

ERSRI MANAGER PRIMER

MAY BOARD MATERIALS

May, 2018

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BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO

SSGA PRIMER

NEPC, LLC

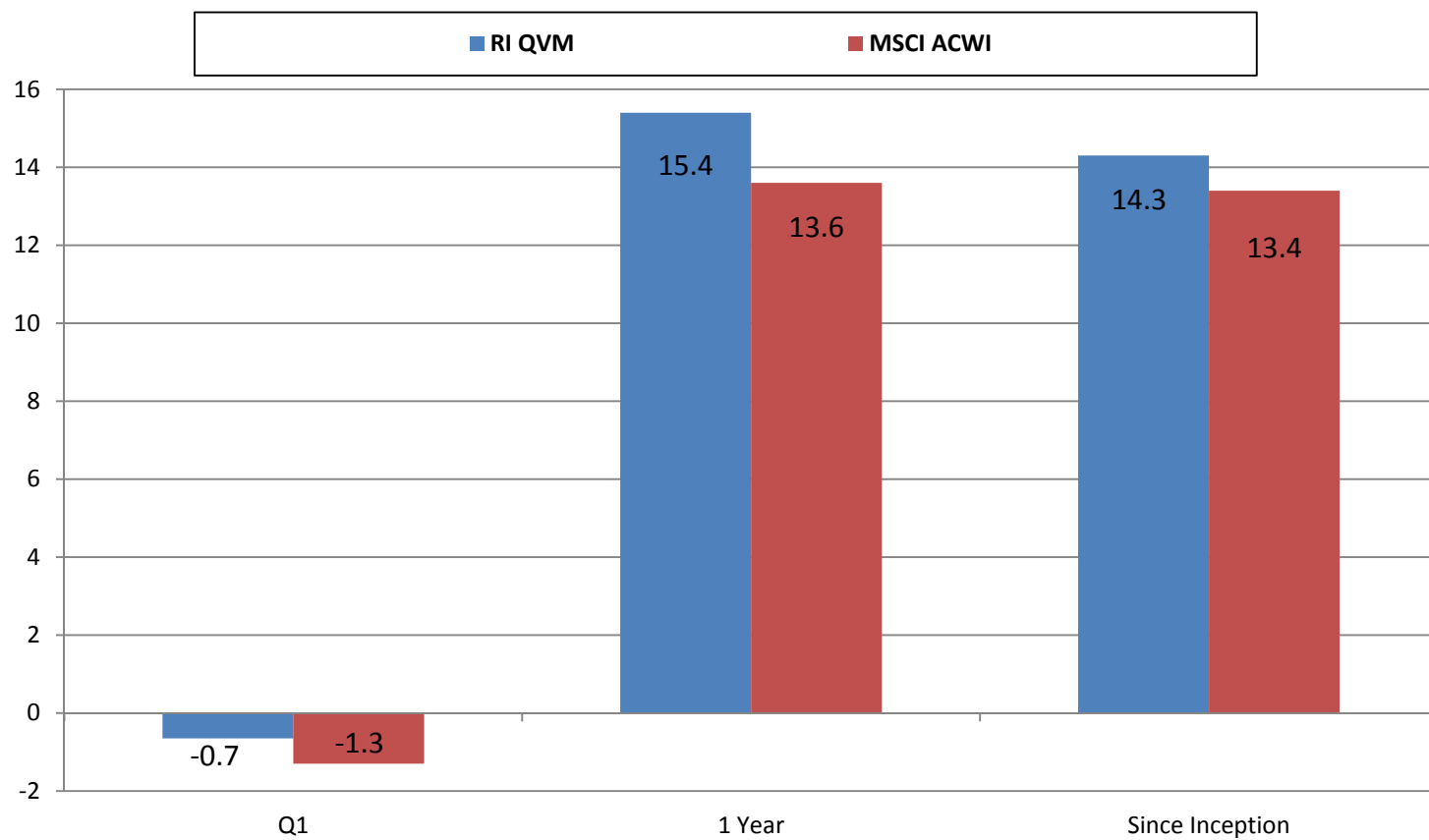
		RI QVM (3 Factors*)	Proposed RI QVM (3 Factors)	SSGA QVM (5 Factors)
	Quality (1)			
	Valuation (2)			
	Momentum (3)			
	Size (4)			
	Volatility (5)			
	Optimizer			



*The RI QVM portfolio has a custom definition of quality that differs from the SSGA 5 Factor product

RHODE ISLAND QVM PERFORMANCE (NET)

- The Rhode Island QVM performance has outpaced the MSCI ACWI by 0.84% net of fees since inception



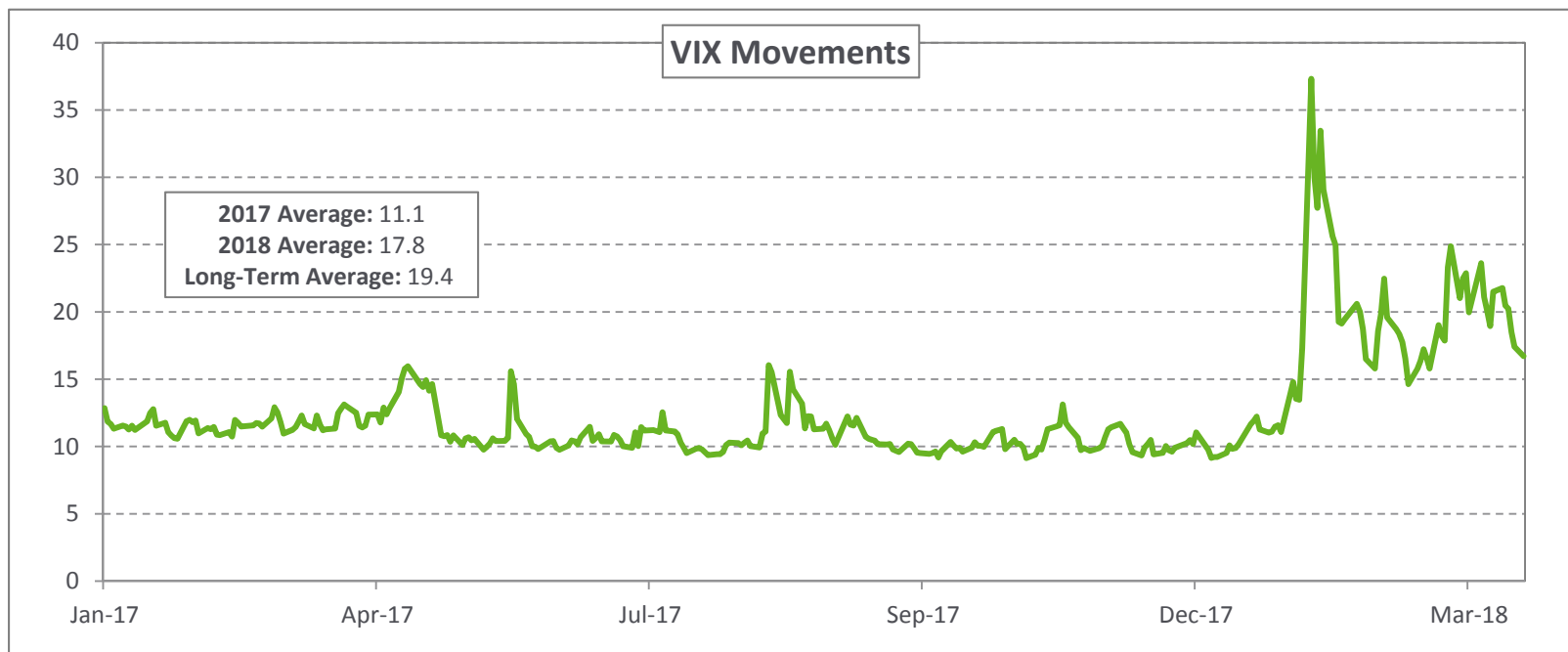
*Performance sourced from SSGA and is as of 3.31.18
**Inception date of the mandate is October 2015

MARKET UPDATE

NEPC, LLC

THE RETURN OF VOLATILITY

- **2017 was one of the least-volatile markets in over half a century**
 - The S&P 500 experienced only four greater than 1% moves in 2017, while in 2018 it has already seen 15 of that magnitude through the beginning of April
- **Generally, a more volatile market environment was expected for 2018, but few expected the severity and consistency of swings we have already experienced this year in equity markets**



Source: CBOE, Bloomberg



WHAT CAUSED RECENT VOLATILITY?

- **Through February, expectations of building inflation pressure pushed the 10 Year Treasury yield close to 3% and raised concerns of the impact of higher interest rates on economic activity**
 - Following the knee-jerk sell-off, revised inflation data eased concerns that the Fed would need to move more aggressively to raise interest rates
 - With the Fed's preferred inflation metric, PCE, still running below its 2% target, the Fed is expected to continue its gradual approach to normalize rates
- **February's technical sell-off in the short volatility trade rapidly forced equity market volatility higher**
 - Market participants had sought to capitalize on the premium between expected equity volatility and low realized volatility of the past few years by selling volatility
 - Short volatility strategies include leverage, which caused significant disruption as VIX rose, leading to significant margin calls and forced sales as investors appeared too complacent with the historically low levels of equity market volatility
- **Escalating trade tensions between the US and China rattled equity markets throughout the quarter as one of our key market themes, "Globalization Backlash" reignites**
- **Continued global trade tensions are likely to sustain higher volatility levels and potentially have long-term economic implications**



CALENDAR YEAR INDEX PERFORMANCE

	2010	2011	2012	2013	2014	2015	2016	2017	Q1	April	YTD
US Large Cap	15.1%	2.1%	16.0%	32.4%	13.7%	1.4%	12.0%	21.8%	-0.8%	0.4%	-0.4%
US Small/Mid Cap	26.7%	-2.5%	17.9%	36.8%	7.1%	-2.9%	17.6%	16.8%	-0.2%	0.2%	0.0%
Int'l Developed Equity	7.8%	-12.1%	17.3%	22.8%	-4.9%	-0.8%	1.0%	25.0%	-1.5%	2.3%	0.7%
Emerging Market Equity	18.9%	-18.4%	18.2%	-2.6%	-2.2%	-14.9%	11.2%	37.3%	1.4%	-0.4%	1.0%
US Aggregate	6.5%	7.8%	4.2%	-2.0%	6.0%	0.5%	2.6%	3.5%	-1.5%	-0.7%	-2.2%
US High Yield	15.1%	5.0%	15.8%	7.4%	2.5%	-4.5%	17.1%	7.5%	-0.9%	0.7%	-0.2%
US Long Treasuries	9.4%	29.9%	3.6%	-12.7%	25.1%	-1.2%	1.3%	8.5%	-3.3%	-1.9%	-5.2%
EM Local Credit	15.7%	-1.8%	16.8%	-9.0%	-5.7%	-14.9%	9.9%	15.2%	4.4%	-3.0%	1.4%
Global Credit	-5.3%	-5.3%	-4.1%	2.7%	-0.6%	3.3%	2.1%	7.4%	1.4%	-1.6%	-0.3%
Commodities	16.8%	-13.3%	-1.1%	-9.5%	-17.0%	-24.7%	11.8%	1.7%	-0.4%	2.6%	2.2%

S&P 500 = US Large Cap
 Russell 2500 = US Small/Mid Cap
 MSCI EAFE = International Developed Equity
 MSCI EM = Emerging Market Equity
 Barclays Aggregate = US Aggregate
 Barclays Long Treasury = US Long Treasuries
 Barclays High Yield = US HY
 Barclays Global Aggregate = Global Credit
 GBI-EM Global Diversified = EM Local Credit
 Bloomberg Commodity = Commodities

Source: Bloomberg, Barclays, S&P, Russell, MSCI, JP Morgan, Credit Suisse



APPENDIX

NEPC, LLC

TRAILING ANNUAL INDEX PERFORMANCE

Equity						
	Apr-18	YTD	1 YR	3 YR	5 YR	10 YR
MSCI ACWI	1.0%	0.0%	14.2%	7.4%	8.8%	5.1%
S&P 500	0.4%	-0.4%	13.3%	10.6%	13.0%	9.0%
Russell 1000	0.3%	-0.4%	13.2%	10.3%	12.8%	9.1%
Russell 2000	0.9%	0.8%	11.5%	9.6%	11.7%	9.5%
Russell 2500	0.2%	0.0%	11.7%	8.9%	11.5%	9.7%
MSCI EAFE	2.3%	0.7%	14.5%	4.9%	5.9%	2.4%
MSCI Emerging Markets	-0.4%	1.0%	21.7%	6.0%	4.7%	2.2%

Rates/Credit						
	Apr-18	YTD	1 YR	3 YR	5 YR	10 YR
BC Global Aggregate	-1.6%	-0.3%	4.1%	2.2%	0.9%	2.6%
BC US Aggregate	-0.7%	-2.2%	-0.3%	1.1%	1.5%	3.6%
BC Credit	-0.9%	-3.0%	0.6%	2.0%	2.3%	5.0%
BC US High Yield	0.7%	-0.2%	3.3%	5.0%	4.8%	7.9%
BC Municipal Bond	-0.4%	-1.5%	1.6%	2.3%	2.4%	4.2%
BC Municipal High Yield	0.4%	1.0%	5.8%	4.9%	4.0%	5.6%
BC TIPS	-0.1%	-0.8%	0.3%	1.0%	-0.1%	3.1%
BC 20+ STRIPS	-2.4%	-6.9%	2.2%	1.2%	3.3%	8.4%
BC Long Treasuries	-1.9%	-5.2%	0.0%	0.8%	2.1%	5.8%
BC Long Credit	-1.9%	-5.7%	2.5%	3.3%	3.4%	7.1%
BC Gov/Credit 1-3 Yr	-0.1%	-0.3%	-0.1%	0.6%	0.7%	1.6%
CS Lev Loan	0.5%	2.1%	4.7%	4.2%	4.1%	5.1%
JPM EMBI Glob Div	-1.5%	-3.2%	1.3%	4.7%	3.8%	6.8%
JPM GBI-EM Glob Div	-3.0%	1.4%	8.4%	3.4%	-1.9%	3.3%













Real Assets						
	Apr-18	YTD	1 YR	3 YR	5 YR	10 YR
BBG Commodity	2.6%	2.2%	8.0%	-4.2%	-7.3%	-7.8%
Alerian MLP	8.1%	-3.9%	-12.5%	-10.7%	-4.5%	5.6%
FTSE NAREIT Equity REITs	0.5%	-6.2%	-1.0%	4.8%	5.5%	6.3%

Source: Bloomberg, Barclays, S&P, Russell, MSCI, JP Morgan, Credit Suisse, Alerian, NAREIT



PERFORMANCE OVERVIEW

Q1 Market Summary

Macro			Equity			Credit			Real Assets		
US Dollar	VIX	US 10-Yr	S&P 500	MSCI EAFE	MSCI EM	US Agg.	High Yield	Dollar EMD	Oil	Gold	REITS
											
-2.3%	8.9	33 bps	-0.8%	-1.5%	1.4%	-1.5%	-0.9%	-1.8%	7.5%	1.7%	-6.5%

- **After a strong year for equity markets in 2017, the first quarter of the year saw a spike in volatility – in part due to concerns over a potential trade war between the US and China**
- **After ending the year down over 10%, the dollar continued to decline as the US deficit is likely to increase with higher spending and lower tax**
 - As a result, emerging market equities fared well throughout the quarter and are still supported by strong earnings and GDP growth
- **Long-term US Treasury yields increased, but an additional Fed rate hike pushed up short-term yields even more, causing the curve to flatten**

Market segment (index representation) as follows: US Dollar (DXY Index), VIX (CBOE Volatility Index), US 10-Year (US 10-Year Treasury Yield), S&P 500 (US Equity), MSCI EAFE Index (International Developed Equity), MSCI Emerging Markets (Emerging Markets Equity), US Agg (Barclays US Aggregate Bond Index), High Yield (Barclays US High Yield Index), Dollar EMD (JPM Emerging Market Bond Index), Crude Oil (WTI Crude Oil Spot), Gold (Gold Price Spot), and REITs (NAREIT Composite Index).



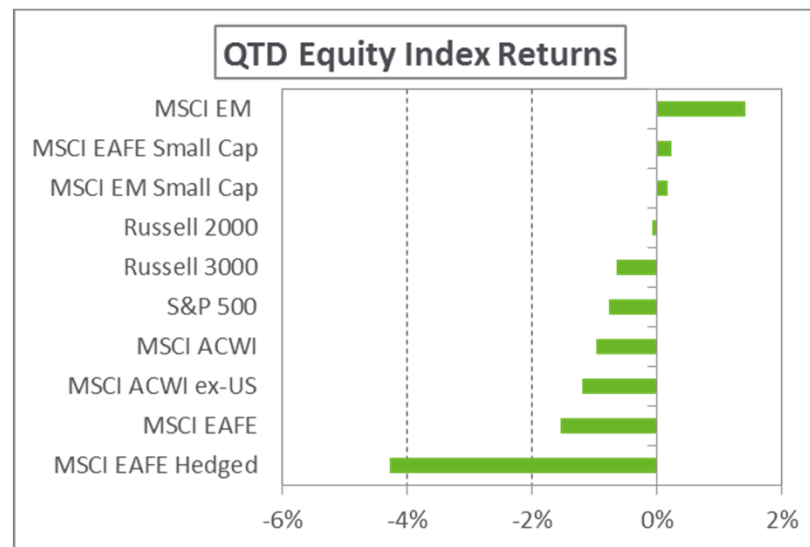
EQUITY PERFORMANCE OVERVIEW

Q1 Equity Market Summary

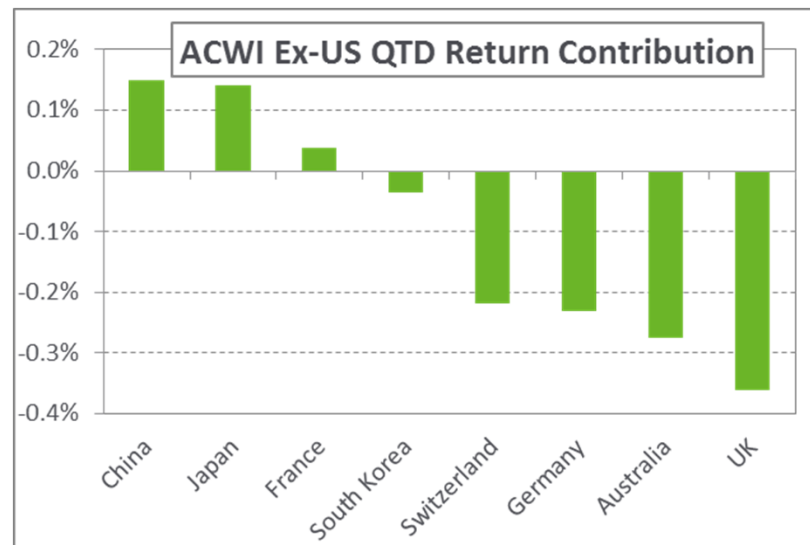
- **Despite volatility weighing on global equity returns, strong fundamentals and growth prospects remain supportive**
- **US equity markets declined 0.8% on the quarter in part due to trade concerns – its first negative quarter in over two years**

Russell 3000 QTD Sector Return Contribution	
Information Technology	0.80%
Consumer Discretionary	-0.68%
Financials	-0.15%
Industrials	-0.07%
Consumer Staples	-0.45%
Energy	0.07%
Materials	-0.19%
Health Care	-0.77%
Real Estate	0.15%
Telecommunication	0.20%
Utilities	-0.23%

Source: Russell, Bloomberg



Source: MSCI, Russell, S&P, Bloomberg



Source: MSCI, Bloomberg. QTD top country contributors to index return



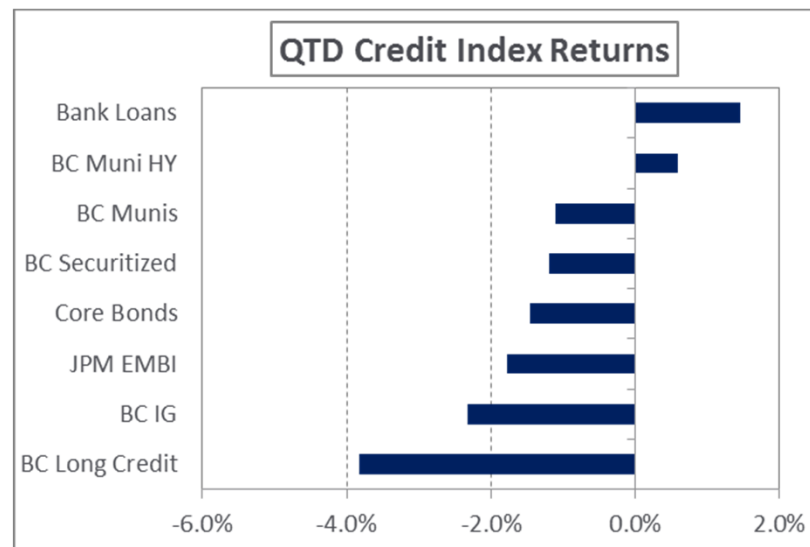
CREDIT PERFORMANCE OVERVIEW

Q1 Credit Market Summary

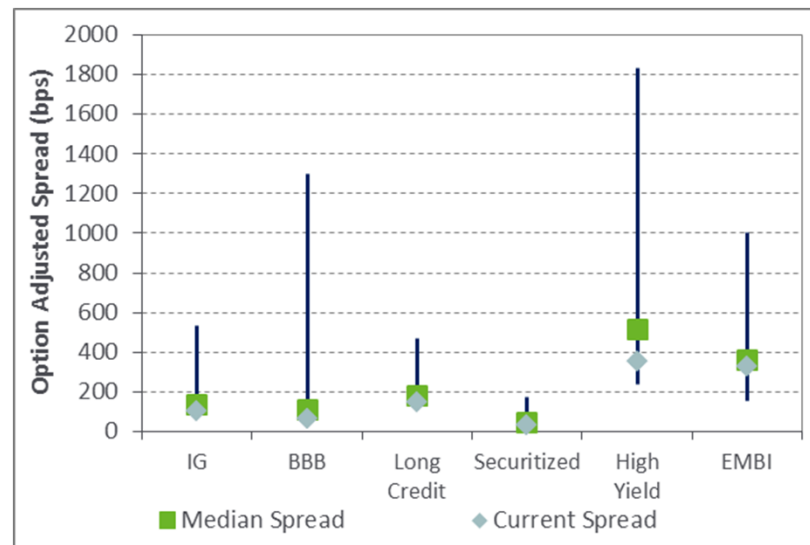
- Credit spreads increased slightly, but remain below medians in most areas of the credit market
- In particular, current high yield spreads continue to support a broad reduction in exposure
- Long credit declined 3.3% for the quarter with the 30-year Treasury yield increasing 23 basis points

Credit Spread (Basis Points)	12/29/17	03/31/18	\Delta
BC IG Credit	93	109	16
BC Long Credit	139	148	9
BC Securitized	27	32	5
BC High Yield	343	354	11
Muni HY	275	253	-22
JPM EMBI	311	326	15
Bank Loans - Libor	336	257	-79

Source: Barclays, Merrill Lynch, JPM, Bloomberg, NEPC



Source: Barclays, JPM, S&P, Bloomberg



Source: Barclays, JPM, S&P, Bloomberg. As of 01/31/2000



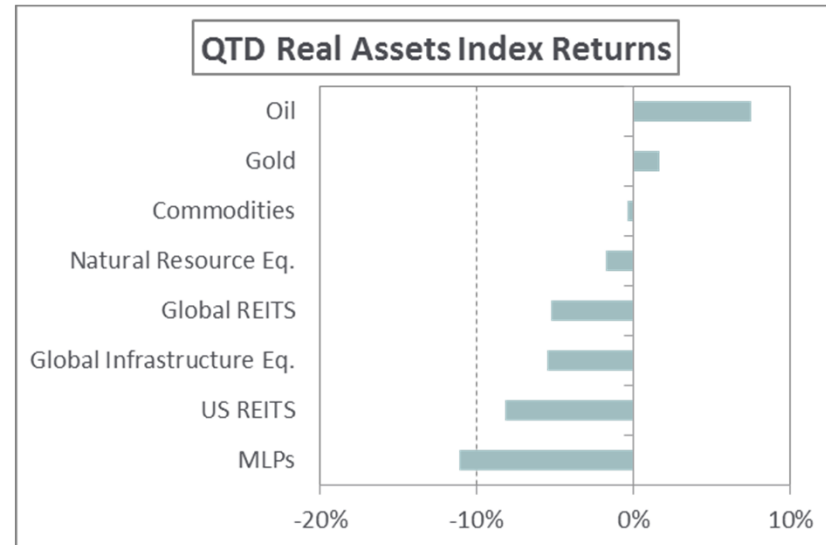
REAL ASSETS PERFORMANCE OVERVIEW

Q1 Real Assets Market Summary

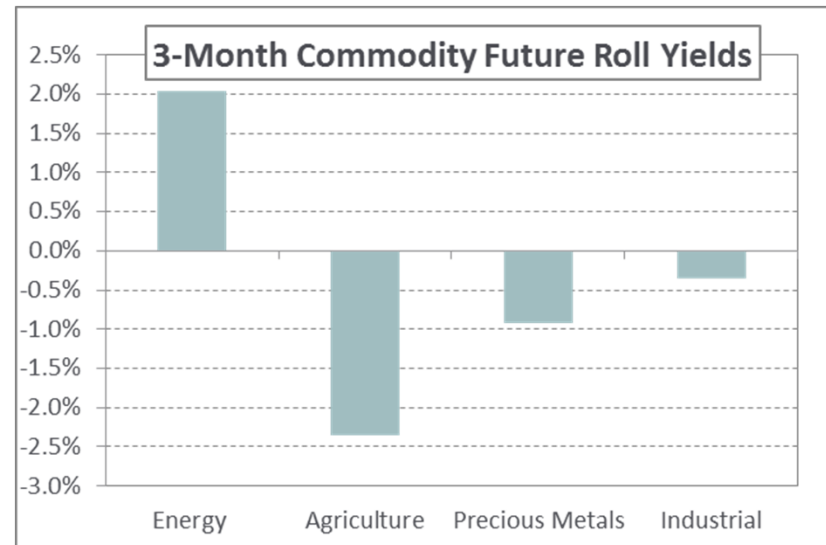
- MLPs experienced a significant decline for the quarter as a result of flow weakness, the FERC ruling, and higher Treasury yields**
 - Despite the negative performance, fundamentals remain supportive with strong earnings and growth prospects
- Commodity index roll yield is more negative than the previous quarter, despite the energy sector having a positive contribution**

Real Asset Yields	12/29/17	03/31/18
MLPs	7.8%	8.9%
Core Real Estate	4.4%	N/A
US REITs	4.1%	4.6%
Global REITs	3.6%	4.0%
Global Infrastructure Equities	3.9%	3.9%
Natural Resource Equities	3.1%	3.6%
US 10-Yr Breakeven Inflation	2.0%	2.1%
Commodity Index Roll Yield	-0.4%	-1.6%

Source: NCREIF, Alerian, NAREIT, S&P, Bloomberg



Source: S&P, NAREIT, Alerian, Bloomberg



Source: Bloomberg, NEPC Calculated as of 04/09/2018



UPDATED WORK PLAN: MONTHLY SIC MEETINGS

	SIC Meetings	NEPC Items
Phase 1	March	Present Draft Work Plan
		Discuss Asset Allocation Implementation
Phase 2	April	ERSRI Manager Primer
	May	ERSRI Manager Review
		SSGA QVM Manager Presentation & Review
	June	ERSRI Manager Review (cont.)
		Initiate Manager Search(s) - if necessary
Phase 3	July	ERSRI Risk Analysis



NEPC RATING DESCRIPTORS & DEFINITIONS

Rating	Rating Descriptor	Definition
1	Preferred	A high conviction investment strategy. A 1 (Preferred) rated strategy has a compelling and sound investment thesis, and the manager is well-resourced and incented to execute on the thesis.
2	Positive	NEPC has a positive view of the strategy. Strategy has a compelling and sound investment thesis. The manager is sufficiently resourced and incented to execute on the thesis. Strengths outweigh the weaknesses.
3	Neutral	NEPC has a neutral view of the strategy. Strategy lacks a compelling investment thesis. There are no significant concerns with the manager.
4	Negative	Strategy lacks or has an unclear investment thesis. The strategy's weaknesses clearly outweigh its strengths.
5	Not Recommended	A strategy that lacks an investment thesis or NEPC has no confidence in the strategy's ability to execute on the thesis. Serious issues have been identified with the investment manager or strategy.
NR	Not Rated	NEPC has not performed sufficient due diligence on the product or manager.



2018 5-7 YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	2018	2017	2018-2017
Cash	2.00%	1.75%	+0.25%
Treasuries	2.25%	2.00%	+0.25%
IG Corp Credit	3.50%	3.75%	-0.25%
MBS	2.50%	2.25%	+0.25%
Core Bonds*	2.75%	2.65%	+0.10%
TIPS	3.25%	3.00%	+0.25%
High-Yield Bonds	3.75%	4.75%	-1.00%
Bank Loans	4.50%	5.25%	-0.75%
Non-US Bonds (Unhedged)	0.50%	1.00%	-0.50%
Non-US Bonds (Hedged)	0.73%	1.09%	-0.36%
EMD External	4.25%	4.75%	-0.50%
EMD Local Currency	6.00%	6.75%	-0.75%
Large Cap Equities	5.25%	5.75%	-0.50%
Small/Mid Cap Equities	5.75%	6.00%	-0.25%
Int'l Equities (Unhedged)	7.50%	7.25%	+0.25%
Int'l Equities (Hedged)	7.82%	7.57%	+0.25%
Emerging Int'l Equities	9.00%	9.50%	-0.50%
Private Equity	8.00%	8.25%	-0.25%
Private Debt	6.50%	7.25%	-0.75%
Core Real Estate	5.75%	6.00%	-0.25%
Commodities	4.75%	4.75%	-
Hedge Funds**	5.83%	5.95%	-0.12%

* Core Bonds assumption based on market weighted blend of components of Aggregate Index (Treasuries, IG Corp Credit, and MBS).

** Hedge Funds is a calculated blend of 40% Equity, 40% Credit, 20% Macro-related strategies.



2018 5-7 YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	2018	2017	2018-2017
Short Treasuries	2.25%	2.00%	+0.25%
US 10 Yr. Treasury	2.25%	2.00%	+0.25%
Long Treasuries	2.00%	1.75%	+0.25%
20+ Year STRIPS	1.75%	1.50%	+0.25%
Short Credit	2.75%	2.75%	-
Long Credit	4.00%	4.25%	-0.25%
Long Government/Credit*	3.26%	3.33%	-0.07%
Non-US Cash**	0.50%	0.25%	+0.25%
Non-US Inflation-Linked Bonds	1.75%	1.00%	+0.75%
Short High Yield	4.25%	5.00%	-0.75%
Municipal Bonds (1-10 Year)	2.50%	-	-
High Yield Municipal Bonds	3.75%	4.25%	-0.50%
Global Equity*	6.88%	7.21%	-0.33%
MLPs	7.25%	7.00%	+0.25%
REITs	6.50%	6.50%	-
Real Assets (Liquid)**	5.87%	5.92%	-0.05%
Non-Core Real Estate	7.00%	N/A	N/A
Private Real: Energy/Metals	8.00%	8.25%	-0.25%
Private Real: Infrastructure/Land	6.00%	6.00%	-
Hedge Funds - Long/Short	6.25%	6.25%	-
Hedge Funds - Credit	5.00%	5.25%	-0.25%
Hedge Funds - Macro	6.25%	6.25%	-

* Assumption based on market weighted blend of index components

** Custom weighted blend of underlying asset classes



2018 VOLATILITY FORECASTS

Volatility			
Asset Class	2018	2017	2018-2017
Cash	1.00%	1.00%	-
Treasuries	5.50%	5.50%	-
IG Corp Credit	7.50%	7.50%	-
MBS	7.00%	7.00%	-
Core Bonds*	5.99%	6.03%	-0.04%
TIPS	6.50%	6.50%	-
High-Yield Bonds	13.00%	13.00%	-
Bank Loans	9.00%	9.00%	-
Non-US Bonds (Unhedged)	10.00%	8.50%	+1.50%
Non-US Bonds (Hedged)	4.50%	5.00%	-0.50%
EMD External	13.00%	13.00%	-
EMD Local Currency	13.00%	15.00%	-2.00%
Large Cap Equities	17.50%	17.50%	-
Small/Mid Cap Equities	21.00%	21.00%	-
Int'l Equities (Unhedged)	21.00%	21.00%	-
Int'l Equities (Hedged)	18.00%	18.00%	-
Emerging Int'l Equities	28.00%	28.00%	-
Private Equity	23.00%	23.00%	-
Private Debt	13.00%	14.00%	-1.00%
Core Real Estate	13.00%	15.00%	-2.00%
Commodities	19.00%	19.00%	-
Hedge Funds**	9.07%	8.74%	-0.33%

* Core Bonds assumption based on market weighted blend of components of Aggregate Index (Treasuries, IG Corp Credit, and MBS).

** Hedge Funds is a calculated blend of 40% Equity, 40% Credit, 20% Macro-related strategies.



2018 VOLATILITY FORECASTS

Volatility			
Asset Class	2018	2017	2018-2017
Short Treasuries	2.50%	2.50%	-
US 10 Yr. Treasury	7.50%	7.50%	-
Long Treasuries	12.00%	12.00%	-
20+ Yr. STRIPS	19.00%	19.00%	-
Short Credit	3.50%	3.50%	-
Long Credit	12.00%	13.00%	-1.00%
Long Government/Credit*	11.26%	12.01%	-0.75%
Non-US Cash**	1.00%	1.00%	-
Non-US 10 Yr. Sovereigns**	6.50%	6.50%	-
Non-US Inflation-Linked Bonds (H)	5.50%	6.00%	-0.50%
Short High Yield	8.50%	9.00%	-0.50%
Municipal Bonds (1-10 Year)	5.50%	-	-
Global Equity***	18.22%	18.26%	-0.04%
MLPs	19.00%	20.00%	-1.00%
REITs	21.00%	21.00%	-
Real Assets (Liquid)****	13.06%	12.83%	+0.23%
Non-Core Real Estate	17.00%	N/A	N/A
Private Real: Energy/Metals	21.00%	21.00%	-
Private Real: Infrastructure/Land	12.00%	14.00%	-2.00%
Hedge Funds - Long/Short	11.00%	11.00%	-
Hedge Funds - Credit	9.50%	9.50%	-
Hedge Funds - Macro	9.50%	9.50%	-

* Assumption based on market weighted blend of index components

** Custom weighted blend of underlying asset classes

