What's going on in the marketplace?

In general, global stocks were positive during the month partially reversing October's tumble. The markets remained volatile during the period due to economic slowing in Europe and China, concerns surrounding trade policy, and continued uncertainty surrounding Brexit. In response to the equity markets' volatility, some investors moved towards quality and safer assets, many seeking refuge in the fixed income markets, particularly U.S. Treasuries.

U.S. Equities

U.S. equity markets partially bounced back during the month, the Russell 3000 Index gained 2.0%. Mid-caps led the way returning just over 3%, followed by large and then small caps which returned 2.0% and 1.6%, respectively. Value outpaced growth for the second straight month, evidenced by the Russell 3000 style indices (R3000V 2.9%, R3000V 1.1%).

The KRS U.S. Equity portfolio outperformed the Russell 3000 by 12 bps during the month (2.1% vs 2.0%). The portfolio's relative performance was driven by both stock selection and allocation. From a stock selection perspective, the relative performance of the individual strategies were mixed, with the internal mid cap and internal factor based mandates outpacing their respective benchmarks. From an allocation perspective, the value tilt and slightly overweight mid cap positioning was a tailwind during the period.

Non-U.S. Equities

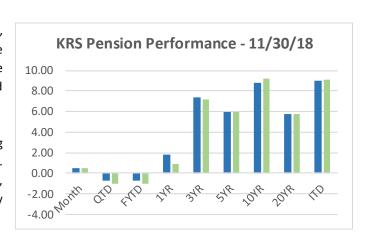
While positive, Non-U.S. equities were weaker than the U.S. markets, returning 0.85% during the month. Emerging markets outperformed their developed market counterparts. Non-U.S. markets also favored value during the period.

The KRS Non-U.S. Equity portfolio trailed the index by 47 basis points during the month (0.4% vs 0.5%). Stock selection was difficult as three of the four active large cap managers underperformed their associated index, leaving the remaining manager and small cap mandate as the lone outperformers. Allocation decisions had little impact on relative performance.

Fixed Income

Fixed income market segments were mixed. In general, those spaces seen as "safer" tended to do well, while those higher yielding segments struggled. The U.S. Aggregate gained 60 bps, while the corporate high yield and leveraged loan areas fell approximately -90 bps.

The core portion of the KRS portfolio gained 15 bps during the period, while the specialty credit piece fell -0.1%. Relative performance within the core portfolio was difficult, while additive in the specialty credit portfolio, especially within the leveraged loan mandates.



Alternative Assets

The diversifying strategy group was relatively flat during the period losing just -4 bps. The Opportunistic, Real Return, and Real Estate portions of the portfolio returned 0.8%, 0.3%, and 0.0%, respectively. The Absolute Return portion of the portfolio declined -1.1%. The Private Equity portion of the portfolio was also relatively flat gaining 5 bps during the month.

Cash

The cash portfolio performed inline during the month (0.2% vs 0.2%). The cash allocation finished the period above target in part due to the continued transitioning of assets to 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).
- 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) Private Equity Composite (Insurance)

Inception (07/01/02) to 06/30/11 Inception (07/01/02) to 06/30/11

60.00% S&P 1500 Composite Index 80.00% S&P 1500 Composite Index

40.00% Barclays US Corporate High Yield Index 20.00% Barclays US Corporate High Yield Index

07/01/11 to 12/31/15 07/01/11 to 12/31/15

100.00% Russell 3000 Index + 4% (Qtr Lag) 100.00% Russell 3000 Index + 4% (Qtr Lag)

01/01/16 to Present 01/01/16 to Present

100.00% Russell 3000 Index + 3% (Qtr Lag) 100.00% Russell 3000 Index + 3% (Qtr Lag)

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<SYrs: 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 -

<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%)

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%)

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

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

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 -

<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%)

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%)

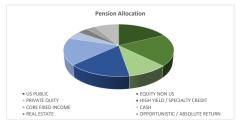
Absolute Return: HFRI Diversified FOF (10.0%)
Real Return<5yrs: Actual Performance
Real Return>5yrs: CPI+3% (10.0%)
Private Equity<5Yrs: Actual Performance
Private Equity>5Yrs: Russell 3000 Index+3% (9.2%)

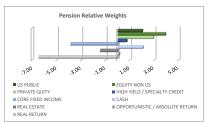
Cash: Cit Grp 3-mos Treasury Bill (2.0%)

KENTUCKY RETIREMENT SYSTEMS - PENSION FUND - NET RETURNS - 11/30/18 3 Years 5 Years 10 Years 20 Years ITD KRS Benchmark TOTAL FUND KY Ret. Blended Index 4/1/1984 12.072.438.331.95 100.00 0.46 0.47 -5.75 -0.75 -1.02 1.81 0.89 7.43 7.17 5.93 5.93 8.78 9.16 5.74 5.79 9.00 9.10 7,616,590,483.71 0.69 GROWTH 63.09 -8.67 -1.25 -1.25 US PUBLIC KY Domestic Equity Blend 4/1/1984 2,143,989,880.64 17.76 2.12 2.00 -14.84 -14.30 1.22 4.61 5.53 11.18 11.80 9.68 10.62 13.76 14.46 6.89 7.05 11.23 11.28 0.21 KY Ret.Int'l Eq. Blended Index Russell 3000 + 3%(Qtr Lag) 7/1/2000 7/1/2002 2,374,303,372.79 1,197,656,954.47 19.67 0.38 -7.47 5.30 -7.22 5.30 -6.74 15.14 -8.49 15.14 6.41 11.39 5.70 11.39 2.13 13.48 8.06 18.91 2.75 3.04 11.80 FOUITY NON US 0.85 -12.64 -11.88 2.77 8.01 PRIVATE QUITY -0.06 0.05 -0.06 13.48 11.23 HIGH YIELD / SPECIALTY CREDIT Bloomberg Barclays US High Yield 1,900,640,275.81 3.59 FIXED INCOME / LIQUIDITY 2.618.777.723.94 21 69 0.15 0.73 0.48 0.48 Bloomberg Barclays US Aggregate 0.78 CORE FIXED INCOME 2,007,415,772.20 16.63 0.15 0.60 0.38 -1.34 1.33 2.43 3.44 -0.18 -0.19 1.95 2.32 2.03 Citigroup Treasury Bill-3 Month 1/1/1988 611,361,951.74 0.18 0.58 0.57 0.87 2.28 1.76 1.38 0.93 0.90 0.57 0.78 0.34 2.27 3.13 DIVERSIFYING STRATEGIES 1.837.585.373.17 15.22 -0.04 -2.35 -0.37 -0.37 REAL ESTATE NCREIF NFI-ODCE Net 1 Qtr in Arrears Index^ 7/1/1984 429,213,698.75 3.56 0.00 0.00 0.42 1.81 11.52 7.47 9.50 10.03 8.67 7.69 6.12 6.43 3.15 10.17 8.38 4.34 7.00 OPPORTUNISTIC / ABSOLUTE RI HFRI Diversified 378,247,960.64 3.14 -1.11 -0.59 -0.65 -0.39 -2.63 2.66 -1.00 2.42 1.81 2.91 2.32 3.90 2.61 REAL RETURN Pension Real Return Custom Benchmark 7/1/2011 1,030,123,713.78 8.53 0.28 0.28 -4.46 -1.90 -1.90 -1.53 -1.53 4.66 4.66 2.22 2.22 3.23 2.11 KENTUCKY RETIREMENT SYSTEMS - PENSION FUND - PLAN NET RETURNS - 11/30/18 2,000,309,594.55 643,231,442.29 6.54 7.55 6.74 7.31 5.71 5.96 5.63 5.82 8.60 8.81 5.65 5.75 5.72 5.77 9.06 9.09 KERS KY Ret. KERS Plan Index 100.00 0.39 0.42 -1 92 -n 34 1 88 1.02 9.02 8.95 KERS- H 100.00 KY Ret. KERS Haz Plan Index 0.46 0.47 -2.51 -2.74 -0.82 -1.06 1.74 0.89 9.14 9.01 CERS KY Ret. CERS Plan Index 6,867,212,266.94 100.00 0.47 0.47 -2.56 -2.74 -0.88 -1.06 1.72 0.89 7.60 7.32 5.95 5.82 8.81 9.14 5.75 5.77 9.01 9.09 0.47 0.47 7.61 6.64 7.31 6.93 5.98 5.35 5.82 5.58 9.14 5.77 5.71 CERS- H KY Ret. CERS Haz Plan Inde: 2,298,922,769.11 100.00 -2.56 -2.74 -0.87 -1.06 1.76 0.89 8.82 5.75 9.01 9.09 KY Ret. SPRS Plan Index 262,762,259.38 100.00 -2.22 -2.47 -0.60 1.54 0.92 8.50 5.60 8.92 9.05 SPRS -0.89 KERS 14.5 KERS-H 17.7 20.0 5.0 4.7 3.2 CERS 18.0 20.3 22.8 4.3 4.9 3.5

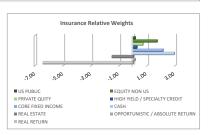


Note: The above chart displays the average monthly allocation.



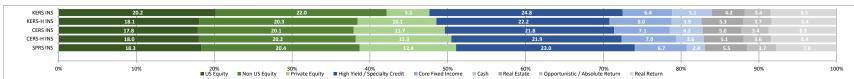






KENTUCKY RETIREMENT SYSTEMS - INSURANCE FUND - NET RETURNS - 11/30/18																						
Structure	Benchmark	Inception	Market Value	% of Total	Month		QTD		Fiscal YTD		1 Year		3 Years		5 Years		10 Years		20 Years		ITD	
					KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS I	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS E	Benchmark	KRS E	Benchmark
TOTAL FUND	KY Ret. Blended Index	4/1/1987	5,092,521,563.71	100.00	0.54	0.52	-5.88		-0.84	-1.11	2.01	1.14	7.78	7.50	5.96	6.20	9.07	9.88	5.18	5.43	7.34	7.68
GROWTH		7/1/2018	3,325,102,379.75	65.29	0.78		-8.69		-1.35												-1.35	
US PUBLIC	KY Domestic Equity Blend	7/1/1992	961,902,588.71	18.89	2.13	2	-14.79	-14.30	0.25	1.22	4.59	5.53	11.43	11.80	9.86	10.62	13.71	14.31	6.85	6.69	9.59	9.50
EQUITY NON US	KY Ret.Int'l Eq. Blended Index	4/1/2000	1,041,790,356.08	20.46	0.42	0.85	-12.65	-11.88	-7.45	-7.22	-6.90	-8.49	6.32	5.70	2.68	2.13	7.72	7.69			2.75	2.21
PRIVATE QUITY	Russell 3000 + 3%(Qtr Lag)	7/1/2002	544,512,962.01	10.69	0.31	0.31	0.21	0.21	4.52	4.52	18.06	18.06	13.76	13.76	15.83	15.83	13.60	18.28			10.28	11.24
HIGH YIELD / SPECIALTY CREDIT Bloomberg Barclays US High Yield			776,896,472.95	15.26	-0.03		-1.17		1.62		3.36										4.93	
FIXED INCOME / LIQUIDITY		7/1/2018	996,370,718.03	19.57	0.16		0.74		0.49												0.49	
CORE FIXED INCOME	Bloomberg Barclays US Aggregate	7/1/2013	795,804,706.44	15.63	0.15	0.6	0.77		0.38	-0.18	-0.24	-1.34	1.99	1.33	1.95	2.03					2.06	2.40
CASH	Citigroup Treasury Bill-3 Month	7/1/1992	200,566,011.59	3.94	0.18	0.18	0.57	0.57	0.87	0.87	2.00	1.76	1.10	0.93	0.74	0.57	0.51	0.34	2.00	1.82	2.63	2.50
DIVERSIFYING STRATEGIES		7/1/2018	771,398,996.11	15.15	0.04		-2.01		-0.26												-0.26	
REAL ESTATE	NCREIF NFI-ODCE Net 1 Qtr in Arrears Index^	5/1/2009	176,923,747.49	3.47	0.00	0.00	0.45		3.21	1.81	11.47	7.47	10.41	8.38	10.23	10.03					9.17	5.91
OPPORTUNISTIC / ABSOLUTE RI HFRI Diversified			159,601,830.08	3.13	-1.12	-0.59	-0.66		-0.35	-2.63	2.73	-1.00	2.42	1.81	2.92	2.32					3.84	2.61
REAL RETURN	Pension Real Return Custom Benchmark	7/1/2011	434,873,418.54	8.54	0.43	0.43	-3.84	-3.84	-1.76	-1.76	-1.45	-1.45	4.30	4.30	2.09	2.09					2.98	2.20

KENTUCKY RETIREMENT SYSTEMS - INSURANCE FUND - PLAN NET RETURNS - 11/30/18																					
Plan	Benchmark	Inception Market Value	% of Total	Month		3 Months		Fiscal YTD		1 Year		3 Years		5 Years		10 Years		20 Years			
KERS INS	KY Ins. KERS Plan Index	841,635,259.00	100.00	0.57	0.49	-2.99	-2.82	-1.17	-1.03	0.82	1.11	7.22	7.53	5.50	5.94	8.79	9.77	5.04	5.37	7.25	7.65
KERS - H INS	KY Ins. KERS Haz Plan Index	502,385,352.67	100.00	0.53	0.52	-2.53	-2.64	-0.86	-0.99	1.86	1.30	7.69	7.59	5.90	6.02	9.06	9.81	5.17	5.39	7.33	7.66
CERS INS	KY Ins. CERS Plan Index	2,314,560,365.33	100.00	0.53	0.52	-2.46	-2.76	-0.80	-1.11	2.19	1.18	7.85	7.53	6.03	6.02	9.12	9.81	5.20	5.39	7.35	7.66
CERS - H INS	KY Ins. CERS Haz Plan Index	1,246,911,938.99	100.00	0.53	0.52	-2.44	-2.76	-0.78	-1.11	2.28	1.18	7.93	7.53	6.09	6.02	9.14	9.81	5.21	5.39	7.36	7.66
SPRS INS	KY Ins. SPRS Plan Index	187,028,647.70	100.00	0.52	0.52	-2.47	-2.76	-0.79	-1.11	2.28	1.18	7.91	7.54	6.07	6.03	9.13	9.82	5.21	5.40	7.36	7.66



Note: The above chart displays the average monthly allocation.