

# FUND EVALUATION REPORT

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## Massachusetts Housing Finance Agency Retirement System

Quarterly Review  
December 31, 2016



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- 2. System Detail as of December 31, 2016**
- 3. Portfolio Reviews as of December 31, 2016**
- 4. Appendices**
  - The World Markets Fourth Quarter of 2016
  - Corporate Update
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**System Summary**  
**As of December 31, 2016**

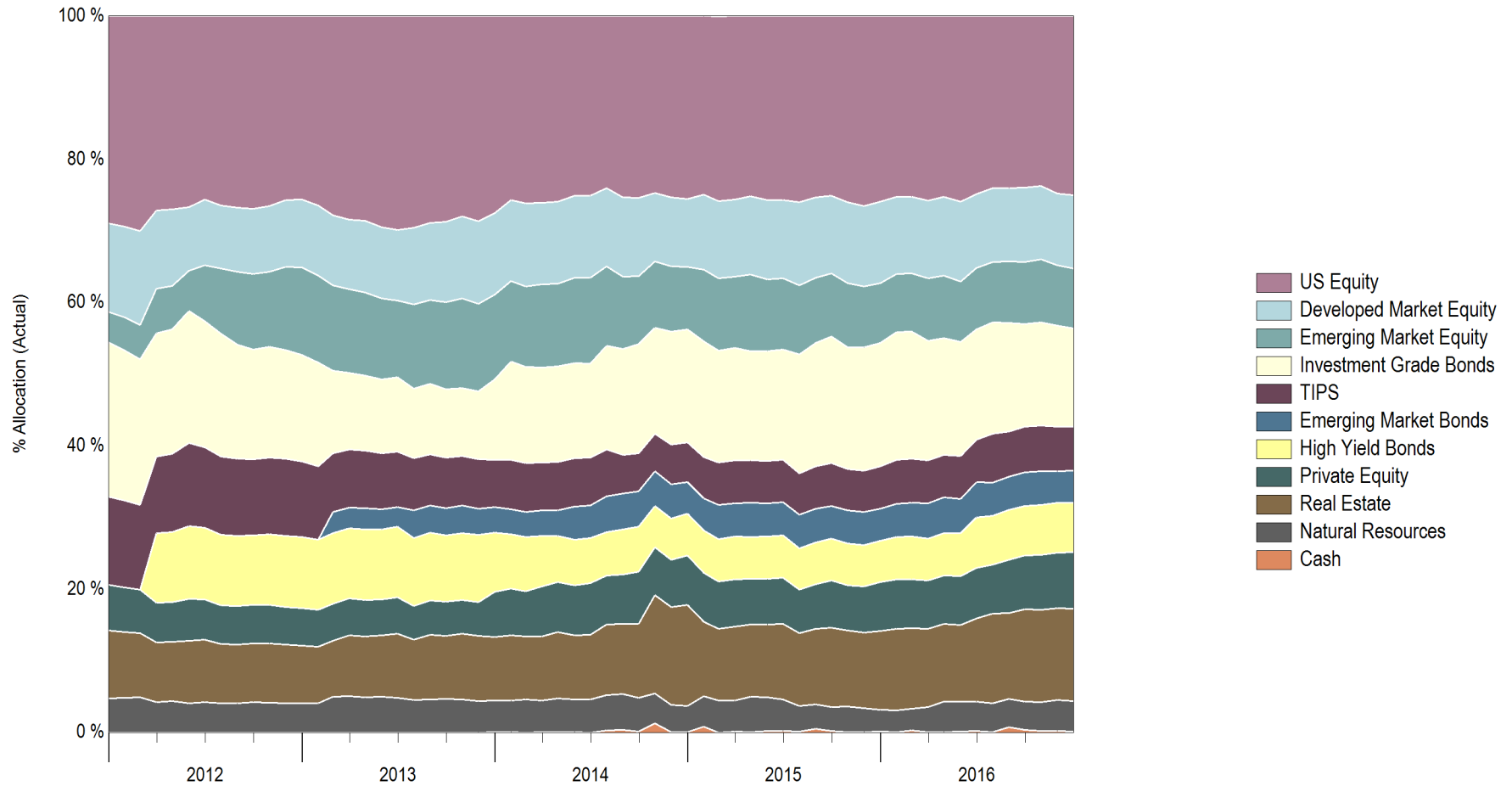
## Total Retirement System

As of December 31, 2016

## Allocation vs. Targets and Policy

	Current Balance	Current Allocation	Policy	Policy Range	Within IPS Range?
US Equity	\$31,937,381	25%	25%	20% - 30%	Yes
Developed Market Equity	\$13,120,335	10%	10%	6% - 14%	Yes
Emerging Market Equity	\$10,653,996	8%	10%	6% - 14%	Yes
Investment Grade Bonds	\$17,525,674	14%	15%	12% - 18%	Yes
TIPS	\$7,877,400	6%	6%	4% - 8%	Yes
Emerging Market Bonds	\$5,632,090	4%	5%	3% - 7%	Yes
High Yield Bonds	\$8,911,492	7%	6%	3% - 9%	Yes
Private Equity	\$10,005,633	8%	8%	5% - 11%	Yes
Real Estate	\$16,481,963	13%	10%	7% - 13%	Yes
Natural Resources	\$5,426,981	4%	5%	3% - 7%	Yes
Cash	\$176,707	0%	0%	0% - 5%	Yes
<b>Total</b>	<b>\$127,749,652</b>	<b>100%</b>	<b>100%</b>		

Asset Allocation History  
5 Years Ending December 31, 2016



## Total Retirement System

As of December 31, 2016

## Asset Class Performance Summary

	Market Value (\$)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Return (%)	Since
<b>Total Retirement System</b>	<b>127,749,609</b>	<b>100.0</b>	<b>0.5</b>	<b>9.5</b>	<b>3.6</b>	<b>6.7</b>	<b>4.3</b>	<b>5.1</b>	<b>Jul-01</b>
Consumer Price Index			0.0	2.1	1.2	1.4	1.8	2.0	Jul-01
60% MSCI ACWI / 40% Barclays Global Aggregate			-2.2	5.7	1.9	5.8	3.8	5.4	Jul-01
<b>Domestic Equity Assets</b>	<b>31,937,381</b>	<b>25.0</b>	<b>4.3</b>	<b>13.1</b>	<b>8.5</b>	<b>14.6</b>	<b>7.0</b>	<b>6.3</b>	<b>Jul-01</b>
Russell 3000			4.2	12.7	8.4	14.7	7.1	6.5	Jul-01
<b>Total International Developed Market Equity</b>	<b>13,120,335</b>	<b>10.3</b>	<b>-1.3</b>	<b>1.6</b>	<b>-0.4</b>	<b>7.7</b>	<b>2.1</b>	<b>5.6</b>	<b>Jul-01</b>
MSCI EAFE			-0.7	1.0	-1.6	6.5	0.7	4.5	Jul-01
<b>International Emerging Market Equity Assets</b>	<b>10,653,996</b>	<b>8.3</b>	<b>-3.3</b>	<b>11.7</b>	<b>-4.3</b>	<b>0.0</b>	<b>--</b>	<b>-1.0</b>	<b>Jul-07</b>
MSCI Emerging Markets			-4.2	11.2	-2.6	1.3	1.8	0.2	Jul-07
<b>Investment Grade Bond Assets</b>	<b>17,525,674</b>	<b>13.7</b>	<b>-3.0</b>	<b>2.7</b>	<b>3.2</b>	<b>2.2</b>	<b>4.6</b>	<b>4.8</b>	<b>Jul-01</b>
BBgBarc US Aggregate TR			-3.0	2.6	3.0	2.2	4.3	4.7	Jul-01
<b>High Yield Bond Assets</b>	<b>8,911,492</b>	<b>7.0</b>	<b>0.8</b>	<b>11.5</b>	<b>5.0</b>	<b>6.9</b>	<b>6.5</b>	<b>6.6</b>	<b>Feb-05</b>
CSFB High Yield Index			2.5	18.3	4.6	7.2	7.1	7.2	Feb-05
<b>TIPS Assets</b>	<b>7,877,400</b>	<b>6.2</b>	<b>-2.4</b>	<b>4.7</b>	<b>2.2</b>	<b>0.9</b>	<b>--</b>	<b>4.4</b>	<b>Jul-07</b>
BBgBarc US TIPS TR			-2.4	4.7	2.3	0.9	4.4	4.4	Jul-07
<b>Emerging Market Debt Assets</b>	<b>5,632,090</b>	<b>4.4</b>	<b>-6.0</b>	<b>9.4</b>	<b>-5.3</b>	<b>--</b>	<b>--</b>	<b>-7.6</b>	<b>Mar-13</b>
JP Morgan GBI EM Global Diversified TR USD			-6.1	9.9	-4.1	-1.3	3.8	-5.7	Mar-13
<b>Real Estate Assets</b>	<b>16,481,963</b>	<b>12.9</b>	<b>2.2</b>	<b>9.0</b>	<b>11.9</b>	<b>11.6</b>	<b>4.0</b>	<b>5.6</b>	<b>Apr-05</b>
NCREIF-ODCE			2.1	8.8	12.1	12.2	5.8	7.7	Apr-05
<b>Private Equity Assets</b>	<b>10,005,633</b>	<b>7.8</b>	<b>2.3</b>	<b>6.3</b>	<b>6.7</b>	<b>7.8</b>	<b>6.3</b>	<b>4.7</b>	<b>Oct-03</b>
Russell 3000 + 3%			5.0	16.1	11.7	18.1	10.3	12.1	Oct-03
<b>Natural Resources &amp; Commodities Assets</b>	<b>5,426,981</b>	<b>4.2</b>	<b>6.5</b>	<b>53.7</b>	<b>-9.6</b>	<b>-4.8</b>	<b>--</b>	<b>-6.4</b>	<b>Jul-11</b>
S&P Global Natural Resources Index TR USD			6.7	32.3	-3.2	-0.2	1.1	-3.5	Jul-11
<b>Cash</b>	<b>176,707</b>	<b>0.1</b>							

## Total Retirement System

As of December 31, 2016

## Trailing Gross Performance

	Market Value (\$)	% of Portfolio	% of Sector	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Return (%)	Since
<b>Total Retirement System</b>	<b>127,749,609</b>	<b>100.0</b>	<b>--</b>	<b>0.5</b>	<b>9.5</b>	<b>3.6</b>	<b>6.7</b>	<b>4.3</b>	<b>5.1</b>	<b>Jul-01</b>
Consumer Price Index				0.0	2.1	1.2	1.4	1.8	2.0	Jul-01
60% MSCI ACWI / 40% Barclays Global Aggregate				-2.2	5.7	1.9	5.8	3.8	5.4	Jul-01
<b>Domestic Equity Assets</b>	<b>31,937,381</b>	<b>25.0</b>	<b>25.0</b>	<b>4.3</b>	<b>13.1</b>	<b>8.5</b>	<b>14.6</b>	<b>7.0</b>	<b>6.3</b>	<b>Jul-01</b>
Russell 3000				4.2	12.7	8.4	14.7	7.1	6.5	Jul-01
SSgA Russell 1000 Value Index-NL	15,035,811	11.8	47.1	6.6	17.3	8.6	14.8	5.8	7.2	Jan-05
Russell 1000 Value				6.7	17.3	8.6	14.8	5.7	7.1	Jan-05
SSgA Russell 1000 Growth-NL	13,902,099	10.9	43.5	1.1	7.2	8.6	14.5	--	7.9	Jul-07
Russell 1000 Growth				1.0	7.1	8.6	14.5	8.3	7.9	Jul-07
SSgA Russell 2000 Index-NL	2,999,471	2.3	9.4	8.8	21.5	6.8	14.5	--	13.8	Aug-10
Russell 2000				8.8	21.3	6.7	14.5	7.1	13.7	Aug-10
<b>Total International Developed Market Equity</b>	<b>13,120,335</b>	<b>10.3</b>	<b>10.3</b>	<b>-1.3</b>	<b>1.6</b>	<b>-0.4</b>	<b>7.7</b>	<b>2.1</b>	<b>5.6</b>	<b>Jul-01</b>
MSCI EAFE				-0.7	1.0	-1.6	6.5	0.7	4.5	Jul-01
SSgA MSCI EAFE Index-NL	9,696,050	7.6	73.9	-0.7	1.4	-1.3	6.9	--	5.3	Aug-10
MSCI EAFE				-0.7	1.0	-1.6	6.5	0.7	5.0	Aug-10
SSgA MSCI EAFE Small Cap Index-NL	3,424,285	2.7	26.1	-2.9	2.4	2.3	10.8	--	8.7	Aug-10
MSCI EAFE Small Cap				-2.9	2.2	2.1	10.6	2.9	8.4	Aug-10



## Total Retirement System

As of December 31, 2016

	Market Value (\$)	% of Portfolio	% of Sector	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Return (%)	Since
<b>International Emerging Market Equity Assets</b>	<b>10,653,996</b>	<b>8.3</b>	<b>8.3</b>	<b>-3.3</b>	<b>11.7</b>	<b>-4.3</b>	<b>0.0</b>	<b>--</b>	<b>-1.0</b>	<b>Jul-07</b>
MSCI Emerging Markets				-4.2	11.2	-2.6	1.3	1.8	0.2	Jul-07
DFA (Net)	2,090,512	1.6	19.6	-1.0	19.8	-2.4	1.2	--	-0.3	Jul-07
MSCI Emerging Markets				-4.2	11.2	-2.6	1.3	1.8	0.2	Jul-07
LMCG Emerging Markets	4,000,355	3.1	37.5	-4.5	7.0	--	--	--	-2.7	Aug-15
MSCI Emerging Markets				-4.2	11.2	-2.6	1.3	1.8	-0.9	Aug-15
KB Investors Emerging Markets Equity	4,563,129	3.6	42.8	-3.3	12.0	--	--	--	7.7	Oct-15
MSCI Emerging Markets				-4.2	11.2	-2.6	1.3	1.8	9.4	Oct-15
<b>Investment Grade Bond Assets</b>	<b>17,525,674</b>	<b>13.7</b>	<b>13.7</b>	<b>-3.0</b>	<b>2.7</b>	<b>3.2</b>	<b>2.2</b>	<b>4.6</b>	<b>4.8</b>	<b>Jul-01</b>
BBgBarc US Aggregate TR				-3.0	2.6	3.0	2.2	4.3	4.7	Jul-01
McDonnell Core Bond	17,525,674	13.7	100.0	-3.0	2.7	3.2	2.2	4.6	4.8	Jul-01
BBgBarc US Aggregate TR				-3.0	2.6	3.0	2.2	4.3	4.7	Jul-01
<b>High Yield Bond Assets</b>	<b>8,911,492</b>	<b>7.0</b>	<b>7.0</b>	<b>0.8</b>	<b>11.5</b>	<b>5.0</b>	<b>6.9</b>	<b>6.5</b>	<b>6.6</b>	<b>Feb-05</b>
CSFB High Yield Index				2.5	18.3	4.6	7.2	7.1	7.2	Feb-05
Columbia Institutional High Yield	8,911,492	7.0	100.0	0.8	11.5	5.0	--	--	6.3	Mar-12
BBgBarc US High Yield TR				1.8	17.1	4.7	7.4	7.5	6.4	Mar-12
<b>TIPS Assets</b>	<b>7,877,400</b>	<b>6.2</b>	<b>6.2</b>	<b>-2.4</b>	<b>4.7</b>	<b>2.2</b>	<b>0.9</b>	<b>--</b>	<b>4.4</b>	<b>Jul-07</b>
BBgBarc US TIPS TR				-2.4	4.7	2.3	0.9	4.4	4.4	Jul-07
SSgA TIPS-NL	7,877,400	6.2	100.0	-2.4	4.7	2.2	0.9	--	4.4	Jul-07
BBgBarc US TIPS TR				-2.4	4.7	2.3	0.9	4.4	4.4	Jul-07
<b>Emerging Market Debt Assets</b>	<b>5,632,090</b>	<b>4.4</b>	<b>4.4</b>	<b>-6.0</b>	<b>9.4</b>	<b>-5.3</b>	<b>--</b>	<b>--</b>	<b>-7.6</b>	<b>Mar-13</b>
JP Morgan GBI EM Global Diversified TR USD				-6.1	9.9	-4.1	-1.3	3.8	-5.7	Mar-13
Stone Harbor Emerging Markets Local Currency Debt (Net)	2,919,955	2.3	51.8	-8.8	6.2	-6.3	--	--	-8.3	Mar-13
JP Morgan GBI EM Global Diversified TR USD				-6.1	9.9	-4.1	-1.3	3.8	-5.7	Mar-13

## Total Retirement System

As of December 31, 2016										
	Market Value (\$)	% of Portfolio	% of Sector	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Return (%)	Since
Logan Circle Emerging Markets Debt (Net)	2,712,134	2.1	48.2	--	--	--	--	--	-1.4	Nov-16
50% JPM EMBI GD / 50% JPM GBI-EM				-5.1	10.2	1.0	2.3	5.4	-4.0	Nov-16
<b>Real Estate Assets</b>	<b>16,481,963</b>	<b>12.9</b>	<b>12.9</b>	<b>2.2</b>	<b>9.0</b>	<b>11.9</b>	<b>11.6</b>	<b>4.0</b>	<b>5.6</b>	<b>Apr-05</b>
NCREIF-ODCE				2.1	8.8	12.1	12.2	5.8	7.7	Apr-05
AG Realty Fund IV	4,346	0.0	0.0							
TA Associates Realty Fund IX	1,971,716	1.5	12.0							
TA Associates Realty Fund X	2,561,653	2.0	15.5							
Intercontinental U.S. REIF (Net)	5,133,431	4.0	31.1	4.4	10.9	--	--	--	11.9	Oct-14
NCREIF-ODCE				2.1	8.8	12.1	12.2	5.8	12.0	Oct-14
AEW Core Property Trust (Net)	6,810,817	5.3	41.3	1.8	7.6	--	--	--	10.4	Oct-14
NCREIF-ODCE				2.1	8.8	12.1	12.2	5.8	12.0	Oct-14
<b>Private Equity Assets</b>	<b>10,005,633</b>	<b>7.8</b>	<b>7.8</b>	<b>2.3</b>	<b>6.3</b>	<b>6.7</b>	<b>7.8</b>	<b>6.3</b>	<b>4.7</b>	<b>Oct-03</b>
Russell 3000 + 3%				5.0	16.1	11.7	18.1	10.3	12.1	Oct-03
Ascent Venture Partners - Fund II	133,940	0.1	1.3							
Ascent Venture Partners - Fund III	91,987	0.1	0.9							
Ascent Venture Partners - Fund IV	108,573	0.1	1.1							
Ascent Venture Partners - Fund V	879,981	0.7	8.8							
Ascent Venture Partners - Fund VI	507,027	0.4	5.1							
Constitution Capital Partners Ironsides III	886,520	0.7	8.9							

AG Realty Fund IV, TA Associates Realty Fund IX, and TA Associates Realty Fund X are based on September 30, 2016 fair market value, adjusted for subsequent cash flows.

Private Equity Assets: Based on September 30, 2016 fair market value, adjusted for subsequent cash flows.



## Total Retirement System

As of December 31, 2016

	Market Value (\$)	% of Portfolio	% of Sector	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Return (%)	Since
Constitution Capital Direct IV	1,196,685	0.9	12.0							
Goldman Sachs PEP 2005	1,208,949	0.9	12.1							
HarbourVest Partners VIII	1,429,761	1.1	14.3							
HarbourVest Partners IX	2,987,482	2.3	29.9							
HarbourVest X Buyout Fund	574,727	0.4	5.7							
<b>Natural Resources &amp; Commodities Assets</b>	<b>5,426,981</b>	<b>4.2</b>	<b>4.2</b>	<b>6.5</b>	<b>53.7</b>	<b>-9.6</b>	<b>-4.8</b>	<b>--</b>	<b>-6.4</b>	<b>Jul-11</b>
<i>S&amp;P Global Natural Resources Index TR USD</i>				6.7	32.3	-3.2	-0.2	1.1	-3.5	Jul-11
RS Global Natural Resources (Net)	5,426,981	4.2	100.0	6.5	53.7	-9.6	-4.8	--	-6.4	Jul-11
<i>S&amp;P Global Natural Resources Index TR USD</i>				6.7	32.3	-3.2	-0.2	1.1	-3.5	Jul-11
<b>Cash</b>	<b>176,707</b>	<b>0.1</b>	<b>0.1</b>							
Cash STIF	176,707	0.1	100.0							

## Total Retirement System

As of December 31, 2016

## Calendar Year Performance

	2016 (%)	2015 (%)	2014 (%)	2013 (%)	2012 (%)	2011 (%)	2010 (%)	2009 (%)	2008 (%)	2007 (%)
<b>Total Retirement System</b>	<b>9.5</b>	<b>-2.7</b>	<b>4.3</b>	<b>10.9</b>	<b>12.2</b>	<b>2.2</b>	<b>12.5</b>	<b>17.7</b>	<b>-24.7</b>	<b>7.9</b>
<i>Consumer Price Index</i>	2.1	0.7	0.8	1.5	1.7	3.0	1.5	2.7	0.1	4.1
<b>Domestic Equity Assets</b>	<b>13.1</b>	<b>0.4</b>	<b>12.4</b>	<b>33.5</b>	<b>16.3</b>	<b>1.0</b>	<b>17.5</b>	<b>30.8</b>	<b>-38.3</b>	<b>3.9</b>
<i>Russell 3000</i>	12.7	0.5	12.6	33.6	16.4	1.0	16.9	28.3	-37.3	5.1
SSgA Russell 1000 Value Index-NL	17.3	-3.7	13.4	32.5	17.4	0.4	15.6	20.0	-36.8	-0.1
<i>Russell 1000 Value</i>	17.3	-3.8	13.5	32.5	17.5	0.4	15.5	19.7	-36.8	-0.2
SSgA Russell 1000 Growth-NL	7.2	5.6	13.1	33.5	15.4	2.6	16.7	37.2	-38.4	--
<i>Russell 1000 Growth</i>	7.1	5.7	13.0	33.5	15.3	2.6	16.7	37.2	-38.4	11.8
SSgA Russell 2000 Index-NL	21.5	-4.4	5.0	38.9	16.4	-4.1	--	--	--	--
<i>Russell 2000</i>	21.3	-4.4	4.9	38.8	16.3	-4.2	26.9	27.2	-33.8	-1.6
<b>Total International Developed Market Equity</b>	<b>1.6</b>	<b>2.0</b>	<b>-4.7</b>	<b>24.4</b>	<b>18.1</b>	<b>-12.6</b>	<b>11.4</b>	<b>36.3</b>	<b>-41.5</b>	<b>9.8</b>
<i>MSCI EAFE</i>	1.0	-0.8	-4.9	22.8	17.3	-12.1	7.8	31.8	-43.4	11.2
SSgA MSCI EAFE Index-NL	1.4	-0.5	-4.6	23.1	17.7	-11.9	--	--	--	--
<i>MSCI EAFE</i>	1.0	-0.8	-4.9	22.8	17.3	-12.1	7.8	31.8	-43.4	11.2
SSgA MSCI EAFE Small Cap Index-NL	2.4	9.7	-4.7	29.5	20.1	-15.0	--	--	--	--
<i>MSCI EAFE Small Cap</i>	2.2	9.6	-4.9	29.3	20.0	-15.9	22.0	46.8	-47.0	1.4
<b>International Emerging Market Equity Assets</b>	<b>11.7</b>	<b>-18.1</b>	<b>-4.4</b>	<b>-3.8</b>	<b>18.8</b>	<b>-25.6</b>	<b>22.1</b>	<b>92.3</b>	<b>-53.9</b>	<b>--</b>
<i>MSCI Emerging Markets</i>	11.2	-14.9	-2.2	-2.6	18.2	-18.4	18.9	78.5	-53.3	39.4
DFA (Net)	19.8	-18.8	-4.4	-3.8	18.8	-25.6	22.1	92.3	-53.9	--
<i>MSCI Emerging Markets</i>	11.2	-14.9	-2.2	-2.6	18.2	-18.4	18.9	78.5	-53.3	39.4
LMCG Emerging Markets	7.0	--	--	--	--	--	--	--	--	--
<i>MSCI Emerging Markets</i>	11.2	-14.9	-2.2	-2.6	18.2	-18.4	18.9	78.5	-53.3	39.4

## Total Retirement System

As of December 31, 2016

	2016 (%)	2015 (%)	2014 (%)	2013 (%)	2012 (%)	2011 (%)	2010 (%)	2009 (%)	2008 (%)	2007 (%)
KB Investors Emerging Markets Equity	12.0	--	--	--	--	--	--	--	--	--
<i>MSCI Emerging Markets</i>	11.2	-14.9	-2.2	-2.6	18.2	-18.4	18.9	78.5	-53.3	39.4
<b>Investment Grade Bond Assets</b>	<b>2.7</b>	<b>0.8</b>	<b>6.1</b>	<b>-3.1</b>	<b>4.6</b>	<b>8.5</b>	<b>6.7</b>	<b>9.7</b>	<b>3.8</b>	<b>6.2</b>
<i>BBgBarc US Aggregate TR</i>	2.6	0.5	6.0	-2.0	4.2	7.8	6.5	5.9	5.2	7.0
McDonnell Core Bond	2.7	0.8	6.1	-3.1	4.6	8.5	6.7	9.7	3.8	6.2
<i>BBgBarc US Aggregate TR</i>	2.6	0.5	6.0	-2.0	4.2	7.8	6.5	5.9	5.2	7.0
<b>High Yield Bond Assets</b>	<b>11.5</b>	<b>-0.2</b>	<b>4.1</b>	<b>6.0</b>	<b>13.6</b>	<b>6.2</b>	<b>12.9</b>	<b>43.2</b>	<b>-23.3</b>	<b>2.2</b>
<i>CSFB High Yield Index</i>	18.3	-4.9	1.9	7.5	14.7	5.5	14.4	54.2	-26.2	2.6
Columbia Institutional High Yield	11.5	-0.2	4.1	6.0	--	--	--	--	--	--
<i>BBgBarc US High Yield TR</i>	17.1	-4.5	2.5	7.4	15.8	5.0	15.1	58.2	-26.2	1.9
<b>TIPS Assets</b>	<b>4.7</b>	<b>-1.4</b>	<b>3.6</b>	<b>-8.6</b>	<b>6.9</b>	<b>13.5</b>	<b>6.3</b>	<b>11.3</b>	<b>-2.4</b>	<b>--</b>
<i>BBgBarc US TIPS TR</i>	4.7	-1.4	3.6	-8.6	7.0	13.6	6.3	11.4	-2.4	11.6
SSgA TIPS-NL	4.7	-1.4	3.6	-8.6	6.9	13.5	6.3	11.3	-2.4	--
<i>BBgBarc US TIPS TR</i>	4.7	-1.4	3.6	-8.6	7.0	13.6	6.3	11.4	-2.4	11.6
<b>Emerging Market Debt Assets</b>	<b>9.4</b>	<b>-15.2</b>	<b>-8.5</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>JP Morgan GBI EM Global Diversified TR USD</i>	9.9	-14.9	-5.7	-9.0	16.8	-1.8	15.1	22.0	-5.2	18.1
Stone Harbor Emerging Markets Local Currency Debt (Net)	6.2	-15.2	-8.5	--	--	--	--	--	--	--
<i>JP Morgan GBI EM Global Diversified TR USD</i>	9.9	-14.9	-5.7	-9.0	16.8	-1.8	15.1	22.0	-5.2	18.1
Logan Circle Emerging Markets Debt (Net)	--	--	--	--	--	--	--	--	--	--
<i>50% JPM EMBI GD / 50% JPM GBI-EM</i>	10.2	-7.1	0.7	-7.1	17.2	2.8	13.8	26.0	-8.6	12.0

## Total Retirement System

As of December 31, 2016

	2016 (%)	2015 (%)	2014 (%)	2013 (%)	2012 (%)	2011 (%)	2010 (%)	2009 (%)	2008 (%)	2007 (%)
<b>Real Estate Assets</b>	<b>9.0</b>	<b>13.8</b>	<b>12.8</b>	<b>10.1</b>	<b>12.5</b>	<b>16.7</b>	<b>12.7</b>	<b>-38.9</b>	<b>-14.2</b>	<b>23.6</b>
<i>NCREIF-ODCE</i>	8.8	15.0	12.5	13.9	10.9	16.0	16.4	-29.8	-10.0	16.0
AG Realty Fund IV										
TA Associates Realty Fund IX										
TA Associates Realty Fund X										
Intercontinental U.S. REIF (Net)	10.9	12.5	--	--	--	--	--	--	--	--
<i>NCREIF-ODCE</i>	8.8	15.0	12.5	13.9	10.9	16.0	16.4	-29.8	-10.0	16.0
AEW Core Property Trust (Net)	7.6	12.8	--	--	--	--	--	--	--	--
<i>NCREIF-ODCE</i>	8.8	15.0	12.5	13.9	10.9	16.0	16.4	-29.8	-10.0	16.0
<b>Private Equity Assets</b>	<b>6.3</b>	<b>0.8</b>	<b>13.5</b>	<b>9.5</b>	<b>9.2</b>	<b>7.9</b>	<b>19.9</b>	<b>-14.2</b>	<b>-2.8</b>	<b>17.3</b>
<i>Russell 3000 + 3%</i>	16.1	3.5	15.9	37.5	19.9	4.1	20.4	32.1	-35.3	8.3
Ascent Venture Partners - Fund II										
Ascent Venture Partners - Fund III										
Ascent Venture Partners - Fund IV										
Ascent Venture Partners - Fund V										
Ascent Venture Partners - Fund VI										
Constitution Capital Partners Ironsides III										
Constitution Capital Direct IV										
Goldman Sachs PEP 2005										
HarbourVest Partners VIII										

## Total Retirement System

As of December 31, 2016

	2016 (%)	2015 (%)	2014 (%)	2013 (%)	2012 (%)	2011 (%)	2010 (%)	2009 (%)	2008 (%)	2007 (%)
HarbourVest Partners IX										
HarbourVest X Buyout Fund										
<b>Natural Resources &amp; Commodities Assets</b>	<b>53.7</b>	<b>-38.0</b>	<b>-22.6</b>	<b>-0.3</b>	<b>6.5</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>S&amp;P Global Natural Resources Index TR USD</i>	32.3	-24.0	-9.7	1.5	7.2	-14.9	11.0	36.1	-38.3	41.7
RS Global Natural Resources (Net)	53.7	-38.0	-22.6	-0.3	6.5	--	--	--	--	--
<i>S&amp;P Global Natural Resources Index TR USD</i>	32.3	-24.0	-9.7	1.5	7.2	-14.9	11.0	36.1	-38.3	41.7
<b>Cash</b>										
Cash STIF										

**Statistics Summary**  
**5 Years Ending December 31, 2016**

	Anlzd Return	Anlzd Standard Deviation	Information Ratio	Beta	Sharpe Ratio	Tracking Error
Total Retirement System	6.7%	6.6%	0.8	1.0	1.0	6.5%
Consumer Price Index	1.4%	1.1%	--	1.0	1.1	0.0%
Domestic Equity Assets	14.6%	10.6%	-0.3	1.0	1.4	0.1%
Russell 3000	14.7%	10.6%	--	1.0	1.4	0.0%
SSgA Russell 1000 Value Index-NL	14.7%	10.6%	-1.5	1.0	1.4	0.1%
Russell 1000 Value	14.8%	10.6%	--	1.0	1.4	0.0%
SSgA Russell 1000 Growth-NL	14.4%	10.9%	-2.1	1.0	1.3	0.0%
Russell 1000 Growth	14.5%	10.9%	--	1.0	1.3	0.0%
SSgA Russell 2000 Index-NL	14.4%	14.6%	-0.7	1.0	1.0	0.1%
Russell 2000	14.5%	14.6%	--	1.0	1.0	0.0%
Total International Equity	3.6%	14.2%	-0.8	1.0	0.2	2.9%
MSCI ACWI ex USA IMI Gross	5.8%	13.3%	--	1.0	0.4	0.0%
Total International Developed Market Equity	7.7%	13.3%	1.0	1.0	0.6	1.2%
MSCI EAFE	6.5%	13.5%	--	1.0	0.5	0.0%
SSgA MSCI EAFE Index-NL	6.7%	13.5%	1.9	1.0	0.5	0.1%
MSCI EAFE	6.5%	13.5%	--	1.0	0.5	0.0%
SSgA MSCI EAFE Small Cap Index-NL	10.5%	13.4%	-0.3	1.0	0.8	0.2%
MSCI EAFE Small Cap	10.6%	13.5%	--	1.0	0.8	0.0%
International Emerging Market Equity Assets	0.0%	17.5%	-0.4	1.1	0.0	3.4%
MSCI Emerging Markets	1.3%	16.2%	--	1.0	0.1	0.0%



## Total Retirement System

As of December 31, 2016

	Anlzd Return	Anlzd Standard Deviation	Information Ratio	Beta	Sharpe Ratio	Tracking Error
DFA	1.2%	18.2%	0.0	1.1	0.1	4.0%
MSCI Emerging Markets	1.3%	16.2%	--	1.0	0.1	0.0%
LMCG Emerging Markets	--	--	--	--	--	--
MSCI Emerging Markets	1.3%	16.2%	--	1.0	0.1	0.0%
KB Investors Emerging Markets Equity	--	--	--	--	--	--
MSCI Emerging Markets	1.3%	16.2%	--	1.0	0.1	0.0%
Total Fixed Income	2.1%	4.1%	-0.3	1.3	0.5	1.9%
BBgBarc US Universal TR	2.8%	2.9%	--	1.0	0.9	0.0%
Investment Grade Bond Assets	2.2%	3.1%	-0.2	1.1	0.7	0.3%
BBgBarc US Aggregate TR	2.2%	2.9%	--	1.0	0.7	0.0%
McDonnell Core Bond	2.2%	3.1%	-0.2	1.1	0.7	0.3%
BBgBarc US Aggregate TR	2.2%	2.9%	--	1.0	0.7	0.0%
High Yield Bond Assets	6.8%	5.0%	-0.1	0.8	1.4	2.2%
CSFB High Yield Index	7.2%	5.5%	--	1.0	1.3	0.0%
Columbia Institutional High Yield	--	--	--	--	--	--
BBgBarc US High Yield TR	7.4%	5.5%	--	1.0	1.3	0.0%
TIPS Assets	0.9%	4.7%	-0.5	1.0	0.2	0.0%
BBgBarc US TIPS TR	0.9%	4.8%	--	1.0	0.2	0.0%
SSgA TIPS-NL	0.9%	4.7%	-0.6	1.0	0.2	0.0%
BBgBarc US TIPS TR	0.9%	4.8%	--	1.0	0.2	0.0%
Emerging Market Debt Assets	--	--	--	--	--	--
JP Morgan GBI EM Global Diversified TR USD	-1.3%	12.2%	--	1.0	-0.1	0.0%
Stone Harbor Emerging Markets Local Currency Debt	--	--	--	--	--	--
JP Morgan GBI EM Global Diversified TR USD	-1.3%	12.2%	--	1.0	-0.1	0.0%

## Total Retirement System

As of December 31, 2016

	Anlzd Return	Anlzd Standard Deviation	Information Ratio	Beta	Sharpe Ratio	Tracking Error
Logan Circle Emerging Markets Debt	--	--	--	--	--	--
50% JPM EMBI GD / 50% JPM GBI-EM	2.3%	9.1%	--	1.0	0.2	0.0%
Real Estate Assets	11.6%	4.8%	-0.4	0.9	2.4	1.4%
NCREIF-ODCE	12.2%	5.0%	--	1.0	2.4	0.0%
AG Realty Fund IV	0.0%	0.0%	-2.5	0.0	--	5.0%
NCREIF-ODCE	12.2%	5.0%	--	1.0	2.4	0.0%
TA Associates Realty Fund IX	13.1%	5.9%	0.3	1.0	2.2	3.0%
NCREIF-ODCE	12.2%	5.0%	--	1.0	2.4	0.0%
TA Associates Realty Fund X	--	--	--	--	--	--
NCREIF-ODCE	12.2%	5.0%	--	1.0	2.4	0.0%
Intercontinental U.S. REIF	--	--	--	--	--	--
NCREIF-ODCE	12.2%	5.0%	--	1.0	2.4	0.0%
AEW Core Property Trust	--	--	--	--	--	--
NCREIF-ODCE	12.2%	5.0%	--	1.0	2.4	0.0%
Private Equity Assets	7.8%	5.4%	-0.9	0.0	1.4	11.7%
Russell 3000 + 3%	18.1%	10.6%	--	1.0	1.7	0.0%
Natural Resources & Commodities Assets	-4.8%	25.0%	-0.3	1.2	-0.2	13.2%
S&P Global Natural Resources Index TR USD	-0.2%	17.6%	--	1.0	0.0	0.0%
RS Global Natural Resources	-4.8%	25.0%	-0.3	1.2	-0.2	13.2%
S&P Global Natural Resources Index TR USD	-0.2%	17.6%	--	1.0	0.0	0.0%

**System Detail**  
**As of December 31, 2016**

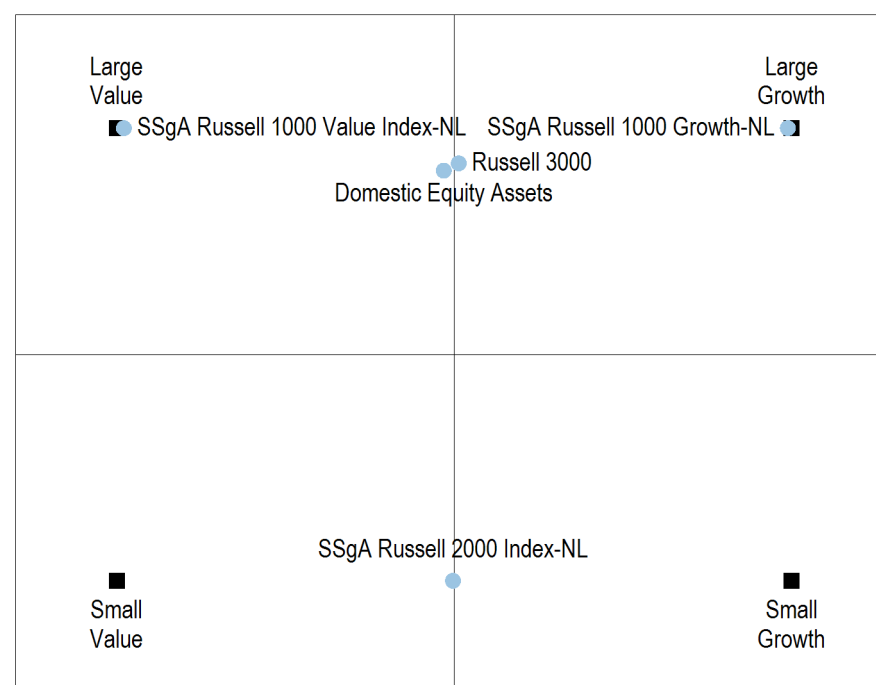
## **Domestic Equity Assets**

## Domestic Equity Assets

As of December 31, 2016

## Asset Allocation on December 31, 2016

	Actual (\$)	Actual %
SSgA Russell 1000 Growth-NL	\$13,902,099	43.5%
SSgA Russell 1000 Value Index-NL	\$15,035,811	47.1%
SSgA Russell 2000 Index-NL	\$2,999,471	9.4%
<b>Total</b>	<b>\$31,937,381</b>	<b>100.0%</b>

Domestic Equity Assets Style Map  
3 Years Ending December 31, 2016

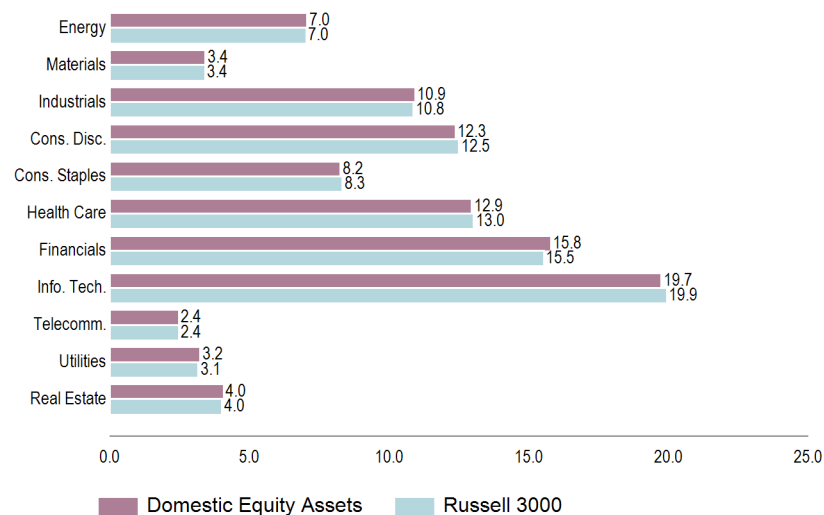
## Domestic Equity Assets

As of December 31, 2016

## Domestic Equity Assets Characteristics

	Portfolio Q4-16	Index Q4-16	Portfolio Q3-16
<b>Market Value</b>			
Market Value (Mil)	31.9	--	30.6
Number Of Holdings	2961	2976	2930
<b>Characteristics</b>			
Wtg. Avg. Market Cap. (Bil)	113.7	115.4	110.3
Median Market Cap (Bil)	1.9	1.5	1.9
P/E Ratio	23.5	22.7	23.3
Yield	2.0	2.0	2.0
EPS Growth - 5 Yrs.	8.5	8.3	9.5
Price to Book	4.3	3.7	4.4
Beta (holdings; domestic)	1.0	1.0	1.0

## Sector Allocation (%) vs Russell 3000



## Top 10 Holdings

APPLE	2.6%
MICROSOFT	2.0%
EXXON MOBIL	1.6%
JP MORGAN CHASE & CO.	1.3%
JOHNSON & JOHNSON	1.3%
BERKSHIRE HATHAWAY 'B'	1.3%
GENERAL ELECTRIC	1.2%
AMAZON.COM	1.2%
AT&T	1.1%
WELLS FARGO & CO	1.1%
<b>Total</b>	<b>14.9%</b>

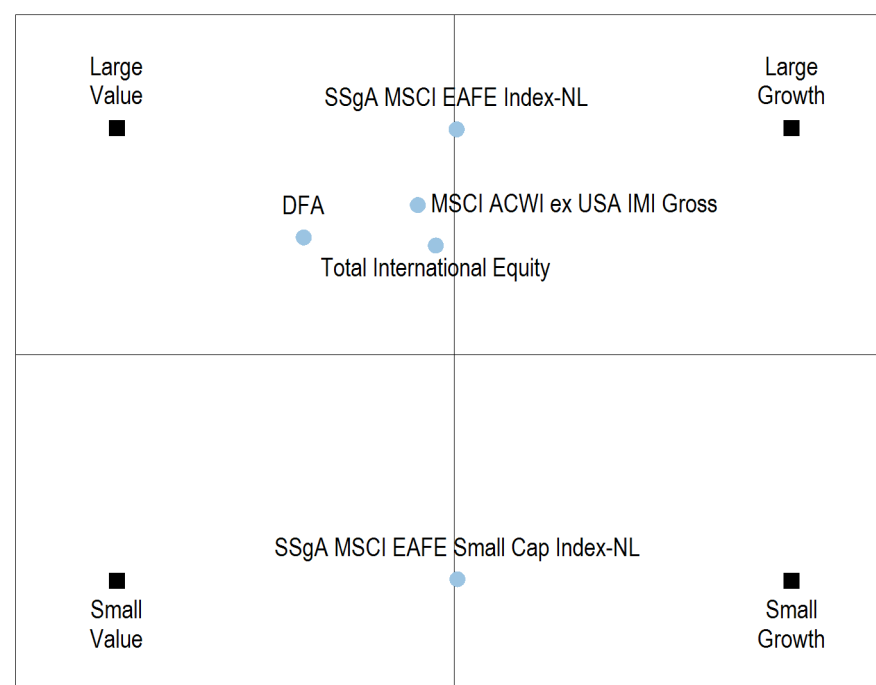
## **Total International Equity**

## Total International Equity

As of December 31, 2016

## Asset Allocation on December 31, 2016

	Actual (\$)	Actual %
DFA	\$2,090,512	8.8%
KB Investors Emerging Markets Equity	\$4,563,129	19.2%
LMCG Emerging Markets	\$4,000,355	16.8%
SSgA MSCI EAFE Index-NL	\$9,696,050	40.8%
SSgA MSCI EAFE Small Cap Index-NL	\$3,424,285	14.4%
<b>Total</b>	<b>\$23,774,331</b>	<b>100.0%</b>

Total International Equity Style Map  
3 Years Ending December 31, 2016



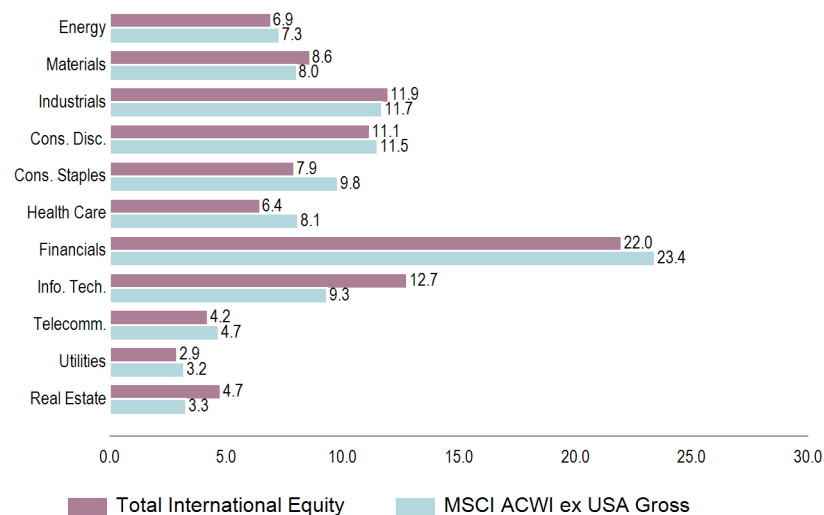
## Total International Equity

As of December 31, 2016

## Total International Equity Characteristics

	Portfolio Q4-16	Index Q4-16	Portfolio Q3-16
<b>Market Value</b>			
Market Value (Mil)	23.8	--	24.3
Number Of Holdings	5513	1856	5470
<b>Characteristics</b>			
Wtg. Avg. Market Cap. (Bil)	36.5	49.2	37.5
Median Market Cap (Bil)	1.1	6.7	1.1
P/E Ratio	18.0	20.2	18.4
Yield	3.2	2.9	3.2
EPS Growth - 5 Yrs.	6.8	6.1	7.4
Price to Book	2.7	2.5	2.8
Beta (holdings; domestic)	1.0	1.1	1.0

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



## Top 10 Holdings

CHINA CON.BANK 'H'	1.5%
TAIWAN SEMICON.MNFG.	1.3%
INDL. & COML.BK.OF CHINA 'H'	1.0%
NESTLE 'R'	0.8%
BANK OF CHINA 'H'	0.8%
OAO GAZPROM ADS (LON)	0.7%
SAMSUNG ELECTRONICS	0.7%
TENCENT HOLDINGS	0.7%
HON HAI PRECN.IND.	0.6%
ISHARES MSCI EMRG.MKTS. IDX.FD.	0.6%
<b>Total</b>	<b>8.6%</b>

## Total International Equity

As of December 31, 2016

## Total International Equity Region Allocation

vs MSCI ACWI ex USA Gross

Region	% of Total	% of Bench	% Diff
North America ex U.S.	0.0%	7.1%	-7.1%
United States	0.9%	0.0%	0.9%
Europe Ex U.K.	24.0%	31.5%	-7.5%
United Kingdom	9.6%	12.8%	-3.2%
Pacific Basin Ex Japan	10.4%	8.5%	1.9%
Japan	14.4%	17.1%	-2.7%
Emerging Markets	40.1%	22.4%	17.7%
Other	0.6%	0.7%	-0.1%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

## Total International Equity

As of December 31, 2016

## Total International Equity Country Allocation

vs MSCI ACWI ex USA Gross

Country	% of Total	% of Bench	% Diff
ARGENTINA	0.0%	0.0%	0.0%
AUSTRALIA	4.0%	5.2%	-1.2%
AUSTRIA	0.2%	0.1%	0.1%
BAHRAIN	0.0%	0.0%	0.0%
BANGLADESH	0.0%	0.0%	0.0%
BELGIUM	0.8%	0.8%	-0.1%
BRAZIL	4.1%	1.8%	2.3%
BULGARIA	0.0%	0.0%	0.0%
CANADA	0.0%	7.1%	-7.1%
CHILE	0.3%	0.3%	0.0%
CHINA	6.9%	6.0%	0.9%
COLOMBIA	0.2%	0.1%	0.1%
CROATIA	0.0%	0.0%	0.0%
CZECH REPUBLIC	0.0%	0.0%	0.0%
DENMARK	0.9%	1.2%	-0.3%
EGYPT	0.0%	0.0%	0.0%
ESTONIA	0.0%	0.0%	0.0%
FINLAND	0.6%	0.7%	0.0%
FRANCE	4.7%	7.1%	-2.5%
GERMANY	4.7%	6.5%	-1.8%
GREECE	0.0%	0.1%	-0.1%
HONG KONG	5.4%	2.3%	3.1%
HUNGARY	0.5%	0.1%	0.4%
INDIA	3.5%	1.9%	1.6%

## Total International Equity

As of December 31, 2016

Country	% of Total	% of Bench	% Diff
INDONESIA	1.0%	0.6%	0.4%
IRELAND	0.3%	0.3%	-0.1%
ISRAEL	0.4%	0.5%	-0.1%
ITALY	1.4%	1.5%	-0.1%
JAPAN	14.4%	17.1%	-2.7%
JORDAN	0.0%	0.0%	0.0%
KAZAKHSTAN	0.0%	0.0%	0.0%
KENYA	0.0%	0.0%	0.0%
KOREA	5.9%	3.3%	2.6%
KUWAIT	0.0%	0.0%	0.0%
LEBANON	0.0%	0.0%	0.0%
LITHUANIA	0.0%	0.0%	0.0%
LUXEMBOURG	0.1%	0.0%	0.1%
MALAYSIA	1.0%	0.6%	0.4%
MAURITIUS	0.0%	0.0%	0.0%
MEXICO	1.0%	0.8%	0.2%
MOROCCO	0.0%	0.0%	0.0%
NETHERLANDS	2.0%	2.3%	-0.3%
NEW ZEALAND	0.2%	0.1%	0.1%
NIGERIA	0.0%	0.0%	0.0%
NORWAY	0.5%	0.5%	0.1%
OMAN	0.0%	0.0%	0.0%
OTHER	0.2%	0.0%	0.2%
PAKISTAN	0.0%	0.0%	0.0%
PERU	0.0%	0.1%	-0.1%
PHILIPPINES	0.2%	0.3%	-0.1%
POLAND	0.3%	0.3%	0.1%

## Total International Equity

As of December 31, 2016

Country	% of Total	% of Bench	% Diff
PORTUGAL	0.1%	0.1%	0.0%
QATAR	0.0%	0.2%	-0.2%
ROMANIA	0.0%	0.0%	0.0%
RUSSIA	1.5%	1.0%	0.4%
SERBIA	0.0%	0.0%	0.0%
SINGAPORE	0.8%	0.9%	-0.1%
SLOVENIA	0.0%	0.0%	0.0%
SOUTH AFRICA	3.6%	1.6%	2.0%
SPAIN	1.6%	2.2%	-0.5%
SRI LANKA	0.0%	0.0%	0.0%
SWEDEN	1.9%	2.0%	-0.1%
SWITZERLAND	4.3%	6.1%	-1.8%
TAIWAN	7.1%	2.7%	4.4%
THAILAND	1.9%	0.5%	1.4%
TUNISIA	0.0%	0.0%	0.0%
TURKEY	0.8%	0.2%	0.5%
UKRAINE	0.0%	0.0%	0.0%
UNITED ARAB EMIRATES	0.3%	0.2%	0.1%
UNITED KINGDOM	9.6%	12.8%	-3.2%
UNITED STATES	0.9%	0.0%	0.9%
VIETNAM	0.0%	0.0%	0.0%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

## **Total Fixed Income**

## Total Fixed Income

As of December 31, 2016

## Asset Allocation on December 31, 2016

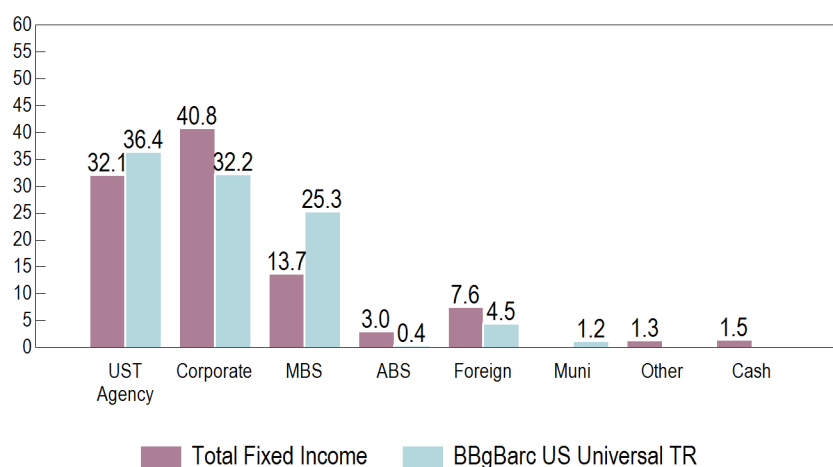
	Actual (\$)	Actual %
Columbia Institutional High Yield	\$8,911,492	22.3%
Logan Circle Emerging Markets Debt	\$2,712,134	6.8%
McDonnell Core Bond	\$17,525,674	43.9%
SSgA TIPS-NL	\$7,877,400	19.7%
Stone Harbor Emerging Markets Local Currency Debt	\$2,919,955	7.3%
<b>Total</b>	<b>\$39,946,655</b>	<b>100.0%</b>

## Total Fixed Income Characteristics

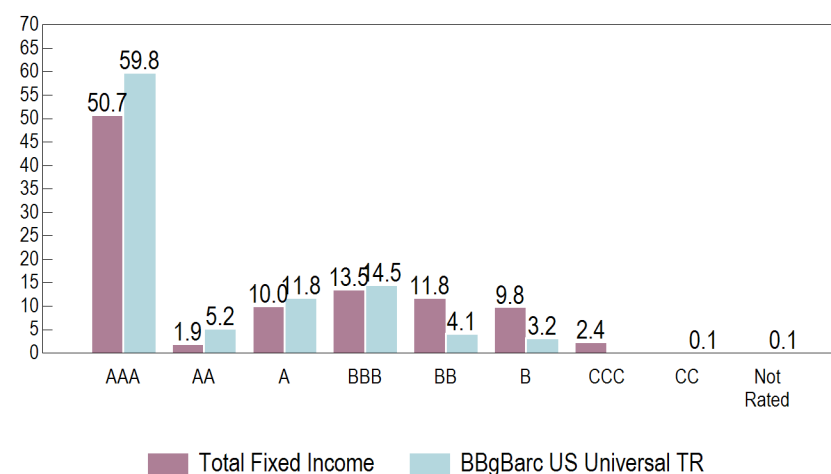
## vs. BBgBarc US Universal TR

	Portfolio Q4-16	Index Q4-16	Portfolio Q3-16
Fixed Income Characteristics			
Yield to Maturity	3.5	3.0	3.2
Average Duration	5.0	5.7	5.3
Average Quality	A	AA	A
Weighted Average Maturity	7.3	11.9	7.3

## Sector Allocation



## Credit Quality Allocation



**Portfolio Reviews**  
**As of December 31, 2016**



## SSgA Russell 1000 Value Index-NL

As of December 31, 2016

## Account Information

Account Name	SSgA Russell 1000 Value Index-NL
Account Structure	Commingled Fund
Investment Style	Passive
Inception Date	1/01/05
Account Type	Equity
Benchmark	Russell 1000 Value
Universe	eA US Large Cap Value Equity Gross

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
SSgA Russell 1000 Value Index-NL	6.6	17.3	8.6	14.8	7.2	Jan-05
Russell 1000 Value	6.7	17.3	8.6	14.8	7.1	Jan-05
eA US Large Cap Value Equity Gross Rank	46	26	33	38	78	Jan-05

## Top 10 Holdings

EXXON MOBIL	3.4%
JP MORGAN CHASE & CO.	2.9%
BERKSHIRE HATHAWAY 'B'	2.8%
AT&T	2.4%
JOHNSON & JOHNSON	2.4%
WELLS FARGO & CO	2.3%
GENERAL ELECTRIC	2.1%
BANK OF AMERICA	2.1%
CHEVRON	2.0%
PROCTER & GAMBLE	2.0%
<b>Total</b>	<b>24.3%</b>

## SSgA Russell 1000 Value Index-NL Characteristics

	Portfolio Q4-16	Index Q4-16	Portfolio Q3-16
<b>Market Value</b>			
Market Value (Mil)	15.0	--	14.1
Number Of Holdings	693	696	688
<b>Characteristics</b>			
Wtg. Avg. Market Cap. (Bil)	114.2	114.0	106.8
Median Market Cap (Bil)	8.0	8.0	7.5
P/E Ratio	20.8	19.8	19.9
Yield	2.5	2.4	2.6
EPS Growth - 5 Yrs.	5.3	5.0	5.2
Price to Book	2.4	2.4	2.6
Beta (holdings; domestic)	1.0	1.0	1.0
<b>Sector Distribution</b>			
Energy	13.6	13.6	13.5
Materials	2.9	2.9	2.9
Industrials	10.0	10.0	9.8
Consumer Discretionary	4.5	4.5	4.6
Consumer Staples	8.0	8.0	8.9
Health Care	10.3	10.2	11.5
Financials	26.8	26.8	23.4
Information Technology	9.4	9.4	10.0
Telecommunication Services	3.9	3.9	3.9
Utilities	6.0	6.0	6.5
Real Estate	4.6	4.6	5.1

## SSgA Russell 1000 Growth-NL

As of December 31, 2016

## Account Information

Account Name	SSgA Russell 1000 Growth-NL
Account Structure	Commingled Fund
Investment Style	Passive
Inception Date	7/01/07
Account Type	Equity
Benchmark	Russell 1000 Growth
Universe	eA US Large Cap Value Equity Gross

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
SSgA Russell 1000 Growth-NL	1.1	7.2	8.6	14.5	7.9	Jul-07
Russell 1000 Growth	1.0	7.1	8.6	14.5	7.9	Jul-07
eA US Large Cap Value Equity Gross Rank	98	95	34	45	12	Jul-07

## Top 10 Holdings

APPLE	5.5%
MICROSOFT	4.5%
AMAZON.COM	2.8%
FACEBOOK CLASS A	2.5%
ALPHABET 'A'	2.2%
ALPHABET 'C'	2.2%
WALT DISNEY	1.6%
HOME DEPOT	1.6%
COMCAST 'A'	1.5%
UNITEDHEALTH GROUP	1.4%
<b>Total</b>	<b>25.7%</b>

## SSgA Russell 1000 Growth-NL Characteristics

	Portfolio Q4-16	Index Q4-16	Portfolio Q3-16
<b>Market Value</b>			
Market Value (Mil)	13.9	--	13.8
Number Of Holdings	602	606	598
<b>Characteristics</b>			
Wtg. Avg. Market Cap. (Bil)	137.1	136.9	135.6
Median Market Cap (Bil)	8.8	8.8	8.9
P/E Ratio	25.8	25.2	26.8
Yield	1.6	1.6	1.5
EPS Growth - 5 Yrs.	12.1	11.8	13.6
Price to Book	6.9	6.6	7.0
Beta (holdings; domestic)	1.0	1.0	1.0
<b>Sector Distribution</b>			
Energy	0.6	0.6	0.6
Materials	3.6	3.6	3.6
Industrials	11.1	11.1	10.5
Consumer Discretionary	20.8	20.8	20.6
Consumer Staples	9.5	9.5	9.6
Health Care	16.1	16.1	16.8
Financials	2.9	2.9	2.7
Information Technology	31.5	31.4	31.5
Telecommunication Services	1.3	1.3	1.2
Utilities	0.0	0.0	0.1
Real Estate	2.7	2.7	2.8

## SSgA Russell 2000 Index-NL

As of December 31, 2016

## Account Information

Account Name	SSgA Russell 2000 Index-NL
Account Structure	Commingled Fund
Investment Style	Passive
Inception Date	8/01/10
Account Type	Equity
Benchmark	Russell 2000
Universe	eA US Small Cap Core Equity Gross

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
SSgA Russell 2000 Index-NL	8.8	21.5	6.8	14.5	13.8	Aug-10
Russell 2000	8.8	21.3	6.7	14.5	13.7	Aug-10
eA US Small Cap Core Equity Gross Rank	60	42	63	68	78	Aug-10

## Top 10 Holdings

ADVANCED MICRO DEVC.	0.5%
MICROSEMI	0.3%
WEBSTER FINANCIAL	0.3%
PROSPERITY BCSH.	0.3%
BANK OF THE OZARKS	0.2%
RSP PERMIAN	0.2%
PRIVATEBANCORP	0.2%
EMCOR GROUP	0.2%
UMPQUA HOLDINGS	0.2%
ASPEN TECHNOLOGY	0.2%
<b>Total</b>	<b>2.7%</b>

## SSgA Russell 2000 Index-NL Characteristics

	Portfolio Q4-16	Index Q4-16	Portfolio Q3-16
<b>Market Value</b>			
Market Value (Mil)	3.0	--	2.8
Number Of Holdings	1967	1978	1937
<b>Characteristics</b>			
Wtg. Avg. Market Cap. (Bil)	2.1	2.1	1.8
Median Market Cap (Bil)	0.8	0.8	0.7
P/E Ratio	25.8	25.1	23.7
Yield	1.4	1.1	1.5
EPS Growth - 5 Yrs.	9.7	9.0	9.3
Price to Book	3.3	3.0	3.2
Beta (holdings; domestic)	1.3	1.3	1.2
<b>Sector Distribution</b>			
Energy	3.7	3.8	3.2
Materials	4.9	4.9	4.7
Industrials	14.6	14.6	14.1
Consumer Discretionary	12.6	12.5	12.7
Consumer Staples	3.0	3.0	3.0
Health Care	11.8	12.1	14.1
Financials	20.1	20.2	17.8
Information Technology	17.1	17.0	18.0
Telecommunication Services	0.8	0.7	0.7
Utilities	3.7	3.5	3.8
Real Estate	7.8	7.6	7.8

## SSgA MSCI EAFE Index-NL

As of December 31, 2016

## Account Information

Account Name	SSgA MSCI EAFE Index-NL
Account Structure	Commingled Fund
Investment Style	Passive
Inception Date	8/01/10
Account Type	Equity
Benchmark	MSCI EAFE
Universe	eA EAFE Core Equity Gross

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
SSgA MSCI EAFE Index-NL	-0.7	1.4	-1.3	6.9	5.3	Aug-10
MSCI EAFE	-0.7	1.0	-1.6	6.5	5.0	Aug-10
eA EAFE Core Equity Gross Rank	31	41	75	83	85	Aug-10

## Top 10 Holdings

NESTLE 'R'	1.9%
NOVARTIS 'R'	1.4%
ROCHE HOLDING	1.3%
HSBC HDG. (ORD \$0.50)	1.3%
TOYOTA MOTOR	1.3%
ROYAL DUTCH SHELL A(LON)	1.0%
BP	1.0%
TOTAL	0.9%
ROYAL DUTCH SHELL B	0.9%
BRITISH AMERICAN TOBACCO	0.9%
<b>Total</b>	<b>11.8%</b>

## SSgA MSCI EAFE Index-NL Characteristics

	Portfolio Q4-16	Index Q4-16	Portfolio Q3-16
<b>Market Value</b>			
Market Value (Mil)	9.7	--	9.8
Number Of Holdings	964	930	959
<b>Characteristics</b>			
Wtg. Avg. Market Cap. (Bil)	50.9	50.6	52.5
Median Market Cap (Bil)	8.5	8.6	8.7
P/E Ratio	22.0	21.3	21.0
Yield	3.1	3.1	3.3
EPS Growth - 5 Yrs.	5.4	5.2	6.0
Price to Book	3.1	2.4	3.2
Beta (holdings; domestic)	1.0	1.0	1.0
<b>Sector Distribution</b>			
Energy	5.4	5.5	4.8
Materials	7.9	7.9	7.5
Industrials	14.0	14.0	14.0
Consumer Discretionary	12.5	12.5	12.2
Consumer Staples	11.2	11.1	12.9
Health Care	10.7	10.6	11.5
Financials	21.2	21.2	19.2
Information Technology	5.5	5.5	5.5
Telecommunication Services	4.5	4.5	4.8
Utilities	3.4	3.4	3.7
Real Estate	3.7	3.7	4.0

## SSgA MSCI EAFE Small Cap Index-NL

As of December 31, 2016

## Account Information

Account Name	SSgA MSCI EAFE Small Cap Index-NL
Account Structure	Commingled Fund
Investment Style	Passive
Inception Date	8/01/10
Account Type	Equity
Benchmark	MSCI EAFE Small Cap
Universe	eA EAFE Small Cap Core Gross

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
SSgA MSCI EAFE Small Cap Index-NL	-2.9	2.4	2.3	10.8	8.7	Aug-10
MSCI EAFE Small Cap	-2.9	2.2	2.1	10.6	8.4	Aug-10
eA EAFE Small Cap Core Gross Rank	53	38	71	93	88	Aug-10

## Top 10 Holdings

INFORMA	0.3%
MICRO FOCUS INTL.	0.3%
MTU AERO ENGINES HLDG.	0.3%
TELEPERFORMANCE	0.3%
SMURFIT KAPPA GROUP	0.3%
CLARIANT	0.3%
RENTOKIL INITIAL	0.3%
WIRECARD	0.3%
TRELLEBORG 'B'	0.2%
LEG IMMOBILIEN	0.2%
<b>Total</b>	<b>2.8%</b>

## SSgA MSCI EAFE Small Cap Index-NL Characteristics

	Portfolio Q4-16	Index Q4-16	Portfolio Q3-16
<b>Market Value</b>			
Market Value (Mil)	3.4	--	3.5
Number Of Holdings	2230	2228	2227
<b>Characteristics</b>			
Wtg. Avg. Market Cap. (Bil)	2.2	2.2	2.3
Median Market Cap (Bil)	1.0	1.0	1.0
P/E Ratio	20.7	19.7	20.9
Yield	2.3	2.2	2.4
EPS Growth - 5 Yrs.	10.7	10.1	11.0
Price to Book	2.8	2.4	2.8
Beta (holdings; domestic)	0.9	0.9	0.9
<b>Sector Distribution</b>			
Energy	3.0	3.0	2.6
Materials	9.3	9.3	9.2
Industrials	21.9	21.8	21.9
Consumer Discretionary	16.1	16.2	15.8
Consumer Staples	6.9	6.9	7.2
Health Care	6.9	7.1	7.7
Financials	11.5	11.4	10.6
Information Technology	10.4	10.4	10.5
Telecommunication Services	1.1	1.1	1.2
Utilities	2.0	1.9	1.7
Real Estate	11.0	11.0	11.4

As of December 31, 2016

## Account Information

Account Name	DFA
Account Structure	Mutual Fund
Investment Style	Active
Inception Date	7/01/07
Account Type	Equity
Benchmark	MSCI Emerging Markets
Universe	eA Emg Mkts Equity Net

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
DFA	-1.0	19.8	-2.4	1.2	-0.3	Jul-07
MSCI Emerging Markets	-4.2	11.2	-2.6	1.3	0.2	Jul-07
eA Emg Mkts Equity Net Median	-5.2	8.2	-2.0	2.5	0.8	Jul-07
eA Emg Mkts Equity Net Rank	6	7	58	80	78	Jul-07

## Top 10 Holdings

CHINA CON.BANK 'H'	3.3%
RELIANCE INDUSTRIES	2.0%
OAQ GAZPROM ADS (LON)	1.8%
INDL.& COML.BK.OF CHINA 'H'	1.5%
BANK OF CHINA 'H'	1.5%
PTT FB	1.4%
PTRO.BRAO.ADR 1:2	1.3%
HYUNDAI MOTOR	1.2%
PTRO.BRAO.ADR 1:2	1.2%
STANDARD BK.GP.	1.1%
<b>Total</b>	<b>16.4%</b>

## DFA Characteristics

	Portfolio Q4-16	Index Q4-16	Portfolio Q3-16
<b>Market Value</b>			
Market Value (Mil)	2.1	--	2.1
Number Of Holdings	2215	832	2174
<b>Characteristics</b>			
Wtg. Avg. Market Cap. (Bil)	18.8	48.4	18.4
Median Market Cap (Bil)	0.4	4.6	0.4
P/E Ratio	13.0	18.3	15.1
Yield	3.0	2.6	3.1
EPS Growth - 5 Yrs.	1.1	8.7	1.9
Price to Book	1.2	2.6	1.2
Beta (holdings; domestic)	1.2	1.1	1.2
<b>Sector Distribution</b>			
Energy	15.5	7.9	15.8
Materials	16.4	7.4	14.8
Industrials	9.1	5.8	9.4
Consumer Discretionary	9.5	10.3	9.7
Consumer Staples	3.8	7.2	4.3
Health Care	0.5	2.5	0.5
Financials	29.6	24.4	29.9
Information Technology	8.3	23.2	8.4
Telecommunication Services	2.2	5.9	2.1
Utilities	1.7	2.9	1.8
Real Estate	3.3	2.6	3.4

## LMCG Emerging Markets

As of December 31, 2016

## Account Information

Account Name	LMCG Emerging Markets
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	8/01/15
Account Type	Equity
Benchmark	MSCI Emerging Markets
Universe	eA Emg Mkts Equity Gross

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
LMCG Emerging Markets	-4.5	7.0	--	--	-2.7	Aug-15
MSCI Emerging Markets	-4.2	11.2	-2.6	1.3	-0.9	Aug-15
eA Emg Mkts Equity Gross Median	-4.5	10.4	-1.2	3.3	-0.1	Aug-15
eA Emg Mkts Equity Gross Rank	50	73	--	--	78	Aug-15

## Top 10 Holdings

SAMSUNG ELECTRONICS	4.2%
TAIWAN SEMICON.MNFG.	4.1%
TENCENT HOLDINGS	4.0%
ISHARES MSCI EMRG.MKTS. IDX.FD.	3.6%
CHINA CON.BANK 'H'	2.3%
ISHARES MSCI INDIA	2.2%
HON HAI PRECN.IND.	2.1%
BANCO BRADESCO PN	1.8%
CHINA MOBILE	1.6%
ITAU UNIBANCO HOLDING PN	1.5%
<b>Total</b>	<b>27.5%</b>

## LMCG Emerging Markets Characteristics

	Portfolio Q4-16	Index Q4-16	Portfolio Q3-16
<b>Market Value</b>			
Market Value (Mil)	4.0	--	4.2
Number Of Holdings	115	832	124
<b>Characteristics</b>			
Wtg. Avg. Market Cap. (Bil)	48.5	48.4	49.0
Median Market Cap (Bil)	7.6	4.6	7.4
P/E Ratio	14.5	18.3	17.6
Yield	3.1	2.6	3.0
EPS Growth - 5 Yrs.	7.9	8.7	8.2
Price to Book	2.6	2.6	3.0
Beta (holdings; domestic)	1.1	1.1	1.2
<b>Sector Distribution</b>			
Energy	8.7	7.9	6.9
Materials	6.6	7.4	6.4
Industrials	6.1	5.8	6.7
Consumer Discretionary	7.3	10.3	8.2
Consumer Staples	6.5	7.2	8.0
Health Care	3.6	2.5	3.2
Financials	22.4	24.4	21.7
Information Technology	21.5	23.2	22.9
Telecommunication Services	4.3	5.9	4.5
Utilities	2.8	2.9	1.9
Real Estate	4.4	2.6	4.4

## KB Investors Emerging Markets Equity

As of December 31, 2016

## Account Information

Account Name	KB Investors Emerging Markets Equity
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	10/01/15
Account Type	Equity
Benchmark	MSCI Emerging Markets
Universe	eA Emg Mkts Equity Gross

## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
KB Investors Emerging Markets Equity	-3.3	12.0	--	--	7.7	Oct-15
MSCI Emerging Markets	-4.2	11.2	-2.6	1.3	9.4	Oct-15
eA Emg Mkts Equity Gross Median	-4.5	10.4	-1.2	3.3	9.8	Oct-15
eA Emg Mkts Equity Gross Rank	29	38	--	--	68	Oct-15

## Top 10 Holdings

CHINA CON.BANK 'H'	4.2%
INDL. & COML.BK.OF CHINA 'H'	3.2%
TAIWAN SEMICON.MNFG.	3.1%
INFOSYS	3.0%
HCL TECHNOLOGIES	2.9%
BANK OF CHINA 'H'	2.0%
TATA CONSULTANCY SVS.	1.8%
OAO GAZPROM ADS (LON)	1.6%
CHINA MOBILE	1.6%
HYOSUNG	1.6%
<b>Total</b>	<b>24.9%</b>

## KB Investors Emerging Markets Equity Characteristics

	Portfolio Q4-16	Index Q4-16	Portfolio Q3-16
<b>Market Value</b>			
Market Value (Mil)	4.6	--	4.7
Number Of Holdings	132	832	134
<b>Characteristics</b>			
Wtg. Avg. Market Cap. (Bil)	29.6	48.4	31.4
Median Market Cap (Bil)	5.4	4.6	5.0
P/E Ratio	13.5	18.3	13.8
Yield	4.1	2.6	4.0
EPS Growth - 5 Yrs.	8.4	8.7	9.6
Price to Book	2.3	2.6	2.4
Beta (holdings; domestic)	1.0	1.1	0.9
<b>Sector Distribution</b>			
Energy	7.4	7.9	7.0
Materials	7.5	7.4	6.4
Industrials	6.5	5.8	6.4
Consumer Discretionary	8.5	10.3	8.7
Consumer Staples	4.6	7.2	5.0
Health Care	2.1	2.5	2.2
Financials	27.5	24.4	26.9
Information Technology	24.5	23.2	24.6
Telecommunication Services	6.6	5.9	5.4
Utilities	3.0	2.9	3.7
Real Estate	3.2	2.6	3.5



## McDonnell Core Bond

As of December 31, 2016

## Account Information

Account Name	McDonnell Core Bond
Account Structure	Separate Account
Investment Style	Active
Inception Date	7/01/01
Account Type	Fixed
Benchmark	BBgBarc US Aggregate TR
Universe	eA US Core Fixed Inc Gross

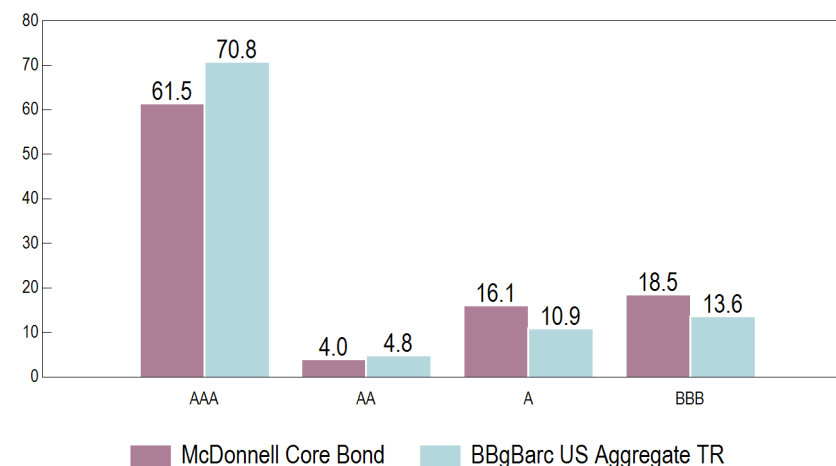
## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
McDonnell Core Bond	-3.0	2.7	3.2	2.2	4.8	Jul-01
BBgBarc US Aggregate TR	-3.0	2.6	3.0	2.2	4.7	Jul-01
eA US Core Fixed Inc Gross Median	-2.7	3.2	3.4	2.9	5.2	Jul-01
eA US Core Fixed Inc Gross Rank	74	74	71	93	88	Jul-01

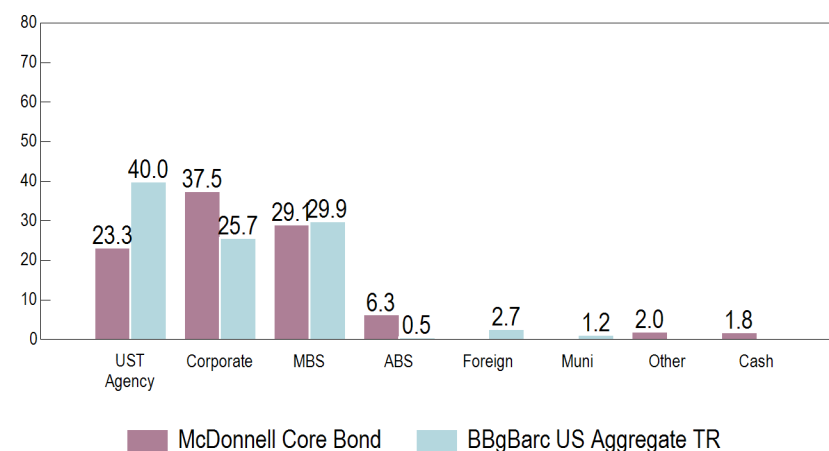
McDonnell Characteristics  
vs. BBgBarc US Aggregate TR

	Portfolio Q4-16	Index Q4-16	Portfolio Q3-16
Fixed Income Characteristics			
Yield to Maturity	2.6	2.5	2.0
Average Duration	5.4	5.9	5.2
Average Quality	AA	AA	AA
Weighted Average Maturity	7.0	12.9	6.9

## Credit Quality Allocation



## Sector Allocation



## Columbia Insitutional High Yield

As of December 31, 2016

## Account Information

Account Name	Columbia Insitutional High Yield
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	3/01/12
Account Type	Fixed
Benchmark	BBgBarc US High Yield TR
Universe	eA US High Yield Fixed Inc Gross

## Portfolio Performance Summary

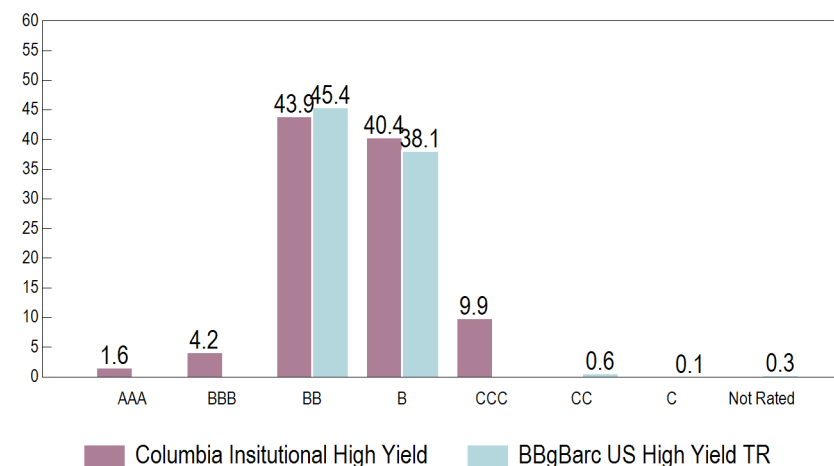
	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
Columbia Insitutional High Yield	0.8	11.5	5.0	--	6.3	Mar-12
BBgBarc US High Yield TR	1.8	17.1	4.7	7.4	6.4	Mar-12
eA US High Yield Fixed Inc Gross Median	1.6	14.0	4.5	7.2	6.4	Mar-12
eA US High Yield Fixed Inc Gross Rank	90	74	30	--	53	Mar-12

## Columbia Insitutional High Yield Characteristics

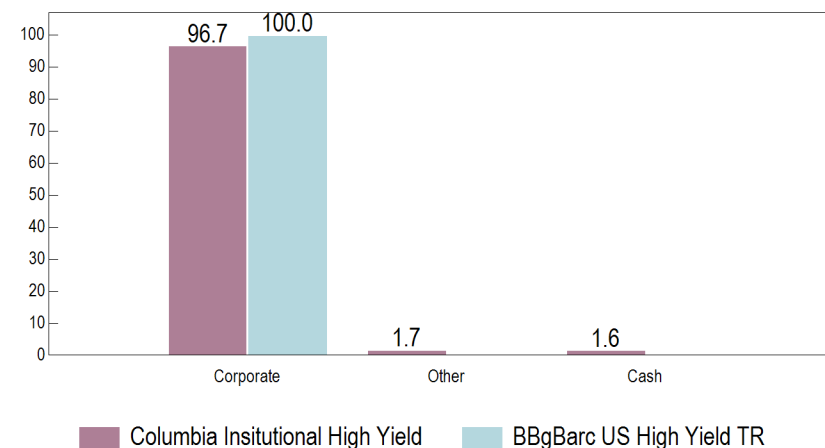
## vs. BBgBarc US High Yield TR

	Portfolio Q4-16	Index Q4-16	Portfolio Q3-16
Fixed Income Characteristics			
Yield to Maturity	5.5	6.5	4.9
Average Duration	4.3	4.1	4.2
Average Quality	BB	BB	BB
Weighted Average Maturity	7.0	6.3	6.7

## Credit Quality Allocation



## Sector Allocation



As of December 31, 2016

## Account Information

Account Name	SSgA TIPS-NL
Account Structure	Commingled Fund
Investment Style	Passive
Inception Date	7/01/07
Account Type	Fixed
Benchmark	BBgBarc US TIPS TR
Universe	eA TIPS / Infl Indexed Fixed Inc Gross

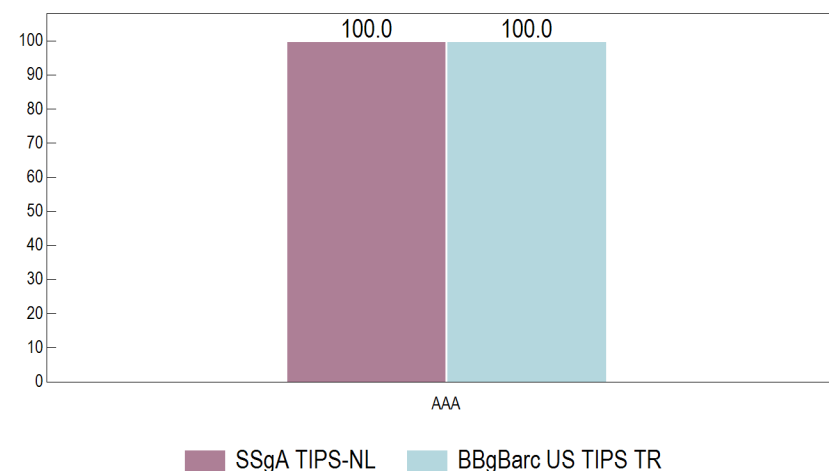
## Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
SSgA TIPS-NL	-2.4	4.7	2.2	0.9	4.4	Jul-07
BBgBarc US TIPS TR	-2.4	4.7	2.3	0.9	4.4	Jul-07
eA TIPS / Infl Indexed Fixed Inc Gross Median	-2.3	4.7	2.2	1.0	4.5	Jul-07
eA TIPS / Infl Indexed Fixed Inc Gross Rank	71	51	50	70	71	Jul-07

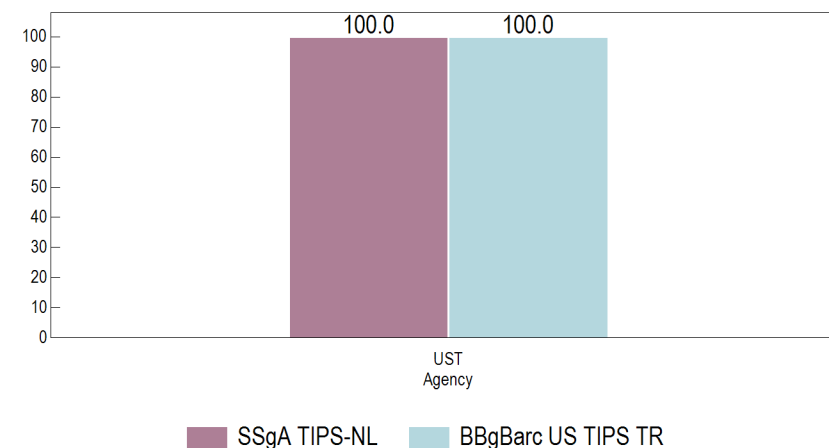
SSgA TIPS-NL Characteristics  
vs. BBgBarc US TIPS TR

	Portfolio Q4-16	Index Q4-16	Portfolio Q3-16
Fixed Income Characteristics			
Yield to Maturity	2.2	0.2	1.6
Average Duration	4.9	4.9	6.6
Average Quality	AAA	AAA	AAA
Weighted Average Maturity	8.3	8.3	8.6

## Credit Quality Allocation



## Sector Allocation



Massachusetts Housing Finance Agency Retirement System  
Stone Harbor Emerging Markets Local Currency Debt

As of December 31, 2016

### Account Information

Account Name	Stone Harbor Emerging Markets Local Currency Debt
Account Structure	Mutual Fund
Investment Style	Active
Inception Date	3/01/13
Account Type	Fixed
Benchmark	JP Morgan GBI EM Global Diversified TR USD
Universe	

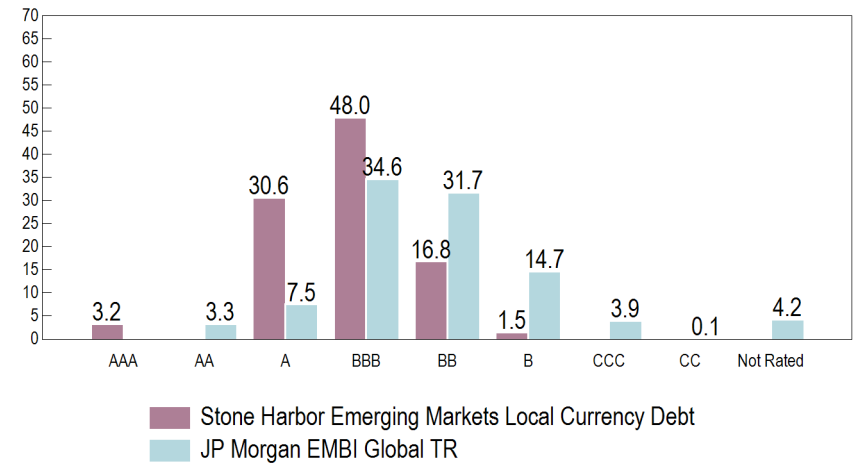
### Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
Stone Harbor Emerging Markets Local Currency Debt (Net)	-8.8	6.2	-6.3	-	-8.3	Mar-13
JP Morgan GBI EM Global Diversified TR USD	-6.1	9.9	-4.1	-1.3	-5.7	Mar-13

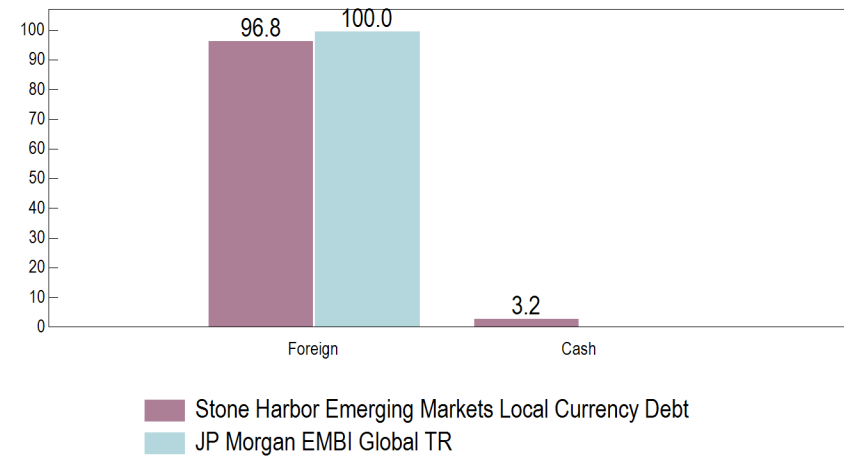
### Stone Harbor Emerging Markets Local Currency Debt Characteristics vs. JP Morgan EMBI Global TR

	Portfolio Q4-16	Index Q4-16	Portfolio Q3-16
<b>Fixed Income Characteristics</b>			
Yield to Maturity	7.3	5.7	6.6
Average Duration	5.1	6.7	5.3
Average Quality	BBB	BB	BBB
Weighted Average Maturity	7.7	10.7	7.8

### Credit Quality Allocation



### Sector Allocation



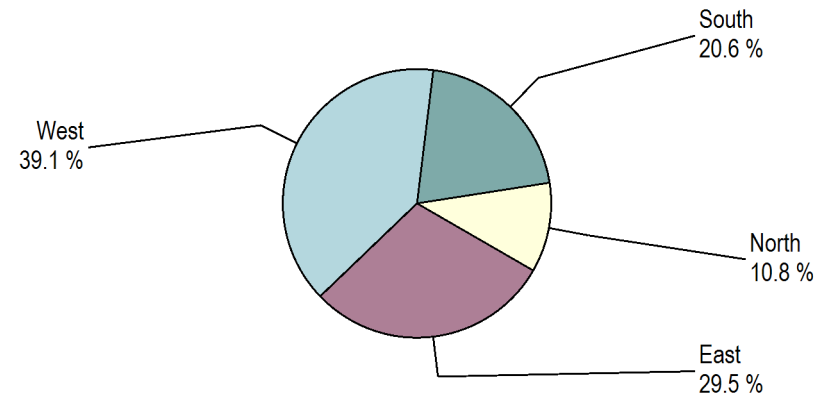
### Account Information

Account Name	Intercontinental U.S. REIF
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	10/01/14
Account Type	Real Estate
Benchmark	NCREIF-ODCE
Universe	

### Portfolio Performance Summary

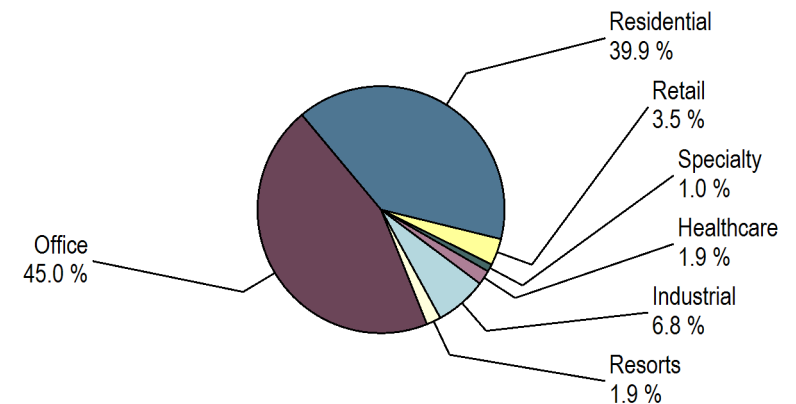
	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
Intercontinental U.S. REIF	5.6	12.9	--	--	14.3	Oct-14
NCREIF-ODCE	2.1	8.8	12.1	12.2	12.0	Oct-14

### Geographic Diversification



North represents Midwest.

### Property Type Allocation



Note: Number of investments is 116.

## AEW Core Property Trust

As of December 31, 2016

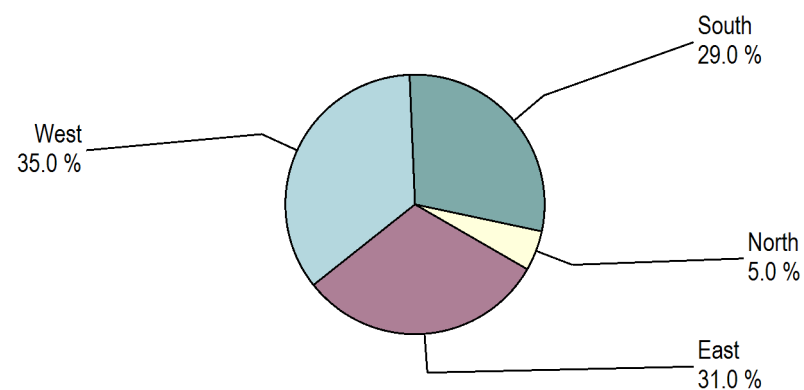
## Account Information

Account Name	AEW Core Property Trust
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	10/01/14
Account Type	Real Estate
Benchmark	NCREIF-ODCE
Universe	

## Portfolio Performance Summary

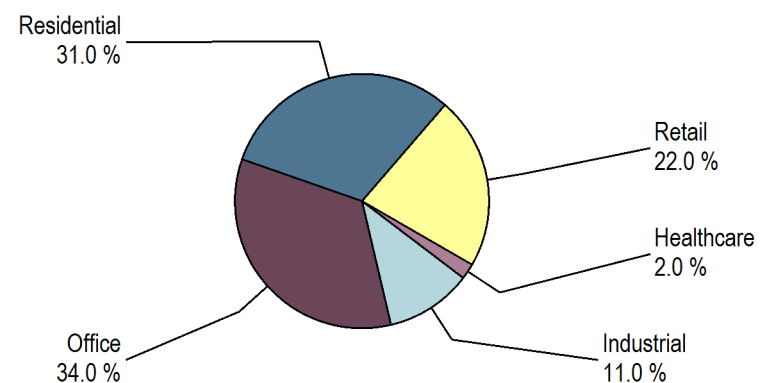
	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
AEW Core Property Trust	2.0	8.6	--	--	11.3	Oct-14
NCREIF-ODCE	2.1	8.8	12.1	12.2	12.0	Oct-14

## Geographic Diversification



North represents Midwest.

## Property Type Allocation



Note: Number of investments is 63 and Net IRR is 9.8%.



## TA Associates Realty Fund IX

As of December 31, 2016

## Account Information

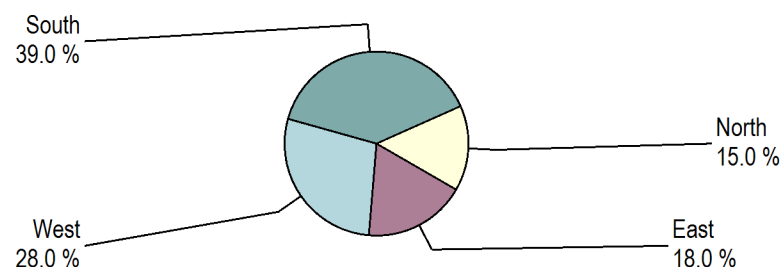
Account Name	TA Associates Realty Fund IX
Account Structure	Other
Investment Style	Active
Inception Date	5/01/10
Account Type	Real Estate
Benchmark	NCREIF-ODCE
Universe	

## Non-Marketable Securities Overview

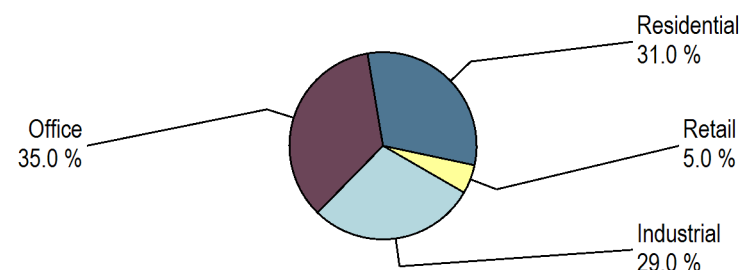
As of December 31, 2016

Account Type	Account	Vintage Year	Commitment	Cumulative Takedown	Cumulative Distributions	Value (RV)	Total Value (RV + Dist)	Unfunded Commitment
Real Estate	TA Associates Realty Fund IX	2010	\$3,000,000	\$2,880,000	\$2,756,503	\$1,971,716	\$4,728,219	\$120,000
	<b>Total Account</b>		<b>\$3,000,000</b>	<b>\$2,880,000</b>	<b>\$2,756,503</b>	<b>\$1,971,716</b>	<b>\$4,728,219</b>	<b>\$120,000</b>

## Geographic Diversification



## Property Type Allocation



**Investment Strategy:** TA Associates Realty Fund IX uses a value-added strategy to create a diversified portfolio of direct real estate investments. Fund IX expects to invest in office, industrial, retail, and multifamily properties located primarily in major U.S. markets. Historically, TA Realty commingled funds have received about two-thirds of return from income and maintained moderate leverage of approximately 50% to 55% of the aggregate value of the Fund's real estate investments. Most value-added improvements include re-development, re-positioning, re-tenanting or recapitalization. TA Realty expects to proactively manage tenant and industry exposure with no significant concentration towards either.

Note: As of September 30, 2016, the number of investments is 64 and Net IRR is 11.1%.



As of December 31, 2016

## Account Information

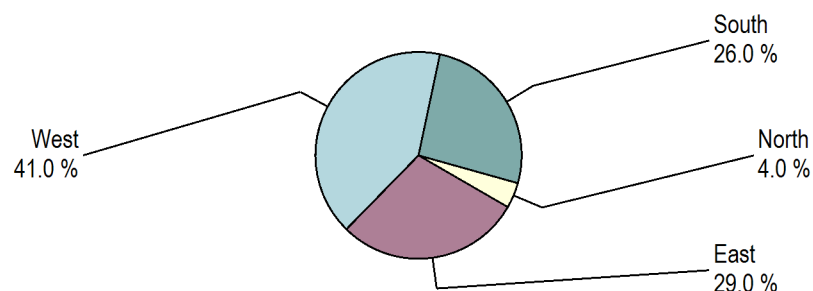
Account Name	TA Associates Realty Fund X
Account Structure	Other
Investment Style	Active
Inception Date	4/01/13
Account Type	Real Estate
Benchmark	NCREIF-ODCE
Universe	

## Non-Marketable Securities Overview

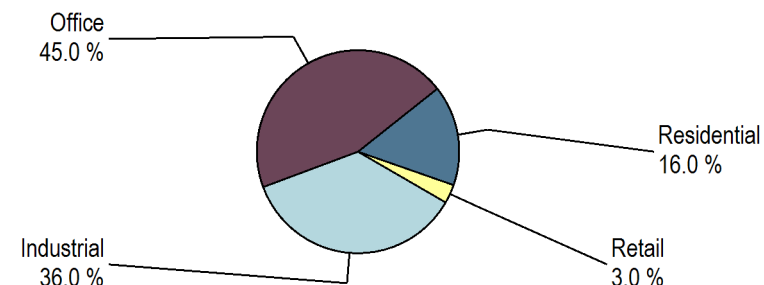
As of December 31, 2016

Account Type	Account	Vintage Year	Commitment	Cumulative Takedown	Cumulative Distributions	Value (RV)	Total Value (RV + Dist)	Unfunded Commitment
Real Estate	TA Associates Realty Fund X	2013	\$3,000,000	\$3,005,227	\$1,454,166	\$2,561,653	\$4,015,819	-\$5,227
	<b>Total Account</b>		<b>\$3,000,000</b>	<b>\$3,005,227</b>	<b>\$1,454,166</b>	<b>\$2,561,653</b>	<b>\$4,015,819</b>	<b>-\$5,227</b>

## Geographic Diversification



## Property Type Allocation



**Investment Strategy:** TA Associates Realty Fund X uses a value-added strategy to create a diversified portfolio of direct real estate investments. The strategy is anticipated to target under-leased office, industrial, multifamily, and retail assets that are expected to be well-located, functional buildings with strong net operating income (NOI) growth potential. Geographically, the fund will target over 35 U.S. markets with broad regional diversification targets of 25% to 40% in the west, 20% to 35% in the east, 20% to 30% in the south, and 10% to 20% in the Midwest. The fund will target 35% leverage, with a maximum of 50%. Most value-added improvements include redevelopment, repositioning, retenanting, or recapitalization.

Note: As of September 30, 2016, the number of investments is 91 and Net IRR is 12.7%.



## AG Realty Fund IV

As of December 31, 2016

## Account Information

Account Name	AG Realty Fund IV
Account Structure	Commingled Fund
Investment Style	Active
Inception Date	
Account Type	Real Estate
Benchmark	NCREIF-ODCE
Universe	

## Non-Marketable Securities Overview

As of December 31, 2016

Account Type	Account	Vintage Year	Commitment	Cumulative Takedown	Cumulative Distributions	Value (RV)	Total Value (RV + Dist)	Unfunded Commitment
Real Estate	AG Realty Fund IV	2004	\$1,000,000	\$950,000	\$1,332,500	\$4,346	\$1,336,846	\$50,000
	<b>Total Account</b>		<b>\$1,000,000</b>	<b>\$950,000</b>	<b>\$1,332,500</b>	<b>\$4,346</b>	<b>\$1,336,846</b>	<b>\$50,000</b>

**Investment Strategy:** Funded in 1999, Angelo Gordon's Fund IV is an opportunistic real estate portfolio. Leverage on the portfolio is about 50%. About 75% of return is expected to result from capital appreciation, with the remaining 25% coming from income. The portfolio's emphasis is on purchasing sub-performing and non-performing commercial properties in the \$30 million range. The firm then enhances these properties through redevelopment or other measures. Angelo Gordon seeks to limit downside risk in the portfolio through diversification.

Note: Number of investments is 0.



## Ascent Venture Partners - Fund II

As of December 31, 2016

## Account Information

Account Name	Ascent Venture Partners - Fund II
Account Structure	Other
Investment Style	Active
Inception Date	
Account Type	Private Equity
Benchmark	

## Non-Marketable Securities Overview by Account Type

Account Type	Account	Vintage Year	Commitment	Cumulative Takedown	Cumulative Distributions	Value (RV)	Total Value (RV + Dist)	Unfunded Commitment
Private Equity	Ascent Venture Partners - Fund II	1995	\$500,000	\$484,254	\$1,458,918	\$133,940	\$1,592,858	\$15,746
	<b>Total Account</b>		<b>\$500,000</b>	<b>\$484,254</b>	<b>\$1,458,918</b>	<b>\$133,940</b>	<b>\$1,592,858</b>	<b>\$15,746</b>

**Investment Strategy:**

Ascent Venture Partners seeks to build private equity portfolios that are balanced with respect to industry (high and low technology ventures), and diverse with respect to company growth stage (from seed through buyout and re capitalization). Ascent favors proven management teams and reasonable valuations. Ascent has shifted their focus to liquidating the remaining investments in the partnership.

Note: As of September 30, 2016, the Net IRR is 26.6%.



## Ascent Venture Partners - Fund III

As of December 31, 2016

## Account Information

Account Name	Ascent Venture Partners - Fund III
Account Structure	Other
Investment Style	Active
Inception Date	
Account Type	Private Equity
Benchmark	

## Non-Marketable Securities Overview by Account Type

Account Type	Account	Vintage Year	Commitment	Cumulative Takedown	Cumulative Distributions	Value (RV)	Total Value (RV + Dist)	Unfunded Commitment
Private Equity	Ascent Venture Partners - Fund III	1999	\$1,500,000	\$1,395,000	\$1,697,063	\$91,987	\$1,789,050	\$105,000
	<b>Total Account</b>		<b>\$1,500,000</b>	<b>\$1,395,000</b>	<b>\$1,697,063</b>	<b>\$91,987</b>	<b>\$1,789,050</b>	<b>\$105,000</b>

**Investment Strategy:**

Ascent Venture Partners seeks to build private equity portfolios that are balanced with respect to industry (high and low technology ventures), and diverse with respects to company growth stage (from seed through buyout and re-capitalization). Ascent favors proven management teams and reasonable valuations. Ascent has shifted their focus to liquidating the remaining investments in the partnership.

Note: As of September 30, 2016, the Net IRR is 4.0%.



## Ascent Venture Partners - Fund IV

As of December 31, 2016

## Account Information

Account Name	Ascent Venture Partners - Fund IV
Account Structure	Other
Investment Style	Active
Inception Date	
Account Type	Private Equity
Benchmark	

## Non-Marketable Securities Overview by Account Type

Account Type	Account	Vintage Year	Commitment	Cumulative Takedown	Cumulative Distributions	Value (RV)	Total Value (RV + Dist)	Unfunded Commitment
Private Equity	Ascent Venture Partners - Fund IV	2003	\$1,000,000	\$1,000,000	\$155,588	\$108,573	\$264,161	\$0
	<b>Total Account</b>		<b>\$1,000,000</b>	<b>\$1,000,000</b>	<b>\$155,588</b>	<b>\$108,573</b>	<b>\$264,161</b>	<b>\$0</b>

**Investment Strategy:**

Located in Boston, Ascent Venture Partners (formerly known as Pioneer Capital) was formed in 1999, after Landmark Partners purchased Pioneer's interest. Ascent focuses primarily on high growth companies in the information technology sector. Ascent is an active investor, typically taking a board seat in portfolio companies. As a result, Ascent has focused its investments in the Eastern United States.

Note: As of September 30, 2016, the Net IRR is -21.1%.



## Ascent Venture Partners - Fund V

As of December 31, 2016

## Account Information

Account Name	Ascent Venture Partners - Fund V
Account Structure	Other
Investment Style	Active
Inception Date	
Account Type	Private Equity
Benchmark	

## Non-Marketable Securities Overview by Account Type

Account Type	Account	Vintage Year	Commitment	Cumulative Takedown	Cumulative Distributions	Value (RV)	Total Value (RV + Dist)	Unfunded Commitment
Private Equity	Ascent Venture Partners - Fund V	2010	\$1,000,000	\$860,000	\$569,783	\$879,981	\$1,449,765	\$140,000
	<b>Total Account</b>		<b>\$1,000,000</b>	<b>\$860,000</b>	<b>\$569,783</b>	<b>\$879,981</b>	<b>\$1,449,765</b>	<b>\$140,000</b>

**Investment Strategy:**

Ascent Venture Partners V is an early stage venture capital fund focused on making investments within the technology products and services industry. Specific areas of interest include next generation software (open source and Software-as-a-Service), data management and analysis, automated computing, security and compliance, financial services, and applications associated with the convergence of remote devices. The GP is located in Boston and will invest in the eastern United States and Canada. The Fund will target companies that have pre-money valuations of \$3 to \$15 million and have the potential for a \$100 million exit value.

Note: As of September 30, 2016, the Net IRR is 11.1%.



## Ascent Venture Partners - Fund VI

As of December 31, 2016

## Account Information

Account Name	Ascent Venture Partners - Fund VI
Account Structure	Other
Investment Style	Active
Inception Date	
Account Type	Private Equity
Benchmark	

## Non-Marketable Securities Overview by Account Type

Account Type	Account	Vintage Year	Commitment	Cumulative Takedown	Cumulative Distributions	Value (RV)	Total Value (RV + Dist)	Unfunded Commitment
Private Equity	Ascent Venture Partners - Fund VI	2015	\$1,500,000	\$435,000	\$0	\$507,027	\$507,027	\$1,065,000
	<b>Total Account</b>		<b>\$1,500,000</b>	<b>\$435,000</b>	<b>\$0</b>	<b>\$507,027</b>	<b>\$507,027</b>	<b>\$1,065,000</b>

As of December 31, 2016

## Account Information

Account Name	Goldman Sachs PEP 2005
Account Structure	Other
Investment Style	Active
Inception Date	8/01/06
Account Type	Private Equity
Benchmark	

## Non-Marketable Securities Overview by Account Type

Account Type	Account	Vintage Year	Commitment	Cumulative Takedown	Cumulative Distributions	Value (RV)	Total Value (RV + Dist)	Unfunded Commitment
Private Equity	Goldman Sachs PEP 2005	2006	\$3,000,000	\$2,926,055	\$2,372,346	\$1,208,949	\$3,581,295	\$73,945
	<b>Total Account</b>		<b>\$3,000,000</b>	<b>\$2,926,055</b>	<b>\$2,372,346</b>	<b>\$1,208,949</b>	<b>\$3,581,295</b>	<b>\$73,945</b>

**Investment Strategy:**

Goldman Sachs Private Equity Partners 2005 is a fund of funds formed to create a diversified portfolio of 18 to 25 partnerships. The Fund will invest opportunistically in order to commit to the "very best managers." The Fund expects to commit approximately \$40 million to each partnership. Previous funds have invested approximately 30% outside the U.S.

As of December 31, 2016

## Account Information

Account Name	HarbourVest Partners VIII
Account Structure	Other
Investment Style	Active
Inception Date	
Account Type	Private Equity
Benchmark	

## Non-Marketable Securities Overview by Account Type

Account Type	Account	Vintage Year	Commitment	Cumulative Takedown	Cumulative Distributions	Value (RV)	Total Value (RV + Dist)	Unfunded Commitment
Private Equity	HarbourVest Partners VIII	2006	\$2,500,000	\$2,350,000	\$2,381,492	\$1,429,761	\$3,811,253	\$150,000
	<b>Total Account</b>		<b>\$2,500,000</b>	<b>\$2,350,000</b>	<b>\$2,381,492</b>	<b>\$1,429,761</b>	<b>\$3,811,253</b>	<b>\$150,000</b>

**Investment Strategy:**

HarbourVest Partners, known as Hancock Venture Partners until 1997, was founded in 1982 to invest in private equity partnerships. The HarbourVest Partners VIII Investment Program consists of three separate fund of funds, each dedicated to distinct private equity strategies: buyout, venture capital and mezzanine debt partnerships. Each vehicle will invest primarily in newly raised funds, but will also invest a portion of assets in secondary interest.

Note: As of September 30, 2016, the Net IRR is 10.0%.





As of December 31, 2016

## Account Information

Account Name	HarbourVest Partners IX
Account Structure	Other
Investment Style	Active
Inception Date	
Account Type	Private Equity
Benchmark	

## Non-Marketable Securities Overview by Account Type

Account Type	Account	Vintage Year	Commitment	Cumulative Takedown	Cumulative Distributions	Value (RV)	Total Value (RV + Dist)	Unfunded Commitment
Private Equity	HarbourVest Partners IX	2010	\$5,000,000	\$3,012,500	\$839,862	\$2,987,482	\$3,827,344	\$1,987,500
	<b>Total Account</b>		<b>\$5,000,000</b>	<b>\$3,012,500</b>	<b>\$839,862</b>	<b>\$2,987,482</b>	<b>\$3,827,344</b>	<b>\$1,987,500</b>

**Investment Strategy:**

HarbourVest Partners, known as Hancock Venture Partners until 1997, was founded in 1982 to invest in private equity partnerships. The HarbourVest Partners IX Fund consists of three separate fund of funds, each dedicated to distinct private equity strategies: buyout, venture capital, and mezzanine debt partnerships. Each vehicle will invest primarily in newly-raised funds, but will also invest a portion of assets in secondary interests.

Note: As of September 30, 2016, the Net IRR is 14.9%.



## Constitution Capital Partners Ironsides III

As of December 31, 2016

## Account Information

Account Name	Constitution Capital Partners Ironsides III
Account Structure	Other
Investment Style	Active
Inception Date	
Account Type	Private Equity
Benchmark	

## Non-Marketable Securities Overview by Account Type

Account Type	Account	Vintage Year	Commitment	Cumulative Takedown	Cumulative Distributions	Value (RV)	Total Value (RV + Dist)	Unfunded Commitment
Private Equity	Constitution Capital Direct IV	2016	\$2,500,000	\$1,238,019	\$0	\$1,196,685	\$1,196,685	\$1,261,981
	<b>Total Account</b>		<b>\$2,500,000</b>	<b>\$1,238,019</b>	<b>\$0</b>	<b>\$1,196,685</b>	<b>\$1,196,685</b>	<b>\$1,261,981</b>

## Investment Strategy:

Constitution Capital seeks investments in underlying private equity funds ranging in size from \$200 million to approximately \$1.0 billion, with a few larger potentially. Constitution has noted their preference to invest the majority of capital to funds of less than \$1 billion. Constitution has noted their preference to invest the majority of capital to funds of less than \$1 billion. Constitution targets a variety of fund types (domestic middle-market buyout, special situations, growth equity, distressed, and sector-specific) and will allocate amongst them opportunistically. The group will not invest in early-stage venture capital funds or mega buyout funds. The portfolio will have 12 to 15 underlying fund investments of approximately \$10 million to \$20 million each. For co-investments, it is anticipated that a total of 12-15 co-investments will each range from \$5 million to \$25 million. The enterprise values of the underlying companies are expected to range from \$100 million to \$1.5 billion.

Note: As of June 30, 2016, the Gross IRR is 9.5%.



## Constitution Capital Direct IV

As of December 31, 2016

## Account Information

Account Name	Constitution Capital Direct IV
Account Structure	Other
Investment Style	Active
Inception Date	
Account Type	Private Equity
Benchmark	

## Non-Marketable Securities Overview by Account Type

Account Type	Account	Vintage Year	Commitment	Cumulative Takedown	Cumulative Distributions	Value (RV)	Total Value (RV + Dist)	Unfunded Commitment
Private Equity	Constitution Capital Direct IV	2016	\$2,500,000	\$1,238,019	\$0	\$1,196,685	\$1,196,685	\$1,261,981
	<b>Total Account</b>		<b>\$2,500,000</b>	<b>\$1,238,019</b>	<b>\$0</b>	<b>\$1,196,685</b>	<b>\$1,196,685</b>	<b>\$1,261,981</b>

## RS Global Natural Resources

As of December 31, 2016

## Account Information

Account Name	RS Global Natural Resources
Account Structure	Mutual Fund
Investment Style	Active
Inception Date	7/01/11
Account Type	Equity
Benchmark	S&P Global Natural Resources Index TR USD
Universe	

## Portfolio Performance Summary

	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
RS Global Natural Resources	6.5	53.7	53.7	-9.6	-4.8	-6.4	Jul-11
S&P Global Natural Resources Index TR USD	6.7	32.3	32.3	-3.2	-0.2	-3.5	Jul-11

## RS Global Natural Resources Characteristics

	Portfolio
	Q3-16

Market Value	
Market Value (Mil)	5.1
Number Of Holdings	22

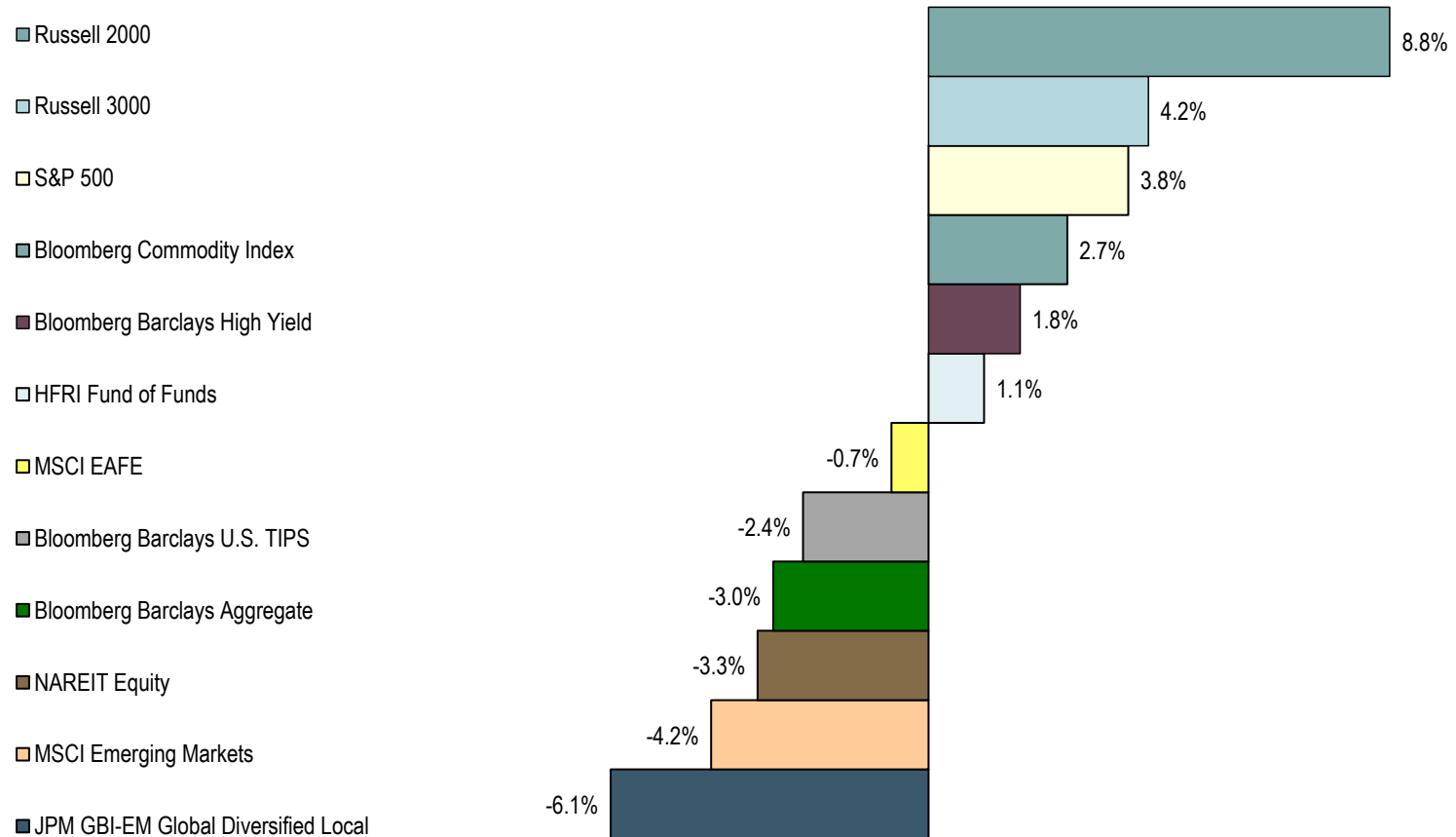
Characteristics	
Wtg. Avg. Market Cap. (Bil)	5.6
Median Market Cap (Bil)	3.2
P/E Ratio	19.0
Yield	0.6
EPS Growth - 5 Yrs.	17.1
Price to Book	3.1
Beta (holdings; domestic)	1.9

Sector Distribution	
Energy	43.6
Materials	45.2
Industrials	0.0
Consumer Discretionary	0.0
Consumer Staples	0.0
Health Care	0.0
Financials	0.0
Information Technology	0.0
Telecommunication Services	0.0
Utilities	3.8
Real Estate	0.0

## Appendices

## **The World Markets Fourth Quarter of 2016**

## The World Markets<sup>1</sup> Fourth Quarter of 2016



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

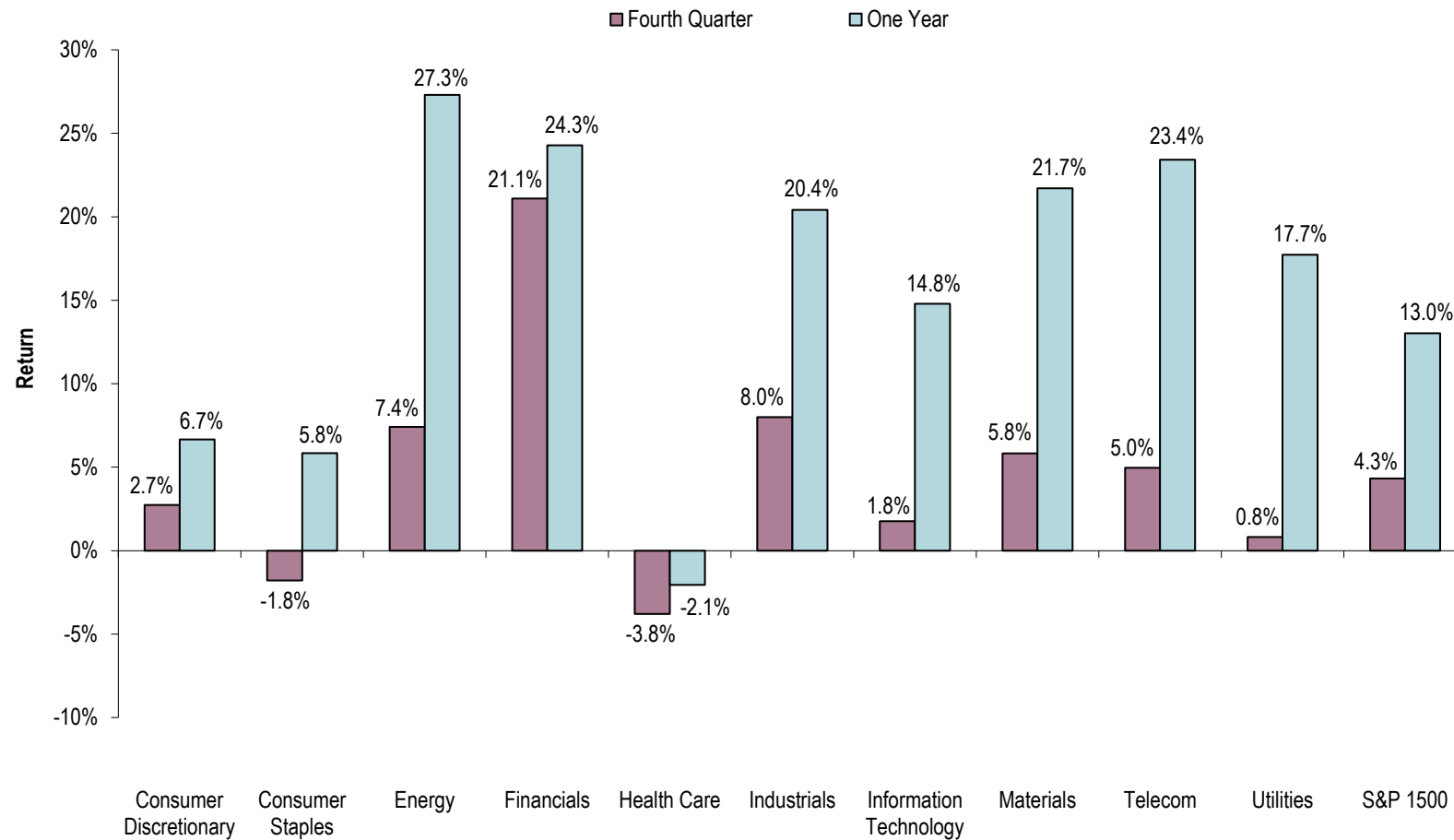
Index Returns<sup>1</sup>

	4Q16 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
<b>Domestic Equity</b>					
Russell 3000	4.2	12.7	8.4	14.7	7.1
Russell 1000	3.8	12.1	8.6	14.7	7.1
Russell 1000 Growth	1.0	7.1	8.6	14.5	8.3
Russell 1000 Value	6.7	17.3	8.6	14.8	5.7
Russell MidCap	3.2	13.8	7.9	14.7	7.9
Russell MidCap Growth	0.5	7.3	6.2	13.5	7.8
Russell MidCap Value	5.5	20.0	9.5	15.7	7.6
Russell 2000	8.8	21.3	6.7	14.5	7.1
Russell 2000 Growth	3.6	11.3	5.1	13.7	7.8
Russell 2000 Value	14.1	31.7	8.3	15.1	6.3
<b>Foreign Equity</b>					
MSCI ACWI (ex. U.S.)	-1.3	4.5	-1.8	5.0	1.0
MSCI EAFE	-0.7	1.0	-1.6	6.5	0.7
MSCI EAFE (local currency)	7.1	5.3	5.5	11.8	2.2
MSCI EAFE Small Cap	-2.9	2.2	2.1	10.6	2.9
MSCI Emerging Markets	-4.2	11.2	-2.6	1.3	1.8
MSCI Emerging Markets (local currency)	-1.4	9.7	2.8	5.6	4.4
<b>Fixed Income</b>					
Bloomberg Barclays Universal	-2.6	3.9	3.3	2.8	4.6
Bloomberg Barclays Aggregate	-3.0	2.6	3.0	2.2	4.3
Bloomberg Barclays U.S. TIPS	-2.4	4.7	2.3	0.9	4.4
Bloomberg Barclays High Yield	1.8	17.1	4.7	7.4	7.5
JPMorgan GBI-EM Global Diversified (Local Currency)	-6.1	9.9	-4.1	-1.3	3.8
<b>Other</b>					
NAREIT Equity	-3.3	8.6	12.7	12.0	5.1
Bloomberg Commodity Index	2.7	11.8	-11.3	-9.0	-5.6
HFRI Fund of Funds	1.1	0.7	1.3	3.5	1.3

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



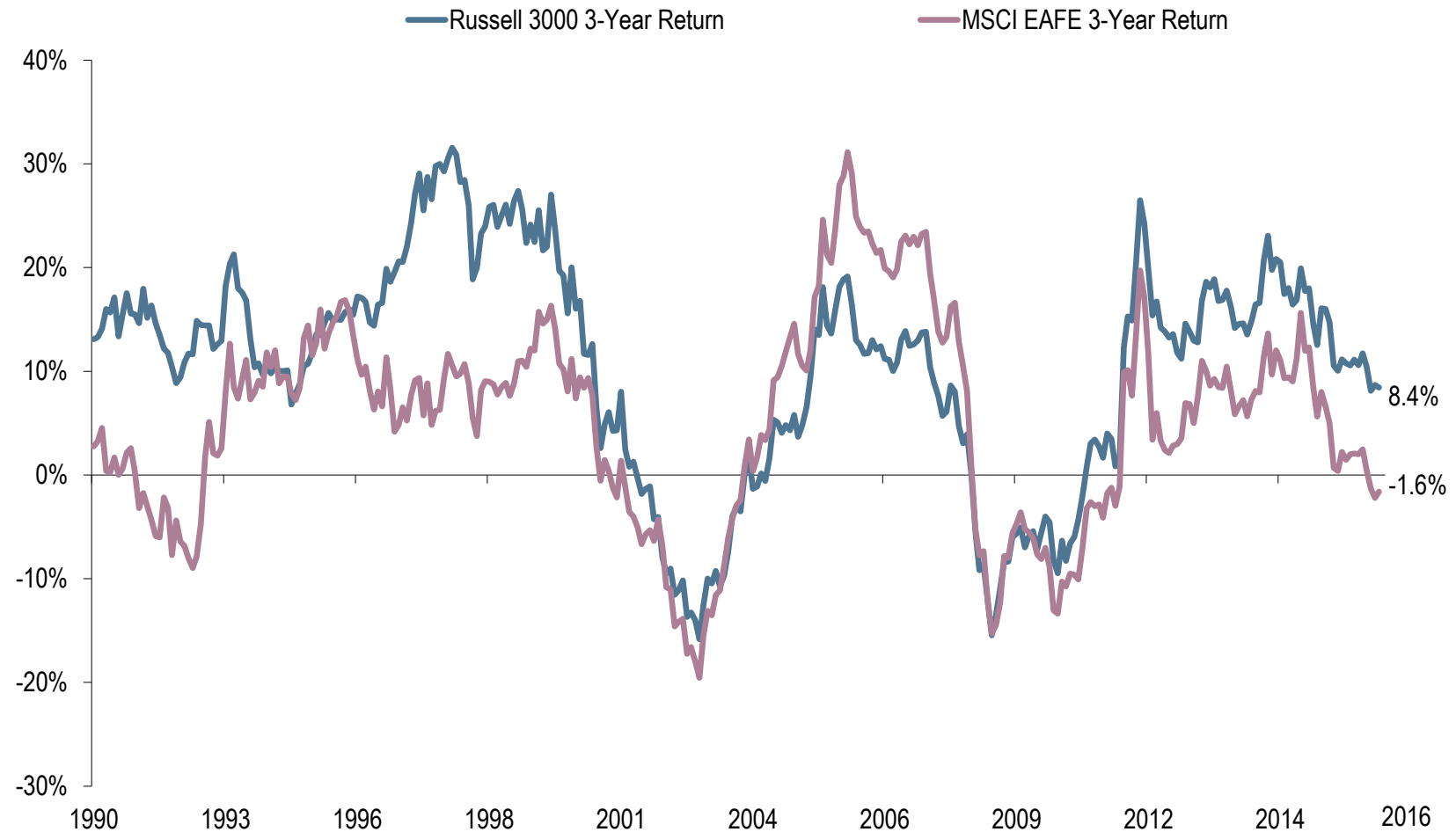
## S&P Sector Returns<sup>1</sup>



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



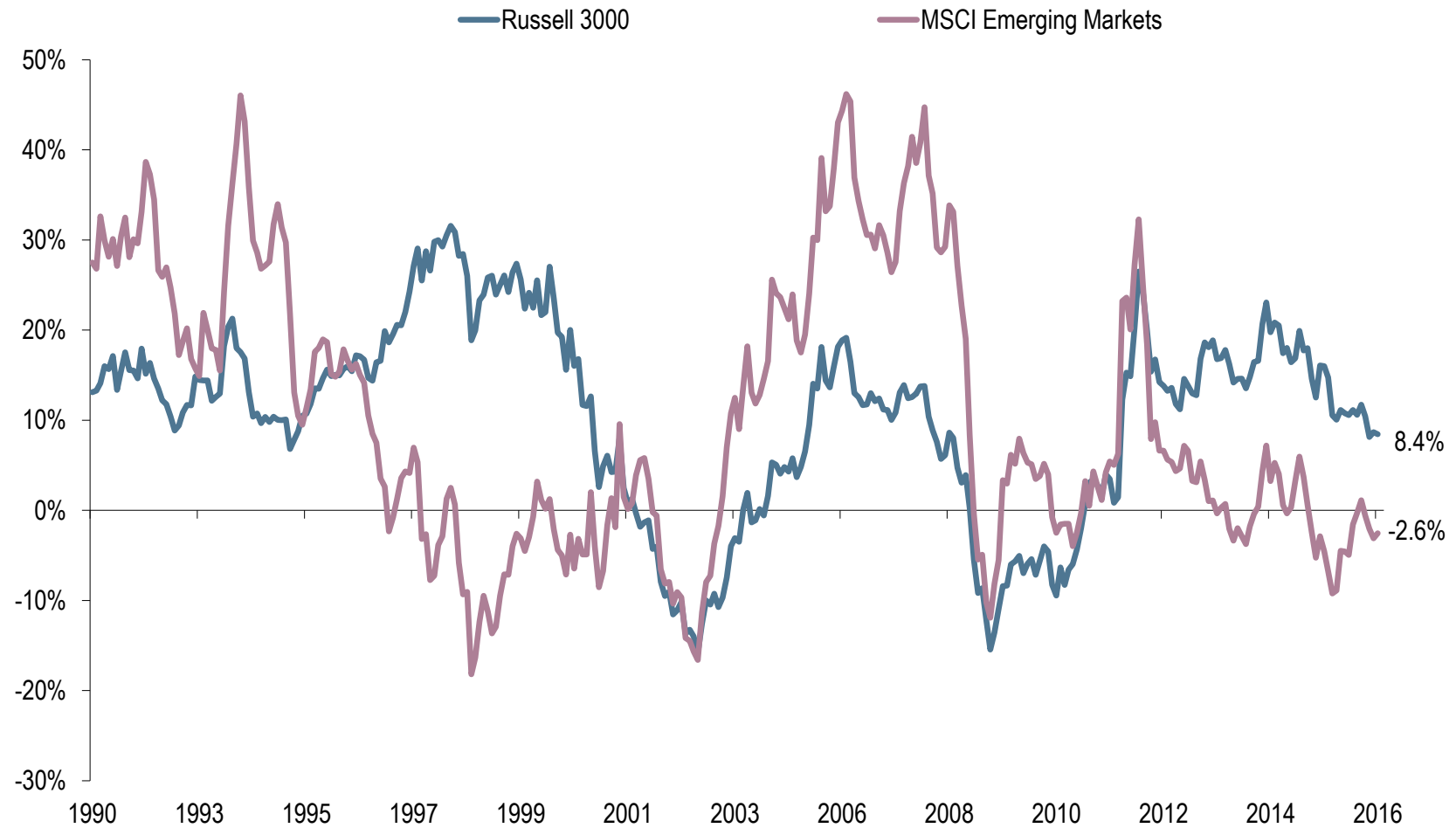
## U.S. and Developed Market Foreign Equity Rolling Three-Year Returns<sup>1</sup>



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



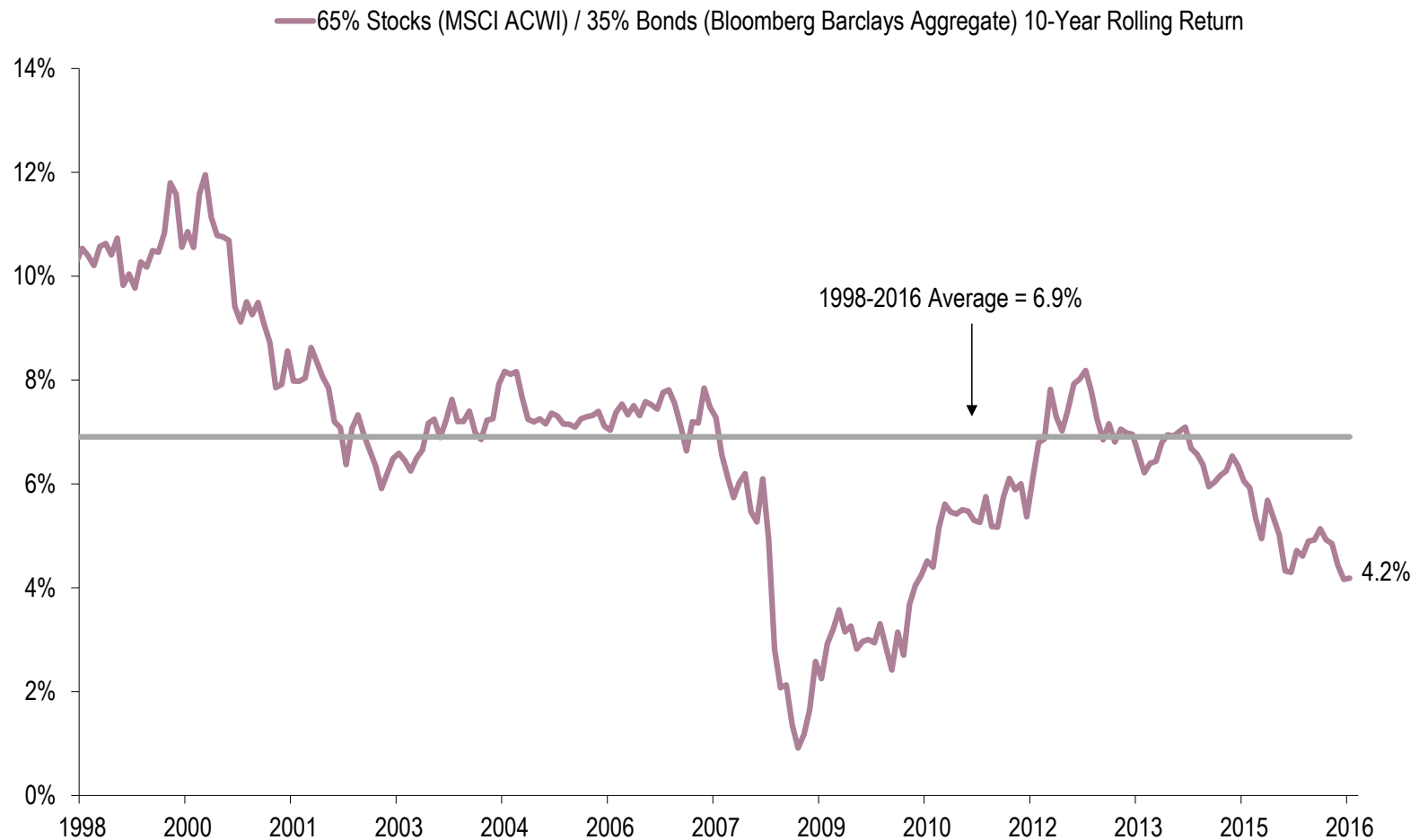
## U.S. and Emerging Market Equity Rolling Three-Year Returns<sup>1</sup>



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



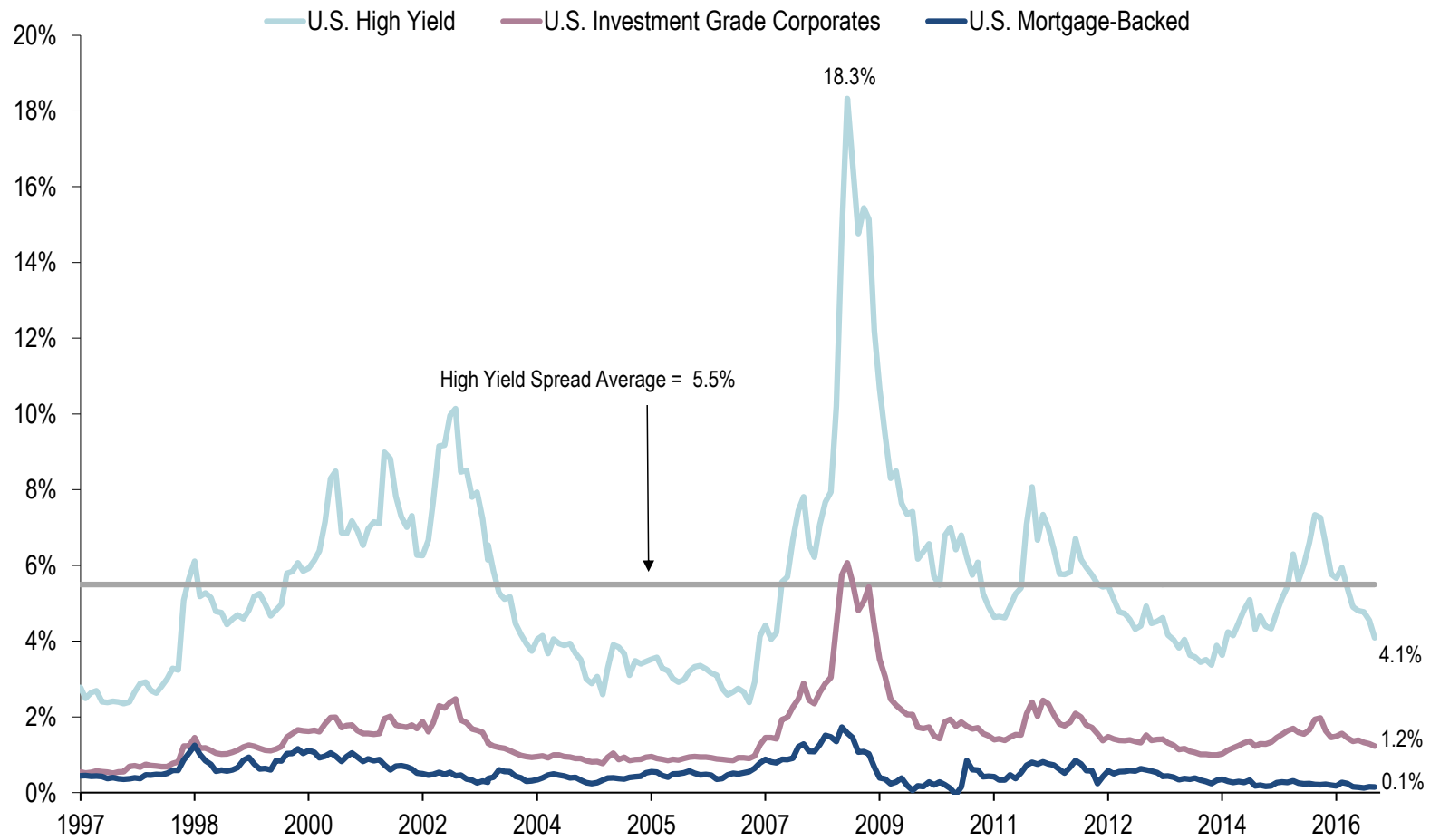
## Rolling Ten-Year Returns: 65% Stocks and 35% Bonds<sup>1</sup>



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



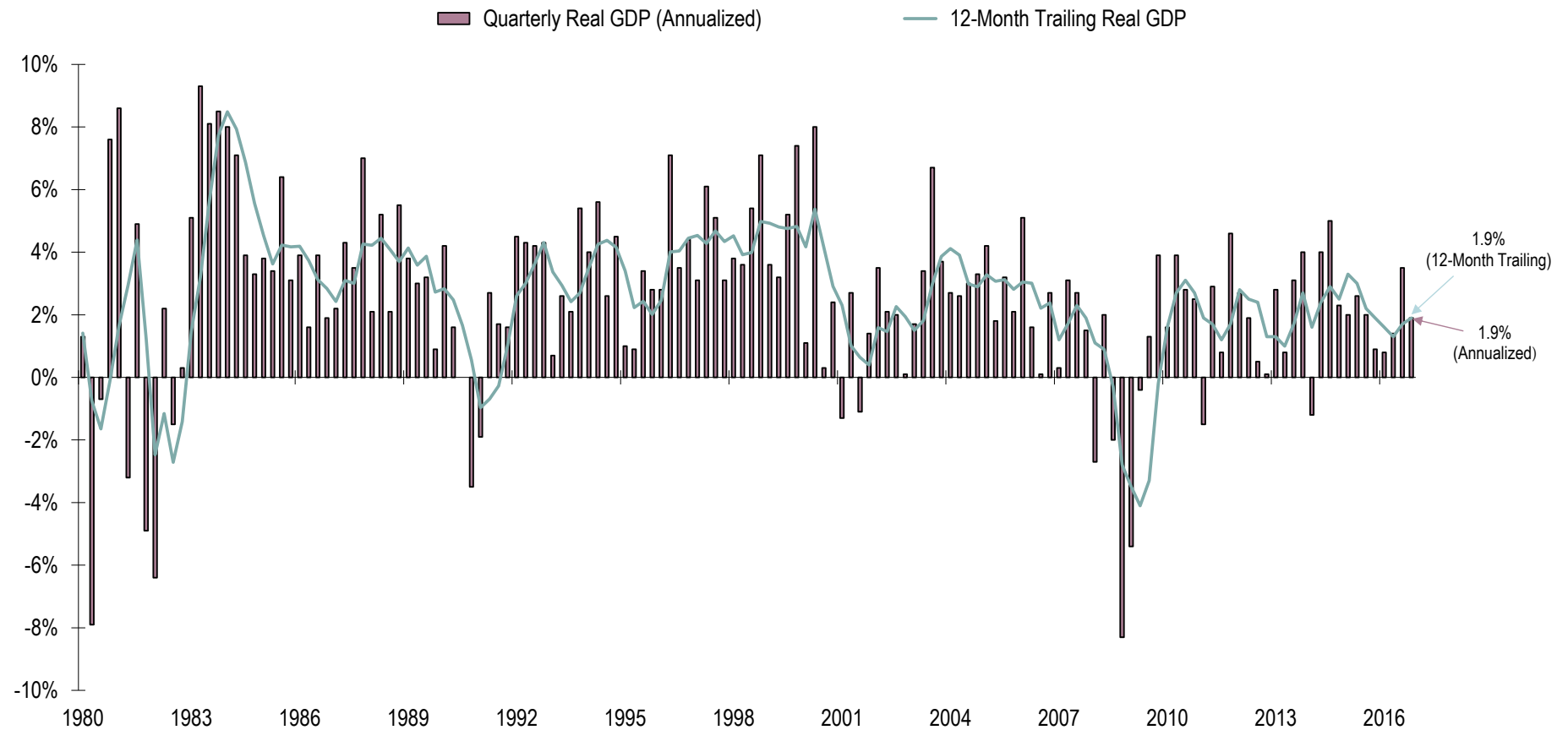
## Credit Spreads vs. U.S. Treasury Bonds<sup>1,2</sup>



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

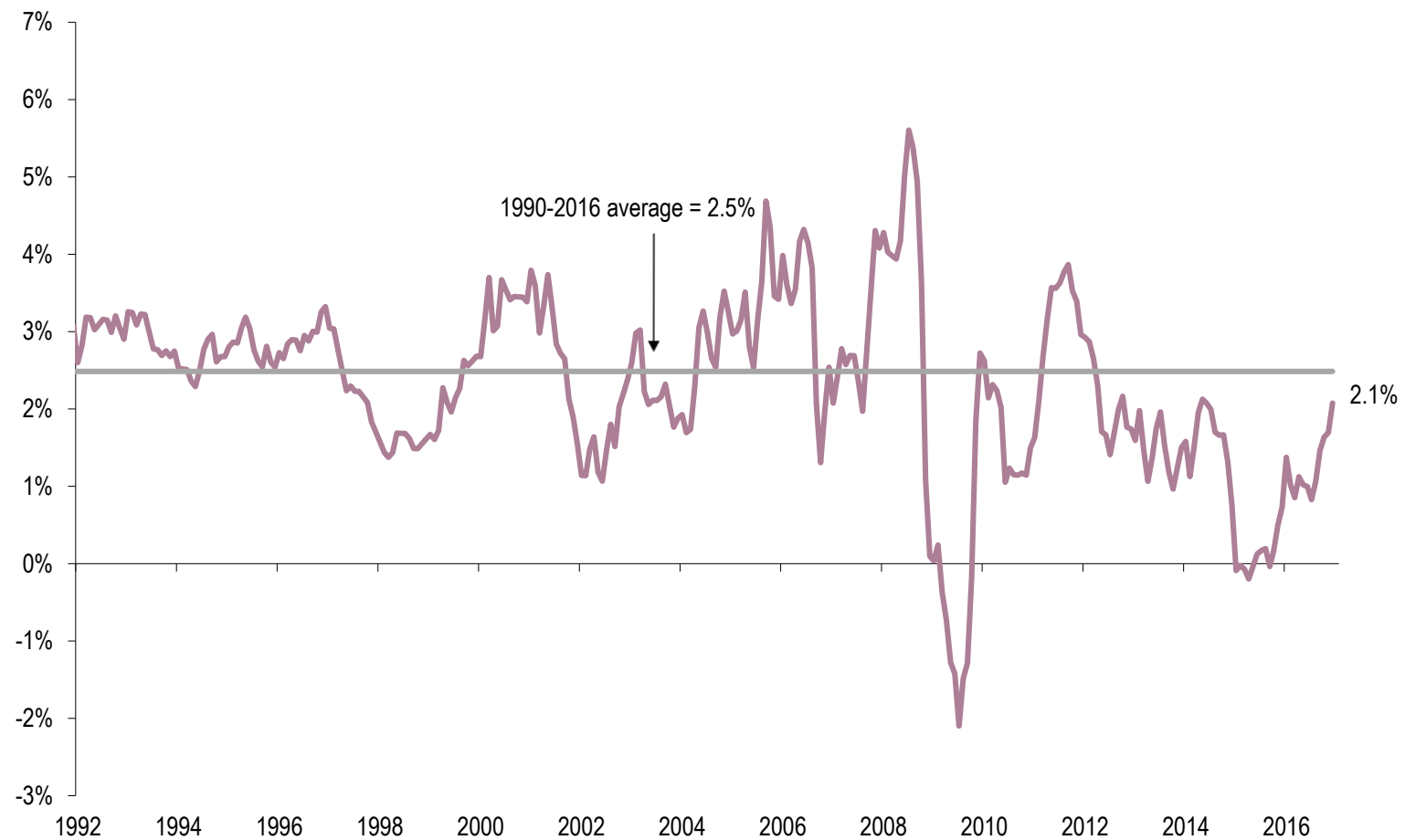
<sup>2</sup> The median high yield spread was 5.1% from 1997-2016.

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



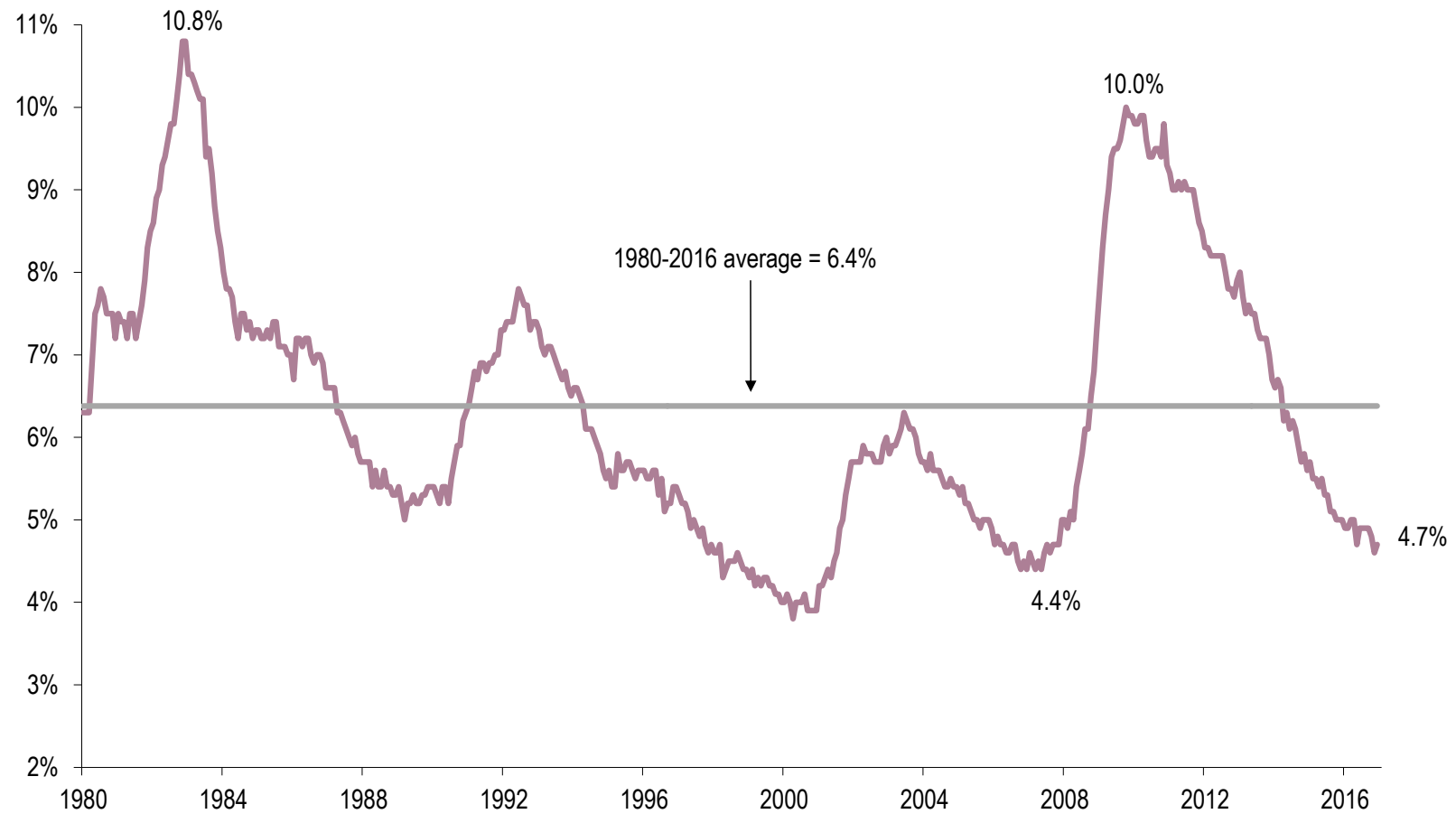
<sup>1</sup> Source: Bureau of Economic Analysis. Fourth quarter GDP data represents the first estimate.

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



<sup>1</sup> Source: Bureau of Labor Statistics. Data is non-seasonally adjusted CPI, which may be volatile in the short-term. Data is as of December 31, 2016.

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

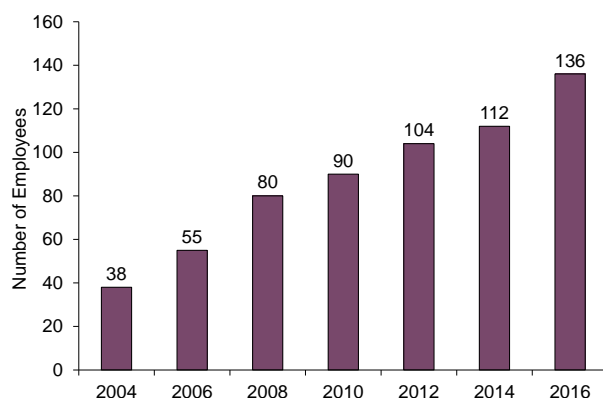
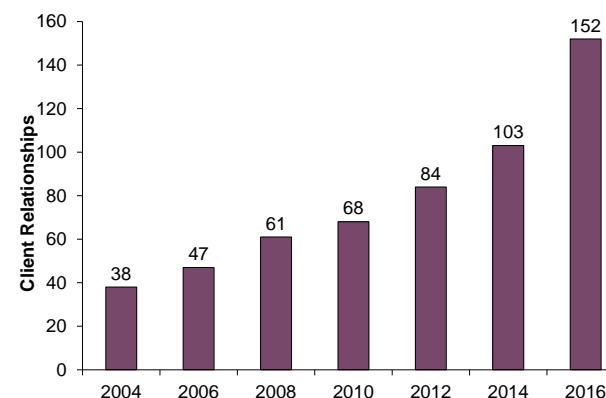


<sup>1</sup> Source: Bureau of Labor Statistics. Data is as of December 31, 2016.



## **Meketa Investment Group Corporate Update**

- Staff of 136, including 88 investment professionals and 27 CFA Charterholders
- 152 clients, with over 250 funds throughout the United States
- Significant investment in staff and resources
- Offices in Boston, Chicago, Miami, Portland (OR), San Diego, and London
- Clients have aggregate assets of over \$890 billion
  - Over \$50 billion in assets committed to alternative investments
    - Private Equity      ▪ Infrastructure      ▪ Natural Resources
    - Real Estate        ▪ Hedge Funds      ▪ Commodities

**Employee Growth****Client Growth**

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

## Asset Classes Followed Intensively by Meketa Investment Group

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

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

The material contained in this report is confidential and may not be reproduced, disclosed, or distributed, in whole or in part, to any person or entity other than the intended recipient. The data are provided for informational purposes only, may not be complete, and cannot be relied upon for any purpose other than for discussion.

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.

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 Board Members 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 Board.

**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.

**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.