



NEPC, LLC

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Dallas Police & Fire Pension System

Investment Summary

Quarter Ending June 30, 2017

September 14, 2017

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Q2 2017 Market Update



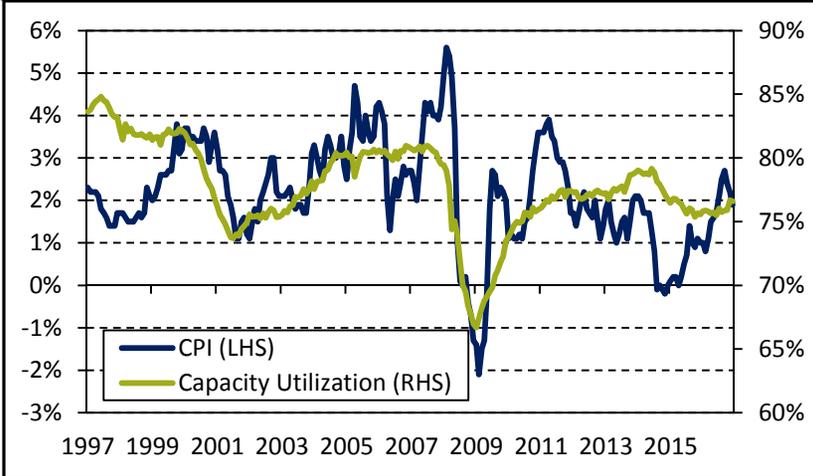
Index Performance Summary as of 06/30/2017

	2009	2010	2011	2012	2013	2014	2015	2016	Q1	April	May	June	Q2	YTD
MSCI EM	78.5%	18.9%	-18.4%	18.2%	-2.6%	-2.2%	-14.9%	11.2%	11.4%	2.2%	3.0%	1.0%	6.3%	18.4%
MSCI EAFE	31.8%	7.8%	-12.1%	17.3%	22.8%	-4.9%	-0.8%	1.0%	7.2%	2.5%	3.7%	-0.2%	6.1%	13.8%
MSCI ACWI	34.6%	12.7%	-7.3%	16.1%	22.8%	4.2%	-2.4%	7.9%	6.9%	1.6%	2.2%	0.5%	4.3%	11.5%
JPM GBI-EM Global Div	22.0%	15.7%	-1.8%	16.8%	-9.0%	-5.7%	-14.9%	9.9%	6.5%	1.2%	2.0%	0.5%	3.6%	10.4%
S&P 500	26.5%	15.1%	2.1%	16.0%	32.4%	13.7%	1.4%	12.0%	6.1%	1.0%	1.4%	0.6%	3.1%	9.3%
Russell 1000	28.4%	16.1%	1.5%	16.4%	33.1%	13.2%	0.9%	12.1%	6.0%	1.1%	1.3%	0.7%	3.1%	9.3%
BC US STRIPS 20+ Yr	-36.0%	10.9%	58.5%	3.0%	-21.0%	46.4%	-3.7%	1.4%	1.8%	1.8%	3.1%	1.1%	6.1%	8.0%
BC US Long Credit	16.8%	10.7%	17.1%	12.7%	-6.6%	16.4%	-4.6%	10.2%	1.7%	1.6%	2.1%	1.0%	4.7%	6.4%
JPM EMBI Glob Div	29.8%	12.2%	7.3%	17.4%	-5.3%	7.4%	1.2%	10.2%	3.9%	1.6%	0.9%	-0.1%	2.2%	6.2%
BC US Govt/Cred Long	1.9%	10.2%	22.5%	8.8%	-8.8%	19.3%	-3.3%	6.7%	1.6%	1.6%	2.0%	0.8%	4.4%	6.0%
Russell 2500	34.4%	26.7%	-2.5%	17.9%	36.8%	7.1%	-2.9%	17.6%	3.8%	0.8%	-1.1%	2.5%	2.1%	6.0%
Russell 2000	27.2%	26.9%	-4.2%	16.3%	38.8%	4.9%	-4.4%	21.3%	2.5%	1.1%	-2.0%	3.5%	2.5%	5.0%
BC US Corporate HY	58.2%	15.1%	5.0%	15.8%	7.4%	2.5%	-4.5%	17.1%	2.7%	1.2%	0.9%	0.1%	2.2%	4.9%
BC Global Agg	-6.5%	-5.3%	-5.3%	-4.1%	2.7%	-0.6%	3.3%	2.1%	1.8%	1.1%	1.5%	-0.1%	2.6%	4.4%
BC Municipal	12.9%	2.4%	10.7%	6.8%	-2.6%	9.1%	3.3%	0.2%	1.6%	0.7%	1.6%	-0.4%	2.0%	3.6%
CS Hedge Fund	18.6%	10.9%	-2.5%	7.7%	9.7%	4.1%	-0.7%	1.2%	2.1%	0.4%	0.8%	-	1.3%	3.4%
FTSE NAREIT Eqy REITs	28.0%	28.0%	8.3%	18.1%	2.5%	30.1%	3.2%	8.5%	1.2%	0.1%	-0.8%	2.2%	1.5%	2.7%
BC US Agg Bond	5.9%	6.5%	7.8%	4.2%	-2.0%	6.0%	0.5%	2.6%	0.8%	0.8%	0.8%	-0.1%	1.4%	2.3%
CS Leveraged Loan	44.9%	10.0%	1.8%	9.4%	6.2%	2.1%	-0.4%	9.9%	1.2%	0.4%	0.4%	-0.1%	0.8%	2.0%
BC US Agg Interm	6.5%	6.1%	6.0%	3.6%	-1.0%	4.1%	1.2%	2.0%	0.7%	0.6%	0.5%	-0.3%	0.9%	1.6%
BC TIPS	11.4%	6.3%	13.6%	7.0%	-8.6%	3.6%	-1.4%	4.7%	1.3%	0.6%	0.0%	-0.9%	-0.4%	0.9%
BC US Govt/Cred 1-3 Yr	3.8%	2.8%	1.6%	1.3%	0.6%	0.8%	0.7%	1.3%	0.4%	0.2%	0.2%	0.0%	0.3%	0.7%
Alerian MLP	76.4%	35.9%	13.9%	4.8%	27.6%	4.8%	-32.6%	18.3%	3.9%	-1.3%	-4.5%	-0.6%	-6.4%	-2.7%
BBG Commodity	18.9%	16.8%	-13.3%	-1.1%	-9.5%	-17.0%	-24.7%	11.8%	-2.3%	-1.5%	-1.4%	-0.3%	-3.2%	-5.6%

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

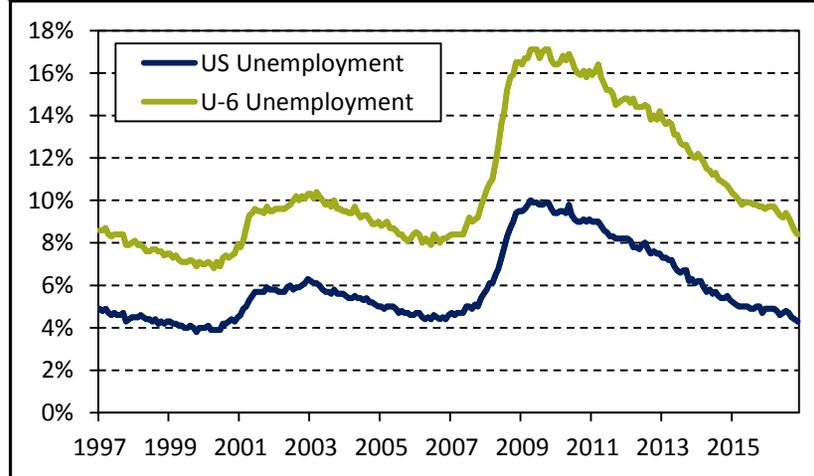
US Economic Indicators

Inflation continues to decline, while capacity utilization trends upward



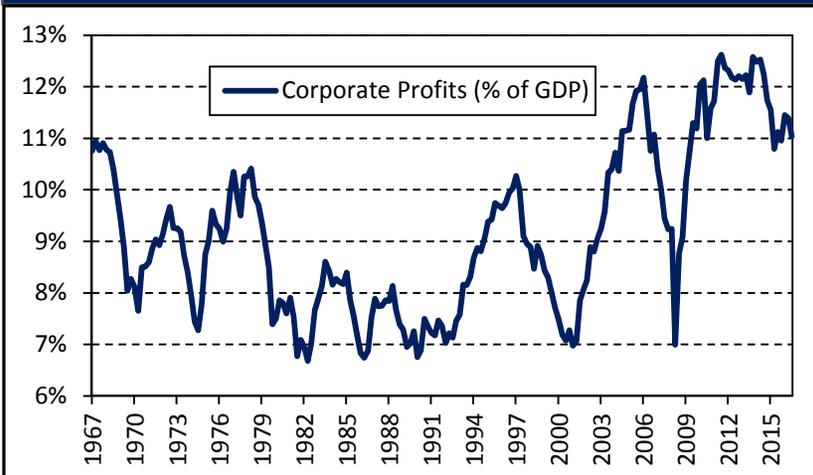
Source: Bloomberg, Federal Reserve, Bureau of Labor Statistics

Unemployment is still declining



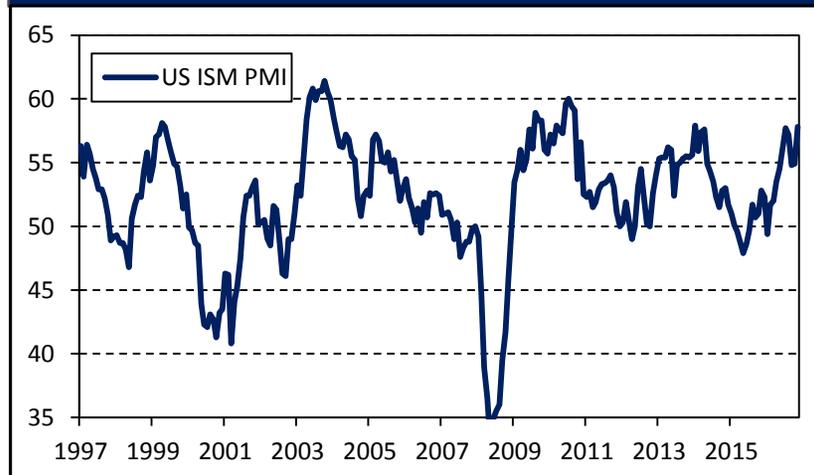
Source: Bloomberg, Bureau of Labor Statistics

Corporate profits fall off recent highs



Source: Bloomberg, Bureau of Economic Analysis

Manufacturing growth hit a multi-year high

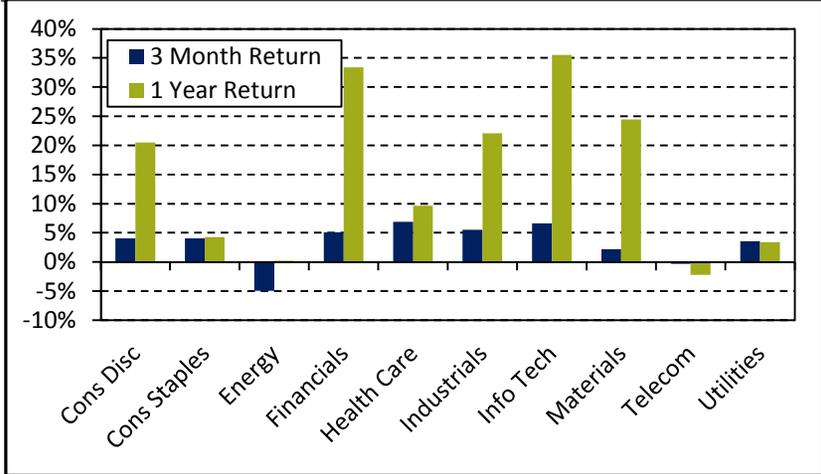


Source: Bloomberg, Institute for Supply Management



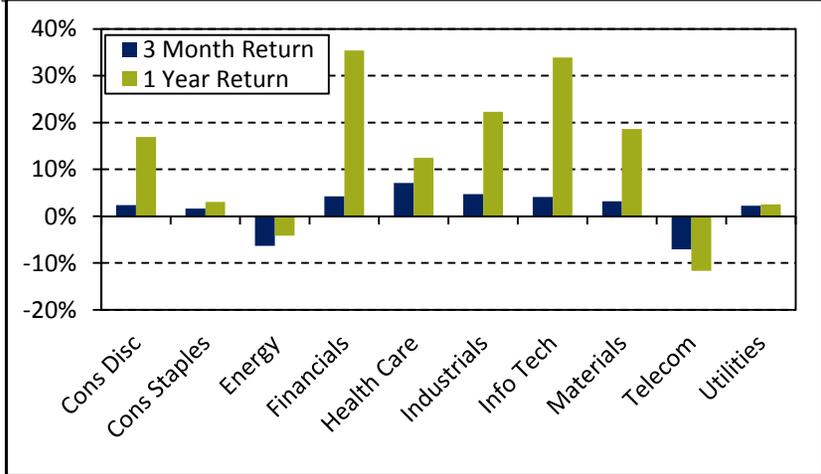
Global Equity by Sector

Ex-energy and telecom, MSCI ACWI has posted broad short-term returns



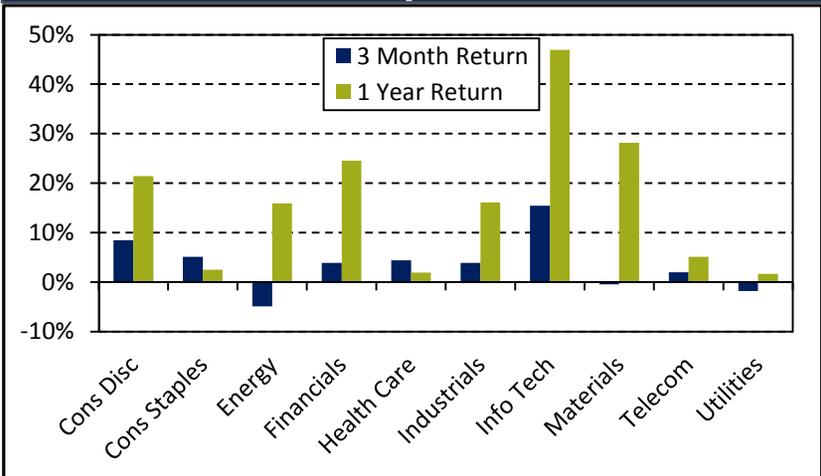
Source: Bloomberg, MSCI

Energy and telecom sectors drag S&P 500 short-term returns



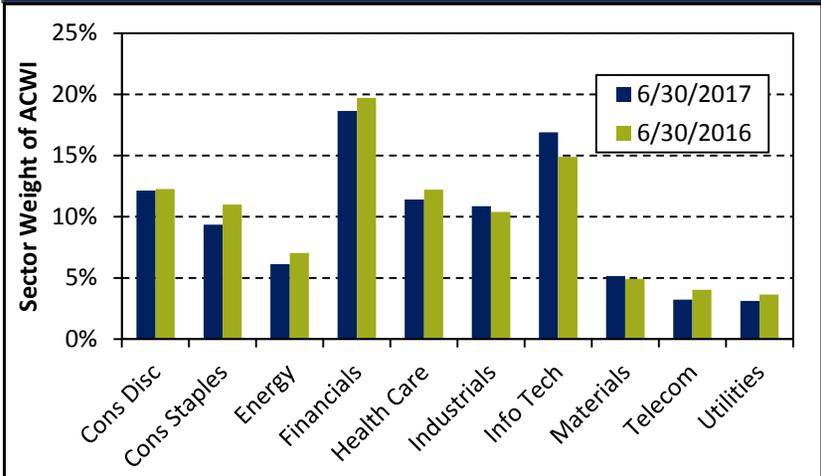
Source: Bloomberg, Standard and Poors

MSCI EM short-term returns have been lead by Info Tech



Source: Bloomberg, MSCI

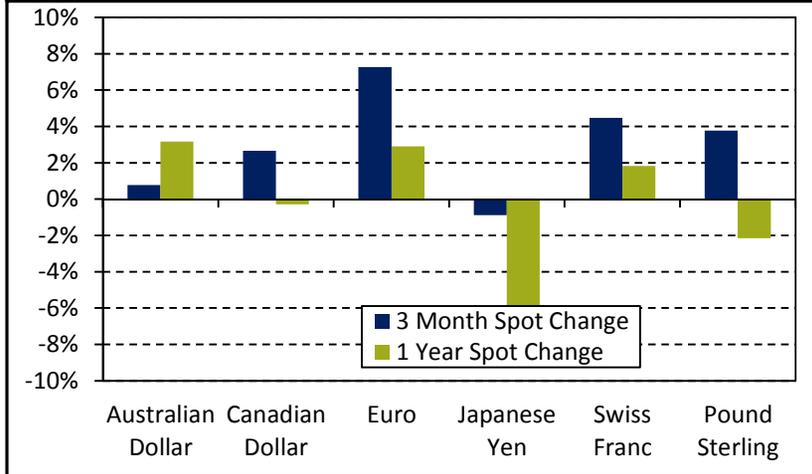
Financials sector weight has decreased in favor of Info Tech and Industrials



Source: Bloomberg, MSCI

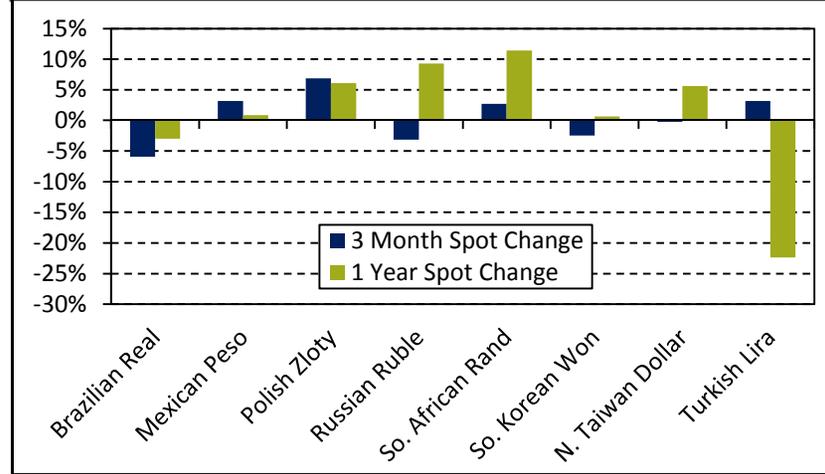
Currencies

Many currencies have appreciated against the dollar due to recent USD weakness



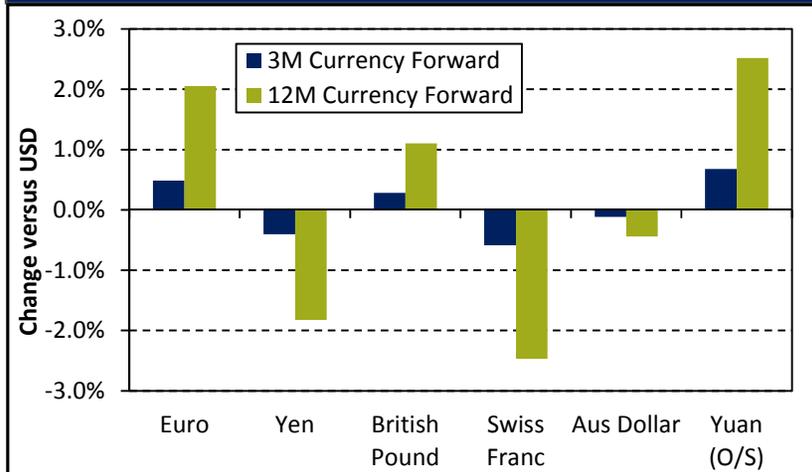
Source: Bloomberg

EM currencies remain mixed relative to the dollar



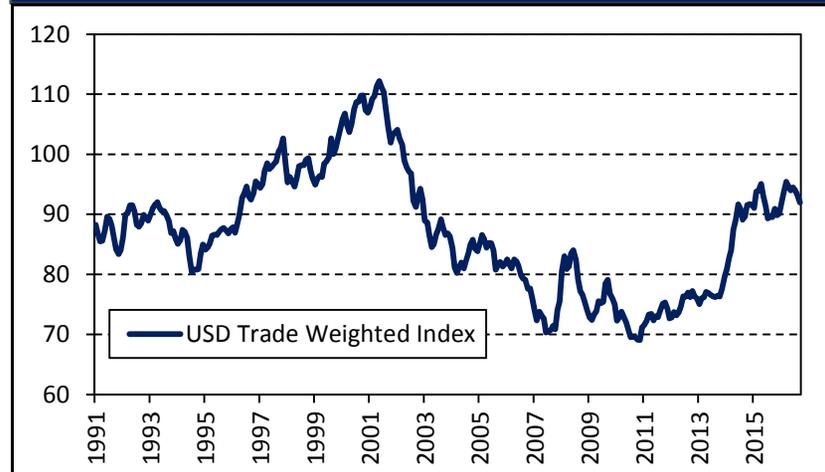
Source: Bloomberg

USD expectations vary across developed markets



Source: Bloomberg

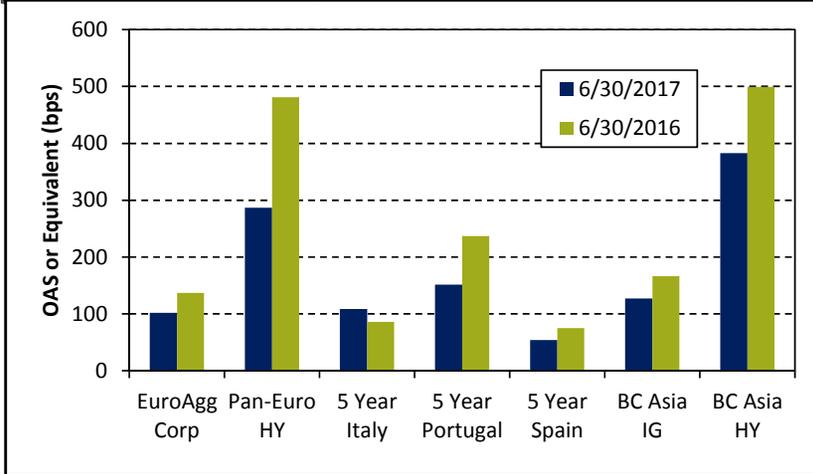
The dollar continues trending downward



Source: Bloomberg, Federal Reserve

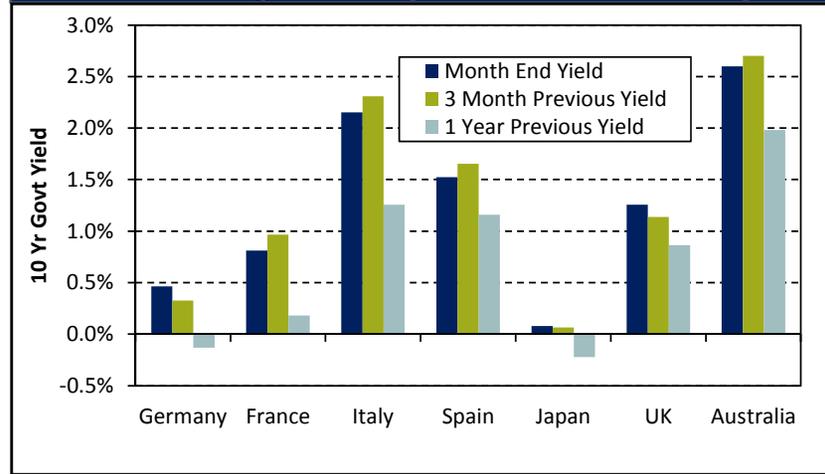
International Developed Fixed Income

Ex-Italy, periphery yields have declined over the year relative to Germany



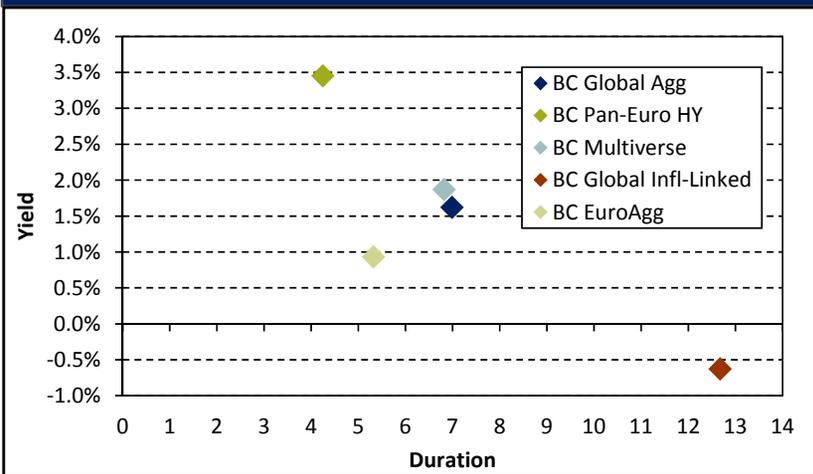
Source: Barclays, Bloomberg, *European periphery spreads are over equivalent German Bund

Yields continue to rise in the UK as a result of heightened political uncertainty



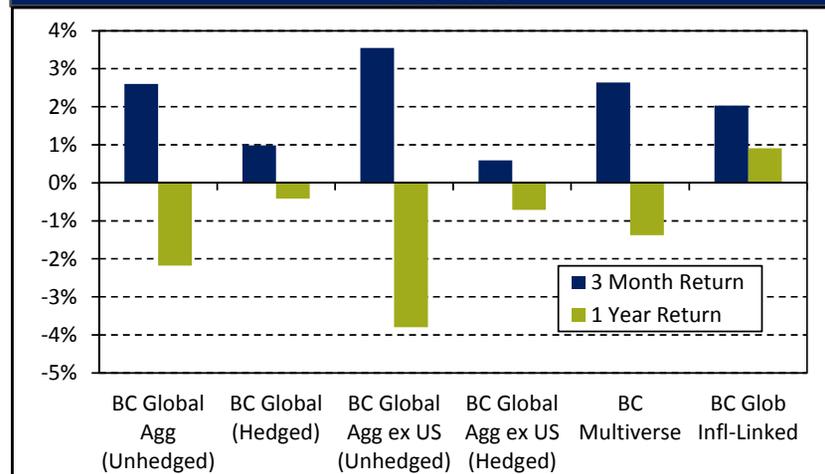
Source: Bloomberg

Low yields persist in global bond universe



Source: Bloomberg, Citigroup, Barclays

Global bonds post strong short-term returns

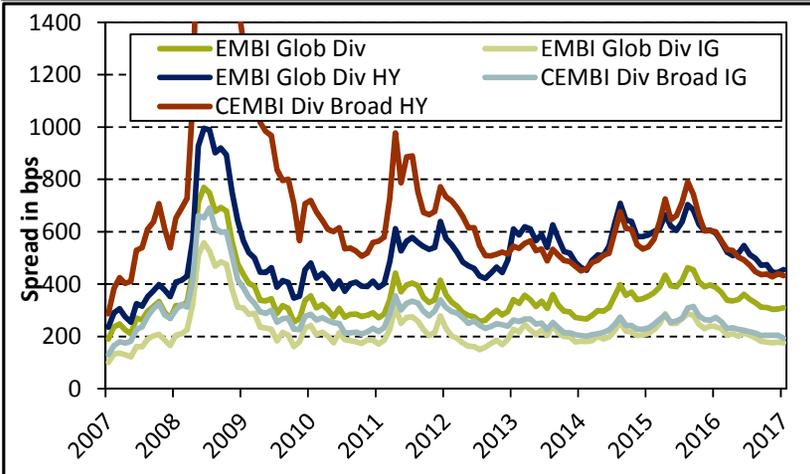


Source: Bloomberg, Citigroup, Barclays



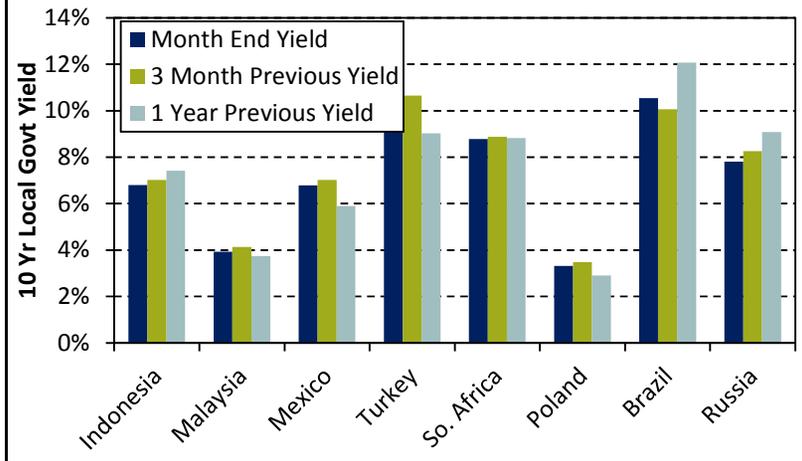
Emerging Markets Fixed Income

EM spreads remain steady



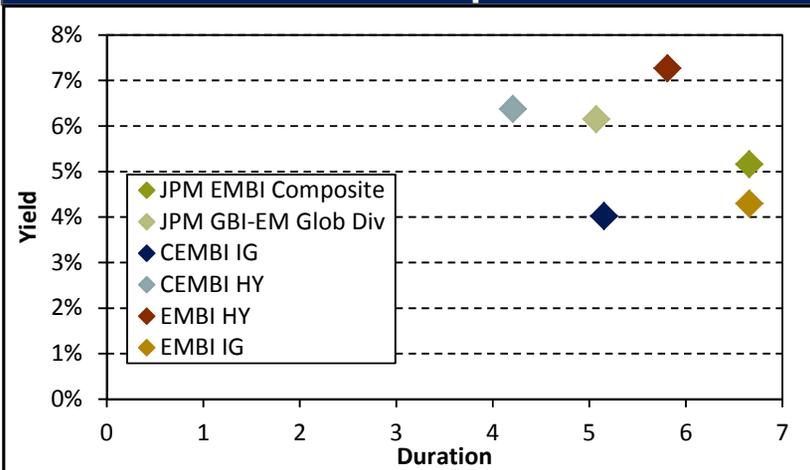
Source: Bloomberg, JP Morgan

Brazil's bond yields have increased with concerns over President Michel Temer



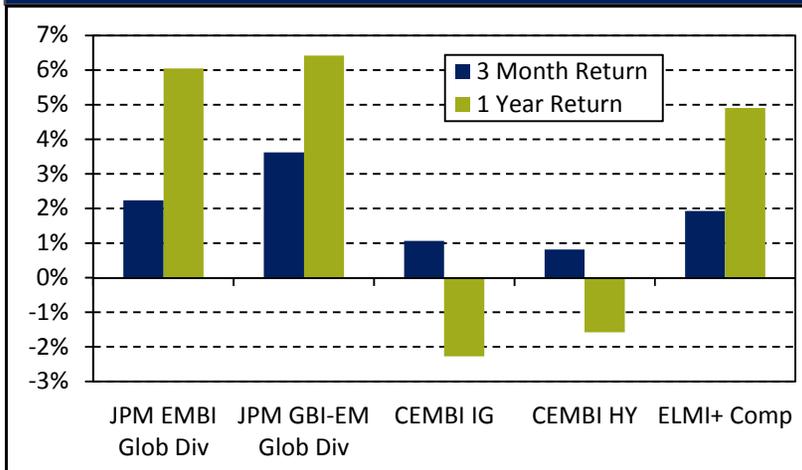
Source: Bloomberg

EM yields remain attractive versus global counterparts



Source: Bloomberg, JP Morgan

EM debt posts strong positive 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.**
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Q2 2017 Performance & Asset Allocation



Asset Allocation: Broad Composites

	Market Value \$	% of Portfolio	Policy %
Total Equity	557,168,712	26.3%	30%
Total Fixed Income	287,786,139	13.6%	33%
Total GAA	135,388,341	6.4%	10%
Total Real Assets	1,036,978,504	48.9%	25%
Cash	145,221,767	6.8%	2%
DPFP Debt	(40,000,000)	-1.9%	---
Total DPFP	2,122,543,462	100%	100%

Asset Allocation: By Asset Class

	Current Allocation \$	Current Allocation %	Policy %
Global Equity	329,184,831	15.5%	20%
Emerging Market Equity	--	0.0%	5%
Private Equity	227,983,881	10.7%	5%
<i>Total Equity</i>	557,168,712	26.3%	30%
Short-Term Core Bonds	49,988,274	2.4%	2%
High Yield	80,303,450	3.8%	5%
Bank Loans	57,655,597	2.7%	6%
Emerging Market Debt	19,169,018	0.9%	6%
Global Bonds	64,416,017	3.0%	3%
Structured & AR Credit	--	0.0%	6%
Private Debt	16,253,784	0.8%	5%
<i>Total Fixed Income</i>	287,786,140	13.6%	33%
Risk Parity	78,215,385	3.7%	5%
GTAA	22,275,879	1.0%	3%
Absolute Return	34,897,076	1.6%	2%
<i>Total GAA</i>	135,388,340	6.4%	10%
Natural Resources	252,475,145	11.9%	5%
Infrastructure	237,986,942	11.2%	5%
Real Estate	546,516,417	25.7%	12%
Real Assets – Liquid	--	0.0%	3%
<i>Total Real Assets</i>	1,036,978,504	48.9%	25%
Cash	145,221,767	6.8%	2%
DPPF Debt	(40,000,000)	-1.9%	--
Total	2,122,543,462	100%	100%



Asset Allocation: Portfolio Lookthrough

	Lookthrough %	Actual %	Policy %
US Equity	7.6%	--	--
International Equity	7.2%	--	--
Emerging Markets Eq	1.2%	--	5%
Global Equity	--	15.5%	20%
Private Equity	10.7%	10.7%	5%
<i>Total Equity</i>	26.7%	26.3%	30%
Short-Term Core Bonds	2.4%	2.4%	2%
High Yield	3.8%	3.8%	5%
Bank Loans	2.7%	2.7%	6%
Emerging Market Debt	1.1%	0.9%	6%
Global Bonds	5.4%	3.0%	3%
Structured & AR Credit	--	--	6%
Private Debt	0.8%	0.8%	5%
<i>Total Fixed Income</i>	16.2%	13.6%	33.0%

	Lookthrough %	Actual %	Policy %
Risk Parity	--	3.7%	5%
GTAA	--	1.0%	3%
Absolute Return	--	1.6%	2%
Hedge Funds*	2.4%	--	--
<i>Total GAA</i>	2.4%	6.4%	10%
Natural Resources	11.9%	11.9%	5%
Infrastructure	11.2%	11.2%	5%
Real Estate	26.2%	25.7%	12%
Real Assets – Liquid	--	--	3%
<i>Total Real Assets</i>	49.3%	48.9%	25%
Cash	6.8%	6.8%	2%
DPPF Debt	-1.9%	-1.9%	--

*Hedge Fund lookthrough exposure due to GMO and Bridgewater Pure Alpha Major Markets allocations.

Dallas Police & Fire Pension

Trailing Returns: By Broad Composite

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
DPFP	2,122,543,462	100.0	2.1	91	2.8	99	5.1	99	-2.8	99	1.7	99	3.1	99	0.8	99	6.1	Jun-96
<i>Policy Index</i>			2.9	40	7.4	42	12.0	47	7.7	1	9.6	9	10.2	7	5.7	16	--	<i>Jun-96</i>
Total Equity	557,168,712	26.3	-12.0	--	-10.8	--	-11.0	--	-3.4	--	5.5	--	--	--	--	--	3.9	Dec-10
<i>Total Equity Policy Index</i>			4.7	--	12.7	--	20.7	--	--	--	--	--	--	--	--	--	--	<i>Dec-10</i>
Total Fixed Income	287,786,139	13.6	2.4	43	1.5	97	5.3	47	0.6	69	4.4	37	6.5	21	5.0	51	5.7	Jul-06
<i>Total Fixed Income Policy Index</i>			2.2	55	5.0	44	8.0	32	--	--	--	--	--	--	--	--	--	<i>Jul-06</i>
Total GAA	135,388,341	6.4	-1.5	99	1.2	99	8.6	45	2.0	47	4.3	62	6.3	48	3.7	72	3.7	Jul-07
<i>Total GAA Policy Index</i>			3.0	42	7.1	46	8.3	45	6.5	1	6.7	29	7.0	41	6.9	3	6.9	<i>Jul-07</i>
Total Real Assets	1,036,978,504	48.9	11.5	--	12.3	--	14.9	--	-5.6	--	-2.6	--	--	--	--	--	-2.9	Dec-10
<i>Total Real Assets Policy Index</i>			2.0	--	5.1	--	9.7	--	--	--	--	--	--	--	--	--	--	<i>Dec-10</i>
Cash Equivalents	145,221,767	6.8	0.2	--	0.4	--	0.7	--	--	--	--	--	--	--	--	--	1.1	Apr-15
<i>91 Day T-Bills</i>			0.2	--	0.4	--	0.5	--	0.2	--	0.2	--	0.1	--	0.4	--	0.3	<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	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
DPPF	2,122,543,462	100.0	2.1	91	2.8	99	5.1	99	-2.8	99	1.7	99	3.1	99	0.8	99	6.1	Jun-96
<i>Policy Index</i>			2.9	40	7.4	42	12.0	47	7.7	1	9.6	9	10.2	7	5.7	16	--	Jun-96
Global Equity	329,184,831	15.5	6.6	20	15.4	20	22.3	24	7.0	24	12.1	33	11.5	47	4.5	45	6.1	Jul-06
<i>MSCI ACWI Gross</i>			4.5	58	11.8	45	19.4	39	5.4	45	11.1	48	11.1	57	4.3	47	6.1	Jul-06
Private Equity	227,983,881	10.7	-26.3	--	-27.8	--	-30.5	--	-16.0	--	-8.3	--	-4.7	--	-3.8	--	-0.8	Oct-05
<i>Russell 3000 + 3%</i>			3.8	--	10.5	--	22.0	--	12.4	--	18.0	--	18.8	--	10.5	--	11.5	Oct-05
Short Term Core Bonds	49,988,274	2.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Jun-17
<i>BBgBarc US Treasury 1-3 Yr TR</i>			0.2	99	0.5	99	-0.1	63	0.7	99	0.6	99	0.8	99	2.0	99	--	Jun-17
Global Bonds	64,416,017	3.0	3.9	11	8.6	8	3.1	64	1.0	64	2.0	72	--	--	--	--	3.0	Dec-10
<i>BBgBarc Global Aggregate TR</i>			2.6	40	4.4	59	-2.2	94	-0.4	82	0.8	86	2.4	87	3.7	85	1.7	Dec-10
High Yield	80,303,450	3.8	3.5	11	9.2	10	19.4	2	3.1	66	6.9	36	--	--	--	--	7.4	Dec-10
<i>BBgBarc Global High Yield TR</i>			3.2	12	6.5	12	11.9	51	3.7	46	7.1	28	8.3	13	7.7	1	7.2	Dec-10
Bank Loans	57,655,597	2.7	1.0	92	2.6	87	9.1	28	3.6	22	--	--	--	--	--	--	4.1	Jan-14
<i>S&P/LSTA U.S. Leveraged Loan</i>			0.8	95	1.9	93	7.4	36	3.4	27	4.6	34	5.1	38	4.5	63	3.6	Jan-14
Emerging Markets Debt	19,169,018	0.9	2.8	32	9.9	25	11.2	7	2.4	50	3.0	54	--	--	--	--	3.9	Dec-10
<i>50% JPM EMBI/50% JPM GBI-EM</i>			2.9	25	8.3	42	6.3	75	0.9	58	2.3	57	--	--	--	--	3.4	Dec-10
Private Debt	16,253,784	0.8	-1.9	--	-22.3	--	-20.7	--	--	--	--	--	--	--	--	--	-13.3	Jan-16
<i>Barclays Global High Yiel +2%</i>			3.7	--	7.5	--	14.1	--	--	--	--	--	--	--	--	--	16.2	Jan-16
Risk Parity	78,215,385	3.7	0.9	88	4.2	76	6.5	62	1.8	49	4.2	63	--	--	--	--	6.6	Dec-10
<i>60% MSCI ACWI/40% Barclays Global Agg</i>			3.6	29	8.6	29	10.0	35	2.9	40	6.7	29	7.4	38	4.0	65	5.4	Dec-10
GTA	22,275,879	1.0	3.2	33	8.5	32	11.1	29	2.5	43	5.6	47	--	--	--	--	5.7	Dec-10
<i>60% MSCI ACWI/40% Barclays Global Agg</i>			3.6	29	8.6	29	10.0	35	2.9	40	6.7	29	7.4	38	4.0	65	5.4	Dec-10
Absolute Return	34,897,076	1.6	-9.1	98	-8.7	89	14.7	6	3.0	42	6.6	15	--	--	--	--	5.8	Aug-11
<i>HFRX Absolute Return Index</i>			0.7	34	1.4	38	1.9	40	1.2	56	1.9	56	1.1	64	-1.1	88	1.4	Aug-11
Natural Resources	252,475,145	11.9	0.5	--	1.2	--	3.4	--	5.4	--	6.6	--	--	--	--	--	3.8	Apr-15
<i>Natural Resources Benchmark</i>			-1.1	--	1.6	--	14.7	--	12.9	--	15.9	--	--	--	--	--	16.7	Apr-15
Infrastructure	237,986,942	11.2	66.6	--	71.1	--	68.2	--	16.0	--	11.9	--	--	--	--	--	11.9	Jul-12
<i>Infrastructure Benchmark</i>			6.0	--	14.4	--	12.7	--	11.5	--	9.7	--	--	--	--	--	9.7	Jul-12
Real Estate	546,516,417	25.7	2.5	--	2.6	--	6.3	--	-12.4	--	-7.2	--	-5.8	--	-4.6	--	3.7	Mar-85
<i>NCREIF Property Index</i>			1.8	--	3.3	--	7.0	--	10.2	--	10.5	--	11.6	--	6.4	--	8.0	Mar-85
Cash Equivalents	145,221,767	6.8	0.2	--	0.4	--	0.7	--	--	--	--	--	--	--	--	--	1.1	Apr-15
<i>91 Day T-Bills</i>			0.2	--	0.4	--	0.5	--	0.2	--	0.2	--	0.1	--	0.4	--	0.3	Apr-15

Total Fund Risk/Return

3 Years Ending June 30, 2017

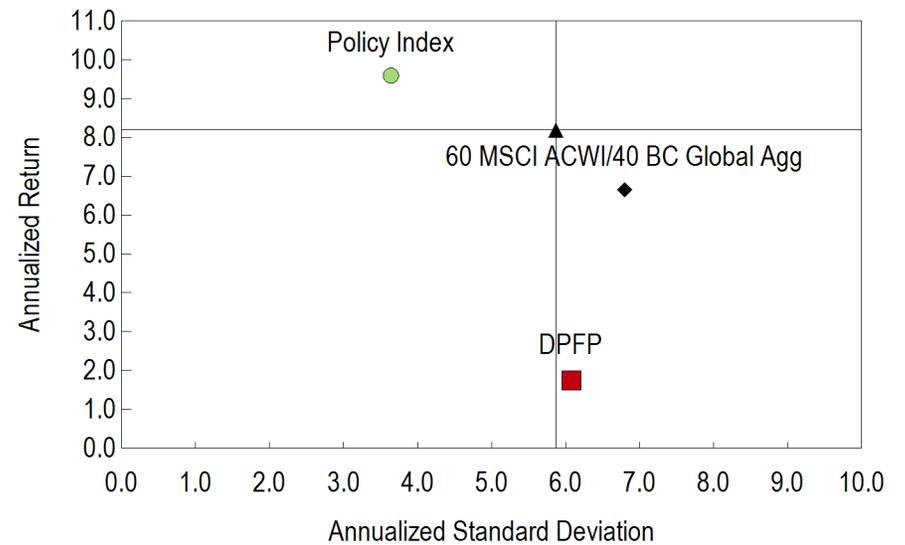
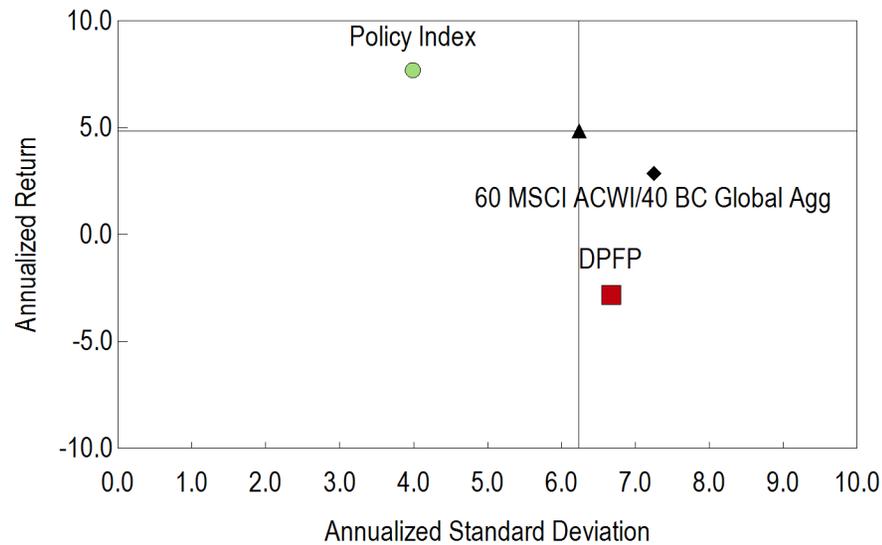
	Anlzd Ret	Rank	Anlzd Std Dev	Rank
DPFP	-2.8%	99	6.7%	71
Policy Index	7.7%	1	4.0%	3
60 MSCI ACWI/40 BC Global Agg	2.9%	96	7.3%	90
InvestorForce Public DB Net Median	4.9%	--	6.2%	--

	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
DPFP	-0.46	99	-0.39	99
Policy Index	1.87	1	4.24	1
60 MSCI ACWI/40 BC Global Agg	0.36	98	0.70	92
InvestorForce Public DB Net Median	0.74	--	1.15	--

5 Years Ending June 30, 2017

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
DPFP	1.7%	99	6.1%	61
Policy Index	9.6%	9	3.6%	2
60 MSCI ACWI/40 BC Global Agg	6.7%	90	6.8%	88
InvestorForce Public DB Net Median	8.2%	--	5.9%	--

	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
DPFP	0.26	99	0.24	99
Policy Index	2.59	1	5.80	1
60 MSCI ACWI/40 BC Global Agg	0.95	97	1.88	80
InvestorForce Public DB Net Median	1.37	--	2.23	--



Attribution Analysis: By Asset Class – 3 Months Ending June 30, 2017

	Portfolio Weights		Returns		Attribution Effects By			
	DPFP#	Policy	DPFP	Index	Selection	Allocation	Interaction	Total*
Global Equity	15.5%	20.0%	6.572%	4.454%	0.420%	-0.183%	-0.264%	-0.027%
Emerging Markets Equity	0.0%	5.0%	0.000%	6.384%	-0.319%	-0.172%	0.319%	-0.172%
Private Equity	10.7%	5.0%	-26.326%	3.772%	-1.530%	0.078%	-2.816%	-4.267%
Short Term Core Bonds	2.4%	2.0%	-0.023%	0.192%	-0.004%	0.047%	0.005%	0.048%
Global Bonds	3.0%	3.0%	3.889%	2.604%	0.038%	0.000%	-0.001%	0.037%
High Yield	3.8%	5.0%	3.472%	3.186%	0.014%	-0.005%	-0.002%	0.007%
Bank Loans	2.7%	6.0%	1.027%	0.761%	0.016%	0.073%	-0.009%	0.081%
Structured & A/R Credit	0.0%	6.0%	0.000%	1.216%	-0.074%	0.102%	0.074%	0.102%
Emerging Markets Debt	0.9%	6.0%	2.779%	2.932%	-0.010%	-0.001%	0.008%	-0.003%
Private Debt	0.8%	5.0%	-1.892%	3.693%	-0.276%	-0.034%	0.236%	-0.074%
Risk Parity	3.7%	5.0%	0.905%	3.603%	-0.135%	-0.010%	0.038%	-0.107%
GTAA	1.0%	3.0%	3.234%	3.603%	-0.011%	-0.014%	0.008%	-0.018%
Absolute Return	1.6%	2.0%	-9.102%	0.723%	-0.206%	0.007%	0.032%	-0.167%
Natural Resources	11.9%	5.0%	0.478%	-1.087%	0.080%	-0.288%	0.112%	-0.096%
Infrastructure	11.2%	5.0%	66.617%	5.953%	3.043%	0.091%	0.963%	4.097%
Real Estate	25.7%	12.0%	2.514%	1.750%	0.098%	-0.097%	0.110%	0.110%
Liquid Real Assets	0.0%	3.0%	0.000%	1.243%	-0.038%	0.050%	0.038%	0.050%
Cash Equivalents	6.8%	2.0%	0.242%	0.220%	0.000%	-0.405%	0.005%	-0.400%
Total*	101.7%	100.0%	2.113%	2.911%	1.107%	-0.761%	-1.144%	-0.798%

*Total column may not add up due to rounding.

#Total DPFP Portfolio Weights include 1.9% in DPFP debt.



Attribution Analysis: By Asset Class – 12 Months Ending June 30, 2017

	Portfolio Weights		Returns		Attribution Effects By			
	DPFP#	Policy	DPFP	Index	Selection	Allocation	Interaction	Total*
Global Equity	15.5%	20.0%	22.348%	19.421%	0.543%	-0.769%	-0.317%	-0.543%
Emerging Markets Equity	0.0%	5.0%	0.000%	24.173%	-1.194%	-0.579%	1.194%	-0.579%
Private Equity	10.7%	5.0%	-30.510%	22.014%	-2.821%	1.134%	-5.775%	-7.462%
Short Term Core Bonds	2.4%	2.0%	-0.023%	-0.107%	0.002%	0.240%	-0.001%	0.241%
Global Bonds	3.0%	3.0%	3.079%	-2.177%	0.170%	0.033%	-0.014%	0.190%
High Yield	3.8%	5.0%	19.432%	11.893%	0.354%	0.028%	-0.066%	0.316%
Bank Loans	2.7%	6.0%	9.097%	7.424%	0.101%	0.157%	-0.064%	0.194%
Structured & A/R Credit	0.0%	6.0%	0.000%	9.894%	-0.612%	0.125%	0.612%	0.125%
Emerging Markets Debt	0.9%	6.0%	11.174%	6.258%	0.293%	0.229%	-0.218%	0.304%
Private Debt	0.8%	5.0%	-20.660%	14.110%	-1.873%	-0.045%	1.043%	-0.875%
Risk Parity	3.7%	5.0%	6.473%	9.978%	-0.176%	0.022%	0.038%	-0.115%
GTAA	1.0%	3.0%	11.077%	9.978%	0.031%	0.010%	0.007%	0.048%
Absolute Return	1.6%	2.0%	14.660%	1.925%	0.279%	0.051%	-0.130%	0.200%
Natural Resources	11.9%	5.0%	3.377%	14.703%	-0.575%	0.100%	-0.668%	-1.143%
Infrastructure	11.2%	5.0%	68.189%	12.710%	2.943%	0.065%	0.908%	3.916%
Real Estate	25.7%	12.0%	6.325%	6.975%	-0.072%	-0.567%	-0.065%	-0.703%
Liquid Real Assets	0.0%	3.0%	0.000%	6.721%	-0.211%	0.158%	0.211%	0.158%
Cash Equivalents	6.8%	2.0%	0.657%	0.537%	0.003%	-1.186%	0.004%	-1.180%
Total*	101.7%	100.0%	5.091%	12.000%	-2.813%	-0.794%	-3.302%	-6.909%

*Total column may not add up due to rounding.

#Total DPFP Portfolio Weights include 1.9% in DPFP debt.



Attribution Analysis: Definition and Explanation (3 months ending 6/30/2017)

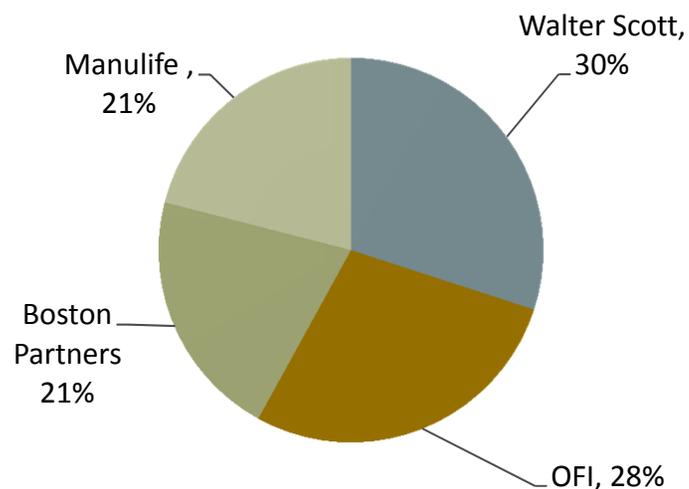
- **Selection Effect**
 - Contribution to excess return due to the over/under weighting of managers within asset classes
 - The Selection Effect of **0.420%** is due to the outperformance of the DPFP Global Equity return vs. the Global Equity Index return. Based on policy, DPFP selected outperforming managers vs. the index.
 - $20\% * (6.572\% - 4.454\%) = 0.420\%$
- **Allocation Effect**
 - Contribution to excess return due to the over/under weighting of asset classes
 - The Allocation Effect of **-0.183%** is due to the underweighting of the Global Equity allocation, 15.5% vs. the Global Equity Policy Allocation, 20% and also the outperformance of the Global Equity Index, 4.454% vs. the Total Plan Index, 2.911%. DPFP was underweight to an outperforming sector resulting in a negative Allocation Effect.
 - $(15.5\% - 20\%) * (4.454\% - 2.911\%) = -0.183\%$
- **Interaction Effect**
 - Is the residual effect due to timing not explained directly by either the selection or the allocation effect.
 - $(15.5\% - 20\%) * (6.572\% - 4.454\%) = -0.264\%$

	Portfolio Weights		Returns		Attribution Effects By			
	DPFP [#]	Policy	DPFP	Index	Selection	Allocation	Interaction	Total [*]
Global Equity	15.5%	20.0%	6.572%	4.454%	0.420%	-0.183%	-0.264%	-0.027%
Total[*]	101.7%	100.0%	2.113%	2.911%	1.107%	-0.761%	-1.144%	-0.798%

Global Public Equity: Composite Overview

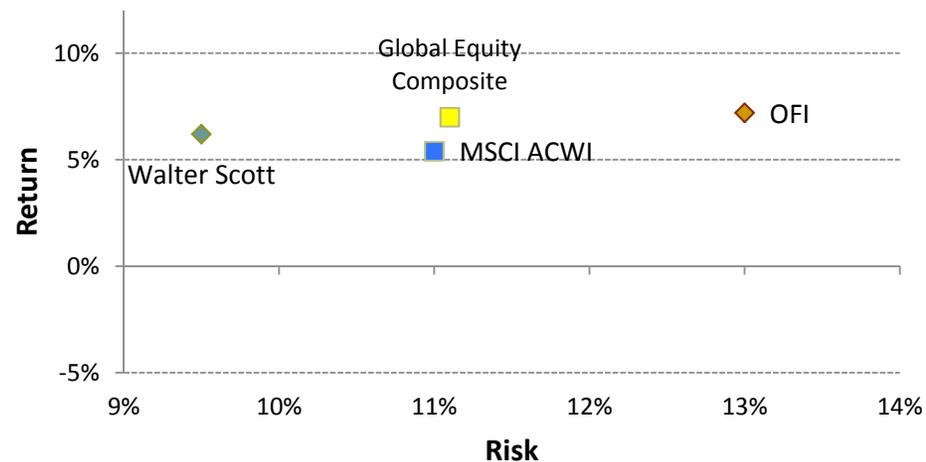
Manager	Benchmark	Descriptions
Boston Partners	MSCI ACWI	Value
Manulife	MSCI ACWI	Value
OFI	MSCI ACWI	Growth
Walter Scott	MSCI ACWI	Growth

Global Public Equity Managers



*May not add to 100% due to rounding.

3-Year Risk/Return



Dallas Police & Fire Pension

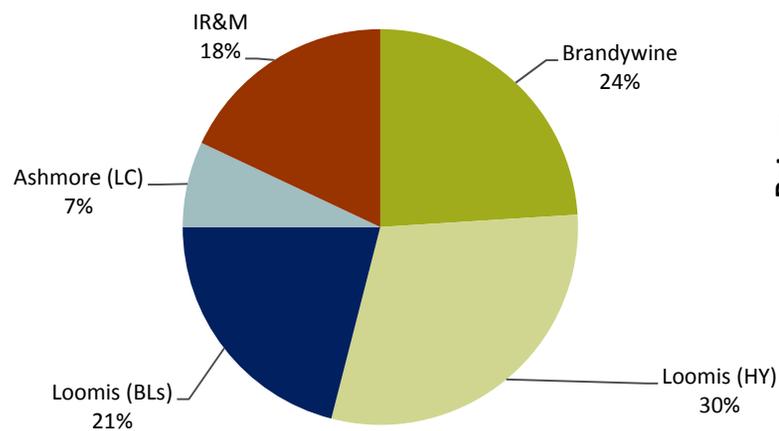
DPFP

	Market Value (\$)	% of Portfolio	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Return (%)	Since
DPFP	2,122,543,462	100.0	2.1	2.8	5.1	-2.8	1.7	3.1	0.8	6.1	Jun-96
<i>Policy Index</i>			2.9	7.4	12.0	7.7	9.6	10.2	5.7	--	Jun-96
<i>InvestorForce Public DB Net Rank</i>			91	99	99	99	99	99	99	73	Jun-96
Global Equity	329,184,831	15.5	6.6	15.4	22.3	7.0	12.1	11.5	4.5	6.1	Jul-06
<i>MSCI ACWI Gross</i>			4.5	11.8	19.4	5.4	11.1	11.1	4.3	6.1	Jul-06
<i>eA All Global Equity Net Rank</i>			20	20	24	24	33	47	45	46	Jul-06
Pyramis	106,676	0.0									
Walter Scott	98,244,881	4.6	4.9	12.2	14.3	6.3	10.5	10.9	--	8.9	Dec-09
<i>MSCI ACWI Gross</i>			4.5	11.8	19.4	5.4	11.1	11.1	4.3	9.1	Dec-09
<i>eA Global Large Cap Growth Eq Net Rank</i>			84	94	95	64	82	77	--	79	Dec-09
OFI	90,634,697	4.3	8.6	19.3	31.7	7.3	13.7	12.7	--	5.6	Oct-07
<i>MSCI ACWI Gross</i>			4.5	11.8	19.4	5.4	11.1	11.1	4.3	4.0	Oct-07
<i>eA Global Large Cap Growth Eq Net Rank</i>			21	24	1	42	24	36	--	47	Oct-07
RREEF Global REIT	183,605	0.0									
Boston Partners Global Investors Inc	70,181,981	3.3									
Manulife Asset Management LLC	69,832,990	3.3									

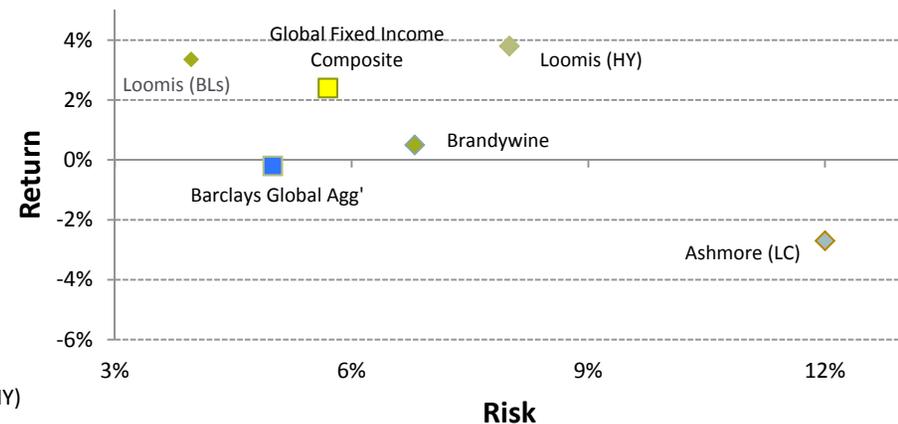
Global Fixed Income: Composite Overview

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 (Local Currency)	JPM EMBI Global Diversified	Emerging Market Debt	Diversified, Local Currency
IR&M	Barclays 1-3 Yr treasury	Short Term Core Bonds	Short Term Liquidity

Global Public Fixed Income Managers



3-Year Risk/Return



Dallas Police & Fire Pension

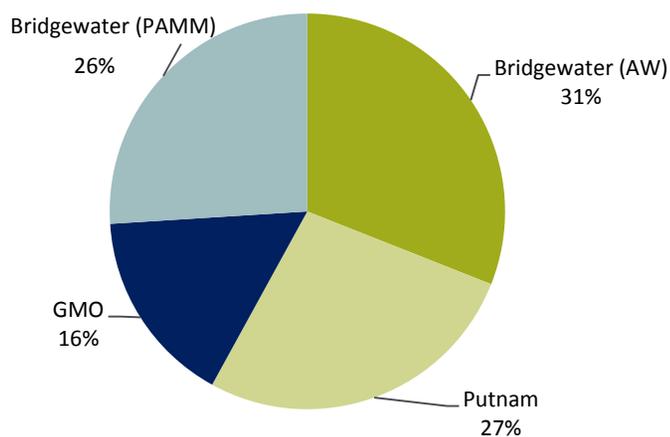
DPFP

	Market Value (\$)	% of Portfolio	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Return (%)	Since
DPFP	2,122,543,462	100.0	2.1	2.8	5.1	-2.8	1.7	3.1	0.8	6.1	Jun-96
Policy Index			2.9	7.4	12.0	7.7	9.6	10.2	5.7	--	Jun-96
InvestorForce Public DB Net Rank			91	99	99	99	99	99	99	73	Jun-96
Public Fixed Income	271,532,356	12.8	2.8	7.2	11.3	2.4	4.9	--	--	5.9	Dec-10
BBgBarc Global Aggregate TR			2.6	4.4	-2.2	-0.4	0.8	2.4	3.7	1.7	Dec-10
Short Term Core Bonds	49,988,274	2.4	--	--	--	--	--	--	--	--	Jun-17
IR&M	49,988,274	2.4									
Global Bonds	64,416,017	3.0	3.9	8.6	3.1	1.0	2.0	--	--	3.0	Dec-10
BBgBarc Global Aggregate TR			2.6	4.4	-2.2	-0.4	0.8	2.4	3.7	1.7	Dec-10
eA All Global Fixed Inc Net Rank			11	8	64	64	72	--	--	65	Dec-10
Brandywine	64,416,017	3.0	3.9	8.6	3.1	0.6	2.6	5.1	6.0	5.0	Oct-04
BBgBarc Global Aggregate TR			2.6	4.4	-2.2	-0.4	0.8	2.4	3.7	3.6	Oct-04
eA All Global Fixed Inc Net Rank			11	8	64	68	64	38	29	49	Oct-04
High Yield	80,303,450	3.8	3.5	9.2	19.4	3.1	6.9	--	--	7.4	Dec-10
BBgBarc Global High Yield TR			3.2	6.5	11.9	3.7	7.1	8.3	7.7	7.2	Dec-10
eA Global High Yield Fixed Inc Net Rank			11	10	2	66	36	--	--	11	Dec-10
Loomis Sayles	80,303,450	3.8	3.5	9.4	20.6	3.8	8.1	9.0	8.1	10.0	Oct-98
BBgBarc Global High Yield TR			3.2	6.5	11.9	3.7	7.1	8.3	7.7	--	Oct-98
eA Global High Yield Fixed Inc Net Rank			11	10	1	45	9	1	1	1	Oct-98
Bank Loans	57,655,597	2.7	1.0	2.6	9.1	3.6	--	--	--	4.1	Jan-14
S&P/LSTA U.S. Leveraged Loan			0.8	1.9	7.4	3.4	4.6	5.1	4.5	3.6	Jan-14
eA All Global Fixed Inc Net Rank			92	87	28	22	--	--	--	36	Jan-14
Loomis Sayles Senior Rate and Fixed Income	57,655,597	2.7	1.0	2.6	9.1	3.6	--	--	--	4.1	Jan-14
S&P/LSTA U.S. Leveraged Loan			0.8	1.9	7.4	3.4	4.6	5.1	4.5	3.6	Jan-14
eA Float-Rate Bank Loan Net Rank			15	13	17	40	--	--	--	27	Jan-14
Emerging Markets Debt	19,169,018	0.9	2.8	9.9	11.2	2.4	3.0	--	--	3.9	Dec-10
50% JPM EMBI/50% JPM GBI-EM			2.9	8.3	6.3	0.9	2.3	--	--	3.4	Dec-10
eA All Emg Mkts Fixed Inc Net Rank			32	25	7	50	54	--	--	55	Dec-10
Ashmore AEMLCB	19,169,018	0.9	2.8	10.9	8.0	-2.7	-0.6	--	--	0.1	Mar-11
JP Morgan GBI EM Global Diversified TR USD			3.6	10.4	6.4	-2.8	-0.7	1.9	3.9	0.3	Mar-11
eA All Emg Mkts Fixed Inc Net Rank			32	13	39	86	81	--	--	78	Mar-11

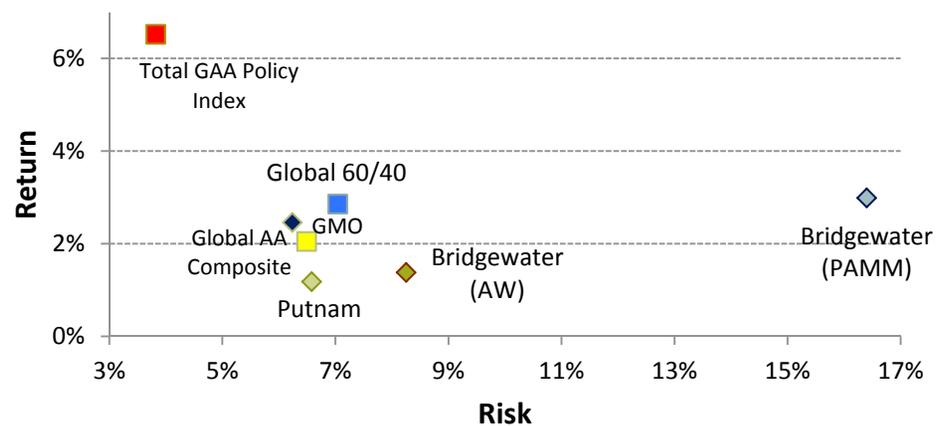
Global Asset Allocation: Composite Overview

Manager	Benchmark	Asset Class	Descriptions
Bridgewater (All Weather)	Global 60/40	Risk Parity	Passive approach
Bridgewater (PAMM)	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



3-Year Risk/Return



Dallas Police & Fire Pension

DPFP

	Market Value (\$)	% of Portfolio	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Return (%)	Since
DPFP	2,122,543,462	100.0	2.1	2.8	5.1	-2.8	1.7	3.1	0.8	6.1	Jun-96
Policy Index			2.9	7.4	12.0	7.7	9.6	10.2	5.7	--	Jun-96
InvestorForce Public DB Net Rank			91	99	99	99	99	99	99	73	Jun-96
Total GAA	135,388,341	6.4	-1.5	1.2	8.6	2.0	4.3	6.3	3.7	3.7	Jul-07
Total GAA Policy Index			3.0	7.1	8.3	6.5	6.7	7.0	6.9	6.9	Jul-07
eA All Global Balanced / TAA Net Rank			99	99	45	47	62	48	72	72	Jul-07
Risk Parity	78,215,385	3.7	0.9	4.2	6.5	1.8	4.2	--	--	6.6	Dec-10
60% MSCI ACWI/40% Barclays Global Agg			3.6	8.6	10.0	2.9	6.7	7.4	4.0	5.4	Dec-10
eA All Global Balanced / TAA Net Rank			88	76	62	49	63	--	--	15	Dec-10
Bridgewater All Weather	41,402,823	2.0	0.7	4.4	5.9	1.4	3.5	7.8	--	5.6	Sep-07
91 Day T-Bill + 7%			1.9	3.8	7.6	7.3	7.2	7.1	7.5	7.4	Sep-07
eA All Global Balanced / TAA Net Rank			90	73	67	57	69	31	--	15	Sep-07
Putnam	36,812,562	1.7	1.1	4.1	6.5	1.2	4.3	6.3	--	5.8	Dec-09
60% MSCI World (Net) / 40% CITI WGBI			3.6	8.2	8.8	2.9	6.7	7.6	4.1	6.0	Dec-09
eA All Global Balanced / TAA Net Rank			82	78	62	60	62	49	--	45	Dec-09
GTAA	22,275,879	1.0	3.2	8.5	11.1	2.5	5.6	--	--	5.7	Dec-10
60% MSCI ACWI/40% Barclays Global Agg			3.6	8.6	10.0	2.9	6.7	7.4	4.0	5.4	Dec-10
eA All Global Balanced / TAA Net Rank			33	32	29	43	47	--	--	34	Dec-10
GMO	22,275,879	1.0	3.2	8.5	11.1	2.5	5.6	6.9	--	4.7	Sep-07
CPI + 5% (Seasonally Adjusted)			1.2	2.9	6.7	5.9	6.4	6.7	6.7	6.7	Sep-07
eA All Global Balanced / TAA Net Rank			33	32	29	43	47	41	--	45	Sep-07
Absolute Return	34,897,076	1.6	-9.1	-8.7	14.7	3.0	6.6	--	--	5.8	Aug-11
HFRX Absolute Return Index			0.7	1.4	1.9	1.2	1.9	1.1	-1.1	1.4	Aug-11
eV Alt All Macro Rank			98	89	6	42	15	--	--	17	Aug-11
Bridgewater PAMM	34,897,076	1.6	-9.1	-8.7	14.7	3.0	6.6	--	--	5.8	Aug-11
HFRX Absolute Return Index			0.7	1.4	1.9	1.2	1.9	1.1	-1.1	1.4	Aug-11
eV Alt All Macro Rank			98	89	6	42	15	--	--	17	Aug-11

Policy Compliance Test: Traditional Managers

3 Year Rolling Excess Return Violations:

Manager	Return Rank	NEPC Recommendation
Global Equity		
Walter Scott	64	HOLD
Public Fixed Income		
Brandywine	68	HOLD
Ashmore AEMLCB	86	N/A
GAA		
Putnam	60	HOLD
Bridgewater AW	57	HOLD

3 Year Rolling Risk-Adjusted Excess Return Violations:

Manager	Sharpe Ratio Rank	NEPC Recommendation
Global Equity		
OFI	57	HOLD
Public Fixed Income		
Brandywine	69	HOLD
Loomis Sayles HY	69	HOLD
Loomis Sayles SBL	85	HOLD
Ashmore AEMLCB	80	N/A
GAA		
Putnam	63	HOLD
Bridgewater AW	63	HOLD
Bridgewater PAMM	52	HOLD

Qualitative Concerns:

Manager	NEPC Status
N/A	N/A

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.

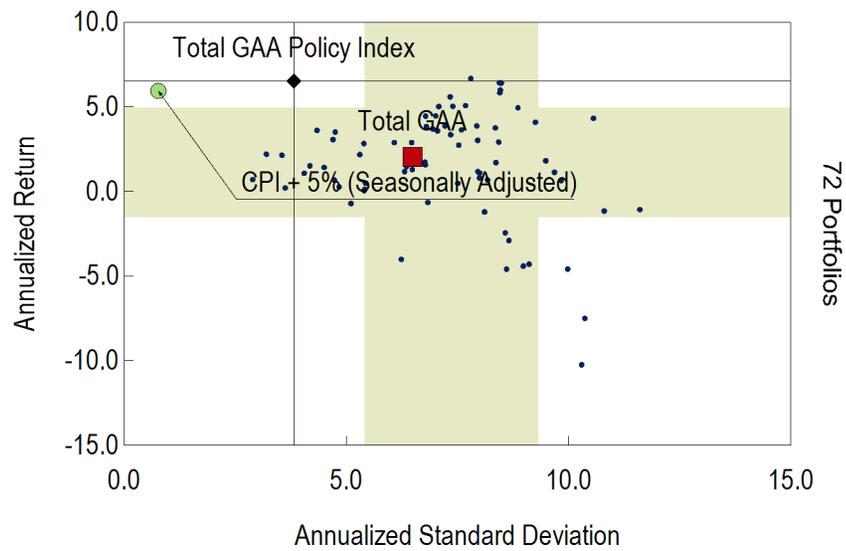
Footnotes

1. **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.
2. **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.
3. **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.
4. **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.
5. **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.
6. **Oaktree Fund IV** 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.
7. **Global Infrastructure composite** was included in the Private Markets composite history until 6/30/2012.
8. **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.
9. **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.
10. **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.
11. **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.
12. **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.

Portfolio Review: Global Asset Allocation

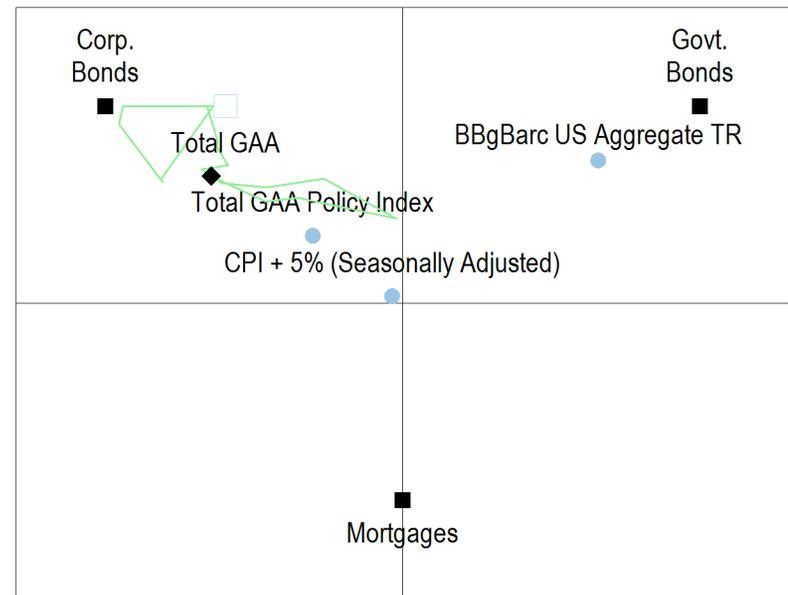


3 Year Risk Return



- Total GAA
- ◆ Total GAA Policy Index
- CPI + 5% (Seasonally Adjusted)
- 68% Confidence Interval
- eA All Global Balanced / TAA Net

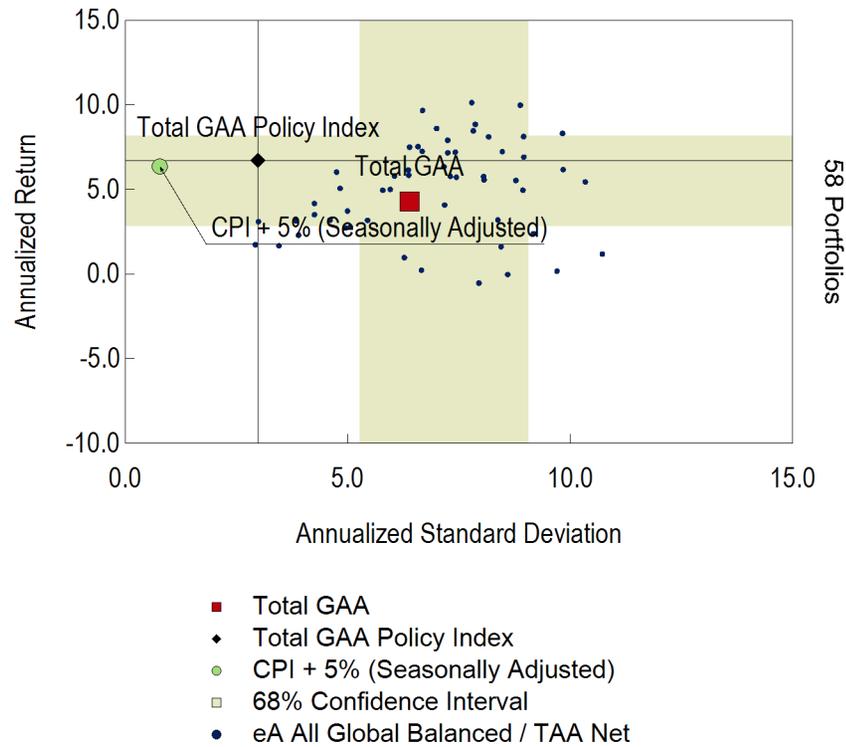
3 Year Style Analysis



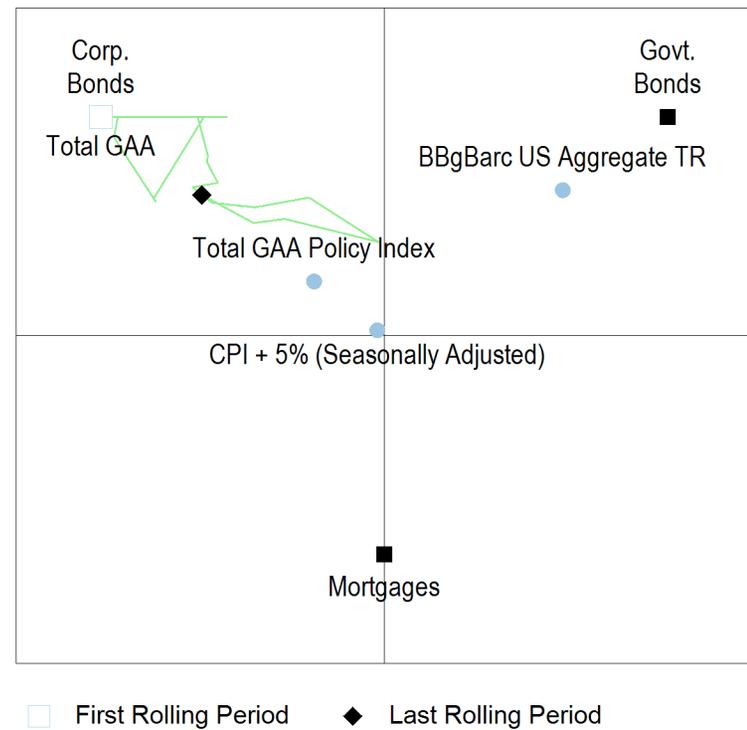
- First Rolling Period
- ◆ Last Rolling Period

Returns are net of fees

5 Year Risk Return

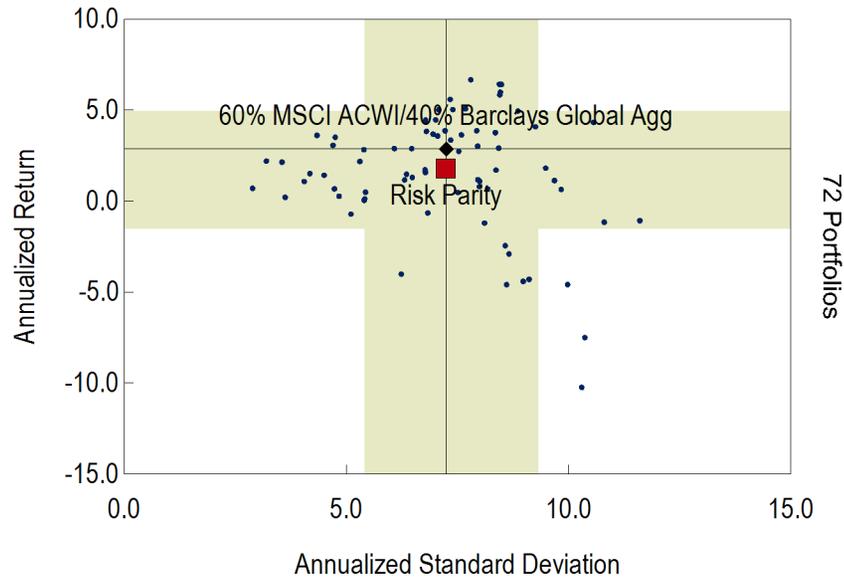


5 Year Style Analysis



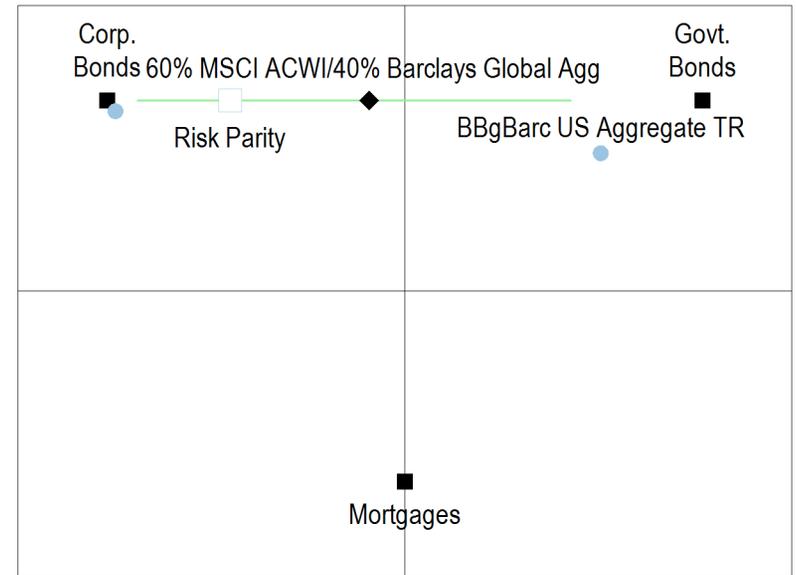
Returns are net of fees

3 Year Risk Return



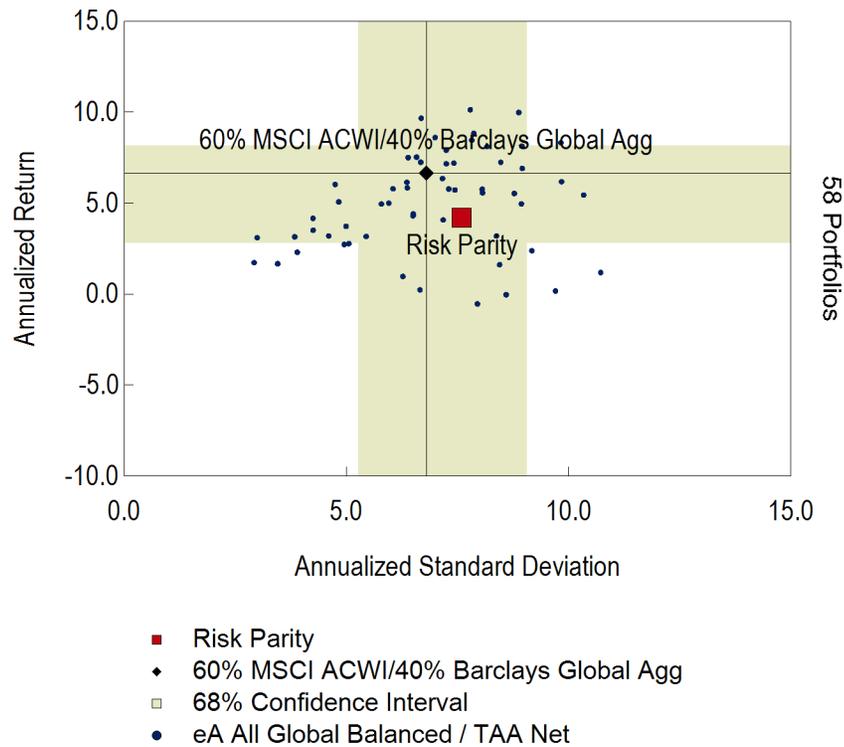
- Risk Parity
- ◆ 60% MSCI ACWI/40% Barclays Global Agg
- 68% Confidence Interval
- eA All Global Balanced / TAA Net

3 Year Style Analysis

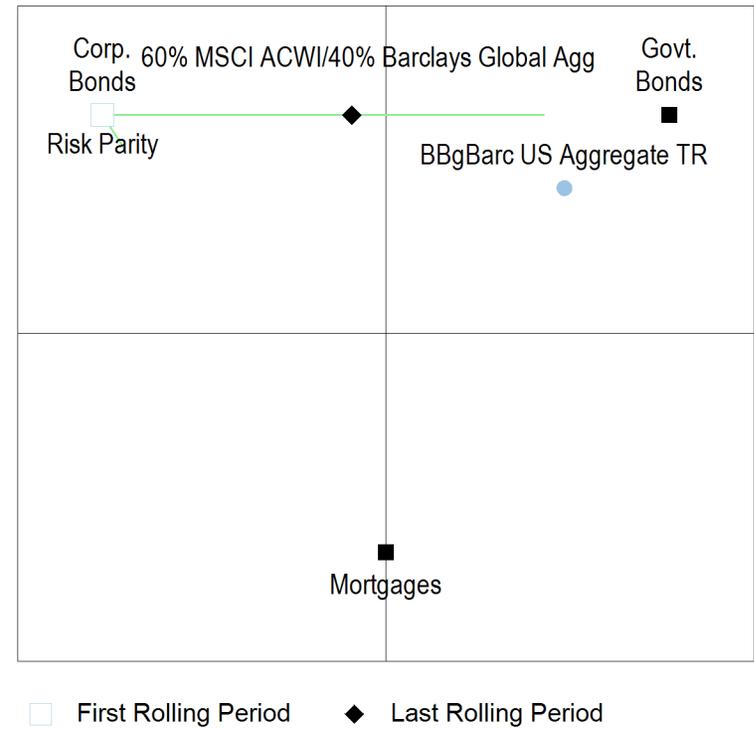


- First Rolling Period
- ◆ Last Rolling Period

5 Year Risk Return



5 Year Style Analysis



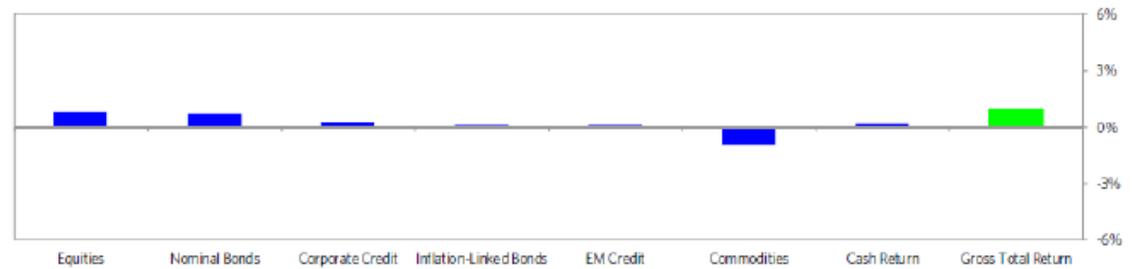
Bridgewater - All Weather Fund

- **Role in Portfolio**
 - Risk Parity mandate (added September 2007).
 - Risk Parity is a financially-engineered balanced fund, which NEPC expects to outperform a simple 60/40 solution on a total return and a risk-adjusted basis over the long term. Bridgewater views All Weather as their 'optimal beta portfolio.'
 - DPF is invested in the 12% volatility approach.
- **Organizational Profile**
 - Bridgewater Associates is a portfolio management firm focused on institutional investors, providing optimal beta solutions and alpha strategies. They began offering investment services in 1975, initially providing money management and consulting services in the global credit and currency markets to corporations in the management of income statement and balance sheet exposures. Bridgewater registered with the SEC as an investment advisor in 1990 and has been managing assets for institutional investors ever since. As a privately held company, Bridgewater does not disclose any other information regarding its ownership structure. Bridgewater has no parent, affiliate, or joint venture relationships.
 - Bridgewater is headquartered in Westport, Connecticut.
- **Investment Strategy Commentary**
 - Passive balanced risk exposure to high/low growth environments and high/low inflation environments. Notional exposures do not change significantly.
 - Interest rate exposure tends to be greater than other Risk Parity strategies. Potential headwind in rising rate environment but better balance in growth and inflation shocks.
 - Size of asset class positions are based on strength of relationship to growth and inflation factors. Fund notional exposure ranges between 150% and 200%. Implemented with both physical and synthetics.
- **Due Diligence Notes**
 - March, 2016: Jon Rubinstein joined as Co-CEO. NEPC recommended 'No Action'.
 - March 2017: Several changes at the management level occurred including the departure of recently appointed Co-CEO, Jon Rubinstein. NEPC recommended 'No Action'.

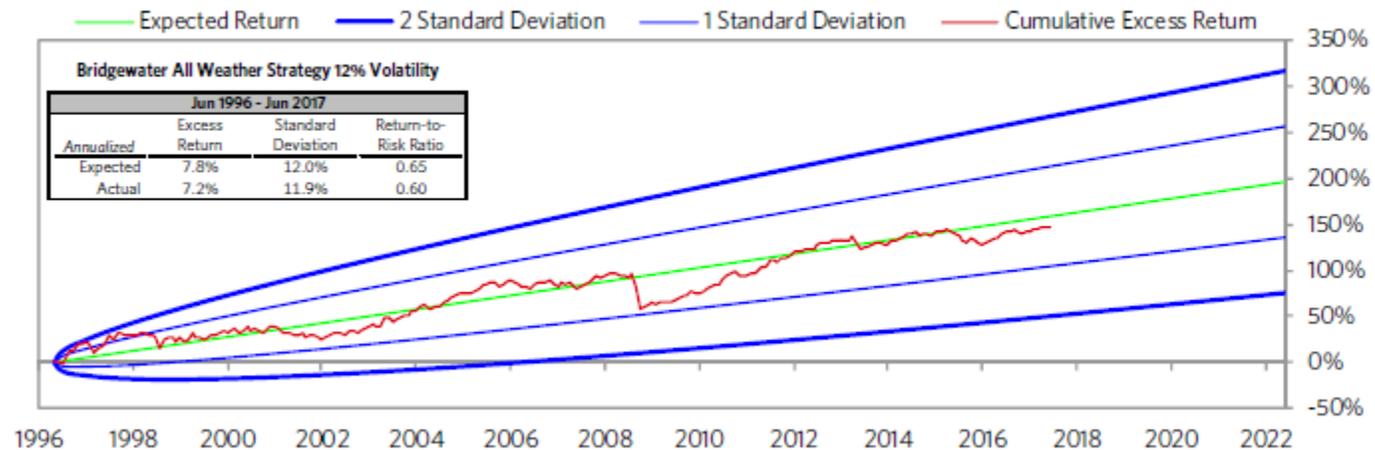
Bridgewater All Weather 12% Strategy: 2017 Q2
Gross Excess Return Attribution by Economic Environment

	Growth	Inflation
Rising	Return 0.1%	Return -1.1%
Falling	Return 0.4%	Return 1.3%
= Risk Premiums & Discount Rates 0.8% Excess Return Over Cash		
Plus Cash Return =		0.2%
Gross Total All Weather Return =		0.9%

Bridgewater All Weather 12% Strategy: 2017 Q2
Gross Excess Return Attribution



Gross Cumulative Excess Return vs. Expectations (ln)
(Returns Based on Related Fund Performance Prior to July 2006)



Source: Bridgewater

Exposure as a % of
Portfolio Value

Nominal Interest Rates	
Africa	0.4%
Asia	2.0%
Australia	4.7%
Canada	0.5%
Eastern Europe	1.3%
Euroland	0.0%
Japan	0.0%
Latin America	0.6%
United Kingdom	0.0%
United States	32.0%
Western Europe ex Euroland	0.1%
Total Nominal Interest Rates	41.6%
Corporate Credit	14.8%
Inflation-Linked Bonds	
Australia	1.5%
Canada	2.2%
Euroland	12.7%
Sweden	1.4%
United Kingdom	8.6%
United States	20.0%
Total Inflation-Linked Bonds	46.4%
Emerging Market Credit	
Argentina	1.3%
Brazil	2.1%
Colombia	0.5%
Indonesia	1.1%
Mexico	1.0%
Peru	0.5%
Philippines	0.3%
Russia	1.8%
South Africa	0.9%
Turkey	2.2%
Venezuela	0.0%
Total Emerging Market Credit	11.7%

Equities	
Australia	3.1%
Canada	1.6%
Emerging Markets	4.5%
France	1.4%
Germany	2.8%
Hong Kong	0.7%
Japan	2.6%
United Kingdom	3.2%
United States	9.8%
Western Europe	2.9%
Total Equities	32.5%

Commodities	
Aluminum	2.4%
Coffee	0.4%
Copper	2.4%
Corn	0.4%
Cotton	0.2%
Gold	9.0%
Lean Hogs	0.3%
Live Cattle	0.5%
Natural Gas	1.4%
Nickel	0.9%
Oil and Petroleum Products	5.4%
Silver	0.1%
Soybean Meal	0.3%
Soybean Oil	0.2%
Soybeans	0.4%
Sugar	0.4%
Wheat	0.4%
Zinc	1.0%
Total Commodities	26.1%

Source: Bridgewater



Putnam - Total Return Fund

- **Role in Portfolio**
 - Risk Parity mandate (added December 2009)
 - Risk Parity is a financially-engineered balanced fund, which NEPC expects to outperform a simple 60/40 solution on a total return and a risk-adjusted basis over the long term.
 - Total Return targets a 10% volatility.
- **Organizational Profile**
 - Putnam was founded in 1937, and registered with the Securities and Exchange Commission in 1968 as an investment advisor. In 1970, the firm was acquired by Marsh & McLennan Companies, Inc. In August 2007, the sale of Putnam Investments by Marsh and McLennan Companies (MMC) to Great-West Lifeco Inc., a subsidiary of Power Financial Corporation, was completed. At the present time, Putnam is 90% owned by Great-West Lifeco Inc., the remaining 10% is owned by senior Putnam investment professionals and other key people.
 - Putnam is headquartered in Boston, Massachusetts.
- **Investment Strategy Commentary**
 - The strategy seeks to outperform one-month LIBOR by 5% to 8% over a full market cycle, while targeting a risk level of approximately 10%.
 - The Fund is expected to deliver a more efficient asset allocation by balancing the sources of portfolio risk across asset class risk exposures. In addition, the expertise of the Putnam Global Asset Allocation team enables a dynamic allocation process that seeks to identify the most attractive asset allocation throughout different economic cycles. Bringing the beta and alpha allocations together, the strategy seeks to deliver higher risk-adjusted returns than a traditional balanced portfolio.
 - A fundamental process is used to inform active views and tactically shift positions across asset classes or to adjust notional exposure. The Fund targets a notional exposure of 150% and is implemented using physical and synthetics.
- **Due Diligence Notes**
 - January, 2013: Jeff Knight, CIO, resigned. NEPC placed the product on 'Client Review'.
 - March, 2014: NEPC upgraded DD status to 'Watch' as asset flows stabilized and Co-CIO structure seen as working.
 - February, 2015: NEPC upgraded DD status from 'Watch' to 'No Action'. New Co-CIO structure working well.
 - July, 2015: Due to senior team member departure, NEPC placed the product back on 'Watch', with searches allowed.
 - March, 2016: Product upgraded from 'Watch' to 'No Action'.
 - July, 2017: Bob Kea, Co-Head of GAA, announced his retirement at the end of December, 2017. NEPC recommended 'No Action' with this announcement.

Risk weight summary as of June 30, 2017

	Risk factor weight (%)
Common factor risk	
Equity	61.85
Rates	-0.25
Credit	21.54
Inflation	16.86

Source: Putnam, June 2017



Portfolio weight summary as of June 30, 2017

Asset Class	Physical Weight	Derivative Exposure	Total Current Weight	Index Proxy
U.S. Equity	20.33%	4.65%	24.98%	Russell 3000 Index
Non-U.S. Equity	10.91%	1.72%	12.63%	MSCI EAFE Index
Emerging-Market Equity	5.58%	0.00%	5.58%	MSCI Emerging Markets Index
U.S. High-Yield Bond	13.63%	8.16%	21.79%	JP Morgan High Yield Developed Index
Emerging-Market Bond	0.00%	5.00%	5.00%	JPM EM Global Bond Index
U.S. Investment-Grade Bond	14.07%	-3.49%	10.57%	Barclays Aggregate Bond Index
Non-U.S. Government Bond	0.00%	25.07%	25.07%	Citi WGBI ex US Index
U.S. TIPS	0.00%	29.98%	29.98%	Barclays TIPS Index
Commodities	0.00%	12.09%	12.09%	GSCI Index
REITs	3.23%	0.00%	3.23%	MSCI REIT Index
Cash	32.27%	-83.19%	-50.92%	3 month U.S. Treasury Bill

data as of June 30, 2017

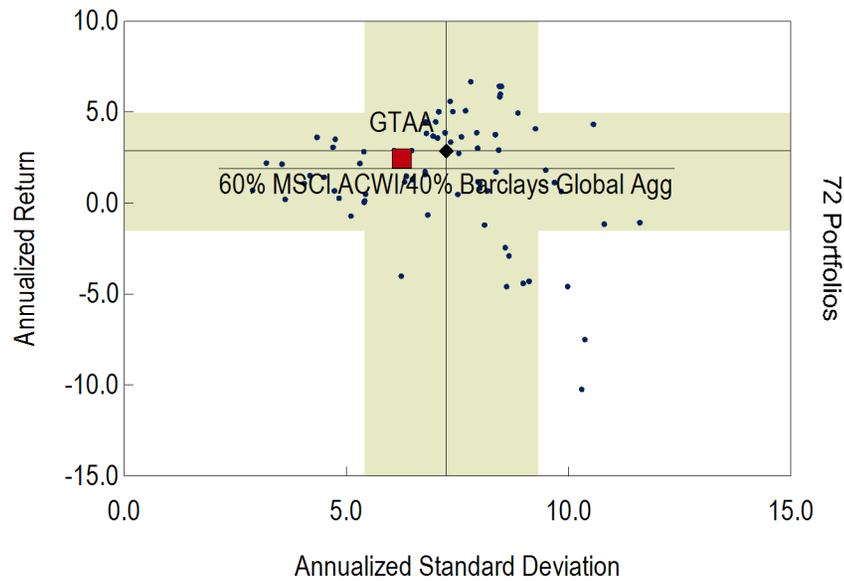
Source: Putnam, June 2017



NEPC, LLC

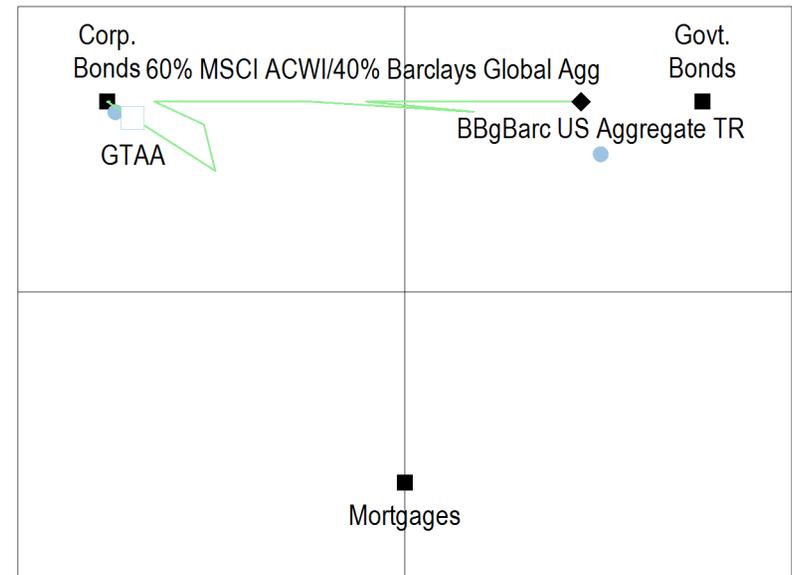
June 30, 2017

3 Year Risk Return



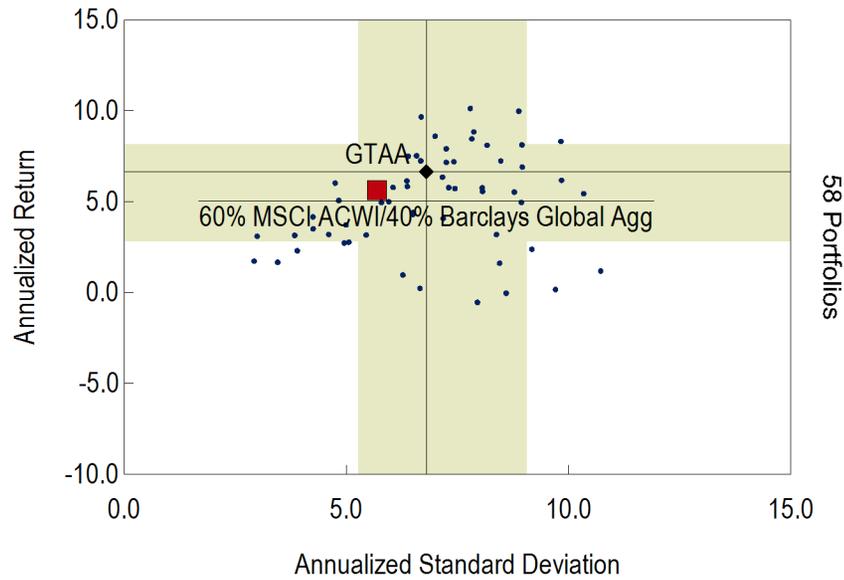
- GTAA
- ◆ 60% MSCI ACWI/40% Barclays Global Agg
- 68% Confidence Interval
- eA All Global Balanced / TAA Net

3 Year Style Analysis



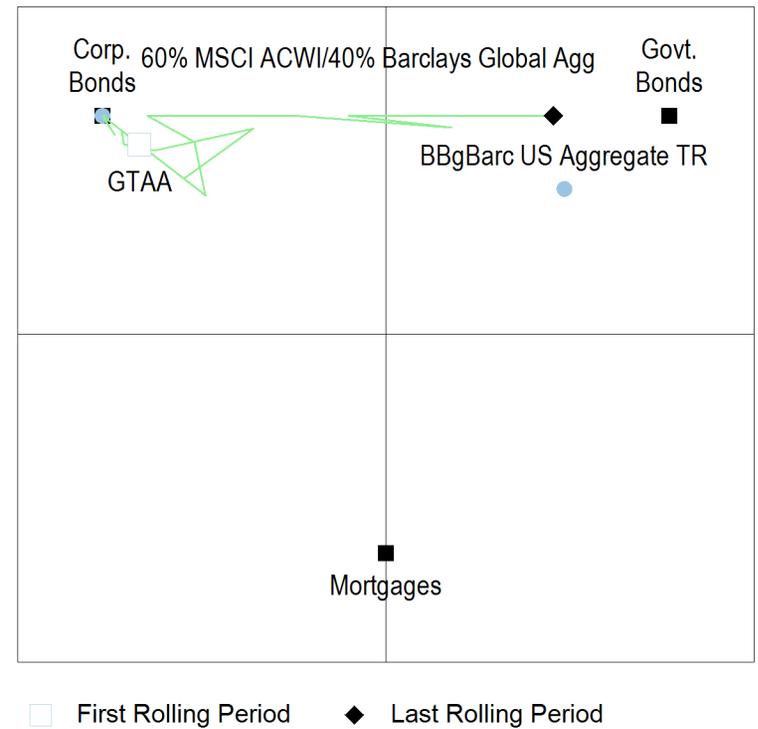
- First Rolling Period
- ◆ Last Rolling Period

5 Year Risk Return



- GTAA
- ◆ 60% MSCI ACWI/40% Barclays Global Agg
- 68% Confidence Interval
- eA All Global Balanced / TAA Net

5 Year Style Analysis



- First Rolling Period
- ◆ Last Rolling Period

GMO - Global Allocation Absolute Return Fund (GAAR)

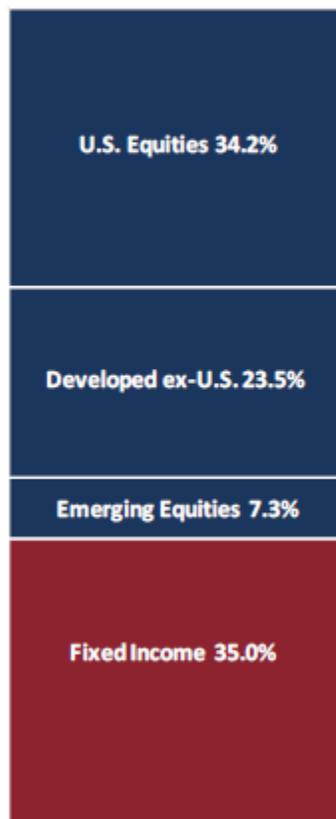
- **Role in Portfolio**
 - Global Tactical Asset Allocation (GTAA) mandate.
 - In September 2007, DPFPP invested in GMO's GTAA service Real Return Global Balanced Asset Allocation.
 - In December 2010, DPFPP transitioned to GAAR, GMO's unconstrained GTAA product.
 - GTAA funds use top down views and portfolio management techniques in an effort to outperform a balanced 60/40 benchmark or an absolute return benchmark such as CPI + 5%.
 - GAAR is invested to outperform a CPI + 5% benchmark.
- **Organizational Profile**
 - GMO was founded in 1977 as a private investment firm to serve institutional clients.
 - Initial products were designed around the firm's value-oriented discipline until GMO's quantitative division was launched in 1982, providing a way to augment existing strategies and disciplines.
 - GMO has a wide range of products across global asset classes, and are known for their contrarian, often bearish view of the marketplace.
 - GMO is headquartered in Boston, Massachusetts.
- **Investment Strategy Commentary**
 - Real Return Global Balanced Asset Allocation (Sep-2007 through Nov-2010)
 - Portfolio construction based on seven year asset class forecasts developed by GMO's quantitative team.
 - Product seeks to add 2-3% above a blended benchmark (60% MSCI World, 20% BC Agg', 20% Cash).
 - GAAR (invested in Dec-2010)
 - GMO's Asset Allocation team seeks to add value on an absolute return basis.
 - The team focuses on identifying opportunities for mean reversion and contrarian investments.
 - The goal is to generate strong real returns over a market cycle by allocating to a potentially wide range of asset classes, including diversifying ones such as Int'l Small Cap, Emerging Market equities, REITs, and TIPS.
 - GMO expects volatility to lie in same range as traditional balanced portfolios, although the pattern of returns can be very different.
- **Due Diligence Notes**
 - October, 2013: Global Equity and Asset Allocation strategy teams joined together. NEPC placed the product on 'Watch' with this announcement.
 - December, 2013: NEPC upgraded the DD status on the strategy from 'Watch' to 'No Action'.
 - June, 2016: NEPC placed the product on 'Hold' due to organizational changes.

GMO - Global Allocation Absolute Return Fund (GAAR)

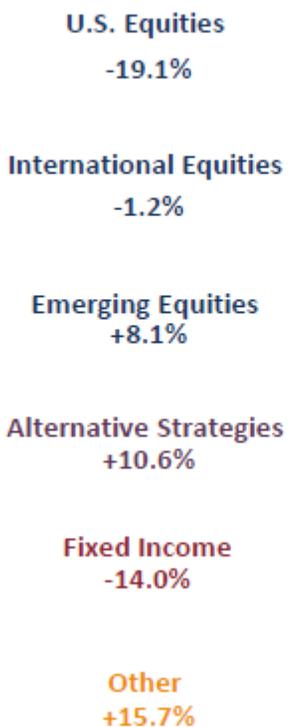
Asset Allocation

Benchmark

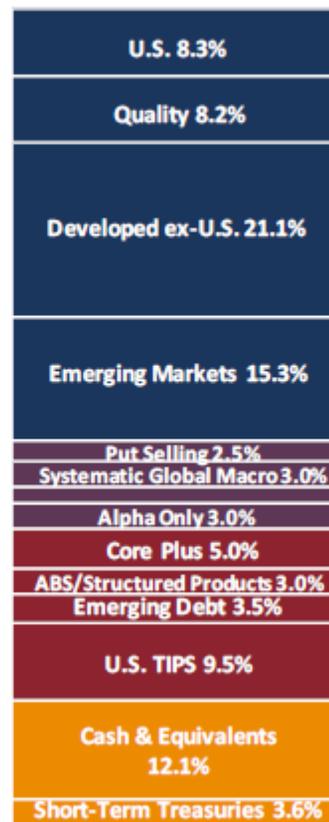
65% Equities/35% Bonds ¹



GMO Active Weighting Decisions^{2*}



Strategy

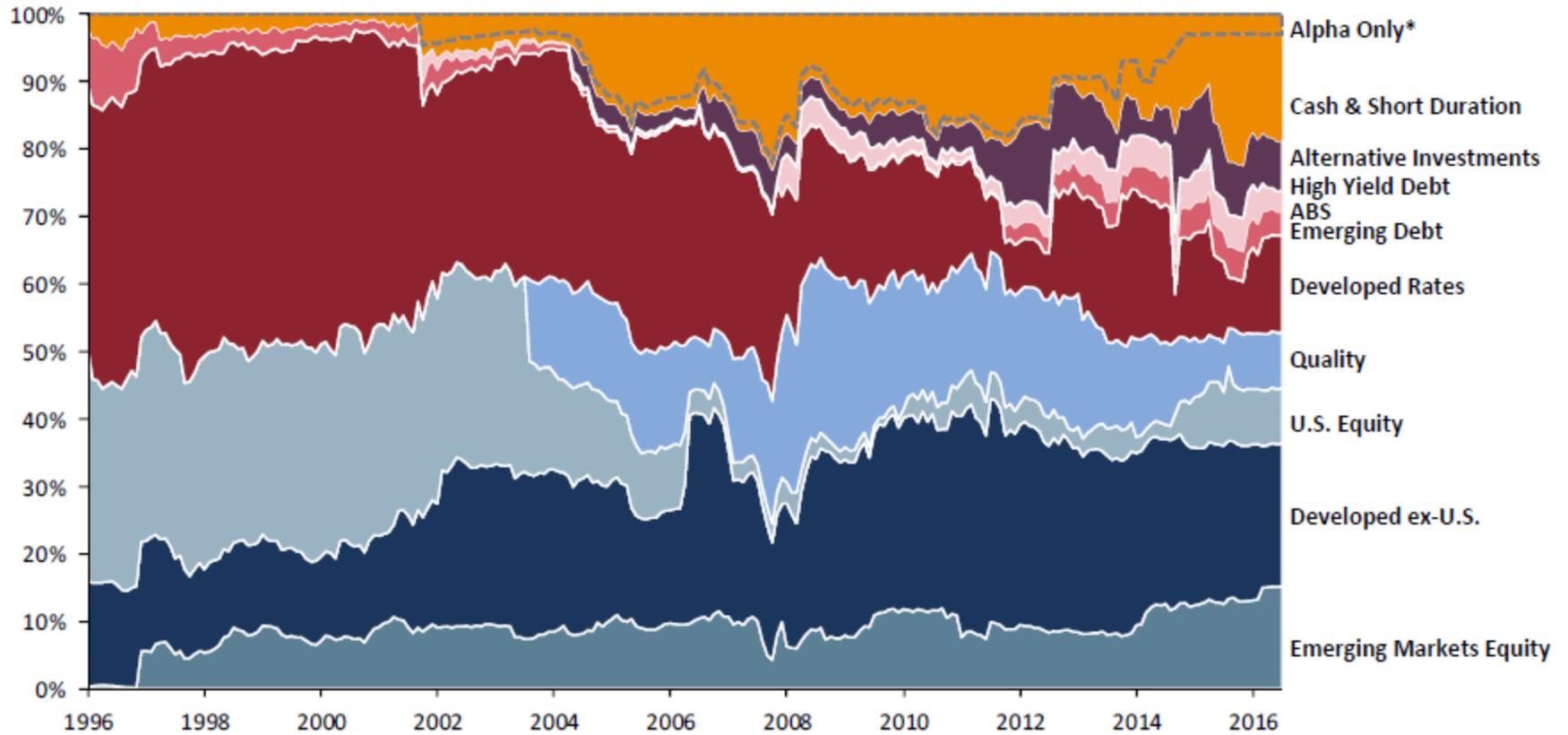


Relative Value Interest Rates & FX 2.1%

Source: GMO

GMO - Global Allocation Absolute Return Fund (GAAR)

Historical Allocation



Source: GMO

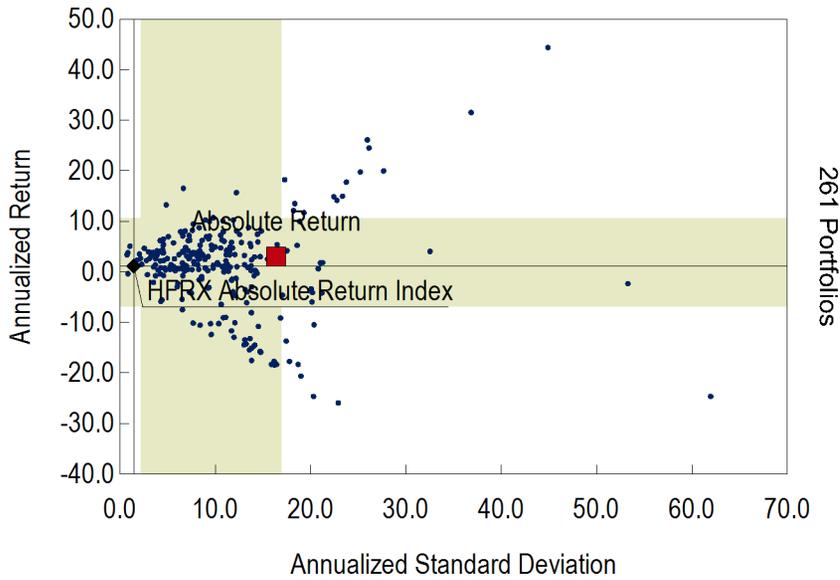


NEPC, LLC

June 30, 2017

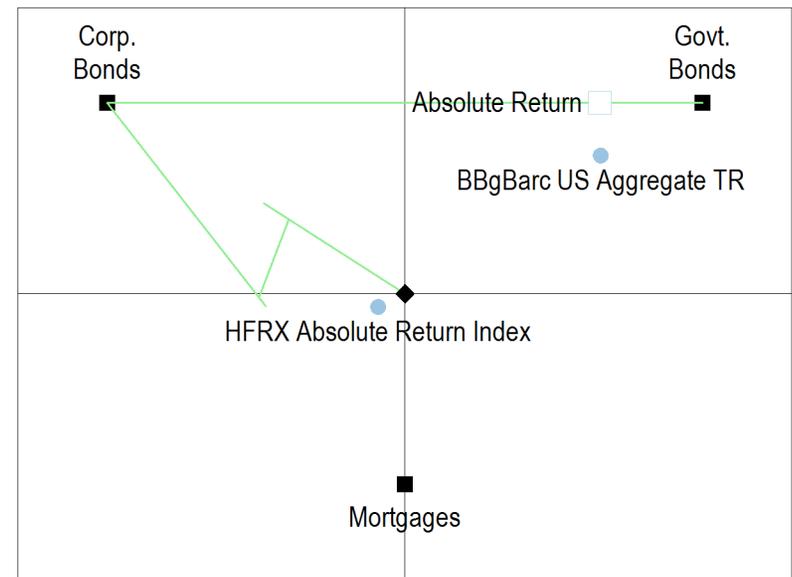
Absolute Return

3 Year Risk Return



- Absolute Return
- ◆ HFRX Absolute Return Index
- 68% Confidence Interval
- eV Alt All Macro

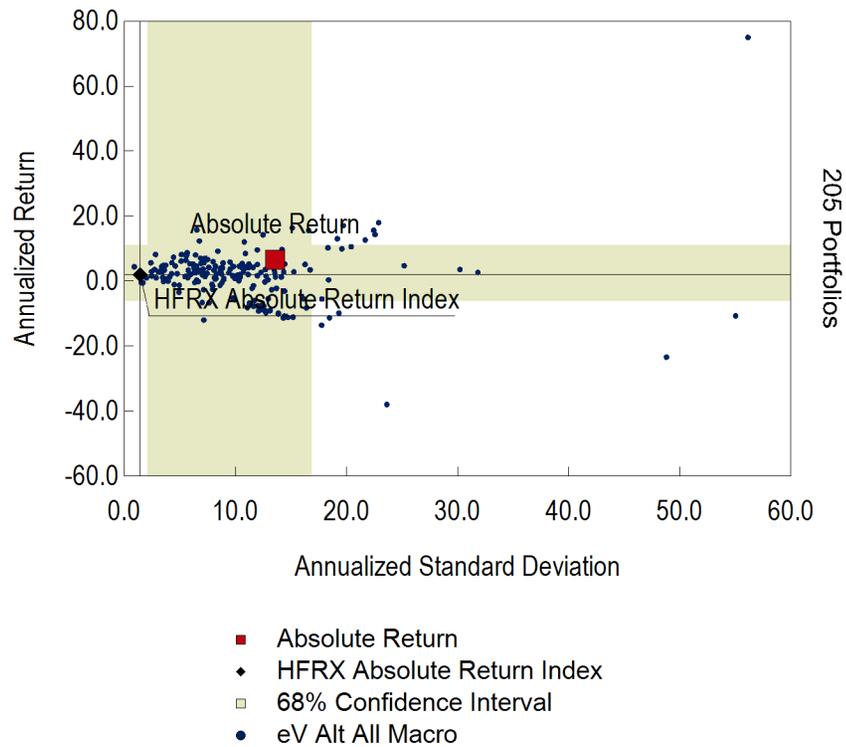
3 Year Style Analysis



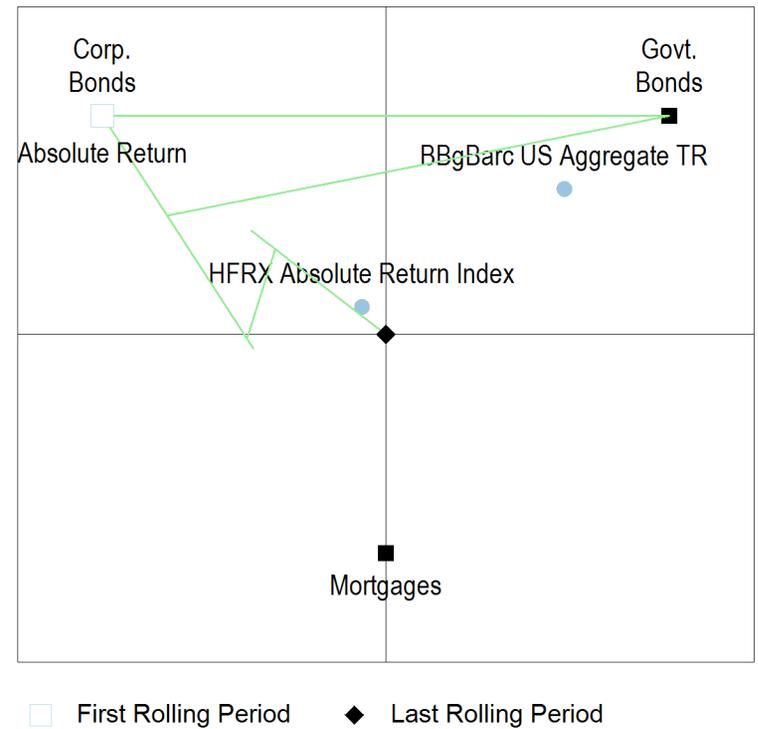
- First Rolling Period
- ◆ Last Rolling Period

Absolute Return

5 Year Risk Return



5 Year Style Analysis

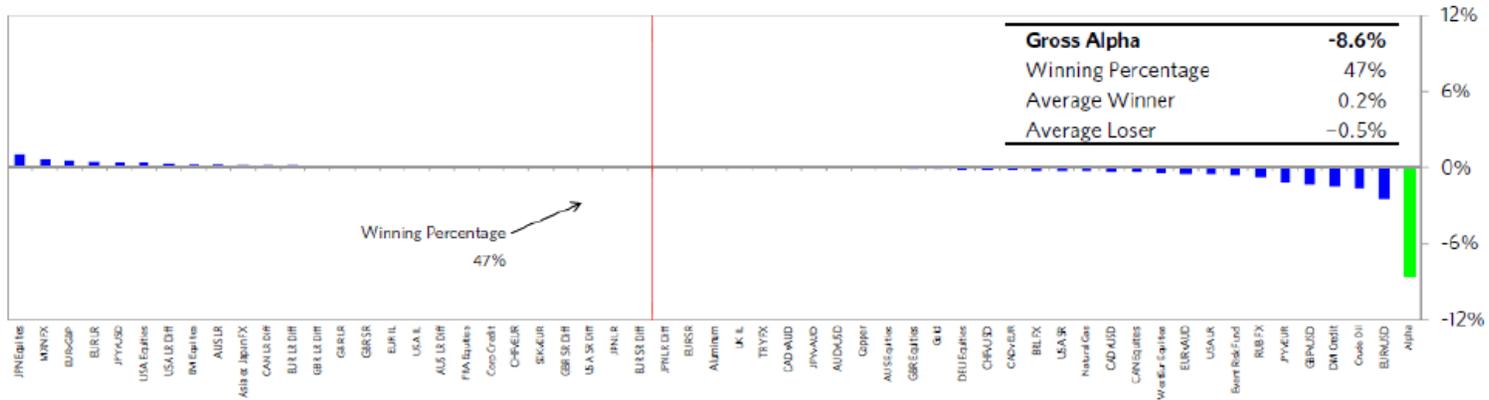


Bridgewater – Pure Alpha Major Markets II (PAMM)

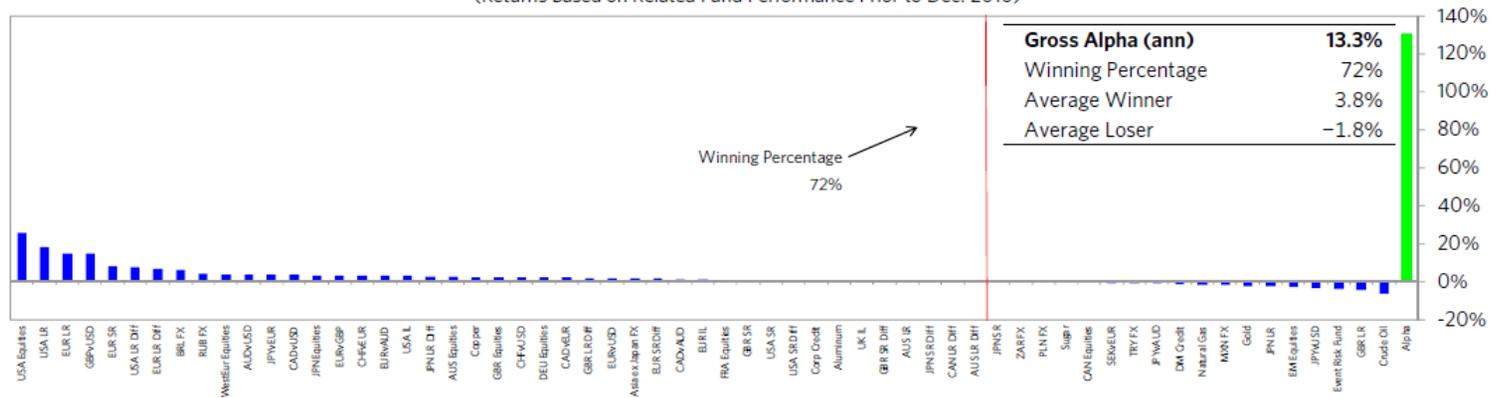
- **Role in Portfolio**
 - Absolute Return mandate (added August 2011).
 - Absolute return funds seek to earn an uncorrelated, positive return regardless of market conditions.
 - PAMM is invested to provide an excess return over cash of 12% with a Sharpe Ratio of 0.85, over the long term. The DFPF policy benchmark for PAMM is the HFRX Absolute Return Index.
- **Organizational Profile**
 - Bridgewater Associates is a portfolio management firm focused on institutional investors, providing optimal beta solutions and alpha strategies. They began offering investment services in 1975, initially providing money management and consulting services in the global credit and currency markets to corporations in the management of income statement and balance sheet exposures. Bridgewater registered with the SEC as an investment advisor in 1990 and has been managing assets for institutional investors ever since. As a privately held company, Bridgewater does not disclose any other information regarding its ownership structure. Bridgewater has no parent, affiliate, or joint venture relationships.
 - Bridgewater is headquartered in Westport, Connecticut.
- **Investment Strategy Commentary**
 - Launched in 2010, PAMM is an extension of Bridgewater's Pure Alpha strategy.
 - PAMM stems from the same investment process and investment professionals but trades a subset of the markets in which Pure Alpha invests; in particular, PAMM trades in deeper markets with more capacity.
 - PAMM is a global, active hedge fund strategy designed to generate high and consistent returns, which are expected to be uncorrelated to markets.
- **Due Diligence Notes**
 - March, 2016: Jon Rubinstein joined as Co-CEO. NEPC recommended 'No Action'.
 - March 2017: Several changes at the management level occurred including the departure of recently appointed Co-CEO, Jon Rubinstein. NEPC recommended 'No Action'.

Bridgewater – Pure Alpha Major Markets II (PAMM)

Bridgewater Pure Alpha Major Markets Strategy 21% Volatility: 2017 Q2
Gross Value Added Attribution by Market



Bridgewater Pure Alpha Major Markets Strategy 21% Volatility: Since Nov-10
Gross Value Added Attribution by Market
 (Returns Based on Related Fund Performance Prior to Dec. 2010)



Source: Bridgewater

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/Observations¹ – The total number of data points that make up a specified universe

Allocation Index³ - 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 Effect² - 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)³ - 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)³ - 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.

Attribution³ - 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 Maturity⁴ - 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 Average¹ - 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) Attribution¹ - 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) Attribution¹ - 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)⁴ - 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.

Correlation¹ - 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: ¹InvestorForce, ²Interaction Effect Performance Attribution, ³NEPC, LLC, ⁴Investopedia, ⁵Hedgeco.net



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Coupon⁴ – 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 Effect¹ - Is the effect that changes in currency exchange rates over time affect excess performance.

Derivative Instrument³ - 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 Deviation¹ - 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.

Duration³ - 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 Ratio¹ – 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 Bond³ - 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 Hurdle⁵ – 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 Mark⁴ - 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 Rate⁴ - 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 Effects² - 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.

Median³ - 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 Duration³ - The percentage change in the price of a fixed income security that results from a change in yield.

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

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

Net Investment Change¹ – Is the change in an investment after accounting for all Net Cash Flows.

Performance Fee⁴ - 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: ¹InvestorForce, ²Interaction Effect Performance Attribution, ³NEPC, LLC, ⁴Investopedia, ⁵Hedgeco.net

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Policy Index³ - 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)⁴ - 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)³ - The weighted equity P/E is based on current price and trailing 12 months earnings per share (EPS).

Price to Sales (P/S)⁴ - 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)⁴ - 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) Effect² - 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 rate⁵ - is a hurdle rate that once beaten allows a fund manager to charge a performance fee based on the entire annualized return.

Tiered Fee¹ - 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 Effects² - 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 Return¹ - 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.

Universe³ - The list of all assets eligible for inclusion in a portfolio.

Upside Deviation¹ - Standard Deviation of Positive Returns

Weighted Avg. Market Cap.⁴ - 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 (%)³ - The current yield of a security is the current indicated annual dividend rate divided by current price.

Yield to Maturity³ - The discount rate that equates the present value of cash flows, both principal and interest, to market price.

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

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