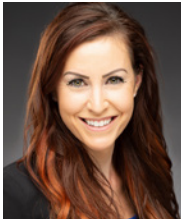




Joel A. Buursma, CIPM
Vice President,
Senior Software Architect



Denise Wilson
Index Operations Manager

Municipal Bond Market Performance

September 2021

Overview

The municipal bond market, as measured by the Standard & Poor's Municipal Bond Investment Grade Index, had a Total Return of -0.667% in September 2021, consisting of the components displayed in Table 1. Table 1 also displays a breakdown of year-to-date returns; the YTD Total Return was 0.650%.

The Investment Grade Index outperformed the High Yield Index, which posted a -0.868% total return, and was outperformed by the Prerefunded / ETM Index, which posted a -0.159% due to its lower duration. More details about the Prerefunded / ETM changes can be found in the Interpretation section's discussion of the Sector / Quality Return Breakdown.

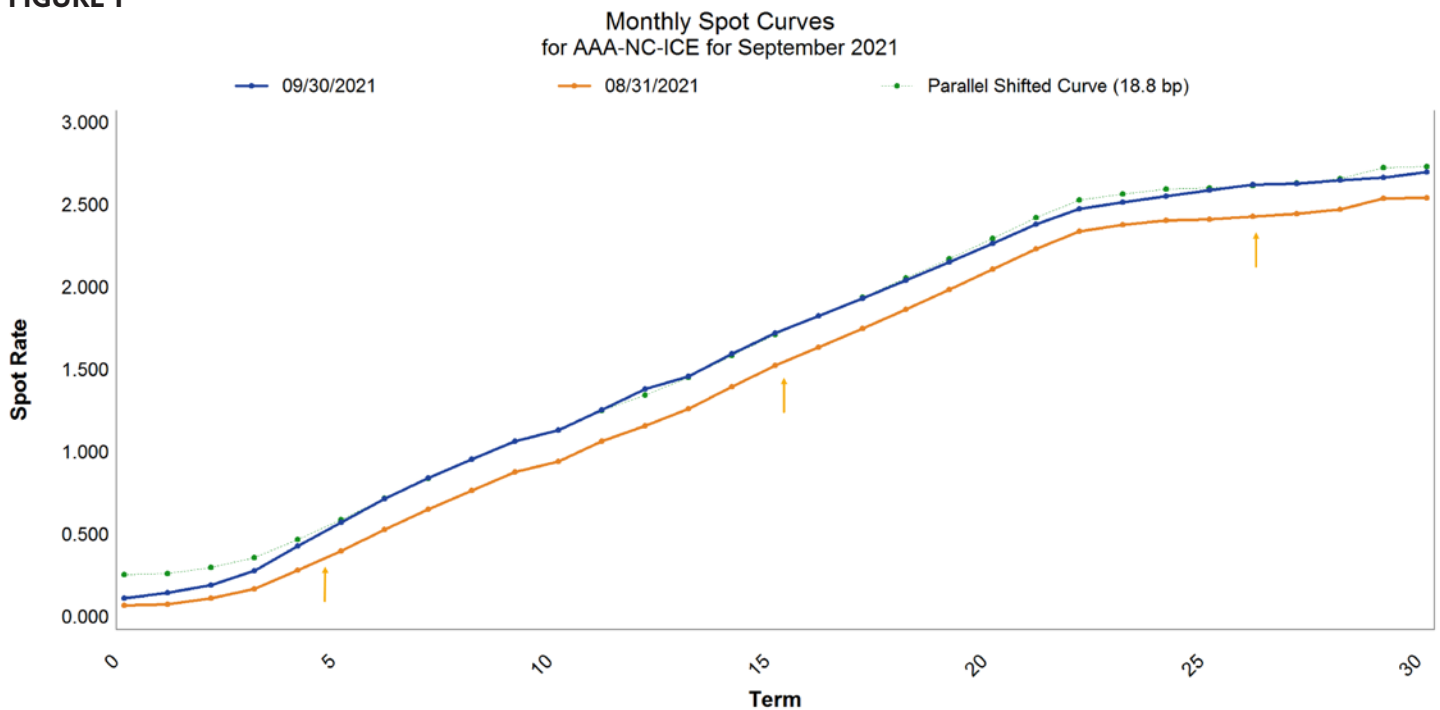
TABLE 1

	SEPTEMBER	YTD
Total Return	-0.667%	0.650%
Coupon Return	0.305%	2.871%
Market Amortization Return	-0.233%	-2.143%
Parallel Shift Return	-0.789%	-1.929%
Non-Parallel Shift Return	0.112%	0.304%
Sector/Quality Return	0.445%	2.934%
Residual Price Return	-0.507%	-1.386%

Interpretation

Figure 1 shows the overall change in the muni AAA non-callable spot curve for September. The graph captures the yield curve increase over the month. There was a little bit of steepening in the short end of the curve, particularly from the 3-month to the 5-year maturity ranges. The Treasury curve demonstrated similar movement.

FIGURE 1



The green dotted line depicts the parallel shift implied by the ten-year point's spot curve change.

The Parallel Shift Return of -0.789% is calculated from the 18.8 bp increase in the ten-year point of the spot curve, as shown in Table 2.

TABLE 2

Change for 10-Year Spot Rate ^(a)	18.81
Total Key Rate Duration ^(b)	4.198
Parallel Shift Return ^(-b*a)	-0.789

The Non-Parallel Shift Return was 0.112%. With the exception of the 7-year point, most points increased less than the 10-year point did, resulting in negative Non-Parallel Changes and a positive Non-Parallel Shift Return. This suggests that shorter-term portfolios and indices would have higher (less negative) returns from September's yield curve movements than this index did. See Table 3 for the full calculations for this index.

TABLE 3

	6 Mos	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs	20 Yrs	30 Yrs
Non-Parallel Change	-13.60	-11.91	-10.80	-7.99	-1.67	0.07	0.00	-2.93	-3.13
Key Rate Duration	0.036	0.008	0.275	0.632	0.975	0.959	0.972	0.311	0.031
Non-Parallel Shift Return	0.005	0.001	0.030	0.050	0.016	-0.001	0.000	0.009	0.001

Each value in the Non-Parallel Shift Return row is calculated by multiplying together the two cells above it and reversing the sign.

Sector/Quality Return captures return from changes in average option-adjusted spread (adjusted by duration) for sector/quality groupings. The index's overall Sector/Quality Return was 0.445%. The sectors exhibiting the largest tightening in average option-adjusted spread (weighted by both market value and duration) were Health Care, Water / Sewer, and Public Power. The only sector to exhibit any overall widening in option-adjusted spread was Prerefunded/ETM, with a change of 2.19 bps. Quality-based groupings suggested a slight flight to quality, with AA bond spreads tightening more than other rating categories.

The sector/quality categories with the biggest negative contributions to Sector/Quality Return, considering both weightings and the groupings' own sector/quality returns, are listed in Table 4. As shown, there are only two sector/quality categories with negative contributions. The biggest positive contributors are listed in Table 5.

TABLE 4

	AA-rated Prefunded/ ETM	AAA-rated Prefunded/ ETM	A-rated Prefunded/ ETM	Sub B-rated Prefunded/ ETM
Change in Duration-Adjusted Average OA Spread ^(a)	2.313	2.036	2.392	1.628
Total Key Rate Duration ^(b)	1.515	1.786	1.275	1.729
Sector/Quality Return ^(-b*a)	-0.035	-0.036	-0.031	-0.028
Market Value Weight ^{%(c)}	4.435	2.005	1.276	0.985
Contribution to Duration ^(b*c)	0.06720	0.03581	0.01628	0.01703
Contribution to Sector/Quality Return ^(-b*c*a)	-0.00155	-0.00073	-0.00039	-0.00028

TABLE 5

	AA-rated Local GO	AAA-rated Local GO	AA-rated Tax Supported (Excl. GO's)	A-rated Transportation
Change in Duration-Adjusted Average OA Spread ^(a)	-11.237	-10.948	-10.221	-11.434
Total Key Rate Duration ^(b)	4.501	4.460	4.393	4.628
Sector/Quality Return ^(b*a)	0.506	0.488	0.449	0.529
Market Value Weight ^(c)	9.559	8.980	7.685	5.673
Contribution to Duration ^(b*c)	0.43030	0.40050	0.33759	0.26255
Contribution to Sector/Quality Return ^(b*c*a)	0.04835	0.04385	0.03451	0.03002

Coupon Return was 0.305%, based on the index's average coupon of 4.331%. The average beginning-of-month market yield was 0.885%, resulting in a Market Amortization Return of -0.233%. These two terms sum to a total income effect of 0.072%.

Note that Coupon Return reflects both interest payments and changes in accrued interest throughout the month. Market Amortization Return is negative because of the large number of premium bonds in the index due to the low yield curve environment. Premium bond prices, absent any change in yield, naturally decline over time to their redemption price. This decline is called market amortization.

Finally, the Residual Price Return was -0.507%, reflecting the positive effects of rolling down the yield curve as well as the much larger effects of convexity.

CONTACT US

All table data and figures in this report were produced using Investortools, Inc.'s **Custom Index Manager** product.

For more information about Investortools, please visit www.invtools.com or [click here to contact us](#).

To request a product demonstration, please contact sales@invtools.com.

For more information about **Custom Index Manager**, please [click here](#).