What's going on in the marketplace?

Global equity markets rose during the month of June as Covid-19 infection rates in many countries showed signs of decline. This caused investors to hang their hopes on a recovery in economic growth. Unfortunately, a few states in the U.S. began to have an uptick in cases causing concern for reopening and ultimately slowed the U.S. market. In general, non-U.S. equity markets outperformed U.S. markets. Global bonds rose as central banks continued to give support.

The KRS investment portfolio returned 1.0% versus the benchmark of 0.7%.

The portfolio benefitted from its relative outperformance in the Non-U.S. Equity and Core Fixed Income segments of the portfolio in combination with its significant underweight position to the Real Return space, which struggled during the period (-1.6%) However, the portfolio's relative outperformance was partially offset by weaker performance in the Specialty Credit and Real Estate portions of the portfolio.

The fiscal year return stands at 1.2% versus a benchmark return of 0.5%

The portfolio benefitted from relative outperformance in the Real Estate and Non-U.S. Equity portfolios combined with an overweight to the Core Fixed Income allocation (the best performing asset class during the fiscal year). The portfolio's outperformance was partially hampered due to weaker security selection in both the Core Fixed Income and U.S. Equity allocations.

U.S. Equities

U.S. markets gained nearly 2.3% during the month per the Russell 3000. All market cap segments produced positive returns. That said, small caps performed the best, followed by large caps, and then mid-caps (SC: 3.5% vs LC: 2.0% vs MC: 1.3%). Growth continued to outperform value as the market narrowed and investors willingness to pay a premium for growth in a difficult market environment increased (R3000G: 4.3% vs R3000V: -0.5%).

During the month, the KRS U.S. Equity portfolio trailed the Russell 3000 Index by 13bps. Relative performance amongst the individual mandates was mixed. However, weaker performance in the small cap, all cap growth, and internal factor based portfolio created a drag on the overall portfolio.

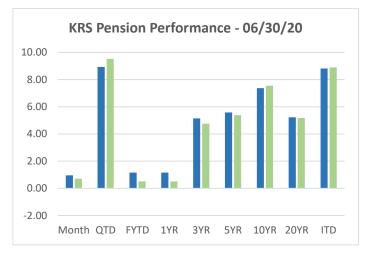
For the fiscal year, the KRS U.S. Equity portfolio returned 4.7%, trailing the 6.5% return of the Russell 3000. Stock selection was not an issue although the small cap portfolio underperformed its benchmark (most mandates outperformed their respective indices). Though stock selection in the internal factor based portfolio looks to be the culprit (-1.4%vs7.5%), relative performance was really a product of allocation as the strategy has more of a mid-cap and value bent compared with a large cap core benchmark. The

dispersion between large and mid- caps (7.5%vs-6.7%) and growth and value (21.9%vs-9.4%) was dramatic during the period.

Non-U.S. Equities

Non-U.S. equity markets gained 4.4% for the month per the MSCI ACWI-Ex US Index. Emerging markets (MSCI EM: 7.4%) held up better than their developed market counterparts (MSCI World Ex-US: 3.4%). Just as in the U.S., growth outpaced value, especially in the emerging markets where the spread between the two styles was about 4%.

The KRS Non-U.S. Equity portfolio gained 5.1% during the month, outpacing the benchmark by 71bps. KRS' external



MSCI ACWI Ex-US and MSCI EM individual mandates' relative returns split along style lines, as those with a growth bias outperformed and those with a value bias underperformed their respective core benchmarks.

For the fiscal year, the KRS Non-U.S. Equity portfolio fell -2.3%; however, it provided 271bps of downside protection (-2.0%vs-4.7%). Strong results from two of the four active MSCI ACWI Ex-U.S. mandates (both with a growth bias) have driven this relative outperformance, both outperforming by 15%.

Fixed Income

In a reversal from May, those segments of the market that are considered more risk-on outperformed those considered a place of safety. The leveraged loan market gained 1.1% and the high yield market added nearly 1.0%. The U.S. Corporate 1-3 Years Index and the U.S. aggregate market gained 81bps and 63bps, respectively. The Barclays Intermediate Aggregate Bond Index returned 0.4%.

The KRS Specialty Credit allocation returned 0.4%, trailing its benchmark that returned 1.1% during the month. Individual strategy relative performance was split; however, the distribution of relative returns was negatively skewed. The KRS Core Fixed Income portfolio performed well versus the Bloomberg Barclays Aggregate (1.2% vs 0.6%). Relative performance was positive impacted by the portfolio's short-term credit and intermediate investments, which gained 1.4% and 0.8%, respectively.

The KRS Specialty Credit allocation fell -1.4% for fiscal year versus the benchmark return of -1.0%. Relative underperformance was both in part to security selection from a couple individual mandates and from the leveraged loan portion of the portfolio as this was generally a weaker segment of the market. The Core Fixed Income portfolio returned 5.3% during the fiscal year compared to the 8.7% of the benchmark. Most individual mandates performed well in both absolute and relative terms; however, underperformance was driven by weakness in the U.S. Corporates 1-3 Years mandate.

Alternative Assets

The diversifying strategy group fell -0.5% during the month, with relative performance amongst the major portfolio segments mixed during the period. The Opportunistic and Absolute Return segments returned 2.6% and 1.1%, respectively. The Real Return and Real Estate portfolios lost ground, falling -1.6% and -1.3%, respectively. The Private Equity portion of the portfolio, reported on a lag was credited with a -6.9% return.

For the fiscal year, the Real Estate added 9.8%. While the Real Return, Absolute Return, and Opportunistic portfolios have all lost ground, returning -9.2%, -4.2%, and -2.8%, respectively. The Private Equity allocation returned 0.3% (reporting on a quarter lag).

Cash

The Cash portfolio added 1bp over the 3-month T-Bill; this brought the fiscal year return to 1.9% versus the 1.6% of the benchmark.

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.
- 4) Private Equity Composite (Pension) Inception (07/01/02) to 06/30/11

Private Equity Composite (Insurance) 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)

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 -

<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%)

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 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

Cash: Cit Grp 3-mos Treasury Bill (1.4%)

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Private Equity>5Yrs: Russell 3000 Index+3% (9.4%)

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.

Structure ®	Benchmark	Inception	Market Value		Mont	h⊠	QTD		Fiscal Y		- 06/30/20 1 Year	2	3 Year	s2	5 Year	\$2	10 Year	s2	20 Year	rs⊠	ITD	a
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OTAL FUND GROWTH	KY Ret. Blended Index	4/1/1984 7/1/2018	12,719,461,813.07 7,938,174,709.89	100.00 62.41	0.95 1.29	0.70	8.93 11.48	9.53	1.15 0.72	0.50	1.15 0.72	0.50	5.14	4.75	5.58	5.38	7.37	7.55	5.22	5.18	8.82 3.26	8.90
PUBLIC EQUITY	Global Equity Blended Index	4/1/1984	4,839,765,672.72	38.05	3.62	3.31	20.56	19.53	1.44	0.86	1.44	0.86	5.88	5.53	6.25	5.99	8.93	9.10	4.41	4.36	10.15	9.98
US PUBLIC	KY Domestic Equity Blend	4/1/1984	2,429,890,418.55	19.10	2.16	2.29	21.88	22.03	4.86	6.53	4.86	6.53	8.96	10.04	9.14	10.03	12.95	13.71	6.01	6.43	11.08	11.18
EQUITY NON US	KY Ret.Int'l Eq. Blended Index	7/1/2000	2,409,875,254.17	18.95	5.07	4.36	19.00	16.96	-2.03	-4.74	-2.03	-4.74	3.17	0.99	3.86	2.38	5.35	5.32			2.88	2.9
PRIVATE EQUITY	Russell 3000 + 3%(Qtr Lag)	7/1/2002	1,051,883,338.60	8.27	-6.87	-6.87	-5.98	-5.98	0.29	0.29	0.29	0.29	8.59	8.59	8.77	8.77	11.27	13.99			10.56	10.28
	DIT High Yield Custom Benchmark	7/1/2017	2,046,525,698.57	16.09	0.39	1.06	1.22	9.94	-1.38	-0.98	-1.38	-0.98									3.71	2.71
FIXED INCOME / LIQUIDITY	Discouring Development of Assessment	7/1/2018	2,960,074,159.76	23.27	0.89		4.09	2.90	4.20		4.20										5.22	
CORE FIXED INCOME CASH	Bloomberg Barclays US Aggregate Citigroup Treasury Bill-3 Month	7/1/2013 1/1/1988	2,549,639,089.99 410,435,069.77	20.05 3.23	1.15 0.02	0.63 0.01	5.33 0.10	0.14	5.33 1.89	8.74 1.56	5.33 1.89	8.74 1.56	4.23 2.05	5.32 1.72	3.80 1.52	4.30 1.15	0.93	0.61	2.01	1.58	3.59 3.50	3.96
DIVERSIFYING STRATEGIES	Citigroup Treasury Bill-3 World	7/1/2018	1,821,871,954.96	14.32	-0.46	0.01	4.03	0.14	-2.85	1.50	-2.85	1.50	2.05	1.72	1.52	1.15	0.55	0.01	2.01	1.50	1.06	3.07
REAL ESTATE	NCREIF NFI-ODCE Net 1 Qtr in Arrears Index^	7/1/2018	573,313,474.12	4.51	-1.26	0.75	-0.20	0.75	9.77	3.93	9.77	3.93	9.93	5.85	9.77	7.48	10.59	10.42	7.41	7.07	6.28	6.39
OPPORTUNISTIC / ABSOLUT		.,_,	506,871,574.22	3.99	1.07	1.69	-2.30	7.25	-4.19	0.87	-4.19	0.87	0.18	2.63	-0.13	1.46					2.84	2.73
REAL RETURN	Pension Real Return Custom Benchmark	7/1/2011	741,686,906.62	5.83	-1.61	-1.61	7.33	7.33	-9.24	-9.24	-9.24	-9.24	-0.95	-0.95	1.11	1.11					2.32	1.41
Plan	Benchmark	Inception		KENTUCKY F	RETIREME	NT SYSTEM	MS - PENSI	ON FUND	PLAN NE		NS - 06/30 1 Year		3 Year	cFl E	5 Year	eল	10 Year	re3	20 Year	relii i	ITD	n
KERS	KY Ret. KERS Plan Index	Inception	2,316,004,897.31	100.00	1.33	0.72	8.65	8.96	2.36	1.07	2.36	1.07	5.17	4.76	5.31	5.33	7.26	7.47	5.17	5.14	8.79	8.88
KERS- H	KY Ret. KERS Haz Plan Index		693,794,374.23	100.00	1.00	0.67	9.36	9.72	0.95	0.51	0.95	0.51	5.06	4.85	5.58	5.41	7.36	7.53	5.22	5.17	8.82	8.90
CERS	KY Ret. CERS Plan Index		7,045,846,330.92	100.00	0.86	0.67	8.97	9.72	0.84	0.51	0.84	0.51	5.07	4.85	5.60	5.41	7.37	7.53	5.22	5.17	8.82	8.90
CERS- H	KY Ret. CERS Haz Plan Index		2,377,165,026.82	100.00	0.83	0.67	8.93	9.72	0.71	0.51	0.71	0.51	5.04	4.85	5.60	5.41	7.36	7.53	5.22	5.17	8.82	8.90
SPRS	KY Ret. SPRS Plan Index		286,651,184.16	100.00	1.34	0.72	9.02	8.96	2.21	1.07	2.21	1.07	5.17	4.83	5.21	5.28	7.17	7.46	5.12	5.13	8.76	8.88
KERS	17.2	16	7		8.6			14.4					23.7				6.6		5.4	3.7	3.5	
KERS-H	19.6		19.5		0.0	9.0	0	2414		15.2		_	23.7	18.1			4.9		5.3	3.6	4.6	
CERS	18.9		19.5		_	9.6				5.2	_	_		16.8			5.1		7	4.0		4
CERS-H	19.4		19.2		_	9.7				15.0	_	_		15.9		_	6.5	5.7	4	2.0		
SPRS	17.4	16			6.7	5.7		4.8	-	15.0			25.3	15.5		_	0.5 E.4		F 4	3.0		4
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