

nuveen

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Municipal market update

31 July 2022

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OPINION PIECE. PLEASE SEE IMPORTANT DISCLOSURES IN THE ENDNOTES.

2022 municipal market themes

- The level of inflation remains hard to predict. While we believe inflation has peaked, the incremental price declines indicate inflation is still above the Fed's target. Geopolitical events are creating further uncertainty.
- The Fed has raised interest rates 225 bps in 2022, with more hikes expected through the cycle. The Fed's policy shift has been fully discounted by the markets.
- Peak economic expansion is behind us. Economic growth is beginning to soften due to higher interest rates and fiscal tightening.
- Interest rate volatility is now moving in both directions. The path of interest rates depends on how inflation evolves.
- Credit fundamentals remain strong, with revenue collections and rainy day funds at the highest levels in history.
- Municipal supply is lower year over year, due to fewer refundings and less taxable municipal supply.
- Consumer behavior has normalized and returned to pre-pandemic trends.
- Attractive spreads plus strong credit offer an appealing entry point for high yield municipals.

Certain statements may be deemed forward-looking statements. Please note that any such statements are not guarantees or intended to constitute a prediction of any future performance; actual results or developments may differ materially from those projected.

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Fed is reducing monetary policy accommodation

We think Fed policy will operate on two axes:

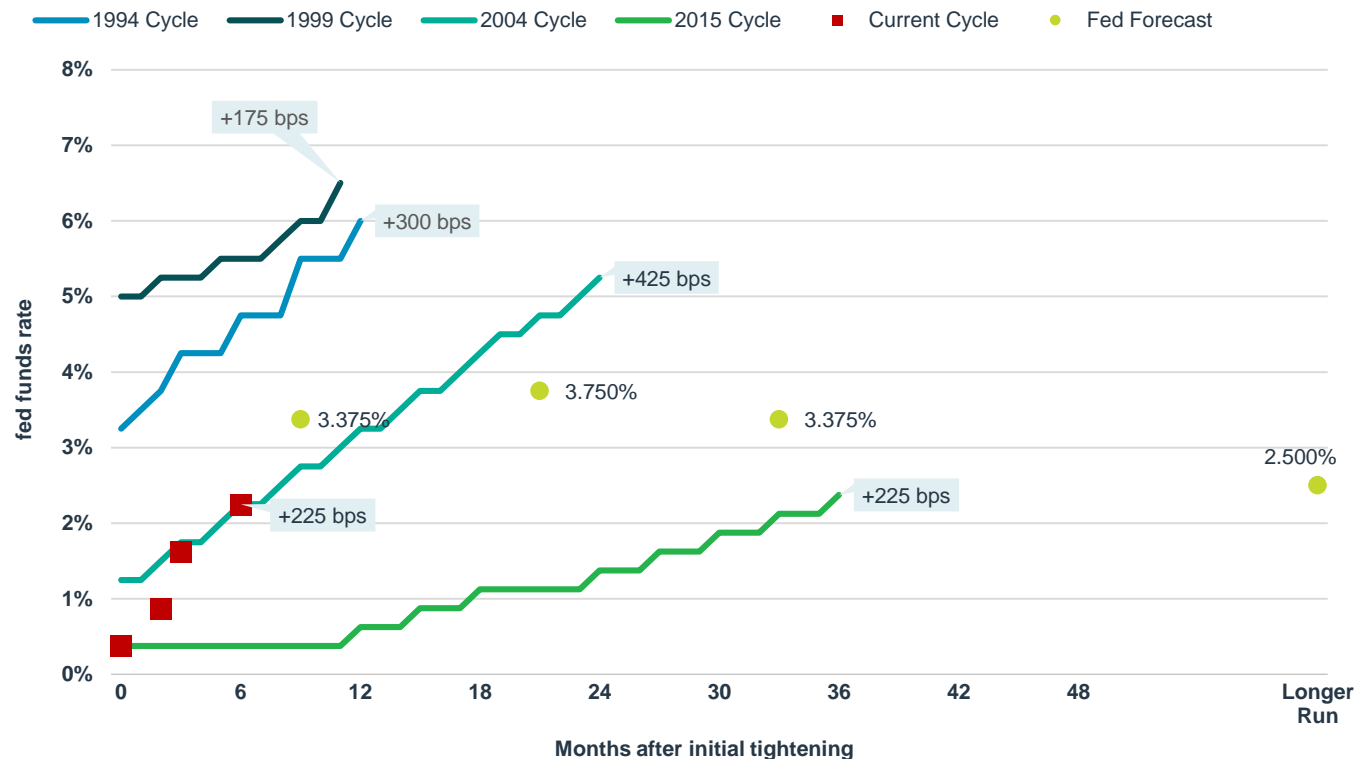
Rate hikes:

- The Fed hiked rates by 75 bps at the July FOMC meeting
- We expect a 75 bps hike in September, followed by a 25 bps hike at each of the final two meetings of the year
- Beyond year-end, the market is pricing a pause in Fed rate hikes, and cuts as soon as March

Balance sheet reduction:

- Formal announcement in May as expected, setting up June start date
- Consistent with expectations, maximum monthly runoff capped at \$60B in Treasuries and \$35 billion in MBS per month

Path of fed funds target rate compared to past cycles



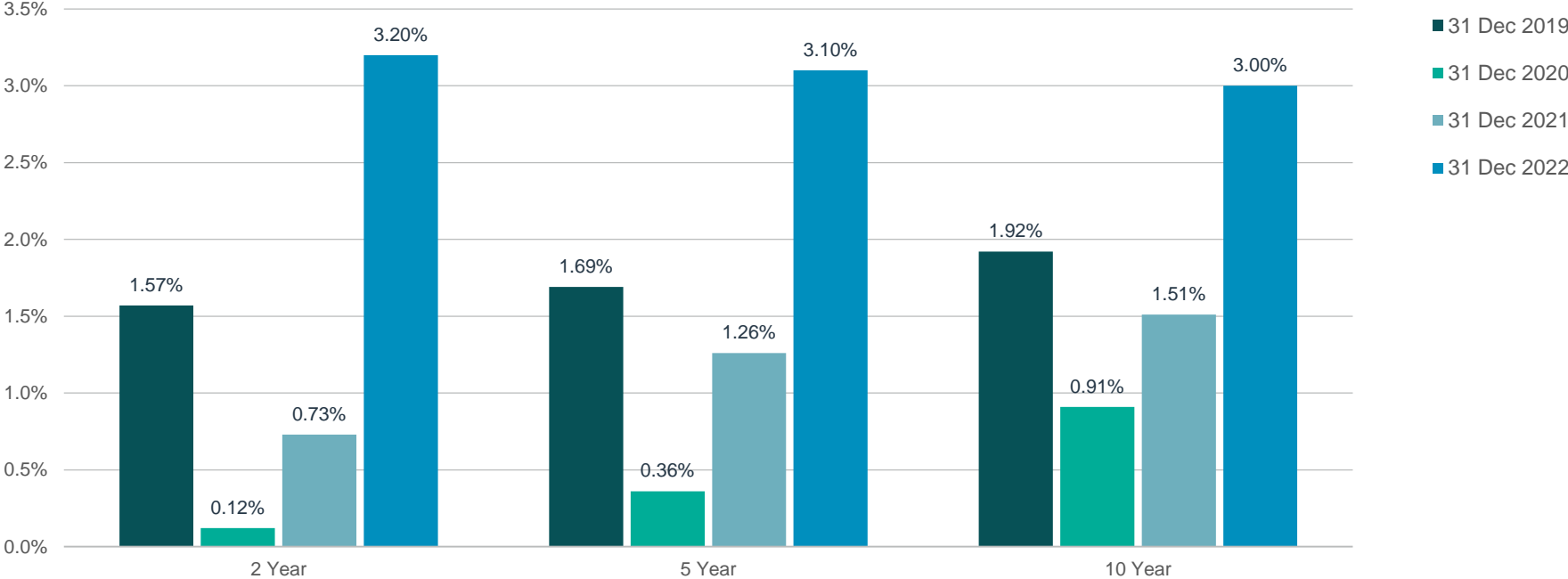
Data sources: Bloomberg; Federal Reserve Projection Materials. Fed funds rate and Fed forecasts as of 15 Jun 2022. Fed forecast represents the median forecast of each Federal Open Market Committee participant for the midpoint of the fed funds rate at year ends 2022, 2023, 2024 and longer run. Month 0 shows first rate increase. A basis point is a common unit of measure for interest rates and other percentages in finance. One basis point is equal to 1/100th of 1%, or 0.01% (0.0001).

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Interest rates will rise, but remain contained

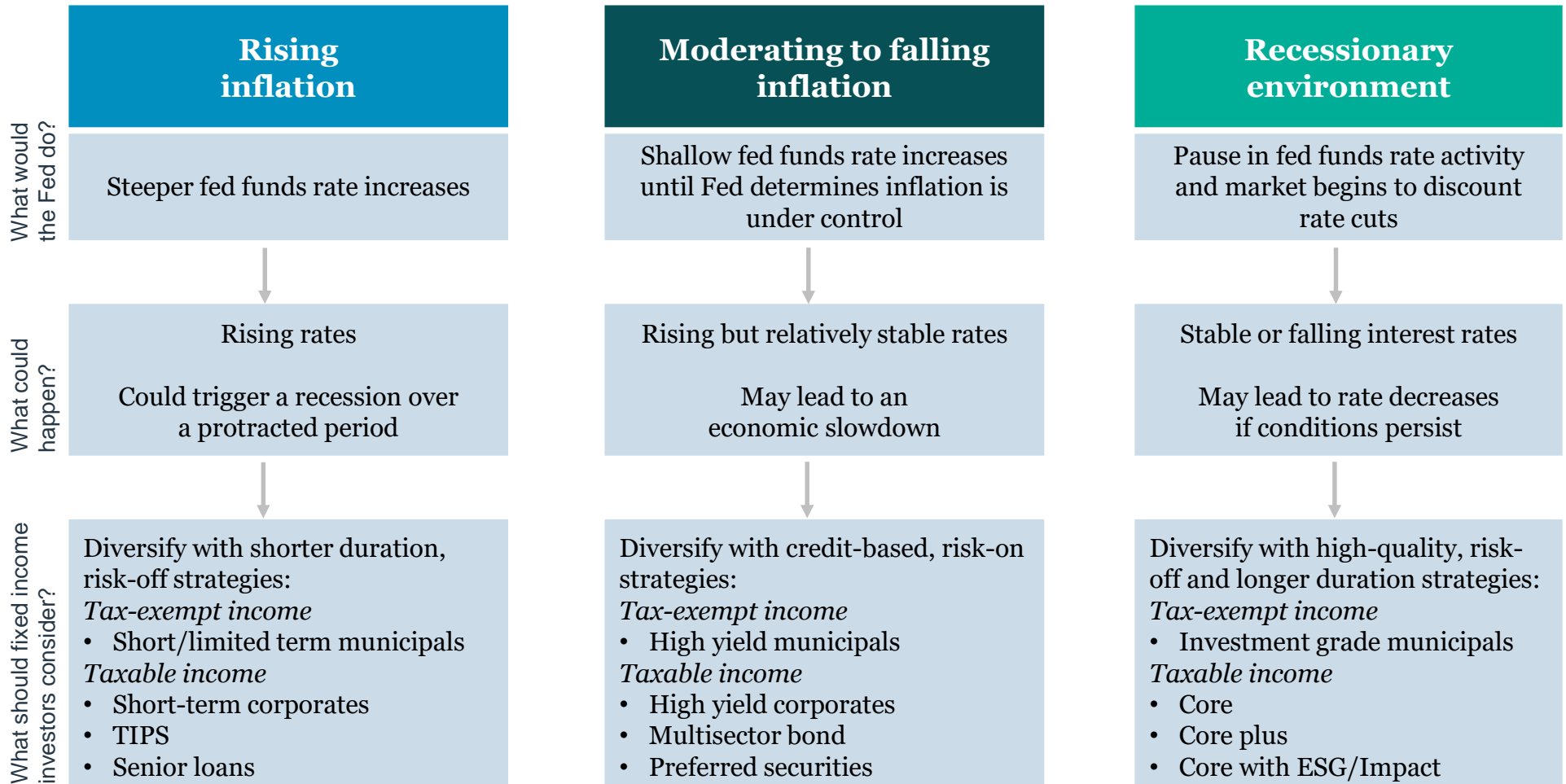
Expect modest further yield increases, and the curve should stay relatively flat.

Treasury yields



Data sources: www.treasury.gov; Nuveen estimates, Data and estimates as of 31 Jul 2022.
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Which environment seems most likely?

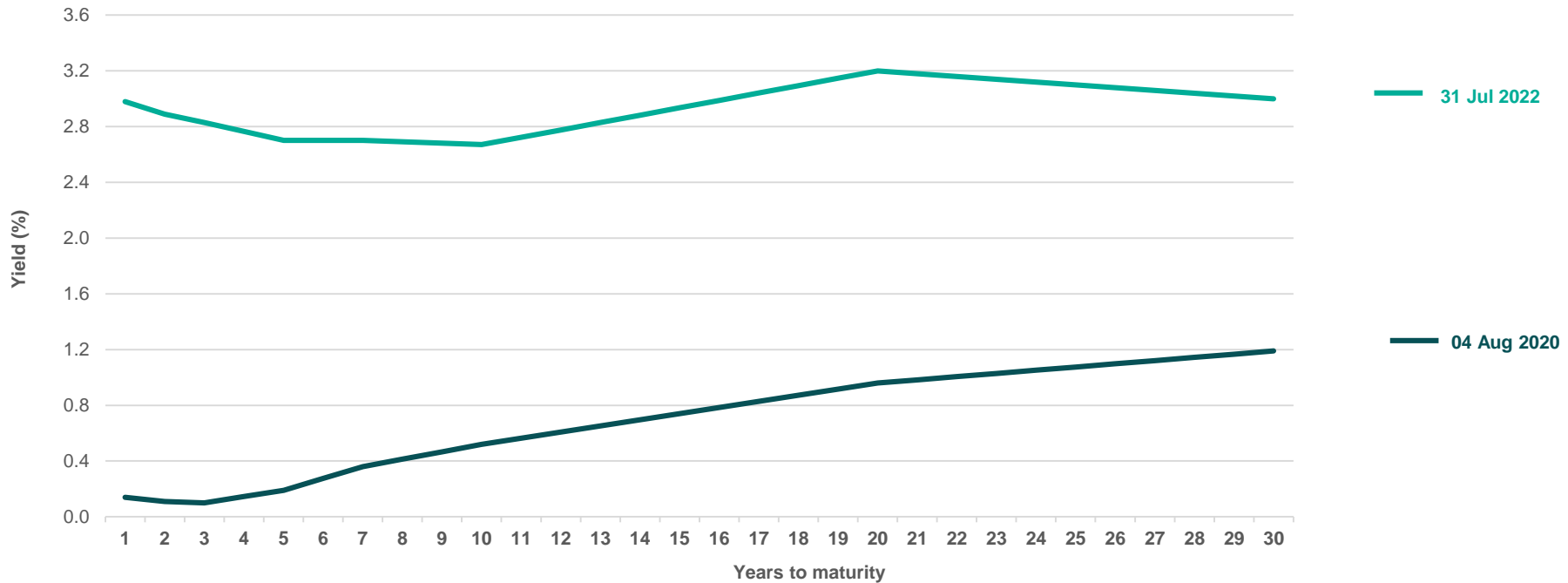


Source: Nuveen as of 31 Jul 2022. Certain statements may be deemed forward-looking statements. Please note that any such statements are not guarantees or intended to constitute a prediction of any future performance; actual results or developments may differ materially from those projected.

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U.S. Treasury rates are exhibiting more volatility

Treasury rates have been unpredictable after hitting an all-time low in 2020.



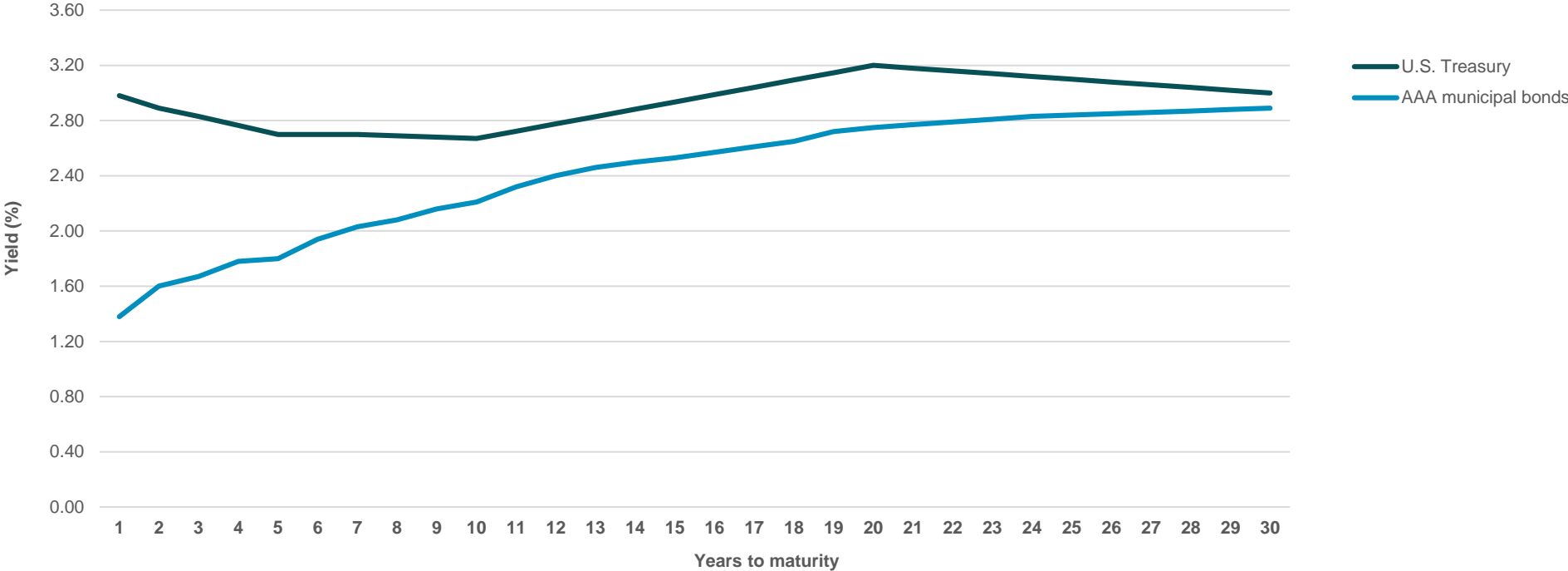
Parts of the Treasury yield curve have now inverted, caused by concerns over inflation, rising rates and geopolitical events.

Data source: U.S. Department of the Treasury, 31 Jul 2022. Past performance does not predict or guarantee future results.

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Markets are concerned about inflation and a more aggressive Fed rate increase cycle

U.S. Treasuries vs. AAA-rated G.O. municipal yield curve

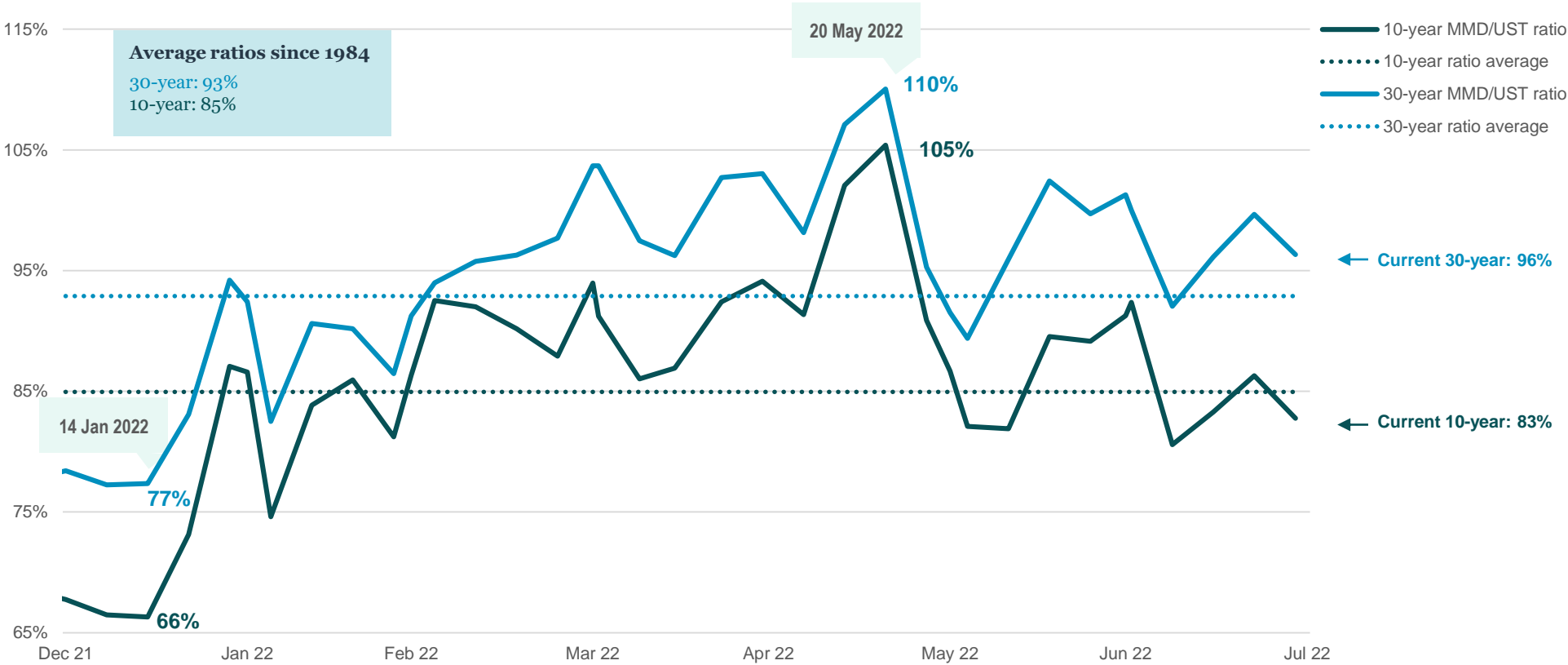


The municipal yield curve is upward sloping and has shown less volatility than Treasuries.

Data sources: U.S. Department of the Treasury; Refinitiv MMD, 31 Jul 2022. Past performance does not predict or guarantee future results. AAA municipals represented by Municipal Market Data (MMD) scale. OPINION PIECE. PLEASE SEE IMPORTANT DISCLOSURES IN THE ENDNOTES.

Municipal-to-Treasury ratios have moderated, but the long end of the curve remains attractive

AAA municipal's value relative to Treasuries



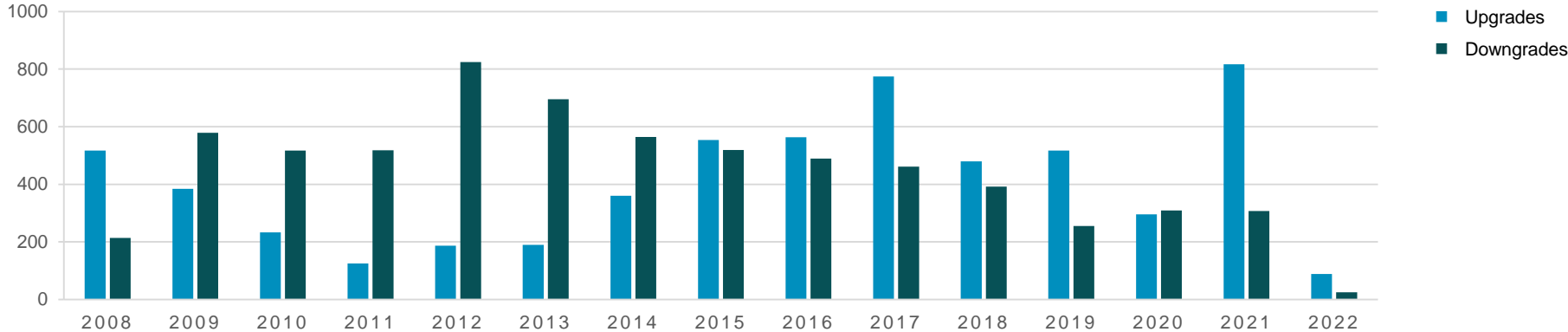
Data source: Refinitiv MMD for fair value Municipal 10- and 30-Year Index AAA General Obligation bonds; Bloomberg for 10- and 30-year U.S. Treasury yields, shown weekly, 31 Dec 2021 – 31 Jul 2022, averages shown from 01 Jan 1984 – 31 Jul 2022. Past performance does not predict or guarantee future results. Municipal-to-Treasury ratio represents the value of AAA municipal yields relative to U.S. Treasury yields.

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Ratings upgrades have continued to exceed downgrades in recent history

Upgrades also continue to outpace downgrades in 2022.

Number of rating changes for public finance



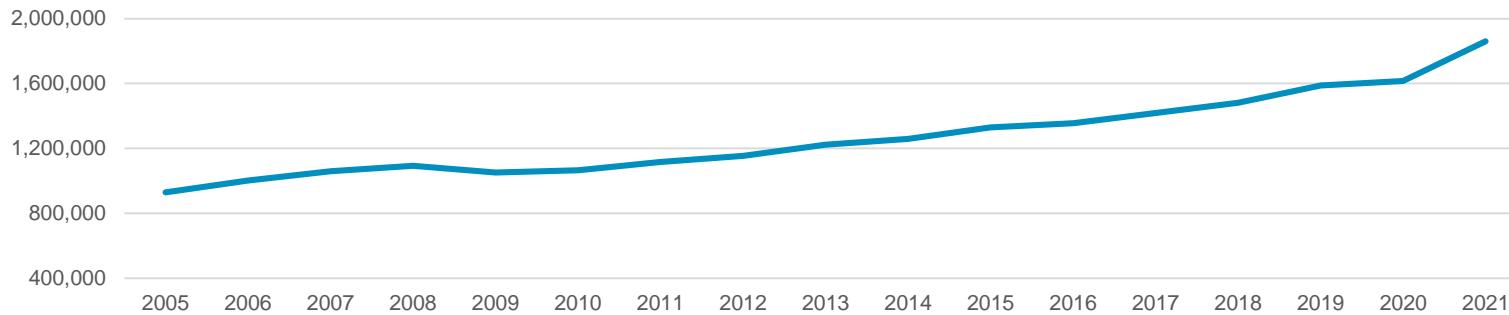
Data sources: Moody's Investors Service, *Quarterly and Annual Municipal Rating Revisions*, 29 Apr 2022, data as of 31 Mar 2022; U.S. Rating Revisions, 29 Apr 2022.

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Municipalities are in a strong financial position

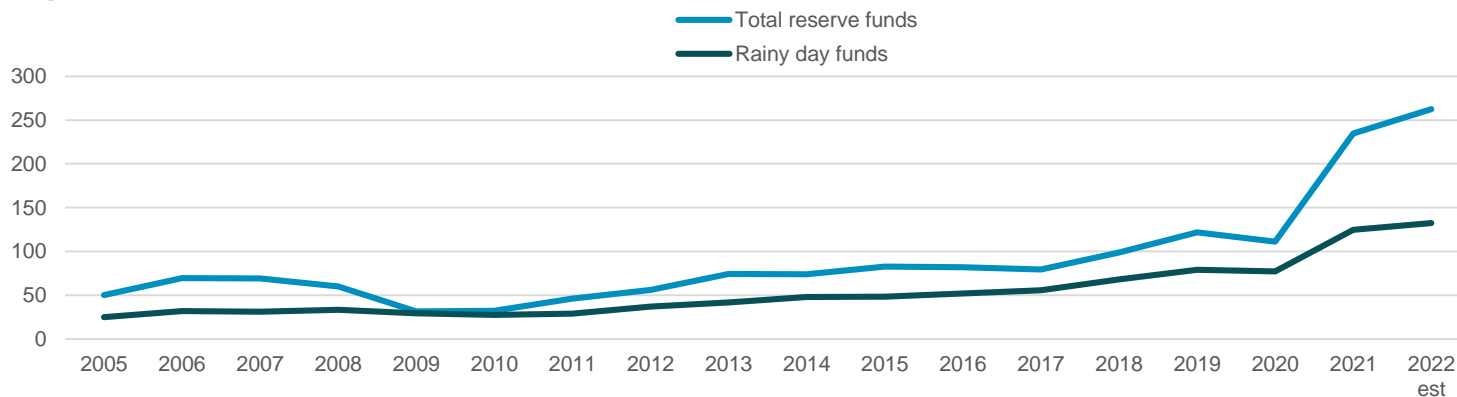
Revenue collections and reserve levels are the highest in more than 40 years.

State & local government tax revenue collections (\$)¹



2021 state revenues rose by 17%, the highest increase dating back to 1979.²

State government funds (\$ billions)²



Total reserve funds in 2022 are \$262 billion vs. \$11 billion in 1979.²

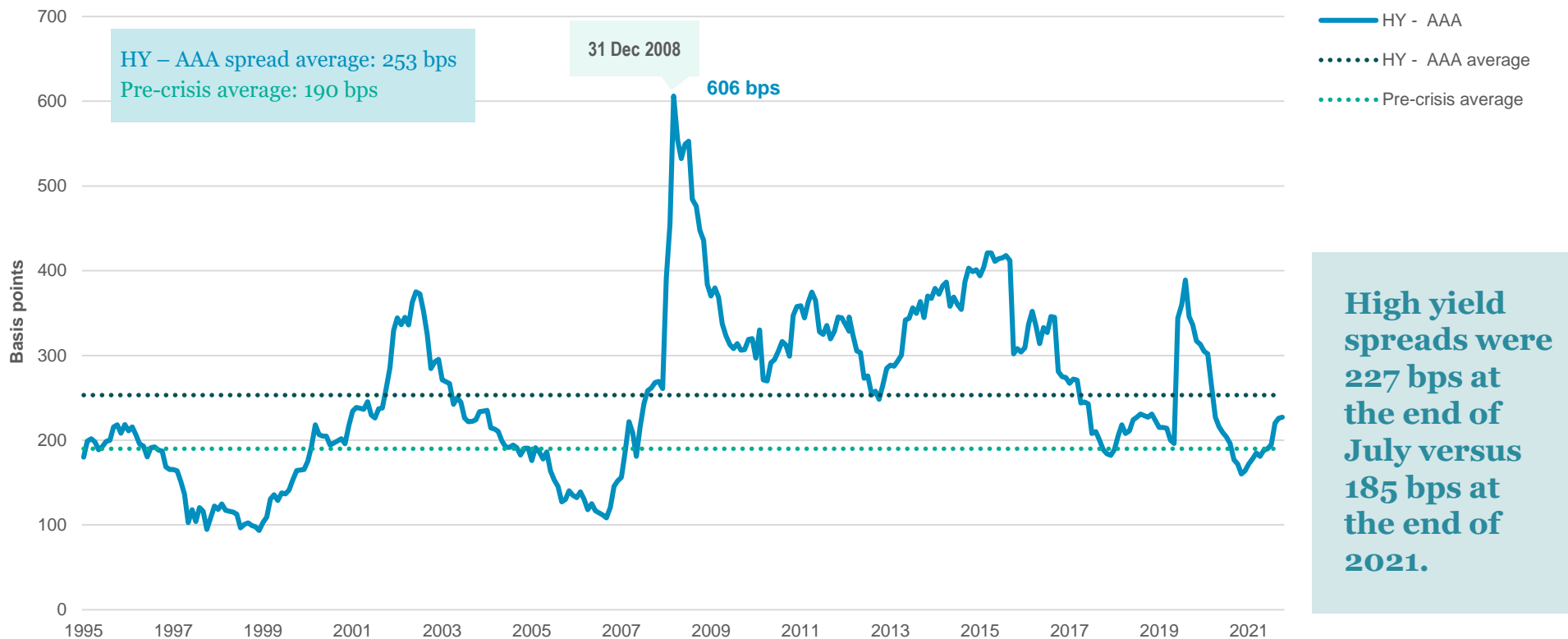
1 Data source: census.gov, 31 Dec 2021.

2 Data source: National Association of State Budget Officers (NASBO), *The Fiscal Survey of States*, Spring 2022.

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High yield credit spreads have widened slightly since the beginning of the year

Bloomberg High Yield Municipal Index versus AAA yields

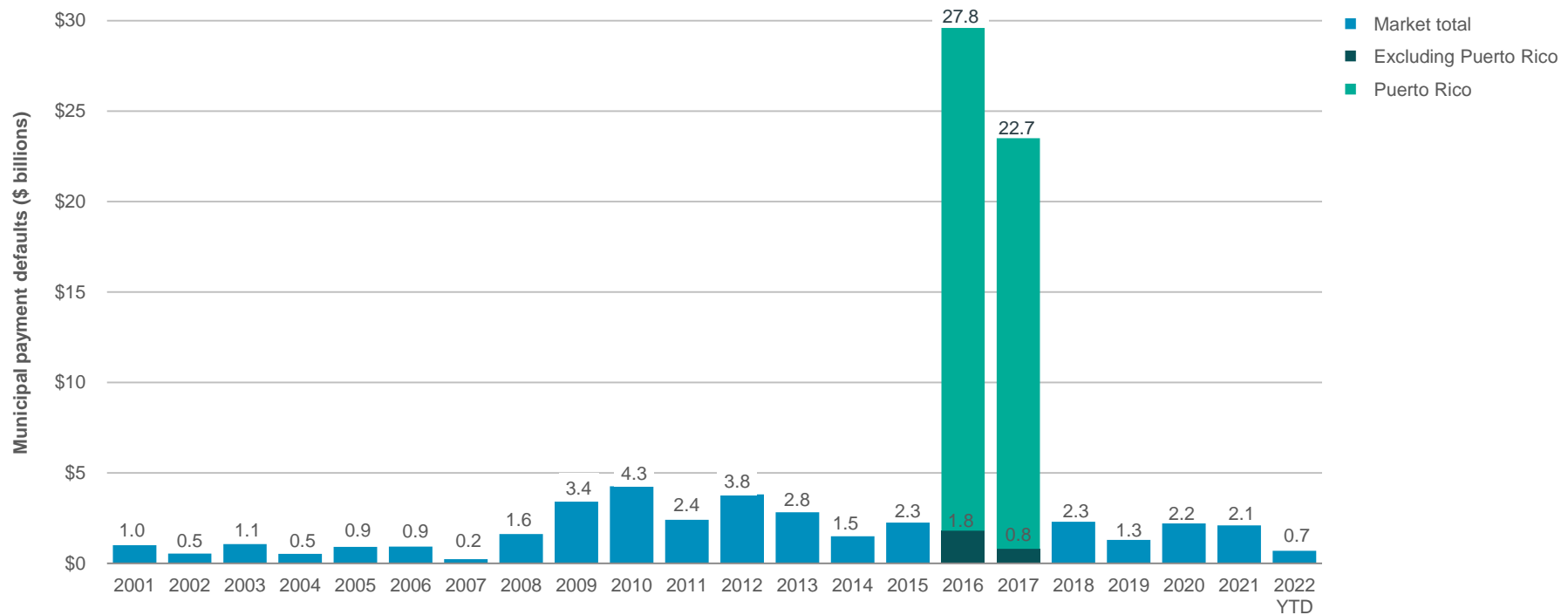


Data source: Bloomberg, Refinitiv MMD, 31 Oct 1995 – 31 Jul 2022, shown monthly. Chart shows data to the earliest period available. Pre-crisis period is 31 Oct 1995 – 31 Dec 2007. **Past performance does not predict or guarantee future results.** High yield municipal yields represented by the Bloomberg High Yield Municipal Index; AAA municipal yields represented by Municipal Market Data (MMD) yields for AAA rated 20-year bonds. High yield or lower-rated bonds and municipal bonds carry greater credit risk, and are subject to greater price volatility. Ratings shown are from S&P and are subject to change. AAA, AA, A, and BBB are investment grade ratings; BB, B, CCC/CC/C and D are below-investment grade ratings. Different benchmarks, economic periods, methodologies and market conditions will produce different results.

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Defaults remain in line with historical trends

Municipal payment defaults



Municipal defaults are rare and idiosyncratic. Nursing homes and industrial development bonds accounted for 71% of defaults in 2022 and 75% in 2021.

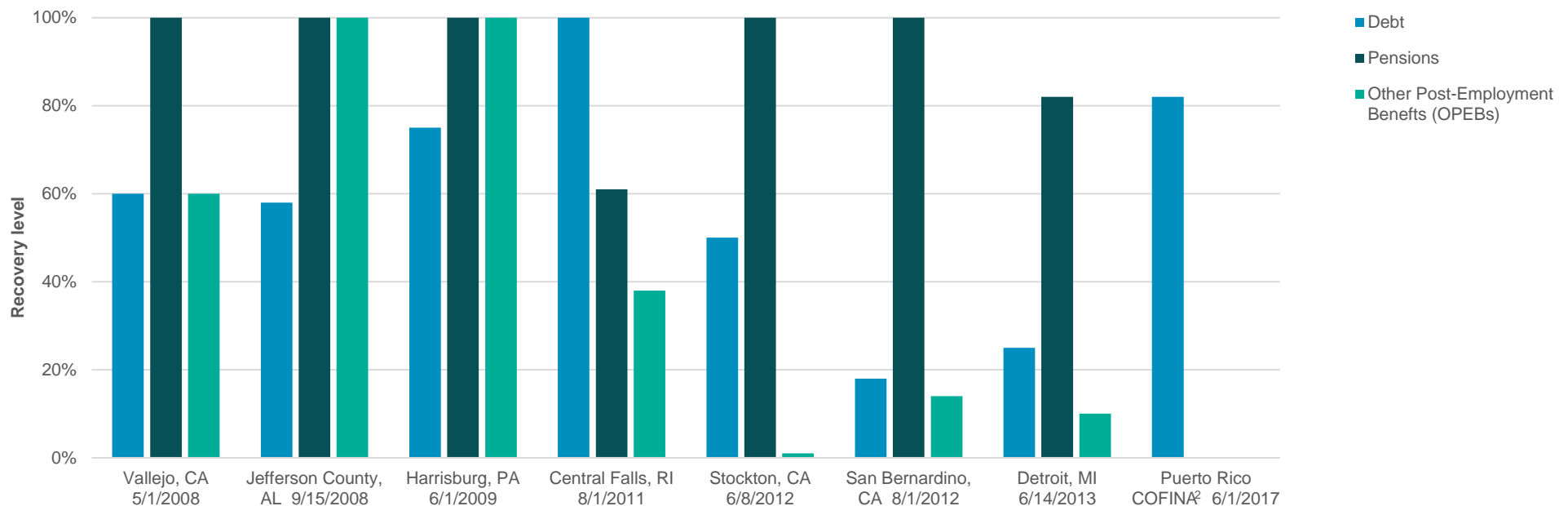
Data sources: Bank of America/Merrill Lynch Research, 08 Jul 2022, default data as of 30 Jun 2022. Data represents defaults on the entire universe of bonds, both rated and unrated, and includes Puerto Rico defaults.

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Retirees with pensions have priority in municipal defaults

Municipal recovery rates are significantly higher than corporates, with an average weighted recovery of 68% for municipals vs. 47% for corporates.¹

Recoveries in large municipal bankruptcies



¹ Municipal average weighted recoveries shown since 1970, and corporate average weighted recoveries since 1987.

² Puerto Rico includes COFINA recovery. Other debt, including retiree benefits, is not yet determined under Commonwealth Plan of Adjustment (POA). Puerto Rico GO bonds were exchanged on 15 March 2022. Recovery will depend on performance of sales tax.

Data source: Moody's Investors Service, 25 Feb 2016; *U.S. Municipal Bond Defaults and Recoveries, 1970 – 2020*, 09 Jul 2021. Past performance does not predict or guarantee future results.

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Municipal bonds have historically defaulted at rates lower than equivalently rated corporates

Municipal default rates remain significantly less than corporates.

Moody's average cumulative default rates of municipals vs. corporates, 1970-2021¹

Rating	YEAR 5			YEAR 10		
	Corporate	Municipal	Difference	Corporate	Municipal	Difference
Aaa	0.08%	0.00%	0.08%	0.35%	0.00%	0.35%
Aa	0.28%	0.01%	0.28%	0.76%	0.02%	0.74%
A	0.68%	0.03%	0.65%	1.96%	0.10%	1.86%
Baa	1.38%	0.46%	0.92%	3.45%	1.06%	2.38%
Ba	7.42%	1.88%	5.55%	14.78%	3.40%	11.38%
B	20.12%	11.67%	8.45%	33.42%	16.70%	16.73%
Caa-C	33.66%	19.04%	14.62%	49.04%	23.71%	25.33%

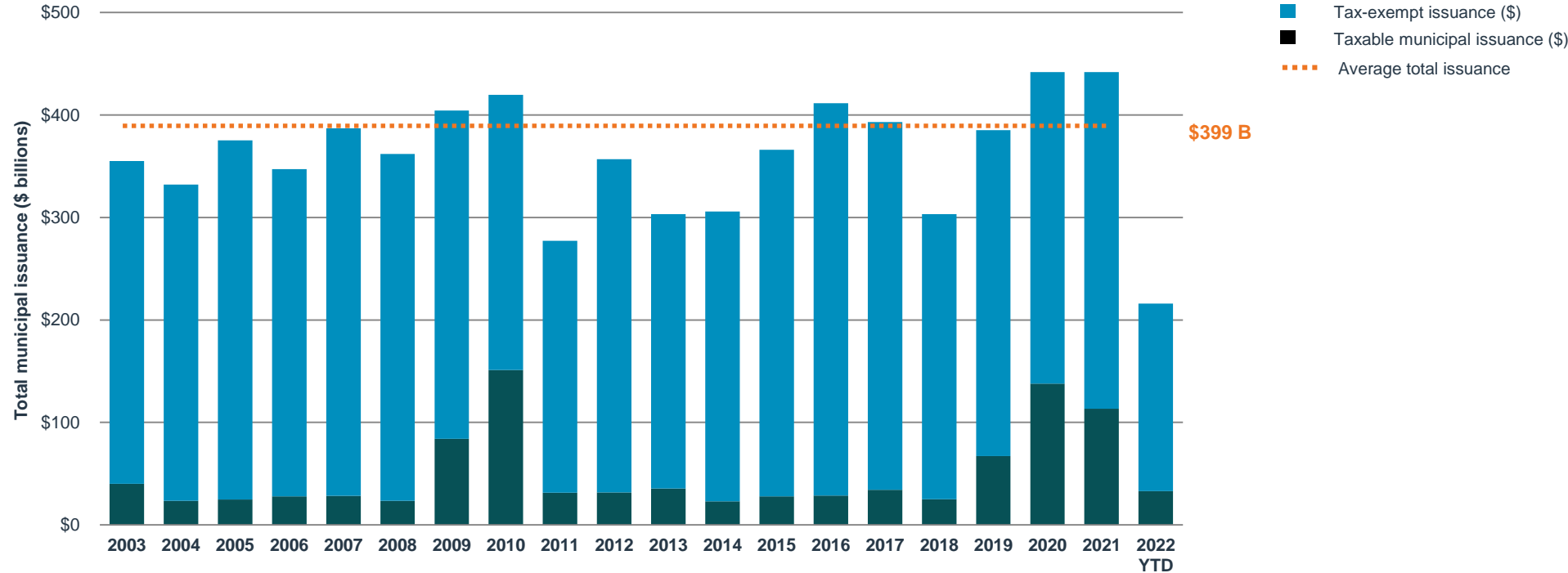
¹ Data source: Moody's Investors Service, *U.S. Municipal Bond Defaults and Recoveries, 1970 – 2021*, 21 Apr 2022. Past performance does not predict or guarantee future results. The universe for the study represents approximately 12,500 fundamental U.S. public finance ratings from Moody's.

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Municipal supply should be similar to last year; rising rates have dampened refundings

Lower refunding activity has led to less taxable issuance this year.

Municipal issuance

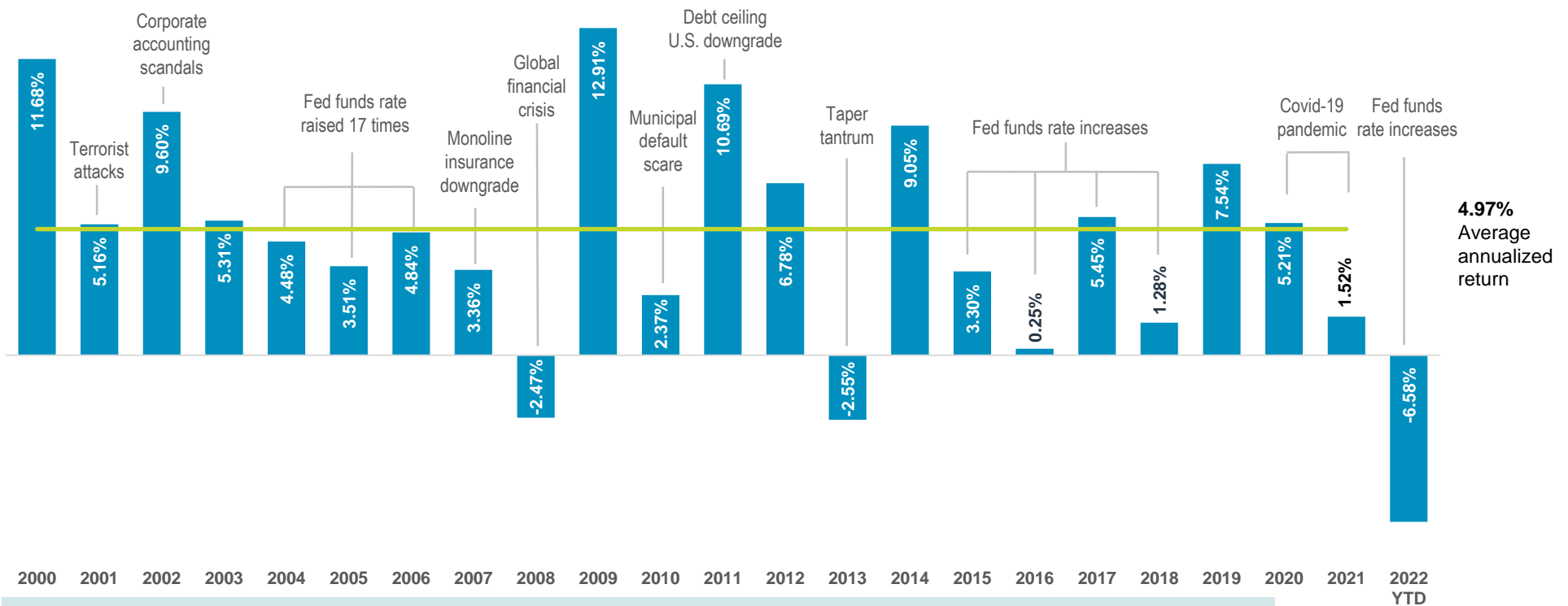


Data source: Securities Industry and Financial Markets Association (SIFMA.org), U.S. Bond Market Issuance and Outstanding, 01 Aug 2022 for period ending 31 Jul 2022. The average total issuance shown is for the period 01 Jan 2003 – 31 Dec 2021.

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Municipals have shown resilience during uncertain environments

Bloomberg Municipal Bond Index Returns (%)

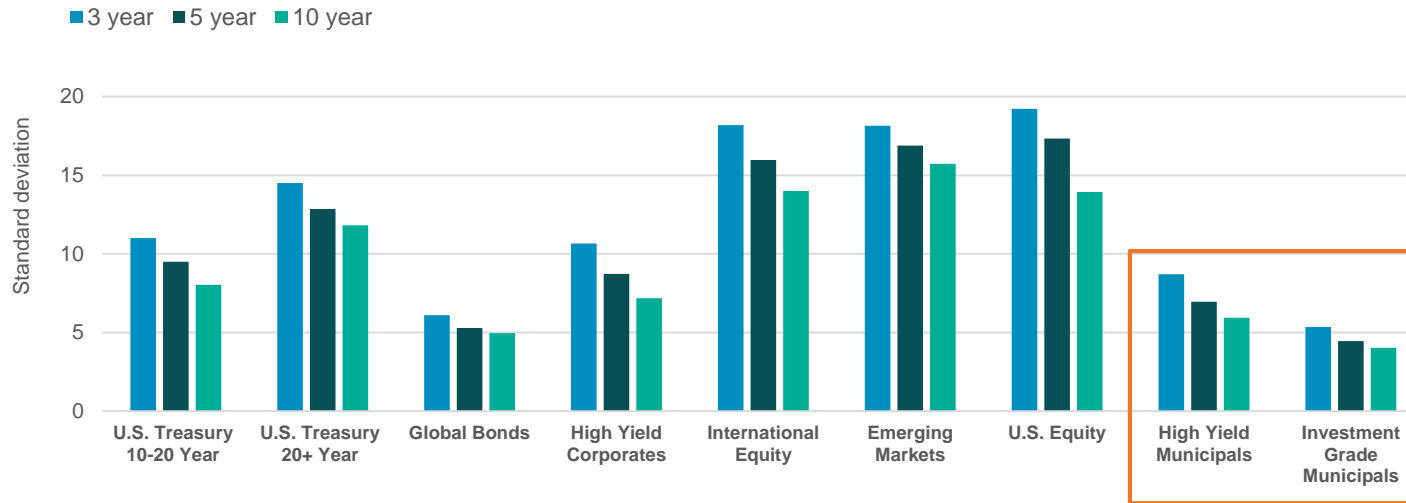


Municipal market volatility has increased since 2007. YTD performance is a result of technical conditions, but fundamentals remain sound.

Data source: Bloomberg, L.P., 31 Jul 2022. The average annualized return shown is for the period 01 Jan 2000 – 31 Dec 2021. Past performance does not predict or guarantee future results. All investments carry a certain degree of risk, including possible loss of principal, and there is no assurance that an investment will provide positive performance over any period of time. Index returns include reinvestment of income and do not reflect investment professional and other fees that would reduce performance in an actual client account.

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Municipals have exhibited lower volatility with strong risk-adjusted returns



Municipals have exhibited low volatility among asset classes.



Municipals have been relatively attractive on a risk-adjusted basis.

Data source: Morningstar, period ending 31 Jul 2022. Past performance does not predict or guarantee future results. Representative Indexes: Treasuries: Bloomberg U.S. 10-20 Year Treasury Index and the Bloomberg U.S. 20+ Year Treasury Index; Global Bonds: Bloomberg Global Aggregate Unhedged Index; High Yield Corporates: Bloomberg High Yield Corporate Index; International Equity: MSCI EAFE Index; Emerging Markets: MSCI Emerging Markets Index; U.S. Equity: S&P 500 Index; High Yield Municipals: S&P Municipal High Yield Index and Investment Grade Municipals: Bloomberg Municipal Bond Index.

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The way rates rise can determine how fixed income may react

Fed funds rising rate periods rates since 1994

	Period 1 04 Feb 1994 to 01 Feb 1995	Period 2 30 Jun 1999 to 16 May 2000	Period 3 30 Jun 2004 to 29 Jun 2006	Period 4 15 Dec 2015 to 19 Dec 2018	Period 5 16 Mar 2022 to ?
Starting rate level	3.00%	4.75%	1.00%	0 to 25 bps	25 bps
Number of hikes	7	6	17	9	4
Duration	12 Months	10 Months	24 Months	36 months	?
Ending rate level	6.00%	6.50%	5.25%	2.50%	?
Magnitude	300 basis points	175 basis points	425 basis points	225 basis points	?

Data sources: Bloomberg, www.federalreserve.gov, data indicates changes in fed funds rates. Data shown applies to the actual time periods noted in the table. Data for period 5 is as of 31 Jul 2022. **Past performance does not predict or guarantee future results.** One basis point equals .01%, or 100 basis points equal 1%. Different benchmarks and economic periods will produce different results. Other methods and market conditions may result in slightly different outcomes. All investments carry a certain degree of risk, including possible loss of principal, and there is no assurance that an investment will provide positive performance over any period of time. Each period has its own specific factors that may help or hurt the total returns of bonds. These may be economic in nature or technically driven.

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The way rates rise can affect returns along the yield curve

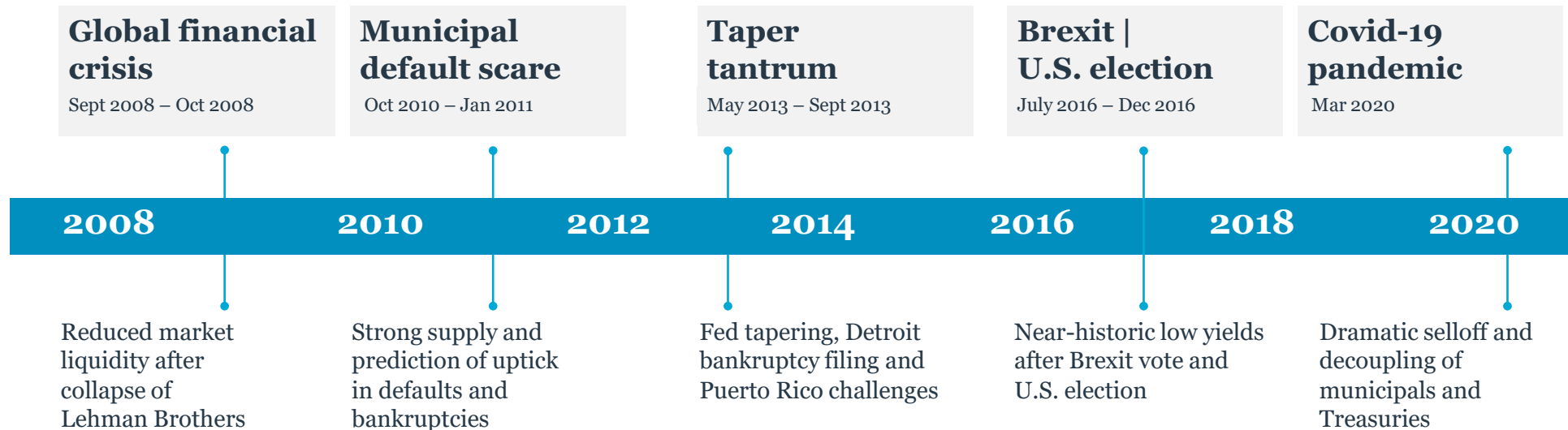
Bloomberg Municipal Index	Period 1 04 Feb 1994 to 01 Feb 1995					Period 2 30 Jun 1999 to 16 May 2000					Period 3 30 Jun 2004 to 29 Jun 2006					Period 4 15 Dec 2015 to 19 Dec 2018				
	6-month return before	Total return during	Change in yields during	6-month return after	Total return across three periods	6-month return before	Total return during	Change in yields during	6-month return after	Total return across three periods	6-month return before	Total return during	Change in yields during	6-month return after	Total return across three periods	6-month return before	Total return during	Change in yields during	6-month return after	Total return across three periods
1-year	2.45%	2.06%	+204 bps	3.77%	8.50%	1.35%	3.11%	+92 bps	2.99%	7.63%	0.28%	3.40%	+188 bps	2.08%	5.85%	0.39%	4.96%	+109 bps	1.54%	4.90%
3-year	3.35%	0.70%	+175 bps	5.22%	9.51%	0.66%	2.43%	+80 bps	3.89%	7.12%	-0.31%	3.46%	+132 bps	2.57%	6.78%	1.00%	6.60%	+85 bps	2.43%	6.87%
5-year	4.38%	-0.95%	+152 bps	6.83%	10.45%	-0.21%	1.90%	+68 bps	5.02%	6.78%	-0.90%	4.76%	+77 bps	3.22%	7.16%	2.13%	9.48%	+69 bps	3.82%	10.64%
10-year	6.13%	-3.49%	+142 bps	8.55%	11.19%	-1.73%	1.71%	+53 bps	6.92%	6.87%	-0.81%	7.81%	+30 bps	4.77%	12.05%	3.44%	14.40%	+49 bps	5.61%	17.10%
20-year	6.53%	-4.91%	+128 bps	7.64%	9.03%	-1.13%	-1.04%	+70 bps	8.85%	6.50%	-0.18%	12.53%	-20 bps	5.52%	18.53%	3.59%	17.36%	+53 bps	6.55%	20.37%
22+year	6.73%	-6.21%	+128 bps	8.29%	8.40%	-1.68%	-2.68%	+75 bps	9.69%	4.95%	-1.26%	15.93%	-47 bps	6.17%	21.53%	4.20%	18.61%	+48 bps	7.31%	22.37%
Yield curve flattened 76 bps Best performer: 10-year					Yield curve flattened 17 bps Best performer: 1-year					Yield curve flattened 235 bps Best performer: 22+					Yield curve flattened 61 bps Best performer: 22+					

Data source: Bloomberg L.P. Data shown applies to the actual time periods noted in the table. **Past performance does not predict or guarantee future results. Representative Indexes:** 1-Year Bonds: Bloomberg 1-Year Municipal Bond Index; 3-Year Bonds: Bloomberg 3-Year Municipal Bond Index; **5-Year Bonds:** Bloomberg 5-Year Municipal Bond Index; 10-Year Bonds: Bloomberg 10-Year Municipal Bond Index; 20-Year Bonds: Bloomberg 20-Year Municipal Bond index; **22+-Year Bonds:** Bloomberg Long Municipal Bond Index; **Municipal Bond Market:** Bloomberg Municipal Bond Index. Different benchmarks and economic periods will produce different results. Other methods and market conditions may result in slightly different outcomes. Index returns include reinvestment of income and do not reflect investment professional and/or other fees that would reduce performance in an actual client account. All investments carry a certain degree of risk, including possible loss of principal, and there is no assurance that an investment will provide positive performance over any period of time. Each period has its own specific factors that may help or hurt the total returns of bonds. These may be economic in nature or technically driven.

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Staying the course has benefited investors

Since 2008, there have been five periods when municipal yields increased by at least 100 basis points in less than one year.



In 2022, we entered another period of municipal market volatility in which Fed rate increases, inflation and geopolitical events has led to rapid municipal yield increases.

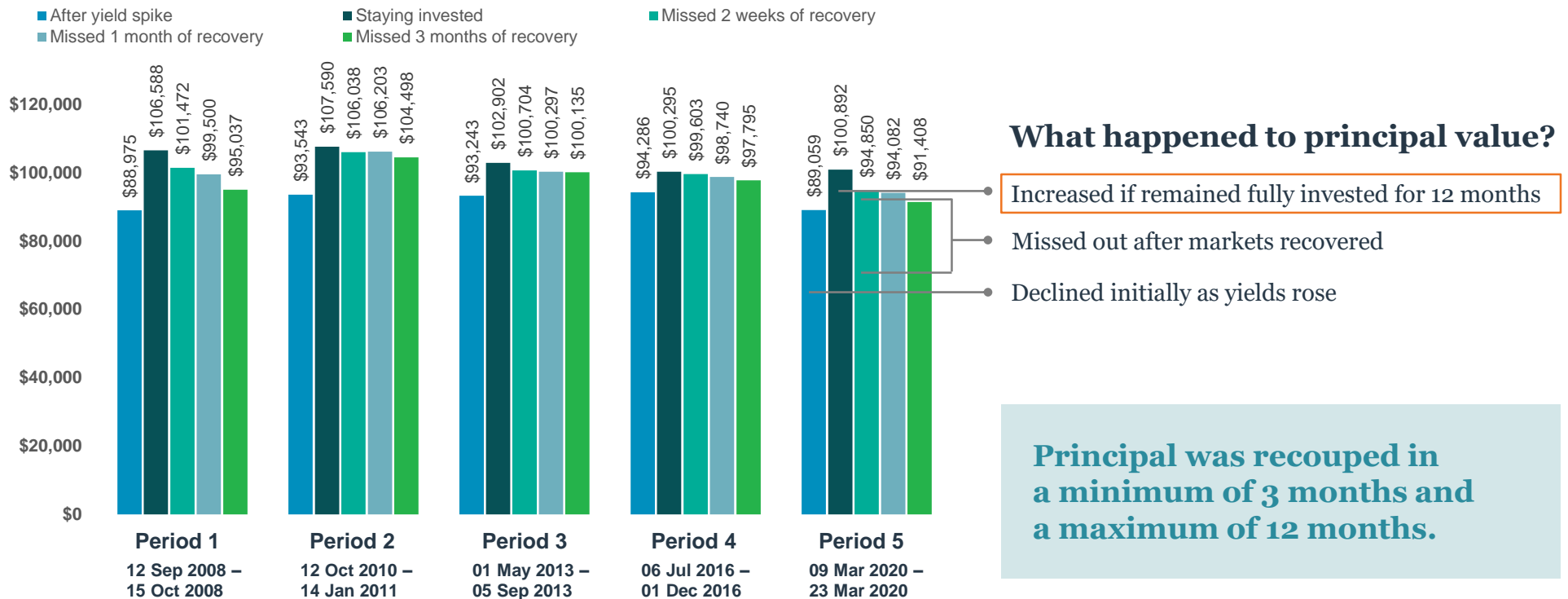
Municipal bond market yields as represented by Bloomberg Municipal Bond Index.

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Portfolios were eventually compensated for patience

Missing even the first two weeks of a market rebound resulted in lower rates of recovery.

Value of a hypothetical \$100,000 portfolio

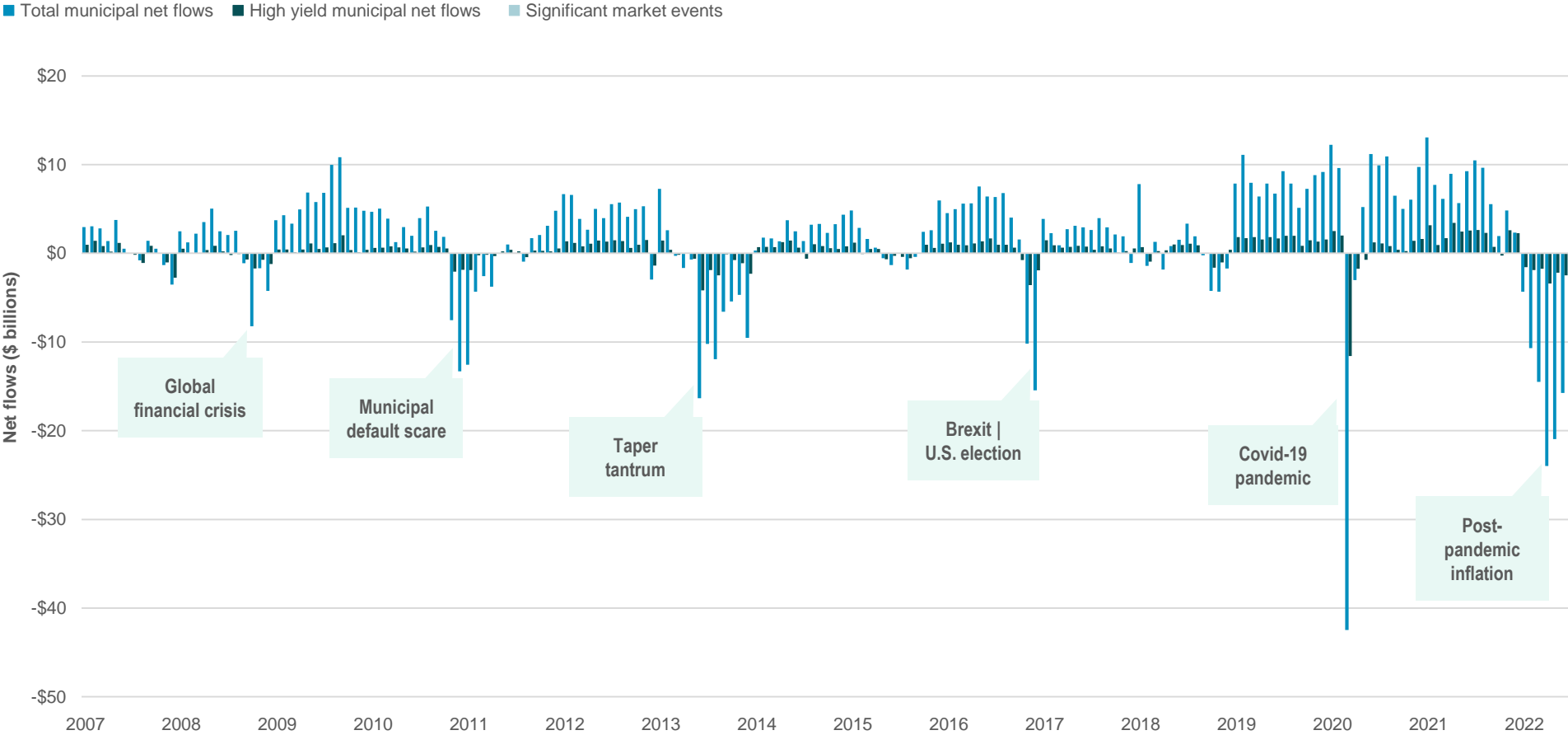


Data source: Bloomberg L.P., as of 31 Mar 2020. Data shown applies to the actual time periods noted in the table. **Representative Index:** Bloomberg Municipal Bond Index. Nuveen analyzed five periods where municipal yields increased by at least 100 basis points in less than one year. Nuveen examined the total return of hypothetical \$100,000 portfolios held for 3-, 6-, and 12-month periods following the spike. In this chart, the portfolios were held for 12 months following the spikes. Hypothetical examples are shown for illustrative purposes only and do not represent the performance of an actual portfolio. Individual investor results will vary. Different benchmarks and economic periods will produce different results. Other methods and market conditions may result in slightly different outcomes. Index returns include reinvestment of income and do not reflect investment professional and/or other fees that would reduce performance in an actual client account. Hypothetical results are no guarantee of future results.

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Municipal fund flows have historically returned after market dislocations

Total municipal and high yield municipal net fund flows

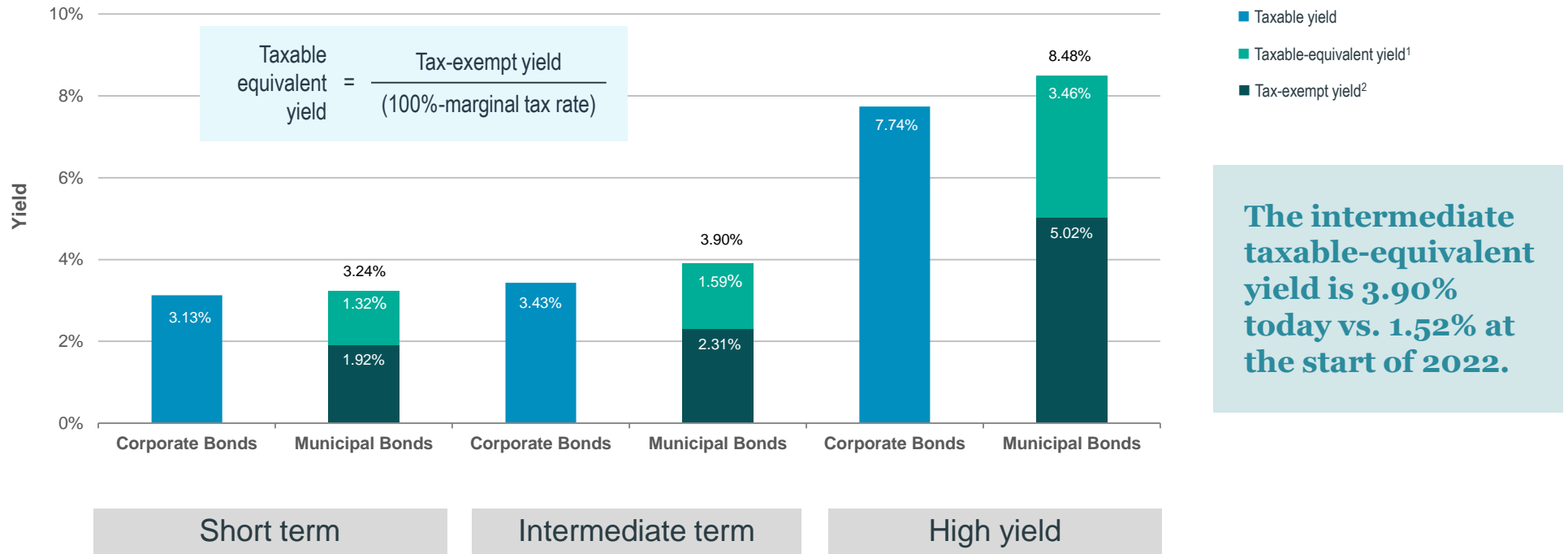


Data source: Morningstar Direct, 01 Jan 2007 – 30 Jun 2022, shown monthly. Industry categories: **Municipals** represent the total of all all municipal bond open-end funds, including high yield; **High yield municipals** represent all high yield municipal bond open-end funds. Shading represents significant market events.

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Municipals are attractive on an after-tax basis

Taxable and tax-equivalent yields



1 The taxable-equivalent yield is based on the highest individual marginal federal tax rate of 37%, plus the 3.8% Medicare tax on investment income (the Net Investment Income Tax). Individual tax rates may vary.

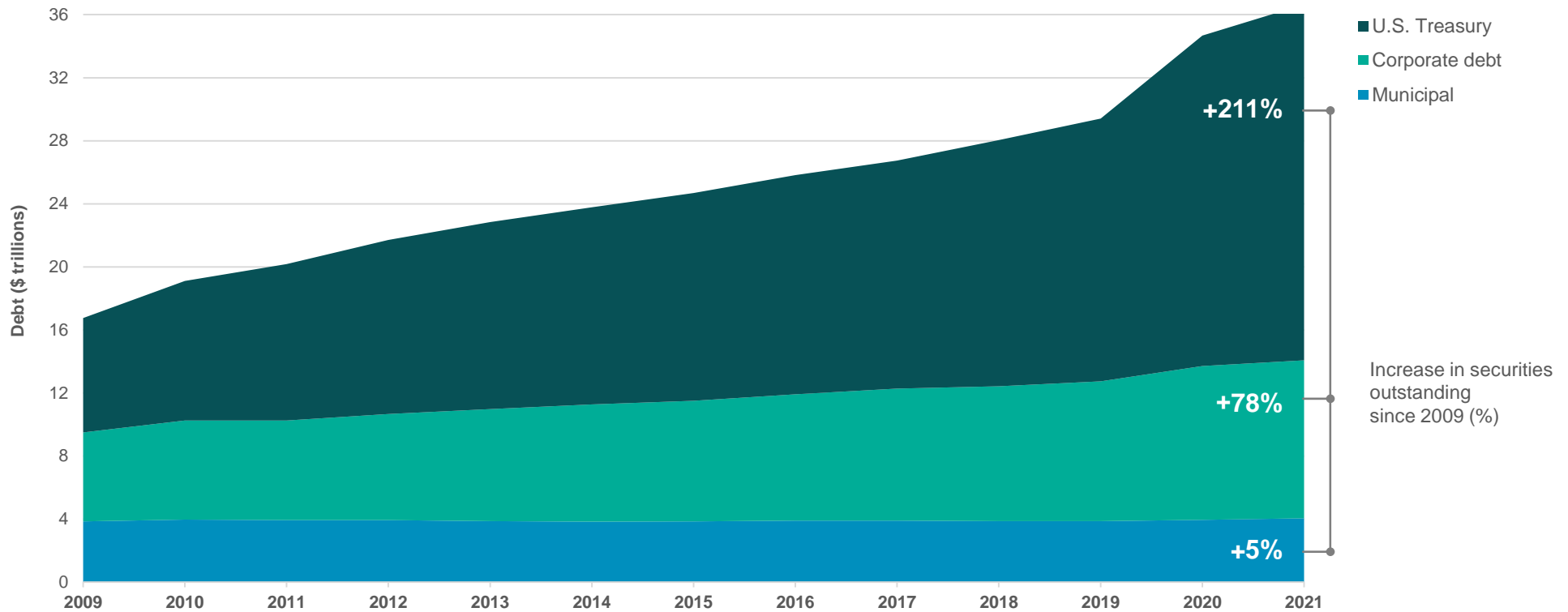
2 Some income may be subject to state and local taxes and the federal alternative minimum tax.

Data source: Bloomberg L.P., 31 Jul 2022. **Past performance does not predict or guarantee future results.** Yields are yield to worst. Yield to worst is the lowest potential yield that can be received on a bond without the issuer defaulting. Taxable-equivalent yield is the yield a taxable investment needs to possess (before taxes) for its yield to be equal to that of a tax-free municipal investment. The yields shown are based on the highest individual marginal federal tax rate of 37%, plus the 3.8% Medicare tax on investment income. Individual tax rates may vary. They do not take into account the effects of the federal alternative minimum tax (AMT) or capital gains taxes. **Representative Indexes:** **Short Term Corporate Bonds:** Bloomberg U.S. Government/Credit 1-3 Year Index; **Short Term Municipal Bonds:** Bloomberg Municipal Short Index; **Intermediate Term Corporate Bonds:** Bloomberg U.S. Government/Credit Intermediate Index; **Intermediate Term Municipal Bonds:** Bloomberg Municipal Intermediate Index; **High Yield Corporate Bonds:** Bloomberg Corporate High Yield 2% Issuer Capped Index; **High Yield Municipal Bonds:** Bloomberg High Yield Municipal Bond Index. Different benchmarks, economic periods, methodologies and market conditions will produce different results.

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Municipal securities outstanding are not growing as quickly as other fixed income markets

U.S. Treasury and corporate debt outstanding has increased, while the amount of outstanding municipal bonds has remained generally flat.

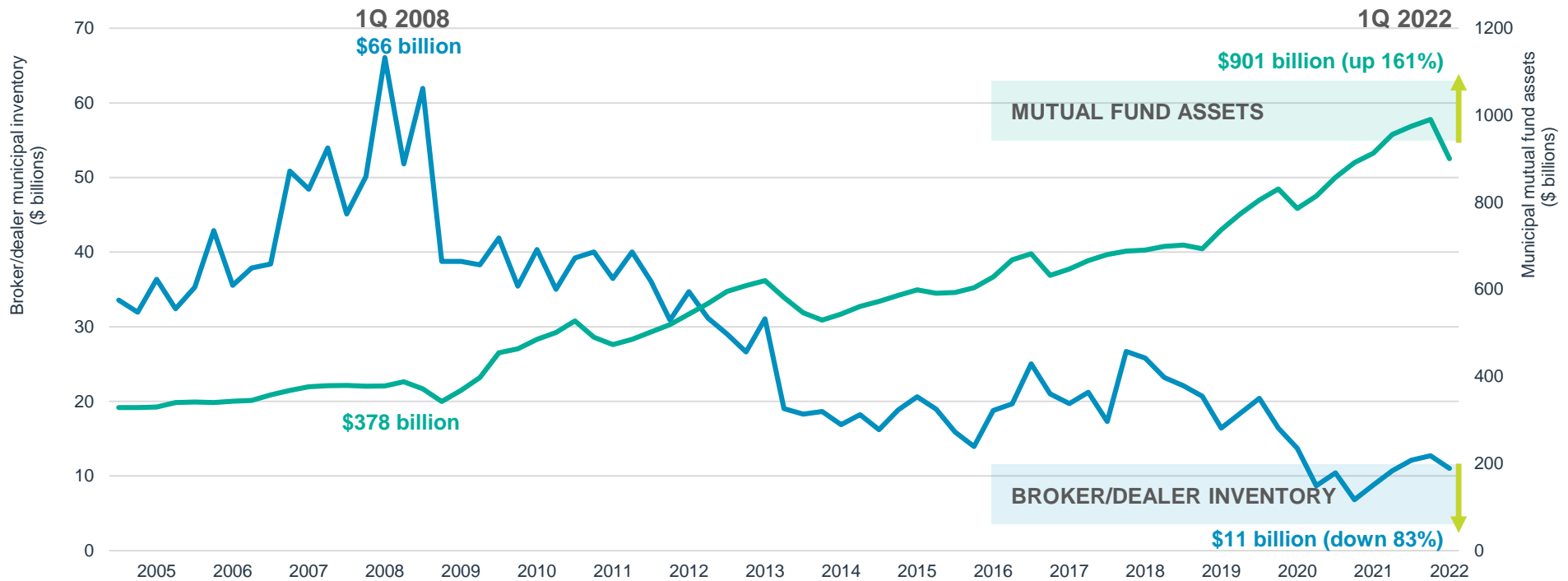


Data sources: SIFMA, Bloomberg, Federal Reserve, U.S. Treasury, 31 Mar 2022 for period ending 31 Dec 2021.

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Building individual bond portfolios has become more difficult

Professional managers can help in an environment of lower inventory.



Other factors that support investing with a professional manager:

- Sources of liquidity have diminished for individual investors
- Municipal assets under management have increased since 2008, adding \$523 billion in mutual funds

Data source: Assets and inventory data from Federal Reserve Flow of Funds ending 09 Jun 2022, data as of 31 Mar 2022.

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Outlook

Opportunities

- Higher yields and interest rate volatility are creating opportunity across various municipal strategies.
- Municipal credit remains strong, with rating upgrades outpacing downgrades
- Technical dislocations often attract non-traditional buyers which can help with recovery.
- Municipal-to-Treasury ratios have moderated, but the long end of the curve remains attractive.
- Flexible mandates and strong credit fundamentals support high yield strategies.
- Flexibility regarding curve positioning and credit selection can support long-term outperformance.

Challenges

- Overall municipal supply continues to decline.
- Treasury market volatility is creating higher interest rate volatility for municipals.
- Municipal-to-Treasury ratios are more volatile, due to waves of retail selling.
- Inflation has been less contained than originally expected, creating concern for markets and investors.
- Recession risks are increasing but a soft landing is still possible.

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Taxable municipal market

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Technical factors are driving negative returns year to date; fundamentals remain sound

Characteristics and performance

Index	Yield to worst (%)	Spread (bps)	Effective duration (years)	Returns (%)			
				July 2022	2Q 2022	YTD 2022	2021
Taxable municipal (AA-)	4.12	123	8.46	1.92	-6.20	-12.31	0.93
U.S. asset-backed securities (AA+)	3.71	81	2.19	0.49	-0.91	-3.30	-0.34
U.S. mortgage-backed securities (AA+)	3.35	27	5.43	3.21	-4.01	-5.85	-1.04
U.S. corporate investment grade (BBB+)	4.32	142	7.67	3.24	-7.26	-11.61	-1.04
U.S. aggregate bond (AA)	3.41	48	6.34	2.44	-4.69	-8.16	-1.54
U.S. Treasury (AAA)	2.89	-	6.41	1.59	-3.78	-7.69	-2.32
Global corporate bonds (BBB+)	3.87	160	6.58	2.79	-8.72	-13.15	-2.89
Global aggregate (unhedged) (A+)	2.60	54	6.99	2.13	-8.26	-12.08	-4.71

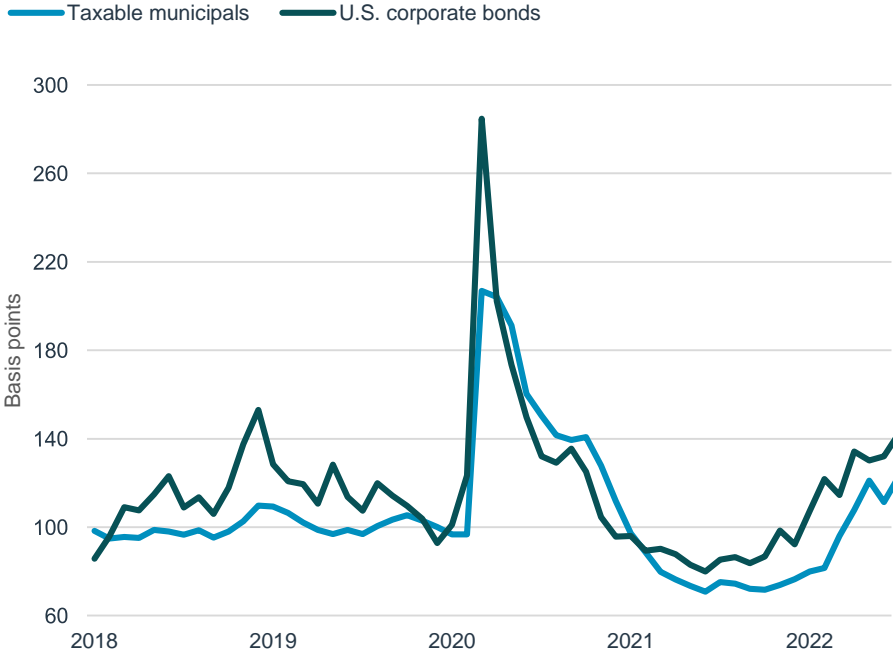
Data sources: Bloomberg, L.P., Bloomberg indexes, 31 Jul 2022. Past performance does not predict or guarantee future results. Total returns for a period of less than one year are cumulative.

OPINION PIECE. PLEASE SEE IMPORTANT DISCLOSURES IN THE ENDNOTES.

Taxable municipal credit spreads have been more stable than corporate spreads this year

Taxable municipals have been defensive during Treasury volatility.

Credit spreads



Yield



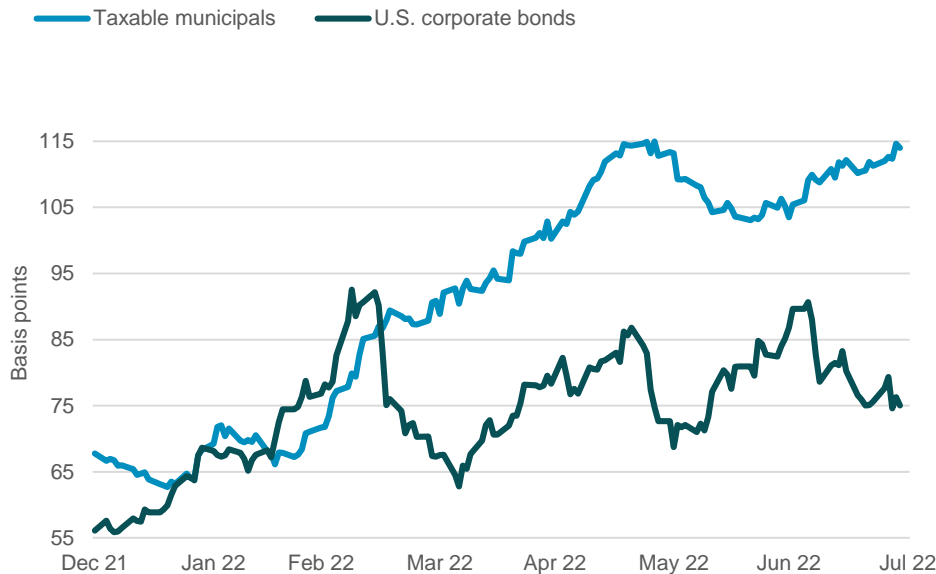
Data source: Bloomberg, L.P., 31 Jan 2018 – 31 Jul 2022, shown monthly. Spread represents option-adjusted spread (OAS). Past performance does not predict or guarantee future results. Representative indexes: taxable municipals: Bloomberg U.S. Taxable Municipal Bond Index; U.S. corporate bonds: Bloomberg U.S. Corporate Bond Index.

OPINION PIECE. PLEASE SEE IMPORTANT DISCLOSURES IN THE ENDNOTES.

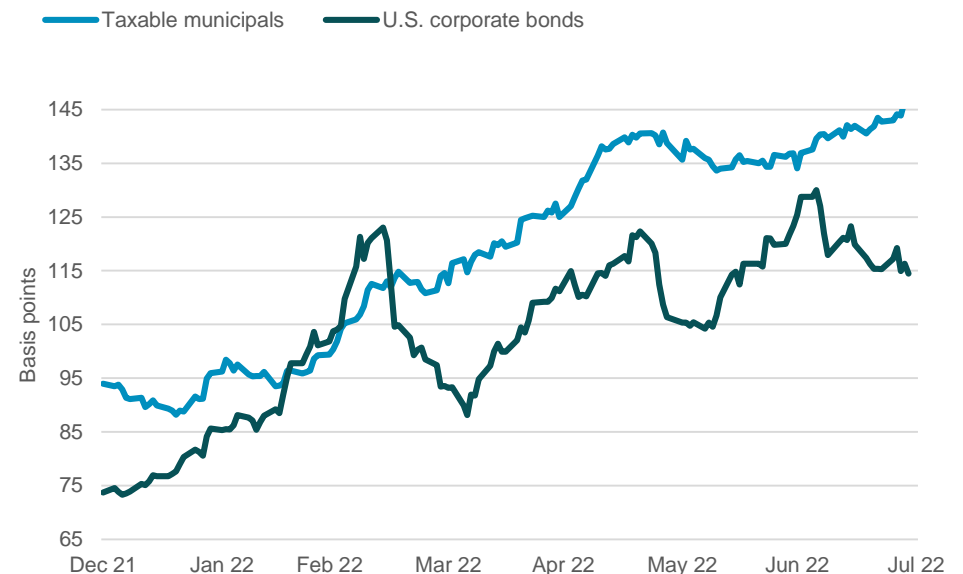
Municipal and corporate spreads are moving in different directions

Municipal bonds provide essential services, which can help provide insulation from economic downturns.

AA-rated spread



A-rated spread



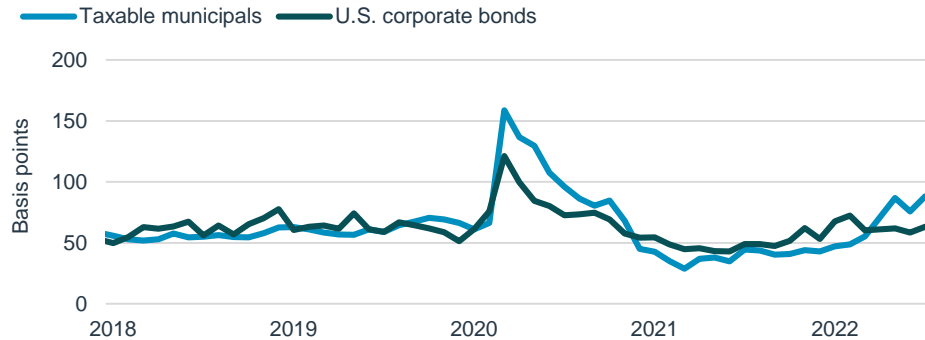
Divergence in spreads widened as technical pressures continue in the taxable municipal market during July.

Data source: Bloomberg, L.P., 31 Dec 2021 – 31 Jul 2022, shown daily. Spread represents option-adjusted spread (OAS). Past performance does not predict or guarantee future results. Representative indexes: taxable municipals: Bloomberg U.S. Taxable Municipal Bond Index; U.S. corporate bonds: Bloomberg U.S. Corporate Bond Index.

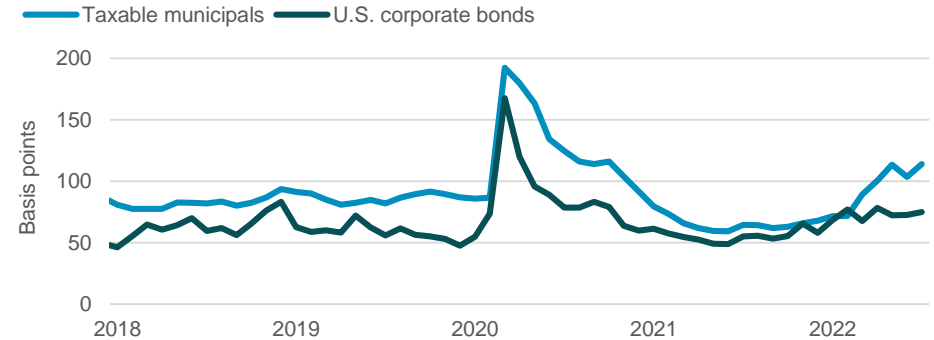
OPINION PIECE. PLEASE SEE IMPORTANT DISCLOSURES IN THE ENDNOTES.

Lower credit quality taxable municipal bonds can provide yield premium

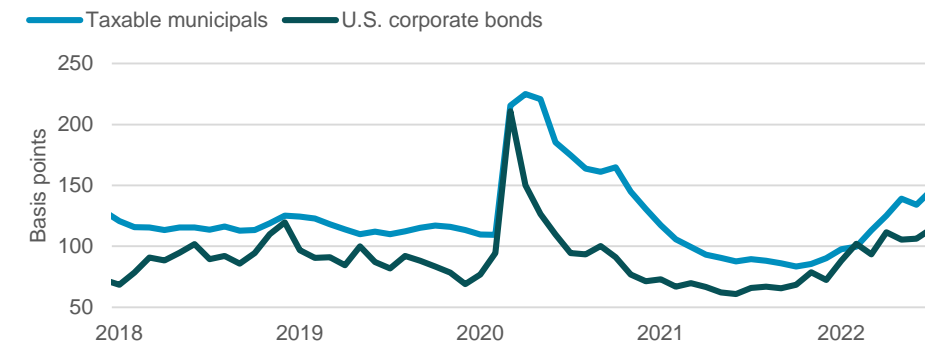
AAA-rated spread



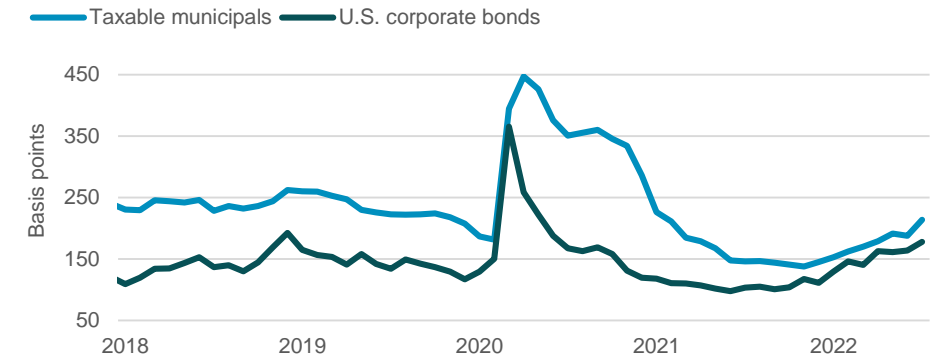
AA-rated spread



A-rated spread



BBB-rated spread



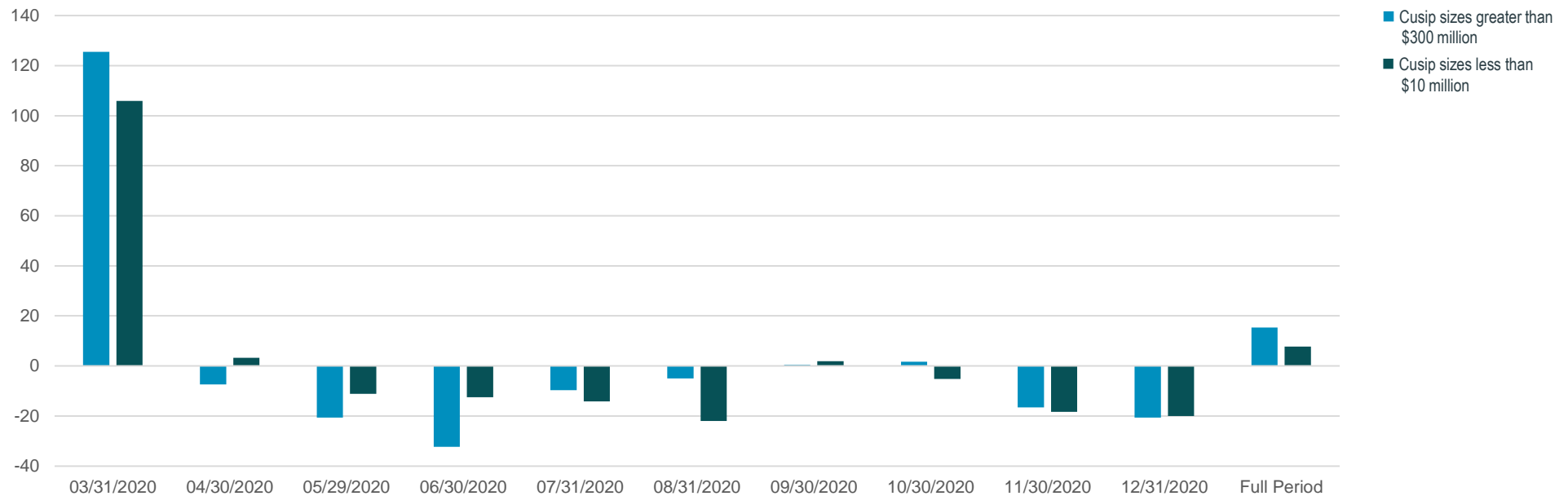
Data source: Bloomberg, L.P., 31 Jan 2018 – 31 Jul 2022, shown monthly. Spread represents option-adjusted spread (OAS). Past performance does not predict or guarantee future results. Representative indexes: taxable municipals: Bloomberg U.S. Taxable Municipal Bond Index; U.S. corporate bonds: Bloomberg U.S. Corporate Bond Index.

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Lower beta taxable municipals have outperformed during initial drawdown but lagged in recovery

Over a full period, credit spread movements have normalized between larger issuers that tend to have higher beta and smaller issuers with lower beta.

Credit spread widening and recovery during pandemic onset in 2020



Data source: Bloomberg, L.P. and S&P, 31 Mar 2020 – 31 Dec 2020. **Spread** represents option-adjusted spread (OAS). Monthly OAS change reflects the difference in OAS from beginning of the month to end of the month. **Cusip sizes greater than \$300 million:** Bloomberg Taxable Municipal Agg Eligible Index; **Cusip sizes less than \$10 million** are comprised of Cusips within the S&P Taxable Municipal Index that are less than \$10 million and have effective durations between 10 and 12 years. **Lower beta** represented by Cusip sizes less than \$10 million.

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Appendix

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Rating agency outlooks are brighter

An infusion of federal stimulus funds and solid revenue collections have led to improving outlooks.

Category	Sector	2022 Moody's outlook	2020 Moody's outlook
Transportation	Airport	Positive	Negative
	Mass transit	Stable	Negative
	Public ports	Positive	Negative
	Toll roads	Positive	Negative
Higher education	Privates	Stable	Negative
	Publics	Stable	Negative
	Community colleges	Stable	Stable
General obligation	State governments	Stable	Negative
	Local governments	Stable	Negative
Utilities	Public power	Stable	Stable
	Water/Sewer	Stable	Stable
Health care	Not for Profit Hospitals/Health care	Negative	Negative
Other	Housing	Stable	Stable
	Not for profit	Stable	Negative

Data source: Moody's, 31 Dec 2021.

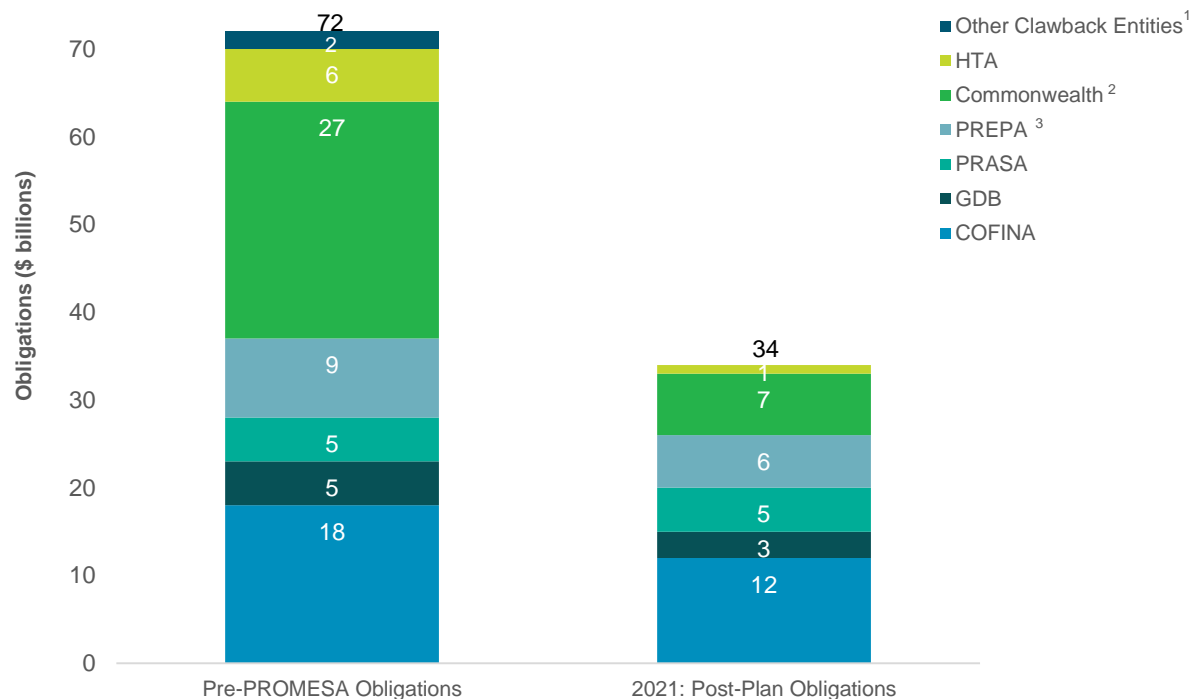
OPINION PIECE. PLEASE SEE IMPORTANT DISCLOSURES IN THE ENDNOTES.

Puerto Rico emerges from bankruptcy

On 15 March 2022, bondholders exchanged legacy bonds for new GO debt, a cash consideration and Contingent Value Instrument (CVI).

- Direct debt obligations reduced to \$7 billion from \$34 billion. New GO bonds benefit from enhanced security pledge.
- CVI holders may benefit from outperformance in sales tax collections.
- New debt management policy limits Puerto Rico's ability to overleverage in the future.
- Plan of Adjustment requires pension reform measures and established new pension reserve trust with annual funding requirements.
- The Puerto Rico Electric Power Agency (PREPA) and Highway and Transportation Authority (HTA) remain in bankruptcy.

Plan of Adjustment: before and after



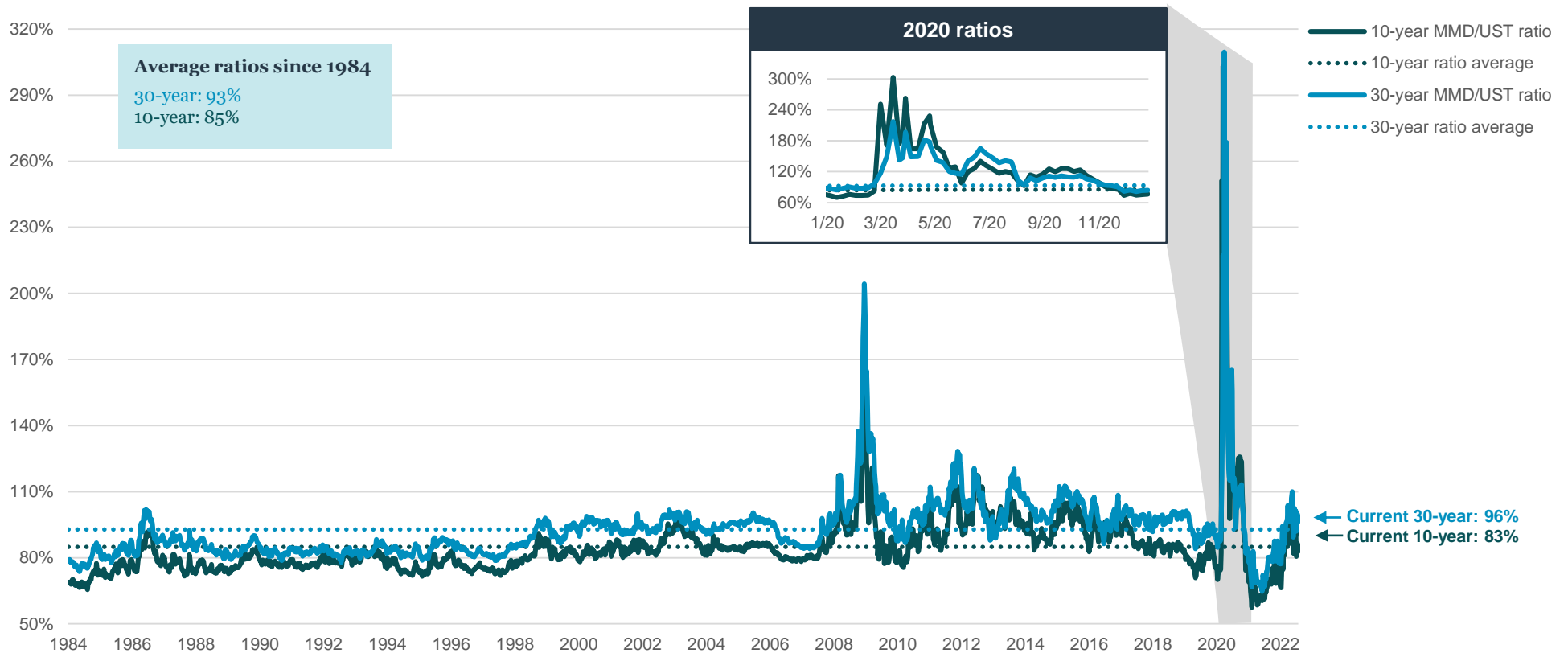
¹ Other Clawback Entities (Pre-PROMESA): Mediation ongoing; claims include ~\$2 billion PRIFA and ~\$420 million CCDA and MBA. ² Commonwealth (Pre-PROMESA): Includes GO/PBA claims of \$19 billion, General Unsecured Claims ~\$5 billion, ERS ~\$3 billion. ³ PREPA (Post-plan): Still in process. PREPA is not yet restructured and is currently subject to executing the 2019 PREPA RSA. Assuming maximum haircut of 32.5% as contemplated in May 2019 PREPA RSA.

Data sources: Puerto Rico Fiscal Agency & Financial Advisory Authority, *Fact Sheet – Plan of Adjustment – Amended POA, based on POA 1 Jan 2022*; The Bond Buyer. “As Plan of Adjustment becomes effective, restructured Puerto Rico debt hits market.” 16 Mar 2022. POA data excludes pensions. HTA: Highways and Transportation Authority, PREPA: Puerto Rico Electric Power Authority, PRASA: Puerto Rico Aqueduct and Sewer Authority, GDB: Government Development Bank, COFINA: Sales Tax-Backed Bonds. Corporacion del Fondo de Interes Apremiante de Puerto Rico, PBA: Public Building Authority, PRIFA: Puerto Rico Infrastructure Financing Agency, ERS: Employee Retirement System, RSA: Restructuring Support Agreement.

OPINION PIECE. PLEASE SEE IMPORTANT DISCLOSURES IN THE ENDNOTES.

Municipal-to-Treasury ratios are moderating and are closer to historical levels

AAA municipal's value relative to Treasuries

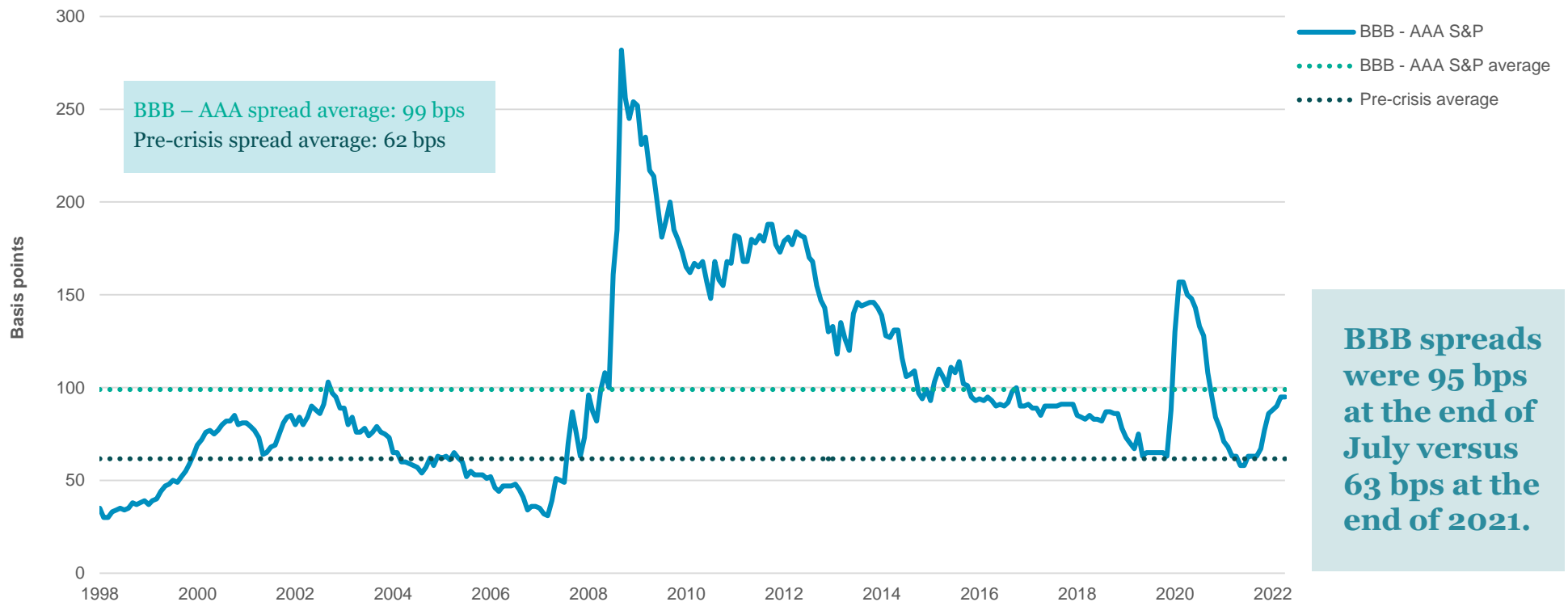


Data source: Refinitiv MMD for fair value Municipal 10- and 30-Year Index AAA General Obligation bonds; Bloomberg for 10- and 30-year U.S. Treasury yields, shown weekly, 01 Jan 1984 – 31 Jul 2022. Past performance does not predict or guarantee future results. Municipal-to-Treasury ratio represents the value of AAA municipal yields relative to U.S. Treasury yields.

OPINION PIECE. PLEASE SEE IMPORTANT DISCLOSURES IN THE ENDNOTES.

BBB credit spreads have widened slightly but are still below average

20-year BBB municipal yields versus AAA municipal yields



Data source: Bloomberg, Refinitiv MMD, 30 Apr 1998 – 31 Jul 2022, shown monthly. AAA and BBB rated municipal yields represented by Refinitiv Municipal Market Data (MMD) yields for AAA rated and BBB rated 20-year bonds, respectively. Data to the earliest period available. Pre-crisis period is 30 Apr 1998 - 31 Dec 2007. **Past performance does not predict or guarantee future results.** Ratings shown are from S&P and are subject to change. AAA, AA, A, and BBB are investment grade ratings; BB, B, CCC/CC/C and D are below-investment grade ratings. Different benchmarks, economic periods, methodologies and market conditions will produce different results.

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Significant federal stimulus and infrastructure spending benefits the municipal bond market

Over \$6 trillion in federal funds benefit individuals and municipalities, promoting financial and economic recovery and growth.

Federal stimulus/ Spending bills	Date signed into law	Funding
Coronavirus Aid, Relief and Economic Security Act (CARES I)	27 Mar 2020	\$2.2 trillion (stimulus)
Consolidated Appropriations Act (CARES II)	27 Dec 2020	\$900 billion (stimulus)
American Rescue Plan Act (ARPA)	11 Mar 2021	\$1.9 trillion (stimulus)
Infrastructure Investment and Jobs Act (IIJA)	12 Nov 2021	\$1.2 trillion (infrastructure spending): <ul style="list-style-type: none">• \$650 billion (existing programs)• \$550 billion (new programs)

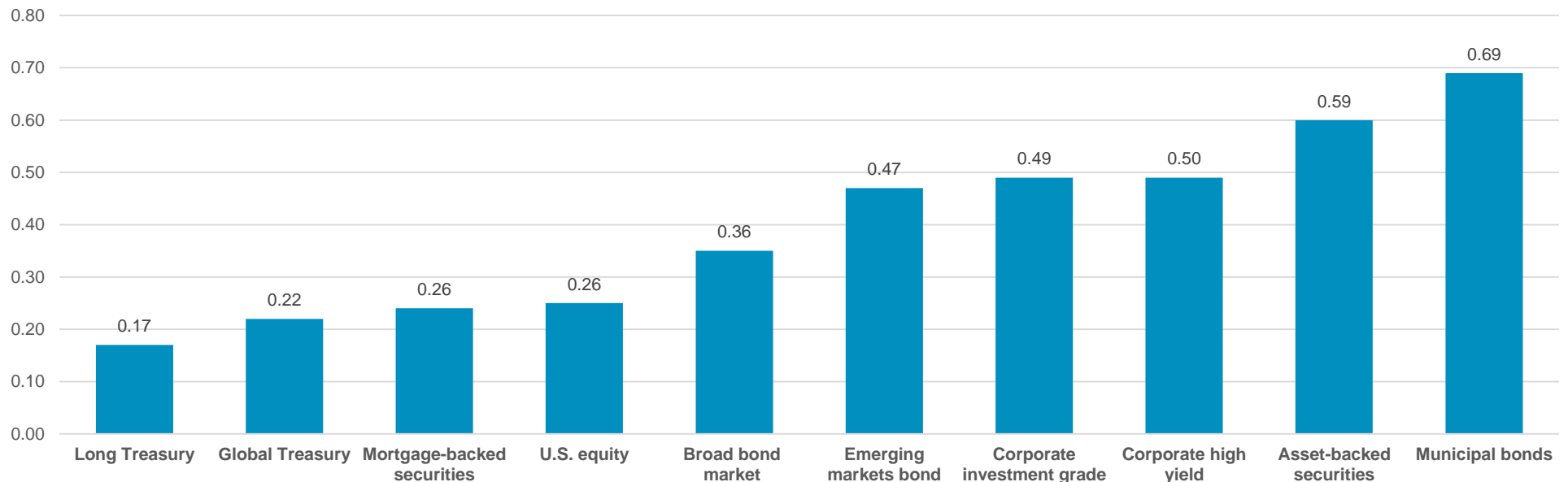
OPINION PIECE. PLEASE SEE IMPORTANT DISCLOSURES IN THE ENDNOTES.

High yield municipal bonds have a low correlation to other asset classes

High yield municipal bonds tend to be less cyclical than corporate bonds due to the essential nature of the projects being financed.

Correlation to Bloomberg High Yield Municipal Bond Index

01 Jul 1999 – 31 Jul 2022



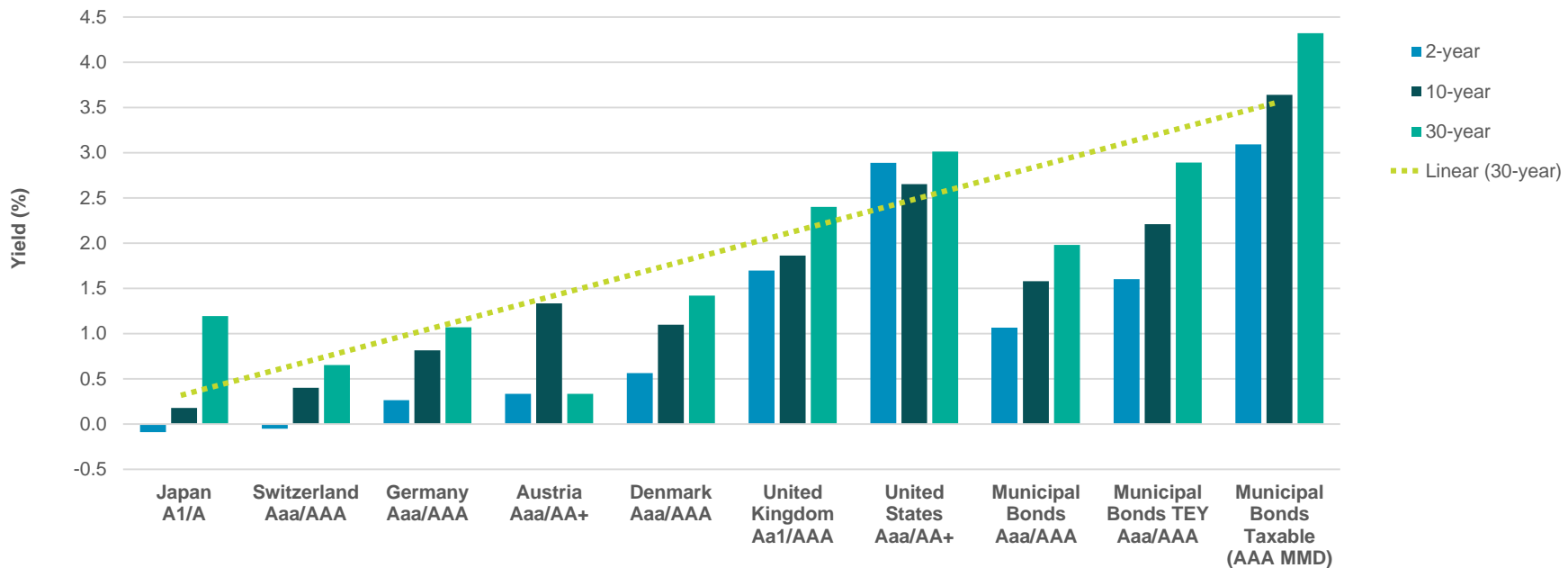
Data source: Morningstar Direct; 01 Jul 1999 – 31 Jul 2022. Past performance does not predict or guarantee future results. Representative Indexes: Long Treasury: Bloomberg U.S. Treasury Long Index; Global Treasury: Bloomberg Global Ex U.S. Treasury Bond Index; Mortgage-Backed Securities: Bloomberg MBS (fixed rate) Index; U.S. Equity: S&P 500 Index; Broad Bond Market: Bloomberg U.S. Aggregate Bond Index; Emerging Markets Bond: Bloomberg Emerging Market Index; Corporate Investment Grade: Bloomberg U.S. Corporate Investment Grade Index; Corporate High Yield: Bloomberg U.S. Corporate High Yield Index; Asset-Backed Securities: Bloomberg Asset-Backed Securities Index; Municipal Bonds: Bloomberg U.S. Municipal Bond Index.

OPINION PIECE. PLEASE SEE IMPORTANT DISCLOSURES IN THE ENDNOTES.

Municipals are attractive relative to sovereign debt

- Global central banks monetary and fiscal policies remain generally supportive, but tightening is underway.
- U.S. Treasuries are attractive relative to other developed nations' sovereign debt.
- Municipals are reporting higher yields, particularly on a taxable-equivalent basis.

Global bond yields and ratings



Data source: Bloomberg L.P., 31 Jul 2022. **Past performance does not predict or guarantee future results.** Municipal bonds represented by the Municipal Market Data (MMD) scale. The taxable-equivalent yield is based on the highest individual marginal federal tax rate of 37%, plus the 3.8% Medicare tax on investment income (the Net Investment Income Tax). Individual tax rates may vary.

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Stress in the system can always be a concern

Top 10 typical warning signs of a potential impending municipal bankruptcy

1. Late budget(s)

6. High debt service to total expenditures

2. High turnover

7. Large unfunded pension liability

3. High unemployment

8. Inability to balance budget

4. Low per capita income

9. Small general fund reserves/balance

5. Low real estate market values per capita

10. Statements indicating lack of support for debt service

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