



KENTUCKY RETIREMENT SYSTEMS INVESTMENTS



To: KRS Investment Committee of the Board of Trustees
From: Richard Robben, Interim Executive Director of Investments
Date: June 7th, 2018
Subject: Report on Recent Investment Staff Activities

Investment Activity

New States Capital Partners Fund II (Private Equity)- The Investment Committee approved a \$25MM investment in the Fund at the February 6th, 2018 meeting, however due to the requirements of 2017 SB2, New States has declined to accept our investment.

Davidson Kempner LP (Absolute Return)- In March, we received noticed from DK requesting KRS to withdraw our ~\$70MM investment in the fund, citing the requirements of 2017 SB2 and recent litigation involving KRS as the reasons.

Equity Reduction (Public Equities) – At the beginning of April staff conducted another equity reduction trade, removing roughly \$365MM of exposure (Pension \$250MM, Insurance \$115MM).

Manulife Global Fixed Income (Core Fixed Income)- On April 9th, KRS sent an additional deposit of \$135MM to our existing Manulife Global Bond portfolio. These funds were the result of a reduction to our public equity exposure at the beginning of the month.

BNY Mellon Intermediate Credit Index CTF (Core Fixed Income)- On April 18th KRS made an additional deposit of \$288MM to the BNY Int Credit Index Fund. These funds were the result of a reduction to our public equity exposure at the beginning of the month.

Shenkman Capital (US Bank Loans) – On May 22nd staff made an additional deposit of \$40MM to Shenkman.

New Asset Allocations Approved

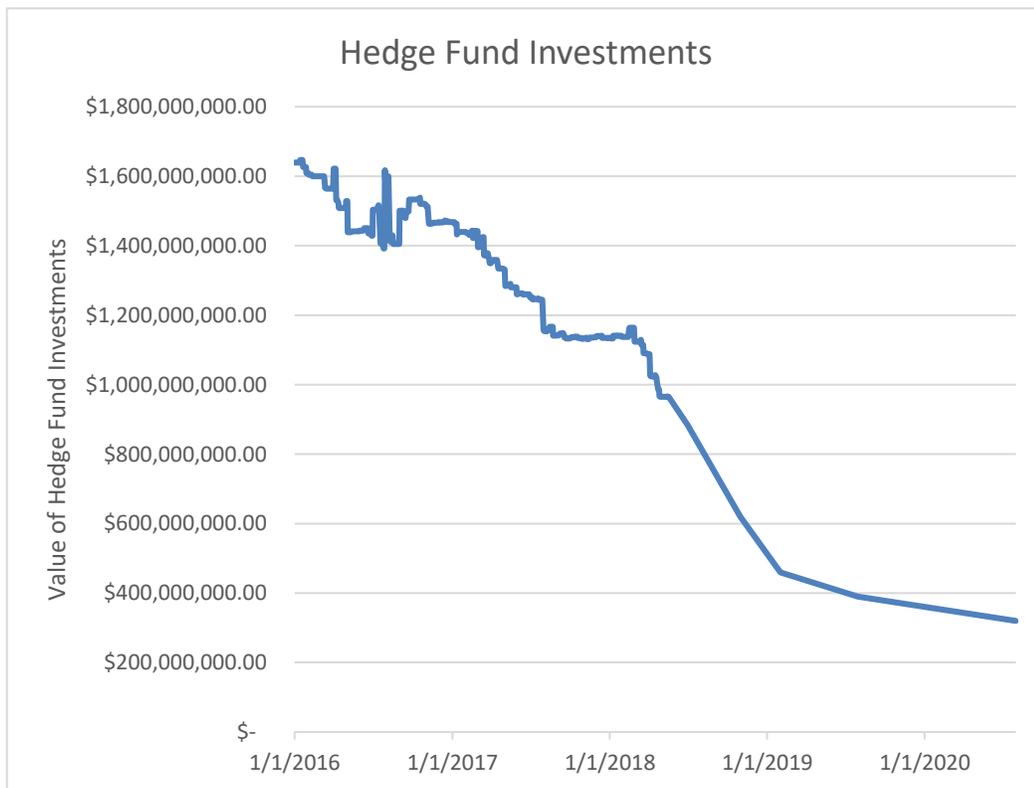
At the May 1st Investment Committee meeting our new general consultant, Wilshire Associates, presented their first asset liability study which contained a proposal for new asset allocations for all systems. While this proposal contained a recommendation to increase our equity exposure in the CERS, KERS-Hazardous, and all Insurance plans, it also suggested a substantial reduction to the equity positions in the KERS and SPRS plans because of their server underfunded status. No action was taken at the meeting because the committee wanted more time to study the recommendations, and asked Wilshire to rerun their

analysis for the KERS and SPRS plans to reflect the increased funding recently provided by the legislature. Wilshire was also asked to focus on increasing the probability of the KERS and SPRS plans hitting the assumed rate of return of 5.25% over a 10 year period, while decreasing the annual volatility that those plans are expected to experience. On June 7th Wilshire presented a new Asset Allocation for those plans, and the recommended allocations for all 10 plans were approved by the Committee. Those allocations are presented in Appendix A.

Continued Restructuring of Absolute Return Investments

Staff continued their work to review and restructure our Absolute Return portfolio. In Late 2016, the Investment Committee started a detailed review of the entire absolute return portfolio. In March 2017 KRS began to redeem some investments, and to transfer several investment previously held with our fund-of-funds vehicle to direct ownership by KRS. In October 2017 our new general investment consultant, Wilshire, began their review of the absolute return portfolio, and provided recommendations to staff in early 2018. In April, staff issued redemption notices to two more funds, and on May 7th 2018 KRS issued a full redemption notice to Prisma indicating our desire to fully liquidate our last fund-of-funds investment. Prisma provided KRS a schedule of liquidations on May 18th. They estimate that KRS will receive \$265,300,000 (48.7%) in October 2018, \$159,000,000 in January 2019 (29.2%), \$68,600,000 (12.6%) in July 2019, \$44,100,000 (8.1%) in July 2020, and the remainder in early 2021.

Overall hedge fund investments at KRS have been reduced from a high of \$1,646,000,000 in January 2016 down to \$965,325,000 as of May 2018. Of that total, roughly \$600,000,000 is currently in the redemption que, and should be realized over the next 24 months.



Investment Guideline Waivers

The Investment Committee granted 3 guideline waivers at the February 6th meeting and agreed to review each of these waivers at all subsequent meetings. Two of these waivers are still in effect:

1. Staff was granted a waiver of the requirement that each of our external investment managers should be visited annually on-site by KRS staff.
2. Staff was granted a waiver of the requirement to rebalance assets within the Absolute Return, Real Estate, and Fixed Income asset classes as the transition to our new asset allocation policy is ongoing.

Performance

PENSION (Net of Fees)					
	Mar-18	FYTD	1Yr	3Yr	5Yr
Total Pension Fund	-0.17%	7.72%	11.19%	7.02%	7.38%
Allocation Benchmark	-0.49%	7.21%	10.65%	6.87%	7.64%
	0.32%	0.51%	0.54%	0.15%	-0.26%
IPS Benchmark	-0.37%	6.09%			
	0.20%	1.63%			
KERS	-0.20%	6.80%	10.07%	6.31%	6.97%
Benchmark	-0.35%	6.44%	9.65%	6.54%	7.31%
	0.15%	0.36%	0.42%	-0.23%	-0.34%
KERS-HAZ	-0.17%	7.83%	11.34%	7.15%	7.45%
Benchmark	-0.53%	7.51%	11.01%	6.93%	7.60%
	0.36%	0.32%	0.33%	0.22%	-0.15%
CERS	-0.17%	7.90%	11.40%	7.16%	7.46%
Benchmark	-0.53%	7.51%	11.00%	6.90%	7.59%
	0.36%	0.39%	0.40%	0.26%	-0.13%
CERS-HAZ	-0.15%	7.88%	11.38%	7.19%	7.47%
Benchmark	-0.53%	7.51%	11.00%	6.90%	7.59%
	0.38%	0.37%	0.38%	0.29%	-0.12%
SPRS	-0.24%	6.95%	10.15%	6.11%	6.82%

Benchmark	-0.40%	6.82%	10.06%	6.50%	7.32%
	0.16%	0.13%	0.09%	-0.39%	-0.50%

Insurance Plan Performance

INSURANCE (Net of Fees)					
	Mar-18	FYTD	1Yr	3Yr	5Yr
Total Insurance Fund	-0.12%	8.02%	11.56%	7.29%	7.33%
Allocation Benchmark	-0.42%	7.60%	11.17%	7.20%	7.91%
	0.30%	0.42%	0.39%	0.09%	-0.58%
IPS Benchmark	-0.39%	6.11%			
	0.27%	1.91%			
KERS-INS	-0.43%	7.24%	10.64%	6.86%	6.91%
Benchmark	-0.42%	7.68%	11.05%	7.02%	7.70%
	-0.01%	-0.44%	-0.41%	-0.16%	-0.79%
KERSH-INS	-0.16%	7.91%	11.42%	7.20%	7.32%
Benchmark	-0.42%	7.69%	11.17%	7.06%	7.74%
	0.26%	0.22%	0.25%	0.14%	-0.42%
CERS-INS	-0.05%	8.14%	11.69%	7.34%	7.40%
Benchmark	-0.42%	7.69%	11.24%	7.10%	7.77%
	0.37%	0.45%	0.45%	0.24%	-0.37%
CERSH-INS	-0.03%	8.21%	11.79%	7.43%	7.40%
Benchmark	-0.42%	7.69%	11.24%	7.10%	7.77%
	0.39%	0.52%	0.55%	0.33%	-0.37%
SPRS-INS	-0.03%	8.25%	11.85%	7.41%	7.43%
Benchmark	-0.42%	7.69%	11.24%	7.11%	7.78%
	0.39%	0.56%	0.61%	0.30%	-0.35%



WILSHIRE ASSOCIATES

Wilshire Consulting



Recommended Asset Allocation Policies

June 7, 2018

Summary of Recommendations

KERS Non-Hazardous and SPRS

- The recommended Asset Allocation Policy achieves the following:
 - Maintains approximately 60% probability of achieving assumed rate of return – 5.25%
 - Increases projected liquidity profile by roughly 30%
 - Decreases expected annual volatility by over 10%
 - Decreases sensitivity to economic growth cycles by 14%

Summary of Recommendations

KERS/CERS Hazardous, CERS Non-Hazardous, and Insurance Plans

- The recommended Asset Allocation Policy achieves the following:
 - Maintains approximately 50% probability of achieving assumed rate of return – 6.25%
 - Maintains similar risk profile
 - Increases projected liquidity profile by roughly 23%

Recommended Policy

Recommended Policy & Compliance Bands for KERS Non-Hazardous and SPRS

Asset Class	KERS (NH) & SPRS		Compliance Bands		
	Current Policy	Wilshire Recommendation	Min	-	Max
US Equity	17.50%	15.75%	10.00%	-	25.00%
Non-US Equity	17.50%	15.75%	10.00%	-	25.00%
High Yield / Credit Fixed Income	17.00%	15.00%	10.00%	-	25.00%
Private Equity	<u>10.00%</u>	<u>7.00%</u>	5.00%	-	15.00%
Total Growth	62.00%	53.50%	50.00%	-	65.00%
Core Fixed Income	10.00%	20.50%	15.00%	-	25.00%
Cash	<u>3.00%</u>	<u>3.00%</u>	0.00%	-	5.00%
Total Fixed Income / Liquidity	13.00%	23.50%	15.00%	-	26.00%
Real Estate	5.00%	5.00%	0.00%	-	10.00%
Hedge Funds / Opportunistic	10.00%	3.00%	0.00%	-	10.00%
Real Return	<u>10.00%</u>	<u>15.00%</u>	5.00%	-	20.00%
Total Diversifying	25.00%	23.00%	15.00%	-	25.00%
Total Assets	100.00%	100.00%			
Total Illiquid Assets	30.90%	21.80%			
Standard Deviation of Return	10.55%	9.41%			
+ / (-) in SD of Return (bps)		-114			
Sharpe Ratio	0.43	0.45			
Cash Yield	3.08%	3.37%			
<u>Contribution to Asset Volatility (%):</u>					
Growth	86.7	81.5			
Fixed Income / Liquidity	1.5	4.2			
Diversifying	11.8	14.3			

Total Illiquid Assets are comprised of 20% of High Yield / Credit Fixed Income, Private Equity, Real Estate, Hedge Funds / Opportunistic and 25% of Real Return.

Recommended Policy

Recommended Policy & Compliance Bands for KERS Hazardous, CERS (Hazardous and Non-Hazardous) and Insurance Plans

Asset Class	KERS (H), CERS (H / NH) & Insurance Plans		Compliance Bands		
	Current Policy	Wilshire Recommendation	Min	-	Max
US Equity	17.50%	18.75%	10.00%	-	25.00%
Non-US Equity	17.50%	18.75%	10.00%	-	25.00%
High Yield / Credit Fixed Income	24.00%	15.00%	5.00%	-	20.00%
Private Equity	<u>10.00%</u>	<u>10.00%</u>	7.00%	-	13.00%
Total Growth	69.00%	62.50%	60.00%	-	66.00%
Core Fixed Income	4.00%	13.50%	7.00%	-	18.00%
Cash	<u>2.00%</u>	<u>1.00%</u>	0.00%	-	5.00%
Total Fixed Income / Liquidity	6.00%	14.50%	10.00%	-	18.00%
Real Estate	5.00%	5.00%	0.00%	-	10.00%
Hedge Funds / Opportunistic	10.00%	3.00%	0.00%	-	10.00%
Real Return	<u>10.00%</u>	<u>15.00%</u>	5.00%	-	20.00%
Total Diversifying	25.00%	23.00%	15.00%	-	26.00%
Total Assets	100.00%	100.00%			
Total Illiquid Assets	32.30%	24.80%			
Standard Deviation of Return	10.93%	10.95%			
+ / (-) in SD of Return (bps)		2			
Sharpe Ratio	0.42	0.42			
Cash Yield	3.42%	3.23%			
Contribution to Asset Volatility (%):					
Growth	88.0	85.9			
Fixed Income / Liquidity	0.5	2.1			
Diversifying	11.5	12.0			

Total Illiquid Assets are comprised of 20% of High Yield / Credit Fixed Income, Private Equity, Real Estate, Hedge Funds / Opportunistic and 25% of Real Return.

Asset Class Assumptions

As of December 31, 2017

- Wilshire’s asset class return, risk and correlation assumptions are developed based on 10-year forward looking expectations, adjusted to incorporate recent trends.
- Return expectations represent a passive investment (beta) and do not reflect any value added from active management (alpha).

	US Equity	Non-US Equity	Core Fixed Income	High Yield / Credit	Real Estate	Hedge Funds	Real Return	Private Equity	Cash
Expected Return (%)	6.25	6.45	3.55	4.95	6.90	4.75	5.75	8.75	1.75
Expected Risk (%)	17.00	18.75	5.15	10.00	14.00	4.60	7.75	28.00	1.25
Correlations									
US Equity	1.00								
Non-US Equity	0.83	1.00							
Core Fixed Income	0.28	0.09	1.00						
High Yield / Credit Fixed Income	0.54	0.45	0.25	1.00					
Real Estate	0.54	0.47	0.19	0.57	1.00				
Hedge Funds	0.43	0.55	0.08	0.58	0.32	1.00			
Real Return	0.44	0.51	0.30	0.55	0.64	0.50	1.00		
Private Equity	0.74	0.67	0.31	0.34	0.51	0.42	0.46	1.00	
Cash	-0.05	-0.08	0.19	-0.10	-0.05	0.07	0.04	0.00	1.00

Custom Hedge Fund basket assumption is representative of the strategic objective of KRS’ Hedge Fund portfolio and is comprised of 62.5% Relative Value, 25.0% Equity Market Neutral and 12.5% Global Macro.

Custom Real Return basket assumption represents a mix of 75% Public Real Assets and 25% Private Real Assets.

High Yield / Credit assumption utilizes Wilshire’s standard High Yield assumption.

©2018 Wilshire Associates.

Wilshire Consulting

Important Information



In preparing the analysis in this report, Wilshire has used information and data provided to us by third parties believed to be reliable, including the investment managers and market index providers discussed herein, . We have relied on such data and information as being complete and accurate. We have not independently verified and make no representations or warranties as to the accuracy or completeness of the data or information. Wilshire accepts no responsibility or liability (including for indirect, consequential or incidental damages) for any error, omission or inaccuracy in such information and for results obtained from its use. Information and opinions are as of the date indicated, and are subject to change without notice. Wilshire assumes no duty to update this material.

Research viewpoints may be based on investment due diligence conducted by Wilshire and do not include any form of operational due diligence. This material is intended for informational purposes only and should not be construed as legal, accounting, tax, investment, or other professional advice.

This report may include estimates, projections and other "forward-looking statements." Due to numerous factors, actual events may differ substantially from those presented.

This report is not to be used or considered as an offer to sell, or a solicitation to an offer to buy, any security. Nothing contained herein should be considered a recommendation or advice to purchase or sell any security. Past performance is no guarantee of future results.

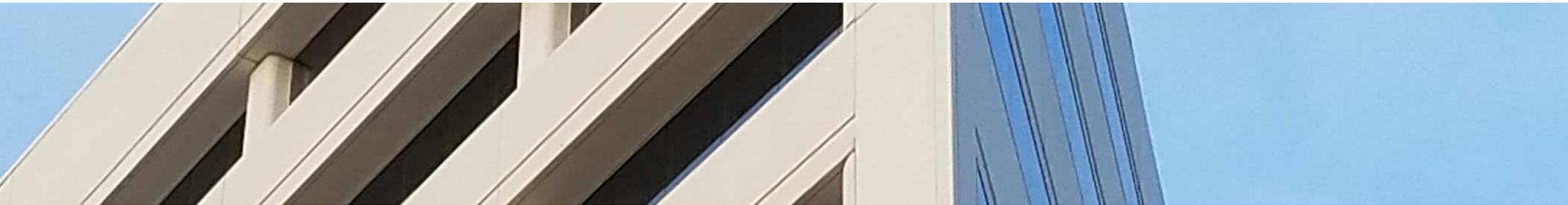
This material may contain confidential and proprietary information of Wilshire Associates Incorporated, ("Wilshire®"), and is intended for the exclusive use of the person to whom it is provided. It may not be disclosed, reproduced or redistributed, in whole or in part, to any other person or entity without prior written permission from Wilshire. Wilshire® is a registered service mark of Wilshire Associates Incorporated, Santa Monica, CA, USA. All other trade names, trademarks, and/or service marks are the property of their respective holders.

Copyright © 2018, Wilshire Associates Incorporated. All rights reserved. www.wilshire.com.



WILSHIRE ASSOCIATES

Wilshire Consulting



Kentucky Retirement Systems Pension

Executive Summary of Investment Performance

March 31, 2018

ACTUAL ALLOCATION VS POLICY ALLOCATION

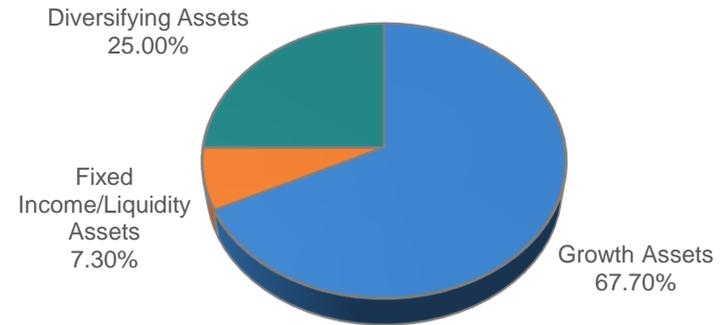
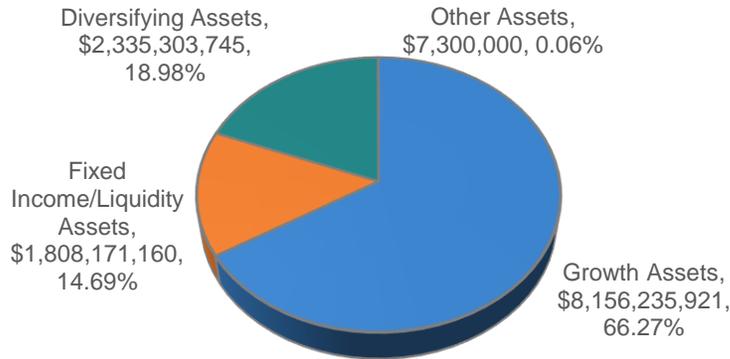
KRS Pension Plan Composite

Asset Class Bucketing

As of March 31, 2018

Total Fund

Policy Index



\$12,301,010,827

ACTUAL ALLOCATION VS POLICY ALLOCATION

KRS Pension Plan Composite

Asset Class Bucketing

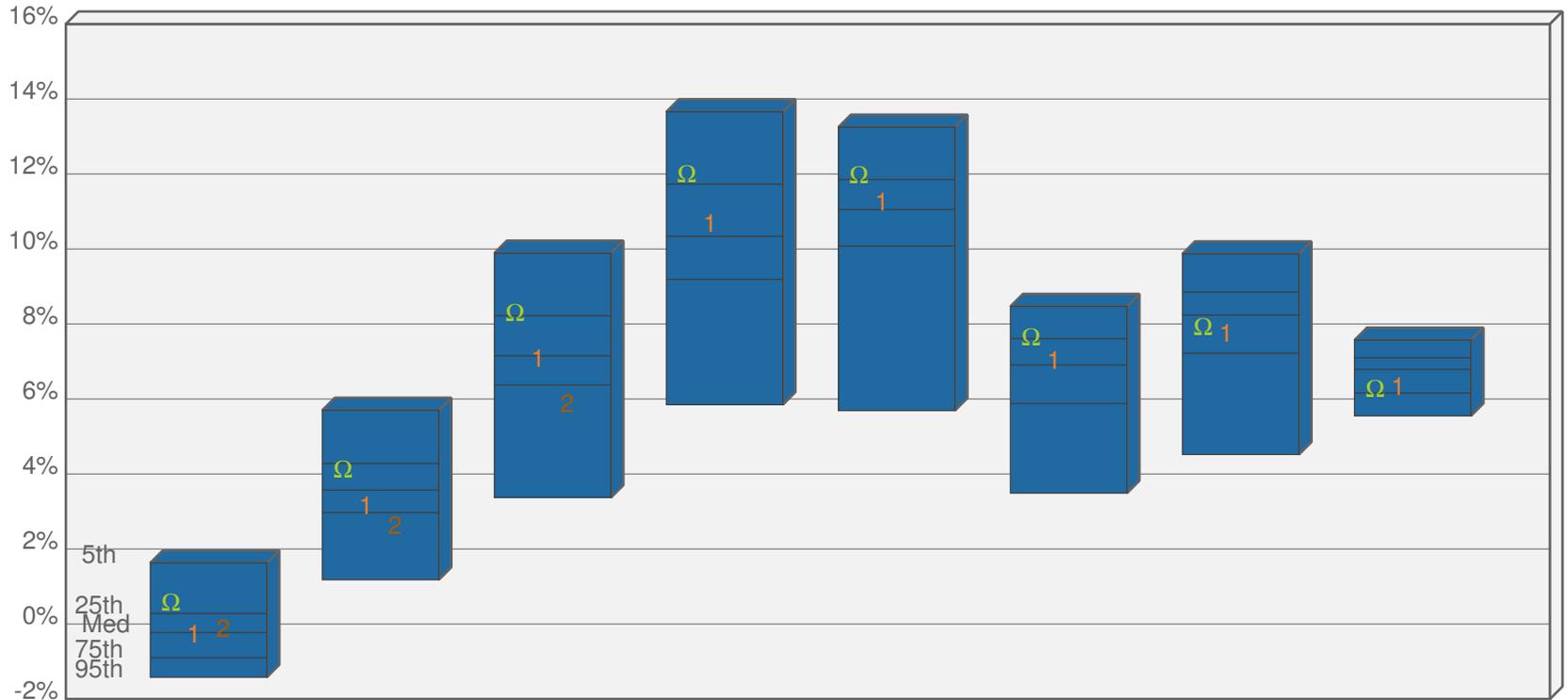
As of March 31, 2018

Asset Class / Bucket	Total Pension Allocation		Policy Index	Relative (+/-)
	(\$)	(%)		
U.S. Equity	\$2,480,003,011	20.2%	17.5%	2.7%
Non-U.S. Equity	\$3,035,065,839	24.7%	17.5%	7.2%
Private Equity	\$1,213,536,884	9.9%	10.0%	-0.1%
Credit / High Yield	\$1,427,630,187	11.6%	22.7%	-11.1%
Growth Assets	\$8,156,235,921	66.3%	67.7%	-1.4%
Core Fixed Income	\$1,380,924,725	11.2%	5.1%	6.1%
Cash	\$427,246,435	3.5%	2.2%	1.3%
Fixed Income/Liquidity Assets	\$1,808,171,160	14.7%	7.3%	7.4%
Real Estate	\$571,495,231	4.6%	5.0%	-0.4%
Real Return	\$986,707,056	8.0%	10.0%	-2.0%
Absolute Return	\$777,101,458	6.3%	10.0%	-3.7%
Diversifying Assets	\$2,335,303,745	19.0%	25.0%	-6.0%
Other Assets	\$7,300,000	0.1%	0.0%	0.1%
Total Fund	\$12,307,010,827	100.0%	100.0%	0.0%

PERFORMANCE COMPARISON

KRS Pension Plan Composite

Periods Ended March 31, 2018



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
Ω KRS Pension Plan	0.60 (15)	4.15 (29)	8.32 (22)	12.01 (20)	12.00 (21)	7.67 (23)	7.93 (60)	6.30 (70)
1 KRS Allocation I	-0.25 (51)	3.17 (67)	7.09 (50)	10.69 (44)	11.27 (42)	7.03 (44)	7.77 (62)	6.35 (67)
2 KRS IPS Benchmark	-0.11 (47)	2.65 (79)	5.90 (80)					
5th %tile	1.63	5.70	9.89	13.66	13.25	8.47	9.87	7.57
25th %tile	0.28	4.28	8.22	11.73	11.85	7.61	8.85	7.10
Median	-0.23	3.57	7.15	10.34	11.05	6.91	8.24	6.79
75th %tile	-0.90	2.97	6.37	9.19	10.08	5.88	7.22	6.16
95th %tile	-1.42	1.18	3.37	5.85	5.69	3.49	4.52	5.55
Number of Funds	137	137	135	135	135	135	133	112

*TUCS Total Ret of Master Trusts - Public Universe - Gross of Fees

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended March 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
KRS Pension Plan									
Net of Fee Return	0.41	3.80	7.72	11.19	7.03	7.38	5.98	3/31/84	9.19
KRS Allocation Index	-0.25	3.17	7.09	10.69	7.03	7.77	6.35	3/31/84	9.32
Value Added	0.66	0.63	0.63	0.50	0.00	-0.39	-0.37	3/31/84	-0.13
KRS IPS Benchmark	-0.11	2.65	5.90						
KERS Pension Plan									
Net of Fee Return	0.30	3.22	7.43	10.72	6.52	7.10	5.84	3/31/84	9.14
KERS Allocation Index	-0.45	2.45	6.29	9.50	6.13	7.16	6.05	3/31/84	9.23
Value Added	0.75	0.78	1.14	1.22	0.39	-0.07	-0.21	3/31/84	-0.08
KERS IPS Benchmark	-0.33	2.37	5.95						
Assumed Rate 5.25%	1.29	2.59	3.91						
KERS (H) Pension Plan									
Net of Fee Return	0.39	3.84	8.38	11.91	7.34	7.56	6.07	3/31/84	9.21
KERS (H) Allocation Index	-0.22	3.32	7.75	11.44	7.15	7.80	6.36	3/31/84	9.32
Value Added	0.61	0.51	0.63	0.47	0.19	-0.24	-0.29	3/31/84	-0.11
KERS (H) IPS Benchmark	-0.08	2.69	6.35						
Assumed Rate 6.25%	1.53	3.08	4.65						
CERS Pension Plan									
Net of Fee Return	0.42	3.90	8.44	11.97	7.35	7.57	6.07	3/31/84	9.21
CERS Allocation Index	-0.20	3.35	7.78	11.47	7.16	7.81	6.36	3/31/84	9.32
Value Added	0.62	0.55	0.66	0.49	0.19	-0.23	-0.29	3/31/84	-0.11
CERS IPS Benchmark	-0.07	2.71	6.38						
Assumed Rate 6.25%	1.53	3.08	4.65						

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended March 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
CERS (H) Pension Plan									
Net of Fee Return	0.42	3.89	8.43	11.95	7.37	7.58	6.08	3/31/84	9.21
CERS (H) Allocation Index	-0.19	3.36	7.81	11.50	7.17	7.81	6.37	3/31/84	9.32
Value Added	0.60	0.52	0.62	0.45	0.21	-0.23	-0.29	3/31/84	-0.11
CERS (H) IPS Benchmark	-0.05	2.73	6.40						
Assumed Rate 6.25%	1.53	3.08	4.65						
SPRS Pension Plan									
Net of Fee Return	0.23	3.30	7.42	10.64	6.27	6.92	5.75	3/31/84	9.12
SPRS Allocation Index	-0.36	2.78	6.87	10.31	6.66	7.49	6.21	3/31/84	9.27
Value Added	0.60	0.53	0.55	0.33	-0.39	-0.57	-0.46	3/31/84	-0.16
SPRS IPS Benchmark	-0.24	2.50	6.06						
Assumed Rate 5.25%	1.29	2.59	3.91						

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended March 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
US Equity Composite									
Net of Fee Return	-0.69	5.26	9.85	12.76	9.43	12.26	9.33	3/31/84	11.32
Russell 3000	-0.64	5.65	10.48	13.81	10.22	13.03	9.72	3/31/84	11.35
Value Added	-0.04	-0.39	-0.63	-1.06	-0.79	-0.78	-0.38	3/31/84	-0.03
Non-US Equity Composite									
Net of Fee Return	0.19	5.73	12.90	19.99	7.94	7.34	4.08	6/30/00	3.58
Policy Index	-1.06	4.11	10.72	17.42	6.79	6.44	3.32	6/30/00	3.74
Value Added	1.26	1.63	2.18	2.56	1.15	0.90	0.76	6/30/00	-0.17
Fixed Income Composite									
Net of Fee Return	-0.30	0.14	1.21	2.89	3.88	3.62	4.82	3/31/84	7.55
Policy Index	-1.13	-0.69	0.79	2.65	4.46	3.83	4.67	3/31/84	7.36
Value Added	0.83	0.84	0.42	0.24	-0.58	-0.21	0.15	3/31/84	0.18
Bloomberg Global Aggregate	1.36	2.45	4.26	6.97	3.14	1.49	2.57		
Real Return Composite									
Net of Fee Return	-0.50	0.26	1.77	2.42	3.28	1.80		6/30/11	3.82
Real Return Index (P)	-1.84	-1.30	-0.85	-0.97	1.25	1.62		6/30/11	2.37
Value Added	1.33	1.57	2.63	3.38	2.03	0.19		6/30/11	1.45
Real Estate Composite									
Net of Fee Return	2.31	4.67	7.37	9.77	9.55	8.97	7.97	6/30/84	6.04
NCREIF ODCE NOF 1 Quarter Lag	1.85	3.52	5.04	6.66	9.42	10.52	4.07		
Value Added	0.46	1.15	2.32	3.11	0.13	-1.55	3.89		
Absolute Return Composite									
Net of Fee Return	1.61	2.94	4.99	5.46	2.13	4.14		3/31/10	4.22
HFRI FOF Div (1 Month Lag)	1.43	3.13	4.78	5.73	1.84	3.50		3/31/10	3.09
Value Added	0.18	-0.19	0.21	-0.27	0.29	0.65		3/31/10	1.12

PERFORMANCE COMPARISON

Trailing Returns

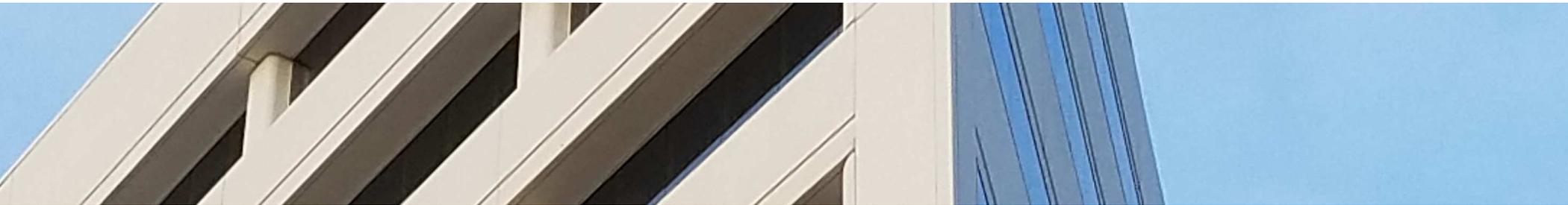
Periods Ended March 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Private Equity Composite									
Net of Fee Return	3.40	6.66	11.70	17.93	11.60	12.99	8.32	6/30/02	11.18
KRS Short Term PE Index	3.40	6.66	11.71	17.93	11.60	12.99	8.32	6/30/02	11.18
Value Added	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	6/30/02	-0.00
Russell 3000 +3% Qtr Lag	7.12	12.85	17.34	25.09	15.44	19.78	13.01	6/30/02	11.13
Cash Composite									
Net of Fee Return	0.57	1.23	1.52	1.75	1.00	0.76	0.82	12/31/87	3.61
91-Day Treasury Bill	0.35	0.63	0.90	1.10	0.53	0.34	0.34	12/31/87	3.30
Value Added	0.22	0.59	0.62	0.65	0.48	0.42	0.48	12/31/87	0.31
Other Assets									
Net of Fee Return	0.00	0.00	0.00	0.00	0.00	0.32	0.19	3/31/99	3.20



WILSHIRE ASSOCIATES

Wilshire Consulting



Kentucky Retirement Systems Insurance

Executive Summary of Investment Performance

March 31, 2018

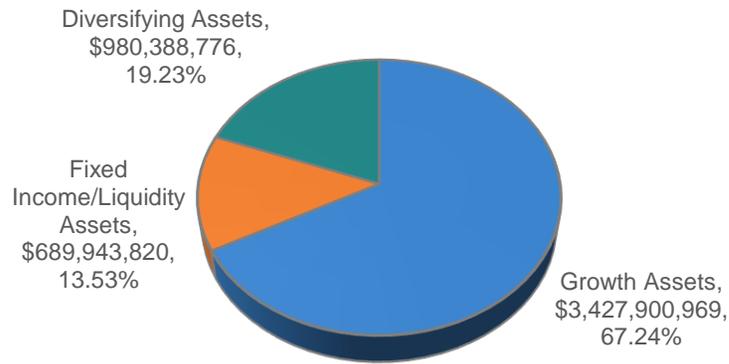
ACTUAL ALLOCATION VS POLICY ALLOCATION

KRS Insurance Plan Composite

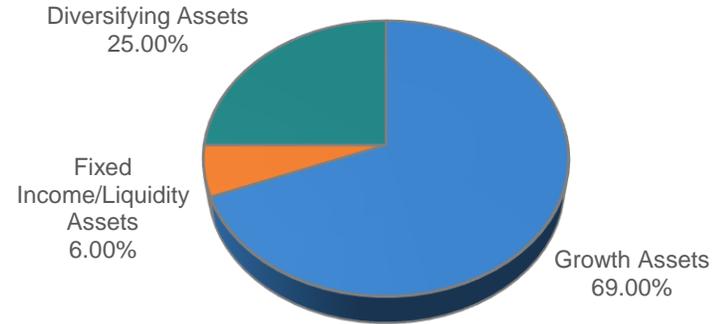
Asset Class Bucketing

As of March 31, 2018

Total Fund



Policy Index



\$5,098,233,565

ACTUAL ALLOCATION VS POLICY ALLOCATION

KRS Insurance Plan Composite

Asset Class Bucketing

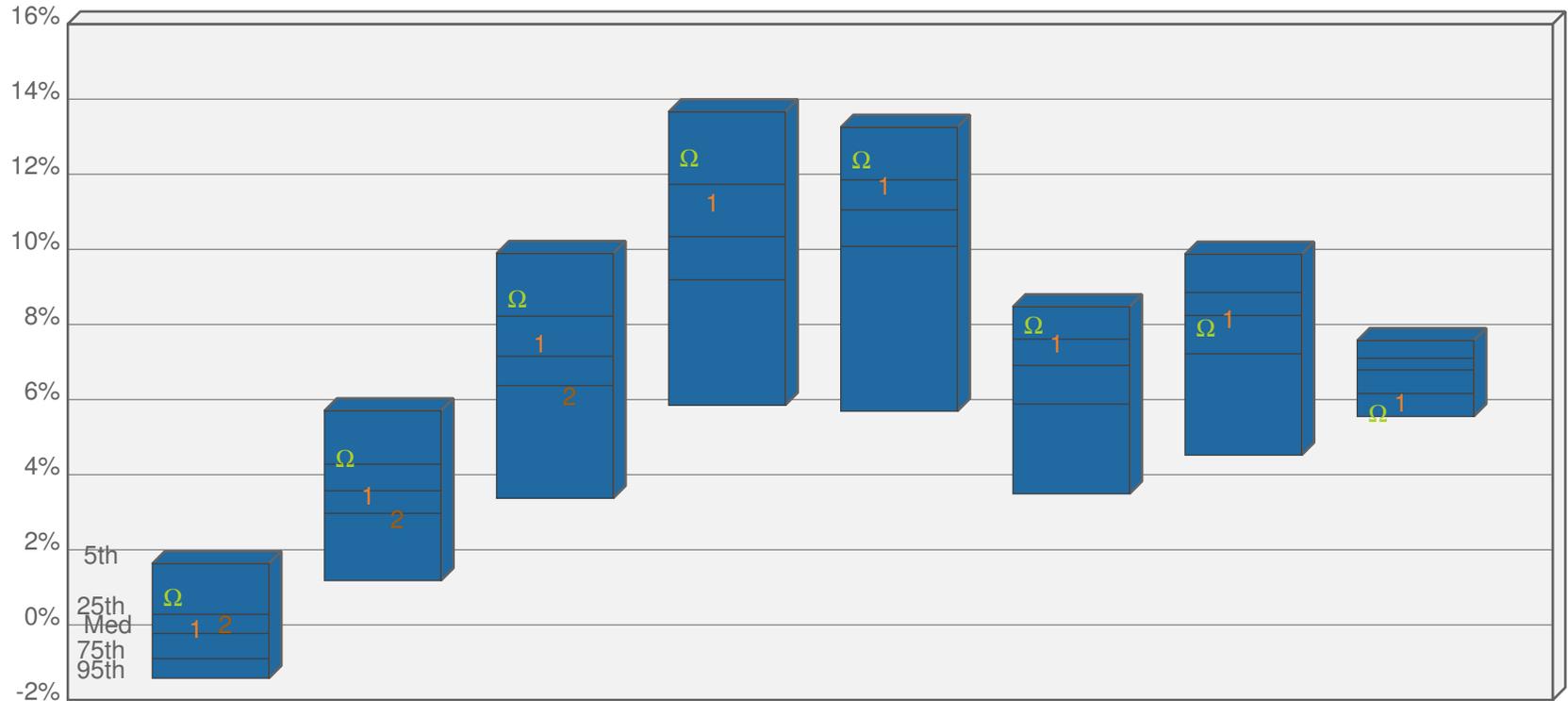
As of March 31, 2018

Asset Class / Bucket	Total Insurance Allocation		Policy Index	Relative (+/-)
	(\$)	(%)		
U.S. Equity	\$1,094,842,459	21.5%	17.5%	4.0%
Non-U.S. Equity	\$1,303,874,675	25.6%	17.5%	8.1%
Private Equity	\$513,181,133	10.1%	10.0%	0.1%
Credit / High Yield	\$516,002,702	10.1%	24.0%	-13.9%
Growth Assets	\$3,427,900,969	67.2%	69.0%	-1.8%
Core Fixed Income	\$564,549,068	11.1%	4.0%	7.1%
Cash	\$125,394,752	2.5%	2.0%	0.5%
Fixed Income/Liquidity Assets	\$689,943,820	13.5%	6.0%	7.5%
Real Estate	\$244,496,085	4.8%	5.0%	-0.2%
Real Return	\$422,617,228	8.3%	10.0%	-1.7%
Absolute Return	\$313,275,463	6.1%	10.0%	-3.9%
Diversifying Assets	\$980,388,776	19.2%	25.0%	-5.8%
Total Fund	\$5,098,233,565	100.0%	100.0%	0.0%

PERFORMANCE COMPARISON

KRS Insurance Plan Composite

Periods Ended March 31, 2018



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
--	-----------	------------	------------	--------	---------	---------	---------	----------

Ω KRS Insurance Plan
1 KRS Allocation I
2 KRS IPS Benchmark

Ω KRS Insurance Plan	0.73 (11)	4.44 (20)	8.69 (15)	12.45 (15)	12.40 (13)	8.00 (12)	7.92 (61)	5.64 (88)
1 KRS Allocation I	-0.12 (47)	3.45 (55)	7.50 (43)	11.23 (33)	11.69 (28)	7.48 (27)	8.15 (53)	5.92 (84)
2 KRS IPS Benchmark	0.02 (38)	2.82 (77)	6.10 (79)					

5th %tile	1.63	5.70	9.89	13.66	13.25	8.47	9.87	7.57
25th %tile	0.28	4.28	8.22	11.73	11.85	7.61	8.85	7.10
Median	-0.23	3.57	7.15	10.34	11.05	6.91	8.24	6.79
75th %tile	-0.90	2.97	6.37	9.19	10.08	5.88	7.22	6.16
95th %tile	-1.42	1.18	3.37	5.85	5.69	3.49	4.52	5.55
Number of Funds	137	137	135	135	135	135	133	112

*TUCS Total Ret of Master Trusts - Public Universe - Gross of Fees

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended March 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
KRS Insurance Plan									
Net of Fee Return	0.48	4.02	8.02	11.56	7.29	7.33	5.32	3/31/87	7.50
KRS Allocation Index	-0.12	3.45	7.50	11.23	7.48	8.15	5.92	3/31/87	7.91
Value Added	0.60	0.57	0.52	0.32	-0.19	-0.82	-0.60	3/31/87	-0.41
KRS IPS Benchmark	0.02	2.82	6.10						
KERS Insurance Plan									
Net of Fee Return	0.12	3.45	7.24	10.64	6.86	6.91	5.12	3/31/87	7.43
KERS Allocation Index	-0.27	3.24	7.29	11.02	7.31	7.99	5.84	3/31/87	7.88
Value Added	0.39	0.21	-0.05	-0.38	-0.45	-1.08	-0.73	3/31/87	-0.45
KERS IPS Benchmark	-0.13	2.61	5.90						
Assumed Rate 6.25%	1.53	3.08	4.65						
KERS (H) Insurance Plan									
Net of Fee Return	0.43	3.95	7.90	11.41	7.20	7.32	5.32	3/31/87	7.50
KERS (H) Allocation Index	-0.15	3.41	7.46	11.19	7.37	8.03	5.86	3/31/87	7.89
Value Added	0.58	0.53	0.44	0.22	-0.17	-0.71	-0.54	3/31/87	-0.39
KERS (H) IPS Benchmark	-0.01	2.78	6.06						
Assumed Rate 6.25%	1.53	3.08	4.65						
CERS Insurance Plan									
Net of Fee Return	0.54	4.12	8.15	11.70	7.35	7.40	5.36	3/31/87	7.51
CERS Allocation Index	-0.12	3.46	7.52	11.25	7.39	8.04	5.87	3/31/87	7.89
Value Added	0.65	0.66	0.63	0.45	-0.04	-0.64	-0.51	3/31/87	-0.38
CERS IPS Benchmark	0.02	2.83	6.12						
Assumed Rate 6.25%	1.53	3.08	4.65						

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended March 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
CERS (H) Insurance Plan									
Net of Fee Return	0.58	4.18	8.21	11.80	7.43	7.45	5.38	3/31/87	7.52
CERS (H) Allocation Index	-0.11	3.47	7.52	11.26	7.39	8.04	5.87	3/31/87	7.89
Value Added	0.69	0.71	0.69	0.54	0.04	-0.59	-0.49	3/31/87	-0.37
CERS (H) IPS Benchmark	0.03	2.84	6.13						
Assumed Rate 6.25%	1.53	3.08	4.65						
SPRS Insurance Plan									
Net of Fee Return	0.60	4.20	8.25	11.85	7.42	7.43	5.37	3/31/87	7.51
SPRS Allocation Index	-0.12	3.46	7.51	11.25	7.39	8.04	5.87	3/31/87	7.89
Value Added	0.72	0.75	0.74	0.61	0.03	-0.61	-0.49	3/31/87	-0.37
SPRS IPS Benchmark	0.02	2.82	6.12						
Assumed Rate 6.25%	1.53	3.08	4.65						

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended March 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
US Equity Composite									
Net of Fee Return	-0.69	5.27	9.83	12.82	9.80	12.42	9.23	6/30/92	9.67
Russell 3000	-0.64	5.65	10.48	13.81	10.22	13.03	9.62	6/30/92	9.82
Value Added	-0.05	-0.38	-0.65	-1.00	-0.43	-0.62	-0.39	6/30/92	-0.16
Non-US Equity Composite									
Net of Fee Return	0.09	5.65	12.79	19.83	7.86	7.22	1.84	3/31/00	2.57
Policy Index	-1.06	4.11	10.72	17.42	6.79	6.44	2.97	3/31/00	2.87
Value Added	1.15	1.54	2.07	2.41	1.06	0.79	-1.13	3/31/00	-0.30
Fixed Income Composite									
Net of Fee Return	-0.28	0.11	1.08	2.63	3.73	3.15	4.38	6/30/92	6.38
Policy Index	-1.13	-0.69	0.79	2.65	4.46	3.83	4.42	6/30/92	6.35
Value Added	0.85	0.80	0.29	-0.02	-0.73	-0.68	-0.04	6/30/92	0.03
Bloomberg Global Aggregate	1.36	2.45	4.26	6.97	3.14	1.49	2.57	6/30/92	5.20
Real Return Composite									
Net of Fee Return	-0.32	0.42	1.81	2.48	3.10	1.57		6/30/11	3.54
Real Return Index (I)	-1.60	-1.08	-0.56	-0.48	1.42	1.78		6/30/11	2.50
Value Added	1.29	1.50	2.37	2.96	1.68	-0.21		6/30/11	1.04
Real Estate Composite									
Net of Fee Return	2.27	4.59	7.23	9.60	9.60	9.01		6/30/09	9.24
NCREIF ODCE NOF 1 Quarter Lag	1.85	3.52	5.04	6.66	9.42	10.52		6/30/09	7.86
Value Added	0.42	1.07	2.19	2.94	0.18	-1.51		6/30/09	1.38
Absolute Return Composite									
Net of Fee Return	1.61	2.94	5.01	5.46	2.14	4.14		3/31/10	4.15
HFRI FOF Div (1 Month Lag)	1.43	3.13	4.78	5.73	1.84	3.50		3/31/10	3.09
Value Added	0.17	-0.20	0.23	-0.27	0.30	0.64		3/31/10	1.06

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended March 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Private Equity Composite									
Net of Fee Return	4.45	8.11	13.28	19.90	14.18	15.26	10.63	6/30/02	10.12
KRS Short Term PE Index	4.45	8.11	13.28	19.90	14.18	15.26	10.63	6/30/02	10.12
Value Added	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	6/30/02	-0.00
Russell 3000 +3% Qtr Lag	7.12	12.85	17.34	25.09	15.44	19.78	13.01	6/30/02	11.13
Cash Composite									
Net of Fee Return	0.50	1.13	1.52	1.75	0.83	0.59	0.55	6/30/92	2.67
91-Day Treasury Bill	0.35	0.63	0.90	1.10	0.53	0.34	0.34	6/30/92	2.63
Value Added	0.15	0.50	0.62	0.65	0.31	0.25	0.21	6/30/92	0.03