Municipal Market Insight

September 2019

Portfolio Advisory Group – U.S. Fixed Income Strategies

What's inside

Infrastructure plans remain elusive

About four months ago, U.S. President Donald Trump and Democratic congressional leaders were, it seemed, in agreement on pursuing a $2T infrastructure plan to upgrade the nation's highways, railroads, bridges, and broadband. Since then, little has been done to push this boulder up the hill and with trade and tariffs dominating the headlines it will likely be some time before "Infrastructure Week" has meaning as anything other than a punchline for late-night comedians. Infrastructure could receive some play on the campaign trail heading into 2020, as Democratic Senator and presidential candidate Amy Klobuchar has rolled out a $1T infrastructure plan ensuring that, similar to 2016, the issue will provide some good debate talking points. However, we think the real key will be whether the issue has any traction once the rubber meets the road after Inauguration Day, January 20, 2021.

We've all likely driven on our share of worn-out roads and bridges frequently enough to agree that increased infrastructure spending should be an important goal. In addition, there are side benefits such as the creation of high-paying construction jobs. We see another benefit—increased municipal bond issuance,

U.S. Treasury rate forecasts (% as of September 5, 2019)

	2019			2020			
	5-Sep	Q3E	Q4E	Q1E	Q2E	Q3E	Q4E
FF	2.13	1.88	1.88	1.88	1.88	1.88	1.88
2-yr	1.53	1.85	1.90	1.95	2.00	2.10	2.15
5-yr	1.43	1.85	1.95	2.00	2.10	2.20	2.30
10-yr	1.56	2.05	2.15	2.25	2.30	2.35	2.45
30-yr	2.05	2.55	2.60	2.65	2.70	2.75	2.80

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 (8/1/19)	1.68%	1.07%	1.89%	1.48%	2.44%	2.19%
Mid-month (8/15/19)	1.43%	0.96%	1.53%	1.22%	1.97%	1.87%
End of month (8/31/19)	1.39%	1.03%	1.50%	1.22%	1.96%	1.84%

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

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Wealth Management

which in a market starved for supply, could be a godsend. Until we get there, however, the current dearth of supply will only increase the calls of "Dude, where're my muni bonds?"

We think the Federal Reserve will likely lower rates another 25 basis points when it meets September 17–18. We foresee a total of three rate cuts heading into year-end as policymakers deal with a trade-induced economic slowdown and, as such, our view on rates continues to be "lower for longer."

Market investment strategy & market commentary

Market Performance – Munis rally but cannot keep pace

August was another good month for fixed income markets, which saw investors flee equity markets in search of safety. Growing concerns over trade tensions with China, a potential global economic slowdown, and the mention of a possible U.S. recession sent investors fleeing to government bonds. August issuance surged to a 20-month high as issuers flooded the market with long-term muni debt, taking advantage of historically low yields. Despite the issuance surge ($38.5B), demand for munis easily absorbed the excess supply in the market. Munis began August returning 0.59% the week ended August 9, the best performance in five months, and are on track to post their best year since 2014.

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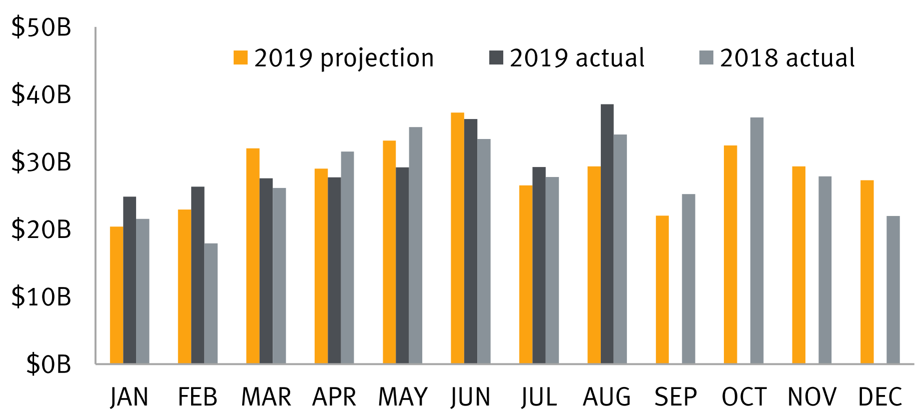
Despite August's strong muni performance (1.58% returns), Treasury and corporate bond markets, at 3.40% and 3.14%, respectively, easily outpaced munis. While munis have outperformed Treasuries most of the year, August's Treasuries and corporates results proved to be insurmountable, leaving munis lagging both of them year to date, where munis are returning 7.61%, Treasuries 8.63%, and corporate bonds 13.94%, according to Bloomberg Barclays indexes.

Is a reversal of fortune coming in this month?

After payments to bondholders outpaced supply in July and August, the tide is expected to turn this month. RBC Capital Markets is projecting September issuance of around $22B, down slightly from last year's $25.2B, with investors set to receive approximately $19.1B in redemptions as supply is set to outpace redemptions by approximately $3B.

2019 projected supply vs. actual supply

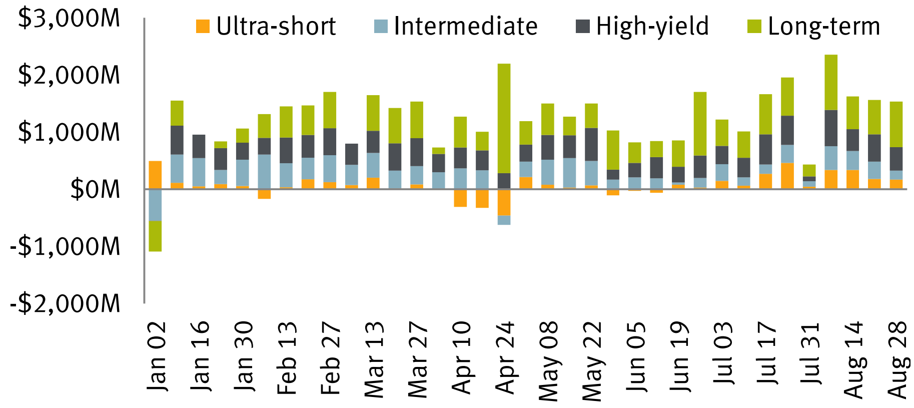


Source - RBC Capital Markets

Despite September's challenges, we are expecting demand from institutional buyers and crossover buyers will remain sufficient to offset the resulting supply imbalance. Global uncertainty, which has pushed many foreign government bonds toward negative yields, has opened investing opportunities in the U.S. bond market

This year's solid muni performance continues to be driven by strong demand, primarily by muni bond funds, which has led to 34 consecutive weeks of inflows with those funds adding over $42B, according to Lipper.

2019 muni fund flows



Source - Lipper U.S. Fund Flows, RBC Wealth Management; weekly data through 8/28/19

where returns remain positive and considerably more favorable than comparable foreign bonds. This year's solid muni performance continues to be driven by strong demand, primarily by muni bond funds, which has led to 34 consecutive weeks of inflows with those funds adding over $42B, according to Lipper.

Munis remain attractive relative to Treasuries

Despite strong muni returns through August 31, munis have rallied alongside Treasuries and other fixed income asset classes but have failed to keep pace with Treasuries pushing state and local debt to its cheapest level versus Treasuries since March 2019, with 30-year munis offering 95% of comparable Treasuries. An accommodative Fed and our belief in rates remaining lower for longer coupled with a potential September rate cut have resulted in the long-end continuing to present opportunities for traditional buy-and-hold investors.

This month's focus: California earthquake risk

On July 5, the Ridgecrest region experienced Southern California's most powerful earthquake in the past two decades when a 7.1 magnitude earthquake shook the desert 10 miles northeast of the city of Ridgecrest. It was preceded by a 6.4 magnitude earthquake the day before and was followed by 1,400 aftershocks.

This is not the first time the area has experienced earthquakes. Ridgecrest experienced a 5.4 magnitude quake in August 1995 and a 5.8 magnitude earthquake a month later. Allegedly, this area of California high desert once saw so many tremors that it was known as the earthquake capital of the world.

Luckily, while several buildings in Ridgecrest sustained major damage, the damage was contained, and there was no loss of life.

July's quake tied for the 11th most powerful in California history, but thankfully the area's remote location, low-density, and low-rise buildings did not translate into any municipal bond losses.

To put the Ridgecrest area earthquake and resulting damage into perspective, the 6.7 magnitude Northridge earthquake in 1994 caused 57 fatalities, 8,700 injuries, and $15B in damage. Unlike the Ridgecrest tremor, the Northridge earthquake impacted a much more densely populated area—its epicenter was located 20 miles northwest of Los Angeles, yet to our knowledge did not result in any municipal defaults.

Based on our review, most municipalities do not have earthquake insurance, and statewide only about 10% of residences have such insurance.

Earthquakes are a prevalent risk

Bigger picture, California municipal bond investors must be comfortable with seismic risk because many of the state's largest debt issuers are acutely exposed to this risk. The state is crisscrossed by major fault lines, including 500 active fault lines.

While many California municipalities have strengthened building codes to mitigate catastrophic building failures, nonetheless building to the state's minimum requirements statistically would likely still result in extensive damage in a major earthquake. Furthermore, based on our review, most municipalities do not have earthquake insurance, and statewide only about 10% of residences have such insurance.

A 2008 U.S. Geological Survey study predicted there was a greater than 99% chance of at least a 6.7 magnitude tremor striking California over the next 30 years (Ridgecrest validated this prediction). The study went on to say that an earthquake of that magnitude along the San Andreas Fault could result in $213B in damage and cripple Southern California's infrastructure for months.

Solace

California municipal bondholders are exposed to many natural disaster risks including wildfires, earthquakes, floods, landslides, and drought. Over the past several decades, California communities have been stricken by all these catastrophes yet still continue to honor their debt obligations and flourish.

Furthermore, there is a higher probability of rebuilding and economic rejuvenation if there is reasonable likelihood of future prosperity. In our view, statewide, the California economy offers ample future economic opportunities, even in the face of catastrophic loss. We assume federal funding and other charitable support could also help boost the suppressed regional economy until the area regains its footing.

An ounce of prevention

To our knowledge, nationwide, no natural disaster has resulted in a municipal default, which highlights the resiliency of that asset class. However, municipal investors should not get complacent. Instead, investors should take measured precautions such as geographically diversifying their portfolios and limiting exposure to any one municipality or small geographic region. Puerto Rico is a cautionary warning against purchasing many discrete municipalities that are nonetheless tightly interwoven.

While historically there has not been a municipal default due to a natural disaster, we think a default is likely to occur in the future. As such, we reinforce the importance of geographic diversification, and not just diversification to different parts of the same state, especially if the investor is exposed to the same risks. In the case of California, municipal investors are exposed to many of the same natural disaster risks statewide, most notably earthquakes and wildfires.

An ounce of prevention is worth a pound of cure.

Territorial update

Puerto Rico – Monthly updates

New governor sworn in

It was a tumultuous start to August for Puerto Rico residents, as the commonwealth saw its third governor in five days sworn into office. Following the resignation of Governor Ricardo Rosselló, and a Puerto Rico Supreme Court decision removing Rosselló's chosen successor Pedro Pierluisi from the position, Justice Secretary

Wanda Vázquez was sworn in on August 7. The island seems to have stabilized after Vazquez was sworn in. The new governor, however, is not without controversy, finding herself in an ethics investigation.

National Public Finance Guarantee and MBIA – File a lawsuit

On August 8, the two insurance companies filed a lawsuit in Puerto Rico against eight major Wall Street banks, seeking to hold the banks accountable for inequitable conduct in Puerto Rico's municipal market transactions, which the insurers claim contributed to the island's economic collapse. The insurers, citing a report prepared by Puerto Rico's Financial Oversight and Management Board, said the banks failed to conduct their due diligence, which resulted in materially false or misleading disclosure statements in the bond documents.

Opportunity zone projects – A priority for the commonwealth

The commonwealth is planning to take advantage of opportunity zones, which were created as part of the federal 2017 Tax Cuts and Jobs Act. The commonwealth plans to prioritize low-income housing developments and construction of commercial properties in the island's opportunity zone projects. The head of Puerto Rico's Department of Economic Development and Commerce said the opportunity zones could generate more than $600M of investments.

PRASA – Receives favorable Federal Loans

The commonwealth's Aqueduct and Sewer Authority reached an agreement with the U.S. Environmental Protection Agency and the U.S. Department of Agriculture to modify existing loans, which are expected to save the Authority about $380M in interest costs over the next decade.

PREPA Retiree Trust – Files a lawsuit

The trust responsible for PREPA pensioners filed suit against the electric utility and the Puerto Rico Financial Oversight and Management Board, which is currently overseeing the utility's bankruptcy. The trust's lawsuit is seeking to protect the pensioners over bondholders with respect to priority of payments. The utility, with $8B of debt, is considering a plan that disregards provisions of a legacy union contract. The trust's argument is centered on the belief PREPA has not been in compliance with a collective bargaining agreement created in the 1940s.

Revenue tops estimates

The commonwealth closed FY2019, which ended June 30, with revenue exceeding projections by $1.1B, providing the island with much-needed cash as it works to restructure government operations. The commonwealth collected $11.4B in general fund revenue from July 1, 2018 through June 30, 2019. The island's economy, which has been in recession for more than a decade, grew at a 4% clip in FY2019, fueled by federal disaster aid and insurance money that has flowed in to help rebuild following Hurricane Maria.

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State news

General market commentary

Banks continue reducing muni holdings

The nation's biggest banks, which began trimming their muni holdings in early 2018, continued selling their muni positions during Q2 2019 when they slashed their holdings by $7.4B, the largest drop since the selloff began. Wells Fargo & Co., JPMorgan Chase & Co., and Citigroup, Inc. reduced their holdings the most during the second quarter ended June 30.

Municipal Market Advisors (MMA) reported there were 33 municipal-bond defaults during the first seven months of 2019, 12 more than the same period in 2018.

Muni defaults on the rise
Municipal Market Advisors (MMA) reported there were 33 municipal-bond defaults during the first seven months of 2019, 12 more than the same period in 2018. The number of impairments, or munis in some kind of trouble, rose to 86 during the period versus 62 during the same period last year. The rise was primarily attributable to increases in land secured financings and senior living and multifamily projects, according to MMA.

The research firm also reported seven local government general-obligation bond impairments, the most in any full year. MMA is expecting a material increase in safe sector impairments and defaults in the long term but said the 2019 trend does not suggest the rise in impairments has begun.

State Ratings Roundup – Multiple affirmations and upgrades

California – Upgraded by Fitch
On August 16, Fitch upgraded the state to AA, the rating agency's third-highest investment-grade rating. The upgrade affects $72B of debt and "reflects the improved fiscal management that has become institutionalized across administrations." The state has used temporary tax increases, reserves, and limited spending growth to help it better withstand future economic downturns.

Ohio – Fitch assigns AA+ rating
On August 20, Fitch assigned an AA+ rating to the state's $320M general obligation bond offering, the outlook is stable. The state's large and diverse economy, careful

State/territory credit ratings

State/Territory	Fitch	Moody's	Kroll
Alabama	AA+	Aa1	-----
Alaska	AA	Aa3	-----
Arizona	-----	Aa2	-----
Arkansas	-----	Aa1	-----
California	AA	Aa3	-----
Colorado	-----	Aa1	-----
Connecticut	A+	A1	AA-
Delaware	AAA	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	Kroll
Nevada	AA+	Aa2	-----
New Hampshire	AA+	Aa1	-----
New Jersey	A	A3	A
New Mexico	-----	Aa1	-----
New York	AA+	Aa1	AA+
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	AA+	Aa1	-----
Virginia	AAA	Aaa	-----
Washington	AA+	Aaa	-----
West Virginia	AA	Aa2	-----
Wisconsin	AA+	Aa1	AA+
Wyoming	-----	-----	-----
District of Columbia	AA+	Aaa	-----
Guam	-----	-----	-----
Puerto Rico	-----	Ca	-----
Virgin Islands	-----	-----	-----

Note: On August 16, Fitch Ratings upgraded California's GO rating to AA from AA-, on improved fiscal management, growing reserves, and limited spending growth better positioning the state to withstand economic downturns. On August 23, Moody's upgraded Washington state to Aaa due to a booming tech sector.
Source - Fitch Ratings, Moody's Investors Service, Kroll Bond Ratings Agency

financial management, rebuilding of reserves, ongoing record of maintaining fiscal balance, and low liabilities support the current rating.

Massachusetts – Fitch assigns AA+ rating

On August 21, Fitch assigned an AA+ rating to the state's $1.2B general obligation bond offering, the outlook is stable. The AA+ rating considers the state's considerable economic resources, strong budget controls, and a track record of careful financial management.

Texas – Affirmed by Fitch

On August 7, Fitch affirmed the state's AAA rating with a stable outlook reflecting the state's "growth-oriented economy and the ample financial flexibility provided both by its conservative approach to financial operations and maintenance of substantial reserve balances."

Washington: Rating boosted to Aaa

Moody's upgraded approximately $19.4B of the state's outstanding debt to Aaa, citing the "exceptional growth of the state's economy driven largely by the technology sector in the Seattle metro area." The rating is also supported by the state's reduced dependence on aircraft manufacturing and The Boeing Company, the largest employer in the state with approximately 70,000 employees.

Other State News

California – Revenue tops estimates

California reported July revenue of $8.3B. July, the first month of FY2020, was 6.8% ahead of budget, according to the state's finance department. All three major tax categories (corporate, personal income, and sales taxes) experienced revenue growth that surpassed budget.

Connecticut – Better prepared for next economic downturn

Connecticut, hard hit by the last recession, announced its rainy day fund will reach $2.9B by fiscal year end June 30, 2020.

The state, hard hit by the last recession, announced its rainy day fund will reach $2.9B by fiscal year end June 30, 2020. The $2.9B is projected to cover 15% of the state's annual budget. While the state was able to close its FY2019 $3.7B deficit without raising personal income taxes, the state still needs to address its rising costs for debt service, pension, and health care, which account for approximately 30% of the state's budget. The state's $62B unfunded pension liability is second highest, behind Illinois.

Illinois – Reduces deficit following bond issuance

The state reported its general fund deficit was almost cut in half to around $7.8B in the fiscal year ended June 30, 2018, after rising to $14.6B in FY2017, following a two-year budget impasse that allowed for a surge in unpaid invoices. The state issued bonds to pay down its open invoices, which were subject to 12% interest rates a year. The state's fiscal picture also has improved, showing the state's employee retirement system liability declined $4.1B to $133.6B at fiscal year-end.

Illinois judge dismisses lawsuit

An Illinois judge ruled that a lawsuit filed by a hedge fund to invalidate two debt offerings issued by the State of Illinois cannot move forward. The hedge fund was claiming $10B in taxable bonds issued in 2003 and $6B in GO bonds issued in 2017 should be voided because the transactions were not linked to a specific purpose as well as being deficit financings, both of which violate the state constitution.

The judge stated there were no reasonable grounds for filing the proposed complaint.

New Jersey – Avoids a gas tax increase

Following a state-mandated 2016 law requiring a steady stream of revenue support for the state's Transportation Trust Fund, a review of fuel consumption levels and realistic projections have allowed the state to avoid increasing the gas tax for the current year. The state's gasoline and diesel fuel will remain at $0.414 and $0.484 per gallon, respectively.

Governor Phil Murphy vetoes tax-credit program

Murphy vetoed legislation that would have granted a reprieve to the state's $11B tax credit program that is currently under investigation by the state's attorney general's office and a panel appointed by the governor, including three former federal prosecutors. A report released in June of this year questioned deals tied to a prominent Democratic power broker from Camden.

Regional updates and other market news

Local issuer rating updates

Detroit Public Schools, MI – Upgraded by Moody's

On August 29, Moody's upgraded Detroit Public Schools to Ba3 from B2, the outlook is stable. The upgrade reflects strong financial support from the state and additional aid from state and state legislative transfer of the district's educational responsibilities to Detroit Public Schools Community District, which improves the Detroit Public Schools' capacity to service its obligations.

On August 29, Moody's upgraded Detroit Public Schools to Ba3 from B2, the outlook is stable.

Other municipal-related news

Chicago, IL – Looming budget deficit

The chairman of the city council's finance committee said the city is facing a more than $700M budget deficit on rising costs including debt service, pension payments, labor contracts, and overtime, all of which are impacting the shortfall. Mayor Lori Lightfoot is considering multiple options including overhauling government operations, changes to fines and fees, and a variety of revenue options including a service tax and changes to rideshare licenses and levies.

Chicago Board of Education (CBOE) – Approves 2020 budget

The CBOE approved a $7.7B FY2020 budget and authorized the issuance of $1.9B in bonds during the fiscal year. The budget includes building improvements for more than 300 of the district's schools, capital investment in classrooms, improved accessibility, and support for English learners.

Denver International Airport (DIA), CO – Terminates contract

DIA, owned by the City and County of Denver, terminated its contract with Denver Great Hall LLC to build, finance, and operate a "Great Hall" at the airport. The project has experienced delays and an approximately $311M cost overrun. DIA has said it plans to complete the project. The three major rating agencies have said DIA's financial position remains strong with no immediate impact to the airport's rating.

Essex County, NJ – To provide aid to Newark

Newark, the state's largest city, received positive news when the Essex County Improvement Authority approved $120M of municipal bonds to help the city replace lead pipes that supply water to approximately 18,000 homes, amid concerns of lead contamination. Without the bond issue, it would have taken the city approximately 10 years to replace the pipes.

Governor Mike Dunleavy and representatives of the University of Alaska reached an agreement to reduce in half the previously announced $135M budget cut the governor was seeking.

NYC Metropolitan Transportation Authority (MTA) – Moody's update
Moody's, in a recent report, said the MTA's history of raising revenue through definite fare hikes will come under increasing pressure due to the city's growing income inequality, which makes the difference between fare and income growth for the city's lowest earning residents unsustainable. Moody's said, the "MTA risks becoming a drag on region's economic competitiveness absent adequate support."

Santee Cooper, SC – In talks to possibly revive nuclear project
South Carolina's state-owned utility is reportedly in talks with South Korean and U.S. companies to complete the construction of the stalled V.C. Summer Nuclear Station. *The State* newspaper reported Santee Cooper CEO Mark Bonsall said the utility is in discussions with outside parties interested in completing the project. One of the interested parties includes South Korea's state-run power company, Korea Electric Power Corporation.

University of Alaska – Receives a reprieve
Governor Mike Dunleavy and representatives of the University of Alaska reached an agreement to reduce in half the previously announced $135M budget cut the governor was seeking. The agreement provides a lifeline to the University, which had filed "financial exigency" in July. Under the terms of the new agreement, the cuts would be implemented in three stages with a $25M, $25M, and $20M cuts coming in 2020, 2021, and 2022, respectively.

RBC Wealth Management retail trading (8/1/19 – 8/31/19)

Top 10 CUSIPs selling volume to retail customers

CUSIP	Description	Maturity	Coupon	Volume
75157TAB5	RAMPART RANGE MET	12/01/2047	5.00	5,013
362762LE4	GAINESVILLE HOSP-A	08/15/2054	5.50	4,235
38611TAC1	GRAND PARKWAY-B	10/01/2051	5.25	4,051
246430AD4	DELAWARE TRANSN	06/01/2055	5.00	3,534
041806ST8	ARLINGTON HGR ED FIN	08/15/2049	4.00	3,192
13063DAZ1	CALIFORNIA ST	11/01/2047	4.00	2,925
072024TY8	BAY AREA TOLL AUTH	10/01/2054	5.00	2,826
083763TX0	BERGEN CO	07/15/2037	3.00	2,708
79765RW47	SAN FRANCISCO CITY &	11/01/2045	5.00	2,634
64972GAZ7	NYC MUNI WTR-BB	06/15/2047	5.00	2,305

Top 10 CUSIPs buying volume from retail customers

CUSIP	Description	Maturity	Coupon	Volume
7973555X8	SAN DIEGO USD-I	07/01/2047	4.00	5,558
64542PAW5	NEW HOPE CULT EDU-A1	07/01/2051	5.00	4,714
283590EX1	EL PASO CO HOSP DIST	08/15/2043	5.00	4,000
64542PAV7	NEW HOPE CULT EDU-A1	07/01/2046	5.00	3,872
91412G2L8	UNIV OF CALIFORNIA-M	05/15/2047	5.00	3,609
797299JM7	SAN DIEGO PUB FACS-A	10/15/2042	4.75	3,336
13063DAZ1	CALIFORNIA ST	11/01/2047	4.00	2,888
072024TY8	BAY AREA TOLL AUTH	10/01/2054	5.00	2,785
13063C5D8	CALIFORNIA	08/01/2046	5.00	2,428
66286TAC6	N TX EDU FIN CORP-A	12/01/2047	5.25	2,360

Source - RBC Wealth Management

RBC Capital Markets institutional trading (8/1/19 – 8/31/19)

Top 10 CUSIPs selling volume to institutional customers

CUSIP	Description	Maturity	Coupon	Volume
25476FXV5	DIST OF COLUMBIA	10/15/2044	5.00	56,106
64971XLE6	NYC TRANS FIN AUTH	05/01/2037	5.00	45,555
64966QCR9	NEW YORK-A-A-1	08/01/2037	4.00	41,895
709224S91	PENNSYLVANIA ST TPKE	12/01/2049	5.00	36,538
118217AU2	BUCKEYE TOB ASSET-A-2	06/01/2047	5.88	30,325
64971XKL1	NYC TRANS FIN AUTH-C1	11/01/2039	4.00	29,661
64971XLG1	NYC TRANS FIN AUTH	05/01/2039	5.00	24,633
462467YJ4	IOWA ST FIN AUTH SF M	01/01/2049	3.50	23,606
74529JRH0	RESTRUCTURED-SER A-2	07/01/2040	4.33	22,609
709224S83	PENNSYLVANIA ST TPKE	12/01/2044	5.00	20,883

Top 10 CUSIPs buying volume from institutional customers

CUSIP	Description	Maturity	Coupon	Volume
25476FXV5	DIST OF COLUMBIA	10/15/2044	5.00	56,161
64966QCR9	NEW YORK-A-A-1	08/01/2037	4.00	41,753
709224S91	PENNSYLVANIA ST TPKE	12/01/2049	5.00	38,968
365418BX9	GARDEN ST PRESERV-A	11/01/2028	5.75	38,388
64971XLE6	NYC TRANS FIN AUTH	05/01/2037	5.00	32,019
452151LF8	IL ST TXB-PENSION	06/01/2033	5.10	30,353
118217AU2	BUCKEYE TOB ASSET-A-2	06/01/2047	5.88	30,287
64971XLG1	NYC TRANS FIN AUTH	05/01/2039	5.00	24,755
977100AC0	WISCONSIN GEN REV	05/01/2026	5.70	22,932
64966QCS7	NEW YORK-A-A-1	08/01/2038	4.00	22,150

Source - RBC Capital Markets

Bond Buyer indexes

Weekly	Current 8/1/19	Previous 8/22/19	2019 high	Date	2019 low	Date
Bond Buyer Revenue Bond Index	3.45%	3.55%	4.71%	(2/14)	3.45%	(8/29)
Bond Buyer 20-Bond Index	2.97%	3.07%	4.24%	(2/14)	2.97%	(8/29)
Bond Buyer 11-Bond Index	2.51%	2.61%	3.71%	(2/14)	2.51%	(8/29)

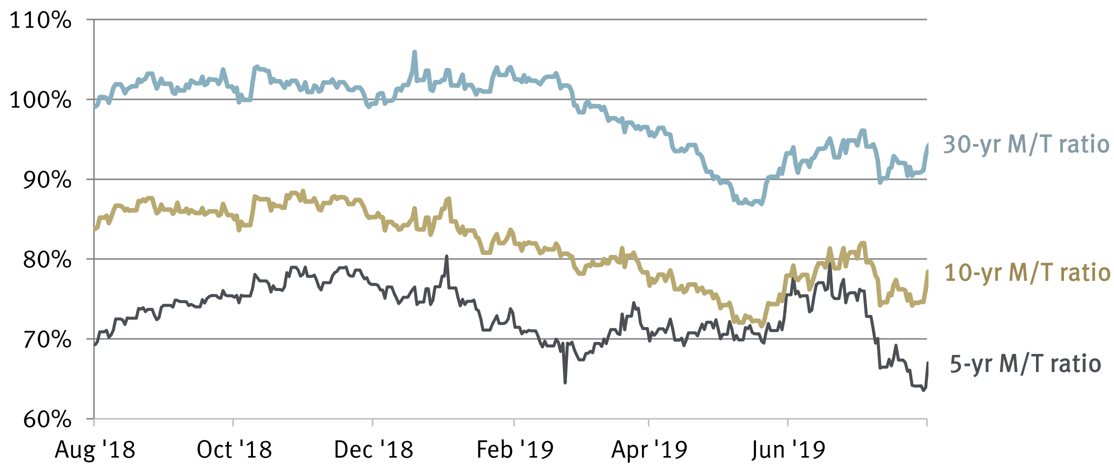
Source - *The Bond Buyer*

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	1.58%	0.57%	1.54%	2.12%	2.54%	1.43%	1.48%	1.69%	2.09%
Year-to-date total return	7.61%	5.26%	6.74%	9.22%	10.51%	6.91%	7.21%	8.18%	9.73%

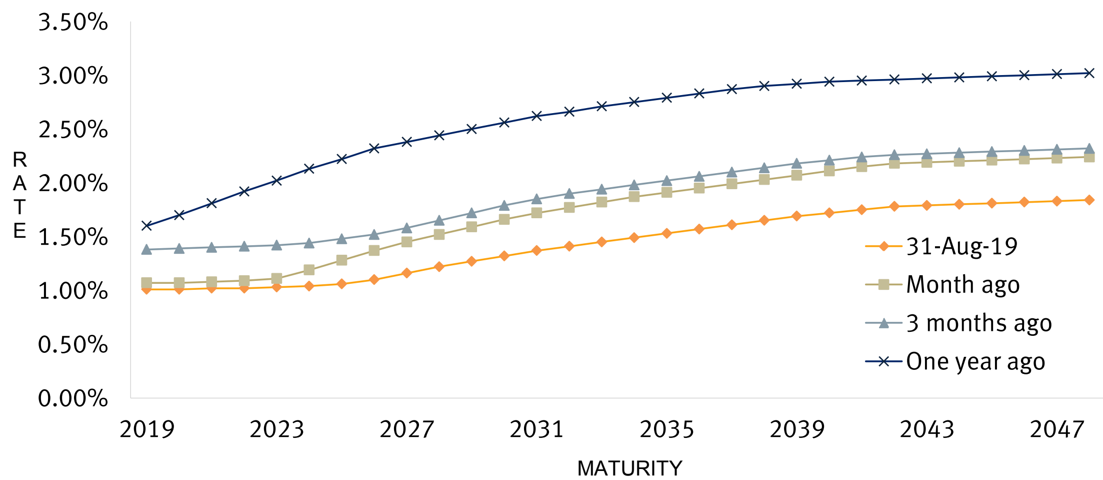
Source - Barclays; data through 8/31/19

Muni/Treasury ratio comparison



Source - RBC Wealth Management, Bloomberg; data through 8/31/19

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 8/31/19

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