What's going on in the marketplace?

April ushered in strong performance for global equity markets recovering a portion of the value lost during the previous couple of months (U.S. equity markets outperformed Non-U.S. markets). Driving the market recovery was massive a monetary and fiscal policy response, along with slowing infection rates of the Covid-19 virus and some easing of restrictions, as an eye towards reopening the economy emerged. This risk-on environment was also felt in the bond markets as corporate bonds outpaced government securities. Non-U.S. bonds outperformed U.S. bonds during the period.

The KRS investment portfolio gained 5.34% versus the benchmark return of 6.0%.

Relative underperformance was primarily driven by weaker performance in the Specialty Credit and Absolute Return portfolios. In addition, the portfolio's underweight to the Real Return space combined with its overweight position to Cash hampered relative performance. Offsetting some of the drag on relative performance was the overweight to public equities, especially to U.S. Equities, which was the strongest performing asset class during the month. The portfolio also benefitted from strong relative performance in the Core Fixed Income space.

U.S. Equities

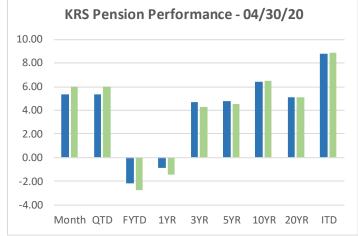
U.S. markets experienced significant rebound during the month, gaining 13.2% (per the Russell 3000). All market cap segments were positive, with mid-caps leading the way with a return of 14.2%; small caps followed and then large caps returning 13.7% and 12.8%, respectively. Growth again outpaced value by nearly 350 bps (R3000G 14.8%, R3000V 11.3%).

During the month, the KRS U.S. Equity portfolio trailed the Russell 3000 Index by 22 bps. From a stock selection perspective, relative performance of the individual mandates were mixed; however, the net effect was that of a tailwind. Allocation positioning also hampered relative performance. Not in terms of sizing, but in terms of style expressed through a slight value tilt in the portfolio.

Non-U.S. Equities

Non-U.S. equity gained 8.2% for the month per the MSCI ACWI-Ex US Index. Emerging markets (9.2%) outperformed their developed market counterparts, which gained 7.1%. Growth outpaced value in both developed and emerging countries.

The KRS Non-U.S. Equity portfolio gained 8.3% during the month, outpacing the benchmark by 13 bps. Stock selection was the primary driver of relative outperformance as three of the four active MSCI ACWI Ex-US mandates outpaced their respective benchmarks. Both active emerging market portfolios returned over 10.0% outpacing the EM Index. The small cap piece of the portfolio returned 11.4%; however, it trailed the benchmark by 74 bps. Allocation decisions had little effect on the period's relative performance.



Fixed Income

The fixed income markets were positive during the period, with those higher risk segments leading the way. The U.S. Corporate High Yield and Leveraged Loan markets both gained approximately 4.5%. The U.S. Intermediate Credit Index rose 3.4% and the Barclays Universal Index returned 2.0%. The U.S. Aggregate gained 1.8% for the month.

The KRS Specialty Credit allocation gained 0.5%, trailing the benchmark by roughly 4%, as some of the leveraged loan and opportunistic strategies struggled versus their respective indices. Individual strategy relative performance was mixed. The KRS Core Fixed Income allocation added 101 bps over the Bloomberg Barclays Aggregate (1.8%). Relative outperformance can be attributed solid performance of the U.S. Aggregate portfolios, and the U.S. Credit-Intermediate allocation.

Alternative Assets

The diversifying strategy group gained 2.9% during the month; relative performance of the individual sub asset classes was mixed. The Real Return portfolio earned 7.1%, followed by the Real Estate portfolio added 79 bps. The Opportunistic portfolio was flat and the Absolute Return portfolio lost -4.3%. The Private Equity portion of the portfolio gained 1.1% during the month.

Cash

The Cash portfolio trailed the 3-month T-Bill, returning 5 bps versus 8 bps.

NOTES:

- 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)

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 -

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 (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
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%)

<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 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 - 04/30/20 3 Years 5 Years 10 Years 20 Years Benchmark KRS Benchmark Benchmark Benchmark 5.34 TOTAL FUND KY Ret. Blended Index 4/1/1984 12.341.225.179.86 100.00 5.34 6.00 6.00 -2.17 -2.73 -0.87 -1.44 4.65 4.31 4.76 4.52 6.39 6.46 5.09 5.06 8.76 8.85 8,395,182,714.14 6.77 GROWTH 7/1/2018 68.03 -3.54 -2.46 1.16 10.75 13.02 10.72 13.24 -6.58 -1.14 -6.42 -2.50 -6.46 -1.04 PUBLIC EQUITY Global Equity Blended Index 4/1/1984 5,229,300,170.29 42.37 10.75 10 72 -6.81 3.81 6.91 3.82 4.04 7.42 3.82 6.66 6.83 3.98 4.00 6.07 9.80 13.02 2,773,350,641.06 13.24 KY Domestic Equity Blend 4/1/1984 22.47 -2.76 8.02 8.33 10.55 11.29 5.63 10.90 11.01 US PUBLIC EQUITY NON US KY Ret.Int'l Eq. Blended Index 7/1/2000 2,455,949,529.23 19.90 8.28 1.12 8.15 8.28 1.12 8.15 1.12 -10.84 -11.91 -10.34 -11.78 1.07 -0.43 1.28 -0.07 2.42 PRIVATE FOUITY Russell 3000 + 3%(Qtr Lag) 7/1/2002 1.140.394.992.93 9.24 1.12 7.86 -2.06 7.86 11.40 -0.58 11.40 12.95 12.95 11.36 11.36 12.46 15.47 11.11 11.76 HIGH YIELD / SPECIALTY CREDI' High Yield Custom Benchmark 7/1/2017 2,025,487,550.92 16.41 0.52 4.50 0.52 4.50 -5.88 -5.36 3.68 1.04 7/1/2018 7/1/2013 2.14 FIXED INCOME / LIQUIDITY 2.120.139.609.48 17.18 2.14 2.79 2.25 2.80 4.31 4.63 1,507,272,671.16 12.21 CORE FIXED INCOME 1.78 **Bloomberg Barclays US Aggregate** 7.56 10.84 3.31 3.89 5.21 3.62 5.17 3.03 CASH Citigroup Treasury Bill-3 Month 1/1/1988 612,866,938.32 1,826,342,197.27 4.97 0.05 2.87 0.08 0.05 0.08 1.50 2.28 1.92 2.09 1.75 1.52 1.14 0.96 0.60 2.06 1.62 3.52 3.08 DIVERSIFYING STRATEGIES 14.80 2.87 0.54 7/1/2018 -3.94 -2.70 NCREIF NFI-ODCE Net 1 Qtr in Arrears Index 580,830,728.91 4.71 0.79 0.79 10.86 11.91 10.43 10.39 7.61 7.17 6.34 7/1/1984 10.99 OPPORTUNISTIC / ABSOLUTE R HFRI Diversified 446 030 534 52 3.61 -4.30 3.59 -4.30 3.59 -6.15 -2.39 -7 07 -1.66 -0.51 1.51 -0.18 0.98 2.68 2.44 1.41 Pension Real Return Custom Benchmark 6.48 7.07 7.07 7.07 -9.46 -7.77 0.62 2.34 REAL RETURN 7/1/2011 799,480,933.84 7.07 -9.46 -7.77 -0.90 -0.90 0.62 KENTUCKY RETIREMENT SYSTEMS - PENSION FUND - PLAN NET RETURNS - 04/30/20 KY Ret. KERS Plan Index 2,236,318,870.22 4.65 4.99 -1.09 6.28 8.73 8.83 5.61 -2.03 0.22 KERS- H KY Ret. KERS Haz Plan Index 668,811,552.20 100.00 5.55 6.16 6.16 -7.35 -7.18 -2.56 -2.75 -2.75 -1.31 -1.48 4.51 4.41 4.72 4.52 6.37 6.44 5.08 5.05 8.75 8.84 5.42 -7.27 -7.18 -2.44 -1.16 -1.48 4.41 4.77 4.50 6.40 6.44 5.09 5.05 8.76 8.84 CERS KY Ret. CERS Plan Index 6.848.144.540.33 100.00 6.40 6.17 CERS- H 2,310,829,601.04 -7.24 -7.18 -2.54 -2.75 -1.24 4.58 4.50 5.12 6.38 SPRS KY Ret SPRS Plan Index 277.120.617.71 100 00 5.61 -6.22 -6.28 -1.45 -2.03 -0 16 -0 64 4.54 4.40 4.31 4.43 4.97 5.03 8.70 8 83 18.9 16.8 KERS-H 21.8 20.2 3.5 5.7 3.3 16.1 CERS 21.5 20.0 12.1 3.8 6.2 3.6 6.4 CERS-H 21.3 19.9 4.4 5.8 3.5 5.8 SPRS 5.8 3.2

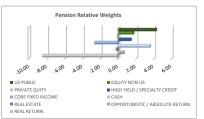
20% 30% 40% 50% 60% 70% US Equity Non US Equity Private Equity High Yield / Specialty Credit Core Fixed Income Cash Real Estate Opportunistic / Absolute Return

Note: The above chart displays the average monthly allocation

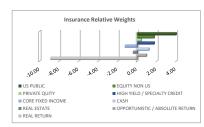
0%



10%







90%

100%

				KENTUCK	Y RETIREI	MENT SYST	EMS - INS	SURANCE F	UND - NE	T RETURNS	- 04/30/2	20										
Structure	Benchmark	Inception	Market Value	% of Total	Mo			TD	Fiscal		1 Yea		3 Ye	ars	5 Yea	ars	10 Ye	ars	20 Ye	ars	ITD	
	"				KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS I	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS I	Benchmark
TOTAL FUND	KY Ret. Blended Index	4/1/1987	5,321,671,639.90	100.00	5.30	5.89	5.30	5.89	-2.51	-2.89	-1.24	-1.62	4.62	4.40	4.84	4.67	6.13	6.71	4.58	4.73	7.14	7.47
GROWTH	Growth Custom Benchmark	7/1/2018	3,775,711,050.02	70.95	6.55	7.53	6.55	7.53	-4.00	-2.31	-2.93	-1.06									0.80	2.42
PUBLIC EQUITY	Global Equity Blended Index	7/1/1992	2,331,009,566.12	43.80	10.77	10.70	10.77	10.70	-6.84	-6.62	-6.45	-6.50	3.73	3.78	4.13	3.83	6.60	6.79	4.29	3.91	8.05	7.86
US PUBLIC	KY Domestic Equity Blend	7/1/1992	1,240,854,747.33	23.32	13.05	13.24	13.05	13.24	-2.86	-1.14	-2.61	-1.04	6.85	8.02	7.60	8.33	10.59	11.28	5.91	5.76	9.25	9.24
EQUITY NON US	KY Ret.Int'l Eq. Blended Index	4/1/2000	1,090,154,818.79	20.49	8.27	8.15	8.27	8.15	-10.84	-11.91	-10.35	-11.78	0.95	-0.43	1.18	-0.07	3.01	3.17			2.41	1.81
PRIVATE EQUITY	Russell 3000 + 3%(Qtr Lag)	7/1/2002	553,991,225.87	10.41	0.14	0.14	0.14	0.14	4.31	4.31	7.69	7.69	12.46	12.46	12.44	12.44	13.39	15.50			10.05	11.24
HIGH YIELD / SPECIALTY CRI	EDI' Bloomberg Barclays US High Yield	7/1/2017	890,710,258.03	16.74	0.41	4.50	0.41	4.50	-2.13	-5.88	-0.62	-5.36									3.42	1.04
FIXED INCOME / LIQUIDITY		7/1/2018	768,286,900.93	14.44	2.35		2.35		2.15		4.11										4.48	
CORE FIXED INCOME	Bloomberg Barclays US Aggregate	7/1/2013	651,360,632.91	12.24	2.72	1.78	2.72	1.78	2.44	7.56	4.83	10.84	3.52	5.17	2.97	3.80					2.96	3.89
CASH	Citigroup Treasury Bill-3 Month	7/1/1992	116,926,268.02	2.20	0.07	0.08	0.07	0.08	1.39	1.50	1.80	1.92	1.81	1.75	1.25	1.14	0.77	0.60	1.82	1.62	2.60	2.48
DIVERSIFYING STRATEGIES		7/1/2018	777,936,502.95	14.62	2.52		2.52		-3.13		-1.86										1.01	
REAL ESTATE	NCREIF NFI-ODCE Net 1 Qtr in Arrears Index^	5/1/2009	243,307,434.47	4.57	0.80	0.00	0.80	0.00	11.01	3.15	12.09	4.39	11.17	6.13	10.46	7.99					9.51	5.86
OPPORTUNISTIC / ABSOLUT			209,655,337.05	3.94	-4.17	3.59	-4.17	3.59	-6.07	-2.39	-6.99	-1.66	-0.48	1.51	-0.15	0.98					2.64	2.44
REAL RETURN	Pension Real Return Custom Benchmark	7/1/2011	324,973,731.43	6.11	6.31	6.31	6.31	6.31	-7.54	-7.54	-5.80	-5.80	-0.28	-0.28	0.92	0.92					2.35	1.70
			K	ENTUCKY R	ETIREME	NT SYSTEM	IS - INSUF	RANCE FUN	D - PLAN	NET RETUR	RNS - 04/3	0/20										
Plan	Benchmark	Inception	Market Value	% of Total	Mo	nth	3 Mc	onths	Fiscal	YTD	1 Yea	ar	3 Ye	ars	5 Ye	ars	10 Ye	ars	20 Ye	ars	ITD	
KERS INS	KY Ins. KERS Plan Index		945,237,691.74	100.00	5.89	5.94	-7.53	-6.99	-2.78	-2.77	-1.74	-1.51	3.88	4.39	4.33	4.56	5.79	6.61	4.41	4.68	7.03	7.44
KERS - H INS	KY Ins. KERS Haz Plan Index		501.680.207.87	100.00	5.15	5.94	-7.23	-6.99	-2.64	-2.77	-1.38	-1.51	4.49	4.47	4.74	4.62	6.10	6.64	4.57	4.69	7.13	7.45

CERS INS CERS - H INS SPRS INS	KY Ins. CERS Plan Index KY Ins. CERS Haz Plan Index KY Ins. SPRS Plan Index	2,410,694,428.34 100.00 5.2 1,269,972,407.52 100.00 5.0 194,086,911.52 100.00 5.1	1 5.94 -7.14 -6. 9 5.94 -6.96 -6.	99 -2.40 -2.7	7 -1.24 -1.51 7 -1.08 -1.51	4.69 4.48 4.88 4.80 4.48 4.99	4.63 6.18 6.65 4.64 6.22 6.65 4.64 6.25 6.66	4.60 4.70 7.15 4.62 4.70 7.16 4.64 4.70 7.17	7 7 7
KERS INS	24.6	20.8	6.6		16.7	15.2	2.3 4	.9 3.4 4.9	$\overline{}$
KERS-H INS	21.3	20.0	11.1		15.8	12.5	2.1 6.9	4.1 6.1	
CERS INS	21.1	19.7	12.1		15.7	13.2	2.0 6.2	3.8 6.1	
CERS-H INS	20.8	19.5	12.9		15.4	12.4	2.4 6.5	3.9 6.0	
SPRS INS	21.8	19.8	12.9		14.4	13.1	1.7 6.8	4.0 5.6	
]									
0%	10% 20% ■ US E	30% quity ■ Non US Equity ■ Private Equity ■ High Yield	40% 50 ✓ Specialty Credit Core Fixed I	0% ncome ■ Cash ■ Re	60% eal Estate	70% solute Return Real Return	80%	90% 10	100%

Note: The above chart displays the average monthly allocation