



Kentucky Retirement Systems

House Budget Review Subcommittee on Personnel, Public Retirement and Finance

February 27, 2019

Highlights of Calendar 2019

- Investment performance
 - +5.7% FY 2019 vs. 8.6% FY 2018
 - +15.2% for the first 6 months of FY 2020 vs. 19.4% median
- But most funds take far more risk

	KRS	Universe Median
Public Equities	40.0%	56.0%
3 Year Standard Deviation	5.1% (6 th)	7.2%
3 Year Sharpe Ration	1.45% (2 nd)	1.07%

- Cash flow positive for 8 of 10 plans during first 6 months of FY 2020
 - +\$142 MIL vs. +\$66.6 MIL
- Funded status' for FY 2019 somewhat lower than FY 2018
 - Had to absorb \$2 BIL in additional liabilities due to assumption changes

ASSET CLASS PERFORMANCE

ANNUALIZED
5-YEAR
AS OF 12/2019

REITs 31.8%	REITs 4.2%	MLPs 18.3%	Emrg Mrkts 37.7%	T-Bills 1.9%	U.S. Equity 31.0%	U.S. Equity 11.4%
U.S. Equity 12.7%	U.S. Equity 0.7%	High Yield 17.1%	Developed 25.6%	Core Bond 0.0%	REITs 25.8%	REITs 6.9%
Core Bond 6.0%	Core Bond 0.6%	U.S. Equity 13.4%	U.S. Equity 21.0%	U.S. TIPS -1.3%	Developed 22.7%	Developed 6.2%
MLPs 4.8%	T-Bills 0.1%	Commodities 11.8%	High Yield 7.5%	High Yield -2.1%	Emrg Mrkts 18.9%	High Yield 6.1%
U.S. TIPS 3.6%	Developed -0.4%	Emrg Mrkts 11.6%	REITs 4.2%	REITs -4.8%	High Yield 14.3%	Emrg Mrkts 6.0%
High Yield 2.5%	U.S. TIPS -1.4%	REITs 7.2%	Core Bond 3.6%	U.S. Equity -5.3%	Core Bond 8.7%	Core Bond 3.1%
T-Bills 0.0%	High Yield -4.5%	U.S. TIPS 4.7%	U.S. TIPS 3.0%	Commodities -11.2%	U.S. TIPS 8.4%	U.S. TIPS 2.6%
Emrg Mrkts -1.8%	Emrg Mrkts -14.6%	Core Bond 2.6%	Commodities 1.7%	MLPs -12.4%	Commodities 7.7%	T-Bills 1.1%
Developed -4.5%	Commodities -24.7%	Developed 1.5%	T-Bills 0.8%	Developed -13.4%	MLPs 6.6%	Commodities -3.9%
Commodities -17.0%	MLPs -32.6%	T-Bills 0.3%	MLPs -6.5%	Emrg Mrkts -14.2%	T-Bills 2.3%	MLPs -7.0%

Data sources: Wilshire Compass

Note: Developed asset class is developed equity markets ex-U.S., ex-Canada

Asset Allocation Bucketing

KRS Pension Plan

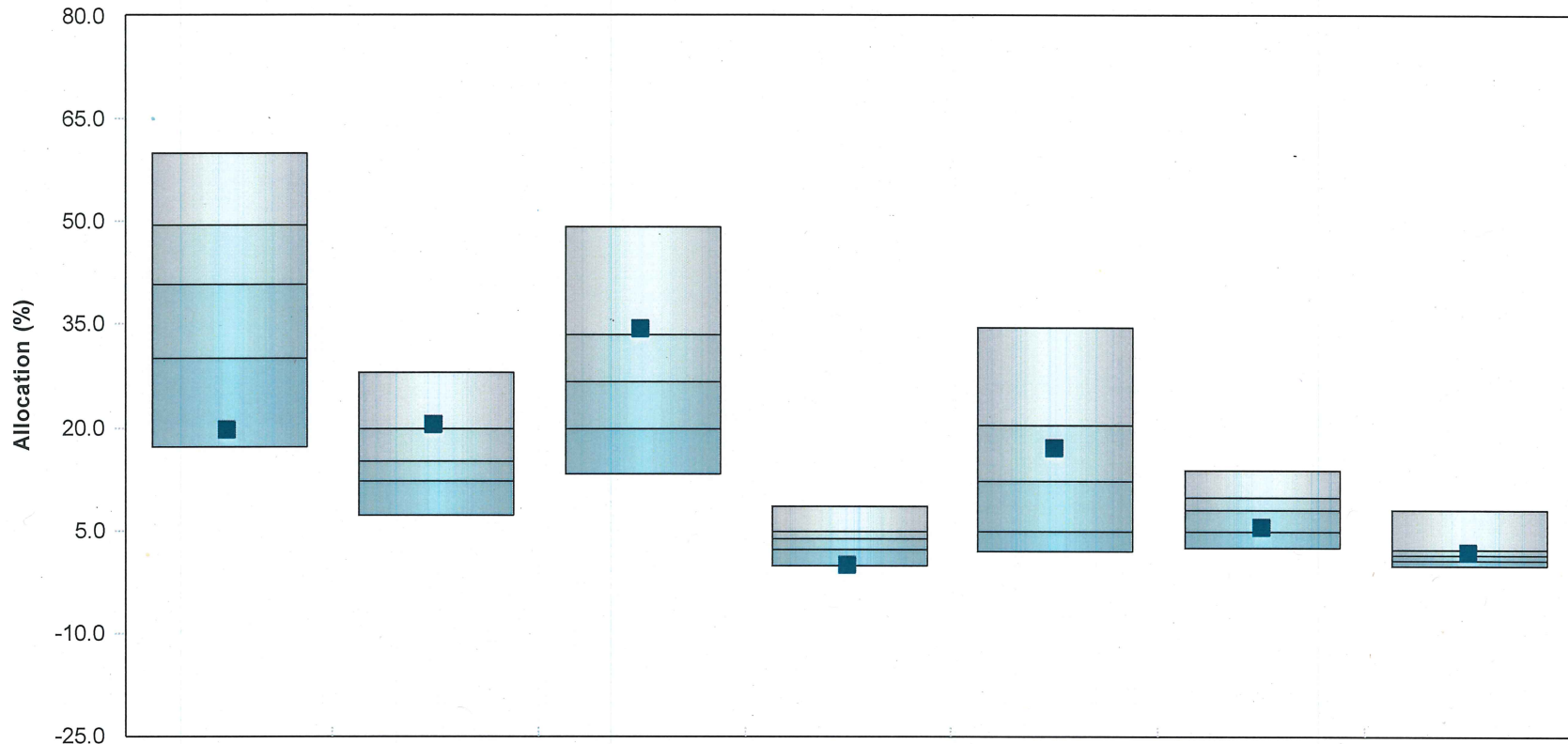
Periods Ended As of December 31, 2019

	Actual		Target	Difference	
	\$	%		\$	%
Growth	\$8,582,361,468	64.1%	60.7%	\$457,315,620	3.4%
U.S. Equity	\$2,613,928,930	19.5%	18.2%	\$177,753,733	1.3%
Non-U.S. Equity	\$2,735,016,510	20.4%	18.2%	\$298,841,313	2.2%
Private Equity	\$1,116,015,335	8.3%	9.4%	-\$142,228,997	-1.1%
High Yield/Specialty Credit	\$2,117,400,693	15.8%	15.0%	\$109,563,992	0.8%
Liquidity	\$2,721,466,214	20.3%	16.3%	\$539,616,999	4.0%
Core Fixed Income	\$2,489,660,834	18.6%	15.9%	\$361,353,931	2.7%
Cash	\$231,805,380	1.7%	1.4%	\$44,407,288	0.3%
Diversifying	\$2,081,750,322	15.6%	23.0%	-\$996,932,619	-7.4%
Real Estate	\$734,492,570	5.5%	5.0%	\$65,213,670	0.5%
Real Return	\$1,147,108,341	8.6%	15.0%	-\$860,728,360	-6.4%
Absolute Return	\$200,149,411	1.5%	3.0%	-\$201,417,929	-1.5%

Plan Sponsor TF Asset Allocation

KRS Pension Plan vs All Public Plans-Total Fund

Periods Ended December 31, 2019

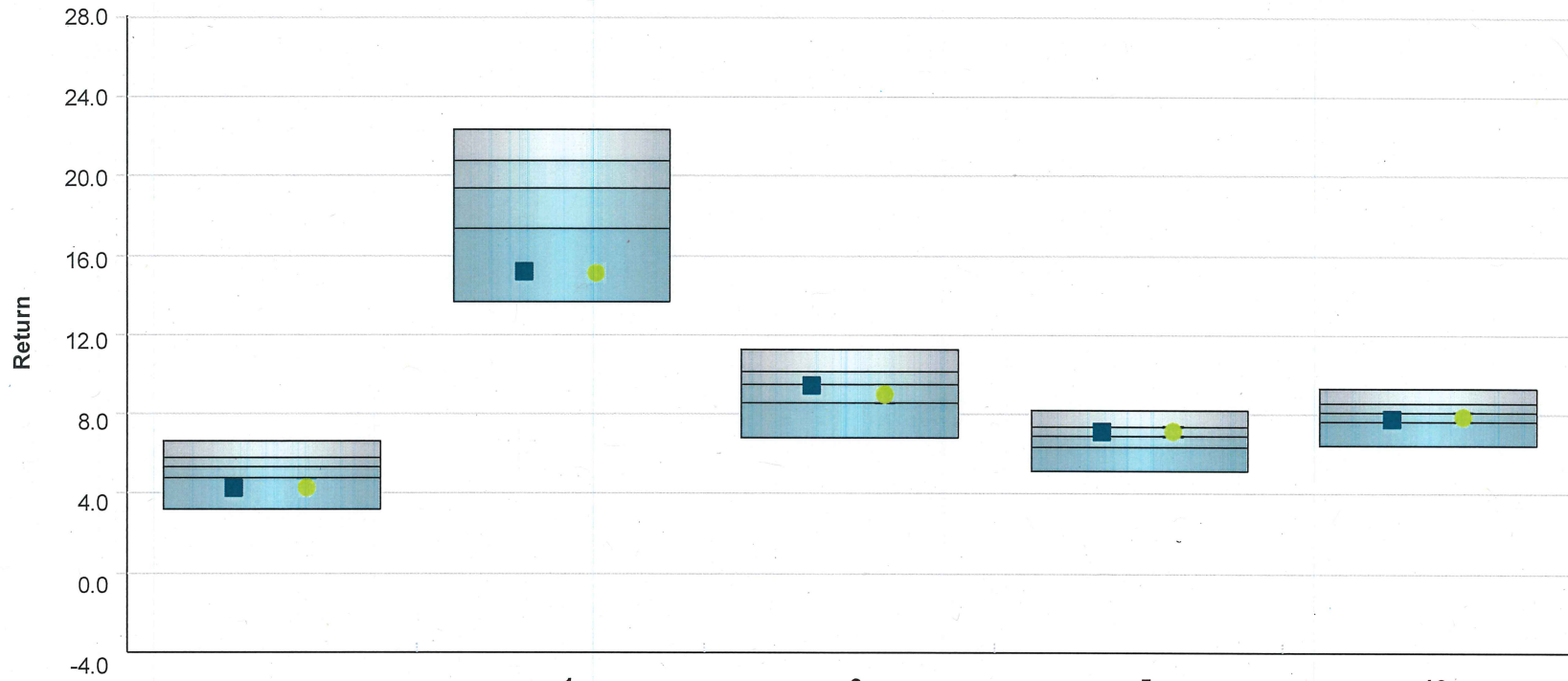


	US Equity	Intl. Equity	US Fixed Income	Intl. Fixed Income	Alternative Inv.	Real Estate	Cash
■ KRS Pension Plan	19.53	20.43	34.42	0.00	16.91	5.49	1.73
5th Percentile	60.14	28.10	49.34	8.71	34.54	13.73	8.17
1st Quartile	49.51	19.84	33.50	4.81	20.46	9.80	2.43
Median	40.85	15.17	26.64	3.92	12.31	8.16	1.39
3rd Quartile	30.19	12.33	19.94	2.36	5.02	5.01	0.61
95th Percentile	17.17	7.32	13.22	0.06	2.01	2.66	0.06

Plan Sponsor Peer Group Analysis

KRS Pension Plan vs All Public Plans-Total Fund

Periods Ended December 31, 2019

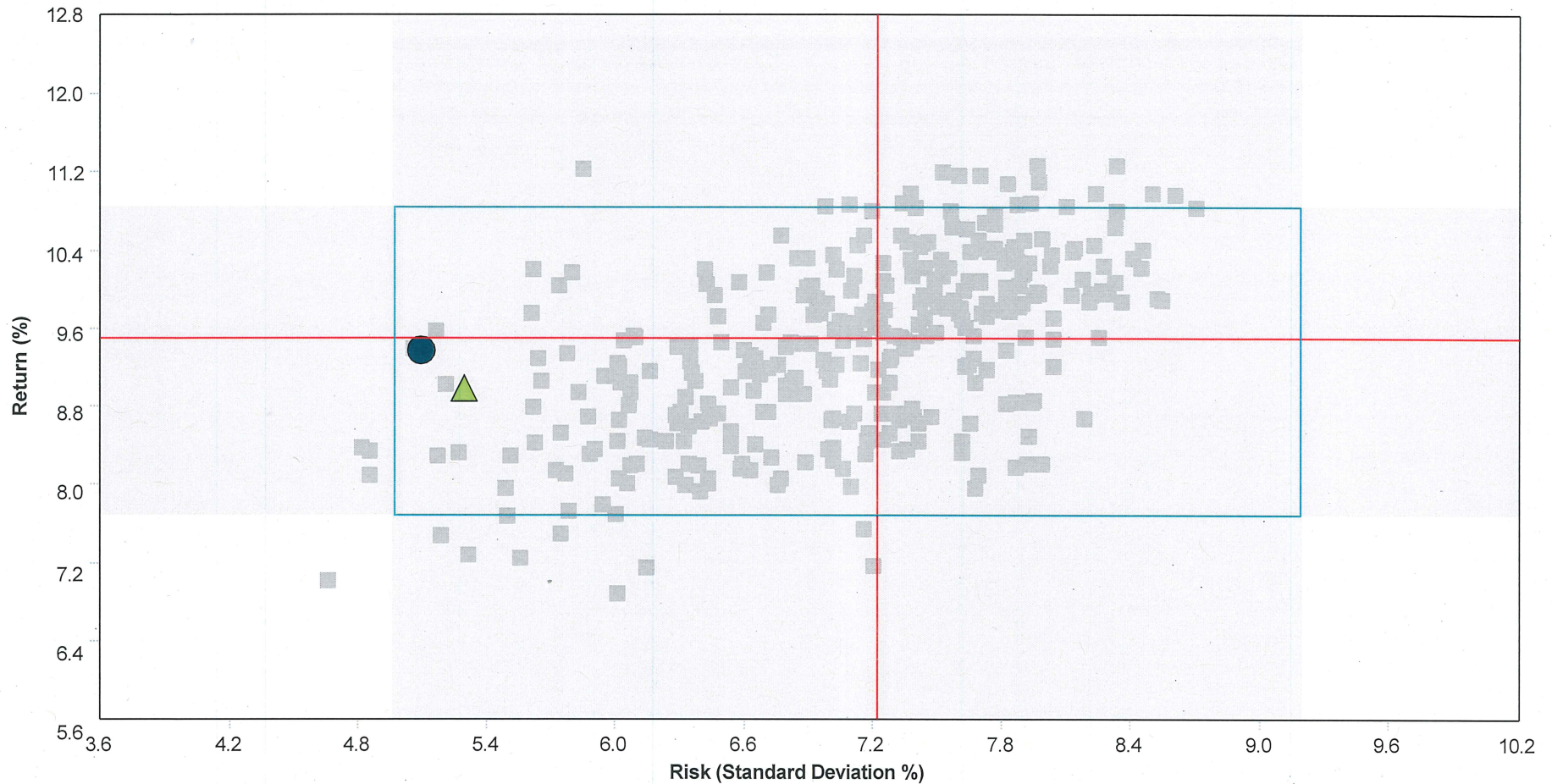


	QTD	1 Year	3 Years	5 Years	10 Years
■ KRS Pension Plan	4.23 (89)	15.16 (91)	9.37 (55)	7.12 (38)	7.76 (66)
● KRS Allocation Index	4.23 (89)	15.06 (92)	8.99 (66)	7.09 (39)	7.86 (63)
5th Percentile	6.61	22.38	11.26	8.18	9.30
1st Quartile	5.85	20.77	10.14	7.34	8.62
Median	5.37	19.44	9.50	6.92	8.10
3rd Quartile	4.81	17.36	8.62	6.39	7.62
95th Percentile	3.19	13.65	6.87	5.19	6.44
Population	425	419	398	366	300

Parentheses contain percentile rankings.
Calculation based on monthly periodicity.

Plan Sponsor Scattergram

KRS Pension Plan vs All Public Plans-Total Fund
 Periods Ended January 1, 2017 To December 31, 2019



	Return	Standard Deviation
KRS Pension Plan	9.37	5.10
rp KRS Allocation Index	8.99	5.30
— Median	9.50	7.22

Calculation based on monthly periodicity.



Pension - Investment Update 12/31/19

Net of Fees Rates of Return

	Market Value (in \$millions)	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years
CERS Non-Hazardous	\$7,480.6	15.5%	9.5%	7.2%	7.8%	5.5%	8.1%
<i>Plan Index</i>		15.6%	9.3%	7.0%	7.8%	5.5%	8.0%
CERS Hazardous	\$2,521.6	15.4%	9.5%	7.2%	7.8%	5.5%	8.1%
<i>Plan Index</i>		15.6%	9.3%	7.0%	7.8%	5.5%	8.0%
KERS Non-Hazardous	\$2,364.5	13.2%	8.5%	6.5%	7.5%	5.3%	8.0%
<i>Plan Index</i>		14.4%	8.5%	6.7%	7.6%	5.4%	8.0%
KERS Hazardous	\$722.4	15.2%	9.4%	7.2%	7.8%	5.5%	8.1%
<i>Plan Index</i>		15.6%	9.3%	7.0%	7.8%	5.5%	8.0%
SPRS	\$296.5	14.0%	8.7%	6.4%	7.4%	5.3%	8.0%
<i>Plan Index</i>		14.4%	8.7%	6.6%	7.6%	5.4%	8.0%



Insurance - Investment Update 12/31/19

Net of Fees Rates of Return

	Market Value (in \$millions)	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years
CERS Non-Hazardous	\$2,609.5	15.1%	9.6%	7.3%	7.6%	5.0%	7.5%
<i>Plan Index</i>		15.5%	9.4%	7.1%	8.0%	5.2%	7.7%
CERS Hazardous	\$1,381.6	15.2%	9.7%	7.4%	7.6%	5.0%	7.6%
<i>Plan Index</i>		15.5%	9.4%	7.1%	8.0%	5.2%	7.7%
KERS Non-Hazardous	\$1,007.0	15.2%	8.8%	6.7%	7.2%	4.8%	7.4%
<i>Plan Index</i>		15.5%	9.3%	7.0%	8.0%	5.2%	7.6%
KERS Hazardous	\$547.8	15.1%	9.4%	7.2%	7.5%	5.0%	7.5%
<i>Plan Index</i>		15.5%	9.3%	7.1%	8.0%	5.2%	7.7%
SPRS	\$209.4	15.1%	9.6%	7.4%	7.6%	5.0%	7.5%
<i>Plan Index</i>		15.5%	9.4%	7.1%	8.0%	5.2%	7.7%

KRS Funded Status
Pension Fund
Assets at Actuarial Value
As of 06/30/19 (\$MIL)

	CERS	CERS NH	KERS	KERS NH	SPRS	Total
Assets	\$7,160	\$2,375	\$2,206	\$672	\$282	\$12,585
Liabilities	\$14,356	\$5,254	\$16,466	\$1,226	\$1,045	\$38,388
Unfunded Liabilities	\$7,307	\$2,870	\$14,260	\$555	\$763	\$25,755
% Unfunded	49.1%	45.3%	13.4%	54.8%	27.0%	32.8%

KRS Funded Status
Insurance Trust
Assets at Actuarial Value
As of 06/30/19 (\$MIL)

	CERS	CERS NH	KERS	KERS NH	SPRS	Total
Assets	\$2,523	\$1,314	\$991	\$525	\$197	\$5,550
Liabilities	\$3,568	\$1,733	\$2,733	\$427	\$277	\$8,738
Unfunded Liabilities	\$1,045	\$419	\$1,742	(\$99)	\$79	\$3,186
% Unfunded	70.7%	75.8%	36.3%	123.1%	71.3%	63.5%
Change vs. 06/30/18	(7.4%)	(.3%)	(.1%)	(6.9%)	(.3%)	(2.3%)

KRS Contribution Rates Pension and Insurance FY 2019 vs. FY 2020

	CERS	CERS NH	KERS	KERS NH	SPRS
FY 2019	21.48%	35.34%	83.43%	36.85%	146.28%
FY 2019 Prior to Phase In	28.05%	47.86%	NA	NA	NA
FY 2020	24.06%	53.60%	93.01%	37.64%	156.99%
FY 2020 Prior to Phase In	31.99%	58.78%	NA	NA	NA