

What's going on in the marketplace?

Global equity markets jumped in November as political uncertainty in the U.S. subsided and optimism regarding a vaccine for Covid-19 increased. Clinical trials for several potential vaccine candidates came in better than expected which caused investors to look past the current market environment and towards a more normalized future. Non-U.S. equity markets outpaced domestic markets and global bonds rose during the month spurred on by spread tightening of corporate bonds in a risk-on period.

The KRS investment portfolio returned 5.9% versus the benchmark of 6.6%.

Relative underperformance in the Specialty Credit and Absolute Return asset classes hampered the overall portfolio from a selection perspective. From an allocation perspective, the significant underweight to the Real Return asset class and underweight to the Core Fixed Income bucket provided a drag on the overall portfolio. Offsetting some of the relative underperformance was the solid stock selection in the Non-U.S. Equity portfolio and the overweight in both the U.S. and Non-U.S. equity portfolios as public equities were the strongest performing asset class during the month.

U.S. Equities

U.S. markets gained over 12% 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: 18.4% vs MC: 14.3% vs LC: 11.0%). For the third month in a row, value outperformed growth (R3000V: 13.8% vs R3000G: 10.7%).

During the month, the KRS U.S. Equity portfolio trailed its benchmark by 27 bps, returning 11.9% versus the Russell 3000 Index return of 12.2%. The portfolio's slight value tilt and smaller market cap positioning was beneficial during the period; however, weaker stock selection across the board overwhelmed the allocation advantage.

Non-U.S. Equities

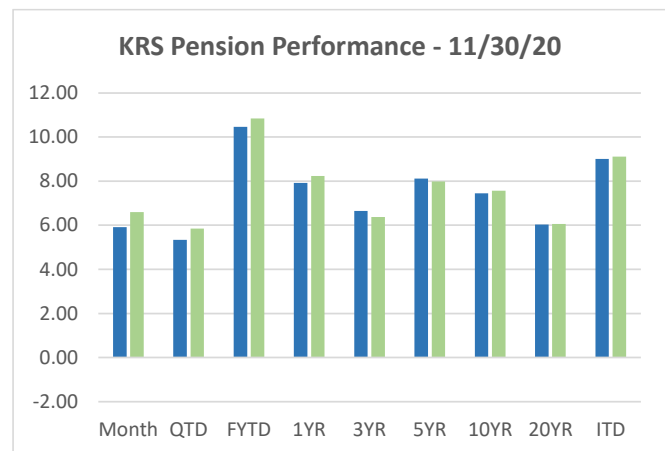
Non-U.S. equity markets jumped 13.5% during the month per the MSCI ACWI-Ex US Index. Developed markets outpaced their Emerging market counterparts (MSCI World Ex-US: 15.3% vs MSCI EM: 9.3%). Similar to U.S. markets, value outpaced growth in the international markets.

The KRS Non-U.S. Equity portfolio gained 13.9% during the month, outpacing the benchmark by 43 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 was additive to relative performance.

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 4.0% and 2.2%, respectively. The U.S. Aggregate Index returned 1.0%, followed by the intermediate bond market, which gained 34 bps, while global bonds were higher for the month.

The KRS Specialty Credit allocation returned 1.6%, trailing its benchmark by 154 bps during the month. This can be attributed to the relative weakness in the leveraged loan portion of the allocation. The KRS Core Fixed Income portfolio gained 86 bps, just underperforming the Bloomberg Barclays Aggregate (0.9% vs 1.0%). Relative performance amongst the individual mandates was good, with the intermediate portfolios trailing the overall allocation.



Alternative Assets

The diversifying strategy group returned 3.9% during the month, with all four major portfolio segments providing positive returns during the period. The Real Return portfolio returned 7.7%, the Opportunistic portfolio returned 2.4%, the Real Estate portfolio gained 40 bps, and the Absolute Return portfolio added 34 bps. The Private Equity portion of the portfolio returned 0.2% on the month.

Cash

The Cash portfolio performed in line with the 3-month T-Bill, returning 1 basis point. This brought the fiscal year return to 5 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) 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 - 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%)	<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 - 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%)
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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%)

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Real Return>5yrs: CPI+3% (8%)
Private Equity<5Yrs: Actual Performance
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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% (15.0%)
Cash: Cit Grp 3-mos Treasury Bill (1.0%)

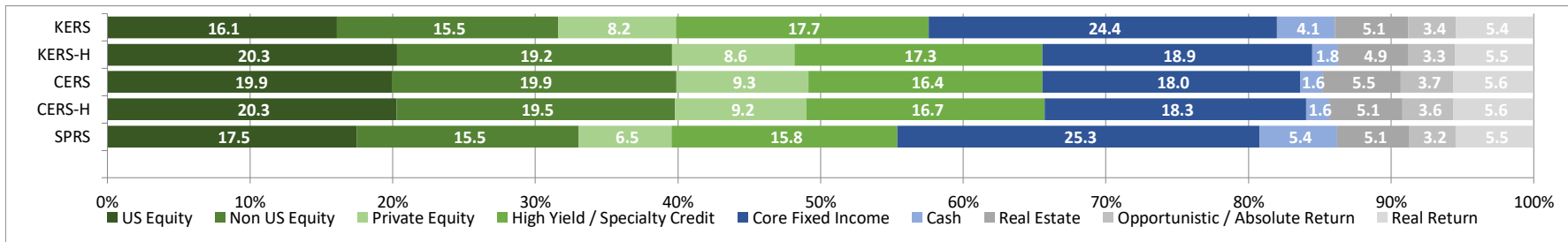
**Fund composite benchmark is a roll-up of individual plans, which may differ from one another.

KENTUCKY RETIREMENT SYSTEMS - PENSION FUND - NET RETURNS - 11/30/20

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	13,924,357,763.58	100.00	5.91	5.34	10.46	7.92	6.65	8.12	7.45	6.03	9.01
KY Ret. Blended Index				6.59	5.85	10.84	8.23	6.37	7.99	7.57	6.06	9.11
GROWTH	7/1/2018	9,161,241,951.42	65.79	8.08	7.10	14.47	10.22					8.60
PUBLIC EQUITY	4/1/1984	5,665,119,214.98	40.68	12.91	10.49	19.20	14.66	8.80	10.91	9.32	5.97	10.56
Global Equity Blended Index				12.83	10.36	19.21	14.45	8.48	10.81	9.36	5.96	10.39
US PUBLIC	4/1/1984	2,833,383,731.65	20.35	11.90	9.94	19.29	16.86	12.05	13.07	13.25	7.47	11.48
KY Domestic Equity Blend				12.17	9.74	19.85	19.02	13.20	13.95	14.04	7.96	11.60
EQUITY NON US	7/1/2000	2,831,735,483.33	20.34	13.93	11.04	19.12	12.20	5.94	8.96	5.85	4.85	3.71
KY Ret.Int'l Eq. Blended Index				13.50	10.99	18.53	9.85	3.74	7.58	5.53	4.93	3.74
PRIVATE EQUITY	7/1/2002	1,126,361,955.48	8.09	0.16	1.85	9.29	4.24	10.14	9.91	11.71		10.84
Russell 3000 + 3%(Qtr Lag)				0.16	1.85	9.29	4.24	10.14	9.91	16.39		12.03
HIGH YIELD / SPECIALTY CREDIT	7/1/2017	2,369,760,780.96	17.02	1.55	2.14	6.54	2.88	4.61				5.18
High Yield Custom Benchmark				3.09	3.46	7.99	5.31	4.69				4.70
FIXED INCOME / LIQUIDITY	7/1/2018	2,879,367,085.50	20.68	0.77	0.84	1.97	4.53					5.15
CORE FIXED INCOME	7/1/2013	2,577,857,976.15	18.51	0.86	0.93	2.25	5.80	4.67	4.01			3.70
Bloomberg Barclays US Aggregate				0.98	0.53	1.15	7.28	5.45	4.34			3.89
CASH	1/1/1988	301,509,109.35	2.17	0.01	0.02	0.05	1.07	1.90	1.51	0.92	1.88	3.46
Citigroup Treasury Bill-3 Month				0.01	0.02	0.05	0.72	1.59	1.16	0.60	1.45	3.03
DIVERSIFYING STRATEGIES	7/1/2018	1,884,351,265.16	13.53	3.85	4.09	6.40	1.49					3.50
REAL ESTATE	7/1/1984	574,749,278.76	4.13	0.40	0.49	0.21	4.04	8.97	9.18	9.50	7.13	6.21
NCREIF NFI-ODCE Net 1 Qtr in Arrears Index^				0.00	0.00	-1.75	1.33	4.72	6.35	9.78	6.80	6.26
OPPORTUNISTIC / ABSOLUTE RETURN		473,237,817.54	3.40	0.34	0.68	2.83	-1.65	0.33	1.11			3.00
HFRI Diversified				3.85	4.03	8.14	8.58	4.11	3.76			3.38
REAL RETURN	7/1/2011	836,364,168.86	6.01	7.67	7.31	9.75	-0.46	1.64	4.10			3.23
Pension Real Return Custom Benchmark				7.67	7.31	9.75	-0.46	1.64	4.10			2.35

KENTUCKY RETIREMENT SYSTEMS - PENSION FUND - PLAN NET RETURNS - 11/30/20

Plan	Inception	Market Value	% of Total	Month	3 Months	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	ITD
KERS		2,542,392,064.80	100.00	5.19	4.86	9.70	8.68	6.67	7.57	7.27	5.94	8.96
KY Ret. KERS Plan Index				6.00	4.56	9.73	7.93	6.24	7.62	7.38	5.97	9.05
KERS- H		768,752,686.92	100.00	6.09	4.98	10.64	7.90	6.59	8.16	7.47	6.04	9.01
KY Ret. KERS Haz Plan Index				6.70	5.27	11.12	8.41	6.47	8.13	7.57	6.07	9.11
CERS		7,695,699,899.64	100.00	6.10	5.02	10.66	7.75	6.60	8.21	7.47	6.04	9.02
KY Ret. CERS Plan Index				6.70	5.27	11.12	8.41	6.47	8.14	7.57	6.07	9.11
CERS- H		2,604,398,225.75	100.00	6.10	5.01	10.65	7.66	6.57	8.19	7.47	6.04	9.01
KY Ret. CERS Haz Plan Index				6.70	5.27	11.12	8.41	6.47	8.13	7.57	6.07	9.11
SPRS		313,114,893.40	100.00	5.26	4.40	9.45	8.25	6.50	7.60	7.16	5.88	8.93
KY Ret. SPRS Plan Index				6.00	4.56	9.73	7.93	6.20	7.73	7.36	5.96	9.05



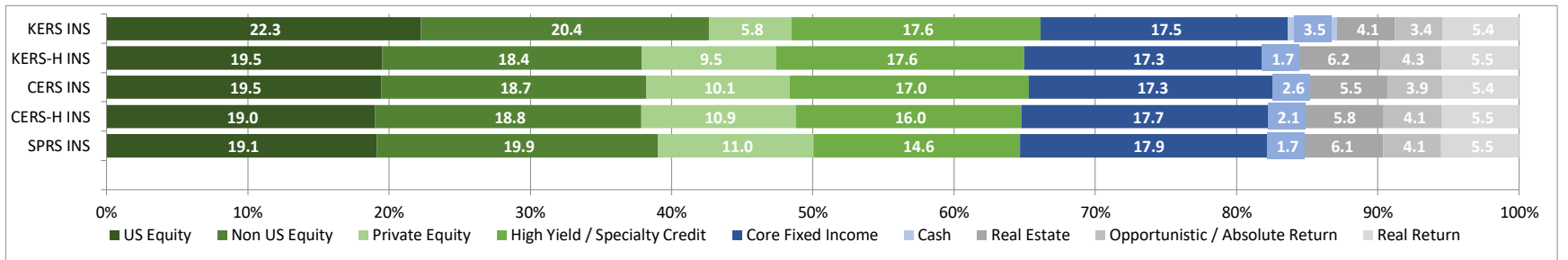
Note: The above chart displays the average monthly allocation.

KENTUCKY RETIREMENT SYSTEMS - INSURANCE FUND - NET RETURNS - 11/30/20

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	6,100,517,193.47	100.00	5.98	5.38	10.48	7.24	6.46	8.17	7.31	5.45	7.42
KY Ret. Blended Index				6.70	5.90	10.81	7.83	6.31	8.10	7.91	5.70	7.76
GROWTH	7/1/2018	4,115,444,602.82	67.46	8.02	7.06	14.09	8.81					7.86
Growth Custom Benchmark				9.83	9.54	19.90	15.21					10.96
PUBLIC EQUITY	7/1/1992	2,534,414,711.34	41.54	12.89	10.48	19.24	14.63	8.72	10.96	9.26	6.13	8.87
Global Equity Blended Index				12.83	10.37	19.20	14.42	8.44	10.79	9.34	5.76	8.66
US PUBLIC	7/1/1992	1,281,640,181.41	21.01	11.90	9.93	19.29	16.79	12.00	13.20	13.25	7.62	10.03
KY Domestic Equity Blend				12.17	9.74	19.85	19.02	13.20	13.95	14.03	7.57	10.03
EQUITY NON US	4/1/2000	1,252,774,529.93	20.54	13.93	11.05	19.19	12.18	5.82	8.87	5.67	5.23	3.68
KY Ret.Int'l Eq. Blended Index				13.50	10.99	18.53	9.85	3.74	7.58	5.55	4.59	2.98
PRIVATE EQUITY	7/1/2002	526,654,440.55	8.63	0.14	2.01	6.75	-3.03	7.98	9.44	12.20		9.50
Russell 3000 + 3%(Qtr Lag)				0.14	2.01	6.75	-3.03	7.98	9.44	16.53		11.53
HIGH YIELD / SPECIALTY CREDIT	7/1/2017	1,054,375,450.93	17.28	1.50	2.03	6.41	2.58	4.34				4.87
Bloomberg Barclays US High Yield				3.09	3.46	7.99	5.31	4.69				4.70
FIXED INCOME / LIQUIDITY	7/1/2018	1,158,372,694.56	18.99	0.77	0.82	1.96	4.44					5.06
CORE FIXED INCOME	7/1/2013	1,013,367,263.82	16.61	0.88	0.94	2.25	5.41	4.51	3.95			3.36
Bloomberg Barclays US Aggregate				0.98	0.53	1.15	7.28	5.45	4.34			3.89
CASH	7/1/1992	145,005,430.74	2.38	0.01	0.02	0.05	0.63	1.64	1.24	0.76	1.66	2.55
Citigroup Treasury Bill-3 Month				0.01	0.02	0.05	0.72	1.59	1.16	0.60	1.45	2.43
DIVERSIFYING STRATEGIES	7/1/2018	827,092,615.17	13.56	3.78	3.88	6.63	2.54					4.08
REAL ESTATE	5/1/2009	243,319,918.60	3.99	0.39	0.47	0.45	4.40	9.15	9.44	9.59		8.96
NCREIF NFI-ODCE Net 1 Qtr in Arrears Index^				0.00	0.00	-1.75	1.33	4.72	6.35	9.78		5.46
OPPORTUNISTIC / ABSOLUTE RETURN		226,989,404.32	3.72	0.33	0.67	2.77	-1.67	0.37	1.12			2.96
HFRI Diversified				3.85	4.03	8.14	8.58	4.11	3.76			3.38
REAL RETURN	7/1/2011	356,783,292.25	5.85	7.57	6.76	9.67	1.31	2.34	4.30			3.26
Pension Real Return Custom Benchmark				7.57	6.76	9.67	1.31	2.34	4.30			2.64

KENTUCKY RETIREMENT SYSTEMS - INSURANCE FUND - PLAN NET RETURNS - 11/30/20

Plan	Inception	Market Value	% of Total	Month	3 Months	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	ITD
KERS INS		1,133,804,177.10	100.00	6.47	4.75	10.98	8.39	6.26	7.96	7.09	5.34	7.36
KY Ins. KERS Plan Index				6.69	4.94	10.82	7.91	6.33	8.13	7.81	5.65	7.73
KERS - H INS		560,850,783.87	100.00	5.85	4.83	10.34	6.86	6.25	8.02	7.25	5.42	7.40
KY Ins. KERS Haz Plan Index				6.69	4.94	10.82	7.91	6.38	8.15	7.84	5.67	7.74
CERS INS		2,758,618,055.20	100.00	5.90	4.82	10.37	7.02	6.46	8.17	7.33	5.46	7.43
KY Ins. CERS Plan Index				6.69	4.94	10.82	7.91	6.37	8.15	7.85	5.67	7.74
CERS - H INS		1,428,439,774.85	100.00	5.82	4.87	10.33	6.86	6.46	8.20	7.35	5.47	7.43
KY Ins. CERS Haz Plan Index				6.69	4.94	10.82	7.91	6.37	8.15	7.85	5.67	7.74
SPRS INS		218,804,405.82	100.00	5.94	4.98	10.48	7.40	6.62	8.29	7.39	5.49	7.45
KY Ins. SPRS Plan Index				6.69	4.94	10.82	7.91	6.37	8.15	7.86	5.67	7.74



Note: The above chart displays the average monthly allocation.