Municipal Market Insight

February 2019

Portfolio Advisory Group – U.S. Fixed Income Strategies

What's inside

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Portfolio diversification

Diversification is a key tenet of successful investing, yet it can mean making hard decisions that push investors out of their comfort zone. This month's feature explores geographic diversification for municipal bond portfolios that goes against the home-state bias held by many muni investors. Another way for investors to diversify is to have exposure to the full muni curve, long and short maturities. The current interest rate environment with a flatter Treasury yield curve can cause investors to question the value in buying longer-dated issues, but here again we think the hard(er) decision is the most favorable one.

The municipal bond yield curve, from short to long maturities, remains steep and investors are being rewarded with higher yields for extending maturities. Furthermore, we think the Fed's recent monetary policy signals—a pause in rate hikes—suggest rates are unlikely to move higher, which argues for locking in longer rather than shorter yields.

Fed policymakers have executed a significant "dovish" pivot, suggesting they will pause in hiking rates, but many Fed watchers think hikes will resume this summer. Historical precedence, however, suggests the Fed is more likely to cut rather than hike rates following a pause, and Fed Chair Jerome Powell raised this possibility late last month. Therefore, we think this pause may be more permanent and a rate cut could be on the 2020 calendar.

U.S. Treasury rate forecasts (% as of January 11, 2019)

	2019				2020			
	Q1E	Q2E	Q3E	Q4E	Q1E	Q2E	Q3E	Q4E
FF	2.75	3.00	3.00	3.00	3.00	3.00	3.00	3.00
2-yr	2.90	3.25	3.20	3.15	3.10	3.10	3.10	3.05
5-yr	2.95	3.30	3.30	3.20	3.20	3.20	3.15	3.10
10-yr	3.05	3.40	3.40	3.30	3.25	3.25	3.20	3.15
30-yr	3.25	3.60	3.60	3.50	3.45	3.40	3.35	3.30

Source - RBC Economics

Treasuries vs. municipals

	5-yr TSY	5-yr Muni	10-yr TSY	10-yr AAA Muni	30-yr TSY	30-yr AAA Muni
Beginning of month (1/1/19)	2.51%	1.92%	2.69%	2.27%	3.02%	2.99%
Mid-month (1/15/19)	2.53%	1.83%	2.71%	2.20%	3.07%	3.03%
End of month (1/31/19)	2.44%	1.76%	2.63%	2.17%	3.00%	3.02%

Source - Bloomberg (Treasury),
Thomson Reuters TM3 (Municipals)

RBC Wealth Management

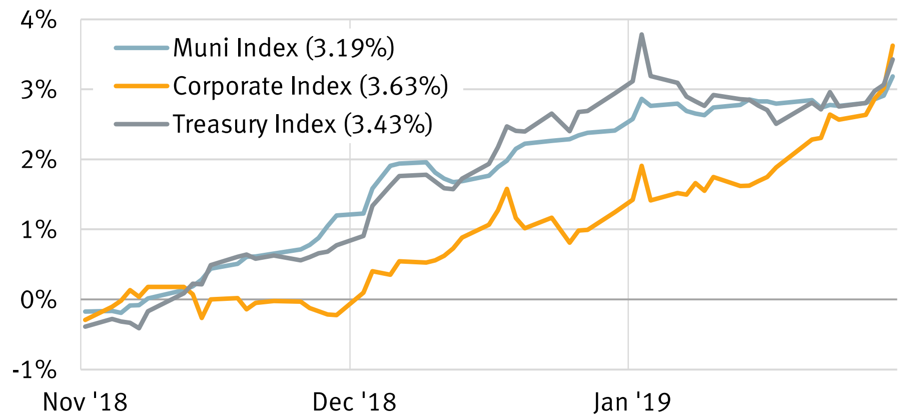
Despite February's weaker start, we believe munis are well positioned to post positive returns for the month.

Market investment strategy and market commentary

Market performance – Munis post strong returns for a third straight month

The muni market started 2019 where it ended 2018, posting strong gains for the third consecutive month. Following gains of 1.11% and 1.20% in November and December, respectively, munis returned 0.76% in January.

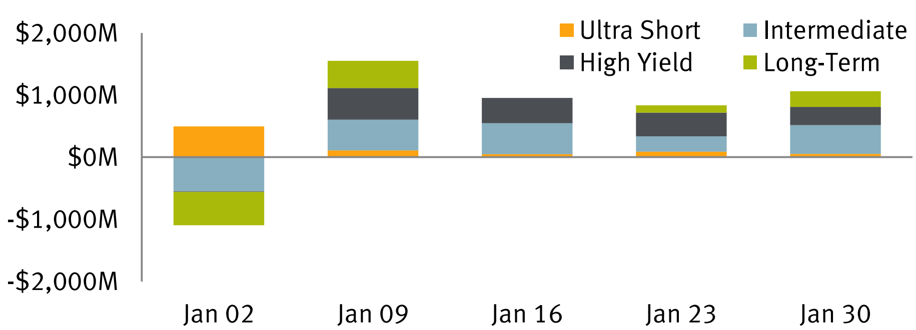
Bloomberg Barclays Indexes



Source - Bloomberg; data through 1/31/19

The November and December rallies were impressive in light of a drop in demand for muni bond funds that began in early September 2018. Over the 17-week period leading up to December 26, investors withdrew money from muni funds in 14 of those weeks. After withdrawing $599M from muni funds in the first week of January, the Fed's dovish comments on future interest rate hikes seem to have swayed investor sentiment, bringing fixed income back in vogue. For the weeks covering January 9 through January 30, investors added $4.4B to muni funds, with a heavy focus on intermediate and high-yield bond funds.

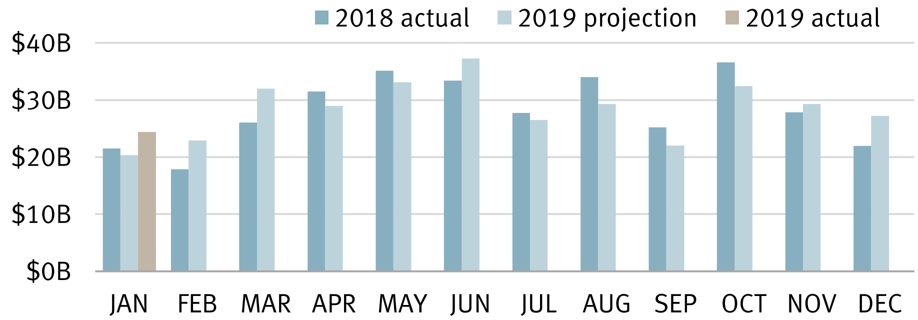
2019 muni fund flows



Source - Lipper U.S. Fund Flows, RBC Wealth Management; weekly data through 1/30/19

An 11.6% bump in January supply, while sizable, was outpaced by maturities, redemptions, and interest payments in excess of $8B. This left investors in search of fewer reinvestment opportunities, providing a boost to the market. Despite February's weaker start, we believe munis are well positioned to post positive returns for the month, with $33.8B of maturities, redemptions, and interest payments set to outpace our estimate of $23B of primary market issuance, while we expect a steady influx into muni funds during February.

2019 issuance projections



Source - RBC Capital Markets

The muni market environment will likely shift during March through June, as we expect supply to outpace maturities, redemptions, and interest payments, before reversing course in July and August, when demand should once again outstrip supply. We believe investors should continue to focus on high-grade, high-coupon bonds in the 20-year maturity space where investors can capture 100% of the comparable Treasury.

Tax Cuts and Jobs Act of 2017 and opportunities created for AMT bonds

The alternative minimum tax (AMT) was originally enacted in 1969 to ensure that high-income earners paid their fair share of taxes, regardless of how many deductions they included on their tax returns. However, a major flaw of the AMT legislation was that tax exemptions were not indexed for inflation, and, as a result, over time more middle income taxpayers were ensnared by AMT.

AMT bonds still yield more than generic tax-exempt bonds in many cases and therefore present a yield pickup opportunity.

The Tax Cuts and Jobs Act passed in 2017 made numerous changes to tax policy, including changes to AMT. Consequently, the AMT threshold was raised to $1M for joint filers and $500,000 for individuals for tax year 2018, and tax exemptions were permanently indexed for inflation going forward. The higher thresholds will significantly reduce the number of taxpayers subject to AMT.

Historically, debt offerings subject to AMT required higher yields compared to traditional tax-exempt bonds to compensate for the potential tax consequences. Yet despite the recent legislative changes that free most taxpayers from AMT, AMT bonds still yield more than generic tax-exempt bonds in many cases and therefore present a yield pickup opportunity for investors that are no longer subject to AMT.

This month’s focus: Multistate diversification is achievable without sacrificing returns

Investors’ desire to minimize their tax burden is a fundamental tenet of municipal bond investing, but, as a result, investors tend to fixate exclusively on their home-state muni bonds. Unfortunately, in doing so, investors both break a cardinal rule of investing and unwittingly subject themselves to unique state-specific risks that could have been avoided if portfolios were geographically diversified.

In isolation, the benefits gained through geographic diversification far outstrip the tax advantage of buying only in-state bonds. The benefits are only magnified when investors achieve comparable taxable-equivalent yields on out-of-state bonds. Depending on the investor’s marginal state income tax rate, realizing taxable-equivalent yields on out-of-state bonds is surprisingly attainable, especially in the current low yield environment.

Often there are more advantageous investment opportunities outside the investor's home state.

States and municipalities are intertwined

Investors may not fully appreciate the high correlation of all governments within a state because most state-level decisions have a trickle-down effect on all lower levels of government. Therefore, an investor cannot diversify away from a state-level-induced risk simply by purchasing more discrete names within the state. A timely example is underfunded pension liabilities that many states ultimately must address. These pension challenges will require difficult decisions that may include diminished state support for all its local municipalities. In turn, all local governments within these states will likely experience varying degrees of financial pressure.

History is littered with examples of unforeseen events such as industry collapses, technological shifts, and irresponsible political policies that compromised local, state, and regional credit quality. Such events can lead to rating downgrades and price declines for all municipalities correlated with the contagion. In our opinion, muni bond investors can easily minimize these pitfalls by geographically diversifying their portfolios.

Single-state portfolios exclude opportunities

Single-state portfolios also limit investment opportunities by excluding all municipalities located outside a state's borders. As a result, investors may not be maximizing their returns because they are foregoing thousands of out-of-state options. The muni market is a cornucopia of quality issuers. However, the sheer number of issuers, especially infrequent issuers, makes the market somewhat inefficient. As a result, yield opportunities are more prevalent.

Investors may also not fully appreciate that muni issuers in states without income taxes must offer higher yields to attract investors because these states do not have a native buyer base. (In-state investors are indifferent to geographic location because they are not subject to state tax consequences.) Conversely, in affluent high-tax states, muni yields are frequently suppressed because there is such demand from in-state buyers seeking to shelter income. The confluence of these circumstances often means that there are more advantageous investment opportunities outside the investor's home state.

Realizing taxable-equivalent yields is surprisingly achievable

Superficially, it makes logical sense to purchase in-state bonds to avoid taxes; however, in many cases realizing the extra yield necessary to offset the tax liability on out-of-state muni bonds is possible, especially in this current low yield environment.

Assuming two muni bonds are both federally tax-exempt and of similar credit quality, purely from a yield prospective, an investor should be indifferent to the investment choice if the out-of-state bond's taxable-equivalent yield is at least equal to the in-state bond's yield. Of course, this supposition ignores the added fundamental benefits of geographic diversification.

Regardless, the table on the following page illustrates in each state the yield required on an out-of-state muni bond to offset the maximum state income tax rate compared to an in-state muni bond. Interestingly, on average, investors must only realize 0.3% in additional yield on an out-of-state bond compared to an in-state bond that is yielding 4.0%. Naturally, the actual additional incremental yield required will vary depending on the individual state's income tax rate.

Furthermore, most states have graduated income tax rates; therefore, the actual additional yield necessary for an individual investor may be less than the maximum rate in the table on the following page. To get into the weeds, we also did not include

Investing in muni bonds must be about more than just maximizing tax avoidance.

Out-of-state equivalent yield

	Income Tax Rate (max.)	3.00%	3.50%	4.00%		Income Tax Rate (max.)	3.00%	3.50%	4.00%
AL	5.00%	3.16%	3.68%	4.21%	NE	6.84%	3.22%	3.76%	4.29%
AK	0.00%	-	-	-	NV	0.00%	-	-	-
AZ	4.54%	3.14%	3.67%	4.19%	NH	5.00%	3.16%	3.68%	4.21%
AR	6.90%	3.22%	3.76%	4.30%	NJ	8.97%	3.30%	3.84%	4.39%
CA	13.30%	3.46%	4.04%	4.61%	NM	4.90%	3.15%	3.68%	4.21%
CO	4.63%	3.15%	3.67%	4.19%	NY	8.82%	3.29%	3.84%	4.39%
CT	6.99%	3.23%	3.76%	4.30%	NC	5.50%	3.17%	3.70%	4.23%
DE	6.60%	3.21%	3.75%	4.28%	ND	2.90%	3.09%	3.60%	4.12%
FL	0.00%	-	-	-	OH	5.00%	3.16%	3.68%	4.21%
GA	6.00%	3.19%	3.72%	4.26%	OK	5.00%	3.16%	3.68%	4.21%
HI	11.00%	3.37%	3.93%	4.49%	OR	9.90%	3.33%	3.88%	4.44%
ID	7.40%	3.24%	3.78%	4.32%	PA	3.07%	3.10%	3.61%	4.13%
IL	4.95%	3.16%	3.68%	4.21%	RI	5.99%	3.19%	3.72%	4.25%
IN	3.23%	3.10%	3.62%	4.13%	SC	7.00%	3.23%	3.76%	4.30%
IA	8.98%	3.30%	3.85%	4.39%	SD	0.00%	-	-	-
KS	5.70%	3.18%	3.71%	4.24%	TN	3.00%	3.09%	3.61%	4.12%
KY	6.00%	3.19%	3.72%	4.26%	TX	0.00%	-	-	-
LA	6.00%	3.19%	3.72%	4.26%	UT	5.00%	3.16%	3.68%	4.21%
ME	7.15%	3.23%	3.77%	4.31%	VT	8.95%	3.29%	3.84%	4.39%
MD	5.75%	3.18%	3.71%	4.24%	VA	5.75%	3.18%	3.71%	4.24%
MA	5.10%	3.16%	3.69%	4.21%	WA	0.00%	-	-	-
MI	4.25%	3.13%	3.66%	4.18%	WV	6.50%	3.21%	3.74%	4.28%
MN	9.85%	3.33%	3.88%	4.44%	WI	7.65%	3.25%	3.79%	4.33%
MS	5.00%	3.16%	3.68%	4.21%	WY	0.00%	-	-	-
MO	5.90%	3.19%	3.72%	4.25%	DC	8.95%	3.30%	4.39%	5.49%
MT	6.90%	3.22%	3.76%	4.30%					
					Average		0.21%	0.25%	0.30%

Source - Federation of Tax Administrators; RBC Wealth Management; average = average of additional yield one would need to pick up for an out-of-state bond for each coupon range

local income tax rates that will impact some investors, but for the vast majority of investors, the table illuminates the possibility that geographic diversification may be reasonably achieved without sacrificing returns. This outcome is especially true in states with lower maximum income tax rates simply because the income tax consumes a smaller percentage of the out-of-state bond's investment return.

Parting thoughts

Investing in muni bonds must be about more than just maximizing tax avoidance. Not only does exclusively owning home-state muni bonds unwittingly subject investors to unique state-specific risks, it also excludes potentially advantageous out-of-state investment opportunities. In fact, investors may actually improve the aggregate credit quality of their portfolios by geographically diversifying away from unpredictable state-specific risks that could wreak havoc on a single-state muni bond portfolio.

The credit benefits of geographic diversification are unquestionable, in our view, and these benefits are simply magnified if investors can realize at least comparable

The PROMESA board identified all bonds backed by Puerto Rico's good faith, credit, and taxing power issued in 2012 and 2014 as debt that should be invalidated.

taxable-equivalent yields on out-of-state bonds without sacrificing credit quality. Given the small incremental yield necessary to achieve such results coupled with the yield opportunities within the fractured muni market, this outcome is certainly possible.

Territorial update

Guam – Rating affirmation and outlook revision

On January 10, Moody's affirmed the government's Ba1 rating and revised its outlook to stable from negative. The revision reflects the recent stabilization of the government's financial position. The temporary increase in the business privilege tax, one-time revenues from a tax amnesty program, and spending cuts helped offset the loss of income from the 2017 federal tax cuts. The government made the increase in the business privilege tax permanent to offset lost tax revenue for 2019.

Puerto Rico updates

Puerto Rico – Economic Activity Index (EAI)

The commonwealth's EAI contracted for the third consecutive month in November, declining 0.2% from October and 1.3% since August 2018. This signals that the economic recovery that started following Hurricane Maria could be slowing as insurance funds from FEMA begin to end.

Puerto Rico – Oversight board seeks to invalidate certain GO debt

The Financial Oversight and Management Board of Puerto Rico (PROMESA board) stated that more than $6B of the roughly $13B of general obligation (GO) bonds outstanding should be voided because the bonds breached the commonwealth's constitutional debt limit. The board identified all bonds backed by Puerto Rico's good faith, credit, and taxing power issued in 2012 and 2014 as debt that should be invalidated.

Puerto Rico – Sales Tax Financing Corp. (COFINA)

On January 10, the PROMESA board issued a press release confirming all classes of senior and subordinate lien bondholders overwhelmingly accepted the Plan of Adjustment (restructuring). Under the restructuring, senior lien COFINA bondholders would experience 93.015% principal recovery through a combination of new bonds and other cash payments, while subordinate lien COFINA holders would experience 56.415% principal recovery through a combination of new bonds and other cash payments.

On February 5, Judge Laura Taylor Swain approved the COFINA Plan of Adjustment, pursuant to which senior lien bondholders will achieve 93% principal recovery and subordinate lien bondholders will achieve 56% principal recovery in the form of new bonds. The judge's order is final and binding and shall not be subject to challenge in any court, except as permitted under applicable law. Furthermore, the federal bankruptcy court shall retain jurisdiction to enforce the terms of the Plan of Adjustment until the COFINA bonds have been paid in full and to adjudicate any claims that may arise.

State news

California – Despite a swelling surplus, state could still be affected by recession

The state's Legislative Analyst Office (LAO) reported California's $20.6B budget surplus, while "extraordinary," requires continued government attention. The governor and legislature should remain focused on increasing reserve balances to allow the state to weather a recession. The LAO said the state would need $20B in reserves in a mild recession and $25B in reserves for a moderate recession.

CalPERs, the nation's largest U.S. public pension system, said its investments lost ground in the first half of FY2019.

California Public Employees' Retirement System (CalPERs) – Funding level drops

CalPERs, the nation's largest U.S. public pension system, said its investments lost ground in the first half of FY2019 (year-end June 30), losing 3.9%, with the fund reporting total assets of $348.8B as of January 18. CalPERs reported the fund earned 8.6% over the past 12 month despite the drag over the past six months. CalPERs' funding level dropped a percentage point to 65% funded.

Connecticut – Fiscal picture improves

The state government revised its revenue projections in the middle of January to reflect increased collections from online sales. The state raised its revenue projections by $200M and now projects a budget surplus of $462M for FY2019 (year-end June 30).

Illinois – Newly elected Governor Pritzker sets out priorities

Governor J.B. Pritzker, who took office in early January, set a balanced budget and adoption of an infrastructure program with new revenue support among his top priorities for the General Assembly's spring session. The Democratic governor enters office enjoying three-fifths Democratic super-majorities in the Illinois House and Senate, which could prove favorable in helping put forward his fiscal agenda.

State/territory credit ratings

State/Territory	Fitch	Moody's
Alabama	AA+	Aa1
Alaska	AA	Aa3
Arizona	-----	Aa2
Arkansas	-----	Aa1
California	AA-	Aa3
Colorado	-----	Aa1
Connecticut	A+	A1
Delaware	AAA	Aaa
Florida	AAA	Aa1
Georgia	AAA	Aaa
Hawaii	AA	Aa1
Idaho	AA+	Aa1
Illinois	BBB	Baa3
Indiana	AAA	Aaa
Iowa	AAA	Aaa
Kansas	-----	Aa2
Kentucky	AA-	Aa3
Louisiana	AA-	Aa3
Maine	AA	Aa2
Maryland	AAA	Aaa
Massachusetts	AA+	Aa1
Michigan	AA	Aa1
Minnesota	AAA	Aa1
Mississippi	AA	Aa2
Missouri	AAA	Aaa
Montana	AA+	Aa1
Nebraska	-----	Aa1

State/Territory	Fitch	Moody's
Nevada	AA+	Aa2
New Hampshire	AA+	Aa1
New Jersey	A	A3
New Mexico	-----	Aa1
New York	AA+	Aa1
North Carolina	AAA	Aaa
North Dakota	-----	Aa1
Ohio	AA+	Aa1
Oklahoma	AA	Aa2
Oregon	AA+	Aa1
Pennsylvania	AA-	Aa3
Rhode Island	AA	Aa2
South Carolina	AAA	Aaa
South Dakota	AAA	Aaa
Tennessee	AAA	Aaa
Texas	AAA	Aaa
Utah	AAA	Aaa
Vermont	AAA	Aa1
Virginia	AAA	Aaa
Washington	AA+	Aa1
West Virginia	AA	Aa2
Wisconsin	AA+	Aa1
Wyoming	-----	-----
District of Columbia	AA+	Aaa
Guam	-----	-----
Puerto Rico	-----	Ca
Virgin Islands	-----	-----

Source - Fitch Ratings, Moody's Investors Service

The governor took office facing $7.5B of unpaid bills, a roughly $1B deficit in the current budget, and $133.7B in unfunded pension liabilities.

Illinois – Backlog of unpaid bills set to rise

Illinois' backlog of over $7B of unpaid bills (which reached a high of $16.7B in November 2017) is set to rise again in the current FY2020. The state has more than $1.5B in scheduled pension, employee pay, and education funding hikes that will make it difficult for the governor to reduce the state's balance sheet liabilities. The rating agencies have cited the state's rising backlog for previous downgrades and combined with rising budget deficits, Illinois' rating could come under pressure.

Kentucky – Pension reform 2.0

The state will make its second attempt to reform several of its retirement systems in this year's legislative session. In 2018, the state Supreme Court struck down the state's previous attempt to reform the system. Fitch Ratings said that the current attempt would have no impact on the state's rating because the anticipated modest savings and proposed benefit changes and subsequent litigation would have little impact on the state's finances.

Michigan – Revenue prospects improve

Michigan sees improving revenue prospects for the next two years as the state realizes an additional $265M in tax revenues through FY2019 (year-end November 30) and approximately $225M for FY2020. The state is experiencing higher-than-expected earnings in both individual and corporate income taxes, according to members of the state's Consensus Revenue Estimating Conference including state Treasurer Rachel Eubanks.

New Jersey – Is state facing tax increases? Budget cuts?

New Jersey Governor Phil Murphy received bad financial news in December when he was informed that tax collections for that month dipped 10.1% y/y, or $355M. At the same time, state revenues grew at a modest 2.1% y/y, leaving the state's Department of Treasury $700M short of expectations. The Department of Treasury blamed the revenue shortfall on 2017's federal tax reform and the limit it placed on state and local tax deductions.

New York – Governor may need to revisit budget

New York reported it collected $2.3B less than projected in income tax revenues in December and January.

The state reported it collected $2.3B less than projected in income tax revenues in December and January. The shortfall comes one month after Governor Andrew Cuomo submitted his $175B budget to the legislature in early January. In the event the trend of high-income earners leaving the state continues, the governor and legislature may need to make budget revisions. This may require some tough decisions and affect how much the state spends on high-ticket items, including health, education, infrastructure, and the state's planned middle-income tax cut. The governor has directly blamed the revenue declines on wealthy residents leaving New York for second homes in Florida.

Oklahoma – State needs to boost rainy day fund

Governor Kevin Stitt is pushing lawmakers to increase the state's rainy day fund to over $1B to avoid a repeat of the budget crisis that followed the 2014 collapse of oil prices and worsened by income tax cuts implemented by the previous administration. Revenue enhancements and a boost in oil prices have improved the state's budget surplus to $612M.

Regional updates and other market news

Local issuer rating updates

- **Newark, NJ:** On February 4, Moody's rewarded the state's most populous city with a one-notch upgrade to Baa2 from Baa3 and maintained a positive outlook on the city. The upgrade reflects the city's recent positive financial operations and the expectations of continued positive results, which should lead to improved reserve and liquidity levels.
- **New York State Thruway Authority:** On January 15, Moody's upgraded the authority's senior lien rating one notch to A1 from A2 and the junior lien rating to A2 from A3 with a stable outlook on both tranches of debt. Moody's cited the on-time and on-budget replacement of the Tappan Zee Bridge as driving the rating upgrades.
- **York County, SC:** On January 19, Moody's upgraded the South Carolina county's rating to Aaa from Aa1, citing York's rapid growth, diversification of its sizeable tax base, and expectations the local economy will continue its trend of steady growth.
- **Wesleyan University (CT):** On January 25, Moody's affirmed the university's Aa3 rating with a stable outlook. The university's excellent strategic position and national reputation as a selective private liberal arts institution with solid student demand from the U.S. and internationally were main drivers of the rating affirmation.

Other municipal-related news

Catholic Health & Dignity Health – Close merger
On February 1, the two health systems completed a merger that was years in the works. The new entity will be known as CommonSpirit Health and is relocating to Chicago. The merger creates a non-profit health system with approximately $10B of debt and revenues in excess of $29B with operations in 21 states.

Huntington Beach, CA – In litigation with the state
The California beach community was sued by state Attorney General Xavier Becerra at the direction of newly elected Governor Gavin Newsom. The state alleges that Huntington Beach worsened the state's housing shortage by ignoring state plans for more affordable housing units. The lawsuit is the first test of a California law that allows state lawmakers to revoke a city's housing plan that is deemed out of compliance with state standards.

The lawsuit against Huntington Beach is the first test of a California law that allows state lawmakers to revoke a city's housing plan.

Los Angeles Unified School District (LAUSD) – Teachers return to work
Teachers returned to work following a six-day strike in mid-January after successfully negotiating a new contract giving teachers a 6% raise over the next two years. The LAUSD also agreed to hire full-time nurses for every school and to reduce class size by four students in grades 4–12.

Scranton, PA – Residents want answers
On January 9, the FBI raided the offices and home of Mayor Bill Courtright. The FBI confirmed the raid but did not divulge what triggered it. According to a local television station, the raid focused on the city's office of licensing, inspection, and permits. The raid comes as the city is seeking to exit from state oversight under the Pennsylvania Act 47 workout program for distressed communities.

RBC Wealth Management retail trading (1/1/19 – 1/31/19)

Top 10 CUSIPs selling volume to retail customers

CUSIP	Description	Maturity	Coupon	Volume
544525UH9	LA DEPT WTR-REF-A	07/01/2046	5.00	7,795
19645R6D8	COLORADO EDU & CULT-A	03/01/2047	5.00	3,947
38611TAC1	GRAND PARKWAY-B	10/01/2051	5.25	3,794
448492Q68	HUTTO ISD -A	08/01/2049	5.00	3,486
04184RDF4	ARLINGTON-C	02/15/2048	5.00	3,287
64971WUD0	NYC TRANSTNL FIN-E-1	02/01/2041	5.00	3,069
261005PF3	DOWNEY UNIF SD-B	08/01/2039	3.50	2,970
646140DE0	NJ TPK AUTH-A-BAM	01/01/2048	5.00	2,893
6461364J7	NJ TRANSPRTN TRUST-A	12/15/2037	4.00	2,377
93976ABH4	WASHINGTON ST CONVENT	07/01/2058	4.00	2,360

Top 10 CUSIPs buying volume from retail customers

CUSIP	Description	Maturity	Coupon	Volume
64972GPZ1	NEW YORK CITY NY MUNI	06/15/2048	5.00	4,486
870462SE9	SWEETWATER SD-REF	08/01/2036	5.00	2,785
13063DFQ6	CALIFORNIA ST	10/01/2039	5.25	2,591
072024TP7	BAY AREA TOLL AUTH-F1	04/01/2054	5.00	1,652
13063DAZ1	CALIFORNIA ST	11/01/2047	4.00	1,642
650009ZB2	NY TWY-I	01/01/2042	5.00	1,271
254839P49	DISTRICT COLUMBIA	04/01/2040	5.00	1,174
89602REU5	TRIBOROUGH BRID-C-REF	11/15/2036	5.00	1,172
649519AE5	NY LIBERTY DEV	07/15/2047	5.63	1,093
64990AGQ2	NEW YORK ST DORM AUTH	03/15/2042	5.00	1,060

Source - RBC Wealth Management

RBC Capital Markets institutional trading (1/1/19 – 1/31/19)

Top 10 CUSIPs selling volume to institutional customers

CUSIP	Description	Maturity	Coupon	Volume
93974DY51	WASHINGTON ST	08/01/2027	5.00	44,935
795576HK6	SALT LAKE CITY ARPT-A	07/01/2043	5.00	23,324
576000SE4	MA SCH BLDG AUTH-C	08/15/2037	5.00	22,571
58942HAC5	MERCY HEALTHCARE SYSTEM	07/01/2028	4.30	21,615
167725AC4	CHICAGO TRANSIT SER A	12/01/2040	6.90	19,812
882854ZQ8	TX WTR DEV BRD-A	04/15/2023	5.00	18,284
74440DBD5	KY PUB ENERGY AUTH-B	01/01/2049	4.00	17,824
544525YK8	LOS ANGELES CA DEPT O	07/01/2048	5.00	17,338
45506DW92	INDIANA ST FIN AUTH R	02/01/2037	5.00	15,877
64966L5A5	NEW YORK-REF-C	08/01/2024	5.00	15,623

Top 10 CUSIPs buying volume from institutional customers

CUSIP	Description	Maturity	Coupon	Volume
93974DY51	WASHINGTON ST	08/01/2027	5.00	44,871
79766DLW7	SAN FRANCISCO APRT-A	05/01/2036	5.00	29,584
795576HK6	SALT LAKE CITY ARPT-A	07/01/2043	5.00	23,303
51771FAU0	LAS VEGAS CONVENTION	07/01/2049	4.00	22,968
167725AC4	CHICAGO TRANSIT SER A	12/01/2040	6.90	19,547
58942HAC5	MERCY HEALTHCARE SYSTEM	07/01/2028	4.30	18,838
882854ZQ8	TX WTR DEV BRD-A	04/15/2023	5.00	18,272
167725AF7	CHICAGO TRANSIT SER B	12/01/2040	6.90	18,235
544525YK8	LOS ANGELES CA DEPT O	07/01/2048	5.00	17,324
09182RAF8	BLACK BELT ENERGY GAS	12/01/2048	4.00	17,190

Source - RBC Capital Markets

Bond Buyer indexes

	INDEX								
	1 Month	5 Year (4-6)	10 Year (8-12)	15 Year (12-17)	Long Bond (22+)	AAA	AA	A	BAA
Month-to-date total return	0.76%	0.91%	1.09%	0.82%	0.55%	0.80%	0.73%	0.76%	0.80%
Year-to-date total return	0.76%	91.00%	1.09%	0.82%	0.55%	0.80%	0.73%	0.76%	0.80%

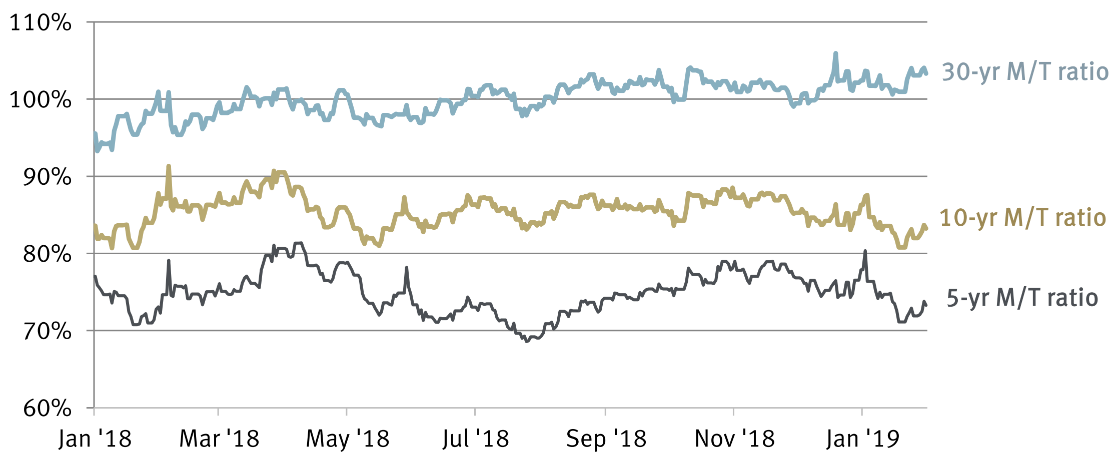
Source - *The Bond Buyer*

Barclays Municipal Index returns

	INDEX								
	1 Month	5 Year (4-6)	10 Year (8-12)	15 Year (12-17)	Long Bond (22+)	AAA	AA	A	BAA
Month-to-date total return	0.76%	0.91%	1.09%	0.82%	0.55%	0.80%	0.73%	0.76%	0.80%
Year-to-date total return	0.76%	91.00%	1.09%	0.82%	0.55%	0.80%	0.73%	0.76%	0.80%

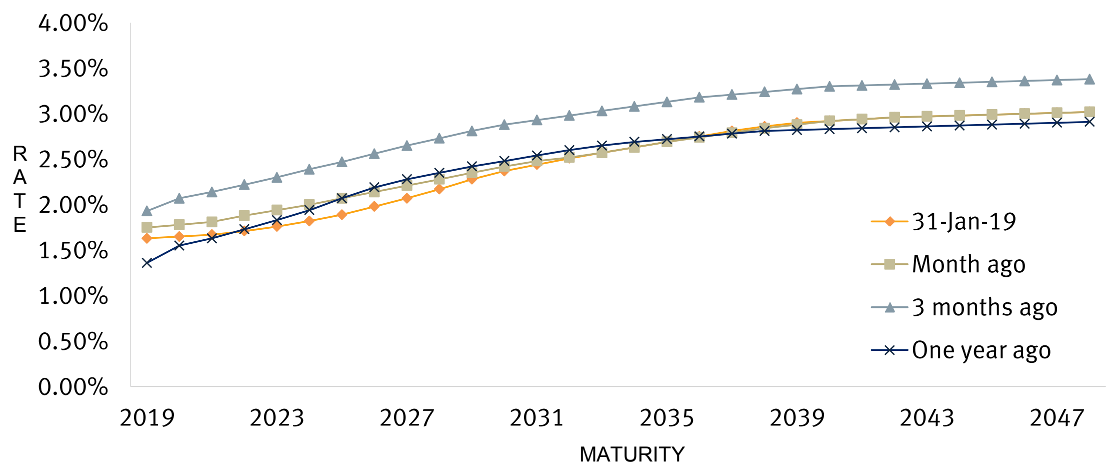
Source - Barclays; data through 1/31/19

Muni/Treasury ratio comparison



Source - RBC Wealth Management, Bloomberg; data through 1/31/19

Muni market data AAA yield curve



Source - RBC Wealth Management, Thomson Reuters TM3

Municipal bond insurers

Insurer	Moody's	Kroll Ratings
ACA	Not rated	Not rated
AMBAC	Not rated	Not rated
Assured Guaranty (AGC)	A3 (stable outlook)	AA (stable outlook)
Assured Guaranty Municipal Corp. (AGM)	A2 (stable outlook)	AA+ (stable outlook)
Berkshire Hathaway (BHAC)	Aa1 (stable outlook)	Not rated
Build America Mutual (BAM)	Not rated	Not rated
FGIC	Not rated	Not rated
Municipal Assurance Corporation	Not rated	AA+ (stable outlook)
National Public Finance (MBIA)	Baa2 (stable outlook)	Not rated
Syncora	Not rated	Not rated

Source - RBC Wealth Management; data through 1/31/19

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