

Lessons from COVID-19: U.S. Municipal Bond Market



Barbara Novick
Vice Chairman



Peter Hayes
Head of Municipal
Bond Group



Kate Fulton
Head of US Public
Policy



Sean Carney
Head of Municipal
Strategy and Primary
Markets, Global
Fixed Income Group



Michael Huang
Risk & Quantitative
Analysis Group



Rachel Barry
Global Public Policy
Group



Chen Ai
Risk & Quantitative
Analysis Group



Philip Sommer
Liquidity Research
Group

The U.S. municipal bond market came under pressure during the COVID-19 Crisis. This reflected both general market conditions and concerns about the finances of municipalities in light of the impact of COVID-19 on both revenues and expenses. The latter concern led to selling pressure in both individual bonds and via redemptions from municipal bond funds, which peaked in March 2020. More recently, the municipal bond market has begun to normalize, which is most evident in supply-demand dynamics. In this *ViewPoint*, we explore various aspects of the U.S. municipal bond market ecosystem during the COVID-19 Crisis, the Federal response to provide assistance to municipalities, and the approach to liquidity risk management of municipal bond funds. We conclude with recommendations to further enhance the liquidity risk management toolkit for municipal bond fund managers and improve price discovery for investors.

Municipal bond ecosystem

Mutual funds hold approximately 20% of outstanding municipal debt; 80% is held by other investors.¹ As with many asset classes, municipal bonds are part of a broader ecosystem which includes a range of investors. According to the Federal Reserve Financial Accounts of the United States Z.1 Report, the household sector holds approximately 46% of outstanding municipal debt, banks hold approximately 12%, property and casualty companies hold approximately 7%, and life insurance companies hold 5%.²

Typically, in periods of dislocation, the municipal market can offer significant relative value to nontraditional investors, which helps maintain market liquidity and can act as a backstop to some degree on price decrease. During the market pressure experienced in March and April 2020, insurance companies, banks, hedge funds, and family offices were buying municipal bonds, while individuals and mutual funds were selling them. In some cases, these investors are taxable and are referred to as “crossover buyers,” as they compare taxable and tax-exempt bonds and may switch between these asset classes based on market conditions and their outlook for future performance. In other periods, these investors have been net sellers of municipal bonds, e.g., following the Tax Cuts and Jobs Act of 2017 when the corporate tax rate was lowered from 35% to 21%.

Following the dramatic selloff in March 2020, the municipal market regained a semblance of normalcy in April and has continued to normalize since then. Overall, market sentiment has remained cautious and investors have become more focused on issuer fundamentals as the economic impact of the COVID-19 pandemic has become clearer. As a result, municipal bonds underperformed U.S. Treasuries in the intermediate and long end of the yield curve in March and April. The S&P Municipal Bond Index finished the month of April down -1.18% and -1.75% year to date versus the S&P U.S. Treasury Bond Index return of 0.50% and 7.78%, respectively.

The opinions expressed are as of July 2020 and may change as subsequent conditions vary.

[blackrock.com/publicpolicy](https://www.blackrock.com/publicpolicy)

Key observations and recommendations

1. The ecosystem for municipal bond investors includes individuals, insurance companies, banks, hedge funds, family offices and mutual funds. Mutual funds hold approximately 20% of outstanding municipal debt, with 80% held by other investors. Various buyers from these groups availed themselves of investment opportunities presented by the market pressure experienced in March and April 2020.
2. In March, the municipal bond market experienced a dramatic selloff, which resulted in increased transaction costs for municipal bonds, a dearth of new issuance, and wider spreads on bonds that transacted. By June, the market had largely recovered.
3. The Federal Reserve and Congress took actions to aid municipalities. These actions have also benefited the secondary market for municipal bonds.
 - The Federal Reserve’s Municipal Liquidity Facility provides a backstop for issuers to help meet the cash shortfall from dramatically lower revenues.
 - The CARES Act provided \$150 billion in federal aid to state and local governments for COVID-19 relief efforts.
4. In March 2020, municipal bond mutual funds (which we refer to as “municipal bond funds” in this paper) experienced unusual levels of redemptions. High yield municipal bond funds, which invest in less liquid sectors of the market, were most impacted. Different fund managers used different approaches to meet redemptions. During the COVID-19 Crisis, all municipal bond mutual funds met 100% of redemption requests.
5. Municipal bond funds that are registered under the Investment Company Act of 1940 (the ‘40 Act) are subject to the SEC’s rule on Liquidity Risk Management Programs, which implemented specific requirements on how funds assess and manage liquidity risk.
 - Different managers may have more stringent internal guidelines around diversification, cash equivalent holdings, and limits on how much of an outstanding debt issue can be held by a fund.
6. While municipal bond funds represent only 20% of the overall municipal bond market, these funds should be as resilient as possible in market stress scenarios. We recommend that the SEC work with the industry to consider implementing anti-dilution tools for open-end funds. We have used swing pricing effectively in some UCITS funds, and we recommend exploring how this tool could be implemented in ‘40 Act funds to assist in managing redemptions consistent with investor protection principles.
7. To further increase market efficiency, we recommend that the SEC, the Municipal Securities Review Board (MSRB),³ and the industry work together to promote trading electronification. Only about 12% to 15% of municipal bond trading is done electronically today.⁴ More electronification could improve price discovery for investors, while enhancing the ability of portfolio managers to estimate liquidity and transaction costs for municipal bonds.

Exhibit 1: Holders of Municipal Securities



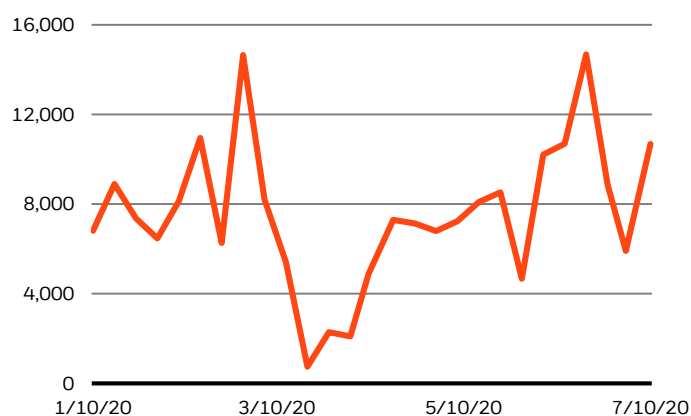
Source: Federal Reserve, Financial Accounts of the United States, First Quarter (released Jun. 11, 2020), available at <https://www.federalreserve.gov/releases/z1/20200611/z1.pdf>. See table L.212 on Municipal Securities. Categories labeled hold 5% or more of outstanding securities.

There was some recovery in May 2020, when the S&P Municipal Bond Index was up 2.99% for the month and 1.19% year to date, versus the S&P U.S. Treasury Bond Index return of -0.17% in May and 7.60% year to date.

Municipal bond issuance

A key indicator of the health of the municipal bond market is the level of new issuance. As reflected in Exhibit 2, prior to the COVID-19 Crisis, the primary municipal bond market was issuing an average of \$8.3 billion per week. During the last two weeks of March and the first week in April, total issuance for all three weeks combined was \$5.0 billion, reflecting a handful of transactions. Since then, the new issuance market has rebounded with a weekly average in excess of \$8.5 billion.⁵ As discussed below, the Federal Reserve and Congress have played a role in this turnaround. The market is currently functioning at pre-COVID levels, reflecting normalization. However, a larger new issue calendar over time is likely to create wider concessions reflecting the sensitivity of this market to credit fundamentals.

Exhibit 2: Weekly Municipal Bond Issuance in 2020



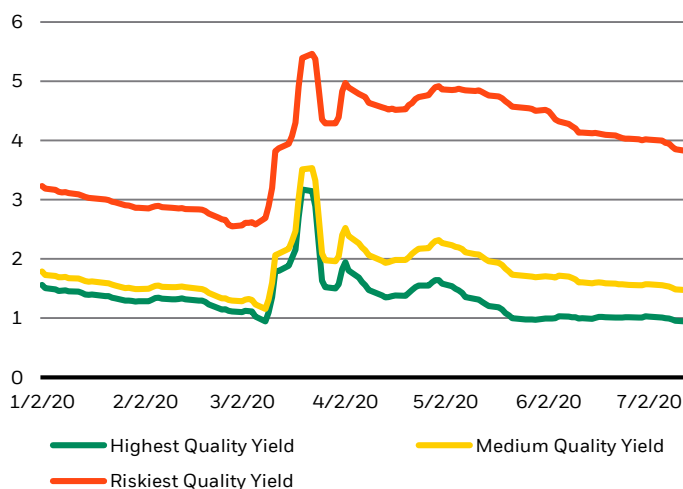
Source: Calculations by BlackRock Municipal Primary Markets Group. As of 07/10/20.

In March, the disrupted revenue streams put a strain on municipal governments and public authorities that ordinarily maintain limited cash balances. During normal conditions, these entities cover any revenue shortfalls by issuing interim notes or borrowing from banks. However, during the weeks in March when there was mass selling across financial markets, it was difficult for issuers to access short-term capital in the municipal markets, creating a temporary strain.

Looking at the credit spreads of Bloomberg Barclays Indices by quality, there was an increase in spreads in March 2020. Since then, higher quality yields have seen significant retracement. The riskiest yield tranche remains relatively wide, displaying the increase in quality bias that

has been ongoing for some time. While investment grade spreads have tightened, riskier securities are attracting a more limited audience.

Exhibit 3: Municipal Spreads by Credit Quality



Source: Bloomberg Barclays Indices. Data from 1/2/2020 through 7/13/2020. Highest quality yield defined as AAA, medium quality as AA and A, and riskiest defined as BBB and high yield.

Actions by the Federal Reserve Bank and by Congress to aid municipalities

In March and early April, the municipal markets were under immense stress. Given the market conditions, there was concern about the ability of municipalities to fund their normal operations. On April 9, 2020, the Federal Reserve and the US Treasury announced the Municipal Liquidity Facility (MLF).⁶ Under the program as initially designed, the Federal Reserve Bank would lend on a recourse basis to a special purpose vehicle (SPV) to purchase up to \$500 billion of eligible notes from states, cities with a population exceeding 1,000,000 residents and counties with a population exceeding 2,000,000 residents. This program provides a backstop for issuers to help meet the cash shortfall from dramatically lower revenues. The focus of the program was the short end of the curve with eligible notes to include tax anticipation notes (TANs), tax and revenue anticipation notes (TRANs), bond anticipation notes (BANs), and other notes maturing in two years or less.

The program was subsequently modified, and more details were provided as the program was operationalized. On April 27, 2020, the term sheet was revised to expand eligible cities and counties by halving the population minimums and to extend the maturities to allow up to 3 years.⁷ On May 11, 2020, the Federal Reserve updated the term sheet to include pricing, noting that federal income tax-exempt notes will be priced at a fixed interest rate based on the

comparable maturity overnight index swap rate, plus a spread based on credit rating. Pricing for non-federal income tax-exempt notes will be determined by the tax-exempt rate divided by 0.65.⁸ On May 15, 2020, the New York Federal Reserve released a Notice of Interest for Eligible Issuers to express interest in selling notes to the MLF SPV.⁹ On June 3, 2020, the Federal Reserve announced an expansion in the number and type of entities eligible to directly use the MLF so that all U.S. states will be able to have at least two cities or counties eligible to directly issue notes to the MLF SPV regardless of population. Governors of each state will also be able to designate two issuers in their jurisdictions whose revenues are generally derived from operating government activities to be eligible to directly use the facility.¹⁰

Under the MLF program, issuers place debt directly with the Federal Reserve. While the MLF program targets new issuance and not secondary market purchases, the introduction of this program sent a positive signal to the municipal bond market almost immediately upon being announced. It is too soon to assess the long-term impact of the MLF program on the municipal bond market, as the program is just beginning to be operationalized.

COVID-19 has had a major impact on both the revenues and the expenses of states and other municipalities. Several states have reported massive projected deficits that could exceed \$105 billion in fiscal year (FY) 2020 and \$290 billion in FY 2021,¹¹ which would surpass the gaps experienced in 2009 (\$130 billion) and 2010 (\$230 billion). Initial reports have found that total state taxes declined 49.4% in April 2020 compared to a year earlier.¹² Prior to the COVID-19 Crisis, most states and municipalities were fundamentally in good fiscal health. Median reserves were at a record high (8.0% of FY 2020 budgets vs. 4.8% in FY 2008),¹³ and state debt as a percent of personal income in FY 2020 was 2.0% compared to 2.4% in 2008. Many of the states and municipalities facing the most severe budget challenges coming out of the COVID-19 Crisis had existing budget deficits beforehand, making federal funding a controversial topic. While some municipalities can file bankruptcy when facing insolvency,¹⁴ states cannot.

In response to the COVID-19 Crisis, Congress included provisions in the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) – which was enacted on March 27, 2020 – for state and local governments to receive \$150 billion in federal aid for COVID-19 relief efforts.¹⁵ To address remaining funding challenges, states may use their fiscal tool kit to address the large gap projected for FY 2021. Most states are required to “balance” their budgets every year, even in recession, and have many potential tools available to them. For example, states can tap into available reserves, cut spending and benefits, raise taxes, borrow, move the final payday of the FY, defer spending into the following year, sell assets, and/or defer pension payments.

Different states are taking different approaches, depending on the status of their budgets prior to the crisis and how significantly they have been impacted by the crisis. Some states, like New Jersey, have announced they are moving their FY payments and may be implementing cuts in public employment to meet their needs.¹⁶ Others, like Illinois, are primarily relying on federal aid.¹⁷ A combination of funding from the CARES Act, state reserves of \$75 billion,¹⁸ and potential borrowing under the MLF – which was not an option in 2009 – will help cover the current fiscal year shortfall.

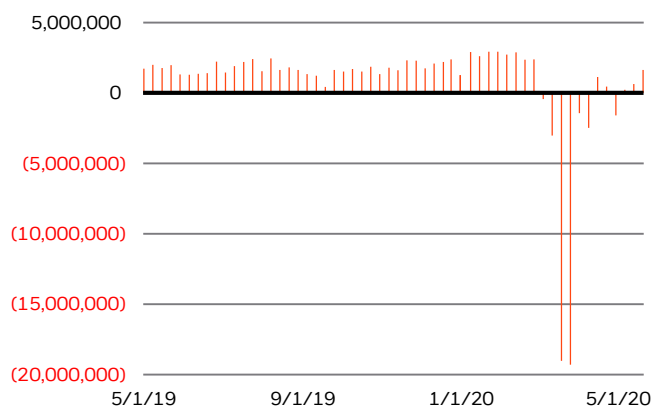
The Federal government may provide additional relief for municipalities. Democratic leadership in the House has included another round of federal funding for states in their latest COVID-19 relief bill, the Health and Economic Recovery Omnibus Emergency Solutions (HEROES) Act, which was approved by the House in May 2020.¹⁹ The bill includes substantial state and local fiscal relief, both by providing flexible grant aid and by extending the temporary increase in the federal share of Medicaid costs (first passed in the Families First Act in March 2020), which can alleviate state budget pressures. The path forward for the HEROES Act and additional federal funding for state and local governments is uncertain, as enacting additional legislation will depend on negotiations later this summer among the House, Senate, and the Administration.

Municipal bond fund flows

During March 2020, municipal bond funds²⁰ experienced unusual levels of redemptions. This reflected the broad market sentiment around duration and credit as well as municipal bond performance, volatility, pricing, and a change in fundamental credit outlook for municipalities, given the sudden closing of the economy and the anticipated revenue and expense impacts in the months/quarters to follow.

Outflows were initially witnessed in high yield (HY) municipal bond funds, though long-term and intermediate investment grade (IG) funds were not immune. Prior to COVID-19, municipal bond funds had experienced 60 consecutive weeks of inflows totaling \$116 billion. The onset of the pandemic quickly reversed these flows, and municipal bond funds experienced back-to-back weeks of record outflows.²¹ During the week of March 18, 2020, there were \$19.0 billion of outflows, followed by \$19.3 billion during the week of March 25, 2020. Exhibit 4 below depicts municipal bond fund weekly flows during 2020. As illustrated in Exhibit 5, national, high yield, and state-specific municipal bond funds all experienced outflows during March 2020, with especially large outflows in the last two weeks.²² High yield municipal bond funds were particularly impacted, experiencing the largest absolute outflows and the largest outflows as a percentage of AUM invested in these funds.

Exhibit 4: Weekly Municipal Bond Fund Flows in 2020 (\$USD)



Source: ICI weekly fund flow data through 05/20/2020.

Liquidity risk management in municipal bond funds

As with other mutual funds regulated under the '40 Act, municipal bond funds are subject to SEC oversight, which is important to consider in the context of how funds managed liquidity risk during the COVID-19 Crisis.

The SEC's 2016 rule on Investment Company Liquidity Risk Management Programs (Rule 22e-4 under the '40 Act, referred to as the Liquidity Rule),²³ requires all open-end funds to have a written liquidity risk management program approved and reviewed by the fund's board, which is intended to manage the risk that a fund would not be able to meet redemption requests without diluting the interests of remaining shareholders. In accordance with its liquidity risk management program, a fund must assess, manage, and periodically review its liquidity risk. As part of this

Exhibit 5: Monthly Open-End Municipal Bond Funds

Category	# of Funds	Feb '20 AUM	Feb '20 AUM %	2019 NNB	Mar '20 NNB	Mar '20 NNB as a % of Feb '20 AUM	Apr '20 NNB	Apr '20 NNB as a % of Feb '20 AUM
Muni National Interim	98	257,991	30.1%	39,195	(9,974)	-3.9%	(673)	-0.3%
Muni National Short	63	139,810	16.3%	5,756	(8,661)	-6.2%	160	0.1%
Muni National Long	49	132,182	15.4%	15,537	(5,041)	-3.8%	502	0.4%
High Yield Muni	49	130,768	15.3%	18,208	(11,587)	-8.9%	(1,780)	-1.4%
Muni California Long	27	47,502	5.5%	4,335	(1,881)	-4.0%	(174)	-0.4%
Muni California Intermediate	26	33,437	3.9%	4,821	(1,649)	-4.9%	(307)	-0.9%
Muni New York Long	19	25,107	2.9%	1,114	(930)	-3.7%	(197)	-0.8%
Muni Single State Long	61	23,929	2.8%	1,734	(557)	-2.3%	(99)	-0.4%
Muni Single State Interim	58	11,693	1.4%	492	(259)	-2.2%	(46)	-0.4%
Muni Pennsylvania	18	9,942	1.2%	462	(235)	-2.4%	(53)	-0.5%
Muni Single State Short	16	9,483	1.1%	17	(274)	-2.9%	(51)	-0.5%
Muni Massachusetts	14	8,210	1.0%	730	(303)	-3.7%	(46)	-0.6%
Muni New York Intermediate	17	8,068	0.9%	1,290	(334)	-4.1%	(109)	-1.3%
Muni New Jersey	15	7,203	0.8%	382	(274)	-3.8%	(65)	-0.9%
Muni Minnesota	14	5,691	0.7%	521	(113)	-2.0%	(10)	-0.2%
Muni Ohio	10	5,337	0.6%	265	(126)	-2.4%	(6)	-0.1%
Muni Target Maturity	3	117	0.0%	5	(8)	-6.6%	1	1.1%
Grand Total	557	856,472	100.0%	94,864	(42,206)	-4.9%	(2,952)	-0.3%

Source: Simfund. All AUM and NNB data in \$ millions. Data for Feb '20 as of 02/29/20, data for Mar '20 as of 03/31/20 and data for Apr '20 as of 04/30/20. Includes open-end municipal bond funds. Excludes money market funds, closed-end funds, and exchange-traded funds. Number of Funds as of 04/30/20.

assessment, a fund must consider whether trading varying portions of a position in a particular portfolio investment, in sizes that the fund would reasonably anticipate trading, would impact the liquidity of such investment.

In addition, a fund must classify the liquidity of each of its investments based on the number of days in which the fund reasonably expects the investment to be convertible into cash without significantly changing the market value of the investment. A fund is required to determine a minimum percentage of net assets that must be invested in highly liquid investments (e.g., cash), as well as procedures to respond to a shortfall in highly liquid assets. In addition, a fund is not permitted to purchase additional illiquid investments if more than 15% of net assets is categorized as illiquid. These requirements related to the level of highly liquid investments and illiquid investments provide guardrails for portfolio managers such that using cash on hand and/or selling highly liquid investments to meet redemption requests will not ultimately dilute the value of remaining shareholders' interests in the fund's remaining portfolio investments.

The Liquidity Rule did not fundamentally alter how municipal bond funds were managing liquidity risk, though it did provide a clear framework for risk management and ensure robust oversight procedures for all funds. Within the SEC's framework, different municipal bond funds employ different approaches to liquidity risk management. For example, different managers have different approaches to diversification and limits on how much of an issue can be held. More diversified portfolios, with limits on how much outstanding debt of an issuer can be held by a fund, can help mitigate liquidity risk, since smaller position sizes may be more readily convertible into cash.

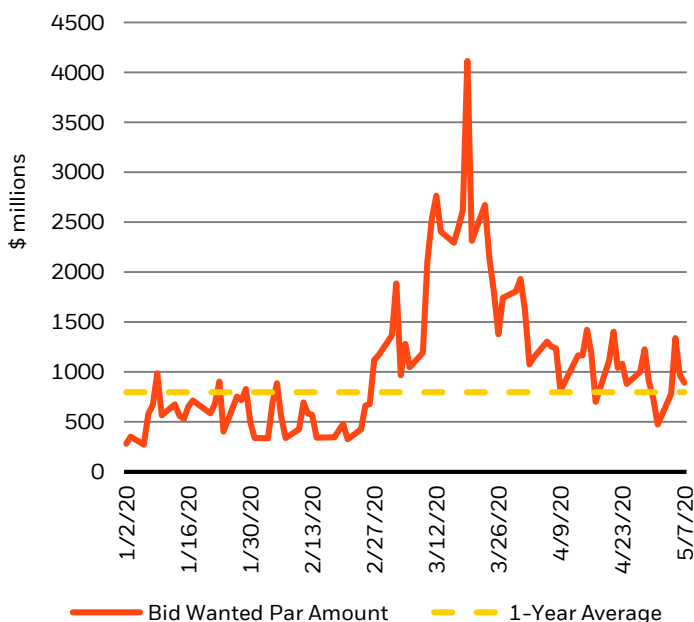
In a stressed market environment, municipal bond fund managers have several tools to meet redemptions: cash on hand, selling in the secondary market, and, in some circumstances, lines of credit.²⁴ Different fund managers took different approaches when redemptions spiked in March 2020. **In the COVID-19 Crisis, all municipal bond mutual funds met 100% of redemption requests.**

To meet redemptions during stressed market conditions, portfolio managers make decisions on what assets to sell, with a goal of minimizing realized losses for fund shareholders. Given that the price of buying and selling is a function of market conditions, sometimes portfolio managers will sell cash equivalents and other more liquid assets that can be sold with fewer losses on price than other assets in the fund, which may be more expensive to sell. In March 2020, the market conditions caused a larger than normal deviation in pricing.

Selling cash and cash equivalents, in addition to other assets, was one way that portfolio managers managed redemptions while protecting fund investors from realized losses. Investment grade municipal bond funds generally hold some cash in their portfolios and were able to use cash as an initial tool to meet redemptions in addition to selling investment grade bonds. High yield municipal bond funds generally do not hold as much cash, given that their primary objective is high income; however, these funds do hold some investment grade bonds that many funds sold to meet redemptions in addition to selling high yield bonds.

When funds received redemption requests, managers used "bid wanteds" to sell in the secondary market by putting securities out for bid and allowing the market to set a clearing level. Bid wanteds were the most prevalent avenue amongst portfolio managers to obtain pricing information in March 2020. As illustrated in Exhibit 6, bid wanteds activity spiked during the COVID-19 Crisis as many portfolio managers looked to sell. Fund managers sold to meet current and anticipated future redemptions. As Exhibits 7 and 8 show, the average daily trading volumes (ADV) increased for both high yield and investment grade municipal bonds in March and early April, reflecting increased selling and buying of bonds. In late March when redemptions peaked, one high yield municipal bond fund manager received financial support from its parent company, which stepped in to purchase shares of the fund.²⁵

Exhibit 6: Bid Wanted Activity 2020

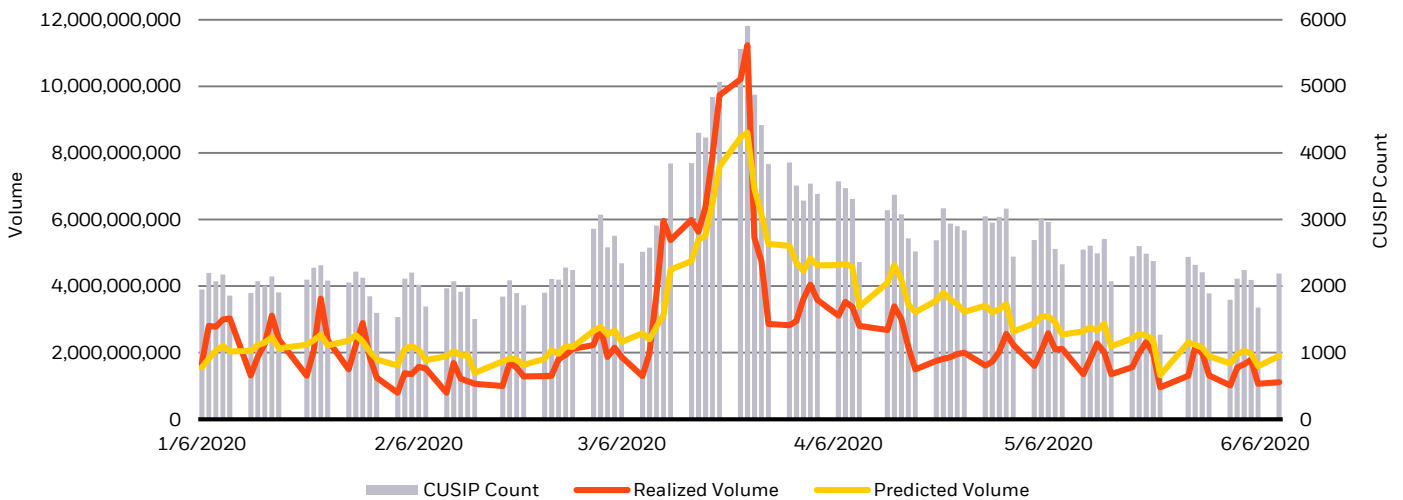


Source: BlackRock. Data from 1/2/2020–5/7/2020.

BlackRock's Financial Modeling Group (FMG), in partnership with Risk and Quantitative Analysis (RQA), has developed proprietary models in Aladdin²⁶ to forecast daily trading volumes and transaction costs under normal market conditions for high yield and investment grade municipal bonds. BlackRock's risk managers and portfolio managers use these models as one input to the liquidity risk management process.

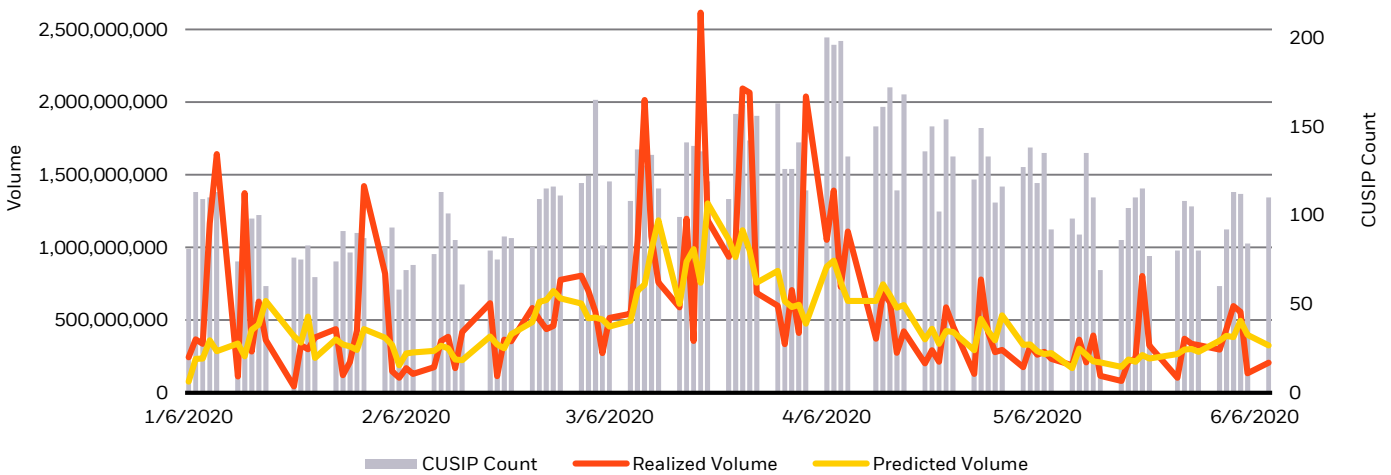
The transaction cost model estimates the expected cost to transact municipal bonds as a percentage change in price. The model forecasts the liquidity, market impact and transaction cost of trading a municipal bond in the secondary market using empirical transaction data and intraday reference prices, as well as bond attributes, to estimate a fixed cost and a market impact component.

Exhibit 7: Average Daily Trading Volume for Investment Grade Municipal Bonds



Source: BlackRock estimates. Reflects trading activity for CUSIPs in Muni IG index (MBINDEX), excluding retail trades. Data from 1/1/2020-6/8/2020.

Exhibit 8: Average Daily Trading Volume for High Yield Municipal Bonds



Source: BlackRock estimates. Reflects trading activity for CUSIPs in Muni HY Index (MBHYINDEX), excluding retail trades. Data from 1/1/2020-6/8/2020.

During times of market stress, it can be more expensive to find liquidity in the high yield municipal bond market; this is especially pronounced in smaller issue sizes where a manager holds most or all of the issue. As one tool to help manage redemptions in stressed market conditions, high yield municipal bond funds can hold investment grade bonds in addition to high yield bonds (depending on the investment strategy of the fund), recognizing that transaction costs to trade high yield bonds generally increase more during stressed markets. Having investment grade bonds in a portfolio can enable high yield municipal bond fund managers to sell those investment grade bonds at more favorable prices than they would be able to sell high yield bonds. Given the market conditions in March 2020, high yield municipal bond funds sought liquidity in bonds with a bid, which was most often found in higher quality bonds. The selling of investment grade bonds by high yield municipal bond funds created some degree of pressure in the investment grade space. Exhibit 9 illustrates the increase in bid-ask spreads for both high yield and investment grade municipal bonds, with a more pronounced increase in high yield bonds. The widening of bid-ask spreads was reflected in wider transaction costs. Exhibits 10 and 11 depict expected and realized transaction costs for municipal bonds, reflecting the increased cost of liquidity during the stressed market environment.

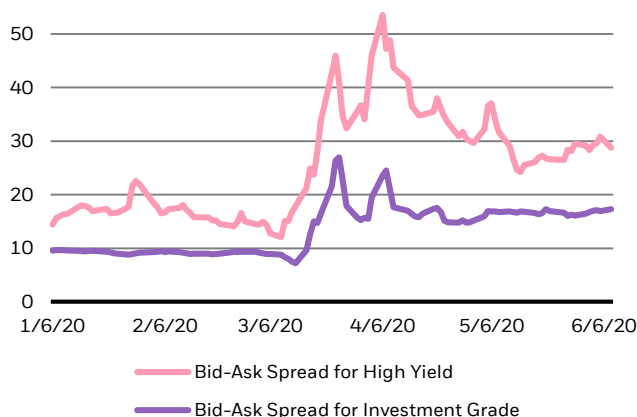
Looking forward

As we move further away from March 2020, the municipal bond markets continue to adjust back to normalized levels. Given the unknown factors around credit in the current environment, valuation adjustments could continue to take place over time. In addition, the impacts of the Federal Reserve’s Municipal Liquidity Facility remain to be seen as this program is operationalized.

Within the Liquidity Rule framework for assessing and managing liquidity risk, municipal bond funds were able to meet all redemption requests during the COVID-19 Crisis. To further strengthen the liquidity risk management toolkit available to municipal bond fund managers, **BlackRock recommends that the SEC work with the industry to consider implementing additional anti-dilution tools for open-end funds.**

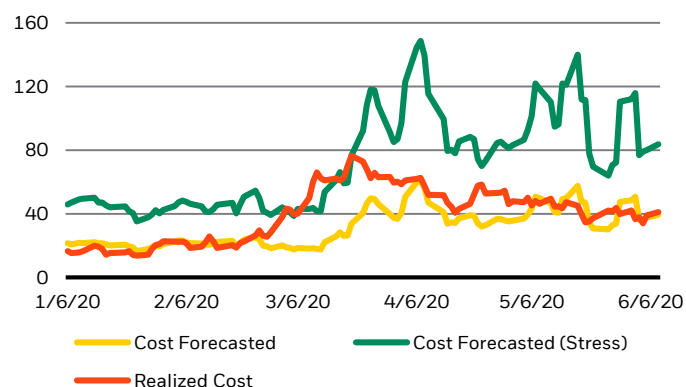
BlackRock has long supported permitting mutual funds to have mechanisms to allocate transaction and market impact costs associated with the sale (or purchase) of fund assets to redeeming (or subscribing) shareholders. Such mechanisms are a way to reimburse or economically buffer a fund’s remaining shareholders, while at the same time providing a price signal to subscribing and redeeming fund shareholders of the genuine economic cost of obtaining liquidity. In several European jurisdictions, fund managers can adopt a swing pricing mechanism that does this by

Exhibit 9: Bid-Ask Spreads for High Yield and Investment Grade Municipal Bonds



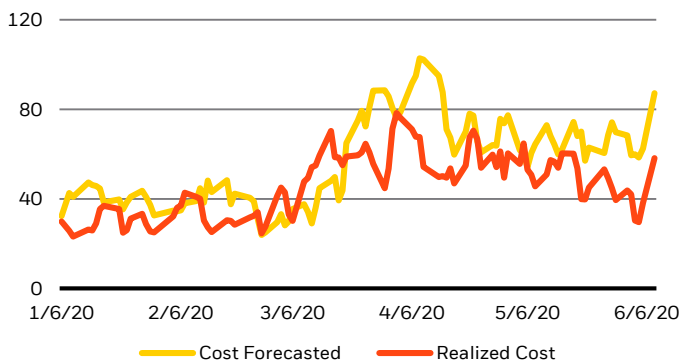
Source: IDC Continuous Evaluated Pricing. Data from 1/1/2020-6/8/2020.

Exhibit 10: Transaction Cost to Trade Investment Grade Municipal Bonds



Source: BlackRock transaction cost estimates for bonds in the Muni IG index (MBINDEX) compared to realized transaction cost (based on MSRB trade data) in the period from 1/1/2020-6/8/2020. In March 2020, given the gap in between the model cost forecasted and the realized cost, a stressed version of our model aligned better with the dislocated markets.

Exhibit 11: Transaction Cost to Trade High Yield Municipal Bonds



Source: BlackRock estimates for bonds in the Muni HY Index (MBHYINDEX). Data from 1/1/2020-6/8/2020. Given that the forecasted cost scale for high yield during the stress period is broadly in-line with the realized cost scale, we did not require an additional stressed version of the expected cost forecast.

allowing the net asset value (NAV) calculation to “swing” to either the bid or offered side of the market depending on the net inflows or outflows from the fund.²⁷ We encourage the SEC to consider the operational infrastructure necessary to implement a similar mechanism in the U.S.

To enable further evolution in the municipal bond markets, we recommend that regulators, the industry, and the MSRB work together to advance electronic of municipal bond markets. At present, only about 12% to 15% of municipal bond trading is done electronically.²⁸ The continuous evaluated pricing enabled

by electronic trading in other fixed income markets, such as corporate bond markets, has provided transparency to investors. Greater electronic could further increase market efficiency and improve price discovery for investors, while also ultimately enhancing the ability of portfolio managers to estimate liquidity and transaction costs for municipal bonds.

Each of these measures would provide benefits to investors in municipal bond funds and further strengthen the ability of these funds to operate smoothly during stressed market environments.

Related Content

For access to our full collection of public policy commentaries, including the *ViewPoint* series and comment letters to regulators, please visit <https://www.blackrock.com/publicpolicy>.

- [BlackRock Municipal Market Monthly, July 2020](#)

Endnotes

1. Federal Reserve, Financial Accounts of the United States, First Quarter 2020 (released Jun. 11, 2020), available at <https://www.federalreserve.gov/releases/z1/20200611/z1.pdf>. See table L.212 on Municipal Securities. Includes open-end mutual funds; excludes money market funds (3%), exchange-traded funds (1%), and closed-end funds (2%).
2. Federal Reserve, Financial Accounts of the United States, First Quarter 2020 (released Jun. 11, 2020), available at <https://www.federalreserve.gov/releases/z1/20200611/z1.pdf>. See table L.212 on Municipal Securities. Banks include U.S.-chartered depository institutions, banks in U.S.-affiliated areas, and credit unions.
3. The MSRB is a self-regulatory organization that regulates the activities of broker-dealers and banks that buy, sell and underwrite municipal securities, as well as the firms (and their financial professionals) that provide advice to state and local governments and other municipal entities about the issuance of bonds and municipal financial products. The MSRB is not authorized to regulate municipal entities, including state and local government issuers of municipal securities. The MSRB is overseen by Congress and the SEC. MSRB rules generally must be approved by the SEC before becoming effective. For more information, see MSRB, The Role and Jurisdiction of the MSRB, available at <http://www.msrb.org/msrb1/pdfs/Role-and-Jurisdiction-of-MSRB.pdf>.
4. Kevin McPartland, Greenwich Associates, The Modernization of Municipal Bond Trading (May 6, 2019), available at <https://www.greenwich.com/fixed-income/modernization-municipal-bond-trading>.
5. Source: Calculations by BlackRock Municipal Primary Markets Group. As of 07/10/20. Average issuance from 04/09/20 through 07/10/20.
6. Federal Reserve, Press Release, Federal Reserve takes additional actions to provide up to \$2.3 trillion in loans to support the economy (Apr. 9, 2020), available at <https://www.federalreserve.gov/newsevents/pressreleases/monetary20200409a.htm>.
7. Federal Reserve Board, Press Release, Federal Reserve Board announces an expansion of the scope and duration of the Municipal Liquidity Facility (Apr. 27, 2020), available at <https://www.federalreserve.gov/newsevents/pressreleases/monetary20200427a.htm>.
8. Federal Reserve Board, Press Release, Federal Reserve publishes updates to the term sheet for the Municipal Liquidity Facility (May 11, 2020), available at <https://www.federalreserve.gov/newsevents/pressreleases/monetary20200511a.htm>.
9. Federal Reserve Board, Press Release, New York Fed Releases Notice of Interest for the Municipal Liquidity Facility (May 15, 2020), available at <https://www.newyorkfed.org/newsevents/news/markets/2020/20200515>.
10. Federal Reserve Board, Press Release, Federal Reserve Board announces an expansion in the number and type of entities eligible to directly use its Municipal Liquidity Facility (Jun. 3, 2020), available at <https://www.federalreserve.gov/newsevents/pressreleases/monetary20200603a.htm>.
11. Center on Budget and Policy Priorities, Elizabeth McNichol, Michael Leachman, and Joshua Marshall, “States Need Significantly More Fiscal Relief to Slow the Emerging Deep Recession” (Apr. 14, 2020), available at <https://www.cbpp.org/research/state-budget-and-tax/states-need-significantly-more-fiscal-relief-to-slow-the-emerging-deep>.
12. Urban Institute, Monthly State Revenue Highlights (Apr. 2020), available at https://www.urban.org/sites/default/files/monthlystrh_april2020.pdf.
13. Tax Foundation, Jared Walczak and Janelle Cammenga, “State Rainy Day Funds and the COVID-19 Crisis” (Apr. 7, 2020), available at <https://taxfoundation.org/state-rainy-day-funds-covid-19/>.

Endnotes (cont'd)

14. Some states permit municipalities to file for bankruptcy, while others do not. For more information, see Pew Trusts, Municipal Bankruptcy Explained: What it Means to File for Chapter 9, available at <https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2011/11/22/municipal-bankruptcy-explained-what-it-means-to-file-for-chapter-9>.
15. H.R. 748, The Coronavirus Aid, Relief, and Economic Security Act, available at <https://www.congress.gov/116/bills/hr748/BILLS-116hr748enr.pdf>.
16. New Jersey Governor Phil Murphy said the state may have to cut 200,000 public employees if additional federal aid is not distributed to help plug a \$10.1 billion revenue hole through June 2021. The Governor also extended the fiscal year by three months. See Bloomberg Politics, "N.J. May Have to Fire 200,000 Public Workers, Murphy Says" (May 28, 2020), available at <https://www.bloomberg.com/news/articles/2020-05-28/new-jersey-may-have-to-fire-200-000-state-workers-murphy-says>; Bloomberg Markets, "New Jersey to move fiscal year-end to September" (Apr. 1, 2020), available at <https://www.bloomberg.com/news/articles/2020-04-01/new-jersey-to-move-fiscal-year-end-to-september-from-june>.
17. The Illinois legislature passed a \$40 billion state budget that relies heavily on federal funding. See Chicago Tribune, "Illinois lawmakers send Gov. J.B. Pritzker \$40 billion maintenance budget that relies heavily on federal funding" (May 24, 2020), available at <https://www.chicagotribune.com/politics/ct-illinois-house-approves-budget-20200524-lqgh5p3msfbxfpkcgarvz5sovi-story.html>.
18. Center on Budget and Policy Priorities, Elizabeth McNichol and Michael Leachman, "States Continue to Face Large Shortfalls Due to COVID-19 Effects" (Jul. 7, 2020), available at <https://www.cbpp.org/research/state-budget-and-tax/states-continue-to-face-large-shortfalls-due-to-covid-19-effects>.
19. H.R. 6800, Health and Economic Recovery Omnibus Emergency Solutions Act, available at <https://www.congress.gov/bill/116th-congress/house-bill/6800>.
20. In this paper, we are referring to open-end municipal bond funds, excluding exchange-traded funds and money market funds (MMFs). For information on muni MMFs, see BlackRock, Lessons from COVID-19: US Short-term money markets (Jul. 2020).
21. ICI weekly fund flow data through 05/20/2020.
22. Simfund. Includes open-end municipal bond funds. Excludes money market funds, closed-end funds, and exchange-traded funds.
23. See SEC, Final Rule, Investment Company Liquidity Risk Management Programs, available at <https://www.sec.gov/rules/final/2016/33-10233.pdf>. MMFs are not covered by the Liquidity Rule.
24. Some fund managers have historically used bank lines of credit to meet redemptions in extreme scenarios to avoid selling at depressed prices.
25. See Form N-CEN report filed by Nuveen High Yield Municipal Bond Fund (Jun. 16, 2020), available at <https://sec.report/Document/0001145549-20-034518/>. TIAA purchased \$350,000,000 worth of Nuveen High Yield Municipal Bond Fund shares on March 19, 2020 and purchased another \$750,000,000 worth of Fund shares on March 26, 2020. Nuveen Fund Advisors, LLC, the investment adviser to the Fund, is a subsidiary of Nuveen, LLC, the investment management arm of TIAA. According to the SEC filing, TIAA purchased the shares to provide the Fund with additional cash to meet redemptions and to reduce the Fund's borrowings, and to provide TIAA itself with an attractive investment with a desirable risk profile.
26. Aladdin is BlackRock's end-to-end operating system, which includes risk management analytics. For more on Aladdin, see <https://www.blackrock.com/aladdin>.
27. For more information on swing pricing, see BlackRock *ViewPoint*, Fund Structures As Systemic Risk Mitigants (Sep. 2014), available at <https://www.blackrock.com/corporate/literature/whitepaper/viewpoint-fund-structures-as-systemic-risk-mitigants-september-2014.pdf>; BlackRock, Comment Letter to SEC – Open-End Fund Liquidity Risk Management Programs; Swing Pricing; Re-Opening of Comment Period for Investment Company Reporting Modernization Release (Jan. 13, 2016), available at <https://www.blackrock.com/corporate/literature/publication/sec-liquidity-risk-management-proposal-011316.pdf>; Letter from Richard Apostolik, GARP, Open-End Fund Liquidity Risk Management Programs; Swing Pricing; Re-Opening of Comment Period for Investment Company Reporting Modernization Release (Jan. 12, 2016), available at <https://www.sec.gov/comments/s7-16-15/s71615-33.pdf>.
28. Kevin McPartland, Greenwich Associates, The Modernization of Municipal Bond Trading (May 6, 2019), available at <https://www.greenwich.com/fixed-income/modernization-municipal-bond-trading>.

This publication represents the regulatory and public policy views of BlackRock. The opinions expressed herein are as of July 2020 and are subject to change at any time due to changes in the market, the economic or regulatory environment or for other reasons. The information herein should not be construed as sales material, research or relied upon in making investment decisions with respect to a specific company or security. Any reference to a specific company or security is for illustrative purposes and does not constitute a recommendation to buy, sell, hold or directly invest in the company or its securities, or an offer or invitation to anyone to invest in any funds, BlackRock or otherwise, in any jurisdiction. There is no guarantee that any forecasts made will come to pass. Reliance upon information in this material is at the sole discretion of the reader.

In the **U.S.**, this material is available for public distribution. In the UK, issued by BlackRock Investment Management (UK) Limited (authorized and regulated by the Financial Conduct Authority). Registered office: 12 Throgmorton Avenue, London, EC2N 2DL. Registered in England No. 2020394. Tel: 020 7743 3000. For your protection, telephone calls are usually recorded. BlackRock is a trading name of BlackRock Investment Management (UK) Limited. This material is for distribution to Professional Clients (as defined by the FCA Rules) and Qualified Investors and should not be relied upon by any other persons.

In the **EEA**, issued by BlackRock (Netherlands) BV: Amstelplein1, 1096 HA, Amsterdam, Tel: 020 -549 5200, Trade Register No. 17068311. BlackRock is a trading name of BlackRock (Netherlands) BV. For qualified investors in Switzerland, this material shall be exclusively made available to, and directed at, qualified investors as defined in the Swiss Collective Investment Schemes Act of 23 June 2006, as amended.

In **Australia**, issued by BlackRock Investment Management (Australia) Limited ABN 13 006 165 975, AFSL 230 523 (BIMAL). This material is not a securities recommendation or an offer or solicitation with respect to the purchase or sale of any securities in any jurisdiction. The material provides general information only and does not take into account your individual objectives, financial situation, needs or circumstances.

In **Singapore**, this is issued by BlackRock (Singapore) Limited (Co. registration no. 200010143N).

In **Hong Kong**, this material is issued by BlackRock Asset Management North Asia Limited and has not been reviewed by the Securities and Futures Commission of Hong Kong.

In **South Korea**, this material is for distribution to the Qualified Professional Investors (as defined in the Financial Investment Services and Capital Market Act and its sub-regulations).

In **Taiwan**, independently operated by BlackRock Investment Management (Taiwan) Limited. Address: 28F., No. 100, Songren Rd., Xinyi Dist., Taipei City 110, Taiwan. Tel: (02)23261600.

In **Japan**, this is issued by BlackRock Japan Co., Ltd. (Financial Instruments Business Operator: The Kanto Regional Financial Bureau. License No375, Association Memberships: Japan Investment Advisers Association, the Investment Trusts Association, Japan, Japan Securities Dealers Association, Type II Financial Instruments Firms Association.) For Professional Investors only (Professional Investor is defined in Financial Instruments and Exchange Act).

In **China**, this material may not be distributed to individuals resident in the People's Republic of China ("PRC", for such purposes, excluding Hong Kong, Macau and Taiwan) or entities registered in the PRC unless such parties have received all the required PRC government approvals to participate in any investment or receive any investment advisory or investment management services.

For **Other APAC Countries**, this material is issued for Institutional Investors only (or professional/sophisticated/qualified investors, as such term may apply in local jurisdictions) and does not constitute investment advice or an offer or solicitation to purchase or sell in any securities, BlackRock funds or any investment strategy nor shall any securities be offered or sold to any person in any jurisdiction in which an offer, solicitation, purchase or sale would be unlawful under the securities laws of such jurisdiction.

In **Latin America**, for institutional investors and financial intermediaries only (not for public distribution). No securities regulator within Latin America has confirmed the accuracy of any information contained herein. The provision of investment management and investment advisory services is a regulated activity in Mexico thus is subject to strict rules. For more information on the Investment Advisory Services offered by BlackRock Mexico please refer to the Investment Services Guide available at www.blackrock.com/mx.

©2020 BlackRock, Inc. All Rights Reserved. BLACKROCK is a registered trademark of BlackRock, Inc. All other trademarks are those of their respective owners.