

What's going on in the marketplace?

On the back of November's jump, global equity markets continued their climb. Hopes driven by new Covid-19 vaccines seemed to underpin the idea of a return to normal economic activity might be just around the corner in 2021. Additional fiscal stimulus combined with continued low rates supported markets. U.S. stock markets hit record highs, despite international markets outperforming them during the month. Global bonds increased while U.S. fixed markets provided modest returns.

The KRS investment portfolio returned 3.3% versus the benchmark of 3.0%.

Relative outperformance in the Real Estate, Specialty Credit, U.S. Equity, and Core Fixed Income asset classes bolstered the overall portfolio performance from a selection perspective. From an allocation perspective, the overweight to both the Non-U.S. and U.S. Equity asset classes provided a tailwind to the overall portfolio. Offsetting some of the relative underperformance was the relative weakness in the Absolute Return portfolio and the underweight to the Private Equity space as this was one of the strongest performing asset classes during the period.

The fiscal year return to date now stands at 14.1% versus a benchmark return of 14.2%

In general, the portfolio has benefitted from its overweight to the public equity markets, as these have been the strongest performing asset classes for the period. Further, strong absolute performance within the private equity, leveraged loan, and real return portions of the portfolio have been beneficial.

U.S. Equities

U.S. markets gained 4.5% during the month per the Russell 3000. The strong market performance was led by small caps, followed by mid-caps, and then the large cap market segment (SC: 8.7% vs MC: 6.5% vs LC: 3.8%). Reversing a short-lived trend, growth outperformed value during the month (R3000G: 4.9% vs R3000V: 4.1%).

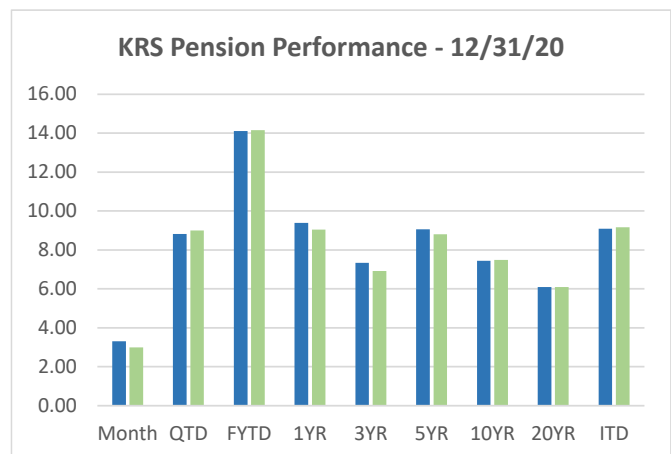
During the month, the KRS U.S. Equity portfolio outpaced its benchmark by 30 bps, returning 4.8% versus the Russell 3000 Index return of 4.5%. The portfolio was mixed in terms of stock selection; however, the all cap value and micro-cap strategies provided solid relative outperformance. In addition, the smaller market cap positioning was beneficial during the period.

For the first six months of the fiscal year, the portfolio returned 25.0% versus the benchmark return of 25.2%. Stock selection was mixed, though the net result was a slight drag on relative performance. Allocation from a style perspective hurt the portfolio as the slight value tilt served as a headwind (R3000G: 26.9% vs R3000V: 23.6%). However, the portfolio's smaller positioning offset a good portion of the stock selection and style issues. Small caps, followed by mid-caps, outpaced their large cap counterparts (SC: 37.9% vs MC: 30.3% vs LC: 22.2%).

Non-U.S. Equities

Non-U.S. equity markets provided a strong 5.6% return during the month per the MSCI ACWI-Ex US Index. Emerging markets significantly outpaced their Developed market counterparts (MSCI EM: 8.6% vs MSCI World Ex-US: 4.6%). Unlike the U.S. markets, value outpaced growth in the international markets.

The KRS Non-U.S. Equity portfolio gained 5.6% during the month, essentially matching its benchmark, trailing by just 4 bps. KRS' external MSCI ACWI Ex-US mandates were mixed in terms of relative performance, and both of the external MSCI EM mandates outpaced their benchmarks. The value tilt within the



MSCI ACWI-Ex US mandates was beneficial; however, the growth tilt within the emerging market portion of the portfolio hampered relative performance.

During the first half of the fiscal year, the KRS Non-U.S. Equity portfolio has returned 25.8%, outpacing the index by 57 bps. Individual strategy results have been good, with only the deep value ACWI Ex-U.S. significantly trailing the core index. This is expected due to the out of favor style bias of the portfolio.

Fixed Income

Fixed Income markets produced positive performance during the month with the higher yielding segments (those with more significant credit risk) outperforming those segments that are traditionally considered safer. The high yield and leveraged loan markets gained 1.9% and 1.4%, respectively. The intermediate bond market gained approximately 0.5%, followed by the U.S. Aggregate Index, which gained 14 bps.

The KRS Specialty Credit allocation returned 2.2%, outpacing its benchmark by 62 bps during the month. This can be attributed to the relative strength in the leveraged loan portion of the allocation. The KRS Core Fixed Income portfolio gained 51 bps, outpacing the Bloomberg Barclays Aggregate (0.5% vs 0.1%). Relative performance amongst the individual mandates was good, as all strategies outperformed their respective indices.

The KRS Specialty Credit allocation returned 8.9% during the fiscal year to date trailing its benchmark return of 9.7%. Individual strategy relative performance has been mixed, with the corporate high yield allocations providing the strongest returns generally. The liquidity portion of the credit allocation returned 2.4% for the six-month period, with the short-term corporate strategy providing the bulk of performance.

Alternative Assets

The diversifying strategy group returned 2.1% during the month, with all four major portfolio segments providing positive returns during the period. The Real Estate portfolio returned 3.1%, the Real Return portfolio gained 1.8%, the Opportunistic portfolio returned 1.4%, and the Absolute Return portfolio added 106 bps. The Private Equity portion of the portfolio returned 5.0% on the month.

Overall, the alternative asset group has provided solid absolute performance for the fiscal year to date. The Private Equity, Opportunistic, and Real Return portfolios all provided double-digit returns as follows: 14.8%, 12.9%, and 11.7%, respectively. The Absolute Return and Real Estate Portfolios gained 3.9% and 3.35%, respectively.

Cash

The Cash portfolio performed in line with the 3-month T-Bill, returning 1 basis point. This brought the fiscal year return to 6 bps.

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 (pgs.4&5).
- 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)	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
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)

- 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 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

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

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 07/31/18

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%)

Insurance Benchmark Composite 07/31/18 to Present

US Equity: Russell 3000 (18.75%)
Non US Equity: MSCI AXCI Ex-US IMI (18.75%)
Core Fixed Income: Barclays US Aggregate (5.0%)
Specialty Credit/High Yield FI: Custom Benchmark (13.5%)
Real Estate: NCREIF ODCE (10.0%)
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 Return>5yrs: CPI+3% (15.0%)
Private Equity<5Yrs: Actual Performance
Private Equity>5Yrs: Russell 3000 Index+3% (15.0%)
Cash: Cit Grp 3-mos Treasury Bill (1.0%)

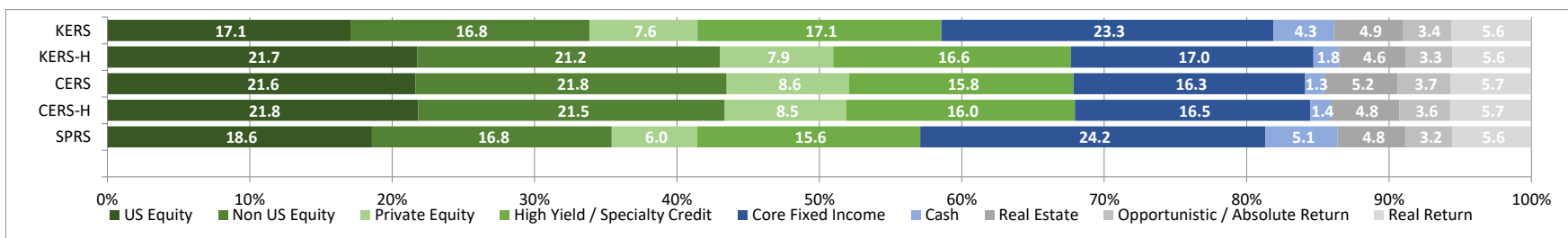
**Fund composite benchmark is a roll-up of individual plans, which may differ from one another.

KENTUCKY RETIREMENT SYSTEMS - PENSION FUND - NET RETURNS - 12/31/20

Structure	Inception	Market Value	% of Total	Month	QTD	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	ITD
TOTAL FUND	4/1/1984	14,364,876,432.33	100.00	3.31	8.82	14.11	9.39	7.33	9.06	7.44	6.09	9.09
KY Ret. Blended Index				2.99	9.00	14.15	9.05	6.92	8.81	7.48	6.10	9.17
GROWTH	7/1/2018	9,870,657,514.34	68.71	4.41	11.82	19.52	12.26					10.19
PUBLIC EQUITY	4/1/1984	6,295,655,904.88	43.83	5.19	16.22	25.39	16.64	10.04	12.51	9.14	6.12	10.68
Global Equity Blended Index				5.05	15.94	25.23	16.01	9.67	12.36	9.12	6.12	10.52
US PUBLIC	4/1/1984	3,149,136,370.74	21.92	4.80	15.22	25.01	19.02	13.48	14.74	13.06	7.59	11.59
KY Domestic Equity Blend				4.50	14.68	25.24	20.89	14.49	15.43	13.78	8.09	11.71
EQUITY NON US	7/1/2000	3,146,519,534.14	21.90	5.58	17.24	25.76	14.02	7.01	10.49	5.69	5.10	3.97
KY Ret.Int'l Eq. Blended Index				5.62	17.22	25.19	11.12	4.83	9.17	5.28	5.11	4.00
PRIVATE EQUITY	7/1/2002	1,139,236,934.34	7.93	5.01	6.95	14.76	8.06	10.82	11.01	12.21		11.08
Russell 3000 + 3%(Qtr Lag)				5.01	6.95	14.76	8.06	10.82	11.01	15.47		11.78
HIGH YIELD / SPECIALTY CREDIT	7/1/2017	2,435,764,675.12	16.96	2.23	4.42	8.91	4.22	5.31				5.72
High Yield Custom Benchmark				1.61	5.13	9.73	5.12	5.13				5.07
FIXED INCOME / LIQUIDITY	7/1/2018	2,550,245,346.93	17.75	0.46	1.30	2.43	4.75					5.16
CORE FIXED INCOME	7/1/2013	2,282,848,162.94	15.89	0.51	1.44	2.77	6.10	4.75	4.17			3.72
Bloomberg Barclays US Aggregate				0.14	0.67	1.29	7.51	5.34	4.44			3.87
CASH	1/1/1988	267,397,183.99	1.86	0.01	0.03	0.06	0.59	1.77	1.51	0.91	1.85	3.45
Citigroup Treasury Bill-3 Month				0.01	0.02	0.06	0.58	1.56	1.16	0.60	1.43	3.02
DIVERSIFYING STRATEGIES	7/1/2018	1,944,696,617.26	13.54	2.07	6.24	8.60	1.78					4.23
REAL ESTATE	7/1/1984	584,165,093.28	4.07	3.08	3.59	3.30	6.09	9.06	9.60	9.83	6.96	6.28
NCREIF NFI-ODCE Net 1 Qtr in Arrears Index^				0.27	0.27	-1.49	0.52	4.25	5.69	9.26	6.63	6.25
ABSOLUTE RETURN	4/1/2010	142,519,761.66	0.99	1.06	1.75	3.92	-1.32	0.38	1.23			3.08
HFRI Diversified				3.52	7.38	11.65	10.47	4.92	4.33			3.66
OPPORTUNISTIC	7/1/2018	370,905,923.50	2.58	1.44	12.91	4.52						8.09
S&P LSTA Leveraged Loan Index				1.35	8.11	3.12						3.86
REAL RETURN	7/1/2011	847,105,838.82	5.90	1.81	9.25	11.73	-1.07	2.02	4.84			3.40
Pension Real Return Custom Benchmark				1.81	9.25	11.73	-1.07	2.02	4.84			2.52

KENTUCKY RETIREMENT SYSTEMS - PENSION FUND - PLAN NET RETURNS - 12/31/20

Plan	Inception	Market Value	% of Total	Month	3 Months	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	ITD
KERS		2,615,447,792.32	100.00	2.80	7.70	12.78	9.93	7.21	8.38	7.21	5.97	9.02
KY Ret. KERS Plan Index				2.62	8.05	12.59	8.59	6.71	8.35	7.25	5.99	9.11
KERS- H		794,809,349.66	100.00	3.36	9.02	14.35	9.37	7.27	9.11	7.46	6.10	9.09
KY Ret. KERS Haz Plan Index				3.06	9.19	14.51	9.27	7.04	8.97	7.49	6.11	9.17
CERS		7,944,489,892.87	100.00	3.44	9.13	14.47	9.27	7.31	9.18	7.47	6.10	9.09
KY Ret. CERS Plan Index				3.06	9.19	14.51	9.27	7.04	8.99	7.49	6.11	9.17
CERS- H		2,688,370,832.32	100.00	3.44	9.12	14.46	9.20	7.29	9.16	7.47	6.10	9.09
KY Ret. CERS Haz Plan Index				3.06	9.19	14.51	9.27	7.04	8.98	7.49	6.11	9.17
SPRS		321,758,565.32	100.00	2.78	7.69	12.50	9.40	7.04	8.44	7.09	5.91	8.99
KY Ret. SPRS Plan Index				2.62	8.05	12.59	8.59	6.65	8.48	7.24	5.98	9.10



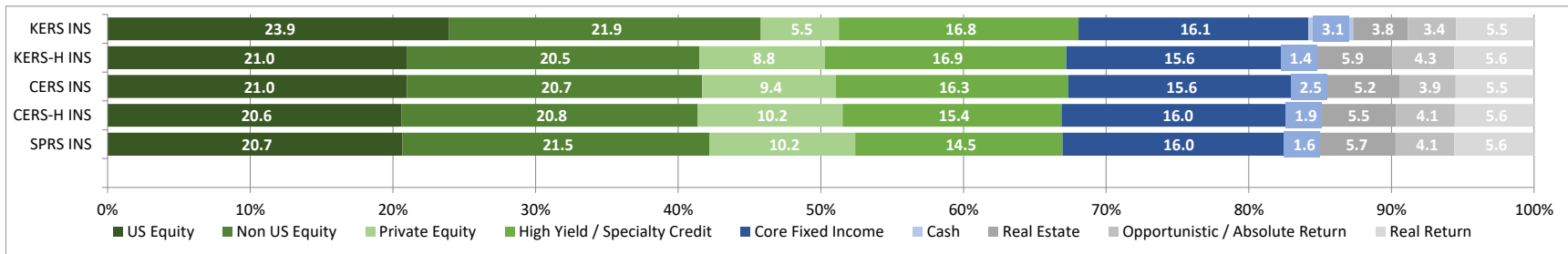
Note: The above chart displays the average monthly allocation.

KENTUCKY RETIREMENT SYSTEMS - INSURANCE FUND - NET RETURNS - 12/31/20

Structure	Inception	Market Value	% of Total	Month	QTD	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	ITD
				KRS	KRS	KRS	KRS	KRS	KRS	KRS	KRS	KRS
TOTAL FUND	4/1/1987	6,310,886,603.02	100.00	3.45	9.01	14.29	8.84	7.17	9.14	7.13	5.49	7.51
KY Ret. Blended Index				3.20	9.28	14.35	8.87	6.92	8.95	7.64	5.69	7.84
GROWTH	7/1/2018	4,473,986,226.84	70.89	4.55	11.93	19.27	11.00					9.52
Growth Custom Benchmark				2.96	12.79	23.45	15.18					11.88
PUBLIC EQUITY	7/1/1992	2,840,620,346.69	45.01	5.15	16.17	25.39	16.58	9.95	12.54	9.10	6.23	9.04
Global Equity Blended Index				5.06	15.95	25.23	15.97	9.63	12.33	9.12	5.80	8.82
US PUBLIC	7/1/1992	1,433,102,338.71	22.71	4.80	15.20	25.02	18.94	13.43	14.83	13.05	7.67	10.18
KY Domestic Equity Blend				4.50	14.68	25.24	20.89	14.49	15.43	13.79	7.75	10.17
EQUITY NON US	4/1/2000	1,407,518,007.98	22.30	5.52	17.18	25.77	13.94	6.86	10.39	5.54	5.46	3.93
KY Ret.Int'l Eq. Blended Index				5.62	17.22	25.19	11.12	4.83	9.17	5.32	4.77	3.24
PRIVATE EQUITY	7/1/2002	548,052,248.02	8.68	6.36	8.50	13.54	1.95	8.99	10.67	12.69		9.82
Russell 3000 + 3%(Qtr Lag)				6.36	8.50	13.54	1.95	8.99	10.67	15.50		11.27
HIGH YIELD / SPECIALTY CREDIT	7/1/2017	1,085,313,632.13	17.20	2.17	4.24	8.72	3.91	5.07				5.39
Bloomberg Barclays US High Yield				1.61	5.13	9.73	5.12	5.13				5.07
FIXED INCOME / LIQUIDITY	7/1/2018	982,043,364.41	15.56	0.42	1.25	2.39	4.63					5.07
CORE FIXED INCOME	7/1/2013	873,074,121.81	13.83	0.48	1.43	2.74	5.67	4.59	4.11			3.39
Bloomberg Barclays US Aggregate				0.14	0.67	1.29	7.51	5.34	4.44			3.87
CASH	7/1/1992	108,969,242.60	1.73	0.01	0.03	0.06	0.49	1.54	1.24	0.76	1.63	2.54
Citigroup Treasury Bill-3 Month				0.01	0.02	0.06	0.58	1.56	1.16	0.60	1.43	2.42
DIVERSIFYING STRATEGIES	7/1/2018	855,328,274.67	13.55	1.98	5.94	8.74	2.87					4.76
REAL ESTATE	5/1/2009	246,753,396.14	3.91	2.90	3.39	3.37	6.22	9.18	9.76	9.90		9.17
NCREIF NFI-ODCE Net 1 Qtr in Arrears Index^				0.27	0.27	-1.49	0.52	4.25	5.69	9.26		5.45
ABSOLUTE RETURN	4/1/2010	58,349,008.11	0.92	1.06	1.74	3.86	-1.33	0.40	1.24			3.03
HFRI Diversified				3.52	7.38	11.65	10.47	4.92	4.33			3.66
OPPORTUNISTIC	7/1/2018	188,867,579.50	2.99	1.44	12.91	4.52						8.09
S&P LSTA Leveraged Loan Index				1.35	8.11	3.12						3.86
REAL RETURN	7/1/2011	361,358,290.92	5.73	1.78	8.66	11.62	0.91	2.75	5.02			3.42
Pension Real Return Custom Benchmark				1.78	8.66	11.62	0.91	2.75	5.02			2.81

KENTUCKY RETIREMENT SYSTEMS - INSURANCE FUND - PLAN NET RETURNS - 12/31/20

Plan	Inception	Market Value	% of Total	Month	3 Months	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	ITD
KERS INS		1,175,348,541.49	100.00	3.38	9.18	14.73	9.98	7.01	8.93	6.91	5.38	7.44
KY Ins. KERS Plan Index				3.19	9.26	14.35	8.97	6.93	9.03	7.54	5.63	7.81
KERS - H INS		578,787,559.09	100.00	3.46	8.90	14.16	8.49	6.97	9.00	7.07	5.46	7.49
KY Ins. KERS Haz Plan Index				3.19	9.26	14.35	8.97	6.99	9.03	7.57	5.65	7.82
CERS INS		2,854,409,134.88	100.00	3.44	8.97	14.17	8.60	7.15	9.13	7.15	5.50	7.52
KY Ins. CERS Plan Index				3.19	9.26	14.35	8.97	6.98	9.02	7.59	5.66	7.82
CERS - H INS		1,476,229,059.37	100.00	3.49	8.99	14.19	8.49	7.17	9.17	7.18	5.51	7.52
KY Ins. CERS Haz Plan Index				3.19	9.26	14.35	8.97	6.98	9.01	7.59	5.66	7.82
SPRS INS		226,112,309.23	100.00	3.55	9.13	14.41	9.15	7.35	9.27	7.22	5.54	7.54
KY Ins. SPRS Plan Index				3.19	9.26	14.35	8.97	6.98	9.01	7.59	5.66	7.82



Note: The above chart displays the average monthly allocation.