Municipals Weekly

Muni market trading with a soft landing in mind

Industry Overview

19 May 2023

Municipals
United States

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Key takeaways

- The A-rated muni index spread hit a new low for the year as investors exhibit confidence in a soft landing scenario.
- Banks' muni holdings fell 5% to $389bn in 1Q23; 50-50 split btw AFS and HTM for the top-4 largest banks.
- Muni rates have historically fallen into Memorial Day; this year's environment will test that pattern.

A-rated credit index spread plowed to a new YTD low

The muni market is trading with increasing evidence of a soft landing scenario. AAA muni yields rose some as Treasury yields trade around the upper bounds of their ranges in March/April. All credit spreads narrowed as high yield and BBB-rated index credit spreads removed two-thirds of their widening in March and the A-rated index credit spread plowed to a new YTD low.

Banks' muni holdings decline in 1Q23 per FFIEC data

Federal Financial Institutions Examination Council data shows banks' muni bond holdings fell to $389bn in 1Q23 from $410bn in 4Q22. It also shows a shift in the largest banks' holding type; the data now shows an almost 50-50 split of munis that are available for sale vs those that are held to maturity.

Historically, rates fall into the Memorial Day holiday

Our review of historical data show that muni market yields tend to move somewhat lower heading into the Memorial Day Holiday, and for a period thereafter. With the Fed's somewhat-hawkish tone despite uncertainty surrounding the debt limit negotiation, it is unclear if the historical average pattern can play out again.

Key figures: issuance, returns, spreads & fund flows

Supply: MTD issuance through 17 May totals $17.6bn, down 18% y/y; YTD issuance of $128bn is down 23% y/y. YTD issuance is 86% tax-exempt and 12% taxable; 76% is new money and 24% is refundings.

Returns: For the week ending 17 May, the Muni Master index (U0A0) returned -0.43% and the Muni High Yield index (U0HY) returned -0.19%; YTD total returns are 2.63% and 2.38%, respectively. By rating, BBBs' returns for the week are strongest at -0.29%; by sector, Health's -0.09% is strongest. Taxables' return for the week is -0.83%.

Spreads: As of 17 May, IG spreads tightened 3bp w/w to 25bp while HY spreads narrowed 8bp to 192bp.

Flows: For the week ending 17 May, all municipal bond fund outflows were $0.19bn; IG outflows were $0.11bn, while HY outflows were $0.07bn. Money market fund outflows were $0.04bn for the week.

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Exhibit 1: Strategic and tactical views & key forecasts

Buy long duration high grade bonds, especially 4% coupons

Strategic views

- Overweight: (1) 15-30yr part of the curve, particularly 4% coupon bonds; (2) AMT bonds*
- Neutral: BBBs and high yield
- Underweight: (1) the territories; (2) small private colleges; (3) rural, single-facility hospitals

Tactical views

- TXMB/C0A0 spread to fall to -70bp during tightening cycle
- Position for a muni curve bull flattener and credit spread compression in 1H23
- 4% coupon bracket to benefit more in a rally
- Swap long-end muni taxables for long-end tax-exempts

Key forecasts

- 2023 issuance to total $400bn; $320bn of new money and $80bn of refundings
- 2023 principal redemptions to total $402bn and coupon payments $161bn. Cumulative fund inflows of $40-$60bn
- 1/30 slope to fall to 65bp, driven by 10/30 AAA flattening, with slope falling to 50bp range
- 10yr AAA rates to reach 1.65% area; 30yr to 2.20%. 10yr muni/Tsy ratio range of 70%-90% and 30yr 85%-100%
- Muni Master index to return 11.5% in 2023; taxable muni index 12.5%

Note: *If the holder is certain they are not subject to the AMT under current tax law.

Source: BofA Global Research

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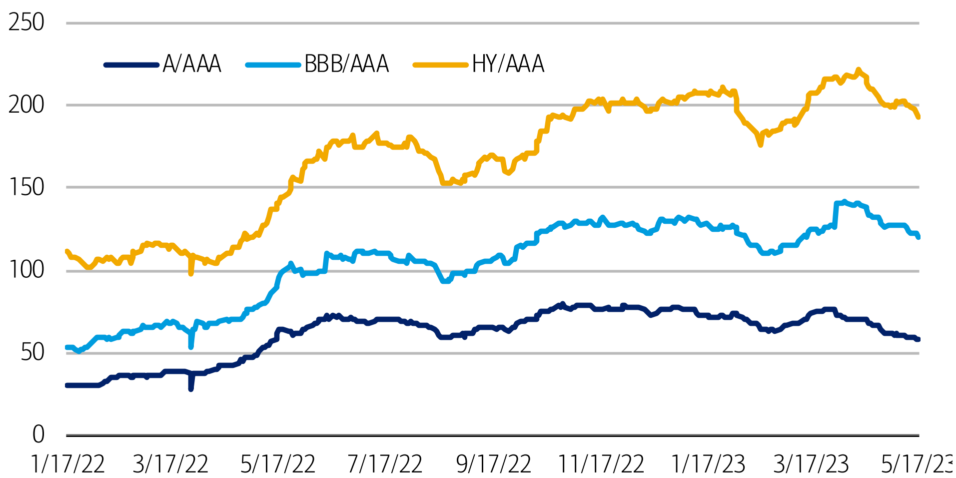
Market views & strategies

A-rated muni index spread plowed to new YTD low

Muni AAA yields finally moved up a few basis points as Treasury yields trade around the very upper bounds of their ranges of the past two months. Treasury market weakness in short maturities was attributable to waning hope of an early Fed rate cut, while the weakness in longer maturities was due to the hope of finding a resolution to the debt limit issue in time. Although time is running out quick, there are still nearly two weeks left before the 1 June X-date is hit. More news on the negotiating parties' posturing may cause day-to-day today volatility for the rest of the month. Thus far in May, muni AAA yields moved in a 5bp-15bp range throughout the curve, while Treasury yields moved in a 20bp-30bp range. Muni/Treasury ratios remained low in 7+ year maturities while short maturity ratios are slightly high. Again, only when Treasury yields break below their range bound pattern should the 10-year muni AAA break below its YTD low of 2.08%.

Exhibit 2: ICE BofA muni credit index spreads to AAA-rated index (bp)

A-rated index spread to AAA-rated index has plowed to new YTD low



Source: ICE Indices, LLC

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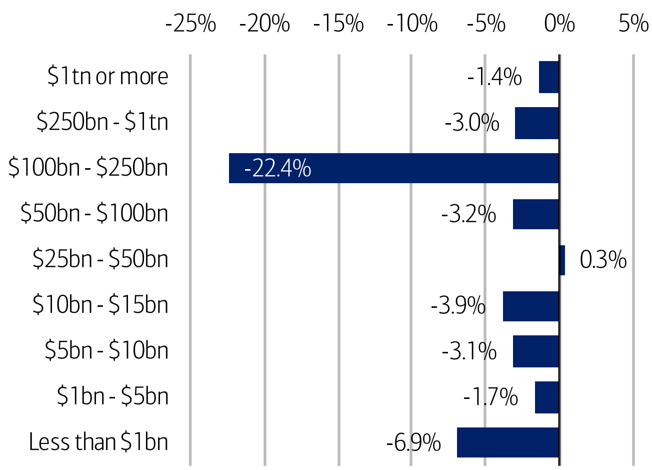
In the meantime, the tight range bound pattern for muni high grades is not the full picture. The perception of a successful containment of regional bank problems has been encouraging for credit names. ICE BofA BBB-rated muni index (U0A4) and muni high yield index (U0HY) spreads to the AAA-rated index (U0A1) recovered more than 2/3 of their respective widenings in March; and the A-rated muni index (U0A3) spread to U0A1 compressed to a newer low for the year (Exhibit 2). Investors are clearly showing their confidence in a soft landing scenario.

While bank holdings of munis declined in 1Q23 q/q according to Federal Financial Institutions Examination Council's (FFIEC) data, the disposal of failed banks' muni holdings has not had a material impact on the market. Meanwhile, our review of historical data show that market yields tend to move somewhat lower heading into the Memorial Day Holiday.

Bank holdings of munis fall q/q in 1Q23 – FFIEC data

The FFIEC's Central Data repository posted data as of 1Q23 on 15 May, including banks' muni bond holdings. Per the FFIEC's data, banks held a total of $389bn of munis as of the 1Q23, which is down relative to the $410bn held as of 4Q22. Exhibit 4 shows bank muni holdings by divided into two categories: those that are held to maturity (HTM) and those that are available for sale (AFS). The banks muni holdings are grouped by the size of the banks' total assets. The largest four banks in the US account for almost $80bn of munis (down about 1.4% q/q), with a roughly equal split between HTM and AFS. In 4Q22, as Exhibit 4 shows, FFIEC data showed 74% were HTM and 26% were AFS.

Exhibit 3: Q/q change in muni holdings, by bank asset size
Change for banks w/ $100bn-$250bn total assets due to SVB's failure



Note: SVB refers to Silicon Valley Bank.
Source: BofA Global Research, FFIEC

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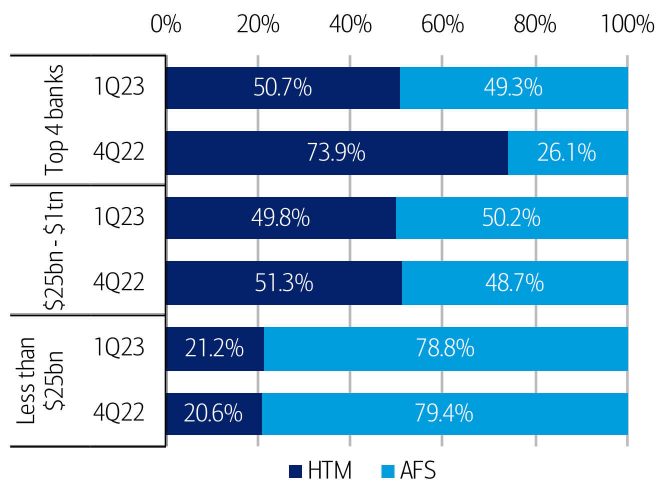
Exhibit 4: Bank muni holdings – HTM vs AFS, by bank asset size
Less munis are HTM at largest 4 banks as of 1Q23 relative to 4Q22



Source: BofA Global Research, FFIEC

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Note the large q/q decline in muni holdings for banks with assets between $100bn and $250bn in Exhibit 3 above. That change, which amounted to over $9bn less in muni holdings in 1Q23, is almost wholly the result of Silicon Valley Bank's (SVB) failure. Indeed, SVB's 4Q22 total muni holdings of $7.4bn (which were 7th largest among the banks in the US according to FFIEC data) do not show up in 1Q23 data. The FDIC is liquidating SVB's muni portfolio. We expect modest impact, if any, on the muni market as the FDIC does so given a lower-than-anticipated primary market for the YTD and the "gradual and orderly" process in which the FDIC plans to liquidate SVB's portfolio.

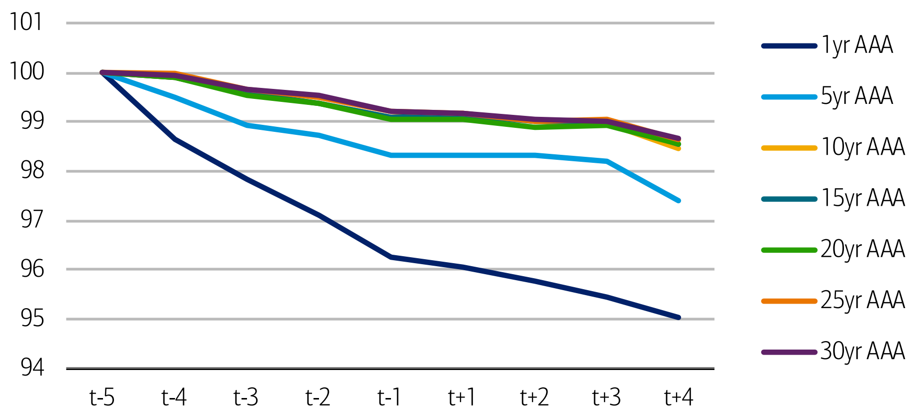
Historically, muni rates fall into & following Memorial Day

Memorial Day falls on 29 May this year, as it did in 1989, 1995, 2000, 2006 and 2017. We reviewed 1yr, 5yr, 10yr, 15yr, 20yr, 25yr and 30yr AAA MMD rates dating back to May of 1986 to see rate behavior for the week leading into and during the week of the Memorial Day holiday. In conducting our review, we indexed each date to the Monday one week prior to Memorial Day. For example, in 2022, Memorial Day fell on 30 May. So, rates on the Friday following Memorial Day are divided by rates on the Monday prior to Memorial Day. We then averaged that ratio for each day (Memorial Day minus 5 days, minus 4 days, etc) over those 37 years.

On average, rates fell into Memorial Day over the last 37 years, and continued to decline thereafter. As Exhibit 5 shows, rates inside 10 years decline, on average, the most around Memorial Day. This makes sense, as the impact from Tax Time in mid-April, which has an outsized impact on the front end, dissipates.

This year, the Fed continues to talk in a somewhat-hawkish tone despite market uncertainty surrounding the debt limit negotiation. It should be a unique situation to see if the historical average pattern can play out again.

Exhibit 5: Change in AAA rates, by curve spot, for week leading into and of Memorial Day holiday
Rates fall, on average, into and after Memorial Day, particularly at the front end; "t" = Memorial Day



Source: BofA Global Research, Refinitiv

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Performance

Munis outperformed for second straight week

For the second week in a row, exempt IG munis outperformed both govies and corporates this week, with exempt muni IG's -43bp of total returns outpacing govies by 38bp and corporates by 48bp. Taxable munis' returns fell in line with govies; exempt IG munis outperformed taxables by about 40bp. However, exempt muni IG underperformed HY by nearly 25bp. While HY is outperforming IG over the last month by some 47bp, for the YTD IG is still besting HY by 25bp. In total, muni IG lost 84bp of returns over the last month, underperforming govies by 110bp, corporates by 40bp and taxables by 133bp.

Exhibit 6: Municipal total returns (%) monitor, as of 17 May 2023
Despite negative returns, exempt IG munis outperform govies and corporates for 2nd straight week

Index	Ticker	1d	1wk	MTD	1mo	3mo	YTD	1yr
Govt Master	G0A0	-0.235	-0.811	-0.826	0.266	2.117	2.765	-1.200
Corporate Master	C0A0	-0.205	-0.905	-1.474	-0.438	1.169	2.787	0.581
IG munis	**U0A0**	**-0.230**	**-0.430**	**-0.071**	**-0.836**	**1.757**	**2.627**	**4.567**
AAA	U0A1	-0.235	-0.465	-0.145	-1.004	1.600	2.067	3.978
AA	U0A2	-0.242	-0.461	-0.117	-0.933	1.683	2.328	4.545
A	U0A3	-0.206	-0.378	0.004	-0.644	1.877	3.144	4.920
BBB	U0A4	-0.210	-0.287	0.176	-0.423	2.184	4.113	4.749
1-3yr	U1A0	-0.121	-0.172	-0.083	-0.600	0.738	0.668	1.736
3-7yr	U2A0	-0.262	-0.441	-0.175	-0.968	0.975	1.369	3.431
7-12yr	U3A0	-0.220	-0.379	-0.057	-0.957	1.449	2.355	6.038
12-22yr	U4A0	-0.240	-0.426	-0.037	-0.737	2.141	3.241	5.440
22+yr	U5A0	-0.256	-0.583	-0.035	-0.892	2.635	4.108	5.133
HY munis	**U0HY**	**-0.148**	**-0.185**	**0.070**	**-0.362**	**0.798**	**2.378**	**1.817**
Non-rated	U0NR	-0.095	-0.027	0.202	0.160	1.420	3.566	3.740
General Obligation	**U0AG**	**-0.232**	**-0.413**	**-0.090**	**-0.933**	**1.603**	**2.188**	**4.347**
AAA	UGA1	-0.247	-0.456	-0.108	-1.061	1.508	1.749	3.175
AA	UGA2	-0.234	-0.445	-0.131	-0.965	1.520	2.046	4.512
A	UGA3	-0.184	-0.101	0.216	-0.485	1.637	2.159	4.720
BBB	UGA4	-0.231	-0.239	0.178	-0.266	3.278	5.797	6.866
State	U0AA	-0.224	-0.369	-0.077	-0.861	1.412	2.098	4.545
Local	U0AB	-0.243	-0.467	-0.105	-1.019	1.836	2.297	4.083

Exhibit 6: Municipal total returns (%) monitor, as of 17 May 2023

Despite negative returns, exempt IG munis outperform govies and corporates for 2nd straight week

Index	Ticker	1d	1wk	MTD	1mo	3mo	YTD	1yr
Revenue	**U0AR**	**-0.229**	**-0.435**	**-0.064**	**-0.803**	**1.809**	**2.775**	**4.642**
AAA	URA1	-0.227	-0.472	-0.171	-0.963	1.666	2.300	4.577
AA	URA2	-0.245	-0.469	-0.110	-0.918	1.757	2.456	4.564
A	URA3	-0.208	-0.405	-0.017	-0.660	1.905	3.205	4.940
BBB	URA4	-0.208	-0.291	0.171	-0.436	1.906	3.675	4.290
Airport	U0AV	-0.170	-0.268	0.080	-0.582	1.923	3.583	5.741
Education	U0AE	-0.250	-0.476	-0.068	-0.865	1.898	2.727	4.500
Health	U0HL	-0.136	-0.091	0.393	-0.522	0.418	0.683	-1.442
Hospital	U0AH	-0.263	-0.583	-0.143	-0.982	1.834	2.821	4.786
Industrial Development Rev	U0ID	-0.215	-0.175	0.290	-0.289	2.282	4.276	4.701
Leases, COPs & Appropriations	U0AL	-0.245	-0.435	-0.106	-0.877	1.508	2.108	3.941
Miscellaneous	U0AM	-0.248	-0.461	-0.145	-1.077	1.442	2.064	4.046
Multi-family Housing	U0AU	-0.281	-0.529	-0.189	-1.154	1.621	2.589	2.881
Pollution Control	U0AQ	-0.237	-0.252	-0.026	-0.900	1.249	1.970	3.665
Power	U0AP	-0.213	-0.391	-0.061	-0.772	1.477	2.164	3.693
Single-family Housing	U0AS	-0.293	-0.525	-0.219	-1.227	1.215	1.429	1.989
Tax Revenue	U0TX	-0.248	-0.466	-0.162	-1.004	1.912	2.688	5.251
Tobacco	U0TB	-0.222	-0.242	-0.019	-0.275	1.457	3.399	5.556
Toll & Turnpike	U0TL	-0.231	-0.442	-0.059	-0.767	1.785	2.847	4.868
Transportation - other	U0AT	-0.191	-0.377	0.035	-0.601	2.395	3.764	5.556
Utilities - other	U0UT	-0.163	-0.402	0.147	-0.213	1.404	2.658	3.671
Water & Sewer	U0AW	-0.224	-0.422	-0.117	-0.819	1.715	2.314	4.091
Taxable	**TXMB**	**-0.180**	**-0.828**	**-1.077**	**0.497**	**1.498**	**4.848**	**0.611**
Build America Bonds	BABS	-0.124	-0.755	-1.174	0.377	1.231	4.510	0.686
VRDOs	**VRDO**	**0.008**	**0.055**	**0.143**	**0.071**	**0.548**	**0.667**	**1.555**
Daily reset	VRDD	0.007	0.050	0.126	0.054	0.486	0.563	1.327
Weekly reset	VRDW	0.008	0.057	0.152	0.081	0.582	0.722	1.676

Source: ICE Data Indices, LLC

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BBBs again outperformed, losing 29bp of returns. GOs and revenue bonds performed largely in line, though GO bonds edging out revenue bonds by 2bp. Among the muni bond sectors, the Health sector had the strongest week, with loss of just 9bp of returns. Utilities are still the strongest performer over the last month, with -21bp of returns and, for the YTD, Industrial Development Revenue's 428bp of returns are strongest.

The shortest maturities of the curve outperformed the longest maturities this week. Indeed, the 1-3yr+ IG index outperformed the 22+yr IG index by 41bp. Still, the longest maturities are outperforming for the YTD by 344bp.

Muni IG and HY spreads tightened w/w

Muni IG spreads tightened 3bp w/w to 25bp, hitting a new tight of their 52-wk range while Muni HY spreads narrowed 8bp to 192bp and are now sitting at the 63rd percentile of their 52-wk wide. Non-rated spreads tightened 10bp w/w. GO spreads tightened 3bp overall w/w, with A GO spreads tightening 6bp. Revenue bond spreads tightened 3bp w/w overall. Among muni IG revenue bond sectors, Multi-family Housing widened 4bp w/w, while Health narrowed by 11bp.

Exhibit 7: Muni YTW spread monitor as of 17 May

IG spreads tightened 3bp w/w overall while HY spreads tightened 8bp

	52wk				Current	Change from				Current as %		
	Tights	Wides	T-1wk	T-1d	5/17/23	Tights	Wides	T-1wk	T-1d	of 52wk range	Price	Yield
Investment Grade	**25**	**39**	**28**	**26**	**25**	**0**	**-14**	**-3**	**-1**	**0**	**101**	**3.56**
AA	5	21	8	6	5	0	-16	-3	-1	0	102	3.36
A	58	79	60	58	58	0	-21	-2	0	0	99	3.89
BBB	91	142	126	123	120	29	-22	-6	-3	57	93	4.51
High Yield	**140**	**222**	**200**	**196**	**192**	**52**	**-30**	**-8**	**-4**	**63**	**94**	**5.23**
Non-rated	173	298	230	224	220	47	-78	-10	-4	38	65	5.51
General Obligation	**-9**	**3**	**-6**	**-8**	**-9**	**0**	**-12**	**-3**	**-1**	**0**	**102**	**3.22**
AA	-15	3	-12	-14	-14	1	-17	-2	0	6	102	3.17
A	-15	29	14	9	8	23	-21	-6	-1	52	105	3.39

Exhibit 7: Muni YTW spread monitor as of 17 May

IG spreads tightened 3bp w/w overall while HY spreads tightened 8bp

	52wk				Current	Change from				Current as %		
	Tights	Wides	T-1wk	T-1d	5/17/23	Tights	Wides	T-1wk	T-1d	of 52wk range	Price	Yield
BBB	40	122	86	82	81	41	-41	-5	-1	50	96	4.12
State	-28	-5	-24	-28	-28	0	-23	-4	0	0	106	3.03
Local	12	19	15	15	14	2	-5	-1	-1	29	97	3.45
Revenue	**37**	**52**	**40**	**38**	**37**	**0**	**-15**	**-3**	**-1**	**0**	**100**	**3.68**
AA	14	30	17	15	14	0	-16	-3	-1	0	102	3.45
A	62	83	65	63	62	0	-21	-3	-1	0	98	3.93
BBB	93	147	129	126	123	30	-24	-6	-3	56	93	4.54
Airport	63	98	69	65	63	0	-35	-6	-2	0	103	3.94
Education	16	44	22	17	16	0	-28	-6	-1	0	103	3.47
Health	67	174	162	154	151	84	-23	-11	-3	79	92	4.82
Hospital	73	97	77	74	73	0	-24	-4	-1	0	99	4.04
Industrial Development Rev	75	130	103	99	97	22	-33	-6	-2	40	99	4.28
Leases, COPs & Appropriations	8	23	9	9	9	1	-14	0	0	7	102	3.40
Miscellaneous	1	14	8	8	7	6	-7	-1	-1	46	99	3.38
Multi-family Housing	62	90	79	78	83	21	-7	4	5	75	92	4.14
Pollution Control	7	58	46	43	42	35	-16	-4	-1	69	100	3.73
Power	16	39	32	31	31	15	-8	-1	0	65	102	3.62
Single-family Housing	49	85	81	82	82	33	-3	1	0	92	96	4.13
Tax Revenue	8	32	10	9	8	0	-24	-2	-1	0	100	3.39
Tobacco	10	78	22	19	18	8	-60	-4	-1	12	101	3.49
Toll & Turnpike	35	50	38	36	35	0	-15	-3	-1	0	98	3.66
Transportation - other	33	62	36	33	35	2	-27	-1	2	7	99	3.66
Utilities - other	44	105	75	76	74	30	-31	-1	-2	49	102	4.05
Water & Sewer	12	21	15	14	13	1	-8	-2	-1	11	103	3.44

Note: YTW spread to the ICE BofA AAA US Municipal Securities Index (U0A1).

Source: BofA Global Research, ICE Data Indices, LLC

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Supply & demand

YTD issuance totals $128bn, down 23% y/y

MTD issuance as of 17 May 2023 totaled $17.6bn, down 18% y/y. By tax status, 92% of April's issuance is tax-exempt and 5% is taxable. YTD issuance of $128bn is down 23% y/y. Thus far, 76% of YTD issuance is new money, while 24% is refundings. New money volumes are down 23% y/y while refunding volumes are down 21%.

Exhibit 8: Issuance summary ($mn)

YTD issuance of $128bn is down 23% y/y; new money down 23% y/y and refundings down 21%

	Month-to-date			Year-to-date		
	5/17/23	5/17/22	y/y % Δ	5/17/23	5/17/22	y/y % Δ
Total	**17,628.0**	**21,598.9**	**-18%**	**127,972.2**	**165,481.2**	**-23%**
New Money	13,474.9	17,664.9	-24%	96,921.3	126,076.4	-23%
Total Refunding	4,153.0	3,934.0	6%	31,056.9	39,404.8	-21%
Advanced refunding	0.0	0.0	-	1,380.9	1,256.3	10%
Unknown refunding	4,153.0	2,948.6	41%	28,243.1	34,682.9	-19%
Current & Forward refunding	0.0	985.4	-100%	1,432.8	3,465.6	-59%
Insured	3,504.9	2,170.9	61%	10,960.4	13,212.4	-17%
Fixed Rate	16,693.7	20,979.6	-20%	115,204.2	157,352.7	-27%
Variable Rate Long	872.5	180.9	382%	8,465.2	4,362.9	94%
Variable Rate Short	60.0	381.9	-84%	3,824.1	2,120.7	80%
Zero Coupon	1.8	54.4	-97%	194.7	432.3	-55%
Linked Rate	0.0	2.2	-	270.0	896.7	-70%
Convertible	0.0	0.0	-	14.0	315.9	-96%
Variable rate no put	-	-	-	-	-	-
Tax Exempt	16,190.8	16,713.5	-3%	109,705.1	129,012.1	-15%
Taxable	807.2	4,131.3	-80%	15,563.8	28,446.4	-45%
Alternate Minimum Tax	630.0	754.2	-16%	2,709.3	8,022.7	-66%
Education	6,897.3	5,390.0	28%	38,774.9	43,781.0	-11%
General Purpose	4,295.3	3,326.4	29%	34,407.2	40,092.4	-14%
Utilities	2,250.3	5,264.7	-57%	17,039.9	20,346.3	-16%
Housing	1,310.2	1,245.7	5%	10,645.3	10,631.3	0%
Electric Power	994.4	573.2	73%	5,403.4	5,402.6	0%

Exhibit 8: Issuance summary ($mn)
YTD issuance of $128bn is down 23% y/y; new money down 23% y/y and refundings down 21%

	Month-to-date			Year-to-date		
	5/17/23	5/17/22	y/y % Δ	5/17/23	5/17/22	y/y % Δ
Healthcare	988.7	1,693.7	-42%	4,584.8	15,094.4	-70%
Transportation	426.7	3,369.0	-87%	10,908.2	22,721.3	-52%
Development	248.4	329.6	-25%	3,708.2	3,468.7	7%
Public Facilities	176.8	386.6	-54%	1,617.2	3,314.5	-51%
Environmental Facilities	40.0	20.0	100%	883.2	628.7	40%
Muni-backed corporates	585.0	915.9	-36%	2,196.6	10,087.1	-78%

Note: Long-term bonds only. Reflects any data revisions by Refinitiv or Bloomberg.
Source: BofA Global Research, Refinitiv, Bloomberg

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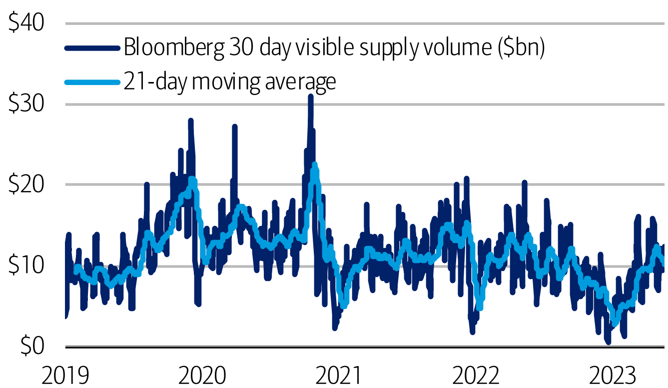
Exhibit 9: Bloomberg 30-day visible supply ($bn)
30-day visible supply was $10.6bn as of 18 May 2023



Note: Data as of 18 May 2023.
Source: Bloomberg

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Exhibit 10: 2023 gross issuance, redemption, forecasts vs actuals ($bn)
Gross issuance forecast of $400bn vs $564bn of prin. & cpn. redemptions

	Issuance		Prin. & cpn redemptions	
Month	Forecast	Actual	Forecast	Actual
January	**$23**	$23	$42	$39
February	**20**	20	45	42
March	**32**	32	39	36
April[1]	29	33	32	29
May	33	18*	45	
June	43		65	
July	31		59	
August	36		62	
September	34		37	
October	45		40	
November	34		41	
December	39		56	-

Note: Totals may not add up due to rounding. Data as of 17 May 2023. January-March data are actuals. [1]Monthly issuance forecasts revised from April onward.
Source: BofA Global Research, Refinitiv, Bloomberg

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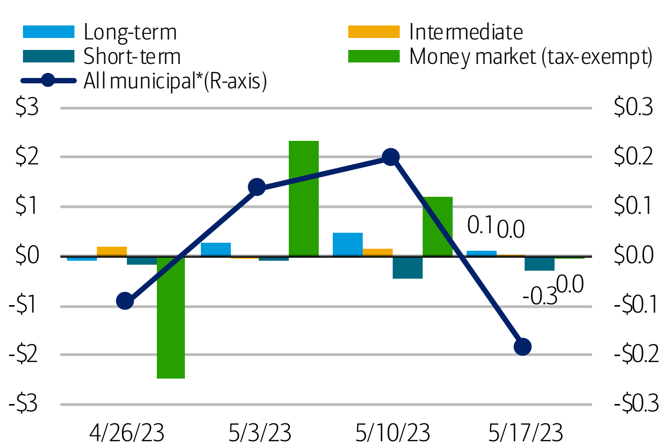
Mutual fund outflows total $0.19bn; ETF outflows $0.12bn

Mutual fund flows were negative this week, with outflows totaling $0.19bn, coming mostly from short-term funds. There were $0.11bn of outflows from investment grade funds against $0.07bn of outflows from high yield funds. YTD, investment grade outflows total $6.5bn versus $0.7bn of inflows to high yield.

Exhibit 11: Flows by maturity brackets ($bn)
Muni outflows of $0.19bn, money market outflows of $0.04bn



Note: ETFs included. All Municipal = LT+INT+ST. Data includes both weekly and monthly reporting funds as of 17 May 2023.
Source: Refinitiv Lipper

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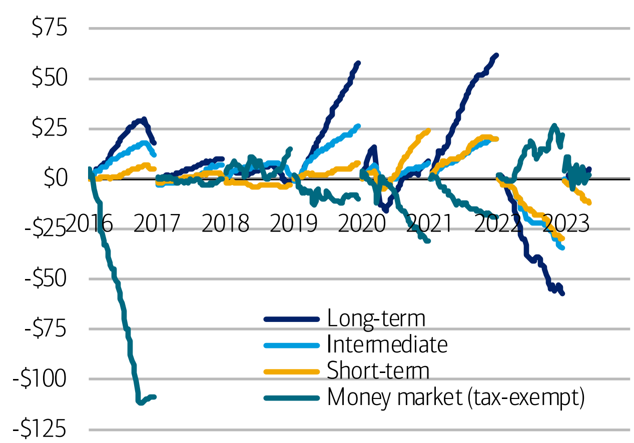
Exhibit 12: YTD cumulative flows ($bn)
2023 flow: LT: $4.5bn, INT: $1.2bn, ST: -$11.5bn, MM: $1.7bn



Note: ETFs included. All Municipal = LT+INT+ST. Data includes both weekly and monthly reporting funds as of 17 May 2023.
Source: Refinitiv Lipper

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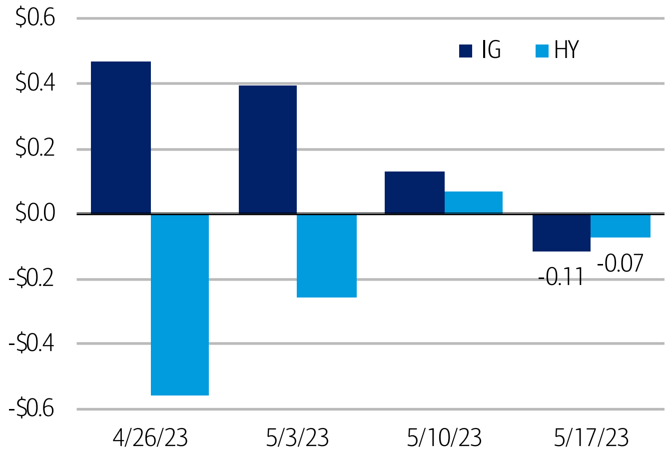
Exhibit 13: IG vs HY muni fund flows ($bn)
IG outflows of $0.11bn vs $0.07bn of HY outflows for the wk of 17 May



Note: ETFs included. All Municipal = IG+HY. Data includes both weekly and monthly reporting funds as of 17 May 2023.
Source: Refinitiv Lipper

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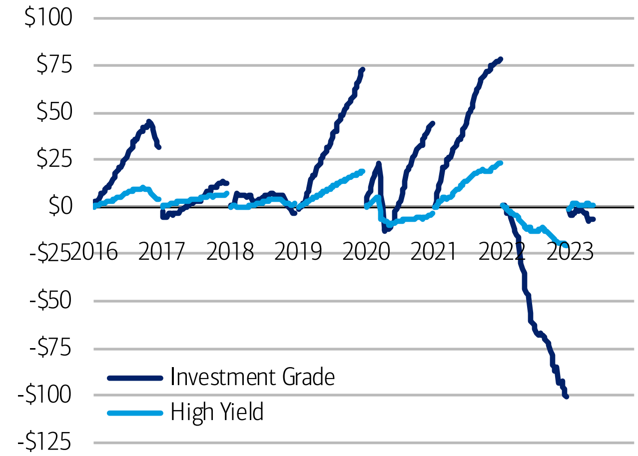
Exhibit 14: Year-to-date cumulative flows ($bn)
2023 flow: IG: -$6.5bn, HY: $0.7bn



Note: ETFs included. All Municipal = IG+HY. Data includes both weekly and monthly reporting funds as of 17 May 2023.
Source: Refinitiv Lipper

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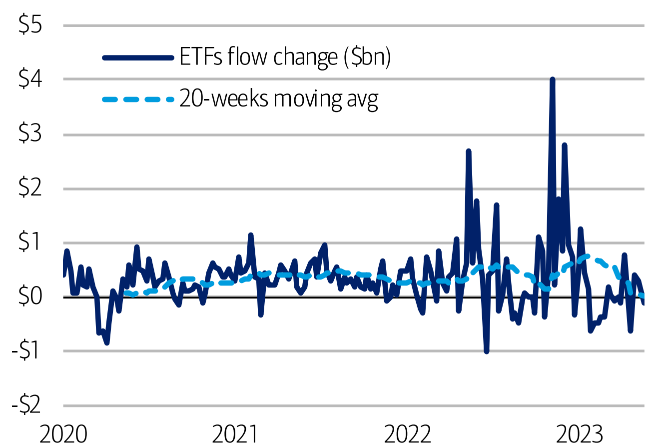
ETF fund flows were negative for the week, with outflows totaling almost $0.12bn. Overall, our flow strength indicator measured by the 2-year trailing z-score suggests this week's flow strength was normal.

Exhibit 15: Municipal ETF fund flows ($bn)
ETF outflows were $0.12bn for the week of 17 May 2023



Note: ETFs included. All Municipal = LT+INT+ST. Data includes both weekly and monthly reporting funds as of 17 May 2023.
Source: Refinitiv Lipper

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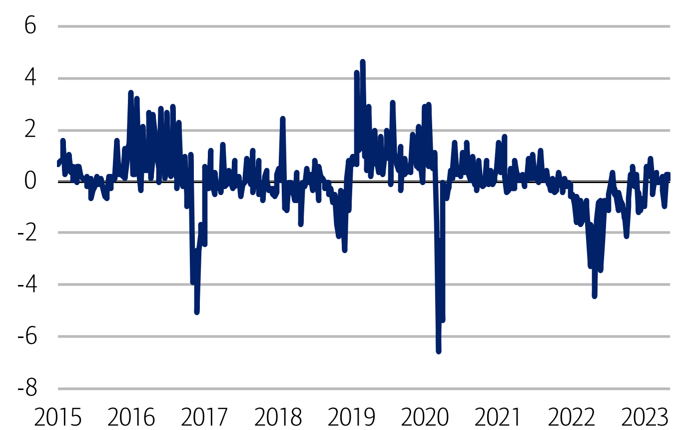
Exhibit 16: Flow strength indicator
Flow strength was Normal with 0.15 z-score for the week of 19 April



Note: The flow strength indicator is measured by 2-year trailing z-score (A positive or negative number does not necessarily suggest buying or selling). ETFs included. Data includes both weekly and monthly reporting funds as of 17 May 2023.
Source: Refinitiv Lipper

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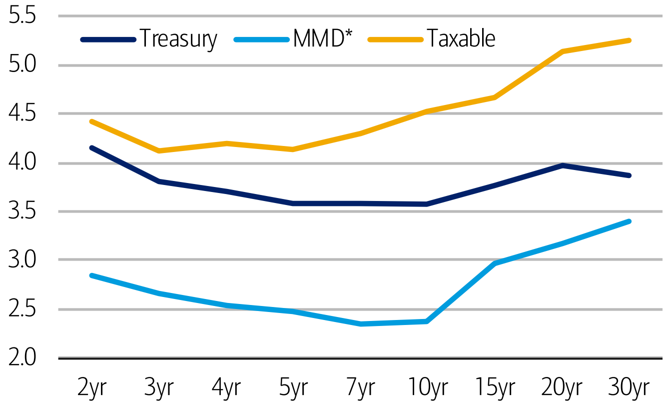
Curve

Curve shifts up 12bp on avg w/w

The AAA MMD curve cheapened w/w by 12bp on average, and cheapened by 31bp m/m. For the week, the 1s5s slope undid some inversion by 2bp to -64bp and is 125bp flatter than it was one year ago; the 5s10s slope inverted 10bp w/w to -10bp and is 52bp flatter than it was one year ago; the 10s20s slope was flat w/w at 81bp and is 59bp steeper than it was one year ago. The 20s30s slope fell 2bp w/w to 22bp and is 9bp steeper than it was one year ago. Investors should continue to position for a bull flattener.

Exhibit 17: AAA GO muni, Treasury and taxable yield curves (%)
Tsy, MMD and taxable cheapened on average w/w



Note: *MMD AAA GO yield curve. As of 17 May 2023.
Source: BofA Global Research, Refinitiv, Bloomberg

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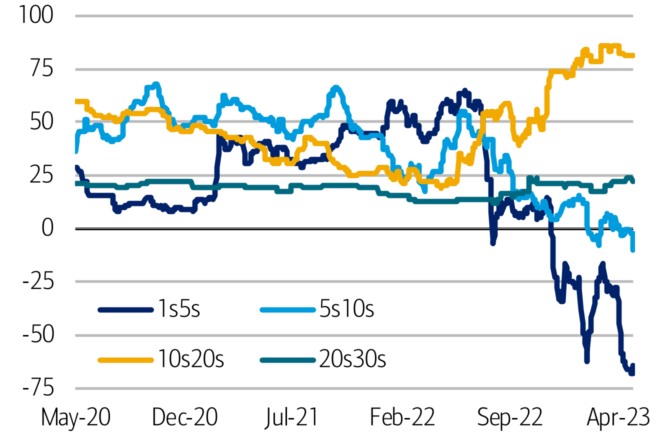
Exhibit 18: Curve slope (bp)
1s5s undid some inversion as 5s10s and 20s30s were negative w/w



Source: Refinitiv

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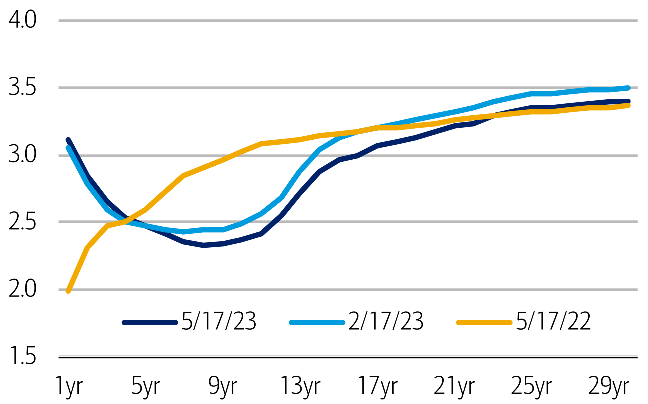
Exhibit 19: AAA GO municipal curve movement (%)
AAA is richer than a year ago between 5yr and 23yr



Source: Refinitiv

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Relative value

Ratios neutral, curves largely flat on long-term basis

We screen the muni market for parts of the curve, sectors and ratings that are rich or cheap. Exhibit 20 shows that muni/Treasury ratios are Cheap at the 3yr and Rich at the 30yr on a short-term basis; otherwise, they are Neutral on a long-term basis. Exhibit 21 shows that the 10s30s slope is Steep on a long-term basis, while other slopes are Very Flat. On a short-term basis, the 10s30s is Neutral while others are Flat.

Exhibit 20: Rich/cheap analysis of MMD*/Treasury ratios as of 17 May 2023
The muni market is Cheap at the 3yr and Rich at the 30yr on a ST basis and Neutral on a LT basis

Maturity	Current Tsy	Muni/Tsy	MMD R/C (short-term)	3 mo. max	3 mo. min	3 mo. avg	MMD R/C (long-term)	3 year max	3 year min	3 year avg
3yr	3.809%	69.8%	**Cheap**	71.4%	51.7%	62.3%	**Neutral**	302.2%	26.7%	70.2%
5yr	3.587%	68.9%	**Neutral**	70.4%	53.5%	63.5%	**Neutral**	234.8%	39.3%	69.1%
10yr	3.575%	66.3%	**Neutral**	70.3%	59.7%	65.7%	**Neutral**	158.7%	54.7%	81.9%
30yr	3.877%	87.7%	**Rich**	95.2%	85.0%	90.1%	**Neutral**	138.6%	63.5%	90.1%

Note: *MMD AAA GO yield curve. R/C = Rich/Cheap Note the benchmark for short-term is the 3-month average and for long-term is the 3-year average. Rich/cheap is based on z-scores: if z-score is >2, then "Very Cheap"; if >1 but <2, then "Cheap"; if between -1 and 1, then "Neutral"; if <-1 but >-2, then "Rich"; if <-2, then "Very Rich".
Source: BofA Global Research, Refinitiv, Bloomberg

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Exhibit 21: Rich/cheap analysis of MMD* slopes (bp) as of 17 May 2023
The 10s30s curve is Steep on a LT basis while the rest are Very Flat/Flat on both a ST and LT basis

Slope	Current slope	Slope S/F (short-term)	3 mo. max	3 mo. min	3 mo. avg	Slope S/F (long-term)	3 year max	3 year min	3 year avg
1s5s	-68	**Flat**	-16	-68	-41	**Very Flat**	65	-68	21
1s10s	-70	**Flat**	-13	-70	-40	**Very Flat**	120	-70	59
10s30s	103	**Neutral**	108	97	103	**Steep**	108	32	65
1s30s	33	**Flat**	91	33	63	**Very Flat**	170	33	124

Note: *MMD AAA GO yield curve. S/F = Steep/Flat Note the benchmark for short-term is the 3-month average and for long-term is the 3-year average. Rich/cheap is based on z-scores: if z-score is >2, then "Very Cheap"; if >1 but <2, then "Cheap"; if between -1 and 1, then "Neutral"; if <-1 but >-2, then "Rich"; if <-2, then "Very Rich".
Source: BofA Global Research, Refinitiv, Bloomberg

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Cross-sector YTW spread rich/cheap analysis

Below, we conduct a cross-sector yield-to-worst spread rich/cheap analysis using z-scores based on spreads over the last 12 months. Versus the market broadly (represented by the ICE BofA Muni Master Index, U0A0), we can see that Local GOs, the housing sectors and leasing sectors YTW spreads are generally cheap to other sectors. Conversely, Airport, Education and Tobacco spreads to the market are rich. While the Pollution Control sector generally skews cheap, the Industrial Development Revenue sector's spreads skew more rich; note those sectors are generally comprised of private sector corporate borrowers.

Exhibit 22: Cross sector rich/cheap analysis of YTW spreads (bp; as of 17 May 2023)
Local GOs YTW spread to the market is Very Cheap right now, as is Single Family Housing's. Conversely, Education's is Very Rich

	Market	GO	GO-S	GO-L	REV	AIR	EDU	HLTH	HOSP	IDR	LCA	MISC	MFH	PC	PWR	SFH	TAX	TBCO	T&T	TRAN	UTL	W&S
GO	-34		19	-23	-46	-72	-25	-160	-82	-106	-18	-16	-92	-51	-40	-91	-17	-27	-44	-44	-83	-22
GO-S	-53	-19		-42	-65	-91	-44	-179	-101	-125	-37	-35	-111	-70	-59	-110	-36	-46	-63	-63	-102	-41
GO-L	-11	23	42		-23	-49	-2	-137	-59	-83	5	7	-69	-28	-17	-68	6	-4	-21	-21	-60	1
REV	12	46	65	23		-26	21	-114	-36	-60	28	30	-46	-5	6	-45	29	19	2	2	-37	24
AIR	38	72	91	49	26		47	-88	-10	-34	54	56	-20	21	32	-19	55	45	28	28	-11	50
EDU	-9	25	44	2	-21	-47		-135	-57	-81	7	9	-67	-26	-15	-66	8	-2	-19	-19	-58	3
HLTH	126	160	179	137	114	88	135		78	54	142	144	68	109	120	69	143	133	116	116	77	138
HOSP	48	82	101	59	36	10	57	-78		-24	64	66	-10	31	42	-9	65	55	38	38	-1	60
IDR	72	106	125	83	60	34	81	-54	24		88	90	14	55	66	15	89	79	62	62	23	84
LCA	-16	18	37	-5	-28	-54	-7	-142	-64	-88		2	-74	-33	-22	-73	1	-9	-26	-26	-65	-4
MISC	-18	16	35	-7	-30	-56	-9	-144	-66	-90	-2		-76	-35	-24	-75	-1	-11	-28	-28	-67	-6
MFH	58	92	111	69	46	20	67	-68	10	-14	74	76		41	52	1	75	65	48	48	9	70
PC	17	51	70	28	5	-21	26	-109	-31	-55	33	35	-41		11	-40	34	24	7	7	-32	29
PWR	6	40	59	17	-6	-32	15	-120	-42	-66	22	24	-52	-11		-51	23	13	-4	-4	-43	18
SFH	57	91	110	68	45	19	66	-69	9	-15	73	75	-1	40	51		74	64	47	47	8	69
TAX	-17	17	36	-6	-29	-55	-8	-143	-65	-89	-1	1	-75	-34	-23	-74		-10	-27	-27	-66	-5
TBCO	-7	27	46	4	-19	-45	2	-133	-55	-79	9	11	-65	-24	-13	-64	10		-17	-17	-56	5
T&T	10	44	63	21	-2	-28	19	-116	-38	-62	26	28	-48	-7	4	-47	27	17		0	-39	22
TRAN	10	44	63	21	-2	-28	19	-116	-38	-62	26	28	-48	-7	4	-47	27	17	0		-39	22
UTL	49	83	102	60	37	11	58	-77	1	-23	65	67	-9	32	43	-8	66	56	39	39		61
W&S	-12	22	41	-1	-24	-50	-3	-138	-60	-84	4	6	-70	-29	-18	-69	5	-5	-22	-22	-61	

Note: Dark blue shaded cells are Very Cheap; light blue shaded cells are Cheap; unshaded cells are Neutral; yellow shaded cells are Rich; orange shaded cells are Very Rich. Based on z-scores over the last 12 months. If a z-score is >2, then we view it as "Very Cheap"; if it is >1 but <2, then we view it as "Cheap"; if it is between -1 and 1, then we view it as "Neutral"; if it is <-1 but >-2, then we view it as "Rich"; lastly, if it is <-2, then we view it as "Very Rich". Read horizontally. For example, while Power's current 6bp spread to the market (U0A0) is Cheap, it's -120bp spread to Healthcare is nonetheless Neutral. See Exhibit 43 for sector definitions.
Source: BofA Global Research, ICE Data Indices, LLC

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Screening for cheap OAS

At the 7-12yr part of the curve, we consider Single-A Health, BBB Health, BBB Lease COPs & Appropriation, AAA Utilities' OAS Cheap. See Exhibit 24. At the 22+yr part of the curve, we consider Single-A Health, BBB Health and AAA Higher Ed, AAA Lease COPS & Appropriation and Single-A Pollution Control sectors' OAS Cheap. Conversely, we consider BBB Utilities' OAS at the 22+yr part of the curve to be Very Rich. See Exhibit 27.

Exhibit 23: OAS, 7-12yr indexes (bp)
AA Health at -39bp

Sector	AAA	AA	A	BBB
Airports		31	20	-7
Higher Education	-15	-18	31	
GO Local	-11	-3	51	115
GO State	-18	-16	47	0
Health		-39	159	169
Hospital		13	27	89
IDR		24	77	84
Leases COPS & Appr.		1	30	251
Pollution Control	-4		82	
Power	-25	-20	13	
Tax Revenues	-10	-5	61	124
Tobacco			64	
Toll & Turnpike		19	3	106
Transportation - Other	17	5	55	83
Utilities - Other	0	-4	74	
Water & Sewer	-18	-19	0	114

Note: Data as of 16 May 2023. Only includes non-prerefunded bonds. Benchmark is 3-yr avg.
Source: ICE Data Indices, LLC

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Exhibit 24: Rich/cheap OAS, 7-12yr
...is Very Rich right now at 7-12yrs...

Sector	AAA	AA	A	BBB
Airports		N	N	R
Higher Education	R	R	N	
GO Local	R	R	N	N
GO State	R	R	N	R
Health		VR	C	C
Hospital		N	N	N
IDR		N	N	N
Leases COPS & Appr.		R	N	C
Pollution Control	N		N	
Power	R	R	N	
Tax Revenues	R	R	N	N
Tobacco			N	
Toll & Turnpike		N	R	N
Transportation - Other	N	N	N	N
Utilities - Other	C	N	N	
Water & Sewer	R	R	R	N

Note: Data as of 16 May 2023. Only includes non-prerefunded bonds. Benchmark is 3-yr avg.
Source: ICE Data Indices, LLC

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Exhibit 25: 3-yr avg OAS, 7-12 year (bp)
...against its 3yr OAS avg of 32bp

Sector	AAA	AA	A	BBB
Airports		41	46	94
Higher Education	-5	4	56	
GO Local	2	16	53	140
GO State	-1	4	49	144
Health		32	69	112
Hospital		25	53	108
IDR		50	64	101
Leases COPS & Appr.		17	47	120
Pollution Control	1		85	
Power	5	2	32	
Tax Revenues	14	14	61	142
Tobacco			62	
Toll & Turnpike		28	33	98
Transportation - Other	7	24	84	114
Utilities - Other	-3	5	47	
Water & Sewer	2	0	25	116

Note: Data as of 16 May 2023. Only includes non-prerefunded bonds. Benchmark is 3-yr avg.
Source: ICE Data Indices, LLC

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Exhibit 26: Current OAS, 22yr+ indexes (bp)
BBB Utilities at 0bp

Sector	AAA	AA	A	BBB
Airports		36	30	-1
Higher Education	41	-4	24	106
GO Local	3	8	14	83
GO State	-24	-14		0
Health		-37	79	212
Hospital		18	37	80
IDR			59	87
Leases COPS & Appr.	18	1	44	46
Pollution Control			49	
Power		1	27	86
Tax Revenues	18	12	68	85
Tobacco				113
Toll & Turnpike			20	50
Transportation - Other		0	31	64
Utilities - Other		0	40	0
Water & Sewer	-8	-9	5	

Note: Data as of 16 May 2023. Only includes non-prerefunded securities. Benchmark is 3-yr avg.
Source: ICE Data Indices, LLC

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Exhibit 27: Rich/Cheap OAS analysis, 22yr+
...is Very Rich right now at 22+ years

Sector	AAA	AA	A	BBB
Airports		N	N	N
Higher Education	C	N	N	N
GO Local	N	N	N	N
GO State	N	N		R
Health		R	C	C
Hospital		N	N	N
IDR			N	N
Leases COPS & Appr.	C	N	N	N
Pollution Control			C	
Power		N	N	N
Tax Revenues	N	N	N	N
Tobacco				N
Toll & Turnpike			N	N
Transportation - Other		N	N	N
Utilities - Other		N	N	VR
Water & Sewer	N	N	N	

Note: Data as of 16 May 2023. Only includes non-prerefunded securities. Benchmark is 3-yr avg.
Source: ICE Data Indices, LLC

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Exhibit 28: 3-yr avg OAS, 22yr+ (bp)
...against its 3yr OAS avg of 77bp

Sector	AAA	AA	A	BBB
Airports		35	40	46
Higher Education	16	-1	31	88
GO Local	-11	4	32	113
GO State	-25	-15		113
Health		1	37	103
Hospital		10	33	65
IDR			55	84
Leases COPS & Appr.	-7	0	39	72
Pollution Control			12	
Power		-4	22	55
Tax Revenues	10	10	65	95
Tobacco				90
Toll & Turnpike			21	59
Transportation - Other		18	55	69
Utilities - Other	-10	-7	29	77
Water & Sewer	-17	-9	9	

Note: Data as of 16 May 2023. Only includes non-prerefunded securities. Benchmark is 3-yr avg
Source: ICE Data Indices, LLC

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MWIs fell slightly over the past week

Our market width indicator (MWI), which measures muni sectors' recent market momentum by calculating the percentage of a sectors' CUSIPs whose current yields-to-worst are below their moving 20-week average, shows that most sectors' MWIs have small decreases over the past week and remain mostly in the Cheap/Neutral levels (20%-50%) space. The ETM, Pre-Re, and Health sectors are the lowest. For w/w, Miscellaneous, Pollution Control and Tax Revenue saw the largest declines.

Exhibit 29: MWIs – sector momentum (%) as of 16 May 2023
Most the sectors had small decreases over the past week

Sector	MWI	w/w Δ	Sector	MWI	w/w Δ
U0A0 Index	**35.0%**	**-4.7%**	Miscellaneous	22.8%	-7.2%
ETM	4.4%	-4.4%	Multi-Family Housing	24.3%	-2.5%
GO - Local	32.9%	-6.1%	Pollution Control	21.7%	-8.4%
GO - State	27.4%	-5.9%	Power	28.7%	-6.3%

Exhibit 29: MWIs – sector momentum (%) as of 16 May 2023
Most the sectors had small decreases over the past week

Sector	MWI	w/w Δ	Sector	MWI	w/w Δ
Pre-Re	1.4%	-1.3%	Single Family Housing	22.2%	2.6%
Airport	49.8%	-3.6%	Tax revenue	38.5%	-10.5%
Education	39.6%	-2.4%	Tobacco	64.5%	0.4%
Health	16.9%	0.0%	Toll & Turnpike	43.7%	-3.1%
Hospitals	42.1%	-1.8%	Transportation	47.6%	-2.1%
Industrial Development Rev	71.4%	9.3%	Utilities - Other	39.8%	1.5%
Leasing COPS & Appropriations	33.3%	-4.7%	Water & Sewer	35.4%	-5.0%

Source: BofA Global Research, ICE Data Indices, LLC

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Trade activity

Most actively traded CUSIPs for the week

The most actively traded CUSIP over the last week by total volume and trades was 956622W34, totaling $147.4mn and 230 trades. These are newly-issued West Virginia University Health System revenue bonds due in 2053.

Exhibit 30: Most actively traded muni CUSIPs over the week ending 17 May 2023
956622W34 was the most frequently traded CUSIP. [1]Last trade.

CUSIP	Short name	ST	Coupon	Maturity	Issue	Price[1]	Yield[1]	Size[1] (000s)	Spread	# of trades	Volume ($mn)
956622W34	W VA HOSP FIN AUTH-A-	WV	4.375	06/01/53	05/24/23	98.154	4.49	10	105	230	147.4
904115FJ6	UMATILLA CO SD #6R	OR	0.000	06/15/53	05/24/23	22.255	5.03	225	159	42	81.1
74529JRH0	RESTRUCTURED-SER A-2	PR	4.329	07/01/40	08/01/19	90.500	5.17	4	211	44	77.1
13063D3S5	CA ST	CA	5.125	03/01/38	03/15/23	101.643	4.91	300	133	38	76.2
13033DAL9	CA HSG FIN AGY -CLASS	CA	4.375	09/20/36	05/01/23	99.500	4.43	2700	162	20	73.7
60528ABX1	MS BUS FIN-G-CHEVRON	MS	2.750	11/01/35	11/30/10	100.000	--	400		22	66.2
956622W26	W VA HOSP FIN AUTH-A-	WV	4.250	06/01/47	05/24/23	98.278	4.37	10	102	175	65.8
64971X7H5	NYC TRANSITIONAL FIN	NY	4.000	02/01/51	03/23/23	97.100	4.18	100	75	222	55.4
64966MSB6	NY CITY-B4-VAR	NY	2.770	10/01/46	10/03/17	100.000	--	5M+		14	50.7
45204FAH8	IL ST FIN AUTH-C	IL	2.700	08/15/49	04/30/20	100.000	--	700		14	50.5
414009PV6	HARRIS ED-VAR-B-REF	TX	2.750	12/01/59	08/27/20	100.000	--	1000	-375	18	49.0
45204FMB8	IL FIN AUTH-C-REF	IL	2.720	07/15/55	08/18/21	100.000	--	5M+		16	48.9
64972GC85	NYC MUNI WTR FIN-BB-2	NY	2.770	06/15/53	02/16/23	100.000	--	5M+		13	46.1
20775DTS1	CT HLTH&EDU FACS AUTH	CT	2.000	07/01/42	07/01/16	100.000	--	5M+		10	45.2
38546WDR8	GRAND FORKS-REV-REF	ND	3.000	12/01/51	09/28/21	73.625	4.69	135	125	126	44.9
65821DWM9	NORTH CAROLINA ST MED	NC	4.000	11/01/52	07/11/19	96.472	4.21	10	77	121	42.5
91412HPV9	UNIV OF CA-BP-1-REF	CA	1.700	05/15/48	02/22/23	100.000	--	1000		14	42.0
74529JQG3	PR SALES TAX FING-A1	PR	0.000	07/01/46	08/01/18	25.675	5.97	12	265	46	41.3
64966MSD2	NY CITY-B5-VAR	NY	2.770	10/01/46	10/03/17	100.000	--	5M+		14	40.7
74529JPX7	PR SALES TAX FING-A1	PR	5.000	07/01/58	08/01/18	94.000	5.38	8	196	60	40.5

Source: Bloomberg

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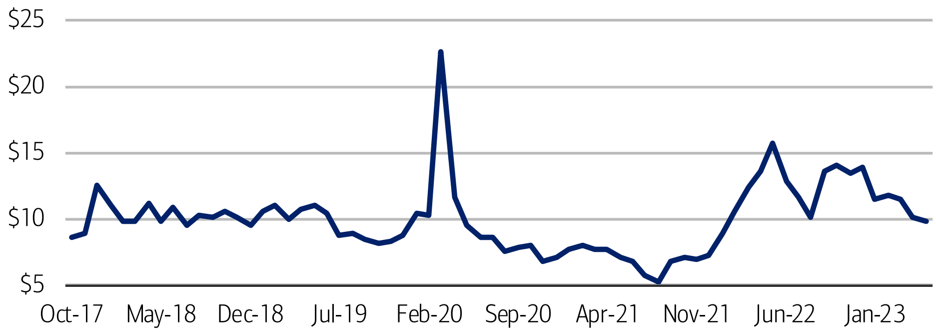
Avg daily secondary trading $9.9bn MTD in May

After a very slow start to the month given the FOMC's meeting, secondary activity for the MTD is just modestly behind April's levels: MTD through 17 May's average daily volume of $9.9bn is down just 2% from April's average. However, it is down 37% versus May 2022's average. In total, $128.7bn of muni bond par value traded for the MTD. We continue to look for higher secondary trading levels in May as volatility increases as we approach the X-date.

Exhibit 31: Daily avg secondary trading volume ($bn; as of 17 May 2023)
May-23 MTD daily avg volume of $9.9bn down just 2% vs Apr-23's $10.1bn daily average



Source: BofA Global Research, Bloomberg

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Credit corner

State & local governments

Lower April collections cause NJ to lower its FY23 & FY24 revenue forecasts

Lower personal income tax collections continue to drag down y/y collection growth medians for the states in April. For the 35 states reporting April thus far, we see median overall y/y growth of -14.2%. While both corporate and sales tax collections are up modestly on median y/y (2.1% and 2.4%, respectively), personal income tax collections are down 30.9% on median. In several states, the declines in April's collections, particularly in personal income taxes, are exceeding expectations owing largely to declines in capital gains taxes. New Jersey's treasurer, in her testimony before the Assembly Budget Committee, said that while the state forecasted a 12% y/y decline in April's gross income taxes, they came in 27% lower. She pointed out that CT, NY, PA and MA also suffered similar declines. NJ's declines forced the state to reevaluate their FY23 and FY24 revenue forecasts; together, the state lowered their forecasts by $2.2bn, or about 2% of general fund expenditures over those two years, which she testified the state is "in unprecedented shape to handle" given underlying fundamental improvements in the state, like pension payments, debt retirement and the like.

Kentucky upgraded one notch to AA by Fitch, with a stable outlook

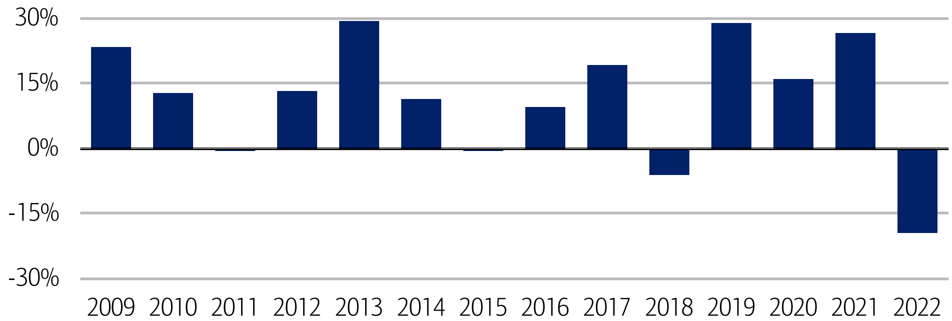
Fitch upgraded KY's issuer default rating one notch to AA from AA- on 11 May, with a stable outlook. The commonwealth's appropriation-backed debt was also upgraded one notch to AA-. According to Fitch, the upgrade reflects "material improvements to Kentucky's fiscal reserves since 2020 as a result of improved budgetary discipline and a post-pandemic surge in tax collections now in its third year." The rating agency also pointed to KY's improved financial resilience and pension funding practices – the commonwealth shifted to "making full actuarially-determined annual pension contributions," enhancing budgetary flexibility. Fitch believes "these improvements are sustainable." While trailing 12-month total tax collections appear to have peaked in February at $14.8bn, April 2023's $14.7bn total is over 35% larger than 12-month total collections in April 2020, and are up nearly 6% on a y/y basis.

States likely face the largest decline in capital gains tax revenue since 2008

"Stock market declines in 2022 suggest state capital gains tax revenue this year will be far lower than in any year since the Great Recession and potentially lower than states projected when enacting current fiscal year budgets," per Moody's. With the S&P 500 closing down 19% for 2022, Moody's estimates that total state capital gains taxes could fall 40-70% over 2023 and 2024. The full effect on total tax revenue likely will not be known until after states start processing April tax returns. Even if there is a turnaround in the stock market, revenue recovery will likely lag since taxpayers can carry losses forward. CA, CT and NY stand to be the most impacted, given both a greater dependence on income taxes and a personal income base with a greater share of income from capital gains. Moody's estimates capital gains taxes in CT and NY were 8% and 10%, of total tax revenue in FY21, respectively, while CA reported just over 12%. Still, strong stock market gains over the last several years drove up capital gains income across these states and surpluses were used to bolster financial reserves. Moody's noted, though CT's "fund balance ratio remains below the state median, the state used large portions of surplus revenue in recent years to significantly increase payments to its pension fund."

Exhibit 32: S&P 500 annual returns (%)

2022's -19% return is the lowest since the Great Recession



Source: Bloomberg

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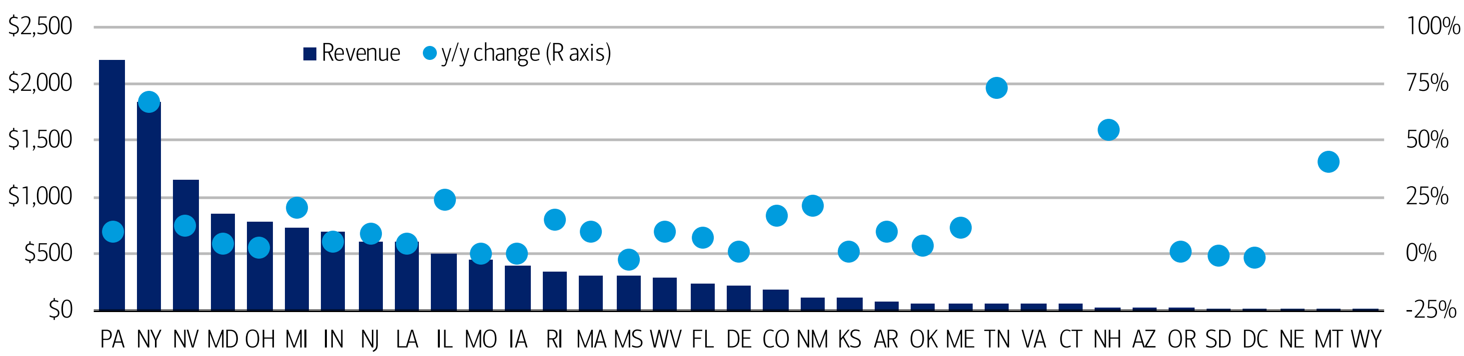
Regulated US sports betting revenue up nearly 75% with NY in the lead

The regulated US sports betting market generated total revenue of $7.56bn in 2022, not including sportsbook operations in tribal casinos, representing a nearly 75% increase y/y per the American Gaming Association's State of the States 2023 report,. Americans legally bet $93.7bn vs $57.5bn in 2021. NY became the largest legal sports betting market in the country with $1.4bn, or more than 18% of the US revenue total after launching online sports betting in January. IL was in the second spot as NJ fell from number one to number three with a y/y decline in revenue given expanded competition from NY. At the end of 2022, 32 states plus DC have legalized sports betting. The report also showed that "strong growth in gaming revenue" translated into a record $13.5bn in "direct gaming tax revenue paid to state and local governments by commercial gaming operations," a 15.3% increase y/y. That figure reflects only specific state and local taxes that are applied directly to gaming activities and not the billions more paid by the industry on the form of income, sales and various other corporate taxes. Nor does the total reflect payroll taxes paid by gaming operators and suppliers. It also excludes federal excise tax payments made by sports betting operators. PA ($2.2bn), NY ($1.8bn) and NV ($1.2bn) were the top-three states with direct gaming revenue collections for 2022.

Exhibit 33: Commercial casino direct gaming tax revenue by state ($mn)

PA tops the states with over $2.2bn in revenue



Note: Y/y changes > 100%: VA = 227.0%, AZ = 385.5%, CT = 463.2%, WY = 653.4%.

Source: American Gaming Association State of the States 2023 report

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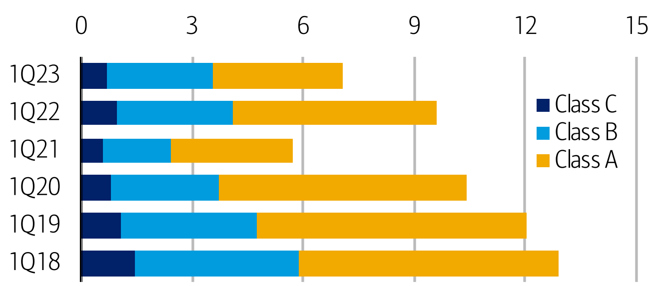
NYC's shelter population, leasing activity and PIT collections – comptroller

NYC's comptroller released his "By the Numbers" report which highlighted the number of homeless and asylum seekers in the city's shelters. As of April 2023, nearly 85,000 individuals were in the city's homeless shelters and emergency response and relief centers, which was up 87% on a y/y basis. The city anticipates the city's asylum seeker population will "grow significantly" following Title 42's expiration. The city spends about $8mn/day currently to house asylum seekers. The report also highlights the city's office market; per the comptroller, a "lower utilization of office space" given remote and hybrid work "will result in lower leasing activity," though "[t]he long-term leases prevalent in much of the office market may" spread the effects of reduced demand "over many years." Additionally, the comptroller focused on personal income tax collections through April. Versus a forecast from January, income taxes are up $2.2bn. However, when estimating the most volatile components of the city's personal income taxes (or, in other words, after stripping out withholdings on wage income that are up 4% y/y through April), collections are down over 20% y/y. See Exhibit 35.

Exhibit 34: Leasing activity, by class (leased sq ft; mn)
Leasing activity fell 27% y/y in 1Q23



Source: NYC comptroller, citing CoStar

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Exhibit 35: Performance of select PIT components, FY22 vs FY23
20.4% estimated decline overall thru April on lower capital gain collections

	FY22	FY23	% change
PTET tax year 2022*	$0	$1,877	n/a
PIT estimated & extension payments thru April**	$4,316	$1,967	-54.4
PIT returns Jan-April	$637	$389	-39.0
PIT State/City offsets Jan-April	$750	$641	-14.5
PIT refunds Jan-April***	-$739	-$924	25.0
Total	**$4,964**	**$3,950**	**-20.4**

Note: PIT refers to personal income tax. PTET refers to pass-through entity tax. *Collections through March excluding $288.5mn in March payments attributed to 2023 liability. **Includes first quarterly installments because FY23 split between installments and extensions is not yet available. ***Excludes $250mn EITC increase in FY23.
Source: NYC comptroller, NYC OMB, NYS Department of Taxation and Finance

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Miami upgraded to AA from AA- by S&P

On 17 May, S&P raised its long-term and underlying ratings to AA from AA- on Miami, FL's limited ad valorem bonds and non-ad valorem bonds and assigned a stable outlook. Per the S&P release, the upgrade reflects S&P's "view of Miami's economic growth and income improvement, coupled with moderation of debt."

IRS increases cap on the TX PSF guarantee program

The IRS announced last week its intent to increase the Texas Permanent School Fund (PSF) Bond Guarantee Program's capacity, essentially aligning the federal limit with the state statutory limit of up to 5.0x the cost value of the Texas PSF, or roughly $218bn at current levels. The change, effective 10 May, reflects a significant increase from the program's previous cap of $117.3bn. Per a press release from the Texas State Board of Education (SBOE), "[i]n a period between last November and January, available program capacity was nearly depleted when the program approached the IRS limit, and 56 districts across the state were denied $8.4bn in applications." While the SBOE can vote to increase the cost value multiplier up to 5.0x, it has been set at 3.5x since 2018, setting the capacity level to $152.6bn as of 31 March. In a 16 May report, Moody's noted that it does "not expect the SBOE to increase the multiple to the allowed 5.0x any time soon given that the recently added capacity almost covers the amount of school districts' authorized unissued debt." The rating agency also noted that when the SBOE has voted to change the multiplier, it has been in 0.25x increments. Moody's expects PSF credit quality "to remain strong because of the fund's sizable asset portfolio, strong default tolerance and the robust credit quality of the school districts whose debt it enhances." Were the fund to guarantee debt up to the current $152.6bn SBOE cap, Moody's estimates the PSF's liquid assets would provide strong coverage of 2.3x and a default tolerance of 13%, assuming no future recovery. Since the program's inception in

1983, it guaranteed $220bn in school district and charter school debt and savings to Texas taxpayers are currently estimated at $300-$400mn annually.

FOMB increases FY23 budget by 12%, includes PREPA loan

The FOMB approved an amended $13.9bn FY23 general fund budget for Puerto Rico reflecting "updated revenue and expense projections," per a 16 May press release. The original budget, approved last June, totaled just over $12.4bn. The additional amounts include $650mn that was previously authorized for Puerto Rico's Emergency Reserve, $545mn for a loan to PREPA and $100mn to fund "a potential Medicaid funding shortfall." Regarding the loan to PREPA for working capital, the FOMB says it will ensure "investments and upgrades are made and suppliers are paid." The loan will provide critical liquidity; in the past, PREPA did not maintain "adequate cash reserves" leaving the system "vulnerable to natural disasters." Otherwise, we highlight: (a) TSA balances of $6.9bn as of 5 May were down $138mn w/w, but are now 3.6% below adopted liquidity plan levels, and FYTD General Fund collections through 5 May of $11.1bn that are up 1.2% vs adopted liquidity plan levels; and, (b) cement sales – a bellwether for construction on-island – that were down 18.8% m/m in April and down 8.5% y/y.

Healthcare

Debt limit breach could result in Medicare and Medicaid payment delays

If the US does not increase the debt limit and hits the X-date, the Bipartisan Policy Center (BPC), a Washington DC think tank, notes that for bills come due through 9 June, there could be payment delays for medical providers and states under the Medicare and Medicaid programs totaling $49bn and $22bn, respectively. BPC projects that the X-date will most likely occur between early June and early August of 2023. We note that BofA's Rates team projects a 1 June X-date. In a note, Moody's said the "disruption in the flow of Medicare payments, which typically account for over 40% of hospital patient service revenue, would cause significant stress to not-for-profit hospitals, especially the ones with limited liquidity or on the lower end of the spectrum." While the medians days cash on hand for the sector is above 200 days, "a brief spell without federal funding would cause significant stress for many hospitals." Hospitals would likely draw on lines of credit or sell off investments to raise cash once working capital funds are depleted. Moody's also noted that any delay in Medicaid payments would further stress cash flow.

Water & sewer

EPA's cyber risk requirement may be costly for water utilities

A US Environmental Protection Agency (EPA) memorandum, effective in early March, requiring states to incorporate a review of cyber resilience in its regular period audits of public water systems "will add an increased regulatory and financial burden, which could be onerous for smaller systems and systems with minimal existing cyber infrastructure," per Fitch. "Given that there was little federal cyber regulation for the sector prior to this memorandum, many utilities will likely have deficiencies cited in sanitary surveys," or audits. Water utilities' capex budgets could be significantly impacted and margins pressured if systems are unable to pass on the additional costs to customers through rate increases. Several states including Missouri, Arkansas and Iowa have filed petitions against the new mandate arguing that the EPA does not have authority to expand the scope of existing regulations without Congressional action.

Rating activity

75% of Moody's 1Q23 rating changes were upgrades

Moody's released 1Q23 rating activity data on 15 May. Overall, there were 329 ratings changed during the quarter; of those changes, 247 were upgrades and 82 were downgrades, for a 3.0 to 1 upgrade-to-downgrade ratio during 1Q23. That marks an improvement over 4Q22. Still, 146 of those upgrades and 31 of those downgrades were due to a local government methodology change. All the same, "[s]tripping out the impact of the methodology," upgrades still outpaced downgrades roughly 2.0 to 1. For reference, aggregated monthly data for S&P's rating actions show a 2.5 to 1 in 1Q23.

An update from NFMA's annual conference

Focus on ESG, cyber-security and remote work

This week the National Federation of Municipal Analysts held their annual conference in Orlando, FL. Looking over the next 10 years, a consistent drive for infrastructure improvements will only continue to grow among small local governments. When it comes to water and sewer projects, what citizens don't see, they don't fix. Also of focus was the ongoing housing crisis nationwide. As those who find housing issues in urban centers move to suburban areas, those same suburban areas will then face housing issues of their own over the next two to three years. Exclusionary zoning and NIMBY (not in my backyard) mindsets will draw the eye of government leaders as housing solutions are sought throughout communities. In a post pandemic operating environment many localities show signs of lessons being learned: increased reserves, thorough and established emergency response plans and policies. City leaders in major cities are concerned that downtown areas have not yet returned; there remains an increased focus on reimagining downtown empty spaces like parking garages and optimizing areas such as parks for remote work. Local leaders also emphasized their concerns over the ongoing opioid crisis, especially fentanyl, noting their presence in schools. ESG and cybersecurity concerns remain at the fore as municipalities try to adapt to new policy initiatives and environmental targets. Cyber-attacks, particularly ransomware, weigh heavy on local governments, with many unwilling to discuss their procedures and insurance in depth, as they look to avoid being targeted.

Defaults, distress & HY

U0HY's recent OAS narrowing; who/what's responsible?

A month and a half ago, we examined the ICE BofA US Municipal High Yield Securities Index's (U0HY) OAS widening between from 16 February to 27 March, attributing almost 40% of the widening over that period to just three airlines' CUSIPs. U0HY's OAS continued to widen to mid-April, reaching 189bp on 13 April; since then, U0HY's OAS came in 21bp to 168bp as of 16 May. Here, we analyze U0HY to determine which issuers and sectors are most responsible for the index's OAS narrowing since mid-April.

Exhibit 36: Top-20 issuers contributing to U0HY's OAS narrowing
Three airline borrowers accounted for 38% of the index's narrowing

Borrower	% of OAS narrowing
Delta Airlines Inc -Rev	14.9%
United Airlines Inc -Rev	14.6%
Board of Education of City of Chicago -GO	13.7%
Children's Trust -Rev	9.3%
American Airlines Group Inc -Rev	8.3%
Puerto Rico Electric Power Authority -Rev	6.4%
Jefferson County Alabama -Rev	5.0%
United States Steel Corp -Rev	3.7%
Covanta Hldg Corp -Rev	2.3%
University of Puerto Rico -Rev	2.3%
Brooklyn Events Ctr LLC -Rev	2.0%
Government of Guam -REV	1.8%
Howmet Aerospace Inc -Rev	1.2%
Legacy Traditional School -Rev	1.2%
Cnx Marine Terminal Inc -Rev	1.1%
Citgo Petroleum Corp -Rev	1.0%
Au Health Sys Inc -Rev	0.8%
Haverland Carter Lifestyle Group -Rev	0.8%
Ultimate Medical Academy -Rev	0.8%
Genesis Healthcare Sys -Rev	0.7%

Source: BofA Global Research, ICE Data Indices, LLC

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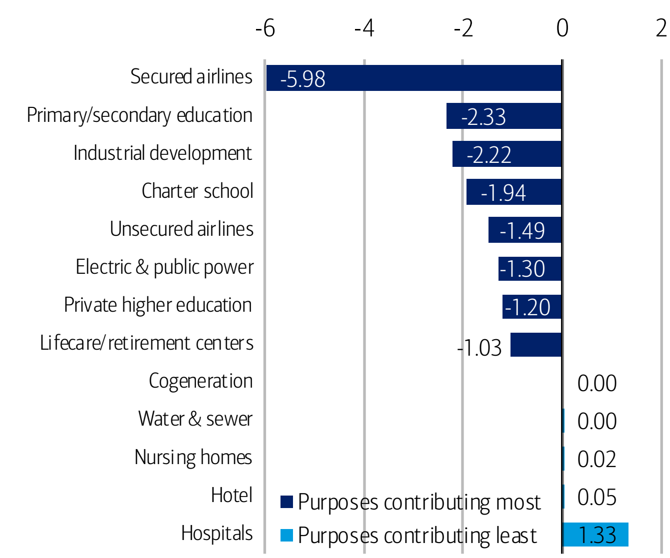
Exhibit 37: Bp of U0HY OAS narrowing by muni bond purpose
Secured airlines and primary/secondary education account for most bp



Source: BofA Global Research, ICE Data Indices, LLC

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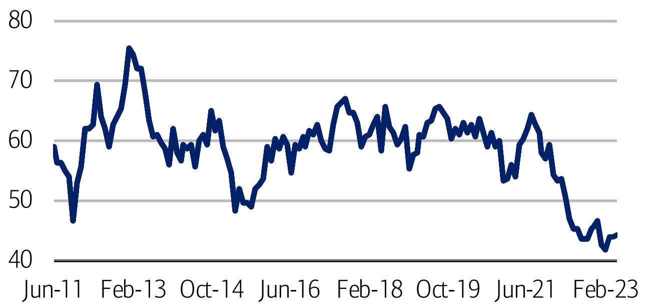
Whereas in our last review three airlines' CUSIPs – United, American and Delta – combined to account for nearly 39% of U0HY's widening, Exhibit 36 shows they now account for 38% of the index's narrowing since 13 April. Exhibit 36 also shows that just

20 borrowers' CUSIPs account for over 92% of overall narrowing. By use of proceeds, secured airlines account for the largest share, at nearly 6.0bp of narrowing, followed by primary/secondary education's 2.3bp of narrowing and industrial development's 2.2bp.

Tracking: material credit event and Ch. 9 filings

For the week ending 17 May, our tracking of those Moody's-defined material credit events (MCEs) shows 8 postings, down 21 on a w/w basis, with the MTD total of 47 as of 17 May. See Exhibit 38. Meanwhile, we note there were no new Chapter 9 bankruptcy petitions filed for the week ending on 17 May and, as a result, it's been 188 days since the last bankruptcy petition was filed by Chester, PA on 10 November 2022. Since 1982, the average period between bankruptcy filings is 52 days. Note that, over this period, the time between Chapter 9 filings exceeded 188 days on only 9 other occasions.

Exhibit 38: 6-mo mov avg of material credit events posted to EMMA
Filings posted to EMMA have sightly increased since last May



Note: Data as of 17 May 2023. Material credit events (MCE) reflect: 1. bankruptcy, insolvency, receivership or similar event, 2. financial obligation-event reflecting financial difficulties, 3. nonpayment related default, 4. principal/interest payment delinquency, 5. unscheduled draw on credit enhancement reflecting financial difficulties, and 6. unscheduled draw on debt service reserve reflecting financial difficulties.
Source: EMMA

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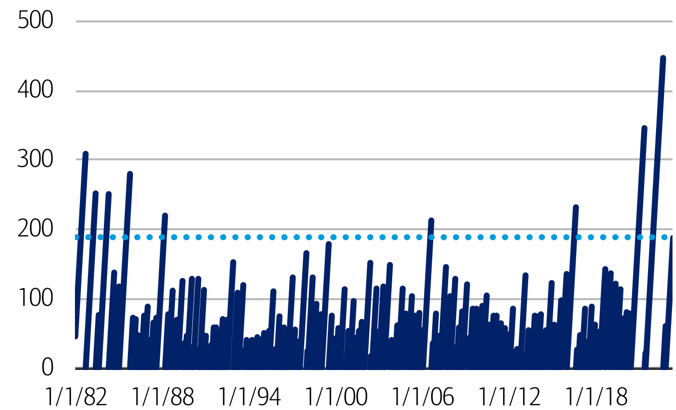
Exhibit 39: Calendar days since last Chapter 9 petition file
188 days since Chester, PA filed for bankruptcy protection on 10 Nov 2022



Source: BofA Global Research, PACER, US Courts

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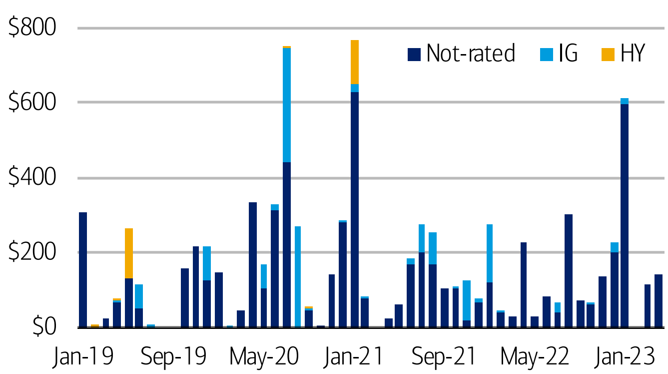
YTD defaults up 50% y/y thru Apr; distress nearly doubled

As a reminder, first-time payment defaults totaled $142mn in April, bringing the YTD total to $866mn, up 50% y/y. The Nursing Home/Senior Living sector continues to default in YTD-23, as we projected earlier. We continue to hold a cautious view on this sector. First-time distressed totaled $122mn in April, bringing the YTD total to $838mn, up 97% y/y. The total cumulative first-time distressed debt since 2019 totals $12.6bn; of that, 35% defaulted while 7% currently exited distressed status.

Exhibit 40: Monthly first-time defaults ($mn) by avg rating at issue
First-time defaults $142mn in April; YTD-23 totals $866mn, up 50% y/y



Note: We may revise data if Bloomberg revises its data.
Source: BofA Global Research, Bloomberg

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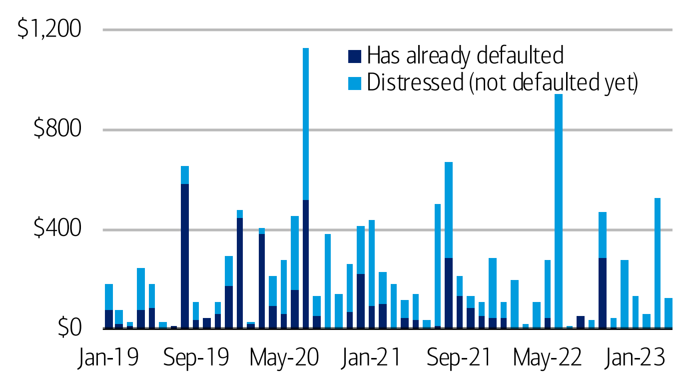
Exhibit 41: Monthly first-time distressed debt ($mn)
First-time distressed $122mn in April; YTD-23 totals $838mn, up 97 % y/y



Note: We may revise data if Bloomberg revises its data.
Source: BofA Global Research, Bloomberg

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As we noted in our [Municipals Year Ahead 2023](), we still expect defaults to tick up some in 2023, with our estimate for the year at $1.7bn-$2.1bn. We expect defaults emanating from this distress to be concentrated in the Nursing Home, Hospital, Student Housing and Industrial Development sectors.

Cross currency equivalent yields

Taxable munis look attractive for most countries on a cross-currency equivalent basis, with only a few exceptions: 5-yr and 10-yr taxable munis remain less attractive for Italy; 5-yr taxables for South Korea and Taiwan.

Exhibit 42: Cross currency equivalent yields as of 18 May 2023

Taxable munis are attractive for foreign investors, though 5yr and 10yr taxables are less so for Italy; 5yr taxables for South Korea and Taiwan

	Government bond yield (in investor country's currency)			Cross currency equivalent yield*						Can foreign investors buy?					
				US Treasury			US AAA taxable municipal bond			US Treasury			US AAA taxable municipal bond		
				5 year	10 year	30 year	5 year	10 year	30 year						
Country	5 year	10 year	30 year	(3.681)	(3.642)	(3.897)	(4.14)	(4.53)	(5.25)	5 year	10 year	30 year	5 year	10 year	30 year
Canada	3.393	3.176	3.159	3.524	3.478	3.821	3.980	4.366	5.170	Yes	Yes	Yes	Yes	Yes	Yes
United Kingdom	3.782	3.952	4.376	4.091	3.912	4.020	4.457	4.799	5.380	Yes			Yes	Yes	Yes
France	2.794	3.027	3.463	2.812	2.870	3.539	3.269	3.752	4.870	Yes		Yes	Yes	Yes	Yes
Germany	2.409	2.441	2.626	2.812	2.870	3.539	3.269	3.752	4.870	Yes	Yes	Yes	Yes	Yes	Yes
Italy	3.751	4.303	4.672	2.812	2.870	3.539	3.269	3.752	4.870						Yes
Spain	3.106	3.506	4.135	2.812	2.870	3.539	3.269	3.752	4.870				Yes	Yes	Yes
Portugal	2.834	3.226	3.843	2.812	2.870	3.539	3.269	3.752	4.870				Yes	Yes	Yes
Netherlands	2.631	2.812	2.882	2.812	2.870	3.539	3.269	3.752	4.870	Yes	Yes	Yes	Yes	Yes	Yes
Switzerland	0.772	0.881	0.993	2.812	2.870	3.539	3.269	3.752	4.870	Yes	Yes	Yes	Yes	Yes	Yes
Japan	0.097	0.378	1.206	-0.359	-0.035	2.224	0.085	0.834	3.482			Yes		Yes	Yes
Australia	3.230	3.483	4.005	3.874	4.335	4.211	4.330	5.216	5.575	Yes	Yes	Yes	Yes	Yes	Yes
South Korea	3.257	3.328	3.384	2.218	2.844	3.527	2.670	3.725	4.852			Yes		Yes	Yes
China	2.529	2.715	3.102	4.663	4.191	4.151	5.123	5.079	5.515	Yes	Yes	Yes	Yes	Yes	Yes
Taiwan	1.073	1.150	1.585	0.701	2.029	3.153	1.153	2.904	4.449		Yes	Yes	Yes	Yes	Yes
Singapore	2.723	2.776	2.260	3.221	3.395	3.781	3.679	4.281	5.124	Yes	Yes	Yes	Yes	Yes	Yes

Note: *Cross currency equivalent yield is the yield for an international buyer to purchase US bond in dollar and convert back to its own country's currency.

Source: BofA Global Research, Bloomberg

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Acronyms

Exhibit 43: Common acronyms used in our Municipals reports

This list is subject to change

Acronym	Definition	Acronym	Definition	Acronym	Definition
1Q	First Quarter	HOSP	Hospital	PA	Pennsylvania
2Q	Second Quarter	HY	High Yield	PC	Pollution Control
3Q	Third Quarter	IA	Iowa	PL	Plains
4Q	Fourth Quarter	ICE	Intercontinental Exchange	PPFI	Milliman's Public Pension Funding Index
AIR	Airport	ICMA	International Capital Market Association	Ppt	Percentage point
AK	Alaska	ID	Idaho	PR	Puerto Rico
AL	Alabama	IDR	Industrial Development Revenue	PRE-RE	Pre-refunded
AMT	Alternative Minimum Tax	IG	Investment Grade	PRHTA	Puerto Rico Highway & Transportation Authority
Apr	April	IL	Illinois	PROMESA	Puerto Rico Oversight, Management, and Economic Stability Act
AR	Arkansas	IN	Indiana	PWR	Power
ARPA	American Rescue Plan Act	INT	Intermediate term	Q/Q	Quarter-over-quarter
Aug	August	Jan	January	QTD	Quarter-to-date
Avg	Average	Jun	June	R	Rich
AZ	Arizona	KS	Kansas	RI	Rhode Island
BEA	Bureau of Economic Analysis	KY	Kentucky	RM	Rocky Mountain
BLS	Bureau of Labor Statistics	LA	Louisiana	S&L	State and Local
BofA	Bank of America	LCA	Leases, COPs & Appropriations	S&P	Standard & Poor's
Bp	Basis points	LT	Long term	SC	South Carolina
BTN	Back-to-Normal Index	M	Mideast	SD	South Dakota
C	Cheap	M/M	Month-over-month	SE	Southeast
CA	California	MA	Massachusetts	Sep	September
CARES	Coronavirus Aid, Relief, and Economic Security Act	Mar	March	SFH	Single Family Housing
CB	Census Bureau	MD	Maryland	ST	Short term

Exhibit 43: Common acronyms used in our Municipals reports

This list is subject to change

Acronym	Definition	Acronym	Definition	Acronym	Definition
CO	Colorado	ME	Maine	SW	Southwest
COPs	Certificates of Participation	MFH	Multi-Family Housing	T&T	Toll & Turnpike
CPI	Consumer Price Index	MI	Michigan	TAX	Tax Revenue
CT	Connecticut	MISC	Miscellaneous	TBCO	Tobacco
CUSIP	Committee on Uniform Security Identification Procedures	MMD	Municipal Market Data	TEU	Twenty-Foot Equivalent Units
DC	District of Columbia	MN	Minnesota	TN	Tennessee
DE	Delaware	MO	Missouri	TRAN	Transportation - other
Dec	December	MS	Mississippi	TSA	For Puerto Rico, Treasury Single Account; otherwise, Transportation Security Administration
EAI	Puerto Rico Economic Activity Index	MSA	Metropolitan Statistical Area	TX	Texas
EDU	Education	MT	Montana	US	United States
ESG	Environmental, Social, Governance	MTD	Month-to-date	USVI	US Virgin Islands
ETF	Exchange Traded Fund	N	Neutral	UT	Utah
ETM	Escrowed to Maturity	NASBO	National Association of State Budget Officers	UTL	Utilities - other
Feb	February	NC	North Carolina	VA	Virginia
Fed	Federal Reserve	ND	North Dakota	VC	Very Cheap
FEMA	Federal Emergency Management Agency	NE	Nebraska	VPIP	Value of construction put in place
FL	Florida	NED	New England	VR	Very Rich
FOMB	Financial Oversight & Management Board for Puerto Rico	NH	New Hampshire	VRDO	Variable Rate Demand Obligation
FW	Far West	NJ	New Jersey	VT	Vermont
FY	Fiscal year	NM	New Mexico	W&S	Water & Sewer
GA	Georgia	Nov	November	W/W	Week-over-week
GDP	Gross Domestic Product	NV	Nevada	WA	Washington
GL	Great Lakes	NY	New York	WI	Wisconsin
GO	General Obligation	OAS	Option Adjusted Spread	WV	West Virginia
GO-L	Local GO	Oct	October	WY	Wyoming
GO-S	State GO	OH	Ohio	Y/Y	Year-over-year
Govt	Government	OK	Oklahoma	YTD	Year-to-date
HI	Hawaii	OR	Oregon	YTM	Yield to Maturity
HLTH	Healthcare	P&C	Property & Casualty insurance company	YTW	Yield to Worst

Source: BofA Global Research

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