NORTHERN TRUST

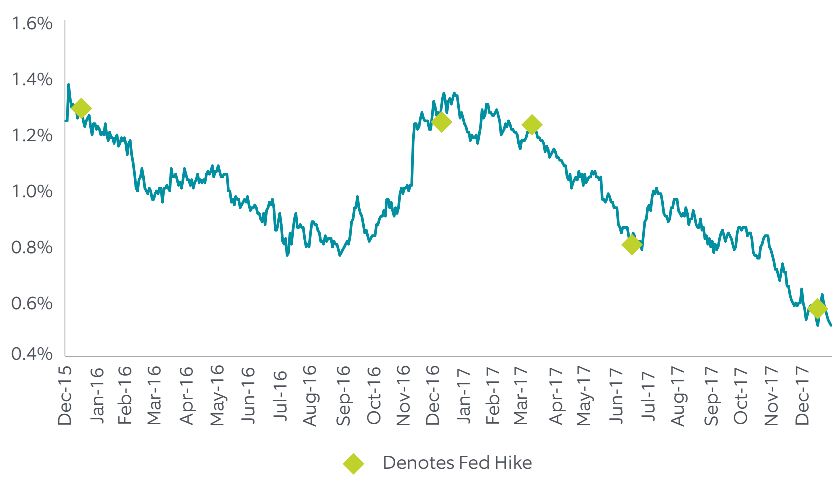
FIXED INCOME UPDATE – FOURTH QUARTER 2017

KEY POINTS

- The Treasury curve flattened as the Federal Reserve raised its benchmark fed funds rate 25 basis points in December. This was the fourth increase since December 2016.
- The new U.S. tax policy may favor municipal bond investors by limiting deductions and reducing issuance from some municipalities.
- Corporate fundamentals are improving and have led credit spreads to their tightest levels in 10 years.

IN THIS ISSUE

SPREAD BETWEEN 2- AND 10-YEAR TREASURYS



SOURCE: Northern Trust Fixed Income; Federal Reserve Bank of St. Louis

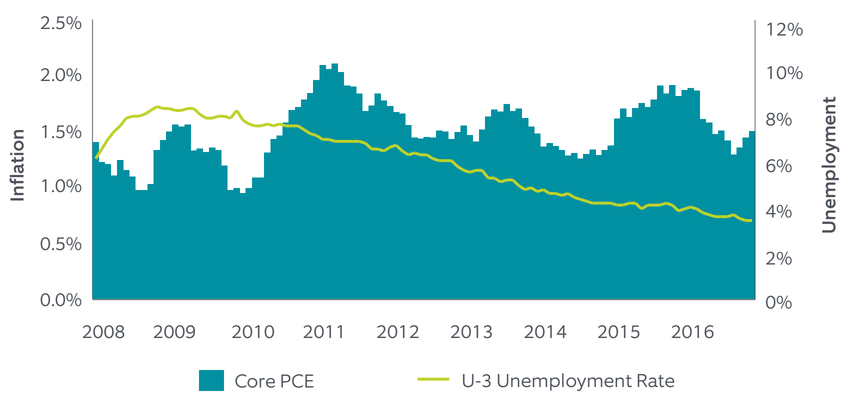
CENTRAL BANK/MACRO UPDATE

- U.S. employment growth remains solid. The unemployment rate is now near a 17-year low. Despite low unemployment, inflation and inflation expectations remain low.
- The confirmation of Jerome Powell as Fed chairman represents the status quo on interest rates. Like Janet Yellen, he favors slowly raising interest rates. In addition, he also favors less bank regulation.
- The Fed has raised its benchmark fed funds rate four times since December 2016. The market is pricing in a high probability of another 25 basis point increase in March.

Long-Term Trends:

- Interest rates are likely to move only moderately higher given low inflation.
- Accommodative foreign central bank policy will constrain the Fed from aggressively increasing rates.
- We forecast a 10-year Treasury at 3% in five years.

FED'S DUAL MANDATE



SOURCE: Northern Trust Fixed Income; Bloomberg Barclays

MUNICIPAL MARKET

Current Positioning:

- Portfolios moved from short duration to neutral as yields rose on record December issuance. We believe new issuance in the first quarter of 2018 will be light, providing a strong technical assist to the market.
- Our broader maturity profile enhanced performance, while our higher credit quality bias was a headwind.
- We favor select general obligation bonds and essential services revenue bonds.
- California paper has very strong demand; we are looking for better relative value in other states.

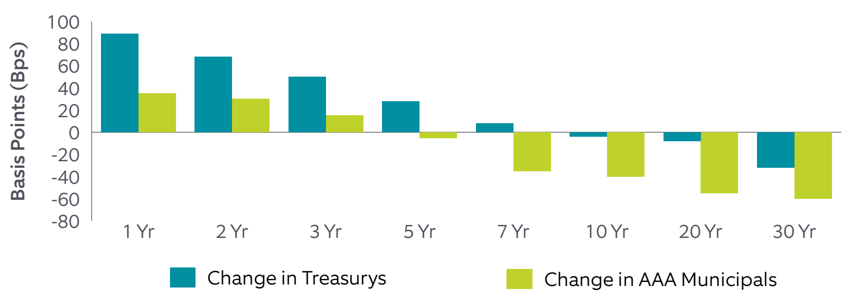
RATIO: AAA MUNI YIELD TO TREASURY YIELD

SOURCE: Northern Trust Fixed Income

MUNICIPAL CREDIT RATINGS AND RETURNS
RANGE OF ANNUAL RETURNS: 2008-2017

As of 12/31/17
SOURCE: Bloomberg Barclays

TREASURYS VERSUS AAA MUNICIPALS – CHANGE IN YIELDS
FULL YEAR 2017 (FED FUNDS: + 75 BASIS POINTS (BPS)



As of 12/31/17
SOURCE: Northern Trust Fixed Income

Municipal Market Highlights:

- The impact of tax law changes is mixed. Supply will be constrained by new legislative limits on issuance. Demand could be challenged by lower tax rates, but enhanced as other taxpayer deductions are minimized.
- Longer maturity and lower quality bonds outperformed in 2017. Investors were not adequately compensated for purchasing lower quality bonds. Credit fundamentals for these issuers have not improved.
- Muni/Treasury ratios improved as a result of record issuance in December 2017.

CORE/CORE PLUS

Current Positioning:

- Portfolios remain overweight corporate debt. Corporate fundamentals have improved with better sales, earnings and cash flows. There's no sign that demand for corporate debt is slowing. Investors around the globe continue to search for yield in a low interest rate world. As a result, portfolios own lower quality issuers.
- The global search for yield continues and the U.S. has some of the highest interest rates in the developed world. Current positioning reflects range-bound interest rates and inflation. Duration is short to neutral relative to the Bloomberg Barclays U.S. Aggregate Index benchmark. Portfolios are underweight in the 1 - to 7- year and overweight in the 10- year-plus portions of the interest rate curve.

Core / Core Plus Highlights:

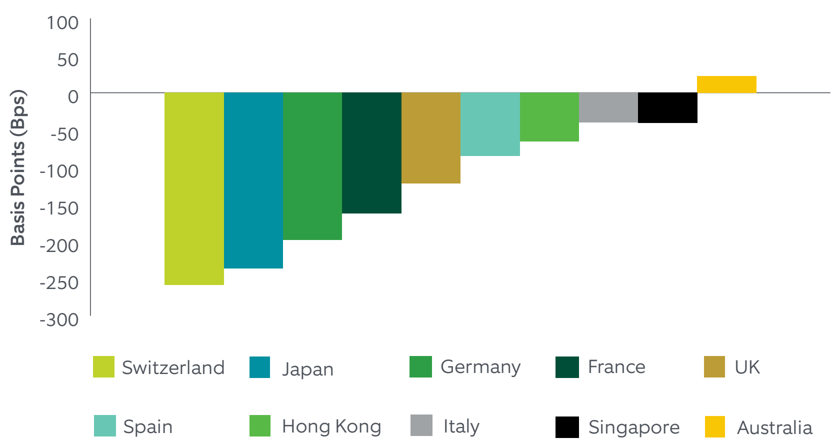
- Global investors continued to move money into the U.S. fixed income markets in a search for yield. This has driven credit spreads to their tightest levels in over 10 years despite the fourth year in a row of record issuance.
- Corporate sales, earnings and cash flows have improved and are supportive of high valuations.
- Tax reform in the U.S. will be very positive for investment-grade companies, accelerating the growth of earnings and cash flows.

PORTFOLIO POSITIONING RELATIVE TO BENCHMARK

Duration	Neutral	▬				
Curve	Short	▼	Intermediate	▬	Long	▬
Sector	Credit	▲	Securitized	▬	Government	▼
Credit	Short	▼	Intermediate	▲	Long	▲
Securitized	MBS	▲	ABS	▼	CMBS	▬
Government	TIPS	▬	UST	▼		

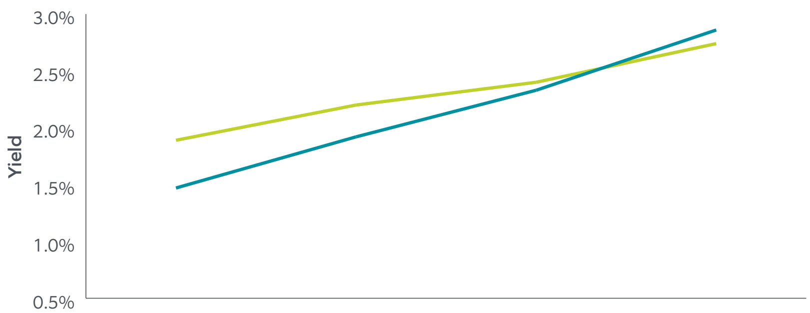
INTEREST RATES ARE AMONG THE HIGHEST IN THE DEVELOPED WORLD

Developed Markets Spread to 10-Year Treasurys



As of 12/31/17
SOURCE: Northern Trust Fixed Income; Bloomberg Barclays

YIELD CURVE CHANGES — FOURTH QUARTER CHANGE IN TREASURY YIELDS

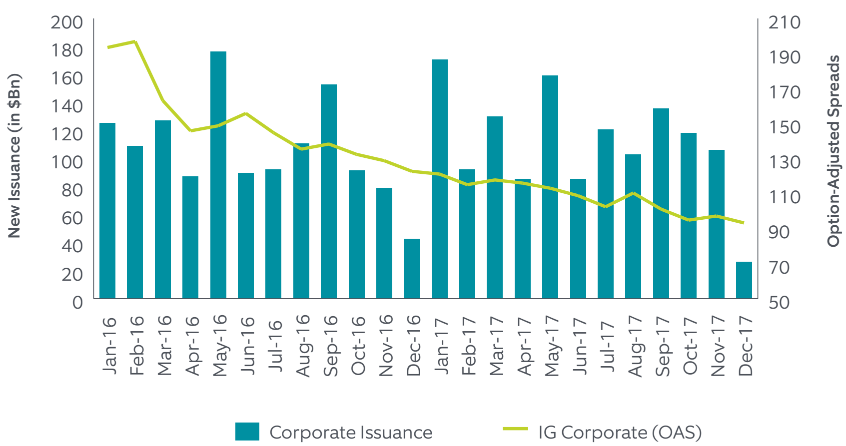


		2 Yr	5 Yr	10 Yr	30 Yr
—	9/30/2017	1.47	1.92	2.33	2.86
—	12/31/2017	1.89	2.20	2.40	2.74
	Change	0.42	0.28	0.07	-0.12

SOURCE: U.S. Department of the Treasury

- The Treasury yield curve flattened, as the Federal Reserve increased its benchmark federal funds rate for the fourth time since December 2016.

CORPORATE ISSUANCE AND CREDIT SPREADS



SOURCE: Northern Trust Fixed Income, Bloomberg Barclays, SIFMA, Thomson Reuters

HIGH-YIELD MARKET

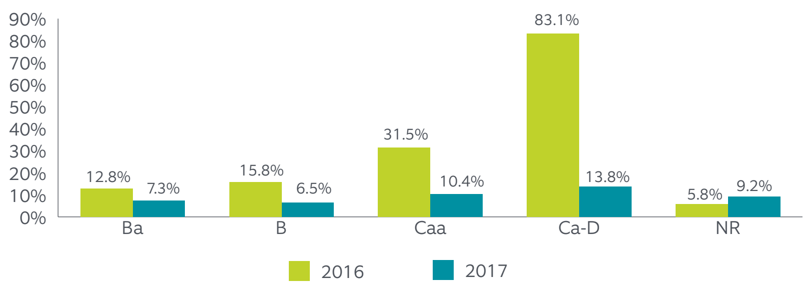
Current Positioning:

- Portfolios remain overweight lower quality corporate debt as company sales, earnings and cash flows are improving. Company defaults continued to fall from the elevated levels in 2016 when many commodity-related issuers went out of business.
- Being overweight lower quality issuers with higher yields contributed to performance in the fourth quarter and throughout 2017.

High-Yield Market Highlights:

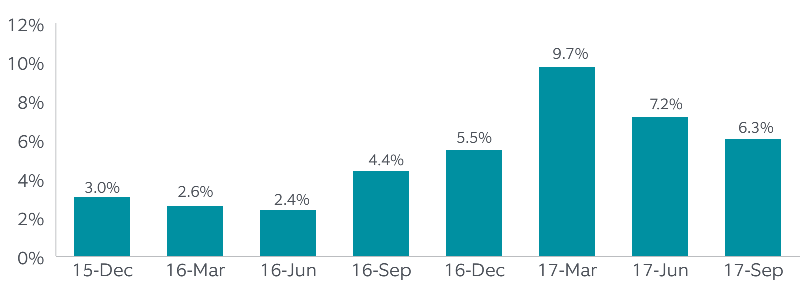
- Revenues for high-yield companies have accelerated, driving higher earnings and cash flows.
- Defaults dropped significantly in 2017 after commodity-related bankruptcies in 2016.
- Tax reform will be very positive for high-yield companies, supporting tight credit spreads.
- Returns by credit rating were very similar in 2017. This contrasts with 2016, when lower quality issuers outperformed significantly.

TOTAL RETURN BY QUALITY



SOURCE: Northern Trust Fixed Income; Bloomberg Barclays Live

REVENUE GROWTH FOR HIGH-YIELD COMPANIES (YEAR OVER YEAR)



SOURCE: Bloomberg Barclays Indices, Capital IQ

HIGH-YIELD INDEX OPTION ADJUSTED-SPREAD VERSUS MOODY'S DEFAULT RATE

SOURCE: OAS is from Bloomberg Barclays Capital 2% Capped Index; default rate is from Moody's

ULTRA-SHORT / CASH MARKET

Current Positioning:

- Our ultra-short products continue to be modestly short duration to help protect against potential increases in short-term rates.
- Ultra-short products have increased exposure to floating rate notes because variable coupons help to protect investors from rising interest rates.
- Credit spreads tightened on corporate debt maturing from 1 to 3 years.

Ultra-Short / Cash Highlights:

- Yields on one-year Treasury bills moved 45 basis points higher in the fourth quarter as investors bet the Fed would increase interest rates at its December meeting.
- Assets in prime funds increased as investors were attracted by higher yields, stable net asset values and adequate liquidity.
- Ultra-short bonds saw demand increase from money market investors seeking higher yields and longer-term investors reducing duration.

HIGHER RATES 2-YEAR TREASURY

SOURCE: Northern Trust Fixed Income; U.S. Department of the Treasury

1-3 YEAR CORPORATE OPTION-ADJUSTED SPREAD

SOURCE: Bloomberg Barclays Live

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