The Current State of Municipal Pension Funds

by

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I. Introduction

A. Defining the ARC

Municipal pension funds were put in place to provide public sector employees benefits upon retirements. The entitlements that these retirees are expecting have been earned and are fully due to them for the work they have provided. The employees under these plans range from the police officers and firemen to public school teachers. These individuals have worked their entire lives, expecting the complete benefits that they were promised.

That being said, the pension funds supporting these retirees have been under scrutiny by regulators and investors of late. The issue at hand is that the general state of municipal pension funds has been dismal with slow signs of recovery.

Each year, the individually ran funds are expected to contribute an Annual Required Contribution (ARC). The ARC is calculated to include two metrics: (1) the amount necessary to pay benefits in the current year, and (2) the calculated amount to bridge the gap of Unfunded Actuarial Accrued Liabilities (UAAL), amortized over the next 30 years[1].

While the name may suggest some sort of obligation to contribute the calculated amounts towards the pension fund, there is no formal or legal contract for funds to do so. While entities are expected to fully fund the ARC, most have not, creating a deficit each year that is ultimately summed up into the outstanding UAAL.

1 GASB https://www.gasb45help.com/(S(kdn1mg553oupl5455qeice45))/term.aspx?t=24

B. Hypothesis

Each pension fund is influenced by a unique set of factors leading to its current status. These factors include, but are not limited to: (1) the management of contributed funds, (2) political oversight of state funds, and (3) the lack of a long-term vision of a solution. Accordingly, I have examined three respective hypotheses to determine potential root causes for the current state of funding.

First, I examine the breakdown of the contributed funds by fund managers. Similar to private pension funds, municipal funds require certain target returns in order to maintain the prescribed benefits. That being said, the composition of investments made by the funds has to adjust to the economic environment and general risk appetite of institutional investors. I believe that rather than easing the funding gap, the shift into riskier assets to seek returns has in fact adversely affected the goal.

Second, I believe that the agendas and economic platforms that are attached to political offices at the municipal level are directly correlated to whether state fund are actually directed to fund the ARC.

Third, there is a general lack of vision for a solution that is generally agreed upon yet that is only making matters worse. While there is no single solution that can be expected to solve the current state of funding, certain steps that are being taken by pension funds are only furthering the damage rather than working towards a mendable situation.

II. State of Funding

Before venturing into each of the three hypotheses posed, it is imperative to fully understand where the current landscape of municipal pension funds stands.

A. Methodology

To comprehend the current situation, I have examined data from the last five years directly from the Comprehensive Annual Financial Report (CAFR) of 98 different pension funds spanning the 50 states, excluding the District of Columbia and Puerto Rico. The data points for each funds includes the following for each fiscal year (FY): Actuarial Assets, Actuarial Liabilities, Unfunded Actuarial Accrued Liability (UAAL), Payroll, Annual Required Contribution (ARC), and ARC Funded.

B. Funding Percentage

The percent of funding is calculated by dividing the actuarial liabilities by actuarial assets. Taking this metric and examining it over five years, an average funding percentage was calculated for each state. As **Exhibit 1** shows, the 50 states can be categorized into three buckets: Well-Funded (13 States, >80%), Under-Funded (28 States, >60% & <80%), and Severely Under-Funded (9 States, <60%). While in essence, every fund is considered Under-Funded since there exists a liability gap, it is unnecessary and unreasonable to expect every fund to be fully funded at all times. The industry standard in examining pension funds is to expect that there is at least 80% funding for a pension system to be deemed healthy and capable of fulfilling requirements sustainably.. As such, each fund should still strive to fully fund its liabilities, to maintain room for minor lapses to prove that it is in no danger of defaulting on its obligations.

There exist a handful of funds that have fallen far below a comfortable level of funding, especially concerning of which are *Kentucky* (41.7%), *Illinois* (40.7%) and *Maine* (40.3%). Each of these states has continuously had less than have of their liabilities funded over five years. The degree of underfunding can only be fully understood by the direction of change in examined period. This leads directly to the second analysis of the state of funding to examine whether the percent of funding has been trending upwards, downwards or staying flat.

Individual Years

When examining each year on its own, we see that the degree of underfunding slowly increases at the aggregate level each year. In 2010, funds had an average funding of 72.1% that dropped to 71.4% and 69.9% in 2011 and 2012 respectively. There was a minor lift in 2013 where funding rose to 70.4% but the overall level is still much lower compared to 2010. The data also points to a continued downturn with an average funding of 69.8% for those who have already reported FY2014 actuarial statistics.

Trends

The three categorizations for trends were calculated by taking the sum of the change year over year for each state. Those with net changes within the band of $\pm$1% were deemed to be stable over the five years with anything above 1% trending upwards and anything below -1% trending downwards. **Exhibit 2** summarizes the data and shows that 25 states have been trending downwards, 8 stable and 17 trending upwards. With half of the states examined trending downwards, we see an alignment to the fact that there is a year over year decrease at the aggregate level.

Largest Downward Trend

The first of those with the most noticeable downward trends is *Michigan*. *Michigan* started with a percent funding of 84% in FY2010 that quickly disintegrated to 60.3% in just four years. The second largest decrease was seen in *Pennsylvania*, which saw its funding decrease from 75.1% to 61.5% over the same period of time.

The third largest decrease, but most concerning of which, came from *Kentucky*. *Kentucky* had 49.6% of its obligations funded in 2010 and saw a steady drop each year to 37.3% funded. As noted before, not only is *Kentucky* amongst the bottom three in terms of average funding over the last five years, it is the only one of the three to continue trending downwards towards even more threatening levels.

Largest Upward Trend

The three states with the largest increases in funding over the last five years were *Oklahoma*, *Maine* and *Idaho*. *Oklahoma* and *Maine* are showing signs of increased focus on funding their liabilities as they were on the lower end of funding in 2010 at 56.9% and 33.7% respectively. However, while *Oklahoma* has proved to be one of the more responsible states of late, *Maine* is still struggling despite its large gains. In 2014, *Maine* had just under half of its ARC actually contributed, leaving it still at the bottom of the list of funding compared to all other states.

Other Notable States

Wisconsin has continued to prove to be the most responsible in funding its required contribution. While its level has been stable over the last five years, that is only because there is not much room for it to increase from the 99.8% it was at in 2010. Regardless, the state continued to not only funds its liabilities at a high level, but a gradually increasing level as well.

On the other hand, *Illinois* proved itself to continue to be one of the poorest preforming states. While it was not amongst the largest decreases over the last five years, it had been trending downwards at a faster rate than most, which led to it being the second weakest preforming state over the past five years.

Two other interesting cases are *New York* and *Washington*, historically strong and diligent in funding their liabilities. However, in recent years, both states have been missing their required contributions heavily, threatening to push the two lower down the list of well performing states and into the underfunded territory should the trend continues.

C. State of the ARC

While the UAAL is calculated by compounding each year's deficit in ARC, changes in the annual funding also provide an alternate view at trends within each state. **Exhibit 6** shows that there are twelve states that have been fully funding their ARC. In each of these cases, the states are paying the bare minimum in funding the current year's needs and the amortization of the unfunded gap. However, of these states, *Alabama, Maryland, South Carolina, New Hampshire and Rhode Island* are all still struggling despite fully funding their ARC with less than 75% of their liabilities covered.

The second group to look at is those who are going beyond covering their ARC with average excess each year. Most notable and mentioned earlier is *Wisconsin*, which has been overfunding its ARC each year to potentially make it the only state to have completed funded all liabilities. Over the last three years, *Wisconsin* has a covered an average of 102% of its ARC each year. The other states that have over funded their ARC are *Vermont* (114.6%), *Mississippi* (105.1%), and *Missouri* (100.2%).

The third group examined includes twelve states that have been missing their ARC each year with less than 75% of the ARC actually contributed. The most notable of the following include *New Jersey,* which has had an average funding of just 11.7% over the last three years. The only relief the state has is that the majority of that funding came in 2013 when 27.9% of the ARC was funded, compared to just 2.3% in 2010. However, when looking at the entire group, only five of the twelve states that have been significantly underfunding their ARC belong to the bottom tier of states as shown in the previous section. The previously strong states that are beginning to show signs of a change in focus include *Washington*, *Texas* and *Minnesota*, all with over 80% of their UAAL funded.

While funding of pension funds is currently a priority for many states, the reason why the ARC has been underfunded is not because funds are sitting in state budgets untouched, it is because in times of difficulty, it is the easiest to cut first. When balancing budgets, leaving contributions unfunded is typically the low hanging fruit to be picked, as the effects of doing so are not felt immediately. It is easy to say for many states that they will underfund one year and will make it up in the year after. It is much more difficult to approve cutting the police force, infrastructure investments or education. However, while state hoped to make up gaps in the past, often time, situations only worsen and funds aren't made up. While originally unfelt in initial years, the effects are realized after years of worsening situations.

D. Identified Issues with Funding Liabilities

After examining the funding of states' UAAL and ARC funding, we are presented a list of states that are worrisome beyond those with currently low levels of funding. While some of these states, such as *Maine*, are showing signs of recovery and a renewed effort to change, others, such as *Kentucky* and *Illinois* show otherwise. Those three merely present an image of those with currently low funding ratios. States such as *Washington* and *Texas*, former stalwarts are beginning to show a sign of weakness. The only state that has clearly differentiated itself from the rest of the forty-nine states is *Wisconsin*, presenting a potential case study for other states to follow and examine.

The most alarming note, regardless of the minor points of positive news, is the fact that what is troublesome is the overall image with the entire system showing a lower funding rate over the last three years. All this has happened despite the increased scrutiny of state pension funds over the same period. Have policy makers and those in charge of the pension funds been ignoring the issues at hand? Or has the problem simply gotten out of hand?

III. Asset Allocation of Pension Funds

California Public Employees Retirement System (CalPERS) is the largest public pension fund with over $300bn in assets. The investment decisions of those who manage CalPERS are so far reaching that investors look forward to their annual Focus List. Their decisions have been nicknamed to cause the "CalPERS Effect" – where stocks placed on their Focus List have been studied to outperform the S&P500 by 8.1% over the five year span of being on the list[2].

While not every municipal pension fund is as large and influential as CalPERS, they are large enough to make significant impact on investments. The investments made by these funds span a variety of asset classes that include, but are not limited to, domestic and international equity and bond markets.

Exhibit 3 breaks down the decisions of fund managers over the last 15 years, with many key points to consider. The overall Equity allocation has seen the greatest changes. The first of which is the dramatic decline in US Equity. In 2010, nearly half the funds' allocations were invested in US Equity. Now, that amount has almost halved with only 27.9% of the funds invested in this asset class. Although there was an outflow from US Equity, the overall Equity investment percentage remained flat. The outflows flowed evenly to Non-US Equity, Real Estate and Private Equity.

The issue that lies in the shifting Equity allocation is that the investments made are on average riskier compared to US Equity. I imagine that fund managers were seeking to improve their returns to hit annual goals and by default, turned to riskier assets to reach these goals.

2 http://dealbook.nytimes.com/2006/04/19/six-firms-to-feel-the-calpers-effect/

Now shifting focus to the Debt side, the general trend over the last 15 years was a shift away from US-Bonds to the Other category that consists of primarily cash & cash equivalents as well as commodities, hedge funds, and other absolute return strategies[3]. While the shift has been large, it cannot be determined if the decision to shift funds was inherently riskier or not. It can only be assumed that the decision to do so was again to seek higher returns in markets that are less efficient than the domestic market.

A. Effects of Allocation Shifts

Now that the decisions to shift allocations do not seem to be changing back towards domestics markets, it is important to look back at exactly how these more aggressive investments have fared compare to those in 2000.

To do so, an analysis of the last three years was conducted. Vanguard's Total Stock Market Index Fund (VTSAX) was chosen to represent US Equity through its exposure to the entire domestic equity market including all sizes of growth and value stocks[4]. Vanguard's Total Bond Market Index Fund was used to represent US Bonds with a design to provide broad exposure to domestic investment grade bonds. To review hedge fund returns, the HFRX index's Global Hedge Fund Index, designed to be representative of the overall hedge fund space[5]. Lastly, returns of Private Equity investments were sourced from Bain & Company's Global Private Equity Report 2015[6].

3 Wilshire report 2015, page 16

4 https://personal.vanguard.com/us/funds/snapshot?FundId=0585&FundIntExt=INT

5 https://www.hedgefundresearch.com/?fuse=hfrx_strats&orderby=currency&ascend=1

6 http://www.bain.com/bainweb/Publications/global_private_equity_report_confirmation.asp

Exhibit 4 provides the context for analysis and notes that from 2012 to 2014, US based equities and bonds both performed well, with average returns over the three year period being 30% and 14% respectively. First examining the equity portion of asset allocation for municipal funds, there was little net change between the Vanguard funds documenting domestic versus international returns over the period. However, the difference comes when looking at private equity returns. Based on Preqin's report, returns for private equity firms exceeded those of equities at 12%-13%. Now taking a look at the Debt portion, **Exhibit 4** shows that the difference between the domestic and international Vanguard funds was not that large, with a difference of roughly 4% split between a three-year period.

With both of these examinations in mind, it seems that the pension funds should have been able to find their higher returns justifying the risker asset allocation in the less efficient markets. If the average fund was able to reproduce the same returns as benchmarked by the funds above that were structured to reflect specific asset class performances, it should have found returns that were slightly higher over the last three years.

In this case, it seems contradictory that funding of pension funds continues to decline over the same period despite the higher returns. This leads to two possible ideas to explain the situation. The first idea is that funding from the state level is decreasing at a faster rate than what the analysis in **Section I** suggests. The other, and more likely explanation would be that pension funds' investment returns have not hit the average returns shown. While there is not a lot of public data readily available on the returns individual funds receive from private equity investments, one report found the top 10 funds in terms of returns from private equity. That being said, the 10th highest return sat just above 14% while the highest return was just above 18%. This potentially leaves the remaining funds and investments moving more and more steeply down the curve.

Regardless of these decisions, the change seen in pension funds falls in line with what McKinsey & Co. has analyzed in that institutional investors have been sending more money to alternative investments. While there is a higher risk in terms of investing in hedge funds, the risk is often times taken for potentially higher returns. It is expected that investments in hedge funds, private equity and real estate will more than double to $14.7 trillion by 2020[7]. However, the case for or against investing in hedge funds and other alternative investments has been argued from both sides in a number of different states.

California, New Jersey, and Texas Case Study

What is interesting to note though is that despite increased returns that funds have seen with the change in asset allocation, the largest pension fund in the United States has begun divesting investments from the alternative investments. While unsure of where the funds will be going, CalPERS cited that hedge funds have become too complex and

7 http://www.bloomberg.com/news/articles/2014-09-15/calpers-to-exit-hedge-funds-citing-expenses-complexity

expensive. $135 million was paid in fees alone for fiscal year 2014, which translates to what would have been an additional 0.4% of the 7.1% for the year. This aggressive measure follows the actions taken by the fund management since 2009, after the last chief investment officer made the conscious decision to shed investments in real estate, private equity, emerging markets, and public-works projects.

California's move seems to be well thought out though. During the Great Recession, CalPERS saw more than a third of its assets disappear from poor investment decisions. California was forced to utilize more of its taxpayer dollars in order to meet its contribution requirements. Since then, it has been taking a different approach to its investments, removing risk where possible, while still making 18.4% in 2014 from its portfolio.

However, while California has decided to move away from these risky and expensive assets, other pension funds such as New Jersey has begun to add more of these alternative investments to their portfolio. By doing so, New Jersey is hoping to make up for the large deficits it has incurred.

New Jersey has tripled its allocation in hedge funds to 12% while investments in private equity have increased from 5.3% to 9.3%. Since this increase, New Jersey has incurred $265 million in management fees and $335 million on performance bonuses in fiscal year 2014 alone[8]. The dramatic amount of fees has led the retirement system's board of trustees to launch a probe into how the millions of dollars paid in fees is allocated and rewarded.

The only issue that New Jersey has here is why there are such large fees associated with the potentially higher returns. In 2014, hedge funds made up roughly 6.5% of the

8 http://www.nj.com/politics/index.ssf/2015/04/nj_pension_fund_heads_to_investigate_investment_fe.html

portfolio of investments for the public employee's retirement system[9]. This management and the returns associated with it accounted for $265 million in fees. The disconnect that the board at the state fund saw here is that on the other side, their Department of Investment oversees over three quarters of investments but only cost just under $11 million in compensation. This difference in fees is now under scrutiny to determine how compensation is awarded and whether or not a continued investment in the asset is in the best interest of the state fund.

The last state to examine, Texas, now presents a different outlook on alternative investments. Texas' Teacher's Retirement System has shown a fundamental belief in the strategy of hedge funds and private equity firms. However, rather than continue to pay annual performance and management fees, the retirement system decided to cut the fees by making direct equity investments. Most recently, the system made a $250 million investment in Bridgewater Associates, which followed a $3 billion investment in each KKR and Apollo. These investments are backed by claims that the system "believes this is one of the best investment opportunities of its kind[10]." The caveat with this decision compared to investing in a hedge fund though is that this position is much less liquid. It will be much more difficult to divest its investments like CalPERS did if conditions are deemed unfavorable. Earnings for the system will now be far more tightly tied to the direct returns of the hedge fund and should the market or the fund do poorly and a string of investors withdraw their money, the system could suffer more greatly with fewer options.

9 http://www.nj.gov/treasury/doinvest/pdf/AnnualReport/2014AnnualReportStateInvestmentCouncil.pdf

10 http://dealbook.nytimes.com/2012/03/05/texas-teacher-pension-buys-stake-in-bridgewater/

IV. Political Impact of State Governors

Often times the degree of funding can be traced back to how a state is doing fiscally. The decision to fund the municipal pension fund may be placed at a lower priority compared to the other needs of the state that can include direct and immediate needs. While it is not always the case, I propose that the party in power for a state has an impact on the priority to fund the ARC. To explore this, I conducted three different analyses to examine the correlation.

The first analysis conducted looked at the average funding rate over the five years broken down by whether a Democrat or Republican held the gubernatorial seat. States that had an officer who identified as an independent were excluded from this analysis. As shown in **Exhibit 5**, Republican run states had a higher funding rate compared to Democrat run states, with an increasing spread each year until 2014.

While there is not enough evidence from this analysis to determine whether there is a direct correlation and causation involved, it is interesting to note that republican states consistently fund their ARC's at a higher level. To move one step closer to potentially looking at causation, the next analysis focuses on states that have shifted from a Republican to a Democratic representative to see if the funding trend continued despite a change in office party or if it flipped to negate the trend.

Over the last five years, 19 states had a change in party of the governor elected. Of these, 15 can be bucketed into two cases. The first case is a state with a Republican representative in 2010, and subsequently a Democrat in the following term. This category consisted of California, Connecticut, Minnesota and Vermont. In all four of these cases, funding dropped when the Democrat came into office, with an average decrease in funding of 3.0% across the four. While this may show signs of being indicative of a potential effect from the executive branch of state governments, the view would not be complete without look at case two.

The second case has a Democrat in office in 2010 with a Republican voted in for the subsequent term. For this case, there were eleven samples to view (Iowa, Kansas, Maine, Michigan, New Mexico, Ohio, Oklahoma, Pennsylvania, Tennessee, Wisconsin, and Wyoming). However, the view in this case showed a mixed effect. While a positive correlation would show that Republican governors fund their ARC's at a better rate, only five of the eleven actually showed an increase in funding over the Republican tenure. Conversely, six of the eleven show a decrease in funding, with states like Michigan and Pennsylvania actually being the two states with the biggest decrease in funding over the five year period as referenced in **Section I. B.**

Furthermore, while the first case showed potential, a cause that has not been explored is whether or not the four states were already on a downward trend before the Democratic governor came into office. To fully judge this relationship, there would need to be a larger sample of years examined due to the nature of the position calling for four-year terms for governors.

Another analysis of this data set looked at states that were wholly run by a Democrat or Republican. From this analysis, it was found that the fifteen states that were run by a Democrat for the entire five years was funded on average at 74.8% versus a funding ratio of 70.0% from the sixteen fully Republican states. This offers another conflicting view from the first analysis, with Republicans having a now lower funding ratio compared to that of Democrats.

The last analysis used to examine this data set was done so using an ordinary least squares regression to determine the correlation between who is in office and the state of funding. While this analysis does not look at the change over time and view the correlation that a panel regression would allow, it does allow a form of analysis that views whether or not there is any correlation whatsoever between the dependent variable to the party in office. From this analysis and as shown in **Exhibit 8**, there was an R-Squared of 0.3% which represents that there is most likely very little correlation between who is in office and the amount of liabilities funded for a state. This falls in line with the results above in proving that there does not seem to be a correlation between who is in office.

Legislation

The key takeaway shows that funding ratios are not dependent on the party in office. The National Conference of State Legislatures notes in a report that in 2010-2011 alone, forty-three states had enacted some sort of major reform in reducing actuarial liabilities for state pension funds[11]. These reforms include, but are not limited to, increasing contribution rates, reducing port-retirement increases (COLAs) or raising the requirements for normal retirement. While individual states have their own legislative processes and different degrees to which reform has been made, it is safe to say that there is no cause to cast blame on any individual party.

11 http://www.ncsl.org/documents/employ/Highlights-Pension-Reform2012.pdf

V. Lack of Effective Pension Management

In face of a growing liability gap, pension funds are stuck with limited, risky and contentious options. Policy makers are struggling to agree on what the best steps are and every step taken by individual states is being examined in intense detail. Nevertheless, at some point, a decision has to be made to, at the very least, attempt to shift the situation in a positive direction.

A. Pension Bond Issuances

Since 1985, there have been roughly $105 billion of pension-obligation bonds issued. While this collective number pales in comparison to the overall $3.6 trillion municipal market, the uses of these funds have been used in a variety of ways, but all to attempt to bridge the pension liability gap.

In 2015 alone, a large number of cities and states have already begun to issue a growing number of pension-obligation bonds (POB). *Hamden, Connecticut* issued $125 million of taxable general obligation (GO) bonds in February. *Macomb County, Michigan* issued $263 million of taxable POB's. *Kansas* state has just approved a record $1.0 billion bond issuance to help bridge their shortfall estimated to be nearly $600 million[12].

While there is a massive inflow of cash coming from these bond issuances, the last-resort measure is not good news. The primary reason issuers are contemplating issuing such large amounts is in hopes of reinvesting the money for higher returns than the interest paid. While this concept sounds great, its practicality is debatable. *Kansas* has publicly stated that its goal is to issue its bond at no higher than a 5% interest rate and expects to earn at least 8% annually.

The position states are currently in though, is very similar to that of Detroit in 2005. Detroit issued POBs before the Great Recession but saw its returns freeze and slowly disintegrate

12 http://www.nytimes.com/aponline/2015/04/02/us/ap-us-xgr-public-pensions-kansas.html

over the years to become a key factor in the failure of the city in the past year. This debt for debt strategy is merely delaying the issue while providing temporary budgetary relief. The only silver lining in this case is that pension funds will be saving on the annual amortization of growing unfunded liabilities with an inflow of cash that will decrease the need for as much state contributions.

However, that concept is flawed in its own ways. While it is great that pension funds will not be required to contribute as much, if they were really seeking to correct their situation, they would still be overfunding at levels prior to bond issuances. States should not be using the decreased requirement because doing so would only be shifting the issue later down the timeline when another government is in charge. While funding the ARC is a strain with or without the issuance of POB's, policymakers seem to be avoiding the issue as a whole and would prefer the state to go through significantly rougher measures later on than endure a tighter control over the next thirty years.

Furthermore, the goal to generate returns higher than the costs from issuing bonds is complicated at best. States do not seem to be considering timing when deciding to issue POB's. *Kansas* is issuing the largest offering since 2011 when Illinois issued $3.7 billion in POB's. By the time *Kansas* receives a boost in it coffers, the S&P 500 will be at its record highs, after rising more than 70% over the last five years. The number of skeptics is rising and while everyone hopes that things continue to stay golden, the odds are against it doing so. In the worst case scenario in which a deep fall occurs, these pension funds that have on average 25% of their pension funds in US Equity (Section III) will definitely feel the effects. Moreover, real estate and private equity returns have been trending upwards and should a correction occur, the effects will likewise be just as devastating. The strategy of issuing bonds at the historically low rate

environment now to generate returns in the stock market would work perfectly if issuers believed that the market has bottomed out. While only time can tell if the current move by pension funds was timely, history already shows through Detroit that an ill-timed issuance will cause more trouble than benefit.

Lastly, issuing POBs also decreases the mobility for pension funds as well. While states have an annual ARC to fulfill, the amount to contribute is fluid and can be adjusted based on the year-by-year budget that a state has. Issuing POBs trades this fluidity for a rigid payment structure and required annual debt service that in turn can cause even greater stress for an individual state.

B. Rating Agency Inconsistency

The rating agencies involvement in pension obligations extend beyond just rating the POB's that are directly backed by the pension funds. State pension liabilities are also factored into every state's general obligation (GO) bonds. These GO bonds are not formally backed by a stream of revenue but are fulfilled by the believed ability of a state to tax residents without any formal collateral.

Of the benchmark scorecard the Moody's uses, the only metric related to pension funds are the Net Pension Liability to Full Value and Net Pension Liability to Revenue metrics. With this, only 10% of a state's general scorecard is affected by the status of the state's pension liabilities. Comparatively, 10% of the scorecard is allocated to just looking at the trend of how a state's fund and cash balance has been preforming, historically while an additional 20% is allocated to the actual current status of fund and cash balances. The scorecard will obviously put more weight directly on the cash reserves and financial stability but it does not seem to add up

for the, in some cases very large, current unfunded liabilities to have equal weight to a historical trend.

Now taking a look at Standard and Poor's rating methodology, there seems to be a stronger focus on how a state pension liability performs. S&P states clearly that if a states combined debt service plus annual required payments plus other post-employment benefit payments exceeds 50% of a year's expenditures, the score for GO bonds will be capped at 4 (weak, on a scale of 1-5), which translate to roughly no higher than a rating of "A" and at least one notch lower than if ignored.

S&P has also laid out very clear metrics on how they judge the strength of a state's contribution to pensions regardless of it liabilities are over 50% of annual revenues. S&P scrutinizes how metrics such as how much of the ARC has been contributed annually. If that number is less than 80%, a special investigation takes place and a trend will lead the raters to believe that there is either a "short-term cash flow issue or a willingness of management to defer difficult decisions"[13].

After examining the two, it seems that S&P places a much heavier emphasis on the pension liabilities. While it recognizes the magnitude to which historical context, trends and the current status of contributions made by the state, Moody's gives very little insight or focus on the matter. This disconnect is representative of the fact that despite its importance, not all parties recognize, fairly evaluate and penalize states for their responsibility in allowing liabilities to grow to a point of critical mass. Without any extreme penalties or incentives, states will continue with their current plans, defer the problem to future years and fail to right the situation starting now.

13 http://www.standardandpoors.com/spf/upload/Events_US/US_PF_logo102014.pdf

VI. Concluding Remarks

A. Key Takeaways

The state of current municipal pension funds is, quite frankly, worse than most give it credit to be. The factors leading into this conclusion go beyond looking simply at the current funding ratios. While most of the funds examined did not even hit the 80% funding ratio that is considered an industry standard in judging the health of a pension program, their historical funding percentages and trends make the situation even more bleak.

As states chase higher returns to fulfill funding gaps, the methods to chase these returns need to be carefully considered. Some states, such as California, are trading the potentially higher returns in alternative assets for lower risk assets. Meanwhile, states like New Jersey have been forced to do the opposite. Without a large base of investments, New Jersey has restricted options with the limited resources at hand. Calculated moves such as this have been taken to the next level by states such as Kansas. The attractive returns that alternative assets provide have become even more attractive in the low rate environment.

This analysis has largely been focused on looking at the history of pension fund decisions to find the root of the problems currently at hand. Fundamentally, the largest reason for the issue at hand now is the fact that each state should have funded all its obligations in years past. The only reason a funding gap exists is due to the lack of oversight and priority in former years.

The first recommendation this analysis provides it to take the pains from the past and to adjust going forward. Taking a step back and looking towards the future, the focus should not be on how states should have fully funded contributions in years past. The main priority should be to actually start fully funding annual required contributions. By doing so, at the very least, states

will not be adding to the growing funding gap. With this first step, states will begin to be able to address the situation without it ballooning to an even larger problem.

The second recommendation is to provide fair and rewarding compensation for successful management. Taking a look at Wisconsin, nearly $12 million was awarded in bonuses to 142 state pension fund managers[14]. The state should be seeking those qualified to manage the funds given the importance of doing so. Similarly, those holding and seeking official public offices should be rewarded through elections based on the platform they run on. Officials who seem willing to defer action for later years do so at the expense of state residents. The analysis done in **Section 4** shows that there is no correlation between a party and the amount liabilities are funded. Therefore, each candidate running for office should be judged and held accountable for their individual platforms and views on how to solve the issue at hand. Should voters and public employees want to see their benefits paid out and carefully managed, they have the power to do so and should be cognizant when voting.

The final recommendation is to begin reform for benefits and to decrease costs for incoming years. In the end, the largest unfunded gaps will only be corrected by seeing a large decrease in the actuarial liabilities. However, instead of spending money focusing on limiting employees who earned their benefits, policy makers need to restrict the costs in coming years. It is unsustainable to continue with defined benefit plans but to continue transitioning to defined contribution plans. In the last ten years, a number of states have begun to explore the option of providing defined contribution plans that shifts the burden of costs for employers. Without reforms in this space, it will be much more difficult to find a sustainable solution to cover the pains from the past as well as cover the heavy burden from the coming years.

14 http://www.tribtown.com/view/story/3e0fbace9bab40ef878e7861440df123/WI--Wisconsin-Pension-Fund-Bonuses

Appendix

Exhibit 1

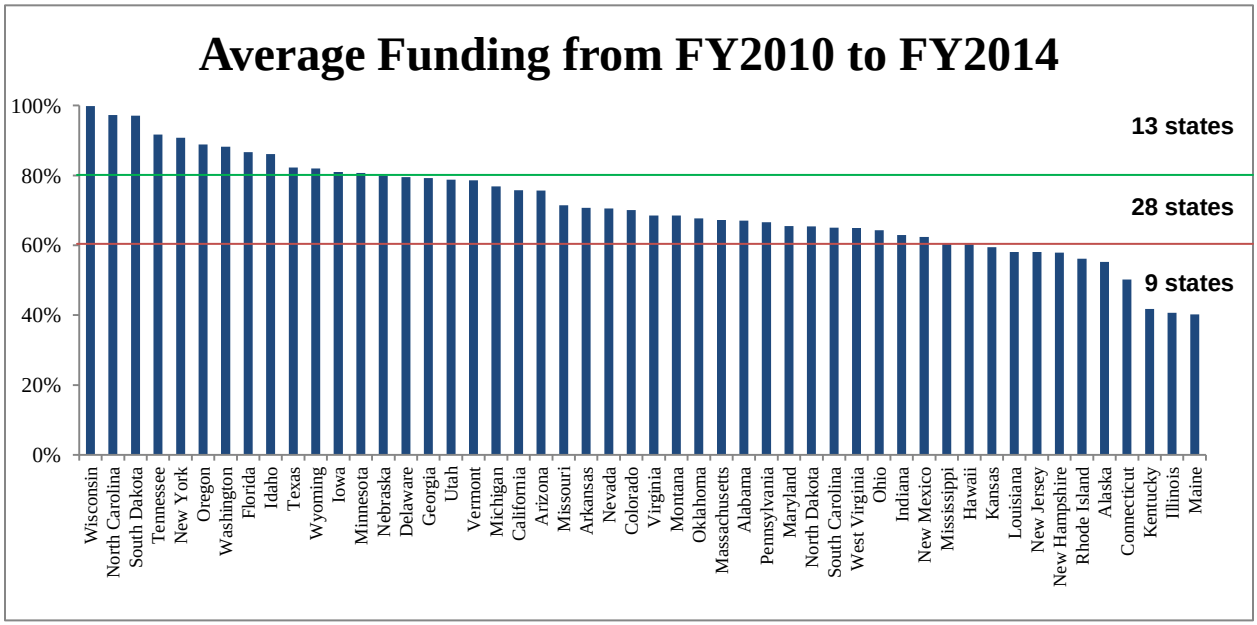

Exhibit 2: Trend of State Funding Liabilities

State	2010	2014	Average	Trend
Alabama	69.7%	65.9%	67.1%	Down
Alaska	58.3%	51.3%	55.3%	Down
Arizona	76.4%	75.4%	75.7%	Stable
Arkansas	70.8%	79.7%	70.7%	Up
California	77.4%	75.2%	75.8%	Down
Colorado	72.9%	69.0%	70.0%	Down
Connecticut	52.9%	50.3%	50.2%	Down
Delaware	77.9%	84.3%	79.5%	Up
Florida	86.6%	86.6%	86.7%	Stable
Georgia	82.9%	76.3%	79.2%	Down
Hawaii	61.4%	61.4%	60.3%	Stable
Idaho	78.6%	92.7%	86.1%	Up
Illinois	44.1%	38.9%	40.7%	Down
Indiana	64.7%	65.3%	62.9%	Stable
Iowa	81.4%	82.7%	81.0%	Up
Kansas	62.2%	59.9%	59.4%	Down
Kentucky	49.6%	37.3%	41.7%	Down
Louisiana	57.7%	59.3%	58.1%	Up
Maine	33.7%	49.3%	40.3%	Up
Maryland	64.1%	68.7%	65.5%	Up
Massachusetts	69.8%	63.3%	67.3%	Down
Michigan	84.0%	60.3%	76.9%	Down
Minnesota	83.6%	79.8%	80.7%	Down
Mississippi	64.2%	61.0%	60.6%	Down
Missouri	69.9%	73.1%	71.5%	Up
Montana	69.8%	69.9%	68.5%	Stable
Nebraska	82.4%	82.7%	79.8%	Stable
Nevada	70.5%	71.5%	70.5%	Up
New Hampshire	58.5%	60.7%	57.9%	Up
New Jersey	57.5%	54.8%	58.1%	Down
New Mexico	65.7%	60.1%	62.4%	Down
New York	95.3%	89.0%	90.7%	Down
North Carolina	97.7%	97.3%	97.3%	Stable
North Dakota	71.7%	61.8%	65.4%	Down
Ohio	64.6%	69.3%	64.3%	Up
Oklahoma	56.9%	75.9%	67.7%	Up
Oregon	86.9%	95.9%	88.9%	Up
Pennsylvania	75.1%	61.5%	66.6%	Down
Rhode Island	48.4%	58.5%	56.2%	Up
South Carolina	65.5%	62.5%	65.0%	Down
South Dakota	96.4%	100.0%	97.1%	Up
Tennessee	89.9%	93.6%	91.7%	Up
Texas	83.8%	78.7%	82.3%	Down
Utah	79.9%	78.5%	78.8%	Down
Vermont	81.2%	77.9%	78.6%	Down
Virginia	72.4%	65.9%	68.5%	Down
Washington	91.0%	82.8%	88.3%	Down
West Virginia	60.4%	68.8%	65.0%	Up
Wisconsin	99.8%	99.9%	99.9%	Stable
Wyoming	87.5%	77.6%	82.0%	Down

Exhibit 3: Asset Allocation of State Pension Funds

Equity	2000	2004	2009	2014
US Equity	45.0	44.5	34.7	27.9
Non-US Equity	13.0	14.4	18.2	21.0
Real Estate	4.0	3.8	6.5	7.2
Private Equity	3.0	4.3	7.4	10.1
Equity Subtotal	65.0	67.0	66.7	66.1
Debt				
US Bonds	31.0	29.1	27.1	21.4
Non-US Bonds	2.0	1.3	1.2	2.1
Other	2.0	2.6	.0	10.4
Debt Subtotal	35.0	33.0	33.3	33.9

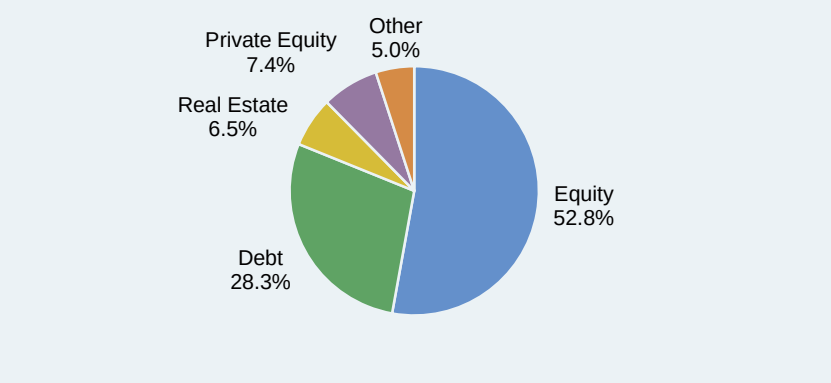

Exhibit 4: Fund Returns from 2012 – 2014

Asset	2012	2013	2014
US Equity	5.6%	15.6%	6.1%
Non US Equity	18.5%	14.5%	-4.1%
US Bond	7.0%	4.4%	2.5%
Hedge Fund - HFRX	3.5%	6.7%	-0.6%
Private Equity - Preqin	13.6%	13.3%	12.4%

Exhibit 5: Average Funding by Party

Party	2014	2013	2012	2011	2010
Democrat	68.4%	67.9%	69.5%	69.9%	71.9%
Republican	73.7%	71.3%	70.6%	70.4%	72.3%

State	2010	2011	2012	2013	2014
Alabama	R	R	R	R	R
Alaska	R	R	R	R	I
Arizona	R	R	R	R	R
Arkansas	D	D	D	D	D
California	R	D	D	D	D
Colorado	D	D	D	D	D
Connecticut	R	D	D	D	D
Delaware	D	D	D	D	D
Florida	R	R	R	R	R
Georgia	R	R	R	R	R
Hawaii	D	D	D	D	D
Idaho	R	R	R	R	R
Illinois	D	D	D	D	D
Indiana	R	R	R	R	R
Iowa	D	R	R	R	R
Kansas	D	R	R	R	R
Kentucky	D	D	D	D	D
Louisiana	R	R	R	R	R
Maine	D	R	R	R	R
Maryland	D	D	D	D	D
Massachusetts	D	D	D	D	D
Michigan	D	R	R	R	R
Minnesota	R	D	D	D	D
Mississippi	R	R	R	R	R
Missouri	D	D	D	D	D
Montana	D	D	D	D	D
Nebraska	R	R	R	R	R
Nevada	R	R	R	R	R
New Hampshire	D	D	D	D	D
New Jersey	R	R	R	R	R
New Mexico	D	R	R	R	R
New York	D	D	D	D	D
North Carolina	D	D	D	R	R
North Dakota	R	R	R	R	R
Ohio	D	R	R	R	R
Oklahoma	D	R	R	R	R
Oregon	D	D	D	D	D
Pennsylvania	D	R	R	R	R
Rhode Island	R	I	I	D	D
South Carolina	R	R	R	R	R
South Dakota	R	R	R	R	R
Tennessee	D	R	R	R	R
Texas	R	R	R	R	R
Utah	R	R	R	R	R
Vermont	R	D	D	D	D
Virginia	R	R	R	R	D
Washington	D	D	D	D	D
West Virginia	D	D	D	D	D
Wisconsin	D	R	R	R	R
Wyoming	D	R	R	R	R

Exhibit 6: State of Annual Required Contributions

State	ARC	Average
Alabama	100.0%	67.1%
Alaska	90.6%	55.3%
Arizona	100.0%	75.7%
Arkansas	98.6%	70.7%
California	59.6%	75.8%
Colorado	78.2%	70.0%
Connecticut	95.4%	50.2%
Delaware	99.6%	79.5%
Florida	84.0%	86.7%
Georgia	100.0%	79.2%
Hawaii	91.6%	60.3%
Idaho	94.4%	86.1%
Illinois	83.1%	40.7%
Indiana	97.0%	62.9%
Iowa	93.6%	81.0%
Kansas	72.0%	59.4%
Kentucky	70.1%	41.7%
Louisiana	88.4%	58.1%
Maine	80.2%	40.3%
Maryland	100.0%	65.5%
Massachusetts	84.7%	67.3%
Michigan	94.9%	76.9%
Minnesota	63.4%	80.7%
Mississippi	105.1%	60.6%
Missouri	100.2%	71.5%
Montana	79.0%	68.5%
Nebraska	91.2%	79.8%
Nevada	93.0%	70.5%
New Hampshire	100.0%	57.9%
New Jersey	11.7%	58.1%
New Mexico	73.8%	62.4%
New York	100.0%	90.7%
North Carolina	98.8%	97.3%
North Dakota	68.4%	65.4%
Ohio	67.4%	64.3%
Oklahoma	95.1%	67.7%
Oregon	100.0%	88.9%
Pennsylvania	42.7%	66.6%
Rhode Island	100.0%	56.2%
South Carolina	100.0%	65.0%
South Dakota	100.0%	97.1%
Tennessee	100.0%	91.7%
Texas	58.1%	82.3%
Utah	100.0%	78.8%
Vermont	114.6%	78.6%
Virginia	51.8%	68.5%
Washington	66.9%	88.3%
West Virginia	96.9%	65.0%
Wisconsin	102.0%	99.9%
Wyoming	84.8%	82.0%

Exhibit 7: Moody's Scorecard for US Local Government General Oblgation Debt Rating Methodology

Scorecard Factors and Weights

Local Governments

Broad Rating Factors	Factor Weighting	Rating Subfactors	Subfactor Weighting
Economy/Tax Base	30%	Tax Base Size (full value)	10%
		Full Value Per Capita	10%
		Wealth (median family income)	10%
Finances	30%	Fund Balance (% of revenues)	10%
		Fund Balance Trend (5-year change)	5%
		Cash Balance (% of revenues)	10%
		Cash Balance Trend (5-year change)	5%
Management	20%	Institutional Framework	10%
		Operating History	10%
Debt/Pensions	20%	Debt to Full Value	5%
		Debt to Revenue	5%
		Moody's-adjusted Net Pension Liability (3-year average) to Full Value	5%
		Moody's-adjusted Net Pension Liability (3-year average) to Revenue	5%

Exhibit 8: Ordinary Least Squares Regression

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.062651029
R Square	0.003925151
Adjusted R Square	-0.000521611
Standard Error	0.142928938
Observations	226