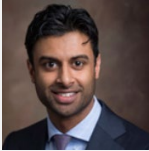




LDI Solutions

PENSION CURVE INSIDER

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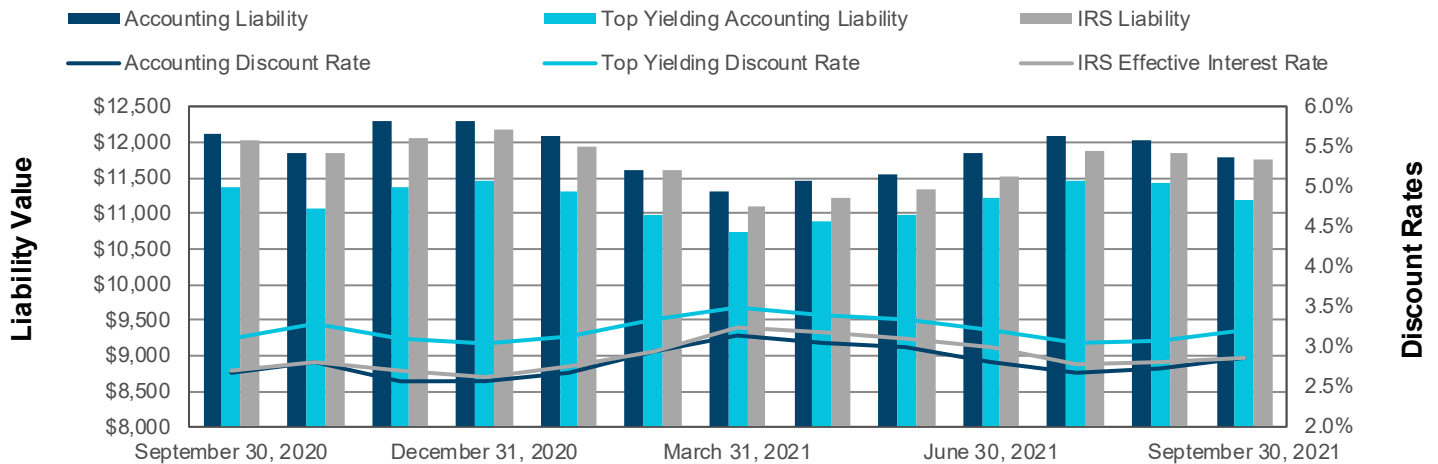
MONTHLY RECAP

September saw a broad increase in Treasury yields, with corporate spreads tightening slightly. The discount rate based on the AA-rated spot curve for a sample plan liability increased by 14 basis points with a similar increase in the top yielding curve.

On a marked-to-market basis, plan liability values decreased, extending last month's marginal decline. Discount rates remain well below the recent peak in March, but higher than the end of 2020. Spreads between the top-yielding curve and the broader AA-rated universe continues to be relatively stable and currently provides 34 basis points of additional yield.

September saw a pickup in activity compared to last month, with nine new issues added to the AA-rated index, totaling \$6.0B of market value. Six of these new issues accounted for half of the market value and had maturities of 10 years or more, broadening the opportunity set for liability driven investors.

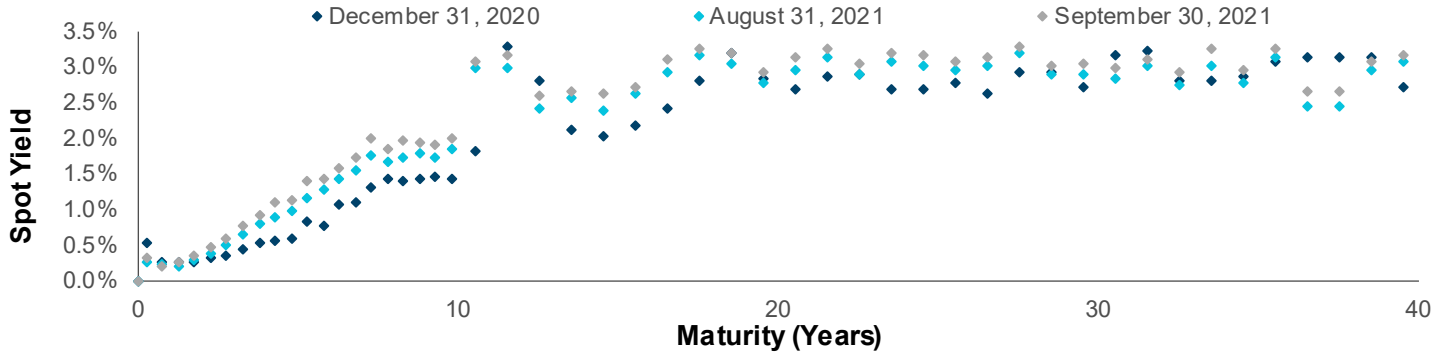
LIABILITY IMPACT



Yield Curve	Liability Value 9/30/21	Discount Rate 9/30/21	Liability Value 8/31/21	Discount Rate 8/31/21	Liability Value 12/31/20	Discount Rate 12/31/20
Accounting Yield Curve	\$11,776	2.86%	\$12,025	2.72%	\$12,288	2.57%
Top Yielding Accounting Curve	\$11,199	3.20%	\$11,419	3.07%	\$11,456	3.04%
IRS Yield Curve	\$11,765	2.96%	\$11,858	2.80%	\$12,182	2.62%

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

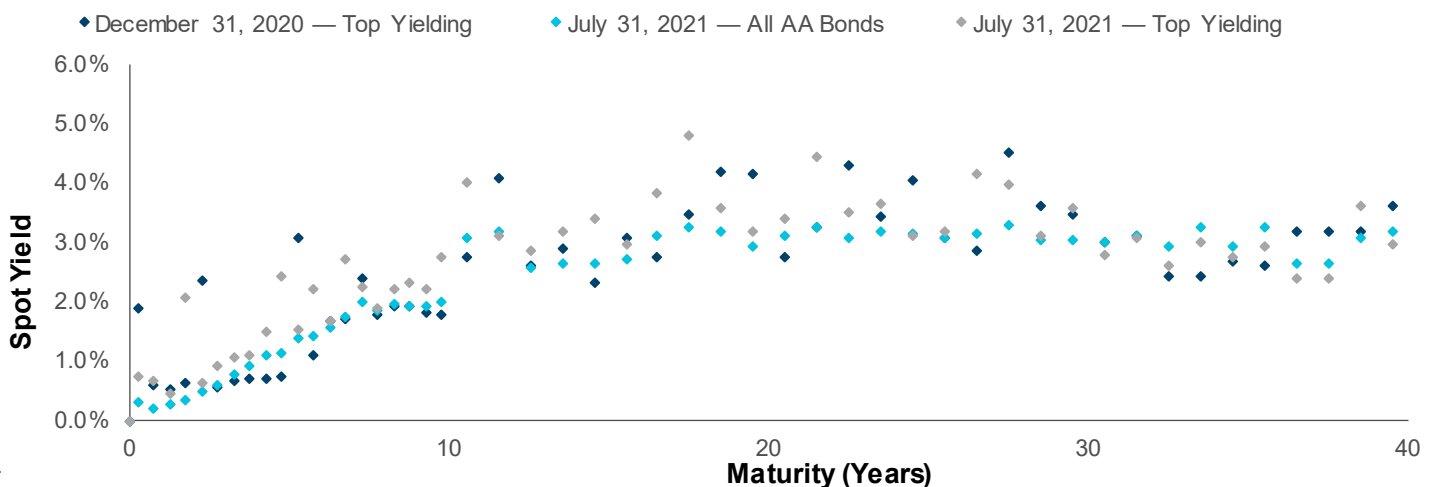
Issuer	Event	Curve Impact
WalMart	New Issue (4 Bonds)	WalMart was the most active issuer within the AA-rated universe during September, representing over half of new bonds added to the index this month. The retailer offered bonds at multiple tenors, spreading its \$5.75B of obligations over seven-, ten-, twenty-, and thirty-year maturities.
	Tender (1 Bond)	At the same time, WalMart tendered its 2040-maturity bonds, reducing the amount outstanding below the inclusion threshold for our yield curve.
Multiple	New Issues (5 Bonds)	A handful of new issuers entered the index, representing a diverse set of regions and sectors. Shorter-dated issues came exclusively from foreign entities, including OEKB Group, Swedish Export Credit Corporation, The Council of Europe, and Arab Petroleum. Longer-dated issues were entirely domestic, including WalMart (detailed above) and Providence St. Joseph Health.
RWJ Barnabas Health	Upgraded (2 Bonds)	RWJ Barnabas Health saw two of its bonds, totaling \$800M of market value, upgraded into the AA-rated credit index. The upgrade of the health system provider's bonds was underwritten by Moody's, who simultaneously placed an Aa3 rating on a proposed new issue which has yet to price.
Baptist Health South Florida	Downgrade (1 Bond)	The only downgrade during the month of September, Baptist Health's bonds represented only 0.04% of the AA credit index universe at the end of last month.

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

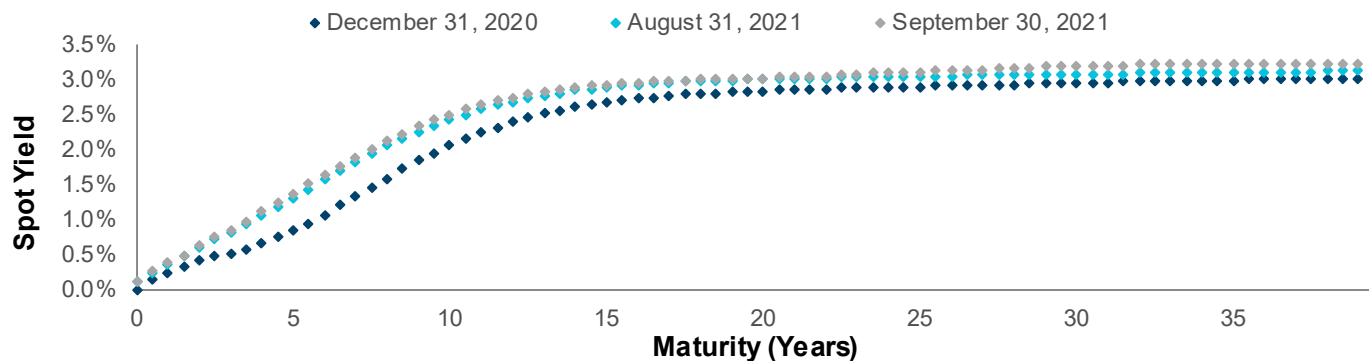
	New Issues	Other Bonds Entering	Downgrades	Other Bonds Exiting
September 2021				
Count	9	2	1	1
Market Value (\$M)	\$11,275	\$808	\$300	\$508
Market Value (%)	1.64%	0.12%	0.04%	0.07%
2021 YTD				
Count	83	41	36	15
Market Value (\$M)	\$78,702	\$66,452	\$33,905	\$19,899
Market Value (%)	11.53%	9.56%	5.61%	3.00%

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

TOP YIELDING ACCOUNTING CURVE



IRS CURVE

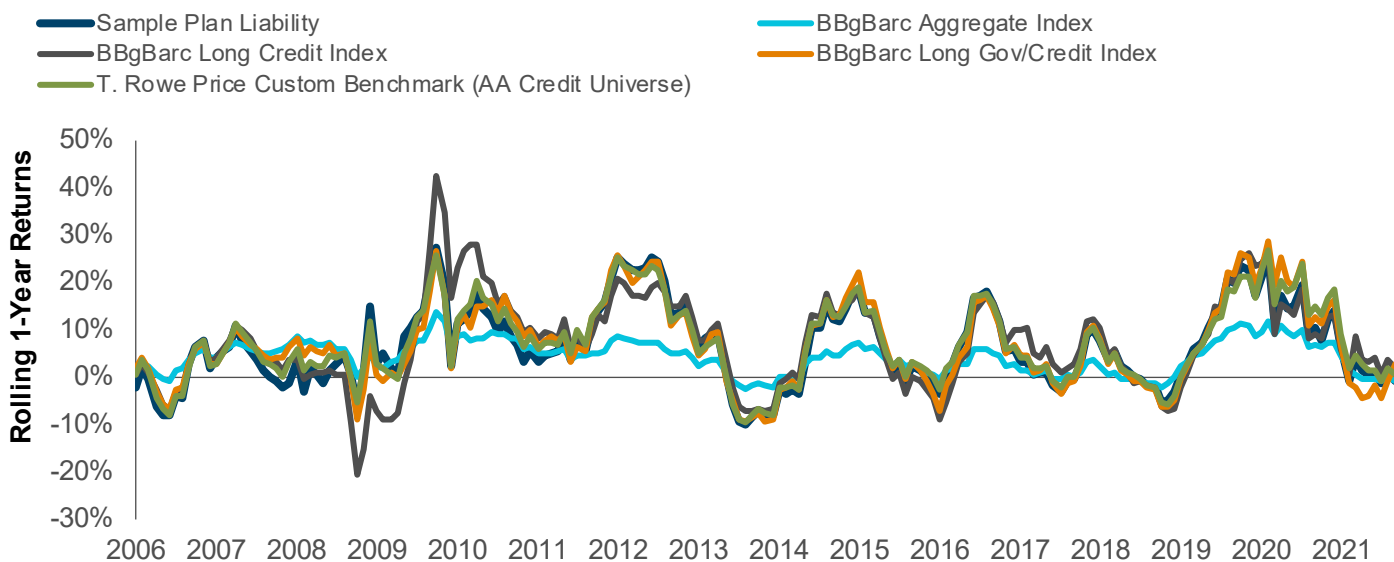


Sources: IRS and T. Rowe Price

Dates	AAA Corporate OAS (basis points)	AA Corporate OAS	A Corporate OAS	BBB Corporate OAS
August Monthly Average	63	48	68	108
September 1, 2021	65	48	67	106
September 15, 2021	66	46	66	105
September 30, 2021	62	44	65	103
September Monthly Average	65	46	66	104

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

ONE-YEAR ROLLING RETURNS AND TRACKING ERROR



	September 2021 Return	YTD Total Return	Annual Tracking Error Relative to Liability	Average Monthly Return Difference from Liability
Hypothetical Sample Plan Liability	-1.88%	-2.52%	NA	NA
BBgBarc Aggregate Index	-0.87%	-1.56%	6.62%	1.44%
BBgBarc Long Credit Index	-1.97%	-2.66%	4.39%	0.90%
BBgBarc Long Gov/Credit Index	-2.34%	-4.56%	3.19%	0.64%
Hypothetical T. Rowe Price Custom Benchmark	-1.66%	-0.14%	2.02%	0.33%

Sources: Bloomberg Index Services Ltd., T. Rowe Price; Analysis by T. Rowe Price. Performance shown in graph and tables above shown from February 1, 2005 through September 30, 2021.

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://www.treasury.gov/resource-center) and [irs.gov/Retirement-Plans](https://www.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 BBgBarc AA credit universe to develop the accounting yield curve shown. Please see [fasb.org](https://www.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://www.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 BBgBarc 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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