Understanding Public Pension Debt

A State-by-State Comparison

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The Competitive Enterprise Institute's *The High Cost of Big Labor* series analyzes and compares the economic impact of labor policies on the states, including right to work and public sector collective bargaining laws.

Executive Summary

STATE GOVERNMENT PENSION DEBT burdens labor markets and worsens the business climate. To get a clear picture of the extent of this effect around the nation, this paper amalgamates several estimates of states' pension debts and ranks them from best to worst.

Today, many states face budget crunches due to massive pension debts that have accumulated over the past two decades, often in the billions of dollars. There are several reasons for this.

One reason is legal. In many states, pension payments have stronger legal protections than other kinds of debt. This has made reform extremely difficult, as government employee unions can sue to block any scaling back of generous pension packages.

Then there is the politics. For years, government employee unions have effectively opposed efforts to control the costs of generous pension benefits. Meanwhile, politicians who rely on government unions for electoral support have been reluctant to pursue reform, as they find it much easier to pass the bill to future generations than to anger their union allies.

Another contributing factor has been math—or rather, bad math. For years, state governments have understated the underfunding of their pensions through the use of dubious accounting methods. This involves using a discount rate—the interest rate used to determine the present value of future cash flows—that is too high. This affects the valuation of liabilities and the level of governments' contributions into their pension funds.

Today, defined benefit plans are more prevalent in the public sector than in the private sector, where employers have moved toward defined contribution plans, such as 401(k) accounts. In defined benefit plans, states are on the hook for payouts regardless of their pensions' funding level. Therefore, the discount rate used in the valuation of pension liabilities should be a low-risk rate, because of the fixed nature of pension liabilities. Ideally, this should as low as the rate of return on 10- to 20-year Treasury bonds, which is in the 3 to 4 percent range.

However, in the U.S., most state and local governments use discount rates based on much higher investment return projections, usually of 7 to 8 percent a year. This usually leads to state and local governments making lower contributions, in the expectation of high investment returns making up for the gap. However, while such returns may be achievable at some times, they need to be achievable *year-on-year* in order for a pension fund to meet its payout obligations, which grow without interruption. Therefore, failing to achieve such high returns can result in pension underfunding that extends into the future. Discount rates based on high return projections also incentivize pension fund managers to seek higher returns. This encourages in-

vesting in riskier assets, which incur large losses for investors when they go south.

For years, this practice was validated by the quasi-private Government Accounting Standards Board (GASB). To improve accounting, GASB recently introduced new standards that have pensions deemed underfunded—those with a funding level of under 80 percent—use a lower discount rate. However, pension plans deemed to be above 80 percent funded will still be able to use a high discount rate. Thus, the new GASB standards do not go nearly far enough to end the dubious accounting practices that have exacerbated state pension underfunding by hiding its extent.

Individuals and businesses in states with underfunded pensions—or considering a move to such a state—understand that the piper will have to be paid eventually. Without significant reform, these debts will adversely affect their business through higher taxes, fewer basic government services, or both.

Because locating or relocating a business is an expensive proposition filled with upheaval, businesses are giving careful consideration to which jurisdictions they decide to call home. The rankings of state pension debt in this paper will help inform businesses of the quality of their options. They also should prompt GASB to revisit its accounting standards and state lawmakers and citizens to work to improve their states' situation.

—Aloysius Hogan

Introduction

A STATE GOVERNMENT'S FISCAL health affects the business climate and labor markets within each state, as strained budgets or excess debt foretell possible increased tax burdens and lower quality government services. The financial status of public pension programs is an important factor determining governments' fiscal health, and may attest to the quality of a state's fiscal administration more broadly. If public pension programs are severely underfunded, tax rates may need to be raised and government services curtailed in order to meet future payment obligations. Therefore, private businesses choosing where to locate, and individuals choosing where to live and work, are wise to consider not only the current policy climate of prospective states, but also the risk of policy changes made necessary by looming budgetary concerns like the need to increase funding of public pensions.[1]

Economic Activity and Expectations of Future Changes in Public Policy

TAXES INFLUENCE THE ECONOMIC decisions of individuals and businesses in a variety of ways. When tax levels rise, individuals and businesses increasingly act in ways to reduce their tax burden, as some opportunities for mutually profitable transactions become unprofitable. Some businesses grow less quickly, move elsewhere, or are not founded. Expenditures or investments are not made. New jobs are not created. These effects reduce the efficiency of markets and result in a loss of wealth to both businesses and individuals. Moreover, the loss of efficiency and wealth generally accelerates as tax rates go up.

Many firms take into account tax burdens when determining where and how to do business, and many individuals do likewise when choosing where to live, how hard to work, and what things to buy. The evidence for this is compelling. Over the last 30 years, numerous studies using a variety of data sets and methodologies have shown the relevance of tax burdens to business decision-making and migration of people.[2]

This may be especially true where *neighboring* states have substantially different regimes. A business looking to relocate to, or remain within, a given region may have a choice among neighboring states, and its ultimate choice may be motivated in part by considerations of the business climate, including tax and regulatory issues. This is true of individuals as well.[3]

It is not just current tax burdens that matter. Moving a business or a household can be costly, as can altering one's business practices or expenditures in light of policy changes. So location and other business decisions, as well as individuals' residential choices, also depend on *expectations of future changes* in tax burdens and government-provided services. Government debt can be a major driver of such expectations—the larger the debt, the more likely it is that significant policy changes will take place. Given how difficult it is to reduce benefits to politically influential constituencies, it is reasonable to assume that unfunded obligations for future benefit payments to those constituencies will be met, at least in part, by increased taxes and decreased government services. The larger the debt, the larger the potential tax increases—and the greater the behavioral responses to them.

But don't the vast majority of states have constitutional balanced-budget requirements, keeping the states from getting into debt problems? It is not that simple.

How Pension Plans Work

MOST STATE AND LOCAL SPENDing is funded by same-year revenue. Taxes, fees, federal grants, and other revenue sources have grown along with expenditures, keeping budgets in balance. And states generally hold enough assets to offset explicit debt obligations. But defined benefit (DB) public pension programs create legal obligations to pay *future* benefits, and the way governments account for these future liabilities enables them to *implicitly* take on debt by underfunding pension programs without appearing to do so.

A public pension program, at its simplest, entitles qualifying public employees to a stream of income after they retire. Qualification requirements, retirement age, payout levels, and myriad other considerations all depend on the specific plan details, but most public pension plans generally have the same basic structure—workers today accrue future retirement benefits. The future stream of payments comes out of a pension fund, which the government—and increasingly employees themselves—are supposed to have paid into over time to finance the benefits. Many states have laws or constitutional provisions protecting pension funds from use for other purposes and treating pension benefits as a contractual obligation of the government.[4]

Pension programs generally come in two varieties: defined benefit and defined contribution (DC). Defined benefit plans, as their name suggests, determine the amount in benefits an employee is entitled to receive in retirement according to a formula. The funding of the plan, including gains from investment of plan assets, must be sufficient to meet the payment obligations in future periods; otherwise, the plan is at risk of becoming insolvent at some point in the future. A defined contribution plan avoids this insolvency risk by defining the payments into the plan according to some formula. The benefit payments made to retirees then are determined by the investment growth of the plan assets over time.

Most private corporations offering retirement plans for their employees have moved to defined contribution plans, but most public pension programs have remained primarily defined benefit. Under a DB plan, the amount of benefits to be paid out to future retirees is fixed by a formula and legally guaranteed, so public pension programs that are underfunded may require further infusions of cash, lest they be-

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come insolvent. As with explicit debts from ordinary borrowing, implicit debts from pension underfunding create an expectation of needed policy changes. Topping up the fund to meet the payment obligations to future retirees requires either raising revenue or shifting spending from elsewhere in the budget.

But here is where things get really confusing. The rules that apply to government accounting of public pension plans enable governments to use rosy assumptions about investment returns to make pension assets look sufficient to cover pension liabilities. Many government reports show pension plans being well-funded, even though the accounting standards used by private companies in the United States and most governments throughout the world would show they are not.

Accounting for Pension Assets and Liabilities

IN DETERMINING WHETHER A PEN-sion fund's assets are sufficient to meet its future liabilities, one must compare the valuation of assets in the pension fund with the calculated *net present value* of future payments to retirees. Calculating the net present value of future liabilities requires the use of a discount rate representing the risk and timing of those liabilities. Because pension payments are intended to be certain and reliable for retirees, and in many states those payments have stronger legal protections than ordinary debt, the discount rate used in the valuation of liabilities should be a low-risk rate, ideally as low as the rate on Treasury bonds, but at least as low as other government bonds or even high-quality corporate bonds.[5]

This is not to say that public pension funds should make only risk-free investments, but that the *valuation* of pension liabilities as an accounting matter is entirely separate from the challenge of *financing* those liabilities. This distinction is important, as will be shown.

Consider a simple example showing how sensitive a net present value calculation is to the discount rate used. Suppose we know that payments to retirees will be $10 million annually starting next year and continuing for 30 years. Since these payment obligations are certain to come due, we should use a risk-free discount rate, perhaps the rate on a Treasury bond—say 2 percent. The valuation of the liabilities of our pension fund—the net present value of the entire future stream of payments—turns out to be around $224 million. Now suppose we used a higher discount rate, perhaps what a municipal bond returns—say 5 percent. Using that discount rate, valuation of pension liabilities goes down to $154 million. Using a still higher discount rate of 8 percent, valuation of pension liabilities goes down to $113 million. Clearly, the choice of discount rates affects the valuation of liabilities greatly. Therefore, if one wanted to make liabilities appear low, one would prefer using a high discount rate.

Given this sensitivity of valuations to the choice of discount rates, accounting standards ordinarily require the use of a discount rate that properly reflects the risk and timing of future liabilities. This *fair market value* approach is the standard for private corporations in the United States and almost all foreign governments, and is used by the Congressional Budget Office and the Bureau of Economic Analysis as well.

But state and local governments in the U.S. follow a different set of rules set forth by the Government Accounting Standards Board

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> The regulatory framework for public pensions not only masks their underfunding, it also creates perverse incentives toward overly risky investment practices.

(GASB), the independent, quasi-private organization that sets accounting standards for state and local governments in the United States.[6] These rules have until recently run starkly contrary to the principle that the valuation of liabilities should be independent of the valuation of the assets used to finance those liabilities. GASB Statements 25 and 27 specifically allow the government to value and report pension *liabilities* using a discount rate based not on the certainty of those liabilities coming due but on the expected rate of return on plan *assets*.[7] This allows a public pension fund that invests in high-risk financial instruments seeking high rates of return to discount its pension obligations at equally high discount rates, even though the obligations were almost certain to come due while the high returns were anything but certain.[8]

The distinct regulatory framework for public pensions not only masks their underfunding, it also creates perverse incentives toward overly risky investment practices.[9] Indeed, public pensions invest in financial instruments with high expected yields and report liabilities using commensurately high discount rates of around 8 percent,[10] making their liabilities appear much smaller than they are.

Even using such high discount rates, state and local government data have shown public pension funding shortfalls. But those shortfalls become much larger in revised estimates using lower discount rates. Put simply, many public pension plans are underfunded even under their own accounting. Fair-market-value adjustments show the underfunding is even more severe.

Table 1 provides some idea of how much larger the underfunding problem appears if more appropriate discount rates are used. For each state, the table shows a 20-year average (from 1990 to 2009) of the level of state public pension underfunding, first according to officially reported data, and then according to fair-market-value estimates in Naughton, Petacchi, Weber (2013).[11] To make cross-state comparisons more meaningful, the underfunding levels are also shown as a percent of state GDP (as of 2000).

In order to improve the accounting of public pensions, GASB approved new accounting and financial reporting standards relating to public employee pensions by state and local governments, on June 25, 2012.[12] GASB Statements 25 and 27 are being superseded by GASB 67, which became effective in mid-2013, and GASB 68, which will become effective in mid-2014. "The new standards will improve the way state and local governments report their pension liabilities and expenses, resulting in a more faithful representation of the full impact of these obligations," said GASB Chairman Robert H. Attmore. "Among other improvements, net pension liabilities will be reported on the balance sheet, providing citizens and other users of these financial reports with a clearer picture of the size and nature of the financial obligations to current and former employees for past services rendered."[13]

The new rules, while an improvement, leave much to be desired. GASB 67 allows for continued use of the heavily criticized GASB 25 method for "funded" portions of the liabilities. And for the unfunded portion, GASB 67 requires the use of discount rates equal to yields on high-quality municipal bonds, which are not as low as the Treasury-bond rate that many economists deem appropriate. This will affect government pension plans differently based on the make-up of investments in the plans and their existing levels of funding.[14]

TABLE 1

#	State	Officially Reported Underfunding		Re-estimated FMV* Underfunding	
		Millions of $	% of GDP	Millions of $	% of GDP
1	Alabama	2,360	2.0%	15,990	13.8%
2	Alaska	1,590	6.1%	4,840	18.7%
3	Arizona	700	0.4%	12,490	7.7%
4	Arkansas	890	1.3%	7,110	10.4%
5	California	18,670	1.4%	145,260	11.0%
6	Colorado	4,270	2.5%	22,700	13.2%
7	Connecticut	9,360	5.7%	20,060	12.3%
8	Delaware	-150	-0.4%	1,660	4.1%
9	Florida	1,800	0.4%	34,000	7.1%
10	Georgia	1,680	0.6%	16,170	5.5%
11	Hawaii	2,340	5.6%	7,010	16.9%
12	Idaho	590	1.6%	3,540	9.8%
13	Illinois	27,670	5.8%	69,230	14.6%
14	Indiana	7,760	3.9%	15,020	7.6%
15	Iowa	1,280	1.4%	6,130	6.6%
16	Kansas	2,740	3.2%	8,740	10.2%
17	Kentucky	3,720	3.3%	14,340	12.7%
18	Louisiana	7,880	6.0%	18,240	13.9%
19	Maine	2,620	7.2%	8,110	22.3%
20	Maryland	4,590	2.5%	15,990	8.7%
21	Massachu-setts	8,680	3.2%	31,620	11.6%
22	Michigan	6,670	2.0%	33,330	9.9%
23	Minnesota	3,590	1.9%	19,960	10.6%
24	Mississippi	4,210	6.4%	12,280	18.7%
25	Missouri	3,970	2.2%	19,920	11.0%
26	Montana	890	4.1%	3,660	16.9%
27	Nebraska	640	1.1%	2,960	5.2%
28	Nevada	3,660	4.8%	8,590	11.3%
29	New Hamp-shire	990	2.2%	3,040	6.9%
30	New Jersey	9,270	2.6%	54,620	15.6%
31	New Mexico	2,680	5.3%	10,510	20.9%
32	New York	-3,650	-0.5%	83,390	10.8%

TABLE 1 (*continued*)

#	State	Officially Reported Underfunding		Re-estimated FMV* Underfunding	
		Millions of $	% of GDP	Millions of $	% of GDP
33	North Carolina	-1,110	-0.4%	15,070	5.4%
34	North Dakota	230	1.3%	1,350	7.4%
35	Ohio	21,280	5.6%	74,580	19.6%
36	Oklahoma	6,790	7.4%	13,180	14.4%
37	Oregon	1,150	1.0%	18,880	16.7%
38	Pennsylvania	3,270	0.8%	37,970	9.6%
39	Rhode Island	2,320	6.9%	6,440	19.2%
40	South Carolina	4,660	4.0%	12,970	11.2%
41	South Dakota	360	1.5%	1,910	7.9%
42	Tennessee	1,460	0.8%	14,160	8.0%
43	Texas	7,430	1.0%	60,820	8.3%
44	Utah	770	1.1%	6,190	8.9%
45	Vermont	310	1.7%	1,570	8.7%
46	Virginia	3,440	1.3%	17,500	6.7%
47	Washington	3,410	1.5%	31,290	13.7%
48	West Virginia	4,630	11.2%	8,280	20.0%
49	Wisconsin	1,350	0.8%	25,070	14.1%
50	Wyoming	210	1.2%	2,180	12.8%

FMV = Fair Market Value, using Treasury rates as discount rate for valuing future pension liabilities.
Source: Naughton, Petacchi, Weber (2013). State GDP data from Bureau of Economic Analysis.

Survey of States

MANY STATE-BY-STATE ANALYSES of public pension funding rely on official government data.[15] As discussed, officially reported data are based on inappropriately high discount rates. Even with the use of high discount rates, state pension plans appear significantly underfunded. In the following table, the states are ranked from worst to best according to their officially reported pension debt levels (liabilities – assets) as a percent of state GDP. Due to lags in availability, the most recent data is from 2012. (See table 2.)

In addition to the official government statistics, there are a handful of studies that source data from a large number of state pension systems and report results on a state-by-state basis.

The most salient studies here are those of Professors Novy-Marx and Rauh. I present separate rankings based on two of their papers, Novy-Marx and Rauh (2011)[16] and Novy-Marx and Rauh (2012).[17] Novy-Marx and Rauh (2011) discusses liability/accrual concepts and valuation methodologies, and recalculates pension liabilities under appropriate discount rates using data from 2009 and 2010. The rankings in table 3 are based on these recalculated pension debt levels as a percent of state GDP.

Novy-Marx and Rauh (2012) estimates the increased contribution levels necessary to fully fund pension plans over the course of 30 years. The rankings in table 4 are based on these contribution increases as a percent of GDP.

Naughton, Petucchi, Weber (2013) follows Novy-Marx and Rauh's approach and analyzes data from the 20-year period, 1990-2009. The data are significantly more remote but the analysis benefits from spanning multiple business cycles. Table 5 provides rankings based on the average level of underfunding over the given timeframe as a percent of state GDP in 2000.

Another study that re-estimates liabilities according to fair-market value, with the benefit of more recent data, is Eucalitto (2013).[18] The rankings in table 6 are based on the data therein.

Finally, Moody's (2014)[19] also provides a fair-market-value-based assessment of adjusted net pension liabilities based on the most up-to-date information (table 7).

Which of these tables gives the "best" ranking of the 50 states? It is difficult to say. But importantly, they are in rough agreement regarding which states' pensions are in the worst shape, with some slight differences in ranking.

TABLE 2

#	State	Under-funding (% GDP)	#	State	Under-funding (% GDP)
1	New Mexico	15.8%	26	Maryland	6.4%
2	Alaska	15.5%	27	Arkansas	6.3%
3	Mississippi	15.0%	28	Arizona	6.0%
4	Kentucky	14.9%	29	Missouri	5.8%
5	Ohio	14.6%	30	Virginia	5.8%
6	Illinois	14.1%	31	Minnesota	5.4%
7	Hawaii	12.2%	32	Indiana	5.0%
8	New Jersey	11.3%	33	Vermont	4.9%
9	Connecticut	11.0%	34	Utah	4.7%
10	South Carolina	10.1%	35	Iowa	4.5%
11	Rhode Island	9.6%	36	Wyoming	4.5%
12	Nevada	9.5%	37	Georgia	3.9%
13	Pennsylvania	9.3%	38	Texas	3.5%
14	Michigan	9.1%	39	Oregon	3.5%
15	Colorado	8.7%	40	North Dakota	3.4%
16	Alabama	8.5%	41	Idaho	3.4%
17	Louisiana	8.4%	42	Florida	2.7%
18	West Virginia	8.1%	43	Nebraska	2.5%
19	California	8.1%	44	Delaware	2.1%
20	New Hampshire	7.3%	45	Washington	1.9%
21	Montana	7.0%	46	Tennessee	1.6%
22	Kansas	6.7%	47	South Dakota	1.4%
23	Massachusetts	6.7%	48	New York	1.4%
24	Maine	6.6%	49	North Carolina	0.9%
25	Oklahoma	6.6%	50	Wisconsin	-0.6%

Source: Pension data from the U.S. Census Bureau. State GDP data from the Bureau of Economic Analysis.

As argued above, the official statistics are problematic because of overly optimistic discounting of liabilities. But they are more recent and therefore reflect the recovery of asset prices since the Great Recession, as well as some early financial improvements due to policy changes in various states. The other studies use more appropriate discount rates, but one may quib-

> Official statistics are problematic because of overly optimistic discounting of liabilities.

TABLE 3

#	State	Under-funding (% GDP)	#	State	Under-funding (% GDP)
1	Ohio	35.4%	26	Louisiana	16.4%
2	Mississippi	31.3%	27	Kansas	16.4%
3	New Mexico	29.9%	28	Arkansas	16.1%
4	Rhode Island	29.3%	29	Maryland	15.9%
5	South Carolina	27.6%	30	Wyoming	15.3%
6	Kentucky	27.0%	31	Utah	15.0%
7	Illinois	26.4%	32	Idaho	15.0%
8	New Jersey	26.1%	33	Massachusetts	14.8%
9	Hawaii	25.2%	34	Georgia	14.3%
10	Alabama	23.8%	35	New Hampshire	13.7%
11	Maine	23.7%	36	Nevada	13.3%
12	Oregon	23.4%	37	Washington	13.3%
13	Wisconsin	23.4%	38	Vermont	13.0%
14	Colorado	23.1%	39	South Dakota	12.7%
15	Connecticut	22.7%	40	Iowa	12.5%
16	Minnesota	21.0%	41	Virginia	12.2%
17	Oklahoma	20.6%	42	Florida	12.1%
18	California	20.0%	43	Indiana	11.8%
19	Montana	19.8%	44	Texas	11.6%
20	Arizona	19.6%	45	New York	11.6%
21	Alaska	19.4%	46	North Dakota	11.5%
22	Pennsylvania	18.1%	47	North Carolina	9.4%
23	West Virginia	18.0%	48	Tennessee	9.2%
24	Missouri	17.7%	49	Delaware	8.3%
25	Michigan	16.6%	50	Nebraska	7.3%

Source: Novy-Marx and Rauh (2011).

ble with their choices, and some rely on older data. Naughton, Petacchi, and Weber's data, in particular, are quite old but they average over multiple business cycles and therefore may have some probative value. For simplicity, aggregate ranking, from worst to best, using a simple average of the constituent rankings, are shown in table 8.

The lack of data beyond 2012—and of multiple independent fair-market value recalculations using the most recent data—is less than ideal, especially in light of the economic volatility of recent years. The financial crisis and recession wreaked havoc on public pension asset balances, as investments in real estate, equity, and other investments suffered huge losses,

TABLE 4

#	State	Funding Increase (% GDP)	#	State	Funding Increase (% GDP)
1	Ohio	2.40%	26	Connecticut	0.79%
2	New Mexico	2.14%	27	Vermont	0.79%
3	Oregon	2.11%	28	Maine	0.78%
4	Illinois	1.84%	29	Florida	0.75%
5	New York	1.65%	30	Idaho	0.74%
6	Minnesota	1.61%	31	Virginia	0.73%
7	California	1.59%	32	Georgia	0.73%
8	Michigan	1.55%	33	Oklahoma	0.72%
9	New Jersey	1.45%	34	Massachusetts	0.71%
10	Kentucky	1.40%	35	Nebraska	0.69%
11	Wisconsin	1.39%	36	North Carolina	0.68%
12	Pennsylvania	1.39%	37	New Hampshire	0.67%
13	South Carolina	1.38%	38	Delaware	0.66%
14	Mississippi	1.36%	39	Alaska	0.66%
15	Colorado	1.35%	40	Iowa	0.63%
16	Missouri	1.21%	41	Nevada	0.63%
17	Wyoming	1.07%	42	Rhode Island	0.63%
18	Kansas	1.04%	43	North Dakota	0.63%
19	Texas	1.04%	44	Maryland	0.59%
20	Washington	1.01%	45	Arizona	0.55%
21	Hawaii	0.90%	46	South Dakota	0.52%
22	Alabama	0.88%	47	Arkansas	0.49%
23	Louisiana	0.86%	48	West Virginia	0.47%
24	Montana	0.83%	49	Utah	0.35%
25	Tennessee	0.82%	50	Indiana	0.23%

Source: Novy-Marx and Rauh (2012).

and as some state and local governments decided to forego making full contributions. The effects of the financial crisis, recession, and slow recovery were not uniform across the 50 states. Therefore, lack of up-to-date data amid such gyrations argues for caution in interpreting this or any study on current public pension funding.

As concerns over public pension funding have gained traction, policy makers have responded in many states.[20] Changes include reduced benefits for future employees, reductions in annual cost-of-living adjustments, increased employee contribution requirements, and moves toward hybrid plans with a defined-contribution component, among other measures. As a result, the

TABLE 5

#	State	Under-funding (% GDP)	#	State	Under-funding (% GDP)
1	Maine	20.9%	26	Missouri	11.0%
2	New Mexico	20.0%	27	New York	10.8%
3	West Virginia	19.6%	28	Minnesota	10.6%
4	Ohio	19.2%	29	Arkansas	10.4%
5	Rhode Island	18.7%	30	Kansas	10.2%
6	Mississippi	18.7%	31	Michigan	9.9%
7	Alaska	16.9%	32	Idaho	9.8%
8	Montana	16.9%	33	Pennsylvania	9.6%
9	Hawaii	16.7%	34	Utah	8.9%
10	Oregon	15.6%	35	Maryland	8.7%
11	New Jersey	14.6%	36	Vermont	8.7%
12	Illinois	14.4%	37	Texas	8.3%
13	Oklahoma	14.1%	38	Tennessee	8.0%
14	Wisconsin	13.9%	39	South Dakota	7.9%
15	Louisiana	13.8%	40	Arizona	7.7%
16	Alabama	13.7%	41	Indiana	7.6%
17	Washington	13.2%	42	North Dakota	7.4%
18	Colorado	12.8%	43	Florida	7.1%
19	Wyoming	12.7%	44	New Hampshire	6.9%
20	Kentucky	12.3%	45	Virginia	6.7%
21	Connecticut	11.6%	46	Iowa	6.6%
22	Massachusetts	11.3%	47	Georgia	5.5%
23	Nevada	11.2%	48	North Carolina	5.4%
24	South Carolina	11.0%	49	Nebraska	5.2%
25	California	20.9%	50	Delaware	4.1%

Source: Naughton, Petucchi, Weber (2013). State GDP from Bureau of Economic Analysis.

data will not show the effects of changes being made to state-run public pension plans across the country for several years. Reforms have been far from uniform across states, and some states have failed to act entirely. The changes are also recent enough, and still ongoing, that assessments of the states' relative positions on pension debt will change considerably over the next few years. One can only await new data over the next several years to know how effective these various reforms will be.

Moreover, as noted above, future officially reported government data will reflect the changes in accounting rules required by GASB 67 and 68.

TABLE 6

#	State	Under-funding (% GDP)	#	State	Under-funding (% GDP)
1	Ohio	56.4%	26	Maine	25.5%
2	New Mexico	53.1%	27	Wyoming	25.2%
3	Mississippi	48.1%	28	Kansas	23.7%
4	Alaska	45.7%	29	Idaho	23.3%
5	Illinois	41.3%	30	Maryland	23.0%
6	Kentucky	41.0%	31	Wisconsin	22.9%
7	Oregon	37.8%	32	Utah	22.8%
8	Hawaii	37.2%	33	Iowa	22.3%
9	Montana	37.1%	34	Massachusetts	22.0%
10	Nevada	36.3%	35	New York	21.6%
11	New Jersey	33.8%	36	New Hampshire	21.5%
12	Connecticut	33.5%	37	Vermont	20.2%
13	Arkansas	32.0%	38	Georgia	19.7%
14	California	32.0%	39	Florida	19.6%
15	Louisiana	30.8%	40	Arizona	18.9%
16	Colorado	30.6%	41	Virginia	17.8%
17	South Carolina	30.2%	42	Texas	17.5%
18	Alabama	30.1%	43	Washington	17.0%
19	Michigan	29.6%	44	South Dakota	17.0%
20	Rhode Island	29.5%	45	North Dakota	15.9%
21	Missouri	28.1%	46	North Carolina	14.7%
22	West Virginia	27.3%	47	Indiana	14.4%
23	Minnesota	26.9%	48	Nebraska	13.4%
24	Pennsylvania	26.1%	49	Tennessee	13.2%
25	Oklahoma	25.8%	50	Delaware	12.8%

Source: Eucalitto (2013)

TABLE 7

#	State	Under-funding (% GDP)	#	State	Under-funding (% GDP)
1	Illinois	26.9%	26	Indiana	6.7%
2	Connecticut	25.1%	27	Oregon	6.3%
3	Kentucky	23.9%	28	California	5.8%
4	Hawaii	22.7%	29	South Carolina	5.3%
5	Alaska	19.3%	30	New Hampshire	4.2%
6	Louisiana	18.8%	31	Missouri	4.2%
7	Maine	18.7%	32	Alabama	4.2%
8	West Virginia	15.6%	33	South Dakota	4.0%
9	Massachusetts	15.5%	34	Idaho	3.9%
10	Maryland	15.3%	35	Minnesota	3.8%
11	Vermont	14.6%	36	Michigan	3.7%
12	Mississippi	12.9%	37	Nevada	3.3%
13	Montana	12.5%	38	Ohio	3.1%
14	Kansas	12.0%	39	Georgia	2.9%
15	New Jersey	11.5%	40	North Carolina	2.9%
16	Pennsylvania	11.1%	41	Utah	2.8%
17	New Mexico	10.4%	42	Arizona	2.8%
18	Oklahoma	9.7%	43	Florida	2.8%
19	Texas	9.5%	44	Iowa	2.6%
20	North Dakota	9.2%	45	Washington	2.3%
21	Rhode Island	9.2%	46	Virginia	2.2%
22	Delaware	8.7%	47	Tennessee	2.1%
23	Colorado	7.9%	48	New York	1.8%
24	Wyoming	7.7%	49	Wisconsin	1.4%
25	Arkansas	7.7%	50	Nebraska	0.9%

Source: Moody's (2014).

TABLE 8

Rank	State	CB	NMR2011	NMR2012	NPW	Eucalitto	Moody's	AVG
1	New Mexico	1	3	2	2	2	17	4.5
2	Illinois	6	7	4	12	5	1	5.8
3	Mississippi	3	2	14	6	3	12	6.7
4	Kentucky	4	6	10	20	6	3	8.2
5	Ohio	5	1	1	4	1	38	8.3
6	Hawaii	7	9	21	9	8	4	9.7
7	New Jersey	8	8	9	11	11	15	10.3
8	Alaska	2	21	39	7	4	5	13.0
9	Connecticut	9	15	26	21	12	2	14.2
10	Montana	21	19	24	8	9	13	15.7
11	Maine	24	11	28	1	26	7	16.2
12	Oregon	39	12	3	10	7	27	16.3
12	South Carolina	10	5	13	24	17	29	16.3
14	Colorado	15	14	15	18	16	23	16.8
15	Louisiana	17	26	23	15	15	6	17.0
16	Rhode Island	11	4	42	5	20	21	17.2
17	California	19	18	7	25	14	28	18.5
18	Alabama	16	10	22	16	18	32	19.0
19	Pennsylvania	13	22	12	33	24	16	20.0
20	West Virginia	18	23	48	3	22	8	20.3
21	Oklahoma	25	17	33	13	25	18	21.8
22	Michigan	14	25	8	31	19	36	22.2
23	Kansas	22	27	18	30	28	14	23.2
23	Minnesota	31	16	6	28	23	35	23.2
25	Missouri	29	24	16	26	21	31	24.5
26	Wyoming	36	30	17	19	27	24	25.5
27	Massachusetts	23	33	34	22	34	9	25.8
28	Nevada	12	36	41	23	10	37	26.5
29	Wisconsin	50	13	11	14	31	49	28.0
30	Arkansas	27	28	47	29	13	25	28.2
31	Maryland	26	29	44	35	30	10	29.0
32	Vermont	33	38	27	36	37	11	30.3
33	Idaho	41	32	30	32	29	34	33.0
34	Texas	38	44	19	37	42	19	33.2
35	New Hampshire	20	35	37	44	36	30	33.7
36	Washington	45	37	20	17	43	45	34.5
37	New York	48	45	5	27	35	48	34.7
38	Arizona	28	20	45	40	40	42	35.8
39	Utah	34	31	49	34	32	41	36.8

Rank	State	CB	NMR2011	NMR2012	NPW	Eucalitto	Moody's	AVG
40	Georgia	37	34	32	47	38	39	37.8
41	Virginia	30	41	31	45	41	46	39.0
42	North Dakota	40	46	43	42	45	20	39.3
43	Florida	42	42	29	43	39	43	39.7
43	Iowa	35	40	40	46	33	44	39.7
45	Indiana	32	43	50	41	47	26	39.8
46	South Dakota	47	39	46	39	44	33	41.3
47	Delaware	44	49	38	50	50	22	42.2
47	Tennessee	46	48	25	38	49	47	42.2
49	North Carolina	49	47	36	48	46	40	44.3
50	Nebraska	43	50	35	49	48	50	45.8

Conclusion

EXPECTATIONS OF FUTURE POLICY changes, including tax increases and reduced government services, can affect the business climate and labor market within a state. Unfunded public pension liabilities represent a significant source of concern, especially given the guaranteed nature of pension benefits to retirees. Current government statistics obfuscate the underfunding of public pensions. A proper accounting of public pension liabilities shows an increased risk of tax increases and reduced government services. Unfunded public pension obligations are not the only source of such policy changes, but they remain a significant threat to the states' fiscal health and therefore to the business climate and labor markets within the states. Due to ongoing changes in state pension programs, a slow but continuing economic recovery, and the advent of new accounting rules, this underscores the need for wide-ranging pension reform that assures proper funding of pensions well into the future.

Notes

1. Public pension programs are not the only type of program that threatens future strain on state budgets. Public employee retirement health care benefit plans pose similar challenges. In fact, as Courtney Collins of Mercer University and Andrew Rettenmaier of Texas A&M University point out in a co-authored study: "[U]nlike pension plans, most of these non-pension [health-care] benefit plans are completely unfunded. That is, assets are not being set aside to fund the obligations." Courtney Collins and Andrew J. Rettenmaier, "Unfunded Liabilities of State and Local Government Employee Retirement Benefit Plans," Policy Report No. 329, National Center for Policy Analysis, July 2010, http://www.ncpa.org/pdfs/st329.pdf. State health care expenditures have been a major driver of state spending growth over the past decade, leading to tax increases and crowding out other government spending, but most such expenditures are financed by same-year revenues and have a straightforward accounting that does not hide risks like the accounting for retiree benefits can.

2. For a discussion of the literature on this issue, see Scott Drenkard and Joseph Henchman, "2013 State Business Tax Climate Index," Background Paper No. 64, Tax Foundation (Oct. 2012); and Jeffrey Thompson, "Costly Migration and the Incidence of State and Local Taxes," Working Papers wp251, Political Economy Research Center, University of Massachusetts at Amherst (2011).

3. Ibid.

4. See Alexander Volokh, "Overprotecting Public Employee Pensions: The Contract Clause and the California Rule," Federalist Society (2013); Jack M. Beermann, "The Public Pension Crisis," *Washington and Lee Law Review*, Vol. 70, No. 1 (2013), http://law.wlu.edu/deptimages/law%20review/Vol70-1WashingtonandLeeLawReviewWinter2013.pdf; Moira Kearney-Marks, "Navigating the Legal Landscape for Public Pension Reform: Travel at Your Own Risk," Forefront 3, No. 1 (2012); Amy B. Monahan, "Statutes as Contracts? The 'California Rule' and Its Impact on Public Pension Reform," *Iowa Law Review*, Vol. 97, 1029 (2012), http://www.uiowa.edu/~ilr/issues/ILR_97-4_Monahan.pdf; Stuart Buck, "The Legal Ramifications of Public Pension Reform," 17 *Texas Review of Law and Politics*, Vol. 17. No. 1 (2012), http://www.questia.com/library/journal/1P3-2913045321/the-legal-ramifications-of-public-pension-reform.

5. See discussions in Andrew Biggs, "Public Sector Pensions: How Well Funded Are They, Really?" State Budget Solutions, July 2012, http://www.statebudgetsolutions.org/doclib/20120716_PensionFinancingUpdate.pdf; Robert Novy-Marx and Joshua Rauh, "Pension Promises: How Big Are They and What Are They Worth?" *Journal of Finance*, Vol. 66, No. 4 (August 2011), http://www.afajof.org/SpringboardWebApp/userfiles/afa/file/Supplements%20and%20Data%20Sets/Internet%20Appendix%20for%20Public%20Pension%20Promises%20How%20Big%20Are%20They%20and%20What%20Are%20They%20Worth%206323-IA-Aug-2011.pdf.

6. "Facts about GASB," Government Accounting Standards Board website, http://www.gasb.org/cs/ContentServer?c=Document_C&pagename=GASB%2FDocument_C%2FGASBDocumentPage&cid=1176163065939.

7. "The investment return (discount) rate commonly selected for governmental pension plan calculations is based on an estimated long-term rate

of return on current and expected future plan investments," Statement No. 25 of the Governmental Accounting Standards Board, page 107, http://www.gasb.org/cs/BlobServer?blobkey=id&blobnocache=true&blobwhere=1175824062183&blobheader=application%2Fpdf&blobheadername2=Content-Length&blobheadername1=Content-Disposition&blobheadervalue2=711122&blobheadervalue1=filename%3DGASBS-25.pdf&blobcol=urldata&blobtable=MungoBlobs, accessed on 1/10/2014.

8. For more on the GASB rules, see Novy-Marx, "Logical Implications of GASB's Methodology for Valuing Pension Liabilities," Working Paper, University of Rochester and National Bureau of Economic Research (2012), http://rnm.simon.rochester.edu/research/LIoGMfVPL.pdf.

9. See Aleksandar Andonov, Rob Bauer, and Martijn Cremers, "Pension Fund Asset Allocation and Liability Discount Rates: Camouflage and Reckless Risk Taking by U.S. Public Plans?" (2013), http://ssrn.com/abstract=2070054. See also SOA Blue Ribbon Panel, "Report of the Blue Ribbon Panel on Public Pension Plan Funding," Society of Actuaries (2014).

10. Novy-Marx and Rauh, "Public Pension Promises;" Novy-Marx and Rauh, "Intergenerational Transfer of Public Pension Promises," Initiative on Global Markets Working Paper No. 22, University of Chicago (Sep. 2008), Appendix Table I.

11. James P. Naughton, Reining Petacchi, and Joseph Weber, "Economic Consequences of Public Pension Accounting Rules" (December 6, 2013), http://ssrn.com/abstract=2199067.

12. News Release, Government Accounting Standards Board website, June 25, 2012, http://www.gasb.org/cs/ContentServer?pagename=GASB/GASBContent_C/GASBNewsPage&cid=1176160126951, accessed 1/10/2014.

13. Ibid.

14. For further criticism of the new GASB rules, see Andrew Biggs, "Public Sector Pensions: How well funded are they, really?" Biggs writes: "Like the current rules, the new regulations cement in place the flawed notion that boosting investment risk makes a pension better funded, before a dime of higher returns have been realized. Under the current rules, a pension that shifts to riskier investments can discount its liabilities using a higher interest rate. Under the new rules, a plan that takes greater investment risk can assume its trust funds will last longer and therefore fewer years of benefits would be discounted using lower municipal bond rates. The incentives to take greater investment risk, particularly at a time when state and local governments would be hard-pressed to increase pension funding, are obvious."

15. For example, Pew Center on the States, "The Widening Gap Update," Washington, DC: Pew Charitable Trusts (2012), relies on states' own actuarial (high-discount-rate) assumptions. Richard W. Johnson, Matthew M. Chingos, Grover J. Whitehurst, "Are Public Pensions Keeping Up with the Times?" Brown Center on Education Policy at Brookings, The Brookings Institution (2013), discusses at length the problem of high-discounting of state pension liabilities but only provides state-by-state data based on the Pew study's recitation of official data.

16. Novy-Marx and Rauh, "Public Pension Promises."

17. Novy-Marx and Rauh, "The Revenue Demands of Public Employee Pension Promises" (September 16, 2012), http://ssrn.com/abstract=1973668.

18. Cory Eucalitto, "Promises Made, Promises Broken—The Betrayal of Pensioners and Taxpayers," State Budget Solutions, September 3, 2013, http://www.statebudgetsolutions.org/publications/detail/promises-made-promises-broken-the-betrayal-of-pensioners-and-taxpayers#ixzz2vgdpQJrz.

19. Moody's Investor Service, "US State Pension Medians Increase in Fiscal 2012," January 30, 2014, http://media.navigatored.com/documents/Moody's+-+State+Pension+Liability+Medians.pdf.

20. See Dan Liljenquist, "Keeping the Promise: State Solutions for Government Pension Reform," American Legislative Exchange Council, 2013, http://www.alec.org/wp-content/uploads/Keeping-the-Promise_-State-Solutions-for-Government-Pension-Reform.pdf. See also Government Accountability Office, "State and Local Government Pension Plans: Economic Downturn Spurs Efforts to Address Costs and Sustainability," Report to Congressional Requesters, March 2012, http://www.gao.gov/assets/590/589043.pdf.

About the Author

Robert Sarvis has a diverse professional background, with experience as an entrepreneur and small-business owner, a software engineer and mobile-app developer, a math teacher, and a lawyer. He has earned degrees in mathematics from Harvard University and the University of Cambridge, a J.D. from New York University School of Law, and a Master of Arts in economics from George Mason University. A Libertarian candidate for Governor of Virginia in 2013, Sarvis received the highest vote share for a third-party candidate in a Southern state in 40 years.

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