

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



**Denise Wilson**  
Index Operations Manager

# Municipal Bond Market Performance

December 2020

## Overview

The municipal bond market, as measured by the Standard & Poor's Municipal Bond Investment Grade Index, had a Total Return of 0.500% in December 2020, consisting of the components displayed in Table 1.

The closing out of December 2020 gave some highlights of interest. There was a modest total return, the least movement in parallel shift return in the year, but one of the top quarter largest Sector/Quality returns of the year. Amid a general reach for yield, Health Care and Transportation sectors stood out.

A year-end summary and monthly breakdown have been appended to the end of the report.

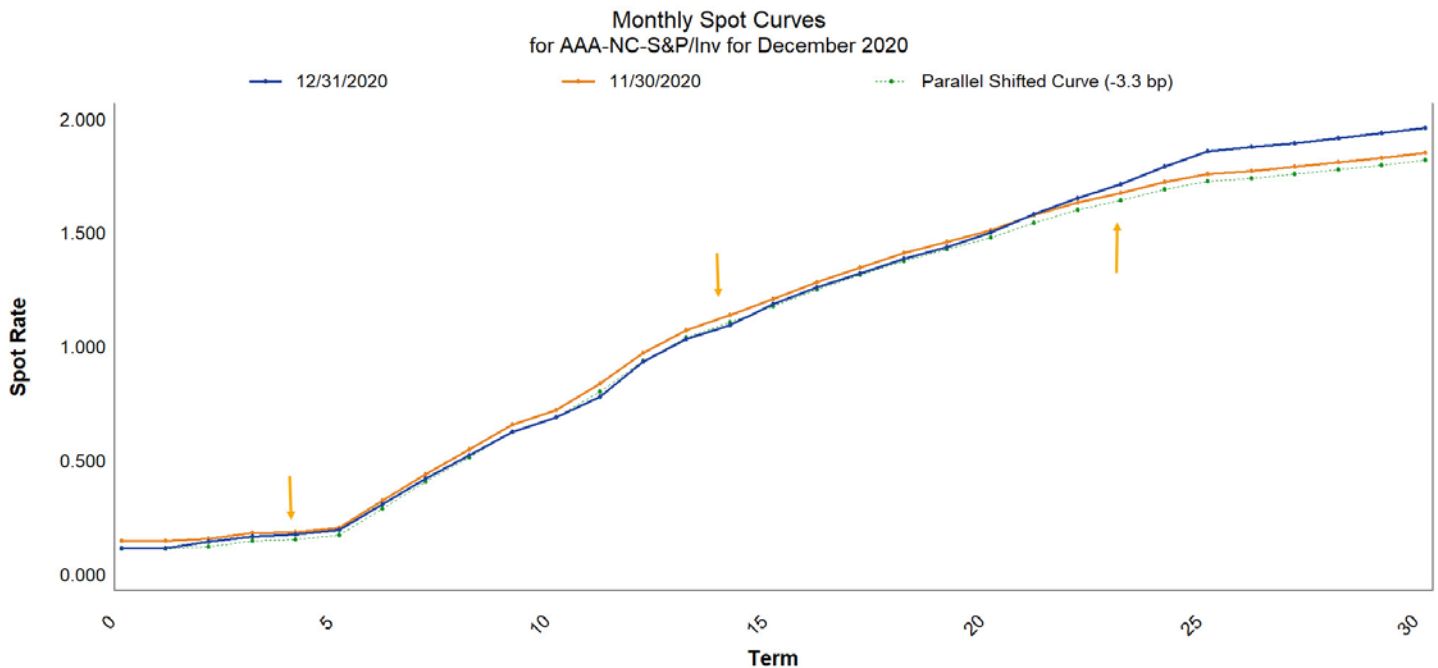
**TABLE 1**

Total Return	0.500%
Coupon Return	0.330%
Market Amortization Return	-0.239%
Parallel Shift Return	0.168%
Non-Parallel Shift Return	-0.091%
Sector/Quality Return	0.337%
Residual Price Return	-0.004%

## Interpretation

Figure 1 shows the overall change in the muni AAA non-callable spot curve for December. As depicted, the spot curve had almost no yield curve movement on the short end and an increase starting around the 22-year point resulting in an overall steepening.

**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 0.168% can be calculated from the -3.3 bp change in the ten-year point of the spot curve, as shown in Table 2.

**TABLE 2**

Change in 10-Year Spot Rate <sup>(a)</sup>	-3.29
Total Key Rate Duration <sup>(b)</sup>	5.1138
Parallel Shift Return <sup>(-b*a)</sup>	0.168

The Non-Parallel Shift Return was -0.091%, with most rates on the curve increasing more than the ten-year point did. Table 3 shows the full calculation.

**TABLE 3**

	6 Mos	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs	20 Yrs	30 Yrs
Non-Parallel Change (bp)	0.29	0.29	1.99	1.79	2.19	1.16	0.00	2.40	14.34
Key Rate Duration	0.0342	0.1139	0.2480	0.5493	0.9823	1.0843	1.1660	0.7762	0.1596
Non-Parallel Shift Return	0.000	0.000	-0.005	-0.010	-0.021	-0.013	0.000	-0.019	-0.023

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). The index's overall Sector/Quality Return was 0.337%.

Average option-adjusted spread for quality groupings showed a reach for yield pattern, with BBB-rated bonds tightening 25.2 bp overall and A-rated bonds tightening 10.6 bp overall.

Every single sector demonstrated negative overall changes in option adjusted spread. The sectors exhibiting the largest tightening in option-adjusted spread (weighting by both market value and duration) were Health Care and Transportation, both in the double-digits.

The only Sector/Quality grouping to demonstrate any negative contribution (a minimal -0.00003%) was the unrated Prere/ETM grouping. Therefore, there is no table this month for negative contributions.

The sector/quality categories with the biggest positive contributions, considering both weight and the groupings' own sector/quality returns, are listed in Table 4.

**TABLE 4**

	A-rated Transportation	AA-rated Health Care	A-rated Health Care	AA-rated Tax-Supported (Excl. GO's)
Change in Duration-Adjusted Average OA Spread <sup>(a)</sup>	-13.093	-14.100	-14.474	-6.469
Total Key Rate Duration <sup>(b)</sup>	5.809	5.903	6.289	5.085
Sector/Quality Return <sup>(b*a)</sup>	0.761	0.832	0.910	0.329
Market Value Weight <sup>(c)</sup>	5.520	3.542	2.959	7.748
Contribution to Duration <sup>(b*c)</sup>	0.32065	0.20911	0.18610	0.39393
Contribution to Sector/Quality Return <sup>(b*c*a)</sup>	0.04198	0.02948	0.02694	0.02548

The Coupon Return was 0.330%, based on the index's average coupon of 4.382%. The average beginning-of-month market yield was 1.067%, resulting in a Market Amortization Return of -0.239%. These two terms sum to a total income effect of 0.091%.

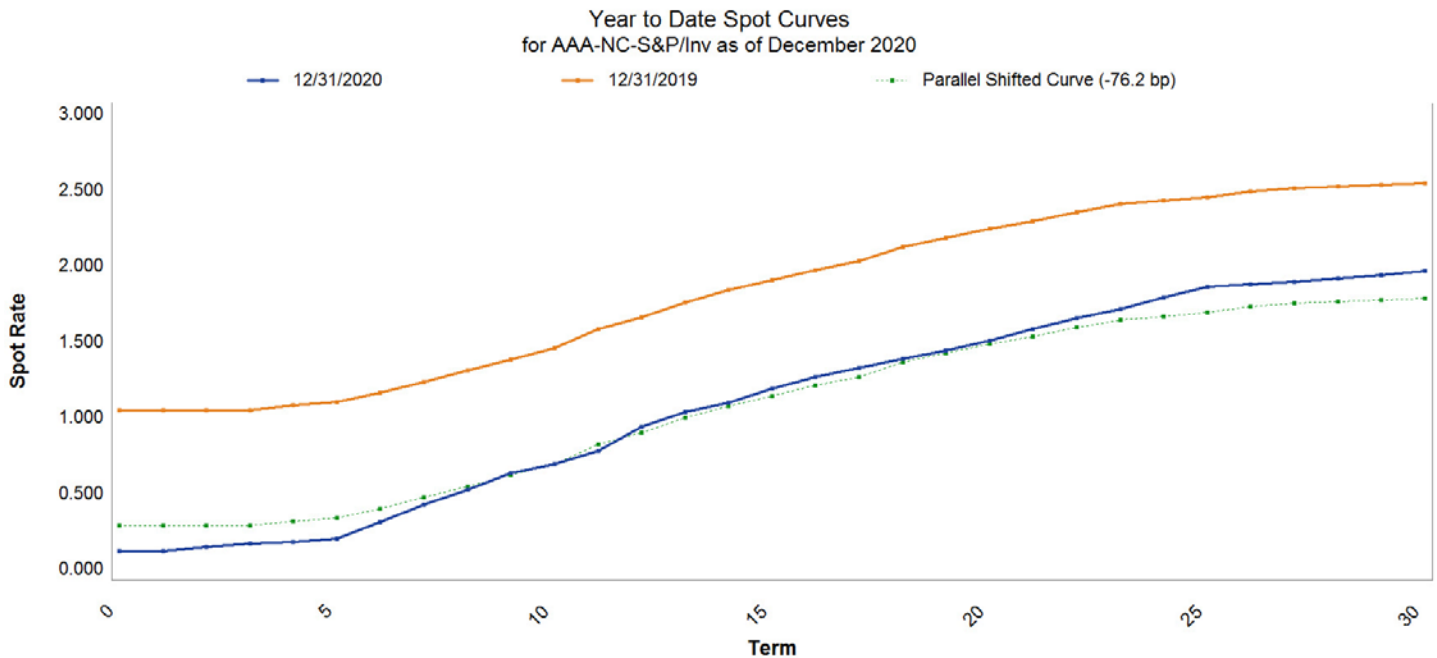
*Note that Coupon Return reflects both interest payments and changes in accrued interest throughout the month. And Market Amortization Return is negative because of the large number of premium bonds in the index due to the low yield curve environment. Premium bond prices, absent any change in yield,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

## 2020 Year in Review

Table 5 contains the 2020 monthly and annual total returns and their breakdowns.

<b>TABLE 5</b>	<b>Total Return</b>	<b>Coupon Return</b>	<b>Market Amort Return</b>	<b>Parallel Shift Return</b>	<b>Non-Parallel Shift Return</b>	<b>Sector/Quality Return</b>	<b>Residual Price Return</b>
<b>YEAR</b>	4.865%	3.987%	-2.549%	4.029%	0.292%	-1.546%	0.653%
<b>Dec</b>	0.500%	0.330%	-0.239%	0.168%	-0.091%	0.337%	-0.004%
<b>Nov</b>	1.207%	0.312%	-0.205%	1.096%	-0.162%	-0.018%	0.183%
<b>Oct</b>	-0.168%	0.333%	-0.235%	-0.480%	0.082%	0.136%	-0.004%
<b>Sep</b>	0.010%	0.312%	-0.215%	-0.216%	0.114%	0.023%	-0.008%
<b>Aug</b>	-0.288%	0.322%	-0.227%	-0.849%	0.331%	0.217%	-0.082%
<b>July</b>	1.355%	0.337%	-0.220%	1.162%	-0.067%	-0.023%	0.166%
<b>June</b>	0.589%	0.317%	-0.190%	-0.155%	-0.058%	0.693%	-0.018%
<b>May</b>	2.958%	0.348%	-0.184%	3.430%	0.172%	-1.278%	0.471%
<b>Apr</b>	-1.105%	0.321%	-0.166%	-0.673%	0.323%	-0.611%	-0.299%
<b>Mar</b>	-2.939%	0.343%	-0.236%	-1.894%	-0.119%	-0.941%	-0.092%
<b>Feb</b>	1.160%	0.303%	-0.194%	1.015%	-0.202%	0.106%	0.132%
<b>Jan</b>	1.604%	0.330%	-0.184%	1.497%	-0.029%	-0.217%	0.208%

The table shows that Parallel Shift Return was the biggest contributor to the overall total return, reflecting an overall decrease in the curve level throughout the year (along with some steepening), as shown in Figure 2.



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

This overall decrease is reflected more subtly in the decrease of Mkt Amort Return over the course of the year, mirroring general decreases in bond yields.

The table also shows that March, April, and May saw significant spread widening, contributing to an overall negative Sector/Quality Return for the year despite partial recoveries in months like June and December.

Investortools, Inc.'s Custom Index Manager product can perform this same return attribution on portfolios or a group of portfolios to reveal how and why their historical performance differed from an index's.

Breaking down total return in this way does more than explain how the total return came to be. It also allows rough calculation of what total return might have been without these market movements. For example, combining the annual Coupon and Mkt Amort Returns gives a 1.438% total income effect, a rough "baseline" for what total return would have been with no market movements at all. However, accurately projecting an index's performance under various curve or spread scenarios requires complete modeling of every bond in the index. This can be done in Investortools, Inc.'s Custom Index Manager product. Custom Index Manager can perform the same calculations on a portfolio or group of portfolios and reveal how and why their projected performance differs from an index's.

## 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](http://www.invtools.com) or [click here to contact us](#).

To request a product demonstration, please contact [sales@invtools.com](mailto:sales@invtools.com).

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