AKSIA LLC

PENNSYLVANIA PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM
QUARTERLY UPDATE

AS OF DECEMBER 31, 2017

PSERS Board Meeting

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I. EXECUTIVE SUMMARY

ABSOLUTE RETURN PROGRAM REVIEW

Investment Policy and Program Objectives

- Reduce risk and/or enhance returns of PSERS overall investment program
- Annual return of LIBOR + 3.5% or greater, with a 9.0% or lower volatility target
- Focus on funds with low equity beta risk

	Target Allocation	**Current Allocation** as of 12/31/2017
Absolute Return Program	10%	9.7%

Sector Constraints	**Allocation Range**	**Current Allocation** as of 12/31/2017
Long/Short Equity	0% - 20%	0%
Event Driven	0% - 50%	15%
Relative Value	0% - 65%	50%
Tactical Trading	0% - 65%	35%

Manager/Fund Constraints	**Maximum**	**Note**
Allocation to any one manager	20%	
Allocation to any one separate account	12%	
Allocation to any one fund	10%	1 fund currently >10%

[1] The Absolute Return Program is permitted to have one fund or manager that exceeds the maximum allocation guidelines noted above. In no case may the maximum allocation exceed 25%. The Absolute Return Program is currently in compliance with the 25% maximum allocation guideline.

ABSOLUTE RETURN PROGRAM REVIEW – PERFORMANCE

Performance Objective: Annual return of 3M LIBOR + 3.5% or greater, with a 9.0% or lower volatility target

	Actual Performance			Beta-Adjusted Performance ("Alpha")	
Time Period	**PSERS[1]**	**HFRI FOF Composite[2]**	**LIBOR + 3.5%**	**PSERS[1]**	**HFRI FOF Composite[2]**
Current Fiscal YTD (Jul '17 – Dec '17)	2.2%	4.4%	2.4%	1.3%	1.7%
Prior Fiscal Year (Jul '16 - Jun '17)	9.0%	6.5%	4.5%	7.3%	2.2%
CYTD 2017	4.0%	7.7%	4.7%	2.2%	2.7%
One Year	4.0%	7.7%	4.7%	2.2%	2.7%
Three Year	3.9%	2.6%	4.2%	2.9%	-0.3%
Five Year	3.9%	4.0%	4.1%	2.5%	0.0%
Inception to Date (Oct '05 – Dec '17)	5.3%	2.7%	5.2%	5.1%	0.2%

Risk and Return (Oct 2005 - Dec 2017)				**(Oct 2008 - Dec 2017)[3]**	
Return (Ann.)	5.3%	2.7%	5.2%	5.1%	0.17%
Volatility (Ann.)	4.8%	5.1%	0.6%	3.9%	3.1%
Sharpe Ratio	0.79	0.24	-	1.19	-0.08
Correlation with S&P 500	0.36	0.70	-	-	-
Beta to S&P 500	0.12	0.26	-	-	-

[1] Net of hedge fund fees and expenses but before Aksia's fees.

[2] This is a well-known index which is included merely to show the general trends in the larger universe of hedge fund strategies in the periods indicated and is not intended to imply that the PSERS portfolio is comparable to the funds providing their returns to the index either in composition or elements of risk.

[3] The beta-adjustment calculation requires 36 months of data, therefore the first available date for beta-adjusted performance is October 2008. The referenced index used to calculate Beta-adjusted performance is the S&P 500 TR.

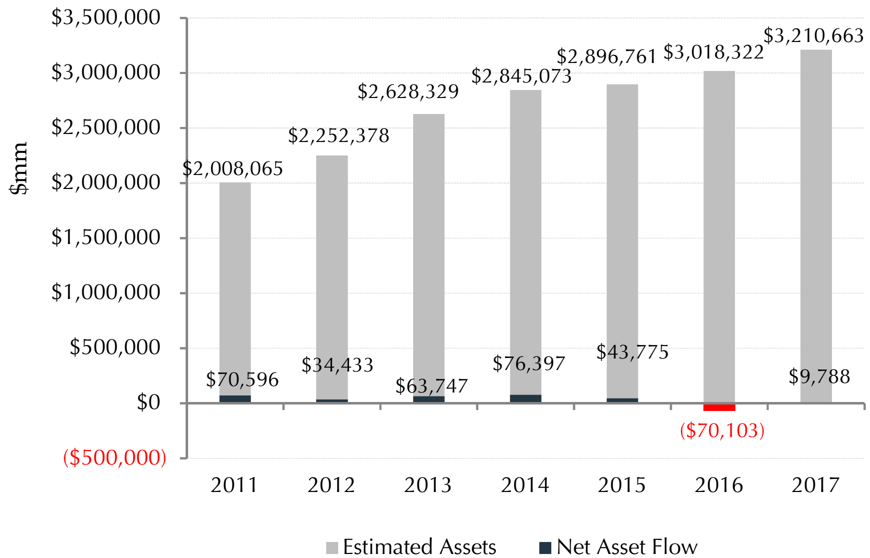
PORTFOLIO ACTIVITY – ABSOLUTE RETURN PORTFOLIO

Q4 2017	Fund	Transaction	Amount
October	Perry Partners LP	Distribution	-$4.6mm
	DaVinci Reinsurance Ltd.	Additional Subscription	+$14.3mm
	Caspian Keystone Focused Fund LP	Distribution	-$0.6mm
	SASOF III LP	Distribution	-$3.6mm
	Sciens Aviation Special Opportunities Investment Fund II, LP	Distribution	-$0.8mm
November	Aeolus Property Catastrophe Keystone PF Fund LP - J17	Transfer to J18 Sub Account	-$0.4mm
	Aeolus Property Catastrophe Keystone PF Fund LP - J18	Transfer from J17 Sub Account	+$0.4mm
	Aeolus Property Catastrophe Keystone PF Fund LP - MY16	Distribution	-$2.2mm
	Aeolus Property Catastrophe Keystone PF Fund LP - J16	Distribution	-$1.6mm
	Sciens Aviation Special Opportunities Investment Fund II, LP	Distribution	-$1.0mm
	SASOF III LP	Distribution	-$2.1mm
December	Aeolus Property Catastrophe Keystone PF Fund LP - J18	Additional Subscription	+$164.0mm

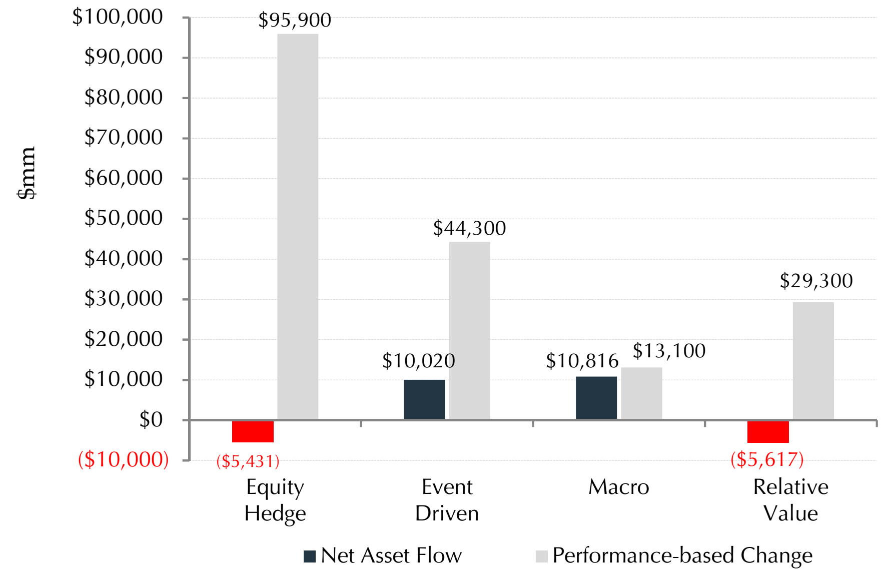
II. HEDGE FUND INDUSTRY REVIEW

HEDGE FUND INDUSTRY REVIEW

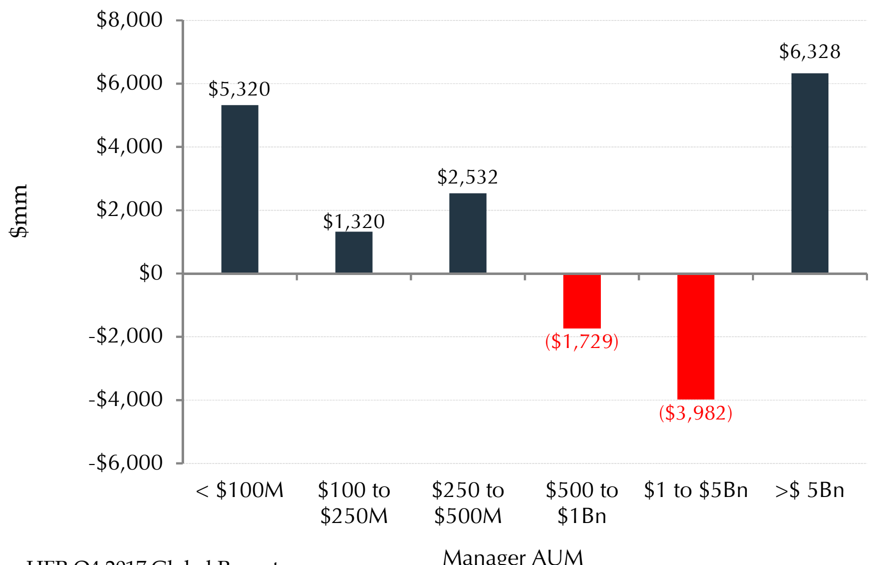
Industry Assets Continue to Climb on Positive Performance & Net Inflows



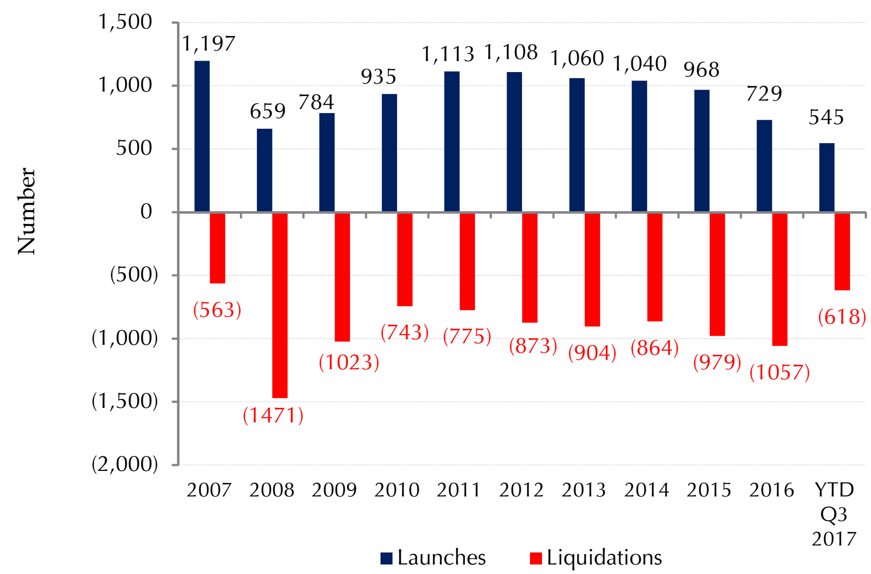
All Sectors Experience Positive Performance-Based Asset Growth in 2017



Capital Flows Barbelled Between Smallest & Largest Firms in 2017



Headwinds Continue to Buffer New Launches



Source: HFR Q4 2017 Global Report

III. PSERS PORTFOLIO REVIEW

PSERS PORTFOLIO AS OF DEC 31, 2017 – ABSOLUTE RETURN PORTFOLIO

Sector	Strategy	Fund Name	Net Allocation ($mm)	NAV ($mm)	Multiple of Cost	Annualized Return in PSERS Portfolio*	Manager Inception in PSERS Portfolio
Event Driven	Event Credit	Caspian Keystone Focused Fund LP	12.9	15.4	1.12	14.7%	May-16
		Caspian Select Credit International Ltd	200.0	250.8	1.25	3.5%	Mar-11
		Ellis Lake Domestic Fund LP (liquidating)	11.6	2.6	0.91	-3.9%[1]	Apr-13
		Venor Capital Offshore Ltd	150.0	164.1	1.09	7.0%	Sep-16
	Event & Merger	Oceanwood Opportunities Fund	200.0	242.4	1.21	5.9%	Sep-14
		Perry Partners LP (liquidating)	60.5	33.3	0.86	-4.4%[1]	Dec-13
	Real Assets	SASOF III LP	60.4	68.5	1.04	5.7%[1]	Feb-15
		Sciens Aviation Special Opportunities Investment Fund II LP	-13.5	4.1	1.13	7.2%[1]	Mar-13
Total Event Driven			**681.8**	**778.4**			
Relative Value	Fixed Income Arbitrage	Capula Global Relative Value Fund Limited	300.0	427.5	1.42	6.6%	Feb-11
		Garda Fixed Income Relative Value Opportunity Fund Ltd	300.0	407.8	1.36	5.6%	Nov-11
	Insurance Linked	Aeolus Property Catastrophe Keystone PF Fund LP - Composite	15.8	282.2	1.13	10.0%	Jun-12
		Palmetto Catastrophe Fund Ltd	85.0	163.2	1.31	4.5%	Jul-11
		RenaissanceRe Medici Fund Ltd	44.0	45.4	1.03	3.7%	Feb-16
		RenaissanceRe Upsilon Diversified Fund	19.1	8.0	0.44	-58.3%	Jan-17
		DaVinci Reinsurance Ltd	33.0	31.6	0.96	-3.8%	Jan-16
	Long/Short Credit	Brigade Leveraged Capital Structures Offshore Ltd	-71.5	301.1	1.49	5.6%	Sep-07
		PIMCO Global Credit Opportunity Offshore Fund Ltd	83.9	281.2	2.09	9.4%	Feb-08
	Structured Credit	OWS Credit Opportunity Offshore Fund III Ltd	200.0	252.0	1.26	11.7%	Dec-15
	Volatility	PIMCO Multi-Asset Volatility Offshore Fund Ltd	211.2	239.8	1.13	2.3%	Oct-12
	Multi Risk Premia	Two Sigma Risk Premia Enhanced Fund LP	200.0	206.5	1.03	2.7%	May-17
Total Relative Value			**1,404.6**	**2,644.5**			
Tactical Trading	Global Macro	Bridgewater Pure Alpha Fund II Ltd	-178.0	900.5	3.07	11.5%	Nov-05
		PARS V Offshore Fund I Ltd	36.9	273.8	2.53	11.8%	Feb-08
	Risk Mitigators	BlackRock Capital Structure Investments Offshore Fund Ltd	200.0	326.3	1.63	5.7%	Apr-09
		Capula Tail Risk Fund Limited	365.0	319.2	0.87	-1.8%	Jun-11
Total Tactical Trading			**423.9**	**1,819.8**			
PSERS Total			2,510.3	5,242.8	1.45	5.3%	Oct-05

* Annualized performance shown is since inception of the fund in the PSERS portfolio.

[1] Annualized return number is Internal Rate of Return (IRR) since inception of the investment.

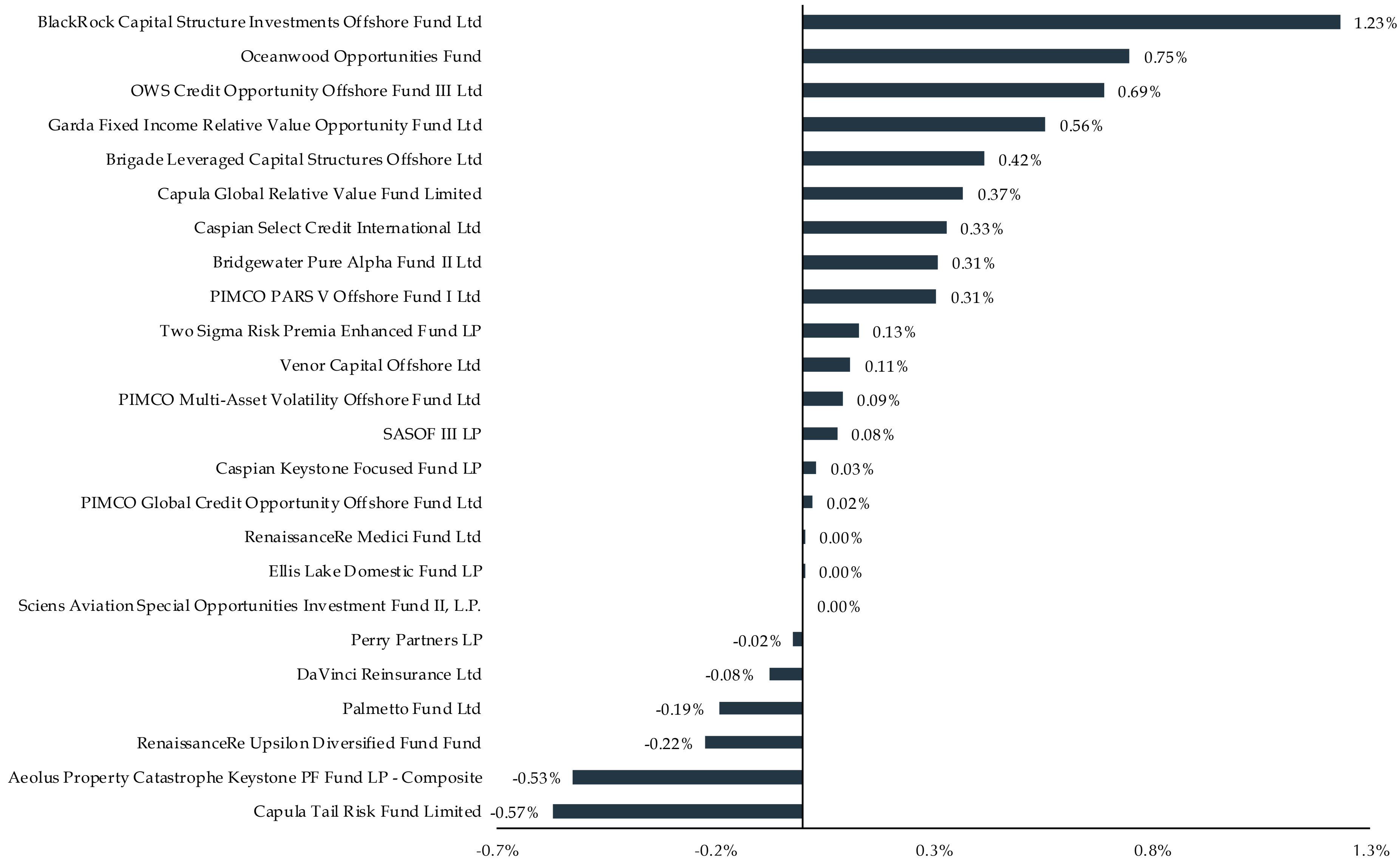
PSERS PORTFOLIO AS OF DEC 31, 2017 – OTHER ASSET CLASSES

Hedge Funds in Other Asset Classes

Asset Class	Sector	Strategy	Fund Name	Net Allocation ($mm)	NAV ($mm)	Multiple of Cost	Annualized Return in PSERS Portfolio*	Manager Inception in PSERS Portfolio
Commodities	Tactical Trading	Discretionary Commodities	PIMCO Commodity Alpha Fund Ltd	189.5	288.0	1.49	16.0%	Apr-15
Global Equity	Relative Value	Quantitative Strategies	BlackRock Emerging Markets Alpha Advantage Fund Ltd	-21.3	162.2	2.94	17.8%	Jan-09
			The 32 Capital Fund Ltd	79.2	188.0	1.70	8.2%	Jan-09
High Yield Fixed Income	Event Driven	Credit	Brigade Distressed Value Fund Ltd	100.0	159.4	1.59	7.7%	Oct-11
	Relative Value	Structured Credit	Brigade Structured Credit Offshore Fund Ltd	200.0	259.4	1.30	8.6%	Nov-14
	Private Credit	Real Estate	Galton Onshore Mortgage Recovery Fund III LP	78.6	98.8	1.11	2.5%	Nov-13
Risk Parity	Multi-Strategy	Multi-Strategy	Bridgewater All Weather Portfolio Limited 15%	575.2	699.8	1.08	5.4%	Sep-12
	Tactical Trading	Global Macro	DE Shaw Orienteer HV Fund LLC	568.0	614.5	1.20	14.9%	Feb-16
TIPS	Tactical Trading	Global Macro	Bridgewater Pure Alpha Fund II Ltd	124.7	593.3	1.73	13.6%	Jun-07
	Relative Value	Fixed Income Arbitrage	Garda Fixed Income Relative Value Opportunity Fund Ltd	132.2	148.6	1.12	4.7%	Aug-14
US Core Plus Fixed Income	Multi-Strategy	Multi-Strategy	BlackRock US Extended Core Global Alpha Bond (Non-ERISA) Fund Ltd	456.0	973.1	1.41	7.3%	Jun-07
LIBOR Composite	Tactical Trading	Risk Mitigators	Capula Tail Risk Fund Limited	50.0	45.8	0.92	-3.9%	Nov-15

* Annualized performance shown is since inception of the fund in the PSERS portfolio

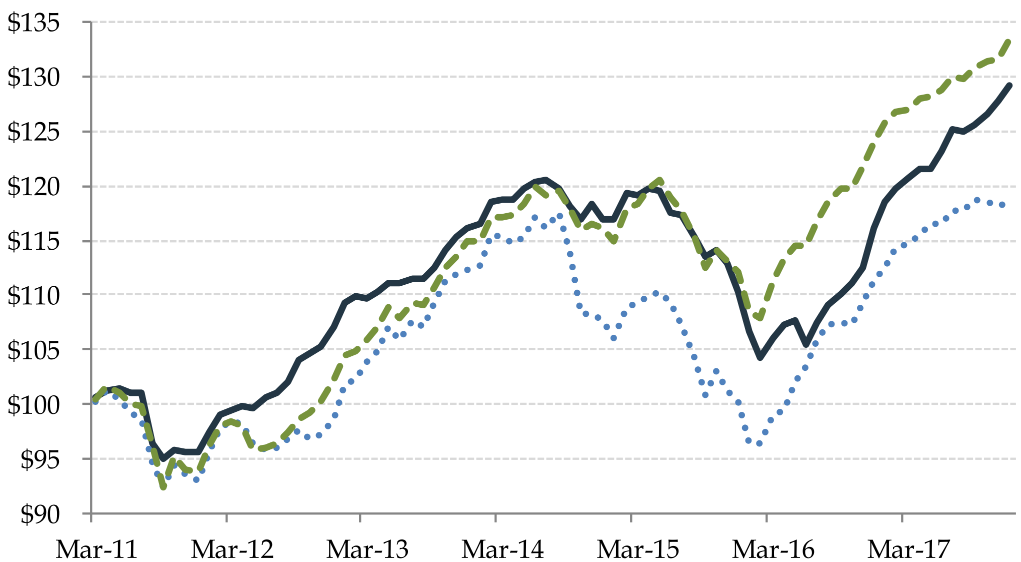
2017 ABSOLUTE RETURN PORTFOLIO MANAGER ATTRIBUTION



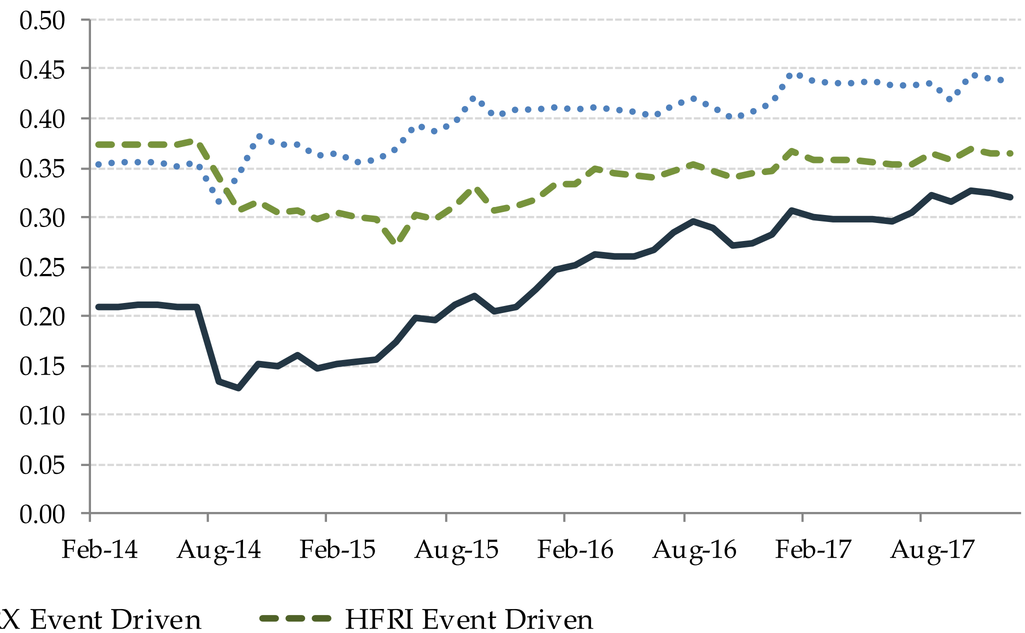
	YTD through December 31, 2017 Return
PSERS Absolute Return Portfolio	4.0%

PSERS EVENT DRIVEN CARVE OUT (AS OF DECEMBER 31, 2017)

Cumulative Performance
$100 Invested on March 1, 2011



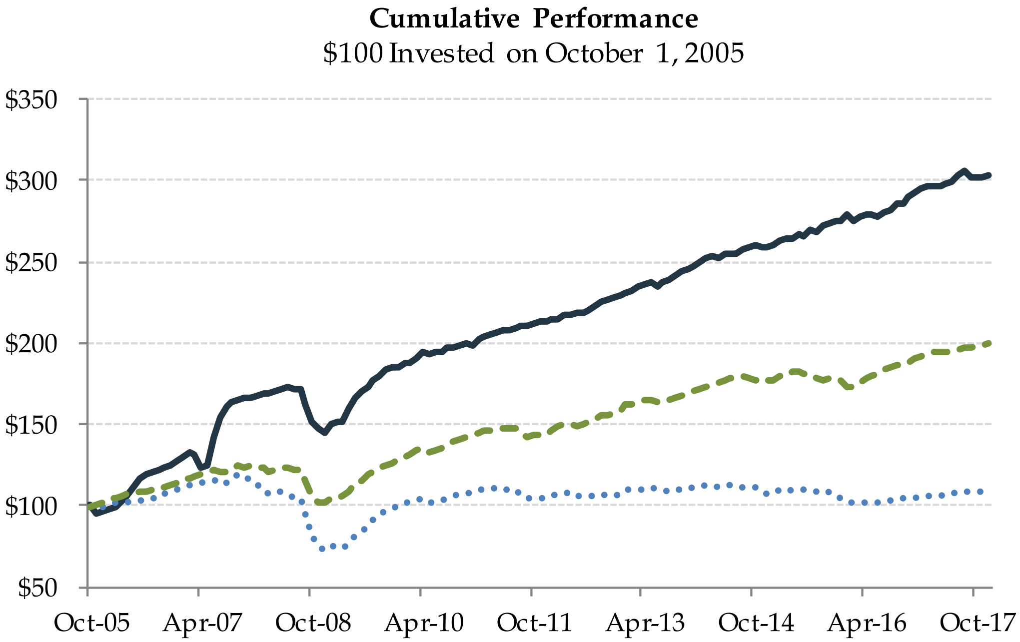
Beta to S&P 500
3yr Rolling

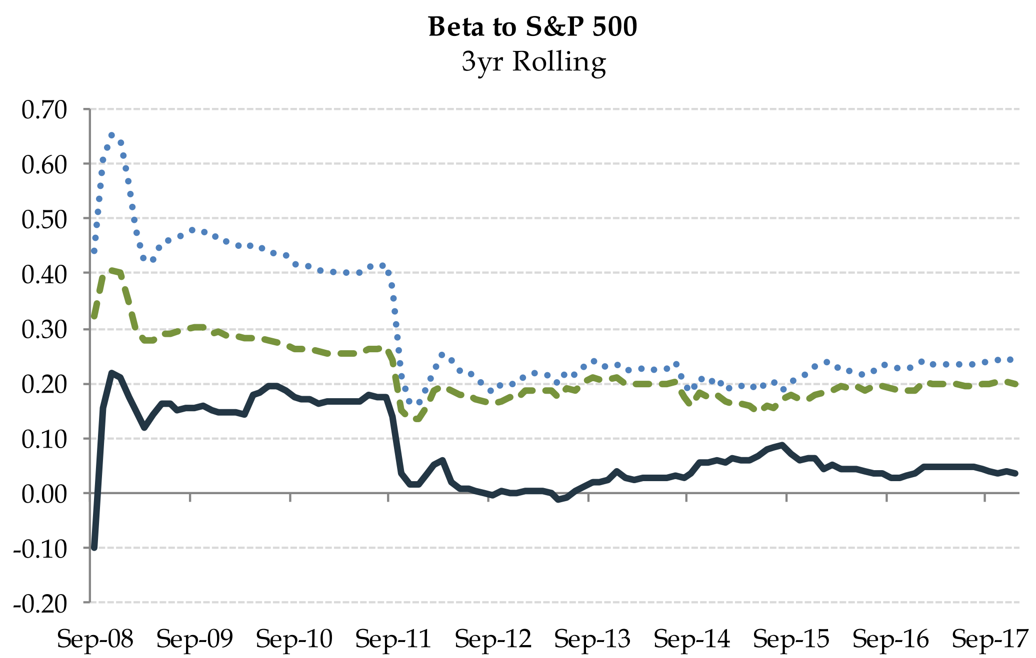


* Analysis for PSERS Event Driven Carve Out is based on realized performance of PSERS' Event Driven hedge funds. The track record includes current funds and funds that have been formerly redeemed.

* Aksia has included both HFRI & HFRX indices as together they provide a decent indicator of hedge fund performance by strategy. HFRX indices are considered 'investable,' whereas HFRI indices are equally weighted across funds in the HFR database. We believe that HFRX indices have a negative selection bias (funds willing to accept new investments may be non-institutional and/or struggling to raise assets), while HFRI has a self-reporting bias (funds who self-report are likely to have recently outperformed, and funds who do poorly may stop reporting). As a result of these biases, we expect HFRX to understate and HFRI to overstate institutional hedge fund performance, over the long run.

PSERS RELATIVE VALUE CARVE OUT (AS OF DECEMBER 31, 2017)





PSERS Relative Value HFRX Relative Value HFRI Relative Value

* Analysis for PSERS Relative Value Carve Out is based on realized performance of PSERS' Relative Value hedge funds. The track record includes current funds and funds that have been formerly redeemed.

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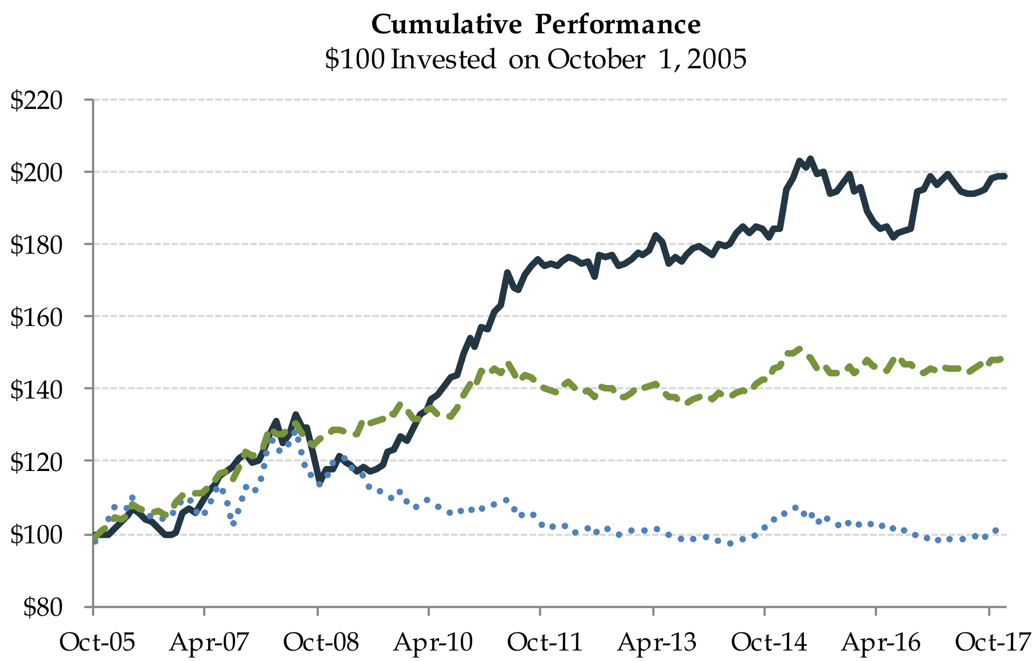
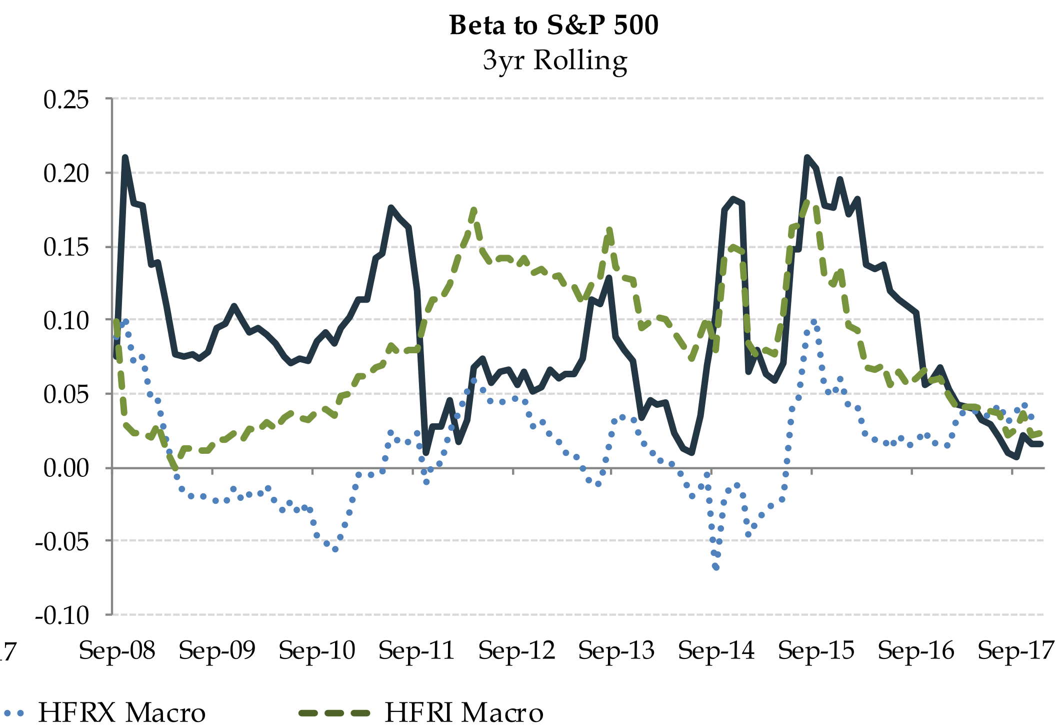
PSERS TACTICAL TRADING CARVE OUT (AS OF DECEMBER 31, 2017)





* Analysis for PSERS Tactical Trading Carve Out is based on realized performance of PSERS' Tactical Trading hedge funds. The track record includes current funds and funds that have been formerly redeemed.

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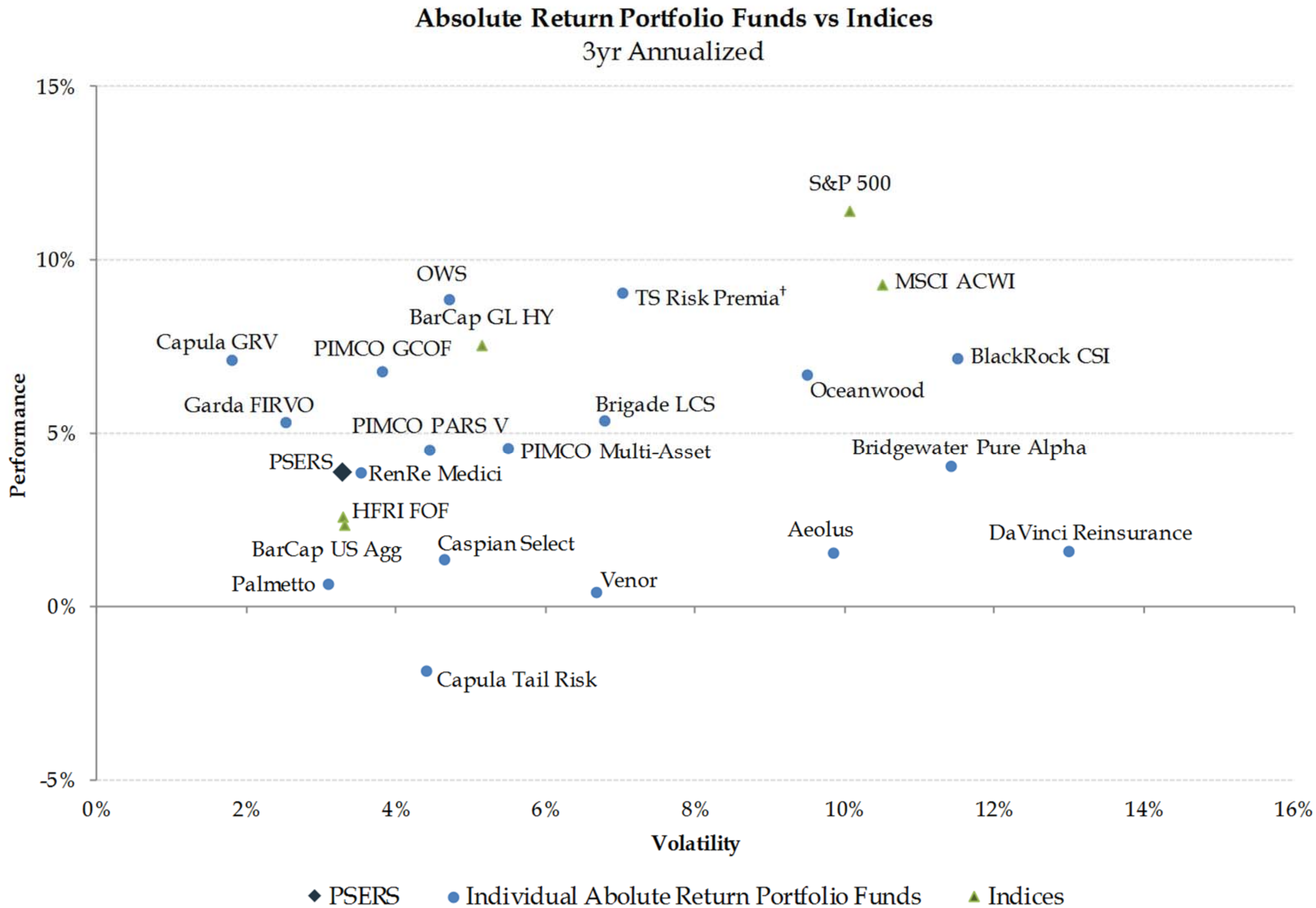
PERFORMANCE & VOLATILITY (AS OF DECEMBER 31, 2017)

PSERS Absolute Return Portfolio has exhibited performance and volatility in line with program objectives



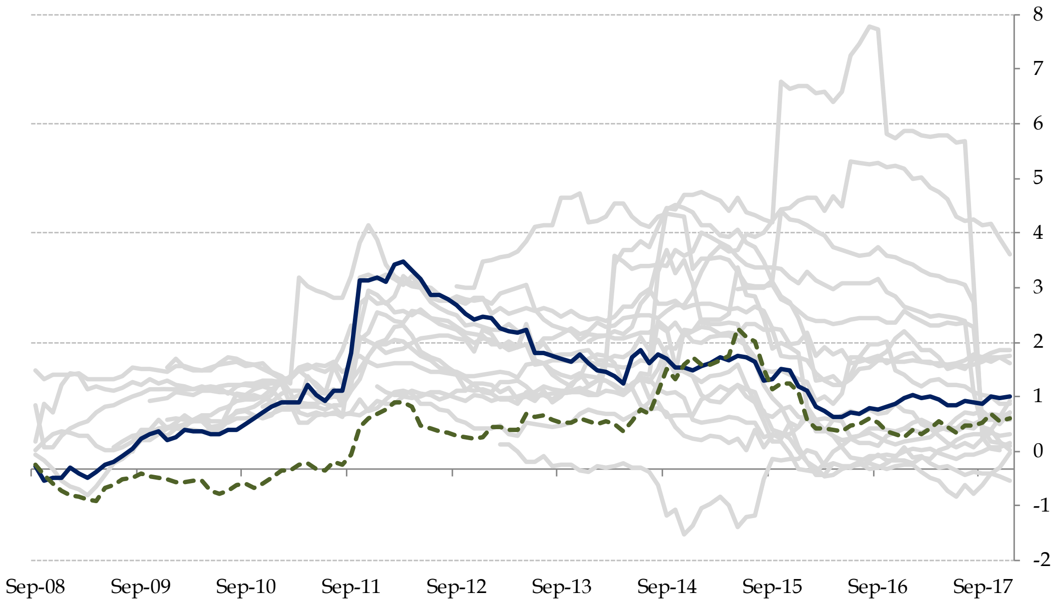
† Track record is less than 36 months

- Loss activity related to the natural catastrophe events in the second half of 2017 negatively impacted performance of the RenaissanceRe Upsilon Diversified Fund. Upsilon's three year annualized performance and volatility (-19.9%, 28.3% vol) fall outside of the range of the chart.
- The return and volatility analysis for the Absolute Return portfolio funds utilizes PSERS' realized performance for the 36-month period prior to and including December 2017. If PSERS has been invested in a fund for less than 36 months, the analysis uses the blended performance of realized returns and fund-level returns prior to PSERS initial investment date. Please see page 9 in this presentation for the inception date of each fund in PSERS portfolio. Analysis for PSERS is performed on realized performance for the Absolute Return portfolio.

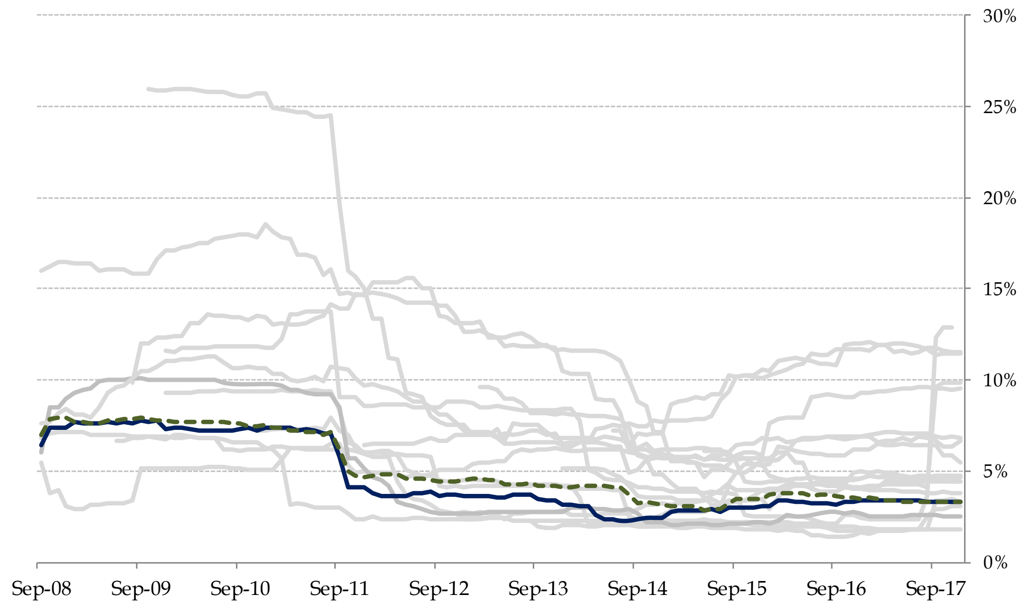
RISK-ADJUSTED PERFORMANCE & VOLATILITY (AS OF DECEMBER 31, 2017)

PSERS Absolute Return Portfolio has generally exhibited greater risk-adjusted returns than the broad FOF universe

Sharpe Ratio
3yr Rolling



Volatility
3yr Rolling



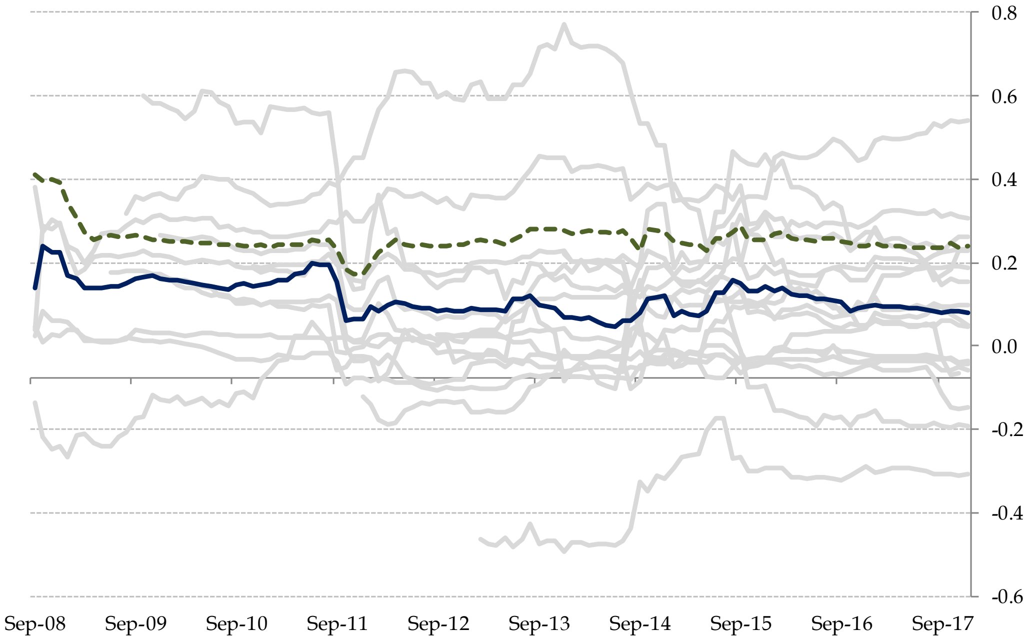
PA PSERS — Individual Absolute Return Portfolio Funds — HFRI FOF Composite

- The Sharpe and volatility analysis for the Absolute Return portfolio funds utilizes PSERS' realized performance for the 36-month period prior to and including December 2017. If PSERS has been invested in a fund for less than 36 months, the analysis uses the blended performance of realized returns and fund-level returns prior to PSERS initial investment date. Please see page 9 in this presentation for the inception date of each fund in PSERS portfolio. Analysis for PSERS is performed on realized performance for the Absolute Return portfolio. Sharpe Ratio uses LIBOR as the risk-free rate.
- For a broad indicator of average 'hedge fund portfolio' performance, Aksia prefers to use the HFRI FOF Composite Index, as there tends to be less self-reporting/dropout bias and losses and side pockets are captured by the FOF vehicle.

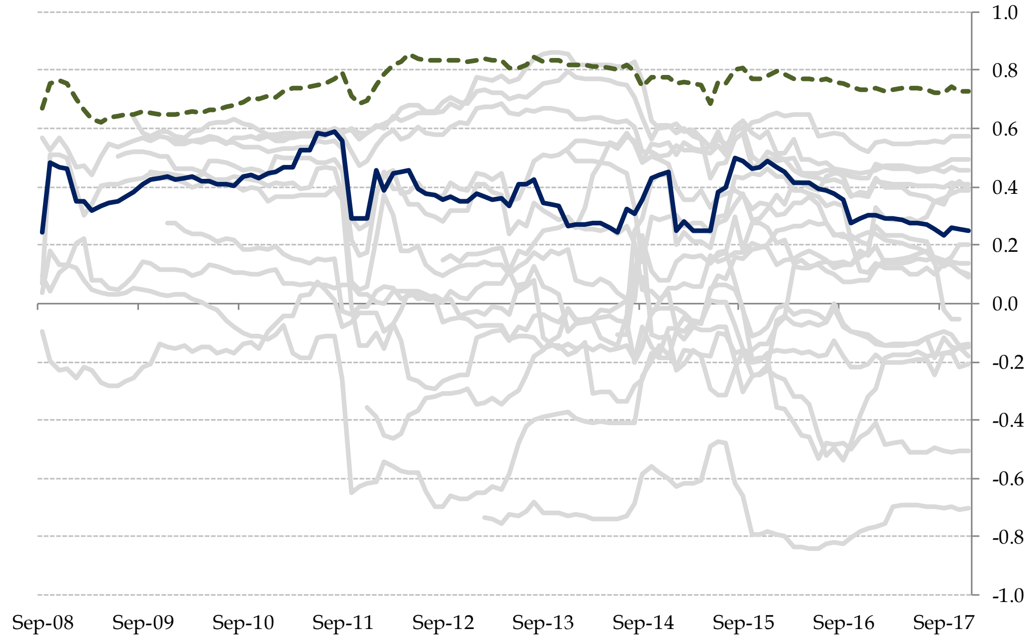
BETA & CORRELATION (AS OF DECEMBER 31, 2017)

PSERS Absolute Return Portfolio has exhibited consistently low beta and correlation to U.S. equities

Beta to S&P 500
3yr Rolling



Correlation to S&P 500
3yr Rolling



PA PSERS — Individual Absolute Return Portfolio Funds — HFRI FOF Composite

- The beta and correlation analysis for the Absolute Return portfolio funds utilizes PSERS' realized performance for the 36-month period prior to and including December 2017. If PSERS has been invested in a fund for less than 36 months, the analysis uses the blended performance of realized returns and fund-level returns prior to PSERS initial investment date. Please see page 9 in this presentation for the inception date of each fund in PSERS portfolio. Analysis for PSERS is performed on realized performance for the Absolute Return portfolio.
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CYTD 2017	4.0%	7.7%	4.7%	2.2%	2.7%
2016	4.0%	0.5%	4.2%	2.7%	-2.5%
2015	3.8%	-0.3%	3.8%	3.7%	-1.0%
2014	3.1%	3.4%	3.7%	2.1%	-0.2%
2013	4.8%	9.0%	3.8%	2.0%	1.1%
2012	3.5%	4.8%	4.0%	2.2%	1.6%
2011	7.7%	-5.7%	3.8%	8.0%	-6.1%
2010	17.3%	5.7%	3.9%	14.7%	1.8%
2009	15.3%	11.5%	4.3%	11.8%	5.6%
2008	-8.6%	-21.4%	7.1%	-1.7%	-1.0%
2007	8.2%	10.3%	9.3%	-	-
2006	3.7%	10.4%	8.9%	-	-
2005 (Oct 2005 – Dec 2005)	0.2%	2.2%	1.9%	-	-

[1] Net of hedge fund fees and expenses but before Aksia's fees.

[2] This is a well-known index which is included merely to show the general trends in the larger universe of hedge fund strategies in the periods indicated and is not intended to imply that the PSERS portfolio is comparable to the funds providing their returns to the index either in composition or elements of risk.

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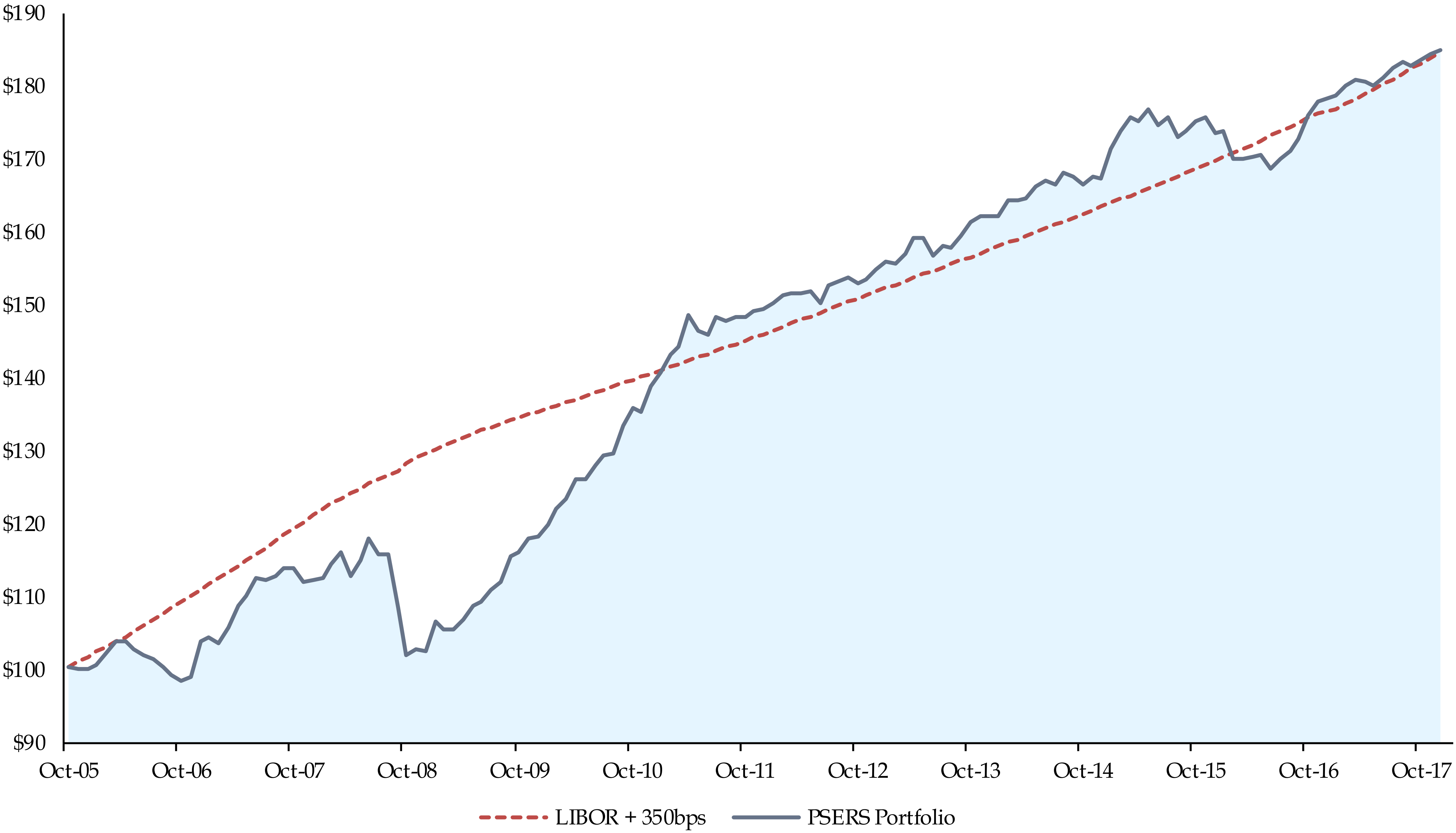
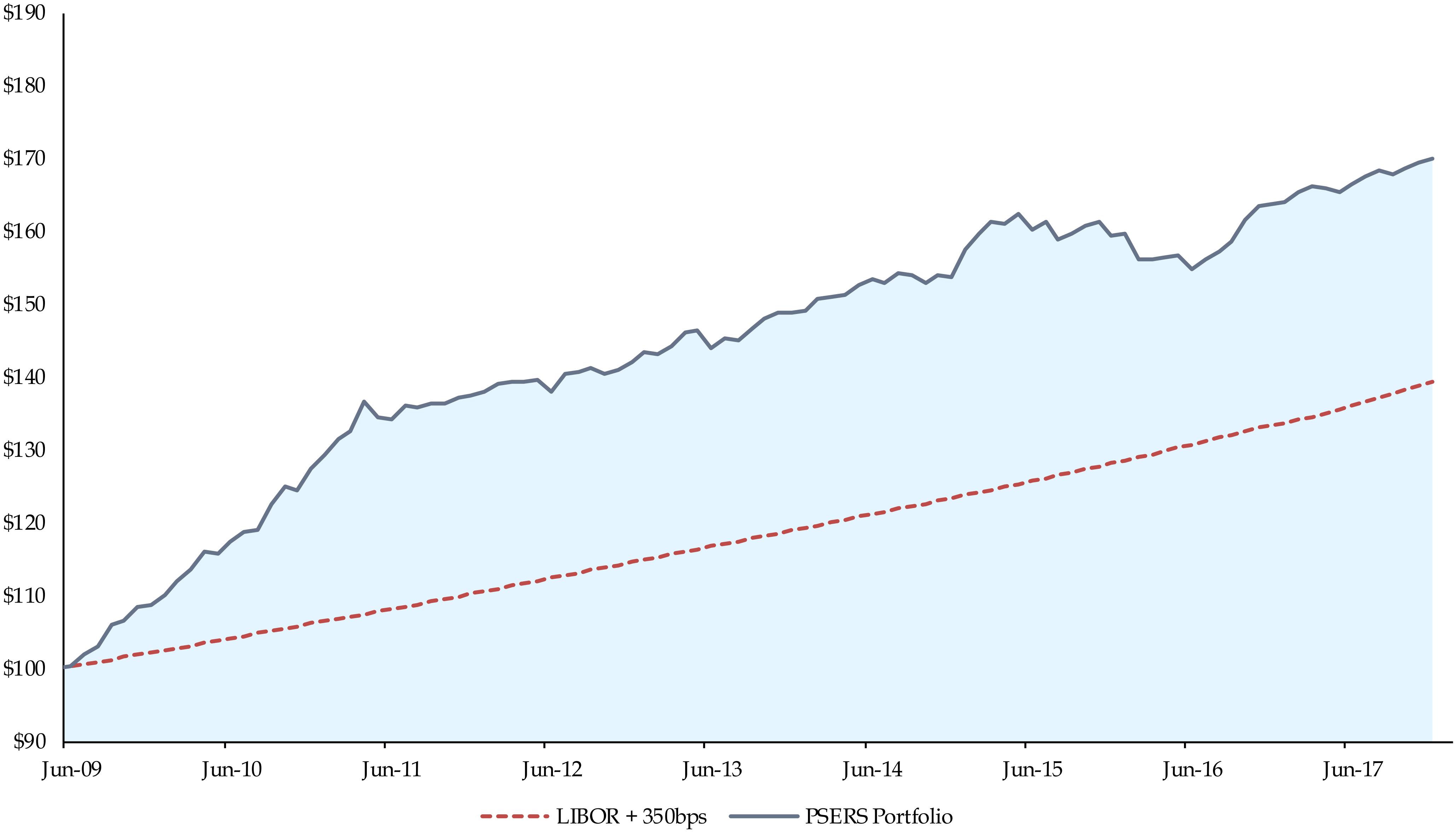
APPENDIX – PORTFOLIO RETURNS VS 3M LIBOR + 350BPS

$100 INVESTED OCTOBER 1, 2005



APPENDIX – PORTFOLIO RETURNS VS 3M LIBOR + 350BPS

$100 INVESTED JUNE 1, 2009 (END OF FINANCIAL CRISIS)



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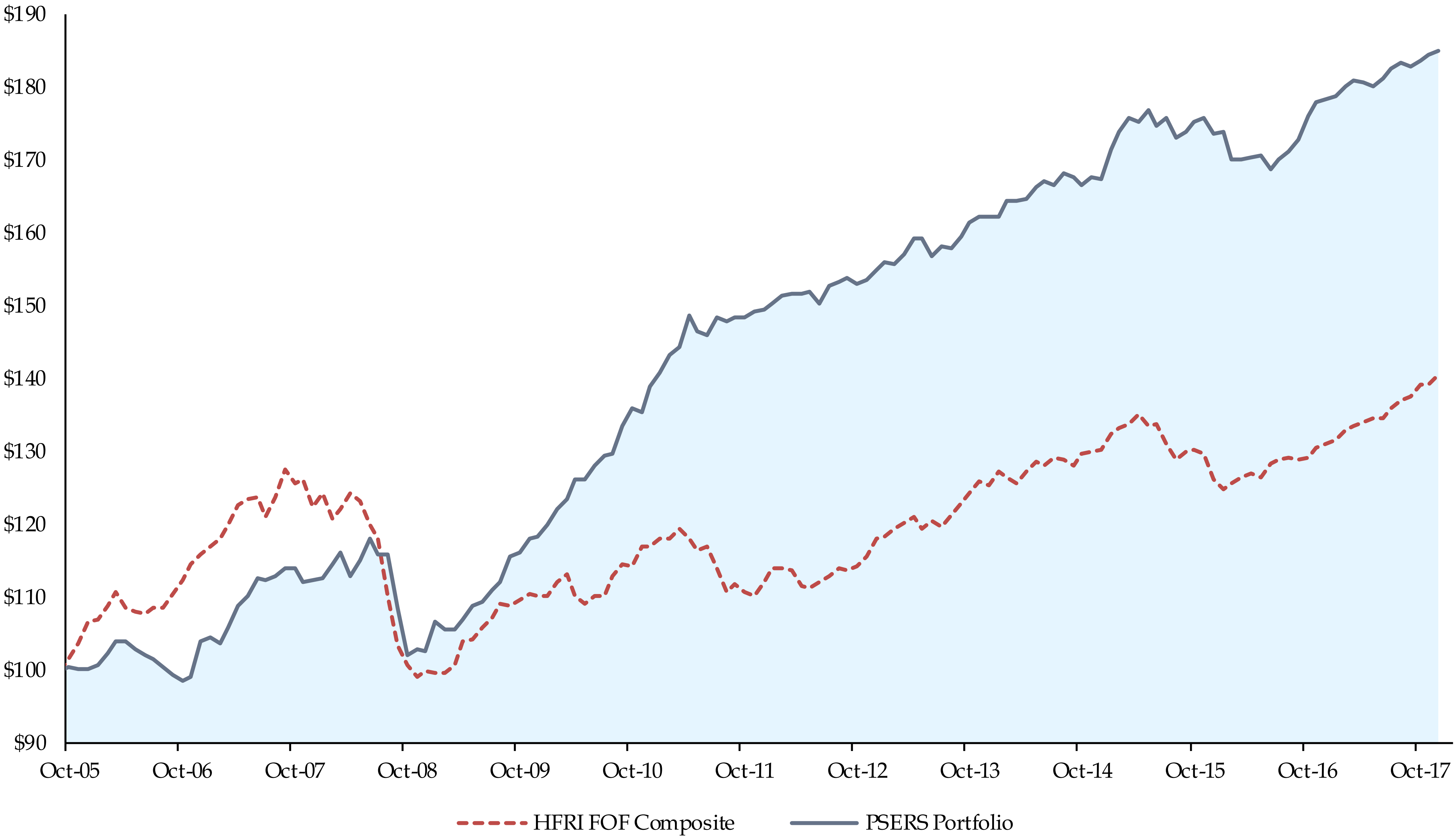
APPENDIX – PORTFOLIO RETURNS VS HFRI FOF COMPOSITE

$100 INVESTED OCTOBER 1, 2005



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