August	KRS MONTHLY PERFORMANCE UPDATE
2018	KNS WONTHET FENTONWANCE OF DATE

## What's going on in the marketplace?

The basket of global stocks was positive during the month; however, this performance was really driven by U.S. equity markets. Outside of the U.S., equity markets fell as investors continued to worry about a slowdown in China among other geopolitical concerns causing some investors to seek safety in U.S. Treasuries. In general, U.S. bond yields declined during the month. Non-U.S. bonds fell during the period.

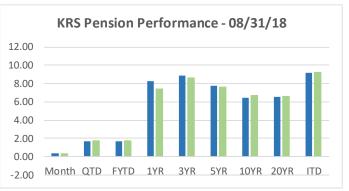
# **U.S. Equities**

U.S. equity markets gained approximately 3.5% (Russell 3000) on the month. All market cap segments performed well with small caps leading with a return of 4.3% (Russell 2000). Large caps returned approximately 3.25% (S&P 500) during the period. The real discrepancy in performance came from the style factor, where growth significantly outperformed value by nearly 4% (R3000G 5.5%, R3000V 1.6%).

The KRS U.S. Equity portfolio underperformed the Russell 3000 by 64 bps during the month (2.9% vs 3.5%). The portfolio's relative performance was driven by both stock selection and allocation. From a stock selection perspective, the portfolio's growth mandate trailed the index by nearly 140 bps. The internal factor based portfolio also struggled against the large cap index returning 1.7% versus 3.3%, this points to allocation as value was a headwind during the period.

## Non-U.S. Equities

Non-U.S. equities were weak during the period, declining approximately -1.9%. Developed markets outperformed their emerging market counterparts as currency weakness in those markets weighed heavy on performance. While growth outperformed value during the period, this relative style bias discrepancy in performance was not as pronounced as it was in the domestic markets.



The KRS Non-U.S. Equity portfolio provided 33 bps of downside protection during the period, falling -1.6% versus the market return of -1.9%. Relative outperformance was driven primarily by stock selection, with all four active large/mid cap managers outperforming the index on average providing nearly 70 basis points of downside protection. This was partially offset by weaker performance in the small cap space. Allocation decisions had little impact on relative performance.

## **Fixed Income**

Fixed income market segments were positive in terms of performance during the mon th. The corporate high yield market rose three-quarters of a point, the core space as defined by the U.S. Aggregate gained 64 bps, intermediate credit was up 0.6%, and leveraged loans were up 40 bps during the period.

The specialty credit portion of the KRS portfolio returned 63 bps on the month, while the core fixed income piece of the portfolio gained 0.6%. Manager performance was mixed in terms of relative performance, with notable strong relative performance being provided by several high yield managers.

## **Alternative Assets**

The diversifying strategy group was relatively flat during the month, falling roughly 13 bps. The Opportunistic and Absolute Return portion of the portfolio gained 14bps and 5 bps, respectively. The Real Estate portfolio was flat, while the Real Return portfolio fell approximately 0.3%. The Private Equity portion of the portfolio was also flat during the period.

### Cash

The cash portfolio basically performed inline during the month (0.15% vs 0.17%). The cash allocation finished the period above target due to transitioning assets while moving towards the newly approved asset allocation.

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.

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)

Insurance Benchmark Composite 01/01/16 to 08/31/17

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.

Pension Benchmark Composite 01/01/16 to 08/31/17 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%) Pension Benchmark Composite 09/01/17 to 05/31/18 -Transition Period w/Sliding Targets 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%) 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 Present 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%)

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%) Insurance Benchmark Composite 09/01/17 to 05/31/18 -Transition Period w/Sliding Targets 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%) 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%) Insurance Benchmark Composite 06/01/18 to Present US Equity: Russell 3000 (17.9%) Non US Equity: MSCI AXCI Ex-US IMI (21.9%) Global Fixed Income: Barclays Universal Index (13.0%) Credit Fixed Income: Barclays US High Yield (11.0%) 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% (9.2%) Cash: Cit Grp 3-mos Treasury Bill (2.0%)

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

				KENTUC	KY RETIRE	MENT SYS	STEMS -	PENSION FL	JND - NET	RETURNS	08/31/1	8										
Structure	Benchmark	Inception	Market Value	% of Total	Mon	th		QTD	Fisca	I YTD	1 Ye	ar	3 Ye	ars	5 Year	rs	10 Y	'ears	20 Yea	ars	ITC	
					KRS I	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS B	enchmark	KRS	Benchmark	KRS E	Benchmark	KRS	Benchmark
TOTAL FUND	KY Ret. Blended Index	4/1/1984	12,433,803,822.29	100.00	0.33	0.37	1.72	1.74	1.72	1.74	8.26	7.50	8.85	8.66	7.78	7.69	6.45	6.74	6.59	6.66	9.15	9.25
GROWTH			7,925,325,310.96	63.74	0.40		2.26		2.26												2.26	
US PUBLIC	KY Domestic Equity Blend	4/1/1984	2,247,979,009.78	18.08	2.87	3.51	6.33	6.95	6.33	6.95	19.90	20.25	15.26	15.86	13.41	14.25	10.45	10.90	8.27	8.40	11.50	11.55
EQUITY NON US	KY Ret.Int'l Eq. Blended Index	7/1/2000	2,591,293,808.26	20.84	-1.61	-1.94	0.44	0.17	0.44	0.17	6.54	3.53	9.76	8.59	6.79	5.91	4.56	4.09			3.26	3.52
PRIVATE QUITY	Russell 3000 + 3%(Qtr Lag)	7/1/2002	1,190,899,730.70	9.58	-0.03	-0.03	0.15	0.15	0.15	0.15	13.98	13.98	10.84	10.84	12.82	12.82	8.80	13.81			11.06	11.45
HIGH YIELD / SPECIALTY CREI	DIT Bloomberg Barclays US High Yield		1,895,152,762.22	15.24	0.63		1.46		1.46		5.63										6.35	
FIXED INCOME / LIQUIDITY			2,471,347,054.33	19.88	0.51		0.75		0.75												0.75	
CORE FIXED INCOME	Bloomberg Barclays US Aggregate		1,479,933,258.06	11.90	0.60	0.64	0.85	0.67	0.85	0.67	0.08	-1.05	2.31	1.76	2.84	2.49					2.65	3.62
CASH	Citigroup Treasury Bill-3 Month	1/1/1988	991,413,796.27	7.97	0.15	0.17	0.34	0.33	0.34	0.33	2.03	1.49	1.22	0.75	0.81	0.46	0.76	0.32	2.31	1.85	3.59	3.14
DIVERSIFYING STRATEGIES			2,037,337,556.55	16.39	-0.13		0.88		0.88												0.88	
REAL ESTATE	NCREIF NFI-ODCE Net 1 Qtr in Arrears Index <sup>A</sup>	7/1/1984	435,617,418.93	3.50	-0.02	0.00	1.48	0.00	1.48	0.00	13.23	7.11	10.62	9.00	9.52	10.42	8.50	4.16	7.15	7.85	6.12	6.42
OPPORTUNISTIC / ABSOLUTE	RI HFRI Diversified		531,667,136.03	4.28	0.05	0.54	0.21	0.85	0.21	0.85	4.29	4.17	1.76	2.02	3.54	3.38					4.09	3.11
REAL RETURN	Pension Real Return Custom Benchmark	7/1/2011	1,070,053,001.59	8.61	-0.28	-0.28	1.05	1.05	1.05	1.05	1.45	1.45	5.13	5.13	3.31	3.31					3.77	2.61

#### KENTUCKY RETIREMENT SYSTEMS - PENSION FUND - PLAN NET RETURNS - 08/31/18

Plan	Benchmark	Inception Market Value	% of Total	Month		3 Mont	hs	Fiscal YT	rd	1 Year		3 Years		5 Years		10 Year		20 Year		ITD	
KERS	KY Ret. KERS Plan Index	2,021,174,899.50	100.00	0.34	0.35	1.45	1.68	1.61	1.64	7.27	6.89	7.72	8.03	7.30	7.30	6.22	6.57	6.48	6.57	9.08	9.20
KERS- H	KY Ret. KERS Haz Plan Index	659,902,308.14	100.00	0.33	0.36	1.68	1.74	1.73	1.75	8.36	7.75	9.00	8.76	7.86	7.63	6.49	6.72	6.61	6.65	9.16	9.25
CERS	KY Ret. CERS Plan Index	7,111,868,743.42	100.00	0.32	0.36	1.69	1.74	1.73	1.75	8.41	7.74	9.08	8.78	7.87	7.63	6.50	6.72	6.61	6.65	9.16	9.25
CERS- H	KY Ret. CERS Haz Plan Index	2,375,040,064.66	100.00	0.32	0.36	1.72	1.74	1.73	1.75	8.43	7.75	9.09	8.77	7.88	7.63	6.50	6.72	6.62	6.65	9.16	9.25
SPRS	KY Ret. SPRS Plan Index	265,817,801.51	100.00	0.35	0.32	1.51	1.79	1.65	1.61	7.36	7.22	7.94	8.34	7.16	7.36	6.15	6.59	6.44	6.58	9.06	9.21



Note: The above chart displays the average monthly allocation



#### KENTUCKY RETIREMENT SYSTEMS - INSURANCE FUND - NET RETURNS - 08/31/18

Structure	Benchmark	Inception	Market Value	% of Total	Mo	nth	Q	D	Fiscal	YTD	1 Yea	ar	3 Ye	ears	5 Yea	ars	10 Y	ears	20 Y	ears	ITD	
					KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS E	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS B	Benchmark
TOTAL FUND	KY Ret. Blended Index	4/1/1987	5,217,474,736.05	100.00	0.33	0.38	1.74	1.76	1.74	1.76	8.76	8.04	9.31	9.09	7.85	8.03	5.88	6.45	6.02	6.32	7.49	7.84
GROWTH		7/1/2018	3,391,984,910.81	65.01	0.40		2.29		2.29												2.29	
US PUBLIC	KY Domestic Equity Blend	7/1/1992	995,232,740.20	19.07	2.88	3.51	6.34	6.95	6.34		19.86	20.25	15.56	15.86	13.60	14.25	10.49	10.85	8.20	7.99	9.94	9.83
EQUITY NON US	KY Ret.Int'l Eq. Blended Index	4/1/2000	1,133,492,183.22	21.72	-1.61	-1.94	0.46	0.17	0.46	0.17	6.35	3.53	9.67	8.59	6.70	5.91	4.16	3.73			3.24	2.67
PRIVATE QUITY	Russell 3000 + 3%(Qtr Lag)	7/1/2002	525,790,142.25	10.08	-0.03	-0.03	0.14	0.14	0.14	0.14	18.03	18.03	13.87	13.87	15.54	15.54	11.07	13.19			10.16	10.87
HIGH YIELD / SPECIALTY CRED	IT Bloomberg Barclays US High Yield		737,469,845.14	14.13	0.58		1.39		1.39		5.28										5.81	
FIXED INCOME / LIQUIDITY		7/1/2018	976,074,246.51	18.71	0.51		0.76		0.76												0.76	
CORE FIXED INCOME	Bloomberg Barclays US Aggregate	7/1/2013	592,227,851.22	11.35	0.60	0.64	0.86	0.67	0.86	0.67	0.17	-1.05	2.32	1.76	2.44	2.49					2.26	2.60
CASH	Citigroup Treasury Bill-3 Month	7/1/1992	383,846,395.29	7.36	0.16	0.17	0.34	0.33	0.34	0.33	1.74	1.49	0.94	0.75	0.64	0.46	0.49	0.32	2.03	1.85	2.64	2.50
DIVERSIFYING STRATEGIES		7/1/2018	849,555,790.80	16.28	-0.11		0.79		0.79												0.79	
REAL ESTATE	NCREIF NFI-ODCE Net 1 Qtr in Arrears Index <sup>^</sup>	5/1/2009	178,900,760.53	3.43	-0.02	0.00	1.48	0.00	1.48	0.00	13.17	7.11	10.97	9.00	9.54	10.42					9.22	5.87
OPPORTUNISTIC / ABSOLUTE I	RI HFRI Diversified		220,747,639.94	4.23	0.09	0.54	0.23	0.85	0.23	0.85	4.36	4.17	1.77	2.02	3.55	3.38					4.03	3.11
REAL RETURN	Pension Real Return Custom Benchmark	7/1/2011	449,907,390.33	8.62	-0.25	-0.25	0.85	0.85	0.85	0.85	1.20	1.20	4.81	4.81	3.08	3.08					3.46	2.66

			ENTUCKY R	ETIREMENT	SYSTEM	1S - INSURA	NCE FUN	D - PLAN N	ET RETUR	RNS - 08/31	L/18										
Plan	Benchmark	Inception Market Value	% of Total	Month		3 Mont	hs.	Fiscal YT		1 Year		3 Years		5 Years		10 Year		20 Year			
KERS INS	KY Ins. KERS Plan Index	853,435,136.53	100.00	0.37	0.40	1.65	1.85	1.87	1.87	7.77	7.99	8.89	9.09	7.40	7.79	5.65	6.34	5.91	6.27	7.41	7.81
KERS - H INS	KY Ins. KERS Haz Plan Index	518,997,350.20	100.00	0.34	0.37	1.81	1.93	1.72	1.73	8.56	8.08	9.22	9.07	7.82	7.83	5.87	6.36	6.02	6.28	7.48	7.81
CERS INS	KY Ins. CERS Plan Index	2,371,181,201.60	100.00	0.32	0.37	1.90	1.93	1.70	1.73	8.89	8.12	9.35	9.06	7.91	7.86	5.91	6.38	6.04	6.28	7.50	7.82
CERS - H INS	KY Ins. CERS Haz Plan Index	1,281,950,880.90	100.00	0.32	0.37	1.93	1.93	1.70	1.73	8.99	8.12	9.43	9.06	7.96	7.86	5.94	6.38	6.05	6.28	7.50	7.82
SPRS INS	KY Ins. SPRS Plan Index	191,910,162.84	100.00	0.33	0.37	1.92	1.93	1.72	1.73	9.05	8.12	9.40	9.06	7.95	7.87	5.93	6.38	6.05	6.29	7.50	7.82

KERS INS	2	20.6		23.9	5.4	19.	3	9.9	3.7	4.2	4.3	8.7
KERS-H INS	18.2		21.8		9.5	16.5		12.2	3.5	5.2	4.7	8.4
CERS INS	18.1		21.7		11.0	16.2		11.0	3.8	4.9	4.4	8.9
CERS-H INS	18.2		21.8		11.5	16.	4	10.7	3.4	5.0	4.5	8.5
SPRS INS	18.5		22.	0	11.7		17.3	10.2	2.3	5.3	4.7	7.9
1												
09	% 10	0% 20 ∎ US E	% 30 Equity ■ Non US Equity ■	40 Private Equity ■ High Yield / S	0% 50 Specialty Credit ■ Core Fixed Ir	0% ncome ■Cash ■ Real Esta	)% te ■ Opportunistic / Absolut	70% e Return 🔲 Real Return	80%		90%	100%

Note: The above chart displays the average monthly allocation.