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Municipal market: How rates rise matters

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Many bond investors continue to be concerned about the impact a tighter monetary policy could have on bond yields. Since rates and bond prices are inversely related, investors continue to evaluate their fixed income allocations. Some are shortening portfolio duration to minimize the potential impact of rising rates (duration measures sensitivity to changes in rates). Others see yield increases as an opportunity to lengthen portfolios, given more attractive relative yields. Which 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, and including the present cycle, there have been four periods of increasing fed funds rates, as detailed in Exhibit 1.

Exhibit 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 16 Dec 2015 to ?
Starting rate level	3.00%	4.75%	1.00%	0 to 25 bps
Number of hikes	7	6	17	8
Duration	12 months	10 months	24 months	currently 34 months
Ending rate level	6.00%	6.50%	5.25%	currently 2.00% – 2.25%
Magnitude	300 basis points	175 basis points	425 basis points	200 basis points to date

Data source: Bloomberg L.P., www.federalreserve.gov., 30 Sep 2018. 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

Exhibits 2, 3 and 4 detail the performance of the municipal bond market during the prior three 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.

Exhibit 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).

Exhibit 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).

Exhibit 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.

Exhibit 5: Returns along the yield curve – period 4 (Dec 2015 to present)

	6-month return pre-tightening (%)	Total return during tightening cycle (%)	Change in benchmark yields during tightening cycle (bps)
Bloomberg Barclays 1-Year	0.39	2.19	123
Bloomberg Barclays 3-Year	1.00	2.32	100
Bloomberg Barclays 5-Year	2.13	2.98	86
Bloomberg Barclays 10-Year	3.44	5.47	66
Bloomberg Barclays 20-Year	3.59	7.72	62
Bloomberg Barclays 22+Year	4.20	8.47	48

Data source: Bloomberg, L.P. The six month pre-tightening period is 15 Jun 2015 to 15 Dec 2015. **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.

So far in this cycle, yields have increased across all maturities. The yield curve has flattened, with yields of shorter bonds increasing more than longer bonds. All six municipal benchmarks have shown positive returns, with long duration assets outperforming in terms of total return. Exhibit 6 summarizes the market characteristics and outcomes of the three tightening cycles.

Exhibit 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: 16 Dec 2015 to ?
Real GDP year-over-year	3.40% (1Q94)	4.80% (2Q99)	4.20% (2Q04)	2.9% (2Q18)
PCE deflator	2.245% (1/94)	1.392% (6/99)	2.015% (6/04)	2.3% (9/18)
Unemployment rate	6.6% (1/94)	4.3% (6/99)	5.6% (6/04)	3.7% (9/18)
Yield curve change overall	Flattened 76 bps	Flattened 17 bps	Flattened 235 bps	Flattened 109 bps
Short maturity change (1 year)	+204 bps	+92 bps	+188 bps	+123 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 (through Sep 2018)

Data source: Bloomberg, L.P., Bureau of Economic Analysis and Bureau of Labor Statistics. **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.

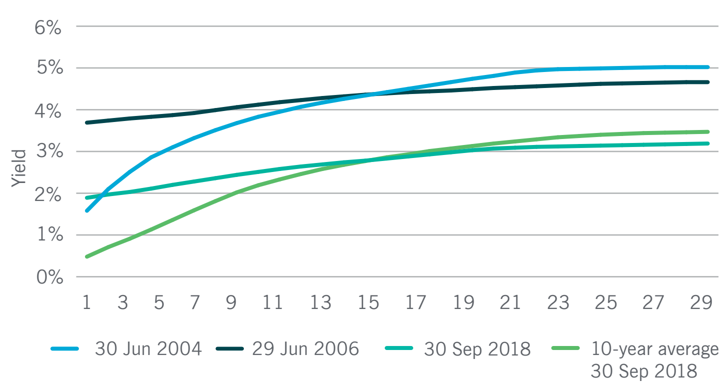
WHAT ABOUT TODAY?

Gross domestic product (GDP) stood at 2.90% year-over-year through 30 Jun 2018. While inflation has moved higher, readings remain within the Fed's target zone as measured by the PCE deflator (personal consumption expenditure) with a reading of 2.00% as of 30 Sep 2018. Despite unemployment being historically low at 3.7% (through 30 Sep 2018), wage growth currently stands at 2.80%. This wage level is slightly higher than the 2.6% average since the Fed started raising rates in December 2015. While the Fed continues to strike a balance in normalizing monetary policy, we believe current economic readings continue to support a gradual approach toward normalization.

Since the Fed began tightening in December 2015, the municipal yield curve has continued to flatten through 30 Sep 2018. When the June 2004 Fed tightening began, there were 344 bps of spread between 1- and 30-year AAA maturities. Prior to the initial fed funds increase on 16 Dec 2015, this spread was 239 bps. Today, that spread is 130 bps (as of 30 Sep 2018).

When the Fed finished tightening in June 2006, the curve had flattened by 247 bps, a result of bond yields increasing on the short end of the curve and decreasing on the long end. During this tightening period, 1-year AAA rated yields increased 211 bps, 10-year yields increased

Exhibit 7: Today's yield curve is similar in shape to June 2006



Data source: Thomson Reuters. MMD AAA Municipal Yield Curve. Past performance is no guarantee of future results.

by 23 bps and 30-year yields declined by 36 bps. These yield changes help explain the total return figures for the 2004 to 2006 period in Exhibit 4, where intermediate and long bond returns outperformed portfolios with a shorter bias. During the tightening cycle that began in December 2015, 1-year AAA rated yields have increased 139 bps, 10-year yields 60 bps and 30-year yields 30 bps.

Over the past 10 years, the data shows that if/when yields increase due to increases in the fed funds rate, there could be more room for yields to continue to increase on the short end of the curve relative to intermediate and longer maturities.

OBSERVATIONS ACROSS PRIOR TIGHTENING PERIODS

- **Shorter maturities increased more in yield** during all three 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.
- **Total returns were positive across all six benchmarks** in all three periods. That means investors who stayed the course were rewarded.

RISING RATES AREN'T ALWAYS BAD FOR 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 and commentary that can be sensationalized. As a result, investors expect rates to rise, and many are shouting the old saw that "rising rates are bad for bond investors."

The analysis in this paper demonstrates that this is not necessarily the case. In each of the last three rising rate environments, economic conditions and the pace and scale of Fed activity affected various parts of the curve differently. The current tightening cycle is similar to the Jun 2004 to 2006 cycle in terms of yield curve flattening and return profiles. There was, though, one common theme: patient investors who held portfolios through the rising rate cycle generated positive returns.

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

1 Data source: Bureau of Economic Analysis

2 Data source: Bureau of Labor Statistics

Glossary

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 5-year (2-4) component of the Municipal Bond Index.

Bloomberg Barclays 5-Year Municipal Bond Index is the 5-year (4-6) component of the Municipal Bond Index.

Bloomberg Barclays 10-Year Municipal Bond Index is the 10-year (8-12) component of the Municipal Bond Index.

Bloomberg Barclays 20-Year Municipal Bond Index is the 20-year (17-22) component of the Municipal Bond Index.

Bloomberg Barclays Long Bond Municipal Bond Index is the 22+ year component of the Municipal Bond Index.

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