

# FUND EVALUATION REPORT

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## Plymouth County Retirement Association

Investment Review  
August 28, 2019



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## **Estimated Retirement Association Performance**

**Estimated Aggregate Performance<sup>1</sup>**

	July <sup>2</sup> (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
<b>Total Retirement Association</b>	<b>0.2</b>	<b>11.6</b>	<b>2.0</b>	<b>7.0</b>	<b>5.6</b>	<b>8.4</b>
<i>60% MSCI ACWI/40% Barclays Global Aggregate</i>	<i>0.1</i>	<i>12.1</i>	<i>4.1</i>	<i>6.6</i>	<i>4.4</i>	<i>6.6</i>
<i>Policy Benchmark</i>	<i>0.3</i>	<i>10.5</i>	<i>3.6</i>	<i>7.9</i>	<i>6.1</i>	<i>8.7</i>

**Benchmark Returns**

	July (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
<i>Russell 3000</i>	<i>1.5</i>	<i>20.5</i>	<i>7.1</i>	<i>13.1</i>	<i>11.0</i>	<i>14.0</i>
<i>MSCI EAFE</i>	<i>-1.3</i>	<i>12.6</i>	<i>-2.6</i>	<i>6.9</i>	<i>2.4</i>	<i>5.8</i>
<i>MSCI Emerging Markets</i>	<i>-1.2</i>	<i>9.2</i>	<i>-2.2</i>	<i>8.4</i>	<i>1.8</i>	<i>4.6</i>
<i>Barclays Aggregate</i>	<i>0.2</i>	<i>6.4</i>	<i>8.1</i>	<i>2.2</i>	<i>3.1</i>	<i>3.8</i>
<i>Barclays TIPS</i>	<i>0.4</i>	<i>6.5</i>	<i>5.7</i>	<i>1.9</i>	<i>1.8</i>	<i>3.7</i>
<i>Barclays High Yield</i>	<i>0.6</i>	<i>10.6</i>	<i>6.9</i>	<i>6.8</i>	<i>5.1</i>	<i>8.7</i>
<i>JPM GBI-EM Global Diversified</i>	<i>0.9</i>	<i>9.7</i>	<i>8.0</i>	<i>4.4</i>	<i>-0.1</i>	<i>3.0</i>
<i>S&amp;P Global Natural Resources</i>	<i>-2.5</i>	<i>11.1</i>	<i>-7.4</i>	<i>8.8</i>	<i>0.5</i>	<i>2.6</i>

**Estimated Total Fund Assets**

	July Estimate
<b>Total Retirement Association</b>	<b>\$1,052,840,949</b>

<sup>1</sup> The July performance estimates are calculated using index returns as of July 31, 2019 for each asset class. No performance estimate was included for private equity, real estate, infrastructure, and private natural resources asset classes.

<sup>2</sup> As of July 31, 2019



## **Second Quarter Investment Review**

As of June 30, 2019

## Asset Class Net Performance Summary

	Market Value (\$)	% of Portfolio	1 Mo (%)	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	15 Yrs (%)	Inception (%)	Inception Date
<b>Total Retirement Association</b>	<b>999,726,794</b>	<b>100.0</b>	<b>4.1</b>	<b>2.6</b>	<b>11.3</b>	<b>3.1</b>	<b>7.9</b>	<b>5.3</b>	<b>8.9</b>	<b>6.3</b>	<b>7.8</b>	<b>Nov-89</b>
60% MSCI ACWI / 40% Barclays Global Aggregate			4.8	3.6	12.0	6.1	7.7	4.3	7.4	6.0	6.6	Nov-89
Custom Benchmark - Policy Benchmark (Net)			4.0	2.5	10.2	4.9	8.8	5.7	9.3	7.1	--	Nov-89
<b>Domestic Equity Assets</b>	<b>232,394,265</b>	<b>23.2</b>	<b>7.2</b>	<b>3.9</b>	<b>21.1</b>	<b>4.9</b>	<b>14.5</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>13.3</b>	<b>Jan-16</b>
Russell 3000			7.0	4.1	18.7	9.0	14.0	10.2	14.7	8.9	13.0	Jan-16
<b>International Developed Market Equity Assets</b>	<b>115,947,034</b>	<b>11.6</b>	<b>5.1</b>	<b>1.6</b>	<b>12.1</b>	<b>-4.6</b>	<b>7.7</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>5.3</b>	<b>Jan-16</b>
MSCI EAFE			5.9	3.7	14.0	1.1	9.1	2.2	6.9	5.3	6.4	Jan-16
<b>International Emerging Market Equity Assets</b>	<b>109,031,860</b>	<b>10.9</b>	<b>5.8</b>	<b>1.3</b>	<b>10.5</b>	<b>-2.8</b>	<b>9.2</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>8.8</b>	<b>Jan-16</b>
MSCI Emerging Markets			6.2	0.6	10.6	1.2	10.7	2.5	5.8	8.7	11.0	Jan-16
<b>Global Equity Assets</b>	<b>103,157,018</b>	<b>10.3</b>	<b>6.1</b>	<b>4.5</b>	<b>16.3</b>	<b>7.0</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>1.3</b>	<b>Feb-18</b>
MSCI ACWI			6.5	3.6	16.2	5.7	11.6	6.2	10.1	7.0	-0.2	Feb-18
<b>Core Fixed Income</b>	<b>57,979,181</b>	<b>5.8</b>	<b>1.2</b>	<b>3.1</b>	<b>6.2</b>	<b>7.1</b>	<b>2.5</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>3.8</b>	<b>Jan-16</b>
75% Bbg Barclays Aggregate/25% Bbg Barclays US TIPs 1-10 year			1.2	2.9	5.9	7.1	2.2	2.6	3.7	--	3.4	Jan-16
<b>Value Added Fixed Income</b>	<b>90,277,581</b>	<b>9.0</b>	<b>1.7</b>	<b>2.3</b>	<b>7.1</b>	<b>6.5</b>	<b>6.3</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>7.2</b>	<b>Jan-16</b>
Custom Benchmark (1)			2.0	2.7	8.9	8.1	6.2	--	--	--	7.6	Jan-16
<b>Hedge Funds (2)</b>	<b>60,229,007</b>	<b>6.0</b>	<b>2.5</b>	<b>3.0</b>	<b>10.8</b>	<b>1.6</b>	<b>6.4</b>	<b>3.5</b>	<b>--</b>	<b>--</b>	<b>4.6</b>	<b>Feb-10</b>
HFRI Fund of Funds Composite Index			1.6	1.5	6.2	1.2	4.2	2.2	3.2	3.0	2.8	Feb-10
<b>Real Estate (3)</b>	<b>88,156,145</b>	<b>8.8</b>	<b>0.6</b>	<b>0.8</b>	<b>5.5</b>	<b>7.3</b>	<b>4.4</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>5.3</b>	<b>Jan-16</b>
80% NCREIF ODCE / 20% Wilshire REIT			1.1	1.1	5.5	7.5	7.0	--	--	--	7.7	Jan-16
<b>Private Equity (4)</b>	<b>52,130,118</b>	<b>5.2</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>	<b>0.5</b>	<b>5.4</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>3.8</b>	<b>Jan-16</b>
Cambridge Associates Fund of Funds Composite 1-Quarter Lag			4.0	4.0	3.5	12.5	12.2	11.0	12.1	11.0	11.3	Jan-16
<b>Real Assets (5)</b>	<b>50,019,328</b>	<b>5.0</b>	<b>3.2</b>	<b>3.2</b>	<b>2.0</b>	<b>2.3</b>	<b>0.3</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>-1.6</b>	<b>Jan-16</b>
CPI + 3%			0.3	1.2	2.5	4.7	5.1	4.5	4.7	5.0	5.0	Jan-16
<b>Cash and Cash Equivalent</b>	<b>40,405,258</b>	<b>4.0</b>										

(1) The custom benchmark is comprised of 33% BBG US High Yield/ 33% Credit Suisse Leveraged Loans/ 33% JP Morgan EMBI Global diversified.

(2) EntrustPermal Special Opportunities Evergreen Fund is one quarter lagged.

(3) The market value and performance is one quarter lagged.

(4) The market value and performance is one quarter lagged.

(5) The market value and performance is one quarter lagged.

As of June 30, 2019

## Trailing Net Performance

	Market Value (\$)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Total Retirement Association</b>	<b>999,726,794</b>	<b>100.0</b>	<b>--</b>	<b>4.1</b>	<b>2.6</b>	<b>11.3</b>	<b>3.1</b>	<b>7.9</b>	<b>5.3</b>	<b>8.9</b>	<b>7.8</b>	<b>Nov-89</b>
60% MSCI ACWI / 40% Barclays Global Aggregate				4.8	3.6	12.0	6.1	7.7	4.3	7.4	6.6	Nov-89
Custom Benchmark - Policy Benchmark (Net)				4.0	2.5	10.2	4.9	8.8	5.7	9.3	--	Nov-89
<b>Domestic Equity Assets</b>	<b>232,394,265</b>	<b>23.2</b>	<b>23.2</b>	<b>7.2</b>	<b>3.9</b>	<b>21.1</b>	<b>4.9</b>	<b>14.5</b>	<b>--</b>	<b>--</b>	<b>13.3</b>	<b>Jan-16</b>
Russell 3000				7.0	4.1	18.7	9.0	14.0	10.2	14.7	13.0	Jan-16
Rhumblin Russell 1000 Value	35,648,319	3.6	15.3	7.2	3.8	16.2	8.5	10.1	7.3	--	9.9	Apr-13
Russell 1000 Value				7.2	3.8	16.2	8.5	10.2	7.5	13.2	10.0	Apr-13
eV US Large Cap Value Equity Net Median				6.9	3.7	15.3	5.9	10.5	7.1	12.7	10.0	Apr-13
eV US Large Cap Value Equity Net Rank				42	45	37	31	62	44	--	52	Apr-13
Rhumblin Russell 1000 Growth	34,576,782	3.5	14.9	6.9	4.6	21.5	11.5	18.0	13.3	--	15.5	Jul-09
Russell 1000 Growth				6.9	4.6	21.5	11.6	18.1	13.4	16.3	15.6	Jul-09
eV US Large Cap Growth Equity Net Median				6.7	5.0	21.8	11.4	17.4	12.3	15.2	14.5	Jul-09
eV US Large Cap Growth Equity Net Rank				42	60	52	48	46	29	--	26	Jul-09
Fisher Midcap Value	44,076,162	4.4	19.0	8.2	5.0	22.2	5.5	14.1	8.5	14.9	7.7	Apr-07
Russell MidCap Value				6.8	3.2	18.0	3.7	8.9	6.7	14.6	6.9	Apr-07
eV US Mid Cap Value Equity Net Median				6.8	3.5	17.7	0.7	9.5	6.5	13.4	7.1	Apr-07
eV US Mid Cap Value Equity Net Rank				13	15	6	23	1	11	15	33	Apr-07

As of June 30, 2019

	Market Value (\$)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Boston Company Small Cap Growth	51,214,556	5.1	22.0	6.6	4.8	30.9	10.5	22.5	13.8	--	15.5	Aug-09
<i>Russell 2000 Growth</i>				7.7	2.7	20.4	-0.5	14.7	8.6	14.4	13.7	Aug-09
<i>eV US Small Cap Growth Equity Net Median</i>				7.4	5.1	23.4	5.1	17.7	10.4	15.3	14.7	Aug-09
<i>eV US Small Cap Growth Equity Net Rank</i>				73	53	17	26	19	15	--	37	Aug-09
LMCG Small Cap Value	66,855,958	6.7	28.8	7.2	2.2	15.9	-4.8	7.7	6.0	--	7.8	Mar-11
<i>Russell 2000 Value</i>				6.4	1.4	13.5	-6.2	9.8	5.4	12.4	8.1	Mar-11
<i>eV US Small Cap Value Equity Net Median</i>				6.9	2.0	14.9	-5.4	8.9	5.0	12.8	8.3	Mar-11
<i>eV US Small Cap Value Equity Net Rank</i>				40	48	39	45	69	29	--	62	Mar-11
<b>International Developed Market Equity Assets</b>	<b>115,947,034</b>	<b>11.6</b>	<b>11.6</b>	<b>5.1</b>	<b>1.6</b>	<b>12.1</b>	<b>-4.6</b>	<b>7.7</b>	<b>--</b>	<b>--</b>	<b>5.3</b>	<b>Jan-16</b>
<i>MSCI EAFE</i>				5.9	3.7	14.0	1.1	9.1	2.2	6.9	6.4	Jan-16
KBI Master Account	50,117,909	5.0	43.2	4.2	-0.3	8.5	-4.9	5.7	-0.7	5.3	3.4	Jul-05
<i>MSCI EAFE</i>				5.9	3.7	14.0	1.1	9.1	2.2	6.9	4.6	Jul-05
<i>eV EAFE Core Equity Net Median</i>				5.5	2.8	13.1	-2.2	8.5	3.0	8.1	5.3	Jul-05
<i>eV EAFE Core Equity Net Rank</i>				86	98	97	71	92	97	99	98	Jul-05
HGK TS International Equity	30,036,727	3.0	25.9	4.8	1.6	13.1	-3.0	11.2	3.2	--	6.0	Feb-11
<i>MSCI EAFE</i>				5.9	3.7	14.0	1.1	9.1	2.2	6.9	4.1	Feb-11
<i>eV EAFE All Cap Equity Net Median</i>				5.6	2.9	13.1	-0.4	8.5	3.1	7.8	5.0	Feb-11
<i>eV EAFE All Cap Equity Net Rank</i>				80	81	50	73	17	50	--	34	Feb-11
Copper Rock International Small Cap	35,792,398	3.6	30.9	6.6	4.6	16.9	-6.9	--	--	--	-5.4	Nov-17
<i>MSCI EAFE Small Cap</i>				4.2	1.7	12.5	-6.3	9.1	4.4	9.7	-3.3	Nov-17
<i>eV EAFE Small Cap Equity Net Median</i>				4.6	2.5	12.6	-7.2	8.9	4.7	10.5	-4.4	Nov-17
<i>eV EAFE Small Cap Equity Net Rank</i>				5	21	18	38	--	--	--	64	Nov-17



## Total Retirement Association

As of June 30, 2019

	Market Value (\$)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>International Emerging Market Equity Assets</b>	<b>109,031,860</b>	<b>10.9</b>	<b>10.9</b>	<b>5.8</b>	<b>1.3</b>	<b>10.5</b>	<b>-2.8</b>	<b>9.2</b>	<b>--</b>	<b>--</b>	<b>8.8</b>	<b>Jan-16</b>
<i>MSCI Emerging Markets</i>				6.2	0.6	10.6	1.2	10.7	2.5	5.8	11.0	Jan-16
LMCG Emerging Markets	49,501,232	5.0	45.4	5.4	0.1	7.9	-5.2	8.3	0.5	--	1.3	Sep-13
<i>MSCI Emerging Markets</i>				6.2	0.6	10.6	1.2	10.7	2.5	5.8	3.5	Sep-13
<i>eV Emg Mkts Equity Net Median</i>				6.1	1.4	12.0	0.9	9.9	2.5	6.7	3.7	Sep-13
<i>eV Emg Mkts Equity Net Rank</i>				71	85	91	91	68	91	--	95	Sep-13
ABS Emerging Markets	22,422,766	2.2	20.6	5.7	0.7	12.1	--	--	--	--	12.1	Dec-18
<i>MSCI Emerging Markets</i>				6.2	0.6	10.6	1.2	10.7	2.5	5.8	7.7	Dec-18
<i>eV Emg Mkts Equity Net Median</i>				6.1	1.4	12.0	0.9	9.9	2.5	6.7	9.0	Dec-18
<i>eV Emg Mkts Equity Net Rank</i>				66	65	50	--	--	--	--	21	Dec-18
Copper Rock Emerging Markets Small Cap	10,832,352	1.1	9.9	5.1	1.4	8.7	--	--	--	--	8.7	Dec-18
<i>MSCI Emerging Markets Small Cap</i>				3.9	-1.0	6.7	-5.1	5.5	0.5	5.9	5.0	Dec-18
<i>eV Emg Mkts Small Cap Equity Net Median</i>				4.8	0.5	9.9	-3.1	7.0	2.5	9.2	8.4	Dec-18
<i>eV Emg Mkts Small Cap Equity Net Rank</i>				34	32	74	--	--	--	--	46	Dec-18
Driehaus Emerging Markets Growth	26,275,510	2.6	24.1	6.7	4.0	--	--	--	--	--	6.2	Mar-19
<i>MSCI Emerging Markets</i>				6.2	0.6	10.6	1.2	10.7	2.5	5.8	1.5	Mar-19
<i>eV Emg Mkts Equity Net Median</i>				6.1	1.4	12.0	0.9	9.9	2.5	6.7	2.6	Mar-19
<i>eV Emg Mkts Equity Net Rank</i>				26	9	--	--	--	--	--	10	Mar-19
<b>Global Equity Assets</b>	<b>103,157,018</b>	<b>10.3</b>	<b>10.3</b>	<b>6.1</b>	<b>4.5</b>	<b>16.3</b>	<b>7.0</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>1.3</b>	<b>Feb-18</b>
<i>MSCI ACWI</i>				6.5	3.6	16.2	5.7	11.6	6.2	10.1	-0.2	Feb-18
First Eagle Global Value Fund	20,044,401	2.0	19.4	5.9	3.5	13.5	5.2	--	--	--	0.2	Feb-18
<i>MSCI ACWI</i>				6.5	3.6	16.2	5.7	11.6	6.2	10.1	-0.2	Feb-18
<i>eV All Global Equity Net Median</i>				6.3	3.4	16.1	5.2	10.4	6.1	10.7	0.4	Feb-18
<i>eV All Global Equity Net Rank</i>				67	50	73	51	--	--	--	54	Feb-18

Total Retirement Association

As of June 30, 2019

	Market Value (\$)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Kopernik Global All Cap Fund	19,022,074	1.9	18.4	5.3	4.6	10.1	1.4	--	--	--	-3.5	Feb-18
<i>MSCI ACWI</i>				6.5	3.6	16.2	5.7	11.6	6.2	10.1	-0.2	Feb-18
<i>eV All Global Equity Net Median</i>				6.3	3.4	16.1	5.2	10.4	6.1	10.7	0.4	Feb-18
<i>eV All Global Equity Net Rank</i>				79	28	93	74	--	--	--	77	Feb-18
Lee Munder Global Multi-Cap Strategy	28,938,564	2.9	28.1	6.3	2.2	14.7	2.2	--	--	--	1.0	Mar-18
<i>MSCI ACWI</i>				6.5	3.6	16.2	5.7	11.6	6.2	10.1	3.0	Mar-18
<i>eV All Global Equity Net Median</i>				6.3	3.4	16.1	5.2	10.4	6.1	10.7	3.5	Mar-18
<i>eV All Global Equity Net Rank</i>				50	66	63	69	--	--	--	71	Mar-18
Wellington Durable Enterprises, L.P.	35,151,979	3.5	34.1	6.4	7.0	23.2	16.1	--	--	--	12.6	Mar-18
<i>MSCI ACWI</i>				6.5	3.6	16.2	5.7	11.6	6.2	10.1	3.0	Mar-18
<i>eV Global All Cap Equity Net Median</i>				6.4	3.7	15.3	4.0	10.1	5.6	10.2	2.8	Mar-18
<i>eV Global All Cap Equity Net Rank</i>				46	7	9	2	--	--	--	4	Mar-18
<b>Core Fixed Income</b>	<b>57,979,181</b>	<b>5.8</b>	<b>5.8</b>	<b>1.2</b>	<b>3.1</b>	<b>6.2</b>	<b>7.1</b>	<b>2.5</b>	<b>--</b>	<b>--</b>	<b>3.8</b>	<b>Jan-16</b>
<i>75% Bbg Barclays Aggregate/25% Bbg Barclays US TIPs 1-10 year</i>				1.2	2.9	5.9	7.1	2.2	2.6	3.7	3.4	Jan-16
IR&M Core Bonds	57,979,181	5.8	100.0	1.2	3.1	6.2	7.1	2.4	2.6	4.3	4.2	Nov-04
<i>75% Bbg Barclays Aggregate/25% Bbg Barclays US TIPs 1-10 year</i>				1.2	2.9	5.9	7.1	2.2	2.6	3.7	4.0	Nov-04
<i>eV US Core Fixed Inc Net Median</i>				1.3	3.1	6.4	7.9	2.5	3.0	4.3	4.4	Nov-04
<i>eV US Core Fixed Inc Net Rank</i>				59	55	66	90	54	85	55	61	Nov-04
<b>Value Added Fixed Income</b>	<b>90,277,581</b>	<b>9.0</b>	<b>9.0</b>	<b>1.7</b>	<b>2.3</b>	<b>7.1</b>	<b>6.5</b>	<b>6.3</b>	<b>--</b>	<b>--</b>	<b>7.2</b>	<b>Jan-16</b>
<i>Custom Benchmark</i>				2.0	2.7	8.9	8.1	6.2	--	--	7.6	Jan-16
Eaton Vance High Yield	21,563,131	2.2	23.9	2.2	2.6	9.5	7.3	6.5	4.7	9.0	7.0	Apr-06
<i>ICE BofAML US High Yield TR</i>				2.5	2.6	10.2	7.6	7.6	4.7	9.2	7.3	Apr-06
<i>eV US High Yield Fixed Inc Net Median</i>				2.1	2.5	9.4	6.7	6.8	4.1	8.5	6.8	Apr-06
<i>eV US High Yield Fixed Inc Net Rank</i>				50	40	48	37	63	25	26	38	Apr-06



## Total Retirement Association

As of June 30, 2019

	Market Value (\$)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
THL Bank Loan Select Fund	36,273,500	3.6	40.2	0.2	1.2	5.0	3.8	5.3	4.1	--	5.4	Sep-10
<i>Credit Suisse Leveraged Loans</i>				0.2	1.6	5.4	4.1	5.4	3.9	6.3	4.9	Sep-10
<i>Bank Loan MStar MF Median</i>				0.3	1.4	5.4	3.3	4.8	3.3	5.7	4.4	Sep-10
<i>Bank Loan MStar MF Rank</i>				83	81	68	26	22	4	--	1	Sep-10
Franklin Templeton Emerging Market Bonds	32,440,950	3.2	35.9	3.1	3.3	7.5	8.8	7.2	4.1	8.0	7.0	May-06
<i>JP Morgan EMBI Global Diversified</i>				3.4	4.1	11.3	12.4	5.5	5.3	7.8	7.3	May-06
<i>eV Emg Mkt Fixed Inc Unhedged Net Median</i>				3.7	4.2	9.6	10.0	5.1	3.1	6.5	6.7	May-06
<i>eV Emg Mkt Fixed Inc Unhedged Net Rank</i>				71	86	89	70	3	37	15	43	May-06
<b>Hedge Funds</b>	<b>60,229,007</b>	<b>6.0</b>	<b>6.0</b>	<b>2.5</b>	<b>3.0</b>	<b>10.8</b>	<b>1.6</b>	<b>6.4</b>	<b>3.5</b>	<b>--</b>	<b>4.6</b>	<b>Feb-10</b>
<i>HFRI Fund of Funds Composite Index</i>				1.6	1.5	6.2	1.2	4.2	2.2	3.2	2.8	Feb-10
ABS Offshore SPC - Global Segregated Portfolio	21,514,775	2.2	35.7	2.5	2.0	7.8	-0.1	5.9	2.9	--	5.1	Aug-10
<i>HFRI Fund of Funds Composite Index</i>				1.6	1.5	6.2	1.2	4.2	2.2	3.2	3.0	Aug-10
Entrust Special Opportunities Fund III, Ltd.	27,371,734	2.7	45.4	3.3	3.3	13.5	2.4	--	--	--	13.0	Oct-16
<i>HFRI Fund of Funds Composite Index</i>				1.6	1.5	6.2	1.2	4.2	2.2	3.2	3.8	Oct-16
Old Farm Partners Master Fund, L.P.	4,971,102	0.5	8.3	1.6	2.2	5.9	--	--	--	--	-0.6	Oct-18
<i>HFRI Fund of Funds Composite Index</i>				1.6	1.5	6.2	1.2	4.2	2.2	3.2	0.9	Oct-18
EnTrustPermal Special Opportunities Evergreen Fund, Ltd.	6,371,396	0.6	10.6	0.0	6.9	14.2	--	--	--	--	14.2	Jan-19
<i>HFRI Fund of Funds Composite Index</i>				1.6	1.5	6.2	1.2	4.2	2.2	3.2	6.2	Jan-19

Note: EntrustPermal Special Opportunities Evergreen Fund is one quarter lagged.



## Total Retirement Association

As of June 30, 2019

	Market Value (\$)	% of Portfolio	% of Sector	1 Mo (%)	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Real Estate</b>	<b>88,156,145</b>	<b>8.8</b>	<b>8.8</b>	<b>0.6</b>	<b>0.8</b>	<b>5.5</b>	<b>7.3</b>	<b>4.4</b>	<b>--</b>	<b>--</b>	<b>5.3</b>	<b>Jan-16</b>
80% NCREIF ODCE / 20% Wilshire REIT				1.1	1.1	5.5	7.5	7.0	--	--	7.7	Jan-16
<b>Core Real Estate</b>	<b>56,971,882</b>	<b>5.7</b>	<b>64.6</b>	<b>0.8</b>	<b>1.1</b>	<b>5.7</b>	<b>7.3</b>	<b>6.2</b>	<b>--</b>	<b>--</b>	<b>7.4</b>	<b>Jan-16</b>
NCREIF-ODCE				1.0	1.0	2.4	6.4	7.6	9.8	9.9	7.8	Jan-16
PRISA I	1,751,815	0.2	3.1	0.0	0.0	1.6	5.4	6.7	9.3	7.7	6.7	Sep-04
NCREIF ODCE				1.0	1.0	2.4	6.4	7.6	9.8	9.9	7.9	Sep-04
Invesco Equity Real Estate Securities Trust	770,593	0.1	1.4	1.4	2.1	19.6	12.4	5.8	8.1	14.8	11.3	Dec-02
Wilshire REIT				1.4	1.6	17.9	10.5	4.1	7.8	15.7	10.6	Dec-02
TA Realty Core Property Fund, L.P.	27,153,280	2.7	47.7	2.1	2.1	3.9	7.9	--	--	--	11.4	Apr-18
NCREIF ODCE				1.0	1.0	2.4	6.4	7.6	9.8	9.9	6.8	Apr-18
JPMorgan Strategic Property	27,296,193	2.7	47.9	0.3	0.7	--	--	--	--	--	0.7	Apr-19
NCREIF-ODCE				1.0	1.0	2.4	6.4	7.6	9.8	9.9	1.0	Apr-19
<b>Non-Core Real Estate</b>	<b>31,184,263</b>	<b>3.1</b>	<b>35.4</b>	<b>0.0</b>	<b>0.0</b>	<b>5.0</b>	<b>7.6</b>	<b>-1.3</b>	<b>--</b>	<b>--</b>	<b>-1.2</b>	<b>Jan-16</b>
<b>Private Equity</b>	<b>52,130,118</b>	<b>5.2</b>	<b>5.2</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>	<b>0.5</b>	<b>5.4</b>	<b>--</b>	<b>--</b>	<b>3.8</b>	<b>Jan-16</b>
Cambridge Associates Fund of Funds Composite 1-Quarter Lag				4.0	4.0	3.5	12.5	12.2	11.0	12.1	11.3	Jan-16
<b>Private Equity</b>	<b>45,179,085</b>	<b>4.5</b>	<b>86.7</b>	<b>1.3</b>	<b>1.3</b>	<b>2.5</b>	<b>-0.7</b>	<b>3.9</b>	<b>--</b>	<b>--</b>	<b>2.2</b>	<b>Jan-16</b>
<b>Venture Capital</b>	<b>6,951,033</b>	<b>0.7</b>	<b>13.3</b>	<b>2.0</b>	<b>2.0</b>	<b>-4.0</b>	<b>4.0</b>	<b>9.4</b>	<b>--</b>	<b>--</b>	<b>8.5</b>	<b>Jan-16</b>
<b>Real Assets</b>	<b>50,019,328</b>	<b>5.0</b>	<b>5.0</b>	<b>3.2</b>	<b>3.2</b>	<b>2.0</b>	<b>2.3</b>	<b>0.3</b>	<b>--</b>	<b>--</b>	<b>-1.6</b>	<b>Jan-16</b>
CPI + 3%				0.3	1.2	2.5	4.7	5.1	4.5	4.7	5.0	Jan-16
IFM Global Infrastructure	21,795,049	2.2	43.6	3.9	3.8	6.6	--	--	--	--	9.6	Oct-18
CPI+5% (1q Lagged)				2.4	2.4	3.2	--	--	--	--	4.6	Oct-18
<b>Cash and Cash Equivalent</b>	<b>40,405,258</b>	<b>4.0</b>	<b>4.0</b>									
Cash	40,405,258	4.0	100.0									

## Total Retirement Association

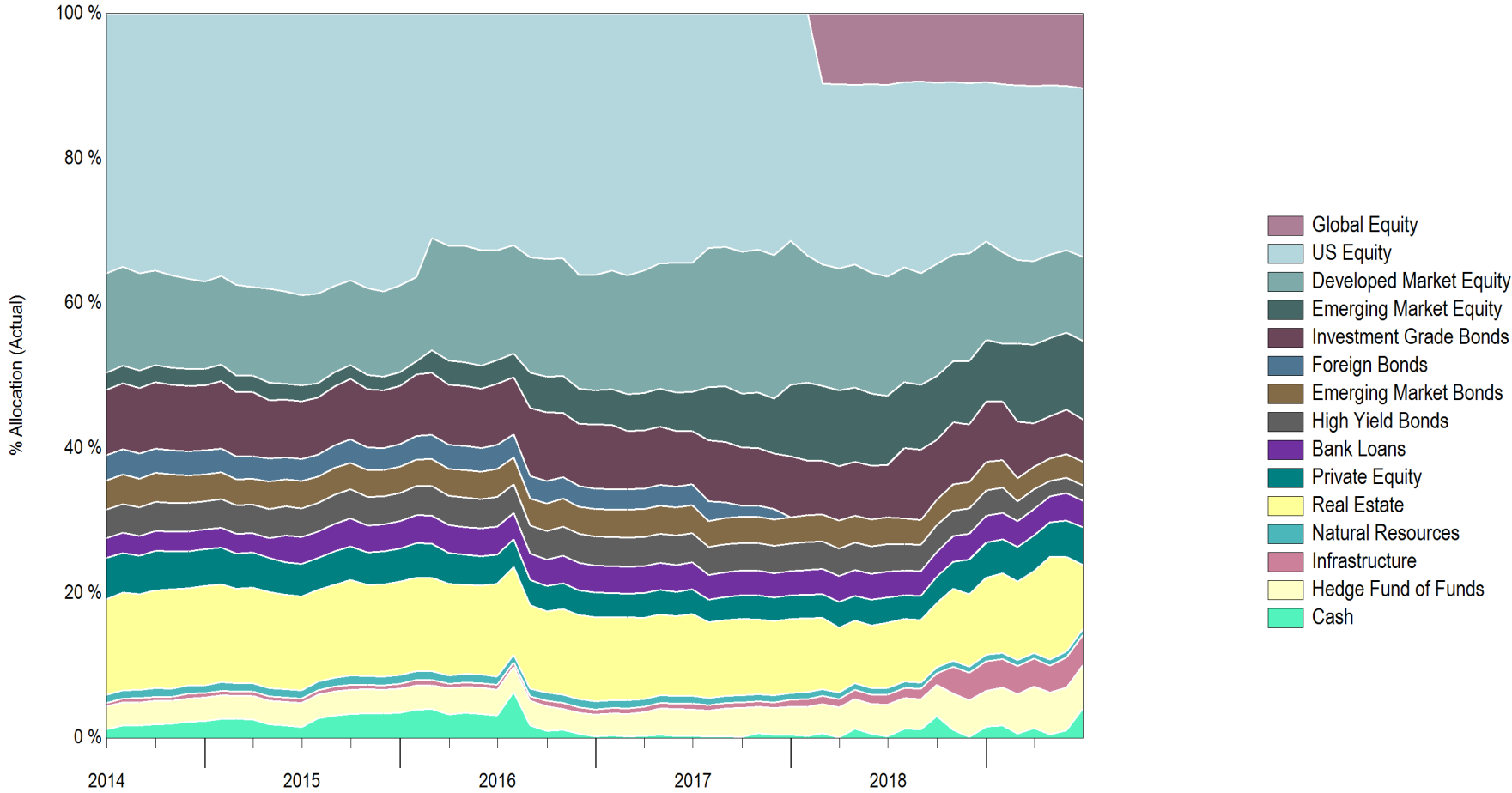
As of June 30, 2019

## Allocation vs. Target

	Current Balance	Current Allocation	Policy	Policy Range	Within IPS Range?
Domestic Equity	\$232,394,265	23%	26%	21% - 36%	Yes
International Developed Market Equity	\$115,947,034	12%	6%	1% - 16%	Yes
International Emerging Market Equity	\$109,031,860	11%	10%	5% - 20%	Yes
Global Equity	\$103,157,018	10%	10%	5% - 20%	Yes
Core Bonds	\$57,979,181	6%	9%	4% - 14%	Yes
Value-Added Fixed Income	\$90,277,581	9%	6%	2% - 12%	Yes
Private Equity	\$52,130,118	5%	13%	4% - 18%	Yes
Real Estate	\$88,156,145	9%	10%	5% - 15%	Yes
Real Assets	\$50,019,328	5%	6%	2% - 10%	Yes
Hedge Fund of Funds	\$60,229,007	6%	4%	2% - 6%	No
Cash	\$40,405,258	4%	0%	0% - 3%	No
<b>Total</b>	<b>\$999,726,794</b>	<b>100%</b>	<b>100%</b>		

	Current Balance	Current Allocation	Policy	Policy Range	Within IPS Range?
Total Equity	\$672,889,303	67%	69%	60% - 80%	Yes
Total Fixed Income	\$148,256,761	15%	15%	5% - 25%	Yes
Total Real Assets and Real Estate	\$138,175,472	14%	16%	13% - 19%	Yes
Cash	\$40,405,258	4%	0%	0% - 3%	No

Asset Allocation History  
5 Years Ending June 30, 2019



As of June 30, 2019

**Statistics Summary**  
5 Years Ending June 30, 2019

	Anlzd Return	Anlzd Standard Deviation	Information Ratio	Beta	Sharpe Ratio	Tracking Error
Total Retirement Association	5.3%	7.2%	0.3	0.9	0.6	2.9%
60% MSCI ACWI / 40% Barclays Global Aggregate	4.3%	7.7%	--	1.0	0.4	0.0%
Domestic Equity Assets	--	--	--	--	--	--
Russell 3000	10.2%	12.3%	--	1.0	0.8	0.0%
Rhumblin Russell 1000 Value	7.3%	11.9%	-1.2	1.0	0.5	0.1%
Russell 1000 Value	7.5%	11.9%	--	1.0	0.6	0.0%
Rhumblin Russell 1000 Growth	13.3%	13.0%	-1.5	1.0	1.0	0.1%
Russell 1000 Growth	13.4%	13.0%	--	1.0	1.0	0.0%
Fisher Midcap Value	8.5%	14.9%	0.4	1.1	0.5	4.3%
Russell MidCap Value	6.7%	12.7%	--	1.0	0.5	0.0%
Boston Company Small Cap Growth	13.8%	18.2%	1.0	1.0	0.7	5.0%
Russell 2000 Growth	8.6%	17.4%	--	1.0	0.4	0.0%
LMCG Small Cap Value	6.0%	15.7%	0.2	0.9	0.3	3.1%
Russell 2000 Value	5.4%	16.4%	--	1.0	0.3	0.0%
International Equity	--	--	--	--	--	--
International Equity Custom Benchmark	2.8%	12.5%	--	1.0	0.2	0.0%
International Developed Market Equity Assets	--	--	--	--	--	--
MSCI EAFE	2.2%	12.3%	--	1.0	0.1	0.0%
KBI Master Account	-0.7%	12.0%	-1.3	1.0	-0.1	2.3%
MSCI EAFE	2.2%	12.3%	--	1.0	0.1	0.0%

As of June 30, 2019

	Anlzd Return	Anlzd Standard Deviation	Information Ratio	Beta	Sharpe Ratio	Tracking Error
HGK TS International Equity	3.2%	13.6%	0.2	1.0	0.2	4.7%
MSCI EAFE	2.2%	12.3%	--	1.0	0.1	0.0%
Copper Rock International Small Cap	--	--	--	--	--	--
MSCI EAFE Small Cap	4.4%	12.7%	--	1.0	0.3	0.0%
International Emerging Market Equity Assets	--	--	--	--	--	--
MSCI Emerging Markets	2.5%	15.8%	--	1.0	0.1	0.0%
LMCG Emerging Markets	0.5%	14.9%	-0.7	0.9	0.0	2.8%
MSCI Emerging Markets	2.5%	15.8%	--	1.0	0.1	0.0%
ABS Emerging Markets	--	--	--	--	--	--
MSCI Emerging Markets	2.5%	15.8%	--	1.0	0.1	0.0%
Copper Rock Emerging Markets Small Cap	--	--	--	--	--	--
MSCI Emerging Markets Small Cap	0.5%	14.3%	--	1.0	0.0	0.0%
Driehaus Emerging Markets Growth	--	--	--	--	--	--
MSCI Emerging Markets	2.5%	15.8%	--	1.0	0.1	0.0%
Global Equity Assets	--	--	--	--	--	--
MSCI ACWI	6.2%	11.8%	--	1.0	0.4	0.0%
First Eagle Global Value Fund	--	--	--	--	--	--
MSCI ACWI	6.2%	11.8%	--	1.0	0.4	0.0%
Kopernik Global All Cap Fund	--	--	--	--	--	--
MSCI ACWI	6.2%	11.8%	--	1.0	0.4	0.0%
Lee Munder Global Multi-Cap Strategy	--	--	--	--	--	--
MSCI ACWI	6.2%	11.8%	--	1.0	0.4	0.0%
Wellington Durable Enterprises, L.P.	--	--	--	--	--	--
MSCI ACWI	6.2%	11.8%	--	1.0	0.4	0.0%



As of June 30, 2019

	Anlzd Return	Anlzd Standard Deviation	Information Ratio	Beta	Sharpe Ratio	Tracking Error
Fixed Income Assets	3.2%	3.0%	0.0	0.7	0.8	2.3%
BBgBarc US Universal TR	3.2%	2.8%	--	1.0	0.8	0.0%
Core Fixed Income	--	--	--	--	--	--
75% Bbg Barclays Aggregate/25% Bbg Barclays US TIPs 1-10 year	2.6%	2.8%	--	1.0	0.6	0.0%
IR&M Core Bonds	2.6%	2.7%	0.2	1.0	0.7	0.3%
75% Bbg Barclays Aggregate/25% Bbg Barclays US TIPs 1-10 year	2.6%	2.8%	--	1.0	0.6	0.0%
Value Added Fixed Income	--	--	--	--	--	--
Custom Benchmark	--	--	--	--	--	--
Eaton Vance High Yield	4.7%	4.7%	0.0	0.8	0.8	1.5%
ICE BofAML US High Yield TR	4.7%	5.6%	--	1.0	0.7	0.0%
THL Bank Loan Select Fund	4.1%	2.7%	0.4	0.9	1.2	0.7%
Credit Suisse Leveraged Loans	3.9%	2.9%	--	1.0	1.0	0.0%
Franklin Templeton Emerging Market Bonds	4.1%	6.2%	-0.3	0.9	0.5	3.6%
JP Morgan EMBI Global Diversified	5.3%	5.5%	--	1.0	0.8	0.0%
Hedge Funds	3.5%	6.0%	0.3	1.2	0.4	4.0%
HFRI Fund of Funds Composite Index	2.2%	3.7%	--	1.0	0.4	0.0%
ABS Offshore SPC - Global Segregated Portfolio	2.9%	6.3%	0.2	1.5	0.3	3.4%
HFRI Fund of Funds Composite Index	2.2%	3.7%	--	1.0	0.4	0.0%
Entrust Special Opportunities Fund III, Ltd.	--	--	--	--	--	--
HFRI Fund of Funds Composite Index	2.2%	3.7%	--	1.0	0.4	0.0%
Old Farm Partners Master Fund, L.P.	--	--	--	--	--	--
HFRI Fund of Funds Composite Index	2.2%	3.7%	--	1.0	0.4	0.0%

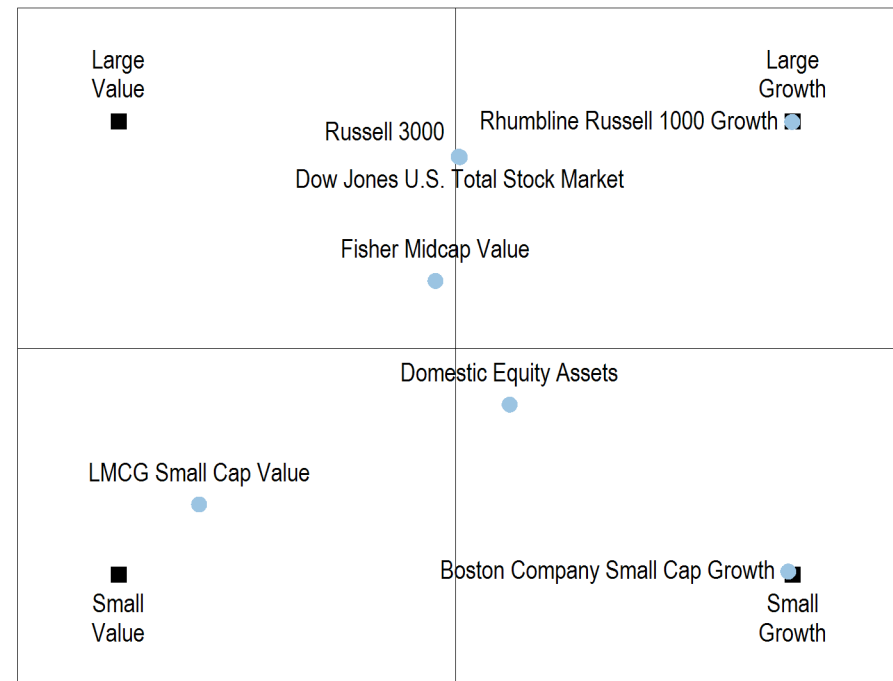
As of June 30, 2019

	Anlzd Return	Anlzd Standard Deviation	Information Ratio	Beta	Sharpe Ratio	Tracking Error
EnTrustPermal Special Opportunities Evergreen Fund, Ltd.	--	--	--	--	--	--
HFRI Fund of Funds Composite Index	2.2%	3.7%	--	1.0	0.4	0.0%
Real Estate	--	--	--	--	--	--
80% NCREIF ODCE / 20% Wilshire REIT	--	--	--	--	--	--
Core Real Estate	--	--	--	--	--	--
NCREIF-ODCE	9.8%	4.2%	--	1.0	2.1	0.0%
PRISA I	9.3%	4.2%	-0.4	1.0	2.0	1.1%
NCREIF ODCE	9.8%	4.2%	--	1.0	2.1	0.0%
Invesco Equity Real Estate Securities Trust	8.1%	13.5%	0.1	0.9	0.5	2.4%
Wilshire REIT	7.8%	14.6%	--	1.0	0.5	0.0%
TA Realty Core Property Fund, L.P.	--	--	--	--	--	--
NCREIF ODCE	9.8%	4.2%	--	1.0	2.1	0.0%
JPMorgan Strategic Property	--	--	--	--	--	--
NCREIF-ODCE	9.8%	4.2%	--	1.0	2.1	0.0%
Private Equity	--	--	--	--	--	--
Cambridge Associates Fund of Funds Composite 1-Quarter Lag	11.0%	6.0%	--	1.0	1.7	0.0%
Real Assets	--	--	--	--	--	--
CPI + 3%	4.5%	0.7%	--	1.0	5.4	0.0%
IFM Global Infrastructure	--	--	--	--	--	--
CPI+5% (1q Lagged)	--	--	--	--	--	--

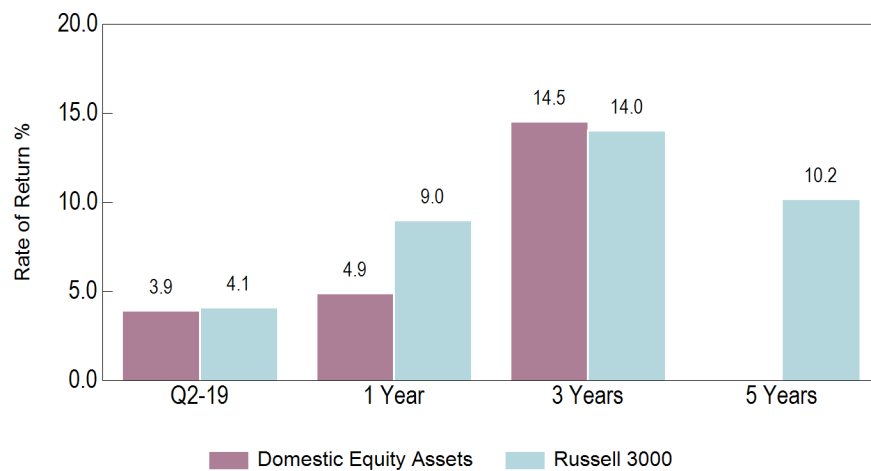
Asset Allocation on June 30, 2019

	Actual	Actual
Boston Company Small Cap Growth	\$51,214,556	22.0%
Fisher Midcap Value	\$44,076,162	19.0%
LMCG Small Cap Value	\$66,855,958	28.8%
Misc Domestic Equity Assets	\$22,475	0.0%
Rhumblin Russell 1000 Growth	\$34,576,782	14.9%
Rhumblin Russell 1000 Value	\$35,648,319	15.3%
<b>Total</b>	<b>\$232,394,252</b>	<b>100.0%</b>

Domestic Equity Assets Style Map  
3 Years Ending June 30, 2019



Return Summary  
Ending June 30, 2019



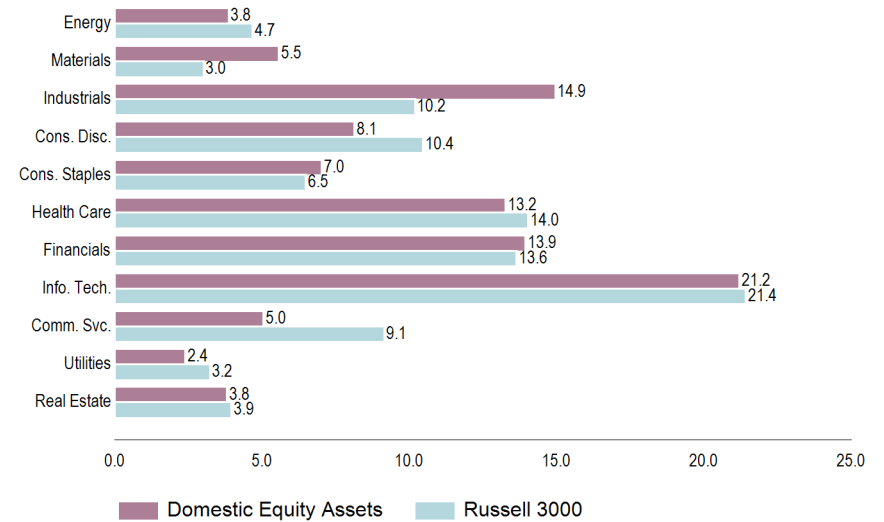
**Domestic Equity Assets Equity Characteristics**

	Portfolio Q2-19	Index Q2-19
<b>Market Value</b>		
Market Value (\$M)	232.39	--
Number Of Holdings	1146	2954
<b>Characteristics</b>		
Weighted Avg. Market Cap. (\$B)	65.49	190.66
Median Market Cap (\$B)	8.76	1.65
P/E Ratio	20.68	20.48
Yield	1.30	1.87
EPS Growth - 5 Yrs.	13.44	12.96
Price to Book	2.87	3.43
Beta (holdings; domestic)	1.15	1.03

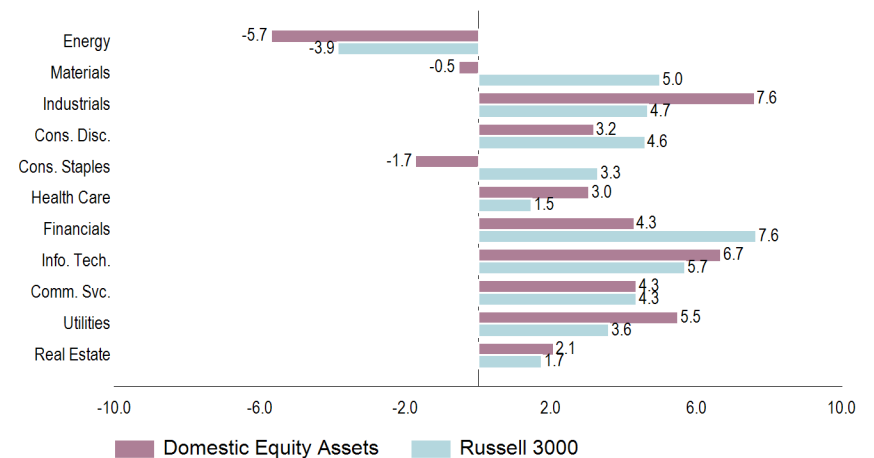
**Top 10 Holdings**

MICROSOFT	1.1%
CACI INTERNATIONAL 'A'	1.0%
APPLE	1.0%
TWILIO 'A'	1.0%
BANDWIDTH A	0.9%
AMAZON.COM	0.8%
CHAS.RVR.LABS.INTL.	0.8%
PLANET FITNESS CL.A	0.8%
SHOPIFY 'A' (NYS)	0.8%
HUBSPOT	0.8%
<b>Total</b>	<b>8.9%</b>

**Sector Allocation (%) vs Russell 3000**



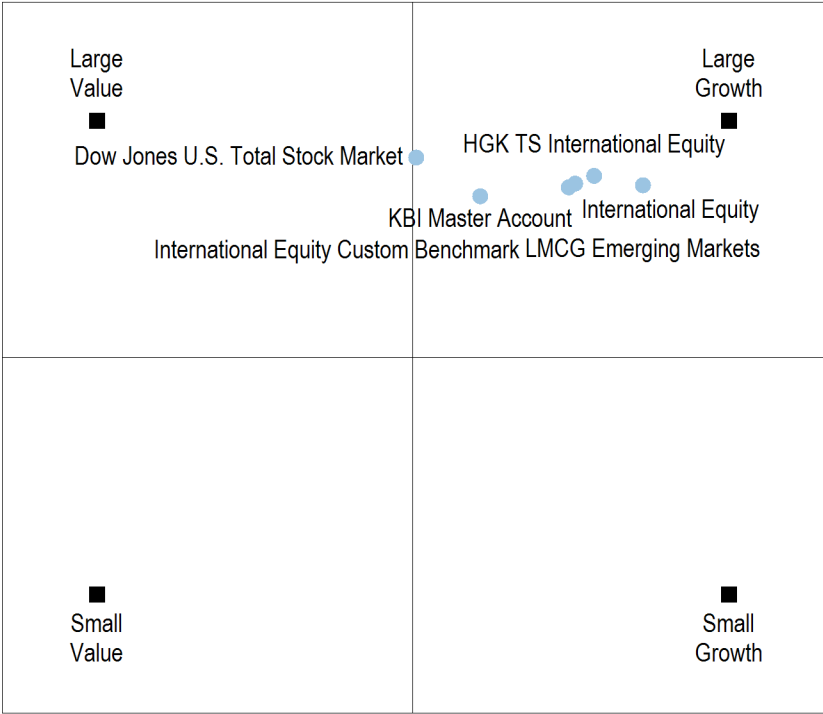
**Sector Returns (%) vs Russell 3000**



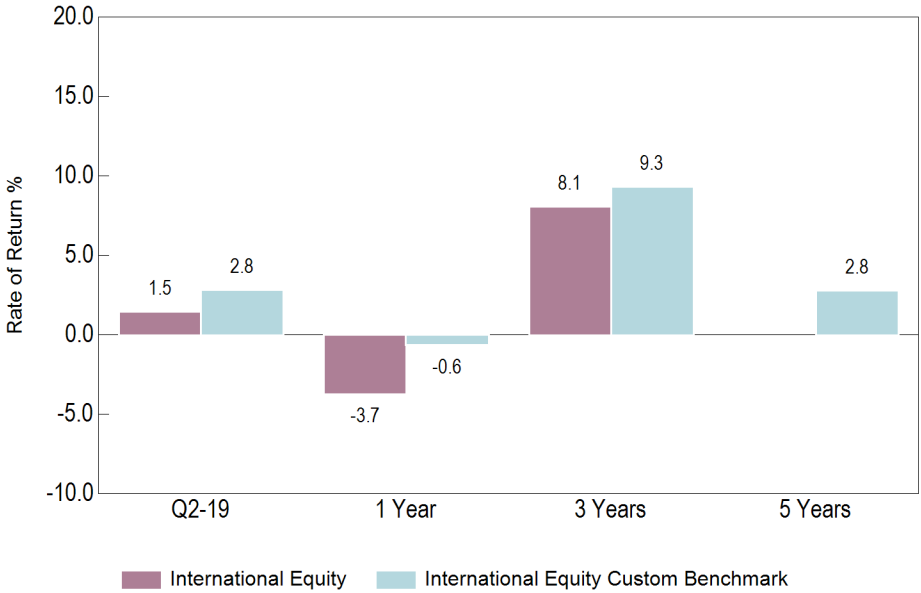
**Asset Allocation on June 30, 2019**

	Actual	Actual
ABS Emerging Markets	\$22,422,766	10.0%
Copper Rock Emerging Markets Small Cap	\$10,832,352	4.8%
Copper Rock International Small Cap	\$35,792,398	15.9%
Driehaus Emerging Markets Growth	\$26,275,510	11.7%
HGK TS International Equity	\$30,036,727	13.4%
KBI Master Account	\$50,117,909	22.3%
LMCG Emerging Markets	\$49,501,232	22.0%
<b>Total</b>	<b>\$224,978,894</b>	<b>100.0%</b>

**International Equity Style Map**



**Return Summary  
Ending June 30, 2019**



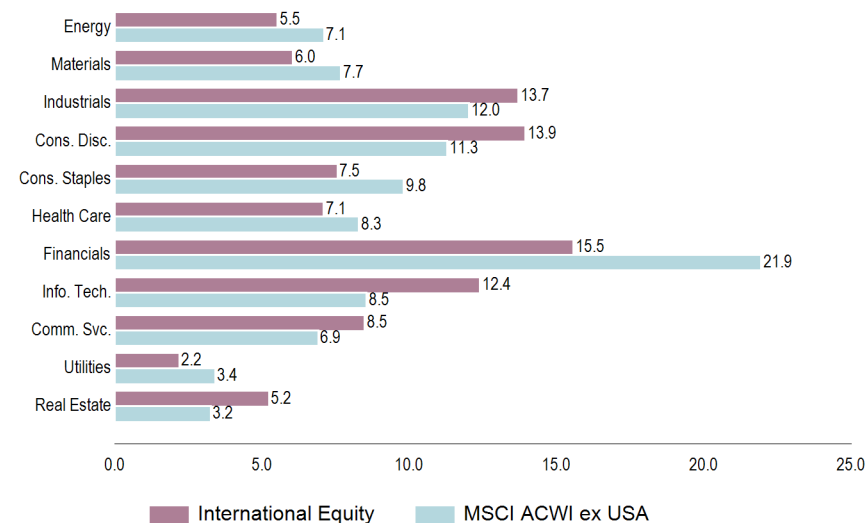
International Equity Equity Characteristics

	Portfolio Q2-19	Index Q2-19
<b>Market Value</b>		
Market Value (\$M)	224.98	--
Number Of Holdings	443	2204
<b>Characteristics</b>		
Weighted Avg. Market Cap. (\$B)	40.29	65.43
Median Market Cap (\$B)	6.41	7.58
P/E Ratio	12.53	15.00
Yield	3.46	3.20
EPS Growth - 5 Yrs.	14.08	9.62
Price to Book	2.30	2.31
Beta (holdings; domestic)	1.00	1.04

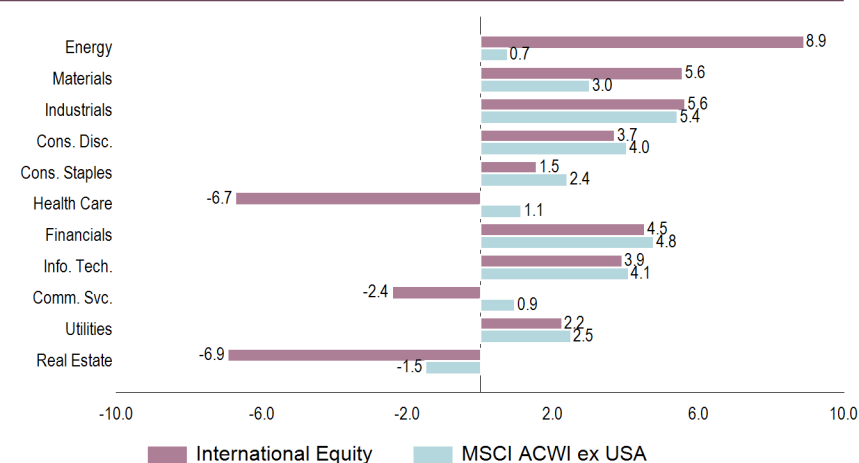
Top 10 Holdings

TAIWAN SEMICON.MNFG.	1.6%
SAMSUNG ELECTRONICS	1.5%
TENCENT HOLDINGS	1.5%
ROCHE HOLDING	1.4%
ISHARES MSCI EMERGING MARKETS ETF	1.0%
RHEINMETALL	1.0%
RIO TINTO	0.8%
FERROVIAL	0.8%
CHINA CON.BANK 'H'	0.7%
MOWI	0.7%
<b>Total</b>	<b>10.9%</b>

Sector Allocation (%) vs MSCI ACWI ex USA



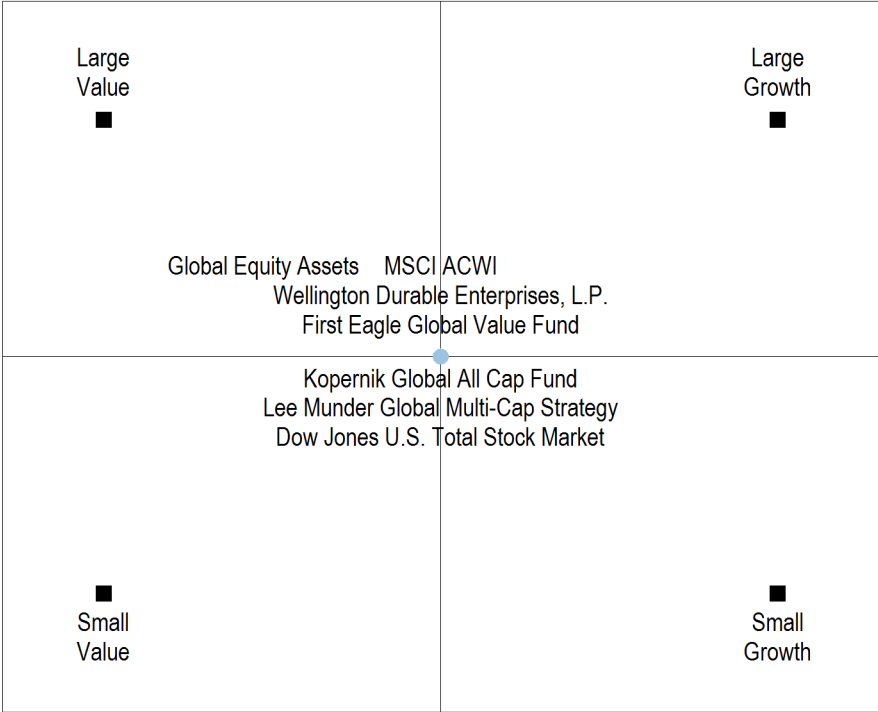
Sector Returns (%) vs MSCI ACWI ex USA



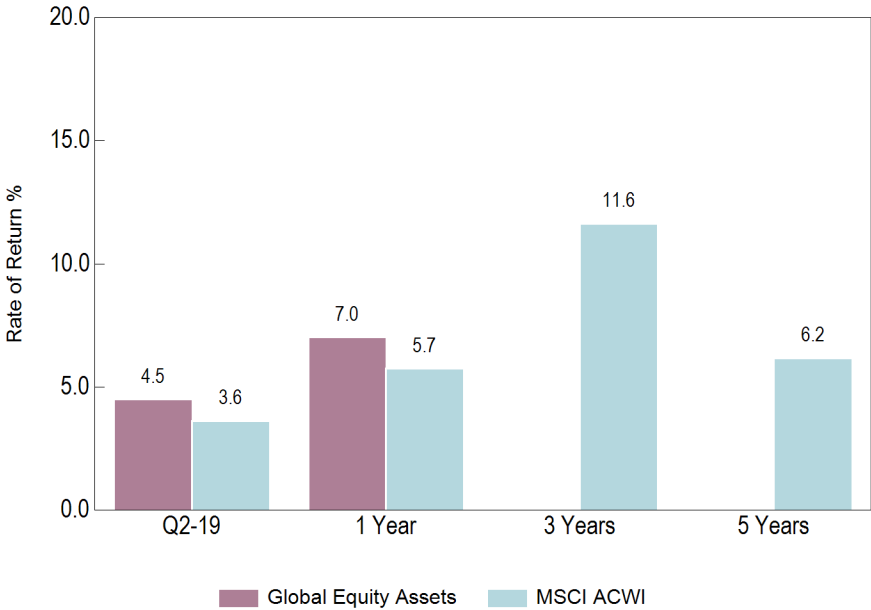
**Asset Allocation on June 30, 2019**

	Actual	Actual
First Eagle Global Value Fund	\$20,044,401	19.4%
Kopernik Global All Cap Fund	\$19,022,074	18.4%
Lee Munder Global Multi-Cap Strategy	\$28,938,564	28.1%
Wellington Durable Enterprises, L.P.	\$35,151,979	34.1%
<b>Total</b>	<b>\$103,157,018</b>	<b>100.0%</b>

**Global Equity Assets Style Map**



**Return Summary  
Ending June 30, 2019**



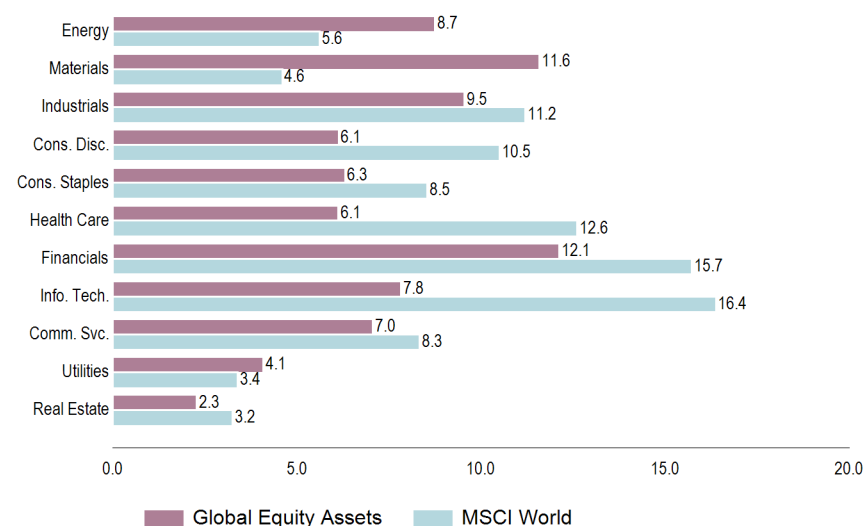
Global Equity Assets Equity Characteristics

	Portfolio Q2-19	Index Q2-19
<b>Market Value</b>		
Market Value (\$M)	103.16	--
Number Of Holdings	289	1654
<b>Characteristics</b>		
Weighted Avg. Market Cap. (\$B)	87.58	156.60
Median Market Cap (\$B)	11.84	12.76
P/E Ratio	15.73	18.33
Yield	2.25	2.44
EPS Growth - 5 Yrs.	7.35	11.13
Price to Book	2.52	3.02
Beta (holdings; domestic)	1.02	1.01

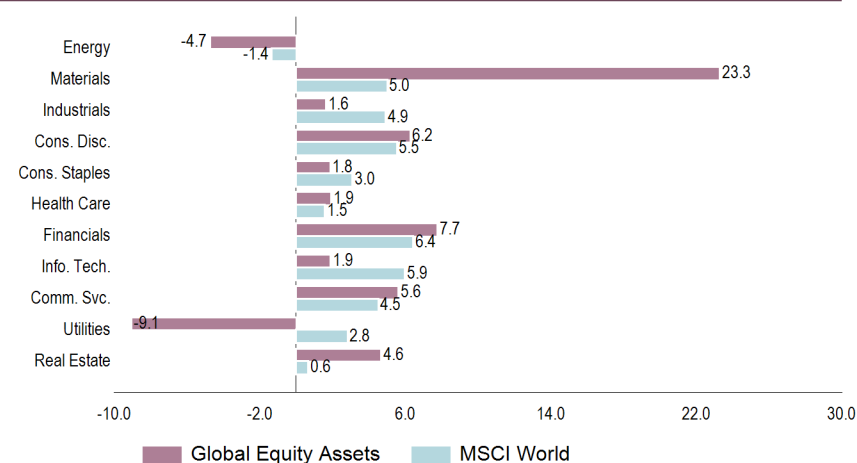
Top 10 Holdings

ISHARES CORE MSCI EMERGING MARKETS ETF	4.6%
NEWCREST MINING	1.5%
COMCAST A	1.5%
CAMECO (NYS)	1.5%
KT	1.4%
APPLE	1.3%
ISHARES MSCI EAFE	1.2%
AMAZON.COM	1.2%
ALPHABET A	1.2%
MICROSOFT	1.2%
<b>Total</b>	<b>16.4%</b>

Sector Allocation (%) vs MSCI World



Sector Returns (%) vs MSCI World





Fixed Income Assets

As of June 30, 2019

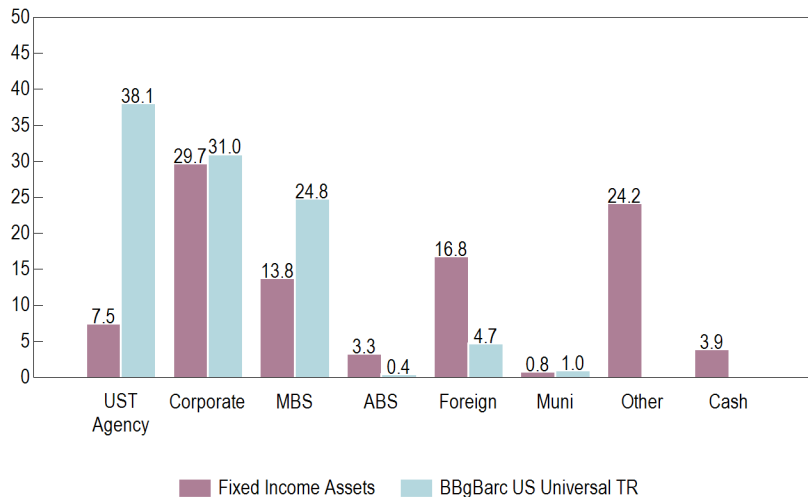
Asset Allocation on June 30, 2019

	Actual	Actual
Eaton Vance High Yield	\$21,563,131	14.5%
Franklin Templeton Emerging Market Bonds	\$32,440,950	21.9%
IR&M Core Bonds	\$57,979,181	39.1%
THL Bank Loan Select Fund	\$36,273,500	24.5%
<b>Total</b>	<b>\$148,256,761</b>	<b>100.0%</b>

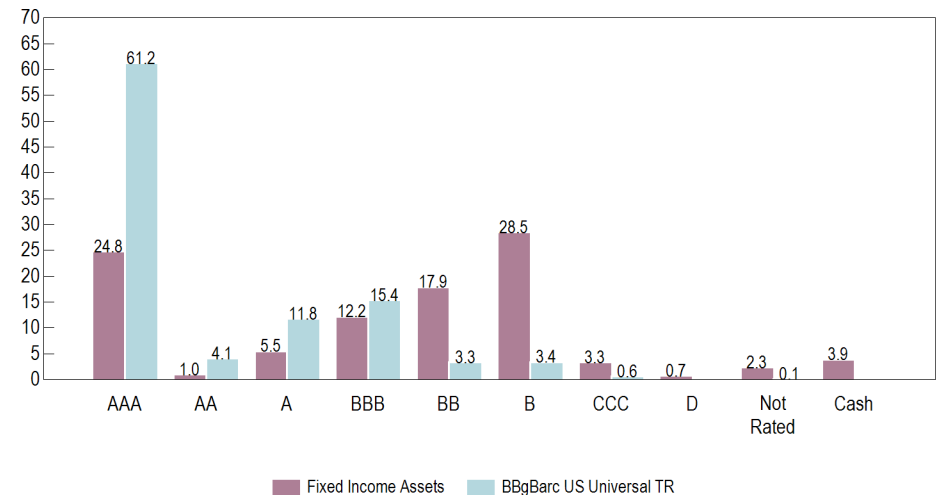
Fixed Income Assets Characteristics  
vs. BBgBarc US Universal TR

	Portfolio Q2-19	Index Q2-19	Portfolio Q1-19
<b>Fixed Income Characteristics</b>			
Yield to Maturity	5.8	2.9	5.9
Average Duration	3.3	6.0	3.5
Average Quality	BBB	AA	BBB
Weighted Average Maturity	6.3	12.1	6.6

Sector Allocation



Credit Quality Allocation



As of June 30, 2019

## Account Information

Account Name	Rhumblin Russell 1000 Value
Account Structure	Commingled Fund
Investment Style	Passive
Inception Date	4/30/13
Account Type	US Equity
Benchmark	Russell 1000 Value
Universe	eV US Large Cap Value Equity Net

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Rhumblin Russell 1000 Value	3.8	8.5	10.1	7.3	--	9.9	Apr-13
<i>Russell 1000 Value</i>	3.8	8.5	10.2	7.5	13.2	10.0	Apr-13
<i>eV US Large Cap Value Equity Net Median</i>	3.7	5.9	10.5	7.1	12.7	10.0	Apr-13
<i>eV US Large Cap Value Equity Net Rank</i>	45	31	62	44	--	52	Apr-13

## Top 10 Holdings

BERKSHIRE HATHAWAY 'B'	3.1%
JP MORGAN CHASE & CO.	2.7%
EXXON MOBIL	2.4%
JOHNSON & JOHNSON	2.3%
PROCTER & GAMBLE	1.9%
BANK OF AMERICA	1.8%
AT&T	1.8%
WALT DISNEY	1.8%
PFIZER	1.8%
CHEVRON	1.8%
<b>Total</b>	<b>21.4%</b>

## Rhumble Russell 1000 Value Characteristics

	Portfolio Q2-19	Index Q2-19	Portfolio Q1-19
<b>Market Value</b>			
Market Value (\$M)	35.6	--	34.3
Number Of Holdings	763	722	724
<b>Characteristics</b>			
Weighted Avg. Market Cap. (\$B)	113.3	123.1	120.0
Median Market Cap (\$B)	9.0	9.2	8.9
P/E Ratio	16.8	17.4	17.3
Yield	2.6	2.6	2.6
EPS Growth - 5 Yrs.	6.7	6.1	5.5
Price to Book	2.2	2.3	2.2
Beta (holdings; domestic)	1.0	1.0	0.9
<b>Sector Distribution</b>			
Energy	9.2	10.8	9.6
Materials	4.4	4.7	3.9
Industrials	9.7	9.2	7.7
Consumer Discretionary	5.9	6.3	5.2
Consumer Staples	8.9	5.6	8.6
Health Care	12.9	16.4	15.2
Financials	23.4	19.2	21.5
Information Technology	5.9	9.3	9.7
Communication Services	8.0	6.6	6.9
Utilities	6.5	6.8	6.4
Real Estate	5.1	5.3	5.1

As of June 30, 2019

## Account Information

Account Name	Rhumblin Russell 1000 Growth
Account Structure	Commingled Fund
Investment Style	Passive
Inception Date	7/31/09
Account Type	US Equity
Benchmark	Russell 1000 Growth
Universe	eV US Large Cap Growth Equity Net

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Rhumblin Russell 1000 Growth	4.6	11.5	18.0	13.3	--	15.5	Jul-09
<i>Russell 1000 Growth</i>	4.6	11.6	18.1	13.4	16.3	15.6	Jul-09
<i>eV US Large Cap Growth Equity Net Median</i>	5.0	11.4	17.4	12.3	15.2	14.5	Jul-09
<i>eV US Large Cap Growth Equity Net Rank</i>	60	48	46	29	--	26	Jul-09

## Top 10 Holdings

MICROSOFT	7.2%
APPLE	6.5%
AMAZON.COM	5.6%
FACEBOOK CLASS A	3.3%
ALPHABET 'C'	2.3%
ALPHABET A	2.3%
VISA 'A'	2.2%
CISCO SYSTEMS	1.7%
MASTERCARD	1.7%
UNITEDHEALTH GROUP	1.6%
<b>Total</b>	<b>34.5%</b>

## Rhumble Russell 1000 Growth Characteristics

	Portfolio Q2-19	Index Q2-19	Portfolio Q1-19
<b>Market Value</b>			
Market Value (\$M)	34.6	--	36.0
Number Of Holdings	532	546	545
<b>Characteristics</b>			
Weighted Avg. Market Cap. (\$B)	287.5	283.4	262.2
Median Market Cap (\$B)	12.6	12.1	11.7
P/E Ratio	26.9	24.9	24.2
Yield	1.2	1.3	1.3
EPS Growth - 5 Yrs.	20.2	20.4	20.1
Price to Book	8.1	7.2	6.9
Beta (holdings; domestic)	1.1	1.1	1.1
<b>Sector Distribution</b>			
Energy	0.4	0.7	0.7
Materials	1.4	2.3	1.8
Industrials	9.7	12.1	11.8
Consumer Discretionary	14.5	9.6	15.1
Consumer Staples	4.7	5.3	5.7
Health Care	14.6	10.7	13.1
Financials	3.2	4.8	4.3
Information Technology	37.0	38.1	32.9
Communication Services	11.3	15.3	12.0
Utilities	0.0	0.0	0.0
Real Estate	2.4	1.0	2.4

As of June 30, 2019

## Account Information

Account Name	Fisher Midcap Value
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	4/30/07
Account Type	US Equity
Benchmark	Russell MidCap Value
Universe	eV US Mid Cap Value Equity Net

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Fisher Midcap Value	5.0	5.5	14.1	8.5	14.9	7.7	Apr-07
<i>Russell MidCap Value</i>	3.2	3.7	8.9	6.7	14.6	6.9	Apr-07
<i>eV US Mid Cap Value Equity Net Median</i>	3.5	0.7	9.5	6.5	13.4	7.1	Apr-07
<i>eV US Mid Cap Value Equity Net Rank</i>	15	23	1	11	15	33	Apr-07

## Top 10 Holdings

TOTAL SYSTEM SERVICES	4.0%
AUTODESK	3.6%
ASPEN TECHNOLOGY	3.2%
SYNOPSYS	2.9%
PERKINELMER	2.8%
COOPER COS.	2.7%
RAYMOND JAMES FINL.	2.6%
FIDELITY NAT.INFO.SVS.	2.6%
ANSYS	2.5%
CHAS.RVR.LABS.INTL.	2.5%
<b>Total</b>	<b>29.4%</b>

## Fisher Midcap Value Characteristics

	Portfolio Q2-19	Index Q2-19	Portfolio Q1-19
<b>Market Value</b>			
Market Value (\$M)	44.1	--	44.8
Number Of Holdings	76	587	75

## Characteristics

Weighted Avg. Market Cap. (\$B)	16.2	15.6	15.1
Median Market Cap (\$B)	9.8	7.5	9.1
P/E Ratio	20.7	18.8	19.6
Yield	1.1	2.3	1.1
EPS Growth - 5 Yrs.	13.9	8.8	12.6
Price to Book	2.8	2.2	2.7
Beta (holdings; domestic)	1.2	1.0	1.2

## Sector Distribution

Energy	7.4	4.6	7.6
Materials	4.6	5.7	4.0
Industrials	14.5	13.7	14.8
Consumer Discretionary	5.1	8.9	5.6
Consumer Staples	2.2	4.8	2.7
Health Care	15.9	7.0	16.4
Financials	16.4	18.2	17.5
Information Technology	25.6	8.2	23.2
Communication Services	1.5	3.2	1.7
Utilities	0.0	10.9	0.0
Real Estate	5.7	14.9	5.6



As of June 30, 2019

## Account Information

Account Name	Boston Company Small Cap Growth
Account Structure	Separate Account
Investment Style	Active
Inception Date	8/31/09
Account Type	US Equity
Benchmark	Russell 2000 Growth
Universe	eV US Small Cap Growth Equity Net

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Boston Company Small Cap Growth	4.8	10.5	22.5	13.8	--	15.5	Aug-09
<i>Russell 2000 Growth</i>	2.7	-0.5	14.7	8.6	14.4	13.7	Aug-09
<i>eV US Small Cap Growth Equity Net Median</i>	5.1	5.1	17.7	10.4	15.3	14.7	Aug-09
<i>eV US Small Cap Growth Equity Net Rank</i>	53	26	19	15	--	37	Aug-09

## Top 10 Holdings

TWILIO 'A'	4.3%
BANDWIDTH A	4.2%
PLANET FITNESS CL.A	3.6%
SHOPIFY 'A' (NYS)	3.5%
HUBSPOT	3.5%
RAPID7	3.1%
FRESHPET	2.7%
EVERBRIDGE	2.6%
TELADOC HEALTH	2.5%
MERCURY SYSTEMS	2.3%
<b>Total</b>	<b>32.2%</b>

## Boston Company Small Cap Growth Characteristics

	Portfolio Q2-19	Index Q2-19	Portfolio Q1-19
<b>Market Value</b>			
Market Value (\$M)	51.2	--	53.8
Number Of Holdings	86	1228	81

## Characteristics

Weighted Avg. Market Cap. (\$B)	4.4	2.9	3.9
Median Market Cap (\$B)	2.1	0.9	2.2
P/E Ratio	36.5	23.7	35.1
Yield	0.2	0.7	0.2
EPS Growth - 5 Yrs.	23.7	13.8	25.6
Price to Book	4.7	4.1	4.5
Beta (holdings; domestic)	1.3	1.3	1.3

## Sector Distribution

Energy	1.6	1.7	1.5
Materials	2.0	3.4	3.0
Industrials	13.6	18.5	11.3
Consumer Discretionary	10.2	14.6	11.1
Consumer Staples	5.7	2.9	6.1
Health Care	23.1	26.4	20.1
Financials	5.9	7.1	4.7
Information Technology	30.8	18.5	31.7
Communication Services	4.2	3.1	4.3
Utilities	0.0	0.5	0.0
Real Estate	1.7	3.2	2.6

As of June 30, 2019

## Account Information

Account Name	LMCG Small Cap Value
Account Structure	Separate Account
Investment Style	Active
Inception Date	3/31/11
Account Type	US Equity
Benchmark	Russell 2000 Value
Universe	eV US Small Cap Value Equity Net

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
LMCG Small Cap Value	2.2	-4.8	7.7	6.0	--	7.8	Mar-11
<i>Russell 2000 Value</i>	1.4	-6.2	9.8	5.4	12.4	8.1	Mar-11
<i>eV US Small Cap Value Equity Net Median</i>	2.0	-5.4	8.9	5.0	12.8	8.3	Mar-11
<i>eV US Small Cap Value Equity Net Rank</i>	48	45	69	29	--	62	Mar-11

## Top 10 Holdings

STERLING BANCORP	2.3%
MACOM TECH.SLTN.HDG.	2.1%
BLACKSTONE MGE.TST.CL.A	2.0%
DARLING INGREDIENTS	2.0%
IBERIABANK	2.0%
CACI INTERNATIONAL 'A'	1.9%
MURPHY USA	1.9%
PORTLAND GEN.ELEC.	1.9%
TREEHOUSE FOODS	1.8%
FNB	1.7%
<b>Total</b>	<b>19.8%</b>

## LMCG Small Cap Value Characteristics

	Portfolio Q2-19	Index Q2-19	Portfolio Q1-19
<b>Market Value</b>			
Market Value (\$M)	66.9	--	70.2
Number Of Holdings	92	1347	89

## Characteristics

Weighted Avg. Market Cap. (\$B)	3.2	2.2	3.1
Median Market Cap (\$B)	2.7	0.7	2.9
P/E Ratio	16.7	16.2	16.5
Yield	1.6	2.2	1.7
EPS Growth - 5 Yrs.	7.4	6.8	7.6
Price to Book	1.9	1.7	1.9
Beta (holdings; domestic)	1.2	1.1	1.2

## Sector Distribution

Energy	2.2	4.9	2.5
Materials	11.6	4.2	12.0
Industrials	21.8	11.6	21.2
Consumer Discretionary	6.3	8.5	5.7
Consumer Staples	11.4	2.4	11.3
Health Care	3.5	4.1	3.2
Financials	19.0	29.4	17.6
Information Technology	10.9	11.9	10.0
Communication Services	3.2	2.9	4.3
Utilities	4.8	7.7	4.7
Real Estate	4.1	12.3	4.1

As of June 30, 2019

## Account Information

Account Name	KBI Master Account
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	7/31/05
Account Type	Non-US Stock Developed
Benchmark	MSCI EAFE
Universe	eV EAFE Core Equity Net

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
KBI Master Account	-0.3	-4.9	5.7	-0.7	5.3	3.4	Jul-05
MSCI EAFE	3.7	1.1	9.1	2.2	6.9	4.6	Jul-05
eV EAFE Core Equity Net Median	2.8	-2.2	8.5	3.0	8.1	5.3	Jul-05
eV EAFE Core Equity Net Rank	98	71	92	97	99	98	Jul-05

## Top 10 Holdings

RIO TINTO	2.6%
NOVO NORDISK 'B'	2.2%
ROYAL DUTCH SHELL B	2.0%
SIEMENS	2.0%
REPSOL YPF	1.9%
ASSICURAZIONI GENERALI	1.9%
ROCHE HOLDING	1.8%
IMPERIAL BRANDS	1.7%
IBERDROLA	1.7%
SAMSUNG ELECTRONICS	1.6%
<b>Total</b>	<b>19.5%</b>

## KBI Master Account Characteristics

	Portfolio Q2-19	Index Q2-19	Portfolio Q1-19
<b>Market Value</b>			
Market Value (\$M)	50.1	--	50.3
Number Of Holdings	238	922	227

## Characteristics

Weighted Avg. Market Cap. (\$B)	46.5	61.2	45.9
Median Market Cap (\$B)	12.7	10.1	13.8
P/E Ratio	11.1	15.5	11.3
Yield	4.6	3.4	4.5
EPS Growth - 5 Yrs.	14.1	7.9	13.1
Price to Book	2.0	2.3	2.0
Beta (holdings; domestic)	1.0	1.0	1.0

## Sector Distribution

Energy	7.1	5.5	7.3
Materials	8.4	7.4	8.9
Industrials	12.1	14.9	11.1
Consumer Discretionary	10.4	11.1	11.2
Consumer Staples	7.4	11.6	8.6
Health Care	8.0	11.2	7.7
Financials	21.4	18.9	20.2
Information Technology	8.4	6.7	9.2
Communication Services	7.0	5.4	6.3
Utilities	3.5	3.7	2.4
Real Estate	4.4	3.6	4.5

As of June 30, 2019

## Account Information

Account Name	HGK TS International Equity
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	2/28/11
Account Type	Non-US Stock Developed
Benchmark	MSCI EAFE
Universe	eV EAFE All Cap Equity Net

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
HGK TS International Equity	1.6	-3.0	11.2	3.2	--	6.0	Feb-11
MSCI EAFE	3.7	1.1	9.1	2.2	6.9	4.1	Feb-11
eV EAFE All Cap Equity Net Median	2.9	-0.4	8.5	3.1	7.8	5.0	Feb-11
eV EAFE All Cap Equity Net Rank	81	73	17	50	--	34	Feb-11

## Top 10 Holdings

ROCHE HOLDING	6.1%
FERROVIAL	6.1%
MOWI	5.5%
NEXT	5.5%
HENDERSON LD.DEV.	5.4%
SHIMANO	5.1%
MURATA MANUFACTURING	4.9%
NEXON	4.9%
SUBSEA 7	4.8%
DEUTSCHE POST	4.8%
<b>Total</b>	<b>53.2%</b>

## HGK TS International Equity Characteristics

	Portfolio Q2-19	Index Q2-19	Portfolio Q1-19
<b>Market Value</b>			
Market Value (\$M)	30.0	--	29.6
Number Of Holdings	25	922	25
<b>Characteristics</b>			
Weighted Avg. Market Cap. (\$B)	61.0	61.2	61.5
Median Market Cap (\$B)	19.0	10.1	18.8
P/E Ratio	14.8	15.5	15.1
Yield	2.6	3.4	2.6
EPS Growth - 5 Yrs.	10.7	7.9	13.7
Price to Book	2.6	2.3	2.3
Beta (holdings; domestic)	1.0	1.0	1.0

## Sector Distribution

Energy	4.6	5.5	4.6
Materials	0.0	7.4	0.0
Industrials	22.1	14.9	22.1
Consumer Discretionary	36.8	11.1	36.8
Consumer Staples	5.3	11.6	5.3
Health Care	5.8	11.2	5.8
Financials	4.0	18.9	4.0
Information Technology	8.8	6.7	8.8
Communication Services	7.5	5.4	7.5
Utilities	0.0	3.7	0.0
Real Estate	5.2	3.6	5.2



As of June 30, 2019

### Account Information

Account Name	Copper Rock International Small Cap
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	11/30/17
Account Type	Non-US Stock Developed
Benchmark	MSCI EAFE Small Cap
Universe	eV EAFE Small Cap Equity Net

### Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Copper Rock International Small Cap	4.6	-6.9	--	--	--	-5.4	Nov-17
MSCI EAFE Small Cap	1.7	-6.3	9.1	4.4	9.7	-3.3	Nov-17
eV EAFE Small Cap Equity Net Median	2.5	-7.2	8.9	4.7	10.5	-4.4	Nov-17
eV EAFE Small Cap Equity Net Rank	21	38	--	--	--	64	Nov-17

### Top 10 Holdings

ISHARES MSCI EAFE SMCP.	2.7%
MARUI GROUP	1.7%
NIHON UNISYS	1.6%
TOPDANMARK	1.5%
CLEANAWAY WASTE MANAGEMENT	1.5%
DECHRA PHARMACEUTICALS	1.5%
GREENCORE GROUP	1.5%
ITALGAS	1.5%
BRITVIC	1.5%
UDG HEALTHCARE PUBLIC	1.5%
<b>Total</b>	<b>16.4%</b>

### Copper Rock International Small Cap Characteristics

	Portfolio Q2-19	Index Q2-19	Portfolio Q1-19
<b>Market Value</b>			
Market Value (\$M)	35.8	--	34.2
Number Of Holdings	84	2340	90
<b>Characteristics</b>			
Weighted Avg. Market Cap. (\$B)	3.5	2.5	3.2
Median Market Cap (\$B)	3.4	1.0	3.3
P/E Ratio	17.0	15.1	15.6
Yield	2.3	2.8	2.3
EPS Growth - 5 Yrs.	16.3	12.4	17.2
Price to Book	2.6	2.1	2.5
Beta (holdings; domestic)	0.9	0.9	1.0
<b>Sector Distribution</b>			
Energy	2.6	2.7	4.6
Materials	5.1	8.6	3.3
Industrials	18.9	21.4	20.4
Consumer Discretionary	9.2	12.3	9.9
Consumer Staples	9.4	6.3	9.1
Health Care	12.7	7.6	11.4
Financials	10.0	10.9	9.1
Information Technology	15.9	9.5	14.9
Communication Services	5.6	5.1	5.9
Utilities	2.8	2.4	4.6
Real Estate	5.3	13.0	6.3

As of June 30, 2019

## Account Information

Account Name	LMCG Emerging Markets
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	9/30/13
Account Type	Non-US Stock Emerging
Benchmark	MSCI Emerging Markets
Universe	eV Emg Mkts Equity Net

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
LMCG Emerging Markets	0.1	-5.2	8.3	0.5	--	1.3	Sep-13
MSCI Emerging Markets	0.6	1.2	10.7	2.5	5.8	3.5	Sep-13
eV Emg Mkts Equity Net Median	1.4	0.9	9.9	2.5	6.7	3.7	Sep-13
eV Emg Mkts Equity Net Rank	85	91	68	91	--	95	Sep-13

## Top 10 Holdings

TENCENT HOLDINGS	4.7%
TAIWAN SEMICON.MNFG.	3.3%
SAMSUNG ELECTRONICS	3.1%
ISHARES MSCI EMERGING MARKETS ETF	3.1%
58 COM CL.A ADR 1:2	2.3%
OAO GAZPROM ADS (LON)	1.5%
CHINA CON.BANK 'H'	1.3%
ITAUSA INVESTIMENTOS ITAU PN	1.2%
INFOSYS	1.1%
LUKOIL OAO SPN.ADR 1:1	1.1%
<b>Total</b>	<b>22.7%</b>

## LMCG Emerging Markets Characteristics

	Portfolio Q2-19	Index Q2-19	Portfolio Q1-19
<b>Market Value</b>			
Market Value (\$M)	49.5	--	49.5
Number Of Holdings	125	1193	125
<b>Characteristics</b>			
Weighted Avg. Market Cap. (\$B)	52.8	81.7	54.5
Median Market Cap (\$B)	4.7	5.6	5.9
P/E Ratio	11.2	14.1	10.6
Yield	3.6	2.8	3.6
EPS Growth - 5 Yrs.	13.6	13.3	11.6
Price to Book	2.3	2.4	2.2
Beta (holdings; domestic)	1.0	1.1	1.0
<b>Sector Distribution</b>			
Energy	6.4	7.9	6.2
Materials	6.9	7.7	7.3
Industrials	7.7	5.5	6.8
Consumer Discretionary	11.0	13.5	9.6
Consumer Staples	7.3	6.4	7.0
Health Care	2.4	2.6	2.5
Financials	18.8	25.2	21.2
Information Technology	15.5	13.9	15.8
Communication Services	12.6	11.5	13.0
Utilities	1.3	2.7	1.7
Real Estate	6.0	3.0	4.8

As of June 30, 2019

## Account Information

Account Name	First Eagle Global Value Fund
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	2/01/18
Account Type	Equity
Benchmark	MSCI ACWI
Universe	eV All Global Equity Net

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
First Eagle Global Value Fund	3.5	5.2	--	--	--	0.2	Feb-18
MSCI ACWI	3.6	5.7	11.6	6.2	10.1	-0.2	Feb-18
eV All Global Equity Net Median	3.4	5.2	10.4	6.1	10.7	0.4	Feb-18
eV All Global Equity Net Rank	50	51	--	--	--	54	Feb-18

## Top 10 Holdings

ORACLE	3.3%
EXXON MOBIL	2.7%
COMCAST A	2.5%
FANUC	2.3%
SCHLUMBERGER	2.2%
WEYERHAEUSER	2.0%
KDDI	1.9%
DANONE	1.9%
BRITISH AMERICAN TOBACCO	1.8%
NUTRIEN (NYS)	1.7%
<b>Total</b>	<b>22.4%</b>

## First Eagle Global Value Fund Characteristics

	Portfolio Q2-19	Index Q2-19	Portfolio Q1-19
<b>Market Value</b>			
Market Value (\$M)	20.0	--	19.4
Number Of Holdings	140	2847	144
<b>Characteristics</b>			
Weighted Avg. Market Cap. (\$B)	80.8	147.7	77.6
Median Market Cap (\$B)	19.5	9.4	18.6
P/E Ratio	17.4	17.6	16.9
Yield	2.6	2.5	2.6
EPS Growth - 5 Yrs.	5.3	11.6	5.6
Price to Book	2.3	2.9	2.3
Beta (holdings; domestic)	1.0	1.0	1.0
<b>Sector Distribution</b>			
Energy	6.7	5.9	6.1
Materials	8.6	5.0	7.2
Industrials	12.3	10.5	11.2
Consumer Discretionary	5.1	10.8	4.5
Consumer Staples	8.6	8.3	8.0
Health Care	4.4	11.4	4.0
Financials	14.5	16.8	13.6
Information Technology	7.9	16.1	7.1
Communication Services	7.1	8.7	6.2
Utilities	0.2	3.3	0.2
Real Estate	3.8	3.2	3.5



As of June 30, 2019

## Account Information

Account Name	Kopernik Global All Cap Fund
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	2/01/18
Account Type	Equity
Benchmark	MSCI ACWI
Universe	eV All Global Equity Net

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Kopernik Global All Cap Fund	4.6	1.4	--	--	--	-3.5	Feb-18
MSCI ACWI	3.6	5.7	11.6	6.2	10.1	-0.2	Feb-18
eV All Global Equity Net Median	3.4	5.2	10.4	6.1	10.7	0.4	Feb-18
eV All Global Equity Net Rank	28	74	--	--	--	77	Feb-18

## Top 10 Holdings

CAMECO (NYS)	5.1%
KT	4.8%
NEWCREST MINING	4.5%
GAZPROM ORD	3.9%
CENTERRA GOLD	3.9%
RUSGIDRO ORD	3.8%
EDF	3.4%
mitsui	3.3%
RANGE RES.	3.3%
GOLDEN AGRI-RESOURCES	3.2%
<b>Total</b>	<b>39.3%</b>

## Kopernik Global All Cap Fund Characteristics

	Portfolio Q2-19	Index Q2-19	Portfolio Q1-19
<b>Market Value</b>			
Market Value (\$M)	19.0	--	18.2
Number Of Holdings	72	2847	73
<b>Characteristics</b>			
Weighted Avg. Market Cap. (\$B)	9.4	147.7	9.7
Median Market Cap (\$B)	1.1	9.4	1.1
P/E Ratio	11.2	17.6	10.6
Yield	1.7	2.5	1.7
EPS Growth - 5 Yrs.	-4.1	11.6	-2.6
Price to Book	1.8	2.9	1.6
Beta (holdings; domestic)	0.9	1.0	0.9

## Sector Distribution

Energy	18.2	5.9	18.9
Materials	25.5	5.0	25.4
Industrials	10.2	10.5	10.6
Consumer Discretionary	2.4	10.8	2.7
Consumer Staples	6.9	8.3	7.4
Health Care	0.8	11.4	0.6
Financials	6.4	16.8	6.6
Information Technology	0.9	16.1	1.0
Communication Services	5.5	8.7	5.6
Utilities	11.9	3.3	10.5
Real Estate	1.9	3.2	2.1

## Lee Munder Global Multi-Cap Strategy

As of June 30, 2019

## Account Information

Account Name	Lee Munder Global Multi-Cap Strategy
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	3/01/18
Account Type	Equity
Benchmark	MSCI ACWI
Universe	eV All Global Equity Net

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Lee Munder Global Multi-Cap Strategy	2.2	2.2	--	--	--	1.0	Mar-18
MSCI ACWI	3.6	5.7	11.6	6.2	10.1	3.0	Mar-18
eV All Global Equity Net Median	3.4	5.2	10.4	6.1	10.7	3.5	Mar-18
eV All Global Equity Net Rank	66	69	--	--	--	71	Mar-18

## Top 10 Holdings

ISHARES CORE MSCI EMERGING MARKETS ETF	9.7%
APPLE	2.9%
ISHARES MSCI EAFE	2.6%
AMAZON.COM	2.5%
ISHARES MSCI CHINA	2.4%
ALPHABET A	2.3%
ISHARES MSCI SOUTH KOREA ETF	2.1%
CAPITAL ONE FINL.	1.9%
MICROSOFT	1.9%
JP MORGAN CHASE & CO.	1.9%
<b>Total</b>	<b>30.2%</b>

## Lee Munder Global Multi-Cap Strategy Characteristics

	Portfolio Q2-19	Index Q2-19	Portfolio Q1-19
<b>Market Value</b>			
Market Value (\$M)	28.9	--	28.3
Number Of Holdings	84	2847	84
<b>Characteristics</b>			
Weighted Avg. Market Cap. (\$B)	132.6	147.7	128.1
Median Market Cap (\$B)	11.3	9.4	11.1
P/E Ratio	16.1	17.6	15.1
Yield	2.4	2.5	2.4
EPS Growth - 5 Yrs.	14.8	11.6	14.6
Price to Book	2.9	2.9	3.0
Beta (holdings; domestic)	1.1	1.0	1.1

## Sector Distribution

Energy	3.9	5.9	3.9
Materials	4.4	5.0	4.4
Industrials	7.4	10.5	7.4
Consumer Discretionary	9.2	10.8	9.2
Consumer Staples	4.4	8.3	4.4
Health Care	10.6	11.4	10.6
Financials	14.3	16.8	14.3
Information Technology	12.3	16.1	12.3
Communication Services	8.0	8.7	8.0
Utilities	1.4	3.3	1.4
Real Estate	1.6	3.2	1.6



**Account Information**

Account Name	<b>IR&amp;M Core Bonds</b>
Account Structure	<b>Commingled Fund</b>
Investment Style	<b>Passive</b>
Inception Date	<b>11/30/04</b>
Account Type	<b>US Fixed Income Investment Grade</b>
Benchmark	<b>75% Bbg Barclays Aggregate/25% Bbg Barclays US TIPs 1-10 year</b>
Universe	<b>eV US Core Fixed Inc Net</b>

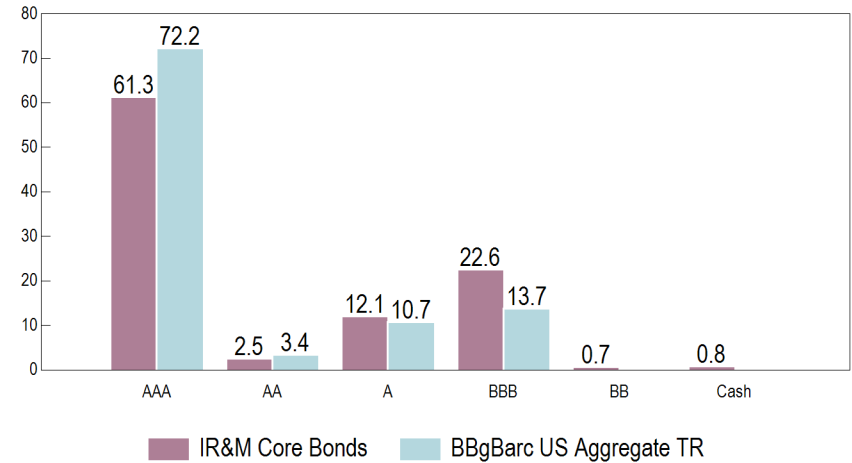
**Portfolio Performance Summary**

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
IR&M Core Bonds	3.1	7.1	2.4	2.6	4.3	4.2	Nov-04
75% Bbg Barclays Aggregate/25% Bbg Barclays US TIPs 1-10 year	2.9	7.1	2.2	2.6	3.7	4.0	Nov-04
eV US Core Fixed Inc Net Median	3.1	7.9	2.5	3.0	4.3	4.4	Nov-04
eV US Core Fixed Inc Net Rank	55	90	54	85	55	61	Nov-04

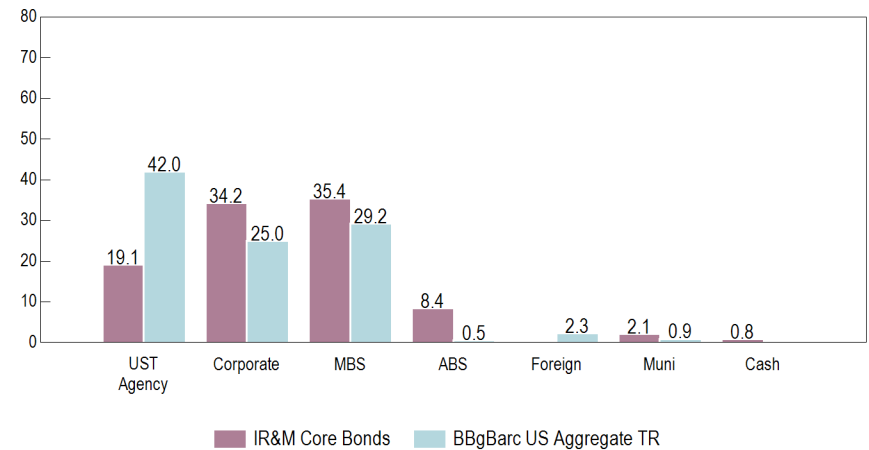
**IR&M Core Bonds Characteristics vs. BBgBarc US Aggregate TR**

	Portfolio Q2-19	Index Q2-19	Portfolio Q1-19
<b>Fixed Income Characteristics</b>			
Yield to Maturity	2.8	2.4	3.2
Average Duration	5.6	6.1	5.8
Average Quality	AA	AA	AA
Weighted Average Maturity	8.3	7.9	8.7

**Credit Quality Allocation**



**Sector Allocation**



**Account Information**

Account Name	Eaton Vance High Yield
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	4/30/06
Account Type	US Fixed Income High Yield
Benchmark	ICE BofAML US High Yield TR
Universe	eV US High Yield Fixed Inc Net

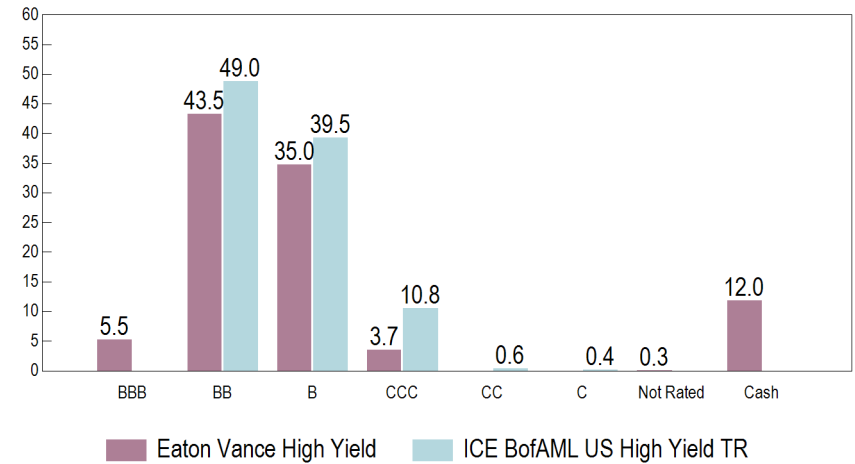
**Portfolio Performance Summary**

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Eaton Vance High Yield	2.6	7.3	6.5	4.7	9.0	7.0	Apr-06
ICE BofAML US High Yield TR	2.6	7.6	7.6	4.7	9.2	7.3	Apr-06
eV US High Yield Fixed Inc Net Median	2.5	6.7	6.8	4.1	8.5	6.8	Apr-06
eV US High Yield Fixed Inc Net Rank	40	37	63	25	26	38	Apr-06

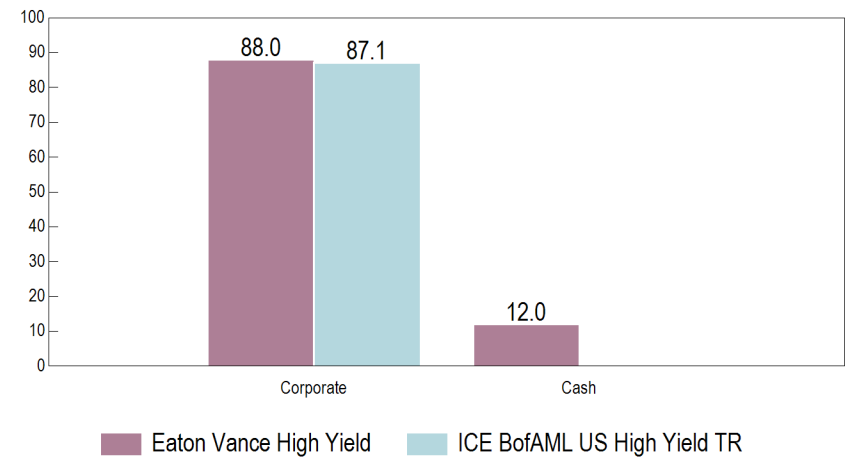
**Eaton Vance High Yield Characteristics vs. ICE BofAML US High Yield TR**

	Portfolio Q2-19	Index Q2-19	Portfolio Q1-19
<b>Fixed Income Characteristics</b>			
Yield to Maturity		5.9	6.5
Average Duration		2.8	4.5
Average Quality		BB	B
Weighted Average Maturity		5.4	5.8

**Credit Quality Allocation**



**Sector Allocation**



**Account Information**

Account Name	<b>THL Bank Loan Select Fund</b>
Account Structure	<b>Commingled Fund</b>
Investment Style	<b>Active</b>
Inception Date	<b>9/30/10</b>
Account Type	<b>US Fixed Income High Yield</b>
Benchmark	<b>Credit Suisse Leveraged Loans</b>
Universe	<b>Bank Loan MStar MF</b>

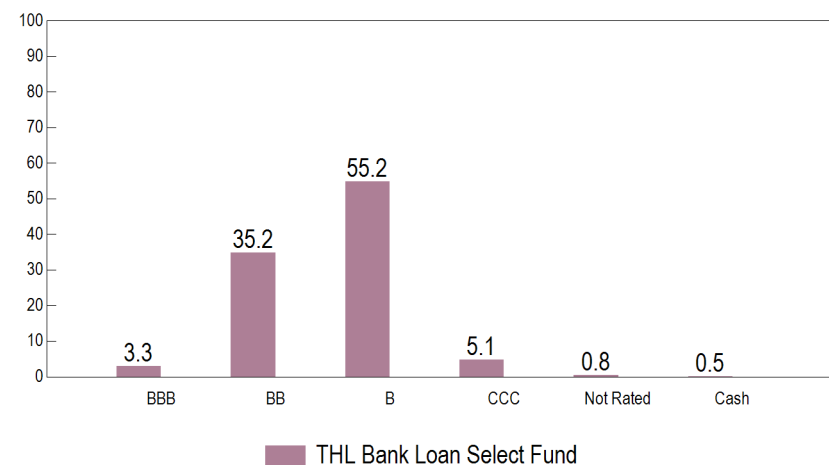
**Portfolio Performance Summary**

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
THL Bank Loan Select Fund	1.2	3.8	5.3	4.1	--	5.4	Sep-10
<i>Credit Suisse Leveraged Loans</i>	1.6	4.1	5.4	3.9	6.3	4.9	Sep-10
<i>Bank Loan MStar MF Median</i>	1.4	3.3	4.8	3.3	5.7	4.4	Sep-10
<i>Bank Loan MStar MF Rank</i>	81	26	22	4	--	1	Sep-10

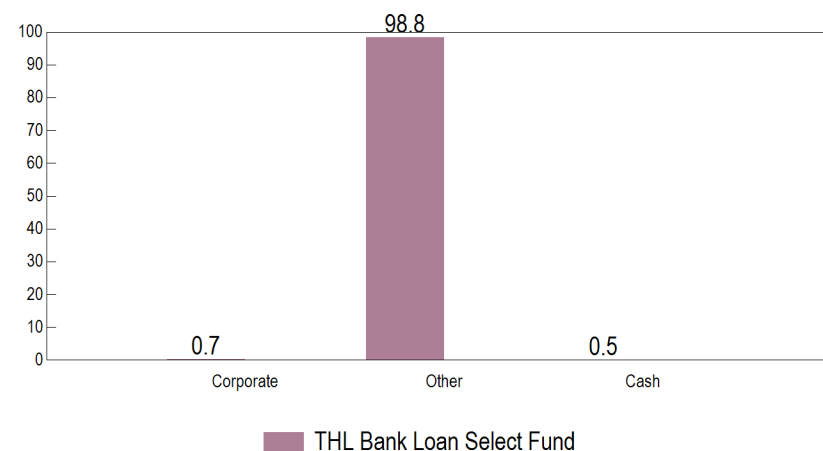
**THL Bank Loan Select Fund Characteristics**

	Portfolio Q2-19	Portfolio Q1-19
<b>Fixed Income Characteristics</b>		
Yield to Maturity	6.5	6.3
Average Duration	0.1	0.2
Average Quality	B	B
Weighted Average Maturity	5.0	5.2

**Credit Quality Allocation**



**Sector Allocation**





**Account Information**

Account Name	<b>Franklin Templeton Emerging Market Bonds</b>
Account Structure	<b>Commingled Fund</b>
Investment Style	<b>Active</b>
Inception Date	<b>5/31/06</b>
Account Type	<b>Non-US Fixed Income</b>
Benchmark	<b>JP Morgan EMBI Global Diversified</b>
Universe	<b>eV Emg Mkt Fixed Inc Unhedged Net</b>

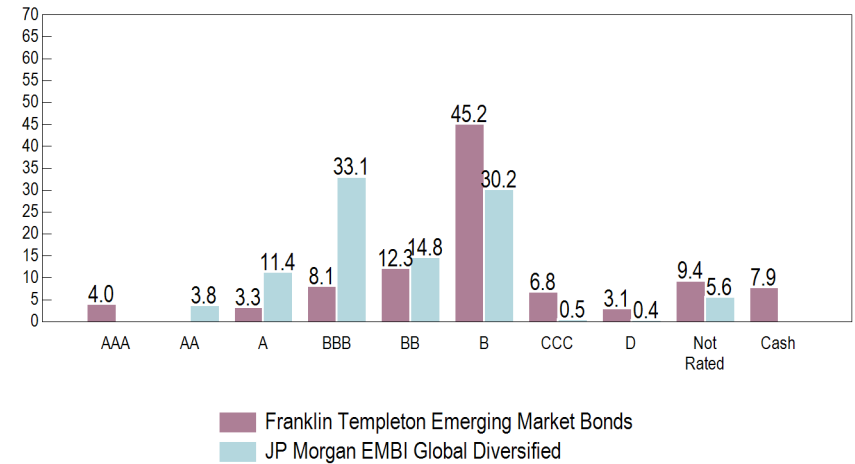
**Portfolio Performance Summary**

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Franklin Templeton Emerging Market Bonds	3.3	8.8	7.2	4.1	8.0	7.0	May-06
<i>JP Morgan EMBI Global Diversified</i>	4.1	12.4	5.5	5.3	7.8	7.3	May-06
<i>eV Emg Mkt Fixed Inc Unhedged Net Median</i>	4.2	10.0	5.1	3.1	6.5	6.7	May-06
<i>eV Emg Mkt Fixed Inc Unhedged Net Rank</i>	86	70	3	37	15	43	May-06

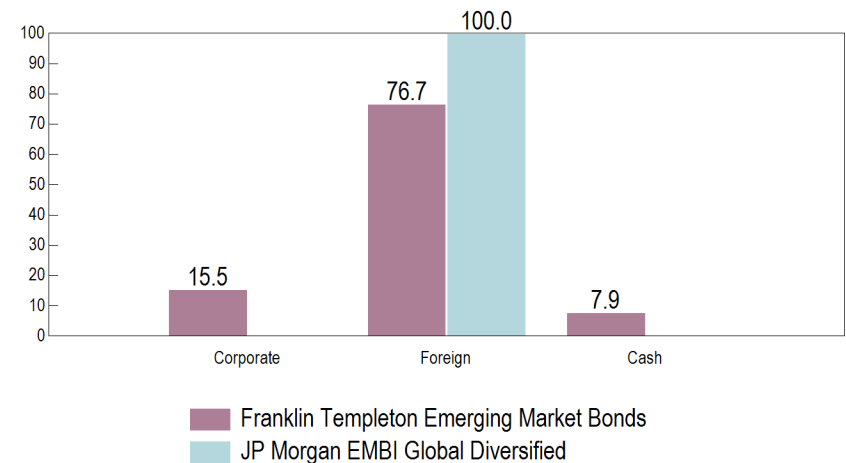
**Franklin Templeton Emerging Market Bonds Characteristics vs. JP Morgan EMBI Global Diversified**

	Portfolio Q2-19	Index Q2-19	Portfolio Q1-19
<b>Fixed Income Characteristics</b>			
Yield to Maturity		10.3	5.4
Average Duration		3.2	7.1
Average Quality		BB	BB
Weighted Average Maturity		4.9	11.4
			5.2

**Credit Quality Allocation**



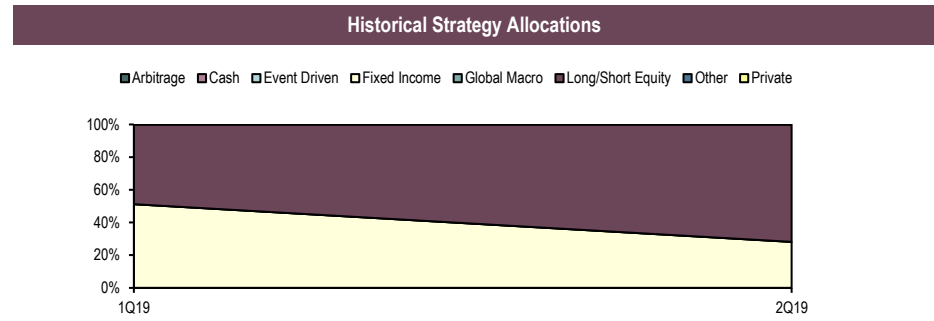
**Sector Allocation**



EnTrustPermal Special Opportunities Evergreen Fund, Ltd.

As of June 30, 2019

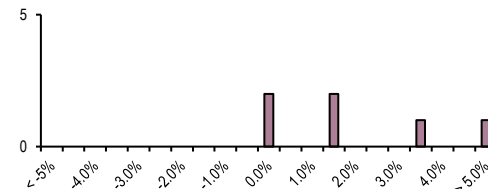
Account Information	Instrument Allocation
<b>Mandate:</b> Hedge Fund, Fund of Funds	
<b>Market Value:</b> \$6.4 M	
<b>Portfolio Manager:</b> Team	
<b>Location:</b> New York, NY	
<b>Inception Date:</b> 1/1/2019	
<b>Account Type:</b> Limited Partnership	
<b># of Investments:</b> 5	
<b>Fee Schedule:</b> 1.25% management fee; 10% performance fee	
<b>Liquidity Constraints:</b> Distributions from monetized investments will be recycled into the Fund, unless otherwise noted by the investor. Investors who opt out of the Fund (in part or in whole) following expiration of the 3 year Commitment Period, and any applicable successive renewals, will receive their pro rata distributions of underlying investments in the Fund, net of fees and expenses, as they are realized by the Investment Manager.	



Geographic Exposure Allocation (%)	6/30/2019	3/31/2019	12/31/2018	9/30/2018
Not Provided				

Exposure Report (%)	6/30/2019	3/31/2019	12/31/2018	9/30/2018
Not Provided				

Return Distribution



**Strategy:** EnTrustPermal's Special Opportunities Funds focus on thematic high conviction ideas that arise due to market dislocations or event driven investments. They structure the funds as committed capital and drawdown vehicles in order to quickly take advantage of co-investment opportunities. Fund III takes advantage of a similar portion of the liquidity spectrum as the previous funds. The strategy targets investments with 2 to 5 year investment horizons, seeking to exploit the period that is generally too short for private market investments, but too long for most hedge fund structures.

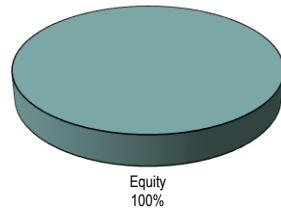
Portfolio Performance Summary					
	2Q19 (%)	1 YR (%)	3 YR (%)	5 YR (%)	Since 1/2019 (%)
EnTrustPermal Special Opportunities Evergreen Fund, Ltd.	6.9	NA	NA	NA	14.2
HFRI Fund of Funds Composite Index	1.5	1.1	4.2	2.2	6.2



As of June 30, 2019

**Account Information** **Instrument Allocation**

**Mandate:** Hedge Fund, Fund of Funds  
**Market Value:** \$5 M  
**Portfolio Manager:** Team  
**Location:** New York, NY  
**Inception Date:** 10/1/2018  
**Account Type:** Limited Partnership  
**# of Investments:** 32  
**Fee Schedule:** 0.5% management fee; 5% performance fee  
**Liquidity Constraints:** Quarterly with 65 days' notice

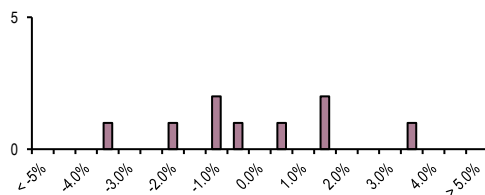


**Strategy:** Old Farm Partners invests primarily in long/short equity, global macro, and event-driven hedge fund strategies. The fund also allocates modestly to co-investments with the goal of enhancing returns with lower relative fees. Manager selection focuses on achieving absolute return through different market environments and the attempt to limit over-correlation to other managers in the portfolio.

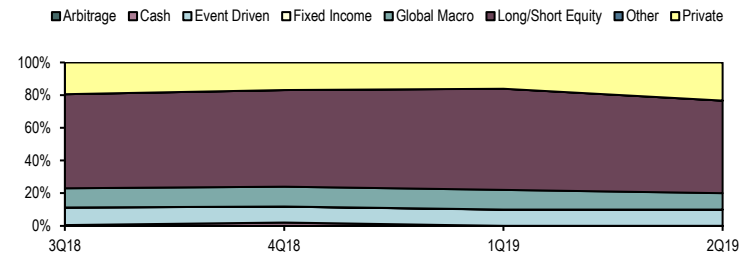
**Portfolio Performance Summary**

	1 YR (%)	3 YR (%)	5 YR (%)	Since 10/2018 (%)
Old Farm Partners Master Fund, L.P.	NA	NA	NA	-0.6
HFRI Fund of Funds Composite Index	1.1	4.2	2.2	0.9

**Return Distribution**



**Historical Strategy Allocations**



**Geographic Exposure Allocation (%)** 6/30/2019 3/31/2019 12/31/2018 9/30/2018

Not Provided

**Exposure Report (%)** 6/30/2019 3/31/2019 12/31/2018 9/30/2018

Total Gross Exposure	133	139	118	156
Total Net Exposure	40	30	27	42

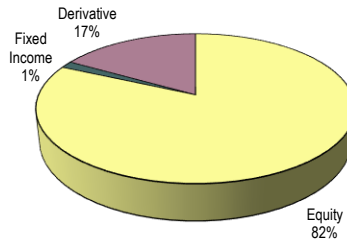
Plymouth County Retirement Association  
**ABS Offshore SPC - Global Segregated Portfolio**

As of June 30, 2019

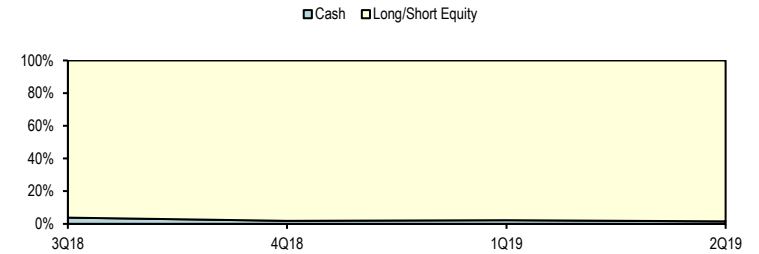
**Account Information**

**Mandate:** Hedge Fund, Fund of Funds  
**Market Value:** \$21.5 M  
**Portfolio Manager:** Team  
**Location:** Greenwich, CT  
**Inception Date:** 8/31/2010  
**Account Type:** Limited Partnership  
**# of Investments:** 29  
**Fee Schedule:** 1.00% management fee; 5.0% performance fee  
**Liquidity Constraints:** Quarterly with 45 days' notice

**Instrument Allocation**



**Historical Strategy Allocations**



**Strategy:**

ABS uses a qualitative, bottom-up process to select and invest with managers, and relies upon research performed in house. ABS believes that equity long/short strategies' combination of net long exposure to the equity markets (market beta), active exposure management (flexible beta), and stock selection (alpha), provide an attractive risk/reward opportunity over a full market cycle.

**Portfolio Performance Summary**

	2Q19 (%)	1 YR (%)	3 YR (%)	5 YR (%)	Since 8/2010 (%)
ABS Offshore SPC - Global Segregated Portfolio	2.0	-0.1	5.9	2.9	5.1
HFRI Fund of Funds Composite Index	1.5	1.1	4.2	2.2	3.0

**Risk**

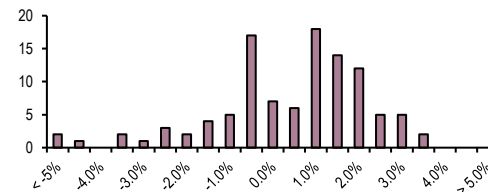
	Std Dev (%)	Max Drawdown (%)	Max Drawdown Length	Kurtosis	Skew
ABS Offshore SPC - Global Segregated Portfolio	6.5	-8.3	27	1.5	-1.0
HFRI Fund of Funds Composite	3.8	-5.3	9	1.1	-0.7

Geographic Exposure Allocation (%)	6/30/2019	3/31/2019	12/31/2018	9/30/2018
North America	62	61	58	57
Developed Europe	22	23	24	24
Emerging Markets	10	8	9	10
Developed Asia	6	8	9	9

Exposure Report (%)	6/30/2019	3/31/2019	12/31/2018	9/30/2018
Total Gross Exposure	159	156	150	156
Gross Long Exposure	101	99	95	99
Gross Short Exposure	58	57	55	57
Net Exposure	43	42	40	42

**Return Distribution**

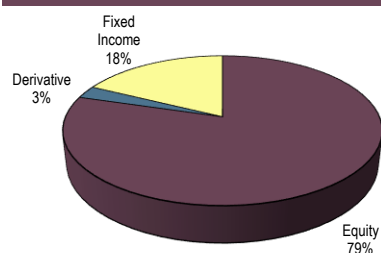


As of June 30, 2019

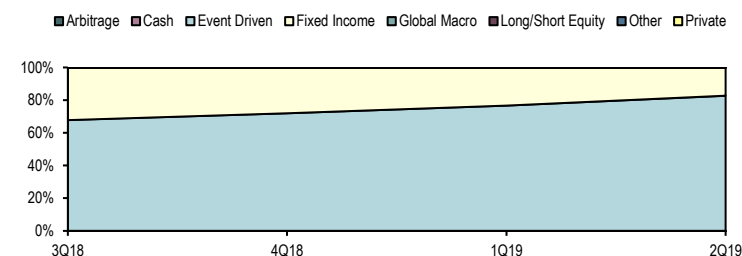
**Account Information**

**Mandate:** Hedge Fund, Fund of Funds  
**Market Value:** \$26.5 M  
**Portfolio Manager:** Team  
**Location:** New York, NY  
**Inception Date:** 10/1/2016  
**Account Type:** Limited Partnership  
**# of Investments:** Not Provided  
**Fee Schedule:** 1.25% management fee; 10% performance fee; 7.5% hurdle  
**Liquidity Constraints:** 3 Year Lockup (4 years max) then quarterly with 95 days' notice

**Instrument Allocation**



**Historical Strategy Allocations**



**Strategy:**

EnTrustPermal's Special Opportunities Funds focus on thematic high conviction ideas that arise due to market dislocations or event driven investments. They structure the funds as committed capital and drawdown vehicles in order to quickly take advantage of co-investment opportunities. Fund III takes advantage of a similar portion of the liquidity spectrum as the previous funds. The strategy targets investments with 2 to 5 year investment horizons, seeking to exploit the period that is generally too short for private market investments, but too long for most hedge fund structures.

**Portfolio Performance Summary**

	2Q19 (%)	1 YR (%)	3 YR (%)	5 YR (%)	Since 10/2016 (%)
EnTrust Special Opportunities Fund III, Ltd.	3.3	2.4	NA	NA	13.0
HFRI Fund of Funds Composite Index	1.5	1.1	4.2	2.2	3.8

**Risk**

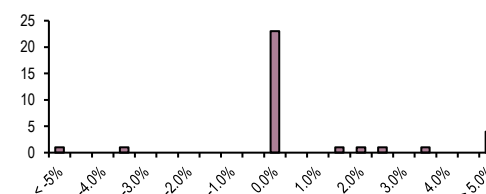
	Standard Deviation (%)	Max Drawdown (%)	Max Drawdown Length	Kurtosis	Skew
EnTrust Special Opportunities Fund III, Ltd.	17.2	-28.2	24	5.7	0.7
HFRI Fund of Funds Composite	3.8	-5.3	9	1.1	-0.7

Geographic Exposure Allocation (%)	6/30/2019	3/31/2019	12/31/2018	9/30/2018
North America	58	56	44	38
Developed Europe	31	29	38	41
Developed Asia	3	4	4	2
Emerging Markets	8	11	14	18

Exposure Report (%)	6/30/2019	3/31/2019	12/31/2018	9/30/2018
Total Gross Exposure	97	97	101	103
Gross Long Exposure	97	96	101	101
Gross Short Exposure	<1	<1	1	2
Net Exposure	96	96	100	99

**Return Distribution**



As of June 30, 2019

## Annual Investment Expense Analysis

As Of June 30, 2019

Name	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
<b>Domestic Equity Assets</b>		<b>\$232,394,265</b>		
Rhumblin Russell 1000 Value	0.05% of First 25.0 Mil, 0.04% of Next 25.0 Mil, 0.03% Thereafter	\$35,648,319	\$16,759	0.05%
Rhumblin Russell 1000 Growth	0.05% of First 25.0 Mil, 0.04% of Next 25.0 Mil, 0.03% Thereafter	\$34,576,782	\$16,331	0.05%
Fisher Midcap Value	0.80% of First 25.0 Mil, 0.75% of Next 25.0 Mil, 0.67% Thereafter	\$44,076,162	\$343,071	0.78%
Boston Company Small Cap Growth	0.45% of Assets	\$51,214,556	\$230,466	0.45%
LMCG Small Cap Value	0.90% of Assets	\$66,855,958	\$601,704	0.90%
<b>International Developed Market Equity Assets</b>		<b>\$115,947,034</b>		
KBI Master Account	0.65% of Assets	\$50,117,909	\$325,766	0.65%
HGK TS International Equity	1.00% of Assets	\$30,036,727	\$300,367	1.00%
Copper Rock International Small Cap	0.85% of Assets	\$35,792,398	\$304,235	0.85%
<b>International Emerging Market Equity Assets</b>		<b>\$109,031,860</b>		
LMCG Emerging Markets	0.75% of Assets	\$49,501,232	\$371,259	0.75%
ABS Emerging Markets	0.35% Management Fee and 10% Performance/Incentive Fee.	\$22,422,766		
Copper Rock Emerging Markets Small Cap	0.85% of Assets	\$10,832,352	\$92,075	0.85%
Driehaus Emerging Markets Growth	0.55% of Assets	\$26,275,510	\$144,515	0.55%
<b>Global Equity Assets</b>		<b>\$103,157,018</b>		
First Eagle Global Value Fund	0.75% of Assets	\$20,044,401	\$150,333	0.75%
Kopernik Global All Cap Fund	0.80% of First 50.0 Mil, 0.75% of Next 150.0 Mil, 0.70% of Next 250.0 Mil, 0.65% of Next 350.0 Mil	\$19,022,074	\$152,177	0.80%
Lee Munder Global Multi-Cap Strategy	0.45% of Assets	\$28,938,564	\$130,224	0.45%
Wellington Durable Enterprises, L.P.	0.60% of Assets	\$35,151,979	\$210,912	0.60%
<b>Core Fixed Income</b>		<b>\$57,979,181</b>		
IR&M Core Bonds	0.25% of First 50.0 Mil, 0.20% of Next 50.0 Mil, 0.15% Thereafter	\$57,979,181	\$140,958	0.24%
<b>Value Added Fixed Income</b>		<b>\$90,277,581</b>		
Eaton Vance High Yield	0.50% of Assets	\$21,563,131	\$107,816	0.50%
THL Bank Loan Select Fund	0.40% of Assets	\$36,273,500	\$145,094	0.40%
Franklin Templeton Emerging Market Bonds	0.99% of Assets	\$32,440,950	\$321,165	0.99%

## Total Retirement Association

As of June 30, 2019

Note: The adjusted value is based on March 31, 2019 FMV adjusted for subsequent cash flows.

Private Equity	Commitment	Total Contributions	Total Distributions	Adjusted Value
Ascend Ventures II, L.P.	2,500,000	2,324,355	925,962	61,532
Ascent Venture Partners IV, L.P.	2,500,000	2,502,219	388,970	40,167
Ascent Venture Partners V, L.P.	5,000,000	5,104,731	3,432,862	4,255,389
Audax Mezzanine Fund IV, L.P.	10,000,000	4,175,783	1,328,097	3,103,932
Charles River Partnership XI, L.P.	1,839,000	1,820,323	1,996,788	145,022
DN Partners II, L.P.	5,000,000	2,362,034	0	1,627,979
Euro Choice V, L.P.	5,042,904	5,688,459	2,167,976	5,000,943
Globespan Capital Partners V, L.P.	5,000,000	4,852,500	8,008,564	2,593,945
HarbourVest Partners Co-Investment Fund V, L.P.	12,000,000	1,200,000	0	1,200,000
Ironsides Direct Investment Fund V, L.P.	12,000,000	8,155,144	871,982	7,437,168
Landmark Equity Partners XIV, L.P.	6,000,000	6,288,437	6,612,813	1,028,077
Leeds Equity Partners IV, L.P.	5,185,562	5,089,327	6,224,435	10,302
Leeds Equity Partners V, L.P.	2,500,000	3,573,083	3,980,028	2,139,649
Lexington Capital Partners VII, L.P.	10,000,000	10,556,021	12,844,970	2,605,676
LLR Equity Partners V, L.P.	12,000,000	4,800,000	433,003	4,543,057
Mesirow Financial Capital Partners IX, L.P.	4,000,000	3,840,731	1,897,056	223,454
Ridgemont Equity Partners III, L.P.	12,000,000	0	0	600,790
Rimco Production Company, Inc	2,000,000	2,000,000	7,486,401	1
Siguler Guff Distressed Opportunities Fund III, L.	6,000,000	5,820,000	8,197,030	922,575
Summit Partners Growth Equity Fund IX, L.P.	10,000,000	7,685,000	997,650	7,835,948
TRG Growth Partnership II, L.P.	7,500,000	7,450,399	7,463,445	1,181,037
Trilantic Capital Partners VI (North America), L.P.	12,000,000	2,545,979	0	2,404,343
Wellspring Capital Partners VI, L.P.	12,000,000	3,402,317	0	3,169,101
<b>Total Plymouth County - PE</b>	<b>162,067,465</b>	<b>101,236,843</b>	<b>75,258,032</b>	<b>52,130,118</b>

## Total Retirement Association

As of June 30, 2019

Note: The adjusted value is based on March 31, 2019 FMV adjusted for subsequent cash flows.

Real Assets	Commitment	Total Contributions	Total Distributions	Adjusted Value
Basalt Infrastructure Partners II *	10,000,000	5,610,581	49,561	5,484,352
BTG Pactual Global Timberland Resources Fund, LLC	4,338,966	5,043,536	229,998	3,043,232
Global Infrastructure Partners III, L.P.	10,000,000	8,196,596	788,954	8,260,304
IFM Global Infrastructure (US), L.P.	20,000,000	20,000,000	119,615	21,795,049
JPMorgan Global Maritime Investment	10,000,000	9,186,014	938,504	6,344,048
Timbervest Partners III, L.P. *	5,000,000	5,000,000	1,179,000	5,092,342
<b>Total Plymouth County - RA</b>	<b>59,338,966</b>	<b>53,036,727</b>	<b>3,305,633</b>	<b>50,019,328</b>

Real Estate	Commitment	Total Contributions	Total Distributions	Adjusted Value
1921 Realty, Inc. *	5,000,000	5,378,194	0	858,126
AEW Partners Real Estate Fund VIII, L.P.	25,000,000	13,152,392	2,840,603	11,012,598
Carlyle Realty Partners VIII, L.P.	18,000,000	1,911,908	1,650	1,465,438
DSF Capital Partners IV, L.P.	5,000,000	5,000,000	5,997,885	16,359
DSF Multi-Family Real Estate Fund III, L.P.	15,000,000	15,499,746	1,055,730	15,518,437
Invesco Equity Real Estate Securities Trust	22,000,000	23,908,825	44,000,000	770,593
JPMorgan Strategic Property	27,000,000	27,000,000	0	27,296,193
New Boston Institutional Fund VII, L.P.	5,000,000	3,012,998	3,893,905	124,296
PRISA I	14,995,000	17,227,013	33,284,488	1,751,815
Real Estate International Partnership Fund I, L.P.	15,000,000	12,674,617	10,772,161	2,189,009
TA Realty Core Property Fund, L.P. *	25,000,000	25,000,000	322,844	27,153,280
<b>Total Plymouth County - RE</b>	<b>176,995,000</b>	<b>149,765,694</b>	<b>102,169,266</b>	<b>88,156,145</b>

\* The adjusted value is based on December 31, 2018 FMV adjusted for subsequent cash flows.

Note: The value for Invesco Equity Real Estate Securities Trust is as of June 30, 2019.





## Current Issues

## Potential Next Steps

## Background

- Chapter 176 requires that the Board conduct a search for each service provider every seven years.
- Staggering the searches out over time makes the most sense.
- Meketa Investment Group recommends the Board conduct an index fund search for existing and potential new mandates.
  - The Board could solicit passive bids on existing Russell 1000 Growth and Russell 1000 Value mandates, but also consider International Developed Markets, Investment Grade Bonds, TIPS, and REITS as potential new mandates.
  - Once the search is in process, we can consider the active/passive merits of these asset classes and the existing manager roster.
- The Board could also consider an active emerging market debt search.

## **Asset Allocation Review and Risk Analysis**

## Introduction

- This document evaluates Plymouth County Retirement Association’s asset allocation policy and compares it to the current allocation, PRIT’s current target allocation, and the median allocation of the public defined benefit peer group<sup>1</sup>.
- We provide various approaches to assessing risk in order to provide a “mosaic” of the risks faced by the Association.
- The goal of this review is not to declare one policy the “right” choice or the only prudent choice, but to highlight the risk and return tradeoffs of different policy portfolios.
- The asset allocation review process highlights the natural tension between long-term goals and short-term risks, and should allow the Association to make more informed decisions regarding portfolio positioning.

<sup>1</sup> Public Defined Benefit Peer group represents the InvMetrics Public DB Net Universe as of June 30, 2019. Includes 241 observations.



## Asset Allocation Overview

## Asset Allocation

### ***What is Asset Allocation?***

- Asset allocation refers to the distribution of assets across a number of asset classes that exhibit different correlations with each other. Each asset class exhibits a unique combination of risk and reward. The expected and realized long-term returns vary by asset class, as does the interim volatility of those returns. Some asset classes, like equities, exhibit high degrees of volatility, but also offer high returns over time. Other asset classes, like cash, experience very little volatility, but offer limited return potential.

### ***Why is Asset Allocation important?***

- The distribution of assets across various asset classes exerts a major influence on the return behavior of the aggregate pool over short and long time periods.

### ***How does Asset Allocation affect aggregate performance?***

- In addition to exhibiting unique characteristics, each asset class interacts differently with other asset classes. Because of low correlations, the likelihood that any two asset classes will move together in the same direction is limited, with the movement of one asset class often offsetting another's. Combining asset classes allows investors to control more fully the aggregate risk and return of their portfolios, and to benefit from the reduction in volatility that stems from diversification.

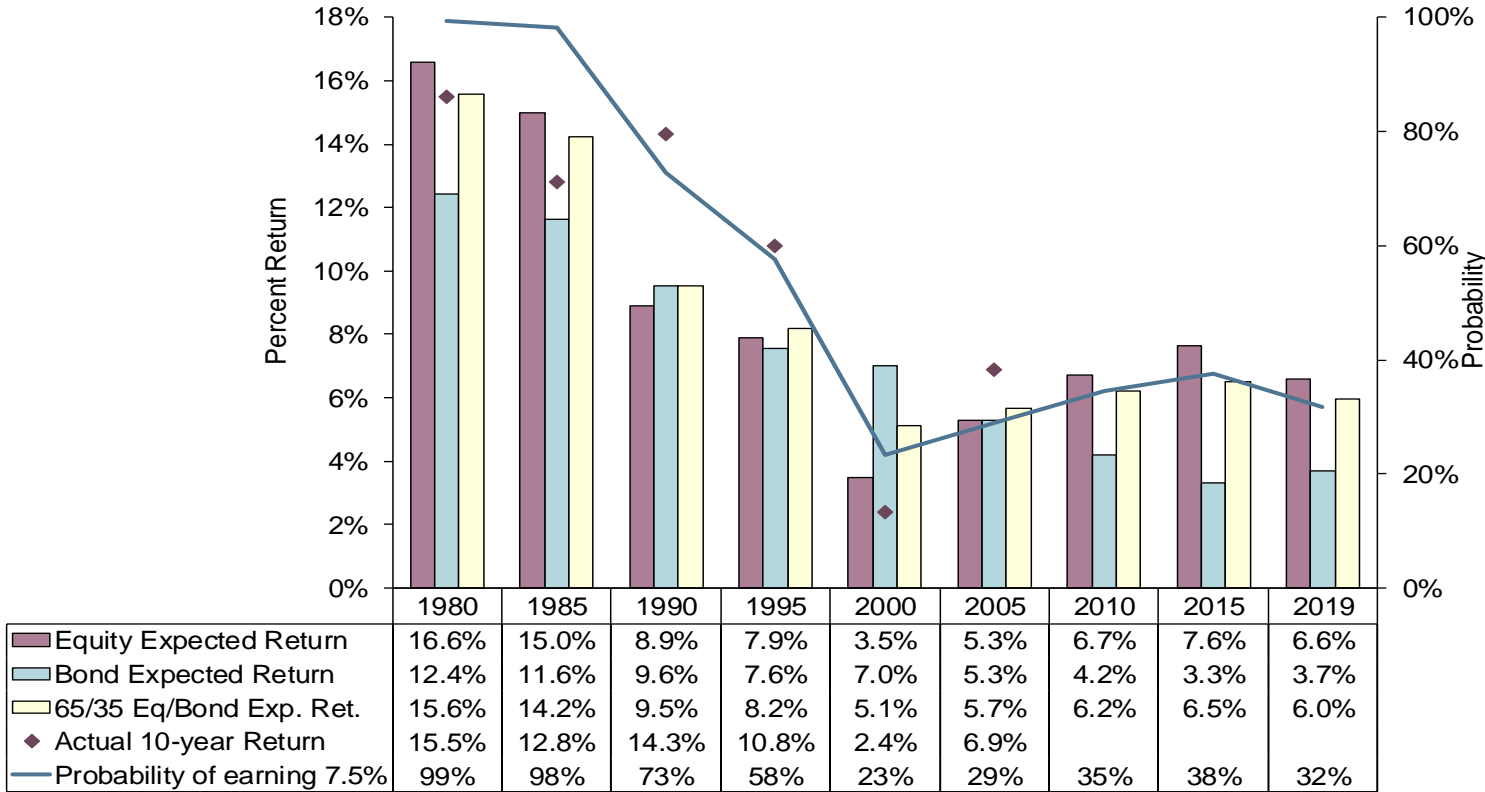
## Asset Allocation Review Process

- Review the current asset allocation and policy targets and how they compare to PRIT's current target allocation and the median allocation of the public defined benefit peer group<sup>1</sup>.
- Analyze the expected returns and risk that accompany each portfolio, and revisit whether the current positioning is appropriate for the financial position of the Association.
- Accept equity risk as means of achieving an acceptable long-term return, or consider lower returns and higher contributions that come with less equity risk.
- Understand the risks in a portfolio predominantly invested in equities and equity-like assets.

<sup>1</sup> Public Defined Benefit Peer group represents the InvMetrics Public DB Net Universe as of June 30, 2019. Includes 241 observations.



### The Secular Decline in Investment Returns<sup>1</sup>



- The chart above illustrates that a portfolio comprising of 65% domestic stocks and 35% investment grade bonds has produced diminishing expected returns as well as actual returns over the past 30 years.

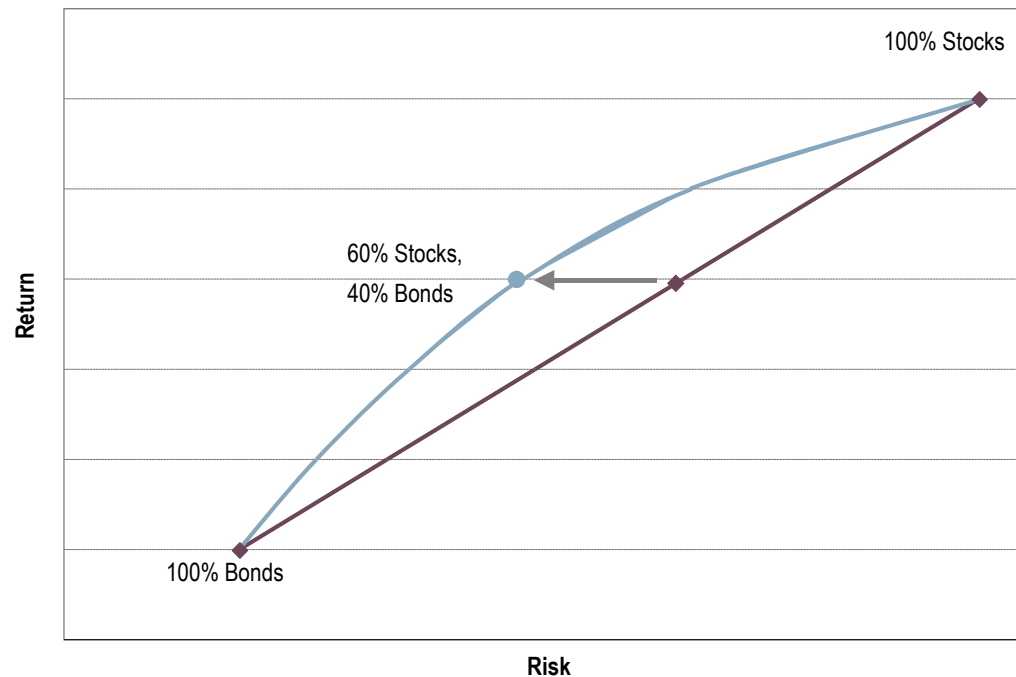
<sup>1</sup> Expected return assumptions for 1) Bonds equals the yield of the ten-year Treasury plus 100 basis points, and 2) Equities equals the dividend yield plus the earnings yield of the S&P 500 index (using the inflation-adjusted trailing 10-year earnings). Probability calculation is for the subsequent ten years.



## Mean Variance Optimization

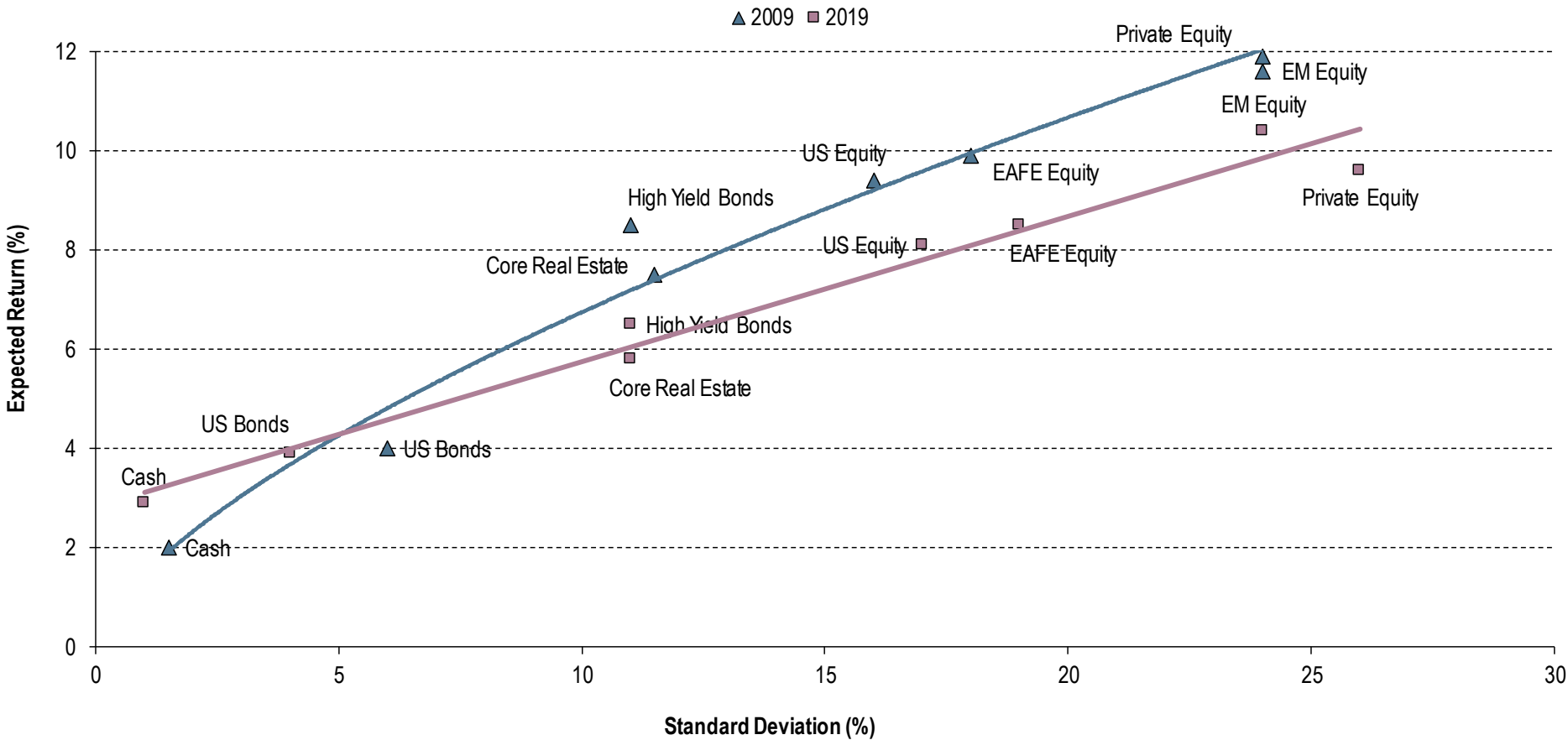
- MVO is the traditional starting point for determining asset allocation.
- MVO mathematically determines an “efficient frontier” of policy portfolios with the highest risk-adjusted returns.
- All asset classes exhibit only three characteristics, which serve as inputs to the model:
  - Expected return
  - Expected volatility
  - Expected covariance with all other assets
- The model assumes:
  - Normal return distribution
  - Stable volatility and covariances over time
  - Returns are not serially correlated
- The MVO model tends to underestimate the risks of large negative events.

## The Efficient Frontier



- Combining uncorrelated assets produces an “efficient frontier.” Different combinations of assets (e.g., 60% stocks & 40% bonds) will lie along this efficient frontier.
- By combining assets that are not highly correlated with each other, the Fund can produce a higher return for a given level of risk than it could by investing in perfectly correlated assets. Alternatively, it can experience lower risk for a given level of return.

**Investable Universe over Time: Less Return for the Same or More Risk<sup>1</sup>**



- A positive relationship exists between long-term return expectations and the level of risk accepted.
- However, this relationship is not static.

<sup>1</sup> Expected return and standard deviation are based upon Meketa Investment Group's Annual Asset Study.



## Current Policy Comparison

Asset Allocation Comparison<sup>1</sup>

	PCRA Policy (%)	PCRA Current (%)	PRIT (%)	Public DB <sup>2</sup> (%)
<b>Equities</b>	<b>65</b>	<b>61</b>	<b>52</b>	<b>60</b>
US Equity	26	23	13	28
Developed Market Equity (non-US)	6	12	13	7
Emerging Market Equity	10	11	5	5
Global Equity	10	10	0	12
Long-Short	0	0	8	0
Private Equity	13	5	13	8
<b>Credit</b>	<b>6</b>	<b>9</b>	<b>8</b>	<b>3</b>
High Yield Bonds / Bank Loans	4	6	5	0
Distressed Debt	0	0	2	0
Emerging Market Bonds	2	3	2	3
<b>Rate Sensitive</b>	<b>9</b>	<b>10</b>	<b>15</b>	<b>20</b>
Short-term Investment Grade Bonds / Cash	2	4	2	0
Investment Grade Bonds	5	6	6	20
Long-term Strips	0	0	3	0
TIPS	2	0	4	0
<b>Real Assets</b>	<b>16</b>	<b>14</b>	<b>14</b>	<b>12</b>
Real Estate	10	9	10	9
Natural Resources / Timber	2	2	4	3
Core Infrastructure	4	3	0	0
<b>Hedge Funds</b>	<b>4</b>	<b>6</b>	<b>11</b>	<b>5</b>
<i>Expected Return (20 years)</i>	<i>8.58</i>	<i>8.20</i>	<i>7.65</i>	<i>7.88</i>
<i>Standard Deviation</i>	<i>14.4</i>	<i>13.5</i>	<i>11.6</i>	<i>12.6</i>
<i>Probability of Achieving 7.88% over 20 Years</i>	<i>58.3</i>	<i>53.8</i>	<i>46.1</i>	<i>49.6</i>

<sup>1</sup> Expected return and standard deviation are based upon Meketa Investment Group's 2019 Annual Asset Study. Throughout this document, returns for periods longer than one year are annualized.

<sup>2</sup> Public Defined Benefit Peer group represents the InvMetrics Public DB Net Universe as of June 30, 2019. Includes 241 observations

## Review of Asset Allocation Comparison

- In revisiting the Association's current portfolio and current targets, it may make sense to evaluate in the context of both the PRIT and public peers.
- While it is smart to be aware of how peers are allocated, it is also imperative to be mindful that peers have different constraints and objectives than the Plymouth County Retirement Association.
- From the above data, we can conclude that PRIT is positioned rather defensively, with the lowest expected return and lowest standard deviation amongst the four portfolios.
  - PCRA's policy produces the highest expected return and standard deviation.
- Note that the peer average is constantly changing as other Systems make changes to their asset allocation targets. Each fund in the peer group is unique and differs in some way from the average of the peer group.
  - Over the past five years, we observe some general trends in the peer group data:
    - A slight decrease in developed non-US equity exposure, offset by an increase in emerging market equity exposure.
    - Fixed income has decreased slightly.
    - The use of private equity has increased.
    - Hedge funds and GTAA strategies have declined.
- The following pages provide an in-depth analysis on factors to consider while evaluating the Association's policy targets and current portfolio.

## **Diversification and Risk Analysis**



## Diversification

- The primary motive for diversifying a portfolio is to reduce risk.
- Diversification is the sole “free lunch” available to investors. That is, it represents the only way to reduce risk without reducing expected returns.
- Therefore, investments should be allocated across multiple classes of assets, based in part on the expected correlation of their returns.
- Within each asset type, investments should be distributed across strategies and risk factors to further reduce volatility.

## Types of Risk Analysis Addressed

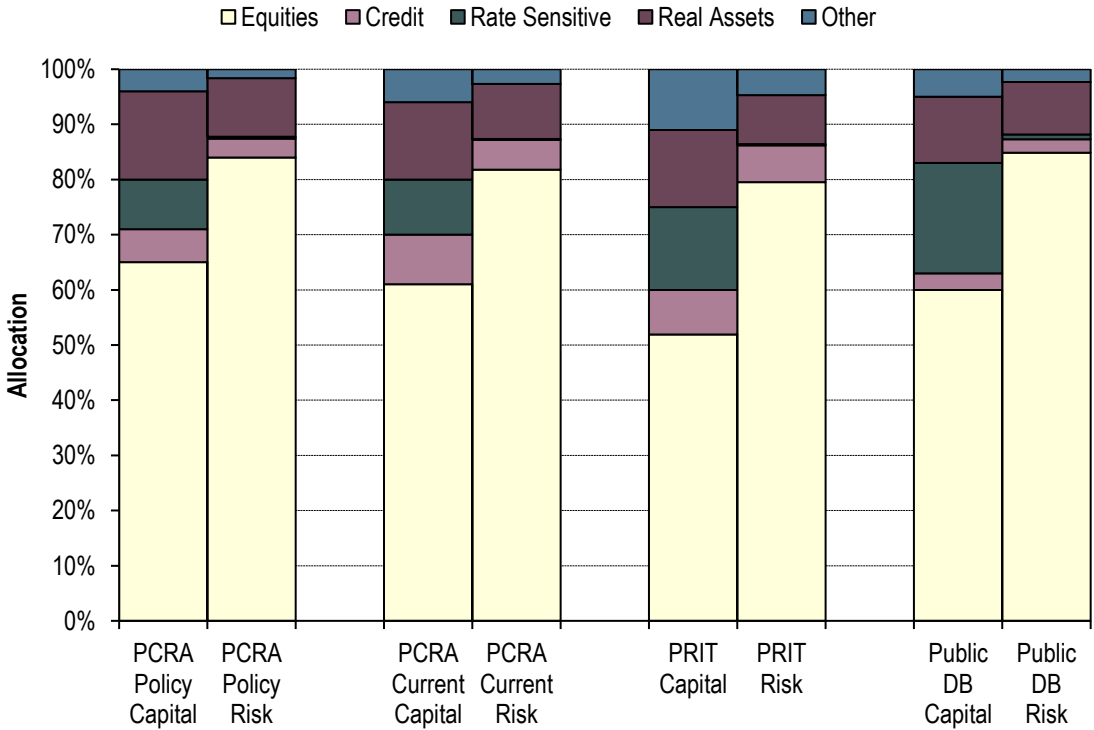
- Risk budgeting<sup>1</sup>
  - Attributes overall portfolio risks to specific asset classes
  - Highlights the source and scale of portfolio-level risk
- MVO-based risk analytics
  - Includes worst-case return expectations and Value at Risk (VaR)<sup>2</sup>
  - Relies on assumptions underlying MVO
- Scenario analysis
  - Stress tests policy portfolios using actual historical examples
  - Stress tests policy portfolios under specific hypothetical scenarios

---

<sup>1</sup> Risk budgeting seeks to decompose the aggregate risk of a portfolio into different sources (in this case, by asset class), with risk defined as standard deviation.

<sup>2</sup> VaR is a risk measure that estimates the maximum loss on a portfolio over a given time horizon and a given confidence level (usually 95% or 99%).

### Risk Budgeting Analysis<sup>1</sup> (Capital Allocation vs. Risk Allocation)

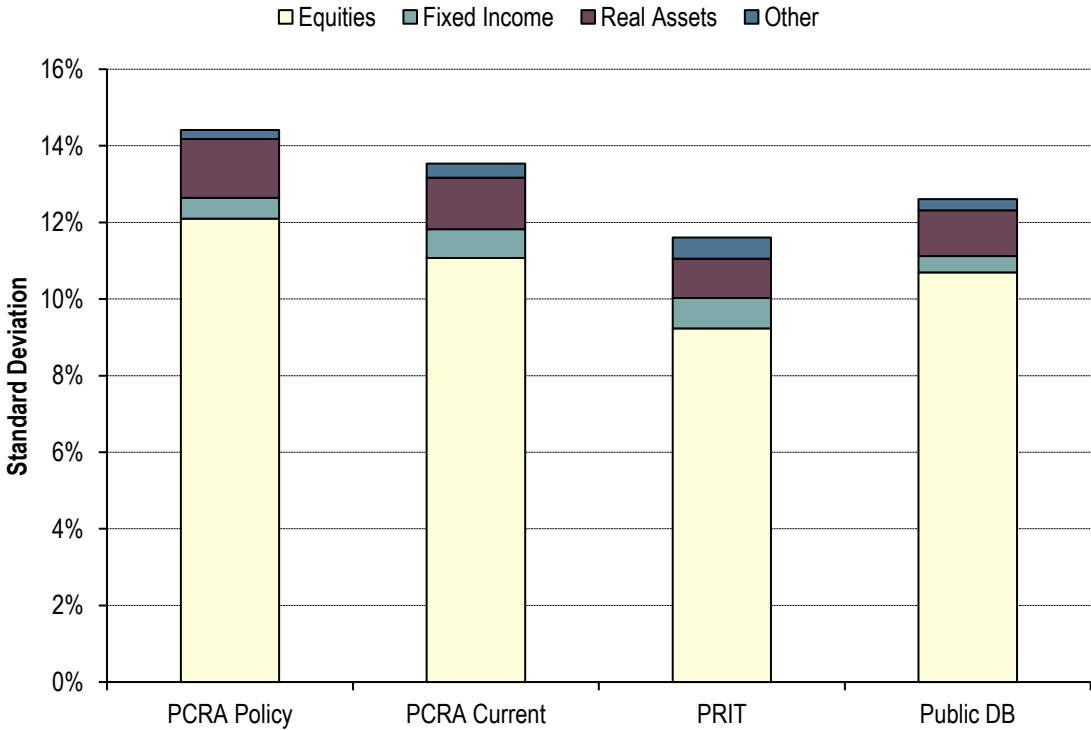


- Assets with low relative volatility, such as rate sensitive fixed income, contribute less to risk than their asset weighting implies.

<sup>1</sup> Other includes Hedge Funds. Risk allocation is calculated by multiplying the weight of the asset class by its standard deviation and its correlation with the total portfolio and then dividing this by the standard deviation of the total portfolio.



### Risk Budgeting Analysis<sup>1</sup> (Absolute Contribution to Risk)



- In each policy option, equity risk dominates the risk profile of the portfolio.

<sup>1</sup> Contribution to risk is calculated by multiplying the weight of the asset class by its standard deviation and its correlation with the total portfolio.



### MVO-Based Risk Analysis

Scenario:	PCRA Policy (%)	PCRA Current (%)	PRIT (%)	Public DB (%)
<b>Worst Case Returns (1)</b>				
One Year	-20.0	-18.9	-16.1	-17.6
Three Years (annualized)	-9.0	-8.4	-6.8	-7.7
Five Years (annualized)	-5.3	-4.9	-3.7	-4.4
Ten Years (annualized)	-1.4	-1.2	-0.5	-1.0
Twenty Years (annualized)	1.4	1.4	1.8	1.5
<b>Probability of Experiencing Negative Returns</b>				
One Year	26.6	26.3	24.6	25.7
Three Years	13.9	13.6	11.7	12.9
Five Years	8.1	7.8	6.2	7.2
Ten Years	2.4	2.2	1.5	2.0
Twenty Years	0.3	0.2	0.1	0.2
<b>Probability of Achieving at least an 7.88% Return</b>				
One Year	51.9	50.9	49.1	49.9
Three Years	53.2	51.5	48.5	49.8
Five Years	54.2	51.9	48.0	49.8
Ten Years	55.9	52.7	47.2	49.7
Twenty Years	58.3	53.8	46.1	49.6

- PRIT is structured to be the most defensive portfolio. However, it is the least likely to reach the Association’s target return over the long term.

**Value at Risk<sup>1</sup>**

Scenario	PCRA Policy	PCRA Current	PRIT	Public DB
<b>VaR (%):</b>				
1 month	-8.9	-8.4	-7.1	-7.8
3 months	-14.5	-13.6	-11.5	-12.6
6 months	-19.1	-17.9	-15.1	-16.6

**Conditional Value at Risk<sup>1</sup>**

Scenario	PCRA Policy	PCRA Current	PRIT	Public DB
<b>CVaR (%):</b>				
1 month	-10.3	-9.7	-8.2	-9.0
3 months	-16.8	-15.8	-13.4	-14.7
6 months	-22.4	-21.0	-17.8	-19.5

- According to the VaR model, the Association could lose up to 8.9% in a single month, based on the current policy targets.

<sup>1</sup> Calculated with a 99% confidence level and based upon Meketa Investment Group's Annual Asset Study. cVaR represents the average loss past the 99<sup>th</sup> percentile.



### Historical Negative Scenario Analysis<sup>1</sup> (Cumulative Return)

Scenarios	PCRA Policy (%)	PCRA Current (%)	PRIT (%)	Public DB (%)
Taper Tantrum (May - Aug 2013)	-0.1	-0.9	-0.5	-0.5
Global Financial Crisis (Oct 2007 - Mar 2009)	-33.1	-34.0	-22.8	-29.6
2008 Calendar Year	-29.5	-30.1	-21.3	-25.7
Popping of the TMT Bubble (Apr 2000 - Sep 2002)	-16.8	-17.9	-8.3	-17.1
LTCM (Jul - Aug 1998)	-10.5	-11.2	-6.9	-10.1
Asian Financial Crisis (Aug 1997 - Jan 1998)	1.0	-1.2	3.8	1.5
Rate spike (1994 Calendar Year)	2.2	1.7	3.0	1.6
Crash of 1987 (Sep - Nov 1987)	-13.9	-14.4	-7.9	-13.9
Strong dollar (Jan 1981 - Sep 1982)	0.2	-0.5	4.2	3.1
Stagflation (Jan - Mar 1980)	-3.7	-3.7	-3.9	-4.7
Stagflation (Jan 1973 - Sep 1974)	-25.7	-25.6	-18.8	-23.1

- The PRIT portfolio would have performed the best in environments of declining equity markets, due to its more conservative positioning.
- The public DB Median portfolio would have fared the worst during periods of rising rates; however, the losses in these environments are dwarfed by the losses during an equity downturn.

<sup>1</sup> See the Appendix for our scenario inputs. In periods where the ideal benchmark was not yet available we used the next closest benchmark(s) as a proxy.



### Historical Positive Scenario Analysis<sup>1</sup> (Cumulative Return)

Scenarios	PCRA Policy (%)	PCRA Current (%)	PRIT (%)	Public DB (%)
Global Financial Crisis Recovery (Mar 2009 - Nov 2009)	39.6	42.1	27.3	37.9
Best of Great Moderation (Apr 2003 - Feb 2004)	33.5	34.9	26.0	30.7
Peak of the TMT Bubble (Oct 1998 - Mar 2000)	49.9	46.5	56.9	42.5
Pre-Recession (Jun - Oct 1990)	-6.8	-7.2	-2.2	-5.8
Plummeting Dollar (Jan 1986 - Aug 1987)	59.1	66.0	47.9	58.7
Volcker Recovery (Aug 1982 - Apr 1983)	34.4	34.0	25.7	36.5
Bretton Wood Recovery (Oct 1974 - Jun 1975)	32.5	32.4	23.3	32.2

- PCRA’s current portfolio would have captured most of the upside in strongly positive markets.

<sup>1</sup> See the Appendix for our scenario inputs. In periods where the ideal benchmark was not yet available we used the next closest benchmark(s) as a proxy.





### Stress Testing: Impact of Market Movements (Expected Return under Stressed Conditions)<sup>1</sup>

Scenarios	PCRA Policy (%)	PCRA Current (%)	PRIT (%)	Public DB (%)
10-year Treasury Bond rates rise 100 bps	6.2	6.0	4.4	5.2
10-year Treasury Bond rates rise 200 bps	3.7	4.0	1.3	2.1
10-year Treasury Bond rates rise 300 bps	1.9	2.3	-1.8	0.1
Baa Spreads widen by 50 bps, High Yield by 200 bps	-0.7	-1.2	0.4	-0.5
Baa Spreads widen by 300 bps, High Yield by 1000 bps	-23.9	-24.2	-18.1	-21.6
Trade Weighted Dollar gains 10%	-2.1	-2.6	-0.7	-1.2
Trade Weighted Dollar gains 20%	-2.5	-3.4	-1.0	-1.9
U.S. Equities decline 10%	-6.7	-6.6	-4.9	-6.0
U.S. Equities decline 25%	-18.3	-18.1	-13.6	-16.7
U.S. Equities decline 40%	-30.4	-30.7	-22.4	-28.0

- Each portfolio has a different sensitivity to four major risk factors: interest rates, credit spreads, currency fluctuations, and equity values.
- The Association's primary risk factors would continue to be an equity market decline and a widening of credit spreads, no matter the policy.

<sup>1</sup> Assumes that assets not directly exposed to the factor are affected nonetheless. See the Appendix for further details.

### Stress Testing: Impact of Positive Market Movements (Expected Return under Stressed Conditions)<sup>1</sup>

Scenarios	PCRA Policy (%)	PCRA Current (%)	PRIT (%)	Public DB (%)
10-year Treasury Bond rates drop 100 bps	5.4	4.8	6.2	5.9
10-year Treasury Bond rates drop 200 bps	15.2	15.0	14.6	16.1
Baa Spreads narrow by 30bps, High Yield by 100 bps	9.0	8.7	7.4	8.4
Baa Spreads narrow by 100bps, High Yield by 300 bps	16.4	16.9	13.0	15.0
Trade Weighted Dollar drops 10%	7.8	8.2	6.8	7.3
Trade Weighted Dollar drops 20%	20.5	20.9	17.6	19.8
U.S. Equities rise 10%	7.9	7.5	6.8	7.4
U.S. Equities rise 30%	19.6	19.0	15.1	19.0

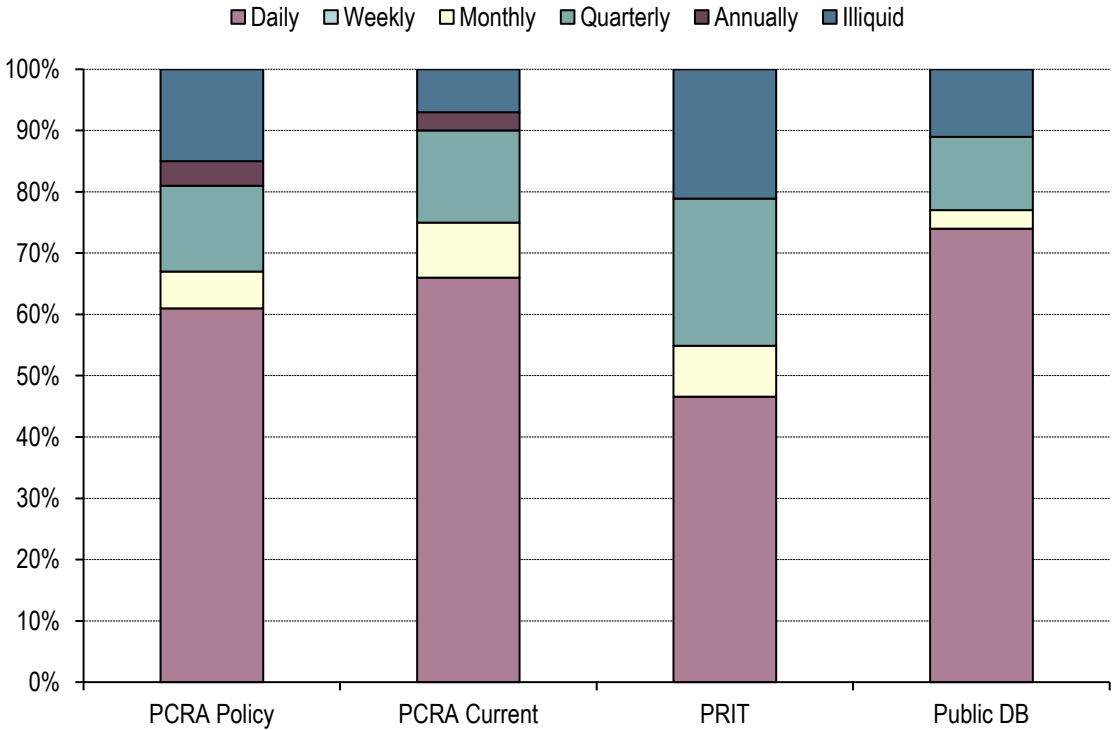
- The portfolio with the least downside risk is likewise the portfolio that participates least in upside scenarios.

<sup>1</sup> Assumes that assets not directly exposed to the factor are affected nonetheless. See the Appendix for further details.

## Liquidity Analysis

- Liquidity risk is a meaningful risk that is generally not captured in traditional asset allocation processes.
- The Association must maintain adequate liquidity to satisfy benefit payments and to avoid having to sell illiquid assets at distressed prices if possible.

### Liquidity Profile<sup>1</sup>



- PCRA’s Policy has at least 60% allocated to daily-liquid assets.

<sup>1</sup> For this analysis, we assume that emerging market debt provides monthly liquidity; core real estate and core infrastructure provide quarterly liquidity; and private equity, opportunistic debt, non-core real estate, and non-core infrastructure are illiquid.



## Recommendations

## Considerations

- Meketa Investment Group has no recommendations related to the Association's investment policy targets.
- We do recommend the Board considers the Association's current policy and positioning compared to peers in order to ensure that the portfolio is in line with both the Association's current goals and constraints.

# Appendices



## Horizon Study

- Annually, Horizon Actuarial Services, LLC publishes a survey of capital market assumptions that they collect from various investment advisors.
  - In the 2019<sup>1</sup> survey there were 34 respondents.
- The Horizon survey is a useful tool for Board members to determine whether their consultant's expectations for returns (and risk) are reasonable.

Asset Class	10-Year Average (%)	20-Year Average (%)	MIG 20-Year (%)
U.S. Equity (large cap)	6.0	7.1	8.1
Non-U.S. – Developed	6.8	7.7	8.5
Non-U.S. – Emerging	7.8	8.7	10.4
U.S. Corporate Bonds – Core	3.6	4.3	4.6
U.S. Corporate Bonds – High Yield	5.1	5.8	6.5
Non-U.S. Debt – Developed	2.6	3.4	2.3
Non-U.S. Debt – Emerging	5.6	6.1	5.3
U.S. Treasuries (cash)	2.7	3.0	2.9
TIPS	3.1	3.5	3.6
Real Estate	5.8	6.8	7.0
Hedge Funds	5.3	6.2	5.4
Commodities	3.9	4.7	5.0
Infrastructure	6.8	7.2	6.5
Private Equity	9.0	10.1	10.1
Private Debt	7.4	7.8	7.3
Inflation	2.2	2.3	2.6

<sup>1</sup> The 10-year horizon includes all 34 respondents and the 20-year horizon includes 16 respondents.

## Notes and Disclaimers

- <sup>1</sup> The returns shown in the Policy Options and Risk Analysis sections rely on estimates of expected return, standard deviation, and correlation developed by Meketa Investment Group. To the extent that actual return patterns to the asset classes differ from our expectations, the results in the table will be incorrect. However, our inputs represent our best unbiased estimates of these simple parameters.
- <sup>2</sup> The returns shown in the Policy Options and Risk Analysis sections use a lognormal distribution, which may or may not be an accurate representation of each asset classes' future return distribution. To the extent that it is not accurate in whole or in part, the probabilities listed in the table will be incorrect. As an example, if some asset classes' actual distributions are even more right-skewed than the lognormal distribution (i.e., more frequent low returns and less frequent high returns), then the probability of the portfolio hitting a given annual return will be lower than that stated in the table.
- <sup>3</sup> The standard deviation bars in the chart in the Risk Analysis section do not indicate the likelihood of a 1, 2, or 3 standard deviation event—they simply indicate the return we expect if such an event occurs. Since the likelihood of such an event is the same across allocations regardless of the underlying distribution, a relative comparison across policy choices remains valid.

## Scenario Return Inputs

Asset Class	Benchmark Used
Investment Grade Bonds	Barclays Aggregate
TIPS	Barclays U.S. TIPS
Intermediate-term Government Bonds	Barclays Treasury Intermediate
Long-term Government Bonds	Barclays Long U.S. Treasury
EM Bonds (local)	JPM GBI-EM Global Diversified Composite
Bank Loans	CSFB Leveraged Loan
High Yield Bonds	Barclays High Yield
Direct Lending - First Lien	Cliffwater Direct Lending Index
Direct Lending - Second Lien	Cliffwater Direct Lending Index
Mezzanine Debt	Cambridge Associates Mezzanine
Distressed Debt	Cambridge Associates Distressed Debt Index
Core Real Estate	NCREIF Property
Value-Added RE	NCREIF Townsend Value Added
Opportunistic RE	NCREIF Townsend Opportunistic
REITs	NAREIT Equity
Infrastructure (private)	S&P Global Infrastructure
Natural Resources (private)	S&P Global Natural Resources
Timber	NCREIF Timberland
Commodities	Bloomberg Commodity Index
U.S. Equity	Russell 3000
Public Foreign Equity (Developed)	MSCI EAFE
Public Foreign Equity (Emerging)	MSCI Emerging Markets
Private Equity	Cambridge Associates Private Equity Composite
Long-short Equity	HFRI Equity Hedge
Global Macro	HFRI Macro
Hedge Funds	HFRI Fund Weighted Composite
Private Debt	Weighted average of Distressed Debt, Mezzanine Debt and Direct Lending (2 <sup>nd</sup> Lien)

**Meketa Investment Group 2019 Annual Asset Study**  
**Twenty-Year Annualized Return and Volatility Expectations for Major Asset Classes**

Asset Class	Annualized Compounded Return (%)	Annualized Average Return (%)	Annualized Standard Deviation (%)
<b>Rate Sensitive</b>			
Cash Equivalents	2.9	2.9	1.0
Investment Grade Bonds	3.9	4.0	4.0
Long-term Government Bonds	3.7	4.4	12.0
TIPS	3.6	3.8	7.0
<b>Credit</b>			
High Yield Bonds	6.5	7.1	11.0
Bank Loans	6.1	6.5	9.0
Emerging Market Bonds (major; unhedged)	5.2	5.8	11.0
Emerging Market Bonds (local; unhedged)	5.3	6.3	14.0
Direct Lending - First Lien	6.7	7.3	11.0
Direct Lending - Second Lien	7.9	9.0	15.0
Mezzanine Debt	7.2	8.3	15.0
Distressed Debt	7.3	9.3	20.0
<b>Equities</b>			
Public U.S. Equity	8.1	9.5	17.0
Public Developed Market Equity	8.5	10.3	19.0
Public Emerging Market Equity	10.4	13.3	24.0
Private Equity Composite	10.1	13.5	26.0
<b>Real Assets</b>			
REITs	7	10.4	26.0
Core Private Real Estate	5.8	6.4	11.0
Value Added Real Estate	7.5	9.1	18.0
Opportunistic Real Estate	9.1	12.0	24.0
High Yield Real Estate Debt	6.8	8.4	18.0
Natural Resources (Private)	9.5	11.7	21.0
Commodities	5	6.4	17.0
Infrastructure (Core)	6.5	7.5	14.0
Infrastructure (Non-Core)	8.8	11.2	22.0
<b>Other</b>			
Hedge Funds	5.4	5.7	7.0

**Meketa Investment Group 2019 Annual Asset Study: Correlation Expectations**

	Investment Grade Bonds	TIPS	High Yield Bonds	U.S. Equity	Developed Market Equity	Emerging Market Equity	Private Equity	Real Estate	Natural Resources (private)	Commodities	Core Infrastructure (private)	Hedge Funds
Investment Grade Bonds	1.00											
TIPS	0.80	1.00										
High Yield Bonds	0.20	0.30	1.00									
U.S. Equity	0.05	0.00	0.70	1.00								
Developed Market Equity	0.05	0.15	0.70	0.90	1.00							
Emerging Market Equity	0.05	0.15	0.70	0.80	0.90	1.00						
Private Equity	0.05	0.05	0.65	0.85	0.80	0.75	1.00					
Real Estate	0.20	0.10	0.50	0.50	0.45	0.40	0.45	1.00				
Natural Resources (private)	0.10	0.10	0.45	0.65	0.60	0.60	0.55	0.45	1.00			
Commodities	0.05	0.30	0.40	0.35	0.55	0.60	0.30	0.15	0.65	1.00		
Core Infrastructure (private)	0.30	0.30	0.60	0.55	0.55	0.50	0.45	0.60	0.60	0.35	1.00	
Hedge Funds	0.05	0.20	0.70	0.80	0.85	0.85	0.65	0.45	0.65	0.65	0.60	1.00



# Appendix

## **Case for Emerging Market Equities**

## Background

- Emerging markets are playing an increasingly important role in the global economy.
  - Emerging markets are growing considerably faster than developed markets.
  - The investment opportunity set has changed significantly as a result.
- Institutional investors have invested significant money in emerging market equities in the past 10 years.
  - Average allocation for pension funds is 5.0%.<sup>1</sup>

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<sup>1</sup> As of June 30, 2019. Source: MSCI InvestorForce. Based on all Public Defined Benefit Plans



## What Makes a Market Emerging?

- Uniform definitions do not exist, as different bodies use differing classification systems.
  - The IMF uses per capita income, export diversification, and integration into the global financial system.
  - The UN uses a more complex approach based on factors such as income, life expectancy, and literacy.
  - The World Bank uses per capita income.
- Many investment managers and index providers use similar methodology to define the emerging market universe.
- The constituents of a common emerging market index, the MSCI Emerging Markets index<sup>1</sup>, are listed below:

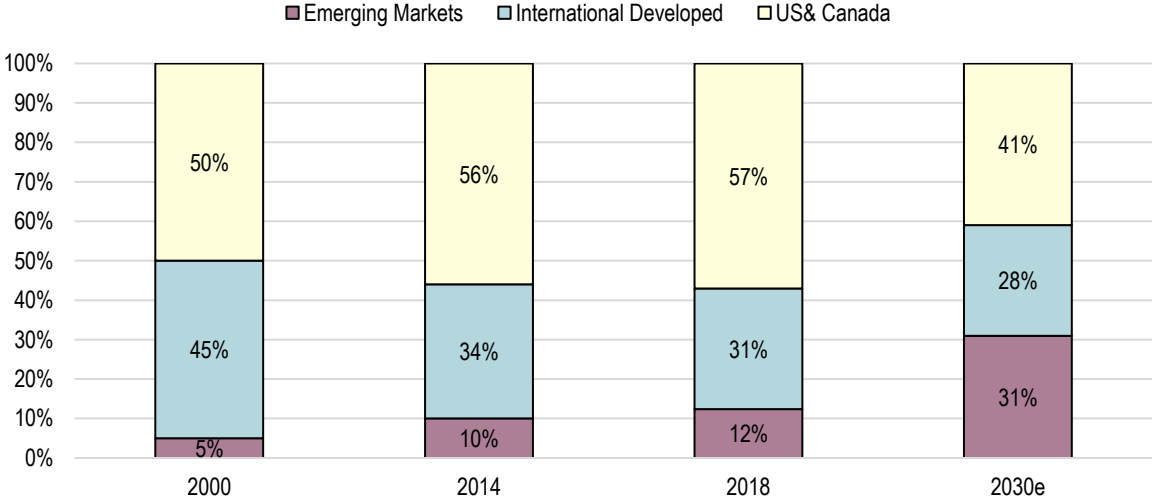
Latin America	Asia	Europe	Middle East/Africa
Brazil	China	Czech Republic	Egypt
Chile	India	Greece	Pakistan
Colombia	Indonesia	Hungary	Qatar
Mexico	Korea	Poland	South Africa
Peru	Malaysia	Russia	Turkey
Argentina	Philippines		UAE
	Taiwan		Saudi Arabia
	Thailand		

<sup>1</sup> As of July 31<sup>st</sup>, 2019

### The Emerging Market Thesis

- The primary rationale for investing in emerging markets is simple: growth.
- Emerging markets comprise roughly 80% of the world’s population and approximately 40% of global economic output.<sup>1</sup>
- The size and liquidity of the marketplace are expected to continue to increase:<sup>2</sup>

#### MSCI ACWI Index Market Weights

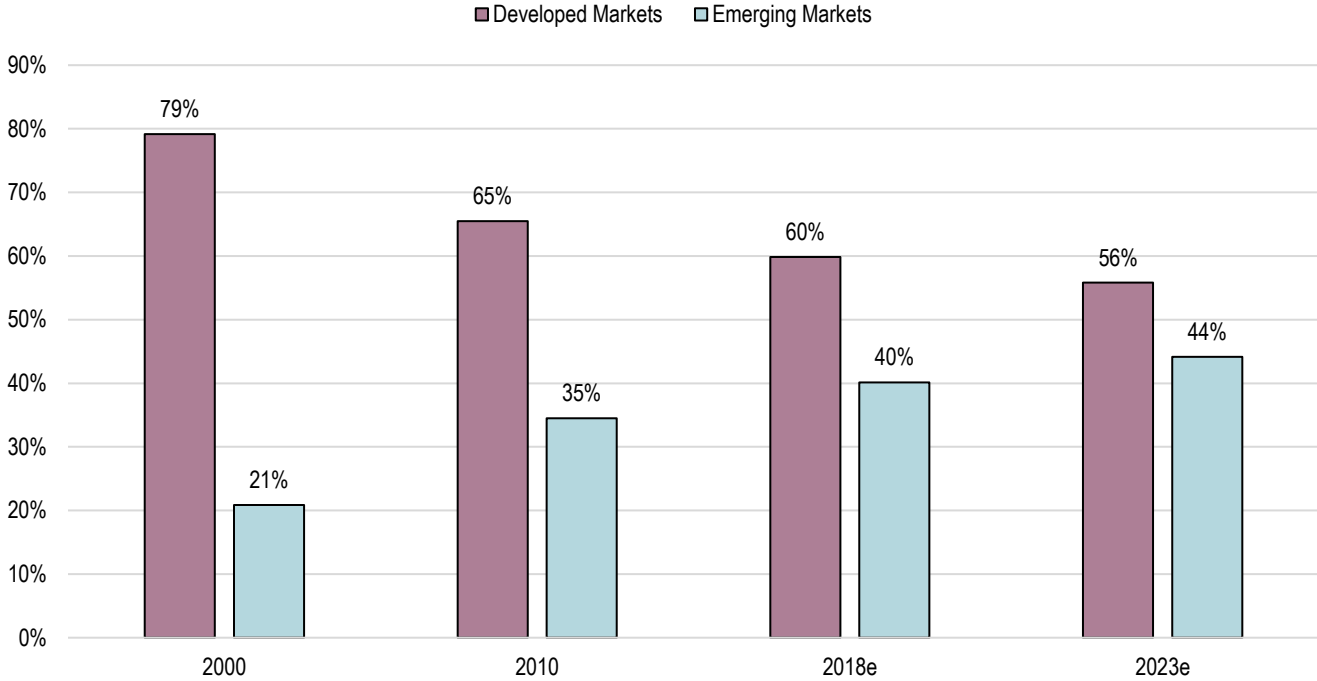


<sup>1</sup> Source: IMF, World Bank.  
<sup>2</sup> Projections for 2030 are from Goldman Sachs Global ECS Research. Data is free-float adjusted.



### The Case for Growth

- Emerging markets continue to grow as important global trading partners.
- Emerging markets are expected to represent 45% of global GDP around 2023.<sup>1</sup>



<sup>1</sup> IMF  
**M**

## The Case for Growth: Better Outlook than Developed Markets

- Economists project higher growth for emerging markets.

Emerging Markets		Developed Markets	
Country	Projected Real GDP Growth <sup>1</sup>	Country	Projected Real GDP Growth
Brazil	2.2%	Australia	2.6%
China	5.5%	France	1.6%
India	8.2%	Germany	1.2%
Mexico	2.9%	Japan	0.5%
Russia	1.5%	United Kingdom	1.6%
South Africa	1.8%	United States	1.4%
<b>Average:</b>	<b>3.7%</b>	<b>Average:</b>	<b>1.5%</b>

<sup>1</sup> Source: IMF. Projections are for 2023.



## The Case for Growth: Lower Starting Point

- Many emerging economies are starting from a lower base (GDP Per Capita).
  - Modest improvements result in large percentage increases.

### Emerging Markets<sup>1</sup>

Country	GDP per capita (est. 2018)	GDP per capita (est. 2023)	Cumulative Growth
Brazil	\$10,224	\$12,576	23%
China	\$10,088	\$15,183	51%
India	\$2,135	\$3,274	53%
Indonesia	\$4,052	\$5,480	35%
Russia	\$11,947	\$13,787	15%
South Africa	\$6,459	\$7,336	14%
<b>Average:</b>	<b>\$7,484</b>	<b>\$9,606</b>	<b>28%</b>

### Developed Markets

Country	GDP per capita (est. 2018)	GDP per capita (est. 2023)	Cumulative Growth
Australia	\$59,655	\$72,091	21%
France	\$44,934	\$53,839	20%
Germany	\$50,842	\$63,728	25%
Japan	\$40,849	\$48,036	18%
United Kingdom	\$44,177	\$51,114	16%
United States	\$62,152	\$71,805	16%
<b>Average:</b>	<b>\$50,435</b>	<b>\$60,102</b>	<b>19%</b>

<sup>1</sup> Sources: IMF



## The Case for Growth: Lower Debt Burden

- Research has shown that there exists a negative correlation between a country's debt burden and its growth.<sup>1</sup>
- The average emerging market carries a much lower debt burden than the average developed economy.

Emerging Markets		Developed Markets	
Country	Debt-to-GDP Ratio <sup>2</sup>	Country	Debt-to-GDP Ratio
Brazil	87%	Australia	42%
China	51%	France	96%
India	69%	Germany	60%
Indonesia	30%	Japan	236%
Russia	19%	Switzerland	42%
South Africa	55%	United Kingdom	86%
Taiwan	34%	United States	108%
<b>Average:</b>	<b>49%</b>	<b>Average:</b>	<b>96%</b>

<sup>1</sup> Source: Reinhart and Rogoff, "Growth in a Time of Debt" (2010).

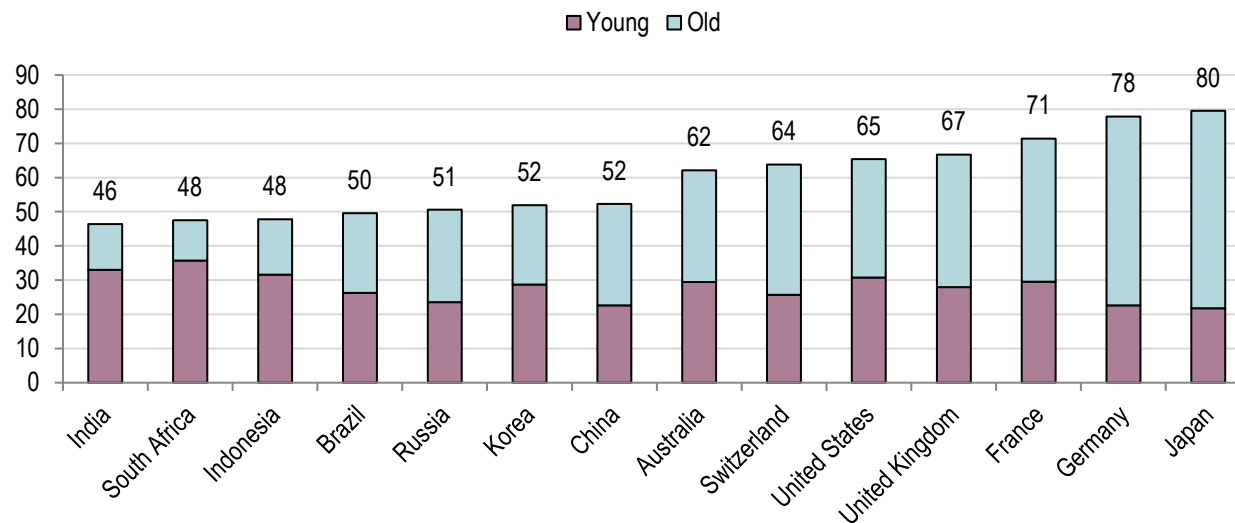
<sup>2</sup> Source: IMF 2018 estimates General government debt as Percent of GDP.



## The Case for Growth: Better Demographics

- Demographics favor emerging economies.
  - A higher proportion of working age population has led to higher productivity growth historically.<sup>1</sup>
  - This effect is known as the “demographic dividend.”
  - Hence, a lower proportion of those “dependent” on the working age population is better.

**Age Dependency Ratio (%) in 2035<sup>2</sup>**



<sup>1</sup> Source: Bloom, Canning and Sevilla, “Economic Growth and the Demographic Transition” (2001).

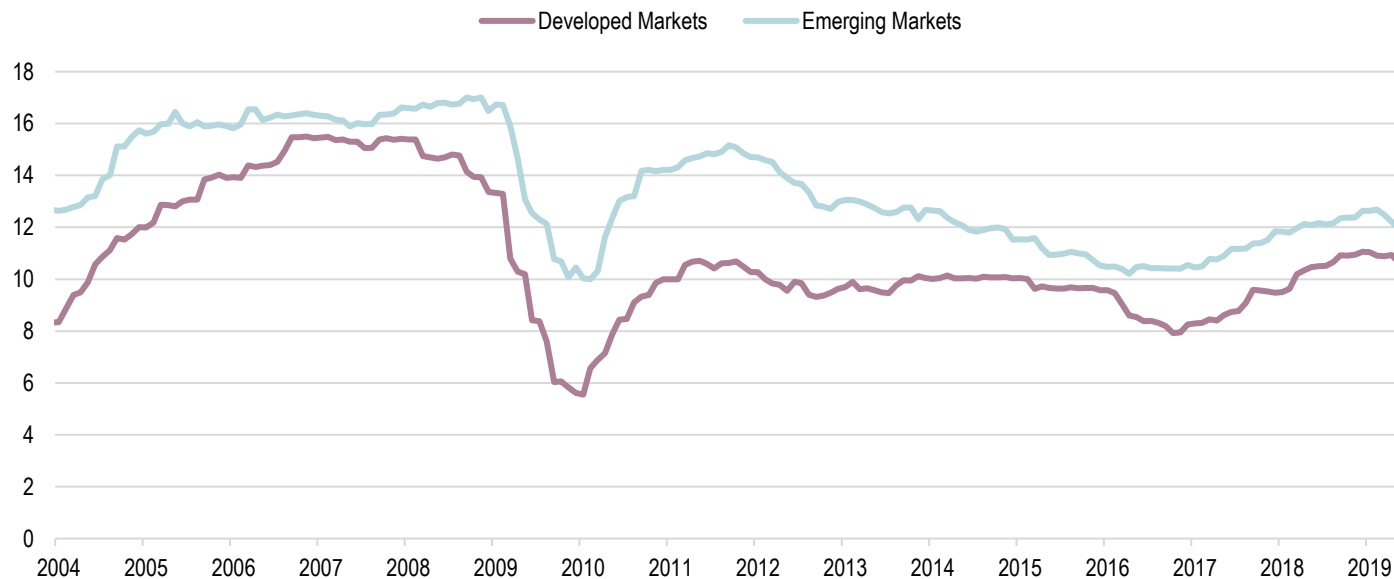
<sup>2</sup> Age Dependency Ratio is defined by the World Bank as the percentage of old (older than 64) and young (younger than 15) dependents to the working age population (ages 15 to 64). All Data is as of February 2015.



## Does Higher Growth Lead to Higher Returns?

- Higher growth in emerging markets should lead to higher equity market returns.
  - A region's companies should grow at roughly the same rate as its economy, as defined by GDP.
- The development of financial and banking systems, along with protection of property rights, is likewise critical.
- Evidence suggests that economic growth has resulted in earnings growth for emerging market stocks.

### Return on Equity(%)<sup>1</sup>



- Factors, currently unknown, may prevent future economic growth from translating to higher profitability.

<sup>1</sup> Source: MSCI, Bloomberg.

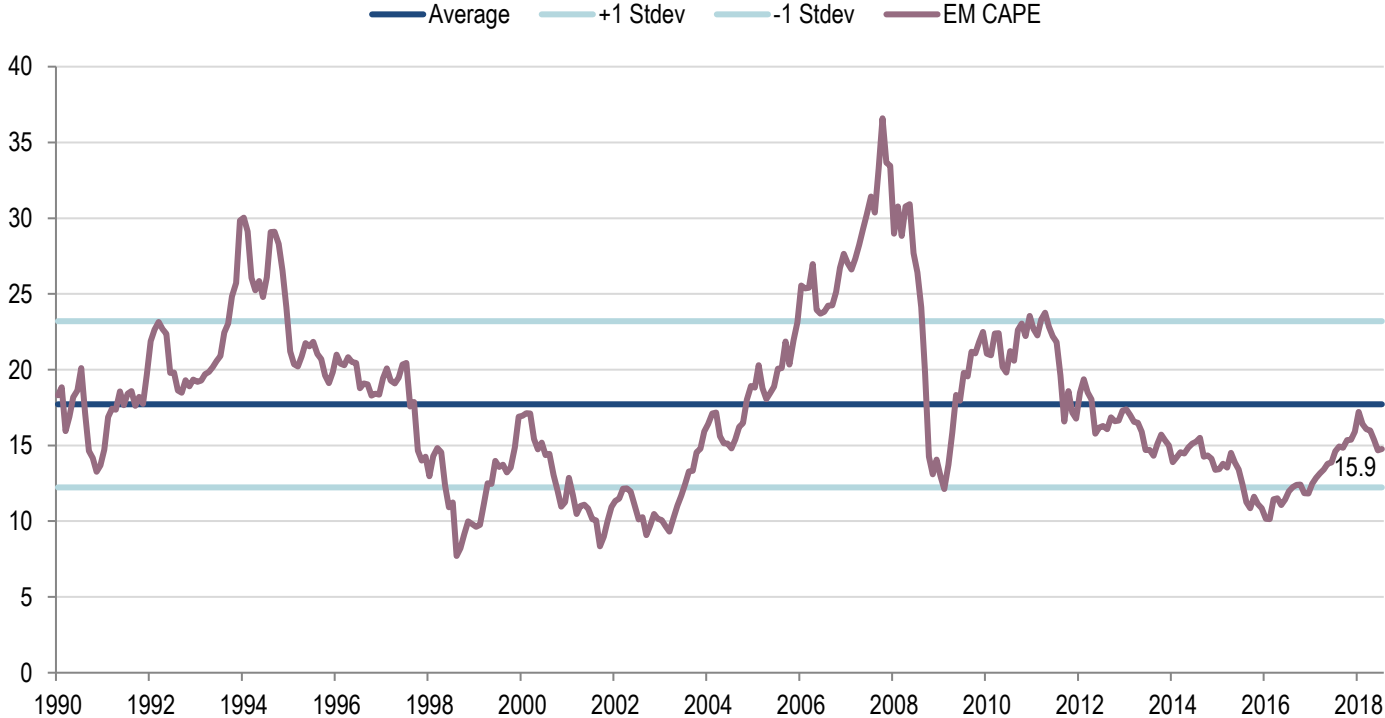




### Current Pricing

- Cyclically adjusted Emerging Market P/E ratios are slightly below their historical average.

#### Emerging Market Equities Cyclically Adjusted P/E (MSCI Emerging Markets)<sup>1</sup>

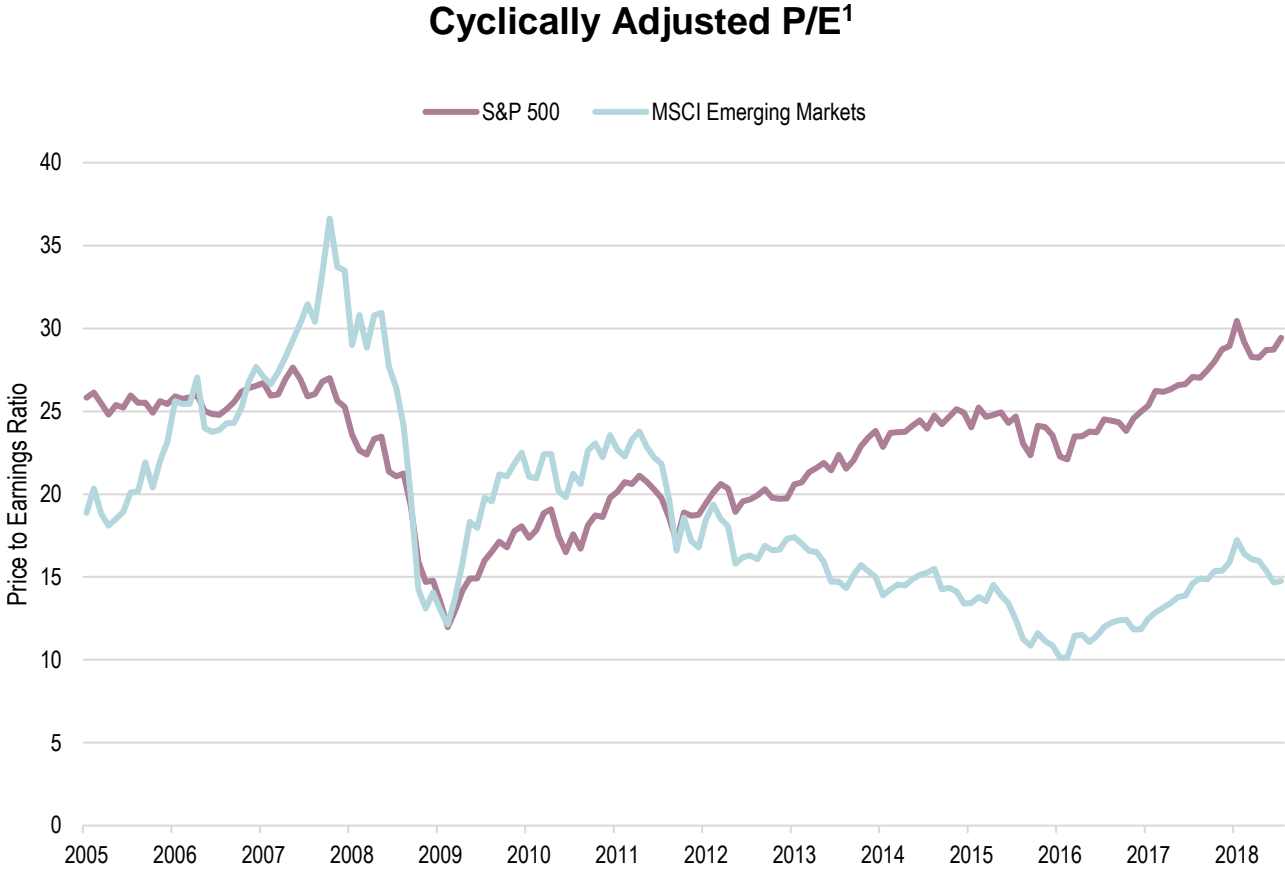


<sup>1</sup> Source: MSCI, Bloomberg and Research Affiliates. Earnings figures represent the average of monthly earnings over the previous ten years.



### Current Pricing (Continued)

- Emerging Market Equities are trading at much lower valuations than U.S. Equities.



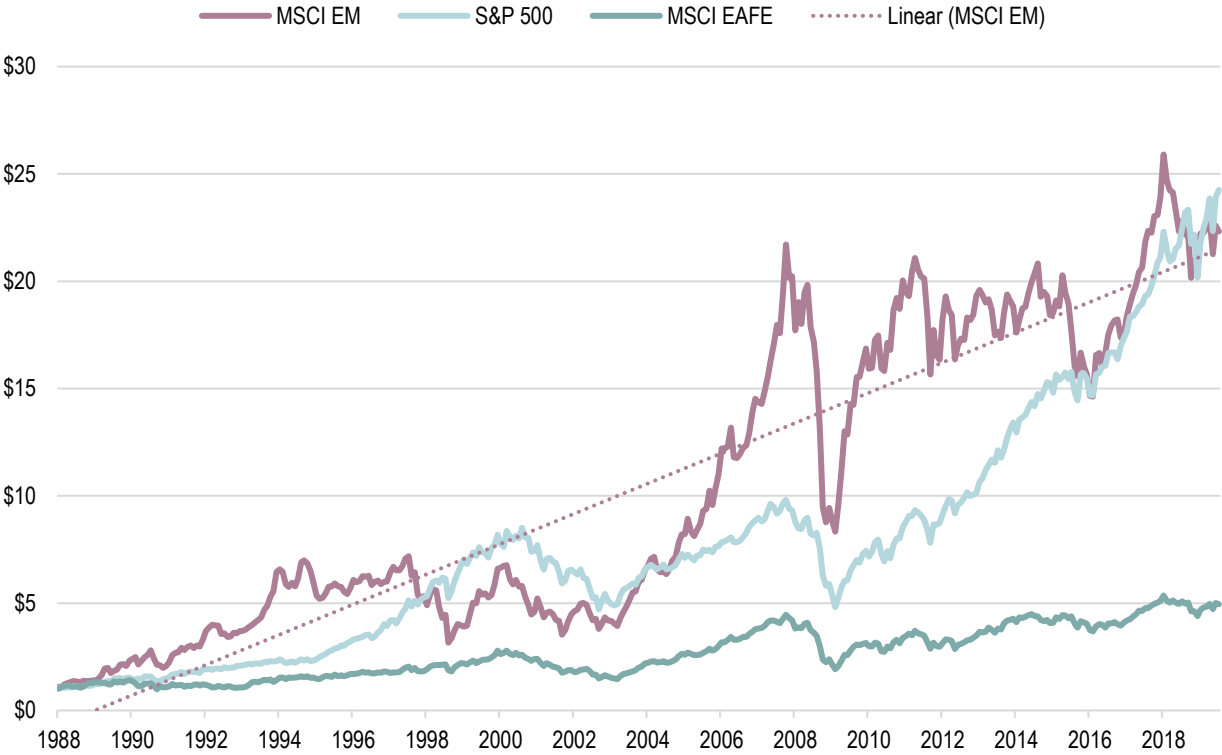
<sup>1</sup> Sources: S&P and Bloomberg for S&P 500, MSCI and Bloomberg for MSCI Emerging Markets. Earnings figures represent the average of monthly earnings over the previous ten years.



### Emerging Markets Equity Returns

- Emerging markets have experienced significant volatility around a generally outperforming trend.

**Cumulative Returns (Growth a Dollar)  
January 1988 – July 2019<sup>1</sup>**



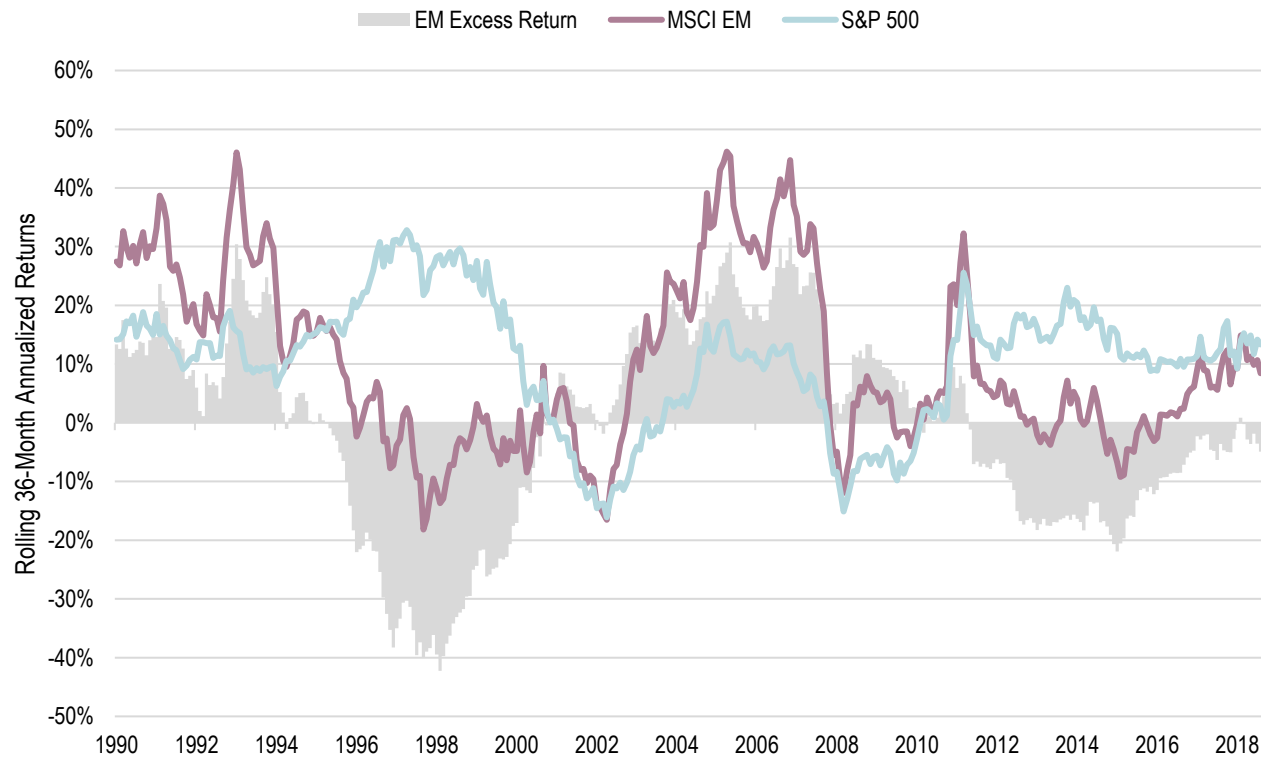
<sup>1</sup> Sources: S&P and Bloomberg for S&P 500, MSCI and Bloomberg for MSCI Emerging Markets and MSCI EAFE.



## Cyclicality

- Emerging markets equities experience long periods of outperformance and underperformance relative to US equities.

### Rolling 36-month Returns January 1988 – July 2019<sup>1</sup>

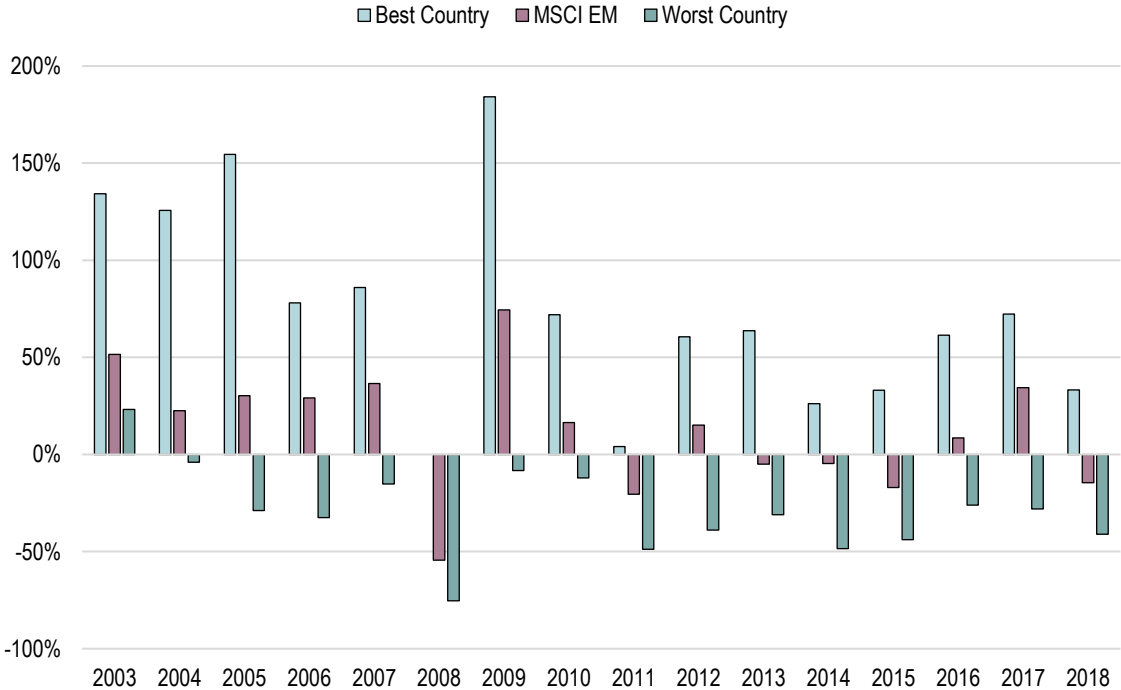


<sup>1</sup> Sources: S&P and Bloomberg for S&P 500, MSCI and Bloomberg for MSCI Emerging Markets.

**Potential Concerns: What about Volatility?**

- Individual countries have exhibited incredible gains and substantial drawdowns in the past.
- Taken together, the emerging markets universe is less volatile than its constituents.

**MSCI Emerging Markets Performance  
2003 - 2018<sup>1</sup>**



<sup>1</sup> Source: FactSet



## Potential Concerns: Event and Political Risks

- Event Risk
  - Emerging market countries have a history of being at the center of financial crises.
    - Asian financial crisis.
    - Russian default.
  - Detrimental events can occur in any country or region, regardless of whether they are classified as developed or emerging.
    - Global financial crisis.
- Political Risks
  - Are present whenever investing outside the U.S.
    - Civil insurrection.
    - State seizure of private assets.
    - Corruption, graft, and corporate theft/fraud.
  - Emerging market countries tend to fare less well than developed markets by these standards.
    - Index of Economic Freedom.
    - Corruption Perceptions Index.

## Implementation Issues

- Accessing skilled active emerging markets managers can be done through several methods:
  - Use dedicated emerging market managers.
  - Use dedicated regional managers (e.g., Latin America or Asia).
  - Allow international or global equity managers to allocate a portion of their portfolio.
- Separate accounts versus commingled funds:
  - Depends primarily on size of the mandate.
- Investment Costs
  - The median fee for a \$25 million account is 90 basis points.<sup>1</sup>
  - Higher costs from trading, custody, and accounting requirements.
  - These costs have fallen, but remain higher than investing in U.S. stocks.

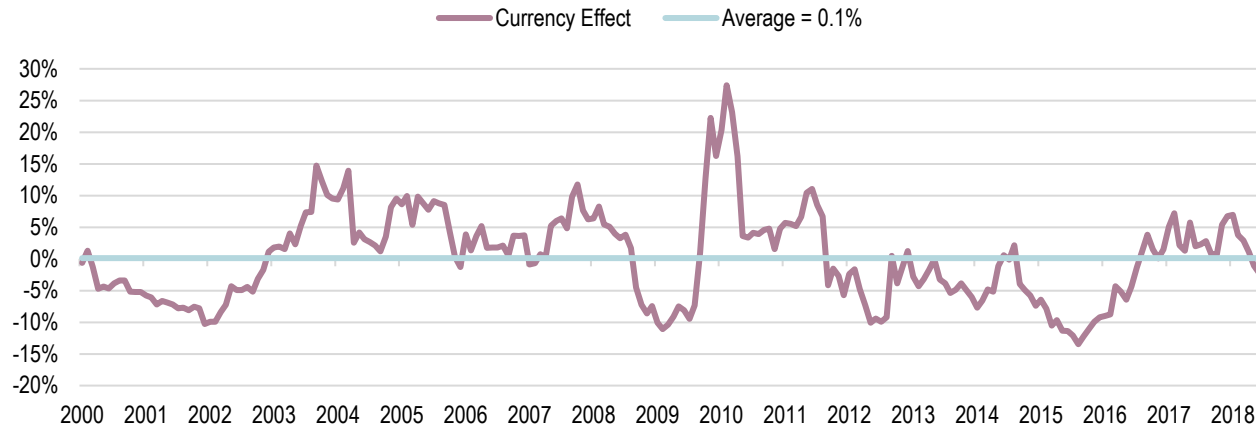
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<sup>1</sup> Source: eVestment All Emerging Markets Equity Commingled Funds as of June 30<sup>th</sup>, 2019

## Implementation Issues (continued)

- Currency Impact:
  - Effects of local currency movements on U.S.-based emerging market investors should be negligible over the long term.
  - That said, investors should be prepared for significant short-term volatility.

### Currency Effect on MSCI Emerging Markets Returns<sup>1</sup>



- Hedging emerging market currencies is costly and complex.<sup>2</sup>
- Meketa Investment Group believes the cost of fully hedging emerging market currency exposure outweighs the benefits.

<sup>1</sup> Currency Effect is defined as the trailing 12-month annualized difference in returns between MSCI Emerging Markets Returns in U.S. Dollars and Local Currency.

<sup>2</sup> The higher the interest rate differential between the U.S. and foreign country, the higher the hedging cost.



## Summary

- The long-term prospects for emerging markets appear to be bright.
  - Higher expected growth and lower debt compared to developed markets.
  - Growing middle class and solid demographic trends.
  - Valuations are reasonable.
  - Potential for higher returns.
- The risks remain.
  - Higher level of volatility.
  - Less diversification benefit versus ten years ago.
  - Event and political risks.

## Recommendation

- Meketa Investment Group recommends that most long-term investors allocate to emerging market equities according to the following guidelines:
  - Minimum allocation: 10% of total equities allocation to emerging markets.
  - Base case: most long-term investors allocate 20-25% of total equities allocation.
  - Needing high returns: consider 30% or more of total equities allocation to emerging markets.

**Private Markets Program**  
As of December 31, 2018

1. **Private Equity Program**
2. **Private Real Assets Program**
3. **Private Real Estate Program**
4. **Appendices**

The purpose of this document is to offer a review of the Retirement Association's aggregate private market investments.

As of December 31, 2018, the Retirement Association had committed \$449.5 million to 49 partnerships. The reported fair value of those 49 partnerships, in aggregate, was \$193.7 million at the end of the fourth quarter.

Aggregate Private Equity Program <sup>1</sup>		Aggregate Real Assets Program <sup>1</sup>		Aggregate Real Estate Program <sup>1</sup>	
<b>Number of Partnerships</b>	27	<b>Number of Partnerships</b>	6	<b>Number of Partnerships</b>	16
<b>Committed Capital<sup>2</sup></b>	\$179.1 million	<b>Committed Capital<sup>2</sup></b>	\$60.4 million	<b>Committed Capital<sup>2</sup></b>	\$210.0 million
<b>Capital Called</b>	\$110.4 million	<b>Capital Called</b>	\$49.6 million	<b>Capital Called</b>	\$141.9 million
<b>Distributions</b>	\$87.1 million	<b>Distributions</b>	\$2.6 million	<b>Distributions</b>	\$101.8 million
<b>Reported Value</b>	\$44.9 million	<b>Reported Value</b>	\$45.6 million	<b>Reported Value</b>	\$103.2 million
<b>Total Value Multiple</b>	1.2x	<b>Total Value Multiple</b>	1.0x	<b>Total Value Multiple</b>	1.4x
<b>Net IRR<sup>3</sup></b>	4.3%	<b>Net IRR</b>	-1.4%	<b>Net IRR<sup>3</sup></b>	5.5%
<b>Q4 2018 IRR<sup>3</sup></b>	-0.7%	<b>Q4 2018 IRR<sup>3</sup></b>	0.9%	<b>Q4 2018 IRR<sup>3</sup></b>	2.3%
<b>Trailing Year IRR<sup>3</sup></b>	-2.2%	<b>Trailing Year IRR<sup>3</sup></b>	5.1%	<b>Trailing Year IRR<sup>3</sup></b>	6.2%

<sup>1</sup> Throughout this report, numbers may not sum due to rounding.

<sup>2</sup> Some partnership commitments were made in foreign currency. This total reflects committed capital in U.S. dollars, adjusted for foreign currency exchange rates, as of the report date.

<sup>3</sup> IRR is net of Meketa Investment Group fees, but gross of prior advisory fees.

**The Retirement Association made one new commitment during the quarter: \$12.0 million to Ironsides Direct Investment Fund V, a direct partnership targeting North American companies primarily in buyout private market transactions.**

**In aggregate, approximately \$11.2 million was called by the underlying managers from the Retirement Association during the fourth quarter.**

- Ironsides Direct Investment Fund V called \$7.2 million from the Association during the fourth quarter to fund investments in Atria Wealth Solutions, a holding company for independent broker dealers; in Guy & O'Neill, LLC, a manufacturer of a wide range of wet wipes, personal care products and liquid-fill formulations for leading consumer packaged goods businesses and retailers.
- Summit Partners Growth Equity Fund IX called \$1.7 million primarily to fund an investment in Sound Inpatient Physicians, Inc., one of the leading providers of hospital medicine services in the U.S., headquartered in Tacoma, Washington.
- LLR Equity Partners V called \$1.0 million from the Association during the fourth quarter to fund investments in Eye Health America, Midigator and MedBridge.

**Distributions received by the Retirement Association from underlying partnerships during the fourth quarter totaled approximately \$2.2 million.**

- Globespan Capital Partners V distributed \$0.6 million to the Association during the quarter in proceeds received from the partial realizations of Redfin and Roku.
- TRG Growth Partnership II distributed \$0.6 million to the Association primarily in proceeds received from the sale of Wing – Franchise Services Global Limited and Supernova (Cayman) Limited.
- Euro Choice II distributed \$0.3 million to the Association as the final Partnership distribution, primarily from gains related to Enkom Infrastructure Holding AG and Premo Corporation SL.

**During the fourth quarter of 2018, the Retirement Association did not make any new commitments.**

**In aggregate, \$21.3 million was called by the underlying managers from the Retirement Association during the fourth quarter.**

- IFM Global Infrastructure (U.S.) called \$20.0 million, the capital contribution will be used to subscribe for Class A units in the open-ended Partnership.
- Basalt Infrastructure Partners II called \$1.6 million primarily to fund an investment in Detroit Renewable Energy, an essential services infrastructure business that provides reliable, cost effective district heating services to commercial and industrial customers in Downtown Detroit by generating steam from a renewable fuel source – municipal solid waste.

**Distributions received by the Retirement Association from underlying partnerships during the fourth quarter totaled \$0.1 million.**

- JPMorgan Global Maritime Investment distributed proceeds of \$0.1 million to the Association related to operating income received from Vessel Investments.

**During the fourth quarter of 2018, the Retirement Association did not make any new commitments.**

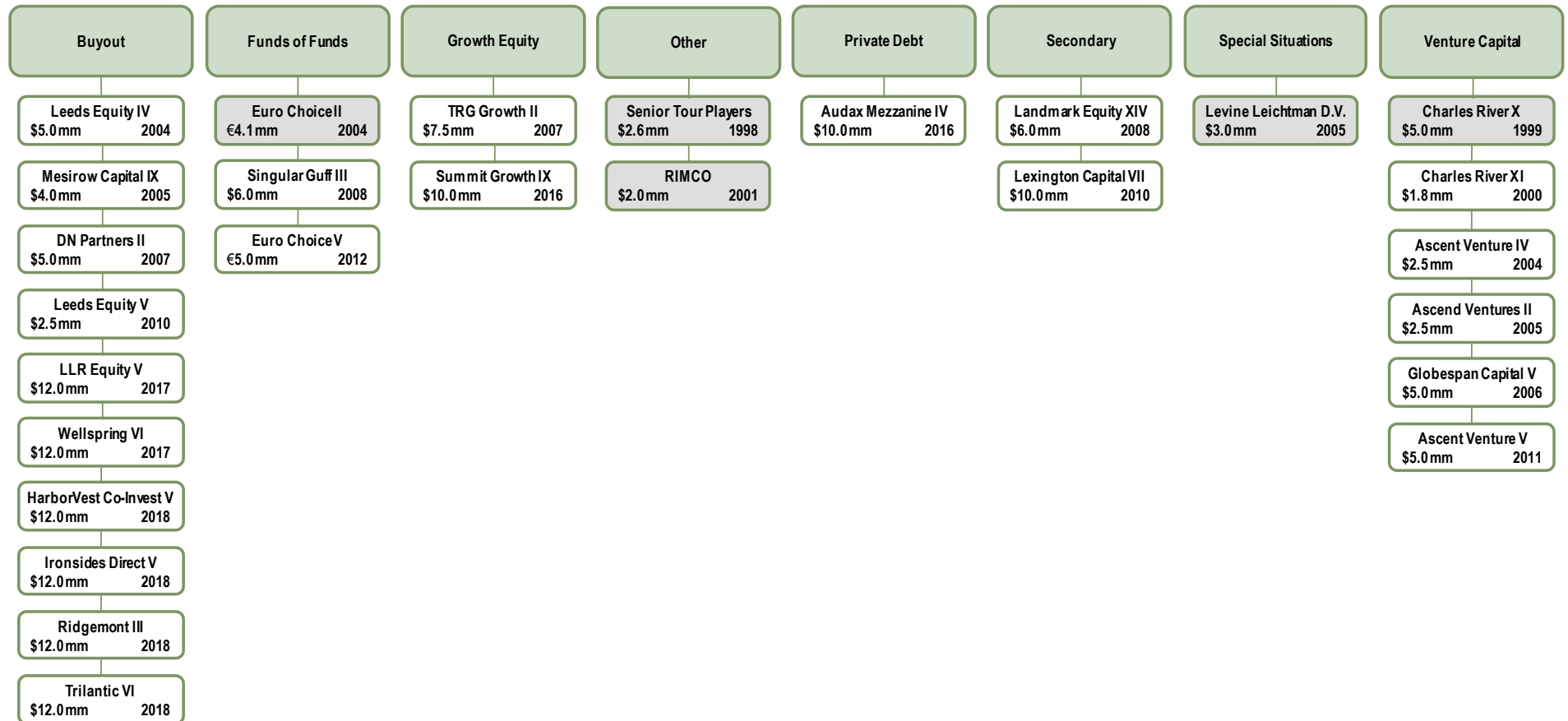
**In aggregate, \$8.9 million was called by the underlying managers from the Retirement Association during the fourth quarter.**

- TA Realty Core Property Fund called \$5.6 million, to date the Association has contributed 76% of its commitment of \$25.0 million.
- DSF Multi-Family Real Estate Fund III called \$2.4 million primarily to fund the acquisition of a 180-unit garden-style apartment community located in Abington, Massachusetts.
- AEW Partners Real Estate Fund VIII called \$0.8 million primarily to fund an investment in 24-16 Queens Plaza South, a partially completed residential building in Long Island City, to complete construction and convert the units from rental to condominium.

**Distributions received by the Retirement Association from underlying partnerships during the fourth quarter totaled approximately \$2.4 million.**

- DSF Capital Partners IV distributed \$2.1 million to the Association during the quarter from proceeds from the sale of Halstead New Rochelle in New Rochelle, NY.
- Hunt Redevelopment and Renovation Fund returned \$0.1 million to the Association during the quarter from proceeds relating to the final distribution and liquidation of the Partnership.

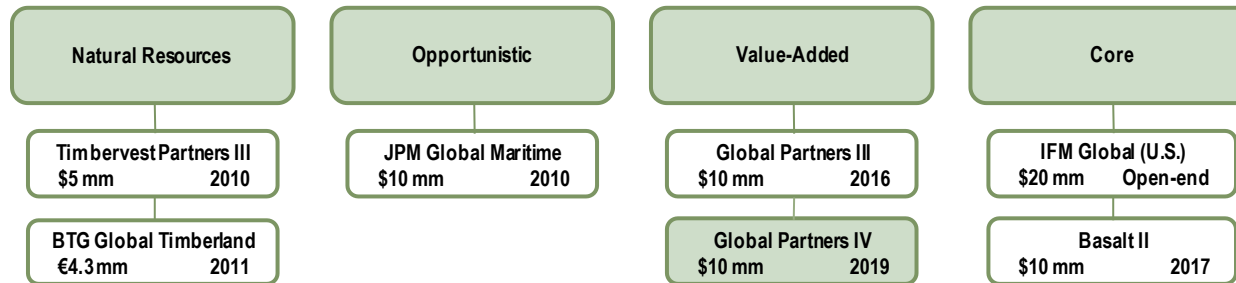
As of June 30, 2019



- White box: Current investment.
- Gray box: Liquidated Investment.

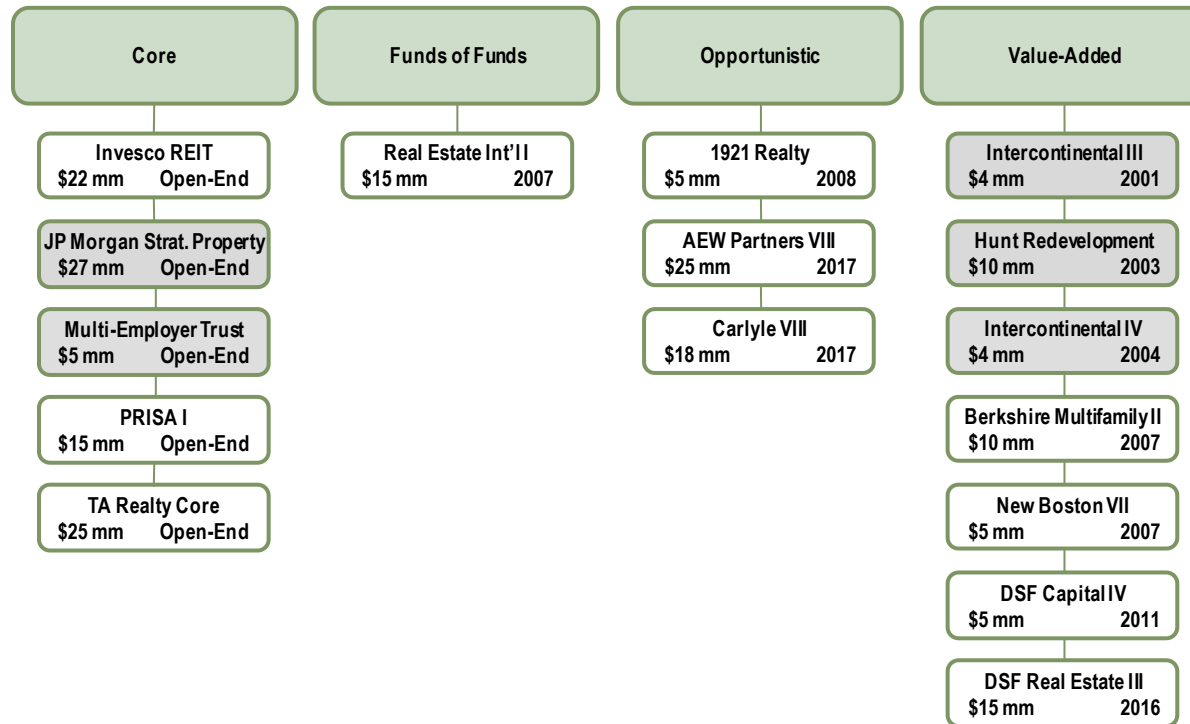


As of June 30, 2019



- White box: Current investment.
- Green box: Investment made subsequent to quarter end and, as such, is not included in any other section of this report.

As of June 30, 2019



- White box: Current Investment.
- Gray box: Liquidated Investment.

## Aggregate Private Equity Program Partnership Roster

	Vintage Year	Commitment (\$ mm)	Committed (%)	Reported Fair Value (\$ mm)	Reported Fair Value (%)
<b>Total Program</b>		<b>179.1</b>	<b>100</b>	<b>44.9</b>	<b>100</b>
<b>Fund of Funds</b>		<b>17.6</b>	<b>10</b>	<b>6.6</b>	<b>15</b>
Euro Choice II, L.P. <sup>1</sup>	2004	5.5	3	0.0	0
Siguler Guff Distressed Opportunities Fund III, L.P.	2008	6.0	3	1.1	2
Euro Choice V, L.P. <sup>2</sup>	2012	6.1	3	5.5	12
<b>Secondary</b>		<b>16.0</b>	<b>9</b>	<b>4.3</b>	<b>10</b>
Landmark Equity Partners XIV, L.P.	2008	6.0	3	1.3	3
Lexington Capital Partners VII, L.P.	2009	10.0	6	3.1	7
<b>Buyout</b>		<b>88.5</b>	<b>49</b>	<b>15.9</b>	<b>35</b>
Leeds Equity Partners IV, L.P.	2004	5.0	3	0.0	< 1
Mesirow Financial Capital Partners IX, L.P.	2005	4.0	2	0.2	< 1
DN Partners II, L.P.	2007	5.0	3	0.9	2
Leeds Equity Partners V, L.P.	2010	2.5	1	2.4	5
LLR Equity Partners V, L.P.	2017	12.0	7	2.9	6
Wellspring Capital Partners VI, L.P.	2017	12.0	7	0.4	1
HarbourVest Partners Co-Investment Fund V, L.P. <sup>3</sup>	2018	12.0	7	NM	NM
Ironsides Direct Investment Fund V, L.P.	2018	12.0	7	7.1	16
Ridgemont Equity Partners III, L.P.	2018	12.0	7	0.0	0
Trilantic Capital Partners VI (North America), L.P.	2018	12.0	7	2.2	5
<b>Special Situations</b>		<b>3.0</b>	<b>2</b>	<b>0.0</b>	<b>0</b>
Levine Leichtman Capital Partners Deep Value Fund, L.P.	2005	3.0	2	0.0	0

<sup>1</sup> In 2004, €4.1 million was committed to the Partnership. The \$5.5 million is an estimated amount based on the contributed capital and unfunded commitment as of 12/31/2018.

<sup>2</sup> In 2013, €5.0 million was committed to the Partnership. The \$6.1 million is an estimated amount based on the contributed capital and unfunded commitment as of 12/31/2018.

<sup>3</sup> Due to a negative capital account balance as of 12/31/2018, Reported Fair Value for the Partnership has been listed as "Not Meaningful". HarbourVest Partners Co-Investment Fund V has funded existing investments through a credit borrowing facility, but has not yet called capital from Limited Partners.



## Aggregate Private Equity Program Partnership Roster

	Vintage Year	Commitment (\$ mm)	Committed (%)	Reported Fair Value (\$ mm)	Reported Fair Value (%)
<b>Private Debt</b>		<b>10.0</b>	<b>6</b>	<b>2.8</b>	<b>6</b>
Audax Mezzanine Fund IV, L.P.	2016	10.0	6	2.8	6
<b>Venture Capital</b>		<b>21.8</b>	<b>12</b>	<b>7.7</b>	<b>17</b>
Charles River Partnership X, L.P.	1999	5.0	3	0.0	0
Charles River Partnership XI, L.P.	2000	1.8	1	0.1	< 1
Ascent Venture Partners IV, L.P.	2004	2.5	1	0.1	< 1
Ascend Ventures II, L.P.	2005	2.5	1	0.1	< 1
Globespan Capital Partners V, L.P.	2006	5.0	3	3.1	7
Ascent Venture Partners V, L.P.	2011	5.0	3	4.3	10
<b>Growth Equity</b>		<b>17.5</b>	<b>10</b>	<b>7.7</b>	<b>17</b>
TRG Growth Partnership II, L.P.	2007	7.5	4	1.2	3
Summit Partners Growth Equity Fund IX, L.P.	2016	10.0	6	6.5	14
<b>Other</b>		<b>4.6</b>	<b>3</b>	<b>0.0</b>	<b>0</b>
Senior Tour Players, L.P.	1998	2.6	1	0.0	0
Rimco Production Company, Inc	2001	2.0	1	0.0	0

## Aggregate Real Assets Program Partnership Roster

	Vintage Year	Commitment (\$ mm)	Committed (%)	Reported Fair Value (\$ mm)	Reported Fair Value (%)
<b>Total Program</b>		<b>60.4</b>	<b>100</b>	<b>45.6</b>	<b>100</b>
<b>Core</b>		<b>30.0</b>	<b>50</b>	<b>23.6</b>	<b>52</b>
IFM Global Infrastructure (U.S.), L.P.	Open-end	20.0	33	20.6	45
Basalt Infrastructure Partners II	2017	10.0	17	3.0	7
<b>Natural Resources</b>		<b>10.4</b>	<b>17</b>	<b>8.3</b>	<b>18</b>
Domain Timbervest Partners III, L.P.	2010	5.0	8	5.2	11
BTG Pactual Global Timberland Resources Fund, LLC <sup>1</sup>	2011	5.4	9	3.1	7
<b>Opportunistic</b>		<b>10.0</b>	<b>17</b>	<b>6.7</b>	<b>15</b>
JPMorgan Global Maritime Investment	2010	10.0	17	6.7	15
<b>Value-Added</b>		<b>10.0</b>	<b>17</b>	<b>7.0</b>	<b>15</b>
Global Infrastructure Partners III, L.P.	2016	10.0	17	7.0	15

<sup>1</sup> In 2010, €4.3 million was committed to the Partnership. The \$5.4 million is an estimated amount based on the contributed capital and unfunded commitment as of 12/31/2018.

## Aggregate Real Estate Program Partnership Roster

	Vintage Year	Commitment (\$ mm)	Committed (%)	Reported Fair Value (\$ mm)	Reported Fair Value (%)
<b>Total Program</b>		<b>210.0</b>	<b>100</b>	<b>103.2</b>	<b>100</b>
<b>Fund of Funds</b>		<b>15.0</b>	<b>7</b>	<b>3.2</b>	<b>3</b>
Real Estate International Partnership Fund I, L.P.	2007	15.0	7	3.2	3
<b>Core</b>		<b>94.0</b>	<b>45</b>	<b>78.6</b>	<b>76</b>
PRISA I	1970	15.0	7	41.2	40
Multi-Employer Property Trust	1982	5.0	2	0.0	0
JPMorgan Strategic Property	1998	27.0	13	0.0	0
Invesco Equity Real Estate Securities Trust	2005	22.0	10	16.4	16
TA Realty Core Property Fund, L.P.	2018	25.0	12	21.0	20
<b>Opportunistic</b>		<b>48.0</b>	<b>23</b>	<b>9.7</b>	<b>9</b>
1921 Realty, Inc.	2008	5.0	2	0.9	1
AEW Partners Real Estate Fund VIII, L.P.	2017	25.0	12	7.4	7
Carlyle Realty Partners VIII, L.P.	2017	18.0	9	1.5	1
<b>Value-Added</b>		<b>53.0</b>	<b>25</b>	<b>11.8</b>	<b>11</b>
Intercontinental Real Estate Investment Fund III, LLC	2001	4.0	2	0.0	0
Hunt Redevelopment and Renovation Fund, LLC	2003	10.0	5	0.0	0
Intercontinental Real Estate Investment Fund IV, LLC	2004	4.0	2	0.0	0
Berkshire Multifamily Value Fund II, L.P.	2007	10.0	5	0.0	0
New Boston Institutional Fund VII, L.P.	2007	5.0	2	0.3	< 1
DSF Capital Partners IV, L.P.	2011	5.0	2	0.0	< 1
DSF Multi-Family Real Estate Fund III, L.P.	2016	15.0	7	11.5	11

## Aggregate Program Performance Summary

Investment Strategy	Capital Committed (\$ mm)	Total Contributions Paid to Date <sup>1</sup> (\$ mm)	Unfunded Commitment <sup>2</sup> (\$ mm)	Total Distributions Received to Date (\$ mm)	Reported Fair Value (\$ mm)	Reported Fair Value Plus Distributions (\$ mm)	Net IRR <sup>3</sup> (%)	Inv. Multiple <sup>4</sup> (x)
<b>Total Program</b>	<b>179.1</b>	<b>110.4</b>	<b>74.4</b>	<b>87.1</b>	<b>44.9</b>	<b>132.0</b>	<b>4.3</b>	<b>1.2</b>
<b>Vintage Year 1998</b>	<b>2.6</b>	<b>2.7</b>	<b>0.0</b>	<b>0.1</b>	<b>0.0</b>	<b>0.1</b>	<b>-25.5</b>	<b>0.0</b>
Senior Tour Players, L.P. Other	2.6	2.7	0.0	0.1	0.0	0.1	-25.5	0.0
<b>Vintage Year 1999</b>	<b>5.0</b>	<b>4.4</b>	<b>0.6</b>	<b>2.2</b>	<b>0.0</b>	<b>2.2</b>	<b>-14.9</b>	<b>0.5</b>
Charles River Partnership X, L.P. Venture Capital	5.0	4.4	0.6	2.2	0.0	2.2	-14.9	0.5
<b>Vintage Year 2000</b>	<b>1.8</b>	<b>1.8</b>	<b>0.0</b>	<b>2.0</b>	<b>0.1</b>	<b>2.1</b>	<b>3.5</b>	<b>1.2</b>
Charles River Partnership XI, L.P. Venture Capital	1.8	1.8	0.0	2.0	0.1	2.1	3.5	1.2
<b>Vintage Year 2001</b>	<b>2.0</b>	<b>2.0</b>	<b>0.0</b>	<b>7.5</b>	<b>0.0</b>	<b>7.5</b>	<b>29.1</b>	<b>3.7</b>
Rimco Production Company, Inc Other	2.0	2.0	0.0	7.5	0.0	7.5	29.1	3.7
<b>Vintage Year 2004</b>	<b>13.0</b>	<b>13.3</b>	<b>0.4</b>	<b>14.7</b>	<b>0.1</b>	<b>14.7</b>	<b>2.0</b>	<b>1.1</b>
Ascent Venture Partners IV, L.P. Venture Capital	2.5	2.5	0.0	0.4	0.1	0.5	-28.5	0.2
Euro Choice II, L.P. <sup>5</sup> Fund of Funds	5.5	5.5	0.4	8.0	0.0	8.0	7.0	1.5
Leeds Equity Partners IV, L.P. Buyout	5.0	5.3	0.0	6.2	0.0	6.2	3.2	1.2
<b>Vintage Year 2005</b>	<b>9.5</b>	<b>11.0</b>	<b>0.3</b>	<b>7.9</b>	<b>0.3</b>	<b>8.2</b>	<b>-5.3</b>	<b>0.7</b>
Ascend Ventures II, L.P. Venture Capital	2.5	2.3	0.2	0.9	0.1	1.0	-8.8	0.4
Levine Leichtman Capital Partners Deep Value Fund, L.P. Special Situations	3.0	4.9	0.0	5.1	0.0	5.1	1.3	1.0
Mesirow Financial Capital Partners IX, L.P. Buyout	4.0	3.8	0.2	1.9	0.2	2.1	-7.2	0.6

<sup>1</sup> In certain instances, Total Contributions Paid to Date may exceed Capital Committed as certain partnerships may call fees outside of commitment and most partnerships reserve a limited right to recycle capital and/or recall distributions.

<sup>2</sup> Unfunded Commitment amounts are an approximation due to the inclusion of recallable distributions.

<sup>3</sup> The Net IRR calculations were performed by Meketa Investment Group. Total Program IRR is net of fees, expenses, and carried interest for each partnership and net of Meketa Investment Group fees. Partnership and Vintage Year IRRs are net of partnership fees but gross of Meketa Investment Group fees.

<sup>4</sup> The Inv. Multiple calculations were performed by Meketa Investment Group. Total Program Inv. Multiple is net of fees, expenses, and carried interest for each partnership and net of Meketa Investment Group fees. Partnership and Vintage Year Inv. Multiples are net of partnership fees but gross of Meketa Investment Group fees.

<sup>5</sup> In 2004, €4.1 million was committed to the Partnership. The \$5.5 million is an estimated amount based on the contributed capital and unfunded commitment as of 12/31/2018.



## Aggregate Program Performance Summary

	Investment Strategy	Capital Committed (\$ mm)	Total Contributions Paid to Date <sup>1</sup> (\$ mm)	Unfunded Commitment <sup>2</sup> (\$ mm)	Total Distributions Received to Date (\$ mm)	Reported Fair Value (\$ mm)	Reported Fair Value Plus Distributions (\$ mm)	Net IRR <sup>3</sup> (%)	Inv. Multiple <sup>4</sup> (x)
<b>Vintage Year 2006</b>		<b>5.0</b>	<b>4.9</b>	<b>0.1</b>	<b>7.1</b>	<b>3.1</b>	<b>10.3</b>	<b>12.6</b>	<b>2.1</b>
	Globespan Capital Partners V, L.P.	Venture Capital	5.0	4.9	0.1	7.1	3.1	10.3	2.1
<b>Vintage Year 2007</b>		<b>12.5</b>	<b>9.8</b>	<b>2.7</b>	<b>7.5</b>	<b>2.1</b>	<b>9.6</b>	<b>-0.5</b>	<b>1.0</b>
	DN Partners II, L.P.	Buyout	5.0	2.4	2.6	0.0	0.9	-11.9	0.4
	TRG Growth Partnership II, L.P.	Growth Equity	7.5	7.5	0.1	7.5	1.2	3.3	1.2
<b>Vintage Year 2008</b>		<b>12.0</b>	<b>12.1</b>	<b>0.2</b>	<b>14.5</b>	<b>2.3</b>	<b>16.8</b>	<b>8.9</b>	<b>1.4</b>
	Landmark Equity Partners XIV, L.P.	Secondary	6.0	6.3	0.0	6.4	7.7	6.7	1.2
	Siguler Guff Distressed Opportunities Fund III, L.P.	Fund of Funds	6.0	5.8	0.2	8.1	9.1	10.2	1.6
<b>Vintage Year 2009</b>		<b>10.0</b>	<b>10.5</b>	<b>0.0</b>	<b>12.4</b>	<b>3.1</b>	<b>15.4</b>	<b>14.6</b>	<b>1.5</b>
	Lexington Capital Partners VII, L.P.	Secondary	10.0	10.5	0.0	12.4	15.4	14.6	1.5
<b>Vintage Year 2010</b>		<b>2.5</b>	<b>3.6</b>	<b>0.0</b>	<b>3.5</b>	<b>2.4</b>	<b>5.9</b>	<b>14.9</b>	<b>1.7</b>
	Leeds Equity Partners V, L.P.	Buyout	2.5	3.6	0.0	3.5	5.9	14.9	1.7
<b>Vintage Year 2011</b>		<b>5.0</b>	<b>5.0</b>	<b>0.2</b>	<b>3.4</b>	<b>4.3</b>	<b>7.7</b>	<b>9.5</b>	<b>1.5</b>
	Ascent Venture Partners V, L.P.	Venture Capital	5.0	5.0	0.2	3.4	7.7	9.5	1.5
<b>Vintage Year 2012</b>		<b>6.1</b>	<b>5.7</b>	<b>0.9</b>	<b>1.9</b>	<b>5.5</b>	<b>7.4</b>	<b>9.1</b>	<b>1.3</b>
	Euro Choice V, L.P. <sup>6</sup>	Fund of Funds	6.1	5.7	0.9	1.9	7.4	9.1	1.3
<b>Vintage Year 2016</b>		<b>20.0</b>	<b>10.0</b>	<b>10.0</b>	<b>2.0</b>	<b>9.2</b>	<b>11.3</b>	<b>19.0</b>	<b>1.1</b>
	Audax Mezzanine Fund IV, L.P.	Private Debt	10.0	3.6	6.4	1.0	3.8	7.3	1.1
	Summit Partners Growth Equity Fund IX, L.P.	Growth Equity	10.0	6.4	3.6	1.0	7.5	29.6	1.2
<b>Vintage Year 2017</b>		<b>24.0</b>	<b>4.0</b>	<b>20.4</b>	<b>0.4</b>	<b>3.3</b>	<b>3.8</b>	<b>NM</b>	<b>0.9</b>
	LLR Equity Partners V, L.P.	Buyout	12.0	3.4	9.1	0.4	3.3	NM	1.0

<sup>6</sup> In 2013, €5.0 million was committed to the Partnership. The \$6.1 million is an estimated amount based on the contributed capital and unfunded commitment as of 12/31/2018.





## Aggregate Program Performance Summary

	Investment Strategy	Capital Committed (\$ mm)	Total Contributions Paid to Date <sup>1</sup> (\$ mm)	Unfunded Commitment <sup>2</sup> (\$ mm)	Total Distributions Received to Date (\$ mm)	Reported Fair Value (\$ mm)	Reported Fair Value Plus Distributions (\$ mm)	Net IRR <sup>3</sup> (%)	Inv. Multiple <sup>4</sup> (x)
	Wellspring Capital Partners VI, L.P.	12.0	0.6	11.4	0.0	0.4	0.4	NM	0.7
	<b>Vintage Year 2018</b>	<b>48.0</b>	<b>9.6</b>	<b>38.4</b>	<b>0.0</b>	<b>9.0</b>	<b>9.0</b>	<b>NM</b>	<b>0.9</b>
	HarbourVest Partners Co-Investment Fund V, L.P. <sup>7</sup>	12.0	0.0	12.0	NA	NM	NM	NM	NA
	Ironsides Direct Investment Fund V, L.P.	12.0	7.2	4.8	0.0	7.1	7.1	NM	1.0
	Ridgemont Equity Partners III, L.P.	12.0	0.0	12.0	NA	NA	NA	NA	NA
	Trilantic Capital Partners VI (North America), L.P.	12.0	2.4	9.6	0.0	2.2	2.2	NM	0.9

<sup>7</sup> Due to a negative capital account balance as of 12/31/2018, Reported Fair Value for the Partnership has been listed as "Not Meaningful". HarbourVest Partners Co-Investment Fund V has funded existing investments through a credit borrowing facility, but has not yet called capital from Limited Partners.

Aggregate Program Performance Summary

Investment Strategy	Capital Committed (\$ mm)	Total Contributions Paid to Date <sup>1</sup> (\$ mm)	Unfunded Commitment <sup>2</sup> (\$ mm)	Total Distributions Received to Date (\$ mm)	Reported Fair Value (\$ mm)	Reported Fair Value Plus Distributions (\$ mm)	Net IRR <sup>3</sup> (%)	Inv. Multiple <sup>4</sup> (x)
<b>Total Program</b>	<b>60.4</b>	<b>49.6</b>	<b>11.2</b>	<b>2.6</b>	<b>45.6</b>	<b>48.2</b>	<b>-1.4</b>	<b>1.0</b>
<b>Total Closed-end</b>	<b>40.4</b>	<b>29.6</b>	<b>11.2</b>	<b>2.6</b>	<b>25.1</b>	<b>27.7</b>	<b>-2.1</b>	<b>0.9</b>
<b>Vintage Year 2010</b>	<b>15.0</b>	<b>14.2</b>	<b>1.1</b>	<b>2.0</b>	<b>11.9</b>	<b>13.9</b>	<b>-0.4</b>	<b>1.0</b>
Domain Timbervest Partners III, L.P.	5.0	5.0	0.0	1.0	5.2	6.3	3.9	1.3
JPMorgan Global Maritime Investment	10.0	9.2	1.1	0.9	6.7	7.7	-4.6	0.8
<b>Vintage Year 2011</b>	<b>5.4</b>	<b>5.0</b>	<b>0.4</b>	<b>0.2</b>	<b>3.1</b>	<b>3.3</b>	<b>-7.4</b>	<b>0.7</b>
BTG Pactual Global Timberland Resources Fund, LLC <sup>5</sup>	5.4	5.0	0.4	0.2	3.1	3.3	-7.4	0.7
<b>Vintage Year 2016</b>	<b>10.0</b>	<b>7.3</b>	<b>2.8</b>	<b>0.3</b>	<b>7.0</b>	<b>7.4</b>	<b>1.3</b>	<b>1.0</b>
Global Infrastructure Partners III, L.P.	10.0	7.3	2.8	0.3	7.0	7.4	1.3	1.0
<b>Vintage Year 2017</b>	<b>10.0</b>	<b>3.1</b>	<b>6.9</b>	<b>0.0</b>	<b>3.0</b>	<b>3.1</b>	<b>NM</b>	<b>1.0</b>
Basalt Infrastructure Partners II	10.0	3.1	6.9	0.0	3.0	3.1	NM	1.0
<b>Total Open-end</b>	<b>20.0</b>	<b>20.0</b>	<b>0.0</b>	<b>0.0</b>	<b>20.6</b>	<b>20.6</b>	<b>11.9</b>	<b>1.0</b>
IFM Global Infrastructure (U.S.), L.P.	20.0	20.0	0.0	0.0	20.6	20.6	11.9	1.0

<sup>1</sup> In certain instances, Total Contributions Paid to Date may exceed Capital Committed as certain partnerships may call fees outside of commitment and most partnerships reserve a limited right to recycle capital and/or recall distributions.

<sup>2</sup> Unfunded Commitment amounts are an approximation due to the inclusion of recallable distributions.

<sup>3</sup> The Net IRR calculations were performed by Meketa Investment Group. Total Program IRR is net of fees, expenses, and carried interest for each partnership and net of Meketa Investment Group fees. Partnership and Vintage Year IRRs are net of partnership fees but gross of Meketa Investment Group fees.

<sup>4</sup> The Inv. Multiple calculations were performed by Meketa Investment Group. Total Program Inv. Multiple is net of fees, expenses, and carried interest for each partnership and net of Meketa Investment Group fees. Partnership and Vintage Year Inv. Multiples are net of partnership fees but gross of Meketa Investment Group fees.

<sup>5</sup> In 2010, €4.3 million was committed to the Partnership. The \$5.4 million is an estimated amount based on the contributed capital and unfunded commitment as of 12/31/2018.



## Aggregate Program Performance Summary

	Investment Strategy	Capital Committed (\$ mm)	Total Contributions Paid to Date <sup>1</sup> (\$ mm)	Unfunded Commitment <sup>2</sup> (\$ mm)	Total Distributions Received to Date (\$ mm)	Reported Fair Value (\$ mm)	Reported Fair Value Plus Distributions (\$ mm)	Net IRR <sup>3</sup> (%)	Inv. Multiple <sup>4</sup> (x)
<b>Total Program</b>		<b>210.0</b>	<b>141.9</b>	<b>76.3</b>	<b>101.8</b>	<b>103.2</b>	<b>205.0</b>	<b>5.5</b>	<b>1.4</b>
<b>Total Closed-end</b>		<b>116.0</b>	<b>76.7</b>	<b>43.4</b>	<b>58.9</b>	<b>24.7</b>	<b>83.6</b>	<b>1.8</b>	<b>1.1</b>
<b>Vintage Year 2001</b>		<b>4.0</b>	<b>4.6</b>	<b>0.0</b>	<b>5.7</b>	<b>0.0</b>	<b>5.7</b>	<b>2.4</b>	<b>1.2</b>
Intercontinental Real Estate Investment Fund III, LLC	Value-Added	4.0	4.6	0.0	5.7	0.0	5.7	2.4	1.2
<b>Vintage Year 2003</b>		<b>10.0</b>	<b>9.0</b>	<b>1.9</b>	<b>11.7</b>	<b>0.0</b>	<b>11.7</b>	<b>5.1</b>	<b>1.3</b>
Hunt Redevelopment and Renovation Fund, LLC	Value-Added	10.0	9.0	1.9	11.7	0.0	11.7	5.1	1.3
<b>Vintage Year 2004</b>		<b>4.0</b>	<b>4.6</b>	<b>0.0</b>	<b>2.4</b>	<b>0.0</b>	<b>2.4</b>	<b>-8.0</b>	<b>0.5</b>
Intercontinental Real Estate Investment Fund IV, LLC	Value-Added	4.0	4.6	0.0	2.4	0.0	2.4	-8.0	0.5
<b>Vintage Year 2007</b>		<b>30.0</b>	<b>26.9</b>	<b>4.3</b>	<b>30.9</b>	<b>3.5</b>	<b>34.4</b>	<b>5.0</b>	<b>1.3</b>
Berkshire Multifamily Value Fund II, L.P.	Value-Added	10.0	11.3	0.0	17.9	0.0	17.9	11.0	1.6
New Boston Institutional Fund VII, L.P.	Value-Added	5.0	3.0	2.0	3.7	0.3	4.1	5.9	1.3
Real Estate International Partnership Fund I, L.P.	Fund of Funds	15.0	12.7	2.3	9.2	3.2	12.4	-0.4	1.0
<b>Vintage Year 2008</b>		<b>5.0</b>	<b>5.4</b>	<b>0.0</b>	<b>0.0</b>	<b>0.9</b>	<b>0.9</b>	<b>-16.0</b>	<b>0.2</b>
1921 Realty, Inc.	Opportunistic	5.0	5.4	0.0	0.0	0.9	0.9	-16.0	0.2
<b>Vintage Year 2011</b>		<b>5.0</b>	<b>5.0</b>	<b>0.0</b>	<b>6.0</b>	<b>0.0</b>	<b>6.0</b>	<b>4.8</b>	<b>1.2</b>
DSF Capital Partners IV, L.P.	Value-Added	5.0	5.0	0.0	6.0	0.0	6.0	4.8	1.2

<sup>1</sup> Certain instances, Total Contributions Paid to Date may exceed Capital Committed as certain partnerships may call fees outside of commitment and most partnerships reserve a limited right to recycle capital and/or recall distributions.

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Aggregate Program Performance Summary

	Investment Strategy	Capital Committed (\$ mm)	Total Contributions Paid to Date <sup>1</sup> (\$ mm)	Unfunded Commitment <sup>2</sup> (\$ mm)	Total Distributions Received to Date (\$ mm)	Reported Fair Value (\$ mm)	Reported Fair Value Plus Distributions (\$ mm)	Net IRR <sup>3</sup> (%)	Inv. Multiple <sup>4</sup> (x)
<b>Vintage Year 2016</b>		<b>15.0</b>	<b>11.4</b>	<b>4.0</b>	<b>0.8</b>	<b>11.5</b>	<b>12.3</b>	<b>6.2</b>	<b>1.1</b>
	DSF Multi-Family Real Estate Fund III, L.P.	15.0	11.4	4.0	0.8	11.5	12.3	6.2	1.1
<b>Vintage Year 2017</b>		<b>43.0</b>	<b>9.8</b>	<b>33.2</b>	<b>1.4</b>	<b>8.8</b>	<b>10.3</b>	<b>NM</b>	<b>1.0</b>
	AEW Partners Real Estate Fund VIII, L.P.	25.0	8.5	16.5	1.4	7.4	8.8	NM	1.0
	Carlyle Realty Partners VIII, L.P.	18.0	1.3	16.7	0.0	1.5	1.5	NM	1.1
<b>Total Open-end</b>		<b>94.0</b>	<b>65.2</b>	<b>32.9</b>	<b>42.9</b>	<b>78.6</b>	<b>121.5</b>	<b>7.2</b>	<b>1.9</b>
	Invesco Equity Real Estate Securities Trust	22.0	23.9	0.0	27.0	16.4	43.4	8.1	1.8
	JPMorgan Strategic Property	27.0	0.0	27.0	NA	NA	NA	NA	NA
	Multi-Employer Property Trust	5.0	5.0	0.0	15.9	0.0	15.9	6.5	3.2
	PRISA I	15.0	17.2	0.0	0.0	41.2	41.2	6.7	2.4
	TA Realty Core Property Fund, L.P.	25.0	19.1	5.9	0.0	21.0	21.0	16.5	1.1

Open-end Real Estate Time-Weighted Performance

	4Q18 (%)	1 YR (%)	3 YR (%)	5 YR (%)	Since Inception (%)	Inception Date
<b>Private Real Estate</b>	<b>1.4</b>	<b>7.3</b>	<b>6.8</b>	<b>9.3</b>	<b>6.8</b>	<b>12/30/1999</b>
Invesco Equity Real Estate Securities Trust	0.0	3.8	4.8	8.3	9.3	11/20/2002
Wilshire REIT	-6.9	-4.8	2.1	7.9	NA	
PRISA I	1.6	7.7	7.5	9.8	6.9	6/30/2004
NCREIF ODCE	1.9	7.7	7.8	9.7	7.5	
NCREIF ODCE Equal Weighted (net)	1.4	7.3	7.5	9.6	7.2	
TA Realty Core Property Fund, L.P.	2.3	NA	NA	NA	64.6	3/21/2018
NCREIF ODCE	1.8	8.3	8.2	10.4	8.3	
NCREIF ODCE Equal Weighted (net)	1.4	7.3	7.5	9.6	7.3	

The IRR (internal rate of return) and investment multiple are the most meaningful measures of performance for a private equity fund. IRR measures how assets are performing in relation to time. Investment multiple shows the cash on cash return generated on the invested capital by the underlying assets.

As of December 31, 2018, the Retirement Association's Private Equity Program generated a 4.3% net IRR and a 1.2x net TVM. After adjusting for capital calls and distributions that occurred during the quarter, the reported fair value of the Program decreased by approximately \$0.3 million or 0.7%, which was primarily driven by decreases in the valuations of Globespan Capital Partners V (\$0.3 million or 7.8%) and Ironsides Direct Investment Fund V (\$0.2 million or 4.5%), partially offset by increases in the net valuations of Leeds Equity Partners V (\$0.2 million or 10.6%), Summit Partners Growth Equity Fund IX (\$0.2 million or 3.6%), and Wellspring Capital Partners VI (\$0.1 million or 24.0%).

As of December 31, 2018, the Retirement Association's Real Assets Program generated a -1.4% net IRR and a 1.0x net TVM. After adjusting for capital calls and distributions that occurred during the quarter, the reported fair value of the Program increased by approximately \$0.4 million or 1.2%. Performance was primarily driven by increases in the valuations of IFM Global Infrastructure (U.S.) (\$0.6 million or 5.7%) and Basalt Infrastructure Partners II (\$0.2 million or 10.4%).

As of December 31, 2018, the Retirement Association's Real Estate Program generated a 5.5% net IRR and a 1.4x net investment multiple. After adjusting for capital calls and distributions that occurred during the quarter, the reported fair value of the Program increased by approximately \$2.4 million, or 2.4%. Performance was primarily driven by increases in the valuations of AEW Partners Real Estate Fund VIII (\$0.7 million or 10.4%), PRISA I (\$0.6 million or 1.6%), and Carlyle Realty Partners VIII (\$0.5 million or 51.5%).

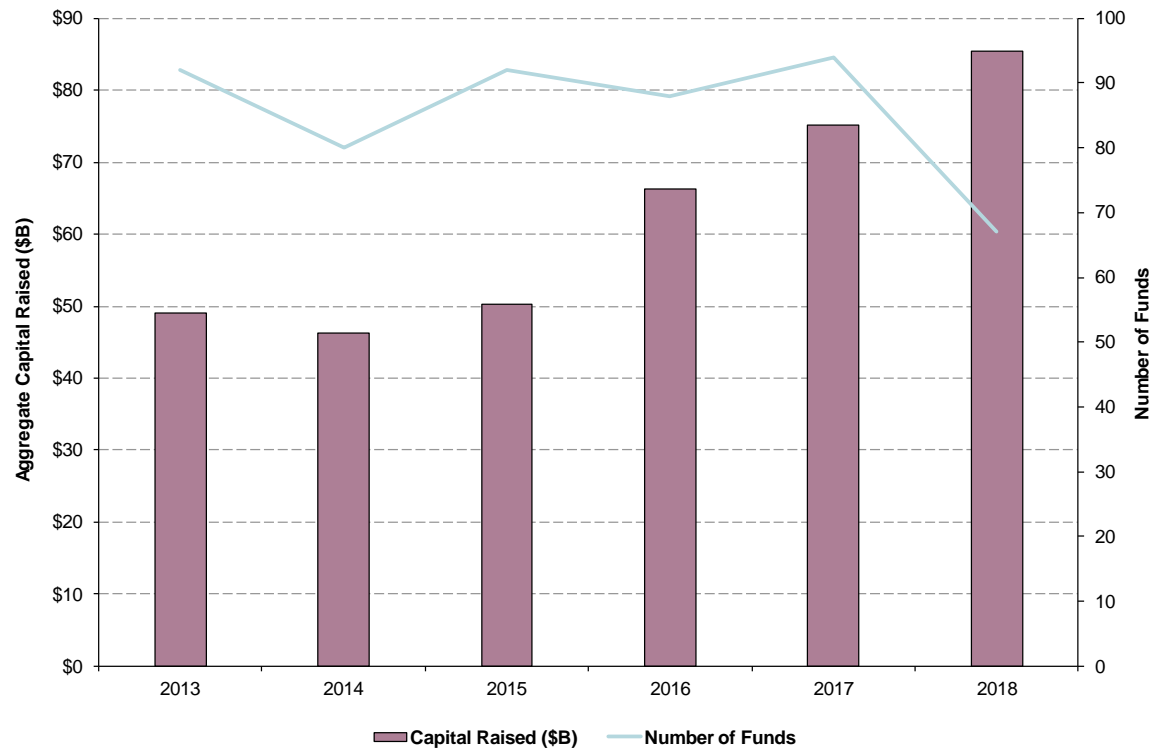
# Appendices

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Meketa Investment Group has prepared this report on the basis of sources believed to be reliable. The data are based on matters as they are known as of the date of preparation of the report, and not as of any future date, and will not be updated or otherwise revised to reflect information that subsequently becomes available.



### Global Quarterly Unlisted Infrastructure Fundraising<sup>1</sup>



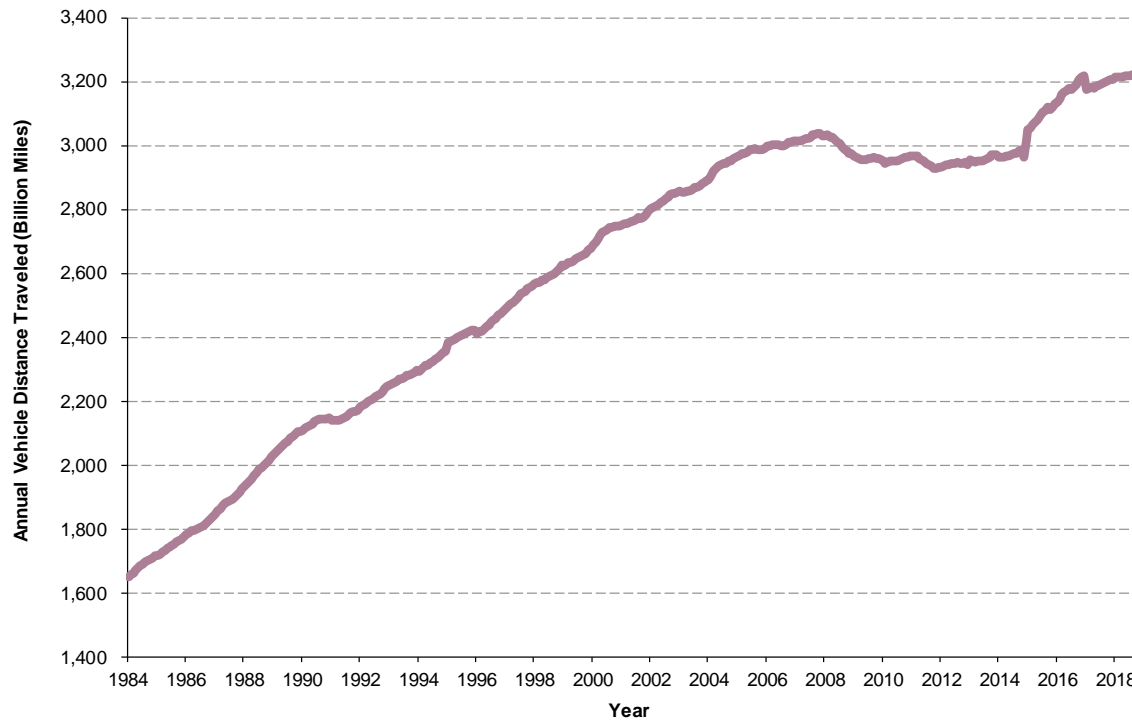
Capital raised in 2018 exceeded 2017. However, the market continues to trend toward fewer funds at higher target sizes. This year, the average fund size raised has exceeded \$1 billion, with Q4 posting a \$0.9 billion average sized fund. As of December 31, 2018, a total of 208 unlisted infrastructure funds were in market, according to Preqin, with a combined fundraising target of approximately \$193 billion.

The majority of infrastructure capital continues to focus on the developed markets of North America and Europe, accounting for nearly 93% of the capital raised in 2018 and 55 of the 67 funds closed this year. There were only four funds consisting of \$4.1 billion raised in Asia and eight funds consisting of \$2.2 billion in the rest of the world. Notable final closes held in Q4 2018 included Alinda Infrastructure Fund III's (\$5.0 billion), Fondi Italiani Per Le Infrastrutture III's (€2.5 billion), and Copenhagen Infrastructure III's (€3.5 billion).

<sup>1</sup> Source: Preqin Private Capital Fundraising Update, Q4 2018.



### Moving 12-month Total on All U.S. Roads<sup>1</sup>



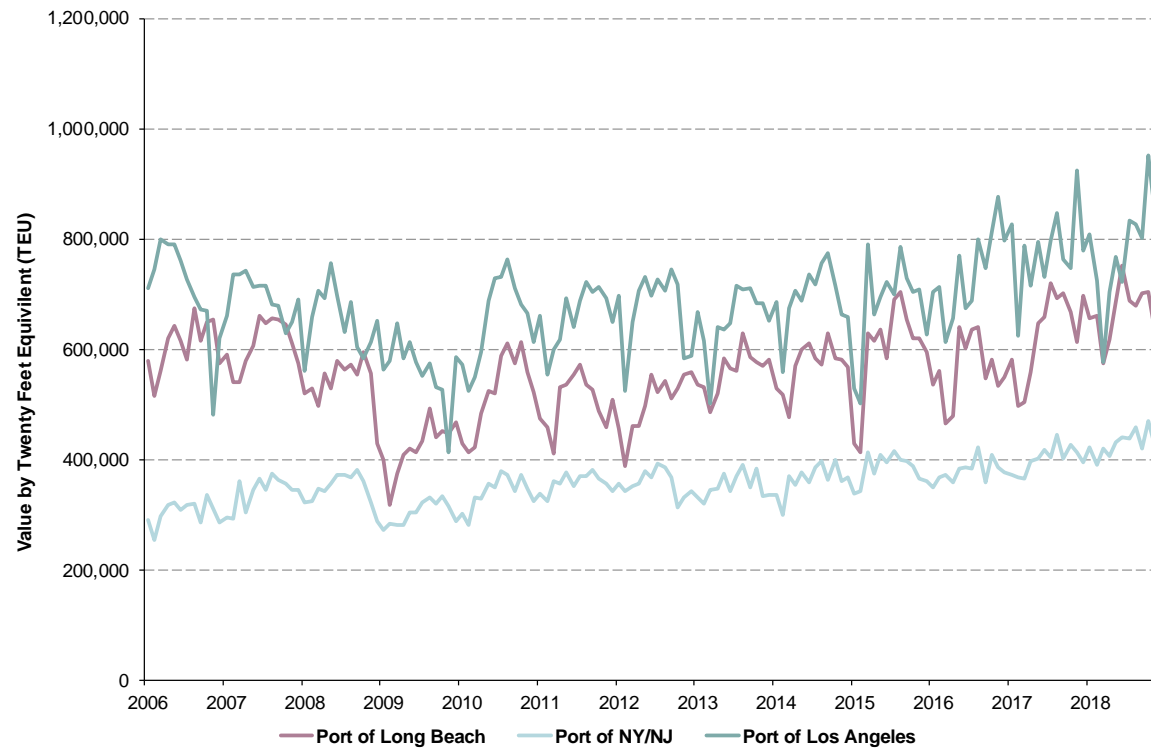
During the fourth quarter of 2018, travel on U.S. roads totaled approximately 809 billion miles. This represented an increase of 1.4% over the same period in 2017. For the Year to Date, Federal Highway Administration data showed vehicle miles traveled increased by 16,360 million miles, up 0.5% over the Year to Date of Q4 2017.

In Q4 2018, the average U.S. price of a gallon of gas came down to a monthly average of \$2.82 per gallon, with a peak of \$2.99. This compares to \$2.53 and \$2.76 seen in 2017. According to INRIX, Boston, Washington, D.C., and Chicago rank as the top three cities in the U.S. in which drivers spend the most hours in traffic.

<sup>1</sup> Source: U.S. Department of Transportation, Federal Highway Administration: Office of Highway Policy Information.



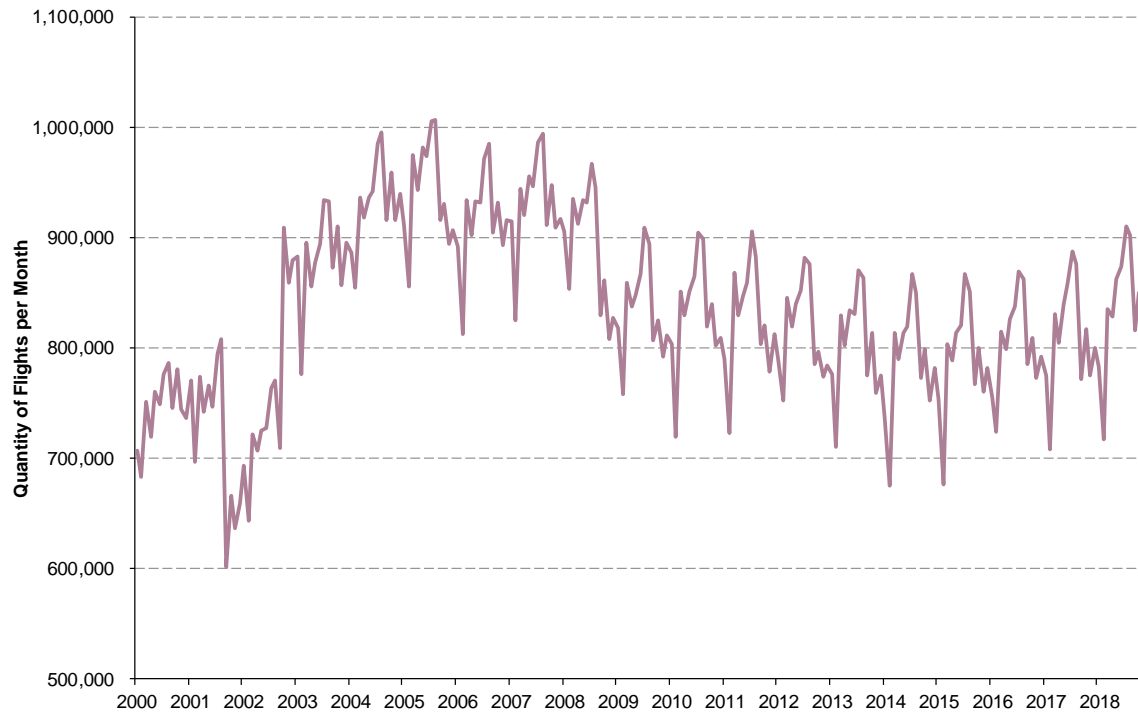
### U.S. Port Activity – Container Trade in TEUs



The chart represents the top three U.S. ports by container volume, as measured by twenty-foot equivalent units (TEU). Activity at the three ports provides a high-level representation of the volume of imports received into the U.S. more broadly.

During the fourth quarter of 2018, volumes at the three ports increased by approximately 410,600 TEU, or 7.3% over same period in 2017. On a year-over-year basis, the combined port volumes increased by 1,003,067 TEU, or 4.6%, over the prior 12 month period. All three ports saw an increase in year-over-year activity. The Port of Long Beach recorded an increase of 7.2% (546,000 TEU), the Port of NY/NJ reported an increase of 7.1% (341,000 TEU) and the Port of Los Angeles recorded an increase of 1.2% (115,000 TEU) from the prior 12 months.

### Total U.S. Domestic and International Flights<sup>1</sup>



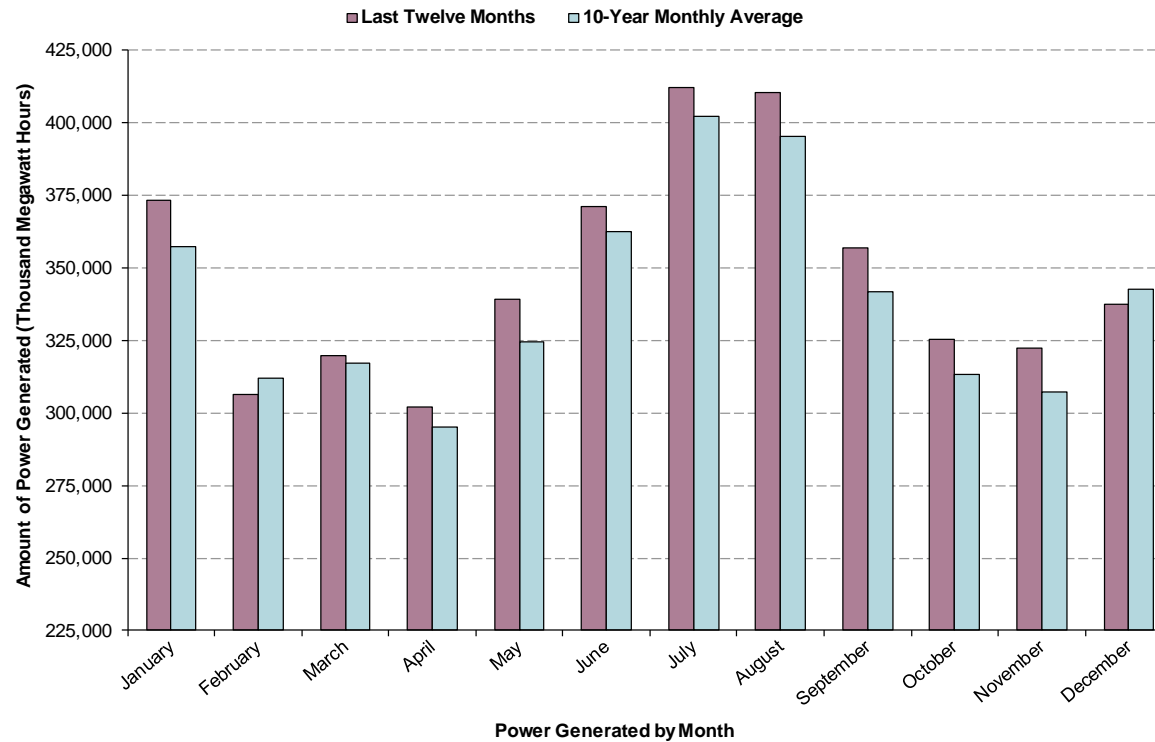
The chart above represents all U.S. domestic and international flights, excluding foreign point-to-point flights by month. Air traffic is cyclical with peaks in the summer months and declines in the winter months.

There were over 87,700 more flights during the fourth quarter of 2018, representing a 3.7% increase, compared to the same period in 2017. Air traffic activity also increased by 2.7% for the 12 months ending December 31, 2018 over the previous period. In addition to the number of flights during the fourth quarter increasing year-over-year, the total number of passengers travelling on U.S. and international airlines increased by 4.8% from 2017 to 2018, which indicates higher capacity factors among airlines compared to the prior period.

<sup>1</sup> Source: Bureau of Transportation Statistics: Flights, All U.S., and Foreign Carriers.



### Total U.S. Power Generation<sup>1</sup>

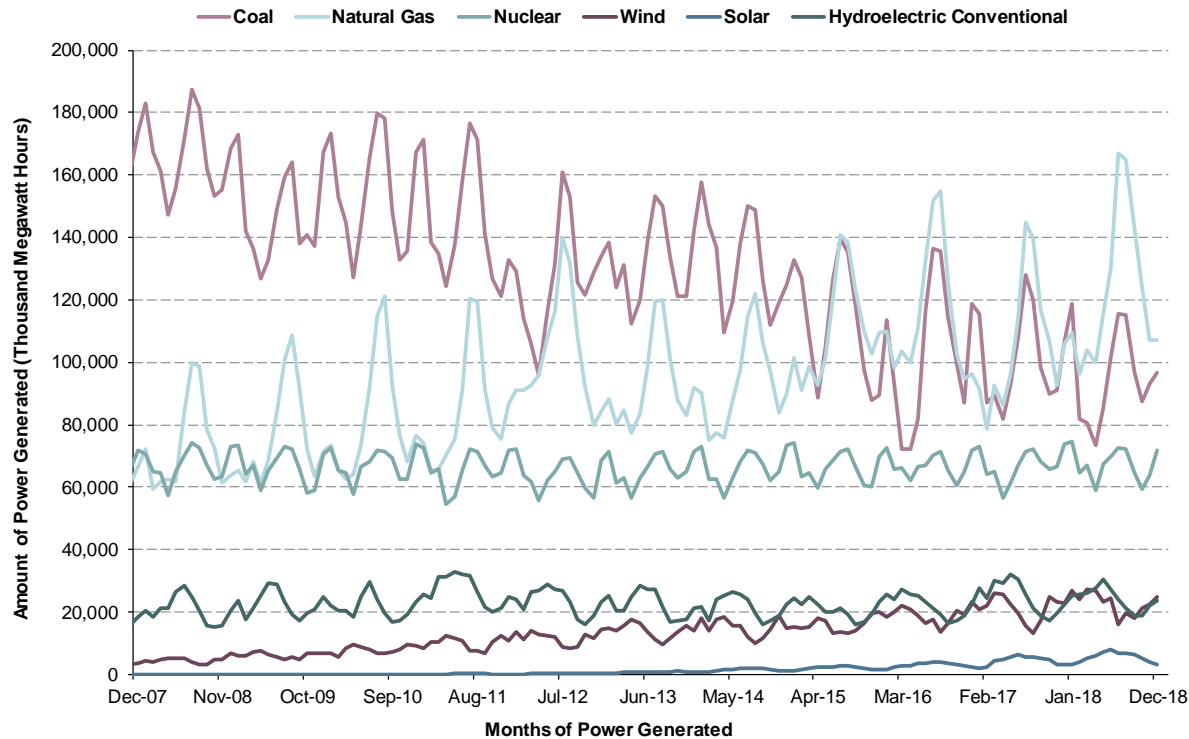


The graph above represents the total net generation for the past 12 months compared to the 10-year average for each month. Over the past year, power generation exceeded the 10-year average in 10 out of the 12 months. Net energy generation in the U.S. increased by 1.5% during the fourth quarter, compared to the same period in 2017. For the 12 months ended December 31, 2018, net energy generation increased by 4.2% over the previous 12 months.

<sup>1</sup> Source: U.S. Energy Information Administration: Electric Power Monthly, December 2018.



### U.S. Power Generation by Source<sup>1</sup>



When comparing individual generation sources in the U.S., natural gas, solar, and hydroelectric conventional increased 10.7%, 12.3%, and 8.6%, respectively in the fourth quarter of 2018 as compared to the same period in the previous year, while generation from coal, nuclear, and wind dropped by 3.7%, 5.5%, and 3.5%, respectively, during the same period. Wind and utility scale solar continue to make up a small portion of total net energy generation in the U.S., accounting for only 6.9% and 1.3% of energy generation in the fourth quarter, while coal, natural gas, and nuclear accounted for 28.1%, 34.3%, and 19.8%, respectively. However, the growth of wind and solar as sources of energy generation continues to increase at a faster rate than coal and natural gas, especially over the last couple of years.

<sup>1</sup> Source: U.S. Energy Information Administration: Electric Power Monthly, December 2018.

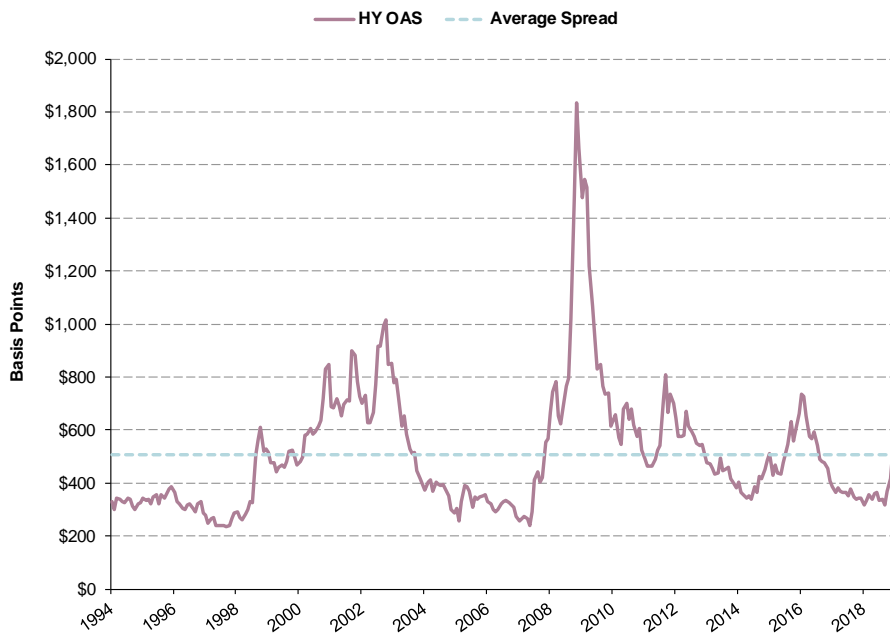


### Private Debt

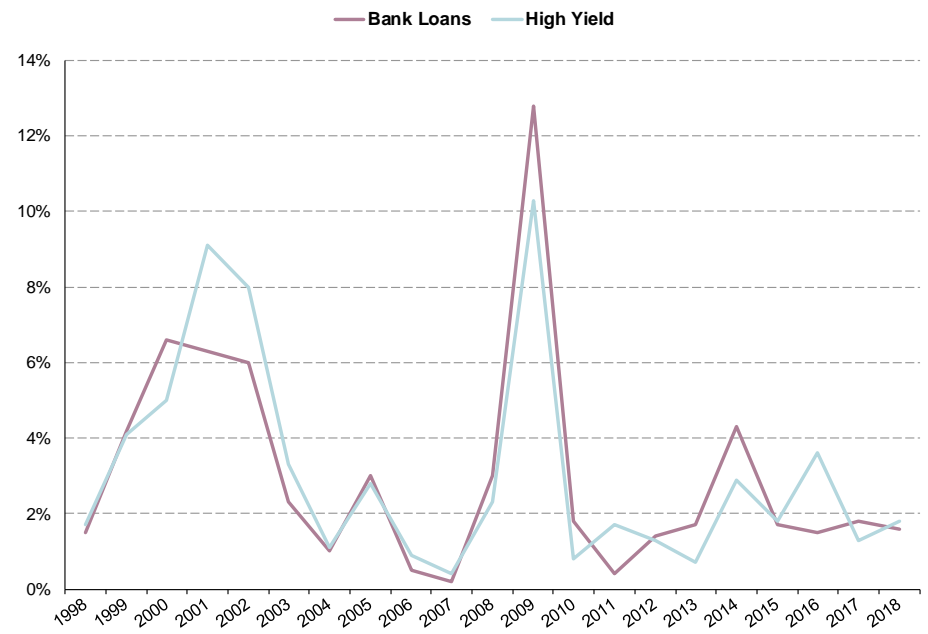
Credit markets sold off in the fourth quarter as sentiment changed from the prior three quarters and investors demanded greater compensation for taking credit risk. High yield spreads widened 210 basis points to finish the year at 526 basis points, just slightly wider than the historical long-term average. Bank loans also experienced a large sell off, though this appeared to be driven more by technical pressures related to changes in perception of the future path of interest rates rather than concerns over credit quality. Issuance ground to a halt by the end of the year with virtually no new high yield bond issuance in December.

Default rates remained below 2% for both high yield bonds and bank loans as there were no major defaults during the quarter. Recovery rates for first lien loans remained stable at around 60% in 2018, however they fell approximately 10% to 42% for high yield bonds.

**U.S. Corporate High Yield Spread<sup>1</sup>**



**U.S. Corporate Default Rate<sup>2</sup>**



<sup>1</sup> Source: Barclays Capital

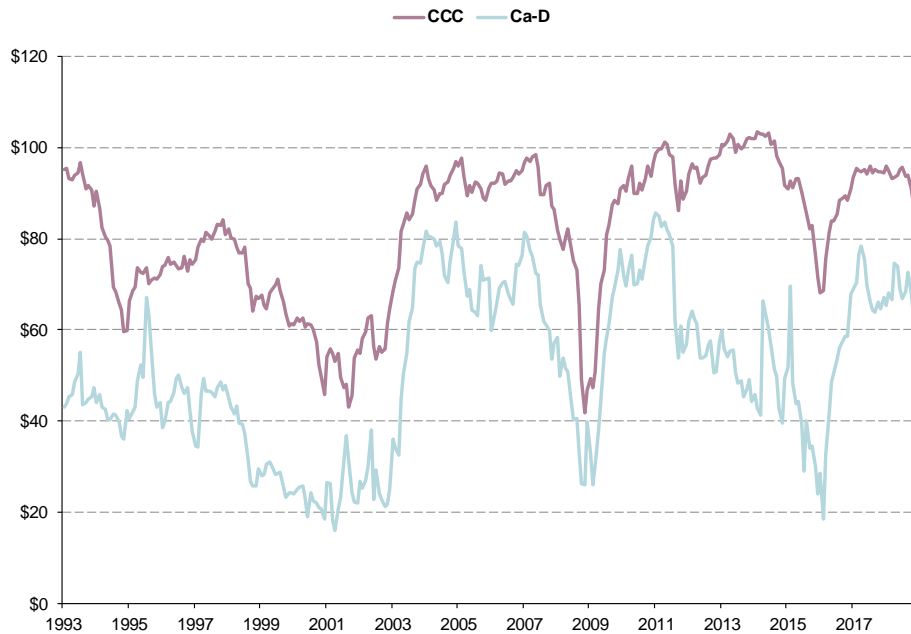
<sup>2</sup> Source: JP Morgan



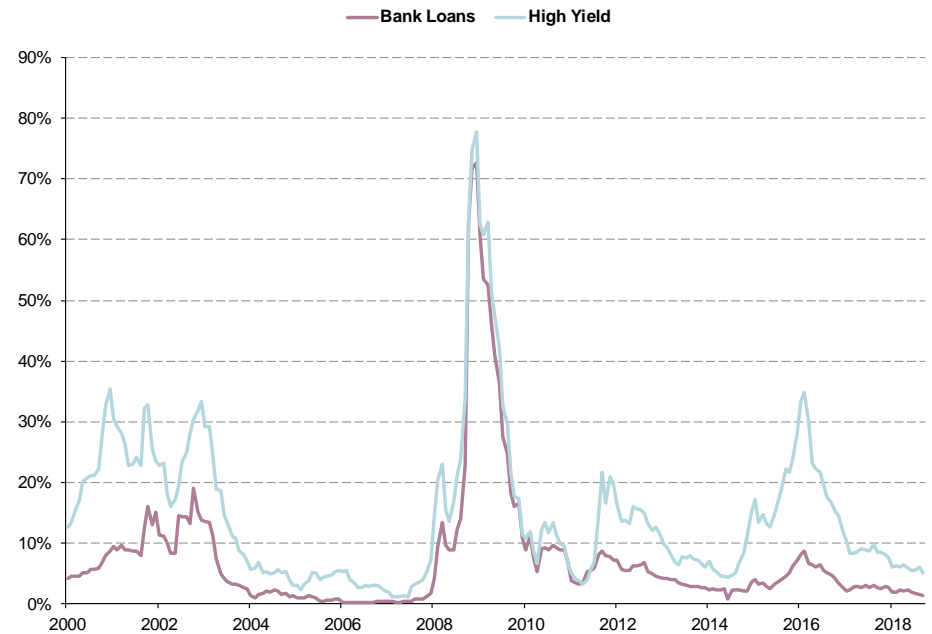
### Distressed & Opportunistic Debt

The high yield distressed ratio more than doubled from the end of the third quarter to finish at 12.3% while the bank loan distressed ratio increased to 2.5%. While the average price of lower rated debt decreased, the supply of CCC and below CCC rated debt remained at the same levels during the fourth quarter. The opportunity for distressed managers remains most prevalent in the energy, retail, and media industries.

**Lower Rated Debt Pricing<sup>1</sup>**



**Distressed Ratio<sup>2</sup>**



<sup>1</sup> Source: Barclays Capital

<sup>2</sup> Source: Bank Loans trading below \$80, Credit Suisse; High Yield trading at spread of more than 1,000bps, Deutsche Bank.

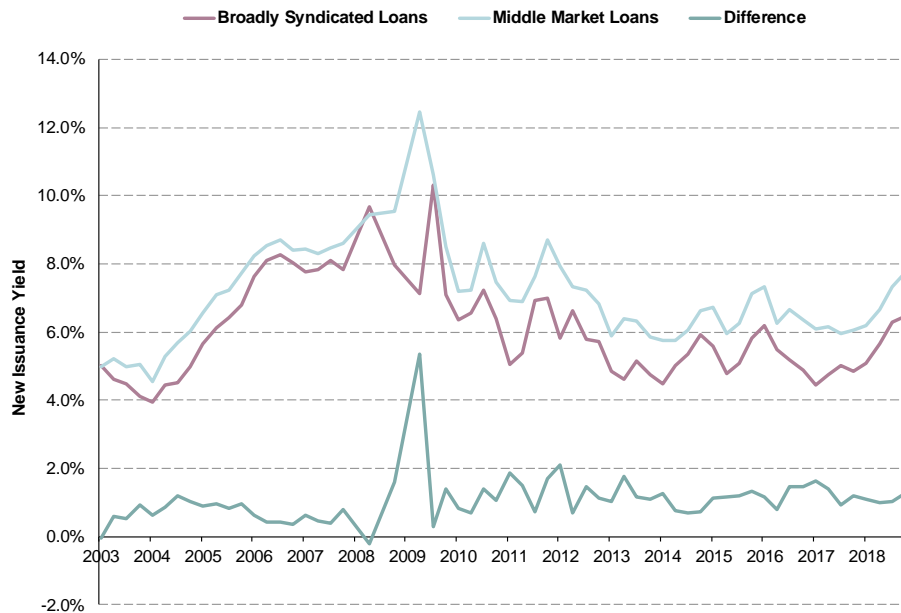




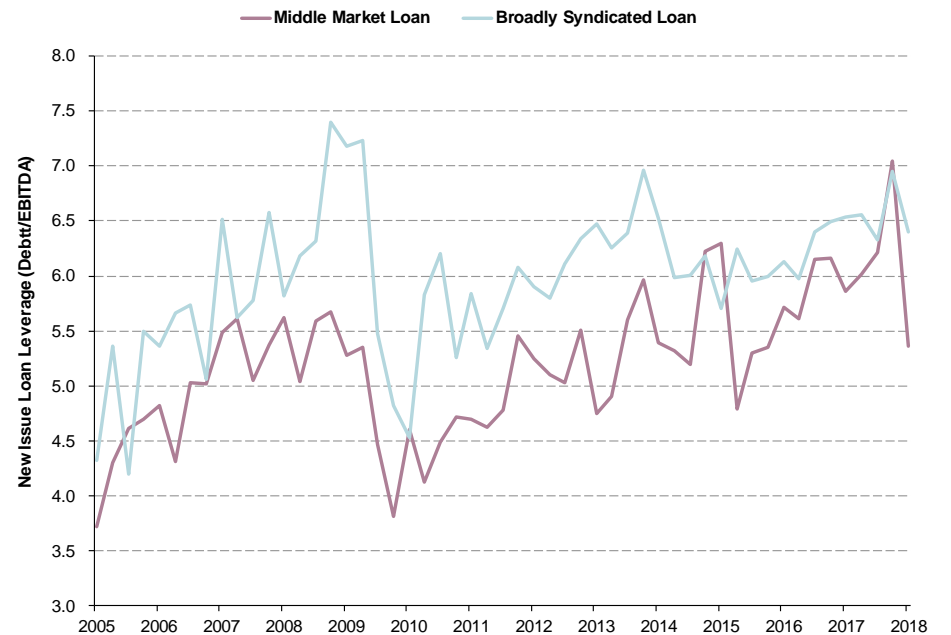
### Private Senior & Subordinated Debt

New issuance volumes across private debt (senior and subordinated) finished 2018 slightly below recent calendar years. Yields in the direct lending market remained consistent in the fourth quarter and the “illiquidity premium” over the broadly syndicated market stayed range bound. New deal quality appeared to improve in the fourth quarter though as the average leverage in new deals decreased significantly in the middle market while there was only marginal improvement in the broadly syndicated market.

Senior Loan Pricing<sup>1</sup>



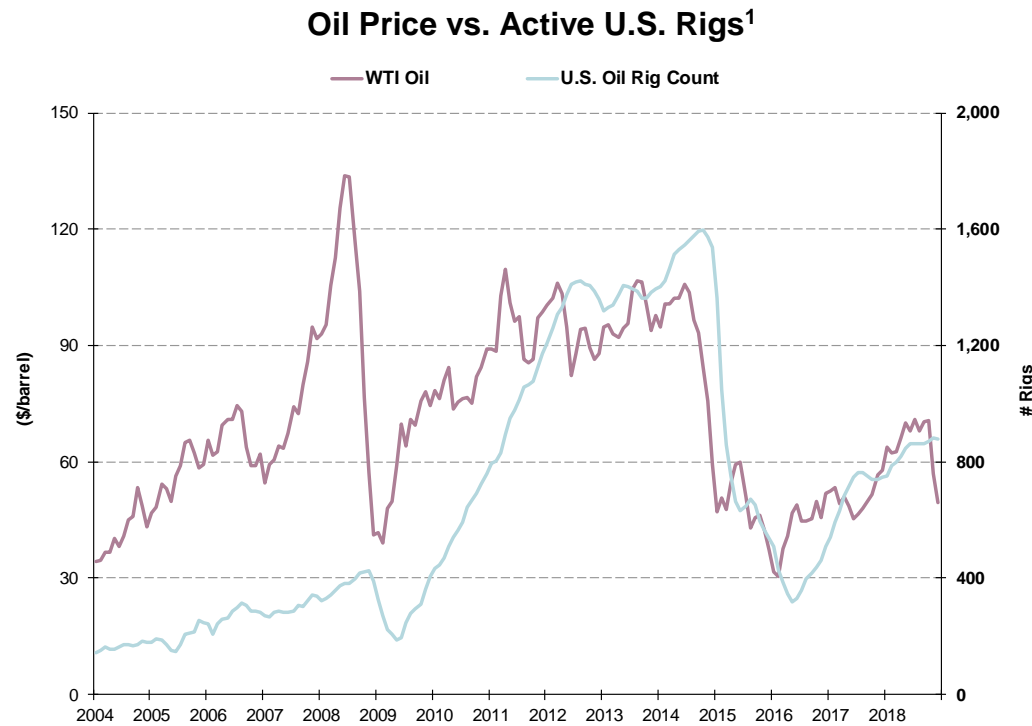
New Deal Leverage Multiples



<sup>1</sup> Source: Thomson Reuters LPC



Extracted Resources



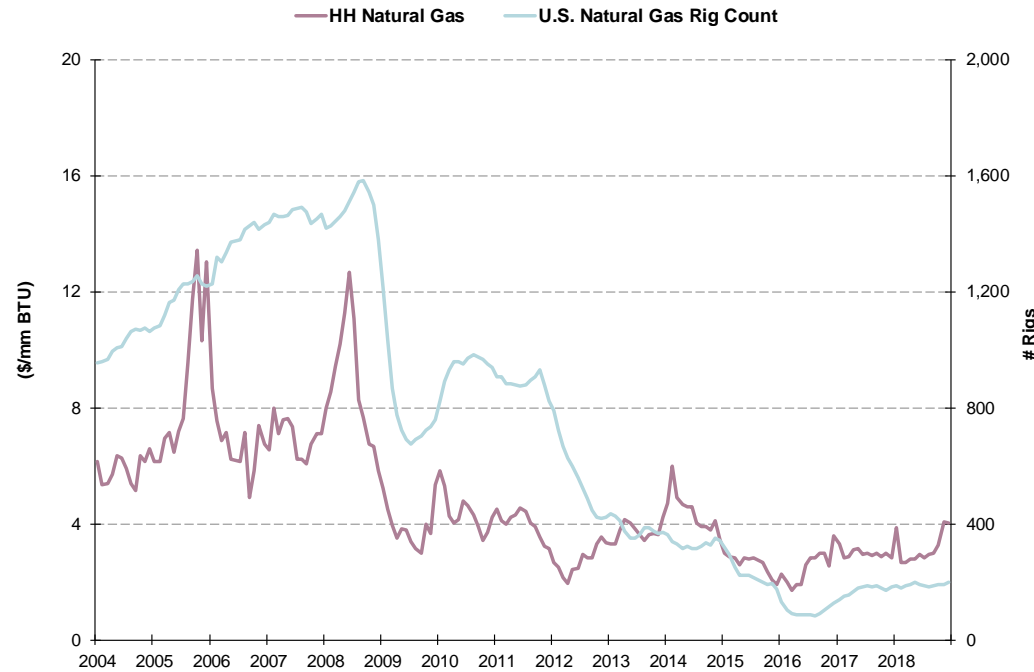
Oil prices for West Texas Intermediate (“WTI”) and Brent experienced significant volatility during the fourth quarter due to concerns of weakening global demand, oil export waivers issued for Iranian oil, and high production from the U.S., Saudi Arabia, and Russia. WTI prices fell from a high of \$75 to a low of \$46 during the quarter, while Brent decreased from a high of \$86 to a low of \$51. An agreement in December among OPEC and Russia resulted in a production cut which helped lead to a recovery in oil prices in early 2019. There were 880 oil rigs in operation in the U.S. at year end, an increase of 16 from the prior quarter. U.S. oil production remained strong during the year averaging almost 11.0 million barrels of oil equivalent per day (“boepd”) with record production in December of approximately 12.0 million boepd. Midstream constraints between certain producing regions and key trading hubs have resulted in pricing differentials but should improve as the pipelines under development become commissioned. U.S. gasoline prices for regular blend decreased to \$2.58 representing a 13% decrease from the previous quarter and a 3% decrease from one year prior.

<sup>1</sup> Source: EIA and Baker Hughes.



Extracted Resources

Natural Gas Price vs. Active U.S. Rigs<sup>1</sup>



Henry Hub natural gas spot prices ended the quarter at approximately \$4.0/MM BTU representing a 35% increase from the prior quarter that can largely be attributed to an increase in demand from seasonal cold weather, particularly in November, which experienced a daily high of \$4.7/mm BTU. Relative to one year prior, natural gas prices were up by 43%. The natural gas rig count in the U.S. ended the year at 198, an increase of 11 from the prior quarter. The U.S. continues to produce high levels of natural gas as a result of lower costs, improved operational efficiencies, and increased associated natural gas production from oil activities. During 2018, the U.S. averaged approximately 88.9 billion cubic feet (“bcf”) of natural gas production per day with December producing over 98.5 bcf per day. Natural gas consumption in the U.S. is expected to increase over the coming decades led by the industrial and electric power generation sectors.

<sup>1</sup> Source: EIA and Baker Hughes.



**Extracted Resources**



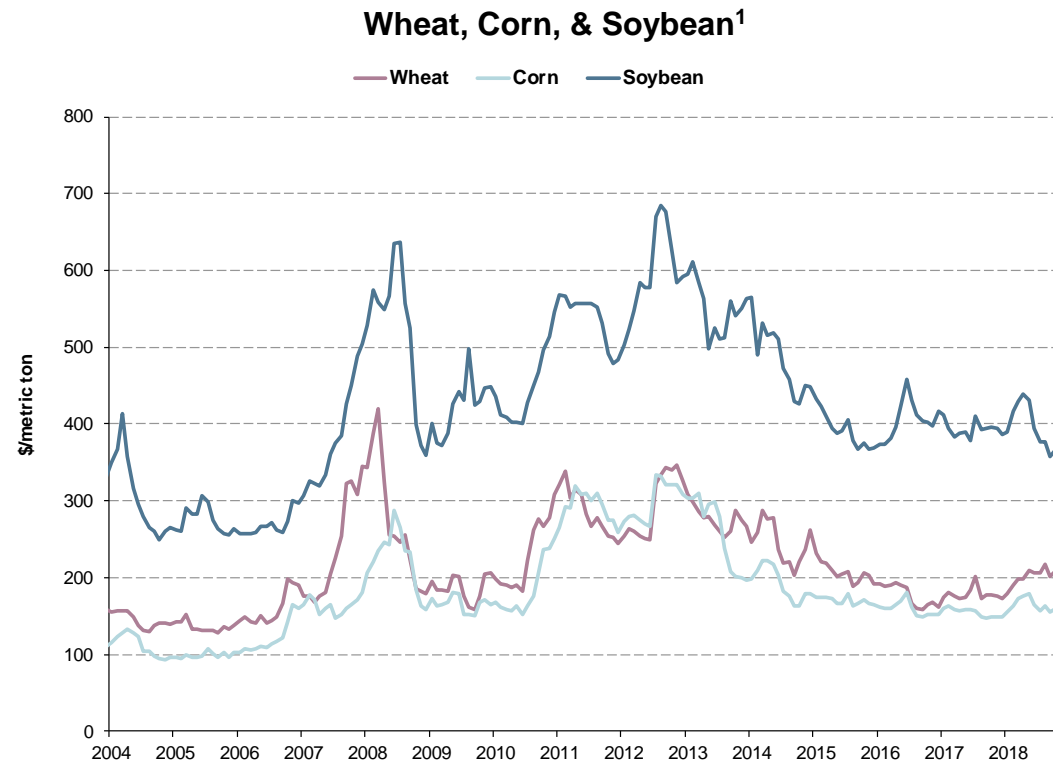
Volatility in the equity markets and a less-hawkish Fed helped prices for safe-haven assets, such as precious metals prices, at the end of the year. During the quarter, the price of gold increased to \$1,250 per ounce representing an increase of 4% from the prior quarter. Relative to one year prior, gold prices were down by approximately 1%.

Base metals were challenged in part due to concerns of trade and tariff wars between the U.S. and China and a slower growing China economy. While copper prices were flat for the quarter, they were down by approximately 11% relative to one year prior.

<sup>1</sup> Source: World Bank



## Harvested Resources



Concerns of tariffs and trade wars between the U.S. and China continued into the fourth quarter. In what is perceived as a gesture toward easing tensions, China’s Sinograin and Cofco began purchasing several million tons of U.S. soybeans ahead of an upcoming trade meeting between the U.S. and China. While the purchases were material, they only represent a fraction of the typical purchases China makes in a typical year. During the quarter, wheat, corn, and soybean prices were up 8%, 8%, and 7%, respectively. Relative to one year prior, wheat and corn were up 26% and 12%, respectively, while soybeans were down by 2%.

<sup>1</sup> Source: World Bank



**Harvested Resources**

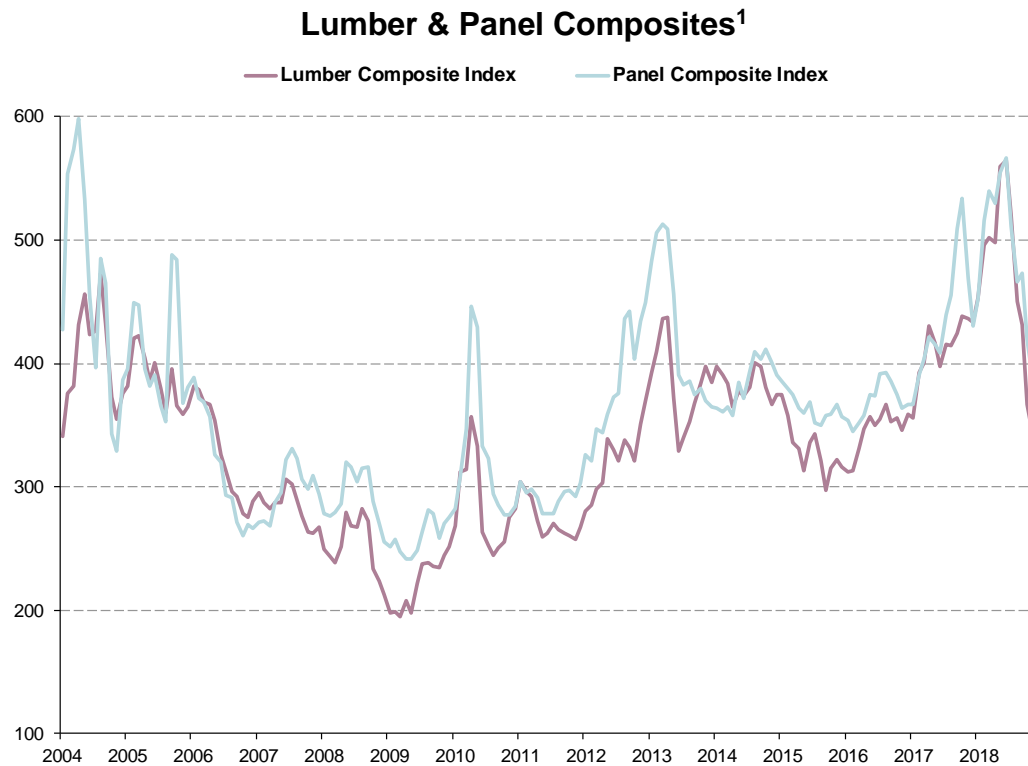
<i>As of December 31, 2018</i>	<b>Trailing Period Returns<sup>1</sup></b>			
	<b>Q4 18</b>	<b>1 Year</b>	<b>5 Years</b>	<b>10 Years</b>
<b>NCREIF Farmland</b>	<b>2.8%</b>	<b>6.7%</b>	<b>8.6%</b>	<b>11.2%</b>
<b>NCREIF Timberland</b>	<b>0.8</b>	<b>3.2</b>	<b>4.9</b>	<b>3.8</b>
<b>S&amp;P 500</b>	<b>-13.5</b>	<b>-4.4</b>	<b>8.5</b>	<b>13.1</b>
<b>Barclays Aggregate</b>	<b>1.6</b>	<b>0.0</b>	<b>2.5</b>	<b>3.5</b>

The NCREIF Farmland index experienced a 2.8% increase during the quarter with income accounting for 2.2% and appreciation generating 0.7%. The Pacific West region generated the strongest regional returns of 5.2% while the Pacific Northwest produced the weakest returns of -0.3%. Row crop returns were driven by 0.9% income and 0.6% appreciation. Permanent crop returns of 5.1% were driven by 4.3% of income and 0.8% appreciation.

The NCREIF Timberland index increased 0.8% during the quarter primarily as a result of income gains of 0.8%. For its one-year returns, the index generated 3.2% largely from an income return of 3.2% with appreciation flat. The Northeast and Northwest regions generated the strongest regional returns of 2.7% and 2.1%, respectively. The South region generated total returns of 0.1% with income returns of 0.7% largely offsetting asset depreciation of 0.6%.

<sup>1</sup> Source: National Council of Real Estate Investment Fiduciaries (NCREIF).

Harvested Resources



Prices for U.S. timber products, such as lumber and panel, decreased significantly during the quarter generally due to softer demand, logistical challenges from inclement weather, and destocking of inventory. Hurricane Michael in Florida and heavy rain fall in Texas helped slow construction activity and demand for wood products. As a result, lumber and panel prices decreased by 22% and 23%, respectively, during the quarter. Relative to one year prior, lumber and panel prices were down by 23% and 15%, respectively.

<sup>1</sup> Source: Random Lengths



### Private Equity Global Fundraising<sup>1</sup>



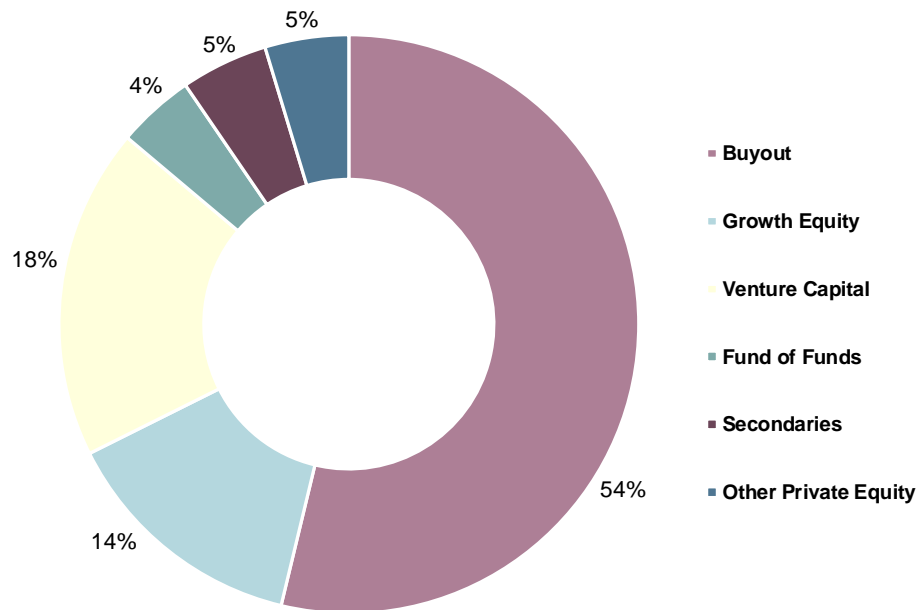
Fundraising activity for private equity funds in the fourth quarter of 2018 was slightly below the prior quarter, at \$117 billion raised and essentially flat compared to the \$116 billion raised in Q4 2017. In aggregate, fundraising levels in 2018 have been significantly lower than that of the previous two years, potentially signifying more caution within the market. While less capital has been raised to date compared with the previous two years, the trend of capital concentration is continuing with 495 fewer funds fundraising in 2018 than that of the prior year. This suggests that funds are growing significantly in size, with approximately 79% of funds in 2018 achieving capital commitments at or above their target size. Funds were also spending slightly less time in market, with 52% of funds that closed in 2018 spending less than 12 months fundraising compared to 49% of funds in the 2017 and 45% in 2016.

<sup>1</sup> Preqin

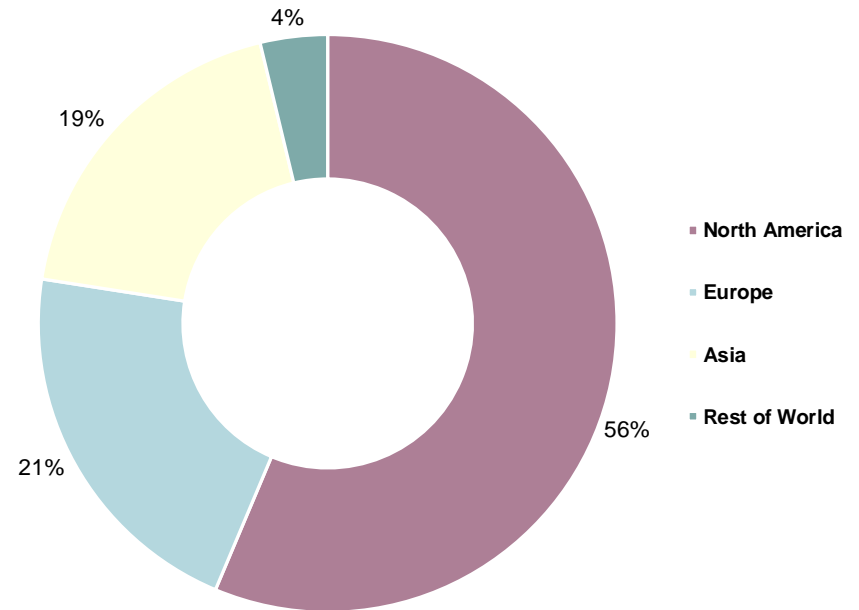




**Capital Raised by Strategy<sup>1</sup>**



**Capital Raised by Geography<sup>2</sup>**



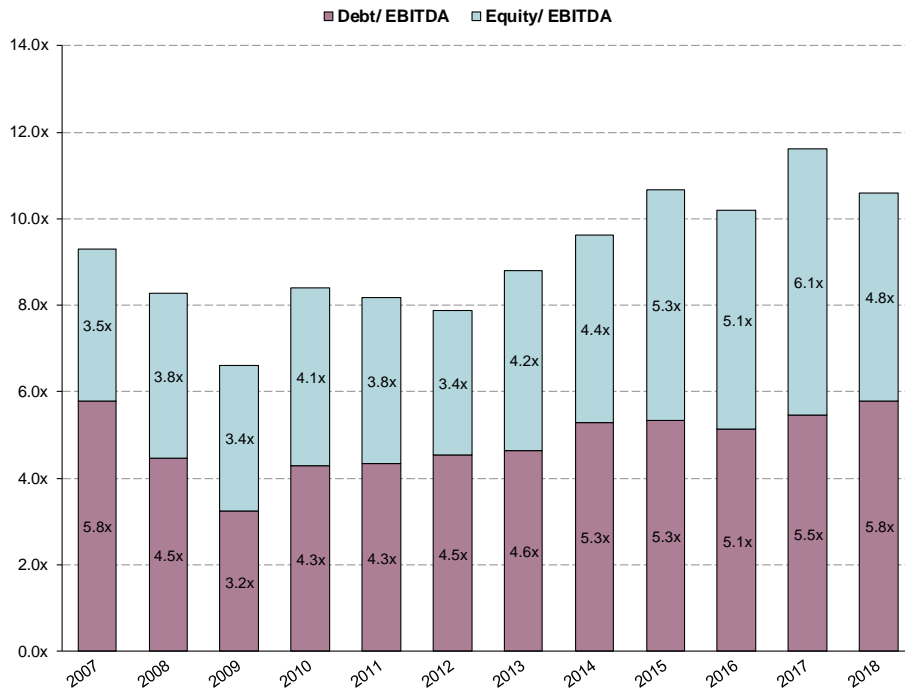
Buyout funds continued to be the most popular private equity strategy with \$229 billion or 54% of all private equity capital raised dedicated to Buyout funds throughout 2018. Despite remaining the dominant private equity strategy in fundraising, Buyout funds raised approximately 10% less in 2018 than in 2017, while Venture Capital funds had their most successful year at \$79 billion of capital raised in 2018, representing a 6.5% increase in strategy allocation from 2017. Growth Equity funds similarly experienced a strong year, raising \$59 billion, a 5.3% increase compared to 2017. Capital raised by Secondaries have declined by 3%, while the other strategies remained relatively neutral. While North American focused vehicles represented a majority of all funds raised in 2018 at \$240 billion, this represents a decrease of \$32 billion and 3.6% of the allocation by strategy. Europe focused funds also saw a decrease of 2.9%, while Asian funds raised more capital than prior years, representing a 4.7% increase in allocation.

<sup>1</sup> Preqin

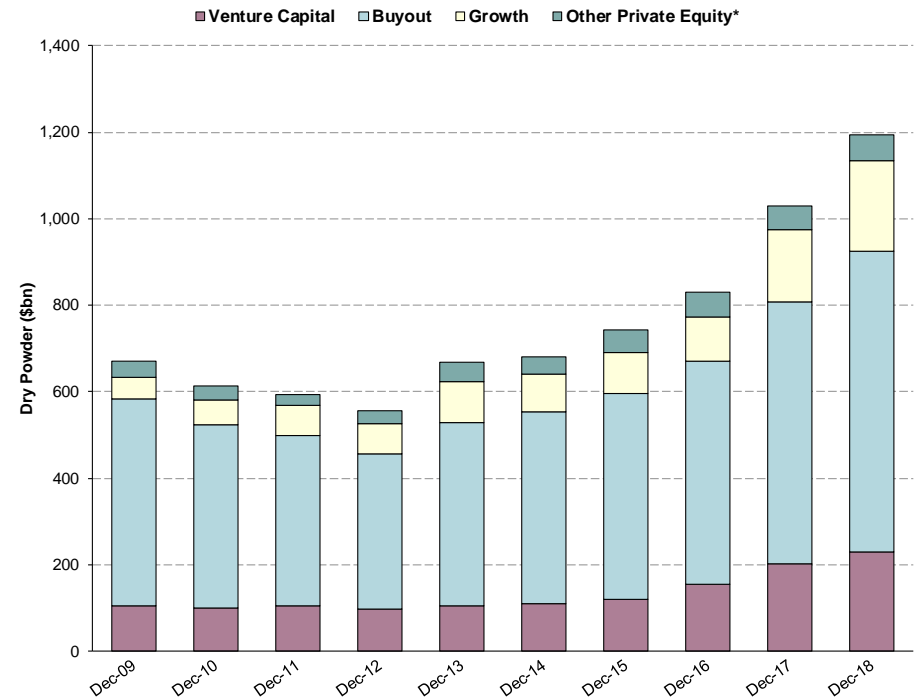
<sup>2</sup> Preqin



### Purchase Price Breakdown, All LBOs<sup>1</sup>



### Dry Powder by Fund Type<sup>2</sup>



Private Equity purchase price multiples in 2018 were below the levels seen in 2017 but remain near all-time highs. Notably, equity contribution relative to total purchase price continued to decline in 2018 compared to the previous three years, but remained only slightly below the 10-year average of 48%. One explanation for continued elevated prices is the record level of dry powder outstanding in private equity, as dry powder levels increased by 16% from last year to \$1.19 trillion. Dry powder levels are expected to continue to increase as long as more capital is being raised than is being deployed, and investors should expect to continue to see high purchase prices as a result of the high levels of capital competing for deals. Capital concentration along with larger sized funds should be expected to contribute to increasing levels of dry powder as well. TMT (21%), Healthcare (14%), and Services and Leasing (13%) were the three largest sectors targeted for LBOs, making up over half of all LBO deals.<sup>3</sup>

<sup>1</sup> S&P

<sup>2</sup> Preqin

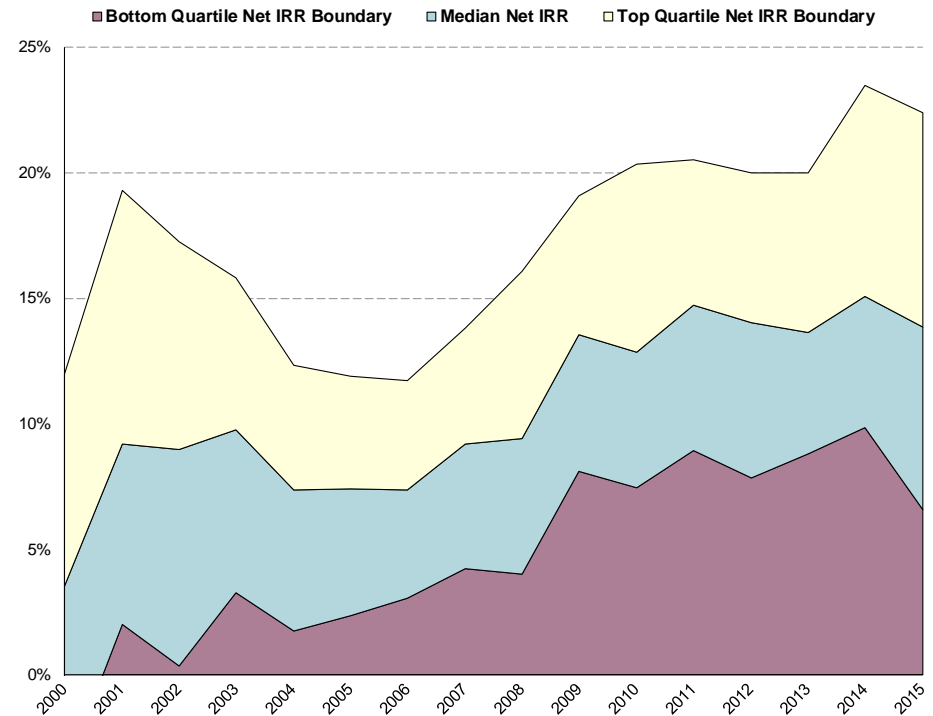
<sup>3</sup> S&P



**Private Equity Performance by Horizon<sup>1</sup>**

Horizon	Private Equity	Buyout	Venture Capital	Fund of Funds
1 Year to Sep-18	23.3%	23.6%	26.2%	19.6%
3 Years to Sep-18	17.6	22.3	16.8	13.5
5 Years to Sep-18	19.0	20.8	21.3	14.9
10 Years to Sep-18	16.3	18.0	16.6	12.8

**Private Equity Performance by Vintage Year<sup>2</sup>**



Recent aggregate private equity returns remained strong at 23.3% over the prior year, 17.6% over the prior three years, and 19.0% over the prior five years. In general, performance has been strong in each vintage year since the Global Financial Crisis. Buyout and Venture funds have both performed well over the four time horizons on an absolute basis, with Buyout funds far outperforming that of Venture in the 3-year horizon. The gap between top and bottom performers in private equity has grown consistently since the Global Financial Crisis; 2007 vintage funds reported a 10% spread while 2015 vintage funds reported a 15.8% spread.

<sup>1</sup> Cambridge Associates Global Top Quartile

<sup>2</sup> Cambridge Associates Global Top Quartile



### Real Estate Fundamentals Vacancy by Property Type<sup>1</sup>



In the fourth quarter of 2018, vacancy rates increased for all property types except office. Multifamily vacancies have been irregular, but in a slight upward trend since 2011. Retail vacancies flattened over the last three years, and office and industrial vacancies continue a downward trend. Compared to one year ago, vacancy rates in multifamily decreased 34 basis points, office decreased 65 basis points, industrial decreased 45 basis points, and retail decreased 3 basis points. Overall, the vacancy rate across all properties decreased 45 basis points from Q4 2017.

<sup>1</sup> Source: NCREIF



### NOI Growth<sup>1</sup>

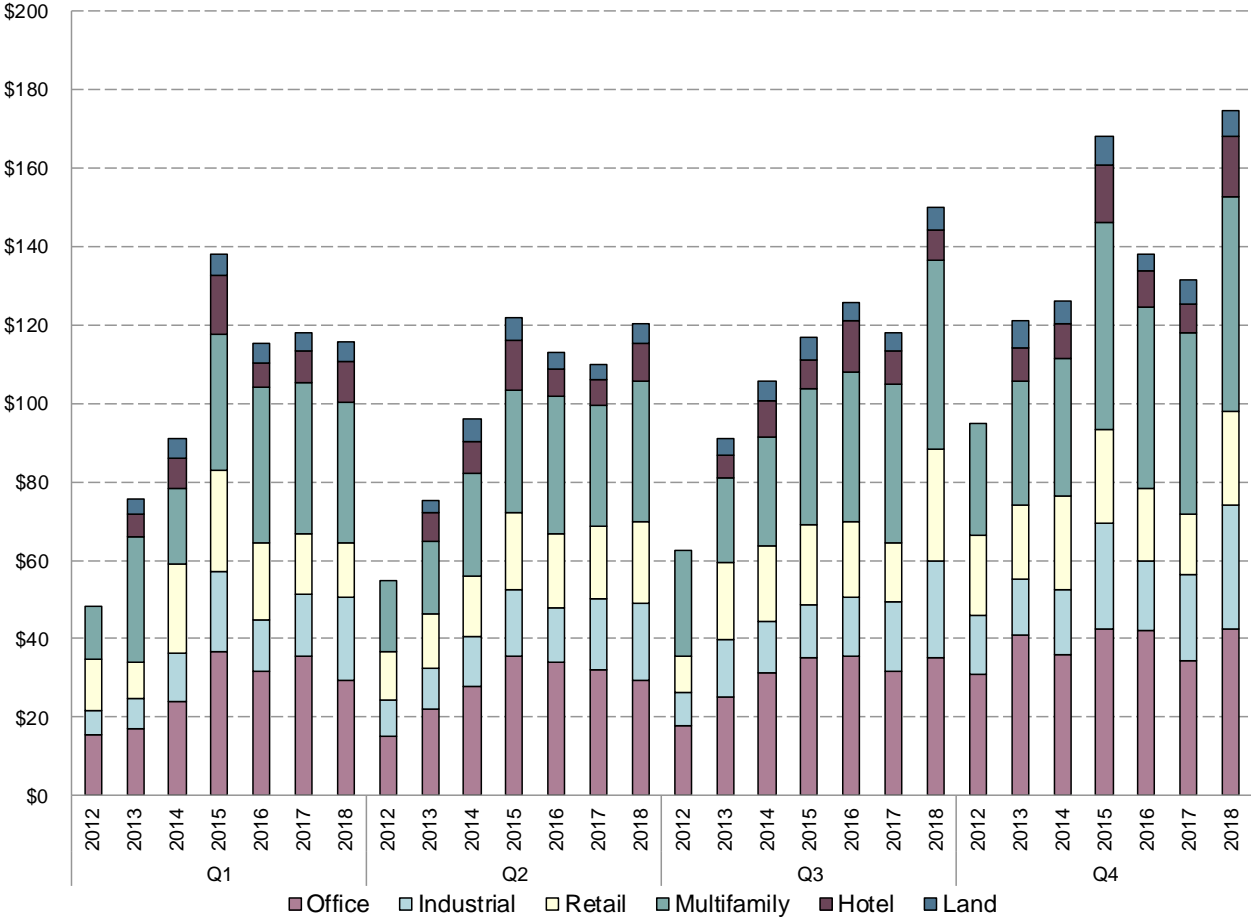


The trailing twelve month rate of NOI continued to hover around 4.0% in the fourth quarter of 2018. Continued growth of the U.S. economy coupled with only moderate new construction allowed property owners to increase rents and lease vacant space. However, growth moderated in 2018 to a range of 3.5% to 4.5%. The strongest NOI growth continues to be within the industrial sector, which grew to 9.6% year-over-year ending Q4 2018. Office NOI growth decreased to 2.1%, while apartment and retail NOI growth increased to 5.4% and 2.2%, respectively.

<sup>1</sup> Source: NCREIF



### Transaction Volume (\$bn)<sup>1</sup>

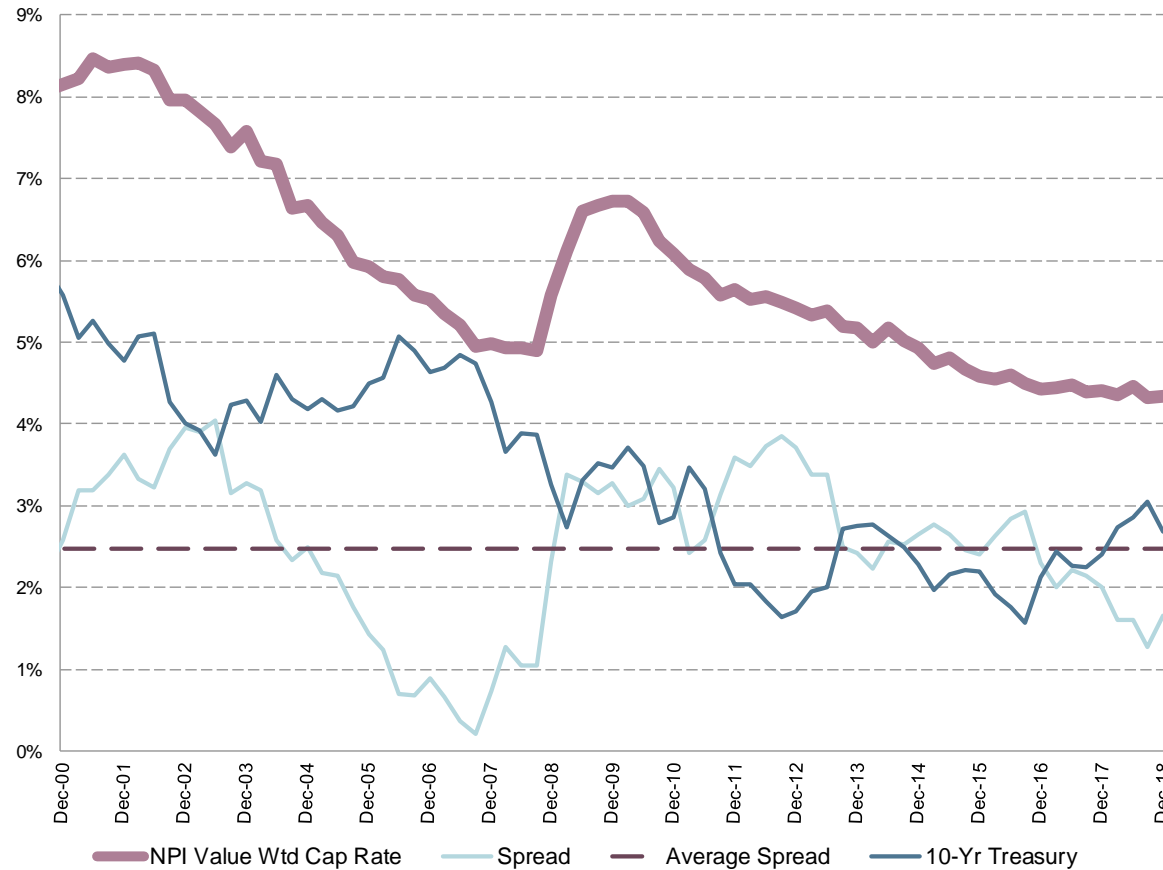


Private real estate transaction volume for properties valued over \$2.5 million hit the highest level in any quarter since 2012, at over \$170 million. Hotel volumes were up 97% compared to last quarter, while retail volumes were down 16%. Office, industrial and multifamily volumes increased 21%, 30%, and 14% respectively. Multifamily and office properties made up the largest percentages of total transaction volume during the quarter, at 37% and 28%, respectively.

<sup>1</sup> Source: PREA



### Real Estate Capital Markets Cap Rates vs. 10-Year Treasury<sup>1</sup>



The NPI Value Weighted Cap Rate continues to hover just below 4.5%. The 10-year Treasury yield peaked above 3.0% in Q3 2018, but returned down to 2.7% at the end of the year. The spread between cap rates and treasury yields increased to 165 basis points, which is 83 basis points below the long term average spread.

<sup>1</sup> Source: NCREIF and U.S. Department of the Treasury



**Trailing Period Returns<sup>1</sup>**

<i>As of December 31, 2018</i>	<b>1 Year</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>
<b>NFI-ODCE (EW, net)</b>	<b>7.3%</b>	<b>7.5%</b>	<b>9.6%</b>	<b>5.9%</b>
<b>NCREIF Property Index</b>	<b>6.7</b>	<b>7.2</b>	<b>9.3</b>	<b>7.5</b>
<b>NAREIT Equity REIT Index</b>	<b>-4.4</b>	<b>4.1</b>	<b>8.2</b>	<b>12.5</b>

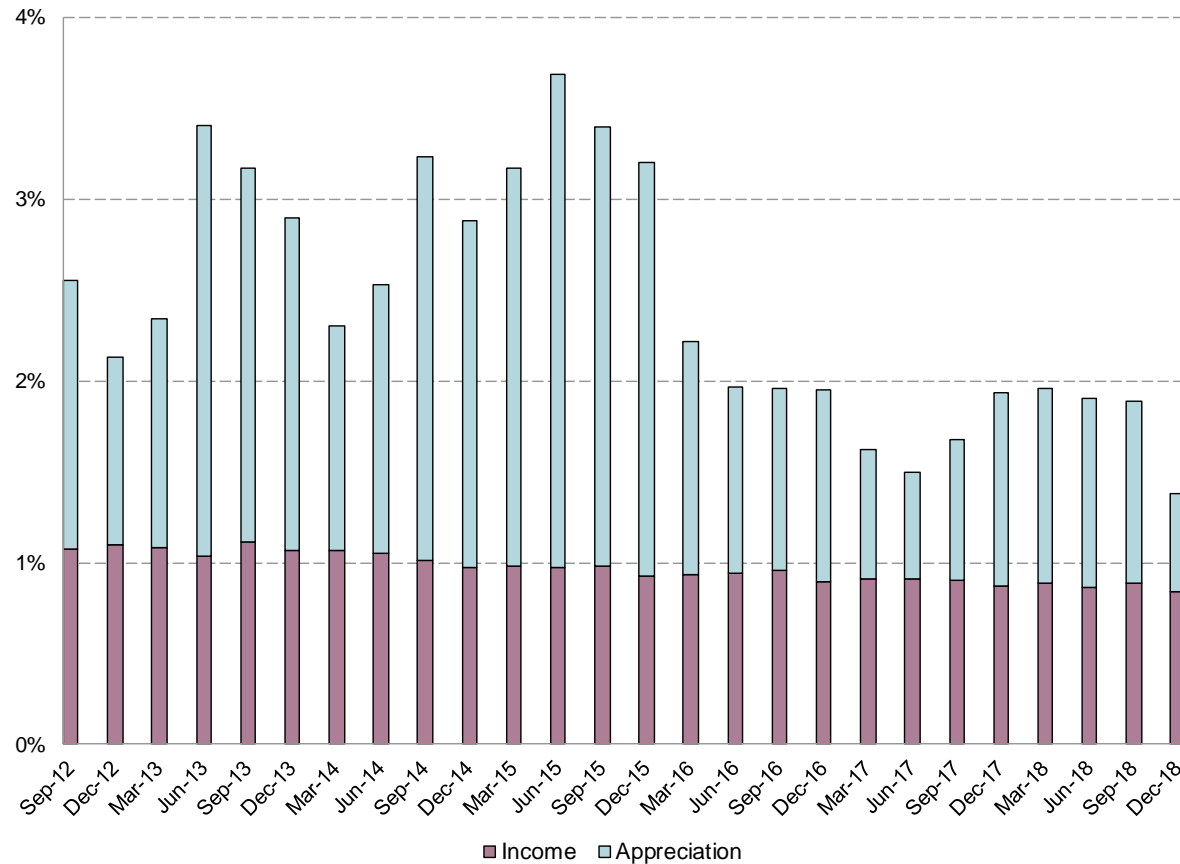
Private real estate indices have continued to post positive returns, driven by strong property-level fundamentals and a low interest rate environment. Recent public real estate performance has experienced more volatility with negative returns in both Q1 and Q4 2018, dragging down overall performance for the year.

<sup>1</sup> Source: NCREIF





### ODCE Return Components<sup>1</sup> (Equal Weight, Net)



The NFI-ODCE Equal Weight return for Q4 2018 was 1.4%, about 50 basis points lower than the previous three quarters and the lowest returning quarter since March 2010. The compression in the quarterly return was driven largely by a decrease in the appreciation component, down approximately 50% compared to the first three quarters of 2018. The income return has continued to fall, down to 84 basis points in Q4 2018.

<sup>1</sup> Source: NCREIF



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If we manage your assets on a discretionary basis, please contact us if there are any changes in your financial situation or investment objectives, or if you want to impose any reasonable restrictions on our management of your account or reasonably modify existing restrictions.

In general, the valuation numbers presented in this report are prepared by the custodian bank for listed securities, and by the fund manager or appropriate General Partner in the case of unlisted securities. The data used in the market comparison sections of this report are sourced from various databases. These data are continuously updated and are subject to change.

This report does not contain all the information necessary to fully evaluate the potential risks of any of the investments described herein. Because of inherent uncertainties involved in the valuations of investments that are not publicly traded, any estimated fair values shown in this report may differ significantly from the values that would have been used had a ready market for the underlying securities existed, and the differences could be material. Note that for unlisted securities the valuations may be lagged by one or more calendar quarters, or may reflect original cost.

This document may contain certain forward-looking statements, forecasts, estimates, projections, and opinions (“Forward Statements”). No representation is made or will be made that any Forward Statements will be achieved or will prove to be correct. A number of factors, in addition to any risk factors stated in this material, could cause actual future results to vary materially from the Forward Statements. No representation is given that the assumptions disclosed in this document upon which Forward Statements may be based are reasonable. There can be no assurance that the investment strategy or objective of any fund or investment will be achieved, or that the Retirement System will receive a return of the amount invested.

In some cases Meketa Investment Group assists the Retirement System in handling capital calls or asset transfers among investment managers. In these cases we do not make any representations as to the managers’ use of the funds, but do confirm that the capital called or transferred is within the amounts authorized by the Retirement System.

The values of companies and partnerships in this review are based on audited reports for December 31, 2017, provided by the General Partners, unless otherwise noted.

Because there is no readily accessible market for private markets assets (companies and partnerships), the values placed on private markets assets are calculated by General Partners using conservative and industry standard pricing procedures. Annually, an independent auditor reviews the pricing procedures employed by the General Partner of each partnership.

While all private markets partnerships are audited by an independent entity, there is some discretion as to the method employed to price private companies and, therefore, private markets partnerships. At all times, Meketa Investment Group expects General Partners to utilize conservative and industry standard pricing procedures, and requires the General Partners to disclose those procedures in their reports. However, because of the inherent uncertainty of valuation, these estimated values may differ from the values that would be used if a ready market for the investments existed, and the differences could be significant.

**Absorption:** The amount of inventory or units of a specific commercial property type that become occupied during a specified time period (usually a year) in a given market, typically reported as the absorption rate.

**Advisory Board:** Partnerships often establish an advisory board comprised of representatives of the Limited Partners to oversee the on-going work of the General Partners. Advisory boards typically meet once each year to review the partnership's investments. It is important to note that unlike the Board of Directors of a public company, the advisory board has very little power to control the activities of the General Partners.

**Angel Investor:** Angel investors are individuals who invest their own capital directly in small, early stage companies. Angels are an alternative source of funding for entrepreneurs. Such investments are characterized by high levels of risk and potentially a large return on investment.

**Appraisal:** An estimate of a property's fair market value that is typically based on replacement cost, discounted cash flow analysis and/or comparable sales price.

**Appreciation:** An increase in the value or price of a real estate asset.

**Appreciation Return:** The portion of the total return generated by the change in the value of the real estate assets during the current quarter, as measured by both appraisals and sales of assets.

**Asset Management:** The various disciplines involved with managing real property assets from the time of investment through the time of disposition, including acquisition, management, leasing, operational/financial reporting, appraisals, audits, market review and asset disposition plans.

**Asset Management Fee:** A fee charged to investors based on the amount invested into real estate assets for the fund or account.

**Barrel:** 42 U.S. gallons of oil.

**Base Metals:** Non-precious, non-ferrous metals that include copper, aluminum, lead, nickel, tin, and zinc.

**Base Rent:** A set amount used as a minimum rent with provisions for increasing the rent over the term of the lease.

**Biofuels:** Biofuels are combustible fuels, such as bio-ethanol, that are made and processed from vegetation sources such as corn, sugar cane, barley, or wheat.

**Blind Pool:** Most Limited Partnerships are organized as blind pools, meaning that Limited Partners commit capital to the partnership before any actual investments are made. At the point of commitment, the Limited Partners do not know specifically how their money will be used (hence the term blind pool), and must therefore rely entirely upon the track record and experience of the General Partner.

**BOE/day:** A daily production metric equivalent to the energy content of a barrel of oil equivalent often related to natural gas, natural liquids, and condensates.

**Broker:** A person who acts as an intermediary between two or more parties in connection with a transaction.

**Brownfield:** A project with an operating history. The initial outlay is entirely to the public entity. Brownfield can be considered an easier starting point for investors, given the shorter J-curve and lower level of risk. Meketa Investment Group categorizes a Fund as brownfield if the Fund's investment strategy calls for over 65% of its underlying investments to be in brownfield (operating) assets.

**Buyout Fund:** A buyout partnership uses the partners' capital to purchase existing, established businesses. The acquired firms may be family owned prior to purchase, or may be operating divisions of larger companies seeking to restructure their businesses. In a few cases, the buyout partners may purchase all of the outstanding shares of a publicly traded company, effectively taking it private. Buyout funds are not involved in venture capital or startups.

Buyout partnerships own the acquired companies outright, or in combination with other buyout partnerships. In some cases the buyout partners will replace the existing management with a new team, or the acquired firm will be left autonomous. The buyout partners frequently take one or more board seats in order to ensure control of the business.

**Capital Appreciation:** The change in market value of a property or portfolio adjusted for capital improvements and partial sales.

**Capital Call (Contribution):** Once a partnership has declared its first close, the General Partners will begin to make portfolio investments. As each investment is made, the capital necessary to fund the investment is "called" from the Limited Partners.

**Capitalization Rate:** A percentage that relates the value of an income-producing property to its future income, expressed as net operating income divided by purchase price. This is also referred to as cap rate.

**Carried Interest:** The share of profits that the fund manager is due once it has returned the cost of investment to investors. Carried interest is normally expressed as a percentage of the total profits of the fund. The industry norm is 20%. The fund manager will normally therefore receive 20% of the profits generated by the fund and distribute the remaining 80% of the profits to investors.

**Carrying Value:** The General Partner must list on the partnership's balance sheet a value for every investment held. These valuations are called carrying values, and in most cases are simply the original cost of the investment. Note that carrying values in most cases are not audited and do not represent actual market values.

**Cash Flow Positive:** When a company generates more free cash than it consumes in normal operations, it is deemed to be cash flow positive. Such companies may not need extra financing or debt in order to grow.

**Cash Leasing Farmland:** A low risk/return strategy that shifts the operational risk of farming to a local operator. Farmland investors receive stable lease payments from the local operators who are allowed to farm the land. Cash leasing is typically used for row croplands.

**Cash on Cash Return:** The simple gross total return earned by the Limited Partners, calculated as the total distributions received divided by the total contributions made. Thus, if an investor supplied a total of \$100 in cash calls and contributions, and received over the life of the partnership \$200 in distributions, the cash on cash return would be 100%. The cash on cash return is typically reported as a multiple. In the example above, the investment returned 2x (two times).

**Chip-N-Saw:** Produced from mid-sized trees that are cut and chipped to pulpwood chips or small dimension lumber. Chip-N-Saw is typically derived from trees measuring 10-13" DBH.

**Claw-Back Provision:** A claw-back provision ensures that a General Partner does not receive more than its agreed percentage of carried interest over the life of the fund. So, for example, if a General Partner receives 21% of the partnership's profits instead of the agreed 20%, Limited Partners can claw back the extra one percent.

**Cleantech:** A broad term used to classify products or services that improve energy productivity, performance, or efficiency while reducing input costs, consumption, waste, or pollution. Common products associated with cleantech are wind farms, photovoltaics, fuel cells, biofuels, and smart grid technologies.

**Closed-end Fund:** A commingled fund that has a targeted range of investor capital and a finite life.

**Closings and Closing Dates:** Every partnership must specify the date upon which the General Partners will cease fundraising and begin making actual investments with the Limited Partners' committed capital. That date is called the closing date, and defines the vintage year of the partnership. Most partnerships, however, have several closing dates, and all partnerships must eventually have a final closing. In most cases, the final closing lags six to nine months after the first closing. If a majority of the original Limited Partners consent, a partnership can remain open to new investors after the final closing and while early investments are being made, in order to have time to attract additional investors.

**Co-Investment:** In some cases, Limited Partners want the right to make additional direct investments in one or more of the underlying companies purchased by the General Partner. If the partnership agreement gives co-investment rights to specific Limited Partners, then they may elect to invest additional monies “along side” the General Partner in various deals. In these cases, the co-investing Limited Partners would have two investments in an underlying property: their share of the partnership’s investment, and their direct additional co-investment on the side. Note that co-investment rights may be available only to the largest Limited Partners.

Co-investment rights are often negotiated by very large Limited Partners when they have strong convictions about the deal finding skills of the General Partners, because co-investment rights permit them to make even larger investments in the underlying properties than would otherwise be possible, without paying carried interest.

**Committed Capital:** When a Limited Partnership is formed, each Limited Partner agrees to contribute a specific amount of capital to be invested over the life of the partnership. Once the agreement is signed, the Limited Partners are legally bound and committed to supply the agreed upon capital when it is called for by the General Partner.

**Concession:** A business operated under a contract or license associated with a degree of exclusivity. In the case of a public service concession, a private company (the concessionaire) enters into an agreement with the government to have the exclusive right to operate, maintain and carry out investment in a public asset (such as a utility) for a given number of years.

**Concessions:** Cash or cash equivalents expended by the landlord in the form of rental abatement, additional tenant finish allowance, moving expenses or other monies expended to influence or persuade a tenant to sign a lease.

**Consolidation (Roll Up):** Many industries in America are highly fragmented, as the market space is serviced by a large number of locally owned businesses. By consolidating fragmented industries (i.e., purchasing many local businesses), firms can create a single larger company with greater market control, more attractive financial characteristics, and potentially, better pricing flexibility and lower costs.

**Construction Loan:** Interim financing during the developmental phase of a property.

**Convertible Bonds:** Some private equity partnerships, generally those that provide mezzanine financing, may take convertible bonds as part of their compensation for providing investment capital. The convertible bond pays interest like other bonds, but can be exchanged for shares of the company stock at a favorable price if certain conditions are met, hence the term convertible.

**Core Properties:** The major property types - specifically office, retail, industrial and multifamily. Core assets tend to be built within the past five years or recently renovated. They are substantially leased (90% or better) with higher-credit tenants and well-structured long-term leases with the majority fairly early in the term of the lease. Core assets generate good, stable income that, together with potential appreciation, is expected to generate total returns in the 10% to 12% range.

**Crude Oil:** An unpurified mixture of liquid hydrocarbons derived from rock formations, containing different levels or impurities such as water or sulfur.

**DBH:** DBH (Diameter at Breast Height) is the most common measure made by a forester to determine the growth, volume, yield, and potential of a tree. DBH is defined as 4.5 ft. above the ground on the uphill side of a tree.

**Development Well:** A well drilled in a proven area of an oil or gas reservoir to a depth known to be productive.

**Direct Investment:** Partnerships that invest in companies are said to make direct investments. The alternative is a partnership that invests in other partnerships, a fund of funds.

**Direct Operation Farmland:** A strategy typically employed with permanent crops to retain complete control over the assets. Farmland investors use farmland management firms to operate the farm and add value through increased quality and output. The primary risks associated with direct operation are operating, weather, and marketing risks.

**Diversification:** The process of consummating individual investments in a manner that insulates a portfolio against the risk of reduced yield or capital loss, accomplished by allocating individual investments among a variety of asset types, each with different characteristics.

**Downstream:** Portion of the energy chain that includes oil refineries, petrochemical plants, power generation, and distribution outlets.

**Dry Hole:** An oil well that fails to find or produce any oil or gas.

**Due Diligence:** The process of examining a property, related documents, and procedures conducted by or for the potential lender or purchaser to reduce risk. Applying a consistent standard of inspection and investigation one can determine if the actual conditions do or do not reflect the information as represented.

**E&P:** Acronym for "Exploration and Production" that relates to the exploration, development, and production of crude oil or natural gas reserves. E&P is also referred to as the upstream sector.

**EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization):** The "top line" profits of a private company are the monies earned before paying interest and taxes, and adding back depreciation and amortization. Unlike public companies, which are valued as the multiple of bottom line earnings to the stock price (P/E or price to earnings), private companies are valued as the multiple of EBITDA to the price of the stock.

There is no simple conversion factor that will convert an EBITDA multiple to a P/E for all companies, but in general, a factor of 2 is appropriate. Thus, a private company selling for an EBITDA multiple of 6 is priced about as richly as a public company with a P/E of 12.

**EBITDA Multiples:** The ratio of a private company's top line earnings to the price of its shares. See EBITDA above.

**Enterprise Value:** A measure of a company's value, often used as an alternative to straightforward market capitalization. Enterprise Value is calculated as market cap plus debt, minority interest and preferred shares, minus total cash and cash equivalents.

**Exploratory Well:** A well drilled to find and produce oil or gas in an unproven area or expand production of a previously known reservoir.

**Fee Income:** The General Partners in a private markets partnership generally receive two types of compensation: fee income as payment for their portfolio management services, and a share of any profits (carried interest) as incentive compensation.

**Fuel Cell:** A device that captures the electricity generated from a chemical reaction between a fuel and an oxidant. An example is a hydrogen fuel cell, which uses hydrogen as the fuel and oxygen as the oxidant to produce electricity and water.

**Fund of Funds:** A private markets partnership that consists primarily of investments in other partnerships, as opposed to direct investments in individual companies and deals. The General Partners of a fund of funds thus act as a manager of managers to create a diversified portfolio of partnerships, each of which in turn consists of a portfolio of direct investment deals.

Although a fund of funds is a collection of partnerships, the fund of funds itself is a partnership, and therefore has a vintage year, a commitment period, a distribution phase, and a final end. Thus, fund of funds have finite lifetimes, just like their underlying partnerships.

The advantages of a fund of funds are high diversification and "one stop shopping," i.e., the client has a single relationship with the fund of funds manager.

The disadvantages of fund of funds are higher costs (another entire layer of management fees and carried interest), an additional loss of liquidity, and an additional loss of control by the Limited Partners. Just as with direct private markets funds, a fund of funds is organized as a blind pool. That is, when a new fund of funds is announced, and a subscription target set, early investors do not know what specific sub-funds will be selected by the manager. Generally, the Private Placement Memorandum gives the General Partner almost unlimited latitude in making subsequent investments.

**General Partner:** The control partner in private equity partnerships, analogous to the portfolio manager in a public stock portfolio. Under the IRS code, the General Partner must commit some personal capital to the partnership (a minimum of 1% of the partnership's committed capital), and unlike the Limited Partners, is liable for leverage and other losses generated by the partnership.

**Geothermal Energy:** Energy extracted from the earth's interior to produce heat and electricity. Applications of geothermal energy include conventional geothermal (use of steam to drive turbines), geothermal heat pumps (pipes sunk beneath the earth's surface to act as a heat exchanger during the warmer and colder seasons), and direct heat (hot water pumped from the earth for use as a heat source).

**Greenfield:** A project without an operating history. Some of the initial outlay may be to the public entity, but the majority is used for construction. Greenfield opportunities may take an exceptionally long time to come to fruition. Meketa Investment Group categorizes a Fund as Greenfield if the Fund's investment strategy calls for over 65% of its underlying investments to be in greenfield assets.

**Growth (Expansion Capital):** A strategy that entails providing capital to a private company with the intention that the capital be used to expand operations. Generally, expansion capital strategies result in minority equity positions in companies, but with some degree of control over how the expansion capital is spent.

**Hedging:** Strategy used to limit or offset exposure to pricing risk of an underlying commodity. A common way to execute this strategy is through the use of futures contracts, a financial derivative that allows for the sale of a commodity at a pre-specified price in the future, whether or not the market price increases or decreases at the time. Counterparties to the futures contracts are speculators who are willing to accept the risk of price fluctuations in exchange for the potential upside.

**High-rise:** In the central business district, this could mean a building higher than 25 stories above ground level, but in suburban markets, it generally refers to buildings higher than seven or eight stories.

**Hurdle Rate:** The minimum rate of return that the Limited Partners must receive before the General Partners have a right to a share of any additional profits (carried interest) produced by the partnership's investments. For example, the partnership may specify that once the Limited Partners have received distributions representing an 8% total return on their commitment (the hurdle rate), the General Partner will share in all future distributions until they have been allocated 80% to the Limited Partners, and 20% to the General Partners (their carried interest).

**Hydro Energy:** Energy derived from the natural movement of falling or flowing water. The most common form of hydro energy comes from dammed water driving a turbine and generator to produce electricity. Once a hydroelectric complex is built, no direct waste is produced.

**Hydrocarbon:** A hydrogen and carbon compound created from the decomposition of organic material over time. Most hydrocarbons are found naturally in fossil fuels such as crude oil, natural gas, and coal.

**Improvements:** In the context of leasing, the term typically refers to the improvements made to or inside a building but may include any permanent structure or other development, such as a street, sidewalk, utilities, etc.

**Independent Oil Company:** A company involved in the exploration, production, and development of oil and natural gas that is not a Major Oil Company.

**In-Kind Distribution:** Most distributions from private equity partnerships are in cash. However, in some cases, a private deal will be taken public through an initial public offering (IPO), or through a trade sale for stock to a public company. In these cases, the Limited Partners will receive their distributions in the form of publicly traded common stocks and/or rights and warrants.

**Investment Period:** The period of time after the first closing during which the General Partner will call capital from the Limited Partners and make partnership investments. Legally, the investment period is usually six years. Practically, it is three to four years. Not to be confused with the term of the partnership, generally ten to twelve years.

**IPO (Initial Public Offering):** When a private company issues publicly traded stock, it becomes known as a public company. The initial sale of publicly available stock is called the initial public offering, or IPO.

**IRR (Internal Rate of Return):** The annualized rate of return on capital that is generated or capable of being generated within an investment or portfolio over a period of time, assuming all cash flows can be reinvested at the same rate. Mathematically, the IRR of an investment is the discount rate applied to that investment such that the net present value of the investment is zero. IRR is commonly used to measure profitability by applying the calculation to the after-tax cash flows to arrive at an after-tax equity yield rate.

**J-Curve:** Many private markets partnerships have small negative returns in their first years of operation as capital is invested. The negative returns result because the partnership's investments have not matured and turned a profit, but the partnership has nevertheless experienced various operating costs. When early deals begin to mature and are liquidated at a profit, the partnership's returns should become positive. Thus, the graph of the partnership's returns versus time can resemble the capital letter "J."



**Landfill Methane:** Landfill methane is generated from the decomposition of waste in landfills. Bacteria break down the organic matter, releasing a gas that is rich in methane. By capturing the methane, greenhouse gases released into the atmosphere are reduced, and the gases can be used as an energy source.

**Later Stage Fund:** A venture capital partnership that specializes in investing in startup companies that have already achieved at least some actual revenues, or a venture fund that provides subsequent rounds of venture financing after all of the capital provided in the first rounds has been consumed.

**Lead Investor:** Describes a General Partner who is the “lead” investor in a deal, as opposed to co-investors or follow-on investors. The term implies that the lead investor has taken the lead in sourcing, evaluating, and executing the deal.

**Lease:** An agreement whereby the owner of real property gives the right of possession to another for a specified period of time and for a specified consideration.

**Lease Rate:** The period rental payment to a lessor for the use of assets. It may also be considered as the implicit interest rate in minimum lease payments.

**Leverage:** Many General Partners use both equity capital provided by the Limited Partners and money borrowed from banks or other lenders to finance their investments. Any borrowed money is called leverage. If a deal is successful, leverage can often enhance the returns of the Limited Partners substantially. On the other hand, too much leverage can cripple an investment with interest and financing costs. It is important to note that the Limited Partners are not responsible for the repayment of any borrowed money.

**Leveraged Buyouts:** The purchase of a private or public company wherein the bulk of the purchase price is paid using borrowed money.

**Lifecycle:** The various developmental stages of a property: pre-development, development, leasing, operating and redevelopment (or rehab).

**Limited Partner:** All investors in a Limited Partnership other than the named General Partner are defined under the IRS code as Limited Partners. Limited Partners have only the control rights defined for them in the Private Placement Memorandum, and are generally passive investors in the partnership's deals.

A very important point is that Limited Partner's total liability for all deals made by the partnership are limited strictly by law to the Limited Partner's committed capital. Thus, even if the General Partners borrow a great deal of money (leverage), and lose it all, the lenders have no recourse to the assets of the Limited Partners. In effect, a Limited Partner can lose no more than the amount of money invested.

**Look-Back Provision:** See Claw-Back Provision above.

**Low-rise:** A building with fewer than four stories above ground level.

**Major Oil Company:** One of the original "Seven Sisters" consisting initially of Exxon, British Petroleum, Chevron, Gulf, Mobil, Texaco, and Royal Dutch Shell.

**Market Strategy:** A course of action defined with respect to a particular real estate market phase. For example, consider the market strategy of avoiding real estate transactions when there is an oversupply of space available in the market.

**Market Value:** The most probable price that a property would bring in a competitive and open market under fair sale conditions. Market value also refers to an estimate of this price.

**Mezzanine Financing:** An additional level of financing provided to a private company to expand sales, market share, or develop new products. Most mezzanine financing is structured as a package of high coupon bonds with equity “kickers,” i.e., rights to acquire the company's stock at a favorable price at a future point. Companies seeking mezzanine financing often have substantial revenues, and if not actual profits, the expectation of imminent profitability.

**Midstream:** Portion of the energy chain that transports and stores commodities such as oil and natural gas.

**MMCF:** One million cubic feet.

**Multiples and Multiple Expansion:** Managers purchasing public common stocks often buy companies with low price to earnings multiples when they believe some factor will induce other investors to bid up the price of the stock without an increase in actual earnings, thus causing the price multiple to expand. In the same fashion, a General Partner may purchase a private company with a low EBITDA multiple, expecting to profit through an expansion of that multiple. A typical example of a multiple expansion plan is consolidation. Many small companies, operating independently, may each be priced at relatively low multiples. But if purchased and combined into a larger, cohesive entity, investors might be willing to pay a higher multiple for the aggregate than for any individual component.

**Natural Gas:** A gaseous fossil fuel consisting primarily of methane and other heavier hydrocarbons. Natural gas burns cleaner than oil and coal and is a major source of electricity generation through the use of gas and steam turbines.

**Net Metering:** An arrangement that allows a facility to sell any excess energy it generates back to the electrical grid to offset its consumption.

**Net Operating Income (NOI):** The potential rental income plus other income, less vacancy, credit losses, and operating expenses.

**Oil Sands:** Naturally occurring mixtures of a very dense, tar-like form of petroleum called bitumen and sand or clay. Because of the high production and refining costs associated with oil sands, economic feasibility only occurs with high oil prices.

**OPEC:** OPEC (Organization of Petroleum Exporting Countries) is an oil cartel comprising twelve countries around the world.

**Open-end Fund:** A commingled fund that does not have a finite life, it continually accepts new investor capital and makes new property investments.

**Operator:** The party responsible for managing the asset; may be (and usually is) different than the owner/lessee of the asset.

**Opportunistic:** A phrase generally used by advisers and managers to describe investments in underperforming and/or undermanaged assets that hold the expectation of near-term increases in cash flow and value. Total return objectives for opportunistic strategies tend to be 20% or higher. Opportunistic investments typically involve a high degree of leverage - typically 60% to 100% on an asset basis and 60% to 80% on a portfolio basis.

**Permanent Crops:** Permanent crops include those grown on a tree or vine such as almonds, wine grapes, apples, and oranges. They are usually directly operated to produce higher income returns from crop sales but can carry a higher level of risk.

**PFI:** The Private Finance Initiative specifies a method, developed initially by the U.K. government, to provide financial support for Public-Private Partnerships. This has since been adopted as part of a wider reform program for the delivery of public services which is driven by the WTO, IMF & World Bank as a part of their "deregulation" and privatization drive. In return for their services, the private sector receives payment linked to its performance.

**Pipeline:** A system made of steel piping used to transport oil, gas, and other liquids from one location to another.

**Placement Agent:** Unlike public stock management companies, most of whom utilize an in-house sales force to market their services, private equity partnerships are generally marketed by third-party placement agents. These outside marketing firms and individuals are paid a commission by the General Partner.

**Platform Company:** Some private equity buyout funds attempt to add value by merging companies into larger, more cost efficient enterprises. This strategy generally begins with the acquisition of a platform company, often a market leader, to which other companies are added.

**Possible Reserves:** Reserves of oil or natural gas that have a less likely chance of being recovered than probable reserves. These reserves are often claimed as having a 10% certainty of being produced and are also known as P10 or 3P.

**PPM (Private Placement Memorandum):** Because Limited Partnership interests are not registered with the SEC, private equity managers must distribute a comprehensive document to prospective investors that describes the broad investment thesis of the partnership, and highlights any risks involved in the partnership. This document is called a Private Placement Memorandum.

**PPP:** A Public Private Partnership (or P3) is a system in which a government service or private business venture is funded and operated through a partnership of government and one or more private sector companies. Also referred to as Collective Development Agreements or Alternative Finance Procurement.

**Precious Metals:** Precious metals include gold, silver, palladium, and platinum. These metals have wide industrial uses but are better known for their usage in jewelry, art, and store of value.

**Pre-merch (merchantable):** Logs that do not meet the minimum size, quality, or usable volume required for the commercial sale of timber.

**Privatization:** The transfer of property or control of assets used to provide public services from the public sector to the private sector.

**Probable Reserves:** Probable reserves are those reserves based on median estimates and claim a 50% confidence of recoverability. These reserves are also known as P50 or 2P.

**Producing Well:** A well that produces oil and gas in sufficient quantities such that the revenue generated exceeds the associated production costs and taxes.

**Property Type:** The classification of commercial real estate based on its primary use. The four primary property types are: retail, industrial, office, and multi-family residential.

**Proved Reserves:** Reserves of oil or natural gas that are claimed to have a 90% certainty of being recovered using existing technology. The SEC only allows oil companies to report proved reserves to investors. Proved reserves are also known as P90 or 1P.

**Public to Private:** If a private partnership (or group of private partnerships) purchases all of the outstanding shares of a publicly traded company, the company's shares may be de-listed from the stock exchange. The company is then said to have been "taken private." For example, in June 1989, the private partnership Wings Holdings acquired the public stock of Northwest Airlines in a \$3.65 billion-dollar leveraged buyout. Following this acquisition, Northwest became a privately held corporation for the first time since 1941.

**Pulpwood:** Wood cut and chipped for the manufacturing of paper and paper related products. Pulpwood is typically too small or of insufficient quality for sawtimber and is classified as 6-9" DBH.

**Real Estate Cycles (phases):** The regularly repeating sequence of economic downturns and upturns and associated changes in real estate market transactions tied to market dynamics and changing macroeconomic conditions, whose phases include (in order) recession, recovery, expansion, and oversupply.

**Real Estate Investment Trust (REIT):** An investment vehicle in which investors purchase certificates of ownership in the trust, which in turn invests the money in real property and then distributes any profits to the investors. The trust is not subject to corporate income tax as long as it complies with the tax requirements for a REIT.

Shareholders must include their share of the REIT's income in their personal tax returns. (Barron's Dictionary of Real Estate Terms and Encyclopedia of Real Estate Terms 2nd Edition, Damien Abbott)

**Real Estate Trends:** Long-term movements or tendencies in the demand for commercial real estate (which can typically last for years or decades), usually tied to macro-economic or business cycles.

**Renewable Energy:** Energy derived from natural resources such as solar, wind, geothermal, or biofuels. Unlike oil, natural gas, or coal, these sources of energy are naturally replenished, providing a potential source of cleaner and more sustainable energy.

**Row Crops:** Row crops are those that are planted and harvested annually from the soil, as opposed to trees or vines, and include corn, cotton, rice, soybeans, and vegetables. Row crops are often eligible to receive federal subsidies.

**Sawtimber:** Timber of sufficient size and quality to be cut and harvested for lumber or other solid wood products. Sawtimber is usually derived from trees measuring 14" + DBH.

**Secondary Fund:** Occasionally, a Limited Partner will wish to sell his interest in a partnership before the term of the partnership is completed. Any such sale is termed a secondary market sale. A secondary fund creates a portfolio of partnership interests from earlier partnerships purchased in the secondary market. The advantage of a secondary fund is that it gives investors an opportunity to invest in seasoned partnerships from closed funds of prior vintage years.

**Shadow Tolls:** Payments made by government to the private sector operator of a road based, at least in part, on the number of vehicles using the road. They are currently in operation on some roads in the U.K., and they have also been adopted in other countries.

**Solar Energy:** Source of energy derived from the sun's light and heat. Common solar technologies include photovoltaics (PV) and solar thermal.

**Sponsor:** Every private equity opportunity that Meketa Investment Group evaluates is assigned to a sponsor. This individual, who is a member of Meketa Investment Group's Private Equity Investment Committee, is responsible for the collection of information and the evaluation of the opportunity.

**Submarket:** A segment or portion of a larger geographic market defined and identified on the basis of one or more attributes that distinguish it from other submarkets or locations.

**Take Down/Draw Down:** A take down or a draw down is the same as a capital call.

**Term:** The term of a private partnership is its expected lifetime, and is specified in the Private Placement Memorandum. Most partnerships have a term of ten years, with the option to extend the term once or twice by an additional year if the Limited Partners approve.

The term of a partnership consists of several phases. After the final closing, no new commitments are accepted and the partnership enters the commitment phase or investment phase, legally lasting up to six years, but generally lasting three to four years, during which the individual investments are made. A distribution phase follows, during which mature investments are realized and profits distributed to the partners. The final phase is the liquidation phase, during which all remaining properties and assets are sold in order to terminate the partnership.

**Trade Sale:** The most prevalent exit strategy for many private equity managers involves selling a company in the private markets, usually through an auction process, to other private equity investors or to larger companies. This type of exit is termed a trade sale.

**Turnaround:** A turnaround strategy involves buying a troubled company, usually for a relatively low price, and making significant managerial or organizational changes to better the company's operations and enhance profitability.

**Upstream:** Portion of the energy industry engaged in the exploration, production, and development of crude oil and natural gas reserves.

**Vacancy:** The number of units or space (of a specific commercial type) that are vacant and available for occupancy at a particular point in time within a given market (usually expressed as a vacancy rate).

**Vacancy Rate:** The percentage of the total supply of units or space of a specific commercial type that is vacant and available for occupancy at a particular point in time within a given market.

**Value-added:** A phrase generally used by advisers and managers to describe investments in underperforming and/or undermanaged assets. The objective is to generate 13 % to 18% returns.

**VCOC (Venture Capital Operating Company):** The IRS code defines one category of private partnerships to be venture capital operating companies for tax purposes. The General Partners of VCOCs are not required to register with the SEC as investment advisors. The name venture capital operating company relates only to the partnership's legal and tax structure, and does not imply that the partnership will invest in venture capital deals. For example, a middle market buyout fund, which invests only in mature companies with enterprise values of between \$200 million and \$1 billion, may be structured as a venture capital operating company.

**Veneer:** Continuous sheets of thin wood cut from trees measuring at least 16" + DBH. Veneer is commonly used in the manufacture of furniture and plywood.

**Venture Capital:** Money supplied to entrepreneurs to create new businesses is called venture capital. It is the first stage of financing for any new venture.

Traditionally, the recipient of the venture capital was a small group of entrepreneurs with an idea and a business plan, but no management team, corporate structure, revenues or profits. In the 1990s, however, venture capital was often used to seed established teams of entrepreneurs with well-defined products and in-place corporate structures. Thus, there is great variability in the meaning of venture capital and in the types of deals financed with venture capital money.

**Vintage Year:** The calendar year in which the first cash flow to a partnership occurred. This cash flow can be intended for management fees or investment capital. Vintage year can be used to differentiate the partnerships established over time by a General Partner, to track portfolio commitment pacing, and to benchmark portfolio performance.

**Warrants:** Just like publicly traded companies, private companies may issue warrants to their shareholders or to other groups providing some form of financing. A warrant is the right to purchase shares of the company's stock at a future date at a predetermined price, called the exercise price. Warrants become valuable if the exercise price is below the market price of the stock.

**Wind Energy:** Source of energy derived from wind motion that can be converted to electricity by turning a turbine and generator.

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

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

**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.