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Municipal market: How rates rise matters



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Some investors are concerned that continued accommodative monetary policy will help stoke inflation and eventually cause bond yields to increase. 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 over bond yields eventually rising (duration measures price sensitivity to changes in bond yields). Others see an opportunity to lengthen portfolios, given less concern about rising bond yields and more 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 in these rising rate environments, a hypothetical investor who stayed the course 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 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. Since 1994, there have been four periods of increasing fed funds rates, as detailed in Figure 1.

Figure 1: Changes in fed funds rates

	Period 1 4 Feb 1994 to 1 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
Starting rate level	3.00%	4.75%	1.00%	0 to 25 bps
Number of hikes	7	6	17	9
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 5 detail the performance of the municipal bond market during the prior four tightening cycles. The indexes represent different areas of the municipal yield curve. It illustrates 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: Returns along the yield curve – period 1 (4 Feb 1994 to 1 Feb 1995)

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

Data source: Bloomberg, L.P. Past performance is no guarantee of 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. All indexes are unmanaged and unavailable for direct investment.

The Fed was hawkish during this cycle, given stronger economic growth prospects and inflation expectations. Individual Fed fund 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 Barclays 10-Year Municipal Index (8-12 years).

Figure 3: Returns along the yield curve – period 2 (30 Jun 1999 to 16 May 2000)

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

Data source: Bloomberg, L.P. Past performance is no guarantee of 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. All indexes are unmanaged and unavailable for direct investment.

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 Barclays 1-Year Municipal Index (1-2 years).

Figure 4: Returns along the yield curve – period 3 (30 Jun 2004 to 29 Jun 2006)

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

Data source: Bloomberg, L.P. Past performance is no guarantee of 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. All indexes are unmanaged and unavailable for direct investment.

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 Barclays 22+ Municipal Index.

Figure 5: Returns along the yield curve – period 4 (15 Dec 2015 to 19 Dec 2018)

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

Data source: Bloomberg, L.P. Past performance is no guarantee of 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. All indexes are unmanaged and unavailable for direct investment.

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 Barclays 22+ Municipal Index performing best. Figure 6 summarizes the market characteristics and outcomes of the four tightening cycles.

Figure 6: Market characteristics of each period of rising rates

	Period 1: 4 Feb 1994 to 1 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
Real GDP year-over-year	3.40% (1Q94)	4.80% (2Q99)	4.20% (2Q04)	1.9% (Q415)
PCE deflator	2.245% (1/94)	1.392% (6/99)	2.015% (6/04)	0.4% (12/15)
Unemployment rate	6.6% (1/94)	4.3% (6/99)	5.6% (6/04)	5.0% (12/15)
Yield curve change overall	Flattened 76 bps	Flattened 17 bps	Flattened 235 bps	Flattened 61 bps
Short maturity change (1 year)	+204 bps	+92 bps	+188 bps	+109 bps
Long maturity change (22+ years)	+128 bps	+75 bps	-47 bps	+48 bps
Best performer	Bloomberg Barclays 10-Year Municipal Index (8 – to 12-year portion)	Bloomberg Barclays 1-Year Municipal Index (1 – to 2-year portion)	Bloomberg Barclays 22+ Municipal Index	Bloomberg Barclays 22+ Municipal Index

Data source: Bloomberg, L.P., Bureau of Economic Analysis and Bureau of Labor Statistics, 31 May 2020. **Past performance is no guarantee of 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. All indexes are unmanaged and unavailable for direct investment.

OBSERVATIONS ACROSS TIGHTENING PERIODS

- **Shorter maturities increased more in yield** during all four periods.
- **The yield curve flattened**, with yields of shorter bonds increasing more than 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 the course were rewarded.

STAYING THE COURSE CAN BENEFIT INVESTORS

Armed with this historical analysis, how should 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. But analysis of five periods of municipal market volatility suggests that investors who stay the course can benefit from their patience.

VALUATIONS RECOVERED WITHIN ONE YEAR

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 became more in line with historical averages.

PERIOD 1: SEPTEMBER/OCTOBER 2008

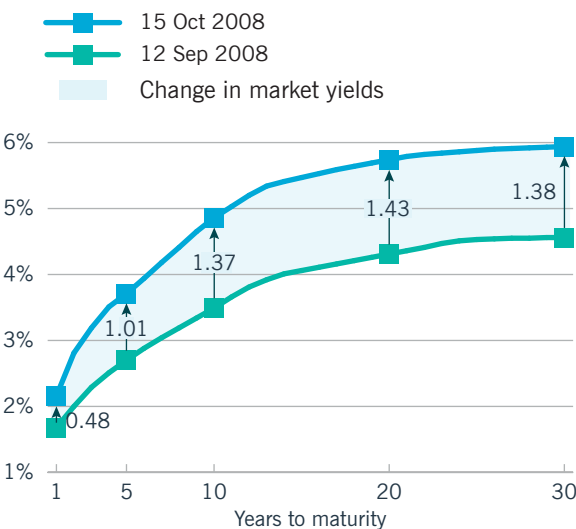
Trigger: Market liquidity evaporated following the Lehman Brothers bankruptcy.

Yields increased across most credit instruments, including municipals. Notably, intermediate- and longer-term maturities experienced the largest yield increases and consequently 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 that underperformed as yields increased outperformed as the market rallied.

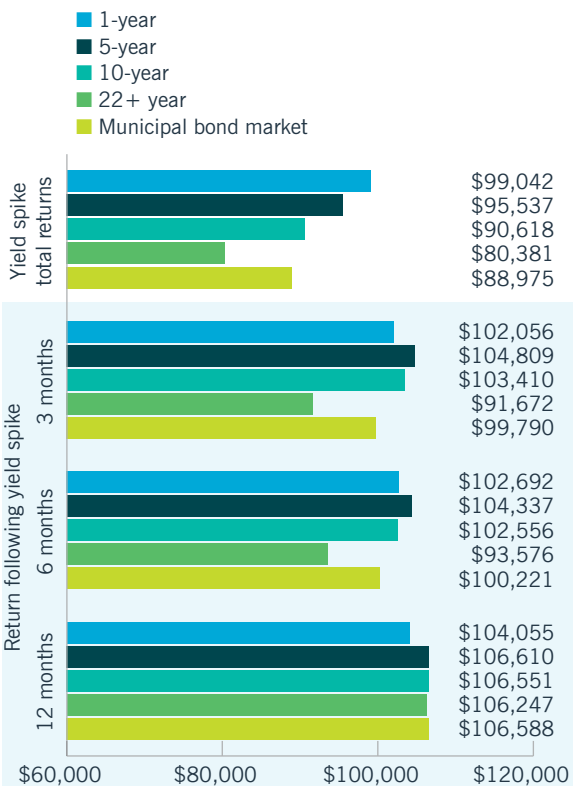
Figure 7: Capital preserved and grown within 12 months of the yield spike

Yield curve change (%) during yield spike period



Data source: Refinitiv MMD yields for AAA-rated bonds and Barclays, L.P. Past performance is no guarantee of future results. Representative indexes: 1-year bonds: Bloomberg Barclays 1-Year Municipal Bond Index; 5-year bonds: Bloomberg Barclays 5-Year Municipal Bond Index; 10-year bonds: Bloomberg Barclays 10-Year Municipal Bond Index; 22+-year bonds: Bloomberg Barclays Long Municipal Bond Index; municipal bond market: Bloomberg Barclays 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. Indexes are unmanaged and unavailable for direct investment.

Value of a hypothetical \$100,000 portfolio



PERIOD 2: OCTOBER 2010 TO JANUARY 2011

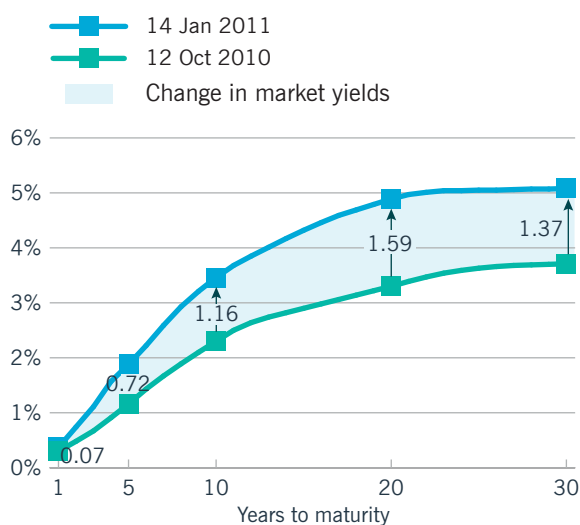
Trigger: Strong supply and an analyst's prediction of an unprecedented uptick in defaults and bankruptcies.

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.

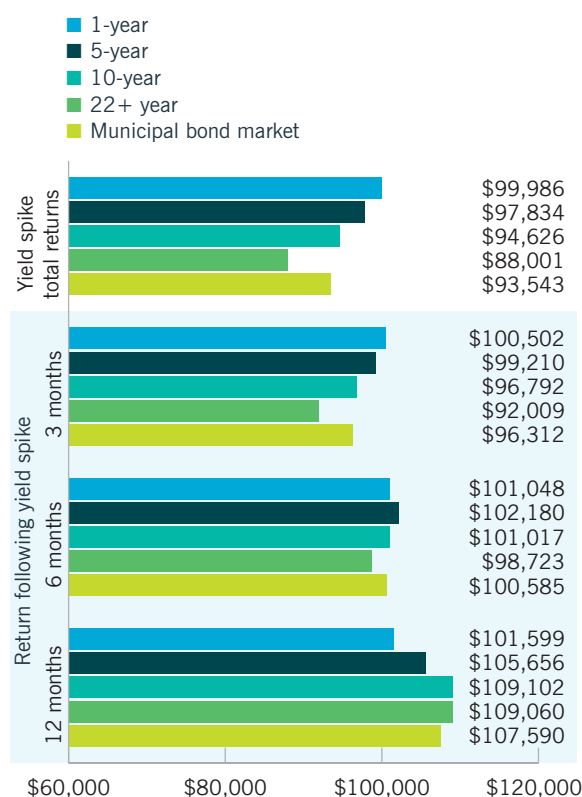
Figure 8: Principal recouped within 6 months; principal growth within 12 months of the yield spike

Yield curve (%) change during yield spike period



Data source: Refinitiv MMD yields for AAA-rated bonds and Barclays, L.P. **Past performance is no guarantee of future results.** Representative indexes: **1-year bonds:** Bloomberg Barclays 1-Year Municipal Bond Index; **5-year bonds:** Bloomberg Barclays 5-Year Municipal Bond Index; **10-year bonds:** Bloomberg Barclays 10-Year Municipal Bond Index; **22+-year bonds:** Bloomberg Barclays Long Municipal Bond Index; **municipal bond market:** Bloomberg Barclays 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. Indexes are unmanaged and unavailable for direct investment.

Value of a hypothetical \$100,000 portfolio



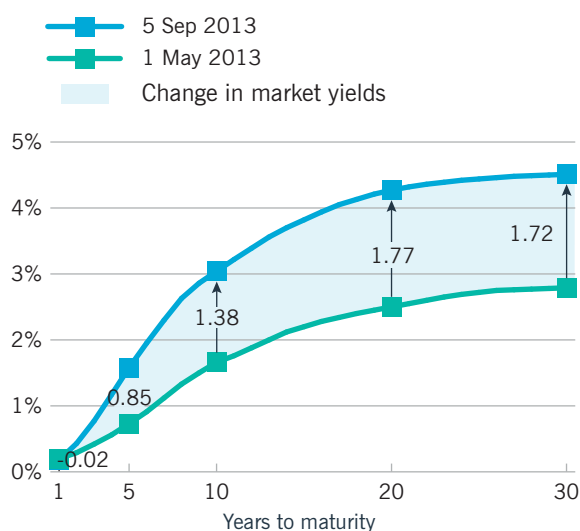
PERIOD 3: MAY 2013 TO SEPTEMBER 2013

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, the 10- and 22+-year maturities fully recovered principal and exhibited the greatest dollar returns.

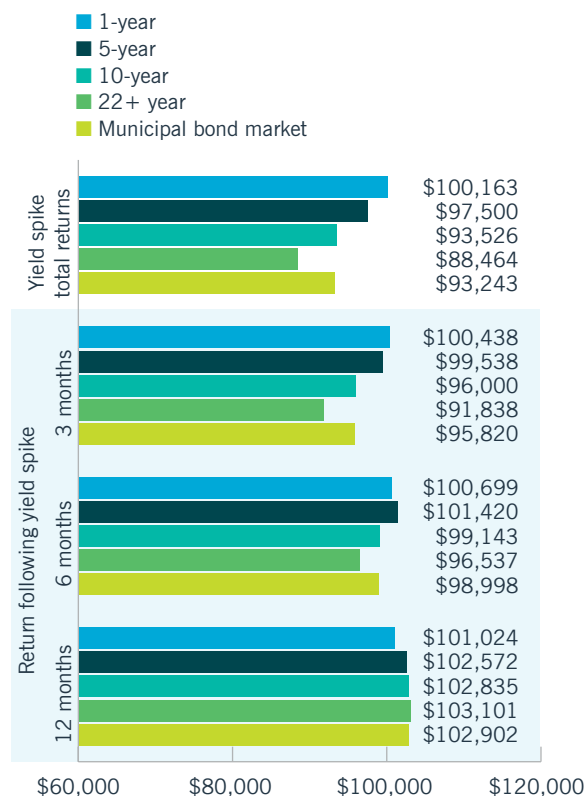
Figure 9: Principal recovered within 12 months of the yield spike

Yield curve change during yield spike period (%)



Data source: Refinitiv MMD yields for AAA-rated bonds and Barclays, L.P. **Past performance is no guarantee of future results.** Representative indexes: **1-year bonds:** Bloomberg Barclays 1-Year Municipal Bond Index; **5-year bonds:** Bloomberg Barclays 5-Year Municipal Bond Index; **10-year bonds:** Bloomberg Barclays 10-Year Municipal Bond Index; **22+-year bonds:** Bloomberg Barclays Long Municipal Bond Index; **municipal bond market:** Bloomberg Barclays 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. Indexes are unmanaged and unavailable for direct investment.

Value of a hypothetical \$100,000 portfolio



PERIOD 4: JULY 2016 TO DECEMBER 2016

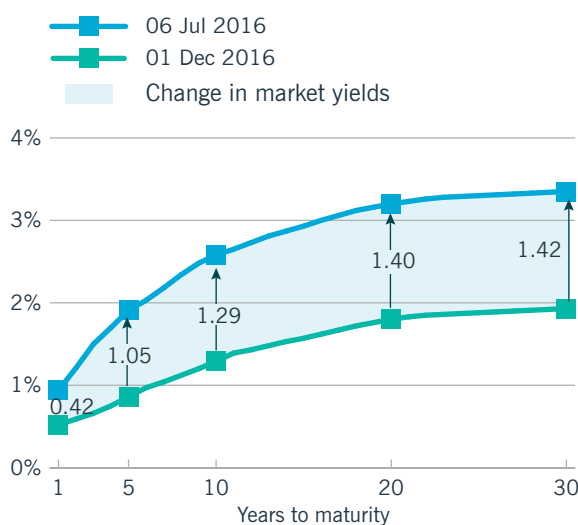
Trigger: Near-historic low yields following the summer BREXIT vote and the November U.S. election results.

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 most or all of the initial investment.
- Within 12 months, the 22+ maturity exhibited the greatest dollar return.

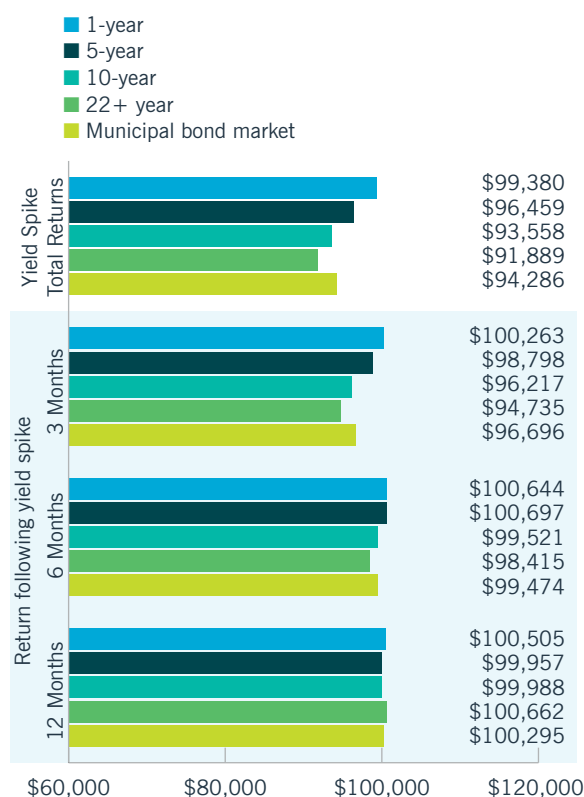
Figure 10: Principal was nearly recouped or experienced modest principal growth

Yield curve change during spike period (%)



Data source: Refinitiv MMD yields for AAA-rated bonds and Barclays, L.P. **Past performance is no guarantee of future results.** Representative indexes: **1-year bonds:** Bloomberg Barclays 1-Year Municipal Bond Index; **5-year bonds:** Bloomberg Barclays 5-Year Municipal Bond Index; **10-year bonds:** Bloomberg Barclays 10-Year Municipal Bond Index; **22+-year bonds:** Bloomberg Barclays Long Municipal Bond Index; **municipal bond market:** Bloomberg Barclays 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. Indexes are unmanaged and unavailable for direct investment.

Value of a hypothetical \$100,000 portfolio



PERIOD 5: MARCH 2020

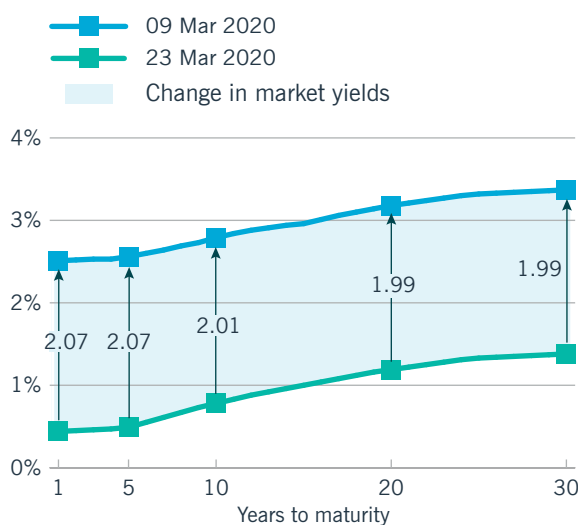
Trigger: Concern over the coronavirus pandemic caused municipal yields to increase nearly 200 bps over a three-week period.

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 3 months, the 1- and 5-year maturities recouped most or all of the March principal reduction.

Figure 11: After three months, shorter maturities nearly recouped or experienced modest principal growth

Yield curve change during spike period (%)



Value of a hypothetical \$100,000 portfolio



Data source: Refinitiv MMD yields for AAA-rated bonds and Barclays, L.P. **Past performance is no guarantee of future results.** Representative indexes: **1-year bonds:** Bloomberg Barclays 1-Year Municipal Bond Index; **5-year bonds:** Bloomberg Barclays 5-Year Municipal Bond Index; **10-year bonds:** Bloomberg Barclays 10-Year Municipal Bond Index; **22+-year bonds:** Bloomberg Barclays Long Municipal Bond Index; **municipal bond market:** Bloomberg Barclays 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. Indexes are unmanaged and unavailable for direct investment.

PORTFOLIOS WERE EVENTUALLY COMPENSATED FOR PATIENCE

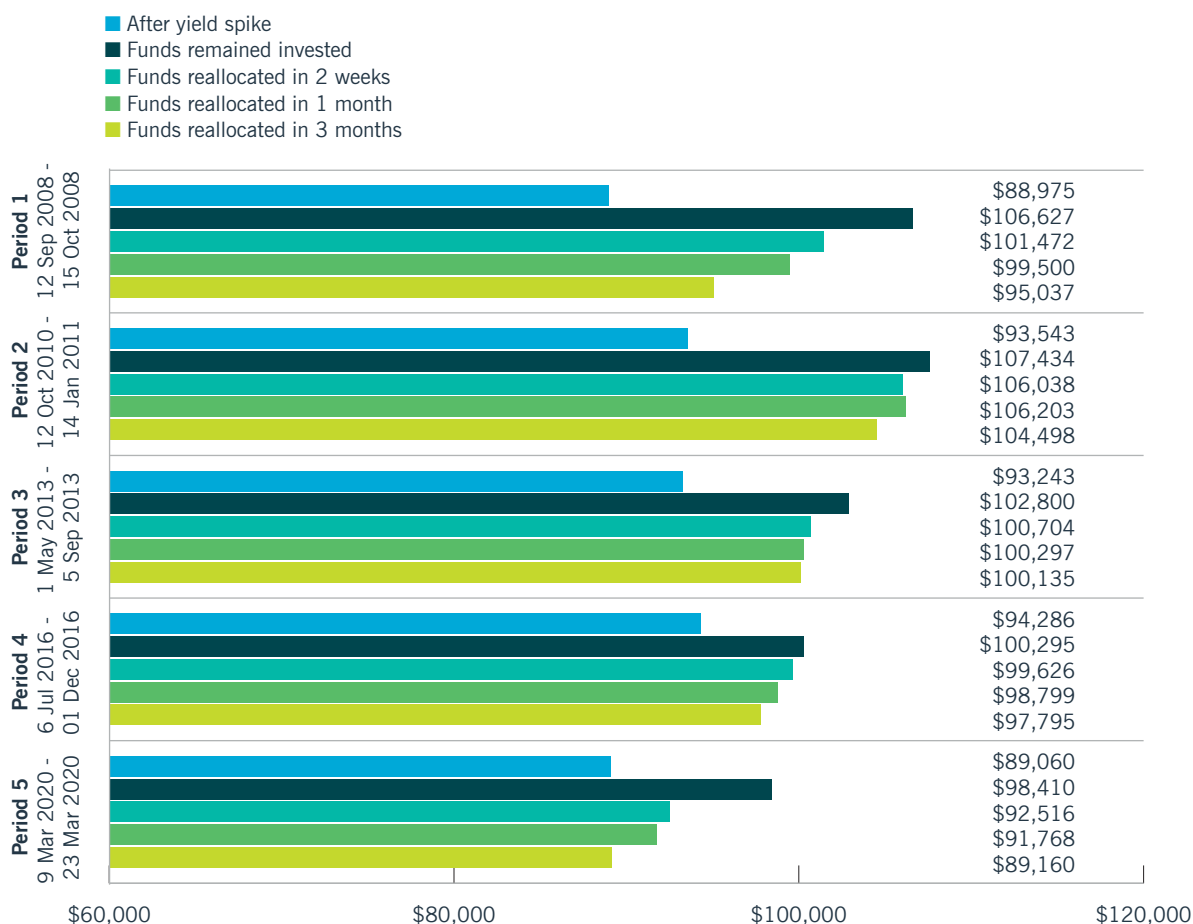
In times of elevated market volatility or negative press, investors may decide to sell and wait for conditions or valuations to improve before reallocating funds. But most cannot time the market perfectly, which can mean lost opportunity.

Figure 12 shows that missing even the first two weeks of a market rebound resulted in lower portfolio values. In all periods, 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 12: Staying invested led to higher returns



Data source: Barclays, L.P. Performance represents the Bloomberg Barclays Municipal Bond Index. **Past performance is no guarantee of 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. Indexes are unmanaged and unavailable for direct investment.

RISING RATES AREN'T ALWAYS BAD FOR MUNICIPAL BOND INVESTORS

Investors have access to more information and advice than ever before. It's sometimes difficult to separate high quality, long-term investment advice from knee-jerk trading suggestions.

Sharply rising rates can cause concern, as investor sentiment deteriorates and portfolios lose value

more quickly. Nuveen does not anticipate a sharp rise in rates in the coming months, nor do we expect the Fed to push rates dramatically higher. Rather, we believe investors should understand that periods of rising rates do not necessarily correlate to losses in bond portfolios, and that attempting to time markets can have negative impact. In each of the last five municipal market rate spikes, staying the course was eventually rewarded.

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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Glossary

One **basis point** equals .01%, or 100 basis points equal 1%. **Bloomberg Barclays Municipal Bond Index** is a rules-based, market-value-weighted index engineered for the long-term tax-exempt bond market. The Index tracks general obligation bonds, revenue bonds, insured bonds and prerefunded bonds rated Baa3/BBB – or higher by at least two of the ratings agencies: Moody's, S&P, Fitch. **Bloomberg Barclays 1-Year Municipal Bond Index** is the 1-year (1-2) component of the Municipal Bond Index. **Bloomberg Barclays 3-Year Municipal Bond Index** is the 3-year (3-4) component of the Municipal Bond Index. **Bloomberg Barclays 5-Year Municipal Bond Index** is the 5-year (5-6) component of the Municipal Bond Index. **Bloomberg Barclays 10-Year Municipal Bond Index** is the 10-year (10-12) component of the Municipal Bond Index. **Bloomberg Barclays 20-Year Municipal Bond Index** is the 20-year (20-22) component of the Municipal Bond Index. **Bloomberg Barclays Long Bond Municipal Bond Index** is the 22+ year component of the Municipal Bond Index. The **personal consumption expenditures (PCE)** deflator indicates the average increase in prices for all domestic personal consumption.

A word on risk

Investing involves risk; principal loss is possible. All investments carry a certain degree of risk and there is no assurance that an investment will provide positive performance over any period of time. Investing in municipal bonds involves risks such as interest rate risk, credit risk and market risk. The value of the portfolio will fluctuate based on the value of the underlying securities. There are special risks associated with investments in high yield bonds, hedging activities and the potential use of leverage. Portfolios that include lower rated municipal bonds, commonly referred to as "high yield" or "junk" bonds, which are considered to be speculative, the credit and investment risk is heightened for the portfolio. Bond insurance guarantees only the payment of principal and interest on the bond when due, and not the value of the bonds themselves, which will fluctuate with the bond market and the financial success of the issuer and the insurer. No representation is made as to an insurer's ability to meet their commitments.

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