

# FUND EVALUATION REPORT

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## City of Marlborough Contributory Retirement System

Quarterly Review  
December 31, 2018



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M E K E T A     I N V E S T M E N T     G R O U P

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MIAMI  
FLORIDA

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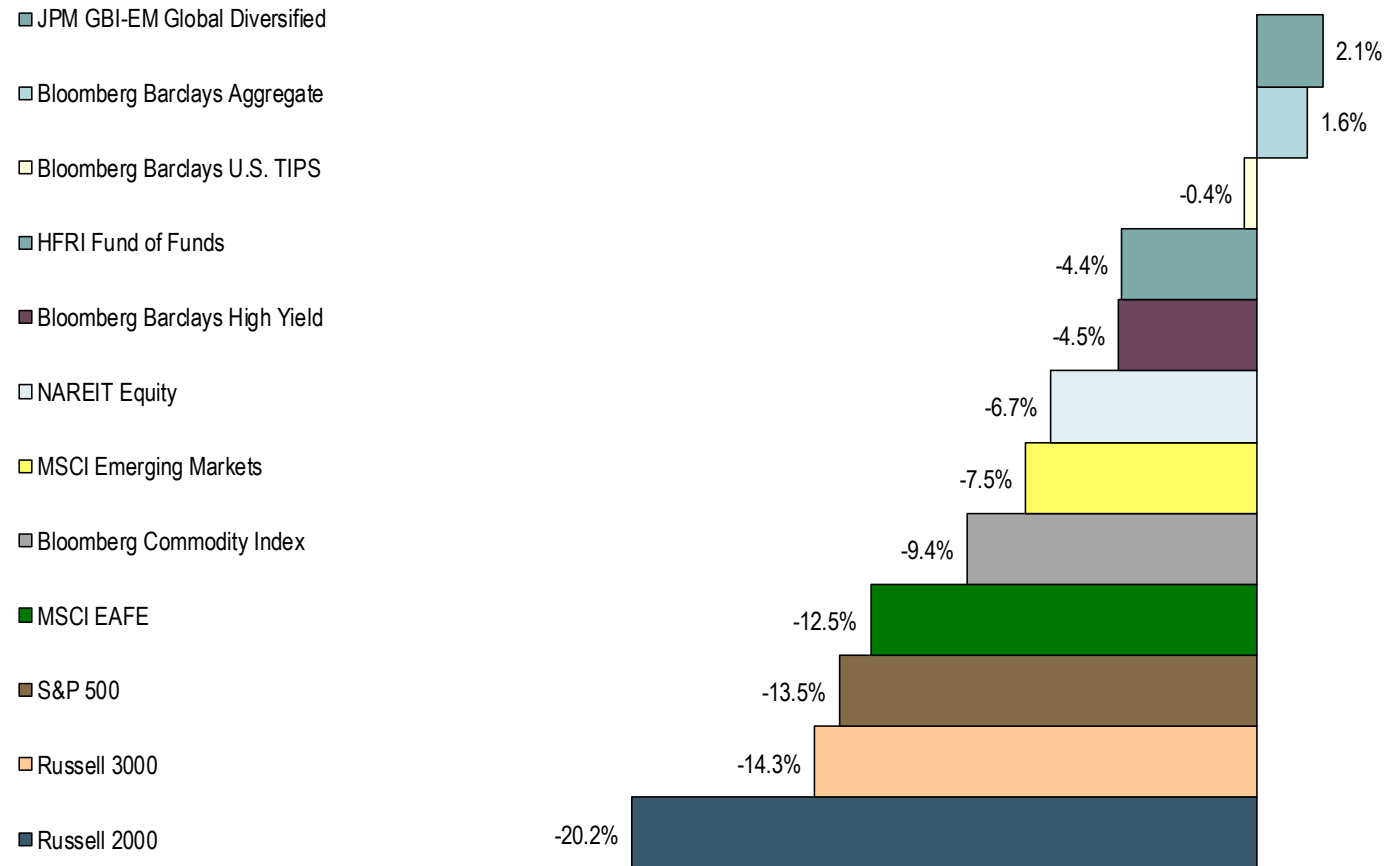
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- 3. Private Market Funds Overview**
- 4. Appendices**
  - Corporate Update
  - Disclaimer, Glossary, and Notes

# **The World Markets Fourth Quarter of 2018**

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



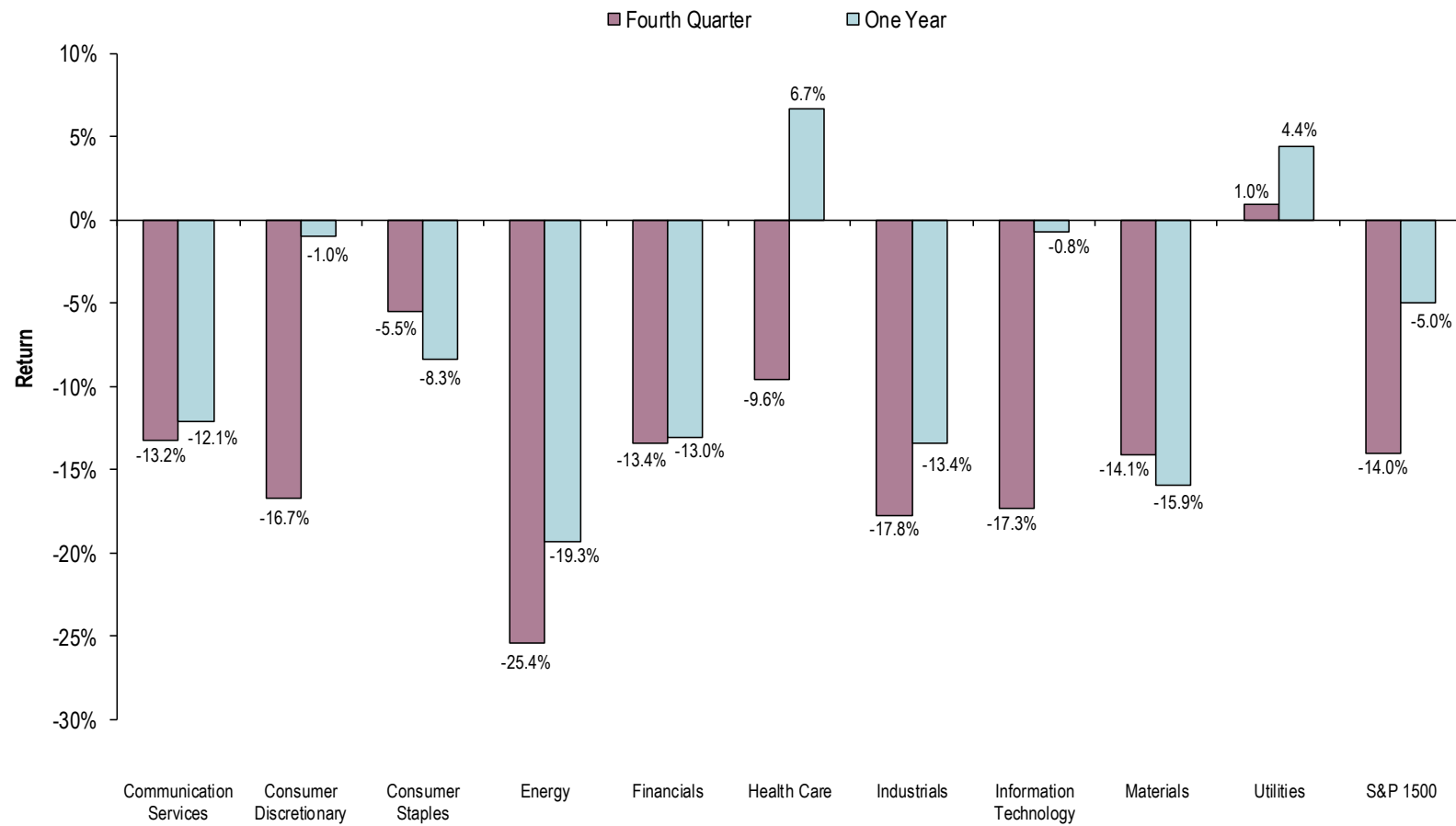
<sup>1</sup> Source: InvestorForce.

Index Returns<sup>1</sup>

	4Q18 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
<b>Domestic Equity</b>					
Russell 3000	-14.3	-5.2	9.0	7.9	13.2
Russell 1000	-13.8	-4.8	9.1	8.2	13.3
Russell 1000 Growth	-15.9	-1.5	11.1	10.4	15.3
Russell 1000 Value	-11.7	-8.3	7.0	5.9	11.2
Russell MidCap	-15.4	-9.1	7.0	6.3	14.0
Russell MidCap Growth	-16.0	-4.8	8.6	7.4	15.1
Russell MidCap Value	-15.0	-12.3	6.1	5.4	13.0
Russell 2000	-20.2	-11.0	7.4	4.4	12.0
Russell 2000 Growth	-21.7	-9.3	7.2	5.1	13.5
Russell 2000 Value	-18.7	-12.9	7.4	3.6	10.4
<b>Foreign Equity</b>					
MSCI ACWI (ex. U.S.)	-11.5	-14.2	4.5	0.7	6.6
MSCI EAFE	-12.5	-13.8	2.9	0.5	6.3
MSCI EAFE (Local Currency)	-12.2	-11.0	2.6	3.8	7.5
MSCI EAFE Small Cap	-16.0	-17.9	3.7	3.1	10.5
MSCI Emerging Markets	-7.5	-14.6	9.2	1.6	8.0
MSCI Emerging Markets (Local Currency)	-7.4	-10.1	8.8	5.0	9.6
<b>Fixed Income</b>					
Bloomberg Barclays Universal	1.2	-0.3	2.6	2.7	4.1
Bloomberg Barclays Aggregate	1.6	0.0	2.1	2.5	3.5
Bloomberg Barclays U.S. TIPS	-0.4	-1.3	2.1	1.7	3.6
Bloomberg Barclays High Yield	-4.5	-2.1	7.2	3.8	11.1
JPM GBI-EM Global Diversified	2.1	-6.2	5.9	-1.0	3.4
<b>Other</b>					
NAREIT Equity	-6.7	-5.0	2.7	7.8	12.1
Bloomberg Commodity Index	-9.4	-11.2	0.3	-8.8	-3.8
HFRI Fund of Funds	-4.4	-3.5	1.5	1.5	3.2

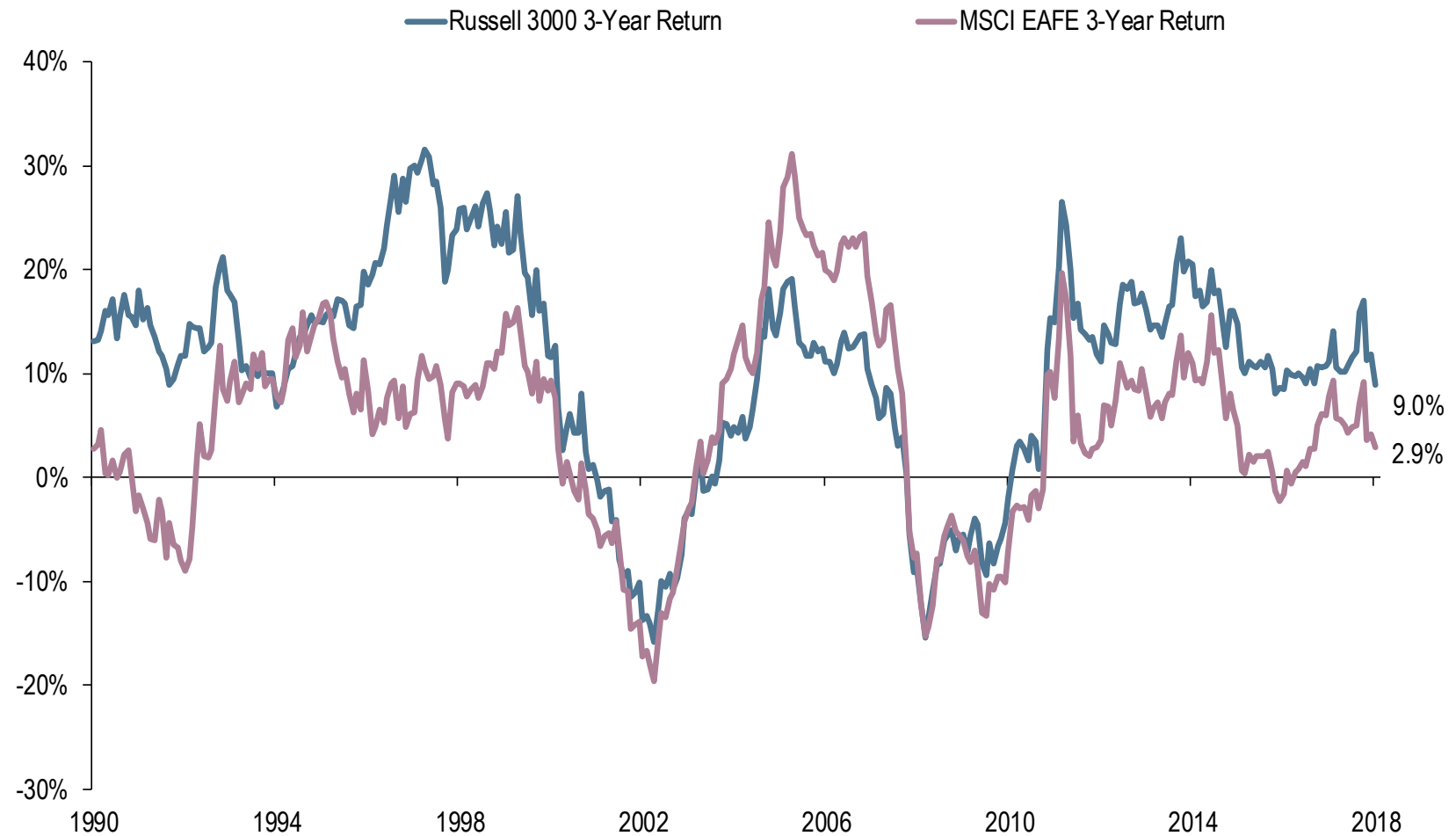
<sup>1</sup> Source: InvestorForce.

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



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

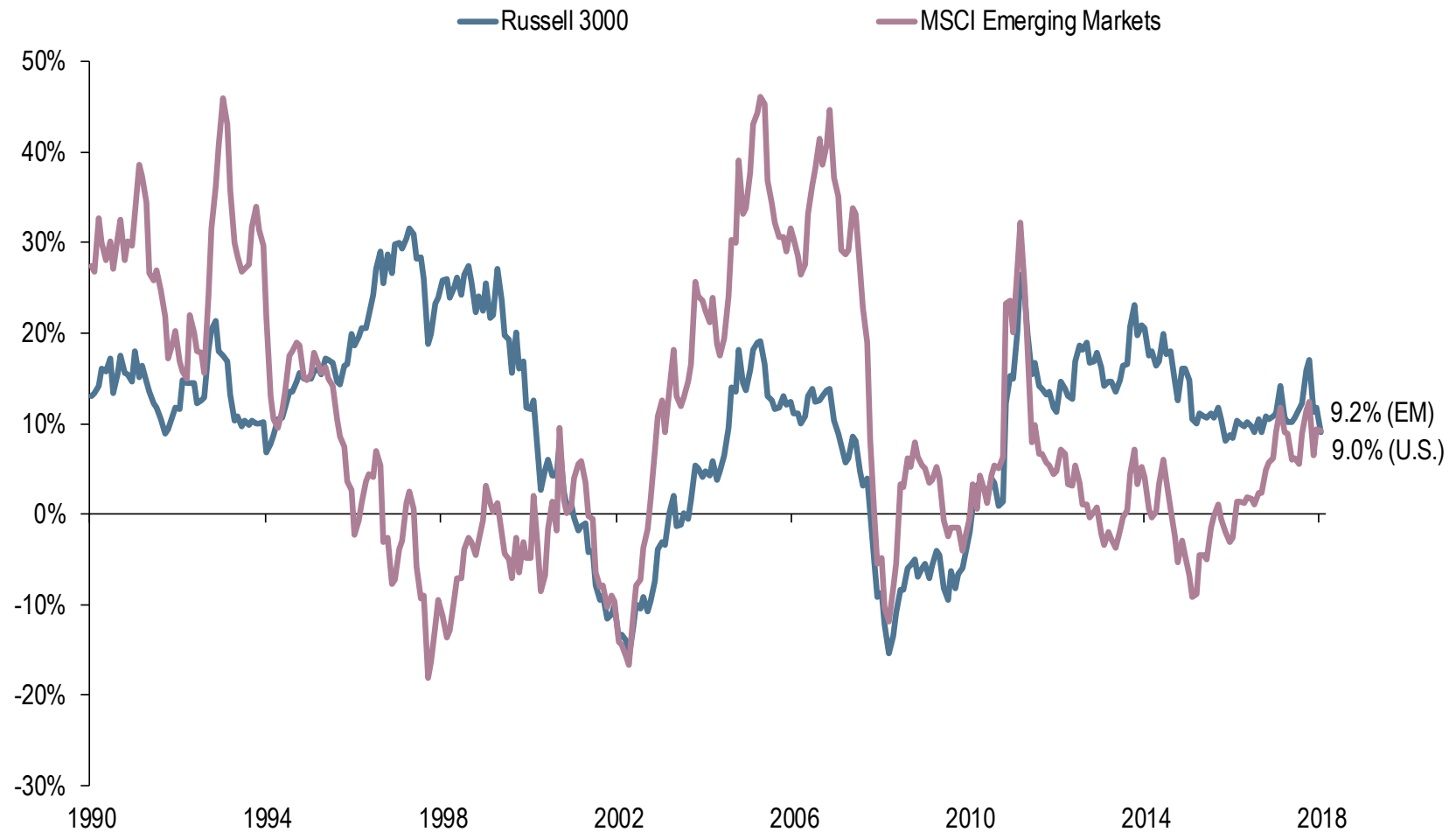
## U.S. and Developed Market Foreign Equity Rolling Three-Year Returns<sup>1</sup>



<sup>1</sup> Source: InvestorForce.



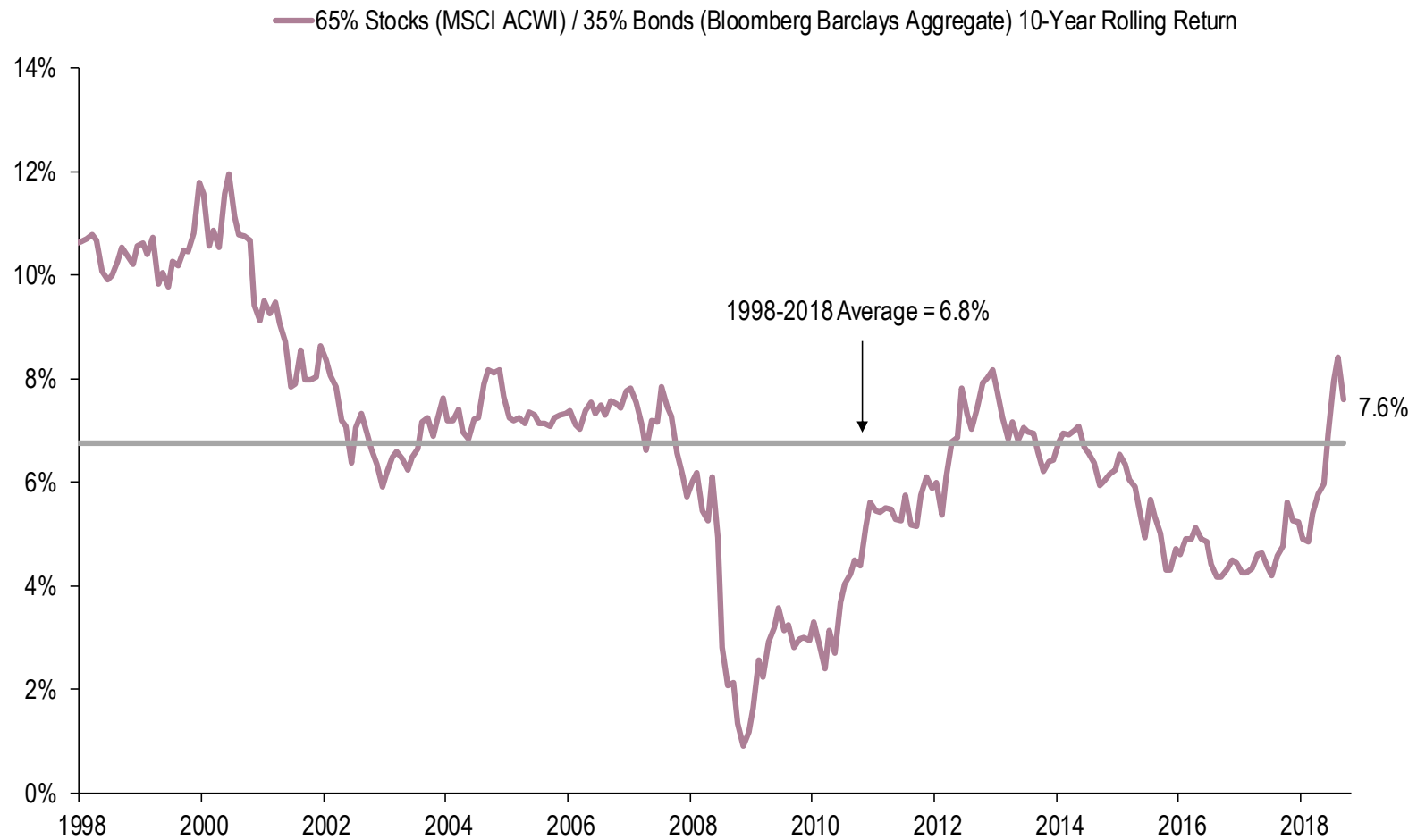
## U.S. and Emerging Market Equity Rolling Three-Year Returns<sup>1</sup>



<sup>1</sup> Source: InvestorForce.



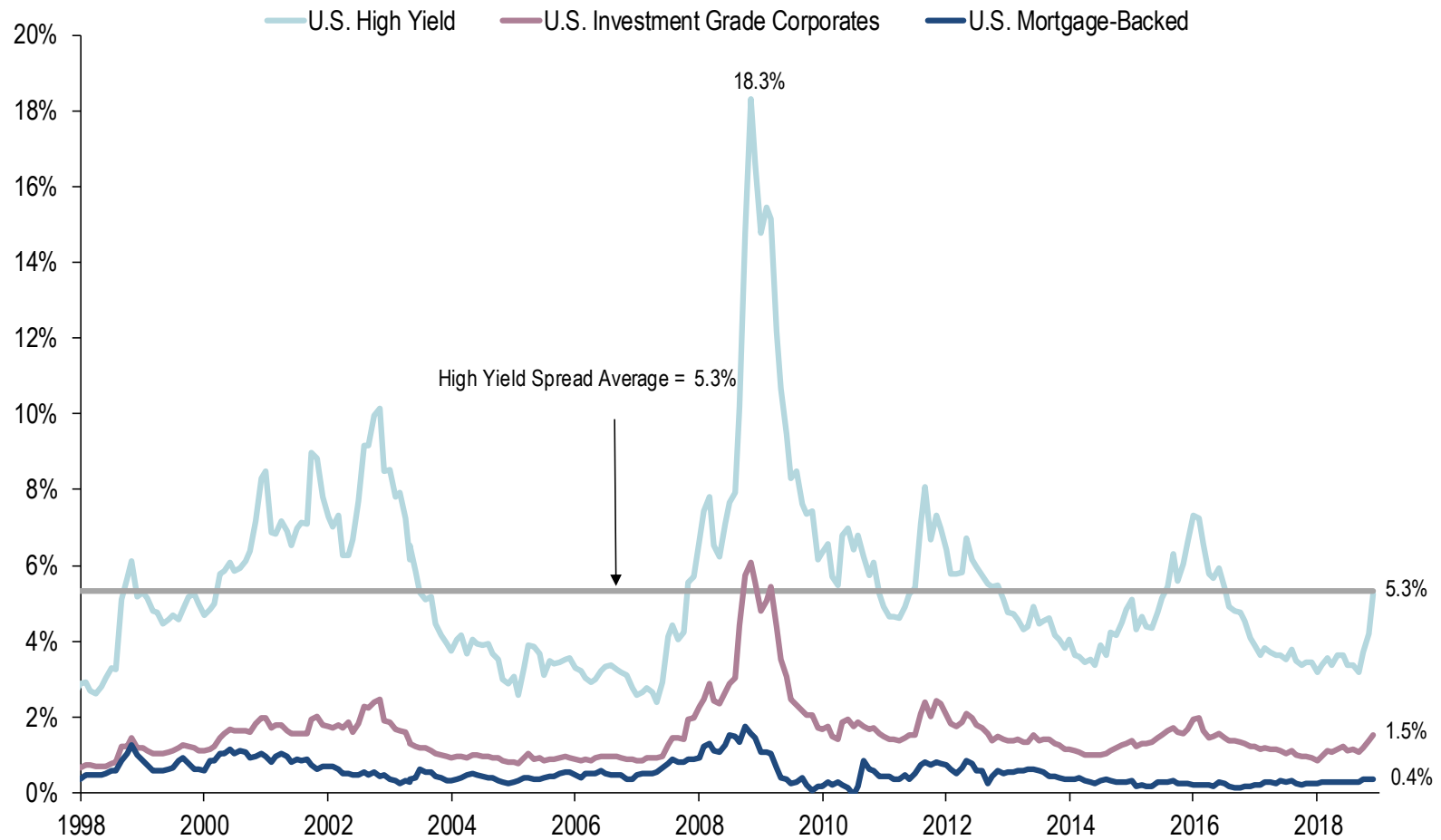
## Rolling Ten-Year Returns: 65% Stocks and 35% Bonds<sup>1</sup>



<sup>1</sup> Source: InvestorForce.



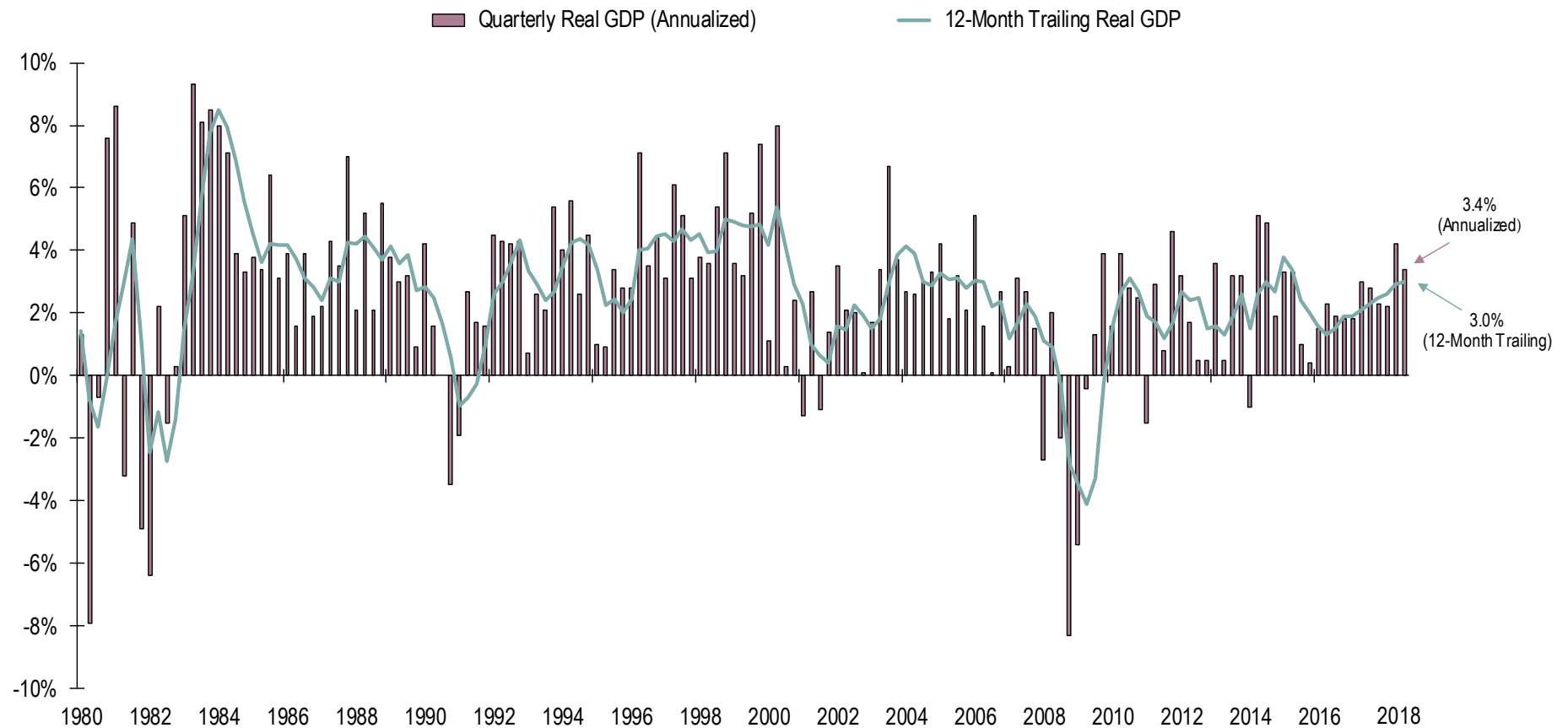
## Credit Spreads vs. U.S. Treasury Bonds<sup>1,2</sup>



<sup>1</sup> Source: Barclays Live.

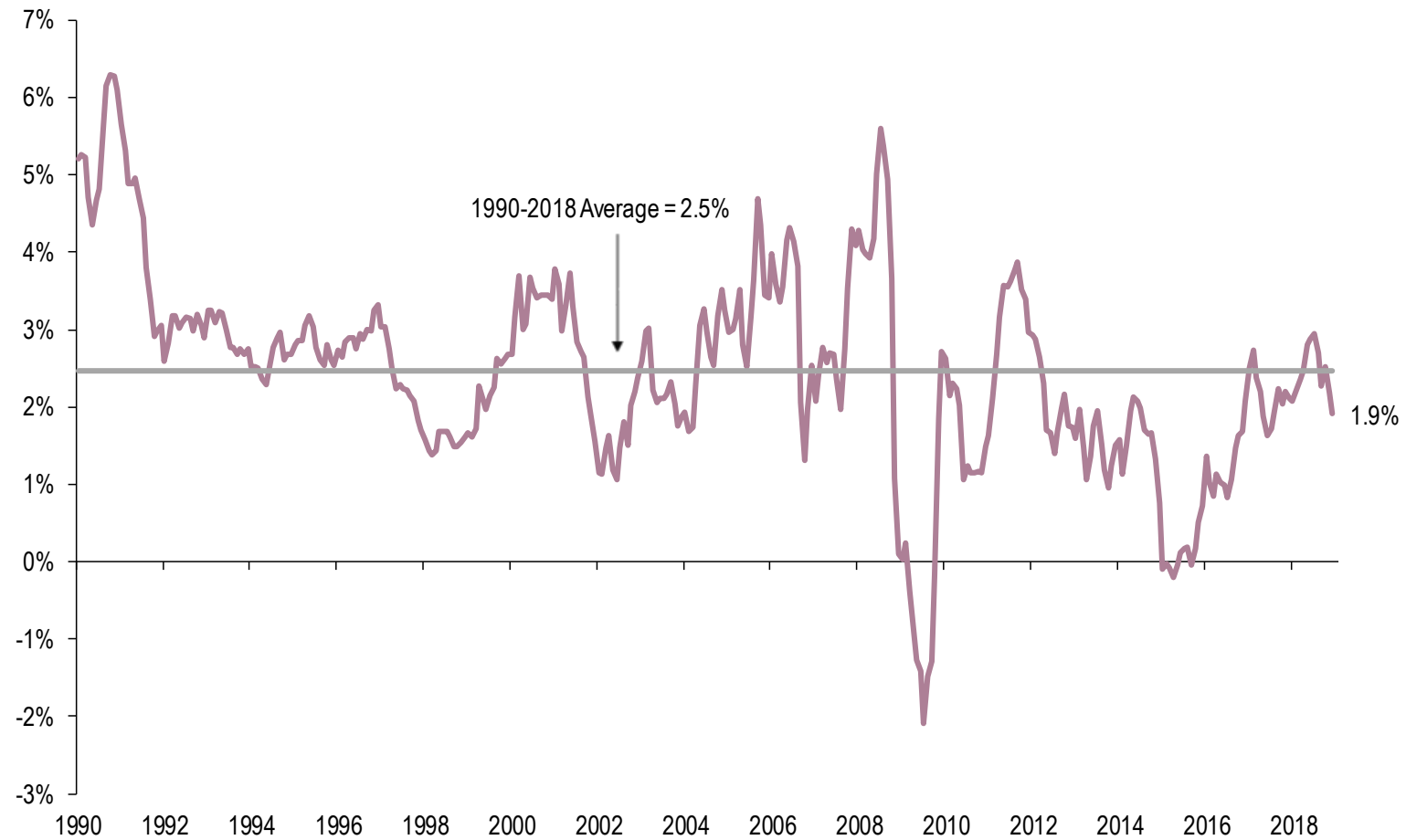
<sup>2</sup> The median high yield spread was 4.8% from 1997-2018.

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



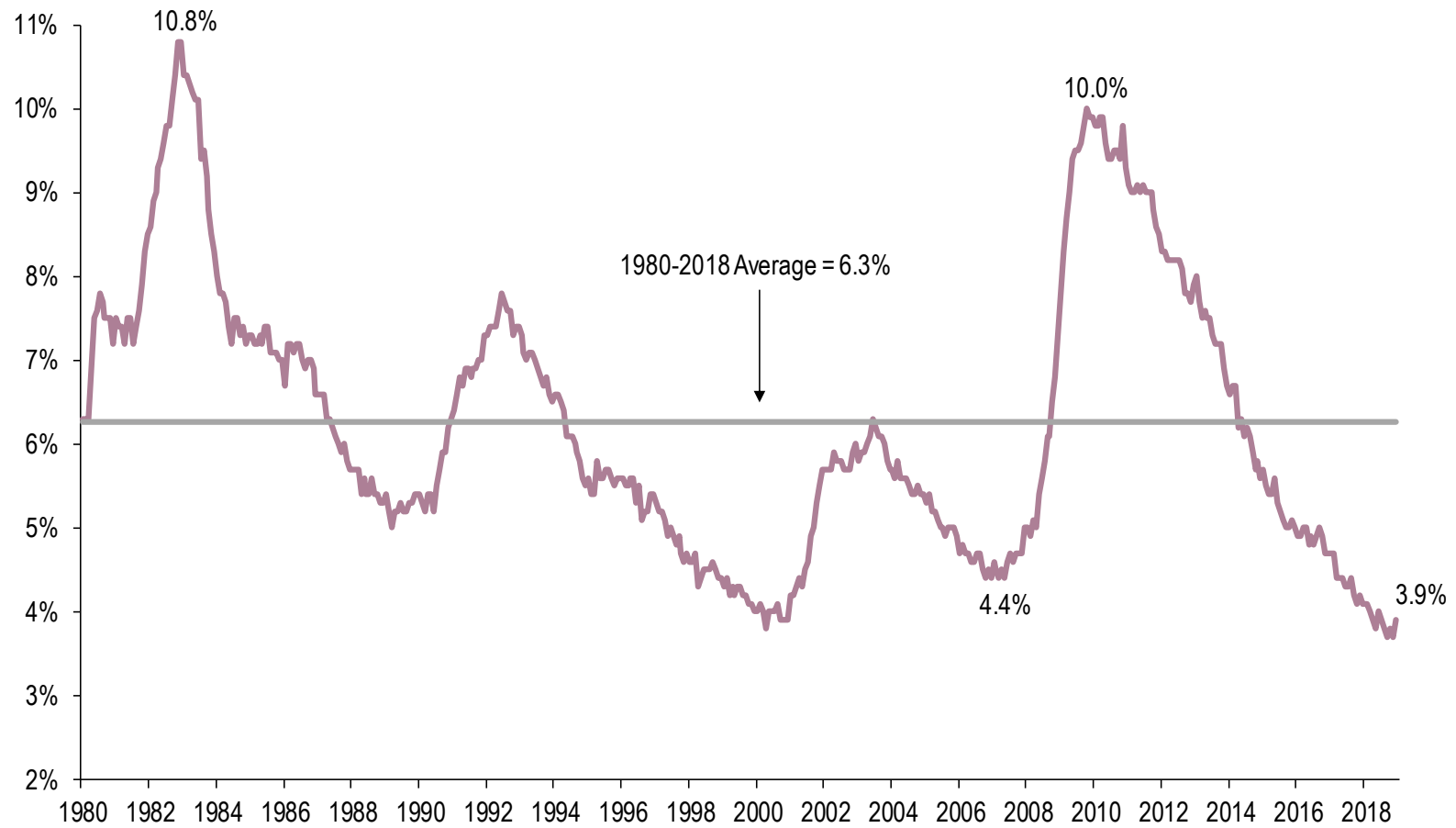
<sup>1</sup> Source: Bureau of Economic Analysis. Data is as of Q3 2018 and represents the third estimate.

## 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.

## U.S. Unemployment<sup>1</sup>



<sup>1</sup> Source: Bureau of Labor Statistics.








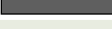


## **Retirement System Fourth Quarter Review**

## **Retirement System Summary**

## Total Retirement System

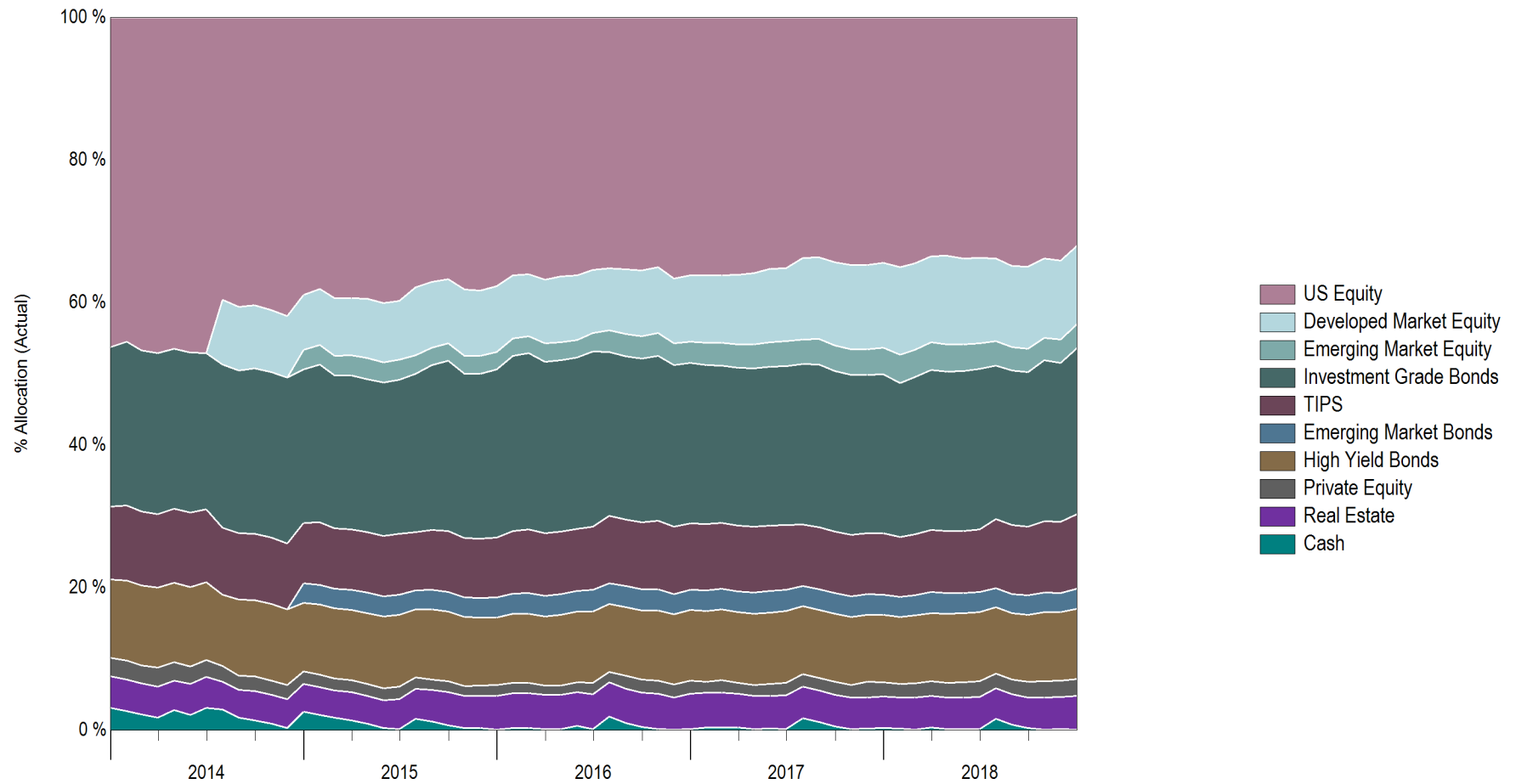
As of December 31, 2018

## Allocation vs. Targets and Policy

	Current Balance	Current Allocation	Policy	Policy Range
 US Equity	\$52,033,629	32%	33%	28% - 38%
 Developed Market Equity	\$17,769,235	11%	9%	5% - 13%
 Emerging Market Equity	\$5,443,662	3%	3%	1% - 5%
 Investment Grade Bonds	\$37,757,732	23%	22%	17% - 27%
 TIPS	\$16,992,732	10%	10%	7% - 13%
 Emerging Market Bonds	\$4,614,381	3%	3%	1% - 5%
 High Yield Bonds	\$15,946,543	10%	10%	7% - 13%
 Private Equity	\$3,907,974	2%	5%	3% - 7%
 Real Estate	\$7,624,583	5%	5%	2% - 8%
 Cash	\$175,568	0%	0%	0% - 100%
<b>Total</b>	<b>\$162,266,039</b>	<b>100%</b>	<b>100%</b>	



Asset Allocation History  
5 Years Ending December 31, 2018



## Total Retirement System

As of December 31, 2018

	Actual Asset Allocation (%)	Target Allocation (%)	Target Range (%)	PRIT Asset Allocation <sup>1</sup> (%)
<b>Total Retirement System</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
<i>Equity Assets</i>	46	45	37-53	38
Domestic Equity Assets	32	33	28-38	17
International Equity Assets	14	12	9-15	21
<i>Fixed Income Assets</i>	46	45	32-53	21
Domestic Investment Grade Assets	23	22	17-27	13
High Yield Bond Assets	10	10	7-13	8
TIPS	10	10	7-13	-
Emerging Market Debt	3	3	1-5	-
<i>Portfolio Completion Strategies</i>	NA	NA	NA	14
<i>Real Estate Assets</i>	5	5	3-7	9
<i>Private Equity</i>	2	5	3-7	12
<i>Timber/Natural Resources</i>	NA	NA	NA	4
<i>Cash</i>	< 1	5	< 5	0

<sup>1</sup> PRIT asset allocation as of December 2018. TIPS and Emerging Market Debt are reflected in PRIT's Core and Value-Added Fixed Income Sleeves, respectively.

## Total Retirement System

As of December 31, 2018

## Asset Class Performance Summary

	Market Value (\$)	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	20 Yrs (%)	Inception (%)	Inception Date
<b>Total Retirement System</b>	<b>162,266,039</b>	<b>100.0</b>	<b>-6.6</b>	<b>-4.4</b>	<b>-4.4</b>	<b>5.6</b>	<b>4.5</b>	<b>7.8</b>	<b>5.9</b>	<b>7.4</b>	<b>Jul-88</b>
55% MSCI World & 45% Barclays Aggregate			-6.8	-4.6	-4.6	4.5	3.8	7.1	4.8	6.7	Jul-88
Consumer Price Index			-0.5	1.9	1.9	2.0	1.5	1.8	2.2	2.5	Jul-88
PRIT Core Fund			-6.1	-1.8	-1.8	7.7	6.4	9.1	6.9	8.7	Jul-88
InvestorForce Public DB Net Median			-8.2	-4.4	-4.4	5.6	4.5	8.0	5.2	7.7	Jul-88
InvestorForce Public DB Net Rank			16	50	50	52	48	62	19	65	Jul-88
<b>Domestic Equity Assets</b>	<b>52,033,629</b>	<b>32.1</b>	<b>-13.8</b>	<b>-6.7</b>	<b>-6.7</b>	<b>8.7</b>	<b>7.4</b>	<b>13.0</b>	<b>--</b>	<b>7.1</b>	<b>Oct-06</b>
Russell 3000			-14.3	-5.2	-5.2	9.0	7.9	13.2	6.0	7.5	Oct-06
PRIT Domestic Equity			-14.7	-5.1	-5.1	9.0	7.7	12.9	5.9	6.5	Oct-06
<b>International Developed Markets Equity Assets</b>	<b>17,769,235</b>	<b>11.0</b>	<b>-12.5</b>	<b>-13.5</b>	<b>-13.5</b>	<b>3.1</b>	<b>-0.2</b>	<b>5.8</b>	<b>--</b>	<b>1.6</b>	<b>Oct-06</b>
MSCI EAFE			-12.5	-13.8	-13.8	2.9	0.5	6.3	3.5	2.0	Oct-06
<b>International Emerging Markets Equity Assets</b>	<b>5,443,662</b>	<b>3.4</b>	<b>-6.9</b>	<b>-15.5</b>	<b>-15.5</b>	<b>8.9</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>3.0</b>	<b>Jan-15</b>
MSCI Emerging Markets			-7.5	-14.6	-14.6	9.2	1.6	8.0	8.5	2.6	Jan-15
<b>Investment Grade Bonds Assets</b>	<b>37,757,732</b>	<b>23.3</b>	<b>1.7</b>	<b>0.0</b>	<b>0.0</b>	<b>2.1</b>	<b>2.5</b>	<b>3.5</b>	<b>4.4</b>	<b>6.0</b>	<b>Jul-88</b>
BBgBarc US Aggregate TR			1.6	0.0	0.0	2.1	2.5	3.5	4.5	6.1	Jul-88
PRIT Core Fixed Income			1.3	-0.8	-0.8	2.9	4.2	5.2	5.2	6.8	Jul-88
<b>High Yield Bond Assets</b>	<b>15,946,543</b>	<b>9.8</b>	<b>-3.8</b>	<b>-1.3</b>	<b>-1.3</b>	<b>6.0</b>	<b>3.7</b>	<b>8.7</b>	<b>--</b>	<b>6.4</b>	<b>Sep-03</b>
BBgBarc US High Yield TR			-4.5	-2.1	-2.1	7.2	3.8	11.1	6.6	7.4	Sep-03
PRIT Public Value-Added Fixed Income			-2.5	-2.1	-2.1	6.0	2.5	7.9	--	6.5	Sep-03
<b>TIPS Assets</b>	<b>16,992,732</b>	<b>10.5</b>	<b>-0.4</b>	<b>-1.3</b>	<b>-1.3</b>	<b>2.1</b>	<b>1.7</b>	<b>3.6</b>	<b>--</b>	<b>3.4</b>	<b>Oct-05</b>
BBgBarc US TIPS TR			-0.4	-1.3	-1.3	2.1	1.7	3.6	5.2	3.4	Oct-05
<b>Emerging Market Debt Assets</b>	<b>4,614,381</b>	<b>2.8</b>	<b>-3.2</b>	<b>-7.0</b>	<b>-7.0</b>	<b>5.1</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>3.6</b>	<b>Jan-15</b>
JP Morgan EMBI Global Diversified			-1.3	-4.3	-4.3	5.2	4.8	8.2	9.1	4.1	Jan-15
<b>Open-Ended Real Estate</b>	<b>5,620,286</b>	<b>3.5</b>	<b>1.0</b>	<b>8.6</b>	<b>8.6</b>	<b>8.5</b>	<b>10.9</b>	<b>6.2</b>	<b>7.5</b>	<b>8.2</b>	<b>Oct-95</b>
NCREIF-ODCE			1.8	8.3	8.3	8.2	10.4	7.0	8.6	9.2	Oct-95

## Total Retirement System

As of December 31, 2018

	Market Value (\$)	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	20 Yrs (%)	Inception (%)	Inception Date
<b>Total Closed End Real Estate</b>	<b>2,004,297</b>	<b>1.2</b>	<b>0.0</b>	<b>4.5</b>	<b>4.5</b>	<b>9.6</b>	<b>13.1</b>	<b>--</b>	<b>--</b>	<b>14.0</b>	<b>Jan-13</b>
<i>NCREIF ODCE</i>			<i>1.8</i>	<i>8.3</i>	<i>8.3</i>	<i>8.2</i>	<i>10.4</i>	<i>7.0</i>	<i>8.6</i>	<i>11.0</i>	<i>Jan-13</i>
<b>Private Equity Assets</b>	<b>3,907,974</b>	<b>2.4</b>									
<b>Cash</b>	<b>175,568</b>	<b>0.1</b>									

## Total Retirement System

As of December 31, 2018

## Trailing Performance

	Market Value (\$)	% of Portfolio	% of Sector	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	20 Yrs (%)	Inception (%)	Inception Date
<b>Total Retirement System</b>	<b>162,266,039</b>	<b>100.0</b>	<b>--</b>	<b>-6.6</b>	<b>-4.4</b>	<b>-4.4</b>	<b>5.6</b>	<b>4.5</b>	<b>7.8</b>	<b>5.9</b>	<b>7.4</b>	<b>Jul-88</b>
55% MSCI World & 45% Barclays Aggregate				-6.8	-4.6	-4.6	4.5	3.8	7.1	4.8	6.7	Jul-88
Consumer Price Index				-0.5	1.9	1.9	2.0	1.5	1.8	2.2	2.5	Jul-88
PRIT Core Fund				-6.1	-1.8	-1.8	7.7	6.4	9.1	6.9	8.7	Jul-88
<b>Domestic Equity Assets</b>	<b>52,033,629</b>	<b>32.1</b>	<b>32.1</b>	<b>-13.8</b>	<b>-6.7</b>	<b>-6.7</b>	<b>8.7</b>	<b>7.4</b>	<b>13.0</b>	<b>--</b>	<b>7.1</b>	<b>Oct-06</b>
Russell 3000				-14.3	-5.2	-5.2	9.0	7.9	13.2	6.0	7.5	Oct-06
PRIT Domestic Equity				-14.7	-5.1	-5.1	9.0	7.7	12.9	5.9	6.5	Oct-06
RhumbLine S&P 500 Index	16,317,081	10.1	31.4	-13.5	-4.4	-4.4	9.2	8.5	13.1	--	5.7	Mar-99
S&P 500				-13.5	-4.4	-4.4	9.3	8.5	13.1	5.6	5.6	Mar-99
Fiduciary Large Cap Equity	21,007,301	12.9	40.4	-9.5	-3.7	-3.7	9.3	7.4	--	--	10.8	Sep-12
Russell 3000				-14.3	-5.2	-5.2	9.0	7.9	13.2	6.0	11.7	Sep-12
Frontier Capital Appreciation	14,709,247	9.1	28.3	-19.4	-13.2	-13.2	7.7	5.6	--	--	9.7	Feb-13
Russell 2500 Growth				-20.1	-7.5	-7.5	8.1	6.2	14.8	7.5	10.2	Feb-13
<b>International Developed Markets Equity Assets</b>	<b>17,769,235</b>	<b>11.0</b>	<b>11.0</b>	<b>-12.5</b>	<b>-13.5</b>	<b>-13.5</b>	<b>3.1</b>	<b>-0.2</b>	<b>5.8</b>	<b>--</b>	<b>1.6</b>	<b>Oct-06</b>
MSCI EAFE				-12.5	-13.8	-13.8	2.9	0.5	6.3	3.5	2.0	Oct-06
Rhumblin MSCI EAFE Index	17,769,235	11.0	100.0	-12.5	-13.5	-13.5	3.1	--	--	--	0.1	Aug-14
MSCI EAFE				-12.5	-13.8	-13.8	2.9	0.5	6.3	3.5	0.0	Aug-14
<b>International Emerging Markets Equity Assets</b>	<b>5,443,662</b>	<b>3.4</b>	<b>3.4</b>	<b>-6.9</b>	<b>-15.5</b>	<b>-15.5</b>	<b>8.9</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>3.0</b>	<b>Jan-15</b>
MSCI Emerging Markets				-7.5	-14.6	-14.6	9.2	1.6	8.0	8.5	2.6	Jan-15
DFA Emerging Markets	2,678,918	1.7	49.2	-6.4	-15.2	-15.2	9.2	--	--	--	2.6	Jan-15
MSCI Emerging Markets				-7.5	-14.6	-14.6	9.2	1.6	8.0	8.5	2.6	Jan-15

## Total Retirement System

As of December 31, 2018

	Market Value (\$)	% of Portfolio	% of Sector	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	20 Yrs (%)	Inception (%)	Inception Date
Driehaus Emerging Market Equity	2,764,744	1.7	50.8	-7.4	-15.7	-15.7	8.7	--	--	--	3.5	Jan-15
MSCI Emerging Markets				-7.5	-14.6	-14.6	9.2	1.6	8.0	8.5	2.6	Jan-15
<b>Investment Grade Bonds Assets</b>	<b>37,757,732</b>	<b>23.3</b>	<b>23.3</b>	<b>1.7</b>	<b>0.0</b>	<b>0.0</b>	<b>2.1</b>	<b>2.5</b>	<b>3.5</b>	<b>4.4</b>	<b>6.0</b>	<b>Jul-88</b>
BBgBarc US Aggregate TR				1.6	0.0	0.0	2.1	2.5	3.5	4.5	6.1	Jul-88
PRIT Core Fixed Income				1.3	-0.8	-0.8	2.9	4.2	5.2	5.2	6.8	Jul-88
SSgA U.S. Aggregate Bond Index	37,757,732	23.3	100.0	1.7	0.0	0.0	2.1	2.5	3.5	--	4.4	May-01
BBgBarc US Aggregate TR				1.6	0.0	0.0	2.1	2.5	3.5	4.5	4.4	May-01
<b>High Yield Bond Assets</b>	<b>15,946,543</b>	<b>9.8</b>	<b>9.8</b>	<b>-3.8</b>	<b>-1.3</b>	<b>-1.3</b>	<b>6.0</b>	<b>3.7</b>	<b>8.7</b>	<b>--</b>	<b>6.4</b>	<b>Sep-03</b>
BBgBarc US High Yield TR				-4.5	-2.1	-2.1	7.2	3.8	11.1	6.6	7.4	Sep-03
PRIT Public Value-Added Fixed Income				-2.5	-2.1	-2.1	6.0	2.5	7.9	--	6.5	Sep-03
Shenkman Capital	15,946,543	9.8	100.0	-3.8	-1.3	-1.3	6.0	3.7	8.7	--	6.4	Apr-06
BBgBarc US High Yield TR				-4.5	-2.1	-2.1	7.2	3.8	11.1	6.6	6.9	Apr-06
<b>TIPS Assets</b>	<b>16,992,732</b>	<b>10.5</b>	<b>10.5</b>	<b>-0.4</b>	<b>-1.3</b>	<b>-1.3</b>	<b>2.1</b>	<b>1.7</b>	<b>3.6</b>	<b>--</b>	<b>3.4</b>	<b>Oct-05</b>
BBgBarc US TIPS TR				-0.4	-1.3	-1.3	2.1	1.7	3.6	5.2	3.4	Oct-05
SSgA TIPS Index-NL	16,992,732	10.5	100.0	-0.4	-1.3	-1.3	2.1	1.7	3.6	--	3.4	Oct-05
BBgBarc US TIPS TR				-0.4	-1.3	-1.3	2.1	1.7	3.6	5.2	3.4	Oct-05
<b>Emerging Market Debt Assets</b>	<b>4,614,381</b>	<b>2.8</b>	<b>2.8</b>	<b>-3.2</b>	<b>-7.0</b>	<b>-7.0</b>	<b>5.1</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>3.6</b>	<b>Jan-15</b>
JP Morgan EMBI Global Diversified				-1.3	-4.3	-4.3	5.2	4.8	8.2	9.1	4.1	Jan-15
Payden Emerging Market Bond	4,614,381	2.8	100.0	-3.2	-7.0	-7.0	5.1	--	--	--	3.6	Jan-15
JP Morgan EMBI Global Diversified				-1.3	-4.3	-4.3	5.2	4.8	8.2	9.1	4.1	Jan-15

## Total Retirement System

As of December 31, 2018

	Market Value (\$)	% of Portfolio	% of Sector	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	20 Yrs (%)	Inception (%)	Inception Date
<b>Open-Ended Real Estate</b>	<b>5,620,286</b>	<b>3.5</b>	<b>3.5</b>	<b>1.0</b>	<b>8.6</b>	<b>8.6</b>	<b>8.5</b>	<b>10.9</b>	<b>6.2</b>	<b>7.5</b>	<b>8.2</b>	<b>Oct-95</b>
<i>NCREIF-ODCE</i>				1.8	8.3	8.3	8.2	10.4	7.0	8.6	9.2	Oct-95
Clarion Partners	5,620,286	3.5	100.0	1.0	8.6	8.6	8.5	10.9	6.2	--	7.4	Oct-02
<i>NCREIF-ODCE</i>				1.8	8.3	8.3	8.2	10.4	7.0	8.6	8.3	Oct-02
<b>Total Closed End Real Estate</b>	<b>2,004,297</b>	<b>1.2</b>	<b>1.2</b>	<b>0.0</b>	<b>4.5</b>	<b>4.5</b>	<b>9.6</b>	<b>13.1</b>	<b>--</b>	<b>--</b>	<b>14.0</b>	<b>Jan-13</b>
<i>NCREIF ODCE</i>				1.8	8.3	8.3	8.2	10.4	7.0	8.6	11.0	Jan-13
Colony Realty Partners IV	2,004,297	1.2	100.0	0.0	4.5	4.5	9.6	13.1	--	--	--	Jan-13
<i>NCREIF-ODCE</i>				1.8	8.3	8.3	8.2	10.4	7.0	8.6	11.0	Jan-13
<b>Private Equity Assets</b>	<b>3,907,974</b>	<b>2.4</b>	<b>2.4</b>									
North American Strategic Partners 2006	814,456	0.5	20.8									
Ironsides Partnership Fund IV	878,495	0.5	22.5									
Ironsides Direct Investment Fund IV	2,215,023	1.4	56.7									
<b>Cash</b>	<b>175,568</b>	<b>0.1</b>	<b>0.1</b>									

## Total Retirement System

As of December 31, 2018

## Calendar Year Performance

	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)	2013 (%)	2012 (%)	2011 (%)	2010 (%)	2009 (%)
<b>Total Retirement System</b>	<b>-4.4</b>	<b>13.1</b>	<b>8.7</b>	<b>-0.2</b>	<b>6.3</b>	<b>14.0</b>	<b>10.9</b>	<b>2.4</b>	<b>12.3</b>	<b>16.8</b>
55% MSCI World & 45% Barclays Aggregate	-4.6	13.6	5.5	0.0	5.5	13.0	10.7	0.7	10.0	19.2
Consumer Price Index	1.9	2.1	2.1	0.7	0.8	1.5	1.7	3.0	1.5	2.7
PRIT Core Fund	-1.8	17.7	8.0	1.1	8.1	15.2	13.9	0.1	13.6	17.7
<b>Domestic Equity Assets</b>	<b>-6.7</b>	<b>20.3</b>	<b>14.6</b>	<b>-1.6</b>	<b>13.1</b>	<b>33.1</b>	<b>15.3</b>	<b>0.0</b>	<b>18.8</b>	<b>29.8</b>
Russell 3000	-5.2	21.1	12.7	0.5	12.6	33.6	16.4	1.0	16.9	28.3
PRIT Domestic Equity	-5.1	20.8	12.9	0.3	11.7	33.7	16.9	1.1	16.8	25.4
RhumbLine S&P 500 Index	-4.4	21.8	11.9	1.4	13.6	32.2	16.0	2.1	15.0	26.6
S&P 500	-4.4	21.8	12.0	1.4	13.7	32.4	16.0	2.1	15.1	26.5
Fiduciary Large Cap Equity (net)	-3.7	19.2	13.8	-2.4	12.4	30.5	--	--	--	--
Russell 3000	-5.2	21.1	12.7	0.5	12.6	33.6	16.4	1.0	16.9	28.3
Frontier Capital Appreciation (net)	-13.9	19.1	20.5	-6.5	12.4	--	--	--	--	--
Russell 2500 Growth	-7.5	24.5	9.7	-0.2	7.1	40.6	16.1	-1.6	28.9	41.7
<b>International Developed Markets Equity Assets</b>	<b>-13.5</b>	<b>24.9</b>	<b>1.4</b>	<b>-0.8</b>	<b>-8.7</b>	<b>21.2</b>	<b>15.0</b>	<b>-14.1</b>	<b>10.6</b>	<b>34.1</b>
MSCI EAFE	-13.8	25.0	1.0	-0.8	-4.9	22.8	17.3	-12.1	7.8	31.8
Rhumblin MSCI EAFE Index (net)	-13.5	24.9	1.4	-0.8	--	--	--	--	--	--
MSCI EAFE	-13.8	25.0	1.0	-0.8	-4.9	22.8	17.3	-12.1	7.8	31.8
<b>International Emerging Markets Equity Assets</b>	<b>-15.5</b>	<b>39.7</b>	<b>9.4</b>	<b>-12.7</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
MSCI Emerging Markets	-14.6	37.3	11.2	-14.9	-2.2	-2.6	18.2	-18.4	18.9	78.5
DFA Emerging Markets (net)	-15.2	36.6	12.4	-14.9	--	--	--	--	--	--
MSCI Emerging Markets	-14.6	37.3	11.2	-14.9	-2.2	-2.6	18.2	-18.4	18.9	78.5



## Total Retirement System

As of December 31, 2018

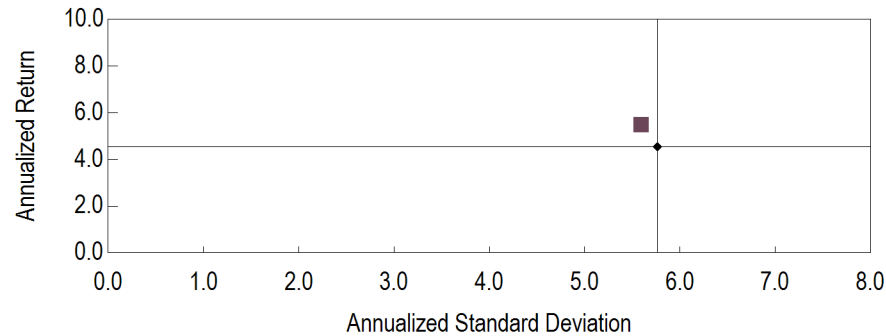
	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)	2013 (%)	2012 (%)	2011 (%)	2010 (%)	2009 (%)
Driehaus Emerging Market Equity (net)	-15.7	42.9	6.5	-10.6	--	--	--	--	--	--
<i>MSCI Emerging Markets</i>	-14.6	37.3	11.2	-14.9	-2.2	-2.6	18.2	-18.4	18.9	78.5
<b>Investment Grade Bonds Assets</b>	<b>0.0</b>	<b>3.6</b>	<b>2.6</b>	<b>0.6</b>	<b>6.0</b>	<b>-2.0</b>	<b>4.3</b>	<b>7.8</b>	<b>6.6</b>	<b>6.0</b>
<i>BBgBarc US Aggregate TR</i>	0.0	3.5	2.6	0.5	6.0	-2.0	4.2	7.8	6.5	5.9
<i>PRIT Core Fixed Income</i>	-0.8	5.4	4.0	-2.0	15.2	-2.8	6.4	8.1	7.5	11.9
SSgA U.S. Aggregate Bond Index	0.0	3.6	2.6	0.6	6.0	-2.0	4.3	7.8	6.6	6.0
<i>BBgBarc US Aggregate TR</i>	0.0	3.5	2.6	0.5	6.0	-2.0	4.2	7.8	6.5	5.9
<b>High Yield Bond Assets</b>	<b>-1.3</b>	<b>7.0</b>	<b>12.7</b>	<b>-2.3</b>	<b>2.9</b>	<b>6.4</b>	<b>12.4</b>	<b>6.0</b>	<b>12.8</b>	<b>34.3</b>
<i>BBgBarc US High Yield TR</i>	-2.1	7.5	17.1	-4.5	2.5	7.4	15.8	5.0	15.1	58.2
<i>PRIT Public Value-Added Fixed Income</i>	-2.1	9.0	11.7	-4.7	-0.2	-1.5	14.7	5.3	13.6	39.7
Shenkman Capital	-1.3	7.2	12.7	-2.3	2.9	6.4	12.4	6.0	12.8	34.3
<i>BBgBarc US High Yield TR</i>	-2.1	7.5	17.1	-4.5	2.5	7.4	15.8	5.0	15.1	58.2
<b>TIPS Assets</b>	<b>-1.3</b>	<b>3.0</b>	<b>4.7</b>	<b>-1.4</b>	<b>3.6</b>	<b>-8.6</b>	<b>6.9</b>	<b>13.5</b>	<b>6.3</b>	<b>11.3</b>
<i>BBgBarc US TIPS TR</i>	-1.3	3.0	4.7	-1.4	3.6	-8.6	7.0	13.6	6.3	11.4
SSgA TIPS Index-NL	-1.3	3.0	4.7	-1.4	3.6	-8.6	6.9	13.5	6.3	11.3
<i>BBgBarc US TIPS TR</i>	-1.3	3.0	4.7	-1.4	3.6	-8.6	7.0	13.6	6.3	11.4
<b>Emerging Market Debt Assets</b>	<b>-7.0</b>	<b>12.0</b>	<b>11.5</b>	<b>-0.8</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>JP Morgan EMBI Global Diversified</i>	-4.3	10.3	10.2	1.2	7.4	-5.3	17.4	7.3	12.2	29.8
Payden Emerging Market Bond (net)	-7.0	12.0	11.5	-0.8	--	--	--	--	--	--
<i>JP Morgan EMBI Global Diversified</i>	-4.3	10.3	10.2	1.2	7.4	-5.3	17.4	7.3	12.2	29.8

## Total Retirement System

As of December 31, 2018

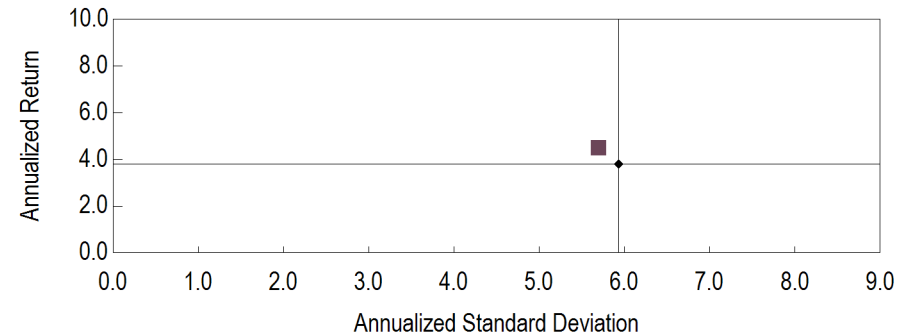
	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)	2013 (%)	2012 (%)	2011 (%)	2010 (%)	2009 (%)
<b>Open-Ended Real Estate</b>	<b>8.6</b>	<b>7.9</b>	<b>9.1</b>	<b>15.7</b>	<b>13.2</b>	<b>12.8</b>	<b>10.9</b>	<b>18.7</b>	<b>19.2</b>	<b>-38.6</b>
NCREIF-ODCE	8.3	7.6	8.8	15.0	12.5	13.9	10.9	16.0	16.4	-29.8
Clarion Partners	8.6	7.9	9.1	15.7	13.2	12.8	10.9	18.7	19.2	-38.6
NCREIF-ODCE	8.3	7.6	8.8	15.0	12.5	13.9	10.9	16.0	16.4	-29.8
<b>Total Closed End Real Estate</b>	<b>4.5</b>	<b>15.1</b>	<b>9.5</b>	<b>23.8</b>	<b>13.3</b>	<b>18.8</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
NCREIF ODCE	8.3	7.6	8.8	15.0	12.5	13.9	10.9	16.0	16.4	-29.8
Colony Realty Partners IV	4.5	15.1	9.5	23.8	13.3	--	--	--	--	--
NCREIF-ODCE	8.3	7.6	8.8	15.0	12.5	13.9	10.9	16.0	16.4	-29.8
<b>Private Equity Assets</b>										
North American Strategic Partners 2006 (net)										
Ironsides Partnership Fund IV (net)										
Ironsides Direct Investment Fund IV (net)										
<b>Cash</b>										

Annualized Return vs. Annualized Standard Deviation  
3 Years Ending December 31, 2018



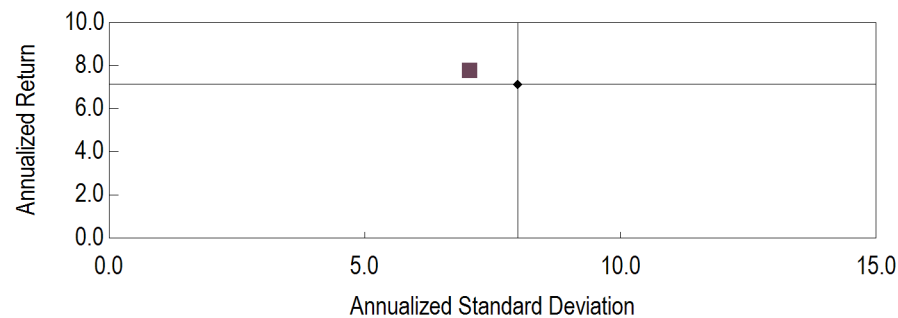
- Total Retirement System
- ◆ 55% MSCI World & 45% Barclays Aggregate

Annualized Return vs. Annualized Standard Deviation  
5 Years Ending December 31, 2018



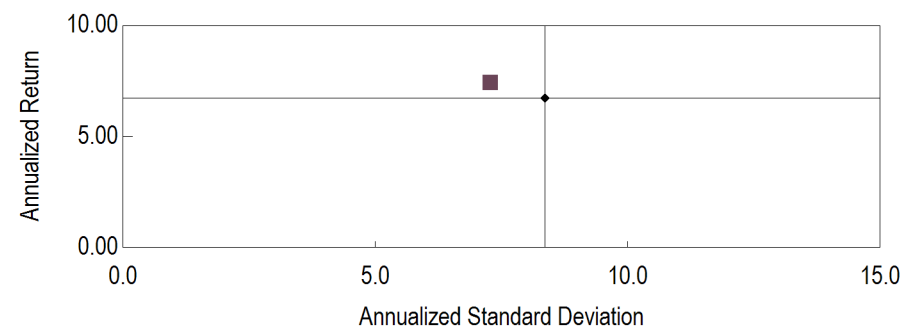
- Total Retirement System
- ◆ 55% MSCI World & 45% Barclays Aggregate

Annualized Return vs. Annualized Standard Deviation  
10 Years Ending December 31, 2018



- Total Retirement System
- ◆ 55% MSCI World & 45% Barclays Aggregate

Annualized Return vs. Annualized Standard Deviation  
Since Inception



- Total Retirement System
- ◆ 55% MSCI World & 45% Barclays Aggregate

As of December 31, 2018

## Statistics Summary

5 Years Ending December 31, 2018

	Anlzd Return	Anlzd Standard Deviation	Information Ratio	Beta	Sharpe Ratio	Tracking Error
Total Retirement System	4.5%	5.7%	0.6	0.9	0.7	1.2%
55% MSCI World & 45% Barclays Aggregate	3.8%	5.9%	--	1.0	0.5	0.0%
Equity Assets	5.4%	10.7%	-1.0	0.9	0.4	2.4%
Russell 3000	7.9%	11.2%	--	1.0	0.7	0.0%
Domestic Equity Assets	7.4%	11.1%	-0.3	1.0	0.6	1.7%
Russell 3000	7.9%	11.2%	--	1.0	0.7	0.0%
RhumbLine S&P 500 Index	8.5%	10.9%	-0.5	1.0	0.7	0.0%
S&P 500	8.5%	10.9%	--	1.0	0.7	0.0%
Fiduciary Large Cap Equity	7.4%	10.2%	-0.1	0.9	0.7	3.6%
Russell 3000	7.9%	11.2%	--	1.0	0.7	0.0%
Frontier Capital Appreciation	5.4%	15.0%	-0.2	1.0	0.3	4.9%
Russell 2500 Growth	6.2%	14.8%	--	1.0	0.4	0.0%
International Developed Markets Equity Assets	-0.2%	11.8%	-0.7	1.0	-0.1	1.0%
MSCI EAFE	0.5%	11.8%	--	1.0	0.0	0.0%
Rhumblin MSCI EAFE Index	--	--	--	--	--	--
MSCI EAFE	0.5%	11.8%	--	1.0	0.0	0.0%
International Emerging Markets Equity Assets	--	--	--	--	--	--
MSCI Emerging Markets	1.6%	15.2%	--	1.0	0.1	0.0%
DFA Emerging Markets	--	--	--	--	--	--
MSCI Emerging Markets	1.6%	15.2%	--	1.0	0.1	0.0%

## Total Retirement System

As of December 31, 2018

	Anlzd Return	Anlzd Standard Deviation	Information Ratio	Beta	Sharpe Ratio	Tracking Error
Driehaus Emerging Market Equity	--	--	--	--	--	--
MSCI Emerging Markets	1.6%	15.2%	--	1.0	0.1	0.0%
Investment Grade Bonds Assets	2.5%	2.8%	0.9	1.0	0.7	0.0%
BBgBarc US Aggregate TR	2.5%	2.8%	--	1.0	0.7	0.0%
SSgA U.S. Aggregate Bond Index	2.5%	2.8%	0.9	1.0	0.7	0.0%
BBgBarc US Aggregate TR	2.5%	2.8%	--	1.0	0.7	0.0%
High Yield Bond Assets	3.4%	4.6%	-0.4	0.9	0.6	1.0%
BBgBarc US High Yield TR	3.8%	5.1%	--	1.0	0.6	0.0%
Shenkman Capital	3.4%	4.6%	-0.4	0.9	0.6	1.0%
BBgBarc US High Yield TR	3.8%	5.1%	--	1.0	0.6	0.0%
TIPS Assets	1.7%	3.6%	-0.5	1.0	0.3	0.0%
BBgBarc US TIPS TR	1.7%	3.6%	--	1.0	0.3	0.0%
SSgA TIPS Index-NL	1.7%	3.6%	-0.5	1.0	0.3	0.0%
BBgBarc US TIPS TR	1.7%	3.6%	--	1.0	0.3	0.0%
Emerging Market Debt Assets	--	--	--	--	--	--
JP Morgan EMBI Global Diversified	4.8%	5.4%	--	1.0	0.8	0.0%
Payden Emerging Market Bond	--	--	--	--	--	--
JP Morgan EMBI Global Diversified	4.8%	5.4%	--	1.0	0.8	0.0%
Open-Ended Real Estate	10.9%	4.7%	0.4	1.1	2.2	1.0%
NCREIF-ODCE	10.4%	4.4%	--	1.0	2.2	0.0%
Clarion Partners	10.9%	4.7%	0.4	1.1	2.2	1.0%
NCREIF-ODCE	10.4%	4.4%	--	1.0	2.2	0.0%

## Total Retirement System

As of December 31, 2018

	Anlzd Return	Anlzd Standard Deviation	Information Ratio	Beta	Sharpe Ratio	Tracking Error
Total Closed End Real Estate	13.1%	6.5%	0.8	1.3	1.9	3.3%
NCREIF ODCE	10.4%	4.4%	--	1.0	2.2	0.0%
Colony Realty Partners IV	13.1%	6.5%	0.8	1.3	1.9	3.3%
NCREIF-ODCE	10.4%	4.4%	--	1.0	2.2	0.0%
Comerica Short Term Fund	0.2%	0.1%	-1.8	-0.1	-4.1	0.3%
91 Day T-Bills	0.6%	0.2%	--	1.0	0.0	0.0%

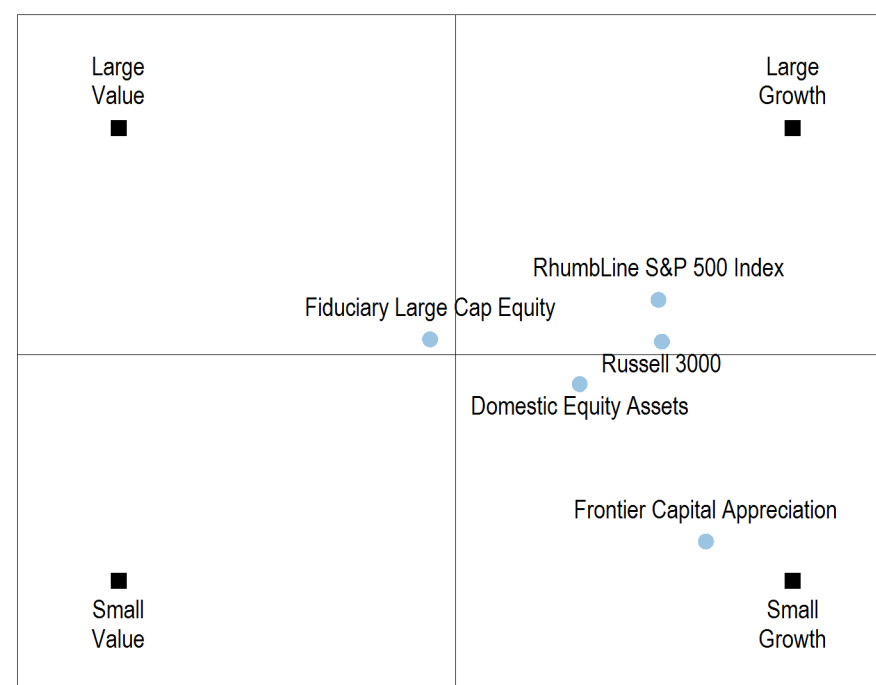
## Retirement System Detail

## Domestic Equity Assets

As of December 31, 2018

## Asset Allocation on December 31, 2018

	Actual	Actual
Fiduciary Large Cap Equity	\$21,007,301	40.4%
Frontier Capital Appreciation	\$14,709,247	28.3%
RhumbLine S&P 500 Index	\$16,317,081	31.4%
<b>Total</b>	<b>\$52,033,629</b>	<b>100.0%</b>

Domestic Equity Assets Style Map  
3 Years Ending December 31, 2018



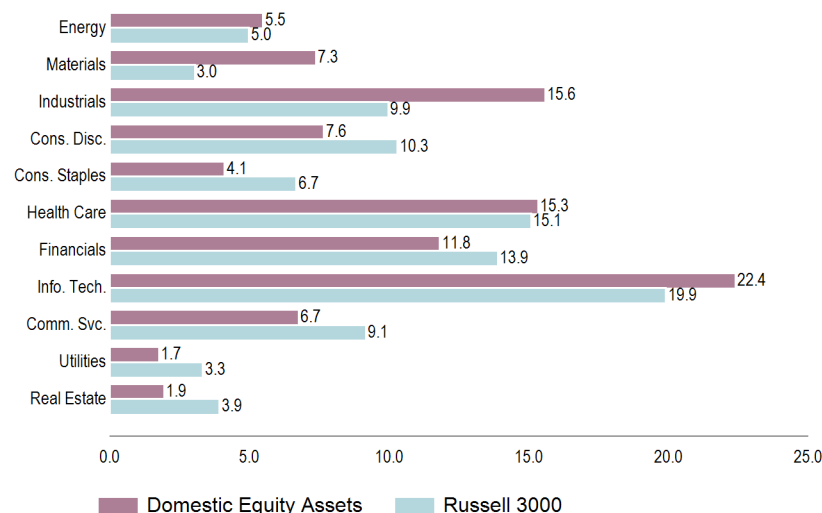
## Domestic Equity Assets

As of December 31, 2018

## Domestic Equity Assets Characteristics

	Portfolio Q4-18	Index Q4-18	Portfolio Q3-18
<b>Market Value</b>			
Market Value (\$M)	52.0	--	61.7
Number Of Holdings	630	3015	634
<b>Characteristics</b>			
Weighted Avg. Market Cap. (\$B)	98.4	154.7	123.7
Median Market Cap (\$B)	13.9	1.4	16.0
P/E Ratio	20.0	22.3	26.4
Yield	1.7	2.1	1.4
EPS Growth - 5 Yrs.	8.9	9.0	10.3
Price to Book	4.9	4.2	5.8
Beta (holdings; domestic)	1.2	1.0	1.2

## Sector Allocation (%) vs Russell 3000



## Top 10 Holdings

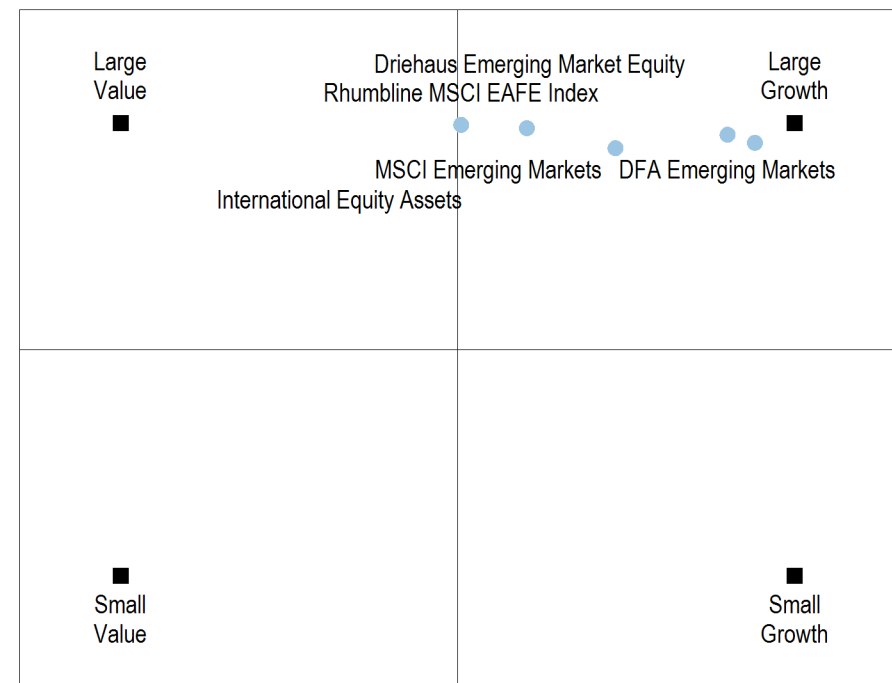
MICROSOFT	1.9%
UNITED CONTINENTAL HOLDINGS	1.8%
APPLE	1.8%
AMAZON.COM	1.5%
TUTOR PERINI	1.1%
INSULET	1.1%
ALLEGHENY TECHS.	1.0%
COOPER COS.	1.0%
BERKSHIRE HATHAWAY 'B'	1.0%
TAHOE RESOURCES	1.0%
<b>Total</b>	<b>13.1%</b>

## International Equity Assets

As of December 31, 2018

## Asset Allocation on December 31, 2018

	Actual	Actual
DFA Emerging Markets	\$2,678,918	11.5%
Driehaus Emerging Market Equity	\$2,764,744	11.9%
Rhumblin MSCI EAFE Index	\$17,769,235	76.5%
<b>Total</b>	<b>\$23,212,896</b>	<b>100.0%</b>

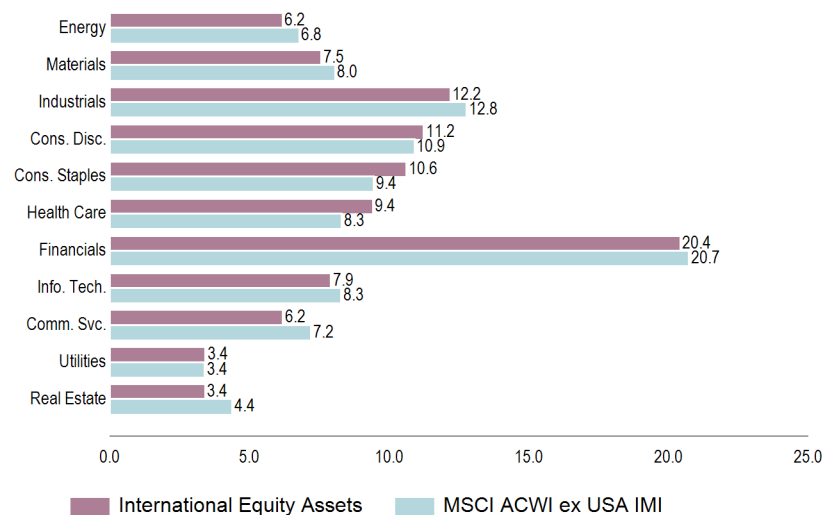
International Equity Assets Style Map  
3 Years Ending December 31, 2018

## International Equity Assets

As of December 31, 2018

International Equity Characteristics			
	Portfolio Q4-18	Index Q4-18	Portfolio Q3-18
<b>Market Value</b>			
Market Value (\$M)	23.2	--	26.2
Number Of Holdings	5923	6284	5990
<b>Characteristics</b>			
Weighted Avg. Market Cap. (\$B)	54.9	48.8	60.2
Median Market Cap (\$B)	0.6	1.4	0.6
P/E Ratio	17.7	16.4	20.4
Yield	3.4	3.4	3.0
EPS Growth - 5 Yrs.	8.3	9.9	8.8
Price to Book	2.9	2.3	3.1
Beta (holdings; domestic)	1.0	1.0	1.1

## Sector Allocation (%) vs MSCI ACWI ex USA IMI



## Top 10 Holdings

NESTLE 'R'	1.5%
NOVARTIS 'R'	1.1%
ROCHE HOLDING	1.1%
HSBC HOLDINGS	1.0%
ISHARES MSCI EAFE	0.9%
TENCENT HOLDINGS	0.9%
TOYOTA MOTOR	0.8%
AIA GROUP	0.8%
ROYAL DUTCH SHELL A(LON)	0.8%
BP	0.8%
<b>Total</b>	<b>9.8%</b>

## International Equity Assets

As of December 31, 2018

## Country Allocation Report

As of 12/31/2018

Region	% of Total	% of Bench	% Diff
North America ex U.S.	0.0%	6.5%	-6.5%
United States	1.8%	0.0%	1.8%
Europe Ex U.K.	35.4%	30.2%	5.2%
United Kingdom	12.7%	11.7%	1.1%
Pacific Basin Ex Japan	12.1%	8.5%	3.7%
Japan	18.7%	17.4%	1.2%
Emerging Markets	18.7%	25.0%	-6.2%
Other	0.5%	0.8%	-0.3%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

## International Equity Assets

As of December 31, 2018

## International Equity Country Allocation

vs MSCI ACWI ex USA IMI

Country	% of Total	% of Bench	% Diff
ARGENTINA	0.1%	0.0%	0.1%
AUSTRALIA	5.3%	4.8%	0.6%
AUSTRIA	0.2%	0.2%	-0.1%
BAHRAIN	0.0%	0.0%	0.0%
BANGLADESH	0.0%	0.0%	0.0%
BELGIUM	0.7%	0.7%	0.0%
BRAZIL	2.1%	1.9%	0.2%
BULGARIA	0.0%	0.0%	0.0%
CANADA	0.0%	6.5%	-6.5%
CHILE	0.2%	0.3%	-0.1%
CHINA	2.3%	7.1%	-4.9%
COLOMBIA	0.0%	0.1%	-0.1%
CROATIA	0.0%	0.0%	0.0%
CZECH REPUBLIC	0.0%	0.0%	0.0%
DENMARK	1.3%	1.2%	0.1%
EGYPT	0.0%	0.0%	0.0%
ESTONIA	0.0%	0.0%	0.0%
FINLAND	0.8%	0.8%	0.0%
FRANCE	8.4%	6.8%	1.7%
GERMANY	6.7%	5.7%	1.0%
GREECE	0.0%	0.1%	0.0%
HONG KONG	5.4%	2.5%	2.9%
HUNGARY	0.1%	0.1%	0.0%
INDIA	3.2%	2.6%	0.7%

## International Equity Assets

As of December 31, 2018

Country	% of Total	% of Bench	% Diff
INDONESIA	0.9%	0.6%	0.3%
IRELAND	0.3%	0.4%	0.0%
ISRAEL	0.4%	0.5%	-0.1%
ITALY	1.7%	1.7%	0.0%
JAPAN	18.7%	17.4%	1.2%
JORDAN	0.0%	0.0%	0.0%
KAZAKHSTAN	0.0%	0.0%	0.0%
KENYA	0.0%	0.0%	0.0%
KOREA	2.8%	3.6%	-0.8%
KUWAIT	0.0%	0.0%	0.0%
LEBANON	0.0%	0.0%	0.0%
LITHUANIA	0.0%	0.0%	0.0%
LUXEMBOURG	0.1%	0.0%	0.1%
MALAYSIA	0.4%	0.6%	-0.3%
MAURITIUS	0.0%	0.0%	0.0%
MEXICO	0.6%	0.7%	-0.1%
MOROCCO	0.0%	0.0%	0.0%
NETHERLANDS	3.4%	2.3%	1.1%
NEW ZEALAND	0.2%	0.2%	-0.1%
NIGERIA	0.0%	0.0%	0.0%
NORWAY	0.6%	0.6%	-0.1%
OMAN	0.0%	0.0%	0.0%
OTHER	0.1%	0.0%	0.1%
PAKISTAN	0.0%	0.0%	0.0%
PERU	0.1%	0.1%	0.0%
PHILIPPINES	0.3%	0.3%	0.1%
POLAND	0.2%	0.3%	-0.1%

## International Equity Assets

As of December 31, 2018

Country	% of Total	% of Bench	% Diff
PORTUGAL	0.1%	0.1%	0.0%
QATAR	0.0%	0.3%	-0.3%
ROMANIA	0.0%	0.0%	0.0%
RUSSIA	0.7%	0.8%	-0.2%
SERBIA	0.0%	0.0%	0.0%
SINGAPORE	1.2%	1.0%	0.3%
SLOVENIA	0.0%	0.0%	0.0%
SOUTH AFRICA	1.3%	1.6%	-0.3%
SPAIN	2.4%	2.1%	0.3%
SRI LANKA	0.0%	0.0%	0.0%
SWEDEN	2.0%	2.1%	-0.1%
SWITZERLAND	6.6%	5.5%	1.1%
TAIWAN	2.4%	3.1%	-0.7%
THAILAND	0.8%	0.7%	0.1%
TUNISIA	0.0%	0.0%	0.0%
TURKEY	0.2%	0.2%	0.0%
UKRAINE	0.0%	0.0%	0.0%
UNITED ARAB EMIRATES	0.0%	0.2%	-0.2%
UNITED KINGDOM	12.7%	11.7%	1.1%
UNITED STATES	1.8%	0.0%	1.8%
VIETNAM	0.0%	0.0%	0.0%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

## Fixed Income Assets

As of December 31, 2018

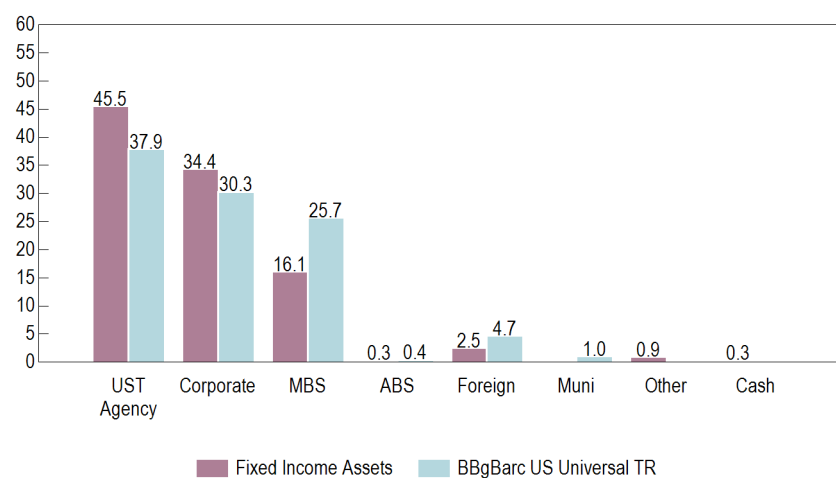
## Asset Allocation on December 31, 2018

	Actual	Actual
Payden Emerging Market Bond	\$4,614,381	6.1%
Shenkman Capital	\$15,946,543	21.2%
SSgA TIPS Index-NL	\$16,992,732	22.6%
SSgA U.S. Aggregate Bond Index	\$37,757,732	50.1%
<b>Total</b>	<b>\$75,311,388</b>	<b>100.0%</b>

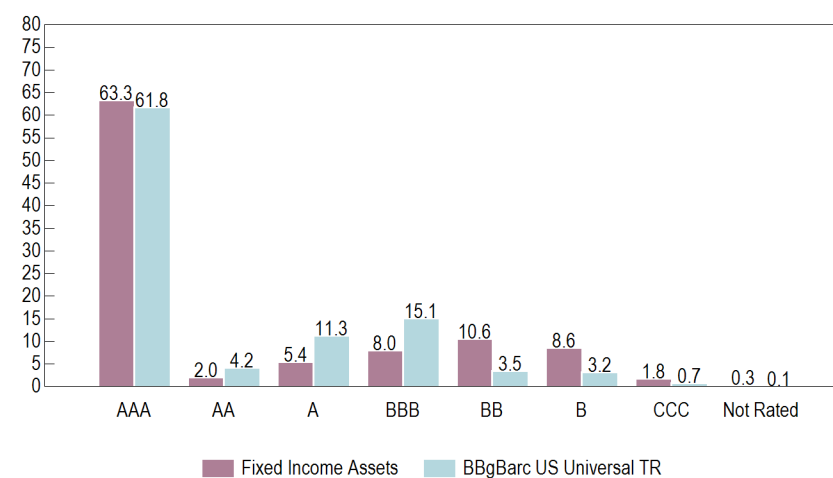
Fixed Income Characteristics  
vs. BBgBarc US Universal TR

	Portfolio Q4-18	Index Q4-18	Portfolio Q3-18
Fixed Income Characteristics			
Yield to Maturity	4.3	3.7	4.2
Average Duration	5.3	5.7	5.4
Average Quality	A	AA	A
Weighted Average Maturity	7.7	12.0	8.0

## Sector Allocation



## Credit Quality Allocation





## Portfolio Reviews

## RhumbLine S&amp;P 500 Index

As of December 31, 2018

## Account Information

Account Name	RhumbLine S&P 500 Index
Account Structure	Commingled Fund
Investment Style	Passive
Inception Date	3/01/99
Account Type	US Equity
Benchmark	S&P 500
Universe	eV US Passive S&P 500 Equity Gross

## Portfolio Performance Summary

	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
RhumbLine S&P 500 Index	-13.5	-4.4	-4.4	9.2	8.5	13.1	5.7	Mar-99
S&P 500	-13.5	-4.4	-4.4	9.3	8.5	13.1	5.6	Mar-99

## Top 10 Holdings

MICROSOFT	3.7%
APPLE	3.3%
AMAZON.COM	2.9%
BERKSHIRE HATHAWAY 'B'	1.9%
JOHNSON & JOHNSON	1.6%
JP MORGAN CHASE & CO.	1.5%
ALPHABET 'C'	1.5%
FACEBOOK CLASS A	1.5%
ALPHABET A	1.5%
EXXON MOBIL	1.4%
<b>Total</b>	<b>20.7%</b>

## RhumbLine S&amp;P 500 Index Characteristics

	Portfolio Q4-18	Index Q4-18	Portfolio Q3-18
<b>Market Value</b>			
Market Value (\$M)	16.3	--	20.2
Number Of Holdings	508	505	507
<b>Characteristics</b>			
Weighted Avg. Market Cap. (\$B)	183.1	183.2	229.9
Median Market Cap (\$B)	18.4	18.5	21.5
P/E Ratio	23.4	20.7	32.6
Yield	2.2	2.2	1.9
EPS Growth - 5 Yrs.	8.3	7.9	9.6
Price to Book	5.9	4.6	6.8
Beta (holdings; domestic)	1.0	1.0	1.0

## Sector Distribution

Energy	5.3	5.3	6.0
Materials	2.7	2.7	2.4
Industrials	9.1	9.2	9.6
Consumer Discretionary	9.8	9.9	10.3
Consumer Staples	7.3	7.4	6.7
Health Care	15.4	15.5	15.0
Financials	14.1	13.3	13.5
Information Technology	19.9	20.1	21.0
Communication Services	10.0	10.1	10.0
Utilities	3.3	3.3	2.7
Real Estate	2.9	3.0	2.6

## Fiduciary Large Cap Equity

As of December 31, 2018

## Account Information

Account Name	Fiduciary Large Cap Equity
Account Structure	Mutual Fund
Investment Style	Active
Inception Date	9/01/12
Account Type	US Equity
Benchmark	Russell 3000
Universe	eV US Large Cap Equity Net

## Portfolio Performance Summary

	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Fiduciary Large Cap Equity	-9.5	-3.7	-3.7	9.3	7.4	--	10.8	Sep-12
Russell 3000	-14.3	-5.2	-5.2	9.0	7.9	13.2	11.7	Sep-12

## Top Holdings as of December 31, 2018

BERKSHIRE HATHAWAY INC B	5.70%
DOLLAR GENERAL CORP	5.63%
TWENTY-FIRST CENTURY FOX INC CLASS B	5.57%
UNITEDHEALTH GROUP INC	4.93%
HONEYWELL INTERNATIONAL INC	4.29%
JPMORGAN CHASE & CO	3.98%
PEPSICO INC	3.54%
ACCENTURE PLC A	3.38%
NESTLE SA ADR	3.33%
QUEST DIAGNOSTICS INC	3.26%

## Fund Characteristics as of December 31, 2018

Versus Russell 3000

Sharpe Ratio (3 Year)	0.82
Average Market Cap (\$mm)	54,758.75
Price/Earnings	15.48
Price/Book	2.71
Price/Sales	1.72
Price/Cash Flow	10.98
Dividend Yield	2.04
Number of Equity Holdings	30
R-Squared (3 Year)	0.87
Alpha (3 Year)	0.15%

## Sector Allocation as of December 31, 2018

BASIC MATERIALS	8.04%
COMMUNICATION SERVICES	2.29%
CONSUMER CYCLICAL	15.39%
CONSUMER DEFENSIVE	19.02%
ENERGY	2.46%
FINANCIAL SERVICES	17.35%
HEALTHCARE	11.51%
INDUSTRIALS	12.77%
REAL ESTATE	0.00%
TECHNOLOGY	11.16%
UTILITIES	0.00%

## Frontier Capital Appreciation

As of December 31, 2018

## Account Information

Account Name	Frontier Capital Appreciation
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	2/01/13
Account Type	US Equity
Benchmark	Russell 2500 Growth
Universe	eV US Small-Mid Cap Growth Equity Net

## Portfolio Performance Summary

	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Frontier Capital Appreciation	-19.6	-13.9	-13.9	7.3	5.4	--	9.5	Feb-13
Russell 2500 Growth	-20.1	-7.5	-7.5	8.1	6.2	14.8	10.2	Feb-13

## Top 10 Holdings

UNITED CONTINENTAL HOLDINGS	3.6%
TUTOR PERINI	2.3%
INSULET	2.3%
ALLEGHENY TECHS.	2.1%
COOPER COS.	2.1%
TAHOE RESOURCES	2.0%
TANDEM DIABETES CARE	1.9%
MONOLITHIC PWR.SYS.	1.7%
QORVO	1.6%
AMERICAN AIRLINES GROUP	1.6%
<b>Total</b>	<b>21.2%</b>

## Frontier Capital Appreciation Characteristics

	Portfolio Q4-18	Index Q4-18	Portfolio Q3-18
<b>Market Value</b>			
Market Value (\$M)	14.7	--	18.3
Number Of Holdings	140	1508	143

## Characteristics

Weighted Avg. Market Cap. (\$B)	5.1	4.6	5.9
Median Market Cap (\$B)	2.2	1.0	3.0
P/E Ratio	16.2	18.6	19.1
Yield	1.2	0.7	0.9
EPS Growth - 5 Yrs.	13.0	15.2	12.6
Price to Book	3.8	5.7	3.8
Beta (holdings; domestic)	1.4	1.3	1.3

## Sector Distribution

Energy	5.7	1.1	6.3
Materials	12.5	4.4	13.1
Industrials	22.7	16.8	20.6
Consumer Discretionary	5.2	15.1	5.4
Consumer Staples	0.5	2.1	0.3
Health Care	15.2	22.2	15.7
Financials	9.2	7.1	9.5
Information Technology	25.1	24.7	25.4
Communication Services	3.1	3.4	3.3
Utilities	0.0	0.3	0.0
Real Estate	0.8	2.8	0.4

## Rhumbline MSCI EAFE Index

As of December 31, 2018

## Account Information

Account Name	Rhumbline MSCI EAFE Index
Account Structure	Commingled Fund
Investment Style	Passive
Inception Date	8/01/14
Account Type	Non-US Stock Developed
Benchmark	MSCI EAFE
Universe	eV EAFE All Cap Equity Net

## Portfolio Performance Summary

	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Rhumbline MSCI EAFE Index	-12.5	-13.5	-13.5	3.1	--	--	0.1	Aug-14
MSCI EAFE	-12.5	-13.8	-13.8	2.9	0.5	6.3	0.0	Aug-14

## Top 10 Holdings

NESTLE 'R'	2.0%
NOVARTIS 'R'	1.4%
ROCHE HOLDING	1.4%
HSBC HOLDINGS	1.3%
ISHARES MSCI EAFE	1.2%
TOYOTA MOTOR	1.1%
ROYAL DUTCH SHELL A(LON)	1.1%
BP	1.0%
TOTAL	1.0%
ROYAL DUTCH SHELL B	0.9%
<b>Total</b>	<b>12.3%</b>

## Rhumbline MSCI EAFE Index Characteristics

	Portfolio Q4-18	Index Q4-18	Portfolio Q3-18
<b>Market Value</b>			
Market Value (\$M)	17.8	--	20.3
Number Of Holdings	924	920	928
<b>Characteristics</b>			
Weighted Avg. Market Cap. (\$B)	53.0	52.6	58.4
Median Market Cap (\$B)	9.1	9.1	10.8
P/E Ratio	17.0	16.7	20.3
Yield	3.6	3.6	3.2
EPS Growth - 5 Yrs.	7.2	8.6	8.0
Price to Book	2.7	2.3	3.0
Beta (holdings; domestic)	1.0	1.0	1.1

## Sector Distribution

Energy	5.7	5.9	6.0
Materials	7.4	7.4	8.0
Industrials	13.9	14.3	13.9
Consumer Discretionary	11.0	11.2	10.9
Consumer Staples	11.3	11.6	10.9
Health Care	11.2	11.2	10.8
Financials	19.1	19.5	19.3
Information Technology	5.8	6.0	6.0
Communication Services	5.4	5.6	5.3
Utilities	3.7	3.8	3.1
Real Estate	3.6	3.7	3.3

## DFA Emerging Markets

As of December 31, 2018

## Account Information

Account Name	DFA Emerging Markets
Account Structure	Mutual Fund
Investment Style	Active
Inception Date	1/01/15
Account Type	Non-US Stock Emerging
Benchmark	MSCI Emerging Markets
Universe	eV Emg Mkt Equity Hedged Net

## Portfolio Performance Summary

	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
DFA Emerging Markets	-6.4	-15.2	-15.2	9.2	--	--	2.6	Jan-15
MSCI Emerging Markets	-7.5	-14.6	-14.6	9.2	1.6	8.0	2.6	Jan-15

## Top 10 Holdings

SAMSUNG ELECTRONICS	3.5%
TENCENT HOLDINGS	1.7%
TAIWAN SEMICON.SPN.ADR 1:5	1.6%
TAIWAN SEMICON.MNFG.	1.2%
CASH - USD	0.9%
VALE ON	0.9%
ALIBABA GROUP HLDG.SPN. ADR 1:1	0.8%
CHINA CON.BANK 'H'	0.7%
SK HYNIX	0.7%
PING AN INSURANCE (GROUP) OF CHINA 'H'	0.6%
<b>Total</b>	<b>12.6%</b>

## DFA Emerging Markets Characteristics

	Portfolio Q4-18	Index Q4-18	Portfolio Q3-18
<b>Market Value</b>			
Market Value (\$M)	2.7	--	2.9
Number Of Holdings	4984	1125	5045

## Characteristics

Weighted Avg. Market Cap. (\$B)	37.4	70.0	43.3
Median Market Cap (\$B)	0.4	4.9	0.4
P/E Ratio	16.4	16.6	18.8
Yield	3.2	2.9	2.8
EPS Growth - 5 Yrs.	10.6	11.7	10.9
Price to Book	2.8	2.9	2.9
Beta (holdings; domestic)	1.1	1.1	1.1

## Sector Distribution

Energy	6.2	8.0	6.4
Materials	11.3	7.7	11.7
Industrials	9.2	5.6	9.1
Consumer Discretionary	10.2	10.5	10.3
Consumer Staples	7.5	6.7	7.5
Health Care	3.3	2.8	3.6
Financials	18.6	24.8	17.7
Information Technology	17.2	14.3	18.8
Communication Services	8.2	14.0	8.1
Utilities	3.5	2.7	3.1
Real Estate	3.7	3.0	3.5

## Driehaus Emerging Market Equity

As of December 31, 2018

## Account Information

Account Name	Driehaus Emerging Market Equity
Account Structure	Mutual Fund
Investment Style	Active
Inception Date	1/01/15
Account Type	Non-US Stock Emerging
Benchmark	MSCI Emerging Markets
Universe	eV Emg Mkt Equity Hedged Net

## Portfolio Performance Summary

	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Driehaus Emerging Market Equity	-7.4	-15.7	-15.7	8.7	--	--	3.5	Jan-15
MSCI Emerging Markets	-7.5	-14.6	-14.6	9.2	1.6	8.0	2.6	Jan-15

## Top 10 Holdings

TENCENT HOLDINGS	6.6%
TAIWAN SEMICON.SPN.ADR 1:5	4.0%
ALIBABA GROUP HLDG.SPN. ADR 1:1	3.6%
HDFC BANK ADR 1:3	3.5%
SAMSUNG ELECTRONICS	3.2%
PING AN INSURANCE (GROUP) OF CHINA 'H'	2.9%
ICICI BK.ADR 1:2	2.5%
AIA GROUP	2.0%
BANK CENTRAL ASIA	2.0%
TATA CONSULTANCY SVS.	1.9%
<b>Total</b>	<b>32.2%</b>

## Driehaus Emerging Market Equity Characteristics

	Portfolio Q4-18	Index Q4-18	Portfolio Q3-18
<b>Market Value</b>			
Market Value (\$M)	2.8	--	3.0
Number Of Holdings	95	1125	99

## Characteristics

Weighted Avg. Market Cap. (\$B)	87.4	70.0	91.2
Median Market Cap (\$B)	14.8	4.9	15.0
P/E Ratio	24.1	16.6	22.5
Yield	2.3	2.9	2.2
EPS Growth - 5 Yrs.	13.5	11.7	14.3
Price to Book	4.4	2.9	4.7
Beta (holdings; domestic)	1.0	1.1	1.1

## Sector Distribution

Energy	9.4	8.0	9.5
Materials	4.6	7.7	6.5
Industrials	2.6	5.6	1.7
Consumer Discretionary	13.8	10.5	13.3
Consumer Staples	8.6	6.7	6.4
Health Care	3.2	2.8	3.7
Financials	31.6	24.8	29.9
Information Technology	12.7	14.3	14.0
Communication Services	9.7	14.0	10.3
Utilities	1.3	2.7	1.7
Real Estate	1.6	3.0	1.2

## SSgA U.S. Aggregate Bond Index

As of December 31, 2018

## Account Information

Account Name	SSgA U.S. Aggregate Bond Index
Account Structure	Commingled Fund
Investment Style	Passive
Inception Date	5/01/01
Account Type	US Fixed Income Investment Grade
Benchmark	BBgBarc US Aggregate TR
Universe	eV US Core Fixed Inc Gross

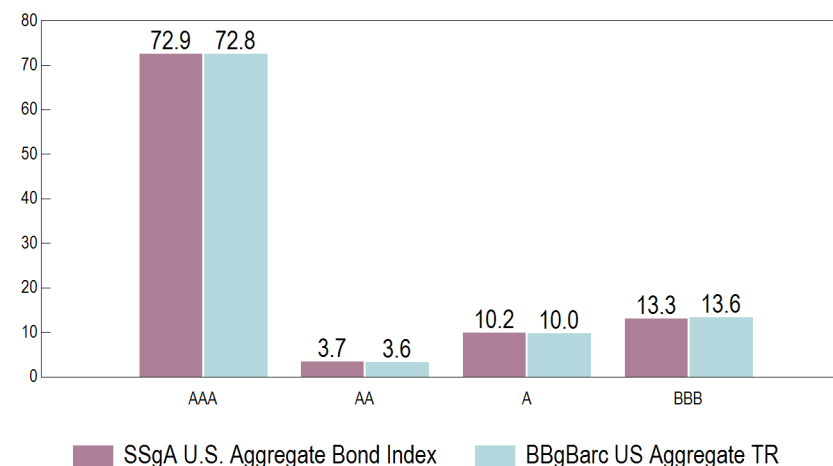
## Portfolio Performance Summary

	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
SSgA U.S. Aggregate Bond Index	1.6	0.0	0.0	2.1	2.5	3.5	4.4	May-01
BBgBarc US Aggregate TR	1.6	0.0	0.0	2.1	2.5	3.5	4.4	May-01

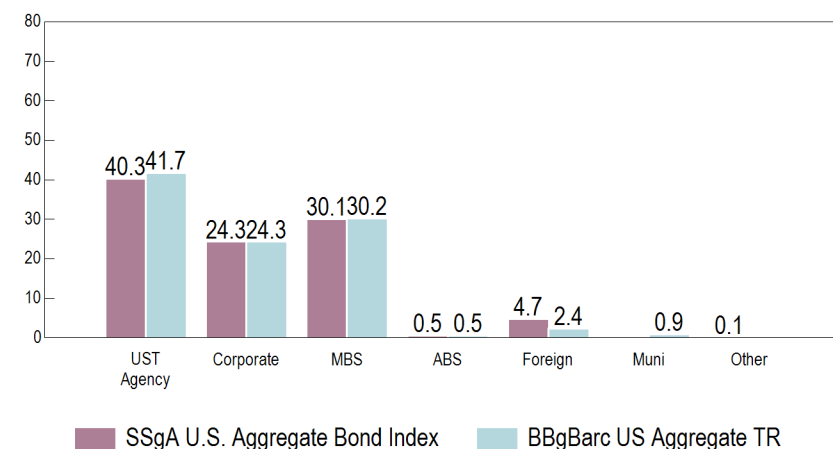
SSgA U.S. Aggregate Bond Index Characteristics  
vs. BBgBarc US Aggregate TR

	Portfolio Q4-18	Index Q4-18	Portfolio Q3-18
Fixed Income Characteristics			
Yield to Maturity	3.3	3.3	3.5
Average Duration	5.9	5.9	6.0
Average Quality	AA	AA	AA
Weighted Average Maturity	8.2	12.9	8.4

## Credit Quality Allocation



## Sector Allocation





## Account Information

Account Name	Shenkman Capital
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	4/01/06
Account Type	US Fixed Income High Yield
Benchmark	BBgBarc US High Yield TR
Universe	eV US High Yield Fixed Inc Gross

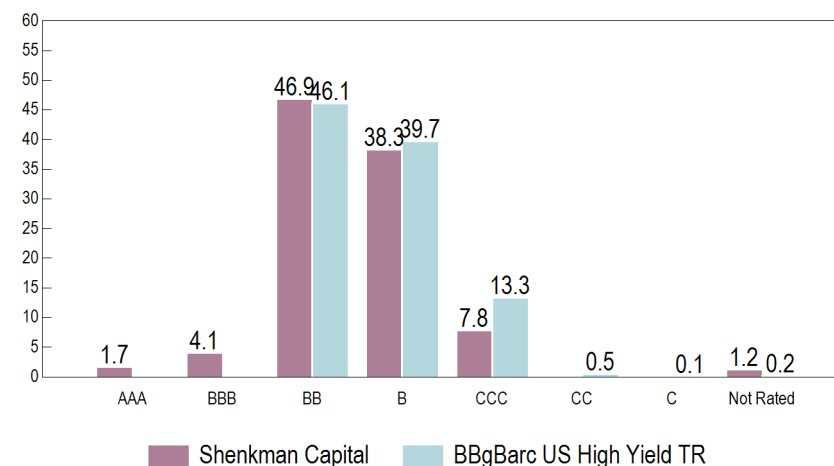
## Portfolio Performance Summary

	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Shenkman Capital	-3.9	-1.8	-1.8	5.6	3.4	8.6	6.3	Apr-06
BBgBarc US High Yield TR	-4.5	-2.1	-2.1	7.2	3.8	11.1	6.9	Apr-06

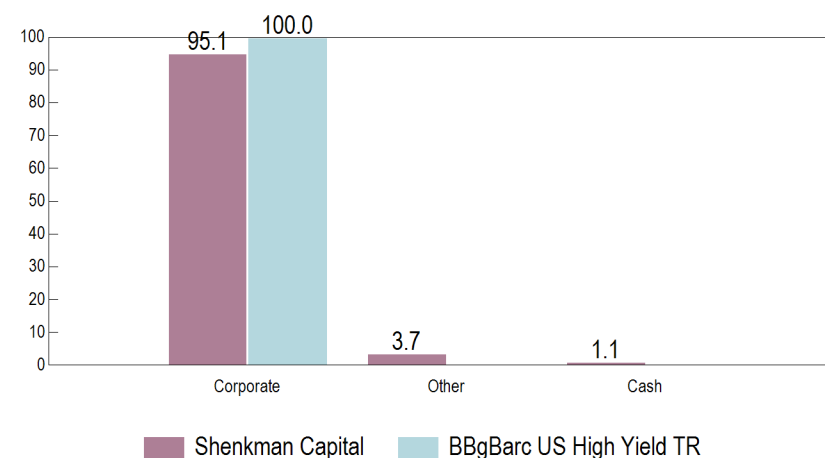
Shenkman Capital Characteristics  
vs. BBgBarc US High Yield TR

	Portfolio Q4-18	Index Q4-18	Portfolio Q3-18
Fixed Income Characteristics			
Yield to Maturity	7.2	8.1	5.9
Average Duration	3.8	4.0	3.5
Average Quality	B	B	BB
Weighted Average Maturity	5.4	5.8	5.8

## Credit Quality Allocation



## Sector Allocation



## SSgA TIPS Index-NL

As of December 31, 2018

## Account Information

Account Name	SSgA TIPS Index-NL
Account Structure	Commingled Fund
Investment Style	Passive
Inception Date	10/01/05
Account Type	US Inflation Protected Fixed
Benchmark	BBgBarc US TIPS TR
Universe	eV US TIPS / Inflation Fixed Inc Gross

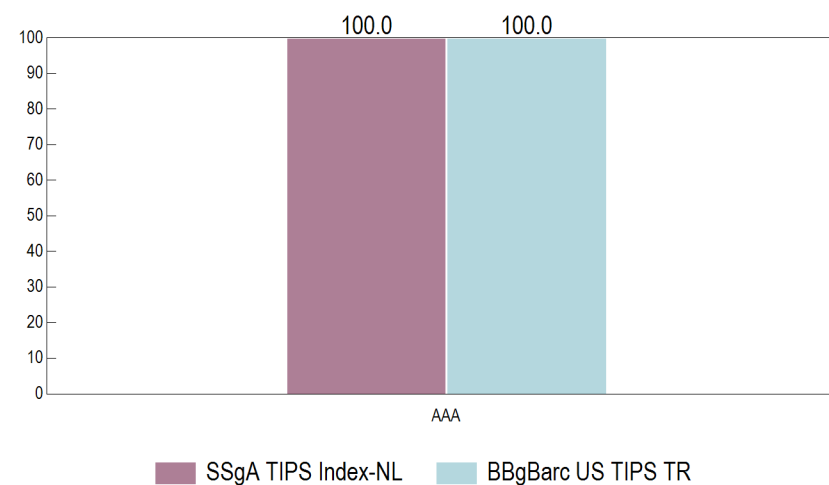
## Portfolio Performance Summary

	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
SSgA TIPS Index-NL	-0.4	-1.4	-1.4	2.1	1.7	3.6	3.4	Oct-05
BBgBarc US TIPS TR	-0.4	-1.3	-1.3	2.1	1.7	3.6	3.4	Oct-05

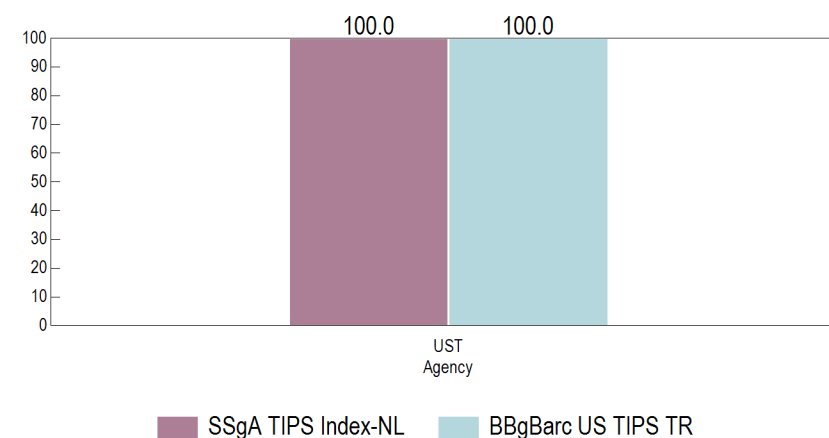
SSgA TIPS Index-NL Characteristics  
vs. BBgBarc US TIPS TR

	Portfolio Q4-18	Index Q4-18	Portfolio Q3-18
<b>Fixed Income Characteristics</b>			
Yield to Maturity	2.5	1.1	3.1
Average Duration	5.3	5.3	5.4
Average Quality	AAA	AAA	AAA
Weighted Average Maturity	7.9	7.9	8.2

## Credit Quality Allocation



## Sector Allocation



## Payden Emerging Market Bond

As of December 31, 2018

## Account Information

Account Name	Payden Emerging Market Bond
Account Structure	Mutual Fund
Investment Style	Active
Inception Date	1/01/15
Account Type	International Emerging Market Debt
Benchmark	JP Morgan EMBI Global Diversified
Universe	eV Emg Mkt Fixed Inc Hedged Net

## Portfolio Performance Summary

	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Payden Emerging Market Bond	-3.2	-7.0	-7.0	5.1	--	--	3.6	Jan-15
JP Morgan EMBI Global Diversified	-1.3	-4.3	-4.3	5.2	4.8	8.2	4.1	Jan-15

## Fund Characteristics as of December 31, 2018

Versus JP Morgan EMBI Global Diversified

Sharpe Ratio (3 Year)	0.64
Average Duration	6.44
Average Coupon	6.73%
Average Effective Maturity	11.21
R-Squared (3 Year)	0.95
Alpha (3 Year)	-0.05%
Beta (3 Year)	1.11

## Payden Emerging Market Bond Characteristics

vs. JP Morgan EMBI Global TR

	Portfolio Q4-18	Index Q4-18	Portfolio Q3-18
Fixed Income Characteristics			
Yield to Maturity	8.5	6.6	7.6
Average Duration	6.4	6.7	6.5
Average Quality	BB	BB	BB
Weighted Average Maturity	11.2	11.0	11.4

## Fixed Income Sectors as of December 31, 2018

GOVERNMENT	71.21%
MUNICIPAL	0.00%
CORPORATE	19.80%
SECURITIZED	0.00%
CASH & EQUIVALENTS	3.96%
DERIVATIVE	5.03%

## Credit Quality as of December 31, 2018

AAA	0.00%
AA	1.00%
A	2.00%
BBB	22.00%
BB	27.00%
B	38.00%
Below B	7.00%
Not Rated	3.00%

As of December 31, 2018

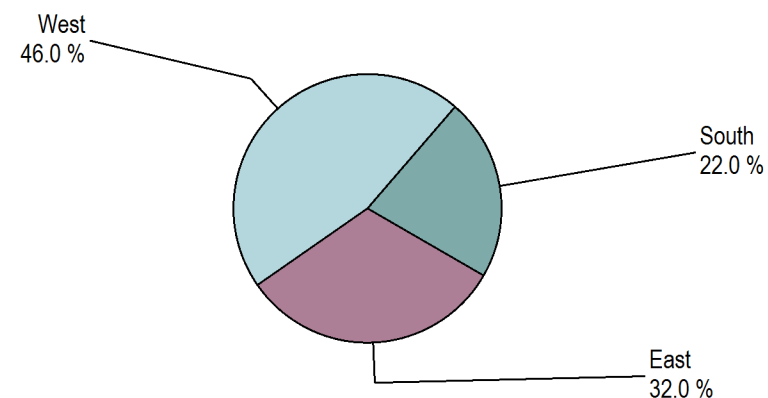
## Account Information

Account Name	Clarion Partners
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	10/01/02
Account Type	Real Estate
Benchmark	NCREIF-ODCE
Universe	US Real Estate Equity

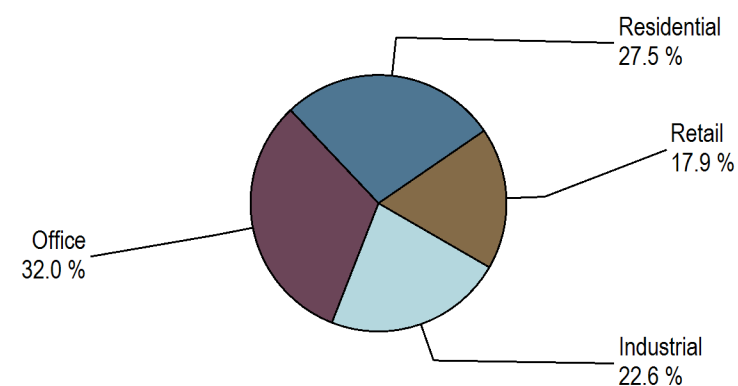
## Portfolio Performance Summary

	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Clarion Partners	1.0	8.6	8.6	8.5	10.9	6.2	7.4	Oct-02
NCREIF-ODCE	1.8	8.3	8.3	8.2	10.4	7.0	8.3	Oct-02

## Geographic Diversification



## Property Type Allocation



## Colony Realty Partners IV

As of December 31, 2018

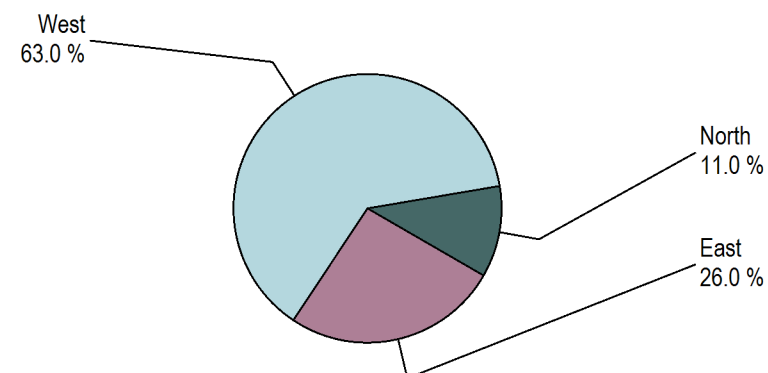
## Account Information

Account Name	Colony Realty Partners IV
Account Structure	Other
Investment Style	Active
Inception Date	1/01/13
Account Type	Real Estate
Benchmark	NCREIF-ODCE
Universe	US Real Estate Equity

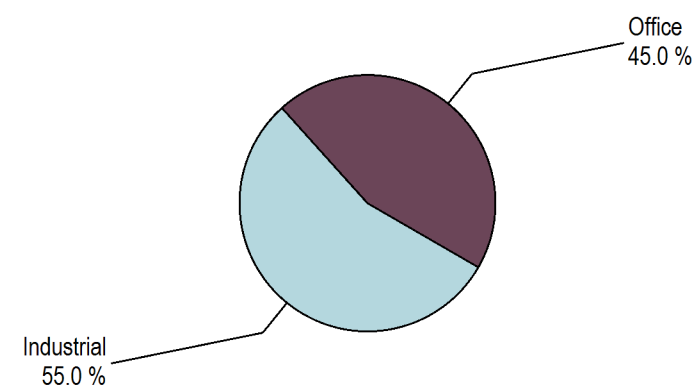
## Portfolio Performance Summary

	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Colony Realty Partners IV	0.0	4.5	4.5	9.6	13.1	--	--	Jan-13
NCREIF-ODCE	1.8	8.3	8.3	8.2	10.4	7.0	11.0	Jan-13

## Geographic Diversification



## Property Type Allocation



As of December 31, 2018

**Annual Investment Expense Analysis**  
As Of December 31, 2018

Name	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
<b>Equity Assets</b>		<b>\$75,246,525</b>		
<b>Domestic Equity Assets</b>		<b>\$52,033,629</b>		
RhumbLine S&P 500 Index	0.07% of First 25.0 Mil, 0.05% of Next 25.0 Mil, 0.04% Thereafter	\$16,317,081	\$11,422	0.07%
Fiduciary Large Cap Equity	0.66% of Assets	\$21,007,301	\$138,648	0.66%
Frontier Capital Appreciation	0.79% of Assets	\$14,709,247	\$116,203	0.79%
<b>International Equity Assets</b>		<b>\$23,212,896</b>		
<b>International Developed Markets Equity Assets</b>		<b>\$17,769,235</b>		
Rhumblin MSCI EAFE Index	0.08% of First 25.0 Mil, 0.07% of Next 25.0 Mil, 0.05% Thereafter	\$17,769,235	\$14,215	0.08%
<b>International Emerging Markets Equity Assets</b>		<b>\$5,443,662</b>		
DFA Emerging Markets	0.53% of Assets	\$2,678,918	\$14,198	0.53%
Driehaus Emerging Market Equity	0.90% of Assets	\$2,764,744	\$24,883	0.90%
<b>Fixed Income Assets</b>		<b>\$75,311,388</b>		
<b>Investment Grade Bonds Assets</b>		<b>\$37,757,732</b>		
SSgA U.S. Aggregate Bond Index	0.04% of Assets	\$37,757,732	\$15,103	0.04%
<b>High Yield Bond Assets</b>		<b>\$15,946,543</b>		
Shenkman Capital	0.45% of Assets	\$15,946,543	\$71,759	0.45%
<b>TIPS Assets</b>		<b>\$16,992,732</b>		
SSgA TIPS Index-NL	0.04% of Assets	\$16,992,732	\$6,797	0.04%
<b>Emerging Market Debt Assets</b>		<b>\$4,614,381</b>		
Payden Emerging Market Bond	0.69% of Assets	\$4,614,381	\$31,839	0.69%
<b>Real Estate Assets</b>		<b>\$7,624,583</b>		

## Total Retirement System

As of December 31, 2018

Name	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
<b>Open-Ended Real Estate</b>		<b>\$5,620,286</b>		
Clarion Partners	1.10% of Assets	\$5,620,286	\$61,823	1.10%
<b>Total Closed End Real Estate</b>		<b>\$2,004,297</b>		
Colony Realty Partners IV	1.5% management fee based on committed equity during the investment period and invested equity thereafter	\$2,004,297		
<b>Private Equity Assets</b>		<b>\$3,907,974</b>		
North American Strategic Partners 2006	0.8% on drawn and undrawn capital less investments sold or written off   5% carried interest, 8% preferred return	\$814,456		
Ironsides Partnership Fund IV	0% Management fee, 8% Preferred Return, 5% Carried Interest	\$878,495		
Ironsides Direct Investment Fund IV	0.5% Management fee, 8% Preferred Return, 15% Carried Interest	\$2,215,023		
<b>Cash</b>		<b>\$175,568</b>		
Comerica Short Term Fund		\$175,568		
<b>Total</b>		<b>\$162,266,039</b>	<b>\$506,892</b>	<b>0.31%</b>

## Private Market Funds Overview



### Private Market Funds Overview As of December 31, 2018

Partnership	Vintage Year	Committed	Called	Distributed	Fair Value	Net IRR <sup>1</sup>
Colony Realty Partners IV	2012	\$2.0	\$2.2	\$1.4	\$2.0	15.0%
North American Strategic Partners 2006	2006	\$4.5	\$3.9	\$5.0	\$0.8	7.0%
Ironsides Partnership Fund IV	2015	\$2.5	\$0.8	\$0.1	\$0.9	13.2%
Ironsides Direct Investment Fund IV	2015	\$2.5	\$2.3	\$0.2	\$2.2	4.8%

<sup>1</sup> As of September 30, 2018.



## Appendices

## **Meketa Investment Group Corporate Update**



BOSTON MA  
CHICAGO IL  
MIAMI FL  
PORTLAND OR  
SAN DIEGO CA  
LONDON UK

January 15, 2019

We are writing to share an important and exciting announcement. [Pension Consulting Alliance \(PCA\)](#), a leading investment consulting and advisory firm, will be joining Meketa Investment Group, Inc. (Meketa). While this will not constitute a change in control of Meketa, it will add more resources, experience, and services to our already growing platform. We plan to consummate the transaction sometime in the first half of this year.

As you may know, Portland, Oregon-based PCA is an independent, full-service investment consulting and advisory firm. Under the leadership of its founder, Allan Emkin, the 30+ member PCA team provides non-discretionary consulting services to U.S. tax-exempt and public pension fund clients with more than \$1.4 trillion in assets. PCA has expertise in general, real estate and private markets consulting. Together, Meketa and PCA's collective client assets will represent approximately \$1.7 trillion and the combined firm will consult on over \$100 billion in private markets and real estate assets.

We will continue to serve proudly as Meketa's Co-CEOs and we will be supported by the existing Meketa senior management team. The firm will continue to be known as Meketa Investment Group, Inc. Meketa's Executive Committee, and other management committees, will include representatives from both Meketa and PCA. Allan will serve on Meketa's Board of Directors and will continue to work as a consultant for several clients. Allan is regarded as one of the leading pension consultants in the industry and we're thrilled to be bringing him onboard where he will continue to provide valuable services to our clients as well as mentoring and training for our collective staff. Christy Fields, a Managing Director at PCA, will also join the Meketa Board of Directors.

All of PCA's board members will become Meketa shareholders and equity will be offered to additional PCA employees as well. There is no planned reduction in staff, with all Meketa and PCA employees remaining with the combined company. We will serve clients from six locations across the United States, as well as London. There will be no changes in client relationships and you will continue to be served by your existing consulting team.

Meketa and PCA are among the industry's most experienced - and we think many would agree - highly-regarded firms. As independent fiduciaries and fully employee-owned firms, we are each known for providing creative investment solutions to leading institutions and organizations such as yours.

Both Meketa and PCA have long been well positioned for success in a competitive marketplace and we believe that the sharing and building upon of best practices developed over many decades offers an opportunity to enhance our organizations' resources, geographic coverage, and services. For example, one of the key attributes of PCA joining Meketa will be our enhanced private markets service, particularly in real estate, an area of the marketplace ripe for growth. We are confident that leveraging the combined institutional knowledge and client experience of our firms will help ensure we remain thought leaders in the industry and further our goal of consistently providing best-in-class service to our clients.


Over the coming weeks, we will keep you apprised of developments related to this news and your consulting team will be speaking with you about this exciting event. If you have questions in the meantime, please contact your lead consultant or one of us.

PCA joining Meketa is a true milestone for our firm and would not have been possible without the hard work and dedication of our employees, and the trust our clients place in us each day. Thank you for making possible our continued success.

Sincerely,



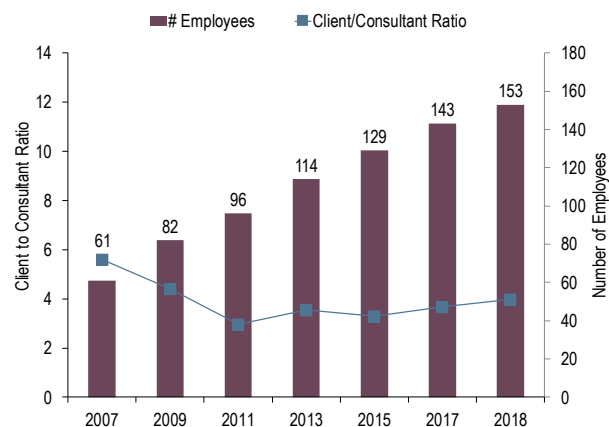
Stephen P. McCourt, CFA  
Managing Principal  
Co-Chief Executive Officer



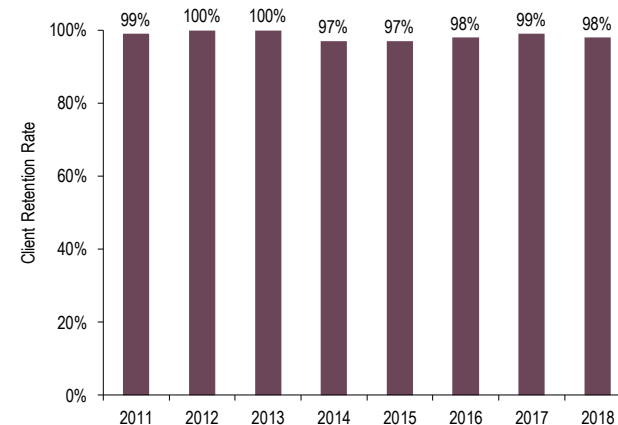
Peter S. Woolley, CFA, CLU, ChFC  
Managing Principal  
Co-Chief Executive Officer

- Staff of 153, including 102 investment professionals and 31 CFA Charterholders
- 175 clients, with over 300 funds throughout the United States
- Significant investment in staff and resources
- Offices in Boston, Chicago, Miami, Portland (OR), San Diego, and London
- We advise on over \$640 billion in client assets
  - Over \$90 billion in assets committed to alternative investments
    - Private Equity      ▪ Infrastructure      ▪ Natural Resources
    - Real Estate      ▪ Hedge Funds      ▪ Commodities

### Client to Consultant Ratio



### Client Retention Rate<sup>1</sup>



**Meketa Investment Group is proud to work for over 5 million American families everyday.**

<sup>1</sup> Client Retention Rate is one minus the number of clients lost divided by the number of clients at prior year-end.

### Asset Classes Followed Intensively by Meketa Investment Group

Domestic Equities	International Equities	Private Equity	Real Assets	Fixed Income	Hedge Funds
<ul style="list-style-type: none"> <li>- Passive</li> <li>- Enhanced Index</li> <li>- Large Cap</li> <li>- Midcap</li> <li>- Small Cap</li> <li>- Microcap</li> <li>- 130/30</li> </ul>	<ul style="list-style-type: none"> <li>- Large Cap Developed</li> <li>- Small Cap Developed</li> <li>- Emerging Markets</li> <li>- Frontier Markets</li> </ul>	<ul style="list-style-type: none"> <li>- Buyouts</li> <li>- Venture Capital</li> <li>- Private Debt</li> <li>- Special Situations</li> <li>- Secondaries</li> <li>- Fund of Funds</li> </ul>	<ul style="list-style-type: none"> <li>- Public REITs</li> <li>- Core Real Estate</li> <li>- Value Added Real Estate</li> <li>- Opportunistic Real Estate</li> <li>- Infrastructure</li> <li>- Timber</li> <li>- Natural Resources</li> <li>- Commodities</li> </ul>	<ul style="list-style-type: none"> <li>- Short-Term</li> <li>- Core</li> <li>- Core Plus</li> <li>- TIPS</li> <li>- High Yield</li> <li>- Bank Loans</li> <li>- Distressed</li> <li>- Global</li> <li>- Emerging Markets</li> </ul>	<ul style="list-style-type: none"> <li>- Long/Short Equity</li> <li>- Event Driven</li> <li>- Relative Value</li> <li>- Fixed Income Arbitrage</li> <li>- Multi Strategy</li> <li>- Market Neutral</li> <li>- Global Macro</li> <li>- Fund of Funds</li> <li>- Portable Alpha</li> </ul>

## **Disclaimer, Glossary, and Notes**



WE HAVE PREPARED THIS REPORT (THIS "REPORT") FOR THE SOLE BENEFIT OF THE INTENDED RECIPIENT (THE "RECIPIENT").

SIGNIFICANT EVENTS MAY OCCUR (OR HAVE OCCURRED) AFTER THE DATE OF THIS REPORT AND THAT IT IS NOT OUR FUNCTION OR RESPONSIBILITY TO UPDATE THIS REPORT. ANY OPINIONS OR RECOMMENDATIONS PRESENTED HEREIN REPRESENT OUR GOOD FAITH VIEWS AS OF THE DATE OF THIS REPORT AND ARE SUBJECT TO CHANGE AT ANY TIME. ALL INVESTMENTS INVOLVE RISK. THERE CAN BE NO GUARANTEE THAT THE STRATEGIES, TACTICS, AND METHODS DISCUSSED HERE WILL BE SUCCESSFUL.

INFORMATION USED TO PREPARE THIS REPORT WAS OBTAINED FROM INVESTMENT MANAGERS, CUSTODIANS, AND OTHER EXTERNAL SOURCES. WHILE WE HAVE EXERCISED REASONABLE CARE IN PREPARING THIS REPORT, WE CANNOT GUARANTEE THE ACCURACY OF ALL SOURCE INFORMATION CONTAINED HEREIN.

CERTAIN INFORMATION CONTAINED IN THIS REPORT MAY CONSTITUTE "FORWARD - LOOKING STATEMENTS," WHICH CAN BE IDENTIFIED BY THE USE OF TERMINOLOGY SUCH AS "MAY," "WILL," "SHOULD," "EXPECT," "AIM," "ANTICIPATE," "TARGET," "PROJECT," "ESTIMATE," "INTEND," "CONTINUE" OR "BELIEVE," OR THE NEGATIVES THEREOF OR OTHER VARIATIONS THEREON OR COMPARABLE TERMINOLOGY. ANY FORWARD - LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION ARE BASED UPON CURRENT ASSUMPTIONS. CHANGES TO ANY ASSUMPTIONS MAY HAVE A MATERIAL IMPACT ON FORWARD - LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS. ACTUAL RESULTS MAY THEREFORE BE MATERIALLY DIFFERENT FROM ANY FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION.

PERFORMANCE DATA CONTAINED HEREIN REPRESENT PAST PERFORMANCE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.

**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-  $[\text{Risk Free Rate} + \text{Beta} * (\text{market return} - \text{Risk Free Rate})]$ .

**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.

**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 its 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.

**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%.

$$\frac{5\% \text{ (discount)}}{5 \text{ (yrs. to maturity)}} = 1\% \text{ pro rata, plus } 5.26\% \text{ (current yield)} = 6.26\% \text{ (yield to maturity)}$$

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

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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.