

Exhibit A

Report on Pension Bonds

Prior to the issuance of pension obligation bonds, the Umpqua Community College (the “District”) has obtained a statistically based assessment from ECONorthwest entitled “Issuance of Pension Obligation Bonds – A Risk/Reward Analysis” updated as of April 15, 2021 (the “Assessment”) pursuant to ORS 238.697(1)(a). The Assessment was updated in order to include a fourth assumed pension bond true interest cost to help evaluate the potential risk associated with less-favorable future market conditions that may be projected in updated market information (anticipated to be available from the Oregon Investment Council in June, 2021).

The District has prepared this report pursuant to ORS 238.697(1)(b) (the “Report”).

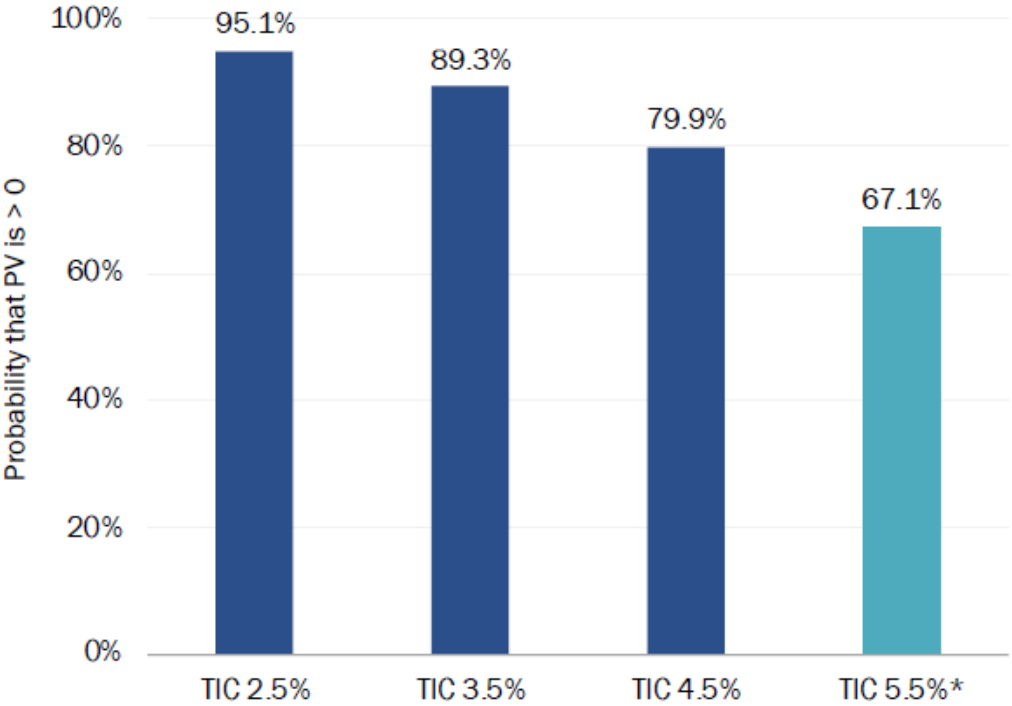
In connection with the issuance of pension obligation bonds, the District has not retained the services of an independent municipal advisor registered with the Securities and Exchange Commission.

The Assessment is attached to this Report as Exhibit 1. Results of the Assessment are as follows:

Umpqua Community College participated with a group of other Oregon public employers in a study conducted by EcoNorthwest to evaluate the risks and rewards of pension obligation bonds (POBs). EcoNorthwest’s analysis compared the performance of a side account under various market conditions to the cost of debt at three different levels of true interest cost (TIC). The three levels of true interest cost were 2.5 percent, 3.5 percent, and 4.5 percent. The analysis simulates 10,000 different possible investment return scenarios and compares that to bond issuance costs at the three different levels of the assumed true interest cost. Each one of the 10,000 scenarios for each true interest cost results in a positive or negative present value to the employer of pension obligation bond issuance. The analysis then calculates a probability that the present value will be greater than zero based on all of these iterations. Shortly before seeking approval from our Board of Education to issue pension obligation bonds, new information about lower long-term expected returns for PERS assets was presented to the PERS board by the Oregon Investment Council. To simulate the reduced earnings expectations, a fourth TIC (5.5%) was added to the EcoNorthwest analysis. The difference between the probabilities associated with the 4.5% TIC and the 5.5% TIC represents the amount the probability of success would be reduced if long-term expected earnings were reduced by 1%.

Figure 1 shows the results of the analysis.

Figure 1: Probability that the present value of POB issuance is greater than zero, various TICs



Source: ECONorthwest

*The fourth TIC of 5.5% was added to our analysis to help evaluate the potential risk associated with less-favorable future market conditions relative to those anticipated in our original report.

Exhibit 1

Assessment

**Issuance of Pension
Obligation Bonds**
A Risk/Reward Analysis

Update

April 15, 2021

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ECONorthwest

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Introduction



Outline of Our Remarks

- Introduction
 - Basics of Pension Obligation Bonds (POBs)
 - Purpose of this Analysis
- Approach
 - Monte Carlo Methodology
 - Asset Return and Allocation Assumptions
 - Alternative Scenarios Modeled
- Model Findings
 - Side Account Performance and the Potential Benefits of POBs to Employers
- Implications
- Acknowledgements, Caveats and Disclaimers

This analysis was prepared to assist issuers of POBs in understanding the risks and returns of POBs under hypothetical conditions. Individuals should seek professional guidance concerning the relevance of this analysis to their circumstances.

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Basics of POBs

- POBs are bonds issued by state or local governments to fund public employee pension obligations
 - First issued by City of Oakland in 1986 to arbitrage between tax-exempt borrowing rates and higher market investment yields of pension assets
- The Tax Reform Act of 1986 eliminated tax exemption for POBs
 - Higher yields of diversified portfolios relative to borrowing costs revived POB arbitrage opportunities in 1990s
- Still seen as a potential way to lower cost of pension funding
 - Use is heaviest by high-UAL plans (CA, IL, and OR)

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Purpose of this Analysis

- Measure the potential risks and rewards of POBs
- The potential advantages of POBs to public employers depend upon the relative performance of the investment vehicle (“side account”) and POB issuance costs
 - Issuance of POBs may reduce employer costs of pension funding
 - However, high side account yields are not achieved without risk
- Key measures of POB performance
 - The mean expected net present value (PV) of side account returns relative to POB total interest costs
 - The risk profile of the PV given uncertainty about side account returns
- This update includes a fourth TIC of 5.5% that was not modeled in the original report. In lieu of updated market projections (anticipated to be available from OIC in June, 2021), the additional scenario provides an alternative means to evaluate the potential risk of less-favorable future market conditions relative to those anticipated in our original report.

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Approach



Approach: Monte Carlo Simulation

- Quantifying advantages to issuers is complex
 - The future path of asset yields is not known precisely
 - Side account management and actuarial treatment of POB contributions must be emulated
- ECONorthwest uses Monte Carlo techniques to simulate uncertainty in side account performance
 - Individual asset class returns are stochastic
 - Rebalancing behaviors are linked to asset returns paths
- ECONorthwest POB model also emulates POB and Plan features
 - Alternative Total Interest Cost (TIC) of the POB issue
 - Actuarial treatment of POB contributions

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Model Assumptions

- Four issuance cost (TIC) assumptions: 2.5%, 3.5%, 4.5%, 5.5%*
- Our analysis uses the portfolio target and asset returns characteristics forecast for the OIC/OST in February 2020 by Callan, an investment consultant to OST.
- Current allocation based on OPERF valuation as of 10/31/2020.
- All analyses assume a \$1 m. total POB contribution to facilitate scaling.
- Present value calculations include calculated earnings through December 2039 (assumed end of the side account) and bond costs through 2040.

*The fourth TIC of 5.5% was added to our analysis to help evaluate the potential risk associated with less-favorable future market conditions relative to those anticipated in our original report.

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Asset Return and Allocation Assumptions

Asset Class	Future Returns and Volatility		Portfolio Allocation		
	Mean	St. Dev.	Range	Target	Current*
All Public Equity	--	--	27.5 - 37.5%	32.5%	29.3%
Broad U.S. Equity	7.2%	18.0%	--	16.3%	14.7%†
Global ex-U.S. Equity	7.3%	20.5%	--	16.3%	14.7%†
Illiquid alternatives	7.4%	12.5%	7.5 - 17.5%	15.0%	10.6%
Diversifying Strategies	6.0%	11.0%	0 - 5.0%	0.0%	2.1%
Fixed Income	2.8%	3.8%	15.0 - 25.0%	20.0%	20.2%
Private Equity	9.2%	26.3%	13.5 - 21.5%	17.5%	24.8%
Real Estate	7.0%	12.2%	9.5 - 15.5%	12.5%	11.0%
Risk Parity	6.3%	11.0%	0.0 - 2.5%	2.5%	2.0%

Source: ECONorthwest from Callan and OST data.

Notes:

* Current allocation is based on 10/31/2020 valuation.

† Values have been imputed using target allocations.

Asset Return and Allocation Assumptions

Asset Class Returns Correlation over Time

Asset Class	Broad US Equity	Global Ex-US Equity	Private Equity	Fixed Income	Real Estate	Illiquid Alternatives	Diversifying Strategies	Risk Parity
Broad US Equity	1.00	0.85	0.92	-0.11	0.69	0.43	0.23	0.55
Global Ex-US Equity	0.85	1.00	0.88	-0.14	0.66	0.40	0.20	0.55
Private Equity	0.92	0.88	1.00	-0.23	0.77	0.55	0.15	0.40
Fixed Income	-0.11	-0.14	-0.23	1.00	-0.06	0.02	0.15	0.45
Real Estate	0.69	0.66	0.77	-0.06	1.00	0.56	0.20	0.54
Illiquid Alternatives	0.43	0.40	0.55	0.02	0.56	1.00	0.17	0.29
Diversifying Strategies	0.23	0.20	0.15	0.15	0.20	0.17	1.00	0.33
Risk Parity	0.55	0.55	0.40	0.45	0.54	0.29	0.33	1.00

Amortization Assumptions

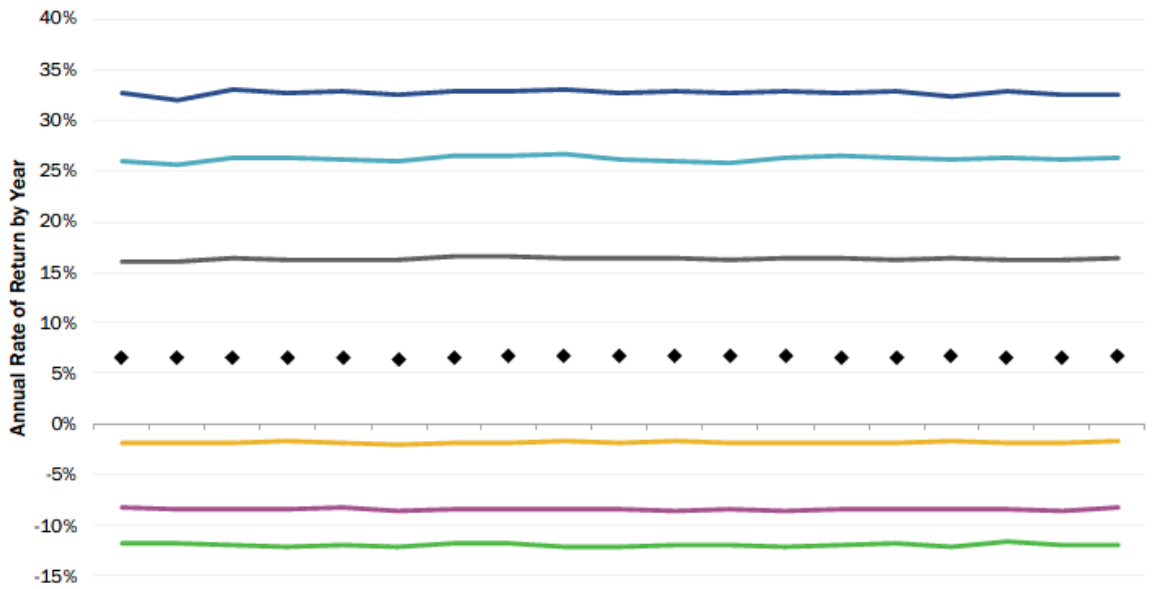
- Side account balances are influenced by amortization procedures
 - Balances amortized as a constant percent of payroll over remaining life of the side account (the account is assumed to end on 12/31/2039)
 - Each year, the percent of payroll that is determined by the amortization is taken out of the modeled side account balance for employer rate relief
 - Assumed earnings rate of 7.2% and 3.50% payroll growth rate are used in amortization
- Current plan procedures are incorporated:
 - Credited earnings and deducted transfers to the Employer Reserve for rate relief are accommodated
- Earnings are credited annually at the simulated portfolio rate of return
 - Applied to the beginning balance for the year minus one half of the amount taken out for rate relief

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Model Results



Mean Annual Side Account Return and Range

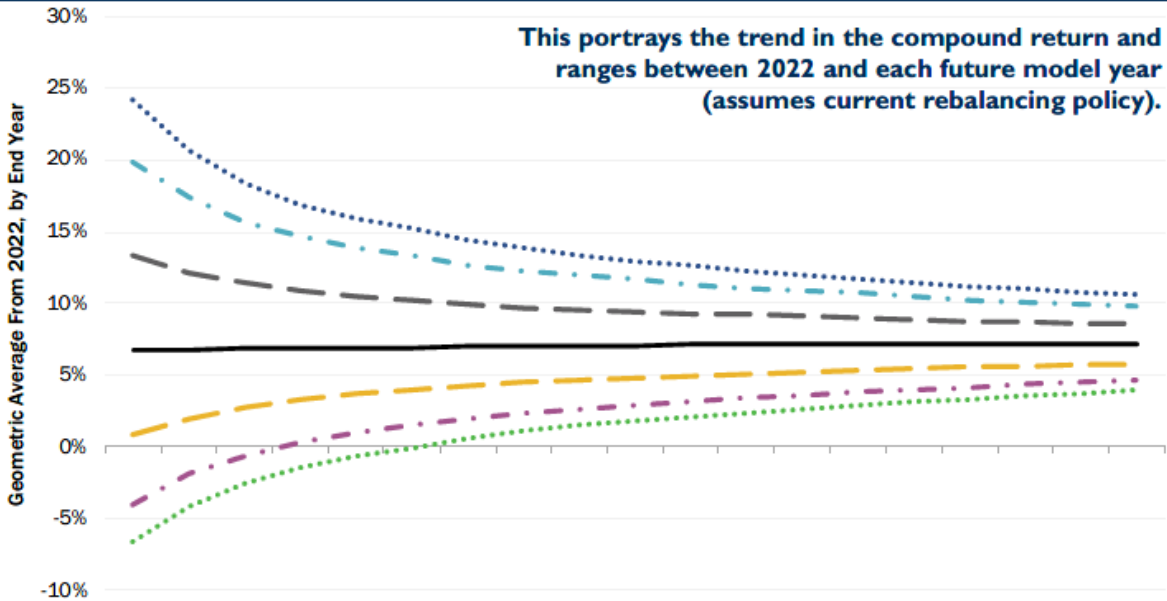


Percentile	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
95th	32.7%	32.0%	33.0%	32.8%	32.8%	32.5%	32.9%	32.9%	33.0%	32.7%	32.8%	32.7%	33.0%	32.7%	32.8%	32.4%	32.9%	32.5%	32.5%
90th	25.9%	25.6%	26.3%	26.2%	26.1%	25.9%	26.4%	26.5%	26.7%	26.1%	25.9%	25.8%	26.3%	26.4%	26.3%	26.1%	26.3%	26.2%	26.4%
75th	16.1%	16.0%	16.3%	16.3%	16.3%	16.2%	16.5%	16.5%	16.5%	16.4%	16.4%	16.3%	16.5%	16.3%	16.2%	16.4%	16.2%	16.2%	16.4%
50th	6.6%	6.5%	6.5%	6.6%	6.6%	6.3%	6.6%	6.7%	6.8%	6.7%	6.7%	6.7%	6.7%	6.6%	6.6%	6.7%	6.6%	6.6%	6.7%
25th	-1.8%	-1.8%	-1.9%	-1.7%	-1.8%	-2.0%	-1.8%	-1.8%	-1.7%	-1.8%	-1.7%	-1.8%	-1.8%	-1.8%	-1.8%	-1.8%	-1.8%	-1.8%	-1.7%
10th	-8.3%	-8.4%	-8.3%	-8.5%	-8.3%	-8.5%	-8.4%	-8.4%	-8.4%	-8.4%	-8.5%	-8.4%	-8.5%	-8.3%	-8.4%	-8.4%	-8.4%	-8.5%	-8.2%
5th	-11.7%	-11.8%	-12.0%	-12.1%	-12.0%	-12.1%	-11.8%	-11.8%	-12.1%	-12.2%	-12.0%	-12.0%	-12.1%	-11.9%	-11.8%	-12.0%	-11.6%	-11.9%	-11.9%

Mean Annual Side Account Returns (cont.)

- The forecast extends to fiscal year 2040, the last year the side account exists
 - Trend in mean annual return
 - Increase from 6.6% in 2022 to 6.7% as of the 2040 forecast horizon
 - Trend in 95th percentile return
 - Decreases from 32.7% in 2022 to 32.5% as of the 2040 forecast horizon
 - Trend in 5th percentile return
 - Decreases from -11.7% in 2022 to -11.9% as of the 2040 forecast horizon
- Trends are similar to recent forecasts by consultants to OIC/OST and OPERS

Geometric Mean Returns from 2022, by Year



Percentile	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
95th	24.2%	20.6%	18.4%	16.9%	15.9%	15.2%	14.4%	13.8%	13.4%	13.0%	12.6%	12.3%	12.0%	11.7%	11.4%	11.2%	11.0%	10.8%	10.6%
90th	19.8%	17.4%	15.7%	14.6%	13.9%	13.3%	12.7%	12.3%	11.9%	11.7%	11.3%	11.1%	10.9%	10.7%	10.5%	10.2%	10.1%	9.9%	9.8%
75th	13.3%	12.1%	11.4%	10.9%	10.5%	10.2%	10.0%	9.7%	9.6%	9.4%	9.3%	9.2%	9.1%	8.9%	8.9%	8.8%	8.7%	8.6%	8.5%
50th	6.7%	6.8%	6.8%	6.9%	6.9%	6.9%	7.0%	7.0%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%	7.1%
25th	0.8%	2.0%	2.7%	3.3%	3.7%	4.0%	4.2%	4.5%	4.6%	4.8%	4.9%	5.1%	5.2%	5.3%	5.4%	5.5%	5.6%	5.7%	5.8%
10th	-4.0%	-1.9%	-0.6%	0.3%	1.0%	1.5%	1.9%	2.3%	2.6%	2.9%	3.2%	3.4%	3.6%	3.8%	4.0%	4.1%	4.3%	4.4%	4.6%
5th	-6.7%	-4.1%	-2.5%	-1.5%	-0.6%	0.0%	0.6%	1.1%	1.5%	1.8%	2.1%	2.4%	2.6%	2.9%	3.1%	3.3%	3.5%	3.7%	3.9%

Geometric Mean Returns (cont.)

- Fiscal year 2040 is the assumed final year of bonds
 - The projected annualized geometric mean return over the term of the bonds is 7.1%
 - The 95th percentile return is 10.6%
 - The 5th percentile return is 3.9%
- Again, the forecast returns are similar to those derived by other consultants to OIC and OPERS

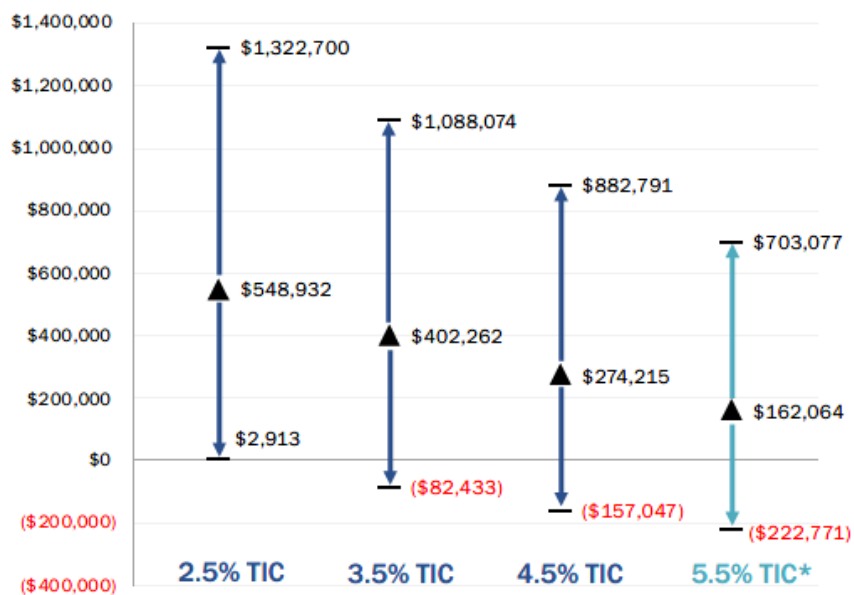
The Effect of Issuance TIC on PV of POBs

- The PV of the POB strategy varies inversely with TIC
 - Expected value of POB policy is \$548,932, \$402,262, \$274,215, and \$162,064 (per million dollars) for TICs of 2.5%, 3.5%, 4.5%, and 5.5%, respectively.
- Also, 5th percentile VaR increases with TIC
 - VaR per million dollars is \$(2,913), \$82,433, \$157,047, and \$222,771 (per million dollars) for TICs of 2.5%, 3.5%, 4.5%, and 5.5%, respectively.
- We added a fourth TIC of 5.5% to the analysis to help evaluate the potential risk associated with less-favorable future market conditions relative to those anticipated in our original report.
- Output from the new scenario provides an approximate characterization of the potential risk inherent in less favorable market conditions than those modeled in the original report.
- For example, the 5.5% TIC scenario provides output that is roughly analogous to a 4.5% TIC bond issue with market returns approximately one percentage point below those anticipated in our original analysis. The 4.5% TIC scenario can be similarly compared to the 3.5% TIC scenario output, and so on.

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The Effect of TIC on PV of POBs

*The fourth TIC of 5.5% was added to our analysis to help evaluate the potential risk associated with less-favorable future market conditions relative to those anticipated in our original report. For example, the 5.5% TIC scenario provides output that is roughly analogous to a 4.5% TIC bond issue with market returns approximately one percentage point below those anticipated in our original analysis. The 4.5% TIC scenario can be similarly compared to the 3.5% TIC scenario output, and so on.



POB Probability of Success: $PV > \$0$

- This is another perspective on risk
 - The VaR measures the 5th percentile dollar value at risk
 - The zero bound measures the overall probability of the dollar value of the PV benefit being more than zero (i.e., success)

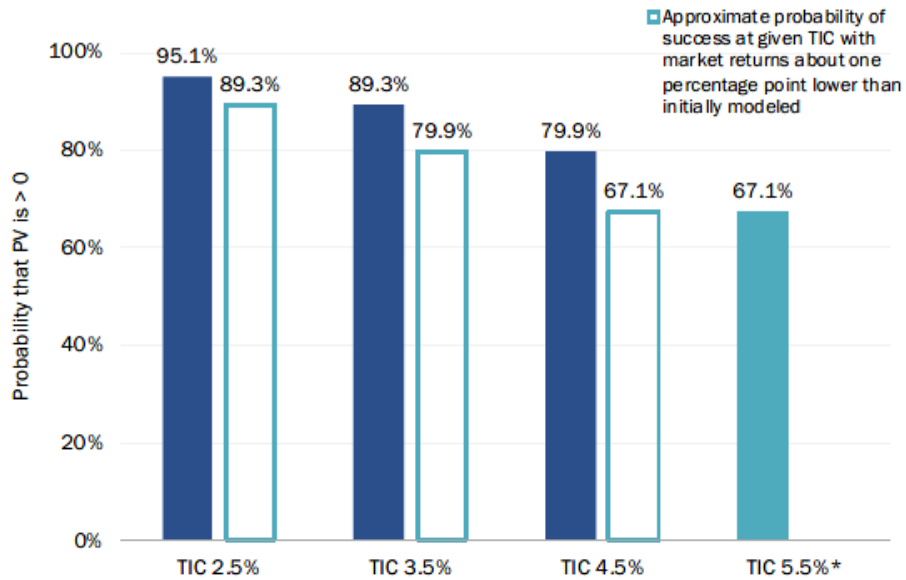
- Model results
 - The probability of a positive PV is lower for higher TICs
 - Probabilities of being above zero range from 67% (TIC 5.5%*) to 95% (TIC 2.5%)

*The fourth TIC of 5.5% was added to our analysis to help evaluate the potential risk associated with less-favorable future market conditions relative to those anticipated in our original report. For example, the 5.5% TIC scenario provides output that is roughly analogous to a 4.5% TIC bond issue with market returns approximately one percentage point below those anticipated in our original analysis. The 4.5% TIC scenario can be similarly compared to the 3.5% TIC scenario output, and so on.

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Probability that PV is More than \$0

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Summary PV Statistics, by Scenario

*The fourth TIC of 5.5% was added to our analysis to help evaluate the potential risk associated with less-favorable future market conditions relative to those anticipated in our original report. For example, the 5.5% TIC scenario provides output that is roughly analogous to a 4.5% TIC bond issue with market returns approximately one percentage point below those anticipated in our original analysis. The 4.5% TIC scenario can be similarly compared to the 3.5% TIC scenario output, and so on.

No. of Tranches	1	1	1	1
Rate (TIC)	2.5%	3.5%	4.5%	5.5%*
Mean	\$548,932	\$402,262	\$274,215	\$162,064
Std Deviation	\$419,122	\$370,750	\$329,071	\$293,051
Maximum	\$3,393,617	\$2,967,149	\$2,592,638	\$2,262,810
Minimum	\$(336,091)	\$(385,105)	\$(428,435)	\$(466,879)
95th Perc	\$1,322,700	\$1,088,074	\$882,791	\$703,077
90th Perc	\$1,104,226	\$893,399	\$709,810	\$548,797
75th Perc	\$770,245	\$599,774	\$450,156	\$320,087
50th Perc	\$480,961	\$342,299	\$220,903	\$114,852
25th Perc	\$248,540	\$136,280	\$38,418	\$(47,779)
10th Perc	\$85,882	\$(8,851)	\$(91,354)	\$(163,865)
5th Perc (VaR)	\$2,913	\$(82,433)	\$(157,047)	\$(222,771)
Zero Bound Perc	95.1%	89.3%	79.9%	67.1%

This table summarizes the simulations of the present value of potential gains from implementing a POB strategy. All dollar amounts are per \$1 million of POB funding.

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Conclusions

- The expected value to employers of a POB strategy is positive (in present value terms)
 - The expected value is non-trivial proportion of POB funding under the scenarios modeled
 - The 5th percentile VaR is less than the expected PV in all of the scenarios modeled except for the 2.5% TIC scenario.
- However, there is a non-trivial probability that the present value of POBs is zero or less, and the probability increases with TIC
- Important considerations for individual employers
 - The issuance TIC
 - Some issuance costs are not included in TIC
 - Whether the employer's payroll growth rate is the same as currently assumed by the PERS actuary

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Acknowledgements, Caveats, and Disclaimers

The authors wish to acknowledge the kind assistance of Mike G Mueller of the Oregon State Treasury, Investment Division for their kind assistance, and for Callan and Associates staff's generous provision of capital market assumptions. We also wish to thank Carol Samuels of Piper Sandler & Co. for her assistance in providing insight into muni market conditions. Finally, a note of gratitude to Carl Batten, original developer of the ECONorthwest POB model, for his ongoing assistance with subsequent iterations of the model, including the version used in this analysis. None of the statements or analysis herein should be attributed to anyone other than ECONorthwest staff.

The analysis provided in this document was developed by ECONorthwest for informational purposes only. All possible professional care was taken to prepare a realistic emulation of the likely POB side account behavior, and the OPERS procedures for accommodating POBs. State of the art modeling and statistical software was employed in this exercise. It should be recognized, however, that there are practical limits to the precision with which market and agency behavior can be modeled. The generic nature of the modeling performed may or may not be relevant to the circumstances of any one public employer. Additionally, nothing herein should be construed as offering investment advice or fairness opinions for the purpose of issuing securities. For this, interested parties should seek out professional counsel.

This analysis takes the narrow perspective of measuring the potential benefits of POB issuance to current employers and taxpayers. Whether use of pension obligation bonds is good public policy is a matter of professional debate and is not addressed herein.

This analysis was prepared to assist issuers of POBs in understanding the risks and returns of POBs under hypothetical conditions. Individuals should seek professional guidance concerning the relevance of this analysis to their circumstances.

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