



Ohio Retirement Study Council

Investment Performance Analysis

Period Ended: December 31, 2014



INDEX GLOSSARY

S&P 500: The **S&P 500 Index (Cap Wtd)** is a commonly recognized, market-capitalization weighted index of 500 widely held equity securities designed to measure broad US equity performance.

R 3000: The **Russell 3000 Index** is a market-capitalization weighted index of 3,000 widely held equity securities designed to measure performance of the entire U.S. stock market.

Wilshire 5000: The **Wilshire 5000 Index** is a market-capitalization weighted index of more than 6,700 widely held equity securities designed to measure performance of the entire U.S. stock market.

MSCI ACW Ex US: The **MSCI ACW (All Country World) Ex US Index** is designed to measure equity market performance in global developed and emerging markets, excluding the US. The 22 underlying developed countries are: *Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United Kingdom*. The 23 emerging market countries are: *Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Russia, Qatar, South Africa, Taiwan, Thailand, Turkey, and United Arab Emirates*.

MSCI ACW Ex US Investable Mkt: The **MSCI ACW Ex US Investable Mkt Index** is designed to measure equity performance across 22 of 23 Developed Markets (DM) countries (excluding the United States) and 23 Emerging Markets (EM) countries. With 6,085 constituents, the index covers approximately 99% of the global equity opportunity set outside the US.

MSCI EAFE: The **MSCI EAFE (Europe, Australasia, Far East) Index** is designed to measure equity market performance of 21 developed countries, excluding the US & Canada: *Australia, Austria, Belgium, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United Kingdom*.

MSCI World Ex US: The **MSCI World Index Ex US Index** is designed to measure the equity market performance of developed markets. The MSCI World Index consists of the following 22 developed market country indexes: *Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United Kingdom*.

MSCI Emerging Markets: The **MSCI Emerging Markets Index** is designed to measure equity market performance of emerging markets. The MSCI Emerging Markets Index consists of the following 23 emerging market country indexes: *Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Qatar, Russia, South Africa, Taiwan, Thailand, Turkey* and United Arab Emirates*.

Barclays US Agg Bond: The **Barclays US Aggregate Bond Index** covers the US dollar-denominated, investment-grade, fixed-rate, taxable bond market of SEC-registered securities: US Treasury and agency bonds, domestic corporate debt, and mortgage-backed securities.

Barclays US Universal: The **Barclays US Universal Index** covers US dollar-denominated, taxable bonds that are rated either investment grade or high-yield.

Barclays US Trsy: US TIPS: The **Barclays US Treasury: US TIPS Index** is an unmanaged index that consists of inflation-protected securities issued by the U.S. Treasury.

Barclays Mortgage: The **Barclays US Mortgage Backed Securities (MBS) Index** tracks agency mortgage backed pass-through securities (both fixed-rate and hybrid ARM) guaranteed by Ginnie Mae (GNMA), Fannie Mae (FNMA), and Freddie Mac (FHLMC).

Barclays CMBS: The **U.S. CMBS Investment Grade Index** measures the market of conduit and fusion CMBS deals with a minimum current deal size of \$300mn.

Barclays US High Yield: The **Barclays US Corporate High Yield Bond Index** measures the USD-denominated, high yield, fixed-rate corporate bond market. Securities are classified as high yield if the middle rating of Moody's, Fitch and S&P is Ba1/BB+/BB+ or below.

Barclays Global High Yield: The **Barclays Global High-Yield Index** provides a broad-based measure of the global high-yield fixed income markets.

CS High Yield Dev Countries Only: The **Credit Suisse High Yield Dev Countries Only Index** tracks the performance of noninvestment-grade corporate bonds from developed countries.

CS Leveraged Loan: The **Credit Suisse Leveraged Loan Index** is an index designed to mirror the investable universe of the \$US-denominated leveraged loan market.

JPMorgan GBI-EM Gbl Dvf'd: The **JPMorgan GBI-EM Global Diversified Total Return Index (Unhedged)** is a global emerging markets index that consists of regularly traded, liquid fixed-rate, domestic currency government bonds.

JPMorgan Emerging Markets Bond Global: The **JPMorgan Emerging Markets Bond Global Index** is a global emerging markets index that consists of regularly traded, liquid fixed-rate, US dollar-denominated government bonds.

NCREIF ODCE: The **NCREIF ODCE (Open End Diversified Core) Index** is an index of investment returns reporting on both a historical and current basis the results of 16 open-end commingled funds pursuing a core investment strategy, some of which have performance histories dating back to the 1970s. The NCREIF ODCE Index is capitalization-weighted and performance is time-weighted.

NCREIF Property: The **NCREIF Property Index** prepared by the National Council of Real Estate Investment Fiduciaries is a quarterly time series composite return measure for over 6,000 individual commercial real estate properties acquired in the private market for investment purposes. Total performance represents returns from appreciation and income, and includes multi-family, office, retail, and industrial properties.

HFRI FOF Composite: The **HFN FOF (Fund of Funds) Composite Index** is an equal-weighted index that contains over 400 constituent hedge fund of funds, both domestic and offshore.

Burgiss All Private Equity: The **Burgiss All Private Equity Benchmark** is a composite of nearly 1400 private equity funds derived from the holdings of over 200 institutional investors.

Alerian MLP: The **Alerian MLP Index** is a market-capitalization weighted index of the 50 most prominent energy Master Limited Partnerships.

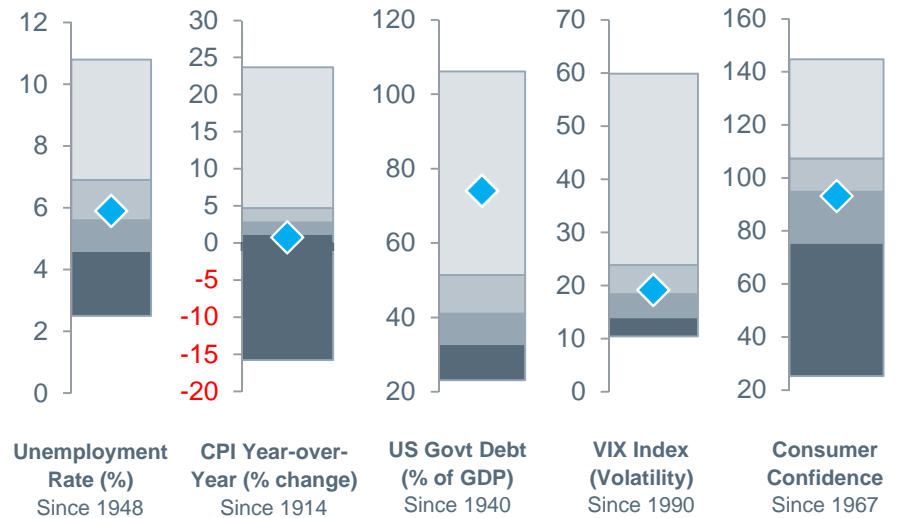
S&P Goldman Sachs Commodity: The **S&P Goldman Sachs Commodity Index** is a composite index of commodity sector returns representing an unleveraged, long-only investment in commodity futures that is broadly diversified across the spectrum of commodities. Components are weighted by their respective world production quantities.

Fourth Quarter Economic Environment

Key Economic Indicators

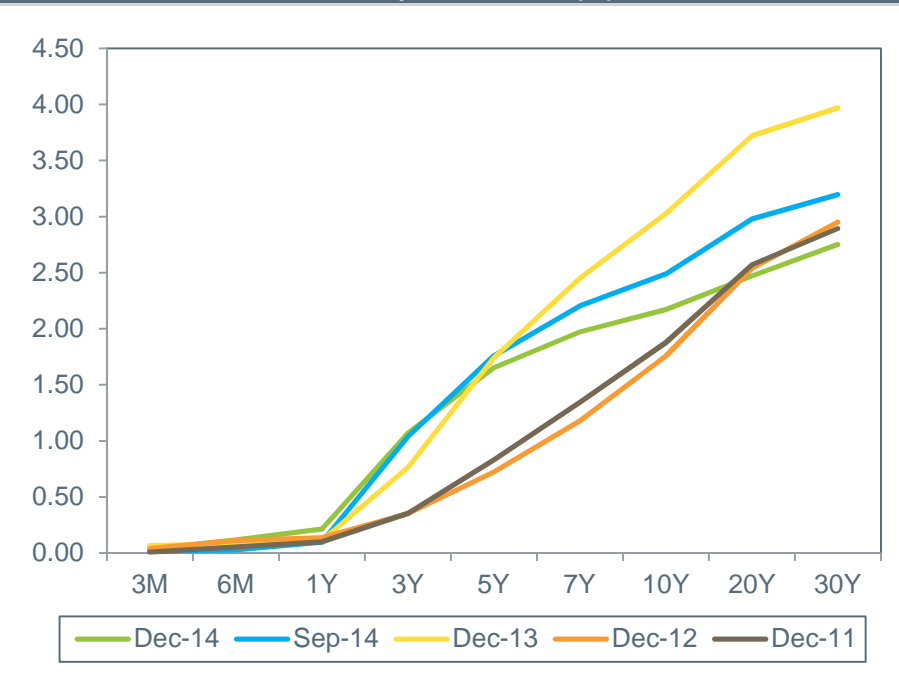
Multiple periods of heightened volatility hit global markets in Q4. However, a strengthening of the U.S. dollar combined with rapidly falling oil prices caused domestic markets to decouple from international markets. The U.S. economy continues to show strength compared to foreign regions. Non-farm payroll jobs increased at an average monthly rate of 289,000 rounding out the strongest year of job gains since 1999. Furthermore, the unemployment rate continued to decline, ending the year at 5.6%. While market participants continue to forecast interest rate hikes by mid-2015, further signs of disinflation could push the date out further. Economic developments in Europe and emerging economies were less impressive. European monetary policy has proven successful in recapitalizing the banking system; however, lending remains constrained due to weak loan demand from the private sector. Within emerging economies, falling oil prices and a rising U.S. dollar have led to renewed concerns over possible balance of payments issues and capital flight.

Key Economic Indicators



Economic Indicators	Dec-14	Sep-14	Dec-13	Dec-11	20 Yr
Federal Funds Rate (%)	0.06 ▼	0.07	0.07	0.04	2.85
Breakeven Infl. - 1 Yr (%)	-0.21 ▼	-0.19	1.50	1.22	1.14
Breakeven Infl. - 10 Yr (%)	1.68 ▼	1.97	2.23	1.95	2.05
CPI YoY (Headline) (%)	0.80 ▼	1.70	1.50	3.00	2.38
Unemployment Rate (%)	5.60 ▼	5.90	6.70	8.50	6.01
Real GDP YoY (%)	2.40 ▼	2.70	3.10	1.70	2.47
PMI - Manufacturing	52.90 ▼	56.10	56.10	52.80	52.03
USD Total Wtd Idx (%)	85.13 ▲	81.09	76.20	73.35	86.26
WTI Crude Oil per Barrel (\$)	53 ▼	91	98	99	53.51
Gold Spot per Oz (\$)	1,185 ▼	1,208	1,206	1,564	704

Treasury Yield Curve (%)



Market Performance (%)	QTD	YTD	1 Yr	5 Yr	10 Yr
S&P 500 (Cap Wtd)	4.93	13.69	13.69	15.45	7.67
Russell 2000	9.73	4.89	4.89	15.54	7.77
MSCI EAFE (Net)	-3.57	-4.90	-4.90	5.33	4.43
MSCI EAFE SC (Net)	-2.27	-4.95	-4.95	8.63	6.04
MSCI Emg Mkts (Net)	-4.50	-2.19	-2.19	1.78	8.43
Barclays US Agg Bond	1.79	5.97	5.97	4.45	4.71
BofA ML 3 Mo US T-Bill	0.00	0.04	0.04	0.09	1.54
NCREIF ODCE (Gross)	3.26	12.50	12.50	13.93	7.10
Wilshire US REIT	15.13	31.78	31.78	17.26	8.26
HFN FOF Multi-Strat	0.67	3.03	3.03	3.12	2.75
Bloomberg Cmtdy (TR)	-12.10	-17.01	-17.01	-5.53	-1.86

Treasury data courtesy of the U.S. Department of the Treasury. Economic data courtesy of Bloomberg Professional Service.



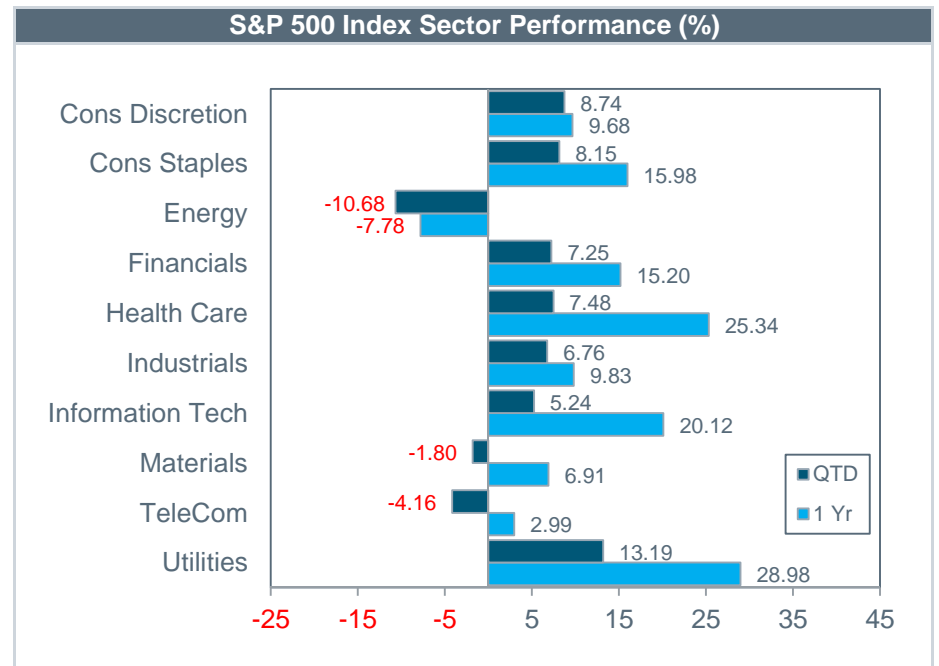
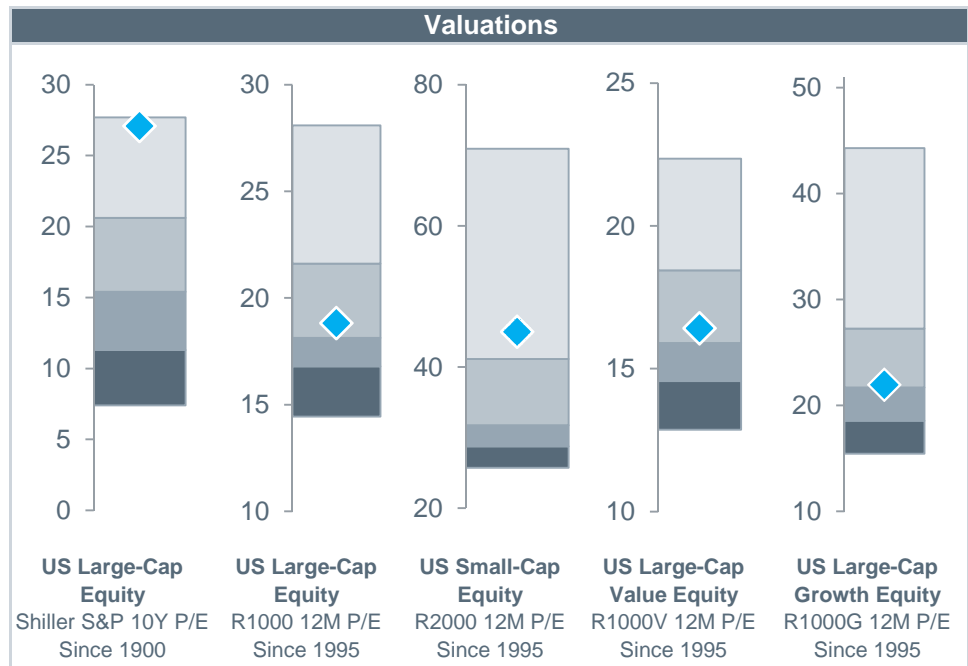
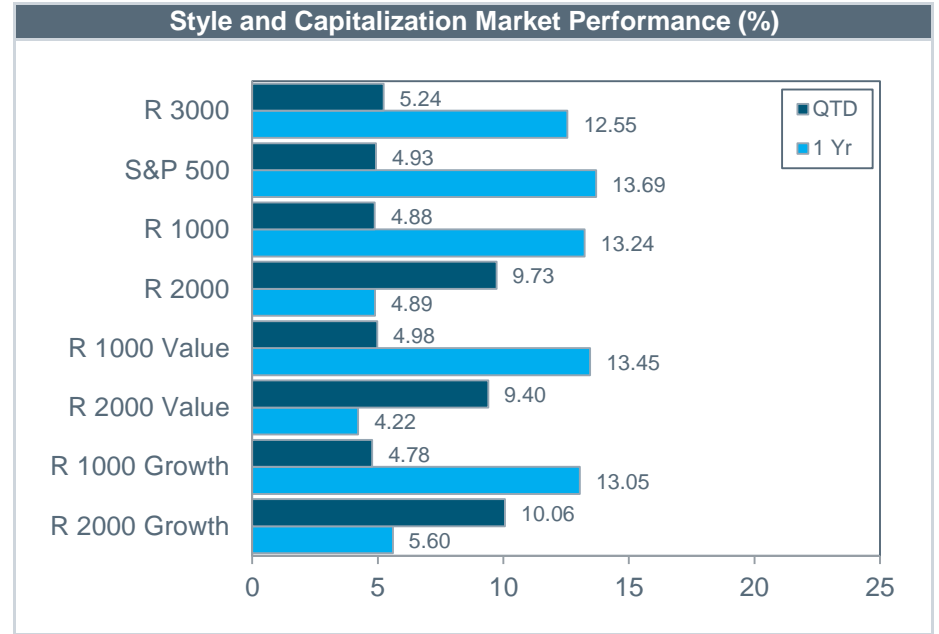
Fourth Quarter Review

Broad Market
 The U.S. equity market rallied significantly in October and November, supported by a revised Q3 GDP growth estimate of 5%.

Market Cap
 As the risk appetite of investors increased during the quarter, small-cap stocks outpaced the mid- and large-cap segments with a spread of nearly 500 basis points between the Russell 2000 and Russell 1000. This represented a trend reversal, as small-cap underperformed large-cap earlier in 2014.

Style
 Value stocks finished the year on a positive note with the spread between the Russell 3000 Value and Russell 3000 Growth increasing by 26 basis points for the year.

Sector
 Due to a spike in volatility and anticipation of interest rate declines, high dividend stocks outperformed lower yielding stocks, with the strongest results in the Utilities sector. Energy stocks lagged the general market significantly for the quarter.



Valuation data courtesy of Bloomberg Professional Service and Robert J. Shiller, Irrational Exuberance, Second Edition. P/E metrics shown represent the 5th through 95th percentiles to minimize the effect of outliers.



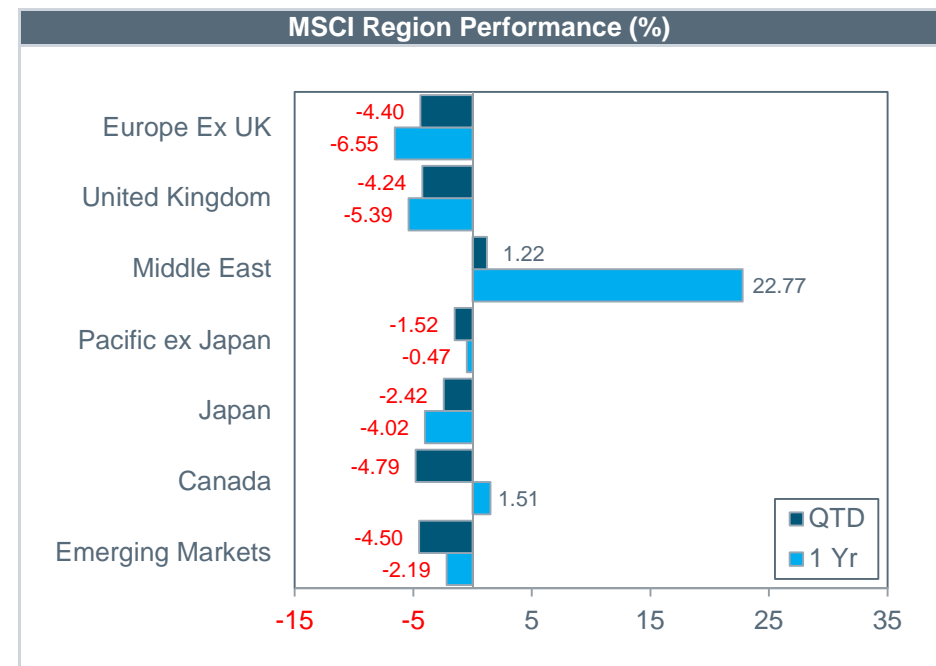
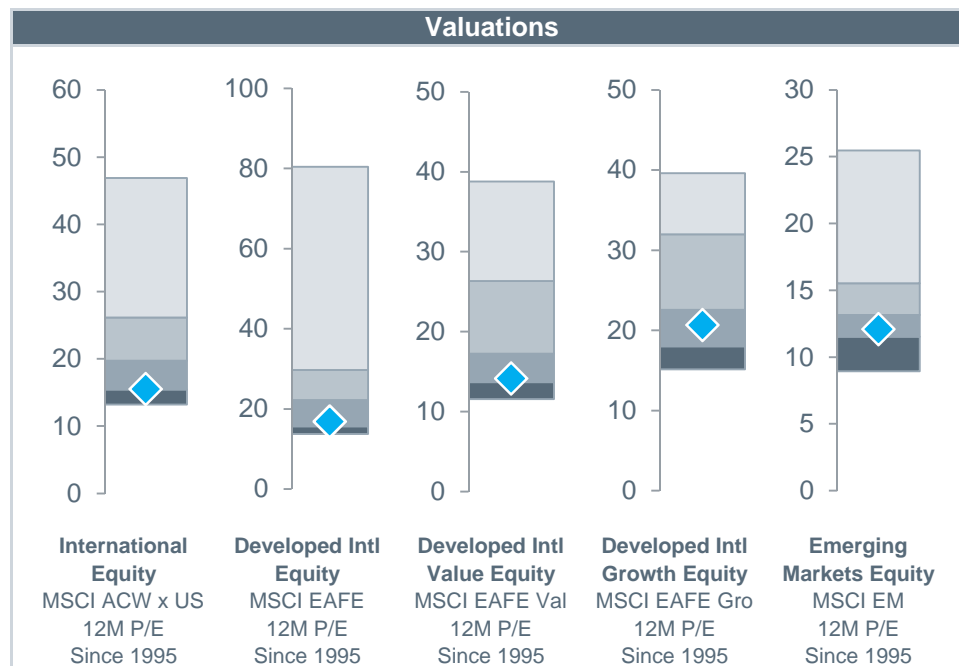
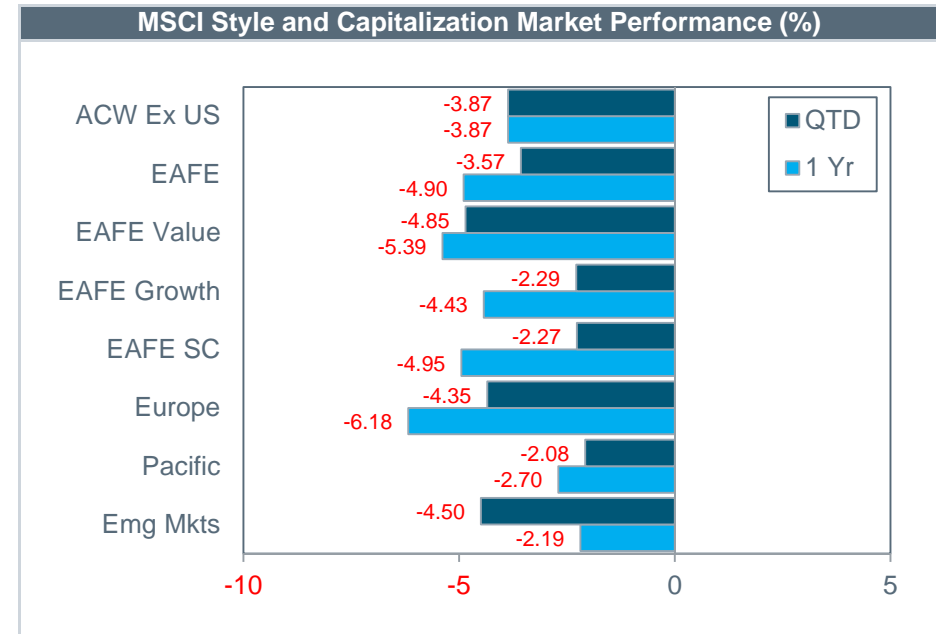
Fourth Quarter Review

Broad Market
 Poor performance plagued developed international markets across the board, while emerging economies were hurt by deflationary headwinds from an oversupply of oil and weaker than expected demand in developed countries.

Market Cap & Style
 Small-cap outperformed for the quarter but was in line with large-cap for the full year. Growth stocks significantly outperformed value for the quarter and finished ahead of value stocks over the calendar year.

Developed Markets
 One of the only bright spots in the developed world was Hong Kong. In September, China announced reforms to the Hong Kong electoral system which spurred protests. Upon the dissolution of the protests in December, the market moved into positive territory.

Emerging Markets
 Emerging and frontier markets returned less than their developed counterparts. Russia, which was impacted by collapsing oil prices and increased Ukraine-related economic sanctions, was the worst performer.



Valuation data courtesy of Bloomberg Professional Service.
 P/E metrics shown represent the 5th through 95th percentiles to minimize the effect of outliers.
 All returns are shown net of foreign taxes on dividends.

Fourth Quarter Review

Broad Market

U.S. fixed income performed modestly well as the treasury yield curve flattened over the quarter. The Barclays U.S. Aggregate Index returned 1.8% for the quarter, ending 2014 with a return above its 5- and 10-year averages. 2014 was the second least volatile year since the inception of the Barclays U.S. Aggregate Index.

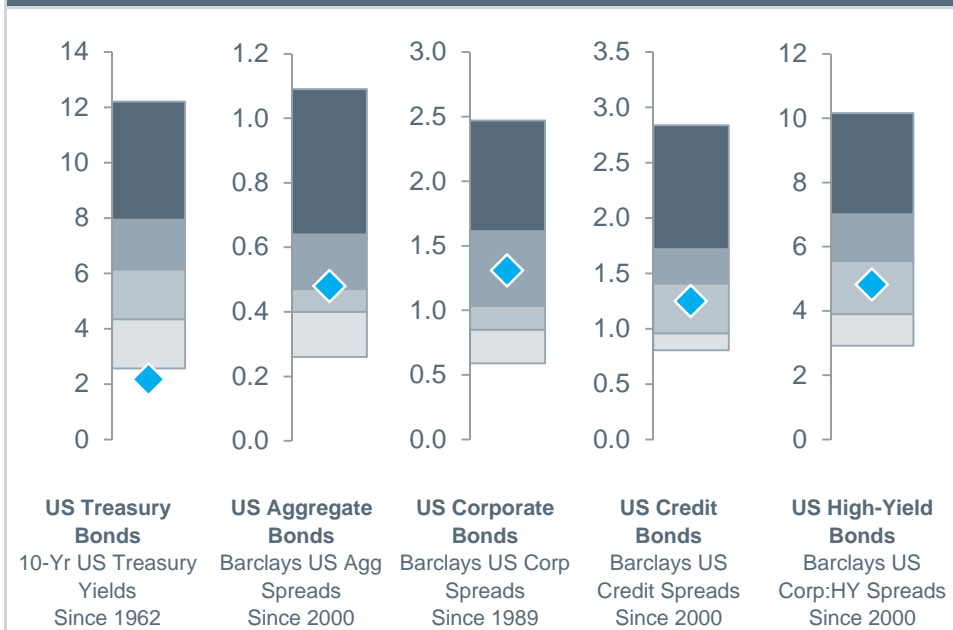
US Treasury Market

Long duration treasuries outperformed intermediate duration by 765 basis points as the market favored duration and quality.

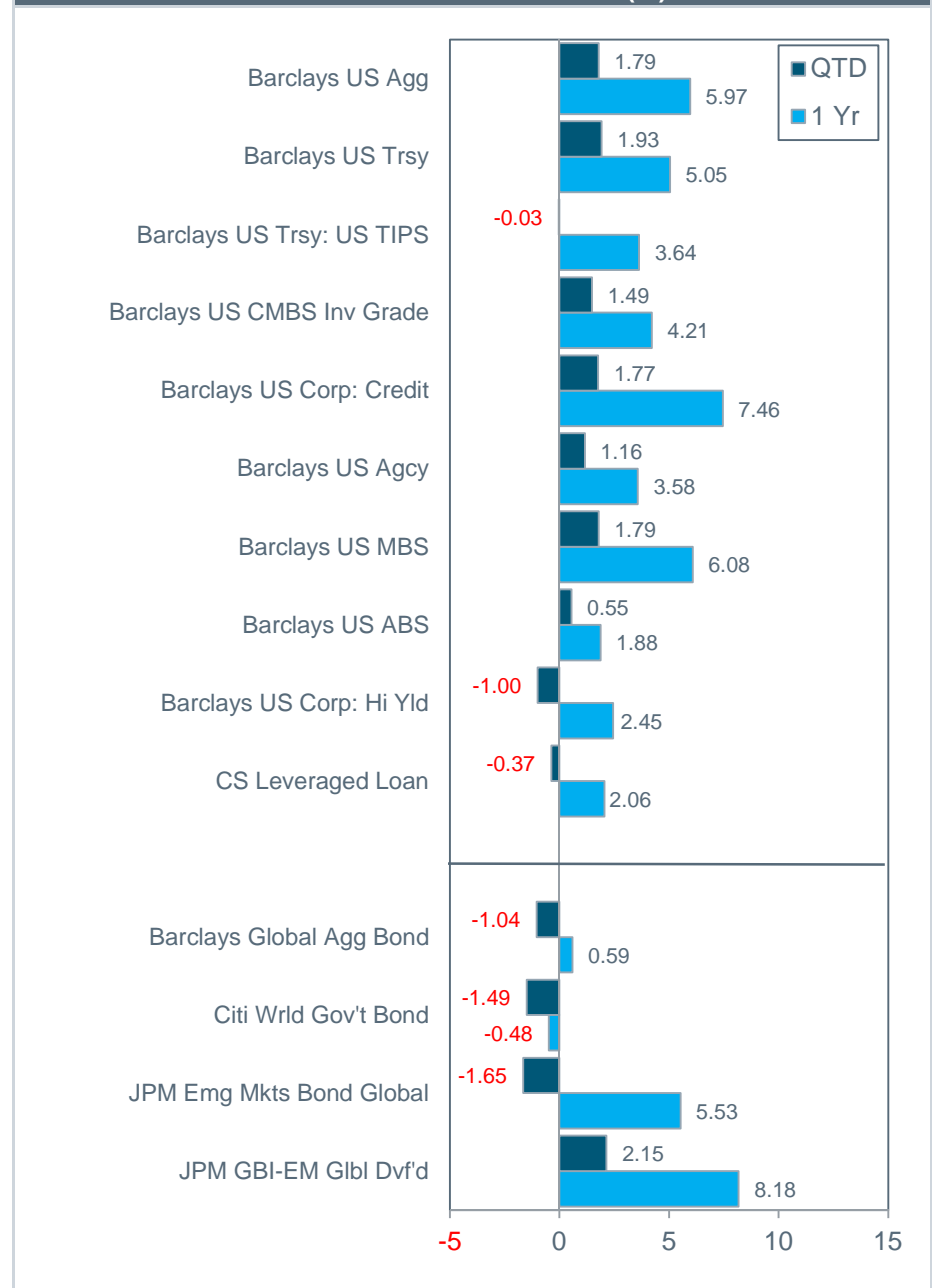
Foreign Currency

As the U.S. dollar strengthened, exposure to foreign currency impacted returns. The hedged Barclays Global Aggregate Bond Index outperformed the unhedged version by 324 basis points in Q4 and 700 basis points for the year. Excluding currency effects, the government bonds of other developed countries performed similarly to U.S. Treasuries. However, emerging markets debt (EMD) underperformed due to the recent market bias toward quality. Local currency EMD has suffered doubly due to foreign currency exposure.

Valuations



Fixed Income Performance (%)



Valuation data courtesy of Bloomberg Professional Service.

Valuations shown represent the 5th through 95th percentiles to minimize the effect of outliers.

Fourth Quarter Review - Absolute Return

General Market - Hedge Funds

Funds with concentration in event-oriented themes suffered due to two developments in Q4. As such, hedge funds experienced larger than expected losses during the volatile, early half of October, and failed to rebound by quarter end. Generally, long/short equity funds maintained or added to long exposures during the October bottom, which helped these funds earn positive returns in November and December.

General Market - Global Tactical Asset Allocation (GTAA)

In the fourth quarter, GTAA managers with fewer benchmark constraints underperformed more-traditional asset allocations such as a static 60/40 portfolio. In all, 2014 was a difficult year for GTAA managers, as exposure to foreign developed and emerging market equities weighed on performance. Managers with valuation driven asset allocation processes continued to find attractive valuations in emerging and developed foreign equity markets relative to U.S. equities. However, strategies that maintain heavier U.S. equity and fixed income exposure have continued to outperform globally-oriented peers.

Fourth Quarter Review - Real Assets

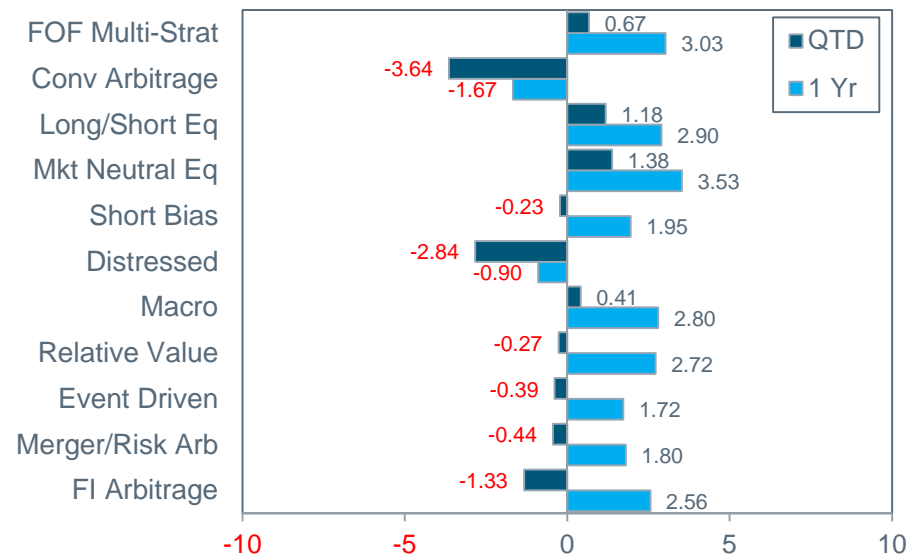
General Market - Diversified Inflation Strategies (DIS)

Few bright spots existed for diversified inflation strategies (DIS) in Q4 as inflation expectations continued to fall. The historic decrease in oil prices and commodities detracted significantly from the returns of many managers. The Goldman Sachs Commodities Index finished the year down 33.1%, losing 27.7% in the fourth quarter. Natural Resources equities depreciated over 10% after a second straight negative quarter.

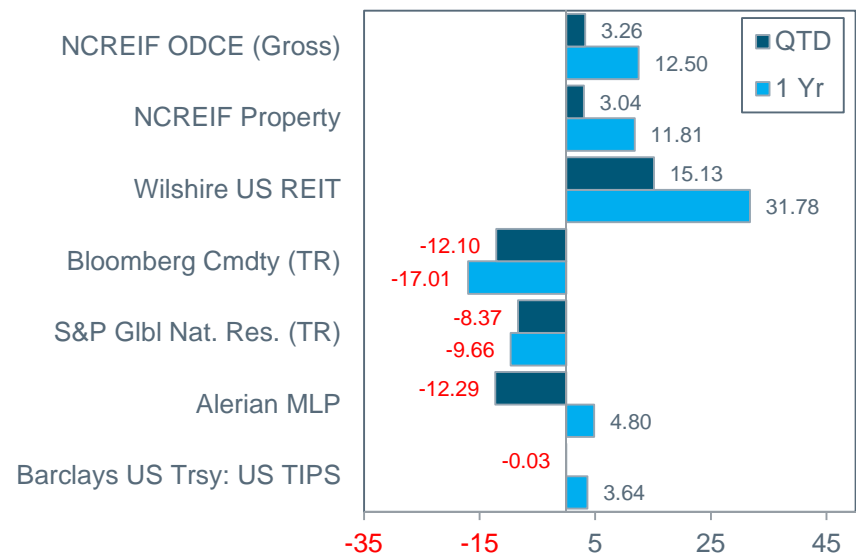
General Market - Real Estate

Performance in the U.S. Core Real Estate market capped off a strong year, as evidenced by a 3.3% preliminary total return in Q4 for the NCREIF-ODCE index, resulting in a 12.5% return for the year. Additionally, publicly-traded real estate securities bounced back in Q4. The U.S. commercial real estate market showed continued improvement with drops in vacancy rates occurring in the office, industrial, and retail sectors. Private real estate investment reached an all-time high in 2014 with \$742 billion in assets under management.

HFN Hedge Fund Performance (%)



Real Asset Performance (%)



Annual Asset Class Performance

As of December 31, 2014

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Best	31.84	12.35	25.91	61.34	33.16	34.00	35.97	39.38	8.44	78.51	28.60	22.49	20.00	38.82	31.78
	31.04	8.44	16.56	55.81	31.45	26.19	32.18	16.23	5.24	58.21	26.86	15.99	18.23	32.39	19.31
	16.16	7.89	14.81	47.25	25.55	21.39	26.34	15.97	2.06	46.78	22.04	13.56	17.59	29.30	13.69
	14.28	7.28	10.25	38.59	20.25	21.36	19.31	11.63	-2.35	31.78	18.88	9.24	17.32	22.78	12.50
	13.15	6.61	5.54	36.18	18.33	13.82	18.37	11.17	-10.01	28.60	16.83	7.84	16.34	13.94	5.97
	12.40	5.64	3.58	28.97	13.06	13.54	16.32	9.91	-20.47	27.18	16.36	4.98	16.00	9.10	4.89
	11.63	5.28	3.12	28.68	11.13	6.75	15.79	6.97	-26.16	26.46	15.12	2.11	15.81	7.44	3.64
	6.18	4.42	1.78	23.93	10.88	5.33	11.85	6.60	-33.79	18.91	15.06	0.10	10.94	1.86	3.03
	-3.02	2.49	-1.41	11.93	9.15	4.91	9.85	5.49	-35.65	11.41	10.16	-4.18	8.82	0.07	2.45
	-5.86	-2.62	-6.17	9.28	8.56	4.55	4.85	5.00	-37.00	9.72	7.75	-5.55	6.98	-2.02	0.04
	-7.56	-11.89	-7.83	8.39	8.46	3.07	4.33	1.87	-39.20	5.93	6.54	-12.14	4.80	-2.60	-2.19
	-9.10	-12.53	-15.94	5.87	6.79	2.84	2.71	1.45	-43.38	1.92	6.31	-13.32	4.21	-8.61	-4.90
	-14.17	-19.51	-20.48	4.10	4.34	2.74	2.07	-1.57	-47.01	0.21	4.77	-15.94	0.11	-8.83	-4.95
Worst	-30.83	-21.44	-22.10	1.15	1.33	2.43	0.41	-17.55	-53.33	-29.76	0.13	-18.42	-1.06	-9.52	-17.01
	S&P 500 - US Large Cap	R 2000 - US Small Cap	MSCI EAFE (Net) - Int'l Dev.	MSCI EAFE SC (Net) - Int'l SC	MSCI EM (Net) - Int'l Emg Mkts	Barclays US Agg Bond - FI	Barclays US Corp: Hi Yield - FI	Barclays US Trsy: US TIPS - FI	Barclays US Gov/Credit: Lng - FI	NCREIF ODCE (Gross) - Real Estate	Wilshire US REIT - REITs	HFN FOF Multi-Strat (Net) - ARS	Bloomberg Cmdty (TR) - Commod.	BofA ML 3 Mo T-Bill - Cash Equiv	

Performance shown for HFN FOF Multi-Strat (Net) is preliminary and subject to change.



Summary

All six Ohio Funds delivered positive absolute performance during 2014, with mixed relative results. Five of the six plans outperformed the All Public Funds > \$1B-Total Fund median 1-year return of 6.6%.

Over the trailing 3-year period, five of the six plans outperformed their respective benchmarks and the All Public Funds Universe. The six Ohio Funds earned returns ranging from 10.2% to 12.9%. Over the trailing 5-year period, four of the six plans outperformed their respective benchmarks and the All Public Funds > \$1B Universe.

Over the trailing 3- and 5-year time periods, all six plans outperformed their respective actuarial interest rates of 8.25% for OP&F, 8.0% for HPRS and PERS (DB), 7.75% for SERS and STRS, and 6.70% for PERS (HC). However over a more complete market cycle, the six plans have trailed these respective absolute benchmarks.

Asset Allocation & Performance

	Market Value (\$000)	Performance (%)									
		2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010
PERS (DB)	77,119,386	0.33	7.25	12.17	10.11	4.97	6.76	14.65	14.78	0.58	14.01
PERS (DB) Total Fund Benchmark		-0.51	5.83	11.72	9.34	4.58	6.37	14.24	15.35	-0.88	13.06
Difference		0.84	1.42	0.45	0.77	0.39	0.39	0.41	-0.57	1.46	0.95
Rank		56	29	39	41	65	52	62	8	57	34
PERS (HC)	12,489,751	-1.30	5.46	10.22	8.65	4.95	6.21	11.54	13.85	-0.38	13.51
PERS (HC) Total Fund Benchmark		-1.27	5.03	9.70	8.15	4.84	6.10	10.70	13.54	-0.71	12.88
Difference		-0.03	0.43	0.52	0.50	0.11	0.11	0.84	0.31	0.33	0.63
Rank		97	74	78	85	68	78	83	31	80	46
STRS	73,654,603	1.81	7.95	12.91	10.61	4.91	7.25	17.39	13.60	1.49	13.32
STRS Total Fund Benchmark		1.79	8.26	13.35	10.78	5.21	7.15	18.09	13.93	0.83	13.59
Difference		0.02	-0.31	-0.44	-0.17	-0.30	0.10	-0.70	-0.33	0.66	-0.27
Rank		14	18	21	18	70	19	26	44	33	48
OP&F	14,261,134	-0.13	6.74	12.94	11.35	5.83	7.60	16.93	15.41	2.57	15.85
OP&F Total Fund Benchmark		-0.22	6.87	12.08	10.18	5.22	7.00	14.61	14.94	2.43	12.61
Difference		0.09	-0.13	0.86	1.17	0.61	0.60	2.32	0.47	0.14	3.24
Rank		74	46	19	6	28	7	31	3	25	7
SERS	12,547,655	0.52	6.92	12.65	9.92	4.38	6.57	16.86	14.42	-0.07	12.35
SERS Total Fund Benchmark		0.92	6.59	11.76	9.02	4.43	6.39	15.32	13.56	-0.07	10.40
Difference		-0.40	0.33	0.89	0.90	-0.05	0.18	1.54	0.86	0.00	1.95
Rank		51	35	30	49	85	63	34	17	74	72
HPRS	848,790	0.78	6.73	12.46	9.48	4.72	6.26	19.59	11.45	-2.85	13.81
HPRS Total Fund Benchmark		1.20	7.03	12.23	10.16	5.69	7.07	16.79	13.07	1.20	13.40
Difference		-0.42	-0.30	0.23	-0.68	-0.97	-0.81	2.80	-1.62	-4.05	0.41
Rank		37	47	35	69	76	78	8	90	99	40
<i>All Public Plans > \$1B-TF Median</i>		<i>0.52</i>	<i>6.57</i>	<i>11.75</i>	<i>9.88</i>	<i>5.15</i>	<i>6.76</i>	<i>15.85</i>	<i>13.34</i>	<i>0.77</i>	<i>13.09</i>

Performance shown is gross of fees but is net of embedded fees on externally managed real estate and alternative investments. Ranks are shown against All Public Plans >\$1B-Total Fund.

Summary

All six Ohio Funds delivered positive absolute performance during 2014, net of investment management fees. Two of the six plans outperformed their respective benchmarks.

Over the trailing 3-year period, four of the six plans outperformed their respective benchmarks. The six Ohio Funds earned returns ranging from 10.1% to 12.8%. Over the trailing 5-year period, four of the six plans outperformed their respective benchmarks.

Over the trailing 3- and 5-year time periods, all six plans outperformed their respective actuarial interest rates of 8.25% for OP&F, 8.0% for HPRS and PERS (DB), 7.75% for SERS and STRS, and 6.70% for PERS (HC). However over a more complete market cycle, the six plans have trailed these respective absolute benchmarks.

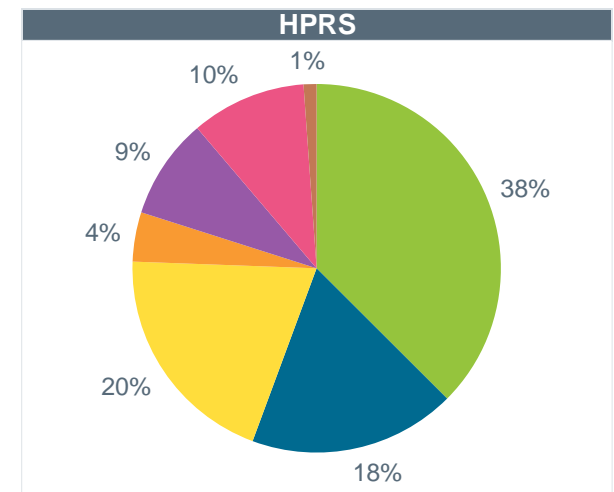
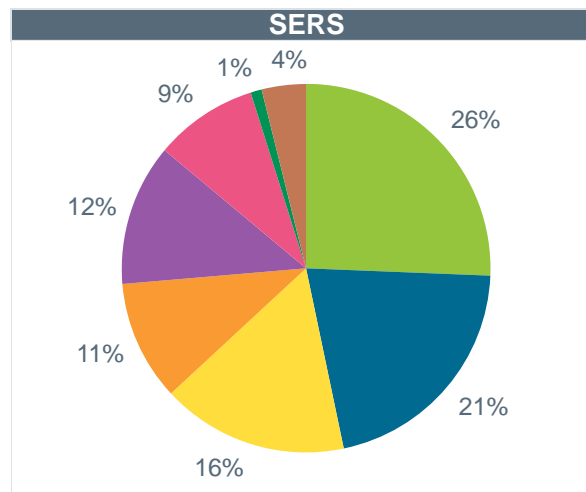
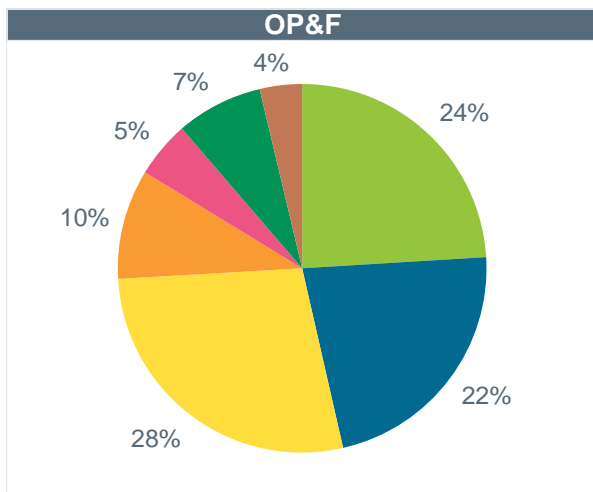
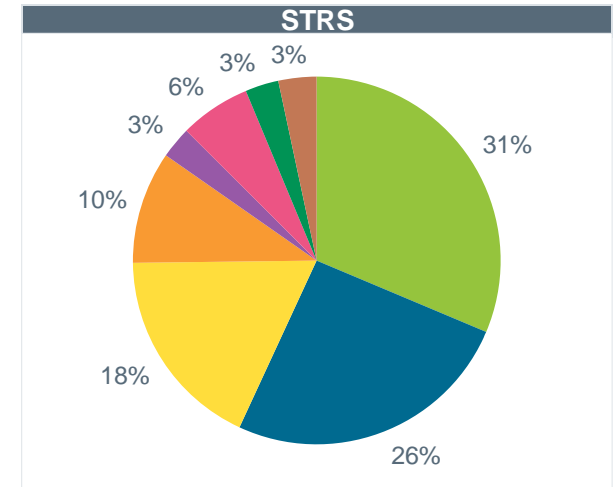
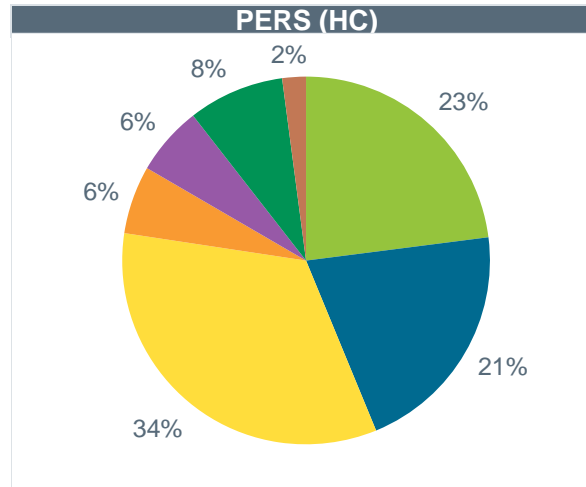
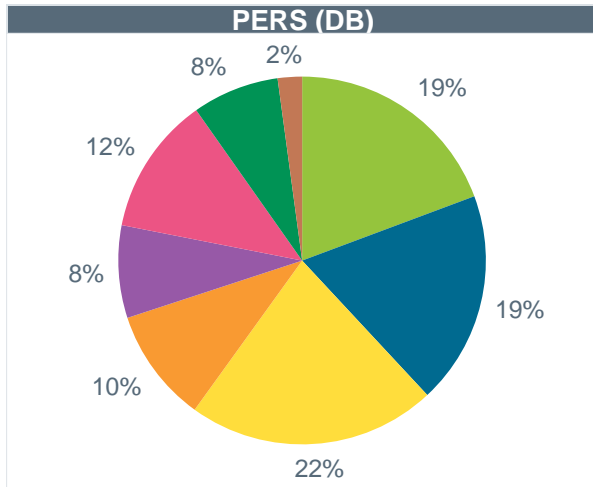
Asset Allocation & Performance - Net of Fees

	Market Value (\$000)	Performance (%)									
		2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010
PERS (DB)	77,119,386	0.18	6.96	11.90	9.90	4.82	6.65	14.38	14.54	0.36	13.98
PERS (DB) Total Fund Benchmark		-0.51	5.83	11.72	9.34	4.58	6.37	14.24	15.35	-0.88	13.06
Difference		0.69	1.13	0.18	0.56	0.24	0.28	0.14	-0.81	1.24	0.92
PERS (HC)	12,489,751	-1.39	5.28	10.06	8.64	4.94	6.20	11.36	13.72	-0.38	13.93
PERS (HC) Total Fund Benchmark		-1.27	5.03	9.70	8.15	4.84	6.10	10.70	13.54	-0.71	12.88
Difference		-0.12	0.25	0.36	0.49	0.10	0.10	0.66	0.18	0.33	1.05
STRS	73,654,603	1.74	7.82	12.78	10.48	4.79	7.13	17.25	13.47	1.38	13.20
STRS Total Fund Benchmark		1.79	8.26	13.35	10.78	5.21	7.15	18.09	13.93	0.83	13.59
Difference		-0.05	-0.44	-0.57	-0.30	-0.42	-0.02	-0.84	-0.46	0.55	-0.39
OP&F	14,261,134	-0.45	6.16	12.42	10.88	5.42	7.23	16.41	14.98	2.16	15.46
OP&F Total Fund Benchmark		-0.22	6.87	12.08	10.18	5.22	7.00	14.61	14.94	2.43	12.61
Difference		-0.23	-0.71	0.34	0.70	0.20	0.23	1.80	0.04	-0.27	2.85
SERS	12,547,655	0.21	6.25	11.88	9.15	3.65	5.91	16.09	13.55	-0.85	11.54
SERS Total Fund Benchmark		0.92	6.59	11.76	9.02	4.43	6.39	15.32	13.56	-0.07	10.40
Difference		-0.71	-0.34	0.12	0.13	-0.78	-0.48	0.77	-0.01	-0.78	1.14
HPRS	848,790	0.58	6.30	12.13	9.14	4.41	5.93	19.35	11.13	-3.23	13.50
HPRS Total Fund Benchmark		1.20	7.03	12.23	10.16	5.69	7.07	16.79	13.07	1.20	13.40
Difference		-0.62	-0.73	-0.10	-1.02	-1.28	-1.14	2.56	-1.94	-4.43	0.10

Performance shown is net of all investment management costs.

Summary

PERS (DB) has the smallest allocation to public equities among the six plans and the highest allocation to total alternatives (incl. real estate).
 PERS (HC) has the highest allocation to fixed income and does not have a dedicated allocation to private equity.
 STRS has the highest allocation to public equities and the second lowest allocation to fixed income among the six plans.
 OP&F has the second highest allocation to fixed income relative to the other plans and does not have a dedicated allocation to hedge funds.
 SERS has the smallest allocation to fixed income and the highest allocations to hedge funds and real estate.
 HPRS has the highest allocation to domestic equity and the smallest allocation to real estate among the six plans.



- Domestic Equity
- International Equity
- Fixed Income
- Real Estate
- Hedge Funds
- Private Equity
- Other Alternatives
- Cash Equivalents

Allocations shown may not sum up to 100% exactly due to rounding.

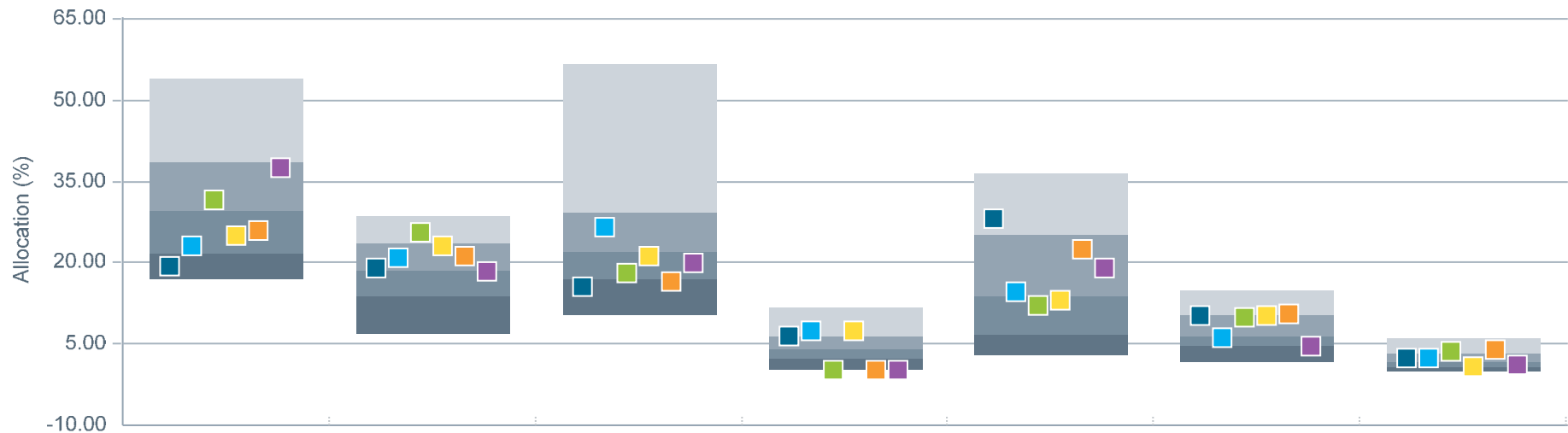


Summary

All six plans are diversified across multiple traditional (equity and fixed income) and alternative (real estate, real assets, private equity, hedge funds, etc.) asset classes, as compared to peers.

- PERS (DB) has a below median US Equity allocation and top quartile allocation to Alternatives. The US Fixed Income allocation is below median. PERS (DB) also allocates to Intl. Fixed Income.
- PERS (HC) has a lower allocation to US Equity and an above-median allocation to US and Intl. Fixed Income.
- STRS has an allocation to US Equity that is in line with peers and an allocation to Intl. Equity that is above median. The allocation to US Fixed Income is lower than peers.
- OP&F has a lower allocation to US Equity while Intl. Equity is above the peer median. The US Fixed Income allocation is slightly below median. OP&F also allocates to Intl. Fixed Income.
- SERS's allocation to US Fixed Income is below median, while allocations to Alternatives and Real Estate are higher than peers.
- HPRS has a higher allocation to US Equity and an Intl. Equity allocation in line with the peer median. HPRS's allocation to Real Estate is below median.

Plan Sponsor Peer Group Analysis - Total Fund Asset Allocation

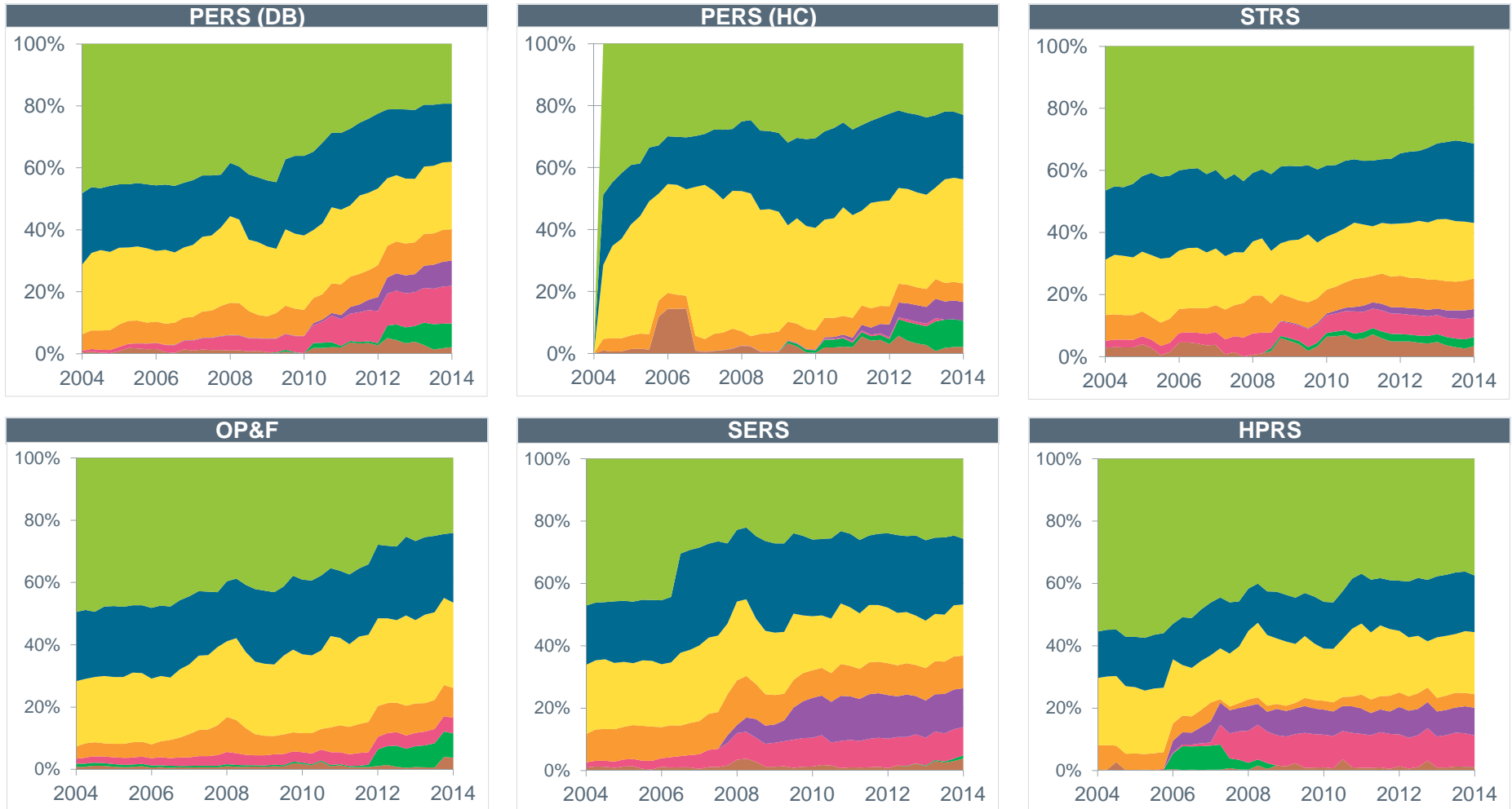


	US Equity	Intl. Equity	US Fixed Income	Intl. Fixed Income	Alternative Inv.	Real Estate	Cash
■ PERS (DB)	19.32 (86)	18.76 (49)	15.39 (81)	6.46 (25)	27.91 (14)	10.00 (29)	2.15 (38)
■ PERS (HC)	22.97 (66)	20.80 (37)	26.33 (36)	7.27 (21)	14.53 (47)	6.00 (51)	2.10 (39)
■ STRS	31.34 (41)	25.57 (14)	17.89 (73)	0.00	11.95 (56)	9.89 (30)	3.37 (20)
■ OP&F	24.80 (62)	23.09 (27)	21.22 (57)	7.32 (21)	12.95 (53)	9.94 (30)	0.70 (74)
■ SERS	25.63 (61)	21.08 (35)	16.41 (77)	0.00	22.46 (29)	10.53 (25)	3.89 (17)
■ HPRS	37.49 (28)	18.16 (53)	19.91 (61)	0.00	18.95 (45)	4.36 (82)	1.13 (63)
Median	29.47	18.61	22.12	4.11	13.95	6.28	1.51

Allocations shown may not add up to 100% due to rounding. US Fixed Income may include allocations to Intl. Fixed Income not explicitly broken out by the plans. Parentheses contain percentile ranks.

Summary

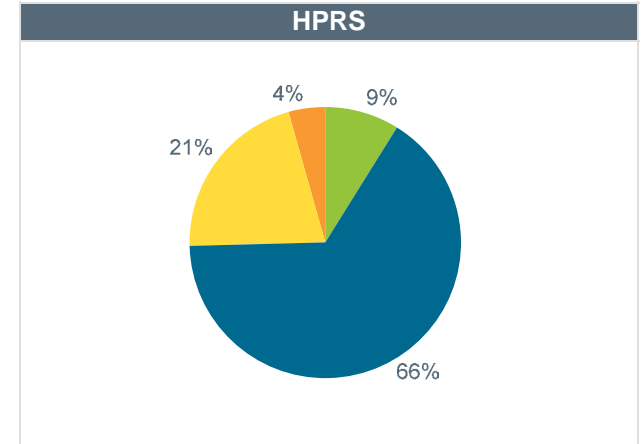
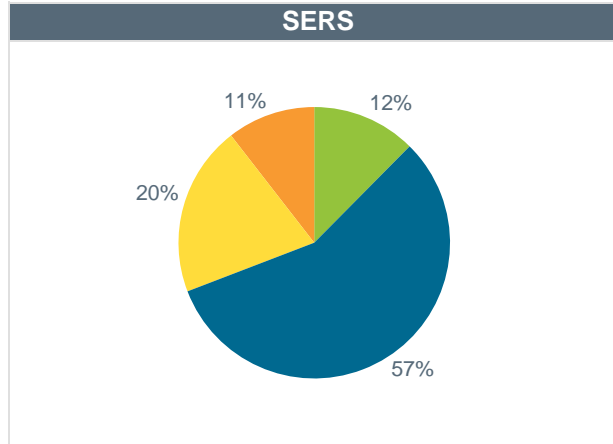
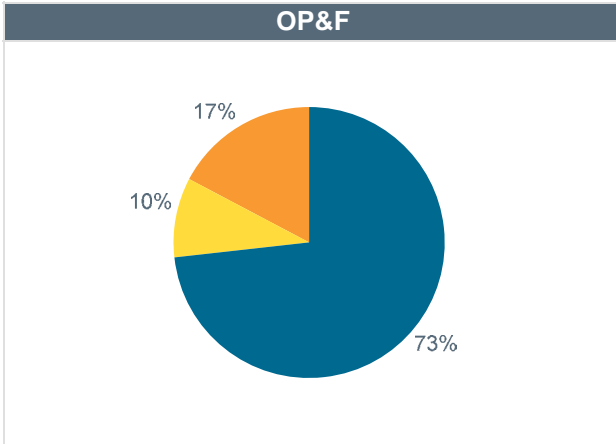
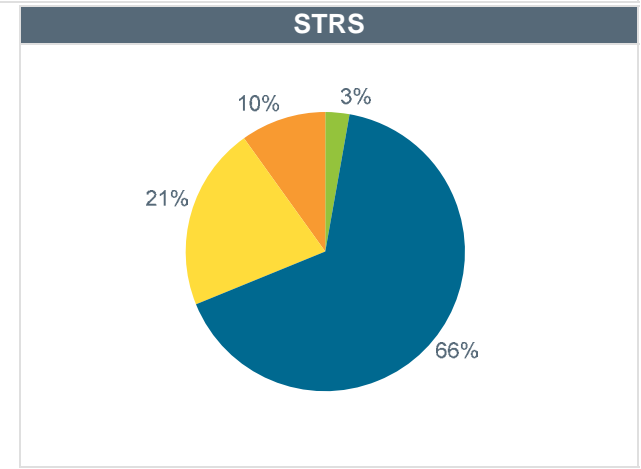
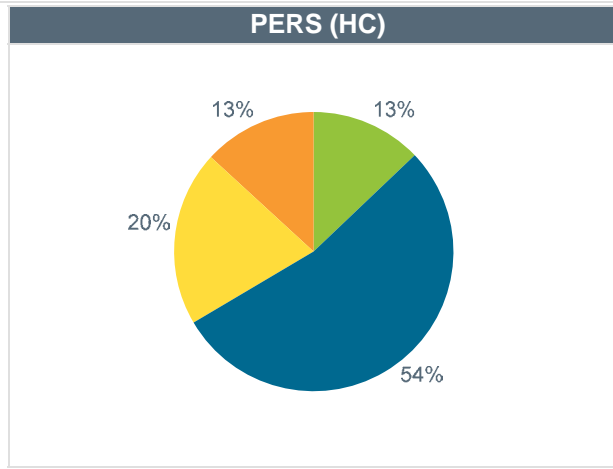
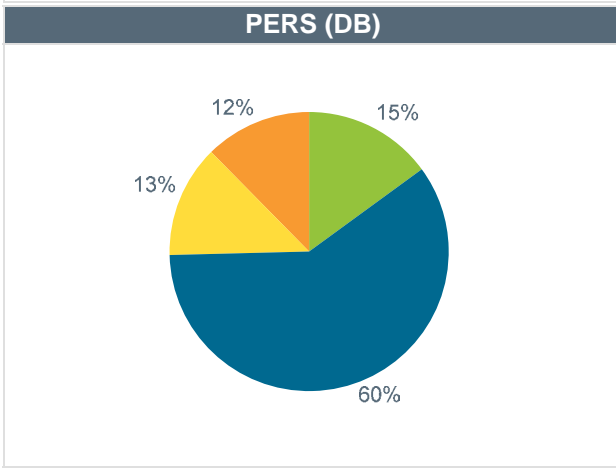
Over the past ten years, domestic equity allocations have generally declined across all six plans while allocations to alternatives, particularly hedge funds and private equity, have generally increased. Allocations to international equity and fixed income have remained relatively consistent over time.



- Domestic Equity
- International Equity
- Fixed Income
- Real Estate
- Hedge Funds
- Private Equity
- Other Alternatives
- Cash Equivalents

Summary

- **Alpha:** Aims to continually provide a return in excess of the portfolio benchmark return for a given level of risk and are intended to provide diversification (primarily with the Capital Appreciation and Capital Preservation components).
(Includes: Hedge Funds and Global Tactical Asset Allocation (GTAA))
- **Capital Appreciation:** Seeks high level of capital gains through increased risk-return trade-off.
(Includes: Public & Private Equities, High Yield, Emerging Markets Debt, MLPs, Timber, Non-Core Real Estate, and Opportunistic Investments)
- **Capital Preservation:** Conservative strategy designed to avoid risk of loss of principal.
(Includes: Core Fixed Income and Cash Equivalents)
- **Inflation:** Provide returns that will keep pace with normal inflationary movements in the long-term market. Designed not to lose value in an inflationary environment.
(Includes: TIPS, Commodities, Real Return, Floating Rate Debt, REITs, and Core Real Estate)



OP&F does not have any dedicated exposure to Alpha strategies, but does have alpha exposure embedded within other asset class buckets. Allocations shown may not sum up to exactly 100% due to rounding. Asset Allocation by Theme is based on dedicated composite allocations and not underlying investment manager exposures; as such, thematic allocations are approximations. Please see the Glossary for additional information regarding thematic descriptions.

Summary

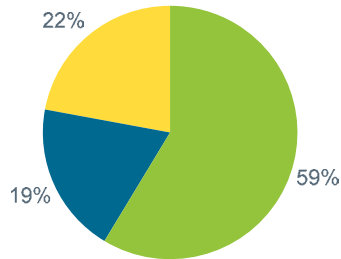
RVK Liquidity Rating - A qualitative method developed and calculated by RVK for determining the relative amount of liquidity in a portfolio.

Liquid Investments: Publicly traded assets, largely exchanged traded with significant trading volume for the overall asset classes. Takes a relatively small discount or time required to raise cash, but generally expected to clear at quoted bid prices within several trading days.

Less Liquid Investments: Smaller trading volume, non-exchange traded, or vehicle-based liquidity constraints. Moderate to significant discount to raise cash, expected to see fewer purchase-oriented bids, or time required to receive cash is significantly greater than several trading days.

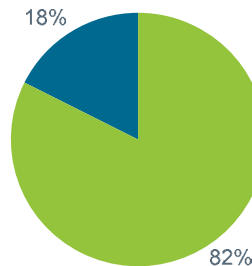
Not Liquid Investments: Private appraisal-based transactions, vehicle-based liquidity constraints, or privately held assets. Extreme discount to raise cash or 6-12+ months required to receive cash.

PERS (DB)



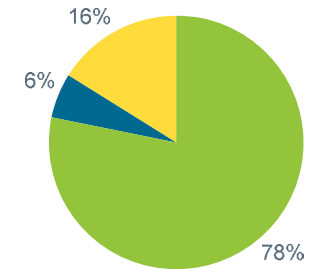
PERS (DB) Liquidity Rating 63

PERS (HC)



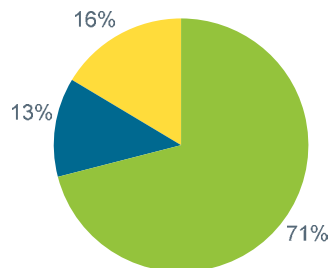
PERS (HC) Liquidity Rating 80

STRS



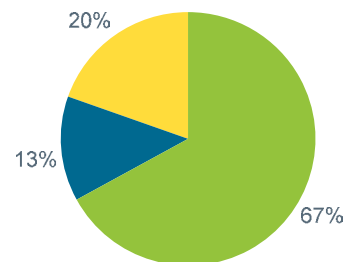
STRS Liquidity Rating 73

OP&F



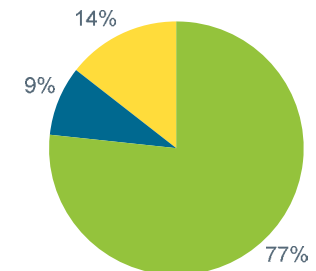
OP&F Liquidity Rating 75

SERS



SERS Liquidity Rating 66

HPRS



HPRS Liquidity Rating 71

Allocations shown may not sum up to exactly 100% due to rounding. The RVK Liquidity Rating is calculated using beginning of quarter investment weights applied to each corresponding asset class liquidity rating. Asset Allocation by Liquidity is based on dedicated composite allocations and not underlying investment manager exposures; as such, liquidity allocations are approximations. Please see the glossary for additional information regarding liquidity and custom index descriptions.

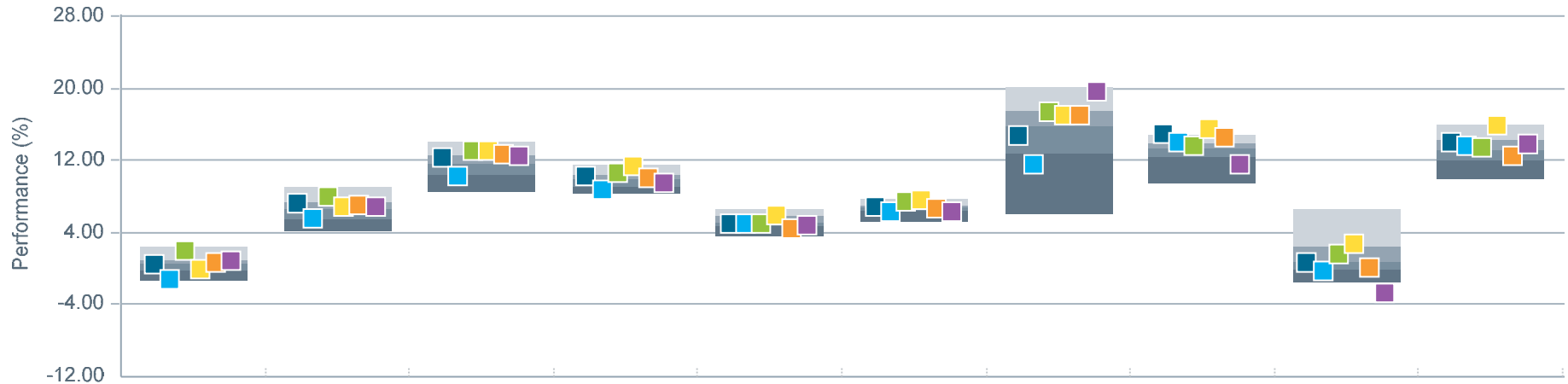


Summary

Five of the six Ohio Funds outperformed the All Public Plans >\$1B-Total Fund median during the 2014 calendar year.

- PERS (DB) outperformed the median over the trailing 1-, 3-, and 5-year periods.
- PERS (HC) has trailed the peer median over all trailing periods shown.
- With the exception of the trailing 7-year period, STRS has outperformed the peer median over all other trailing periods shown.
- With the exception of the past 2 quarters, OP&F outperformed the peer median over all other trailing periods shown.
- Over the trailing 1-, 3-, and 5-year trailing periods, SERS has outperformed the peer universe.
- HPRS outperformed the peer median over the trailing 1- and 3-year periods, but trailed the universe over longer time periods.

Plan Sponsor Peer Group - Total Fund Performance



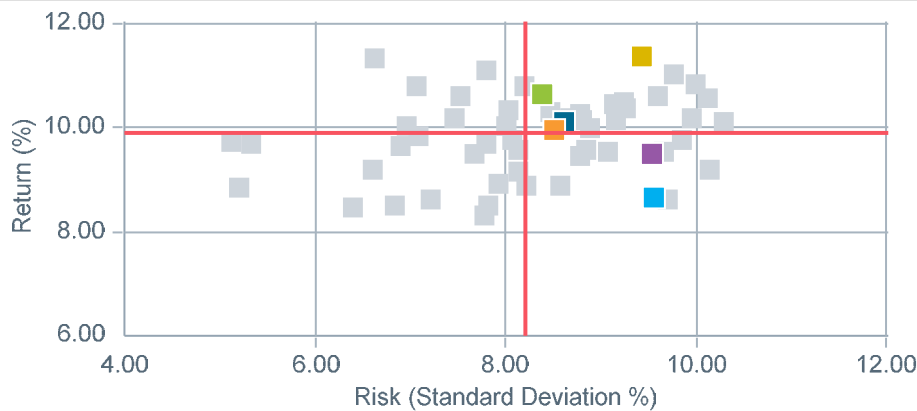
	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010
■ PERS (DB)	0.33 (56)	7.25 (29)	12.17 (39)	10.11 (41)	4.97 (65)	6.76 (52)	14.65 (62)	14.78 (8)	0.58 (57)	14.01 (34)
■ PERS (HC)	-1.30 (97)	5.46 (74)	10.22 (78)	8.65 (85)	4.95 (68)	6.21 (78)	11.54 (83)	13.85 (31)	-0.38 (80)	13.51 (46)
■ STRS	1.81 (14)	7.95 (18)	12.91 (21)	10.61 (18)	4.91 (70)	7.25 (19)	17.39 (26)	13.60 (44)	1.49 (33)	13.32 (48)
■ OP&F	-0.13 (74)	6.74 (46)	12.94 (19)	11.35 (6)	5.83 (28)	7.60 (7)	16.93 (31)	15.41 (3)	2.57 (25)	15.85 (7)
■ SERS	0.52 (51)	6.92 (35)	12.65 (30)	9.92 (49)	4.38 (85)	6.57 (63)	16.86 (34)	14.42 (17)	-0.07 (74)	12.35 (72)
■ HPRS	0.78 (37)	6.73 (47)	12.46 (35)	9.48 (69)	4.72 (76)	6.26 (78)	19.59 (8)	11.45 (90)	-2.85 (99)	13.81 (40)
Median	0.52	6.57	11.75	9.88	5.15	6.76	15.85	13.34	0.77	13.09
Population	79	77	68	65	65	60	84	86	90	85

Performance shown is gross of fees. Parentheses contain percentile ranks.

Summary

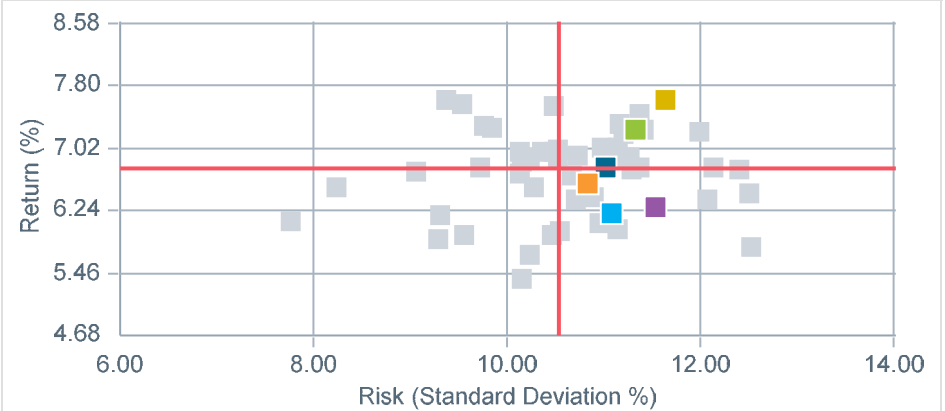
- All six plans have experienced higher volatility (standard deviation) than the All Public Plans > \$1B-Total Fund median over the trailing 5- and 10-year periods.
- Over the trailing five-year period, PERS (DB), STRS, OP&F, and SERS have outperformed or met the universe median on both a total return and total return and total risk-adjusted return basis. PERS (HC) and HPRS have trailed the universe median Sharpe Ratio over the same time period.
- Over the trailing ten-year period, STRS and OP&F have outperformed the universe median on both a total return and total risk-adjusted return basis. PERS (DB), PERS (HC), SERS, and HPRS have trailed the median Sharpe Ratio over the same period.

Plan Sponsor Peer Group Scattergram - 5 Years



	Return	Standard Deviation
■ PERS (DB)	10.11	8.62
■ PERS (HC)	8.65	9.57
■ STRS	10.61	8.39
■ OP&F	11.35	9.45
■ SERS	9.92	8.53
■ HPRS	9.48	9.54
— Median	9.88	8.21

Plan Sponsor Peer Group Scattergram - 10 Years



	Return	Standard Deviation
■ PERS (DB)	6.76	11.03
■ PERS (HC)	6.21	11.08
■ STRS	7.25	11.35
■ OP&F	7.60	11.65
■ SERS	6.57	10.85
■ HPRS	6.26	11.55
— Median	6.76	10.55

Sharpe Ratio - 5 Year

PERS (DB)	1.16
PERS (HC)	0.92
STRS	1.25
OP&F	1.19
SERS	1.16
HPRS	1.00
All Public Plans > \$1B-Total Fund Median	1.16

Sharpe Ratio - 10 Year

PERS (DB)	0.51
PERS (HC)	0.46
STRS	0.54
OP&F	0.56
SERS	0.50
HPRS	0.45
All Public Plans > \$1B-Total Fund Median	0.53

Performance shown is gross of fees.

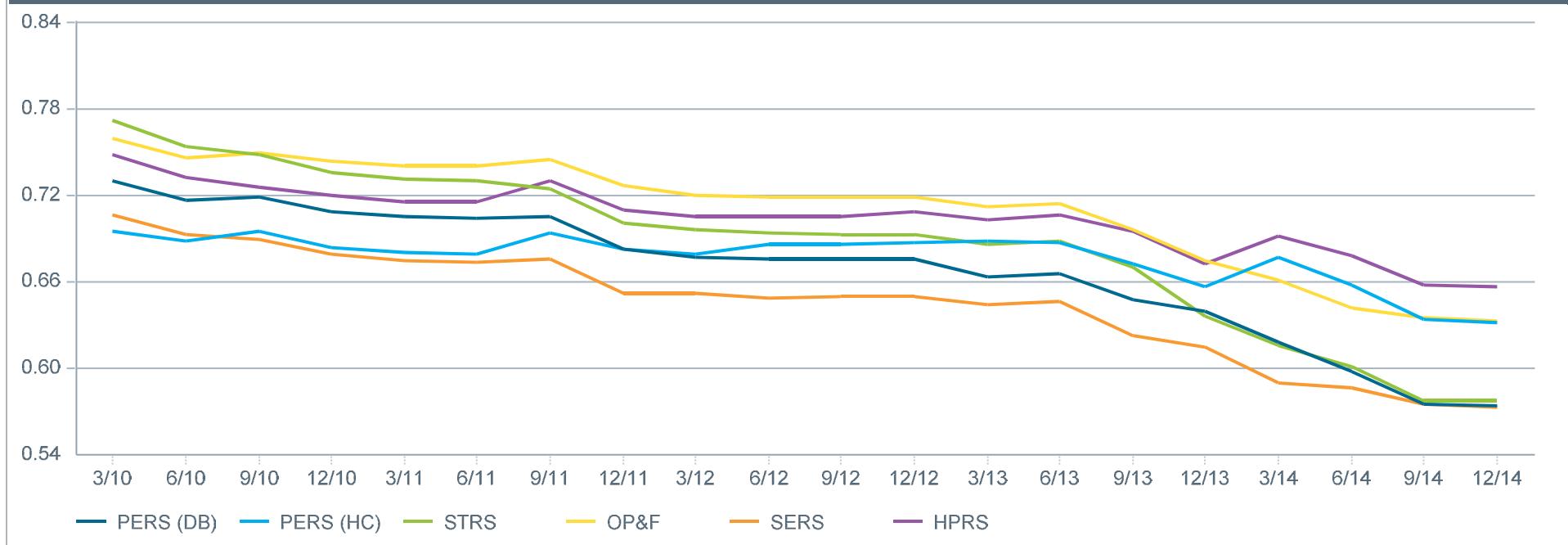
Summary

Beta is a measure of the sensitivity of a portfolio to the movements of the U.S. equity market as represented by the S&P 500 Index (Cap Wtd). Beta measures a portfolio's non-diversifiable or systematic risk. As an example, a Beta of 0.70 indicates that a portfolio captures roughly 70% of the S&P 500 Index return. If the S&P 500 Index returns 10%, the portfolio would be expected to return 7%.

Equity Beta

	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years
PERS (DB)	0.39	0.57	0.48	0.57	0.66	0.66
PERS (HC)	0.78	0.85	0.57	0.63	0.66	0.66
STRS	0.58	0.63	0.53	0.58	0.68	0.68
OP&F	0.40	0.65	0.54	0.63	0.70	0.70
SERS	0.50	0.62	0.54	0.57	0.64	0.64
HPRS	0.48	0.59	0.63	0.66	0.70	0.70
S&P 500 Index (Cap Wtd)	1.00	1.00	1.00	1.00	1.00	1.00

5 Year Rolling Equity Beta



Performance shown is gross of fees and is calculated using quarterly periodicity.

Summary

- Over the trailing 1-year period, all six plans trailed the 12.6% return earned by the R 3000 Index. **STRS's** and **HPRS's** domestic equity returns outperformed the peer median, returning 11.7% and 12.0%, respectively.
- Four of six funds trailed the R 3000 Index over the trailing 3-period and three funds trailed the index over the trailing 5-year period.
- Four of six funds trailed the broad market benchmark and peer median over the trailing 10-year period.

Performance

	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010
Domestic Equity										
PERS (DB)	4.63	11.29	20.20	15.44	7.32	7.78	33.86	16.58	1.15	16.68
R 3000 Index	5.25	12.55	20.51	15.63	7.54	7.94	33.55	16.42	1.03	16.93
Difference	-0.62	-1.26	-0.31	-0.19	-0.22	-0.16	0.31	0.16	0.12	-0.25
Rank	48	53	49	63	55	56	59	47	34	78
PERS (HC)	4.63	11.29	20.20	15.44	7.32	7.78	33.86	16.58	1.15	16.68
R 3000 Index	5.25	12.55	20.51	15.63	7.54	7.94	33.55	16.42	1.03	16.93
Difference	-0.62	-1.26	-0.31	-0.19	-0.22	-0.16	0.31	0.16	0.12	-0.25
Rank	48	53	49	63	55	56	59	47	34	78
STRS	4.71	11.70	19.48	15.09	7.04	7.62	32.14	15.56	1.51	16.64
R 3000 Index	5.25	12.55	20.51	15.63	7.54	7.94	33.55	16.42	1.03	16.93
Difference	-0.54	-0.85	-1.03	-0.54	-0.50	-0.32	-1.41	-0.86	0.48	-0.29
Rank	43	44	73	73	62	67	84	71	27	81
OP&F	3.95	11.27	19.89	16.35	8.37	8.63	35.53	14.28	0.94	22.57
Wilshire 5000 Index	5.34	12.71	20.29	15.54	7.49	7.99	33.07	16.06	0.98	17.16
Difference	-1.39	-1.44	-0.40	0.81	0.88	0.64	2.46	-1.78	-0.04	5.41
Rank	72	53	58	18	19	12	24	93	41	5
SERS	3.49	10.99	20.83	15.96	7.63	7.84	35.76	17.09	0.13	18.69
R 3000 Index	5.25	12.55	20.51	15.63	7.54	7.94	33.55	16.42	1.03	16.93
Difference	-1.76	-1.56	0.32	0.33	0.09	-0.10	2.21	0.67	-0.90	1.76
Rank	77	60	21	35	43	54	19	25	50	45
HPRS	5.39	11.97	20.75	16.07	8.14	8.34	35.56	16.01	-1.01	20.87
R 3000 Index	5.25	12.55	20.51	15.63	7.54	7.94	33.55	16.42	1.03	16.93
Difference	0.14	-0.58	0.24	0.44	0.60	0.40	2.01	-0.41	-2.04	3.94
Rank	27	36	24	32	24	31	24	62	76	7
<i>All Public Plans > \$1B-US Equity Segment Median</i>	<i>4.58</i>	<i>11.42</i>	<i>20.16</i>	<i>15.66</i>	<i>7.42</i>	<i>7.88</i>	<i>34.70</i>	<i>16.51</i>	<i>0.10</i>	<i>17.98</i>

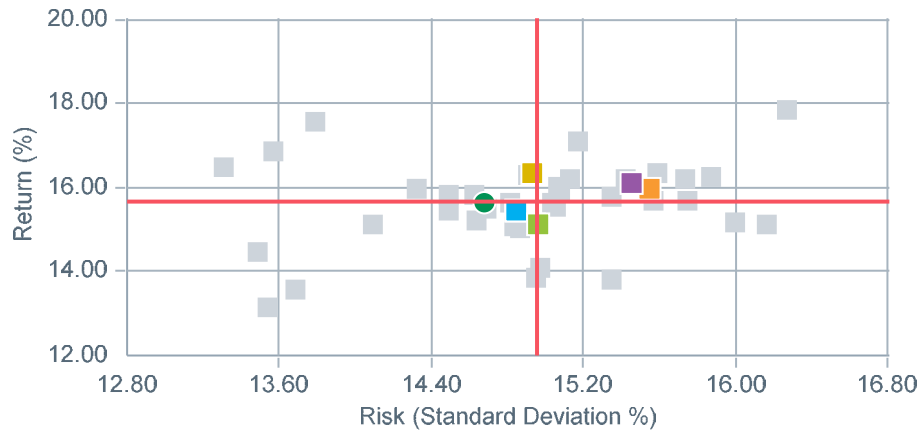
Performance shown is gross of fees. Ranks are shown against All Public Plans >\$1B-US Equity Segment.

All Public Plans > \$1B-US Equity Segment

Summary

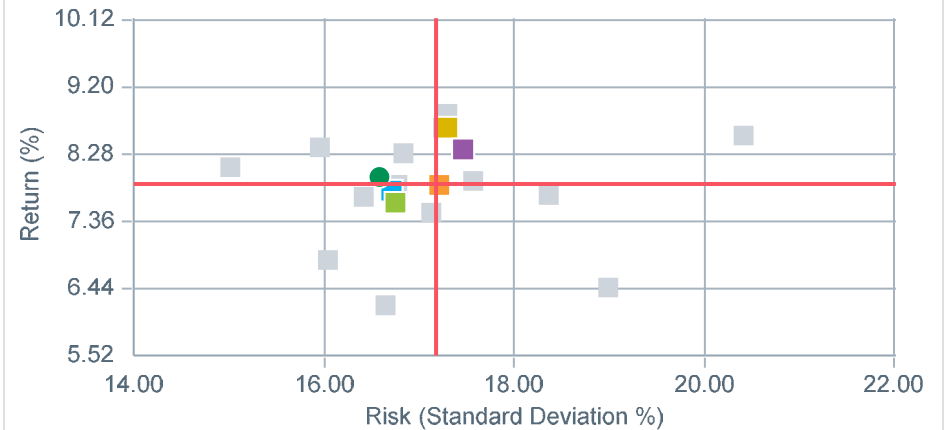
- OP&F's and HPRS's domestic equity composites have earned more return for each unit of risk exposure over the trailing five-year period. PERS (DB) and PERS (HC) have earned similar levels of risk-adjusted domestic equity returns over the same period.
- Two of the six plans (OP&F and HPRS) outperformed the All Public Plans > \$1B-US Equity Segment median over the trailing ten-year period.
- All six plans have generated Sharpe Ratios in line with the peer median over the trailing ten-year period.

Plan Sponsor Peer Group Scattergram - 5 Years



	Return	Standard Deviation
■ PERS (DB)	15.44	14.86
■ PERS (HC)	15.44	14.86
■ STRS	15.09	14.97
■ OP&F	16.35	14.94
■ SERS	15.96	15.55
■ HPRS	16.07	15.45
● R 3000 Index	15.63	14.68
— Median	15.66	14.96

Plan Sponsor Peer Group Scattergram - 10 Years



	Return	Standard Deviation
■ PERS (DB)	7.78	16.72
■ PERS (HC)	7.78	16.72
■ STRS	7.62	16.76
■ OP&F	8.63	17.32
■ SERS	7.84	17.23
■ HPRS	8.34	17.48
● R 3000 Index	7.94	16.60
— Median	7.88	17.18

Sharpe Ratio - 5 Years

PERS (DB)	1.05
PERS (HC)	1.05
STRS	1.03
OP&F	1.10
SERS	1.04
HPRS	1.06
R 3000 Index	1.08
All Public Plans > \$1B-US Equity Segment Median	1.06

Sharpe Ratio - 10 Years

PERS (DB)	0.44
PERS (HC)	0.44
STRS	0.43
OP&F	0.48
SERS	0.44
HPRS	0.46
R 3000 Index	0.45
All Public Plans > \$1B-US Equity Segment Median	0.44

Performance shown is gross of fees.

Summary

- Three of the six plans' international equity composites outperformed their respective benchmarks during the 2014 calendar year.
- All plans outperformed their respective benchmarks but four of the six plans trailed the peer group median over the trailing 3- and 5-year periods.
- All of the six plans outperformed their respective benchmarks over the trailing seven-year period, with three plans also outperforming the peer median.
- Over the trailing ten-year period, five of the six plans outperformed their respective benchmarks. **STRS**, **OP&F**, and **SERS** also outperformed peers during the same period.

Performance

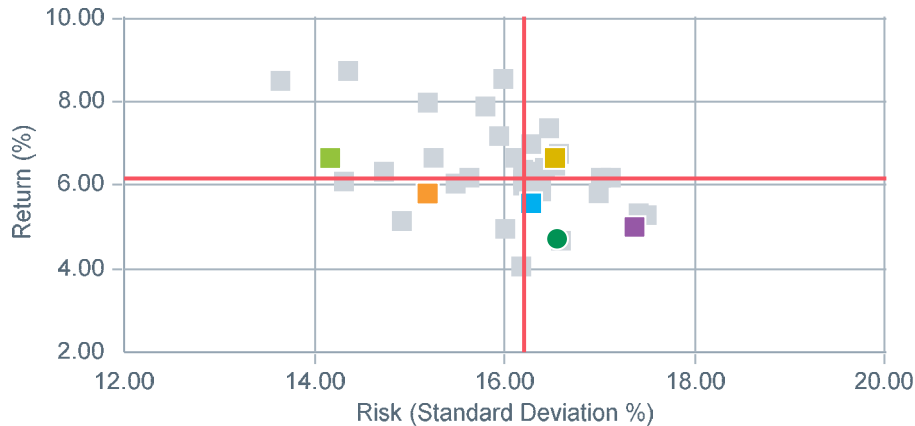
	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010
International Equity										
PERS (DB)	-7.47	-1.48	10.40	5.54	-0.02	5.71	15.61	18.15	-13.39	12.33
PERS (DB) International Equity Custom Benchmark	-8.88	-3.42	8.52	4.04	-0.89	4.94	12.92	17.18	-14.19	11.15
Difference	1.41	1.94	1.88	1.50	0.87	0.77	2.69	0.97	0.80	1.18
Rank	36	28	64	77	73	70	81	75	71	59
PERS (HC)	-7.47	-1.48	10.40	5.54	-0.01	5.71	15.61	18.15	-13.39	12.34
PERS (HC) International Equity Custom Benchmark	-8.88	-3.42	8.52	4.04	-0.89	4.94	12.92	17.18	-14.19	11.15
Difference	1.41	1.94	1.88	1.50	0.88	0.77	2.69	0.97	0.80	1.19
Rank	36	28	64	77	73	70	81	75	71	59
STRS	-4.28	0.83	12.15	6.64	1.19	7.00	19.23	17.32	-12.81	12.17
STRS International Equity Custom Benchmark	-4.48	0.24	11.30	5.68	0.43	6.30	17.63	16.93	-13.11	10.04
Difference	0.20	0.59	0.85	0.96	0.76	0.70	1.60	0.39	0.30	2.13
Rank	7	9	21	30	25	26	38	85	55	67
OP&F	-7.89	-5.85	10.97	6.63	0.63	6.45	21.00	19.96	-12.37	15.12
MSCI ACW Ex US Investable Mkt Index (Net)	-9.13	-3.89	9.22	4.71	-0.34	5.37	15.82	17.04	-14.31	12.73
Difference	1.24	-1.96	1.75	1.92	0.97	1.08	5.18	2.92	1.94	2.39
Rank	50	100	49	30	43	40	18	26	45	14
SERS	-8.93	-4.10	10.26	5.77	0.39	6.67	17.29	19.16	-13.16	13.75
SERS International Equity Custom Benchmark	-8.93	-3.87	9.75	4.94	0.05	5.83	17.15	17.39	-13.12	10.81
Difference	0.00	-0.23	0.51	0.83	0.34	0.84	0.14	1.77	-0.04	2.94
Rank	84	90	70	76	48	37	73	38	69	40
HPRS	-9.62	-4.65	10.25	4.97	-0.38	5.00	19.05	18.06	-14.49	11.21
MSCI ACW Ex US Index (Net)	-8.93	-3.87	9.00	4.43	-0.63	5.13	15.29	16.83	-13.71	11.15
Difference	-0.69	-0.78	1.25	0.54	0.25	-0.13	3.76	1.23	-0.78	0.06
Rank	96	95	70	85	83	85	39	77	86	77
<i>All Public Plans > \$1B-Intl. Equity Segment Median</i>	<i>-7.90</i>	<i>-3.00</i>	<i>10.90</i>	<i>6.16</i>	<i>0.38</i>	<i>6.22</i>	<i>18.10</i>	<i>18.96</i>	<i>-12.69</i>	<i>12.79</i>

Performance shown is gross of fees. Ranks are shown against All Public Plans >\$1B-Intl. Equity Segment.

Summary

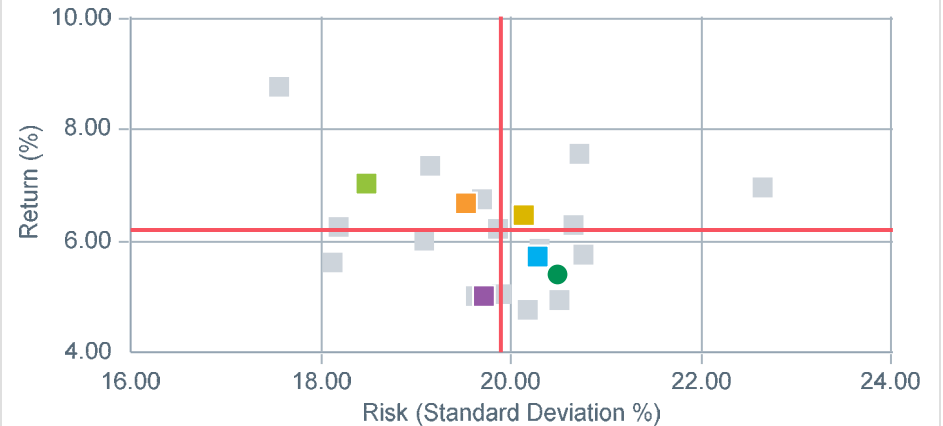
- The international equity composites for **STRS** and **OP&F** have generated higher risk-adjusted returns than peers over both the trailing 5- and 10-year periods.
- **SERS**'s international equity composite has also generated a higher Sharpe Ratio than the median peer over the trailing 10-year period.

Plan Sponsor Peer Group Scattergram - 5 Years



	Return	Standard Deviation
■ PERS (DB)	5.54	16.30
■ PERS (HC)	5.54	16.30
■ STRS	6.64	14.19
■ OP&F	6.63	16.54
■ SERS	5.77	15.21
■ HPRS	4.97	17.38
● MSCI ACW Ex US IMI (Net)	4.71	16.57
— Median	6.16	16.21

Plan Sponsor Peer Group Scattergram - 10 Years



	Return	Standard Deviation
■ PERS (DB)	5.71	20.29
■ PERS (HC)	5.71	20.28
■ STRS	7.00	18.49
■ OP&F	6.45	20.14
■ SERS	6.67	19.55
■ HPRS	5.00	19.73
● MSCI ACW Ex US IMI (Net)	5.37	20.51
— Median	6.22	19.89

Sharpe Ratio - 5 Years

PERS (DB)	0.41
PERS (HC)	0.41
STRS	0.52
OP&F	0.47
SERS	0.44
HPRS	0.37
MSCI ACW Ex US IMI (Net)	0.36
<i>All Public Plans > \$1B-Intl. Equity Segment Median</i>	0.45

Sharpe Ratio - 10 Years

PERS (DB)	0.30
PERS (HC)	0.30
STRS	0.38
OP&F	0.34
SERS	0.36
HPRS	0.27
MSCI ACW Ex US IMI (Net)	0.29
<i>All Public Plans > \$1B-Intl. Equity Segment Median</i>	0.33

Performance shown is gross of fees.

Summary

- During 2014, two of the six plans' fixed income composites have outperformed the Barclays US Agg Bond Index return of 6.0% and ranked in line with or above the peer median.
- All plans' fixed income composites outperformed the broad market index over all other available trailing periods shown.

Performance

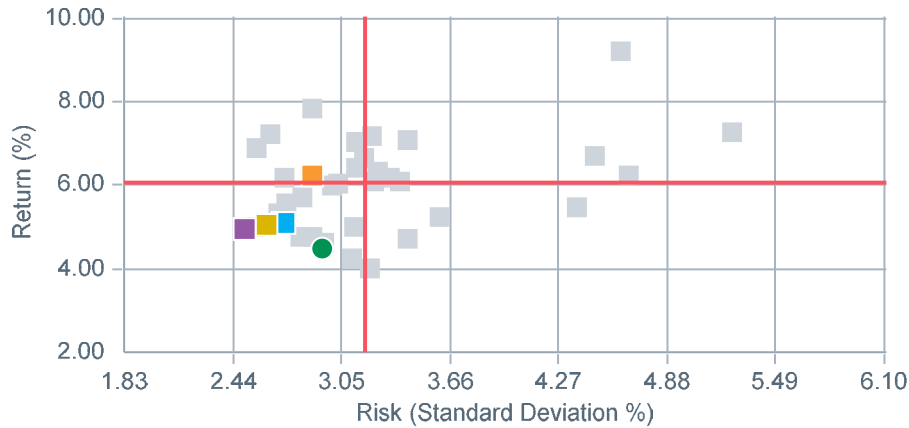
	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010
Fixed Income										
PERS (DB) Core Fixed Income	2.05	6.47	3.42	5.08	N/A	N/A	-1.04	4.99	7.52	7.73
PERS (DB) Core Fixed Income Custom Benchmark	1.96	5.97	2.66	4.45	N/A	N/A	-2.02	4.21	7.84	6.54
Difference	0.09	0.50	0.76	0.63	N/A	N/A	0.98	0.78	-0.32	1.19
Rank	18	33	69	76	N/A	N/A	49	85	60	70
PERS (HC) Core Fixed Income	2.05	6.47	3.42	5.08	N/A	N/A	-1.04	4.99	7.52	7.74
PERS (HC) Core Fixed Income Custom Benchmark	1.96	5.97	2.66	4.45	N/A	N/A	-2.02	4.21	7.84	6.54
Difference	0.09	0.50	0.76	0.63	N/A	N/A	0.98	0.78	-0.32	1.20
Rank	18	33	69	76	N/A	N/A	49	85	60	69
STRS	1.03	5.02	3.33	4.98	5.52	5.39	-1.03	6.14	7.30	7.70
Barclays US Unv Bond Index	1.31	5.56	3.20	4.81	4.99	4.91	-1.35	5.53	7.40	7.16
Difference	-0.28	-0.54	0.13	0.17	0.53	0.48	0.33	0.61	-0.10	0.54
Rank	46	81	71	77	54	44	48	65	62	71
OP&F Core Fixed Income	0.88	4.04	3.06	5.03	5.28	5.07	-1.05	6.31	6.41	9.72
Barclays US Agg Bond Index	1.96	5.97	2.66	4.45	4.77	4.71	-2.02	4.21	7.84	6.54
Difference	-1.08	-1.93	0.40	0.58	0.51	0.36	0.97	2.10	-1.43	3.18
Rank	53	92	78	76	64	60	49	63	78	30
SERS	0.79	5.84	4.82	6.23	6.46	5.89	-0.37	9.21	6.69	10.07
Barclays US Agg Bond Index	1.96	5.97	2.66	4.45	4.77	4.71	-2.02	4.21	7.84	6.54
Difference	-1.17	-0.13	2.16	1.78	1.69	1.18	1.65	5.00	-1.15	3.53
Rank	61	51	35	42	30	27	33	26	77	24
HPRS	0.99	4.00	3.20	4.94	5.18	5.26	-0.81	6.55	7.49	7.70
Barclays US Agg Bond Index	1.96	5.97	2.66	4.45	4.77	4.71	-2.02	4.21	7.84	6.54
Difference	-0.97	-1.97	0.54	0.49	0.41	0.55	1.21	2.34	-0.35	1.16
Rank	51	92	74	77	70	52	44	62	60	71
<i>All Public Plans > \$1B-US Fixed Income Segment Median</i>	<i>0.99</i>	<i>5.90</i>	<i>4.14</i>	<i>6.09</i>	<i>5.56</i>	<i>5.28</i>	<i>-1.11</i>	<i>7.40</i>	<i>7.73</i>	<i>9.00</i>

Performance shown is gross of fees. Ranks are shown against All Public Plans >\$1B-US Fixed Income Segment. PERS (DB), PERS (HC), and OP&F performance for Total Fixed Income is unavailable, so Core Fixed Income is shown for illustrative purposes. PERS (DB) and PERS (HC) changed mandates in 2010 and are therefore unable to report 7- and 10-year trailing returns.

Summary

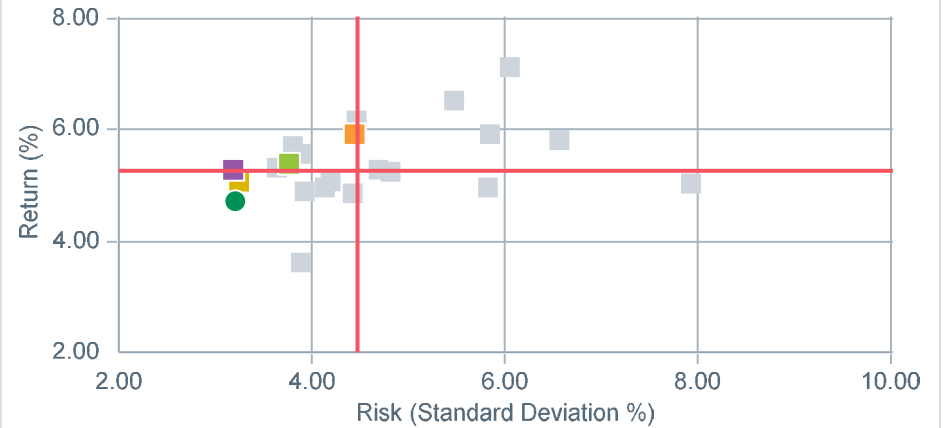
- Over the trailing 5-year period four of six plans have achieved higher risk-adjusted returns than the peer median.
- Over the trailing 10-year period all four plans with available fixed income history have achieved higher risk-adjusted returns than the median peer.

Plan Sponsor Peer Group Scattergram - 5 Years



	Return	Standard Deviation
■ PERS (DB) Core Fixed Income	5.08	2.73
■ PERS (HC) Core Fixed Income	5.08	2.73
■ STRS	4.98	2.57
■ OP&F Core Fixed Income	5.03	2.64
■ SERS	6.23	2.89
■ HPRS	4.94	2.51
● Barclays US Agg Bond Index	4.45	2.95
— Median	6.09	3.19

Plan Sponsor Peer Group Scattergram - 10 Years



	Return	Standard Deviation
■ PERS (DB) Core Fixed Income	N/A	N/A
■ PERS (HC) Core Fixed Income	N/A	N/A
■ STRS	5.39	3.77
■ OP&F Core Fixed Income	5.07	3.26
■ SERS	5.89	4.44
■ HPRS	5.26	3.21
● Barclays US Agg Bond Index	4.71	3.22
— Median	5.28	4.48

Sharpe Ratio - 5 Years

PERS (DB) Core Fixed Income	1.81
PERS (HC) Core Fixed Income	1.81
STRS	1.88
OP&F Core Fixed Income	1.85
SERS	2.09
HPRS	1.91
Barclays US Agg Bond Index	1.47
All Public Plans > \$1B-US Fixed Income Segment Median	1.83

Sharpe Ratio - 10 Years

PERS (DB) Core Fixed Income	N/A
PERS (HC) Core Fixed Income	N/A
STRS	0.96
OP&F Core Fixed Income	1.00
SERS	0.91
HPRS	1.08
Barclays US Agg Bond Index	0.94
All Public Plans > \$1B-US Fixed Income Segment Median	0.78

Performance shown is gross of fees.

Summary

- The majority of each plans' additional fixed income composites have outperformed their respective benchmarks over nearly all available time periods.
- Additional fixed income composite performance provided by **PERS (DB)** and **PERS (HC)** includes Emerging Markets Debt, High Yield, Floating Rate Debt (Bank Loans), Securitized Debt, TIPS, and Global High Yield.
- Additional fixed income composite performance provided by **OP&F** includes Mortgages, High Yield, and Global TIPS.

Performance

	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010
Additional Fixed Income										
PERS (DB) EMD	-8.13	-1.64	3.06	N/A	N/A	N/A	-6.35	18.83	N/A	N/A
PERS Custom EMD Benchmark	-7.22	-0.20	2.72	N/A	N/A	N/A	-7.76	17.74	N/A	N/A
Difference	-0.91	-1.44	0.34	N/A	N/A	N/A	1.41	1.09	N/A	N/A
PERS (DB) High Yield	-2.86	2.73	8.69	N/A	N/A	N/A	7.92	15.82	N/A	N/A
Barclays U.S. High Yield Index	-2.85	2.45	8.84	N/A	N/A	N/A	8.68	15.81	N/A	N/A
Difference	-0.01	0.28	-0.15	N/A	N/A	N/A	-0.76	0.01	N/A	N/A
PERS (DB) Floating Rate Debt	1.52	4.43	N/A	N/A	N/A	N/A	6.69	N/A	N/A	N/A
CS Leveraged Loan Index	-0.70	2.06	5.84	5.83	4.60	4.70	6.15	9.43	1.82	9.97
Difference	2.22	2.37	N/A	N/A	N/A	N/A	0.54	N/A	N/A	N/A
PERS (DB) Securitized Debt	3.69	17.98	21.22	N/A	N/A	N/A	21.25	24.51	N/A	N/A
Barclays CMBS Index + 2%	2.30	5.76	6.48	N/A	N/A	N/A	2.23	11.66	N/A	N/A
Difference	1.39	12.22	14.74	N/A	N/A	N/A	19.02	12.85	N/A	N/A
PERS (DB) TIPS	-2.05	3.66	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Barclays U.S. TIPS Index	-2.07	3.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Difference	0.02	0.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PERS (DB) Global High Yield	-5.93	0.00	N/A	N/A	N/A	N/A	7.58	N/A	N/A	N/A
Barclays Global High Yield Index	-5.70	0.01	N/A	N/A	N/A	N/A	7.33	N/A	N/A	N/A
Difference	-0.23	-0.01	N/A	N/A	N/A	N/A	0.25	N/A	N/A	N/A

Performance shown is gross of fees.

	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010
Additional Fixed Income										
PERS (HC) EMD	-8.13	-1.64	3.06	5.13	N/A	N/A	-6.35	18.83	2.17	14.82
PERS (HC) Custom EMD Benchmark	-7.22	-0.20	2.72	4.99	N/A	N/A	-7.76	17.74	3.33	13.92
Difference	-0.91	-1.44	0.34	0.14	N/A	N/A	1.41	1.09	-1.16	0.90
PERS (HC) High Yield	-2.86	2.73	8.69	N/A	N/A	N/A	7.92	15.82	N/A	N/A
Barclays U.S. High Yield Index	-2.85	2.45	8.84	N/A	N/A	N/A	8.68	15.81	N/A	N/A
Difference	-0.01	0.28	-0.15	N/A	N/A	N/A	-0.76	0.01	N/A	N/A
PERS (HC) Floating Rate Debt	1.52	4.43	N/A	N/A	N/A	N/A	6.69	N/A	N/A	N/A
CS Leveraged Loan Index	-0.70	2.06	5.84	5.83	4.60	4.70	6.15	9.43	1.82	9.97
Difference	2.22	2.37	N/A	N/A	N/A	N/A	0.54	N/A	N/A	N/A
PERS (HC) Securitized Debt	3.69	17.98	21.22	N/A	N/A	N/A	21.25	24.51	N/A	N/A
Barclays CMBS Index + 2%	2.30	5.76	6.48	N/A	N/A	N/A	2.23	11.66	N/A	N/A
Difference	1.39	12.22	14.74	N/A	N/A	N/A	19.02	12.85	N/A	N/A
PERS (HC) TIPS	-2.05	3.66	0.46	4.19	4.29	N/A	-8.55	6.95	13.60	6.59
Barclays U.S. TIPS Index	-2.07	3.64	0.44	4.11	4.17	N/A	-8.61	6.98	13.56	6.31
Difference	0.02	0.02	0.02	0.08	0.12	N/A	0.06	-0.03	0.04	0.28
PERS (HC) Global High Yield	-8.03	0.00	N/A	N/A	N/A	N/A	7.58	N/A	N/A	N/A
Barclays Global Hi Yld Index	-5.70	0.01	8.68	8.74	8.51	7.97	7.33	19.60	3.12	14.82
Difference	-0.23	-0.01	N/A	N/A	N/A	N/A	0.25	N/A	N/A	N/A
OP&F Mortgages	2.87	8.56	6.84	8.35	5.90	5.84	6.72	5.28	4.99	16.63
Barclays Mortgage Index (1 Qtr Lag)	2.59	3.78	2.07	3.48	4.87	4.69	-1.20	3.71	5.56	5.70
Difference	0.28	4.78	4.77	4.87	1.03	1.15	7.92	1.57	-0.57	10.93
OP&F High Yield	-1.68	2.81	8.06	9.00	8.81	7.71	6.13	15.64	6.00	15.02
CS High Yield Dev Countries Only Index	-3.50	1.85	7.92	8.68	8.14	7.30	7.53	14.76	5.46	14.39
Difference	1.82	0.96	0.14	0.32	0.67	0.41	-1.40	0.88	0.54	0.63
OP&F Global Inflation Protected Securities	3.81	19.43	7.06	13.90	11.54	9.79	-10.62	14.93	35.50	15.28
Bridewater Custom GIPS Index	4.59	18.76	5.41	9.06	7.93	6.88	-13.10	13.49	24.41	5.88
Difference	-0.78	0.67	1.65	4.84	3.61	2.91	2.48	1.44	11.09	9.40

Performance shown is gross of fees.

Summary

- Of the plans with exposure to core and value-added real estate, returns ranged from 14.2% to 22.0% during the year.
- PERS (HC)'s exposure to REITs earned 31.8% during 2014 as REITs were the strongest performing asset class of the year.
- Over the trailing 10-year period, four of the six plans outperformed their respective benchmarks.

Performance

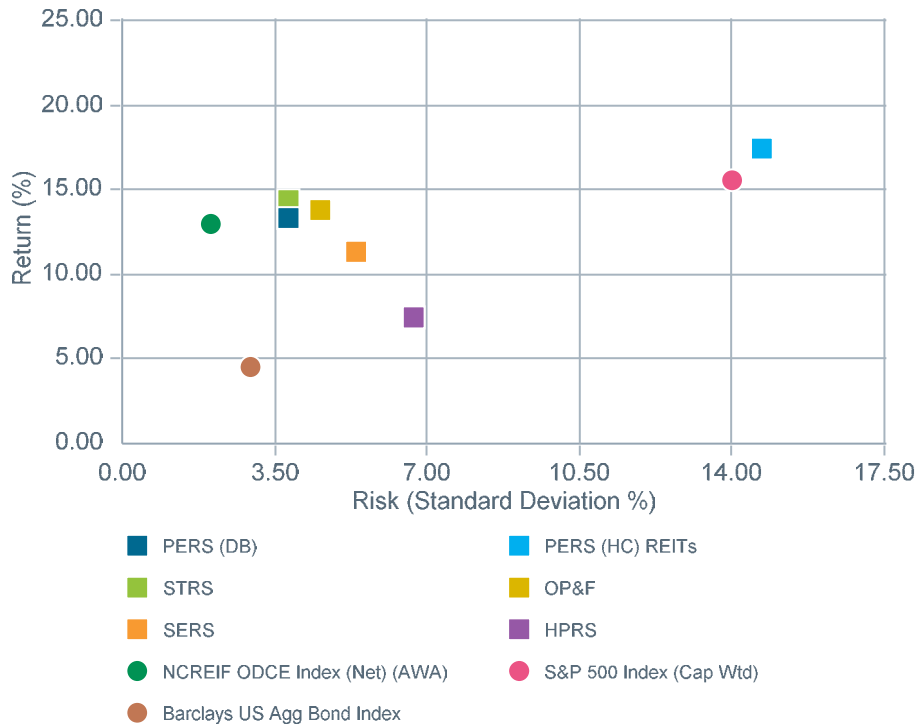
	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010
Real Estate										
PERS (DB)	10.83	18.92	15.73	13.31	4.95	8.71	15.43	12.91	13.06	6.59
NFI-ODCE Index (Net) + 0.85%	6.13	12.21	12.01	11.54	4.62	8.22	12.82	11.00	16.10	5.83
Difference	4.70	6.71	3.72	1.77	0.33	0.49	2.61	1.91	-3.04	0.76
PERS (HC) REITs	11.57	31.79	16.11	17.32	8.14	8.34	1.38	17.17	9.61	29.51
DJ US Select Real Estate Securities TR Index	11.61	31.85	16.08	16.95	7.86	8.01	1.31	17.09	8.87	28.47
Difference	-0.04	-0.06	0.03	0.37	0.28	0.33	0.07	0.08	0.74	1.04
STRS	8.81	17.57	14.40	14.34	5.28	11.36	10.36	15.40	19.07	9.60
STRS Real Estate Custom Benchmark	6.57	14.54	11.97	13.04	5.81	8.81	9.72	11.69	13.85	15.47
Difference	2.24	3.03	2.43	1.30	-0.53	2.55	0.64	3.71	5.22	-5.87
OP&F	8.95	18.17	15.43	13.74	2.86	8.90	15.11	13.06	18.01	4.86
NCREIF ODCE Index (Net) (1 Qtr Lag)	5.77	11.36	11.27	11.34	1.70	6.15	11.97	10.47	17.18	6.01
Difference	3.18	6.81	4.16	2.40	1.16	2.75	3.14	2.59	0.83	-1.15
SERS	5.96	14.22	13.41	11.27	0.81	5.49	12.00	14.02	9.88	6.40
SERS Real Estate Custom Benchmark	5.62	11.26	11.09	10.88	5.20	8.42	11.00	11.00	16.10	5.31
Difference	0.34	2.96	2.32	0.39	-4.39	-2.93	1.00	3.02	-6.22	1.09
HPRS	11.25	22.02	13.91	7.44	-1.17	3.19	13.78	6.46	-3.57	0.45
NCREIF Property Index (1 Qtr Lag)	5.62	11.26	10.93	12.02	4.62	8.33	11.00	10.54	14.26	13.11
Difference	5.63	10.76	2.98	-4.58	-5.79	-5.14	2.78	-4.08	-17.83	-12.66

Performance shown may be net or gross of fees depending on underlying investments. Prior to 2008, HPRS's real estate portfolio consisted of two buildings. Since then, HPRS has shifted its focus to externally managed funds.

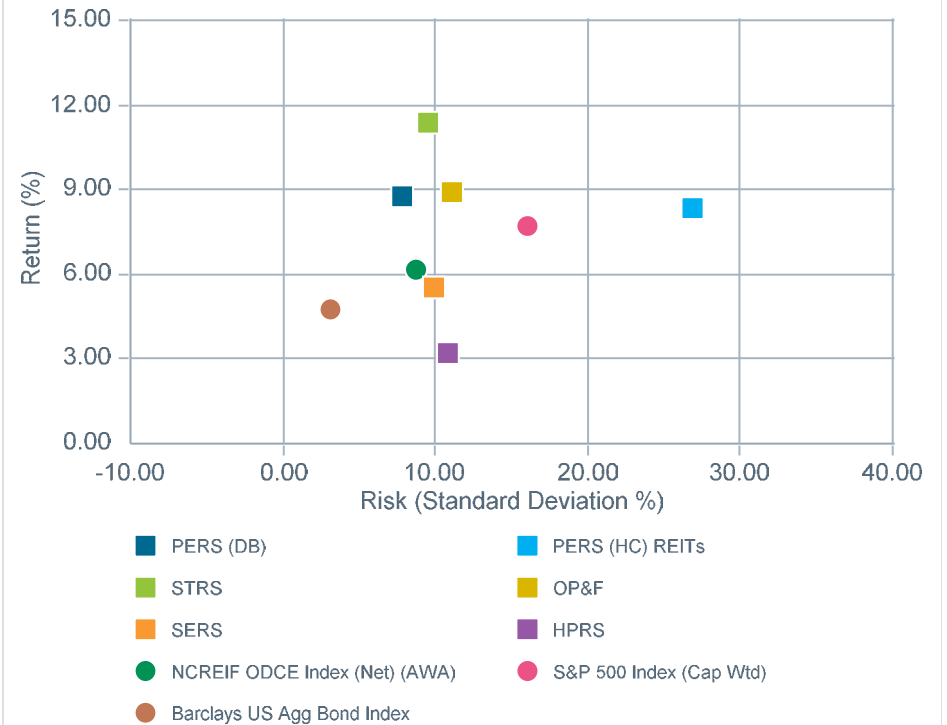
Summary

- The five plans with core and value-added real estate exposure exhibit fairly similar risk and return characteristics over the trailing 5- and 10-year periods.
- As expected, PERS (HC)'s REITs exposure exhibits risk and return characteristics similar to that of public equity markets.

Peer Group Scattergram - 5 Years



Peer Group Scattergram - 10 Years



Sharpe Ratio - 5 Years

PERS (DB)	3.32
PERS (HC) REITs	1.18
STRS	3.53
OP&F	2.87
SERS	2.02
HPRS	1.10
NCREIF ODCE Index (Net) (AWA)	6.00

Sharpe Ratio - 10 Years

PERS (DB)	0.94
PERS (HC) REITs	0.39
STRS	1.06
OP&F	0.71
SERS	0.45
HPRS	0.21
NCREIF ODCE Index (Net) (AWA)	0.56

Performance shown may be net or gross of fees depending on underlying investments.

Summary

- The five plans with dedicated hedge fund exposure earned returns ranging from 3.3% to 4.1% during the year and either tracked or outperformed their respective benchmarks.
- All plans' hedge fund composites outperformed their respective benchmarks over the trailing 3-year period.
- Among the five plans, STRS's composite has the longest available history and has earned 8.0% per annum over the trailing 10-year period.

Performance

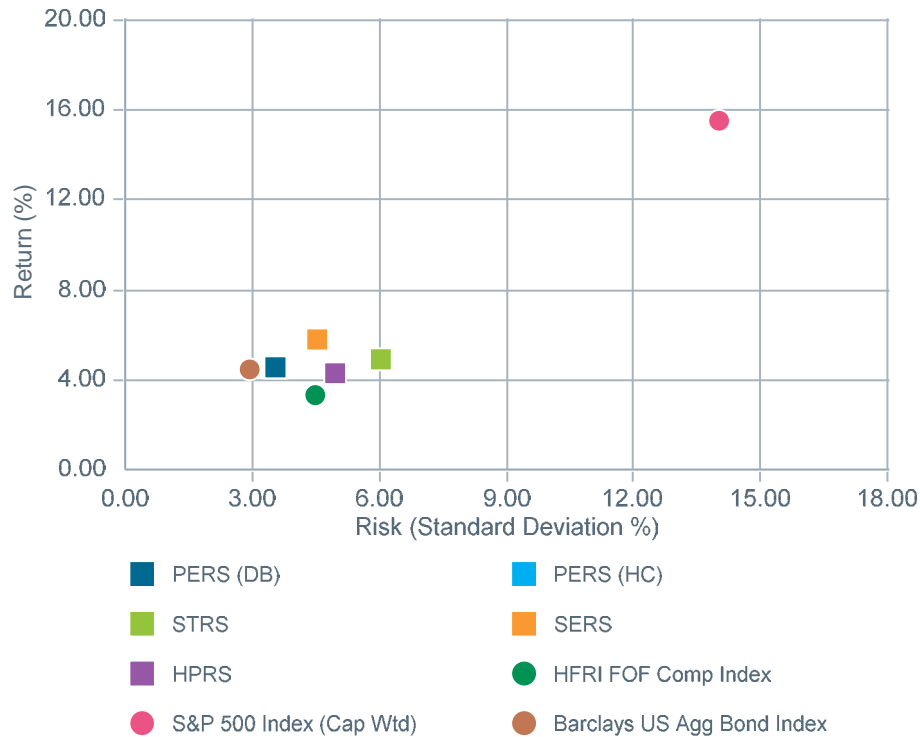
	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010
Hedge Funds										
PERS (DB)	1.03	3.93	6.58	4.51	1.44	N/A	9.63	6.26	-2.67	5.81
PERS (DB) Hedge Funds Custom Benchmark	-1.12	2.62	5.52	5.57	5.71	N/A	7.00	7.00	7.00	4.30
Difference	2.15	1.31	1.06	-1.06	-4.27	N/A	2.63	-0.74	-9.67	1.51
PERS (HC)	1.03	3.93	6.58	4.51	1.44	N/A	9.63	6.26	-2.67	5.81
PERS (HC) Hedge Funds Custom Benchmark	-1.12	2.62	5.52	5.57	5.71	N/A	7.00	7.00	7.00	4.30
Difference	2.15	1.31	1.06	-1.06	-4.27	N/A	2.63	-0.74	-9.67	1.51
STRS	-0.17	3.27	7.31	4.87	2.69	7.96	11.44	7.37	-1.27	3.96
HFRI FOF Comp Index	1.23	3.37	5.68	3.30	0.44	3.04	8.96	4.79	-5.72	5.70
Difference	-1.40	-0.10	1.63	1.57	2.25	4.92	2.48	2.58	4.45	-1.74
SERS	-0.06	4.10	7.27	5.74	N/A	N/A	9.80	7.98	-1.18	8.40
HFRI FOF Comp Index + 1%	1.73	4.37	6.18	3.77	N/A	N/A	9.46	4.79	-5.72	6.62
Difference	-1.79	-0.27	1.09	1.97	N/A	N/A	0.34	3.19	4.54	1.78
HPRS	0.21	3.34	6.59	4.27	2.66	N/A	9.47	7.03	-5.26	7.46
HFRI FOF Comp Index	1.23	3.37	5.68	3.30	0.44	3.04	8.96	4.79	-5.72	5.70
Difference	-1.02	-0.03	0.91	0.97	2.22	N/A	0.51	2.24	0.46	1.76

Performance shown is net of fees.

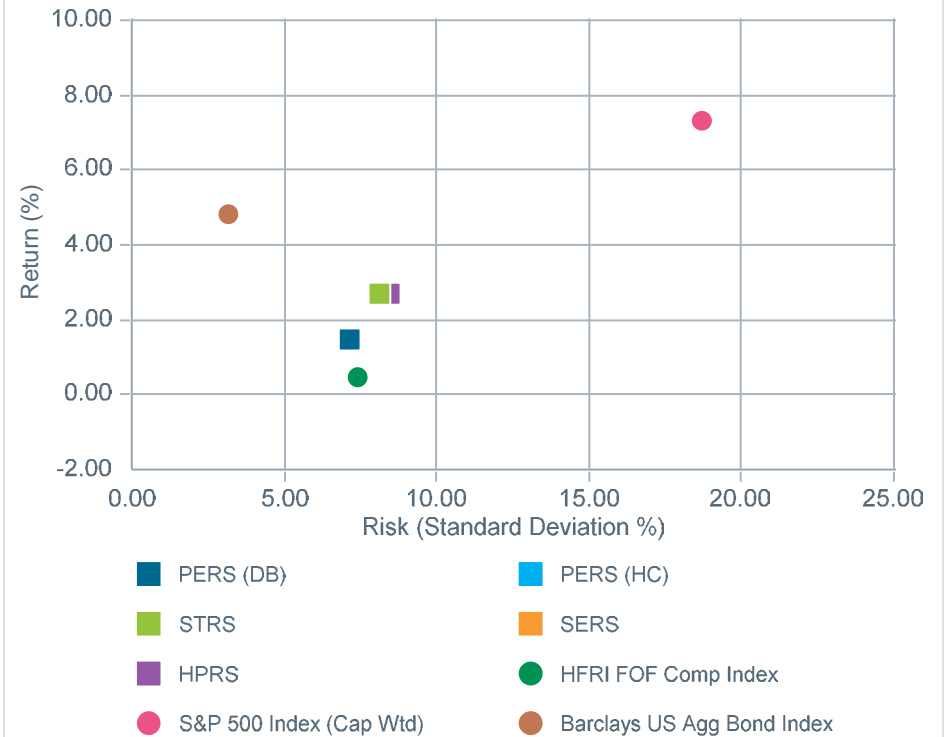
Summary

- The five plans with dedicated hedge fund exposure exhibit similar return and risk characteristics over the trailing 5- and 7-year periods.
- All plans with available history have generated more return for each unit of risk relative to the HFRI FOF Comp Index over both time periods shown.

Peer Group Scattergram - 5 Years



Peer Group Scattergram - 7 Years



Sharpe Ratio - 5 Years

PERS (DB)	1.24
PERS (HC)	1.24
STRS	0.80
SERS	1.24
HPRS	0.85
HFRI FOF Comp Index	0.73

Sharpe Ratio - 7 Years

PERS (DB)	0.18
PERS (HC)	0.18
STRS	0.31
SERS	N/A
HPRS	0.30
HFRI FOF Comp Index	0.04

Performance shown is net of fees.

Summary

- The five plans with dedicated private equity exposure earned time-weighted returns ranging from 12.4% to 22.8% during the year.
- Over the trailing ten-year period, all four plans with available history have outperformed their respective benchmarks.
- RVK prefers to measure private equity performance using since inception money-weighted returns (IRR), but we have included time-weighted performance in our analysis for illustrative purposes.

Performance

	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010
Private Equity										
PERS (DB)	7.36	17.94	17.59	17.96	9.79	14.59	16.29	18.54	15.93	21.19
PERS (DB) Private Equity Custom Benchmark	3.63	15.41	23.60	17.43	8.24	10.85	22.81	33.20	3.55	14.22
Difference	3.73	2.53	-6.01	0.53	1.55	3.74	-6.52	-14.66	12.38	6.97
STRS	5.55	18.90	18.38	16.85	8.89	13.23	20.00	16.27	11.45	17.84
STRS Private Equity Custom Benchmark	5.77	13.67	22.09	17.94	10.02	10.66	34.86	18.73	4.10	20.44
Difference	-0.22	5.23	-3.71	-1.09	-1.13	2.57	-14.86	-2.46	7.35	-2.60
OP&F	6.26	14.85	11.95	13.20	6.99	12.16	11.50	9.58	17.66	12.57
OP&F Private Equity Custom Benchmark	6.52	21.45	26.49	19.14	9.44	12.08	24.59	33.76	3.65	14.44
Difference	-0.26	-6.60	-14.54	-5.94	-2.45	0.08	-13.09	-24.18	14.01	-1.87
SERS	10.30	22.77	17.68	15.87	9.23	11.47	17.32	13.16	14.07	12.32
Burgiss All Private Equity Benchmark	4.39	15.03	23.30	17.18	8.06	10.42	22.34	33.20	4.14	13.16
Difference	5.91	7.74	-5.62	-1.31	1.17	1.05	-5.02	-20.04	9.93	-0.84
HPRS	0.72	12.41	10.23	5.85	3.60	N/A	15.54	3.12	-8.24	8.10
HPRS Private Equity Custom Benchmark	6.36	21.15	26.66	16.27	13.39	N/A	25.63	33.50	0.47	4.08
Difference	-5.64	-8.74	-16.43	-10.42	-9.79	N/A	-10.09	-30.38	-8.71	4.02

Performance shown is net of fees. HPRS's private equity portfolio did not begin in earnest until after 2008. Therefore longer period trailing returns relative to the benchmark may not be relevant.

Summary

- The majority of each plans' other alternatives composites outperform their respective benchmarks over nearly all available time periods.
- Other alternatives composite performance provided by PERS (DB) and PERS (HC) includes Opportunistic Investments, Commodities, Risk Parity, and GTAA.
- Other alternatives composite performance provided by OP&F includes Timber and MLPs.
- Opportunistic Investments performance was provided by STRS and SERS.

Performance

	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010
Other Alternatives										
PERS (DB) Opportunistic Investments	N/A	N/A	N/A	N/A	N/A	N/A	-3.06	4.15	N/A	N/A
PERS (DB) Opportunistic Custom Benchmark	1.93	1.93	1.97	N/A	N/A	N/A	-1.34	5.43	N/A	N/A
Difference	N/A	N/A	N/A	N/A	N/A	N/A	-1.72	-1.28	N/A	N/A
PERS (DB) Commodities	-35.95	-32.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S&P Goldman Sachs Commodity Index (TR)	-36.68	-33.06	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Difference	0.73	0.94	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PERS (DB) Risk Parity	-6.06	9.73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PERS (DB) Risk Parity Custom Benchmark	2.66	7.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Difference	-8.72	2.09	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PERS (DB) GTAA	-0.61	4.44	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PERS (DB) GTAA Custom Benchmark	-1.86	3.61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Difference	1.25	0.83	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PERS (HC) Opportunistic Investments	N/A	N/A	N/A	N/A	N/A	N/A	-3.06	4.25	N/A	N/A
PERS (HC) Opportunistic Custom Benchmark	1.93	1.93	1.97	N/A	N/A	N/A	-1.34	5.43	N/A	N/A
Difference	N/A	N/A	N/A	N/A	N/A	N/A	-1.72	-1.18	N/A	N/A
PERS (HC) Commodities	-35.95	-32.12	-12.23	N/A	N/A	N/A	-0.68	0.30	1.17	N/A
S&P Goldman Sachs Commodity Index	-36.68	-33.06	-12.86	N/A	N/A	N/A	-1.22	0.08	24.99	N/A
Difference	0.73	0.94	0.63	N/A	N/A	N/A	0.54	0.22	-23.82	N/A
PERS (HC) Risk Parity	-6.06	9.73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PERS (HC) Risk Parity Custom Benchmark	2.66	7.64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Difference	-8.72	2.09	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PERS (HC) GTAA	-0.61	4.44	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PERS (HC) GTAA Custom Benchmark	-1.86	3.61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Difference	1.25	0.83	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Performance shown may be net or gross of fees depending on underlying investments. PERS (DB) and PERS (HC) funded a new opportunistic investments portfolio in the third quarter of 2014. Historical performance is represented by an opportunistic investments portfolio that was closed at the end of 2013.

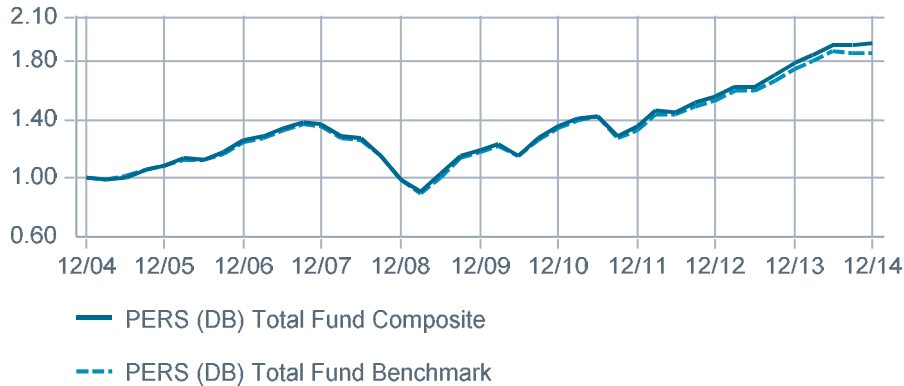
	2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010
Other Alternatives										
STRS Opportunistic Investments	1.03	7.47	10.36	10.13	N/A	N/A	11.68	12.00	3.89	16.01
STRS Opportunistic Custom Benchmark	4.73	11.45	19.33	14.50	N/A	N/A	32.26	15.28	0.02	15.78
Difference	-3.70	-3.98	-8.97	-4.37	N/A	N/A	-20.58	-3.28	3.87	0.23
OP&F Timber	4.11	8.99	N/A	N/A	N/A	N/A	3.07	N/A	N/A	N/A
Consumer Price Index + 5%	0.95	5.79	6.40	6.77	6.69	7.23	6.58	6.83	8.11	6.57
Difference	3.16	3.20	N/A	N/A	N/A	N/A	-3.51	N/A	N/A	N/A
OP&F MLPs	-8.83	16.91	N/A	N/A	N/A	N/A	32.25	N/A	N/A	N/A
Alerian MLP Index	-9.90	4.80	11.90	16.73	13.40	13.81	27.58	4.79	13.87	35.85
Difference	3.07	12.11	N/A	N/A	N/A	N/A	4.67	N/A	N/A	N/A
SERS Opportunistic Investments	3.47	7.96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SERS Opportunistic Custom Benchmark	0.92	6.59	N/A	N/A	N/A	N/A	15.32	N/A	N/A	N/A
Difference	2.55	1.37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Performance shown may be net or gross of fees depending on underlying investments. STRS opportunistic investments portfolio includes Hedge Funds.

Summary

- PERS (DB) has outperformed its benchmark over the trailing 10-year period.
- Relative to a US 60 Equity/40 Bonds, the plan has exhibited similar up-market capture and larger down-market capture characteristics over the past ten years.
- PERS (DB) has earned a return of 1.2% for each unit of risk over the trailing 5-year period and 0.5% for each unit of risk over the trailing 10-year period.

Growth of \$1 - 10 Years



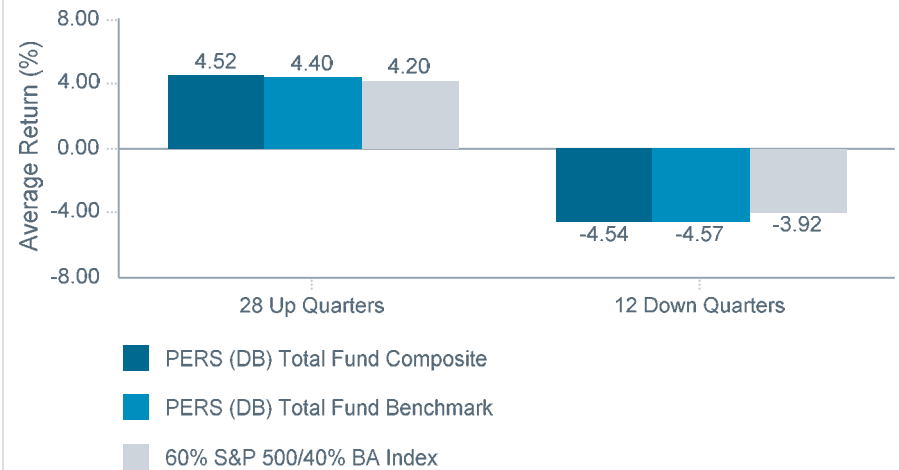
Asset Allocation vs. Targets

	Market Value (\$)	Allocation (%)	Target (%)
Domestic Equity	14,901,328,151	19.32	21.40
International Equity	14,467,441,375	18.76	19.50
Core Fixed Income	7,627,247,698	9.89	10.30
EMD	4,258,974,565	5.52	6.00
High Yield	2,226,937,382	2.89	3.00
Floating Rate Debt	487,595,758	0.63	0.70
Securitized Debt	777,987,324	1.01	1.00
Global High Yield	726,670,158	0.94	1.00
TIPS	748,730,013	0.97	1.00
Real Estate	7,709,834,104	10.00	10.00
Hedge Funds	6,291,769,972	8.16	8.00
Private Equity	9,348,282,448	12.12	10.00
Opportunistic	78,668,995	0.10	0.10
Commodities	578,863,245	0.75	1.00
Risk Parity	3,692,898,356	4.79	5.00
GTAA	1,536,868,852	1.99	2.00
Cash Equivalents	438,450,852	0.57	0.00
Rebalancing	1,220,836,644	1.58	0.00
Total Fund	77,119,385,891	100.00	100.00

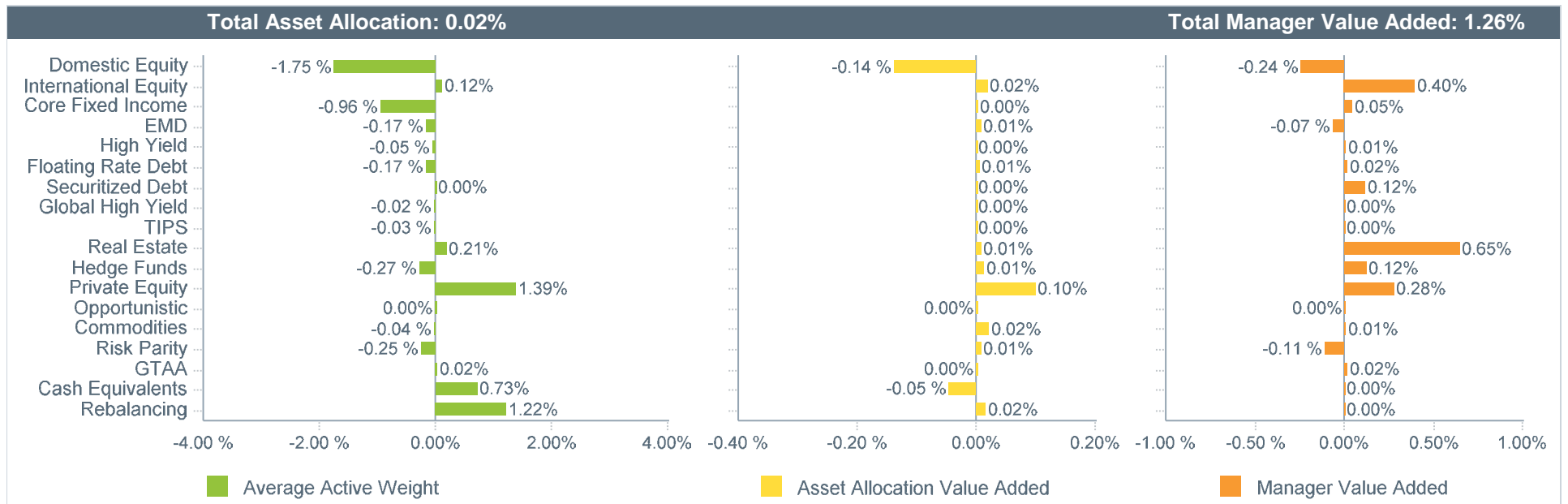
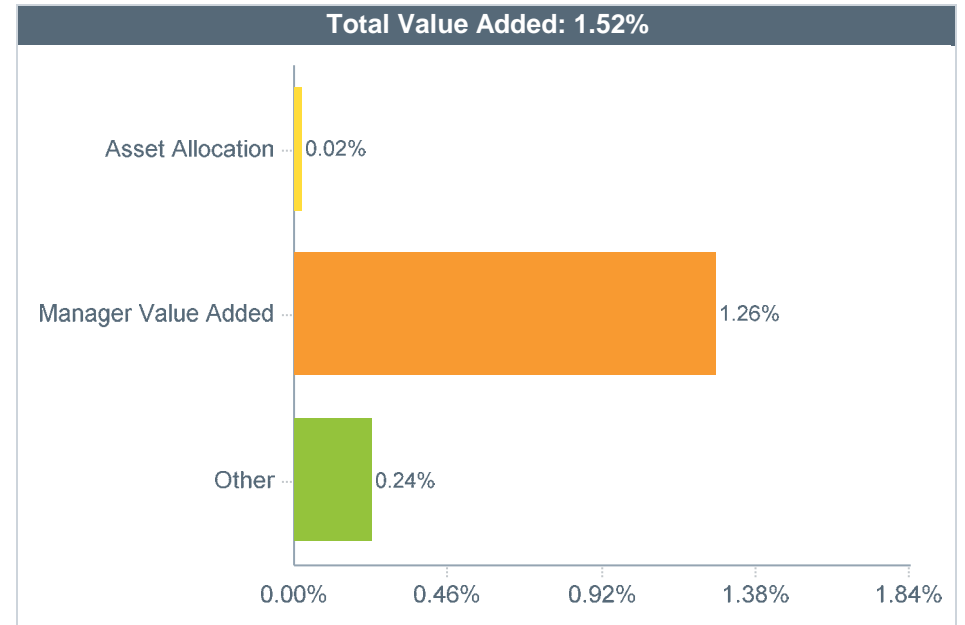
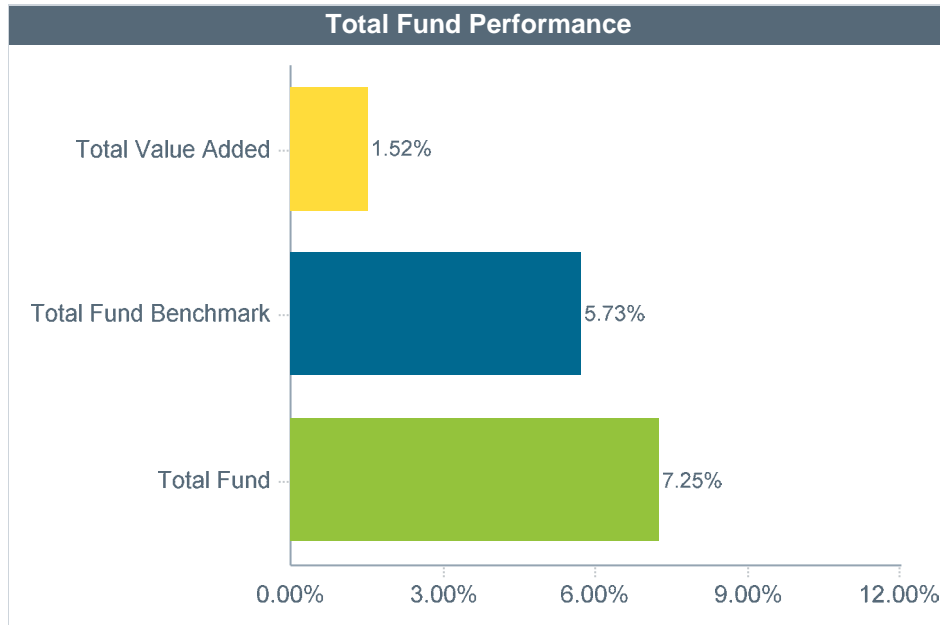
MPT Stats

	5 Years	10 Years
Maximum Return	9.71	12.34
Minimum Return	-9.24	-13.81
Standard Deviation	8.62	11.03
vs. PERS (DB) Total Fund Benchmark		
Info Ratio	0.78	0.39
Tracking Error	0.92	0.92
Alpha	0.76	0.43
vs. S&P 500 Index (Cap Wtd)		
Beta	0.57	0.66
vs. BofA ML 3 Mo US T-Bill Index		
Sharpe Ratio	1.16	0.51

Up/Down Markets - 10 Years



Performance shown is gross of fees. Calculations are based on quarterly periodicity.

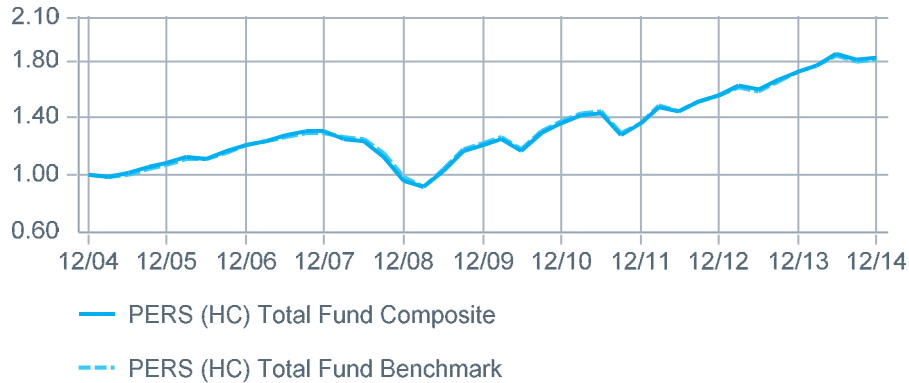


Performance shown is gross of fees. Calculation is based on monthly periodicity. See Glossary for additional information regarding the Total Fund Attribution calculation. Total Fund Benchmark return is calculated by RVK and may differ from Plan provided return due to rounding.

Summary

- PERS (HC) has tracked its benchmark over the trailing 10-year period.
- Relative to a US 60 Equity/40 Bonds, the plan has exhibited similar up-market and larger down-market capture characteristics over the past ten years.
- PERS (HC) has earned a return of 0.9% for each unit of risk over the trailing 5-year period and 0.5% for each unit of risk over the trailing 10-year period.

Growth of \$1 - 10 Years



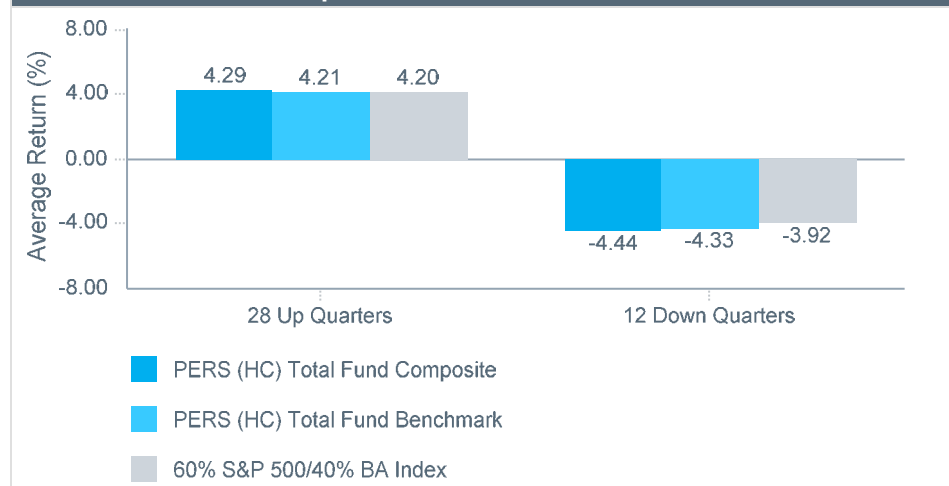
Asset Allocation vs. Targets

	Market Value (\$)	Allocation (%)	Target (%)
Domestic Equity	2,868,804,439	22.97	23.40
International Equity	2,597,854,814	20.80	21.50
Core Fixed Income	2,155,738,791	17.26	17.30
High Yield	312,323,129	2.50	2.50
Global High Yield	186,118,036	1.49	1.50
EMD	722,127,338	5.78	6.00
Floating Rate Debt	81,430,668	0.65	0.70
TIPS	614,156,386	4.92	5.00
Securitized Debt	124,868,455	1.00	1.00
REITs	749,604,731	6.00	6.00
Hedge Funds	759,304,935	6.08	6.00
Opportunistic	13,313,804	0.11	0.10
Risk Parity	607,909,719	4.87	5.00
GTAA	238,191,006	1.91	2.00
Commodities	196,268,224	1.57	2.00
Cash Equivalents	30,730,230	0.25	0.00
Rebalancing	231,006,671	1.85	0.00
Total Fund	12,489,751,376	100.00	100.00

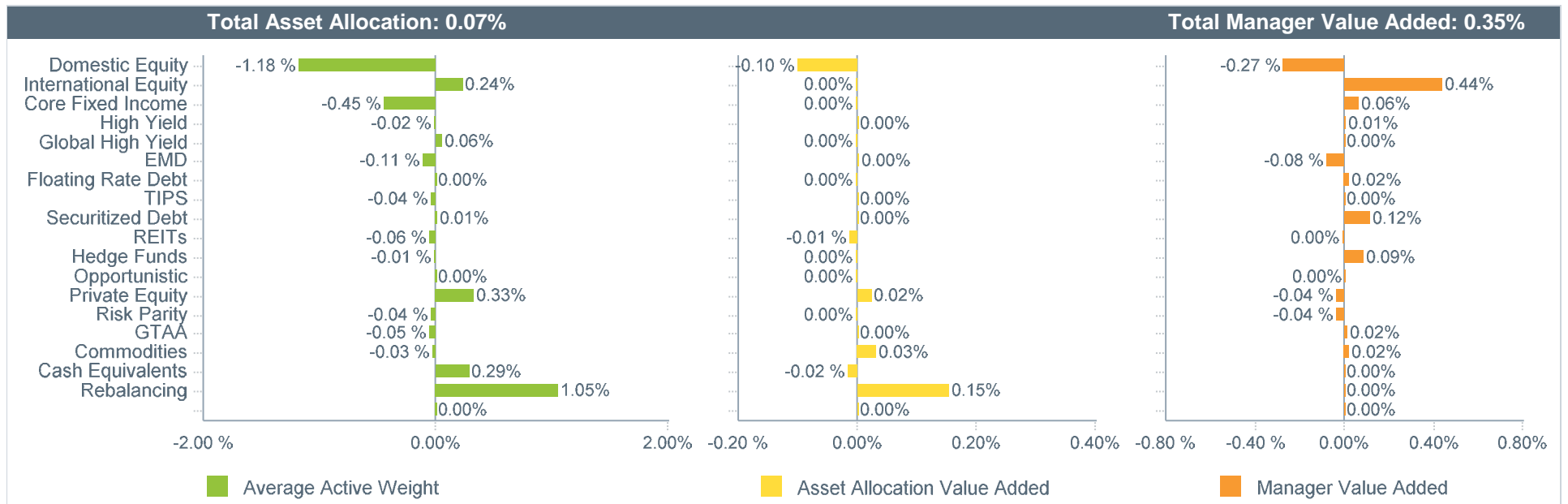
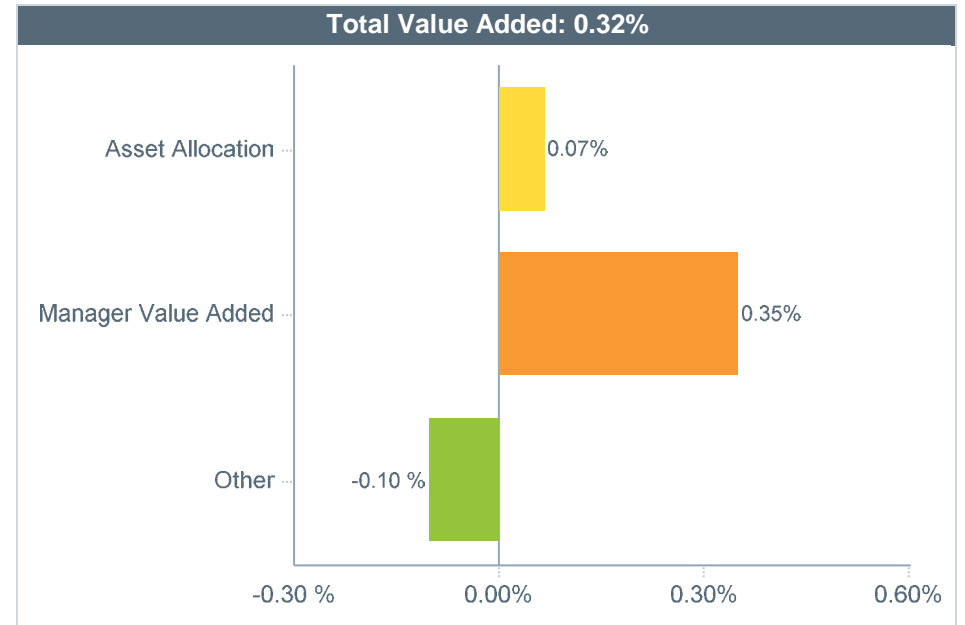
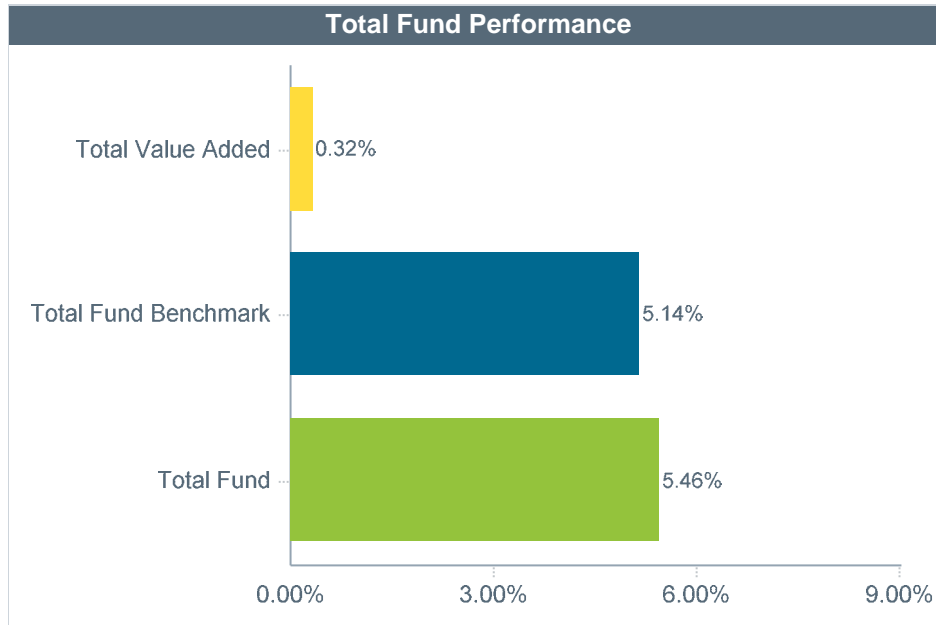
MPT Stats

	5 Years	10 Years
Maximum Return	10.07	12.96
Standard Deviation	9.57	11.08
Minimum Return	-10.71	-14.68
vs. PERS (HC) Total Fund Benchmark		
Info Ratio	1.36	0.13
Tracking Error	0.35	0.79
Alpha	0.41	0.11
vs. S&P 500 Index (Cap Wtd)		
Beta	0.63	0.66
vs. BofA ML 3 Mo US T-Bill Index		
Sharpe Ratio	0.92	0.46

Up/Down Markets - 10 Years



Performance shown is gross of fees. Calculations are based on quarterly periodicity.

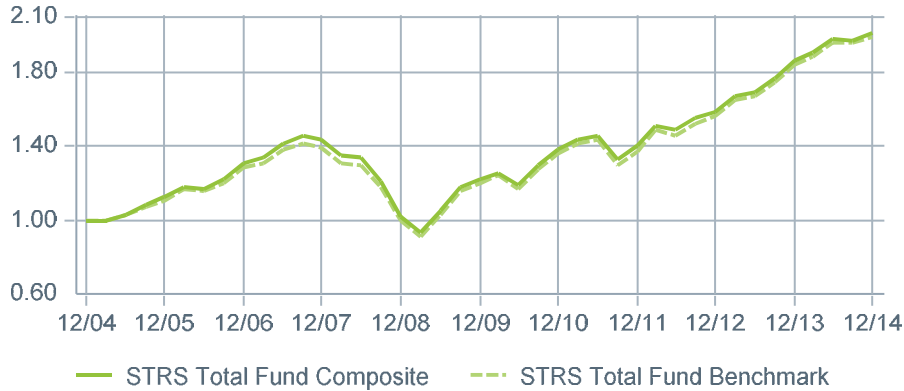


Performance shown is gross of fees. Calculation is based on monthly periodicity. See Glossary for additional information regarding the Total Fund Attribution calculation. Total Fund Benchmark return is calculated by RVK and may differ from Plan provided return due to rounding.

Summary

- STRS has tracked the performance of its custom benchmark over the trailing 10-year period.
- Relative to a US 60 Equity/40 Bonds, the plan has exhibited stronger up-market and down-market capture characteristics over the past ten years.
- STRS has earned a return of 1.3% for each unit of risk over the trailing 5-year period and 0.5% for each unit of risk over the trailing 10-year period.

Growth of \$1 - 10 Years



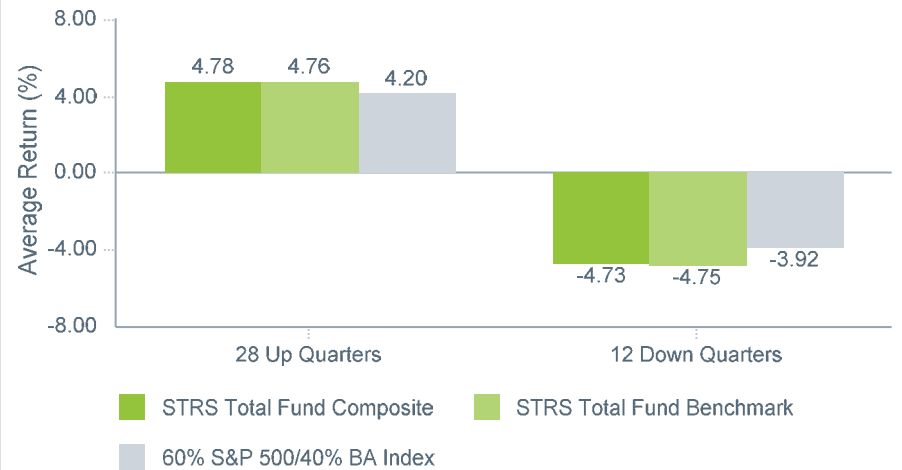
MPT Stats

	5 Years	10 Years
Maximum Return	8.86	12.25
Minimum Return	-8.92	-15.99
Standard Deviation	8.39	11.35
vs. STRS Total Fund Benchmark		
Info Ratio	-0.34	0.13
Tracking Error	0.56	0.71
Alpha	0.33	0.14
vs. S&P 500 Index (Cap Wtd)		
Beta	0.58	0.68
vs. BofA ML 3 Mo US T-Bill Index		
Sharpe Ratio	1.25	0.54

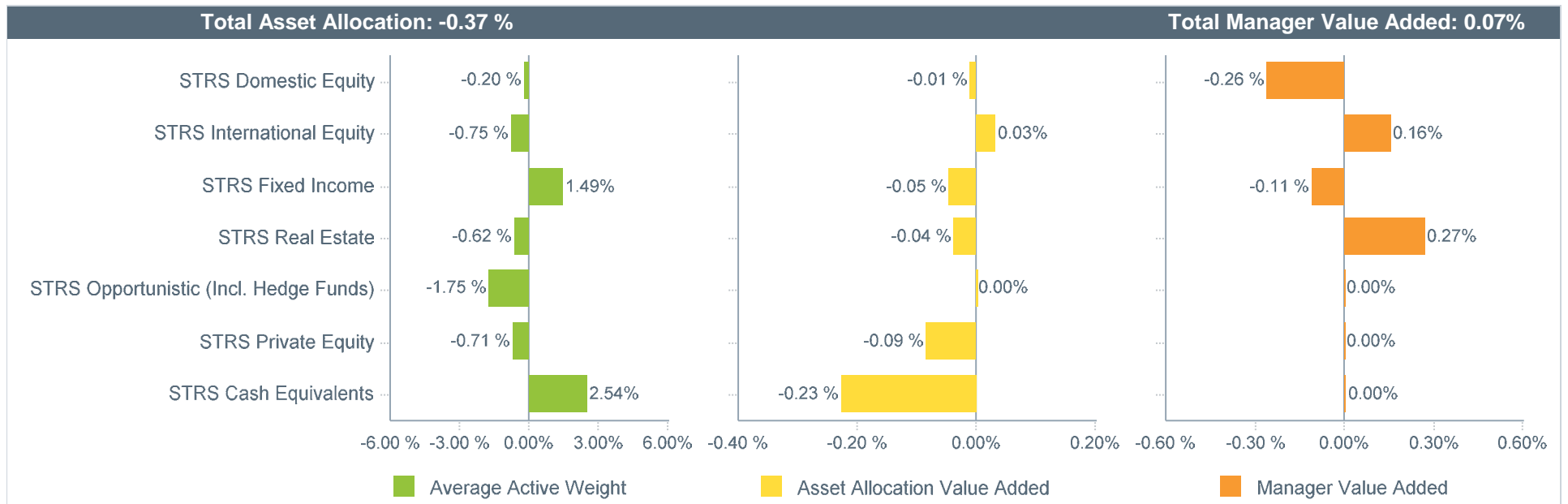
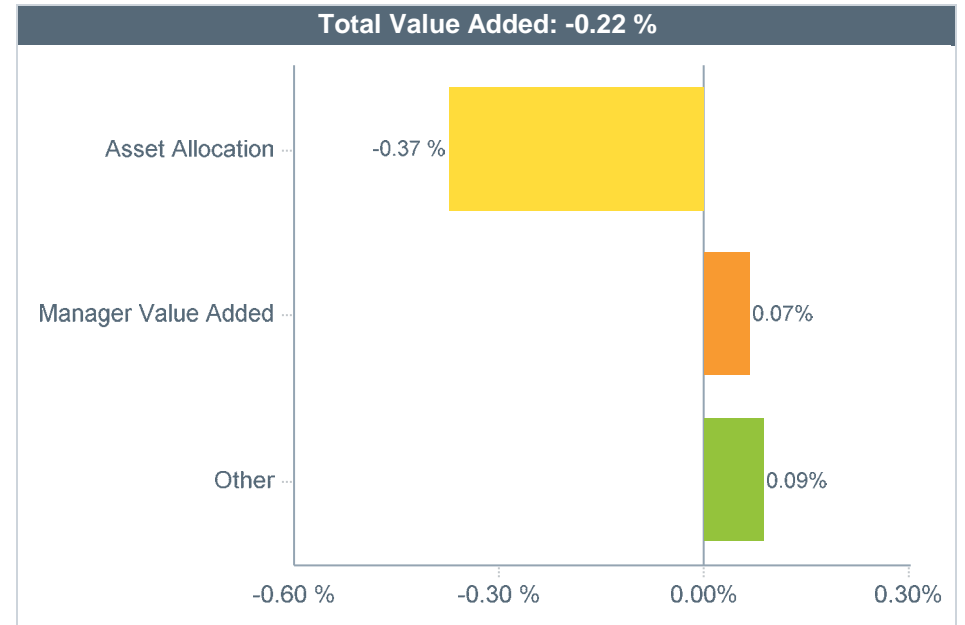
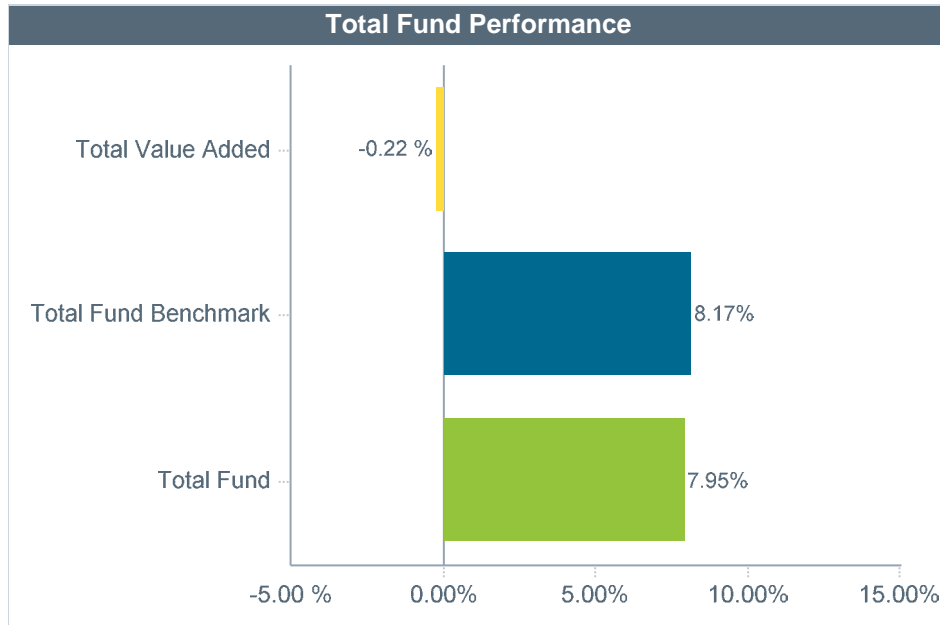
Asset Allocation vs. Targets

	Market Value (\$)	Allocation (%)	Target (%)
STRS Domestic Equity	23,086,354,216	31.34	31.00
STRS International Equity	18,830,380,828	25.57	26.00
STRS Fixed Income	13,174,933,767	17.89	18.00
STRS Real Estate	7,284,068,072	9.89	10.00
STRS Opportunistic (Incl. Hedge Funds)	4,218,626,974	5.73	7.00
STRS Private Equity	4,580,615,583	6.22	7.00
STRS Cash Equivalents	2,479,623,473	3.37	1.00
Total Fund	73,654,602,913	100.00	100.00

Up/Down Markets - 10 Years



Performance shown is gross of fees. Calculations are based on quarterly periodicity.

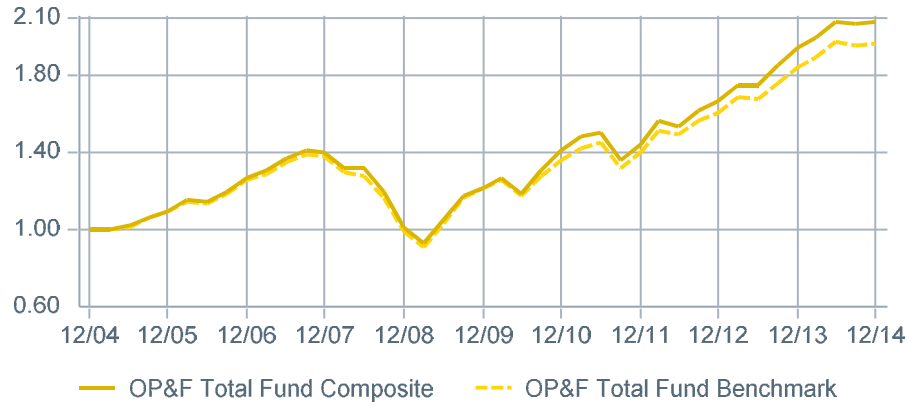


Performance shown is gross of fees. Calculation is based on monthly periodicity. See Glossary for additional information regarding the Total Fund Attribution calculation. Total Fund Benchmark return is calculated by RVK and may differ from Plan provided return due to rounding.

Summary

- OP&F has exceeded its custom benchmark over the trailing 10-year period.
- Relative to a US 60 Equity/40 Bonds, the plan has exhibited stronger up-market and down-market capture characteristics over the past ten years.
- OP&F has earned a return of 1.2% for each unit of risk over the trailing 5-year period and 0.6% for each unit of risk over the trailing 10-year period.

Growth of \$1 - 10 Years



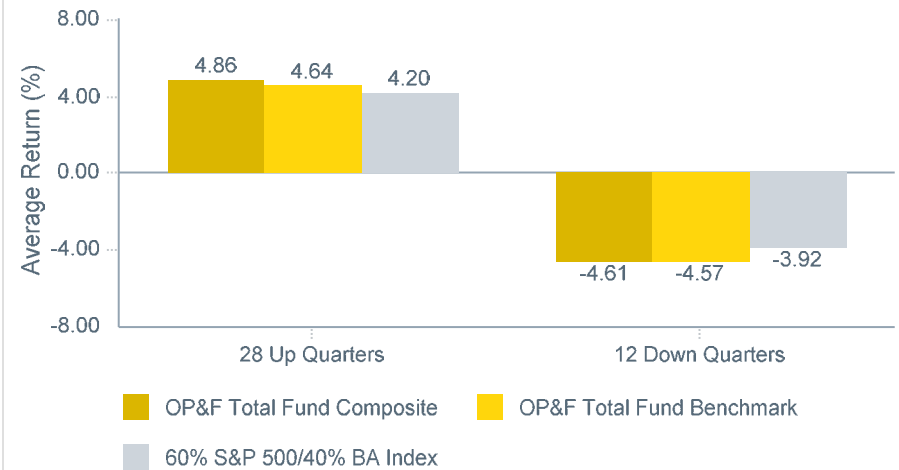
Asset Allocation vs. Targets

	Market Value (\$)	Allocation (%)	Target (%)
Domestic Equity	3,536,578,033	24.80	20.75
International Equity	3,292,242,546	23.09	20.75
High Yield Fixed Income	1,767,474,580	12.39	15.00
Global TIPS	1,043,208,287	7.32	6.50
Core Fixed Income	1,220,259,797	8.56	11.50
Mortgages	37,973,026	0.27	0.00
Real Estate	1,416,891,776	9.94	12.00
Private Markets	729,766,472	5.12	5.00
MLPs	928,126,143	6.51	5.00
Timber	189,017,340	1.33	3.50
Cash Equivalents	99,596,165	0.70	0.00
Total Fund	14,261,134,165	100.00	100.00

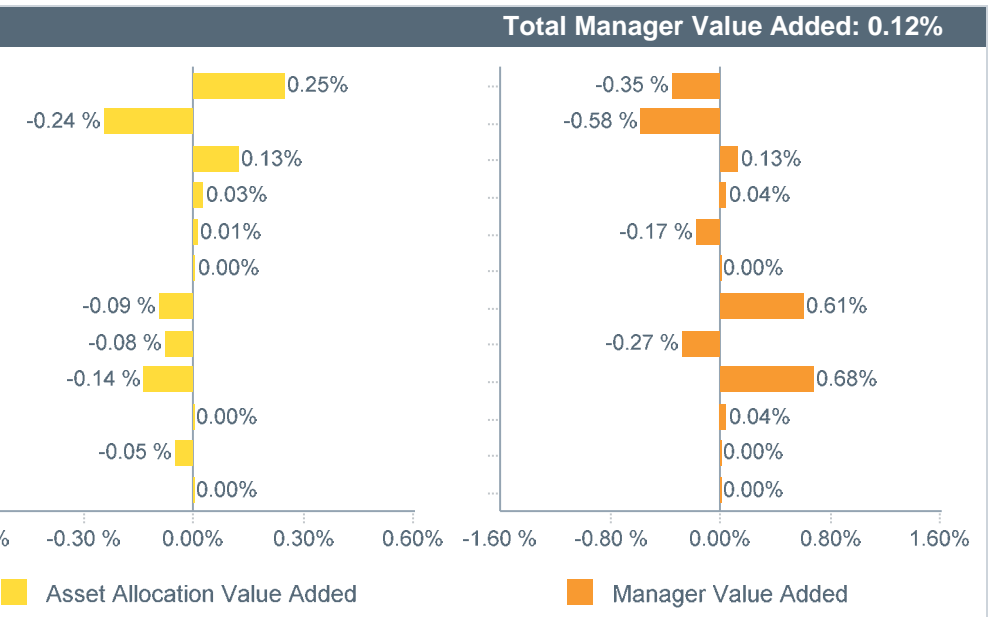
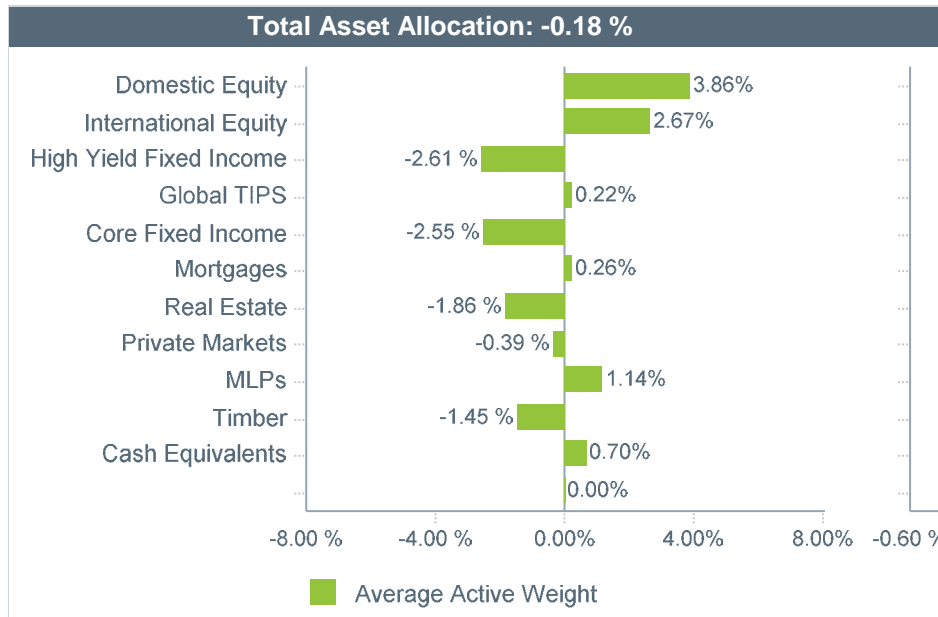
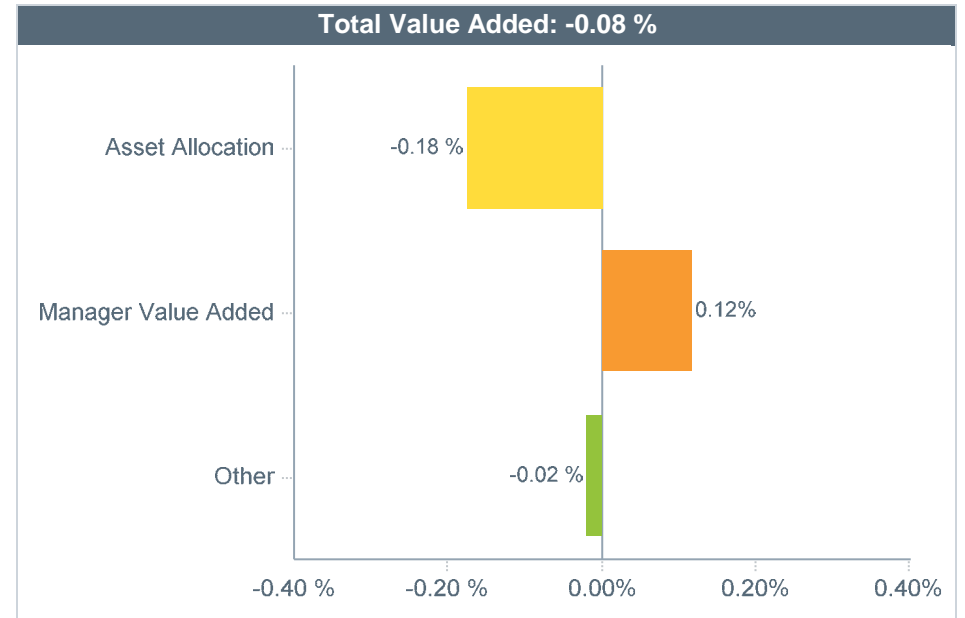
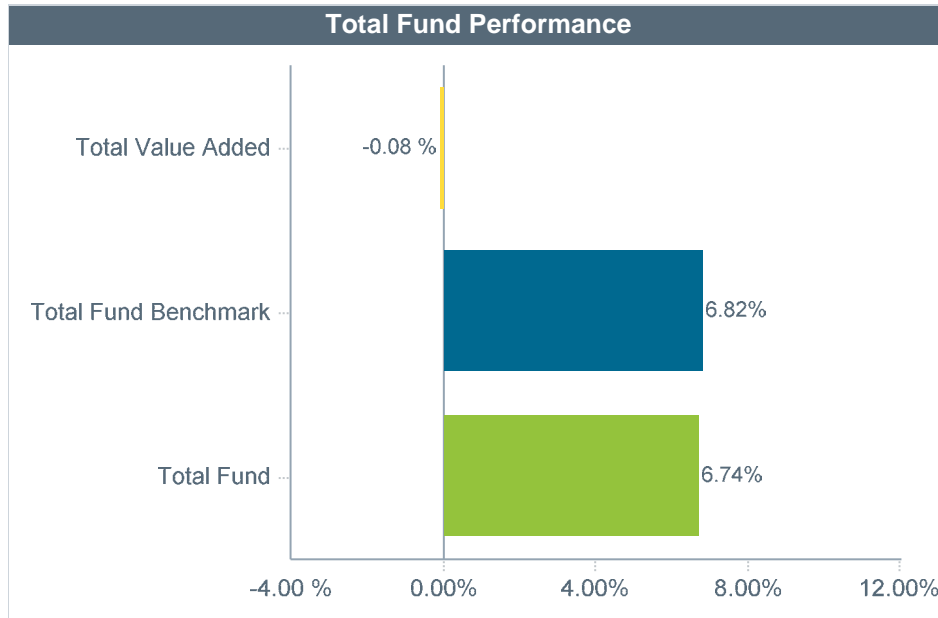
MPT Stats

	5 Years	10 Years
Maximum Return	10.07	13.00
Minimum Return	-9.75	-15.45
Standard Deviation	9.45	11.65
vs. OP&F Total Fund Benchmark		
Info Ratio	1.13	0.59
Tracking Error	1.01	1.00
Alpha	0.39	0.48
vs. S&P 500 Index (Cap Wtd)		
Beta	0.63	0.70
vs. BofA ML 3 Mo US T-Bill Index		
Sharpe Ratio	1.19	0.56

Up/Down Markets - 10 Years



Performance shown is gross of fees. Calculations are based on quarterly periodicity.

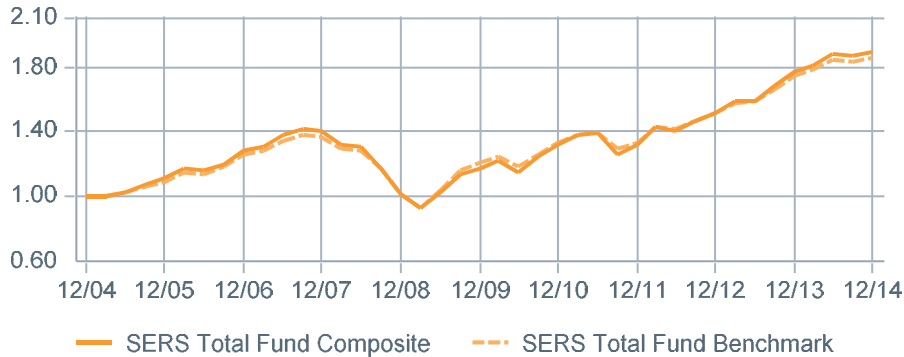


Performance shown is gross of fees. Calculation is based on monthly periodicity. See Glossary for additional information regarding the Total Fund Attribution calculation. Total Fund Benchmark return is calculated by RVK and may differ from Plan provided return due to rounding.

Summary

- SERS has tracked the performance of its benchmark over the trailing 10-year period.
- Relative to a US 60 Equity/40 Bonds, SERS has exhibited similar up-market and larger down-market capture characteristics over the past ten years.
- SERS has earned a return of 1.2% for each unit of risk over the trailing 5-year period and 0.5% for each unit of risk over the trailing 10-year period.

Growth of \$1 - 10 Years



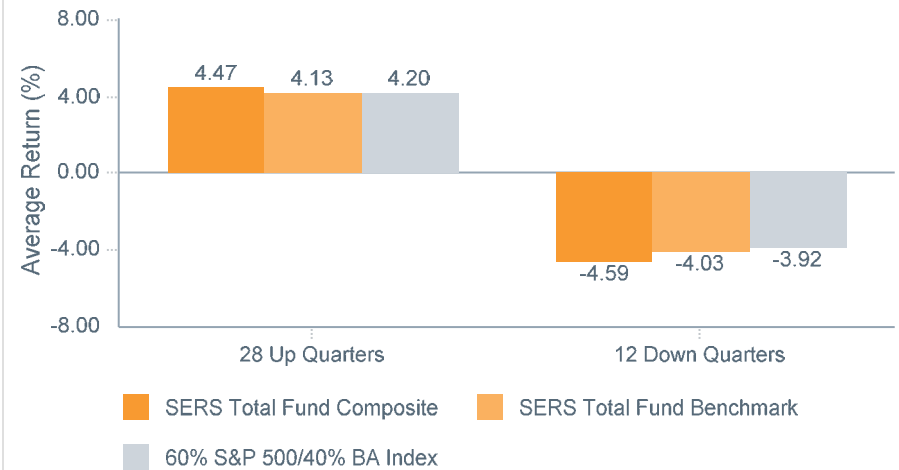
MPT Stats

	5 Years	10 Years
Maximum Return	8.54	11.01
Minimum Return	-9.12	-13.65
Standard Deviation	8.53	10.85
vs. SERS Total Fund Benchmark		
Info Ratio	0.47	0.15
Tracking Error	2.05	1.80
Alpha	-0.88	-0.27
vs. S&P 500 Index (Cap Wtd)		
Beta	0.57	0.64
vs. BofA ML 3 Mo US T-Bill Index		
Sharpe Ratio	1.16	0.50

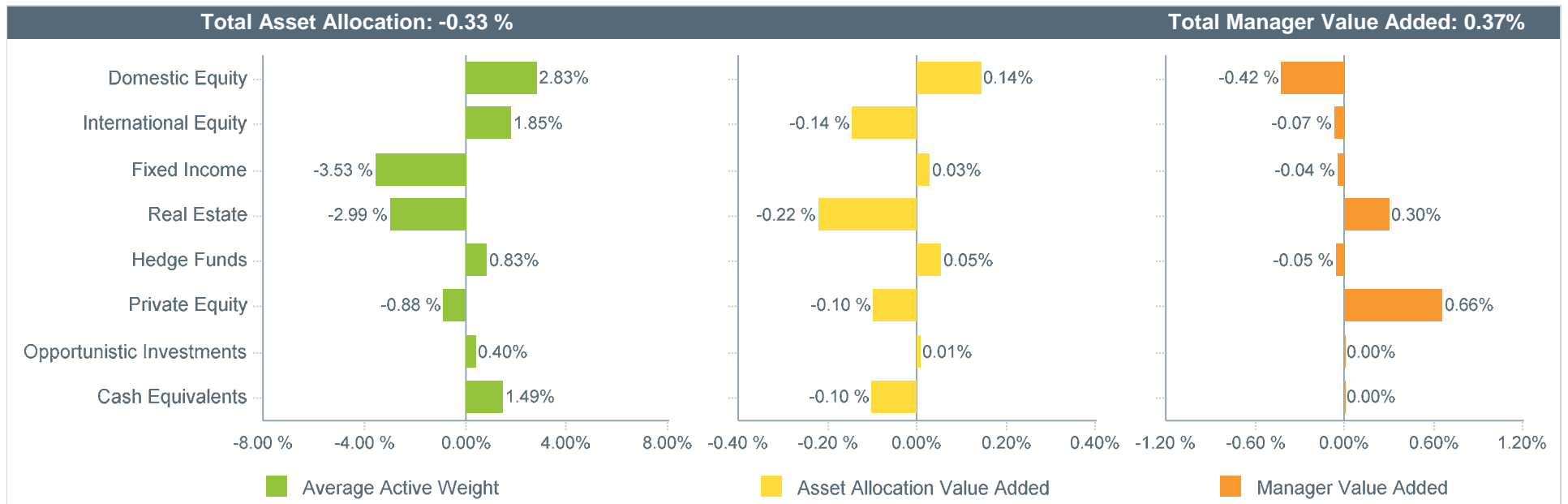
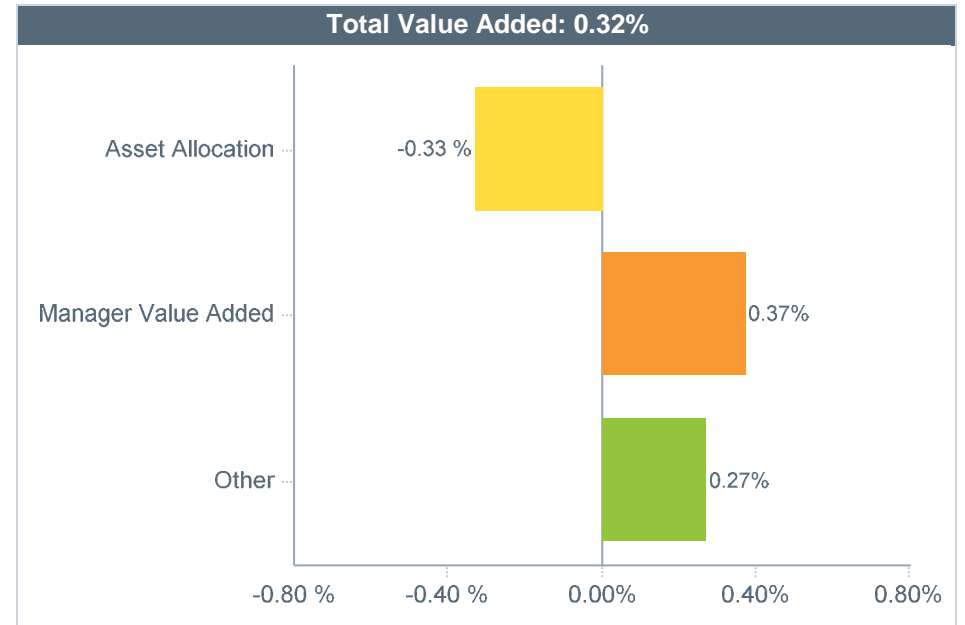
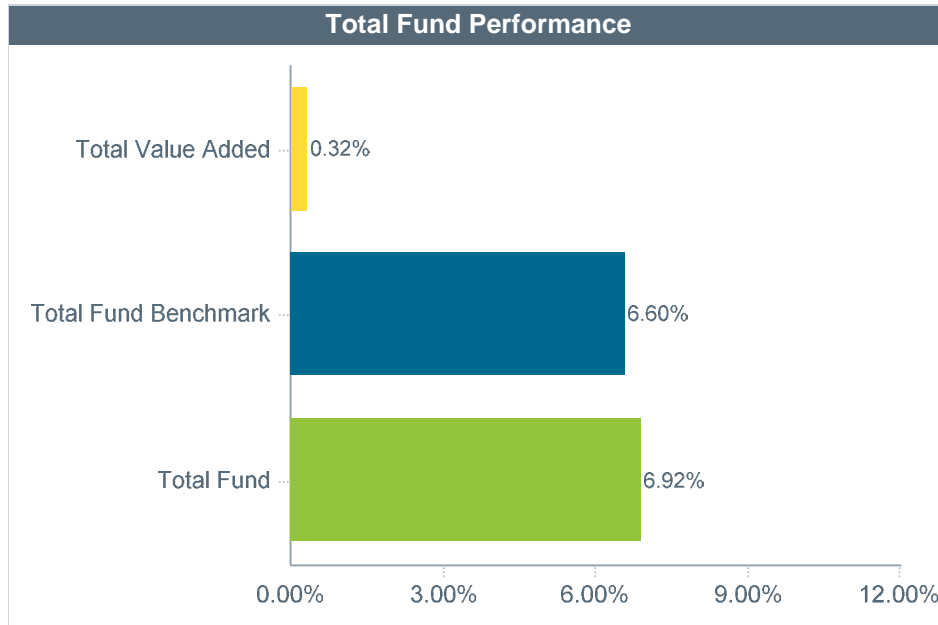
Asset Allocation vs. Targets

	Market Value (\$)	Allocation (%)	Target (%)
Domestic Equity	3,216,091,395	25.63	22.50
International Equity	2,644,639,826	21.08	22.50
Fixed Income	2,058,756,118	16.41	19.00
Real Estate	1,321,799,510	10.53	15.00
Hedge Funds	1,558,687,466	12.42	10.00
Private Equity	1,137,661,500	9.07	10.00
Opportunistic Investments	121,800,339	0.97	0.00
Cash Equivalents	488,218,378	3.89	1.00
Total Fund	12,547,654,532	100.00	100.00

Up/Down Markets - 10 Years



Performance shown is gross of fees. Calculations are based on quarterly periodicity.

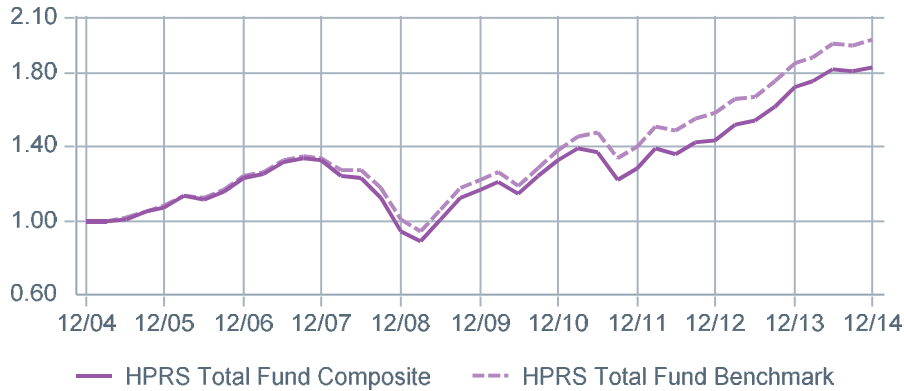


Performance shown is gross of fees. Calculation is based on monthly periodicity. See Glossary for additional information regarding the Total Fund Attribution calculation. Total Fund Benchmark return is calculated by RVK and may differ from Plan provided return due to rounding.

Summary

- HPRS has trailed its custom benchmark over the trailing 10-year period.
- Relative to a US 60 Equity/40 Bonds, the total portfolio has exhibited similar up-market capture and larger down-market capture characteristics over the past ten years.
- HPRS has earned a return of 1.0% for each unit of risk over the trailing 5-year period and 0.5% for each unit of risk over the trailing 10-year period.

Growth of \$1 - 10 Years



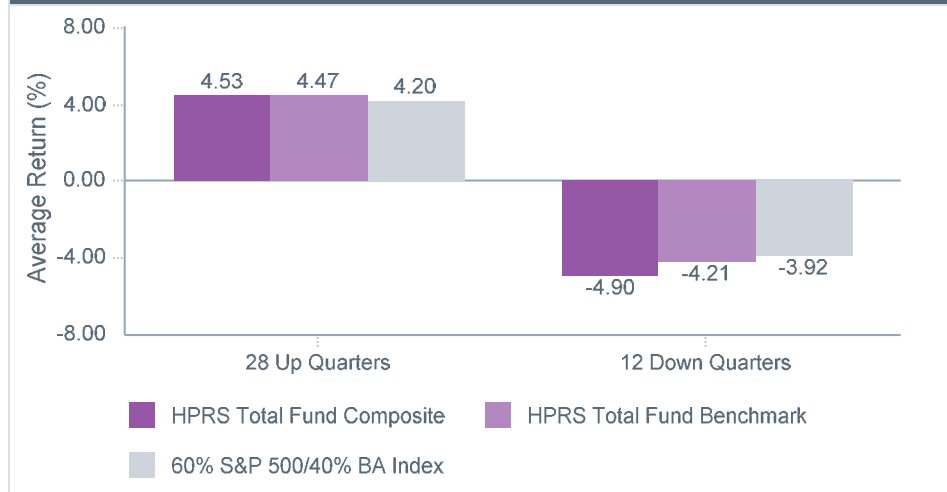
Asset Allocation vs. Targets

	Market Value (\$)	Allocation (%)	Target (%)
Domestic Equity	318,236,130	37.49	35.00
International Equity	154,161,322	18.16	20.00
Fixed Income	168,968,280	19.91	22.50
Real Estate	36,987,290	4.36	5.00
Hedge Funds	75,114,451	8.85	12.50
Private Equity	85,715,942	10.10	5.00
Cash Equivalents	9,606,194	1.13	0.00
Total Fund	848,789,609	100.00	100.00

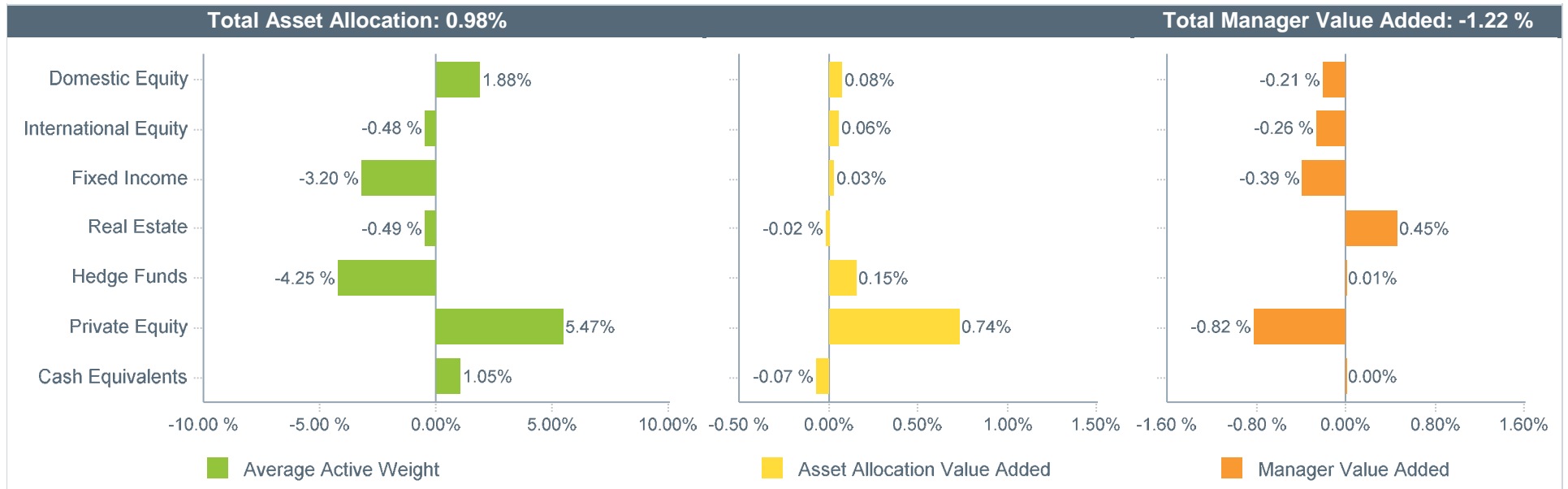
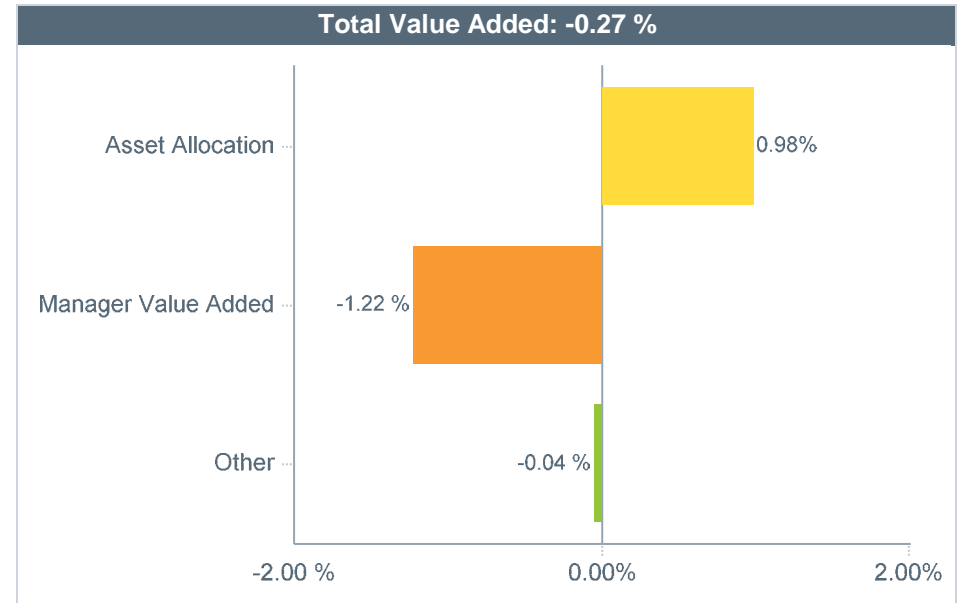
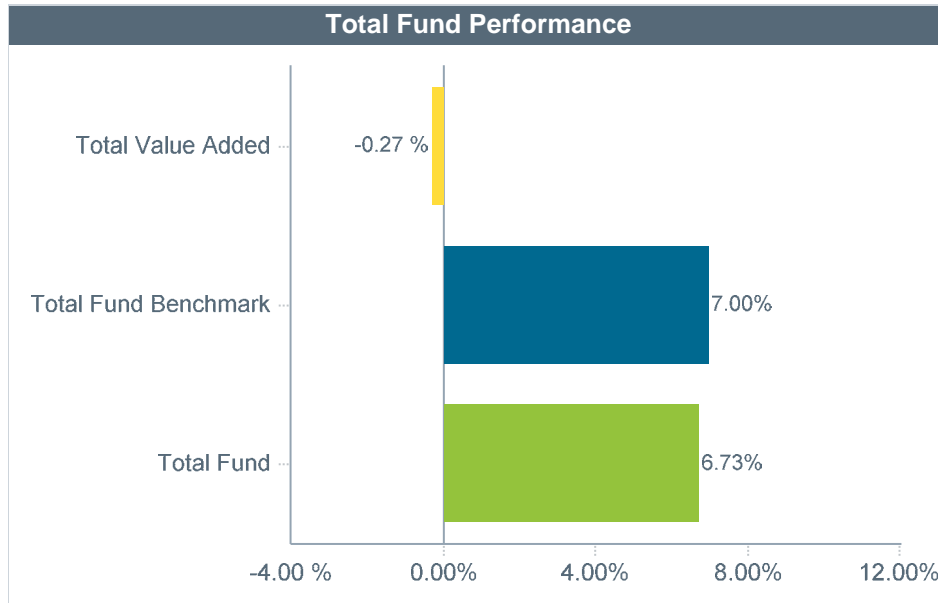
MPT Stats

	5 Years	10 Years
Maximum Return	8.19	12.56
Minimum Return	-11.24	-16.16
Standard Deviation	9.54	11.55
vs. HPRS Total Fund Benchmark		
Info Ratio	-0.30	-0.39
Tracking Error	1.80	1.68
Alpha	-1.61	-1.30
vs. S&P 500 Index (Cap Wtd)		
Beta	0.66	0.70
vs. BofA ML 3 Mo US T-Bill Index		
Sharpe Ratio	1.00	0.45

Up/Down Markets - 10 Years



Performance shown is gross of fees. Calculations are based on quarterly periodicity.



Performance shown is gross of fees. Calculation is based on monthly periodicity. See Glossary for additional information regarding the Total Fund Attribution calculation. Total Fund Benchmark return is calculated by RVK and may differ from Plan provided return due to rounding.

	Market Value (\$000)	Performance (%)									
		2 Quarters	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010
HPRS	848,790	0.78	6.73	12.46	9.48	4.72	6.26	19.59	11.45	-2.85	13.81
HPRS Total Fund Benchmark		1.20	7.03	12.23	10.16	5.69	7.07	16.79	13.07	1.20	13.40
Difference		-0.42	-0.30	0.23	-0.68	-0.97	-0.81	2.80	-1.62	-4.05	0.41
<i>All Public Plans > \$1B-TF Median</i>		0.52	6.57	11.75	9.88	5.15	6.76	15.85	13.34	0.77	13.09
Rank		37	47	35	69	76	78	8	90	99	40
Population		79	77	68	65	65	60	84	86	90	85
<i>All Public Plans \$250M to \$1B-TF Median</i>		0.91	6.37	12.37	10.23	5.51	6.34	16.37	12.91	0.89	13.32
Rank		59	36	48	72	84	58	19	84	100	42
Population		43	43	42	39	36	31	57	55	55	51

Performance shown is gross of fees but is net of embedded fees on externally managed real estate and alternative investments.

Appendix

Performance Related Comments

- Performance shown is gross of fees unless otherwise noted and is annualized for periods greater than one year.
- Total Fund performance shown is net of embedded fees on externally managed real estate and alternative investments.
- All quarterly market value and performance data, including custom benchmark performance, is provided by the individual Plans.
- PERS (HC 115) was formed in October of 2014. RVK will begin reporting on this plan in June of 2015.

Asset Class Fee Comparison – as of 12/31/2014

(annualized fees shown in basis points)							
	Domestic Equity	International Equity	Fixed Income	Real Estate	Alternatives	Private Equity	Hedge Funds
■ PERS (DB)	10	33	17	69	40	49	119
■ PERS (HC)	10	33	17	69	40	49	119
■ STRS	10	19	7	51	86	-	-
■ OP&F	31	44	21	96	-	200	-
■ SERS	33	33	24	105	88	91	138
■ HPRS	31	65	43	136	104	99	110

- Fees for Private Equity are based on committed capital, with the exception of OP&F, which is based on AUM.
- PERS (DB) and PERS (HC) Alternatives include risk parity and GTAA.
- STRS Alternatives include Private Equity and Opportunistic/Diversified Investments (Incl. Hedge Funds).
- SERS Alternatives and Private Equity fees are as of 06/30/2014.
- SERS Alternatives include only opportunistic investments. These fees reflect the current ramp-up period, with fees assessed on commitments and not AUM.
- HPRS Alternatives fees include Private Equity and Hedge Funds.

Appendix

Percentage of Assets Managed by External Managers – as of 12/31/2014

	Total Fund	Domestic Equity	International Equity	Fixed Income	Real Estate	Alternatives	Private Equity	Hedge Funds
■ PERS (DB)	65%	30%	82%	43%	100%	100%	100%	100%
■ PERS (HC)	57%	30%	82%	43%	-	100%	-	100%
■ STRS	28%	9%	42%	16%	14%	87%	97%	100%
■ OP&F	100%	100%	100%	100%	100%	100%	100%	-
■ SERS	97%	100%	100%	100%	100%	100%	100%	100%
■ HPRS	100%	100%	100%	100%	100%	100%	100%	100%

- PERS (DB) and PERS (HC) Alternatives include Risk Parity and GTAA
- STRS Alternatives include Private Equity and Opportunistic/Diversified Investments (Incl. Hedge Funds).
- OP&F Alternatives include Timber and MLPs
- SERS has one internally managed Cash mandate
- HPRS Alternatives include Private Equity and Hedge Funds

Percentage of Actively Managed Assets – as of 12/31/2014

	Total Fund	Domestic Equity	International Equity	Fixed Income	Real Estate	Alternatives	Private Equity	Hedge Funds
■ PERS (DB)	85%	34%	88%	100%	100%	100%	100%	100%
■ PERS (HC)	81%	34%	88%	100%	-	100%	-	100%
■ STRS	87%	62%	100%	100%	85%	100%	100%	100%
■ OP&F	88%	52%	100%	100%	100%	100%	100%	-
■ SERS	80%	54%	61%	100%	92%	100%	100%	100%
■ HPRS	79%	46%	77%	100%	100%	100%	100%	100%

- PERS (DB) and PERS (HC) Alternatives include Risk Parity and GTAA
- STRS Alternatives include Private Equity and Opportunistic/Diversified Investments (Incl. Hedge Funds).
- OP&F Alternatives include Timber and MLPs
- HPRS Alternatives include Private Equity and Hedge Funds

Custom Benchmark Glossary

PERS (DB) Total Fund Custom Benchmark:

- 21.4% Russell 3000 Index
- 19.5% PERS (DB) International Equity Custom Benchmark
- 10.3% PERS (DB) Core Fixed Income Custom Benchmark
- 1% Barclays U.S. TIPS Index
- 6% PERS (DB) EMD Custom Benchmark
- 0.7% CS Leveraged Loan Index
- 1% Barclays CMBS + 2%
- 3% Barclays U.S. High Yield Index
- 1% Barclays Global High Yield Index
- 10% PERS (DB) Private Equity Custom Benchmark
- 10% NFI-ODCE Index (Net) + 0.85%
- 8% PERS (DB) Hedge Funds Custom Benchmark
- 0.1% PERS (DB) Opportunistic Custom Benchmark
- 1% S&P Goldman Sachs Commodity Index (TR)
- 5% PERS (DB) Risk Parity Custom Benchmark
- 2% PERS (DB) GTAA Custom Benchmark

PERS (HC) Total Fund Custom Benchmark:

- 23.4% Russell 3000 Index
- 21.5% PERS (HC) International Equity Custom Benchmark
- 17.3% PERS (HC) Core Fixed Income Custom Benchmark
- 5% Barclays U.S. TIPS Index
- 6% PERS (HC) EMD Custom Benchmark
- 0.7% CS Leveraged Loan Index
- 1% Barclays CMBS + 2%
- 2.5% Barclays U.S. High Yield Index
- 1.5% Barclays Global High Yield Index
- 6% NFI-ODCE Index (Net) + 0.85%
- 6% PERS (HC) Hedge Funds Custom Benchmark
- 0.1% PERS (HC) Opportunistic Custom Benchmark
- 2% S&P Goldman Sachs Commodity Index (TR)
- 5% PERS (HC) Risk Parity Custom Benchmark
- 2% PERS (HC) GTAA Custom Benchmark

STRS Total Fund Custom Benchmark:

- 31% Russell 3000 Index
- 20.8% MSCI World Ex US Index (50% Hedged)
- 5.2% MSCI Emerging Markets Index
- 18% Barclays US Universal Index
- 10% STRS Custom Real Estate Benchmark
- 7% Opportunistic Composite Performance
- 7% Private Equity Composite Performance

OP&F Total Fund Custom Benchmark:

- 20.75% Wilshire 5000 Index
- 20.75% MSCI ACW Ex US IMI Index (Net)
- 11.5% Barclays US Aggregate Bond Index
- 15% CS High Yield Dev. Countries Only Index
- 12% NCREIF ODCE (Net) (1 Quarter Lag)
- 5% Wilshire 5000 + 3% (1 Quarter Lag)
- 3.5% CPI + 5%
- 5% Alerian MLP Index
- 6.5% Bridgewater Custom GIPS Index

SERS Total Fund Custom Benchmark:

- 22.5% Russell 3000 Index
- 22.5% MSCI ACWI Ex US (Net) Index
- 19% Barclays US Aggregate Bond Index
- 15% NCREIF Property Index (1 Quarter Lag)
- 10% HFRI FOF Composite Index + 1%
- 10% Burgiss All Private Equity Benchmark
- 1% Citigroup 30 Day T-Bill Index

HPRS Total Fund Custom Benchmark:

- 35% Russell 3000 Index
- 20% MSCI ACWI Ex US Index
- 22.5% Barclays US Aggregate Bond Index
- 5% NCREIF Index
- 12.5% HFRI FOF Composite Index
- 5% Wilshire 5000 + 3% (1 Quarter Lag)

Custom Benchmark Glossary

PERS (DB) International Equity Custom Benchmark:

- 55% MSCI World Ex US Index
- 10% MSCI World Ex US Small Cap Index
- 31% MSCI Emerging Markets Index
- 4% MSCI Emerging Markets Small Cap Index

PERS (DB) Core Fixed Income Custom Benchmark:

- Barclays Capital Aggregate Index weightings with a maximum allocation to treasuries and government-related issues of 25% with corresponding pro-rata increases to the credit and securitized sectors

PERS (DB) EMD Custom Benchmark:

- 50% JP Morgan Emerging Markets Bond Index Global
- 50% JP Morgan Government Bond Index-Emerging Markets Global Diversified

PERS (DB) Private Equity Custom Benchmark:

- 60% Russell 3000 Index
- 40% MSCI ACWI Ex US IMI + 300 basis points

PERS (DB) Hedge Funds Custom Benchmark:

- The minimum of 700 basis points or 3-month LIBOR plus 400 basis points

PERS (DB) Opportunistic Custom Benchmark:

- The market weight of underlying portfolio benchmarks

PERS (DB) Risk Parity Custom Benchmark:

- The market weight of underlying portfolio benchmarks

PERS (DB) GTAA Custom Benchmark:

- The market weight of underlying portfolio benchmarks

PERS (HC) International Equity Custom Benchmark:

- 55% MSCI World Ex US Index
- 10% MSCI World Ex US Small Cap Index
- 31% MSCI Emerging Markets Index
- 4% MSCI Emerging Markets Small Cap Index

PERS (HC) Core Fixed Income Custom Benchmark:

- Barclays Capital Aggregate Index weightings with a maximum allocation to treasuries and government-related issues of 25% with corresponding pro-rata increases to the credit and securitized sectors

PERS (HC) EMD Custom Benchmark:

- 50% JP Morgan Emerging Markets Bond Global Index
- 50% JP Morgan Government Bond Index-Emerging Markets Global Diversified

PERS (HC) Hedge Funds Custom Benchmark:

- The minimum of 700 basis points or 3-month LIBOR plus 400 basis points

PERS (HC) Opportunistic Custom Benchmark:

- The market weight of underlying portfolio benchmarks

PERS (HC) Risk Parity Custom Benchmark:

- The market weight of underlying portfolio benchmarks

PERS (HC) GTAA Custom Benchmark:

- The market weight of underlying portfolio benchmarks

STRS International Equity Custom Benchmark:

- 80% MSCI EAFE Index
- 20% MSCI Emerging Markets Index

STRS Real Estate Custom Benchmark:

- 85% NCREIF Property Index
- 15% FTSE NAREIT Equity REITs Index

STRS Private Equity Custom Benchmark:

- Russell 3000 + 100 basis points

STRS Opportunistic Custom Benchmark:

- Russell 3000 - 100 basis points

OP&F Private Equity Custom Benchmark:

- Wilshire 5000 + 3% (1 Qtr Lag)
- Prior to 2007Q1: Wilshire 5000 (1 Qtr Lag)
- Prior to 2006Q4: Wilshire 5000 + 5%

SERS International Equity Custom Benchmark:

- MSCI ACWI ex-US (Net) Index
- Prior to 2014Q1: MSCI ACWI ex-US (Net) Index (dev. markets 50% hedged)
- Prior to 2013Q3: MSCI ACWI ex-US (Gross) Index (dev. markets 50% hedged)

SERS Real Estate Custom Benchmark:

- NCREIF Property Index (1 Qtr Lag)
- Prior to 2010Q3: 80% NCREIF/20% NAREIT

SERS Opportunistic Custom Benchmark:

- SERS Total Fund Custom Benchmark

HPRS Private Equity Custom Benchmark:

- Wilshire 5000 + 3% (1 Qtr Lag)
- Prior to 2010Q3: CPI + 5%

Glossary

Alpha - A measure of the difference between a portfolio's actual returns and its expected performance, given its level of risk as measured by beta. It is a measure of the portfolio's historical performance not explained by movements of the market.

Benchmark - A standard against which the performance of a fund or investment manager can be measured.

Beta - A measure of the sensitivity of a portfolio to the movements in the market. A beta of 1.0 indicates the same level of stock market risk as the S&P 500 Index (Cap Wtd), unless otherwise noted. Lower betas indicate lower stock market risk. Beta is a measure of a portfolio's non-diversifiable or systematic risk.

Capital Markets Review -

Breakeven Inflation - Measures the expected inflation rate at each stated maturity by taking the difference between the real yield of the inflation-linked maturity curve and the yield of the closest nominal Treasury maturity.

Consumer Confidence - Measures domestic consumer confidence as defined by the degree of optimism on the state of the economy that consumers express through saving and spending.

Consumer Price Index (CPI) - Measures the change in the price level of consumer goods and services.

Option-Adjusted Spread - Measures the flat spread of an index or bond to the Treasury yield curve after removing the effect of any embedded options.

Purchasing Managers Index (PMI) - Measures economic activity by surveying purchasing managers on a monthly basis as to whether business conditions have improved, worsened, or stayed the same.

US Dollar Total Weighted Index - Measures the value of the US Dollar relative to a basket of other world currencies. It is calculated as the weighted geometric mean of the dollar's value versus the EUR, GBP, CAD, SEK, CHF, and JPY.

VIX - Measures the implied volatility of S&P 500 Index options by looking at the market's expectation of the S&P 500 Index volatility over the next 30 day period. Commonly referred to as the "fear index" or the "fear gauge."

Downside Risk - A measure similar to standard deviation, but focuses only on the negative returns of the fund or investment. The higher the factor, the riskier the fund or investment.

Correlation - A statistical measure of the relationship between asset class returns. A value of 1.00 is a perfect correlation; that is, the asset classes always move in the same direction. A value of -1.00 indicates a perfect negative correlation, in which the asset classes always move in opposite directions of each other. A value of 0 indicates there is no relationship between the direction of returns of the two asset classes. Correlation calculations only consider the direction of changes relative to two variables and not the magnitude of those changes.

Down Market Capture - Down market by definition is negative benchmark return and down market capture represents the ratio in % terms of the average portfolios return over the benchmark during the down market period. The lower the value of the down market capture the better the product's performance.

Excess Return - Arithmetic difference between the fund or investment return and the risk-free return (or other specified market index) over a specified time period, shown on an annualized basis.

Indices - All indices and related information are considered intellectual property and are licensed by each index provider. The indices may not be copied, used or distributed without the index provider's prior written approval. Index providers make no warranties and bear no liability with respect to the indices, any related data, their quality, accuracy, suitability and/or completeness.

Information Ratio - Measured by dividing the active rate of return by the tracking error. The higher the information ratio, the more value-added contribution relative to the market benchmark.

Maximum Return - The maximum quarterly return earned over the specified time period.

Minimum Return - The minimum quarterly return earned over the specified time period.

Peer Groups -

Plan Sponsor Peer Groups - RVK utilizes the Mellon Analytical Solutions Trust Universe along with the Investment Metrics Plan Sponsor Universe. The combined Mellon Analytical Solutions Trust Universe and Investment Metrics Plan Sponsor Universe is used for comparison of total fund composite results and utilizes actual client returns compiled from consultant and custodial data. The Plan Sponsor Peer Group database includes performance and other quantitative data for over 2,100 plans which include corporate, endowment, foundation, public, and Taft Hartley plans. Plan Sponsor Peer Groups are gross of fees.

Glossary

Percentile Rankings - Percentile rank compares an individual fund's performance with those of other funds within a defined peer group of managers possessing a similar investment style. Percentile rank identifies the percentage of a fund's peer group that has a higher return (or other comparative measurement) than the fund being ranked. Conversely, 100 minus the individual fund's ranking will identify the percentage of funds within the peer group that have a lower return than the fund being ranked.

1 - Highest Statistical Value

100 - Lowest Statistical Value

Example: American Funds AMCP;R-4 (RAFEX) is ranked in the 4th percentile within the IM US Equity Large-Cap Growth Funds (MF) Peer Group for the Sharpe Ratio. Within the IM US Equity Large-Cap Growth Funds peer group, 4% of the other funds performed better than American Funds AMCP;R-4 (RAFEX), while 96% of the funds performed worse.

Performance Methodology - RVK calculates performance beginning with the first full month following inception. Since inception performance may vary from manager reported performance due to RVK using the first full month of returns as the inception date. Performance for both managers and composites is annualized for periods greater than one year.

Return - Compounded rate of return for the period.

%Return - The time-weighted rate of return of a portfolio for a given period.

RVK Liquidity Rating - A qualitative method for determining the relative amount of liquidity in a portfolio. The characteristics considered when determining relative liquidity include trading volume, gates for redemption, leverage, nature of transactions, and pricing mechanisms. The RVK Liquidity Rating is calculated using beginning of month investment weights applied to each corresponding asset class liquidity rating.

<u>Asset Class</u>	<u>RVK Liquidity Rating</u>	<u>Asset Class</u>	<u>RVK Liquidity Rating</u>
<u>Liquid Investments</u>		<u>Less Liquid Investments</u>	
T-Bills and Treasurys	100	Fixed Income Plus Sector	50
Cash Equivalents	98	Bank Loans	50
TIPS	95	Emerging Markets Debt	50
US Large Cap Equity	95	Hedge Funds	35
Diversified Real Return	93	Hedge Funds of Funds	35
Non-US Large Cap Equity	90	<u>Not Liquid Investments</u>	
Global Tactical Asset Allocation	88	Core Real Estate	25
US Small Cap Equity	85	Core Plus Real Estate	15
REITs	85	Plus Only Real Estate	5
Non-US Small Cap Equity	85	Private Equity	5
Emerging Markets Equity	85		
Core Fixed Income	85		
Core Plus Fixed Income	80		

Sharpe Ratio - Represents the excess rate of return over the risk-free return (i.e., BofA ML 3 Mo US T-Bill Index unless specified otherwise), divided by the standard deviation of the excess return. The result is the absolute rate of return per unit of risk. The higher the value, the better the portfolio's historical risk-adjusted performance.

Standard Deviation - A statistical measure of the range of a portfolio's performance and is a commonly used proxy for overall investment risk. The variability of a return around its average return over a specified time period.

Tracking Error - A measure of the standard deviation of a portfolio's performance relative to the performance of the market index.

Glossary

Thematic Classification - Represents dedicated manager allocations; as such, thematic allocations are approximations. RVK categorizes the following asset classes as Alpha, Capital Appreciation, Capital Preservation, and Inflation:

<u>Alpha</u>	<u>Capital Appreciation</u>	<u>Capital Preservation</u>	<u>Inflation</u>
Absolute Return Strategies	Public Equity	Core Fixed Income	TIPS
Currency Overlay	Private Equity	CMBS Fixed Income	Bank Loans
GTAA (Global Tactical Asset Allocation)	Preferred Securities	Asset Backed Fixed Income	Core Real Estate
	High Yield	Domestic Core Plus Fixed Income	Real Return
	Convertible Fixed Income	Mortgage Backed Fixed Income	Inflation Hedges
	TALF Funds	International Developed Fixed Income	REITs
	Distressed Debt	Cash Equivalents	Commodities
	Emerging Market Fixed Income	Stable Value	
	MLPs		
	Value Added Real Estate		
	Opportunistic Real Estate		

Total Fund Attribution - A method for identifying the sources of a total fund's over- or underperformance relative to its benchmark. The calculation identifies the contributions of positive or negative total fund excess return caused by allocation differences relative to the total fund's custom benchmark, and performance differences of the investment managers relative to the benchmark components that represent them.

Total Fund Performance -

Total Fund - The percentage return of the total fund for the specified time period.

Total Fund Benchmark - The percentage return of the total fund benchmark for the specified time period; calculated using the target asset allocation and the corresponding benchmark returns.

Total Value Added - The percentage of over- or underperformance of the total fund as compared to the total fund benchmark.

Total Value Added -

Asset Allocation - Shows how the variance of the total fund's actual allocation from its target allocation added to or subtracted from fund performance.

Manager Value Added - The portion of the total value added attributable to the outperformance or underperformance of the fund's investment managers, relative to the individual benchmarks that represent them in the total fund benchmark.

Market Timing/Other - The contribution of other residual factors, including estimation error and transaction timing.

Tracking Error - A measure of the standard deviation of a portfolio's performance relative to the performance of an appropriate market benchmark.

Unit Value - The dollar value of a portfolio, assuming an initial nominal investment of \$1.00, growing at the compounded rate of %Return for a given period.

Up Market Capture - Up market by definition is positive benchmark return and up market capture represents the ratio in % terms of the average portfolios return over the benchmark during the up market period. The higher the value of the up market capture the better the product's performance.

PORTLAND

CHICAGO

NEW YORK

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