



AGENDA

RETIREMENT BOARD MEETING

SECOND MONTHLY MEETING
February 26, 2020
9:00 a.m.

Board Conference Room
1200 Concord Avenue, Suite 350
Concord, California

THE RETIREMENT BOARD MAY DISCUSS AND TAKE ACTION ON THE FOLLOWING:

1. Pledge of Allegiance.
2. Accept comments from the public.
3. Approve minutes from the January 22, 2020 meeting.
4. Capital market assumptions review.
5. Presentation from First Eagle on global markets.
6. Review of total portfolio performance for period ending December 31, 2019.
 - a. Presentation from Verus
 - b. Presentation from staff
7. Annual statement of compliance with Board resolutions.
8. Consider and take possible action to:
 - a. adopt Board of Retirement Resolution 2020-1 to increase the salary ranges by 4% for all unrepresented classifications effective April 1, 2020, with the exception of the Chief Executive Officer.
 - b. adopt the CCCERA Position Pay Schedule for unrepresented classifications effective April 1, 2020 which reflects the salary range changes in Board of Retirement Resolution 2020-1.

The Retirement Board will provide reasonable accommodations for persons with disabilities planning to attend Board meetings who contact the Retirement Office at least 24 hours before a meeting.

9. Consider authorizing the attendance of Board:
 - a. CRCEA Spring Conference, April 6-8, 2020, Visalia, CA. (Note: Conflict with Meeting)
 - b. AE Industrial Partners Annual Meeting, April 15-16, 2020, Boca Raton, FL.
 - c. 2020 Annual Conference, Siguler Guff, April 29-30, 2020, New York, NY.

10. Miscellaneous
 - a. Staff Report
 - b. Outside Professionals' Report
 - c. Trustees' comments

The Retirement Board will provide reasonable accommodations for persons with disabilities planning to attend Board meetings who contact the Retirement Office at least 24 hours before a meeting.



Meeting Date
02/26/20
Agenda Item
#3

MINUTES

RETIREMENT BOARD MEETING MINUTES

REGULAR MEETING
January 22, 2020
9:00 a.m.

Board Conference Room
1200 Concord Avenue, Suite 350
Concord, California

Present: Candace Andersen, Donald Finley, Scott Gordon, Jerry Holcombe, Louie Kroll, Jay Kwon, David MacDonald, John Phillips, Mike Sloan, Todd Smithey and Russell Watts

Absent: William Pigeon

Staff: Gail Strohl, Chief Executive Officer; Christina Dunn, Deputy Chief Executive Officer; Timothy Price, Chief Investment Officer; Karen Levy, General Counsel; Wrally Dutkiewicz, Compliance Officer; Anne Sommers, Administrative/HR Manager; Henry Gudino, Accounting Manager; and Tim Hoppe, Retirement Services Manager

Outside Professional Support: Eileen Neill
Representing: Verus Investments

1. Pledge of Allegiance

The Board, staff and audience joined in the *Pledge of Allegiance*.

2. Accept comments from the public

No member of the public offered comment.

It was the consensus of the Board to move Closed Session to the end of the meeting.

4. Investment benchmark education

Price reported this investment benchmark educational session is being provided because this is the first step toward preparing an asset/liability study.

Neill reviewed benchmarking goals and why benchmarks matter noting benchmarks enable the Board and staff to assist in monitoring whether an investment program is meeting its goals.

The next steps in preparing the finalized asset/liability study was discussed.

5. Consider and take possible action to adopt a cost-of-living increase for retirees as of April 1, 2020

It was **M/S/C** to adopt a cost-of-living increase for retirees as of April 1, 2020 as stated in Segal's January 15, 2020 letter and exhibits. (Yes: Andersen, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips, Smithey and Watts)

6. Consider authorizing the attendance of Board:

- a. There was no action taken on this item. CII Spring 2020 Conference, Council of Institutional Investors, March 9-11, 2020, Washington, DC.

7. Miscellaneous

- (a) Staff Report –

Strohl provided a response to a question from the Board related to the reassignment of the LRWL, Inc. agreement to Segal Consulting. She reported that neither LRWL, Inc. nor Segal Consulting have any connections or financial ties to any pension administration systems that CCCERA might consider in the future.

She reported the two books recently recommended by Trustee Gordon have been ordered and will be added to the Board lending library.

Levy provided a brief update on the federal SECURE Act that recently passed which changes the age for minimum required distributions from age 70.5 to age 72 effective this year. She noted an amendment to CCCERA's Tax Compliance Policy will be presented to the Board for their consideration in February.

Price introduced Mitch Taylor, CCCERA's new Investment Officer.

- (b) Outside Professionals' Report -

None

- (c) Trustees' comments –

None

CLOSED SESSION

The Board moved into closed session pursuant to Govt. Code Section 54957.6.

The Board moved into open session.

3. Conference with Labor Negotiators

There was no reportable action related to Govt. Code Section 54957.6.

It was **M/S/C** to adjourn the meeting. (Yes: Andersen, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips, Smithey and Watts)

Todd Smithey, Chairman

David MacDonald, Secretary

**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



Meeting Date
02/26/20
Agenda Item
#4

FEBRUARY 2020
CCCERA

Introduction to 2020 Capital Market Assumptions

Introduction

- Each year, Verus produces 10-year forward looking capital market assumptions (“CMAs”) for every major asset class. There are three major components to the CMAs:
 - **Expected Return**
 - **Risk (Volatility)**
 - **Correlation**
- These assumptions serve as the primary input for the asset liability study.

— **The objective of today’s discussion is to familiarize the Board with what CMAs are and how they are developed.**

Drivers of return

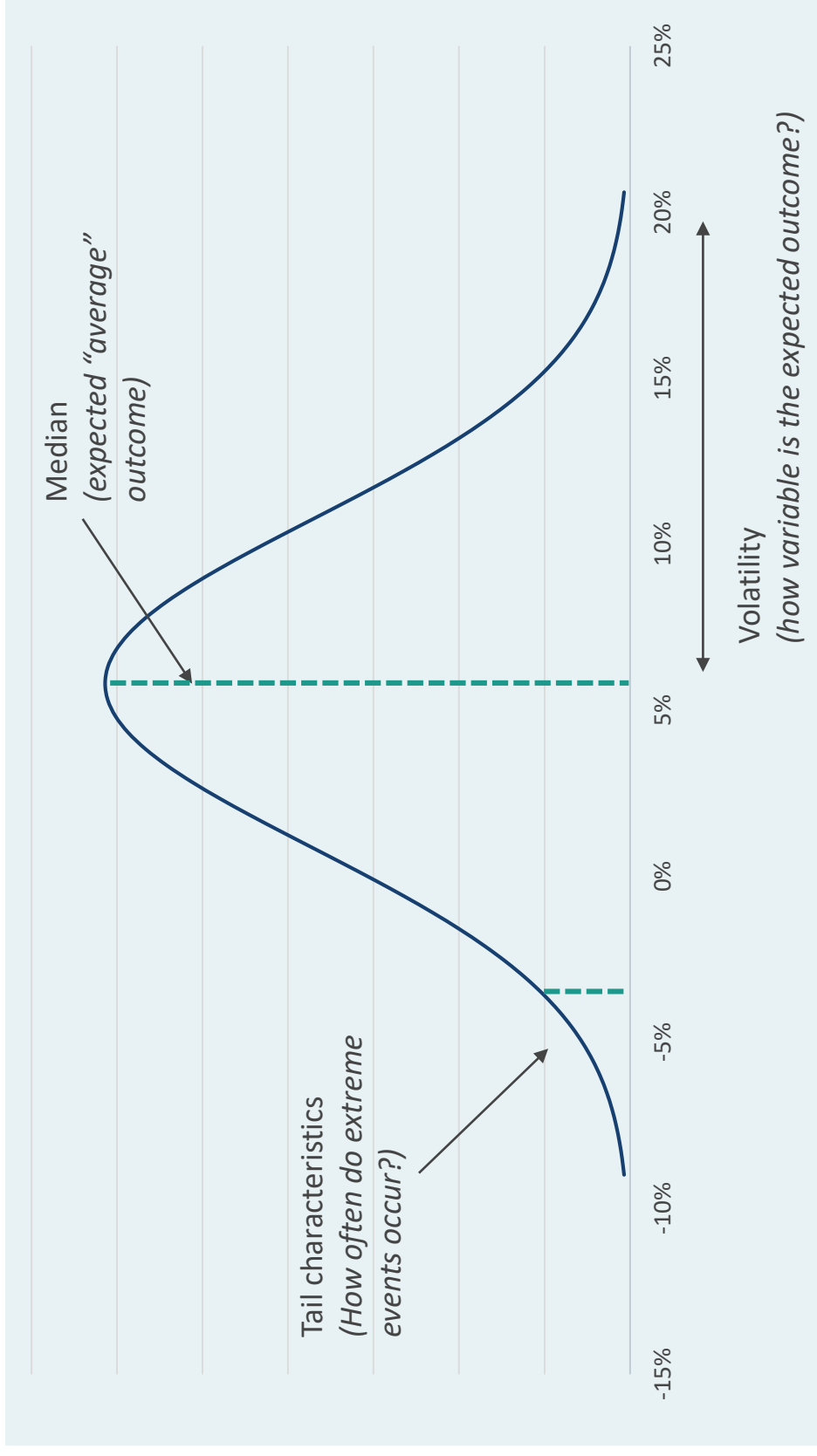
- The expected return is a function of the risk-free interest rate, expected beta, and alpha.
 - Risk free rate is determined using ten-year forward looking Verus capital market assumptions.
 - Beta is determined using ten-year forward looking Verus capital market assumptions.
 - Alpha is impacted by manager selection and asset allocation tilts.



¹CMA = Capital Market Assumptions. 6.5% represents CCCERA's geometric return forecast using Verus' 10-year capital market assumptions.

What is in a forecast?

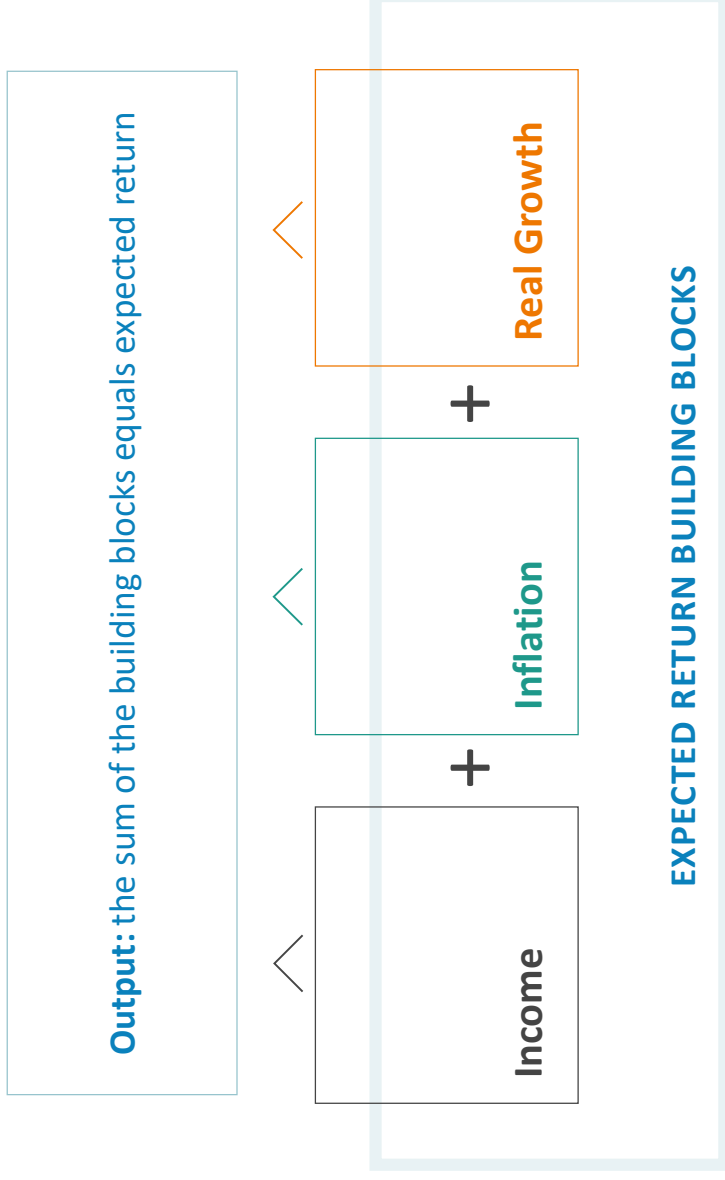
Expected return: 5.8%, standard deviation: 15.6%



A return forecast is simply the “average” expected return

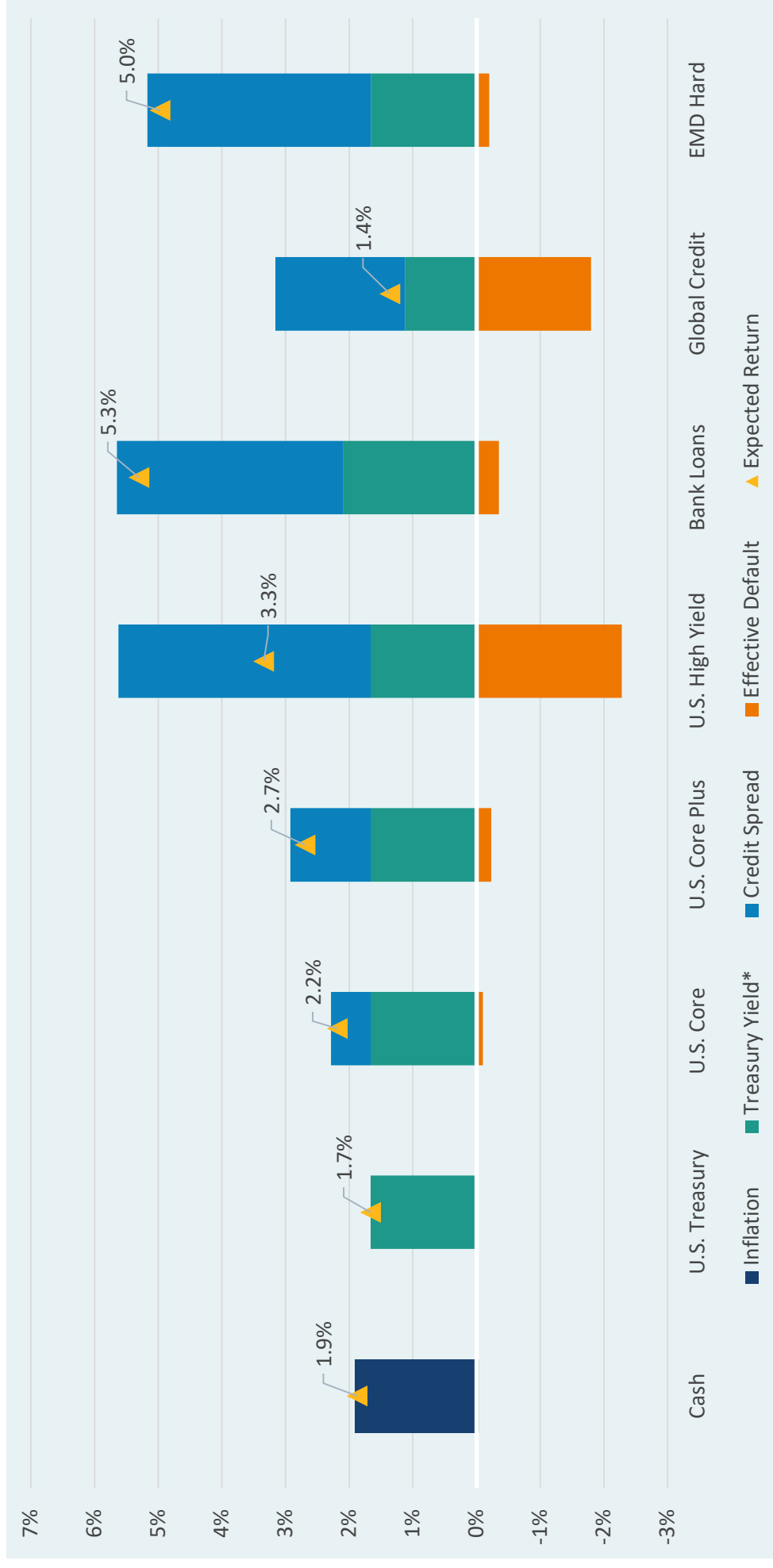
A volatility forecast tells us how different the return might actually be

Building block methodology



For illustrative purposes only

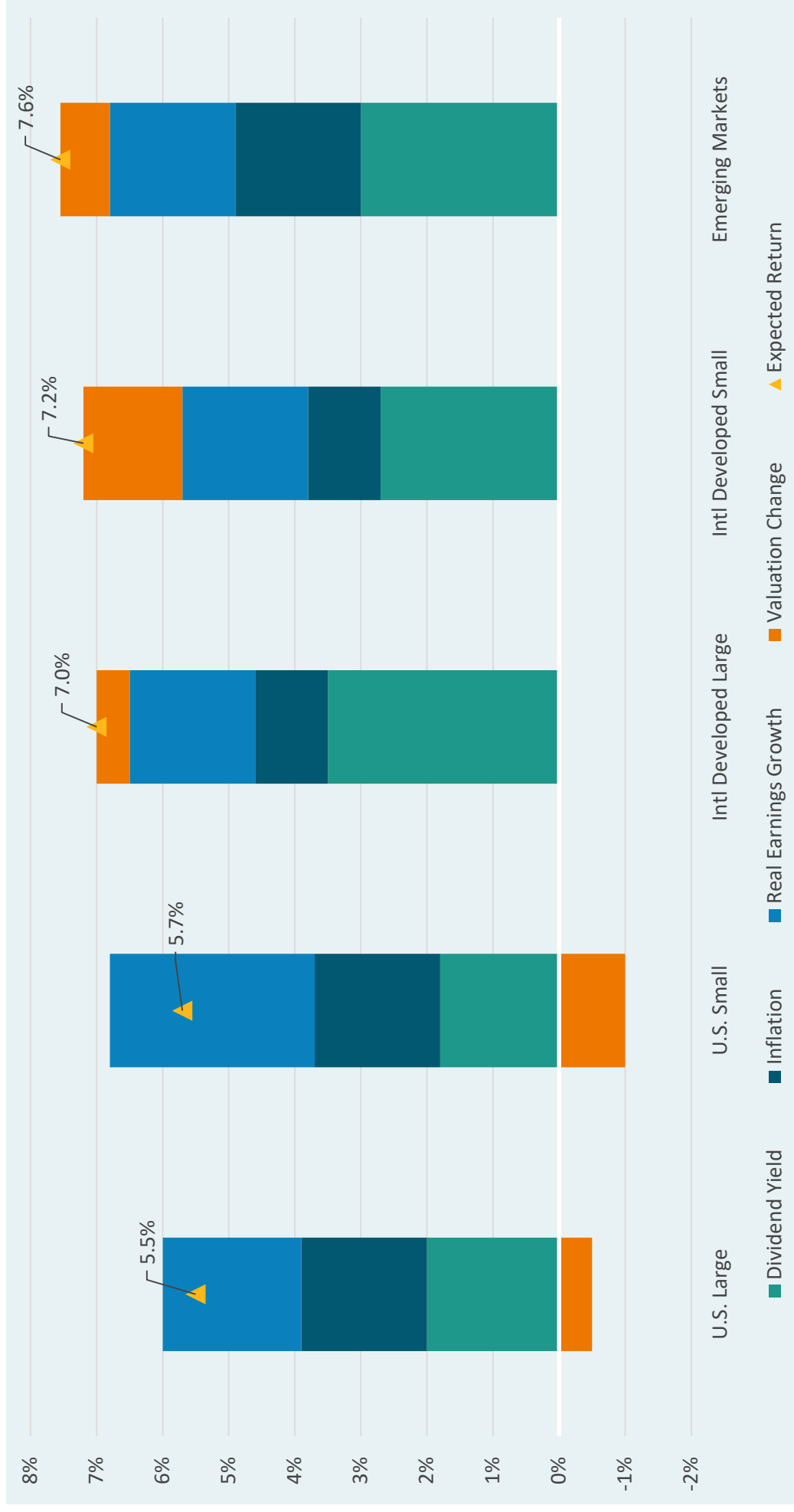
Fixed income return forecasts



Source: Verus

*Bank loans uses 3-month USD Libor instead of the Treasury yield

Equity return forecasts



Source: Verus

10-year return & risk assumptions

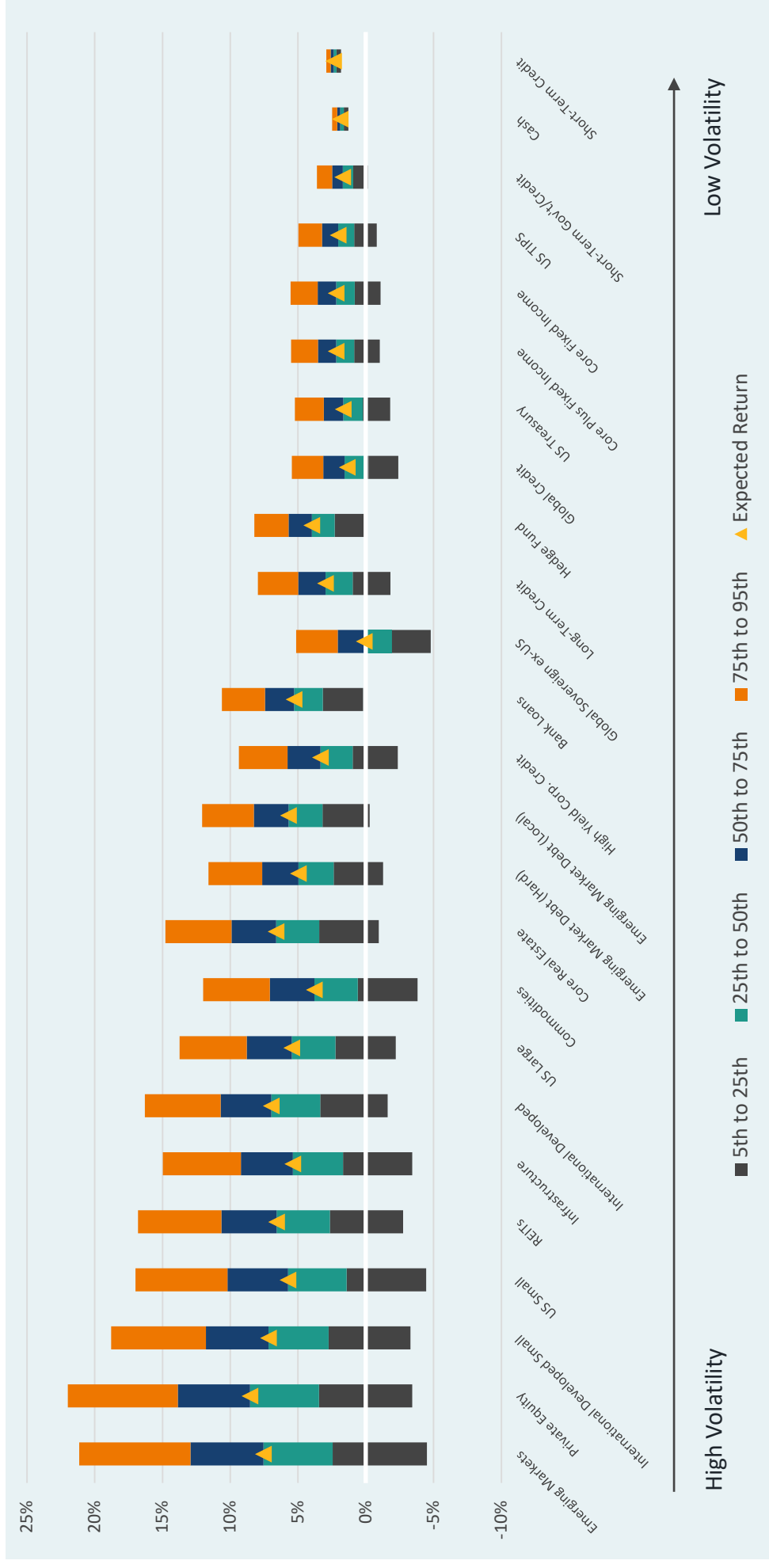
Asset Class	Index Proxy	Ten Year Return Forecast		Standard Deviation Forecast	Sharpe Ratio Forecast (g)	Sharpe Ratio Forecast (a)	10-Year Historical Sharpe Ratio (g)	10-Year Historical Sharpe Ratio (a)
		Geometric	Arithmetic					
Equities								
U.S. Large	S&P 500	5.5%	6.6%	15.4%	0.23	0.31	1.01	1.02
U.S. Small	Russell 2000	5.7%	7.7%	21.1%	0.18	0.28	0.62	0.67
International Developed	MSCI EAFE	7.0%	8.4%	17.5%	0.29	0.37	0.30	0.37
International Small	MSCI EAFE Small Cap	7.2%	9.3%	21.8%	0.24	0.34	0.46	0.52
Emerging Markets	MSCI EM	7.6%	10.4%	25.6%	0.22	0.33	0.17	0.25
Global Equity	MSCI ACWI	6.4%	7.7%	16.8%	0.27	0.34	0.59	0.63
Private Equity*	Cambridge Private Equity	8.5%	11.3%	25.3%	0.26	0.37	-	-
Fixed Income								
Cash	30 Day T-Bills	1.9%	1.9%	1.2%	-	-	-	-
U.S. TIPS	BBgBarc U.S. TIPS 5-10	2.1%	2.2%	5.4%	0.04	0.06	0.65	0.66
U.S. Treasury	BBgBarc Treasury 7-10 Year	1.7%	1.9%	6.7%	-0.03	0.00	0.68	0.69
Global Sovereign ex U.S.	BBgBarc Global Treasury ex U.S.	0.1%	0.6%	9.7%	-0.19	-0.13	0.10	0.14
Global Aggregate	BBgBarc Global Aggregate	1.2%	1.4%	6.2%	-0.11	-0.08	0.39	0.37
Core Fixed Income	BBgBarc U.S. Aggregate Bond	2.2%	2.4%	6.3%	0.05	0.08	1.08	1.09
Core Plus Fixed Income	BBgBarc U.S. Corporate IG	2.7%	3.0%	8.3%	0.10	0.14	1.21	1.22
Short-Term Gov't/Credit	BBgBarc U.S. Gov't/Credit 1-3 Year	1.7%	1.8%	3.6%	-0.06	-0.03	1.16	1.17
Short-Term Credit	BBgBarc Credit 1-3 Year	1.9%	2.0%	3.6%	0.01	0.03	1.76	1.78
Long-Term Credit	BBgBarc Long U.S. Corporate	3.0%	3.4%	9.4%	0.12	0.16	0.93	0.94
High Yield Corp. Credit	BBgBarc U.S. Corporate High Yield	3.3%	4.0%	11.3%	0.12	0.18	1.25	1.26
Bank Loans	S&P/LSTA Leveraged Loan	5.3%	5.8%	10.0%	0.34	0.39	1.47	1.50
Global Credit	BBgBarc Global Credit	1.4%	1.6%	7.4%	-0.07	-0.03	0.77	0.78
Emerging Markets Debt (Hard)	JPM EMBI Global Diversified	5.0%	5.7%	12.4%	0.25	0.31	1.03	1.03
Emerging Markets Debt (Local)	JPM GBI-EM Global Diversified	5.7%	6.4%	12.0%	0.32	0.37	0.17	0.22
Private Credit	Bank Loans + 175bps	7.0%	7.5%	10.0%	0.51	0.56	-	-
Other								
Commodities	Bloomberg Commodity	3.8%	4.9%	15.4%	0.12	0.20	-0.36	-0.29
Hedge Funds*	HFRI Fund Weighted Composite	4.0%	4.3%	7.7%	0.27	0.31	0.55	0.56
Real Estate Debt	BBgBarc CMBS IG	4.0%	4.3%	7.6%	0.27	0.31	1.55	1.58
Core Real Estate	NCREIF Property	6.6%	7.3%	12.4%	0.38	0.44	1.84	1.89
Value-Add Real Estate	NCREIF Property + 200bps	8.6%	10.0%	17.7%	0.38	0.46	-	-
Opportunistic Real Estate	NCREIF Property + 400bps	10.6%	12.9%	23.0%	0.38	0.48	-	-
REITs	Wisshire REIT	6.6%	8.2%	19.1%	0.25	0.33	0.80	0.83
Global Infrastructure	S&P Global Infrastructure	7.2%	8.6%	17.8%	0.30	0.38	0.52	0.56
Risk Parity	Risk Parity	6.9%	7.4%	10.0%	0.50	0.55	-	-
Currency Beta	MSCI Currency Factor Index	1.8%	1.8%	3.6%	-0.04	-0.02	0.19	0.21
Inflation		1.9%	-	-	-	-	-	-

Investors wishing to produce expected geometric return forecasts for their portfolios should use the arithmetic return forecasts provided here as inputs into that calculation, rather than the single-asset-class geometric return forecasts. This is the industry standard approach, but requires a complex explanation only a heavy quant could love, so we have chosen not to provide further details in this document – we will happily provide those details to any readers of this who are interested.

*Return expectations differ depending on method of implementation

Range of likely 10-year outcomes

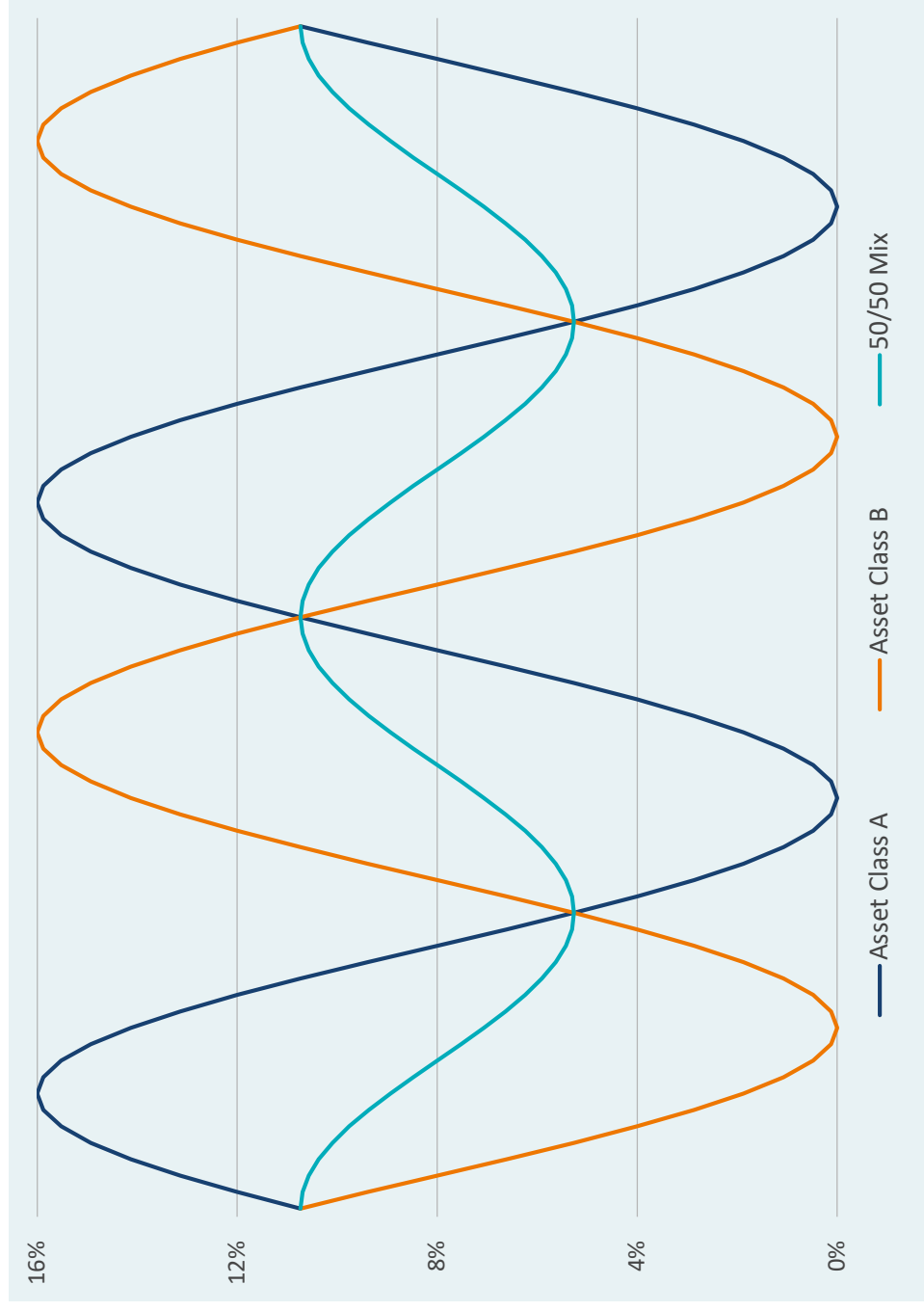
10-YEAR RETURN 90% CONFIDENCE INTERVAL



Source: Verus, MPI

Correlations

CORRELATION ILLUSTRATION



A correlation of 1 indicates two assets move in unison, and there is no diversification benefit.

A correlation of -1 means the assets behave as perfect opposites.

A correlation of 0 means the assets' behavior is not related.

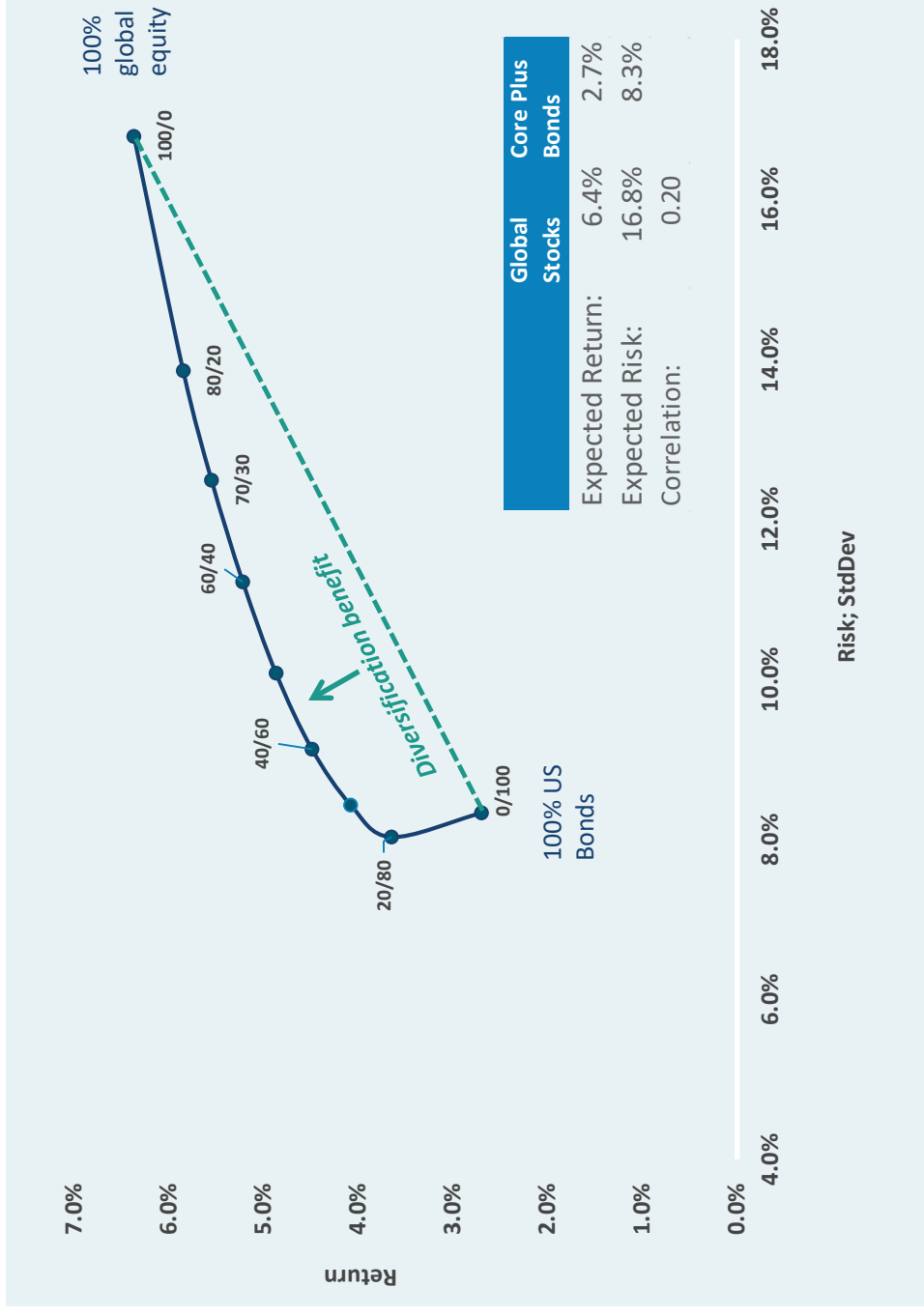
Correlation assumptions

	Cash	US Large	US Small	Intl Large	US Small	Intl Large	Intl Small	EM	Global Equity	PE	US TIPS	US Treasury	Global Sovereign	US Core	Core Plus	Short-Term Govt/Credit	Short-Term Credit	Long-Term Credit	US HY	Bank Loans	Global Credit	EMD USD	EMD Local	Commodities	Hedge Funds	Real Estate	REITs	Infrastructure	Risk Parity	Currency Beta	
Cash	1.0																														
US Large	0.0	1.0																													
US Small	-0.1	0.9	1.0																												
Intl Large	0.0	0.9	0.7	1.0																											
Intl Small	-0.1	0.8	0.7	1.0	1.0																										
EM	0.0	0.7	0.6	0.8	0.8	1.0																									
Global Equity	0.0	1.0	0.8	1.0	0.9	0.9	1.0																								
PE	-0.2	0.6	0.6	0.6	0.6	0.6	0.5	0.6	1.0																						
US TIPS	0.0	0.0	-0.1	0.1	0.1	0.1	0.2	0.1	0.0	1.0																					
US Treasury	0.1	-0.4	-0.5	-0.3	-0.3	-0.2	-0.2	-0.4	-0.2	0.7	1.0																				
Global Sovereign	0.1	0.2	0.0	0.3	0.3	0.4	0.3	0.0	0.5	0.4	1.0																				
US Core	0.1	-0.2	-0.3	-0.1	-0.1	0.0	-0.1	0.0	-0.1	0.8	0.9	0.5	1.0																		
Core Plus	0.1	0.1	0.0	0.2	0.2	0.3	0.2	0.0	0.8	0.7	0.6	0.9	1.0																		
Short-Term Govt/Credit	0.3	-0.1	-0.2	0.0	0.0	0.1	0.0	0.1	0.0	-0.1	0.7	0.7	0.6	0.8	0.7	1.0															
Short-Term Credit	0.2	0.2	0.1	0.4	0.3	0.4	0.3	0.4	0.3	0.0	0.6	0.4	0.6	0.6	0.8	0.8	1.0														
Long-Term Credit	0.1	0.0	-0.1	0.1	0.1	0.2	0.1	0.2	0.1	-0.1	0.7	0.7	0.5	0.8	1.0	0.6	0.6	1.0													
US HY	0.0	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.4	0.3	-0.2	0.3	0.1	0.5	0.2	0.6	0.4	1.0												
Bank Loans	-0.1	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.4	0.1	-0.3	0.0	-0.1	0.2	-0.1	0.3	0.1	0.8	1.0											
Global Credit	0.1	0.5	0.3	0.7	0.7	0.7	0.6	0.6	0.6	0.2	0.5	0.2	0.8	0.5	0.7	0.5	0.8	0.6	0.7	0.4	1.0										
EMD USD	0.0	0.4	0.3	0.6	0.5	0.7	0.6	0.7	0.6	0.2	0.5	0.3	0.6	0.5	0.7	0.4	0.6	0.6	0.7	0.3	0.8	1.0									
EMD Local	0.1	0.5	0.4	0.7	0.6	0.8	0.8	0.8	0.6	0.2	0.4	0.1	0.6	0.2	0.5	0.3	0.5	0.4	0.6	0.4	0.8	0.8	1.0								
Commodities	0.0	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.3	0.1	-0.3	0.4	-0.1	0.1	0.1	0.3	0.0	0.6	0.4	0.5	0.4	0.6	1.0							
Hedge Funds	0.0	0.8	0.7	0.8	0.8	0.8	0.7	0.9	0.6	0.6	0.1	-0.3	0.1	-0.1	0.2	0.0	0.3	0.1	0.7	0.6	0.5	0.4	0.5	1.0							
Real Estate	-0.1	0.6	0.5	0.5	0.5	0.4	0.6	0.6	0.4	0.4	0.2	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.4	0.3	0.2	0.3	0.3	0.2	1.0						
REITs	0.0	0.6	0.6	0.6	0.5	0.5	0.5	0.6	0.4	0.4	0.3	0.1	0.3	0.3	0.4	0.2	0.4	0.4	0.6	0.5	0.5	0.5	0.3	0.5	0.7	1.0					
Infrastructure	0.0	0.7	0.6	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.3	-0.1	0.5	0.1	0.4	0.2	0.5	0.3	0.8	0.5	0.7	0.7	0.7	0.5	0.7	0.3	1.0				
Risk Parity	0.0	0.5	0.4	0.6	0.5	0.6	0.6	0.6	0.4	0.4	0.6	0.3	0.5	0.5	0.7	0.5	0.6	0.6	0.7	0.4	0.7	0.7	0.6	0.6	0.6	0.3	0.5	0.6	1.0		
Currency Beta	0.0	0.2	0.2	0.1	0.0	0.1	0.1	0.1	0.2	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.1	0.0	1.0	

Note: Correlation assumptions are based on the last ten years. Private Equity and Real Estate correlations are especially difficult to model – we have therefore used BarraOne correlation data to strengthen these correlation estimates.

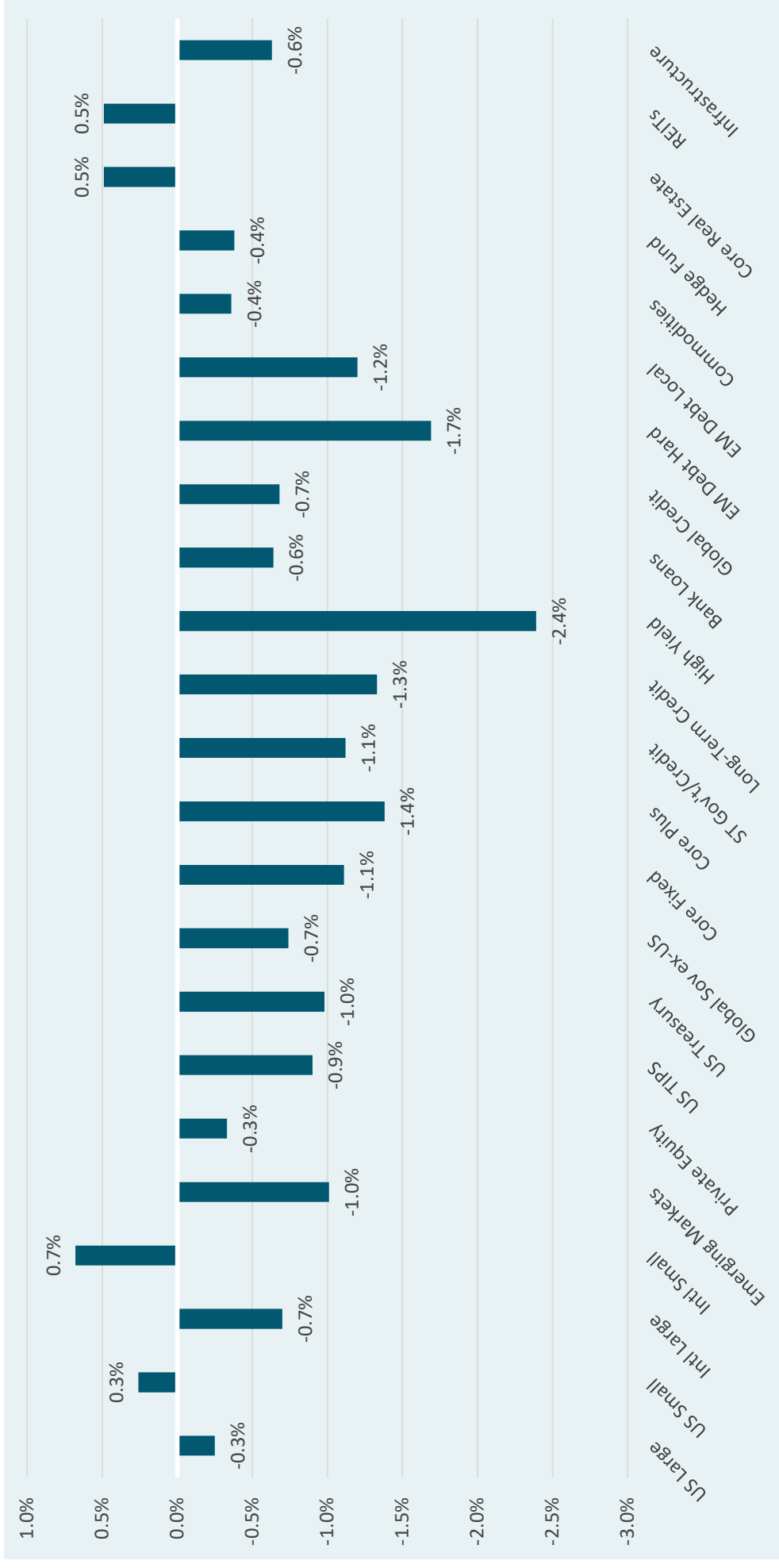
How it all comes together

A SIMPLE 2 ASSET EFFICIENT FRONTIER: STOCKS & BONDS



When assets behave independent from one another, the expected outcome is better than the sum of its parts.

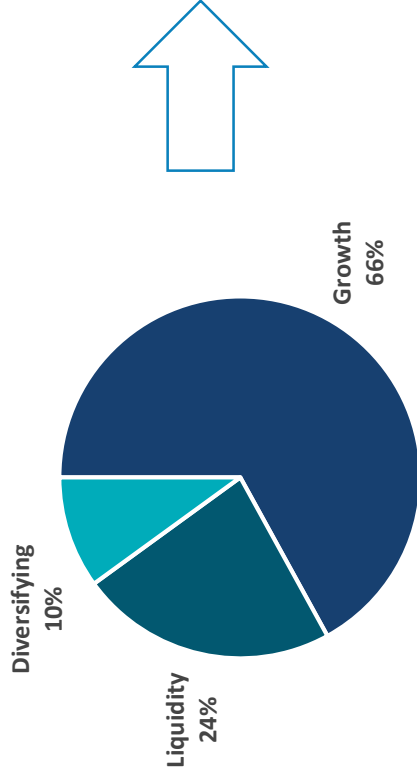
2020 vs. 2019 return forecast



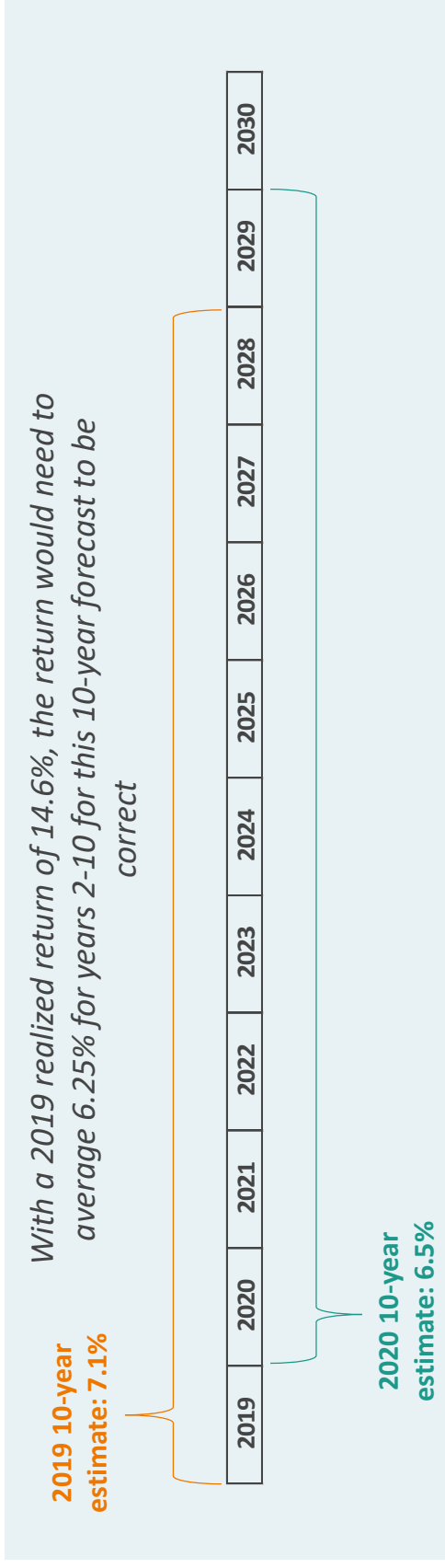
Note: year-over-year change of the select group of asset classes above is based on the 2020 CMA methodology

CCCERA portfolio forecast

CCCERA FFP TARGETS



2020 10-year Capital Market Projections	
Median Return:	6.5%
Risk:	10.2%
Sharpe Ratio	0.45



Appendix

A white triangle pointing to the right, positioned to the left of the main title text.

**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**

NOVEMBER 2019
2020 Capital Market Assumptions

Table of Contents



VERUSINVESTMENTS.COM

SEATTLE 206-622-3700

LOS ANGELES 310-297-1777

SAN FRANCISCO 415-362-3484

Summary	3	Alternatives	22
Inflation	10	Appendix	31
Fixed income	12		
Equities	18		

Summary

Methodology

CORE INPUTS

- We use a fundamental building block approach based on several inputs, including historical data and academic research to create asset class return forecasts.
- For most asset classes, we use the long-term historical volatility after adjusting for autocorrelation.
- Correlations between asset classes are calculated based on the last 10 years. For illiquid assets, such as private equity and private real estate, we use BarraOne correlation estimates.

Asset

Return Methodology

Volatility Methodology*

Asset	Return Methodology	Volatility Methodology*
Inflation	25% weight to the University of Michigan Survey 5-10 year ahead inflation expectation and the Survey of Professional Forecasters (Fed Survey), and the remaining 50% to the market's expectation for inflation as observed through the 10-year TIPS breakeven rate	-
Cash	Real yield estimate + inflation forecast	Long-term volatility
Bonds	Nominal bonds: current yield; Real bonds: real yield + inflation forecast	Long-term volatility
International Bonds	Current yield	Long-term volatility
Credit	Current option-adjusted spread + U.S. 10-year Treasury – effective default rate	Long-term volatility
International Credit	Current option-adjusted spread + foreign 10-year Treasury – effective default rate	Long-term volatility
Private Credit	Bank loan forecast + 1.75% private credit premium**	Long-term volatility
Equity	Current yield + real earnings growth (historical average) + inflation on earnings (inflation forecast) + expected P/E change	Long-term volatility
Intl Developed Equity	Current yield + real earnings growth (historical average) + inflation on earnings (intl. inflation forecast) + expected P/E change	Long-term volatility
Private Equity	US large cap domestic equity forecast * 1.85 beta adjustment	1.2 * Long-term volatility of U.S. small cap
Commodities	Collateral return (cash) + spot return (inflation forecast) + roll return (assumed to be zero)	Long-term volatility
Hedge Funds	Return coming from traditional betas + 15-year historical idiosyncratic return	Long-term volatility
Core Real Estate	Cap rate + real income growth – capex + inflation forecast	65% of REIT volatility
REITs	Core real estate	Long-term volatility
Value-Add Real Estate	Core real estate + 2%	Volatility to produce Sharpe Ratio (g) equal to core real estate
Opportunistic Real Estate	Core real estate + 4%	Volatility to produce Sharpe Ratio (g) equal to core real estate
Infrastructure	Current yield + real income growth + inflation on earnings (inflation forecast)	Long-term volatility
Risk Parity	Expected Sharpe Ratio * target volatility + cash rate	Target volatility

*Long-term historical volatility data is adjusted for autocorrelation (see Appendix)

**The private credit premium is generated by illiquidity, issuer size, and lack of credit rating

10-year return & risk assumptions

Asset Class	Index Proxy	Ten Year Return Forecast		Standard Deviation Forecast	Sharpe Ratio Forecast (g)	Sharpe Ratio Forecast (a)	10-Year Historical Sharpe Ratio (g)	10-Year Historical Sharpe Ratio (a)
		Geometric	Arithmetic					
Equities								
U.S. Large	S&P 500	5.5%	6.6%	15.4%	0.23	0.31	1.01	1.02
U.S. Small	Russell 2000	5.7%	7.7%	21.1%	0.18	0.28	0.62	0.67
International Developed	MSCI EAFE	7.0%	8.4%	17.5%	0.29	0.37	0.30	0.37
International Small	MSCI EAFE Small Cap	7.2%	9.3%	21.8%	0.24	0.34	0.46	0.52
Emerging Markets	MSCI EM	7.6%	10.4%	25.6%	0.22	0.33	0.17	0.25
Global Equity	MSCI ACWI	6.4%	7.7%	16.8%	0.27	0.34	0.59	0.63
Private Equity*	Cambridge Private Equity	8.5%	11.3%	25.3%	0.26	0.37	-	-
Fixed Income								
Cash	30 Day T-Bills	1.9%	1.9%	1.2%	-	-	-	-
U.S. TIPS	BBgBarc U.S. TIPS 5-10	2.1%	2.2%	5.4%	0.04	0.06	0.65	0.66
U.S. Treasury	BBgBarc Treasury 7-10 Year	1.7%	1.9%	6.7%	-0.03	0.00	0.68	0.69
Global Sovereign ex U.S.	BBgBarc Global Treasury ex U.S.	0.1%	0.6%	9.7%	-0.19	-0.13	0.10	0.14
Global Aggregate	BBgBarc Global Aggregate	1.2%	1.4%	6.2%	-0.11	-0.08	0.39	0.37
Core Fixed Income	BBgBarc U.S. Aggregate Bond	2.2%	2.4%	6.3%	0.05	0.08	1.08	1.09
Core Plus Fixed Income	BBgBarc U.S. Corporate IG	2.7%	3.0%	8.3%	0.10	0.14	1.21	1.22
Short-Term Gov't/Credit	BBgBarc U.S. Gov't/Credit 1-3 Year	1.7%	1.8%	3.6%	-0.06	-0.03	1.16	1.17
Short-Term Credit	BBgBarc Credit 1-3 Year	1.9%	2.0%	3.6%	0.01	0.03	1.76	1.78
Long-Term Credit	BBgBarc Long U.S. Corporate	3.0%	3.4%	9.4%	0.12	0.16	0.93	0.94
High Yield Corp. Credit	BBgBarc U.S. Corporate High Yield	3.3%	4.0%	11.3%	0.12	0.18	1.25	1.26
Bank Loans	S&P/LSTA Leveraged Loan	5.3%	5.8%	10.0%	0.34	0.39	1.47	1.50
Global Credit	BBgBarc Global Credit	1.4%	1.6%	7.4%	-0.07	-0.03	0.77	0.78
Emerging Markets Debt (Hard)	JPM EMBI Global Diversified	5.0%	5.7%	12.4%	0.25	0.31	1.03	1.03
Emerging Markets Debt (Local)	JPM GBI-EM Global Diversified	5.7%	6.4%	12.0%	0.32	0.37	0.17	0.22
Private Credit	Bank Loans + 175bps	7.0%	7.5%	10.0%	0.51	0.56	-	-
Other								
Commodities	Bloomberg Commodity	3.8%	4.9%	15.4%	0.12	0.20	-0.36	-0.29
Hedge Funds*	HFRI Fund Weighted Composite	4.0%	4.3%	7.7%	0.27	0.31	0.55	0.56
Real Estate Debt	BBgBarc CMBS IG	4.0%	4.3%	7.6%	0.27	0.31	1.55	1.58
Core Real Estate	NCREIF Property	6.6%	7.3%	12.4%	0.38	0.44	1.84	1.89
Value-Add Real Estate	NCREIF Property + 200bps	8.6%	10.0%	17.7%	0.38	0.46	-	-
Opportunistic Real Estate	NCREIF Property + 400bps	10.6%	12.9%	23.0%	0.38	0.48	-	-
REITs	Wisshire REIT	6.6%	8.2%	19.1%	0.25	0.33	0.80	0.83
Global Infrastructure	S&P Global Infrastructure	7.2%	8.6%	17.8%	0.30	0.38	0.52	0.56
Risk Parity	Risk Parity	6.9%	7.4%	10.0%	0.50	0.55	-	-
Currency Beta	MSCI Currency Factor Index	1.8%	1.8%	3.6%	-0.04	-0.02	0.19	0.21
Inflation		1.9%	-	-	-	-	-	-

Investors wishing to produce expected geometric return forecasts for their portfolios should use the arithmetic return forecasts provided here as inputs into that calculation, rather than the single-asset-class geometric return forecasts. This is the industry standard approach, but requires a complex explanation only a heavy quant could love, so we have chosen not to provide further details in this document – we will happily provide those details to any readers of this who are interested.

*Return expectations differ depending on method of implementation

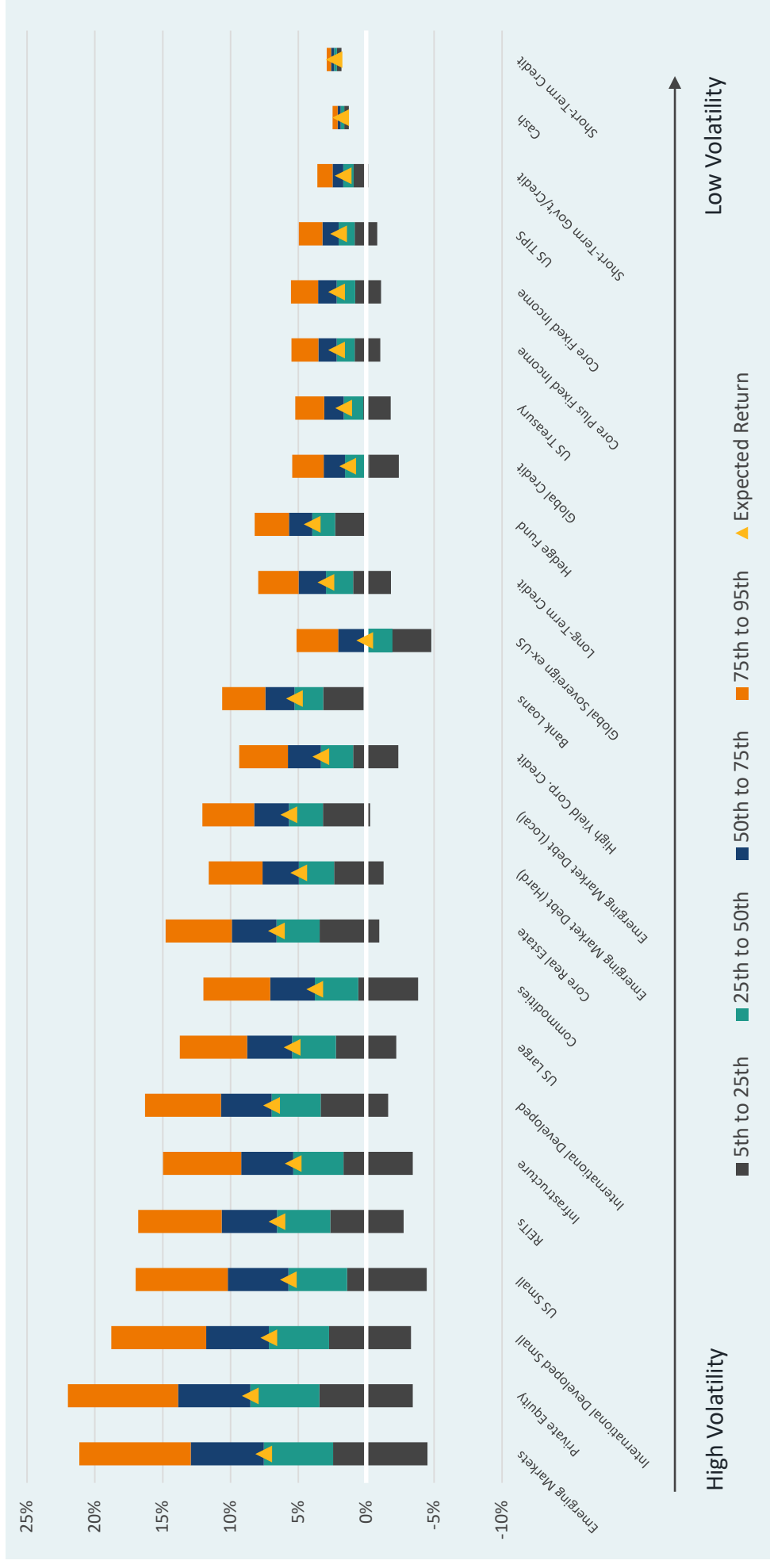
Correlation assumptions

	Cash	US Large	US Small	Intl Large	Intl Small	EM	Global Equity	PE	US TIPS	US Treasury Sovereign	US Core	Core Plus	Short-Term Govt/Credit	Long-Term Credit	US HY	Bank Loans	Global Credit	EMD USD	EMD Local	Commodities	Hedge Funds	Real Estate	REITs	Infrastructure	Risk Parity	Currency Beta
Cash	1.0																									
US Large	0.0	1.0																								
US Small	-0.1	0.9	1.0																							
Intl Large	0.0	0.9	0.7	1.0																						
Intl Small	-0.1	0.8	0.7	1.0	1.0																					
EM	0.0	0.7	0.6	0.8	0.8	1.0																				
Global Equity	0.0	1.0	0.8	1.0	0.9	0.9	1.0																			
PE	-0.2	0.6	0.6	0.6	0.6	0.5	0.6	1.0																		
US TIPS	0.0	0.0	-0.1	0.1	0.1	0.2	0.1	0.0	1.0																	
US Treasury	0.1	-0.4	-0.5	-0.3	-0.3	-0.2	-0.4	-0.2	0.7	1.0																
Global Sovereign	0.1	0.2	0.0	0.3	0.3	0.4	0.3	0.0	0.5	0.4	1.0															
US Core	0.1	-0.2	-0.3	-0.1	-0.1	0.0	-0.1	-0.1	0.8	0.9	0.5	1.0														
Core Plus	0.1	0.1	0.0	0.2	0.2	0.3	0.2	0.0	0.8	0.7	0.6	0.9	1.0													
Short-Term Govt/Credit	0.3	-0.1	-0.2	0.0	0.0	0.1	0.0	-0.1	0.7	0.7	0.6	0.8	0.7	1.0												
Short-Term Credit	0.2	0.2	0.1	0.4	0.3	0.4	0.3	0.0	0.6	0.4	0.6	0.6	0.8	0.8	1.0											
Long-Term Credit	0.1	0.0	-0.1	0.1	0.1	0.2	0.1	-0.1	0.7	0.7	0.5	0.8	1.0	0.6	0.6	1.0										
US HY	0.0	0.7	0.7	0.8	0.8	0.8	0.8	0.4	0.3	-0.2	0.3	0.1	0.5	0.2	0.6	0.4	1.0									
Bank Loans	-0.1	0.6	0.6	0.6	0.6	0.6	0.6	0.4	0.1	-0.3	0.0	-0.1	0.2	-0.1	0.3	0.1	0.8	1.0								
Global Credit	0.1	0.5	0.3	0.7	0.7	0.7	0.6	0.2	0.5	0.2	0.8	0.5	0.7	0.5	0.8	0.6	0.7	0.4	1.0							
EMD USD	0.0	0.4	0.3	0.6	0.5	0.7	0.6	0.2	0.5	0.3	0.6	0.5	0.7	0.4	0.6	0.6	0.7	0.3	0.8	1.0						
EMD Local	0.1	0.5	0.4	0.7	0.6	0.8	0.6	0.2	0.4	0.1	0.6	0.2	0.5	0.3	0.5	0.4	0.6	0.4	0.8	0.8	1.0					
Commodities	0.0	0.5	0.5	0.6	0.6	0.6	0.6	0.3	0.1	-0.3	0.4	-0.1	0.1	0.1	0.3	0.0	0.6	0.4	0.5	0.4	0.6	1.0				
Hedge Funds	0.0	0.8	0.7	0.8	0.8	0.7	0.9	0.6	0.1	-0.3	0.1	-0.1	0.2	0.0	0.3	0.1	0.7	0.6	0.5	0.4	0.4	0.5	1.0			
Real Estate	-0.1	0.6	0.5	0.5	0.5	0.4	0.6	0.4	0.2	0.0	0.1	0.1	0.1	0.1	0.1	0.4	0.3	0.2	0.3	0.2	0.3	0.2	0.5	1.0		
REITs	0.0	0.6	0.6	0.6	0.5	0.5	0.6	0.4	0.3	0.1	0.3	0.4	0.2	0.4	0.4	0.6	0.5	0.5	0.5	0.3	0.3	0.5	0.7	1.0		
Infrastructure	0.0	0.7	0.6	0.9	0.8	0.8	0.8	0.7	0.3	-0.1	0.5	0.1	0.4	0.2	0.5	0.3	0.8	0.5	0.7	0.7	0.7	0.5	0.7	1.0		
Risk Parity	0.0	0.5	0.4	0.6	0.5	0.6	0.6	0.4	0.6	0.3	0.5	0.5	0.7	0.5	0.6	0.4	0.7	0.4	0.7	0.6	0.6	0.6	0.3	0.5	0.6	1.0
Currency Beta	0.0	0.2	0.2	0.1	0.0	0.1	0.1	0.2	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	0.0	0.2	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	1.0

Note: Correlation assumptions are based on the last ten years. Private Equity and Real Estate correlations are especially difficult to model – we have therefore used BarraOne correlation data to strengthen these correlation estimates.

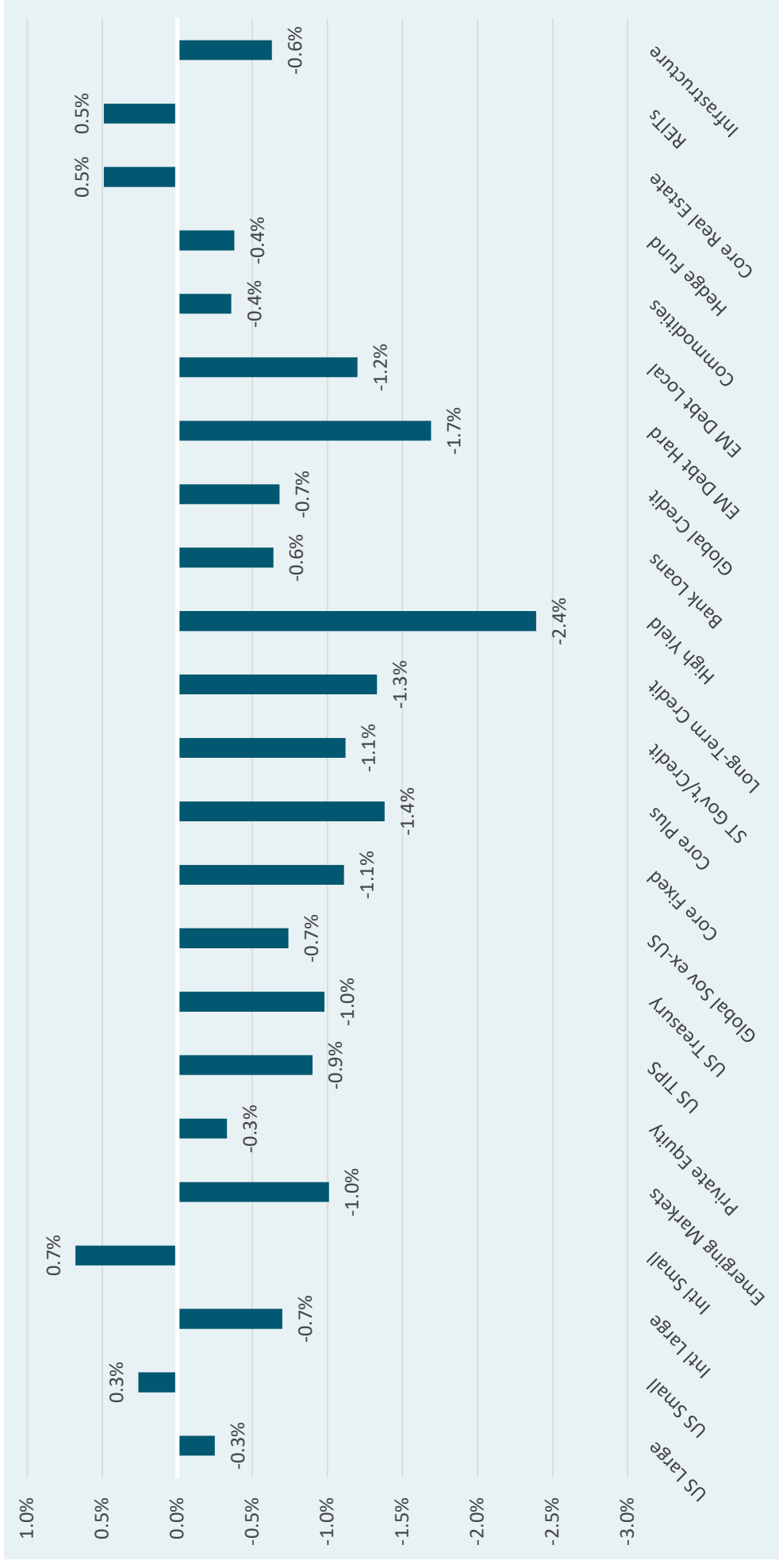
Range of likely 10-year outcomes

10-YEAR RETURN 90% CONFIDENCE INTERVAL



Source: Verus, MPI

2020 vs. 2019 return forecast



Note: year-over-year change of the select group of asset classes above is based on the 2020 CMA methodology

Relevant forecast changes

- Return expectations fell broadly across most asset classes as bond yields moved lower, equities recovered from their 2018 end-of-year drawdown, and valuations became richer. This effect resulted in a decrease of between 0.7%-1.0% to non-U.S. equity expectations.
- Market pricing indicates lower inflation over the next decade. The 10yr U.S. TIPS breakeven inflation rate fell from 1.7% to 1.5% year-to-date, while the University of Michigan Inflation Expectations Survey fell from 2.5% to 2.4%. Inflation is an important component to the performance of asset classes such as equities, real estate, and commodities. Return expectations for these asset classes has come down by 0.1% to 0.2% to reflect this inflation trend. It is important to note that lower inflation expectations decrease *nominal* returns, but do not impact *real* returns.
- Credit spreads dropped throughout the year as the asset class delivered strong performance, which resulted in lower return forecasts for credit assets. Core fixed income spreads fell from 72 bps to 62 bps, and high yield spreads fell from 529 bps to 396 bps.
- The short end of the yield curve fell as the Federal Reserve reversed course, and U.S. markets moved towards a decreasing interest rate environment. The U.S. effective fed funds rate dropped from 2.3% at the beginning of the year to 1.9% in September. The three-month U.S. dollar LIBOR reference rate fell from 2.8% to 2.1%.
- Emerging market hard and local currency debt forecasts have both declined, following strong performance year-to-date. Hard currency-denominated debt spreads to U.S. Treasury yields fell from 421 bps to 351 bps, while yields of local-denominated debt fell from 7.2% to 6.0%.

All data cited above is as of 9/30/19

Inflation

Inflation

We use a weighted average of market expectations (50%), consumer expectations (25%), and professional forecasts (25%) to create a 10-year inflation forecast. The market's expectations for 10-year inflation can be inferred by taking the difference between the U.S. 10-year Treasury yield and the 10-year Treasury Inflation-Protected (TIPS) yield (referred to as the breakeven inflation rate).

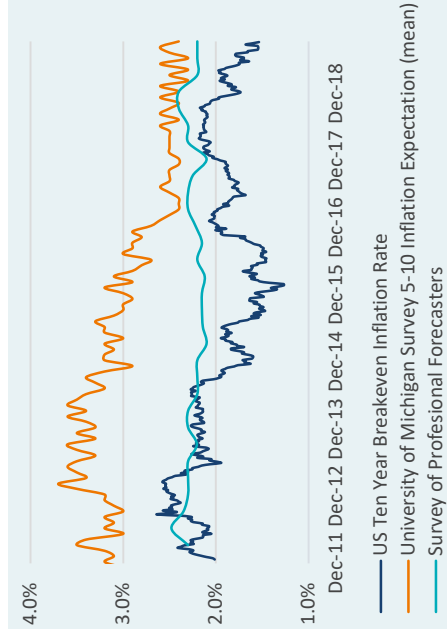
Inflation drifted upward in 2019, reaching the levels not seen in the past decade. However, investors generally expect the low inflation environment to continue well into the future. Breakeven rates rose in the first quarter but then trended downward in Q2 and Q3, likely affected by

pessimism around the U.S. economy. Overall, inflation levels remain mild, relative to past economic cycles.

Consumer inflation expectations increased very slightly from 2.7% to 2.8% in September, based on the University of Michigan Consumer Inflation Expectations Survey. Inflation expectations from the Survey of Professional Forecasters fell from 2.4% to 2.3% - this measure has historically been fairly stable, especially in environments characterized by suppressed inflation volatility.

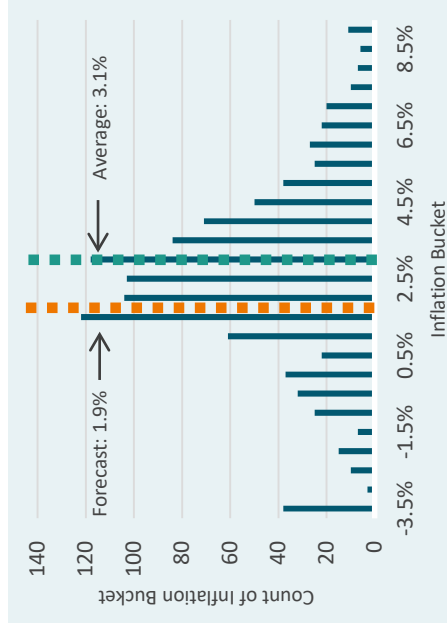
Our inflation forecast decreased slightly from 2.0% to 1.9%.

INFLATION EXPECTATIONS



Source: U. of Michigan, Philly Fed, as of 9/30/19

U.S. 10-YR ROLLING AVERAGE INFLATION SINCE 1923



Source: Bloomberg, as of 9/30/19

FORECAST

	10-Year Forecast
University of Michigan Survey (25% weight)	+2.4%
Survey of Professional Forecasters (25% weight)	+2.2%
US 10-Year TIPS Breakeven Rate (50% weight)	+1.5%
Inflation Forecast	1.9%

Source: Verus, as of 9/30/19

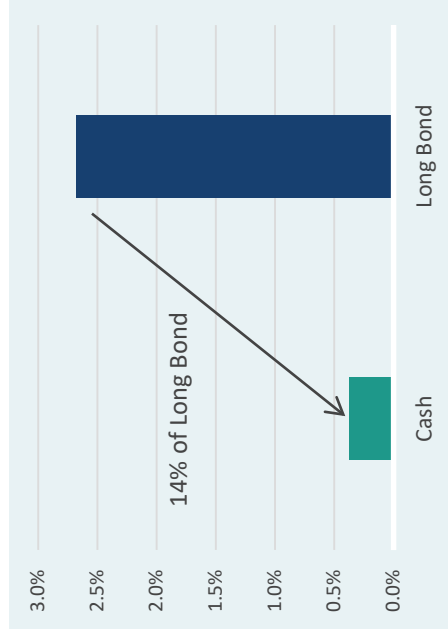
Fixed income

Cash

The U.S. Treasury yield curve further flattened in the latter half of the year, inverting temporarily between the 10- and 2-year yields. By other measures, such as the spread between 10-year and 3-month yields, the curve remains inverted. From the time of inversion, the U.S. economy has historically entered recession within 1-3 years. However, unprecedented monetary policy and central bank involvement in the markets may be having an outsized impact on fixed income pricing, which could be muddying this signal.

Over rolling ten-year time periods, the average historical real return to

AVERAGE REAL RETURN



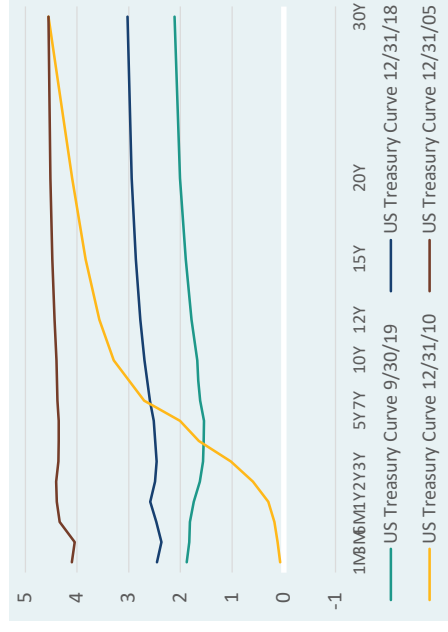
Source: Bloomberg

cash has been 14% of the real return to long-term bonds.

By applying this historical real return relationship, we arrive at a -3 bps expected real return to cash (14% of our -25 bps 10-year U.S. Treasury real return forecast) as real yields are now negative.

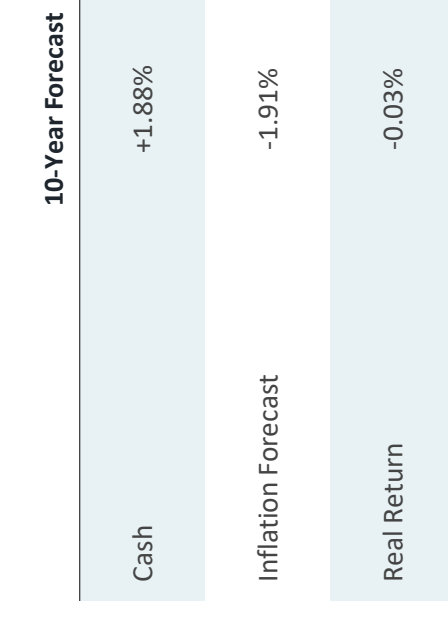
Adding our inflation forecast of 1.9% results in a nominal return to cash of 1.9%.

U.S. TREASURY YIELD CURVE



Source: Bloomberg, as of 9/30/19

FORECAST



Source: Verus, as of 9/30/19

Rates

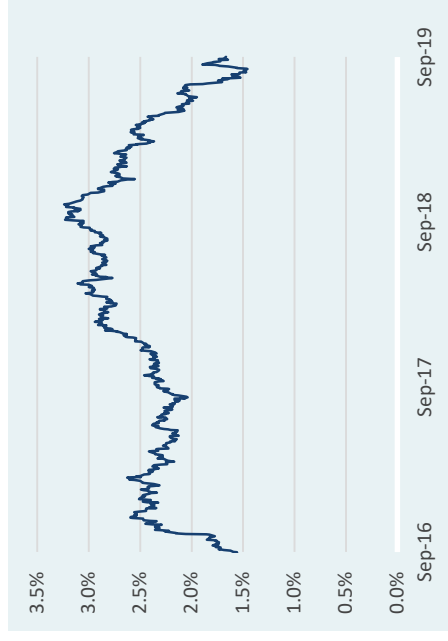
We forecast the return from rates based upon the current 10-year Treasury yield, with all cash flows reinvested at the current yield. The 10-year yield fell from 2.7% to 1.7% through September.

Developed world central banks have shifted their narrative from tightening to easing. Discussions have taken place over fiscal stimulus or perhaps renewed quantitative easing. It is unclear how potent a return to monetary easing would be, now that interest rates have been low (or negative) for some time.

U.S. Treasury yields remain high relative to other developed nations, specifically Japan and Germany. U.S. yields marched upward in 2017 and 2018, but reversed sharply in 2019 as expectations for U.S. economic growth soured and the Federal Reserve shifted to an easing stance. The U.S. yield curve remains surprisingly flat.

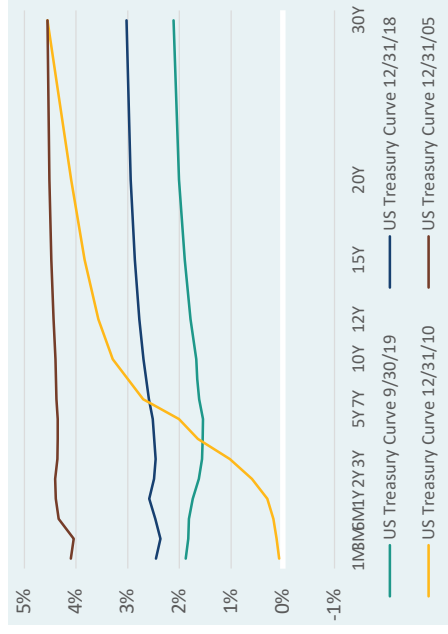
In the U.S., further rate cuts are expected, with rate stabilization possibly occurring in late 2020. It is possible that the next recession may bring negative interest rates to the U.S., in line with secularly low interest rates elsewhere.

U.S. 10-YR TREASURY YIELD



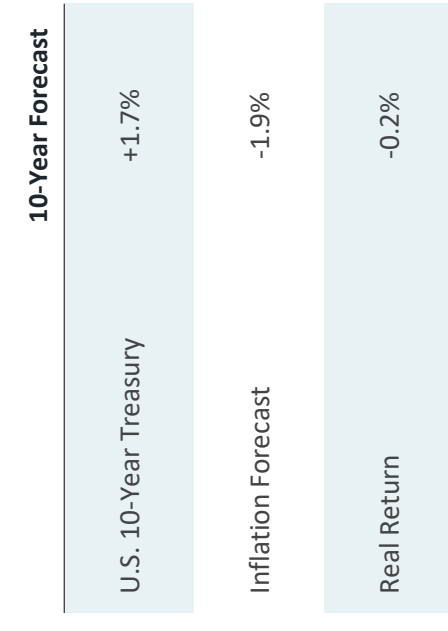
Source: Bloomberg, as of 9/30/19

U.S. TREASURY YIELD CURVE



Source: Bloomberg, as of 9/30/19

FORECAST



Source: Verus, as of 9/30/19

Real rates

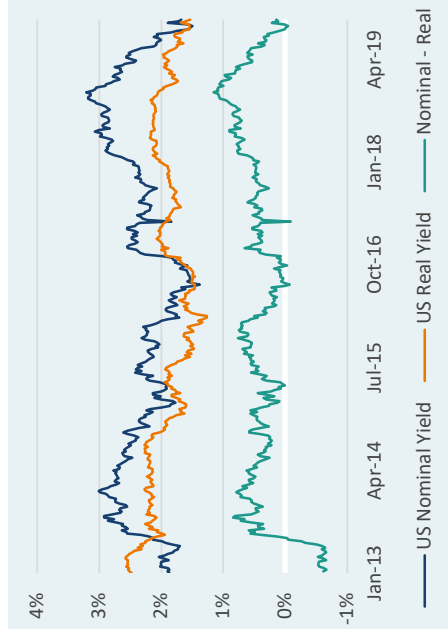
TIPS provide high sensitivity to duration (interest rate risk) over short periods and track inflation (CPI) fairly well over longer periods. Changing inflation expectations, demand for inflation protection, and rate movements contribute to the price volatility of TIPS. Currently, future inflation is expected to be mild, there is low demand for inflation protection, and interest rates are expected to fall. This environment may be muting the price of TIPS.

The U.S. 10-year real yield fell steadily through Q3, along with U.S. TIPS Breakeven rates. Inflation rose slightly, depressing real yields.

Breakeven rates rose in the first quarter but trended downward in Q2 and Q3, likely impacted by pessimism around the domestic economy.

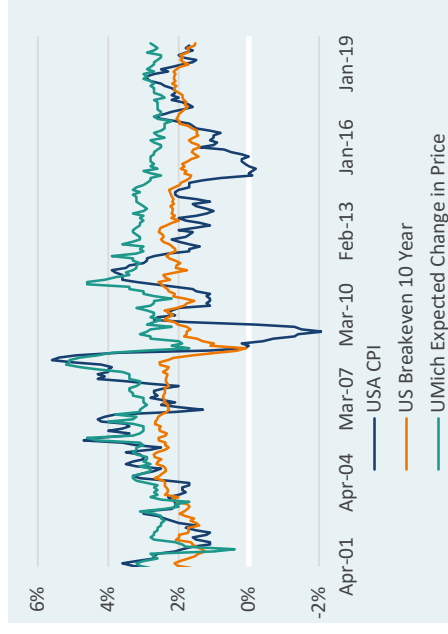
To arrive at a nominal 10-year forecast, we add the current real TIPS yield to our 10-year inflation forecast. Our real rates forecast fell markedly from 1.0% to 0.1% as nominal interest rate dropped much further than inflation expectations.

NOMINAL YIELD VS. REAL



Source: Bloomberg, as of 9/30/19

INFLATION EXPECTATIONS



Source: Bloomberg, as of 9/30/19

FORECAST

	10-Year Forecast
U.S. 10-Year TIPS Real Yield	+0.14%
Inflation Forecast	+1.91%
Nominal Return	2.05%

Source: Verus, as of 9/30/19

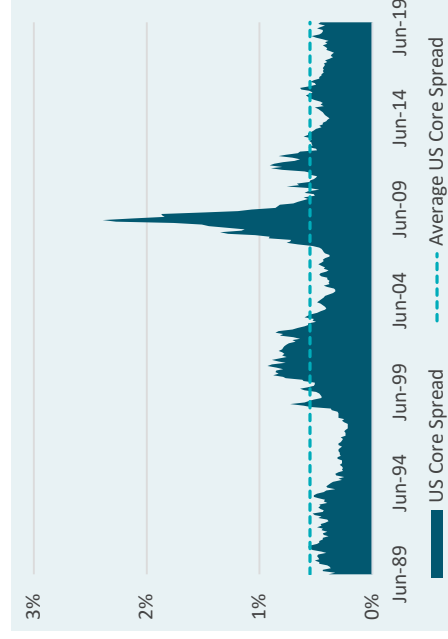
Core fixed

Credit fixed income return is composed of a bond term premium (duration) and credit spread. The bond term premium is represented by the 10-year U.S. Treasury yield.

We use default rates and credit spreads for each respective fixed income category to provide our 10-year return forecast. Our default rate assumption is derived from a variety of sources, including historical data and academic research. The effective default that is subtracted from the return forecast is based on our assumed default and recovery rates.

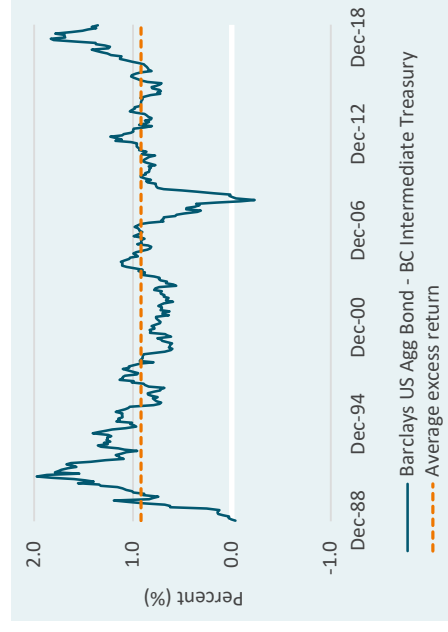
Spreads tightened throughout the year, which resulted in lower return forecasts for credit assets. Core fixed income spreads remain below their 30-year average of 1.25%. Widening credit spreads are typical of late-cycle behavior, as investors demand greater compensation for higher perceived credit risk. Recent activity suggests investors are not yet concerned about late-cycle credit market issues.

U.S. CORE CREDIT SPREAD



Source: Barclays, as of 9/30/19

ROLLING EXCESS RETURN (10-YR)



Source: Barclays, as of 9/30/19

FORECAST

	10-Year Forecast
Barclays U.S. Option-Adjusted Spread	+0.6%
Effective Default	-0.1%
U.S. 10-Year Treasury	+1.7%
Nominal Return	2.2%
Inflation Forecast	-1.9%
Real Return	0.3%

Source: Verus, as of 9/30/19

Credit summary

	Core	Long-Term Credit	Global Credit	High Yield	Bank Loans	EM Debt (USD)	EM Debt (Local)	Private Credit	Real Estate Debt
Index	BBgBarc U.S. Aggregate	BBgBarc Long U.S. Corporate	BBgBarc Global Credit	BBgBarc U.S. High Yield	S&P LSTA	JPM EMBI	JPM GBI-EM	S&P LTSA + 1.75%	BBgBarc CMBS IG
Method	OAS + U.S. 10-Year	OAS + U.S. 10-Year	OAS + Global 10-Year Treasuries	OAS + U.S. 10-Year	LIBOR + Spread	OAS + U.S. 10-Year	Current Yield	Bank Loans+ 1.75% private premium	LIBOR + Spread
Spread to	Intermediate U.S. Treasury	Long-Term U.S. Treasury	Global Long-Term Treasuries	Intermediate U.S. Treasury	LIBOR	Intermediate U.S. Treasury	-	-	LIBOR
Default Assumption	-0.5%	-4.5%	-3.0%	-3.8%	-3.5%	-0.5%	-0.5%	-	-3.7%
Recovery Assumption	80%	95%	40%	40%	90%	60%	40%	-	47%
Spread	0.6%	1.5%	2.0%	4.0%	3.6%	3.5%	-	-	4.0%
Yield	-	-	-	-	-	-	6.0%	-	-
Risk Free Yield	1.7%	1.7%	1.1%	1.7%	2.1%	1.7%	-	-	2.0%
Effective Default	-0.1%	-0.2%	-1.8%	-2.3%	-0.4%	-0.2%	-0.3%	-	-2.0%
Nominal Return	2.2%	3.0%	1.4%	3.4%	5.3%	5.0%	5.7%	7.1%	4.0%
Inflation Forecast	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
Real Return	0.3%	1.1%	-0.6%	1.4%	3.4%	3.1%	3.8%	5.2%	2.1%

Source: Verus

Equities

Equities

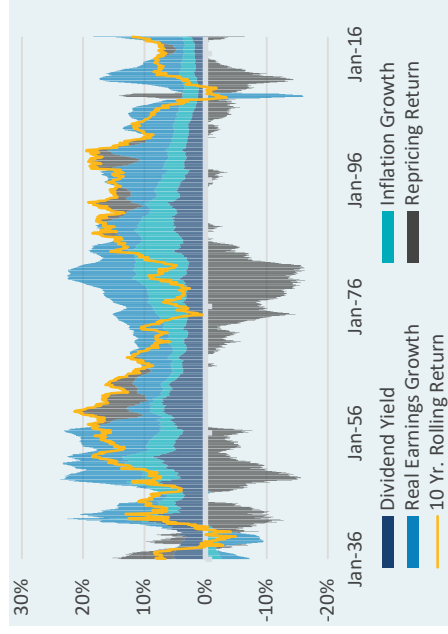
Investment returns in the equity space can be broken down into earnings growth, dividend yield, inflation, and repricing. Over the very long-term, repricing represents a small portion of return to equity investors, but over shorter time frames, the impacts on return can vary considerably.

If investors are willing to pay more for earnings, it could signal that investors are more confident in positive earnings growth going forward, while the opposite is true if investors pay less for earnings. It is somewhat surprising that investor confidence varies so much given that the long-term earnings growth is relatively stable.

Investor confidence in earnings growth can be measured using both the Shiller P/E ratio and the trailing 12-month P/E ratio. We take an average of these two valuations metrics when determining our repricing assumption. In short, if the P/E ratio is too high (low) relative to history, we expect future returns to be lower (higher) than the long-term average. Implicit in this analysis is the assumption that P/E's will exhibit mild mean reversion over 10 years.

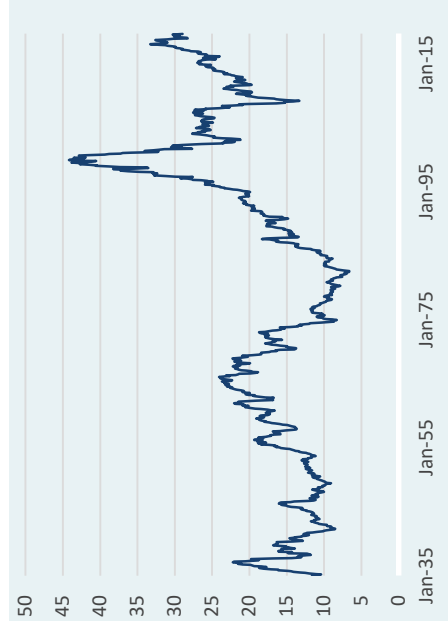
We make a conservative repricing estimate given how widely repricing can vary over time. We then skew the repricing adjustment because the percentage change in index price is larger with each incremental rise in valuations when P/E's are low, compared to when they are high.

TRAILING 10-YR S&P 500 RETURN COMPOSITION



Source: Shiller, Standard & Poor's, as of 9/30/19

U.S. LARGE SHILLER P/E



Source: Shiller, S&P 500, as of 9/30/19

P/E REPRICING ASSUMPTION

Average P/E Percentile Bucket	Lower P/E	Upper P/E	Repricing Assumption
Lower 10%	-	10	2.00%
10% - 20%	10	13	1.50%
20% - 30%	13	15	0.75%
30% - 45%	15	18	0.50%
45% - 55%	18	19	0.0%
55% - 70%	19	21	-0.25%
70% - 80%	21	22	-0.50%
80% - 90%	22	24	-0.75%
Top 10%	24	-	-1.00%

Source: Verus

Global equity

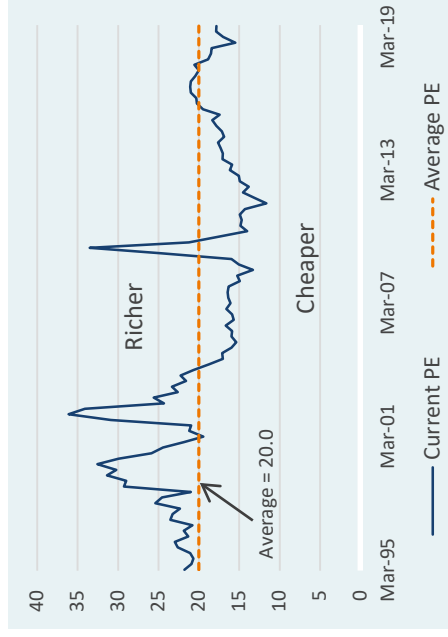
Global Equity is a combination of U.S. large, international developed, and emerging market equities. We can therefore combine our existing return forecasts for each of these asset classes to arrive at our global equity return forecast.

The valuation of global equities are driven by the richness/cheapness of the underlying markets, as indicated by the current price-to-earnings ratio.

We use the MSCI ACWI Index as our benchmark for global equity and apply the country weights of this index to determine the weightings for our global equity return calculation. As with other equity asset classes, we use the historical standard deviation of the benchmark (MSCI ACWI Index) for our volatility forecast.

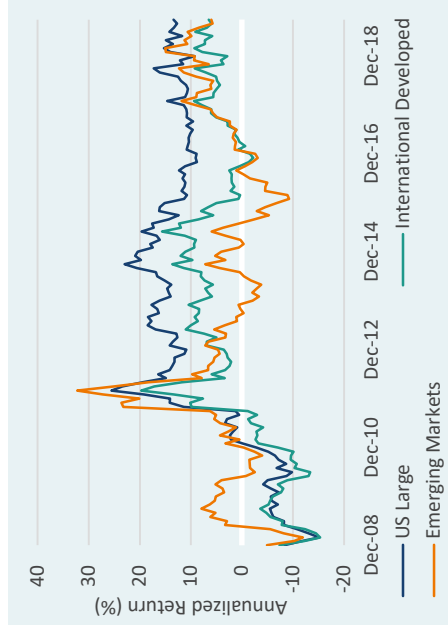
Our return building blocks produce a local return forecast for international equities. For investors who wish to incorporate market implied currency movements into the return forecast, please see the adjustments and explanation in the Appendix.

GLOBAL EQUITY P/E RATIO HISTORY



Source: MSCI, as of 9/30/19

MARKET PERFORMANCE (3-YR ROLLING)



Source: MSCI, Standard & Poor's, as of 9/30/19

FORECAST

Market	Weight	CMA return
U.S. Large	54.2%	5.5%
Developed Large	32.4%	7.0%
Emerging Markets	10.3%	7.6%
Canada	3.1%	8.9%
Global Equity Forecast		6.4%

Source: Verus, as of 9/30/19

Equity summary

Index	U.S. Large	U.S. Small	EAFE	EAFE Small	EM
	S&P 500	Russell 2000	MSCI EAFE Large	MSCI EAFE Small	MSCI EM
Method	Building Block Approach: current dividend yield + historical average real earnings growth + inflation on earnings + repricing				
Current Shiller P/E Ratio	29.0	45.1	17.5	-	10.5
Regular P/E Ratio	19.5	41.0	16.7	18.7*	13.3
2019 Shiller P/E Change	+1.8%	+5.6%	+9.4%	-	+4.0%
2019 Regular P/E Change	+14.0%	-8.3%	+24.6%	-21.4%	+14.9%
Current Shiller P/E Percentile Rank	81%	93%	34%	-	18%
Current Regular P/E Percentile Rank	74%	90%	46%	18%*	34%
Average of P/E Methods' Percentile Rank	77%	92%	40%	18%*	26%
2019 YTD Return	20.5%	14.2%	12.8%	12.1%	5.9%
Shiller PE History	1982	1988	1982	Not Enough History	2005
Long-Term Average Shiller P/E	22.9	31.1	22.6	-	15.1
Current Dividend Yield	2.0%	1.8%	3.5%	2.7%	3.0%
Long-Term Average Real Earnings Growth	2.1%	3.1%	1.9%	1.9%	1.9%
Inflation on Earnings	1.9%	1.9%	1.1%	1.1%	1.9%
Repricing Effect (Estimate)	-0.5%	-1.0%	0.5%	1.5%	0.8%
Nominal Return	5.5%	5.7%	7.0%	7.2%	7.6%
Inflation Forecast	1.9%	1.9%	1.9%	1.1%	1.9%
Real Return	3.6%	3.8%	5.1%	6.1%	5.7%

Data as of 9/30/19

*Average trailing P/E from previous 12 months is used

NOTE: For all equities, we exclude data prior to 1972, which allows for a more appropriate comparison between data sets

Alternatives

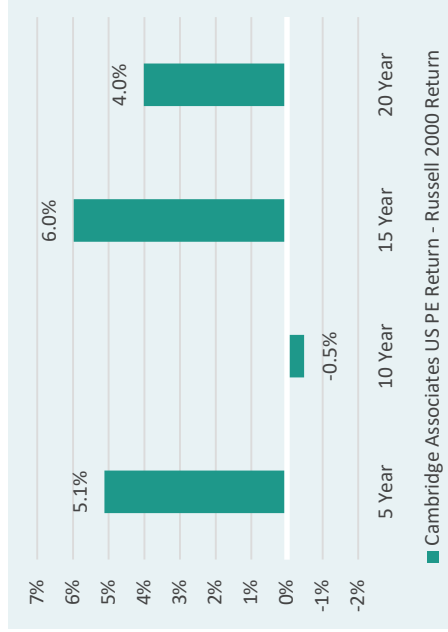
Private equity

Private equity and public equity returns have been correlated historically because the underlying economic forces driving these asset class returns are quite similar. The return relationship between the two can vary in the short-term, but over the long-term investors have received a premium, driven by leverage, concentrated factor exposure (smaller and undervalued companies), skill, and possibly illiquidity.

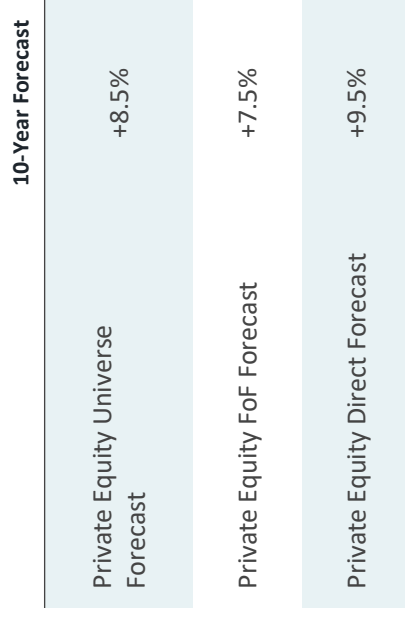
Historically, the beta of private equity relative to public equities has been high. We use a beta assumption of 1.85 to U.S. large cap equities in our capital market forecast.

Private equity performance typically differs based on the implementation approach. We provide a 10-year forecast for the entire private equity universe of 8.5%. Direct private equity programs have historically outperformed the broader universe by approximately 1.0%, and we forecast direct private equity accordingly with a forecast of 9.5%. Private equity fund-of-fund programs have historically lagged the universe by 1.0%, and we forecast private equity FoF at 7.5% to reflect this drag.

PRIVATE EQUITY EXCESS RETURN (PE – U.S. SMALL CAP EQUITY)



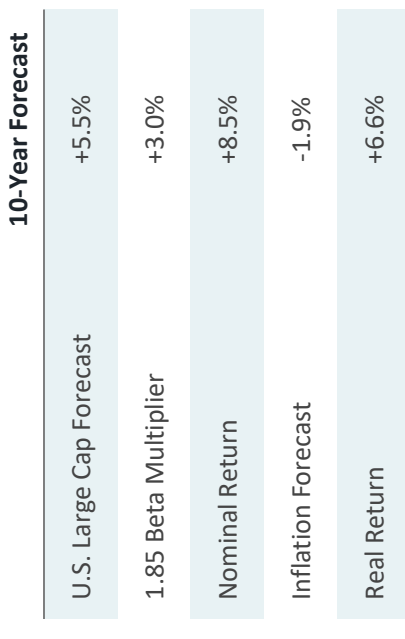
PRIVATE EQUITY IMPLEMENTATION FORECASTS



Source: Cambridge, Russell, as of 3/31/19

Source: Verus, as of 9/30/19

PRIVATE EQUITY UNIVERSE FORECAST



Hedge funds

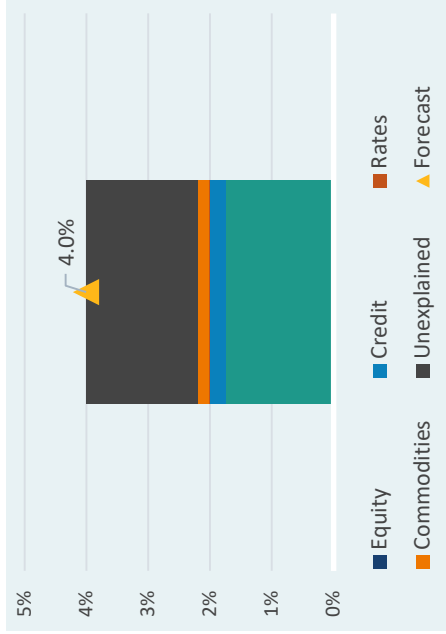
Hedge fund performance variation through time can be partly explained by public market betas (ex: equity, rates, credit, commodities) and partly explained by non-public sources of return (ex: alternative betas, skill, luck). Certain hedge fund strategies can be mostly explained by public market betas, while other types of hedge fund strategies are driven mostly by non-public sources of return.

To forecast hedge fund returns, we identified the portion of historical hedge fund performance that can be attributed to public market betas, and the portion of hedge fund returns that cannot be attributed to public market beta. This means our forecast has two components:

the public market return (explained return) and the non-public market return (unexplained return).

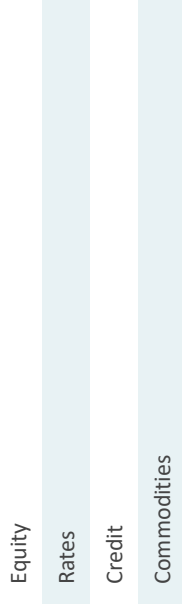
To forecast the public market beta portion of hedge funds, we take the historical sensitivity of hedge funds to equity, rates, credit, and commodities and pair these with our current 10-year public market forecasts for each asset class. To forecast the non-public market return portion of hedge funds (unexplained return) we simply assume the historical performance contribution of these sources will continue over the next 10 years.

HEDGE FUND FORECAST



Source: Verus, as of 9/30/19

HEDGE FUND PUBLIC MARKET SOURCES OF RETURN (EXPLAINED RETURN)



HEDGE FUND NON-PUBLIC SOURCES OF RETURN (UNEXPLAINED RETURN)



Source: Verus

FORECAST

Component	10-Year Forecast
Public Market % of Return	+2.2%
Non-Public Market % of Return	+1.8%
Nominal Return	+4.0%
Inflation Forecast	-1.9%
Real Return	+2.1%

Source: Verus, as of 9/30/19

Private core real estate/REITS

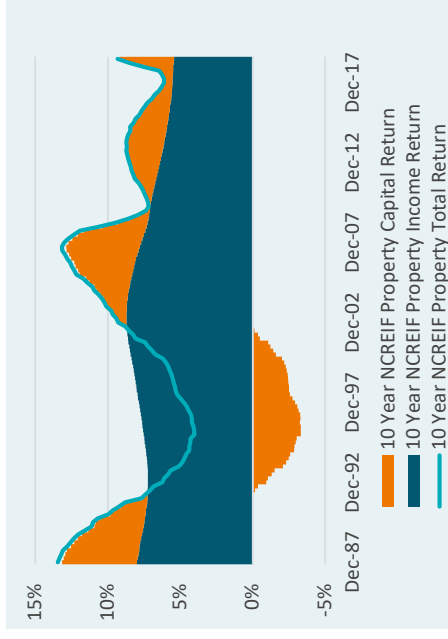
Performance of the NCREIF property index can be decomposed into an income return (cap rate) and capital return. The return coming from income has historically been more stable than the return derived from capital changes.

Private real estate and REITs have provided very similar returns over the long-term. Investors should be careful when comparing risk-adjusted returns of publicly traded assets to returns of appraisal priced assets, due to smoothing effects. While private real estate appears to be less volatile than REITs, the true risks to investors are very similar.

The cap rate is the ratio of earnings less expenses to price, and does not include extraordinary expenses. A more accurate measure of the yield investors receive should include non-recurring capital expenditures; we assume a 2.0% capex expenditure. We also assume income growth will track inflation as higher prices are passed through to rents.

We assume the effects of leverage and liquidity offset each other. Therefore, our return forecast is the same for private real estate and REITs.

TRAILING 10-YR NCREIF RETURN COMPOSITION



Source: NCREIF, as of 6/30/19

PRIVATE REAL ESTATE

Private Real Estate 10-Year Forecast	
Current Cap Rate	+4.4%
Real Income Growth	+2.3%
Capex Assumption	-2.0%
Inflation	+1.9%
Nominal Return	6.6%
Inflation Forecast	-1.9%
Real Return	4.7%

Source: Verus, as of 9/30/19

REITS

Nominal Return Forecast	6.6%
Inflation Forecast	-1.9%
Real Return	4.7%

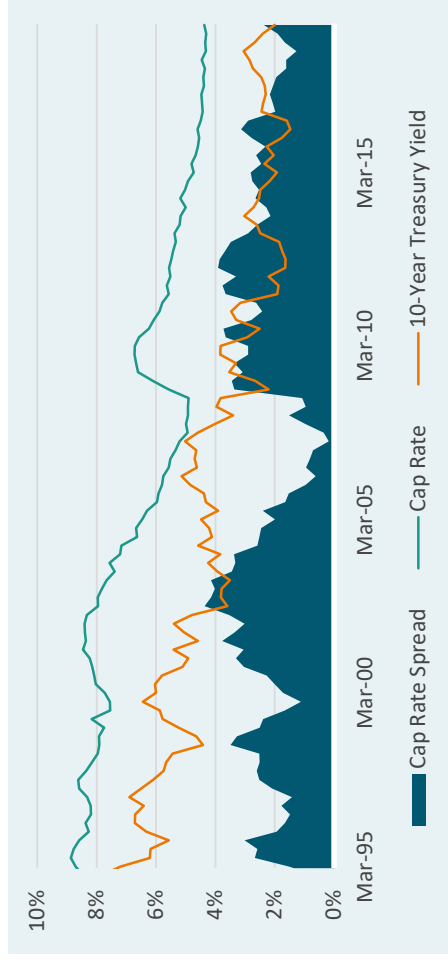
Source: Verus, as of 9/30/19

Value-add & opportunistic real estate

Value-add real estate includes properties which are in need of renovation, repositioning, and/or lease-up. Properties may also be classified as value-add due to their lower quality and/or location. Opportunistic real estate can also include development and distressed or very complex transactions. Greater amounts of leverage are usually employed within these strategies. Leverage increases beta (risk) by expanding the purchasing power of property managers via a greater debt load, which magnifies gains or losses. Increased debt also results in greater interest rate sensitivity. An increase/decrease in interest rates may result in a write-up/write-down of fixed rate debt, since debt holdings are typically marked-to-market.

Performance of value-add real estate is composed of the underlying private

CAP RATE SPREADS



Source: NCREIF, Bloomberg, as of 6/30/19

real estate market returns, plus a premium for additional associated risk, which is modeled here as 200 bps above our core real estate return forecast. Performance of opportunistic real estate strategies rest further out on the risk spectrum, is modeled as 400 bps above the core real estate return forecast.

Additional expected returns above core real estate are justified by the higher inherent risk of properties which need improvement (operational or physical), price discounts built into properties located in non-core markets, illiquidity, and the ability of real estate managers to potentially source attractive deals in this less-than-efficient marketplace.

FORECAST

	Value-Add 10-Year Forecast	Opportunistic 10-Year Forecast
Premium above core	+2.0%	+4.0%
Current Cap Rate	+4.4%	+4.4%
Real Income Growth	+2.3%	+2.3%
Capex Assumption	-2.0%	-2.0%
Inflation	+1.9%	+1.9%
Nominal Return	8.6%	10.6%
Inflation Forecast	-1.9%	-1.9%
Real Return	6.7%	8.7%

Source: Verus, as of 9/30/19

Infrastructure

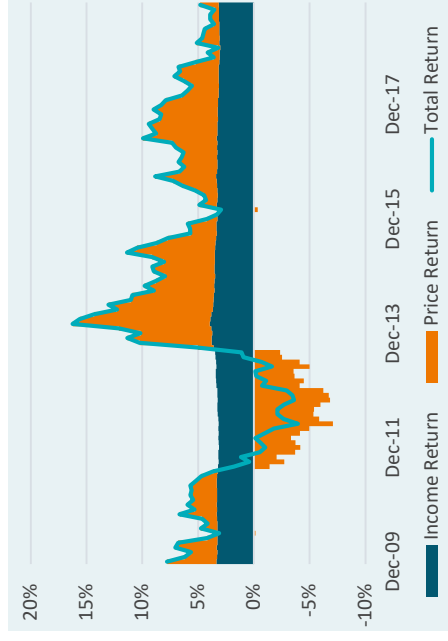
Infrastructure includes a variety of investment types across a subset of industries. There is not one definition for what can be included within infrastructure. The asset class has grown dramatically in the last decade as investors sought assets that might provide more attractive yield relative to fixed income along with the potential for inflation protection.

Similar to real estate investment, income plays a significant role in the returns investors receive. Income yields are currently lower than average due to higher prices and competition in the space, which

might reasonably be expected to translate into lower expected future returns.

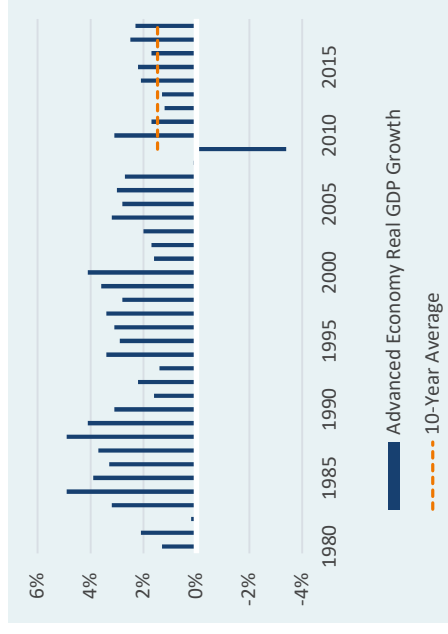
Due to the discount rate effect, infrastructure asset valuations would generally be negatively affected by material increases in interest rates. Because leverage is used in this space, higher interest rates would also impact investors in the form of higher borrowing costs.

5-YR ROLLING RETURN COMPOSITION



Source: S&P Global Infrastructure Index, as of 9/30/19

ADVANCED ECONOMY REAL GDP GROWTH



Source: IMF, as of 9/30/19

FORECAST

	10-Year Forecast
Inflation	1.7%
Yield	4.1%
Income Growth	1.5%
Nominal Return	7.2%
Global Inflation Forecast	-1.7%
Real Return	5.5%

Source: Verus, as of 9/30/19, may not sum due to rounding

Commodities

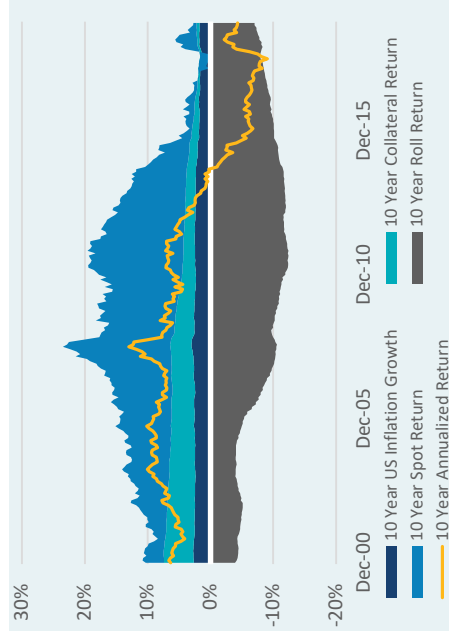
Commodity returns can be decomposed into three sources: collateral return (cash), spot changes (inflation), and roll yield.

Roll return is generated by either backwardation or contango present in futures markets. Backwardation occurs when the futures price is below the spot price, which results in positive yield. Contango occurs when the futures price is above the spot price, and this results in a loss to commodity investors. Historically, futures markets have fluctuated between backwardation and contango but with a net-zero effect over the very long-term (since 1877). Therefore, roll return is assumed to

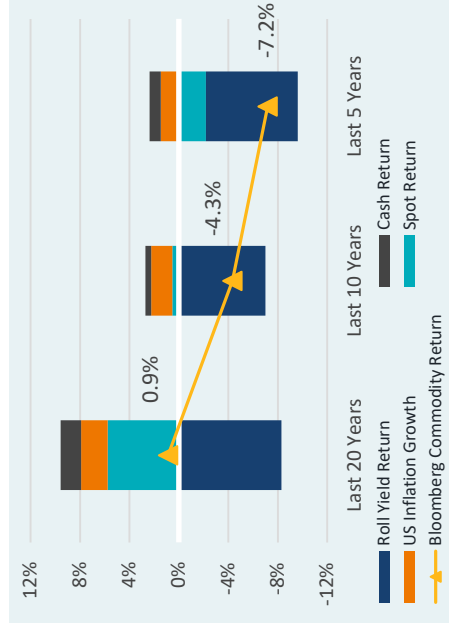
be zero in our forecast. Over the most recent 10-year period, roll return has been negative, though this is likely the result of multiple commodity crises and a difficult market environment.

Our 10-year commodity forecast combines collateral (cash) return with spot return (inflation) to arrive at the nominal return, and subtracts out inflation to arrive at the real return.

TRAILING 10YR BLOOMBERG COMMODITY RETURN COMPOSITION (%)



BLOOMBERG COMMODITY RETURN COMPOSITION (%)



Source: MPI, Bloomberg, as of 9/30/19

Source: MPI, Bloomberg, as of 9/30/19

FORECAST

	10-Year Forecast
Collateral Return (Cash)	+1.9%
Roll Return	+0.0%
Spot Return (Inflation)	+1.9%
Nominal Return	3.8%
Inflation Forecast	-1.9%
Real Return	1.9%

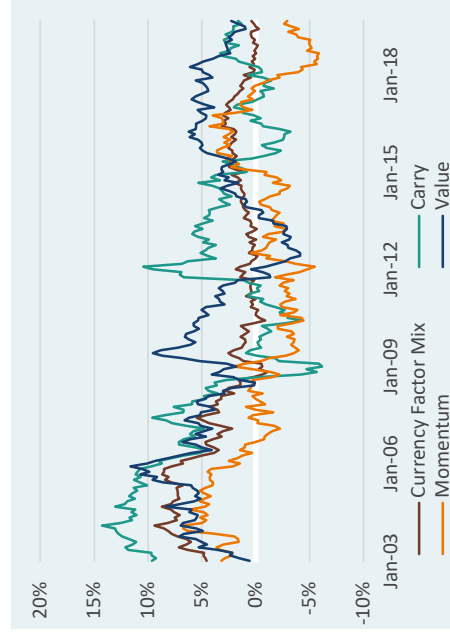
Source: Verus, as of 9/30/19

Currency beta

Currency beta is a long-short portfolio of G10 currencies constructed by investing in three equally weighted factors: carry, momentum, and value. A significant amount of academic research has concluded that these factors demand a risk premium in the currency market. Studies have also shown that currency beta explains a high portion of active currency managers' returns, indicating it may be a good neutral starting point or benchmark for currency investing. Currency beta portfolios gain exposure to the carry, momentum, and value factors in a systematic and transparent manner. For more detailed information on currency beta, please contact your consultant.

We model each factor in the currency beta portfolio separately, and then take a weighted average to get an overall return forecast. For the carry portfolio, the main driver of returns is the yield an investor receives from holding currencies with relatively higher interest rates. We therefore use a 12-month average of the portfolio's yield as the expected return. For value, our return forecast assumes a certain level of mean reversion to PPP fair value based on historical data. Lastly, for momentum, we simply assume the average historical return due to lack of long-term fundamental return drivers. Short-term volatility levels typically drive returns in the momentum portfolio, which is difficult to model in a 10-year return forecast.

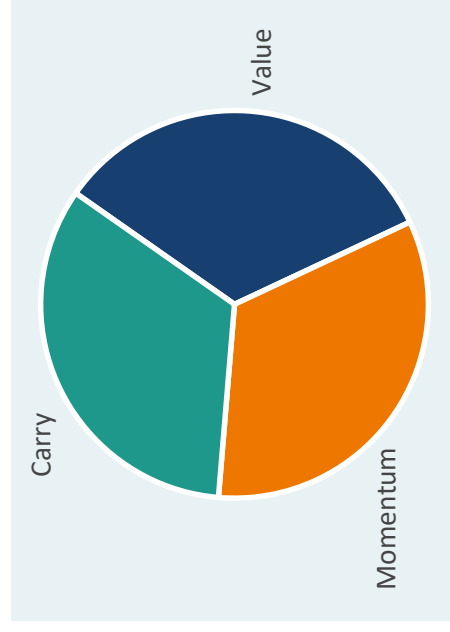
3-YEAR ROLLING PERFORMANCE



Source: MSCI, as of 9/30/19

Source: Verus

CURRENCY BETA CONSTRUCTION



Source: Verus, as of 9/30/19

RETURN FORECAST

Factor	Weight	Return Forecast	Weighted return
Carry	33.3%	2.7%	0.9%
Momentum	33.3%	-0.2%	-0.1%
Value	33.3%	2.8%	0.9%
Currency Beta			1.8%

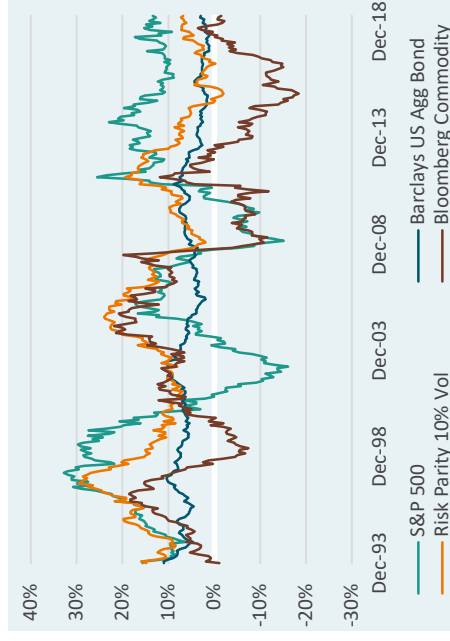
Risk parity

Risk parity is built upon the philosophy of allocating to risk premia rather than to asset classes. Because risk parity by definition aims to diversify risk, the actual asset allocation can appear very different from traditional asset class allocation.

We model risk parity using an assumed Sharpe Ratio of 0.5, which considers the historical performance of risk parity. This assumed Sharpe Ratio is higher than other asset class forecasts, but is consistent with these forecasts because *portfolios* of assets tend to deliver materially higher Sharpe Ratios than individual assets.

The expected return of Risk Parity is determined by this Sharpe Ratio forecast, along with a 10% volatility assumption.

VS. TRADITIONAL ASSET CLASSES



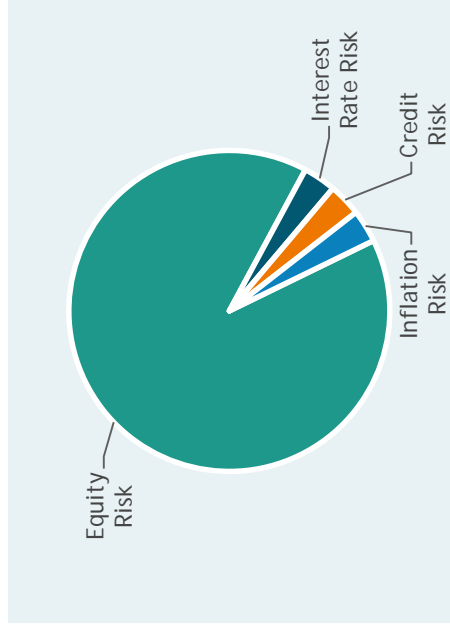
Source: Morningstar, AQR, as of 9/30/19

Note: Risk parity is modeled here using the AQR GRP-EL 10% Volatility Fund. Performance is back tested prior to February 2015

We used a 10-year historical return stream from a market-leading product to represent risk parity correlations relative to the behaviors of each asset class. Risk parity funds are suggested to be better able to withstand various difficult economic environments - reducing volatility without sacrificing return, over longer periods.

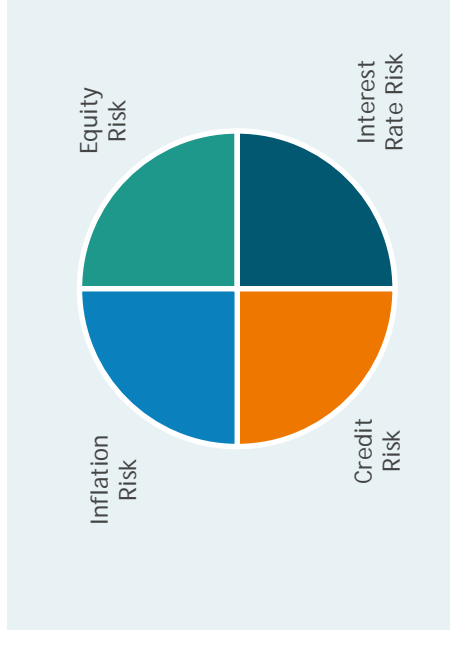
It is difficult to arrive at a single model for risk parity, since strategies can differ significantly across firms/strategies. Risk parity almost always requires explicit leverage. The amount of leverage will depend on the specific strategy implementation style, as well as expected correlations and volatility.

TRADITIONAL ASSET ALLOCATION



Source: Verus

RISK PARITY



Source: Verus

Appendix

30-year return & risk assumptions

- Occasionally investors may have a specific need for longer-term capital market forecasts. We have developed a set of 30-year assumptions to meet those needs.
- The return forecasts below have been constructed using our existing building block approach, but with longer-term inputs. Risks and correlations are estimated using the same approach as our 10-year forecasts, using full-history autocorrelation-adjusted realized risk and past 10 year realized correlations.
- These return figures must be thought of separately from our 10-year forecasts, and are not meant to imply performance for the 20 years *beyond* our 10 year forecasts.
- Please reach out to your Verus consultant with questions regarding whether 30-year Capital Market Assumptions might be appropriate for your needs.

Asset Class	Index Proxy	Thirty Year Return Forecast Geometric	Arithmetic	Standard Deviation Forecast	Sharpe Ratio Forecast (g)	Sharpe Ratio Forecast (a)
Equities						
U.S. Large	S&P 500	5.5%	6.6%	15.4%	0.25	0.32
U.S. Small	Russell 2000	6.1%	8.1%	21.1%	0.21	0.30
International Developed	MSCI EAFE	6.7%	8.0%	17.5%	0.29	0.36
International Small	MSCI EAFE Small Cap	6.2%	8.3%	21.8%	0.21	0.31
Emerging Markets	MSCI EM	6.8%	9.6%	25.6%	0.20	0.31
Global Equity	MSCI ACWI	6.0%	7.3%	16.8%	0.26	0.34
Private Equity*	Cambridge Private Equity	8.7%	11.5%	25.3%	0.28	0.39
Fixed Income						
Cash	30 Day T-Bills	1.7%	1.7%	1.2%	-	-
U.S. TIPS	BbgBarc U.S. TIPS 5 - 10	2.1%	2.3%	5.4%	0.08	0.11
U.S. Treasury	BbgBarc Treasury 7-10 Year	2.1%	2.3%	6.7%	0.07	0.10
U.S. 30-year Treasuries	BbgBarc U.S. Treasury 20+ Year	2.1%	2.9%	12.5%	0.04	0.10
Global Sovereign ex U.S.	BbgBarc Global Treasury ex U.S.	0.7%	1.1%	9.7%	-0.10	-0.06
Global Aggregate	BbgBarc Global Aggregate	1.1%	1.3%	6.2%	-0.09	-0.06
Core Fixed Income	BbgBarc U.S. Aggregate Bond	3.0%	3.2%	6.3%	0.21	0.24
Core Plus Fixed Income	BbgBarc U.S. Corporate IG	3.6%	4.0%	8.3%	0.24	0.28
Short-Term Gov't/Credit	BbgBarc U.S. Gov't/Credit 1 - 3 year	2.3%	2.3%	3.6%	0.17	0.18
Short-Term Credit	BbgBarc Credit 1-3 Year	2.9%	2.9%	3.6%	0.33	0.35
Long-Term Credit	BbgBarc Long U.S. Corporate	3.5%	3.9%	9.4%	0.20	0.24
High Yield Corp. Credit	BbgBarc U.S. Corporate High Yield	5.3%	5.9%	11.3%	0.32	0.37
Bank Loans	S&P/LSTA Leveraged Loan	4.7%	5.2%	10.0%	0.30	0.35
Global Credit	BbgBarc Global Credit	0.8%	1.1%	7.4%	-0.12	-0.08
Emerging Markets Debt (Hard)	JPM EMBI Global Diversified	6.1%	6.8%	12.4%	0.35	0.41
Emerging Markets Debt (Local)	JPM GBIEM Global Diversified	5.7%	6.4%	12.0%	0.34	0.39
Private Credit	Bank Loans + 175bps	6.4%	6.9%	10.0%	0.48	0.52
Other						
Commodities	Bloomberg Commodity	3.2%	4.4%	15.4%	0.10	0.18
Hedge Funds*	HFRI Fund Weighted Composite	4.5%	4.8%	7.7%	0.37	0.40
Real Estate Debt	BbgBarc IG CMBS	4.1%	4.4%	7.6%	0.32	0.35
Core Real Estate	NCREIF Property	6.8%	7.5%	12.4%	0.41	0.47
Value-Add Real Estate	NCREIF Property + 200bps	8.8%	10.2%	17.7%	0.40	0.48
Opportunistic Real Estate	NCREIF Property + 400bps	10.8%	13.0%	23.0%	0.40	0.49
REITs	Wilshire REIT	6.8%	8.4%	19.1%	0.27	0.35
Global Infrastructure	S&P Global Infrastructure	7.0%	8.4%	17.8%	0.30	0.38
Risk Parity	Risk Parity	7.1%	7.6%	10.0%	0.54	0.59
Currency Beta	MSCI Currency Factor Index	2.2%	2.2%	3.6%	0.14	0.15
Inflation		1.6%	-	-	-	-

Investors wishing to produce expected geometric return forecasts for their portfolios should use the arithmetic return forecasts provided here as inputs into that calculation, rather than the single-asset-class geometric return forecasts. This is the industry standard approach, but requires a complex explanation only a heavy quant could love, so we have chosen not to provide further details in this document – we will happily provide those details to any readers of this who are interested.

*Private Equity and Hedge Fund return expectations differ if implemented through a direct program versus a fund of funds vehicle

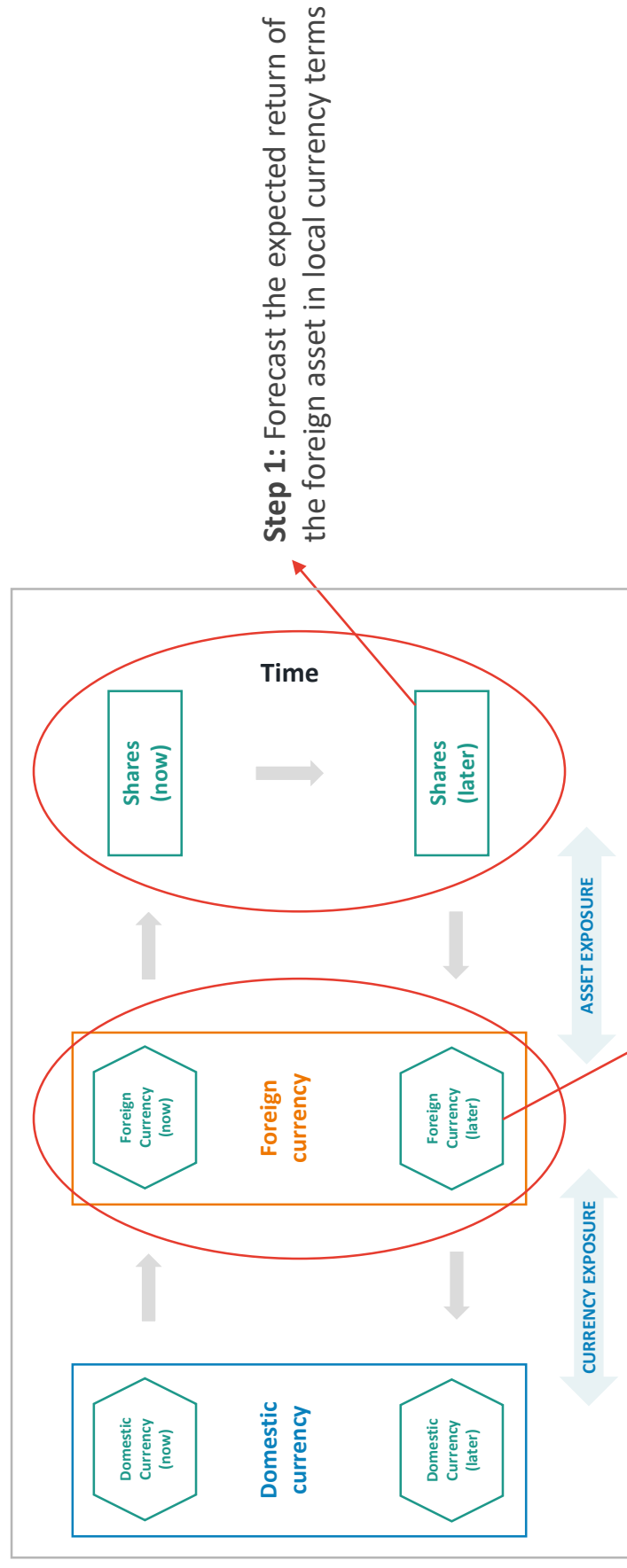
10-year return forecasts with currency adjustment

Asset Class	Index Proxy	Ten Year Return Forecast (Geometric)			Standard Deviation Forecast
		CMA Forecast	Currency Adjustment	Total	
Equities					
International Developed Equity Unhedged	MSCI EAFE	7.0%	1.8%	8.8%	17.5%
International Developed Equity Hedged	MSCI EAFE Hedged	7.0%	1.8%	8.8%	15.7%
International Small Equity Unhedged	MSCI EAFE Small Cap	7.2%	1.8%	9.0%	21.8%
International Small Equity Hedged	MSCI EAFE Small Cap Hedged	7.2%	1.8%	9.0%	19.2%
Fixed Income					
Global Sovereign ex U.S. Unhedged	BBgBarc Global Treasury ex U.S.	0.1%	1.7%	1.8%	9.7%
Global Sovereign ex U.S. Hedged	BBgBarc Global Treasury ex U.S. Hedged	0.1%	1.7%	1.8%	3.8%
Global Credit Unhedged	BBgBarc Global Credit	1.4%	0.5%	1.9%	7.4%
Global Credit Hedged	BBgBarc Global Credit Hedged	1.4%	0.5%	1.9%	5.0%

The currency adjustment is the market implied price change for major currency pairs based on forward contract pricing. Since the market implied spot price change and the cost/gain from hedging are both derived from pricing in the forward market, they are one and the same. Therefore, the currency adjustment is the same for both unhedged and hedged forecasts. See the following slides for the more detail on the currency adjustment methodology.

Explanation of the currency adjustment

Our fundamental building block approach produces a return forecast in local currency. In order to create useable forecasts for non-U.S. dollar-denominated assets, we must make an assumption about future foreign exchange rates.



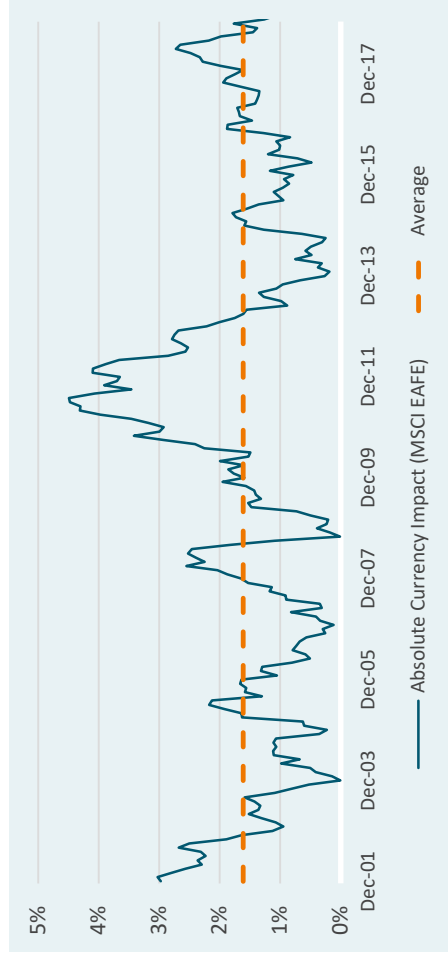
Step 1: Forecast the expected return of the foreign asset in local currency terms

Step 2: Make an assumption on the ending foreign currency exchange rate

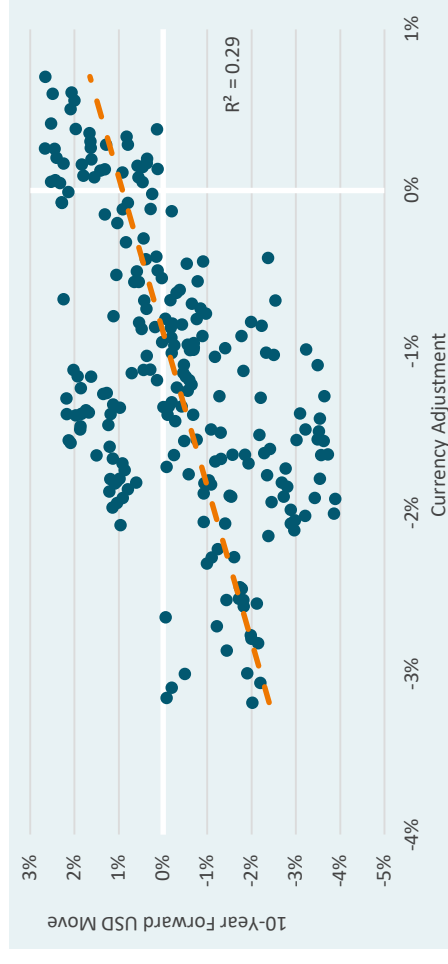
Explanation of the currency adjustment

- There are two options to adjust a local currency return forecast to a U.S. dollar forecast: make a specific exchange rate forecast or take market pricing based on the forward curve
 - It is important to note that ignoring currency is making a specific assumption that the current exchange rate will be unchanged over the next 10 years, which has rarely been the case throughout history
- Markets price future exchange rates in the forward market, which represents the SPOT currency price for FORWARD delivery
- Forward currency contracts are priced based on the interest rate differential between two currencies – interest rate differentials reflect a significant amount of information, including growth, inflation, and monetary policy expectations
- A currency with a higher interest rate is priced to depreciate relative to a currency with a lower interest rate
- We adjust our local currency return forecasts based on forward market pricing because we believe this is the neutral, “no opinion” position, rather than making a specific forecast
- Historically, this currency adjustment has had a positive relationship with 10-year forward exchange rate movements

10-YEAR ROLLING ABSOLUTE CURRENCY IMPACT



CURRENCY ADJUSTMENT VS. FORWARD USD MOVEMENT



Source: Verus, MSCI, as of 9/30/19

Source: Verus, Bloomberg, using data since 1989, based on the MSCI EAFE Index

Autocorrelation adjustment

- We adjust all volatility forecasts that use the long-term historical volatility for autocorrelation.
- Autocorrelation occurs when the future returns of a time series are described (positively correlated) by past returns.
- Time series with positive autocorrelation exhibit artificially low volatility, while time series with negative autocorrelation exhibit artificially high volatility.
- Many asset classes that we tested showed positive autocorrelation, meaning the volatility forecasts that we use in the forecasting process are too low for those asset classes.
- The result of this process was that several asset classes have higher volatility forecasts than if we had made no adjustment for autocorrelation.

Russell 2000 autocorrelation, among many asset classes, is statistically significant

Notices & disclosures

Past performance is no guarantee of future results. This report or presentation is provided for informational purposes only and is directed to institutional clients and eligible institutional counterparties only and should not be relied upon by retail investors. Nothing herein constitutes investment, legal, accounting or tax advice, or a recommendation to buy, sell or hold a security or pursue a particular investment vehicle or any trading strategy. The opinions and information expressed are current as of the date provided or cited only and are subject to change without notice. This information is obtained from sources deemed reliable, but there is no representation or warranty as to its accuracy, completeness or reliability. This report or presentation cannot be used by the recipient for advertising or sales promotion purposes.

The material may include estimates, outlooks, projections and other “forward-looking statements.” Such statements can be identified by the use of terminology such as “believes,” “expects,” “may,” “will,” “should,” “anticipates,” or the negative of any of the foregoing or comparable terminology, or by discussion of strategy, or assumptions such as economic conditions underlying other statements. No assurance can be given that future results described or implied by any forward looking information will be achieved. Actual events may differ significantly from those presented. Investing entails risks, including possible loss of principal. Risk controls and models do not promise any level of performance or guarantee against loss of principal.

“VERUS ADVISORY™” and any associated designs are the respective trademarks of Verus Advisory, Inc. Additional information is available upon request.



<i>Meeting Date</i> 02/26/20
<i>Agenda Item</i> #5

MEMORANDUM

Date: February 26, 2020
To: CCCERA Board
From: Timothy Price, Chief Investment Officer
Subject: Market Review from Matt McLennan of First Eagle

Overview

CCCERA conducts a full asset/liability study once every five years. As our last study was completed in 2015, we are gearing up for the next study to be presented to the Board later this year. A critical portion of these studies are the return and risk expectations for the asset classes that the Board will consider. In order to provide a comprehensive view of the world, I have invited several of our investment managers to share their views of global risk and opportunities. Today we will be joined by Matt McLennan of First Eagle.

First Eagle Strategy

First Eagle manages a global equity strategy with a strong emphasis on downside risk control. We expect the strategy to outperform its equity benchmark over a market cycle, but the pattern of returns should be less volatile (i.e., lose less when the market falls, and participate to a lesser extent when the market rallies). When the portfolio management team believes that they cannot find stocks they like at attractive valuations, they can invest in bonds, cash or gold as stores of value until they identify an attractive stock. This puts First Eagle in a unique position to have a global view of risk and an opinion on the relative attractiveness of several asset classes and geographies.

Biography

Matt is head of the Global Value team and a portfolio manager of the Global Value, International Value, US Value and Gold strategies. He joined First Eagle in September 2008 to lead the Global Value team. Previously, Matt worked for Goldman Sachs Asset Management (GSAM) in London, where he served as co-portfolio manager of Global Equity Partners, a group he co-founded in 2003 that ran a focused global equity portfolio for offshore private wealth clients. Earlier in his career, Matt was equity chief investment officer of the Investment Strategy Group for Goldman Sachs' private client business. He joined Goldman Sachs in Sydney in 1994. Matt started his career in 1991 in Brisbane, Australia, with the Queensland Investment Corporation and was ultimately responsible for the firm's international equity exposure.



Contra Costa County Employees' Retirement Association

February 26, 2020

Matthew McLennan, CFA
Head of the Global Value Team
Portfolio Manager

Claire Miller Hare
Head of Institutional Relationship
Management

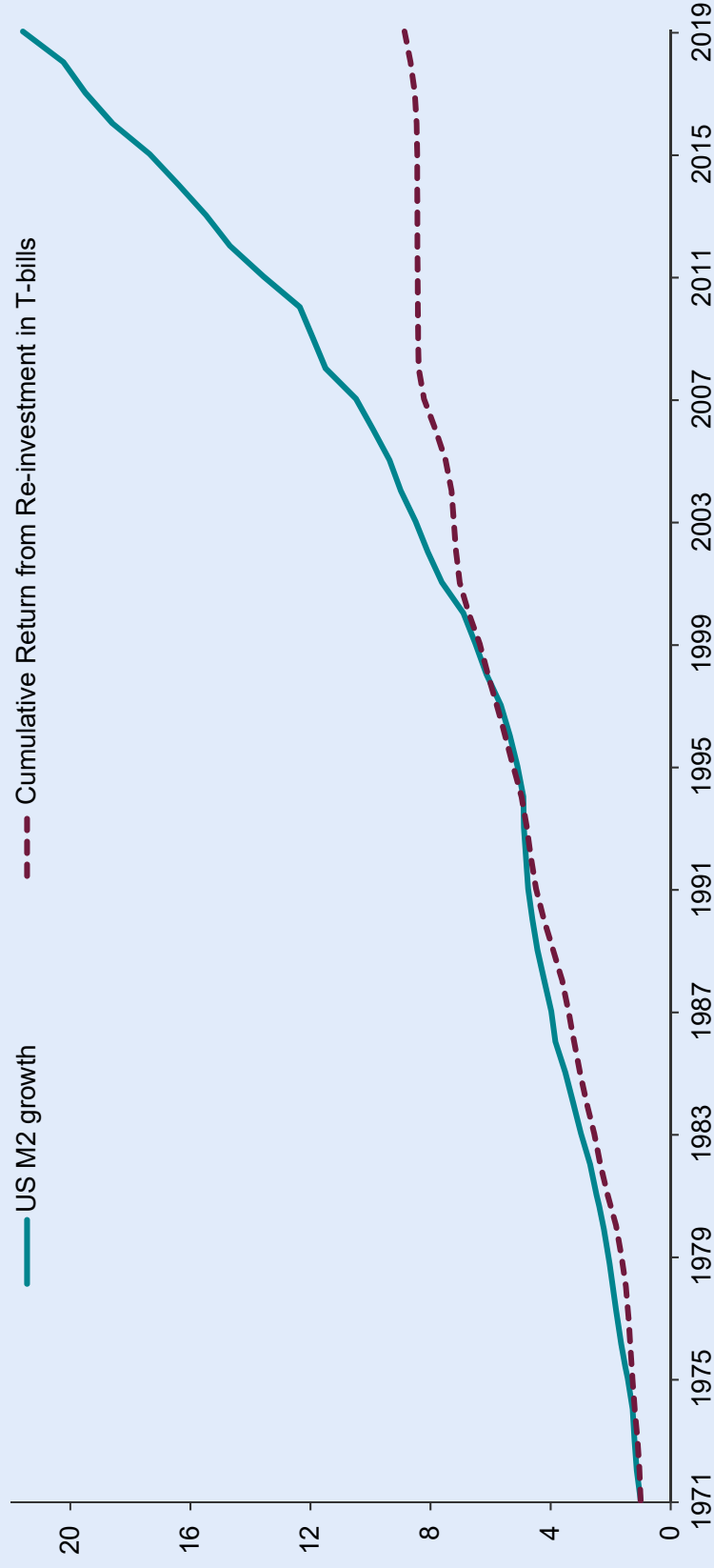
First Eagle Investment Management, LLC
1345 Avenue of the Americas
New York, NY 10105

For Institutional Use Only

Meeting Date
02/26/20
Agenda Item
#5

The Challenge of a Rising Monetary Tide

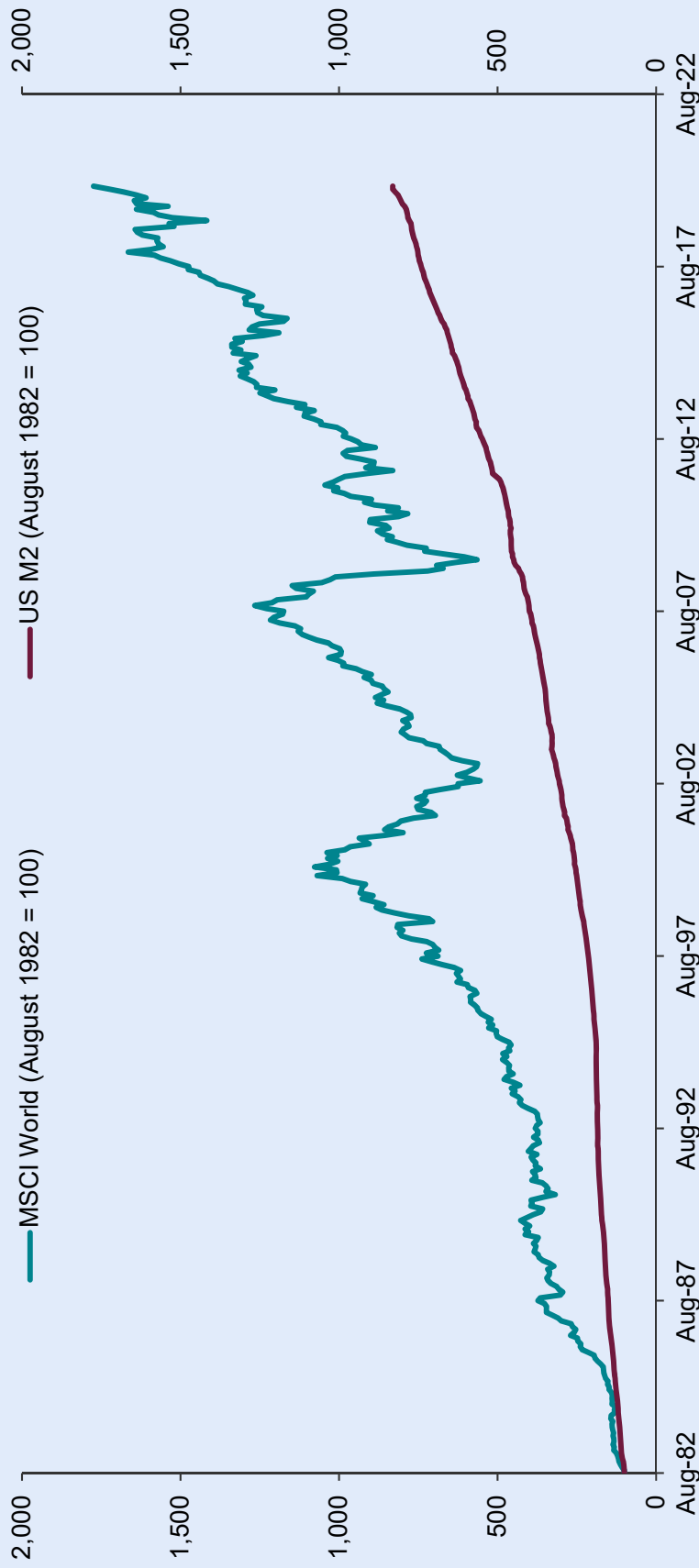
US M2 Growth vs. Return from Cumulative Reinvestment in T-Bills



Source: Haver, Bloomberg as of 12/31/2019.

The Merits of Owning Enterprise

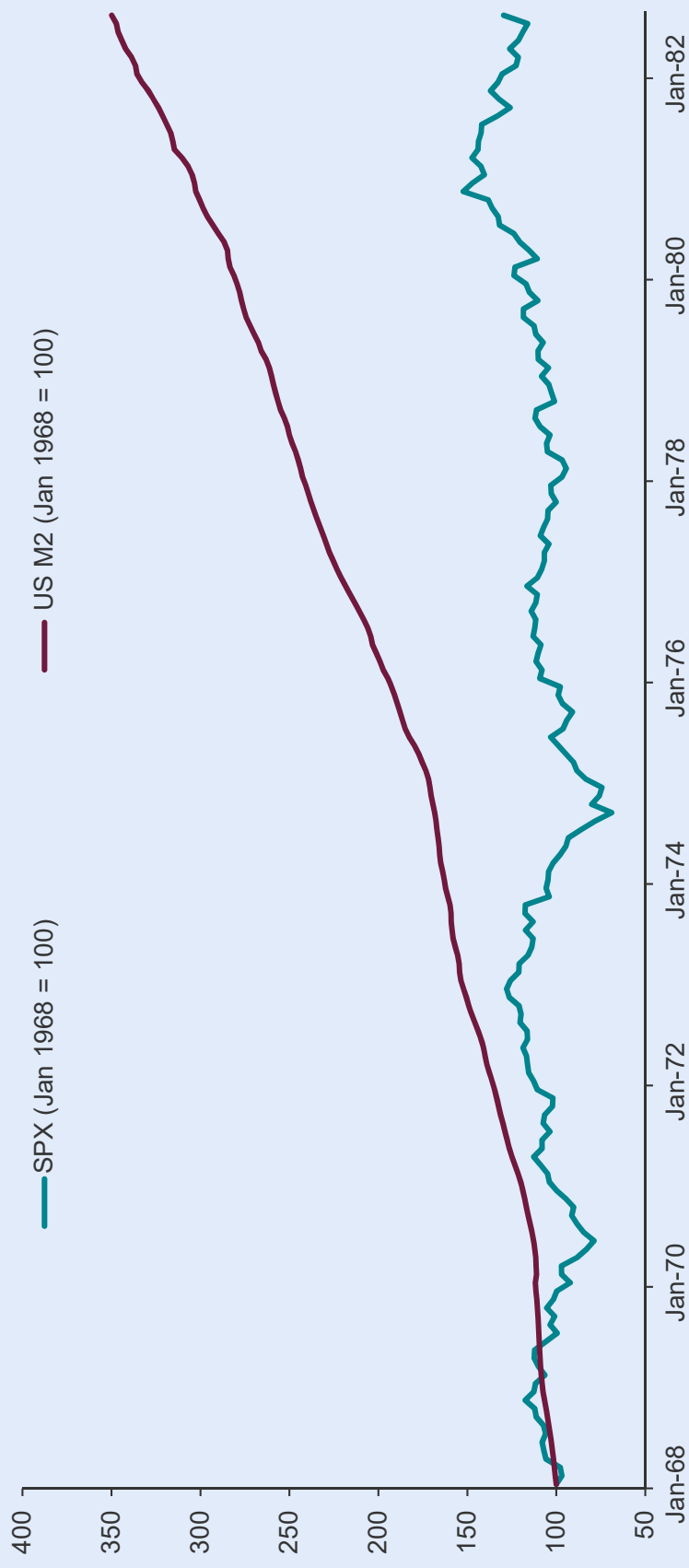
MSCI World and US M2 (Indexed Values) 1982 – Present



Source: Bloomberg as of 12/23/2019.

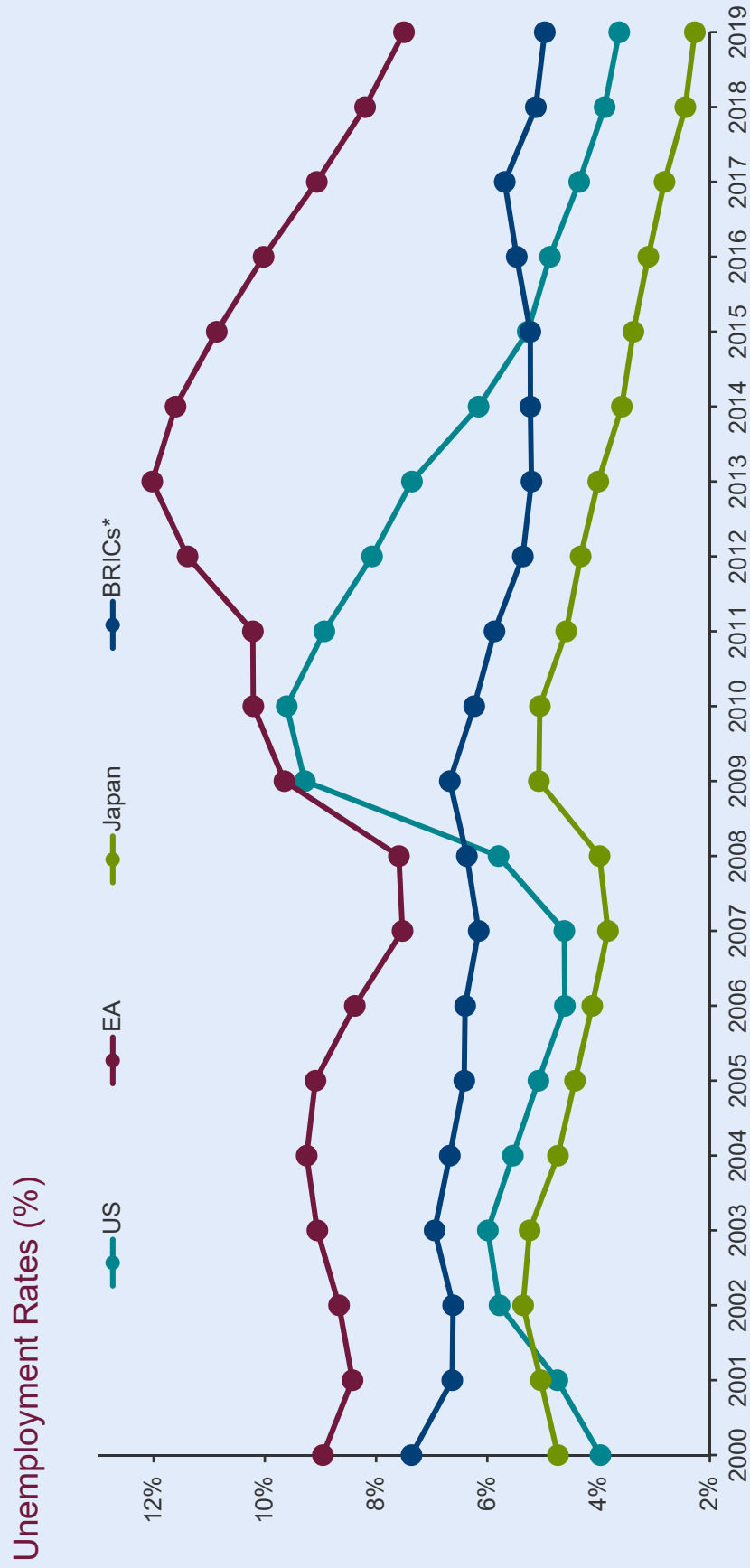
The Future is Uncertain

S&P 500 and US M2 Late 1960's to the Early 1980's



Source: Bloomberg. Data retrieved 10/9/2019

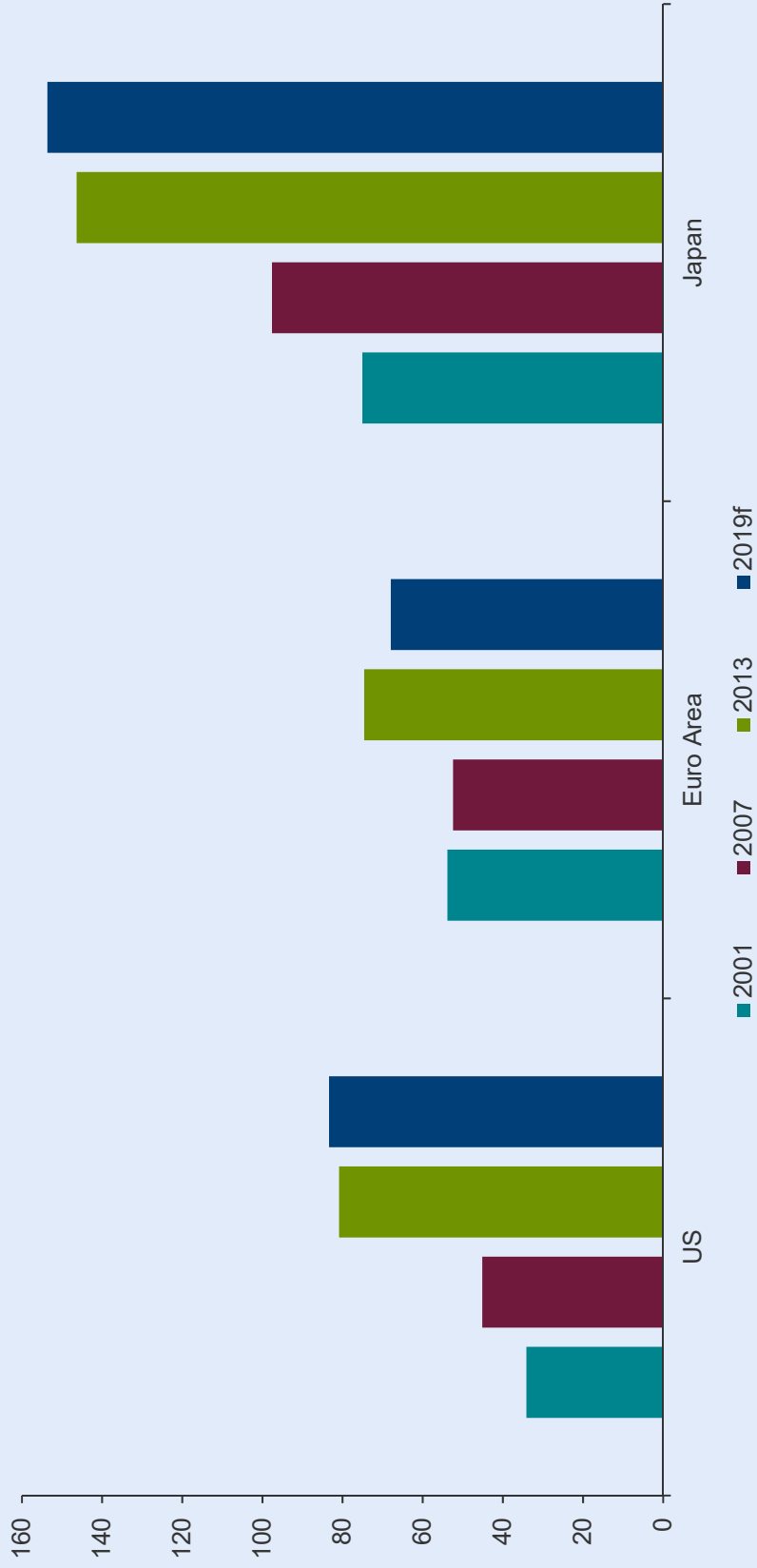
Global Cyclical Recovery Appears to Have Already Occurred



Source: Haver/ IMF WEO, National and EU Authorities. Data retrieved 1/7/2020.
* BRICs series is a GDP-weighted average. India data available and included as of 2007.

Sovereign Debt to GDP in the West

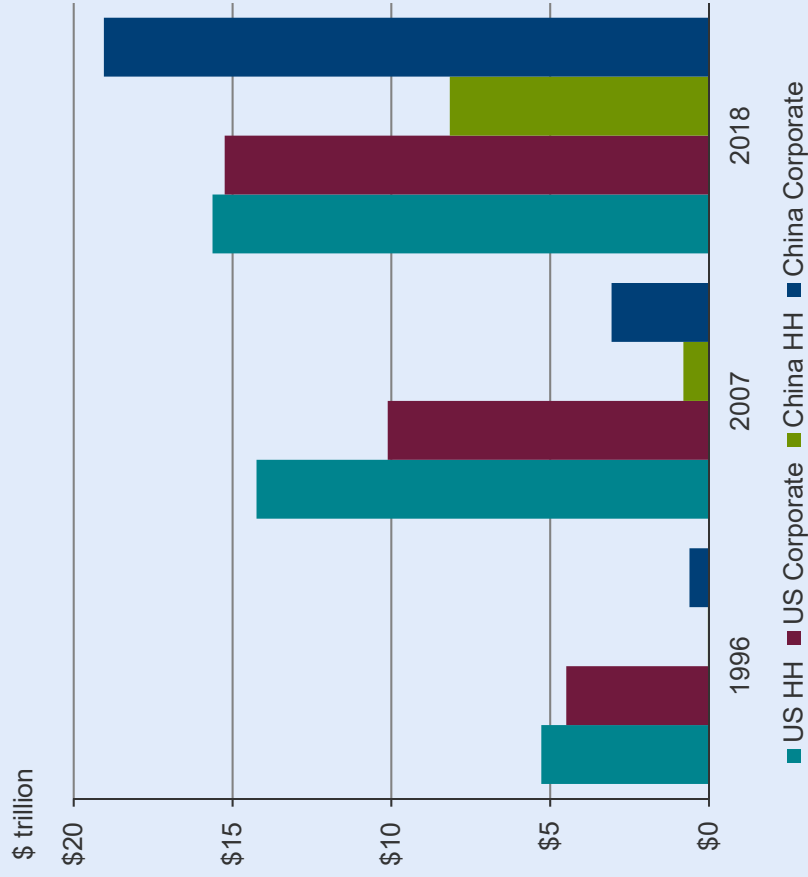
Net Sovereign Debt to GDP



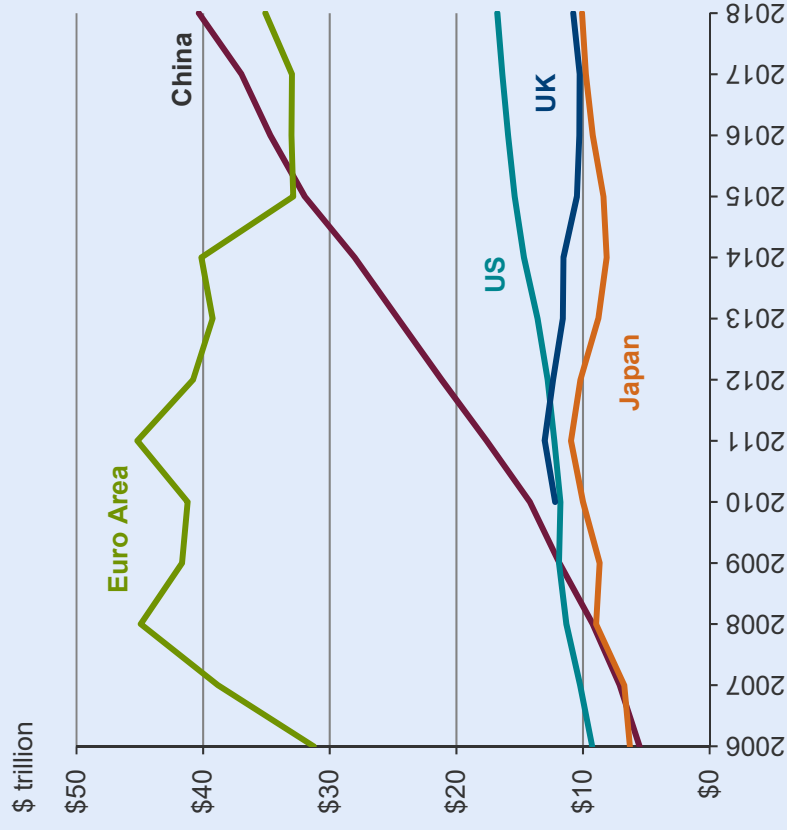
Source: Haver/IMF WEO, data as of October 2019.

China's Credit Boom

Comparing China & US Credit Booms



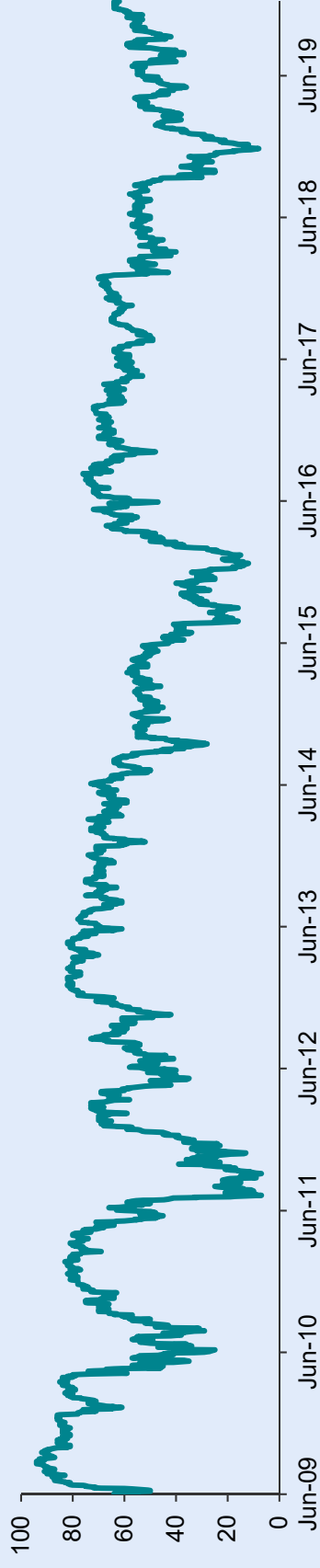
Banking System Assets



Source: (left chart) Haver/ BIS, Deutsche Bank, First Eagle Investment Management; (right chart) Haver/ National Authorities, First Eagle Investment Management. Data through 12/31/18.

Measuring Risk Perception

Percentage of Stocks Closing Above 200-Day Moving Average (as of 1/7/2020)

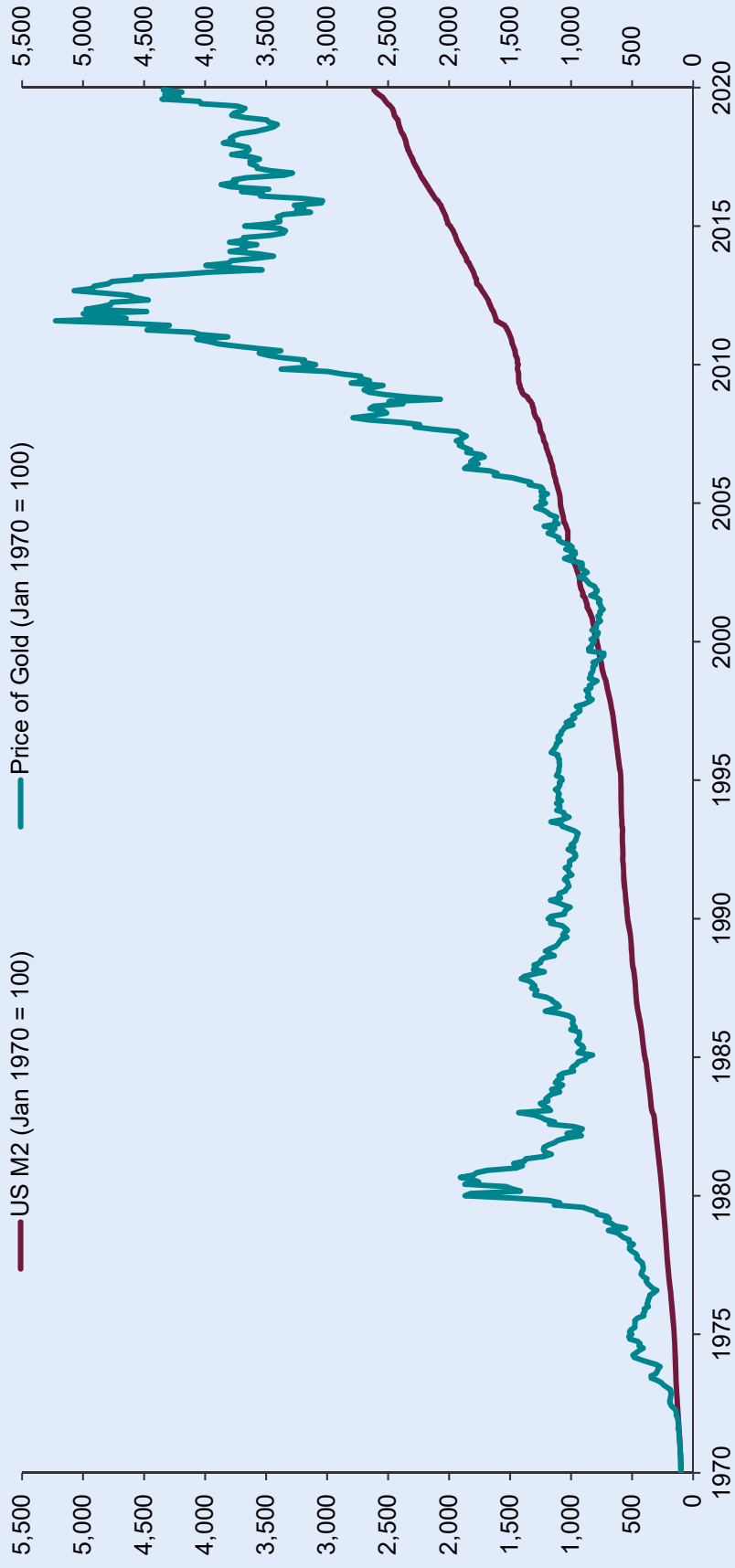


CBOE Volatility Index (as of 1/7/2020)



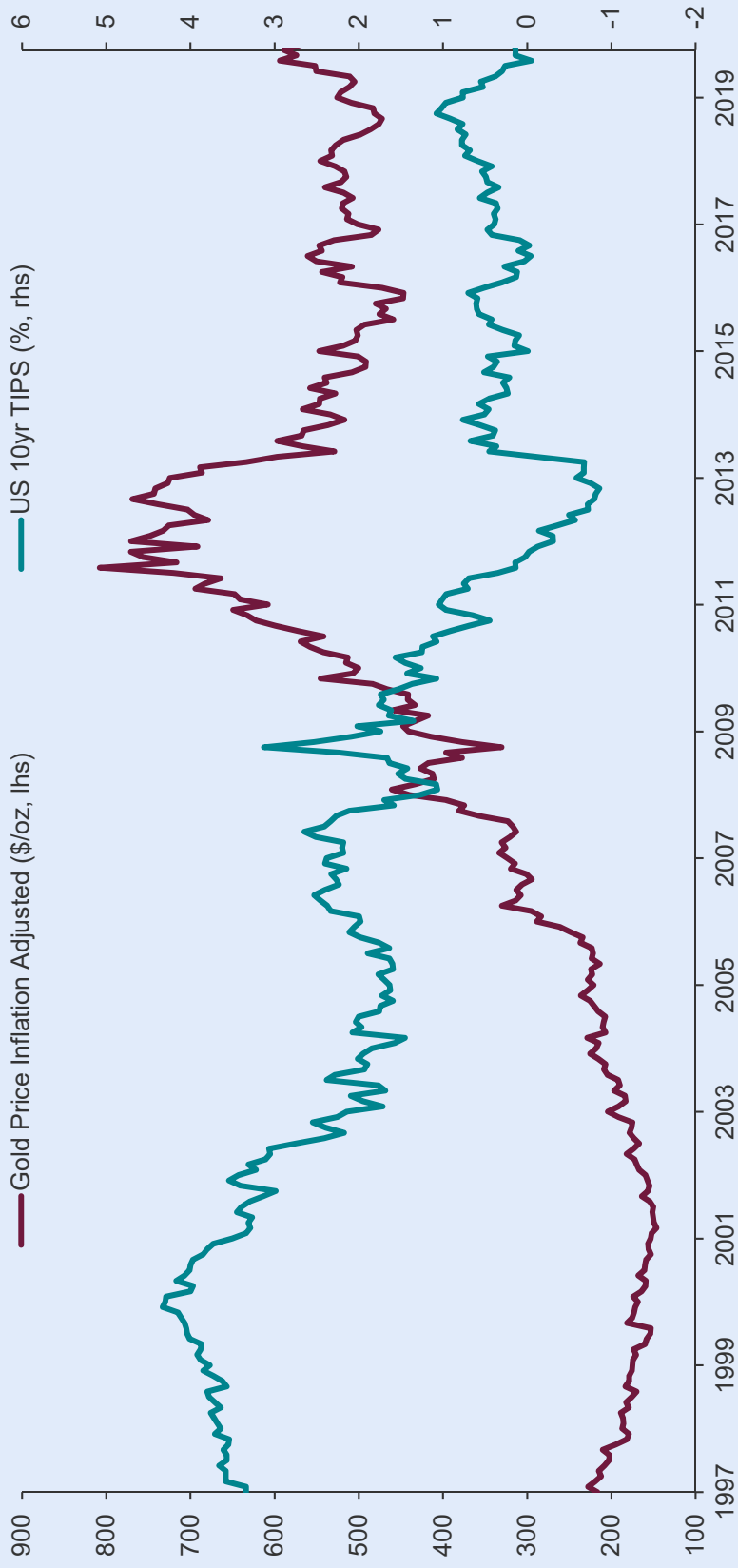
Source: Bloomberg.

Money Stock vs. Price of Gold (Indexed Values)



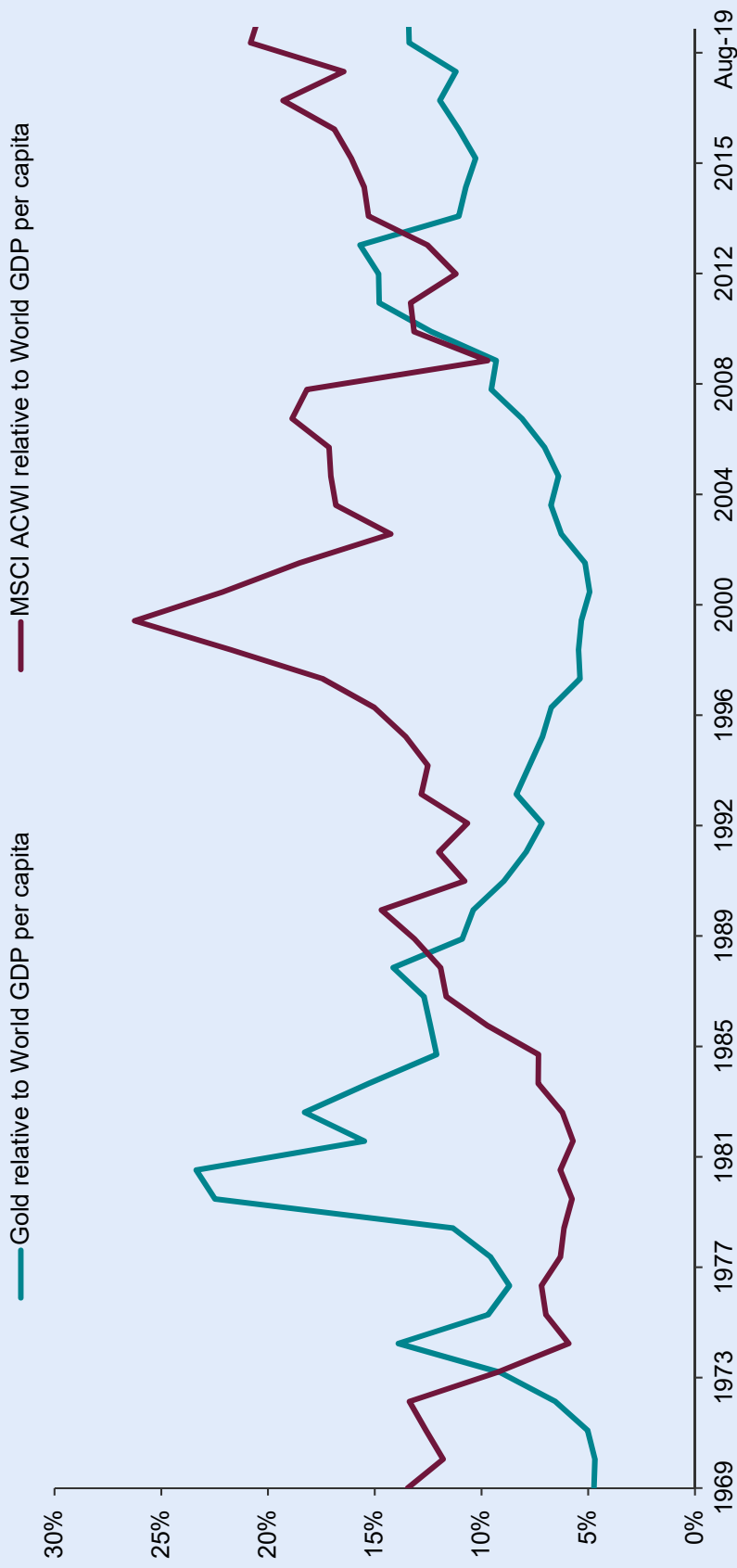
Source: Data retrieved 1/7/2020.

Real Interest Rates and Gold



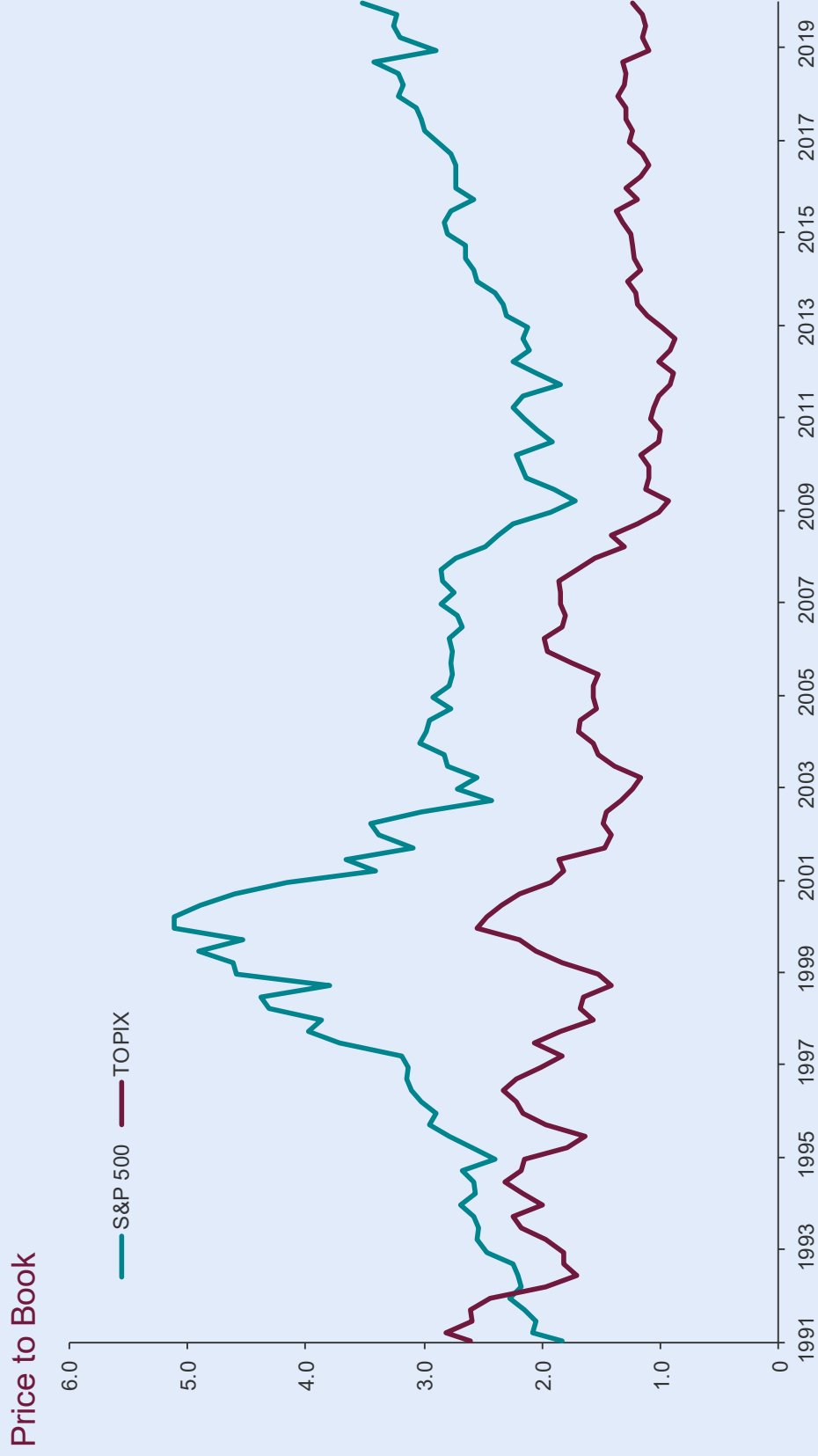
Source: Bloomberg as of 1/8/2020.

Gold as a Potential Hedge



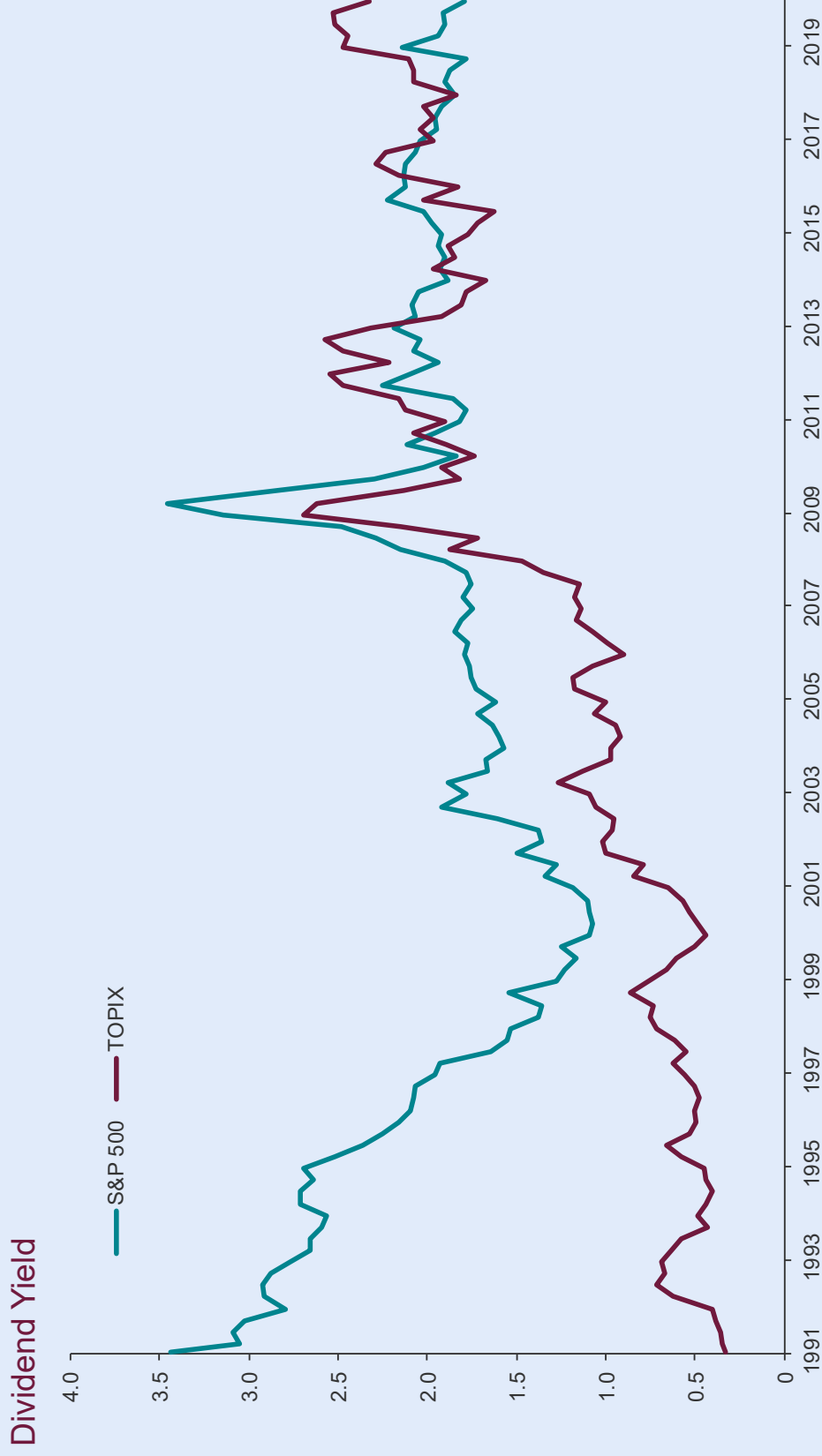
Source: MSCI Database, Bloomberg, World Bank, U.S. Bureau of the Census as of 1/8/2020.
For illustrative purposes only. Not meant to compare performance of the First Eagle Global Value Strategy or the MSCI ACWI to the performance of gold.

Japan: One of the Cheapest Major Markets in the World



As of 12/31/2019. Source: First Eagle Investment Management and FactSet.

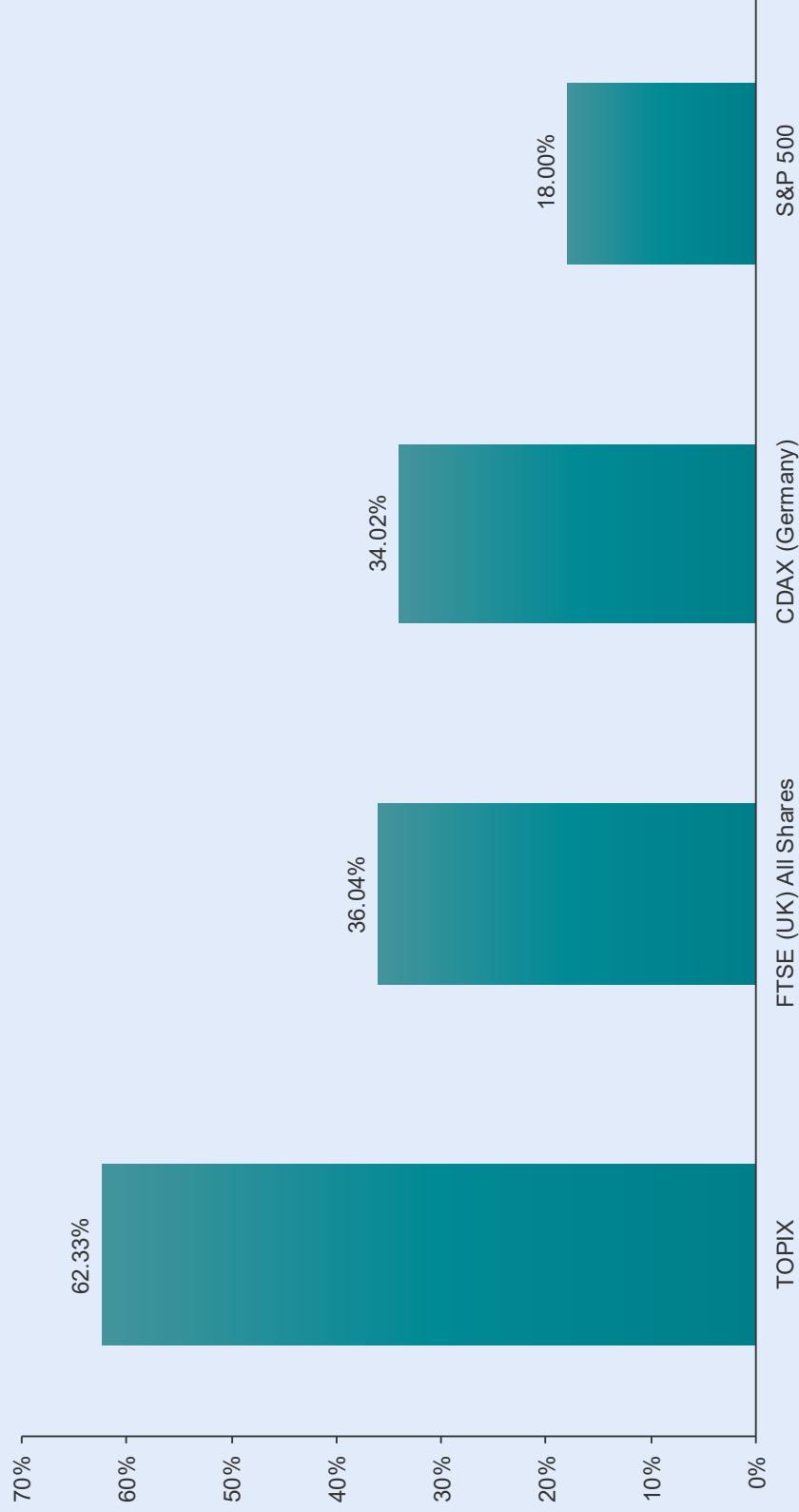
Japan: One of the Cheapest Major Markets in the World



As of 12/31/2019. Source: First Eagle Investment Management and FactSet.

Japan (TOPIX) May Prove to be Good Hunting Ground For Value

Percentage of Companies With Cash Net of Debt



Source: FactSet. As of 12/31/2019. See definitions on page 21.

Appendix



Appendix

Strategy Overview

Global Value

Range of Holdings	100–150
Style	Value
Approach	Bottom-Up Fundamental Benchmark Agnostic
Inception	January 1979
Historical Portfolio Turnover	10–20%
Market Capitalization	All
Sector/Country Constraints	None
Non-Equity Securities Include	Gold Cash and Cash Equivalents Fixed Income Currency Hedges

The portfolio is actively managed and subject to change. The above are not investment guidelines or restrictions. Range of holdings is approximate. All investments involve the risk of loss of principal. Additional risk disclosures for this strategy are included in the appendix. Information for periods prior to 01-Jan-2000 occurred while a prior portfolio manager of the strategy was affiliated with another firm. Inception date shown is when this prior portfolio manager assumed portfolio management responsibilities.

Appendix

Investment Team — Global Value Strategy

First Eagle's industry coverage structure provides balance between generalist & specialists, maintains comparative advantage while mitigating behavioural bias.

Matt McLennan, CFA (28 years)
Head of Global Value Team
Portfolio Manager

Kimball Brooker, Jr. (27 years)
Deputy Head of Global Value Team
Portfolio Manager

Manish Gupta* (14 years)
Associate Portfolio Manager

Director of Research

Matt Lamphier, CFA (25 years)
Director of Research

Senior Advisors

Jean-Marie Evcellard (57 years)
Senior Advisor

Bruce Greenwald, PhD (40 years)
Senior Advisor

Tano Santos, PhD (23 Years)
Senior Advisor

Equity

Julien Albertini (17 years)
Beverages, commercial services, diversified industrials, healthcare

Benjamin Bahr, CFA (14 years)
Agricultural commodities, automobiles, banks & other financials, chemicals, energy E&P

Alan Barr, CFA (29 years)
Forest products & paper, non-food consumer products, retail

Max Belmont, CFA (11 years)
Precious metals, aerospace & defense

Manish Gupta* (14 years)
Technology, media, telecommunications, logistics

Christian Heck, CFA (8 years)
Gaming, lodging & leisure, healthcare, industrials, retail, technology

Thomas Kertsoz (13 years)
Precious metals, marine transportation

John Masi, CFA (10 years)
Commercial vehicles & trucks, diversified industrials, infrastructure, insurance, utilities

George Ross, CFA* (17 years)
Investment grade credit, metals & mining, midstream energy & infrastructure, oil equipment services & distribution, packaging

Elizabeth Tobin (33 years)
Holding companies

David Wang (9 years)
Building materials & products, healthcare, holding companies, packaged food, real estate

Mark Wright, CFA (25 years)
Banks, credit cards & payments, food & tobacco

Trading

Doug DiPasquale (31 years)

Joseph Dargan (27 years)

Mike Grazidei (20 years)

Research Operations

Debbie Lusman (25 years)

Mahoko Hikita (17 years)

Sovereign Debt, FX

Idanna Appio, PhD (21 years)

Camille Bryan (13 years)

Emily Howard (9 years)

Investment Grade Debt

Adrian Jones (31 years)

George Ross, CFA* (17 years)

High Yield

Edward Meigs, CFA (31 years)

Sean Slein, CFA (31 years)

Stefanie Bachhuber, CFA (33 years)

Kevin Kuzio, CFA (26 years)

Andrew Bahl, CFA (17 years)

Lina Kabaria, CFA (13 years)

* Certain members of the investment team hold dual roles.

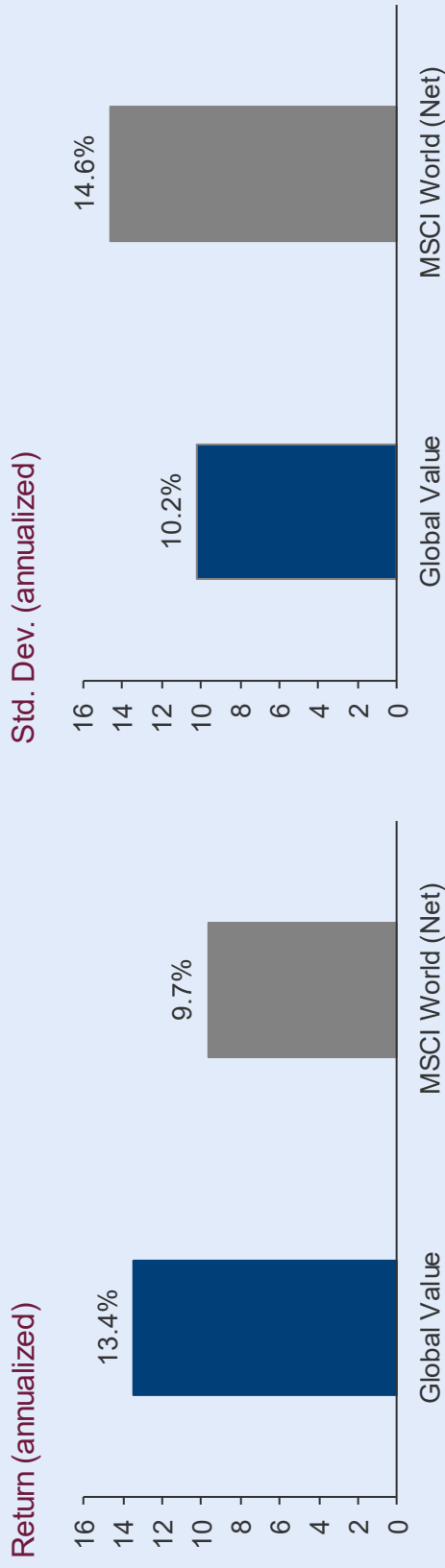
() = industry years of experience

Investment Process

Investment Objective and Results

We seek to achieve attractive real returns over time while avoiding the permanent impairment of capital.

Historical Net Results (01-Jan-1979 to 31-Dec-2019)



Generated positive absolute returns in **37** of **41** calendar years

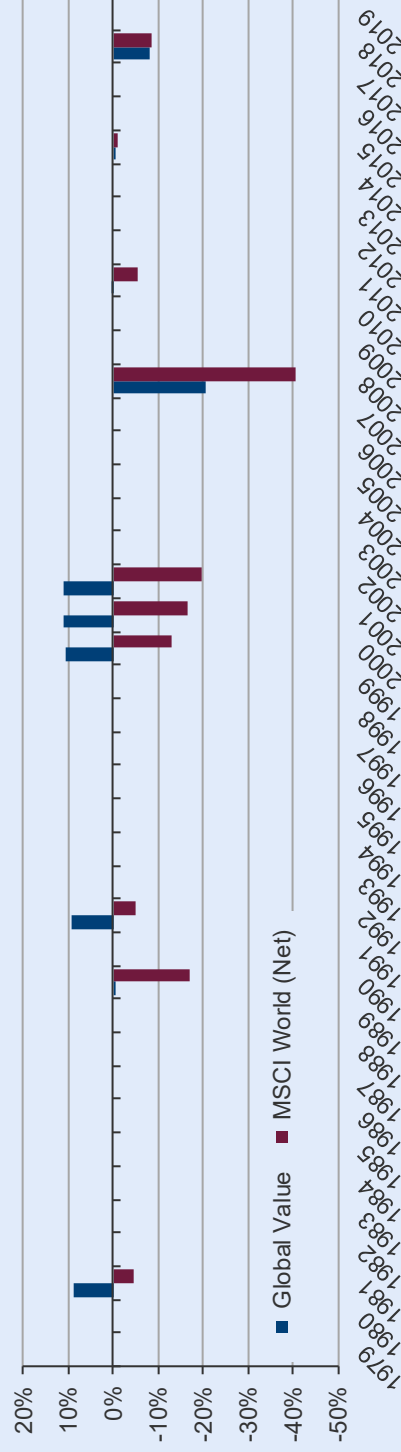
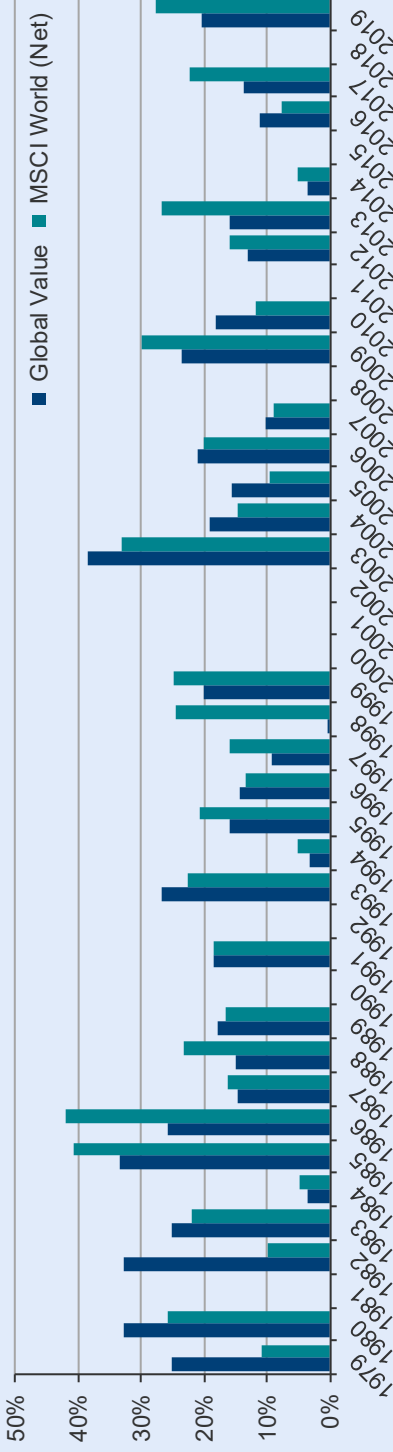
Past performance is not indicative of future results.

Full performance disclosures for the above in the Appendix. All figures beyond one year are annualized. Information for periods prior to 01-Jan-2000 occurred while a prior portfolio manager of the strategy was affiliated with another firm. All investments involve the risk of loss of principal. Additional risk disclosures for this strategy are included in the appendix.

Performance History

Net Performance in Up and Down Markets

As of 31-Dec-2019



¹Reflects full calendar years ²Calculated using quarterly returns. Annualized for periods over one year.

Past performance is not indicative of future results.

Full performance disclosures for the above in the Appendix. All figures beyond one year are annualized.

Information for periods prior to 01-Jan-2000 occurred while a prior portfolio manager of the strategy was affiliated with another firm.

Appendix

Risk Disclosures and Definitions

Risk Disclosures

Risk of loss

All investments involve the risk of loss of principal.

Risks of foreign investments

International investments may involve risk of capital loss from unfavorable fluctuation in currency values, from differences in generally accepted accounting principles, or from social, economic or political instability in other nations. In emerging markets, these risks are heightened.

Risks of investing in gold

Investment in gold and gold-related investments present certain risks, and returns on gold related investments have traditionally been more volatile than investments in broader equity or debt markets.

Risks of value investing

The principal risk of investing in value stocks is that the price of the security may not approach its anticipated value or may decline in value.

Benchmark Definition

MSCI World Index

The MSCI World Index is a widely followed, unmanaged group of stocks from 23 international markets and is not available for purchase. The index provides total returns in US dollars with net dividends reinvested.

Disclosures

Note: Indices are unmanaged and do not incur management fees or other operating expenses. One cannot invest directly in an index.

The S&P 500 Index is a widely recognized unmanaged index including a representative sample of 500 leading companies in leading sectors of the U.S. economy and is not available for purchase. Although the S&P 500 focuses on the large-cap segment of the market, with approximately 80% coverage of U.S. equities, it is also considered a proxy for the total market. The S&P 500 Index includes dividends reinvested.

The Tokyo Stock Price Index (TOPIX) is a free-float adjusted market capitalization-weighted index that is calculated based on all the domestic common stocks listed on the TSE First Section. TOPIX shows the measure of current market capitalization assuming that market capitalization as of the base date (January 4, 1968) is 100 points. This is a measure of the overall trend in the stock market, and is used as a benchmark for investment in Japan stocks.

The FTSE All-World Index is a market-capitalization weighted index representing the performance of the large and mid cap stocks from the FTSE Global Equity Index Series and covers 90-95% of the investable market capitalization. The index covers Developed and Emerging markets and is suitable as the basis for investment products, such as funds, derivatives and exchange-traded funds.

The FTSE All-Share Index is a capitalization-weighted index, comprising approximately 600 of more than 2,000 companies traded on the London Stock Exchange. It aims to represent at least 98% of the full capital value of all UK companies that qualify as eligible for inclusion.

The CDAX® index comprises the shares of all domestic companies listed in the Prime and General Standard segments. It thus represents the German equity market in its entirety, i.e. all companies listed at the Frankfurt Stock Exchange, and is therefore especially suitable for research and analysis.

EV/EBITDA (Enterprise Value to EBITDA)— provides a measure of how cheap or expensive the aggregate value of the whole business. Defined as the Sum of constituent Enterprise Value / Sum of constituent LTM EBITDA. Enterprise Value for each constituent is the sum of its common equity at market value + total debt + preferred equity + any accumulated minority interest – cash.

The information shown is subject to change based on market and other conditions. The opinions expressed are not necessarily those of the firm. These materials are provided for informational purpose only. These opinions are not intended to be a forecast of future events, a guarantee of future results, or investment advice. Any statistics contained herein have been obtained from sources believed to be reliable, but the accuracy of this information cannot be guaranteed. The views expressed herein may change at any time subsequent to the date of issue hereof. The information provided is not to be construed as a recommendation or an offer to buy or sell or the solicitation of an offer to buy or sell any fund or security.

First Eagle Investment Management is the brand name for First Eagle Investment Management, LLC and its subsidiary investment advisers.

Disclosures

Global Value Composite contains fully discretionary accounts invested in a range of asset classes from markets in the United States and throughout the world. To achieve its objective, management will normally invest in common stocks (and securities convertible into common stocks) of US and foreign companies. For comparison purposes, the composite is measured against the MSCI World Equity (Net) Index. Returns include the effect of foreign currency exchange rates. The exchange rate source of the composite is Bloomberg 4 pm EST. The exchange rate source of the benchmark is Reuters 4 pm GMT. The asset mix of the accounts in the composite may not be comparable to the MSCI World Equity (Net) Index. Indices do not incur management fees or other operating expenses. Investments cannot be made directly into an index.

Prior to 07-Dec-2009, First Eagle Investment Management, LLC was known as Arnhold and S. Bleichroeder Advisers, LLC.

First Eagle Investment Management, LLC claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. First Eagle Investment Management, LLC has been independently verified for the periods 01-Jan-1996 through 31-Dec-2018.

Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS standards on a firm-wide basis and (2) the firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. The Global Value Composite has been examined for the periods 01-Jan-2000 through 31-Dec-2018. The verification and performance examination reports are available upon request.

First Eagle Investment Management, LLC is an independent SEC registered investment adviser. The firm maintains a complete list and description of composites, which is available upon request. The GIPS defined firm does not include the Private Credit business.

Results are based on fully discretionary accounts under management, including those accounts no longer with the firm. Total returns of the composite and benchmark are presented net of estimated foreign withholding taxes on dividends, interest, and capital gains. MSCI uses withholding tax rates applicable to Luxembourg holding companies, as Luxembourg applies the highest rate. Withholding taxes may vary according to the investor's domicile.

Derivatives may make up a material part of the composite strategy. The composite may invest in structured notes, the value of which is linked to the price of gold or silver to hedge against market conditions. The use of structured notes is subject to availability and market conditions. Structured notes are purchased through large commercial banks with strong credit ratings. The composite frequently uses currency forwards to hedge currency exposure.

The annual composite dispersion presented is an equal-weighted standard deviation calculated for the accounts in the composite for the entire year.

Past performance is not indicative of future results.

The US Dollar is the currency used to express performance. Returns are presented gross and net of management fees and include the reinvestment of all income. Net of fee performance was calculated using the highest applicable management fee of 0.75% applied monthly. Actual returns will be reduced by investment advisory fees and other expenses that may be incurred in the management of the account. The investment management fee schedule is 0.75% on assets. Actual investment advisory fees incurred by clients may vary.

The collection of fees produces a compounding effect on the total rate of return net of management fees. As an example, the effect of investment management fees on the total value of a client's portfolio assuming (a) quarterly fee assessment, (b) \$1,000,000 investment, (c) portfolio return of 8% a year, and (d) 1.00% annual investment advisory fee would be \$10,416 in the first year, and cumulative effects of \$59,816 over five years and \$143,430 over ten years. Actual investment advisory fees incurred by clients may vary. Policies for valuing portfolios, calculating performance, and preparing compliant presentations are available upon request.

The Global Value Composite was created 01-Jan-1979. Performance presented prior to 01-Jan-2000, is for a US mutual fund that was managed by Jean-Marie Eveillard while he was affiliated with another firm and had portfolio management responsibility. First Eagle Investment Management, LLC acquired this prior firm and became investment adviser to the US mutual fund on 31-Dec-1999. On 27-Mar-2009, Mr. Eveillard transitioned from having portfolio management responsibilities to a senior advisory role to First Eagle Investment Management, LLC, a position he also held from 01-Jan-2005 to 23-Mar-2007.

Appendix

Disclosures

Year End	Total Firm Assets (USD Millions)	Composite Assets (USD Millions)	Number of Accounts	Composite Gross	Composite Net	MSCI World (Net)	3Y ex-post Std. Dev. Composite	3Y ex-post Std. Dev. MSCI World	Composite Dispersion
2018	91,890	55,782	13	-7.55%	-8.24%	-8.71%	7.35%	10.38%	0.20%
2017	116,057	67,600	14	14.68%	13.82%	22.40%	7.42%	10.23%	0.60%
2016	99,086	58,416	17	11.81%	10.98%	7.51%	8.09%	10.92%	1.10%
2015	92,369	53,549	19	0.16%	-0.59%	-0.87%	7.67%	10.80%	0.50%
2014	99,470	58,075	20	4.13%	3.35%	4.94%	7.83%	10.23%	0.60%
2013	92,511	53,910	15	16.90%	16.03%	26.68%	9.48%	13.54%	0.90%
2012	72,916	41,859	12	13.76%	12.91%	15.83%	11.74%	16.74%	0.50%
2011	59,646	33,806	8	0.95%	0.19%	-5.54%	13.87%	20.15%	N.A.
2010	51,961	27,483	Five or Fewer	18.88%	18.00%	11.76%			N.A.
2009	38,910	20,139	Five or Fewer	24.31%	23.38%	29.99%			N.A.
2008	31,605	16,897	Five or Fewer	-20.17%	-20.77%	-40.71%			N.A.
2007	43,879	21,517	Five or Fewer	11.14%	10.31%	9.04%			N.A.
2006	43,089	20,345	Five or Fewer	21.87%	20.96%	20.07%			N.A.
2005	35,210	16,049	Five or Fewer	16.30%	15.43%	9.49%			N.A.
2004	26,315	10,686	Five or Fewer	19.85%	18.95%	14.72%			N.A.
2003	15,481	4,860	Five or Fewer	39.47%	38.43%	33.11%			N.A.
2002	6,703	2,224	Five or Fewer	11.72%	10.89%	-19.89%			N.A.
2001	5,274	1,671	Five or Fewer	11.76%	10.93%	-16.82%			N.A.
2000	5,944	1,680	Five or Fewer	11.22%	10.39%	-13.18%			N.A.
1999		1,924	Five or Fewer	21.04%	20.14%	24.93%			N.A.

N.A. – Information is not statistically meaningful due to an insufficient number of portfolios in the composite for the entire year.

**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



PERIOD ENDING: DECEMBER 31, 2019
Investment Performance Review for

Contra Costa County Employees' Retirement Association

Meeting Date
02/26/20
Agenda Item
#6a.

Table of Contents



VERUSINVESTMENTS.COM

SEATTLE 206-622-3700

LOS ANGELES 300-297-1777

SAN FRANCISCO 415-362-3484

Investment Landscape

TAB I

Investment Performance
Review

TAB II



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**

1ST QUARTER 2020
Investment Landscape

Recent Verus research

Visit: <https://www.verusinvestments.com/insights/>

Annual outlooks

CAPITAL MARKET ASSUMPTIONS

Some important developments occurred in the last year. During our 2020 Capital Market Assumptions webinar, we discussed:

- Market movements of 2019 and how these shifts have affected our long-term outlook
- The impact of falling interest rates on fixed income expectations
- Why it is important to differentiate between shorter-term and longer-term forecasting exercises

Topics of interests

WHY BENCHMARKS MATTER

In this Topics of Interest paper, we seek to outline the importance of benchmark selection within the investment process. The white paper addresses the following points:

- Benchmarks which appear similar can behave very differently, even over long periods of time
- Unconsidered benchmark selection can introduce uncompensated tracking error
- Tools available to investors to assist in determining appropriate benchmark indexes

RISK IN MANAGER SELECTION

In our latest Topics of Interest paper, we provide a framework for assessing the candidacy of a manager for portfolio inclusion and consider the implications of one manager versus alternatives. It addresses the following questions:

- Does the manager add a desired exposure?
- Does the manager exhibit skill?
- What does the manager add to the broader portfolio relative to other candidates?

Table of contents



VERUSINVESTMENTS.COM

SEATTLE 206-622-3700

LOS ANGELES 310-297-1777

SAN FRANCISCO 415-362-3484

Economic environment	6
Fixed income rates & credit	17
Equity	23
Other assets	34
Appendix	36

4th quarter summary

THE ECONOMIC CLIMATE

- Real GDP grew at a 2.1% rate year-over-year in the third quarter (2.1% quarterly annualized rate). Falling imports and weak fixed investment (-0.2% contribution) acted as a drag on growth, while personal consumption continued to be the greatest driver of growth. **p. 7**
- U.S. and Chinese negotiators signed the “phase one” trade agreement, and Boris Johnson’s Conservative Party in the U.K. won a decisive victory. These events appear to have removed some uncertainty from the geopolitical landscape over the short- to intermediate-term. **p. 15**

PORTFOLIO IMPACTS

- Global equity markets exhibited strong performance through Q4, and U.S. equity performance was in-line (MSCI ACWI +9.0%, S&P 500 +9.1%). Emerging markets were the top performing asset class (+11.8%). **p. 40**
- U.S. headline inflation increased 2.3% YoY in December, alongside the core inflation growth figure, and up from 1.7% in September. Although this was a notable jump in the inflation rate, investors appear more concerned about global deflationary forces, as indicated by the 10yr U.S. TIPS Breakeven Inflation Rate of 1.73%. Cyclical price pressures remain surprisingly absent from the current environment. **p. 9**

THE INVESTMENT CLIMATE

- In October, the Federal Open Market Committee cut interest rates by 0.25% to a new range of 1.50 – 1.75%. This marked the third consecutive rate cut by the committee. **p. 18**
- Global sovereign bond yields picked up modestly in Q4, on higher inflation and growth prospects. The dollar value of negative-yielding outstanding debt fell from nearly \$15 trillion to just above \$11 trillion. Central bankers appealed for fiscal action, citing the limited capacity of monetary policy to sustain further economic expansion. **p. 18**

ASSET ALLOCATION ISSUES

- Most risk assets provided sizable gains in Q4. Global equities delivered +9.0%, U.S. high yield increased +2.6%, and Emerging Market Local Debt rose +5.2%. Longer duration fixed income saw losses as interest rates rebounded. **p. 40**
- The U.S. dollar weakened -0.5% against both developed and emerging currencies in Q4, reversing moves of the prior quarter. Dollar volatility remains low relative to the big swings that occurred throughout 2014-2018. **p. 35**
- Although risk assets appear to have rocketed higher in 2019, which may create concerns over valuations, it is important to note that much of this performance was due to assets recovering from a sharp fall in late-2018. **p. 25**

A neutral risk stance may be appropriate in today’s environment

What drove the market in Q4?

“U.S. trade deficit falls 7.6% in October to 16-month low on decline in Chinese imports”

U.S. FEDERAL TRADE DEFICIT (\$BILLIONS)

	Jun	Jul	Aug	Sep	Oct	Nov
	53.7	52.7	53.5	51.1	46.9	43.1

Article Source: MarketWatch, December 5th, 2019

“As markets climb higher, are stocks becoming overvalued?”

BLENDED FORWARD 12-MONTH P/E RATIO OF THE S&P 500 INDEX

	Jul	Aug	Sep	Oct	Nov	Dec
	17.0x	16.6x	16.9x	17.3x	17.8x	18.3x

Article Source: CNBC, December 30th, 2019

“Fed ‘prepared to adjust’ balance sheet to prevent repo market flare-up”

MONTHLY CHANGE IN THE SIZE OF THE FED BALANCE SHEET (\$BILLIONS)

	Jul	Aug	Sep	Oct	Nov	Dec
	-47.7	-19.2	97.8	162.1	33.1	112.7

Article Source: Yahoo Canada Finance, December 11th, 2019

“China’s pork price jumps 110 per cent, sending consumer inflation rocketing to eight-year high”

CHINA CPI INFLATION (YoY % CHANGE)

	Jul	Aug	Sep	Oct	Nov	Dec
	2.8	2.8	3.0	3.8	4.5	4.5

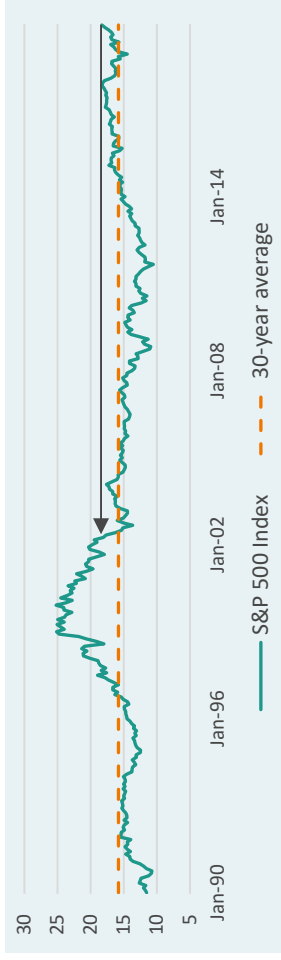
Article Source: South China Morning Post, December 10th, 2019

U.S. MONTHLY TRADE DEFICIT (BILLIONS)



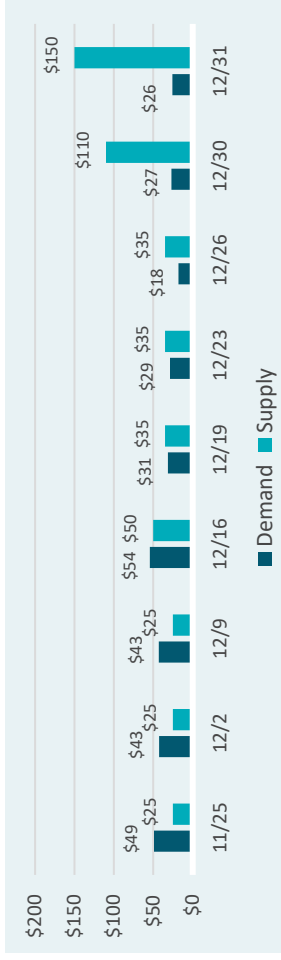
Source: Bloomberg, as of 11/30/19

FORWARD PRICE/EARNINGS RATIO (BLENDED 12-MONTH EARNINGS)



Source: Bloomberg, as of 12/31/19.

YEAR-END LIQUIDITY OFFERED UP BY THE NEW YORK FED (BILLIONS)



Source: New York Fed, as of 12/31/19.

Economic environment

U.S. economics summary

- Real GDP grew at a 2.1% rate year-over-year in the third quarter (2.0% quarterly annualized rate). Falling imports and weak fixed investment (-0.2% contribution) acted as a drag on growth, while personal consumption continued to be the greatest driver of growth.
- U.S. headline inflation came in at 2.3% YoY in December, in line with the core inflation growth figure. Despite more than 10 years of economic expansion, cyclical price pressures seem surprisingly absent from the current environment. Investors appear more concerned about global deflationary forces.
- The U.S. labor market showed further strength in the fourth quarter and unemployment remained at 50-year lows of 3.5%.
- Consumer sentiment indicators remain near all-time-highs and improved slightly over the quarter.
- American households are in a strong financial position, with balance sheets that appear increasingly robust. At the end of Q3, U.S. household debt outstanding was equal to about 74% of GDP, the healthiest level since Q4 2001.
- U.S. and Chinese negotiators signed the “phase one” agreement on trade, and Boris Johnson’s Conservative Party won a decisive victory in the U.K. These developments may ease some of the economic uncertainty across the global economy, providing a tailwind to future growth.
- Existing home sales grew +2.7% YoY in November. New home sales, a far smaller portion of the overall market, grew at a stronger rate of +16.9% YoY, as construction activity further accelerated. Rising homebuilder activity in recent years may ease some of the low inventory pressures in the current market environment.

	Most Recent	12 Months Prior
GDP (YoY)	2.1% 9/30/19	3.1% 9/30/18
Inflation (CPI YoY, Core)	2.3% 12/31/19	2.2% 12/31/18
Expected Inflation (5yr-5yr forward)	1.8% 12/31/19	1.8% 12/31/18
Fed Funds Target Range	1.50 – 1.75% 12/31/19	2.25 – 2.50% 12/31/18
10 Year Rate	1.9% 12/31/19	2.7% 12/31/18
U-3 Unemployment	3.5% 12/31/19	3.9% 12/31/18
U-6 Unemployment	6.7% 12/31/19	7.6% 12/31/18

GDP growth

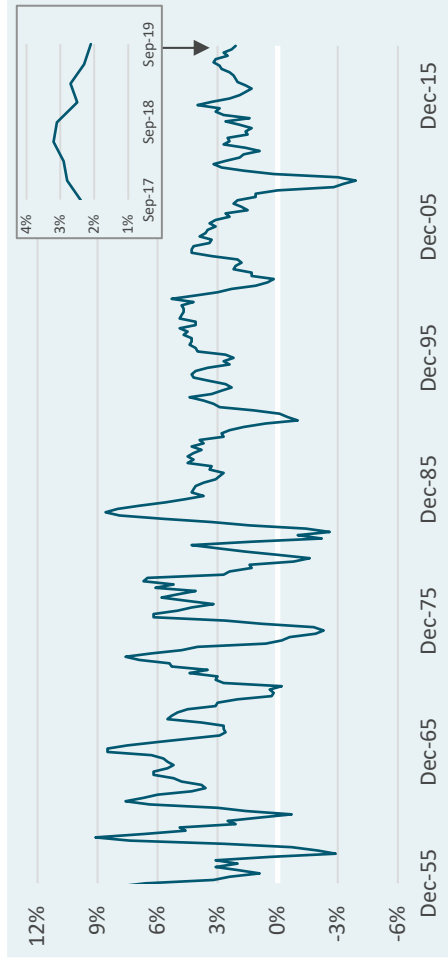
Real GDP grew at a 2.1% rate year-over-year in the third quarter (2.1% quarterly annualized rate). Falling imports detracted -0.3% from the overall GDP print, along with weak fixed investment (-0.2% contribution). Personal consumption, the largest component of gross domestic product, continued to drive the economy forward. The U.S. economy is pacing near the 2.0% rate that economists generally expect for full year 2020.

While trade policies and conflict likely resulted in a mild drag on economic growth in 2019, the U.S. and China have signed

the “phase one” trade deal. A partial trade resolution, or at least an indication that negotiations are headed in a more positive direction, could provide a lift to the economy and markets.

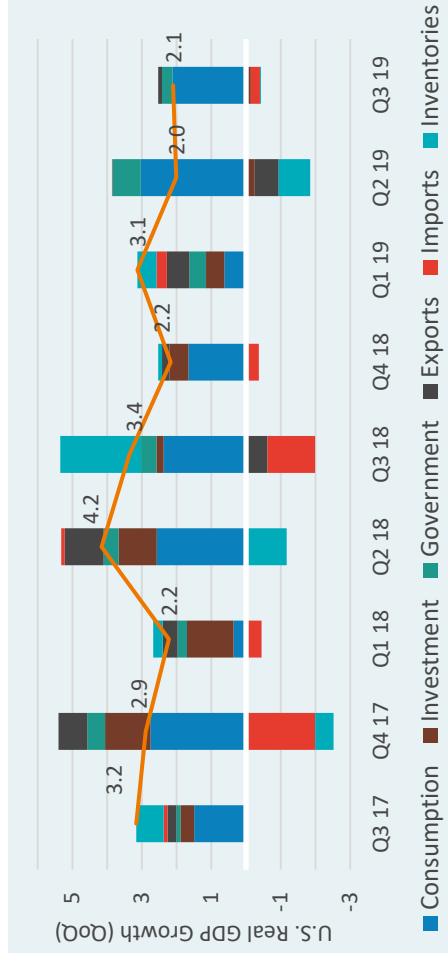
On January 17th, the Federal Reserve Bank of Atlanta GDPNow forecast indicated GDP growth of 1.8% in the fourth quarter. This forecast dipped recently due to weak personal consumption expenditures.

U.S. REAL GDP GROWTH (YOY)



Source: Bloomberg, as of 9/30/19

U.S. GDP GROWTH ATTRIBUTION



Source: BEA, annualized quarterly rate, as of 9/30/19

Inflation

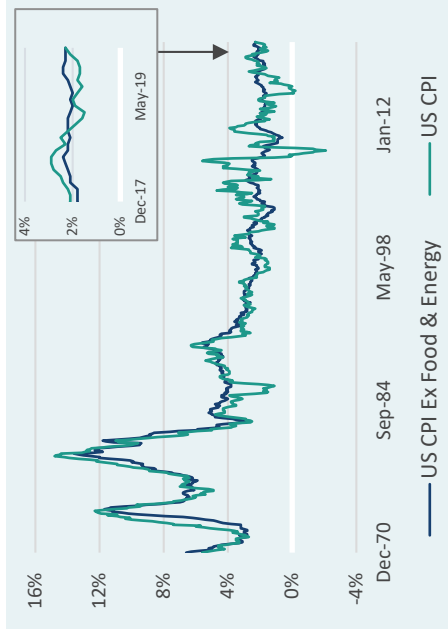
U.S. headline inflation increased 2.3% YoY in December, in line with the core inflation growth figure, and up from 1.7% in September. Although this is a notable jump in the inflation rate, investors appear more concerned about global deflationary forces. Cyclical price pressures remain surprisingly absent from the current environment.

During the quarter, the market's pricing of inflation increased from a low of 1.48% to 1.73%. While the breakeven rate has risen materially from its cycle low of 1.18% achieved in February 2016, it remains depressed by historical standards.

Consumer expectations moved in the opposite direction, falling from 2.7% at the beginning of the year to 2.3% in December.

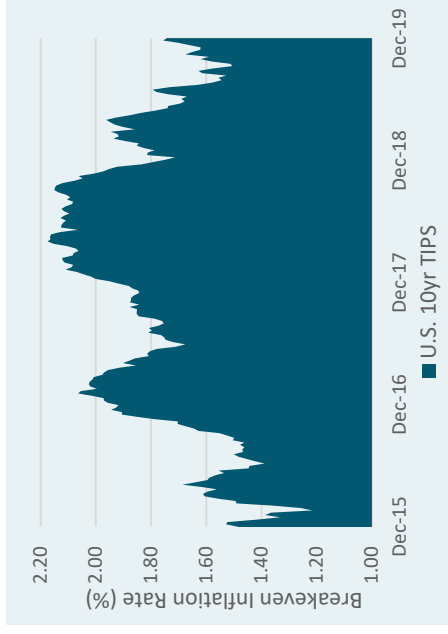
We believe it is likely that inflation will remain subdued. But it is also worth noting that if inflation or inflation fears returned to the markets, this might place central banks in a perilous position. It is doubtful that central banks could hike interest rates for any sustained period of time without risking recession.

U.S. CPI (YOY)



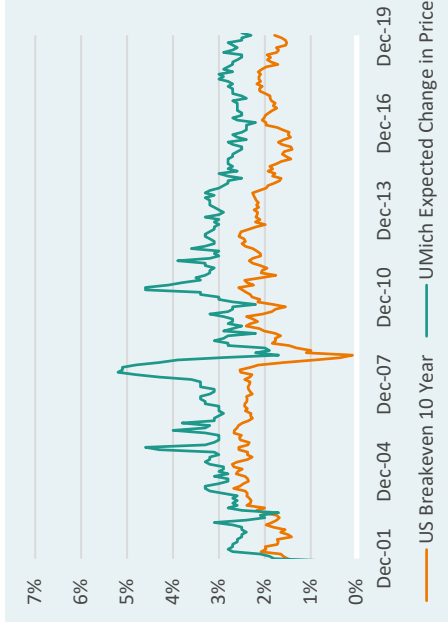
Source: Bloomberg, as of 12/31/19

U.S. BREAKEVEN INFLATION RATE



Source: FRED, as of 12/31/19

INFLATION EXPECTATIONS



Source: Bloomberg, as of 12/31/19

Labor market

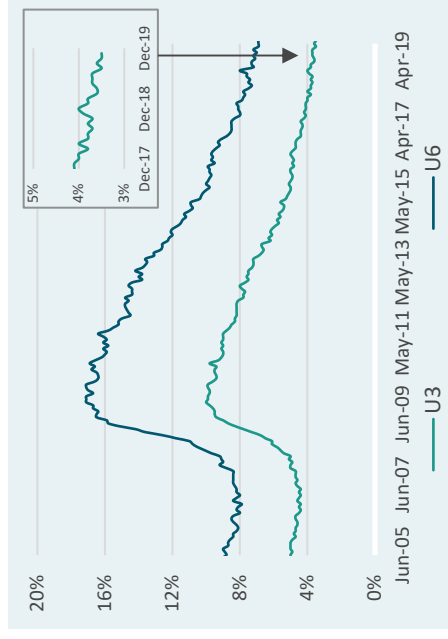
The U.S. labor market continued to show strength in Q4 and unemployment remained at 50-year lows of 3.5%. Year-over-year growth in non-farm payroll additions slowed to its lowest level since September 2017 at 1.4%. Nearly 1.24 jobs are now available per unemployed worker in the labor force, which suggests there is a limited remaining supply of workers to meet business hiring demands.

Average hourly earnings for production and nonsupervisory employees grew 3.0% year-over-year in December, outpacing inflation (2.3%). Sustained real wage growth would support sentiment, which is near cycle highs.

One plausible case for strong consumption to continue hinges on the fact that several key unemployment rates are near historic lows. The unemployment rate for workers who are at least 25 years old and lack high school diplomas (5.3%) is at an at-all-time-low level since the data was first recorded in the year 2000. Typically, workers with less education earn less in nominal terms, but have a higher marginal propensity to consume per each dollar earned. These recent increases in employment for those workers who are more likely to spend may lead to outsized positive impacts on economic growth.

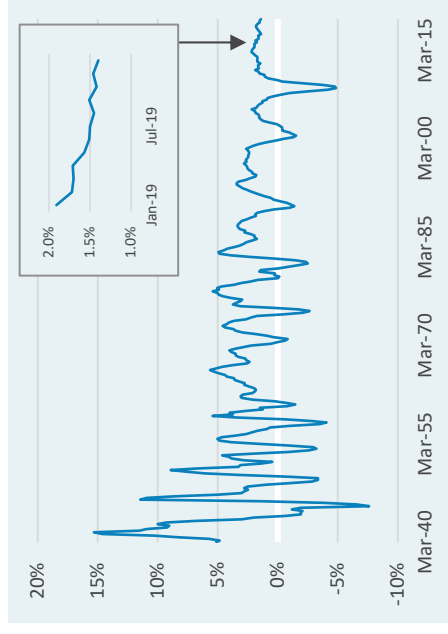
U.S. labor market remains strong, though further upside may be limited

U.S. UNEMPLOYMENT



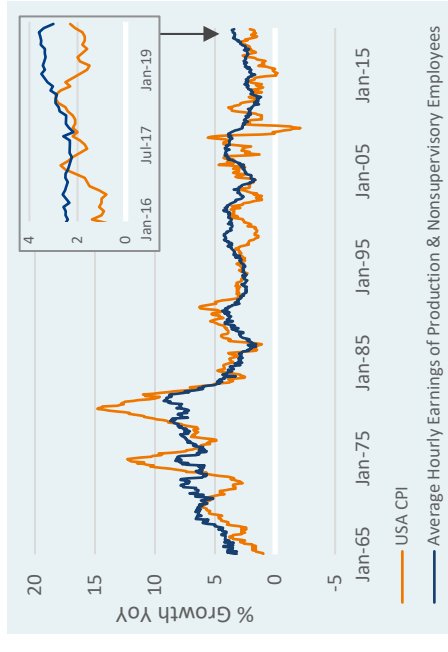
Source: FRED, as of 12/31/19

NON-FARM PAYROLL GROWTH (YOY)



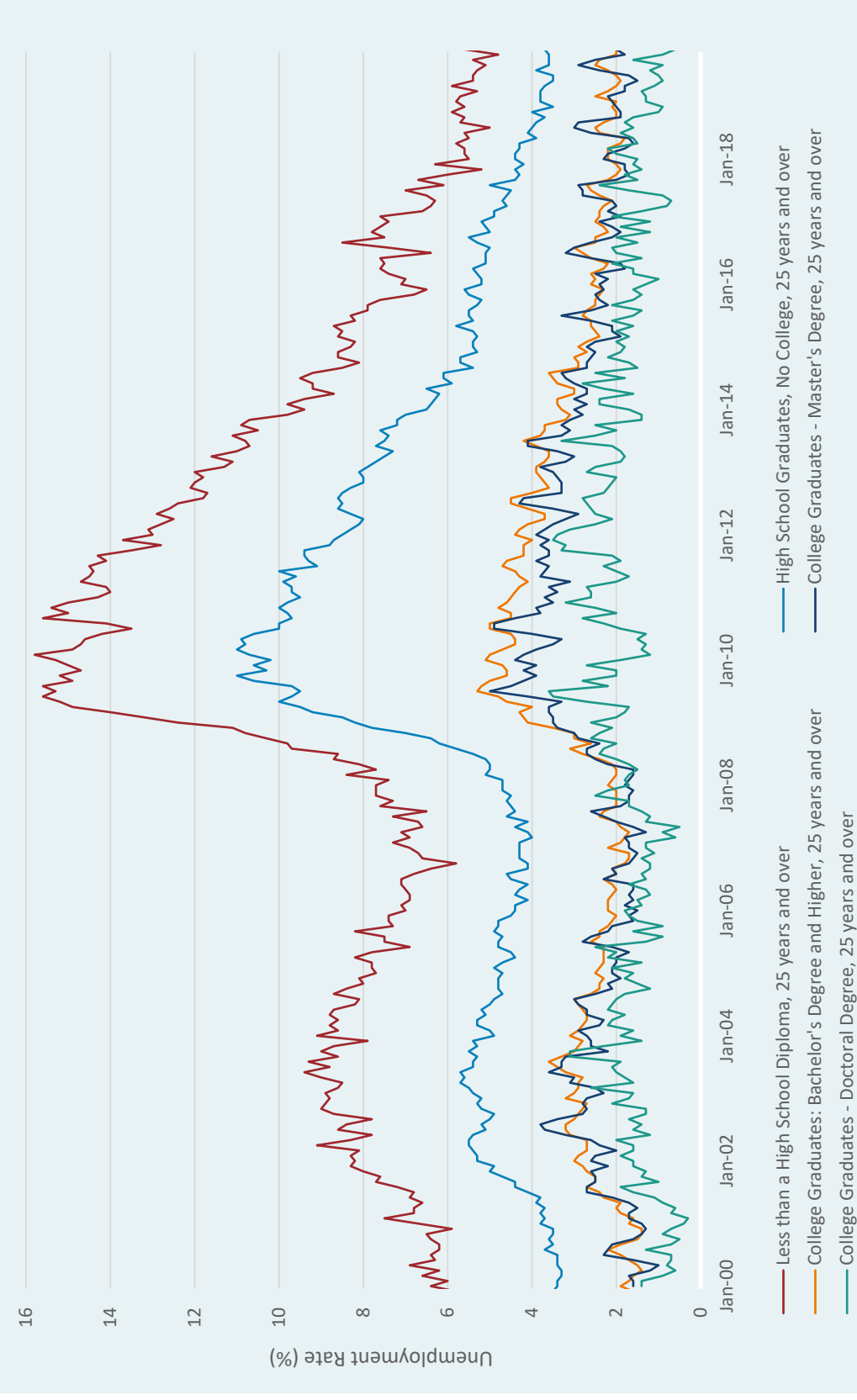
Source: BLS, as 12/31/19

U.S. WAGE GROWTH



Source: FRED, as of 11/30/19

U.S. unemployment



The U.S. job market is very strong, for all levels of education

Source: FRED, as of 11/30/19

The consumer

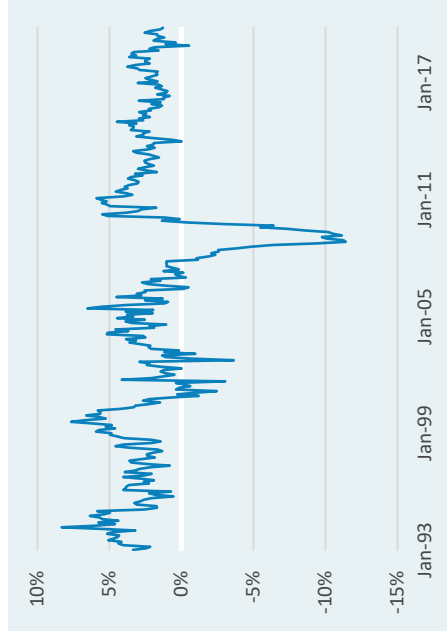
The U.S. consumer continued to push the U.S. economy forward, supported by low unemployment, solid wage gains, and high sentiment. American households are in a strong financial position, with balance sheets that appear robust. At the end of Q3, U.S. household debt outstanding was equal to about 74% of GDP, the healthiest level since Q4 2001.

Retail sales growth slid a bit in real terms, but much of this move was due to a pickup in inflation. The price of a barrel of WTI crude oil rose from \$53 to \$61, helping to propel year-over-year growth in headline inflation from 1.7% to 2.3%. Overall, retail sales growth remains solid, and has been boosted

recently by a surge in e-commerce sales. Cyber Monday sales grew nearly 20% this year, hitting a record \$9.4 billion U.S. dollars according to data from Adobe Analytics. Shoppers' carts were also about 6% larger at checkout than they were last year, perhaps hinting at a more optimistic consumer outlook.

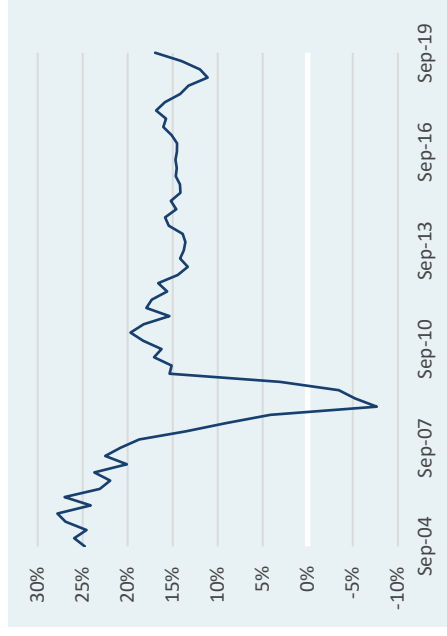
Credit conditions remain benign. Credit-card borrowing ticked down slightly and was offset by faster growth in auto and student loans. Some might consider credit-card debt "worse debt" and auto and student loan debt "better debt" in that prudent investments in transportation and human capital are likely higher-returning than ultra-short-term consumption.

REAL RETAIL SALES GROWTH (YOY)



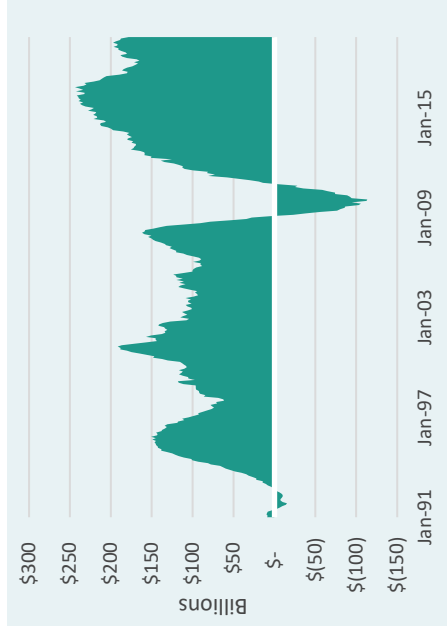
Source: FRED, as of 11/30/19

E-COMMERCE SALES GROWTH (QUARTERLY YOY)



Source: U.S. Census Bureau, Bloomberg, as of 9/30/19

12-MONTH GROWTH IN CONSUMER CREDIT



Source: Federal Reserve, Bloomberg, as of 11/30/19

Sentiment

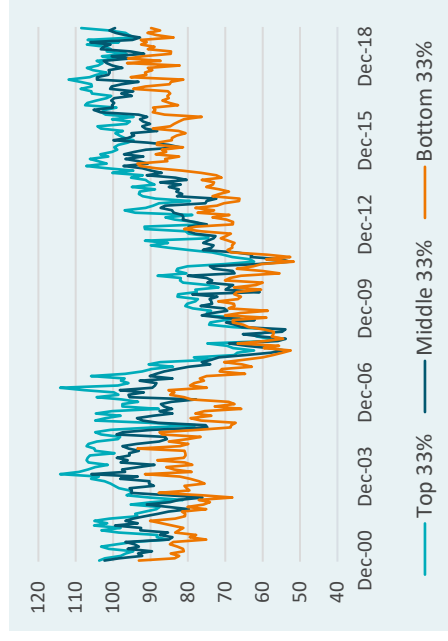
Consumer sentiment indicators remain near all-time-highs and improved slightly as a number of closely-followed geopolitical storylines appeared to move closer to resolution. The U.S. and China “phase one” trade deal, and the victory of Boris Johnson’s Conservative Party in the U.K. appears to have at least removed some uncertainty from the geopolitical landscape over the short- to intermediate-term.

Over the quarter, the difference between the sentiment reading for the top third of income earners and the bottom

third of income earners moved from the 10th percentile to the 65th percentile of monthly periods since 2001, indicating a widening in the gap between the “haves” and “have-nots”.

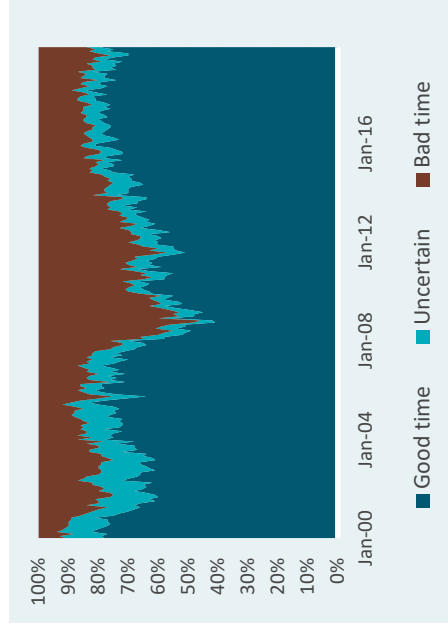
Consumers view the economic conditions for buying big-ticket household items such as furniture, refrigerators and televisions as close to as favorable as they have been over the course of the expansion. This belief appears to be rooted in dual expectations for job security and real wage gains.

CONSUMER SENTIMENT BY INCOME BRACKET



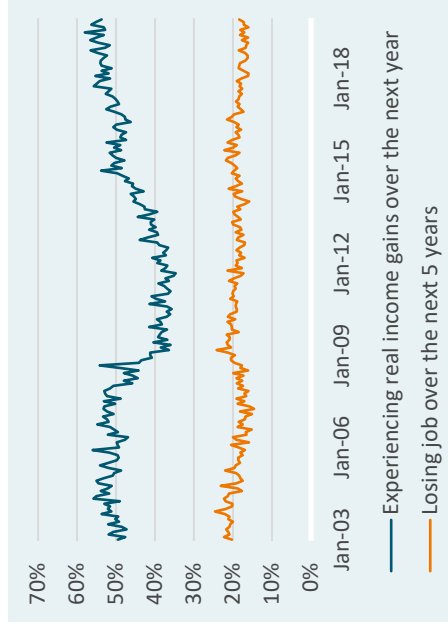
Source: University of Michigan, as of 12/31/19

CONDITIONS FOR BUYING BIG-TICKET ITEMS (%)



Source: University of Michigan, as of 12/31/19

CONSUMER FEAR GAUGE



Source: University of Michigan, as of 12/31/19

Housing

In the first half of 2019 the housing market appeared to be cooling off, coming down from a strong boom throughout the recent economic expansion. The average home sales price is down -8% from the highs of late-2017, although other variables such as the types and location of homes sold can impact these numbers. Homebuilding activity ticked up in the second half of the year as homebuilder sentiment jolted higher in 2019.

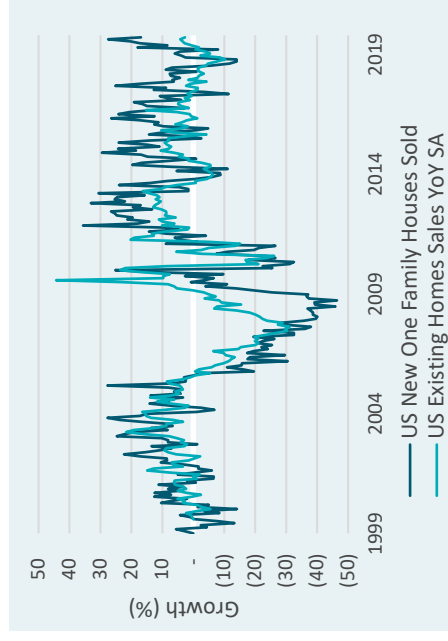
Existing home sales grew +2.7% YoY in November. New home sales, a far smaller portion of the overall market, grew at a stronger rate of +16.9% YoY, as construction activity further accelerated. Rising homebuilder activity in recent years may

ease some of the low inventory pressures in the current market environment.

The housing boom has contributed to a rebound in the U.S. homeownership rate. A decade-long trend away from buying and towards renting appears to have reversed in mid-2016. Since that time, the rate of homeownership has risen to 64.7% from a low of 63.1%.

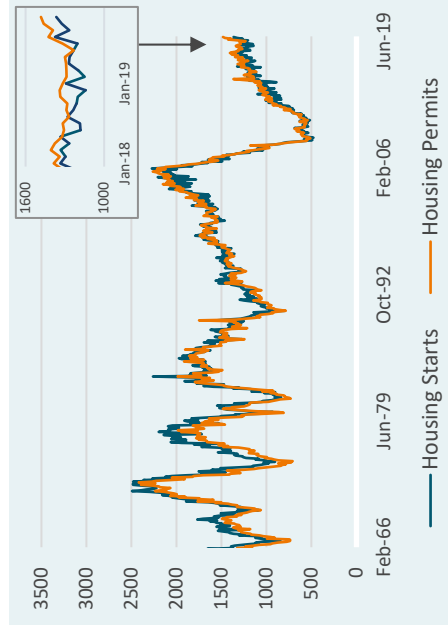
It is always helpful to remember that home price trends can vary meaningfully by location, which means national statistics are sometimes difficult to interpret at a local level.

U.S. HOME SALES (YOY)



Source: FRED, as of 11/30/19

HOUSING STARTS & PERMITS



Source: Bloomberg, NAHB, as of 11/30/19 (see appendix)

HOMEOWNERSHIP RATE



Source: FRED, as of 9/30/19

International economics summary

- The growth of international developed economies remains in a range of 0.5% to 2.0%, near the 2.1% growth rate of the slowing U.S. economy.
- In January, the IMF forecasted 2.9% global growth in 2019 and an acceleration to 3.3% in 2020. These growth expectations were 0.1% lower than the previous quarter’s report, and were mostly a result of downward adjustments to emerging markets expectations.
- Inflation continues to be muted across international developed markets, keeping more options on the table for central banks to step in as needed with accommodative policy.
- The U.K. general election in December resulted in a landslide victory for Boris Johnson. The election, through a consolidation of Tory party power, effectively guarantees that Brexit will ultimately be carried out.
- While the global economy has exhibited mild growth, labor markets continue to tighten across the board. By traditional unemployment measures, job markets are now stronger than pre-2008 levels in most major economies.
- U.S. and Chinese negotiators signed the “phase one” agreement on trade, and the decisive victory of Boris Johnson’s Conservative Party in the U.K. appears to have at least removed some uncertainty from the geopolitical landscape over the short- to intermediate-term.
- China has experienced a significant jump in inflation to 4.5% as an outbreak of African swine fever resulted in a doubling of pork prices. This compares to a 5-year average inflation rate of 1.9%. An acceleration of inflation may create issues for Chinese leadership in an already-slowing economy.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	2.1% 9/30/19	2.3% 12/31/19	3.5% 12/31/19
Eurozone	1.2% 9/30/19	1.3% 12/31/19	7.5% 11/30/19
Japan	1.7% 9/30/19	0.9% 12/31/19	2.2% 11/30/19
BRICS Nations	4.9% 9/30/19	4.4% 12/31/19	5.1% 9/30/19
Brazil	1.2% 9/30/19	4.3% 12/31/19	11.2% 11/30/19
Russia	1.7% 9/30/19	3.1% 12/31/19	4.6% 11/30/19
India	4.5% 9/30/19	7.4% 12/31/19	8.5% 12/31/17
China	6.0% 9/30/19	4.5% 12/31/19	3.6% 9/30/19

International economics

The United States grew at a pace of 2.1% year-over-year in the third quarter, moving more closely in line with other developed nations which have posted growth of 1.0%-2.0%.

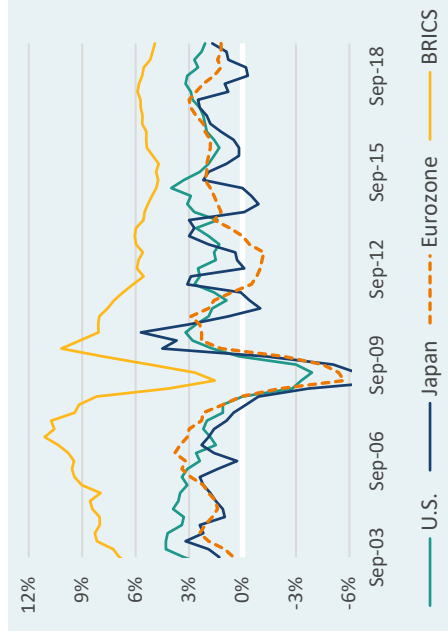
While the global economy has exhibited mild growth, labor markets continue to tighten across the board. By traditional unemployment measures, job markets are now stronger than pre-2008 levels in most major economies.

Inflation has remained subdued across international developed markets, and many pundits have viewed the mild inflation data as a cue for central banks to step in and

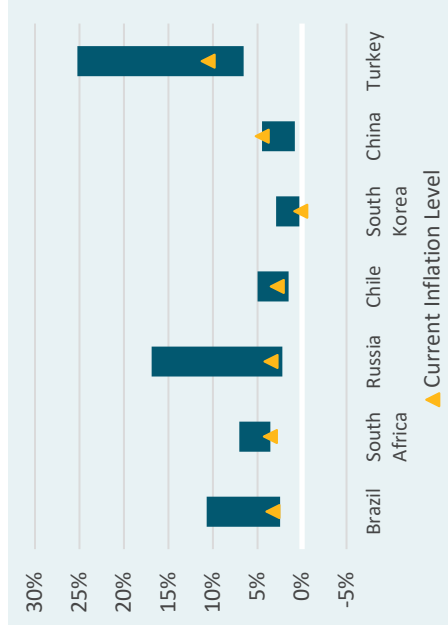
attempt to bolster economic growth through more accommodative policy. Inflation remains muted in emerging economies, and most economies are experiencing CPI below the 5-year average.

China's inflation rate has become an outlier, jumping to 4.5% as an outbreak of African swine fever resulted in a doubling of pork prices in the country during the year. This compares to a 5-year average inflation rate of 1.9%. Prices of other meats in China have also increased on heightened demand for pork substitutes. An acceleration of inflation may create issues for Chinese leadership in an already-slowing economy.

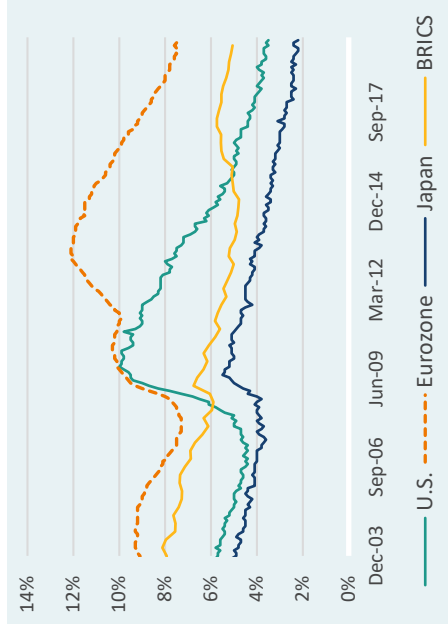
REAL GDP GROWTH (YOY)



INFLATION (CPI YOY)



UNEMPLOYMENT RATE



Source: Bloomberg, as of 9/30/19

Source: Bloomberg, inflation range of past 5 years, as of 11/30/19

Source: Bloomberg, as of 11/30/19 or most recent release

Fixed income rates & credit

Interest rate environment

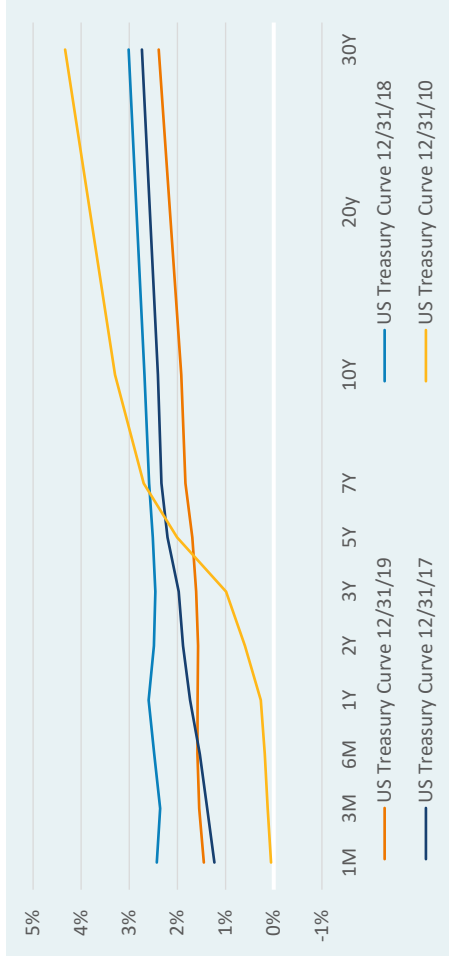
- The global sovereign bond rally lost steam in Q4 as inflation and growth prospects mildly reflat. Central bankers at the European Central Bank and the Federal Reserve signaled that policy would likely remain on hold in the absence of significant economic developments.
- Global ten-year sovereign bond yields picked up moderately, most significantly in Europe. Over the quarter, the U.S.-dollar value of global outstanding negative-yielding debt fell from nearly \$15 trillion to just above \$11 trillion.
- In October, the Federal Open Market Committee cut the range for its benchmark interest rate by 0.25% to a new range of 1.50 to 1.75%.
- Diversity of opinion among FOMC participants about the path of interest rates has faded. Most members now expect rates to remain flat in 2020, and move back toward 2.50% over the longer term.
- The New York Fed conducted a series of term repurchase operations aimed at providing sufficient liquidity for firms to get through the year-end turn when demand for cash typically surges. The Fed balance sheet grew by \$300B in Q4, and analysts continue to debate whether the Fed’s involvement in repo markets should be considered “technical” or “stimulative” in nature.
- The Governing Council of the ECB decided to leave key interest rates unchanged and confirmed that net asset purchases to the tune of €20 billion per month had begun in November.
- In Christine Lagarde’s first major move as President, she announced the ECB’s first Strategic Policy review since 2003, which will begin in January and will address a wide range of topics, including: low inflation, the price-stability goal, climate change, and cryptocurrency.

Area	Short Term (3M)	10-Year
United States	1.54%	1.92%
Germany	(0.78%)	(0.19%)
France	(0.65%)	0.12%
Spain	(0.61%)	0.47%
Italy	(0.34%)	1.41%
Greece	0.26%	1.47%
U.K.	0.69%	0.82%
Japan	(0.10%)	(0.01%)
Australia	0.94%	1.37%
China	2.43%	3.14%
Brazil	4.30%	6.79%
Russia	4.95%	6.36%

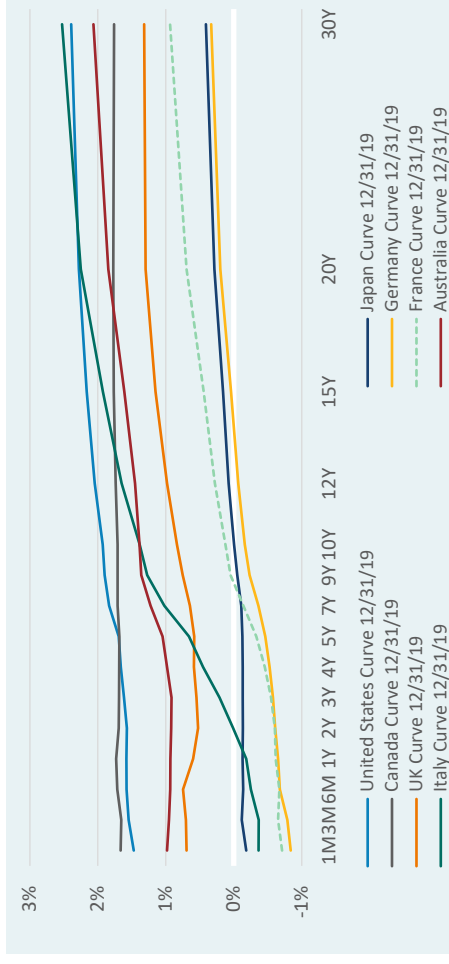
Source: Bloomberg, as of 12/31/19

Yield environment

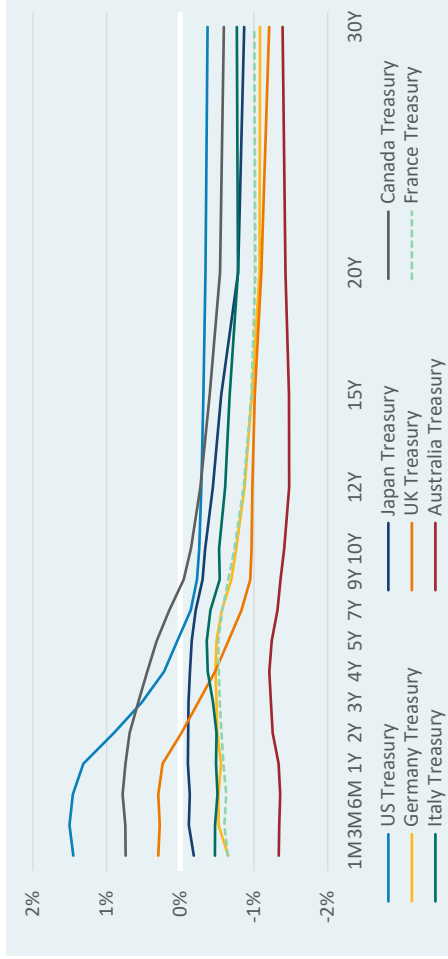
U.S. YIELD CURVE



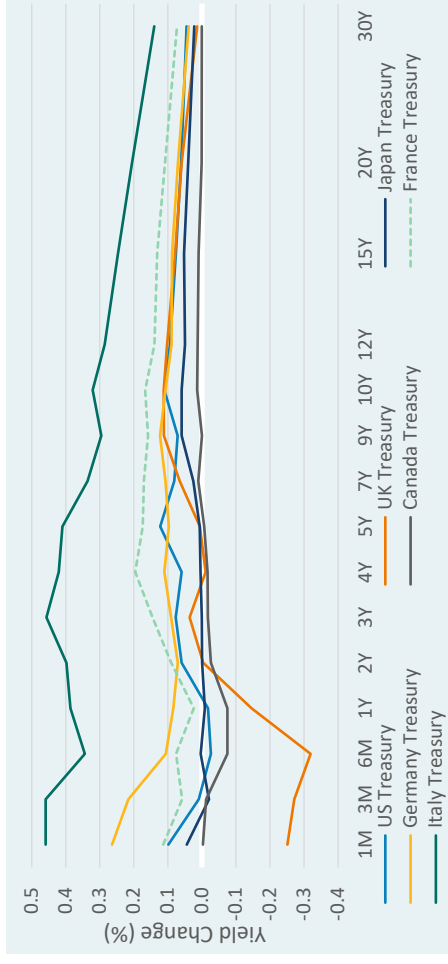
GLOBAL GOVERNMENT YIELD CURVES



YIELD CURVE CHANGES OVER LAST FIVE YEARS



IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 12/31/19

Credit environment

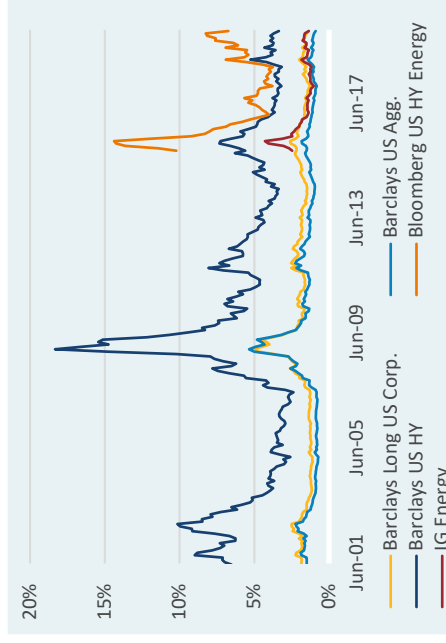
Credit enjoyed a positive 2019 driven by tightening spreads. Both investment grade and below-investment grade assets remained somewhat stable over the period. In high yield, CCCs and energy-related bonds were the best performers during Q4. High yield spreads tightened meaningfully over the year and the quarter (190 bps and 37 bps, respectively). Investment grade bonds also enjoyed positive performance fueled by this year's rate rally, attractive profit margins, and continued demand from investors for higher quality credit.

In the fourth quarter, high yield bonds have returned +3.4%, materially outperforming bank loans (+1.7%) and investment grade credit (+1.1%). In 2019, high yield bonds have returned +14.4%, materially outperforming bank loans (+8.6%) and slightly

outperforming investment grade credit (+13.8%). Bank loans have experienced outflows for much of the year driven by lessening demand for the asset class.

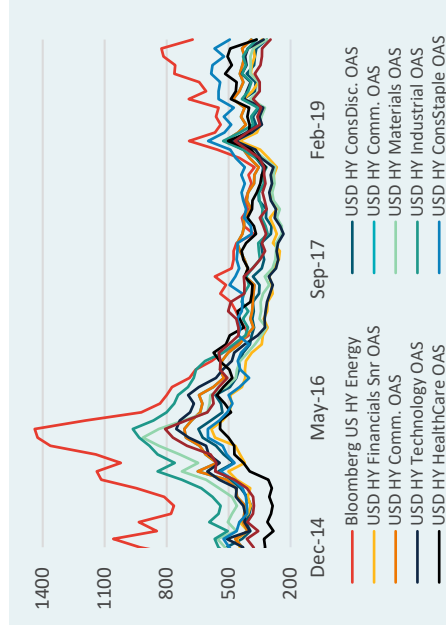
Based on concerns over late-cycle behavior in credit markets, we do not believe investors are being adequately compensated for credit risk. Late-cycle volatility tends to coincide with widening credit spreads and higher propensity for default activity. An underweight to U.S. investment grade, high yield credit, and bank loans may be warranted, with an overweight to emerging market debt which appears to offer more attractive value. This positioning should result in an overall neutral credit risk stance. Within U.S. markets, higher quality and more liquid assets appear most attractive.

SPREADS



Source: Barclays, Bloomberg, as of 12/31/19

HIGH YIELD SECTOR SPREADS (BPS)



Source: Bloomberg, as of 12/31/19

Market	12/31/19	12/31/18
Long U.S. Corp	1.4%	2.0%
U.S. Inv Grade Corp	0.9%	1.5%
U.S. High Yield	3.4%	5.3%
U.S. Bank Loans*	4.4%	5.1%

Source: Barclays, Credit Suisse, Bloomberg, as of 12/31/19

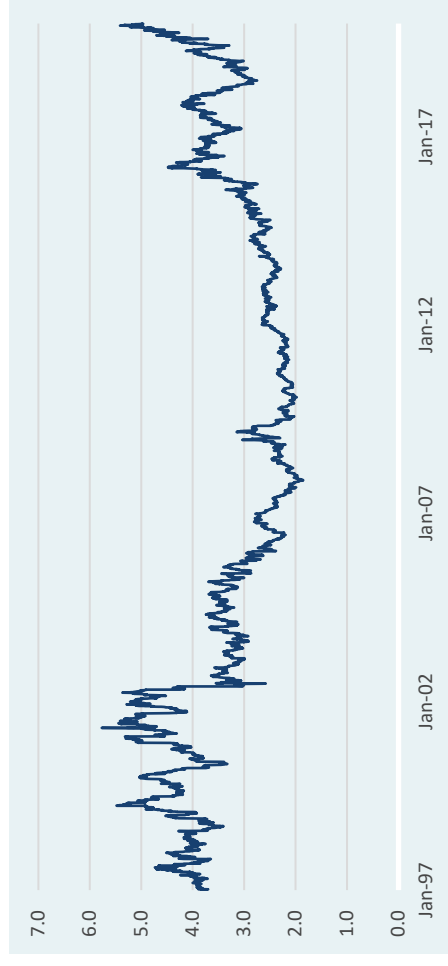
*Discount margin (4-year life)

High yield – what’s in it?

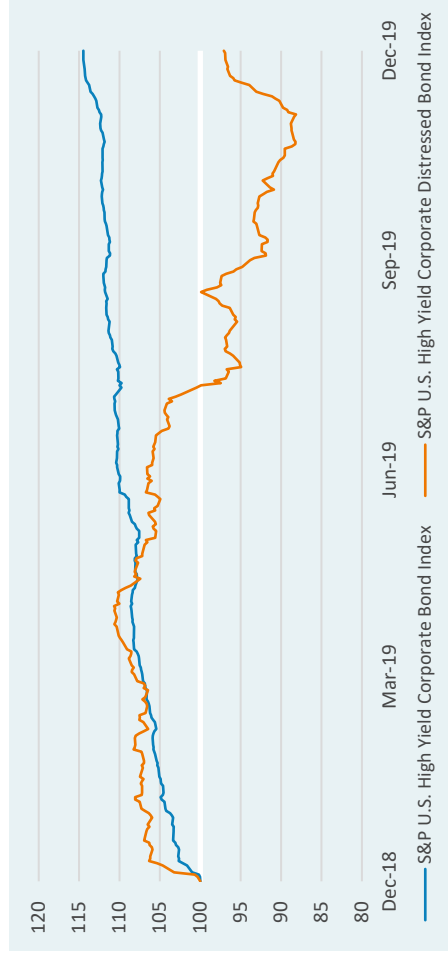
The high yield market rallied in 2019 to provide double digit positive returns for only the fourth time since the 2008-2009 global financial crisis. However, the market was characterized by significant divergences as investors rotated into upper-tier credits relative to lower-tier credits due to volatility and geopolitical uncertainty picking up during the year. This was evidenced by the ratio of CCC/BB credit spread levels, which climbed to levels last seen two decades ago. Investors generally see CCC credits as a proxy for less liquid and/or more complex situations and risks, especially relative to the BB segment.

The distressed market was negatively impacted by investor distaste for less liquid risk during the year. This was particularly true in the energy sector, and in certain retail and healthcare industries. Selling pressures peaked in November as the riskiest segment of the high yield market suffered losses in excess of those experienced during the 2018 year-end drawdown. Market participants pulled money from the space, which resulted in significant redemptions amongst distressed-focused hedge funds and even closures of hedge funds that had previously successfully navigated the global financial crisis.

CCC/BB SPREAD RATIO



HIGH YIELD VS. HIGH YIELD DISTRESSED (INDEXED 12/31/2018=100)



Source: Standard & Poor's, J.P. Morgan, Wall Street Journal, as of 12/31/19

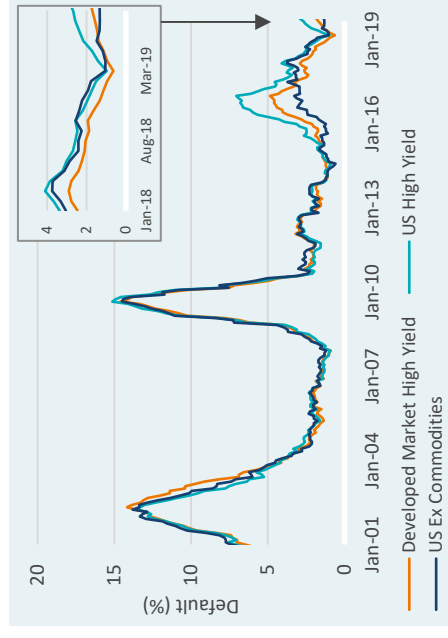
Default & issuance

Default activity for 2019 was slightly higher than 2018 by roughly 0.8%. This was mainly due to elevated defaults in commodity-related industries such as energy and metals/mining. The par-weighted default rate for high yield ended the year at 2.6% and remained below its long-term average range of 3.0-3.5%.

For loans, the par-weighted default rate for 2019 was 1.6% and remained below the long-term average of 3.1%, according to data from J.P. Morgan. Notably, defaults in commodity-related sectors accounted for essentially half of the year's default/distressed activity.

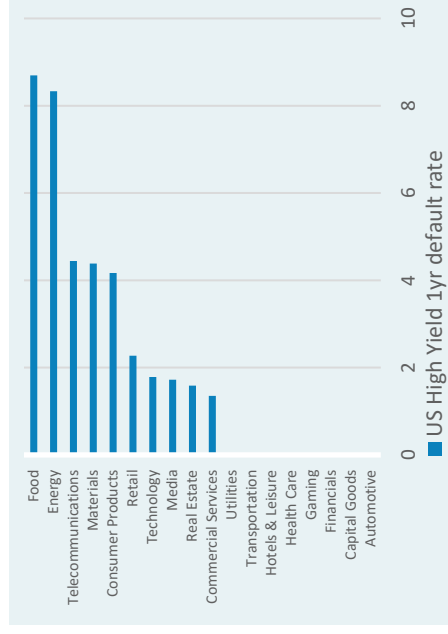
Gross high yield issue activity for 2019 was \$287 billion which was up 52% from a year ago. Loan market issuance is significantly behind last year's pace, likely influenced by lower demand for floating rate securities now that the Federal Reserve has paused monetary tightening. Gross loan issuance is essentially down 44% from a year ago although there was an increase in issuance at the end of December.

HY DEFAULT RATE (ROLLING 1-YEAR)



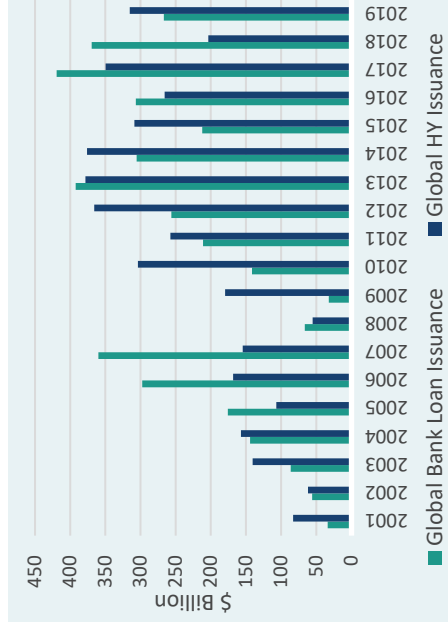
Source: BofA Merrill Lynch, as of 12/31/19

U.S. HY SECTOR DEFAULTS (LAST 12 MONTHS)



Source: BofA Merrill Lynch, as of 12/31/19 – par weighted

GLOBAL ISSUANCE (\$ BILLIONS)



Source: Bloomberg, BofA Merrill Lynch, as of 12/31/19

Equity

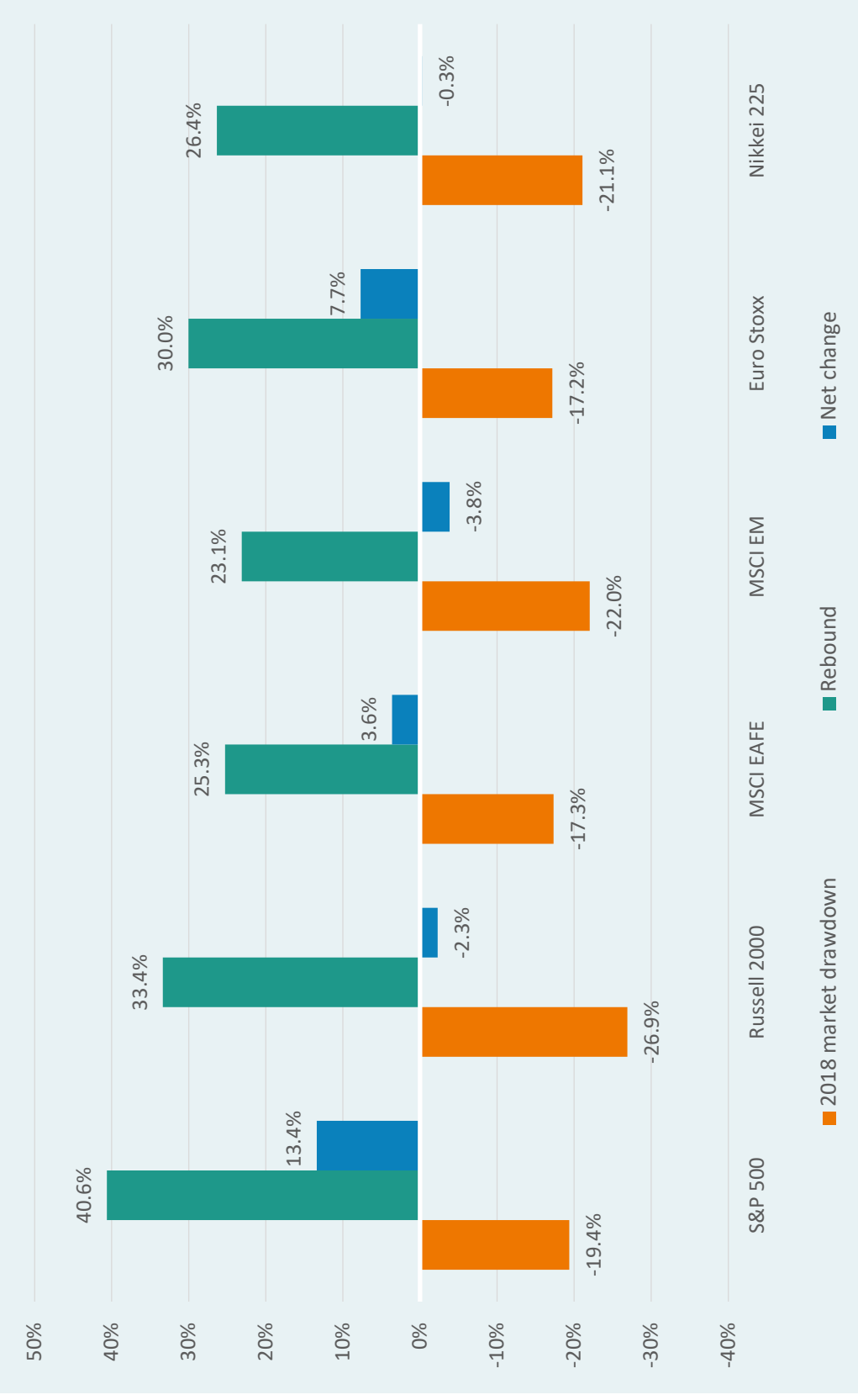
Equity environment

- Global equity markets exhibited strong performance through Q4, and U.S. equity performance was in-line (MSCI ACWI +9.0%, S&P 500 +9.1%). Emerging markets were the top performing asset class (+11.8%).
- Global currency volatility has been muted over the last few years, which has made ignoring currency exposure less consequential. Expecting low currency volatility to persist may be an assumption that gets investors into trouble.
- Unhedged U.S. investors in U.K. equities outperformed their hedged peers by 7.8% in Q4, as a stronger pound sterling dominated the U.K. equity return narrative.
- Based on price-to-forward earnings ratios international equity valuations appear elevated, but unlike in the U.S., they do not yet appear stretched.
- The outlook for monetary policy remains supportive of global equity price movement in 2020. Of the five major global central banks (Federal Reserve, European Central Bank, Bank of England, Bank of Japan, People's Bank of China), four out of five are providing accommodation through their respective balance sheets. Futures imply better than 50/50 odds that the Bank of England cuts its main rate 0.25% at the end of January and China has continued to cut its benchmark lending rate.
- Inflation remains muted in emerging economies, and most economies are experiencing CPI below the 5-year average. Central bank policy has remained accommodative in many major countries within the universe such as China, South Korea, Brazil, and South Africa. This accommodation could provide a boost for equity market pricing as we move further into 2020.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
US Large Cap (S&P 500)	9.1%		31.5%	
US Small Cap (Russell 2000)	9.9%		25.5%	
US Large Value (Russell 1000 Value)	7.4%		26.5%	
US Large Growth (Russell 1000 Growth)	10.6%		36.4%	
International Large (MSCI EAFE)	8.2%	5.8%	22.0%	24.6%
Eurozone (Euro Stoxx 50)	8.3%	5.9%	25.9%	32.1%
U.K. (FTSE 100)	10.8%	3.0%	22.1%	19.5%
Japan (NIKKEI 225)	8.2%	9.6%	21.9%	23.5%
Emerging Markets (MSCI Emerging Markets)	11.8%	9.5%	18.4%	17.7%

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 12/31/19

A different look at 2019 performance



Most of the high returns of 2019 were due to markets recovering from the 2018 drop. Adjusting for this effect shows us that 2019 was a fairly average year.

Source: Standard & Poor's, MSCI, Verus, as of 12/31/19 – "Drawdown" defined as the total market fall in 2018, "Rebound" defined as the total % return from the low point of the fall to the end of 2019. "Net Change" defined as the % market return from the 2018 high point to the end of 2019.

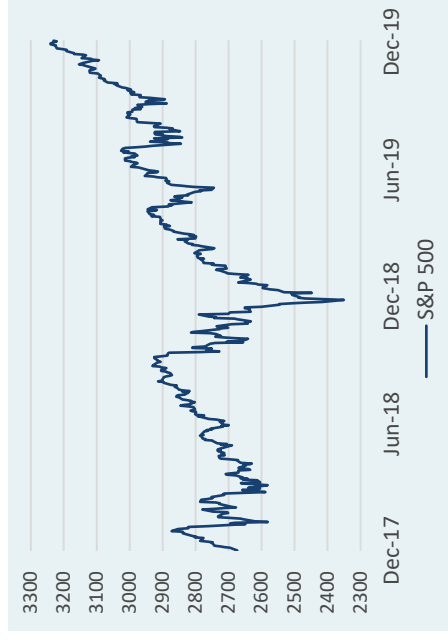
Domestic equity

U.S. equities outpaced international in the third quarter (S&P 500 +9.1%, MSCI EAFE +8.2%) as domestic markets continued to lead.

Falling interest rates in 2019 have supported stock prices, as fixed income becomes less attractive on a relative basis, and cheaper borrowing should bolster future corporate earnings. As the dividend yield of U.S. stocks is once again higher than U.S. Treasury yields, investors may feel pressure to maintain greater exposure to equities in order to meet return objectives.

The S&P 500 delivered a 31.5% total return in calendar year

U.S. EQUITIES

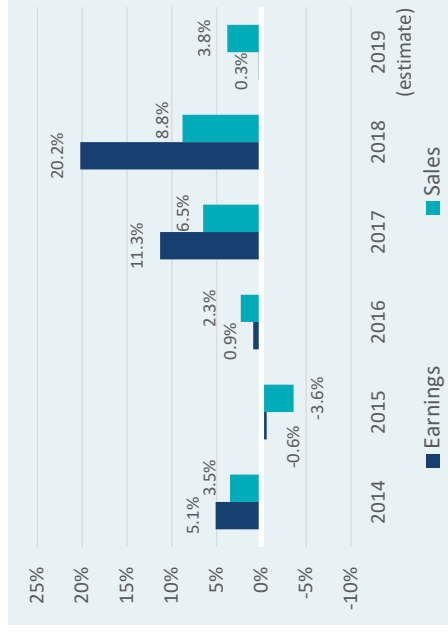


Source: Standard & Poor's, as of 12/31/19

2019, while underlying corporate profits are expected to be flat at +0.3%. This of course means that performance has been driven by higher stock multiples rather than fundamentals. It is worth noting that a significant portion of 2019 performance was a recovery from the late-2018 sell-off of nearly -20%.

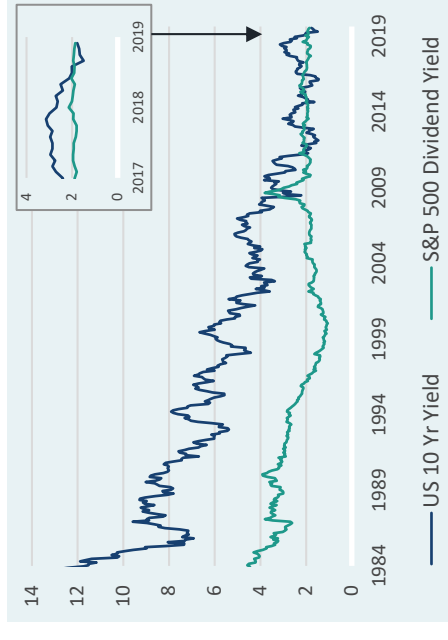
U.S. markets may continue to outperform over the shorter-term due to relative economic and market strength, and prices may certainly rise further. But history suggests that a widening gap between U.S. and international stock valuations will constrain U.S. performance over the longer-term.

EARNINGS



Source: FactSet, as of 12/20/19

RELATIVE YIELDS



Source: Standard & Poor's, as of 11/30/19

Domestic equity size & style

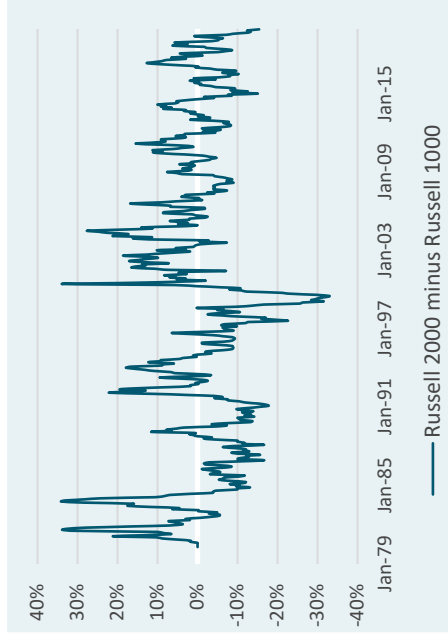
Value stocks lagged growth stocks during the fourth quarter (Russell 1000 Growth +10.6%, Russell 1000 Value +7.4%) while small cap stocks outperformed large stocks (Russell 2000 +9.9%, Russell 1000 +9.0%). During calendar year 2019, both size and value factors significantly underperformed (Russell 1000 +31.4%, Russell 2000 +25.5%; Russell 3000 Growth +35.8%, Russell 3000 Value +26.2%).

The impact of sector performance on the value premium was significant, once again, in 2019. Information Technology delivered very high returns (+50.3%) – a sector which tends to contain more growth stocks. Energy (+11.8%) and Materials (+24.6%) – industries which traditionally contain more value stocks – lagged

the overall index (S&P 500 +31.5%).

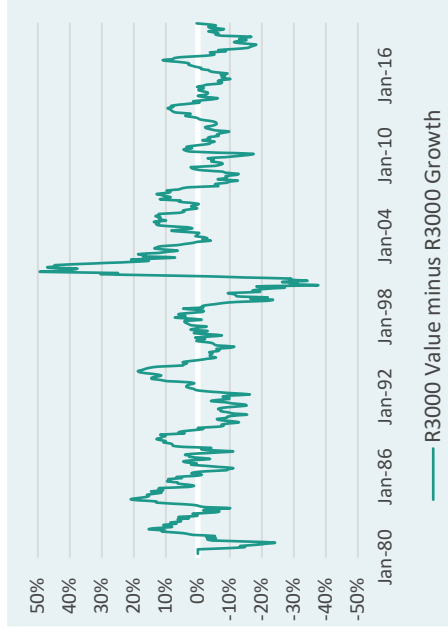
In mid-2016 we argued that there were clear and economic reasons for long-term value factor underperformance, and that a tactical overweight to the value factor did not appear warranted. This view has continued to be correct, as those who bought into value anytime of the past three years would have underperformed. While value continues to be historically cheap, price itself is not a catalyst for outperformance. We remain watchful of value stocks, but do not yet see clear signs of opportunity. As always, attempting to time factors is extremely difficult. We believe this should be done only rarely, if at all, and only when market conditions are particularly compelling.

SMALL CAP VS LARGE CAP (YOY)



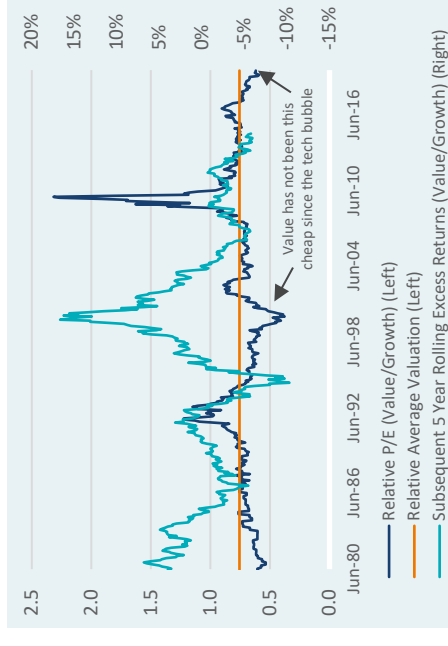
Source: FTSE, as of 12/31/19

VALUE VS GROWTH (YOY)



Source: FTSE, as of 12/31/19

VALUE CONTINUES TO LOOK CHEAP



Source: Russell, Bloomberg, as of 12/31/19

International developed equity

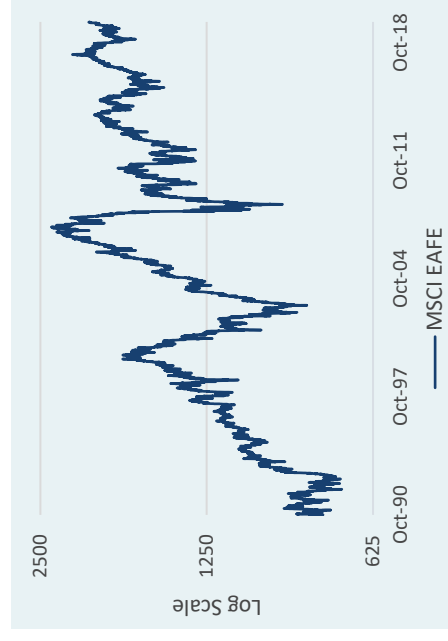
Equities in Europe and Japan posted strong performance for the quarter but failed to keep up with stocks in the U.S. and emerging markets. The U.S. dollar appreciated slightly against the yen, providing headwinds (-1.4%) for unhedged U.S. investors in Japanese stocks. Conversely, a slightly weaker U.S. dollar against the euro put some additional wind in the sails (+2.4%) of U.S. investors in European equities.

When investing in international equities, the “which currency should my assets be denominated?” question has been nearly equally as important as the “what assets should I hold?” question. Over the last three years however, global

currency volatility has been muted, which has made it much easier for investors to avoid thinking about their various currency exposures. Verus’ view remains that currency risk is not compensated, and that it tends to result in increased risk without necessarily adding to return.

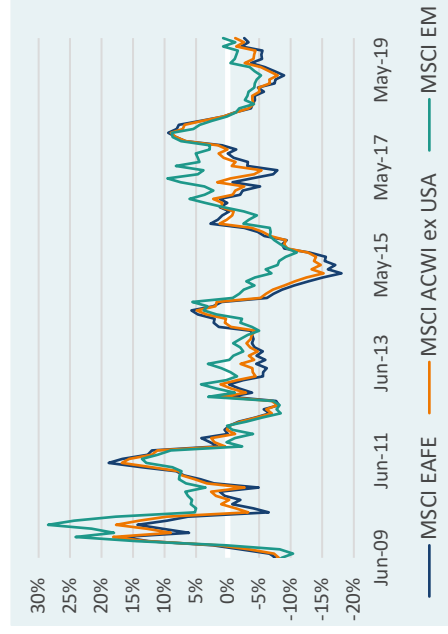
International equity valuations remain elevated, but unlike in the U.S., they do not yet appear stretched. Forward price-to-earnings ratios for the MSCI U.K. and Italy indices rank in the 59th and 52nd percentiles respectively, relative to the monthly expansion average. Valuations are a bit richer in the rest of the EAFE complex, but they may still have room to run.

INTERNATIONAL DEVELOPED EQUITIES



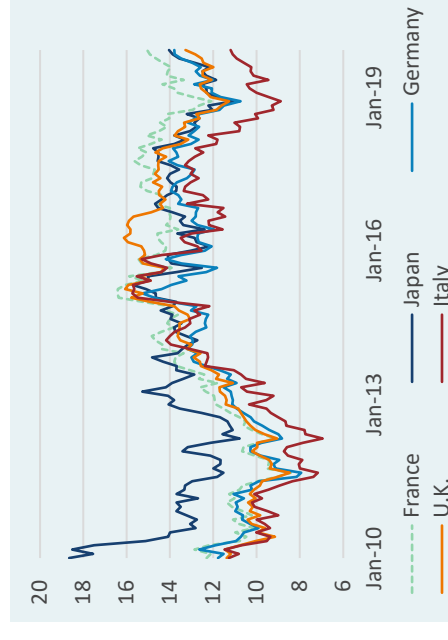
Source: MSCI, as of 12/31/19

EFFECT OF CURRENCY (1-YEAR ROLLING)



Source: MSCI, as of 12/31/19

BLENDED FORWARD 12-MONTH P/E RATIOS



Source: MSCI, Bloomberg, as of 12/31/19

Emerging market equity

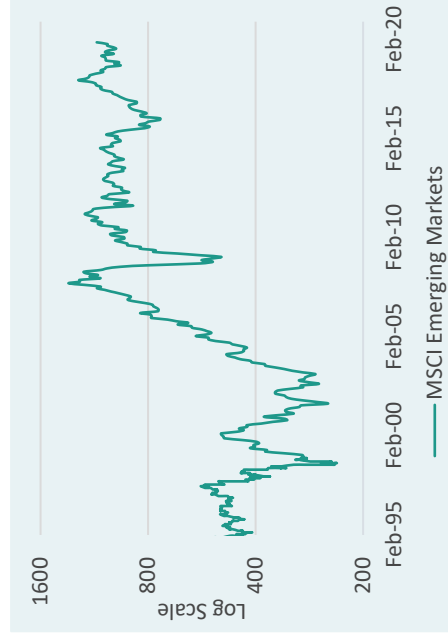
Emerging market equities (+11.8%) outperformed both U.S. (+9.1%) and international developed equities (+8.2%) over the quarter, but still lagged over the full calendar year. In 2019, emerging market equities delivered a total return of 18.4%, and trailed the total return of international developed equities by 3.6%. Regionally, the Asian segment (+12.5%) of the emerging market complex performed better than the Latin American (+10.5%) segment in both Q4 and in 2019.

Emerging market equities saw multiple expansion in Q4: the forward P/E of the MSCI EM Index expanded from a level in

line with the 5-year average to a bit higher than average levels. We do not yet view pricing in this space as rich and see there being more room for multiple expansion.

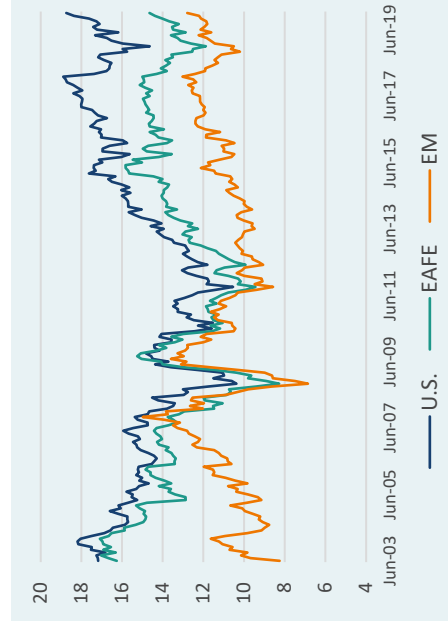
Inflation remains muted in emerging economies, and most economies are experiencing CPI below the 5-year average. Central bank policy has remained accommodative in many major countries within the universe such as China, South Korea, Brazil, and South Africa. This accommodation could provide a boost for equity market pricing as we move further into 2020.

EMERGING MARKET EQUITY



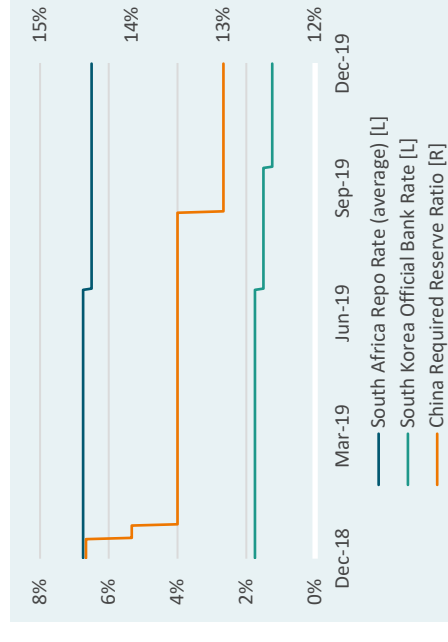
Source: MSCI, as of 12/31/19

FORWARD P/E



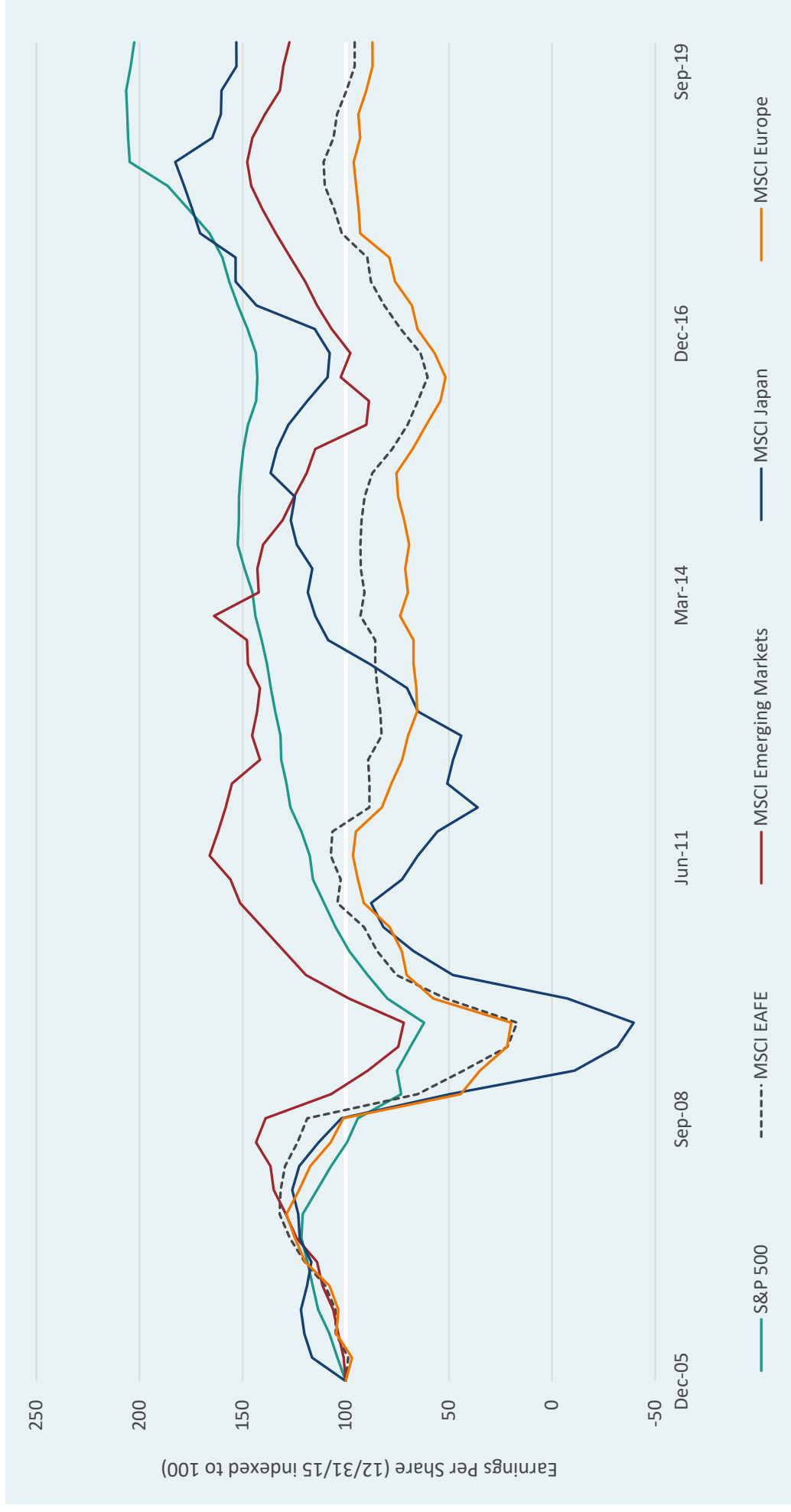
Source: MSCI, as of 12/31/19

CENTRAL BANK ACCOMODATION



Source: MSCI, as of 12/31/19

Equity earnings growth



Source: Bloomberg, as of 12/31/19

Equity valuations

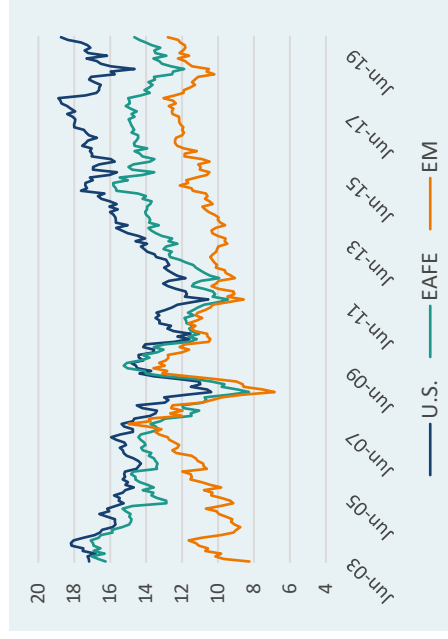
Equity valuations expanded materially in 2019 as prices recovered from their year-end 2018 fall and then continued climbing through the fourth quarter. U.S. equities are expensive relative to their long-run average and prices may become more difficult to justify in an environment of flat earnings growth. International and emerging equity valuations are near average levels. We remain watchful of earnings trends in 2020, which may have important implications for the future path of equities.

In the United States, stocks within the Information Technology

(22.7x) and Communication Services (19.5x) sectors have retained forward P/E ratios elevated well above their respective 5- and 10-year averages. Last year, growing concerns over data privacy, support for anti-trust regulation, and several idiosyncratic scandals weighed on the tech sector. Over the course of this election year, we expect the issue of mega-cap tech regulation to remain beneath the microscope.

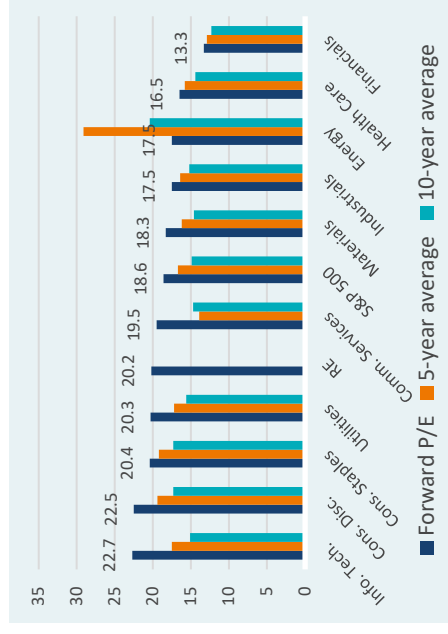
Compared to U.S. and EM equities, international developed equities offer the greatest yield at present, offering a three-month average trailing dividend yield of 3.4%.

FORWARD P/E RATIOS



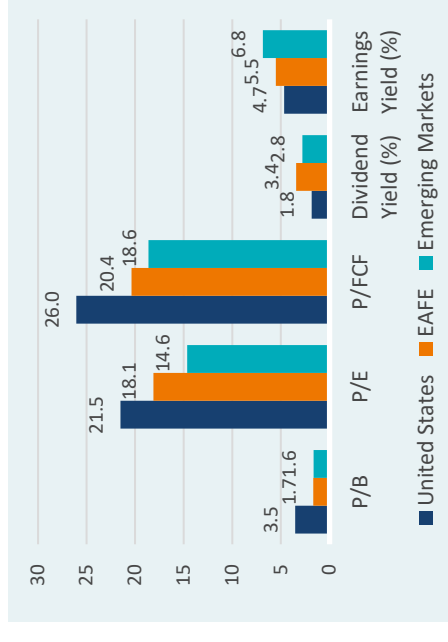
Source: MSCI, 12m forward P/E, as of 12/31/19

S&P 500 INDEX FORWARD SECTOR P/E RATIOS



Source: Standard & Poor's, FactSet, as of 1/17/20

VALUATION METRICS (3-MONTH AVERAGE)



Source: Bloomberg, MSCI as of 12/31/19 - trailing P/E

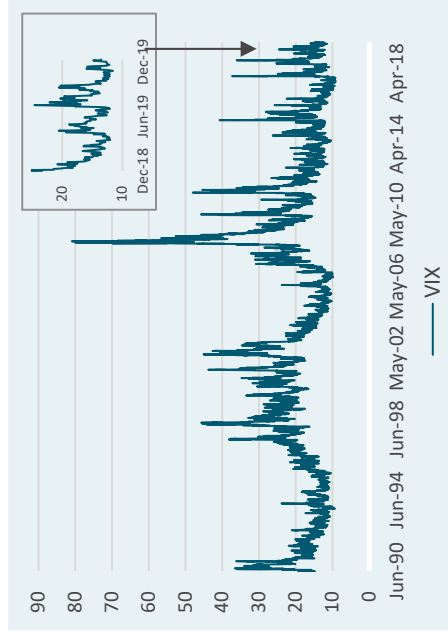
Equity volatility

The implied volatility of large-cap U.S. stocks returned to a subdued level. The CBOE VIX Index, which calculates the market's expectation for volatility implied by S&P 500 Index options, declined from 16.2 to 13.8, a reading which lies in the 15th percentile of weekly readings over the last thirty years. Net non-commercial short VIX positioning reached new all-time-highs in the 4th quarter, meaning that many people are betting on volatility to remain low and push lower. Some investors view this assumption as concerning, and as a signal that the market may be ready for a correction.

U.S. large-cap and emerging market stocks have experienced a higher degree of volatility than international developed stocks over the last several years. Some of the divergence may be attributable to the impacts of the ever-changing U.S.-China trade narrative which has held the full attention of market participants for much of the prior two years.

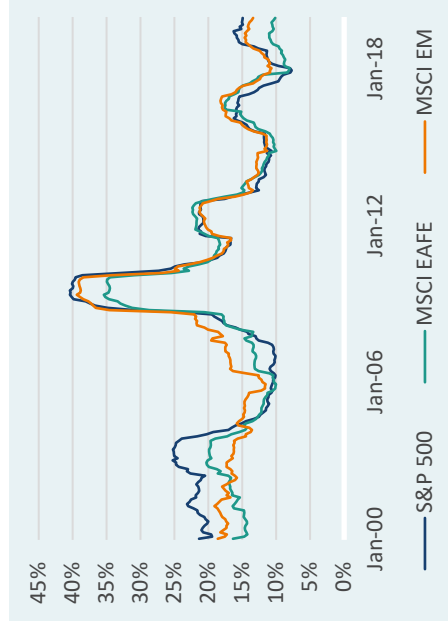
The MSCI EM Index touched new all-time highs in April and did not eclipse that level for another 174 days. In 2019, the S&P 500 and MSCI EAFE indices spent a maximum of 65 and 82 trading days between fresh all-time highs, respectively.

U.S. IMPLIED VOLATILITY (VIX)



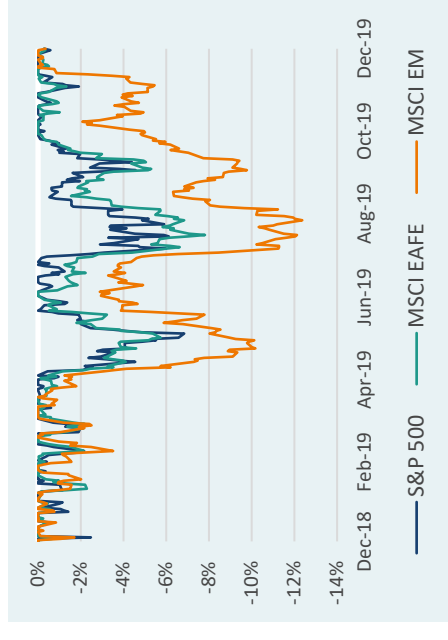
Source: CBOE, as of 12/31/19

ROLLING 1-YEAR REALIZED VOLATILITY



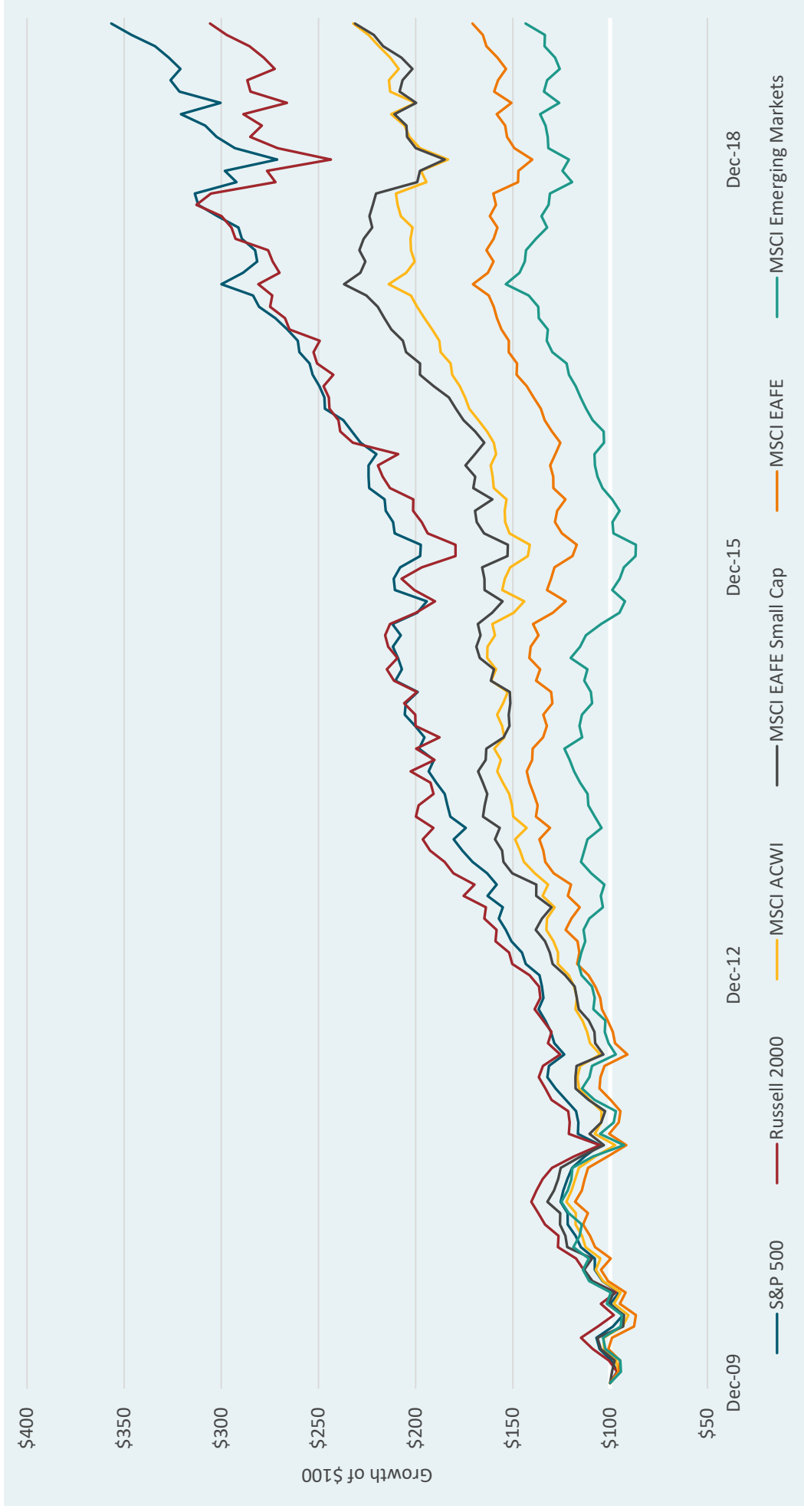
Source: Standard & Poor's, MSCI, Bloomberg, as of 12/31/19

2019 MAX DRAWDOWNS FROM PREVIOUS ALL-TIME-HIGH INDEX LEVELS



Source: Standard & Poor's, MSCI, Bloomberg, as of 12/31/19

Long-term equity performance



Source: Standard & Poor's, Russell, MSCI, Bloomberg, as of 12/31/19

Other assets

Currency

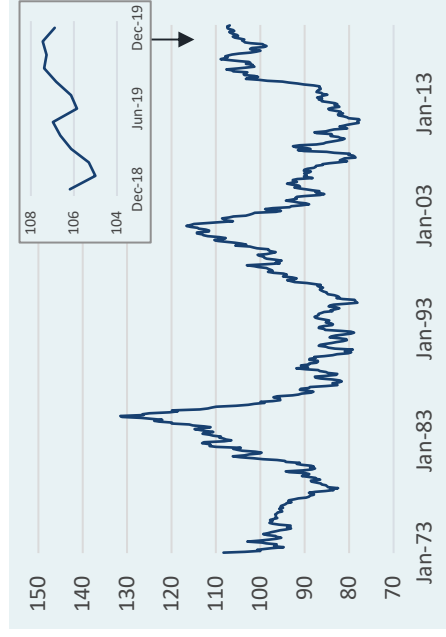
The U.S. dollar weakened versus both developed and emerging market currency baskets in the 4th quarter, fading some of the strong relative performance it had experienced back in Q3 2019. An index tracking the weighted average of the foreign exchange value of the U.S. dollar against major currencies fell 0.5%.

Long as inflationary risks are muted, then higher nominal interest rates in the emerging market complex should afford emerging market central bankers' further room to cut rates than their developed market peers. If implemented, the relative accommodation supplied may fuel both growth and currency depreciation.

J.P. Morgan's Emerging Market Currency Index fell -1.4% in 2019. Many analysts have argued that global disinflationary pressures have eased some long-standing concerns over the risk of capital flight within the emerging market complex. So

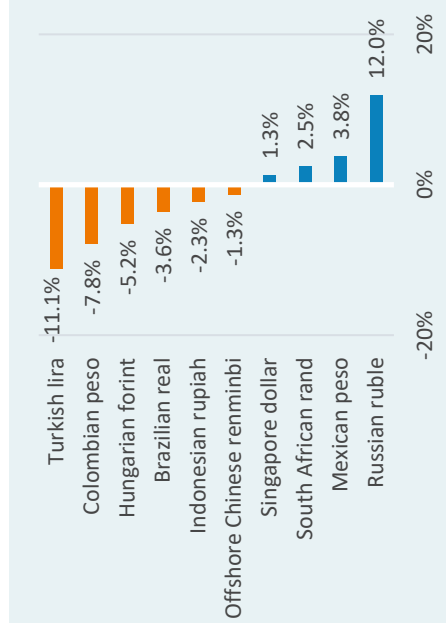
The British pound sterling bounced back sharply in Q4, rising from \$1.23 to \$1.33. Prime Minister Boris Johnson's Conservative Party secured a firm majority in Parliament, lifting the shroud of "Brexit" from the geopolitical landscape.

U.S. DOLLAR TRADE WEIGHTED INDEX



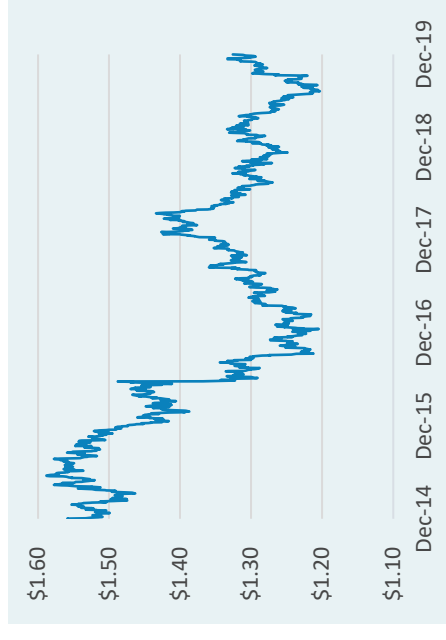
Source: Federal Reserve, Verus, as of 12/31/19

JP MORGAN EMCI CONSTITUENT 2019 RETURNS



Source: J.P. Morgan, Bloomberg, as of 12/31/19

GBP/USD

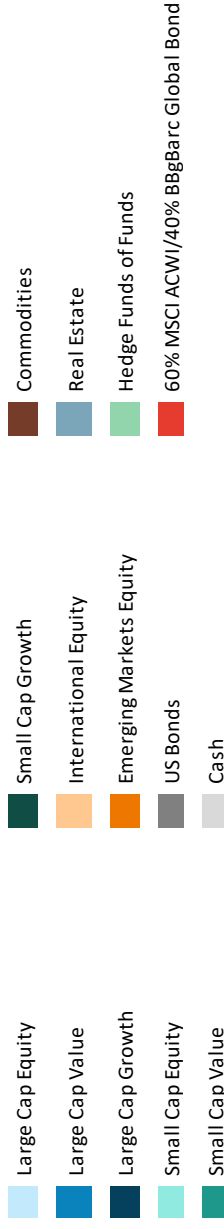


Source: Bloomberg, as of 12/31/19

Appendix

Periodic table of returns

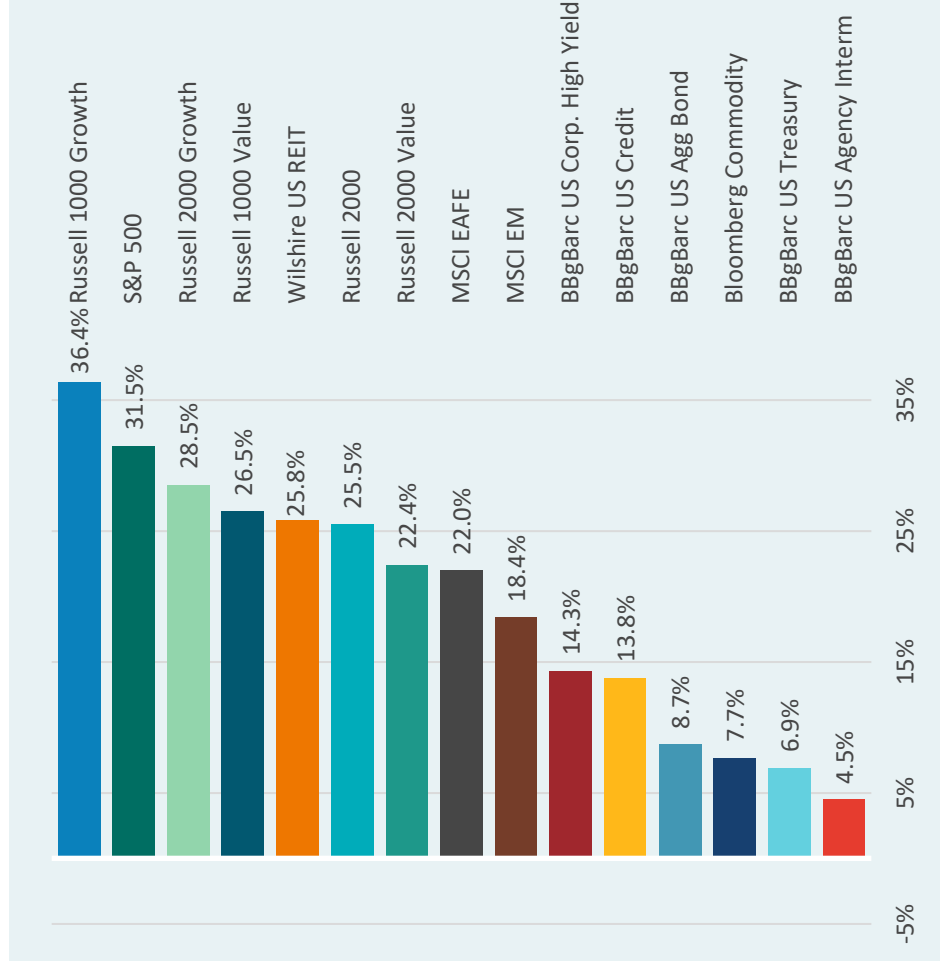
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	5-Year 10-Year
Large Cap Growth	38.7	66.4	31.8	14.0	25.9	56.3	26.0	34.5	32.6	39.8	5.2	79.0	29.1	14.3	18.6	43.3	13.5	13.3	31.7	37.3	6.7	36.4	14.6	15.2
Large Cap Equity	27.0	43.1	22.8	8.4	10.3	48.5	22.2	21.4	26.9	16.2	1.4	37.2	26.9	7.8	18.1	38.8	13.2	5.7	21.3	30.2	1.9	31.4	11.5	13.5
Small Cap Growth	20.3	33.2	12.2	7.3	6.7	47.3	20.7	20.1	23.5	15.8	-6.5	34.5	24.5	2.6	17.9	34.5	13.0	0.9	17.3	25.0	0.0	28.5	9.3	13.0
Large Cap Value	19.3	27.3	11.6	3.3	1.6	46.0	18.3	14.0	22.2	11.8	-21.4	32.5	19.2	1.5	17.5	33.5	11.8	0.6	12.1	22.2	-1.5	26.5	8.6	11.8
Small Cap Equity	16.2	26.5	7.0	2.8	1.0	39.2	16.5	7.5	18.4	11.6	-25.9	28.4	16.8	0.4	16.4	33.1	6.0	0.0	11.8	21.7	-3.5	25.5	8.3	11.8
Small Cap Value	8.7	21.3	4.1	-2.4	-6.0	29.9	14.3	6.3	15.5	10.3	-33.8	23.3	16.1	-2.1	15.3	23.3	4.9	-0.8	11.2	14.6	-6.0	22.4	8.2	10.6
International Equity	15.6	24.3	6.0	2.5	-5.9	30.0	14.5	7.1	16.6	10.9	-28.9	27.2	16.7	0.1	16.3	32.5	5.6	-0.4	11.3	17.1	-4.8	22.0	7.0	9.8
60/40 Global Portfolio	4.9	20.9	-3.0	-5.6	-11.4	29.7	12.9	5.3	15.1	7.0	-35.6	20.6	15.5	-2.9	14.6	12.1	4.2	-1.4	8.0	13.7	-8.3	18.6	6.1	6.4
Emerging Markets Equity	1.2	13.2	-7.3	-9.1	-15.5	25.2	11.4	4.7	13.3	7.0	-36.8	19.7	13.1	-4.2	11.5	11.0	3.4	-2.5	7.1	7.8	-9.3	18.4	5.7	5.5
US Bonds	-2.5	11.4	-7.8	-9.2	-15.7	23.9	9.1	4.6	10.4	5.8	-37.6	18.9	10.2	-5.5	10.5	9.0	2.8	-3.8	5.7	7.7	-11.0	8.7	5.6	3.7
Hedge Funds of Funds	-5.1	7.3	-14.0	-12.4	-20.5	11.6	6.9	4.6	9.1	4.4	-38.4	11.5	8.2	-5.7	4.8	0.1	0.0	-4.4	2.6	7.0	-11.2	7.8	3.0	3.7
Commodities	-6.5	4.8	-22.4	-19.5	-21.7	9.0	6.3	4.2	4.8	-0.2	-38.5	5.9	6.5	-11.7	4.2	-2.0	-1.8	-7.5	1.0	3.5	-12.9	7.7	2.2	2.8
Real Estate	-25.3	-0.8	-22.4	-20.4	-27.9	4.1	4.3	3.2	4.3	-1.6	-43.1	0.2	5.7	-13.3	0.1	-2.3	-4.5	-14.9	0.5	1.7	-13.8	4.8	1.1	0.6
Cash	-27.0	-1.5	-30.6	-21.2	-30.3	1.0	1.4	2.4	2.1	-9.8	-53.2	-16.9	0.1	-18.2	-1.1	-9.5	-17.0	-24.7	0.3	0.9	-14.6	2.1	-3.9	-4.7



Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, BbgBarc US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFR FOF, MSCI ACWI, BbgBarc Global Bond. NCREIF Property Index performance data as of 9/30/19.

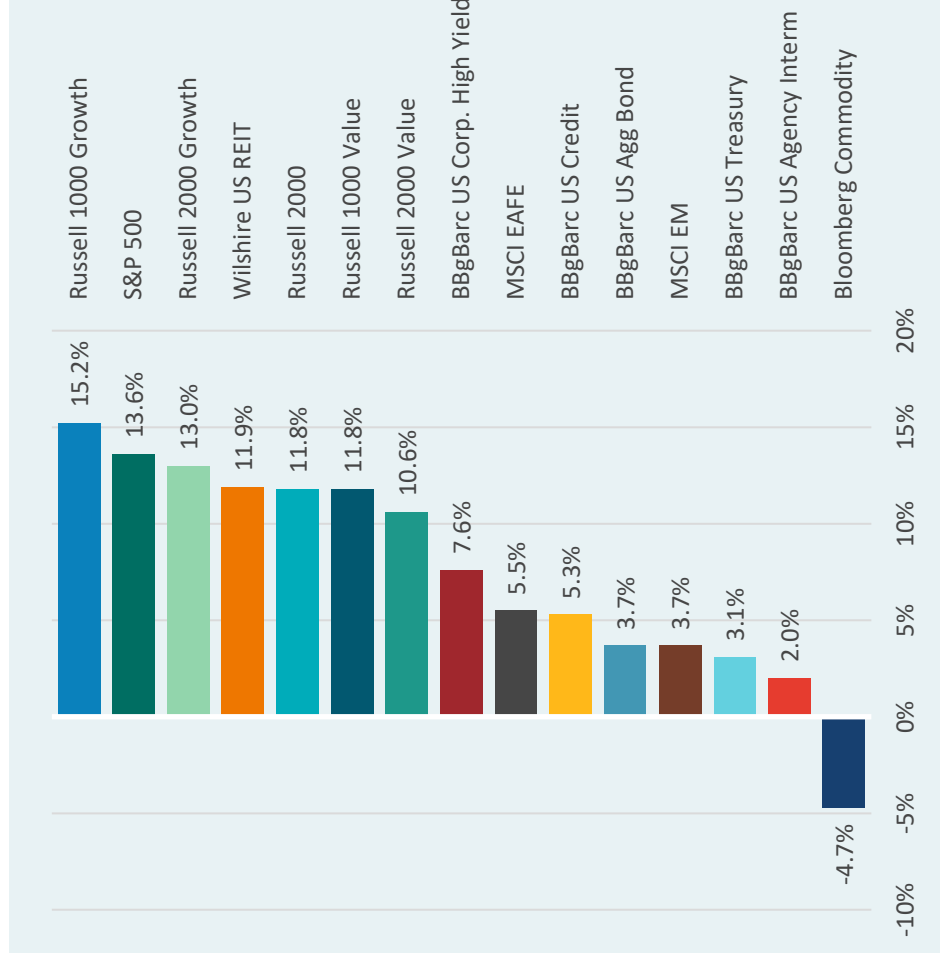
Major asset class returns

ONE YEAR ENDING DECEMBER



Source: Morningstar, as of 12/31/19

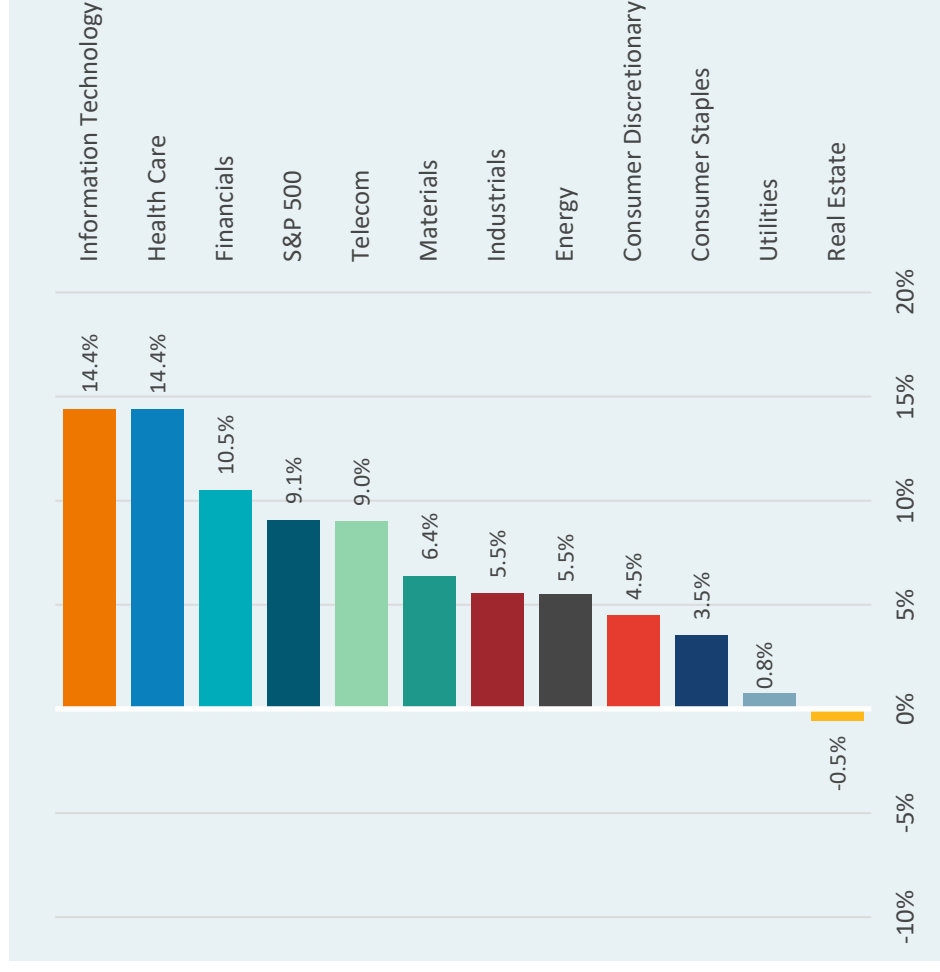
TEN YEARS ENDING DECEMBER



Source: Morningstar, as of 12/31/19

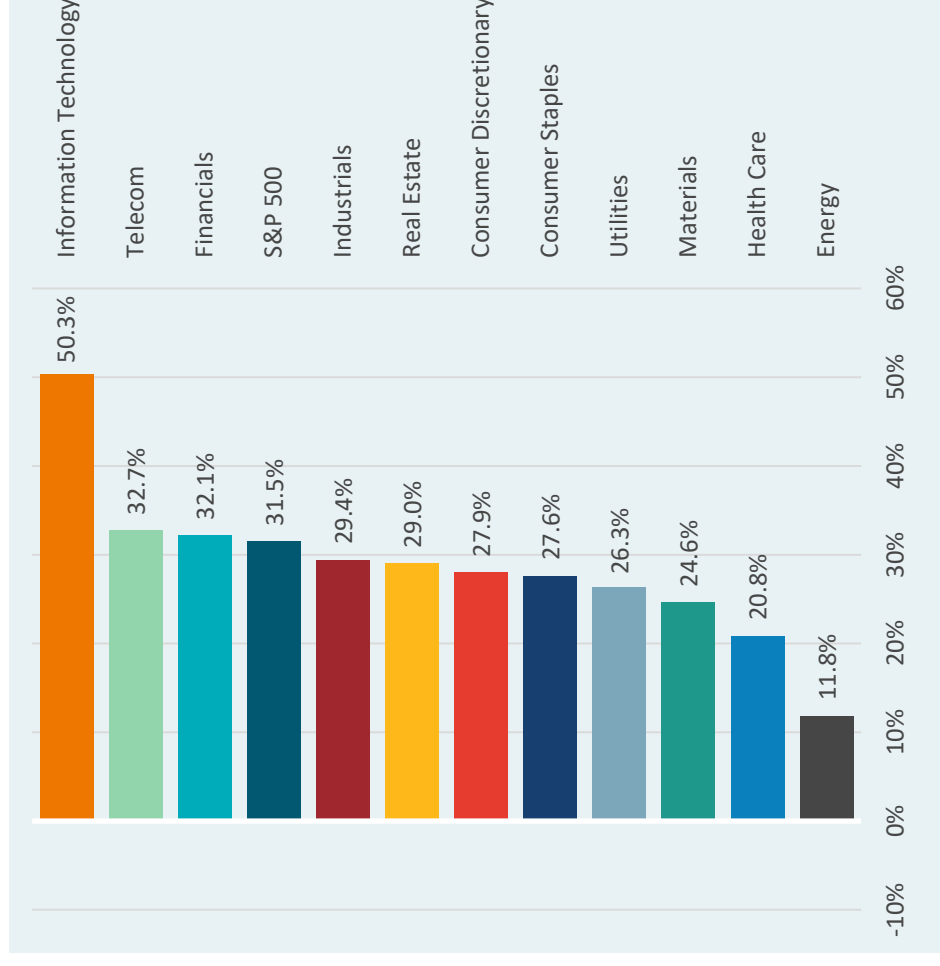
S&P 500 sector returns

Q4 2019



Source: Morningstar, as of 12/31/19

ONE YEAR ENDING DECEMBER



Source: Morningstar, as of 12/31/19

Detailed index returns

DOMESTIC EQUITY		Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year	FIXED INCOME						
		Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Core Index															
S&P 500		3.0	9.1	31.5	31.5	15.3	11.7	13.6	0.4	0.8	8.4	8.4	3.3	2.6	3.4
S&P 500 Equal Weighted		2.8	7.6	29.2	29.2	12.4	9.8	13.5	0.1	0.5	2.3	2.3	1.7	1.1	0.6
DJ Industrial Average		1.9	6.7	25.3	25.3	15.7	12.6	13.4	(0.1)	0.2	8.7	8.7	4.0	3.0	3.7
Russell Top 200		3.1	9.8	31.8	31.8	16.2	12.3	13.7							
Russell 1000		2.9	9.0	31.4	31.4	15.0	11.5	13.5	0.2	0.5	3.6	3.6	1.9	1.4	1.2
Russell 2000		2.9	9.9	25.5	25.5	8.6	8.2	11.8	(2.8)	(4.1)	14.8	14.8	6.9	4.1	7.0
Russell 3000		2.9	9.1	31.0	31.0	14.6	11.2	13.4	(0.6)	(0.8)	6.9	6.9	3.3	2.4	3.1
Russell Mid Cap		2.3	7.1	30.5	30.5	12.1	9.3	13.2							
Style Index															
Russell 1000 Growth		3.0	10.6	36.4	36.4	20.5	14.6	15.2	0.3	0.7	6.4	6.4	3.2	2.6	3.2
Russell 1000 Value		2.8	7.4	26.5	26.5	9.7	8.3	11.8	2.0	2.6	14.3	14.3	6.4	6.1	7.6
Russell 2000 Growth		2.3	11.4	28.5	28.5	12.5	9.3	13.0	0.1	0.3	4.5	4.5	2.4	1.9	2.0
Russell 2000 Value		3.5	8.5	22.4	22.4	4.8	7.0	10.6	0.3	1.1	13.8	13.8	5.8	4.4	5.3
INTERNATIONAL EQUITY															
Broad Index															
MSCI ACWI		3.5	9.0	26.6	26.6	12.4	8.4	8.8	5.0	4.4	7.7	7.7	(0.9)	(3.9)	(4.7)
MSCI ACWI ex US		4.3	8.9	21.5	21.5	9.9	5.5	5.0	(0.7)	(1.1)	25.8	25.8	7.6	6.9	11.9
MSCI EAFE		3.2	8.2	22.0	22.0	9.6	5.7	5.5	1.6	1.7	8.2	8.2	4.5	4.5	5.2
MSCI EM		7.5	11.8	18.4	18.4	11.6	5.6	3.7	8.9	(4.6)	6.7	6.7	(5.0)	(7.0)	4.8
MSCI EAFE Small Cap		4.4	11.5	25.0	25.0	10.9	8.9	8.7							
Style Index															
MSCI EAFE Growth		2.9	8.4	27.9	27.9	12.8	7.7	6.9	2.0	1.8	15.0	15.0	6.7	6.2	6.9
MSCI EAFE Value		3.7	7.8	16.1	16.1	6.3	3.5	4.0	4.1	5.2	13.5	13.5	7.0	2.8	2.7
Regional Index															
MSCI UK		5.2	10.0	21.0	21.0	8.3	3.3	5.0	1.8	3.5	10.4	10.4	4.5	3.5	4.0
MSCI Japan		2.1	7.6	19.6	19.6	8.9	7.7	6.6	1.3	2.5	7.8	7.8	3.7	2.2	2.8
MSCI Euro		2.9	7.9	22.9	22.9	9.1	5.1	3.7	1.8	3.0	(1.8)	(1.8)	2.1	(1.5)	(2.4)
MSCI EM Asia		7.1	12.5	19.2	19.2	12.9	6.6	5.8	2.4	7.5	4.0	4.0	2.3	(3.2)	(2.0)
MSCI EM Latin American		10.3	10.5	17.5	17.5	10.7	4.2	(0.6)	0.8	(0.6)	1.0	1.0	2.4	2.0	(1.5)

Source: Morningstar, HFR, as of 12/31/19

Definitions

Bloomberg US Weekly Consumer Comfort Index - tracks the public's economic attitudes each week, providing a high-frequency read on consumer sentiment. The index, based on cell and landline telephone interviews with a random, representative national sample of U.S. adults, tracks Americans' ratings of the national economy, their personal finances and the buying climate on a weekly basis, with views of the economy's direction measured separately each month. (www.langeersearch.com)

University of Michigan Consumer Sentiment Index - A survey of consumer attitudes concerning both the present situation as well as expectations regarding economic conditions conducted by the University of Michigan. For the preliminary release approximately three hundred consumers are surveyed while five hundred are interviewed for the final figure. The level of consumer sentiment is related to the strength of consumer spending. (www.Bloombergr.com)

NFIB Small Business Outlook - Small Business Economic Trends (SBET) is a monthly assessment of the U.S. small-business economy and its near-term prospects. Its data are collected through mail surveys to random samples of the National Federal of Independent Business (NFIB) membership. The survey contains three broad question types: recent performance, near-term forecasts, and demographics. The topics addressed include: outlook, sales, earnings, employment, employee compensation, investment, inventories, credit conditions, and single most important problem. (<http://www.nfib-sbet.org/about/>)

NAHB Housing Market Index - the housing market index is a weighted average of separate diffusion indices for three key single-family indices: market conditions for the sale of new homes at the present time, market conditions for the sale of new homes in the next six months, and the traffic of prospective buyers of new homes. The first two series are rated on a scale of Good, Fair, and Poor and the last is rated on a scale of High/Very High, Average, and Low/Very Low. A diffusion index is calculated for each series by applying the formula $(\text{Good-Poor} + 100)/2$ to the present and future sales series and $(\text{High/Very High-Low/Very Low} + 100)/2$ to the traffic series. Each resulting index is then seasonally adjusted and weighted to produce the HMI. Based on this calculation, the HMI can range between 0 and 100.

Notices & disclosures

Past performance is no guarantee of future results. This report or presentation is provided for informational purposes only and is directed to institutional clients and eligible institutional counterparties only and should not be relied upon by retail investors. Nothing herein constitutes investment, legal, accounting or tax advice, or a recommendation to buy, sell or hold a security or pursue a particular investment vehicle or any trading strategy. The opinions and information expressed are current as of the date provided or cited only and are subject to change without notice. This information is obtained from sources deemed reliable, but there is no representation or warranty as to its accuracy, completeness or reliability. Verus Advisory Inc. expressly disclaim any and all implied warranties or originality, accuracy, completeness, non-infringement, merchantability and fitness for a particular purpose. This report or presentation cannot be used by the recipient for advertising or sales promotion purposes.

The material may include estimates, outlooks, projections and other "forward-looking statements." Such statements can be identified by the use of terminology such as "believes," "expects," "may," "will," "should," "anticipates," or the negative of any of the foregoing or comparable terminology, or by discussion of strategy, or assumptions such as economic conditions underlying other statements. No assurance can be given that future results described or implied by any forward looking information will be achieved. Actual events may differ significantly from those presented. Investing entails risks, including possible loss of principal. Risk controls and models do not promise any level of performance or guarantee against loss of principal.

"VERUS ADVISORY™" and any associated designs are the respective trademarks of Verus Advisory, Inc. Additional information is available upon request.

Verus⁷⁷ is a registered trademark of Verus Advisory, Inc.

Contra Costa County Employees' Retirement Association

Investment Performance Review

Period Ending: December 31, 2019



VERUSINVESTMENTS.COM

SEATTLE 206-622-3700

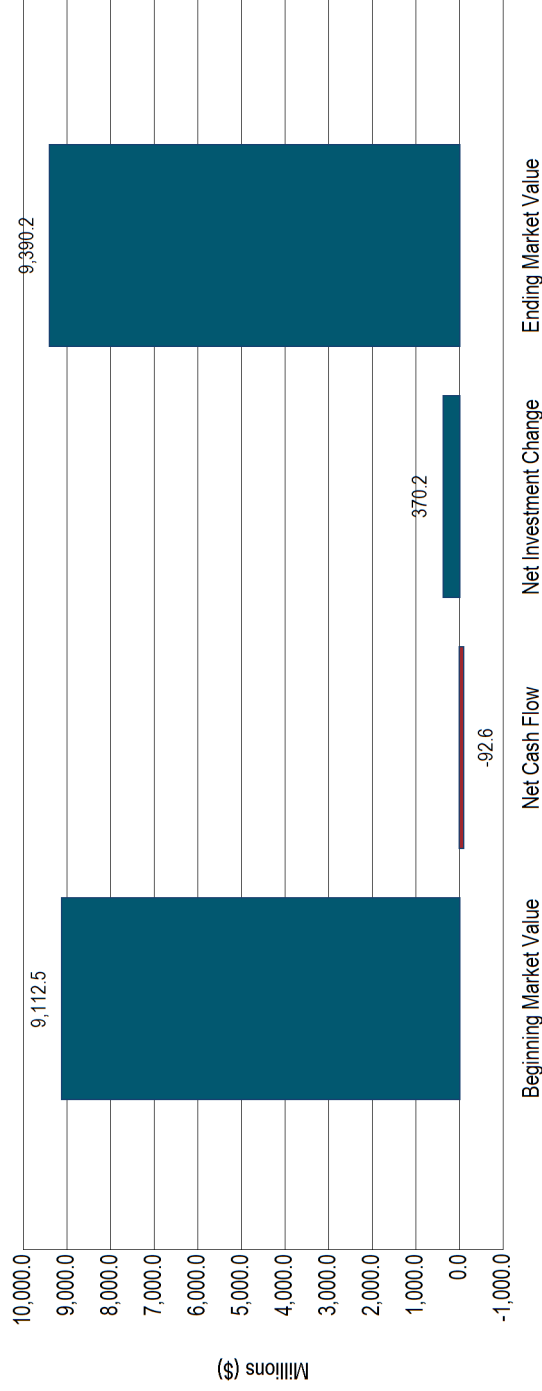
LOS ANGELES 310-297-1777

SAN FRANCISCO 415-362-3484

Portfolio Reconciliation

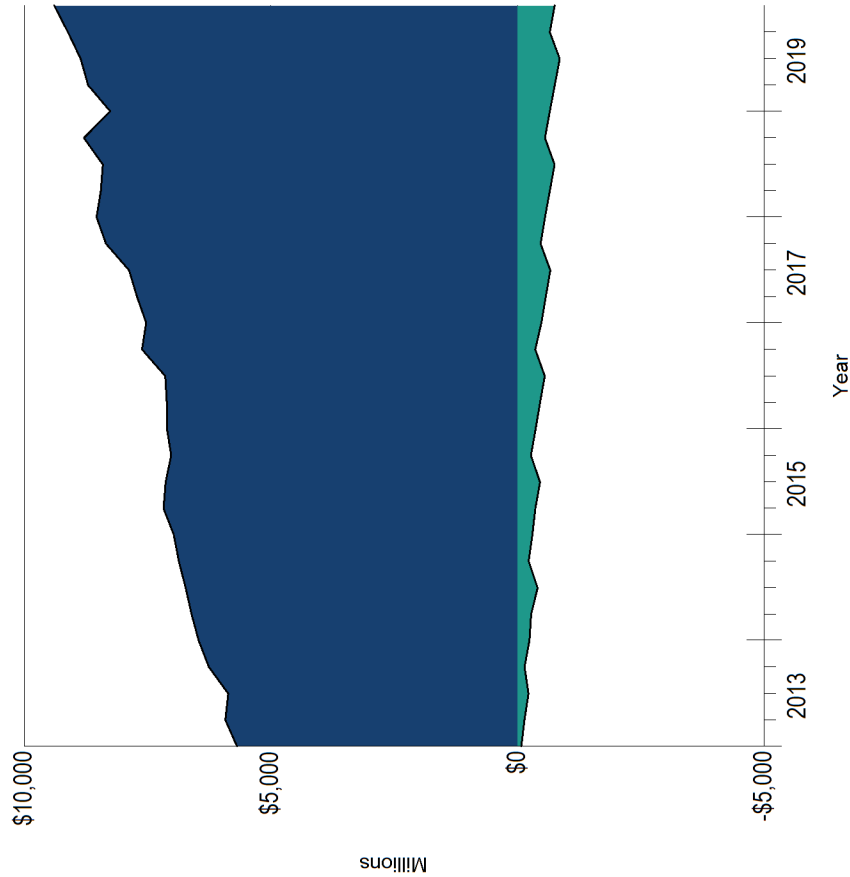
	Last Three Months	Year-To-Date
Beginning Market Value	\$9,112,546,495	\$8,255,873,307
Net Cash Flow	-\$92,588,760	-\$75,240,768
Net Investment Change	\$370,230,301	\$1,209,555,498
Ending Market Value	\$9,390,188,036	\$9,390,188,036

Change in Market Value
Last Three Months

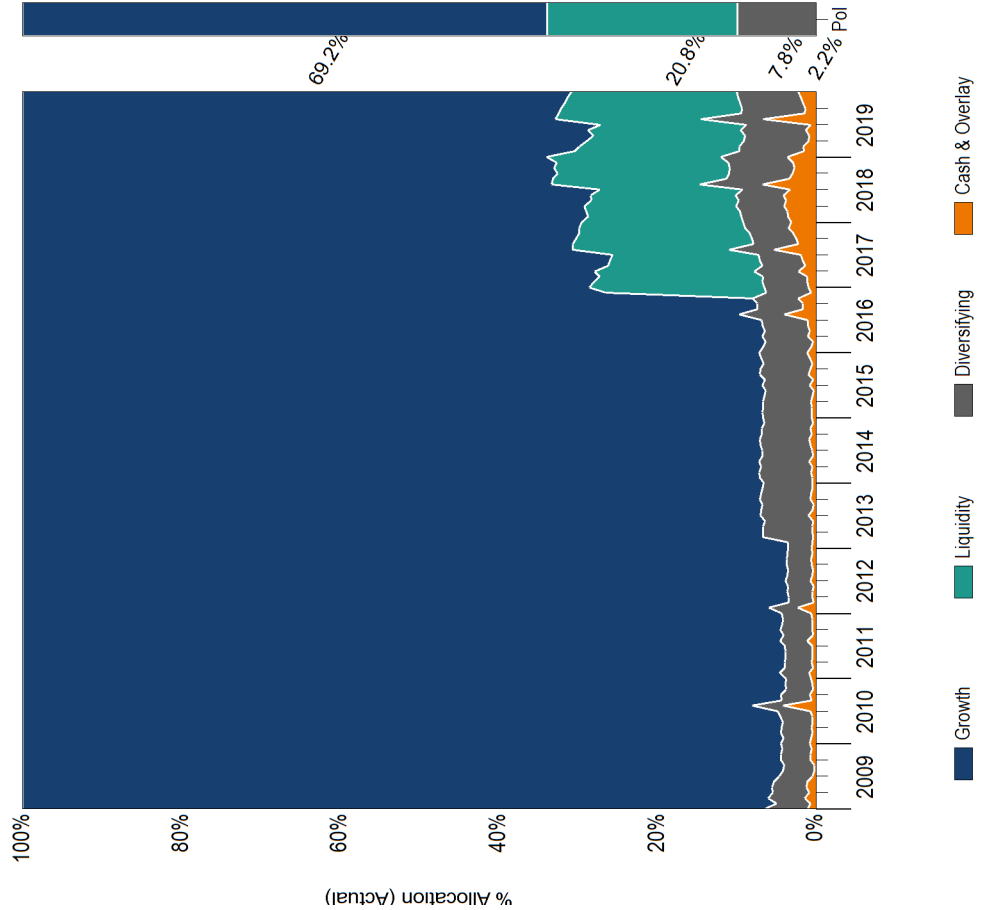


Contributions and withdrawals may include intra-account transfers between managers/funds.

Market Value History
Cumulative Cash Flows

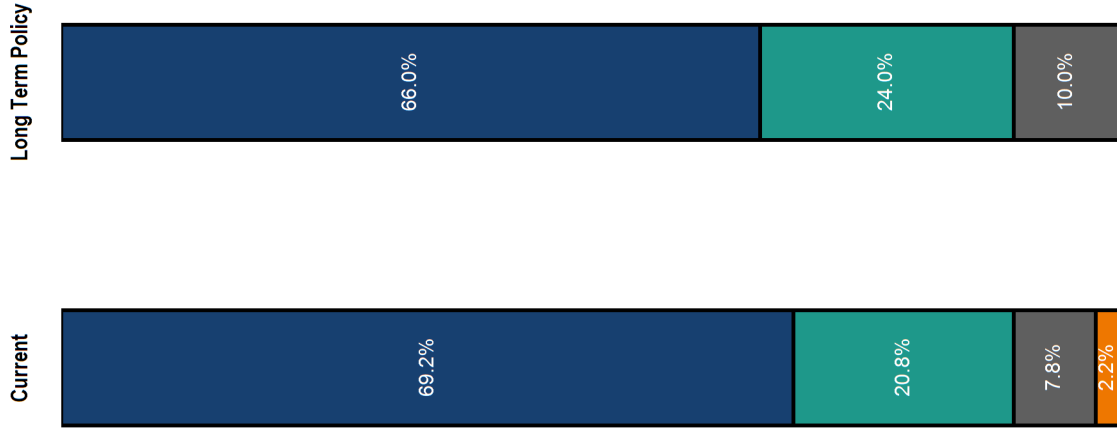


Asset Allocation History



Policy reflects FFP 4-Yr. allocations approved in June 2019.

Total Fund
 Asset Allocation vs. Long Term Target Policy Period Ending: December 31, 2019



Allocation vs. Long Term Target

	Current Balance	Current Allocation	Long Term Target	Difference
Growth	\$6,497,135,406	69.2%	66.0%	\$299,611,302
Liquidity	\$1,956,149,326	20.8%	24.0%	-\$297,495,803
Diversifying	\$728,611,654	7.8%	10.0%	-\$210,407,149
Cash & Overlay	\$208,291,650	2.2%	--	\$208,291,650
Total	\$9,390,188,036	100.0%	100.0%	

Allocation vs. Current Targets

	Current Balance	Current Allocation	Current Target	Difference
Growth	\$6,497,135,406	69.2%	68.0%	\$111,807,541
Liquidity	\$1,956,149,326	20.8%	24.0%	-\$297,495,803
Diversifying	\$728,611,654	7.8%	8.0%	-\$22,603,389
Cash & Overlay	\$208,291,650	2.2%	--	\$208,291,650
Total	\$9,390,188,036	100.0%	100.0%	

Long Term Targets reflect FFP 4-Yr allocations approved in June 2019.
 Current Targets reflect targets approved in June 2019.

Total Fund
Executive Summary (Net of Fees) Period Ending: December 31, 2019

	% of Portfolio	QTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
Total Fund	100.0	4.1	14.6	8.3	6.8	8.5	14.6	-2.7	13.9	6.9	2.1
Policy Index		4.3	14.6	8.9	7.2	9.1	14.6	-0.9	13.7	8.9	0.6
Growth	69.2	5.5	18.4	10.5	8.2	--	18.4	-3.9	18.7	7.6	2.3
Custom Growth Benchmark		6.1	19.3	11.7	9.0	--	19.3	-2.1	19.3	10.1	0.3
Diversifying	7.8	0.5	6.8	2.3	1.2	2.3	6.8	-2.3	2.6	0.8	-1.8
Custom Diversifying Benchmark		0.5	6.1	4.0	3.7	4.1	6.1	1.4	4.7	4.1	2.5
Liquidity	20.8	0.5	4.8	2.6	--	--	4.8	1.7	1.4	--	--
BBgBarc US Govt/Credit 1-3 Yr: TR		0.6	4.0	2.1	--	--	4.0	1.6	0.8	--	--

**Correlation between the Growth and Diversifying composites is .10, .24 and .26 over the previous 1, 3 and 5 year periods respectively.*

Policy Index (7/1/2019-Present): 10% Russell 3000, 18% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 24% BBgBarc 1-3 Yr Govt/Credit, 3.5% BBgBarc US Aggregate, 2% BBgBarc Global Aggregate, 5% ICE BofAML High Yield Master II +2%, 2% ICE BofAML High Yield Master II, 1% Wilshire REIT, 1.6% NCREIF Property Index, 6.4% NCREIF ODCE Index, 2.0% CPI +4%, 11% S&P 500 +4%(Lagged), 2.5% HFRI EH Equity Market Neutral, Policy Index (7/1/2018-6/30/2019): 11% Russell 3000, 19% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 23% BBgBarc 1-3 Yr Govt/Credit, 3.5% BBgBarc US Aggregate, 2% BBgBarc Global Aggregate, 4% ICE BofAML High Yield Master II +2%, 2% ICE BofAML High Yield Master II, 1% Wilshire REIT, 1.8% NCREIF Property Index, 7.2% NCREIF ODCE Index, 2.0% CPI +4%, 10% S&P 500 +4%(Lagged), 2.5% HFRI EH Equity Market Neutral, Policy Index (10/1/2017-6/30/2018): 16.3% Russell 3000, 18.8% MSCI ACWI ex-US (Gross), 8.6% MSCI ACWI (Net), 25% BBgBarc 1-3 Yr Govt/Credit, 3.5% BBgBarc US Aggregate, 1.9% ICE BofAML High Yield Master II +2%, 4.3% ICE BofAML High Yield Master II, 1% Wilshire REIT, 1.6% NCREIF Property Index, 6.4% NCREIF ODCE Index, 2.5% CPI +4%, 10.1% S&P 500 +4%(Lagged), Policy Index (1/1/2017-9/30/2017): 22.9% Russell 3000, 11% MSCI ACWI ex-US (Gross), 10.9% MSCI ACWI (Net), 19.6% BBgBarc 1-3 Yr Govt/Credit, 3.2% BBgBarc US Aggregate, 1.7% NCREIF Property Index, 6.8% NCREIF ODCE Index, 3.6% CPI +4%, 8.1% S&P 500 +4%(Lagged), 1.6% 90-day T-Bills, Policy Index (4/1/2012-12/31/16): 27.7% Russell 3000, 10.6% MSCI ACWI ex-US (Gross), 12.3% S&P 500 +4% (Lagged), 5% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 5.4% Wilshire REIT, 6.75% NCREIF Property Index, 1.35% FTSE/EPRR NAREIT Developed exUS, 6.8% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills, Policy Index (4/1/2011-3/31/2012): 31% Russell 3000, 10.4% MSCI EAFE (Gross), 9.6% MSCI ACWI (Net), 25% BBgBarc US Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 5% NCREIF ODCE Index, 3.6% CPI +4%, 8.1% S&P 500 +4% (Lagged), 1.6% 90-day T-Bills, Policy Index (4/1/2010-3/31/2011): 35.6% Russell 3000, 10.4% MSCI EAFE (Gross), 5% MSCI ACWI (Net), 25% BBgBarc US Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% Wilshire REIT, 3.1% NCREIF Property Index, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills, Policy Index (7/1/2009-3/31/2010): 40.6% Russell 3000, 10.4% MSCI EAFE (Gross), 25% BBgBarc US Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% Wilshire REIT, 3.1% NCREIF Property Index, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.

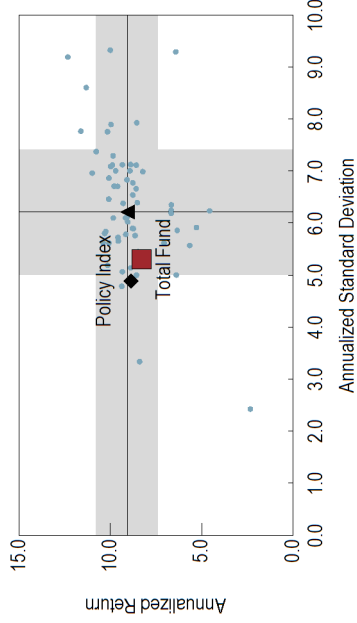
Total Fund
Executive Summary (Net of Fees)

Period Ending: December 31, 2019

3 Years

Total Fund	Anlzd Return	Ann Excess BM Return	Anlzd Standard Deviation	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Information Ratio	Up Mkt Capture Ratio	Down Mkt Capture Ratio
	8.29%	-0.58%	5.31%	-0.90%	1.04	1.61%	0.91	1.25	-0.36	97.49%	107.25%

Risk vs. Return

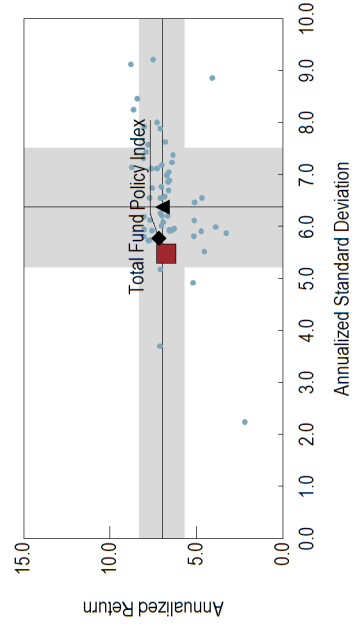


- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvMetrics Public DB > \$1B Gross

5 Years

Total Fund	Anlzd Return	Ann Excess BM Return	Anlzd Standard Deviation	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Information Ratio	Up Mkt Capture Ratio	Down Mkt Capture Ratio
	6.75%	-0.42%	5.47%	0.30%	0.90	1.80%	0.90	1.04	-0.23	89.39%	89.27%

Risk vs. Return



- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvMetrics Public DB > \$1B Gross

Total Fund Performance Summary (Gross of Fees) Period Ending: December 31, 2019

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
Total Fund	9,390,188,036	100.0	4.1	14.9	8.6	7.1	9.1	14.9	-2.5	14.2	7.4	2.7
Policy Index			4.3	14.6	8.9	7.2	9.1	14.6	-0.9	13.7	8.9	0.6
InvMetrics Public DB > \$1B Gross Rank			76	89	73	35	14	89	25	83	74	5
Total Fund ex Overlay & Cash	9,181,896,386	97.8	4.1	14.7	8.6	7.2	9.1	14.7	-2.1	14.1	7.4	2.7
Policy Index			4.3	14.6	8.9	7.2	9.1	14.6	-0.9	13.7	8.9	0.6
InvMetrics Public DB > \$1B Gross Rank			78	90	70	34	13	90	20	84	74	5
Growth	6,497,135,406	69.2	5.6	18.7	10.9	8.7	--	18.7	-3.6	19.1	8.1	3.0
Custom Growth Benchmark			6.1	19.3	11.7	9.0	--	19.3	-2.1	19.3	10.1	0.3
Total Domestic Equity	1,019,488,911	10.9	7.2	26.7	13.4	10.4	13.4	26.7	-7.2	23.9	11.5	1.1
Russell 3000			9.1	31.0	14.6	11.2	13.4	31.0	-5.2	21.1	12.7	0.5
InvMetrics Public DB US Eq Gross Rank			89	88	58	64	34	88	78	6	77	21
BlackRock Russell 1000 Index	204,604,006	2.2	9.0	31.4	--	--	--	31.4	-4.8	--	--	--
Russell 1000			9.0	31.4	--	--	--	31.4	-4.8	--	--	--
eV US Large Cap Equity Gross Rank			40	38	--	--	--	38	47	--	--	--
Jackson Square Partners	244,269,952	2.6	5.7	27.9	17.4	10.4	14.0	27.9	-2.0	29.3	-4.4	6.1
Russell 1000 Growth			10.6	36.4	20.5	14.6	15.2	36.4	-1.5	30.2	7.1	5.7
eV US Large Cap Growth Equity Gross Rank			96	93	79	94	67	93	59	47	98	37
Boston Partners	251,080,501	2.7	8.1	24.3	10.9	8.5	12.4	24.3	-8.7	20.1	15.1	-3.9
Russell 1000 Value			7.4	26.5	9.7	8.3	11.8	26.5	-8.3	13.7	17.3	-3.8
eV US Large Cap Value Equity Gross Rank			43	77	50	60	41	77	55	23	50	65
Emerald Advisers	159,009,461	1.7	11.1	30.3	14.7	11.6	15.7	30.3	-10.1	28.8	10.1	4.1
Russell 2000 Growth			11.4	28.5	12.5	9.3	13.0	28.5	-9.3	22.2	11.3	-1.4
eV US Small Cap Growth Equity Gross Rank			32	45	64	52	28	45	85	26	54	19
Ceredex	160,524,993	1.7	2.6	18.4	5.3	7.7	--	18.4	-11.3	11.4	29.8	-4.4
Russell 2000 Value			8.5	22.4	4.8	7.0	--	22.4	-12.9	7.8	31.7	-7.5
eV US Small Cap Value Equity Gross Rank			99	86	56	48	--	86	25	48	32	52

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

**Total Fund
Performance Summary (Gross of Fees)** Period Ending: December 31, 2019

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
Total International Equity	1,716,185,180	18.3	10.9	23.7	10.0	5.9	6.0	23.7	-14.3	25.5	1.2	-1.2
MSCI ACWI ex USA Gross			9.0	22.1	10.4	6.0	5.4	22.1	-13.8	27.8	5.0	-5.3
MSCI EAFE Gross			8.2	22.7	10.1	6.2	6.0	22.7	-13.4	25.6	1.5	-0.4
InvMetrics Public DB ex-US Eq Gross Rank			8	28	51	56	57	28	44	90	89	28
International Equity	986,003,553	10.5	9.7	27.0	11.2	6.6	6.3	27.0	-13.6	25.3	1.2	-1.2
MSCI ACWI ex USA Gross			9.0	22.1	10.4	6.0	5.4	22.1	-13.8	27.8	5.0	-5.3
InvMetrics Public DB ex-US Eq Gross Rank			55	6	22	35	44	6	21	93	89	28
Pyrford	485,671,948	5.2	8.4	22.1	9.5	5.7	--	22.1	-10.1	19.8	3.4	-2.9
MSCI ACWI ex USA Value			8.2	15.7	6.9	3.6	--	15.7	-14.0	22.7	8.9	-10.1
eV ACWI ex-US Value Equity Gross Rank			91	36	27	42	--	36	5	84	74	59
William Blair	500,331,604	5.3	11.0	32.0	12.9	7.3	--	32.0	-16.8	30.9	-1.4	0.5
MSCI ACWI ex USA Growth			9.6	27.3	12.9	7.3	--	27.3	-14.4	32.0	0.1	-1.3
eV ACWI ex-US Growth Equity Gross Rank			38	42	78	86	--	42	69	81	55	69
Emerging Markets Equity	730,181,627	7.8	12.5	19.4	--	--	--	19.4	-15.3	--	--	--
MSCI Emerging Markets			11.8	18.4	--	--	--	18.4	-14.6	--	--	--
InvMetrics Public DB Emg Mkt Eq Gross Rank			4	27	--	--	--	27	51	--	--	--
PIMCO RAE Emerging Markets	369,299,185	3.9	11.2	14.6	--	--	--	14.6	-12.3	--	--	--
MSCI Emerging Markets			11.8	18.4	--	--	--	18.4	-14.6	--	--	--
eV Emg Mkts Equity Gross Rank			54	82	--	--	--	82	19	--	--	--
TT Emerging Markets	360,882,442	3.8	13.9	24.8	--	--	--	24.8	-18.4	--	--	--
MSCI Emerging Markets			11.8	18.4	--	--	--	18.4	-14.6	--	--	--
eV Emg Mkts Equity Gross Rank			9	23	--	--	--	23	83	--	--	--
Total Global Equity	794,334,977	8.5	7.3	28.9	13.7	10.1	8.2	28.9	-7.8	23.7	7.6	2.2
MSCI ACWI			9.0	26.6	12.4	8.4	8.8	26.6	-9.4	24.0	7.9	-2.4
InvMetrics Public DB Gbl Eq Gross Rank			77	1	43	1	11	1	60	79	40	16
Artisan Partners	404,024,936	4.3	9.7	37.0	18.8	14.1	--	37.0	-7.9	32.9	5.6	9.2
MSCI ACWI			9.0	26.6	12.4	8.4	--	26.6	-9.4	24.0	7.9	-2.4
eV All Global Equity Gross Rank			31	7	10	5	--	7	40	11	61	4
First Eagle	390,143,027	4.2	4.9	21.0	8.8	7.6	--	21.0	-7.6	15.1	11.7	0.2
MSCI ACWI			9.0	26.6	12.4	8.4	--	26.6	-9.4	24.0	7.9	-2.4
eV All Global Equity Gross Rank			89	82	85	71	--	82	38	89	19	49

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

**Total Fund
Performance Summary (Gross of Fees)** Period Ending: December 31, 2019

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
Private Credit	539,105,455	5.7	1.7	7.7	8.8	9.5	13.9	7.7	8.3	10.4	8.2	12.9
ICE BofAML High Yield Master II +2%			3.1	16.7	8.5	8.3	9.6	16.7	-0.3	9.6	19.8	-2.7
Total High Yield	208,823,867	2.2	2.7	16.0	6.2	5.7	7.3	16.0	-3.2	6.5	14.3	-3.5
ICE BofAML High Yield Master II			2.6	14.4	6.3	6.1	7.5	14.4	-2.3	7.5	17.5	-4.6
eV US High Yield Fixed Inc Gross Rank			37	15	66	68	70	15	88	74	47	68
Allianz Global Investors	208,823,867	2.2	2.7	16.0	6.2	5.7	7.3	16.0	-3.2	6.5	14.3	-3.5
ICE BofAML High Yield Master II			2.6	14.4	6.3	6.1	7.5	14.4	-2.3	7.5	17.5	-4.6
eV US High Yield Fixed Inc Gross Rank			37	15	66	68	70	15	88	74	47	68
Total Real Estate	714,060,165	7.6	1.0	8.1	8.9	9.1	12.4	8.1	7.4	11.1	5.5	13.5
Real Estate Benchmark			1.2	7.7	7.2	7.3	10.6	7.7	6.7	7.1	6.7	8.3
NCREIF-ODCE			1.5	5.3	7.1	9.0	11.4	5.3	8.3	7.6	8.8	15.0
NCREIF Property Index			1.6	6.4	6.7	8.2	10.2	6.4	6.7	7.0	8.0	13.3
Adelante	80,205,371	0.9	-0.7	28.2	9.5	7.5	12.8	28.2	-5.0	7.8	4.1	5.1
Wilshire REIT			-1.1	25.8	7.6	6.9	11.9	25.8	-4.8	4.2	7.2	4.2
Private Equity	1,045,326,147	11.1	2.6	8.4	10.8	10.7	11.9	8.4	12.1	11.9	9.4	11.6
S&P 500 Index +4% (Lagged)			2.7	8.4	17.9	15.2	17.7	8.4	22.6	23.3	20.0	3.4
Risk Parity	459,810,703	4.9	1.7	--	--	--	--	--	--	--	--	--
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			5.5	--	--	--	--	--	--	--	--	--
AQR Global Risk Premium-EL	236,618,370	2.5	3.5	--	--	--	--	--	--	--	--	--
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			5.5	--	--	--	--	--	--	--	--	--
PanAgora Risk Parity Multi Asset	223,192,333	2.4	-0.2	--	--	--	--	--	--	--	--	--
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			5.5	--	--	--	--	--	--	--	--	--

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

**Total Fund
Performance Summary (Gross of Fees)** Period Ending: December 31, 2019

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
Diversifying	728,611,654	7.8	0.6	7.1	2.6	1.5	2.7	7.1	-2.0	2.8	1.3	-1.4
Custom Diversifying Benchmark			0.5	6.1	4.0	3.7	4.1	6.1	1.4	4.7	4.1	2.5
Diversifying Fixed Income	523,900,999	5.6	0.5	8.6	3.2	2.8	3.7	8.6	-1.7	2.8	2.8	1.6
eV US Core Fixed Inc Gross Rank			13	81	99	98	92	81	99	96	72	15
AFL-CIO	333,841,377	3.6	-0.3	8.2	4.1	3.2	4.0	8.2	0.6	3.6	2.4	1.6
BBgBarc US Aggregate TR			0.2	8.7	4.0	3.0	3.7	8.7	0.0	3.5	2.6	0.6
eV US Core Fixed Inc Gross Rank			98	90	81	74	74	90	16	76	87	15
Wellington Real Total Return	190,059,622	2.0	2.1	9.2	1.7	0.0	--	9.2	-5.6	1.9	-0.1	-4.9
CPI + 4%			1.1	6.4	6.2	5.9	--	6.4	6.0	6.2	6.2	4.8
Diversifying Equity	204,710,656	2.2	0.8	3.3	--	--	--	3.3	--	--	--	--
Parametric Defensive Equity	204,710,656	2.2	0.8	3.3	--	--	--	3.3	--	--	--	--
91 Day T-Bill +4%			1.3	6.1	--	--	--	6.1	--	--	--	--
Liquidity	1,956,149,326	20.8	0.5	4.9	2.7	--	--	4.9	1.8	1.5	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			0.6	4.0	2.1	--	--	4.0	1.6	0.8	--	--
eV US Short Duration Fixed Inc Gross Rank			74	35	37	--	--	35	24	50	--	--
DFA Short Credit	460,934,054	4.9	0.7	5.2	2.8	--	--	5.2	1.2	1.9	--	--
ICE BofAML 1-5 Yrs US Corp & Govt TR			0.5	5.1	2.6	--	--	5.1	1.4	1.3	--	--
eV US Short Duration Fixed Inc Gross Rank			25	21	33	--	--	21	93	26	--	--
Insight Short Duration	956,150,002	10.2	0.7	4.7	2.6	--	--	4.7	1.7	1.5	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			0.6	4.0	2.1	--	--	4.0	1.6	0.8	--	--
eV US Short Duration Fixed Inc Gross Rank			23	46	48	--	--	46	38	50	--	--
Sit Short Duration	539,065,270	5.7	0.0	4.9	2.9	--	--	4.9	2.5	1.3	--	--
BBgBarc US Govt 1-3 Yr TR			0.5	3.6	1.9	--	--	3.6	1.6	0.4	--	--
eV US Short Duration Fixed Inc Gross Rank			99	35	27	--	--	35	1	68	--	--
Total Cash	169,198,397	1.8	0.7	3.3	2.0	1.4	3.0	3.3	1.7	0.9	0.9	0.1
91 Day T-Bills			0.4	2.1	1.6	1.1	0.6	2.1	1.9	0.9	0.3	0.0
Cash	168,995,241	1.8	0.7	3.4	2.0	1.4	3.1	3.4	1.7	0.9	0.9	0.1
State Street Cash/Tax Reclaims	195,870	0.0	5.1	--	--	--	--	--	--	--	--	--
Northern Trust Transition	7,286	0.0	2.7	--	--	--	--	--	--	--	--	--

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. Effective 3/1/2019 the custodian of record switched from State Street to Northern Trust. State Street Cash/Tax Reclaims reflects \$-28,935 in cash and \$224,806 in potential tax reclaims at State Street after assets were transferred to Northern Trust. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

Total Fund Performance Summary (Net of Fees)

Period Ending: December 31, 2019

	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
Total Fund	4.1	14.6	8.3	6.8	8.5	14.6	-2.7	13.9	6.9	2.1
Policy Index	4.3	14.6	8.9	7.2	9.1	14.6	-0.9	13.7	8.9	0.6
Total Fund ex Overlay & Cash	4.0	14.4	8.3	6.8	8.5	14.4	-2.4	13.8	6.9	2.1
Policy Index	4.3	14.6	8.9	7.2	9.1	14.6	-0.9	13.7	8.9	0.6
Growth	5.5	18.4	10.5	8.2	--	18.4	-3.9	18.7	7.6	2.3
Custom Growth Benchmark	6.1	19.3	11.7	9.0	--	19.3	-2.1	19.3	10.1	0.3
Total Domestic Equity	7.1	26.1	12.9	10.0	12.9	26.1	-7.6	23.5	11.1	0.6
Russell 3000	9.1	31.0	14.6	11.2	13.4	31.0	-5.2	21.1	12.7	0.5
BlackRock Russell 1000 Index	9.0	31.4	--	--	--	31.4	-4.8	--	--	--
Russell 1000	9.0	31.4	--	--	--	31.4	-4.8	--	--	--
Jackson Square Partners	5.6	27.3	17.0	10.0	13.5	27.3	-2.4	28.7	-4.8	5.6
Russell 1000 Growth	10.6	36.4	20.5	14.6	15.2	36.4	-1.5	30.2	7.1	5.7
Boston Partners	8.0	23.8	10.5	8.2	12.1	23.8	-8.9	19.7	14.7	-4.2
Russell 1000 Value	7.4	26.5	9.7	8.3	11.8	26.5	-8.3	13.7	17.3	-3.8
Emerald Advisers	10.9	29.4	13.9	10.9	14.9	29.4	-10.7	28.0	9.4	3.5
Russell 2000 Growth	11.4	28.5	12.5	9.3	13.0	28.5	-9.3	22.2	11.3	-1.4
Ceredex	2.4	17.7	4.8	7.1	--	17.7	-11.8	10.7	29.1	-5.0
Russell 2000 Value	8.5	22.4	4.8	7.0	--	22.4	-12.9	7.8	31.7	-7.5
Total International Equity	10.7	23.2	9.5	5.4	5.5	23.2	-14.7	25.0	0.8	-1.6
MSCI ACWI ex USA Gross	9.0	22.1	10.4	6.0	5.4	22.1	-13.8	27.8	5.0	-5.3
MSCI EAFE Gross	8.2	22.7	10.1	6.2	6.0	22.7	-13.4	25.6	1.5	-0.4
International Equity	9.6	26.5	10.8	6.1	5.9	26.5	-13.9	24.8	0.8	-1.6
MSCI ACWI ex USA Gross	9.0	22.1	10.4	6.0	5.4	22.1	-13.8	27.8	5.0	-5.3
Pyrford	8.3	21.6	9.1	5.3	--	21.6	-10.5	19.3	3.0	-3.3
MSCI ACWI ex USA Value	8.2	15.7	6.9	3.6	--	15.7	-14.0	22.7	8.9	-10.1
William Blair	10.9	31.5	12.4	6.9	--	31.5	-17.1	30.4	-1.8	0.0
MSCI ACWI ex USA Growth	9.6	27.3	12.9	7.3	--	27.3	-14.4	32.0	0.1	-1.3
Emerging Markets Equity	12.3	18.7	--	--	--	18.7	-15.7	--	--	--
MSCI Emerging Markets	11.8	18.4	--	--	--	18.4	-14.6	--	--	--
PIMCO RAE Emerging Markets	11.1	14.0	--	--	--	14.0	-12.6	--	--	--
MSCI Emerging Markets	11.8	18.4	--	--	--	18.4	-14.6	--	--	--
TT Emerging Markets	13.7	24.0	--	--	--	24.0	-18.9	--	--	--
MSCI Emerging Markets	11.8	18.4	--	--	--	18.4	-14.6	--	--	--

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. Effective 7/1/2018. Private Credit and Private Equity data provided by StepStone Group.

Total Fund
Performance Summary (Net of Fees)

Period Ending: December 31, 2019

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
Total Global Equity	794,334,977	8.5	7.1	27.9	12.9	9.3	7.5	27.9	-8.5	22.8	6.9	1.6
MSCI ACWI			9.0	26.6	12.4	8.4	8.8	26.6	-9.4	24.0	7.9	-2.4
Artisan Partners	404,024,936	4.3	9.5	36.0	17.9	13.2	--	36.0	-8.6	31.9	4.8	8.4
MSCI ACWI			9.0	26.6	12.4	8.4	--	26.6	-9.4	24.0	7.9	-2.4
First Eagle	390,143,027	4.2	4.7	20.1	7.9	6.8	--	20.1	-8.3	14.3	10.9	-0.6
MSCI ACWI			9.0	26.6	12.4	8.4	--	26.6	-9.4	24.0	7.9	-2.4
Private Credit	539,105,455	5.7	1.7	7.7	8.8	9.0	12.1	7.7	8.3	10.4	6.9	11.6
ICE BofAML High Yield Master II +2%			3.1	16.7	8.5	8.3	9.6	16.7	-0.3	9.6	19.8	-2.7
Total High Yield	208,823,867	2.2	2.6	15.4	5.7	5.3	7.0	15.4	-3.6	6.1	13.9	-3.9
ICE BofAML High Yield Master II			2.6	14.4	6.3	6.1	7.5	14.4	-2.3	7.5	17.5	-4.6
Allianz Global Investors	208,823,867	2.2	2.6	15.4	5.7	5.3	6.9	15.4	-3.6	6.1	13.9	-3.9
ICE BofAML High Yield Master II			2.6	14.4	6.3	6.1	7.5	14.4	-2.3	7.5	17.5	-4.6
Total Real Estate	714,060,165	7.6	1.0	8.1	8.8	8.7	11.6	8.1	7.4	11.0	4.8	12.4
Real Estate Benchmark			1.2	7.7	7.2	7.3	10.6	7.7	6.7	7.1	6.7	8.3
NCREIF-ODCE			1.5	5.3	7.1	9.0	11.4	5.3	8.3	7.6	8.8	15.0
NCREIF Property Index			1.6	6.4	6.7	8.2	10.2	6.4	6.7	7.0	8.0	13.3
Adelante	80,205,371	0.9	-0.8	27.5	8.9	7.0	12.3	27.5	-5.5	7.2	3.6	4.6
Wilshire REIT			-1.1	25.8	7.6	6.9	11.9	25.8	-4.8	4.2	7.2	4.2
Private Equity	1,045,326,147	11.1	2.6	8.4	10.8	10.2	10.5	8.4	12.1	11.9	8.9	9.9
S&P 500 Index +4% (Lagged)			2.7	8.4	17.9	15.2	17.7	8.4	22.6	23.3	20.0	3.4
Risk Parity	459,810,703	4.9	1.7	--	--	--	--	--	--	--	--	--
60% MSCI ACWI Net/40% BBGBarc Global Aggregate			5.5	--	--	--	--	--	--	--	--	--
AQR Global Risk Premium-EL	236,618,370	2.5	3.5	--	--	--	--	--	--	--	--	--
60% MSCI ACWI Net/40% BBGBarc Global Aggregate			5.5	--	--	--	--	--	--	--	--	--
PanAgora Risk Parity Multi Asset	223,192,333	2.4	-0.2	--	--	--	--	--	--	--	--	--
60% MSCI ACWI Net/40% BBGBarc Global Aggregate			5.5	--	--	--	--	--	--	--	--	--

Individual closed end funds are not shown in performance summary table. AQR Global Risk Parity funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. Effective 7/1/2018. Private Credit and Private Equity data provided by StepStone Group.

**Total Fund
Performance Summary (Net of Fees)**

Period Ending: December 31, 2019

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
Diversifying	728,611,654	7.8	0.5	6.8	2.3	1.2	2.3	6.8	-2.3	2.6	0.8	-1.8
Custom Diversifying Benchmark			0.5	6.1	4.0	3.7	4.1	6.1	1.4	4.7	4.1	2.5
Diversifying Fixed Income	523,900,999	5.6	0.5	8.3	2.9	2.4	3.4	8.3	-2.0	2.6	2.3	1.1
AFL-CIO	333,841,377	3.6	-0.4	7.8	3.7	2.8	3.6	7.8	0.2	3.2	1.9	1.1
BBgBarc US Aggregate TR			0.2	8.7	4.0	3.0	3.7	8.7	0.0	3.5	2.6	0.6
Wellington Real Total Return	190,059,622	2.0	2.1	9.2	1.7	-0.2	--	9.2	-5.6	1.9	-0.6	-5.4
CPI + 4%			1.1	6.4	6.2	5.9	--	6.4	6.0	6.2	6.2	4.8
Diversifying Equity	204,710,656	2.2	0.7	3.0	--	--	--	3.0	--	--	--	--
Parametric Defensive Equity	204,710,656	2.2	0.7	3.0	--	--	--	3.0	--	--	--	--
91 Day T-Bill+4%			1.3	6.1	--	--	--	6.1	--	--	--	--
Liquidity	1,956,149,326	20.8	0.5	4.8	2.6	--	--	4.8	1.7	1.4	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			0.6	4.0	2.1	--	--	4.0	1.6	0.8	--	--
DFA Short Credit	460,934,054	4.9	0.7	5.2	2.7	--	--	5.2	1.1	1.8	--	--
ICE BofAML 1-5 Yrs US Corp & Govt TR			0.5	5.1	2.6	--	--	5.1	1.4	1.3	--	--
Insight Short Duration	956,150,002	10.2	0.7	4.6	2.6	--	--	4.6	1.7	1.5	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			0.6	4.0	2.1	--	--	4.0	1.6	0.8	--	--
Sit Short Duration	539,065,270	5.7	0.0	4.7	2.7	--	--	4.7	2.3	1.1	--	--
BBgBarc US Govt 1-3 Yr TR			0.5	3.6	1.9	--	--	3.6	1.6	0.4	--	--
Total Cash	169,198,397	1.8	0.7	3.3	2.0	1.4	3.0	3.3	1.7	0.9	0.9	0.1
91 Day T-Bills			0.4	2.1	1.6	1.1	0.6	2.1	1.9	0.9	0.3	0.0
Cash	168,995,241	1.8	0.7	3.4	2.0	1.4	3.1	3.4	1.7	0.9	0.9	0.1
State Street Cash/Tax Reclaims	195,870	0.0	5.1	--	--	--	--	--	--	--	--	--
Northern Trust Transition	7,286	0.0	2.7	--	--	--	--	--	--	--	--	--

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. Effective 3/1/2019 the custodian of record switched from State Street to Northern Trust. State Street Cash/Tax Reclaims reflects \$-28,935 in cash and \$224,806 in potential tax reclaims at State Street after assets were transferred to Northern Trust. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

Total Fund
Closed End Funds - Investment Summary **Period Ending: December 31, 2019**

StepStone Group Analysis (*)												
Closing Date	Manager Name/Fund Name	Estimated Market Value as of 12/31/19 ¹	Total Commitment	% Called	Contributed Capital	Current Qtr. Change in Contributed Capital	Current Qtr. Change in Distributed Capital	Total Distributions	Remaining Commitment	Distrib./Paid-In (DPI) ²	Tot. Value/Paid-In (TVPI) ³	Latest Valuation
Private Credit												
8/31/2015	Angelo Gordon Energy Credit Opp. ⁴	\$4,310,949	\$16,500,000	114%	\$18,750,000	\$0	\$0	\$18,829,566	\$2,319,783	1.00	1.23	9/30/2019
12/18/2017	StepStone CC Opportunities Fund	\$499,336,996	\$920,000,000	53%	\$486,208,462	\$28,986,673	\$3,456	\$21,489,403	\$455,256,439	0.04	1.07	9/30/2019
7/1/2006	Torchlight II ⁴	\$0	\$128,000,000	171%	\$218,263,562	\$0	\$0	\$208,563,775	\$0	0.96	0.96	9/30/2019
8/1/2012	Torchlight IV	\$10,230,704	\$60,000,000	141%	\$84,866,971	\$109,223	\$4,256,417	\$104,809,507	\$0	1.23	1.36	9/30/2019
3/12/2015	Torchlight V	\$25,226,806	\$75,000,000	80%	\$60,000,000	\$0	\$15,448,615	\$50,184,746	\$15,000,000	0.84	1.26	9/30/2019
Total Private Credit		\$539,105,455										
		% of Portfolio (Market Value)		5.7%								

*All Data provided by StepStone Group

¹Latest valuation + capital calls - distributions

²(DPI) is equal to (capital returned / capital called)

³(TVPI) is equal to (market value + capital returned) / capital called

⁴Capital has been fully called and fund is in redemption.

Total Fund
Closed End Funds - Investment Summary **Period Ending: December 31, 2019**

Verus Internal Analysis

Inception Date	Manager Name/Fund Name	Estimated Market Value as of 12/31/2019 ¹	Total Commitment	Total % Called	Capital Called	Current Qtr. Capital Called	Current Qtr. Distributions	Total Distributions ⁸	Remaining Commitment	Distrib./Paid-in (DPI) ²	Tot. Value/Paid-in (TVPI) ³	Latest Valuation
1/23/2012	Angelo Gordon Realty Fund VIII ⁷	\$22,192,554	\$80,000,000	94%	\$75,401,855	\$0	\$0	\$98,433,174	\$12,334,302	1.31	1.60	9/30/2019
12/8/2014	Angelo Gordon Realty Fund IX	\$63,926,050	\$65,000,000	86%	\$55,575,000	\$0	\$0	\$8,775,000	\$12,122,500	0.16	1.31	9/30/2019
6/23/2005	DLJ RECP III	\$21,069,138	\$75,000,000	134%	\$100,560,205 ⁴	\$0	\$0	\$69,918,318	\$4,031,338	0.70	0.90	9/30/2019
2/11/2008	DLJ RECP IV	\$78,589,326	\$100,000,000	125%	\$125,138,489 ⁵	\$0	\$2,609,291	\$81,657,887	\$2,890,809	0.65	1.28	9/30/2019
7/1/2014	DLJ RECP V	\$45,167,624	\$75,000,000	126%	\$94,533,721 ⁶	\$0	\$4,755,688	\$70,848,380	\$15,635,816	0.75	1.23	9/30/2019
3/19/2019	DLJ RECP VI	\$23,656,312	\$50,000,000	50%	\$24,949,538	-\$4,663,463	\$220,742	\$220,742	\$25,050,462	0.01	0.96	9/30/2019
6/17/1998	Hearststone II ⁷	-\$1,452	\$25,000,000	80%	\$19,932,386	\$0	\$0	\$19,952,734	\$0	1.00	1.00	9/30/2019
6/30/2013	Invesco Real Estate III ⁷	\$2,054,977	\$35,000,000	93%	\$32,386,423	\$0	\$1,512,241	\$42,502,805	\$2,613,577	1.31	1.38	12/31/2019
6/30/2014	Invesco Real Estate IV ⁷	\$16,901,831	\$35,000,000	85%	\$29,808,739	\$0	\$6,500,649	\$22,353,948	\$5,191,261	0.75	1.32	12/31/2019
6/30/2013	Invesco Real Estate V	\$19,496,203	\$75,000,000	30%	\$22,517,045	\$4,498,311	\$4,723,439	\$4,723,439	\$56,224,458 ⁸	0.21	1.08	12/31/2019
7/16/2013	LaSalle Income & Growth VI ⁷	\$25,305,992	\$75,000,000	95%	\$71,428,571	\$0	\$3,022,774	\$81,382,065	\$3,571,429	1.14	1.49	9/30/2019
2/28/2017	LaSalle Income & Growth VII	\$50,559,229	\$75,000,000	90%	\$67,368,453	\$2,496,216	\$3,830,921	\$31,765,322	\$7,544,444	0.47	1.22	9/30/2019
7/3/2013	Long Wharf Fund IV ⁷	\$7,024,191	\$25,000,000	100%	\$25,000,000	\$0	\$1,183,665	\$30,587,887	\$0	1.22	1.50	12/31/2019
9/30/2016	Long Wharf Fund V ⁷	\$42,060,312	\$50,000,000	100%	\$50,000,000	\$0	\$3,484,520	\$19,764,653	\$0	0.40	1.24	12/31/2019
12/31/2011	Oaktree REOF V ⁷	\$4,241,993	\$50,000,000	100%	\$50,000,000	\$0	\$352,000	\$75,380,955	\$5,000,000	1.51	1.59	12/31/2019
9/30/2013	Oaktree REOF VI ⁷	\$28,718,003	\$80,000,000	100%	\$80,000,000	\$0	\$1,769,202	\$84,010,175	\$18,400,000 ⁹	1.05	1.41	12/31/2019
4/1/2015	Oaktree REOF VII	\$56,048,590	\$65,000,000	92%	\$59,995,000	\$0	\$5,200,000	\$18,915,000	\$23,920,000 ⁹	0.32	1.25	12/31/2019
11/10/2013	Paulson Real Estate Fund II ⁷	\$24,641,354	\$20,000,000	97%	\$19,345,623	\$0	\$849,261	\$6,632,647	\$654,377	0.34	1.62	9/30/2019
1/25/2012	Siguler Guff DREOF	\$33,502,236	\$75,000,000	93%	\$69,375,000	\$0	\$18,944	\$90,282,563	\$5,625,000	1.30	1.78	9/30/2019
8/31/2013	Siguler Guff DREOF II	\$49,042,504	\$70,000,000	89%	\$61,985,000	\$0	\$1,055,497	\$36,732,006	\$8,015,000	0.59	1.38	9/30/2019
1/27/2016	Siguler Guff DREOF II Co-Inv	\$19,657,827	\$25,000,000	82%	\$20,537,862	\$0	\$1,662,583	\$8,321,475	\$4,462,138	0.41	1.36	9/30/2019
	Total Closed End Real Estate	\$633,854,794	\$1,225,000,000	94%	\$1,155,858,911	\$2,331,064	\$42,751,417	\$903,161,173	\$213,286,910	0.78	1.33	
	% of Portfolio (Market Value)	6.8%										

¹Latest valuation + capital calls - distributions
²(DPI) is equal to (capital returned / capital called)
³(TVPI) is equal to (market value + capital returned) / capital called
⁴Includes \$7,231,879 in management fees charged outside the fund.
⁵Includes \$11,036,354 in management fees charged outside the fund.
⁶Includes \$687,307 in management fees charged outside the fund.
⁷Capital has been fully called and fund is in redemption.
⁸Total distributions may include recallable distributions
⁹Remaining commitment includes recallable distributions

Total Fund Closed End Funds - Investment Summary

Period Ending: December 31, 2019

StepStone Group Analysis (*)

Closing Date	Manager Name/Fund Name	Estimated Market Value as of 12/31/19 ¹	Total Commitment	Total % Called	Contributed Capital	Current Qtr. Change in Contributed Capital	Current Qtr. Change in Distributed Capital	Total Distributions	Remaining Commitment	Distrib./Paid-In (DPI) ²	Tot. Value/Paid-In (TVPI) ³	Latest Valuation
Private Equity & Venture Capital												
2/11/2004	Adams Street Partners	\$144,186,277	\$210,000,000	89%	\$186,793,125	\$1,750,000	\$9,211,270	\$155,716,619	\$23,206,875	0.83	1.61	9/30/2019
12/31/2008	Adams Street Partners II	\$6,803,533	\$30,000,000	95%	\$28,365,000	\$0	\$1,592,605	\$41,534,562	\$1,635,000	1.46	1.70	9/30/2019
12/31/2008	Adams Street Partners - Fund 5	\$20,421,474	\$40,000,000	77%	\$30,611,900	\$0	\$547,414	\$17,181,437	\$9,388,100	0.56	1.23	9/30/2019
1/18/1996	Adams Street Partners - BPF	\$1,762,463	\$59,565,614	97%	\$57,517,409	\$0	\$0	\$102,731,103	\$2,048,205	1.79	1.82	9/30/2019
3/31/2016	Adams Street Venture Innovation	\$54,113,494	\$75,000,000	61%	\$45,412,500	\$0	\$0	\$29,587,500	\$0	0.00	1.19	9/30/2019
5/18/2018	AE Industrial Partners Fund II, LP	\$4,635,156	\$35,000,000	15%	\$5,103,684	\$0	\$0	\$0	\$29,896,316	0.00	0.91	9/30/2019
11/27/2013	Aether Real Assets III	\$20,444,816	\$25,000,000	93%	\$23,183,517	\$440,666	\$152,132	\$3,758,603	\$3,887,782	0.16	1.04	9/30/2019
11/30/2013	Aether Real Assets III Surplus	\$49,501,679	\$50,000,000	99%	\$49,696,370	\$0	\$0	\$8,516,717	\$3,336,311	0.17	1.17	9/30/2019
1/30/2016	Aether Real Assets IV	\$39,010,919	\$50,000,000	74%	\$36,955,325	\$1,707,308	\$109,930	\$2,149,276	\$15,187,389	0.06	1.11	9/30/2019
11/26/2003	Bay Area Equity Fund I ⁴	\$2,405,548	\$10,000,000	100%	\$10,000,000	\$0	\$0	\$37,018,019	\$0	3.70	3.94	9/30/2019
11/26/2003	Bay Area Equity Fund II ⁴	\$12,029,163	\$10,000,000	100%	\$10,000,000	\$0	\$0	\$2,026,313	\$0	0.20	1.41	9/30/2019
6/30/2013	Commonfund	\$41,612,032	\$50,000,000	87%	\$43,324,995	\$0	\$0	\$10,460,771	\$6,675,005	0.24	1.20	9/30/2019
7/15/2005	EIF US Power Fund II ⁴	\$6,665,595	\$50,000,000	130%	\$65,029,556	\$0	\$0	\$72,650,020	\$0	1.12	1.22	6/30/2019
5/31/2007	EIF US Power Fund III ⁴	\$16,646,603	\$85,000,000	110%	\$71,409,097	\$0	\$0	\$73,638,258	\$0	1.03	1.26	9/30/2019
8/31/2010	EIF US Power Fund IV	\$43,497,299	\$50,000,000	127%	\$63,746,288	\$0	\$4,444,181	\$30,262,595	\$4	0.47	1.16	9/30/2019
11/28/2016	EIF US Power Fund V	\$42,937,747	\$50,000,000	95%	\$47,434,111	\$0	\$12,500	\$9,204,621	\$9,586,328	0.19	1.10	9/30/2019
2/21/2019	Genstar Capital Partners IX, L.P.	\$11,355,539	\$50,000,000	23%	\$11,588,302	\$5,916,759	\$0	\$0	\$38,411,698	0.00	0.98	9/30/2019
2/28/2010	Oaktree PIF 2009	\$2,003,286	\$40,000,000	87%	\$34,816,729	\$621	\$3,973,348	\$45,239,703	\$6,308,961	1.30	1.36	9/30/2019
8/15/2013	Ocean Avenue Fund II	\$29,681,342	\$30,000,000	87%	\$26,100,000	\$0	\$0	\$12,440,759	\$3,900,000	0.48	1.61	9/30/2019
4/15/2016	Ocean Avenue Fund III	\$54,339,183	\$50,000,000	87%	\$43,500,000	\$1,500,000	\$4,000,000	\$10,000,000	\$6,500,000	0.23	1.48	9/30/2019
11/30/2007	Paladin III	\$40,850,637	\$25,000,000	135%	\$33,767,853	\$207,816	\$51,567	\$24,922,119	\$519,296	0.74	1.95	9/30/2019
8/22/2011	Pathway 6	\$35,728,990	\$40,000,000	95%	\$37,949,925	\$81,000	\$2,059,850	\$26,171,658	\$4,324,230	0.69	1.63	9/30/2019
7/10/2013	Pathway 7	\$71,479,317	\$70,000,000	92%	\$64,259,537	\$157,500	\$3,460,928	\$24,984,769	\$8,732,121	0.39	1.50	9/30/2019
11/23/2015	Pathway 8	\$46,814,073	\$50,000,000	74%	\$36,878,846	\$745,235	\$808,507	\$5,587,274	\$14,980,114	0.15	1.42	9/30/2019
1/19/1999	Pathway	\$14,623,173	\$125,000,000	100%	\$124,872,985	\$73,210	\$399,321	\$173,696,455	\$10,972,489	1.39	1.51	9/30/2019
7/31/2009	Pathway 2008	\$18,729,050	\$30,000,000	97%	\$29,176,161	\$93,933	\$1,177,697	\$29,432,721	\$3,194,260	1.01	1.65	9/30/2019
6/3/2014	Siguler Guff CCCERA Opportunities	\$177,369,645	\$200,000,000	78%	\$155,705,741	\$8,350,000	\$2,146,643	\$51,219,831	\$1,874,772	0.33	1.47	9/30/2019
8/31/2013	Siguler Guff Secondary Opportunities ⁴	\$82,569	\$50,000,000	60%	\$29,999,802	\$0	\$86,465	\$42,724,959	\$46,394,813	1.42	1.43	6/30/2019
5/18/2018	Siris Partners IV, L.P.	\$16,126,886	\$35,000,000	46%	\$16,204,485	\$5,531,521	\$0	\$0	\$18,795,515	0.00	1.00	9/30/2019
6/28/2019	TPG Healthcare Partners, L.P.	-\$9,910	\$24,000,000	3%	\$617,686	\$617,686	\$0	\$0	\$40,000,000	-	-	9/30/2019
5/24/2019	Trident VIII, L.P.	\$0	\$40,000,000	0%	\$0	\$0	\$0	\$0	\$40,000,000	-	-	9/30/2019
12/8/2015	Wastewater Opportunity Fund	\$19,478,590	\$25,000,000	89%	\$22,288,924	\$1,619,721	\$0	\$2,031,922	\$2,733,302	0.09	0.97	9/30/2019
Total Private Equity and Venture Capital		\$1,045,326,147	\$1,743,565,614	83%	\$1,442,309,852	\$28,792,975	\$34,232,359	\$1,015,301,084	\$415,438,680	0.70	1.43	
				% of Portfolio (Market Value)								
												11.1%

* All Data provided by StepStone Group
¹Latest valuation + capital calls - distributions
²(DPI) is equal to (capital returned / capital called)
³(TVPI) is equal to (market value + capital returned) / capital called
⁴Capital has been fully called and fund is in redemption.

Total Fund

Closed End Funds - IRR Summary

Period Ending: December 31, 2019

Private Credit	Inception	Fund Level (G) ²	CCCERA (G)	Fund Level (N) ^{2,3}	CCCERA (N) ³	IRR Date
Angelo Gordon Energy Cred Opp. ⁴	09/24/2015	-	-	-	9.9%	09/30/2019
Stepstone CC Opportunities Fund	02/02/2018	-	11.8%	-	10.0%	09/30/2019
Torchlight II ⁴	07/01/2006	0.0%	0.2%	-1.2%	-1.0%	09/30/2019
Torchlight IV	08/01/2012	12.8%	13.3%	10.1%	10.8%	12/31/2019
Torchlight V	03/12/2015	17.8%	17.9%	11.7%	11.6%	09/30/2019
Real Estate	Inception	Fund Level (G) ²	CCCERA (G)	Fund Level (N) ^{2,3}	CCCERA (N) ³	IRR Date
Angelo Gordon VIII ⁴	01/23/2012	-	-	-	14.9%	09/30/2019
Angelo Gordon IX	12/08/2014	-	-	-	11.5%	09/30/2019
DLJ RECP III	06/23/2005	0.0%	0.0%	-3.0%	-2.0%	09/30/2019
DLJ RECP IV	02/11/2008	6.0%	6.0%	4.0%	5.0%	09/30/2019
DLJ RECP V	07/01/2014	20.0%	20.0%	11.0%	11.0%	09/30/2019
DLJ RECP VI ¹	03/19/2019	-	-	-	-	-
Hearthstone II ⁴	06/17/1998	-	30.1%	-	30.1%	09/30/2019
Invesco Fund III ⁴	06/30/2013	15.1%	-	12.1%	-	12/31/2019
Invesco Fund IV ⁴	06/30/2014	17.6%	-	13.1%	-	09/30/2019
Invesco Fund V	02/20/2019	15.3%	-	12.0%	-	12/31/2019
LaSalle Income & Growth VI ⁴	07/16/2013	14.7%	14.7%	12.2%	12.2%	12/31/2019
LaSalle Income & Growth VII	02/28/2017	13.9%	14.1%	11.3%	11.4%	12/31/2019
Long Wharf IV ⁴	07/03/2013	17.7%	17.9%	13.1%	13.2%	12/31/2019
Long Wharf V ⁴	09/30/2016	16.4%	17.7%	11.0%	11.8%	12/31/2019
Oaktree REOF V ⁴	12/31/2011	16.8%	-	12.4%	-	12/31/2019
Oaktree REOF VI ⁴	09/30/2013	14.0%	-	9.2%	-	12/31/2019
Oaktree REOF VII	04/01/2015	41.9%	-	24.8%	-	12/31/2019
Paulson ⁴	11/10/2013	19.0%	-	13.1%	-	12/31/2018
Siguler Guff I	01/25/2012	14.1%	16.9%	12.6%	13.7%	09/30/2019
Siguler Guff II	08/31/2013	12.4%	12.3%	11.0%	10.0%	09/30/2019
Siguler Guff DREOF II Co-Inv	01/27/2016	14.5%	14.5%	13.5%	11.5%	09/30/2019

¹Manager has yet to report IRR figure.

²Fund level data includes CCCERA and all other fund investors.

³Net IRR calculated after deductions of management fees and carried interest to the General Partner.

⁴Capital has been fully called and fund is in redemption.

Total Fund
 Closed End Funds - IRR Summary

Period Ending: December 31, 2019

Private Equity & Venture Capital	Closing Date	Fund Level (G) ²	CCCPA (G)	Fund Level (N) ^{2,3}	CCCPA (N) ³	IRR Date
Adams Street Partners	2/11/2004	-	12.6%	-	10.3%	9/30/2019
Adams Street Partners II	12/31/2008	-	14.1%	-	11.4%	9/30/2019
Adams Street Partners - Fund 5	12/31/2008	-	9.0%	-	6.3%	9/30/2019
Adams Street Partners Venture	1/18/1996	-	26.4%	-	20.6%	9/30/2019
Adams Street Partners - BPF	3/31/2016	-	14.3%	-	11.6%	9/30/2019
AE Industrial Partners Fund II, LP ¹	5/18/2018	-	-	-	-	-
Aether Real Assets III	11/27/2013	5.1%	5.1%	1.5%	1.5%	9/30/2019
Aether Real Assets III Surplus	11/30/2013	6.7%	6.7%	4.7%	4.7%	9/30/2019
Aether Real Assets IV	1/30/2016	13.3%	13.2%	7.2%	7.2%	9/30/2019
Bay Area Equity Fund I ⁹	11/26/2003	31.5%	31.5%	23.2%	23.2%	9/30/2019
Bay Area Equity Fund II ⁹	11/26/2003	10.3%	10.3%	5.3%	5.3%	9/30/2019
CommonFund	6/30/2013	-	-	-	7.3%	9/30/2019
Energy Investor Fund II ⁹	7/15/2005	6.3%	5.8%	3.6%	3.2%	9/30/2019
Energy Investor Fund III ⁹	5/31/2007	6.5%	6.5%	3.9%	3.9%	9/30/2019
Energy Investor Fund IV	8/31/2010	8.9%	8.8%	5.1%	4.9%	9/30/2019
Energy Investor Fund V	11/28/2016	13.7%	13.2%	8.2%	7.8%	9/30/2019
Genstar Capital Partners IX, L.P. ¹	2/21/2019	-	-	-	-	-
Oaktree PIF 2009	2/28/2010	6.8%	-	6.6%	-	9/30/2019
Ocean Avenue II	8/15/2013	17.8%	-	15.0%	-	9/30/2019
Ocean Avenue III	4/15/2016	36.3%	-	31.7%	-	9/30/2019
Paladin III	11/30/2007	20.9%	-	12.5%	-	9/30/2019
Pathway 6	8/22/2011	16.4%	16.4%	13.9%	13.9%	9/30/2019
Benchmark ⁴	-	14.2%	-	-	-	9/30/2019
Pathway 7	7/10/2013	16.9%	16.9%	14.3%	14.3%	9/30/2019
Benchmark ⁵	-	14.0%	-	-	-	9/30/2019
Pathway 8	11/23/2015	20.5%	20.9%	18.5%	19.2%	9/30/2019
Benchmark ⁶	-	13.7%	-	-	-	9/30/2019
Pathway Private Equity Fund	1/19/1999	10.2%	10.2%	8.4%	8.4%	9/30/2019
Benchmark ⁷	-	10.3%	-	-	-	9/30/2019
Pathway Private Equity Fund 2008	7/31/2009	14.5%	14.5%	12.0%	12.0%	9/30/2019
Benchmark ⁸	-	13.0%	-	-	-	9/30/2019
Siguler Guff CCCERA Opportunities	6/3/2014	18.7%	19.4%	18.2%	16.4%	9/30/2019
Siguler Guff Secondary Opportunities ⁹	8/31/2013	55.4%	118.6%	49.5%	69.2%	9/30/2019
Siris Partners IV, L.P. ¹	5/18/2018	-	-	-	-	-
TPG Healthcare Partners, L.P. ¹	6/28/2019	-	-	-	-	-
Trident VIII, L.P. ¹	5/24/2019	-	-	-	-	-
Wastewater Opportunity Fund	12/8/2015	5.1%	-	-2.2%	-	9/30/2019

¹Manager has yet to report IRR figure.

²Fund level data includes CCCERA and all other fund investors.

³Net IRR calculated after deductions of management fees and carried interest to the General Partner.

⁴Private IQ global all private equity median pooled return for vintage years 2011-2014, as of September 30, 2019.

⁵Private IQ global all private equity median pooled return for vintage years 2012-2016, as of September 30, 2019.

⁶Private IQ global all private equity median pooled return for vintage years 2015-2018, as of September 30, 2019.

⁷Private IQ global all private equity median pooled return for vintage years 1999-2011, as of September 30, 2019.

⁸Private IQ global all private equity median pooled return for vintage years 2008-2014, as of September 30, 2019.

⁹Capital has been fully called and fund is in redemption.

Total Fund
Performance Analysis - 3 Years (Net of Fees) **Period Ending: December 31, 2019**

3 Years

	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
Jackson Square Partners	16.95%	-3.53%	12.88%	-2.00%	0.93	4.05%	0.91	1.19	-0.87	82.88%	95.71%
Boston Partners	10.51%	0.83%	12.62%	0.53%	1.03	2.46%	0.96	0.70	0.34	104.74%	99.77%
Emerald Advisers	13.94%	1.44%	17.27%	1.46%	1.00	4.81%	0.92	0.71	0.30	100.61%	94.02%
Ceredex	4.75%	-0.02%	16.03%	0.20%	0.95	5.21%	0.90	0.19	0.00	92.82%	95.04%
Pyrford	9.08%	2.20%	9.44%	4.06%	0.73	4.89%	0.85	0.79	0.45	78.18%	64.79%
William Blair	12.43%	-0.46%	12.38%	-0.95%	1.04	2.60%	0.96	0.87	-0.18	98.61%	101.42%
Artisan Partners	17.90%	5.46%	12.74%	4.86%	1.05	4.50%	0.88	1.28	1.21	128.25%	95.91%
First Eagle	7.95%	-4.49%	8.47%	-0.99%	0.72	3.89%	0.93	0.75	-1.15	58.94%	71.19%
Allianz Global Investors	5.71%	-0.61%	4.41%	-0.76%	1.02	1.02%	0.95	0.92	-0.60	97.71%	113.94%
Adelante	8.91%	1.28%	11.56%	1.72%	0.94	1.64%	0.98	0.63	0.78	94.99%	85.58%
AFL-CIO	3.65%	-0.38%	2.82%	-0.15%	0.94	0.63%	0.95	0.71	-0.59	90.41%	91.97%
Wellington Real Total Return	1.69%	-4.49%	4.16%	-1.94%	0.59	4.15%	0.01	0.01	-1.08	35.67%	NM

Performance Analysis excludes closed end funds and those funds without 3 years of performance.

Total Fund
Performance Analysis - 3 Years (Net of Fees) **Period Ending: December 31, 2019**

3 Years

	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
Jackson Square Partners	16.95%	-3.53%	12.88%	-2.00%	0.93	4.05%	0.91	1.19	-0.87	82.88%	95.71%
Boston Partners	10.51%	0.83%	12.62%	0.53%	1.03	2.46%	0.96	0.70	0.34	104.74%	99.77%
Emerald Advisers	13.94%	1.44%	17.27%	1.46%	1.00	4.81%	0.92	0.71	0.30	100.61%	94.02%
Ceredex	4.75%	-0.02%	16.03%	0.20%	0.95	5.21%	0.90	0.19	0.00	92.82%	95.04%
Pyrford	9.08%	2.20%	9.44%	4.06%	0.73	4.89%	0.85	0.79	0.45	78.18%	64.79%
William Blair	12.43%	-0.46%	12.38%	-0.95%	1.04	2.60%	0.96	0.87	-0.18	98.61%	101.42%
Artisan Partners	17.90%	5.46%	12.74%	4.86%	1.05	4.50%	0.88	1.28	1.21	128.25%	95.91%
First Eagle	7.95%	-4.49%	8.47%	-0.99%	0.72	3.89%	0.93	0.75	-1.15	58.94%	71.19%
Allianz Global Investors	5.71%	-0.61%	4.41%	-0.76%	1.02	1.02%	0.95	0.92	-0.60	97.71%	113.94%
Adelante	8.91%	1.28%	11.56%	1.72%	0.94	1.64%	0.98	0.63	0.78	94.99%	85.58%
AFL-CIO	3.65%	-0.38%	2.82%	-0.15%	0.94	0.63%	0.95	0.71	-0.59	90.41%	91.97%
Wellington Real Total Return	1.69%	-4.49%	4.16%	-1.94%	0.59	4.15%	0.01	0.01	-1.08	35.67%	NM

Performance Analysis excludes closed end funds and those funds without 3 years of performance.

Total Fund
 Performance Analysis - 5 Years (Net of Fees) Period Ending: December 31, 2019

5 Years

	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
Jackson Square Partners	9.96%	-4.67%	13.22%	-3.93%	0.95	4.97%	0.86	0.67	-0.94	81.49%	108.57%
Boston Partners	8.20%	-0.09%	13.06%	-0.63%	1.07	2.87%	0.96	0.55	-0.03	105.17%	104.32%
Emerald Advisers	10.86%	1.52%	17.60%	1.53%	1.00	4.94%	0.92	0.56	0.31	105.37%	97.91%
Ceredex	7.11%	0.12%	14.85%	1.04%	0.87	5.93%	0.86	0.41	0.02	85.12%	91.35%
Pyrford	5.27%	1.62%	10.36%	2.67%	0.71	5.67%	0.84	0.41	0.29	62.75%	68.70%
William Blair	6.90%	-0.40%	12.37%	-0.22%	0.98	2.69%	0.95	0.47	-0.15	93.91%	97.75%
Artisan Partners	13.24%	4.83%	13.04%	4.64%	1.02	4.99%	0.85	0.93	0.97	125.33%	90.94%
First Eagle	6.76%	-1.65%	8.58%	0.96%	0.69	4.59%	0.90	0.67	-0.36	56.39%	65.53%
Allianz Global Investors	5.27%	-0.87%	5.18%	-0.50%	0.94	1.27%	0.94	0.81	-0.68	90.90%	101.38%
Adelante	6.97%	0.10%	13.03%	0.48%	0.95	1.80%	0.98	0.45	0.06	90.35%	93.44%
AFL-CIO	2.80%	-0.25%	2.83%	0.06%	0.90	0.74%	0.94	0.62	-0.33	86.57%	84.27%
Wellington Real Total Return	-0.22%	-6.11%	5.44%	-5.61%	0.92	5.38%	0.02	-0.23	-1.14	9.22%	NM

Performance Analysis excludes closed end funds and those funds without 5 years of performance.

**Total Fund
Investment Fund Fee Analysis** **Period Ending: December 31, 2019**

Name	Asset Class	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
BlackRock Russell 1000 Index	Growth	0.03% of Assets	\$204,604,006	\$61,381	0.03%
Jackson Square Partners	Growth	0.50% of First 100.0 Mil, 0.40% of Next 150.0 Mil, 0.35% Thereafter	\$244,269,952	\$1,077,080	0.44%
Boston Partners	Growth	0.50% of First 25.0 Mil, 0.30% Thereafter	\$251,080,501	\$803,242	0.32%
Emerald Advisers	Growth	0.75% of First 10.0 Mil, 0.60% Thereafter	\$159,009,461	\$969,057	0.61%
Ceredex	Growth	0.85% of First 10.0 Mil, 0.68% of Next 40.0 Mil, 0.51% Thereafter	\$160,524,993	\$920,677	0.57%
Pyrford	Growth	0.70% of First 50.0 Mil, 0.50% of Next 50.0 Mil, 0.35% Thereafter	\$485,671,948	\$1,949,852	0.40%
William Blair	Growth	0.80% of First 20.0 Mil, 0.60% of Next 30.0 Mil, 0.50% of Next 50.0 Mil, 0.45% of Next 50.0 Mil, 0.40% of Next 50.0 Mil, 0.30% Thereafter	\$500,331,604	\$1,915,995	0.38%
PIMCO RAE Emerging Markets	Growth	0.75% of First 50.0 Mil, 0.68% of Next 50.0 Mil, 0.50% of Next 100.0 Mil, 0.45% Thereafter	\$369,299,185	\$1,974,346	0.53%
TT Emerging Markets	Growth	0.70% of First 100.0 Mil, 0.65% of Next 100.0 Mil, 0.60% Thereafter	\$360,882,442	\$2,315,295	0.64%
Artisan Partners	Growth	0.75% of Assets	\$404,024,936	\$3,030,187	0.75%
First Eagle	Growth	0.75% of Assets	\$390,143,027	\$2,926,073	0.75%
Allianz Global Investors	Growth	0.50% of First 50.0 Mil, 0.40% of Next 50.0 Mil, 0.35% Thereafter	\$208,823,867	\$830,884	0.40%
AQR Global Risk Premium-EL	Growth	0.38% of Assets	\$236,618,370	\$899,150	0.38%

Mutual fund fees shown are sourced from Morningstar and are as of the most current prospectus.

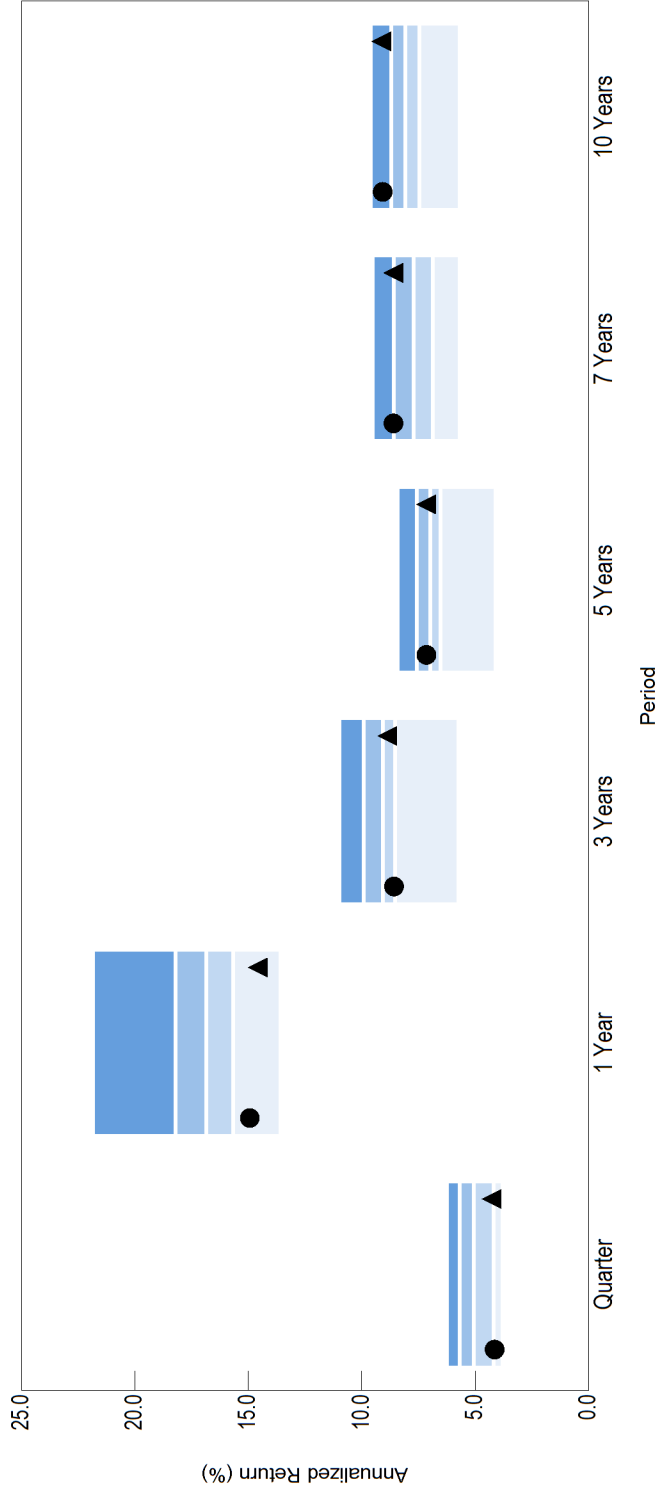
Total Fund
Investment Fund Fee Analysis **Period Ending: December 31, 2019**

Name	Asset Class	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
PanAgora Risk Parity Multi Asset	Growth	0.35% of Assets	\$223,192,333	\$781,173	0.35%
AFL-CIO	Diversifying	0.43% of Assets	\$333,841,377	\$1,435,518	0.43%
Wellington Real Total Return	Diversifying	0.35% of Assets	\$190,059,622	\$665,209	0.35%
Parametric Defensive Equity	Diversifying	0.42% of First 200.0 Mil, 0.39% Thereafter	\$204,710,656	\$858,372	0.42%
DFA Short Credit	Liquidity	0.20% of First 25.0 Mil, 0.10% Thereafter	\$460,934,054	\$485,934	0.11%
Insight Short Duration	Liquidity	0.06% of First 500.0 Mil, 0.05% of Next 500.0 Mil, 0.04% Thereafter	\$956,150,002	\$528,075	0.06%
Sit Short Duration	Liquidity	0.15% of Assets	\$539,065,270	\$808,598	0.15%

Mutual fund fees shown are sourced from Morningstar and are as of the most current prospectus.

Total Fund
Peer Universe Comparison: Cumulative Performance (Gross of Fees) Period Ending: December 31, 2019

Total Fund Cumulative Performance vs. InvMetrics Public DB > \$1B Gross



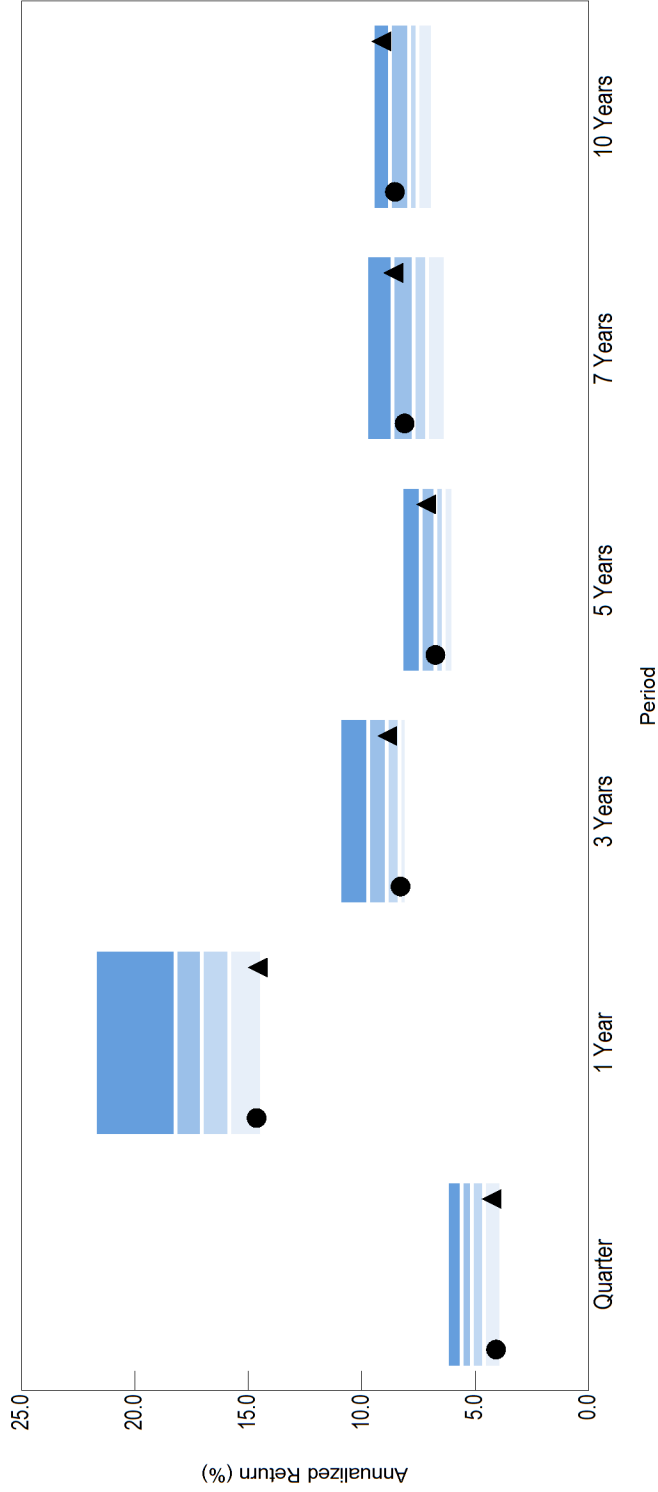
Return (Rank)

5th Percentile	6.2	21.8	11.0	8.4	9.5	9.6
25th Percentile	5.7	18.2	9.9	7.6	8.6	8.7
Median	5.1	16.9	9.1	7.0	7.7	8.1
75th Percentile	4.2	15.7	8.5	6.5	6.9	7.5
95th Percentile	3.8	13.6	5.8	4.1	5.7	5.7
# of Portfolios	64	64	64	63	60	56
● Total Fund	4.1	14.9	8.6	7.1	8.6	9.1
▲ Policy Index	4.3	14.6	8.9	7.2	8.6	9.1
		(76)	(73)	(35)	(25)	(14)
		(73)	(58)	(34)	(25)	(11)

Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation.

Total Fund
Peer Universe Comparison: Cumulative Performance (Net of Fees) Period Ending: December 31, 2019

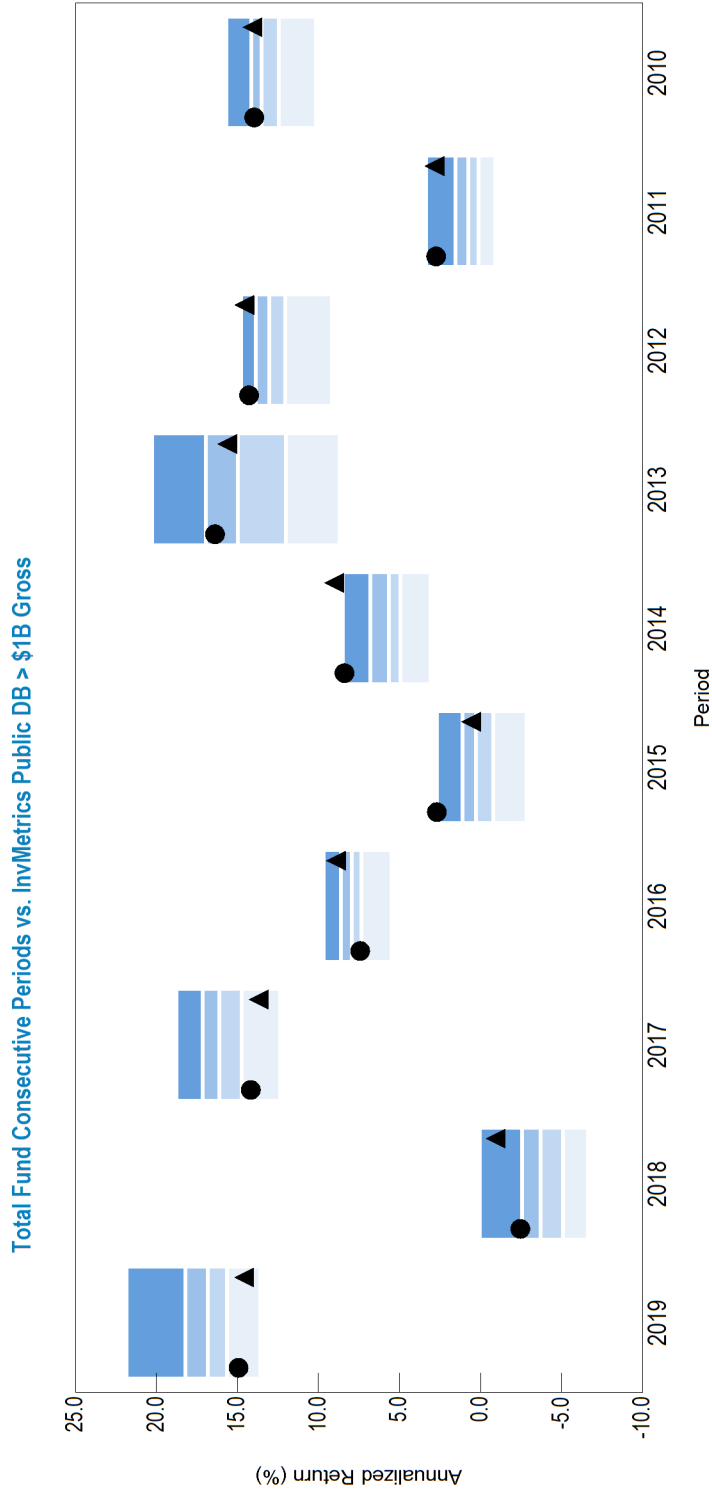
Total Fund Cumulative Performance vs. InvMetrics Public DB > \$1B Net



Return (Rank)

5th Percentile	6.2	21.7	11.0	8.2	9.8	9.5
25th Percentile	5.6	18.2	9.7	7.4	8.7	8.8
Median	5.2	17.1	8.9	6.8	7.7	7.9
75th Percentile	4.6	15.9	8.3	6.4	7.1	7.5
95th Percentile	3.9	14.4	8.0	6.0	6.3	6.9
# of Portfolios	58	58	58	56	55	49
● Total Fund	4.1	14.6	8.3	6.8	8.1	8.5
▲ Policy Index	4.3	14.6	8.9	7.2	8.6	9.1
	(89)	(94)	(80)	(51)	(47)	(31)
	(84)	(95)	(51)	(34)	(27)	(11)

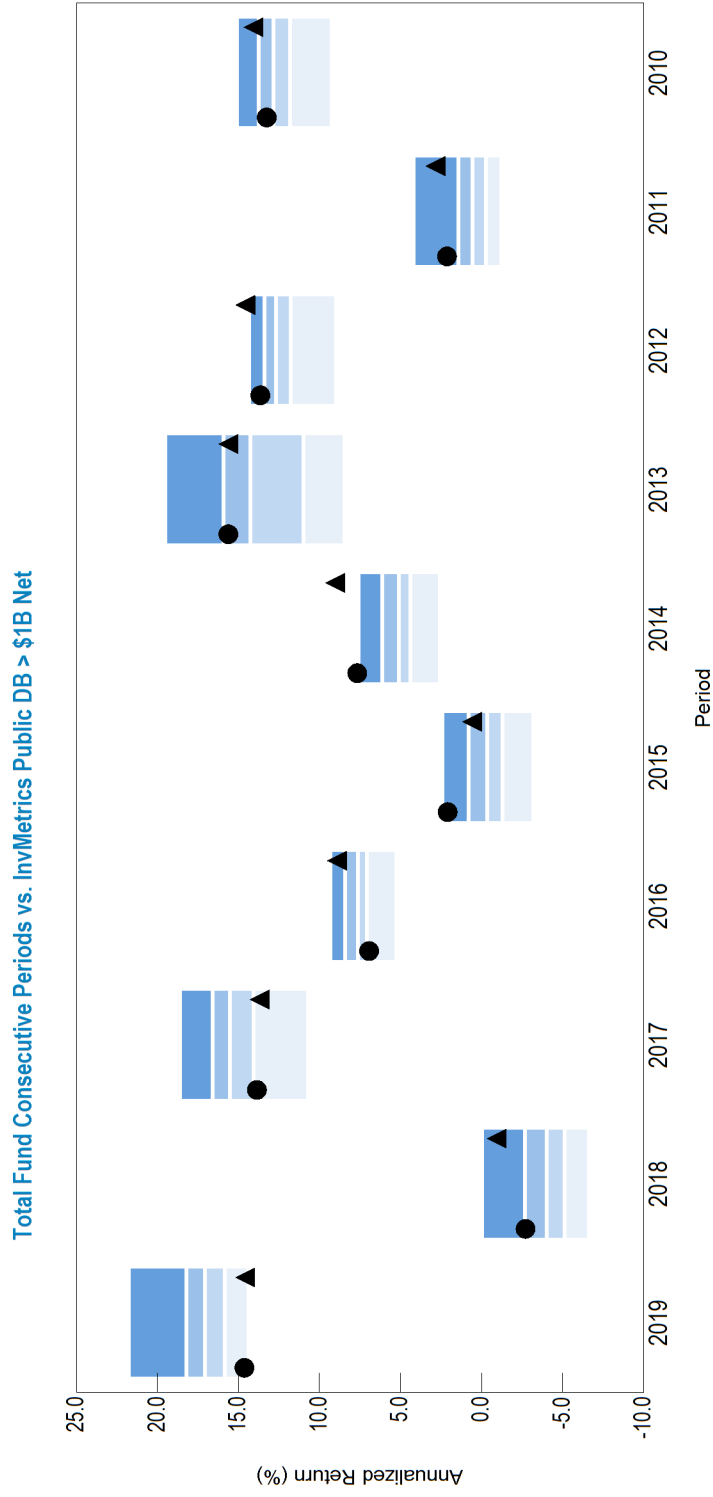
Total Fund
Peer Universe Comparison: Consecutive Periods (Gross of Fees) Period Ending: December 31, 2019



Return (Rank)	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
5th Percentile	13.6	-6.6	12.4	5.5	-2.8	3.1	8.7	9.2	-0.9	10.2
25th Percentile	15.7	-5.1	14.8	7.4	-0.7	4.9	12.0	12.1	0.1	12.5
Median	16.9	-3.7	16.2	8.0	0.3	5.7	15.0	13.0	0.8	13.5
75th Percentile	18.2	-2.6	17.2	8.6	1.1	6.8	17.0	13.9	1.6	14.2
95th Percentile	21.8	0.0	18.8	9.7	2.7	8.5	20.2	14.7	3.3	15.7
# of Portfolios	64	71	98	92	98	79	67	74	68	66
● Total Fund	14.6 (91)	71	98	92	98	79	67	74	68	66
▲ Policy Index	14.9 (89)	-2.5 (25)	14.2 (83)	7.4 (74)	2.7 (5)	8.4 (6)	16.4 (33)	14.3 (13)	2.7 (9)	14.0 (29)

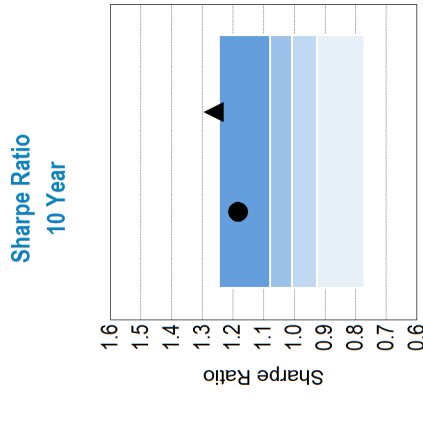
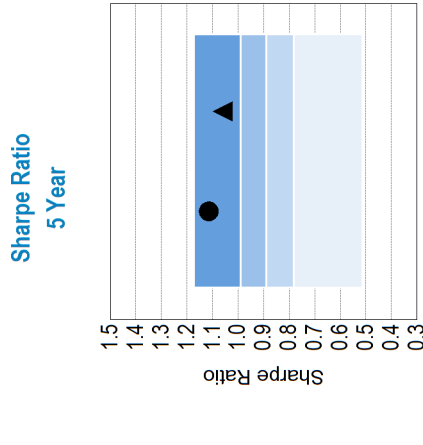
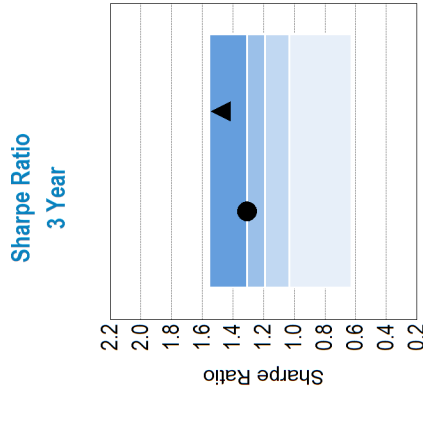
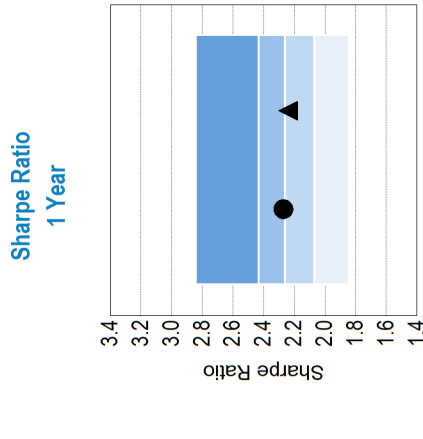
Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation.

Total Fund
Peer Universe Comparison: Consecutive Periods (Net of Fees) Period Ending: December 31, 2019



Year	5th Percentile	25th Percentile	Median	75th Percentile	95th Percentile	# of Portfolios	Total Fund	Policy Index
2019	21.7	18.2	17.1	15.9	14.4	58	-0.1	14.6 (94)
2018	-0.1	-2.7	-4.0	-5.1	-6.6	63	-2.7	14.6 (95)
2017	18.6	16.6	15.6	14.1	10.7	61	13.9 (81)	13.7 (85)
2016	9.3	8.4	7.7	7.1	5.3	62	6.9 (78)	8.9 (13)
2015	2.4	0.8	-0.4	-1.3	-3.2	57	2.1 (12)	0.6 (29)
2014	7.6	6.1	5.1	4.4	2.6	55	7.7 (5)	9.0 (2)
2013	19.5	16.0	14.3	11.0	8.5	48	15.6 (33)	15.6 (33)
2012	14.3	13.4	12.7	11.8	9.0	44	13.6 (21)	14.6 (1)
2011	4.2	1.5	0.6	-0.3	-1.2	42	2.1 (12)	2.8 (11)
2010	15.1	13.8	12.8	11.8	9.3	41	13.3 (34)	14.1 (15)

Total Fund
 Sharpe Ratio Ranking (Gross of Fees) Period Ending: December 31, 2019



● Total Fund Value Rank
 ▲ Policy Index Value Rank
 Universe 5th %tile
 Universe 25th %tile
 Universe Median
 Universe 75th %tile
 Universe 95th %tile

● Total Fund Value Rank
 ▲ Policy Index Value Rank
 Universe 5th %tile
 Universe 25th %tile
 Universe Median
 Universe 75th %tile
 Universe 95th %tile

● Total Fund Value Rank
 ▲ Policy Index Value Rank
 Universe 5th %tile
 Universe 25th %tile
 Universe Median
 Universe 75th %tile
 Universe 95th %tile

● Total Fund Value Rank
 ▲ Policy Index Value Rank
 Universe 5th %tile
 Universe 25th %tile
 Universe Median
 Universe 75th %tile
 Universe 95th %tile

Domestic Equity Managers

Jackson Square Partners Manager Portfolio Overview

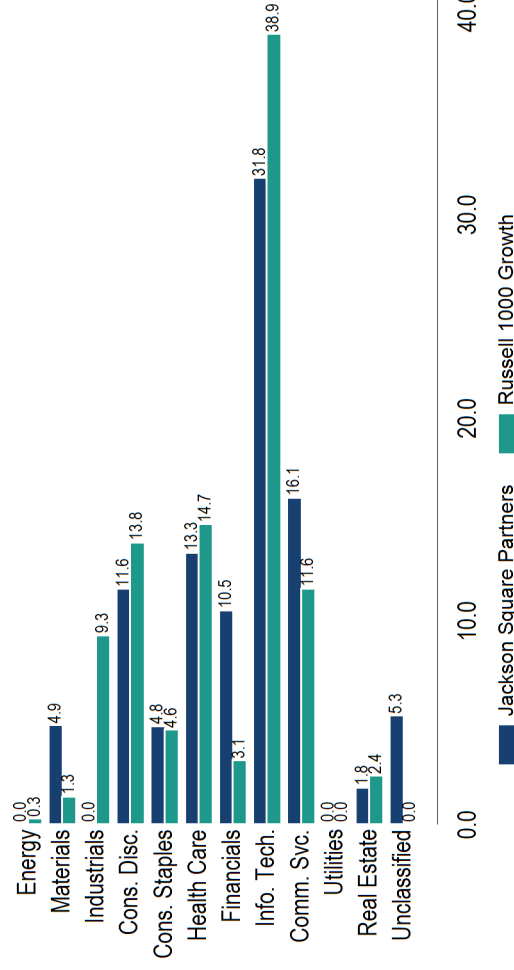
Period Ending: December 31, 2019

Domestic equity large cap growth portfolio concentrated in companies with sustainable long-term growth characteristics. Primary personnel include Jeffrey Van Harte, Christopher Bonavico, Christopher Ericksen, and Daniel Prislín.

Characteristics

	Portfolio	Russell 1000 Growth
Number of Holdings	26	530
Weighted Avg. Market Cap. (\$B)	222.36	362.87
Median Market Cap. (\$B)	55.87	13.03
Price To Earnings	37.81	29.74
Price To Book	5.67	8.79
Price To Sales	3.22	3.14
Return on Equity (%)	21.11	34.60
Yield (%)	0.81	1.17
Beta	0.79	1.00

Sector Allocation (%) vs Russell 1000 Growth



Top Contributors

	End Weight	Return	Avg Wgt	Return	Contribution	Avg Wgt	Return	Contribution
MICROSOFT	9.95	13.82	3.34	13.82	0.46	1.67	-17.62	-0.29
IQVIA HOLDINGS	5.55	3.43	1.16	35.80	0.42	1.79	-10.98	-0.20
ALPHABET A	4.89	9.68	1.46	17.70	0.26	1.57	-10.40	-0.16
CHARTER COMMS.CLA	4.89	17.70	0.94	24.21	0.23	1.58	-8.10	-0.13
BALL	4.85	-10.98	0.92	22.76	0.21	1.58	-8.10	-0.13
CONSTELLATION BRANDS 'A'	4.81	-8.10	0.65	27.45	0.18	0.84	-14.87	-0.13
UNITEDHEALTH GROUP	4.46	35.80	0.85	20.91	0.18	1.17	-8.39	-0.10
HASBRO	4.40	-10.40	1.62	9.11	0.15	0.67	-11.68	-0.08
MASTERCARD	4.07	10.09	0.69	20.37	0.14	0.89	-3.49	-0.03
DOLLAR TREE	3.90	-17.62	0.96	14.14	0.14	1.05	-2.32	-0.02
						0.15	11.08	0.02

Bottom Contributors

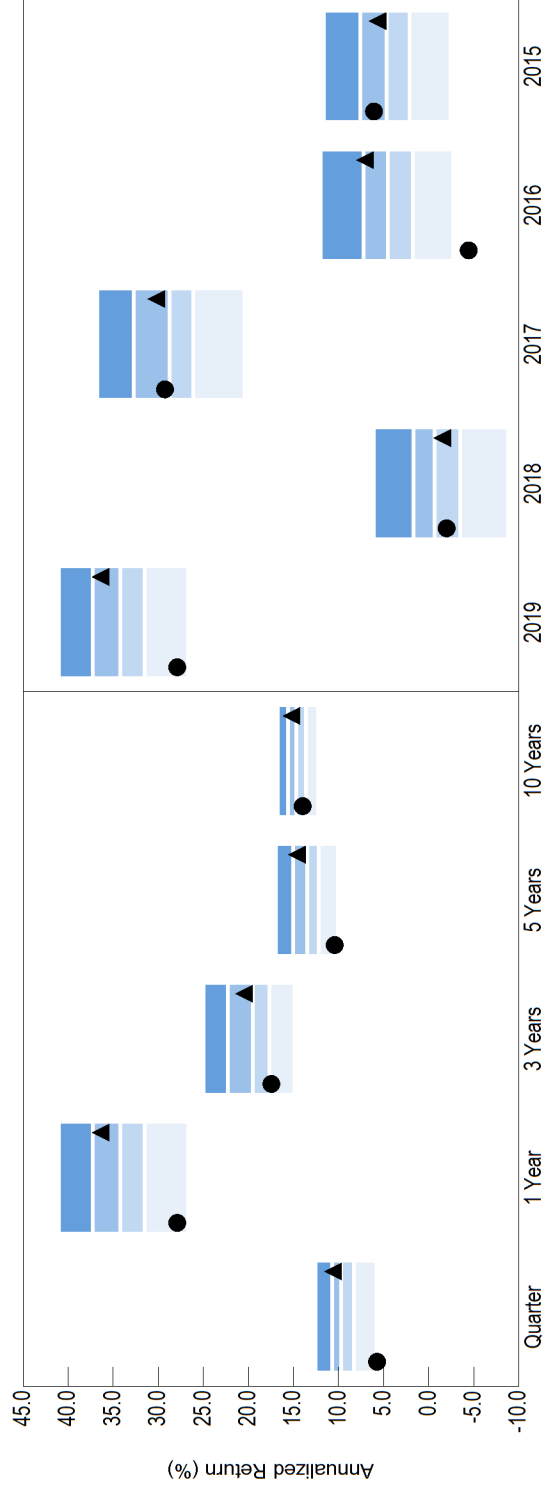
	End Weight	Return	Avg Wgt	Return	Contribution	Avg Wgt	Return	Contribution
MICROSOFT	9.95	13.82	3.34	13.82	0.46	1.67	-17.62	-0.29
IQVIA HOLDINGS	5.55	3.43	1.16	35.80	0.42	1.79	-10.98	-0.20
ALPHABET A	4.89	9.68	1.46	17.70	0.26	1.57	-10.40	-0.16
CHARTER COMMS.CLA	4.89	17.70	0.94	24.21	0.23	1.58	-8.10	-0.13
BALL	4.85	-10.98	0.92	22.76	0.21	1.58	-8.10	-0.13
CONSTELLATION BRANDS 'A'	4.81	-8.10	0.65	27.45	0.18	0.84	-14.87	-0.13
UNITEDHEALTH GROUP	4.46	35.80	0.85	20.91	0.18	1.17	-8.39	-0.10
HASBRO	4.40	-10.40	1.62	9.11	0.15	0.67	-11.68	-0.08
MASTERCARD	4.07	10.09	0.69	20.37	0.14	0.89	-3.49	-0.03
DOLLAR TREE	3.90	-17.62	0.96	14.14	0.14	1.05	-2.32	-0.02
						0.15	11.08	0.02

Unclassified sector allocation includes cash allocations.

Jackson Square Partners
 Manager Performance Comparisons (Gross of Fees)

Period Ending: December 31, 2019

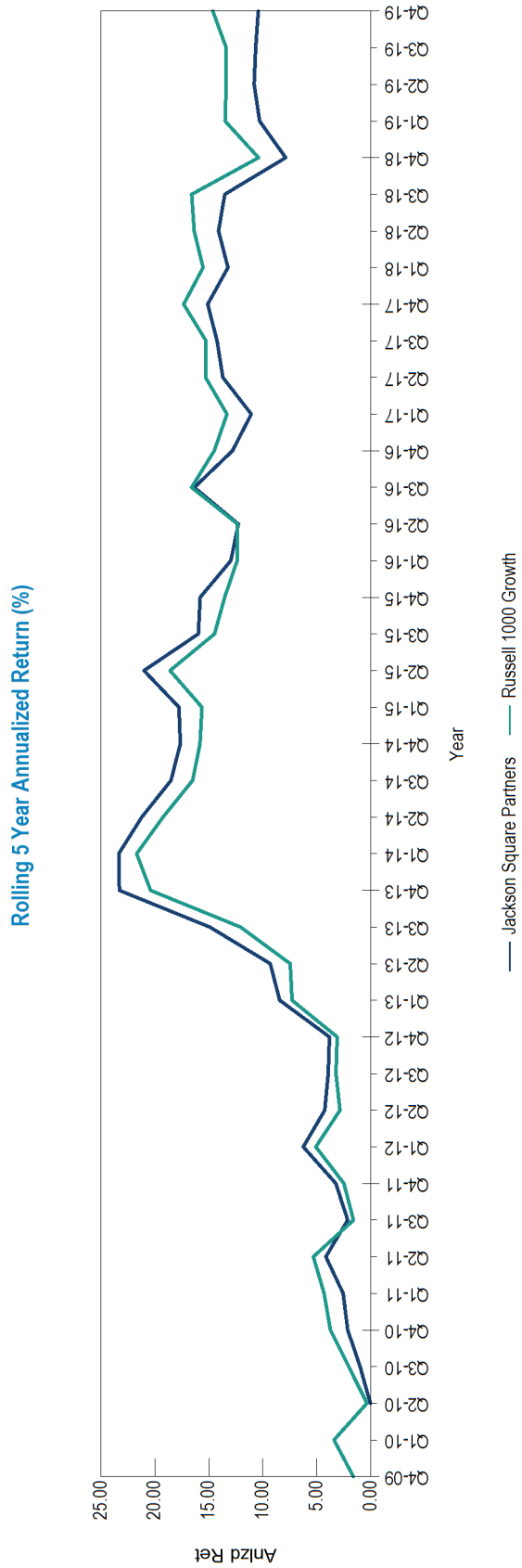
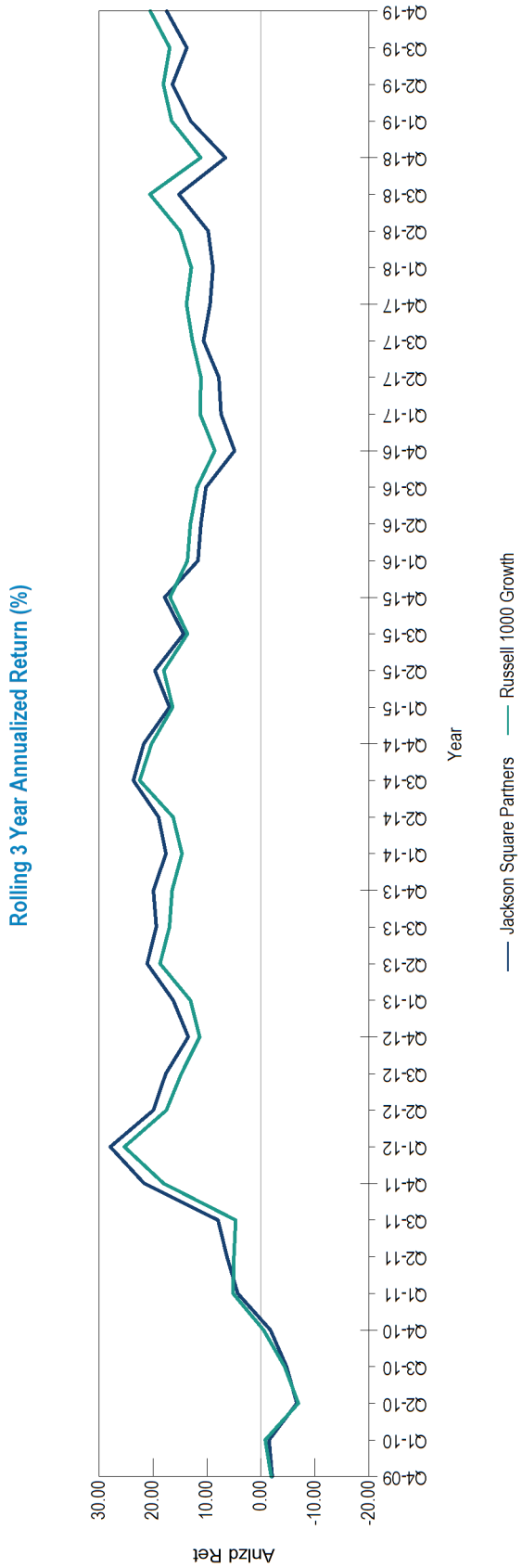
Jackson Square Partners vs. eV US Large Cap Growth Equity Gross Universe



Return (Rank)

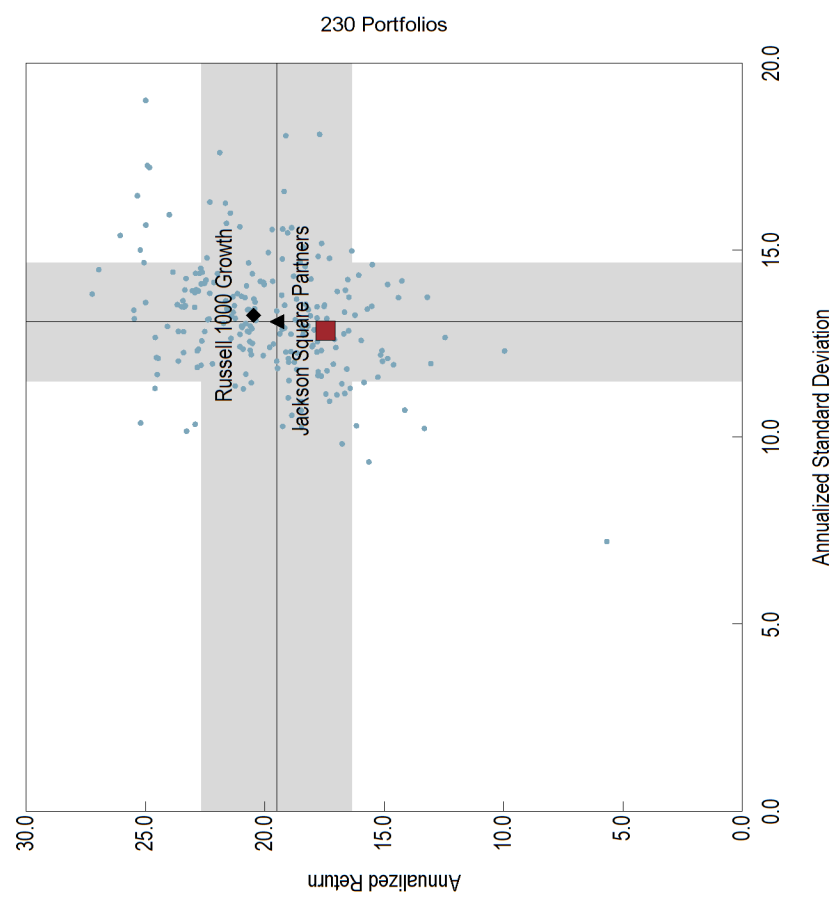
5th Percentile	12.5	41.0	25.0	16.9	16.7	41.0	6.1	36.7	12.0	11.6
25th Percentile	10.7	37.3	22.3	15.0	15.6	37.3	1.7	32.7	7.3	7.6
Median	9.7	34.2	19.5	13.5	14.7	34.2	-0.6	28.8	4.6	4.7
75th Percentile	8.3	31.6	17.7	12.2	13.7	31.6	-3.5	26.2	1.8	2.1
95th Percentile	5.8	26.7	15.0	10.1	12.3	26.7	-8.8	20.5	-2.7	-2.4
# of Portfolios	236	236	230	225	199	236	255	265	282	270
● Jackson Square Partners	5.7 (96)	27.9 (93)	17.4 (79)	10.4 (94)	14.0 (67)	27.9 (93)	-2.0 (59)	29.3 (47)	-4.4 (98)	6.1 (37)
▲ Russell 1000 Growth	10.6 (27)	36.4 (31)	20.5 (44)	14.6 (31)	15.2 (33)	36.4 (31)	-1.5 (57)	30.2 (42)	7.1 (26)	5.7 (42)

Jackson Square Partners
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2019



Jackson Square Partners
 Risk vs. Return 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2019

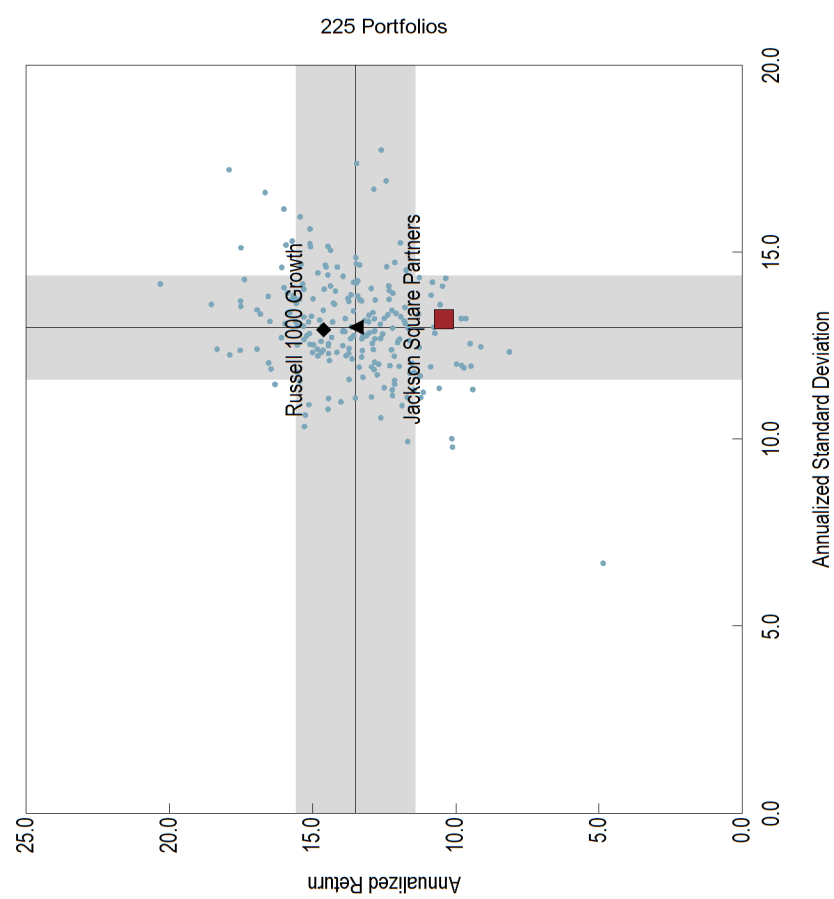
3 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Jackson Square Partners	17.4%	12.9%	1.2
Russell 1000 Growth	20.5%	13.3%	1.4
eV US Large Cap Growth Equity Gross Median	19.5%	13.1%	1.4

5 Years



5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Jackson Square Partners	10.4%	13.2%	0.7
Russell 1000 Growth	14.6%	12.9%	1.1
eV US Large Cap Growth Equity Gross Median	13.5%	13.0%	1.0

Boston Partners Manager Portfolio Overview

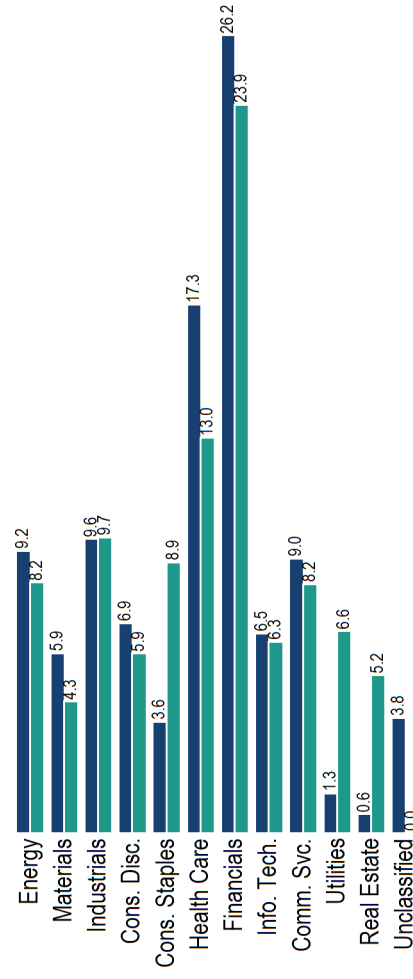
Period Ending: December 31, 2019

Domestic equity large cap value portfolio exhibiting low turnover in companies with low valuations relative to intrinsic value. Primary personnel include Mark Donovan and David Pyle.

Characteristics

	Portfolio	Russell 1000 Value
Number of Holdings	77	764
Weighted Avg. Market Cap. (\$B)	136.54	123.34
Median Market Cap. (\$B)	39.14	9.64
Price To Earnings	17.23	18.48
Price To Book	2.23	2.32
Price To Sales	1.23	1.51
Return on Equity (%)	17.11	13.97
Yield (%)	2.03	2.49
Beta	1.04	1.00

Sector Allocation (%) vs Russell 1000 Value



Largest Holdings

	End Weight	Return
BANK OF AMERICA	4.47	21.40
BERKSHIRE HATHAWAY 'B'	4.46	8.88
JP MORGAN CHASE & CO.	3.47	19.40
CITIGROUP	2.62	16.45
WELLS FARGO & CO	2.54	7.67
PROCTER & GAMBLE	2.49	1.06
CIGNA	2.40	34.72
CHUBB	2.33	-3.11
VERIZON COMMUNICATIONS	2.33	2.78
COMCAST A	2.30	0.23

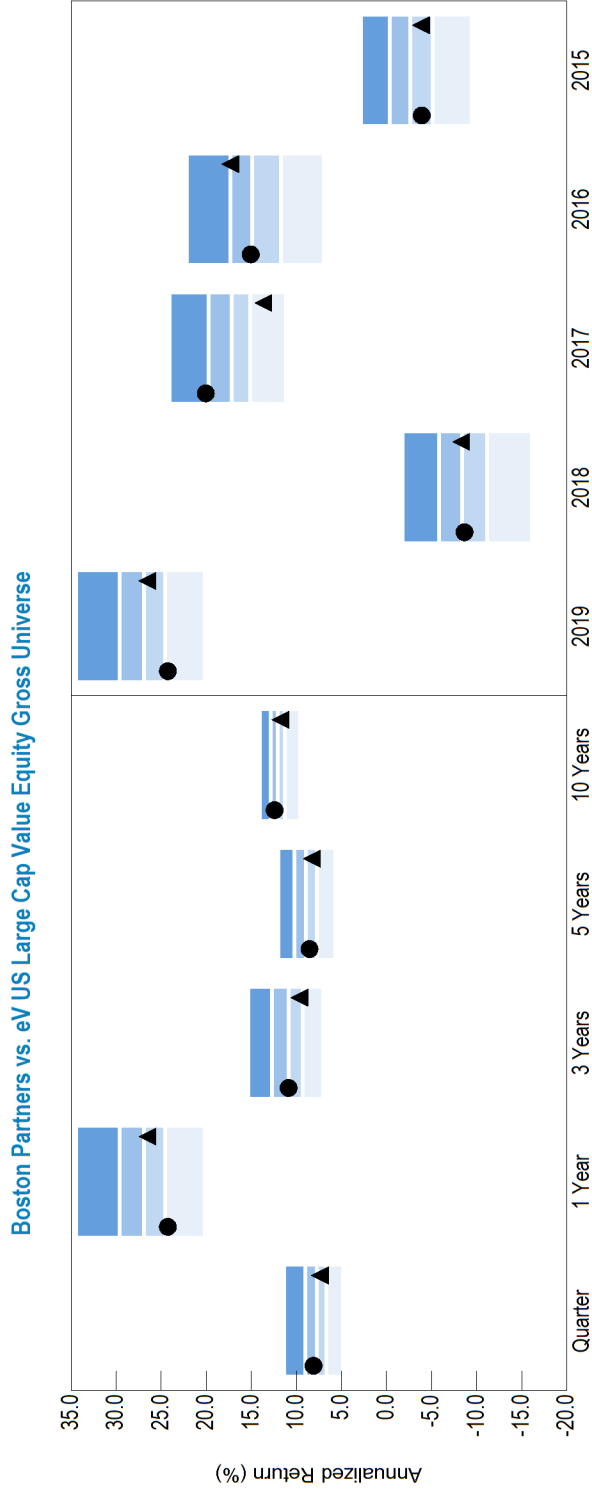
Top Contributors

	Avg Wgt	Return	Contribution
BANK OF AMERICA	1.26	21.40	0.27
CIGNA	0.64	34.72	0.22
JP MORGAN CHASE & CO.	0.99	19.40	0.19
UNITEDHEALTH GROUP	0.42	35.80	0.15
BERKSHIRE HATHAWAY 'B'	1.47	8.88	0.13
CITIGROUP	0.74	16.45	0.12
ANTHEM	0.42	26.14	0.11
CVS HEALTH	0.40	18.69	0.08
LAS VEGAS SANDS	0.36	20.88	0.07
UNITED TECHNOLOGIES	0.72	10.24	0.07

Bottom Contributors

	Avg Wgt	Return	Contribution
AMERICAN INTL.GP.	0.73	-7.26	-0.05
DUPONT DE NEMOURS	0.38	-9.56	-0.04
TRAVELERS COS.	0.37	-7.34	-0.03
CHUBB	0.76	-3.11	-0.02
LIBERTY GLOBAL SR.C	0.21	-8.39	-0.02
ORACLE	0.48	-3.30	-0.02
ESSEX PROPERTY TST.	0.20	-7.30	-0.01
EQUITY	0.23	-5.53	-0.01
RES.D.TST.PROPS. SHBI	0.17	-7.15	-0.01
CH ROBINSON WWD.	0.54	-2.21	-0.01
CISCO SYSTEMS	0.54	-2.21	-0.01

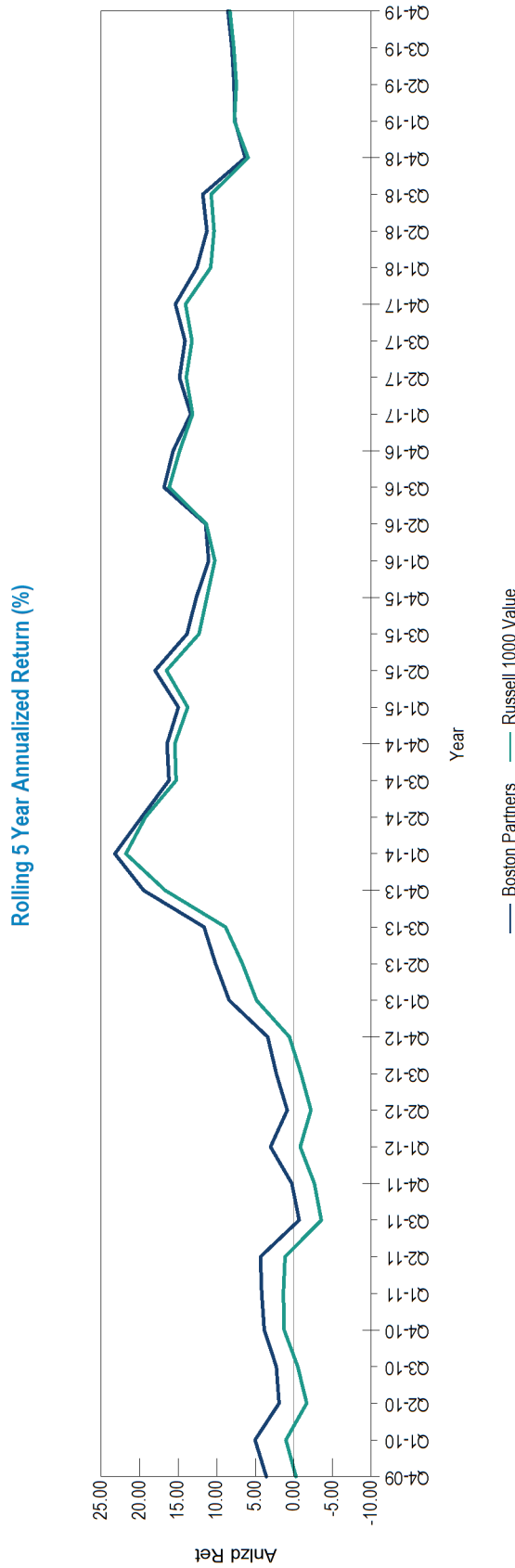
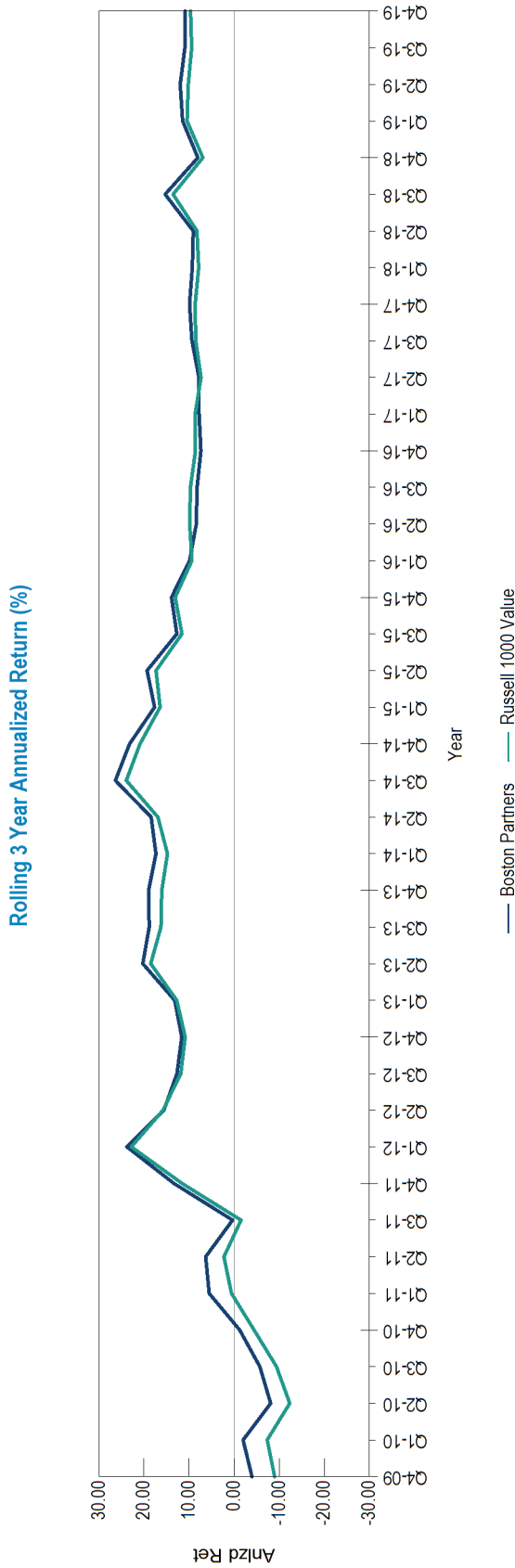
Unclassified sector allocation includes cash allocations.



Return (Rank)

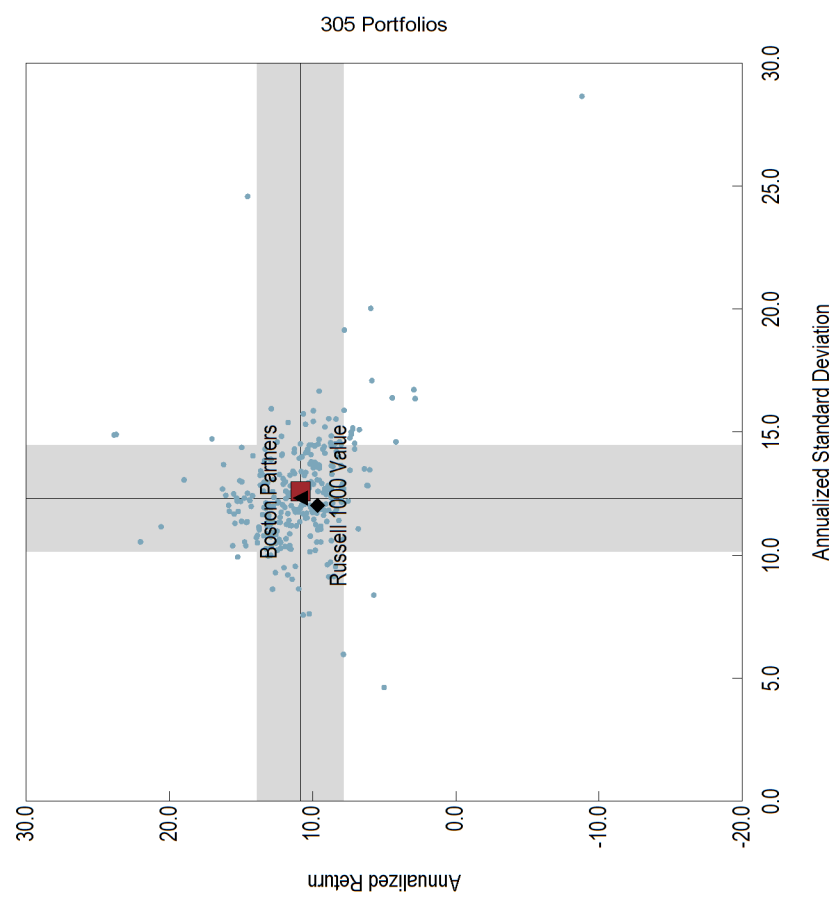
5th Percentile	11.3	15.3	12.0	14.0	14.0	34.4	34.4	24.0	22.1	2.8
25th Percentile	9.0	12.8	10.3	12.8	12.8	29.6	29.6	19.8	17.4	-0.4
Median	7.7	10.9	8.9	12.1	12.1	26.9	26.9	17.2	15.0	-2.6
75th Percentile	6.7	9.3	7.8	11.3	11.3	24.6	24.6	15.1	11.8	-5.1
95th Percentile	4.8	7.1	5.7	9.6	9.6	20.2	20.2	11.2	7.0	-9.4
# of Portfolios	310	305	295	250	250	310	310	342	346	312
● Boston Partners	8.1 (43)	10.9 (50)	8.5 (60)	12.4 (41)	12.4 (41)	24.3 (77)	24.3 (77)	20.1 (23)	15.1 (50)	-3.9 (65)
▲ Russell 1000 Value	7.4 (60)	9.7 (70)	8.3 (65)	11.8 (62)	11.8 (62)	26.5 (55)	26.5 (55)	13.7 (87)	17.3 (26)	-3.8 (64)

Boston Partners
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2019



Boston Partners
 Risk vs. Return 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2019

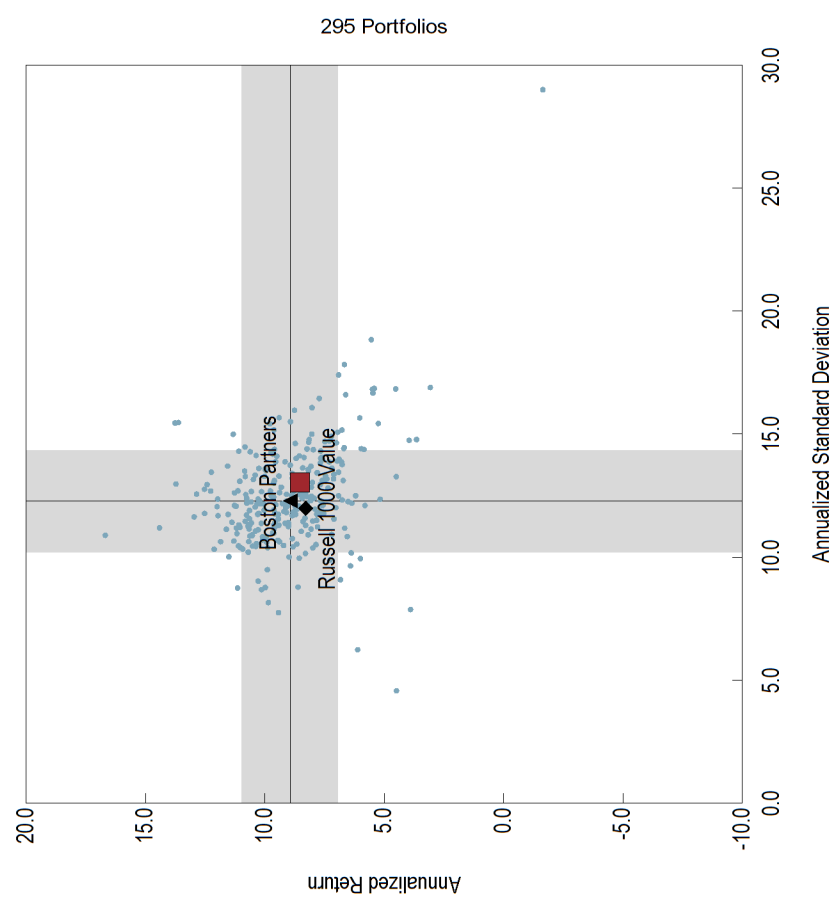
3 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Boston Partners	10.9%	12.6%	0.7
Russell 1000 Value	9.7%	12.0%	0.7
eV US Large Cap Value Equity Gross Median	10.9%	12.3%	0.8

5 Years



5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Boston Partners	8.5%	13.0%	0.6
Russell 1000 Value	8.3%	12.0%	0.6
eV US Large Cap Value Equity Gross Median	8.9%	12.3%	0.7

Emerald Advisers Manager Portfolio Overview

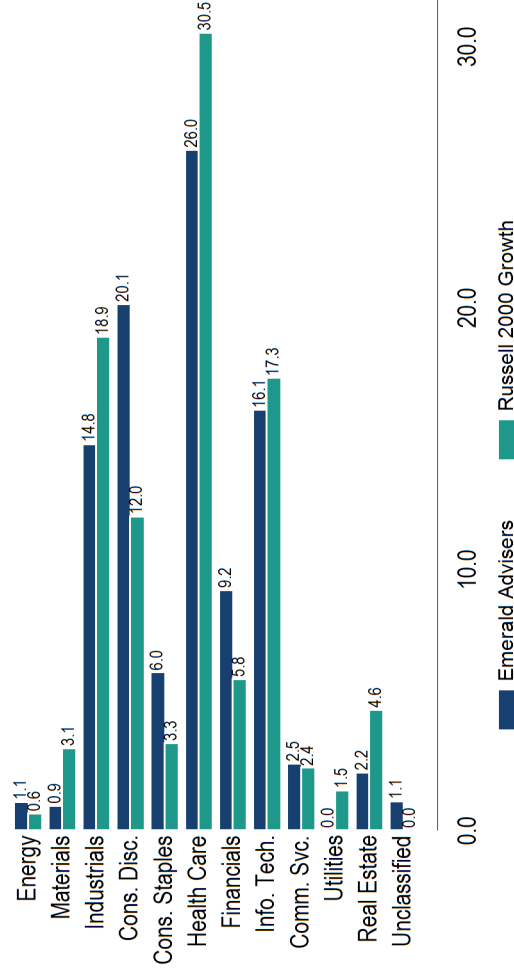
Period Ending: December 31, 2019

Domestic equity small cap growth portfolio of companies with significantly high growth rates. Primary personnel include Kenneth Mertz, Joseph Garner, and Stacey Sears.

Characteristics

	Portfolio	Russell 2000 Growth
Number of Holdings	119	1,172
Weighted Avg. Market Cap. (\$B)	2.92	2.73
Median Market Cap. (\$B)	2.10	0.92
Price To Earnings	24.74	26.45
Price To Book	4.16	4.45
Price To Sales	2.35	1.60
Return on Equity (%)	-8.60	-3.17
Yield (%)	0.44	0.74
Beta	1.12	1.00

Sector Allocation (%) vs Russell 2000 Growth



Largest Holdings

	End Weight	Return	Avg Wgt	Return	Contribution	Avg Wgt	Return	Contribution
CHEGG	2.65	26.58	0.36	154.61	0.55	0.47	-34.42	-0.16
TREX	2.25	-1.15	0.17	178.38	0.30	0.38	-21.71	-0.08
FRESHPET	2.10	18.73	0.53	52.98	0.28	0.58	-13.50	-0.08
PLANET FITNESS CL.A	1.99	29.05	0.24	99.27	0.23	0.29	-26.10	-0.07
CHURCHILL DOWNS	1.99	11.63	0.82	26.58	0.22	0.50	-14.86	-0.07
HORIZON THERAPEUTICS PUBLIC	1.94	32.94	0.53	32.94	0.18	0.47	-13.92	-0.07
NEOGENOMICS	1.92	52.98	0.56	29.05	0.16	0.34	-17.95	-0.06
THE SIMPLY GOOD FOODS	1.81	-1.55	0.50	29.99	0.15	0.46	-13.13	-0.06
VARONIS SYSTEMS	1.80	29.99	0.21	59.84	0.13	0.54	-8.97	-0.05
TETRA TECH	1.79	-0.52	0.52	23.42	0.12	0.27	-15.78	-0.04

Top Contributors

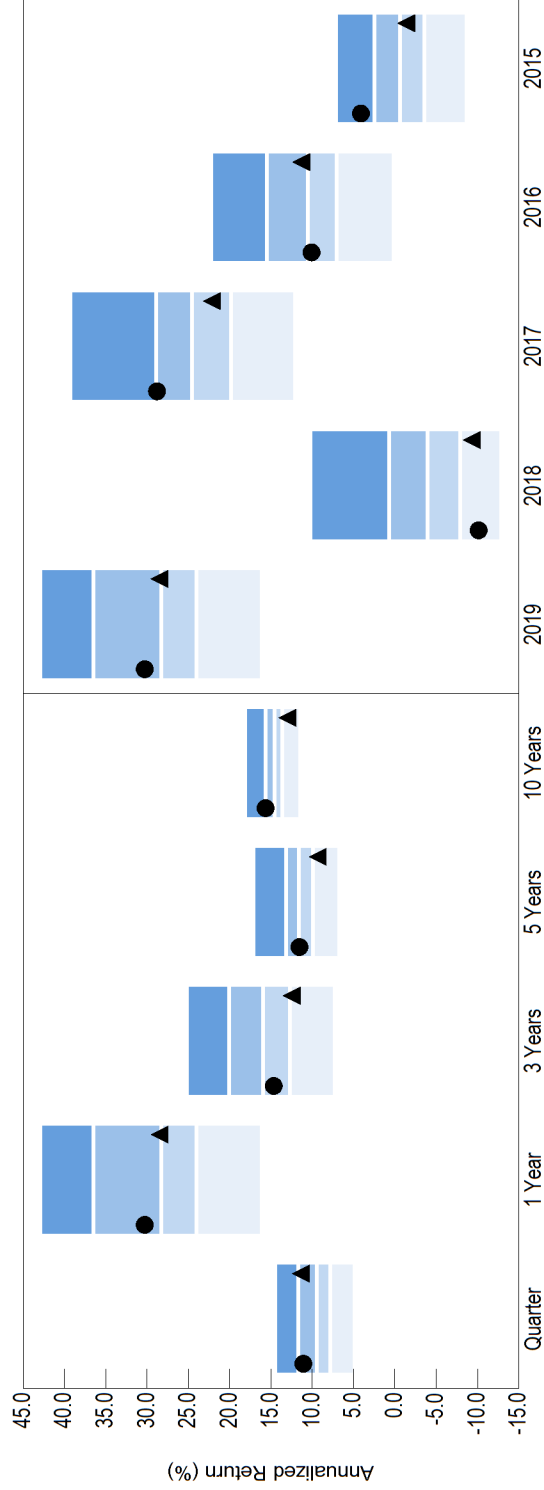
	Avg Wgt	Return	Contribution
REATA PHARMS.CL.A	0.36	154.61	0.55
ARQULE	0.17	178.38	0.30
NEOGENOMICS	0.53	52.98	0.28
KARYOPHARM THERAPEUTICS	0.24	99.27	0.23
CHEGG	0.82	26.58	0.22
HORIZON THERAPEUTICS PUBLIC	0.53	32.94	0.18
PLANET FITNESS CL.A	0.56	29.05	0.16
VARONIS SYSTEMS	0.50	29.99	0.15
AIMMUNE THERAPEUTICS	0.21	59.84	0.13
RAPID7	0.52	23.42	0.12

Bottom Contributors

	Avg Wgt	Return	Contribution
VONAGE HOLDINGS	0.47	-34.42	-0.16
RADIUS HEALTH	0.38	-21.71	-0.08
FORESCOUT TECHNOLOGIES	0.58	-13.50	-0.08
NV5 GLOBAL	0.29	-26.10	-0.07
MERCURY SYSTEMS	0.50	-14.86	-0.07
JACK IN THE BOX	0.47	-13.92	-0.07
CHILDRENS PLACE	0.34	-17.95	-0.06
MERITAGE HOMES	0.46	-13.13	-0.06
TRINET GROUP	0.54	-8.97	-0.05
VOCERA COMMUNICATIONS	0.27	-15.78	-0.04

Unclassified sector allocation includes cash allocations.

Emerald Advisers vs. eV US Small Cap Growth Equity Gross Universe

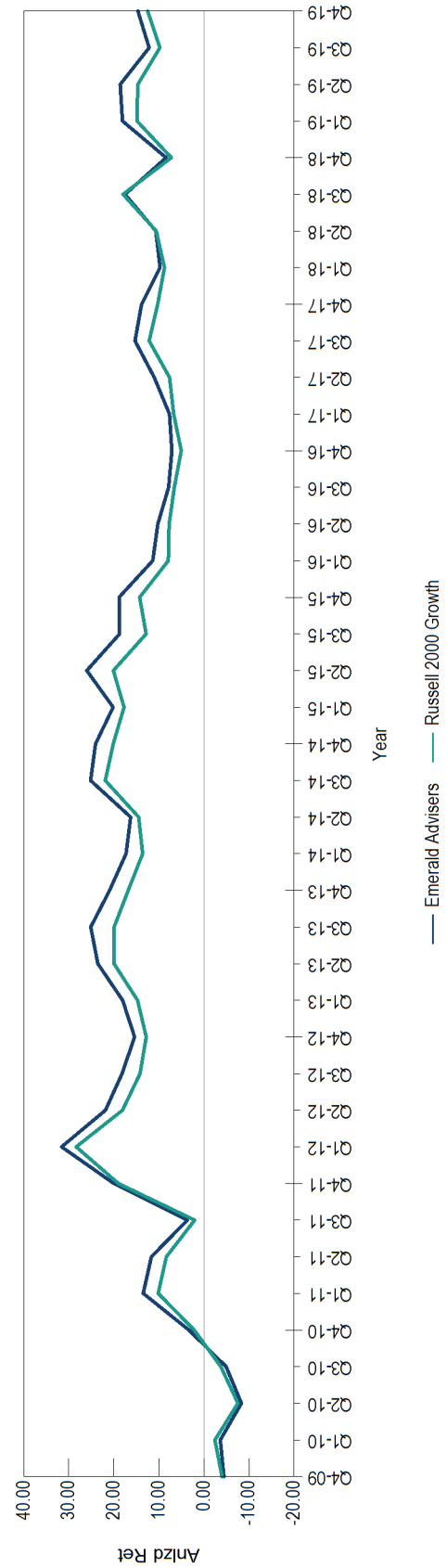


Return (Rank)

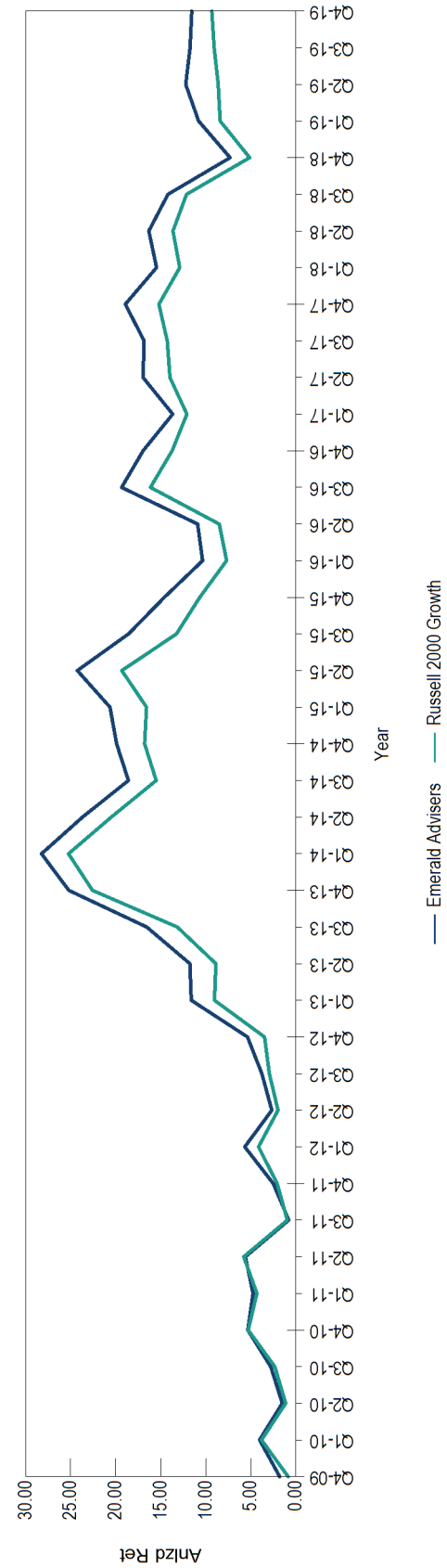
5th Percentile	14.4	25.2	17.1	18.1	42.9	10.2	39.2	22.2	7.1
25th Percentile	11.7	20.1	13.2	15.7	36.5	0.7	28.9	15.5	2.5
Median	9.5	16.0	11.7	14.6	28.3	-3.9	24.6	10.6	-0.6
75th Percentile	7.8	12.7	9.9	13.7	24.1	-7.9	19.8	7.1	-3.5
95th Percentile	4.9	7.3	6.7	11.5	16.2	-12.8	12.1	0.2	-8.7
# of Portfolios	151	150	141	129	151	164	174	170	154
● Emerald Advisers	11.1 (32)	14.7 (64)	11.6 (52)	15.7 (28)	30.3 (45)	-10.1 (85)	28.8 (26)	10.1 (54)	4.1 (19)
▲ Russell 2000 Growth	11.4 (29)	12.5 (79)	9.3 (81)	13.0 (83)	28.5 (49)	-9.3 (80)	22.2 (62)	11.3 (49)	-1.4 (59)

Emerald Advisers
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2019

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)

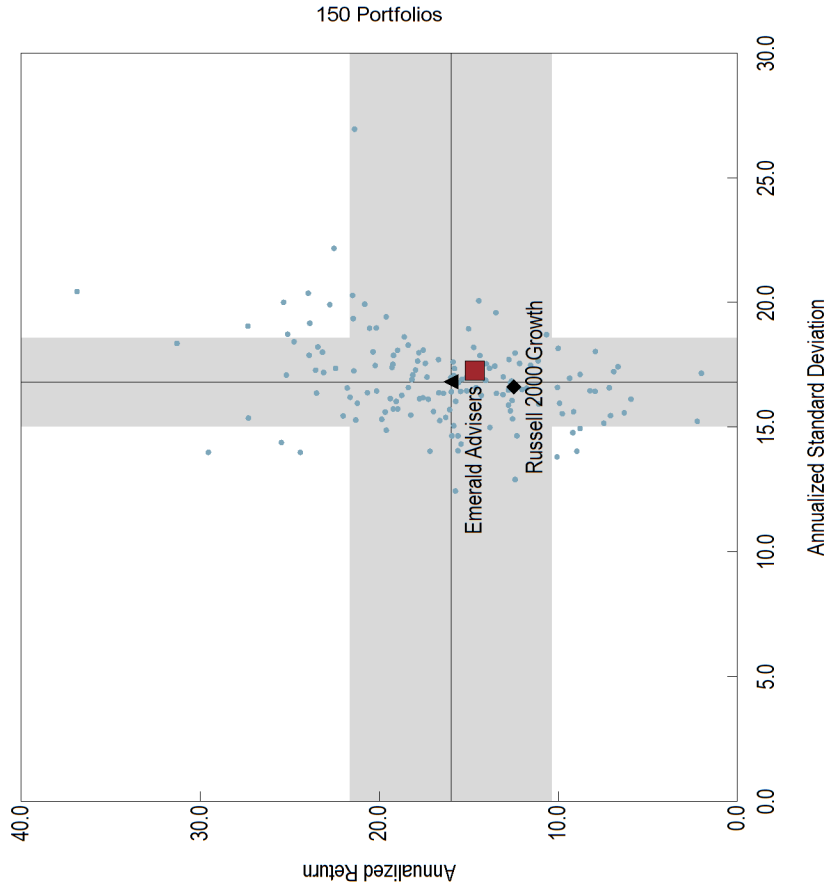


Emerald Advisers

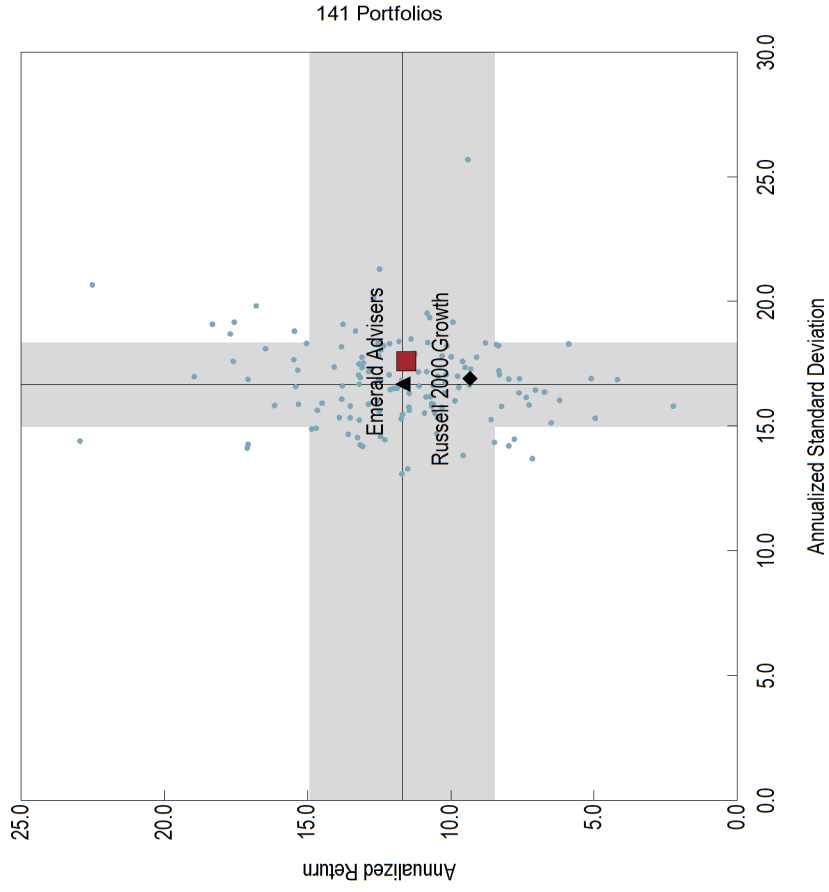
Risk vs. Return 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2019

3 Years



5 Years



3 Years

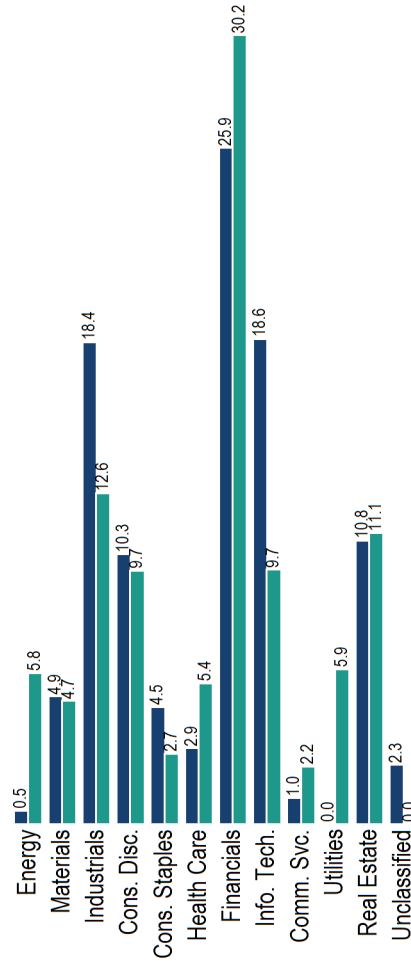
5 Years

Domestic equity small cap value portfolio of companies with dividend yields and low valuations. Primary personnel include Brett Barner and David Maynard.

Characteristics

	Portfolio	Russell 2000 Value
Number of Holdings	82	1,402
Weighted Avg. Market Cap. (\$B)	3.50	2.17
Median Market Cap. (\$B)	2.22	0.70
Price To Earnings	18.14	16.29
Price To Book	2.45	1.71
Price To Sales	1.23	0.92
Return on Equity (%)	17.70	5.31
Yield (%)	2.52	2.13
Beta	0.87	1.00

Sector Allocation (%) vs Russell 2000 Value



Largest Holdings

	End Weight	Return
POWER INTEGRATIONS	5.06	9.60
KEMPER	4.92	-0.20
SABRE	4.48	0.82
ENERGIZER HOLDINGS	4.46	15.93
SLM	4.37	1.32
PHYSICIANS REALTY TST.	3.91	8.12
FIRST AMER.FINL.	3.69	-0.51
CUBIC	3.43	-9.74
AMER.EAG.OUTFITTERS	2.75	-8.51
HILL-ROM HOLDINGS	2.68	8.09

Top Contributors

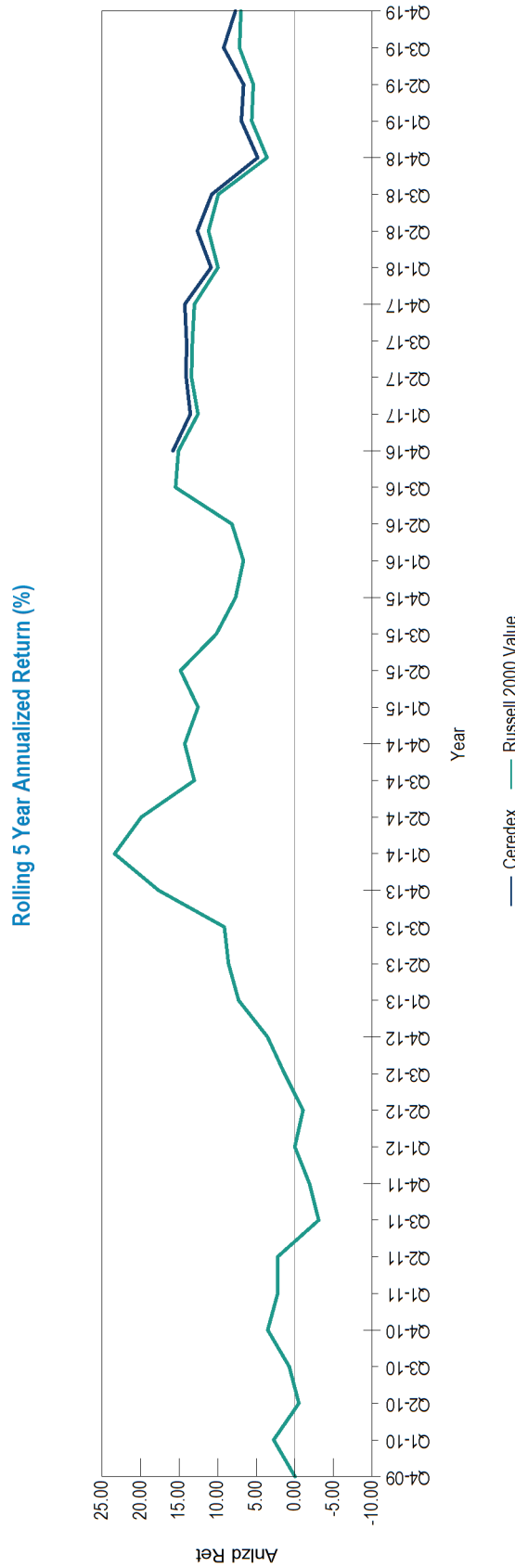
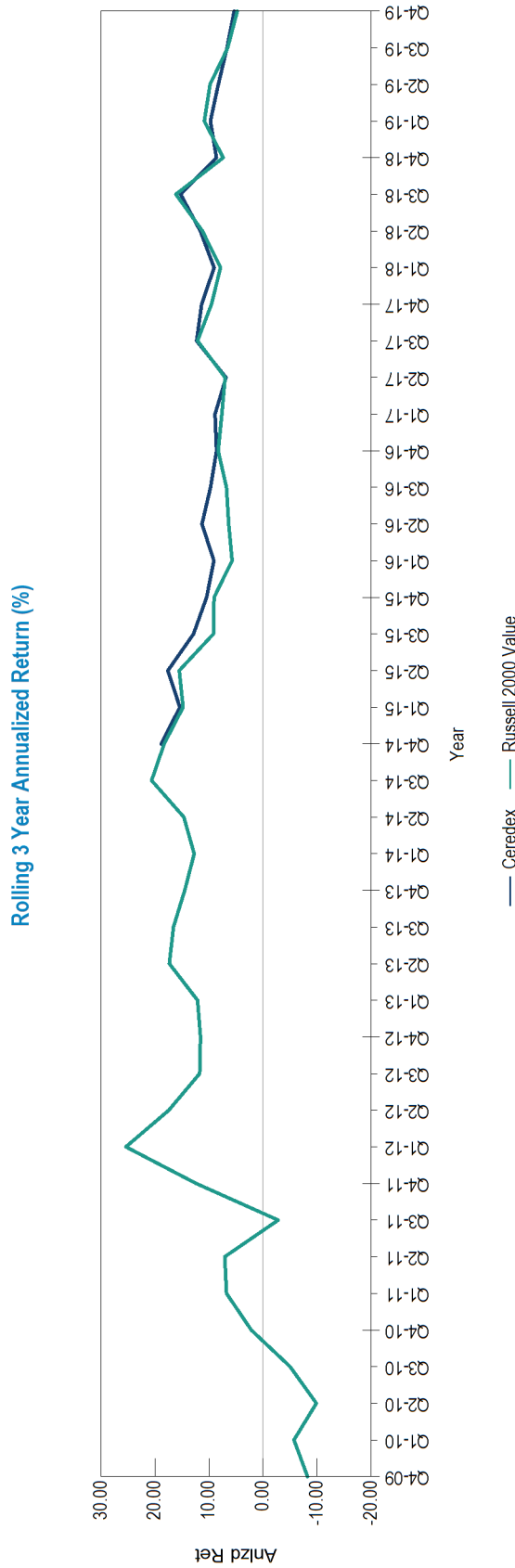
	Avg Wgt	Return	Contribution
ENERGIZER HOLDINGS	1.42	15.93	0.23
POWER INTEGRATIONS	1.57	9.60	0.15
COHU	0.15	69.70	0.11
PHYSICIANS REALTY TST.	1.24	8.12	0.10
MKS INSTRUMENTS	0.46	19.45	0.09
BANK OF HAWAII	0.65	11.56	0.08
MONOLITHIC PWR.SYS.	0.46	14.64	0.07
FIRST HAWAIIAN	0.67	9.05	0.06
HILL-ROM HOLDINGS	0.74	8.09	0.06
PENSKE AUTOMOTIVE GP.	0.83	7.07	0.06

Bottom Contributors

	Avg Wgt	Return	Contribution
CHILDRENS PLACE	1.01	-17.95	-0.18
CUBIC	1.09	-9.74	-0.11
US SILICA HOLDINGS	0.23	-34.97	-0.08
COVANTA HOLDING	0.61	-12.73	-0.08
AMER.EAG.OUTFITTERS	0.91	-8.51	-0.08
APOGEE ENTERPRISES	0.42	-16.25	-0.07
HERMAN MILLER	0.62	-9.24	-0.06
ALEXANDER & BALDWIN	0.36	-13.77	-0.05
EVERCORE A	0.80	-5.98	-0.05
DESIGNER BRANDS A	0.44	-6.62	-0.03

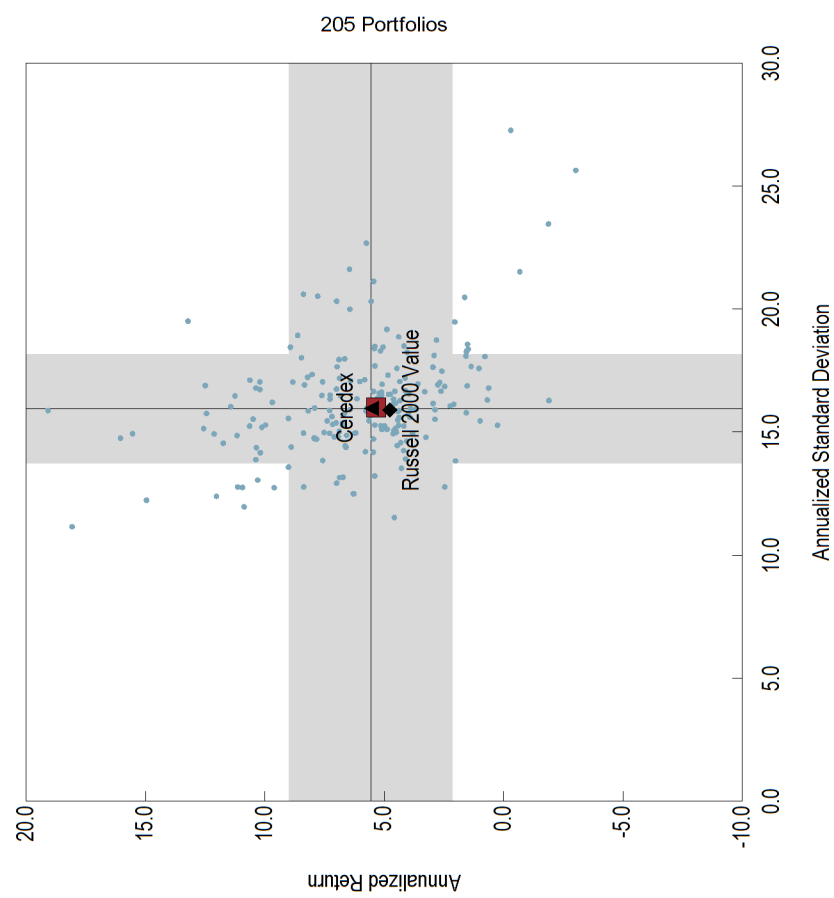
Unclassified sector allocation includes cash allocations.

Ceredex
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2019



Ceredex
 Risk vs. Return 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2019

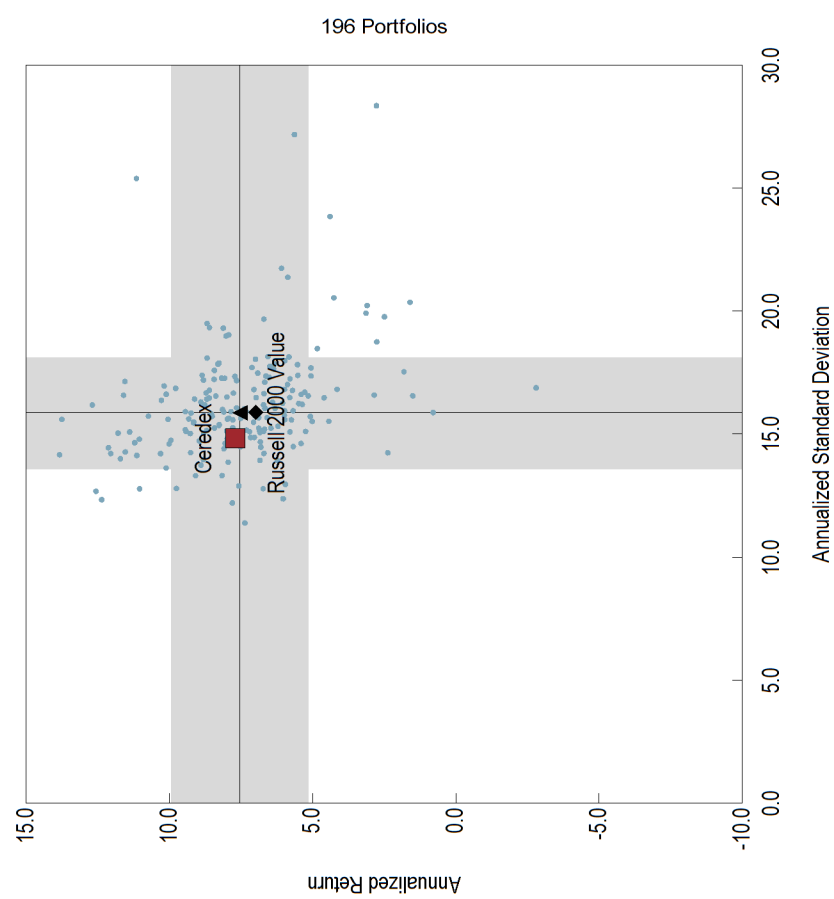
3 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Ceredex	5.3%	16.0%	0.2
Russell 2000 Value	4.8%	15.9%	0.2
eV US Small Cap Value Equity Gross Median	5.6%	16.0%	0.2

5 Years



5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Ceredex	7.7%	14.8%	0.4
Russell 2000 Value	7.0%	15.9%	0.4
eV US Small Cap Value Equity Gross Median	7.5%	15.9%	0.4

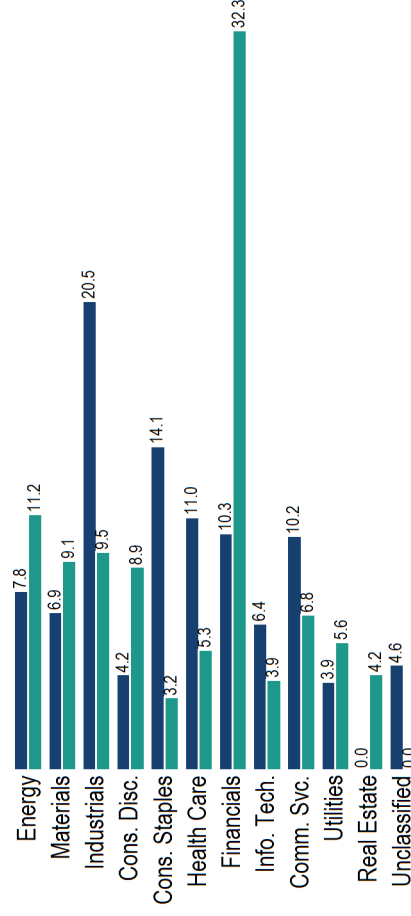
International Equity Managers

International equity value portfolio of non-US companies with low valuations at the country and stock level. Primary personnel include Tony Cousins, Daniel McDonagh, and Paul Simons.

Characteristics

	Portfolio	MSCI ACWI ex USA Value
Number of Holdings	73	1,466
Weighted Avg. Market Cap. (\$B)	68.49	52.68
Median Market Cap. (\$B)	24.44	7.27
Price To Earnings	18.75	12.29
Price To Book	2.51	1.65
Price To Sales	1.51	0.86
Return on Equity (%)	17.67	11.42
Yield (%)	3.63	4.27
Beta	0.90	1.00

Sector Allocation (%) vs MSCI ACWI ex USA Value



Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	88.9%	72.9%
Emerging*	6.5%	27.1%
Top 10 Largest Countries		
Switzerland	13.7%	3.7%
United Kingdom	13.0%	14.4%
Japan	11.0%	16.3%
Australia	10.7%	4.5%
Germany	10.0%	6.4%
France	9.3%	7.2%
Hong Kong	4.7%	2.3%
Cash	4.6%	0.0%
Singapore	4.5%	0.8%
Netherlands	4.4%	1.1%
Total-Top 10 Largest Countries	85.9%	56.7%

Top Contributors

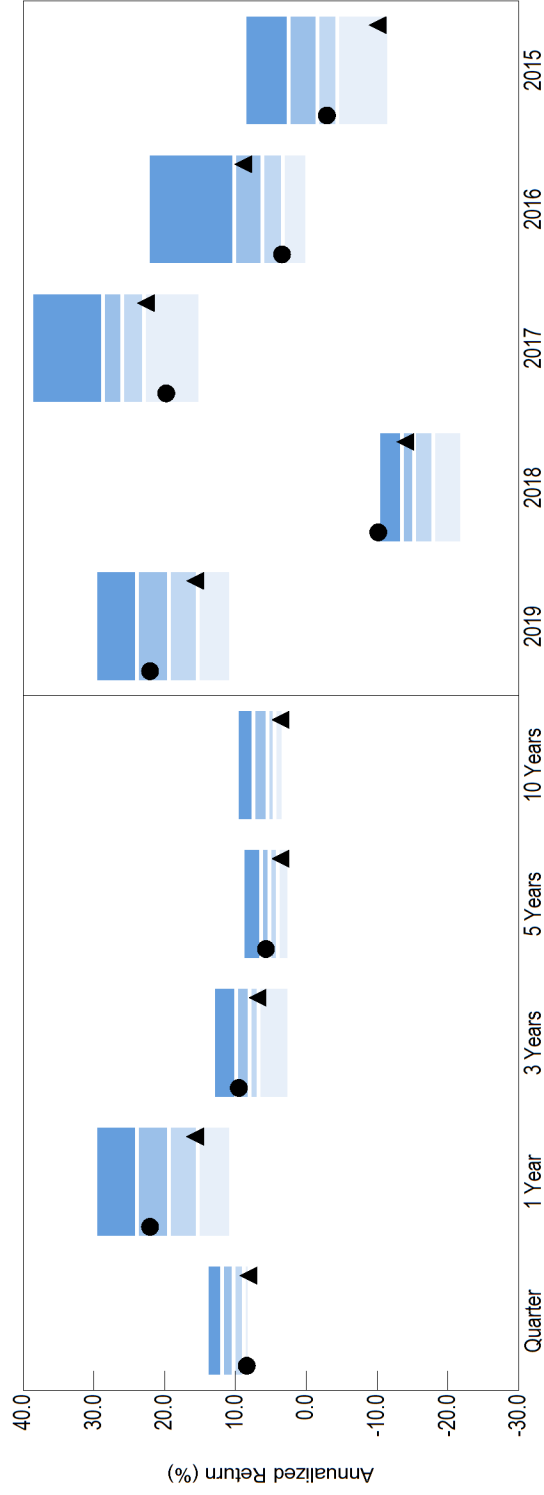
	Avg Wgt	Return	Contribution
FUCHS PETROLUB PREF.	1.63	31.77	0.52
LEGAL & GENERAL	1.35	31.13	0.42
ROCHE HOLDING	3.51	11.32	0.40
TAIWAN SEMICON.MNFG.	1.44	26.88	0.39
NATIONAL GRID	1.97	17.24	0.34
BRITISH AMERICAN TOBACCO	1.49	19.44	0.29
KDDI	1.96	14.51	0.28
GEA GROUP	1.26	21.27	0.27
NOVARTIS 'R'	2.63	9.35	0.25
SSE	1.00	24.16	0.24

Bottom Contributors

	Avg Wgt	Return	Contribution
TELENOR	1.92	-8.84	-0.17
NIHON KOHDEN	1.58	-5.09	-0.08
NEWCREST MINING	0.80	-9.27	-0.07
UNILEVER	1.85	-3.61	-0.07
NESTLE 'R'	3.59	-0.36	-0.01
AXIATA GROUP	1.03	-0.29	0.00
VODAFONE GROUP	1.46	-0.19	0.00
BP	0.68	-0.18	0.00
MERIDA INDUSTRY	0.35	3.49	0.01
ROYAL DUTCH SHELL B	0.88	2.09	0.02

Unclassified sector allocation includes cash allocations.

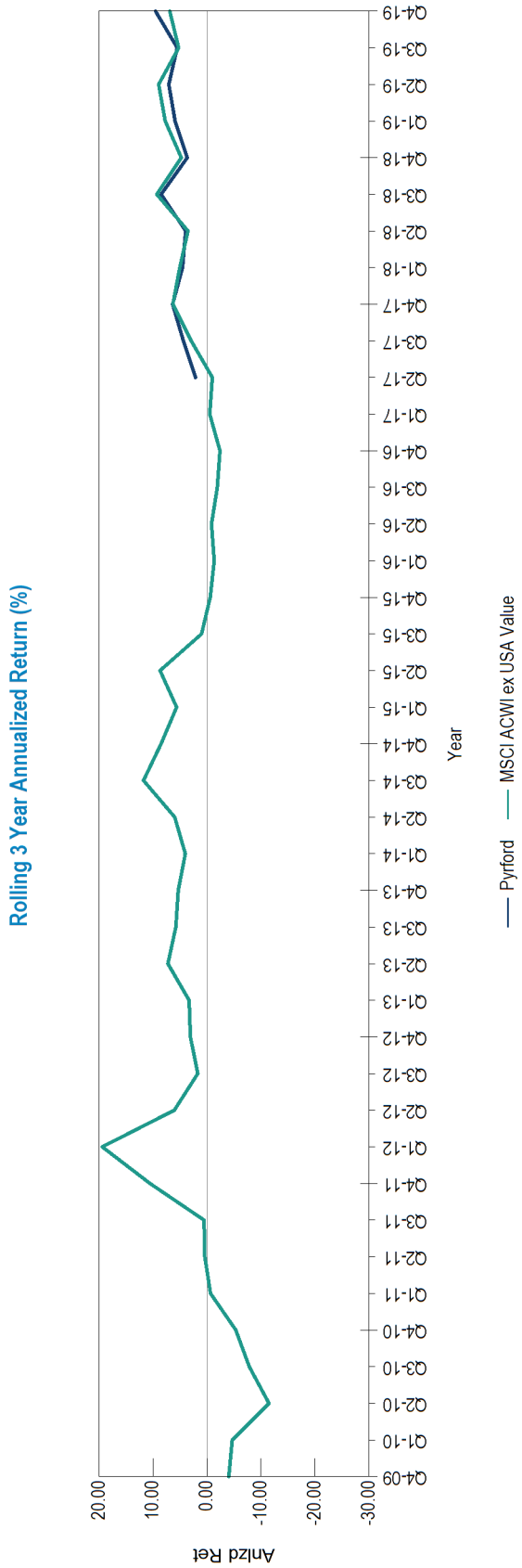
Pyrford vs. eV ACWI ex-US Value Equity Gross Universe



Return (Rank)

5th Percentile	14.1	29.7	13.1	8.9	9.7	29.7	-10.2	38.8	22.3	8.7
25th Percentile	12.0	24.0	10.0	6.4	7.5	24.0	-13.4	28.8	10.2	2.5
Median	10.3	19.4	8.0	5.3	5.5	19.4	-15.2	26.0	6.2	-1.6
75th Percentile	8.9	15.4	6.8	4.1	4.5	15.4	-17.9	23.0	3.3	-4.3
95th Percentile	8.0	10.7	2.4	2.5	3.3	10.7	-21.9	15.0	-0.1	-11.6
# of Portfolios	51	51	49	44	27	51	54	56	55	45
● Pyrford	8.4 (91)	22.1 (36)	9.5 (27)	5.7 (42)	--	22.1 (36)	-10.1 (5)	19.8 (84)	3.4 (74)	-2.9 (59)
▲ MSCI ACWI ex USA Value	8.2 (92)	15.7 (74)	6.9 (73)	3.6 (82)	3.6 (93)	15.7 (74)	-14.0 (32)	22.7 (77)	8.9 (35)	-10.1 (93)

Pyrford
 Manager Performance - Rolling 3 Year (Gross of Fees) Period Ending: December 31, 2019

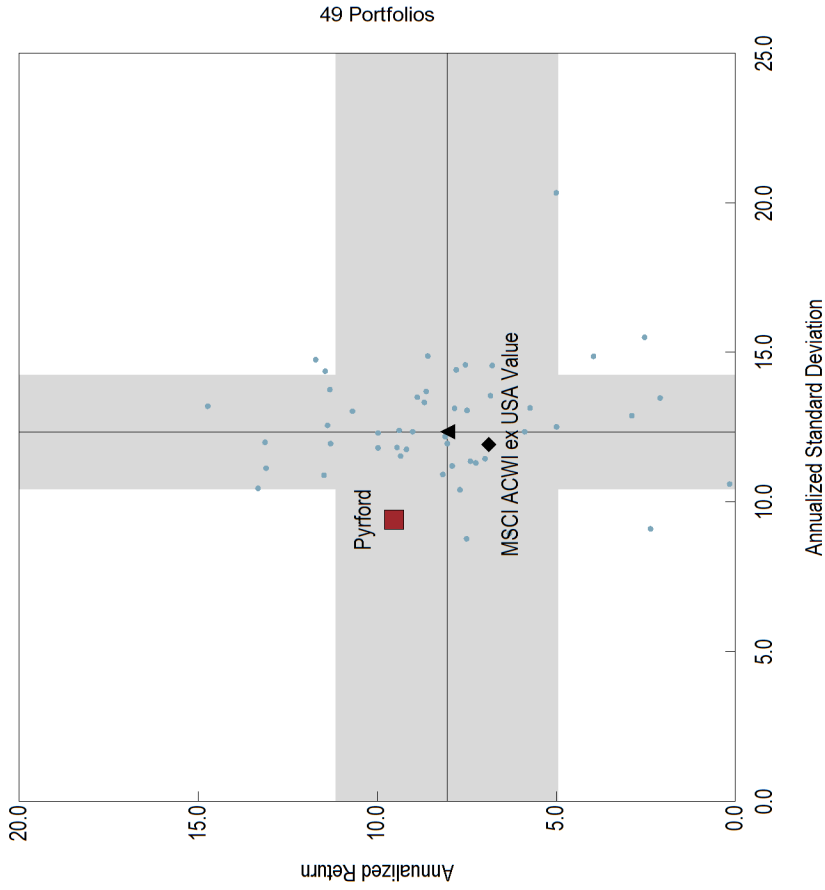


Pyrford

Risk vs. Return 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2019

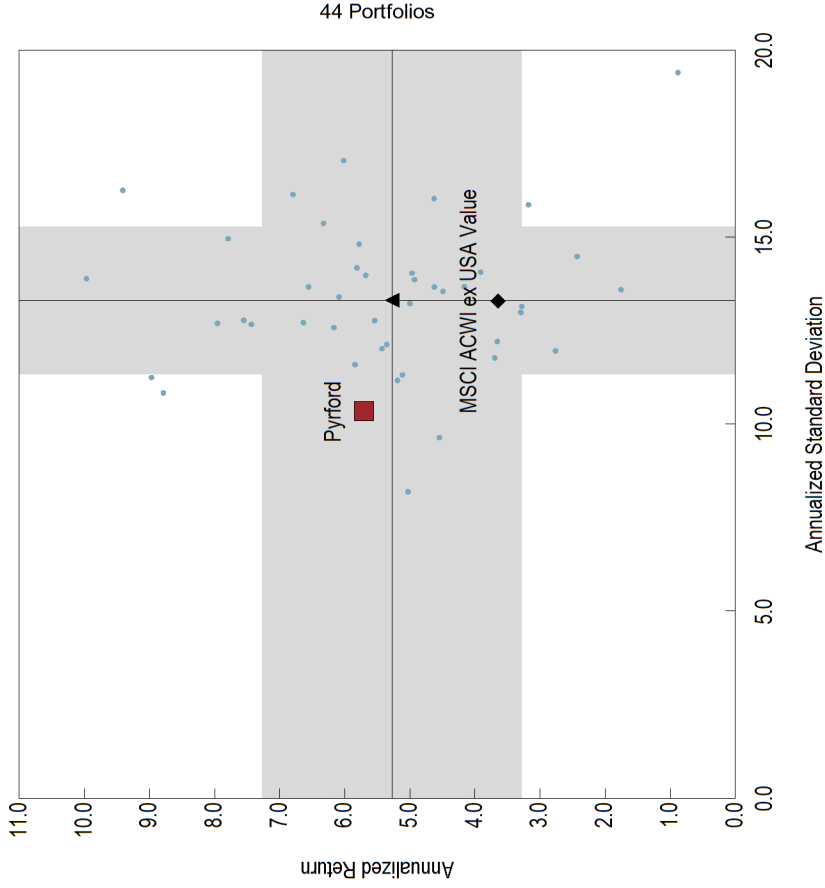
3 Years



3 Years

Pyrford	9.5%	9.4%	0.8
MSCI ACWI ex USA Value	6.9%	11.9%	0.4
eV ACWI ex-US Value Equity Gross Median	8.0%	12.3%	0.5

5 Years



5 Years

Pyrford	5.7%	10.3%	0.4
MSCI ACWI ex USA Value	3.6%	13.3%	0.2
eV ACWI ex-US Value Equity Gross Median	5.3%	13.3%	0.3

William Blair Manager Portfolio Overview

Period Ending: December 31, 2019

International equity growth portfolio of non-US companies with high growth rates constructed from the security level. Primary personnel include Simon Fennell and Kenneth McAtamney.

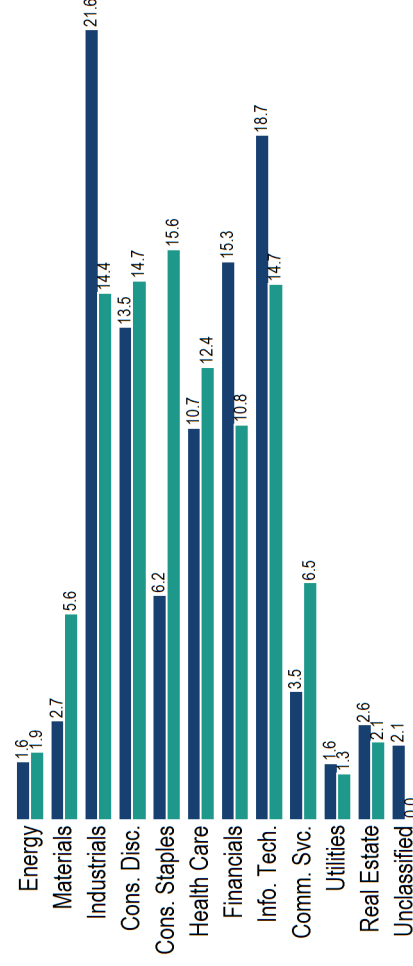
Characteristics

	Portfolio	MSCI ACWI ex USA Growth
Number of Holdings	202	1,214
Weighted Avg. Market Cap. (\$B)	69.53	95.33
Median Market Cap. (\$B)	11.11	8.85
Price To Earnings	27.09	23.80
Price To Book	4.72	3.58
Price To Sales	2.55	1.85
Return on Equity (%)	23.04	19.04
Yield (%)	1.40	1.83
Beta	1.14	1.00

Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	81.5%	72.5%
Emerging*	17.0%	27.5%
Top 10 Largest Countries		
United Kingdom	13.6%	7.4%
Japan	12.6%	16.1%
France	10.2%	7.9%
China*	6.6%	9.4%
Hong Kong	5.5%	2.3%
Canada	5.1%	6.6%
Switzerland	5.0%	8.6%
Denmark	4.7%	2.2%
Germany	4.4%	5.0%
Sweden	4.1%	2.1%
Total-Top 10 Largest Countries	72.0%	67.7%

Sector Allocation (%) vs MSCI ACWI ex USA Growth



Top Contributors

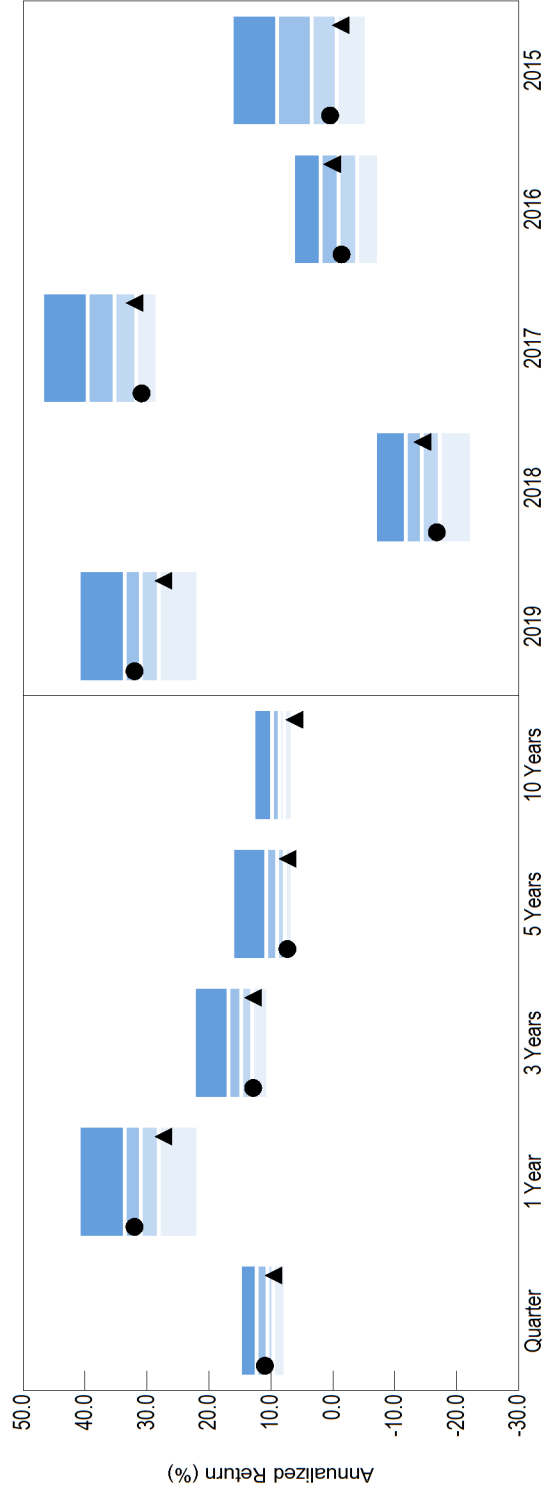
	Avg Wgt	Return	Contribution
ALIBABA GROUP HOLDING ADR 1:8	1.86	26.83	0.50
TAIWAN SEMICON.SPN.ADR 1:5	1.84	25.88	0.48
ATLAS COPCO A	1.20	30.64	0.37
ASML HOLDING	1.70	19.99	0.34
SIKA	1.01	28.26	0.29
TENCENT HOLDINGS	1.93	14.44	0.28
KERING	0.84	28.87	0.24
LVMH	1.35	17.60	0.24
CSL	1.01	22.99	0.23
KEYENCE	1.58	14.43	0.23

Bottom Contributors

	Avg Wgt	Return	Contribution
SHISEIDO	1.09	-9.97	-0.11
THALES	0.75	-9.07	-0.07
START TODAY	0.30	-16.71	-0.05
COMPASS GROUP	1.40	-2.92	-0.04
TEMENOS N	0.70	-5.54	-0.04
HISCOX DI	0.41	-7.78	-0.03
DIGITAL ARTS	0.13	-22.28	-0.03
TORONTO-DOMINION BANK	0.96	-2.76	-0.03
SAFRAN	1.38	-1.88	-0.03
CHRISTIAN HANSEN HOLDING	0.39	-5.03	-0.02

Unclassified sector allocation includes cash allocations.

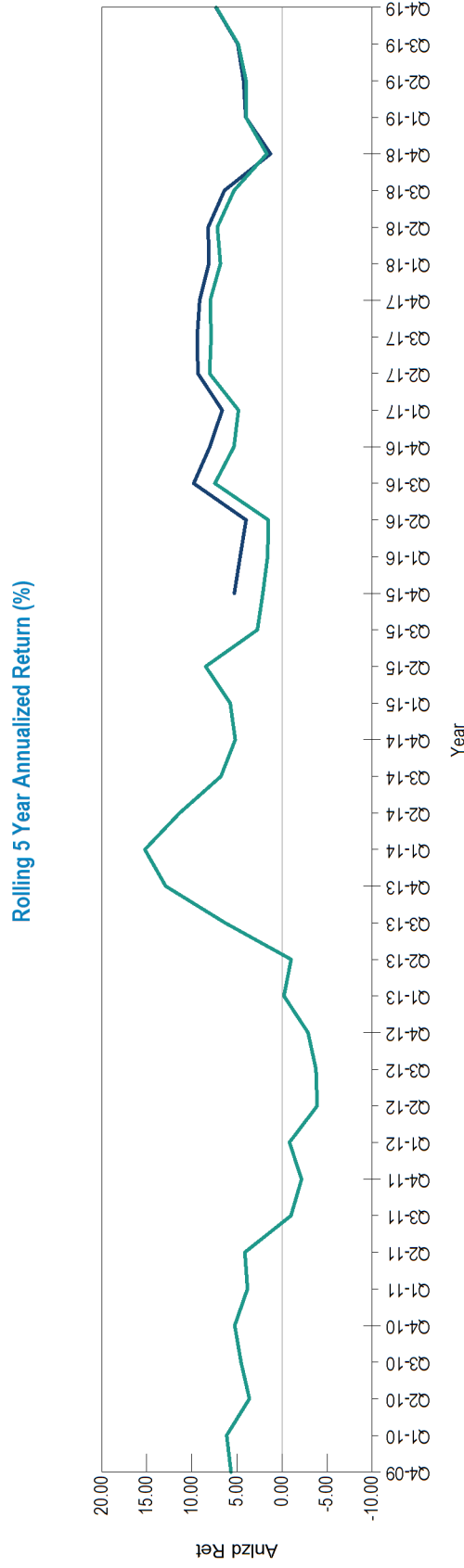
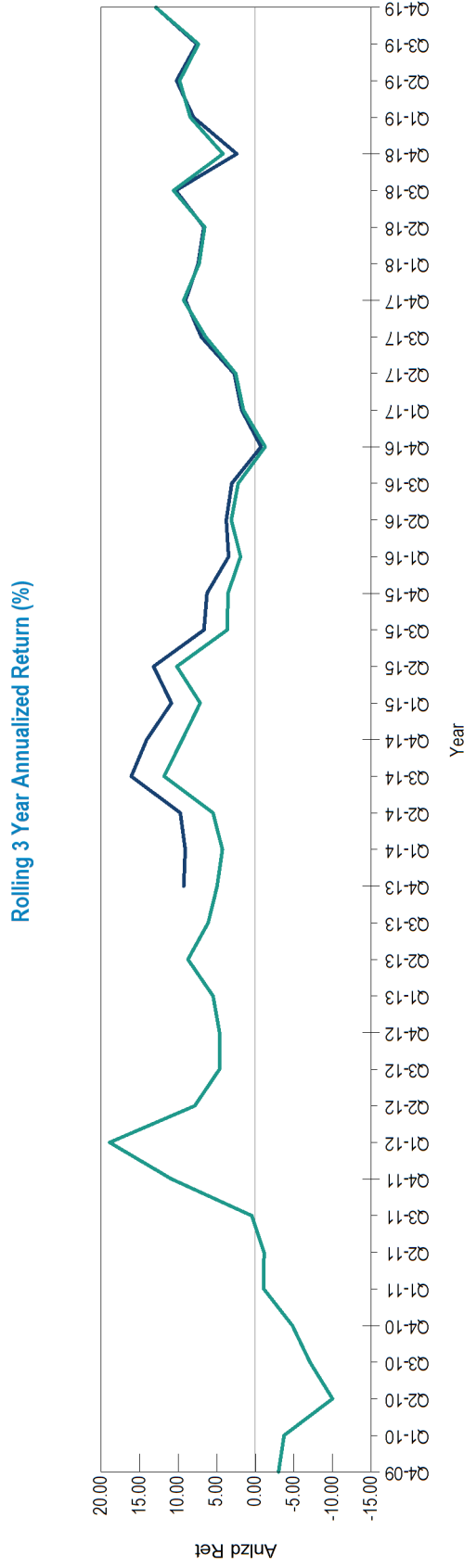
William Blair vs. eV ACWI ex-US Growth Equity Gross Universe



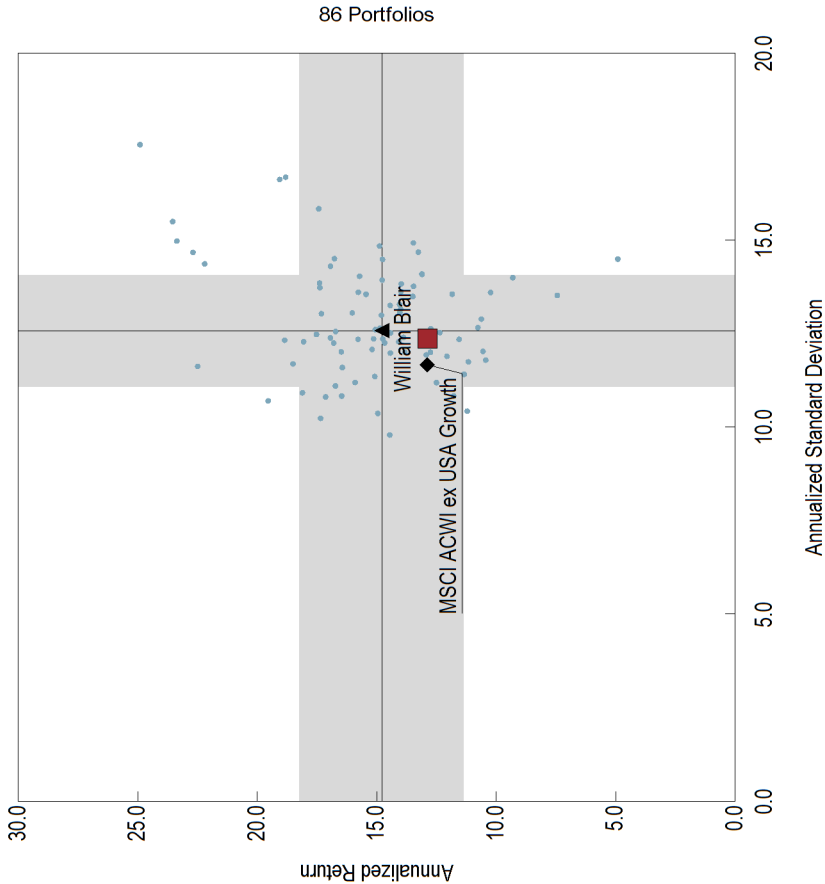
Return (Rank)

5th Percentile	14.9	22.4	16.2	12.7	41.0	-6.8	46.8	6.3	16.3
25th Percentile	12.4	16.9	10.8	9.9	33.6	-11.7	39.6	2.0	9.0
Median	10.6	14.8	9.1	8.7	31.0	-14.3	35.3	-0.9	3.5
75th Percentile	9.6	13.1	7.8	7.9	28.2	-17.2	31.8	-3.9	-0.5
95th Percentile	7.7	10.5	6.5	6.6	21.8	-22.3	28.3	-7.4	-5.4
# of Portfolios	92	86	78	54	92	82	94	90	70
● William Blair	11.0 (38)	12.9 (78)	7.3 (86)	--	32.0 (42)	-16.8 (69)	30.9 (81)	-1.4 (55)	0.5 (69)
▲ MSCI ACWI ex USA Growth	9.6 (76)	12.9 (80)	7.3 (88)	6.2 (99)	27.3 (80)	-14.4 (51)	32.0 (75)	0.1 (45)	-1.3 (83)

William Blair
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2019



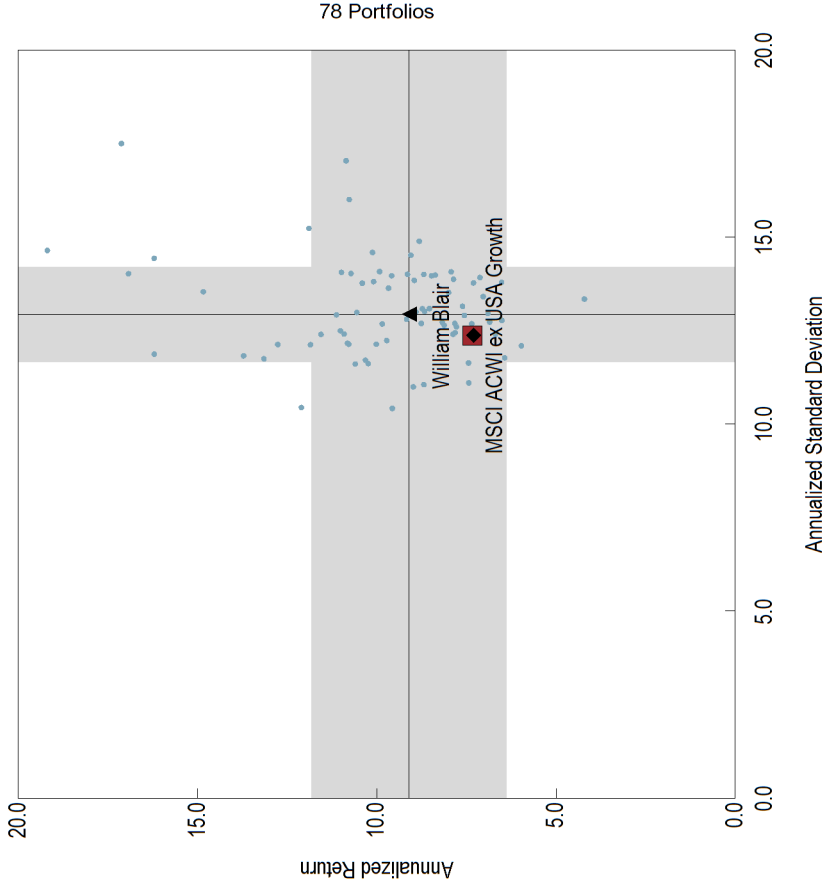
3 Years



3 Years

William Blair	12.9%	12.4%	0.9
MSCI ACWI ex USA Growth	12.9%	11.7%	1.0
eV ACWI ex-US Growth Equity Gross Median	14.8%	12.6%	1.0

5 Years



5 Years

William Blair	7.3%	12.4%	0.5
MSCI ACWI ex USA Growth	7.3%	12.4%	0.5
eV ACWI ex-US Growth Equity Gross Median	9.1%	12.9%	0.6

PIMCO RAE Emerging Markets Manager Portfolio Overview

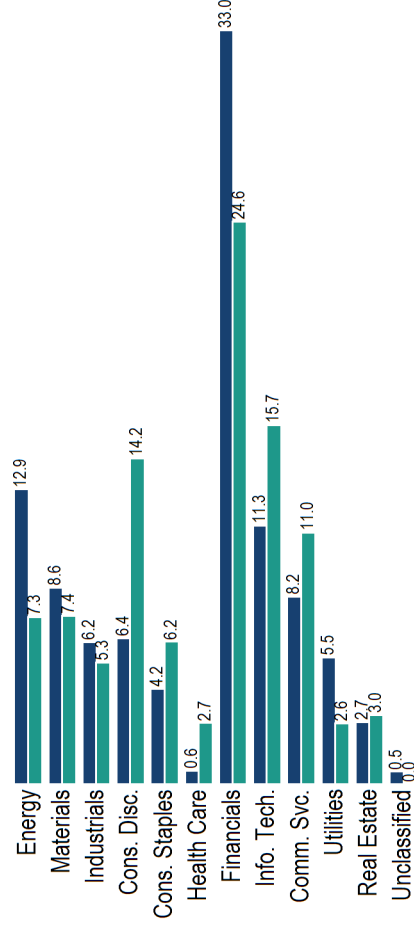
Period Ending: December 31, 2019

The PIMCO RAE Emerging Markets seeks to invest 80% of its assets in investments that are economically tied to emerging market countries. The portfolio is sub-advised by Research Affiliates, LLC.

Characteristics

	Portfolio	MSCI Emerging Markets
Number of Holdings	635	1,371
Weighted Avg. Market Cap. (\$B)	40.92	106.20
Median Market Cap. (\$B)	3.77	5.93
Price To Earnings	8.76	14.97
Price To Book	1.67	2.57
Price To Sales	0.51	1.28
Return on Equity (%)	10.66	16.97
Yield (%)	4.07	2.69
Beta		1.00

Sector Allocation (%) vs MSCI Emerging Markets



Country Allocation

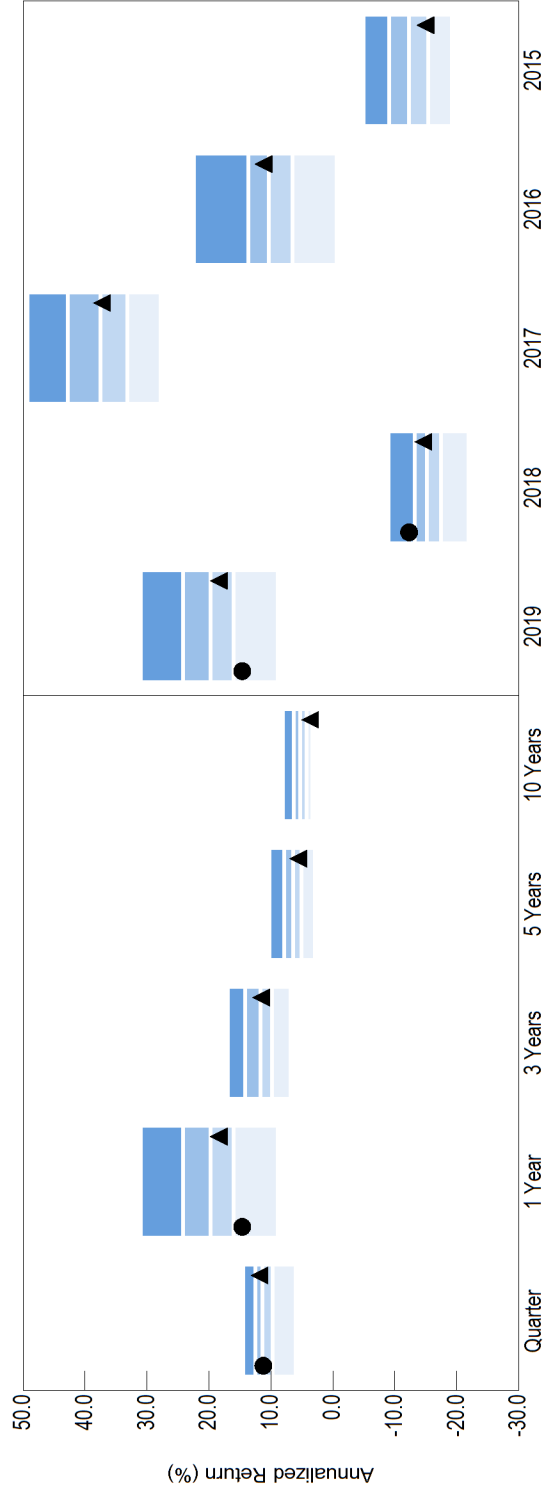
	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	7.8%	0.0%
Emerging*	91.6%	100.0%
Top 10 Largest Countries		
Korea*	16.5%	11.8%
China*	16.2%	33.8%
Russia*	11.6%	3.9%
Taiwan*	10.8%	11.8%
Brazil*	9.1%	7.5%
Hong Kong	7.2%	0.0%
India*	6.5%	8.7%
South Africa*	4.8%	4.8%
Turkey*	4.4%	0.5%
Mexico*	2.9%	2.3%
Total-Top 10 Largest Countries	89.9%	85.2%

Top Contributors				Bottom Contributors			
	End Weight	Return	Contribution	End Weight	Return	Contribution	
PJSC GAZPROM ADR CDI 1:2	4.85	19.18	0.93	JBS ON	0.43	-18.53	
SURGUTNEFTGAS PUBLIC JOINT ADR 1:10	1.25	50.33	0.63	HYUNDAI MOTOR	0.99	-6.99	
SAMSUNG ELECTRONICS	3.13	17.67	0.55	TELKOM SA SOC	0.11	-45.68	
CHINA CON.BANK 'H'	3.62	13.23	0.48	TURKIYE HALK BANKASI	0.34	-14.52	
TATA MOTORS	0.72	56.52	0.41	MTN GROUP	0.69	-7.12	
PJSC LUKOIL SPON (LON) ADR	1.39	23.59	0.33	CHINA TELECOM 'H'	0.45	-9.53	
INDL&COML.BOC.'H'	2.11	14.98	0.32	CHINA UNICOM (HONG KONG)	0.36	-11.24	
TAIWAN	1.08	25.88	0.28	HYUNDAI STEEL	0.20	-16.38	
SEMICON.SPN.ADR 1:5	0.94	28.38	0.27	CENCOSUD	0.15	-20.11	
HON HAI PRECN.IND. PN	0.40	54.18	0.21	INDIAN OIL	0.18	-15.43	
METALURGICA GERDAU							

Unclassified sector allocation includes cash allocations.

PIMCO RAE Emerging Markets
 Manager Performance Comparisons (Gross of Fees) Period Ending: December 31, 2019

PIMCO RAE Emerging Markets vs. eV Emg Mkts Equity Gross Universe



Return (Rank)

5th Percentile	14.4	31.0	16.9	10.1	8.0	31.0	-9.0	49.2	22.4	-5.0
25th Percentile	12.5	24.2	14.2	7.9	6.4	24.2	-13.2	42.8	13.7	-9.0
Median	11.5	19.8	11.7	6.5	5.3	19.8	-15.2	37.6	10.4	-12.2
75th Percentile	9.8	16.1	9.9	5.2	4.3	16.1	-17.4	33.2	6.6	-15.3
95th Percentile	6.0	8.9	6.9	3.0	3.3	8.9	-21.8	27.8	-0.6	-19.2
# of Portfolios	375	373	347	304	150	373	355	343	337	273
● PIMCO RAE Emerging Markets	11.2 (54)	14.6 (82)	-- (--)	-- (--)	-- (--)	14.6 (82)	-12.3 (19)	-- (--)	-- (--)	-- (--)
▲ MSCI Emerging Markets	11.8 (40)	18.4 (62)	11.6 (53)	5.6 (67)	3.7 (90)	18.4 (62)	-14.6 (43)	37.3 (53)	11.2 (45)	-14.9 (70)

TT Emerging Markets Manager Portfolio Overview

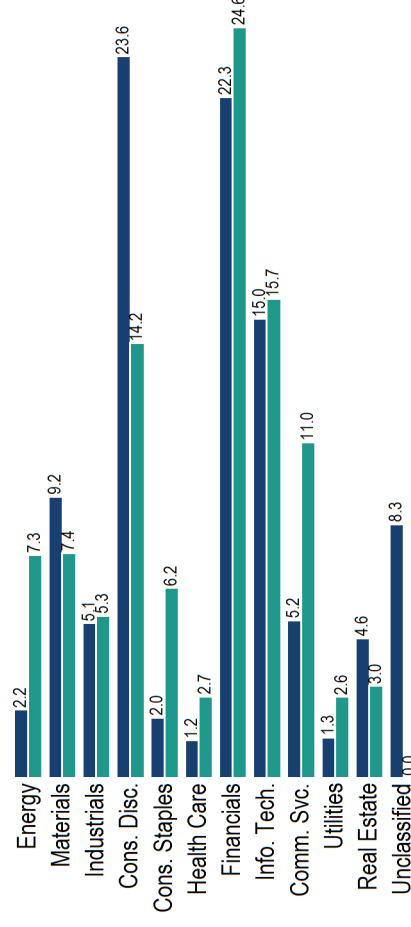
Period Ending: December 31, 2019

The Emerging Markets Unconstrained strategy aims to outperform its benchmark, MSCI Emerging Markets Index by 5% per annum over a three-year rolling period. It targets high returns and long term capital growth by investing in a focused portfolio of primarily equity and equity-related securities traded in the Emerging Markets.

Characteristics

	Portfolio	MSCI Emerging Markets
Number of Holdings	66	1,371
Weighted Avg. Market Cap. (\$B)	91.32	106.20
Median Market Cap. (\$B)	9.58	5.93
Price To Earnings	14.25	14.97
Price To Book	2.57	2.57
Price To Sales	1.37	1.28
Return on Equity (%)	18.26	16.97
Yield (%)	2.16	2.69
Beta		1.00

Sector Allocation (%) vs MSCI Emerging Markets



Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	21.4%	0.0%
Emerging*	74.7%	100.0%
Frontier**	0.8%	0.0%
Top 10 Largest Countries		
India*	14.6%	8.7%
Korea*	13.7%	11.8%
Brazil*	12.7%	7.5%
China*	12.6%	33.8%
Hong Kong	7.4%	0.0%
Taiwan*	6.1%	11.8%
United States	5.4%	0.0%
Russia*	4.8%	3.9%
South Africa*	4.4%	4.8%
Netherlands	3.7%	0.0%
Total-Top 10 Largest Countries	86.0%	82.4%

Country Allocation

	TT Emerging Markets	MSCI Emerging Markets	
Top Contributors	End Weight	Return	Contribution
ALIBABA GROUP HOLDING ADR 1:8	7.37	26.83	1.98
SAMSUNG ELTN.PREF.	6.27	18.88	1.18
TAIWAN SEMICON.MNFG.	2.80	26.88	0.75
ESTACIO PARTICIPACOES ON	1.81	36.32	0.66
ICICI BANK	2.73	23.37	0.64
TENCENT HOLDINGS	3.64	14.44	0.53
LUKOIL OAO SPN.ADR 1:1	2.22	23.03	0.51
GUANGZHOU AUTOMOBILE GP. 'H'	1.63	30.12	0.49
BANCO DO BRASIL ON	2.22	21.61	0.48
HANSOL CHEMICAL	1.23	37.74	0.46
Bottom Contributors	End Weight	Return	Contribution
LARSEN & TOUBRO	1.47	-12.57	-0.19
OCI	1.35	-10.87	-0.15
FUTURE RETAIL	0.97	-10.90	-0.11
PKO BANK	1.45	-7.23	-0.10
ULTRATECH CEMENT	1.27	-7.47	-0.09
AYALA LAND	0.69	-5.31	-0.04
TCI	0.60	-5.61	-0.03
ARVIND FASHIONS	0.19	-10.24	-0.02
CEMEX ADR 1:10	0.72	-2.30	-0.02
PTRO.BRAO.ADR 1:2	0.00	15.91	0.00

Unclassified sector allocation includes cash allocations.

Global Equity Managers

Artisan Partners Manager Portfolio Overview

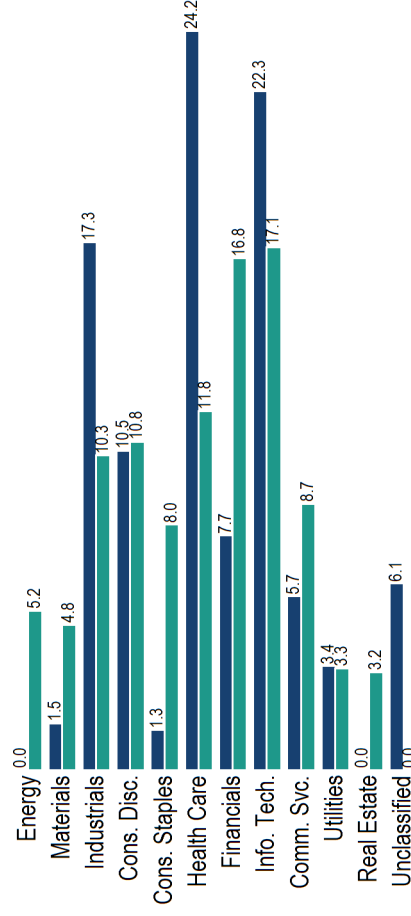
Period Ending: December 31, 2019

Global equity portfolio of companies that is benchmark agnostic with accelerating profit cycles and a focus on capital allocation. Primary personnel include James Hamel, Craig Cepukenas, and Matthew Kamm.

Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	47	3,017
Weighted Avg. Market Cap. (\$B)	125.91	176.60
Median Market Cap. (\$B)	35.91	9.96
Price To Earnings	32.84	19.43
Price To Book	5.69	3.08
Price To Sales	3.04	1.56
Return on Equity (%)	20.73	19.36
Yield (%)	0.92	2.36
Beta	1.19	1.00

Sector Allocation (%) vs MSCI ACWI



Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	92.5%	87.9%
Emerging*	1.4%	12.1%
Top 10 Largest Countries		
United States	56.4%	55.7%
United Kingdom	10.8%	4.8%
Denmark	6.4%	0.5%
Cash	6.1%	0.0%
Hong Kong	5.7%	1.0%
Switzerland	3.5%	2.7%
Japan	3.2%	7.2%
Spain	2.4%	0.8%
Netherlands	2.3%	1.2%
Germany	1.9%	2.5%
Total-Top 10 Largest Countries	98.6%	76.5%

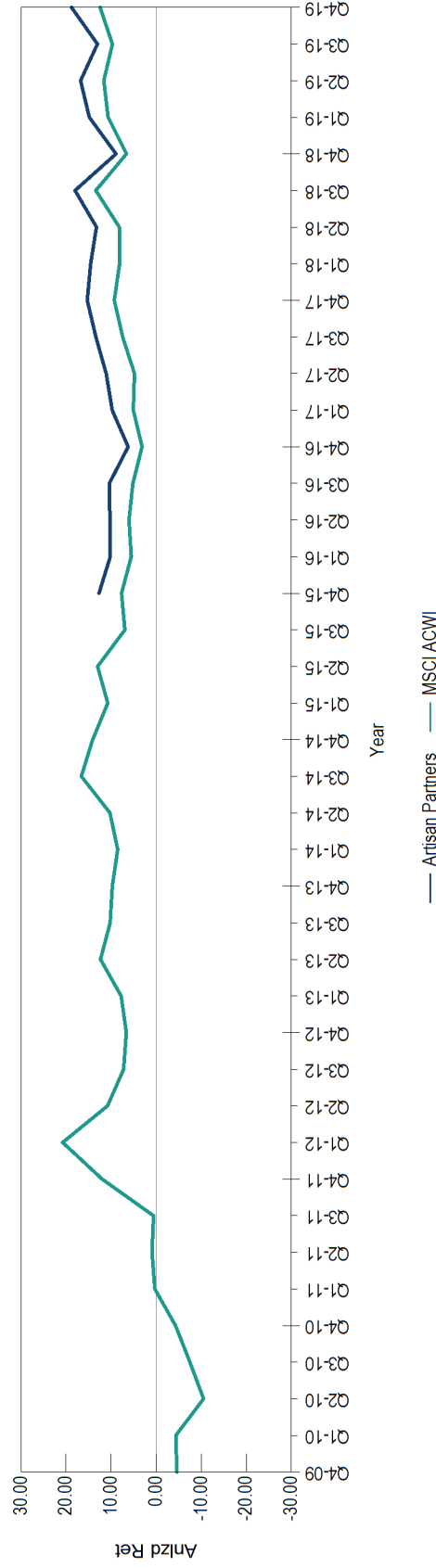
Top Contributors

	Avg Wgt	Return	Contribution
ADVANCED MICRO DEVICES	2.29	58.19	1.33
IHS MARKIT	6.36	12.66	0.81
BANK OF AMERICA	3.50	21.40	0.75
TECHTRONIC INDS.	3.88	17.21	0.67
VESTAS WINDSYSTEMS	2.08	30.23	0.63
MICROSOFT	3.84	13.82	0.53
ANTHEM	1.89	26.14	0.49
CERIDIAN HCM HOLDING	1.15	37.49	0.43
LONDON STOCK EX.GROUP	2.90	14.00	0.41
TENCENT HOLDINGS	2.57	14.44	0.37
PAGSEGURO DIGITAL A	1.76	-26.24	-0.46
ARISTA NETWORKS	2.10	-14.87	-0.31
L3HARRIS TECHNOLOGIES	3.54	-4.80	-0.17
TREASURY WINE ESTATES	1.47	-8.85	-0.13
VEEVA SYSTEMS CLA	1.55	-7.88	-0.12
PROGRESSIVE OHIO	1.56	-6.17	-0.10
FEVERTREE DRINKS	1.34	-7.14	-0.10
TEMENOS N	1.30	-5.54	-0.07
ZOOM VIDEO COMMUNICATIONS A	0.63	-10.71	-0.07
ATLIASSIAN 'A'	1.06	-4.07	-0.04

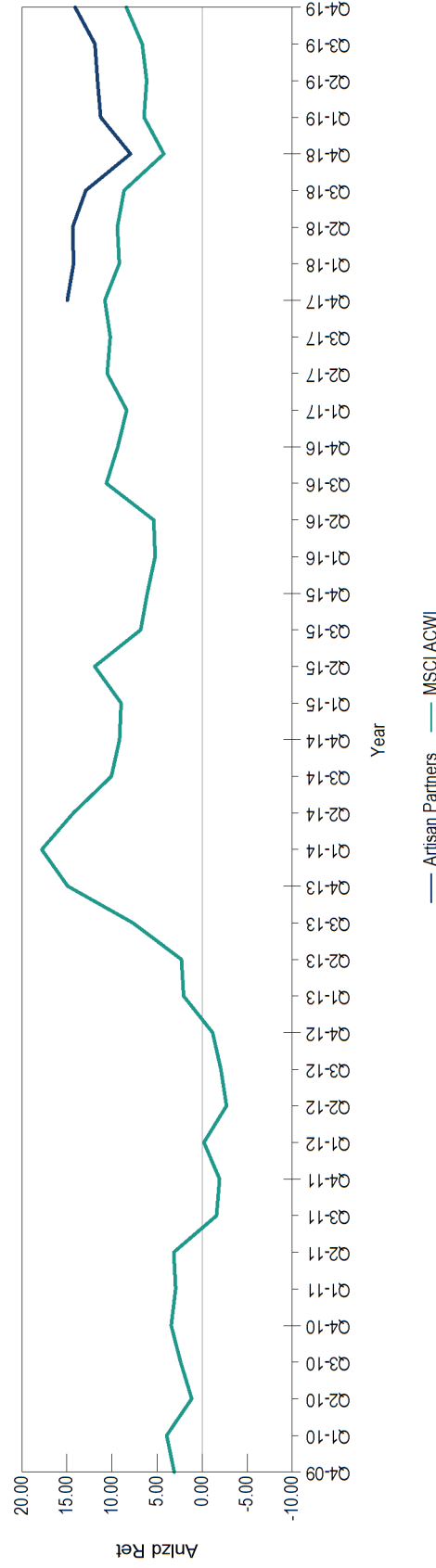
Bottom Contributors

Unclassified sector allocation includes cash allocations.

Rolling 3 Year Annualized Return (%)

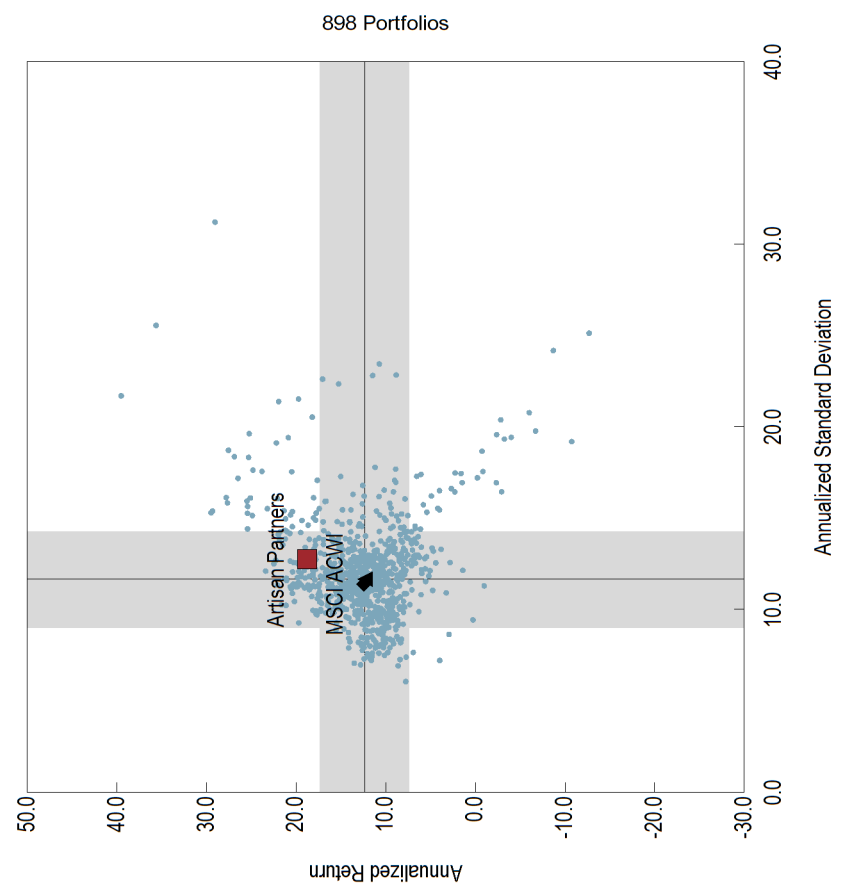


Rolling 5 Year Annualized Return (%)



Artisan Partners
 Risk vs. Return 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2019

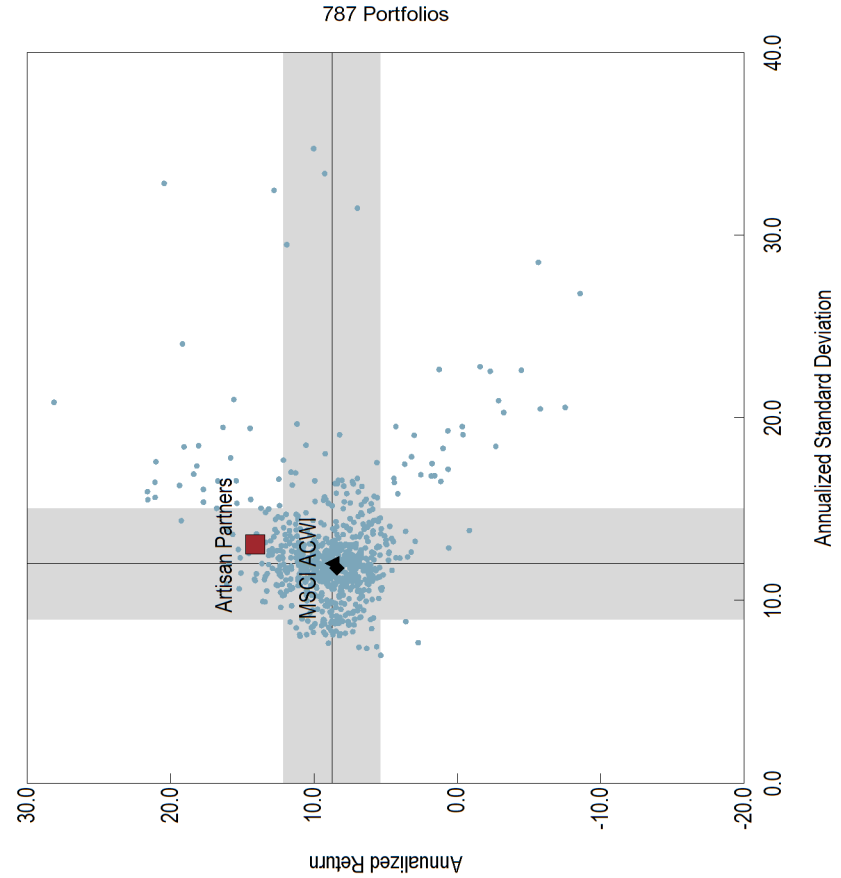
3 Years



3 Years

	Artisan Partners	MSCI ACWI	eV All Global Equity Gross Median
Annualized Return	18.8%	12.4%	12.3%
Annualized Standard Deviation	12.7%	11.4%	11.7%
Sharpe Ratio	1.3	0.9	1.0

5 Years



5 Years

	Artisan Partners	MSCI ACWI	eV All Global Equity Gross Median
Annualized Return	14.1%	8.4%	8.8%
Annualized Standard Deviation	13.1%	11.8%	12.0%
Sharpe Ratio	1.0	0.6	0.7

First Eagle Manager Portfolio Overview

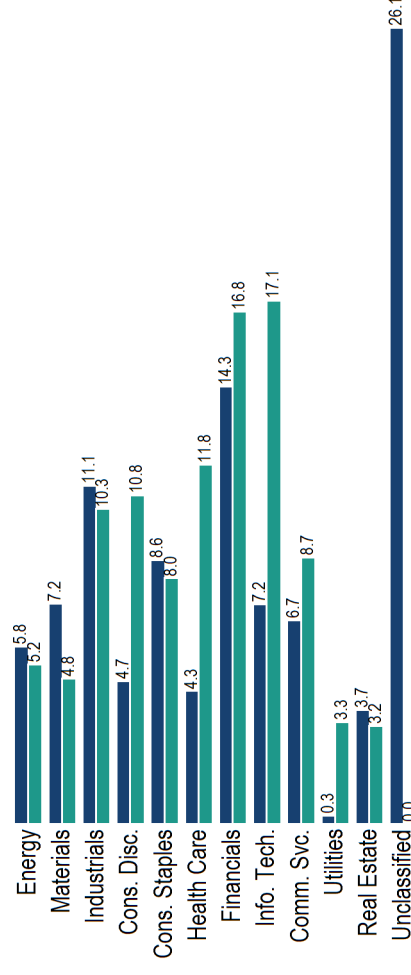
Period Ending: December 31, 2019

Global equity portfolio that is benchmark agnostic comprised of companies with low valuations. Primary personnel include Matt McLennan and Kimball Brooker.

Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	139	3,017
Weighted Avg. Market Cap. (\$B)	80.35	176.60
Median Market Cap. (\$B)	22.32	9.96
Price To Earnings	17.41	19.43
Price To Book	2.37	3.08
Price To Sales	1.49	1.56
Return on Equity (%)	14.84	19.36
Yield (%)	2.27	2.36
Beta	0.68	1.00

Sector Allocation (%) vs MSCI ACWI



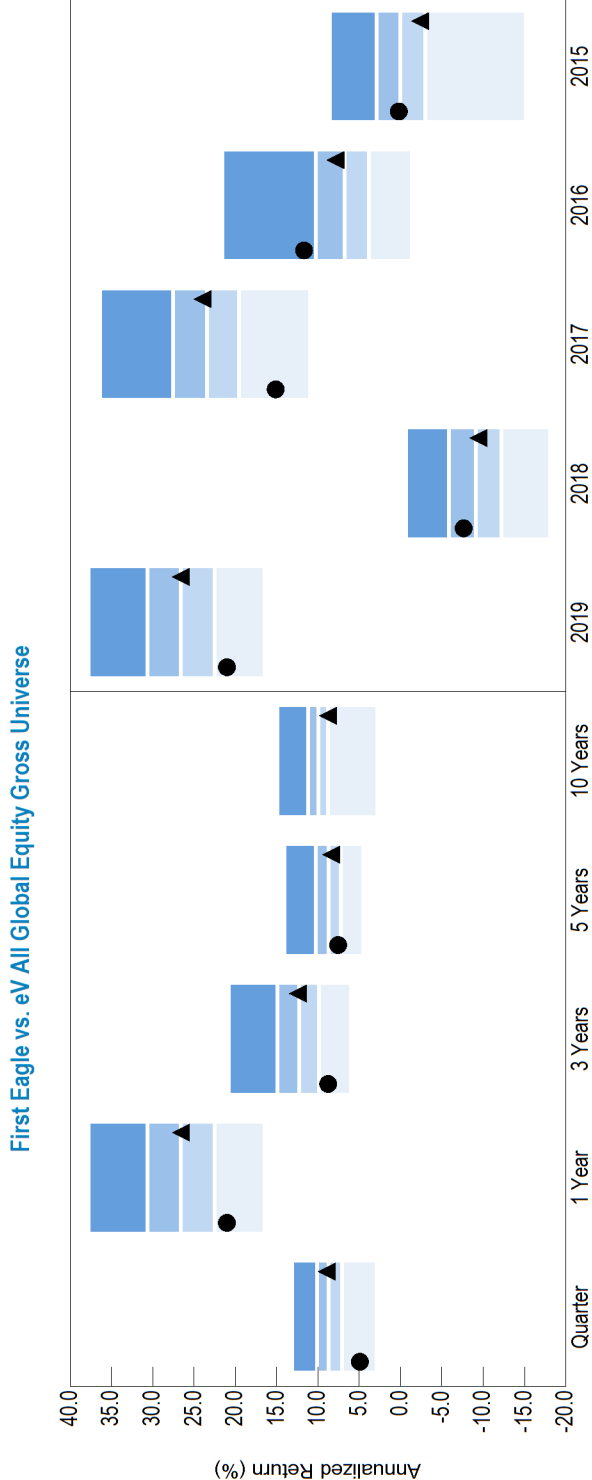
Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	80.1%	87.9%
Emerging*	4.1%	12.1%
Top 10 Largest Countries		
United States	46.2%	55.7%
Cash	15.9%	0.0%
Japan	11.4%	7.2%
France	5.3%	3.3%
United Kingdom	5.1%	4.8%
Canada	3.5%	3.0%
Korea*	2.0%	1.4%
Switzerland	1.9%	2.7%
Singapore	1.5%	0.4%
Sweden	1.1%	0.8%
Total-Top 10 Largest Countries	93.8%	79.3%

Top Contributors				Bottom Contributors			
	Avg Wgt	Return	Contribution		End Weight	Return	Contribution
BRITISH AMERICAN TOBACCO	0.48	19.44	0.09	DANONE	1.34	-5.85	-0.08
SCHLUMBERGER	0.47	19.33	0.09	TERADATA	0.56	-13.65	-0.08
SPDR GOLD SHARES	3.03	2.90	0.09	ORACLE	2.26	-3.30	-0.07
KDDI	0.51	14.51	0.07	SOMPO HOLDINGS	1.24	-5.33	-0.07
LLOYDS BANKING GROUP	0.25	24.15	0.06	TECHNIPFMC	0.61	-10.59	-0.06
PHILIP MORRIS INTL.	0.41	13.59	0.06	CH ROBINSON WWD.	0.85	-7.15	-0.06
WEYERHAEUSER	0.52	10.29	0.05	COLGATE-PALM.	1.01	-5.75	-0.06
BERKELEY GROUP HDG.(THE)	0.20	24.99	0.05	KT & G	0.68	-8.04	-0.05
TIFFANY & CO	0.11	44.91	0.05	NEWCREST MINING	0.38	-9.27	-0.04
BANK OF NEW YORK MELLON	0.39	12.07	0.05	NUTRIEN (NYS)	1.08	-3.04	-0.03

Unclassified sector allocation includes cash allocations and Gold allocations (8.9% as of 12/31/2019).

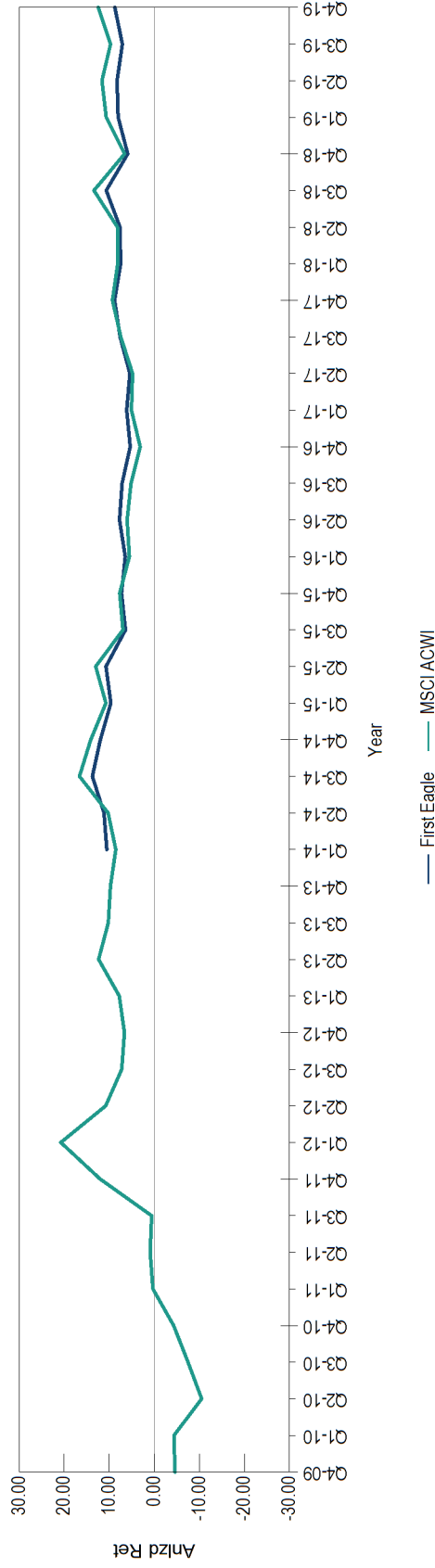
First Eagle
 Manager Performance Comparisons (Gross of Fees) Period Ending: December 31, 2019



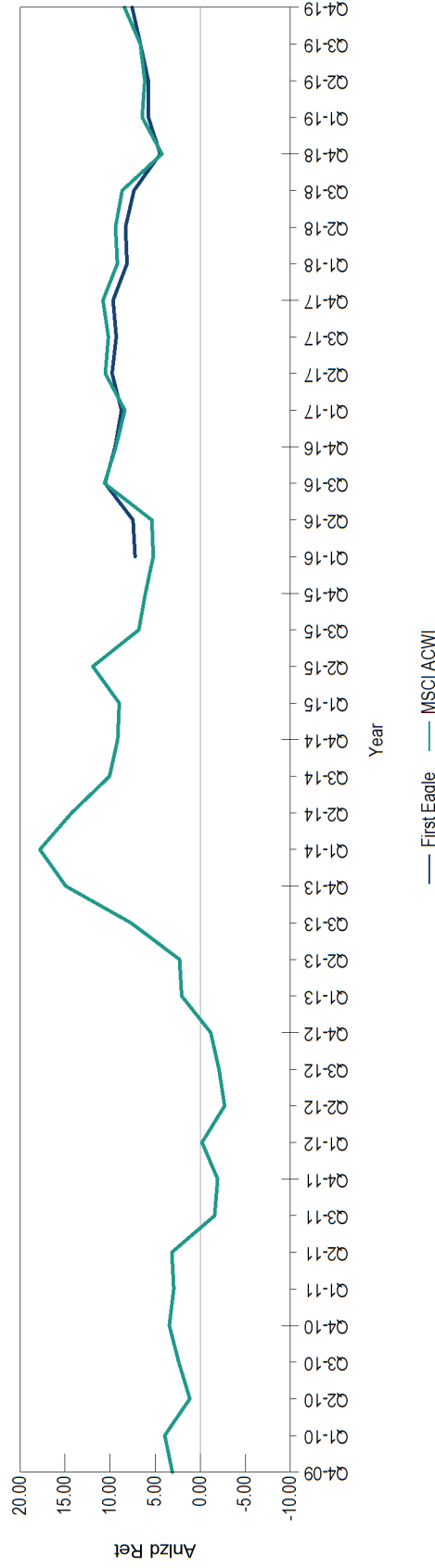
	Quarter	1 Year	3 Years	5 Years	10 Years	2015	2016	2017	2018	2019
Return (Rank)										
5th Percentile	13.1	20.7	14.0	14.8	14.8	37.7	30.7	27.6	-0.7	37.7
25th Percentile	10.2	14.9	10.3	11.2	11.2	30.7	26.6	23.5	-5.8	30.7
Median	8.7	12.3	8.8	10.0	10.0	26.6	22.5	19.6	-9.1	26.6
75th Percentile	7.1	9.9	7.3	8.8	8.8	22.5	19.6	11.0	-12.2	22.5
95th Percentile	2.9	6.0	4.6	2.9	2.9	16.5	11.0	8.0	-18.1	16.5
# of Portfolios	957	898	787	497	497	957	880	880	920	957
● First Eagle	4.9 (89)	8.8 (85)	7.6 (71)	--	--	21.0 (82)	11.7 (19)	15.1 (89)	-7.6 (38)	21.0 (82)
▲ MSCI ACWI	9.0 (46)	12.4 (49)	8.4 (57)	8.8 (78)	8.8 (78)	26.6 (51)	7.9 (42)	24.0 (47)	-9.4 (53)	26.6 (51)

First Eagle
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2019

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)

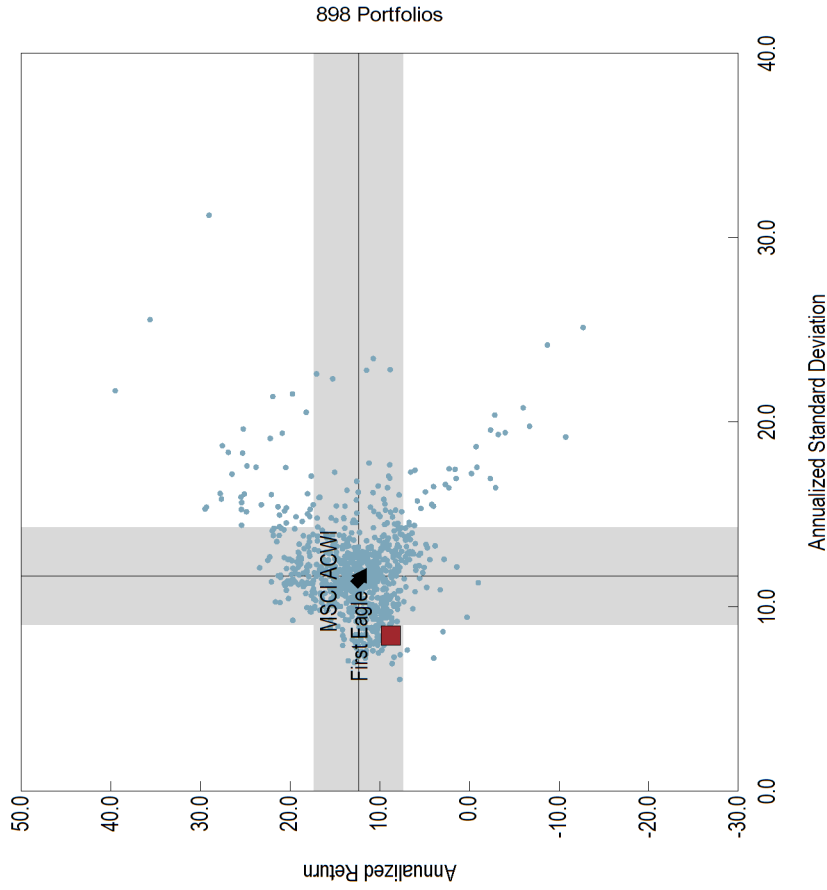


First Eagle

Risk vs. Return 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2019

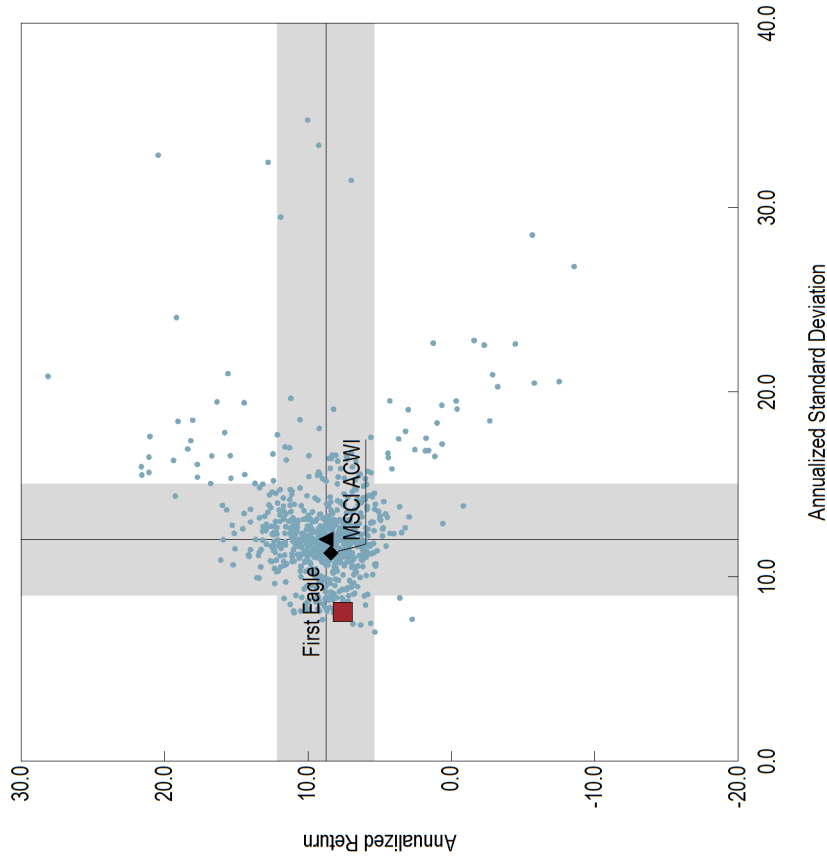
3 Years



3 Years

	Annualized Return	Anlzd Standard Deviation	Sharpe Ratio
First Eagle	8.8%	8.4%	0.8
MSCI ACWI	12.4%	11.4%	0.9
eV All Global Equity Gross Median	12.3%	11.7%	1.0

5 Years



5 Years

	Annualized Return	Anlzd Standard Deviation	Sharpe Ratio
First Eagle	7.6%	8.6%	0.8
MSCI ACWI	8.4%	11.8%	0.6
eV All Global Equity Gross Median	8.8%	12.0%	0.7

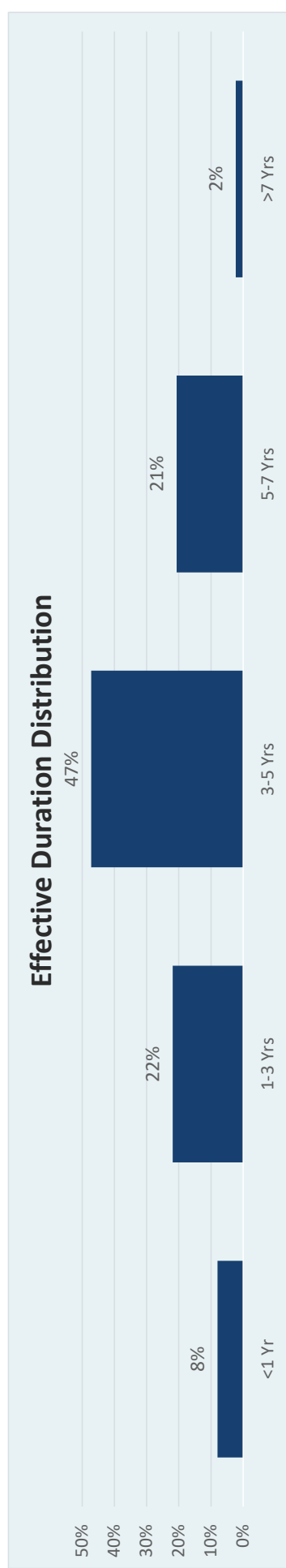
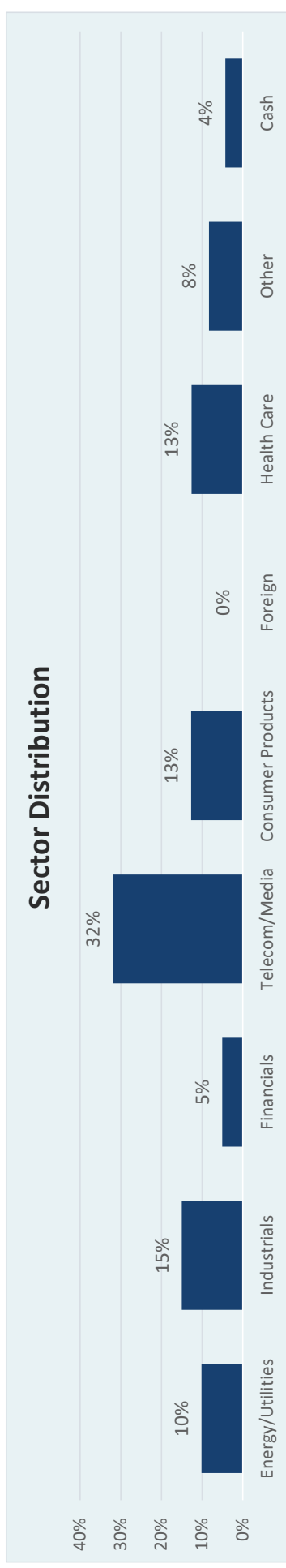
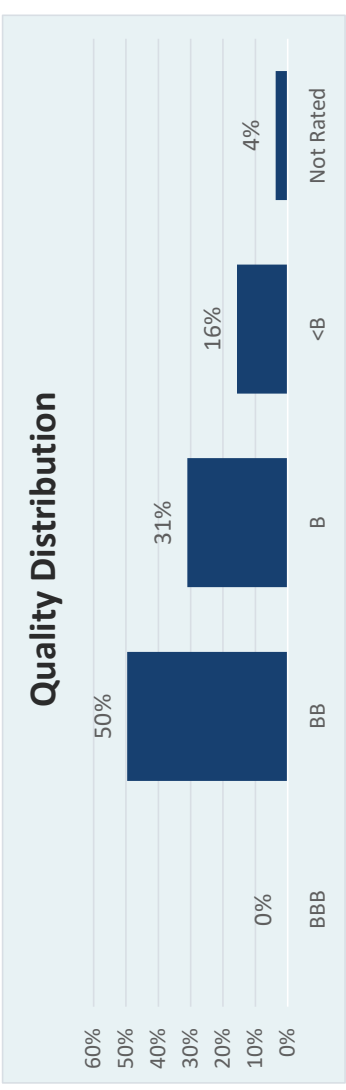
High Yield Managers

Allianz Global Investors Manager Portfolio Overview

Period Ending: December 31, 2019

Domestic high yield fixed income portfolio with a focus on security selection. Primary personnel include Douglas Forsyth, Justin Kass, William Stickney, and Michael Yee.

	Allianz	ICE BofAML HY Master II
Effective Duration	3.20	3.30
Yield to Maturity	5.30	6.00
Average Quality	B1	B1
Average Coupon	6.4%	6.3%



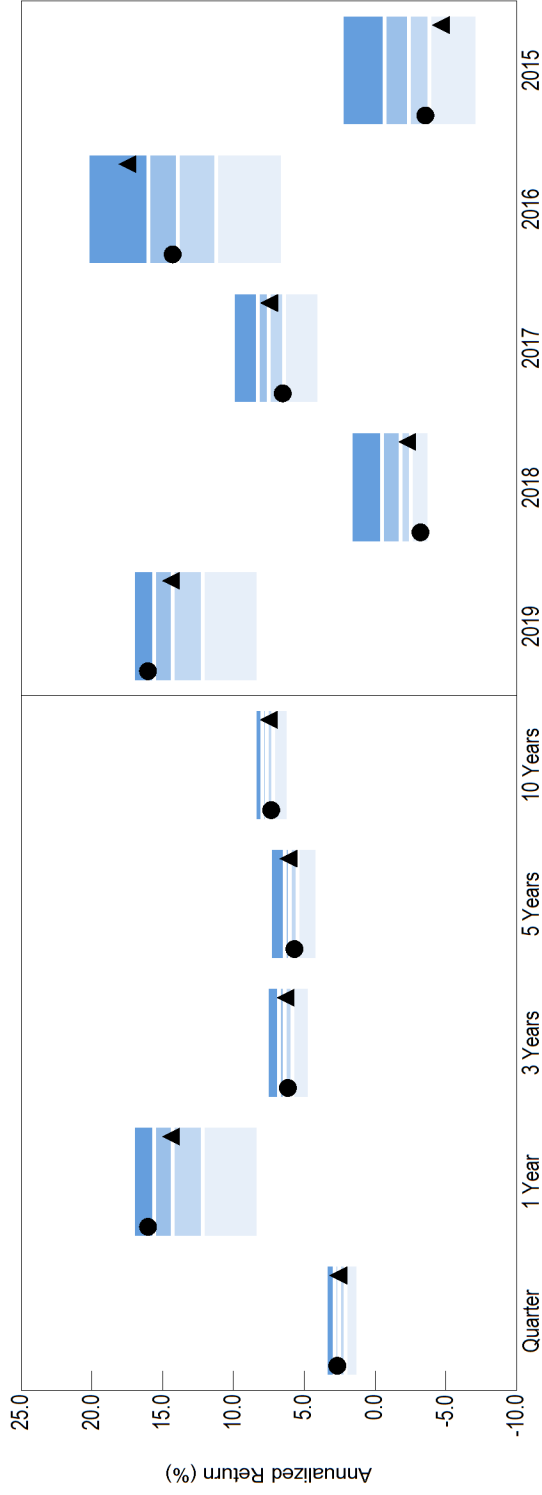
Quality distribution excludes cash.



Allianz Global Investors
 Manager Performance Comparisons (Gross of Fees)

Period Ending: December 31, 2019

Allianz Global Investors vs. eV US High Yield Fixed Inc Gross Universe

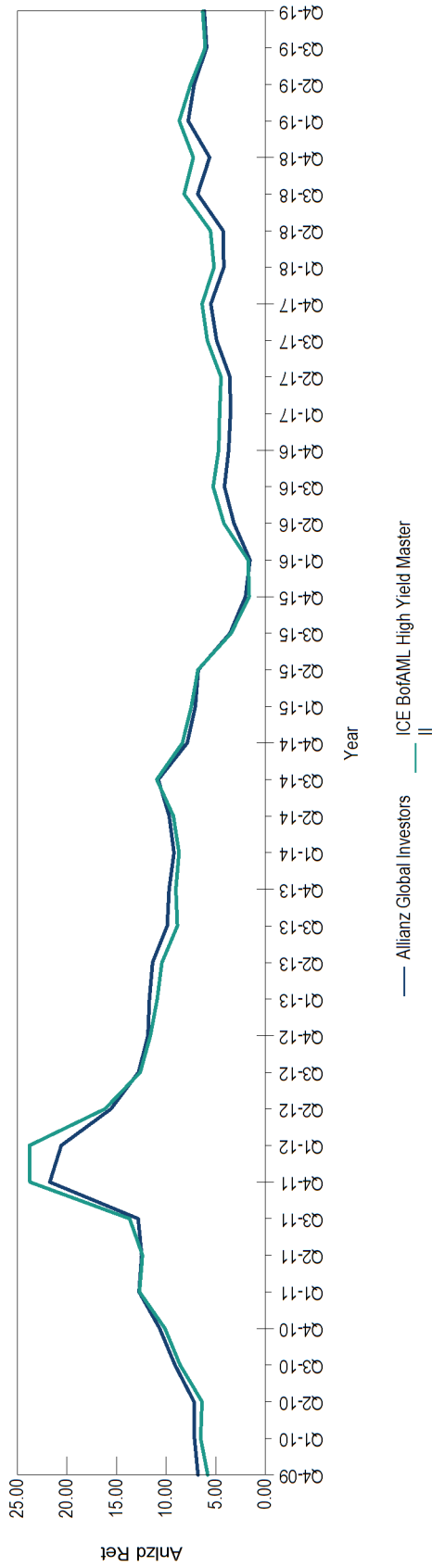


Return (Rank)

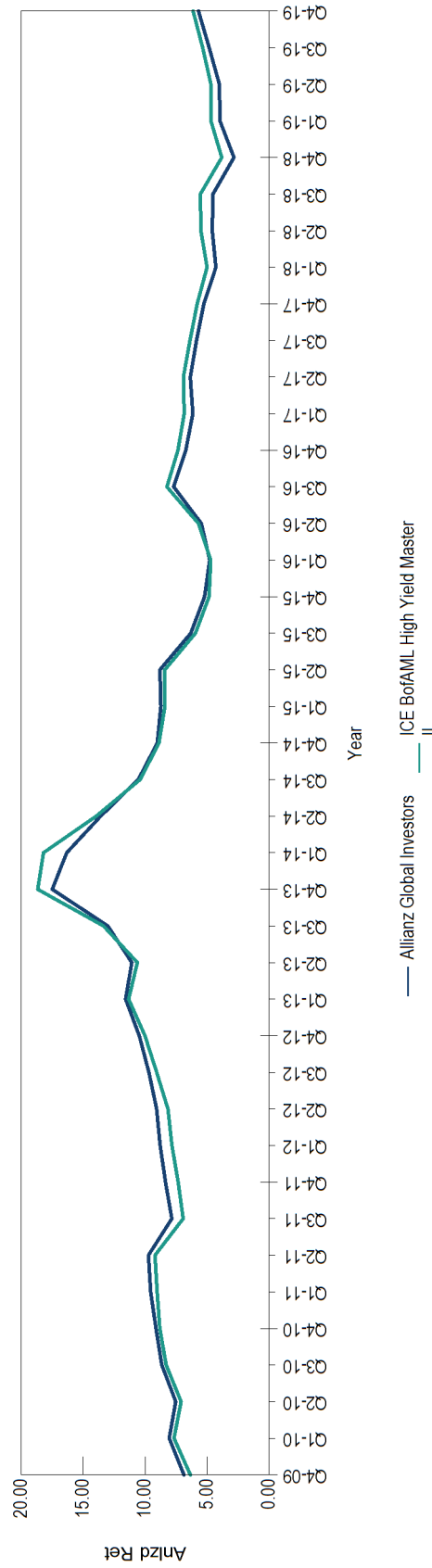
5th Percentile	3.5	7.6	7.4	8.5	17.1	10.0	20.3	2.3
25th Percentile	2.9	6.8	6.4	8.0	15.6	8.3	16.0	-0.7
Median	2.6	6.4	6.1	7.7	14.3	7.5	14.0	-2.4
75th Percentile	2.1	5.8	5.5	7.2	12.2	6.5	11.3	-3.8
95th Percentile	1.2	4.6	4.1	6.2	8.3	4.0	6.6	-7.2
# of Portfolios	203	192	180	124	203	198	183	155
● Allianz Global Investors	2.7 (37)	6.2 (66)	5.7 (68)	7.3 (70)	16.0 (15)	6.5 (74)	14.3 (47)	-3.5 (68)
▲ ICE BofAML High Yield Master II	2.6 (45)	6.3 (56)	6.1 (43)	7.5 (58)	14.4 (48)	7.5 (53)	17.5 (14)	-4.6 (83)

Allianz Global Investors
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: December 31, 2019

Rolling 3 Year Annualized Return (%)

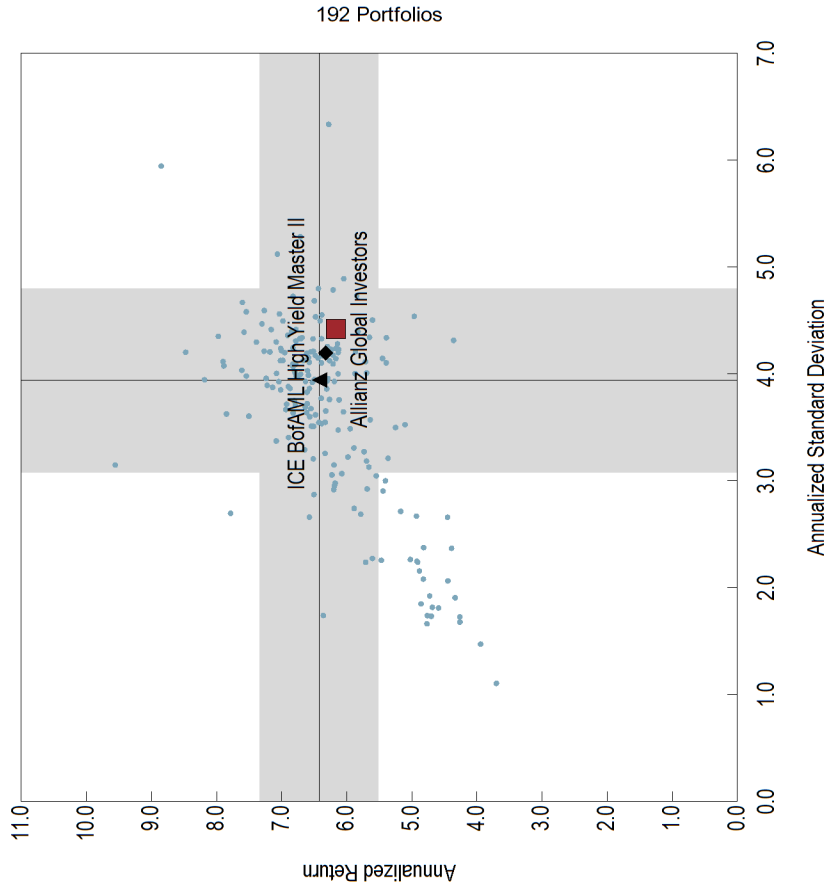


Rolling 5 Year Annualized Return (%)



Allianz Global Investors
Risk vs. Return 3 & 5 Year (Gross of Fees) **Period Ending: December 31, 2019**

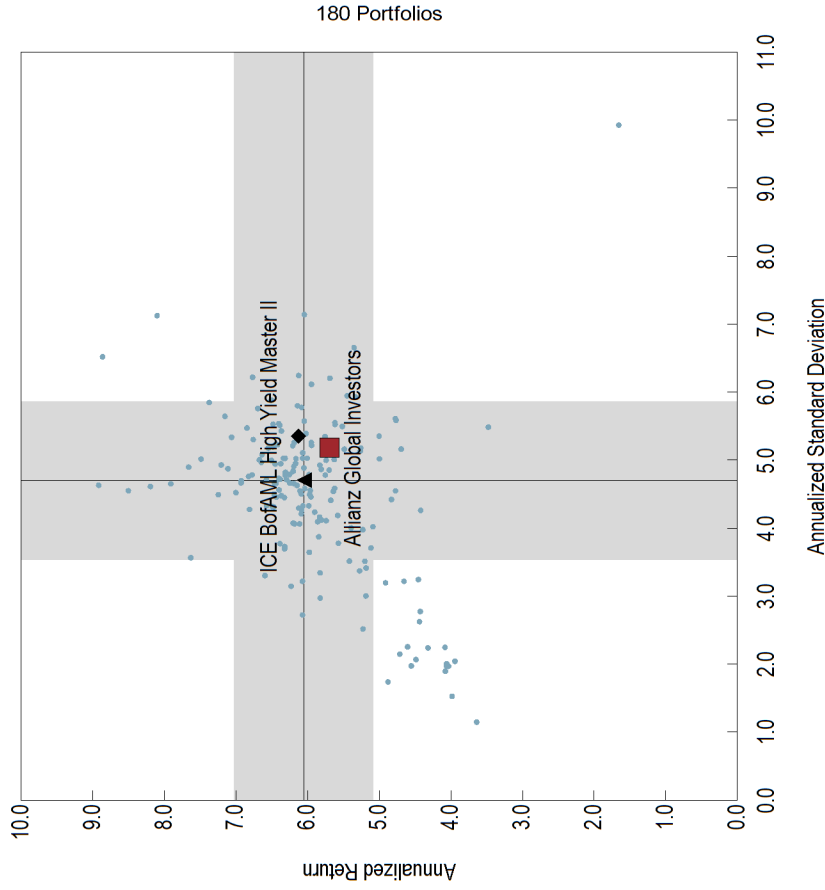
3 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Allianz Global Investors	6.2%	4.4%	1.0
ICE BofAML High Yield Master II	6.3%	4.2%	1.1
eV US High Yield Fixed Inc Gross Median	6.4%	3.9%	1.3

5 Years



5 Years

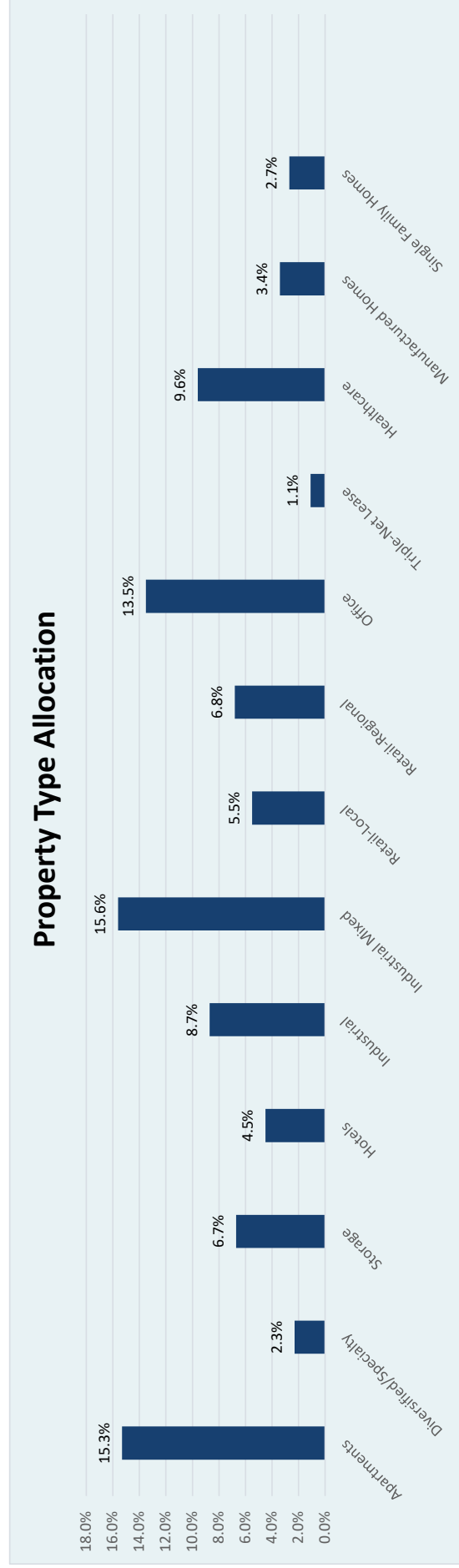
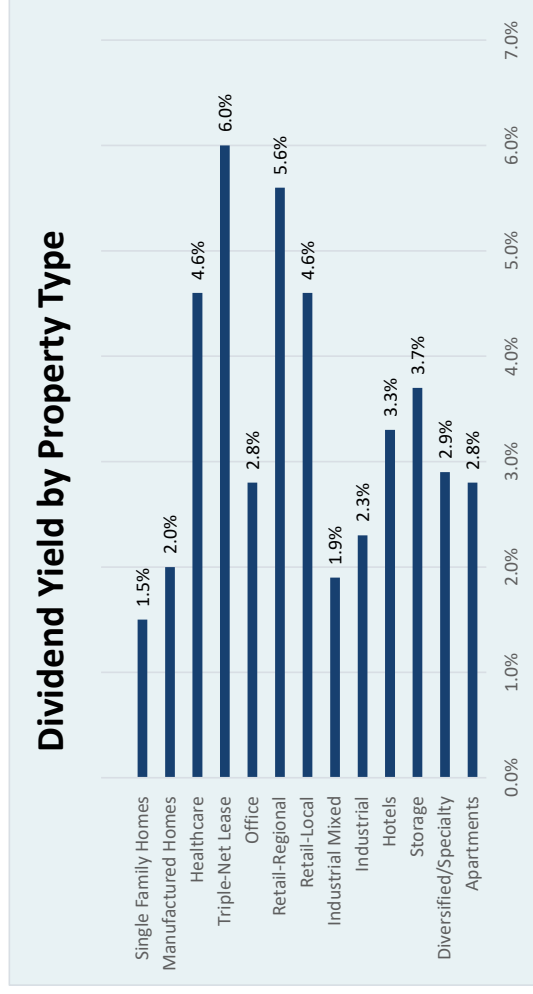
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Allianz Global Investors	5.7%	5.2%	0.9
ICE BofAML High Yield Master II	6.1%	5.4%	0.9
eV US High Yield Fixed Inc Gross Median	6.1%	4.7%	1.1

Real Estate Managers

Diversified portfolio of U.S. REITs with a focus on the underlying real estate assets

Top Five Holdings

Company	Property Type	Allocation
ProLogis Inc.	Industrial	7.2%
Simon Property Group, Inc.	Regional Retail	6.8%
Equinix Inc	Industrial Mixed	6.4%
Equity Residential	Apartments	5.4%
HCP Inc.	Healthcare	5.0%



4.2% is allocated to Cash and Cash Equivalents.

Diversifying Fixed Income Managers

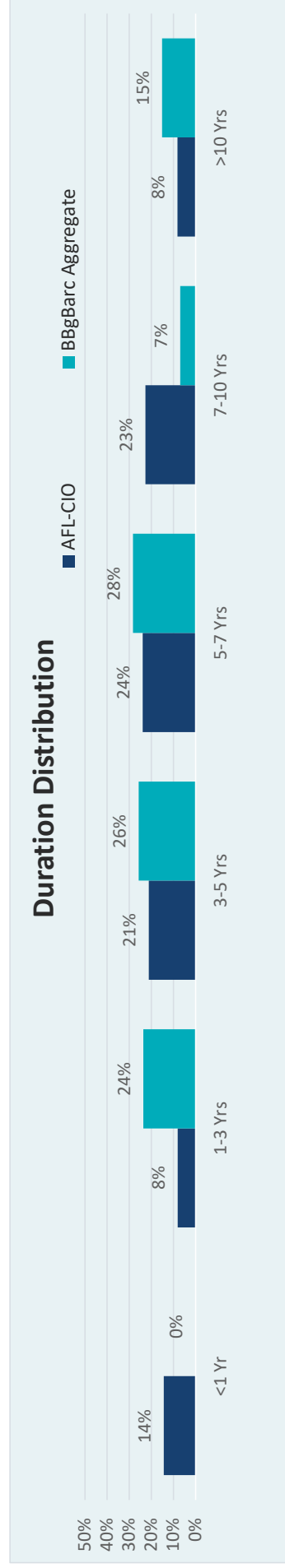
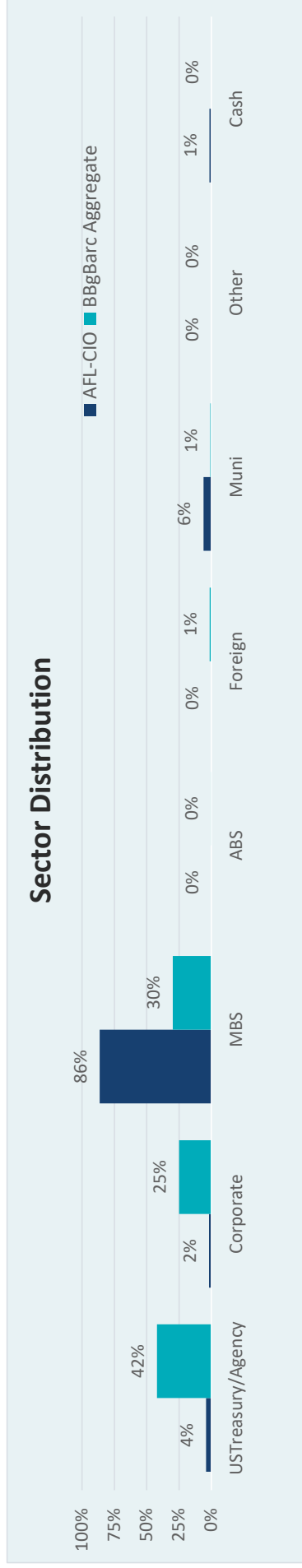
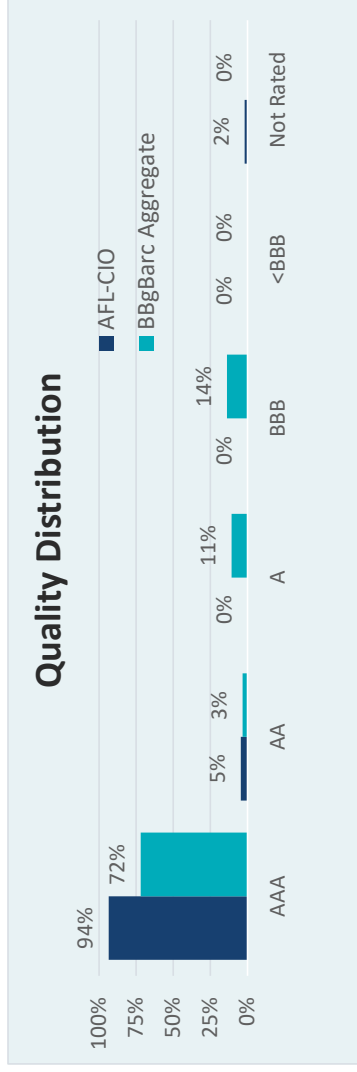
AFL-CIO

Manager Portfolio Overview

Period Ending: December 31, 2019

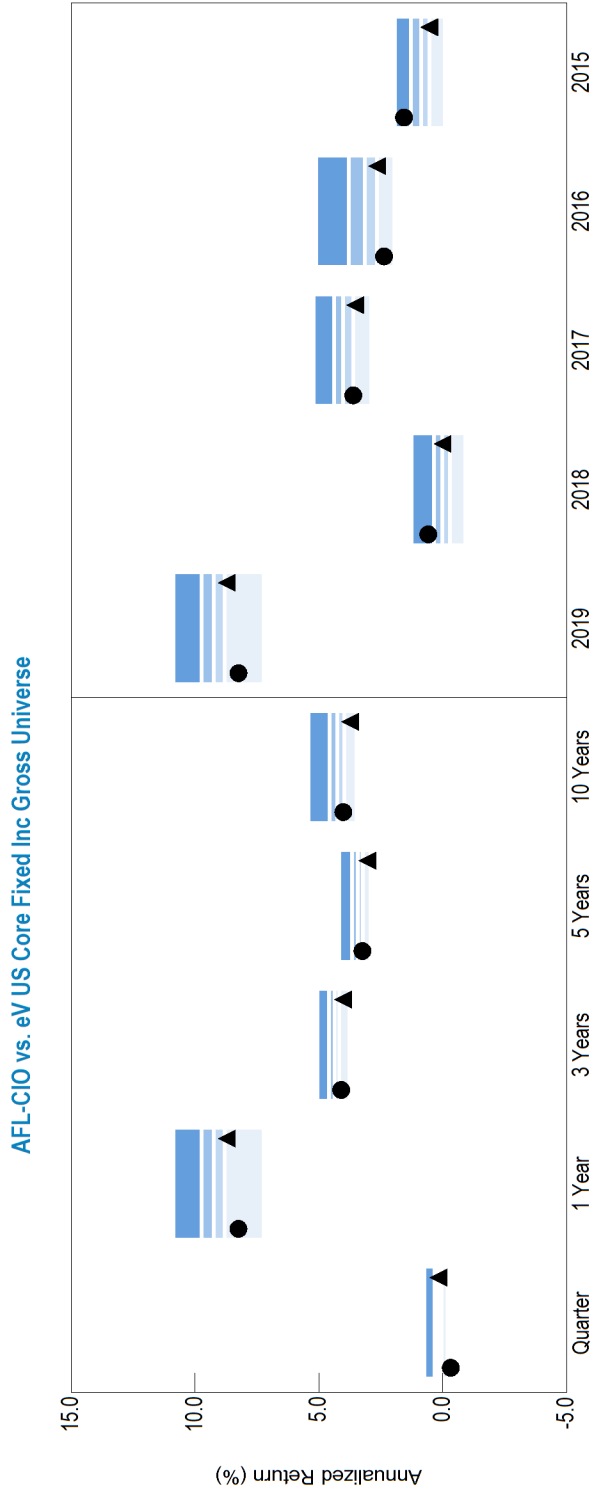
Domestic core fixed income portfolio with an exclusive focus on mortgage-related securities. Primary personnel include Stephen Coyle and Chang Su.

	AFL-CIO	BBgBarc Aggregate
Effective Duration	5.69	5.87
Yield to Maturity	3.10	2.32
Average Quality	AAA	AA/AA+
Average Coupon	3.2%	3.2%



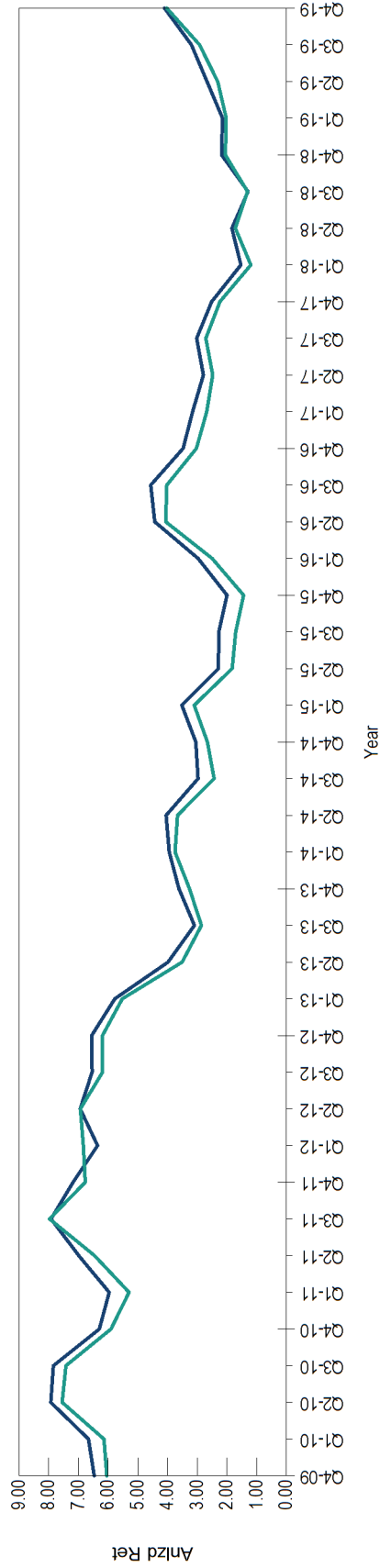
Duration and Quality distributions exclude cash.

AFL-CIO
 Manager Performance Comparisons (Gross of Fees) Period Ending: December 31, 2019

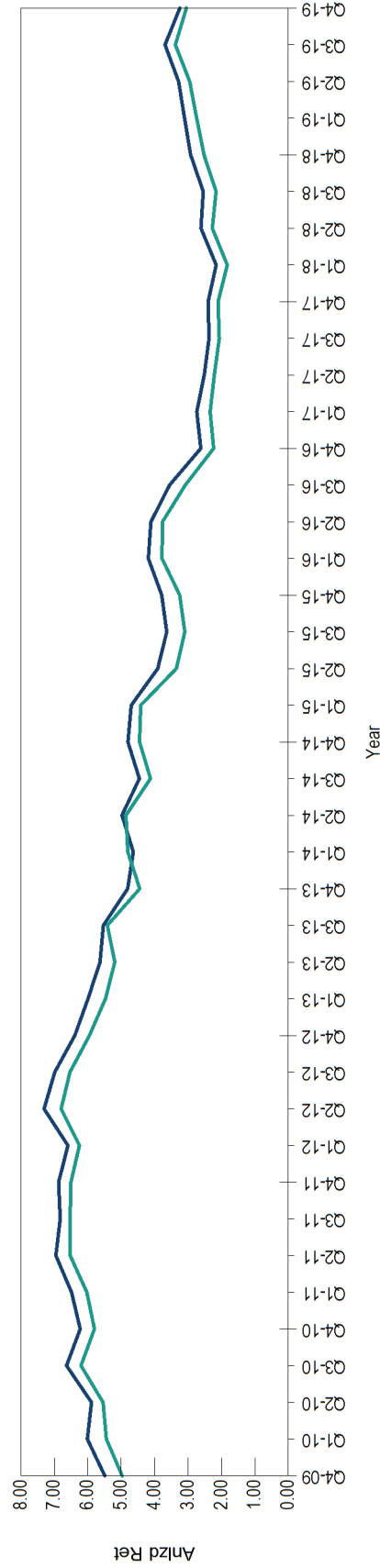


	Quarter	1 Year	3 Years	5 Years	10 Years	2015	2016	2017	2018	2019	2015
5th Percentile	0.7	10.9	5.1	4.2	5.4	1.2	5.1	5.2	1.2	10.9	1.9
25th Percentile	0.3	9.8	4.6	3.7	4.6	0.4	3.8	4.4	0.4	9.8	1.3
Median	0.2	9.2	4.4	3.4	4.3	0.0	3.2	4.0	0.0	9.2	0.9
75th Percentile	0.1	8.8	4.2	3.2	4.0	-0.3	2.7	3.6	-0.3	8.8	0.5
95th Percentile	-0.2	7.2	3.8	2.9	3.5	-0.9	2.0	2.9	-0.9	7.2	-0.1
# of Portfolios	216	216	214	210	197	240	223	233	240	216	196
● AFL-CIO	-0.3 (98)	8.2 (90)	4.1 (81)	3.2 (74)	4.0 (74)	0.6 (16)	2.4 (87)	3.6 (76)	0.6 (16)	8.2 (90)	1.6 (15)
▲ BbgBarc US Aggregate TR	0.2 (58)	8.7 (78)	4.0 (85)	3.0 (90)	3.7 (91)	0.0 (54)	2.6 (77)	3.5 (79)	0.0 (54)	8.7 (78)	0.6 (75)

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)

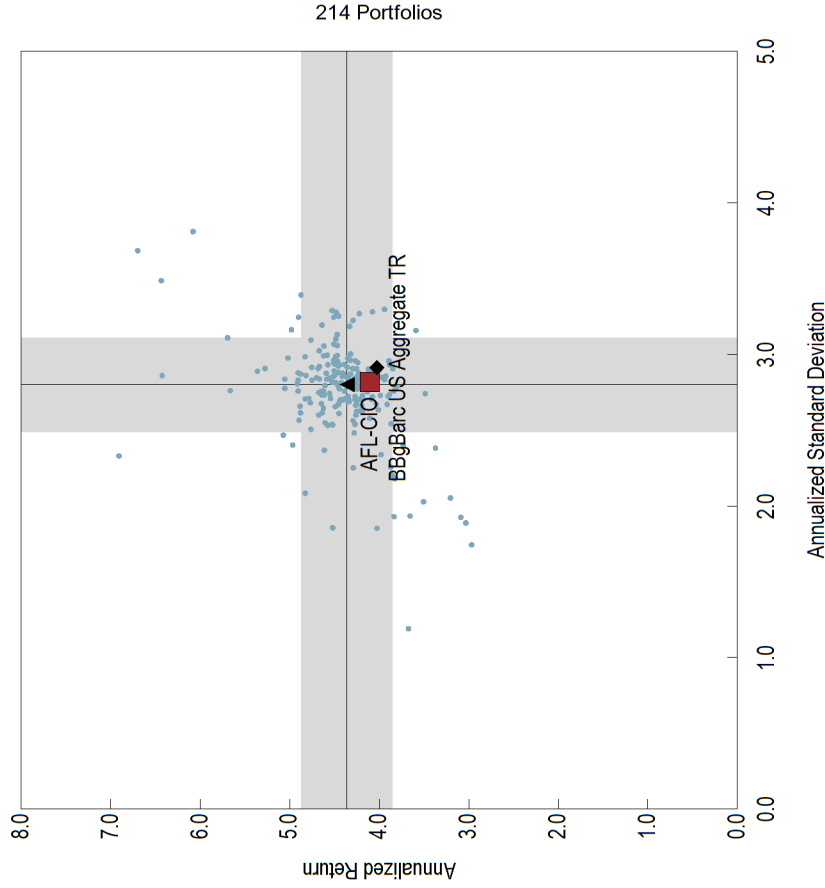


AFL-CIO

Risk vs. Return 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2019

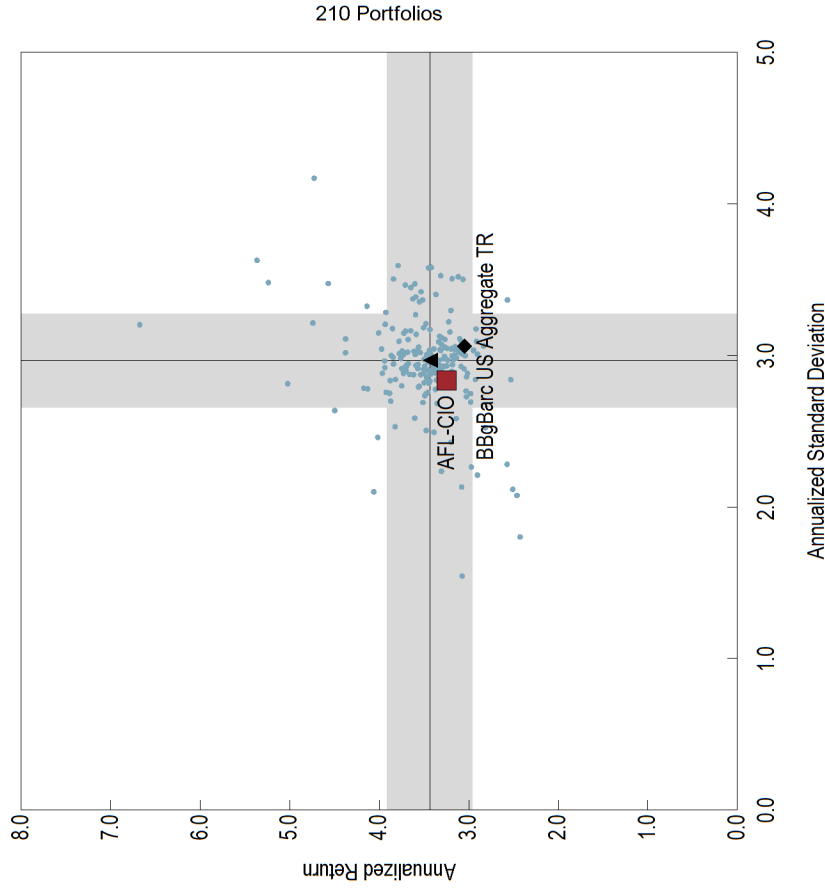
3 Years



3 Years

AFL-CIO	4.1%	2.8%	0.9
BBgBarc US Aggregate TR	4.0%	2.9%	0.8
eV US Core Fixed Inc Gross Median	4.4%	2.8%	1.0

5 Years



5 Years

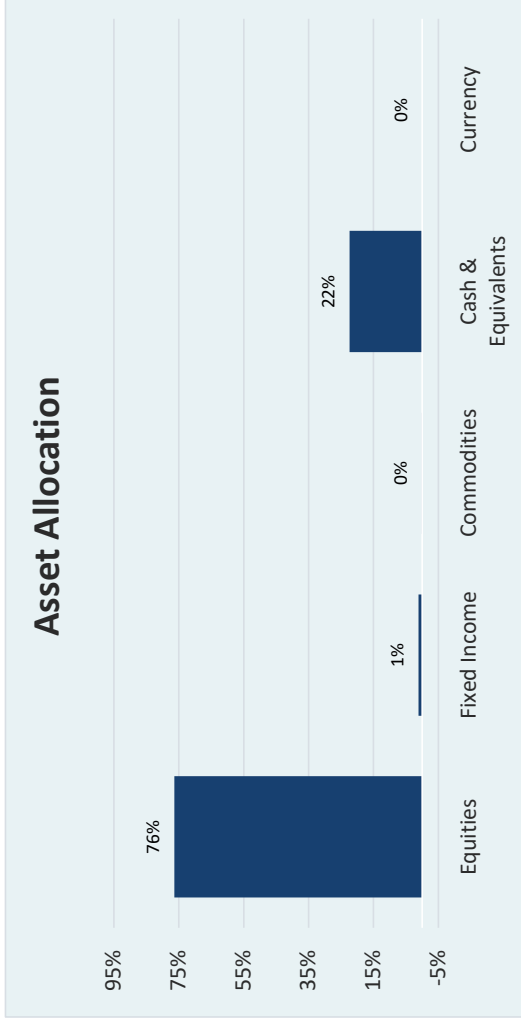
AFL-CIO	3.2%	2.8%	0.8
BBgBarc US Aggregate TR	3.0%	3.1%	0.7
eV US Core Fixed Inc Gross Median	3.4%	3.0%	0.8

Wellington Total Return Manager Portfolio Overview

Period Ending: December 31, 2019

Tactical multi-asset class real return strategy with a focus on managing risk of active strategies used to gain exposure to attractive assets of markets.

	Wellington Total Return
Number of Equity Holdings	915
Number of Commodity Holdings	112
Effective Duration (Years)	5.60



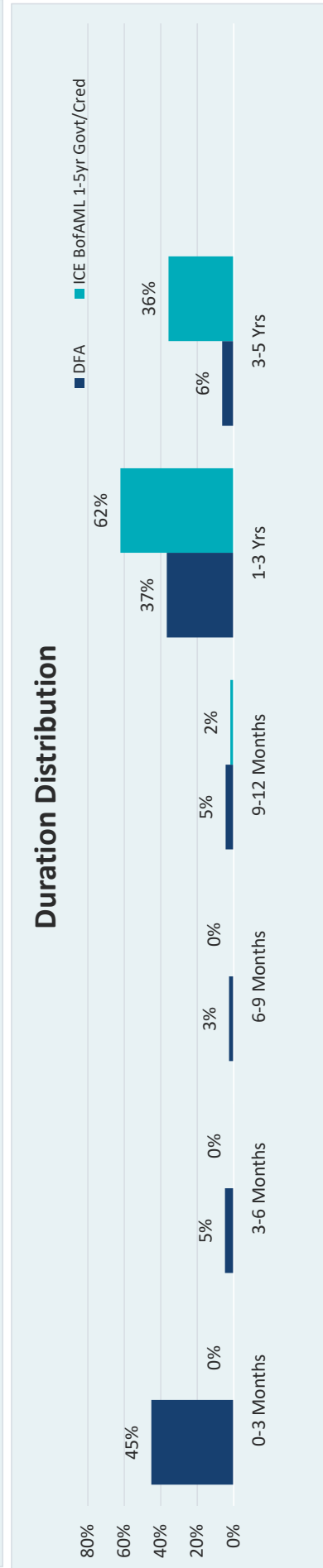
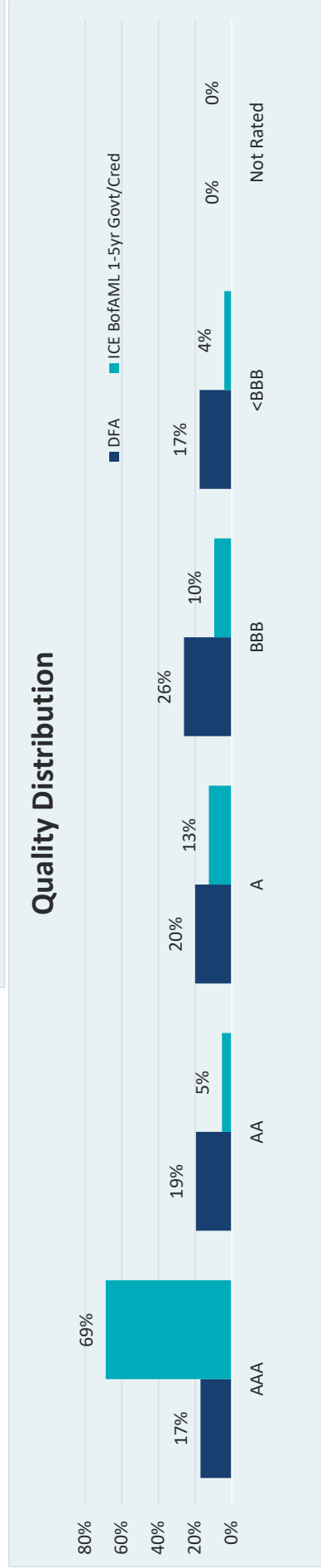
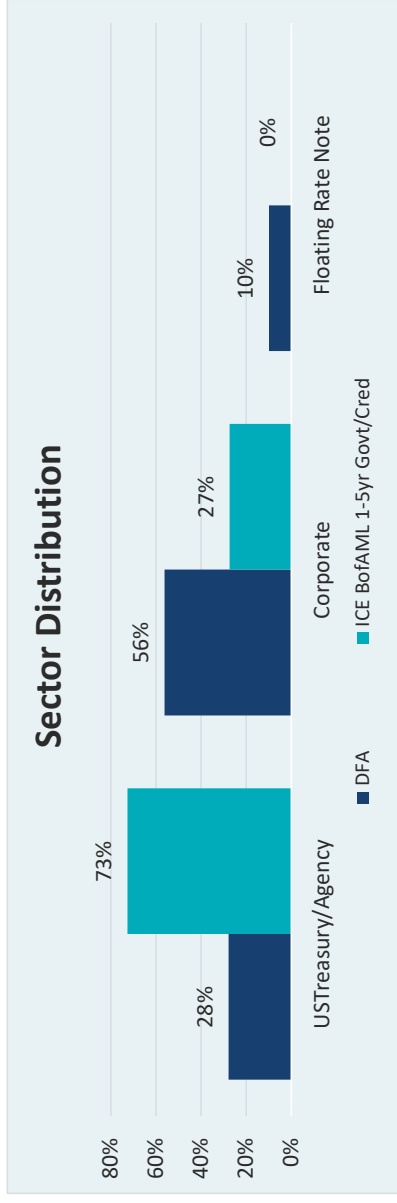
Liquidity Managers

DFA Short Credit Manager Portfolio Overview

Period Ending: December 31, 2019

Domestic short term US credit fixed income portfolio that maximizes total return through income and capital appreciation. Primary personnel include Dave Plecha and Joseph Kolerich.

	DFA	ICE BofAML 1-5yr Govt/Cred
Effective Duration	1.06	2.60
Yield to Maturity	2.10	1.83
Average Quality	A+	AA+
Average Coupon	2.43%	2.60%

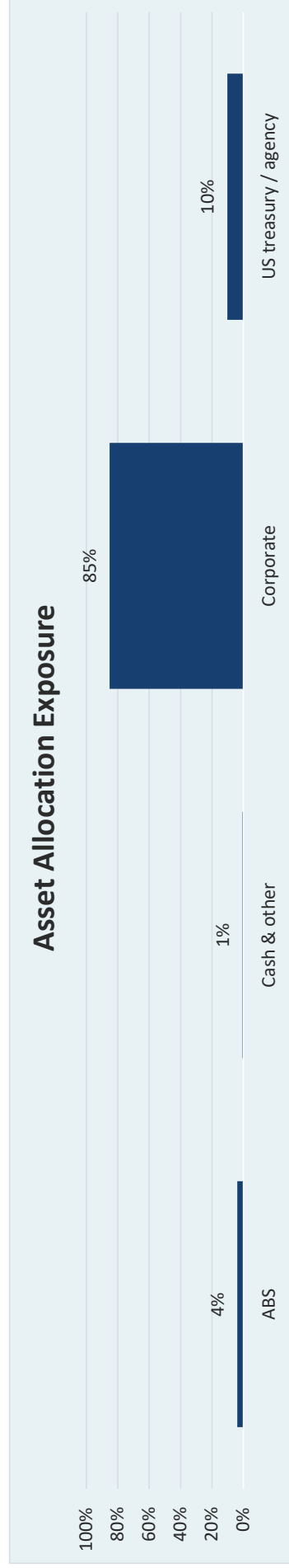
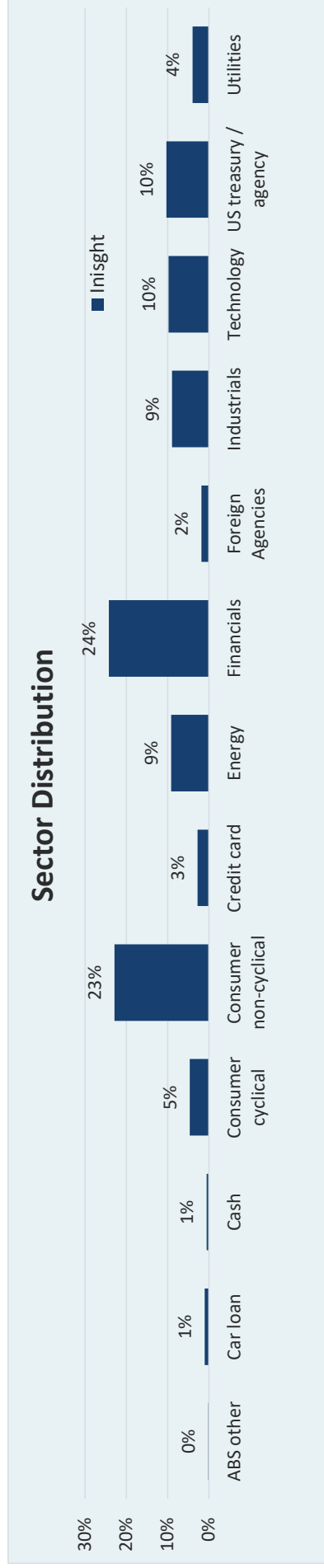
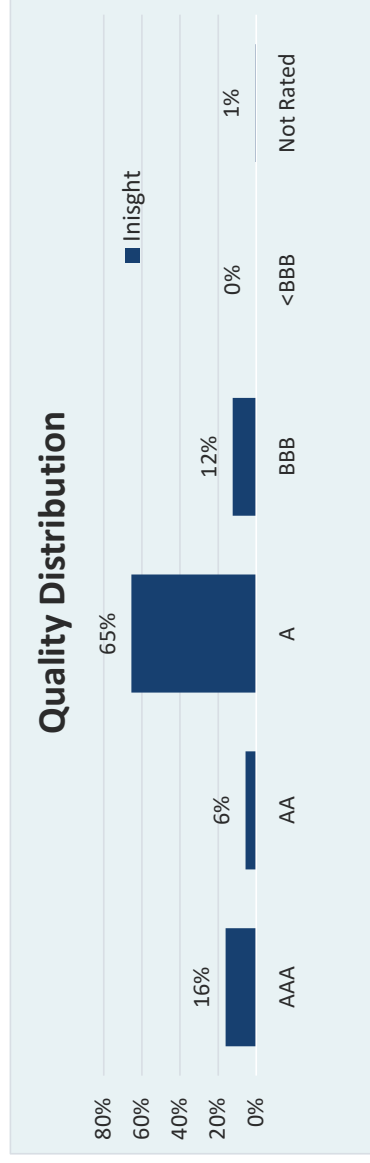


Insight Short Duration Manager Portfolio Overview

Period Ending: December 31, 2019

High quality, short duration multi-sector fixed income portfolio comprised of Treasuries, Agencies, investment grade corporates, and ABS designed specifically to meet CCCERA's liabilities. Key personnel include Gerard Berrigan and Jesse Fogarty.

	Insight	BBgBarc 1-3yr Govt
Effective Duration	1.54	1.89
Yield to Maturity	2.00	1.96
Average Quality	A+	AAA
Average Coupon	2.63%	2.01%

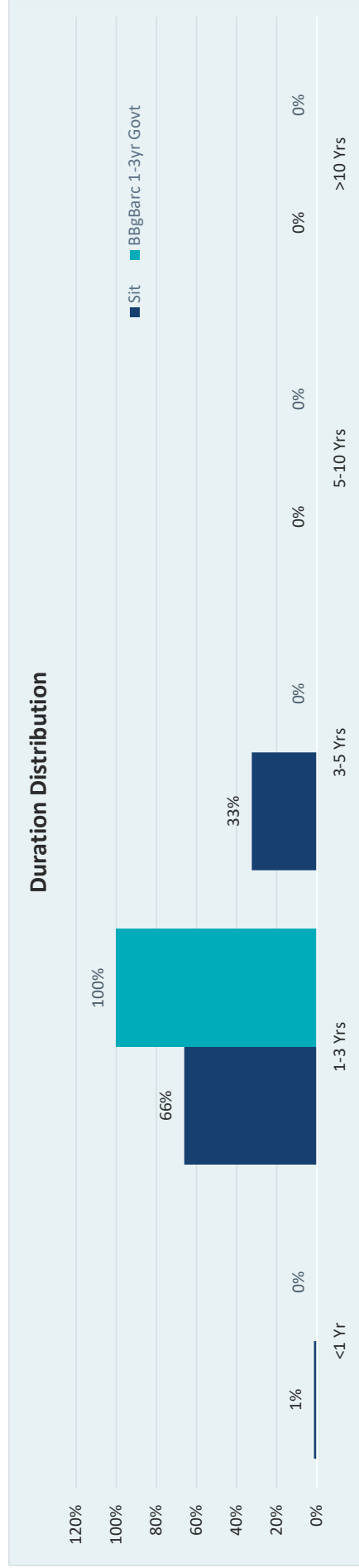
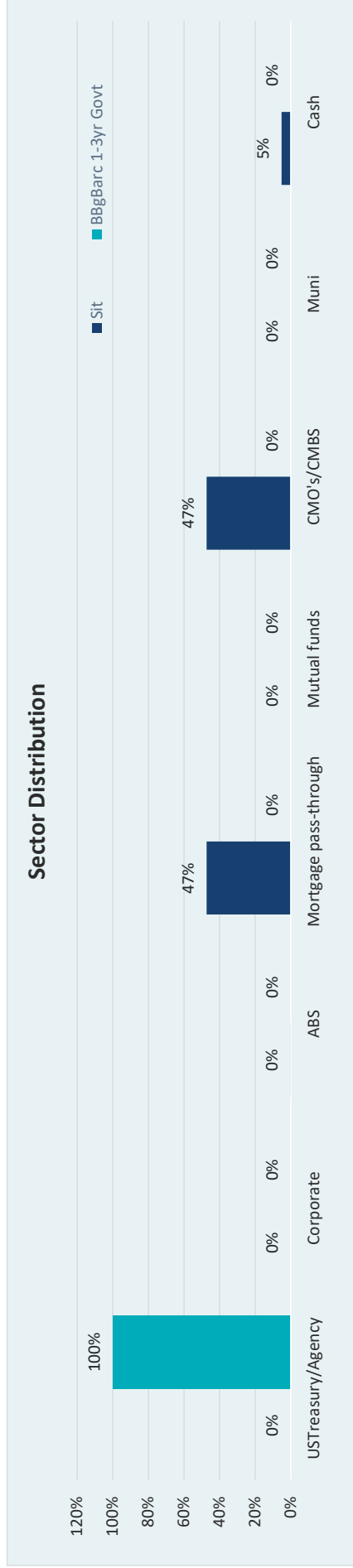
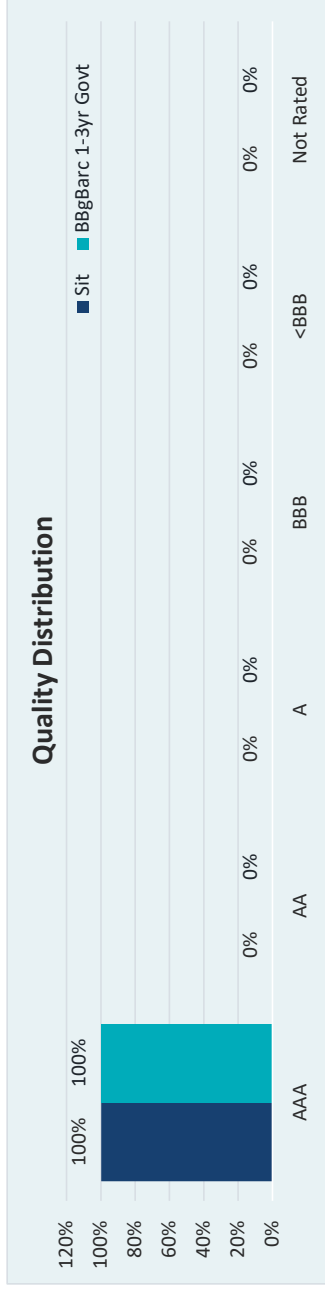


Sit Short Duration Manager Portfolio Overview

Period Ending: December 31, 2019

Short duration fixed income portfolio with a focus on earning high levels of interest income. Primary personnel include Bryce Doty, Paul Jungquist and Michael Brilley.

	Sit	BBgBarc 1-3yr Govt
Adjusted Duration	2.60	1.89
Yield to Maturity	2.60	1.96
Average Quality	AAA	AAA
Average Coupon	6.30%	2.01%



Performance Return Calculations

Performance is calculated using Modified Dietz and for time periods with large cash flow (generally greater than 10% of portfolio value), Time Weighted Rates of Return (TWR) methodologies. Monthly returns are geometrically linked and annualized for periods longer than one year.

Data Source

Verus is an independent third party consulting firm and calculates returns from best source book of record data. Returns calculated by Verus may deviate from those shown by the manager in part, but not limited to, differences in prices and market values reported by the custodian and manager, as well as significant cash flows into or out of an account. It is the responsibility of the manager and custodian to provide insight into the pricing methodologies and any difference in valuation.

Liquid Alternatives

Due to the inability to receive final valuation prior to report production, closed end funds (including but are not limited to Real Estate, Hedge Funds, Private Equity, and Private Credit) performance is typically reported at a one-quarter lag. Valuation is reported at a one-quarter lag, adjusted for current quarter flow (cash flows are captured real time). Closed end fund performance is calculated using a time-weighted return methodology consistent with all portfolio and total fund performance calculations. For Private Markets, performance reports also include Verus-calculated multiples based on flows and valuations (e.g. DPI and TVPI) and manager-provided IRRs.

Policy & Custom Index Composition

Policy Index (7/1/2019 - present)	10% Russell 3000, 18% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 1% Wilshire REIT, 1.6% NCREIF Property Index, 6.4% NCREIF ODCE Index, 2% CPI + 4%, 11% S&P 500 +4% (Lagged), 5% ICE BofAML High Yield Master II +2%, 2% ICE BofAML High Yield Master II, 24% BBgBarc 1-3 Yr Gov/Credit, 3.5% BBgBarc US Aggregate, 2% BBgBarc Global Aggregate, 2.5% HFRI EH Equity Market Neutral.
Policy Index (7/1/2018 - 6/30/2019)	11% Russell 3000, 19% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 1% Wilshire REIT, 1.8% NCREIF Property Index, 7.2% NCREIF ODCE Index, 2% CPI + 4%, 10% S&P 500 +4% (Lagged), 4% ICE BofAML High Yield Master II +2%, 2% ICE BofAML High Yield Master II, 23% BBgBarc 1-3 Yr Gov/Credit, 3.5% BBgBarc US Aggregate, 2% BBgBarc Global Aggregate, 2.5% HFRI EH Equity Market Neutral.
Policy Index (10/1/2017 - 6/30/2018)	16.3% Russell 3000, 18.8% MSCI ACWI ex-US (Gross), 8.6% MSCI ACWI (Net), 1% Wilshire REIT, 1.6% NCREIF Property Index, 6.4% NCREIF ODCE Index, 2.5% CPI + 4%, 10.1% S&P 500 +4% (Lagged), 1.9% ICE BofAML High Yield Master II +2%, 4.3% ICE BofAML High Yield Master II, 25% BBgBarc 1-3 Yr Gov/Credit, 3.5% BBgBarc US Aggregate.
Policy Index (1/1/2017 - 9/30/2017)	22.8% Russell 3000, 11% MSCI ACWI ex-US (Gross), 10.9% MSCI ACWI (Net), 1% Wilshire REIT, 1.7% NCREIF Property Index, 6.8% NCREIF ODCE Index, 3.6% CPI + 4%, 8.1% S&P 500 +4% (Lagged), 1.7% ICE BofAML High Yield Master II +2%, 5.1% ICE BofAML High Yield Master II, 22.4% BBgBarc 1-3 Yr Gov/Credit, 3.2% BBgBarc US Aggregate, 1.6% 91-Day T-Bills.
Policy Index (4/1/2012-12/31/2016)	27.7% Russell 3000, 10.6% MSCI ACWI ex-US (Gross), 12.3% MSCI ACWI (Net), 19.6% BBgBarc U.S. Aggregate, 5% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 13.5% Real Estate Benchmark, 6.6% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Policy Index (4/1/2011-3/31/2012)	31% Russell 3000, 10.4% MSCI EAFE (Gross), 9.6% MSCI ACWI (Net), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% DJ Wilshire REIT, 3.1% NCREIF, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Policy Index (4/1/2010-3/31/2011)	35.6% Russell 3000, 10.4% MSCI EAFE (Gross), 5% MSCI ACWI (Net), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% DJ Wilshire REIT, 3.1% NCREIF, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Policy Index (7/1/2009-3/31/2010)	40.6% Russell 3000, 10.4% MSCI EAFE (Gross), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% DJ Wilshire REIT, 3.1% NCREIF, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Custom Growth Benchmark (7/1/2019 - present)	14.7% Russell 3000, 26.4% MSCI ACWI ex-US (Gross), 16.2% MSCI ACWI (Net), 1.5% Wilshire REIT, 2.4% NCREIF Property Index, 9.4% NCREIF ODCE Index, 16.2% S&P 500 +4% (Lagged), 7.4% ICE BofAML High Yield Master II +2%, 2.9% ICE BofAML High Yield Master II, 2.9% BBgBarc Global Bond
Custom Growth Benchmark (7/1/2018 - 6/30/2019)	16.0% Russell 3000, 27.5% MSCI ACWI ex-US (Gross), 15.9% MSCI ACWI (Net), 1.5% Wilshire REIT, 2.6% NCREIF Property Index, 10.4% NCREIF ODCE Index, 14.5% S&P 500 +4% (Lagged), 2.4% ICE BofAML High Yield Master II +2%, 2.9% ICE BofAML High Yield Master II, 2.9% BBgBarc Global Bond
Custom Growth Benchmark (9/30/2017-6/30/2018)	23.6% Russell 3000, 27.2% MSCI ACWI ex-US (Gross), 12.5% MSCI ACWI (Net), 1.5% Wilshire REIT, 2.3% NCREIF Property Index, 9.3% NCREIF ODCE Index, 14.6% S&P 500 +4% (Lagged), 2.8% ICE BofAML High Yield Master II +2%, 6.2% ICE BofAML High Yield Master II
Custom Growth Benchmark (1/1/2017-9/30/2017)	32.6% Russell 3000, 15.7% MSCI ACWI ex-US (Gross), 15.5% MSCI ACWI (Net), 1.4% Wilshire REIT, 2.4% NCREIF Property Index, 9.6% NCREIF ODCE Index, 1.6% CPI +4%, 11.5% S&P 500 +4% (Lagged), 2.4% ICE BofAML High Yield Master II +2%, 7.3% ICE BofAML High Yield Master II
Custom Growth Benchmark (Prior to 1/1/2017)	Weighted-average of the benchmarks of the sub-composites that make up the composite.
Custom Diversifying Benchmark (7/1/2018 - present)	43.75% BBgBarc US Aggregate, 25% CPI + 4%, 31.25% HFRI EH Equity Market Neutral.
Custom Diversifying Benchmark (10/1/2017 - 6/30/2018)	58.33% BBgBarc US Aggregate, 41.67% CPI + 4%.
Custom Diversifying Benchmark (1/1/2017 - 9/30/2017)	56.1% BBgBarc US Aggregate, 43.9% CPI + 4%.
Custom Diversifying Benchmark (Prior to 1/1/2017)	Weighted-average of the benchmarks of the sub-composites that make up the composite.
Real Estate Benchmark (current)	11% Wilshire REIT, 18% NCREIF Property Index, 71% NCREIF ODCE Index.
Real Estate Benchmark (4/1/2012-11/30/2016)	40% Wilshire REIT, 50% NCREIF Property Index, 10% FTSE/EPR/NAREIT Developed ex-US.

Manager Line Up	Manager	Inception Date	Data Source	Manager	Inception Date	Data Source
BlackRock Russell 1000 Index	BlackRock	4/20/2017	BlackRock	Invesco Real Estate IV	6/30/2014	Invesco
Jackson Square Partners	Northern Trust	5/1/2005	Northern Trust	Invesco Real Estate V	2/20/2019	Invesco
Boston Partners	Northern Trust	6/1/1995	Northern Trust	Oaktree REOF V	12/31/2011	Oaktree
Emerald Advisors	Northern Trust	4/7/2003	Northern Trust	Oaktree REOF VI	9/30/2013	Oaktree
Ceredex	Northern Trust	11/6/2011	Northern Trust	Oaktree REOF VII	4/1/2015	Oaktree
Pyford	State Street	4/25/2014	State Street	Siguler Guff DREOF	1/25/2012	Siguler Guff
William Blair	William Blair	10/29/2010	William Blair	Siguler Guff DREOF II	8/31/2013	Siguler Guff
PIMCO RAE Emerging Markets	State Street	2/28/2017	State Street	Siguler Guff DREOF II Co-Inv	1/27/2016	Siguler Guff
TT Emerging Markets	TT	7/27/2017	TT	Paulson Real Estate Fund II	11/10/2013	Paulson
Artisan Partners	SEI Trust	10/1/2012	SEI Trust	AE Industrial Partners Fund II	4/8/2019	StepStone Group
First Eagle	Northern Trust	1/18/2011	Northern Trust	Adams Street Partners	3/18/1996	StepStone Group
Allianz Global Investors	Northern Trust	4/25/2000	Northern Trust	Adams Street Partners II	1/16/2009	StepStone Group
Adelante	Northern Trust	9/30/2001	Northern Trust	Adams Street Partners Venture	4/28/2017	StepStone Group
AQR Global Risk Premium - EL	AQR	1/18/2019	AQR	Adams Street Partners - BFP	1/18/1996	StepStone Group
Panagora Risk Parity Multi Asset	Panagora	3/15/2019	Panagora	Adams Street Partners - Fund 5	9/21/2012	StepStone Group
AFL-CIO	AFL-CIO	6/30/1991	AFL-CIO	Aether Real Assets IV	3/16/2016	StepStone Group
Wellington Real Total Return	Northern Trust	2/26/2013	Northern Trust	Aether Real Assets III	11/27/2013	StepStone Group
Parametric Defensive Equity	Northern Trust	7/23/2018	Northern Trust	Aether Real Assets III Surplus	11/30/2013	StepStone Group
Sit Short Duration	Northern Trust	11/2/2016	Northern Trust	Bay Area Equity Fund	6/14/2004	StepStone Group
DFA Short Credit	Northern Trust	11/21/2016	Northern Trust	Bay Area Equity Fund II	12/7/2009	StepStone Group
Insight Short Duration	Northern Trust	11/18/2016	Northern Trust	Commonfund	6/28/2013	StepStone Group
Parametric Overlay	Northern Trust	3/29/2017	Northern Trust	EIF US Power Fund II	8/16/2005	StepStone Group
Cash	Northern Trust	-	Northern Trust	EIF US Power Fund III	5/30/2007	StepStone Group
Angelo Gordon Energy Credit Opp	StepStone Group	9/24/2015	StepStone Group	EIF US Power Fund IV	11/28/2011	StepStone Group
StepStone CC Opportunities Fund	StepStone Group	2/1/2018	StepStone Group	EIF US Power Fund V	11/28/2016	StepStone Group
Torchlight II	StepStone Group	9/30/2006	StepStone Group	Genstar Capital Partners IX, L.P.	2/21/2019	StepStone Group
Torchlight IV	StepStone Group	7/1/2012	StepStone Group	Oaktree PIF 2009	2/28/2010	StepStone Group
Torchlight V	StepStone Group	7/1/2012	StepStone Group	Paladin III	11/30/2007	StepStone Group
Angelo Gordon Realty Fund VIII	Angelo Gordon	1/23/2012	Angelo Gordon	Ocean Avenue Fund II	6/11/2014	StepStone Group
Angelo Gordon Realty Fund IX	Angelo Gordon	12/8/2014	Angelo Gordon	Ocean Avenue Fund III	4/15/2016	StepStone Group
DLJ RECP III	DLJ	6/23/2005	DLJ	Pathway 6	5/24/2011	StepStone Group
DLJ RECP IV	DLJ	2/11/2008	DLJ	Pathway 7	2/17/2013	StepStone Group
DLJ RECP V	DLJ	7/1/2014	DLJ	Pathway 8	11/23/2015	StepStone Group
DLJ RECP VI	DLJ	3/19/2019	DLJ	Pathway	11/9/1998	StepStone Group
LaSalle Income & Growth VI	LaSalle	7/16/2013	LaSalle	Pathway 2008	12/26/2008	StepStone Group
LaSalle Income & Growth VII	LaSalle	2/28/2017	LaSalle	Siguler Guff CCCERA Opps	6/3/2014	StepStone Group
Hearthstone II	Hearthstone	6/17/1998	Hearthstone	Siguler Guff Secondary Opps	11/30/2016	StepStone Group
Long Wharf Fund IV	Long Wharf	7/3/2013	Long Wharf	Siris Partners IV	3/15/2019	StepStone Group
Long Wharf Fund V	Long Wharf	9/30/2016	Long Wharf	TPG Healthcare Partners, L.P.	6/28/2019	StepStone Group
Invesco Real Estate II	Invesco	11/26/2007	Invesco	Trident VIII, L.P.	5/24/2019	StepStone Group
Invesco Real Estate III	Invesco	6/30/2013	Invesco	Wastewater Opp. Fund	12/8/2015	StepStone Group

Other Disclosures

All data prior to 12/31/2014 was provided by previous consultant. As of 7/1/2018 all Private Equity and Private Credit data is provided by StepStone Group.

Glossary

Allocation Effect: An attribution effect that describes the amount attributable to the managers' asset allocation decisions, relative to the benchmark.

Alpha: The excess return of a portfolio after adjusting for market risk. This excess return is attributable to the selection skill of the portfolio manager. Alpha is calculated as: Portfolio Return - [Risk-free Rate + Portfolio Beta x (Market Return - Risk-free Rate)].

Benchmark R-squared: Measures how well the Benchmark return series fits the manager's return series. The higher the Benchmark R-squared, the more appropriate the benchmark is for the manager.

Beta: A measure of systematic, or market risk; the part of risk in a portfolio or security that is attributable to general market movements. Beta is calculated by dividing the covariance of a security by the variance of the market.

Book-to-Market: The ratio of book value per share to market price per share. Growth managers typically have low book-to-market ratios while value managers typically have high book-to-market ratios.

Capture Ratio: A statistical measure of an investment manager's overall performance in up or down markets. The capture ratio is used to evaluate how well an investment manager performed relative to an index during periods when that index has risen (up market) or fallen (down market). The capture ratio is calculated by dividing the manager's returns by the returns of the index during the up/down market, and multiplying that factor by 100.

Correlation: A measure of the relative movement of returns of one security or asset class relative to another over time. A correlation of 1 means the returns of two securities move in lock step, a correlation of -1 means the returns of two securities move in the exact opposite direction over time. Correlation is used as a measure to help maximize the benefits of diversification when constructing an investment portfolio.

Excess Return: A measure of the difference in appreciation or depreciation in the price of an investment compared to its benchmark, over a given time period. This is usually expressed as a percentage and may be annualized over a number of years or represent a single period.

Information Ratio: A measure of a manager's ability to earn excess return without incurring additional risk. Information ratio is calculated as: excess return divided by tracking error.

Interaction Effect: An attribution effect that describes the portion of active management that is contributable to the cross interaction between the allocation and selection effect. This can also be explained as an effect that cannot be easily traced to a source.

Portfolio Turnover: The percentage of a portfolio that is sold and replaced (turned over) during a given time period. Low portfolio turnover is indicative of a buy and hold strategy while high portfolio turnover implies a more active form of management.

Price-to-Earnings Ratio (P/E): Also called the earnings multiplier, it is calculated by dividing the price of a company's stock into earnings per share. Growth managers typically hold stocks with high price-to-earnings ratios whereas value managers hold stocks with low price-to-earnings ratios.

R-Squared: Also called the coefficient of determination, it measures the amount of variation in one variable explained by variations in another, i.e., the goodness of fit to a benchmark. In the case of investments, the term is used to explain the amount of variation in a security or portfolio explained by movements in the market or the portfolio's benchmark.

Selection Effect: An attribution effect that describes the amount attributable to the managers' stock selection decisions, relative to the benchmark.

Sharpe Ratio: A measure of portfolio efficiency. The Sharpe Ratio indicates excess portfolio return for each unit of risk associated with achieving the excess return. The higher the Sharpe Ratio, the more efficient the portfolio. Sharpe ratio is calculated as: Portfolio Excess Return / Portfolio Standard Deviation.

Sortino Ratio: Measures the risk-adjusted return of an investment, portfolio, or strategy. It is a modification of the Sharpe Ratio, but penalizes only those returns falling below a specified benchmark. The Sortino Ratio uses downside deviation in the denominator rather than standard deviation, like the Sharpe Ratio.

Standard Deviation: A measure of volatility, or risk, inherent in a security or portfolio. The standard deviation of a series is a measure of the extent to which observations in the series differ from the arithmetic mean of the series. For example, if a security has an average annual rate of return of 10% and a standard deviation of 5%, then two-thirds of the time, one would expect to receive an annual rate of return between 5% and 15%.

Style Analysis: A return based analysis designed to identify combinations of passive investments to closely replicate the performance of funds

Style Map: A specialized form or scatter plot chart typically used to show where a Manager lies in relation to a set of style indices on a two-dimensional plane. This is simply a way of viewing the asset loadings in a different context. The coordinates are calculated by rescaling the asset loadings to range from -1 to 1 on each axis and are dependent on the Style Indices comprising the Map.

Disclaimer

This report contains confidential and proprietary information and is subject to the terms and conditions of the Consulting Agreement. It is being provided for use solely by the customer. The report may not be sold or otherwise provided, in whole or in part, to any other person or entity without written permission from Verus Advisory, Inc., (hereinafter Verus) or as required by law or any regulatory authority. The information presented does not constitute a recommendation by Verus and cannot be used for advertising or sales promotion purposes. This does not constitute an offer or a solicitation of an offer to buy or sell securities, commodities or any other financial instruments or products.

The information presented has been prepared using data from third party sources that Verus believes to be reliable. While Verus exercised reasonable professional care in preparing the report, it cannot guarantee the accuracy of the information provided by third party sources. Therefore, Verus makes no representations or warranties as to the accuracy of the information presented. Verus takes no responsibility or liability (including damages) for any error, omission, or inaccuracy in the data supplied by any third party. Nothing contained herein is, or should be relied on as a promise, representation, or guarantee as to future performance or a particular outcome. Even with portfolio diversification, asset allocation, and a long-term approach, investing involves risk of loss that the investor should be prepared to bear.

The information presented may be deemed to contain forward-looking information. Examples of forward looking information include, but are not limited to, (a) projections of or statements regarding return on investment, future earnings, interest income, other income, growth prospects, capital structure and other financial terms, (b) statements of plans or objectives of management, (c) statements of future economic performance, and (d) statements of assumptions, such as economic conditions underlying other statements. Such forward-looking information can be identified by the use of forward looking terminology such as believes, expects, may, will, should, anticipates, or the negative of any of the foregoing or other variations thereon comparable terminology, or by discussion of strategy. No assurance can be given that the future results described by the forward-looking information will be achieved. Such statements are subject to risks, uncertainties, and other factors which could cause the actual results to differ materially from future results expressed or implied by such forward looking information. The findings, rankings, and opinions expressed herein are the intellectual property of Verus and are subject to change without notice. The information presented does not claim to be all-inclusive, nor does it contain all information that clients may desire for their purposes. The information presented should be read in conjunction with any other material provided by Verus, investment managers, and custodians.

Verus will make every reasonable effort to obtain and include accurate market values. However, if managers or custodians are unable to provide the reporting period's market values prior to the report issuance, Verus may use the last reported market value or make estimates based on the manager's stated or estimated returns and other information available at the time. These estimates may differ materially from the actual value. Hedge fund market values presented in this report are provided by the fund manager or custodian. Market values presented for private equity investments reflect the last reported NAV by the custodian or manager net of capital calls and distributions as of the end of the reporting period. These values are estimates and may differ materially from the investments actual value. Private equity managers report performance using an internal rate of return (IRR), which differs from the time-weighted rate of return (TWRR) calculation done by Verus. It is inappropriate to compare IRR and TWRR to each other. IRR figures reported in the illiquid alternative pages are provided by the respective managers, and Verus has not made any attempts to verify these returns. Until a partnership is liquidated (typically over 10-12 years), the IRR is only an interim estimated return. The actual IRR performance of any LP is not known until the final liquidation.

Verus receives universe data from InvMetrics, eVestment Alliance, and Morningstar. We believe this data to be robust and appropriate for peer comparison. Nevertheless, these universes may not be comprehensive of all peer investors/managers but rather of the investors/managers that comprise that database. The resulting universe composition is not static and will change over time. Returns are annualized when they cover more than one year. Investment managers may revise their data after report distribution. Verus will make the appropriate correction to the client account but may or may not disclose the change to the client based on the materiality of the change.



<i>Meeting Date</i> 02/26/20 <i>Agenda Item</i> #6b.

MEMORANDUM

Date: February 26, 2020
To: CCCERA Board of Retirement
From: Timothy Price, Chief Investment Officer
Subject: Investment Staff Report – Q4 2019

Overview

On a quarterly basis CCCERA's Board receives a report which details critical elements of CCCERA's Functionally Focused Portfolio's sub-portfolios. The purpose of the report is to highlight elements of the sub-portfolios which are good indicators to the Board of the program's efficient and effective operation.

Summary

CCCERA's Total Fund is performing as expected, exhibiting returns above expectations for the amount of risk taken. This is measured by the Sharpe Ratio (risk-adjusted return), and a comparison to the Simple Target Index. The Simple Target Index is the most basic index which could replicate CCCERA's Total Fund, and is made up of 68% MSCI ACWI, 24% Bloomberg 1-3 Year Gov/Credit, and 8% 3-Month Treasury Bills (please see the Total Fund pages in the appendix for additional details). CCCERA's portfolio is much more complex, especially as it relates to allocations to private equity, private credit, and real estate.

CCCERA has been rewarded for implementing a more complex portfolio, and has outperformed the Simple Target Index over the trailing five years, while experiencing less risk (volatility). Details on performance relative to this index are included in the appendix. It is worth noting that CCCERA's Total Fund return is an aggregate of the performance of the Liquidity, Growth, and Risk Diversifying sub-portfolios.

1) Liquidity

The purpose of the liquidity program is to match four years of benefit payments with high credit quality, low duration assets. The liquidity sub-portfolio is made up of three fixed income managers, all of whom pursue a high quality, low duration investment approach. Through the fourth quarter of 2019, all managers held high quality (as measured by credit ratings), low duration portfolios. The average credit quality for the entire liquidity program is AA- (AAA is the highest rating), and the duration is 1.7 years, which is considered short.

2) Growth

The Growth portfolio is designed to take advantage of capital appreciation and income opportunities globally. To achieve this, the Growth portfolio includes a variety of assets, from stocks and growth-oriented bonds to private equity, real estate, and private credit.

One notable change from the prior quarter is the Growth portfolio's 5-year annualized performance relative to the MSCI ACWI. For the trailing five-year period ending September 30, 2019, the Growth portfolio returned 7.6% relative to the index return of 6.6%, for an excess return of 1%. During the fourth quarter of 2019, the public equity markets rallied strongly with the MSCI ACWI Index returning 9% and CCCERA's diversified Growth portfolio returning 5.5%. This single quarter had an outsized impact on the trailing five-year period ending December 31, 2019, where CCCERA's Growth portfolio returned 8.2% (a 0.6% increase from the prior quarter) but the MSCI ACWI Index returned 8.4% (a 1.8% increase from the prior quarter). This shifted our five-year excess return from +1.0% as of September 30 to -0.2% as of December 31. We expect this relative return to increase as the valuations for our private market investments are reappraised over the next quarter.

3) Risk Diversifying

The Risk Diversifying mandate holds assets that are expected to diversify the growth portfolio's volatility while offering moderate growth. The mandate as a whole seeks to be highly liquid, have a low beta to the growth market, and produce positive real returns. In the fourth quarter, the Risk Diversifying mandate fulfilled most of these goals. The entire mandate is able to be liquidated within 90 days, meeting the requirement of high liquidity. The correlation of the mandate to growth markets is 0.5, which shows good diversification. Trailing real (net of inflation) returns over the past five years is -0.7%, an improvement from last quarter's -0.8%, but which remains below expectations. We continue to explore additional mandates that can strengthen this sub-portfolio.

The Liquidity, Growth, and Risk Diversifying sub-portfolios are largely functioning well and within expectations. The product teams and asset managers are stable, and at this time we have no organizational concerns with our investment managers. CCCERA's Total Fund in aggregate is performing in line with expectations, having a higher return and a lower level of volatility compared to the Simple Target Index. Enclosed are additional details on CCCERA's Total Fund, sub-portfolios, and individual investment strategies.

CCCERA Portfolio Report Card

Below we have itemized those elements of each of CCCERA’s sub-portfolios and Total Fund which we believe the Board should pay particular attention to. Additional details on each of the sub-portfolios are available in the appendix. All CCCERA performance is stated on a net of fees basis.

Liquidity

Objective	Measurement	Current Period Data	Status
High Quality	Credit Quality	AA-	Meeting Expectations
Low Risk	Duration	1.7 years	Meeting Expectations
Appropriately Sized	Months of Benefit Payments Invested	43 Months	Meeting Expectations

Growth

Objective	Measurement	Current Period Data	Status
Growth of Plan Assets	Absolute Returns	Trailing 5 yr return of 8.2%	Meeting Expectations
	Benchmark Relative Returns	-0.2% over ACWI over trailing 5 years	Slightly Below Expectations
Efficient Capital Deployment	Sharpe Ratio	CCCERA: 1.1 MSCI ACWI: 0.6 (over trailing 5 years)	Meeting Expectations

Risk Diversifying

Objective	Measurement	Current Period Data	Status
Offset Volatility in Growth Portfolio	Correlation	0.5 over trailing 5 years	Meeting Expectations
Positive Real Returns	Returns	Trailing 5 yr real return of -0.7%	Below Expectations
High Liquidity	% of Portfolio that can be liquidated within 90 days	100%	Meeting Expectations

Total Fund

Objective	Component/Measurement	Status
Store 4 Years of Benefit Payments	Liquidity Sub-portfolio	Meeting Expectations
Participate in Growth Opportunities	Growth Sub-portfolio	Meeting Expectations
Provide an offset to Growth volatility	Risk Diversifying Sub-portfolio	Meeting Expectations
Produce superior risk adjusted returns	Total Fund Sharpe Ratio	Meeting Expectations

Appendix – Liquidity Sub-Portfolio

Manager Reviews

Organizational Stability

	Portfolio Management Assessment	1 Year Product Asset Growth	1 Year Firm Asset Growth	Regulatory Action in Last Year?
Insight	Good	32%	11%	N
Sit	Good	6%	7%	N
DFA	Good	18%	18%	N

Performance

	Portfolio Average Credit Quality	Portfolio Average Duration	Portfolio Average Yield	1 Year Total Return
Insight	A+	1.5	2.0	4.8%
Sit	AAA	2.6	2.6	4.9%
DFA	A+	1.1	2.1	4.8%

Manager Notes:

None

Manager Theses:

The Liquidity Portfolio is a combination of three managers which work together to match four years of CCCERA’s liabilities. The portfolio is refreshed every year during the annual funding plan.

Insight: Insight plays a completion role in the liquidity program, matching out liabilities with short duration government and corporate fixed income securities.

DFA: Dimensional Fund Advisors runs a strategy that focuses on obtaining fixed income exposures via the most liquid securities available. DFA contributes to the Liquidity Program by selling securities at regular intervals to pay a portion of CCCERA’s monthly benefit payment.

Sit: Sit invests in high yielding government backed mortgages. The cash flow from these securities is harvested monthly to make up a portion of CCCERA’s monthly benefit payment.

Appendix – Growth Sub-Portfolio

Manager Reviews

Organizational Stability

	Portfolio Management Assessment	1 Year Product Asset Growth	1 Year Firm Asset Growth	Regulatory Action in Last Year?
Boston Partners	Good	13%	10%	N
Jackson Square	Good	20%	28%	N
BlackRock Index Fund	Good	27%	24%	N
Emerald Advisors	Good	19%	14%	N
Ceredex	Good	-11%	18%	N
Pyrford (BMO)	Good	14%	12%	N
William Blair	Good	15%	20%	N
First Eagle	Good	8%	6%	N
Artisan Global	Good	30%	26%	N
PIMCO/RAE EM	Good	48%	15%	N
TT EM	Good	56%	23%	N
Adelante	Good	14%	17%	N
Allianz	Good	-9%	NA	N
AQR	Good	-5%	-5%	N
PanAgora	Good	13%	1%	N
Private Equity	Good	--	--	N
Private Credit	Good	--	--	N
Real Estate	Good	--	--	N

Performance

	Trailing 1 Year Return	Trailing 5 Year Return	Performance in Line with Expectations?
Boston Partners	24%	8%	Y
Jackson Square	27%	10%	Y
BlackRock Index Fund	31%	12%	Y
Emerald Advisors	29%	10%	Y
Ceredex	19%	8%	Y
Pyrford (BMO)	21%	5%	Y
William Blair	31%	6%	Y
First Eagle	20%	7%	Y
Artisan Global	36%	13%	Y
PIMCO/RAE EM	14%	6%	Y
TT EM	25%	9%	Y
Adelante	28%	7%	Y
Allianz	14%	4%	Y
AQR	22%	5%	Y
PanAgora	22%	7%	Y
	1Yr Premium	5 Year Premium	
Private Equity	-18%	2%	Y
Private Credit	-19%	1%	Y
Real Estate	-19%	0%	Y

Manager Notes:

Boston Partners:

Mark Donovan stepped down from his role as co-CEO at the end of 2019 to focus on portfolio management responsibilities; Joseph “Jay” F. Feeney Jr., co-CEO since 2008, became the sole CEO on December 31st.

TT International Emerging Markets:

TT announced in Q3 2019 that they will be acquired by Sumitomo Mitsui Financial Group. All emerging markets team members are expected to remain with the firm for at least the next several years. The transaction is expected to close in the first half of 2020.

Manager Theses:

The growth portfolio includes all managers in public and private equity, real estate, and private credit. These managers grow CCCERA’s assets for future benefit payments (beyond the four years already covered by the Liquidity program).

Boston Partners: Large cap domestic equity which follows a value discipline. Boston Partners will buy out of favor companies and sell them when their intrinsic values are reflected in the market. Expected to outperform in flat to falling markets.

Jackson Square: Domestic equity large cap growth portfolio concentrated in companies with sustainable long-term growth characteristics. This portfolio should outperform in rapidly rising markets.

BlackRock Index Fund: Large cap domestic equity portfolio which should follow the Russell 1000 Index.

Emerald Advisors: Small cap growth equity seeking companies with high growth rates. Expected to produce strong returns in rising markets, and weak returns in falling markets.

Ceredex: Domestic equity small cap value portfolio of companies with dividend yields and low valuations. This portfolio should outperform flat markets.

Pyrford (BMO): International equity value portfolio of non-US companies with low valuations at the country and stock level. This portfolio should outperform in flat markets.

William Blair: International equity growth portfolio of non-US companies with high growth rates constructed from the security level. This portfolio should outperform in rapidly rising markets.

First Eagle: Global equity portfolio that is benchmark agnostic comprised of companies with low valuations.

Artisan Global Opportunities: Global equity portfolio of companies that is benchmark agnostic with accelerating profit cycles and a focus on capital allocation.

PIMCO/RAE Emerging Markets: Quantitative equity with a value orientation. This portfolio follows the fundamental indexing approach (ranking companies by metrics other than market capitalization), resulting in a diversified, low turnover portfolio. This portfolio underperforms in momentum driven markets.

TT International Emerging Markets: Concentrated, growth oriented manager which invests in small and mid-cap emerging market companies. TT employs both a top-down and a bottom-up research approach, and seeks to outperform by identifying companies that have a catalyst to drive future growth.

Adelante: Diversified portfolio of U.S. REITs with a focus on the underlying real estate assets. Adelante is a public market proxy of the core real estate market.

Allianz High Yield Fixed Income: Domestic high yield fixed income portfolio with a focus on security selection. Allianz will focus on the higher quality segment of the high yield universe. Allianz should provide a steady income stream, and provide downside protection in falling markets.

Private Equity: CCCERA invests in private equity to generate returns above those available in the public equity markets.

Private Credit: CCCERA invests in private credit to generate cash flow streams above those available in the public debt markets.

Real Estate: CCCERA invests in value-add, distressed, and opportunistic real estate to generate returns from the capital appreciation and cash flow associated with commercial real estate investment.

Risk Parity: Multi-asset approach that strives for balanced contributions to total portfolio risk from multiple asset classes.

Appendix – Risk Diversifying Sub-Portfolio

Organizational Stability

	Portfolio Management Assessment	1 Year Product Asset Growth	1 Year Firm Asset Growth	Regulatory Action in Last Year?
Wellington	Satisfactory	-60%	15%	N
AFL-CIO	Good	11%	NA	N
Parametric	Good	27%	119%	N

Performance

	Trailing 1 Year Correlation to Growth	Trailing 3 Year Correlation to Growth	1 Year Return	5 Year Return	% of Portfolio Liquid in 90 Days
Wellington	1.0	0.9	9.6%	0.3%	100%
AFL-CIO	-0.3	0.0	7.8%	2.8%	100%
Parametric	1.0	0.9	3.0%	7.2%	100%

Manager Notes:

None.

Manager Theses:

Managers in the risk diversifying allocation seek to have a low correlation with the growth portfolio, positive returns in flat and falling equity markets, and a high degree of liquidity. These managers work together to offset some of the risks in the growth portfolio.

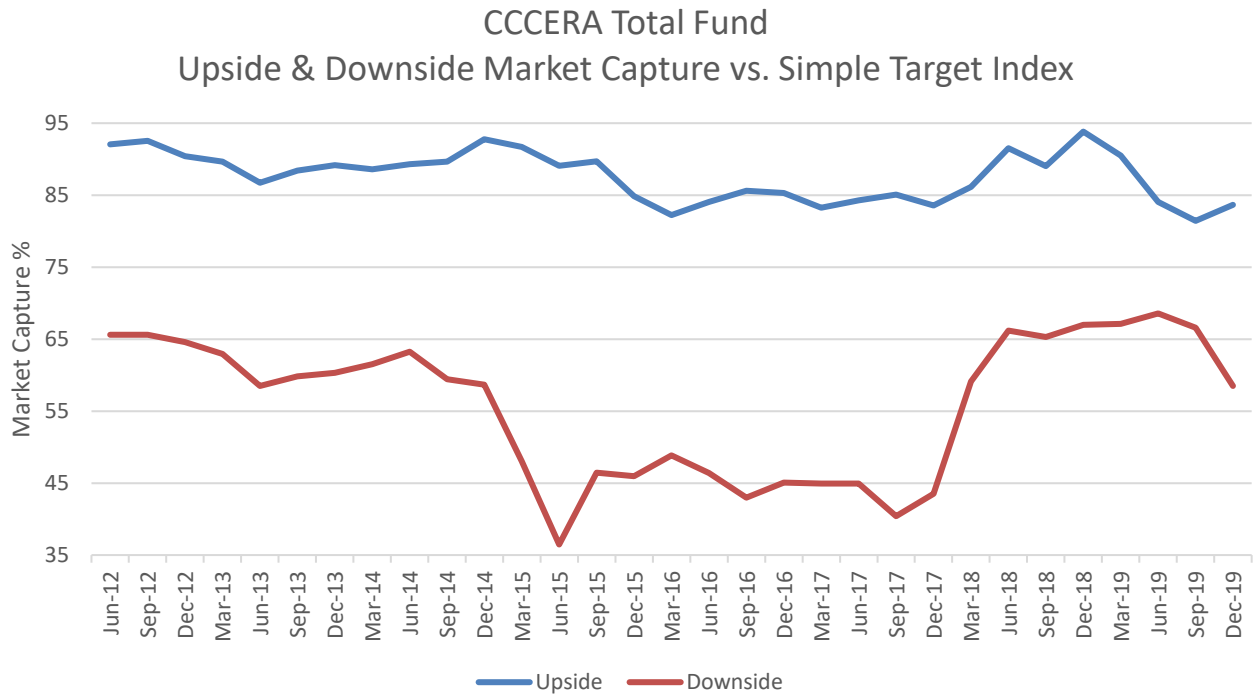
AFL-CIO: Portfolio of domestic, high quality fixed income securities which are backed by commercial and residential mortgages.

Parametric: Portfolio of paired options selling intended to collect insurance premiums by selling puts and calls on the S&P 500 with collateral invested in US Treasury portfolio.

Wellington: Multi-strategy fund which tactically rotates between assets to produce returns. Approximately 50% of underlying strategies pursue an inflation-hedging goal.

Appendix Data – Total Fund

Rolling 3-Year Total Fund Upside/Downside Market Capture



*The composition of the Simple Target Index has mirrored changes in CCCERA’s asset allocation over time: from 2008 to 2012 the benchmark was 73% MSCI ACWI, 23% Bloomberg 1-3 Year Gov/Credit, and 4% 3-Month Treasury Bills. From 2012 to 2016 the composition was 74% MSCI ACWI, 18% Bloomberg 1-3 Year Gov/Credit, and 9% 3-Month Treasury Bills. From 2016 to 2017 the composition was 63% MSCI ACWI, 25% Bloomberg 1-3 Year Gov/Credit, and 12% 3-Month Treasury Bills, from 2017 to June 2018 the composition was 61% MSCI ACWI, 27% Bloomberg 1-3 Year Gov/Credit, and 12% 3-Month Treasury Bills, from July 2018 to June 2019 the composition is 69% MSCI ACWI, 23% Bloomberg 1-3 Year Gov/Credit, and 8% 3-Month Treasury Bills, and from July 2019 to the present the composition is 68% MSCI ACWI, 24% Bloomberg 1-3 Year Gov/Credit, and 8% 3-Month Treasury Bills.

Total Fund Quarterly Attribution

	CCCERA Total Fund			Simple Target Index			Analysis		
	Allocation	Return	Contribution	Allocation	Return	Contribution	Allocation Difference	Return Difference	Total Effect
Liquidity	24.3%	0.5%	0.1%	24.0%	0.6%	0.1%	0.3%	-0.1%	0.0%
Growth	67.6%	5.5%	3.7%	68.0%	9.0%	6.1%	-0.4%	-3.4%	-2.3%
Risk Diversifying	8.1%	0.5%	0.0%	8.0%	0.5%	0.0%	0.1%	0.1%	0.0%
Total Fund	100%		3.9%	100%		6.3%	-0.1%		-2.3%

CCCERA Total Fund Performance vs. Simple Target Index

	One Year		Three Years		Five Years		Ten Years	
	CCCERA	STI	CCCERA	STI	CCCERA	STI	CCCERA	STI
Return	14.6	19.1	8.3	8.7	6.8	5.9	8.5	6.6
Volatility	5.0	7.5	5.8	8.5	5.4	7.7	7.2	9.5
Sharpe	2.5	2.2	1.1	0.8	1.1	0.6	1.1	0.6

The Simple Target Index is made up of 68% MSCI ACWI, 24% Bloomberg 1-3 Year Gov/Credit, and 8% 3-Month Treasury Bill. This purpose of this index is to examine whether CCCERA is being rewarded for pursuing a more nuanced portfolio versus a very simple representative portfolio.

CCCERA's Total Fund has produced strong risk adjusted returns over most trailing periods. Additionally, the CCCERA Portfolio trailed the Simple Target Index over the past one- and three-year periods but has exceeded the STI over longer trailing periods. This would indicate that CCCERA has been rewarded for engaging in more complex investments which target outperformance versus investing passively in the publicly traded market.

The Sharpe ratio is a measure of risk adjusted returns which shows the amount of return a portfolio earns above the risk free rate per unit of volatility. Over all trailing periods, the Total Fund has produced a better Sharpe ratio relative to the Simple Target Index, indicating that CCCERA is being favorably rewarded for the risk taken in the portfolio.



Meeting Date
02/26/20
Agenda Item
#7

MEMORANDUM

Date: February 26, 2020
To: CCCERA Board of Retirement
From: Timothy Price, Chief Investment Officer
Subject: Annual Statement of Compliance with Board Resolutions

Overview

As part of the CCCERA investment procedures, staff is required to report annually on compliance with all Board Resolutions in effect for the prior year. These Board Resolutions can encompass a variety of topics, but in 2019 were limited to asset allocation targets and ranges related to the phased implementation of the new asset allocation program.

The Board adopted one investment-related resolution over the course of 2019 and one resolution from 2018 remained in effect at the beginning of 2019. These resolutions are noted below and included with the memo as Appendix 1.

RESOLUTION	CONTENT	DATE ADOPTED
2018-2	Asset Allocation Targets and Ranges	6/27/18
2019-4	Asset Allocation Targets and Ranges	6/26/19

Compliance

CCCERA Investment staff provided a monthly report to the Board as part of the consent items showing month-end allocation for each sub-portfolio and investment manager. All allocations remained near their targets over the course of the year and the three sub-portfolios (liquidity, growth and diversifying) remained within their mandated ranges at all times. These reports are included with this memo as Appendix 2.

Please note that Resolutions 2018-2 and 2019-4 do not have specific cash allocation targets or ranges as this is overlaid (securitized) by Parametric and therefore has a similar economic exposure as the total fund.

Asset Allocation Summary: Calendar Year 2019

	Liquidity		Growth		Diversifying		Cash & Overlay
	Allocation	Range	Allocation	Range	Allocation	Range	Allocation
January	20.8%	16-28%	69.5%	60-80%	8.2%	0-10%	1.5%
February	20.3	16-28	70.0	60-80	8.1	0-10	1.6
March	19.9	16-28	71.1	60-80	8.2	0-10	0.8
April	19.2	16-28	71.8	60-80	8.1	0-10	0.8
May	19.5	16-28	70.9	60-80	8.3	0-10	1.3
June	18.5	16-28	72.7	60-80	8.2	0-10	0.7
July	23.6	16-28	67.1	60-80	8.0	0-10	1.3
August	23.4	16-28	67.1	60-80	8.1	0-10	1.4
September	23.0	16-28	67.6	60-80	8.1	0-10	1.4
October	22.2	16-28	68.2	60-80	8.0	0-10	1.6
November	21.6	16-28	68.5	60-80	7.9	0-10	1.9
December	20.9	16-28	69.1	60-80	7.8	0-10	2.2

Appendix 1

**RESOLUTION OF THE BOARD OF RETIREMENT
CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

INVESTMENT ASSET ALLOCATION TARGETS AND RANGES

WHEREAS, Article XVI, §17 of the Constitution of the State of California vests the Board of Retirement (Board) with "plenary authority and fiduciary responsibility for the investment of moneys and the administration of the system"; and

WHEREAS, the Board has exclusive control of the investment of CCCERA and may, in its discretion and subject to applicable law, invest, or delegate the authority to invest, the assets of the fund through the purchase, holding or sale or any form or type of investment, financial instrument, or financial transaction when prudent in the informed decision of the board, pursuant to the County Employees Retirement Law of 1937 (CERL), Government Code Section 31595; and

WHEREAS, the Board has adopted an Investment Policy Statement ("IPS"), pursuant to which the Board is to periodically set, review and revise its asset allocation targets.

NOW, THEREFORE BE IT RESOLVED that it shall be the policy of CCCERA to invest assets in the following manner:

Asset Allocation

Section 6.B of the Investment Policy Statement ("IPS"), adopted September 28, 2016, provides that "annually the Board shall review the relative size and composition of [the] sub-portfolios and revise them as necessary through Investment Resolutions." During this annual review, the Investment Consultant will recommend the targets, weightings, and the rationale for any deviation to an under-weight or over-weight across the asset allocation. The Board will consider and take action to adopt or revise asset allocation targets. Under the direction of the Board of Retirement, investment staff will administer the asset allocation per the Board's action.

As of 2018 the long-term asset allocation targets determined by the Board are as follows:

Liquidity: 23%
Growth: 67%
Diversifying: 10%

The Phase 3 targets reflect the continued build out of the diversifying allocation. As additional strategies are identified and funded, we expect to make further progress towards funding this sub-portfolio to its full 10% allocation from its Phase 3 allocation of 8%. On an interim basis, remaining 2% remains in the growth sub-portfolio.

The Liquidity sub-portfolio will have a target allocation of 23% once the annual funding has been completed. Over the course of the following 12 months, the Liquidity sub-portfolio will be used to pay benefits and expenses. As a result, and aside from market fluctuations, the funds in the Liquidity sub-portfolio will decline from the targeted allocation and, therefore, the relative allocations to the Growth and Diversifying sub-portfolios will increase proportionately.

Phase 3 Targets

Sub-Portfolio Strategy	Phase 3 Target	Range
Growth	69.0%	60-80%
Jackson Square	3.0%	
Boston Partners	3.0%	
Emerald	2.0%	
Ceredex	2.0%	
BlackRock Index Fund	1.0%	
Pyrford	5.5%	
William Blair	5.5%	
Artisan	4.0%	
First Eagle	4.0%	
TT Emerging Markets	4.0%	
PIMCO/RAE Emerging Markets	4.0%	
Adelante	1.0%	
Private Real Estate	9.0%	
Private Equity	10.0%	
Private Credit	4.0%	
Allianz	2.0%	
Risk Parity Manager(s)	5.0%	
Liquidity	23.0%	16-28%
Insight	12.0%	
DFA	5.5%	
Sit	5.5%	
Risk Diversifying	8.0%	0-10%
AFL-CIO HIT	3.5%	
Wellington Real Total Return	2.0%	
Parametric Defensive Equity	2.5%	
Total	100.0%	

THIS RESOLUTION WAS ADOPTED BY THE AFFIRMATIVE VOTE OF THE BOARD OF RETIREMENT OF THE CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION THIS TWENTY-SEVENTH DAY OF JUNE, 2018.

AYES: Gordon, Holcombe, Kwon, MacDonald, Phillips, Pigeon, Smithey, Telles and Watts

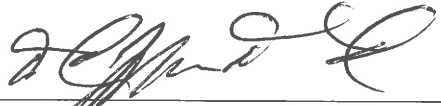
NOES:

ABSTAIN:

ABSENT: Anderson



 Todd Smithey
 Chairperson of the Board of Retirement



 Attest:
 David J. MacDonald
 Secretary of the Board of Retirement

**RESOLUTION OF THE BOARD OF RETIREMENT
CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

INVESTMENT ASSET ALLOCATION TARGETS AND RANGES

WHEREAS, Article XVI, §17 of the Constitution of the State of California vests the Board of Retirement (Board) with "plenary authority and fiduciary responsibility for the investment of moneys and the administration of the system"; and

WHEREAS, the Board has exclusive control of the investment of CCCERA and may, in its discretion and subject to applicable law, invest, or delegate the authority to invest, the assets of the fund through the purchase, holding or sale or any form or type of investment, financial instrument, or financial transaction when prudent in the informed decision of the board, pursuant to the County Employees Retirement Law of 1937 (CERL), Government Code Section 31595; and

WHEREAS, the Board has adopted an Investment Policy Statement ("IPS"), pursuant to which the Board is to periodically set, review and revise its asset allocation targets.

NOW, THEREFORE BE IT RESOLVED that it shall be the policy of CCCERA to invest assets in the following manner:

Asset Allocation

Section 6.B of the Investment Policy Statement ("IPS"), adopted April 24, 2019, provides that "annually the Board shall review the relative size and composition of [the] sub-portfolios and revise them as necessary through Investment Resolutions." During this annual review, the CIO will recommend the targets, weightings, and the rationale for any deviation to an under-weight or over-weight across the asset allocation. The Board will consider and take action to adopt or revise asset allocation targets. Under the direction of the Board of Retirement, investment staff will administer the asset allocation per the Board's action.

As of 2019 the long-term asset allocation targets determined by the Board are as follows:

	Long Term	Current Target
Liquidity:	24%	24%
Growth:	66%	68%
Diversifying:	10%	8%

The current targets reflect the continued build out of the diversifying allocation. As additional strategies are identified and funded, we expect to make further progress towards funding this sub-portfolio to its full 10% allocation from its current allocation of 8%. On an interim basis, remaining 2% remains in the growth sub-portfolio.


The Liquidity sub-portfolio will have a target allocation of 24% once the annual funding has been completed. Over the course of the following 12 months, the Liquidity sub-portfolio will be used to pay benefits and expenses. As a result, and aside from market fluctuations, the funds in the Liquidity sub-portfolio will decline from the targeted allocation and, therefore, the relative allocations to the Growth and Diversifying sub-portfolios will increase proportionately.

Current Targets


Sub-Portfolio Strategy	Current Target	Range
Growth	68.0%	60-80%
Jackson Square	2.5%	
Boston Partners	2.5%	
Emerald	1.5%	
Ceredex	1.5%	
BlackRock Index Fund	2.0%	
Pyrford	5.0%	
William Blair	5.0%	
Artisan	4.0%	
First Eagle	4.0%	
TT Emerging Markets	4.0%	
PIMCO/RAE Emerging Markets	4.0%	
Adelante	1.0%	
Allianz	2.0%	
Private Real Estate	8.0%	
Private Equity	11.0%	
Private Credit	5.0%	
Risk Parity	5.0%	
Liquidity	24.0%	16-28%
Insight	12.0%	
DFA	6.0%	
Sit	6.0%	
Risk Diversifying	8.0%	0-10%
AFL-CIO HIT	3.5%	
Wellington Real Total Return	2.0%	
Parametric Defensive Equity	2.5%	
Total	100.0%	

THIS RESOLUTION WAS ADOPTED BY THE AFFIRMATIVE VOTE OF THE BOARD OF RETIREMENT OF THE CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION THIS 26th DAY OF JUNE, 2019.

AYES: Andersen, Gordon, Holcombe, Kroll, MacDonald, Phillips, and Smithey
 NOES: None
 ABSTAIN: None
 ABSENT: Pigeon, Telles, and Watts



 Todd Smithey
 Chairperson of the Board of Retirement



 Attest:
 David J. MacDonald
 Secretary of the Board of Retirement

Appendix 2

Contra Costa County Employees' Retirement Association
Asset Allocation as of January 31, 2019

	Market Value	Percentage of Total Fund	Phase 3 Target Percentage	Phase 3 Over/(Under)	Long Term Target	Long Term Over/(Under)
Liquidity						
Insight	854,909,681	10.0%	12.0%	-2.0%		
Sit	529,659,848	6.2%	5.5%	0.7%		
Dimensional Fund Advisors	397,429,150	4.6%	5.5%	-0.9%		
Total Liquidity	1,781,998,679	20.8%	23.0%	-2.2%	23.0%	-2.2%
		Range				
		16% - 28%				
Growth						
Domestic Equity						
Boston Partners	285,515,917	3.3%	3.0%	0.3%		
Jackson Square	316,680,045	3.7%	3.0%	0.7%		
BlackRock Index Fund	123,826,420	1.4%	1.0%	0.4%		
Emerald Advisors	221,946,768	2.6%	2.0%	0.6%		
Ceredex	189,125,617	2.2%	2.0%	0.2%		
Total Domestic Equity	1,137,094,766	13.3%	11.0%	2.3%	5.0%	8.3%
Global & International Equity						
Pyrford (BMO)	439,038,730	5.1%	5.5%	-0.4%		
William Blair	441,903,242	5.2%	5.5%	-0.3%		
First Eagle	355,701,491	4.2%	4.0%	0.2%		
Artisan Global Opportunities	375,432,560	4.4%	4.0%	0.4%		
PIMCO/RAE Emerging Markets	351,163,962	4.1%	4.0%	0.1%		
TT Emerging Markets	320,153,681	3.7%	4.0%	-0.3%		
Total Global & International Equity	2,283,393,666	26.7%	27.0%	-0.3%	24.0%	2.7%
Private Equity	966,369,361	11.3%	10.0%	1.3%	11.0%	0.3%
Private Credit	306,667,431	3.6%	4.0%	-0.4%	12.0%	-8.4%
Real Estate - Value Add	181,860,231	2.1%	5.0%	-2.9%	5.0%	-2.9%
Real Estate - Opportunistic & Distressed	450,472,588	5.3%	4.0%	1.3%	4.0%	1.3%
Real Estate - REIT (Adelante)	69,680,909	0.8%	1.0%	-0.2%	1.0%	-0.2%
High Yield (Allianz)	341,484,158	4.0%	2.0%	2.0%	0.0%	4.0%
Risk Parity (AQR GRP EL)	204,743,366	2.4%	5.0%	-2.6%	5.0%	-2.6%
Total Other Growth Assets	2,521,278,045	29.5%	31.0%	-1.5%	38.0%	-8.5%
Total Growth Assets	5,941,766,477	69.5%	69.0%	0.5%	67.0%	2.5%
		Range				
		60% - 80%				
Risk Diversifying						
AFL-CIO	320,312,229	3.7%	3.5%	0.2%	3.0%	0.7%
Parametric Defensive Equity	197,694,436	2.3%	2.5%	-0.2%	3.5%	-1.2%
Wellington Real Total Return	182,269,110	2.1%	2.0%	0.1%	3.5%	-1.4%
Total Risk Diversifying	700,275,774	8.2%	8.0%	0.2%	10.0%	-1.8%
		Range				
		0% - 10%				
Cash and Overlay						
Overlay (Parametric)	51,362,480	0.6%		0.6%		
Cash	80,233,154	0.9%		0.9%		
Total Cash and Overlay	131,595,634	1.5%	0.0%	1.5%	0.0%	1.5%
Total Fund	8,555,636,564.67	100%	100%	0%	100%	0%

*Phase 3 targets and ranges reflect Phase 3 asset allocation targets accepted by the Board on June 27, 2018 (BOR Resolution 2018-2)

Contra Costa County Employees' Retirement Association
Asset Allocation as of February 28, 2019

	Market Value	Percentage of Total Fund	Phase 3 Target Percentage	Phase 3 Over/(Under)	Long Term Target	Long Term Over/(Under)
Liquidity						
Insight	831,882,205	9.7%	12.0%	-2.3%		
Sit	529,629,972	6.1%	5.5%	0.6%		
Dimensional Fund Advisors	384,952,482	4.5%	5.5%	-1.0%		
Total Liquidity	1,746,464,658	20.3%	23.0%	-2.7%	23.0%	-2.7%
		Range				
		16% - 28%				
Growth						
Domestic Equity						
Boston Partners	291,215,692	3.4%	3.0%	0.4%		
Jackson Square	323,571,716	3.8%	3.0%	0.8%		
BlackRock Index Fund	128,019,840	1.5%	1.0%	0.5%		
Emerald Advisors	237,303,498	2.8%	2.0%	0.8%		
Ceredex	194,003,363	2.3%	2.0%	0.3%		
Total Domestic Equity	1,174,114,108	13.6%	11.0%	2.6%	5.0%	8.6%
Global & International Equity						
Pyrford (BMO)	449,991,592	5.2%	5.5%	-0.3%		
William Blair	458,331,757	5.3%	5.5%	-0.2%		
First Eagle	362,863,742	4.2%	4.0%	0.2%		
Artisan Global Opportunities	394,096,511	4.6%	4.0%	0.6%		
PIMCO/RAE Emerging Markets	347,969,126	4.0%	4.0%	0.0%		
TT Emerging Markets	323,460,119	3.8%	4.0%	-0.2%		
Total Global & International Equity	2,336,712,847	27.1%	27.0%	0.1%	24.0%	3.1%
Private Equity	966,369,361	11.2%	10.0%	1.2%	11.0%	0.2%
Private Credit	294,867,872	3.4%	4.0%	-0.6%	12.0%	-8.6%
Real Estate - Value Add	188,059,279	2.2%	5.0%	-2.8%	5.0%	-2.8%
Real Estate - Opportunistic & Distressed	450,287,586	5.2%	4.0%	1.2%	4.0%	1.2%
Real Estate - REIT (Adelante)	70,988,589	0.8%	1.0%	-0.2%	1.0%	-0.2%
High Yield (Allianz)	345,530,949	4.0%	2.0%	2.0%	0.0%	4.0%
Risk Parity (AQR GRP EL)	206,902,996	2.4%	5.0%	-2.6%	5.0%	-2.6%
Total Other Growth Assets	2,523,006,633	29.3%	31.0%	-1.7%	38.0%	-8.7%
Total Growth Assets	6,033,833,588	70.0%	69.0%	1.0%	67.0%	3.0%
		Range				
		60% - 80%				
Risk Diversifying						
AFL-CIO	319,099,527	3.7%	3.5%	0.2%	3.0%	0.7%
Parametric Defensive Equity	197,493,538	2.3%	2.5%	-0.2%	3.5%	-1.2%
Wellington Real Total Return	182,888,349	2.1%	2.0%	0.1%	3.5%	-1.4%
Total Risk Diversifying	699,481,414	8.1%	8.0%	0.1%	10.0%	-1.9%
		Range				
		0% - 10%				
Cash and Overlay						
Overlay (Parametric)	53,710,810	0.6%		0.6%		
Cash	85,841,084	1.0%		1.0%		
Total Cash and Overlay	139,551,894	1.6%	0.0%	1.6%	0.0%	1.6%
Total Fund	8,619,331,554.09	100%	100%	0%	100%	0%

*Phase 3 targets and ranges reflect Phase 3 asset allocation targets accepted by the Board on June 27, 2018 (BOR Resolution 2018-2)

Contra Costa County Employees' Retirement Association
Asset Allocation as of March 31, 2019

	Market Value	Percentage of Total Fund	Phase 3 Target Percentage	Phase 3 Over/(Under)	Long Term Target	Long Term Over/(Under)
Liquidity						
Insight	811,554,864	9.4%	12.0%	-2.6%		
Sit	534,949,963	6.2%	5.5%	0.7%		
Dimensional Fund Advisors	375,055,643	4.3%	5.5%	-1.2%		
Total Liquidity	1,721,560,470	19.9%	23.0%	-3.1%	23.0%	-3.1%
		Range				
		16% - 28%				
Growth						
Domestic Equity						
Boston Partners	259,175,971	3.0%	3.0%	-0.0%		
Jackson Square	267,540,007	3.1%	3.0%	0.1%		
BlackRock Index Fund	130,255,255	1.5%	1.0%	0.5%		
Emerald Advisors	215,040,268	2.5%	2.0%	0.5%		
Ceredex	170,195,375	2.0%	2.0%	-0.0%		
Total Domestic Equity	1,042,206,877	12.1%	11.0%	1.1%	5.0%	7.1%
Global & International Equity						
Pyrford (BMO)	454,787,198	5.3%	5.5%	-0.2%		
William Blair	469,522,194	5.4%	5.5%	-0.1%		
First Eagle	364,525,432	4.2%	4.0%	0.2%		
Artisan Global Opportunities	364,329,832	4.2%	4.0%	0.2%		
PIMCO/RAE Emerging Markets	343,874,286	4.0%	4.0%	-0.0%		
TT Emerging Markets	331,436,277	3.8%	4.0%	-0.2%		
Total Global & International Equity	2,328,475,218	26.9%	27.0%	-0.1%	24.0%	2.9%
Private Equity	962,744,611	11.1%	10.0%	1.1%	11.0%	0.1%
Private Credit	302,970,547	3.5%	4.0%	-0.5%	12.0%	-8.5%
Real Estate - Value Add	194,476,641	2.2%	5.0%	-2.8%	5.0%	-2.8%
Real Estate - Opportunistic & Distressed	471,781,002	5.5%	4.0%	1.5%	4.0%	1.5%
Real Estate - REIT (Adelante)	73,519,066	0.9%	1.0%	-0.1%	1.0%	-0.1%
High Yield (Allianz)	350,246,627	4.1%	2.0%	2.1%	0.0%	4.1%
Risk Parity			5.0%	-0.2%	5.0%	-0.2%
AQR GRP EL	213,625,425	2.5%				
PanAgora	203,616,452	2.4%				
Total Other Growth Assets	2,772,980,371	32.1%	31.0%	1.1%	38.0%	-5.9%
Total Growth Assets	6,143,662,466	71.1%	69.0%	2.1%	67.0%	4.1%
		Range				
		60% - 80%				
Risk Diversifying						
AFL-CIO	324,590,940	3.8%	3.5%	0.3%	3.0%	0.8%
Parametric Defensive Equity	199,494,462	2.3%	2.5%	-0.2%	3.5%	-1.2%
Wellington Real Total Return	183,330,524	2.1%	2.0%	0.1%	3.5%	-1.4%
Total Risk Diversifying	707,415,926	8.2%	8.0%	0.2%	10.0%	-1.8%
		Range				
		0% - 10%				
Cash and Overlay						
Overlay (Parametric)	20,693,167	0.2%		0.2%		
Cash	50,834,497	0.6%		0.6%		
Total Cash and Overlay	71,527,664	0.8%	0.0%	0.8%	0.0%	0.8%
Total Fund	8,644,166,525.71	100%	100%	0%	100%	0%

*Phase 3 targets and ranges reflect Phase 3 asset allocation targets accepted by the Board on June 27, 2018 (BOR Resolution 2018-2)

Contra Costa County Employees' Retirement Association

Asset Allocation as of April 30, 2019

	Market Value	Percentage of Total Fund	Phase 3 Target Percentage	Phase 3 Over/(Under)	Long Term Target	Long Term Over/(Under)
Liquidity						
Insight	787,910,607	9.0%	12.0%	-3.0%		
Sit	534,546,818	6.1%	5.5%	0.6%		
Dimensional Fund Advisors	362,414,528	4.1%	5.5%	-1.4%		
Total Liquidity	1,684,871,953	19.2%	23.0%	-3.8%	23.0%	-3.8%
		Range				
		16% - 28%				
Growth						
Domestic Equity						
Boston Partners	269,246,026	3.1%	3.0%	0.1%		
Jackson Square	283,814,301	3.2%	3.0%	0.2%		
BlackRock Index Fund	135,514,147	1.5%	1.0%	0.5%		
Emerald Advisors	222,384,460	2.5%	2.0%	0.5%		
Ceredex	180,475,251	2.1%	2.0%	0.1%		
Total Domestic Equity	1,091,434,184	12.5%	11.0%	1.5%	5.0%	7.5%
Global & International Equity						
Pyrford (BMO)	454,787,198	5.2%	5.5%	-0.3%		
William Blair	484,998,332	5.5%	5.5%	0.0%		
First Eagle	371,946,910	4.2%	4.0%	0.2%		
Artisan Global Opportunities	378,361,127	4.3%	4.0%	0.3%		
PIMCO/RAE Emerging Markets	348,870,396	4.0%	4.0%	-0.0%		
TT Emerging Markets	338,459,665	3.9%	4.0%	-0.1%		
Total Global & International Equity	2,377,423,627	27.1%	27.0%	0.1%	24.0%	3.1%
Private Equity	959,852,098	11.0%	10.0%	1.0%	11.0%	-0.0%
Private Credit	360,090,542	4.1%	4.0%	0.1%	12.0%	-7.9%
Real Estate - Value Add	189,156,398	2.2%	5.0%	-2.8%	5.0%	-2.8%
Real Estate - Opportunistic & Distressed	466,909,874	5.3%	4.0%	1.3%	4.0%	1.3%
Real Estate - REIT (Adelante)	73,595,994	0.8%	1.0%	-0.2%	1.0%	-0.2%
High Yield (Allianz)	355,535,179	4.1%	2.0%	2.1%	0.0%	4.1%
Risk Parity			5.0%	-0.2%	5.0%	-0.2%
AQR GRP EL	216,031,912	2.5%				
PanAgora	203,616,452	2.3%				
Total Other Growth Assets	2,824,788,450	32.2%	31.0%	1.2%	38.0%	-5.8%
Total Growth Assets	6,293,646,261	71.8%	69.0%	2.8%	67.0%	4.8%
		Range				
		60% - 80%				
Risk Diversifying						
AFL-CIO	324,655,254	3.7%	3.5%	0.2%	3.0%	0.7%
Parametric Defensive Equity	199,072,958	2.3%	2.5%	-0.2%	3.5%	-1.2%
Wellington Real Total Return	185,539,612	2.1%	2.0%	0.1%	3.5%	-1.4%
Total Risk Diversifying	709,267,824	8.1%	8.0%	0.1%	10.0%	-1.9%
		Range				
		0% - 10%				
Cash and Overlay						
Overlay (Parametric)	23,225,901	0.3%		0.3%		
Cash	50,438,666	0.6%		0.6%		
Total Cash and Overlay	73,664,568	0.8%	0.0%	0.8%	0.0%	0.8%
Total Fund	8,761,450,605.55	100%	100%	0%	100%	0%

*Phase 3 targets and ranges reflect Phase 3 asset allocation targets accepted by the Board on June 27, 2018 (BOR Resolution 2018-2)

Contra Costa County Employees' Retirement Association
Asset Allocation as of May 31, 2019

	Market Value	Percentage of Total Fund	Phase 3 Target Percentage	Phase 3 Over/(Under)	Long Term Target	Long Term Over/(Under)
Liquidity						
Insight	766,359,649	9.0%	12.0%	-3.0%		
Sit	540,196,160	6.3%	5.5%	0.8%		
Dimensional Fund Advisors	351,111,492	4.1%	5.5%	-1.4%		
Total Liquidity	1,657,667,301	19.5%	23.0%	-3.5%	23.0%	-3.5%
		Range				
		16% - 28%				
Growth						
Domestic Equity						
Boston Partners	251,075,767	3.0%	3.0%	-0.0%		
Jackson Square	268,090,265	3.2%	3.0%	0.2%		
BlackRock Index Fund	126,880,106	1.5%	1.0%	0.5%		
Emerald Advisors	210,521,237	2.5%	2.0%	0.5%		
Ceredex	161,350,478	1.9%	2.0%	-0.1%		
Total Domestic Equity	1,017,917,852	12.0%	11.0%	1.0%	5.0%	7.0%
Global & International Equity						
Pyrford (BMO)	445,620,412	5.2%	5.5%	-0.3%		
William Blair	464,046,023	5.5%	5.5%	-0.0%		
First Eagle	356,267,043	4.2%	4.0%	0.2%		
Artisan Global Opportunities	360,620,409	4.2%	4.0%	0.2%		
PIMCO/RAE Emerging Markets	333,536,303	3.9%	4.0%	-0.1%		
TT Emerging Markets	311,241,005	3.7%	4.0%	-0.3%		
Total Global & International Equity	2,271,331,195	26.7%	27.0%	-0.3%	24.0%	2.7%
Private Equity	964,378,237	11.3%	10.0%	1.3%	11.0%	0.3%
Private Credit	336,575,699	4.0%	4.0%	-0.0%	12.0%	-8.0%
Real Estate - Value Add	169,676,170	2.0%	5.0%	-3.0%	5.0%	-3.0%
Real Estate - Opportunistic & Distressed	470,995,777	5.5%	4.0%	1.5%	4.0%	1.5%
Real Estate - REIT (Adelante)	73,663,725	0.9%	1.0%	-0.1%	1.0%	-0.1%
High Yield (Allianz)	309,657,923	3.6%	2.0%	1.6%	0.0%	3.6%
Risk Parity			5.0%	-0.1%	5.0%	-0.1%
AQR GRP EL	212,959,999	2.5%				
PanAgora	204,430,064	2.4%				
Total Other Growth Assets	2,742,337,595	32.2%	31.0%	1.2%	38.0%	-5.8%
Total Growth Assets	6,031,586,642	70.9%	69.0%	1.9%	67.0%	3.9%
		Range				
		60% - 80%				
Risk Diversifying						
AFL-CIO	329,935,377	3.9%	3.5%	0.4%	3.0%	0.9%
Parametric Defensive Equity	199,085,214	2.3%	2.5%	-0.2%	3.5%	-1.2%
Wellington Real Total Return	181,237,027	2.1%	2.0%	0.1%	3.5%	-1.4%
Total Risk Diversifying	710,257,618	8.3%	8.0%	0.3%	10.0%	-1.7%
		Range				
		0% - 10%				
Cash and Overlay						
Overlay (Parametric)	16,617,972	0.2%		0.2%		
Cash	93,244,112	1.1%		1.1%		
Total Cash and Overlay	109,862,083	1.3%	0.0%	1.3%	0.0%	1.3%
Total Fund	8,509,373,644.28	100%	100%	0%	100%	0%

*Phase 3 targets and ranges reflect Phase 3 asset allocation targets accepted by the Board on June 27, 2018 (BOR Resolution 2018-2)

Contra Costa County Employees' Retirement Association
Asset Allocation as of June 30, 2019

	Market Value	Percentage of Total Fund	Phase 3 Target Percentage	Phase 3 Over/(Under)	Long Term Target	Long Term Over/(Under)
Liquidity						
Insight	744,843,442	8.5%	12.0%	-3.5%		
Sit	543,009,330	6.2%	5.5%	0.7%		
Dimensional Fund Advisors	339,795,727	3.9%	5.5%	-1.6%		
Total Liquidity	1,627,648,500	18.5%	23.0%	-4.5%	24.0%	-5.5%
		Range				
		16% - 28%				
Growth						
Domestic Equity						
Boston Partners	267,319,996	3.0%	3.0%	0.0%		
Jackson Square	288,330,354	3.3%	3.0%	0.3%		
BlackRock Index Fund	135,787,891	1.5%	1.0%	0.5%		
Emerald Advisors	222,647,710	2.5%	2.0%	0.5%		
Ceredex	174,066,839	2.0%	2.0%	-0.0%		
Total Domestic Equity	1,088,152,791	12.4%	11.0%	1.4%	5.0%	7.4%
Global & International Equity						
Pyrford (BMO)	472,477,417	5.4%	5.5%	-0.1%		
William Blair	494,998,297	5.6%	5.5%	0.1%		
First Eagle	378,018,808	4.3%	4.0%	0.3%		
Artisan Global Opportunities	386,747,648	4.4%	4.0%	0.4%		
PIMCO/RAE Emerging Markets	353,821,590	4.0%	4.0%	0.0%		
TT Emerging Markets	333,648,354	3.8%	4.0%	-0.2%		
Total Global & International Equity	2,419,712,114	27.5%	27.0%	0.5%	24.0%	3.5%
Private Equity	960,285,393	10.9%	10.0%	0.9%	11.0%	-0.1%
Private Credit	412,574,488	4.7%	4.0%	0.7%	12.0%	-7.3%
Real Estate - Value Add	177,142,324	2.0%	5.0%	-3.0%	4.0%	-2.0%
Real Estate - Opportunistic & Distressed	510,022,267	5.8%	4.0%	1.8%	4.0%	1.8%
Real Estate - REIT (Adelante)	74,996,736	0.9%	1.0%	-0.1%	1.0%	-0.1%
High Yield (Allianz)	318,978,341	3.6%	2.0%	1.6%	0.0%	3.6%
Risk Parity			5.0%	-0.0%	5.0%	-0.0%
AQR GRP EL	224,426,901	2.5%				
PanAgora	214,693,530	2.4%				
Total Other Growth Assets	2,893,119,981	32.8%	31.0%	1.8%	37.0%	-4.2%
Total Growth Assets	6,400,984,886	72.7%	69.0%	3.7%	66.0%	6.7%
		Range				
		60% - 80%				
Risk Diversifying						
AFL-CIO	333,624,990	3.8%	3.5%	0.3%	3.0%	0.8%
Parametric Defensive Equity	199,785,900	2.3%	2.5%	-0.2%	3.5%	-1.2%
Wellington Real Total Return	185,543,216	2.1%	2.0%	0.1%	3.5%	-1.4%
Total Risk Diversifying	718,954,106	8.2%	8.0%	0.2%	10.0%	-1.8%
		Range				
		0% - 10%				
Cash and Overlay						
Overlay (Parametric)	22,831,632	0.3%		0.3%		
Cash	36,721,321	0.4%		0.4%		
Total Cash and Overlay	59,552,953	0.7%	0.0%	0.7%	0.0%	0.7%
Total Fund	8,807,140,444.56	100%	100%	0%	100%	0%

*Phase 3 targets and ranges reflect Phase 3 asset allocation targets accepted by the Board on June 27, 2018 (BOR Resolution 2018-2)

Contra Costa County Employees' Retirement Association
Asset Allocation as of July 31, 2019

	Market Value	Percentage of Total Fund	Phase 3 Target Percentage	Phase 3 Over/(Under)	Long Term Target	Long Term Over/(Under)
Liquidity						
Insight	1,072,817,411	11.9%	12.0%	-0.1%		
Sit	538,837,001	6.0%	6.0%	-0.0%		
Dimensional Fund Advisors	527,265,321	5.8%	6.0%	-0.2%		
Total Liquidity	2,138,919,732	23.6%	24.0%	-0.4%	24.0%	-0.4%
		Range				
		16% - 28%				
Growth						
Domestic Equity						
Boston Partners	231,592,007	2.6%	2.5%	0.1%		
Jackson Square	234,004,694	2.6%	2.5%	0.1%		
BlackRock Index Fund	187,892,782	2.1%	2.0%	0.1%		
Emerald Advisors	156,373,137	1.7%	1.5%	0.2%		
Ceredex	157,447,174	1.7%	1.5%	0.2%		
Total Domestic Equity	967,309,793	10.7%	10.0%	0.7%	5.0%	5.7%
Global & International Equity						
Pyrford (BMO)	447,013,835	4.9%	5.0%	-0.1%		
William Blair	451,724,415	5.0%	5.0%	-0.0%		
First Eagle	369,003,841	4.1%	4.0%	0.1%		
Artisan Global Opportunities	375,384,806	4.1%	4.0%	0.1%		
PIMCO/RAE Emerging Markets	342,311,326	3.8%	4.0%	-0.2%		
TT Emerging Markets	332,910,620	3.7%	4.0%	-0.3%		
Total Global & International Equity	2,318,348,844	25.6%	26.0%	-0.4%	24.0%	1.6%
Private Equity	994,759,762	11.0%	11.0%	-0.0%	11.0%	-0.0%
Private Credit	343,274,805	3.8%	5.0%	-1.2%	12.0%	-8.2%
Real Estate - Value Add	177,526,653	2.0%	4.0%	-2.0%	4.0%	-2.0%
Real Estate - Opportunistic & Distressed	509,891,493	5.6%	4.0%	1.6%	4.0%	1.6%
Real Estate - REIT (Adelante)	76,253,840	0.8%	1.0%	-0.2%	1.0%	-0.2%
High Yield (Allianz)	240,032,121	2.7%	2.0%	0.7%	0.0%	2.7%
Risk Parity			5.0%	-0.1%	5.0%	-0.1%
AQR GRP EL	225,993,731	2.5%				
PanAgora	216,653,236	2.4%				
Total Other Growth Assets	2,784,385,641	30.8%	32.0%	-1.2%	37.0%	-6.2%
Total Growth Assets	6,070,044,278	67.1%	68.0%	-0.9%	66.0%	1.1%
		Range				
		60% - 80%				
Risk Diversifying						
AFL-CIO	333,354,520	3.7%	3.5%	0.2%	3.0%	0.7%
Parametric Defensive Equity	200,114,901	2.2%	2.5%	-0.3%	3.5%	-1.3%
Wellington Real Total Return	186,837,610	2.1%	2.0%	0.1%	3.5%	-1.4%
Total Risk Diversifying	720,307,031	8.0%	8.0%	-0.0%	10.0%	-2.0%
		Range				
		0% - 10%				
Cash and Overlay						
Overlay (Parametric)	13,391,665	0.1%		0.1%		
Cash	108,715,756	1.2%		1.2%		
Total Cash and Overlay	122,107,421	1.3%	0.0%	1.3%	0.0%	1.3%
Total Fund	9,051,378,462.72	100%	100%	0%	100%	0%

*Phase 3 targets and ranges reflect Phase 3 asset allocation targets accepted by the Board on June 27, 2018 (BOR Resolution 2018-2)

Contra Costa County Employees' Retirement Association
Asset Allocation as of August 31, 2019

	Market Value	Percentage of Total Fund	Phase 3 Target Percentage	Phase 3 Over/(Under)	Long Term Target	Long Term Over/(Under)
Liquidity						
Insight	1,052,823,818	11.6%	12.0%	-0.4%		
Sit	545,812,356	6.0%	6.0%	0.0%		
Dimensional Fund Advisors	515,337,279	5.7%	6.0%	-0.3%		
Total Liquidity	2,113,973,453	23.4%	24.0%	-0.6%	24.0%	-0.6%
		Range				
		16% - 28%				
Growth						
Domestic Equity						
Boston Partners	225,198,501	2.5%	2.5%	-0.0%		
Jackson Square	231,011,937	2.6%	2.5%	0.1%		
BlackRock Index Fund	184,445,767	2.0%	2.0%	0.0%		
Emerald Advisors	147,745,988	1.6%	1.5%	0.1%		
Ceredex	149,794,381	1.7%	1.5%	0.2%		
Total Domestic Equity	938,196,574	10.4%	10.0%	0.4%	5.0%	5.4%
Global & International Equity						
Pyrford (BMO)	439,908,718	4.9%	5.0%	-0.1%		
William Blair	446,688,224	4.9%	5.0%	-0.1%		
First Eagle	364,772,124	4.0%	4.0%	0.0%		
Artisan Global Opportunities	368,952,264	4.1%	4.0%	0.1%		
PIMCO/RAE Emerging Markets	323,529,118	3.6%	4.0%	-0.4%		
TT Emerging Markets	312,446,512	3.5%	4.0%	-0.5%		
Total Global & International Equity	2,256,296,960	25.0%	26.0%	-1.0%	24.0%	1.0%
Private Equity	1,010,886,094	11.2%	11.0%	0.2%	11.0%	0.2%
Private Credit	421,525,152	4.7%	5.0%	-0.3%	12.0%	-7.3%
Real Estate - Value Add	173,831,065	1.9%	4.0%	-2.1%	4.0%	-2.1%
Real Estate - Opportunistic & Distressed	491,717,420	5.4%	4.0%	1.4%	4.0%	1.4%
Real Estate - REIT (Adelante)	78,699,080	0.9%	1.0%	-0.1%	1.0%	-0.1%
High Yield (Allianz)	242,126,342	2.7%	2.0%	0.7%	0.0%	2.7%
Risk Parity			5.0%	0.0%	5.0%	0.0%
AQR GRP EL	228,759,927	2.5%				
PanAgora	223,723,055	2.5%				
Total Other Growth Assets	2,871,268,135	31.8%	32.0%	-0.2%	37.0%	-5.2%
Total Growth Assets	6,065,761,669	67.1%	68.0%	-0.9%	66.0%	1.1%
		Range				
		60% - 80%				
Risk Diversifying						
AFL-CIO	340,659,461	3.8%	3.5%	0.3%	3.0%	0.8%
Parametric Defensive Equity	201,283,382	2.2%	2.5%	-0.3%	3.5%	-1.3%
Wellington Real Total Return	189,320,931	2.1%	2.0%	0.1%	3.5%	-1.4%
Total Risk Diversifying	731,263,774	8.1%	8.0%	0.1%	10.0%	-1.9%
		Range				
		0% - 10%				
Cash and Overlay						
Overlay (Parametric)	24,164,197	0.3%		0.3%		
Cash	103,729,204	1.1%		1.1%		
Total Cash and Overlay	127,893,401	1.4%	0.0%	1.4%	0.0%	1.4%
Total Fund	9,038,892,296.47	100%	100%	0%	100%	0%

*Phase 3 targets and ranges reflect Phase 3 asset allocation targets accepted by the Board on June 27, 2018 (BOR Resolution 2018-2)

Contra Costa County Employees' Retirement Association
Asset Allocation as of September 30, 2019

	Market Value	Percentage of Total Fund	Phase 3 Target Percentage	Phase 3 Over/(Under)	Long Term Target	Long Term Over/(Under)
Liquidity						
Insight	1,028,461,532	11.4%	12.0%	-0.6%		
Sit	542,662,117	6.0%	6.0%	0.0%		
Dimensional Fund Advisors	501,752,961	5.6%	6.0%	-0.4%		
Total Liquidity	2,072,876,610	23.0%	24.0%	-1.0%	24.0%	-1.0%
		Range				
		16% - 28%				
Growth						
Domestic Equity						
Boston Partners	232,261,879	2.6%	2.5%	0.1%		
Jackson Square	231,044,330	2.6%	2.5%	0.1%		
BlackRock Index Fund	187,647,476	2.1%	2.0%	0.1%		
Emerald Advisors	143,146,343	1.6%	1.5%	0.1%		
Ceredex	156,462,227	1.7%	1.5%	0.2%		
Total Domestic Equity	950,562,255	10.5%	10.0%	0.5%	5.0%	5.5%
Global & International Equity						
Pyrford (BMO)	447,988,315	5.0%	5.0%	-0.0%		
William Blair	450,848,556	5.0%	5.0%	-0.0%		
First Eagle	371,818,334	4.1%	4.0%	0.1%		
Artisan Global Opportunities	368,952,264	4.1%	4.0%	0.1%		
PIMCO/RAE Emerging Markets	332,474,898	3.7%	4.0%	-0.3%		
TT Emerging Markets	317,450,275	3.5%	4.0%	-0.5%		
Total Global & International Equity	2,289,532,642	25.4%	26.0%	-0.6%	24.0%	1.4%
Private Equity	1,025,299,390	11.4%	11.0%	0.4%	11.0%	0.4%
Private Credit	430,927,421	4.8%	5.0%	-0.2%	12.0%	-7.2%
Real Estate - Value Add	173,831,065	1.9%	4.0%	-2.1%	4.0%	-2.1%
Real Estate - Opportunistic & Distressed	490,193,675	5.4%	4.0%	1.4%	4.0%	1.4%
Real Estate - REIT (Adelante)	80,779,460	0.9%	1.0%	-0.1%	1.0%	-0.1%
High Yield (Allianz)	203,391,255	2.3%	2.0%	0.3%	0.0%	2.3%
Risk Parity			5.0%	0.0%	5.0%	0.0%
AQR GRP EL	228,677,512	2.5%				
PanAgora	223,666,394	2.5%				
Total Other Growth Assets	2,856,766,172	31.7%	32.0%	-0.3%	37.0%	-5.3%
Total Growth Assets	6,096,861,069	67.6%	68.0%	-0.4%	66.0%	1.6%
		Range				
		60% - 80%				
Risk Diversifying						
AFL-CIO	338,239,760	3.7%	3.5%	0.2%	3.0%	0.7%
Parametric Defensive Equity	203,166,436	2.3%	2.5%	-0.2%	3.5%	-1.2%
Wellington Real Total Return	187,272,385	2.1%	2.0%	0.1%	3.5%	-1.4%
Total Risk Diversifying	728,678,580	8.1%	8.0%	0.1%	10.0%	-1.9%
		Range				
		0% - 10%				
Cash and Overlay						
Overlay (Parametric)	27,067,493	0.3%		0.3%		
Cash	96,443,107	1.1%		1.1%		
Total Cash and Overlay	123,510,601	1.4%	0.0%	1.4%	0.0%	1.4%
Total Fund	9,021,926,859.73	100%	100%	0%	100%	0%

*Phase 3 targets and ranges reflect Phase 3 asset allocation targets accepted by the Board on June 27, 2018 (BOR Resolution 2018-2)

Contra Costa County Employees' Retirement Association
Asset Allocation as of October 31, 2019

	Market Value	Percentage of Total Fund	Current Target Percentage	Current Target Over/(Under)	Long Term Target	Long Term Over/(Under)
Liquidity						
Insight	1,006,054,108	10.9%	12.0%	-1.1%		
Sit	541,886,884	5.9%	6.0%	-0.1%		
Dimensional Fund Advisors	488,896,723	5.3%	6.0%	-0.7%		
Total Liquidity	2,036,837,715	22.2%	24.0%	-1.8%	24.0%	-1.8%
		Range				
		16% - 28%				
Growth						
Domestic Equity						
Boston Partners	236,115,626	2.6%	2.5%	0.1%		
Jackson Square	234,255,929	2.5%	2.5%	0.0%		
BlackRock Index Fund	191,620,628	2.1%	2.0%	0.1%		
Emerald Advisors	149,287,044	1.6%	1.5%	0.1%		
Ceredex	157,127,355	1.7%	1.5%	0.2%		
Total Domestic Equity	968,406,581	10.5%	10.0%	0.5%	5.0%	5.5%
Global & International Equity						
Pyrford (BMO)	465,177,996	5.1%	5.0%	0.1%		
William Blair	468,584,706	5.1%	5.0%	0.1%		
First Eagle	376,641,145	4.1%	4.0%	0.1%		
Artisan Global Opportunities	377,375,831	4.1%	4.0%	0.1%		
PIMCO/RAE Emerging Markets	345,079,050	3.8%	4.0%	-0.2%		
TT Emerging Markets	328,452,139	3.6%	4.0%	-0.4%		
Total Global & International Equity	2,361,310,868	25.7%	26.0%	-0.3%	24.0%	1.7%
Private Equity	1,025,369,544	11.2%	11.0%	0.2%	11.0%	0.2%
Private Credit	516,827,536	5.6%	5.0%	0.6%	12.0%	-6.4%
Real Estate - Value Add	171,662,851	1.9%	4.0%	-2.1%	4.0%	-2.1%
Real Estate - Opportunistic & Distressed	488,242,895	5.3%	4.0%	1.3%	4.0%	1.3%
Real Estate - REIT (Adelante)	81,683,051	0.9%	1.0%	-0.1%	1.0%	-0.1%
High Yield (Allianz)	204,522,080	2.2%	2.0%	0.2%	0.0%	2.2%
Risk Parity			5.0%	-0.1%	5.0%	-0.1%
AQR GRP EL	230,760,428	2.5%				
PanAgora	223,825,924	2.4%				
Total Other Growth Assets	2,942,894,309	32.0%	32.0%	0.0%	37.0%	-5.0%
Total Growth Assets	6,272,611,758	68.2%	68.0%	0.2%	66.0%	2.2%
		Range				
		60% - 80%				
Risk Diversifying						
AFL-CIO	337,664,322	3.7%	3.5%	0.2%	3.0%	0.7%
Parametric Defensive Equity	204,997,213	2.2%	2.5%	-0.3%	3.5%	-1.3%
Wellington Real Total Return	188,393,363	2.0%	2.0%	0.0%	3.5%	-1.5%
Total Risk Diversifying	731,054,898	8.0%	8.0%	-0.0%	10.0%	-2.0%
		Range				
		0% - 10%				
Cash and Overlay						
Overlay (Parametric)	30,794,075	0.3%		0.3%		
Cash	119,713,758	1.3%		1.3%		
Total Cash and Overlay	150,507,833	1.6%	0.0%	1.6%	0.0%	1.6%
Total Fund	9,191,012,204.27	100%	100%	0%	100%	0%

*Current targets and ranges reflect asset allocation targets accepted by the Board on June 26, 2019 (BOR Resolution 2019-4)

Contra Costa County Employees' Retirement Association
Asset Allocation as of November 30, 2019

	Market Value	Percentage of Total Fund	Current Target Percentage	Current Target Over/(Under)	Long Term Target	Long Term Over/(Under)
Liquidity						
Insight	980,197,021	10.6%	12.0%	-1.4%		
Sit	539,922,001	5.8%	6.0%	-0.2%		
Dimensional Fund Advisors	474,701,746	5.1%	6.0%	-0.9%		
Total Liquidity	1,994,820,769	21.6%	24.0%	-2.4%	24.0%	-2.4%
		Range				
		16% - 28%				
Growth						
Domestic Equity						
Boston Partners	243,689,468	2.6%	2.5%	0.1%		
Jackson Square	239,353,011	2.6%	2.5%	0.1%		
BlackRock Index Fund	198,860,631	2.2%	2.0%	0.2%		
Emerald Advisors	155,667,177	1.7%	1.5%	0.2%		
Ceredex	158,619,594	1.7%	1.5%	0.2%		
Total Domestic Equity	996,189,880	10.8%	10.0%	0.8%	5.0%	5.8%
Global & International Equity						
Pyrford (BMO)	469,960,789	5.1%	5.0%	0.1%		
William Blair	480,846,736	5.2%	5.0%	0.2%		
First Eagle	378,876,168	4.1%	4.0%	0.1%		
Artisan Global Opportunities	389,015,670	4.2%	4.0%	0.2%		
PIMCO/RAE Emerging Markets	345,079,050	3.7%	4.0%	-0.3%		
TT Emerging Markets	332,942,696	3.6%	4.0%	-0.4%		
Total Global & International Equity	2,396,721,109	26.0%	26.0%	-0.0%	24.0%	2.0%
Private Equity	1,022,724,814	11.1%	11.0%	0.1%	11.0%	0.1%
Private Credit	516,192,736	5.6%	5.0%	0.6%	12.0%	-6.4%
Real Estate - Value Add	175,412,673	1.9%	4.0%	-2.1%	4.0%	-2.1%
Real Estate - Opportunistic & Distressed	479,121,358	5.2%	4.0%	1.2%	4.0%	1.2%
Real Estate - REIT (Adelante)	80,866,035	0.9%	1.0%	-0.1%	1.0%	-0.1%
High Yield (Allianz)	205,681,676	2.2%	2.0%	0.2%	0.0%	2.2%
Risk Parity			5.0%	-0.1%	5.0%	-0.1%
AQR GRP EL	230,773,896	2.5%				
PanAgora	222,264,700	2.4%				
Total Other Growth Assets	2,933,037,889	31.8%	32.0%	-0.2%	37.0%	-5.2%
Total Growth Assets	6,325,948,878	68.5%	68.0%	0.5%	66.0%	2.5%
		Range				
		60% - 80%				
Risk Diversifying						
AFL-CIO	336,318,783	3.6%	3.5%	0.1%	3.0%	0.6%
Parametric Defensive Equity	204,524,311	2.2%	2.5%	-0.3%	3.5%	-1.3%
Wellington Real Total Return	189,246,762	2.1%	2.0%	0.1%	3.5%	-1.4%
Total Risk Diversifying	730,089,856	7.9%	8.0%	-0.1%	10.0%	-2.1%
		Range				
		0% - 10%				
Cash and Overlay						
Overlay (Parametric)	32,473,736	0.4%		0.4%		
Cash	146,283,055	1.6%		1.6%		
Total Cash and Overlay	178,756,790	1.9%	0.0%	1.9%	0.0%	1.9%
Total Fund	9,229,616,293.23	100%	100%	0%	100%	0%

*Current targets and ranges reflect asset allocation targets accepted by the Board on June 26, 2019 (BOR Resolution 2019-4)

Contra Costa County Employees' Retirement Association
Asset Allocation as of December 31, 2019

	Market Value	Percentage of Total Fund	Current Target Percentage	Current Target Over/(Under)	Long Term Target	Long Term Over/(Under)
Liquidity						
Insight	956,150,002	10.2%	12.0%	-1.8%		
Sit	539,042,631	5.8%	6.0%	-0.2%		
Dimensional Fund Advisors	460,934,054	4.9%	6.0%	-1.1%		
Total Liquidity	1,956,126,688	20.9%	24.0%	-3.1%	24.0%	-3.1%
		Range				
		16% - 28%				
Growth						
Domestic Equity						
Boston Partners	251,080,501	2.7%	2.5%	0.2%		
Jackson Square	244,269,952	2.6%	2.5%	0.1%		
BlackRock Index Fund	204,604,006	2.2%	2.0%	0.2%		
Emerald Advisors	159,009,461	1.7%	1.5%	0.2%		
Ceredex	160,524,993	1.7%	1.5%	0.2%		
Total Domestic Equity	1,019,488,911	10.9%	10.0%	0.9%	5.0%	5.9%
Global & International Equity						
Pyrford (BMO)	485,671,948	5.2%	5.0%	0.2%		
William Blair	500,334,604	5.3%	5.0%	0.3%		
First Eagle	390,136,719	4.2%	4.0%	0.2%		
Artisan Global Opportunities	404,024,936	4.3%	4.0%	0.3%		
PIMCO/RAE Emerging Markets	369,299,185	3.9%	4.0%	-0.1%		
TT Emerging Markets	360,880,373	3.9%	4.0%	-0.1%		
Total Global & International Equity	2,510,347,766	26.8%	26.0%	0.8%	24.0%	2.8%
Private Equity	1,024,924,786	10.9%	11.0%	-0.1%	11.0%	-0.1%
Private Credit	539,105,455	5.8%	5.0%	0.8%	12.0%	-6.2%
Real Estate - Value Add	163,789,623	1.7%	4.0%	-2.3%	4.0%	-2.3%
Real Estate - Opportunistic & Distressed	466,532,141	5.0%	4.0%	1.0%	4.0%	1.0%
Real Estate - REIT (Adelante)	80,205,371	0.9%	1.0%	-0.1%	1.0%	-0.1%
High Yield (Allianz)	208,839,867	2.2%	2.0%	0.2%	0.0%	2.2%
Risk Parity			5.0%	-0.1%	5.0%	-0.1%
AQR GRP EL	236,618,370	2.5%				
PanAgora	223,192,334	2.4%				
Total Other Growth Assets	2,943,207,947	31.4%	32.0%	-0.6%	37.0%	-5.6%
Total Growth Assets	6,473,044,624	69.1%	68.0%	1.1%	66.0%	3.1%
		Range				
		60% - 80%				
Risk Diversifying						
AFL-CIO	334,559,218	3.6%	3.5%	0.1%	3.0%	0.6%
Parametric Defensive Equity	204,710,656	2.2%	2.5%	-0.3%	3.5%	-1.3%
Wellington Real Total Return	190,367,799	2.0%	2.0%	0.0%	3.5%	-1.5%
Total Risk Diversifying	729,637,673	7.8%	8.0%	-0.2%	10.0%	-2.2%
		Range				
		0% - 10%				
Cash and Overlay						
Overlay (Parametric)	39,093,253	0.4%		0.4%		
Cash	168,995,241	1.8%		1.8%		
Total Cash and Overlay	208,088,494	2.2%	0.0%	2.2%	0.0%	2.2%
Total Fund	9,366,897,478.77	100%	100%		100%	

*Current targets and ranges reflect asset allocation targets accepted by the Board on June 26, 2019 (BOR Resolution 2019-4)



<i>Meeting Date</i> 02/26/20 <i>Agenda Item</i> #8

MEMORANDUM

Date: February 26, 2020

To: CCCERA Board of Retirement

From: Gail Strohl, Chief Executive Officer

Subject: Consider and take possible action to increase the salary ranges by 4% for all unrepresented classifications effective April 1, 2020, with the exception of the Chief Executive Officer.

Background

CCCERA is trusted with administering pension benefits for approximately 23,000 members with over \$9 billion in assets. It is important that CCCERA as an employer has the appropriate workforce in place to meet its core objectives. A critical component to recruiting and retaining qualified individuals is offering appropriate and fair compensation, especially in a tight labor market. A 4% increase in the salary ranges of the unrepresented classifications effective April 1, 2020 will help CCCERA maintain a strong salary structure with the overall labor market. The attached resolution for salary and benefits for unrepresented employees includes non-substantive changes that merely provide further clarification.

The attached pay schedule reflects a proposed increase of 4% in the salary ranges for all unrepresented classifications effective April 1, 2020, with the exception of the Chief Executive Officer.

Recommendation

Consider and take possible action to:

- a. adopt Board of Retirement Resolution 2020-1 to increase the salary ranges by 4% for all unrepresented classifications effective April 1, 2020, with the exception of the Chief Executive Officer.
- b. adopt the CCCERA Position Pay Schedule for unrepresented classifications effective April 1, 2020 which reflects the salary range changes in Board of Retirement Resolution 2020-1.

Meeting Date
02/26/20
Agenda Item
#8a.

BOR Reso. No. 2020-1

**RESOLUTION OF THE BOARD OF RETIREMENT
CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

**CCCERA RESOLUTION FOR SALARY AND BENEFITS
FOR UNREPRESENTED EMPLOYEES**

**EFFECTIVE FEBRUARY 1, 2016
AMENDED MAY 25, 2016
AMENDED JUNE 22, 2016
AMENDED JUNE 14, 2017
AMENDED AUGUST 23, 2017
AMENDED MAY 23, 2018
AMENDED JULY 25, 2018
AMENDED AUGUST 22, 2018
AMENDED APRIL 10, 2019
AMENDED FEBRUARY 26, 2020**

Table of Contents

1. Paid Holidays:2

2. Personal Holidays:3

3. Vacation:3

 Vacation Buy Back:4

4. Sick Leave:.....5

5. Sick Leave Incentive Plan:.....5

6. Management Administrative Leave6

7. Other Unpaid Leaves:7

 A. Medical/Family Illness/Child Care Leave (FMLA/CFRA LEAVE)7

 B. Pregnancy Disability Leave8

 C. Military Leave8

8. Health, Dental, and Related Benefits9

 Health and Dental Coverage Upon Retirement.....10

9. Long-Term and Short-Term Disability Insurance.....12

10. State Disability Insurance12

11. Life Insurance12

12. Workers Compensation Insurance12

13. Health Care Spending Account.....13

14. Dependent Care Assistance Program14

15. Premium Conversion Plan14

16. Vision Insurance14

17. Retirement:.....14

 CCCERA Membership:14

 Deferred Compensation:15

18. General Training16

19. Other Job-Related Training.....16

20. Professional Development Reimbursement16

21. Salary17

22. Overtime17

23. Differential Pay17

 A. Longevity17

 B. Certificate Differentials.....18

WHEREAS, the Contra Costa County Employees' Retirement Association ("CCCERA") is a public agency established by virtue of, and governed by the County Employees' Retirement Law of 1937, Government Code sections 31450, *et seq.*, ("CERL") and Article XVI, section 17 of the California Constitution.

WHEREAS, CCCERA administers a retirement system for the County of Contra Costa and for other participating employers located within the County, including CCCERA, by and through its Board of Retirement ("Board"), and as the Board delegates to its employees who are appointed by CCCERA pursuant to CERL section 31529.9 ("CCCERA Employees.")

WHEREAS, the Board wishes to provide salary and benefits to the unrepresented employees of CCCERA, effective from January 1, 2015 until further notice;

NOW THEREFORE IT IS HEREBY RESOLVED that effective January 1, 2015 and until further notice employees of CCCERA in the job classifications identified on Attachment A hereto shall receive the following salary and benefits:

1. Paid Holidays:

CCCERA observes the following paid holidays during the term covered by this Resolution:

New Year's Day	Labor Day
Martin Luther King Jr. Day	Veterans' Day
Presidents' Day	Thanksgiving Day
Memorial Day	Day after Thanksgiving
Independence Day	Christmas Day

Any paid holiday observed by CCCERA that falls on a Saturday is observed on the preceding Friday and any paid holiday that falls on a Sunday is observed on the following Monday.

Eligibility for Paid Holidays: Regular full-time employees are entitled to a paid day off in recognition of the holiday without a reduction in monthly base pay for CCCERA-observed holidays listed above.

Part-time employees [*who are regularly scheduled to work a minimum of 20 hours per week*] are entitled to the listed paid holidays on a pro rata basis. For example, a part time employee whose position hours are 24 per week is entitled to 4.8 hours off work on a holiday ($24/40 \times 8 = 4.8$).

When a paid holiday falls on a part-time employee's normally scheduled work day and the part-time paid holiday hours are more than the normally scheduled work hours the employee is entitled to receive flexible compensation hours or pay at the rate of one times the employees' base rate of pay for the difference between the employee's normally scheduled work hours and the paid part-time holiday hours.

When a paid holiday falls on a part-time employee’s normally scheduled work day and the part-time paid holiday hours are less than the normally scheduled work hours the employee must use non-sick leave accruals for the difference between the employee’s normally scheduled work hours and the part-time paid holiday hours. If the employee does not have any non-sick leave accrual balances, leave without pay will be authorized.

Flexible Compensation: Flexible Compensation may not be accumulated in excess of 288 hours. After 288 hours are accrued by an employee, the employee will receive flexible pay at the rate of 1.0 times the employee’s base rate of pay. Flexible compensation may be taken on those dates and times determined by mutual agreement of the employee and their supervisor.

2. Personal Holidays:

Regular employees subject to this Resolution are entitled to accrue up to two hours of personal holiday credit each month.

Part-time employees [*who are regularly scheduled to work a minimum of 20 hours per week*] accrue personal holiday hours on a pro rata basis.

No employee may accrue more than forty hours of personal holiday credit at any time. Once the employee reaches forty hours of personal holiday, the employee will cease accruing such paid time off until he/she uses sufficient such time to reduce his/her bank below the forty-hour maximum, after at which time the employee may begin to accrue additional hours up to the forty-hour maximum.

On separation from CCCERA service, employees shall be paid for any accrued and unused personal holiday hours at the employee’s then-current rate of pay.

3. Vacation:

Regular full-time employees subject to this Resolution are entitled to accrue paid vacation as follows:

<u>Length of Service*</u>	<u>Monthly Accrual Hours</u>	<u>Maximum Cumulative Hours</u>
Fewer than 11 years	10	240
11 years	10-2/3	256
12 years	11-1/3	272
13 years	12	288
14 years	12-2/3	304
15 through 19 years	13-1/3	320
20 through 24 years	16-2/3	400

<u>Length of Service*</u>	<u>Monthly Accrual Hours</u>	<u>Maximum Cumulative Hours</u>
25 through 29 years	20	480
30 years and up	23-1/3	560

* Includes County service if employed at CCCERA before January 1, 2015.

Part-time employees [*who are regularly scheduled to work a minimum of 20 hours per week*] are entitled to the listed paid vacation on a pro rata basis.

Employees may accrue paid vacation time up to a maximum of twice their annual vacation accrual. That is, for a full-time employee with 8 years of service, the employee may accrue up to a maximum of 240 hours (120 hours maximum annual accrual x 2 = 240 hours). Once the employee reaches this maximum cumulative hours, she/he will cease accruing paid vacation time until he/she uses sufficient vacation to drop below the maximum cumulative hours after which time the employee may begin to accrue additional hours up to the maximum cumulative hours.

On separation from CCCERA service, employees shall be paid for any accrued and unused vacation hours at the employee's then-current rate of pay.

Vacation Buy Back:

- A. With the exception of the Chief Executive Officer, employees may elect payment of up to one-third (1/3) of their annual vacation accrual, subject to the following conditions:
 - (1) the choice can be made only once every thirteen (13) months and there must be at least twelve (12) full months between each election;
 - (2) payment is based on an hourly rate determined by dividing the employee's current monthly salary by 173.33; and
 - (3) the maximum number of vacation hours that may be paid in any one sale is one-third (1/3) of the annual accrual.

- B. The Chief Executive Officer may elect payment of up to one-third (1/3) of their annual vacation accrual, subject to the following conditions:
 - (1) the choice can be made only once in each calendar year;
 - (2) payment is based on an hourly rate determined by dividing the employee's current monthly salary by 173.33; and
 - (3) the maximum number of vacation hours that may be paid in any one sale is one-third (1/3) of the annual accrual.

- C. The vacation buy back election must be made in the calendar year preceding the year of the vacation sale. Hours that an employee elects to cash out are not available for the employee

to use as vacation. If a vacation buy back election is not made in the preceding calendar year, it will be considered a declination of the vacation sale for the year.

NOTE: Where a lump-sum payment is made to employees as a retroactive general salary adjustment for a portion of a calendar year that is subsequent to the exercise by an employee of the vacation buy-back provision herein, that employee's vacation buy-back will be adjusted to reflect the percentage difference in base pay rates upon which the lump-sum payment was computed, provided that the period covered by the lump-sum payment includes the effective date of the vacation buy-back. *For example: In May a salary increase is approved with an effective date of January 1st and the employee completed a vacation buy-back in March, a lump sum payment for the difference in base pay of the vacation buy-back would be calculated.*

4. Sick Leave:

Regular full-time employees subject to this Resolution shall earn paid sick leave benefits at the rate of eight (8) hours per month. Regular part-time employees [*who are regularly scheduled to work a minimum of 20 hours per week*] are entitled to sick leave benefits on a pro rata basis.

Unused sick leave hours accumulate from year to year. When an employee is separated, other than through retirement, accumulated sick leave hours shall be cancelled, unless the separation results from layoff, in which case the accumulated hours shall be restored if reemployed in a regular position within the period of layoff eligibility. At retirement, employees are credited, at the rate of one day for each one day earned, with sick leave accumulated as of the day of retirement and that sick leave credit counts as additional retirement service credit.

For more information on sick leave benefits please refer to the CCCERA Personnel Policies.

5. Sick Leave Incentive Plan:

Employees may be eligible for a payoff of a part of unused sick leave accruals at separation. The sick leave incentive plan is an incentive for employees to safeguard sick leave accruals as protection against wage loss due to time lost for injury or illness. Payoff must be approved by the Chief Executive Officer, and is subject to the following conditions:

- The employee must have resigned in good standing
- Payout is not available if the employee is eligible to retire
- The balance of sick leave at resignation must be at least 70% of accruals earned in the preceding continuous period of employment excluding any sick leave use covered by the Family and Medical Leave Act (FMLA), the California Family Rights Act (CFRA) or the California Pregnancy Disability Act (PDL).

- Payout is by the following schedule:

<u>Years of Payment Continuous Service</u>	<u>Payment of Unused Sick Leave Payable</u>
3 – 5 years	30%
5 – 7 years	40%
7 plus years	50%

- No payoff will be made pursuant to this section unless CCCERA certifies that an employee requesting as sick leave payoff has terminated membership in, and has withdrawn their contributions from CCCERA.
- It is the intent of the Board of Retirement that payments made pursuant to this section are in lieu of CCCERA retirement benefits resulting from employment with any of the employers in the CCCERA retirement plan.

6. Management Administrative Leave

Management Administrative Leave is authorized time away from the job for any personal activities and needs which are not charged to sick leave or vacation hours. Unrepresented employees who are exempt from the payment of overtime are eligible for this benefit.

Use of Management Administrative Leave may be requested whenever desired by the employee; however; approval of request shall be subject to the same department process as used for vacation requests.

All unused Management Administrative Leave will be cancelled at 11:59 p.m. on December 31st of each year.

- A. On January 1st of each year, all full-time unrepresented employees, who are exempt from the payment of overtime and in paid status, will be credited with ninety four (94) hours of paid Management Administrative Leave. All Management Administrative Leave is non-accruable and all balances will be zeroed out on December 31st of each year.
- B. Regular part-time employees [*who are regularly scheduled to work a minimum of 20 hours per week*] are eligible for Management Administrative Leave on a prorated basis, based upon their position hours.
- C. Employees appointed (hired or promoted) to a management position are eligible for Management Administrative Leave on the first day of the month following their appointment date and will receive Management Administrative Leave on a prorated basis for that first year.

7. **Other Unpaid Leaves:**

CCCERA provides leaves of absence to eligible employees in a variety of circumstances. In all cases, CCCERA intends to comply with applicable federal and state laws. For additional information on unpaid leaves please refer to the CCCERA Personnel Policies.

- Pregnancy disability leave may be requested by any employee at any time.
- Workers' compensation leave is provided to any employee as needed.
- Leave as a reasonable accommodation of an employee's disability is provided to any employee as needed.

Request for Leave: As soon as an employee learns of the need for a leave of absence, the employee should submit a request for leave to the Administrative/HR Manager. Request forms are available from Human Resources. Any leave request must state the purpose of the leave being requested. If approved, the leave must be used for that purpose.

A. **Medical/Family Illness/Child Care Leave (FMLA/CFRA LEAVE)**

Eligible employees may request an unpaid Family Medical Leave Act ("FMLA") of up to 18 workweeks in a rolling 12-month period (measured backwards from the date the leave begins) for any of the following reasons:

- Birth of the employee's child and to care for the child within the first year of birth;
- The care of an adopted or foster child within the first year of placement with the employee;
- Care for the employee's child, spouse or domestic partner, or parent with a serious health condition;
- Serious health condition of the employee;
- A qualifying exigency arising out of an eligible family member's call to military duty; or
- To care for a covered military service member who is the employee's eligible family member/next-of-kin.

For purposes of this Resolution, an eligible employee is one who has completed one year of continuous employment with CCCERA and worked a minimum of 1,250 hours during the preceding 12 months.

Medical certification is required for leaves necessitated by the serious health condition of the employee or of a family member, but an employee or his/her health care provider need not, and should not, disclose the employee's underlying condition. medical history, results

of tests, or any genetic information. A “serious health condition” means an illness, injury, impairment, or physical or mental condition that involves any of the following:

- Time or treatment in connection with inpatient care;
- Period of incapacity of more than three consecutive days that involves treatment by a health care provider; or
- Any period of incapacity or treatment that is permanent or long term.

Employees will continue to be covered by CCCERA health insurance benefits under pre-leave conditions during the entire approved FMLA leave.

FMLA leave is unpaid, except that employees [*may elect* to use any accrued vacation, sick, personal holiday or management administrative leave time.

Intermittent leave or a reduced work schedule may be approved with medical certification for an employee’s Serious Health Condition, for the employee to care for a child, parent, spouse, or domestic partner (under the CFRA only) with a serious health condition.

Medical certification that the employee is released to return to work is required before the employee will be permitted to return.

If an employee needs to extend his or her leave, he/she must request an extension for FMLA/CFRA leave as soon as practicable after he/she has knowledge of the need for additional leave time. Recertification by a treating health care provider may be required every 30 calendar days in connection with an employee’s absence where appropriate.

B. Pregnancy Disability Leave

Pregnancy Disability Leave (PDL) is a leave due to pregnancy, childbirth, or related reasons preventing the employee from performing her job functions. PDL includes leave needed for prenatal care and prenatal complications.

Employees may take up to a maximum of four months of PDL per pregnancy. Medical certification of the need for the leave is required, and the length of PDL will depend on the medical necessity for the leave. Medical certification that the employee is released to return to work is required before the employee will be permitted to return.

Employees will continue to be covered by CCCERA health insurance benefits under pre-leave conditions during the entire approved PDL.

Leave for pregnancy disability is unpaid, except that employees may elect to use any accrued vacation, sick, personal holiday or management administrative leave time.

C. Military Leave

Federal and state mandated-military leaves of absence are granted without pay to members of the United States Uniformed Services, the California National Guard, or the reserves. To

be eligible, an employee must submit written verification from the appropriate military authority. Such leaves will be granted in accordance with state and federal law.

When an employee goes on Military Leave for more than 30 days, any applicable group insurance (existing provisions will apply) continues for 90 days following the commencement of unpaid Military Leave. Beyond the 90 days, the employee may elect to continue the same group health care coverage, including dependent coverage, if applicable, for up to 24 months at his/her own expense.

An employee may elect to use accrued personal holidays, vacation, and/or management administrative leave at the beginning of unpaid military service or may retain earned and accrued vacation for use upon return from the leave. The employee must provide this request/election in writing to Administrative/HR Manager prior to the start of the military leave.

At the conclusion of military service, an employee will be reinstated upon giving notice of his/her intent to return to work by either (1) reporting to work or (2) submitting a timely oral or written request to CCCERA for reinstatement within 90 days of days after their release from active duty or any extended period required by law. The Military Leave will expire upon the employee's failure to request reinstatement or return to work in a timely manner after conclusion of service.

8. Health, Dental, and Related Benefits

Regular full-time and part-time employees [*who are regularly scheduled to work a minimum of 20 hours per week*] and their eligible dependents may be entitled to receive medical and dental insurance coverage through CCCERA Plans. Attached hereto as Attachment B, is the monthly premium subsidy for unrepresented employees.

Effective January 1, 2016, CCCERA shall offer an Internal Revenue Code Section 125 Flexible Benefits Plan that offers (i) CalPERS health plan coverages for each eligible employee and the employee's eligible family members and (ii) at least one other nontaxable benefit. CCCERA shall make monthly contributions under the plan for each eligible employee and their dependents (if applicable) up to the relevant amount set forth in Attachment B. Such contributions shall consist of (i) the Minimum Employer Contribution (MEC) established by the Public Employees' Medical and Hospital Care Act, and designated by CCCERA as the MEC, and (ii) the additional amount of such contributions in excess of the MEC.

Any eligible employee who enrolls in health coverage with a higher total premium than CCCERA's contributions with respect to the eligible employee, as stated in Attachment B, will pay the difference via pre-tax payroll deductions under the plan to the extent permitted by Internal Revenue Code Section 125.

Dual Coverage: Each employee, eligible dependent and retiree may be covered by only a single CCCERA health or dental plan.

Please refer any questions about medical/dental benefits to Human Resources.

Health and Dental Coverage Upon Retirement

1. Any CCCERA retiree or their eligible dependent who becomes age 65 on or after January 1, 2009 and who is eligible for Medicare must immediately enroll in Medicare Parts A and B.
 2. For employees hired by Contra Costa County or CCCERA on or after January 1, 2009 and their eligible dependents, upon completion of five (5) years of CCCERA service, an eligible employee who retires from CCCERA may retain continuous coverage of a CCCERA health and/or dental plan provided that:
 - i. he or she begins to receive a monthly retirement allowance from CCCERA within 120 days of separation from CCCERA employment and
 - ii. he or she pays the difference between the Public Employees' Medical and Hospital Care Act (PEMHCA) minimum contribution and the premium cost of the health plan. He or she pays the full premium of the dental plan without any CCCERA premium subsidy.
 3. For employees hired by Contra Costa County before January 1, 2009 and their eligible dependents, upon completion of five (5) years of CCCERA service, an eligible employee who retires from CCCERA may retain continuous coverage of a CCCERA health and/or dental plan provided that they meet the requirements listed below:
 - i. he or she begins to receive a monthly retirement allowance from CCCERA within 120 days of separation from CCCERA employment and
 - ii. he or she pays the difference between the monthly premium subsidy established by the Board of Retirement for eligible employees and their eligible dependents and the premium cost of the health/dental plan.¹
- ¹CCCERA will pay the health/dental plan monthly premium subsidy established by the Board of Retirement for eligible retirees and their eligible dependents.
4. All periods of benefit eligible employment will be included in the five (5) years of service calculation for purposes of health and dental coverage upon retirement.
 5. Employees who were on an authorized leave of absence without pay prior to retiring must have maintained coverage through CCCERA and paid the applicable premiums during their authorized leave of absence in order to be eligible for coverage under this Section.
 6. Employees, who resign and file for a deferred retirement and their eligible dependents, may continue in their CCCERA group health and/or dental plan under the following conditions and limitations:

- i. Health and dental coverage during the deferred retirement period is totally at the expense of the employee, without any CCCERA contributions.
 - ii. Life insurance coverage is not included.
 - iii. To continue health and dental coverage, the employee must:
 - a. be qualified for a deferred retirement under the 1937 Retirement Act provisions;
 - b. be an active member of a CCCERA group health and/or dental plan at the time of filing their deferred retirement application and elect to continue plan benefits;
 - c. be eligible for a monthly allowance from the Retirement System and direct receipt of a monthly allowance within one hundred twenty (120) days of application for deferred retirement; and
 - d. file an election to defer retirement and to continue health benefits hereunder with CCCERA within thirty (30) days before separation from CCCERA service.
 - iv. Deferred retirees who elect continued health benefits hereunder and their eligible dependents may maintain continuous membership in their CCCERA health and/or dental plan group during the period of deferred retirement by paying the full premium for health and dental coverage on or before the 10th of each month, to CCCERA. When the deferred retirees begin to receive retirement benefits, they will qualify for the same health and/or dental coverage listed above, as similarly situated retirees who did not defer retirement.
 - v. Deferred retirees may elect retiree health benefits hereunder without electing to maintain participation in their CCCERA health and/or dental plan during their deferred retirement period. When they begin to receive retirement benefits, they will qualify for the same health and/or dental coverage as listed above, as similarly situated retirees who did not defer retirement.
 - vi. Employees who elect deferred retirement will not be eligible in any event for CCCERA health and/or dental premium subsidies unless the member draws a monthly retirement allowance within one hundred twenty days (120) after separation from CCCERA employment.
 - vii. Deferred retirees and their eligible dependents are required to meet the same eligibility provisions for retiree health/dental coverage as similarly situated retirees who did not defer retirement.
7. For employees who retire and are eligible to receive a medical premium subsidy that is greater than the PEMHCA minimum contribution, each month during which such retiree medical coverage continues, CCCERA will provide each such retiree with a medical expense reimbursement plan (MERP), also known as a health reimbursement arrangement (HRA), subject to Internal Revenue Code Section 105, with a monthly credit equal to the excess of (i) the relevant medical coverage

monthly premium subsidy set forth in Attachment B for such eligible retiree and his or her eligible family members over (ii) the then current MEC.

8. **Long-Term and Short-Term Disability Insurance**

CCCERA will provide Long-Term and Short-Term Disability Insurance.

9. **State Disability Insurance**

Unrepresented employees do not contribute towards State Disability Insurance.

10. **Life Insurance**

For employees who are enrolled in CCCERA's program of medical or dental coverage as either the primary or the dependent, term life insurance in the amount of ten thousand dollars (\$10,000) will be provided by CCCERA.

Management employees, with the exception of the Chief Executive Officer will also receive fifty-seven thousand dollars (\$57,000) in addition to the life insurance provided above. The Chief Executive Officer will receive an additional sixty thousand dollars (\$60,000) in addition to the ten thousand dollars (\$10,000) insurance provided above.

In addition to the life insurance benefits provided by CCCERA, employees may subscribe voluntarily and at their own expense for supplemental life insurance. Please refer to Human Resources for additional information.

11. **Workers Compensation Insurance**

CCCERA provides workers' compensation benefits to employees who sustain a work-related injury or illness, and claims are processed through an adjusting agent/insurance carrier as designated by CCCERA, which administers workers' compensation claims and provides benefits and services to injured employees. A worker's compensation injury is any injury or illness that arises out of and in the course of employment (AOE/COE) (Labor Code section 3600).

1. **Waiting Period:** There is a three (3) calendar day waiting period before workers' compensation benefits commence. If the injured worker loses any time on the date of injury, that day counts as day one (1) of the waiting period. If the injured worker does not lose time on the date of the injury, the waiting period is the first three (3) days following the date of the injury. The time the employee is scheduled to work during this waiting period will be charged to the employee's sick leave and/or vacation accruals. In order to qualify for workers' compensation the employee must be under the care of a physician. Temporary compensation is payable on the first three (3) days of disability when the injury necessitates hospitalization, or when the disability exceeds

fourteen (14) days.

2. Continuing Pay: Permanent employees shall continue to receive the appropriate percent as per Labor Code section 4650 et. seq. of their regular monthly salary during any period of compensable temporary disability not to exceed one year. Payment of continuing pay and/or temporary disability compensation is made in accordance with Part 2, Article 3 of the Workers' Compensation Laws of California. "Compensable temporary disability absence" for the purpose of this Section, is any absence due to work connected disability which qualifies for temporary disability compensation as set forth in Part 2, Article 3 of the Workers' Compensation Laws of California.

When any disability becomes medically permanent and stationary and/or reaches maximum medical improvement, the salary provided in this Section shall terminate. No charge shall be made against sick leave or vacation for these payments. Sick leave and vacation rights shall not accrue for those periods during which continuing pay is received.

Employees shall be entitled to a maximum of one (1) year of continuing pay benefits for any one injury or illness.

Continuing pay begins at the same time that temporary workers' compensation benefits commence and continues until either the member is declared medically permanent/stationary, or until one (1) year of continuing pay, whichever comes first, provided the employee remains in an active employed status. Continuing pay is automatically terminated on the date an employee is separated from CCCERA by resignation, retirement, layoff, or the employee is no longer employed by CCCERA. In these instances, employees will be paid workers' compensation benefits as prescribed by workers' compensation laws. All continuing pay must be cleared through CCCERA.

3. Physician Visits: Whenever an employee who has been injured on the job and has returned to work is required by an attending physician to leave work for treatment during working hours, the employee is allowed time off, up to three (3) hours for such treatment, without loss of pay or benefits. Said visits are to be scheduled contiguous to either the beginning or end of the scheduled workday whenever possible. This provision applies only to injuries/illnesses that have been accepted by CCCERA as work related.

12. Health Care Spending Account

After six (6) months of regular employment, full time and part time (20/40 or greater) employees may elect to participate in a Health Care Spending Account (HCSA) Program designated to qualify for tax savings under Section 125 of the Internal Revenue Code, but such savings are not guaranteed. The HCSA Program allows employees to set aside a predetermined amount of money from their pay, before taxes, for health care expenses not reimbursed by any other health benefit plans. HCSA dollars may be expended on any

eligible medical expenses allowed by Internal Revenue Code Section 125. Any unused balance over five hundred dollars (\$500) is forfeited and cannot be recovered by the employee. Please refer to Human Resources for more information on the HCSA Program.

13. Dependent Care Assistance Program

Full time and part time (20/40 or greater) employees may elect to participate in a Dependent Care Assistance Program (DCAP) designed to qualify for tax savings under Section 129 of the Internal Revenue Code, but such savings are not guaranteed. The program allows employees to set aside up to five thousand (\$5,000) of annual salary (before taxes) per calendar year to pay for eligible dependent care (child and elder care) expenses. According to IRS regulations, any unused balance is forfeited and may not be recovered by the employee. Please refer to Human Resources for more information on DCAP.

14. Premium Conversion Plan

CCCERA offers the Premium Conversion Plan (PCP) designed to qualify for tax savings under Section 125 of the Internal Revenue Code, but tax savings are not guaranteed. The program allows employees to use pre-tax salary to pay health and dental premiums. Please refer to Human Resources for more information on the PCP.

15. Vision Insurance

CCCERA will pay 100% of the employee only premium for EyeMed Option 2 vision coverage and up to two hours of CCCERA paid time for exam and to obtain glasses. Employees may obtain spouse and dependent coverage at their own cost.

16. Retirement:

CCCERA Membership:

Contributions: Employees are responsible for the payment of one hundred percent of the employees' basic retirement benefit contributions determined annually by the Board. Employees are also responsible for the payment of the employee's contributions to the retirement cost-of-living program as determined annually by the Board. CCCERA is responsible for payment of one hundred percent of the employer's retirement contributions as determined annually by the Board.

- A. Employees who are not classified as new members under PEPRA will be enrolled in Retirement Tier 1 enhanced. For more information on retirement tiers please refer to the CCCERA member handbooks.
- B. Employees who are classified as new members under PEPRA will be enrolled in Retirement IV (3% COLA). For more information on retirement tiers please refer to the CCCERA member handbooks.
- C. CCCERA will implement Section 414(h) (2) of the Internal Revenue Code which allows CCCERA to reduce the gross monthly pay of employees by an amount equal to

the employee’s total contribution to the CCCERA Retirement Plan before Federal and State income taxes are withheld, and forward that amount to the CCCERA Retirement Plan. This program of deferred retirement contribution will be universal and non-voluntary as required by statute.

Deferred Compensation:

- A. CCCERA will contribute eighty-five dollars (\$85) per month to each employee who participates in CCCERA’s Deferred Compensation Plan. To be eligible for this Deferred Compensation Incentive, the employee must contribute to the deferred compensation plan as indicated below:

Employees with Current Monthly Salary of:	Qualifying Base Contribution Amount	Monthly Contribution Required to Maintain Incentive Program Eligibility
\$2,500 and below	\$250	\$50
\$2,501 – 3,334	\$500	\$50
\$3,335 – 4,167	\$750	\$50
\$4,168 – 5,000	\$1,000	\$50
\$5,001 – 5,834	\$1,500	\$100
\$5,835 – 6,667	\$2,000	\$100
\$6,668 and above	\$2,500	\$100

Employees who discontinue contributions or who contribute less than the required amount per month for a period of one (1) month or more will no longer be eligible for the eighty-five dollars (\$85) Deferred Compensation Incentive. To reestablish eligibility, employees must again make a Base Contribution Amounts as set forth above based on current monthly salary. Employees with a break in deferred compensation contributions either because of an approved medical leave or an approved financial hardship withdrawal will not be required to reestablish eligibility. Further, employees who lose eligibility due to displacement by layoff, but maintain contributions at the required level and are later employed in an eligible position, will not be required to reestablish eligibility.

- B. Regular employees hired on and after January 1, 2009 will receive one hundred and fifty dollars (\$150) per month to an employee’s account in the Contra Costa County Deferred Compensation Plan or other tax-qualified savings program designated by CCCERA, for employees who meet all of the following conditions:
1. The employee must be hired by CCCERA on or after January 1, 2009.
 2. The employee is not eligible for a monthly premium subsidy for health and/or dental upon retirement as set forth in Section 8.
 3. The employee must be appointed to a regular position. The position may be either full time or part time (designated at a minimum of 20 hours per week).
 4. The employee must have been employed by CCCERA or Contra Costa County for at

least 90 calendar days.

5. The employee must contribute a minimum of twenty-five dollars (\$25) per month to the Contra Costa County Deferred Compensation Plan, or other tax-qualified savings program designated by CCCERA.
6. The employee must complete and sign the required enrollment form(s) for his/her deferred compensation account and submit those forms to Human Resources.
7. The employee may not exceed the annual maximum contribution amount allowable by the United States Internal Revenue Code.
8. Employees are eligible to apply for loans from the Contra Costa County Deferred Compensation Plan loan program. For more information on the loan program refer to Human Resources.

17. General Training

CCCERA periodically provides training to employees on its harassment prevention and equal opportunity/discrimination policies. The purpose of these training sessions is to inform and remind employees of CCCERA's policies on these matters. These training sessions are mandatory.

Employees also receive safety training as part of CCCERA's Injury and Illness Prevention program.

18. Other Job-Related Training

Employees may request to attend training sessions on topics that are directly related to the employee's current job and that are likely to improve the employee's job knowledge and skills. Requests to attend training must be submitted to the employee's department manager. It is within the sole discretion of CCCERA whether or not to grant a training request.

19. Professional Development Reimbursement

To encourage personal and professional growth which is beneficial to both CCCERA and the employee, CCCERA reimburses for certain expenses incurred by employees which are related to an employee's current work assignment.

Expenses that may be eligible for reimbursement include certification programs and courses offered through accredited colleges, universities and technical schools.

Guidelines: Prior to registering for a course, the employee must provide appropriate information to Human Resources to begin the approval process.

If granted, reimbursement may be used to defray actual costs of tuition, registration, testing materials, testing fees and books only and is limited to \$2,000 per year.

Course attendance, study, class assignments and exams must be accomplished outside of the employee's regular working hours.

Reimbursement: Reimbursement will only be provided for course work in which the employee achieves a grade of C or better. Reimbursement will be provided only to employees who are employed by CCCERA at the time CCCERA receives evidence of satisfactory completion of the course or certification exam.

If the employee does not successfully complete the course or certification exam, no reimbursement will be provided.

Exceptions: For classifications which require a certification or technical license, CCCERA will reimburse the entire cost of certification fees and membership dues without reducing the maximum annual Professional Development Reimbursement amount.

20. Salary

Attached hereto as Attachment A, is the salary schedule for all classifications of unrepresented employees.

21. Overtime

Unrepresented employees who are exempt from the payment of overtime are not entitled to receive overtime pay, flexible compensatory, or overtime compensatory time.

Unrepresented employees who are non-exempt from the payment of overtime will receive overtime for hours worked in excess of 40 hours in the workweek and paid at a rate of time and one-half their hourly rate of pay.

22. Differential Pay

A. Longevity

Ten Years of Service:

Employees who have completed ten (10) years of service for CCCERA* are eligible to receive a two and one-half percent (2.5%) longevity differential effective on the first day of the month following the month in which the employee qualifies for the ten (10) year service award.

Fifteen Years of Service:

Employees who have completed fifteen (15) years of service for CCCERA* are eligible to receive an additional two and one-half percent (2.5%) longevity differential effective on the first day of the month following the month in which the employee qualifies for the fifteen (15) year service award.

Twenty Years of Service:

Employees in the General Counsel classification who have completed twenty (20) years of service for CCCERA* will receive an additional two percent (2%) longevity differential effective on the first day of the month following the month in which the employee qualifies for the twenty (20) year service award.

*For employees hired prior to January 1, 2019 upon completion of required years of service for Contra Costa County and/or CCCERA will qualify.

B. Certificate Differentials

NOTE: No employee may receive more than one certificate differential at one time, regardless of the number of certificates held by that employee.

➤ Accounting Certificate Differential

Incumbents of unrepresented professional accounting, auditing or fiscal officer positions who possess one of the following active certifications will receive a differential of five percent (5%) of base monthly salary:

- (1) a Certified Public Accountant (CPA) license issued by the State of California, Department of Consumer Affairs, Board of Accountancy;
- (2) a Certified Internal Auditor (CIA) certification issued by the Institute of Internal Auditors;
- (3) a Certified Management Accountant (CMA) certification issued by the Institute of Management Accountants; or
- (4) a Certified Government Financial Manager (CGFM) certification issued by the Association of Government Accountants.

➤ Associate of the Society of Actuaries (ASA)

Employees who possess an active ASA certification will receive a differential of five percent (5%) of base monthly salary. Verification of eligibility for any such differential must be provided to Human Resources.

Resolution of the Board of Retirement
Contra Costa County Employees' Retirement Association

CCCERA Resolution for Salary and Benefits for Unrepresented Employees
(BOR Reso. No. 2020-1)

Meeting Date 02/26/20 Agenda Item #8a.

Attachment A

Effective April 1, 2020

Class Title		Salary Range				
		Step 1	Step 2	Step 3	Step 4	Step 5
Accountant	Exempt (Monthly)	\$6,037	\$6,339	\$6,656	\$6,989	\$7,338
Accounting Manager	Exempt (Monthly)	\$10,326	\$10,842	\$11,384	\$11,953	\$12,551
Accounting Supervisor	Exempt (Monthly)	\$7,705	\$8,091	\$8,495	\$8,920	\$9,366
Administrative/HR Manager	Exempt (Monthly)	\$10,080	\$10,584	\$11,113	\$11,669	\$12,252
Administrative/HR Supervisor	Exempt (Monthly)	\$7,705	\$8,091	\$8,495	\$8,920	\$9,366
Communications Coordinator	Exempt (Monthly)	\$7,164	\$7,522	\$7,898	\$8,293	\$8,707
Compliance Business Analyst	Exempt (Monthly)	\$7,898	\$8,293	\$8,707	\$9,143	\$9,600
Deputy General Counsel	Exempt (Monthly)	\$14,529	\$15,256	\$16,019	\$16,820	\$17,661
Executive Assistant	Non-Exempt (Hourly)	\$36.57	\$38.40	\$40.32	\$42.34	\$44.45
Information System Programmer/Analyst	Exempt (Monthly)	\$7,338	\$7,705	\$8,091	\$8,495	\$8,920
Information Technology Coordinator	Non-Exempt (Hourly)	\$38.40	\$40.32	\$42.34	\$44.45	\$46.68
Information Technology Manager	Exempt (Monthly)	\$12,252	\$12,865	\$13,508	\$14,183	\$14,893
Investment Analyst	Exempt (Monthly)	\$10,584	\$11,113	\$11,669	\$12,252	\$12,865
Investment Officer	Exempt (Monthly)	\$14,893	\$15,637	\$16,419	\$17,240	\$18,102
Member Services Manager	Exempt (Monthly)	\$10,080	\$10,584	\$11,113	\$11,669	\$12,252
Member Services Supervisor	Non-Exempt (Hourly)	\$44.45	\$46.68	\$49.01	\$51.46	\$54.03
Retirement Services Manager	Exempt (Monthly)	\$10,080	\$10,584	\$11,113	\$11,669	\$12,252
Retirement Services Supervisor	Non-Exempt (Hourly)	\$44.45	\$46.68	\$49.01	\$51.46	\$54.03

Executive Class Title	Monthly Salary Range
Chief Executive Officer	\$22,525.85
Chief Investment Officer	\$19,883 - \$25,848
Compliance Officer	\$10,276 - \$13,359
Deputy Chief Executive Officer	\$15,941 - \$20,722
General Counsel	\$17,574 - \$22,846
Internal Auditor	\$10,276 - \$13,359

Attachment B

Meeting Date
02/26/20
Agenda Item
#8a.

Health and Dental Coverage Monthly Premium Subsidy

Effective: January 1, 2019

CalPERS Health Plans - For 2019, CCCERA's employer monthly premium subsidy is a set dollar amount and is not a percentage of the medical plan premium charged by CalPERS. Below are the employer monthly premium subsidies provided for each medical plan for 2019 only:

CalPERS Health Plans	Employee Only	Employee & 1 Dependent	Employee & 2+ Dependents
	Employer Monthly Premium Subsidy	Employer Monthly Premium Subsidy	Employer Monthly Premium Subsidy
Anthem HMO Select	\$782.95	\$1,565.89	\$2,035.66
Anthem HMO Traditional	\$746.47	\$1,492.94	\$1,940.82
BSC Access +	\$746.47	\$1,492.94	\$1,940.82
HealthNet SmartCare	\$804.97	\$1,609.95	\$2,092.93
Kaiser Permanente	\$763.16	\$1,526.33	\$1,984.23
PERS Choice	\$746.47	\$1,492.94	\$1,940.82
PERS Select	\$543.19	\$1,086.38	\$1,412.29
PERSCare	\$746.47	\$1,492.94	\$1,940.82
Western Health Advantage	\$746.47	\$1,492.94	\$1,940.82

Delta Dental - For 2019 CCCERA's employer monthly premium subsidy is a set dollar amount and is not a percentage of the dental plan premium charged by Delta Dental. Below are the employer monthly premium subsidies provided for 2019:

Employee Only: \$46.21
Employee and Spouse: \$103.72
Employee and Children: \$103.41
Family: \$169.38

Effective January 1, 2020, any change in the monthly medical plan premiums charged by CalPERS or the monthly dental plan premiums charged by Delta Dental in the plan year 2020 compared to the plan year 2019, will be shared equally by the employee and CCCERA. This change in monthly medical plan premiums or dental plan premiums will be added to or subtracted from the 2019 employer monthly premium subsidy listed in the table above.

CCCERA Position Pay Schedule - Effective 4/1/2020

Revision Dates: 4/1/2020, 1/1/2020, 7/1/19, 4/1/19, 7/1/18, 7/1/17, 7/1/16, 2/1/16, 7/1/15, 1/1/15

Unrepresented positions:

Classification Title	Step 1	Step 2	Step 3	Step 4	Step 5	Eligible for Differential*				
	Step 1	Step 2	Step 3	Step 4	Step 5	10 year Longevity	15 year Longevity	20 year Longevity	CPA, CGFM, CIA, CMA	ASA
Hourly (Non-Exempt)										
Executive Assistant	\$36.57	\$38.40	\$40.32	\$42.34	\$44.45	Yes	Yes	No	No	Yes
Information Technology Coordinator	\$38.40	\$40.32	\$42.34	\$44.45	\$46.68	Yes	Yes	No	No	Yes
Member Services Supervisor	\$44.45	\$46.68	\$49.01	\$51.46	\$54.03	Yes	Yes	No	No	Yes
Retirement Services Supervisor	\$44.45	\$46.68	\$49.01	\$51.46	\$54.03	Yes	Yes	No	No	Yes
Monthly (Exempt)										
Accountant	\$6,037	\$6,339	\$6,656	\$6,989	\$7,338	Yes	Yes	No	Yes	Yes
Accounting Manager	\$10,326	\$10,842	\$11,384	\$11,953	\$12,551	Yes	Yes	No	Yes	Yes
Accounting Supervisor	\$7,705	\$8,091	\$8,495	\$8,920	\$9,366	Yes	Yes	No	Yes	Yes
Administrative/HR Manager	\$10,080	\$10,584	\$11,113	\$11,669	\$12,252	Yes	Yes	No	No	Yes
Administrative/HR Supervisor	\$7,705	\$8,091	\$8,495	\$8,920	\$9,366	Yes	Yes	No	No	Yes
Communications Coordinator	\$7,164	\$7,522	\$7,898	\$8,293	\$8,707	Yes	Yes	No	No	Yes
Compliance Business Analyst	\$7,898	\$8,293	\$8,707	\$9,143	\$9,600	Yes	Yes	No	No	Yes
Deputy General Counsel	\$14,529	\$15,256	\$16,019	\$16,820	\$17,661	Yes	Yes	No	No	Yes
Information System Programmer/Analyst	\$7,338	\$7,705	\$8,091	\$8,495	\$8,920	Yes	Yes	No	No	Yes
Information Technology Manager	\$12,252	\$12,865	\$13,508	\$14,183	\$14,893	Yes	Yes	No	No	Yes
Investment Analyst	\$10,584	\$11,113	\$11,669	\$12,252	\$12,865	Yes	Yes	No	No	Yes
Investment Officer	\$14,893	\$15,637	\$16,419	\$17,240	\$18,102	Yes	Yes	No	No	Yes
Member Services Manager	\$10,080	\$10,584	\$11,113	\$11,669	\$12,252	Yes	Yes	No	No	Yes
Retirement Services Manager	\$10,080	\$10,584	\$11,113	\$11,669	\$12,252	Yes	Yes	No	No	Yes
Monthly Salary Range (Exempt)										
Chief Executive Officer	\$22,525.85									
Chief Investment Officer	\$19,883 - \$25,848									
Compliance Officer	\$10,276 - \$13,359									
Deputy Chief Executive Officer	\$15,941 - \$20,722									
General Counsel	\$17,574 - \$22,846									
Internal Auditor	\$10,276 - \$13,359									

*NOTE: Certificate Differentials cannot be combined with other certificate differentials

Meeting Date
02/26/20
Agenda Item
#8b.

Meeting Date
02/26/20
Agenda Item
#9a.

CRCEA Spring Conference

April 6—8, 2020



Visalia Marriott Hotel
300 South Court Street
Visalia, CA 93291

1-800-798-6506

Mention code CCF (CRCEA 2020 Spring)

ONLINE RESERVATION LINK

[https://www.marriott.com/event-reservations/
reservation-link.mi?
id=1561671450416&key=GRP&app=resvlink](https://www.marriott.com/event-reservations/reservation-link.mi?id=1561671450416&key=GRP&app=resvlink)



Hosted By
Tulare County
Retired
Employees
Association

Contact

Valerie Barnhart
(559)280-9679

Email:

mygalval1956
@sbcglobal.net

P.O. BOX 6981
VISALIA, CA 93290-6981



TULARE COUNTY RETIRED EMPLOYEES ASSOCIATION, INC.

2020 CRCEA SPRING CONFERENCE

APRIL 6-8, 2020

Marriott Hotel

To all CRCEA Delegates, Alternates, County Association Members, Affiliates, Retirement Board Members, Spouses, and Guests:

TCREA, Tulare County Retired Employees Association cordially invites you to attend the CRCEA (Spring 2020) Conference to be held April 6-8, 2020 at:

Marriott Hotel, 300 S. Court St, Visalia, CA 93277
1-800-798-6506

LINK FOR MARRIOTT RESERVATIONS ONLINE

<https://www.marriott.com/event-reservations/reservation-link.mi?id=1561671450416&key=GRP&app=resvlink>

Rooms are blocked for dates April 5, April 6, and April 7. If rooms are needed outside of these dates you must call directly. Mention code CCF (CRCEA 2020 Spring).

Enclosed are registration forms to assist you in registering to attend the CRCEA (Spring 2020) Conference. Please complete a registration form for each attendee, including spouse and/or guest. Your completed registration form(s) and check must be received by March 10, 2020. The check should include \$75 for each attendee (excluding Affiliates), and \$55.00 for each banquet reservation. Please mail to TCREA, Att. Conference, P.O. Box 6981, Visalia, CA 93291-6981.

Hotel reservations are to be made directly with the hotel before March 5, 2020. Please note the room rate is \$159.00 plus taxes. Each room includes a breakfast buffet for up to two. Parking is \$7.00 per day. When making reservations be sure to mention Code CCF (CRCEA 2020 Spring) to receive the conference room rate. We urge you to book early as this is a very popular time of year. The hotel has a restaurant on site as well as many restaurants located in the close vicinity.

Directions to the hotel: Traveling from the South, Hwy. 99N to Hwy 198 E, take exit 107A (CA-63/W Noble Ave. Destination will be on the right. Traveling from the North, Hwy. 99S to Hwy 198 E, take exit 107A (CA-63/W Noble Ave). Destination will be on the right.

Spring is a beautiful time in the Central Valley. Visalia is located at the base of the Sierras and is only about an hour's drive to the Sequoia-Kings Canyon National Park. These parks are home to the Giant Sequoia trees, including the largest trees alive today, the General Sherman and the General Grant.

Any questions regarding conference registration should be referred to: Conference Co-Chair, Valerie Barnhart at 559-280-9679 or email to mygalval1956@sbcglobal.net.

We look forward to seeing you at the conference.

Sincerely,

A handwritten signature in black ink, appearing to read "Kevin Mizner". The signature is fluid and cursive, with a long horizontal stroke at the end.

Kevin Mizner, TCREA President/Conference Co-Chair

Delegates Only: Please bring 25 copies of your association newsletter for placement on the information table.

TENTATIVE PROGRAM AGENDA

SUNDAY, April 05, 2020

1:00 p.m. – 6:00 p.m. **CONFERENCE REGISTRATION**
6:00 p.m. – 8:00 p.m. **Social reception in the Granite Room.** Appetizers, beer, wine, soda, and water will be served. No Host Cocktails and Dinner menu available.

MONDAY, April 06, 2020

6:00 a.m. – 10:00 a.m. **Complimentary Breakfast Buffet for Hotel Guest will be served in the restaurant.** Breakfast coupons will be in your name badge holder.

9:00 a.m. – 4:30 p.m. **Registration: Marriott Ballroom Foyer**

9:00 a.m. – 11:00 a.m. **CRCEA Membership Committee Meeting.** Location in Granite Room
Moderator: Rhonda Biesemeier, CRCEA Membership Committee Chairperson

1:00 p.m. – 1:30 p.m. **Opening Session:** Marriott Sierra Nevada Ballroom
Call to Order: Skip Murphy, CRCEA President
Invocation: Kevin Mizner, TCREA President
Presentation of Colors: Tulare County Sheriff's Office Honor Guard
National Anthem: Jeff Warner, Brother of TCREA Board Member, Valerie Barnhart
Pledge of Allegiance: Mike Barnhart, TCREA 1st Vice President
Roll Call of Counties: CRCEA Secretary – Virginia Adams
Introduction of first time Attendees – President Murphy

1:30 p.m. – 1:45 p.m. **Welcome**
Speaker: Pete VanderPoel, Tulare Co. Board of Supervisor
Introduction: Kevin Mizner, TCREA President

- 1:45 p.m. - 2:30 p.m. **Keynote Address “The Mindset is Your Weapon”**
Speaker: Justin Levine, Owner of California Fitness Academy
Introduction: Kevin Mizner, TCREA President
- 2:30 p.m. – 3:15 p.m. **Presentation:** Active Shooter
Speaker: TBA: Tulare County Sheriff’s Office
Introduction: Kevin Mizner, TCREA President
- 3:15p.m. – 3:30 p.m. **Afternoon Break**
- 3:30 p.m. – 4:10 p.m. **Presentation:** Take Control of Your Health Through Evidence Based Workshops in Your Community
Speaker: Christy Lau and Alma Torres-Nguyen
Introduction: Kevin Mizner, TCREA President
- 4:10 p.m. – 5:00 p.m. **Breakout Sessions:** If you are not assigned to a Committee, please join any Committee you like.
- 5:30 p.m. – 7:00 p.m. **Hospitality Reception – All Attendees and Affiliate Members are Invited – Mountain View Room**
Hosted by Steve Pettee, Pacific Group Agencies
- 7:00 p.m. **Dinner – On your own. A map of downtown local restaurants provided in your registration bag.**

TUESDAY, April 07, 2020

- 6:00 a.m. – 8:30 a.m. **Complimentary Breakfast Buffet for Hotel Guest will be served in the restaurant.** Breakfast coupons will be in your name badge holder.
- 8:00 a.m. – 2:00 p.m. **Registration: Marriott Ballroom Foyer**
- 8:30 a.m. – 8:45 a.m. **Morning General Session: Marriott Sierra Nevada Ballroom**
Call to Order: CRCEA President, Skip Murphy
Announcements: Kevin Mizner, TCREA President

- 8:45 a.m. – 9:30 a.m. **Presentation:** My Job Depends on Ag
Speaker: Erik Wilson and Eric Bream
Introduction: Kevin Mizner, TCREA President
- 9:30 a.m. – 10:15 a.m. **Round Table Session** – Skip Murphy
Speakers: Provided by CRCEA
- 10:15 a.m. – 10:30 a.m. **Morning Break**
- 10:30 a.m. – 11:15 a.m. **Introduction of Affiliates** – Affiliate Committee Chair
- 11:15 a.m. – 12:00 p.m. **Presentation:** Birds of Prey
Speaker: Louise Culver and Dan Turner, Critter Creek Wildlife
Station, Animals for Education
Introduction: Kevin Mizner
- 12:00 p.m. – 1:30 p.m. **Lunch** – On Your Own
- 1:45 p.m. – 2:30 p.m. **Presentation:** Water Conservation
Speaker: Kevin McCusker and Tamara Kelly, Cal Water
Introduction: Kevin Mizner, TCREA President
- 2:30 p.m. – 2:45 p.m. **Afternoon Break**
- 2:45 p.m. – 3:30 p.m. **Legislative Report** – Legislative Committee Chair
Panel: TBA
- 3:30 p.m. – 4:15 p.m. **Presentation:** TBA
Speaker: (Name, title, company/organization)
Introduction (Name of person making introduction)
- 5:30 p.m. – 7:00 p.m. **Hospitality Reception** – All Attendees and Affiliate
Members are Invited – Mountain View Room
Hosted by Steve Pettee, Pacific Group Agencies
- 7:00 p.m. – 9:30 p.m. **Conference Banquet** – Marriott Sierra Nevada Ballroom
Master of Ceremonies Kevin Mizner
Entertainment: Flashback
Door Prize Drawings

WEDNESDAY, April 08. 2020

6:00 a.m. – 8:30 a.m. **Complimentary Breakfast Buffet for Hotel Guest will be served in the restaurant.** Breakfast coupons will be in your name badge holder.

8:30 a.m. – 11:00 a.m. **Business Session - Granite Room**
Call to Order: CRCEA President, Skip Murphy
Announcements: Kevin Mizner
 Conference Surveys Due
Approval of Fall Conference Minutes: Virginia Adams
Executive Committee Report: President Murphy
Financial Report: Carlos Gonzalez
Committee Reports by CRCEA Committee Chairs
 Affiliate: Mike Sloan
 Bylaws: David Muir
 Communications: Virginia Adams
 Audit/Finance: Jerry Jacobs
 Legislation: Art Goulet
 Membership/Benefits: Rhonda Biesemeier
 Nominating: Will Hoag
 Conference: Mike Sloan
 Invitation to the Fall 2020 Conference: Rhonda Biesemeier Stanislaus County

Closing Remarks: President Murphy

CRCEA SPRING 2020 CONFERENCE REGISTRATION FORM
April 6-8, 2020 at Marriott Hotel, 300 S. Court Street, Visalia, CA 93291

Hosted by: Tulare County Retired Employees Association (TCREA)

Please complete this form and mail with check payable to TCREA

NAME _____

Please check appropriate box for your preferred name badge designation:

- Delegate Alternate Delegate Retirement Board Member
 Member Affiliate (pay only banquet fee) CRCEA Officer (Title): _____

ADDRESS _____

CITY _____ **STATE** _____ **ZIP** _____

PHONE _____ **E-MAIL** _____

AFFILIATE OR ASSOCIATION NAME _____

EMERGENCY CONTACT (full name & phone) _____

CONFERENCE REGISTRATION DEADLINE: MUST RECEIVE CHECK BY MARCH 10, 2020

RESERVATION DEADLINE FOR MARRIOTT HOTEL: MARCH 5, 2020. For hotel reservations, CALL Marriott at 1-800-798-6506, mention code CCF (CRCEA 2020 Spring) or register online <https://www.marriott.com/event-reservations/reservation-link.mi?id=1561671450416&key=GRP&app=resvlink>. Conference room rate is \$159 per night plus taxes (includes daily breakfast). Parking is \$7.00 per day. If there are any questions or issues, please contact, Valerie Barnhart, Conference co-chair, at (559)280-9679 or email to mygalval1956@sbcglobal.net

REGISTRATION FEES

Attendee. Except Affiliates (*Entitles bearer to attend entire conference.*) \$75 \$ _____

Spouse/Significant Other (*Entitles bearer to attend entire conference. May only be purchased in combination with Attendee registration.*) \$30 \$ _____

Name: _____

Tuesday Evening Banquet

Entrée: 6 oz. grilled chicken breast with Asiago Cream # _____ \$55 ea X ____ = \$ _____

Fresh Atlantic Salmon with lemon caper # _____

8 oz. New York Strip with port wine reduction # _____

Pasta Primavera (Pasta tossed w/ zucchini, cauliflower, mushrooms and Pesto Sauce.) # _____

Dinner includes salad, vegetable, au gratin potatoes, bread, and dessert

****I will be attending the Sunday Evening Social Reception**** Yes ____ No ____

Mail CHECK payable to TCREA along with this FORM to:

TCREA, Attn: CRCEA Conference, P.O. Box 6981, Visalia, CA 93290-6981

Registrar: Valerie Barnhart - Contact for late registration at mygalval1956@sbcglobal.net or 559-280-9679

Meeting Date
02/26/20
Agenda Item
#9b.



SAVE THE DATE

APRIL 15 & 16, 2020

WHAT
Annual LPAC Meeting & Dinner
and LP Meeting

WHEN
APRIL 15 & 16, 2020

WHERE
Boca Resort
501 E Camino Real
Boca Raton, FL 33432

Wednesday, April 15, 2020

LPAC Fund I Meeting 2:30PM - 4:00PM
LPAC Fund II Meeting 4:00PM - 5:30PM
Dinner (all LPs are welcome) .. 6:30PM - 8:30PM

Thursday, April 16, 2020

LP Meeting 8:00AM - 1:00PM

We have a block of hotel rooms for the night of April 15th.
Please email or call Carla Monti (cmonti@aeroequity.com;
561-372-7821) to confirm that you would like a room to be
held in your name.

We look forward to seeing you in April.

SAVE THE DATE
Siguler Guff's 2020 Annual Conference

<i>Meeting Date</i> 02/26/20 <i>Agenda Item</i> #9c.

Wednesday, April 29 – Thursday, April 30, 2020
The Rainbow Room
30 Rockefeller Plaza
New York, NY 10112

April 29
Cocktail Reception
Dinner with Keynote Speaker

April 30
Morning Portfolio Reviews
Buffet Lunch
Afternoon Portfolio Reviews

Advisory Board Meetings will be held on the afternoon of April 29 at Siguler Guff's New York headquarters (200 Park Avenue, 23rd Floor). Scheduling details will be provided to Advisory Board Members.

Invitation to follow
Please direct questions to conference@sigulerguff.com