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City of Hartford Municipal Employees' Retirement Fund

First Quarter 2014
Investment Performance Analysis

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Executive Summary

Investment Summary

Portfolio Commentary

- **Goals & Objectives**
  - The portfolios investment objective is to achieve a rate of return consistent with that of the set asset allocation, while maintaining a long term investment horizon for the Fund.
  - As of March 31, 2014 the long term target allocation of the fund is 32% equities, 32% fixed income, 7% GAA, and 29% alternatives.
- **Recent Decisions and Ongoing Activities**
  - Grosvenor was selected to manage the Hedge Fund of One allocation.
  - Commitments to Och Ziff ($6 million), Oak Tree ($5 million) approved at the April meeting.
  - Will continue to evaluate opportunistic real estate managers with the goal of selecting one additional manager to complete the 2014 implementation plan.
- **Total Fund Performance**
  - The Fund returned 1.5% for the Quarter, which ranked in the 60th percentile in the IF Public DB Fund Universe.
  - The fund's lower allocation to domestic equity versus the peer universe has detracted from more recent period performance.
- **Total Fund Asset Allocation**
  - Currently, the Fund is overweight to Domestic Equity, International Equity, Global Equity, Core Fixed Income and cash. The fund is underweight to Emerging Market Equity, High Yield, Global Asset Allocation, Long Government/Credit, and Alternative Strategies relative to long term targets.

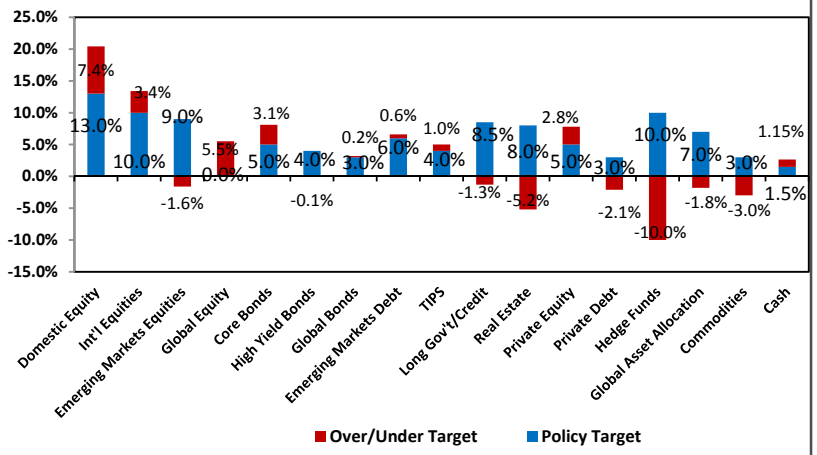
Total Return

	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Total Composite	1.5	7.7	7.7	11.5
Rank	60	93	78	81
Median Public Funds	1.6	11.8	8.6	13.7
Policy Index	1.8	7.7	7.6	13.6

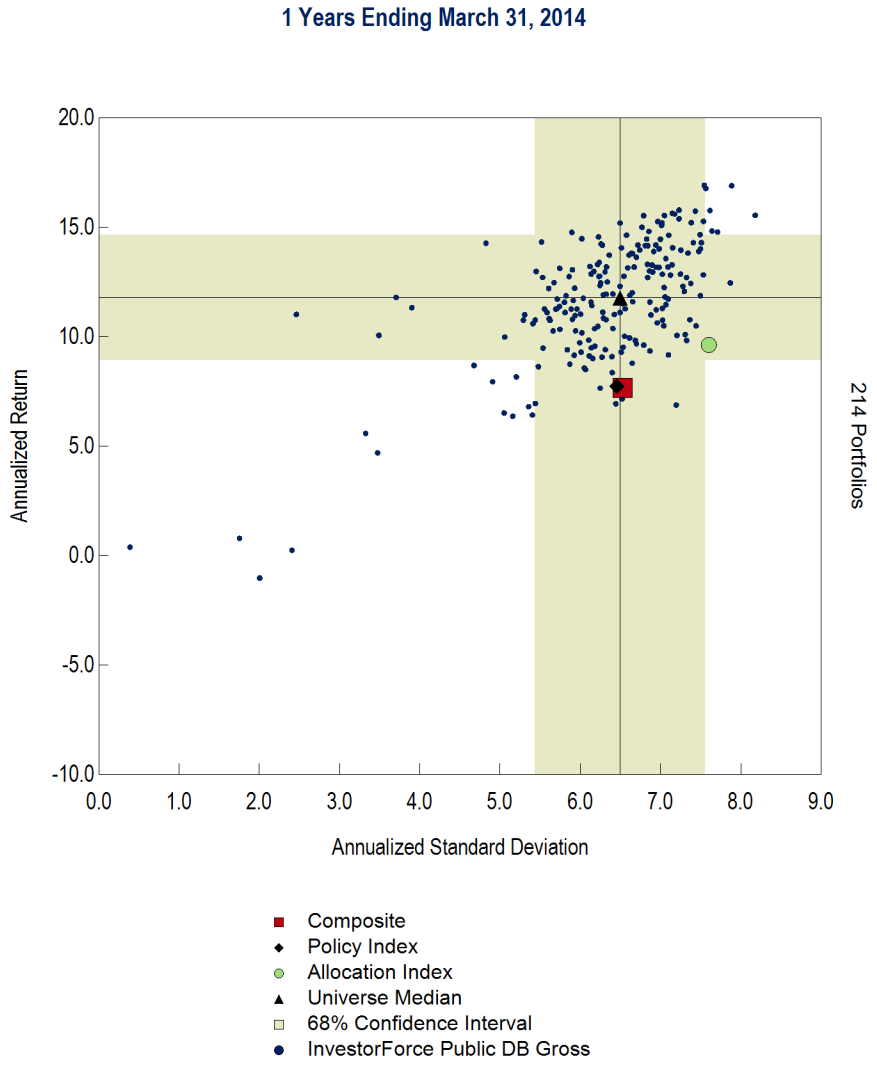
Periods longer than one year are annualized

*Rankings versus total Public Fund s1=best, 100=worst.

Current Allocation Total Composite vs. Long Term Policy Targets



Total Fund Risk/Return - 1 Years



1 Years Ending March 31, 2014

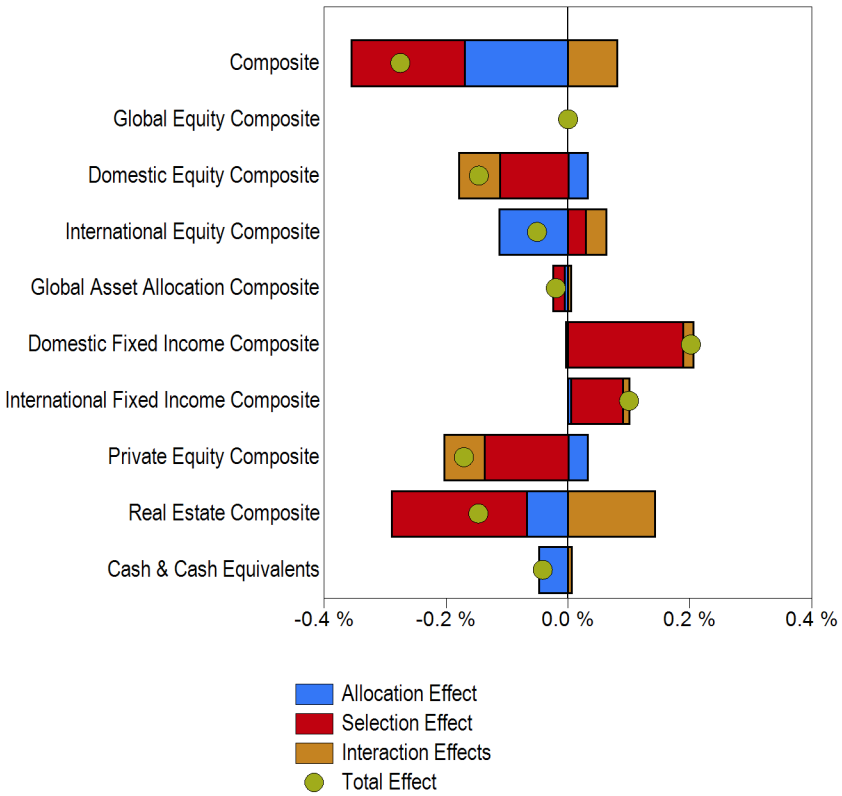
	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Composite	7.65%	93	6.52%	53
Policy Index	7.74%	92	6.45%	49
Allocation Index	9.63%	80	7.60%	98

1 Years Ending March 31, 2014

	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
Composite	1.17	96	4.73	64
Policy Index	1.19	96	3.87	79
Allocation Index	1.26	94	4.40	69

Total Fund Attribution Analysis

Attribution Effects Relative to Policy Index
3 Months Ending March 31, 2014



Attribution Summary
3 Months Ending March 31, 2014

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Global Equity Composite	1.5%	1.1%	0.4%	--	--	--	--
Domestic Equity Composite	1.1%	2.0%	-0.9%	-0.1%	0.0%	-0.1%	-0.1%
International Equity Composite	0.8%	0.5%	0.3%	0.0%	-0.1%	0.0%	-0.1%
Global Asset Allocation Composite	1.6%	1.9%	-0.3%	0.0%	0.0%	0.0%	0.0%
Domestic Fixed Income Composite	2.7%	1.8%	0.8%	0.2%	0.0%	0.0%	0.2%
International Fixed Income Composite	3.4%	2.4%	1.0%	0.1%	0.0%	0.0%	0.1%
Private Equity Composite	0.0%	2.7%	-2.7%	-0.1%	0.0%	-0.1%	-0.2%
Real Estate Composite	0.0%	2.7%	-2.7%	-0.2%	-0.1%	0.1%	-0.1%
Cash & Cash Equivalents	0.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
Total	**1.6%**	**1.5%**	**0.1%**	**-0.2%**	**-0.2%**	**0.1%**	**-0.3%**

Total Fund Attribution Analysis

Performance Attribution

	Last 3 Mo.	1 Yr
Wtd. Actual Return	1.6%	7.8%
Wtd. Index Return *	1.5%	7.0%
Excess Return	**0.1%**	**0.8%**
Selection Effect	-0.2%	-1.9%
Allocation Effect	-0.2%	0.7%
Interaction Effect	0.1%	-0.4%
Asset Class Returns		
Composite	1.5%	7.7%
Total Equity Composite	1.0%	14.2%
Global Equity Composite	1.5%	17.7%
Domestic Equity Composite	1.1%	23.8%
International Equity Composite	0.8%	5.2%
Global Asset Allocation Composite	1.6%	12.0%
Total Fixed Income Composite	2.9%	0.3%
Domestic Fixed Income Composite	2.7%	0.0%
International Fixed Income Composite	3.4%	1.1%
Total Alternatives Composite	-0.1%	8.0%
Private Equity Composite	0.0%	9.2%
Private Debt	0.0%	10.7%
Real Estate Composite	0.0%	3.6%
Core Real Estate Composite	0.0%	5.2%
Cash & Cash Equivalents	0.2%	0.5%
Passive Portfolios Composite	1.8%	10.5%

*Calculated from benchmark returns and weightings of each component.

Investment Market Update: As of April 30, 2014

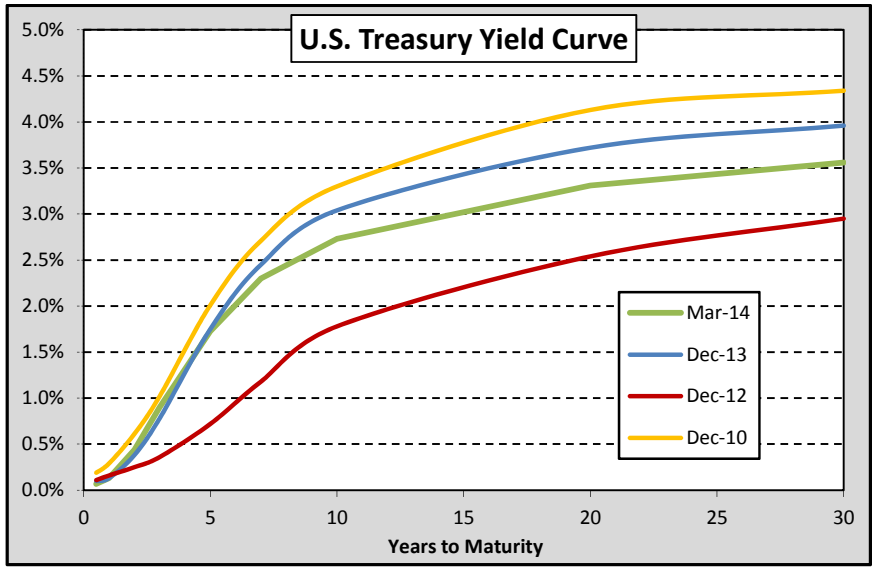
PERFORMANCE THROUGH 4/30/2014

Sector	Index	2008	2009	2010	2011	2012	2013	Q1	APR	2014
Treasury STRIPS	Barclays US Strips 20+ Yr	59.5%	-36.0%	10.9%	58.5%	3.0%	-21.0%	12.7%	3.5%	16.7%
REITS	Wilshire US REIT	-39.2%	28.6%	28.6%	9.2%	17.6%	1.9%	10.1%	3.6%	14.0%
Commodities	DJ UBS Commodity	-35.7%	18.9%	16.8%	-13.3%	-1.1%	-9.5%	7.0%	2.4%	9.6%
Long Govt/Credit	Barclays US Govt/Credit Long	8.4%	1.9%	10.2%	22.5%	8.8%	-8.8%	6.6%	2.2%	8.9%
Long Credit	Barclays US Long Credit	-3.9%	16.8%	10.7%	17.1%	12.7%	-6.6%	6.3%	2.3%	8.7%
Muni Bonds	Barclays Municipal	-2.5%	12.9%	2.4%	10.7%	6.8%	-2.6%	3.3%	1.2%	4.6%
Large Cap Value	Russell 1000 Value	-36.9%	19.7%	15.5%	0.4%	17.5%	32.5%	3.0%	1.0%	4.0%
EMD USD	Barclays EM USD Agg	-14.8%	34.2%	12.8%	7.0%	18.0%	-4.1%	2.8%	1.1%	4.0%
Global Bonds	Citi WGBI	10.9%	2.6%	5.2%	6.4%	1.7%	-4.0%	2.7%	1.1%	3.8%
High Yield	Barclays US Corp High Yield	-26.2%	58.2%	15.1%	5.0%	15.8%	7.4%	3.0%	0.6%	3.6%
EMD Local	JPM GBI EM Glob Div	-5.2%	22.0%	15.7%	-1.8%	16.8%	-9.0%	1.9%	0.9%	2.8%
Core Bonds	Barclays US Agg Bond	5.2%	5.9%	6.5%	7.8%	4.2%	-2.0%	1.8%	0.8%	2.7%
Diversified	Diversified*	-24.5%	24.1%	13.5%	1.3%	12.7%	17.6%	2.1%	0.5%	2.6%
Large Cap	S&P 500	-37.0%	26.5%	15.1%	2.1%	16.0%	32.4%	1.8%	0.7%	2.6%
Large Cap	Russell 1000	-37.6%	28.4%	16.1%	1.5%	16.4%	33.1%	2.1%	0.5%	2.5%
Int'l Developed	MSCI EAFE	-43.4%	31.8%	7.8%	-12.1%	17.3%	22.8%	0.7%	1.5%	2.1%
Interm Core Bonds	Barclays US Agg Interm	4.9%	6.5%	6.2%	6.0%	3.6%	-1.0%	1.2%	0.7%	1.9%
Interm Govt/Credit	Barclays US Govt/Credit Interm	5.1%	5.2%	5.9%	5.8%	3.9%	-0.9%	1.0%	0.5%	1.5%
Large Cap Growth	Russell 1000 Growth	-38.4%	37.2%	16.7%	2.6%	15.3%	33.5%	1.1%	0.0%	1.1%
Govt/Credit	Barclays Govt/Credit 1-5 Yr	5.1%	4.6%	4.1%	3.1%	2.2%	0.3%	0.4%	0.3%	0.7%
Govt/Credit	Barclays US Govt/Credit 1-3 Yr	5.0%	3.8%	2.8%	1.6%	1.3%	0.6%	0.2%	0.2%	0.4%
SMID Cap	Russell 2500	-36.8%	34.4%	26.7%	-2.5%	17.9%	36.8%	2.3%	-2.3%	-0.1%
Emerging Equities	MSCI EM	-53.3%	78.5%	18.9%	-18.4%	18.2%	-2.6%	-0.4%	0.3%	-0.1%
Small Cap Value	Russell 2000 Value	-28.9%	20.6%	24.5%	-5.5%	18.1%	34.5%	1.8%	-2.6%	-0.8%
Small Cap	Russell 2000	-33.8%	27.2%	26.9%	-4.2%	16.4%	38.8%	1.1%	-3.9%	-2.8%
Small Cap Growth	Russell 2000 Growth	-38.5%	34.5%	29.1%	-2.9%	14.6%	43.3%	0.5%	-5.1%	-4.7%

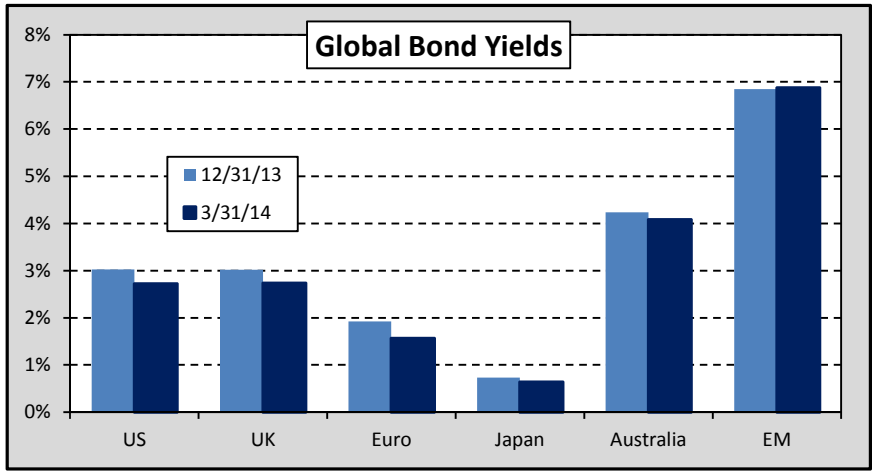
* 35% LC, 10% SC, 12% Intl Equity, 3% Emerging Equity, 25% Core Bonds, 5% HY, 5% Global Bonds, 5% REITS

Source: Morningstar Direct

Market Environment – Interest Rates

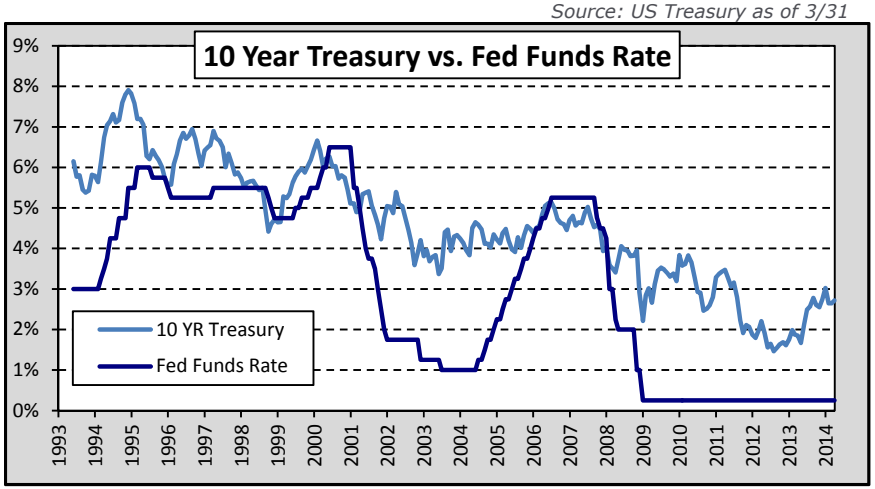


Source: US Treasury as of 3/31



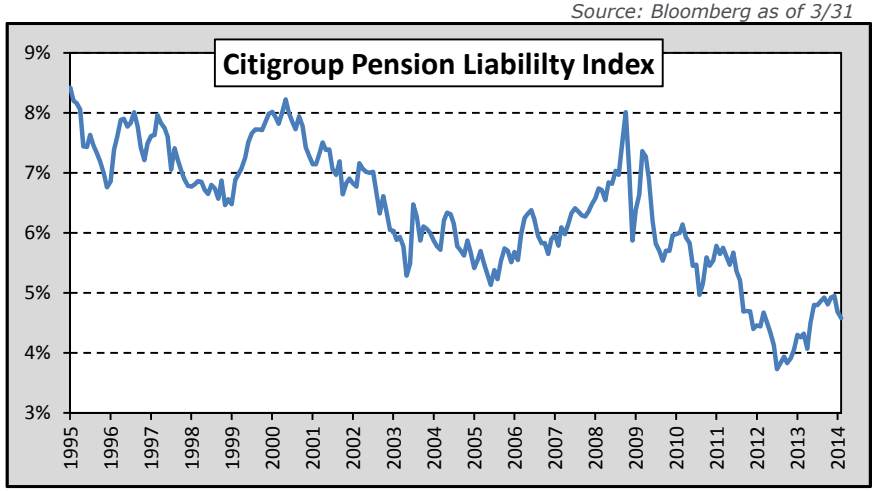
Bond yields across the globe have mostly declined in 2014

Source: Bloomberg as of 3/31



Fed Funds rate remained at 0.25% while the 10 Yr. Treasury Yield finished March at 2.72%

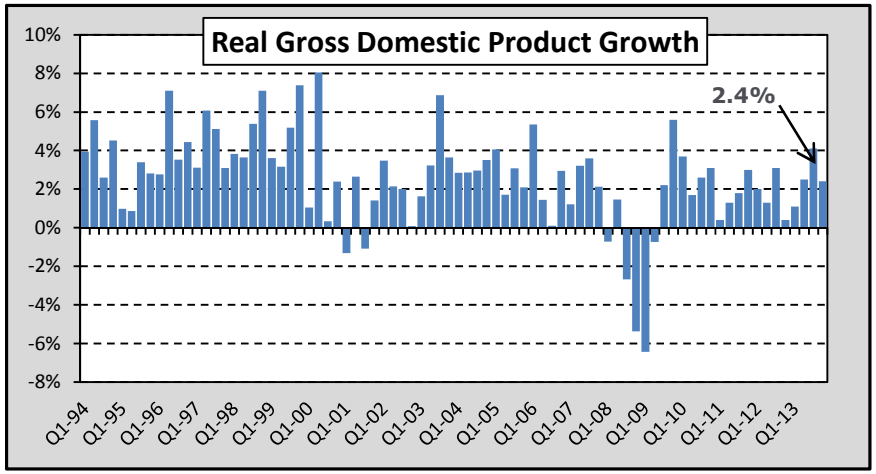
Source: Bloomberg as of 3/31



The Citi Pension discount rate fell to 4.58% through February

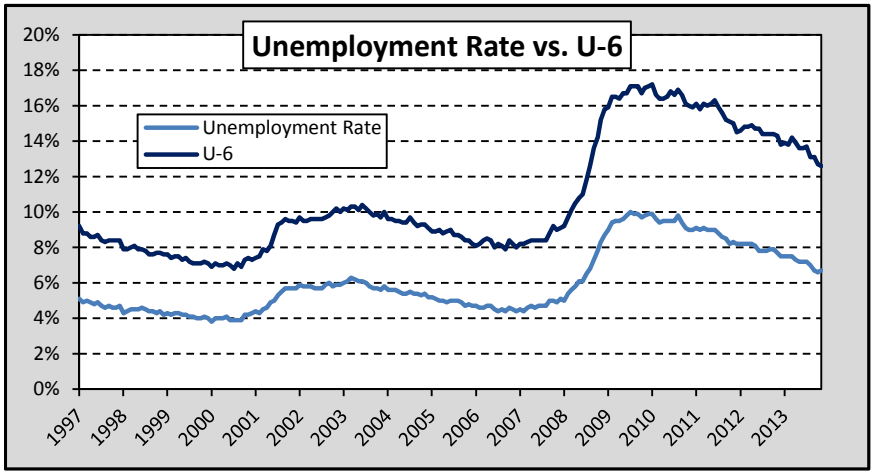
Source: Citigroup as of 2/28

US Economic Environment



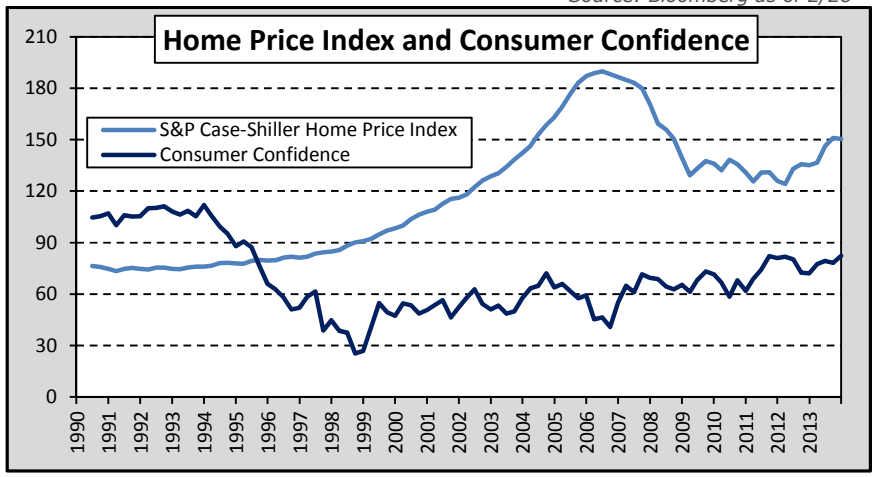
GDP growth was revised downward in the fourth quarter, to 2.4%

Source: Bloomberg as of 2/28



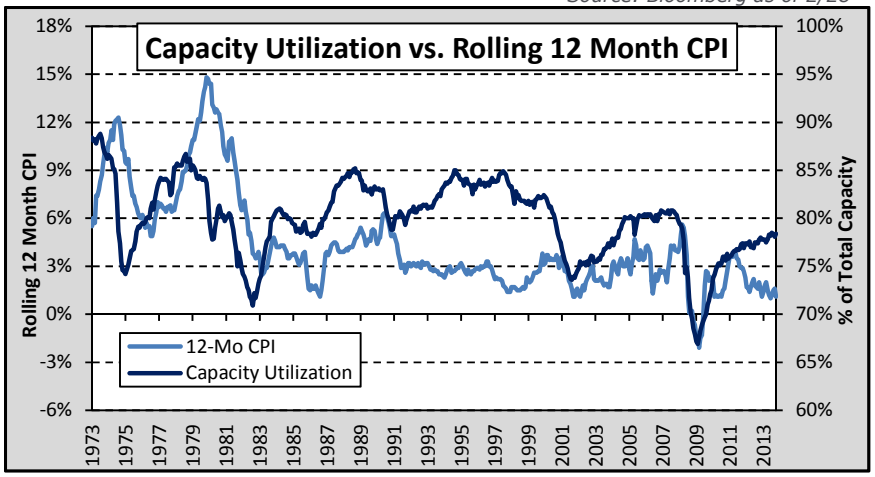
Unemployment rose to 6.7% in February; U-6 declined to 12.6%

Source: Bloomberg as of 2/28



Consumer confidence fell to 82.3 in March; the Case-Shiller home price index (as of 12/31) dipped slightly to 150.39 from its highest level (150.92) since the financial crisis

Source: Bloomberg as of 3/31

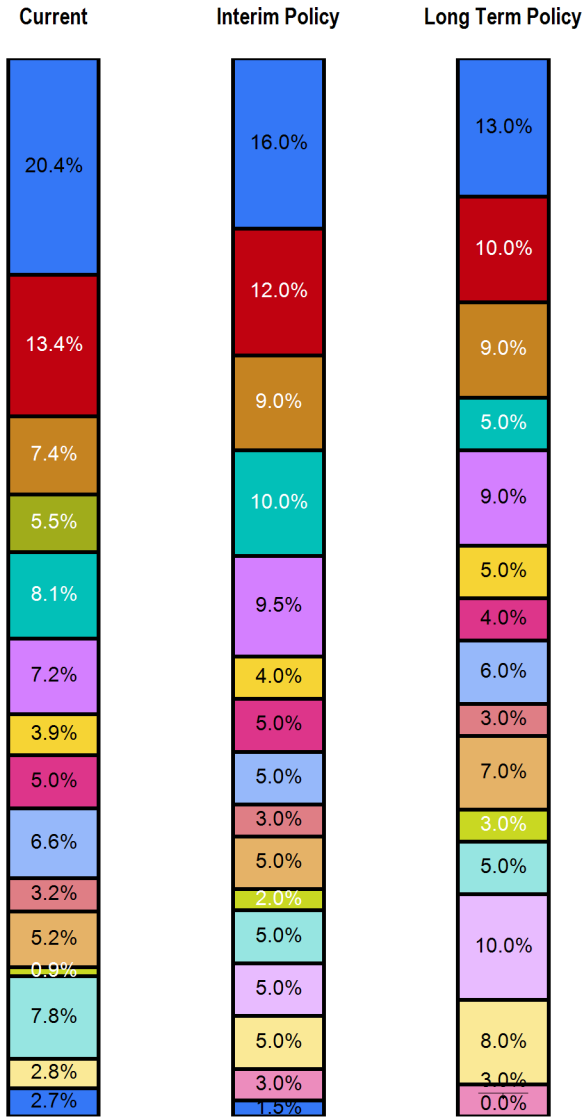


Rolling 12 month CPI decreased to 1.1% at February end; capacity utilization rose slightly to 78.4% in the month

Source: Bloomberg as of 2/28

Asset Allocation

Total Fund Asset Allocation vs. Policy Targets

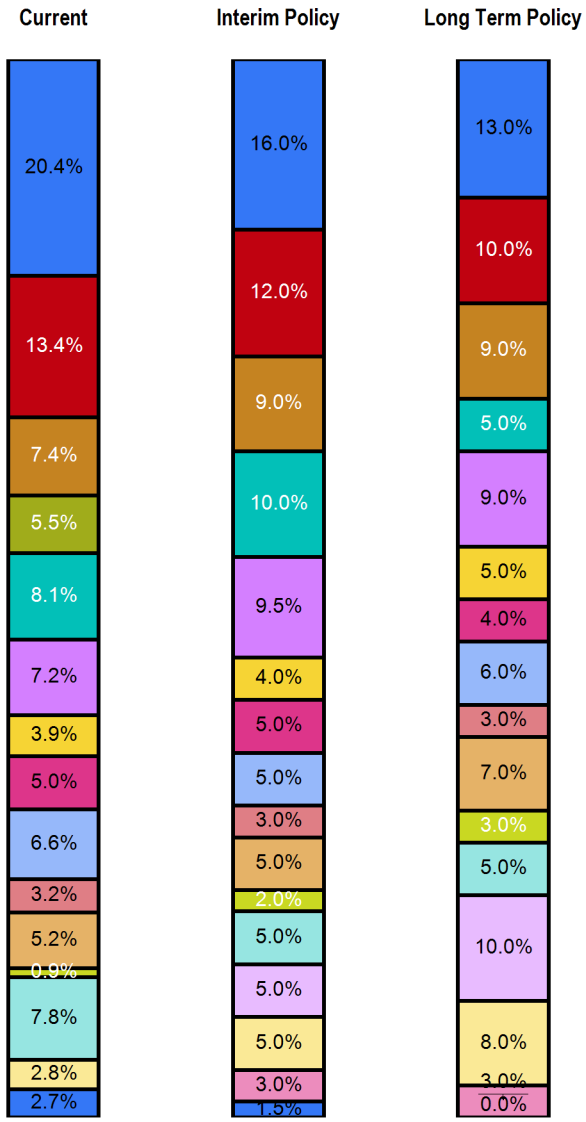


Asset Allocation vs. Target

	Current	Current	Interim Policy	Long Term Policy	Long Term Policy Range	Within Range
Domestic Equity	$207,308,286	20.4%	16.0%	13.0%	10.0% - 16.0%	No
Atlanta Capital Large Growth	$77,213,614	7.6%				
Eagle Capital Large Value	$75,878,057	7.5%				
Southernsun SMID Value	$32,493,441	3.2%				
ING Small Growth	$21,723,173	2.1%				
International Equity	$135,683,507	13.4%	12.0%	10.0%	8.0% - 12.0%	No
Walter Scott Large Growth	$71,301,682	7.0%				
First Eagle All Cap Value	$64,381,825	6.3%				
Emerging Markets Equity	$75,207,866	7.4%	9.0%	9.0%	7.0% - 11.0%	Yes
Eaton Vance Emerging Markets	$45,889,241	4.5%				
Mondrian Emerging Markets	$29,318,598	2.9%				
SSgA Emerging Markets	$26	0.0%				
Global Equity	$55,727,646	5.5%	--	--	--	No
SSgA MSCI ACWI	$55,727,646	5.5%				
Core Bonds	$82,664,672	8.1%	10.0%	5.0%	3.5% - 6.5%	No
Hartford Investment Core Plus Fixed	$55,772,123	5.5%				
Columbia Core Plus Fixed	$746,619	0.1%				
SSgA Barclays Aggregate Index	$15,682,134	1.5%				
SSgA US 1-3 Treasury Index	$10,463,797	1.0%				
Long Gov/Credit	$73,076,966	7.2%	9.5%	9.0%	7.0% - 11.0%	Yes
Aetna GICS	$481,401	0.0%				
PIMCO Long Duration Fixed	$66,504,202	6.5%				
SSgA Long US Treasury Index	$6,091,364	0.6%				

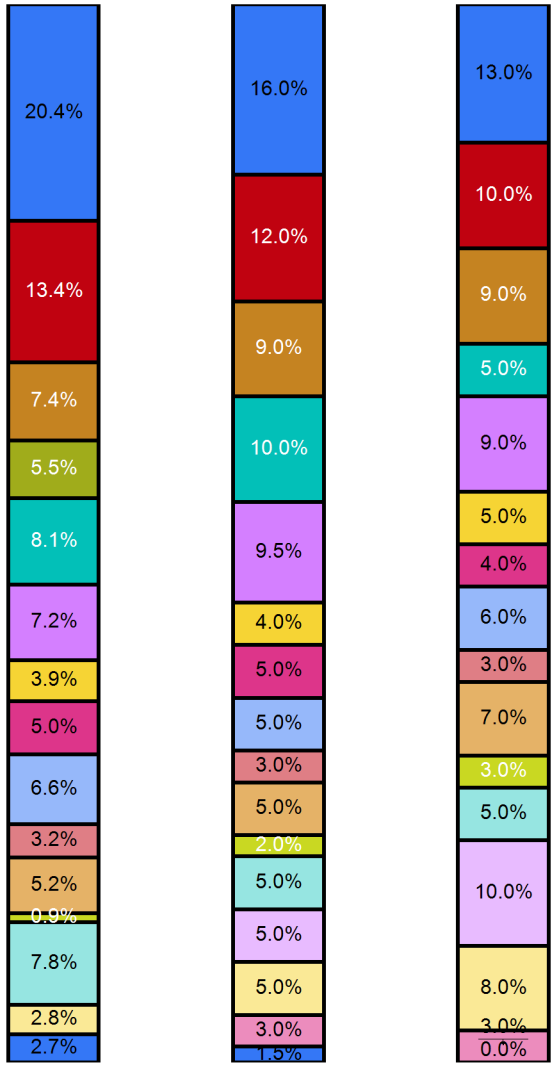
City of Hartford Municipal Employees Retirement Fund

Total Fund Asset Allocation vs. Policy Targets



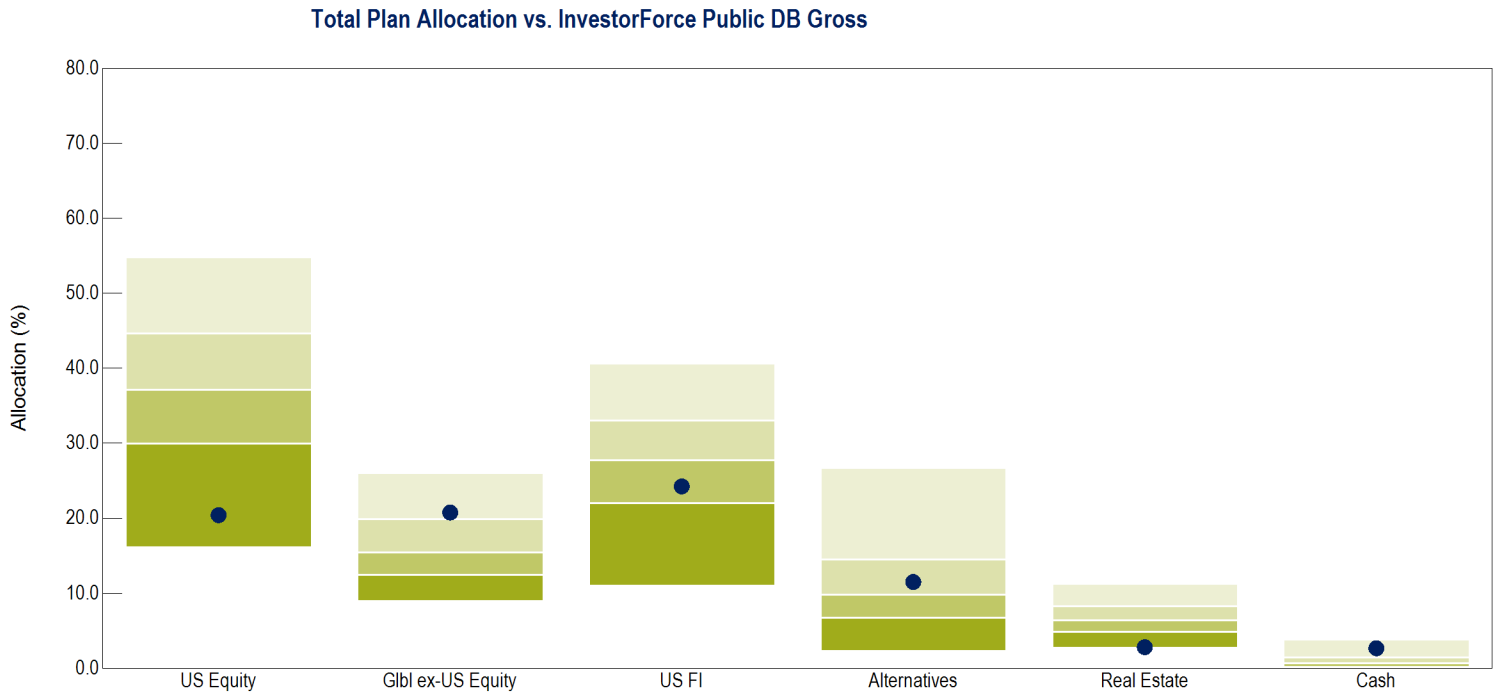
	Current	Current	Interim Policy	Long Term Policy	Long Term Policy Range	Within Range
High Yield	$39,240,342	3.9%	4.0%	5.0%	3.5% - 6.5%	**Yes**
Shenkman Capital High Yield Fixed	$39,240,342	3.9%				
TIPS	$51,256,874	5.0%	5.0%	4.0%	2.5% - 5.5%	**Yes**
Brown Bros-Harriman Global TIPS	$51,256,874	5.0%				
Emerging Market Debt Local	$66,683,986	6.6%	5.0%	6.0%	4.0% - 8.0%	**Yes**
Prudential Emerging Mkt Debt	$66,683,986	6.6%				
Global Bonds	$32,280,247	3.2%	3.0%	3.0%	2.0% - 4.0%	**Yes**
Mondrian Global Fixed Income	$32,280,225	3.2%				
SSgA Passive World Gov't	$22	0.0%				
Global Asset Allocation	$53,211,010	5.2%	5.0%	7.0%	5.0% - 9.0%	**Yes**
Blackrock Global Allocation	$26,862,172	2.6%				
Wellington Opportunistic	$26,348,837	2.6%				
Private Debt	$8,842,808	0.9%	2.0%	3.0%	1.0% - 5.0%	**No**
Smith Whiley & Co Pelham III Fund	$2,963,782	0.3%				
Monroe Direct Lending Fund	$3,717,605	0.4%				
Alcentra	$2,161,421	0.2%				
Private Equity	$79,493,171	7.8%	5.0%	5.0%	3.0% - 8.0%	**Yes**
MERF - Ares Fund II	$1,531,376	0.2%				
Lexington Capital Partners	$1,435,676	0.1%				
Landmark Equity Partners XI	$1,443,168	0.1%				
Ares Corporate Opportunity Fund	$802,887	0.1%				
Parish Capital	$2,987,705	0.3%				
Lexington Capital Partners VI-B	$5,607,762	0.6%				

Total Fund Asset Allocation vs. Policy Targets



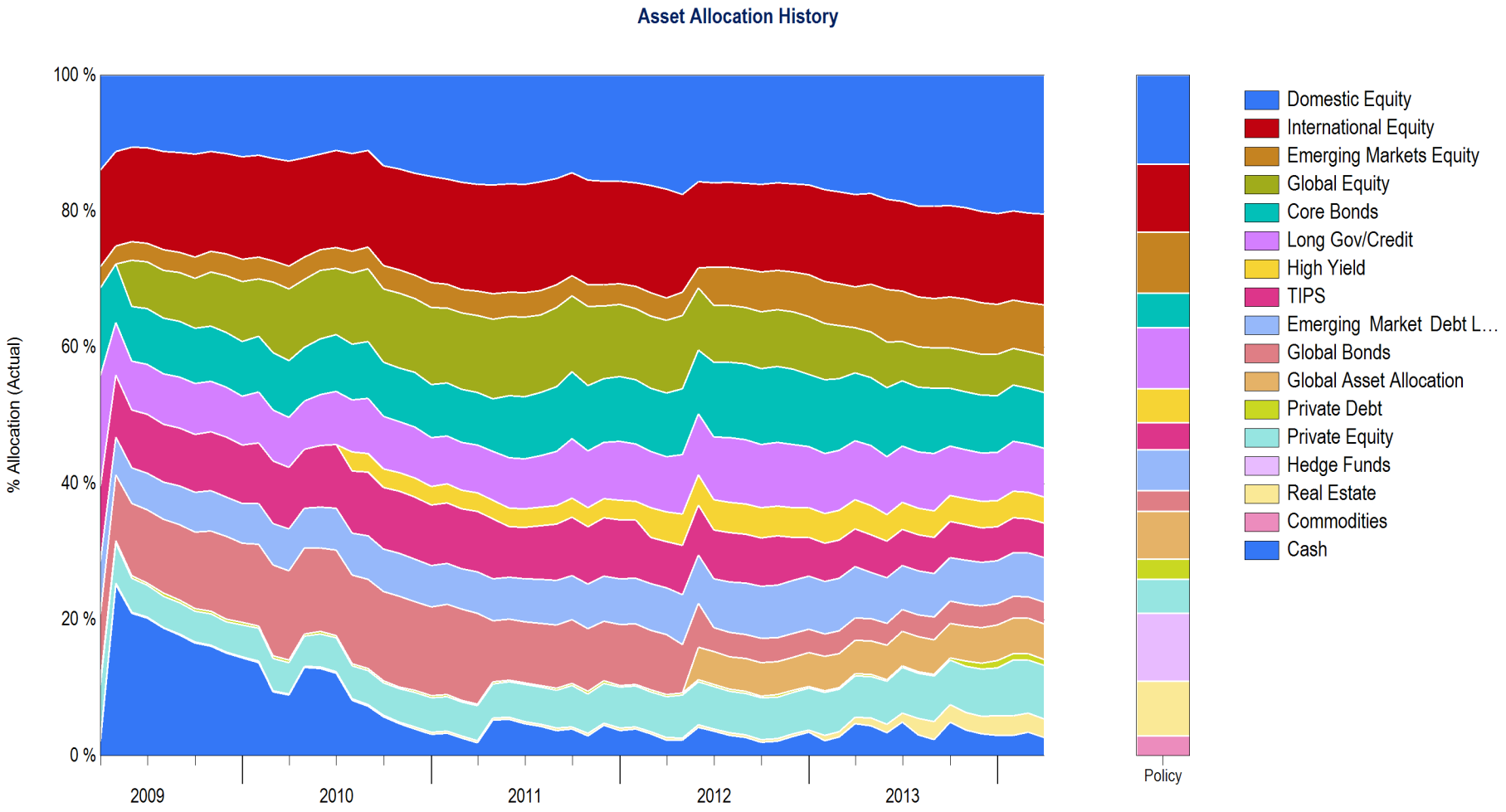
	Current	Current	Interim Policy	Long Term Policy	Long Term Policy Range	Within Range
Landmark Equity Partners XIII	$4,678,907	0.5%				
Parish Capital II	$8,681,495	0.9%				
Fairview Ventures III	$9,323,370	0.9%				
Ares Corporate Opportunity Fund III	$6,367,611	0.6%				
Landmark Equity Partners Fund XIV	$6,123,996	0.6%				
Lexington Capital Partners VII	$6,063,564	0.6%				
Vista Equity Partners IV	$8,828,305	0.9%				
Ares Corporate Opportunity Fund IV	$1,790,738	0.2%				
Pegasus Capital	$2,995,191	0.3%				
Landmark Equity XV	$831,420	0.1%				
Brightwood	$10,000,000	1.0%				
Hedge Funds	--	--	5.0%	10.0%	8.0% - 12.0%	No
Real Estate	$28,417,488	2.8%	5.0%	8.0%	5.0% - 11.0%	No
Cornerstone	$12,173,899	1.2%				
Real Estate - Land	$190,000	0.0%				
New Boston Urban Strategy Amer Fund	$4,155,610	0.4%				
Heitman America Realty Fund	$8,586,832	0.8%				
TA Realty	$2,940,293	0.3%				
Tristan European Property	$370,854	0.0%				
Commodities	--	--	3.0%	3.0%	2.0% - 4.0%	No
Cash	$26,945,877	2.7%	1.5%	0.0%	0.0% - 0.0%	No
Cash	$8,820,055	0.9%				
Benefits Payment Fund	$18,123,168	1.8%				
COH Transition Account - BP Fund	$2,654	0.0%				
Total	**$1,016,040,746**	**100.0%**	**100.0%**	**100.0%**		

Total Fund Allocations vs. Peer Universe

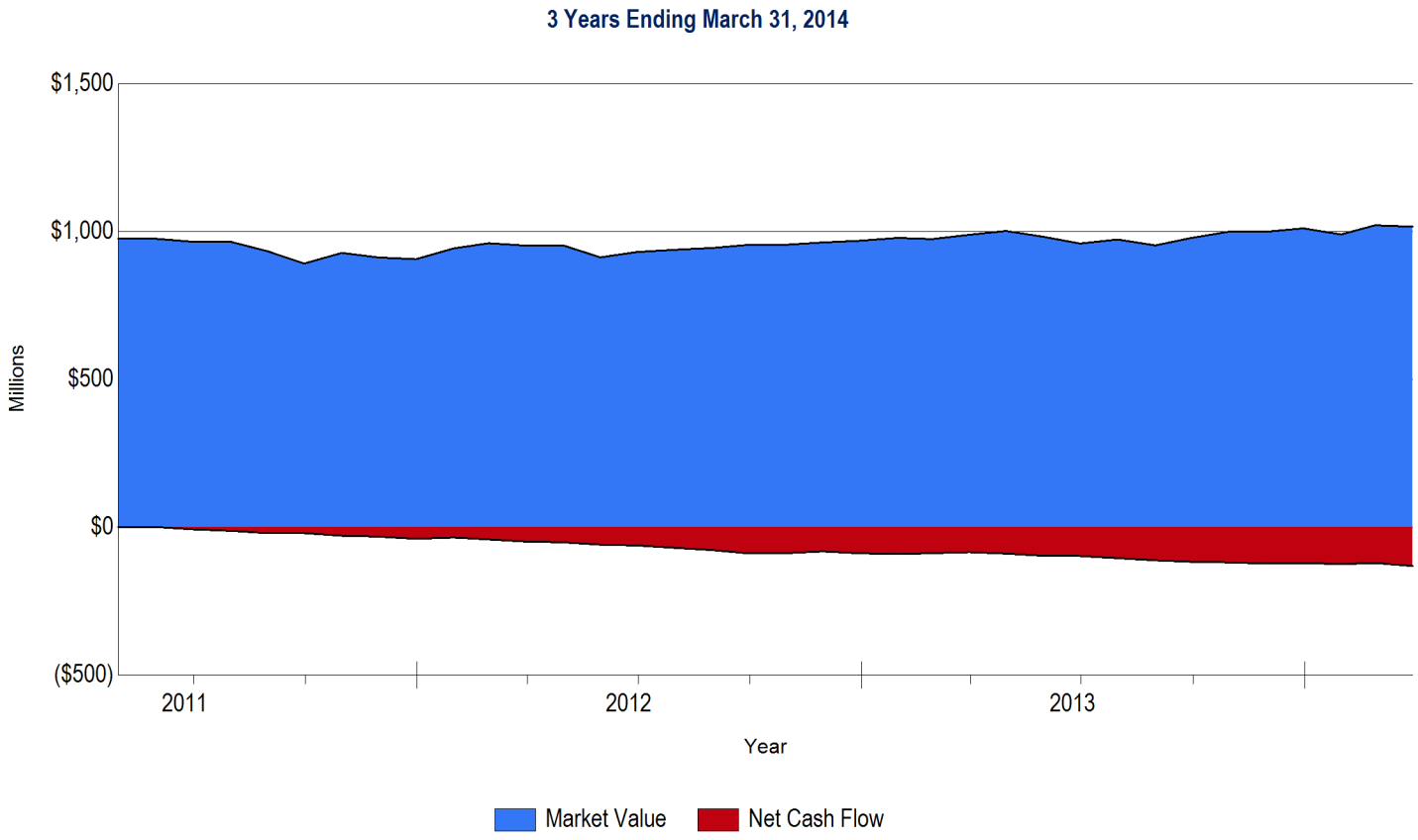


	Allocation (Rank)											
5th Percentile	54.8		26.0		40.6		26.7		11.3		3.8	
25th Percentile	44.7		19.9		33.1		14.6		8.3		1.6	
Median	37.2		15.5		27.9		9.9		6.5		0.7	
75th Percentile	30.1		12.5		22.1		6.8		4.9		0.2	
95th Percentile	16.2		9.0		11.1		2.4		2.8		0.0	
# of Portfolios	135		132		98		63		88		96	
● **Composite**	20.4	(89)	20.8	(19)	24.2	(71)	11.5	(41)	2.8	(96)	2.7	(14)

Total Fund Asset Allocation History



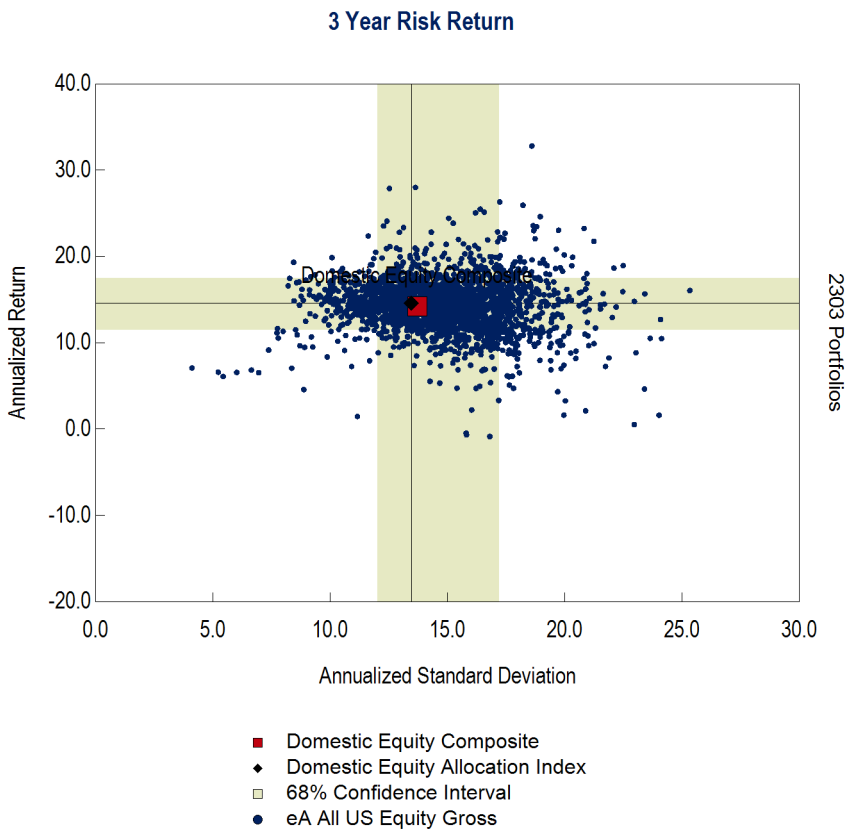
Total Fund Asset Growth Summary

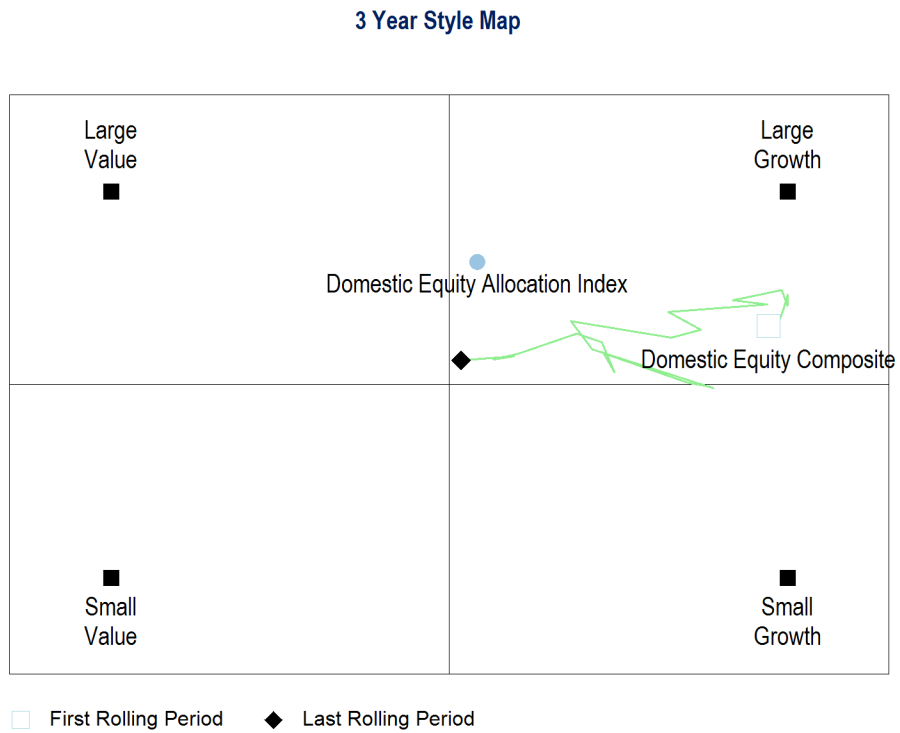


Sources of Portfolio Growth	Last Three Months	Year-To-Date	One Year	Three Years
Beginning Market Value	$1,010,543,540	$1,010,543,540	$988,787,702	$958,947,616
Net Additions/Withdrawals	-$8,883,437	-$8,883,437	-$41,792,642	-$136,705,327
Investment Earnings	$14,380,643	$14,380,643	$69,045,686	$193,798,457
Ending Market Value	$1,016,040,746	$1,016,040,746	$1,016,040,746	$1,016,040,746

Manager Pages

Domestic Equity Composite





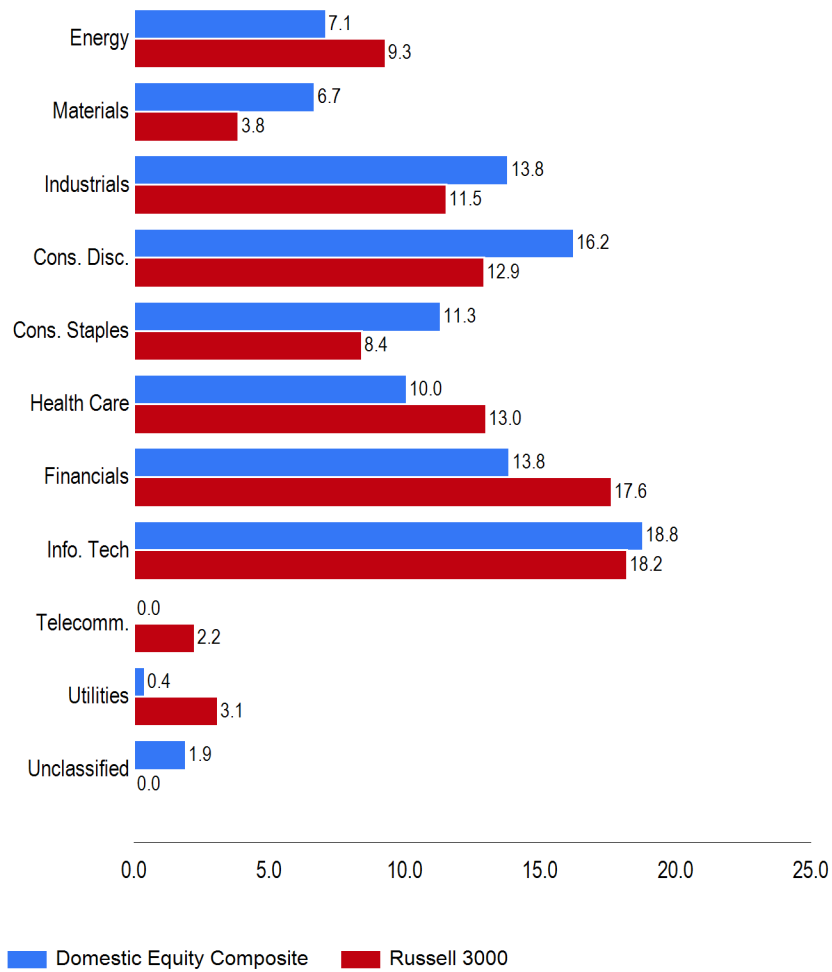
Style Analysis: Analytic is based on historical returns

Domestic Equity Composite

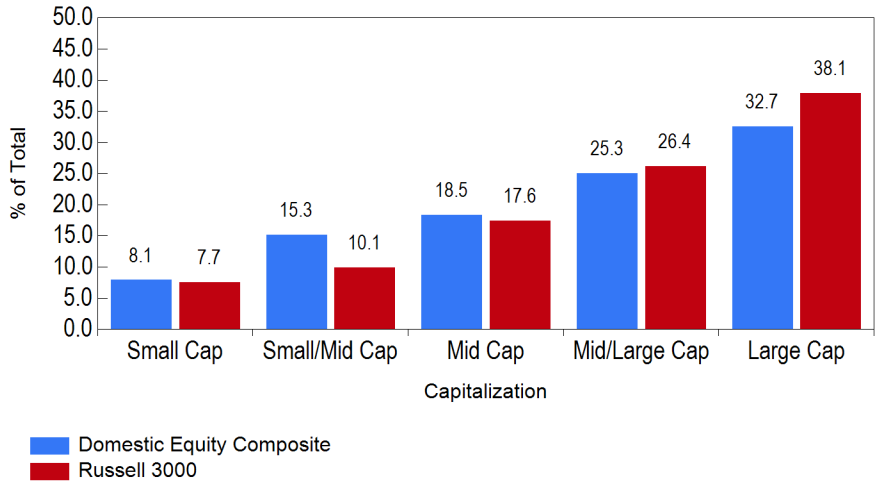
Equity Characteristics

	Portfolio	Russell 3000
Number of Holdings	254	2,992
Weighted Avg. Market Cap. ($B)	76.6	94.8
Median Market Cap. ($B)	3.6	1.4
Price To Earnings	23.1	20.8
Price To Book	3.9	3.6
Price To Sales	3.1	2.8
Return on Equity (%)	18.4	17.3
Yield (%)	1.2	1.8
Beta	1.0	1.0
R-Squared	1.0	1.0

Equity Sector Allocation



Market Capitalization As Of March 31, 2014



Domestic Equity Composite

Top Ten Holdings

ORACLE	3.0%
GOOGLE 'A'	3.0%
UNITEDHEALTH GP.	2.3%
ECOLAB	2.3%
LIBERTY GLOBAL SR.C	2.2%
COCA COLA	2.2%
MICROSOFT	2.0%
AON CLASS A	1.9%
BERKSHIRE HATHAWAY 'B'	1.9%
CASH - USD	1.8%

Top Positive Contributors

	Relative Contribution %	Return %
TRINITY INDS.	0.2%	32.5%
NEWFIELD EXPLORATION	0.2%	27.3%
CONSTELLATION BRANDS 'A'	0.2%	20.7%
UNITEDHEALTH GP.	0.2%	9.3%
ORACLE	0.2%	7.3%
MICROSOFT	0.1%	10.4%
THERMO FISHER SCIENTIFIC	0.1%	8.1%
ECOLAB	0.1%	3.8%
ALTERA	0.1%	12.0%
NOBLE ENERGY	0.1%	4.5%

Top Negative Contributors

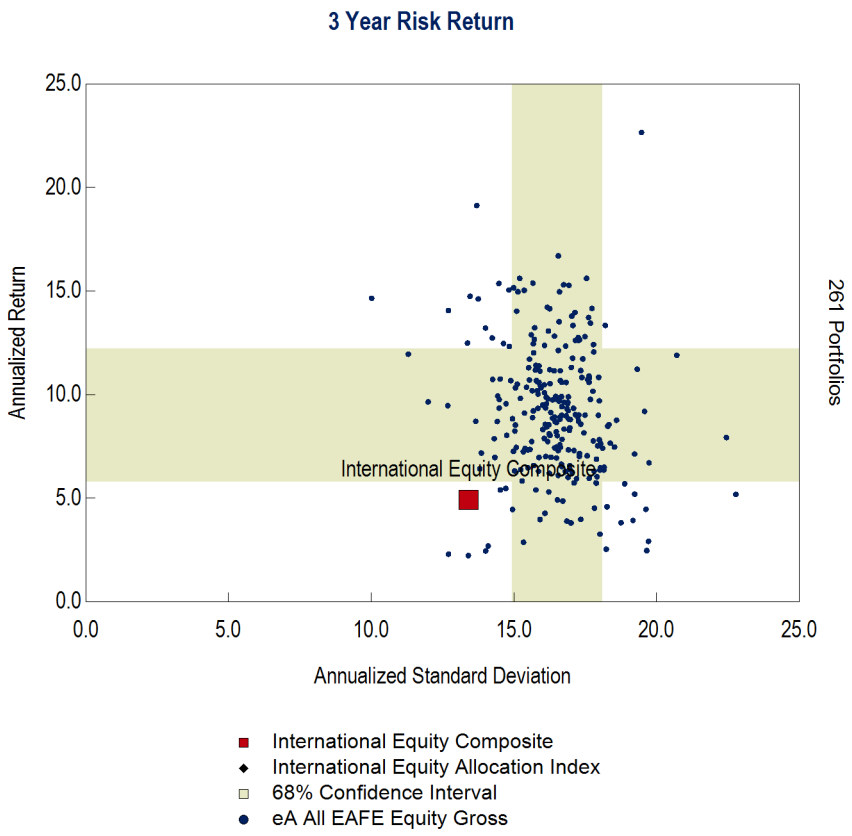
	Relative Contribution %	Return %
TWENTY-FIRST CENTURY FOX CL.A	-0.1%	-8.8%
TIDEWATER	-0.1%	-17.5%
INTERCONTINENTAL EX.GP.	-0.1%	-11.8%
COCA COLA	-0.1%	-5.7%
LOEWS	-0.1%	-8.6%
URS	-0.1%	-10.8%
LIBERTY GLOBAL SR.C	-0.1%	-3.4%
GOLDMAN SACHS GP.	-0.1%	-7.3%
ADT	-0.1%	-25.6%
CLEAN HARBORS	-0.1%	-8.6%

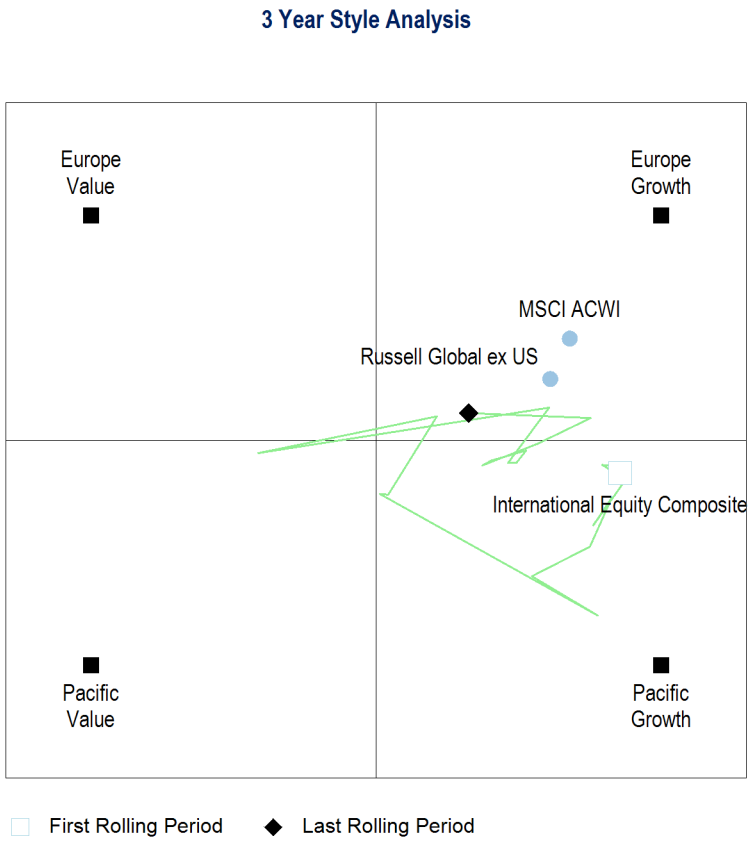
Equity Sector Attribution

	Attribution Effects						Returns		Sector Weights	
	Total Effects		Selection Effect		Allocation Effect		Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark
Energy	0.2%		0.3%		0.0%		-0.1%	5.0%	1.6%	6.7%	9.4%
Materials	-0.1%		-0.1%		0.0%		0.0%	1.5%	3.0%	6.3%	3.8%
Industrials	0.0%		0.0%		0.0%		0.0%	0.8%	0.5%	13.8%	11.7%
Cons. Disc.	-0.1%		0.0%		-0.1%		0.0%	-2.1%	-2.1%	16.8%	13.4%
Cons. Staples	-0.1%		0.0%		0.0%		0.0%	0.1%	0.6%	11.4%	8.5%
Health Care	-0.2%		-0.1%		-0.1%		0.0%	4.5%	5.7%	9.8%	12.5%
Financials	-0.5%		-0.7%		0.0%		0.2%	-1.0%	2.8%	12.8%	17.5%
Info. Tech	0.2%		0.2%		0.0%		0.0%	3.3%	2.2%	19.7%	18.2%
Telecomm.	0.0%		--		0.0%		--	--	0.4%	0.0%	2.0%
Utilities	-0.2%		0.0%		-0.2%		0.0%	9.2%	9.3%	0.4%	2.9%
Cash	0.0%		0.0%		0.0%		0.0%	0.0%	--	2.2%	0.0%
Unclassified	0.0%		0.0%		0.0%		0.0%	0.6%	--	0.1%	0.0%
Portfolio	**-0.8%**	**=**	**-0.3%**	**+**	**-0.5%**	**+**	**0.1%**	**1.2%**	**2.0%**	**100.0%**	**100.0%**

Attribution calculation is based on quarterly buy and hold methodology which does not take into account portfolio turnover and can differ from actual performance.

International Equity Composite





Style Analysis: Analytic is based on historical returns

International Equity Composite

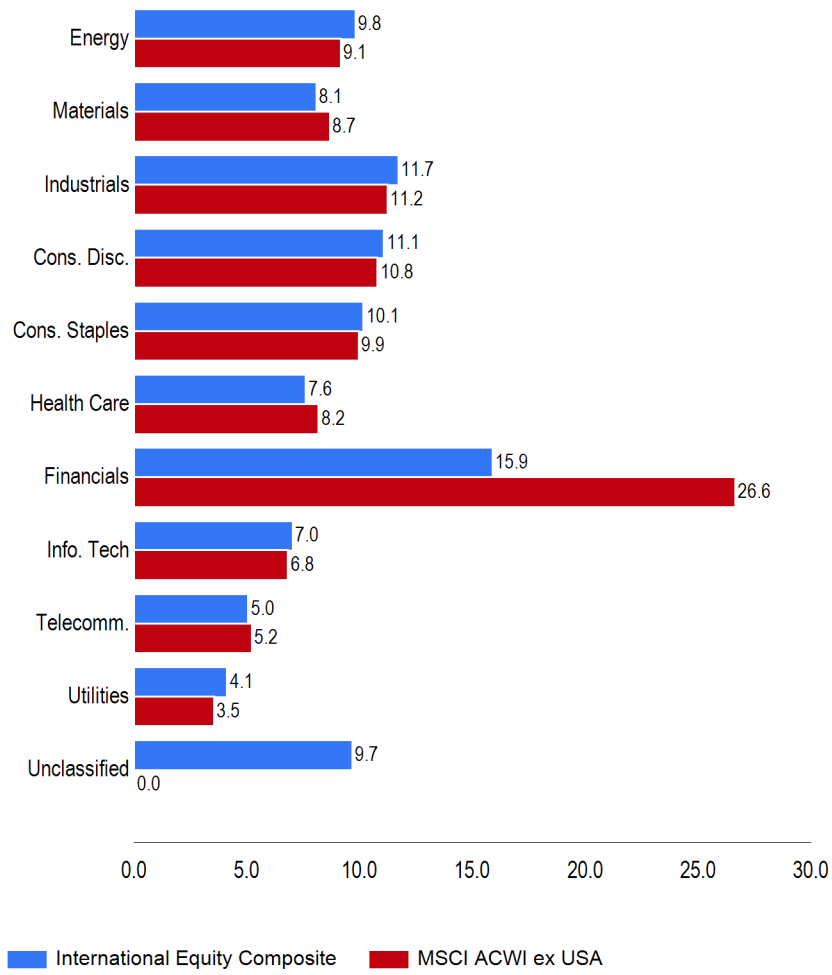
Equity Characteristics

	Portfolio	MSCI ACWI ex USA
Number of Holdings	1,577	1,824
Weighted Avg. Market Cap. ($B)	37.4	54.2
Median Market Cap. ($B)	3.2	6.8
Price To Earnings	18.8	17.6
Price To Book	3.2	2.3
Price To Sales	2.7	1.9
Return on Equity (%)	17.1	14.7
Yield (%)	2.7	2.9
Beta	0.8	1.0
R-Squared	1.0	1.0

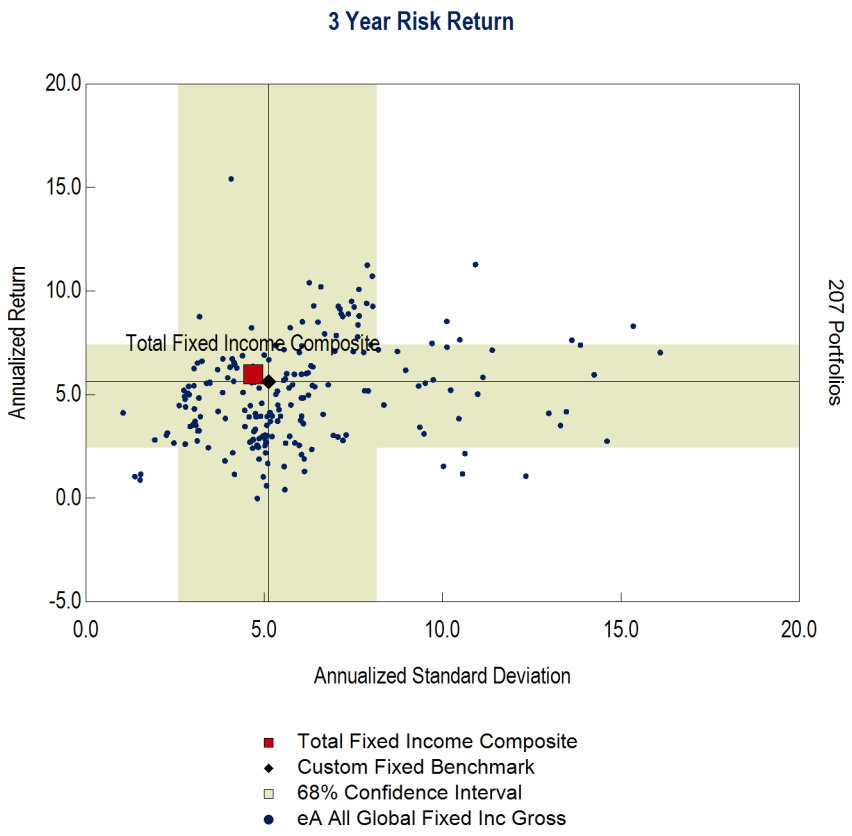
Regional Allocation

Region Weighting	International Equity Composite	MSCI ACWI ex USA
North America ex U.S.	2.91	7.26
United States	10.25	0.00
Europe Ex U.K.	19.38	33.47
United Kingdom	6.95	15.35
Pacific Basin Ex Japan	7.58	8.81
Japan	15.47	14.23
Emerging Markets	34.20	20.51
Other	3.26	0.38

Equity Sector Allocation

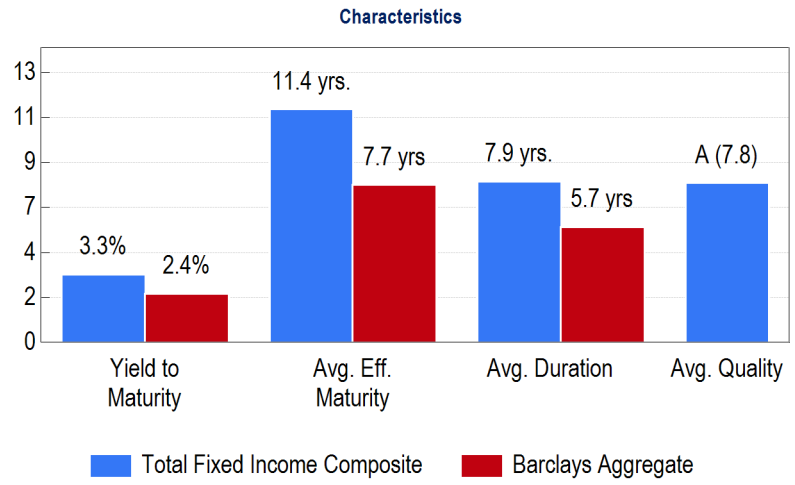


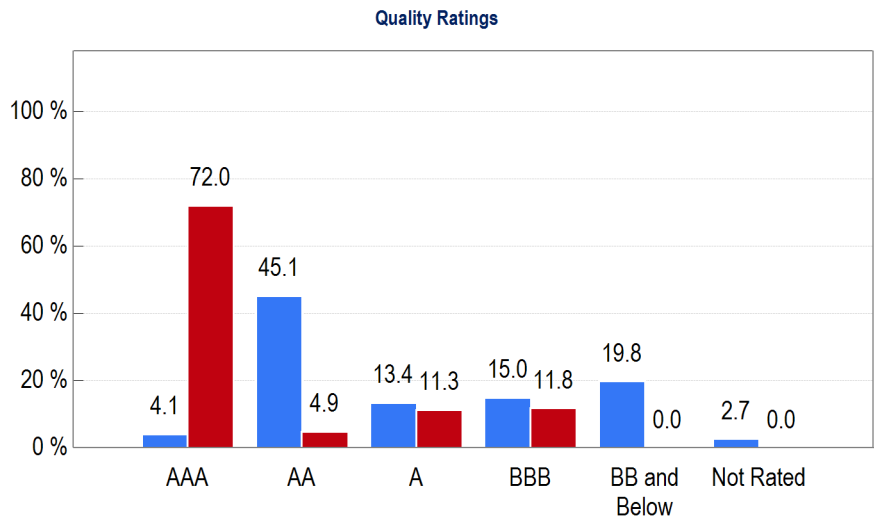
Total Fixed Income Composite

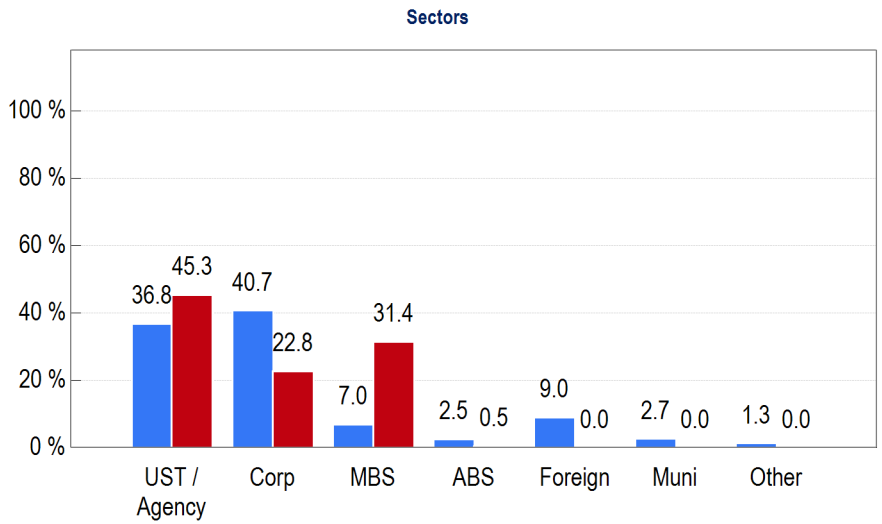


Style Analysis: Analytic is based on historical returns

Total Fixed Income Composite

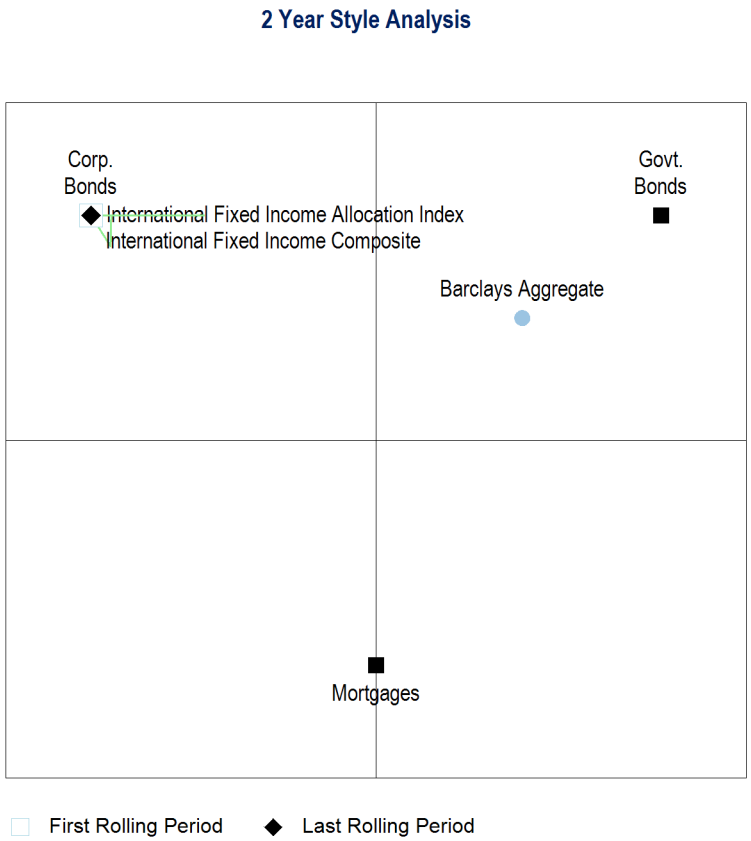






Characteristic, Quality, and Sector information not available for the Custom Fixed Income benchmark

International Fixed Income Composite



Style Analysis: Analytic is based on historical returns

Appendix

Glossary of Terms

The calculation methodology for each measure of performance is outlined below.

Measurement	Description	Equation
Policy Target	Measures policy allocation decisions.	= Target Asset Weights x Index Returns
Allocation Index	Measures actual allocation decisions. Deviations from the policy target can be derived. (Allocation Index – Policy Index)	= Actual Asset Weights x Index Returns
Composite (Total Return)	Measures actual performance and can derive active management decisions. (Composite – Allocation Index)	= Actual Asset Weights x Actual Returns

The calculation methodology for each measure of attribution is outlined below.

Measurement	Description	Equation
Allocation Effect	Measure the effects of overweighting or underweighting managers and asset classes.	= (Actual Manager Weight – Policy Target Weight) X Policy Index Return
Selection Effect	Measures the managers' ability to add excess return relative to the policy index.	= (Actual Manager Return –Index Return) x Policy Target Weight
Interaction Effect	Measures the cross correlation of both selection and allocation affects and is often referred to as an "error term".	= (Actual Manager Return x (Actual Manager Weight – Policy Target Weight)) – ((Manager Weight – Policy Target Weight) X Index Return)

Glossary of Terms

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:
(Annualized Return of Portfolio - Annualized Return of Benchmark)/Annualized Standard Deviation(Period Portfolio Return – 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:
*Calculation Average (X-Y)/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:
(Annualized Return of Portfolio – Annualized Return of Risk Free) / 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:
*Tracking Error = Standard Deviation (X-Y) * √(# 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:
(Portfolio Average Return - Average Return of Risk-Free Rate)/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.

UpsideCapture = TotalReturn(FundReturns)/TotalReturns(BMReturn) when Period Benchmark Return is > = 0

DownsideCapture = TotalReturn(FundReturns)/TotalReturns(BMReturn) when Benchmark <0

Data Source: InvestorForce

Alternative Investment Disclaimer

It is important to note the following characteristics of many non-traditional investment strategies including hedge funds and private equity:

1. Performance can be volatile and investors could lose all or a substantial portion of their investment
2. Leverage and other speculative practices may increase the risk of loss
3. Past performance may be revised due to the revaluation of investments
4. These investments can be illiquid, and investors may be subject to lock-ups or lengthy redemption terms
5. A secondary market may not be available for all funds, and any sales that occur may take place at a discount to value
6. These funds are not subject to the same regulatory requirements as registered investment vehicles
7. Managers are not required to provide periodic pricing or valuation information to investors
8. These funds may have complex tax structures and delays in distributing important tax information
9. These funds often charge high fees
10. Limited partnership agreements often give the manager authority to trade in securities, markets or currencies that are not within the manager's realm of expertise or contemplated investment strategy

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