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Municipal market: How rates rise matters

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An analysis of historical changes in monetary policy — specifically the fed funds rate — shows that various areas of the municipal yield curve responded differently depending on economic conditions, the shape of the curve moving into the tightening cycle and the manner in which the Fed tightened.

After 525 basis points of increases, the U.S. Federal Reserve began cutting rates in September 2024, with additional cuts in November and December. The market is currently pricing in one, possibly two additional cuts by the end of 2025. Many investors feel that we have seen the peak in bond yields for this tightening cycle. However, since rates and bond prices are inversely related, investors continue to evaluate their fixed income allocations. Some favor a shorter duration profile due to concerns that bond yields will continue to rise. Others see an opportunity to lengthen portfolios, given attractive relative yields further out along the yield curve. Which approach is right?

FED TIGHTENING CYCLES: SETTING THE STAGE

To simplify the analysis, a rising rate period is when the Federal Reserve is tightening. This means that short-term rates are rising, but other factors may be impacting the intermediate and long ends of the yield curve. Accounting for the current tightening cycle, there are five periods of increasing fed funds rates, as detailed in Figure 1.

Figure 1: Changes in fed funds rates

	Period 1 04 Feb 1994 to 01 Feb 1995	Period 2 30 Jun 1999 to 16 May 2000	Period 3 30 Jun 2004 to 29 Jun 2006	Period 4 15 Dec 2015 to 19 Dec 2018	Period 5 16 Mar 2022 to 26 Jul 2023
Starting rate level	3.00%	4.75%	1.00%	0 to 25 bps	0 to 25 bps
Number of hikes	7	6	17	9	11
Duration	12 months	10 months	24 months	36 months	16 months
Ending rate level	6.00%	6.50%	5.25%	2.50%	5.50%
Magnitude	300 basis points	175 basis points	425 basis points	225 basis points	525 basis points

Data source: Bloomberg L.P., www.federalreserve.gov. Data shown applies to the actual time periods noted in the table. One basis point equals .01%, or 100 basis points equal 1%.

THE TIGHTENING EFFECT IS VASTLY DIFFERENT ALONG THE YIELD CURVE

Figures 2 through 6 detail the performance of the municipal bond market during these tightening cycles. The indexes represent different areas of the municipal yield curve. The data illustrate how these maturities responded to changes in the fed funds rate during four segments of each tightening period:

- The six months prior to the initial rate increase
- The tightening period
- The six months following the last rate increase
- All of the above

In each period, bond yields increased on the short end of the yield curve as the Fed raised short-term rates. However, there was less consistency in the impact on the other parts of the curve and in the performance of various maturities during and after the tightening cycle.

Figure 2: Period 1 (04 Feb 1994 to 01 Feb 1995)

	6-month return before (%)	Total return during (%)	Change in yields during (bps)	6-month return after (%)	Total return across three periods (%)
Bloomberg 1-Year	2.45	2.06	+204	3.77	8.50
Bloomberg 3-Year	3.35	0.70	+175	5.22	9.51
Bloomberg 5-Year	4.38	-0.95	+152	6.83	10.45
Bloomberg 10-Year	6.13	-3.49	+142	8.55	11.19
Bloomberg 20-Year	6.53	-4.91	+128	7.64	9.03
Bloomberg 22+Year	6.73	-6.21	+128	8.29	8.40

Data source: Bloomberg, L.P. **Performance data shown represents past performance and does not predict or guarantee future results.** Index returns include reinvestment of income and do not reflect investment advisory and/or other fees that would reduce performance in an actual client account.

The Fed was hawkish during this cycle, given stronger economic growth prospects and inflation expectations. Individual fed funds increases ranged from 25 basis points (bps) to 75 bps, generating volatility across the fixed income markets. The yield curve flattened by 76 bps and the best cumulative performer across all three periods came from the Bloomberg 10-Year Municipal Index (8 – 12 years).

Figure 3: Period 2 (30 Jun 1999 to 16 May 2000)

	6-month return before (%)	Total return during (%)	Change in yields during (bps)	6-month return after (%)	Total return across three periods (%)
Bloomberg 1-Year	1.35	3.11	+92	2.99	7.63
Bloomberg 3-Year	0.66	2.43	+80	3.89	7.12
Bloomberg 5-Year	-0.21	1.90	+68	5.02	6.78
Bloomberg 10-Year	-1.73	1.71	+53	6.92	6.87
Bloomberg 20-Year	-1.13	-1.04	+70	8.85	6.50
Bloomberg 22+Year	-1.68	-2.68	+75	9.69	4.95

Data source: Bloomberg, L.P. **Performance data shown represents past performance and does not predict or guarantee future results.** Index returns include reinvestment of income and do not reflect investment advisory and/or other fees that would reduce performance in an actual client account.

Mid-1999 could be characterized by economic exuberance and robust growth prospects. As in the prior period, there were instances where individual rate increases exceeded 25 bps. The yield curve flattened by 17 bps and the best cumulative performer across all three periods was the Bloomberg 1-Year Municipal Index (1 – 2 years).

Figure 4: Period 3 (30 Jun 2004 to 29 Jun 2006)

	6-month return before (%)	Total return during (%)	Change in yields during (bps)	6-month return after (%)	Total return across three periods (%)
Bloomberg 1-Year	0.28	3.40	+188	2.08	5.85
Bloomberg 3-Year	-0.31	3.46	+132	2.57	6.78
Bloomberg 5-Year	-0.90	4.76	+77	3.22	7.16
Bloomberg 10-Year	-0.81	7.81	+30	4.77	12.05
Bloomberg 20-Year	-0.18	12.53	-20	5.52	18.53
Bloomberg 22+Year	-1.26	15.93	-47	6.17	21.53

Data source: Bloomberg, L.P. **Performance data shown represents past performance and does not predict or guarantee future results.** Index returns include reinvestment of income and do not reflect investment advisory and/or other fees that would reduce performance in an actual client account.

This cycle was the most transparent in terms of Fed guidance and market expectations. All rate increases were 25 bps, implemented at a deliberate and measured pace. The yield curve flattened by 235 bps and the best performer across all time periods was the Bloomberg 22+ Municipal Index.

Figure 5: Period 4 (15 Dec 2015 to 19 Dec 2018)

	6-month return before (%)	Total return during (%)	Change in yields during (bps)	6-month return after (%)	Total return across three periods (%)
Bloomberg 1-Year	0.39	4.96	+109	1.54	4.90
Bloomberg 3-Year	1.00	6.60	+85	2.43	6.87
Bloomberg 5-Year	2.13	9.48	+69	3.82	10.64
Bloomberg 10-Year	3.44	14.40	+49	5.61	17.10
Bloomberg 20-Year	3.59	17.36	+53	6.55	20.37
Bloomberg 22+Year	4.20	18.61	+48	7.31	22.37

Data source: Bloomberg, L.P. **Performance data shown represents past performance and does not predict or guarantee future results.** Index returns include reinvestment of income and do not reflect investment advisory and/or other fees that would reduce performance in an actual client account.

This cycle saw a gradual normalization of monetary policy, with 9 rate increases over 36 months. The yield curve flattened, with shorter bond yields increasing and longer bond yields decreasing. All six municipal benchmarks generated positive returns, with the Bloomberg 22+ Municipal Index performing best.

Figure 6: Period 5 (16 Mar 2022 to 26 Jul 2023)

	6-month return before (%)	Total return during (%)	Change in yields during (bps)	6-month return after (%)	Total return across three periods (%)
Bloomberg 1-Year	-1.33	1.52	1.72	1.68	1.86
Bloomberg 3-Year	-3.08	0.65	1.34	1.56	-0.93
Bloomberg 5-Year	-4.45	0.47	1.07	1.70	-2.37
Bloomberg 10-Year	-5.31	1.20	0.81	1.75	-2.49
Bloomberg 20-Year	-5.74	-1.16	1.20	1.96	-5.00
Bloomberg 22+Year	-6.67	-3.75	1.22	1.41	-8.91

Data source: Bloomberg, L.P. **Performance data shown represents past performance and does not predict or guarantee future results.** Index returns include reinvestment of income and do not reflect investment advisory and/or other fees that would reduce performance in an actual client account.

In the six months prior to the initial rate increase in March 2022 and during the most recent tightening cycle, longer duration underperformed. This differs from the 2004/2006 and 2015/2018 cycles, when the yield curve flattened meaningfully and longer duration outperformed. With yield increases being more substantial over a shorter period of time during this tightening cycle, the additional yield from owning longer duration assets was less effective in helping offset overall price declines. Since the Fed started raising rates, the very short end of the market outperformed.

While yields increased across maturities following the initial rate hike in March 2022, the magnitude of yield changes varied by maturity. As of the last fed fund increase in July 2023, 1-year maturities increased the most. This is not surprising, as the short end is generally more sensitive to monetary policy changes. Despite larger yield increases on the short end, returns were modestly positive to modestly negative across shorter-duration benchmarks, as higher yields helped offset negative price return. Notably, benchmark 10-year maturities experienced the smallest yield increase during the tightening cycle.

MARKETS ACTED DIFFERENTLY IN EACH TIGHTENING CYCLE

Figure 7 summarizes the market characteristics and outcomes of the tightening cycles.

Figure 7: Market characteristics of each period of rising rates

	Period 1: 04 Feb 1994 to 01 Feb 1995	Period 2: 30 Jun 1999 to 16 May 2000	Period 3: 30 Jun 2004 to 29 Jun 2006	Period 4: 15 Dec 2015 to 19 Dec 2018	Period 5: 16 Mar 2022 to 26 Jul 2023
Real GDP year-over-year	3.40% (1Q94)	4.80% (2Q99)	4.20% (2Q04)	1.9% (4Q15)	3.1% (4Q23)
PCE deflator	2.245% (1/94)	1.392% (6/99)	2.015% (6/04)	0.4% (12/15)	2.4% (01/24)
Unemployment rate	6.6% (1/94)	4.3% (6/99)	5.6% (6/04)	5.0% (12/15)	3.7% (01/24)
Yield curve change overall	Flattened 76 bps	Flattened 17 bps	Flattened 235 bps	Flattened 61 bps	Flattened 50 bps
Short maturity change (1 year)	+204 bps	+92 bps	+188 bps	+109 bps	+172 bps
Long maturity change (22+ years)	+128 bps	+75 bps	-47 bps	+48 bps	+122 bps
Best performer	Bloomberg 10-year Municipal Index (8 – 12-year portion)	Bloomberg 1-year Municipal Index (1 – 2-year portion)	Bloomberg 22+ Municipal Index	Bloomberg 22+ Municipal Index	Bloomberg 1-year Municipal Index (1 – 2-year portion)

Data source: Bloomberg, L.P., Bureau of Economic Analysis and Bureau of Labor Statistics. Data shown applies to the actual time periods noted in the table. **Performance data shown represents past performance and does not predict or guarantee future results.** The yield curve change overall measures the difference between the 1-year and 22+ year indexes. Index returns include reinvestment of income and do not reflect investment advisory and/or other fees that would reduce performance in an actual client account.

Despite aggressive Fed policy measures from March 2022 to July 2023, unemployment remains anchored at historically low levels. Meanwhile, inflation remains above the Fed's target of 2% but is trending lower at levels well below the summer 2022 high. While investors generally feel that bond yields have peaked, they will likely remain guarded pending greater clarity on the path of inflation and both the timing and magnitude of Fed rate cuts.

OBSERVATIONS ACROSS TIGHTENING PERIODS

- **Shorter maturities increased more in yield** during all five periods.
- **The yield curve flattened,** with yields of shorter bonds increasing more than those of longer bonds.
- **Short maturities outperformed during the actual tightening cycles in periods 1, 2 and 5.** This could be because the Fed raised rates more aggressively in these cycles, measured by the number of increases within each cycle that were greater than 25 bps.
- **Short maturities underperformed in the six months following the last Fed rate hike in four of five tightening periods.** This could be because intermediate and longer maturing bonds had higher yields, which may 1) provide more income to help cushion against further rate increases, 2) compound interest at higher yields and 3) offer greater earnings ability due to higher absolute yields. During the most recent tightening cycle, 5-, 10- and 20-year benchmark maturities outperformed the short end.
- **Short maturities underperformed during the 2004/2006 cycle,** given the significant flattening of the yield curve. This cycle was the most measured and transparent, with 17 consecutive 25 bps increases. This flattening could be attributed to a decline in inflation expectations (given a hawkish Fed on the short end) and/or an anticipation of slower future economic growth.
- **Shorter maturities underperformed** in the 2015/2018 cycle, mainly due to the magnitude of yield curve flattening and low expectations for inflation and growth.
- **Shorter maturities outperformed** significantly during the 2022/2023 cycle. With substantial yield increases over a shorter time period, longer duration bonds underperformed due to greater price sensitivity.

STAYING THE COURSE CAN BENEFIT INVESTORS

Armed with this historical analysis, how should municipal investors move forward? Successful market timing is difficult, if not impossible. Investors sometimes sell following a sharp price decline, hoping to reinvest as the market recovers. In the next section, our analysis of six different periods of municipal market volatility suggests that investors who stay the course can benefit from their patience.

STUDYING PERIODS OF SHARPLY RISING RATES FOR MUNICIPAL BONDS

We analyzed six periods where municipal yields "spiked," meaning they increased by at least 100 basis points in less than one year. We examined the total return of hypothetical investments of $100,000 held for 3-, 6- and 12-month periods following the spike. While the investments experienced volatility, staying the course was ultimately rewarded.

Within one year of each spike, cheap valuations led to increased investor demand and valuations approached historical averages. With yields peaking in October 2023, analysis of the most recent sell off remains pending.

PERIOD 1: SEPTEMBER/OCTOBER 2008

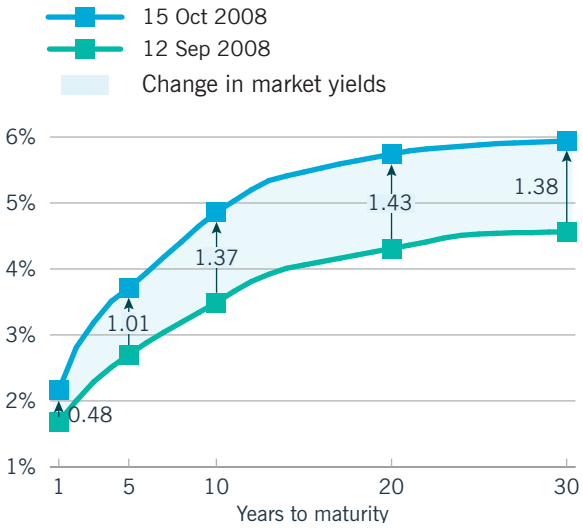
Trigger: Market liquidity evaporated following the Lehman Brothers bankruptcy.

Yields increased across most credit instruments. Notably, intermediate- and longer-term maturities experienced the largest yield increases and the sharpest declines in value.

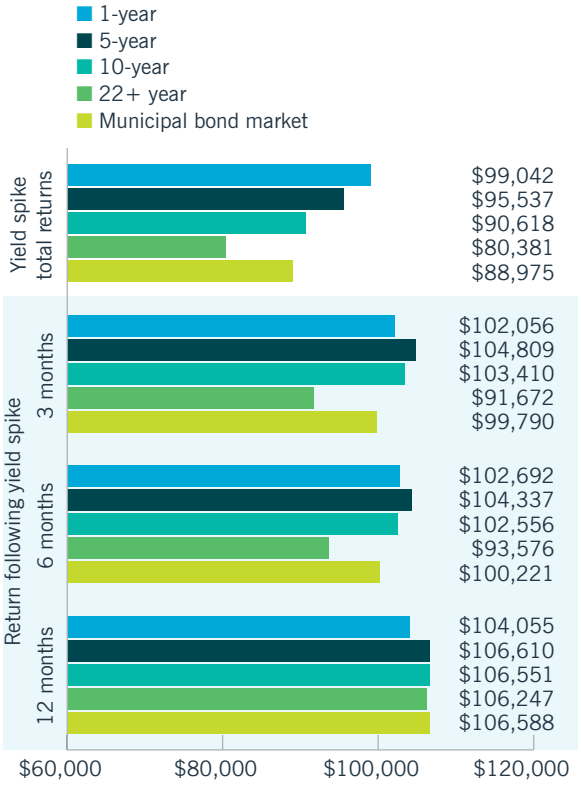
- All returns were negative during the yield spike period, with long-term maturities experiencing the largest decline.
- All maturities rallied in the 3 months following the yield peak, fully recovering the initial investment and achieving principal growth within 12 months.
- Intermediate- and long-term maturities underperformed as yields increased, then outperformed as the market rallied.

Figure 8: Capital preserved and grown within 12 months of the yield spike

Yield curve change (%) during yield spike period



Value of a hypothetical $100,000 investment



Data source: Refinitiv MMD yields for AAA-rated bonds and Bloomberg, L.P. **Performance data shown represents past performance and does not predict or guarantee future results. Representative indexes: 1-year bonds:** Bloomberg 1-Year Municipal Bond Index; **5-year bonds:** Bloomberg 5-Year Municipal Bond Index; **10-year bonds:** Bloomberg 10-Year Municipal Bond Index; **22+-year bonds:** Bloomberg Long Municipal Bond Index; **municipal bond market:** Bloomberg Municipal Bond Index. Index returns include reinvestment of income and do not reflect investment advisory and/or other fees that would reduce performance in an actual client account.

PERIOD 2: OCTOBER 2010 TO JANUARY 2011

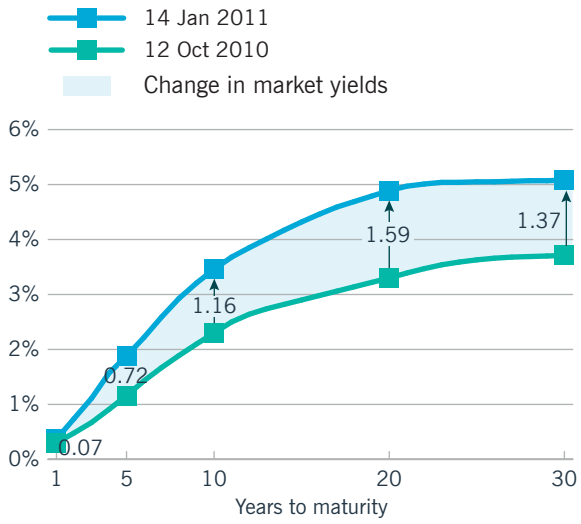
Trigger: strong supply and an analyst's prediction of an unprecedented uptick in defaults and bankruptcies.

The yield increases were similar to Period 1, except that weakness was spread across four months versus just five weeks. As yields peaked, long maturities saw the greatest decline.

- All returns were negative during the yield spike period, with long-term maturities experiencing the largest decline.
- Most maturities recouped principal within 6 months and realized principal growth within 12 months.
- The intermediate- and longer-term maturities realized the highest return within 12 months.

Figure 9: Principal recouped within 6 months; principal growth within 12 months of the yield spike

Yield curve (%) change during yield spike period



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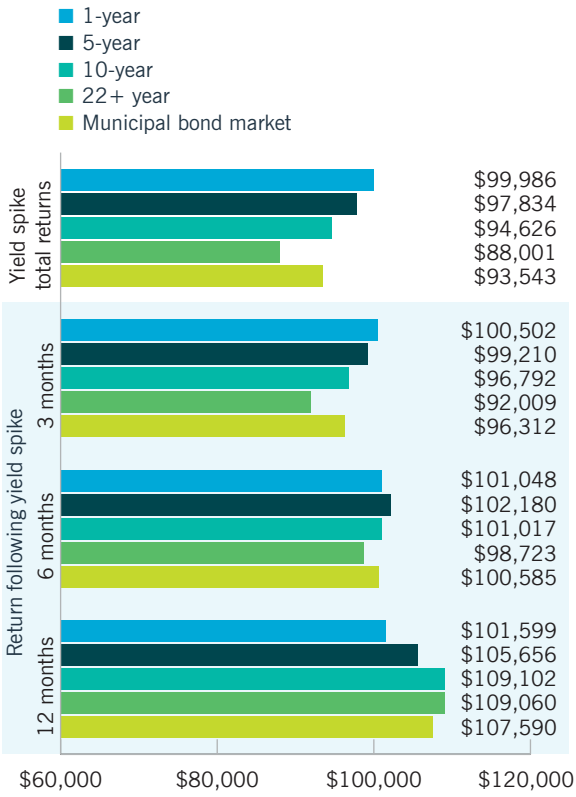

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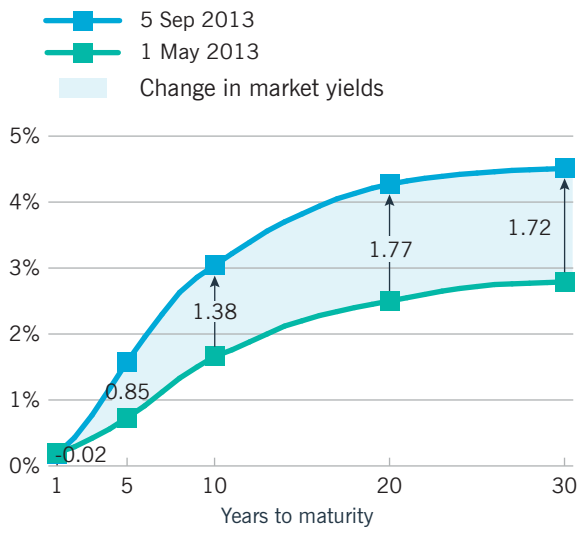
PERIOD 3: MAY 2013 TO SEPTEMBER 2013

Trigger: the taper tantrum combined with the Detroit bankruptcy filing and increasing attention on Puerto Rico.

- Intermediate- and longer-term maturities experienced the largest yield increases and thus the largest principal reductions.
- Within 6 months, the 1- and 5-year maturities had recouped most or all of the initial investment.
- Within 12 months, all maturities had fully recovered principal, and the 10- and 22+-year maturities exhibited the greatest dollar returns.

Figure 10: Principal recovered within 12 months of the yield spike

Yield curve change during yield spike period (%)



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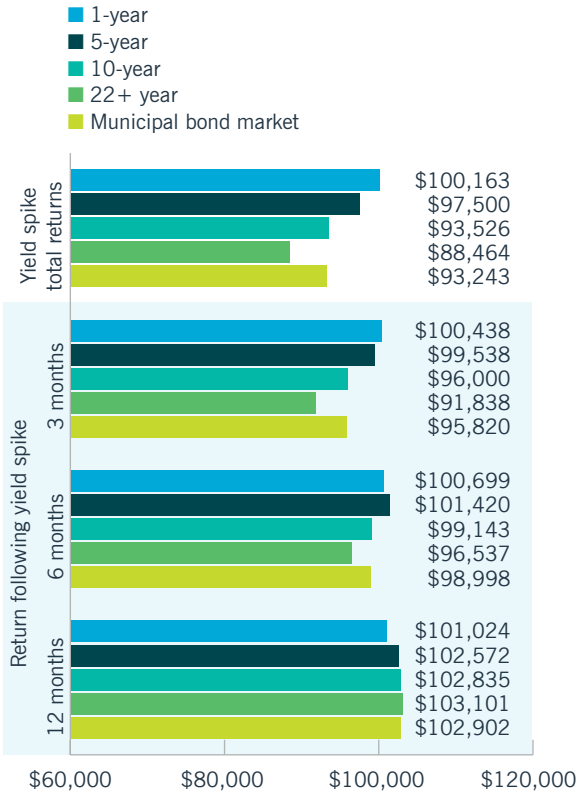


Data source: Refinitiv MMD yields for AAA-rated bonds and Bloomberg, L.P. **Performance data shown represents past performance and does not predict or guarantee future results.** Representative indexes: **1-year bonds:** Bloomberg 1-Year Municipal Bond Index; **5-year bonds:** Bloomberg 5-Year Municipal Bond Index; **10-year bonds:** Bloomberg 10-Year Municipal Bond Index; **22+-year bonds:** Bloomberg Long Municipal Bond Index; **municipal bond market:** Bloomberg Municipal Bond Index. Index returns include reinvestment of income and do not reflect investment advisory and/or other fees that would reduce performance in an actual client account.

PERIOD 4: JULY 2016 TO DECEMBER 2016

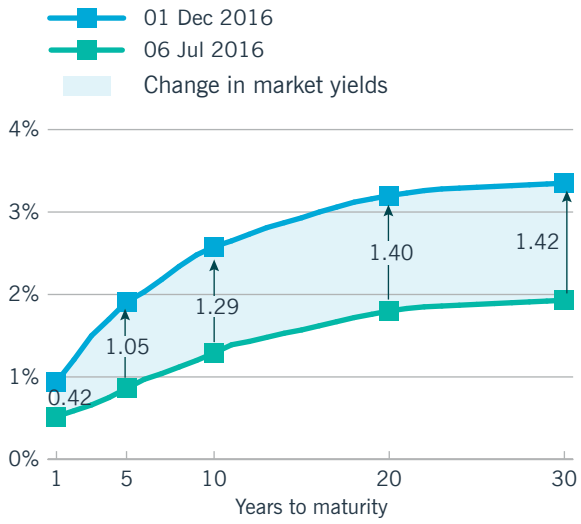
Trigger: near-historic low yields following the summer Brexit vote and the November 2016 U.S. election results.

With a Republican sweep, the market began pricing in a stronger likelihood of more growth-oriented policy/deficit financing, which helped pressure yields higher.

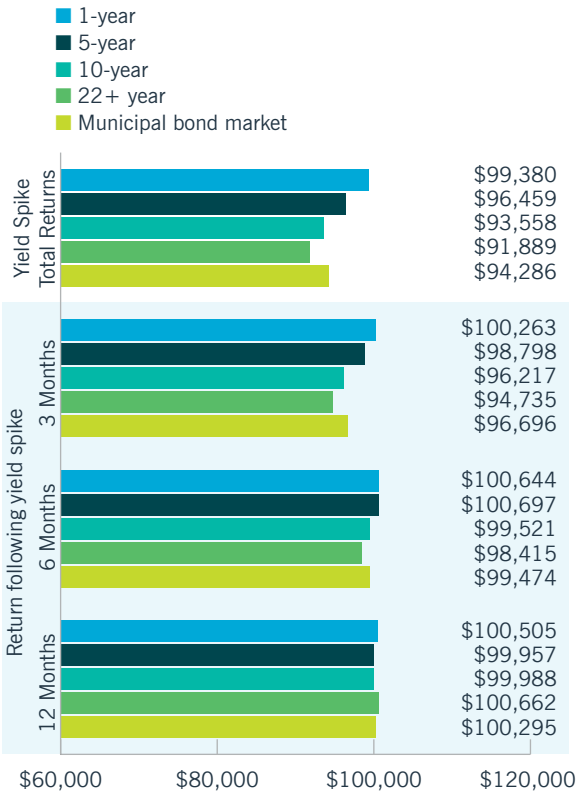
- Intermediate- and longer-term maturities experienced the largest yield increases and thus the largest principal reductions.
- Within 6 months, the 1- and 5-year maturities recouped all of the initial investment.
- Within 12 months, all maturities recouped all or most of the initial investment.
- Within 12 months, the 22+ maturity exhibited the greatest dollar return.

Figure 11: Principal was nearly recouped or experienced modest principal growth

Yield curve change during spike period (%)



Value of a hypothetical $100,000 investment



Data source: Refinitiv MMD yields for AAA-rated bonds and Bloomberg, L.P. **Performance data shown represents past performance and does not predict or guarantee future results.** Representative indexes: **1-year bonds:** Bloomberg 1-Year Municipal Bond Index; **5-year bonds:** Bloomberg 5-Year Municipal Bond Index; **10-year bonds:** Bloomberg 10-Year Municipal Bond Index; **22+-year bonds:** Bloomberg Long Municipal Bond Index; **municipal bond market:** Bloomberg Municipal Bond Index. Index returns include reinvestment of income and do not reflect investment advisory and/or other fees that would reduce performance in an actual client account.

PERIOD 5: MARCH 2020

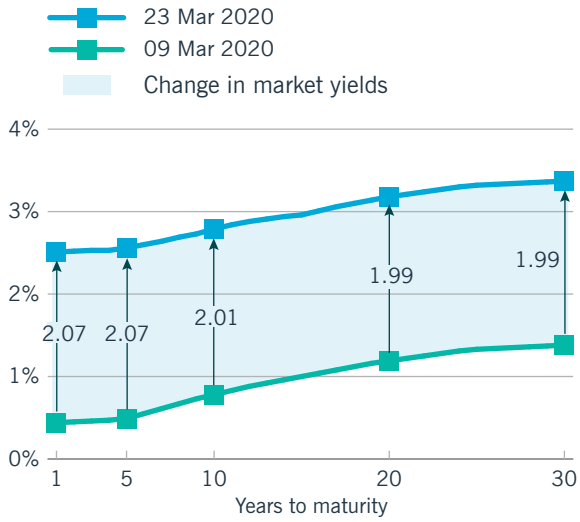
Trigger: Concern over the pandemic caused municipal yields to increase nearly 200 bps over a three-week period.

As investors sought to raise cash for liquidity purposes, this period saw the most severe absolute yield increases.

- Intermediate- and longer-term maturities experienced the largest yield increases and thus the largest principal reductions.
- After six months, the 1- and 5-year maturities recouped most or all of the March principal reduction.
- After 12 months, all maturities showed full recovery and some principal growth.

Figure 12: After six months, shorter maturities nearly recouped or experienced modest principal growth

Yield curve change during spike period (%)



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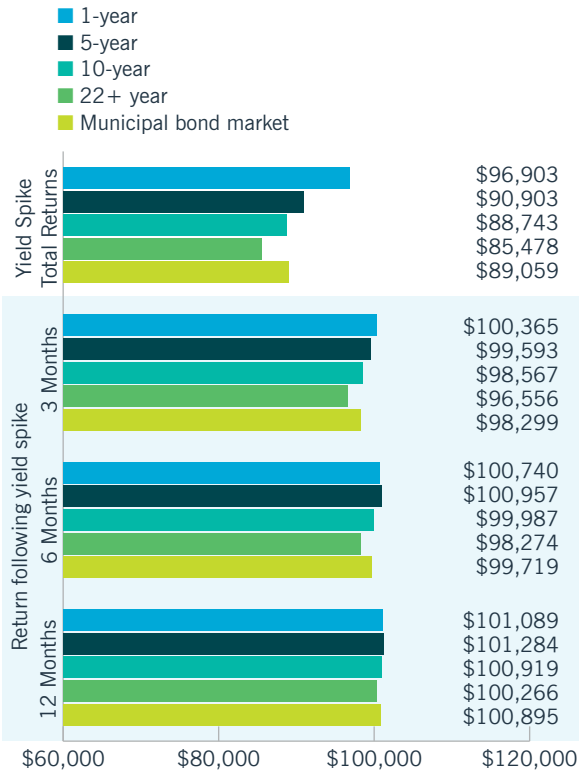

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PERIOD 6: DECEMBER 2021 TO OCTOBER 2023

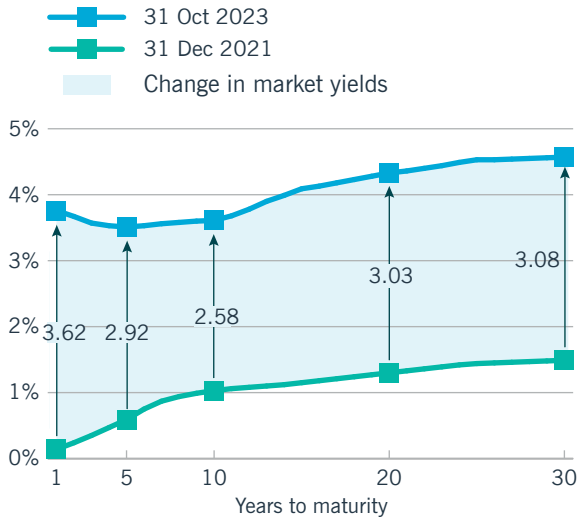
Trigger: aggressive Fed policy response to inflationary pressures.

The Fed tightening of 425 bps in 2022 and 100 bps in 2023 drove municipal bond yields to surge between 258 bps and 362 bps across different maturities.

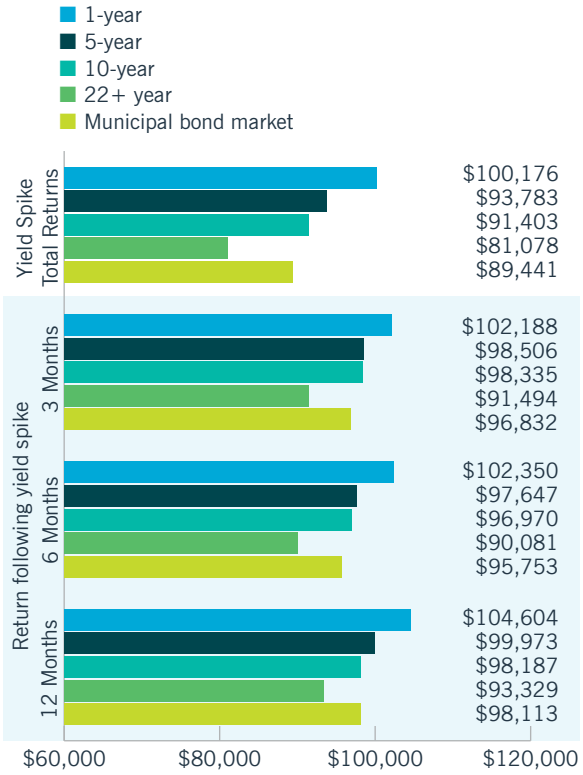
- 1- and 2-year maturities saw the largest yield increases, while intermediate and longer maturities experienced larger principal reductions.
- 1-year maturities experienced principal growth despite an aggressive policy response.
- 5-year maturities experienced a near full recovery.
- Longer duration maturities lagged in recovery due to outsized yield increases.

Figure 13: 5-year maturities experienced a near full recovery

Yield curve change during spike period (%)



Value of a hypothetical $100,000 investment



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INVESTMENTS WERE EVENTUALLY COMPENSATED FOR PATIENCE

In times of elevated market volatility or negative press, investors may decide to sell and wait for conditions or valuations to improve before reallocating funds. But most cannot time the market perfectly, which can mean lost opportunity.

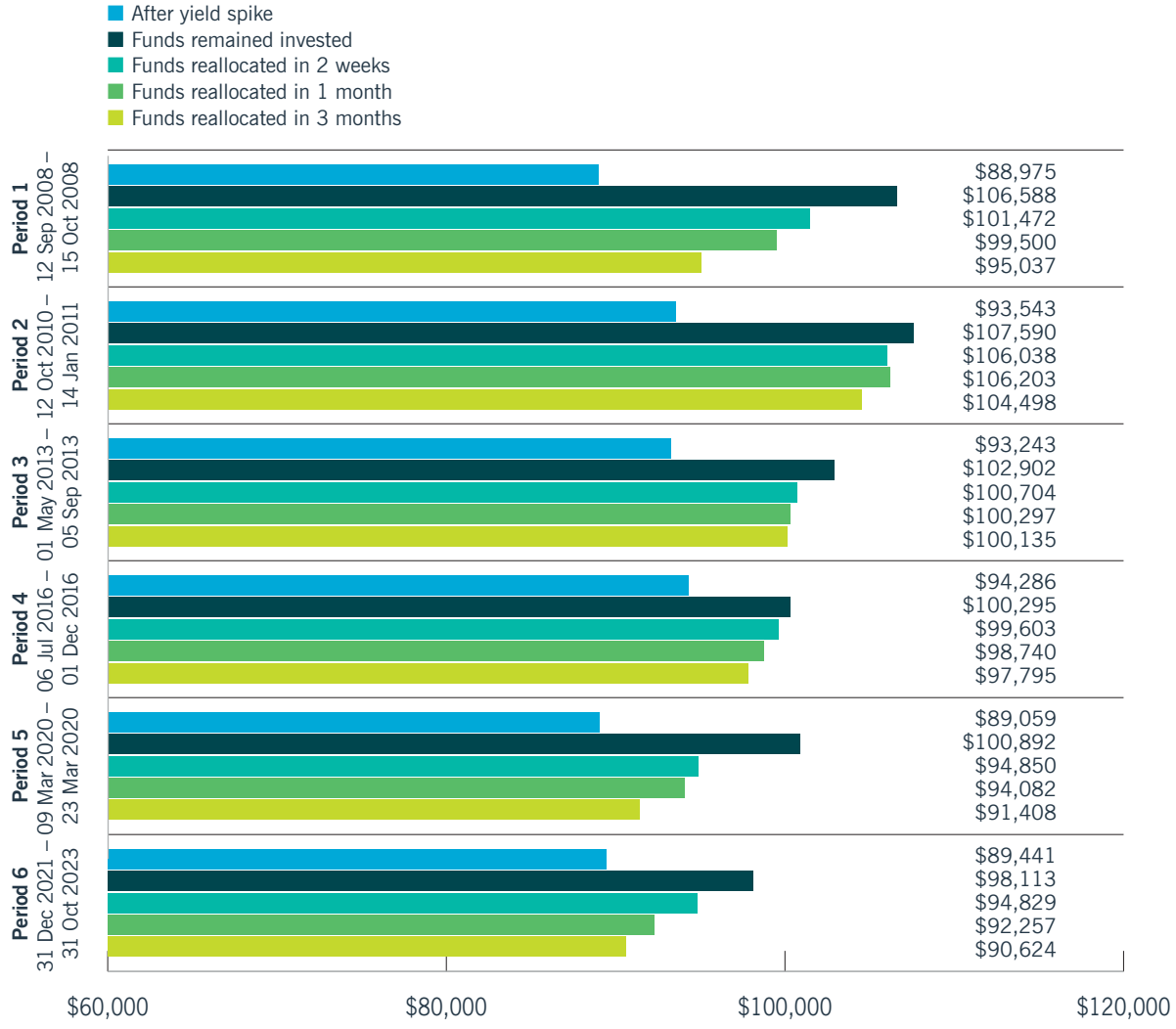
When reviewing these same six periods of increasing municipal yields, Figure 14 shows that missing even the first two weeks of a market rebound resulted in lower investment values. In all periods when municipal yields rose by at least 100 bps, recovery of principal loss was more impressive.

For an initial hypothetical investment of $100,000, in each period:

- First bar shows the reduction in principal value as yields spiked.
- Second bar shows the principal value if the investment had remained fully invested during the selloff and the recoveries that followed.
- Subsequent bars show the value off of these lows if the investor reallocated funds two weeks, one month and three months after yields peaked.

Figure 14: Staying invested helped recovery from market lows

Value of a hypothetical $100,000 investment



Data source: Bloomberg, L.P. Performance represents the Bloomberg Municipal Bond Index. **Performance data shown represents past performance and does not predict or guarantee future results.** Index returns include reinvestment of income and do not reflect investment advisory and/or other fees that would reduce performance in an actual client account.

RISING RATES AREN'T ALWAYS BAD FOR MUNICIPAL BOND INVESTORS

Sharply rising rates can cause concern, as investor sentiment deteriorates and portfolios lose value more quickly. Investors should understand that periods of rising rates do not necessarily correlate to losses in bond portfolios over the long run, and that attempting to time markets can have a negative impact. In each of the last six municipal market rate spikes, markets recovered off of their lows, with the magnitude influenced by yield curve positioning.

For more information, please visit us at nuveen.com.

Endnotes

1 Data source: Bureau of Economic Analysis

2 Data source: Bureau of Labor Statistics

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