

**What’s going on in the marketplace?**

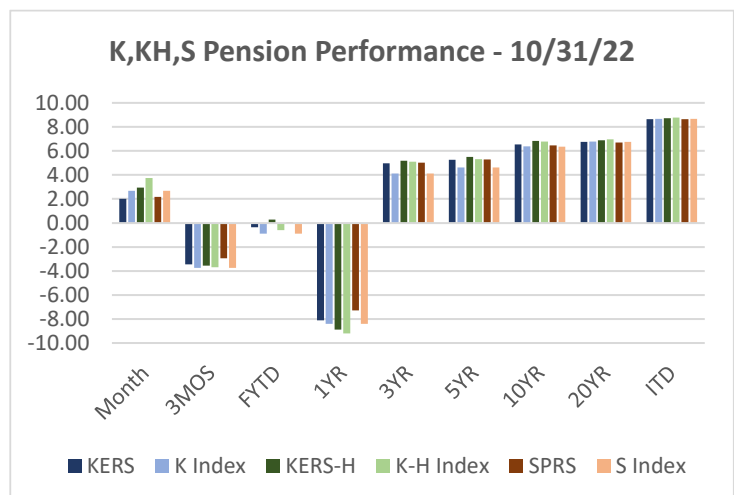
After a volatile quarter that ended with two months of declining equity markets, global stocks rebounded in October, gaining 8.20% per the MSCI ACWI Index. Equity markets rallied as investors’ expectations that rate hikes may slow both in degree and pace in response to signs of slowing economic growth and the potential for a recession took hold. US stocks outperformed their international counterparts. Stubbornly elevated inflation in combination to the Fed’s policy response kept pressure on interest rates, causing bonds to decline. As a result, US bond markets underperformed international bond markets.

**The KPPA Pension Trust portfolio gained 2.99% during the month of October, underperforming a blended benchmark by 73bps.** The KRS Pension Composite produced a 2.2% return during the month. The KERS and SPRS Pension portfolios returned 2.01% and 2.16% respectively, while their benchmark returned 2.68%. The KERS-H Pension portfolio gained 2.95% versus its benchmark return of 3.75%. All three funds underperformed their respective benchmarks with similar drivers of attribution. Relative underperformance in the KERS and SPRS plans was driven primarily by weaker performance within the Specialty Credit allocation in combination with the overweight to Cash during a risk-on period. This was partially offset by solid stock selection in the Public Equity allocation. The KERS-H plan underperformed its benchmark due to weakness in the Specialty Credit portfolio combined with overweights to Cash and Fixed Income investments. As with the KERS and SPRS plans, stock selection in the Public Equity portfolio helped offset some of the underperformance in other asset classes.

For the fiscal year-to-date, the KPPA Pension Trust portfolio has returned 0.14%, outperforming the benchmark return of -0.86%, while the KRS Pension Composite fell -0.19% during the period. The KERS and SPRS Pension portfolios returned -0.35% and 0.05%, against a benchmark return of -0.89%. The KERS-H Pension portfolio returned 0.27% while its benchmark fell -0.61%. All three funds outperformed due to similar attribution drivers. Relative outperformance was driven by solid performance in the Core Fixed Income, Specialty Credit, and the Public Equities portfolios. Allocation positioning partially offset this outperformance, particularly the underweight to both Real Return and Real Estate.

**Global equity markets** experienced were strong during the month of October, as evidenced by the MSCI ACWI Index returning 6.03%, a welcome reversal from September’s extreme weakness. Domestic markets held up better than their Non-US market counterpart (R3000: 6.03% versus MSCI ACWI Ex-US: 3.03%). This brought the fiscal year-to-date return for global markets to -1.20%, driven by weakness in the international markets, which have fallen -6.96%. US markets have gained 3.37% during the period.

**US equity markets** gained 8.20% during the month (Russell 3000), while the KPPA portfolio fared slightly better, returning 8.31%. All market segments provided strong absolute returns, led by the 11.01% return from small caps; with value outpacing growth (R3000V: 10.39% versus R3000G: 6.07%). Relative outperformance was driven primarily by allocation as stock selection amongst the individual mandates was mixed. The portfolio’s tilt smaller and slight value bent was beneficial. For the first four months of the fiscal year, the allocation has returned 3.72%, adding 25bps over its benchmark.



**NonUS equity markets** returned 3.03% (MSCI ACWI Ex-US) during the month. Developed markets returned 5.51% (MSCI World Ex-US) during the period while emerging markets fell -3.1% (MSCI EM). The KPPA portfolio gained 4.65% during the month, outperforming its benchmark by 162bps. Relative outperformance was driven by stock selection, as most individual mandates outperformed their respective benchmarks. The allocation has returned -4.87% versus the benchmark's -6.96% fiscal year-to-date performance.

**The specialty credit portfolio** underperformed its benchmark during the month, returning 0.88% versus 1.82%. The High Yield market gained 2.60% in reversal of what had been a continued risk-off environment. The leveraged loan segment of the market returned 1.03% per the Morningstar LSTA Leveraged Loan Index. The reported relative underperformance is largely driven by the issues associated with timing differences between the private market mandates and the public market benchmarks which tend to be exacerbated during periods of larger moves in the public markets. The valuation for many of these private market mandates are updated on a quarterly basis. Performance for the public markets mandates within the allocation was mixed for the month with a number of mandates outperforming their benchmarks while a few trailed. Over longer period this segment of the portfolio continues to contribute very strong relative performance.

**The core fixed income portfolio** lost -0.48% compared to the Bloomberg Aggregate Index return of -1.30%. Relative outperformance was attributable to positioning within the allocation; the portfolios remain underweight overall duration given the potential for even higher rates and elevated volatility. Both shorter-term and intermediate credit market segments held up better. The fiscal year-to-date return now stands at -2.45% compared to the benchmark return of -5.99%.

**The private equity allocation** fell -2.44% during the month, bringing the 1-year return to 4.03%. Trailing public marks have begun to affect the overall performance of the portfolio over the past few months. While the 1-year return is still positive, it is down from 8.25% last month, and just shy of 21% at the end of August.

**The real return portfolio** gained 5.27% during the month, compared to its benchmark return of 0.46%. As with the past few months, performance was driven by the MLP portion of the portfolio, as this portion of the portfolio gained 13.45%. After the first four months of the fiscal year, the return now stands at 8.10% versus the 2.51% of the benchmark.

**Real estate** added 79bps during the month, bringing the fiscal year-to-date return to 3.53% (benchmark return of 4.54%). The portfolio has benefitted from strength in industrial, multi-family, student housing, and storage properties.

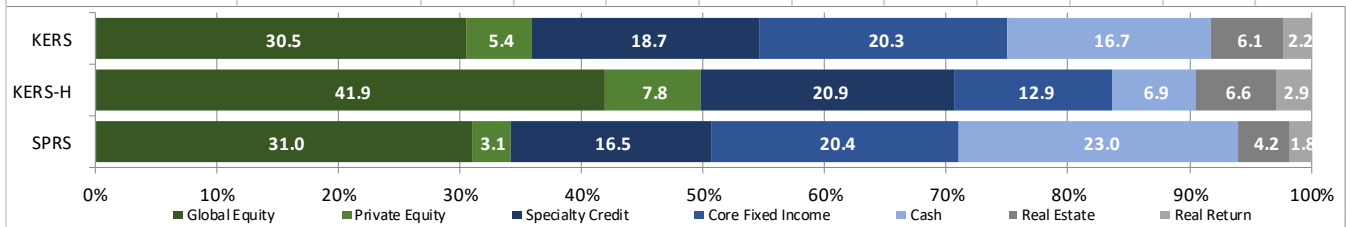
**The cash portfolio** outpaced its benchmark, the 3-month T-bill, by 2bps returning 0.27% for the month. This brought the fiscal year-to-date return to 0.83%, and the 1-year return to 1.05% (versus 0.88%).

**KERS, KERS-HAZ, & SPRS - PENSION FUND - PLAN NET RETURNS - 10/31/22**

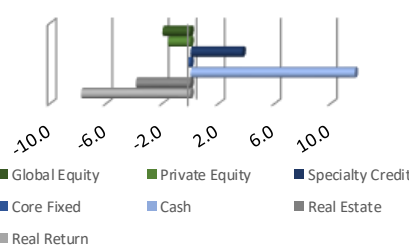
Plan	Market Value	Month	3 Months	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	ITD
<b>KERS</b>	<b>3,116,988,489.14</b>	<b>2.01</b>	<b>-3.45</b>	<b>-0.35</b>	<b>-8.10</b>	<b>4.98</b>	<b>5.26</b>	<b>6.53</b>	<b>6.74</b>	<b>7.52</b>	<b>8.65</b>
KY Ret. KERS Plan IPS Index		2.68	-3.73	-0.89	-8.40	4.12	4.62	6.37	6.77	7.48	8.68
<b>KERS- H</b>	<b>819,020,805.57</b>	<b>2.95</b>	<b>-3.55</b>	<b>0.27</b>	<b>-8.89</b>	<b>5.17</b>	<b>5.49</b>	<b>6.84</b>	<b>6.89</b>	<b>7.63</b>	<b>8.73</b>
KY Ret. KERS Haz Plan IPS Index		3.75	-3.69	-0.61	-9.20	5.11	5.32	6.77	6.97	7.61	8.78
<b>SPRS</b>	<b>548,171,469.77</b>	<b>2.16</b>	<b>-2.94</b>	<b>0.05</b>	<b>-7.28</b>	<b>5.03</b>	<b>5.29</b>	<b>6.47</b>	<b>6.70</b>	<b>7.50</b>	<b>8.63</b>
KY Ret. SPRS Plan IPS Index		2.68	-3.73	-0.89	-8.40	4.12	4.62	6.34	6.75	7.47	8.67

**KPPA PENSION FUND UNIT - NET RETURNS - 10/31/22 - PROXY PLAN ASSET PERFORMANCE**

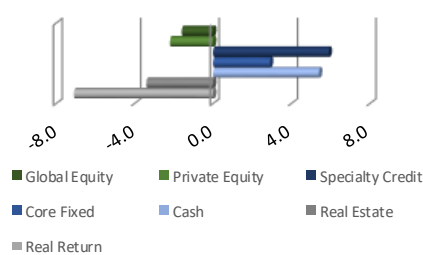
Structure	Month	QTD	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	ITD
<b>PUBLIC EQUITY</b>	<b>6.86</b>	<b>6.86</b>	<b>0.21</b>	<b>-20.52</b>	<b>4.61</b>	<b>5.07</b>	<b>7.95</b>	<b>7.61</b>	<b>8.38</b>	<b>9.93</b>
MSCI ACWI	6.03	6.03	-1.20	-20.49	4.31	4.74	7.72	7.58	8.18	9.76
<b>PRIVATE EQUITY</b>	<b>-2.44</b>	<b>-2.44</b>	<b>-4.29</b>	<b>4.03</b>	<b>16.69</b>	<b>15.34</b>	<b>14.15</b>	<b>13.07</b>		<b>12.07</b>
Russell 3000 + 3%(Qtr Lag)	9.32	9.32	-7.63	-4.35	15.59	15.20	16.78	12.78		12.12
<b>SPECIALTY CREDIT</b>	<b>0.88</b>	<b>0.88</b>	<b>1.21</b>	<b>0.31</b>	<b>4.52</b>	<b>4.97</b>				<b>5.30</b>
50% BB US HY / 50% SP LSTA Leveraged Loan	1.82	1.82	2.22	-6.80	1.55	2.57				2.79
<b>CORE FIXED INCOME</b>	<b>-0.48</b>	<b>-0.48</b>	<b>-2.45</b>	<b>-7.81</b>	<b>-0.43</b>	<b>1.31</b>				<b>2.16</b>
Bloomberg Barclays US Aggregate	-1.30	-1.30	-5.99	-15.68	-3.77	-0.54				1.06
<b>CASH</b>	<b>0.27</b>	<b>0.27</b>	<b>0.83</b>	<b>1.05</b>	<b>0.78</b>	<b>1.39</b>	<b>0.97</b>	<b>1.62</b>	<b>2.70</b>	<b>3.30</b>
Citigroup Treasury Bill-3 Month	0.25	0.25	0.70	0.88	0.60	1.16	0.68	1.20	2.29	2.89
<b>REAL ESTATE</b>	<b>0.79</b>	<b>0.79</b>	<b>3.53</b>	<b>23.65</b>	<b>14.80</b>	<b>13.53</b>	<b>11.39</b>	<b>8.66</b>	<b>6.72</b>	<b>6.94</b>
NCREIF NFI-ODCE Net 1 Qtr in Arrears Index^	0.00	0.00	4.54	28.31	11.66	9.55	10.15	7.84	7.76	6.82
<b>REAL RETURN</b>	<b>5.27</b>	<b>5.27</b>	<b>8.10</b>	<b>5.33</b>	<b>7.41</b>	<b>5.62</b>	<b>3.77</b>			<b>4.73</b>
US CPI +3%	0.46	0.46	2.51	5.33	7.41	5.62	3.88			3.99



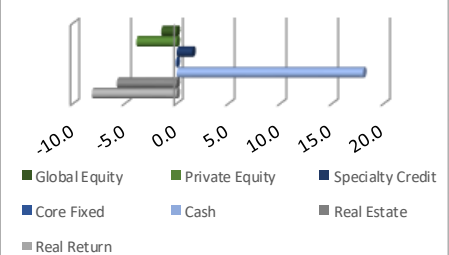
**KERS PEN Relative Weights**



**KERS-HAZ PEN Relative Weights**



**SPRS PEN Relative Weights**

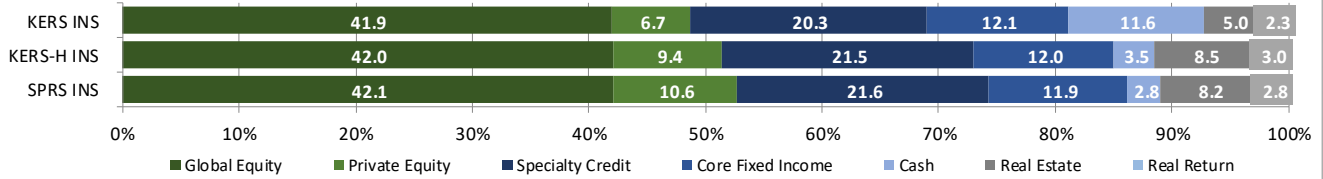


**KERS INS, KERS-HAZ INS, SPRS INS - INSURANCE FUND - PLAN NET RETURNS - 10/31/22**

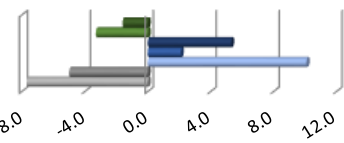
Plan	Market Value	Month	3 Months	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	ITD
<b>KERS INS</b>	<b>1,301,789,439.16</b>	<b>3.02</b>	<b>-3.11</b>	<b>0.65</b>	<b>-8.15</b>	<b>5.32</b>	<b>5.26</b>	<b>6.48</b>	<b>6.59</b>	<b>6.68</b>	<b>7.14</b>
KY Ins. KERS Plan IPS Index		3.75	-3.69	-0.61	-8.70	4.97	5.22	6.74	7.05	7.05	7.46
<b>KERS - H INS</b>	<b>575,742,430.36</b>	<b>3.02</b>	<b>-3.32</b>	<b>0.39</b>	<b>-7.50</b>	<b>5.44</b>	<b>5.66</b>	<b>6.83</b>	<b>6.76</b>	<b>6.80</b>	<b>7.24</b>
KY Ins. KERS Haz Plan IPS Index		3.75	-3.69	-0.61	-8.70	4.83	5.16	6.73	7.04	7.04	7.45
<b>SPRS INS</b>	<b>227,919,562.77</b>	<b>3.00</b>	<b>-3.44</b>	<b>0.30</b>	<b>-7.67</b>	<b>5.65</b>	<b>5.91</b>	<b>6.98</b>	<b>6.84</b>	<b>6.85</b>	<b>7.28</b>
KY Ins. SPRS Plan IPS Index		3.75	-3.69	-0.61	-8.70	4.83	5.16	6.75	7.05	7.05	7.46

**KPPA INSURANCE FUND UNIT - NET RETURNS - 10/31/22 - PROXY PLAN ASSET PERFORMANCE**

Structure	Month	QTD	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	ITD
<b>PUBLIC EQUITY</b>	<b>6.84</b>	<b>6.84</b>	<b>0.17</b>	<b>-20.41</b>	<b>4.63</b>	<b>5.05</b>	<b>8.00</b>	<b>7.54</b>		<b>8.19</b>
MSCI ACWI	6.03	6.03	-1.20	-20.50	4.27	4.71	7.67	7.21		7.97
<b>PRIVATE EQUITY</b>	<b>-0.74</b>	<b>-0.74</b>	<b>-0.85</b>	<b>13.38</b>	<b>16.33</b>	<b>15.41</b>	<b>15.19</b>	<b>12.25</b>		<b>11.19</b>
Russell 3000 + 3%(Qtr Lag)	9.32	9.32	-4.35	-4.35	15.59	15.20	16.78	12.39		11.66
<b>SPECIALTY CREDIT</b>	<b>1.06</b>	<b>1.06</b>	<b>1.30</b>	<b>0.62</b>	<b>4.46</b>	<b>4.83</b>				<b>5.13</b>
50% BB US HY / 50% SP LSTA Leveraged Loan	1.82	1.82	2.22	-6.80	1.55	2.57				2.79
<b>CORE FIXED INCOME</b>	<b>-0.49</b>	<b>-0.49</b>	<b>-2.58</b>	<b>-8.10</b>	<b>-0.68</b>	<b>1.14</b>				<b>1.85</b>
Bloomberg Barclays US Aggregate	-1.30	-1.30	-5.99	-15.68	-3.77	-0.54				1.06
<b>CASH</b>	<b>0.26</b>	<b>0.26</b>	<b>0.81</b>	<b>1.03</b>	<b>0.62</b>	<b>1.22</b>	<b>0.82</b>	<b>1.45</b>		<b>2.42</b>
Citigroup Treasury Bill-3 Month	0.25	0.25	0.70	0.88	0.60	1.16	0.68	1.20		2.31
<b>REAL ESTATE</b>	<b>0.84</b>	<b>0.84</b>	<b>3.47</b>	<b>23.05</b>	<b>14.74</b>	<b>13.49</b>	<b>11.20</b>			<b>10.63</b>
NCREIF NFI-ODCE Net 1 Qtr in Arrears Index <sup>A</sup>	0.00	0.00	4.54	28.31	11.66	9.55	10.15			7.16
<b>REAL RETURN</b>	<b>4.27</b>	<b>4.27</b>	<b>6.56</b>	<b>6.44</b>	<b>7.09</b>	<b>5.47</b>	<b>3.54</b>			<b>4.49</b>
US CPI +3%	0.46	0.46	2.51	7.14	7.32	5.61	3.93			4.04

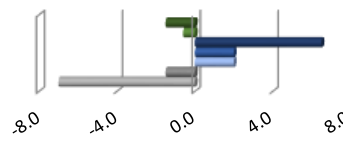


**KERS Insurance Relative Weights**



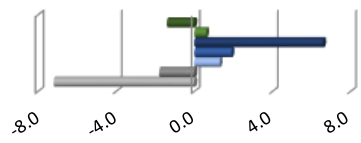
■ Global Equity   
 ■ Private Equity   
 ■ Specialty Credit   
 ■ Core Fixed   
 ■ Cash   
 ■ Real Estate   
 ■ Real Return

**KERS-HAZ Insurance Relative Weights**



■ Global Equity   
 ■ Private Equity   
 ■ Specialty Credit   
 ■ Core Fixed   
 ■ Cash   
 ■ Real Estate   
 ■ Real Return

**SPRS Insurance Relative Weights**



■ Global Equity   
 ■ Private Equity   
 ■ Specialty Credit   
 ■ Core Fixed   
 ■ Cash   
 ■ Real Estate   
 ■ Real Return