

Tulsa Pension System Is Underestimating its Debt and Investment Risk by Millions



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Executive Summary: Tulsa is facing a high probability that taxpayer costs to fund the Municipal Employees' Retirement Plan of the City of Tulsa, OK will grow in the coming years because the current expected rate of return and discount rate are unrealistically optimistic, meaning that the city is not paying the real cost of its pension obligations. Further, the currently used "open" debt amortization method guarantees taxpayers will be saddled with pension debt payments for the foreseeable future unless substantive reforms are adopted.

The Tulsa Municipal Employees' Retirement Plan (MERP) released an annual report this year stating that it was \$118.9 million in debt, or about \$300 in debt for every citizen living in the city limits. This means the city only has 77.7% of the assets needed to pay out all of the pension benefits it has promised to city employees. This is in stark contrast to the city's situation a decade ago, when the system was fully funded.

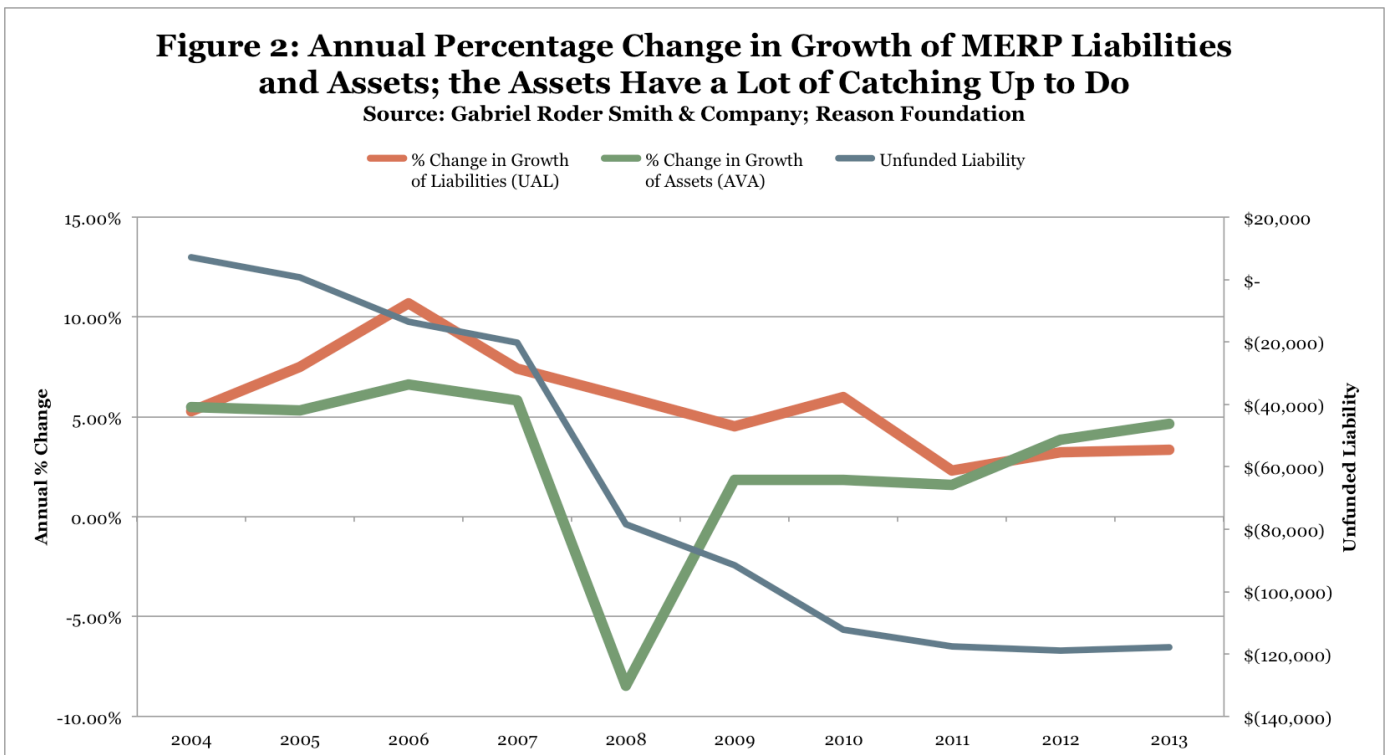
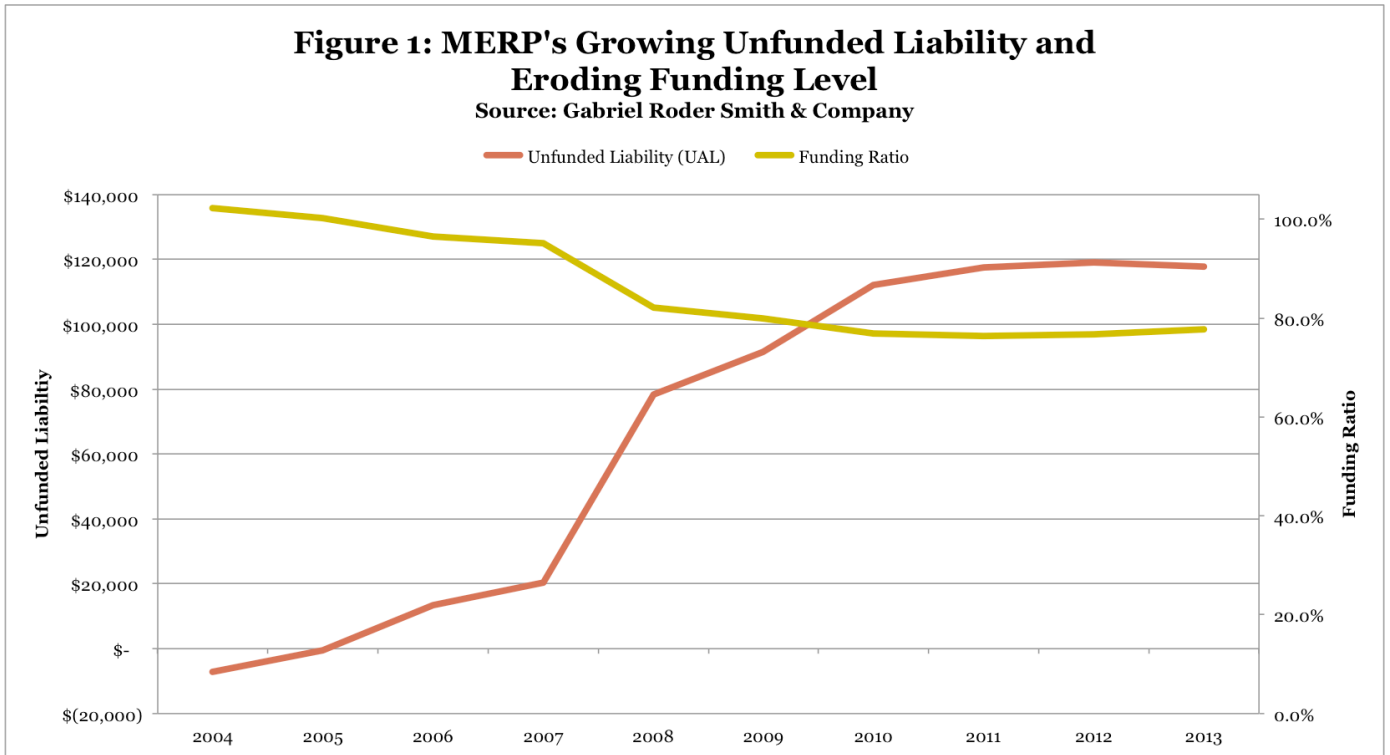
Taken at face value, MERP's estimate of its unfunded liabilities is worrisome enough. As shown in Figure 1, unfunded liabilities have soared since the end of 2003, and the funding ratio has steadily declined. This has been largely driven by a divergence in the growth rate of MERP's assets and liabilities, shown in Figure 2.

However, our recent analysis of the MERP system suggests that Tulsa is currently underestimating its debt by as much as \$500 million, and is facing millions more in additional pension costs due to an unrealistic expectation on its investments over the next 30 years.

We built a model of the Tulsa pension system based on the 2014 actuarial valuation of MERP and tested it under various scenarios for solvency.¹ Unless otherwise noted we have used the assumptions and methods of MERP; where possible figures are inflation adjusted. We find three primary problems that Tulsa policymakers should address in the near-term:

- (1) The current expected rate of return is exposing taxpayers to the probability of increased unfunded liabilities;
- (2) The current discount rate is overly optimistic, relative to best practices for private sector defined-benefit systems; and
- (3) The current debt amortization method being used is creating unnecessary costs for taxpayers.

¹ The estimates for long-term costs and funding pattern of MERP are based on our understanding of the various contribution policies of MERP and relied on the 2014 published liabilities and actuarial measurements of MERP. Any changes to the system will affect the results documented herein.

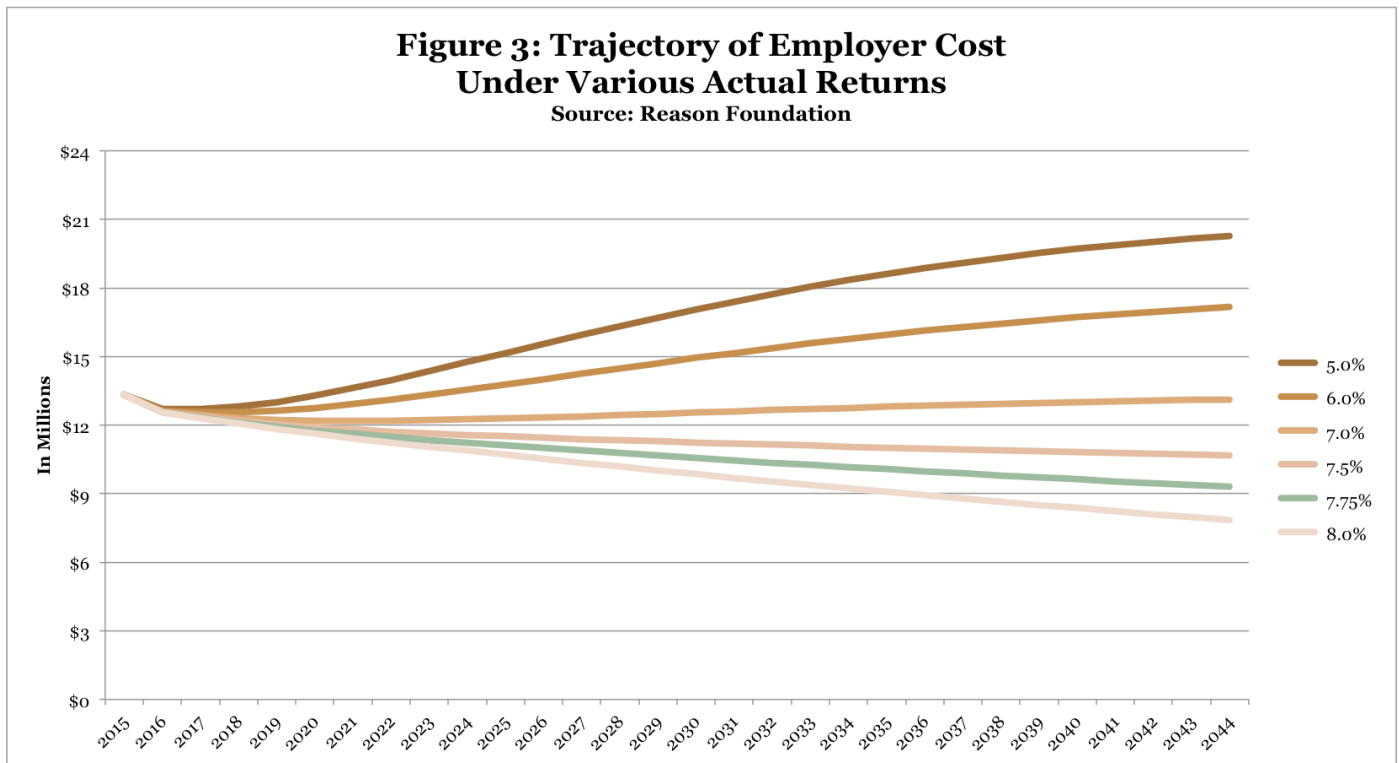


Below we provide analysis of each of these problems, and the threat they pose for Tulsa taxpayers. Unless otherwise noted, our figures are adjusted for inflation and adopt the assumptions and methods of MERP to keep the comparative analysis consistent.

1. Expected Rates of Return

Under the current actuarial assumptions, in order to fully meet obligations to current and future retirees, the city needs to see a consistent return on investments of at least 7.75% every year over the next 30 years. Expected return rates typically fall near the 50th percentile on a distribution of possible actual investment performance.² This means there is roughly a 50% chance the city will not meet the investment goal; in other words, Tulsa taxpayers face a 50% likelihood of increased pension costs required to pay down unfunded liabilities as investment returns underperform.³

Figure 3 shows the trajectory of “employer cost”—normal cost plus amortized debt payment—under different *actual* rates of return over the next 30 years. Normal cost is what the city actuary determines the city should pay to “prefund” all of the pension benefits earned by city employees in a fiscal year. Debt amortization payments are the annual costs to bring the assets of a pension plan with accrued liabilities into balance. Pension systems are designed for the city to contribute enough money each year that can be invested over time so that all of the pension benefits earned that same year will be funded when employees retire.



² To know the exact probability of MERP achieving its expected rate of return we would need to look at the historical performance of its investments and extract the probability from a normal distribution of returns.

³ Further, note that a year with lower than expected returns requires a subsequent year of higher than expected returns to recapture all losses in interest from the previous year, or enough subsequent years of higher than expected rates of return to recapture the losses in low-yielding years. Thus the assumed average return of 7.75% over 30 years is assuming there will be several years with substantially higher returns than 7.75%.

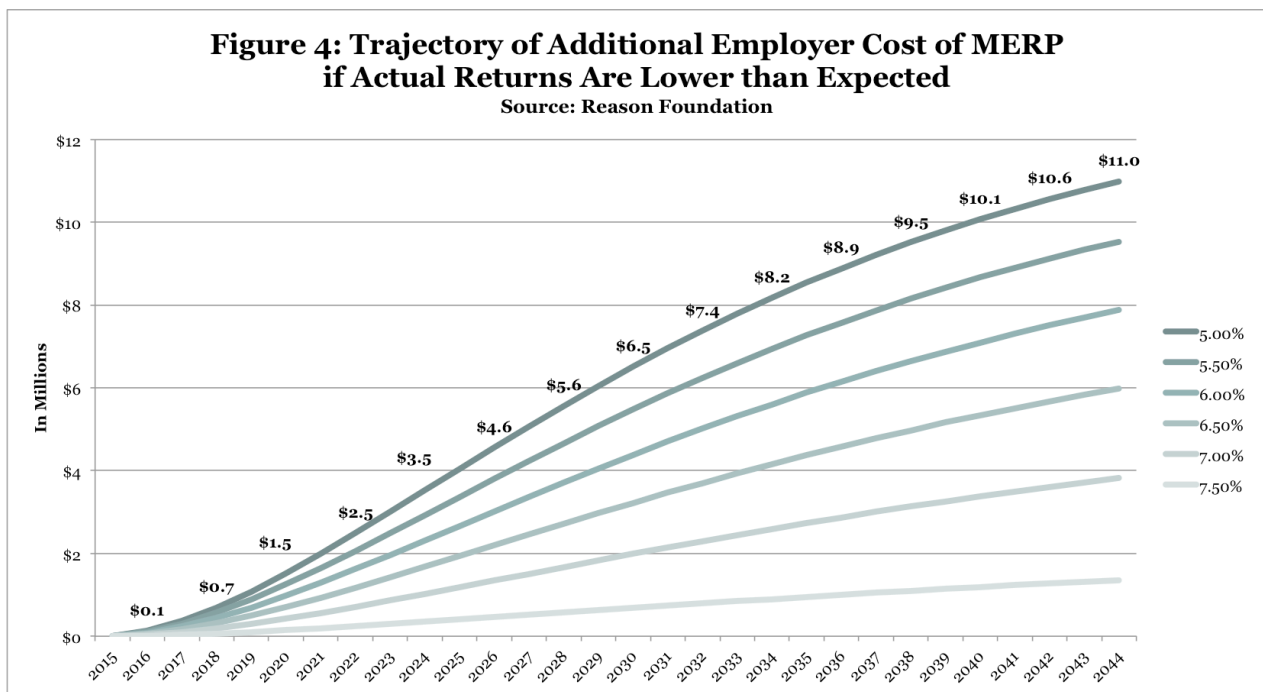
The baseline assumed rate of return at 7.75% is marked in green. If the city were to consistently meet this rate of return, inflation-adjusted employer costs for the city would be on a downward trajectory. However, if the rates of return are even slightly less than what is projected, assets will grow slower than liabilities, thus the cost of amortized debt payments will increase changing the trajectory of total employer cost.

Table 1 shows the *additional* employer cost Tulsa would have to pay if MERP’s actual rates of return were lower than expected. For example, if MERP were to experience an actual return of just 25 basis points—e.g. 0.25 percentage points—lower than currently assumed, then over 30 years Tulsa taxpayers would have to pay \$19.5 million in additional employer cost.

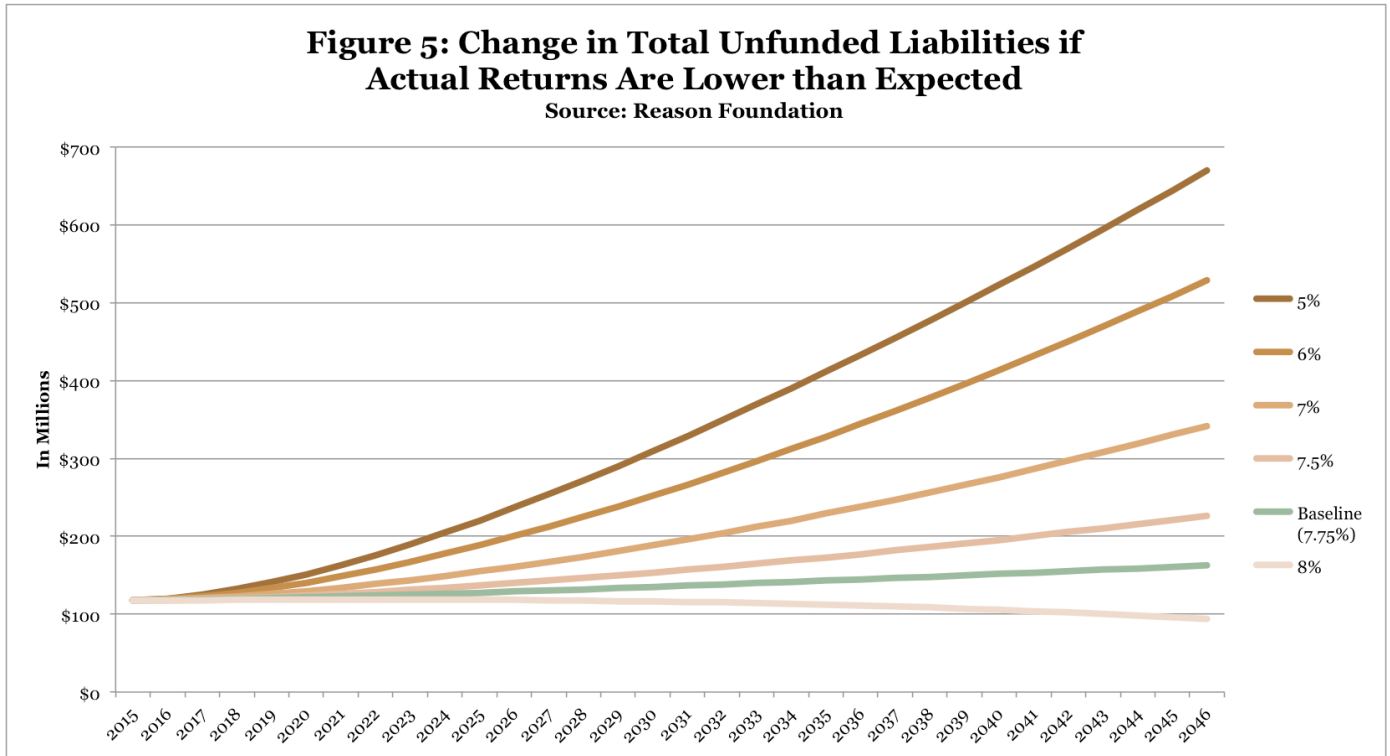
Table 1: Additional Employer Cost for Lower Assumed Rates of Return
(Figures Inflation-Adjusted)

FY Range	Baseline	7.5%	7.0%	6.5%	6.0%	5.5%	5.0%
2015-2019	\$62,275,023	\$210,889	\$630,213	\$1,046,281	\$1,459,112	\$1,868,727	\$2,275,145
2015-2024	\$119,727,215	\$1,420,584	\$4,215,573	\$6,950,108	\$9,625,505	\$12,243,054	\$14,804,020
2015-2029	\$174,138,400	\$3,990,301	\$11,752,557	\$19,232,975	\$26,442,329	\$33,390,990	\$40,088,935
2015-2034	\$225,918,843	\$7,947,205	\$23,224,262	\$37,716,100	\$51,466,000	\$64,514,834	\$76,901,193
2015-2044	\$322,651,415	\$19,557,708	\$56,245,680	\$89,939,319	\$120,905,875	\$149,388,019	\$175,606,107

Figure 4 shows the same data from Table 1, except on an annual basis. It provides a visualization of the trajectory of growth in additions to baseline employer cost (inflation-adjusted) over the next three decades if actual rates of return are too low.



Effectively, underperforming investment returns increase the unfunded accrued liability (UAL). The lower rate of growth in assets would diverge from the growth in accrued liabilities (promised pension benefits), thus creating an expansion of unfunded liabilities. Figure 5 shows the change in unfunded liabilities if investments underperform at different actual rates of return.



The same data from Figure 3 is presented in Table 2, but highlighting the *additional* unfunded liability that would come *on top* of the projected increase in baseline UAL. The table shows the additions to unfunded liabilities that would occur under lower average rates of return over the next 30 years. The far left column shows the trajectory in change of the UAL for the baseline. The columns progressing to the right show the additional unfunded liability under different actual rates of return. An average return of just 25 basis points below the baseline would result in an additional \$64 million being added to the baseline UAL.

Table 2: Additional Unfunded Liabilities for MERP Assuming Various Lower Actual Rates of Return

FY	Baseline UAL	7.5%	7.0%	6.5%	6.0%	5.5%	5.0%
2016	\$117,976,171	\$205,062	\$615,175	\$1,025,277	\$1,435,365	\$1,845,441	\$2,255,503
2021	\$122,681,783	\$3,805,159	\$11,311,015	\$18,679,391	\$25,912,428	\$33,012,238	\$39,980,912
2026	\$129,180,580	\$10,769,862	\$31,676,212	\$51,763,743	\$71,062,373	\$89,601,025	\$107,407,658
2031	\$136,696,428	\$20,389,002	\$59,274,668	\$95,760,699	\$129,988,120	\$162,090,158	\$192,192,642
2036	\$144,859,522	\$32,416,056	\$93,087,984	\$148,591,180	\$199,348,532	\$245,749,934	\$288,154,731
2041	\$153,476,745	\$46,896,887	\$132,979,748	\$209,684,132	\$277,997,593	\$338,807,793	\$392,912,189
2046	\$162,433,117	\$64,147,427	\$179,606,660	\$279,792,156	\$366,672,193	\$441,970,083	\$507,193,569

There will always be risk involved in institutional investment, however policymakers can mitigate this risk by setting their expected rates of return at lower levels to mitigate the dollar-term magnitude of underperformance, and increase the benefits of over-performance.

At present, Tulsa's expected rate of return means that missing the target by a mere 75 basis points, an actual return of 7%, will mean \$180 million in increased unfunded liabilities and \$56.2 million added to projected normal cost over the next 30 years.

2. The Discount Rate

The excessively risky expected rate of return challenge is related to the challenge of using an overly optimistic rate to discount the future value of pension liabilities.⁴ Higher discount rates assume that the interest earned in the coming years will be high, yielding a lower estimate of the present value of pension liabilities than if a low discount rate were to be used.

Setting a responsible discount rate requires considering the trade off between, one, how to use current taxpayer resources and, two, how much pension liability to push off to future taxpayers. Put another way, a higher discount rate now eases budgetary decisions which can be increasingly political, depending on the state of the economy and the city's finances, by artificially lowering the payments needed to make every single pensioner in the system—current and future—whole when they retire.

There is a national debate over how policymakers should set their discount rate. Moody's Investors Services has made the most robust industry argument that municipalities should be discounting pension liabilities using a high-grade, long-term corporate bond index.⁵ This would put municipalities roughly in line with the legal requirements for private sector pension funds, and it would be a realistic representation of the probable interest earnings for the pension fund.⁶

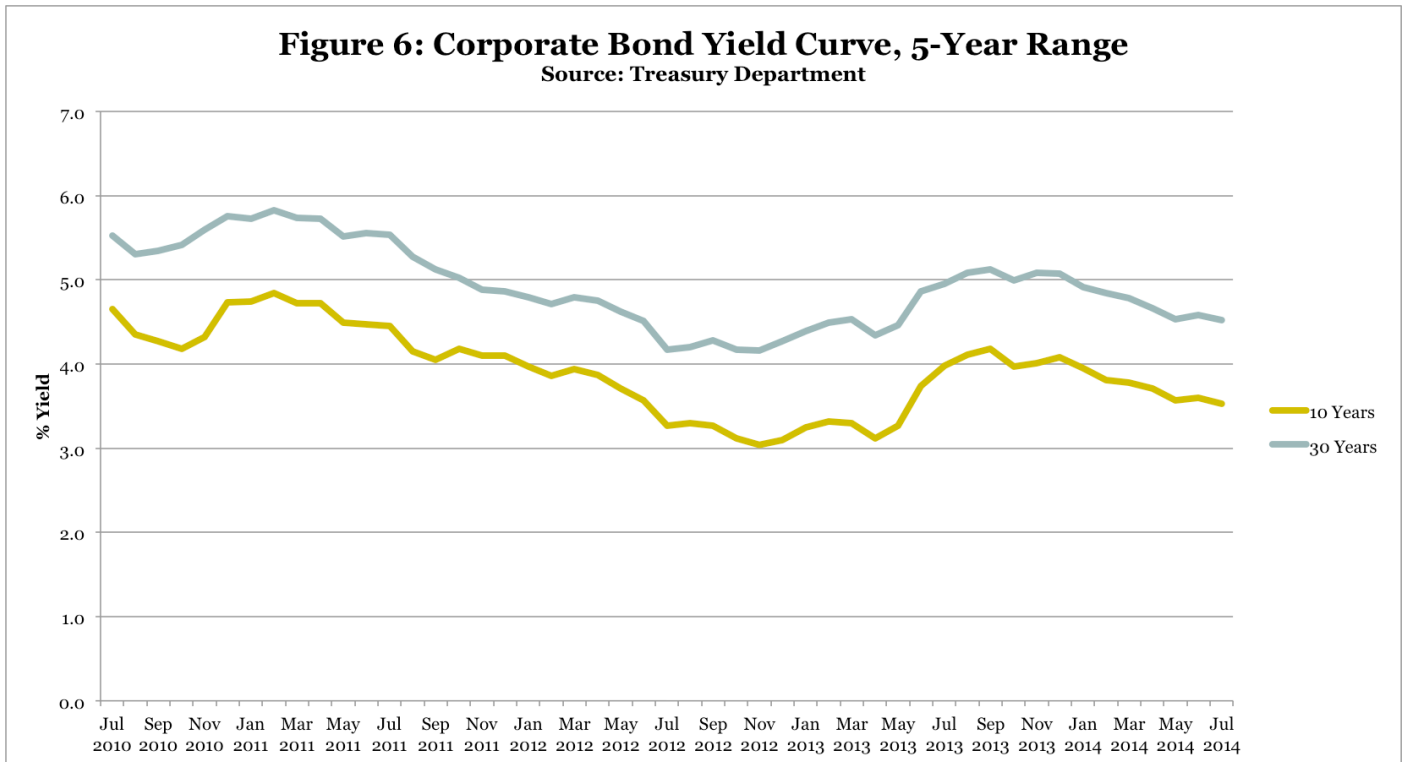
Figure 6 shows the last five years of corporate bond yields (nominal), with all bonds presently offering returns below 5%, and the highest yield being just shy of 6% in early 2011. Moody's pegged the corporate bond index at 5.5% for 2010 and 2011, after which rates fell, but have recovered some in 2014. A pension system adopting

⁴ As Biggs & Smetters have written, when talking about the discount rate we are referring to "a process that subtracts annual interest from the future dollar amount until a 'present value' is determined. The policy debate regards the appropriate discount rate to utilize in making such calculations. A higher discount rate will reduce the present value of plan liabilities and, all other things equal, portray a plan as being better funded. Likewise, lower discount rates generate higher measured liabilities and lower levels of plan funding." (See "Understanding the Argument for Market Valuation of Public Pension Liabilities," May 2013, American Enterprise Institute.)

⁵ For more see "Moody's proposes adjustments to US public sector pension data," *Moody's Investor Service*, July 2, 2012, available at: <http://bit.ly/1qghRRA>.

⁶ Some academics have argued that an even more realistic discount rate would be linked to Treasury yield curve, which would put Tulsa's discount rate closer to 4%. (See Robert Novy-Marx and Joshua D. Rauh, "Policy Options for State Pension Systems and Their Impact on Plan Liabilities," *Journal of Pension Economics and Finance*, Vol. 10, No. 2, April 2011, available at: <http://bit.ly/1s16hN7>.)

the Moody's proposal would set their discount rate based on an index of long-term corporate bonds, which would have a yield similar to the bond yield curve shown below. By this standard, the current discount rate is significantly optimistic.



From an actuarial standpoint, the need for a more realistic discount rate appears strong. Otherwise, the alternative is to keep the discount rate high and simply deal with increases in the unfunded liability as they occur in coming years, hoping markets will over perform every year in perpetuity.

3. The Amortization Method

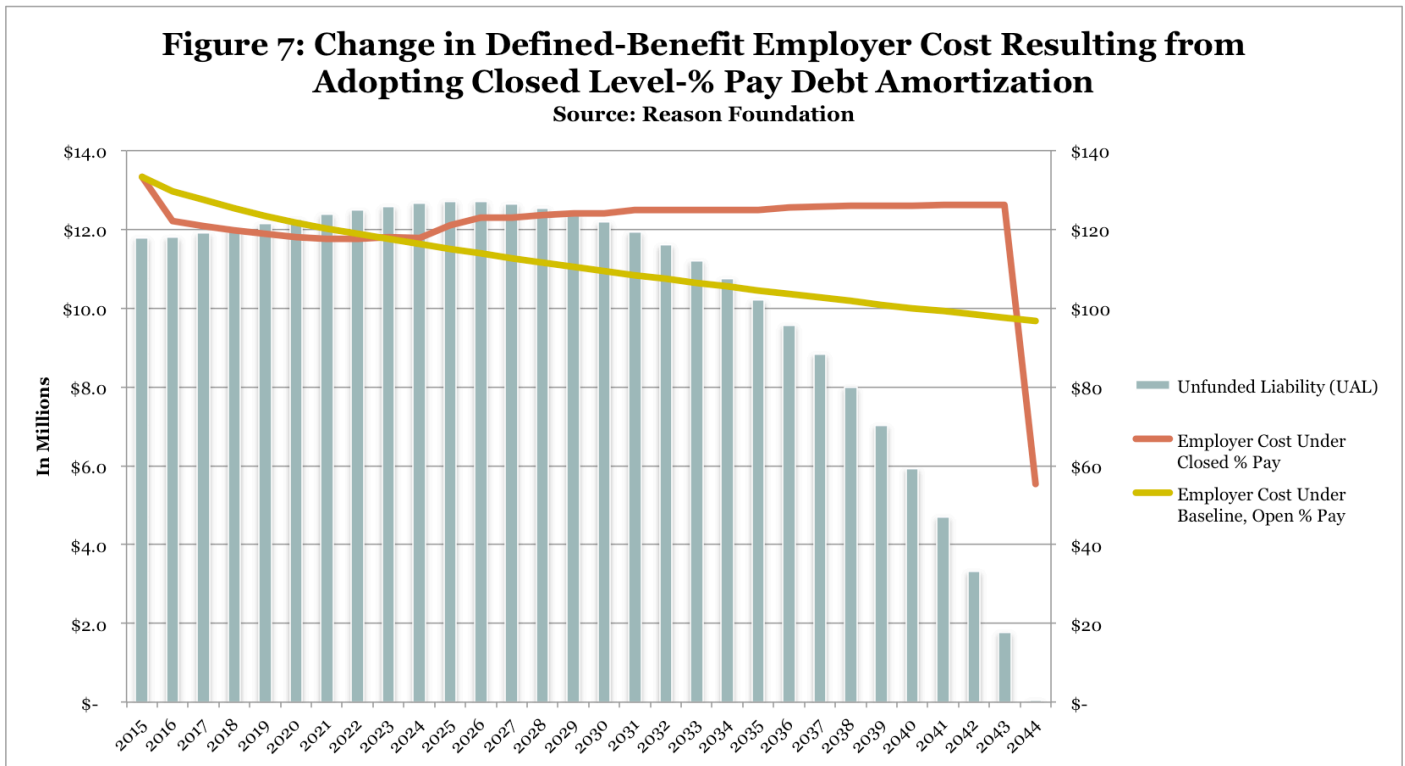
Currently, Tulsa is on track to never pay off its pension debt. Paying pension debt has similar principles as paying off a credit card. The faster the pension debt (unfunded liability) is paid off, the less taxpayers ultimately have to pay for pension benefits because there is less interest being paid on the debt. Therefore, the way that the city goes about paying off the pension debt matters.

The method presently used by Tulsa is called “open level-percent of payroll”. The city determines the present value of its unfunded liabilities (pension debt) and then amortizes that over 30 years using projected level of payroll so that payments from year to year are in line with how much the city is budgeting for staff salaries. (This would be like projecting your salary over the next three decades and figuring out what percentage of your take home pay you should put toward your credit card if you want to have it paid off within 30 years).

The problem is that every year the city resets its 30-year payment plan and pays off only the first year off the amortized cost. As a result, the city will never have its unfunded liability paid off, and the net costs to pay down pension debt are greater than if the city were to use a standard percent of payroll amortization method. The fiscal consequences of leaving the system as it is range from increased taxpayer costs to unsustainable pension debt.⁷

To address this, the city should change its amortization method. One option would be to switch to a “closed” level-percent of payroll method, which would be like the current debt repayment method, but without resetting the 30-year clock each year. Another option would be a “level-dollar” approach, where a fixed payment is required every year.

Were the city to adopt a new debt amortization method, the employer normal cost would increase relative to the baseline. Figure 7 shows the change in employer costs (inflation-adjusted) if MERP were to adopt a *closed* level-percent of payroll amortization method—i.e., designed to pay off the unfunded liability over 30 years.

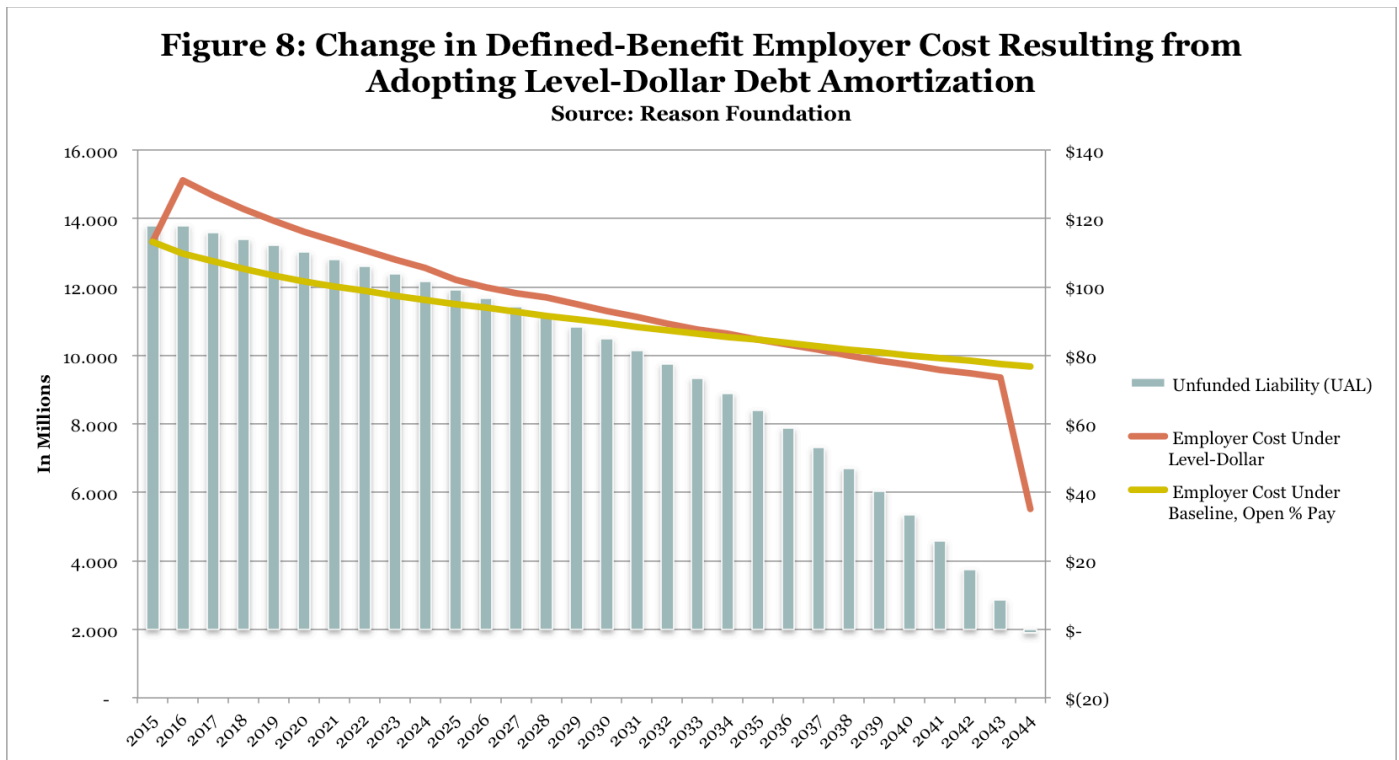


The red line shows that starting in 2016 employer costs would actually fall for a few years, before steadily increasing relative to the status quo baseline (yellow line). However, note that unlike the trajectory of unfunded liabilities shown in Figure 5 and Table 2, the UAL is slowly paid off until assets are greater than liabilities in

⁷ It is worthwhile to point out Detroit used open level-percent of payroll to amortize its pension unfunded liabilities. While the bankruptcy in Detroit was not triggered by pension debt, the weight of pension debt factored into the bankruptcy judge’s process in determining what chance the city would have to make in order to exit bankruptcy with a sustainable fiscal future.

2044. This assumes the MERP 7.75% expected rate of return, so lower returns would mean higher employer costs and a longer term to pay off the pension debt, but the overall trajectory would remain the same.

Figure 8 shows the same approach, but instead models the change in employer cost (inflation-adjusted) for switching to a level-dollar approach. Level-dollar simply means projecting out the total pension debt over 30 years, and then making the same dollar payment every year regardless of payroll or other factors.



In this scenario employer costs will be higher initially under a level-dollar amortization method, but costs would actually decline over time (as opposed to the level-percent pay method). The result would be \$17.9 million less in pension contributions from Tulsa taxpayers over the 30-year process than level-percent pay.

The initial cost increase associated with changing the amortization method could be offset, though, by other changes to the retirement system—such as reducing liabilities by putting future employees into a defined-contribution system and/or adopting a temporary pensionable pay freeze to create a short-term reduction in liabilities and growth of pension debt. And once the unfunded liability is eliminated, annually required contributions will be substantively reduced because they will only include normal cost, with no debt amortization payments.

4. Conclusion

The city of Tulsa is facing the likelihood of a very serious fiscal crisis in the coming years if it does not address fundamental deficiencies in the actuarial design of its pension system. MERP is using an expected rate of return and discount rate that minimize near-term employer costs and downplay the size of pension debt, but are overly optimistic expectations of the future. As a result, Tulsa is tacitly underfunding its pension system today, and future taxpayers will be forced to bear higher costs to fund city pensions that will crowd out other necessary public goods and services like public safety, infrastructure improvements, and other programs important to residents.

Further, the method of amortizing and paying down pension debt currently being used by MERP is particularly irresponsible. The method also means lower near-term costs, but will mean much larger amounts of tax dollars being put toward pensions in the future than otherwise would be the case with a more responsible debt payment method.

Substantive, structural reform to the way Tulsa offers retirement benefits to its city employees is necessary in the immediate future in order to prevent these fiscal challenges from overwhelming the city budget and weighing down heavily on Tulsa taxpayers.

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