

QUARTER ENDING MARCH 31, 2019
INVESTMENT PERFORMANCE ANALYSIS
EASTERN MICHIGAN UNIVERSITY
BOARD OF REGENTS

May 21, 2019

Gary A. Wyniemko, CFA, Principal

James E. Reichert, CFA, Partner

Varun Raman, Senior Analyst



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NEPC UPDATE

NEPC, LLC

HIGHLIGHTS OF 2019 FIRST QUARTER HAPPENINGS AT NEPC

NEPC INSIGHTS

- Taking Stock: Munis Offer Sweet Spot and Flattening Yield Curve
- NEPC's 2019 Asset Allocation Letter: Winter is Coming, But When?
- Private Wealth Investment Policy Statements: A Roadmap for Uncertain Times
- 2018 Fourth Quarter Market Thoughts
- 2019 Investment Outlook: Q4 Market Thoughts, Webinar Replay & AA Letter
- Corporate Pension Plans: NEPC's Key Themes for 2019
- Taking Stock: The Importance of De-Risking Pension Plans and Q4 Liability Performance
- Taking Stock: Should Corporate Pensions Go on the Defense?
- Direct Investments (Part I): Trends and Motivations
- Taking Stock: A is for Access, MSCI Ups Local China Shares in Indexes
- Register Now: NEPC's 24th Annual Investment Conference
- Taking Stock: What is the Yield Curve Signaling?
- Taking Stock: Picking the Right Interest Credit Option for Your Cash Balance Plan

WEBINAR REPLAYS

- NEPC's 2019 Market Outlook Webinar

To download NEPC's recent insights and webinar replays, visit: www.NEPC.com/insights



IN MEMORY OF ROB FISHMAN

On March 10, 2019 we tragically lost a friend, colleague and leader at NEPC, Rob Fishman. Rob passed away quietly in his sleep with no known illnesses. He is survived by his wife of 19 years, Lisa, son Daniel (15), daughter Sarah (12) and the newest addition to their family, Mookie, a dog they rescued in October. Rob was just 46 years old.

Rob left behind a close-knit community of current and former NEPC co-workers, long-time clients and industry colleagues who are profoundly grateful that they had the opportunity to know Rob. Below is a celebration of his life and career.

Rob was an amazingly positive person, with a warm smile and kind words for everyone. He was witty, smart, quick to laugh and had a very dry sense of humor that we all loved. He was a brilliant fantasy football player, an okay golfer, a connoisseur of local micro-brews and really disliked long meetings. Every office has a “go-to person” that people seek for advice. That was Rob. He was loaded with random yet pertinent knowledge and you could bet that he’d seen it, done it, or was willing to learn about it.

Rob began his investment career in 1995 and joined NEPC in 1999. He took great pride in working his way from analyst to Partner in under eight years. This June would have marked his 20th anniversary with the company, a milestone we would have recognized at our annual January offsite.

Rob was a great consultant and decisive investor. During his tenure at NEPC Rob touched the lives of hundreds of thousands of beneficiaries through his roles on the Defined Contribution and Discretionary Teams. He designed and monitored participants’ retirement investment options on an advisory basis, and managed investment portfolios on a discretionary basis. Rob also managed our own retirement plans at NEPC, which we are very thankful for. It saddens us greatly that he did not get to enjoy the secure retirement that he worked so hard to provide for us.

Rob loved everything about NEPC, but most of all, the people; his wife communicated that to us. As heart-warming as that was to hear, we will never be able to express to Rob just how much we appreciated him and everything he did for us over the years. A hallmark of NEPC is our values and culture. Rob embodied those traits and we will honor his memory by continuing to live those values in support of each other and our clients.

[For more details, view the obituary here.](#)















QUARTERLY REVIEW

NEPC, LLC

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
											
1.2%	-11.7	-27 bps	13.6%	10.0%	9.9%	2.9%	7.3%	7.0%	33.3%	0.8%	16.7%

Global equities rallied during the quarter as sentiment improved from easing US-China trade tensions and a dovish pivot by the Fed

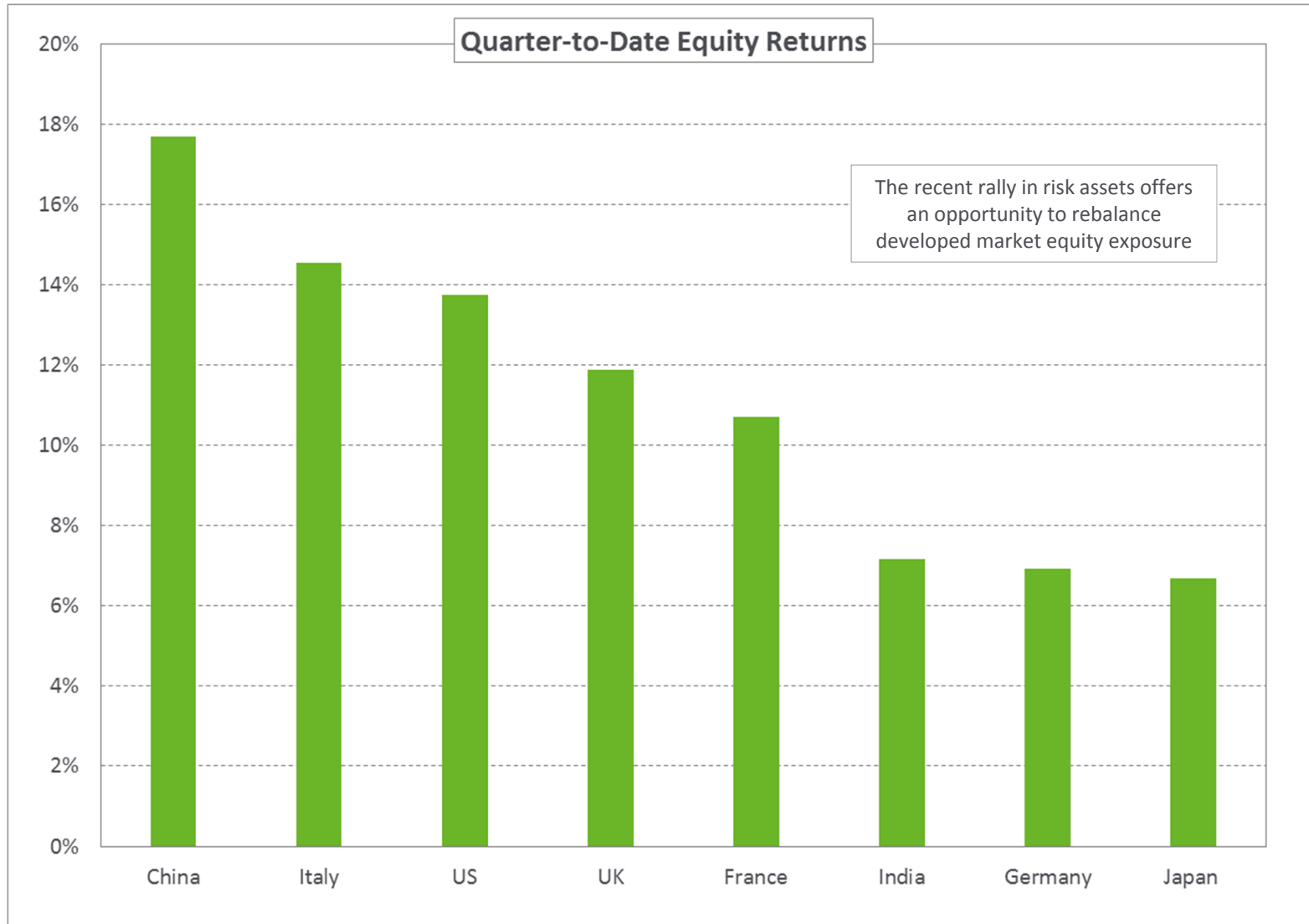
The spread between the 10-year Treasury Note and 3-month Treasury Bill temporarily inverted after the Fed held interest rates constant and announced adjustments to their balance sheet normalization process

Spot crude oil prices rose significantly due to geopolitical concerns in major oil-producing regions

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 EMBI Global Diversified Index), Crude Oil (WTI Crude Oil Spot), Gold (Gold Price Spot), and REITs (NAREIT Composite Index).



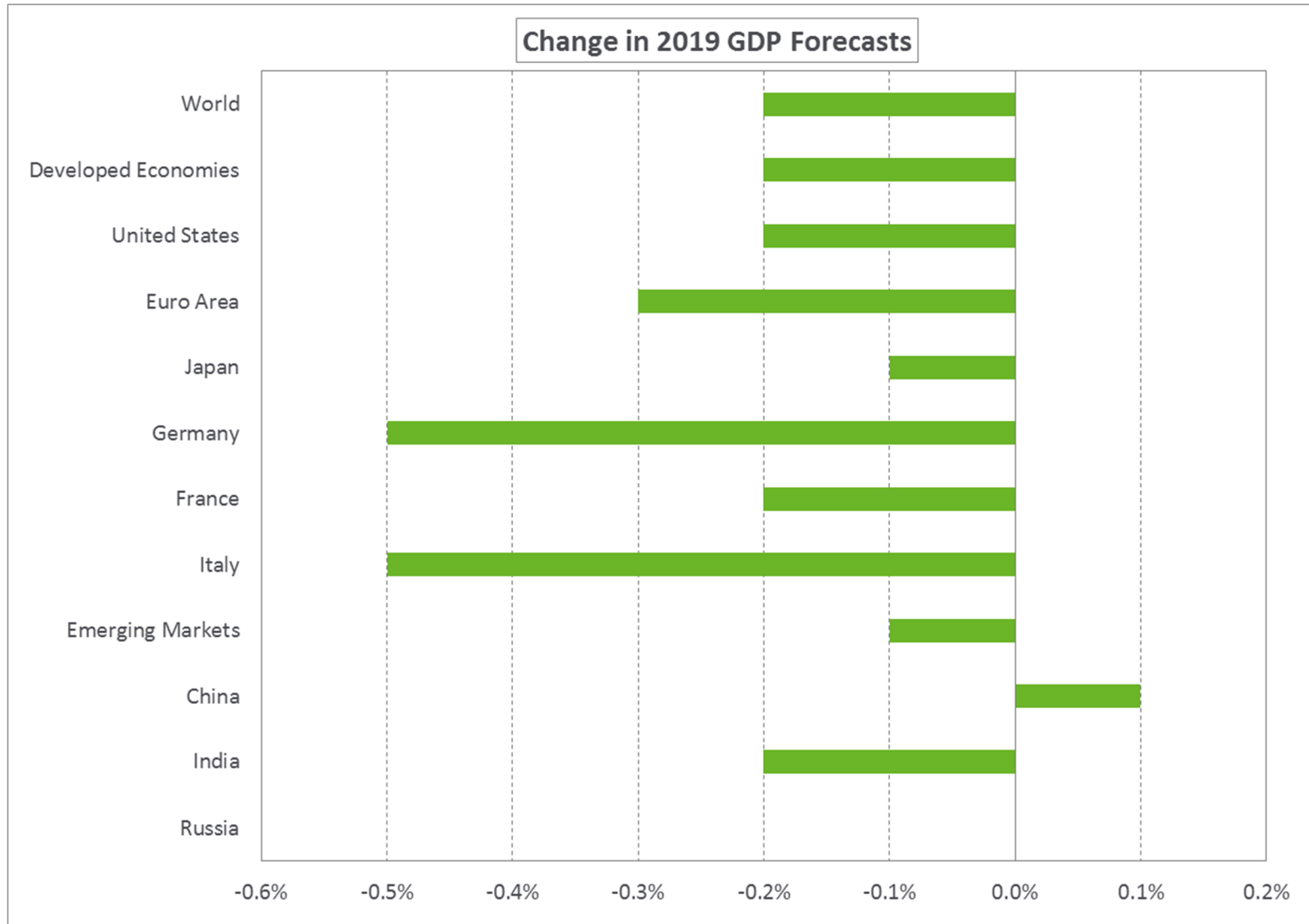
GLOBAL EQUITIES INCREASED



Source: MSCI, Bloomberg; total returns in USD



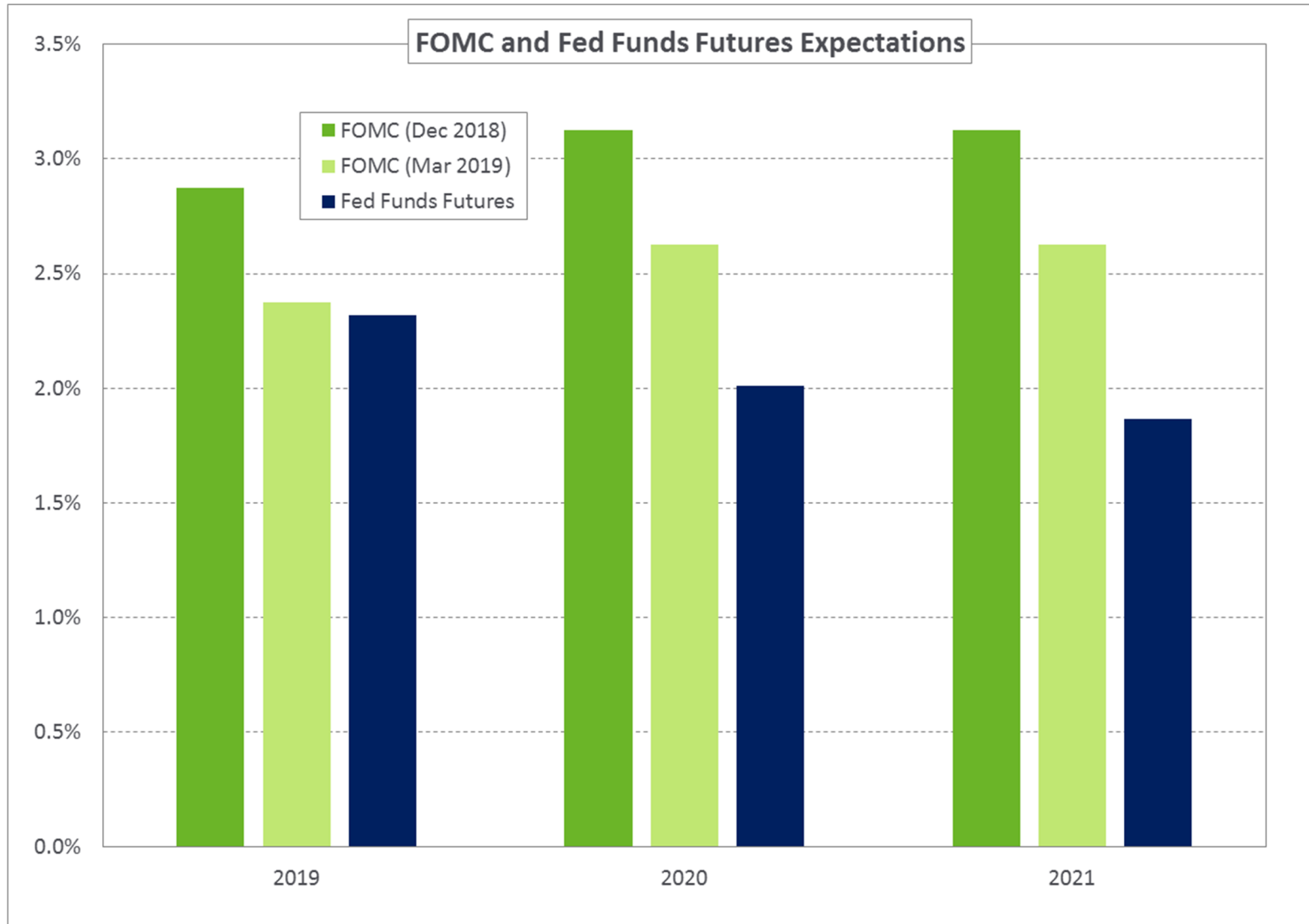
THE GLOBAL GROWTH OUTLOOK DETERIORATED



Source: IMF; change represents difference between the IMF April and January 2019 GDP forecasts



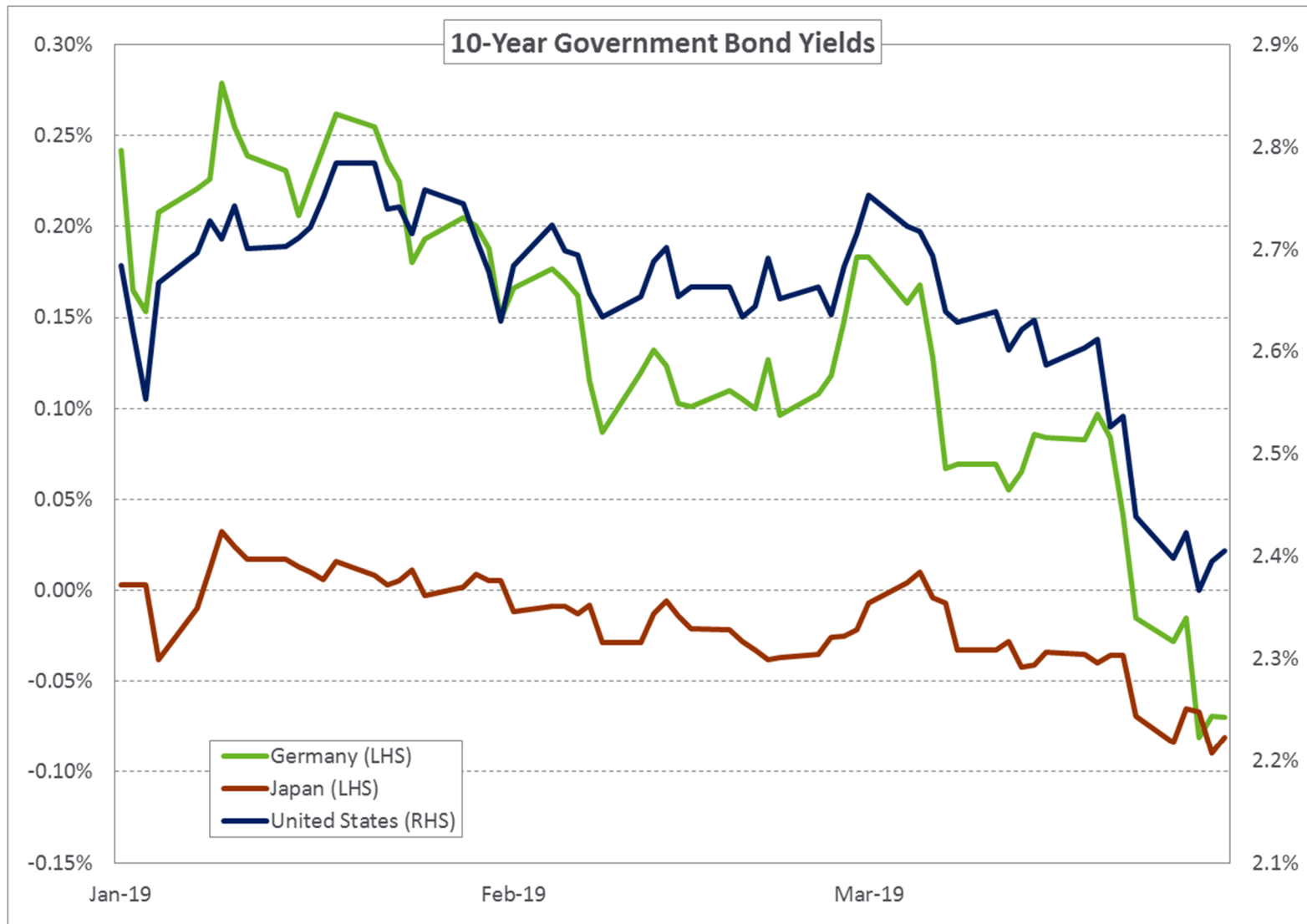
INTEREST RATE EXPECTATIONS DECLINED



Source: FOMC, Bloomberg



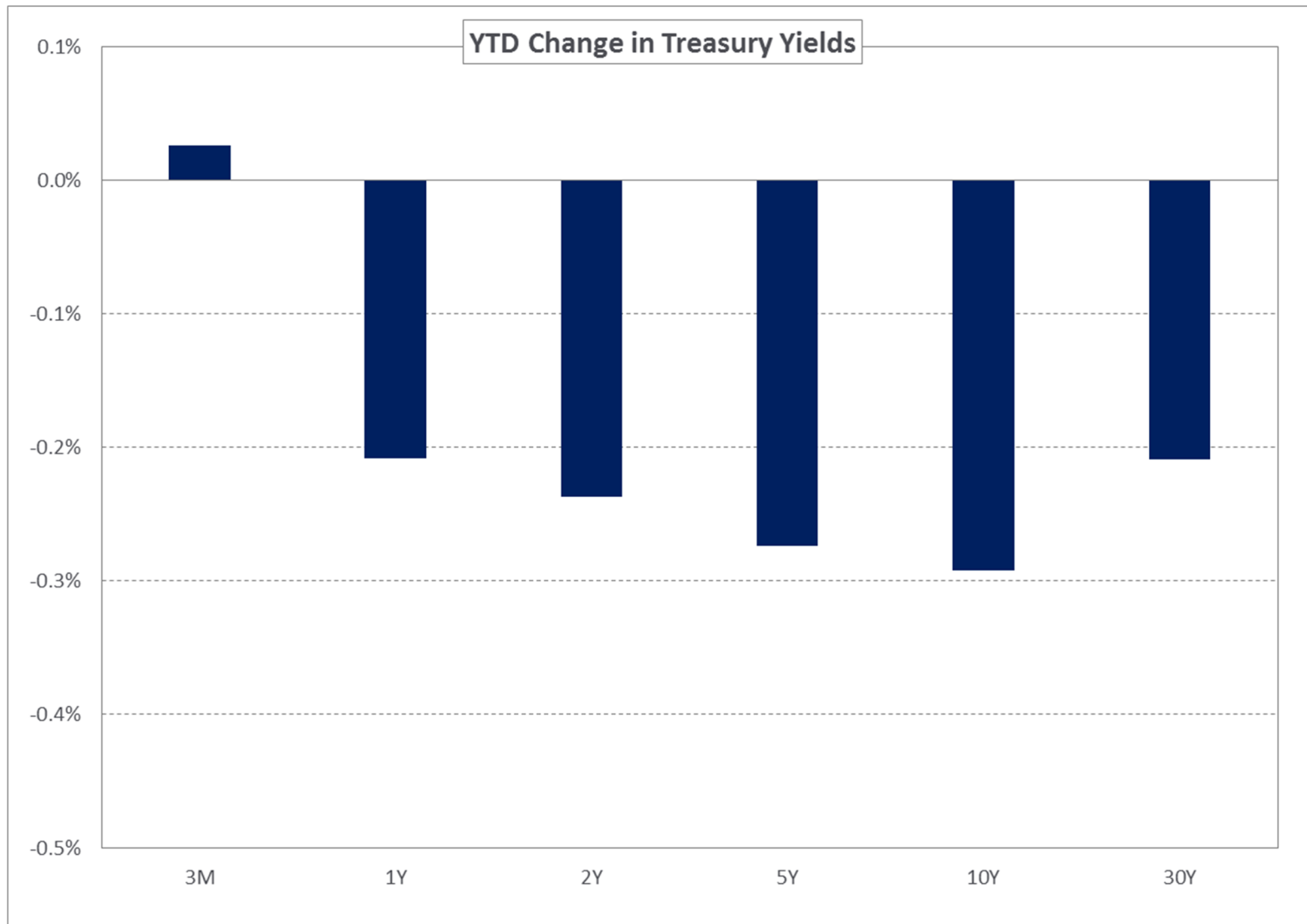
GLOBAL BOND YIELDS DECLINED



Source: Bloomberg



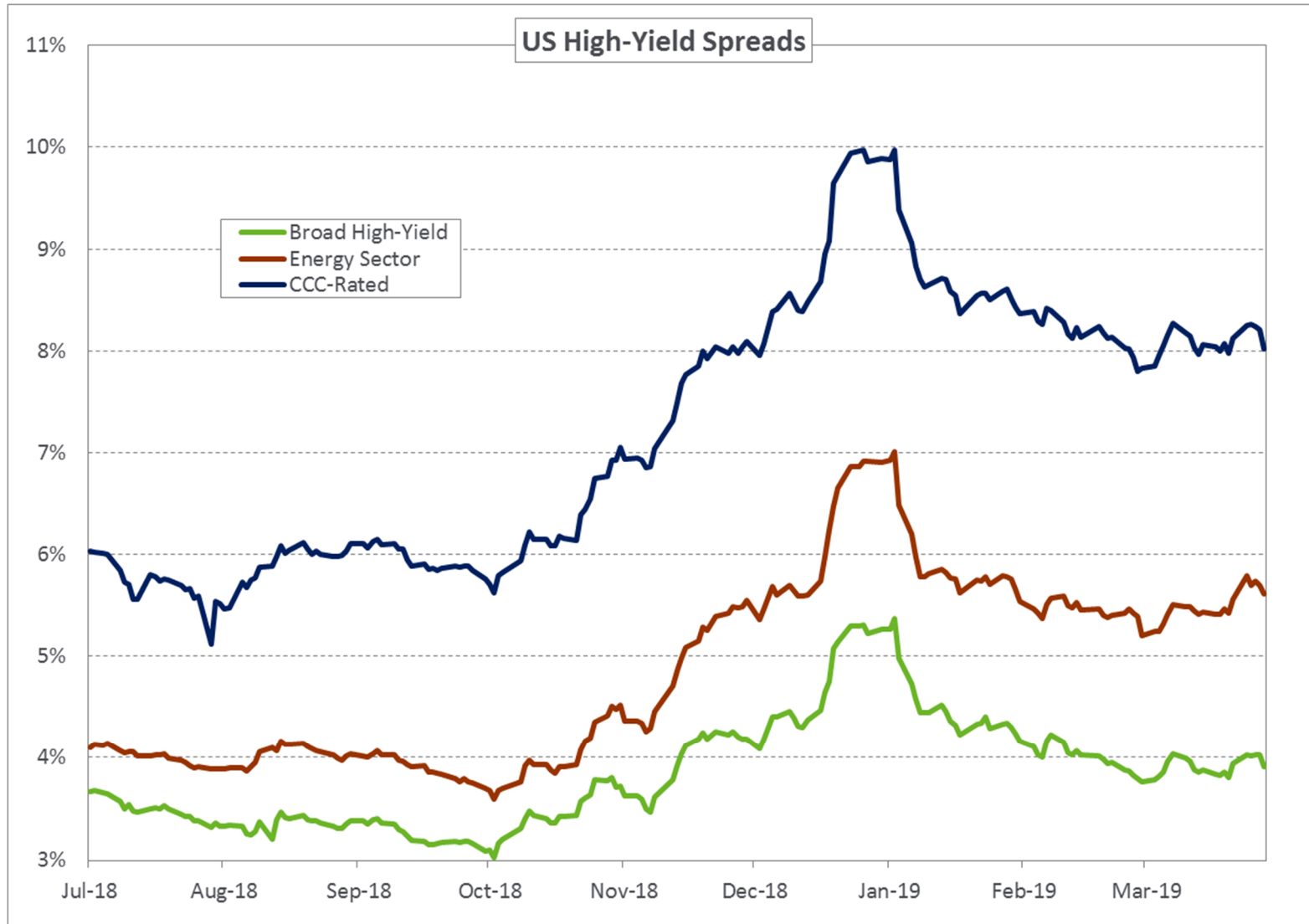
THE US YIELD CURVE TEMPORARILY INVERTED



Source: Bloomberg



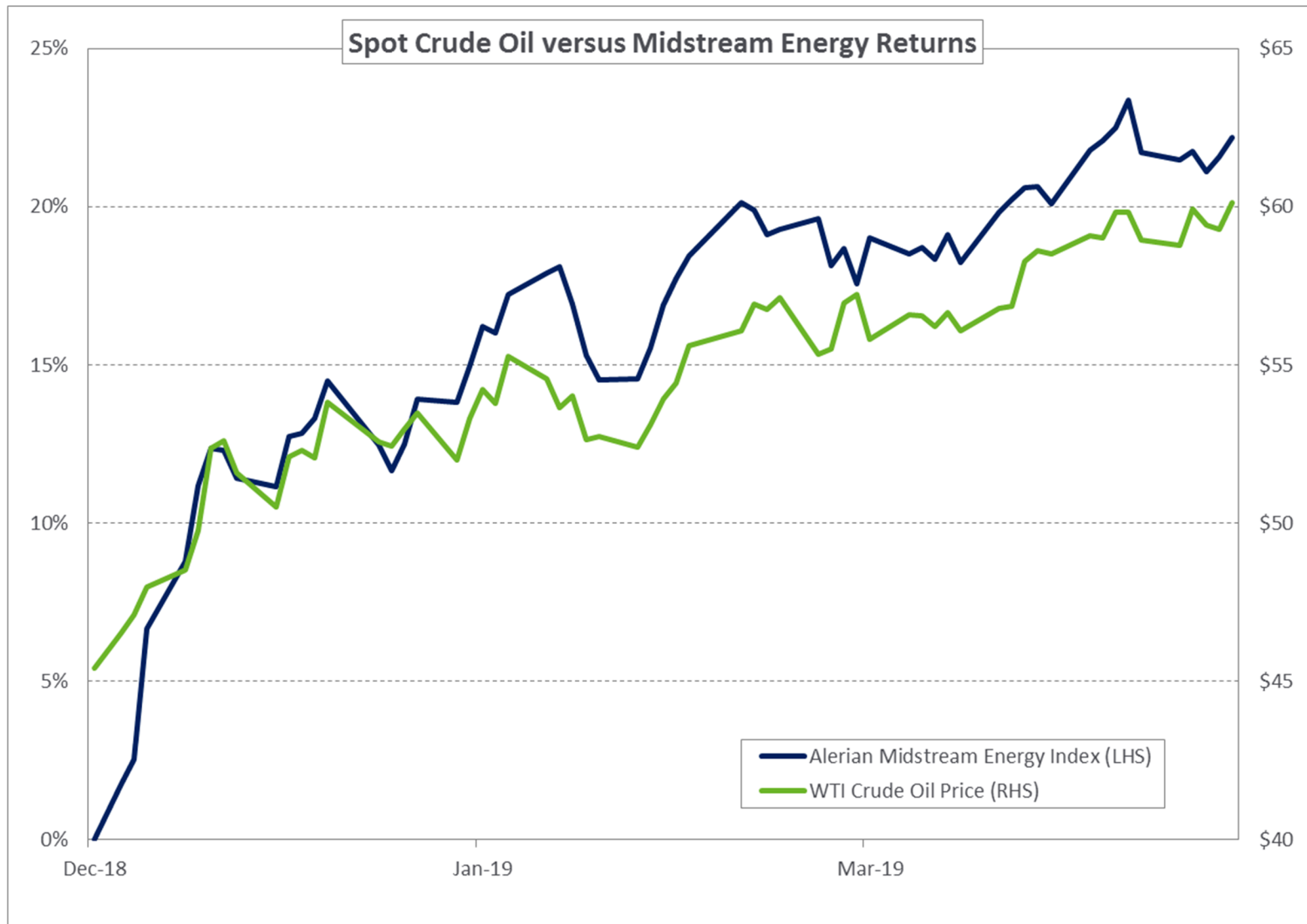
CREDIT SPREADS TIGHTENED FROM YEAR END



Source: Bloomberg



OIL PRICES RALLIED, SUPPORTING REAL ASSETS



Source: Bloomberg



KEY THEMES & OPPORTUNITIES

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THEMES AND OPPORTUNITIES

Key Market Themes

Key Market Themes are factors that define global markets and can be expected to both evolve and remain relevant without a clear timeline of conclusion. At times, themes may be challenged or disrupted and generate market volatility. The conclusion of a theme likely alters both market dynamics and our market outlook. Our intent is for clients to be aware of these themes and understand their implications for asset allocation and portfolio implementation.

Current Opportunities

Current Opportunities are investment ideas that represent an action with the goal of improving investment outcomes relative to an investor's strategic asset allocation. It is not our intent that the full list of opportunities be implemented. Rather, we encourage a focus on the actions that offer a material benefit to each client's strategic allocation relative to their unique objectives and constraints. These investment ideas are likely to change more frequently as market dynamics and valuations shift over time.



KEY MARKET THEMES

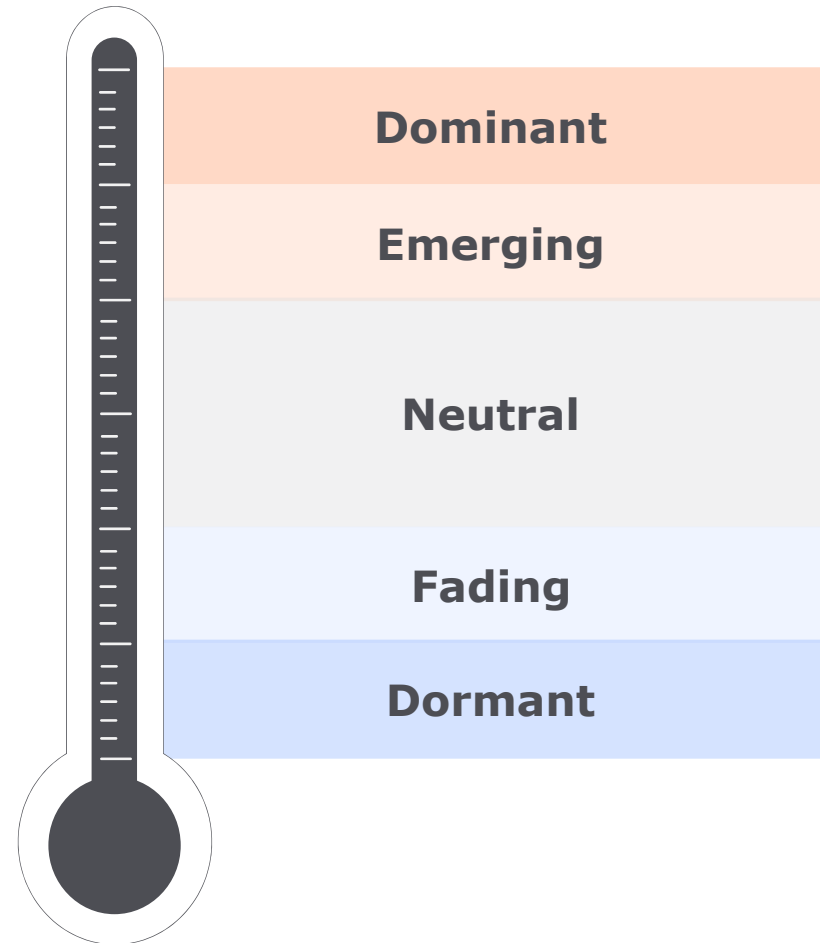
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KEY MARKET THEMES OVERVIEW

Thermometer

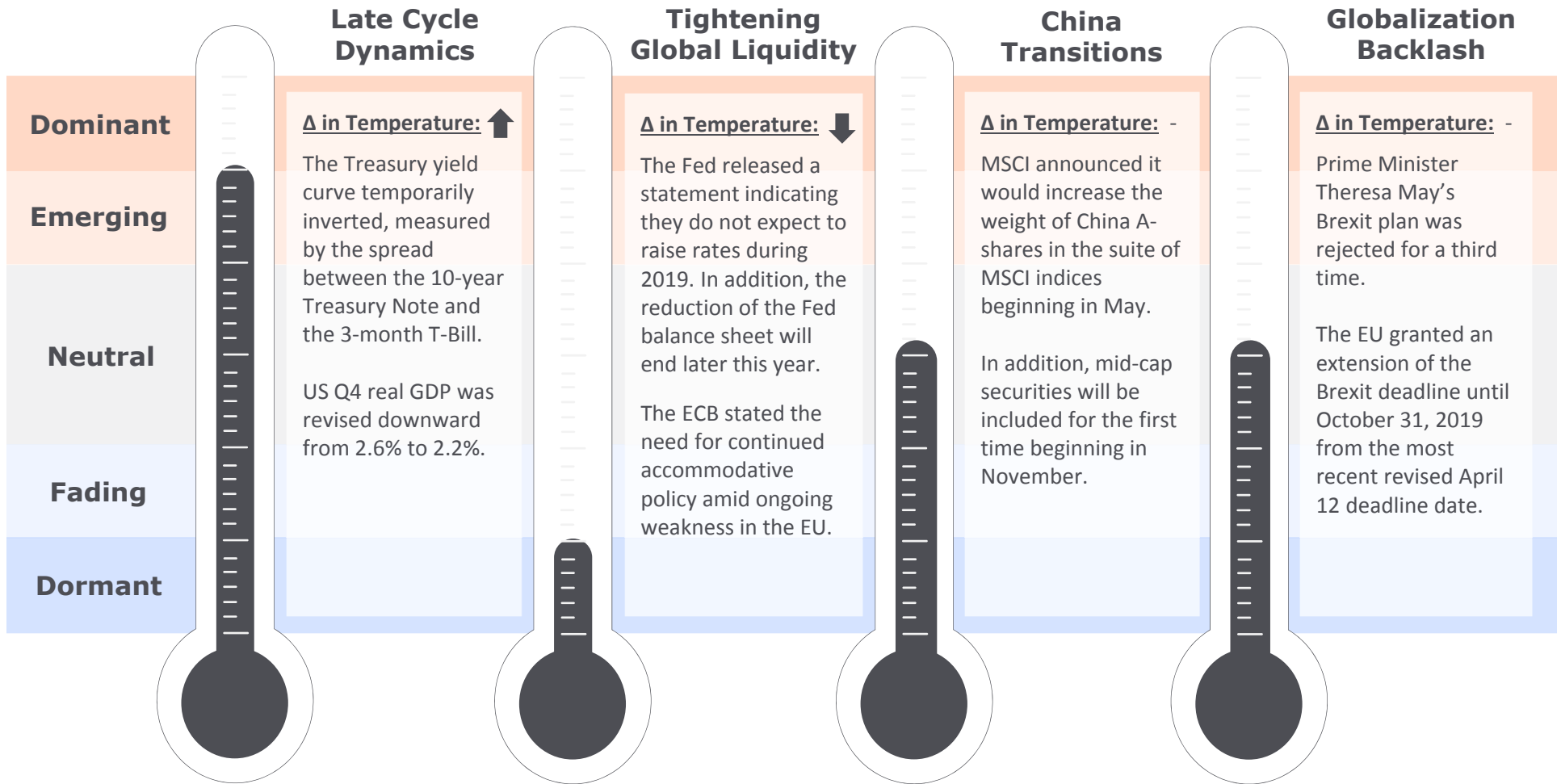
Each Key Market Theme is represented by a thermometer used to assess the current “temperature” of a theme. Themes may trend hotter or colder as market dynamics and underlying conditions change.

We expect temperatures to fluctuate as the theme’s activity level and influence on the market environment and asset pricing varies throughout its lifespan. Our intent is to use this as a communication tool, providing greater clarity on ongoing changes to the themes.



ASSESSING THE KEY MARKET THEMES

Current Temperature



KEY MARKET THEMES

Late Cycle Dynamics

Tightening Global Liquidity

China Transitions

Globalization Backlash



KEY MARKET THEMES

Late Cycle Dynamics

The US economy has transitioned from a mid- to late-cycle environment

Late-cycle does not mean end of cycle; equity markets can offer strong returns and abandoning risk assets early may detract from long-term results

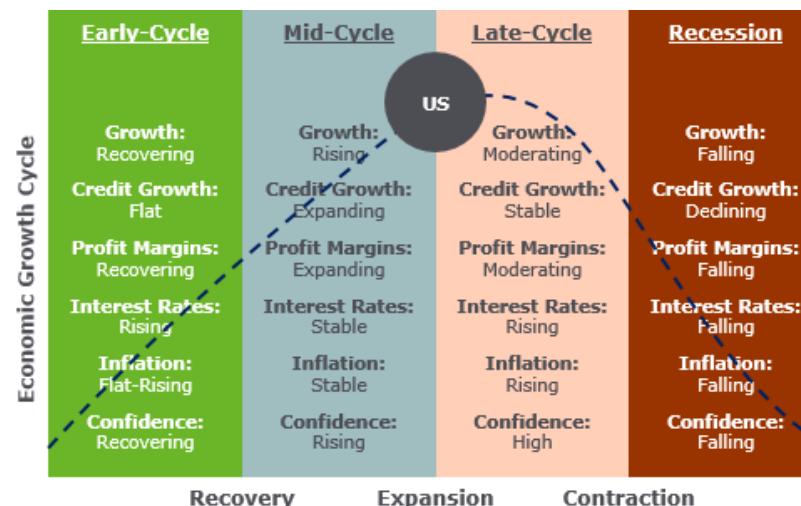
Positive economic data can support continued US economic expansion and further equity gains

However, moving into a late cycle negatively skews the range of outcomes and our investment outlook reflects a more risk-averse posture with a bias toward selling low-quality credit and increasing safe-haven fixed income exposure

Trends among key indicators suggest a transition to late-cycle has occurred

These indicators provide a useful guide to recognize changes in the economic cycle

Despite the recent trend, there is minimal evidence in economic/financial indicators to suggest that a US recession is imminent



US Indicators	Late-Cycle Trend	Current Trend*
Equities	Peaking	Rising
Interest Rates	Rising	Rising
Yield Curve	Flattening	Flattening
Inflation	Rising	Falling
GDP Growth	Moderating	Rising
Credit Spreads	Stable/Rising	Rising
Output Gap	Near/Above Potential	Rising
Unemployment	Falling/Bottoming	Falling

Source: (Top) NEPC




Source: (Bottom) NEPC; *Trend represents changes over the previous two quarters



KEY MARKET THEMES

Late Cycle Dynamics

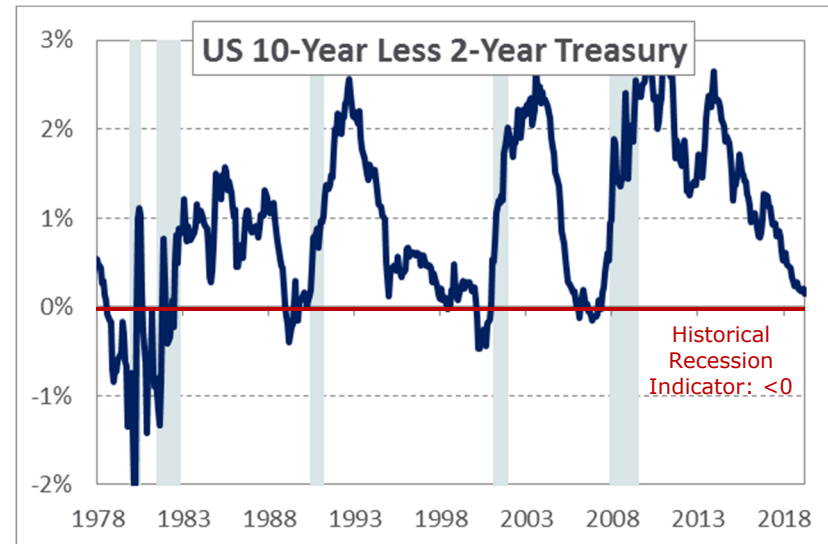
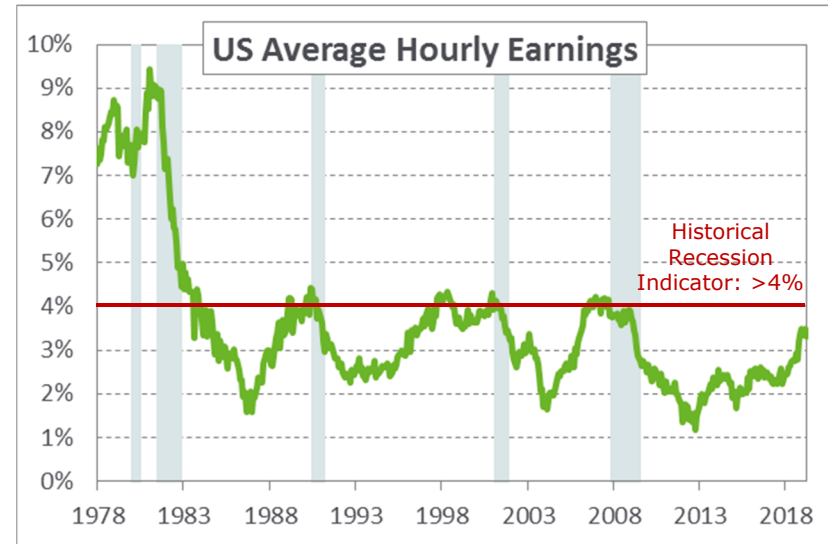
Key indicators are helpful guides, but all business cycles are different

Late-Cycle Dynamics		<u>Growth</u> : This expansion has been the longest ever, but cumulative GDP growth remains well below average. Sustainability of current growth from fiscal stimulus remains unclear.
		<u>Interest Rates</u> : The Fed has methodically increased rates off post-crisis lows. In a pivot from their tightening stance, they appear to be on hold – willing to adjust policy up or down as conditions warrant.
		<u>Inflation</u> : Despite record low unemployment rates, inflation pressures have been slow to materialize relative to history. Core US inflation remains below Fed target of 2%.

We are evaluating market indicators, such as the yield curve, that would lead us to adopt a defensive outlook

A prolonged inversion of the yield curve or weakness in other economic metrics, would lead us to recommend a material increase in safe-haven fixed income and reduction to equity exposure

There is a greater need to seek portfolio balance in a late cycle, while the increased volatility may offer tactical opportunities



Source: (Top) Bloomberg, NEPC
 Source: (Bottom) Federal Reserve Bank of St. Louis, NEPC;
 Light blue shading indicates recession



A CHALLENGED KEY MARKET THEME

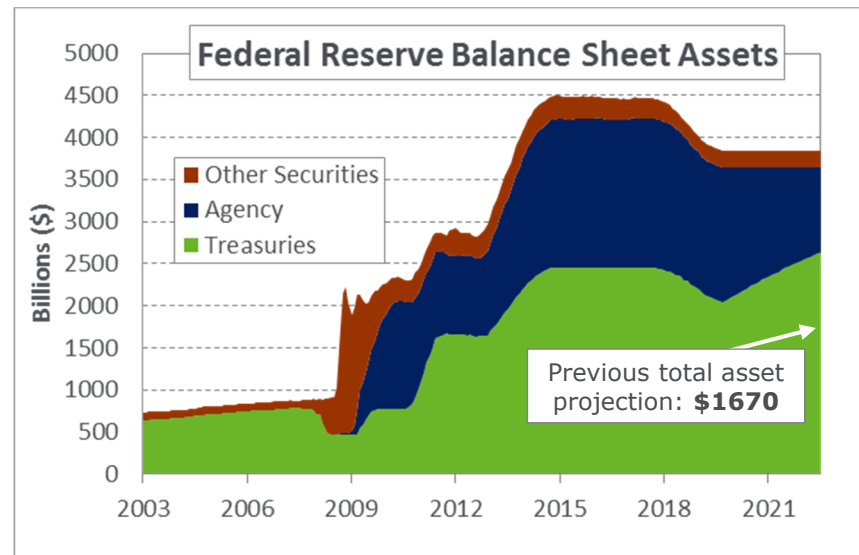
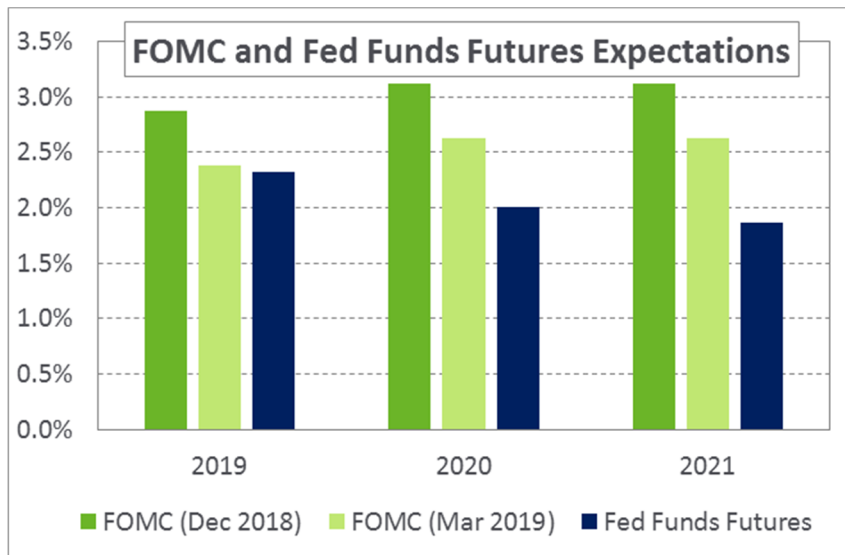
Tightening Global Liquidity

Our Tightening Global Liquidity theme has become partially impaired with the Fed’s dramatic shift away from a tighter monetary policy in the 1st quarter

The Fed signaled two dovish policy adjustments. Stating they will hold rates steady until evidence of inflation pressures begin to materialize. Surprising markets, the Fed announced the program to reduce the size of their balance sheet will end as of September 30th.

While the Fed appears to have paused its plans for tighter monetary policy, global liquidity remains constrained relative to prior years

Overall market liquidity remains a concern as underlying trading conditions for credit markets are fragile and would be severely tested to absorb an exodus from crowded credit positions



Source: (Left) FOMC, Bloomberg

Source: (Right) FOMC, Bloomberg, NEPC; dotted lines represent previous projections



A CHALLENGED KEY MARKET THEME

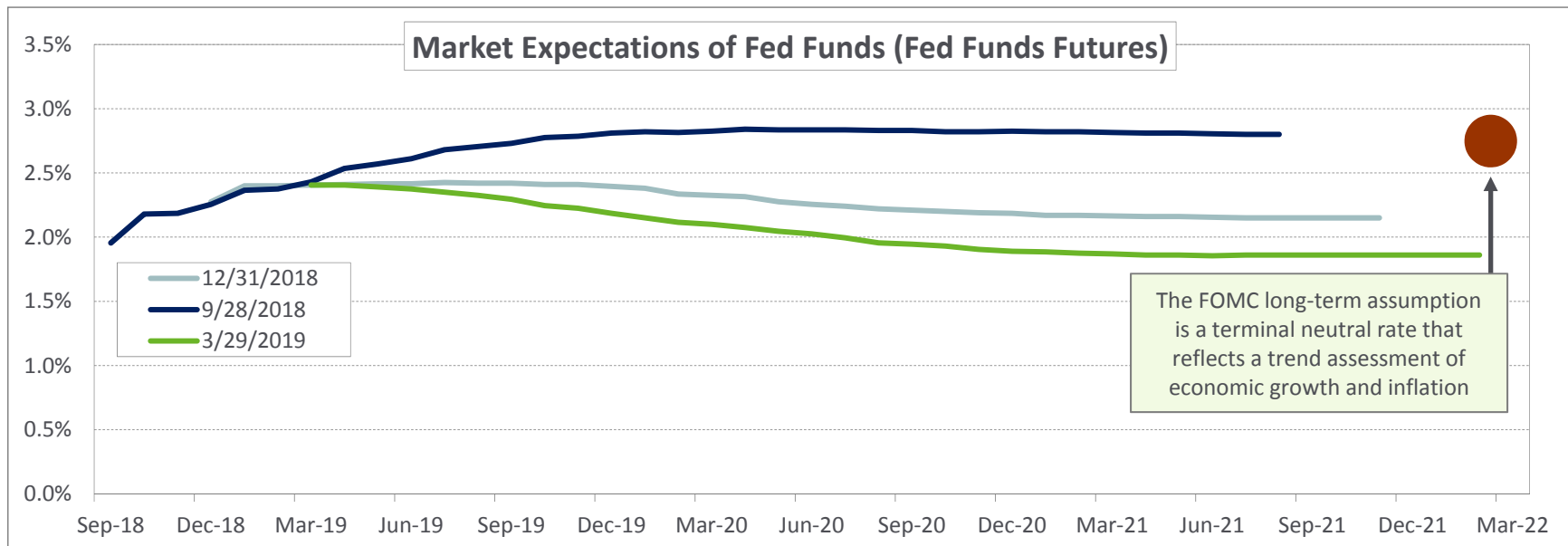
Tightening Global Liquidity

The thesis for our Tightening Global Liquidity theme has been challenged by recent Federal Reserve statements and actions reversing their tightening bias

The Fed had been communicating a tightening path with their forecast for rate hikes moving above the long-term neutral rate. This is no longer the case when referencing both market expectations and the median projections released by the FOMC.

The Fed announced it will end the reduction of its balance sheet in September 2019, with assets totaling more than \$3.5 trillion

The timing to end the balance sheet reduction was a surprise and reverses a significant monetary policy tightening tool that was methodically draining liquidity from the system



Source: FOMC, Bloomberg



CURRENT OPPORTUNITIES

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CURRENT OPPORTUNITIES

Rebalance Developed Market Equities

Funding Sources: EAFE equity, lower quality credit, multi-asset strategies

Raise Safe-Haven Fixed Income Exposure

Funding Sources: Lower quality credit, equity, multi-asset strategies

Reduce Lower Quality Credit Exposure

Funding Sources: High yield, bank loans, US direct lending

Maintain Overweight to Emerging Market Equities

Funding Sources: US equity and EAFE equity

Add Long Volatility Exposure

Funding Sources: Multi-asset strategies

Fund Public Midstream Energy Exposure

Funding Sources: Commodities, high yield, equity

Fund Emerging Local Debt

Funding Sources: High yield and equity



CURRENT OPPORTUNITIES

Rebalance Developed Market Equities

Adjust US and EAFE regional exposure to developed market index weights

Continue to recommend an overweight to emerging equity and adopt an index weight for US/EAFE relative to MSCI World Index

We encourage a global equity target weight of 52% to the US, 33% EAFE, and 15% to the EM. Larger overweight to EM can be funded pro rate from developed equity

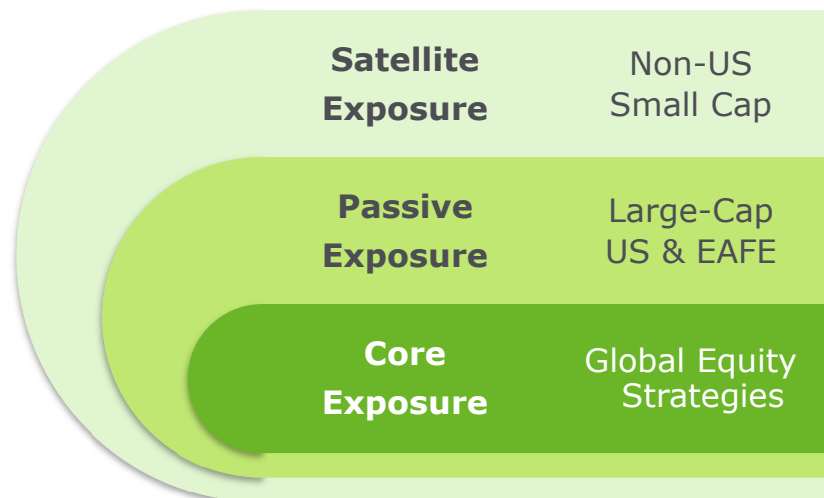
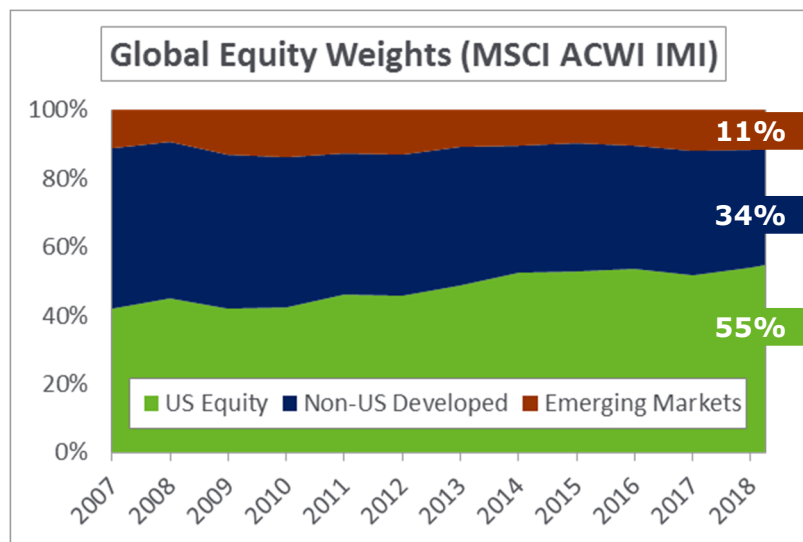
Should US equity markets decline, look to exploit the market volatility and overweight US exposure relative to EAFE index weights

Global equity strategies can serve as the core implementation approach for developed market equity exposure

We remain supportive of pairing active global equity strategies with passive large-cap US and EAFE equity exposure

Within non-US developed markets, we have a strong bias to active small-cap equities

EAFE and US small-cap are a viable funding source for private market commitments



Source: (Top) MSCI, Bloomberg, NEPC; represents free float market cap weights as of 12/31 each year
 Source: (Bottom) NEPC



CURRENT OPPORTUNITIES

Raise Safe-Haven Fixed Income Exposure

The potential for an adverse economic outcome should be acknowledged

Safe-haven exposure is an essential asset class exposure to mitigate portfolio risks

We are evaluating market metrics such as the yield curve that would cause us to shift to a more defensive recommendation

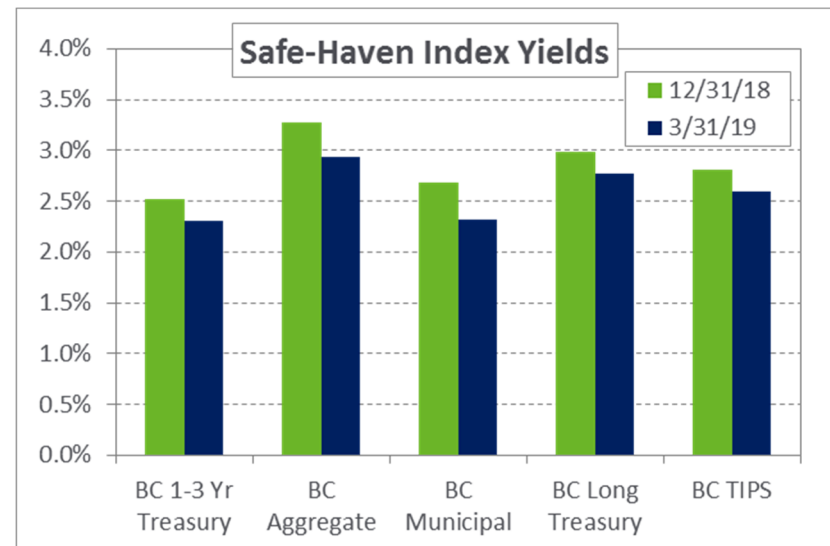
Should the yield curve invert and economic metrics show weakness, we are likely to recommend a material increase to safe-haven fixed income exposure

Short duration safe-haven exposure is attractive on a relative value basis

We encourage investors to increase safe-haven fixed income and use lower quality credit exposure as a funding source

Market volatility has depressed long rates and inflation expectations making short duration segments an important part of a safe haven allocation

TIPS continue to have a place in safe-haven fixed income as a strategic allocation



Source: (Top) Federal Reserve Bank of St. Louis, NEPC; Light blue shading indicates recession

Source: (Bottom) Bloomberg, TIPS yield includes CPI accrual



CURRENT OPPORTUNITIES

Reduce Lower Quality Credit Exposure

Lower-rated credit exposure does not adequately compensate investors for the risk relative to safer alternatives

Late-cycle markets generally exhibit higher than average credit default rates, acutely impacting debt rated BBB and below

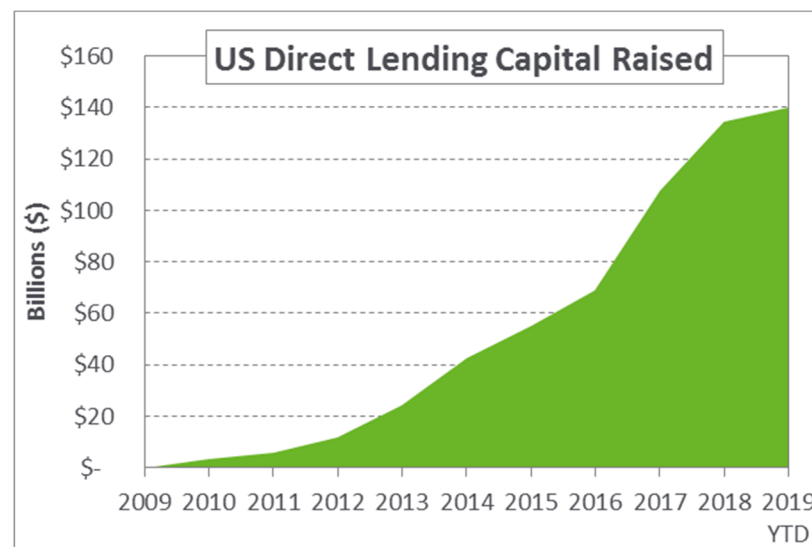
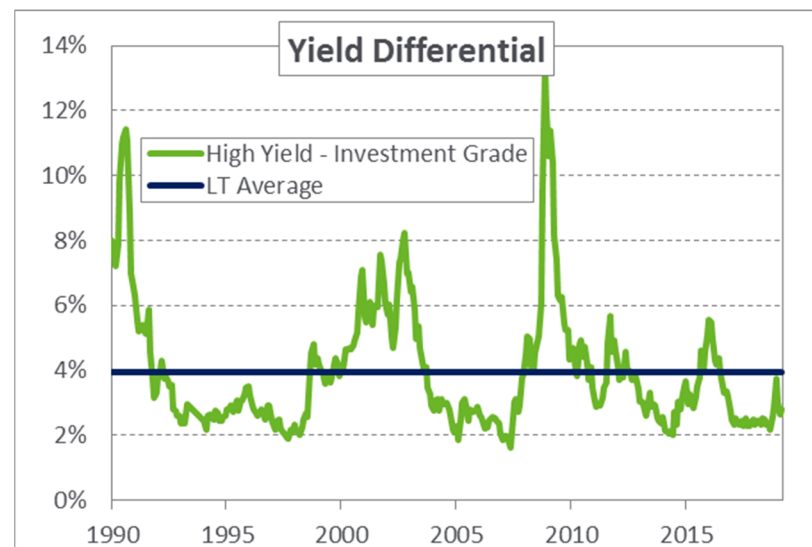
Despite credit spreads trading near median levels, we encourage moving away from lower quality credit and look to alternatives such as safe-haven fixed income, IG CLO's, and higher quality IG corporate bonds

A misaligned risk-return tradeoff also applies to private credit markets

US direct lending is one example as the space has absorbed a large influx of capital over a multi-year horizon

Distressed and niche segments of private markets offer opportunities but require a hyper-focus on underwriting standards

We encourage reducing exposure to credit segments that have performed well over a prolonged period such as high yield, bank loans, and many private debt approaches



Source: (Top) MSCI, Bloomberg

Source: (Bottom) Preqin; represents cumulative capital raised



Q1 EXECUTIVE SUMMARY

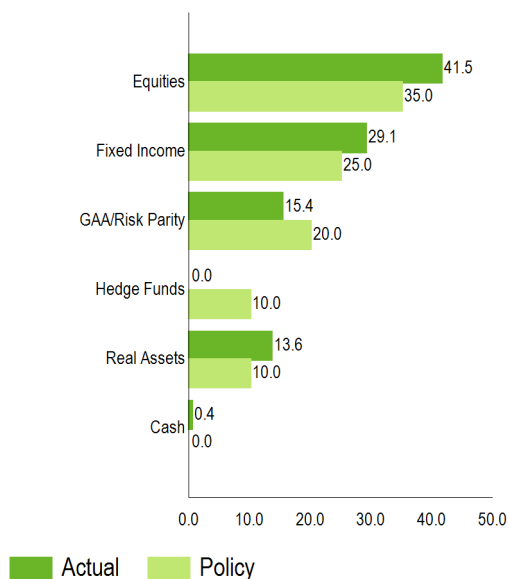
NEPC, LLC

Total Fund Performance Summary

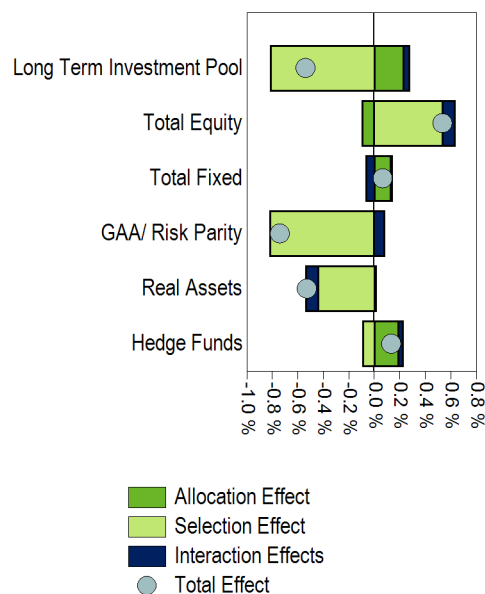
	Market Value	3 Mo	Rank	Fiscal YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank
Board of Regents Total Composite	\$36,999,604	6.9%	11	4.2%	30	2.8%	88	5.7%	14	3.6%	48
<i>Allocation Index</i>		6.9%	11	4.9%	16	4.6%	34	5.9%	13	3.8%	40

	Market Value	3 Mo	Rank	Fiscal YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank
Long Term Investment Pool	\$21,587,473	7.4%	73	2.9%	30	1.5%	87	6.6%	81	4.3%	75
<i>Long Term Allocation Index</i>		7.6%	72	2.6%	36	2.3%	62	6.7%	79	5.0%	49
<i>Long Term Balanced Index</i>		7.6%	72	2.5%	39	2.0%	71	6.7%	79	4.9%	53

Long Term Investment Pool Actual vs. Target Allocation



Long Term Investment Pool Attribution Effects 2 Years 3 Months Ending March 31, 2019



Year to Date

	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank
--	-----------	------	---------------	------	--------------	------

Board of Regents Total Composite	6.91%	11	7.20%	99	0.88	93
Allocation Index	6.92%	11	7.11%	99	0.89	93

Composite Performance

The Total Composite returned +6.9% for the quarter, bringing the fiscal year return to 4.2%. Portfolio performance was flat relative to the Allocation Index for the quarter and a bit behind for the fiscal year.

Allocation Index

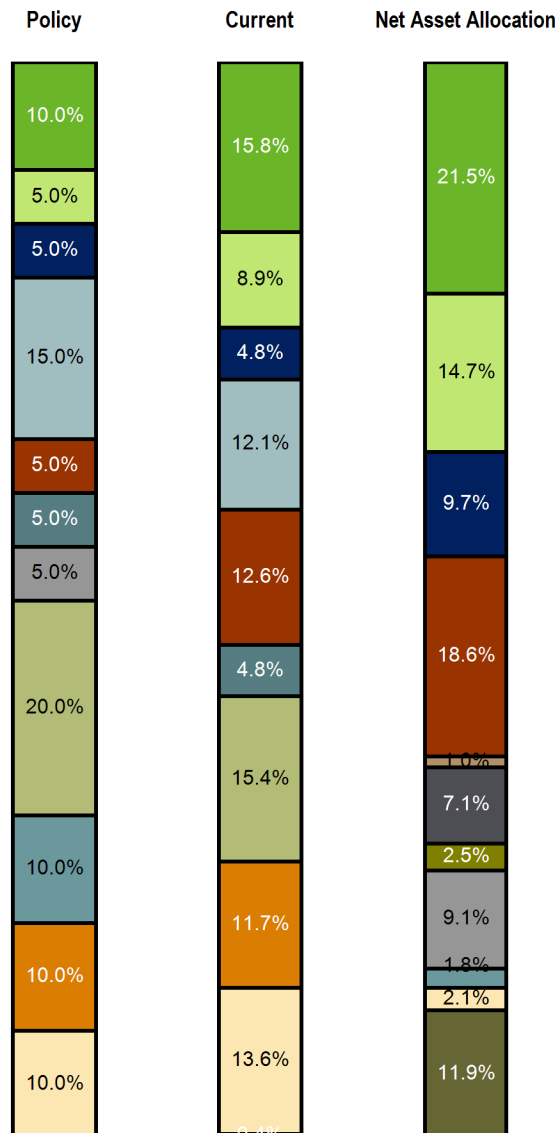
Per the market rally - Global Equities earned significant outperformance, just over 100bps; Fixed Income (more defensive in nature) was relatively flat against the US Bond Market.

Active Management

- Artisan Global Opportunities boasted an impressive 400bps outperformance against the MSCI All Country World Index - contributors were their holdings in IT, Financials, and Consumer Discretionary.
- Franklin Templeton Global Multisector stumbled due to their interest rate strategies and currency positions - this manager has a more defensive posture and performs better in times of duress.



Asset Allocation vs. Policy Targets



Asset Allocation vs. Target				
	Current	Policy	Current	Net Asset Allocation
Domestic Equity	\$3,402,277	10.0%	15.8%	21.5%
International Equity	\$1,919,140	5.0%	8.9%	14.7%
Emerging Markets Equity	\$1,038,542	5.0%	4.8%	9.7%
Global Equity	\$2,607,350	15.0%	12.1%	--
Core Fixed Income	\$2,723,535	5.0%	12.6%	18.6%
High Yield	--	--	--	1.0%
TIPS	--	--	--	7.1%
Multi-Sector Fixed Income	\$1,028,941	5.0%	4.8%	--
Non-US Developed Bonds	--	--	--	2.5%
Emerging Market Debt	--	5.0%	--	9.1%
GAA/Risk Parity	\$3,319,241	20.0%	15.4%	--
Hedge Funds	--	10.0%	--	1.8%
Absolute Return	\$2,526,486	10.0%	11.7%	--
Real Assets	\$2,930,458	10.0%	13.6%	2.1%
Cash	\$91,504	--	0.4%	11.9%
Total	\$21,587,473	100.0%	100.0%	100.0%

Net Asset Allocation breaks multi-asset investments like GAA and Global Equity into their underlying asset classes providing a look through to your actual asset allocation

-Asset Allocation vs. Policy Targets analytics are based on the Long Term Investment Pool.



INVESTMENT MANAGER - DUE DILIGENCE STATUS

Investment Options	Manager Changes/ Announcements (Recent Quarter)	NEPC Due Diligence Committee Recommendations
<p>Pacific Investment Management Company LLC (PIMCO) <i>All Asset Strategy</i></p>	<p>Upgrade: Litigation Update 1/2019</p>	<p>No Action</p>
<p>BlackRock Investments, LLC <i>Strategic Income Opportunities (SIO) (Unconstrained US Domiciled)</i></p>	<p>Loss of Personnel: Blackrock Leadership Changes 4/2019</p>	<p>Watch</p>



INVESTMENT MANAGER DUE DILIGENCE

Investment Option	Commentary	NEPC Rating
<p>Pacific Investment Management Company LLC (PIMCO) <i>All Asset Strategy</i></p>	<p>In 2018, Stacy Schaus, an executive vice president and head of PIMCO’s Defined Contribution practice filed a lawsuit alleging age- and sex-based discrimination at the firm. NEPC Research has been notified that PIMCO and Ms. Schaus have settled their litigation out of court. This comes with both good and bad news. The good news is that this matter was resolved in a matter that minimizes future headline risk. The bad news is that the matter resolved privately, and thus there is no access to the terms of the agreement. NEPC Research is aware that PIMCO continues to believe that Ms. Schaus was treated fairly in her employment at PIMCO; both sides are bound by confidentiality; Ms. Schaus retired from PIMCO as of November 21; Ms. Schaus is not precluded from working in the industry for any amount of time. After discussion within NEPC’s Unfavorable News Committee, PIMCO has been removed from WATCH due diligence status and placed on NO ACTION status.</p>	<p>1</p>
<p>BlackRock Investments, LLC <i>Strategic Income Opportunities (SIO)</i> <i>(Unconstrained US Domiciled)</i></p>	<p>NEPC Research was recently informed that Blackrock Strategic Income Opportunities (SIO) lead portfolio manager, Rick Rieder, will be joining the Blackrock Global Allocation strategy as one of four portfolio managers. Mr. Rieder also serves as CIO of Global Fixed Income at Blackrock. Blackrock is expanding the leadership team and increasing responsibilities and accountability of key investors, including Bob Miller and Ron Sion, both associated with the SIO strategy. Mr. Miller is co-portfolio manager on SIO, and will become Head of Americas Fundamental Fixed Income (FFI) alongside Michael Krautzberger. Mr. Sion will take additional responsibility as Mr. Miller’s deputy in Americas FFI. NEPC Research recommends a WATCH for Blackrock SIO given the added responsibilities for both Mr. Rieder and Mr. Miller away from SIO. NEPC Research will continue to monitor how responsibilities are adopted and ensure that Mr. Rieder and Mr. Miller are still able to make the proper time commitment to the SIO strategy.</p>	<p>1</p>



INVESTMENT MANAGER DUE DILIGENCE

NEPC Due Diligence Committee Recommendation Key	
No Action	Informational items have surfaced; no action is recommended.
Watch	Issues have surfaced to be concerned over; manager can participate in future searches, but current and prospective clients must be made aware of the issues.
Hold	Serious issues have surfaced to be concerned over; manager cannot be in future searches unless a client specifically requests, but current and prospective clients must be made aware of the issues.
Client Review	Very serious issues have surfaced with a manager; manager cannot be in future searches unless a client specifically requests. Current clients must be advised to review the manager.
Terminate	We have lost all confidence in the product; manager would not be recommended for searches and clients would be discouraged from using. The manager cannot be in future searches unless a client specifically requests. Current clients must be advised to replace the manager.



TOTAL FUND SUMMARY

NEPC, LLC

Eastern Michigan University - Board of Regents

Total Fund Performance Summary

	Market Value (\$)	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank
Board of Regents Total Composite	36,999,604	6.9	11	4.2	30	2.8	88	5.7	14	3.6	48
<i>Allocation Index</i>		6.9	11	4.9	16	4.6	34	5.9	13	3.8	40
<i>InvestorForce Trust Funds >60% Fixed Income Net Median</i>		4.2		3.6		4.0		4.2		3.5	
Short Term Investment Pool	15,412,131	0.3	--	0.4	--	0.4	--	0.2	--	0.1	--
<i>91 Day T-Bills</i>		0.6	--	1.7	--	2.1	--	1.2	--	0.8	--
Long Term Investment Pool	21,587,473	7.4	73	2.9	30	1.5	87	6.6	81	4.3	75
<i>Long Term Allocation Index</i>		7.6	72	2.6	36	2.3	62	6.7	79	5.0	49
<i>Long Term Balanced Index</i>		7.6	72	2.5	39	2.0	71	6.7	79	4.9	53
<i>InvestorForce All E&F < \$50mm Net Median</i>		8.7		2.2		2.7		7.8		5.0	
Total Equity	8,967,309	13.3	41	3.0	38	2.7	51	10.5	39	7.6	32
<i>MSCI ACWI</i>		12.2	54	2.1	44	2.6	51	10.7	37	6.5	51
<i>eV All Global Equity Net Median</i>		12.4		1.5		2.7		9.5		6.5	
Total Fixed	6,370,467	2.7	60	3.6	31	2.5	29	4.4	36	2.8	32
<i>BBgBarc US Aggregate TR</i>		2.9	54	4.6	13	4.5	9	2.0	72	2.7	33
<i>eV Global Fixed Inc Unhedged Net Median</i>		3.2		2.8		0.8		3.1		1.9	
GAA/ Risk Parity	3,319,241	4.2	81	1.6	43	-1.9	77	2.6	81	--	--
<i>60% MSCI World (Net) / 40% FTSE WGBI</i>		8.1	49	2.4	29	2.0	36	6.8	34	4.4	34
<i>eV Global TAA Net Median</i>		8.1		0.7		0.8		5.4		3.0	
Real Assets	2,930,458	5.4	72	2.3	20	-0.1	62	7.1	32	--	--
<i>PIMCO All Asset Index</i>		4.6	75	4.4	14	4.5	33	3.9	85	3.6	17
<i>Bloomberg Commodity Index</i>		6.3	70	-5.6	71	-5.3	93	2.2	95	-8.9	73
<i>InvestorForce All E&F Real Assets/Commodities Net Median</i>		8.7		-0.9		1.1		5.9		-2.7	

Intermediate Term Balanced Index comprised of 50.0% Barclays Intermediate U.S. GV/CR Index and 50.0% BofA ML 1-3 Year Treasury Index.

Allocation Index: Used to measure the value add from active management. Calculated as the asset weight from the prior month end multiplied by the specified market index.



Eastern Michigan University - Board of Regents

Total Fund Performance Detail

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Board of Regents Total Composite	36,999,604	100.0	6.9	11	4.2	30	2.8	88	5.7	14	3.6	48	5.1	53	5.1	Apr-09
<i>Allocation Index</i>			6.9	11	4.9	16	4.6	34	5.9	13	3.8	40	--	--	--	Apr-09
<i>InvestorForce Trust Funds >60% Fixed Income Net Median</i>			4.2		3.6		4.0		4.2		3.5		5.2		5.2	Apr-09
Short Term Investment Pool	15,412,131	41.7	0.3	--	0.4	--	0.4	--	0.2	--	0.1	--	0.1	--	0.1	Apr-09
<i>91 Day T-Bills</i>			0.6	--	1.7	--	2.1	--	1.2	--	0.8	--	0.4	--	0.4	Apr-09
Northern Inst Govt Select MMKT	15,028,851	40.6	0.4		0.5		0.5		0.2		0.1		--		0.1	Nov-09
<i>91 Day T-Bills</i>			0.6	66	1.7	59	2.1	62	1.2	76	0.8	76	0.4	72	0.4	Nov-09
Bank of Ann Arbor Trust Cash	383,280	1.0	0.0	99	0.0	99	0.0	99	0.0	99	0.0	99	--	--	0.0	Nov-09
<i>91 Day T-Bills</i>			0.6	66	1.7	59	2.1	62	1.2	76	0.8	76	0.4	72	0.4	Nov-09
<i>eV US Cash Management Net Median</i>			0.6		1.7		2.2		1.3		0.9		0.5		0.5	Nov-09
Long Term Investment Pool	21,587,473	58.3	7.4	73	2.9	30	1.5	87	6.6	81	4.3	75	5.5	97	5.5	Apr-09
<i>Long Term Allocation Index</i>			7.6	72	2.6	36	2.3	62	6.7	79	5.0	49	--	--	--	Apr-09
<i>Long Term Balanced Index</i>			7.6	72	2.5	39	2.0	71	6.7	79	4.9	53	5.4	97	5.4	Apr-09
<i>InvestorForce All E&F < \$50mm Net Median</i>			8.7		2.2		2.7		7.8		5.0		9.4		9.4	Apr-09
Total Equity	8,967,309	24.2	13.3	41	3.0	38	2.7	51	10.5	39	7.6	32	--	--	7.6	Jan-14
<i>MSCI ACWI</i>			12.2	54	2.1	44	2.6	51	10.7	37	6.5	51	12.0	58	6.4	Jan-14
<i>eV All Global Equity Net Median</i>			12.4		1.5		2.7		9.5		6.5		12.5		6.5	Jan-14
SEG Baxter	1,919,140	5.2	15.9	--	5.7	--	5.5	--	--	--	--	--	--	--	8.0	Jul-17
<i>MSCI ACWI ex USA</i>			10.3	--	-1.6	--	-4.2	--	8.1	--	2.6	--	8.8	--	3.1	Jul-17
Acadian Emerging Markets Equity	1,038,542	2.8	9.2	65	-2.3	69	-12.5	81	9.8	51	--	--	--	--	2.6	Oct-14
<i>MSCI Emerging Markets</i>			9.9	57	0.6	38	-7.4	36	10.7	40	3.7	52	8.9	72	3.4	Oct-14
<i>eV Emg Mkts Equity Net Median</i>			10.3		-0.3		-8.6		9.9		3.8		9.8		3.2	Oct-14
Artisan Global Opportunities	1,341,994	3.6	16.6	10	2.1	44	2.9	49	13.6	15	--	--	--	--	10.7	Dec-14
<i>MSCI ACWI</i>			12.2	54	2.1	44	2.6	51	10.7	37	6.5	51	12.0	58	6.3	Dec-14
<i>eV All Global Equity Net Median</i>			12.4		1.5		2.7		9.5		6.5		12.5		6.3	Dec-14
Hexavest GE	1,265,356	3.4	8.4	93	2.6	41	2.8	49	7.1	80	--	--	--	--	5.4	Dec-14
<i>MSCI ACWI</i>			12.2	54	2.1	44	2.6	51	10.7	37	6.5	51	12.0	58	6.3	Dec-14
<i>eV All Global Equity Net Median</i>			12.4		1.5		2.7		9.5		6.5		12.5		6.3	Dec-14
Vanguard Total Stock Market VIPERs	3,402,277	9.2	14.0	48	4.7	31	8.8	32	--	--	--	--	--	--	13.2	Nov-16
<i>Russell 3000</i>			14.0	47	4.7	31	8.8	32	13.5	32	10.4	25	16.0	39	13.2	Nov-16
<i>eV All US Equity Net Median</i>			13.8		1.7		5.2		11.6		8.2		15.4		10.4	Nov-16

-Intermediate Term Balanced Index: 50.0% Barclays Intermediate U.S. GV/CR Index and 50.0% BofA ML 1-3 Year Treasury Index.

-Allocation Index: Used to measure the value add from active management. Calculated as the asset weight from the prior month end multiplied by the specified market index.

-Long-Term Balanced Index: (10% - Russell 3000)(5% - MSCI EAFE Small Cap)(5% - MSCI Emerging Markets)(15% - MSCI ACWI)(15% - Barclays Aggregate)(5% - 50%JPM EMBI GD/ 25% JPM ELMI+/ 25% JPM GBI EM GD)(5% - Barclays Multi-verse)(20% - 60% MSCI World (Net)/ 40% CITI WGBI)(10% - HFRI Fund of Funds Composite)(10% - PIMCO All Asset Index).



Total Fund Performance Detail

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Total Fixed	6,370,467	17.2	2.7	60	3.6	31	2.5	29	4.4	36	2.8	32	--	--	3.0	Jan-14
BBgBarc US Aggregate TR			2.9	54	4.6	13	4.5	9	2.0	72	2.7	33	3.8	73	3.0	Jan-14
eV Global Fixed Inc Unhedged Net Median			3.2		2.8		0.8		3.1		1.9		4.7		2.1	Jan-14
Franklin Templeton- Global Multi-Sector Plus	1,028,941	2.8	1.9	89	5.6	1	2.2	24	5.1	1	--	--	--	--	2.0	Oct-14
BBgBarc Multiverse			2.4	71	2.6	57	-0.3	40	1.8	55	1.2	47	3.3	76	1.5	Oct-14
eV Global Agg Fixed Inc Net Median			2.8		2.8		-0.7		2.1		1.1		4.2		1.3	Oct-14
BlackRock- SIO	2,526,486	6.8	2.4	99	2.3	99	1.5	99	3.6	33	--	--	--	--	2.3	Oct-14
BBgBarc US Aggregate TR			2.9	93	4.6	52	4.5	40	2.0	97	2.7	78	3.8	99	2.6	Oct-14
eV US Core Plus Fixed Inc Net Median			3.6		4.7		4.3		3.1		3.1		5.8		2.9	Oct-14
Baird - Core Bond	1,441,315	3.9	3.3	31	4.8	24	4.6	29	2.5	27	--	--	--	--	2.6	Dec-14
BBgBarc US Aggregate TR			2.9	73	4.6	45	4.5	41	2.0	64	2.7	58	3.8	80	2.3	Dec-14
eV US Core Fixed Inc Net Median			3.2		4.6		4.4		2.2		2.8		4.3		2.4	Dec-14
Vanguard Inflation Protected Fund	1,282,220	3.5	3.2		--		--		--		--		--		1.7	Sep-18
BBgBarc US TIPS TR			3.2	--	1.9	--	2.7	--	1.7	--	1.9	--	3.4	--	1.7	Sep-18
US Treasury	91,504	0.2														
GAA/ Risk Parity	3,319,241	9.0	4.2	81	1.6	43	-1.9	77	2.6	81	--	--	--	--	0.9	Dec-14
60% MSCI World (Net) / 40% FTSE WGBI			8.1	49	2.4	29	2.0	36	6.8	34	4.4	34	8.4	43	4.6	Dec-14
eV Global TAA Net Median			8.1		0.7		0.8		5.4		3.0		7.8		2.8	Dec-14
William Blair Macro Allocation	1,868,284	5.0	1.0	96	1.5	44	-0.6	58	--	--	--	--	--	--	1.3	Aug-17
60% MSCI World (Net) / 40% FTSE WGBI			8.1	49	2.4	29	2.0	36	6.8	34	4.4	34	8.4	43	4.5	Aug-17
eV Global TAA Net Median			8.1		0.7		0.8		5.4		3.0		7.8		2.6	Aug-17
AQR Global Market and Alternative Premia Offshore Fund	1,450,957	3.9	8.7	37	1.8	40	-3.3	83	--	--	--	--	--	--	-3.3	Mar-18
60% MSCI World (Net) / 40% FTSE WGBI			8.1	49	2.4	29	2.0	36	6.8	34	4.4	34	8.4	43	2.0	Mar-18
Real Assets	2,930,458	7.9	5.4	72	2.3	20	-0.1	62	7.1	32	--	--	--	--	3.2	Dec-14
PIMCO All Asset Index			4.6	75	4.4	14	4.5	33	3.9	85	3.6	17	5.8	32	3.3	Dec-14
Bloomberg Commodity Index			6.3	70	-5.6	71	-5.3	93	2.2	95	-8.9	73	-2.6	99	-6.5	Dec-14
InvestorForce All E&F Real Assets/Commodities Net Median			8.7		-0.9		1.1		5.9		-2.7		3.6		-2.5	Dec-14
PIMCO All Asset	2,930,458	7.9	5.4	71	2.3	29	-0.1	56	7.1	32	--	--	--	--	3.2	Dec-14
PIMCO All Asset Index			4.6	79	4.4	7	4.5	11	3.9	64	3.6	42	5.8	68	3.3	Dec-14
Bloomberg Commodity Index			6.3	64	-5.6	96	-5.3	88	2.2	83	-8.9	99	-2.6	99	-6.5	Dec-14
eV Global TAA Net Median			8.1		0.7		0.8		5.4		3.0		7.8		2.8	Dec-14



Total Fund Asset Growth Summary

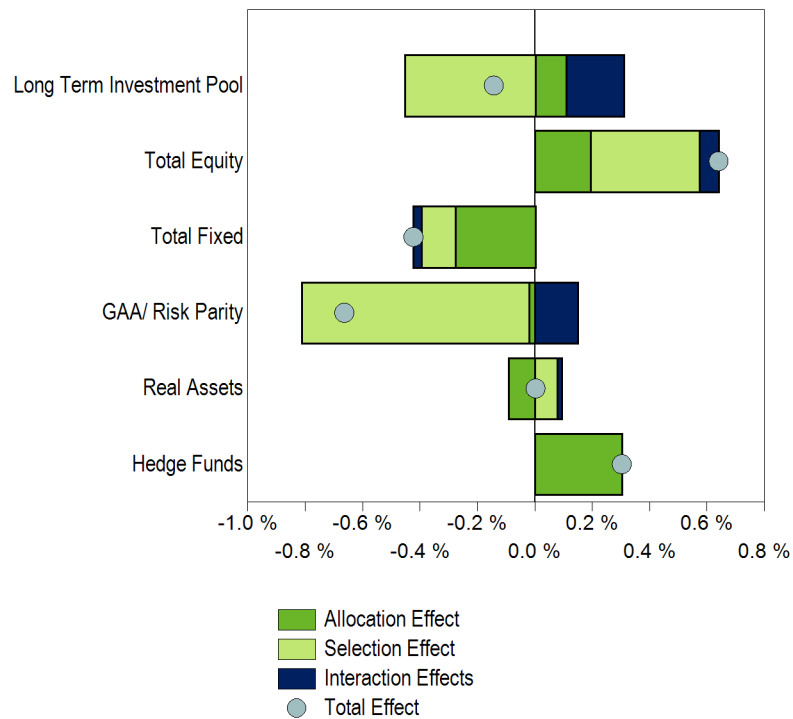
	Quarter Ending March 31, 2019					Ending Market Value
	Beginning Market Value	Contributions	Withdrawals	Net Cash Flow	Net Investment Change	
Acadian Emerging Markets Equity	\$665,082	\$300,000	\$0	\$300,000	\$73,460	\$1,038,542
AQR Global Market and Alternative Premia Offshore Fund	\$1,334,420	\$0	\$0	\$0	\$116,537	\$1,450,957
Artisan Global Opportunities	\$1,151,396	\$0	\$0	\$0	\$190,597	\$1,341,994
Baird - Core Bond	\$1,395,049	\$0	\$0	\$0	\$46,266	\$1,441,315
Bank of Ann Arbor Trust Cash	\$311,621	\$71,678	-\$20	\$71,658	\$0	\$383,280
BlackRock- SIO	\$2,467,993	\$0	\$0	\$0	\$58,493	\$2,526,486
Franklin Templeton- Global Multi-Sector Plus	\$1,009,599	\$0	\$0	\$0	\$19,342	\$1,028,941
Hexavest GE	\$1,167,691	\$0	\$0	\$0	\$97,665	\$1,265,356
Northern Inst Govt Select MMKT	\$0	\$15,000,000	\$0	\$15,000,000	\$28,851	\$15,028,851
PIMCO All Asset	\$2,145,214	\$650,000	\$0	\$650,000	\$135,243	\$2,930,458
SEG Baxter	\$1,656,507	\$0	\$0	\$0	\$262,632	\$1,919,140
US Treasury	\$87,802	\$0	\$0	\$0	\$3,702	\$91,504
Vanguard Inflation Protected Fund	\$943,725	\$300,000	\$0	\$300,000	\$38,495	\$1,282,220
Vanguard Total Stock Market VIPERs	\$2,286,364	\$750,333	-\$18,150	\$732,183	\$383,730	\$3,402,277
William Blair Macro Allocation	\$1,850,397	\$0	\$0	\$0	\$17,886	\$1,868,284
Total	\$18,472,863	\$17,072,012	-\$18,171	\$17,053,841	\$1,472,900	\$36,999,604



Eastern Michigan University - Board of Regents

Long Term Investment Pool

Attribution Effects
3 Months Ending March 31, 2019



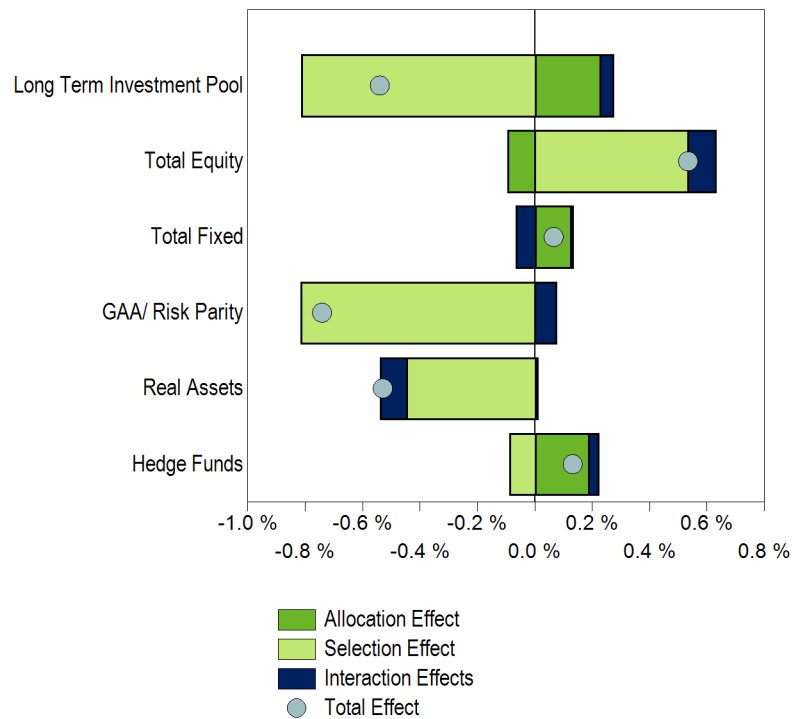
Attribution Summary							
3 Months Ending March 31, 2019							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total Equity	13.3%	12.2%	1.1%	0.4%	0.2%	0.1%	0.6%
Total Fixed	2.7%	3.2%	-0.5%	-0.1%	-0.3%	0.0%	-0.4%
GAA/ Risk Parity	4.2%	8.1%	-3.9%	-0.8%	0.0%	0.1%	-0.7%
Real Assets	5.4%	4.6%	0.7%	0.1%	-0.1%	0.0%	0.0%
Hedge Funds	--	--	--	--	0.3%	--	--
Total	7.4%	7.6%	-0.1%	-0.5%	0.1%	0.2%	-0.1%



Eastern Michigan University - Board of Regents

Long Term Investment Pool

Attribution Effects
1 Year Ending March 31, 2019



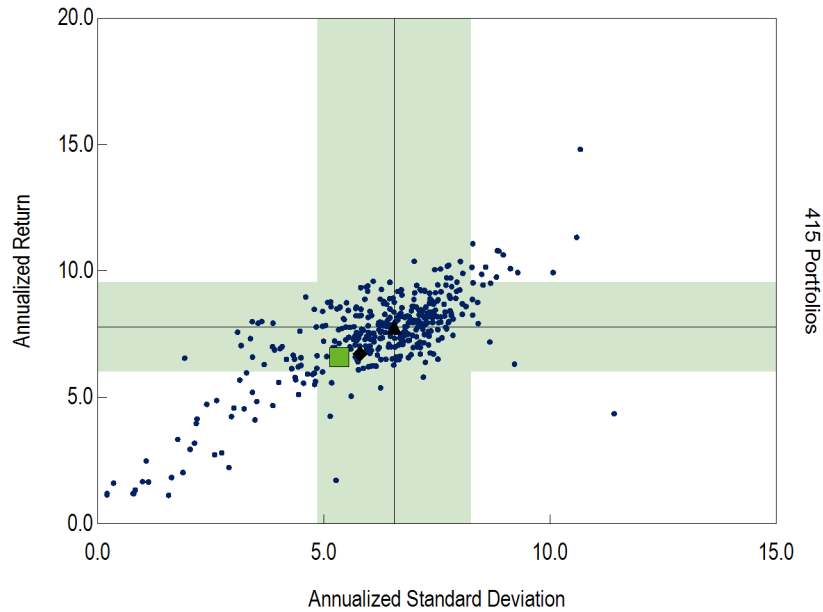
Attribution Summary							
1 Year Ending March 31, 2019							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total Equity	2.7%	1.1%	1.6%	0.5%	-0.1%	0.1%	0.5%
Total Fixed	2.5%	2.5%	0.0%	0.0%	0.1%	-0.1%	0.1%
GAA/ Risk Parity	-1.9%	2.0%	-3.9%	-0.8%	0.0%	0.1%	-0.7%
Real Assets	-0.1%	4.5%	-4.7%	-0.4%	0.0%	-0.1%	-0.5%
Hedge Funds	--	0.7%	--	-0.1%	0.2%	0.0%	0.1%
Total	1.5%	2.0%	-0.5%	-0.8%	0.2%	0.0%	-0.5%



Eastern Michigan University - Board of Regents

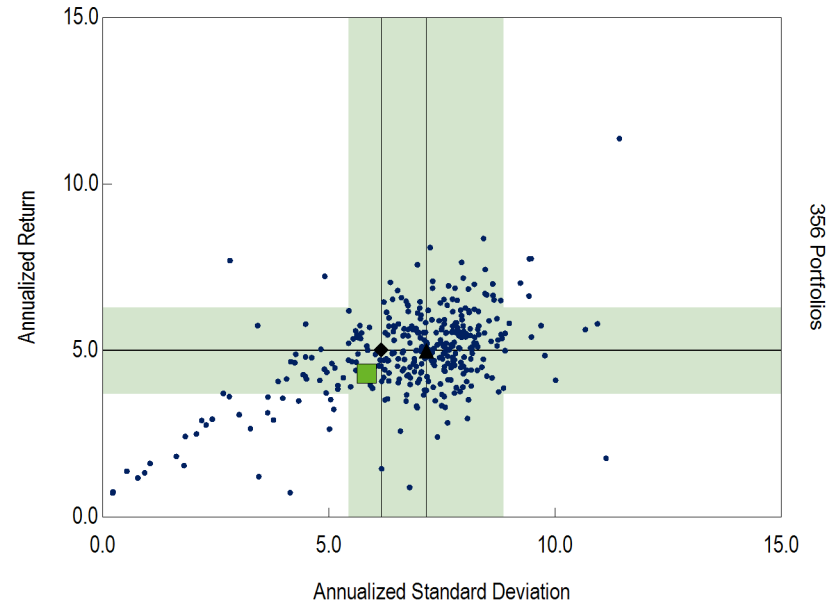
Risk vs. Return

3 Years Ending March 31, 2019



- Long Term Investment Pool
- ◆ Long Term Allocation Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce All E&F < \$50mm Net

5 Years Ending March 31, 2019



- Long Term Investment Pool
- ◆ Long Term Allocation Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce All E&F < \$50mm Net

3 Years Ending March 31, 2019

	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank
Long Term Investment Pool	6.60%	81	5.34%	22	1.01	50
Long Term Allocation Index	6.72%	79	5.80%	30	0.95	66
Long Term Balanced Index	6.70%	79	5.75%	28	0.95	66

5 Years Ending March 31, 2019

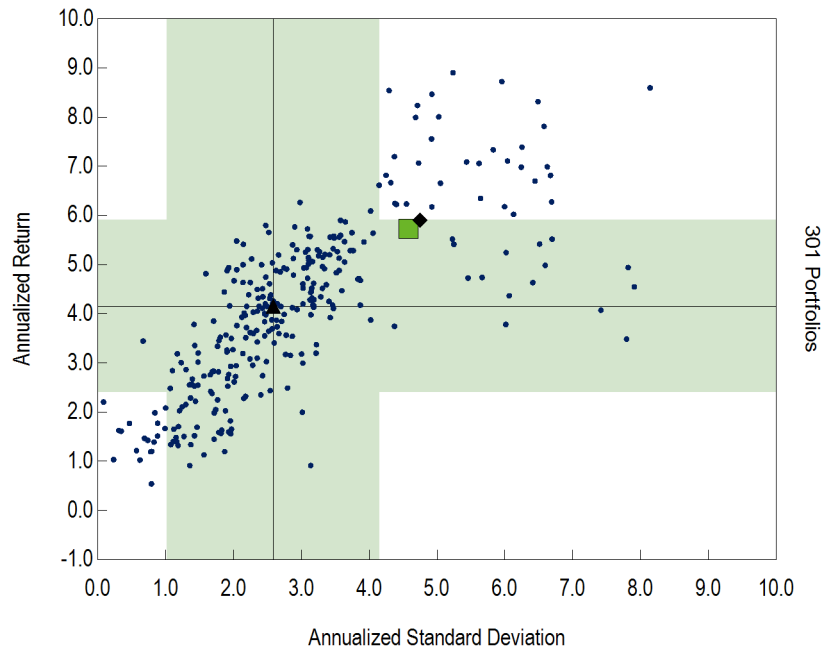
	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank
Long Term Investment Pool	4.31%	75	5.84%	19	0.61	51
Long Term Allocation Index	5.01%	49	6.16%	23	0.69	31
Long Term Balanced Index	4.92%	53	6.13%	22	0.68	33

- Above Risk vs. Return analytics are based on the Long Term Investment Pool.



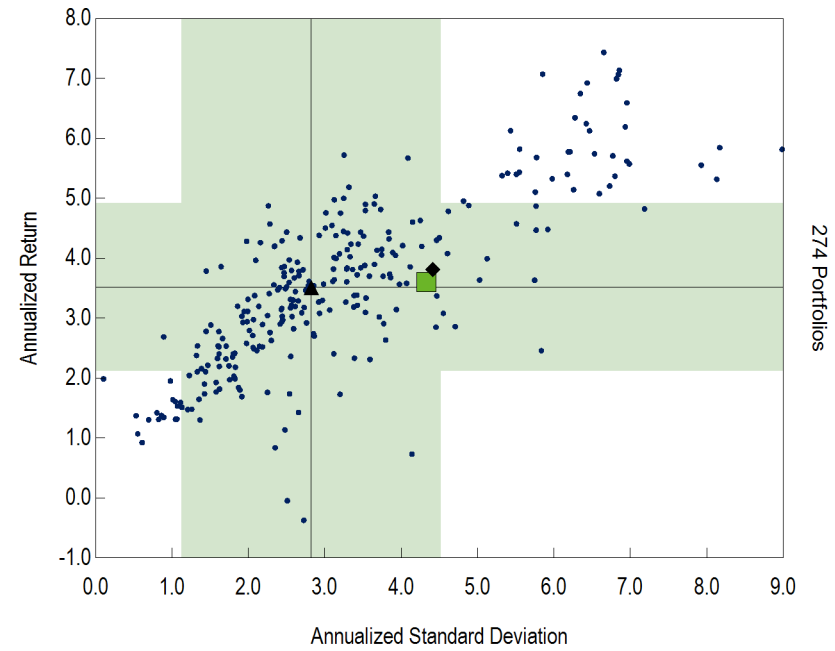
Total Fund Risk vs. Return

3 Years Ending March 31, 2019



- Board of Regents Total Composite
- ◆ Allocation Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Trust Funds >60% Fixed Income Net

5 Years Ending March 31, 2019



- Board of Regents Total Composite
- ◆ Allocation Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Trust Funds >60% Fixed Income Net

3 Years Ending March 31, 2019

	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank
--	-----------	------	---------------	------	--------------	------

Board of Regents Total Composite	5.73%	14	4.58%	14	0.98	54
Allocation Index	5.90%	13	4.75%	13	0.99	54

5 Years Ending March 31, 2019

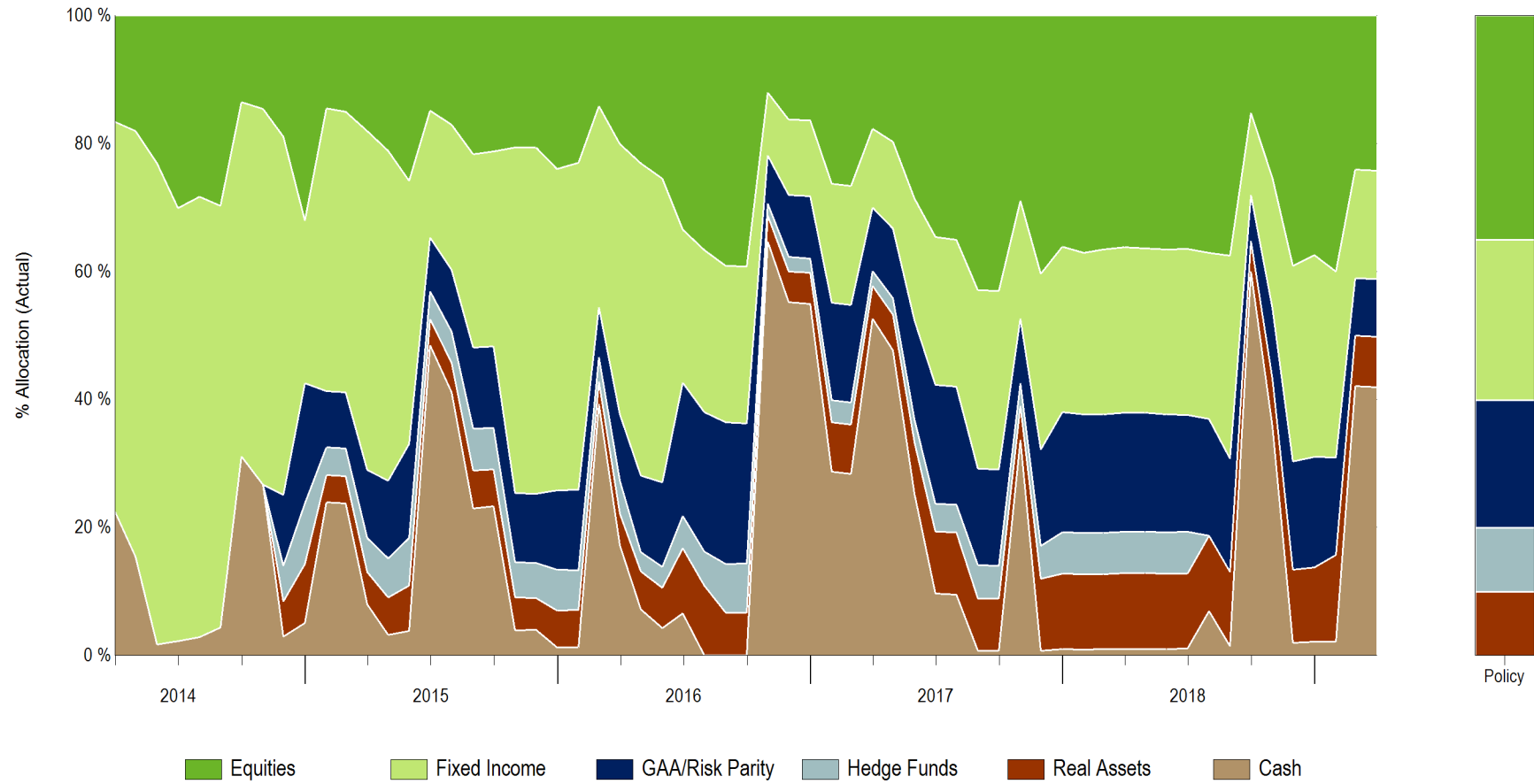
	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank
--	-----------	------	---------------	------	--------------	------

Board of Regents Total Composite	3.60%	48	4.33%	48	0.66	83
Allocation Index	3.81%	40	4.41%	40	0.69	79

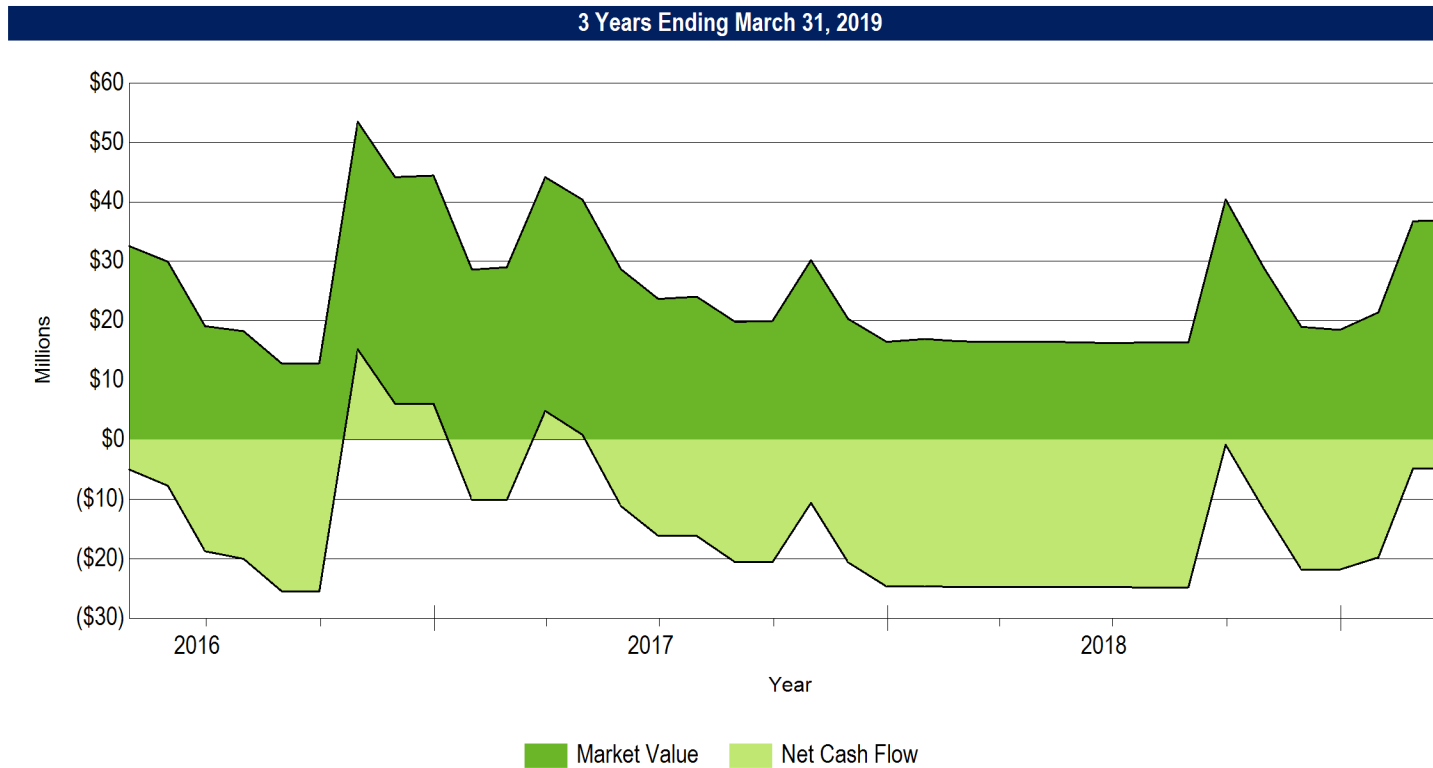


Total Fund Asset Allocation History

Asset Allocation History



Total Fund Asset Growth Summary

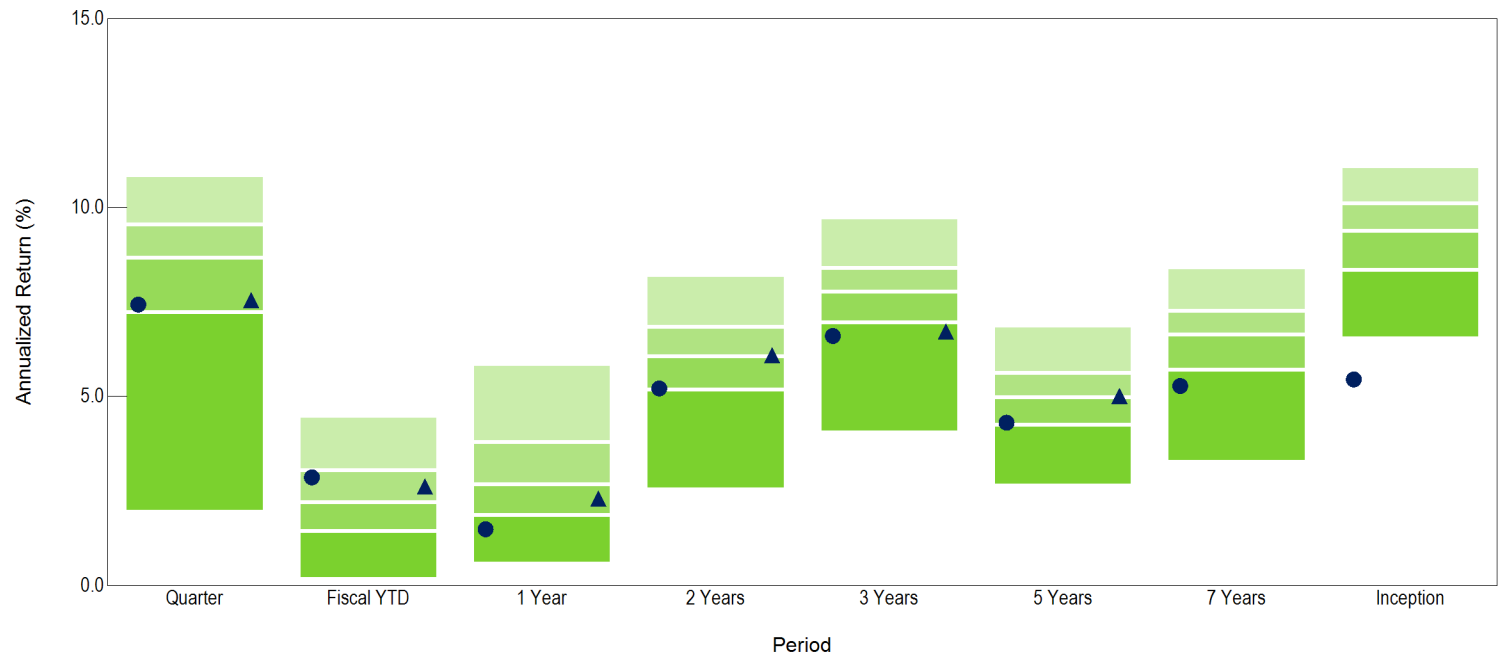


	Last Three Months	Fiscal Year-To-Date	One Year	Three Years
Beginning Market Value	\$18,472,863	\$16,253,086	\$16,471,681	\$37,332,966
Contributions	\$17,072,012	\$46,142,455	\$46,148,812	\$144,469,956
Withdrawals	-\$53,036	-\$26,199,332	-\$26,235,695	-\$149,285,409
Net Cash Flow	\$17,018,976	\$19,943,124	\$19,913,118	-\$4,815,453
Net Investment Change	\$1,507,765	\$803,394	\$614,805	\$4,482,091
Ending Market Value	\$36,999,604	\$36,999,604	\$36,999,604	\$36,999,604



Long Term Investment Pool Return Summary vs. Peer Universe

Long Term Investment Pool vs. InvestorForce All E&F < \$50mm Net

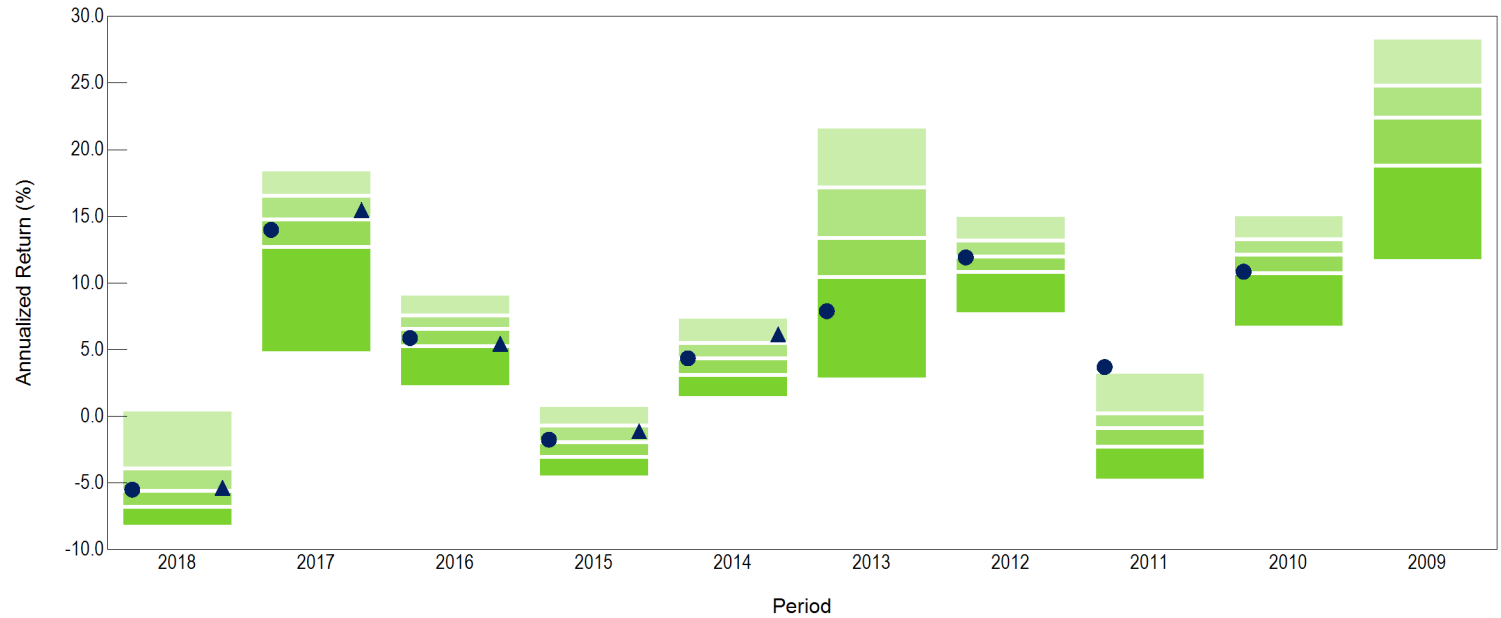


	Return (Rank)															
5th Percentile	10.8	4.5	5.9	8.2	9.7	6.9	8.4	11.1								
25th Percentile	9.6	3.1	3.8	6.8	8.4	5.6	7.3	10.1								
Median	8.7	2.2	2.7	6.1	7.8	5.0	6.7	9.4								
75th Percentile	7.2	1.4	1.9	5.2	7.0	4.3	5.7	8.4								
95th Percentile	2.0	0.2	0.6	2.6	4.1	2.6	3.3	6.5								
# of Portfolios	500	488	484	448	415	356	290	211								
● Long Term Investment Pool	7.4	(73)	2.9	(30)	1.5	(87)	5.2	(75)	6.6	(81)	4.3	(75)	5.3	(85)	5.5	(97)
▲ Long Term Allocation Index	7.6	(72)	2.6	(36)	2.3	(62)	6.1	(50)	6.7	(79)	5.0	(49)	--	(--)	--	(--)



Return Summary vs. Peer Universe

Long Term Investment Pool vs. InvestorForce All E&F < \$50mm Net



	Return (Rank)															
5th Percentile	0.5	18.5	9.2	0.8	7.5	21.7	15.1	3.3	15.1	28.4						
25th Percentile	-3.9	16.6	7.6	-0.7	5.5	17.2	13.2	0.2	13.3	24.8						
Median	-5.6	14.8	6.6	-1.9	4.4	13.4	12.0	-0.9	12.1	22.4						
75th Percentile	-6.8	12.7	5.3	-3.0	3.1	10.5	10.9	-2.3	10.7	18.8						
95th Percentile	-8.3	4.8	2.2	-4.6	1.4	2.8	7.7	-4.8	6.7	11.7						
# of Portfolios	673	486	496	466	400	267	249	216	194	181						
● Long Term Investment Pool	-5.5 (49)	14.0 (62)	5.9 (68)	-1.8 (46)	4.3 (51)	7.9 (84)	11.9 (53)	3.7 (4)	10.8 (74)	-- (--)						
▲ Long Term Allocation Index	-5.4 (46)	15.5 (42)	5.4 (73)	-1.1 (35)	6.2 (14)	-- (--)	-- (--)	-- (--)	-- (--)	-- (--)						

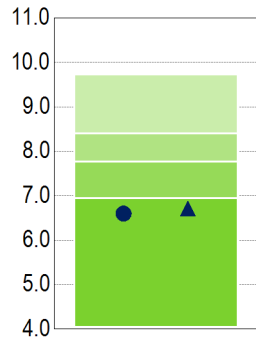
-The above Return Summary vs. Peer Universe analytic is based on the Long Term Investment Pool.



Risk Statistics vs. Peer Universe

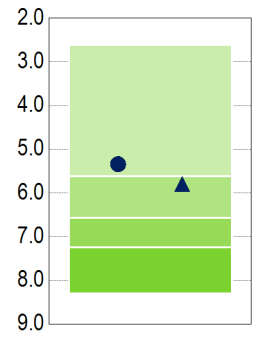
Long Term Investment Pool vs. InvestorForce All E&F < \$50mm Net 3 Years

Anlzd Return



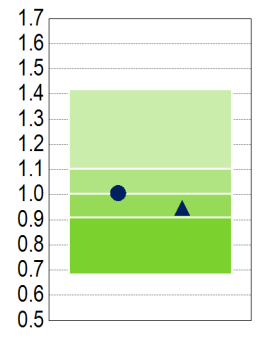
● Long Term Investment Pool	
Value	6.60
Rank	81
▲ Long Term Allocation Index	
Value	6.72
Rank	79
Universe	
5th %tile	9.72
25th %tile	8.42
Median	7.79
75th %tile	6.97
95th %tile	4.07

Anlzd Standard Deviation



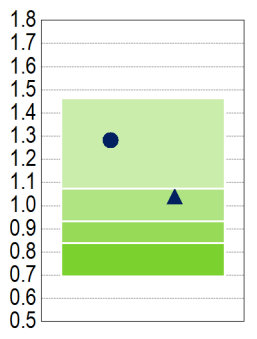
● Long Term Investment Pool	
Value	5.34
Rank	22
▲ Long Term Allocation Index	
Value	5.80
Rank	30
Universe	
5th %tile	2.61
25th %tile	5.60
Median	6.55
75th %tile	7.23
95th %tile	8.28

Sharpe Ratio



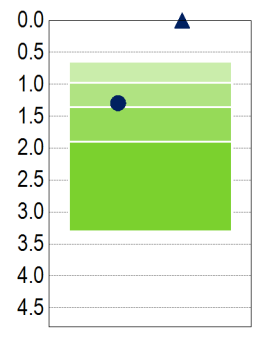
● Long Term Investment Pool	
Value	1.01
Rank	50
▲ Long Term Allocation Index	
Value	0.95
Rank	66
Universe	
5th %tile	1.42
25th %tile	1.10
Median	1.01
75th %tile	0.91
95th %tile	0.69

Sortino Ratio RF



● Long Term Investment Pool	
Value	1.28
Rank	9
▲ Long Term Allocation Index	
Value	1.04
Rank	30
Universe	
5th %tile	1.46
25th %tile	1.08
Median	0.93
75th %tile	0.84
95th %tile	0.70

Tracking Error



● Long Term Investment Pool	
Value	1.30
Rank	49
▲ Long Term Allocation Index	
Value	0.00
Rank	1
Universe	
5th %tile	0.65
25th %tile	0.96
Median	1.35
75th %tile	1.89
95th %tile	3.29

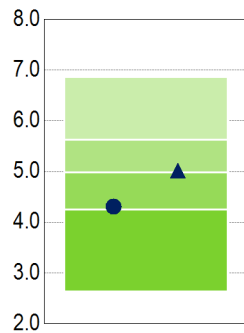
-The above Risk Statistics vs. Peer Universe analytics are based on the Long Term Investment Pool.



Risk Statistics vs. Peer Universe

Long Term Investment Pool vs. InvestorForce All E&F < \$50mm Net 5 Years

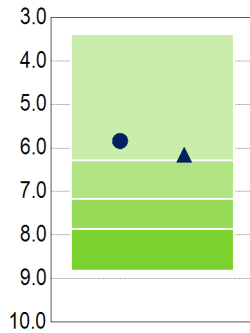
Anlzd Return



● Long Term Investment Pool	
Value	4.31
Rank	75
▲ Long Term Allocation Index	
Value	5.01
Rank	49

Universe	
5th %tile	6.87
25th %tile	5.64
Median	4.99
75th %tile	4.26
95th %tile	2.65

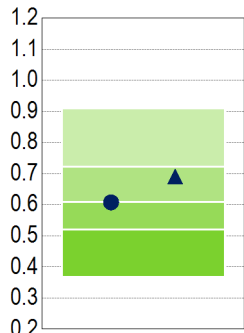
Anlzd Standard Deviation



● Long Term Investment Pool	
Value	5.84
Rank	19
▲ Long Term Allocation Index	
Value	6.16
Rank	23

Universe	
5th %tile	3.38
25th %tile	6.27
Median	7.15
75th %tile	7.85
95th %tile	8.80

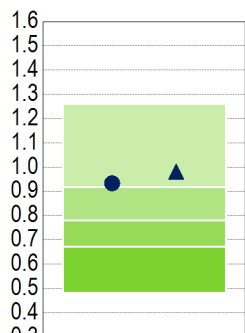
Sharpe Ratio



● Long Term Investment Pool	
Value	0.61
Rank	51
▲ Long Term Allocation Index	
Value	0.69
Rank	31

Universe	
5th %tile	0.91
25th %tile	0.72
Median	0.61
75th %tile	0.52
95th %tile	0.37

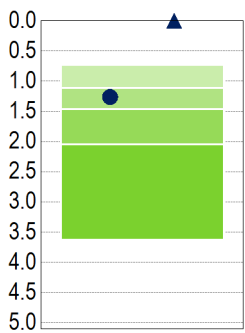
Sortino Ratio RF



● Long Term Investment Pool	
Value	0.93
Rank	23
▲ Long Term Allocation Index	
Value	0.98
Rank	19

Universe	
5th %tile	1.26
25th %tile	0.92
Median	0.78
75th %tile	0.68
95th %tile	0.48

Tracking Error



● Long Term Investment Pool	
Value	1.26
Rank	37
▲ Long Term Allocation Index	
Value	0.00
Rank	1

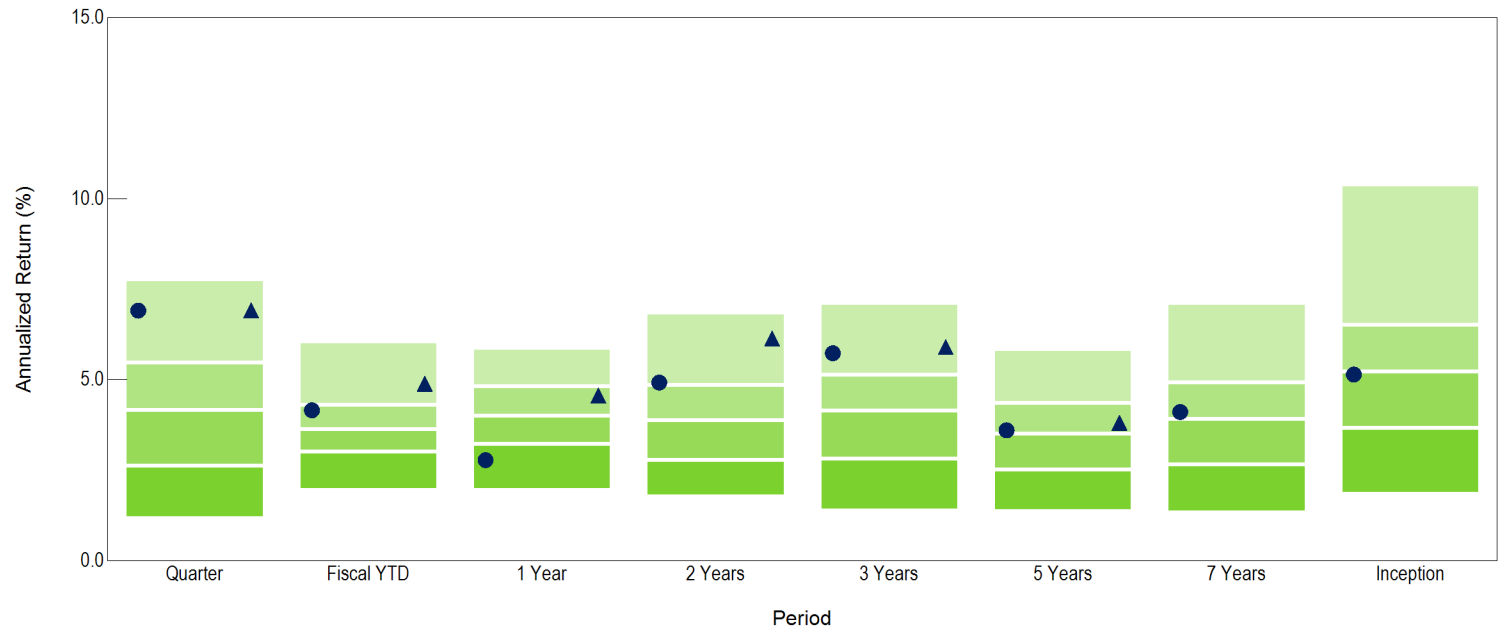
Universe	
5th %tile	0.73
25th %tile	1.10
Median	1.46
75th %tile	2.04
95th %tile	3.61

-The above Risk Statistics vs. Peer Universe analytics are based on the Long Term Investment Pool.



Return Summary vs. Peer Universe

Board of Regents Total Composite vs. InvestorForce Trust Funds >60% Fixed Income Net

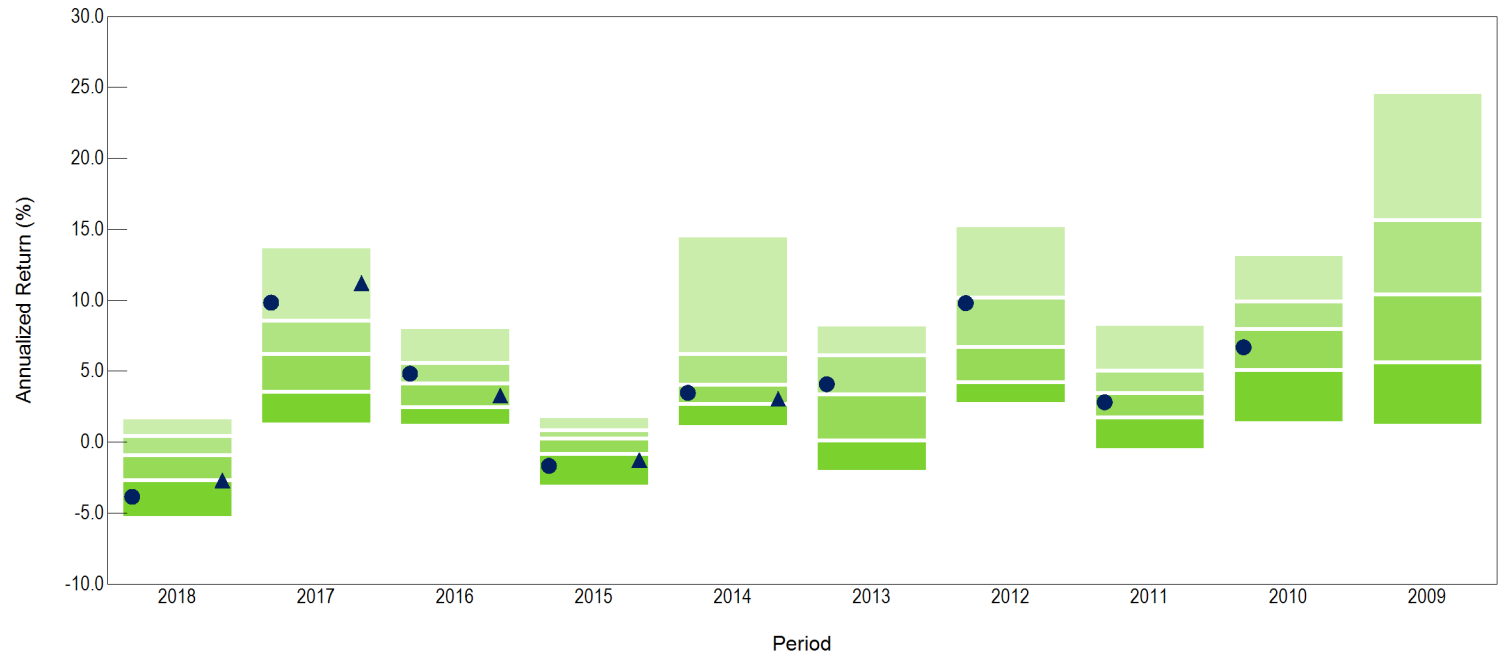


	Return (Rank)															
5th Percentile	7.8	6.1	5.9	6.9	7.1	5.8	7.1	10.4								
25th Percentile	5.5	4.3	4.8	4.9	5.2	4.4	4.9	6.5								
Median	4.2	3.6	4.0	3.9	4.2	3.5	3.9	5.2								
75th Percentile	2.6	3.0	3.2	2.8	2.8	2.5	2.7	3.7								
95th Percentile	1.2	2.0	2.0	1.8	1.4	1.4	1.3	1.9								
# of Portfolios	349	341	338	318	301	274	250	199								
● Board of Regents Total Composite	6.9	(11)	4.2	(30)	2.8	(88)	4.9	(24)	5.7	(14)	3.6	(48)	4.1	(45)	5.1	(53)
▲ Allocation Index	6.9	(11)	4.9	(16)	4.6	(34)	6.1	(9)	5.9	(13)	3.8	(40)	--	(--)	--	(--)



Return Summary vs. Peer Universe

Board of Regents Total Composite vs. InvestorForce Trust Funds >60% Fixed Income Net



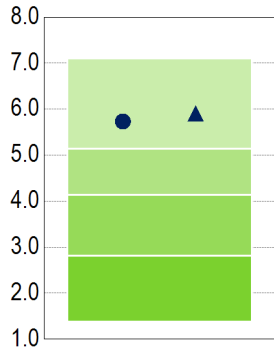
	Return (Rank)																			
5th Percentile	1.7	13.8	8.1	1.8	14.5	8.3	15.3	8.3	13.2	24.7										
25th Percentile	0.5	8.6	5.6	0.9	6.3	6.2	10.2	5.1	9.9	15.7										
Median	-0.9	6.2	4.2	0.3	4.1	3.4	6.7	3.5	8.0	10.4										
75th Percentile	-2.7	3.6	2.5	-0.8	2.7	0.2	4.3	1.8	5.1	5.7										
95th Percentile	-5.3	1.3	1.2	-3.1	1.1	-2.1	2.7	-0.5	1.4	1.2										
# of Portfolios	429	336	298	309	201	46	46	44	43	40										
● Board of Regents Total Composite	-3.8	(86)	9.8	(17)	4.8	(38)	-1.7	(84)	3.5	(63)	4.1	(44)	9.8	(29)	2.8	(55)	6.7	(59)	--	(--)
▲ Allocation Index	-2.7	(76)	11.2	(11)	3.3	(64)	-1.3	(80)	3.1	(70)	--	(--)	--	(--)	--	(--)	--	(--)	--	(--)



Risk Statistics vs. Peer Universe

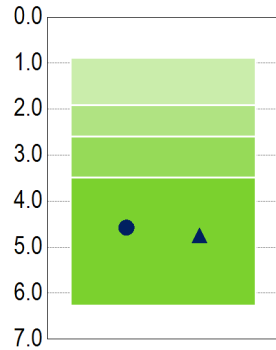
Total Composite vs. InvestorForce Trust Funds >60% Fixed Income Net
3 Years

Anlzd Return



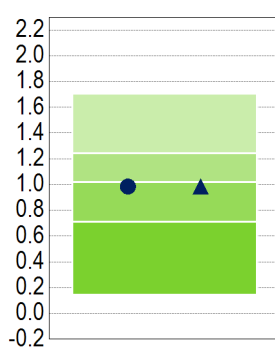
● Board of Regents Total Composite	
Value	5.73
Rank	14
▲ Allocation Index	
Value	5.90
Rank	13
Universe	
5th %tile	7.10
25th %tile	5.15
Median	4.15
75th %tile	2.83
95th %tile	1.40

Anlzd Standard Deviation



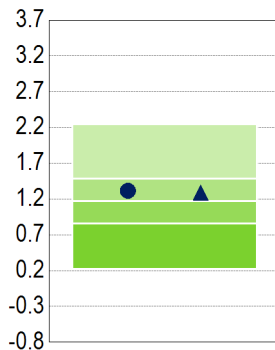
● Board of Regents Total Composite	
Value	4.58
Rank	87
▲ Allocation Index	
Value	4.75
Rank	88
Universe	
5th %tile	0.88
25th %tile	1.90
Median	2.59
75th %tile	3.47
95th %tile	6.25

Sharpe Ratio



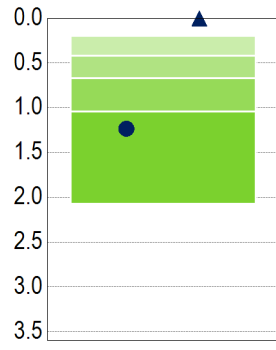
● Board of Regents Total Composite	
Value	0.98
Rank	54
▲ Allocation Index	
Value	0.99
Rank	54
Universe	
5th %tile	1.70
25th %tile	1.25
Median	1.03
75th %tile	0.72
95th %tile	0.15

Sortino Ratio RF



● Board of Regents Total Composite	
Value	1.31
Rank	41
▲ Allocation Index	
Value	1.29
Rank	42
Universe	
5th %tile	2.24
25th %tile	1.49
Median	1.18
75th %tile	0.86
95th %tile	0.24

Tracking Error



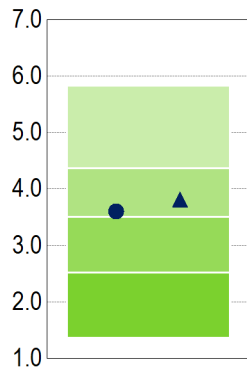
● Board of Regents Total Composite	
Value	1.23
Rank	86
▲ Allocation Index	
Value	0.00
Rank	1
Universe	
5th %tile	0.20
25th %tile	0.41
Median	0.66
75th %tile	1.03
95th %tile	2.07



Risk Statistics vs. Peer Universe

Total Composite vs. InvestorForce Trust Funds >60% Fixed Income Net
5 Years

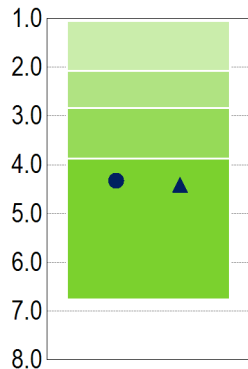
Anlzd Return



● Board of Regents Total Comp
Value 3.60
Rank 48
▲ Allocation Index
Value 3.81
Rank 40

Universe
5th %tile 5.83
25th %tile 4.38
Median 3.52
75th %tile 2.54
95th %tile 1.37

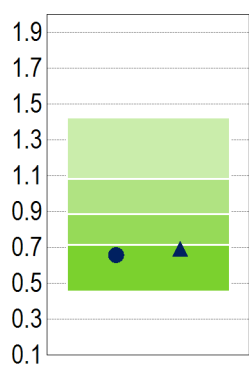
Anlzd Standard Deviation



● Board of Regents Total Comp
Value 4.33
Rank 80
▲ Allocation Index
Value 4.41
Rank 81

Universe
5th %tile 1.06
25th %tile 2.06
Median 2.82
75th %tile 3.86
95th %tile 6.74

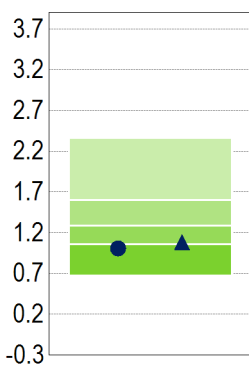
Sharpe Ratio



● Board of Regents Total Comp
Value 0.66
Rank 83
▲ Allocation Index
Value 0.69
Rank 79

Universe
5th %tile 1.42
25th %tile 1.09
Median 0.89
75th %tile 0.72
95th %tile 0.46

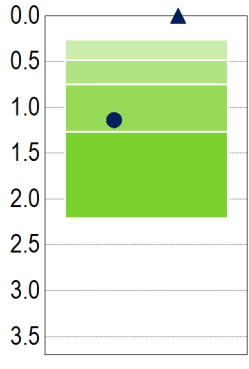
Sortino Ratio RF



● Board of Regents Total Comp
Value 1.01
Rank 81
▲ Allocation Index
Value 1.08
Rank 73

Universe
5th %tile 2.36
25th %tile 1.61
Median 1.29
75th %tile 1.06
95th %tile 0.68

Tracking Error



● Board of Regents Total Comp
Value 1.14
Rank 73
▲ Allocation Index
Value 0.00
Rank 1

Universe
5th %tile 0.26
25th %tile 0.48
Median 0.74
75th %tile 1.26
95th %tile 2.21



APPENDIX

NEPC, LLC

MACRO PERFORMANCE OVERVIEW

Q1 Macro Market Summary

The global growth outlook was revised downward – reflecting slowing growth in most major developed economies

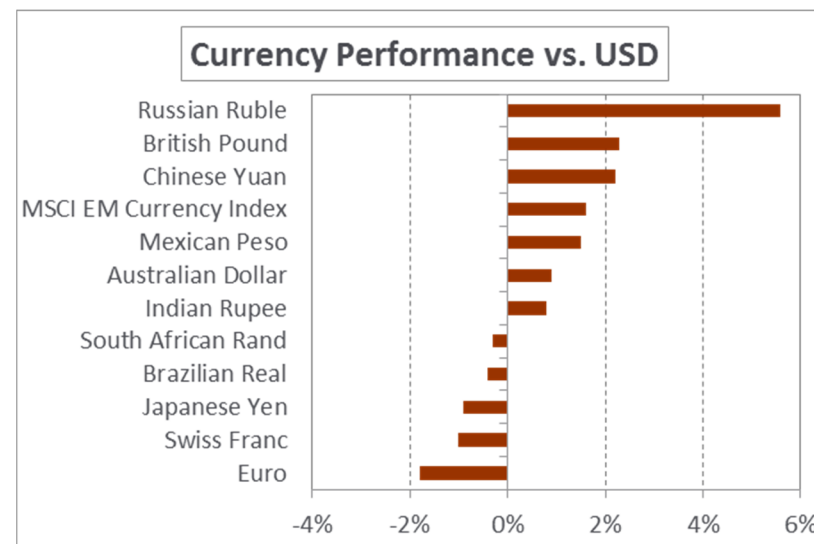
The Fed pivoted toward a more dovish policy stance signaling no additional rate hikes this year

Global bond yields declined with the 10-year German and Japanese yields ending in negative territory

	Yield 12/31/18	Yield 3/31/19	Δ
US 10-Yr	2.68%	2.42%	-0.27%
US 30-Yr	3.01%	2.82%	-0.19%
US Real 10-Yr	0.97%	0.53%	-0.44%
German 10-Yr	0.24%	-0.07%	-0.31%
Japan 10-Yr	-0.01%	-0.09%	-0.09%
China 10-Yr	3.31%	3.07%	-0.24%
EM Local Debt	6.46%	6.16%	-0.30%

Source: Bloomberg

Central Banks	Current Rate	CPI YOY	Notes from the Quarter
Federal Reserve	2.25% - 2.50%	2.2%	The Fed held its benchmark interest rate at 2.25% - 2.50% in March and signaled no additional rate hikes are likely in 2019
European Central Bank	0.0%	1.4%	The ECB maintained its current benchmark interest rate and announced plans to boost commercial lending
Bank of Japan	-0.1%	0.8%	The BoJ will continue its ultra-easy QE program with inflation remaining well below target



Source: Bloomberg



EQUITY PERFORMANCE OVERVIEW

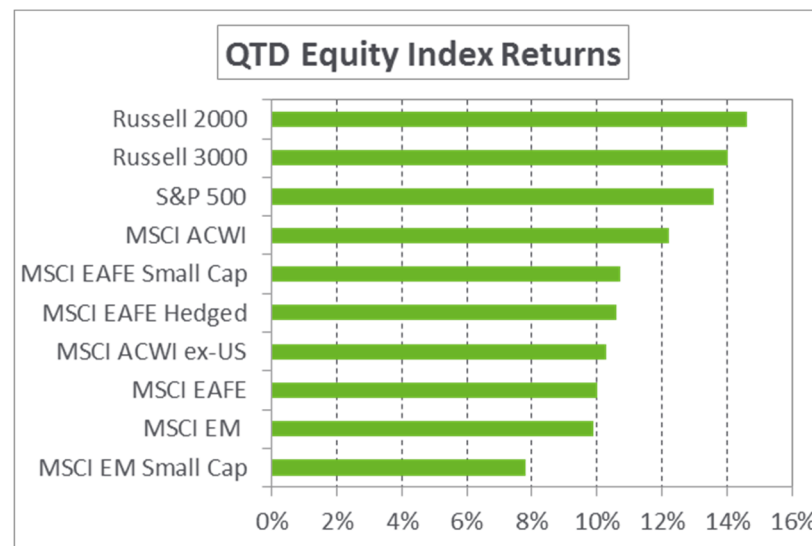
Q1 Equity Market Summary

Global equities made a strong comeback this quarter following a dovish pivot from the Fed

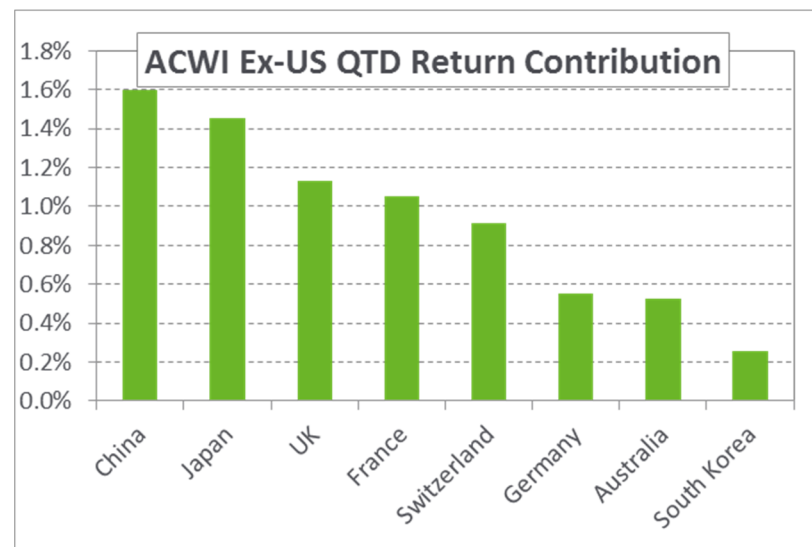
US and Chinese equities led the way as hopes for a trade deal provided a tailwind for local equity markets

Russell 3000 QTD Sector Return Contribution	
Information Technology	3.6%
Consumer Discretionary	2.6%
Financials	1.6%
Industrials	0.8%
Consumer Staples	1.1%
Energy	0.7%
Materials	0.4%
Health Care	1.3%
Real Estate	0.6%
Communication Services	1.9%
Utilities	0.3%

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

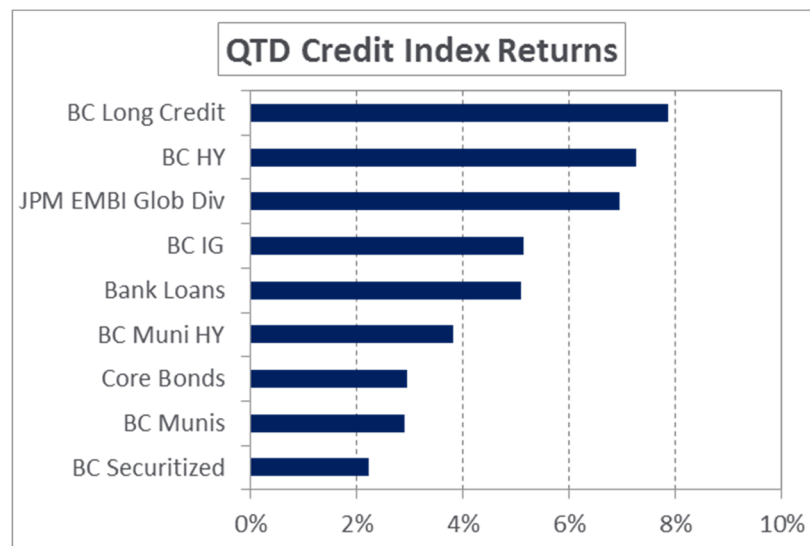
Global yields declined significantly – reflecting concerns over the global growth outlook

Credit spreads broadly declined off of highs at the end of 2018

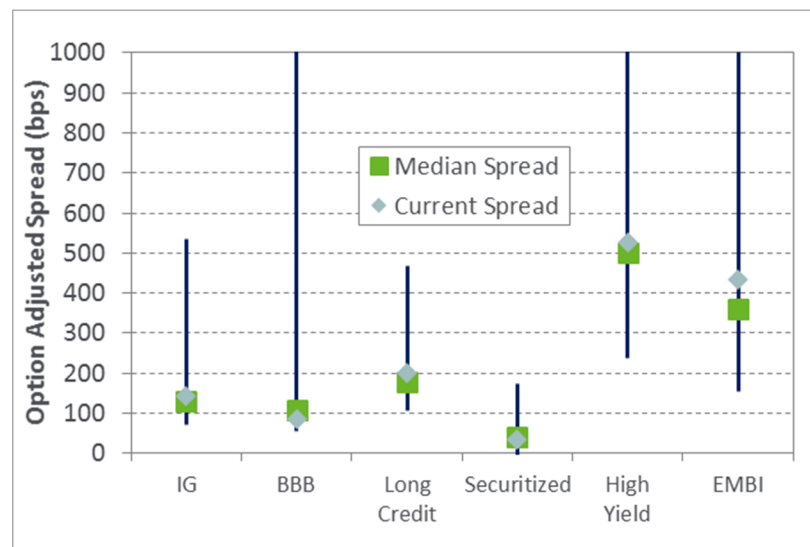
US high yield spreads experienced one of the largest movements – falling 135 basis points, supporting a return of 7.3%

Credit Spread (Basis Points)	12/31/18	3/31/19	\Delta
BC IG Credit	153	119	-34
BC Long Credit	200	172	-28
BC Securitized	35	35	0
BC High Yield	526	391	-135
Muni HY	236	230	-6
JPM EMBI	435	373	-62
Bank Loans - Libor	414	354	-60

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

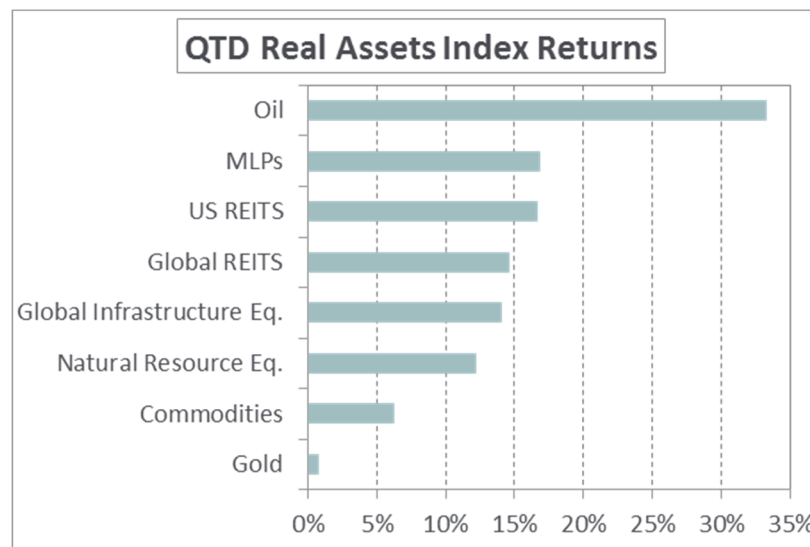
WTI crude oil increased 33.3% as a result of OPEC production cuts and concerns surrounding Venezuela

Midstream energy increased 22.2% following strong earnings and a tailwind from higher oil prices

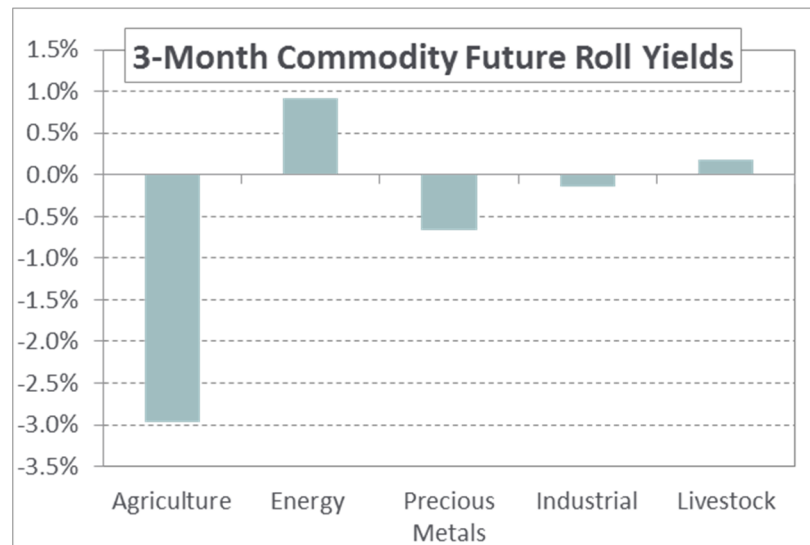
US REITs increased 16.3% during the quarter with the Fed signaling a pause to monetary policy

Real Asset Yields	12/31/18	3/31/19
MLPs	8.9%	8.0%
Core Real Estate	4.5%	4.5%
US REITs	4.6%	4.1%
Global REITs	3.9%	3.4%
Global Infrastructure Equities	4.6%	4.4%
Natural Resource Equities	4.5%	4.2%
US 10-Yr Breakeven Inflation	1.7%	1.9%
Commodity Index Roll Yield	-2.7%	-2.7%

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



Source: S&P, NAREIT, Alerian, Bloomberg



Source: Bloomberg, NEPC Calculated as of 09/28/2018



MARKET OVERVIEW

NEPC, LLC

CALENDAR YEAR INDEX PERFORMANCE

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Jan	Feb	Mar	Q1	YTD
S&P 500	26.5%	15.1%	2.1%	16.0%	32.4%	13.7%	1.4%	12.0%	21.8%	-4.4%	8.0%	3.2%	1.9%	13.6%	13.6%
Russell 1000	28.4%	16.1%	1.5%	16.4%	33.1%	13.2%	0.9%	12.1%	21.7%	-4.8%	8.4%	3.4%	1.7%	14.0%	14.0%
Russell 2000	27.2%	26.9%	-4.2%	16.3%	38.8%	4.9%	-4.4%	21.3%	14.6%	-11.0%	11.2%	5.2%	-2.1%	14.6%	14.6%
Russell 2500	34.4%	26.7%	-2.5%	17.9%	36.8%	7.1%	-2.9%	17.6%	16.8%	-10.0%	11.5%	4.7%	-0.8%	15.8%	15.8%
MSCI EAFE	31.8%	7.8%	-12.1%	17.3%	22.8%	-4.9%	-0.8%	1.0%	25.0%	-13.8%	6.6%	2.5%	0.6%	10.0%	10.0%
MSCI EM	78.5%	18.9%	-18.4%	18.2%	-2.6%	-2.2%	-14.9%	11.2%	37.3%	-14.6%	8.8%	0.2%	0.8%	9.9%	9.9%
MSCI ACWI	34.6%	12.7%	-7.3%	16.1%	22.8%	4.2%	-2.4%	7.9%	24.0%	-9.4%	7.9%	2.7%	1.3%	12.2%	12.2%
Private Equity*	13.7%	19.7%	7.9%	12.5%	20.6%	12.7%	9.6%	8.3%	13.7%	-	-	-	-	-	-
BC TIPS	11.4%	6.3%	13.6%	7.0%	-8.6%	3.6%	-1.4%	4.7%	3.0%	-1.3%	1.3%	0.0%	1.8%	3.2%	3.2%
BC Municipal Bond	12.9%	2.4%	10.7%	6.8%	-2.6%	9.1%	3.3%	0.2%	5.4%	1.3%	0.8%	0.5%	1.6%	2.9%	2.9%
BC Muni High Yield	32.7%	7.8%	9.2%	18.1%	-5.5%	13.8%	1.8%	3.0%	9.7%	4.8%	0.7%	0.5%	2.6%	3.8%	3.8%
BC US Corp High Yield	58.2%	15.1%	5.0%	15.8%	7.4%	2.5%	-4.5%	17.1%	7.5%	-2.1%	4.5%	1.7%	0.9%	7.3%	7.3%
BC US Aggregate	5.9%	6.5%	7.8%	4.2%	-2.0%	6.0%	0.5%	2.6%	3.5%	0.0%	1.1%	-0.1%	1.9%	2.9%	2.9%
BC Global Aggregate	2.6%	5.2%	6.4%	1.6%	-4.0%	-0.5%	-3.6%	1.6%	7.5%	-1.2%	1.5%	-0.6%	1.3%	2.2%	2.2%
BC Long Treasuries	-12.9%	9.4%	29.9%	3.6%	-12.7%	25.1%	-1.2%	1.3%	8.5%	-1.8%	0.7%	-1.2%	5.3%	4.7%	4.7%
BC US Long Credit	16.8%	10.7%	17.1%	12.7%	-6.6%	16.4%	-4.6%	10.2%	12.2%	-6.8%	3.5%	-0.1%	4.3%	7.9%	7.9%
BC US STRIPS 20+ Yr	-36.0%	10.9%	58.5%	3.0%	-21.0%	46.4%	-3.7%	1.4%	13.7%	-4.1%	0.6%	-1.9%	7.7%	6.3%	6.3%
JPM GBI-EM Glob Div	22.0%	15.7%	-1.8%	16.8%	-9.0%	-5.7%	-14.9%	9.9%	15.2%	-6.2%	5.5%	-1.1%	-1.3%	2.9%	2.9%
JPM EMBI Glob Div	29.8%	12.2%	7.3%	17.4%	-5.3%	7.4%	1.2%	10.2%	10.1%	-4.3%	4.4%	1.0%	1.4%	7.0%	7.0%
CS Leveraged Loan	44.9%	10.0%	1.8%	9.4%	6.2%	2.1%	-0.4%	9.9%	4.2%	1.1%	2.3%	1.6%	-0.1%	3.8%	3.8%
CS Hedge Fund	18.6%	10.9%	-2.5%	7.7%	9.7%	4.1%	-0.7%	1.2%	7.1%	-3.2%	1.8%	1.1%	-	-	2.9%
BBG Commodity	18.9%	16.8%	-13.3%	-1.1%	-9.5%	-17.0%	-24.7%	11.8%	1.7%	-11.2%	5.4%	1.0%	-0.2%	6.3%	6.3%
Alerian MLP	76.4%	35.9%	13.9%	4.8%	27.6%	4.8%	-32.6%	18.3%	-6.5%	-12.4%	12.6%	0.3%	3.4%	16.8%	16.8%
FTSE NAREIT Eqy REITs	28.0%	28.0%	8.3%	18.1%	2.5%	30.1%	3.2%	8.5%	5.2%	-4.6%	11.7%	0.7%	3.3%	16.3%	16.3%

Source: Bloomberg, Barclays, Alerian, Nareit, MSCI, JP Morgan, Credit Suisse, Thomson One

*Private Equity return represents calendar year pooled IRR and is subject to a one quarter lag



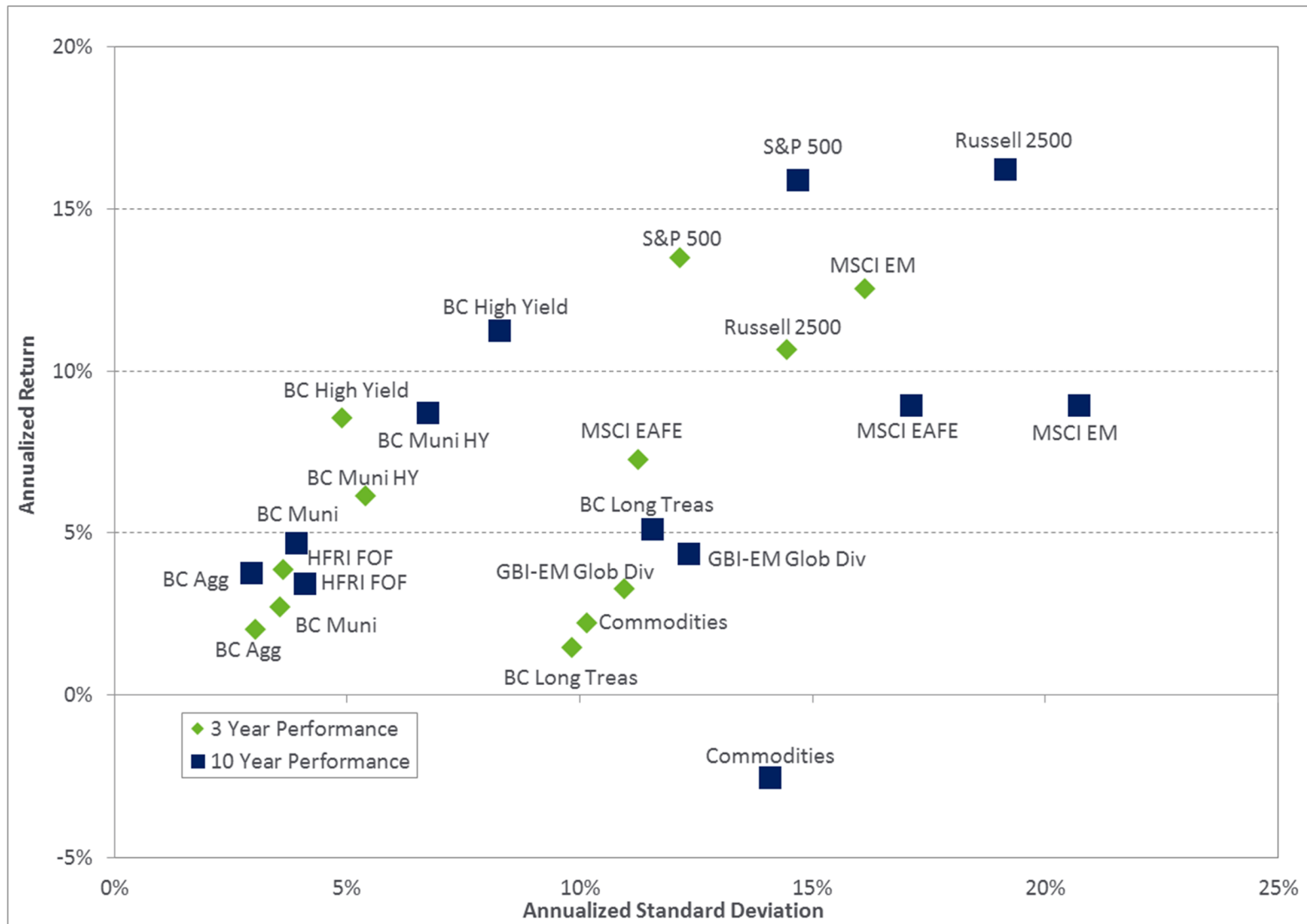
SHORT-TERM PERFORMANCE SUMMARY



Source: Bloomberg, Standard and Poor's, Russell, MSCI, Barclays, JP Morgan
 *1 Yr Range: Represents range of cumulative high/low daily index returns for an investment made one year ago



LONG-TERM PERFORMANCE SUMMARY



Source: Bloomberg, Standard and Poor's, Russell, MSCI, Barclays, JP Morgan



WHAT TO EXPECT WHEN YOU'RE EXPECTING A RECESSION

NEPC, LLC

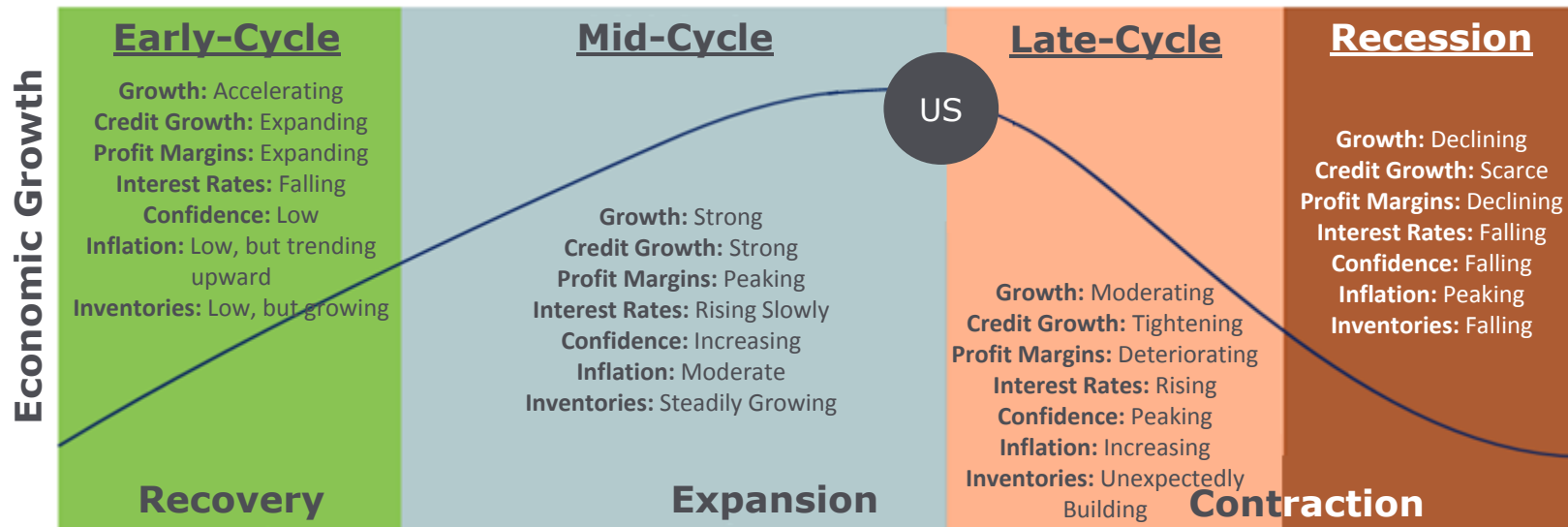
REVISITING THE LATE-CYCLE THESIS

Trends in key indicators suggest the US economy has transitioned from mid- to late-cycle

Despite this change, there is no evidence in current economic or financial indicators to suggest that a recession is imminent

Key indicators have historically provided a useful guide to recognize changes in the economic cycle, but provide little clarity on the timing or duration of the next recession

Should these key indicators exhibit behaviors typical of a recession without an associated response from the market, we would adopt a more defensive outlook – though we believe it is not yet necessary



TYPICAL KEY INDICATOR CHANGES

Though predicting a recession is difficult, the key metrics tend to behave differently at the onset of an economic recession

Indicator	Expected Late-Cycle Behavior	Expected Recession Behavior and Rationale
Equities	Peaking	During the late cycle, equities often reach cyclical highs. As a recession approaches, equities tend to act as a leading indicator, often selling off before an economic recession. An equity sell-off <u>does not</u> indicate a recession is imminent.
Interest Rates	Rising	Following consistent Fed Funds hikes in the late cycle, interest rates have historically stalled in the months just preceding a recession. Once a recession hits, yields tend to decline sharply as the Fed reverses course and abruptly cuts rates in an attempt to spur economic growth.
Yield Curve	Flattening	Consistent Fed action during the late cycle causes yield curve flattening and eventually inversion. Historically, economic weakness preceding and during a recession has necessitated Fed rate cuts – causing the short-end of the curve to decline. As a result, the yield curve is expected to steepen during a recession.
Inflation	Rising	The late cycle is often accompanied by rising inflation resulting from a strong labor market. During a recession, rising unemployment relieves wage pressures, causing inflation to decline.
GDP Growth	Moderating	During the late cycle, growth tends to moderate off the mid-cycle peak. At the onset of a recession, growth will sharply decline – reflecting slowing productivity and output.
Credit Spreads	Stable/Rising	Credit spreads tend to modestly increase during the late cycle. Going into a recession, spreads are expected to spike, reflecting greater default risk.
Output Gap	Near/Above Potential	The late-cycle typically experiences an above-trend output gap, which suggests the economy is operating above potential with rising inflationary pressures. In a recession, slowing growth causes the output gap to decline indicating the economy is operating below potential.
Unemployment	Falling/Bottoming	During the late cycle, unemployment reaches cyclical lows reflecting a healthy labor market. As the recession approaches, unemployment begins to rise, reflecting a turn in the business cycle and a weaker outlook.



HISTORICAL IMPLICATIONS

Analyzing asset class performance during different stages of the economic cycle can help to identify which asset classes offer the best protection during a late cycle or recession

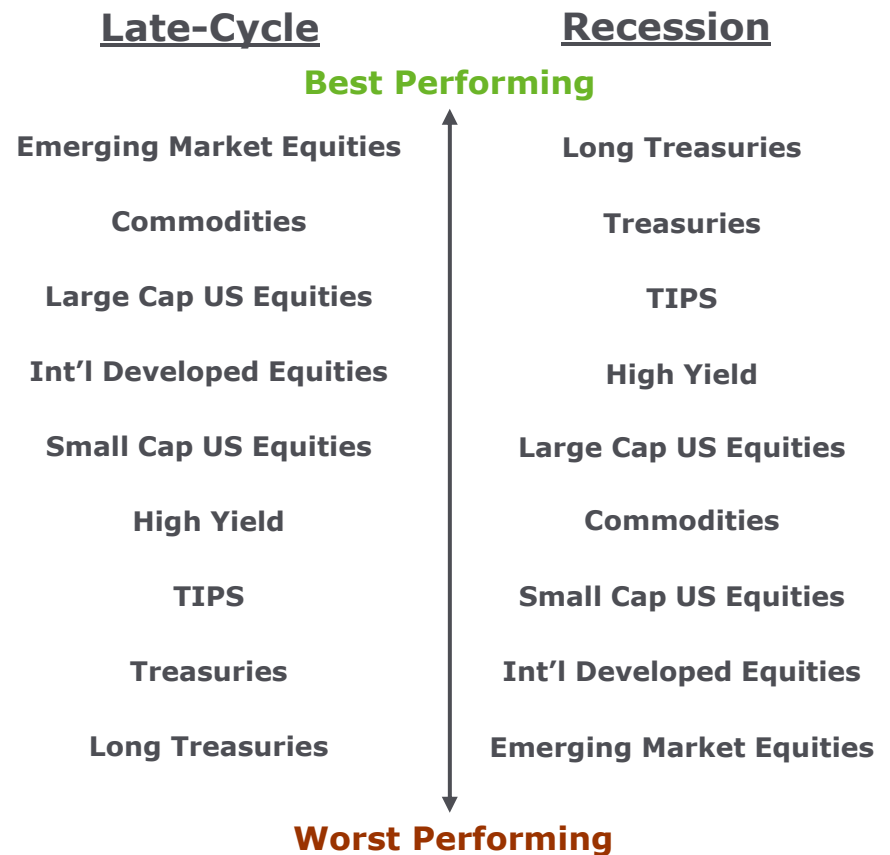
However, the predictive power of such analysis may be limited due to the unique macroenvironments present during each time period

Risk assets tend to perform well during the late cycle, but that trend reverses during a recession

Timing the inflection point is difficult in practice

De-risking too soon may result in missing a component of the recovery, while reacting too slowly may lead to losses

Differences in historical asset class performance between the stages suggest higher volatility is likely – highlighting the need for diversification given dispersion among asset classes



CONSTRUCTING A MORE DEFENSIVE PORTFOLIO

The following is not a statement on the likelihood of a US recession, but outlines actions to mitigate the impact of an economic downturn on a portfolio. These steps should be considered if key economic indicators exhibit behaviors associated with a transition to a recession:

Reduce Equity Exposure

Reduce 5% to 10% of equity exposure at a minimum or utilize a risk budgeting approach to target a decrease in the risk contribution of equity

Look to diversify away from public equity exposure serving as an asset allocation proxy for private equity that is underweight portfolio policy targets

Increase Safe-Haven Fixed Income

Increase Treasury or core bond exposure by 5% to 10% at a minimum

Assess the portfolio drawdown profile using scenario analysis and risk budgeting exercises

Look to Treasuries and liquid short-duration assets to serve as “dry powder” to deploy as ongoing market dislocations may create more frequent rebalancing opportunities

Position for Volatility

Liquidity may become stressed, target a strategic level for “dry power” to aid in funding private market commitments and prevent forced-sales of assets experiencing a drawdown

Begin to build exposure to distressed strategies to capitalize on the market dislocation associated with an economic recession

Focus on a Longer-Term Horizon: Recessions Give Way to Recoveries



DUE DILIGENCE MONITOR

NEPC Due Diligence Status Key

No Action	Informational items have surfaced; no action is recommended.
Watch	Issues have surfaced to be concerned over; manager can participate in future searches, but current and prospective clients must be made aware of the issues.
Hold	Serious issues have surfaced to be concerned over; manager cannot be in future searches unless a client specifically requests, but current and prospective clients must be made aware of the issues.
Client Review	Very serious issues have surfaced with a manager; manager cannot be in future searches unless a client specifically requests. Current clients must be advised to review the manager.
Terminate	We have lost all confidence in the product; manager would not be recommended for searches and clients would be discouraged from using. The manager cannot be in future searches unless a client specifically requests. Current clients must be advised to replace the manager.

NEPC Due Diligence Rating Key

1	A high conviction investment product. Product has a clear and economically-grounded investment thesis, and is managed by an investment team that is sufficiently resourced and incented to execute on the thesis.
2	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, but the strategy does not meet all requirements for a 1 rating.
3	A satisfactory investment product. The strategy lacks a compelling investment thesis, however there are no significant concerns around the manager's viability.
4	The strategy may have an unclear or ambiguous investment thesis or the manager may lack the ability to execute on the stated thesis. The strategy likely has strengths and weaknesses and the weaknesses may outweigh the strengths.
5	A strategy that lacks an investment thesis or NEPC has no confidence in the manager's ability to execute on the thesis, and/or the investment firm may not be viable. Serious issues have been identified with an investment manager or product. This rating aligns with a Terminate Due Diligence status for client-owned products.
NR	Due diligence has not been sufficiently completed on the product or manager.



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- **Past performance is no guarantee of future results.**
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ALTERNATIVE INVESTMENT DISCLOSURES

It is important that investors understand the following characteristics of non-traditional investment strategies including hedge funds and private equity:

- 1. Performance can be volatile and investors could lose all or a substantial portion of their investment**
- 2. Leverage and other speculative practices may increase the risk of loss**
- 3. Past performance may be revised due to the revaluation of investments**
- 4. These investments can be illiquid, and investors may be subject to lock-ups or lengthy redemption terms**
- 5. A secondary market may not be available for all funds, and any sales that occur may take place at a discount to value**
- 6. These funds are not subject to the same regulatory requirements as registered investment vehicles**
- 7. Managers may not be required to provide periodic pricing or valuation information to investors**
- 8. These funds may have complex tax structures and delays in distributing important tax information**
- 9. These funds often charge high fees**
- 10. Investment agreements often give the manager authority to trade in securities, markets or currencies that are not within the manager's realm of expertise or contemplated investment strategy**

