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## Dallas Police & Fire Pension System

### **Investment Summary**

**Quarter Ending December 31, 2016**

March 9, 2017

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**BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | SAN FRANCISCO**

# Q4 2016 Market Update



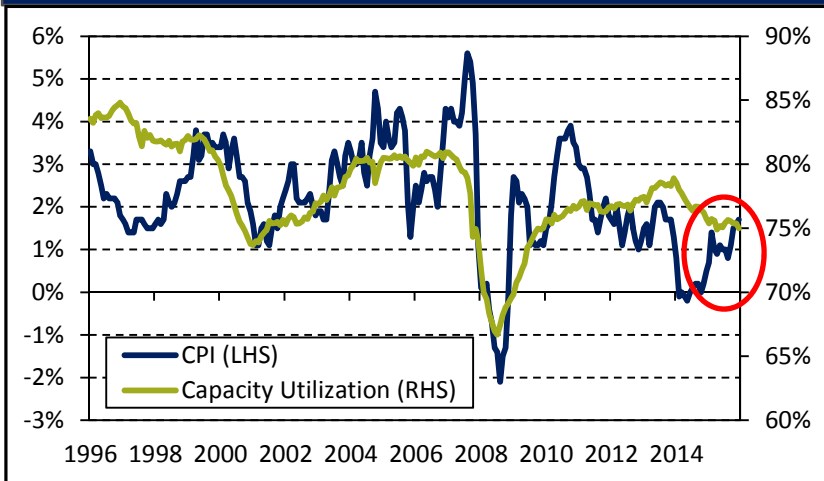
## Index Performance Summary as of 12/30/2016

	2009	2010	2011	2012	2013	2014	2015	Q1	Q2	Q3	Oct	Nov	Dec	Q4	YTD
<b>Russell 2000</b>	27.2%	26.9%	-4.2%	16.3%	38.8%	4.9%	<b>-4.4%</b>	-1.5%	3.8%	9.0%	-4.8%	11.2%	2.8%	8.8%	<b>21.3%</b>
<b>Alerian MLP</b>	76.4%	35.9%	13.9%	4.8%	27.6%	4.8%	-32.6%	-4.2%	19.7%	1.1%	-4.5%	2.3%	4.4%	2.0%	18.3%
<b>Russell 2500</b>	34.4%	26.7%	-2.5%	17.9%	36.8%	7.1%	-2.9%	0.4%	3.6%	6.6%	-4.1%	8.5%	1.9%	6.1%	17.6%
<b>Barclays US Corp HY</b>	58.2%	15.1%	5.0%	15.8%	7.4%	2.5%	<b>-4.5%</b>	3.4%	5.5%	5.6%	0.4%	-0.5%	1.8%	1.8%	<b>17.1%</b>
<b>Russell 1000</b>	28.4%	16.1%	1.5%	16.4%	33.1%	13.2%	0.9%	1.2%	2.5%	4.0%	-2.0%	3.9%	1.9%	3.8%	12.1%
<b>S&amp;P 500</b>	26.5%	15.1%	2.1%	16.0%	32.4%	13.7%	1.4%	1.3%	2.5%	3.9%	-1.8%	3.7%	2.0%	3.8%	12.0%
<b>BBG Commodity</b>	18.9%	16.8%	-13.3%	-1.1%	-9.5%	-17.0%	-24.7%	0.4%	12.8%	-3.9%	-0.5%	1.3%	1.8%	2.7%	11.8%
<b>MSCI EM</b>	78.5%	18.9%	-18.4%	18.2%	-2.6%	-2.2%	-14.9%	5.7%	0.7%	9.0%	0.2%	-4.6%	0.2%	-4.2%	11.2%
<b>Barclays US Long Credit</b>	16.8%	10.7%	17.1%	12.7%	-6.6%	16.4%	-4.6%	6.8%	6.7%	2.3%	-2.1%	-4.9%	1.5%	-5.4%	10.2%
<b>JPM EMBI Global Div</b>	29.8%	12.2%	7.3%	17.4%	-5.3%	7.4%	<b>1.2%</b>	5.0%	5.0%	4.0%	-1.2%	-4.1%	1.3%	-4.0%	<b>10.2%</b>
<b>JPM GBI-EM Global Div</b>	22.0%	15.7%	-1.8%	16.8%	-9.0%	-5.7%	<b>-14.9%</b>	11.0%	2.7%	2.7%	-0.8%	-7.0%	1.9%	-6.1%	<b>9.9%</b>
<b>Credit Suisse Lev Loan</b>	44.9%	10.0%	1.8%	9.4%	6.2%	2.1%	<b>-0.4%</b>	1.3%	2.9%	3.1%	0.8%	0.3%	1.1%	2.3%	<b>9.9%</b>
<b>FTSE NAREIT Eqy REITs</b>	28.0%	28.0%	8.3%	18.1%	2.5%	30.1%	3.2%	6.0%	7.0%	-1.4%	-5.7%	-1.7%	4.7%	-2.9%	8.5%
<b>MSCI ACWI</b>	34.6%	12.7%	-7.3%	16.1%	22.8%	4.2%	<b>-2.4%</b>	0.2%	1.0%	5.3%	-1.7%	0.8%	2.2%	1.2%	<b>7.9%</b>
<b>BC Long US Govt/Credit</b>	1.9%	10.2%	22.5%	8.8%	-8.8%	19.3%	-3.3%	7.3%	6.5%	1.2%	-2.8%	-5.8%	0.7%	-7.8%	6.7%
<b>Barclays US Agg Bond</b>	5.9%	6.5%	7.8%	4.2%	-2.0%	6.0%	0.5%	3.0%	2.2%	0.5%	-0.8%	-2.4%	0.1%	-3.0%	2.6%
<b>Barclays US Agg Int.</b>	6.5%	6.1%	6.0%	3.6%	-1.0%	4.1%	1.2%	2.3%	1.4%	0.3%	-0.4%	-1.7%	0.0%	-2.0%	2.0%
<b>Citi WGBI</b>	2.6%	5.2%	6.4%	1.6%	-4.0%	-0.5%	<b>-3.6%</b>	7.1%	3.4%	0.3%	-3.4%	-4.6%	-0.7%	-8.5%	<b>1.6%</b>
<b>BC US STRIPS 20+</b>	-36.0%	10.9%	58.5%	3.0%	-21.0%	46.4%	-3.7%	11.4%	9.6%	-0.2%	-6.2%	-10.5%	-0.9%	-16.7%	1.4%
<b>BC US Gov/Cred 1-3 Yr</b>	3.8%	2.8%	1.6%	1.3%	0.6%	0.8%	0.7%	1.0%	0.7%	0.0%	0.0%	-0.4%	0.1%	-0.4%	1.3%
<b>MSCI EAFE</b>	31.8%	7.8%	-12.1%	17.3%	22.8%	-4.9%	-0.8%	-3.0%	-1.5%	6.4%	-2.0%	-2.0%	3.4%	-0.7%	1.0%
<b>CS Hedge Fund</b>	18.6%	10.9%	-2.5%	7.7%	9.7%	4.1%	-0.7%	-2.2%	0.6%	1.7%	-0.2%	-0.2%	-	0.2%	0.3%
<b>Barclays Municipal</b>	12.9%	2.4%	10.7%	6.8%	-2.6%	9.1%	3.3%	1.7%	2.6%	-0.3%	-1.0%	-3.7%	1.2%	-3.6%	0.2%

Source: Bloomberg, Barclays, Alerian, Nareit, MSCI, JP Morgan, Credit Suisse

# US Economic Indicators

## Inflation continues rising



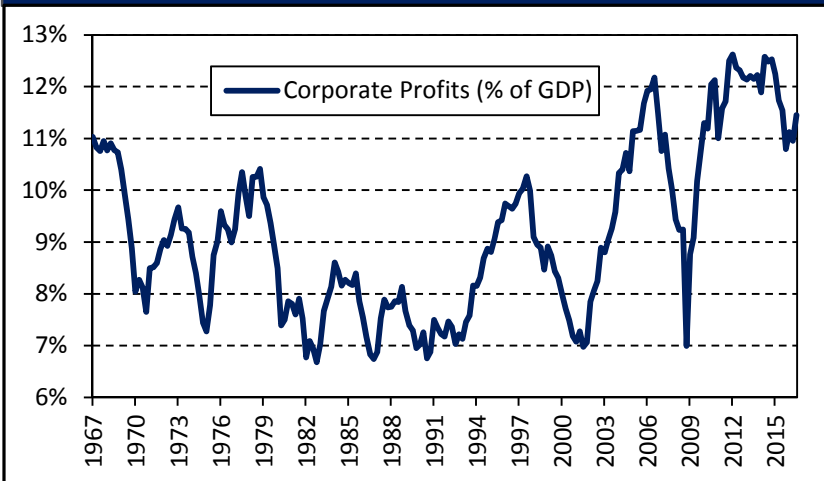
Source: Bloomberg, Federal Reserve, Bureau of Labor Statistics

## Unemployment has steadied



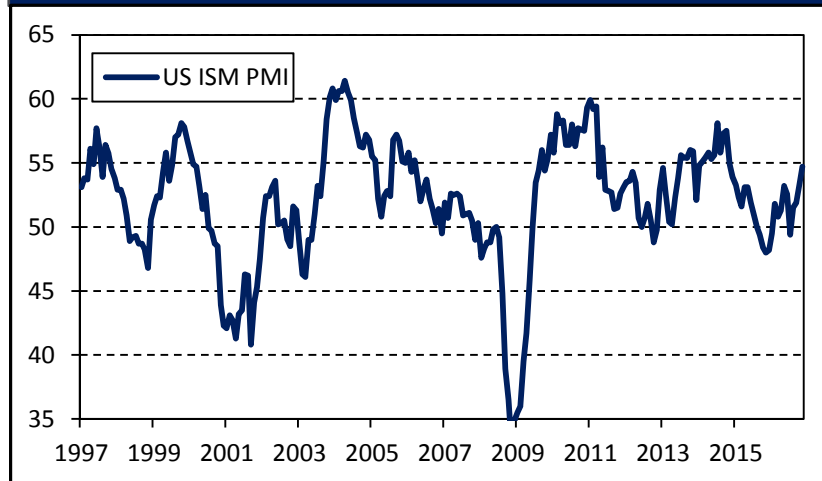
Source: Bloomberg, Bureau of Labor Statistics

## Corporate profits experience an uptick



Source: Bloomberg, Bureau of Economic Analysis

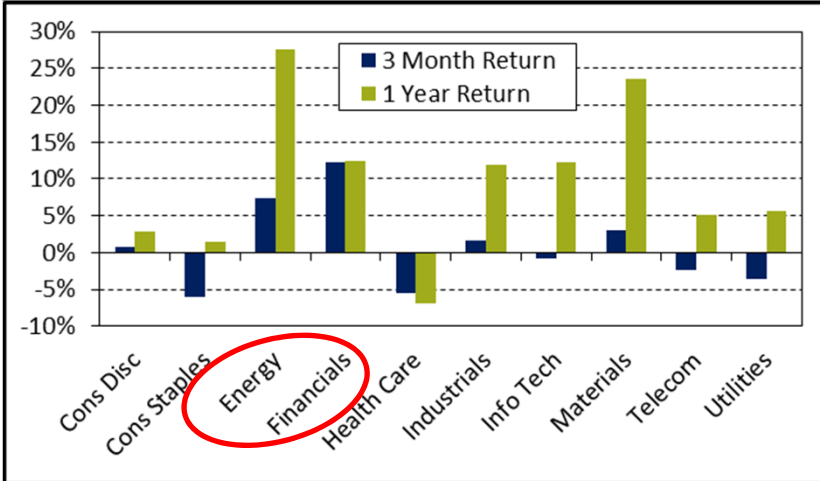
## Manufacturing shows modest strength



Source: Bloomberg, Institute for Supply Management

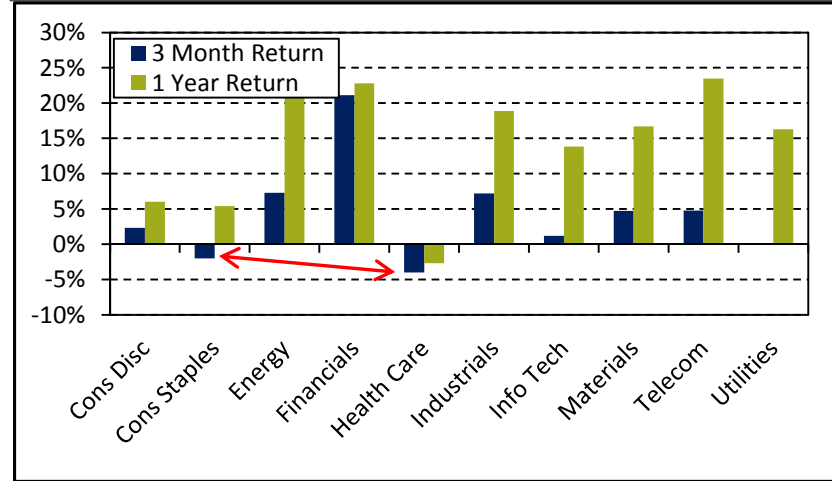
# Global Equity by Sector

## Energy and Financials lead MSCI ACWI short-term returns



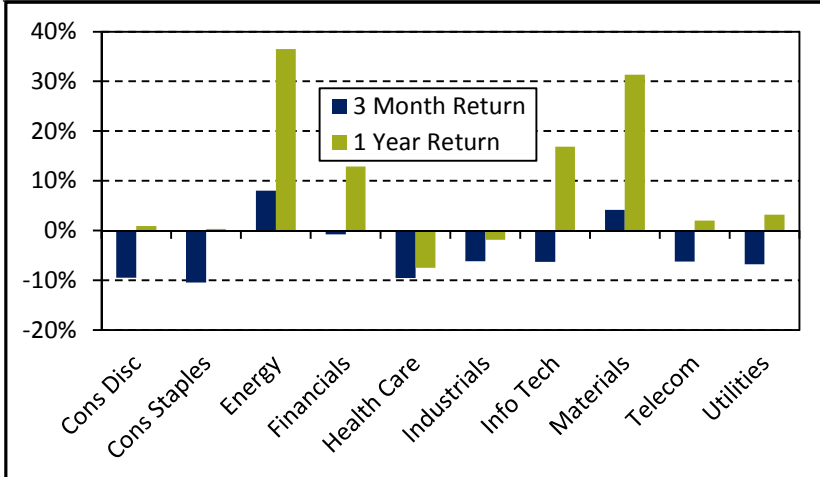
Source: Bloomberg, MSCI

## Healthcare and Consumer Staples drag S&P 500 short-term returns



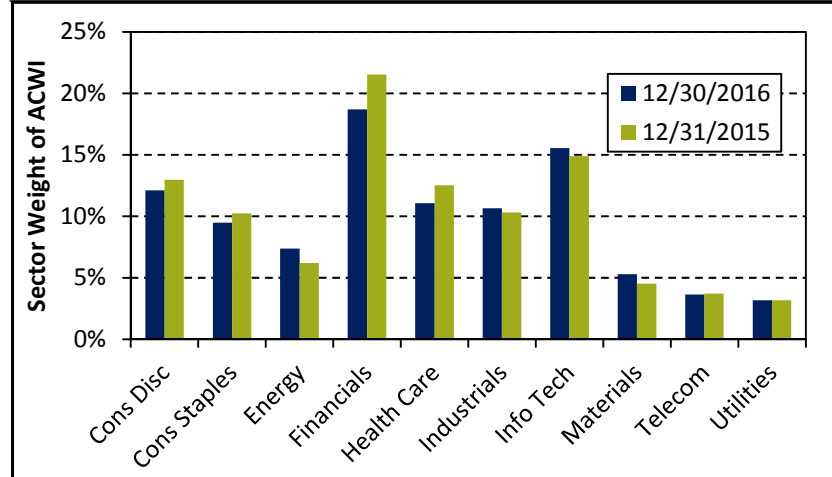
Source: Bloomberg, Standard and Poors

## Energy and Materials continue their strong performance in EM



Source: Bloomberg, MSCI

## Financials sector weight has decreased significantly

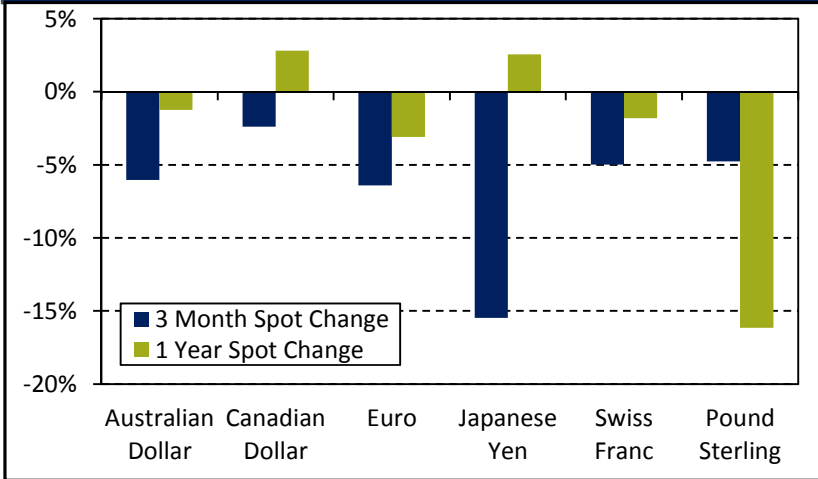


Source: Bloomberg, MSCI



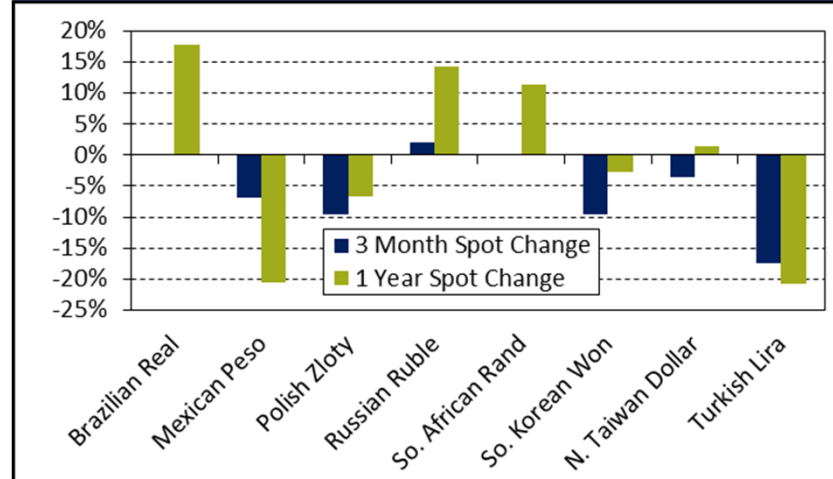
# Currencies

## Developed currencies have declined versus the dollar



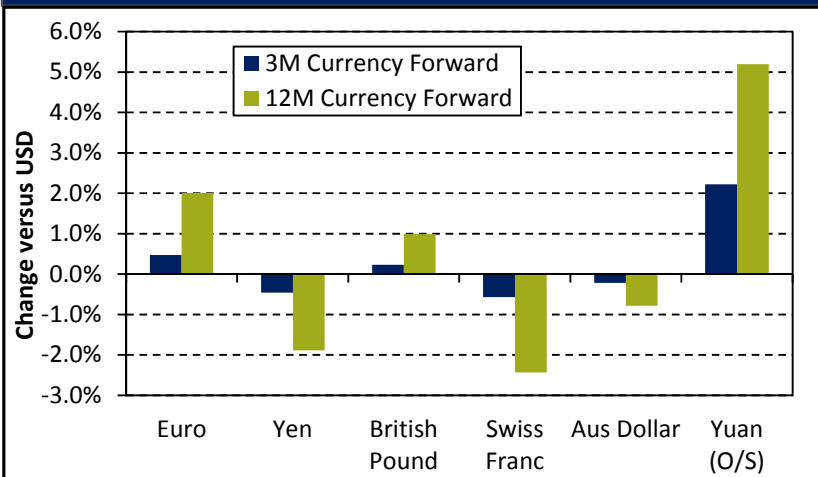
Source: Bloomberg

## A number of currencies have experienced sharp depreciation



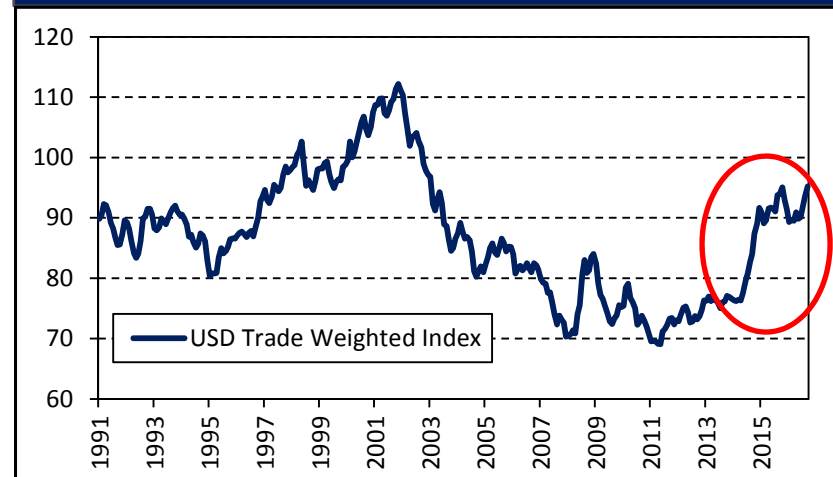
Source: Bloomberg

## USD expectations vary across developed markets



Source: Bloomberg

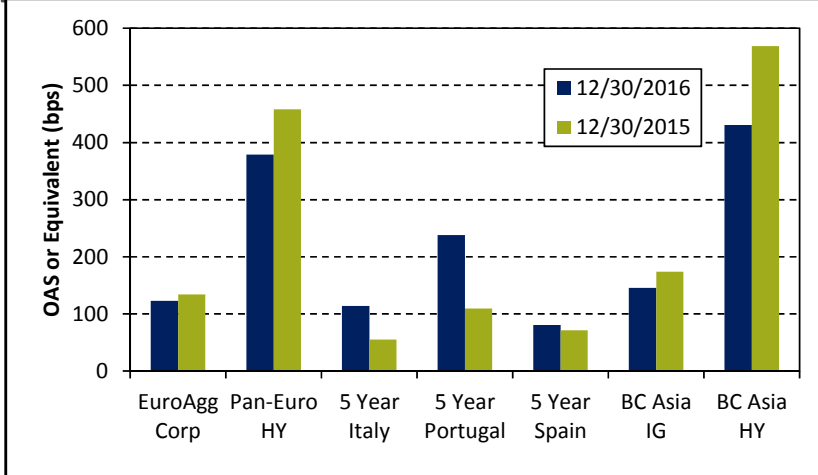
## Dollar strength persists



Source: Bloomberg, Federal Reserve

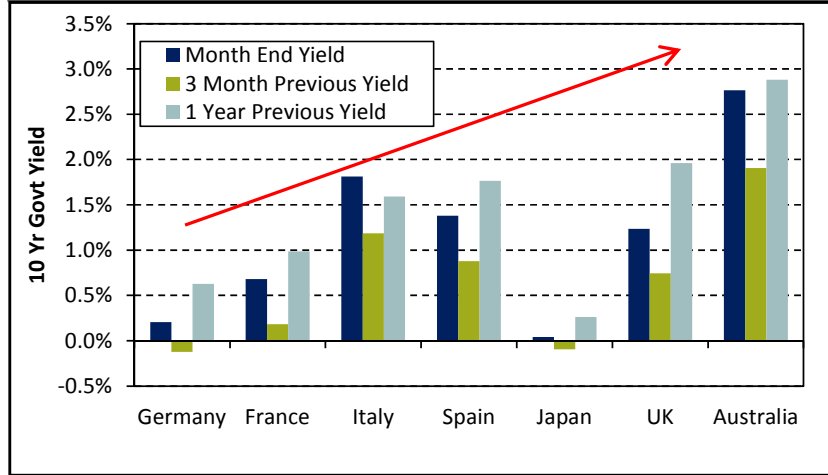
# International Developed Fixed Income

## European periphery yields vary relative to Germany



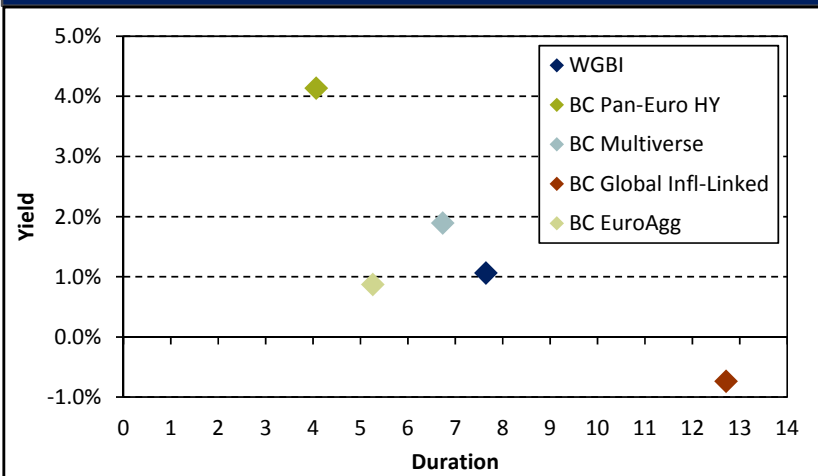
Source: Barclays, Bloomberg, \*European periphery spreads are over equivalent German Bund

## Global yields have increased post rate hike



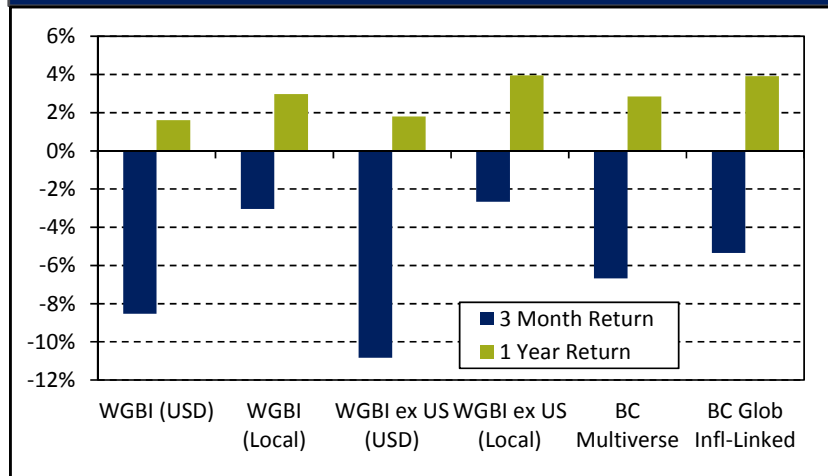
Source: Bloomberg

## Low yields persist in global bond universe



Source: Bloomberg, Citigroup, Barclays

## Global bond returns hurt by rising yields

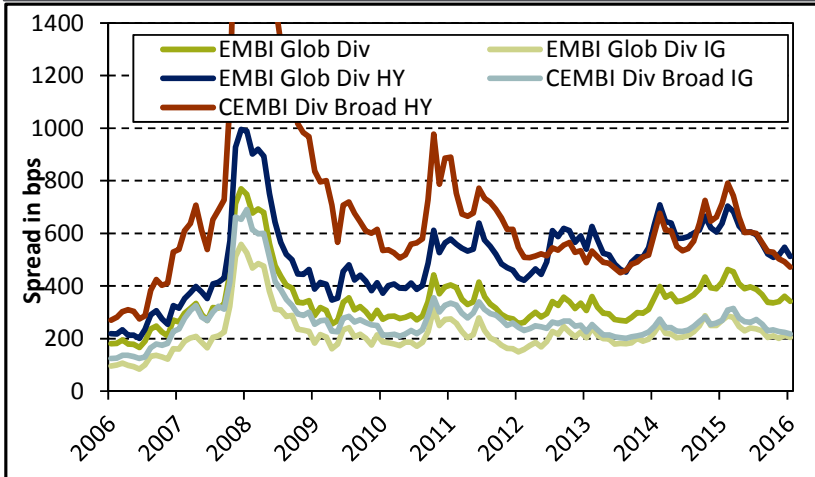


Source: Bloomberg, Citigroup, Barclays



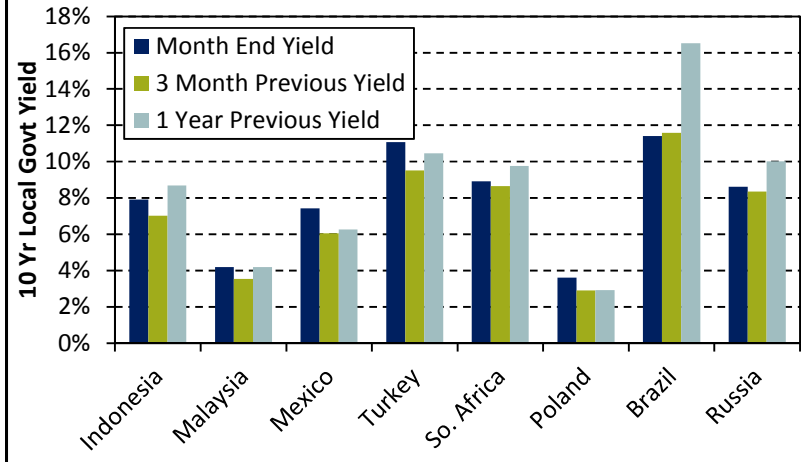
# Emerging Markets Fixed Income

## Spreads continue to decline



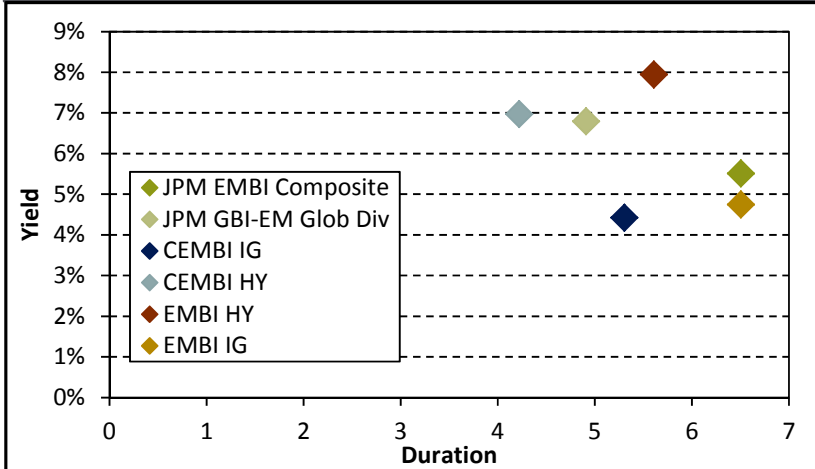
Source: Bloomberg, JP Morgan

## EM local bond yields increased slightly



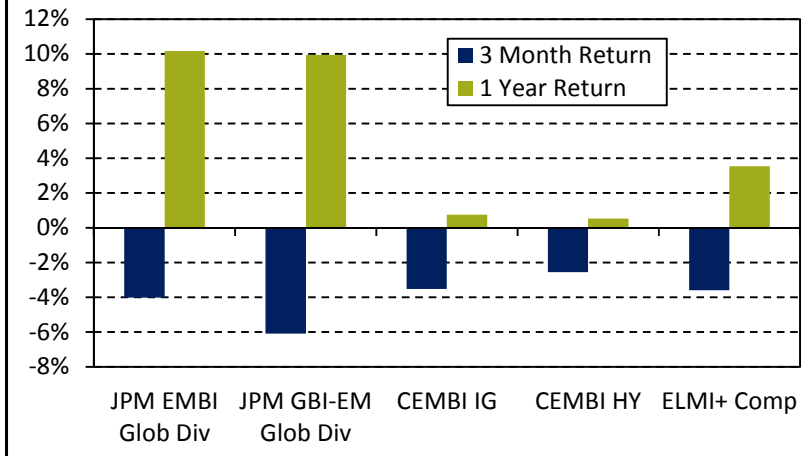
Source: Bloomberg

## EM yields remain attractive versus global counterparts



Source: Bloomberg, JP Morgan

## EM debt posts negative short-term returns



Source: Bloomberg, JP Morgan





- **Past performance is no guarantee of future results.**
- **The goal of this report is to provide a basis for monitoring financial markets. The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.**
- **Information on market indices was provided by sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.**
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# Q4 2016 Performance & Asset Allocation



## Asset Allocation: Broad Composites

	<b>Market Value \$</b>	<b>% of Portfolio</b>	<b>Policy %</b>
Total Equity	506,996,408	23.6%	30%
Total Fixed Income	289,189,366	13.5%	33%
Total GAA	133,973,442	6.2%	10%
Total Real Assets	1,023,688,940	47.7%	25%
Cash	324,327,596	15.1%	2%
DPFP Debt	(130,000,000)	-6.1%	---
<b>Total DPFP</b>	<b>2,148,175,753</b>	<b>100%</b>	<b>100%</b>



## Asset Allocation: By Asset Class

	Current Allocation \$	Current Allocation %	Policy %
Global Equity	155,565,752	7.2%	20%
Emerging Market Equity	--	0.0%	5%
Private Equity	351,430,656	16.4%	5%
<i>Total Equity</i>	506,996,408	23.6%	30%
Short-Term Core Bonds	--	0.0%	2%
High Yield	73,528,112	3.4%	5%
Bank Loans	56,185,908	2.6%	6%
Emerging Market Debt	38,502,186	1.8%	6%
Global Bonds	59,301,063	2.8%	3%
Structured & AR Credit	--	0.0%	6%
Private Debt	61,672,097	2.9%	5%
<i>Total Fixed Income</i>	289,189,366	13.5%	33%
GTAA	20,635,366	1.0%	3%
Risk Parity	75,119,348	3.5%	5%
Absolute Return	38,218,728	1.8%	2%
<i>Total GAA</i>	133,973,442	6.3%	10%
Real Estate	580,866,002	27.0%	12%
Real Assets – Liquid	--	0.0%	3%
Natural Resources	264,588,702	12.3%	5%
Infrastructure	178,234,236	8.3%	5%
<i>Total Real Assets</i>	1,023,688,940	47.6%	25%
Cash	324,327,596	15.1%	2%
DPPF Debt	(130,000,000)	-6.1%	--
<b>Total</b>	<b>2,148,175,753</b>	<b>100%</b>	<b>100%</b>



## Asset Allocation: Portfolio Lookthrough

	Lookthrough %	Actual %	Policy %
US Equity	3.8%	--	--
International Equity	3.6%	--	--
Emerging Markets Eq	0.5%	--	5%
Global Equity	--	7.2%	20%
Private Equity	16.4%	16.4%	5%
<i>Total Equity</i>	24.3%	23.6%	30%
Short-Term Core Bonds	--	--	2%
High Yield	3.4%	3.4%	5%
Bank Loans	2.6%	2.6%	6%
Emerging Market Debt	2.0%	1.8%	6%
Global Bonds	4.9%	2.8%	3%
Structured & AR Credit	--	--	6%
Private Debt	2.9%	2.9%	5%
<i>Total Fixed Income</i>	15.8%	13.5%	33%

	Lookthrough %	Actual %	Policy %
GTAA	--	1.0%	3%
Risk Parity	--	3.5%	5%
Absolute Return	--	1.8%	2%
Hedge Funds	2.5%	--	--
<i>Total GAA</i>	2.5%	6.3%	10%
Real Estate	27.6%	27.0%	12%
Real Assets – Liquid	--	--	3%
Natural Resources	12.3%	12.3%	5%
Infrastructure	8.3%	8.3%	5%
<i>Total Real Assets</i>	48.2%	47.6%	25%
Cash	15.3%	15.1%	2%
DPFP Debt	-6.1%	-6.1%	--

## Dallas Police & Fire Pension

### Trailing Returns: By Broad Composite

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
<b>DPFP</b>	<b>2,148,175,753</b>	<b>100.0</b>	<b>-0.1</b>	<b>89</b>	<b>3.2</b>	<b>99</b>	<b>-2.1</b>	<b>99</b>	<b>1.6</b>	<b>99</b>	<b>2.6</b>	<b>99</b>	<b>1.4</b>	<b>99</b>	<b>6.1</b>	<b>Jun-96</b>
<i>Policy Index</i>			0.3	76	9.6	2	7.1	1	9.2	9	8.7	7	5.6	12	--	<i>Jun-96</i>
<b>Total Equity</b>	<b>506,996,408</b>	<b>23.6</b>	<b>-3.7</b>	<b>--</b>	<b>1.9</b>	<b>--</b>	<b>2.1</b>	<b>--</b>	<b>9.1</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>6.3</b>	<b>Dec-10</b>
<i>Total Equity Policy Index</i>			1.0	--	10.3	--	--	--	--	--	--	--	--	--	--	<i>Dec-10</i>
<b>Total Fixed Income</b>	<b>289,189,366</b>	<b>13.5</b>	<b>1.0</b>	<b>22</b>	<b>11.8</b>	<b>15</b>	<b>2.1</b>	<b>49</b>	<b>5.5</b>	<b>22</b>	<b>7.2</b>	<b>11</b>	<b>5.4</b>	<b>31</b>	<b>5.9</b>	<b>Jul-06</b>
<i>Total Fixed Income Policy Index</i>			-0.8	38	10.1	20	--	--	--	--	--	--	--	--	--	<i>Jul-06</i>
<b>Total GAA</b>	<b>133,973,442</b>	<b>6.2</b>	<b>3.7</b>	<b>1</b>	<b>13.0</b>	<b>6</b>	<b>4.2</b>	<b>44</b>	<b>5.1</b>	<b>87</b>	<b>6.3</b>	<b>61</b>	<b>--</b>	<b>--</b>	<b>3.7</b>	<b>Jul-07</b>
<i>Total Asset Allocation Policy Index</i>			-1.8	73	4.6	80	5.3	40	5.9	79	6.3	60	--	--	6.5	<i>Jul-07</i>
<b>Total Real Assets</b>	<b>1,023,688,940</b>	<b>47.7</b>	<b>1.3</b>	<b>--</b>	<b>-1.8</b>	<b>--</b>	<b>-8.0</b>	<b>--</b>	<b>-5.9</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>-5.0</b>	<b>Dec-10</b>
<i>Total Real Assets Policy Index</i>			1.6	--	13.5	--	--	--	--	--	--	--	--	--	--	<i>Dec-10</i>
<b>Cash Equivalents</b>	<b>324,327,596</b>	<b>15.1</b>	<b>0.1</b>	<b>--</b>	<b>1.3</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>1.1</b>	<b>Apr-15</b>
<i>91 Day T-Bills</i>			0.1	--	0.3	--	0.1	--	0.1	--	0.1	--	0.7	--	0.2	<i>Apr-15</i>

Policy Indexes are calculated using policy benchmarks and weights of the underlying sub composites.

Net of fees returns shown on report are time weighted.

# Dallas Police & Fire Pension

## Trailing Returns: By Asset Class

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
<b>DPFP</b>	<b>2,148,175,753</b>	<b>100.0</b>	<b>-0.1</b>	<b>89</b>	<b>3.2</b>	<b>99</b>	<b>-2.1</b>	<b>99</b>	<b>1.6</b>	<b>99</b>	<b>2.6</b>	<b>99</b>	<b>1.4</b>	<b>99</b>	<b>6.1</b>	<b>Jun-96</b>
<i>Policy Index</i>			0.3	76	9.6	2	7.1	1	9.2	9	8.7	7	5.6	12	--	Jun-96
<b>Global Equity</b>	<b>155,565,752</b>	<b>7.2</b>	<b>-0.1</b>	<b>50</b>	<b>7.1</b>	<b>40</b>	<b>3.8</b>	<b>41</b>	<b>10.0</b>	<b>53</b>	<b>8.3</b>	<b>52</b>	<b>3.9</b>	<b>46</b>	<b>4.9</b>	<b>Jul-06</b>
<i>MSCI ACWI Gross</i>			1.3	36	8.5	30	3.7	43	10.0	53	7.8	62	4.1	45	5.2	Jul-06
<b>Private Equity</b>	<b>351,430,656</b>	<b>16.4</b>	<b>-4.9</b>	<b>--</b>	<b>-1.2</b>	<b>--</b>	<b>-5.8</b>	<b>--</b>	<b>-1.6</b>	<b>--</b>	<b>0.2</b>	<b>--</b>	<b>-0.5</b>	<b>--</b>	<b>2.1</b>	<b>Oct-05</b>
<i>Russell 3000 + 3%</i>			5.0	--	16.1	--	11.7	--	18.1	--	16.3	--	10.3	--	11.1	Oct-05
<b>Global Bonds</b>	<b>59,301,063</b>	<b>2.8</b>	<b>-5.9</b>	<b>75</b>	<b>3.0</b>	<b>72</b>	<b>0.1</b>	<b>72</b>	<b>1.2</b>	<b>73</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>1.9</b>	<b>Dec-10</b>
<i>BBgBarc Global Aggregate TR</i>			-7.1	85	2.1	79	-0.2	75	0.2	85	1.7	88	3.3	81	1.1	Dec-10
<b>High Yield</b>	<b>73,528,112</b>	<b>3.4</b>	<b>3.0</b>	<b>3</b>	<b>20.1</b>	<b>1</b>	<b>2.3</b>	<b>79</b>	<b>6.6</b>	<b>60</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>6.5</b>	<b>Dec-10</b>
<i>BBgBarc Global High Yield TR</i>			-0.2	80	14.3	35	3.6	63	7.4	34	7.8	31	7.3	1	6.7	Dec-10
<b>Bank Loans</b>	<b>56,185,908</b>	<b>2.6</b>	<b>2.2</b>	<b>6</b>	<b>11.8</b>	<b>14</b>	<b>3.9</b>	<b>26</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>3.9</b>	<b>Jan-14</b>
<i>S&amp;P/LSTA U.S. Leveraged Loan</i>			2.3	5	10.2	20	3.6	30	5.1	24	5.3	29	4.6	46	3.6	Jan-14
<b>Emerging Markets Debt</b>	<b>38,502,186</b>	<b>1.8</b>	<b>-3.2</b>	<b>37</b>	<b>13.6</b>	<b>11</b>	<b>1.4</b>	<b>60</b>	<b>2.6</b>	<b>57</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>2.6</b>	<b>Dec-10</b>
<i>50% JPM EMBI/50% JPM GBI-EM</i>			-5.1	71	10.3	50	0.7	61	2.1	59	--	--	--	--	2.3	Dec-10
<b>Private Debt</b>	<b>61,672,097</b>	<b>2.9</b>	<b>5.1</b>	<b>--</b>	<b>3.8</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>3.8</b>	<b>Jan-16</b>
<i>Barclays Global High Yield +2%</i>			0.3	--	16.5	--	--	--	--	--	--	--	--	--	16.5	Jan-16
<b>Risk Parity</b>	<b>75,119,348</b>	<b>3.5</b>	<b>-1.2</b>	<b>64</b>	<b>12.1</b>	<b>20</b>	<b>3.6</b>	<b>49</b>	<b>4.7</b>	<b>99</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>6.4</b>	<b>Dec-10</b>
<i>60% MSCI ACWI/40% Barclays Global Agg</i>			-2.2	78	5.7	65	1.9	86	5.8	80	5.2	95	3.8	88	4.4	Dec-10
<b>GTAA</b>	<b>20,635,366</b>	<b>1.0</b>	<b>-1.5</b>	<b>65</b>	<b>4.6</b>	<b>39</b>	<b>1.3</b>	<b>53</b>	<b>4.8</b>	<b>38</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>4.8</b>	<b>Dec-10</b>
<i>60% MSCI ACWI/40% Barclays Global Agg</i>			-2.2	73	5.7	34	1.9	40	5.8	24	5.2	37	3.8	60	4.4	Dec-10
<b>Absolute Return</b>	<b>38,218,728</b>	<b>1.8</b>	<b>21.8</b>	<b>1</b>	<b>12.7</b>	<b>3</b>	<b>10.6</b>	<b>1</b>	<b>8.3</b>	<b>5</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>8.2</b>	<b>Aug-11</b>
<i>HFRX Absolute Return Index</i>			-0.3	45	0.3	88	1.3	52	1.7	92	0.6	95	-0.7	99	1.2	Aug-11
<b>Natural Resources</b>	<b>264,588,702</b>	<b>12.3</b>	<b>0.3</b>	<b>--</b>	<b>3.1</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>4.1</b>	<b>Apr-15</b>
<i>Natural Resources Benchmark</i>			6.6	--	31.5	--	16.7	--	16.0	--	--	--	--	--	20.9	Apr-15
<b>Infrastructure</b>	<b>178,234,236</b>	<b>8.3</b>	<b>0.0</b>	<b>--</b>	<b>-4.8</b>	<b>--</b>	<b>-2.5</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>0.6</b>	<b>Jul-12</b>
<i>Infrastructure Benchmark</i>			-4.1	--	12.4	--	7.9	--	--	--	--	--	--	--	7.5	Jul-12
<b>Real Estate</b>	<b>580,866,002</b>	<b>27.0</b>	<b>2.2</b>	<b>--</b>	<b>-3.0</b>	<b>--</b>	<b>-11.8</b>	<b>--</b>	<b>-8.7</b>	<b>--</b>	<b>-6.3</b>	<b>--</b>	<b>-4.4</b>	<b>--</b>	<b>3.7</b>	<b>Mar-85</b>
<i>NCREIF Property Index</i>			1.7	--	8.0	--	11.0	--	10.9	--	11.7	--	6.9	--	8.1	Mar-85
<b>Cash Equivalents</b>	<b>324,327,596</b>	<b>15.1</b>	<b>0.1</b>	<b>--</b>	<b>1.3</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>1.1</b>	<b>Apr-15</b>
<i>91 Day T-Bills</i>			0.1	--	0.3	--	0.1	--	0.1	--	0.1	--	0.7	--	0.2	Apr-15

Total Fund Risk/Return

3 Years Ending December 31, 2016

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
DPFP	-2.1%	99	6.9%	70
Policy Index	7.1%	1	4.0%	2
60 MSCI ACWI/40 BC Global Agg	1.9%	98	7.4%	87
InvestorForce Public DB Net Median	4.1%	--	6.5%	--

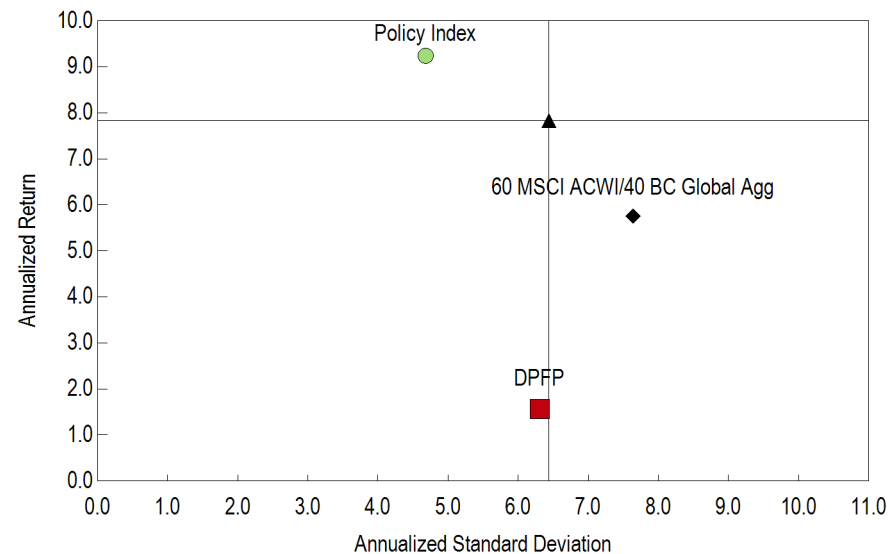
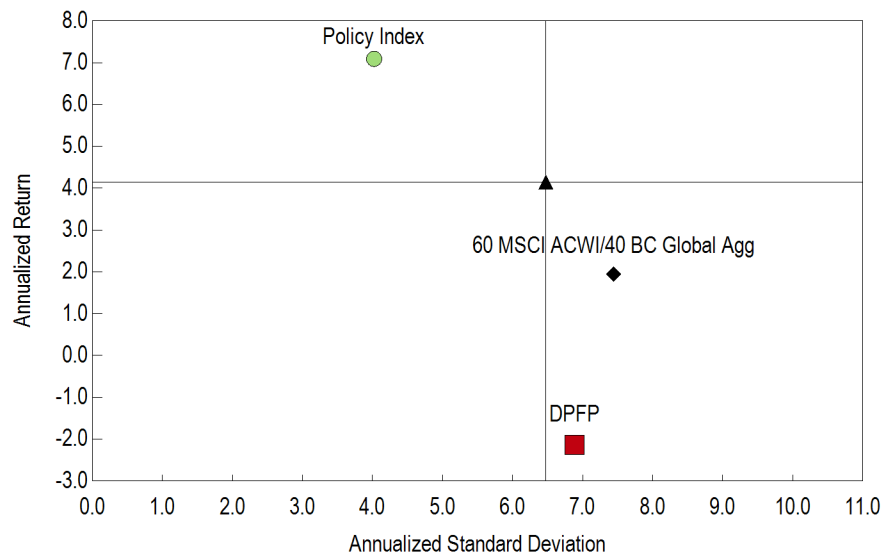
	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
DPFP	-0.33	99	-0.28	99
Policy Index	1.73	1	4.10	1
60 MSCI ACWI/40 BC Global Agg	0.24	98	0.50	96
InvestorForce Public DB Net Median	0.62	--	1.05	--

5 Years Ending December 31, 2016

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
DPFP	1.6%	99	6.3%	45
Policy Index	9.2%	9	4.7%	4
60 MSCI ACWI/40 BC Global Agg	5.8%	96	7.6%	91
InvestorForce Public DB Net Median	7.8%	--	6.4%	--

	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
DPFP	0.23	99	0.22	99
Policy Index	1.95	2	2.53	5
60 MSCI ACWI/40 BC Global Agg	0.74	99	1.23	97
InvestorForce Public DB Net Median	1.20	--	1.83	--





## Attribution Analysis: By Asset Class – 3 Months Ending December 31, 2016

	Portfolio Weights		Returns		Attribution Effects By			
	DPFP #	Policy	DPFP	Index	Selection	Allocation	Interaction	Total *
<b>Global Equity</b>	7.2%	20.0%	-0.053%	1.303%	-0.263%	-0.144%	0.121%	<b>-0.286%</b>
<b>Emerging Markets Equity</b>	0.0%	5.0%	0.000%	-4.084%	0.204%	0.217%	-0.204%	<b>0.217%</b>
<b>Private Equity</b>	16.4%	5.0%	-4.897%	4.972%	-0.495%	0.652%	-1.392%	<b>-1.235%</b>
<b>Short Term Core Bonds</b>	0.0%	2.0%	0.000%	-0.457%	0.009%	0.015%	-0.009%	<b>0.015%</b>
<b>Global Bonds</b>	2.8%	3.0%	-5.940%	-7.068%	0.036%	0.034%	-0.006%	<b>0.064%</b>
<b>High Yield</b>	3.4%	5.0%	2.990%	-0.192%	0.157%	0.007%	-0.018%	<b>0.146%</b>
<b>Bank Loans</b>	2.6%	6.0%	2.232%	2.261%	-0.002%	-0.076%	0.001%	<b>-0.076%</b>
<b>Structured &amp; A/R Credit</b>	0.0%	6.0%	0.000%	2.208%	-0.131%	-0.115%	0.131%	<b>-0.115%</b>
<b>Emerging Markets Debt</b>	1.8%	6.0%	-3.228%	-5.051%	0.112%	0.230%	-0.078%	<b>0.264%</b>
<b>Private Debt</b>	2.9%	5.0%	5.093%	0.304%	0.236%	-0.002%	-0.054%	<b>0.180%</b>
<b>GTAA</b>	1.0%	3.0%	-1.458%	-2.162%	0.021%	0.031%	0.005%	<b>0.058%</b>
<b>Risk Parity</b>	3.5%	5.0%	-1.156%	-2.162%	0.051%	0.027%	-0.017%	<b>0.061%</b>
<b>Absolute Return</b>	1.8%	2.0%	21.808%	-0.349%	0.419%	0.001%	-0.137%	<b>0.283%</b>
<b>Real Estate</b>	27.0%	12.0%	2.186%	1.730%	0.054%	0.170%	0.052%	<b>0.277%</b>
<b>Liquid Real Assets</b>	0.0%	3.0%	0.000%	2.076%	-0.062%	-0.054%	0.062%	<b>-0.054%</b>
<b>Natural Resources</b>	12.3%	5.0%	0.257%	6.583%	-0.311%	0.367%	-0.378%	<b>-0.322%</b>
<b>Infrastructure</b>	8.3%	5.0%	0.030%	-4.057%	0.203%	-0.087%	0.073%	<b>0.189%</b>
<b>Cash Equivalents</b>	15.1%	2.0%	0.112%	0.102%	0.000%	-0.017%	0.001%	<b>-0.016%</b>
<b>Total *</b>	<b>106.1%</b>	<b>100.0%</b>	<b>-0.086%</b>	<b>0.265%</b>	<b>0.240%</b>	<b>1.254%</b>	<b>-1.845%</b>	<b>-0.351%</b>

\*Total column may not add to 100% due to rounding.

#Total DPFP portfolio weights include 6.1% in DPFP debt.



## Attribution Analysis: By Asset Class – 12 Months Ending December 31, 2016

	Portfolio Weights		Returns		Attribution Effects By			
	DPFP#	Policy	DPFP	Index	Selection	Allocation	Interaction	Total*
<b>Global Equity</b>	7.2%	20.0%	7.083%	8.485%	-0.241%	-0.324%	0.109%	<b>-0.455%</b>
<b>Emerging Markets Equity</b>	0.0%	5.0%	0.000%	11.604%	-0.639%	-0.117%	0.639%	<b>-0.117%</b>
<b>Private Equity</b>	16.4%	5.0%	-1.153%	16.085%	-0.806%	1.159%	-2.839%	<b>-2.485%</b>
<b>Short Term Core Bonds</b>	0.0%	2.0%	0.000%	0.861%	-0.018%	0.191%	0.018%	<b>0.191%</b>
<b>Global Bonds</b>	2.8%	3.0%	2.955%	2.085%	0.029%	0.063%	-0.026%	<b>0.065%</b>
<b>High Yield</b>	3.4%	5.0%	20.108%	14.275%	0.269%	0.045%	-0.009%	<b>0.304%</b>
<b>Bank Loans</b>	2.6%	6.0%	11.849%	10.157%	0.166%	0.111%	-0.115%	<b>0.161%</b>
<b>Structured &amp; A/R Credit</b>	0.0%	6.0%	0.000%	8.147%	-0.499%	0.128%	0.499%	<b>0.128%</b>
<b>Emerging Markets Debt</b>	1.8%	6.0%	13.557%	10.251%	0.184%	0.006%	-0.126%	<b>0.065%</b>
<b>Private Debt</b>	2.9%	5.0%	3.777%	16.535%	-0.614%	-0.155%	0.167%	<b>-0.602%</b>
<b>GTAA</b>	1.0%	3.0%	4.594%	5.688%	-0.035%	0.014%	-0.023%	<b>-0.044%</b>
<b>Risk Parity</b>	3.5%	5.0%	12.129%	5.688%	0.312%	-0.015%	0.137%	<b>0.434%</b>
<b>Absolute Return</b>	1.8%	2.0%	12.658%	0.308%	0.278%	0.096%	-0.072%	<b>0.302%</b>
<b>Real Estate</b>	27.0%	12.0%	-2.983%	7.967%	-1.301%	-0.211%	-1.292%	<b>-2.804%</b>
<b>Liquid Real Assets</b>	0.0%	3.0%	0.000%	7.193%	-0.221%	0.092%	0.221%	<b>0.092%</b>
<b>Natural Resources</b>	12.3%	5.0%	3.061%	31.455%	-0.991%	1.224%	-1.690%	<b>-1.458%</b>
<b>Infrastructure</b>	8.3%	5.0%	-4.833%	12.435%	-0.859%	-0.017%	-0.392%	<b>-1.269%</b>
<b>Cash Equivalents</b>	15.1%	2.0%	1.257%	0.301%	0.020%	-0.034%	0.002%	<b>-0.013%</b>
<b>Total*</b>	<b>106.1%</b>	<b>100.0%</b>	<b>2.831%</b>	<b>10.258%</b>	<b>-4.968%</b>	<b>2.254%</b>	<b>-4.792%</b>	<b>-7.506%</b>

\*Total column may not add to 100% due to rounding.

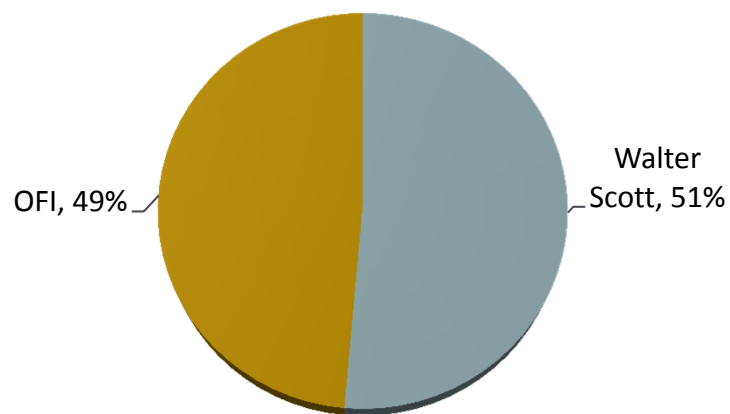
#Total DPFP portfolio weights include 6.1% in DPFP debt.



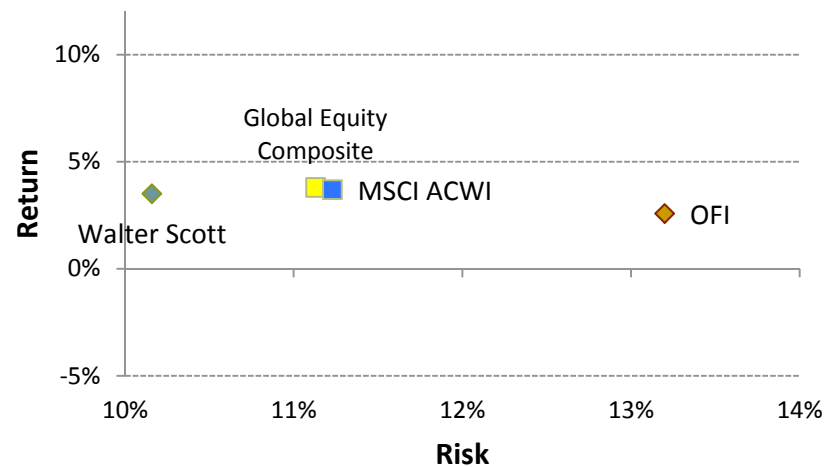
# Global Public Equity: Composite Overview

Manager	Benchmark	Descriptions
OFI	MSCI ACWI	Growth
Walter Scott	MSCI ACWI	Growth

**Global Equity Managers**



**3-Year Risk/Return**



\*May not add to 100% due to rounding.

# Dallas Police & Fire Pension

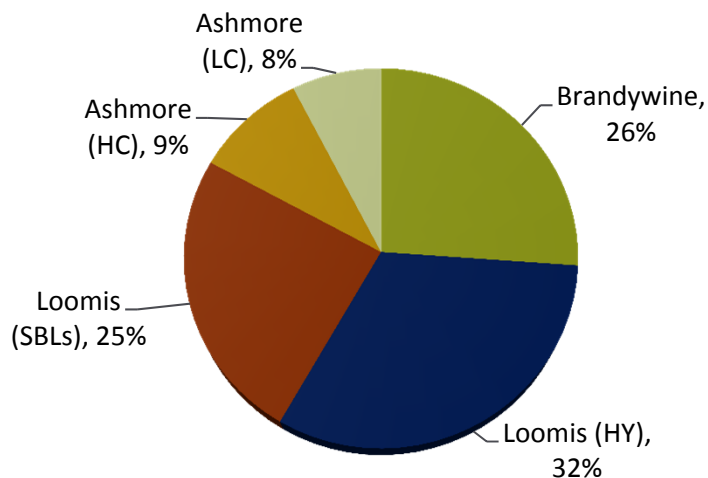
## DPFP

	Market Value (\$)	% of Portfolio	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Return (%)	Since
<b>DPFP</b>	<b>2,148,175,753</b>	<b>100.0</b>	<b>-0.1</b>	<b>3.2</b>	<b>-2.1</b>	<b>1.6</b>	<b>2.6</b>	<b>1.4</b>	<b>6.1</b>	<b>Jun-96</b>
Policy Index			0.3	9.6	7.1	9.2	8.7	5.6	--	Jun-96
InvestorForce Public DB Net Rank			89	99	99	99	99	99	71	Jun-96
<b>Global Equity</b>	<b>155,565,752</b>	<b>7.2</b>	<b>-0.1</b>	<b>7.1</b>	<b>3.8</b>	<b>10.0</b>	<b>8.3</b>	<b>3.9</b>	<b>4.9</b>	<b>Jul-06</b>
MSCI ACWI Gross			1.3	8.5	3.7	10.0	7.8	4.1	5.2	Jul-06
eA All Global Equity Net Rank			50	40	41	53	52	46	47	Jul-06
Eagle Asset	278,462	0.0	8.9	26.6	11.0	15.7	14.6	9.0	10.2	Feb-05
Russell 2000			8.8	21.3	6.7	14.5	13.2	7.1	8.2	Feb-05
eA US Small Cap Equity Net Rank			49	21	5	27	25	19	10	Feb-05
Pyramis	172,470	0.0	-1.1	2.6	2.3	9.5	7.2	3.1	7.6	Mar-02
MSCI ACWI Gross			1.3	8.5	3.7	10.0	7.8	4.1	6.8	Mar-02
eA All Global Equity Net Rank			58	77	65	63	68	68	44	Mar-02
Walter Scott	78,911,118	3.7	-1.2	6.5	3.5	9.7	7.9	--	7.8	Dec-09
MSCI ACWI Gross			1.3	8.5	3.7	10.0	7.8	4.1	8.1	Dec-09
eA All Global Equity Net Rank			59	45	45	58	62	--	65	Dec-09
OFI	75,973,770	3.5	1.0	1.3	2.6	10.9	8.6	--	3.9	Oct-07
MSCI ACWI Gross			1.3	8.5	3.7	10.0	7.8	4.1	3.0	Oct-07
eA All Global Equity Net Rank			39	83	57	32	45	--	39	Oct-07
RREEF Global REIT	115,972	0.0	-5.8	3.5	6.7	10.2	9.6	1.4	12.2	Feb-99
FTSE EPRA/NAREIT Global			-5.8	3.9	5.9	9.8	8.8	2.0	9.2	Feb-99
eA Global REIT Net Rank			80	58	64	81	43	99	1	Feb-99
Mitchell Group	62,026	0.0	5.9	35.9	-3.5	1.5	3.7	5.8	10.3	Oct-01
Dow Jones Equal Wtd. Oil & Gas			6.8	25.6	-13.1	-3.2	-2.4	-4.1	4.6	Oct-01
eA All Global Equity Net Rank			7	2	96	97	93	23	14	Oct-01
Sustainable Asset Management	51,935	0.0	-4.4	9.4	4.2	12.5	7.4	--	10.5	Nov-08
MSCI ACWI Gross			1.3	8.5	3.7	10.0	7.8	4.1	10.3	Nov-08
eA All Global Equity Net Rank			86	25	36	13	67	--	47	Nov-08

# Global Fixed Income: Composite Overview

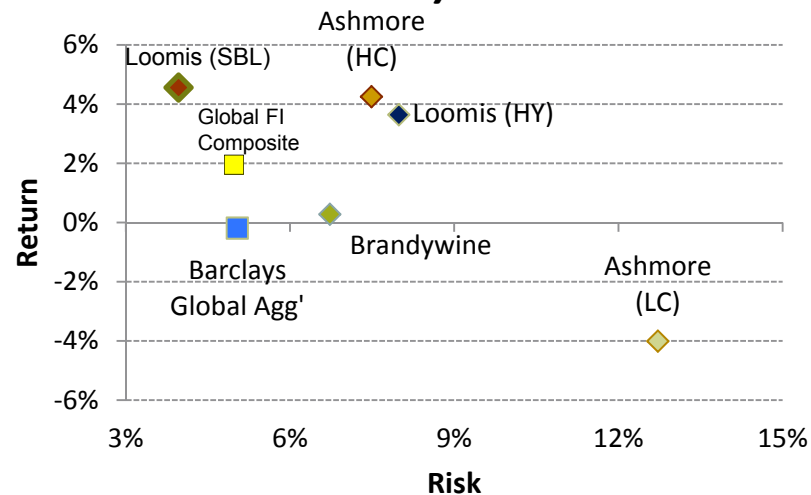
Manager	Benchmark	Asset Class	Descriptions
Brandywine	Barclays Global Aggregate	Global Bonds	Aggressive, but diversified
Loomis (HY)	70% MLHY/30% JPM EMBI+	High Yield	Aggressive
Loomis (BLs)	S&P/LSTA US Levered	Bank Loans	Bank Loans (min 65% of portfolio)
Ashmore (Hard Currency)	JPM EMBI Global Diversified	Emerging Market Debt	Diversified, Hard Currency
Ashmore (Local Currency)	JPM EMBI Global Diversified	Emerging Market Debt	Diversified, Local Currency

## Global Fixed Income Managers



\*May not add to 100% due to rounding.

## 3-Year Risk/Return



# Dallas Police & Fire Pension

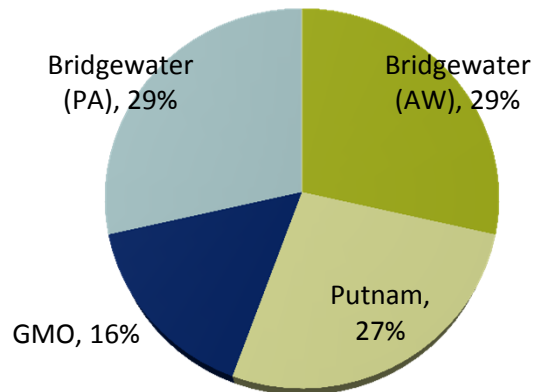
## DPFP

	Market Value (\$)	% of Portfolio	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Return (%)	Since
<b>DPFP</b>	<b>2,148,175,753</b>	<b>100.0</b>	<b>-0.1</b>	<b>3.2</b>	<b>-2.1</b>	<b>1.6</b>	<b>2.6</b>	<b>1.4</b>	<b>6.1</b>	<b>Jun-96</b>
<i>Policy Index</i>			0.3	9.6	7.1	9.2	8.7	5.6	--	Jun-96
<i>InvestorForce Public DB Net Rank</i>			89	99	99	99	99	99	71	Jun-96
<b>Public Fixed Income</b>	<b>227,517,269</b>	<b>10.6</b>	<b>-0.4</b>	<b>13.5</b>	<b>2.0</b>	<b>4.8</b>	<b>--</b>	<b>--</b>	<b>5.2</b>	<b>Dec-10</b>
<i>BBgBarc Global Aggregate TR</i>			-7.1	2.1	-0.2	0.2	1.7	3.3	1.1	Dec-10
Brandywine	59,301,063	2.8	-5.9	3.8	0.3	2.0	4.4	5.3	4.6	Oct-04
<i>BBgBarc Global Aggregate TR</i>			-7.1	2.1	-0.2	0.2	1.7	3.3	3.4	Oct-04
<i>eA All Global Fixed Inc Net Rank</i>			75	62	69	64	41	32	53	Oct-04
Loomis Sayles	73,448,240	3.4	3.0	21.2	3.6	7.9	8.3	7.6	9.8	Oct-98
<i>70% BofA ML High Yield / 30% JPM EMBI Plus</i>			-0.3	15.1	5.1	6.7	7.6	7.1	8.1	Oct-98
<i>eA Global High Yield Fixed Inc Net Rank</i>			3	1	62	9	7	1	1	Oct-98
W.R. Huff High Yield	79,872	0.0	-2.1	11.2	-2.2	3.2	7.7	6.2	6.3	Jun-96
<i>Citi High Yield Market Index</i>			1.9	17.8	4.3	6.9	7.8	7.1	7.2	Jun-96
<i>eA US High Yield Fixed Inc Net Rank</i>			99	74	99	99	45	67	95	Jun-96
Loomis Sayles Senior Rate and Fixed Income	56,185,908	2.6	2.2	11.8	3.9	--	--	--	3.9	Jan-14
<i>S&amp;P/LSTA U.S. Leveraged Loan</i>			2.3	10.2	3.6	5.1	5.3	4.6	3.6	Jan-14
<i>eA All Global Fixed Inc Net Rank</i>			6	14	26	--	--	--	26	Jan-14
Ashmore AEMDF	21,215,458	1.0	-1.6	14.9	4.3	4.6	6.3	6.4	8.2	Feb-05
<i>JP Morgan EMBI Global Diversified</i>			-4.0	10.2	6.2	5.9	7.0	6.9	7.4	Feb-05
<i>eA All Emg Mkts Fixed Inc Net Rank</i>			15	4	39	40	33	39	22	Feb-05
Ashmore AEMLCB	17,286,727	0.8	-5.2	12.5	-4.0	-1.4	--	--	-1.7	Mar-11
<i>JP Morgan GBI EM Global Diversified TR USD</i>			-6.1	9.9	-4.1	-1.3	0.8	3.8	-1.4	Mar-11
<i>eA All Emg Mkts Fixed Inc Net Rank</i>			76	20	84	82	--	--	82	Mar-11

# Global Asset Allocation: Composite Overview

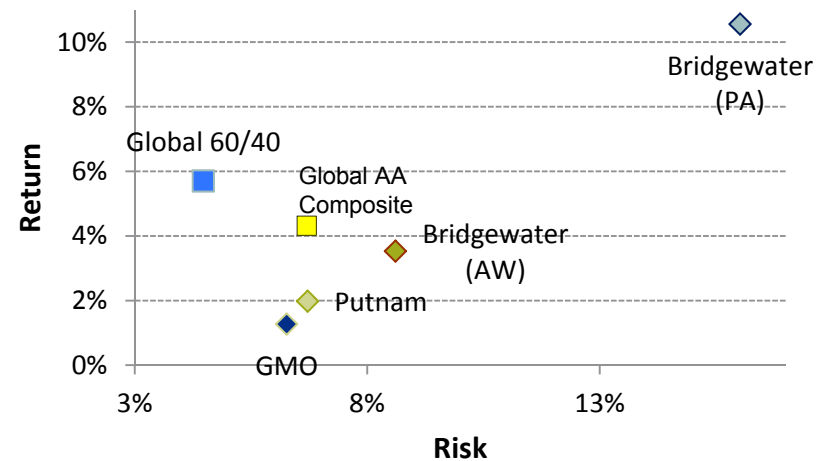
Manager	Benchmark	Asset Class	Descriptions
Bridgewater (All Weather)	Global 60/40	Risk Parity	Passive approach
Bridgewater (Pure Alpha)	HFRX Absolute Return	Absolute Return	Global Macro Hedge Fund
GMO	Global 60/40	GTAA	Unconstrained
Putnam	Global 60/40	Risk Parity	Active approach

**GAA Managers**



\*May not add to 100% due to rounding.

**3-Year Risk/Return**



# Dallas Police & Fire Pension

## DPFP

	Market Value (\$)	% of Portfolio	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Return (%)	Since
<b>DPFP</b>	<b>2,148,175,753</b>	<b>100.0</b>	<b>-0.1</b>	<b>3.2</b>	<b>-2.1</b>	<b>1.6</b>	<b>2.6</b>	<b>1.4</b>	<b>6.1</b>	<b>Jun-96</b>
<i>Policy Index</i>			0.3	9.6	7.1	9.2	8.7	5.6	--	Jun-96
<i>InvestorForce Public DB Net Rank</i>			89	99	99	99	99	99	71	Jun-96
<b>Total GAA</b>	<b>133,973,442</b>	<b>6.2</b>	<b>3.7</b>	<b>13.0</b>	<b>4.2</b>	<b>5.1</b>	<b>6.3</b>	<b>--</b>	<b>3.7</b>	<b>Jul-07</b>
<i>Total Asset Allocation Policy Index</i>			-1.8	4.6	5.3	5.9	6.3	--	6.5	Jul-07
<i>eA Global Balanced Net Rank</i>			1	6	44	87	61	--	71	Jul-07
Bridgewater All Weather	39,669,725	1.8	-2.2	11.7	3.5	4.3	8.6	--	5.4	Sep-07
<i>Global 60/40</i>			-2.2	5.7	5.9	6.0	6.0	--	6.3	Sep-07
<i>eA Global TAA Net Rank</i>			73	4	9	51	1	--	6	Sep-07
Putnam	35,449,623	1.7	-0.2	9.1	2.0	4.3	5.7	--	5.6	Dec-09
<i>Global 60/40</i>			-2.2	5.7	5.7	6.1	6.5	--	6.5	Dec-09
<i>eA Global Balanced Net Rank</i>			53	46	85	99	72	--	88	Dec-09
GMO	20,635,366	1.0	-1.5	4.6	1.3	4.8	4.8	--	4.0	Sep-07
<i>Global 60/40</i>			-2.2	5.7	5.7	6.1	6.5	--	6.6	Sep-07
<i>eA Global TAA Net Rank</i>			65	39	53	38	40	--	48	Sep-07
Bridgewater Pure Alpha	38,218,728	1.8	21.8	12.7	10.6	8.3	--	--	8.2	Aug-11
<i>HFRX Absolute Return</i>			-0.3	0.3	4.1	4.9	--	--	5.0	Aug-11
<i>eA Global TAA Net Rank</i>			1	3	1	5	--	--	1	Aug-11



## Policy Compliance Test: Traditional Managers

### 3 Year Rolling Excess Return Violations:

Manager	Return Rank	NEPC Recommendation
<b>Global Equity</b>		
OFI	57	HOLD
<b>Public Fixed Income</b>		
Brandywine	69	HOLD
Loomis Sayles	62	HOLD
Ashmore AEMLCB	84	N/A
<b>GAA</b>		
Putnam	85	N/A
GMO	53	N/A

### 3 Year Rolling Risk-Adjusted Excess Return Violations:

Manager	Sharpe Ratio Rank	NEPC Recommendation
<b>Global Equity</b>		
OFI	65	HOLD
<b>Public Fixed Income</b>		
Brandywine	69	HOLD
Loomis Sayles HY	73	HOLD
Ashmore AEMLCB	82	N/A
<b>GAA</b>		
Putnam	84	N/A
GMO	52	N/A

### Qualitative Concerns:

Manager	NEPC Status
Putnam	Watch

Note: 'N/A' denotes that the Board has voted to terminate the manager in question. However, market exposure will be maintained with managers that have previously been approved for liquidation and to rebalance if additional cash is needed.

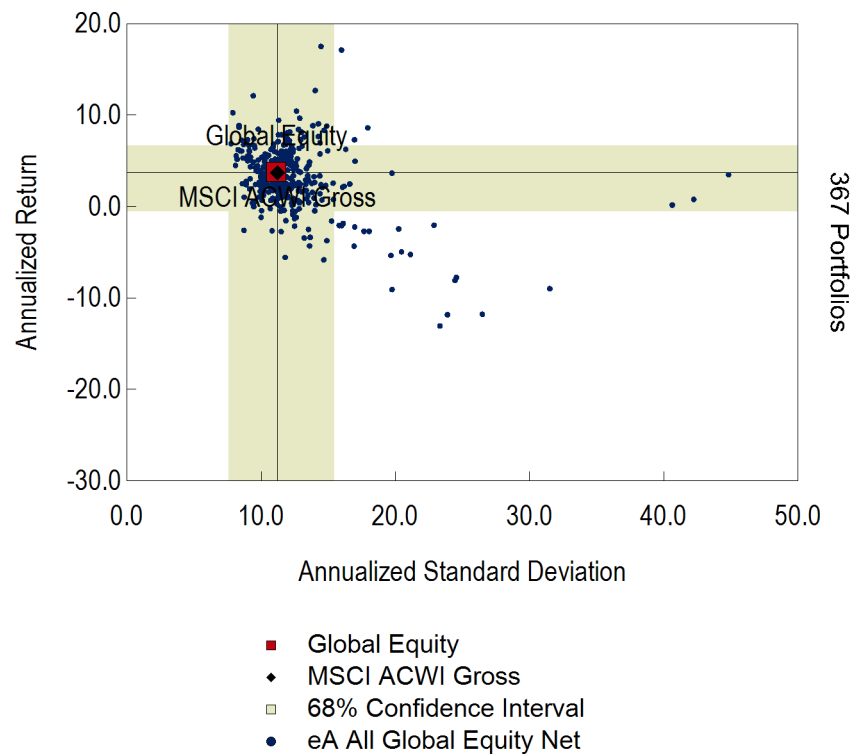
Footnotes

1. **Mitchell Group** was included in the Global Natural Resources composite from 10/1/2001 to 3/31/2015 and included in the Global Equity composite from 4/1/2015 to present.
2. **Sustainable Asset Management** was included in the Global Natural Resources composite from 11/1/2008 to 3/31/2015 and included in the Global Equity composite from 4/1/2015 to present.
3. **Hudson Clean Energy** was included in the Global Natural Resources composite from 1/1/2010 to 3/31/2015 and included in the Private Markets composite from 4/1/2015 to 12/31/2015 and the Private Equity composite from 1/1/2016 to present.
4. **RREEF** was included in the Real Estate composite from 2/1/1999 to 12/31/2009 and included in the Global Equity composite from 1/1/2010 to present.
5. **Highland Crusader** was included in the Global Fixed Income composite from 7/1/2003 to 12/31/2015 and included in the Private Credit composite from 1/1/2016 to present.
6. **Highland Capital Management** was included in the Global Fixed Income composite from 1/1/2007 to 12/31/2015 and included in the Private Credit composite from 1/1/2016 to present.
7. **Lone Star Fund VII, LP** was included in the Global Fixed Income composite from 10/1/2011 to 3/31/2015 and included in the Private Markets composite from 4/1/2015 to 12/31/2015 and included in the Private Credit composite from 1/1/2016 to present.
8. **Lone Star Fund VIII, LP** was included in the Global Fixed Income composite from 10/1/2013 to 3/31/2015 and included in the Private Markets composite from 4/1/2015 to 12/31/2015 and included in the Private Credit composite from 1/1/2016 to present.
9. **Lone Star Fund IX, LP** was included in the Global Fixed Income composite from 10/1/2014 to 3/31/2015 and included in the Private Markets composite from 4/1/2015 to 12/31/2015 and included in the Private Credit composite from 1/1/2016 to present.
10. **Oaktree Fund IV & 2x Loan Fund** was included in the Global Fixed Income composite from 1/1/2002 to 3/31/2015 and included in the Private Markets composite from 4/1/2015 to 12/31/2015 and included in the Private Credit composite from 1/1/2016 to present.
11. **Ashmore Capital GSSF IV** was included in the Private Markets composite from 10/1/2007 to 12/31/2015 and included in the Private Credit composite from 1/1/2016 to present.
12. **Global Infrastructure composite** was included in the Private Markets composite history until 6/30/2012.
13. **Private Equity composite** includes Private Credit managers until 12/31/2015. From 01/01/2016 to present the Private Equity and Credit managers are now in separate composites.
14. **Policy index** changed on 4/1/2016 from 20% MSCI ACWI, 15% S&P 500+2%, 10% Global Natural Resources Benchmark, 15% Barclays Global Agg, 20% CPI+5%, 10% CPI +5%, 15% NCREIF PI to 20% MSCI ACWI (gross), 5% MSCI EM Equity (gross), 5% Russell 3000 +3%, 2% Barclays UST 1-3 Yr, 3% Barclays Global Agg, 5% Barclays Global HY, 6% S&P Leveraged Loan Index, 6% HFRI RV: FI (50/50- Abs/Corp), 6%50% JPM EMBI/50% JPM GBI-EM, 5% Barclays Global HY +2%, 5% S&P Global Nat Res, 5% S&P Global Infra, 12% NCREIF, 3% CPI +5%, 5% 60% MSCI ACWI/40% Barclays Global Agg, 3% 60% MSCI ACWI/40% Barclays Global Agg, 2% HFRX Abs Ret Index, 2% 90 Day T-Bill.
15. **Natural Resources** benchmark changed from the Global Natural Resources benchmark from 12/1/2010 to 12/31/2015 to the S&P Global Natural Resources benchmark 1/1/2016 to present.
16. **Infrastructure** benchmark changed from CPI +5% from 7/1/2012 to 12/31/2015 to S&P Global Infrastructure benchmark 1/1/2016 to present.
17. **Total Asset Allocation** benchmark changed from CPI+ 5% from 7/1/2007 to 12/31/2015 to 80% 60/40 MSCI ACWI & Barclays Global Agg and 20% HFRX Absolute Return Index 1/1/2016 to present.
18. **Bridgewater All Weather** benchmark changed from 91 Day T Bills +6% from 9/1/2007 to 12/31/2015 to 60/40 MSCI ACWI & Barclays Global Agg 1/1/2016 to present.
19. **GMO** benchmark changed from CPI +5% from 9/1/2007 to 12/31/2015 to 60/40 MSCI ACWI & Barclays Global Agg 1/1/2016 to present.
20. **Putnam** benchmark changed from CPI +5% from 12/1/2009 to 12/31/2016 to 60/40 MSCI ACWI & Barclays Global Agg 1/1/2016 to present.
21. **Bridgewater Pure Alpha** benchmark changed from 91 Day T Bills +6% from 8/1/2011 to 12/31/2015 to HFRX Absolute Return Index 1/1/2016 to present.

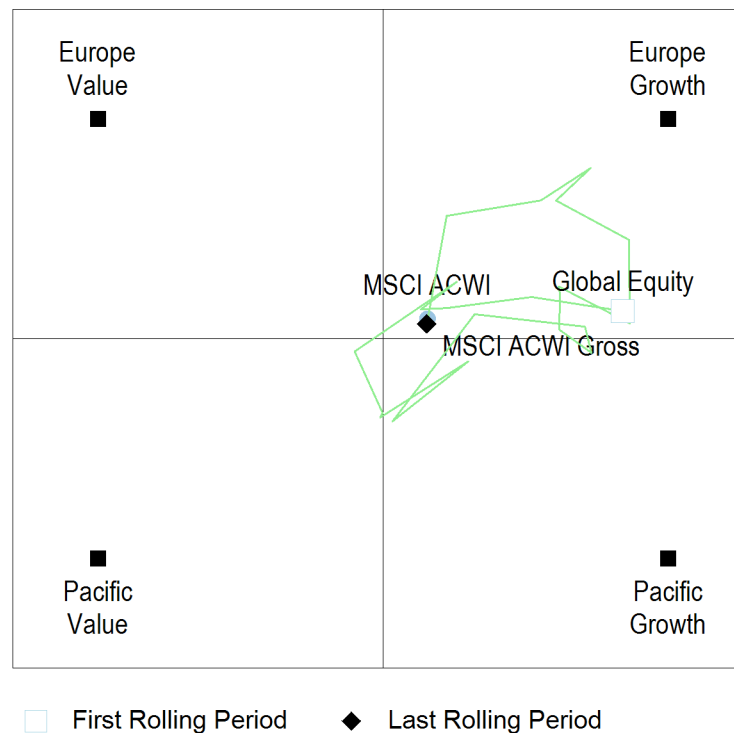
# Portfolio Review: Global Equity



3 Year Risk Return



3 Year Style Analysis



Global Equity

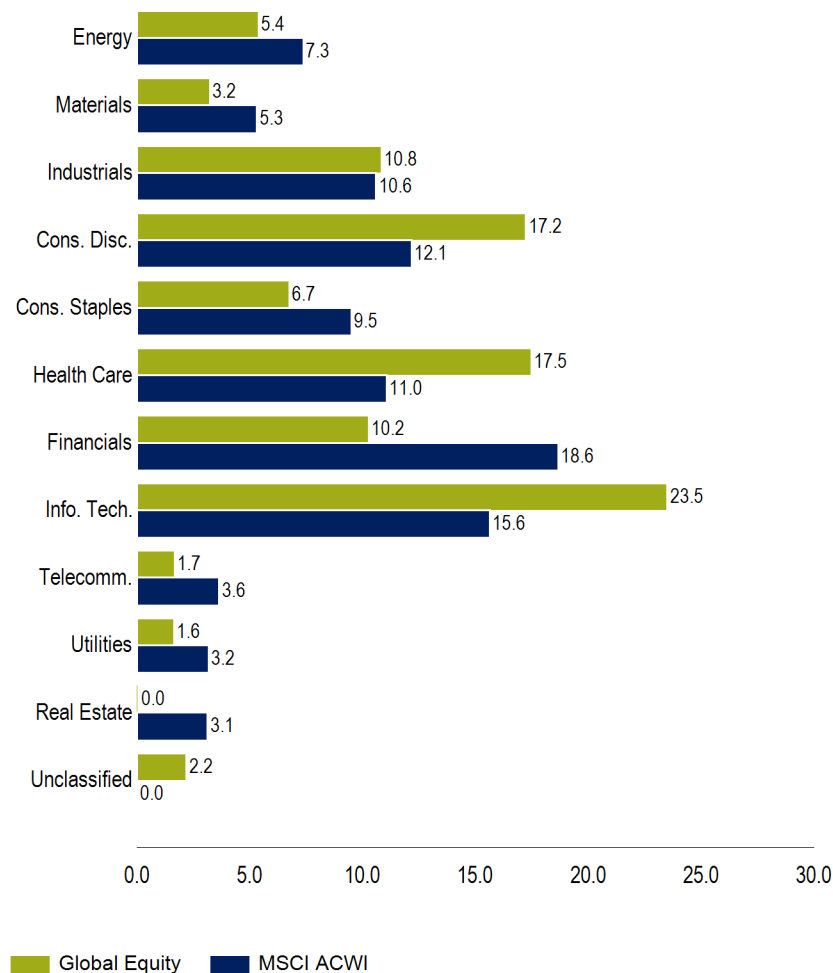
Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	281	2,486
Weighted Avg. Market Cap. (\$B)	79.2	93.9
Median Market Cap. (\$B)	19.6	8.4
Price To Earnings	24.9	21.5
Price To Book	5.1	3.2
Price To Sales	3.9	2.5
Return on Equity (%)	21.5	15.3
Yield (%)	1.9	2.5
Beta	1.0	1.0
R-Squared	1.0	1.0

Regional Allocation

	Global Equity	MSCI ACWI
Region Weighting		
North America ex U.S.	1.27	3.30
United States	49.39	54.18
Europe Ex U.K.	25.91	14.64
United Kingdom	4.86	5.61
Pacific Basin Ex Japan	4.66	4.97
Japan	11.61	7.84
Emerging Markets	2.30	9.17
Other	0.00	0.28

Equity Sector Allocation



Global Equity

Top Ten Holdings

LVMH	2.3%
ALPHABET 'C'	2.3%
COLGATE-PALM.	2.2%
JP MORGAN U S GOVT AGENCY SHARESMONTHLY VARIABLE 12/31/2049	2.2%
WALT DISNEY	2.1%
KEYENCE	2.1%
INDITEX	2.0%
ADOBE SYSTEMS	1.9%
NESTLE 'R'	1.5%
MCGRAW HILL FINANCIAL	1.5%

Equity Sector Attribution

	Attribution Effects				Returns			Sector Weights			
	Total Effects	Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	-0.2%	-0.3%	0.4%	-0.2%	4.5%	7.7%	13.4%	6.8%			
Materials	-0.1%	-0.1%	-0.1%	0.1%	0.1%	3.0%	2.9%	5.2%			
Industrials	-0.2%	0.0%	0.0%	-0.2%	0.9%	1.8%	12.4%	10.5%			
Consumer Discretionary	0.3%	0.4%	0.0%	-0.1%	3.5%	0.9%	12.0%	12.2%			
Consumer Staples	0.4%	-0.3%	0.4%	0.3%	-9.4%	-5.9%	4.7%	10.3%			
Health Care	-0.3%	-0.1%	-0.2%	0.0%	-5.5%	-5.3%	14.6%	11.7%			
Financials	-0.5%	0.5%	-1.1%	0.1%	14.9%	12.2%	7.5%	17.0%			
Information Technology	0.0%	0.3%	-0.1%	-0.2%	-0.1%	-0.8%	17.7%	15.8%			
Telecommunication Services	0.0%	-0.3%	0.1%	0.3%	-11.3%	-2.2%	1.4%	3.8%			
Utilities	-0.2%	-0.3%	0.0%	0.0%	-11.1%	-3.2%	3.2%	3.3%			
Real Estate	-0.6%	0.0%	-0.5%	-0.1%	-5.3%	-6.1%	10.2%	3.4%			
Cash	0.0%	--	--	--	--	--	0.0%	0.0%			
<b>Portfolio</b>	<b>-1.3%</b>	<b>=</b>	<b>-0.2%</b>	<b>+</b>	<b>-1.1%</b>	<b>+</b>	<b>0.0%</b>	<b>0.0%</b>	<b>1.3%</b>	<b>99.9%</b>	<b>100.0%</b>

**Top Positive Contributors**

	Relative Contribution %	Return %
LVMH	0.1%	13.1%
GOLDMAN SACHS GP.	0.1%	48.9%
SOCIETE GENERALE	0.1%	42.5%
SUNCOR ENERGY	0.1%	18.9%
WALT DISNEY	0.1%	13.1%
AUTOMATIC DATA PROC.	0.1%	17.2%
BAKER HUGHES	0.1%	29.1%
COGNIZANT TECH.SLTN.'A'	0.1%	17.4%
CITIGROUP	0.1%	26.2%
SHIN-ETSU CHEMICAL	0.1%	12.4%

**Top Negative Contributors**

	Relative Contribution %	Return %
MCGRAW HILL FINANCIAL	-0.1%	-14.8%
COLGATE-PALM.	-0.1%	-11.2%
VEOLIA ENVIRONNEMENT	-0.1%	-25.9%
INDITEX	-0.1%	-7.1%
INTUITIVE SURGICAL	-0.1%	-12.5%
ZIMMER BIOMET HDG.	-0.1%	-20.4%
SGS 'N'	-0.1%	-9.1%
CERNER	-0.1%	-23.3%
TWITTER	-0.1%	-29.3%
KEYENCE	-0.1%	-5.2%

Global Equity

Country Allocation

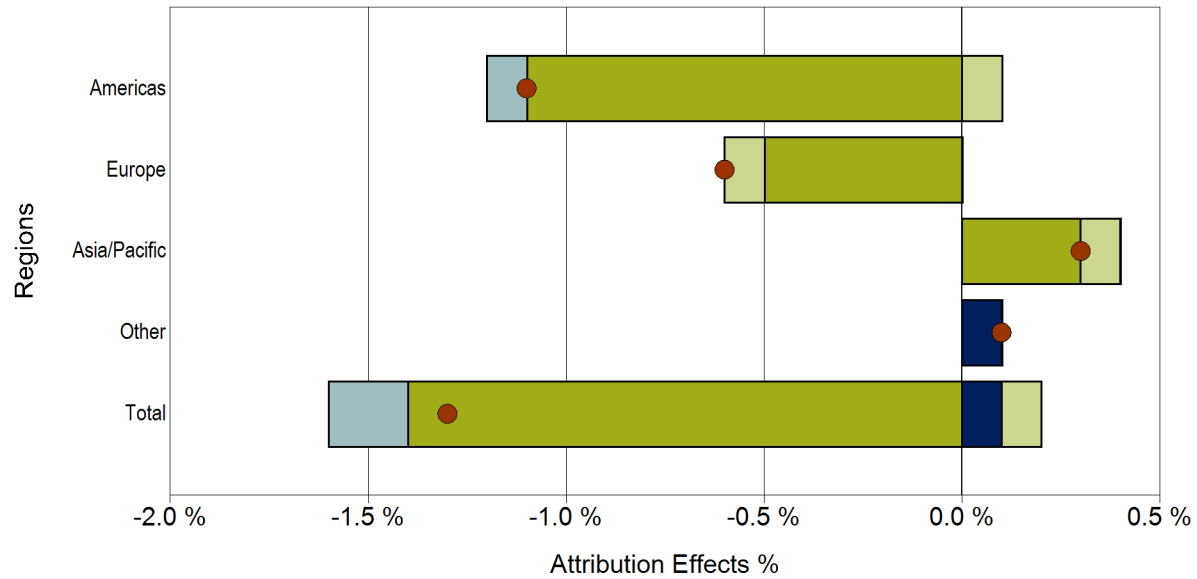
	Manager Allocation (USD)	Index Allocation (USD)	Manager Return (USD)	Index Return (USD)
<b>Americas</b>				
Brazil*	0.1%	0.8%	11.5%	2.3%
Canada	1.2%	3.2%	9.7%	3.4%
Mexico*	0.0%	0.4%	-24.8%	-7.8%
United States	58.7%	52.4%	1.4%	3.6%
<b>Total-Americas</b>	<b>60.1%</b>	<b>57.1%</b>	<b>1.6%</b>	<b>3.4%</b>
<b>Europe</b>				
Austria	0.2%	0.1%	-8.8%	6.5%
Denmark	0.7%	0.6%	-10.3%	-8.8%
Finland	0.2%	0.3%	-2.6%	-4.4%
France	5.4%	3.2%	4.0%	3.1%
Germany	3.5%	3.0%	-0.6%	1.5%
Ireland	0.1%	0.2%	-14.2%	0.1%
Italy	0.4%	0.6%	5.4%	10.8%
Luxembourg	0.1%	0.0%	-15.3%	1.3%
Netherlands	0.6%	1.1%	6.0%	-2.0%
Portugal	0.0%	0.0%	-9.1%	-3.0%
Spain	1.8%	1.0%	-2.8%	2.2%
Sweden	1.3%	0.9%	-5.8%	-0.8%
Switzerland	5.1%	3.0%	-4.7%	-3.9%
United Kingdom	4.3%	6.1%	-6.7%	-0.8%
<b>Total-Europe</b>	<b>23.5%</b>	<b>21.5%</b>	<b>-2.2%</b>	<b>0.1%</b>

Country Allocation  
Versus MSCI ACWI Gross - Quarter Ending December 31, 2016

	Manager Allocation (USD)	Index Allocation (USD)	Manager Return (USD)	Index Return (USD)
<b>AsiaPacific</b>				
Australia	1.2%	2.5%	-9.0%	0.8%
China*	0.4%	3.0%	-2.5%	-6.9%
Hong Kong	3.6%	1.2%	-8.2%	-9.0%
India*	0.4%	0.9%	0.3%	-7.8%
Japan	9.6%	8.0%	0.4%	-0.1%
Korea*	0.1%	1.6%	-15.6%	-6.9%
Philippines*	0.1%	0.1%	-5.5%	-12.8%
Singapore	0.3%	0.4%	-14.3%	-3.6%
Taiwan*	0.7%	1.3%	-6.0%	-2.2%
<b>Total-AsiaPacific</b>	<b>16.5%</b>	<b>20.1%</b>	<b>-3.0%</b>	<b>-3.0%</b>
<b>Totals</b>				
Developed	98.2%	88.9%	0.0%	2.0%
Emerging*	1.8%	11.1%	-4.3%	-4.2%



Global Equity Performance Attribution vs. MSCI ACWI Gross



■ Selection Effect   
 ■ Allocation Effect   
 ■ Currency Effect   
 ■ Interaction Effect   
 ● Total Effects

	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>Totals</b>									
Americas	1.6%	3.4%	60.1%	57.1%	-1.1%	0.0%	0.1%	-0.1%	-1.1%
Europe	-2.2%	0.1%	23.5%	21.5%	-0.5%	0.0%	-0.1%	0.0%	-0.6%
Asia/Pacific	-3.0%	-3.0%	16.5%	20.1%	0.3%	0.0%	0.1%	0.0%	0.3%
Other	--	-5.5%	0.0%	1.4%	--	0.1%	0.0%	--	0.1%
Cash	--	--	0.0%	0.0%	--	0.0%	0.0%	--	0.0%
<b>Total</b>	<b>0.0%</b>	<b>1.3%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>-1.4%</b>	<b>0.1%</b>	<b>0.1%</b>	<b>-0.2%</b>	<b>-1.3%</b>
<b>Totals</b>									
Developed	0.0%	2.0%	98.2%	88.9%	-1.8%	0.1%	-0.2%	-0.2%	-2.1%
Emerging*	-4.3%	-4.2%	1.8%	11.1%	-0.2%	0.5%	0.3%	0.2%	0.8%

- **Manager Role in Portfolio**

- Global Equity All Cap Growth (added in Q4 2009)

- **Organizational Profile**

- Walter Scott was established in 1983 as an investment management firm specializing in equity investment across global mandates. In October, 2006, Walter Scott became a wholly owned subsidiary within The Mellon Financial Corporation (Mellon). Similar to Mellon's other investment management subsidiaries, Walter Scott operates autonomously in terms of business activities, investment research, portfolio management and investment administration. The investment decisions reflected within WS client portfolios reflect it independent investment research.
- In July of 2007, The Bank of New York Company, Inc. and Mellon Financial Corporation completed their merger with senior managers from both organizations heading business and support functions.

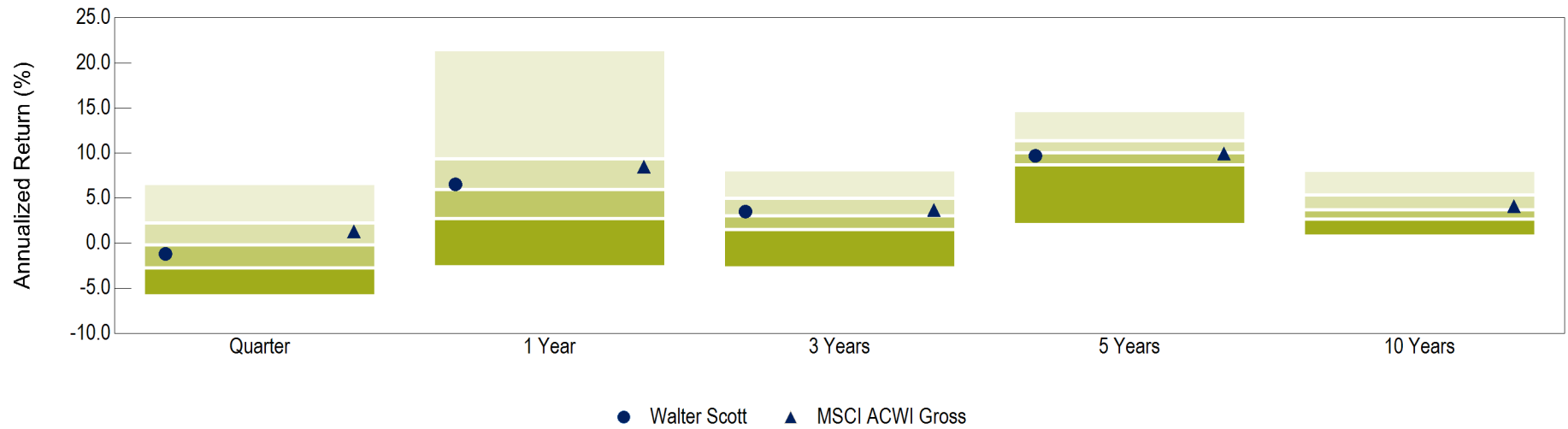
- **Investment Strategy Commentary**

- Walter Scott's fundamental, bottoms-up approach combines detailed financial research with business and industry analysis. The primary focus is upon stock selection, finding companies capable of generating wealth internally at 20% per annum, and compounding at this rate into the future.
- Walter Scott will not own more than 5% of a company's market capitalization, although it may hold a greater proportion of its free float, subject to their confidence level in the business' prospects. The final portfolio will be a low turnover growth portfolio that is concentrated in 40-60 names.

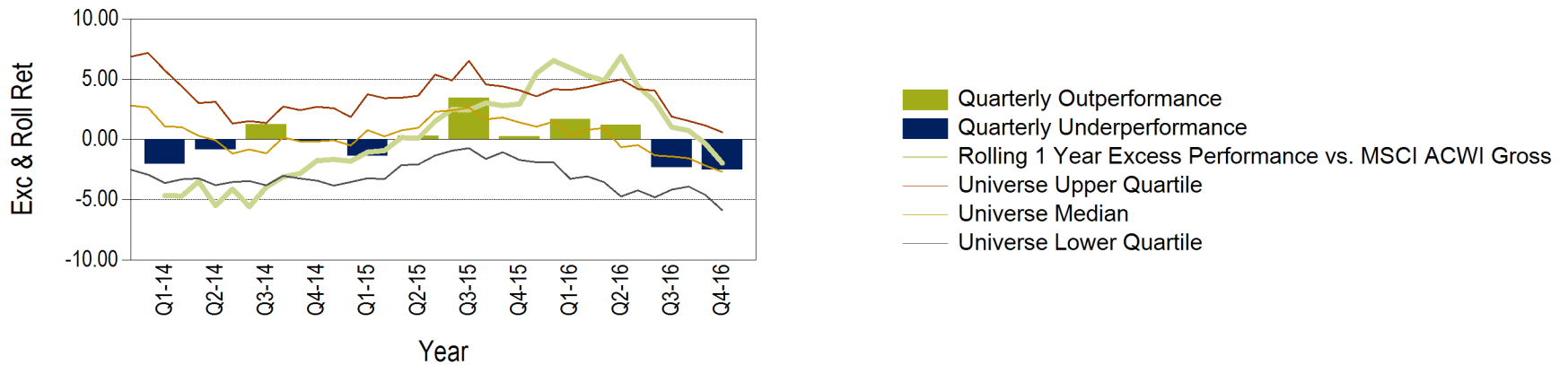
- **Due Diligence Notes**

- On February 8, 2013, Walter Scott announced that Ian Clark stepped down as main board Executive Director. Mr. Clark still maintained his title of Founder and remained involved with the firm, although not in an active investment role. With Mr. Clark stepping down, the total board size moved from 11 to 10 individuals. There were no plans to replace him on the board, but thoughts were that they would do so over the next 12-18 months.
- Effective December 31, 2013, Mr. Clark formally ended his employment.
- Walter Scott has been planning for succession and the founders relinquished stock coverage and management of the research process a long time ago.
- On June 13, 2013, Dr. Kenneth Lyall passed away. Dr. Lyall held various roles throughout the development of Walter Scott & Partners Limited and more recently as our Chairman. Dr. Lyall joined the firm in its first year in 1983 and played a major role in the firm's growth from those early years. In an investment career with Walter Scott & Partners Limited spanning 30 years, Ken contributed heavily to its development and investment success.

eA All Global Equity Net Accounts

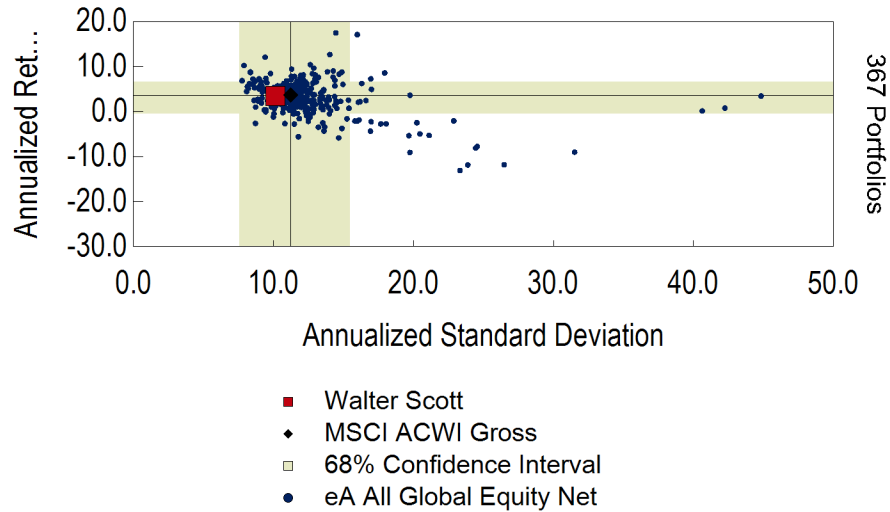


Annualized Excess Performance

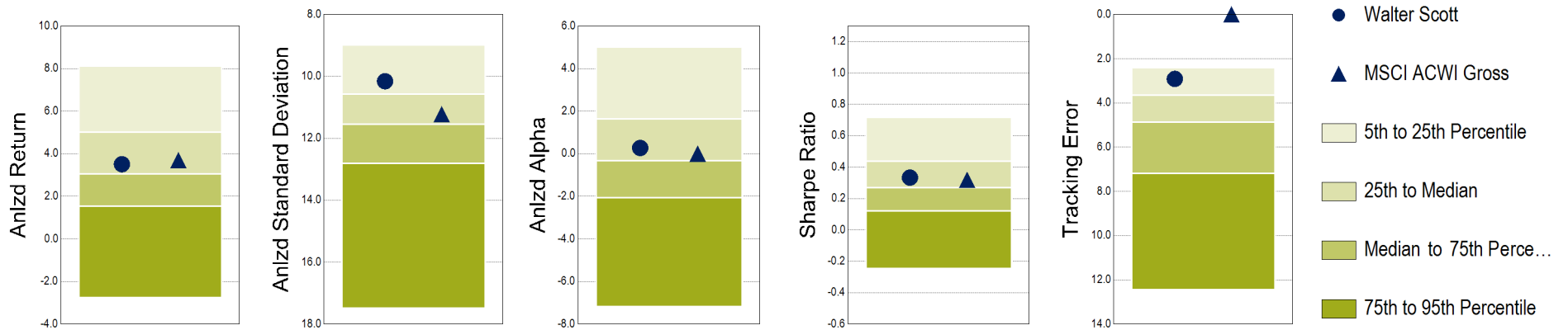
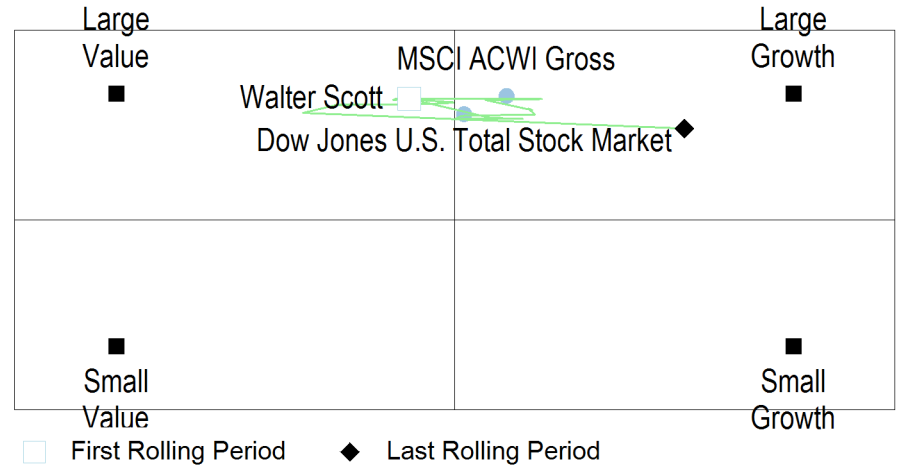


Returns are net of fees

3 Year Risk Return



3 Year Style Map



Returns are net of fees

## Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	57	2,486
Weighted Avg. Market Cap. (\$B)	88.2	93.9
Median Market Cap. (\$B)	49.0	8.4
Price To Earnings	25.8	21.5
Price To Book	6.1	3.2
Price To Sales	4.0	2.5
Return on Equity (%)	23.7	15.3
Yield (%)	2.0	2.5
Beta		1.0
R-Squared		1.0

## Equity Sector Attribution

	Attribution Effects				Returns		Sector Weights				
	Total Effects	Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	0.1%	-0.1%	0.1%	0.1%	8.1%	7.7%	9.2%	6.8%			
Materials	-0.1%	0.1%	0.0%	-0.2%	2.0%	3.0%	5.5%	5.2%			
Industrials	-0.2%	0.2%	0.0%	-0.4%	-1.7%	1.8%	7.8%	10.5%			
Consumer Discretionary	0.2%	0.4%	0.0%	-0.2%	3.0%	0.9%	18.5%	12.2%			
Consumer Staples	0.0%	-0.2%	0.1%	0.0%	-8.4%	-5.9%	8.4%	10.3%			
Health Care	-1.5%	-0.3%	-0.7%	-0.5%	-7.9%	-5.3%	21.7%	11.7%			
Financials	-1.3%	--	-1.9%	--	--	12.2%	0.0%	17.0%			
Information Technology	0.2%	0.4%	-0.2%	0.1%	1.9%	-0.8%	23.2%	15.8%			
Telecommunication Services	-0.1%	-0.5%	0.0%	0.4%	-12.4%	-2.2%	2.2%	3.8%			
Utilities	-0.2%	-0.2%	0.0%	0.1%	-8.0%	-3.2%	3.7%	3.3%			
Real Estate	0.4%	--	0.3%	--	--	-6.1%	0.0%	3.4%			
Cash	0.0%	0.0%	0.0%	0.0%	0.1%	--	0.0%	0.0%			
<b>Portfolio</b>	<b>-2.6%</b>	<b>=</b>	<b>-0.2%</b>	<b>+</b>	<b>-2.4%</b>	<b>+</b>	<b>0.0%</b>	<b>-1.3%</b>	<b>1.3%</b>	<b>100.0%</b>	<b>100.0%</b>

**Top Positive Contributors**

	Relative Contribution %	Return %
SUNCOR ENERGY	0.3%	18.9%
AUTOMATIC DATA PROC.	0.3%	17.2%
COGNIZANT TECH.SLTN.'A'	0.2%	17.4%
SHIN-ETSU CHEMICAL	0.2%	12.4%
LVMH	0.2%	13.1%
WALT DISNEY	0.2%	13.1%
DENSO	0.2%	9.9%
SCHLUMBERGER	0.1%	7.4%
EOG RES.	0.1%	4.7%
STRYKER	0.1%	3.3%

**Top Negative Contributors**

	Relative Contribution %	Return %
INTUITIVE SURGICAL	-0.3%	-12.5%
CERNER	-0.2%	-23.3%
CHINA MOBILE	-0.2%	-12.4%
ESSILOR INTL.	-0.2%	-12.2%
CSL	-0.2%	-11.2%
COLGATE-PALM.	-0.2%	-11.2%
SGS 'N'	-0.2%	-9.1%
RECKITT BENCKISER GROUP	-0.2%	-9.8%
NOVO NORDISK 'B'	-0.2%	-13.1%
CLP HOLDINGS	-0.1%	-10.4%

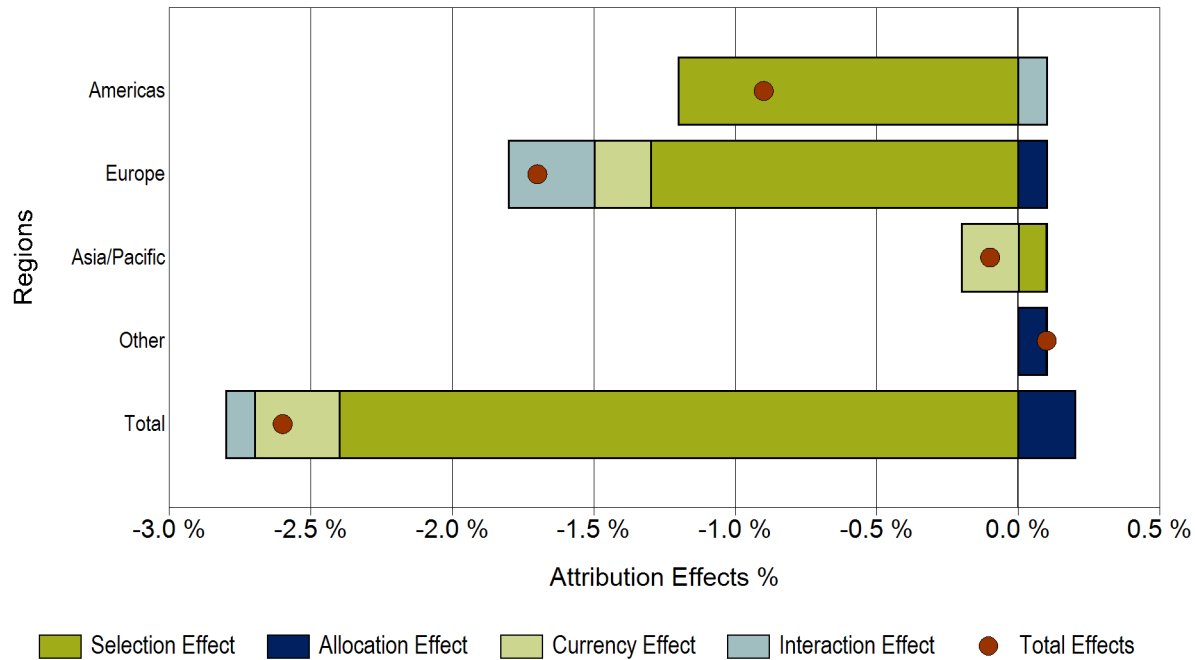
**Country Allocation**

	Manager Allocation (USD)	Index Allocation (USD)	Manager Return (USD)	Index Return (USD)
<b>Americas</b>				
Canada	2.2%	3.2%	18.9%	3.4%
United States	48.6%	52.4%	0.7%	3.6%
<b>Total-Americas</b>	<b>50.9%</b>	<b>57.1%</b>	<b>1.5%</b>	<b>3.4%</b>
<b>Europe</b>				
Denmark	1.7%	0.6%	-13.1%	-8.8%
France	6.1%	3.2%	-0.7%	3.1%
Spain	2.1%	1.0%	-7.1%	2.2%
Sweden	1.7%	0.9%	-1.3%	-0.8%
Switzerland	10.2%	3.0%	-7.4%	-3.9%
United Kingdom	4.3%	6.1%	-7.3%	-0.8%
<b>Total-Europe</b>	<b>26.0%</b>	<b>21.5%</b>	<b>-5.7%</b>	<b>0.1%</b>

**Country Allocation**

	Manager Allocation (USD)	Index Allocation (USD)	Manager Return (USD)	Index Return (USD)
<b>AsiaPacific</b>				
Australia	2.1%	2.5%	-11.2%	0.8%
Hong Kong	7.7%	1.2%	-7.1%	-9.0%
Japan	11.0%	8.0%	3.4%	-0.1%
Taiwan*	2.3%	1.3%	-6.0%	-2.2%
<b>Total-AsiaPacific</b>	<b>23.1%</b>	<b>20.1%</b>	<b>-2.4%</b>	<b>-3.0%</b>
<b>Totals</b>				
Developed	97.7%	88.9%	-1.2%	2.0%
Emerging*	2.3%	11.1%	-6.0%	-4.2%
Cash	0.0%		0.1%	

Walter Scott Performance Attribution vs. MSCI ACWI Gross

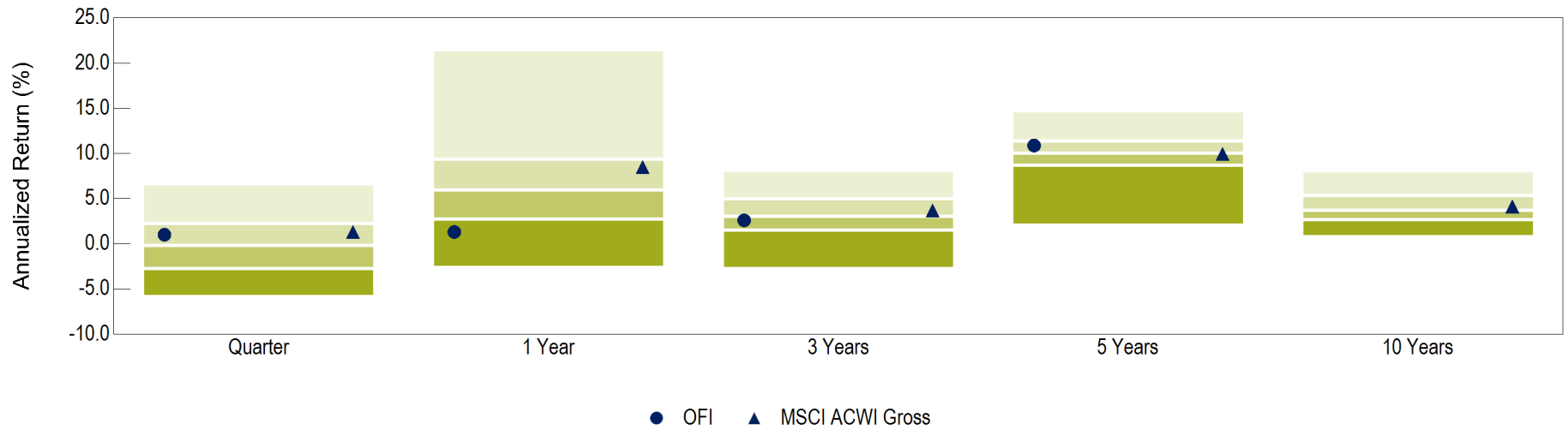


	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>Totals</b>									
Americas	1.5%	3.4%	50.9%	57.1%	-1.2%	0.0%	0.0%	0.1%	-0.9%
Europe	-5.7%	0.1%	26.0%	21.5%	-1.3%	0.1%	-0.2%	-0.3%	-1.7%
Asia/Pacific	-2.4%	-3.0%	23.1%	20.1%	0.1%	0.0%	-0.2%	0.0%	-0.1%
Other	--	-5.5%	0.0%	1.4%	--	0.1%	0.0%	--	0.1%
Cash	0.1%	--	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Total</b>	<b>-1.3%</b>	<b>1.3%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>-2.4%</b>	<b>0.2%</b>	<b>-0.3%</b>	<b>-0.1%</b>	<b>-2.6%</b>
<b>Totals</b>									
Developed	-1.2%	2.0%	97.7%	88.9%	-2.5%	0.1%	-0.6%	-0.2%	-3.3%
Emerging*	-6.0%	-4.2%	2.3%	11.1%	-0.5%	0.5%	0.3%	0.4%	0.7%
Cash	0.1%	--	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

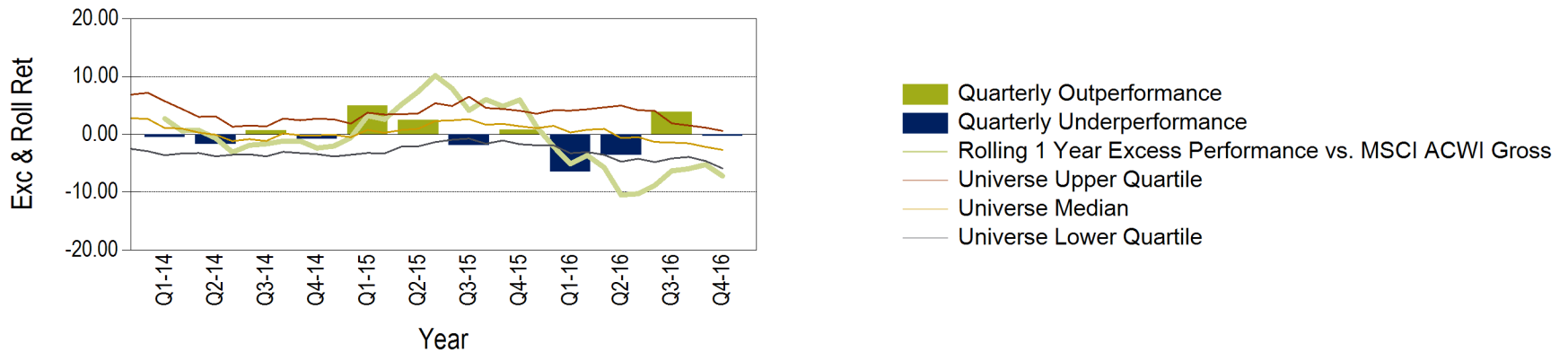


- **Manager Role in Portfolio**
  - Represents global equity allocation
- **Organizational Profile**
  - OFI is a wholly owned subsidiary of Oppenheimer Funds, Inc. with primary office locations in Boston, New York, Denver, and Bellefonte, PA.
- **Investment Strategy Commentary**
  - Fundamental bottom-up stock picking, contrarian, and theme oriented (MANTRA) with a long term view of growth
  - Themes are structural (i.e. new technologies, aging population, etc.) and of long-duration. Sub-themes and industries are constantly evolving.
  - Position size based on level of conviction and performance potential, and the existing country and sector exposures.
  - Largest positions reflect best ideas, and not index weight.

eA All Global Equity Net Accounts

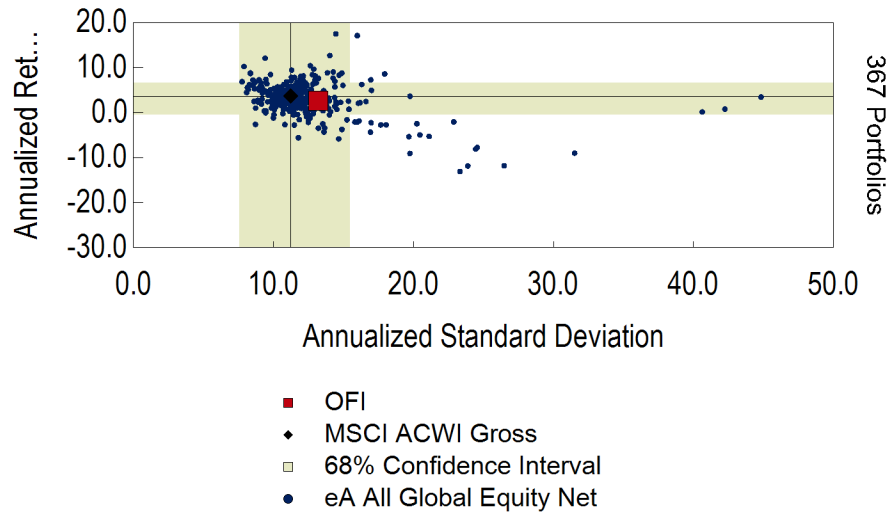


Annualized Excess Performance

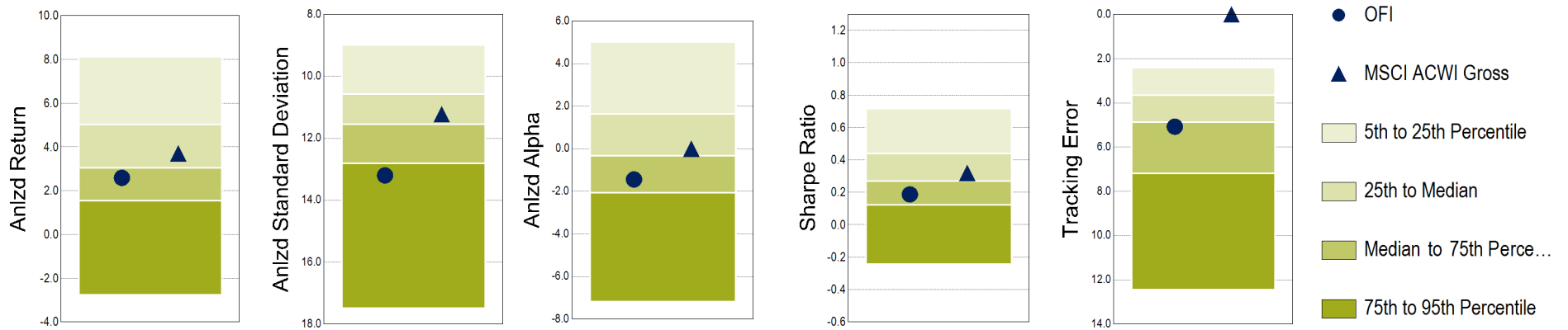
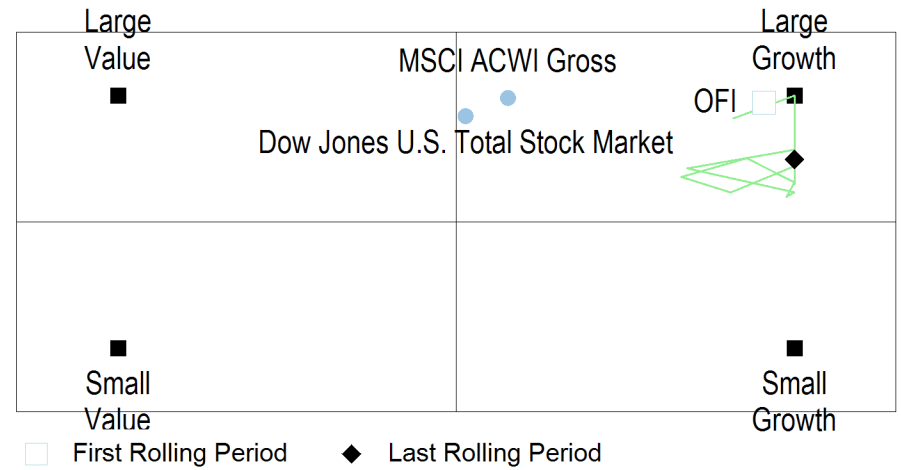


Returns are net of fees

3 Year Risk Return



3 Year Style Map



Returns are net of fees

Characteristics

	Portfolio	MSCI World
Number of Holdings	82	1,654
Weighted Avg. Market Cap. (\$B)	70.1	99.2
Median Market Cap. (\$B)	29.8	10.7
Price To Earnings	24.1	21.9
Price To Book	3.9	3.3
Price To Sales	3.7	2.5
Return on Equity (%)	19.0	15.2
Yield (%)	1.8	2.4
Beta		1.0
R-Squared		1.0

Equity Sector Attribution

	Attribution Effects				Returns		Sector Weights				
	Total Effects	Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	-0.1%	0.7%	-0.2%	-0.5%	12.7%	7.6%	1.6%	6.8%			
Materials	0.0%	-0.2%	-0.1%	0.3%	-2.9%	2.9%	1.1%	5.0%			
Industrials	-0.1%	0.1%	0.0%	-0.3%	1.7%	2.3%	13.0%	11.1%			
Consumer Discretionary	0.4%	0.5%	0.0%	-0.2%	4.9%	2.0%	15.3%	12.4%			
Consumer Staples	0.2%	-0.7%	0.4%	0.5%	-11.7%	-5.4%	5.6%	10.6%			
Health Care	0.2%	0.2%	-0.2%	0.1%	-2.4%	-5.2%	15.5%	12.8%			
Financials	-0.2%	-0.3%	0.4%	-0.3%	12.0%	14.5%	19.3%	16.1%			
Information Technology	-1.6%	-0.1%	-0.4%	-1.1%	-3.4%	0.4%	26.7%	14.8%			
Telecommunication Services	-0.2%	-0.3%	0.0%	0.0%	-17.5%	-1.3%	1.9%	3.5%			
Utilities	0.3%	0.1%	0.2%	0.0%	-4.9%	-2.8%	0.0%	3.4%			
Real Estate	0.4%	--	0.3%	--	--	-5.7%	0.0%	3.5%			
Cash	0.0%	0.0%	0.0%	0.0%	0.1%	--	0.0%	0.0%			
<b>Portfolio</b>	<b>-0.8%</b>	<b>=</b>	<b>0.1%</b>	<b>+</b>	<b>0.4%</b>	<b>+</b>	<b>-1.3%</b>	<b>1.2%</b>	<b>2.0%</b>	<b>100.0%</b>	<b>100.0%</b>

**Top Positive Contributors**

	Relative Contribution %	Return %
GOLDMAN SACHS GP.	0.4%	48.9%
CITIGROUP	0.4%	26.2%
SOCIETE GENERALE	0.3%	42.5%
LVMH	0.2%	13.1%
DAI-ICHI LIFE INSURANCE	0.2%	23.2%
UBS GROUP	0.2%	15.0%
ANTHEM	0.2%	15.2%
AIRBUS GROUP	0.2%	9.5%
AETNA	0.2%	7.7%
PRUDENTIAL	0.2%	13.3%

**Top Negative Contributors**

	Relative Contribution %	Return %
MCGRAW HILL FINANCIAL	-0.4%	-14.8%
ZIMMER BIOMET HDG.	-0.2%	-20.4%
KDDI	-0.2%	-17.5%
COLGATE-PALM.	-0.2%	-11.2%
TWITTER	-0.2%	-29.3%
UNILEVER (UK)	-0.2%	-13.6%
MACROGENICS	-0.1%	-31.7%
INDITEX	-0.1%	-7.1%
FACEBOOK CLASS A	-0.1%	-10.3%
SAP	-0.1%	-4.6%

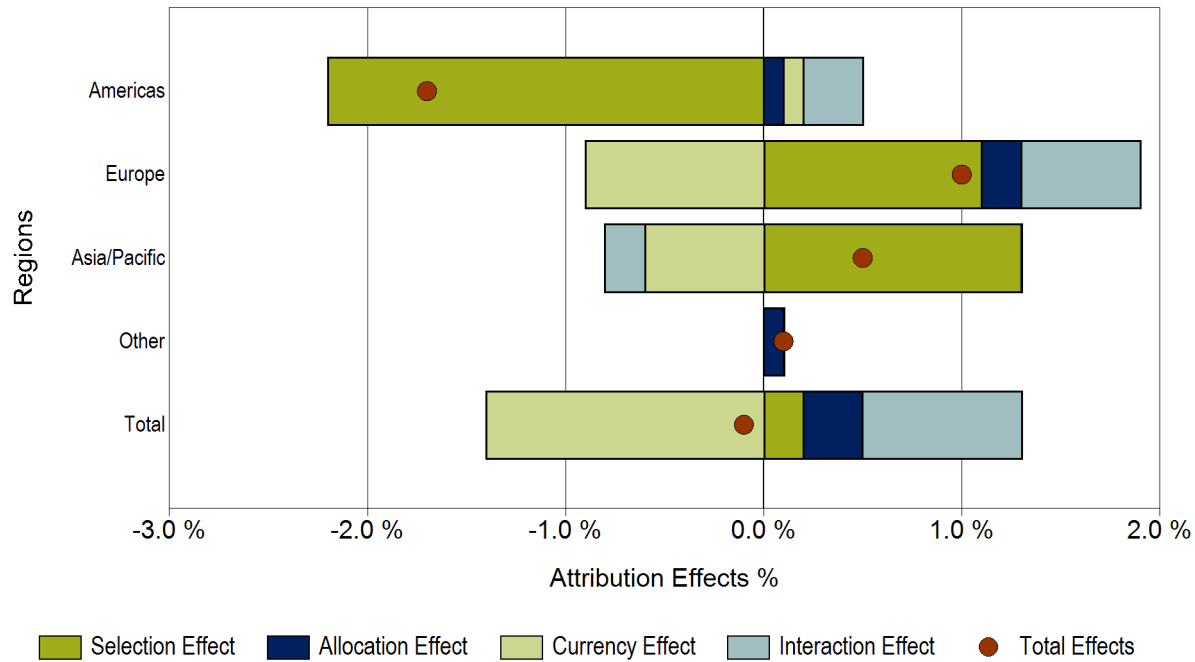
**Country Allocation**

	Manager Allocation (USD)	Index Allocation (USD)	Manager Return (USD)	Index Return (USD)
<b>Americas</b>				
Brazil*	0.2%	0.8%	11.5%	2.3%
United States	48.5%	52.4%	-0.3%	3.6%
<b>Total-Americas</b>	<b>48.7%</b>	<b>57.1%</b>	<b>-0.2%</b>	<b>3.4%</b>
<b>Europe</b>				
Denmark	0.3%	0.6%	10.5%	-8.8%
Finland	0.0%	0.3%	-4.9%	-4.4%
France	8.3%	3.2%	15.9%	3.1%
Germany	9.5%	3.0%	2.1%	1.5%
Italy	1.3%	0.6%	5.4%	10.8%
Spain	3.7%	1.0%	-0.4%	2.2%
Sweden	1.8%	0.9%	-9.6%	-0.8%
Switzerland	4.2%	3.0%	3.6%	-3.9%
United Kingdom	4.7%	6.1%	-1.4%	-0.8%
<b>Total-Europe</b>	<b>33.9%</b>	<b>21.5%</b>	<b>4.5%</b>	<b>0.1%</b>

**Country Allocation**

	Manager Allocation (USD)	Index Allocation (USD)	Manager Return (USD)	Index Return (USD)
<b>AsiaPacific</b>				
China*	1.3%	3.0%	-2.5%	-6.9%
India*	1.3%	0.9%	0.3%	-7.8%
Japan	14.8%	8.0%	-1.3%	-0.1%
<b>Total-AsiaPacific</b>	<b>17.4%</b>	<b>20.1%</b>	<b>-1.3%</b>	<b>-3.0%</b>
<b>Totals</b>				
Developed	97.2%	88.9%	1.2%	2.0%
Emerging*	2.8%	11.1%	-0.1%	-4.2%
Cash	0.0%		0.1%	

OFI Performance Attribution vs. MSCI ACWI Gross



	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>Totals</b>									
Americas	-0.2%	3.4%	48.7%	57.1%	-2.2%	0.1%	0.1%	0.3%	-1.7%
Europe	4.5%	0.1%	33.9%	21.5%	1.1%	0.2%	-0.9%	0.6%	1.0%
Asia/Pacific	-1.3%	-3.0%	17.4%	20.1%	1.3%	0.0%	-0.6%	-0.2%	0.5%
Other	--	-5.5%	0.0%	1.4%	--	0.1%	0.0%	--	0.1%
Cash	0.1%	--	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Total</b>	<b>1.2%</b>	<b>1.3%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.2%</b>	<b>0.3%</b>	<b>-1.4%</b>	<b>0.8%</b>	<b>-0.1%</b>
<b>Totals</b>									
Developed	1.2%	2.0%	97.2%	88.9%	0.7%	0.1%	-1.7%	0.1%	-0.9%
Emerging*	-0.1%	-4.2%	2.8%	11.1%	0.1%	0.5%	0.3%	-0.1%	0.8%
Cash	0.1%	--	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

# Appendix





## Glossary of Investment Terminology – Risk Statistics

**Alpha** - Measures the relationship between the fund performance and the performance of another fund or benchmark index and equals the excess return while the other fund or benchmark index is zero.

**Alpha Jensen** - The average return on a portfolio over and above that predicted by the capital asset pricing model (CAPM), given the portfolio's beta and the average market return. Also known as the abnormal return or the risk adjusted excess return.

**Annualized Excess Return over Benchmark** - Annualized fund return minus the annualized benchmark return for the calculated return.

**Annualized Return** - A statistical technique whereby returns covering periods greater than one year are converted to cover a 12 month time span.

**Beta** - Measures the volatility or systematic risk and is equal to the change in the fund's performance in relation to the change in the assigned index's performance.

**Information Ratio** - A measure of the risk adjusted return of a financial security, asset, or portfolio.

*Formula:*  
 $(\text{Annualized Return of Portfolio} - \text{Annualized Return of Benchmark}) / \text{Annualized Standard Deviation}(\text{Period Portfolio Return} - \text{Period Benchmark Return})$ . To annualize standard deviation, multiply the deviation by the square root of the number of periods per year where monthly returns per year equals 12 and quarterly returns is four periods per year.

**R-Squared** - Represents the percentage of a fund's movements that can be explained by movements in an index. R-Squared values range from 0 to 100. An R-Squared of 100 denotes that all movements of a fund are completely explained by movements in the index.

**Sharpe Ratio** - A measure of the excess return or risk premium per unit of risk in an investment asset or trading strategy.

**Sortino Ratio** - A method to differentiate between good and bad volatility in the Sharpe Ratio. The differentiation of up and down volatility allows the calculation to provide a risk adjusted measure of a security or fund's performance without upward price change penalties.

*Formula:*  
 $\text{Calculation Average } (X-Y) / \text{Downside Deviation } (X-Y) * 2$   
Where X=Return Series X Y = Return Series Y which is the risk free return (91 day T-bills)

**Standard Deviation** - The standard deviation is a statistical term that describes the distribution of results. It is a commonly used measure of volatility of returns of a portfolio, asset class, or security. The higher the standard deviation the more volatile the returns are.

*Formula:*  
 $(\text{Annualized Return of Portfolio} - \text{Annualized Return of Risk Free}) / \text{Annualized Standard Deviation (Portfolio Returns)}$

**Tracking Error** - Tracking error, also known as residual risk, is a measure of the degree to which a portfolio tracks its benchmark. It is also a measure of consistency of excess returns. Tracking error is computed as the annualized standard deviation of the difference between a portfolio's return and that of its benchmark.

*Formula:*  
 $\text{Tracking Error} = \text{Standard Deviation } (X-Y) * \sqrt{(\# \text{ of periods per year})}$   
Where X = periods portfolio return and Y = the period's benchmark return  
For monthly returns, the periods per year = 12  
For quarterly returns, the periods per year = 4

**Treynor Ratio** - A risk-adjusted measure of return based on systematic risk. Similar to the Sharpe ratio with the difference being the Treynor ratio uses beta as the measurement of volatility.

*Formula:*  
 $(\text{Portfolio Average Return} - \text{Average Return of Risk-Free Rate}) / \text{Portfolio Beta}$

**Up/Down Capture Ratio** - A measure of what percentage of a market's returns is "captured" by a portfolio. For example, if the market declines 10% over some period, and the manager declines only 9%, then his or her capture ratio is 90%. In down markets, it is advantageous for a manager to have as low a capture ratio as possible. For up markets, the higher the capture ratio the better. Looking at capture ratios can provide insight into how a manager achieves excess returns. A value manager might typically have a lower capture ratio in both up and down markets, achieving excess returns by protecting on the downside, whereas a growth manager might fall more than the overall market in down markets, but achieve above-market returns in a rising market.

$\text{Upside Capture} = \text{Total Return}(\text{Fund Returns}) / \text{Total Returns}(\text{BM Return})$  when Period Benchmark Return is  $> = 0$

$\text{Downside Capture} = \text{Total Return}(\text{Fund Returns}) / \text{Total Returns}(\text{BM Return})$  when Benchmark  $< 0$

Source: Investor Force



## Glossary of Investment Terminology

**# Of Portfolios/Observations<sup>1</sup>** – The total number of data points that make up a specified universe

**Allocation Index<sup>3</sup>** - The allocation index measures the value added (or subtracted) to each portfolio by active management. It is calculated monthly: The portfolio asset allocation to each category from the prior month-end is multiplied by a specified market index.

**Asset Allocation Effect<sup>2</sup>** - Measures an investment manager's ability to effectively allocate their portfolio's assets to various sectors. The allocation effect determines whether the overweighting or underweighting of sectors relative to a benchmark contributes positively or negatively to the overall portfolio return. Positive allocation occurs when the portfolio is over weighted in a sector that outperforms the benchmark and underweighted in a sector that underperforms the benchmark. Negative allocation occurs when the portfolio is over weighted in a sector that underperforms the benchmark and under weighted in a sector that outperforms the benchmark.

**Agency Bonds (Agencies)<sup>3</sup>** - The full faith and credit of the United States government is normally not pledged to payment of principal and interest on the majority of government agencies issuing these bonds, with maturities of up to ten years. Their yields, therefore, are normally higher than government and their marketability is good, thereby qualifying them as a low risk-high liquidity type of investment. They are eligible as security for advances to the member banks by the Federal Reserve, which attests to their standing.

**Asset Backed Securities (ABS)<sup>3</sup>** - Bonds which are similar to mortgage-backed securities but are collateralized by assets other than mortgages; commonly backed by credit card receivables, auto loans, or other types of consumer financing.

**Attribution<sup>3</sup>** - Attribution is an analytical technique that allows us to evaluate the performance of the portfolio relative to the benchmark. A proper attribution tells us where value was added or subtracted as a result of the manager's decisions.

**Average Effective Maturity<sup>4</sup>** - For a single bond, it is a measure of maturity that takes into account the possibility that a bond might be called back to the issuer.

For a portfolio of bonds, average effective maturity is the weighted average of the maturities of the underlying bonds. The measure is computed by weighing each bond's maturity by its market value with respect to the portfolio and the likelihood of any of the bonds being called. In a pool of mortgages, this would also account for the likelihood of prepayments on the mortgages.

**Batting Average<sup>1</sup>** - A measurement representing an investment manager's ability to meet or beat an index.

*Formula: Divide the number of days (or months, quarters, etc.) in which the manager beats or matches the index by the total number of days (or months, quarters, etc.) in the period of question and multiply that factor by 100.*

**Brinson Fachler (BF) Attribution<sup>1</sup>** - The BF methodology is a highly accepted industry standard for calculating the allocation, selection, and interaction effects within a portfolio that collectively explains a portfolio's underlying performance. The main advantage of the BF methodology is that rather than using the overall return of the benchmark, it goes a level deeper than BHB and measures whether the benchmark sector, country, etc. outperformed/or underperformed the overall benchmark.

**Brinson Hood Beebower (BHB) Attribution<sup>1</sup>** - The BHB methodology shows that excess return must be equal to the sum of all other factors (i.e., allocation effect, selection effect, interaction effect, etc.). The advantage to using the BHB methodology is that it is a highly accepted industry standard for calculating the allocation, selection, and interaction effects within a portfolio that collectively explains a portfolio's underlying performance.

**Corporate Bond (Corp)<sup>4</sup>** - A debt security issued by a corporation and sold to investors. The backing for the bond is usually the payment ability of the company, which is typically money to be earned from future operations. In some cases, the company's physical assets may be used as collateral for bonds.

**Correlation<sup>1</sup>** - A range of statistical relationships between two or more random variables or observed data values. A correlation is a single number that describes the degree of relationship between variables.

Data Source: <sup>1</sup>InvestorForce, <sup>2</sup>Interaction Effect Performance Attribution, <sup>3</sup>NEPC, LLC, <sup>4</sup>Investopedia, <sup>5</sup>Hedgeco.net





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**Coupon<sup>4</sup>** – The interest rate stated on a bond when it is issued. The coupon is typically paid semiannually. This is also referred to as the "coupon rate" or "coupon percent rate."

**Currency Effect<sup>1</sup>** - Is the effect that changes in currency exchange rates over time affect excess performance.

**Derivative Instrument<sup>3</sup>** - A financial obligation that derives its precise value from the value of one or more other instruments (or assets) at the same point of time. For example, the relationship between the value of an S&P 500 futures contract (the derivative instrument in this case) is determined by the value of the S&P 500 Index and the value of a U.S. Treasury bill that matures at the expiration of the futures contract.

**Downside Deviation<sup>1</sup>** - Equals the standard deviation of negative return or the measure of downside risk focusing on the standard deviation of negative returns.

*Formula:*

*Annualized Standard Deviation (Fund Return - Average Fund Return) where average fund return is greater than individual fund returns, monthly or quarterly.*

**Duration<sup>3</sup>** - Duration is a measure of interest rate risk. The greater the duration of a bond, or a portfolio of bonds, the greater its price volatility will be in response to a change in interest rates. A bond's duration is inversely related to interest rates and directly related to time to maturity.

**Equity/Debt/Cash Ratio<sup>1</sup>** – The percentage of an investment or portfolio that is in Equity, Debt, and/or Cash (i.e. A 7/89/4 ratio represents an investment that is made up of 7% Equity, 89% Debt, and 4% Cash).

**Foreign Bond<sup>3</sup>** - A bond that is issued in a domestic market by a foreign entity, in the domestic market's currency. A foreign bond is most often issued by a foreign firm to raise capital in a domestic market that would be most interested in purchasing the firm's debt. For foreign firms doing a large amount of business in the domestic market, issuing foreign bonds is a common practice.

**Hard Hurdle<sup>5</sup>** – is a hurdle rate that once beaten allows a fund manager to charge a performance fee on only the funds above the specified hurdle rate.

**High-Water Mark<sup>4</sup>** - The highest peak in value that an investment fund/account has reached. This term is often used in the context of fund manager compensation, which is performance based. Some performance-based fees only get paid when fund performance exceeds the high-water mark. The high-water mark ensures that the manager does not get paid large sums for poor performance.

**Hurdle Rate<sup>4</sup>** - The minimum rate of return on an investment required, in order for a manager to collect incentive fees from the investor, which is usually tied to a benchmark.

**Interaction Effects<sup>2</sup>** - The interaction effect measures the combined impact of an investment manager's selection and allocation decisions within a sector. For example, if an investment manager had superior selection and over weighted that particular sector, the interaction effect is positive. If an investment manager had superior selection, but underweighted that sector, the interaction effect is negative. In this case, the investment manager did not take advantage of the superior selection by allocating more assets to that sector. Since many investment managers consider the interaction effect to be part of the selection or the allocation, it is often combined with the either effect.

**Median<sup>3</sup>** - The value (rate of return, market sensitivity, etc.) that exceeds one-half of the values in the population and that is exceeded by one-half of the values. The median has a percentile rank of 50.

**Modified Duration<sup>3</sup>** - The percentage change in the price of a fixed income security that results from a change in yield.

**Mortgage Backed Securities (MBS)<sup>3</sup>** - Bonds which are a general obligation of the issuing institution but are also collateralized by a pool of mortgages.

**Municipal Bond (Muni)<sup>4</sup>** - A debt security issued by a state, municipality or county to finance its capital expenditures.

**Net Investment Change<sup>1</sup>** – Is the change in an investment after accounting for all Net Cash Flows.

**Performance Fee<sup>4</sup>** - A payment made to a fund manager for generating positive returns. The performance fee is generally calculated as a percentage of investment profits, often both realized and unrealized.

*Data Source: <sup>1</sup>InvestorForce, <sup>2</sup>Interaction Effect Performance Attribution, <sup>3</sup>NEPC, LLC, <sup>4</sup>Investopedia, <sup>5</sup>Hedgeco.net*



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**Policy Index<sup>3</sup>** - A custom benchmark designed to indicate the returns that a passive investor would earn by consistently following the asset allocation targets set forth in this investment policy statement.

**Price to Book (P/B)<sup>4</sup>** - A ratio used to compare a stock's market value to its book value. It is calculated by dividing the current closing price of the stock by the latest quarter's book value per share, also known as the "price-equity ratio".

**Price to Earnings (P/E)<sup>3</sup>** - The weighted equity P/E is based on current price and trailing 12 months earnings per share (EPS).

**Price to Sales (P/S)<sup>4</sup>** - A ratio for valuing a stock relative to its own past performance, other companies, or the market itself. Price to sales is calculated by dividing a stock's current price by its revenue per share for the trailing 12 months.

**Return on Equity (ROE)<sup>4</sup>** - The amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.

**Selection (or Manager) Effect<sup>2</sup>** - Measures the investment manager's ability to select securities within a given sector relative to a benchmark. The over or underperformance of the portfolio is weighted by the benchmark weight, therefore, selection is not affected by the manager's allocation to the sector. The weight of the sector in the portfolio determines the size of the effect—the larger the sector, the larger the effect is, positive or negative.

**Soft Hurdle rate<sup>5</sup>** - is a hurdle rate that once beaten allows a fund manager to charge a performance fee based on the entire annualized return.

**Tiered Fee<sup>1</sup>** - A fee structure that is paid to fund managers based on the size of the investment (i.e. 1.00% fee on the first \$10M invested, 0.90% on the next \$10M, and 0.80% on the remaining balance).

**Total Effects<sup>2</sup>** - The active management (total) effect is the sum of the selection, allocation, and interaction effects. It is also the difference between the total portfolio return and the total benchmark return. You can use the active management effect to determine the amount the investment manager has added to a portfolio's return.

**Total Return<sup>1</sup>** - The actual rate of return of an investment over a specified time period. Total return includes interest, capital gains, dividends, and distributions realized over a defined time period.

**Universe<sup>3</sup>** - The list of all assets eligible for inclusion in a portfolio.

**Upside Deviation<sup>1</sup>** - Standard Deviation of Positive Returns

**Weighted Avg. Market Cap.<sup>4</sup>** - A stock market index weighted by the market capitalization of each stock in the index. In such a weighting scheme, larger companies account for a greater portion of the index. Most indexes are constructed in this manner, with the best example being the S&P 500.

**Yield (%)<sup>3</sup>** - The current yield of a security is the current indicated annual dividend rate divided by current price.

**Yield to Maturity<sup>3</sup>** - The discount rate that equates the present value of cash flows, both principal and interest, to market price.

Data Source: <sup>1</sup>InvestorForce, <sup>2</sup>Interaction Effect Performance Attribution, <sup>3</sup>NEPC, LLC, <sup>4</sup>Investopedia, <sup>5</sup>Hedgeco.net



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