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Municipal market: How rates rise matters



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At its May meeting, the U.S. Federal Reserve hiked rates 50 basis points from 0.50% to 1.00% and indicated that further rate hikes are likely. Investors are concerned that bond yields will continue to increase as a result. 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?

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. It also shows that the short end of the curve wasn't necessarily the least risky, nor was the longest the most volatile. Finally, it shows that a hypothetical investor who remained invested through the tightening cycle — regardless of their position on the yield curve — may have experienced positive total returns, the notion that “rising rates are bad for bond investors” notwithstanding.

PRIOR 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 ? |
|---------------------|---|---|---|---|------------------------------|
| Starting rate level | 3.00% | 4.75% | 1.00% | 0 to 25 bps | 0 to 25 bps |
| Number of hikes | 7 | 6 | 17 | 9 | 3 |
| Duration | 12 months | 10 months | 24 months | 36 months | ? |
| Ending rate level | 6.00% | 6.50% | 5.25% | 2.5% | ? |
| Magnitude | 300 basis points | 175 basis points | 425 basis points | 225 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%.

TIGHTENING EFFECT 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. Past performance 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. **Past performance 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. **Past performance 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. **Past performance 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 ?)

| | 6-month return before (%) | Total return during (%) | Change in yield during (bps) |
|--------------------|---------------------------|-------------------------|------------------------------|
| Bloomberg 1-year | -1.31 | -0.80 | +86 |
| Bloomberg 3-year | -3.09 | -1.86 | +89 |
| Bloomberg 5-year | -4.50 | -2.87 | +88 |
| Bloomberg 10-year | -5.39 | -4.17 | +96 |
| Bloomberg 20-year | -5.83 | -5.19 | +101 |
| Bloomberg 22+ year | -6.77 | -6.76 | +98 |

Data source: Bloomberg, L.P. **Past performance does not predict or guarantee future results.** Six-month return pre-tightening spans 15 Sep 2021 – 15 Mar 2022. Total return state date is 15 Mar 2022. 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.

Over the past six-plus months, longer duration has continued to underperform and the yield curve has shifted relatively in parallel. 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 year to date, the additional yield from owning longer duration assets has been less effective in helping offset overall price declines.

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 ? |
|----------------------------------|---|---|--|--|---|
| Real GDP year-over-year | 3.40% (1Q94) | 4.80% (2Q99) | 4.20% (2Q04) | 1.9% (4Q15) | 3.6% (1Q22) |
| PCE deflator | 2.245% (1/94) | 1.392% (6/99) | 2.015% (6/04) | 0.4% (12/15) | 6.6% (1Q22) |
| Unemployment rate | 6.6% (1/94) | 4.3% (6/99) | 5.6% (6/04) | 5.0% (12/15) | 3.6% (4/22) |
| Yield curve change overall | Flattened 76 bps | Flattened 17 bps | Flattened 235 bps | Flattened 61 bps | Steepened 12 bps |
| Short maturity change (1 year) | +204 bps | +92 bps | +188 bps | +109 bps | +86 bps |
| Long maturity change (22+ years) | +128 bps | +75 bps | -47 bps | +48 bps | +98 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. **Past performance 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.

In 2022, fixed income investors continue to be wary about the Fed’s potential tightening efforts to help restore price stability. When the Fed last implemented monetary policy normalization via tapering, fed fund increases and balance sheet run-off (30 Nov 2013 – 30 Sep 2019), the Bloomberg Municipal Bond Index still experienced

positive returns (4.38% annualized) over a nearly six-year period.

The narrative in 2022 is different, with investors worried about elevated inflation, but time will ultimately tell what impact policy normalization will have in the current era on longer-term returns.

OBSERVATIONS ACROSS THE PRIOR FOUR TIGHTENING PERIODS

- **Shorter maturities increased more in yield** during all four 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 and 2.** 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 funds hike.** 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.
- **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.
- **Total returns were positive across all six benchmarks** in all four prior periods. That means investors who stayed invested were rewarded.

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 five 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 five 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 \$100,000 portfolios held for 3-, 6- and 12-month periods following the spike. While the portfolios 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.

PERIOD 1: SEPTEMBER/OCTOBER 2008

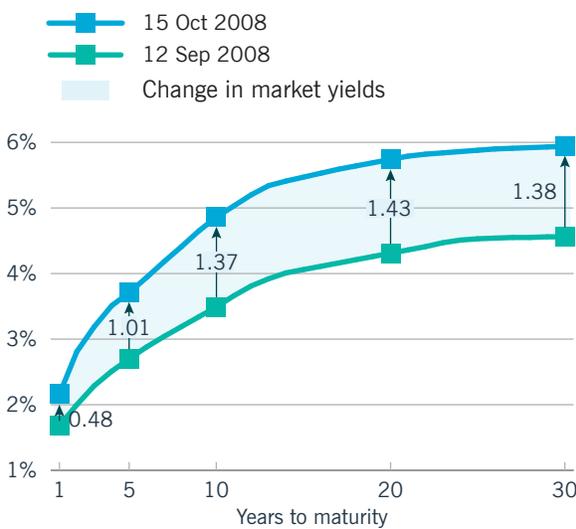
Trigger: Market liquidity evaporated following the Lehman Brothers bankruptcy.

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.

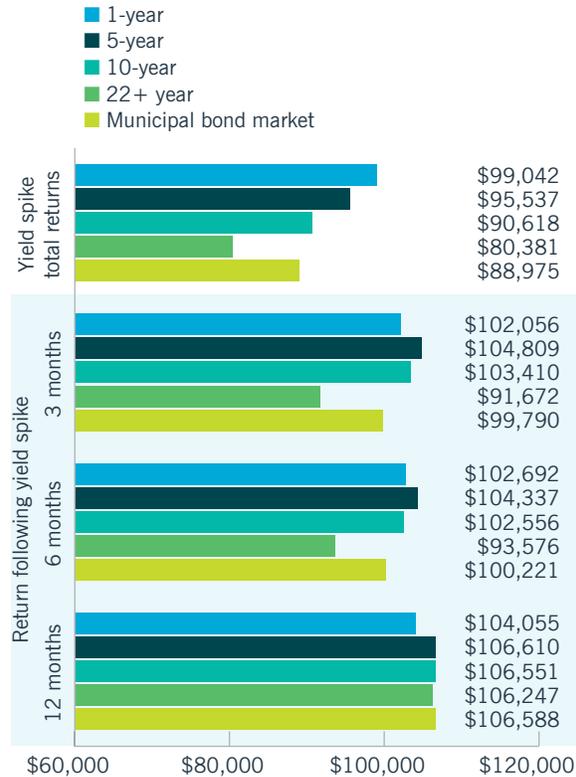
Figure 8: Capital preserved and grown within 12 months of the yield spike

Yield curve change (%) during yield spike period



Data source: Refinitiv MMD yields for AAA-rated bonds and Bloomberg, L.P. **Past performance 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.

Value of a hypothetical \$100,000 portfolio



PERIOD 2: OCTOBER 2010 TO JANUARY 2011

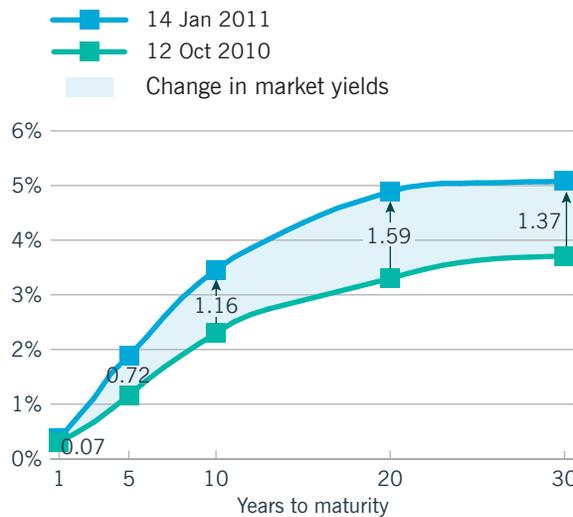
Trigger: strong supply and an analyst's prediction of an unprecedented uptick in defaults and bankruptcies.

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.

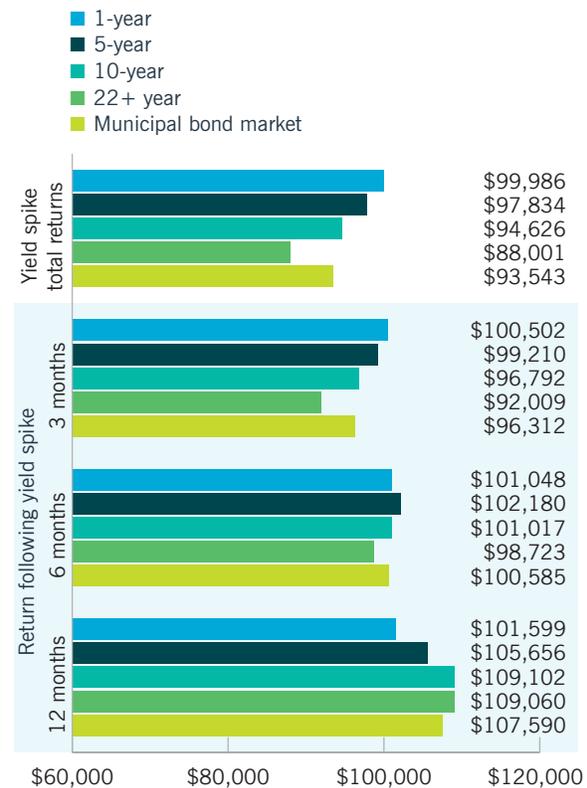
Figure 9: Principal recouped within 6 months; principal growth within 12 months of the yield spike

Yield curve (%) change during yield spike period



Data source: Refinitiv MMD yields for AAA-rated bonds and Bloomberg, L.P. **Past performance 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.

Value of a hypothetical \$100,000 portfolio



PERIOD 3: MAY 2013 TO SEPTEMBER 2013

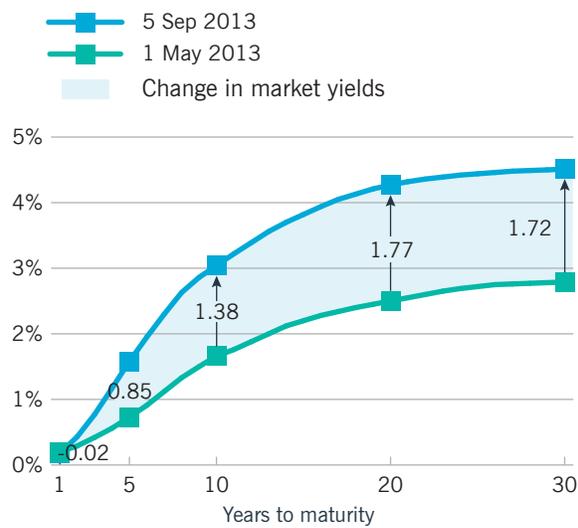
Trigger: the taper tantrum combined with the Detroit bankruptcy filing and increasing attention on Puerto Rico.

- 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.

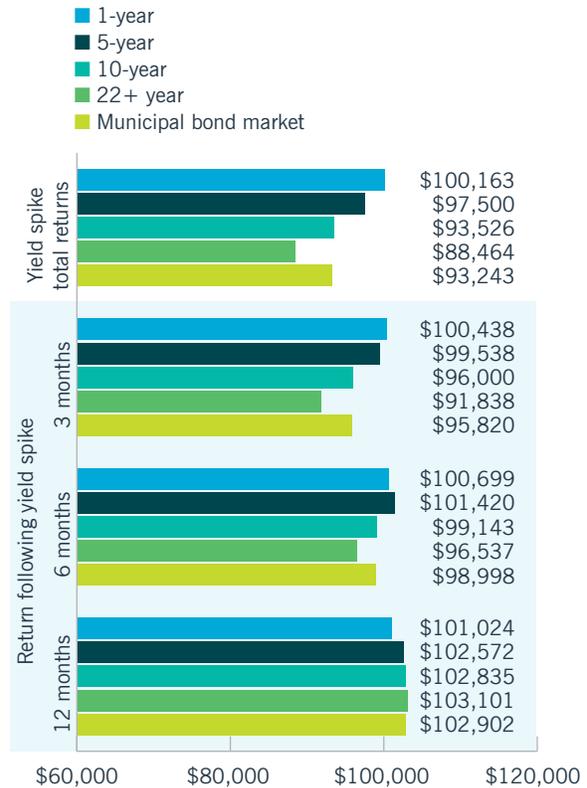
Figure 10: Principal recovered within 12 months of the yield spike

Yield curve change during yield spike period (%)



Data source: Refinitiv MMD yields for AAA-rated bonds and Bloomberg, L.P. **Past performance 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.

Value of a hypothetical \$100,000 portfolio



PERIOD 4: JULY 2016 TO DECEMBER 2016

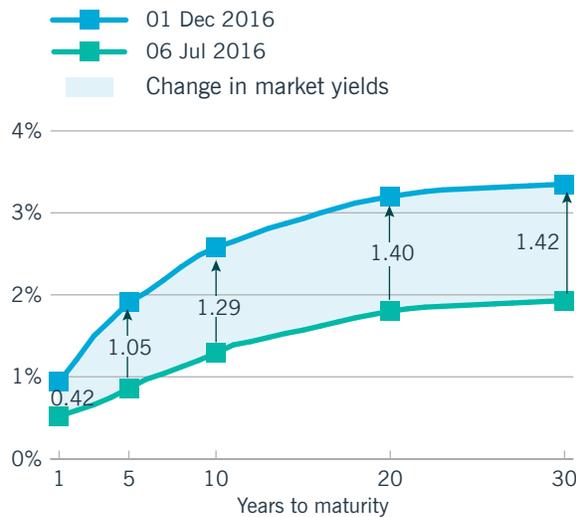
Trigger: near-historic low yields following the summer Brexit vote and the November 2016 U.S. election results.

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 (%)



Data source: Refinitiv MMD yields for AAA-rated bonds and Bloomberg, L.P. **Past performance 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.

Value of a hypothetical \$100,000 portfolio



PERIOD 5: MARCH 2020

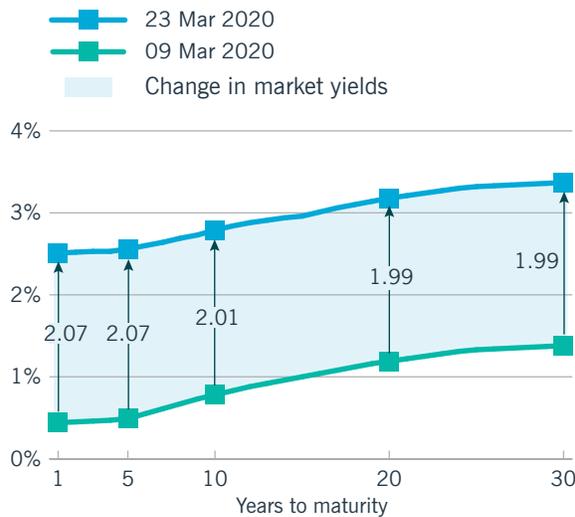
Trigger: Concern over the pandemic caused municipal yields to increase nearly 200 bps over a three-week period.

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.

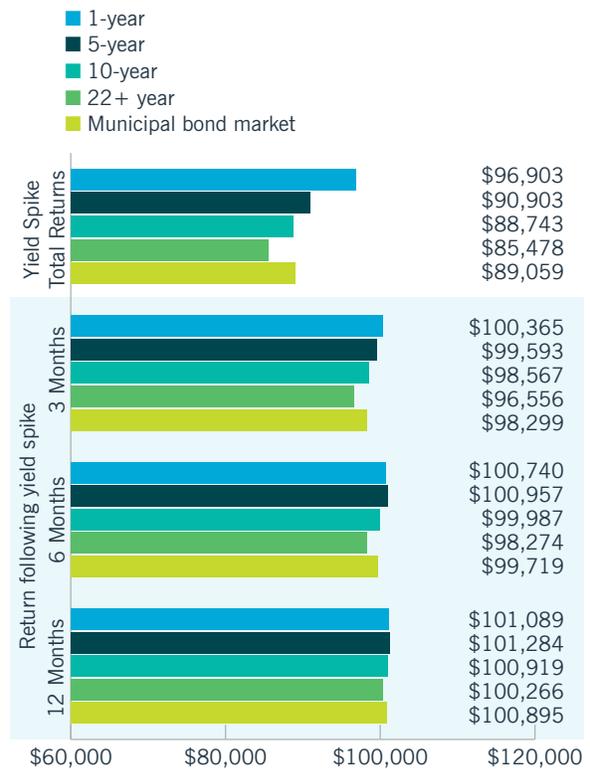
Figure 12: After six months, shorter maturities nearly recouped or experienced modest principal growth

Yield curve change during spike period (%)



Data source: Refinitiv MMD yields for AAA-rated bonds and Bloomberg L.P. **Past performance 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.

Value of a hypothetical \$100,000 portfolio



PORTFOLIOS 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 five periods of increasing municipal yields, Figure 13 shows that missing even the first two weeks of a market rebound resulted in lower portfolio values. In all periods when municipal yields rose by at least 100

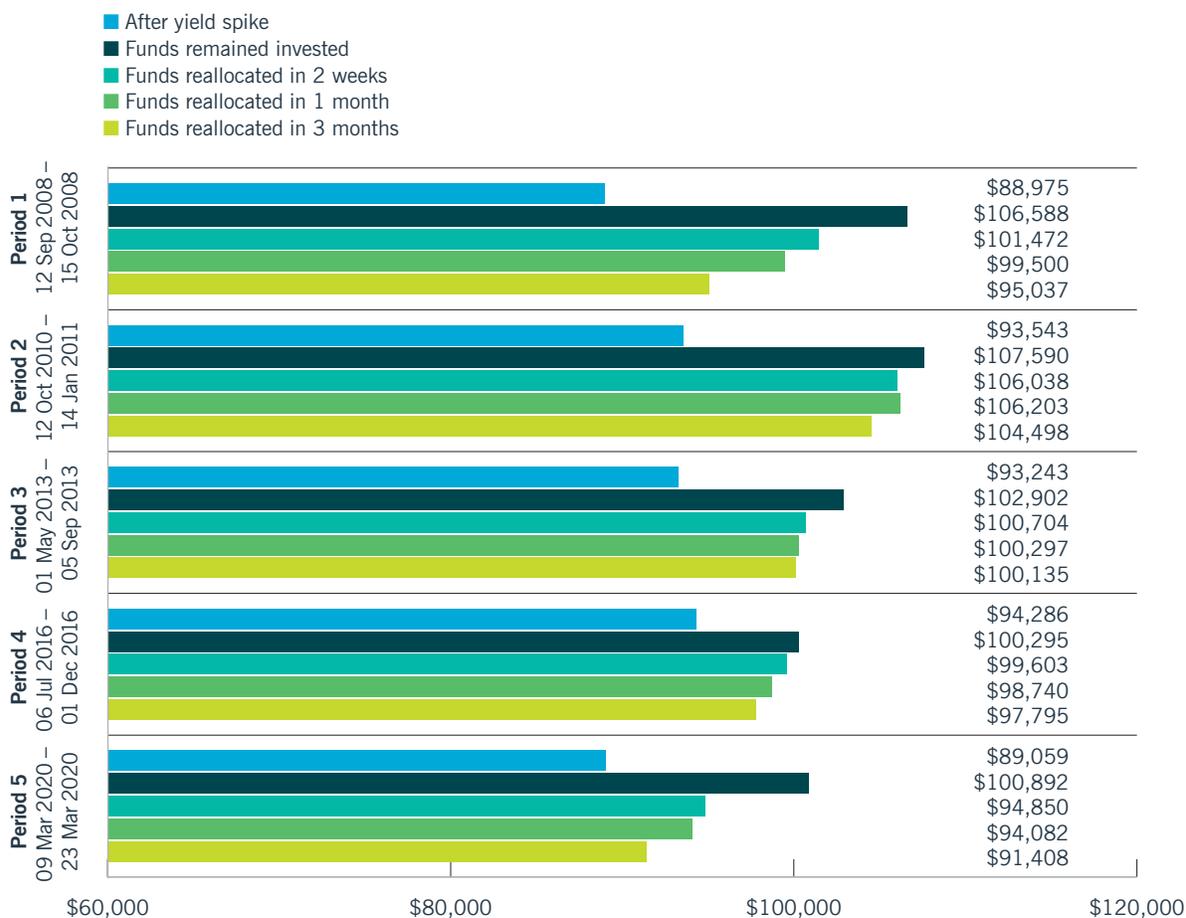
bps in less than one year, portfolios were eventually compensated for patience.

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 portfolio 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 13: Staying invested led to higher returns

Value of a hypothetical \$100,000 portfolio



Data source: Bloomberg, L.P. Performance represents the Bloomberg Municipal Bond Index. Past performance 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 five municipal market rate spikes, principal value was higher 12 months after the rise in rates.

[For more information, please visit us at nuveen.com.](https://www.nuveen.com)

Endnotes

- 1 Data source: Bureau of Economic Analysis
- 2 Data source: Bureau of Labor Statistics

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