



Analysis, Research, Portfolio Models, & More

The background is a solid teal color. On the left side, there is a faint, light-colored shield icon containing three dots. In the top right corner, there are faint outlines of circles and curved lines. At the bottom center, there is a faint outline of a shield icon containing three circles.

# Fixed-Income Chart Book

A sense of what is to come

# Welcome to RIA *Pro*

Within the next few weeks Real Investment Advice will officially introduce and launch RIA Pro. This new subscription service will offer investors an indispensable set of proprietary research tools and commentary aimed exclusively at helping those who wisely seek to compound their wealth.

Preliminary to the formal launch of this new service, and to give interested readers a sense of what is to come, we are providing you the following RIA Pro Fixed-Income Chart Book. Bonds play a vital role in portfolio management and yet oddly qualify as an underserved asset class. Catering to the celebrity of stocks, most research publications give bonds little more than a brief glance of coverage. Given the renewed market volatility and rising geopolitical risks there is no better time to brush up on fixed-income dynamics.

Thank you for your interest, let us know if you have questions or comments and we look forward to providing more details on RIA Pro over the coming weeks.

Sincerely,

Lance Roberts & Michael Lebowitz, CFA

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# Dashboard

Aggregated historical yields and returns  
for major fixed income classes




# Fixed Income Aggregate Dashboard

Yields					Returns (annualized)	
FI Sector	Current 3/29/2018	Last Qtr 12/29/2017	Year Ago 3/31/2017	Five Years Ago 3/29/2013	YTD <i>(For period ending 3/29/2018)</i>	12 months
U.S. Treasury	2.61	2.19	1.91	0.89	-2.10	-0.56
Corporate IG	3.71	3.26	3.33	2.78	-2.56	2.20
Corporate HY	6.39	6.16	6.18	6.47	-0.26	4.18
Municipal	2.66	2.36	2.46	2.20	-1.47	2.50
MBS	3.36	2.91	2.90	2.52	-1.82	0.16
ABS	2.75	2.26	1.89	0.96	-0.56	0.63
Emerging Markets	4.91	4.53	4.74	4.34	-1.53	3.45
Spreads to UST						
Corporate IG	1.10	1.06	1.42	1.89		
Corporate HY	3.78	3.96	4.27	5.58		
Municipal	0.05	0.17	0.55	1.32		
MBS	0.75	0.72	0.99	1.63		
ABS	0.14	0.07	-0.02	0.08		
Emerging Markets	2.29	2.33	2.83	3.45		



# Rates

- U.S. Treasury securities
  - Yields curves
  - Supply and demand dynamics
  - Fed Funds
  - Stock/bond correlation
  - Technical analysis
- 

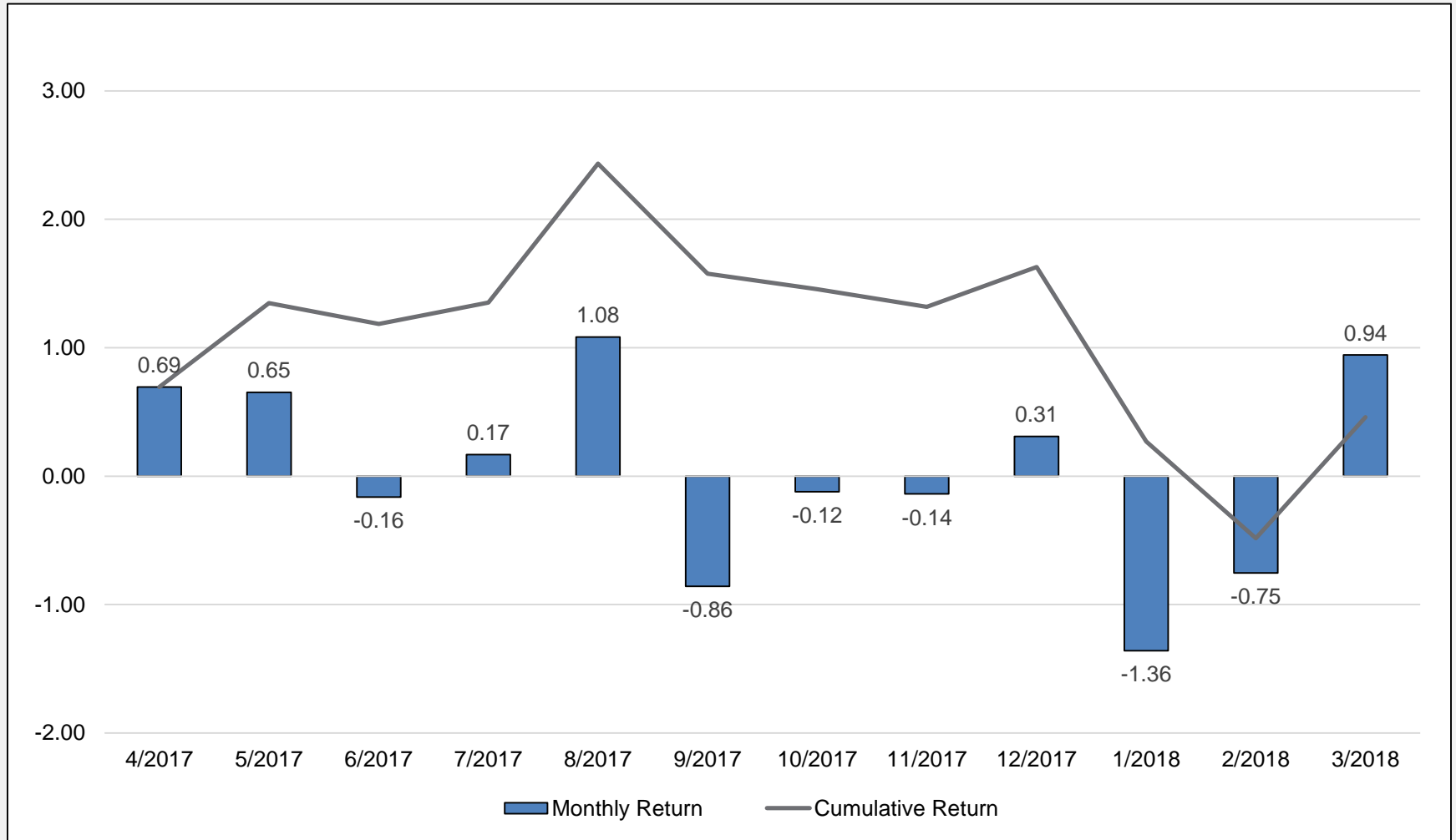
# Interest Rates

U.S. Treasury bills, notes and bonds are the most important market in the world as they establish the price/yield against which all other global assets are benchmarked.

- Although still at low levels, the recent rise in interest rates is primarily due to expectations for more U.S. Treasury supply to fund growing U.S. deficits as well as growing concerns for higher than expected levels of inflation.
- Led by the short-end of the yield curve (maturities less than 3 years), Treasury yields began rising in earnest following the historic lows of mid-2016.
- The risk of a flatter yield curve lies in the possibility of inversion (2-Year yields rise above 10-Year Yields). Historically, this has provided an important recession warning.
- Yield curve flattening in current cycle more gradual and prolonged than in previous rate hike cycles.
- Gradual rate hikes by the Federal Reserve have begun to give way to a more methodical and steady pace.
- In addition to rate hikes, the Fed has begun to slowly allow their balance sheet to decline thus further removing liquidity from the system.
- Movement between stocks and bonds (correlation) is relatively low suggesting the traditional relationship of “stocks down-bonds up” may be changing.



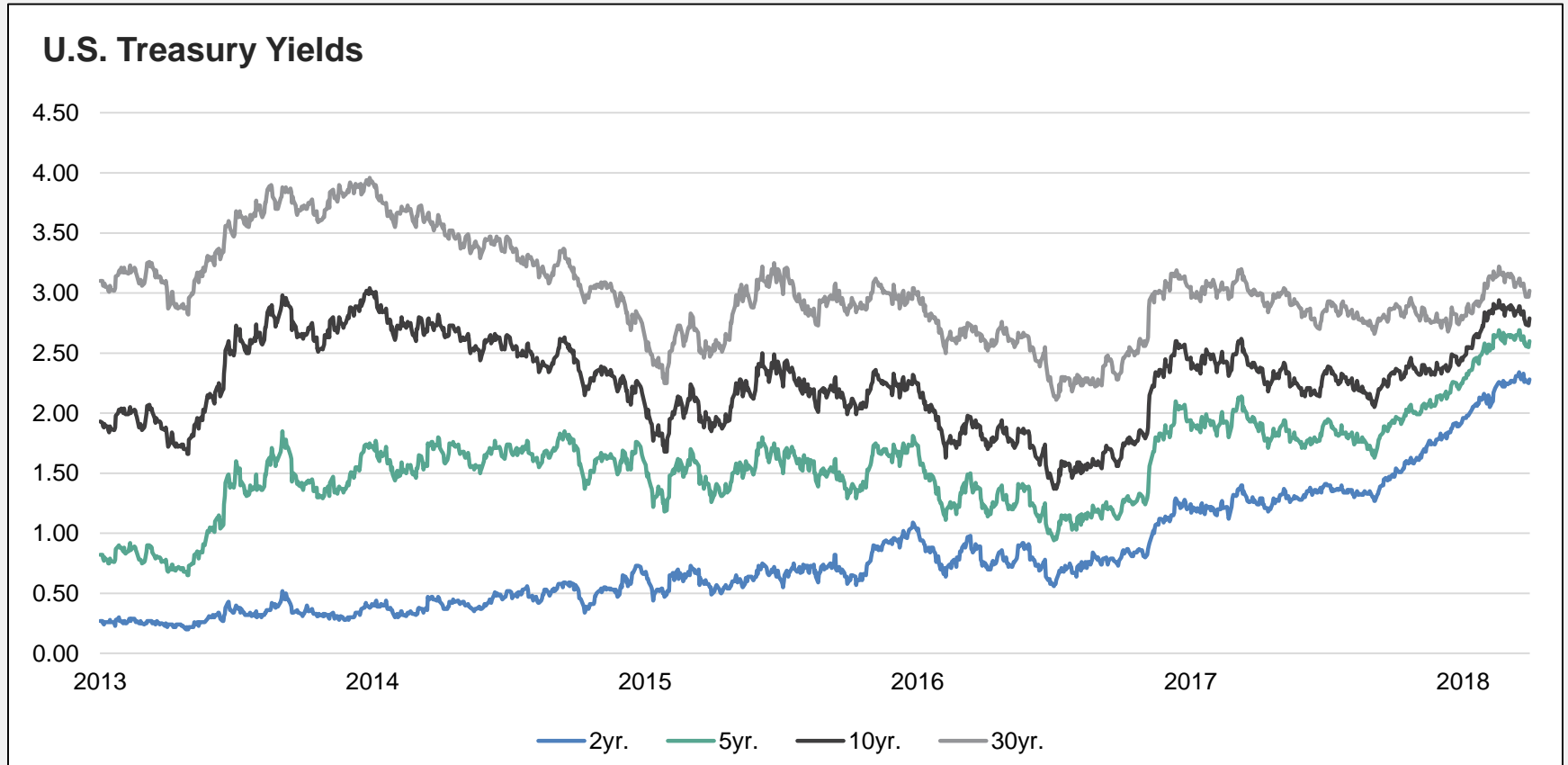
# Aggregate Treasury Bond Performance



# Treasury Market Composite

Instrument	Yield/Spreads				Returns (annualized)	
	Current 3/29/2018	Last Qtr 12/31/2017	Year Ago 3/31/2017	Five Years Ago 3/28/2013	YTD	12 months
Fed Funds (FF)	1.68	1.33	0.82	0.13		
3 Month T-Bill	1.73	1.39	0.76	0.07	0.34%	1.25%
2yr. Tsy Note	2.27	1.89	1.27	0.25	-0.27%	-0.66%
5yr. Tsy Note	2.56	2.20	1.93	0.77	-1.14%	-1.00%
10yr. Tsy Note	2.74	2.40	2.40	1.87	-2.32%	-0.51%
30yr. Tsy Bond	2.97	2.74	3.02	3.10	-3.81%	3.99%
2/5 Yield Curve	0.29	0.31	0.66	0.52		
2/10 Yield Curve	0.47	0.51	1.13	1.62		
FF/10 Yield Curve	1.06	1.07	1.58	1.74		
5yr. TIPS B/E	1.92	1.86	1.77	2.24		
10yr. TIPS B/E	2.05	1.96	1.97	2.51		

# Historical Treasury Yield Spectrum

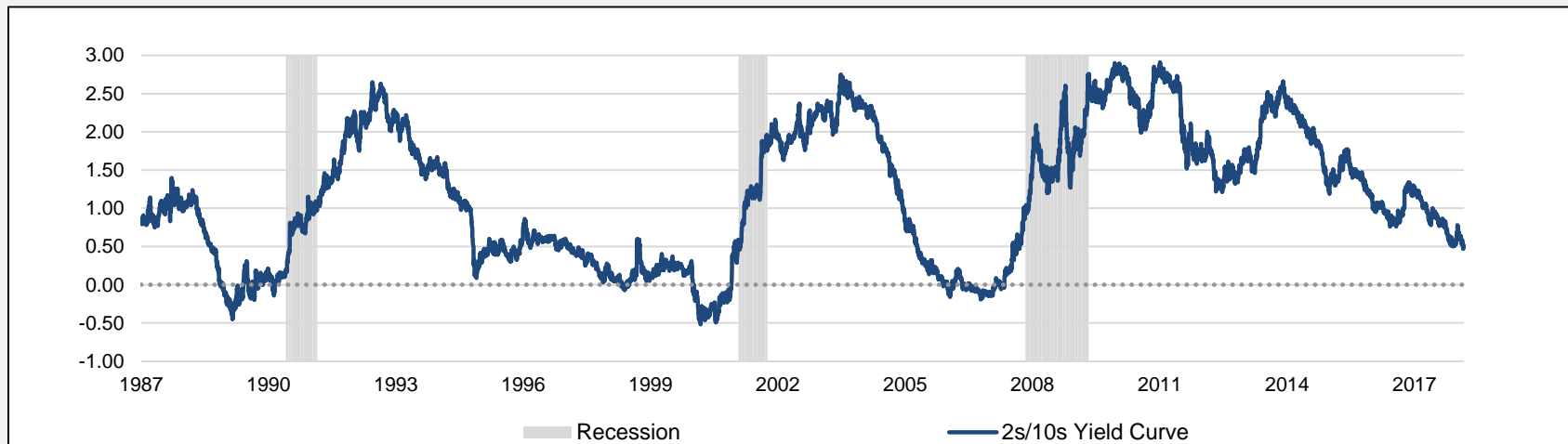


# 2s-10s Yield Curve Spread

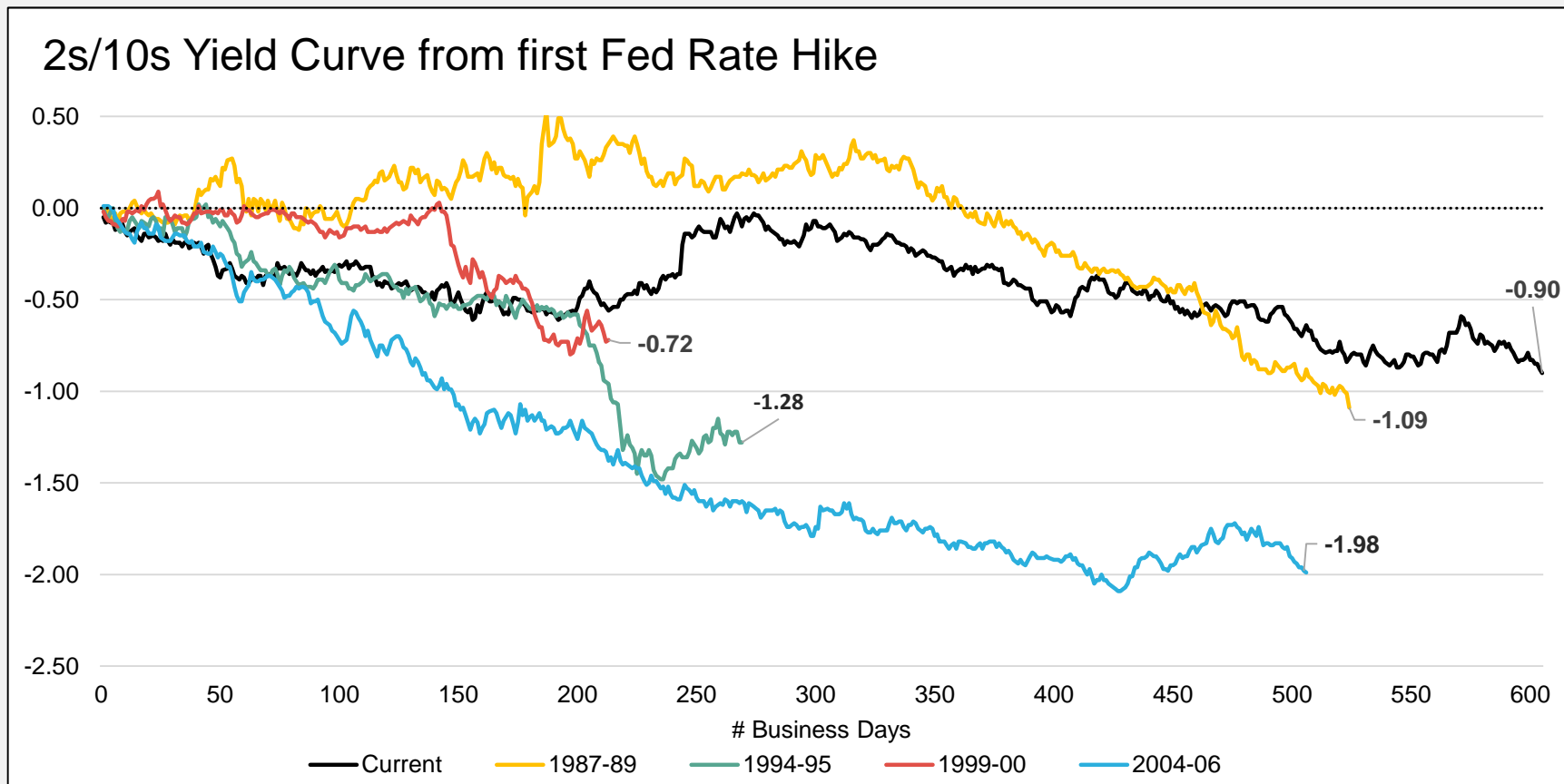
2s/10s Yield Curve



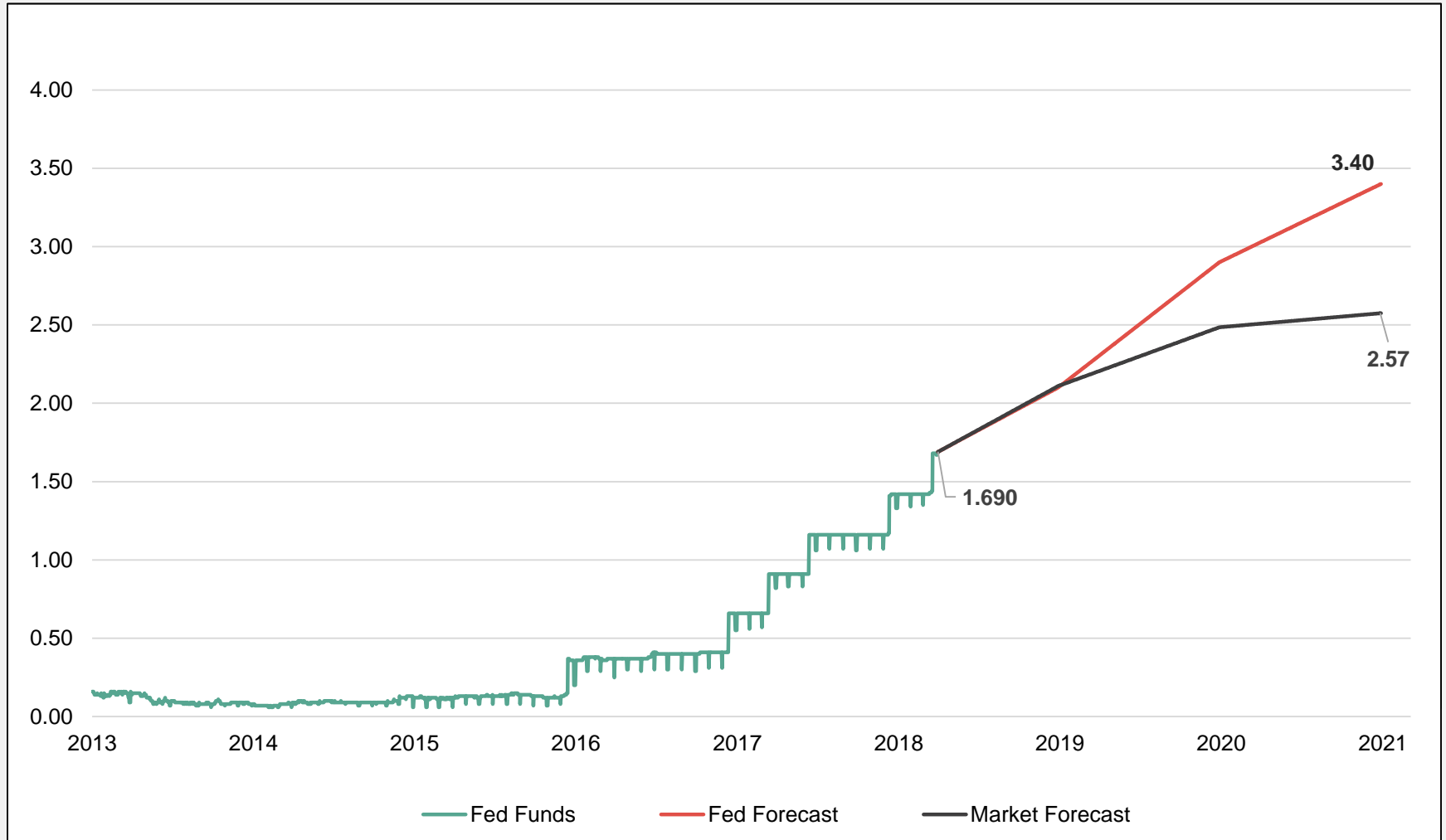
UST Yield Curve Inversions & Recessions



# Historical Fed Rate Hiking Cycles

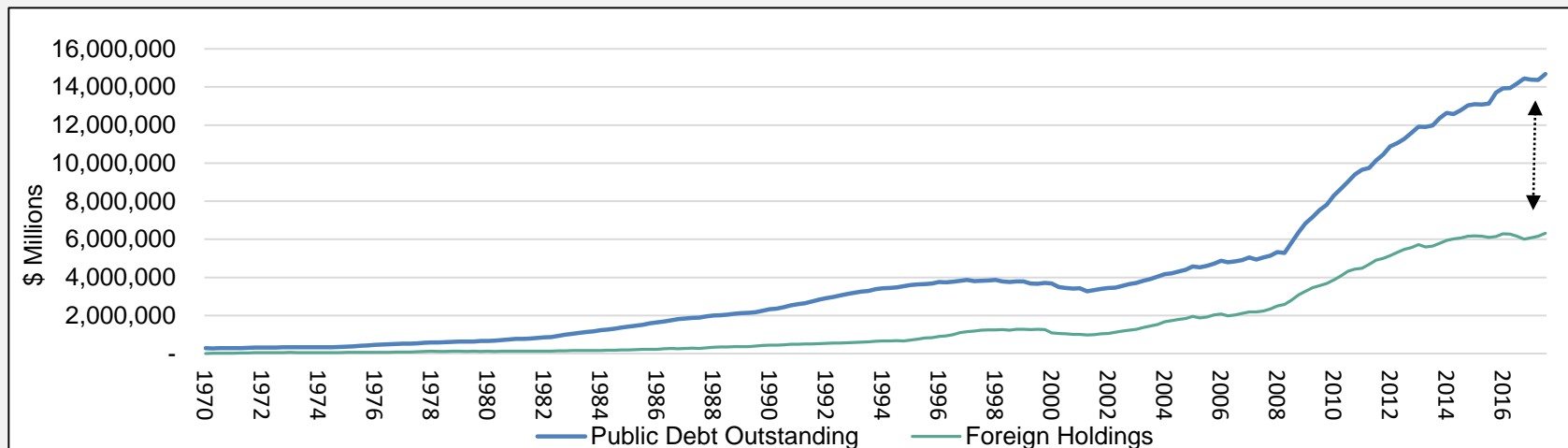


# Fed Funds – Historical and Projected

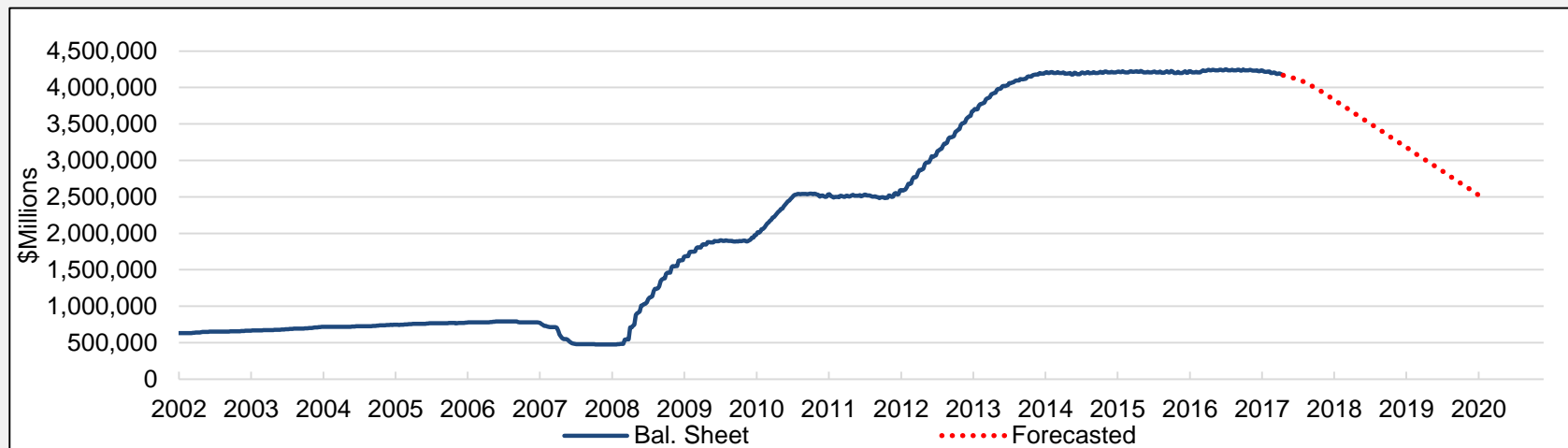


# UST Demand Dynamics

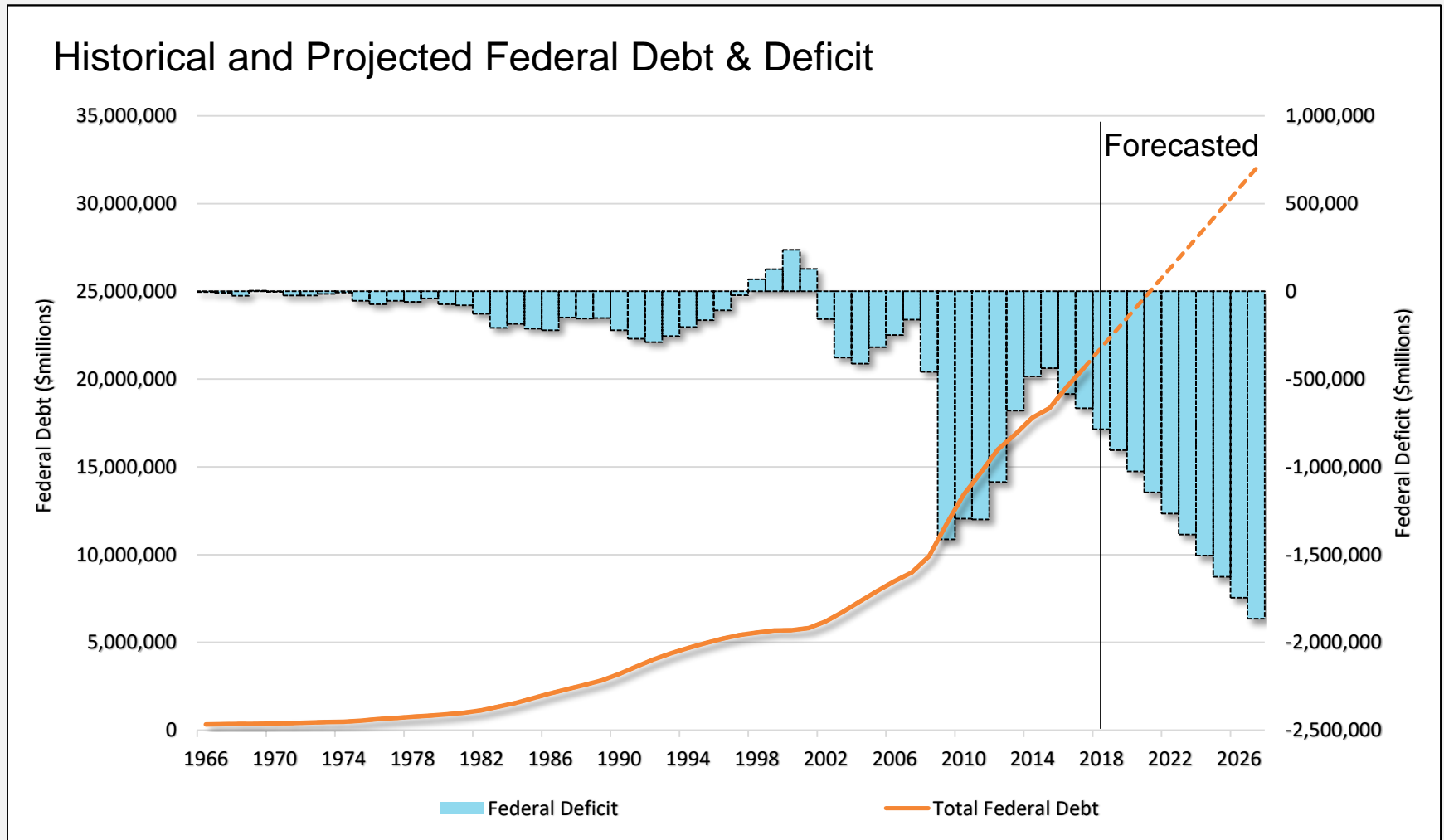
Federal Debt Outstanding and Foreign Holdings



Federal Reserve Balance Sheet

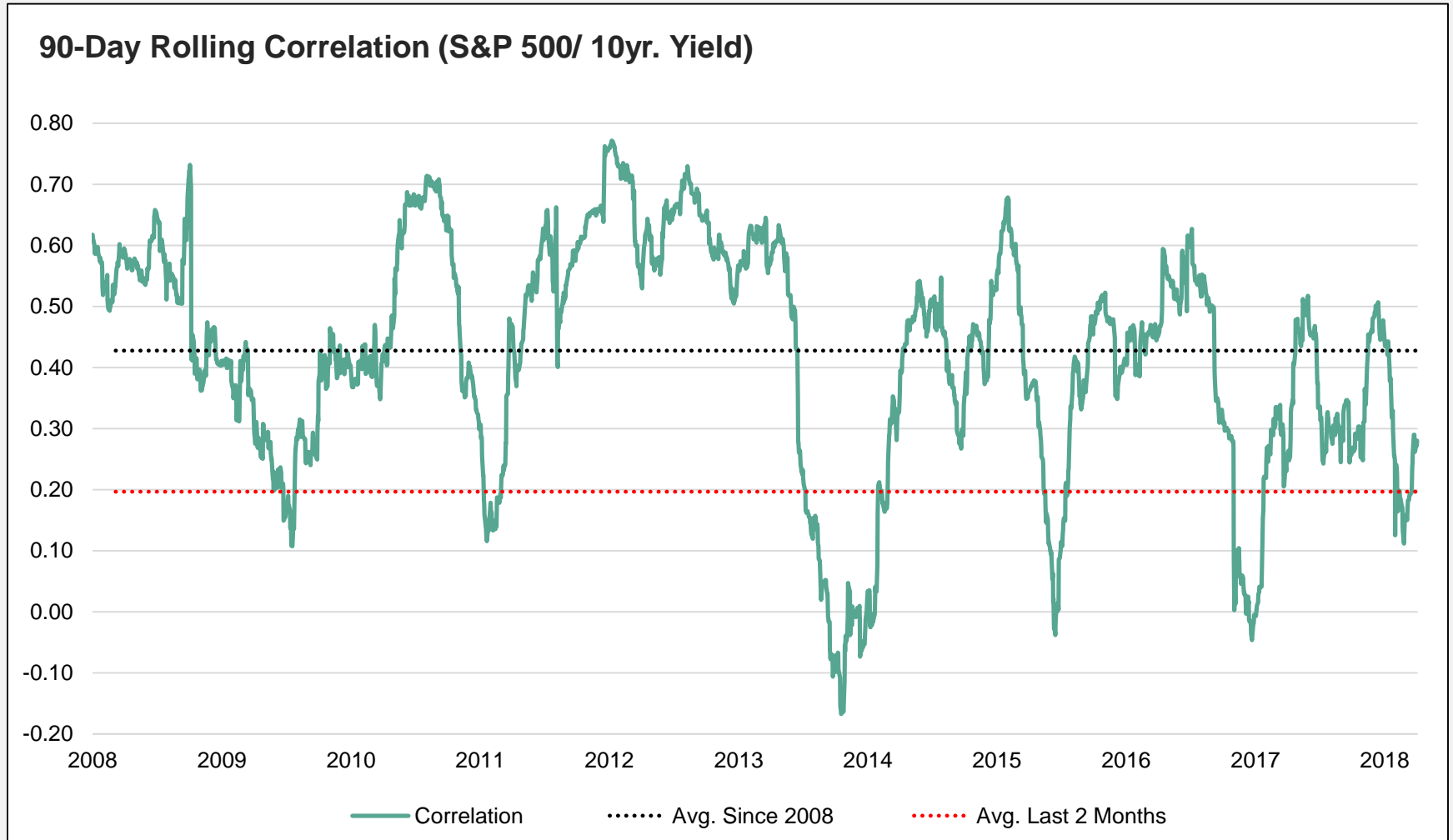


# UST Supply Dynamics





# Stock/Bond Correlation





# Technicals

Long term analysis – UST 10 Year

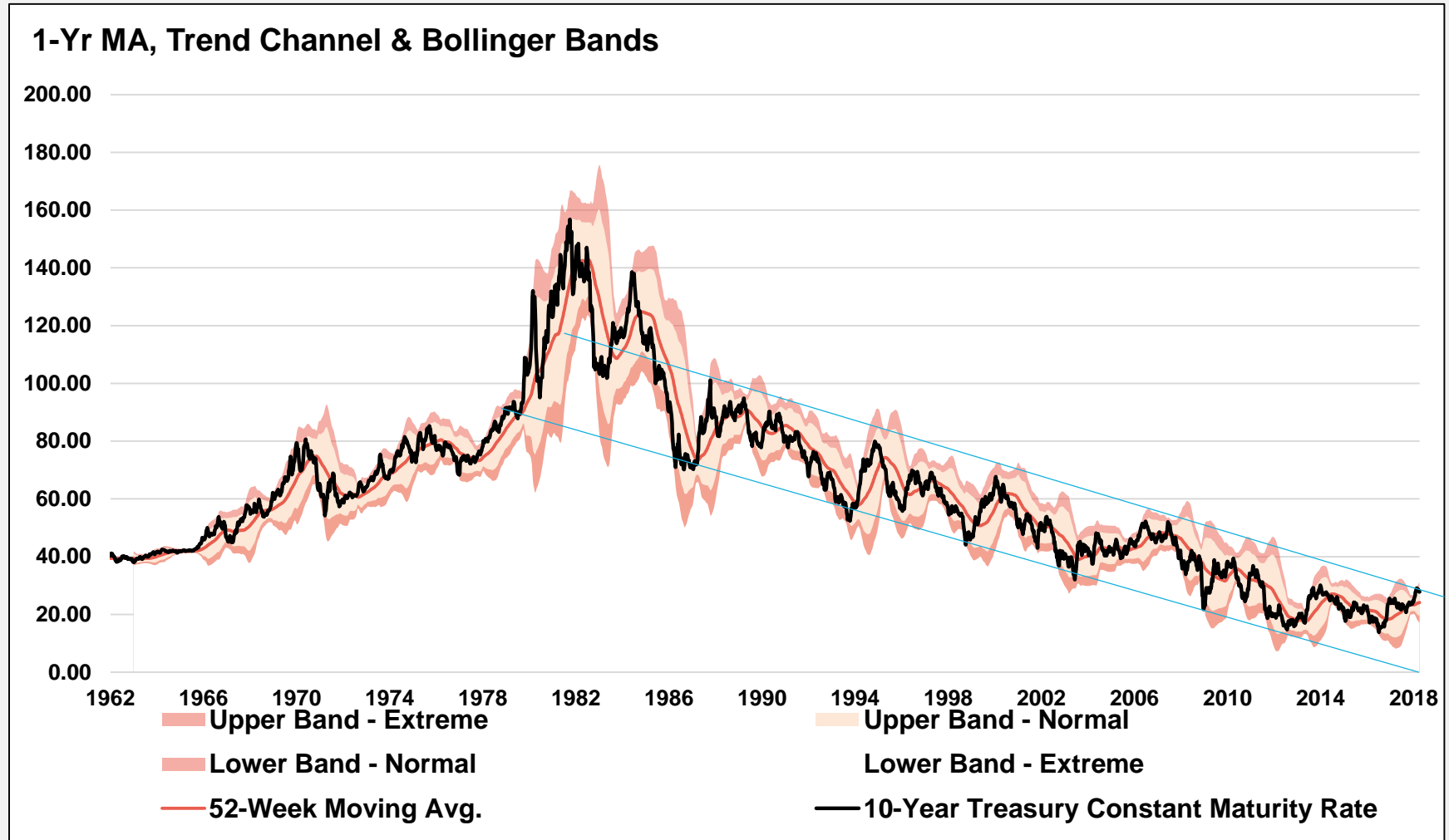
Short term analysis – UST 10 Year



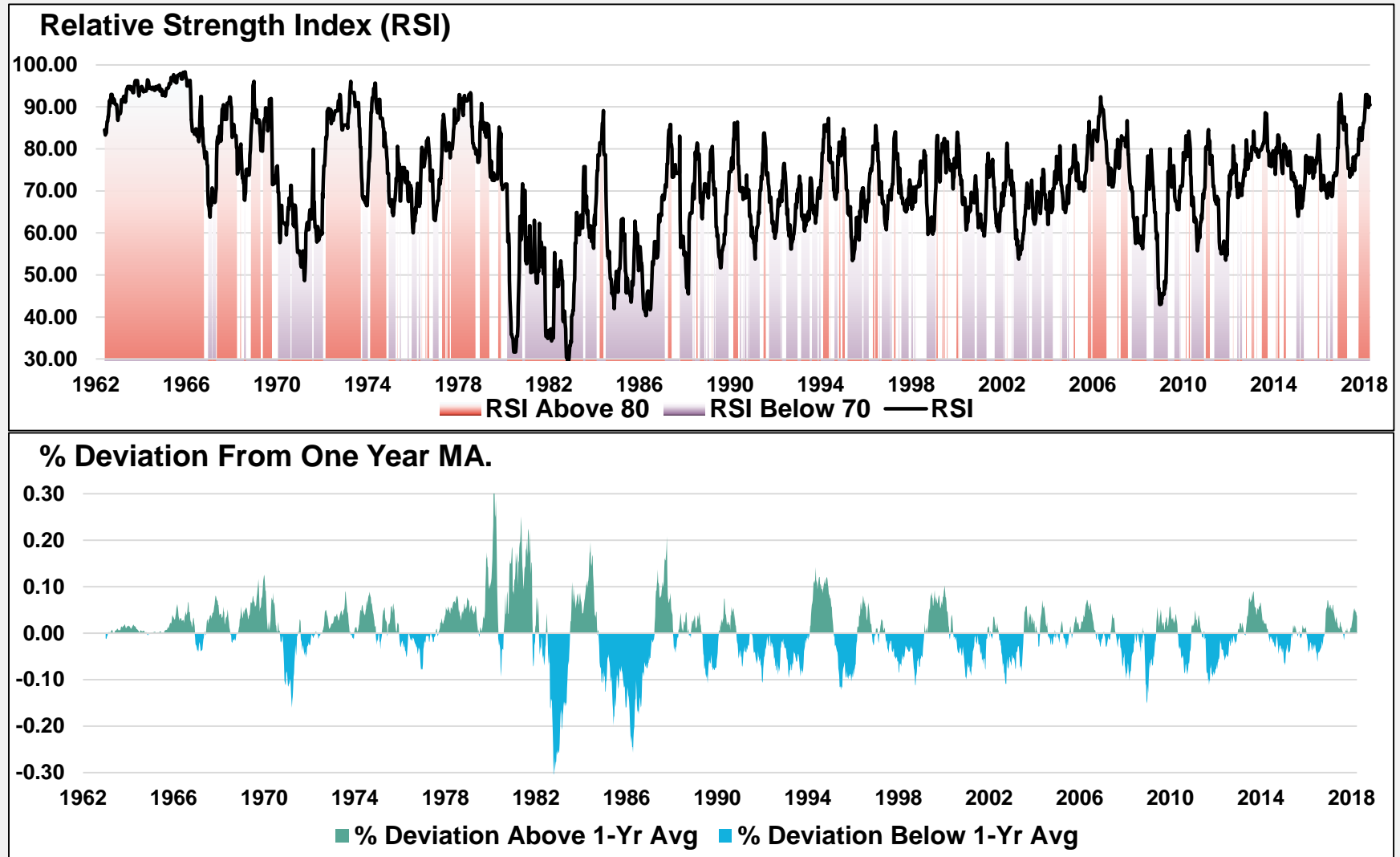
# 10-Year UST Technicals – Long Term

1. Rates are currently pushing into 3-standard deviations of the long-term mean which historically has been a peak of price movements
2. Rates are currently at the top of the their 30 year downtrend line which is likely to limit further advances in rates over the intermediate term
3. Going back through history, peaks in rates typically correspond to financial and economic events from the Black Monday stock market crash of 1987, Long-Term Capital Management, the popping of the dot.com bubble, and most recently the great financial crisis of 2008
4. RSI levels above 90 have always signaled peaks in rates
5. Large deviations from the long-term mean has signaled previous peaks
6. The y-axis on pages 20 and 22 are yields (for example 40= 4.00%).

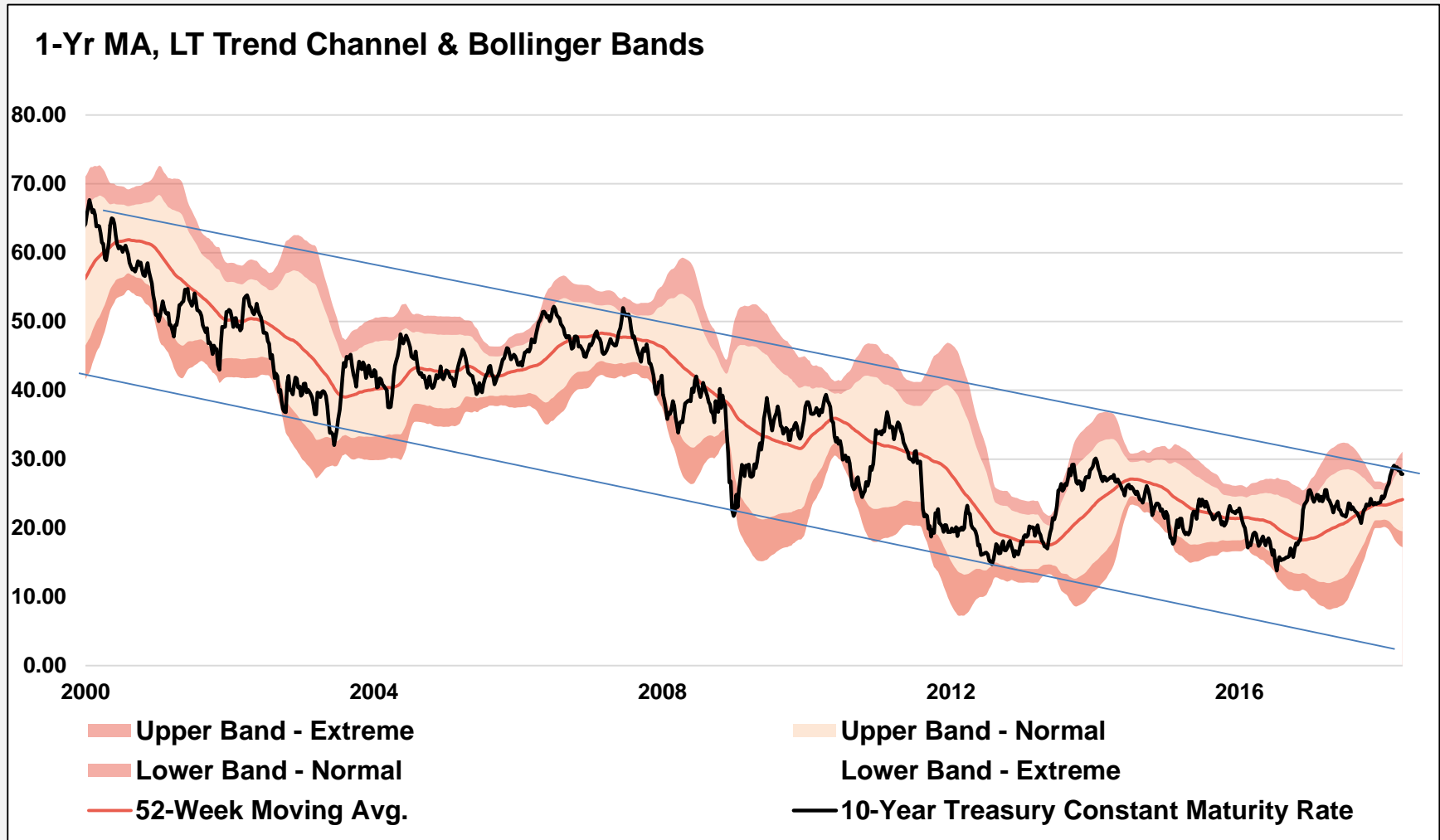
# 10-Year UST Technicals – Long Term



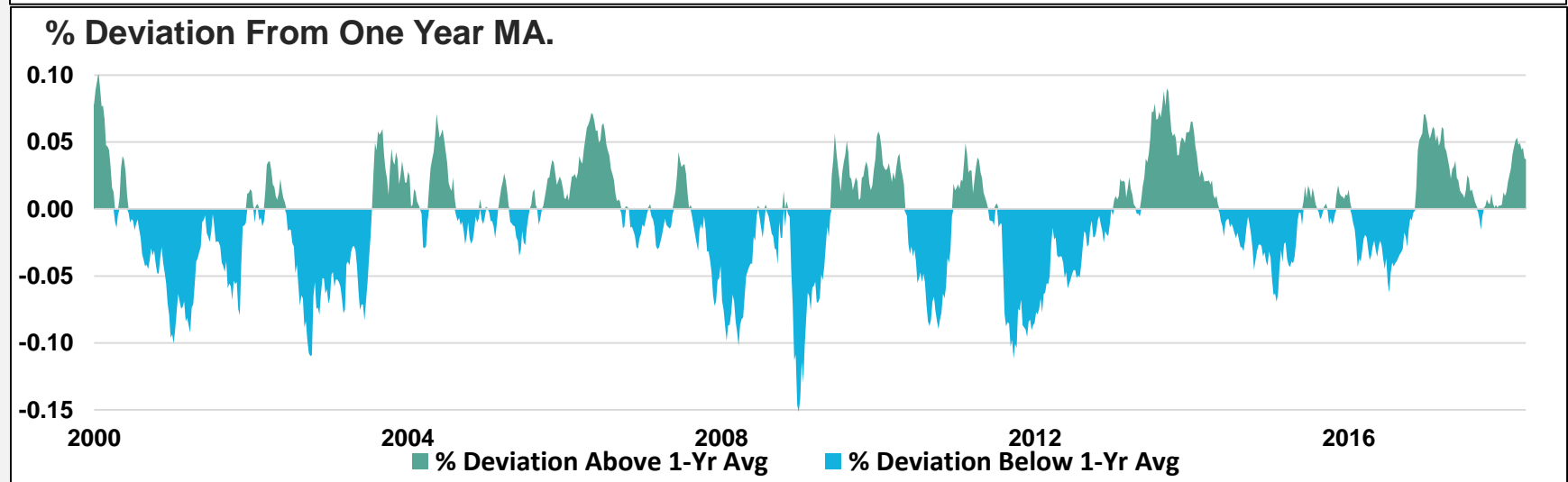
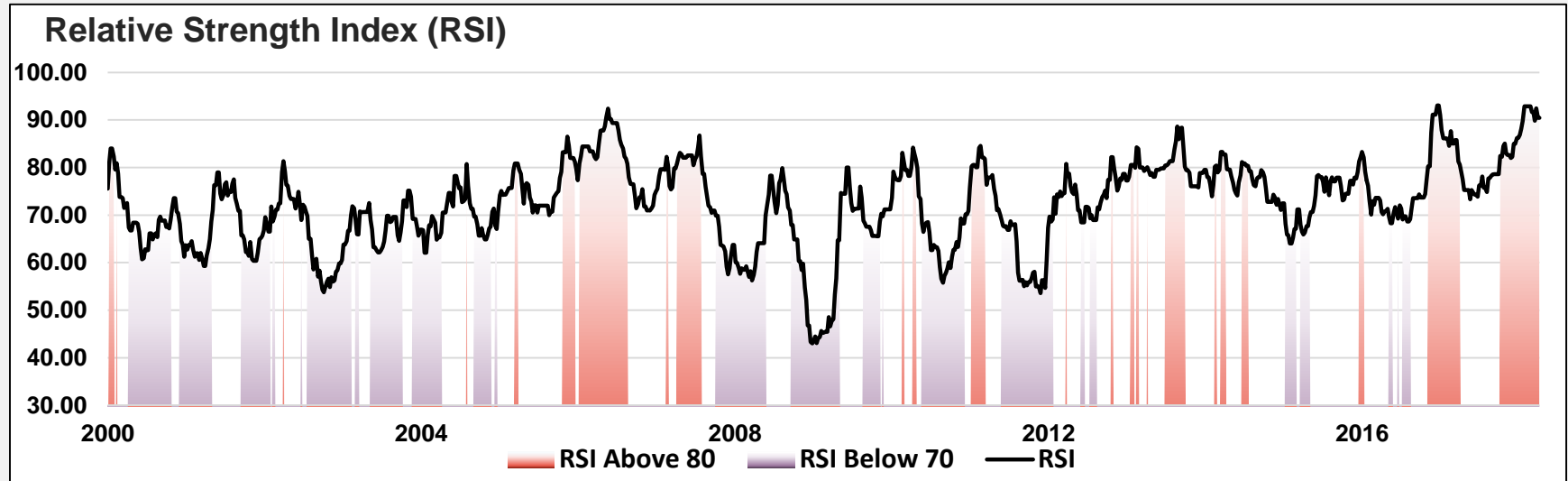
# 10-Year UST Technicals – Long Term



# 10-Year UST Technicals – Short Term




# 10-Year UST Technicals – Short Term





# Corporate Bonds

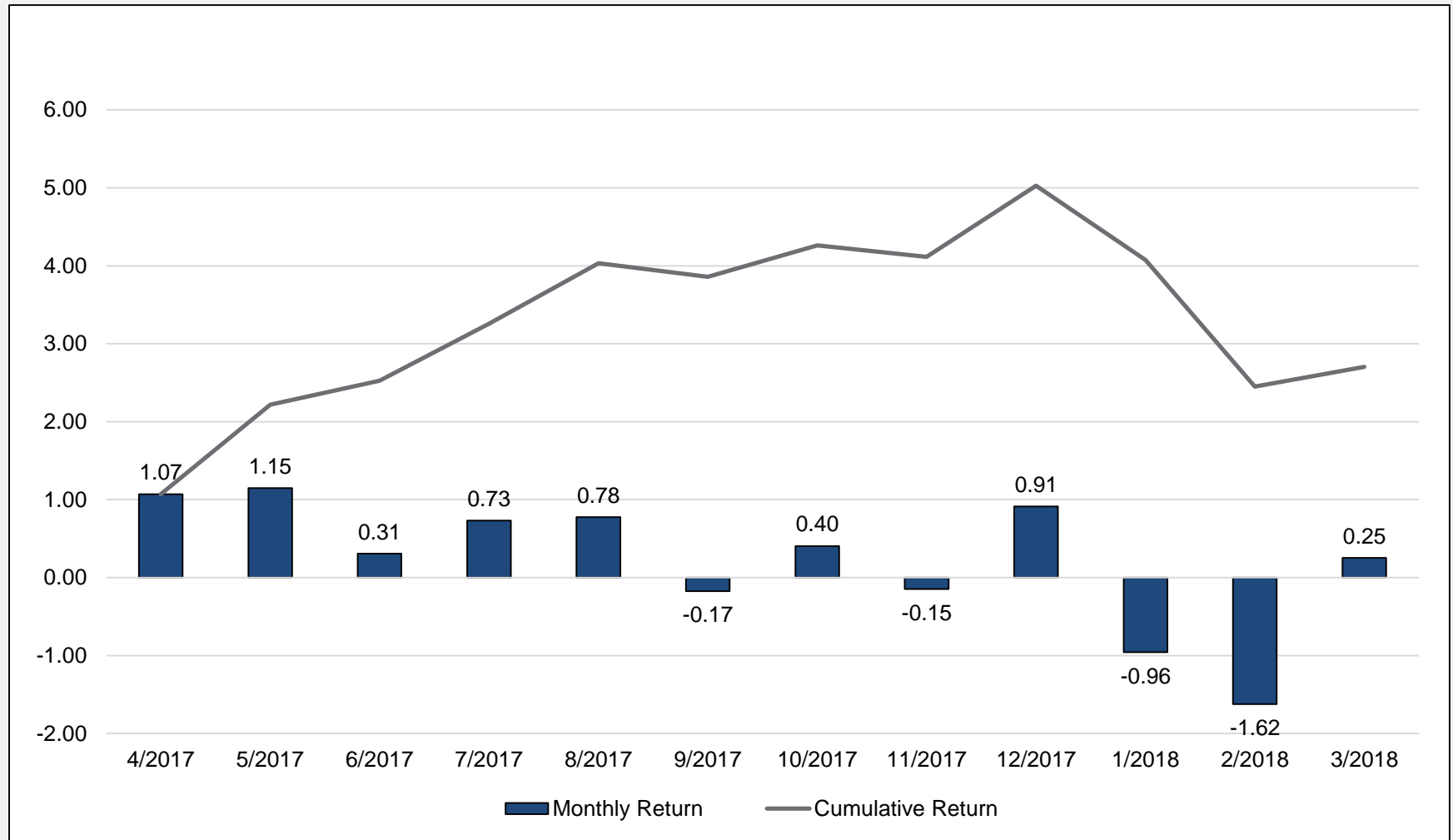
- Performance
  - Credit Spreads
  - Increasing Credit Exposure
- 



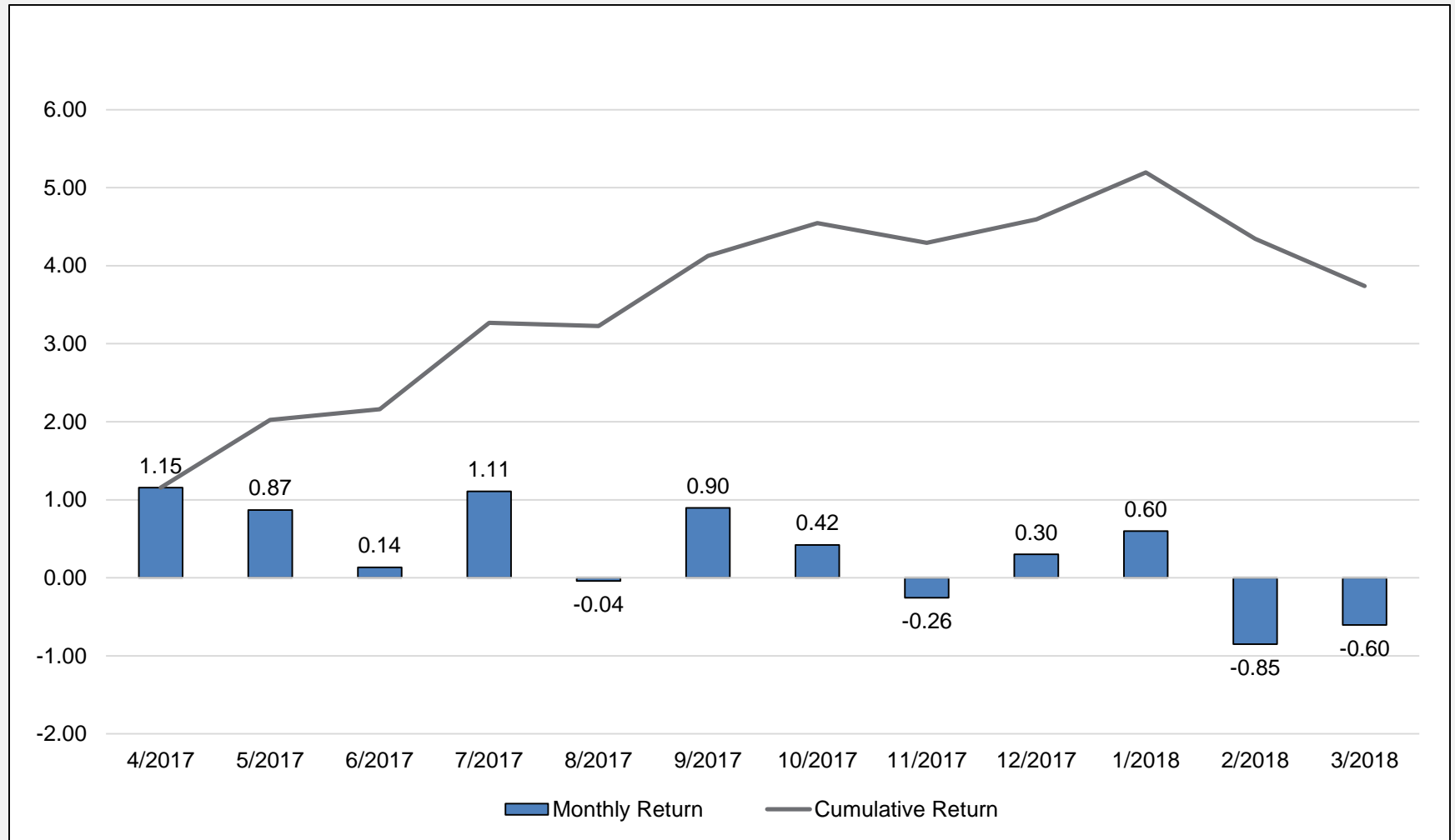
# Corporate Bonds

- Corporate bonds generally offer higher yields to investors as a result of the risk of default and the uncertainty of the recovery of capital.
- That risk is reflected in the credit rating assigned to the issuing company.
- Higher risk of default warrants a lower credit rating and normally a higher yield to investors (higher cost of capital to the issuing company).
  - Corporate credit spreads across all ratings are at or very near record low levels.
  - The amount of corporate debt outstanding is concentrated in lower rated issues (A, BBB and High Yield).
  - BBB-rated corporate debt currently accounts for almost 50% of all investment grade debt outstanding up from 35% in 2008.
  - The combination of lower rated securities and historically tight spreads argues that the embedded risk in the investment grade credit sector is as high as it has ever been.

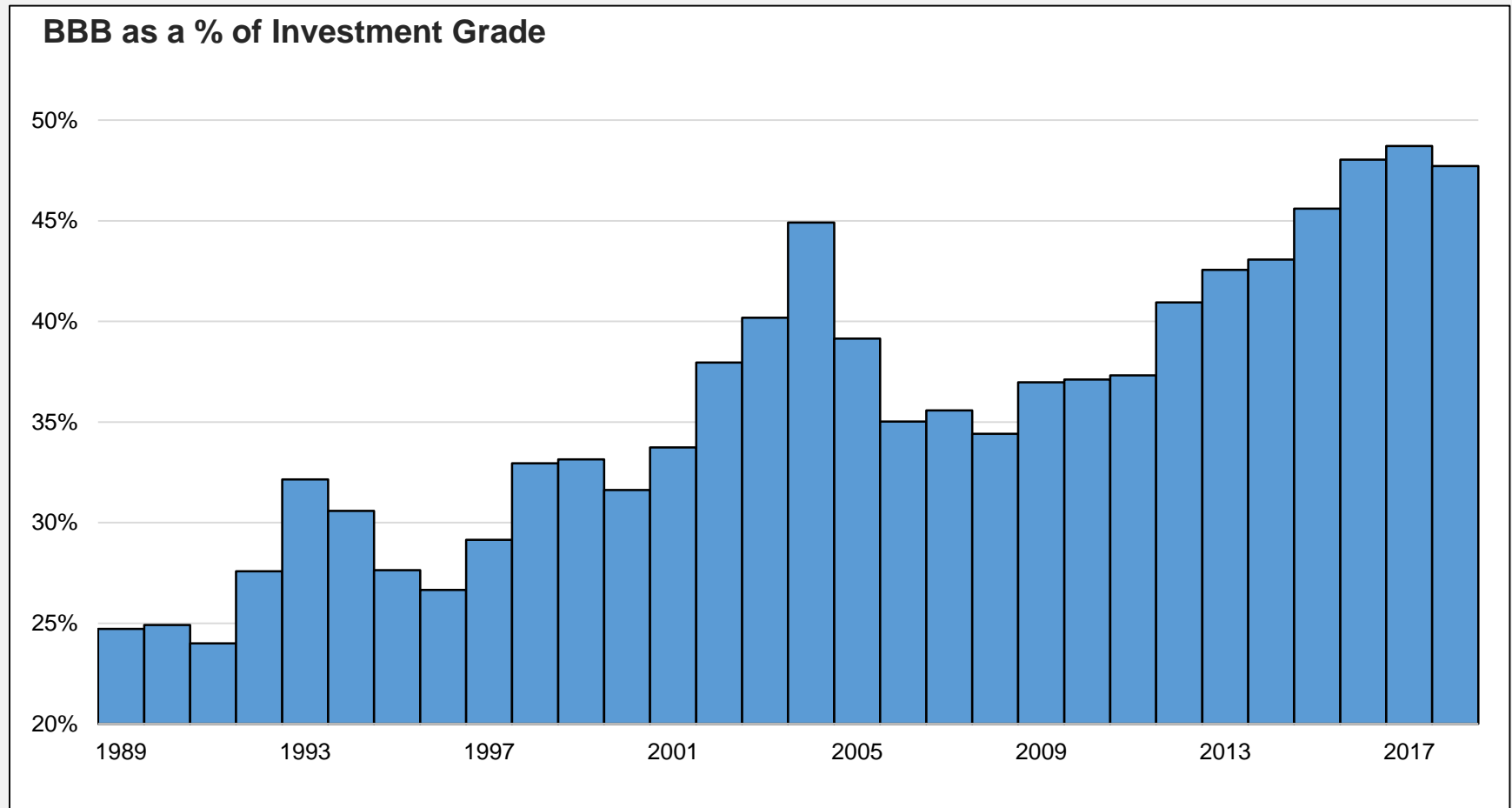
# Investment Grade Performance



# High Yield Performance

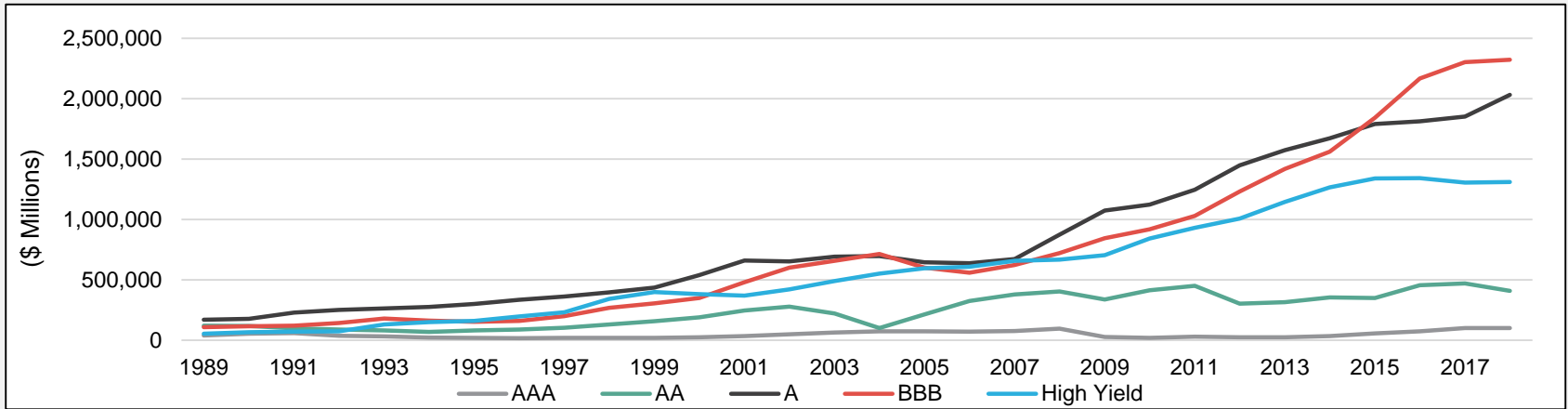


# Shifting Investor Credit Exposure

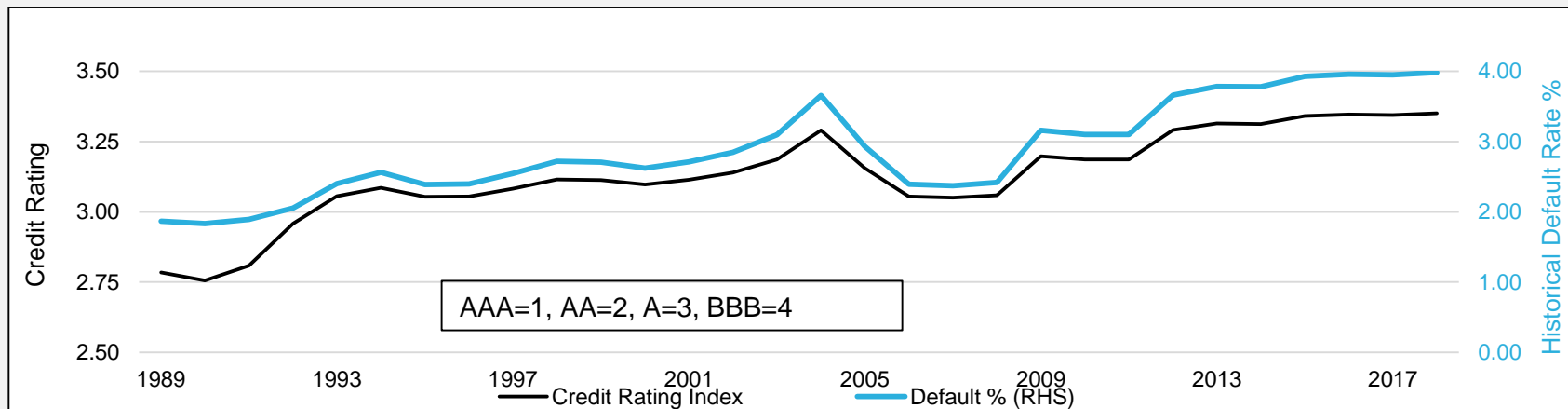


# Increasing Corporate Bond Risk

Corporate Debt by Rating




W.Avg. Credit Rating/Default Rate –Inv. Grade





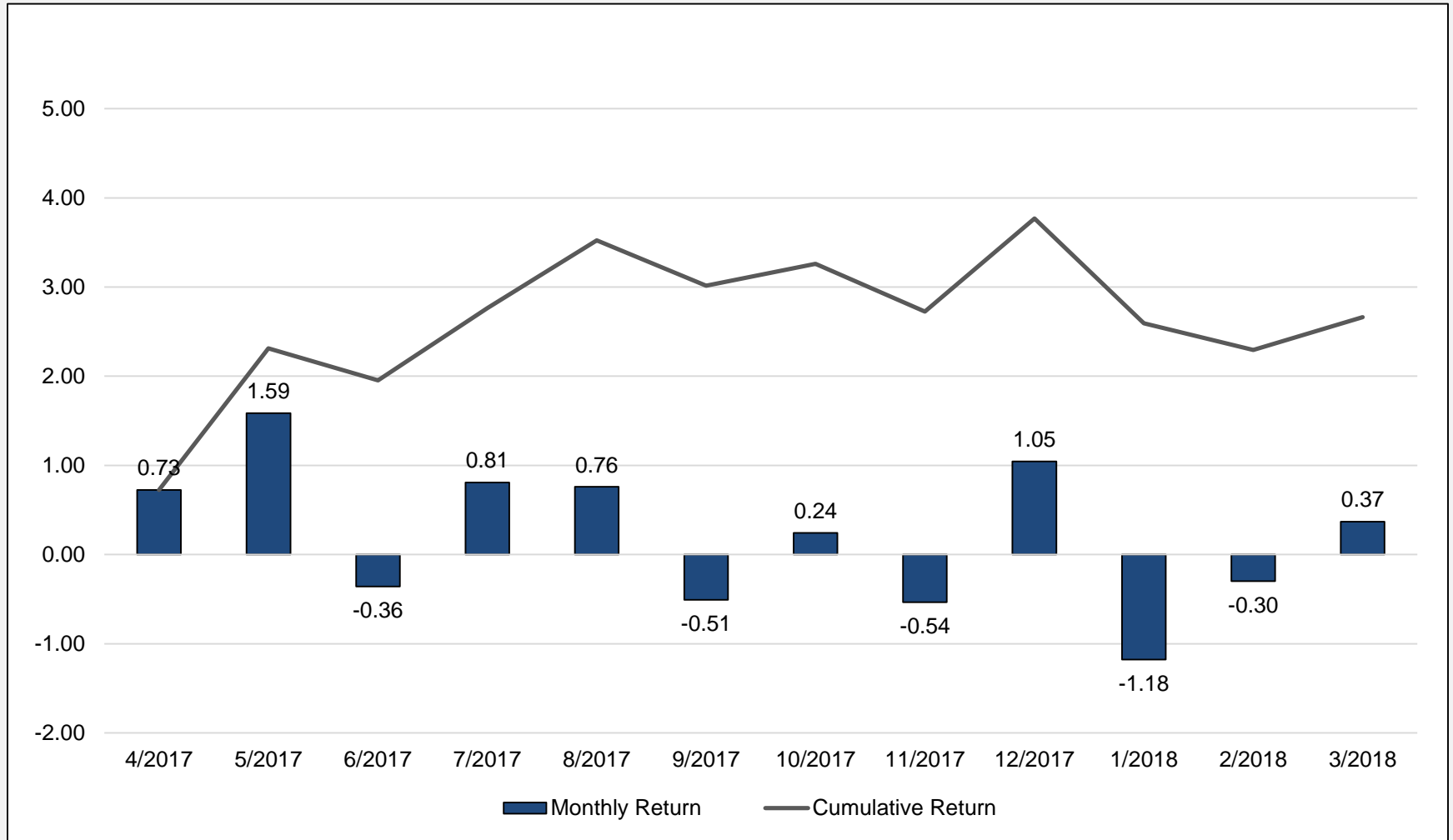
# Municipal Bonds

- Performance
  - Aggregate Yield
  - Muni-Treasury Ratio
  - Weighted Avg. Duration and Ratings
- 

# Municipal Bonds

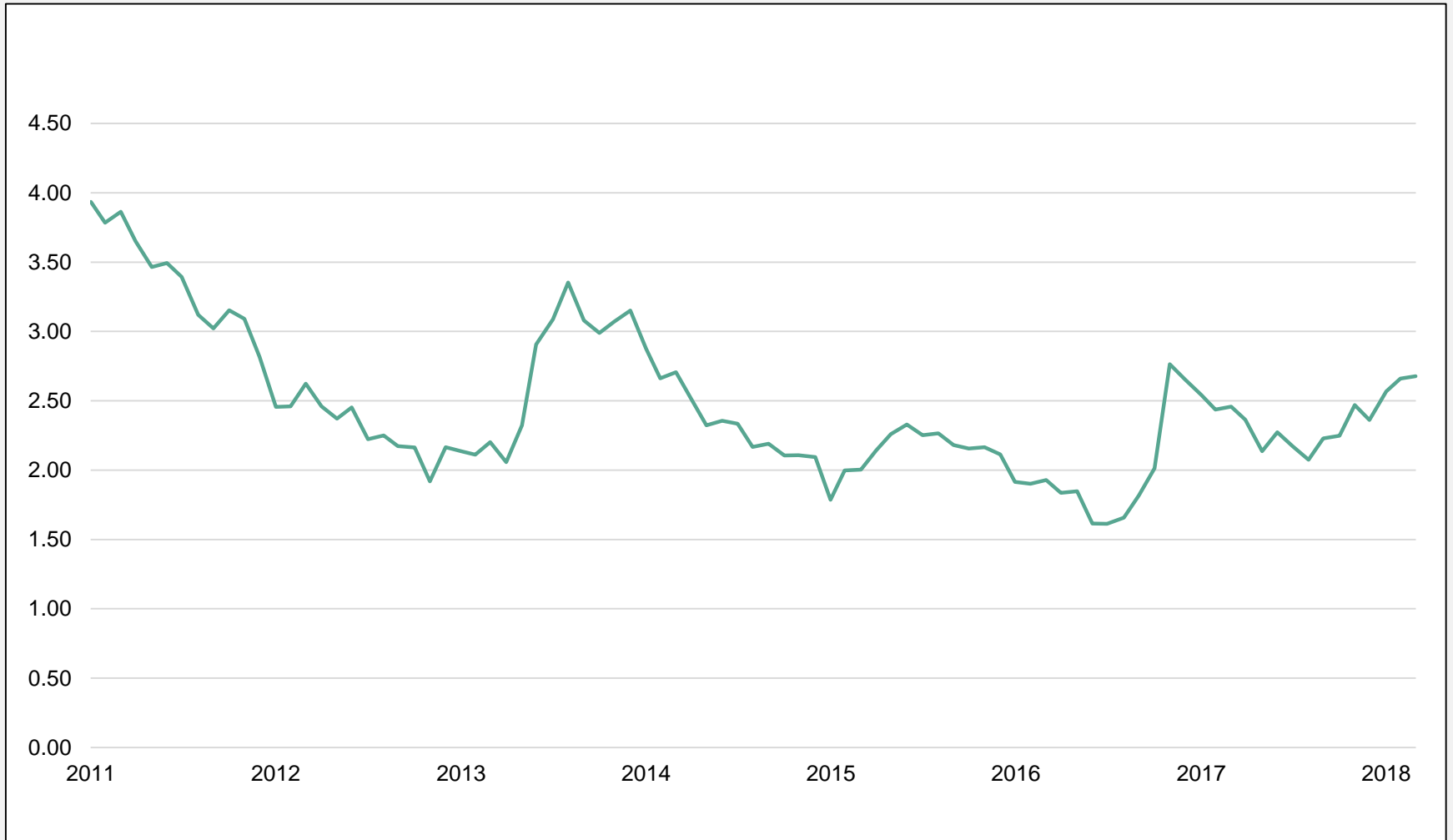
- Municipal bonds are issued by state and local governments
- Income generated by ownership of these bonds is tax-free so tax policy is a key determinant to the yield and performance of Munis.
  - Investment grade Munis have returned 2.6% over the past year but were down -1.1% in Q1 2018.
  - Like those of other bonds, the yield on Munis has been rising since mid-2016.
  - One gauge of relative value, the Muni-Treasury ratio, has remained depressed suggesting Munis are less favorable as an investment than Treasuries of similar maturities.
  - Banks, which typically have among the highest effective tax rates in the U.S., are one of the largest institutional holders of Munis so tax reform could reduce their interest in holding these securities.
  - Although bank demand may be curtailed, it is unlikely that they would become outright sellers due to the negative tax effects that could cause.
  - Evaluating Munis relative to Corporates argues that demand for AAA and AA Munis will remain stable mainly due to the lack of corporate supply with those ratings.

# Municipal Bond Performance



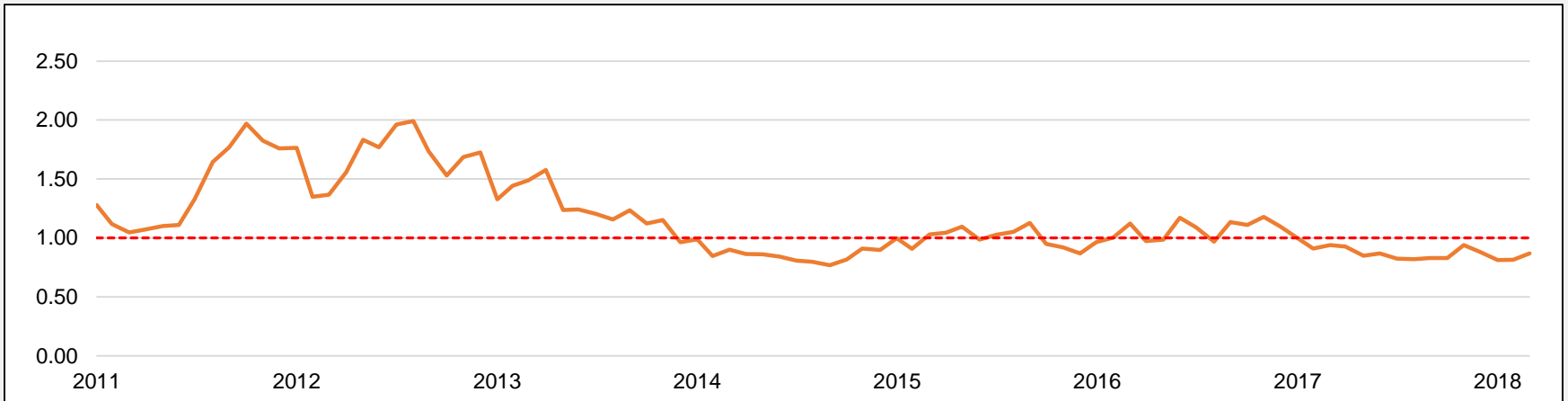


# Municipal Bond Aggregate Yield

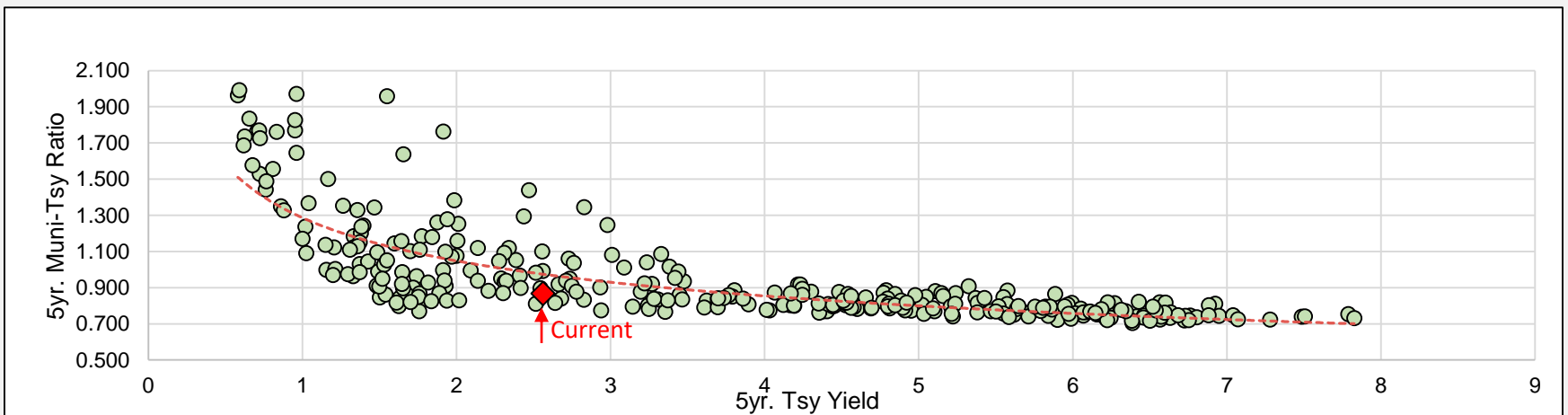


# Muni-Treasury Yield Ratio

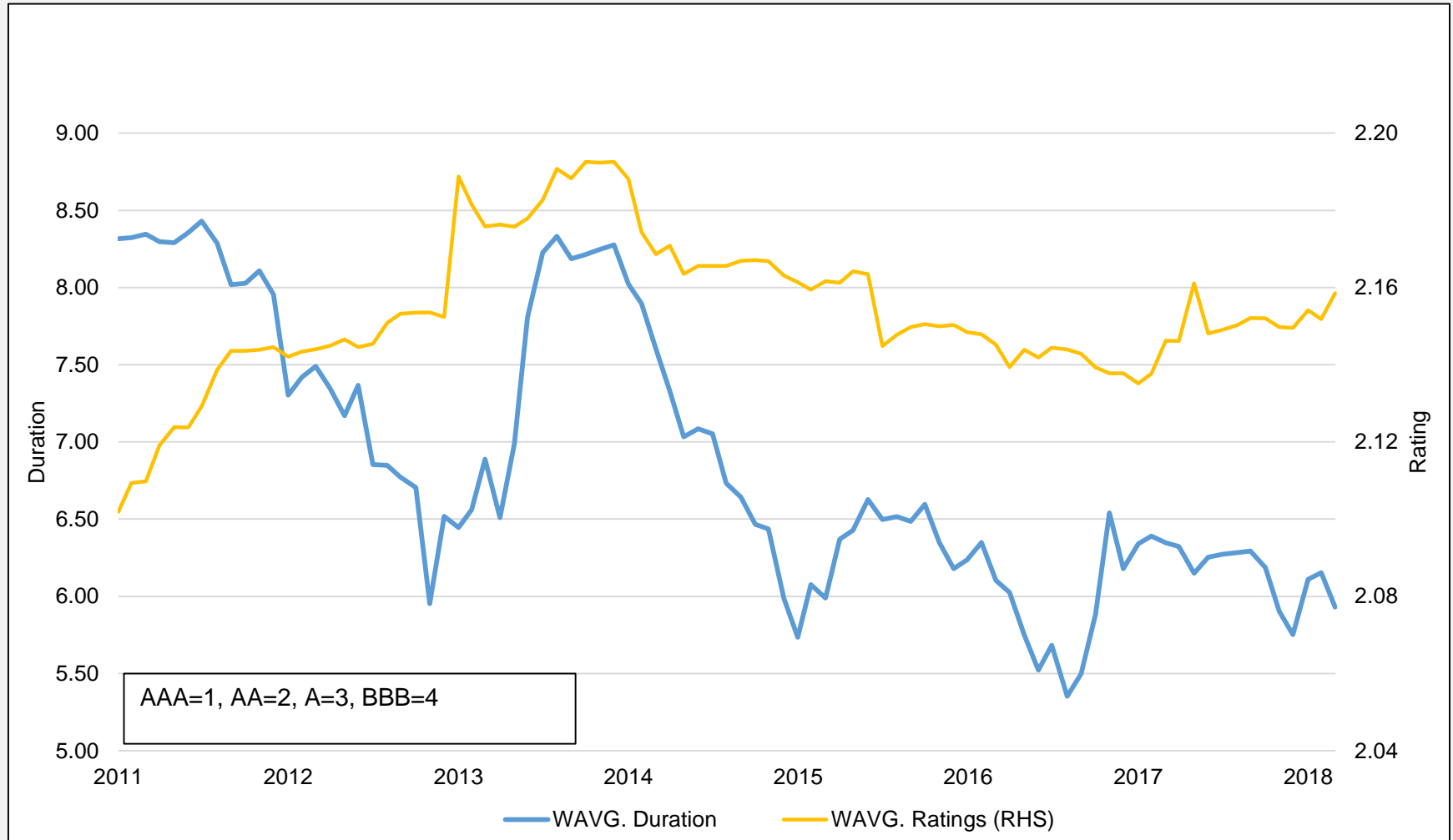
5yr. Muni-Tsy Ratio



5yr. UST yield vs. 5yr. Muni-Tsy Ratio



# Municipal W. Avg. Duration and Credit Ratings





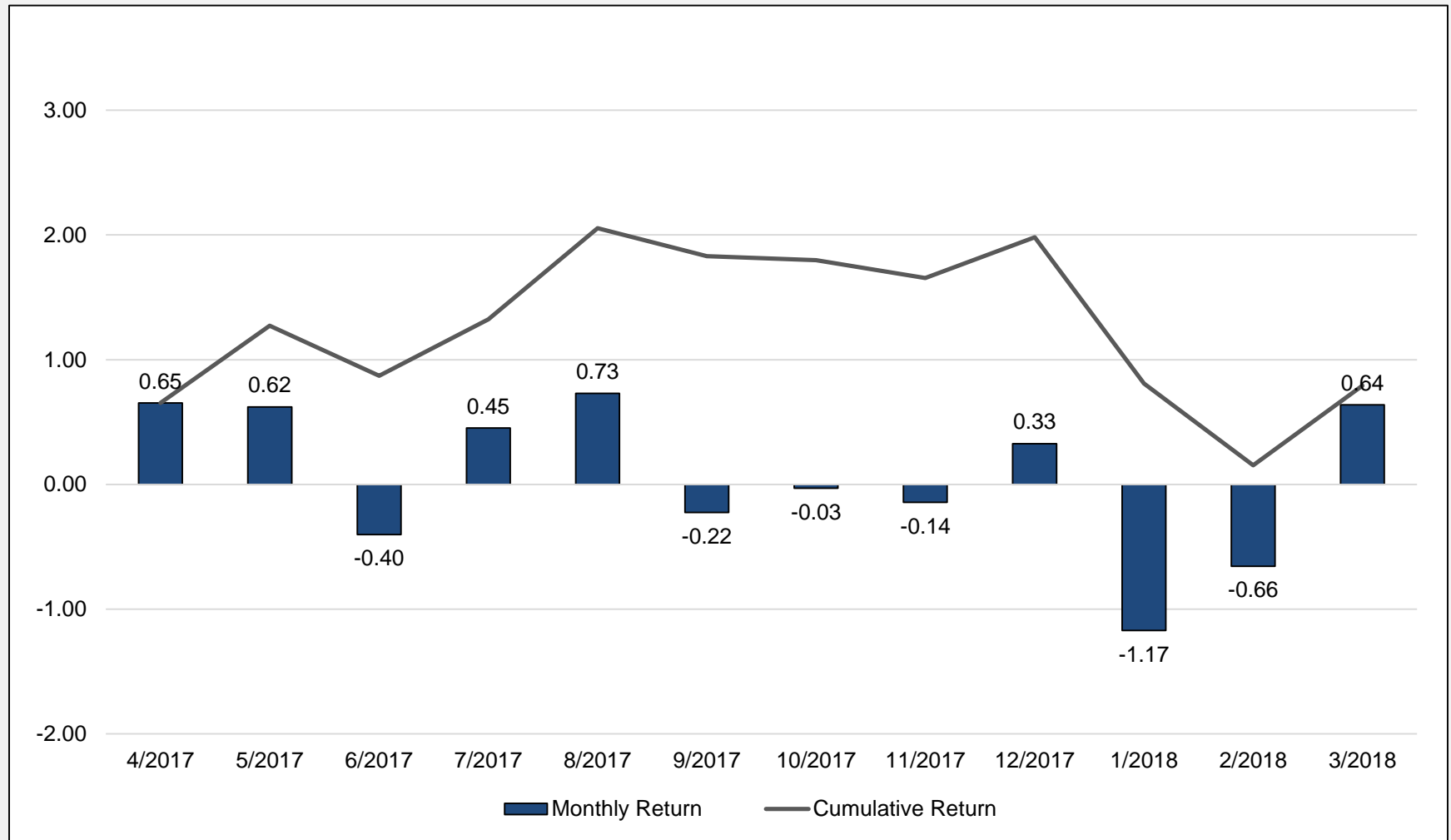
# Securitized Bonds

- Performance
  - Mortgage Backed Securities (MBS) Spreads
  - MBS Duration/Convexity
  - Asset-Backed Securities (ABS) Spreads
  - Commercial-Backed Securities (CMBS) Spreads
- 

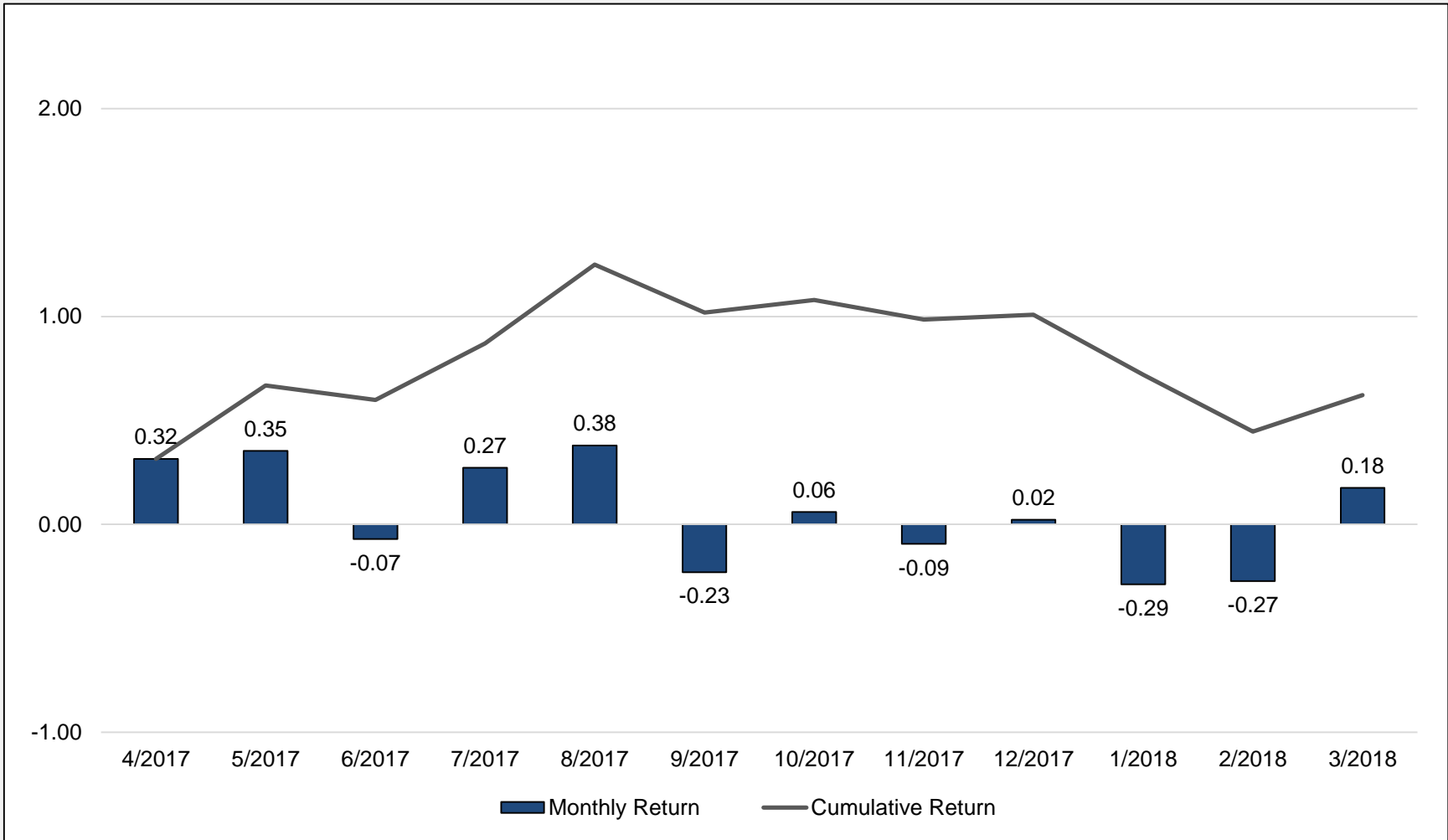
# Securitized Bonds

- Mortgage-backed securities (MBS) are a compelling investment because they offer both contractual cash flows and an investment with the specific collateral of a property behind it.
- At the right entry price, they can provide excellent durability of returns to a portfolio.
  - In aggregate, MBS returned 0.8% for the 12 months ending March 31, 2018 and were down -1.2% in Q1.
  - The poor performance was largely due to rising interest rates in general which causes the duration (a security's sensitivity to interest rate changes) of mortgages to rise as a result of slower prepayments.
  - Those dynamics also caused mortgage spreads to widen further hurting returns.
  - In addition to rising rates, the lack of Fed buying played a role in the sector's dismal performance.
  - Mortgage convexity, another gauge of mortgage risk, also rose due to the increase in interest rates suggesting that modest moves lower in rates will not benefit mortgage returns as they have in the past.

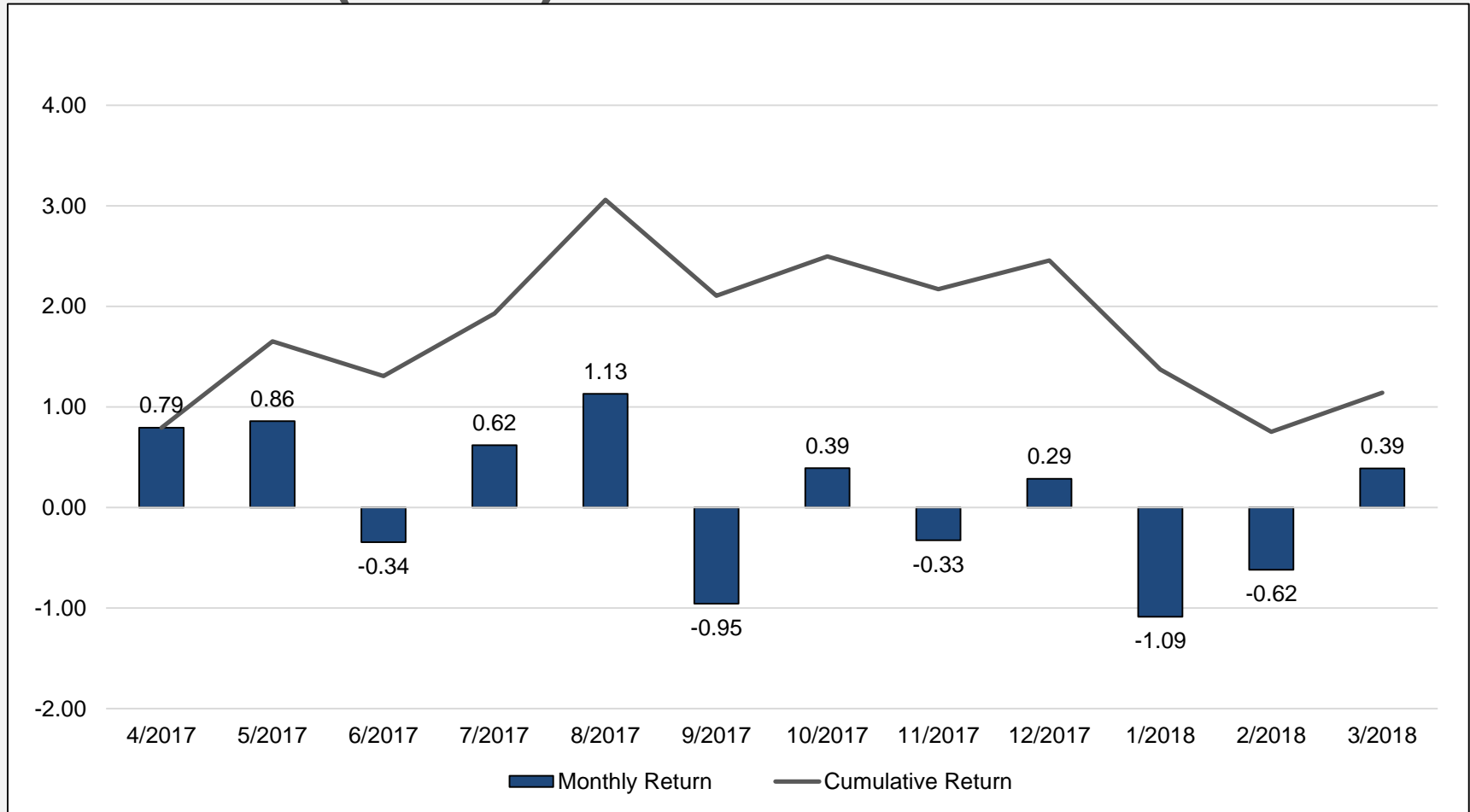
## Aggregate MBS Performance



# Aggregate Asset-Backed Securities (ABS) Performance

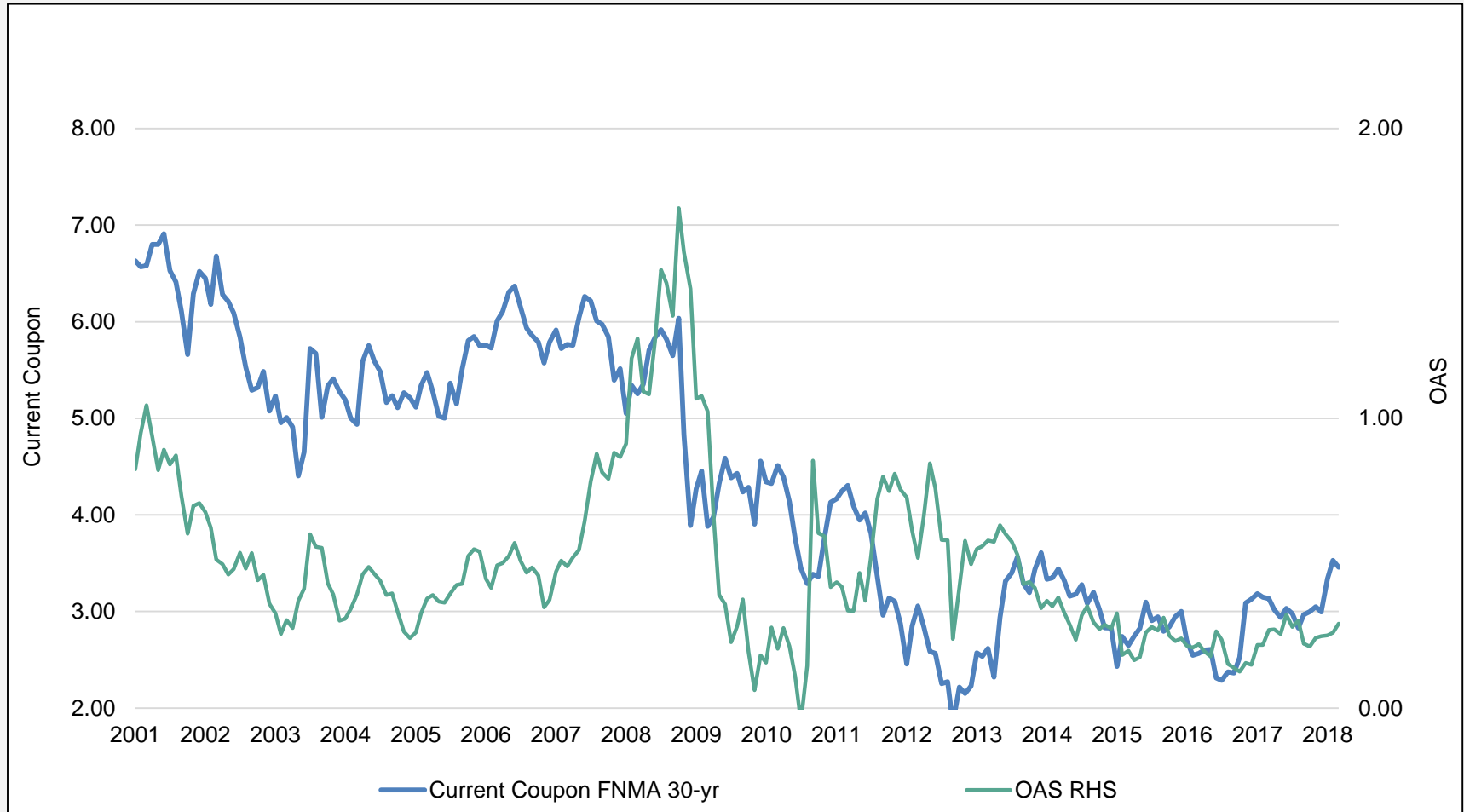


## Aggregate Commercial Mortgage-Backed Securities (CMBS) Performance

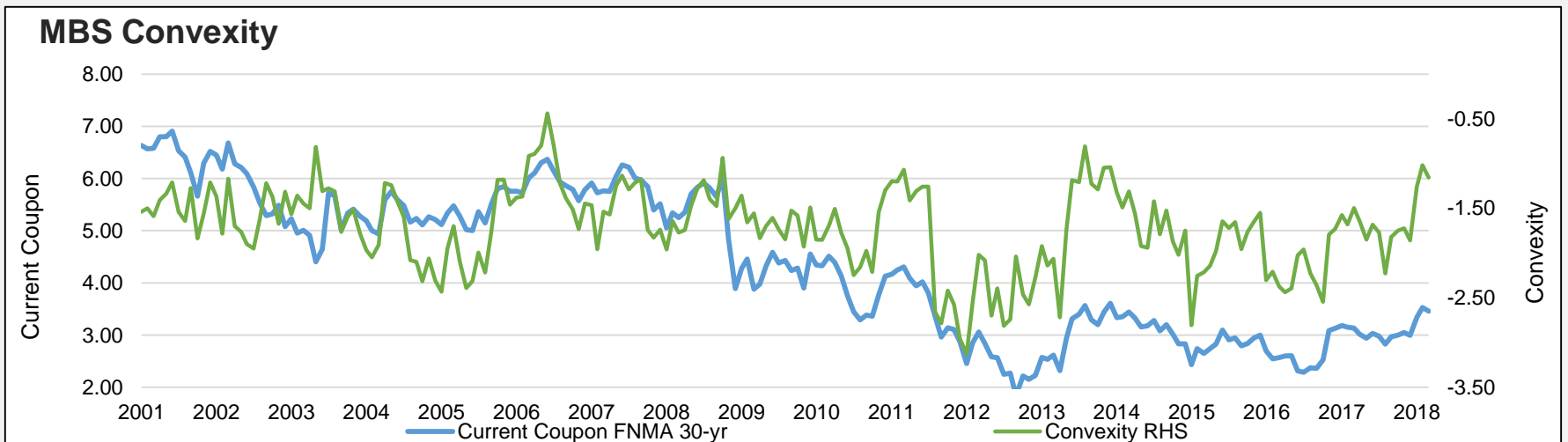
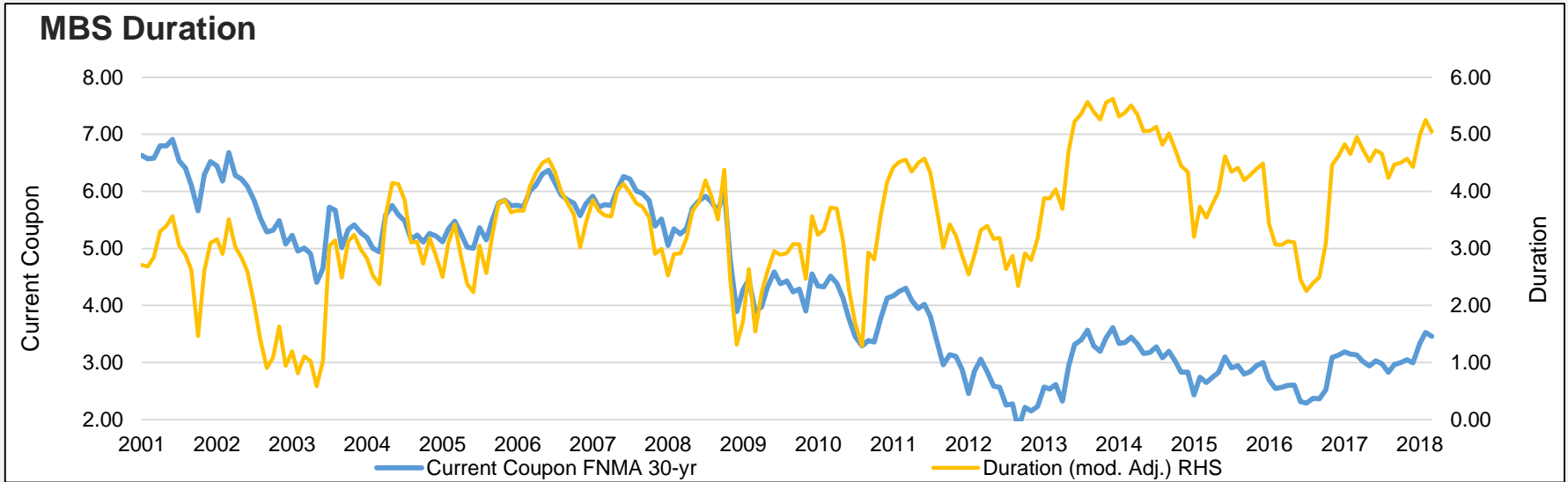




# MBS Option-Adjusted Spread (OAS)

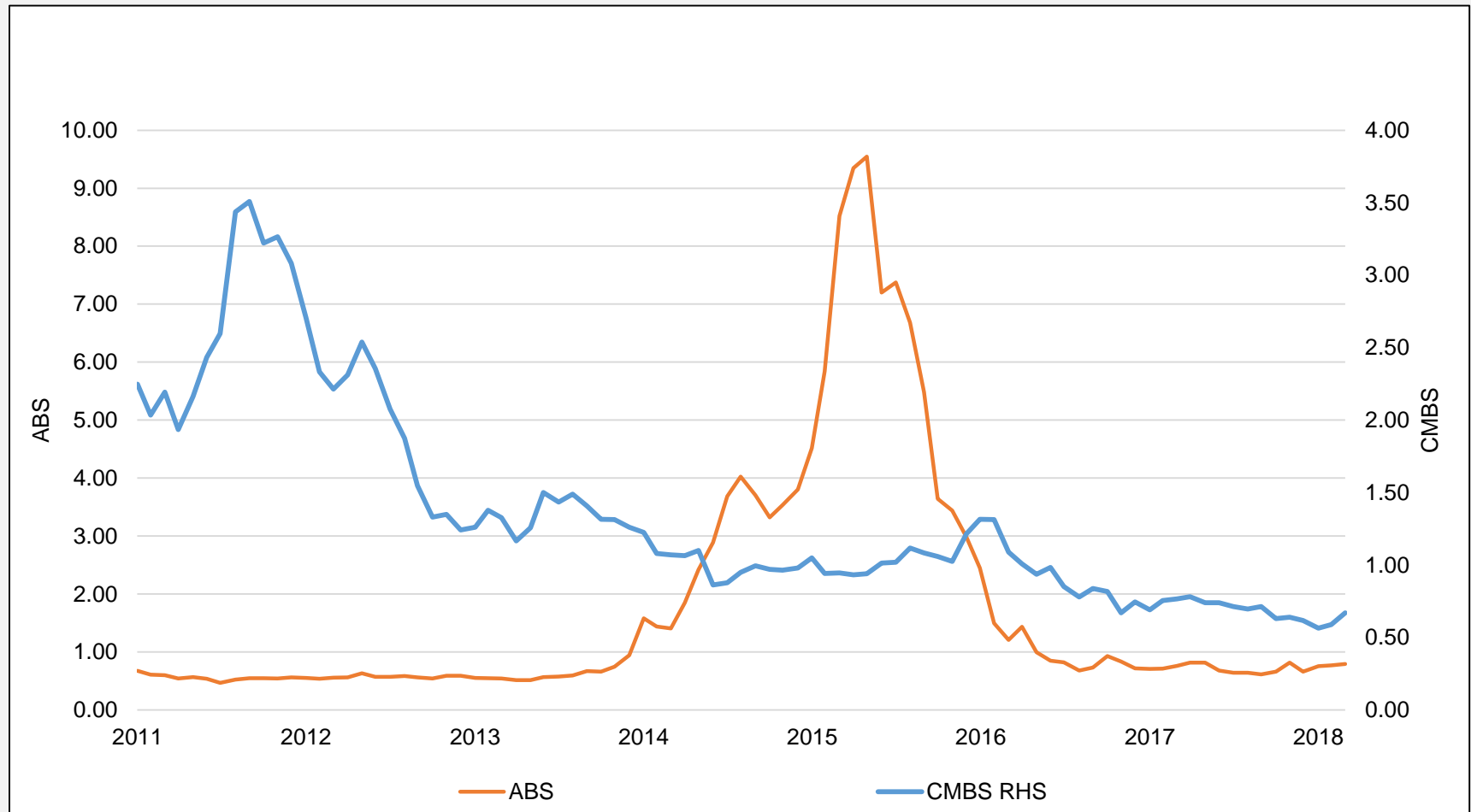


## MBS Duration and Convexity



# MBS, ABS and CMBS

## ABS and CMBS OAS





# Fixed Income ETF Composite



# ETF Composite

		Annualized % Returns				Correlation to S&P 500 (SPY)		
Rates/UST	Ticker	YTD	12 months	5 years	GFC (09/2007-03/2009)	YTD	12 months	GFC (01/2008-03/2009)
ISHARES 1-3 YEAR UST	SHY	-0.11	-0.14	1.94	9.28	-0.51	-0.34	-0.34
ISHARES 3-7 YEAR UST	IEI	-1.00	-0.76	3.65	17.58	-0.20	-0.18	-0.30
ISHARES 7-10 YEAR UST	IEF	-2.03	-1.02	4.14	22.27	0.01	-0.06	-0.16
ISHARES 20+ YEAR UST	TLT	-3.94	2.45	12.65	27.11	0.29	0.07	-0.25
ISHARES TIPS	TIP	-0.79	0.52	-1.45	8.53	0.31	0.05	0.22
<b>Corporate</b>								
VANGUARD S/T CORP	VCSH	-0.59	0.60	8.17	NA	0.24	0.06	NA
ISHARES IBOXX INVESTMENT GRADE	LQD	-2.88	2.35	14.71	-3.10	0.61	0.38	0.31
ISHARES IBOXX HIGH YIELD	HYG	-1.07	2.54	19.02	-25.46	0.88	0.71	0.75
SPDR BARCLAY HIGH YIELD	JNK	-1.38	2.67	17.12	NA	0.87	0.70	0.77
<b>Municipal</b>								
SPDR NUVEEN BARCLAY SHORT TERM	SHM	-0.07	-0.42	2.98	9.92	0.64	0.15	0.03
ISHARES NATIONAL	MUB	-1.42	1.81	10.90	4.42	0.21	0.07	0.30
<b>Misc.</b>								
ISHARES MBS	MBB	-1.36	0.24	7.42	12.68	0.25	0.09	0.18
VANGUARD MBS	VMBS	-1.13	0.27	8.15	NA	0.22	0.07	NA
POWERSHARES EMG MKT SOVEREIGN	PCY	-3.39	1.24	17.70	-8.99	0.79	0.61	0.54
ISHARES JP MORGAN USD EMG MKT	EMB	-2.16	3.37	17.94	NA	0.80	0.59	0.58
<b>Aggregate</b>								
ISHARES CORE U.S. AGGREGATE	AGG	-1.55	0.75	8.22	8.78	0.39	0.14	0.52
VANGUARD TOTAL BOND MARKET	BND	-1.60	0.76	8.14	9.12	0.39	0.14	0.47

# Data Attribution

All data courtesy of:

- Bloomberg
- St. Louis Federal Reserve (FRED)
- Barclays