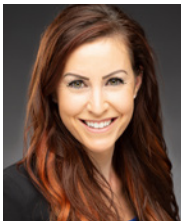




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Municipal Bond Market Performance

October 2022

Overview

The municipal bond market, as measured by the Standard & Poor's Municipal Bond Investment Grade Index, had a Total Return of -0.626% in October 2022, consisting of the components displayed in Table 1.

A Total Return of -0.626% makes October one of the more moderate months of 2022. This is due in large part to a milder yield increase, reflected in Parallel Shift Return. However, intra-month returns were volatile, with the index shedding 1.864% during one week. The muni yield curve remained steep, showing no signs of the dramatic inversions present in the treasury curve. Long- and intermediate-term yields reached heights not seen since 2011 and shorter terms were higher than they had been since 2007, holding out promises of higher future returns.

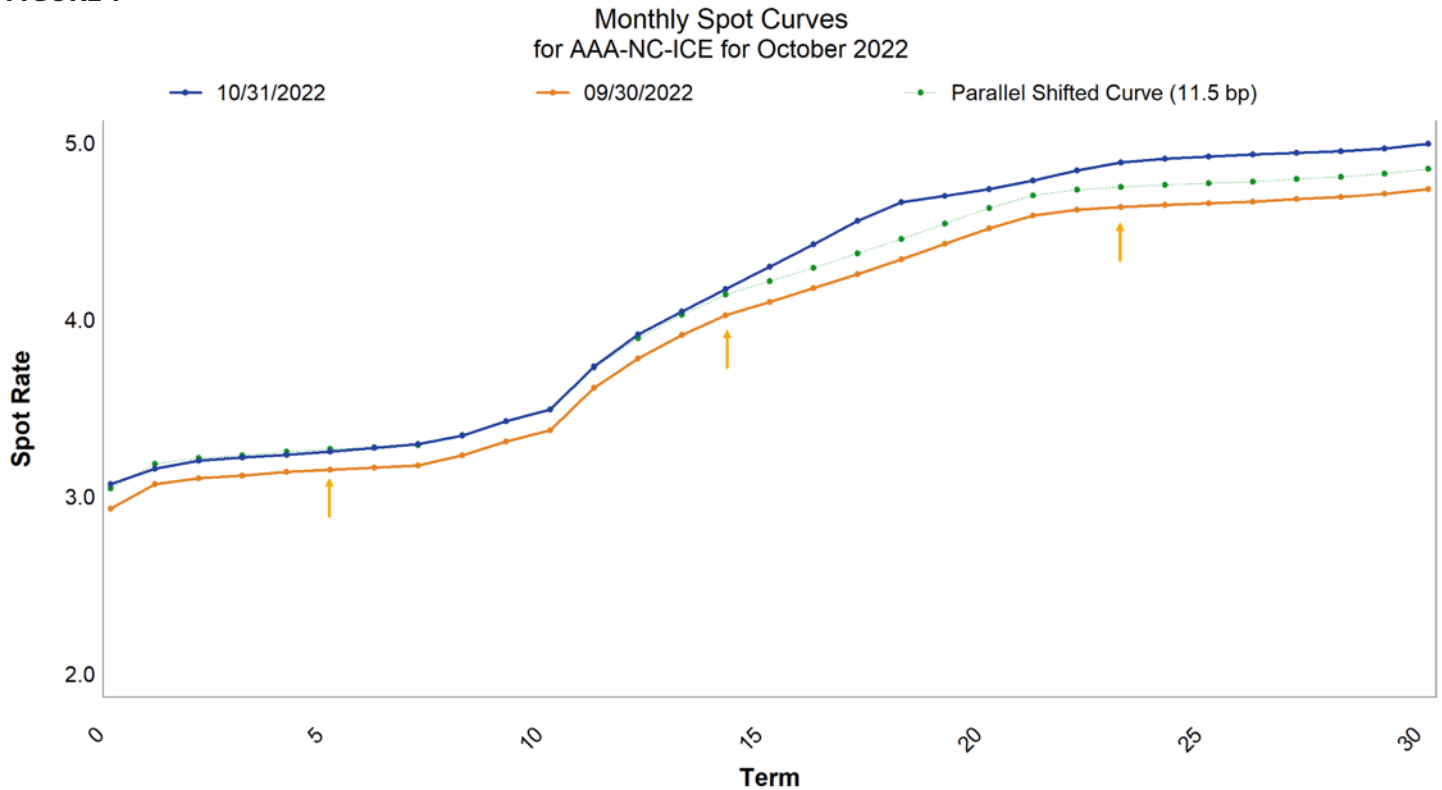
TABLE 1

	OCTOBER	YTD
Total Return	-0.626%	-11.727%
Coupon Return	0.376%	3.186%
Market Amortization Return	-0.039%	-1.217%
Parallel Shift Return	-0.439%	-9.794%
Non-Parallel Shift Return	-0.030%	-0.884%
Sector/Quality Return	0.045%	2.243%
Residual Price Return	-0.539%	-5.260%

Interpretation

Figure 1 shows the overall change in the municipal AAA non-callable spot curve for October which demonstrated a 11.5 bp increase in overall level as measured at the ten-year point.

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 -0.439% is calculated from this curve increase, as shown in Table 2.

TABLE 2

Change for 10-Year Spot Rate ^(a)	11.46
Total Key Rate Duration ^(b)	3.827
Parallel Shift Return ^(-b*a)	-0.439

The Non-Parallel Shift Return was only -0.030%, due to the month's curve increase being largely parallel. Only the long end of the curve diverged substantially from a parallel shift, increasing 10-15 bp more than the 10-year point. These longer terms were the primary contributors to the negative Non-Parallel Shift Return, as can be seen in Table 3.

TABLE 3

	6 Mos	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs	20 Yrs	30 Yrs
Non-Parallel Change	-0.07	-2.68	-1.44	-1.44	-1.23	0.62	0.00	10.86	14.20
Key Rate Duration	0.046	0.177	0.343	0.565	0.681	0.672	0.884	0.398	0.062
Non-Parallel Shift Return	0.000	0.005	0.005	0.008	0.008	-0.004	0.000	-0.043	-0.009

Each value in the Non-Parallel Shift Return row is calculated by multiplying together the two cells above it, dividing by 100 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 0.045%.

Although the overall Sector/Quality Return was quite small, there were significant performance differences between some sectors. The sectors exhibiting the largest tightening in average option-adjusted spread (weighted by both market value and duration) were Tobacco Settlement, Housing, and Public Power. The sectors exhibiting the largest overall widening were IDR/PCR, Transportation, and Resource Recovery. A flight to quality was evidenced in widening average spreads in A-rated and BBB-rated groupings.

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. The biggest positive contributors are listed in Table 5.

TABLE 4

	A-rated Transportation	A-rated IDR / PCR	A-rated Health Care	BBB-rated Health Care
Change in Duration-Adjusted Average OA Spread ^(a)	13.973	18.028	4.739	14.575
Total Key Rate Duration ^(b)	4.162	3.566	4.357	4.518
Sector/Quality Return ^(-b*a)	-0.582	-0.643	-0.206	-0.658
Market Value Weight ^(c)	5.389	2.041	2.955	0.892
Contribution to Duration ^(b*c)	0.22426	0.07277	0.12873	0.04029
Contribution to Sector/Quality Return ^(-b*c*a)	-0.03134	-0.01312	-0.00610	-0.00587

TABLE 5

	AAA-rated Local GO	AA-rated Tax-Supported (Excl. GO's)	AA-rated Education	AA-rated Water / Sewer
Change in Duration-Adjusted Average OA Spread ^(a)	-3.897	-4.437	-8.951	-6.823
Total Key Rate Duration ^(b)	3.992	4.079	4.017	4.043
Sector/Quality Return ^(b*a)	0.156	0.181	0.360	0.276
Market Value Weight ^(c)	9.288	7.808	3.496	4.323
Contribution to Duration ^(b*c)	0.37077	0.31851	0.14046	0.17478
Contribution to Sector/Quality Return ^(b*c*a)	0.01445	0.01413	0.01257	0.01193

Coupon Return was 0.376%, based on the index's average coupon of 4.292%. The average beginning-of-month market yield was 3.961%, resulting in a Market Amortization Return of -0.039%. These two terms sum to a total income effect of 0.337%, the highest this year. In general, Market Amortization Return has steadily gone up (that is, become less negative) over the course of 2022, reflecting greater expected returns going forward.

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 yields remaining lower than most coupon rates. 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 -0.539% reflecting the positive effects of rolling down the yield curve as well as the more substantial effects of convexity.

CONTACT US

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

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