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PERS Liquidity and Insolvency Risk

The purpose of this brief is to evaluate the liquidity and insolvency risk of the Public Employees Retirement System (PERS) pension system.

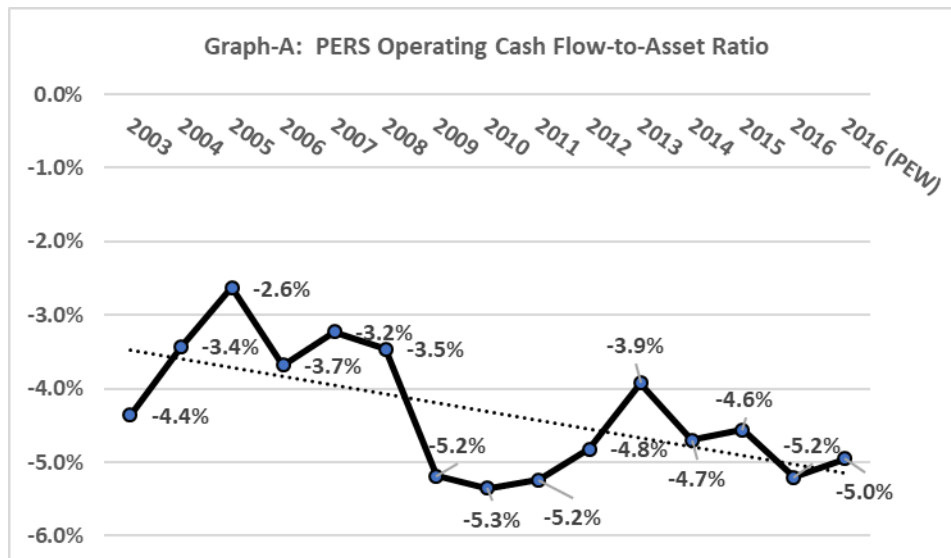
A recently published report by the PEW Charitable Trusts entitled “The State Pension Funding Gap: 2016” (<https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2018/04/the-state-pension-funding-gap-2016>) discusses a new financial metric used to evaluate the liquidity and insolvency risk of state pension systems. The metric is the **operating cashflow-to-asset ratio**, which is defined as the difference between benefit payments and contributions divided by assets. The essence of the ratio is to evaluate the dependency of a state’s pension plan on investment income for a single year. The lower the ratio, the more a state’s pension plan is dependent upon investment returns to fund benefit payments. Stated somewhat differently, the ratio represents the required rate of return on investments, after accounting for contributions, that is needed to ensure that asset balances do not have to be liquidated to meet benefit payments.

The PEW report calculated the average operating cashflow-to-asset ratio for all 50 states in 2016 as being a negative 3.2%. A plan with an operating ratio of a negative 3.2% would need to achieve an investment return of at least a positive 3.2% that year, after accounting for contributions and benefit payments, to keep assets from dropping. PEW reported that the state with the lowest ratio of a negative 6.6% was New Jersey and the state with the highest ratio was Kansas with a ratio of a positive 3% (due to a \$1 billion pension obligation bond sale in 2016). For further state comparisons, Illinois, a state with a troubled pension system, had a ratio of a negative 2.1% and Washington had a negative 1.3% ratio.

The report notes that, “Most public pension plans are long-standing and mature and are therefore likely to have negative ratios because they see more money going out in benefits than coming in from current workers.” In other words, a lower active-to-annuitant or beneficiary ratio means there are fewer active member payroll dollars to support any actuarial gains or losses, such as for investment results varying from the assumption. Although not specifically mentioned in the PEW report, Oregon’s ratio of active PERS members to the number of retirees/beneficiaries is 1.24 for 2016 (falling to 1.19 in 2017) and is categorized as a mature system (i.e., higher ratio of beneficiaries to active members). The National Association of State Retirement Administrator’s 2017 Public Fund Survey has the national retirees/beneficiary ratio at 1.42.

The PEW report calculated Oregon’s operating cashflow-to-asset ratio at a negative 5% for 2016, which was the sixth lowest in the report and indicating a high dependency on investment returns, as compared to most other states. The PEW-calculated ratio, however, differs from that calculated using data from the PERS actuarial valuation report for 2016. The discrepancy is the amount of the beginning market value. If the more accurate actuarial valuation amount is used, this lowers Oregon’s operating cashflow-to-asset ratio to a negative 5.2%, which indicates an even higher dependency on investment returns than the PEW-calculated ratio and would move Oregon’s PEW ranking into a tie for fifth place with Ohio. Either calculation aligns with the commonly understood fact that, historically, investment income has provided over 70% of the funding for Oregon’s PERS pension benefits.

The PEW report only calculated Oregon’s operating cashflow-to-asset ratio for a single year. The following Graph-A shows the ratio, as calculated by the Legislative Fiscal Office, over the last 14 years with calendar year 2016 data points shown for both the PEW amount (-5.0%) and the actuarial valuation amount for 2016 (-5.2%). PERS had the most liquidity in calendar year 2005 with a ratio of a negative 2.6% and had the least liquidity in calendar year 2010 with a ratio of a negative 5.3%. The average ratio over this 14-year period was a negative 4.3% with median value of a negative 4.5%.

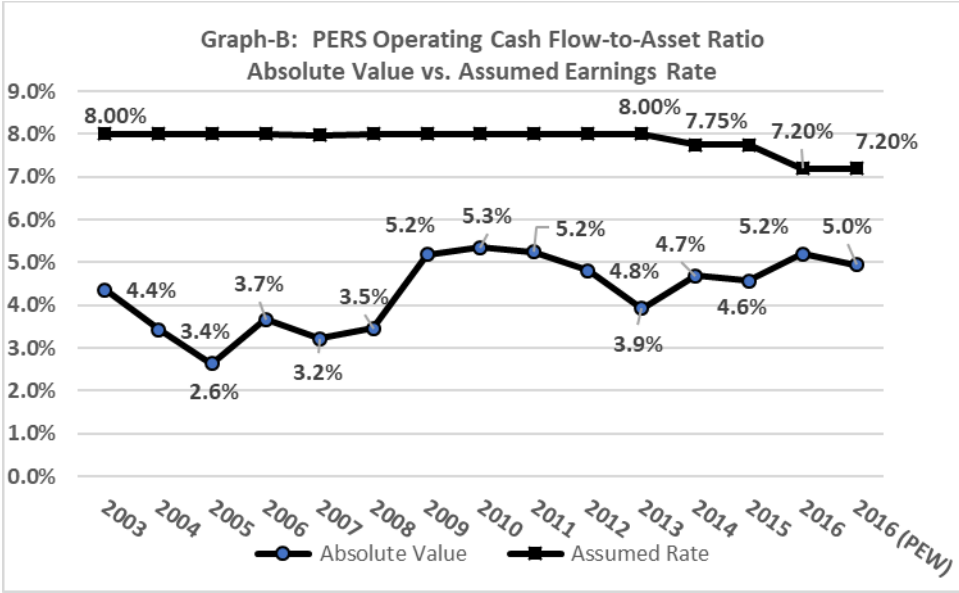


Graph-A shows that after 2008, Oregon’s operating cashflow-to-asset ratio has been on a downward trend toward less liquidity or a shift toward a greater dependence on investment earnings. There are predominately two reasons explaining this trend:

- 2008 Market Correction – The 2008 global financial crisis triggered the worst recession since the Great Depression in the 1930s and represented a major liquidity event for pension systems nationwide. For PERS, assets declined by \$15.9 billion, a market return of -27.18%, plus an additional decline of \$2.8 billion due to the sale of assets needed to meet benefit payments, resulting in an overall \$18.8 billion reduction to PERS assets. Between 2008 and 2009 the beginning market value of assets fell from \$62,583.4 to \$43,835.1 billion due to the financial crisis and only regained the pre-crisis value of \$63.919.1 billion in calendar year 2015.

- Lower Contributions – Contributions, as a percentage of benefits, have declined since the financial crisis. One specific reason for this decline can be attributed to the PERS Board’s rate collaring policy, which has limited the biennium-to-biennium increase in employer contribution rates by deferring a portion of the increase to future biennia and at a cost of the assumed earnings rate.

A more informative comparison, as noted by the PEW report, is to compare the absolute value of the operating cashflow-to-asset ratio to the assumed rate of return or assumed future earnings. The following Graph-B, makes this comparison for Oregon, as calculated by the Legislative Fiscal Office. When the absolute value of the ratio exceeds the assumed rate of return, a pension system can expect assets to decline over time (i.e., asset liquidated to meet benefit payments) with the possibility of insolvency. The absolute value of Oregon’s operating cashflow-to-asset ratio has remained below the assumed rate of return and faces low insolvency risk. In terms of this comparison, Oregon had the most liquidity in calendar year 2005 with a difference of 5.4% (8% assumed rate less 2.6% absolute value of operating cash flow-to-asset ratio) and the least liquidity difference in calendar year 2016 with a difference of 2.2% (7.2% assumed rate less 5.2% absolute value of operating cashflow-to-asset ratio). The average difference over this 14-year period was 3.6% with a median difference of 3.4%.



After 2008, the graph also shows a narrowing of the absolute value of Oregon’s operating cashflow-to-asset ratio and the assumed rate of return. This shift to a higher dependence on investment earnings can generally be explained by three factors, two of which were noted previously: (a) the reduction of assets due to the 2008 financial crisis; (b) lower contributions as compared to benefits; and (c) the PERS Board lowering of the assumed earnings rate on three different occasions from 8% to 7.2%, which narrowed the gap between the operating cashflow-to-asset ratio and the assumed rate of return. The PEW report notes that the median return assumption used by state pension plans in 2016 was 7.5%, which when compared to Oregon’s 7.2% assumed rate, would translate to improved liquidity for PERS.

The most recent PERS actuarial valuation for calendar year 2017, the data of which was not included in the PEW report, shows that Oregon’s operating cashflow-to-asset ratio remained unchanged from calendar year 2016 at 5.2% in absolute value terms with a liquidity gap of 2%

when compared to the current 7.2% assumed earnings rate; however, since the operating cashflow-to-asset ratio is based on the beginning market value, rather than the end-of-year market value, the ratio fails to take into account the fact that market returns for calendar year 2017 were +15.15%, or over twice the assumed earnings rate of 7.2%. In dollar terms, market earnings in 2017 were \$10.1 billion, or the single largest amount of calendar year earnings credited in PERS history and estimated to be \$4.3 billion above assumed earnings. In other words, the operating cashflow-to-asset ratio will not account for these additional assets until the 2018 calculation is done, as that is when the earnings will be incorporated in the beginning market value of assets. This should reduce the operating cashflow-to-asset ratio, resulting in improved system liquidity. The ratio should see further improvement as contributions are slated to continue increasing for the next several biennia.

Conclusion

The PEW operating cashflow-to-asset ratio is useful in assessing the insolvency and liquidity risks of the PERS system as well as in evaluating the dependency of PERS on investment income, for a single year. The conclusions from this brief are:

- **Insolvency Risk** – The PERS system has faced low insolvency risk as the absolute value of the ratio has remained below the assumed earnings rate.
- **Liquidity Risk** – PERS system liquidity has trended downward toward being less liquid primarily as a result of the decline in assets due to the 2008 financial crisis; however, liquidity is gradually being restored due to the combination of positive market earnings and contributions exceeding benefit payments. This has resulted in growth in the amount of assets on which earnings are based.
- **Dependency on Investment Returns** – The PERS system is more dependent on investment returns than most other state retirement systems and therefore needs to achieve a return of at least the absolute value of the operating cashflow-to-asset ratio to keep assets from declining. This return for 2017 was 5.2%, after taking contributions into account.

In conclusion, the PERS system is a mature system, like all other states, with more beneficiaries being paid benefits than contributions being made for workers in the system. This makes managing liquidity and long-term solvency perennial fixtures of the system. Oregon's higher dependency on investment earnings to meet a portion of current benefit payments also makes managing liquidity a challenge, given the inherent variability of investment returns. Over the long-term, the liquidity position of PERS should improve as benefit payments for Tier 1 and Tier 2 retirees and beneficiaries decline as the system transitions to lower benefit payments for Oregon Public Service Retirement Plan members.

Additional Resources

The Legislative Fiscal Office website (oregonlegislature.gov/lfo/Pages/Publications.aspx) contains additional PERS-related resources, including budget information briefs explaining: rate collaring, side accounts, employee contributions, and pension bonding, among others.

Appendix Table: PERS Operating Flow Cash-to-Assets Ratio

Number of Years	Calendar Year	Contributions	Benefit Payments	Beginning Market Value	Operating Cash Flow Ratio	Absolute Value	Assumed Rate	Difference from Operating Cash Ratio	Actual Earnings
1	2003	\$ 966.4	\$ 2,371.8	\$ 32,224.3	-4.4%	4.4%	8.00%	3.6%	23.8%
2	2004	\$ 1,038.6	\$ 2,530.8	\$ 43,604.0	-3.4%	3.4%	8.00%	4.6%	13.8%
3	2005	\$ 1,173.6	\$ 2,435.3	\$ 47,997.3	-2.6%	2.6%	8.00%	5.4%	13.0%
4	2006	\$ 658.1	\$ 2,604.3	\$ 52,958.6	-3.7%	3.7%	8.00%	4.3%	15.6%
5	2007	\$ 798.3	\$ 2,697.6	\$ 58,945.9	-3.2%	3.2%	7.97%	4.7%	10.2%
6	2008	\$ 676.4	\$ 2,841.2	\$ 62,583.4	-3.5%	3.5%	8.00%	4.5%	-27.2%
7	2009	\$ 600.2	\$ 2,872.5	\$ 43,835.1	-5.2%	5.2%	8.00%	2.8%	19.2%
8	2010	\$ 449.5	\$ 3,103.6	\$ 49,618.7	-5.3%	5.3%	8.00%	2.7%	12.4%
9	2011	\$ 644.2	\$ 3,422.9	\$ 53,003.6	-5.2%	5.2%	8.00%	2.8%	2.2%
10	2012	\$ 928.7	\$ 3,403.7	\$ 51,388.8	-4.8%	4.8%	8.00%	3.2%	14.3%
11	2013	\$ 1,567.1	\$ 3,769.9	\$ 56,117.6	-3.9%	3.9%	8.00%	4.1%	15.8%
12	2014	\$ 1,006.8	\$ 3,942.3	\$ 62,522.2	-4.7%	4.7%	7.75%	3.1%	7.3%
13	2015	\$ 1,199.8	\$ 4,116.0	\$ 63,919.1	-4.6%	4.6%	7.75%	3.2%	2.2%
14	2016	\$ 1,049.6	\$ 4,300.7	\$ 62,504.6	-5.2%	5.2%	7.20%	2.0%	7.1%
14	2016 (PEW)	\$ 992.0	\$ 4,206.0	\$ 64,924.0	-5.0%	5.0%	7.20%	2.2%	7.1%
15	2017	\$ 1,255.9	\$ 4,546.8	\$ 63,232.2	-5.2%	5.2%	7.20%	2.0%	15.2%
From 2003-2016									
	AVE	\$ 911.2	\$ 3,172.3	\$ 52,944.5	-4.3%	4.3%	7.9%	3.6%	9.3%
	MAX	\$ 1,567.1	\$ 4,300.7	\$ 63,919.1	-2.6%	5.3%	8.0%	5.4%	23.8%
	MIM	\$ 449.5	\$ 2,371.8	\$ 32,224.3	-5.3%	2.6%	7.2%	2.0%	-27.2%
	MEDIAN	\$ 947.6	\$ 2,988.1	\$ 52,981.1	-4.5%	4.5%	8.0%	3.4%	12.7%
	STD DEV	\$ 285.8	\$ 631.2	\$ 8,783.4	0.8%	0.8%	0.2%	0.9%	11.6%
From 2003-2008									
	AVE	\$ 885.2	\$ 2,580.2	\$ 49,718.9	-3.5%	3.5%	8.0%	4.5%	8.2%
	MAX	\$ 1,173.6	\$ 2,841.2	\$ 62,583.4	-2.6%	4.4%	8.0%	5.4%	23.8%
	MIM	\$ 658.1	\$ 2,371.8	\$ 32,224.3	-4.4%	2.6%	8.0%	3.6%	-27.2%
	MEDIAN	\$ 882.4	\$ 2,567.6	\$ 50,478.0	-3.4%	3.4%	8.0%	4.6%	13.4%
	STD DEV	\$ 189.7	\$ 157.8	\$ 10,062.7	0.5%	0.5%	0.0%	0.5%	16.4%
From 2009-2016									
	AVE	\$ 930.7	\$ 3,616.5	\$ 55,363.7	-4.9%	4.9%	7.8%	3.0%	10.1%
	MAX	\$ 1,567.1	\$ 4,300.7	\$ 63,919.1	-3.9%	5.3%	8.0%	4.1%	19.2%
	MIM	\$ 449.5	\$ 2,872.5	\$ 43,835.1	-5.3%	3.9%	7.2%	2.0%	2.2%
	MEDIAN	\$ 1,006.8	\$ 3,769.9	\$ 56,117.6	-4.8%	4.8%	8.0%	3.1%	7.3%
	STD DEV	\$ 339.2	\$ 467.3	\$ 6,738.7	0.4%	0.4%	0.3%	0.6%	5.9%

Source: Annual PERS actuarial valuation reports and PEW report.