

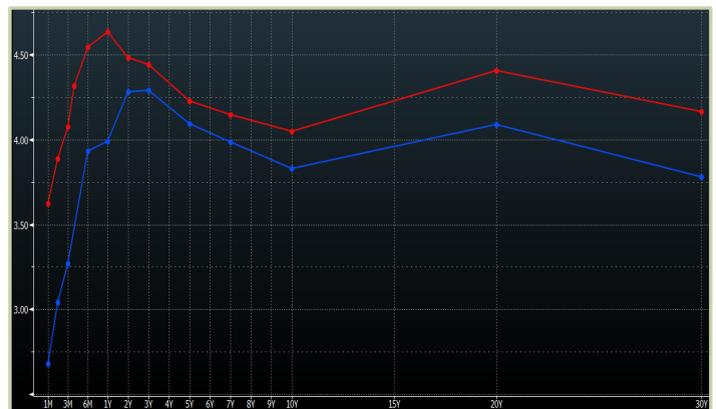


Treasury Rates Continued to Move Higher But Ended October Below Intramonth Highs

- Relatively strong economic data and hawkish sentiment from Fed officials pushed Treasury yields significantly higher for most of the month before the market stabilized over the final week and reversed a portion of the rate rise.
 - 2-10 year Treasury yields rose 14-22 basis points (bps).
 - After reaching an intramonth high of 4.34%, the 10-year Treasury rate ended October at 4.05%, a 22 bp month-over-month increase.
- With labor market and inflation data continuing to show relative strength and Fed officials echoing hawkish comments, market participants increased expectations for cumulative Fed rate hikes into 2023.
 - As of month-end, the futures market projected a 4.98% peak funds rate in mid-2023, nearly 50 bps higher versus September month-end.
 - The projected 2023 year-end funds rate increased 23 bps to 4.56% and still implied rate cuts during the second half of next year.
- The economy added 263,000 jobs in September (expected: 255,000), and the unemployment rate moved lower to 3.5% (expected: 3.7%).
- Given monetary policy tightening lag, the Consumer Price Index (CPI) continued to move higher, increasing 0.4% in September (expected: 0.2%) despite falling energy prices.
 - Core CPI rose 0.6% (expected: 0.4%), largely driven by a 0.7% increase in shelter costs which had a record year-over-year increase of 6.6%.

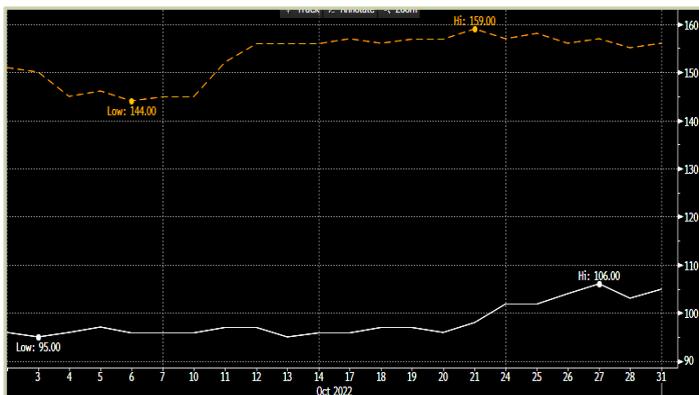
Maturity	9/30/22 Treasury	10/31/22 Treasury	Change
2-Year	4.28%	4.49%	0.21%
5-Year	4.09%	4.23%	0.14%
7-Year	3.99%	4.15%	0.16%
10-Year	3.83%	4.05%	0.22%
30-Year	3.78%	4.17%	0.39%

Treasury Yield Curve: 9/30/22 (blue) vs. 10/31/22 (red)



Segment	October Return	2022 Return
Bloomberg Barclays Intermediate Government Credit Index	-0.44%	-10.02%
ICE BofA 1-10 Year US Treasury Index	-0.45%	-8.95%
ICE BofA 1-10 Year US Inflation-Linked Treasury Index	1.07%	-7.87%
ICE BofA 1-10 Year Corporate Index	-0.52%	-12.47%
ICE BofA 1-10 Year Taxable Municipal Index	-0.85%	-11.55%

1-10 Year IG Credit Spreads: Corporate (orange) and Taxable Municipal (white): October 2022



Source: Bloomberg; Bureau of Economic Analysis; Federal Reserve; ICE BofA; Veritable, L.P. All numbers are estimates. See Disclosures for index descriptions and additional information.

TIPS Rebounded While Credit Mostly Followed Treasuries

- Treasury Inflation Protected Securities (TIPS) outperformed nominal issues and recouped nearly two-thirds of September's relative loss, as global inflation continued to run hot.
 - 1-10 year TIPS provided 175 bps of duration-adjusted excess return in October after lagging nominals by 274 bps in September.
 - After falling to 2.16% in September, the 10-year inflation break-even rate rose 35 bps to 2.51% in October. Meanwhile, the 5-year break-even rate increased 56 bps to 2.66%, once again inverting the inflation expectation curve after normalizing in September.
- Risk aversion stabilized later in the month due to a more fiscally responsible U.K. government leadership transition and signs of less hawkish overtures from global central banks including a smaller than expected rate hike from the Bank of Canada.
- On a duration-adjusted basis, intermediate investment grade corporate bonds narrowly outperformed Treasuries by 9 bps as carry (greater income) offset the slight month-over-month spread widening. For the year, 1-10 year investment grade corporate bonds have underperformed government bonds by 240 bps.
 - After rising 20 bps during September, corporate bond risk premiums increased 5 bps in October.
- Intermediate taxable municipal bonds underperformed largely due to a lag effect from September performance when the sector trailed Treasuries but to a lesser extent versus corporate debt. For October, 1-10 year taxables posted an excess return of -23 bps versus Treasuries, matching September's relative performance and pulling the year-to-date excess return to -99 bps.



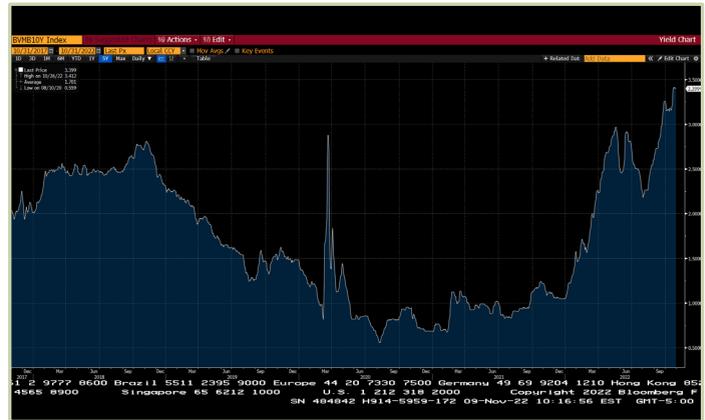
Municipal Yields Climbed With Treasuries But Posted Modest Outperformance

- In October, municipal yields initially showed stability after the previous month's selloff before succumbing to the move in Treasuries and resuming their ascent higher for the remainder of the month.
- Tax-exempt rates rose by 9-22 bps, with more pronounced weakness in longer maturities.
- For the second consecutive month, municipal rates across the curve finished October at their highest respective levels in at least a decade.
- Municipal debt mostly outperformed its taxable counterparts thanks to a sharp drop in new issuance volume, pulling relative valuations lower.
- 1-10 year relative valuations remained below their respective historical averages with the 10-year AAA municipal-to-Treasury yield ratio closing the month at 84% (5-year average: 88%).
- For the month and year-to-date, the 10-year AAA municipal yield rose 9 bps and 236 bps, respectively, to 3.39%.
- The yield spread between 2-year and 10-year AAA municipal rates was unchanged at just 21 bps, 41 bps below the 5-year historical average.
- Despite rich curve steepness from a historical perspective, the 2-year and 10-year AAA municipal term premium of 21 bps remained attractive compared to the inverted Treasury counterpart at -44 bps as of October month-end.
- Despite the flat municipal curve, locking in rates with longer maturities reduces reinvestment risk in a potentially declining rate environment over time (e.g., yield curve shifts lower if the Fed pivots).

Maturity	9/30/22 Muni	10/31/22 Muni	Change	% of U.S. Govt 10/31/22
2-Year	3.09%	3.18%	0.09%	70.82%
5-Year	3.12%	3.24%	0.12%	76.60%
7-Year	3.15%	3.30%	0.15%	79.52%
10-Year	3.30%	3.39%	0.09%	83.70%
15-Year	3.54%	3.69%	0.15%	88.07%
20-Year	3.73%	3.90%	0.17%	88.44%
30-Year	3.90%	4.12%	0.22%	98.80%

- Municipal bond fund outflows continued in October at a pace similar to September with Treasury market volatility remaining the dominant factor.
 - According to Refinitiv Lipper, municipal fund outflows totaled \$8.8 billion in October, as average weekly losses exceeded \$2 billion for the second consecutive month.
 - Through October 26th, municipal bond funds have shed assets for 12 consecutive weeks and 36 of the previous 41 weeks.
 - Year-to-date municipal fund outflows totaled a record \$104.8 billion, wiping out the massive \$101.7 billion aggregate 2021 inflow.

10-Year AAA Municipal Yie Id: 2017-2022



- More attractive nominal rates grabbed the attention of some buyers in October who generally opted for the safety of the front-end of the curve, lured by 1-5 year yields exceeding 3%.
 - The 2-year AAA municipal-to-Treasury yield ratio fell to 71% in October, well below the 5-year average of 88%.
- The 10-12 year maturity range continues to represent the sweet spot of the municipal curve in terms of attractive nominals, roll down price appreciation potential, and ample 'structure' availability.
- Longer-term municipals (15+ years) also offer a compelling value proposition especially for buy-and-hold investors willing to stomach interim price volatility.
- As issuers slowed the pace of issuance in response to the rate volatility, municipal net supply turned negative in October with new issuance (\$23.8 billion) unexpectedly falling short of redemptions (\$27.9 billion) by \$4.1 billion, according to Bloomberg data.
 - The outlook for new issue municipal supply does not look promising, as 30-Day Visible Supply cratered to \$4.8 billion as of October month-end, near the lows of 2022 and about half the 2022 average, according to Bloomberg data.
 - Net supply is expected to remain negative over the final two months of the year, producing full-year net negative supply over \$40 billion, according to JP Morgan.
- With over half of the year-to-date municipal fund outflows coming from long-term funds, a unique buying opportunity has developed for those willing to become a liquidity provider, as brokers have been less willing to commit capital in this volatile market, especially heading into year-end.
- Due to rising benchmark rates, the ICE BofA 1-12 Year Municipal Securities Index produced a -0.20% loss for the month with a year-to-date total return of -7.91%.

Source: Bloomberg; ICE; JP Morgan; MRSB; Refinitiv; SIFMA; Veritable, L.P.
All numbers are estimates. See Disclosures for index descriptions and additional information.



Disclosures

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Index Descriptions *(Investors cannot invest directly in an index)*

Bloomberg Barclays Intermediate Government Credit Index is a total returns index of U.S. dollar denominated U.S. Treasuries, government-related securities, and investment grade U.S. corporate securities that have a remaining maturity of greater than or equal to 1 year and less than 10 years. Securities must have \$250 million or more of outstanding face value and must be fixed rate and non-convertible.

Consumer Price Index (CPI) is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services. The yearly (or monthly) growth rates represent the inflation rate. The CPI is published by the US Bureau of Labor Statistics on a monthly basis.

ICE BofA 1-10 Year US Treasury Index is a subset of ICE BofA Treasury Index including all securities with a remaining term to final maturity greater than or equal to 1 year and less than 10 years.

ICE BofA 1-10 Year US Inflation-Linked Treasury Index is a subset of ICE BofA US Inflation-Linked Treasury Index including all securities with a remaining term to final maturity greater than or equal to 1 year and less than 10 years.

ICE BofA 1-10 Year Corporate Index measures the performance of investment grade corporate bonds of both U.S. and non-U.S. issuers that are U.S. dollar-denominated and publicly issued in the U.S. domestic market with a remaining term to final maturity greater than or equal to 1 year and less than 10 years.

ICE BofA 1-10 Year Taxable Municipal Index is designed to track the performance of U.S. dollar-denominated taxable municipal debt publicly issued by U.S. states and territories, and their political subdivisions, in the U.S. market with a remaining term to final maturity greater than or equal to 1 year and less than 10 years.

ICE BofA 1-12 Year Municipal Securities Index is a subset of ICE BofA Municipal Securities Index including all securities with a remaining term to final maturity less than 12 years. The ICE BofA Municipal Securities Index is market capitalization weighted and tracks the performance of U.S. dollar denominated investment grade tax-exempt debt publicly issued by U.S. states and territories, and their political subdivisions, in the U.S. domestic market. Qualifying securities must have at least one-year remaining term to final maturity, at least 18 months to final maturity at the time of issuance, a fixed coupon schedule and an investment grade rating (based on an average of Moody's, S&P and Fitch).