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City of Hartford Municipal Employees' Retirement Fund

Fourth Quarter 2012 Investment Performance Analysis

February 22, 2013

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- **Save the date**
 - Tuesday May 14, 2013 & Wednesday May 15, 2013
- **Details**
 - Location: Boston Convention and Exhibition Center, 415 Summer Street, Boston, MA
 - Hotel: Renaissance Waterfront Hotel
 - Registration: Available on the NEPC website in early March
- **Headline speakers**
 - Cliff Asness, Ph.D., AQR Capital Management
 - Michael Hood, JP Morgan Asset Management



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Executive 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 December, 2012 the target allocation allocation of the fund is 32% equities, 32% fixed income, 7% GAA, and 29% alternatives.
- Recent Decisions and Ongoing Activities**
 - Discussions on assumptions and client actions for 2013 and updated asset allocation review.
 - Cornerstone and Heitman will be funded in 2013 to fulfill the Core Real Estate mandate.
 - Continuing manager searches to keep the fund on the targeted long-term allocations.
 - Global Asset Allocation and Fixed Income managers continue to be positive contributors to total plan performance during the fourth quarter.
- Total Fund Performance**
 - The Fund returned 2.4% for the Quarter, which ranked in the 14th percentile in the IF Public DB Fund Universe.
 - Trailing performance ranks above the median for the last quarter, one, three, five and ten year period.
- Total Fund Asset Allocation**
 - Currently, the Fund is overweight to Domestic Equity, International Equity, Core Fixed Income and TIPS. The fund is underweight to Emerging Market Equity, Global Asset Allocation, and Alternative Strategies relative to long term targets.

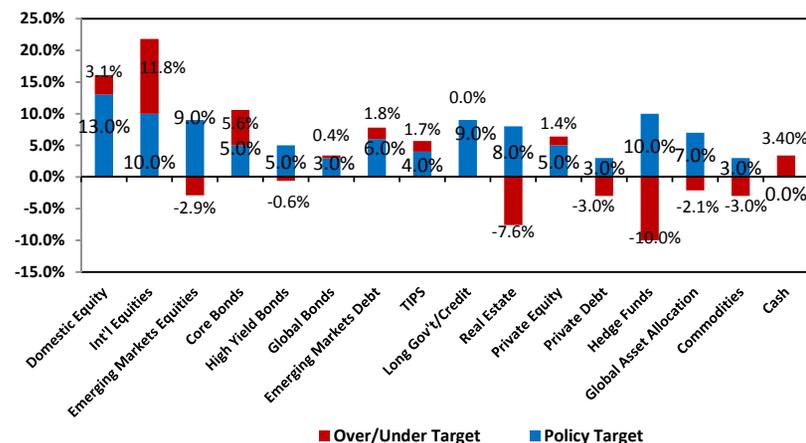
Total Return

	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Total Composite	2.4	13.2	9.2	3.8
Rank	14	19	24	36
Median Public Funds	1.7	11.9	8.4	3.5
Policy Index	1.8	12.5	9.1	4.3

Periods longer than one year are annualized

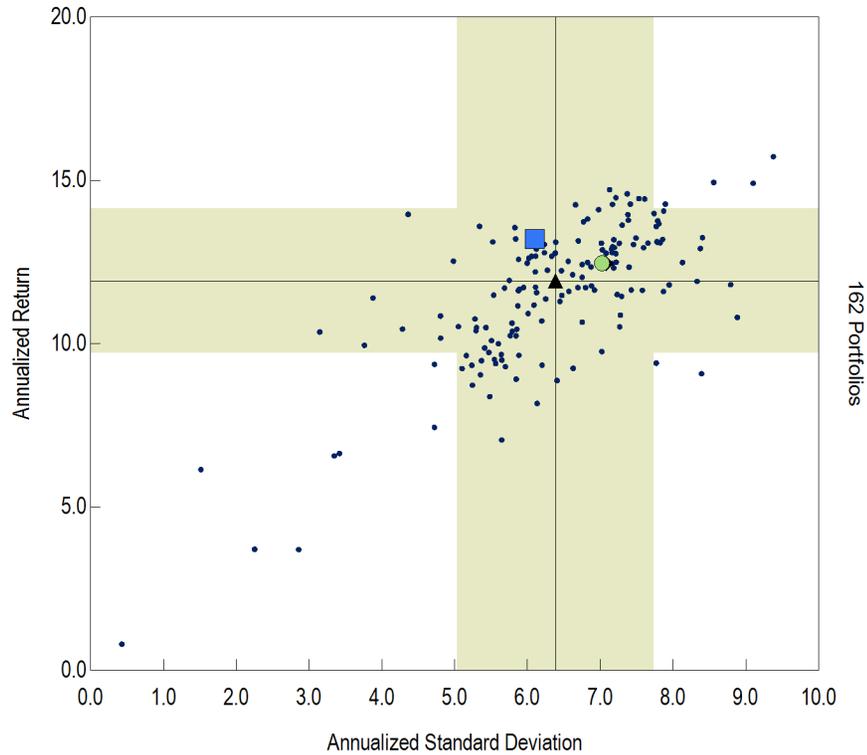
*Rankings versus total Public Funds=best, 100=worst.

Current Allocation Total Composite



Total Fund Risk/Return - 1 Years

1 Years Ending December 31, 2012



- Composite
- ◆ Policy Index
- Allocation Index
- ▲ Universe Median
- 68% Confidence Interval
- IF Public DB Gross

1 Years Ending December 31, 2012

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Composite	13.20%	19	6.10%	39
Policy Index	12.45%	44	7.08%	67
Allocation Index	12.46%	44	7.02%	66

1 Years Ending December 31, 2012

	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
Composite	2.15	8	1.56	31
Policy Index	1.75	63	1.60	24
Allocation Index	1.76	60	1.20	91

City of Hartford Municipal Employees Retirement Fund
Investment Market Update: As of December 31, 2012

PERFORMANCE THROUGH 12/31/2012

Sector	Index	2008	2009	2010	2011	QTR 1	QTR 2	QTR 3	OCT	NOV	DEC	QTR 4	2012
Emerging	EM (net)	-53.3%	78.5%	18.9%	-18.4%	14.1%	-8.9%	7.7%	-0.6%	1.3%	4.9%	5.6%	18.2%
Small Cap Value	R2000 Value	-28.9%	20.6%	24.5%	-5.5%	11.6%	-3.0%	5.7%	-1.3%	0.3%	4.2%	3.2%	18.1%
Emerging FI	BC Emerging (USD)	-14.7%	34.2%	12.8%	7.0%	5.5%	1.4%	6.8%	1.2%	1.0%	1.0%	3.3%	17.9%
SMID Cap	R2500	-36.8%	34.4%	26.7%	-2.5%	13.0%	-4.1%	5.6%	-1.0%	1.5%	2.6%	3.1%	17.9%
REITS	Wilshire REIT	-39.2%	28.6%	28.6%	9.2%	10.8%	3.7%	-0.1%	-0.9%	-0.4%	3.8%	2.5%	17.6%
Large Cap Value	R1000 Value	-36.8%	19.7%	15.5%	0.4%	11.1%	-2.2%	6.5%	-0.5%	-0.0%	2.1%	1.5%	17.5%
Int. Equity	EAFE (net)	-43.4%	31.8%	7.8%	-12.1%	10.9%	-7.1%	6.9%	0.8%	2.4%	3.2%	6.6%	17.3%
EMD Loc.	GBI-EM Glob. Div.	-5.2%	22.0%	15.7%	-1.8%	8.3%	-1.2%	4.8%	0.5%	1.4%	2.2%	4.1%	16.8%
Large Cap	Russell 1000	-37.6%	28.4%	16.1%	1.5%	12.9%	-3.1%	6.3%	-1.7%	0.8%	1.0%	0.1%	16.4%
Small Cap	Russell 2000	-33.8%	27.2%	26.9%	-4.2%	12.4%	-3.5%	5.3%	-2.2%	0.5%	3.6%	1.9%	16.3%
Large Cap	S&P 500	-37.0%	26.5%	15.1%	2.1%	12.6%	-2.8%	6.4%	-1.8%	0.6%	0.9%	-0.4%	16.0%
High Yield	BC HY	-26.2%	58.2%	15.1%	5.0%	5.3%	1.8%	4.5%	0.9%	0.8%	1.6%	3.3%	15.8%
Large Cap Growth	R1000 Growth	-38.4%	37.2%	16.7%	2.6%	14.7%	-4.0%	6.1%	-2.9%	1.7%	-0.0%	-1.3%	15.3%
Small Cap Growth	R2000 Growth	-38.5%	34.5%	29.1%	-2.9%	13.3%	-3.9%	4.8%	-3.1%	0.8%	2.9%	0.4%	14.6%
Long Credit	BC Long Credit	-3.9%	16.8%	10.7%	17.1%	0.8%	5.0%	5.2%	2.1%	-0.4%	-0.4%	1.3%	12.8%
Diversified	Diversified*	-26.8%	25.9%	12.4%	1.9%	8.6%	-1.7%	4.7%	-0.7%	1.0%	1.2%	1.5%	13.3%
Long Gov/Credit	BC Long Gov/Credit	8.4%	1.9%	10.2%	22.5%	-2.1%	7.3%	3.1%	1.2%	0.3%	-1.0%	0.5%	8.8%
Muni Bonds	BC Muni (unadj)	-2.5%	12.9%	2.4%	10.7%	1.7%	1.9%	2.3%	0.3%	1.6%	-1.2%	0.7%	6.8%
Core FI	BC Aggregate	5.2%	5.9%	6.5%	7.8%	0.3%	2.1%	1.6%	0.2%	0.2%	-0.1%	0.2%	4.2%
Int. Gov/Credit	BC Intermediate GC	5.1%	5.2%	5.9%	5.8%	0.6%	1.5%	1.4%	0.1%	0.3%	-0.1%	0.3%	3.9%
Int. Core FI	BC Intermediate Agg	4.9%	6.5%	6.1%	6.0%	0.7%	1.3%	1.4%	0.0%	0.1%	-0.0%	0.2%	3.6%
Treasury STRIPS	BC 20+ STRIPS	59.5%	-36.0%	10.9%	58.5%	-11.3%	18.8%	-0.6%	-0.1%	1.6%	-3.2%	-1.7%	3.0%
Gov/Credit	BC 1-5 Yr Gov/Cred	5.1%	4.6%	4.1%	3.1%	0.5%	0.6%	0.9%	0.0%	0.2%	-0.0%	0.2%	2.2%
Global FI	Citigroup WGBI	10.9%	2.6%	5.2%	6.4%	-0.5%	0.9%	3.0%	-0.6%	-0.2%	-0.9%	-1.7%	1.6%
Gov/Credit	BC 1-3 Yr Gov/Cred	5.0%	3.8%	2.8%	1.6%	0.4%	0.2%	0.5%	0.0%	0.1%	0.1%	0.2%	1.3%
Commodities	DJ UBS Commodity	-35.6%	18.9%	16.8%	-13.3%	0.9%	-4.5%	9.7%	-3.9%	0.1%	-2.6%	-6.3%	-1.1%

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

Sources: Barclays, Bloomberg, Wilshire

PERFORMANCE THROUGH 1/31/2013

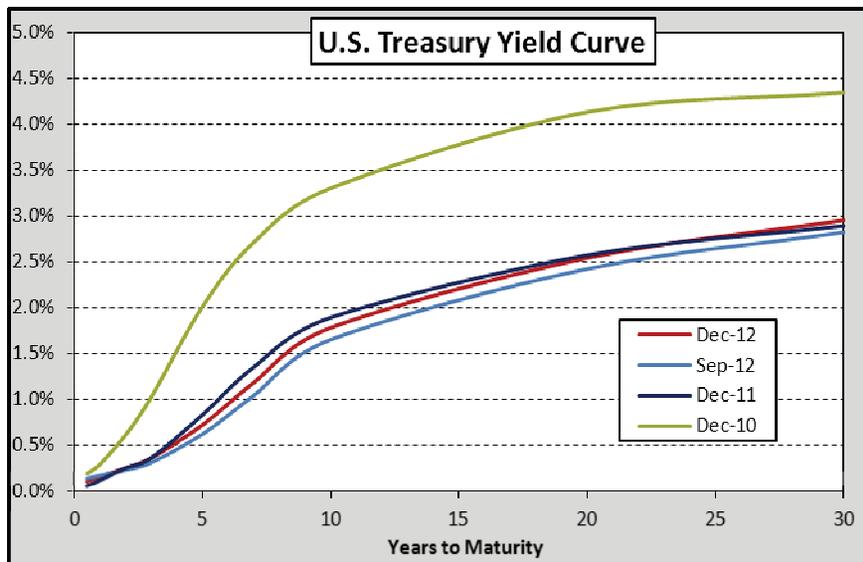
Sector	Index	2008	2009	2010	2011	2012	JAN
SMID Cap	R2500	-36.8%	34.4%	26.7%	-2.5%	17.9%	6.8%
Small Cap Growth	R2000 Growth	-38.5%	34.5%	29.1%	-2.9%	14.6%	6.6%
Large Cap Value	R1000 Value	-36.9%	19.7%	15.5%	0.4%	17.5%	6.5%
Small Cap	Russell 2000	-33.8%	27.2%	26.9%	-4.2%	16.4%	6.3%
Small Cap Value	R2000 Value	-28.9%	20.6%	24.5%	-5.5%	18.1%	6.0%
Large Cap	Russell 1000	-37.6%	28.4%	16.1%	1.5%	16.4%	5.4%
Int. Equity	EAFE (net)	-43.4%	31.8%	7.8%	-12.1%	17.3%	5.3%
Large Cap	S&P 500	-37.0%	26.5%	15.1%	2.1%	16.0%	5.2%
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REITS	Wilshire REIT	-39.2%	28.6%	28.6%	9.2%	17.6%	3.5%
Diversified	Diversified*	-24.5%	24.1%	13.5%	1.3%	12.7%	3.1%
Commodities	DJ UBS Commodity	-35.7%	18.9%	16.8%	-13.3%	-1.1%	2.4%
Emerging	EM (net)	-53.3%	78.5%	18.9%	-18.4%	18.2%	1.4%
High Yield	BC HY	-26.2%	58.2%	15.1%	5.0%	15.8%	1.3%
EMD Loc.	GBI-EM Glob. Div.	-5.2%	22.0%	15.7%	-1.8%	16.8%	0.7%
Muni Bonds	BC Muni (unadj)	-2.5%	12.9%	2.4%	10.7%	6.8%	0.4%
Gov/Credit	BC 1-3 Yr Gov/Cred	5.0%	3.8%	2.8%	1.6%	1.3%	0.0%
Int. Gov/Credit	BC Intermediate GC	5.1%	5.2%	5.9%	5.8%	3.9%	-0.4%
Emerging FI	BC Emerging (USD)	-14.8%	34.2%	12.8%	7.0%	18.0%	-0.7%
Core FI	BC Aggregate	5.2%	5.9%	6.5%	7.8%	4.2%	-0.7%
Int. Core FI	BC Intermediate Agg	5.2%	5.9%	6.5%	7.8%	4.2%	-0.7%
Global FI	Citigroup WGBI	10.9%	2.6%	5.2%	6.4%	1.7%	-1.3%
Long Credit	BC Long Credit	-3.9%	16.8%	10.7%	17.1%	12.7%	-2.2%
Long Gov/Credit	BC Long Gov/Credit	8.4%	1.9%	10.2%	22.5%	8.8%	-2.7%
Treasury STRIPS	BC 20+ STRIPS	59.5%	-36.0%	10.9%	58.5%	3.0%	-5.9%

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

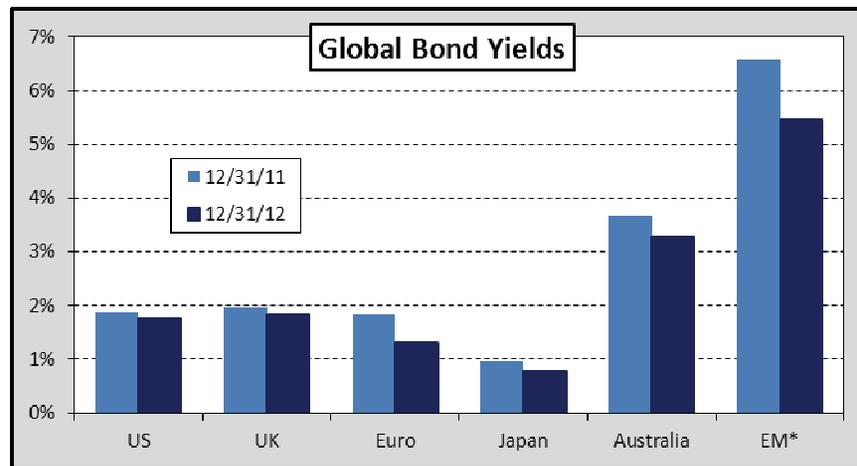
Sources: Barclays, Bloomberg, Wilshire

City of Hartford Municipal Employees Retirement Fund

Market Environment – Interest Rates

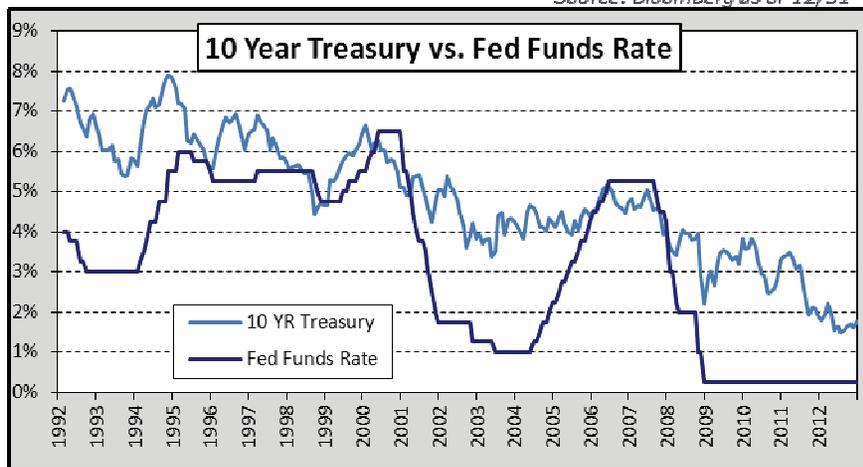


Source: Bloomberg as of 12/31



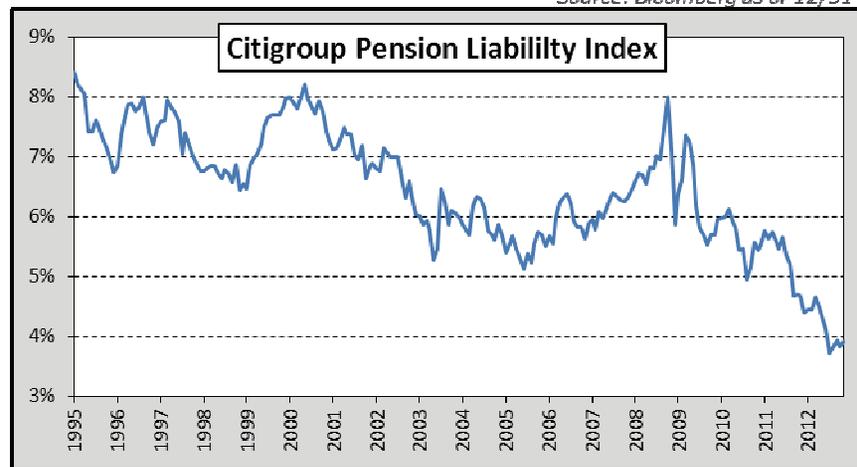
Bond yields across the globe mostly fell in 2012

Source: Bloomberg as of 12/31



Fed Funds rate remained at 0.25% while the 10 Yr. Treasury Yield finished December at 1.76%

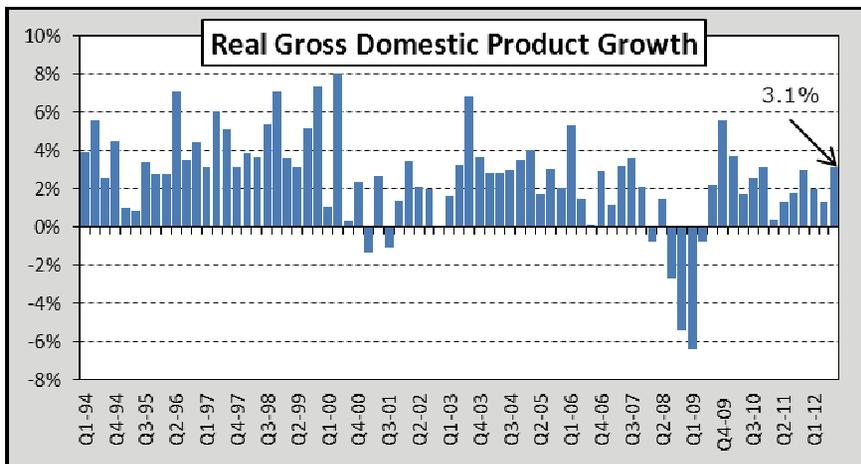
Source: Bloomberg as of 12/31



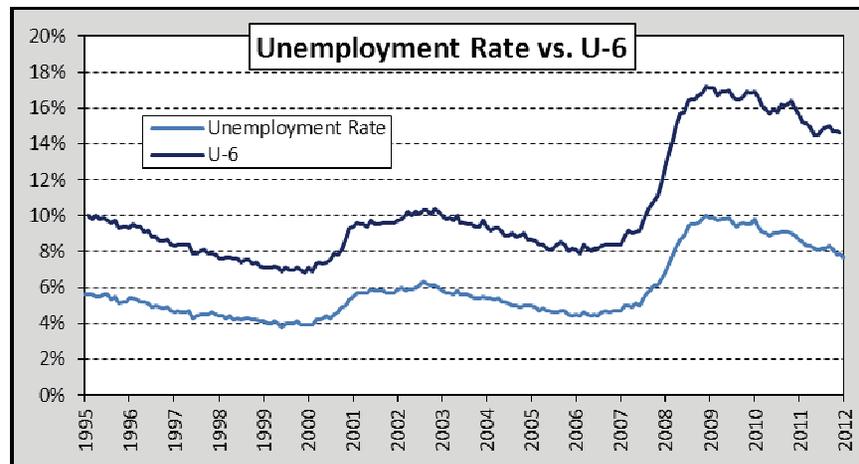
Citi Pension discount rate rose to 3.91% in November but remained near all-time lows

Source: Citigroup as of 12/31

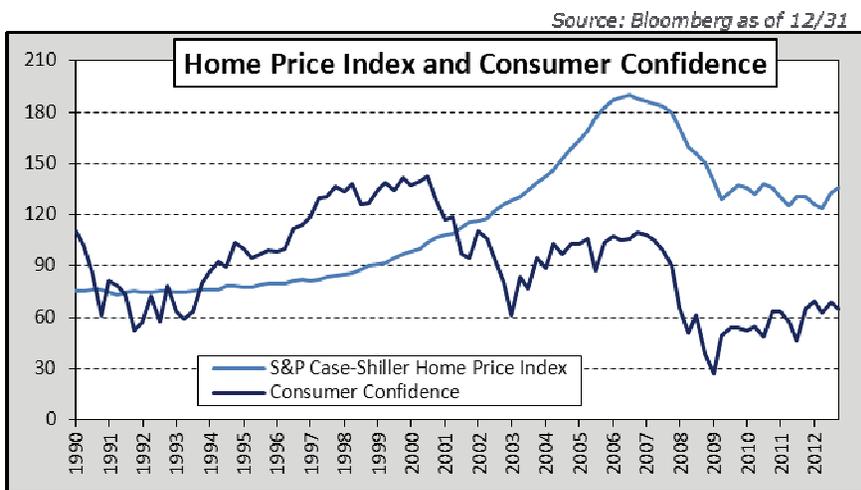
City of Hartford Municipal Employees Retirement Fund
US Economic Environment



Third quarter GDP growth revised up to 3.1% after being originally revised to 2.7% from 2.0%

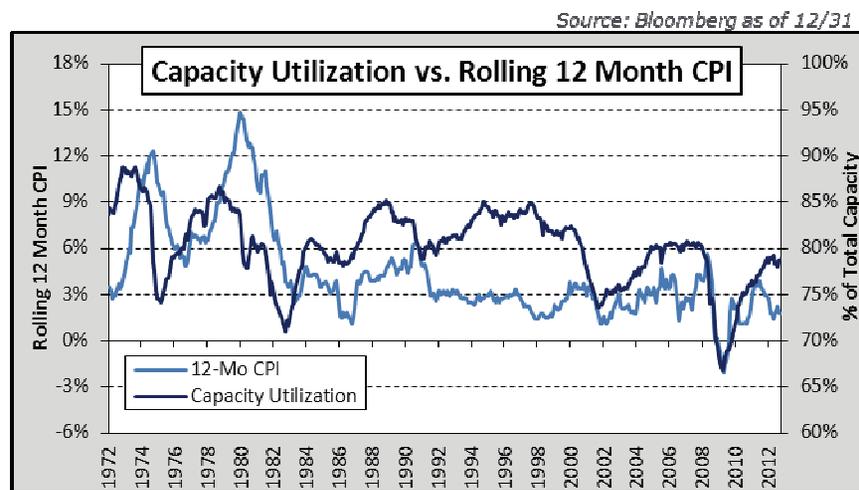


Unemployment stayed flat at 7.8% in December; while U-6 also remained at 14.4%



In the fourth quarter consumer confidence receded slightly from 2012 highs; the Case-Shiller home price index (as of 9/30) reached its highest mark since 2010

Source: Bloomberg as of 12/31



Rolling 12 month CPI decreased to 1.7% at December end; capacity utilization increased to 78.8% in the month

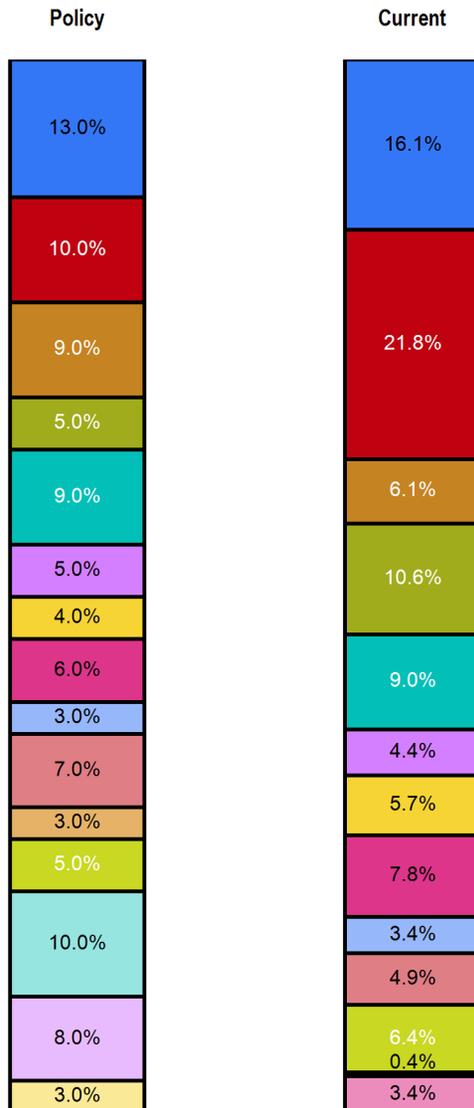
Source: Bloomberg as of 12/31



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City of Hartford Municipal Employees Retirement Fund

Total Fund Asset Allocation vs. Policy Targets



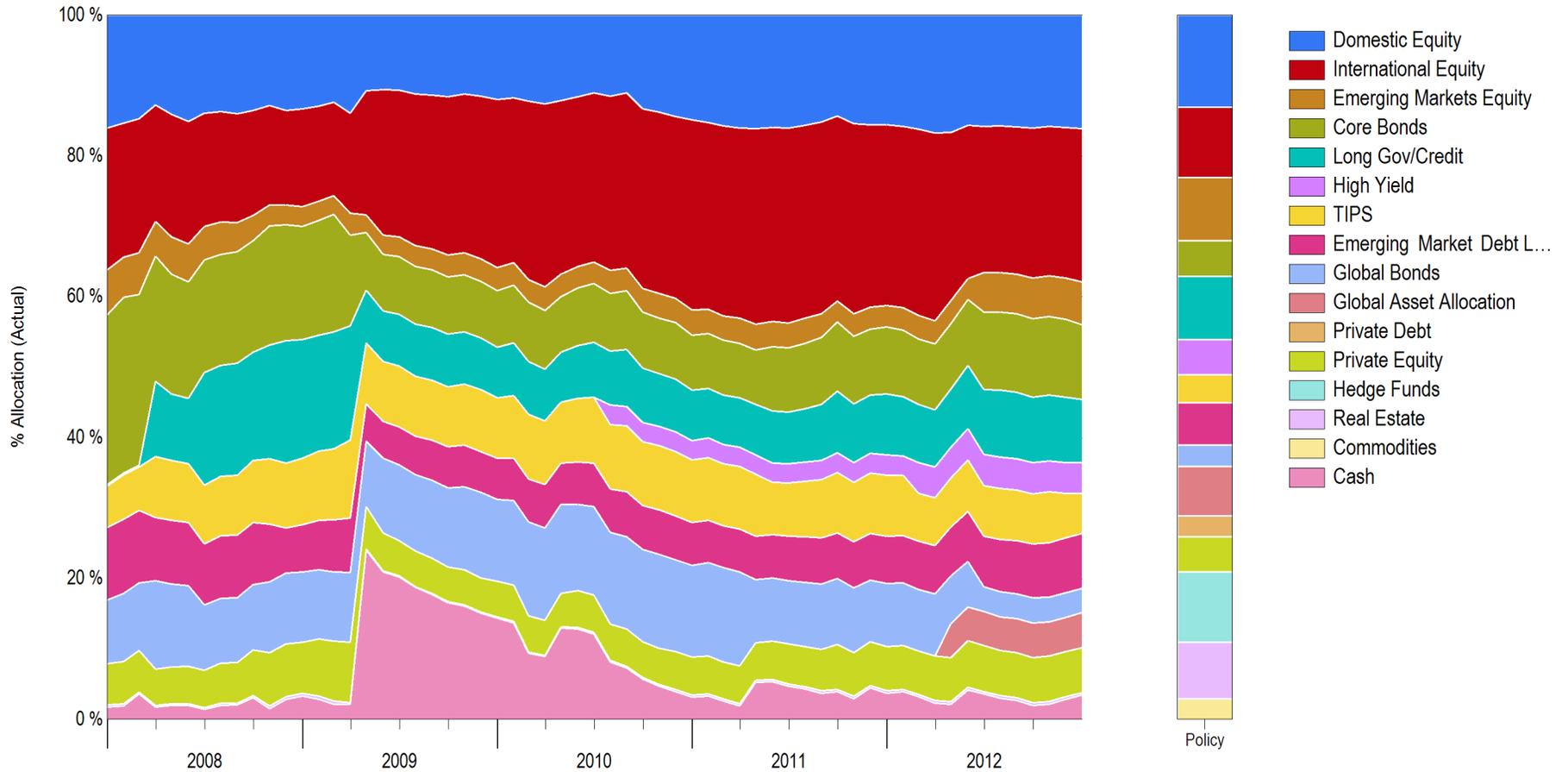
Asset Allocation vs. Target

	Current	Policy	Current	Difference*	Policy Range
Domestic Equity	\$156,109,567	13.0%	16.1%	3.1%	10.0% - 16.0%
International Equity	\$211,026,933	10.0%	21.8%	11.8%	8.0% - 12.0%
Emerging Markets Equity	\$59,040,327	9.0%	6.1%	-2.9%	7.0% - 11.0%
Core Bonds	\$102,207,568	5.0%	10.6%	5.6%	3.5% - 6.5%
Long Gov/Credit	\$87,302,904	9.0%	9.0%	0.0%	7.0% - 11.0%
High Yield	\$42,488,319	5.0%	4.4%	-0.6%	3.5% - 6.5%
TIPS	\$54,929,825	4.0%	5.7%	1.7%	2.5% - 5.5%
Emerging Market Debt Local	\$75,661,062	6.0%	7.8%	1.8%	4.0% - 8.0%
Global Bonds	\$33,342,210	3.0%	3.4%	0.4%	2.0% - 4.0%
Global Asset Allocation	\$47,625,977	7.0%	4.9%	-2.1%	5.0% - 9.0%
Private Debt	--	3.0%	--	-3.0%	1.0% - 5.0%
Private Equity	\$62,166,697	5.0%	6.4%	1.4%	3.0% - 8.0%
Hedge Funds	--	10.0%	--	-10.0%	8.0% - 12.0%
Real Estate	\$3,413,679	8.0%	0.4%	-7.6%	5.0% - 11.0%
Commodities	--	3.0%	--	-3.0%	2.0% - 4.0%
Cash	\$33,327,412	--	3.4%	3.4%	--
Total	\$968,642,478	100.0%	100.0%		

*Difference between Policy and Current Allocation

Total Fund Asset Allocation History

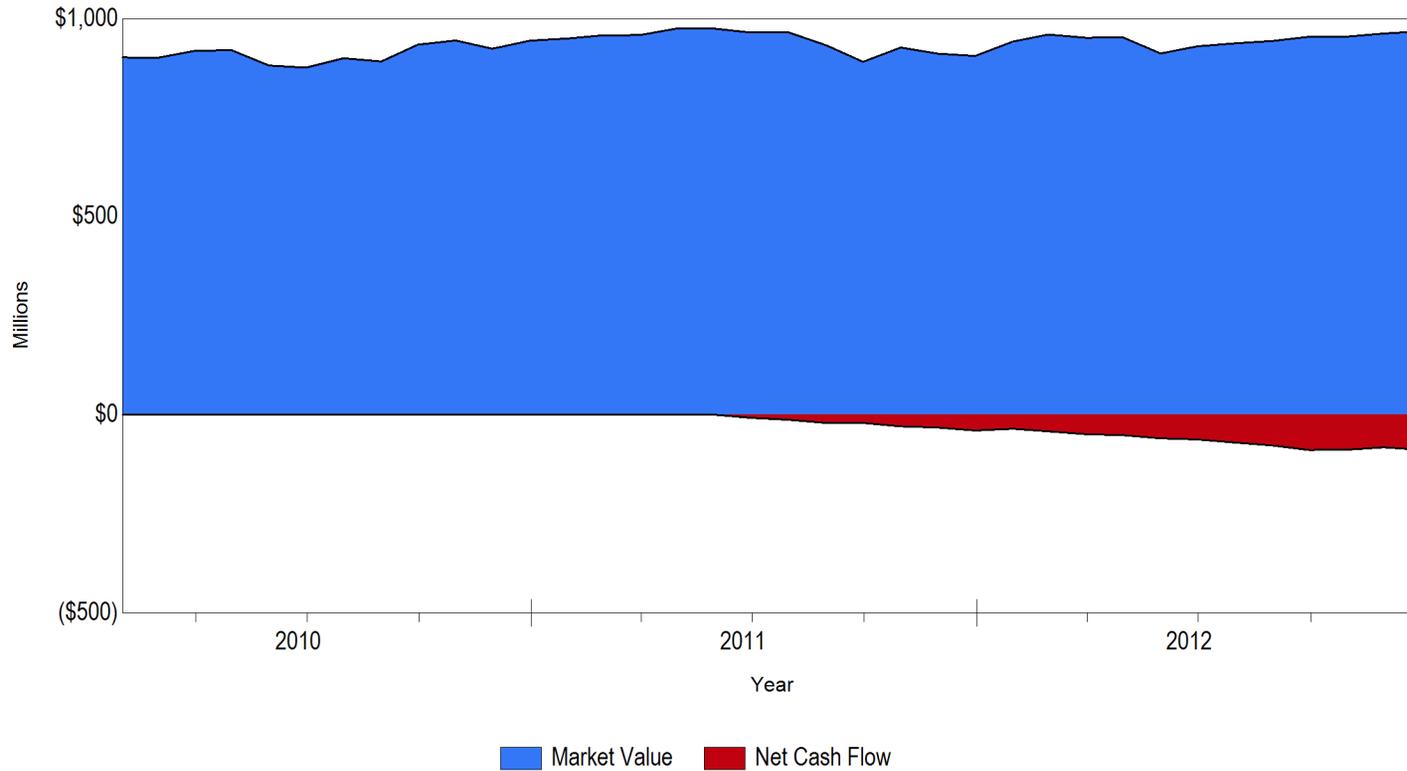
Asset Allocation History



City of Hartford Municipal Employees Retirement Fund

Total Fund Asset Growth Summary

3 Years Ending December 31, 2012



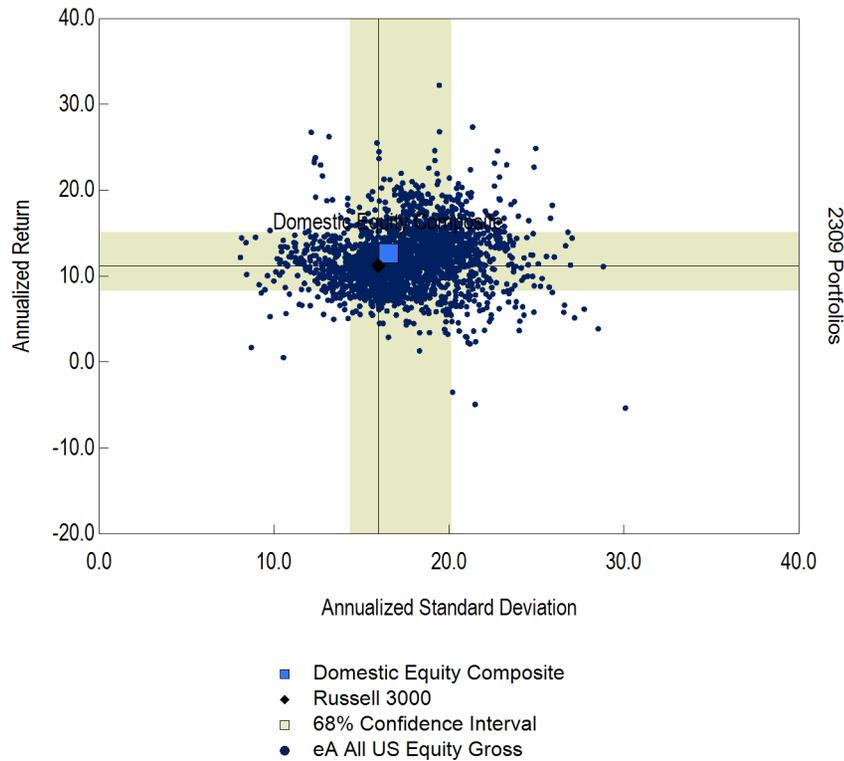
Sources of Portfolio Growth	Last Three Months	Year-To-Date	Fiscal Year-To-Date	One Year	Three Years
Beginning Market Value	\$954,800,553	\$906,157,168	\$930,463,764	\$906,157,168	\$914,802,260
Net Additions/Withdrawals	-\$7,435,718	-\$49,673,403	-\$29,233,845	-\$49,673,403	-\$87,306,249
Investment Earnings	\$21,277,643	\$112,158,713	\$67,412,559	\$112,158,713	\$141,146,467
Ending Market Value	\$968,642,478	\$968,642,478	\$968,642,478	\$968,642,478	\$968,642,478

Manager Pages

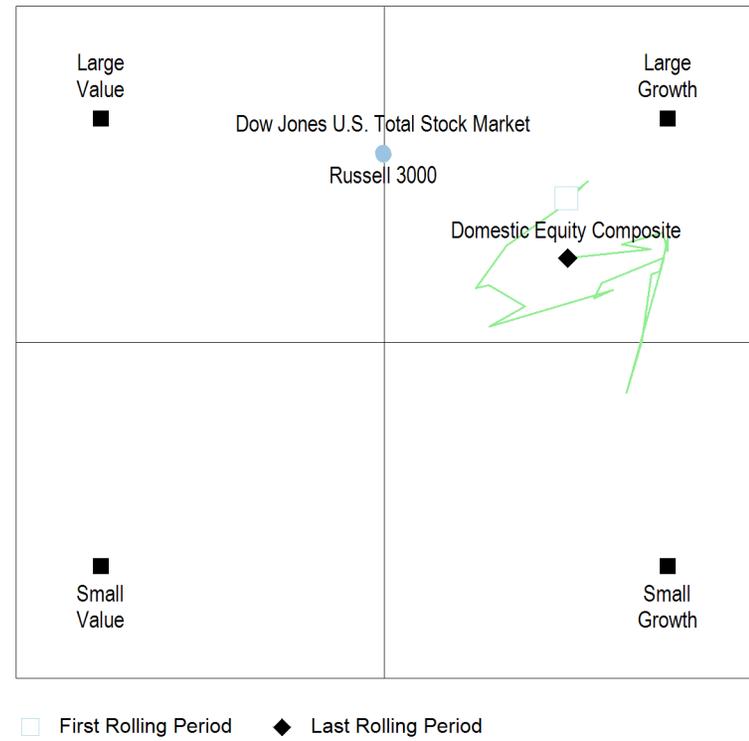


Domestic Equity Composite

3 Year Risk Return



3 Year Style Analysis



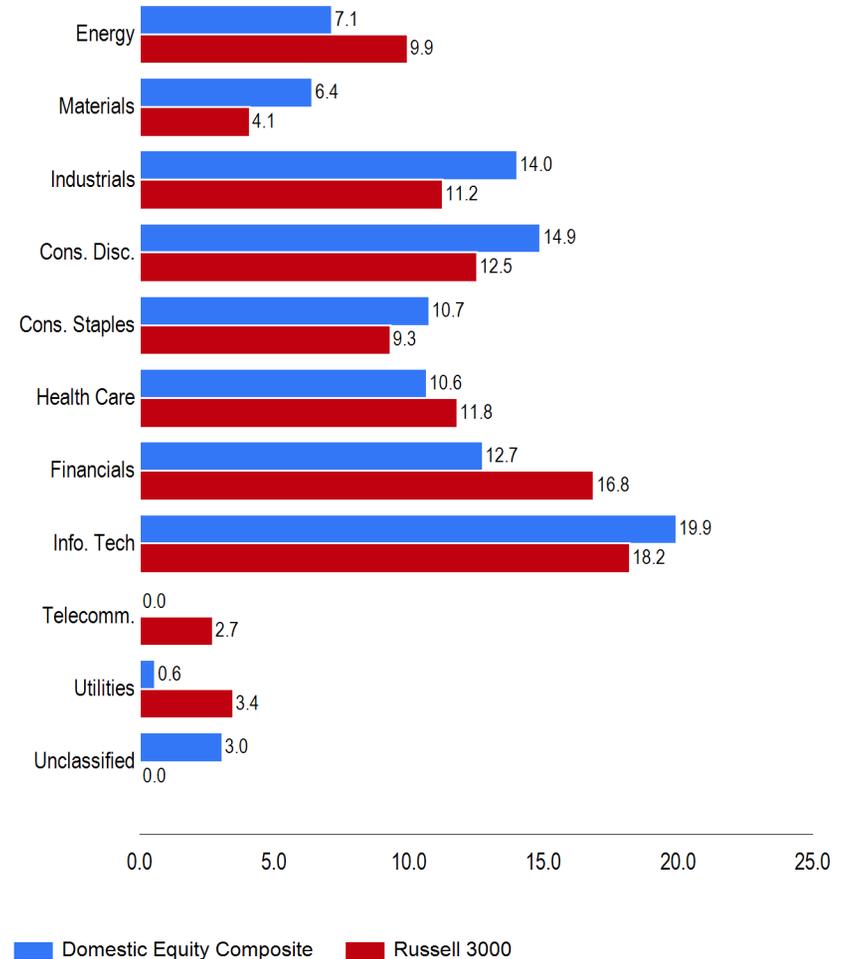
Style Analysis: Analytic is based on historical returns

Domestic Equity Composite

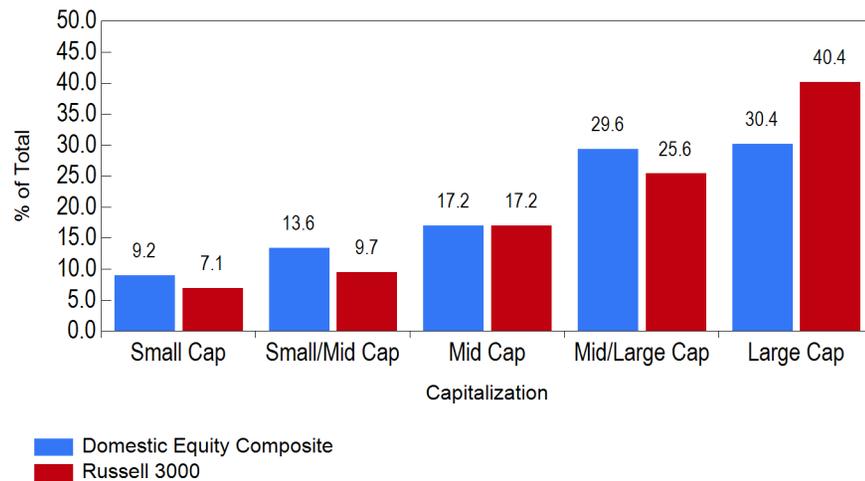
Equity Characteristics

	Portfolio	Russell 3000
Number of Holdings	242	2,969
Weighted Avg. Market Cap. (\$B)	62.8	84.8
Median Market Cap. (\$B)	2.6	1.0
Price To Earnings	19.2	18.0
Price To Book	3.6	2.9
Price To Sales	2.4	2.2
Return on Equity (%)	18.2	17.6
Yield (%)	1.3	2.1
Beta	1.0	1.0
R-Squared	1.0	1.0

Equity Sector Allocation



Market Capitalization As Of December 31, 2012



City of Hartford Municipal Employees Retirement Fund

Domestic Equity Composite

Top Ten Holdings

MICROSOFT	3.1%
CASH - USD	3.0%
COCA COLA	2.8%
GOOGLE 'A'	2.3%
ECOLAB	2.2%
LIBERTY GLOBAL SR.C	2.0%
AON CLASS A	1.9%
APPLE	1.8%
ORACLE	1.8%
UNITEDHEALTH GP.	1.8%

Top Positive Contributors

	Relative Contribution %	Return %
APPLE	0.4%	-19.8%
CARMAX	0.3%	32.7%
ECOLAB	0.2%	11.3%
TIMKEN	0.2%	29.5%
NOBLE ENERGY	0.1%	10.0%
TRINITY INDS.	0.1%	19.9%
CHICAGO BDG.&IO.	0.1%	21.8%
MYLAN	0.1%	12.6%
AON CLASS A	0.1%	6.7%
EXXON MOBIL	0.1%	-4.7%

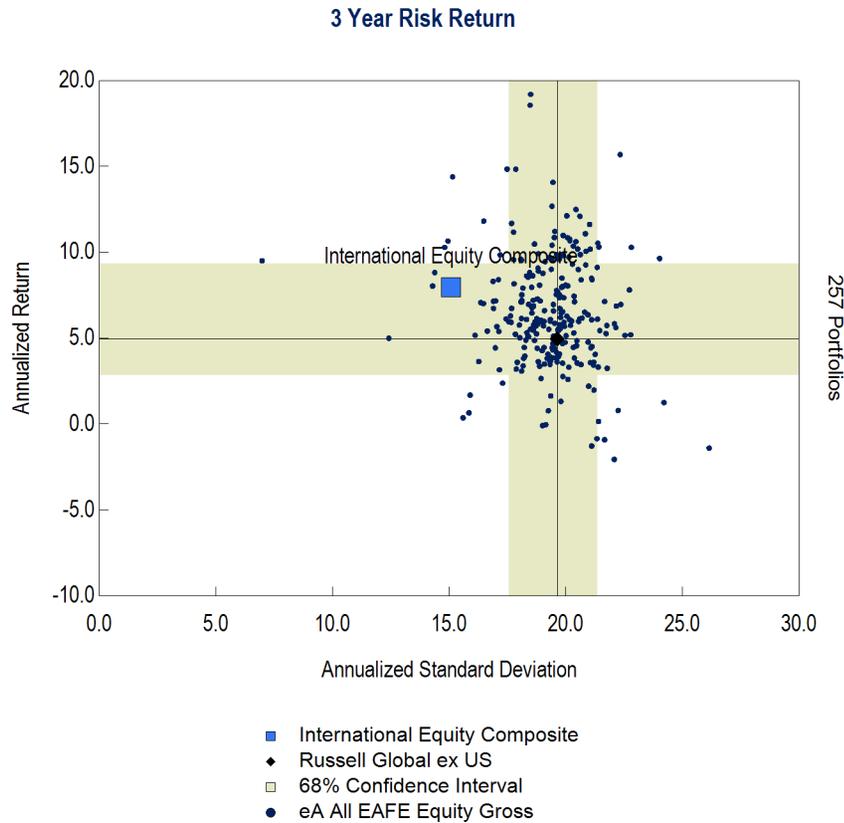
Top Negative Contributors

	Relative Contribution %	Return %
NEWFIELD EXPLORATION	-0.2%	-14.5%
EDWARDS LIFESCIENCES	-0.1%	-16.0%
NATIONAL OILWELL VARCO	-0.1%	-14.5%
WILLIS GROUP HOLDINGS	-0.1%	-8.5%
COCA COLA	-0.1%	-3.8%
DARLING INTL.	-0.1%	-12.3%
MICROSOFT	-0.1%	-9.5%
GOOGLE 'A'	-0.1%	-6.2%
KOHL'S	-0.1%	-15.5%
WAL MART STORES	-0.1%	-7.0%

Equity Sector Attribution

	Attribution Effects				Returns		Sector Weights				
	Total Effects	Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	0.0%	-0.1%	0.1%	0.0%	-3.8%	-2.6%	7.6%	10.2%			
Materials	0.3%	0.2%	0.1%	0.1%	7.4%	3.5%	6.1%	3.9%			
Industrials	0.7%	0.4%	0.1%	0.1%	9.1%	5.2%	13.3%	10.7%			
Cons. Disc.	0.3%	0.2%	0.1%	0.1%	4.5%	2.9%	15.8%	12.2%			
Cons. Staples	-0.1%	0.0%	0.0%	0.0%	-2.0%	-1.6%	11.2%	9.5%			
Health Care	0.3%	0.3%	0.0%	0.0%	1.7%	-0.6%	10.9%	11.9%			
Financials	-0.4%	-0.3%	-0.2%	0.1%	3.3%	4.9%	12.8%	16.0%			
Info. Tech	0.4%	0.3%	0.1%	0.0%	-3.0%	-4.8%	18.1%	19.1%			
Telecomm.	0.2%	--	0.2%	--	--	-5.6%	0.0%	2.9%			
Utilities	0.1%	0.2%	0.1%	-0.1%	2.2%	-2.4%	0.6%	3.5%			
Cash	0.0%	0.0%	0.0%	0.0%	0.0%	--	3.5%	0.0%			
Unclassified	0.0%	0.0%	0.0%	0.0%	0.5%	--	0.1%	0.0%			
Portfolio	1.7%	=	1.1%	+	0.5%	+	0.1%	1.9%	0.2%	100.0%	100.0%

City of Hartford Municipal Employees Retirement Fund
International Equity Composite



Style Analysis: Analytic is based on historical returns

International Equity Composite

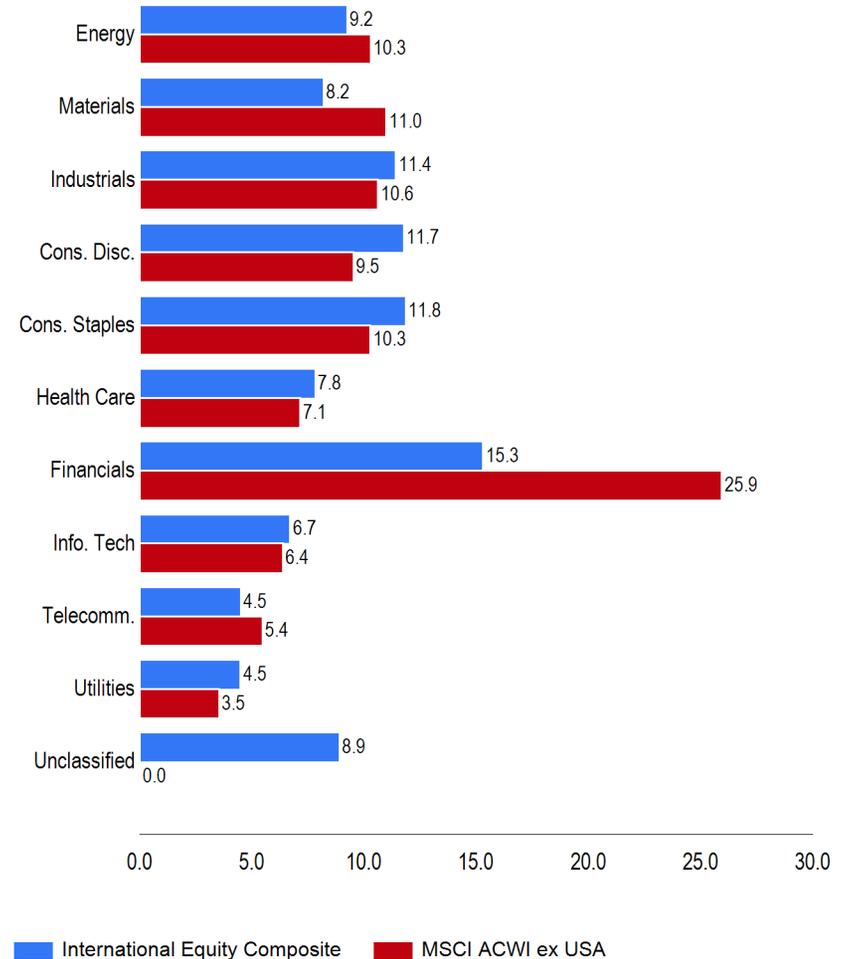
Equity Characteristics

	Portfolio	MSCI ACWI ex USA
Number of Holdings	1,526	1,827
Weighted Avg. Market Cap. (\$B)	36.9	47.7
Median Market Cap. (\$B)	3.3	6.2
Price To Earnings	17.2	16.0
Price To Book	3.1	2.2
Price To Sales	2.2	1.7
Return on Equity (%)	17.6	15.2
Yield (%)	2.7	3.1
Beta	0.8	1.0
R-Squared	1.0	1.0

Regional Allocation

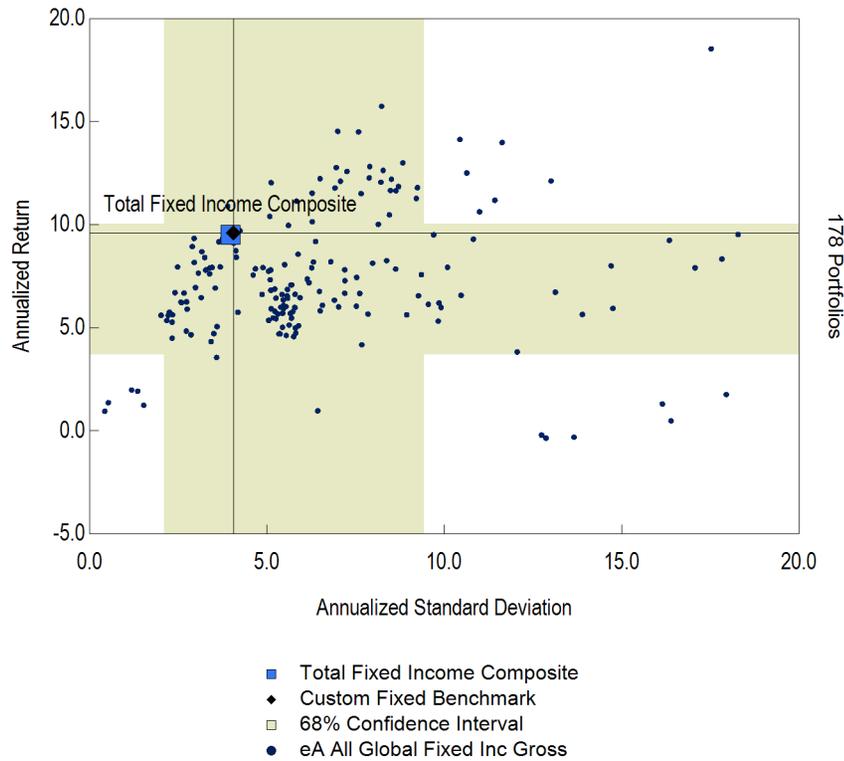
	International Equity Composite	MSCI ACWI ex USA
Region Weighting		
North America ex U.S.	2.19	7.80
United States	15.15	0.00
Europe Ex U.K.	17.03	29.04
United Kingdom	7.16	15.49
Pacific Basin Ex Japan	8.72	9.58
Japan	14.36	13.63
Emerging Markets	32.88	24.10
Other	2.51	0.37

Equity Sector Allocation



Total Fixed Income Composite

3 Year Risk Return

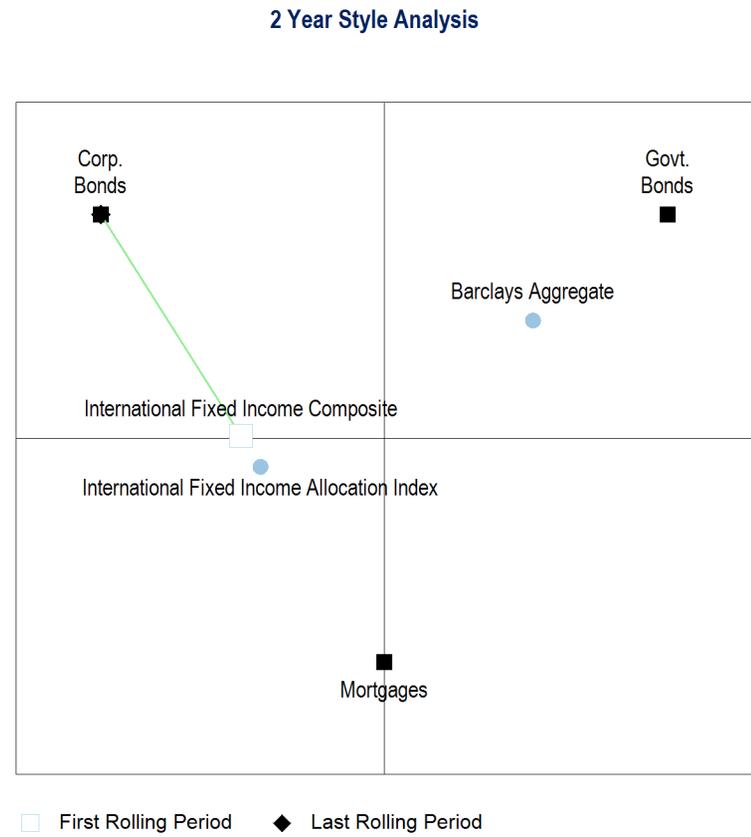
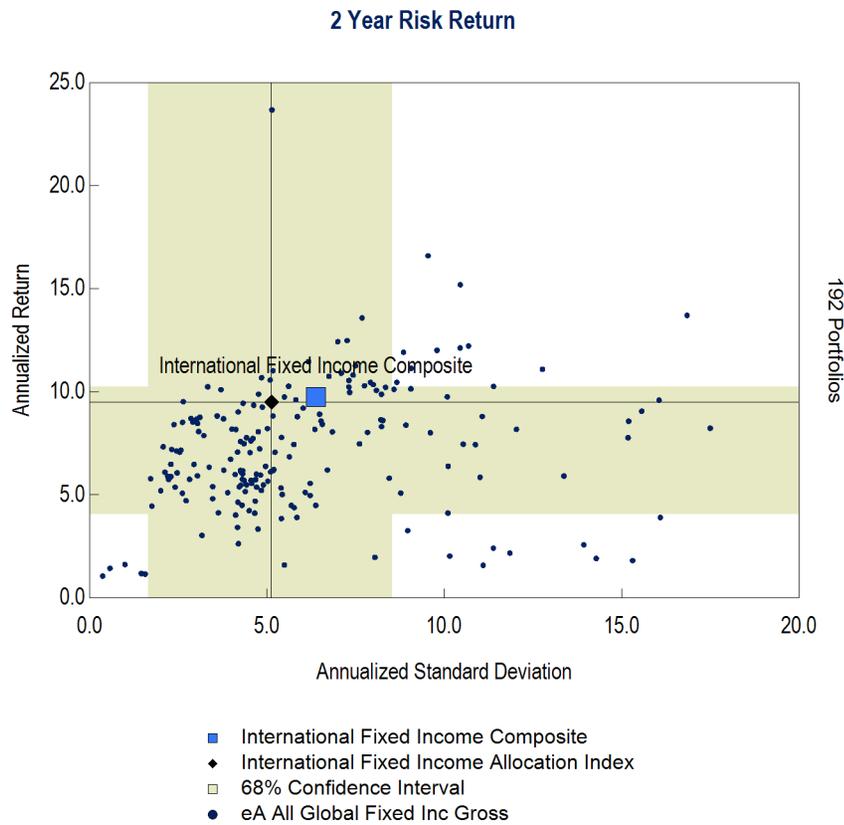


3 Year Style Analysis



Style Analysis: Analytic is based on historical returns

City of Hartford Municipal Employees Retirement Fund
International Fixed Income Composite



Style Analysis: Analytic is based on historical returns

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:

(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) * $\sqrt{(\# \text{ of periods per year})}$
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:

(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

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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