

Municipals Quarterly

4Q23 in review

Industry Overview

Large 4Q rally as the Fed signaled a dovish shift

The 10yr Treasury yield fell 69bp from 4.57% to 3.88% in a bull steepening move in 4Q23. The CPI index moved from 3.7% in September to 3.1% in November. In 4Q23, the Fed maintained its hawkish tone through October on the 3Q economic strength but then pivoted to a dovish posture in early November, guiding the market's focus from possible additional rate hikes to the timing of the first rate cut. Both Treasury and muni yields peaked in October 2023 and then rallied strongly in the final two months of the year. Muni credit spreads widened some in 4Q as the economy clearly down shifted.

Issuance up both y/y and q/q in 4Q23

Issuance totaled \$99.6bn in 4Q23, up 32% y/y and 2% q/q. New money volumes were up 27% y/y but flat q/q, while refunding volumes were up 54% y/y and 10% q/q.

Munis post blockbuster returns in 4Q23

The Muni Master index (UOA0) returned 7.62% in 4Q23, outperforming governments (5.69%), taxable munis (7.51%) and high yield munis (6.17%), but underperforming corporates (7.91%). By rating, BBBs' returns were strongest at 8.38%. By sector, Hospital's 9.55% of returns in 4Q23 were strongest. For the quarter, AA's spreads widened 5bp, single-A's by 9bp, BBB's by 25bp and high yield's by 48bp. Among the sectors, Tobacco's 33bp of widening was largest q/q; only Multi-family Housing and Tax Revenue's spreads narrowed q/q in the 4Q23.

10yr and 30yr AAA MMD rallied hard during the quarter

The 10yr AAA MMD finished the quarter at 2.28%, down 117bp versus the end of 3Q23 while the 30yr ended 4Q23 at 3.42%, down 92bp. The 10yr muni/Treasury ratio richened to 59.1% from 74.9% by the end of 4Q23, and the 30yr ratio richened to 85.8% from 92.3%. Meanwhile, the 1s30s muni AAA curve steepened in 4Q23 to 75bp from 64bp in 3Q23, driven primarily by steepening of the 10s30s AAA curve; the 10s30s, steepened 25bp during 4Q23 to 114bp while the 1s10s inverted further to -39bp.

Credit still resilient: upgrades > downgrades

Credit fundamentals proved resilient during 4Q23 by most indications. S&P upgraded 272 ratings in October and November vs just 62 downgrades, for an upgrade to downgrade ratio of 4.4 to 1 over the first two months of 4Q23. During the quarter, outlook revisions to both negative and positive were fairly even, at 39 and 40, respectively. Notable rating actions include OH's upgrades to Aaa/AAA, PA's upgrade to AA, Chicago's upgrade to BBB+ and MTA's upgrades to A-/A.

4Q23 distress up, defaults down y/y; no Ch. 9 filings

First-time debt service payment defaults in 4Q23 totaled \$414mn, down 5% versus 4Q22. Newly distressed debt totaled \$590mn in 4Q23, down 25% versus 4Q22. Meanwhile, there were no Chapter 9 bankruptcy petition filed in 4Q23. As of the end of 4Q23, it has been 222 days since Hazel Hawkins Memorial Hospital filed for bankruptcy protection.

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United States

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Recent Municipals Research

[Monthly Municipal ESG Monitor: November 2023 19 December 2023](#)

[Municipals Weekly: Fed to markets: "Happy Holidays!" 15 December 2023](#)

[Municipals Weekly: Ratios to retest record lows 08 December 2023](#)

[Municipals Year Ahead 2024: Run it back 01 December 2023](#)

[Monthly Municipal ESG Monitor: October 2023 28 November 2023](#)

[Municipals Weekly: Long the long 4s 17 November 2023](#)

Exhibit 1: Strategic and tactical views & key forecasts

Buy long duration high grade bonds, especially 4% coupons

Strategic views

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

Tactical views

- Position for ratios to reach historically rich levels
- 4% coupon bracket to benefit more in a rally
- Swap long-end muni taxables for long-end tax-exempts

Key forecasts

- 2024 issuance to total \$400bn; \$300bn of new money and \$100bn of refundings
- 2024 principal redemptions to total \$416bn and coupon payments \$158bn. Cumulative fund inflows positive
- 1s10s slope to stay inverted in 2024; 10s30s to steepen, then flatten; 10s30s max slope of 110bp in 2024
- 10yr muni/Tsy ratio range of 55%-80% and 30yr 75%-92%
- Stable credit spreads in 2024 given non-recessionary environment; any material widening is an opportunity

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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4Q23 in review

The 10yr Treasury yield fell 69bp from 4.57% to 3.88% in a bull steepening move in 4Q23. The CPI index moved from 3.7% in September to 3.1% in November. In 4Q23, the Fed maintained its hawkish tone through October on the 3Q economic strength but then pivoted to a dovish posture in early November, guiding the market's focus from possible additional rate hikes to the timing of the first rate cut. Both Treasury and muni yields peaked in October 2023 and then rallied strongly in the final two months of the year. Muni credit spreads widened some in 4Q as the economy clearly down shifted.

On the supply side, issuance during 4Q23 totaled \$99.6bn, up 32% compared to 4Q22's issuance and up 2% versus 3Q23's. On a y/y basis, new money volume was up 27% in 4Q23 while refunding volume was up 54%. 4Q23 issuance was about 16% below our revised \$118bn forecast for the quarter made in Spring 2023. On the demand side, principal redemptions of long- and short-term bonds totaled \$95bn in 4Q23 and coupon payments totaled \$40bn.

Nearly \$813bn of muni par value traded in the secondary market in 4Q23, with an average daily volume of \$13.1bn. That daily average is up 21.4% q/q but down 5.0% y/y. Since 1Q22 when the Fed began its hiking cycle, secondary activity has been elevated. The daily average from 4Q17 through 4Q21 is \$9.3bn vs \$12.0bn from 1Q22 onward.

On rates, the 10yr AAA MMD finished the quarter at 2.28%, down 117bp versus the end of 3Q23. The 30yr AAA ended 4Q23 at 3.42%, down 92bp compared to 30 September 2023. In our [Municipals Year Ahead 2024](#), we expressed a 10yr AAA target range of 2.30% to 2.60%. With those levels already achieved in 4Q23, we now look for the 10yr AAA to reach the 1.80% area. Meanwhile, the 10yr muni/Treasury ratio richened 15.7 ratios to 59.1% from 74.9% by the end of 4Q23, and the 30yr ratio richened, albeit to a lesser degree, to 85.8% from 92.3%. Meanwhile, the 1s30s muni AAA curve steepened in 4Q23 to 75bp from 64bp in 3Q23. That was driven primarily by steepening in the 10s30s AAA curve; it steepened 25bp during 4Q23 to 114bp while the 1s10s curve inverted further to -39bp.

Credit spreads widened during the quarter as the economy down shifted. AA YTW spreads widened 4bp, single-A spreads widened 9bp and BBB spreads widened 24bp. Versus the end of 3Q23, high yield spreads widened 48bp to 228bp.

Credit fundamentals again proved resilient during the quarter. S&P upgraded 272 ratings in October and November versus just 62 downgrades, for an upgrade to downgrade ratio of 4.4 to 1 over the first two months of 4Q23. Outlook revisions to negative (39) were largely balanced with those to positive (40). In 4Q23, S&P removed more ratings from CreditWatch negative than it placed on CreditWatch in October and November. When full

4Q23 S&P data is released – likely next month – we expect it to again show a heavier skew to the positive. While our economists currently forecast a soft landing, they nevertheless expect growth to slow meaningfully; to that end, though we do expect ratings to stay positive in 2024, we do not expect that slowed growth can support such positive rating activity moving forward; as such, we expect upgrade to downgrade ratios to moderate as we move towards year-end.

A few notable rating actions during the quarter include: Chicago's upgrade to BBB+ by Fitch; Oklahoma's outlook revision to positive by Moody's; Rhode Island's outlook revision to positive by Fitch; the Puerto Rico Aqueduct and Sewer Authority's upgrade to CCC by Fitch; the Metropolitan Transportation Authority's (MTA) upgrade to A- by S&P and A by Fitch; Memorial Sloan Kettering Cancer Center, NY's outlook revision to stable by Moody's; Bridgeport, CT's outlook revision to positive from S&P; Denver International Airport's outlook revision to positive by Fitch; South Carolina Public Service Authority's (Santee Cooper) outlook revision to stable by Moody's; Illinois' upgrade to A- by Fitch; the District of Columbia's outlook revision to negative by Moody's; Indianapolis' outlook revision to stable by S&P; Ohio's upgrade to Aaa by Moody's and AAA by S&P; Pennsylvania's upgrade to AA by Fitch; and, Minneapolis, MN's outlook revision to positive by Moody's.

Milliman reported that the funded ratio for the Public Pension Funding Index (PPFI), which is comprised of the 100 largest US public pension plans, fell 1.8ppt m/m in October to 71.4% – the lowest monthly print since October 2022's 71.4% – before climbing 4.5ppt m/m in November to 75.9% – a level which is modestly above where they stood immediately pre-pandemic, but well below their post-financial crisis high water mark from 4Q21 of 85.5%. When Milliman's report for the month of December is released, we expect it to show an increase in funded ratios given performance in the markets during the month.

First-time debt service payment defaults in 4Q23 totaled \$414mn, down 5% versus 4Q22. Of 4Q23's defaults by rating at issue, 90% was on non-rated debt. Newly distressed debt totaled \$590mn in 4Q23, down 25% versus 4Q22. There was no Chapter 9 bankruptcy petition filed in 4Q23. Indeed, the end of 4Q23 marked 222 days since the last Chapter 9 bankruptcy petition was filed by the San Benito Health Care District (d/b/a Hazel Hawkins Memorial Hospital). We continue to expect bankruptcies to stay in the low-to-mid single digits in 2024.

The Muni Master index (UOAO) returned a stellar 7.62% for the quarter. While that was strong enough to outperform governments (5.69%), taxable munis (7.51%) and high yield munis (6.17%), they modestly underperformed corporates (7.91%). AAA munis returned 7.84%, AAs returned 7.46%, single-As returned 7.68% and BBBs returned 8.38%. The long end of the curve had the strongest returns in 4Q23, with the 22+yr index returning 10.69% versus the 1-3yr's 2.73%. Revenue bonds outperformed GOs, 7.75% versus 7.20%, respectively. The Hospital sector's returns in 4Q23 of 9.55% were strongest while Tobacco's 5.56% was weakest. As noted in our Municipals Year Ahead, we expect strong returns for munis in 2024. We continue to expect the best returns to be found in high grade longer maturities, particularly in 4% coupons.

Exhibit 2: 4Q23 Municipals reports – a summary

Muni rates rallied hard to end the year. Fed pivoted from hawkish posture in October to dovish posture in November and December.

Published

[12/19/2023](#)
[ESG Monitor](#)

[12/15/2023](#)

[12/8/2023](#)

Key takeaways

- November Muni ESG issuance: all labeled totaled \$5.4bn, up 30% y/y; ICMA-aligned totaled \$4.4bn, up 6% y/y.
- Muni ESG fund monthly flows totaled \$2.0mn in November; YTD flows totaled -\$71.8mn.
- Bloomberg's Muni Impact index returned 7.18% for November and 4.87% YTD.
- 2.30% is within grasp for the 10yr AAA. 1.80% may become the focus for 2024.
- Muni credit spreads widened for the last six weeks. They should narrow after dovish Fed and resilient Nov-23 economic data.
- 54% of bonds in the ICE Muni Master Index rated by Moody's and S&P have equivalent ratings, up vs 51% in Dec-22.
- If Treasury yields rise significantly during Dec-Feb, muni ratios should retest those record lows attained in 2021.
- Short of a recession, we expect the 1s30s muni AAA slope to rise to the 130bp range in the 2024/2025 Fed easing cycle.
- Muni market stood at \$4.04tn as of 3Q23 per Flow of Funds data; holdings by banks, households and mutual funds fell 4-5% q/q.



Exhibit 2: 4Q23 Municipals reports – a summary

Muni rates rallied hard to end the year. Fed pivoted from hawkish posture in October to dovish posture in November and December.

Published**Key takeaways**

[12/1/2023](#)
[Year Ahead](#)

- Muni issuance to total \$400bn in 2024. \$300bn new money; \$100bn of refundings; \$340bn tax-exempt; \$45bn taxable; \$15bn AMT.
- AAA MMD rates to fall in 2024: 10yr to 2.3%-2.6%, 30yr to 3.3%-3.6%; 1s10s to stay inverted, 10s30s to steepen then flatten.
- Performance to be driven by curve, rates & duration. Muni Master index will return 7.5% in 2024; stronger returns out long.
- 1s10s muni AAA curve to stay inverted as the 10s30s steepens before flattening in 2024; we recommend max duration.

[11/17/2023](#)

- Given our near- and long-term AAA MMD rate forecasts for 2024, we prefer the 4% coupon next year.
- Risk-adjusted returns bottomed in October, but turned positive in November and should stay positive into year-end.

[11/10/2023](#)

- Muni rally to extend until mid-December; 2024 AAA targets: 2.60% for 10yr and 3.60% for 30yr.
- 2024 sector credit views: most positive on essential services and GOs, most negative on higher education and healthcare.
- The value of the muni tax exemption hit 319bp on 31 Oct, the highest since mid-2002; muni yields are still attractive.
- Market rallied after a dovish Fed hold; 30yr muni AAA could end up in the 4.15% area if this is another limited rally.

[11/3/2023](#)

- Investors in many states have the opportunity to find munis with HY-like taxable equivalent yields north of 9%.
- MIA leads the largest airports in YTD-23 passenger recovery; SFO bonds trading cheap on a short-term basis.

[10/27/2023](#)

- Treasury investors defended 5% for the 10yr as the muni market looks more constructive.
- With slower growth expected ahead, we are biased towards up in quality and remain neutral on credit.

[10/20/2023](#)

- As many bonds have fallen below par, and some even below de minimis, we revisit the trading dynamics at play.
- Market stress remains low and activity is normal. We suggest a selective, slice-in approach, as well as tax loss swapping.
- We continue to view muni credit as strong and likely to prove resilient in the face of a slowing economy heading into 2024.
- After an above average calendar for the week, YTD issuance hit \$297.1bn, down 9% y/y.

[10/12/2023](#)
[Primer](#)

- VRDOs are long-term securities that are considered short-term because of their put features.
- VRDOs are not, and should not be confused with, Auction Rate Securities (ARS).
- While SIFMA is around 70% of 1-mo SOFR, on a taxable-equivalent basis, SIFMA may offer better rates.
- A volatile Treasury market drove some yield rise in munis; more favorable 4Q technicals will support the market.

[10/6/2023](#)

- Our preliminary estimate for 2024 issuance is \$400bn: \$300bn of new money and \$100bn of refunding.
- Reviewing historical returns, we find that the middle of Oct and Nov is the best time to put money to work.

[10/3/2023](#)
[3Q23 in review](#)

- Yields climbed in 3Q23 as Fed hiked twice then paused in September. Muni rates surpassed cycle highs from October 2022.
- 10yr AAA finished at 3.45%, up 89bp q/q. 10yr muni/Tsy ratio cheapened to 74.9%, 30yr to 92.3% in 3Q23.
- 3Q23 issuance of \$94bn vs \$114bn of principal redemptions and \$43bn of coupon payments. Muni fund flows totaled -\$3.8bn.

Source: BofA Global Research

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Performance

Exhibit 3: Municipal total returns monitor (%)

In 4Q23, IG exempt munis outperformed govies by 193bp, taxable munis by 10bp and HY munis by 145bp. Underperformed IG corporates by 30bp

Index	Ticker	3Q22		4Q22		1Q23		2Q23		3Q23		4Q23	
		TR	PR	TR	PR	TR	PR	TR	PR	TR	PR	TR	PR
Govt Master	GOA0	-4.677	-5.158	0.722	0.162	3.061	2.472	-1.386	-1.984	-3.276	-3.911	5.687	4.955
Corporate Master	COA0	-5.110	-6.040	3.528	2.460	3.448	2.398	-0.209	-1.246	-2.696	-3.748	7.913	6.723
IG munis	U0A0	-3.615	-4.637	4.019	2.892	2.823	1.735	0.016	-1.046	-3.775	-4.823	7.617	6.446
AAA	U0A1	-3.751	-4.743	4.080	2.985	2.514	1.455	-0.277	-1.315	-4.074	-5.103	7.839	6.676
AA	U0A2	-3.497	-4.520	4.088	2.963	2.669	1.585	-0.175	-1.234	-3.769	-4.817	7.455	6.289
A	U0A3	-3.527	-4.567	3.845	2.713	3.086	1.991	0.289	-0.786	-3.532	-4.589	7.678	6.500
BBB	U0A4	-4.366	-5.382	3.868	2.693	3.610	2.467	1.119	0.029	-4.216	-5.271	8.378	7.179
1-3yr	U1A0	-1.461	-2.497	1.571	0.498	1.102	0.044	-0.113	-1.163	-0.414	-1.475	2.730	1.637
3-7yr	U2A0	-2.587	-3.602	3.011	1.917	1.951	0.880	-0.729	-1.779	-2.052	-3.107	5.248	4.118
7-12yr	U3A0	-2.555	-3.570	4.460	3.359	2.594	1.540	-0.604	-1.634	-3.422	-4.448	7.094	5.964
12-22yr	U4A0	-3.905	-4.929	4.692	3.554	3.257	2.164	0.273	-0.790	-4.471	-5.510	8.928	7.745
22+yr	U5A0	-5.859	-6.884	5.149	3.963	4.062	2.931	0.714	-0.382	-6.169	-7.229	10.693	9.438
HY munis	U0HY	-3.951	-5.179	3.124	1.748	2.158	0.821	0.957	-0.374	-3.016	-4.318	6.170	4.731
Non-rated	U0NR	-4.148	-5.409	3.273	1.939	2.519	1.259	2.265	1.006	-3.462	-4.676	7.600	6.250
General Obligation	U0AG	-3.281	-4.303	3.885	2.767	2.652	1.573	-0.372	-1.423	-3.585	-4.623	7.201	6.048
AAA	UGA1	-3.856	-4.844	4.030	2.938	2.264	1.213	-0.425	-1.455	-4.070	-5.085	7.726	6.578
AA	UGA2	-3.120	-4.143	3.961	2.845	2.540	1.465	-0.385	-1.438	-3.552	-4.593	7.179	6.027
A	UGA3	-2.887	-3.926	3.835	2.717	2.499	1.419	-0.474	-1.582	-2.774	-3.873	6.349	5.142
BBB	UGA4	-3.220	-4.349	2.612	1.376	5.375	4.148	1.002	-0.025	-2.773	-3.716	5.674	4.656
State	U0AA	-2.701	-3.757	3.408	2.265	2.589	1.481	-0.475	-1.559	-2.867	-3.941	6.228	5.056
Local	U0AB	-4.015	-4.994	4.488	3.402	2.728	1.686	-0.249	-1.263	-4.415	-5.412	8.332	7.202
Revenue	U0AR	-3.725	-4.748	4.064	2.934	2.881	1.790	0.147	-0.919	-3.839	-4.891	7.750	6.574
AAA	URA1	-3.669	-4.666	4.117	3.020	2.699	1.632	-0.171	-1.216	-4.078	-5.116	7.916	6.741
AA	URA2	-3.665	-4.689	4.145	3.015	2.726	1.638	-0.079	-1.142	-3.867	-4.917	7.573	6.400
A	URA3	-3.558	-4.599	3.846	2.713	3.113	2.016	0.358	-0.713	-3.601	-4.655	7.791	6.615
BBB	URA4	-4.604	-5.597	4.213	3.056	3.139	2.019	1.155	0.060	-4.333	-5.398	8.604	7.390
Airport	U0AV	-3.431	-4.551	3.512	2.284	3.418	2.225	0.411	-0.752	-3.084	-4.230	6.744	5.485
Education	U0AE	-3.901	-4.931	4.373	3.225	2.958	1.856	-0.104	-1.178	-4.243	-5.301	8.174	6.972

Exhibit 3: Municipal total returns monitor(%)

In 4Q23, IG exempt munis outperformed govies by 193bp, taxable munis by 10bp and HY munis by 145bp. Underperformed IG corporates by 30bp

Index	Ticker	3Q22		4Q22		1Q23		2Q23		3Q23		4Q23	
		TR	PR	TR	PR	TR	PR	TR	PR	TR	PR	TR	PR
Health	UOHL	-4.402	-5.452	2.660	1.471	0.568	-0.589	1.023	-0.151	-3.638	-4.809	9.336	7.964
Hospital	UOAH	-4.865	-5.920	5.159	3.964	3.053	1.917	0.132	-0.979	-5.067	-6.150	9.548	8.302
Industrial Development Rev	UOID	-4.186	-5.206	4.293	3.139	3.579	2.466	1.075	-0.018	-3.498	-4.555	7.693	6.517
Leases, COPs & Appropriations	UOAL	-3.345	-4.396	3.955	2.804	2.454	1.339	-0.136	-1.223	-3.502	-4.579	7.137	5.947
Miscellaneous	UOAM	-3.982	-4.999	4.462	3.329	2.592	1.503	-0.396	-1.448	-3.744	-4.792	7.338	6.175
Multi-family Housing	UOAU	-5.169	-5.873	4.057	3.238	3.058	2.228	-0.292	-1.128	-3.790	-4.652	8.159	7.165
Pollution Control	UOAQ	-3.318	-4.213	3.933	2.928	2.108	1.135	-0.091	-1.059	-2.801	-3.734	6.133	5.181
Power	UOAP	-3.074	-4.063	3.489	2.421	2.237	1.196	0.037	-0.988	-3.191	-4.227	6.539	5.375
Single-family Housing	UOAS	-3.931	-4.761	3.785	2.827	2.131	1.194	-0.713	-1.657	-3.212	-4.185	6.992	5.890
Tax Revenue	UOTX	-3.754	-4.777	4.346	3.215	2.958	1.871	0.013	-1.049	-4.168	-5.209	8.276	7.098
Tobacco	UOTB	-3.002	-4.079	3.577	2.400	3.137	1.983	0.887	-0.241	-2.628	-3.744	5.562	4.348
Toll & Turnpike	UOTL	-3.400	-4.384	4.036	2.955	2.933	1.888	0.298	-0.726	-3.715	-4.726	7.300	6.180
Transportation - other	UOAT	-3.425	-4.443	3.722	2.613	3.703	2.628	0.242	-0.794	-3.603	-4.617	7.789	6.663
Utilities - other	UOUT	-2.860	-3.893	2.712	1.593	1.925	0.828	0.775	-0.295	-2.451	-3.534	6.415	5.253
Water & Sewer	UOAW	-3.547	-4.582	3.862	2.730	2.582	1.484	0.050	-1.021	-3.994	-5.051	7.441	6.262
Taxable	TXMB	-5.650	-6.628	0.915	-0.195	4.925	3.812	-0.289	-1.360	-3.814	-4.890	7.514	6.294
Build America Bonds	BABS	-5.686	-6.938	1.273	-0.145	4.634	3.222	-0.254	-1.617	-4.336	-5.689	7.563	6.023

Note: TR = Total return; PR = Price return.

Source: ICE Data Indices, LLC

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Exhibit 4: Municipal YTW spreads monitor (bp)

IG spreads widened 6bp q/q in 4Q23 and HY spreads by 48bp

	4Q22	1Q23	2Q23	3Q23	4Q23	Change		4Q23 as % of 52wk range	Price	Yield
						y/y	q/q			
IG munis	37	34	25	20	26	-11	6	39	102.59	3.38
AA	14	11	7	3	8	-6	5	50	103.71	3.20
A	78	73	57	50	59	-19	9	34	100.37	3.71
BBB	133	141	114	95	120	-13	25	54	97.14	4.32
HY munis	205	217	193	180	228	23	48	100	94.47	5.40
Non-rated	248	243	212	181	229	-19	48	44	65.33	5.41
General Obligation	-2	-8	-7	-11	-7	-5	4	50	103.23	3.05
AA	-9	-12	-13	-16	-13	-4	3	60	103.10	2.99
A	-9	11	12	6	10	19	4	57	105.61	3.22
BBB	117	114	71	64	87	-30	23	55	97.04	3.99
State	-16	-27	-24	-27	-26	-10	1	29	106.97	2.86
Local	16	15	12	9	15	-1	6	80	99.21	3.27
Revenue	50	48	37	30	37	-13	7	35	102.38	3.49
AA	25	22	16	12	17	-8	5	47	103.97	3.29
A	82	78	62	54	64	-18	10	38	99.94	3.76
BBB	137	143	117	97	122	-15	25	51	97.14	4.34
Airport	90	82	64	52	67	-23	15	39	104.52	3.79
Education	35	28	15	10	17	-18	7	30	105.38	3.29
Health	139	170	138	137	166	27	29	79	94.55	4.78
Hospital	86	87	70	62	71	-15	9	38	100.76	3.83
Industrial Development Rev	124	122	92	68	98	-26	30	53	100.99	4.10
Leases, COPs & Appropriations	13	12	6	1	4	-9	3	44	104.69	3.16
Miscellaneous	5	6	10	-2	7	2	9	67	102.36	3.19
Multi-family Housing	88	70	84	70	66	-22	-4	33	95.47	3.78
Pollution Control	49	51	44	54	56	7	2	76	98.73	3.68
Power	33	37	30	24	27	-6	3	25	105.36	3.39
Single-family Housing	74	79	85	71	88	14	17	95	99.01	4.00
Tax Revenue	20	16	8	7	6	-14	-1	18	102.39	3.18
Tobacco	36	32	11	-15	18	-18	33	65	101.67	3.30
Toll & Turnpike	50	48	35	31	37	-13	6	35	99.27	3.49
Transportation - other	59	47	36	28	33	-26	5	23	100.82	3.45
Utilities - other	94	102	77	68	78	-16	10	29	104.25	3.90
Water & Sewer	21	19	11	10	19	-2	9	89	104.22	3.31

Note: YTW spread to the ICE BofA AAA US Municipal Securities Index (UOA1).

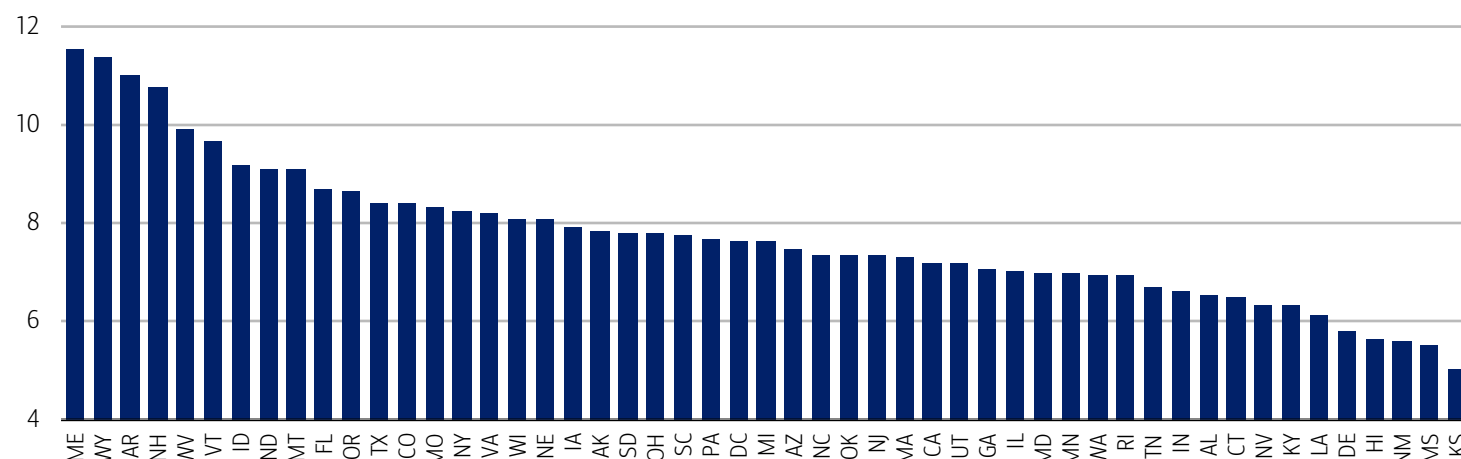
Source: BofA Global Research, ICE Data Indices, LLC

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Exhibit 5: 4Q23 total returns by state (%)

ME paper performed the best in 4Q23, returning 11.56%; KS paper had the worst performance during the quarter, returning 5.05%



Note: For securities included in the ICE BofA Muni Master Index (UOAO).

Source: ICE Data Indices, LLC

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Supply & demand

Exhibit 6: Quarterly issuance summary (\$mn)

4Q23 issuance of \$99.6bn was up 32% y/y and 2% q/q; new money up 27% y/y and refundings up 54%

	1022	2022	3022	4022	1023	2023	3023	4023	4Q23 vs 4Q22	4Q23 vs 3Q23
Total	103,829.5	114,812.1	97,230.5	75,426.1	79,752.1	102,917.5	98,062.0	99,631.4	32%	2%
New Money	77,747.0	90,787.4	79,637.1	61,681.0	65,126.1	72,549.0	78,784.6	78,456.6	27%	0%
Total Refunding	26,082.5	24,024.7	17,593.4	13,745.1	14,625.9	30,368.4	19,277.4	21,174.8	54%	10%
Advanced refunding	1,237.0	148.8	770.0	0.2	1,380.9	0.0	0.0	0.0	-100%	-
Unknown refunding	23,814.4	20,012.2	15,782.8	12,193.4	11,814.4	28,549.1	18,421.5	20,529.2	68%	11%
Current & Forward refunding	1,031.2	3,863.8	1,040.6	1,551.6	1,430.7	1,819.3	856.0	645.5	-58%	-25%
Insured	8,429.7	9,259.0	5,259.9	5,935.8	5,678.9	9,882.4	7,108.1	9,186.6	55%	29%
Fixed Rate	97,971.1	105,675.9	88,501.9	66,637.1	70,512.1	91,704.4	86,067.3	87,844.4	32%	2%
Variable Rate Long	3,962.4	3,872.3	4,399.8	3,985.5	6,403.8	7,463.8	7,764.8	7,987.2	100%	3%
Variable Rate Short	1,064.0	3,618.1	3,637.7	3,213.0	2,388.5	3,600.4	3,234.7	3,226.1	0%	0%
Zero Coupon	312.7	419.3	167.6	383.4	173.6	107.0	51.3	103.7	-73%	102%
Linked Rate	274.0	864.7	523.6	1,207.1	270.0	22.0	836.4	444.9	-63%	-47%
Convertible	245.3	361.8	0.0	0.0	4.1	14.0	107.5	25.1	-	-77%
Tax Exempt	81,797.5	92,655.1	77,700.6	63,163.6	63,826.1	92,285.5	86,760.0	83,339.5	32%	-4%
Taxable	17,700.7	16,552.9	12,953.8	7,072.0	14,074.0	7,514.7	6,735.0	9,119.8	29%	35%
Alternate Minimum Tax	4,331.4	5,604.1	6,576.1	5,190.5	1,852.0	3,117.3	4,567.0	7,172.1	38%	57%
Education	29,802.5	27,513.8	19,420.6	14,894.7	22,815.9	27,950.0	26,371.1	17,715.4	19%	-33%
General Purpose	27,164.2	28,159.5	29,226.8	19,119.6	17,847.0	30,188.1	22,611.2	25,967.2	36%	15%
Transportation	12,989.0	13,449.1	18,277.2	12,172.9	8,762.5	8,735.3	13,771.1	14,056.2	15%	2%
Utilities	12,337.8	14,389.4	11,395.3	10,064.5	12,433.9	12,122.4	12,056.9	10,867.6	8%	-10%
Housing	7,166.9	9,007.4	7,568.0	8,156.5	7,529.3	9,307.7	10,209.2	13,213.1	62%	29%
Healthcare	6,533.5	11,490.0	5,376.6	4,505.1	2,661.1	4,418.0	4,284.1	5,389.2	20%	26%
Electric Power	2,667.2	5,293.5	2,625.3	1,665.0	3,129.5	5,120.4	3,586.1	5,844.2	251%	63%
Development	2,635.7	2,651.3	1,863.2	3,043.8	3,231.2	1,796.9	1,978.5	3,062.4	1%	55%
Public Facilities	2,365.0	1,652.5	769.4	877.6	771.9	2,044.2	2,226.5	2,651.1	202%	19%
Environmental Facilities	167.7	1,205.6	708.1	926.3	569.8	1,234.6	967.2	865.1	-7%	-11%
Muni-backed corporates	6,493.4	5,144.0	10.0	3,441.5	91.6	3,256.8	553.4	150.0	-96%	-73%

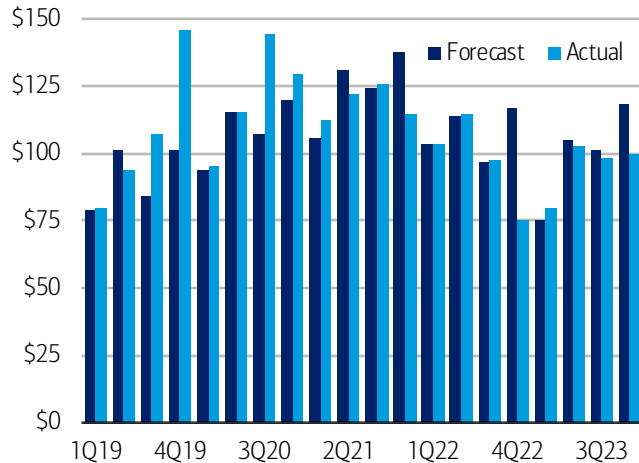
Note: Long-term bonds only. Reflects any data revisions by Refinitiv or Bloomberg.

Source: BofA Global Research, Refinitiv, Bloomberg

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Exhibit 7: Issuance by quarter, forecast vs actual (\$bn)

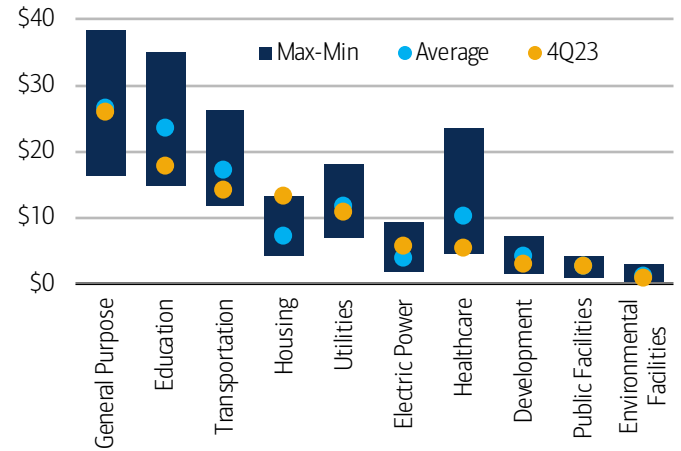
4Q23 issuance 16% below forecast

**Note:** Data as of 31 December 2023. Figures reflect any data changes by Refinitiv.**Source:** BofA Global Research, Refinitiv, Bloomberg

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Exhibit 8: 4Q23 issuance by sector, vs max, min, 10yr avg (\$bn)

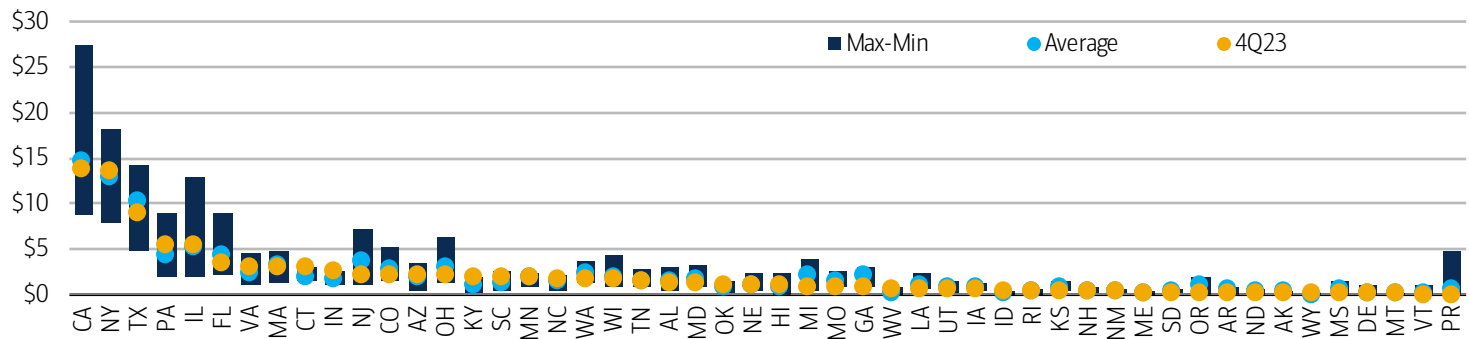
Housing (high) & Healthcare (low) deviated most from 10-yr avg

**Note:** Max, Min and Average are 4Q levels of each year for the past 10 years. Data as of 31 December 2023. Figures reflect any data changes by Refinitiv.**Source:** BofA Global Research, Refinitiv, Bloomberg

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Exhibit 9: 4Q23 issuance by state, vs max, min and 10yr avg (\$bn)

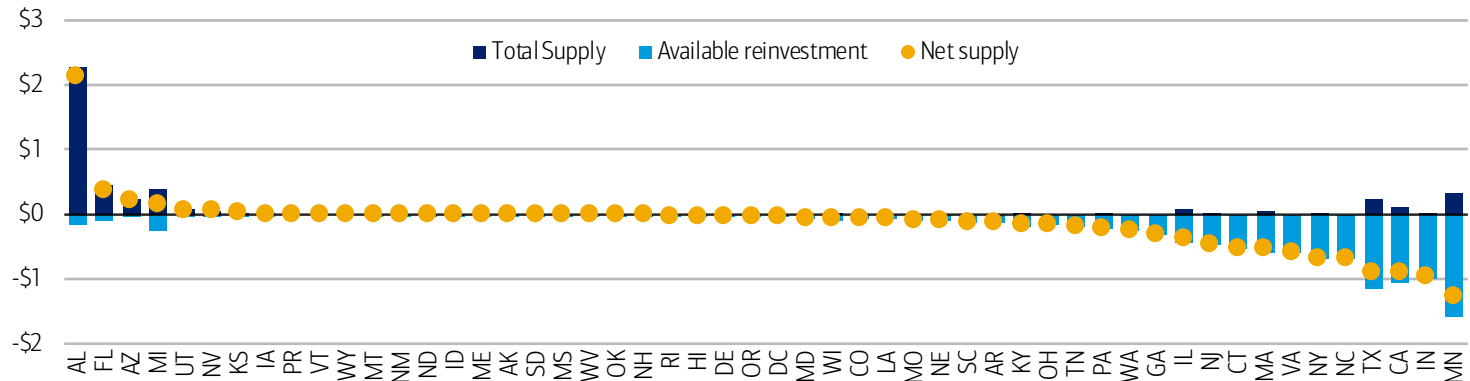
Connecticut (high) and Georgia (low) deviated most from 10yr avg

**Note:** Max, Min and Average are 4Q levels of each year for the past 10 years. Data as of 31 December 2023. Figures reflect any data changes by Refinitiv.**Source:** BofA Global Research, Refinitiv, Bloomberg

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Exhibit 10: Net supply estimates, forward 30 days (\$bn)

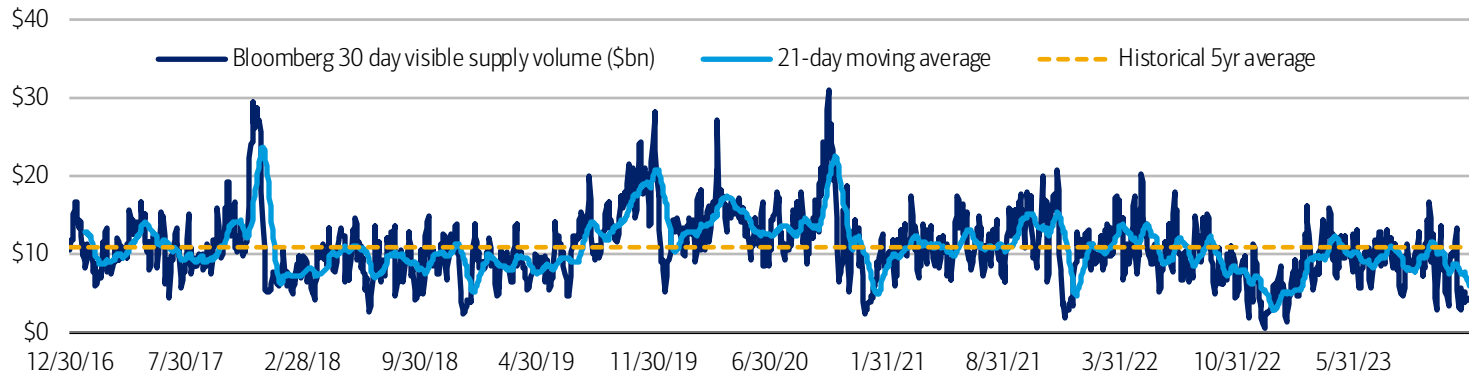
Total net supply is -\$7.3bn, with AL highest (\$2.12bn) and MN lowest (-\$1.26bn)

**Note:** Data as of 31 December 2023.**Source:** Bloomberg

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Exhibit 11: 30-day visible supply

Bloomberg 30-day visible supply was \$4.4bn as of 31 December 2023

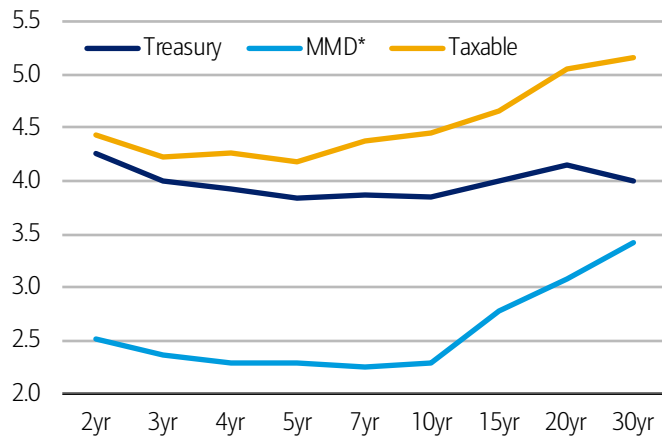


Source: Bloomberg

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Curve**Exhibit 12: AAA GO Muni, Treasury and taxable yield curves (%)**

Tsy, MMD and Taxable AAA richened across the curve q/q in 4Q23



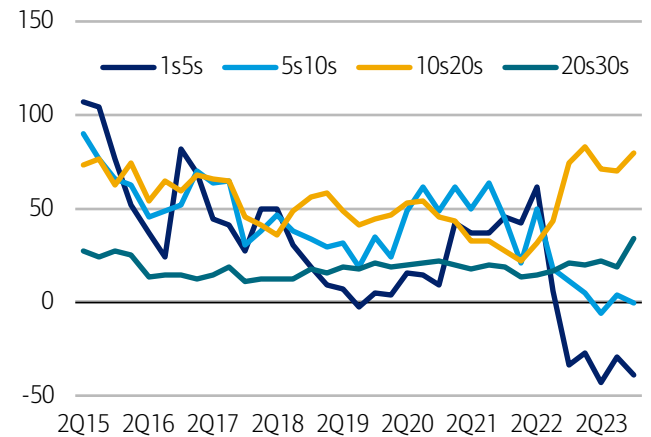
Note: MMD = AAA GO yield curve. Data as of 29 December 2023.

Source: BofA Global Research, Refinitiv, Bloomberg.

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Exhibit 13: Muni AAA curve slopes (bp)

10s20s and 20s30s steepened while 1s5s and 5s10s flattened in 4Q23



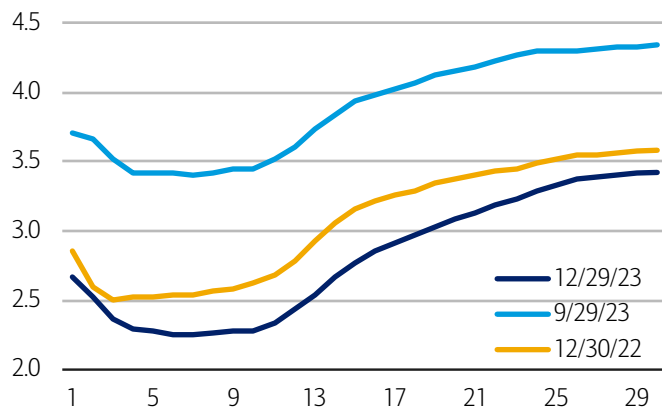
Note: Data as of 29 December 2023.

Source: Refinitiv

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Exhibit 14: AAA GO Municipal curve movement (%)

AAA GO is 108bp richer across the curve on avg vs end of 3Q23



Source: Refinitiv

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Relative value

This section screens the muni market for parts of the curve, sectors and ratings that are rich or cheap using z-scores. If a z-score is >2, we view it as “Very Cheap”; if it’s >1 but <2, we view it as “Cheap”; if it’s between -1 and 1, we view it as “Neutral”; if it’s <-1 but >-2, we view it as “Rich”; lastly, if it’s <-2, we view it as “Very Rich”.

Exhibit 15: Rich/Cheap analysis of MMD*/Treasury ratios as of 31 December 2023

The muni market is Rich on a ST basis and mostly Neutral on a LT basis

	Current		MMD R/C				MMD R/C			
Maturity	Treas	Muni/Treas	(short-term)	3 mo. max	3 mo. min	3 mo. avg	(long-term)	3 year max	3 year min	3 year avg
3yr	4.009%	59.1%	Rich	74.1%	57.8%	66.5%	Neutral	130.7%	26.7%	62.3%
5yr	3.838%	59.4%	Rich	74.3%	58.1%	66.8%	Neutral	92.0%	39.3%	63.3%
10yr	3.851%	59.2%	Rich	75.5%	58.3%	67.9%	Rich	105.3%	54.7%	72.7%
30yr	3.993%	85.7%	Rich	92.3%	83.6%	88.6%	Neutral	110.0%	63.5%	86.8%

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.

Source: BofA Global Research, Refinitiv, Bloomberg

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Exhibit 16: Rich/Cheap analysis of MMD* slopes (bp) as of 31 December 2023

Slopes are mostly Neutral a ST basis

Curve	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	-39	Neutral	-25	-45	-34	Flat	65	-68	10
1s10s	-39	Flat	-15	-42	-28	Flat	120	-74	38
10s30s	114	Neutral	123	88	104	Steep	123	32	70
1s30s	75	Neutral	84	60	76	Neutral	170	26	108

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.

Source: BofA Global Research, Refinitiv, Bloomberg

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Exhibit 17: Rich/cheap analysis of 7-12yr indexes' OAS (bp)

AA Utilities' current OAS of 50bp at 7-12yrs is currently Very Cheap against its 3yr OAS average of 9bp

Sector	Current OAS				Rich/cheap analysis				3yr OAS average			
	AAA	AA	A	BBB	AAA	AA	A	BBB	AAA	AA	A	BBB
Airports		40	39	5		N	N	N		33	32	61
Higher Education	-11	-5	54		N	N	N		-7	-3	41	
GO Local	3	6	56	117	VR	N	N	N	-1	9	44	117
GO State	-4	-4	63	0	N	N	N	R	-5	-4	43	107
Health		24	96	150		N	N	N		21	71	108
Hospital		16	49	84		N	N	N		18	40	99
IDR		61	78	94		N	N	N		38	54	81
Leases COPS & Appr.		13	26	139		N	N	N		11	36	112
Pollution Control	9		80		VR		N		-1		74	
Power	-10	0	75		VC	R	C		-3	-4	27	
Tax Revenues	2	5	72	93	N	N	N	N	4	7	55	121
Tobacco			52				N				49	
Toll & Turnpike		21	27	90		N	N	N		22	20	82
Transportation - Other	0	17	46	0	R	N	N	R	5	14	60	91
Utilities - Other	0	50	104		R	VC	C		-2	9	44	
Water & Sewer	-2	-4	26	20	N	N	N	N	-4	-6	14	108

Note: Data as of 31 December 2023. Only includes non-prerefunded bonds. Benchmark is 3-yr avg.

Source: ICE Data Indices, LLC

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Exhibit 18: Rich/cheap analysis of 22yr+ indexes' OAS (bp)

AAA Higher Education's current OAS of 45bp at 22+yr is currently Cheap against its 3yr OAS average of 24bp

Sector	Current OAS				Rich/cheap analysis				3yr OAS average			
	AAA	AA	A	BBB	AAA	AA	A	BBB	AAA	AA	A	BBB
Airports		49	47	5		C	N	N		27	27	17
Higher Education	45	19	36	110	C	C	N	C	24	-7	21	77
GO Local	17	21	31	100	C	C	N	N	-9	2	23	80
GO State	5	11		0	C	C		VR	-25	-19		88



Exhibit 18: Rich/cheap analysis of 22yr+ indexes' OAS (bp)

AAA Higher Education's current OAS of 45bp at 22+yr is currently Cheap against its 3yr OAS average of 24bp

Sector	Current OAS				Rich/cheap analysis				3yr OAS average			
	AAA	AA	A	BBB	AAA	AA	A	BBB	AAA	AA	A	BBB
Health		-20	71	204		N	C	C		-14	38	110
Hospital		30	41	86		C	N	C		7	26	57
IDR			85	94			C	N			54	71
Leases COPS & Appr.	29	15	38	84	C	N	N	C	-5	-4	31	50
Pollution Control			47				C				16	
Power		18	37	54		C	N	N		-5	17	46
Tax Revenues	32	21	77	75	C	N	C	N	8	5	51	76
Tobacco				114				N				84
Toll & Turnpike			29	62			N	N			13	43
Transportation - Other		0	32	70		N	N	N		13	36	52
Utilities - Other		26	50	0		C	C	VR	-7	-7	23	60
Water & Sewer	11	11	15		C	C	N		-18	-13	-1	

Note: Data as of 31 December 2023. Only includes non-prerefunded bonds. Benchmark is 3-yr avg.

Source: ICE Data Indices, LLC

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Exhibit 19: MWIs – sector momentum (%)

MWIs increased into the overpriced space in 4Q23

Sector	MWI	Q/Q Δ	Sector	MWI	Q/Q Δ
JOAO Index	99.3%	99.1%	Miscellaneous	100.0%	99.6%
ETM	96.6%	96.6%	Multi-Family Housing	97.5%	97.1%
GO - Local	99.6%	99.6%	Pollution Control	99.2%	99.2%
GO - State	99.9%	99.8%	Power	99.0%	99.0%
Pre-Re	100.0%	100.0%	Single Family Housing	96.9%	96.9%
Airport	98.0%	97.1%	Tax revenue	99.9%	99.9%
Education	99.8%	99.8%	Tobacco	96.3%	96.3%
Health	99.1%	97.4%	Toll & Turnpike	98.7%	98.6%
Hospitals	99.7%	99.2%	Transportation	99.9%	99.3%
Industrial Development Rev	95.1%	95.1%	Utilities - Other	97.9%	97.9%
Leasing COPS & Appropriations	98.8%	98.8%	Water & Sewer	99.0%	98.9%

Source: BofA Global Research, ICE Data Indices, LLC

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Trade activity

Exhibit 20: Most actively traded muni CUSIPs during 4Q23

837151F38 was the most frequently traded CUSIP, while 402207AD6 was most active at \$603mn in total volume. ¹Last trade

CUSIP	Short name	ST	Coupon/Maturity	Yield ¹	Spread	# of trades	Avg Vol (\$mn)
402207AD6	GULF COAST INDL DEV	TX	4s of '41	--	-299	173	3.49
546475VW3	LOUISIANA GAS & FUEL	LA	4s of '43	--	-306	160	3.24
13057EBD5	CA PUB FIN AUTH-B	CA	4s of '52	--	-334	148	2.87
072024YE6	BAY AREA TOLL AUTH-A	CA	3.9s of '55	--	-334	148	2.78
452151LF8	IL ST TXB-PENSION	IL	5.1s of '33	5.22	136	365	1.10
91412HPV9	UNIV OF CA-BP-1-REF	CA	4.1s of '48	--	-326	106	3.62
64972GC85	NYC MUNI WTR FIN-BB-2	NY	4.1s of '53	--	-334	139	2.64
20775DTU6	CT HLTH&EDU FACS AUTH	CT	3.95s of '42	--	-302	90	4.00
64972GCN2	NYC MUNI WTR-AA2-ADJ	NY	4.1s of '50	--	-331	212	1.68
64966LLS8	NYC-ADJ-1-SUBSER I-2	NY	4.1s of '40	--	-289	130	2.62
64971XKS6	NYC TRANS FIN AUTH-C4	NY	4.1s of '44	--	-313	129	2.60
64972F2J4	NYC WTR-VAR-FF2-GEN R	NY	4.1s of '44	--	-311	137	2.42
6133408D3	MONTGOMERY CO-E	MD	4.05s of '37	--	-272	227	1.44
74529JQG3	PR SALES TAX FING-A1	PR	0s of '46	5.31	223	703	0.45
64966MSD2	NY CITY-B5-VAR	NY	4.1s of '46	--	-321	143	2.10
79574CFM0	SALT RIVER	AZ	5s of '50	3.53	132	190	1.58
345105GY0	FOOTHILL E TRANSP-A	CA	6s of '49	3.88	130	274	1.08
837151F38	SC PUB SVC-A-UNREFD	SC	5.5s of '54	4.98	240	2163	0.13
64972GCM4	NYC MUNI WTR-AA1-ADJ	NY	4.1s of '50	--	-331	166	1.68
13063ASG5	CA TXB-VAR PURP	CA	7.55s of '39	5.08	90	694	0.39

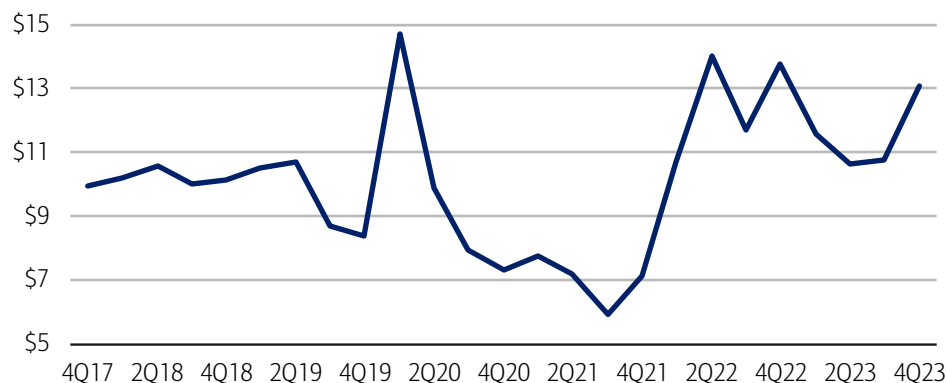
Source: Bloomberg

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Exhibit 21: Daily average secondary trading volume (\$bn), by quarter

4Q23 daily average of \$13.1bn up 21.4% q/q but down 5.0% y/y



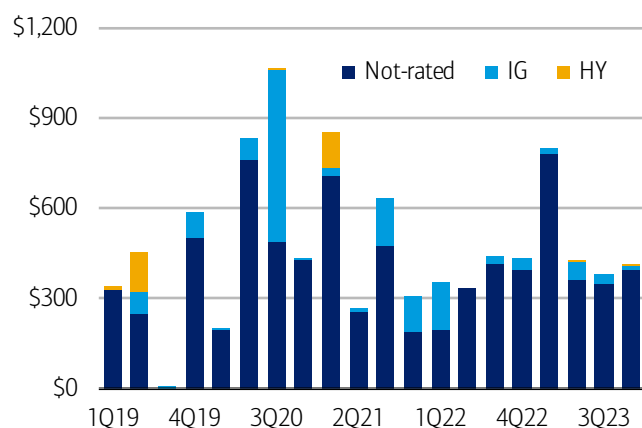
Source: BofA Global Research, Bloomberg

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Defaults & distress

Exhibit 22: Quarterly first-time defaults by avg rating at issue (\$mn)

\$414mn of defaults reported in 4Q23, down 5% y/y



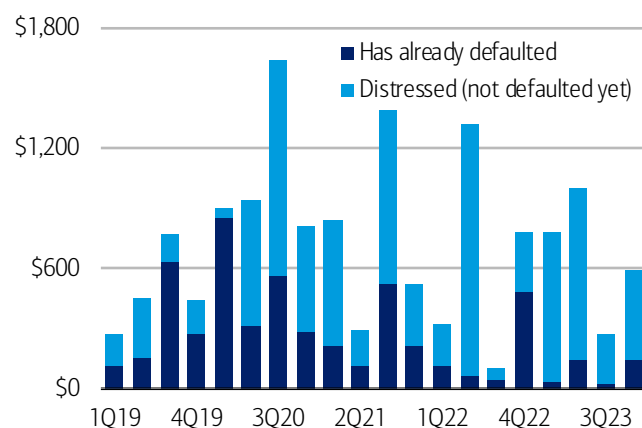
Note: Data as of 31 December 2023.

Source: BofA Global Research, Bloomberg

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Exhibit 23: Quarterly first-time distressed debt (\$mn)

\$590mn of distress (including defaulted) reported in 4Q23, down 25% y/y



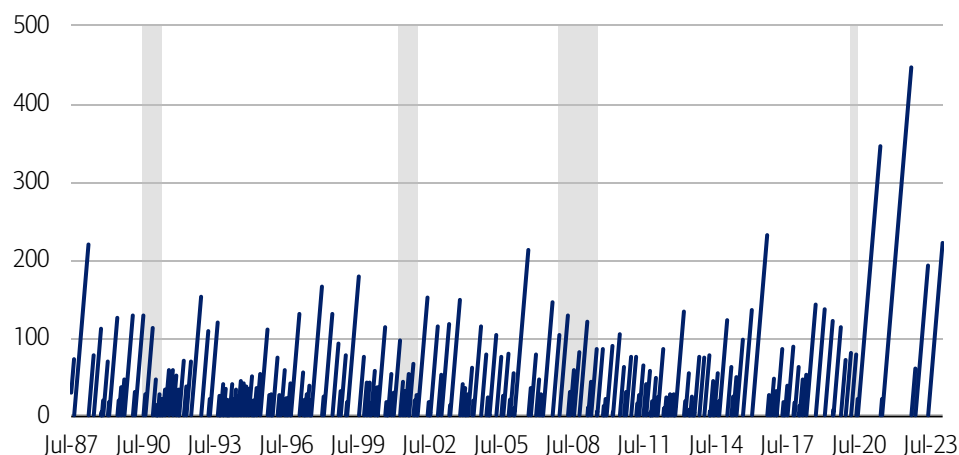
Note: Data as of 31 December 2023.

Source: BofA Global Research, Bloomberg

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Exhibit 24: Calendar days since last Chapter 9 bankruptcy petition filed

No Chapter 9 bankruptcy petitions filed in 4Q23; 222 days since Hazel Hawkins Memorial Hosp. filed



Source: BofA Global Research, PACER, US Courts

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Cross currency equivalent yields

Exhibit 25: Cross currency equivalent yields as of 31 Dec 2023

Taxable munis are generally attractive for foreign investors with a few exceptions

Country	Government bond yield (in investor country's currency)			Cross currency equivalent yield*						Can foreign investors buy?					
	5 yr	10 yr	30 yr	US Treasury			US AAA taxable muni			US Treasury			US AAA taxable muni		
				5 yr (3.919)	10 yr (3.939)	30 yr (4.079)	5 yr (4.18)	10 yr (4.45)	30 yr (5.16)	5 yr	10 yr	30 yr	5 yr	10 yr	30 yr
Canada	3.234	3.177	3.095	3.420	3.451	3.844	3.681	3.962	4.913	Yes	Yes	Yes	Yes	Yes	Yes
United Kingdom	3.534	3.634	4.266	3.577	3.595	3.914	3.840	4.104	4.989	Yes			Yes	Yes	Yes
France	2.310	2.593	3.143	2.380	2.526	3.402	2.640	3.034	4.451	Yes		Yes	Yes	Yes	Yes
Germany	1.986	2.064	2.304	2.380	2.526	3.402	2.640	3.034	4.451	Yes	Yes	Yes	Yes	Yes	Yes
Italy	3.102	3.704	4.378	2.380	2.526	3.402	2.640	3.034	4.451						Yes
Spain	2.648	3.015	3.690	2.380	2.526	3.402	2.640	3.034	4.451					Yes	Yes
Portugal	2.263	2.671	3.361	2.380	2.526	3.402	2.640	3.034	4.451	Yes		Yes	Yes	Yes	Yes
Netherlands	2.156	2.351	2.512	2.380	2.526	3.402	2.640	3.034	4.451	Yes	Yes	Yes	Yes	Yes	Yes
Switzerland	0.707	0.606	0.443	2.380	2.526	3.402	2.640	3.034	4.451	Yes	Yes	Yes	Yes	Yes	Yes
Japan	0.198	0.618	1.620	0.045	0.391	2.396	0.303	0.894	3.400			Yes	Yes	Yes	Yes
Australia	3.662	3.995	4.327	4.156	4.584	4.396	4.418	5.095	5.486	Yes	Yes	Yes	Yes	Yes	Yes
South Korea	3.226	3.268	3.203	2.266	3.014	3.640	2.526	3.521	4.694			Yes		Yes	Yes
China	2.424	2.559	2.835	3.762	3.844	4.033	4.023	4.352	5.107	Yes	Yes	Yes	Yes	Yes	Yes
Taiwan	0.069	1.228	1.571	0.713	2.140	3.230	0.970	2.642	4.258	Yes	Yes	Yes	Yes	Yes	Yes
Singapore	2.723	2.771	2.744	3.351	3.619	3.926	3.611	4.128	4.996	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 26: 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	PREPA	Puerto Rico Electric Power 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
CO	Colorado	ME	Maine	SA	Seasonally adjusted
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

Exhibit 26: Common acronyms used in our Municipals reports

This list is subject to change

Acronym	Definition	Acronym	Definition	Acronym	Definition
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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