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Municipal Bond Market Performance

March 2020

Overview

The municipal bond market, as measured by the Standard & Poor's Municipal Bond Investment Grade Index, had a Total Return of -2.939% in March 2020, consisting of the components displayed in Table 1.

March was a month of both historic current events and historic market volatility. February's "flight to bonds" turned into March's "flight from munis", creating a double whammy of a significant increase in the curve level at the same time that most sector-rating categories saw spreads widen. The slump erased the gains of the previous two months and caused the fifth worst monthly return in the index's 21-year history, and its worst since November 2016, as shown in Table 2.

TABLE 1

Total Return	**-2.939%**
Coupon Return	0.343%
Market Amortization Return	-0.236%
Parallel Shift Return	-1.894%
Non-Parallel Shift Return	-0.119%
Sector/Quality Return	-0.941%
Residual Price Return	-0.092%

TABLE 2

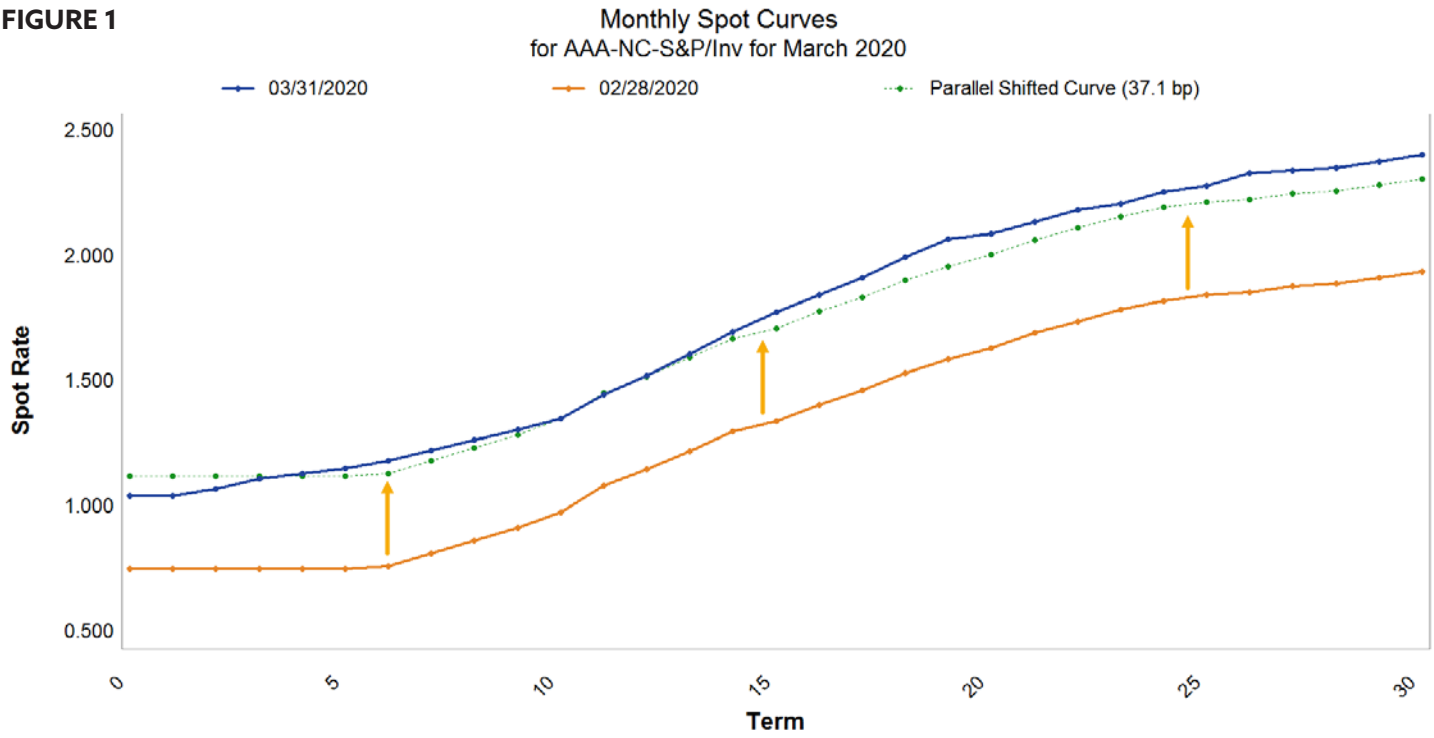
Month	Total Return	Coupon Return	Market Amortization Return	Remaining Price Return
Feb. 2008	-4.822%	0.428%	-0.126%	-5.124%
Sept. 2008	-4.817%	0.482%	-0.117%	-5.182%
July 2003	-3.644%	0.459%	-0.152%	-3.951%
Nov. 2016	-3.436%	0.346%	-0.193%	-3.589%
March 2020	-2.939%	0.343%	-0.236%	-3.046%
June 2013	-2.908%	0.422%	-0.246%	-3.084%
April 2004	-2.427%	0.425%	-0.129%	-2.723%
Oct. 2009	-2.304%	0.427%	-0.147%	-2.584%
Nov. 2010	-2.103%	0.434%	-0.154%	-2.383%
March 2002	-1.935%	0.457%	-0.135%	-2.257%

Interpretation

The biggest driver of return for March was the spot curve's close-to-parallel increase of 37.1 bp (measured at the ten-year point), as depicted in Figure 1. This resulted in a Parallel Shift Return of -1.894%, as outlined in Table 3.

Portfolios with a longer duration than the index would have likely experienced an even more negative Parallel Shift Return than that, whereas for shorter portfolios Parallel Shift Return would have likely been not as negative.

FIGURE 1



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

TABLE 3

Change in 10-Year Spot Rate[a]	37.14
Total Key Rate Duration[b]	5.1004
Parallel Shift Return[-b*a]	-1.894

While this is one of the largest one-month increases in the muni curve level in the past twenty years, it is nonetheless small compared to the roughly 200 bp increase that occurred mid-month between March 9 & 20 before the partial recovery on March 26.

The non-parallel effect for March, largely a steepening, was much smaller. Table 4 shows this effect at each key point of the curve.

TABLE 4	6 Mos	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs	20 Yrs	30 Yrs
Key Rate Duration	0.031	0.102	0.251	0.554	0.998	1.241	1.117	0.666	0.141
Non-Parallel Change	-8.1	-8.1	-5.1	-1.1	3.0	4.0	0.0	8.3	9.5
Non-Parallel Shift Return	-0.003	-0.008	-0.013	-0.006	-0.030	0.050	0.000	-0.055	-0.013

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

Anchoring the market's total return amidst the storm was its Coupon Return of 0.343%, based on the index's average coupon of 4.423%. However, the very low yield environment produced an average beginning-of-month market yield of only 1.229%, resulting in a Market Amortization Return of -0.236%. These two terms sum to a total income effect of 0.108%.

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.

The overall Sector/Quality Return was -0.941%. BBB-rated bonds were hit particularly hard, with a 108 bp increase in average option-adjusted spread (adjusted by duration), with lower-rated GOs, tax-supported, ICR/PCR, transportation and tobacco settlement bonds tending to fare the worst. The only sector with an overall decrease in OAS was Housing.

Portfolios overweight in lower-rated bonds would have likely fared worse than the index for Sector/Quality Return, whereas underweighting in lower-rated bonds &/or overweighting in higher-rated bonds might have resulted in less negative Sector/Quality Return.

The sector/quality categories with the biggest negative contributions, considering both weight and the groupings' own sector-quality returns, are listed in Table 5. The biggest positive contributors are listed in Table 6.

TABLE 5

	A-rated Transportation	BBB-rated Transportation	A-rated IDR/PCR	BBB-rated State GO
Change in Duration-Adjusted Average OA Spread[(a)]	49.826	120.659	96.372	214.855
Total Key Rate Duration[(b)]	5.622	6.344	4.745	4.375
Sector/Quality Return[(-b*a)]	-2.801	-7.654	-4.573	-9.401
Market Value Weight%[(c)]	5.973	1.152	1.712	0.689
Contribution to Duration[(b*c)]	0.33583	0.07306	0.08122	0.03015
Contribution to Sector/Quality Return[(-b*c*a)]	-0.16733	-0.08815	-0.07827	-0.06478

TABLE 6

	AA-rated Housing	AAA-rated Local GO	AAA-rated Housing	AAA-rated Water/Sewer
Change in Duration-Adjusted Average OA Spread[(a)]	-20.372	-3.933	-19.554	-1.400
Total Key Rate Duration[(b)]	6.791	5.242	7.443	5.745
Sector/Quality Return[(-b*a)]	1.383	0.206	1.455	0.080
Market Value Weight%[(c)]	1.726	8.546	0.651	1.454
Contribution to Duration[(b*c)]	0.11721	0.44798	0.04844	0.08352
Contribution to Sector/Quality Return[(-b*c*a)]	0.02388	0.01762	0.00947	0.00117

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

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