Municipals Year Ahead 2024

Run it back

Industry Overview

Key takeaways

Supply: We forecast $400bn of total long-term bond issuance for 2024, with $300bn of new money and $100bn of refundings. $340bn of that will be tax-exempt issuance, $45bn will be taxable and $15bn will be AMT. We expect $50bn of all labeled ESG issuance, with $24bn of green, $18bn of social and $8bn of sustainable bond issuance. By sector, we expect Education, General Purpose, Transportation and Utilities to make up the largest percentages of 2024 issuance. Our forecast for $5bn or so of muni-backed corporate debt is in addition to that $400bn total. Net supply will be -$16bn after deducting principal redemptions.

Demand: We estimate that 2024's principal redemptions will be $416bn and coupon payments on the order of $158bn, for a total of $574bn. We expect mutual fund flows to be consistently positive next year.

Curve: The 1s10s muni AAA curve should stay lightly inverted throughout 2024 unless the Fed's rate cutting becomes more aggressive. The 10s30s should steepen mildly first and then flatten some when the 30-year AAA yield crosses a key level to alleviate the fear for the long end. We see 110bp as the upper limit for the 10s30s in 2024. Our target area for the 10yr AAA in 2024 is 2.30%-2.60% and for the 30-year is 3.30%-3.60%.

Ratios: Ratios should be well-behaved in 2024 in a smooth rallying environment. We expect ratios to fall in January/February, rise in March/April, fall in May-August, rise modestly in September/October before falling in November/December. Between rates and a sustained supply/demand imbalance, we see 10yr muni/Treasury ratios staying within the 55%-80% range, and 75%-92% for 30yr ratios.

Returns: In light of our economist's soft landing view and our view of largely stable credit spreads, we believe performance in 2024 will be driven more by the curve, rates and duration. We expect 7.5% total return for the ICE BofA Muni Master index in 2024. The best returns will likely be found in longer maturities, and in credit. We continue to favor long 4% coupons. Otherwise, we forecast a 7.6% return for the ICE BofA Taxable Muni index, and a 7.7% return for the Bloomberg US Municipal Impact Index.

Credit: With our economists' expectations for significantly below trend growth in 2024, it is clear to us that we are past peak credit in the muni market. Nevertheless, because fundamentals remain quite strong – bolstered, albeit to a lesser degree, by pandemic era aid and revenue growth – we can expect them to prove resilient in 2024, leading to another positive rating year overall. However, we expect more neutral upgrade to downgrade rates in 2024 versus 2022 and 2023. Bankruptcies should stay in the low-to-mid single digits in 2024, and defaults should total between $1.9bn and $2.3bn.

Strategies: Our overall strategy is go long and longer on investment grades and maximize duration within allowed limits. Our preferred trade for 2024 is 4% coupon high grades in the long end of the curve. We would view any sizeable widening of credit spreads in A-rated or BBB-rated bonds as opportunities in 2024.

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Refer to important disclosures on page 34 to 35. 12633102

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Municipals Year Ahead 2024: in summary

2023 did not turn out as we expected: a recession never came, and the Fed never cut. While our rates and performance forecasts were ahead of schedule and reached during the early months of the year, an accelerating economy (+5.2% real GDP growth at annual rates as of 3Q23) pulled rates higher and muni market returns lower.

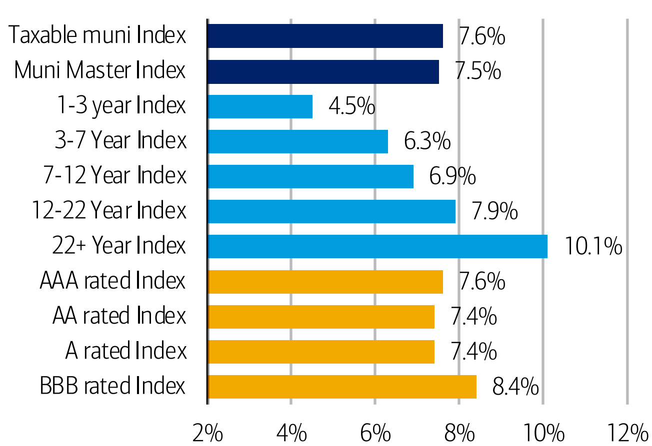
With our economists and rates strategist expecting the economy to slow next year and the Fed to cut rates in the second half, for 2024 we largely “run it back,” with many of our strategies and forecasts for the coming year similar to those we suggested at the end of 2022. While we may see some volatility in the front half of the year as the market’s expectations shift from tightening, to pause, to easing, **we expect the 10yr AAA to reach the 2.30%-2.60% range in 2024 and the 30yr AAA to reach the 3.30%-3.60% area**. Investors should keep in mind that, with the Fed’s eventual goal of bringing down the Fed Funds target rates down to 2.50% by 2025-2026, the muni bull market that we anticipate in 2024 should extend through 2025. Potentially, this bull market can eventually bring the 10yr AAA down to 1.80% or lower in 2025-2026.

Our assessment is based on the muni bond market’s unprecedented 38-month selloff, which saw the 10yr MMD AAA rate rise from a low of 0.55% in August 2020 to a peak of 3.65%. The unfolding bull market should be viewed as a long and large retracement of the August 2020-October 2023 bear market that should run for two years or slightly longer. We are looking for an eventual 185+bp rally, which is a 60% retracement of the entire selloff, by the end of this bull market from November 2023 to the end of 2025 or early 2026. Our 2024 forecast amounts to around 100+bp of the rally.

For the coming year, while the muni AAA curve inversion inside 10yrs may abate some, we still expect the 1s10s to stay inverted through 2024 given our economists’ current Fed rate cut expectations. The 10s30s, meanwhile, should steepen initially before flattening. Additionally, we think that muni credit spreads should remain largely stable, though OAS spreads should retrace about half of their widening from this tightening cycle, assuming no recession, by the end of 2024. AA’s OAS should narrow 10bp or so next year, while single-A’s OAS and BBBs will come in 15bp or so from current levels.

Fund flows, which were significantly negative in 2022, but are much less so in 2023, should be consistently positive in 2024. Indeed, 2023 may end up with positive inflows for the year as a whole given good inflows over the past several weeks. Meanwhile, principal redemptions ($416bn) in 2024 should outsize gross supply ($400bn), resulting in net supply of -$16bn. We estimate coupon payments will total $158bn next year.

Exhibit 1: Expected 2024 ICE BofA muni index returns
Longer durations to outperform shorter durations in 2024



Source: BofA Global Research

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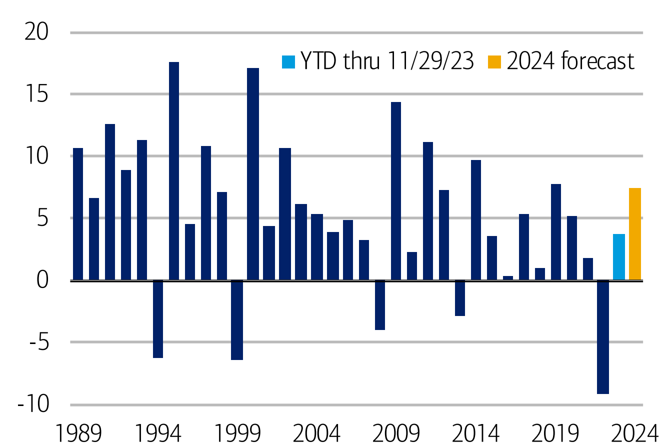
Exhibit 2: Muni Master index total returns (%), by year
2023’s YTD returns below initial estimates, but still positive



Source: BofA Global Research, ICE Data Indices, LLC

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Taken together, we expect the Muni Master (U0A0) index to return at least 12%, possibly 15% from 1 November 2023 to 31 December 2024; however, the total return for calendar year 2024 should be approximately 7.5%, as the currently rally likely will end soon and give some back by the close of 2023. Among the maturity indexes, we expect the strongest returns for the 22+yr index (U5A0) at 10.1% in 2024, and the weakest in the 1-3yr index (U1A0) at 4.5%. Among the rating indexes, we forecast that the BBB index's returns to be the strongest at 8.4%, though we still expect decent returns for the AAA index at 7.6%.

History was rebuffed in 2023 as 2022's negative returns were followed by lower-than-expected, but decent positive returns for the YTD. All told, 2024 is shaping up to be a better year for munis.

Curve, rates, ratios & spreads

1s10s inverted; 10s30s to steepen, then flatten

We believe peak muni yields in this Fed tightening cycle were attained in October 2023, and the bull market for munis is underway. Similar to the start of many long-term bull markets, the initial rally has been strong and swift, delivering a 90bp+ rally of 10yr AAA rates MTD in November 2023. In the short-term, this rally should end soon and then give back some of the gains by the end of 2023.

On the macro front, the rally was sparked by a dovish Fed and a clear and consistent downdrift of the economy as evidenced by October data releases.

That downdrift is expected to continue for much of 2024. Indeed, BofA Global Research's economists forecast that quarterly GDP growth will be 1.0% for 1Q, 0.5% for 2Q, 0.5% for 3Q and 1.0% for 4Q. See Exhibit 17. Such an economic evolution will likely encourage the Fed to stay in a dovish waiting mode in 1H24, and then begin to cut rates by mid-2024. In other words, our economists now believe that the Fed's tightening program is done, and that the Fed will move to an easing cycle after a few months – like what it has done in many late cycle transitions. **No recession is expected for 2024 at this point**. As such, the Fed's easing in 2H24 should be methodical, not accelerated. Given that view, the muni market rally should continue through 2024. **We project that the 10yr AAA should reach the 2.30%-2.60% area and the 30yr the 3.30%-3.60% area in 2024**.

In case the economy deteriorates more, or earlier than expected, these targets could be attained earlier, and lower targets are possible if more aggressive Fed easing becomes consensus. If so, we will revise our targets at that time.

As explained in the summary section above, investors should keep in mind the eventual goal of the Fed in its easing cycle, and likely muni AAA rates targets, extend over the next two years – not just 2024.

Back in July 2023, the Fed's dots plot showed that it eventually would cut the Fed Funds rates down to 2.50% in 2025/2026. Due to the 3Q23 economic strength, the Fed has not updated the dots plot for many months. We think it is very telling that the Fed chose to sit through the entire 3Q23 economic acceleration and sticky inflation, and then leaned somewhat dovish at its 1 November FOMC meeting before it even saw the October economic data (reported in November). In our view, this shows the Fed has clearly transitioned from an ultra hawkish and proactive mode of tightening up until July 2023 to a patient and dovish mode in November. BofA economists believe the actual Fed rate cuts will start in June 2023, and the Fed's own dots plot shows it intends to continue in 2025. As such, the bull market likely will not end in 2024, but extend to 2025/2026 with much lower 10-year AAA target (see the summary section).

How will the muni AAA curve twist going forward? The effect of monetary tightening on the muni AAA curve had two surprising aspects in this cycle: the first is the large inversion of the 1s10s AAA curve, and the second is the stubborn steepness of the

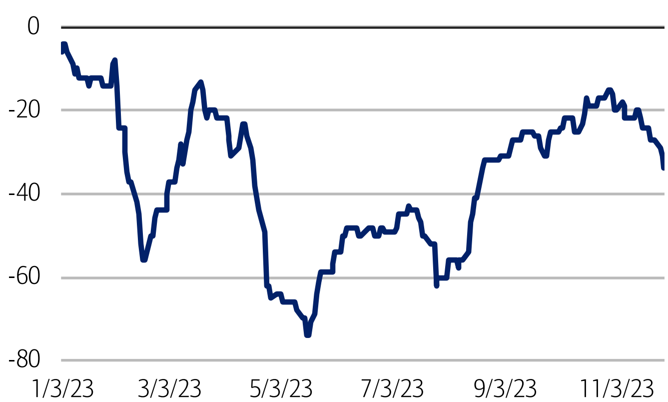
10s30s AAA curve. These two surprises deviate quite a bit from the 40-year muni bull market from 1981-2021. During tightening cycles over that span, the 1s10s never inverted, and the 10s30s would generally flatten handsomely.

Back in August 2020, we wondered loudly whether that 55bp yield for the 10yr AAA marked the start of a long-term bear market, noting that it would take 2-3 years to find out. Clearly the lesson we learned in 2022/2023 showed the result, together with the above two mentioned surprising phenomena. We believe one of the underlying reasons for the two phenomena is that the intrinsic supply/demand in the tax-exempt muni market was quite good throughout this tightening cycle and the very bearish Treasury market imposed outsized negative external sentiment. As such, the 10yr area of the high grade muni market becomes the center of liquid trading for risk takers; the very short end is passively dictated by the ever rising Fed rhetoric and sticky inflation; and, the long end becomes retail's fear land.

In the unfolding bull market, investors should keep in mind that the eventual minimum yield possibilities (in 2025) should be referenced within the framework of a 310bp yield rise of the 10yr AAA from 0.55% to 3.65%. A 60% retracement of this large selloff should push the 10yr AAA back to the 1.80% area by the end of this bull market.

Also, the re-normalization of the AAA curve back to its normal shape should take several phases. In the initial phase of the bull market, the 10yr AAA yield leads the drop and causes the 1s10s curve to flatten and the 10s30s curve to steepen (see Exhibit 3 and Exhibit 4), as has happened over the past three weeks. But, as the rally continues to progress, fears over the very long end should alleviate gradually, and thus the 10s30s curve steepening would stop and flattening would eventually begin. The transition likely will be triggered when the 30yr AAA crosses below some key level – such as 4% – and the 10yr crosses below 3%. 10s30s flattening should still be quite slow and gradual until the 10yr becomes "too low", such as moving closer to the 2.00% area.

Exhibit 3: 1s10s flattened in November rally (bp)
1s10s will likely stay inverted in 2024 with 100bp Fed rates cut only



Source: Refinitiv

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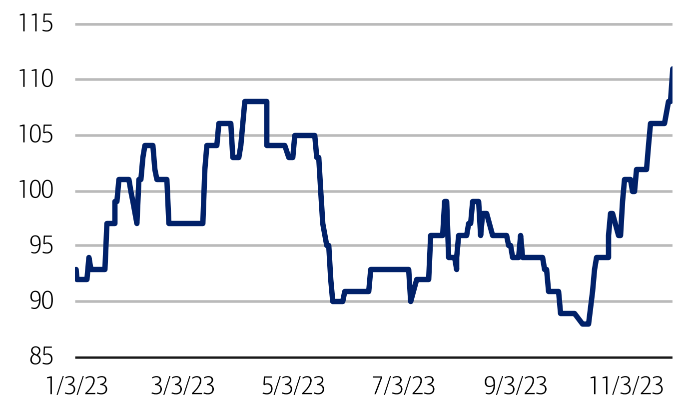
Exhibit 4: 10s30s steepened some in November rally (bp)
10s30s likely will steepen some and then flatten in 2024



Source: Refinitiv

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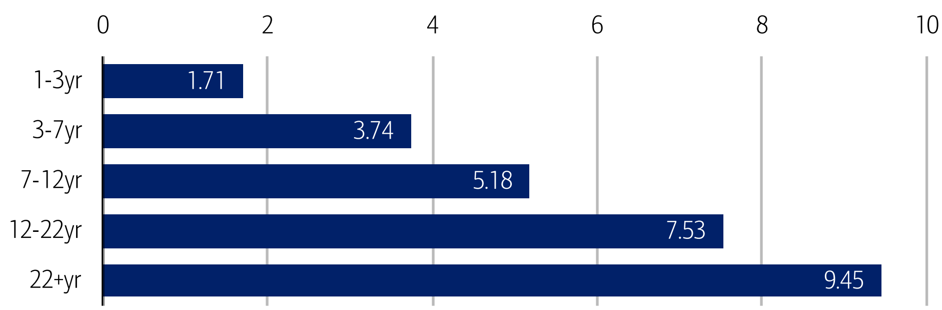
The 1s10s AAA slope will be decided more by the timing of the Fed easing cycle and how aggressive the Fed is. As such, the economic evolution in 2024 will dictate the Fed's posture and thus the 1s10s AAA slope. While the Fed is in a waiting period, repricing of the 1yr AAA should generally be slower than the 10yr, resulting in some flattening of the 1s10s curve. As we discussed several times previously, 1s10s flattening typically continues through the first few months of an easing cycle as the Fed generally would underestimate how fast the economy deteriorates and thus fall behind the curve. Also, the front end of the muni curve generally would be slower than the Treasury market to price in Fed cuts. So, 2024 likely will be a year with mild 1s10s flattening throughout. However, given an exceptionally large 1s10s inversion, which saw its deepest point in May 2023 and had been in a recalibration process, how much the 1s10s curve can flatten in 2024 remains open. We believe 1s10s AAA flattening will be mild and it will remain inverted in 2024.

Curve strategy in 2024: maximize durations

Our curve view above implies that the 1s10s will stay lightly inverted throughout the year unless the Fed rate easing becomes aggressive. 10s30s steepening, then flattening, should be both very light with 110bp as possibly the upper limit, unless the Fed proves to be behind the curve in its easing pace. **For performance minded investors, such a curve outlook clearly calls for a max duration positioning strategy within their defined limits**. Light steepening or flattening will not affect the eventual results much; **longer duration will outperform shorter duration**. Initial evidence of MTD returns illustrate this well (see Exhibit 5). One can see that longer maturity indexes outperform shorter maturity indexes. Indeed, the middle part of the curve surrounding the 10-year maturity (the 7-12 year maturity index) underperformed the 22+ year maturity index by a whopping 4.27% in a month despite some 10s30s steepening in November.

Since no recession is expected in 2024, we expect investment grade credit spreads to change little during 2024 in a soft landing. As such, **the general strategy for high grade above applies to all investment grades, including single-A and BBB-rated**.

Exhibit 5: Longer duration indexes outperform shorter duration indexes in November (%)
Month-to-date ICE BofA muni maturity index returns



Note: As of 29 November 2023.
Source: ICE Data Indices, LLC

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Well behaved ratios in 2024

Muni/Treasury ratios should behave well in 2024 in a smooth rallying environment. Very favorable internal muni supply/demand dynamics should keep ratios low for most of the year. We expect ratios to fall to very low levels right out of the gate in 2024 as January/February issuance tends to be somewhat modest while the volume of bonds maturing and coupon payments is quite large. Macro factors should also support the idea of very low ratios in January/February as the Fed may talk in a somewhat less dovish tone after a strong 4Q23 rates rally eased economic and financial market conditions, causing Treasury rates to give back some of the rally. As is the case, in a sideways selloff of Treasury rates, muni ratios may fall even further.

There may be some modest back up ratios come March/April when tax season kicks in, right after muni relative values versus Treasuries become too rich in the January/February context. Ratios should begin to back down in May and become rich again during the summer months of June through August.

September/October should be the time when muni/Treasury ratios may have some modest rise again, especially if the macro market shows some stress causing a surprisingly strong Treasury rally. Ratios should fall in the final two months of the 2024 holiday season due to improved muni market technical conditions. Exhibit 6 below shows our quarter end forecast for 2024 muni/Treasury ratios for several key maturities. The actual ranges for ratios are wider. For the 1-year, the range should be 55%-70%; 5-year: 50%-75%; 10-year: 55%-80%; 30-year: 75%-92%.

Exhibit 6: Forecasted 2024 quarter end muni/Treasury ratios (%)
Best ratios should be attained around the beginning and end of 2024

Maturity	1Q24	2Q24	3Q24	4Q24
1yr	65	65	70	60
5yr	70	68	75	65
10yr	75	70	80	68
30yr	90	88	92	85

Source: BofA Global Research

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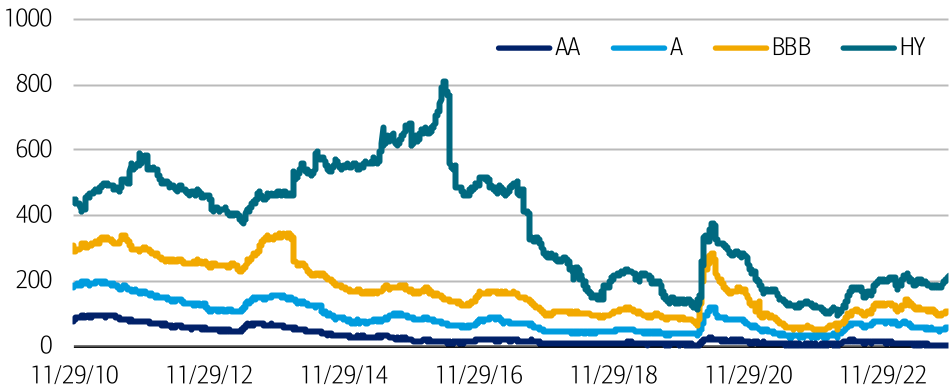
Stable credit spreads in 2024

We expect muni credit spreads to be relatively stable in 2024 as the economy is expected to experience a soft landing. Although muni's upgrade-to-downgrade activity is likely past its peak of the cycle (see our discussion below), muni credit conditions should be quite resilient in 2024. It is hard for credit spreads to widen meaningfully in a non-recessionary environment. Even if there is a light recession, investors should keep in mind it is about real GDP recession; nominal GDP growth can still be quite positive.

Also, resilient credit conditions in a muni rates bull market may impose some pressure on credit spreads to narrow some due to supply/demand dynamics. Indeed, we have seen such behavior for the past 10 years due to supply/demand factors. There is no doubt, the 2008/2009 Great Recession represents a peak of credit bust and credit spread bust in cycle terms. The evolution of credit spreads trended down ever since. Of course, there were a few large widening periods on the road including the Taper Tantrum in 2013, the deflation fear of 2016 and even the COVID-19 induced large widening in 2020 should be viewed as bumps, while the general economy transitioned from a multi-decade disinflationary cycle to an inflationary cycle. Investors should recall that in the 1980's and early 1990's, muni credit spreads were much narrower than those in 2021. So, in no way should the muni credit spreads we saw in 2021 represent the narrowest possible levels in future years. It is quite possible that, at some point (possibly after the Fed easing cycle in 2024/2025), muni credit spreads may fall below those we saw in 2021.

In 2024, muni credit spreads should stay in tight ranges unless the economy proves to be much stronger or much weaker than a soft landing scenario. The ranges should be slightly wider than what they traced in 2H23. The late March/early April muni credit spreads, which are the widest in 2023 due to the regional banking crisis, would be highly unlikely to be reached again next year or in 2025.

Exhibit 7: Spreads of ICE muni credit indexes over AAA-rated index since 2010 (bp)
We see little room for credit spreads to widen materially in a soft landing scenario



Source: ICE Data Indices, LLC

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Total returns

Muni Master index to return 7.5% in 2024

As discussed in our introduction, in order to estimate 2024 total returns of the various muni indexes, it is important to measure the total returns from the very beginning of November to the end of December 2024, and then take an educated guess of what the market may give back by the end of 2023.

Our muni AAA rates targets for 2024 and stable credit spreads view will translate to 12%-15% of total returns for the ICE BofA Muni Master Index (U0A0) from the beginning of November until the end of 2024. As of 29 November, the ICE BofA Muni Index MTD total return was 6.2%. We believe that by the end of 2023, a total return of 4.5% will likely be maintained. As such, in 2024, U0A0 should return 7.5% at least.

We do similar calculations for various ICE muni indexes and the results are shown in Exhibit 1 on page 2. As can be seen there, we expect longer duration indexes to outperform shorter duration indexes. The longest ICE BofA muni maturity index, the 22+ year index (U5A0), is expected to produce at least 10.1% of total returns in 2024. However, if an investor bought the index on 31 October 2023 and held it through 2024, the total return for the 14 months is expected to be 15.3%. The shortest maturity index, the 1-3 year maturity index (U1A0), is expected to produce 4.5% of total returns in 2024. If one bought this index on 31 October 2023, total returns for the 14-month period would be 6.8%.

Our forecast of ICE BofA muni credit index total returns does not vary as much from index to index. Since we expect credit spreads to be stable, the small differentials between them are attributable to their differences in duration, coupon and likely starting index average price levels. The highest returns among them, the BBB-rated index (U0A4), is due to a low average price of the index, longest duration among the four, even though this index has the lowest average coupon among the four. However, in a deteriorating economy, BBB-rated index credit spreads may experience more volatility than A-rated or high grade indexes.

Finally, we expect the ICE BofA Taxable muni index (TXMB) to produce 7.6% of total returns in 2024. This is consistent with our rates strategists' forecast and takes into consideration TXMB's spreads and coupons. Also, if this index was bought on 31 October 2023, the total returns by the end of 2024 should be about 11.6%, slightly lower than the total returns for the ICE BofA Muni Master index. This is because taxable muni AAA yields are expected to fall more in the number of basis points than Treasuries'.

Supply & demand

$400bn of gross supply in 2024

At the end November 2023, new long-term bond issuance totaled $346.4bn, with $267.5bn of new money and $78.9bn of refunding. This amounts to approximately $32bn per month. However, the issuance pattern experienced a somewhat upward shift since August despite higher muni rates. We suspect two factors contributed to the pattern change: (1) the need to issue new money, and (2) the size of the nominal dollar amount for a typical new money issue proportionally increasing due to inflation. The 4Q is generally the largest issuance quarter and the strong muni rates rally in November has led to robust demand for munis. Total 2023 issuance will likely get quite close to our revised target of $400bn for 2023.

The market environment and yield levels have always been important variables when we make our issuance forecast. Had our initial 2023 muni rates forecast worked out, our issuance forecast would have as well. 2023 clearly has been a very challenging year, and in some ways more so than 2022. In 2022, the Fed was well-expected to hike throughout the year; the only unknown was how much and how fast. In 2023, the off-and-on again approach by the Fed was much less contemplated by market forecasters, and even less so by market participants, like muni issuers. For example, during the strong muni market rallies in January and April, although yield levels were very low and made it very attractive to do refundings, refunding volumes were disappointing – likely due to the short window of the rallies and issuers' unpreparedness.

$300bn new money and $100bn refunding

Looking to 2024, the Fed is likely to cut rates multiple times, continuing into 2025. At this point, BofA Global Research's economists expect the Fed will start cutting rates in 2Q24 and eventually cut four times in 2024. They also expect the economy will avoid a recession and produce 1% GDP growth and for the CPI index to get to 3.1%. Based on these forecasts, we believe 2024 issuance will be higher than 2023's, though not materially. **We present a $400bn target of total long term bond issuance for 2024, with $300bn of new money and $100bn of refunding**. New money issuance has picked up some in recent months, and the demand side has already shown more enthusiasm with continuous positive inflows to mutual funds and much improved demand from money managers and retail investors. The $300bn of new money reflects about 4.5% growth over 2023's new money volume. Such a growth rate is clearly down from pre-2022 years, and reflects relatively high rates possibly in 1H24, population growth and very low GDP growth in 2024.

Exhibit 8: Expected monthly new money and refunding volumes in 2024 ($bn)

October should be the largest issuance month in 2024

Month	Total ($)	New money ($)	Refunding ($)
January	26	19	7
February	27	21	6
March	32	24	7
April	31	24	7
May	32	24	8
June	39	29	10
July	30	22	8
August	38	28	10
September	34	26	8
October	42	32	10
November	33	24	9
December	36	27	9
2024 total	**$400**	**$300**	**$100**

Source: BofA Global Research

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Exhibit 9: Muni bonds of various pools

The pool of potential refunding candidates is larger than this time last year

Bonds with 1st call dates earlier than 2024	$134bn
Bonds with 1st call dates 1/1/2024-3/31/2025	$237bn
4%+ coupon bonds with 1st call dates 1/1/2024-3/31/2025	$193bn

Source: BofA Global Research, Bloomberg

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We believe 2024 refunding volume will come in at $100bn, if not higher. Granted, monthly refunding volumes are likely to remain somewhat less robust until May 2024, but we expect muni rates to be much lower by June and thus refunding volumes to rise significantly by June and onward. In 2024, for the first time, we will face a larger backlog of bonds that were eligible for refunding in 2022/2023 but remained unrefunded due to high rates (Exhibit 9).

Exhibit 10 shows expected 2024 issuance by sector according to *Bond Buyer*'s use of proceeds categories. Education and General Purpose bonds are the two largest categories with more than $100bn of new issuance each, while Transportation will be the third largest category with $57bn, followed by Utilities, Health Care and Housing.

Exhibit 10: Expected issuance by sector and tax status in 2024 ($bn)

The Education and General Purpose sectors to account for more than half of the year's issuance

Sector	Amount ($)
Education	103
General Purpose	101
Transportation	57
Utilities	44
Health Care	32
Housing	28
Development	12
Electric Power	11
Public Facilities	9
Environmental Facilities	3

Tax status	Amount ($)
Tax-exempt	340
Taxable	45
AMT	15

Source: BofA Global Research

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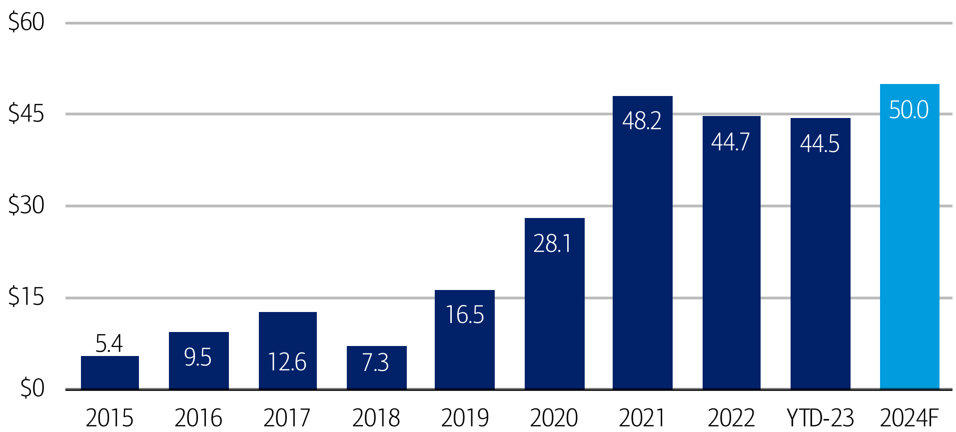
We do not expect much increase in taxable or AMT bond issuance in 2024. In a bull market absent a significant crisis (soft landing), muni/Treasury ratios in 2024 should stay low and well behaved due to a benign macro environment and favorable supply/demand dynamics for munis. As such, a meaningful rise of taxable advance refunding issuance activities is not our base case. Instead, we expect that refundings will be mainly done by using tax-exempt bonds. Also, there is no particular reason to expect a significant increase of AMT bond issuance in 2024. As a result, we expect tax-exempt bonds to account for about 85% of all issuance in 2024. Taxable munis will be mainly sold by the traditional industrial issuers using municipalities as a conduit. Exhibit 10 also shows our expected issuance by tax status. One can see that we only expect $45bn of 2024's supply to be taxable and $15bn to be AMT bonds. Taxable muni investors should note that the $45bn of taxable muni issuance does not include corporate-backed muni CUSIPs, which we expect to total approximately only $5bn. These corporate-backed muni CUSIPs are classified under the corporate bond category.

ESG issuance: expected to grow to $50bn

We expect muni all labeled ESG issuance to grow to $50bn in 2024, or roughly 12.5% of total muni issuance based on our gross supply forecast of $400bn. By label, $24bn of that will be green bonds, $18bn will be social bonds and $8bn will be sustainability bonds. Issuance should continue to come predominately from CA, NY and MA.

Exhibit 11: Annual muni all labeled ESG issuance ($bn)
We expect $50bn of issuance in 2024



Note: Long-term bonds only. Data as of 29 November 2023.
Source: BofA Global Research, Bloomberg

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Demand: prin/cpn redemptions & fund flows

Our redemption estimates worked well for 2023YTD. For 2023 estimated monthly redemption and coupon payments versus actual through November, see Exhibit 12. Our forecast for May, July, October and November matched the actual exactly. For other months, the difference between our forecast and the actual ranges between $1bn-$4bn.

Exhibit 12: 2023 redemption estimates vs actuals ($bn)
Total 2023YTD's forecast is just 3% lower than actual

Month	Forecast	Actual	Month	Forecast	Actual
Jan-23	42	39	Jul-23	59	59
Feb-23	45	42	Aug-23	62	65
Mar-23	39	36	Sep-23	37	33
Apr-23	32	29	Oct-23	40	40
May-23	45	45	Nov-23	41	41
Jun-23	65	64	Dec-23	56	

Note: Data as of 30 November 2023.
Source: BofA Global Research, Bloomberg

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$574bn of principal redemptions and coupon payments

For 2024, we estimate $416bn of principal redemption and $158bn of coupon payments. That will bring the 2024 total to $574bn, or $11bn more than our full year estimate for 2023. See Exhibit 13 below.

For the past several years, we commented on the strong redemption seasonality that occurred from May to August. For 2024, it is notable that May appears to be a rather weak month. The strong redemption summer season will be postponed, starting in June and ending in August. Those three months have total principal redemption and coupon payments of $192bn. January and February of 2024 are also quite strong as well, since new issuance in those two months is typically light and redemption numbers in 2024 are large. Weak months in 2024 include April and September.

Exhibit 13: Estimated 2024 principal redemption and coupon payments by month ($bn)
2024's strong summer redemption will start in June

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Principal	31	33	30	21	26	48	48	50	28	35	30	37	416
Coupon	15	16	9	10	13	15	15	16	9	10	13	15	158
Principal + Coupon	**46**	**49**	**39**	**31**	**39**	**63**	**63**	**66**	**37**	**45**	**43**	**52**	**574**

Source: BofA Global Research, Bloomberg

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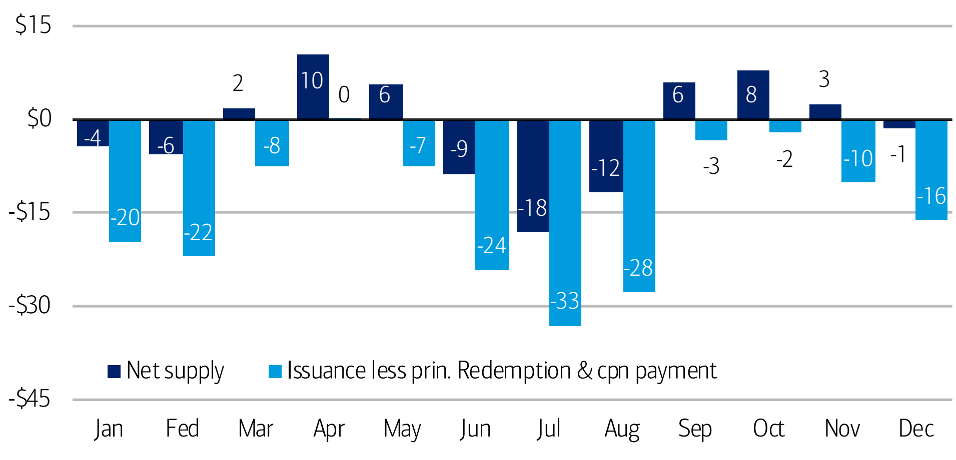
Fund flows: positive in 2024

Muni mutual funds flows generally would turn positive, but inconsistently in the first two weeks of a bull market, but after a month or two in the bull market, the mutual funds flows would turn consistently positive and large. Also, mutual funds flows would not turn consistently negative until the market selloff is three months long or 50bp+ in 10-year AAA yield rise. Given our muni rates view and muni/Treasury ratio views, mutual funds flows should be consistently positive in 2024, with only possible brief weekly negative flows in April or October.

Supply/demand imbalance in 2024: net supply to be -$16bn

Combining our forecasts for $400bn of issuance and $416bn of principal redemption in 2024, we expect -$16bn of net supply for the muni market. Negative net supply for 2024 should set the market dynamics in a generally favorable fashion, though more so for some months than others. Exhibit 14 shows monthly net supply, as well as monthly issuance less principal redemptions and coupon payments. These numbers give a quick expected monthly supply/demand picture. Exhibit 14 also shows that January, February, June, July and August should be very favorable, while April is the least so.

Exhibit 14: Monthly net supply and issuance less principal redemption & coupon payment ($bn)
Jan, Feb, Jun, Jul, Aug are most favorable months; Apr is the least favorable month



Source: BofA Global Research

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Regardless of how Treasury rate technicals are during these months, munis' favorable supply/demand months should translate to better muni/Treasury performance. By the same token, a less favorable month in muni supply/demand should translate to less favorable muni/Treasury ratio performances. Still, even for the least favorable month of

April, total principal redemption and coupon payment just matches expected new issuance; then, muni/Treasury ratios may rise some, but not significantly.

Strategies

As discussed in our total return section, longer duration should outperform shorter duration in general next year. This will be the case even if the muni AAA curve steepens some. As a result, **our overall strategy is to go long and longer**.

In terms of credit, we generally prefer high grades in a slowing economic environment. Even though we expect muni credit spreads to be stable throughout 2024, we believe credit spread ranges for the single-A and BBB-rated indexes in 2024 should be wider than high grades'. The single A-rated index's spread will likely be more stable than the BBB-rated's in 2024. **For credit paper, especially BBB-rated, we would view any sizeable widening as opportunities.** For various macro reasons, if there is any sizeable BBB spread widening, it is likely to occur in the September/October 2024 time frame.

One of our preferred trades for 2024 is going long 4% coupon bonds. This is a trade we recommended at the end of 2022 that worked out very well over the first several months of the year. The 4% coupon bracket continues to be the most sensitive to both rate selloffs and rallies. As Exhibit 15 shows, the bracket's price declined nearly 10pts from the end of July 2023 to the end of October 2023 – more than both the 3% bracket and 5% bracket. But, for the MTD through 29 November, the 4% bracket recovered 90.1% of that decline compared to 3%'s 80.3% and 5%'s 89.0%. That translates to 8.30% MTD total returns for the 4% bracket, 6.8% for the 3% bracket and 3.6% for the 5% bracket. This shows the 4% bracket's returns are particularly strong relative to the 5% bracket's from 15 years and out; between 15 and 30yrs, they are outperforming MTD by about 730bp. Note that inside 15 years, however, the 3% bracket is still outperforming the 4% bracket.

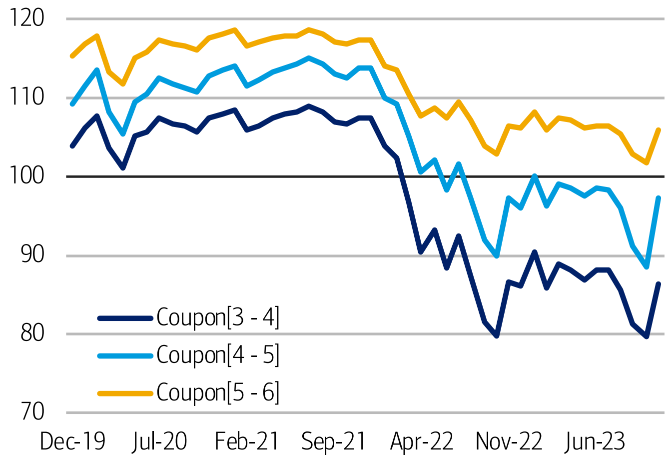
Combining our maturity and coupon index return expectations, **we believe 4% coupons in the long end of the curve should produce the best total returns in 2024. 4% coupons in the long maturity A-rated likely will see the highest returns**.

The argument by some market participants of barbelling 3%, 5% coupons or barbell of them to outperform 4% coupons likely will not pan out, in our view. While 3% and 5% coupons may have better convexities, the starting points of bond prices are much more important in total return expectations. 4% coupons in long maturities were the most sensitive, they were penalized more in a down market and rewarded better in a bull market. 3% coupons can maintain long durations in a rallying market without triggering negative convexity issue, though they would not be rewarded as quick as, and as large as, 4% coupons in a directionally rallying market. 5% should underperform 4% even more in a bull market. MTD total returns by coupon brackets illustrate this well. As of 28 November, 4% coupon brackets in ICE BofA 12-22 year and 22+ year indexes produced 10.05% and 11.84% total returns, respectively. On the other hand, 3% coupon ICE BofA 12-22 year and 22+ year indexes produced 9.53% and 8.51% of total returns, respectively; the 5% coupons in 12-22 year and 22+ year indexes produced 4.40% and 5.82% total returns, respectively. 3% or 5% coupon bullet, or a barbell of 3% and 5% coupons have underperformed 4% coupons significantly in November 2023.

An additional consideration should be added here. We have expressed the view that the 10s30s muni AAA curve should have some mild steepening in the early months of the bull market, but later on when fear of the long end of the curve dissipates, 10s30s AAA flattening likely will come to fruition. As such, what has been shown by the November performance is that the differentials between the 4% coupon bracket vs 3% and 5% coupon barbell or bullets should get wider from a portfolio viewpoint. Namely, a portfolio with more 4% long duration coupons will outperform a portfolio of 3% and 5% coupons.

Exhibit 15: Price, by coupon bracket

4% coupon bracket recovered more MTD than 3% and 5% brackets



Note: As of 29 November 2023.

Source: ICE Data Indices, LLC

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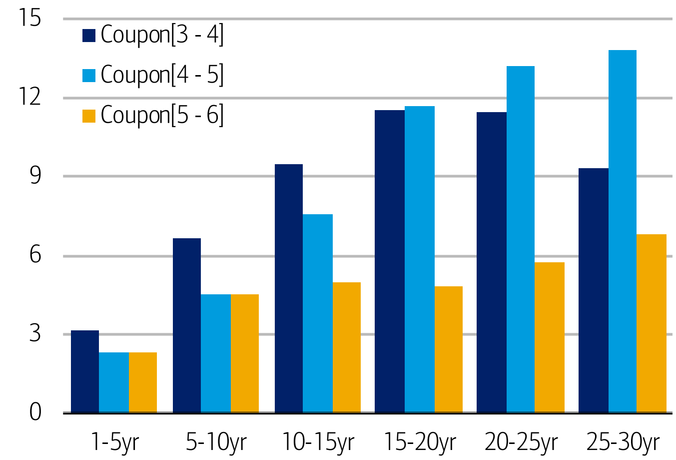
Exhibit 16: MTD total return, by coupon bracket and maturity (%)

4% bracket outperforming 5% bracket by 530bp+ from 15yrs and out



Note: As of 29 November 2023.

Source: ICE Data Indices, LLC

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Credit

Macro outlook

Our economists expect the US economy to grow at 1.4% in 2024, down from 2.4% in 2023 and 1.9% in 2022. At seasonally adjusted annual rates, they expect the economy to expand at "significantly below trend" levels of just 0.5% in 1Q24, 2Q24 and 3Q24, before growing 1.0% in 4Q24. Meanwhile, they expect the Fed to hold the Fed Funds rate at 5.25%-5.50% until the June 2024 FOMC meeting, when the Fed will cut 25bp, followed by 25bp each quarter through at least 4Q25. Nonfarm payroll growth is expected to slow to 75,000 per month on average in 1Q24, and then 50,000 per month on average in 2Q24 through 4Q24. Meanwhile, the unemployment rate is expected to climb over the course of 2024 to 4.4% in 4Q24; currently, they see the unemployment rate falling just 0.1ppt y/y by 4Q25. Core CPI is expected to continue its downward migration, falling 0.1ppt q/q in 1Q24 to 3.3% and finishing 2024 at 2.7%. But the end of 2025, our economists forecast core CPI to be 2.4%.

Exhibit 17: Select components of BofA's US economic outlook

Our economists continue to expect a soft landing for the US economy

	1Q 23	2Q 23	3Q 23	4Q 23	1Q 24	2Q 24	3Q 24	4Q 24	1Q 25	2Q 25	3Q 25	4Q 25	2022	2023	2024	2025
Real Economic Activity, % SAAR																
Real GDP	2.2	2.1	4.9	1.5	0.5	0.5	0.5	1.0	1.5	1.5	2.0	2.0	1.9	2.4	1.4	1.3
% Change, Year Ago	1.7	2.4	2.9	2.7	2.2	1.8	0.8	0.6	0.9	1.1	1.5	1.7				
Nominal GDP (Bil $, SAAR)	26814	27063	27624	27912	28158	28375	28601	28848	29145	29420	29726	30040	25744	27353	28495	29583
% SAAR	6.2	3.8	8.6	4.2	3.6	3.1	3.2	3.5	4.2	3.8	4.2	4.3	9.1	6.2	4.2	3.8
Key Indicators																
Fed Funds Rate (midpoint, % EOP)	4.875	5.125	5.375	5.375	5.375	5.125	4.875	4.625	4.375	4.125	3.875	3.625	4.375	5.375	4.625	3.625
Nonfarm Payrolls (Avg mom ch, 000s)	312	201	233	125	75	50	50	50	75	100	125	125	399	218	56	106
Civilian Unemployment Rate (%)	3.5	3.5	3.7	3.9	4.0	4.1	4.2	4.4	4.4	4.4	4.4	4.3	3.6	3.7	4.2	4.4
US Budget Balance ($bn, Fiscal Year)													-1375	-1700	-1800	-1900
Inflation																
Core PCE Chain Prices (% SAAR)	5.0	3.7	2.4	2.9	3.2	2.7	2.6	2.7	2.6	2.2	2.0	2.0	5.2	4.2	2.9	2.4
% Change, Year Ago	4.8	4.6	3.9	3.5	3.0	2.8	2.8	2.8	2.6	2.5	2.4	2.2				
CPI ex Food & Energy (% SAAR)	5.0	4.7	2.8	3.4	3.3	3.1	2.9	2.7	2.6	2.6	2.5	2.4	6.1	4.8	3.2	2.7
% Change, Year Ago	5.6	5.2	4.4	4.0	3.6	3.2	3.2	3.0	2.8	2.7	2.6	2.5				

Source: BofA Global Research

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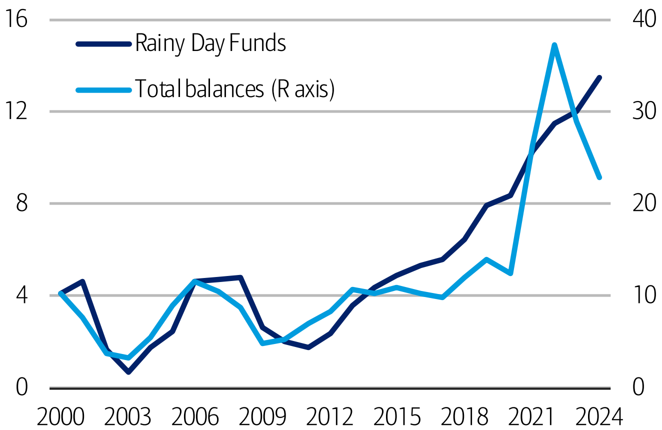
Muni credit is past peak, but strong & resilient

Heading into 2023, our economists expected a recession, and we anticipated that muni market credit fundamentals would weaken some off historic highs. Of course, the recession never came and credit conditions in the muni market remained largely benign throughout the year. Today, issuers' balance sheets remain bolstered – albeit to a lesser degree – by pandemic era aid and revenue growth. Most states ended FY23 with a surplus, and also larger rainy day fund balances according to NASBO. See Exhibit 18. Cities, too, report healthy reserves, per the National League of Cities.

Exhibit 18: State rainy day funds & total balances (% of expenditures)
States built on their rainy day funds in 2023, and are expected to in 2024



Note: 2023 estimated. 2024 projected based on proposed budgets.
Source: NASBO

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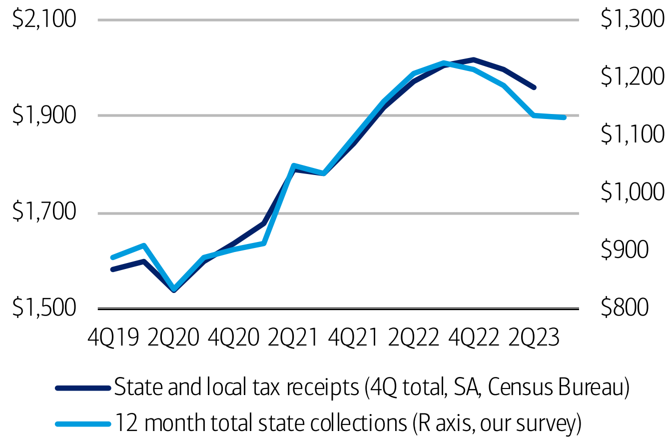
Exhibit 19: Tax receipt trends ($bn)
Our survey of state collections suggests collections stabilizing at lower level



Note: Our survey only includes data for 42 states that reported Sep-23 collections to-date.
Source: BofA Global Research, US Census Bureau

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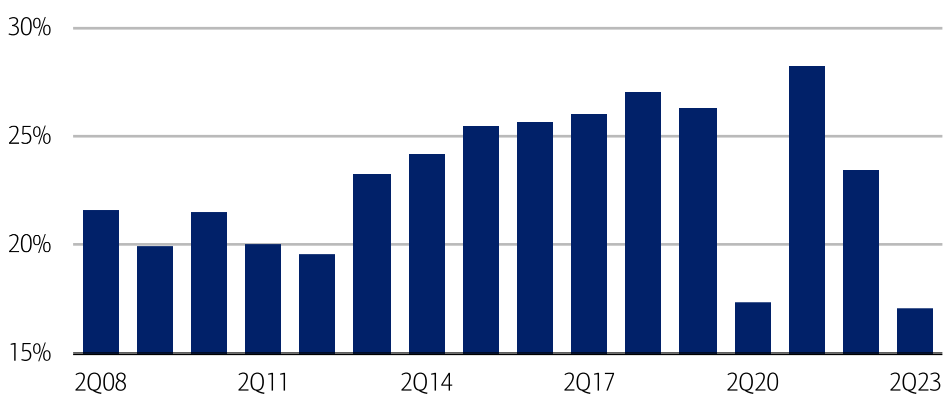
But, with the economy expected to grow "significantly below-trend in 2024", revenue growth should too, particularly for economically-sensitive revenue streams like personal income and sales taxes. For the states, growth is already slowing, weighed down by lower personal income tax collections (resulting from tax cuts, rising unemployment and poor market performance in 2022). Local governments, especially those reliant on property tax collections, are and can be expected to be relatively more insulated (property tax collections tend to lag changes in economic conditions). This can be seen in US Census Bureau data on state and local tax collections: in 2Q23, the most recent data available from the Census Bureau, property tax collections climbed 5% y/y while personal income tax collections declined over 28%.

Exhibit 20: CA's personal income tax collections as a % of all 50 states' and DC's in 2Q08-2Q23
While CA's collections were set to decline, tax deadline shift out of Apr-23 into Nov-23 exacerbated decline



Source: BofA Global Research, US Census Bureau

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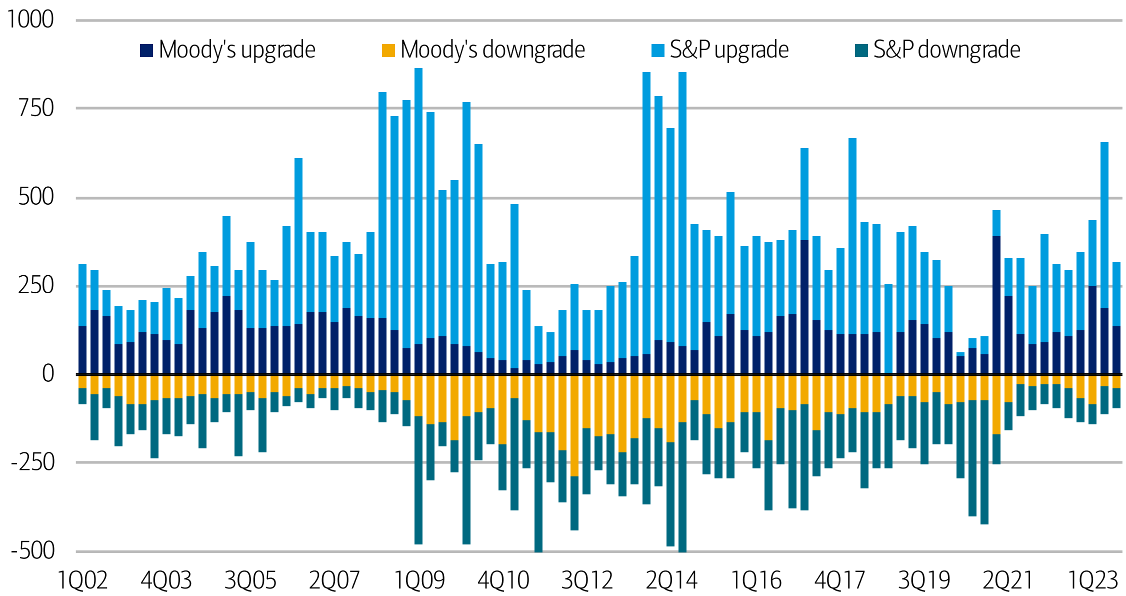
Note that some of that decline is attributable to the shift in tax filing deadlines in California due to last winter's storms. As Exhibit 20 shows, California's income tax collections averaged about 23% of overall state income tax collections in the 2Qs from 2008-2022, but just 17% in 2Q23.

It is clear to us that we are past peak credit (likely achieved in late 2021 or early 2022). Nevertheless, because fundamentals in the muni market remain strong, we can expect them to prove resilient in 2024, leading to another positive rating year (upgrades should outpace downgrades). However, slowed growth simply cannot support the elevated rating activity we have seen over the last several years; as we discuss below, we expect more neutral upgrade-to-downgrade rates in 2024 versus 2022 and 2023. Meanwhile, our base case is that bankruptcies and defaults should stay low in 2024, though potentially modestly higher than what we saw in YTD in 2023.

Rating activity to come back to Earth

Municipal market rating activity since the start of 2021 has been heavily skewed to the positive. 2023 was no exception: through the first three quarters of 2023, Moody's and S&P upgraded over 1,400 ratings and downgraded just under 350 ratings, for a combined upgrade to downgrade ratio of 4.0 to 1.

Exhibit 21: Moody's and S&P's quarterly upgrades and downgrades
For YTD-23 thru 3Q, Moody's and S&P's upgrades outpaced downgrades 4.0 to 1



Source: BofA Global Research, Moody's Investors Service, S&P Global Ratings

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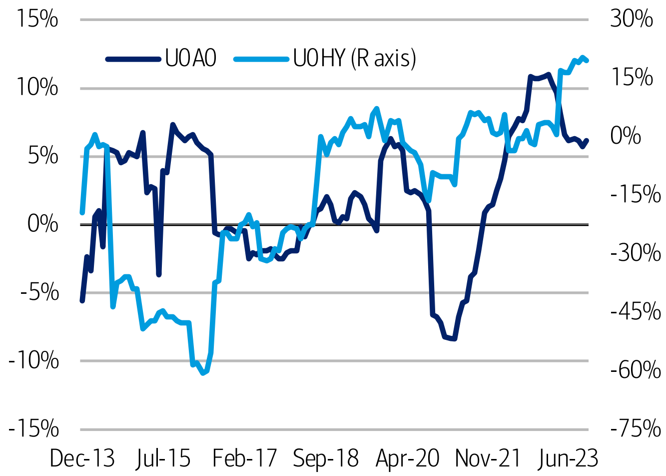
On a ratio basis, S&P's monthly activity peaked in August 2023, with an upgrade-to-downgrade ratio of 4.9 to 1. In September, that ratio softened to 2.1 to 1 and in October to 1.6 to 1 – the lowest since June 2022. Meanwhile, YTD unfavorable outlook and CreditWatch changes are outpacing favorable changes 1.5 to 1.

While negative and positive outlooks from S&P are evenly balanced as of the end of October, softening activity, together with its relationship to unemployment rates (downgrades increase and upgrades decrease with rises in unemployment on a lag) suggests to us that, while upgrade-to-downgrade ratios should stay positive in 2024, they will moderate to much more neutral levels by the time 2024 comes to an end.

As Exhibit 22 shows, the Muni Master (U0A0) index's net upgrade rate (UGR, the trailing 12 month par value of upgrades less downgrades divided by the index's total par value) peaked in January of this year; the muni high yield (U0HY) index's appears to still be peaking. Moderation within the investment grade space should come predominantly in the BBB rating; as Exhibit 23 shows, its UGR is exceedingly positive, though has also clearly peaked.

Exhibit 22: Net upgrade rate (UGR), U0A0 and U0HY

U0A0's UGR likely peaked in Jan-23, while U0HY's appears to be peaking now



Source: BofA Global Research, ICE Data Indices, LLC

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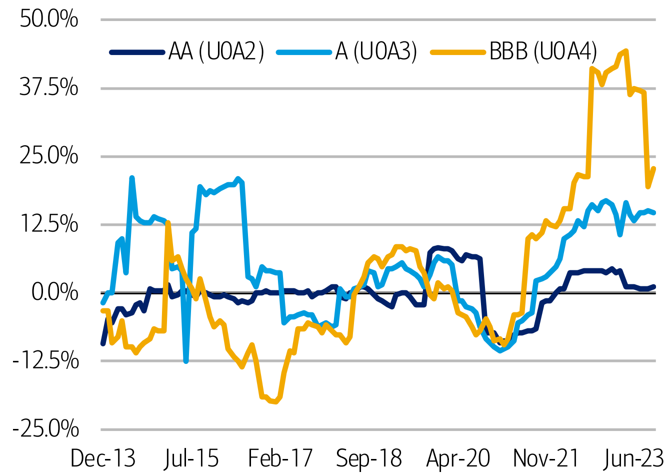
Exhibit 23: AA, single-A and BBB UGRs

AA's and single-A's UGRs stabilized at lower rates; BBB's is well off peaks



Source: BofA Global Research, ICE Data Indices, LLC

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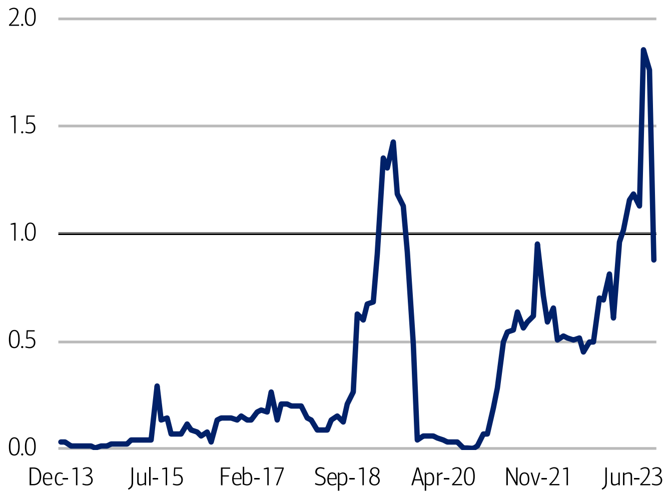
Meanwhile, we also expect fallen angels to outpace rising stars in 2024. Moody's data through 3Q23 shows its Rising Star to Fallen Angel ratio by debt total affected issuer debt outstanding fell to just 0.4 compared to nearly 6.5 in 2022 (driven by the rating agency's upgrade of Chicago into investment grade territory; ex-Chicago, the ratio was even lower than 2023's YTD at 0.3) and about 1.3 in 2021.

That, together with the trailing 12-month ratio of U0A0's fallen angel par to U0HY's rising star par suggests the peak is in. That said, given that U0HY's UGR is still peaking, almost 80% of U0HY is rated BB and our economists see slowed growth rather than a recession, we do not anticipate material credit weakening within the rated muni high yield universe, and remain neutral.

Exhibit 24: Last 12mo par of U0A0 fallen angels to U0HY rising stars
Ratio as of Oct-23 of 0.88 is well below peak of 1.86 from Aug-23



Source: BofA Global Research, ICE Data Indices, LLC

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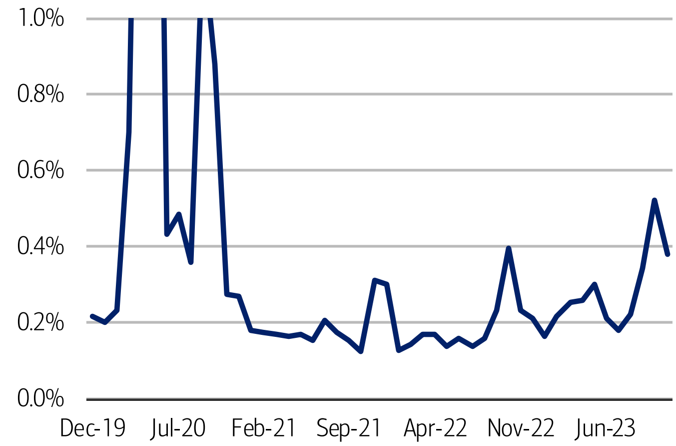
Exhibit 25: % of U0A0's, U0HY's and U0NR's face value distressed
0.38% rate elevated, but well below COVID-era peak of 3.21% in May-20



Note: Only includes 2%+ cpn bonds; reflects total face value of U0A0, U0HY and U0NR at mild and deep distress levels as % of total combined face value of those indexes
Source: BofA Global Research, ICE Data Indices, LLC

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To that end, we note that, if we borrow screening levels from our high yield corporate analysts to determine the size of the distressed muni market (for HY OAS >1,000bp, IG OAS >300bp) and deeply distressed (HY price <60pt, IG OAS >1,000bp) and apply it to the U0A0, U0HY and the unrated muni universe, we arrive at 0.38% of the par value of the market. While that is modestly elevated over the past few years, it is still well below the 2% and 3% we saw at the height of the COVID crisis.

Defaults and bankruptcies to stay low

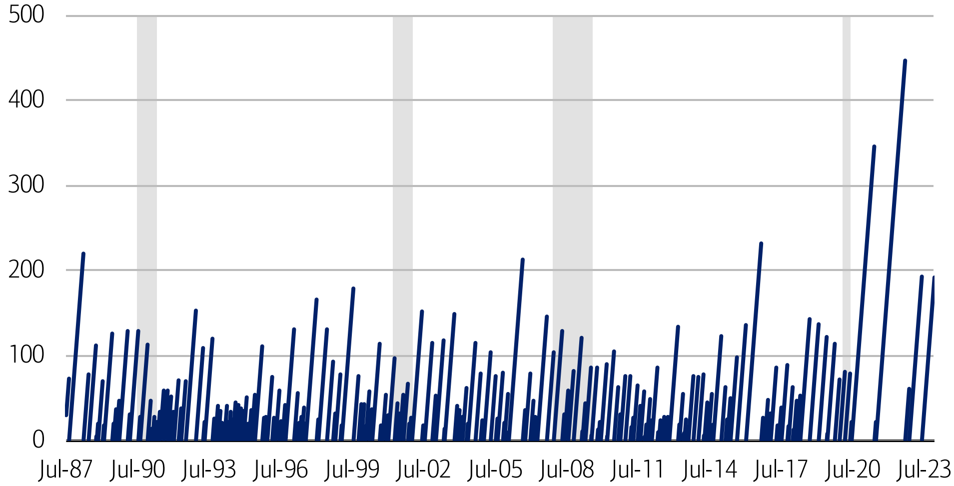
While certain issuers that tap the muni market can file for bankruptcy protection under other Chapters of the US Bankruptcy Code, we note that 2023 was another exceedingly quiet year in terms of Chapter 9 bankruptcy filings (Chapter 9 is the part of the Code solely accessible by municipalities). In fact, only one Chapter 9 bankruptcy was filed in 2023 to-date, by the San Benito Health Care District (d/b/a Hazel Hawkins Memorial Hospital) in the Northern District of California's bankruptcy court. At the time of its filing, Hazel Hawkins had just under $10mn of outstanding muni debt.

Today marks 192 calendar days since Hazel Hawkins filing, marking the 7th longest period since July 1987 between Chapter 9 filings. Notably, of those longer periods, three either began or continued post-pandemic.

Despite our economists' expectations for slowed growth in 2024, strong issuer balance sheets suggest that municipal bankruptcies will stay low next year, with our expectation of single digit bankruptcies in 2024 – likely low-to-mid single digits – with those that do occur driven by more idiosyncratic factors. As it was in 2023, a large general government bankruptcy in 2024 is not our base case.

Exhibit 26: Calendar days since last Chapter 9 petition filed

Credit fundamentals should prove resilient in 2024, keeping Ch. 9 bankruptcies low next year



Source: BofA Global Research, PACER, US Courts

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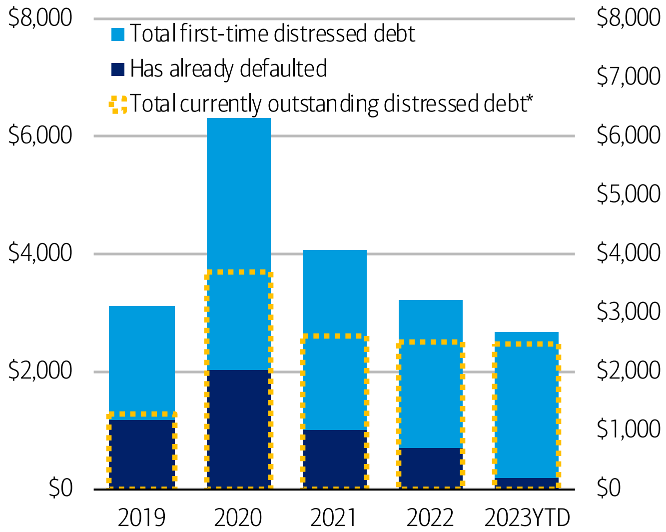
Defaults should also stay low in 2024, though may tick up from 2023's levels. When arriving at our default estimates, we usually begin with distress data, as it often serves as a leading indicator of the likelihood of future defaults. Indeed, our previous studies show that the historical average time from distress to default is declining with 11 months on average in recent years. For 2024, while there is concern of slowed growth, we expect municipal credit fundamentals to remain resilient for most sectors.

We also look at the speeds of default and distress as "now-casting" for the near future (as shown in Exhibit 29). The overall default and distress speeds have picked up in 2023 after significantly slowing since 2021. The defaults are currently cumulating at $164mn-$168mn per month on average as of November. Considering all these factors and the output of our distress-to-default analysis, we estimate $1.9bn-2.3bn of first-time payment defaults in 2024. Most likely, those defaults will come from the Nursing Home/Senior Living, Hospital and Industrial Development sectors.

Exhibit 27: Distress-to-default outlook
We estimate around $1.9bn to 2.3bn going into default in 2024



Note: We may revise data if Bloomberg revises its data. *Currently outstanding and in distressed status excluding the debt out of distressed status later than it first happened and with uncertainty if it may re-enter into the distressed status again later at the time of reporting.
Source: BofA Global Research, Bloomberg

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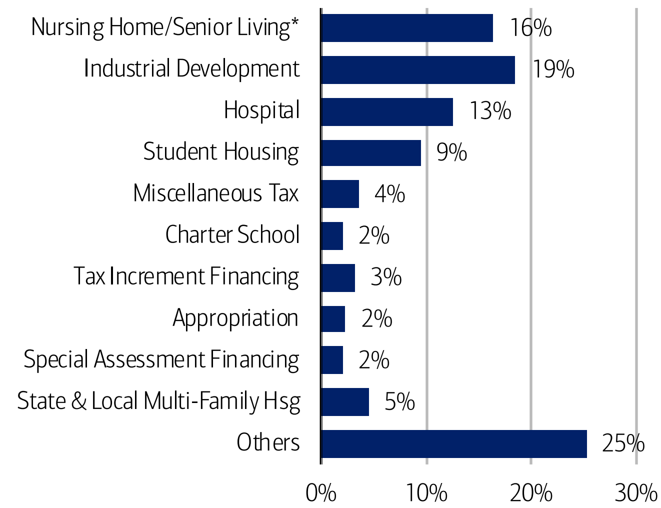
Exhibit 28: Sector cumulative distressed debt (not defaulted)
Since 2019, Nursing Home, Industrial Development and Hospital top cumulative distressed debt



Note: *Nursing Home/Senior Living includes CCRC, ASST Living, Nursing Home, and Independent Living Facilities. The sequence above is based on average rank of breakdown by par value and by number of CUSIPs
Source: BofA Global Research, Bloomberg

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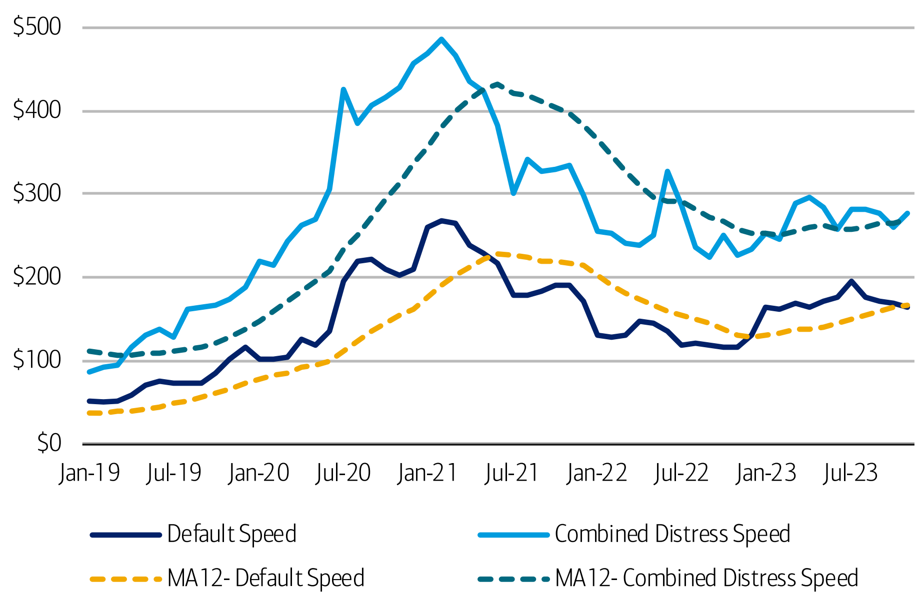
Exhibit 29: Overall default and distress speeds ($mn/month; data as of October 2023)
Overall default & distress speeds picked up in 2023



Note: Combined distress means fist-time distressed events including when the first distressed event is a monetary default.
Source: BofA Global Research, Bloomberg

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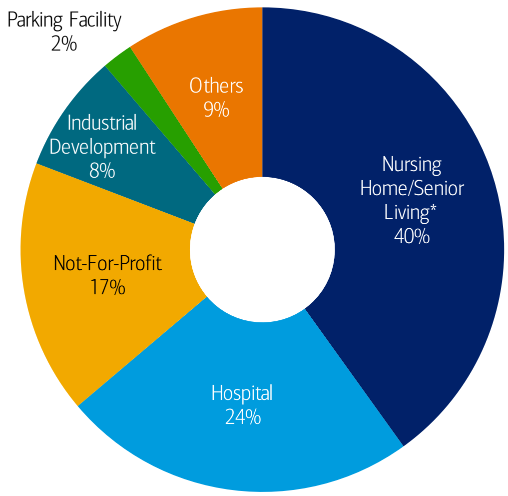
We note that for the year-to-date through November 2023, first-time payment defaults total $1.73bn, or 30% more than what we saw over the same period in 2022, with continued concentrations in the Nursing Home/Senior Living sector. First-time distressed debt for the YTD totals $2.48bn, which is up 10% y/y.

Exhibit 30: YTD-23 defaults by sector

Most defaults concentrated in the Nursing Home/Senior Living sector



Note: * See Footnote in Exhibit 28. The sequence above is based on average rank of breakdown by par value and by number of CUSIPs.
Source: BofA Global Research, Bloomberg

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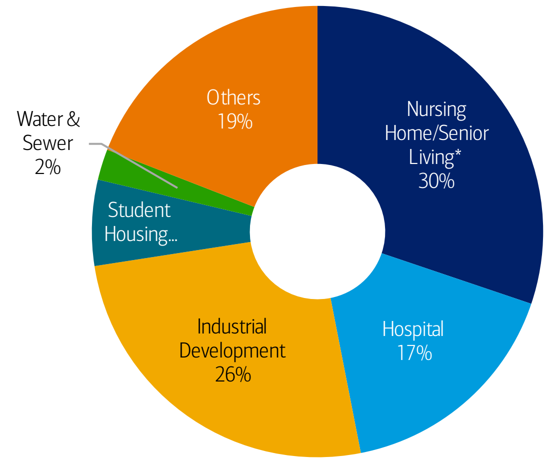
Exhibit 31: YTD-23 first-time distressed debt by sector

Nursing Home, Hospital and Industrial Development sector tops in YTD-23 newly distressed debt



Note: *See footnote in Exhibit 28 The sequence above is based on average rank of breakdown by par value and by number of CUSIPs.
Source: BofA Global Research, Bloomberg

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Sector credit outlook

Our relative 2024 outlooks for the various municipal bond sectors from a purely credit perspective are unchanged from last year, and are as follows. Positive: Essential services, Local governments and States. Neutral: Airports, Housing, Mass transit, Ports, and Toll roads. Negative: Higher education and Healthcare.

Exhibit 32: Summary of relative 2024 credit sector views

We continue to be most positive on the GO and essential services sectors

Positive	Neutral	Negative
Essential services	Airports	Healthcare
Local governments	Housing	Higher education
States	Mass transit	
	Ports	
	Toll roads	

Source: BofA Global Research

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But, as we cautioned last year, a stronger fundamental credit view does not necessarily mean that sector will outperform in terms of returns in 2024. For example, 2022's sector returns were largely driven by duration (shorter duration sectors outperformed), as have 2023's. In 2023, however, we also saw OAS play a more important role; while the Industrial Development Revenue (IDR) sector has a longer duration than the Muni Master index, its OAS narrowed more for the YTD, helping to boost performance. Now, with our expectation for largely stable spreads and a soft landing, we continue to think that performance in 2024 will be driven more by the curve, rates and duration.

Exhibit 33: Sector total return performance ranking by year

The Industrial Development Revenue, Hospital and Healthcare sectors' total returns strongest in falling rate environments on average

Total return: Weakest <------------------> Strongest

Above line = outperformed UOAO; Below line = underperformed UOAO

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023*
Rate environment	**Stable**	**Stable**	**Stable**	**Falling**	**Rising**	**Falling**	**Falling**	**Rising**	**Falling**	**Stable**	**Rising**	**Falling**	**Rising**	**Falling**	**Falling**	**Rising**	**Rising**	**Stable[1]**
Strongest	TBCO	GO-S	GO-S	IDR	SFH	AIR	IDR	TBCO	IDR	TBCO	IDR	IDR	MISC	IDR	TBCO	TRAN	GO-S	IDR
	SFH	PWR	GO-L	TBCO	IDR	HLTH	HLTH	MISC	HLTH	T&T	HOSP	TBCO	LCA	TBCO	HOSP	HOSP	PC	TRAN
	IDR	GO-L	PWR	AIR	MFH	T&T	HOSP	SFH	HOSP	HLTH	MFH	T&T	PC	HOSP	IDR	AIR	PWR	AIR
	AIR	T&T	EDU	HOSP	MISC	IDR	T&T	PC	T&T	HOSP	SFH	AIR	MFH	T&T	HLTH	HLTH	LCA	TBCO
	HOSP	TRAN	W&S	PC	HOSP	HOSP	AIR	GO-S	AIR	AIR	HLTH	HLTH	GO-S	EDU	GO-L	T&T	W&S	T&T
	MFH	W&S	TRAN	HLTH	PC	EDU	TBCO	MFH	UTL	UTL	T&T	TRAN	TRAN	TRAN	SFH	MFH	MISC	TAX
	LCA	EDU	T&T	MFH	GO-S	MISC	UTL	AIR	W&S	IDR	TRAN	HOSP	W&S	AIR	UTL	TBCO	GO-L	UTL
	HLTH	TAX	LCA	MISC	HLTH	W&S	EDU	LCA	EDU	W&S	UTL	UTL	HLTH	HLTH	PC	TAX	TBCO	HOSP
	T&T	UTL	SFH	UTL	LCA	TAX	W&S	HOSP	GO-L	EDU	AIR	EDU	GO-L	SFH	W&S	LCA	UTL	MFH
	EDU	LCA	TAX	SFH	UTL	TRAN	MISC	UTL	TRAN	TAX	PWR	GO-L	HOSP	TAX	EDU	EDU	T&T	EDU
	TRAN	MFH	UTL	T&T	PWR	PC	LCA	T&T	TAX	PC	TAX	SFH	PWR	GO-L	T&T	IDR	TRAN	W&S
	UTL	MISC	MFH	TAX	GO-L	LCA	SFH	EDU	LCA	MFH	W&S	W&S	TAX	UTL	TAX	GO-L	TAX	GO-L
	PC	PC	MISC	LCA	TRAN	GO-S	PC	TRAN	PC	SFH	LCA	TAX	SFH	MISC	GO-S	MISC	SFH	GO-S
	W&S	HOSP	HLTH	EDU	TAX	UTL	MFH	W&S	SFH	PWR	TBCO	LCA	T&T	W&S	PWR	UTL	EDU	LCA
	TAX	SFH	PC	W&S	W&S	GO-L	TAX	HLTH	MFH	GO-L	EDU	PWR	EDU	MFH	TRAN	SFH	AIR	PWR
	GO-L	AIR	HOSP	TRAN	AIR	PWR	TRAN	GO-L	PWR	LCA	PC	MISC	AIR	LCA	MISC	PWR	IDR	MISC
	MISC	HLTH	AIR	PWR	EDU	MFH	GO-L	PWR	TBCO	TRAN	GO-L	MFH	UTL	GO-S	LCA	GO-S	HOSP	PC
	PWR	IDR	IDR	GO-L	T&T	SFH	PWR	IDR	GO-S	GO-S	MISC	GO-S	TBCO	PWR	AIR	W&S	HLTH	HLTH
Weakest	GO-S	TBCO	TBCO	GO-S	TBCO	TBCO	GO-S	TAX	MISC	MISC	GO-S	PC	IDR	PC	MFH	PC	MFH	SFH

Note: See Exhibit 55 below for sector definitions. Note, we consider a rate environment "Stable" if 10yr AAA MMD rates rise or fall by less than 10% over the course of a year. *YTD as of 29 November 2023. [1]As of 29 November 2023, 10yr AAA MMD was just 2% above its close at the end of 2022.

Source: BofA Global Research, ICE Data Indices, LLC, Refinitiv

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Nevertheless, Exhibit 34 shows each sectors' UGR as of the end of October 2023, with the Transportation sector's 24.3% rate currently highest. All the same, it also shows that while Transportation's rate is higher than it was as of September, it is well below its peak rate of nearly 38% back in Apr-23. Sectors still on the upswing include: Toll & Turnpike, Water & Sewer, Tobacco and Pollution Control. Utilities rate appears to have stabilized, while other sectors' rates are falling.

Exhibit 34: Trend in sector UGRs

Toll & Turnpike, Water & Sewer, Tobacco and Pollution Control UGRs still on the upswing

Sector	UGR as of Oct-23	vs 1mo ago	vs 3mo ago	vs 6mo ago	vs 12mo ago	vs 18mo ago	vs 24mo ago
TBCO	8.0%	↗	↗	↗	↗	↗	↘
GO-S	10.1%	↘	↘	↘	↗	↘	↘
GO-L	1.0%	↗	↗	↘	↘	↘	↗
AIR	2.3%	↘	↘	↘	↘	↘	↗
EDU	1.0%	↘	↘	↘	↘	↘	↗
HLTH	-5.1%	↘	↘	↘	↘	↘	↘
HOSP	-4.1%	↘	↘	↘	↘	↘	↘
IDR	8.1%	↘	↘	↗	↘	↘	↗
LCA	8.5%	↘	↘	↘	↘	↗	↗
MISC	-0.6%	↗	↘	↘	↘	↘	↘
MFH	1.9%	↘	↘	↘	↗	↗	↗
PC	0.4%	↗	↗	↗	↗	↗	↗
PWR	-1.1%	↘	↘	↘	↘	↘	↘
SFH	0.1%	↘	↘	↘	↘	↘	↘
TAX	4.1%	↗	↗	↘	↘	↘	↗
T&T	18.5%	↗	↗	↗	↗	↗	↗
TRAN	24.3%	↗	↘	↘	↘	↗	↗
UTL	12.3%	↘	↗	↗	↗	↗	↗
W&S	4.6%	↗	↗	↗	↗	↗	↗

Note: See Exhibit 55 below for sector definitions.

Source: BofA Global Research, ICE Data Indices, LLC

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Below we provide a brief commentary on each of our sector credit fundamental views.

Essential services: positive. Essentiality and the ability to pass on increased costs to customers via self-regulated rate setting is a key credit strength for the public power and water & sewer sectors. Leverage will likely increase to repair, replace, and weatherize aged infrastructure. Affordability may be a challenge in areas with weaker demographics, especially in a slowing economy. Larger utilities are much better positioned to absorb cost increases versus smaller systems. Cyber-attacks and physical climate risks continue to be headwinds for these sectors.

Local governments: positive. Property tax collections should remain resilient amid a weakening US housing market, as they have in prior recessions and economic slowdowns. Reserve levels remain robust and any state funding cuts amid an economic slowdown can be expected to more benign than in previous cycles given strong state credit. More economically sensitive issuers may be challenged in the face of a weakening US economy and those more reliant on commercial real estate for property tax collections may face headwinds. We favor issuers with diverse economies, revenues supported by property taxes, and strong pension funded ratios.

State governments: positive. Like local governments, state reserve levels are largely at-or-near historic highs following an unprecedented amount of federal aid and strong tax collections. While revenue growth has slowed after very strong years, states will adjust spending and, if necessary, draw on reserves to balance their budgets. We continue to favor states with strong and diverse economies, coupled with relatively low unfunded pension liabilities.

Airports: neutral. Air traffic has improved significantly since the start of the pandemic and has surpassed pre-pandemic levels overall. However, an economic slowdown could result in weakened travel demand as consumers become more budget conscious. After hitting pause during the pandemic, many airport operators restarted their capital programs for expansion and/or modernization projects, which could cause leverage metrics to elevate. Though, on balance, we do not see this leading to credit stress across the sector. International travel, which has lagged domestic, should continue its recovery.

Housing: neutral. With an ongoing housing affordability crisis, increased home prices and rising rates, state housing finance agencies (HFAs) have continued to increase their levels of downpayment assistance (DPA), both in number and assistance levels. The average level of DPA rose from $7,400 in 2017 to $10,000 in 2022, per S&P. Asset and loan quality has not declined despite an increase in DPA programs, with many HFAs seeing a drop in nonperforming asset levels in 2022. As housing prices continue to outpace income, particularly for low-income buyers, HFAs will benefit from their unique positioning offering lower interest rate loans and down payment assistance.

Mass Transit: neutral. Many transit agencies across the country continue to struggle with lagging pandemic ridership levels, particularly those that rely primarily on farebox and toll revenue. Some, like the MTA, have found new revenue sources to fill looming budget gaps, via state aid and new tax revenues, but those that do not are likely face continued operating challenges and recurring budget gaps.

Ports: neutral. The two largest ports in the US, the Port of Los Angeles and the Port of Long Beach, both experienced declines in activity entering 2023 and drawn-out labor negotiations through the summer of 2023 seemingly led to a shift in cargo to the East Coast and the Gulf Coast. As the two largest ports see some of that activity return West following the ratification of a new labor deal, port volumes can expect to regulate should recessionary tides remain offshore and trade policies not drastically alter trade patterns.

Toll roads: neutral. Toll roads have maintained a position of stability since the onset of the pandemic, with none of the toll road operators seeing a downgrade courtesy of S&P over that time, making it one of the most stable sectors in the years since. Data from the Federal Highway Administration indicates that total traffic volumes through 2023 YTD are just 1% below pre-pandemic levels while up 2% on 2022. Advancements in toll collection and enforcement technology will aid in a shift towards a fully electronic toll collection system, allowing faster adjustments to toll rates and the potential for improved operations. Statewide systems and operators demonstrating willingness to adjust rates as needed will benefit most from this new environment.

Healthcare: negative. While volumes have largely recovered after plummeting during the pandemic, providers have now been grappling with higher expenses driven by inflation and labor costs. We expect operating margins will continue to recover but at a slow pace and will remain below pre-pandemic levels. An aging population and shift in payor mix towards government payors will continue to pressure the revenue side. M&A activity is expected to tick-up for strategic purposes, as well as the result of distress across the sector. Rural hospitals and senior living facilities will continue to be the most negatively impacted.

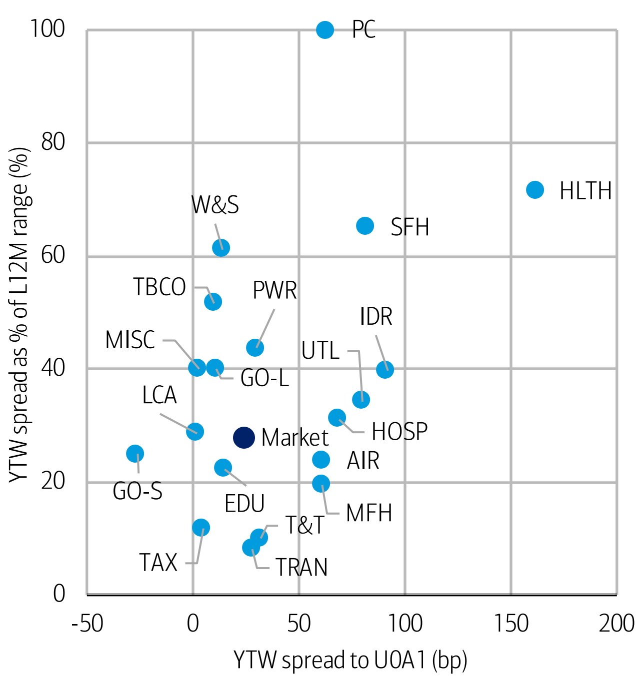
Higher Education: negative. Despite the latest Common App data indicating first time applications are up from pre-pandemic levels, preliminary enrollment data shows that freshman enrollment challenges persist in both public and private institutions. Broadly, preliminary undergraduate enrollment data indicates y/y declines after enrollment increases in Fall 2022. As we cautioned in the past, small private colleges with limited offerings and schools with less demographic diversification in recruitment will continue to struggle in this post-pandemic education environment. We favor comprehensive universities and research institutions with brand recognition and schools that recruit from many states. Opportunities remain for schools that maintain the assets and infrastructure necessary for the consolidation or absorption of struggling institutions.

Sector relative value

Exhibit 35, below left, shows that Healthcare has the widest YTW spreads to the ICE BofA AAA municipal index (U0A1) at 162bp. As of 29 November, that is the 71st percentile of its last twelve-month (L12M) range. We generally consider spreads between the 20th percentile and 80th percentile as largely neutral.

Exhibit 35: Current YTW spread as % of LTM range

Market skews tight at 28th percentile; only PC's cheap at L12M wide



Note: See Exhibit 55 for sector definitions. As of 29 November 2023.
Source: BofA Global Research, ICE Data Indices, LLC

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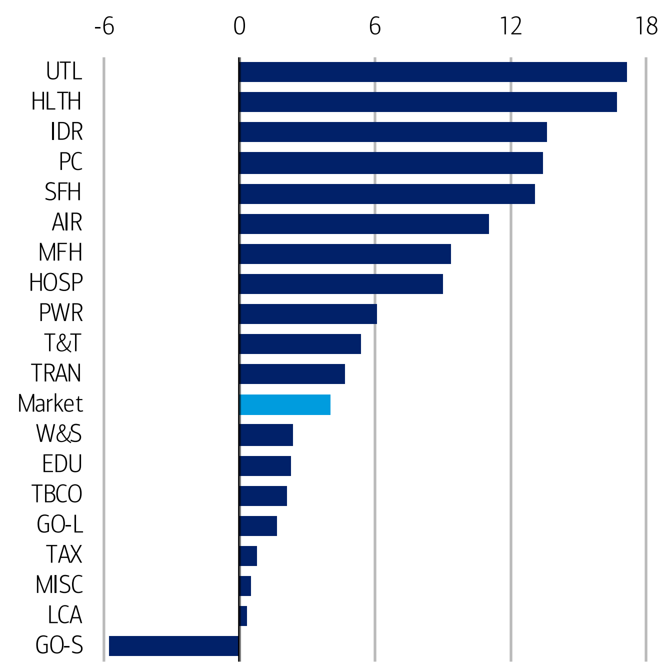
Exhibit 36: YTW spread per unit of duration

UTL and HLTH provide most spread per unit of duration; State GOs the least



Note: See Exhibit 55 for sector definitions. As of 29 November 2023.
Source: BofA Global Research, ICE Data Indices, LLC

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We see five sectors spreads relatively tight on a L12M basis: Multi-family Housing, Tax Revenue, Toll &Turnpike and Transportation. Meanwhile, we see just one sector's as relatively wide: Pollution Control. Exhibit 36 shows that the Utilities – other sector provides the most spread per unit of duration, at over 17bp, followed by the Healthcare sector at just under 17bp. The GO-State sector provides the least, at nearly -6bp.

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 Healthcare bonds YTW spreads are cheap while Transportation's spreads to the market, and most sectors, are rich. Essential service sectors – Power, Water & Sewer and Utilities – skew cheap to most sectors.

Exhibit 37: Cross sector rich/cheap analysis of YTW spreads (bps; as of 29 November 2023)
Healthcare's spreads to other sectors are largely cheap, while Transportation's skew more 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	-33		17	-20	-43	-70	-24	-171	-78	-101	-11	-12	-70	-72	-39	-91	-14	-19	-41	-37	-89	-23
GO-S	-50	-17		-37	-60	-87	-41	-188	-95	-118	-28	-29	-87	-89	-56	-108	-31	-36	-58	-54	-106	-40
GO-L	-13	20	37		-23	-50	-4	-151	-58	-81	9	8	-50	-52	-19	-71	6	1	-21	-17	-69	-3
REV	10	43	60	23		-27	19	-128	-35	-58	32	31	-27	-29	4	-48	29	24	2	6	-46	20
AIR	37	70	87	50	27		46	-101	-8	-31	59	58	0	-2	31	-21	56	51	29	33	-19	47
EDU	-9	24	41	4	-19	-46		-147	-54	-77	13	12	-46	-48	-15	-67	10	5	-17	-13	-65	1
HLTH	138	171	188	151	128	101	147		93	70	160	159	101	99	132	80	157	152	130	134	82	148
HOSP	45	78	95	58	35	8	54	-93		-23	67	66	8	6	39	-13	64	59	37	41	-11	55
IDR	68	101	118	81	58	31	77	-70	23		90	89	31	29	62	10	87	82	60	64	12	78
LCA	-22	11	28	-9	-32	-59	-13	-160	-67	-90		-1	-59	-61	-28	-80	-3	-8	-30	-26	-78	-12
MISC	-21	12	29	-8	-31	-58	-12	-159	-66	-89	1		-58	-60	-27	-79	-2	-7	-29	-25	-77	-11
MFH	37	70	87	50	27	0	46	-101	-8	-31	59	58		-2	31	-21	56	51	29	33	-19	47
PC	39	72	89	52	29	2	48	-99	-6	-29	61	60	2		33	-19	58	53	31	35	-17	49
PWR	6	39	56	19	-4	-31	15	-132	-39	-62	28	27	-31	-33		-52	25	20	-2	2	-50	16
SFH	58	91	108	71	48	21	67	-80	13	-10	80	79	21	19	52		77	72	50	54	2	68
TAX	-19	14	31	-6	-29	-56	-10	-157	-64	-87	3	2	-56	-58	-25	-77		-5	-27	-23	-75	-9
TBCO	-14	19	36	-1	-24	-51	-5	-152	-59	-82	8	7	-51	-53	-20	-72	5		-22	-18	-70	-4
T&T	8	41	58	21	-2	-29	17	-130	-37	-60	30	29	-29	-31	2	-50	27	22		4	-48	18
TRAN	4	37	54	17	-6	-33	13	-134	-41	-64	26	25	-33	-35	-2	-54	23	18	-4		-52	14
UTL	56	89	106	69	46	19	65	-82	11	-12	78	77	19	17	50	-2	75	70	48	52		66
W&S	-10	23	40	3	-20	-47	-1	-148	-55	-78	12	11	-47	-49	-16	-68	9	4	-18	-14	-66	

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 4bps spread to U0A0 is Neutral, it's -127bps spread to Healthcare is nonetheless Rich. See Exhibit 55 for sector definitions.
Source: BofA Global Research, ICE Data Indices, LLC

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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' have increased compared to last year. Almost all sectors' MWIs are above 80%, or in the overpriced space. The ETM, Pre-re and Single & Multi-Family Housing sectors had the largest increase y/y in MWI.

Exhibit 38: MWIs – sector momentum (%) as of 28 November 2023
Most sectors have increased over the past week

Sector	MWI	y/y Δ	Sector	MWI	y/y Δ
U0A0 Index	**87.4%**	**23.6%**	Miscellaneous	94.8%	27.5%
ETM	96.7%	54.0%	Multi-Family Housing	86.8%	53.3%
GO - Local	91.5%	21.6%	Pollution Control	76.2%	17.1%
GO - State	89.0%	19.9%	Power	87.3%	24.6%
Pre-Re	97.3%	56.6%	Single Family Housing	86.2%	60.0%
Airport	80.3%	29.2%	Tax revenue	86.1%	10.6%
Education	84.8%	12.3%	Tobacco	31.3%	-8.8%
Health	69.6%	36.0%	Toll & Turnpike	85.7%	13.6%
Hospitals	88.3%	24.3%	Transportation	89.5%	34.0%
Industrial Development Rev	70.9%	27.2%	Utilities - Other	87.5%	45.8%
Leasing COPS & Appropriations	88.4%	26.7%	Water & Sewer	86.7%	15.8%

Source: BofA Global Research, ICE Data Indices, LLC

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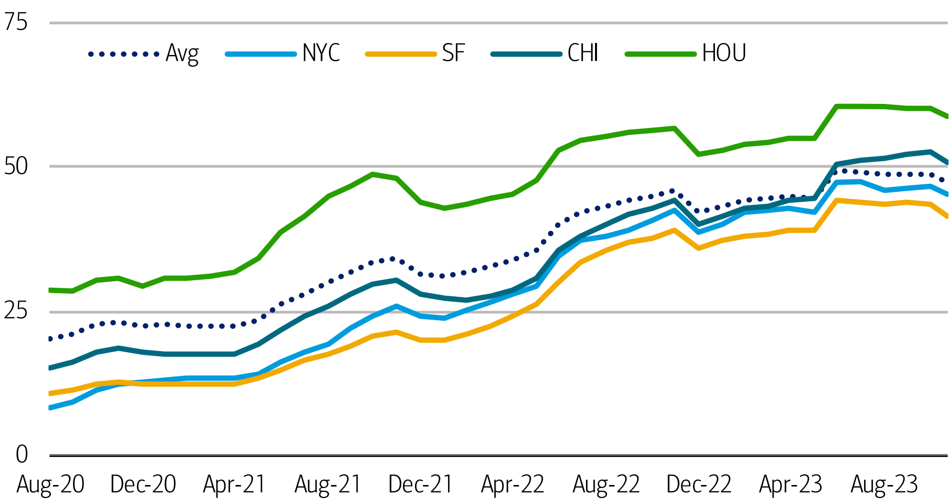
Risks

While we still view muni credit as strong and likely to prove resilient in the face of a slowing economy, there are several risks we will be watching. Those risks include: the impact of commercial real estate on large cities' property tax collections, pension funded ratios, the impact of inflation and higher rates on operating and capital budgets, demographic trends, labor challenges, return to office, and physical climate risks, among others. Below, we discuss a few of those risks in more detail.

Commercial real estate's impact on the largest US cities' tax collections

The pandemic created a large shift towards remote and hybrid work which has negatively impacted the commercial real estate sector in many large cities across the US. One aspect of this we are watching is the impact of commercial real estate on large cities' property tax collections. Kastle's "Back to Work Barometer" data, shows that many cities are still recovering in terms of commercial property occupancy, albeit some quicker than others. As of 22 November, the average occupancy rate for 10 major US cities was 39.3%, up from 31.2% in January 2022 but flat from 50.4% in January 2023. We note the average was 99.1% in February 2020. There is a seasonality factor at play here with many offices seeing lower occupancy during the November-December holiday season. At the end of October, the average occupancy rate was 50.0%. To smooth out the volatility, Exhibit 39 shows the 6-month moving average for Kastle's commercial property occupancy rate data.

Exhibit 39: Commercial property occupancy rate, 6-mo moving average (%)
San Francisco continues to lag other large US cities



Note: Avg = 10 major US cities: Philadelphia, Los Angeles, Chicago, San Francisco, Austin, Washington DC, New York, Houston, San Jose, and Dallas. Occupancy rates based on entries in Kastle-secured buildings.
Source: Kastle Systems, Bloomberg

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Comparing the latest 6-month moving average figures, Houston (58.7%) and Chicago (50.9%) are outpacing the 10 major US city average (47.5%), while New York City (45.3%) and San Francisco (41.4%) both lag. In a recent Moody's report, it cited Atlanta, Boston, New York City, Houston, and San Francisco as the cities with the highest commercial property tax sensitivity.

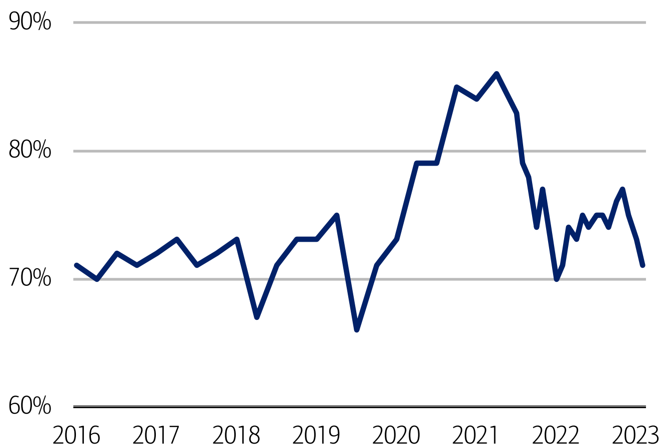
Without sufficient mitigants, these cities that are most sensitive could see negative credit impacts such as budget gaps, higher tax burdens, and/or slow economic growth as a result, among others. Still, as we discussed in our 23 June Municipals Weekly, residential property continues to drive city tax bases. In fact, we highlighted a NYC comptroller report indicating that even under a "doomsday" scenario for office valuations, estimates showed a revenue shortfall of "3% of the total property tax levy, or 1.4% of City tax revenues, and 1.0% of total revenues."

Pension funded ratios should remain near current levels

Public pension funded ratios reverted to pre-pandemic territory, dropping from 86% in December 2021 to 71% in October 2023. The twelve-quarter average heading into the pandemic was 72%. We expect funded ratios to be largely stable in 2024. The asset side of the equation will be supported by strong returns on equity investments, which accounted for 43% of state and local pension plan investment allocations in FY22. BofA's equity strategy team is calling for the S&P to hit 5,000 in 2024, representing a nearly 10% return from its current level.

Fixed income returns should also see boost from the current higher rates environment. The assumed investment return for public pension plans was 7.0% in FY22, according to Public Plans Data. On the liabilities side, offsetting strong market returns, are higher wages, increased cost-of-living adjustments (COLAs) due to higher inflation, and more participants shifting into the retiree bucket. We continue to be cautious on issuers with relatively large unfunded pension liabilities and fixed costs ratios given budgetary pressure, especially in a slowing economic environment.

Exhibit 40: Milliman 100 Public Pension Funding Ratio (MPFIPFNR)
Funded ratio dropped back into historical range; 71% as of October



Note: Data as of 31 October 2023.
Source: Milliman Inc, Bloomberg

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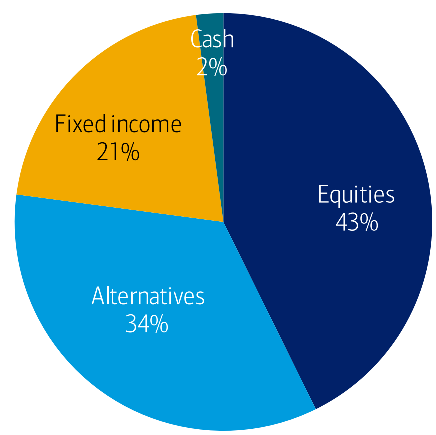
Exhibit 41: FY22 asset allocation for state and local pension plans
Heaviest in Equities, though Alternatives allocation has grown over the yrs



Source: Public Plans Database

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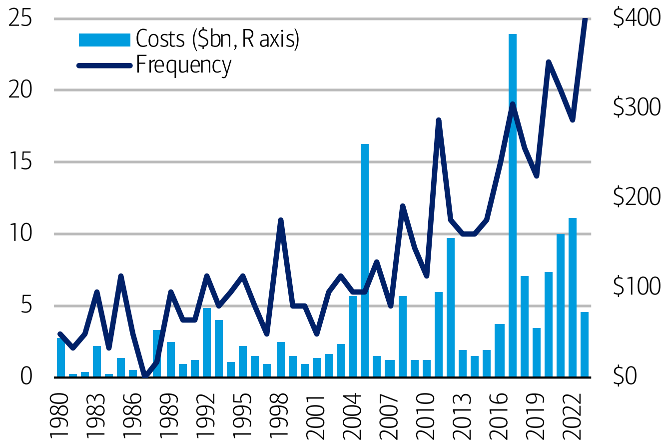
Weather and climate disasters: increasing in frequency and costs

US weather and climate disasters continue to increase in frequency and cost, posing a risk to budgets across all levels of government. This year hasn't even closed out yet, but so far it's logged the highest number of $1bn+ weather and climate disasters since 1980 with 25 events as of 8 November, per the latest available NOAA data. That is up from the 18 last year and the prior peak of 22 in 2020. In fact, the last four years rank in the top-five for frequency of $1bn+ disasters, highlighting the increasing trend.

While costs are down for 2023, they have continued to rise as shown in Exhibit 43. The cost per year grew more than four-fold to $97.2bn in the 2010s from $21.4bn in the 1980s. More recently, the cost per year for the last three years totaled $152.3bn, outpacing the $124.9bn of the last five years. While federal funds generally support recovery efforts, issuers with relatively larger amounts of available liquidity are better positioned to bridge the gap between rebuilding efforts and the actual receipt of federal disaster funding.

Exhibit 42: US $1bn+ weather and climate disasters
The frequency of these events has been steadily increasing...



Note: Latest available data as of 8 November 2023. CPI-adjusted to 2023 dollars.
Source: NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2023)

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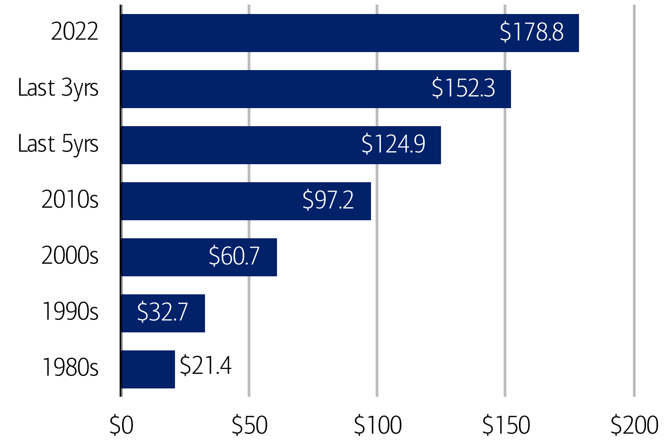
Exhibit 43: Cost/yr of $1bn+ weather and climate disasters ($bn)
...along with the costs; $178.8bn in 2022 alone



Note: Latest available data as of 8 November 2023. CPI-adjusted to 2023 dollars.
Source: NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2023)

BofA GLOBAL RESEARCH

Risks of tax reform and to muni tax exemption low in 2024

In 2023, we saw Fitch downgrade the US and Moody's revise its outlook to negative. In both rating actions, the agencies pointed to the government's large fiscal deficits, which they expect to persist absent spending reductions or revenue increases. As policymakers look to reduce those deficits, personal income tax increases, or limiting or eliminating munis' tax exemption may come up in discussions. However, we think the risk of both is low in 2024. On personal income taxes, the fact that the public seems unconcerned with the need to fix the tax code (recent Gallup polls suggest taxes are only considered by less than 1% of Americans to be the most important issue facing the nation) and that 2024 is a presidential election year bodes against broad tax code changes.

On munis' tax exemption, while there have been repeated attempts by the IRS to constrain or eliminate the muni tax exemption in the past, issuers, particularly, are increasingly aware that removing the tax exemption will raise their costs of financing producing even less investment, particularly in infrastructure, going forward. Should the muni tax exemption face attack, we expect a significant lobbying effort by state and local governments, similar to those during the COVID pandemic and in negotiations over the Inflation Reduction Act and Bipartisan Infrastructure Act.

Chartbook

Performance

Exhibit 44: Municipal total returns (%) monitor, as of 29 November 2023
Exempt IG munis outperform govies MTD by 216bp, corporates by 21bp and taxable munis by 77bp

Index	Ticker	1d	1wk	MTD	1mo	3mo	YTD	1yr
Govt Master	G0A0	0.486	0.983	4.009	3.656	0.406	0.916	0.933
Corporate Master	C0A0	0.677	1.331	5.954	5.536	1.684	4.493	4.849
IG munis	**U0A0**	**0.727**	**1.200**	**6.164**	**6.082**	**2.148**	**3.739**	**3.757**
AAA	U0A1	0.762	1.252	6.348	6.274	2.376	3.102	2.990
AA	U0A2	0.735	1.167	5.992	5.922	2.116	3.352	3.357
A	U0A3	0.684	1.218	6.213	6.111	2.120	4.423	4.564
BBB	U0A4	0.760	1.311	7.141	7.022	2.058	5.461	5.387
1-3yr	U1A0	0.233	0.410	1.708	1.721	1.369	2.470	2.562
3-7yr	U2A0	0.522	0.913	3.737	3.723	1.816	2.532	3.027
7-12yr	U3A0	0.699	1.182	5.181	5.146	1.827	2.799	3.577
12-22yr	U4A0	0.782	1.349	7.529	7.444	2.482	4.529	4.452
22+yr	U5A0	1.072	1.640	9.446	9.230	2.520	4.901	4.160
HY munis	**U0HY**	**0.595**	**1.052**	**5.372**	**5.326**	**0.650**	**3.150**	**3.386**
Non-rated	U0NR	0.704	1.073	6.076	6.125	1.414	5.265	5.067
General Obligation	**U0AG**	**0.683**	**1.180**	**5.789**	**5.716**	**2.137**	**3.252**	**3.236**

Exhibit 44: Municipal total returns (%) monitor, as of 29 November 2023

Exempt IG munis outperform govies MTD by 216bp, corporates by 21bp and taxable munis by 77bp

Index	Ticker	1d	1wk	MTD	1mo	3mo	YTD	1yr
AAA	UGA1	0.755	1.248	6.375	6.277	2.353	2.674	2.610
AA	UGA2	0.700	1.126	5.754	5.698	2.137	3.173	3.136
A	UGA3	0.414	1.484	4.867	4.714	1.795	3.028	3.463
BBB	UGA4	0.429	1.027	4.306	4.309	1.058	6.980	7.034
State	U0AA	0.576	1.067	4.772	4.734	1.834	3.161	3.181
Local	U0AB	0.806	1.309	6.981	6.866	2.481	3.356	3.294
Revenue	**U0AR**	**0.742**	**1.206**	**6.286**	**6.201**	**2.148**	**3.901**	**3.929**
AAA	URA1	0.766	1.254	6.327	6.270	2.391	3.413	3.265
AA	URA2	0.750	1.185	6.094	6.018	2.106	3.432	3.454
A	URA3	0.708	1.195	6.333	6.235	2.143	4.516	4.645
BBB	URA4	0.787	1.334	7.377	7.247	2.142	5.034	4.920
Airport	U0AV	0.718	1.225	6.397	6.220	1.960	4.739	4.693
Education	U0AE	0.792	1.266	6.601	6.521	2.270	3.528	3.396
Health	U0HL	0.819	1.279	7.353	7.398	1.816	2.532	2.109
Hospital	U0AH	0.931	1.422	8.009	7.861	2.355	3.858	3.867
Industrial Development Rev	U0ID	0.804	1.233	6.428	6.375	1.623	5.341	5.657
Leases, COPs & Appropriations	U0AL	0.688	1.131	5.472	5.403	2.018	3.134	3.418
Miscellaneous	U0AM	0.679	1.106	5.895	5.775	1.812	2.817	3.150
Multi-family Housing	U0AU	0.695	1.045	5.835	5.809	2.312	3.833	4.048
Pollution Control	U0AQ	0.634	1.052	4.583	4.555	1.665	2.797	3.523
Power	U0AP	0.583	0.969	4.992	4.942	1.829	3.007	3.062
Single-family Housing	U0AS	0.708	1.164	5.355	5.295	2.003	2.364	2.748
Tax Revenue	U0TX	0.800	1.315	6.609	6.522	2.408	3.964	3.943
Tobacco	U0TB	0.513	0.882	4.096	4.079	0.957	4.508	4.461
Toll & Turnpike	U0TL	0.693	1.147	6.127	6.119	2.071	4.086	4.184
Transportation - other	U0AT	0.708	1.233	6.201	6.090	2.144	5.044	5.152
Utilities - other	U0UT	0.536	0.913	4.641	4.633	1.941	3.962	4.098
Water & Sewer	U0AW	0.723	1.135	6.224	6.125	2.163	3.384	3.160
Taxable	**TXMB**	**0.602**	**1.205**	**5.394**	**5.333**	**0.728**	**4.084**	**4.066**
Build America Bonds	BABS	0.601	1.227	5.498	5.512	0.446	3.340	3.256
VRDOs	**VRDO**	**0.009**	**0.064**	**0.257**	**0.299**	**0.861**	**2.858**	**3.124**
Daily reset	VRDD	0.008	0.057	0.226	0.268	0.808	2.702	2.966
Weekly reset	VRDW	0.009	0.067	0.274	0.317	0.892	2.944	3.211

Source: ICE Data Indices, LLC

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Exhibit 45: Muni YTW spread monitor as of 29 November 2023

Muni IG spreads were flat w/w overall while HY spreads widened 6bp

	52wk				Current	Change from				Current as %		
	Tights	Wides	T-1wk	T-1d	11/29/23	Tights	Wides	T-1wk	T-1d	of 52wk range	Price	Yield
Investment Grade	**19**	**37**	**24**	**23**	**24**	**5**	**-13**	**0**	**1**	**28**	**100**	**3.76**
AA	2	15	5	5	5	3	-10	0	0	23	101	3.57
A	49	78	57	56	57	8	-21	0	1	28	98	4.09
BBB	94	142	109	109	113	19	-29	4	4	40	93	4.65
High Yield	**176**	**222**	**216**	**216**	**222**	**46**	**0**	**6**	**6**	**100**	**91**	**5.74**
Non-rated	174	298	213	217	221	47	-77	8	4	38	63	5.73
General Obligation	**-12**	**-1**	**-8**	**-9**	**-9**	**3**	**-8**	**-1**	**0**	**27**	**101**	**3.43**
AA	-19	-7	-14	-15	-15	4	-8	-1	0	33	101	3.37
A	-15	29	20	9	15	30	-14	-5	6	68	103	3.67
BBB	50	117	84	80	85	35	-32	1	5	52	95	4.37
State	-30	-14	-24	-26	-26	4	-12	-2	0	25	105	3.26
Local	7	17	11	11	11	4	-6	0	0	40	97	3.63
Revenue	**30**	**50**	**34**	**34**	**34**	**4**	**-16**	**0**	**0**	**20**	**100**	**3.86**
AA	10	25	13	13	13	3	-12	0	0	20	101	3.65
A	53	82	60	60	61	8	-21	1	1	28	98	4.13
BBB	96	147	111	112	115	19	-32	4	3	37	93	4.67
Airport	52	90	62	61	61	9	-29	-1	0	24	102	4.13
Education	9	36	14	14	15	6	-21	1	1	22	103	3.67
Health	132	174	155	158	162	30	-12	7	4	71	91	5.14
Hospital	60	89	66	67	69	9	-20	3	2	31	98	4.21
Industrial Development Rev	67	130	89	90	92	25	-38	3	2	40	97	4.44
Leases, COPs & Appropriations	-4	17	2	1	2	6	-15	0	1	29	102	3.54

Exhibit 45: Muni YTW spread monitor as of 29 November 2023

Muni IG spreads were flat w/w overall while HY spreads widened 6bp

	52wk				Current	Change from				Current as %		
	Tights	Wides	T-1wk	T-1d	11/29/23	Tights	Wides	T-1wk	T-1d	of 52wk range	Price	Yield
Miscellaneous	-3	12	2	2	3	6	-9	1	1	40	99	3.55
Multi-family Housing	54	90	58	60	61	7	-29	3	1	19	92	4.13
Pollution Control	30	63	63	63	63	33	0	0	0	100	97	4.15
Power	23	39	28	28	30	7	-9	2	2	44	103	3.82
Single-family Housing	69	89	81	82	82	13	-7	1	0	65	96	4.34
Tax Revenue	3	20	6	5	5	2	-15	-1	0	12	100	3.57
Tobacco	-22	40	7	7	10	32	-30	3	3	52	100	3.62
Toll & Turnpike	30	50	33	32	32	2	-18	-1	0	10	97	3.84
Transportation - other	25	62	28	27	28	3	-34	0	1	8	98	3.80
Utilities - other	67	105	78	78	80	13	-25	2	2	34	102	4.32
Water & Sewer	3	21	13	14	14	11	-7	1	0	61	102	3.66

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

Exhibit 46: Issuance summary ($mn)

YTD issuance of $346.4bn is down 6% y/y; new money down 7% y/y and refundings up 1%

	Month-to-date			Year-to-date		
	11/29/23	11/29/22	y/y % Δ	11/29/23	11/29/22	y/y % Δ
Total	**28,464.2**	**23,221.6**	**23%**	**346,385.9**	**367,472.9**	**-6%**
New Money	22,172.7	19,241.4	15%	267,499.6	289,054.9	-7%
Total Refunding	6,291.5	3,980.2	58%	78,886.3	78,418.0	1%
Advanced refunding	0.0	0.0	-	1,380.9	2,155.7	-36%
Unknown refunding	6,259.3	3,859.6	62%	73,367.2	69,806.3	5%
Current & Forward refunding	22,205.0	19,362.0	-	271,637.8	295,510.9	-8%
Insured	2,760.2	2,208.4	25%	29,300.4	27,204.9	8%
Fixed Rate	24,098.6	20,827.8	16%	308,378.1	338,872.5	-9%
Variable Rate Long	3,364.8	1,076.0	213%	26,157.1	14,014.8	87%
Variable Rate Short	935.2	883.2	6%	10,540.7	10,624.2	-1%
Zero Coupon	65.6	139.8	-53%	436.1	1,061.5	-59%
Linked Rate	0.0	294.9	-100%	723.4	2,292.7	-68%
Convertible	0.0	0.0	-	150.6	607.2	-75%
Variable rate no put	-	-	-	-	-	-
Tax Exempt	24,956.0	19,143.2	30%	297,994.2	296,050.8	1%
Taxable	2,507.2	1,930.1	30%	34,443.0	52,147.3	-34%
Alternate Minimum Tax	1,001.1	2,148.2	-53%	13,948.6	19,274.8	-28%
General Purpose	6,375.0	4,977.8	28%	87,773.5	99,561.6	-12%
Utilities	5,807.7	2,498.9	132%	45,203.8	44,249.8	2%
Education	4,781.6	5,919.5	-19%	88,449.6	87,686.0	1%
Housing	3,912.0	2,225.0	76%	34,955.2	28,513.7	23%
Transportation	3,350.5	4,503.4	-26%	40,470.3	53,412.2	-24%
Public Facilities	1,179.7	293.0	303%	7,242.8	5,363.1	35%
Healthcare	1,005.2	944.2	6%	13,900.5	26,170.0	-47%
Electric Power	802.6	957.6	-16%	15,264.6	11,699.1	30%
Development	626.7	674.9	-7%	9,545.7	8,099.0	18%
Environmental Facilities	623.3	227.3	174%	3,579.9	2,718.4	32%
Muni-backed corporates	0.0	300.0	-	3,951.6	12,425.7	-68%

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

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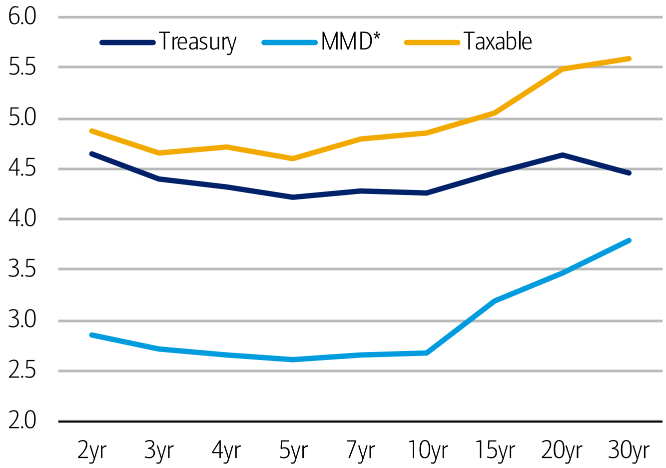
Curve

Exhibit 47: AAA GO muni, Treasury and taxable yield curves (%)
On average Tsy, MMD and Taxable richened w/w



Note: *MMD AAA GO yield curve. As of 29 November 2023.
Source: BofA Global Research, Refinitiv, Bloomberg

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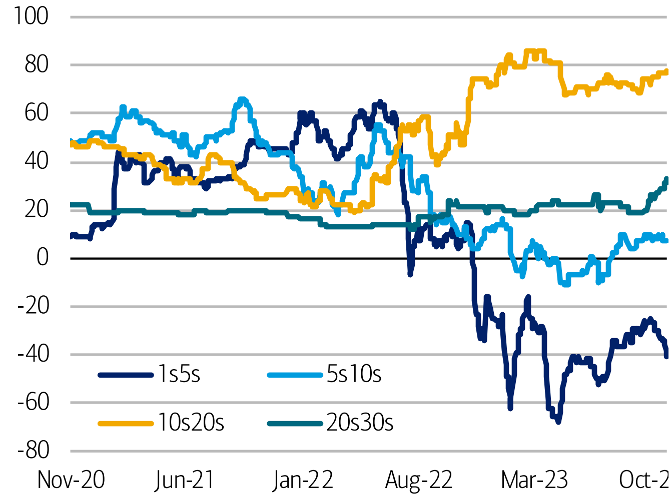
Exhibit 48: Curve slope (bp)
The 1s5s inverted further while 10s20s and 20s30s steepened



Source: Refinitiv

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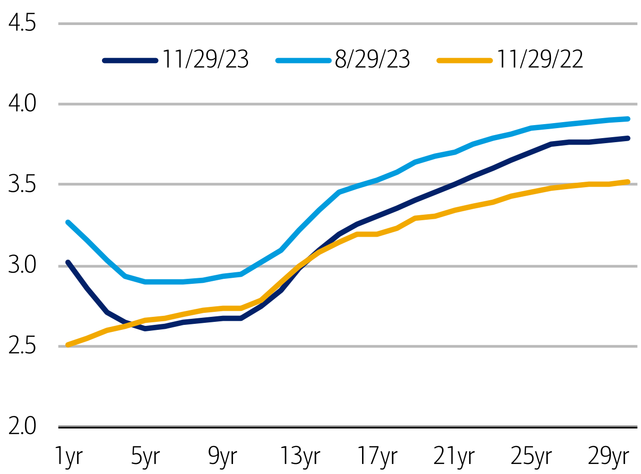
Exhibit 49 AAA GO municipal curve movement (%)
AAA is richer than a three months ago across the curve



Source: Refinitiv

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Relative value

Exhibit 50: Rich/cheap analysis of MMD*/Treasury ratios as of 29 November 2023
The muni market is 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	4.402%	61.6%	**Rich**	74.1%	63.5%	68.2%	**Neutral**	130.7%	26.7%	63.1%
5yr	4.218%	61.9%	**Rich**	74.3%	63.7%	68.9%	**Neutral**	92.0%	39.3%	63.3%
10yr	4.269%	62.8%	**Very Rich**	75.5%	65.3%	71.2%	**Neutral**	105.3%	54.7%	73.2%
30yr	4.450%	85.2%	**Very Rich**	92.4%	86.5%	89.9%	**Neutral**	110.0%	63.5%	86.7%

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 51: Rich/cheap analysis of MMD* slopes (bp) as of 29 November 2023
On a LT basis, the 10s30s curve is Steep while the rest are mostly Flat

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	-38	Flat	-25	-38	-32	Flat	65	-68	11
1s10s	-31	Flat	-15	-32	-24	Flat	120	-74	40
10s30s	108	Very Steep	108	88	96	Steep	108	32	69
1s30s	77	Neutral	83	60	72	Neutral	170	26	109

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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Trade activity

Exhibit 52: Most actively traded muni CUSIPs over the week ending 29 November 2023
62476RAB1 was the most frequently traded CUSIP. [1]Last trade

CUSIP	Short name	ST	Coupon/Maturity	Yield[1]	Spread	# of trades	Avg Vol ($mn)
79574CFR9	AZ AGRIC IMP&PWR DT-B	AZ	5s of '33	4.48	28	54	2.42
79574CFQ1	AZ AGRIC IMP&PWR DT-B	AZ	5.25s of '50	4.46	35	44	1.24
650010BD2	NEW YORK ST THRUWAY A	NY	5s of '32	4.60	39	81	2.10
74514L3P0	RESTRUCTURED-SER A1	PR	5s of '51	6.43	235	88	0.42
64971QV26	NYC TRAN FIN AUTH-C-4	NY	3.85s of '55	--	0	15	3.47
650116GP5	NY TRANSPRTN DEV -AMT	NY	4s of '61	5.58	177	34	0.50
645913AA2	NJ ECON-SER A	NJ	5s of '58	6.22	171	76	0.77
130179VJ0	CA EDUCTL FACS AUTH-A	CA	3.1s of '41	5.55	135	50	2.91
679111C93	OK TURNPIKE AUTH	OK	4.75s of '53	4.50	30	46	0.31
6133408D3	MONTGOMERY CO-E	MD	3.75s of '37	--	0	22	2.03
46246SAV7	IA FIN AUTH-REV-REF	IA	4s of '43	--	139	20	1.86
64966LLS8	NYC-ADJ-1-SUBSER I-2	NY	4s of '45	--	0	15	5.00
010685KF1	ALACHUA HTLH FAC-A	FL	5.574s of '43	5.00	99	215	2.25
64972GCN2	NYC MUNI WTR-AA2-ADJ	NY	2.5s of '36	--	0	27	2.00
79574CFN8	AZ AGRIC IMP&PWR DT-B	AZ	3.12s of '41	4.18	24	30	2.88
160853MS3	CHARLOTTE HOSP-REF-C	NC	5s of '30	--	0	16	4.04
64972GCM4	NYC MUNI WTR-AA1-ADJ	NY	3.15s of '59	--	0	22	1.87
544495DG6	L A WTR/PWR VAR-B-2	CA	2.25s of '48	--	0	8	3.68
13063A5W0	CA VAR-A2-KINDERGARTE	CA	5.125s of '53	--	0	12	0.35
452252PQ6	ILLINOIS ST TOLL HWY	IL	5s of '56	4.50	49	20	4.18

Source: Bloomberg

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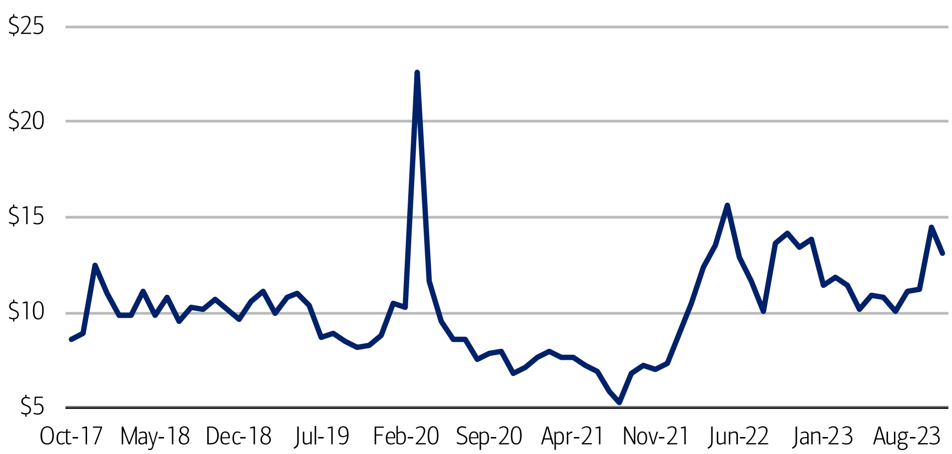
Exhibit 53: Daily avg secondary trading volume ($bn)
MTD through 29 November 2023, daily avg volume of $13.1bn down just 2% y/y



Source: BofA Global Research, Bloomberg

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Cross currency equivalent yields

Exhibit 54: Cross currency equivalent yields as of 30 November 2023

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

	Government bond yield (in investor country's currency)			Cross currency equivalent yield*						Can foreign investors buy?					
				US Treasury			US AAA taxable muni			US Treasury			US AAA taxable muni		
Country	**5 yr**	**10 yr**	**30 yr**	**5 yr (4.287)**	**10 yr (4.340)**	**30 yr (4.507)**	**5 yr (4.88)**	**10 yr (4.86)**	**30 yr (5.59)**	**5 yr**	**10 yr**	**30 yr**	**5 yr**	**10 yr**	**30 yr**
Canada	3.637	3.558	3.367	3.823	3.855	4.269	4.415	4.374	5.341	Yes	Yes	Yes	Yes	Yes	Yes
United Kingdom	4.160	4.169	4.688	4.233	4.151	4.409	4.828	4.672	5.489	Yes			Yes	Yes	Yes
France	2.749	3.018	3.553	2.755	2.879	3.794	3.346	3.396	4.843	Yes		Yes	Yes	Yes	Yes
Germany	2.370	2.444	2.682	2.755	2.879	3.794	3.346	3.396	4.843	Yes	Yes	Yes	Yes	Yes	Yes
Italy	3.612	4.220	4.770	2.755	2.879	3.794	3.346	3.396	4.843						Yes
Spain	3.085	3.466	4.100	2.755	2.879	3.794	3.346	3.396	4.843				Yes		Yes
Portugal	2.695	3.080	3.740	2.755	2.879	3.794	3.346	3.396	4.843	Yes		Yes	Yes	Yes	Yes
Netherlands	2.569	2.775	2.910	2.755	2.879	3.794	3.346	3.396	4.843	Yes	Yes	Yes	Yes	Yes	Yes
Switzerland	0.861	0.788	0.706	2.755	2.879	3.794	3.346	3.396	4.843	Yes	Yes	Yes	Yes	Yes	Yes
Japan	0.246	0.647	1.645	0.015	0.398	2.611	0.596	0.908	3.606			Yes	Yes	Yes	Yes
Australia	4.068	4.409	4.707	4.664	5.055	4.860	5.252	5.576	5.954	Yes	Yes	Yes	Yes	Yes	Yes
South Korea	3.580	3.667	3.546	2.576	3.387	4.043	3.164	3.903	5.098			Yes		Yes	Yes
China	2.553	2.680	2.935	3.900	4.122	4.400	4.488	4.638	5.470	Yes	Yes	Yes	Yes	Yes	Yes
Taiwan	1.179	1.265	1.655	1.126	2.578	3.653	1.708	3.089	4.681		Yes	Yes	Yes	Yes	Yes
Singapore	2.873	2.948	2.949	3.637	3.978	4.329	4.227	4.495	5.399	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 55: 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
EAI	Puerto Rico Economic Activity Index	MSA	Metropolitan Statistical Area	TX	Texas

Exhibit 55: Common acronyms used in our Municipals reports
This list is subject to change

Acronym	Definition	Acronym	Definition	Acronym	Definition
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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