# San Jose Federated City Employees' Retirement System

Quarterly Review September 30, 2018



#### MEKETA INVESTMENT GROUP

BOSTON MASSACHUSETTS CHICAGO Illinois Miami Florida Portland Oregon SAN DIEGO California

LONDON UNITED KINGDOM

www.meketagroup.com

Agenda

#### 1. The World Markets in the Third Quarter of 2018

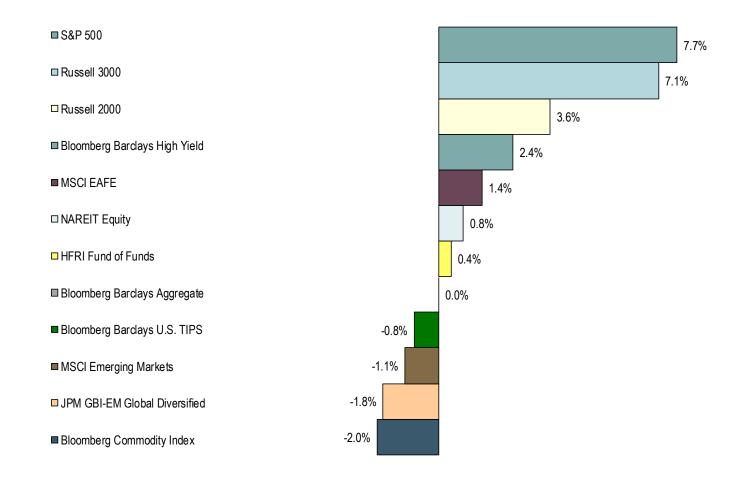
#### 2. Executive Summary

- Aggregate Plan Overview
- Manager Highlights
- Third Quarter Manager Summary
- Watch List
- Market Environment 3Q18 Overview
- 3. 3Q18 Review
- 4. Glossary and Notes

The World Markets Third Quarter of 2018

### The World Markets Third Quarter of 2018

#### The World Markets<sup>1</sup> Third Quarter of 2018

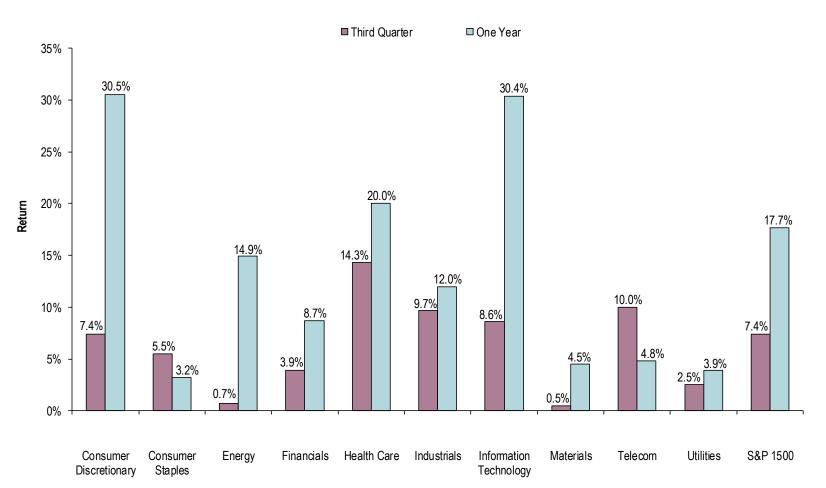


## The World Markets Third Quarter of 2018

### Index Returns<sup>1</sup>

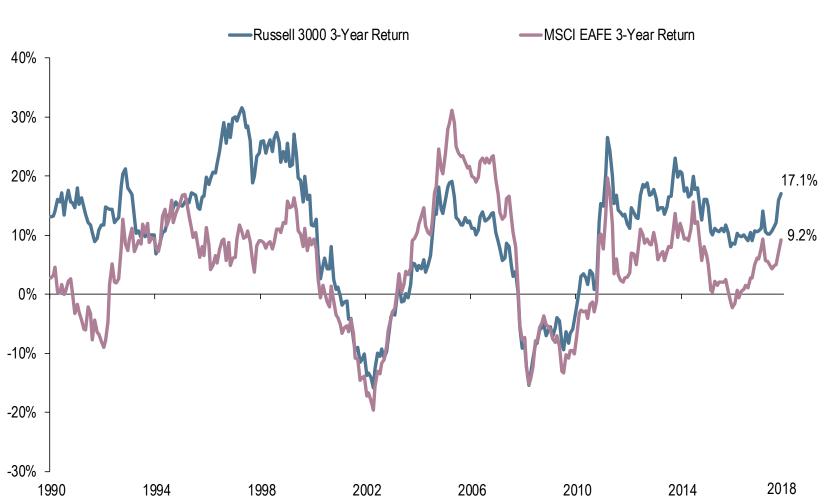
	3Q18 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
Domestic Equity						
Russell 3000	7.1	10.6	17.6	17.1	13.5	12.0
Russell 1000	7.4	10.5	17.8	17.1	13.7	12.1
Russell 1000 Growth	9.2	17.1	26.3	20.6	16.6	14.3
Russell 1000 Value	5.7	3.9	9.5	13.6	10.7	9.8
Russell MidCap	5.0	7.5	14.0	14.5	11.7	12.3
Russell MidCap Growth	7.6	13.4	21.1	16.6	13.0	13.5
Russell MidCap Value	3.3	3.1	8.8	13.1	10.7	11.3
Russell 2000	3.6	11.5	15.2	17.1	11.1	11.1
Russell 2000 Growth	5.5	15.8	21.1	18.0	12.1	12.7
Russell 2000 Value	1.6	7.1	9.3	16.1	9.9	9.5
Foreign Equity						
MSCI ACWI (ex. U.S.)	0.7	-3.1	1.8	10.0	4.1	5.2
MSCI EAFE	1.4	-1.4	2.7	9.2	4.4	5.4
MSCI EAFE (Local Currency)	2.4	1.4	5.1	9.4	7.9	6.7
MSCI EAFE Small Cap	-0.9	-2.2	3.7	12.4	8.0	9.7
MSCI Emerging Markets	-1.1	-7.7	-0.8	12.4	3.6	5.4
MSCI Emerging Markets (Local Currency)	0.0	-2.9	2.7	12.2	7.3	7.7
Fixed Income						
Bloomberg Barclays Universal	0.3	-1.4	-1.0	2.0	2.5	4.2
Bloomberg Barclays Aggregate	0.0	-1.6	-1.2	1.3	2.2	3.8
Bloomberg Barclays U.S. TIPS	-0.8	-0.8	0.4	2.0	1.4	3.3
Bloomberg Barclays High Yield	2.4	2.6	3.0	8.1	5.5	9.5
JPM GBI-EM Global Diversified	-1.8	-8.1	-7.4	5.2	-1.7	2.7
Other						
NAREIT Equity	0.8	1.8	3.3	7.6	9.2	7.4
Bloomberg Commodity Index	-2.0	-2.0	2.6	-0.1	-7.2	-6.2
HFRI Fund of Funds	0.4	1.2	3.3	3.3	3.2	2.6

### The World Markets Third Quarter of 2018

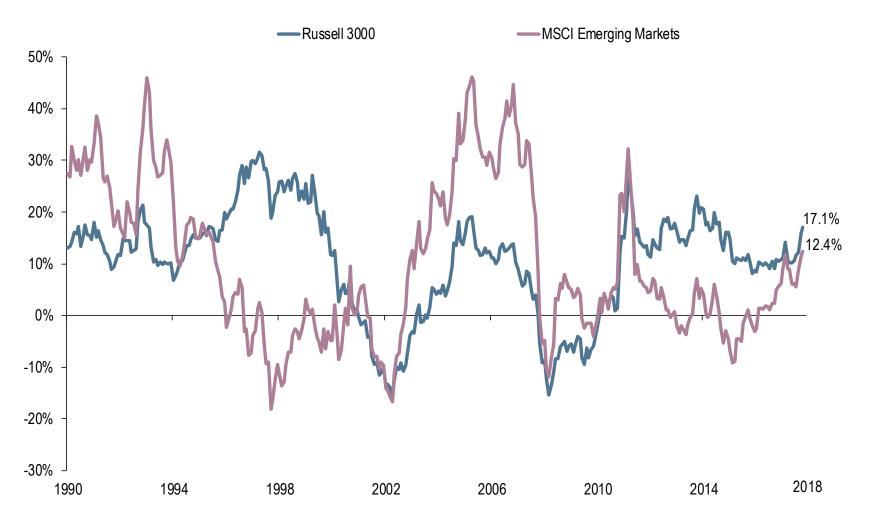


### S&P Sector Returns<sup>1</sup>

<sup>1</sup> Source: InvestorForce. Represents S&P 1500 (All Cap) data.

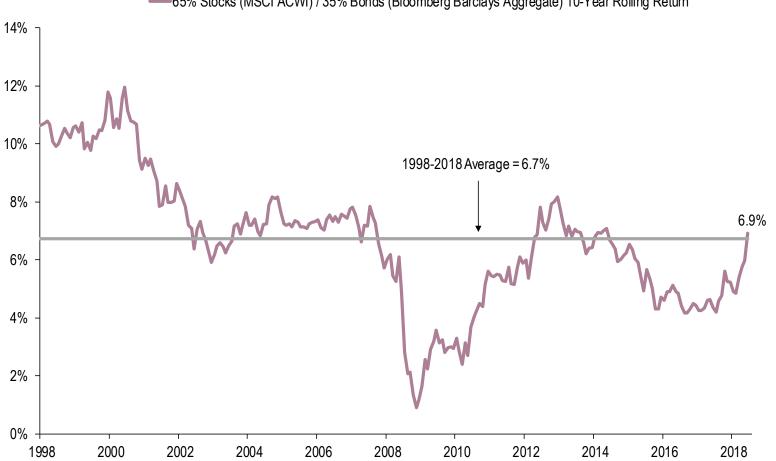


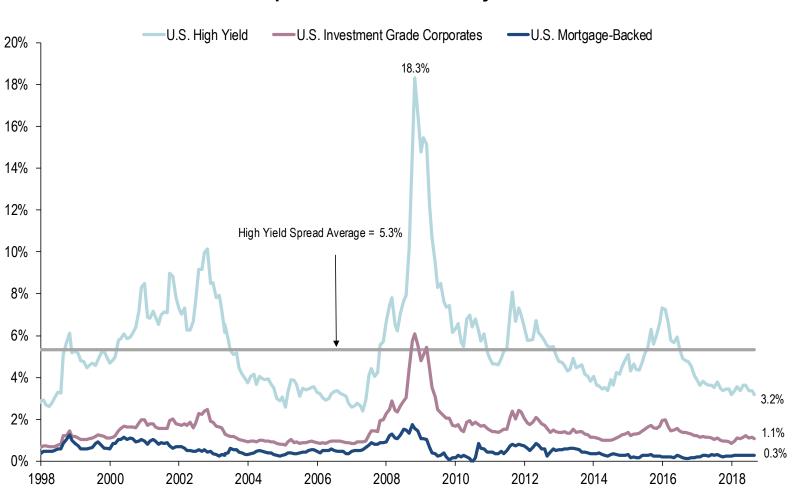
U.S. and Developed Market Foreign Equity Rolling Three-Year Returns<sup>1</sup>



U.S. and Emerging Market Equity Rolling Three-Year Returns<sup>1</sup>

### Rolling Ten-Year Returns: 65% Stocks and 35% Bonds<sup>1</sup>

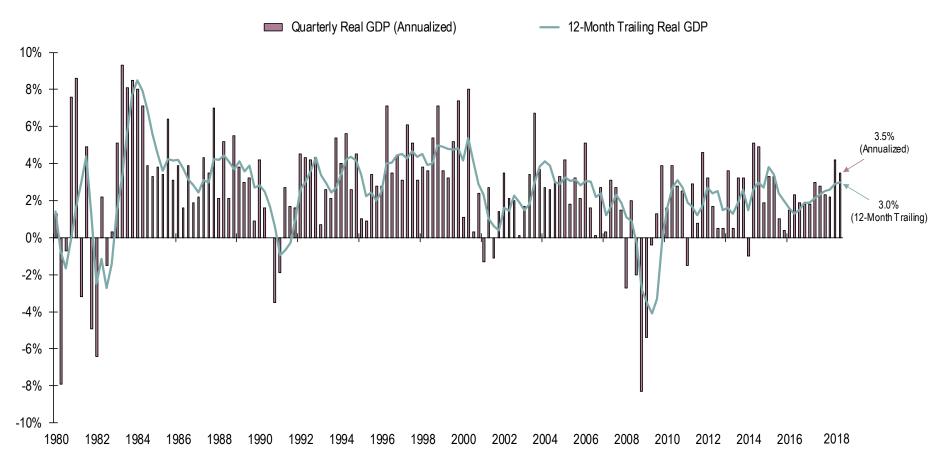




Credit Spreads vs. U.S. Treasury Bonds<sup>1, 2</sup>

Source: Barclays Live.
 The median high yield spread was 4.8% from 1997-2018.

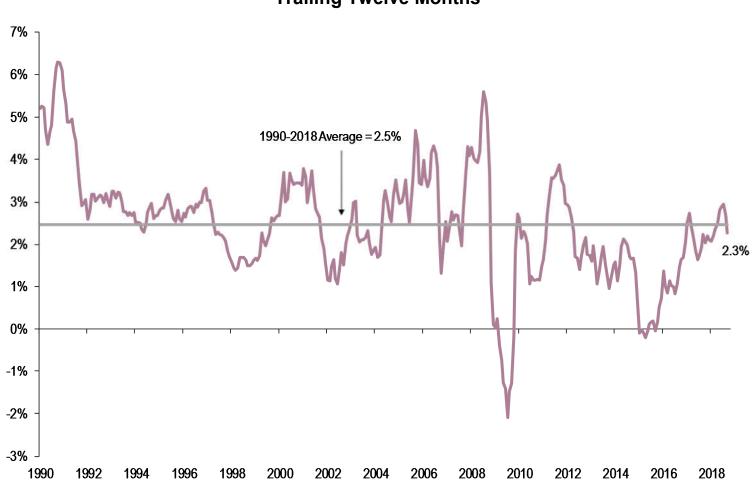




U.S. Real Gross Domestic Product (GDP) Growth<sup>1</sup>

1 Source: Bureau of Economic Analysis. Data is as of Q3 2018 and represents the first estimate.



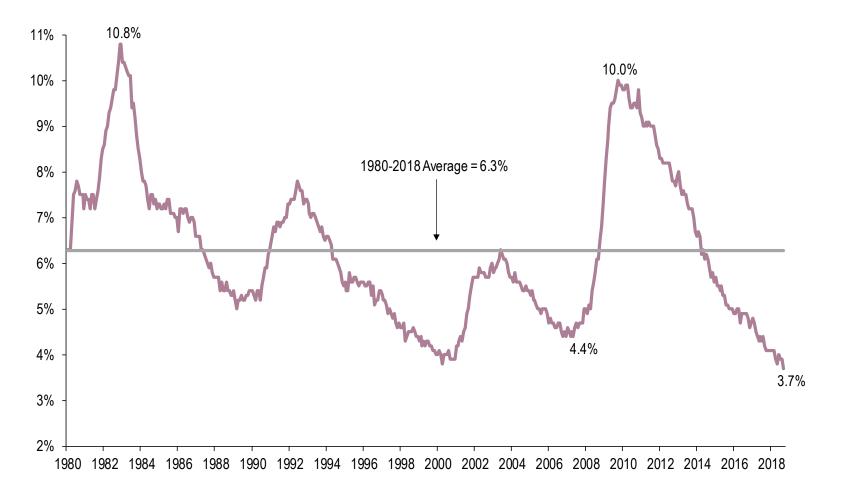


U.S. Inflation (CPI) Trailing Twelve Months<sup>1</sup>

<sup>1</sup> Source: Bureau of Labor Statistics. Data is non-seasonally adjusted CPI, which may be volatile in the short-term. Data is as of September 30, 2018.







<sup>1</sup> Source: Bureau of Labor Statistics. Data is as of September 30, 2018.

Executive Summary As of September 30, 2018

Aggregate Plan Overview

The value of the San Jose Federated City Employees' Retirement System assets was \$2,205.6 million on September 30, 2018, an increase of approximately \$133.9 million from the end of the prior quarter. The System had net cash outflows of \$102.2 million during the quarter.

- The Retirement System's net of fees performance for the quarter was +1.4%, slightly underperforming the Policy Benchmark (+1.5%) and in-line with the Allocation Index (+1.4%). The Retirement System underperformed the peer Public Defined Benefit Plans > \$1 Billion Universe's median return of +2.1%.
- The Retirement System returned +4.2% in the trailing one-year period, compared to +5.2% for the Policy Benchmark, +4.8% for the Allocation Index, and +6.5% for the peer median. The Retirement System's standard deviation of returns was 3.6% for the same period, exhibiting lower volatility than the peer median (4.3%).
  - Total Global Equity returned +2.1% for the quarter and +5.9% over the trailing one-year period, versus +3.9% and +9.6% for the MSCI ACWI IMI benchmark over the same periods, respectively. For the quarter, Global Equity returned +4.1%, U.S. Equity returned +6.3%, International Equity returned +0.5%, Emerging Markets Equity returned -3.0%, and Marketable Alternative Equity returned +0.6%.
  - Global Fixed Income returned +0.2% for the quarter and +0.0% over the trailing one-year period, versus -0.5% and -1.2% for the Custom Benchmark over the same periods, respectively. For the quarter, Global Core returned +0.0%, Non-Investment Grade Credit returned +1.6%, and Emerging Markets Debt returned +0.3%.
  - Real Assets returned +0.9% for the quarter and +7.1% over the trailing one-year period. For the quarter, Real Estate returned +2.9%, Commodities returned -3.2%, Infrastructure returned +3.3%, and Natural Resources returned +0.5%.
- The Retirement System added two investment managers during the quarter: Northern Trust 1-3 Year U.S. Government Bond (Global Core) and Northern Trust MSCI Emerging Markets IMI (Emerging Markets Equity).
- The Retirement System positioned towards its new asset allocation at the end of the quarter, resulting in the current allocation temporarily falling outside of IPS Policy Ranges for Private Equity and Global Fixed Income.



Manager Highlights<sup>1</sup>

#### Artisan

• Artisan Global Value returned +4.2% for the quarter, outperforming the MSCI ACWI Value benchmark by 20 basis points. Compared to peers, Artisan ranks in the 21st and 1st percentiles for the quarter and since inception periods, respectively. Qualcomm, Oracle, and Advance Auto Parts were the top contributors to performance in the quarter while Telefonica Brasil, Tesco, and BNY Mellon were the top detractors.

#### **Cove Street**

• Cove Street Small Cap Value returned +5.7% for the quarter, outperforming the Russell 2000 Value benchmark by 410 basis points. Over the trailing one-year and since inception periods Cove Street has underperformed the benchmark by 300 and 240 basis points, respectively. Belmond and E.W. Scripps were the top contributors to performance in the quarter while Tupperware and Capital Senior Living were the top detractors.

#### Dimensional

• DFA Emerging Markets Value returned +2.2% for the quarter, underperforming the MSCI Emerging Markets Value benchmark by 120 basis points. Since inception in November 2016, DFA has outperformed the benchmark by 180 basis points while ranking in the 19th percentile compared to peers. Relative to the index, the portfolio's emphasis on value stocks was the primary driver of outperformance, while its emphasis on small cap stocks detracted from performance.

#### BlueBay

• BlueBay Emerging Market Select Debt outperformed the Custom Benchmark for the quarter (+0.3% vs. +0.2%) while underperforming over the one-year period (-6.8% vs. -4.6%). Compared to peers, BlueBay ranks in the 58th and 73rd percentiles for the quarter and trailing one-year periods, respectively.

Net of management fees.



## Third Quarter Manager Summary

Investment Manager	Asset Class	Changes/ Announcements	Performance Concerns	Meketa Recommendation <sup>1</sup>	Comments
Artisan Global Opportunities	Global Equity				
Artisan Global Value	Global Equity	Yes		Hold	Personnel Changes
Cove Street Small Cap Value	U.S. Equity		Yes		Watch List
Oberweis International Opps.	International Equity				
Comgest Global EM	Emerging Markets Equity		Yes		Watch List
GQG Partners Global EM	Emerging Markets Equity	Yes		Hold	Personnel Changes
Dimensional EM Value	Emerging Markets Equity	Yes		Hold	Personnel Changes
Senator Global Opportunity	Long-Short Equity		Yes		Watch List
Sandler Plus	Long-Short Equity				
Marshall Wace	Long-Short Equity		Yes		Watch List
Voya Securitized Credit	Global Credit	Yes		Hold	Process Changes
Davidson Kempner Inst.	Non-Investment Grade Credit		Yes		Watch List
BlueBay EM Select Debt	Emerging Markets Debt	Yes	Yes	Hold	Watch List/Personnel Changes
Credit Suisse Risk Parity	Commodities				
Pinnacle Natural Resources	Commodities		Yes		Approved Termination

1 The Meketa Investment Group recommendations are based on the noted organizational or resource changes at each manager.



Watch List

#### Artisan

 During the quarter, it was announced that effective October 1, 2018, the Global Value team will be split from the International Value team into two distinct and autonomous investment teams. Going forward, the Global Value team will be led by Daniel O'Keefe while the International Value team will be led by David Samra. Concurrently, each of the four Associate Portfolio Managers on the Global Value team were named Co-Portfolio Managers along with Mr. O'Keefe.

#### **Cove Street**

• Over the three-year period, Cove Street (+12.4%) has underperformed the Russell 2000 Value by 370 basis points.

#### Comgest

• Since inception in March, 2017 Comgest (-2.8%) has underperformed the MSCI Emerging Markets SMID Cap by 890 basis points and ranked in the 96th percentile compared to peers.

### GQG

• During the quarter, an analyst left the firm.

#### Dimensional

- During the quarter, COO Sam Gilliland left Dimensional to become the CEO for a private firm outside of the industry.
- During the quarter, there were three additions and one departure on the portfolio management team. Dimensional employs a team approach in all aspects of the firm's management.

Manager Highlights<sup>1</sup>

#### Senator

• Over the three-year period, Senator (+5.5%) has underperformed the HFRI Equity Hedge Index by 120 basis points. Since inception in April 2013, Senator (+6.5%) has outperformed the benchmark by 170 basis points per year, on average.

#### Marshall Wace

Over the three-year period, Marshall Wace (+7.0%) has underperformed the HFRI Equity Hedge Index by 30 basis points. Since inception in April 2014, Marshall Wace (+8.5%) has outperformed the benchmark by 420 basis points per year, on average.

#### Voya

• During the quarter, Voya announced a simplified governance structure to improve how the firm evaluates ideas, makes decisions, and executes on these decisions.

#### **Davidson Kempner**

• Over the three-year period, Davidson Kempner (+5.5%) has underperformed the HFRI Event-Driven Index by 120 basis points. Since inception in February 2013, Davidson Kempner (+5.3%) has outperformed the benchmark by 40 basis points per year, on average.

#### BlueBay

- Over the three-year period, BlueBay (+4.0%) has underperformed the JPM Blended Emerging Markets Index by 170 basis points.
- During the quarter, Polina Kurdyavko became sole Head of Emerging Markets as David Dowsett transitioned to a new role as Emering Markets Strategic Advisor and is no longer a named portfolio manager on funds.



### Manager Highlights<sup>1</sup>

### Watch List<sup>1,2</sup>

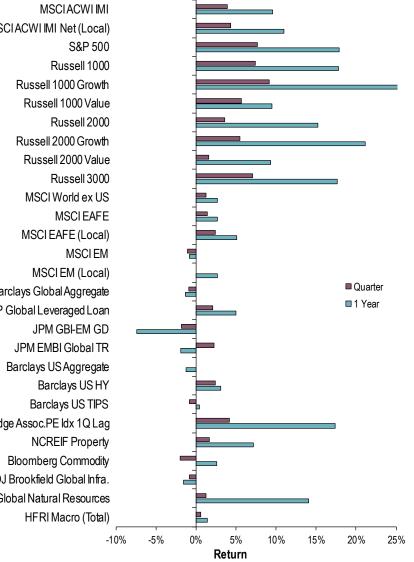
Investment Manager	Asset Class	Watch List Status	Comments
Cove Street Small Cap Value	U.S. Equity	Monitoring	Underperformance
Comgest Global EM	Emerging Markets Equity	Monitoring	Underperformance
Senator Global Opportunity	Long-Short Equity	Monitoring	Underperformance
Marshall Wace	Long-Short Equity	Monitoring	Underperformance
Davidson Kempner Inst.	Non-Investment Grade Credit	Monitoring	Underperformance
DE Shaw	Absolute Return	Monitoring	Transparency Concerns
BlueBay EM Select Debt	Emerging Markets Debt	Monitoring	Underperformance
Pinnacle Natural Resources	Real Assets	Approved Termination	Underperformance
Kepos Alpha Fund	Absolute Return	Monitoring	Underperformance

Watch List excludes Private Markets and Passive Funds.
 Placement on the Watch List includes qualitative reasons and manager underperformance versus the appropriate benchmark over a three and or five year period as outlined in the Investment Policy Statement.

#### San Jose Federated City Employees' Retirement System

#### Market Environment – 3Q18 Overview

	10 YR	5YR	3 YR	1 YR	YTD	3Q18		
	(%)	(%)	(%)	(%)	(%)	(%)	Scope	Benchmark
MSCIA								Global Equity
Meen	8.5	8.7	13.5	9.6	3.7	3.9	World	MSCI ACWI IMI
	9.2	10.5	13.4	11.0	5.4	4.3	World (Local Currency)	MSCI ACWI IMI Net (Local)
								Domestic Equity
F	12.0	14.0	17.3	17.9	10.6	7.7	Large Core	S&P 500
	12.1	13.7	17.1	17.8	10.5	7.4	Large Core	Russell 1000
	14.3	16.6	20.6	26.3	17.1	9.2	Large Growth	Russell 1000 Growth
	9.8	10.7	13.6	9.5	3.9	5.7	Large Value	Russell 1000 Value
F	11.1	11.1	17.1	15.2	11.5	3.6	Small Core	Russell 2000
	12.7	12.1	18.0	21.1	15.8	5.5	Small Growth	Russell 2000 Growth
	9.5	9.9	16.1	9.3	7.1	1.6	Small Value	Russell 2000 Value
	12.0	13.5	17.1	17.6	10.6	7.1	All Cap Core	Russell 3000
								International Equity
	5.2	4.2	9.3	2.7	-1.5	1.3	World ex-US	MSCI World ex US
	5.4	4.4	9.2	2.7	-1.4	1.4	International Developed	MSCI EAFE
							International Developed	MSCI EAFE (Local)
	6.7	7.9	9.4	5.1	1.4	2.4	(Local Currency)	
	5.4	3.6	12.4	-0.8	-7.7	-1.1	Emerging Markets	MSCI EM
Barcla	7.7	7.3	12.2	2.7	-2.9	0.0	Emerging Markets (Local Currency)	MSCI EM (Local)
S&P Glo								Global Fixed Income
	2.9	0.8	2.0	-1.3	-2.4	-0.9	Global Core Bonds	Barclays Global Aggregate
	6.1	3.6	5.2	5.0	4.0	2.1	Bank Loans	S&P Global Leveraged Loan
J	2.7	-1.7	5.2	-7.4	-8.2	-1.8	Emerging Markets Bonds (Local Currency)	JPM GBI-EM GD
Ba	7.5	5.4	6.0	-1.9	-3.0	2.3	Emerging Market Bonds	JPM EMBI Global TR
								Domestic Fixed Income
	3.8	2.2	1.3	-1.2	-1.6	0.0	Core Bonds	Barclays US Aggregate
Combridae	9.5	5.5	8.2	3.1	2.6	2.4	High Yield	Barclays US HY
Cambridge A	3.3	1.4	2.0	0.4	-0.8	-0.8	Inflation	Barclays US TIPS
	0.0	1.4	2.0	0.4	0.0	0.0	Innation	Other
Blo							Private Equity	Cambridge Associates PE Index 1Qtr
DJ Br	10.1	12.5	12.0	17.4	12.5	4.2		Lag
	6.4	9.6	7.8	7.2	5.3	1.7	Real Estate	NCREIF Property
S&P Glob	-6.2	-7.2	-0.1	2.6	-2.0	-2.0	Commodities	Bloomberg Commodity
	9.1	6.1	7.4	-1.6	-2.1	-0.8	Infrastructure	DJ Brookfield Global Infrastructure
	3.2	4.1	19.7	14.1	5.1	1.3	Natural Resources	S&P Global Natural Resources
	-1.4	0.4	-0.6	1.4	-1.2	0.6	Hedge Funds	HFRI Macro



# **3Q18 Review**

#### San Jose Federated City Employees' Retirement System

### Total Fund Aggregate

As of September 30, 2018

Current	Overlay Net	Policy		Allocation vs	. Target <u>s a</u>	nd Policy			
				Current Balance	Current Allocation	Russell Overlay Net Position	Policy	Policy Range	Within IPS Range?
			Total Global Equity	\$637,246,848	28.9%	30.2%	28.0%	20.0% - 36.0%	Yes
28.9%	30.2%	28.0%	Global Equity	\$187,396,146	8.5%	6.1%			
			US Equity	\$124,473,033	5.6%	7.3%			
			International Equity	\$77,096,365	3.5%	4.8%			
			Emerging Markets Equity	\$184,847,223	8.4%	9.1%			
			Marketable Alternative Equity	\$63,434,080	2.9%	2.9%			
		9.0%	Private Equity	\$426,965,498	19.4%	19.4%	9.0%	4.0% - 14.0%	No
			Global Fixed Income	\$358,557,811	16.3%	16.3%	33.0%	23.0% - 43.0%	No
19.4%	19.4%		Global Core	\$252,903,775	11.5%	11.5%	25.0%	20.0%-30.0%	No
			Non-Investment Grade Credit	\$40,341,972	1.8%	1.8%	4.0%	0.0%-6.0%	Yes
			Emerging Markets Debt	\$65,312,064	3.0%	3.0%	4.0%	1.0%-6.0%	Yes
			Private Debt	\$71,740,843	3.3%	3.3%	6.0%	2.0% - 10.0%	Yes
16.3%		33.0%	Real Assets	\$254,477,771	11.5%	11.5%	13.0%	8.0% - 18.0%	Yes
10.070	16.3%		Real Estate	\$169,934,781	7.7%	7.7%	8.0%	4.0%-12.0%	Yes
			Commodities	\$65,981,438	3.0%	3.0%	4.0%	0.0%-8.0%	Yes
3.3%	3.3%		Infrastructure	\$18,448,117	0.8%	0.8%	1.0%	0.0%-4.0%	Yes
	0.070		Natural Resources	\$113,435	0.0%	0.0%	0.0%	0.0%-5.0%	Yes
11.5%	11.5%	6.0%	Absolute Return	\$249,589,647	11.3%	11.3%	11.0%	6.0% - 16.0%	Yes
	11.070		Opportunistic			0.0%	0.0%	0.0% - 5.0%	Yes
		13.0%	Cash	\$207,050,138	9.4%	8.1%	0.0%	0.0% - 10.0%	Yes
11.3%	11.3%	10.070	 Total	\$2,205,628,556	100.0%	100.0%	100.0%		
	-0.0%-	11.0%							
9.4%	8.1%	11.0%							

<sup>1</sup> Data in the column titled "Russell Overlay Net Position" is based on physical exposures, adjusted for synthetic positions provided by Russell Investments. <sup>2</sup> Cash composite includes the cash account, cash collateral in the Russell Investments Overlay program, and residuals from terminated manager assets.

0.0%



As of September 30, 2018

	Asset Class I	Net Perform	nance Su	mmary							
	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Fund Aggregate	2,205,628,556	100.0	1.4	1.4	1.8	4.2	6.4	4.6	5.3	6.7	Jan-94
Policy Benchmark			1.5	1.5	1.8	5.2	7.9	5.0	5.9	7.0	Jan-94
Allocation Index			1.4	1.4	1.4	4.8	7.0	4.5	5.4		Jan-94
InvestorForce Public DB > \$1B Net Median			2.1	2.1	2.9	6.5	9.3	7.1	7.3	7.2	Jan-94
InvestorForce Public DB > \$1B Net Rank			90	90	93	99	99	99	99	77	Jan-94
Total Global Equity	637,246,848	28.9	2.1	2.1	1.3	5.9	10.7	7.7		8.5	May-10
MSCI ACWI IMI Net USD			3.9	3.9	3.7	9.6	13.5	8.7		8.9	May-10
eV All Global Equity Net Median			3.6	3.6	3.6	9.0	12.4	8.7	8.6	9.4	May-10
eV All Global Equity Net Rank			70	70	69	70	73	65		68	May-10
Global Equity	187,396,146	8.5	4.1	4.1	4.5	8.9	14.2			10.4	Jul-15
MSCI ACWI IMI Net USD			3.9	3.9	3.7	9.6	13.5			8.9	Jul-15
eV All Global Equity Net Median			3.6	3.6	3.6	9.0	12.4	8.7	8.6	8.4	Jul-15
eV All Global Equity Net Rank			42	42	41	51	26			24	Jul-15
US Equity	124,473,033	5.6	6.3	6.3	9.6	14.6	15.7			11.4	Jul-15
Russell 3000			7.1	7.1	10.6	17.6	17.1			13.0	Jul-15
eV All US Equity Net Median			5.6	5.6	8.4	14.6	15.1	11.6	11.5	10.9	Jul-15
eV All US Equity Net Rank			42	42	44	50	43			44	Jul-15
International Equity	77,096,365	3.5	0.5	0.5	-1.0	3.6	10.1			5.9	Jul-15
MSCI World ex USA			1.3	1.3	-1.5	2.7	9.3			4.9	Jul-15
eV All EAFE Equity Net Median			0.8	0.8	-2.1	2.4	9.5	5.4	6.5	5.8	Jul-15
eV All EAFE Equity Net Rank			57	57	40	38	42			48	Jul-15

Fiscal Year begins July 1.
 Please see the Appendix for composition of the Policy Benchmark.
 Allocation Index consists of the individual benchmarks that comprise the Policy Benchmark weighted accordingly to actual allocations and re-adjusted monthly.
 Returns for the Equity Aggregate are gross of fees through June 2015 and net of fees thereafter.



As of September 30, 2018

	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Emerging Markets Equity	184,847,223	8.4	-3.0	-3.0	-11.8	-6.2	5.5			1.6	Jul-15
MSCI Emerging Markets			-1.1	-1.1	-7.7	-0.8	12.4			4.8	Jul-15
eV Emg Mkts Equity Net Median			-2.8	-2.8	-9.5	-3.2	11.2	3.7	6.0	4.4	Jul-15
eV Emg Mkts Equity Net Rank			52	52	75	76	96		-	91	Jul-15
Marketable Alternative Equity	63,434,080	2.9	0.6	0.6	4.1	6.7	5.7		-	6.1	Oct-14
HFRI Equity Hedge (Total) Index			0.4	0.4	1.6	5.0	7.3		-	4.7	Oct-14
Private Equity	426,965,498	19.4	6.1	6.1	6.8	9.7	8.2	11.3	8.0	7.2	Jan-06
Cambridge PE Composite BM			4.2	4.2	12.5	17.4	12.0	12.5	10.1	11.3	Jan-06
Private Equity ex Russell 3000	74,825,178	3.4	4.4	4.4	5.2	8.1	7.7	11.0	7.8	7.1	Jan-06
Cambridge PE Composite BM			4.2	4.2	12.5	17.4	12.0	12.5	10.1	11.3	Jan-06
Global Fixed Income	358,557,811	16.3	0.2	0.2	-0.6	0.0	2.1	1.7		2.4	Jan-12
Fixed Income Custom Benchmark			-0.5	-0.5	-2.3	-1.2	2.8	1.0		1.1	Jan-12
eV All Global Fixed Inc Net Median			0.5	0.5	-1.2	-0.5	3.7	2.7	4.7	3.3	Jan-12
eV All Global Fixed Inc Net Rank			59	59	41	44	78	68		66	Jan-12
Global Core	252,903,775	11.5	0.0	0.0	0.0	0.6	1.7			1.6	Jul-15
BBgBarc Global Aggregate TR			-0.9	-0.9	-2.4	-1.3	2.0			2.1	Jul-15
Non-Investment Grade Credit	40,341,972	1.8	1.6	1.6	3.8	4.1	3.8	1.3		2.1	Feb-13
50% BAML Global HY / 50% S&P Global Leveraged Loan			2.0	2.0	2.6	3.4	7.4	5.2		5.7	Feb-13
Emerging Markets Debt	65,312,064	3.0	0.3	0.3	-7.9	-6.8	4.0			1.4	Jul-15
50% JPM EMBI GD / 50% JPM GBI-EM			0.2	0.2	-5.6	-4.6	5.7			3.2	Jul-15
eV All Emg Mkts Fixed Inc Net Median			1.0	1.0	-5.3	-4.4	5.6	3.3	6.5	3.6	Jul-15
eV All Emg Mkts Fixed Inc Net Rank			58	58	77	73	88			78	Jul-15

Returns for the Fixed income, Private Debt, and Real Assets Aggregates are gross of fees through June 2015 and net of fees thereafter.
 Prior to 7/1/2015, Fixed Income Custom Benchmark was 100% Barclays Global Aggregate. After 7/1/2015, Fixed Income Custom Benchmark consists of 80% Barclays Global Aggregate, 5% JPM GBI-EM GD, 5% JPM EMBI GD, 5% S&P Global Leveraged Loan, and 5% BAML Global HY Index.

As of September 30, 2018

	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Private Debt	71,740,843	3.3	-0.8	-0.8	2.6	-1.7	-0.6	2.3		4.0	Dec-10
S&P Global Leveraged Loan +2%			2.1	2.1	4.3	6.1	7.4	5.6		6.5	Dec-10
Real Assets	254,477,771	11.5	0.9	0.9	3.2	7.1	9.1	3.4		1.8	May-10
Real Assets Benchmark			0.3	0.3	2.5	5.5	8.2	3.3		4.8	May-10
Real Estate	169,934,781	7.7	2.9	2.9	8.2	11.4	11.7	14.1	5.0	9.5	Jan-94
NCREIF Property Index			1.7	1.7	5.3	7.2	7.8	9.6	6.4	9.4	Jan-94
Commodities	65,981,438	3.0	-3.2	-3.2	0.1	4.1	0.9	-5.2		-3.4	May-10
Bloomberg Commodity Index TR USD			-2.0	-2.0	-2.0	2.6	-0.1	-7.2		-5.0	May-10
Infrastructure	18,448,117	0.8	3.3	3.3	1.2	1.4	8.7			5.8	Mar-14
DJ Brookfield Global Infrastructure Net TR USD			-0.8	-0.8	-2.1	-1.6	7.4			4.6	Mar-14
Natural Resources	113,435	0.0	0.5	0.5	-0.1	7.4	15.2	1.4		0.3	Nov-12
S&P Global Natural Resources Index TR USD			1.3	1.3	5.1	14.1	19.7	4.1		3.3	Nov-12
Absolute Return	249,589,647	11.3	0.7	0.7	2.8	3.4	2.1	3.2		3.4	Nov-12
HFRI Macro (Total) Index			0.0	0.0	-1.8	0.6	0.4	1.5		1.0	Nov-12
Relative Value	114,057,482	5.2	1.6	1.6	4.5	5.7	4.0			4.1	Oct-14
HFRI Relative Value (Total) Index			1.4	1.4	3.1	4.2	5.2			3.6	Oct-14
Масго	135,532,165	6.1	-0.1	-0.1	1.2	1.4	0.6			1.3	Oct-14
HFRI Macro (Total) Index			0.0	0.0	-1.8	0.6	0.4			0.6	Oct-14
Cash	207,044,776	8.9									
91 Day T-Bills			0.5	0.5	1.3	1.6	0.9				

<sup>1</sup> Cash composite includes the cash account, cash collateral in the Russell Investments Overlay program, and residuals from terminated manager assets.

As of September 30, 2018

Trailing Net Performance													
	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date		
Total Fund Aggregate	2,205,628,556	100.0	1.4	1.4	1.8	4.2	6.4	4.6	5.3	6.7	Jan-94		
Policy Benchmark			1.5	1.5	1.8	5.2	7.9	5.0	5.9	7.0	Jan-94		
Allocation Index			1.4	1.4	1.4	4.8	7.0	4.5	5.4		Jan-94		
InvestorForce Public DB > \$1B Net Median			2.1	2.1	2.9	6.5	9.3	7.1	7.3	7.2	Jan-94		
InvestorForce Public DB > \$1B Net Rank			90	90	93	99	99	99	99	77	Jan-94		
Total Global Equity	637,246,848	28.9	2.1	2.1	1.3	5.9	10.7	7.7		8.5	May-10		
MSCI ACWI IMI Net USD			3.9	3.9	3.7	9.6	13.5	8.7		8.9	May-10		
eV All Global Equity Net Median			3.6	3.6	3.6	9.0	12.4	8.7	8.6	9.4	May-10		
eV All Global Equity Net Rank			70	70	69	70	73	65	-	68	May-10		
Global Equity	187,396,146	8.5	4.1	4.1	4.5	8.9	14.2			10.4	Jul-15		
MSCI ACWI IMI Net USD			3.9	3.9	3.7	9.6	13.5			8.9	Jul-15		
eV All Global Equity Net Median			3.6	3.6	3.6	9.0	12.4	8.7	8.6	8.4	Jul-15		
eV All Global Equity Net Rank			42	42	41	51	26			24	Jul-15		
Artisan Global Value	128,535,485	5.8	4.2	4.2	1.9	6.1	13.6	9.6		11.6	Mar-11		
MSCI ACWI Value NR USD			4.0	4.0	-0.1	4.8	11.5	6.6	-	6.3	Mar-11		
eV Global Value Equity Net Median			2.7	2.7	0.6	5.3	11.6	6.9	8.3	7.5	Mar-11		
eV Global Value Equity Net Rank			21	21	38	43	16	9		1	Mar-11		
Artisan Global Opportunities	58,860,661	2.7	3.5	3.5	8.0	12.8				14.8	Jul-17		
MSCI ACWI Growth NR USD			4.6	4.6	7.6	14.7				16.7	Jul-17		
eV All Global Equity Net Median			3.6	3.6	3.6	9.0	12.4	8.7	8.6	11.6	Jul-17		
eV All Global Equity Net Rank			51	51	19	23			-	26	Jul-17		
Russell Currency Hedge	0	0.0											

Returns for the Equity Aggregate are gross of fees through June 2015 and net of fees thereafter.
 Please see final page of the performance report for composition of the Policy Benchmark.

As of September 30, 2018

	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
US Equity	124,473,033	5.6	6.3	6.3	9.6	14.6	15.7			11.4	Jul-15
Russell 3000			7.1	7.1	10.6	17.6	17.1			13.0	Jul-15
eV All US Equity Net Median			5.6	5.6	8.4	14.6	15.1	11.6	11.5	10.9	Jul-15
eV All US Equity Net Rank			42	42	44	50	43		-	44	Jul-15
Northern Trust Russell 1000 Index	91,879,934	4.2	7.4	7.4	10.7	18.0			-	20.4	Nov-16
Russell 1000			7.4	7.4	10.5	17.8			-	20.2	Nov-16
Cove Street Small Cap Value	18,415,179	0.8	5.7	5.7	6.5	6.3	12.4			6.9	May-14
Russell 2000 Value			1.6	1.6	7.1	9.3	16.1			9.3	May-14
eV US Small Cap Value Equity Net Median			1.3	1.3	4.6	8.0	14.1	9.5	10.7	8.7	May-14
eV US Small Cap Value Equity Net Rank			6	6	33	71	74		-	79	May-14
Northern Trust Russell 2000 Value	14,177,921	0.6	1.6	1.6	7.6					7.6	Jan-18
Russell 2000 Value			1.6	1.6	7.1				-	7.1	Jan-18
International Equity	77,096,365	3.5	0.5	0.5	-1.0	3.6	10.1			5.9	Jul-15
MSCI World ex USA			1.3	1.3	-1.5	2.7	9.3			4.9	Jul-15
eV All EAFE Equity Net Median			0.8	0.8	-2.1	2.4	9.5	5.4	6.5	5.8	Jul-15
eV All EAFE Equity Net Rank			57	57	40	38	42		-	48	Jul-15
Oberweis International Opportunities	39,864,015	1.8	-2.5	-2.5	-1.6	6.2			-	12.2	Nov-15
MSCI World ex USA Small Cap Growth NR USD			-1.4	-1.4	-0.4	6.1				11.5	Nov-15
eV EAFE Small Cap Growth Net Median			-1.5	-1.5	0.8	6.6	13.3	10.3	11.9	12.4	Nov-15
eV EAFE Small Cap Growth Net Rank			65	65	77	56			-	55	Nov-15
Northern Trust MSCI World ex. U.S.	37,232,351	1.7	1.3	1.3	-0.9	3.1			-	12.5	Nov-16
MSCI World ex USA			1.3	1.3	-1.5	2.7				12.0	Nov-16

	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Emerging Markets Equity	184,847,223	8.4	-3.0	-3.0	-11.8	-6.2	5.5			1.6	Jul-15
MSCI Emerging Markets			-1.1	-1.1	-7.7	-0.8	12.4			4.8	Jul-15
eV Emg Mkts Equity Net Median			-2.8	-2.8	-9.5	-3.2	11.2	3.7	6.0	4.4	Jul-15
eV Emg Mkts Equity Net Rank			52	52	75	76	96		-	91	Jul-15
Northern Trust MSCI EM IMI	120,000,000	5.4							-	0.0	Aug-18
MSCI Emerging Market IMI Net									-	-0.9	Aug-18
GQG Partners Global Emerging Markets	25,837,909	1.2	-5.4	-5.4	-11.0	-5.7				3.2	Jul-17
MSCI Emerging Markets			-1.1	-1.1	-7.7	-0.8				5.6	Jul-17
eV Emg Mkts Equity Net Median			-2.8	-2.8	-9.5	-3.2	11.2	3.7	6.0	3.3	Jul-17
eV Emg Mkts Equity Net Rank			83	83	69	73			-	51	Jul-17
Dimensional Fund Advisors EM Value	24,678,045	1.1	2.2	2.2	-5.1	2.4			-	11.5	Nov-16
MSCI Emerging Markets Value NR USD			3.4	3.4	-4.3	2.3				9.7	Nov-16
eV Emg Mkts Equity Net Median			-2.8	-2.8	-9.5	-3.2	11.2	3.7	6.0	9.2	Nov-16
eV Emg Mkts Equity Net Rank			7	7	12	8			-	19	Nov-16
Comgest Global Emerging Markets	14,331,270	0.6	-8.0	-8.0	-21.5	-16.6				-2.8	Mar-17
MSCI Emerging Markets SMID Cap			-3.3	-3.3	-10.4	-2.9				6.1	Mar-17
eV Emg Mkts Small Cap Equity Net Median			-5.2	-5.2	-12.4	-5.2	8.7	4.2	9.0	6.6	Mar-17
eV Emg Mkts Small Cap Equity Net Rank			72	72	99	98				96	Mar-17

	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Marketable Alternative Equity	63,434,080	2.9	0.6	0.6	4.1	6.7	5.7			6.1	Oct-14
HFRI Equity Hedge (Total) Index			0.4	0.4	1.6	5.0	7.3			4.7	Oct-14
Marshall Wace Eureka Fund	23,005,079	1.0	0.4	0.4	6.2	10.1	7.0			8.5	Apr-14
HFRI Equity Hedge (Total) Index			0.4	0.4	1.6	5.0	7.3			4.3	Apr-14
Senator Global Opportunity Offshore Fund	20,766,624	0.9	0.8	0.8	0.0	2.4	5.5	5.4		6.5	Apr-13
HFRI Event-Driven (Total) Index			0.6	0.6	2.6	4.6	6.7	4.3		4.8	Apr-13
Sandler Plus Offshore Fund Ltd	19,662,377	0.9	0.6	0.6	7.7	10.0	9.0	8.9		8.7	May-13
HFRI Equity Hedge (Total) Index			0.4	0.4	1.6	5.0	7.3	5.1		5.4	May-13
Private Equity	426,965,498	19.4	6.1	6.1	6.8	9.7	8.2	11.3	8.0	7.2	Jan-06
Cambridge PE Composite BM			4.2	4.2	12.5	17.4	12.0	12.5	10.1	11.3	Jan-06
Northern Trust Russell 3000	352,140,320	16.0	7.1	7.1						7.8	Jun-18
Russell 3000			7.1	7.1						7.8	Jun-18
Private Equity ex Russell 3000	74,825,178	3.4	4.4	4.4	5.2	8.1	7.7	11.0	7.8	7.1	Jan-06
Cambridge PE Composite BM			4.2	4.2	12.5	17.4	12.0	12.5	10.1	11.3	Jan-06
PE Strategic Partnership LP	25,378,023	1.2	5.3	5.3	5.1	-0.8				-0.7	Aug-17
Cambridge PE Composite BM			4.2	4.2	12.5	17.4				19.7	Aug-17
Pantheon USA Fund VII	20,563,758	0.9	5.1	5.1						8.5	Jun-18
Cambridge PE Composite BM			4.2	4.2						6.9	Jun-18
Partners Group Secondary 2011, L.P.	8,901,556	0.4	2.1	2.1	10.7	14.0	11.5	15.9		22.0	Nov-12
Cambridge PE Composite BM			4.2	4.2	12.5	17.4	12.0	12.5		13.4	Nov-12

As of September 30, 2018

	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Pantheon Global Secondary Fund III 'B'	5,448,929	0.2	13.1	13.1	9.1	11.4	3.9	4.1		5.3	Jul-09
Cambridge PE Composite BM			4.2	4.2	12.5	17.4	12.0	12.5		14.1	Jul-09
Crestline Portfolio Financing	5,028,625	0.2	1.2	1.2						1.2	Jun-18
Cambridge PE Composite BM			4.2	4.2						6.9	Jun-18
Pathway Private Equity Fund VIII	4,168,151	0.2	1.6	1.6	-2.3	4.0	0.8	7.2		10.9	Jul-09
Cambridge PE Composite BM			4.2	4.2	12.5	17.4	12.0	12.5	-	14.1	Jul-09
Great Hill Equity Partners IV, LP	3,656,259	0.2	3.3	3.3	25.5	44.0	38.3	36.9		29.0	Jul-09
Cambridge PE Composite BM			4.2	4.2	12.5	17.4	12.0	12.5		14.1	Jul-09
Partners Group Secondary 2008, L.P.	1,410,129	0.1	0.9	0.9	2.7	3.8	4.5	6.6		9.6	Jul-09
Cambridge PE Composite BM			4.2	4.2	12.5	17.4	12.0	12.5		14.1	Jul-09
Innovation Endeavors II	269,748	0.0								- 	May-18
Global Fixed Income	358,557,811	16.3	0.2	0.2	-0.6	0.0	2.1	1.7		2.4	Jan-12
Fixed Income Custom Benchmark			-0.5	-0.5	-2.3	-1.2	2.8	1.0		1.1	Jan-12
eV All Global Fixed Inc Net Median			0.5	0.5	-1.2	-0.5	3.7	2.7	4.7	3.3	Jan-12
eV All Global Fixed Inc Net Rank			59	59	41	44	78	68		66	Jan-12

<sup>1</sup> Returns for the Fixed Income Aggregate are gross of fees through June 2015 and net of fees thereafter.

<sup>2</sup> Prior to 7/1/2015, Fixed Income Custom Benchmark was 100% Barclays Global Aggregate. After 7/1/2015, Fixed Income Custom Benchmark consists of 80% Barclays Global Aggregate, 5% JPM GBI-EM GD, 5% JPM EMBI GD, 5% S&P Global Leveraged Loan, and 5% BAML GLobal HY Index.

As of September 30, 2018

	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Global Core	252,903,775	11.5	0.0	0.0	0.0	0.6	1.7		-	1.6	Jul-15
BBgBarc Global Aggregate TR			-0.9	-0.9	-2.4	-1.3	2.0			2.1	Jul-15
Northern Trust 1-3 Year US Govt Bond	111,000,000	5.0								0.0	Aug-18
BBgBarc US Govt 1-3 Yr TR									-	-0.1	Aug-18
Voya Securitized Credit	98,825,420	4.5	1.3	1.3	2.8	4.2	6.1		-	5.6	Jul-15
BBgBarc Global Aggregate Securitized TR			-0.2	-0.2	-1.5	-1.1	1.1		-	1.3	Jul-15
Northern Trust TIPS 0-5 Years	43,078,355	2.0	0.3	0.3	1.0	1.2	1.5			0.4	Jul-14
BBgBarc US Treasury TIPS 0-5 Yr TR			0.1	0.1	0.8	1.0	1.4		-	0.4	Jul-14
Non-Investment Grade Credit	40,341,972	1.8	1.6	1.6	3.8	4.1	3.8	1.3		2.1	Feb-13
50% BAML Global HY / 50% S&P Global Leveraged Loan			2.0	2.0	2.6	3.4	7.4	5.2	-	5.7	Feb-13
Davidson Kempner Institutional Partners, L.P.	40,341,972	1.8	1.5	1.5	3.7	4.6	5.5	4.8		5.3	Feb-13
HFRI Event-Driven (Total) Index			0.6	0.6	2.6	4.6	6.7	4.3	-	4.9	Feb-13
Emerging Markets Debt	65,312,064	3.0	0.3	0.3	-7.9	-6.8	4.0			1.4	Jul-15
50% JPM EMBI GD / 50% JPM GBI-EM			0.2	0.2	-5.6	-4.6	5.7			3.2	Jul-15
eV All Emg Mkts Fixed Inc Net Median			1.0	1.0	-5.3	-4.4	5.6	3.3	6.5	3.6	Jul-15
eV All Emg Mkts Fixed Inc Net Rank			58	58	77	73	88		-	78	Jul-15
BlueBay Emerging Market Select Debt	65,312,064	3.0	0.3	0.3	-7.9	-6.8	4.0			1.4	Jul-15
50% JPM EMBI GD / 50% JPM GBI-EM			0.2	0.2	-5.6	-4.6	5.7			3.2	Jul-15
eV All Emg Mkts Fixed Inc Net Median			1.0	1.0	-5.3	-4.4	5.6	3.3	6.5	3.6	Jul-15
eV All Emg Mkts Fixed Inc Net Rank			58	58	77	73	88		-	78	Jul-15

As of September 30, 2018

	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Private Debt	71,740,843	3.3	-0.8	-0.8	2.6	-1.7	-0.6	2.3		4.0	Dec-10
S&P Global Leveraged Loan +2%			2.1	2.1	4.3	6.1	7.4	5.6		6.5	Dec-10
Medley Opportunity Fund II	27,905,538	1.3	-1.3	-1.3	-6.6	-8.6	0.6	3.6		4.8	Jun-11
3-Month LIBOR + 5%			1.8	1.8	5.5	7.2	6.3	5.9		5.7	Jun-11
White Oak Direct Lending Account	14,230,810	0.6	-11.0	-11.0	7.8	-6.8	-9.0	-3.0		-0.6	Feb-11
3-Month LIBOR + 5%			1.8	1.8	5.5	7.2	6.3	5.9		5.7	Feb-11
GSO Direct Lending Account	12,821,572	0.6	10.3	10.3	11.5	12.2	3.6	4.0		8.3	Mar-11
3-Month LIBOR + 5%			1.8	1.8	5.5	7.2	6.3	5.9		5.7	Mar-11
Cross Ocean USD ESS II	11,650,545	0.5	2.2	2.2	6.8	9.1				13.9	Aug-16
S&P Global Leveraged Loan +2%			2.1	2.1	4.3	6.1				7.7	Aug-16
ArrowMark Co-Investment	5,132,377	0.2	3.1	3.1	9.5						Dec-17
S&P Global Leveraged Loan +2%			2.1	2.1	4.3						Dec-17
Real Assets	254,477,771	11.5	0.9	0.9	3.2	7.1	9.1	3.4		1.8	May-10
Real Assets Benchmark			0.3	0.3	2.5	5.5	8.2	3.3		4.8	May-10
Real Estate	169,934,781	7.7	2.9	2.9	8.2	11.4	11.7	14.1	5.0	9.5	Jan-94
NCREIF Property Index			1.7	1.7	5.3	7.2	7.8	9.6	6.4	9.4	Jan-94
American Realty	85,152,365	3.9	1.6	1.6	4.9	6.4	7.5	9.4	4.2	5.0	Jan-07
NCREIF ODCE Equal Weighted (Net)			1.9	1.9	5.8	7.9	8.2	9.9	4.5	5.1	Jan-07

<sup>1</sup> Returns for the Private Debt and Real Assets Aggregates are gross of fees through June 2015 and net of fees thereafter.

	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
PRISA NCREIF ODCE Equal Weighted (Net)	40,211,936	1.8	2.2 1.9	2.2 1.9	7.8 5.8	9.9 7.9	9.7 8.2	10.9 9.9	4.4 4.5	7.2 6.9	Jul-04 <i>Jul-04</i>
DRA Growth & Income Fund VIII	13,377,286	0.6	3.0	3.0	5.7	13.6	12.3		-	12.0	Jan-15
NCREIF Property Index			1.7	1.7	5.3	7.2	7.8			8.9	Jan-15
DRA Growth and Income Fund VII	9,995,118	0.5	12.6	12.6	34.5	45.5	32.8	25.6		23.1	Apr-12
NCREIF Property Index			1.7	1.7	5.3	7.2	7.8	9.6		9.9	Apr-12
Tristan Capital Partners	9,038,797	0.4	3.5	3.5	7.7	10.8				8.9	Jan-16
NCREIF Property Index			1.7	1.7	5.3	7.2				7.4	Jan-16
DRA Growth and Income Fund IX	8,525,703	0.4	6.8	6.8	15.5	19.8			-	15.2	Feb-17
NCREIF Property Index			1.7	1.7	5.3	7.2			-	7.4	Feb-17
Torchlight Debt Opportunity VI	1,854,454	0.1	-2.1	-2.1						-2.1	Apr-18
NCREIF Property Index			1.7	1.7					-	3.5	Apr-18
DRA Growth and Income Fund VI	1,152,862	0.1	-2.6	-2.6	-2.5	1.0	6.5	14.6	8.7	8.8	Jan-08
NCREIF Property Index			1.7	1.7	5.3	7.2	7.8	9.6	6.4	6.2	Jan-08
GEM Realty Fund VI	604,396	0.0	31.9	31.9	8.1				-		Nov-17
NCREIF Property Index			1.7	1.7	5.3				-		Nov-17
DRA Growth and Income Fund V	21,864	0.0	30.4	30.4	130.4	134.3	73.9	50.3	20.6	18.4	Jan-06
NCREIF Property Index			1.7	1.7	5.3	7.2	7.8	9.6	6.4	7.7	Jan-06

	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Commodities	65,981,438	3.0	-3.2	-3.2	0.1	4.1	0.9	-5.2		-3.4	May-10
Bloomberg Commodity Index TR USD			-2.0	-2.0	-2.0	2.6	-0.1	-7.2		-5.0	May-10
Pinnacle Natural Resources, L.P.	39,354,520	1.8	-3.3	-3.3	7.8	10.8				-0.6	Jan-16
Bloomberg Commodity Index TR USD			-2.0	-2.0	-2.0	2.6			-	4.0	Jan-16
Credit Suisse Risk Parity Commodity Index	26,626,918	1.2	-3.1	-3.1	-3.5	0.8	2.1	-3.9		-5.1	Apr-11
Bloomberg Commodity Index TR USD			-2.0	-2.0	-2.0	2.6	-0.1	-7.2	-	-8.4	Apr-11
Infrastructure	18,448,117	0.8	3.3	3.3	1.2	1.4	8.7			5.8	Mar-14
DJ Brookfield Global Infrastructure Net TR USD			-0.8	-0.8	-2.1	-1.6	7.4			4.6	Mar-14
Global Infrastructure Partners III	18,431,429	0.8	5.9	5.9	5.9	-6.6				-2.8	Sep-16
DJ Brookfield Global Infrastructure Net TR USD			-0.8	-0.8	-2.1	-1.6			-	4.9	Sep-16
Rhumbline DJ Brookfield Global Infrastructure	16,688	0.0	-1.0	-1.0	-2.1	-1.5	7.8			3.0	Jun-15
DJ Brookfield Global Infrastructure Net TR USD			-0.8	-0.8	-2.1	-1.6	7.4		-	2.5	Jun-15
Natural Resources	113,435	0.0	0.5	0.5	-0.1	7.4	15.2	1.4		0.3	Nov-12
S&P Global Natural Resources Index TR USD			1.3	1.3	5.1	14.1	19.7	4.1	-	3.3	Nov-12
Rhumbline S&P Global Large MidCap Commodity & NR	113,435	0.0	0.5	0.5	0.5	8.1	15.4			3.5	Jun-15
S&P Global LargeMidCap Commodity and Resources GR USD			1.2	1.2	4.2	12.2	17.0			4.7	Jun-15
Absolute Return	249,589,647	11.3	0.7	0.7	2.8	3.4	2.1	3.2		3.4	Nov-12
HFRI Macro (Total) Index			0.0	0.0	-1.8	0.6	0.4	1.5		1.0	Nov-12

	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Relative Value	114,057,482	5.2	1.6	1.6	4.5	5.7	4.0			4.1	Oct-14
HFRI Relative Value (Total) Index			1.4	1.4	3.1	4.2	5.2			3.6	Oct-14
DE Shaw	40,100,411	1.8	1.7	1.7	7.1	8.8	8.4	11.3		11.1	Apr-13
HFRI Fund Weighted Composite Index			0.5	0.5	1.4	4.0	5.3	4.1	-	4.1	Apr-13
Pine River Volatility Arbitrage	24,592,425	1.1	2.1	2.1	-0.2	1.6				-1.0	Mar-17
HFRI Relative Value (Total) Index			1.4	1.4	3.1	4.2			-	4.0	Mar-17
Hudson Bay	24,525,023	1.1	1.8	1.8	4.3	5.8				4.9	Aug-17
HFRI Relative Value (Total) Index			1.4	1.4	3.1	4.2			-	4.1	Aug-17
JD Capital	22,533,863	1.0	1.3	1.3	6.7	7.1				6.1	Oct-16
HFRI Relative Value (Total) Index			1.4	1.4	3.1	4.2			-	5.1	Oct-16
Pine River Fund Ltd	2,305,760	0.1	-4.4	-4.4	-5.0	-6.5	-2.9	-0.6	-	1.1	Jan-13
HFRI Relative Value (Total) Index			1.4	1.4	3.1	4.2	5.2	4.4	-	4.6	Jan-13
Масго	135,532,165	6.1	-0.1	-0.1	1.2	1.4	0.6			1.3	Oct-14
HFRI Macro (Total) Index			0.0	0.0	-1.8	0.6	0.4		-	0.6	Oct-14
Pharo Management, Ltd.	32,190,243	1.5	-2.7	-2.7	3.1	1.7				9.3	Apr-16
HFRI Macro (Total) Index			0.0	0.0	-1.8	0.6			-	0.0	Apr-16
Systematica	25,806,280	1.2	2.9	2.9	-2.2	3.1			-	3.0	Jul-17
Barclay BTOP50 Index TR USD			1.2	1.2	-2.6	1.0			-	1.1	Jul-17

As of September 30, 2018

	Market Value (\$)	% of Portfolio	QTD (%)	Fiscal YTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Dymon Asia Macro	25,639,864	1.2	-1.9	-1.9	-1.0	-4.9	1.0			0.9	Sep-15
HFRI Macro (Total) Index			0.0	0.0	-1.8	0.6	0.4		-	0.4	Sep-15
Keynes Leveraged Quantitative Strategies Fund	19,294,200	0.9	-3.4	-3.4	-2.5	1.3				-1.3	Jan-16
Barclay BTOP50 Index TR USD			1.2	1.2	-2.6	1.0			-	-2.9	Jan-16
Kepos Alpha Fund	17,008,183	0.8	3.9	3.9	12.0	4.9	-4.3	0.3		-1.0	Mar-13
HFRI Macro: Systematic Diversified Index			0.5	0.5	-3.6	0.8	-1.3	1.5	-	0.6	Mar-13
AHL Frontier Fund	15,593,395	0.7	4.2	4.2	1.9	7.7				8.6	Jun-16
Barclay BTOP50 Index TR USD			1.2	1.2	-2.6	1.0				-3.7	Jun-16
Cash	207,044,776	8.9									
91 Day T-Bills			0.5	0.5	1.3	1.6	0.9		-		
Internal Cash Account	196,807,750	8.9									
Russell Investments Overlay	10,237,026	0.5									

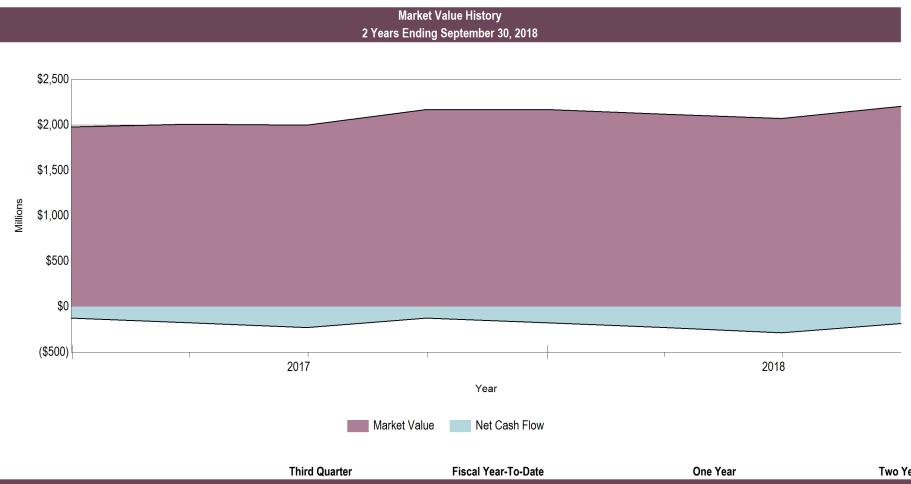
<sup>1</sup> Cash composite includes the cash account, cash collateral in the Russell Investments Overlay program, and residuals from terminated manager assets.

	Cas	h Flow Summary				
	Quarter	Ending June 30, 201	8			
	Beginning Market Value	Contributions	Withdrawals	Net Cash Flow	Net Investment Change	Ending Market Value
Aberdeen Frontier Markets	-	\$0	\$0	\$0	\$0	
AHL Frontier Fund	\$14,971,978	\$0	\$0	\$0	\$621,417	\$15,593,395
American Realty	\$71,334,528	\$12,500,000	-\$172,960	\$12,327,040	\$1,490,797	\$85,152,365
ArrowMark Co-Investment	\$5,133,811	\$0	-\$158,717	-\$158,717	\$157,283	\$5,132,377
Artisan Global Opportunities	\$56,856,675	\$0	\$0	\$0	\$2,003,986	\$58,860,661
Artisan Global Value	\$123,384,609	\$5,305,390	-\$5,305,389	\$1	\$5,150,876	\$128,535,485
BlackRock Global Agg ex US (Hedged)	\$50,320,162	\$0	-\$50,230,018	-\$50,230,018	-\$90,144	\$0
BlackRock Long Government Index	\$38,679,152	\$0	-\$37,617,670	-\$37,617,670	-\$1,061,481	\$0
BlackRock US Debt Fund	\$39,389,750	\$0	-\$39,417,150	-\$39,417,150	\$27,399	\$0
BlueBay Emerging Market Select Debt	\$70,106,569	\$0	-\$5,000,000	-\$5,000,000	\$205,494	\$65,312,064
Claren Road Credit Fund	\$70,985	\$0	-\$97,487	-\$97,487	\$26,502	
Comgest Global Emerging Markets	\$15,574,821	\$0	\$0	\$0	-\$1,243,551	\$14,331,270
Cove Street Small Cap Value	\$17,427,248	\$511,880	-\$511,880	\$0	\$987,931	\$18,415,179
Credit Suisse Risk Parity Commodity Index	\$53,310,507	\$0	-\$25,049,839	-\$25,049,839	-\$1,633,749	\$26,626,918
Crestline Portfolio Financing	\$4,970,014	\$0	\$0	\$0	\$58,611	\$5,028,625
Cross Ocean USD ESS II	\$9,980,529	\$1,500,000	-\$75,920	\$1,424,080	\$245,936	\$11,650,545
Davidson Kempner Institutional Partners, L.P.	\$39,728,279	\$0	-\$149,429	-\$149,429	\$763,123	\$40,341,972
DE Shaw	\$39,444,119	\$0	-\$263,634	-\$263,634	\$919,927	\$40,100,411
Dimensional Fund Advisors EM Value	\$24,147,274	\$0	\$0	\$0	\$530,771	\$24,678,045
DRA Growth & Income Fund VIII	\$12,841,106	\$555,556	-\$470,030	\$85,526	\$450,654	\$13,377,286
DRA Growth and Income Fund IX	\$7,253,546	\$1,307,106	-\$571,246	\$735,860	\$536,297	\$8,525,703
DRA Growth and Income Fund V	\$16,767	\$0	\$0	\$0	\$5,097	\$21,864
DRA Growth and Income Fund VI	\$1,183,566	\$0	-\$3,520	-\$3,520	-\$27,183	\$1,152,862
DRA Growth and Income Fund VII	\$11,030,359	\$0	-\$2,709,380	-\$2,709,380	\$1,674,138	\$9,995,118
Dymon Asia Macro	\$26,141,009	\$0	\$0	\$0	-\$501,145	\$25,639,864
GEM Realty Fund VI	\$564,395	\$400,000	-\$643,063	-\$243,063	\$283,064	\$604,396

	Beginning Market Value	Contributions	Withdrawals	Net Cash Flow	Net Investment Change	Ending Market Value
Global Infrastructure Partners III	\$12,902,651	\$4,555,011	\$79,995	\$4,635,006	\$893,773	\$18,431,429
GQG Partners Global Emerging Markets	\$27,318,991	\$0	-\$33,684	-\$33,684	-\$1,447,399	\$25,837,909
Great Hill Equity Partners IV, LP	\$4,169,546	-\$652,309	-\$15,000	-\$667,309	\$154,022	\$3,656,259
GSO Direct Lending Account	\$11,627,748	\$0	\$0	\$0	\$1,193,824	\$12,821,572
Hudson Bay	\$31,183,521	\$0	-\$7,200,000	-\$7,200,000	\$541,502	\$24,525,023
Innovation Endeavors II	\$432,923	\$0	-\$39,071	-\$39,071	-\$124,104	\$269,748
Internal Cash Account	\$6,340,188	\$828,647,269	-\$638,358,008	\$190,289,261	\$178,301	\$196,807,750
JD Capital	\$22,246,367	\$0	-\$85,010	-\$85,010	\$372,506	\$22,533,863
Kepos Alpha Fund	\$16,371,804	\$0	-\$51,562	-\$51,562	\$687,941	\$17,008,183
Keynes Leveraged Quantitative Strategies Fund	\$19,969,600	\$0	\$0	\$0	-\$675,400	\$19,294,200
Marshall Wace Eureka Fund	\$22,902,161	\$0	-\$126,429	-\$126,429	\$229,346	\$23,005,079
Medley Opportunity Fund II	\$29,990,671	\$0	-\$1,799,031	-\$1,799,031	-\$286,102	\$27,905,538
Northern Trust 1-3 Year US Govt Bond		\$111,000,000	\$0	\$111,000,000	\$0	\$111,000,000
Northern Trust Intermediate Gov't 1-10 Year	\$173,845,840	\$40,500,000	-\$214,095,889	-\$173,595,889	-\$249,951	\$0
Northern Trust MSCI EM IMI		\$120,000,000	\$0	\$120,000,000	\$0	\$120,000,000
Northern Trust MSCI World ex. U.S.	\$165,167,754	\$0	-\$130,000,000	-\$130,000,000	\$2,064,596	\$37,232,351
Northern Trust Russell 1000 Index	\$63,187,777	\$24,000,000	\$0	\$24,000,000	\$4,692,157	\$91,879,934
Northern Trust Russell 2000 Value	\$13,947,883	\$0	\$0	\$0	\$230,038	\$14,177,921
Northern Trust Russell 3000	\$111,939,105	\$231,000,000	\$0	\$231,000,000	\$9,201,215	\$352,140,320
Northern Trust TIPS 0-5 Years	\$151,367,908	\$40,500,000	-\$149,000,000	-\$108,500,000	\$210,447	\$43,078,355
Oberweis International Opportunities	\$40,886,806	\$21,249,785	-\$21,249,785	\$0	-\$1,022,792	\$39,864,015
Pantheon Global Secondary Fund III 'B'	\$5,068,934	\$0	-\$338,887	-\$338,887	\$718,882	\$5,448,929
Pantheon USA Fund VII	\$20,403,951	\$0	-\$900,584	-\$900,584	\$1,060,391	\$20,563,758
Partners Group Secondary 2008, L.P.	\$1,580,799	\$0	-\$185,197	-\$185,197	\$14,527	\$1,410,129
Partners Group Secondary 2011, L.P.	\$9,816,095	\$0	-\$1,125,256	-\$1,125,256	\$210,717	\$8,901,556
Pathway Private Equity Fund VIII	\$4,415,183	-\$319,650	\$0	-\$319,650	\$72,618	\$4,168,151

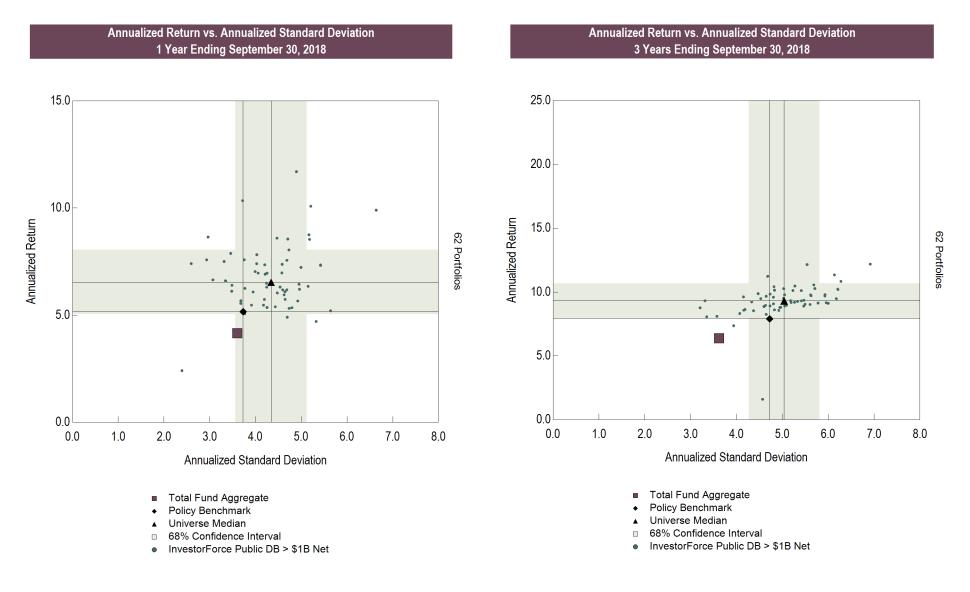
	Beginning Market Value	Contributions	Withdrawals	Net Cash Flow	Net Investment Change	Ending Market Value
PE Strategic Partnership LP	\$19,735,971	\$4,500,000	-\$118,125	\$4,381,875	\$1,260,177	\$25,378,023
Pharo Management, Ltd.	\$33,069,889	\$0	\$0	\$0	-\$879,646	\$32,190,243
Pine River Fund Ltd	\$2,860,378	\$0	-\$454,582	-\$454,582	-\$100,036	\$2,305,760
Pine River Volatility Arbitrage	\$24,091,525	\$0	-\$30,128	-\$30,128	\$531,028	\$24,592,425
Pinnacle Natural Resources, L.P.	\$40,690,240	\$0	\$0	\$0	-\$1,335,720	\$39,354,520
PRISA	\$39,693,911	\$0	-\$337,919	-\$337,919	\$855,943	\$40,211,936
Rhumbline DJ Brookfield Global Infrastructure	\$10,799,104	\$4,091,764	-\$14,801,072	-\$10,709,308	-\$73,108	\$16,688
Rhumbline S&P Global Large MidCap Commodity & NR	\$126,838	\$30,914	-\$44,912	-\$13,998	\$594	\$113,435
Russell Currency Hedge	\$8,437	\$69,140,113	-\$69,412,869	-\$272,756	\$264,320	\$0
Russell Investments Overlay	\$6,339,355	\$49,272,884	-\$45,272,884	\$4,000,000	-\$102,329	\$10,237,026
Sandler Plus Offshore Fund Ltd	\$19,546,476	\$0	\$0	\$0	\$115,901	\$19,662,377
Senator Global Opportunity Offshore Fund	\$20,596,819	\$20,465,460	-\$20,465,460	\$0	\$169,805	\$20,766,624
State Street Terminated Managers	\$5,434	\$0	\$0	\$0	-\$71	\$5,362
Systematica	\$25,076,682	\$0	\$0	\$0	\$729,598	\$25,806,280
Torchlight Debt Opportunity VI	\$2,191,603	\$0	-\$537,900	-\$537,900	\$200,751	\$1,854,454
Tristan Capital Partners	\$7,659,922	\$1,109,951	-\$47,403	\$1,062,548	\$316,327	\$9,038,797
Voya Securitized Credit	\$97,593,592	\$0	\$0	\$0	\$1,231,828	\$98,825,420
White Oak Direct Lending Account	\$20,675,403	\$0	-\$4,510,580	-\$4,510,580	-\$1,934,013	\$14,230,810
Total	\$2,071,707,543	\$1,591,171,123	-\$1,489,004,564	\$102,166,559	\$31,754,454	\$2,205,628,556

Total Fund Asset Growth Summary

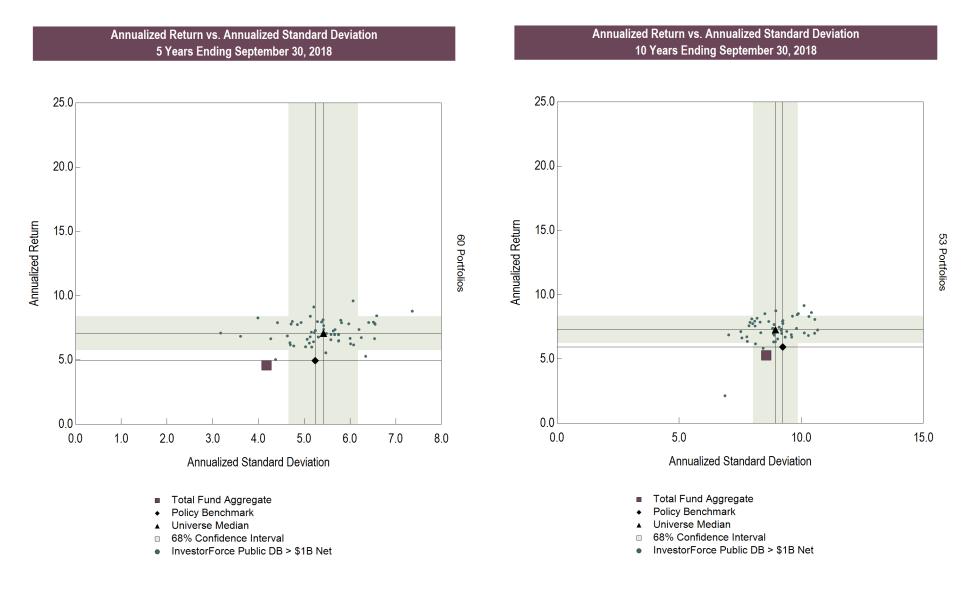


	Third Quarter	Fiscal Year-To-Date	One Year	I wo Years
Beginning Market Value	\$2,071,707,543	\$2,071,707,543	\$2,170,152,987	\$2,019,799,605
Net Cash Flow	\$102,166,559	\$102,166,559	-\$59,554,984	-\$185,246,740
Net Investment Change	\$31,754,454	\$31,754,454	\$95,030,553	\$371,075,691
Ending Market Value	\$2,205,628,556	\$2,205,628,556	\$2,205,628,556	\$2,205,628,556

#### Total Fund Risk/Return



#### Total Fund Risk/Return



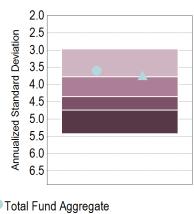
#### Total Fund Risk Statistics vs. Peer Universe (Trailing 1 Year)

As of September 30, 2018



#### Annualized Return (%) vs. InvestorForce Public DB > \$1B Net 11.0 10.0 Annualized Return (%) 9.0 8.0 7.0 6.0 5.0 4.0 Total Fund Aggregate 4.2 Value 99 Rank A Policy Benchmark 5.2 Value 95 Rank Universe 5th %tile 9.8 25th %tile 7.5 Median 6.5 5.8 75th %tile

5.1

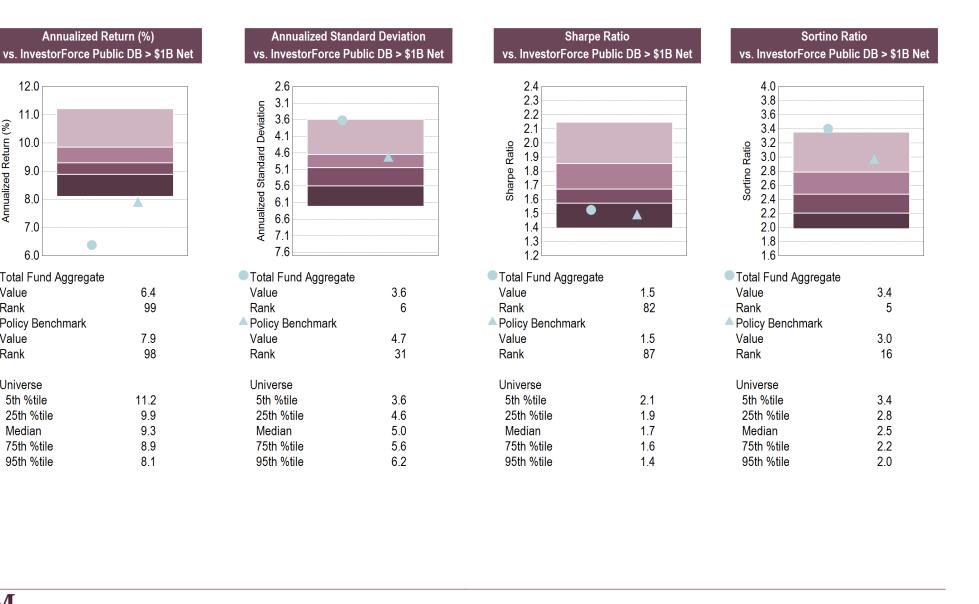


<ul> <li>Total Fund Aggregate</li> <li>Value</li> <li>Rank</li> <li>Policy Benchmark</li> </ul>	3.6 18
Value Rank	3.7 22
Universe	
5th %tile	3.0
25th %tile	3.8
Median	4.3
75th %tile	4.7
95th %tile	5.4

95th %tile

#### Total Fund Risk Statistics vs. Peer Universe (Trailing 3 Years)

As of September 30, 2018



12.0

11.0

10.0

9.0

8.0

7.0

6.0

Value

Rank

Value

Rank

Universe

5th %tile

25th %tile

75th %tile

95th %tile

Median

Total Fund Aggregate

A Policy Benchmark

Annualized Return (%)

#### Total Fund Risk Statistics vs. Peer Universe (Trailing 5 Years)

As of September 30, 2018



#### Annualized Return (%) vs. InvestorForce Public DB > \$1B Net 9.6 9.1 8.6 Annualized Return (%) 8.1 7.6 7.1 6.6 6.1 5.6 5.1 4.6 4.1 3.6 Total Fund Aggregate 4.6 Value Rank 99 A Policy Benchmark Value 5.0 99 Rank Universe 5th %tile 8.5 7.9 25th %tile

7.1

6.6

5.5

Median

75th %tile

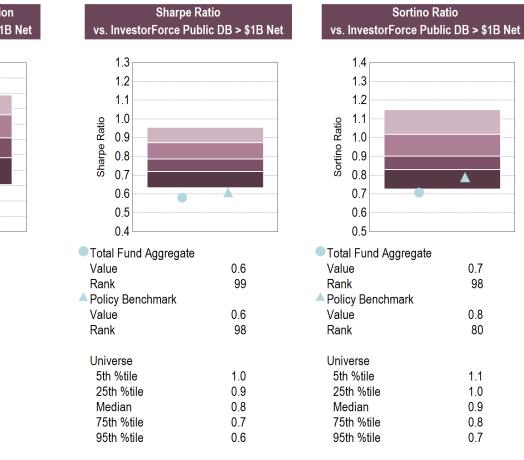
95th %tile

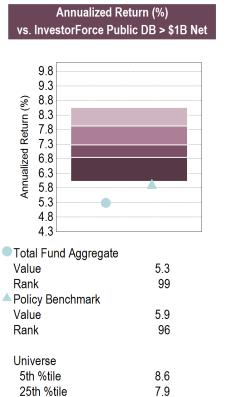
Μ

Annualized Standard Deviation	<ul> <li>3.7</li> <li>4.2</li> <li>4.7</li> <li>5.2</li> <li>5.7</li> <li>6.2</li> <li>6.7</li> <li>7.2</li> <li>7.7</li> </ul>			
Valu Ran	ie k cy Be ie	nd Aggregate enchmark	4.2 5 5.2 41	

#### Total Fund Risk Statistics vs. Peer Universe (Trailing 10 Years)

As of September 30, 2018



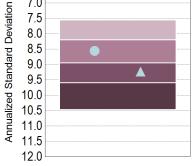


7.3

6.9

6.0

# Annualized Standard Deviation vs. InvestorForce Public DB > \$1B Net



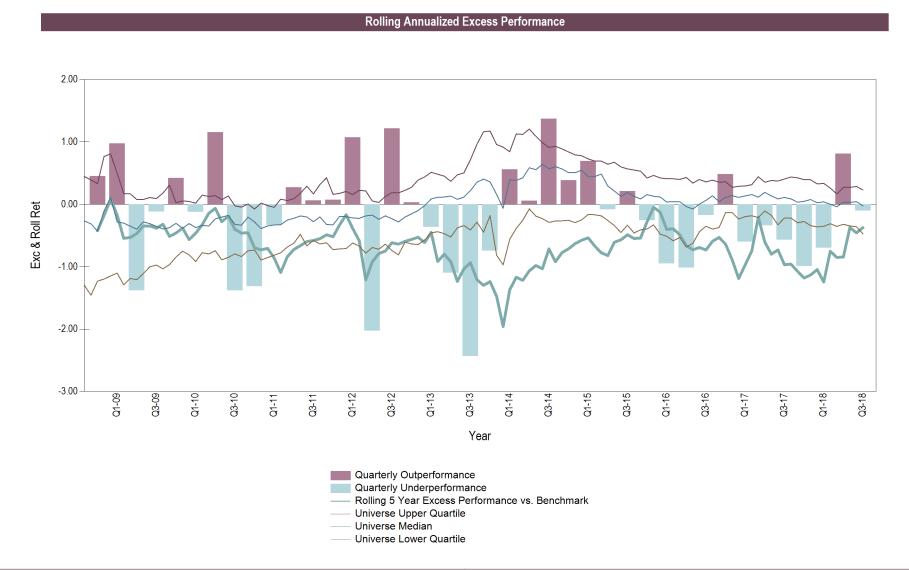
Total Fund Aggregate	
Value	8.6
Rank	34
Policy Benchmark	
Value	9.2
Rank	67
Universe	
5th %tile	7.5
25th %tile	8.2
Median	8.9
75th %tile	9.6
95th %tile	10.5

Median

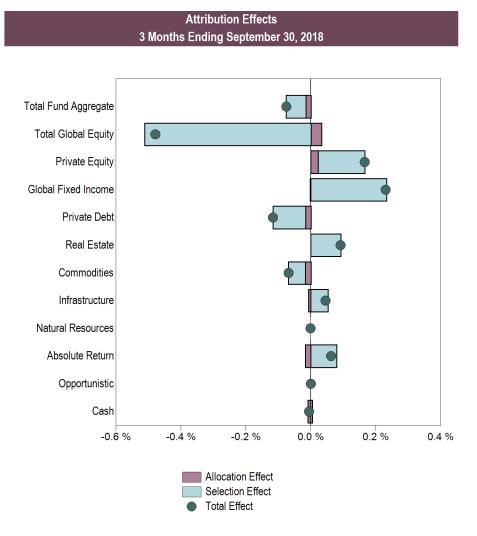
75th %tile

95th %tile

Total Fund Rolling Excess Returns

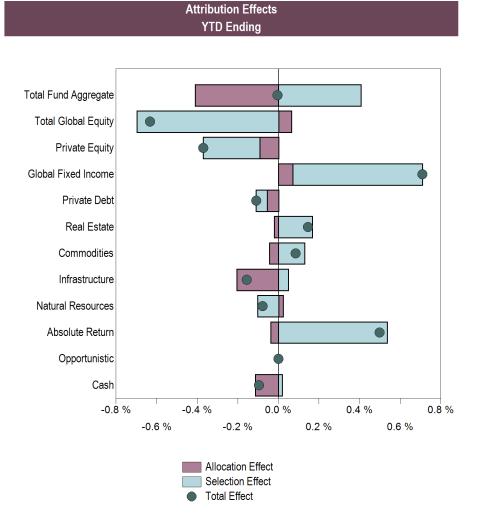


As of September 30, 2018



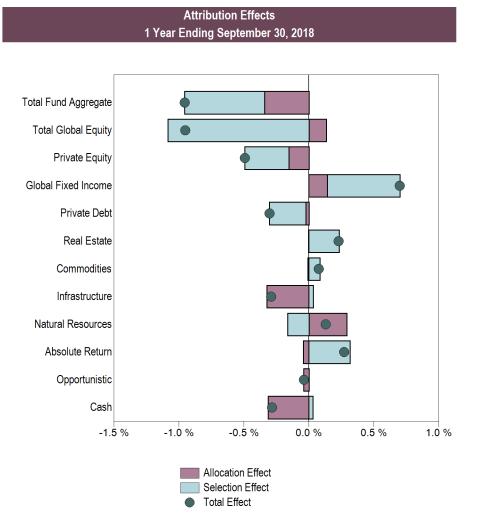
Attribution Summary 3 Months Ending September 30, 2018									
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Total Effects			
Total Global Equity	2.1%	3.9%	-1.8%	-0.5%	0.0%	-0.5%			
Private Equity	6.1%	4.2%	1.9%	0.1%	0.0%	0.2%			
Global Fixed Income	0.2%	-0.5%	0.7%	0.2%	0.0%	0.2%			
Private Debt	-0.8%	2.1%	-2.9%	-0.1%	0.0%	-0.1%			
Real Estate	2.9%	1.7%	1.3%	0.1%	0.0%	0.1%			
Commodities	-3.2%	-2.0%	-1.2%	-0.1%	0.0%	-0.1%			
Infrastructure	3.3%	-0.8%	4.1%	0.1%	0.0%	0.0%			
Natural Resources	0.5%	1.3%	-0.8%	0.0%	0.0%	0.0%			
Absolute Return	0.7%	0.0%	0.7%	0.1%	0.0%	0.1%			
Opportunistic	0.0%	1.9%	-1.9%	0.0%	0.0%	0.0%			
Cash	0.4%	0.0%	0.4%	0.0%	0.0%	0.0%			
Total	1.4%	1.5%	-0.1%	-0.1%	0.0%	-0.1%			

As of September 30, 2018



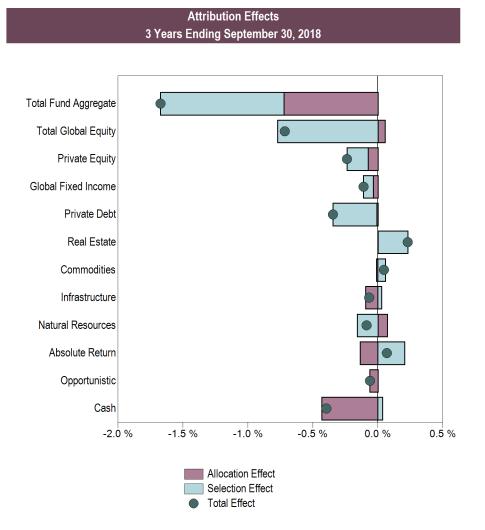
Attribution Summary YTD Ending										
	Wtd. Actual	Wtd. Index	Excess	Selection	Allocation	Total				
	Return	Return	Return	Effect	Effect	Effects				
Total Global Equity	1.3%	3.7%	-2.4%	-0.7%	0.1%	-0.6%				
Private Equity	6.8%	12.5%	-5.7%	-0.3%	-0.1%	-0.4%				
Global Fixed Income	-0.6%	-2.3%	1.7%	0.6%	0.1%	0.7%				
Private Debt	2.6%	4.3%	-1.7%	-0.1%	-0.1%	-0.1%				
Real Estate	8.2%	5.3%	3.0%	0.2%	0.0%	0.1%				
Commodities	0.1%	-2.0%	2.2%	0.1%	0.0%	0.1%				
Infrastructure	1.2%	-2.1%	3.4%	0.0%	-0.2%	-0.2%				
Natural Resources	-0.1%	5.1%	-5.2%	-0.1%	0.0%	-0.1%				
Absolute Return	2.8%	-1.8%	4.6%	0.5%	0.0%	0.5%				
Opportunistic	0.0%	1.3%	-1.3%	0.0%	0.0%	0.0%				
Cash	1.3%	0.0%	1.3%	0.0%	-0.1%	-0.1%				
Total	1.8%	1.8%	0.0%	0.4%	-0.4%	0.0%				

As of September 30, 2018



Attribution Summary 1 Year Ending September 30, 2018										
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Total Effects				
Total Global Equity	5.9%	9.6%	-3.7%	-1.1%	0.1%	-1.0%				
Private Equity	9.7%	17.4%	-7.7%	-0.3%	-0.2%	-0.5%				
Global Fixed Income	0.0%	-1.2%	1.2%	0.6%	0.1%	0.7%				
Private Debt	-1.7%	6.1%	-7.7%	-0.3%	0.0%	-0.3%				
Real Estate	11.4%	7.2%	4.3%	0.2%	0.0%	0.2%				
Commodities	4.1%	2.6%	1.5%	0.1%	0.0%	0.1%				
Infrastructure	1.4%	-1.6%	3.0%	0.0%	-0.3%	-0.3%				
Natural Resources	7.4%	14.1%	-6.6%	-0.2%	0.3%	0.1%				
Absolute Return	3.4%	0.6%	2.8%	0.3%	0.0%	0.3%				
Opportunistic	0.0%	5.2%	-5.2%	0.0%	0.0%	0.0%				
Cash	1.5%	0.0%	1.5%	0.0%	-0.3%	-0.3%				
Total	4.2%	5.2%	-1.0%	-0.6%	-0.3%	-1.0%				

As of September 30, 2018



Attribution Summary 3 Years Ending September 30, 2018									
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Total Effects			
Total Global Equity	10.7%	13.5%	-2.8%	-0.8%	0.1%	-0.7%			
Private Equity	8.2%	12.0%	-3.7%	-0.2%	-0.1%	-0.2%			
Global Fixed Income	2.1%	2.8%	-0.7%	-0.1%	0.0%	-0.1%			
Private Debt	-0.6%	7.4%	-8.0%	-0.3%	0.0%	-0.3%			
Real Estate	11.7%	7.8%	3.9%	0.2%	0.0%	0.2%			
Commodities	0.9%	-0.1%	1.0%	0.1%	0.0%	0.0%			
Infrastructure	8.7%	7.4%	1.3%	0.0%	-0.1%	-0.1%			
Natural Resources	15.2%	19.7%	-4.5%	-0.2%	0.1%	-0.1%			
Absolute Return	2.1%	0.4%	1.7%	0.2%	-0.1%	0.1%			
Opportunistic	0.0%	8.9%	-8.9%	0.0%	-0.1%	-0.1%			
Cash	0.9%	0.0%	0.9%	0.0%	-0.4%	-0.4%			
Total	6.3%	7.9%	-1.7%	-0.9%	-0.7%	-1.7%			

# Total Fund Risk Statistics (Net of Fees)

3 Years Ending September 30, 2018												
	% of Total MV	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Anlzd Alpha J	Anlzd Alpha J Rank	Tracking Error	Information Ratio	Information Ratio Rank	Beta	Sharpe Ratio
Total Fund Aggregate	100.00%	6.37%	99	3.62%	6	0.43%	35	1.80%	-0.85	92	0.72	1.52
Policy Benchmark		7.90%	98	4.72%	31	0.00%	51	0.00%			1.00	1.49
Total Global Equity	28.89%	10.72%	73	7.79%	8	-0.43%	56	2.38%	-1.16	94	0.82	1.27
MSCI ACWI IMI Net USD		13.47%	35	9.33%	40	0.00%	49	0.00%			1.00	1.35
Marketable Alternative Equity	2.88%	5.72%		3.45%		2.19%		4.02%	-0.39		0.42	1.41
HFRI Equity Hedge (Total) Index		7.28%		5.03%		0.00%		0.00%			1.00	1.27
Private Equity	19.36%	8.24%		3.95%		6.15%		6.64%	-0.56		0.11	1.87
Cambridge PE Composite BM		11.97%		6.03%		0.00%		0.00%			1.00	1.84
Global Fixed Income	16.26%	2.11%	78	2.20%	9	0.48%	68	3.13%	-0.23	77	0.39	0.57
Fixed Income Custom Benchmark		2.82%	67	4.80%	61	0.00%	72	0.00%			1.00	0.41
Non-Investment Grade Credit	1.83%	3.84%		2.78%		2.48%		4.93%	-0.72		0.08	1.07
50% BAML Global HY / 50% S&P Global Leveraged Loan	-	7.39%		4.42%		0.00%		0.00%		-	1.00	1.48
Private Debt	3.25%	-0.63%		7.38%		-0.36%		8.28%	-0.97		-0.17	-0.20
S&P Global Leveraged Loan +2%		7.37%		3.23%		0.00%		0.00%			1.00	2.01
Real Assets	11.54%	9.06%		6.48%		1.67%		3.12%	0.28		0.89	1.26
Real Assets Benchmark		8.17%		6.41%		0.00%		0.00%			1.00	1.14
Real Estate	7.70%	11.70%		3.70%		14.24%		5.84%	0.68		-0.49	2.93
NCREIF Property Index		7.76%		3.20%		0.00%		0.00%			1.00	2.15
Commodities	2.99%	0.92%		6.90%		0.59%		6.13%	0.17		0.55	0.01
Bloomberg Commodity Index TR USD		-0.11%		9.90%		0.00%		0.00%			1.00	-0.10

# Total Fund Risk Statistics (Net of Fees)

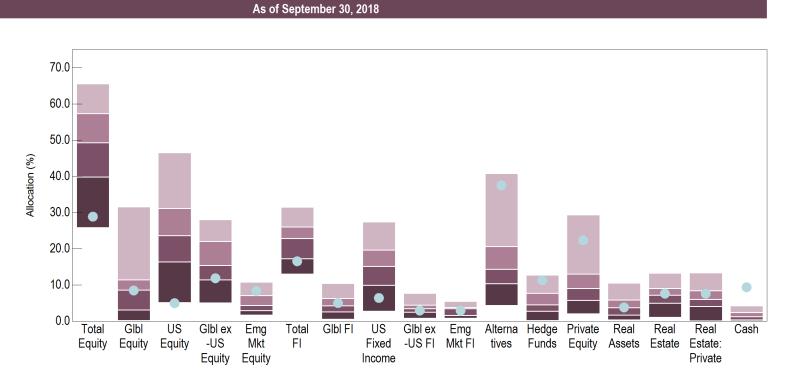
	% of Total MV	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Anlzd Alpha J	Anlzd Alpha J Rank	Tracking Error	Information Ratio	Information Ratio Rank	Beta	Sharpe Ratio
Infrastructure	0.84%	8.70%		10.01%		1.75%		2.81%	0.47		0.94	0.78
DJ Brookfield Global Infrastructure Net TR USD		7.37%		10.29%		0.00%		0.00%			1.00	0.63
Natural Resources	0.01%	15.19%		14.96%		-3.57%		4.27%	-1.05		0.95	0.96
S&P Global Natural Resources Index TR USD		19.69%		15.11%		0.00%		0.00%		-	1.00	1.25
Absolute Return	11.32%	2.08%		2.27%		1.35%		3.49%	0.47		0.29	0.54
HFRI Macro (Total) Index		0.43%		4.10%		0.00%		0.00%			1.00	-0.11
Relative Value	5.17%	3.96%		2.74%		3.69%		3.88%	-0.32		-0.14	1.13
HFRI Relative Value (Total) Index		5.19%		2.43%		0.00%		0.00%			1.00	1.78
Macro	6.14%	0.64%		4.16%		0.11%		2.92%	0.07		0.76	-0.05
HFRI Macro (Total) Index		0.43%		4.10%		0.00%		0.00%			1.00	-0.11
Cash	8.92%	0.89%		0.18%		0.03%		0.13%	0.21		0.77	0.14
91 Day T-Bills		0.86%		0.18%		0.00%		0.00%			1.00	0.00



5th Percentile	3.4	5.6	9.8	11.2	8.5	8.6
25th Percentile	2.5	3.9	7.5	9.9	7.9	7.9
Median	2.1	2.9	6.5	9.3	7.1	7.3
75th Percentile	1.8	2.2	5.8	8.9	6.6	6.9
95th Percentile	1.3	1.6	5.1	8.1	5.5	6.0
# of Portfolios	63	62	62	62	60	53
Total Fund Aggregate	1.4 (90)	1.8 (93)	4.2 (99)	6.4 (99)	4.6 (99)	5.3 (99)
Policy Benchmark	1.5 (89)	1.8 (93)	5.2 (95)	7.9 (98)	5.0 (99)	5.9 (96)
× Allocation Index	1.4 (89)	1.4 (99)	4.8 (98)	7.0 (99)	4.5 (99)	5.4 (98)

# Total Fund Aggregate

As of September 30, 2018



	Allocat	ion																
5th Percentile	65.6	31.6	46.6	28.1	10.8	31.5	10.5	27.5	7.7	5.5	40.8	12.8	29.4	10.6	13.3	13.3	4.3	
25th Percentile	57.4	11.5	31.2	22.2	7.2	26.1	6.4	19.7	4.5	3.9	20.7	7.8	13.1	5.9	9.1	8.5	2.5	
Median	49.3	8.6	23.7	15.5	4.5	22.9	4.4	15.2	3.6	3.6	14.4	4.7	9.1	3.9	7.3	6.1	1.3	
75th Percentile	40.0	3.2	16.5	11.5	3.0	17.3	2.6	10.1	2.6	1.7	10.5	2.8	5.9	1.8	5.1	4.2	0.5	
95th Percentile	25.9	0.3	5.2	5.1	1.8	13.2	0.6	2.8	0.9	0.9	4.4	0.3	2.2	0.4	1.2	0.2	0.1	
# of Portfolios	58	22	48	53	46	59	26	49	30	27	55	37	51	31	51	48	59	
<ul> <li>Total Fund Aggregate</li> <li>Rank</li> </ul>	28.9 92	8.5 51	5.0 96	11.9 73	8.4 15	16.6 80	5.0 46	6.4 82	3.0 68	3.0 62	37.5 7	11.3 9	22.4 8	3.8 51	7.6 48	7.6 37	9.4 2	

Total Plan Allocation vs. InvestorForce Public DB > \$1B Net

Major Benchmark Returns Periods Ending September 30, 2018							
Name	Q3-18	1 Yr	3 Yrs	5 Yrs	10 Yrs		
US Equity							
Russell 3000	7.1	17.6	17.1	13.5	12.0		
S&P 500	7.7	17.9	17.3	13.9	12.0		
Russell 1000	7.4	17.8	17.1	13.7	12.1		
Russell 1000 Growth	9.2	26.3	20.6	16.6	14.3		
Russell 1000 Value	5.7	9.5	13.6	10.7	9.8		
Russell MidCap	5.0	14.0	14.5	11.7	12.3		
Russell 2000	3.6	15.2	17.1	11.1	11.1		
Russell 2000 Growth	5.5	21.1	18.0	12.1	12.7		
Russell 2000 Value	1.6	9.3	16.1	9.9	9.5		
International Equity							
MSCI ACWI	4.3	9.8	13.4	8.7	8.2		
MSCI World ex USA	1.3	2.7	9.3	4.2	5.2		
MSCI EAFE	1.4	2.7	9.2	4.4	5.4		
MSCI Emerging Markets	-1.1	-0.8	12.4	3.6	5.4		
Fixed Income							
91 Day T-Bills	0.5	1.6	0.9	0.5	0.3		
BBgBarc US Aggregate TR	0.0	-1.2	1.3	2.2	3.8		
BBgBarc US Govt/Credit TR	0.1	-1.4	1.4	2.2	4.0		
BBgBarc US Municipal TR	-0.2	0.3	2.2	3.5	4.8		
BBgBarc US High Yield TR	2.4	3.0	8.1	5.5	9.5		
FTSE WGBI TR	-1.6	-1.5	1.7	0.2	2.2		
FTSE WGBI ex US TR	-2.2	-1.6	2.4	-0.2	2.0		
Real Estate							
FTSE NAREIT AII REIT	0.7	4.2	9.2	9.7	8.1		
NCREIF Property Index	1.7	7.2	7.8	9.6	6.4		
Alternatives							
HFRI Fund of Funds Composite Index	0.2	3.0	3.3	3.2	2.5		
Inflation							
Consumer Price Index	0.2	2.3	2.0	1.5	1.4		

		Benchmark History
		As of September 30, 2018
Total Fund Aggrega	ite	
11/1/2017 7/1/2015	Present 10/31/2017	28% MSCI ACWI IMI Net USD / 9% Cambridge PE Composite BM / 33% Fixed Income Custom Benchmark / 6% S&P Global Leveraged Loan +2% / 8% NCREIF Property Index 4% Bloomberg Commodity Index TR USD / 1% DJ Brookfield Global Infrastructure Net TR USD / 11% HFRI Macro (Total) Index 28% MSCI ACWI IMI Net USD / 9% Cambridge Associates Private Equity Composite / 19% Fixed Income Custom Benchmark / 5% S&P Global Leveraged Loan +2% / 7% NCREIF Property Index / 6% Bloomberg Commodity Index TR USD / 5% DJ Brookfield Global Infrastructure Net TR USD / 5% S&P Global Leveraged Loan +2% / 7% NCREIF Property Index / 6% Bloomberg Commodity Index TR USD / 5% DJ Brookfield Global Infrastructure Net TR USD / 5% S&P Global LargeMidCap Commodity and
		Resources GR USD / 11% HFRI Macro (Total) Index / 5% 60/40 MSCI ACWI IMI/BC Global
Total Global Equity		
5/1/2010	Present	MSCI ACWI IMI Net USD
US Equity		
7/1/2015	Present	Russell 3000
International Equity		
7/1/2015	Present	MSCI World ex USA
Emerging Markets	Equity	
7/1/2015	Present	MSCI Emerging Markets
Marketable Alternat	ive Equity	
10/1/2014	Present	HFRI Equity Hedge (Total) Index
Private Equity		
7/1/2018	Present	Cambridge Associates Global Private Equity Index
Global Core		
7/1/2015	Present	BBgBarc Global Aggregate TR
Non-Investment Gra	ade Credit	
2/1/2013	Present	50% ICE BofAML Global High Yield Constrained Hedged TR / 50% S&P/LSTA Leveraged Loan TR
Emerging Markets	Debt	
7/1/2015	Present	50% JP Morgan GBI EM Global Diversified TR USD / 50% JP Morgan EMBI Global Diversified
Private Debt		
12/1/2010	Present	S&P Global Loan+2%

Real Estate		
1/1/1994	Present	NCREIF Property Index
Commodities		
5/1/2010	Present	Bloomberg Commodity Index TR USD
Infrastructure		
3/1/2014	Present	DJ Brookfield Global Infrastructure Net TR USD
Natural Resources		
11/1/2012	Present	S&P Global Natural Resources Index TR USD
Relative Value		
10/1/2014	Present	HFRI Relative Value (Total) Index
Macro		
10/1/2014	Present	HFRI Macro (Total) Index
Cash		
	Present	91 Day T-Bills

# **Glossary and Notes**

#### Glossary

**Credit Risk:** Refers to the risk that the issuer of a fixed income security may default (i.e., the issuer will be unable to make timely principal and/or interest payments on the security.)

**Duration:** Measure of the sensitivity of the price of a bond to a change in its yield to maturity. Duration summarizes, in a single number, the characteristics that cause bond prices to change in response to a change in interest rates. For example, the price of a bond with a duration of three years will rise by approximately 3% for each 1% decrease in its yield to maturity. Conversely, the price will decrease 3% for each 1% increase in the bond's yield. Price changes for two different bonds can be compared using duration. A bond with a duration of six years will exhibit twice the percentage price change of a bond with a three-year duration. The actual calculation of a bond's duration is somewhat complicated, but the idea behind the calculation is straightforward. The first step is to measure the time interval until receipt for each cash flow (coupon and principal payments) from a bond. The second step is to compute a weighted average of these time intervals. Each time interval is measured by the present value of that cash flow. This weighted average is the duration of the bond measured in years.

**Information Ratio:** This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return), and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

**Jensen's Alpha:** A measure of the average return of a portfolio or investment in excess of what is predicted by its beta or "market" risk. Portfolio Return- [Risk Free Rate+Beta\*(market return-Risk Free Rate)].

**Market Capitalization:** For a firm, market capitalization is the total market value of outstanding common stock. For a portfolio, market capitalization is the sum of the capitalization of each company weighted by the ratio of holdings in that company to total portfolio holdings; thus it is a weighted-average capitalization. Meketa Investment Group considers the largest 65% of the broad domestic equity market as large capitalization, the next 25% of the market as medium capitalization, and the smallest 10% of stocks as small capitalization.

**Market Weighted:** Stocks in many indices are weighted based on the total market capitalization of the issue. Thus, the individual returns of higher market-capitalization issues will more heavily influence an index's return than the returns of the smaller market-capitalization issues in the index.

Maturity: The date on which a loan, bond, mortgage, or other debt/security becomes due and is to be paid off.

#### Glossary

**Prepayment Risk:** The risk that prepayments will increase (homeowners will prepay all or part of their mortgage) when mortgage interest rates decline; hence, investors' monies will be returned to them in a lower interest rate environment. Also, the risk that prepayments will slow down when mortgage interest rates rise; hence, investors will not have as much money as previously anticipated in a higher interest rate environment. A prepayment is any payment in excess of the scheduled mortgage payment.

**Price-Book Value (P/B) Ratio:** The current market price of a stock divided by its book value per share. Meketa Investment Group calculates P/B as the current price divided by Compustat's quarterly common equity. Common equity includes common stock, capital surplus, retained earnings, and treasury stock adjusted for both common and nonredeemable preferred stock. Similar to high P/E stocks, stocks with high P/B's tend to be riskier investments.

**Price-Earnings (P/E) Ratio:** A stock's market price divided by its current or estimated future earnings. Lower P/E ratios often characterize stocks in low growth or mature industries, stocks in groups that have fallen out of favor, or stocks of established blue chip companies with long records of stable earnings and regular dividends. Sometimes a company that has good fundamentals may be viewed unfavorably by the market if it is an industry that is temporarily out of favor. Or a business may have experienced financial problems causing investors to be skeptical about is future. Either of these situations would result in lower relative P/E ratios. Some stocks exhibit above-average sales and earnings growth or expectations for above average growth. Consequently, investors are willing to pay more for these companies' earnings, which results in elevated P/E ratios. In other words, investors will pay more for shares of companies whose profits, in their opinion, are expected to increase faster than average. Because future events are in no way assured, high P/E stocks tend to be riskier and more volatile investments. Meketa Investment Group calculates P/E as the current price divided by the I/B/E/S consensus of twelve-month forecast earnings per share.

**Quality Rating:** The rank assigned a security by such rating services as Fitch, Moody's, and Standard & Poor's. The rating may be determined by such factors as (1) the likelihood of fulfillment of dividend, income, and principal payment of obligations; (2) the nature and provisions of the issue; and (3) the security's relative position in the event of liquidation of the company. Bonds assigned the top four grades (AAA, AA, A, BBB) are considered investment grade because they are eligible bank investments as determined by the controller of the currency.

**Sharpe Ratio:** A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

#### Glossary

**Standard Deviation:** A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

**STIF Account:** Short-term investment fund at a custodian bank that invests in cash-equivalent instruments. It is generally used to safely invest the excess cash held by portfolio managers.

**Style:** The description of the type of approach and strategy utilized by an investment manager to manage funds. For example, the style for equities is determined by portfolio characteristics such as price-to-book value, price-to-earnings ratio, and dividend yield. Equity styles include growth, value, and core.

**Yield to Maturity:** The yield, or return, provided by a bond to its maturity date; determined by a mathematical process, usually requiring the use of a "basis book." For example, a 5% bond pays \$5 a year interest on each \$100 par value. To figure its current yield, divide \$5 by \$95—the market price of the bond—and you get 5.26%. Assume that the same bond is due to mature in five years. On the maturity date, the issuer is pledged to pay \$100 for the bond that can be bought now for \$95. In other words, the bond is selling at a discount of 5% below par value. To figure yield to maturity, a simple and approximate method is to divide 5% by the five years to maturity, which equals 1% pro rata yearly. Add that 1% to the 5.26% current yield, and the yield to maturity is roughly 6.26%.

5% (discount)	1% pro rata, plus		
5 (yrs. to maturity)	= 5.26% (current yield)	=	6.26% (yield to maturity)

Sources: <u>Investment Terminology</u>, International Foundation of Employee Benefit Plans, 1999. <u>The Handbook of Fixed Income Securities</u>, Fabozzi, Frank J., 1991.

Notes

The Russell Indices<sup>®</sup>, TM, SM are trademarks/service marks of the Frank Russell Company. Throughout this report, numbers may not sum due to rounding. Returns for periods greater than one year are annualized throughout this report. Values shown are in millions of dollars, unless noted otherwise.