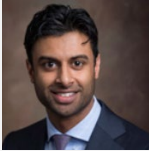




LDI Solutions

# PENSION CURVE INSIDER

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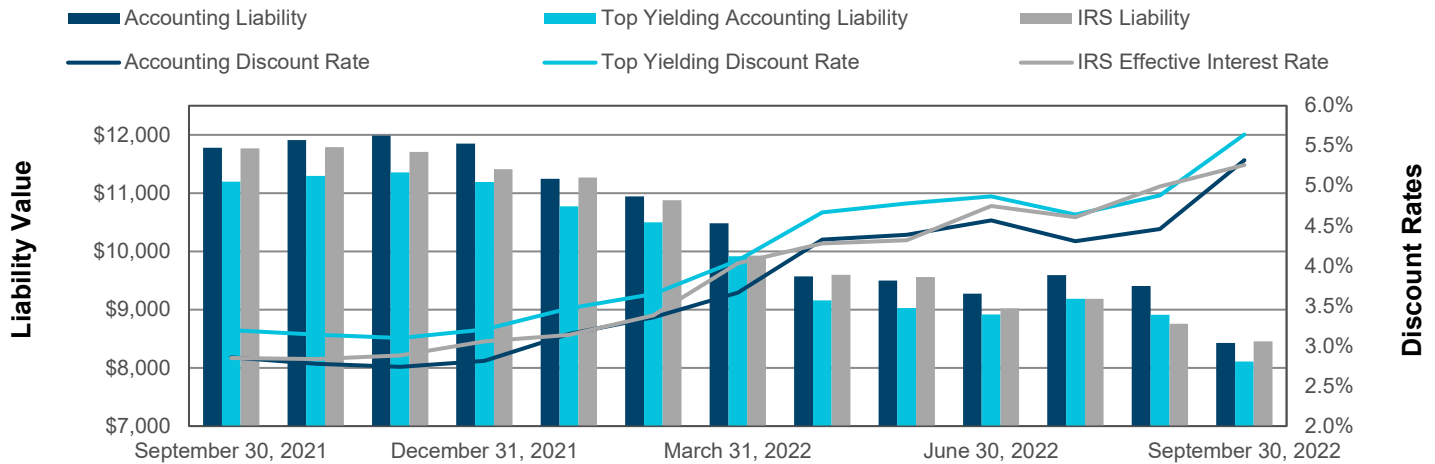
## MONTHLY RECAP

The Federal Reserve continued to tighten monetary policy during the month of October, raising its policy benchmark by 75 basis points. As rates markets adjusted to expectations of higher rates, the Treasury curve inversion deepened to its most negative legal year-to-date. Amidst the broader market volatility, credit spreads widened through the month.

Plan liability values decreased on a marked-to-market basis in September, extending their decline from August. Discount rates for a sample plan liability increased by 86 basis points based on the AA-rated spot curve and 76 basis points using the top-yielding curve. At month end, the top-yielding curve provided 32 basis points of additional yield versus the broader AA-rated universe.

Issuance was modest during the month, as eight new bonds with \$6.8B of notional value entered the index. Maturities and index eligibility were the only reasons for outgoing turnover. New entrants had a small downward impact on the medium- to long-term segment of the AA-rated spot curve, while exits had a negligible effect overall.

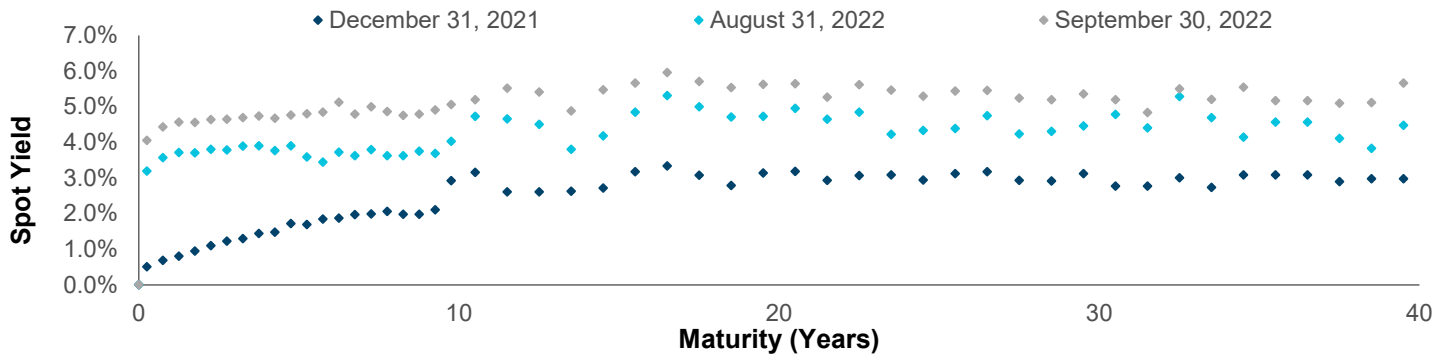
## LIABILITY IMPACT



Yield Curve	Liability Value 9/30/22	Discount Rate 9/30/22	Liability Value 8/31/22	Discount Rate 8/31/22	Liability Value 12/31/21	Discount Rate 12/31/21
<b>Accounting Yield Curve</b>	\$8,429	5.32%	\$9,405	4.46%	\$11,849	2.82%
<b>Top Yielding Accounting Curve</b>	\$8,107	5.64%	\$8,913	\$4.88%	\$11,192	3.21%
<b>IRS Yield Curve</b>	\$8,455	5.26%	\$8,756	4.99%	\$11,411	3.06%

Sources: Bloomberg. Bloomberg Index Services Ltd. Copyright 2021, Bloomberg Index Services Ltd. Used with permission. IRS, and T. Rowe Price. Sample plan cash flows have a liability of \$10,000 at 4.0% discount rate.

### ACCOUNTING CURVE



Sources: Bloomberg. Bloomberg Index Services Ltd. Copyright 2021, Bloomberg Index Services Ltd. Used with permission. T. Rowe Price.

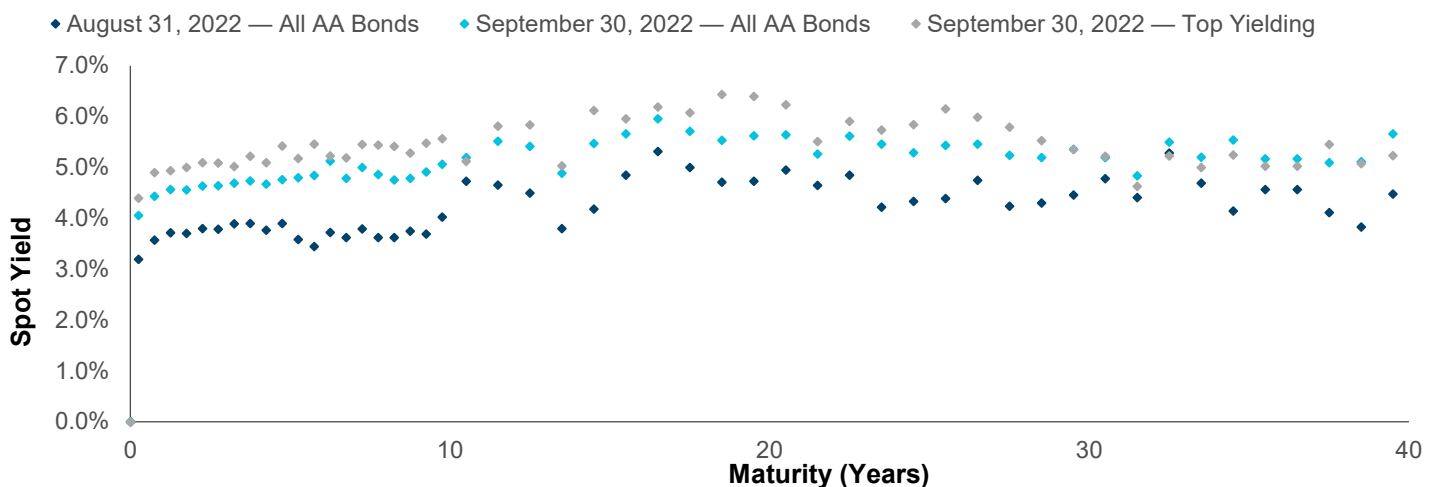
Issuer	Event	Curve Impact
<b>WalMart Inc.</b>	New Issue (4 Bonds)	WalMart Inc. issued \$5.0B notional of debt through four issues, with maturities ranging from 2025 to 2052. All four issues traded tighter than comparable peers, and had a small downward impact on the AA-rated curve. The American retailer was the fifth-largest issuer of the AA-rated universe and accounted for \$21.2B of debt at monthend.
<b>Export-Import Bank of Korea</b>	New Issue (3 Bonds)	The Export-Import Bank of Korea brought three new issues to market during the month of September. The issues priced tighter than similar bonds, but only had a negligible downward effect on the short- to medium-term segments of the AA-rated curve.
<b>Oesterreichische Kontrollbank AG</b>	New Issue (1 Bond)	Oesterreichische Kontrollbank AG (“OEKB”) sold one five-year bond in early September, with notional value of \$1.0B. The new issue of the Austrian export bank traded tighter than peers and had a minor downward impact on the medium-term segment of the AA-rated curve.

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	New Issues	Other Bonds Entering	Downgrades	Other Bonds Exiting
<b>September 2022</b>				
<b>Count</b>	8	0	0	3
<b>Market Value (\$M)</b>	\$8,261	--	--	\$3,479
<b>Market Value (%)</b>	1.51%	--	--	0.64%
<b>2022 YTD</b>				
<b>Count</b>	59	11	9	5
<b>Market Value (\$M)</b>	\$50,093	\$11,546	\$5,683	\$61,236
<b>Market Value (%)</b>	9.16%	2.02%	0.99%	11.2%

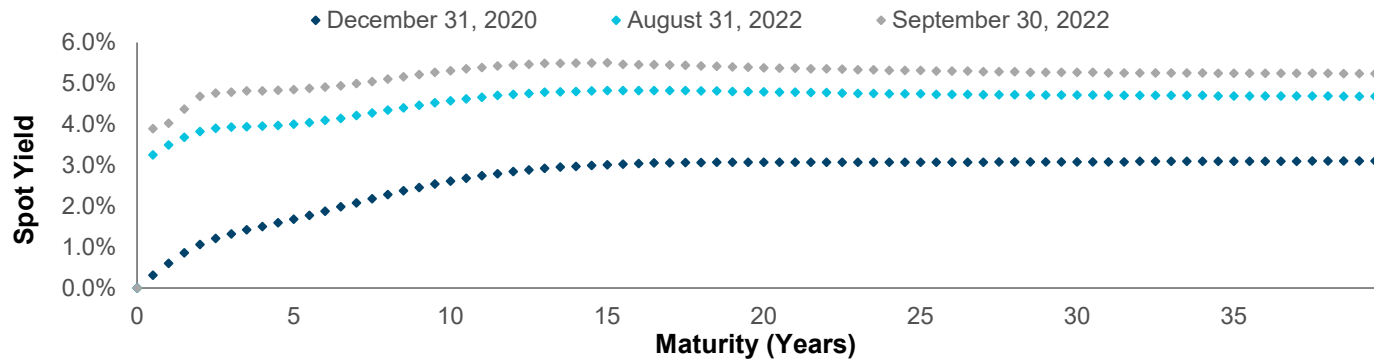
Sources: Bloomberg. Bloomberg Index Services Ltd. Copyright 2021, Bloomberg Index Services Ltd. Used with permission. T. Rowe Price.

### TOP YIELDING ACCOUNTING CURVE



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### IRS CURVE

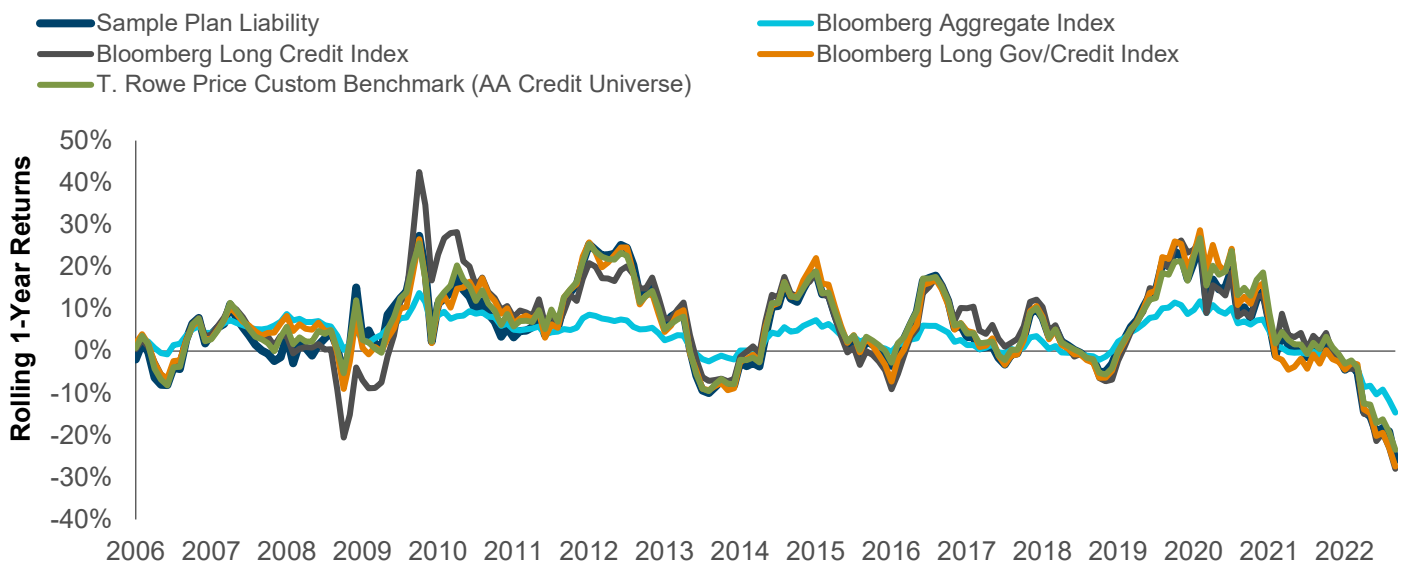


Sources: IRS and T. Rowe Price

Dates	AAA Corporate OAS (basis points)	AA Corporate OAS	A Corporate OAS	BBB Corporate OAS
<b>August Monthly Average</b>	108	66	107	167
<b>September 1, 2022</b>	101	65	113	174
<b>September 15, 2022</b>	100	70	111	168
<b>September 30, 2022</b>	119	75	129	188
<b>September Monthly Average</b>	105	69	116	174

Sources: Bloomberg, Bloomberg Index Services Ltd. Copyright 2021, Bloomberg Index Services Ltd. Used with permission. T. Rowe Price.

### ONE-YEAR ROLLING RETURNS AND TRACKING ERROR



	September 2022 Return	YTD Total Return	Annual Tracking Error Relative to Liability	Average Monthly Return Difference from Liability
<b>Hypothetical Sample Plan Liability</b>	-10.00%	-26.8%	--	--
<b>Bloomberg Aggregate Index</b>	-4.32	-14.62	6.76%	1.47%
<b>Bloomberg Long Credit Index</b>	-8.64	-29.05	4.40	0.91
<b>Bloomberg Long Gov/Credit Index</b>	-8.30	-28.94	3.22	0.64
<b>Hypothetical T. Rowe Price Custom Benchmark</b>	-7.05	-24.28	2.17	0.35

Sources: Bloomberg Index Services Ltd., T. Rowe Price; Analysis by T. Rowe Price. Performance in graph and tables above shown from February 1, 2005 through September 30, 2022.

**Past performance cannot guarantee future results.** Custom Benchmark returns do not reflect the deduction of management fees. Please refer to the disclosure at the end of the article for important additional information.

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## GLOSSARY

**IRS Yield Curve:** Plan sponsors of qualified defined benefit pension plans use this yield curve to determine funding requirements per IRS regulations. These funding requirements are disclosed on form 5500 annually. Yields on AAA, AA, and A corporate securities determine the yield curve for discounting purposes. The yield curve is not a marked-to-market curve representing any single date, but rather an average yield over the course of the entire month. For more information on the IRS methodology, please see [treasury.gov/resource-center](https://treasury.gov/resource-center) and [irs.gov/Retirement-Plans](https://irs.gov/Retirement-Plans).

**Accounting Yield Curve:** US GAAP requires pension plan sponsors to disclose pension obligations using “fixed-income debt securities that receive one of the two highest ratings given by a recognized ratings agency”. As a proxy for bonds useable for accounting purposes, we use the constituents of Bloomberg AA credit universe to develop the accounting yield curve shown. Please see [fasb.org](https://fasb.org) for more information.

**Top Yielding Curve:** Since the US GAAP rules allow the use of a fairly broad range of securities for accounting purposes, some plan sponsors use an optimized yield curve approach to value their pension liabilities on the disclosure dates. Bonds trading at higher yields than other bonds of similar maturity tend to be used for this purpose. To quantify the effectiveness of this approach, T. Rowe Price developed a yield curve using the highest yielding bonds designed to meet SEC requirements at each node.

**Annual Tracking Error Relative to Liability:** Calculated as the standard deviation of return differences between a fixed income index and a set of cash flows discounted using the accounting yield curve. The liability return has two components: an interest cost component analogous to roll return on a bond, and yield change component analogous to price return on a bond. The table shows annualized ex-post tracking error.

**Average Monthly Return Difference:** Similar to the tracking error metric, this metric demonstrates how closely a fixed income benchmark tracks a set of liability returns. We calculate this measure by simply averaging the difference in returns over the period shown.

**Sample Plan Liability:** Pension plan sponsors must account for the cost of their retirement plan on their financial statements. The amount of this liability can fluctuate over time based on several factors, including benefits earned, benefits paid out, mortality experience, and most significantly, interest rates. The Sample Plan is intended to be a representative defined benefit pension plan and does not reflect the cash flows from any specific plan.

**T. Rowe Price Custom Benchmark:** An index of fixed income securities created using T. Rowe Price proprietary methodology that attempts to replicate interest rate exposures embedded in a pension plan’s liability structure.

To learn more, please visit [troweprice.com](https://troweprice.com)

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The illustrations presented are hypothetical and used to demonstrate capabilities. Certain assumptions have been made for modelling purposes and with the benefit of hindsight and are unlikely to be realized. The specific issuers and bond issues mentioned in this document had significant impact on liability curves calculated using Bloomberg index universes. The modelling used for plan and benchmark development has certain inherent limitations. Benchmark construction may not reflect all material economic and market factors that could have impacted implementation or weighting decisions if the modelled plan actually existed during the time period presented. Actual T. Rowe Price Custom Benchmark characteristics, including (among other things) yield, annualized return, liability-relative tracking error and average monthly returns difference relative to plan liability may differ substantially from the hypothetical scenario presented.

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