

What's going on in the marketplace?

Global equity markets continued their rise spurred on by solid corporate earnings and perceived progress in the vaccine efforts for COVID-19. U.S. equity markets generally outpaced Non-U.S. markets. Global bonds gained on the month due to lower interest rates and central bank support.

The KRS investment portfolio gained 2.7% versus the benchmark return of 3.0%.

Relative underperformance was primarily driven by weaker performance in the Specialty Credit, Core Fixed Income, Absolute Return portfolios, and U.S. Equity portfolios. In addition, the overweight position to Core Fixed Income and Cash allocations hampered performance as these were some of the lesser performing portions of the market. Offsetting some of the drag on relative performance was the relative strong performance of the Non-US Equity portfolio. The overweight position to the public equity markets was beneficial and helped bolster performance.

U.S. Equities

U.S. markets continued their strong performance during the month, as the Russell 3000 gained 5.7% during the month. All market cap segments were positive, with large caps leading the way with a return of 5.6%; mid-caps followed and then small caps returning 4.6% and 2.8%, respectively. Growth again outpaced value by 360 bps (R3000G 7.5%, R3000V 3.9%).

During the month, the KRS U.S. Equity portfolio trailed the Russell 3000 Index by 32 bps. From a stock selection perspective, relative performance of the individual mandates was primarily positive with the only noteworthy relative weakness coming from the all cap growth mandate. The effect of allocation positioning was relatively muted as the small nod down market cap and towards value created a slight drag on performance.

Non-U.S. Equities

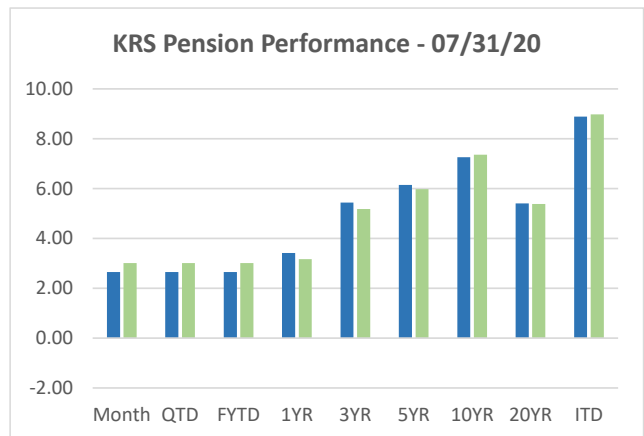
Non-U.S. equity gained 4.5% for the month per the MSCI ACWI-Ex US Index. Emerging markets (8.9%) outperformed their developed market counterparts, which gained 2.7%. Growth outpaced value in both developed and emerging countries.

The KRS Non-U.S. Equity portfolio gained 4.7% during the month, outpacing the benchmark by 17 bps. Stock selection was mixed amongst the active MSCI ACWI Ex-US and emerging markets mandates split by style bias, and created a slight drag on relative performance. From an allocation perspective, the portfolio benefitted from the small overweight to emerging markets, which provided strong absolute returns as, noted above.

Fixed Income

The fixed income markets were positive during the period, with higher risk segments leading the way. The U.S. Corporate High Yield and Leveraged Loan markets gained approximately 4.7% and 2.0%, respectively. The Barclays Universal Index rose 1.8% and the U.S. Aggregate returned 1.5%. The U.S. Intermediate Credit Index gained 0.6% for the month.

The KRS Specialty Credit allocation gained 2.2%, trailing the benchmark by roughly 1.1%, as a couple of the leveraged loan and high yield strategies struggled versus their respective indices. The KRS Core Fixed Income allocation gained 99 bps, underperforming the Bloomberg Barclays Aggregate (1.5%).



Relative underperformance was in part due to the tilt towards short-term U.S. credits within the allocation, whose performance trailed their longer counterparts during the month (shorter duration risk within the portfolio).

Alternative Assets

The diversifying strategy group gained 1.2% during the month; the Real Return portion of the group led the way with a 2.4% return. The Opportunistic portfolio earned 1.8%, followed by the Absolute Return portfolio, which returned 30 bps. The Real Estate portfolio lost 36 bps during the period. The Private Equity portion of the portfolio gained 0.4% during the month.

Cash

The Cash portfolio performed in line with the 3-month T-Bill, returning one basis point during the month.

NOTES:

- 1) Returns displayed are “net”. For the purposes of this report, total fund return information is net of fees and expenses, with audited data beginning in July 2011. At the manager level returns are net of fees beginning with July 2011, and gross of fees for prior data.
- 2) Individual plan allocation and performance (pg.4).
- 3) Prior to January 1, 2014, the inception date for the Private Equity asset class was stated as 10/1/1990 for Pension Fund and 6/1/2001 for Insurance Fund. Prior to 07/01/02, the characteristics of the allocation, and the benchmark itself, were more closely aligned with Real Estate. As such, it is not appropriate to report this portion of the return stream within the Private Equity allocation, whose true inception date has been determined to be 07/01/02 based on funding the Systems’ first private equity mandate. The portion of the original return streams that are no longer reported within the Private Equity allocation (Pension from 10/1/90 to 06/30/02; Insurance 06/01/01 to 06/30/02) are reported within the Fund Level performance figures.
- 4)

Private Equity Composite (Pension) Inception (07/01/02) to 06/30/11 60.00% S&P 1500 Composite Index 40.00% Barclays US Corporate High Yield Index 07/01/11 to 12/31/15 100.00% Russell 3000 Index + 4% (Qtr Lag) 01/01/16 to Present 100.00% Russell 3000 Index + 3% (Qtr Lag)	Private Equity Composite (Insurance) Inception (07/01/02) to 06/30/11 80.00% S&P 1500 Composite Index 20.00% Barclays US Corporate High Yield Index 07/01/11 to 12/31/15 100.00% Russell 3000 Index + 4% (Qtr Lag) 01/01/16 to Present 100.00% Russell 3000 Index + 3% (Qtr Lag)
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- 5) The Private Equity & Real Return Benchmarks, from one month returns up until five year returns, is equal to the performance of the associated KRS allocations. Given there is not appropriate benchmark to use for short term performance evaluation, this will allow greater focus on longer term returns, which is more appropriate given the long term nature of these investments.

<u>Pension Benchmark Composite 01/01/16 to 08/31/17</u> US Equity: Russell 3000 (25.6%) Non US Equity: MSCI AXCI Ex-US IMI (25.2%) Global Fixed Income: Barclays Universal Index (6.8%) Credit Fixed Income: Barclays US High Yield (7.2%) Real Estate: NCREIF ODCE (5.0%) Absolute Return: HFRI Diversified FOF (10.0%) Real Return: Allocation Specific (8.0%) Private Equity<5Yrs: Actual Performance Private Equity>5Yrs: Russell 3000 Index+3% (10.0%) Cash: Cit Grp 3-mos Treasury Bill (2.2%) <u>Pension Benchmark Composite 09/01/17 to 05/31/18 -</u> <u>Transition Period w/Sliding Targets</u> US Equity: Russell 3000 (23.6%) Non US Equity: MSCI AXCI Ex-US IMI (23.2%) Global Fixed Income: Barclays Universal Index (9.0%) Credit Fixed Income: Barclays US High Yield (9.0%)	<u>Insurance Benchmark Composite 01/01/16 to 08/31/17</u> US Equity: Russell 3000 (26.5%) Non US Equity: MSCI AXCI Ex-US IMI (26.5%) Global Fixed Income: Barclays Universal Index (6.0%) Credit Fixed Income: Barclays US High Yield (6.0%) Real Estate: NCREIF ODCE (5.0%) Absolute Return: HFRI Diversified FOF (10.0%) Real Return: Allocation Specific (8.0%) Private Equity<5Yrs: Actual Performance Private Equity>5Yrs: Russell 3000 Index+3% (10.0%) Cash: Cit Grp 3-mos Treasury Bill (2.0%) <u>Insurance Benchmark Composite 09/01/17 to 05/31/18 -</u> <u>Transition Period w/Sliding Targets</u> US Equity: Russell 3000 (24.5%) Non US Equity: MSCI AXCI Ex-US IMI (24.5%) Global Fixed Income: Barclays Universal Index (8.0%) Credit Fixed Income: Barclays US High Yield (8.0%)
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Real Estate: NCREIF ODCE (5.0%)
 Absolute Return: HFRI Diversified FOF (10.0%)
 Real Return<5yrs: Actual Performance
 Real Return>5yrs: CPI+3% (8%)
 Private Equity<5Yrs: Actual Performance
 Private Equity>5Yrs: Russell 3000 Index+3% (10.0%)
 Cash: Cit Grp 3-mos Treasury Bill (2.2%)
Pension Benchmark Composite 06/01/18 to 07/31/18
 US Equity: Russell 3000 (17.0%)
 Non US Equity: MSCI AXCI Ex-US IMI (21.0%)
 Global Fixed Income: Barclays Universal Index (13.0%)
 Credit Fixed Income: Barclays US High Yield (12.4%)
 Real Estate: NCREIF ODCE (5.0%)
 Absolute Return: HFRI Diversified FOF (10.0%)
 Real Return<5yrs: Actual Performance
 Real Return>5yrs: CPI+3% (10.0%)
 Private Equity<5Yrs: Actual Performance
 Private Equity>5Yrs: Russell 3000 Index+3% (9.4%)
 Cash: Cit Grp 3-mos Treasury Bill (2.2%)
Pension Benchmark Composite 07/31/18 to Present
US Equity: Russell 3000 (18.2%)
Non US Equity: MSCI AXCI Ex-US IMI (18.2%)
Core Fixed Income: Barclays US Aggregate (14.8%)
Specialty Credit/High Yield FI: Custom Benchmark (15.0%)
Real Estate: NCREIF ODCE (5.0%)
Absolute Return: HFRI Diversified FOF (3.0%)
Real Return<5yrs: Actual Performance
Real Return>5yrs: CPI+3% (15.0%)
Private Equity<5Yrs: Actual Performance
Private Equity>5Yrs: Russell 3000 Index+3% (9.4%)
Cash: Cit Grp 3-mos Treasury Bill (1.4%)

Real Estate: NCREIF ODCE (5.0%)
 Absolute Return: HFRI Diversified FOF (10.0%)
 Real Return<5yrs: Actual Performance
 Real Return>5yrs: CPI+3% (8%)
 Private Equity<5Yrs: Actual Performance
 Private Equity>5Yrs: Russell 3000 Index+3% (10.0%)
 Cash: Cit Grp 3-mos Treasury Bill (2.0%)
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 Absolute Return: HFRI Diversified FOF (10.0%)
 Real Return<5yrs: Actual Performance
 Real Return>5yrs: CPI+3% (10.0%)
 Private Equity<5Yrs: Actual Performance
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Insurance Benchmark Composite 07/31/18 to Present
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Real Estate: NCREIF ODCE (10.0%)
Absolute Return: HFRI Diversified FOF (3.0%)
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Cash: Cit Grp 3-mos Treasury Bill (1.0%)

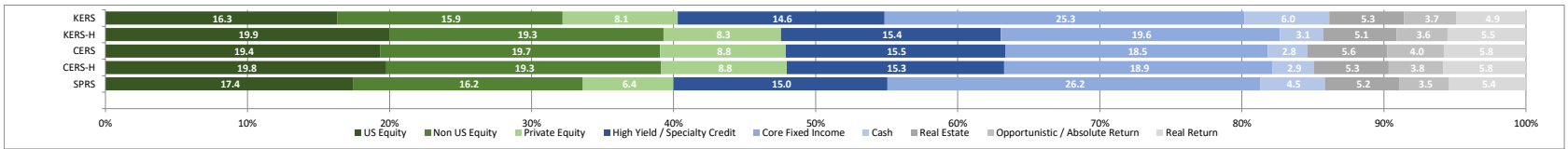
**Fund composite benchmark is a roll-up of individual plans, which may differ from one another.

KENTUCKY RETIREMENT SYSTEMS - PENSION FUND - NET RETURNS - 07/31/20

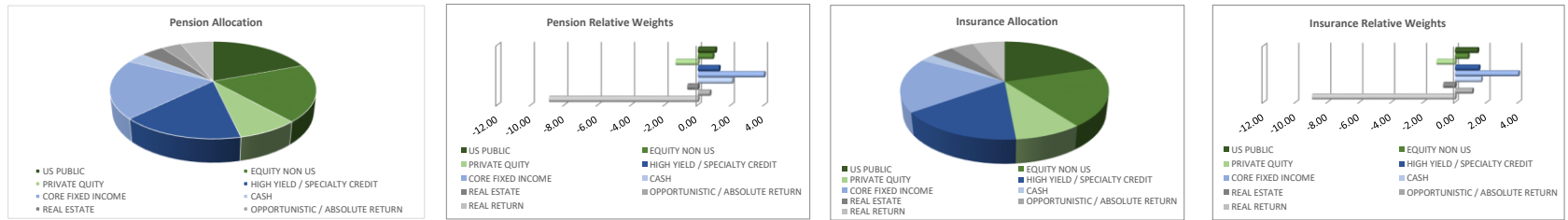
Structure	Benchmark	Inception	Market Value	% of Total	Month		QTD		Fiscal YTD		1 Year		3 Years		5 Years		10 Years		20 Years		ITD	
					KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark
TOTAL FUND	KY Ret. Blended Index	4/1/1984	13,057,302,744.06	100.00	2.65	3.01	2.65	3.01	2.65	3.01	3.41	3.16	5.43	5.18	6.14	5.98	7.26	7.36	5.40	5.38	8.88	8.97
GROWTH		7/1/2018	8,184,319,994.42	62.68	3.67	3.67	3.67	3.67	3.67	3.67	3.82	3.16									4.93	4.93
PUBLIC EQUITY	Global Equity Blended Index	4/1/1984	5,008,873,960.05	38.36	5.03	5.11	5.03	5.11	5.03	5.11	6.31	5.81	6.62	6.32	7.27	7.04	8.76	8.83	4.80	4.75	10.27	10.11
US PUBLIC	KY Domestic Equity Blend	4/1/1984	2,515,126,664.20	19.26	5.36	5.68	5.36	5.68	5.36	5.68	9.00	10.39	10.23	11.39	10.04	10.89	12.79	13.58	6.36	6.83	11.21	11.33
EQUITY NON US	KY Ret.Int'l Eq. Blended Index	7/1/2000	2,493,747,295.85	19.10	4.70	4.53	4.70	4.53	4.70	4.53	3.42	0.72	3.44	1.26	4.83	3.34	5.19	4.88			3.11	3.16
PRIVATE EQUITY	Russell 3000 + 3%(Qtr Lag)	7/1/2002	1,050,823,336.02	8.05	0.35	0.35	0.35	0.35	0.35	0.35	-1.56	-1.56	8.51	8.51	8.82	8.82	11.30	14.79			10.53	11.00
HIGH YIELD / SPECIALTY CREDIT	High Yield Custom Benchmark	7/1/2017	2,124,622,698.35	16.27	2.19	3.32	2.19	3.32	2.19	3.32	0.33	1.62	3.82	3.52							4.34	3.73
FIXED INCOME / LIQUIDITY		7/1/2018	3,025,306,505.63	23.17	0.85	0.85	0.85	0.85	0.85	0.85	4.93										5.44	5.44
CORE FIXED INCOME	Bloomberg Barclays US Aggregate	7/1/2013	2,570,295,080.66	19.68	0.99	1.49	0.99	1.49	0.99	1.49	6.24	10.12	4.37	5.69	3.86	4.47					3.69	4.13
CASH	Citigroup Treasury Bill-3 Month	1/1/1988	455,011,424.97	3.48	0.01	0.01	0.01	0.01	0.01	0.01	1.70	1.36	2.02	1.70	1.52	1.15	0.93	0.61	1.98	1.55	3.50	3.06
DIVERSIFYING STRATEGIES		7/1/2018	1,848,445,090.81	14.16	1.20	1.20	1.20	1.20	1.20	1.20	-1.79										1.59	1.59
REAL ESTATE	NCREIF NFI-ODCE Net 1 Qtr in Arrears Index*	7/1/1984	568,901,893.51	4.36	-0.36	0.00	-0.36	0.00	-0.36	0.00	9.09	3.93	9.75	5.85	9.69	7.48	10.55	10.42	7.07	7.07	6.25	6.37
OPPORTUNISTIC / ABSOLUTE R	HFRFI Diversified		485,846,932.85	3.72	0.28	2.23	0.28	2.23	0.28	2.23	-4.51	2.71	-0.07	3.08	0.14	2.13					2.85	2.93
REAL RETURN	Pension Real Return Custom Benchmark	7/1/2011	793,696,264.45	6.08	2.35	2.35	2.35	2.35	2.35	2.35	-6.97	-6.97	-0.60	-0.60	1.74	1.74					2.56	1.66

KENTUCKY RETIREMENT SYSTEMS - PENSION FUND - PLAN NET RETURNS - 07/31/20

Plan	Benchmark	Inception	Market Value	% of Total	Month		3 Months		Fiscal YTD		1 Year		3 Years		5 Years		10 Years		20 Years		ITD	
					KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark
KERS	KY Ret. KERS Plan Index		2,371,078,767.82	100.00	2.39	2.84	5.96	6.12	2.39	2.84	4.29	3.60	5.44	5.22	5.77	5.88	7.13	7.26	5.34	5.33	8.84	8.94
KERS- H	KY Ret. KERS Haz Plan Index		712,953,438.44	100.00	2.73	3.06	6.43	6.52	2.73	3.06	3.30	3.18	5.37	5.28	6.17	6.06	7.27	7.34	5.41	5.37	8.88	8.97
CERS	KY Ret. CERS Plan Index		7,241,270,505.06	100.00	2.71	3.06	6.16	6.52	2.71	3.06	3.17	3.18	5.37	5.28	6.19	6.06	7.27	7.34	5.41	5.37	8.88	8.97
CERS- H	KY Ret. CERS Haz Plan Index		2,438,498,399.66	100.00	2.72	3.06	6.15	6.52	2.72	3.06	3.06	3.18	5.34	5.28	6.19	6.05	7.27	7.34	5.41	5.37	8.88	8.97
SPRS	KY Ret. SPRS Plan Index		293,501,634.92	100.00	2.53	2.84	6.35	6.12	2.53	2.84	4.40	3.60	5.45	5.24	5.76	5.89	7.06	7.25	5.30	5.33	8.82	8.94



Note: The above chart displays the average monthly allocation.

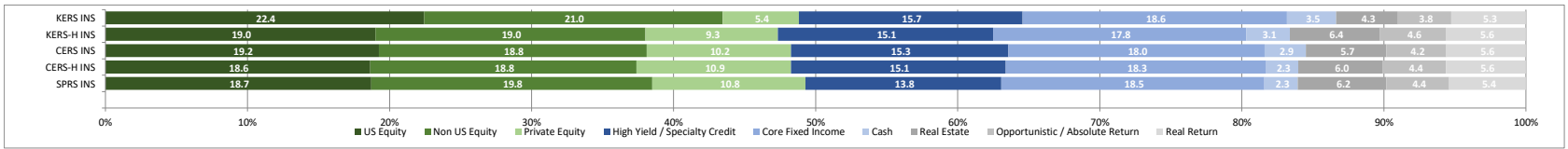


KENTUCKY RETIREMENT SYSTEMS - INSURANCE FUND - NET RETURNS - 07/31/20

Structure	Benchmark	Inception	Market Value	% of Total	Month		QTD		Fiscal YTD		1 Year		3 Years		5 Years		10 Years		20 Years		ITD	
					KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark
TOTAL FUND	KY Ret. Blended Index	4/1/1987	5,640,633,038.15	100.00	2.74	3.09	2.74	3.09	2.74	3.09	2.88	2.95	5.33	5.22	6.21	6.13	7.23	7.84	4.88	5.06	7.26	7.60
GROWTH	Growth Custom Benchmark	7/1/2018	3,670,629,337.97	65.07	3.65	6.32	3.65	6.32	3.65	6.32	5.62										4.25	6.50
PUBLIC EQUITY	Global Equity Blended Index	7/1/1992	2,241,620,098.01	39.74	5.06	5.10	5.06	5.10	5.06	5.10	6.26	5.77	6.55	6.28	7.34	7.03	8.68	8.75	5.05	4.64	8.49	8.28
US PUBLIC	KY Domestic Equity Blend	7/1/1992	1,137,587,432.01	20.17	5.36	5.68	5.36	5.68	5.36	5.68	8.90	10.93	10.18	11.39	10.18	10.89	12.79	13.53	6.62	6.48	9.66	9.66
EQUITY NON US	KY Ret.Int'l Eq. Blended Index	4/1/2000	1,104,032,666.00	19.57	4.76	4.53	4.76	4.53	4.76	4.53	3.37	0.72	3.31	1.26	4.74	3.34	4.94	4.84			3.09	2.40
PRIVATE EQUITY	Russell 3000 + 3%(Qtr Lag)	7/1/2002	498,249,721.94	8.83	0.33	0.33	0.33	0.33	0.33	0.33	-6.70	-6.70	7.30	7.30	9.09	9.09	12.16	15.01			9.31	10.49
HIGH YIELD / SPECIALTY CREDIT	Bloomberg Barclays US High Yield	7/1/2017	930,759,518.02	16.50	2.14	3.32	2.14	3.32	2.14	3.32	0.02	1.62	3.78	3.52							4.02	3.73
FIXED INCOME / LIQUIDITY		7/1/2018	1,160,177,874.80	20.57	0.90	0.90	0.90	0.90	0.90	0.90	4.94										5.36	5.36
CORE FIXED INCOME	Bloomberg Barclays US Aggregate	7/1/2013	1,010,926,296.89	17.92	1.03	1.49	1.03	1.49	1.03	1.49	5.87	10.12	4.27	5.69	3.80	4.47					3.35	4.13
CASH	Citigroup Treasury Bill-3 Month	7/1/1992	149,251,577.91	2.65	0.01	0.01	0.01	0.01	0.01	0.01	1.24	1.36	1.75	1.70	1.25	1.15	0.76	0.61	1.74	1.55	2.58	2.46
DIVERSIFYING STRATEGIES		7/1/2018	810,285,749.88	14.37	1.39	1.39	1.39	1.39	1.39	1.39	-0.51										2.24	2.24
REAL ESTATE	NCREIF NFI-ODCE Net 1 Qtr in Arrears Index*	5/1/2009	239,654,609.29	4.25	-0.25	0.00	-0.25	0.00	-0.25	0.00	9.42	3.93	9.90	5.85	10.00	7.48					9.17	5.80
OPPORTUNISTIC / ABSOLUTE R	HFRFI Diversified		230,780,508.44	4.09	0.29	2.23	0.29	2.23	0.29	2.23	-4.52	2.71	-0.02	3.08	0.17	2.13					2.81	2.93
REAL RETURN	Pension Real Return Custom Benchmark	7/1/2011	339,850,632.15	6.03	2.65	2.65	2.65	2.65	2.65	2.65	-4.54	-4.54	0.23	0.23	2.11	2.11					2.63	2.00

KENTUCKY RETIREMENT SYSTEMS - INSURANCE FUND - PLAN NET RETURNS - 07/31/20

Plan	Benchmark	Inception	Market Value	% of Total	Month		3 Months		Fiscal YTD		1 Year		3 Years		5 Years		10 Years		20 Years		ITD	
					KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark
KERS INS	KY Ins. KERS Plan Index		1,023,540,389.59	100.00	2.96	3.10	6.94	6.31	2.96	3.10	3.63	3.05	4.98	5.23	5.92	6.09	6.99	7.74	4.76	5.01	7.19	7.57
KERS- H INS	KY Ins. KERS Haz Plan Index		526,548,920.18	100.00	2.67	3.10	5.66	6.31	2.67	3.10	2.54	3.05	5.14	5.30	6.06	6.14	7.18	7.77	4.85	5.03	7.25	7.58
CERS INS	KY Ins. CERS Plan Index		2,552,972,749.19	100.00	2.71	3.10	5.67	6.31	2.71	3.10	2.74	3.05	5.36	5.31	6.22	6.15	7.26	7.78	4.90	5.08	7.27	7.59
CERS- H INS	KY Ins. CERS Haz Plan Index		1,333,416,003.22	100.00	2.67	3.10	5.47	6.31	2.67	3.10	2.59	3.05	5.37	5.31	6.26	6.15	7.28	7.79	4.90	5.08	7.28	7.59
SPRS INS	KY Ins. SPRS Plan Index		204,154,973.26	100.00	2.64	3.10	5.45	6.31	2.64	3.10	2.94	3.05	5.48	5.31	6.31	6.15	7.30	7.79	4.92	5.03	7.29	7.59



Note: The above chart displays the average monthly allocation.