

What's going on in the marketplace?

Global equity markets fell off a cliff in May as a breakdown in trade negotiations between the U.S. and China resulted in another round of tariffs going into effect. Global growth concerns escalated further as the US threatened new tariffs against Mexico in an attempt to stem illegal immigration. In response, a flight to quality took place, primarily in the form of a rush to U.S. Treasuries driving yields lower.

U.S. Equities

U.S. equity markets fell nearly -6.5% during the month per the Russell 3000. All market cap segments lost significant ground with large caps holding up the best, falling -6.4%. Both small and mid-caps lost over -7.5% (-7.6% and -8.0%, respectively). There was no significant style bias as growth and value performed similarly (R3000G -6.4%, R3000V -6.6%).

The KRS U.S. Equity portfolio provided 18 bps of downside protection over the Russell 3000 Index during the month (-6.3% vs -6.5%). The portfolio's relative performance was driven entirely by stock selection, and was hampered by allocation decisions. From a stock selection perspective, all mandates outperformed their respective benchmarks; the internal factor based portfolio outpaced the S&P 500 by 158 bps. From an allocation perspective, the value and tilt smaller detracted from performance (see above of style / size comparisons).

Non-U.S. Equities

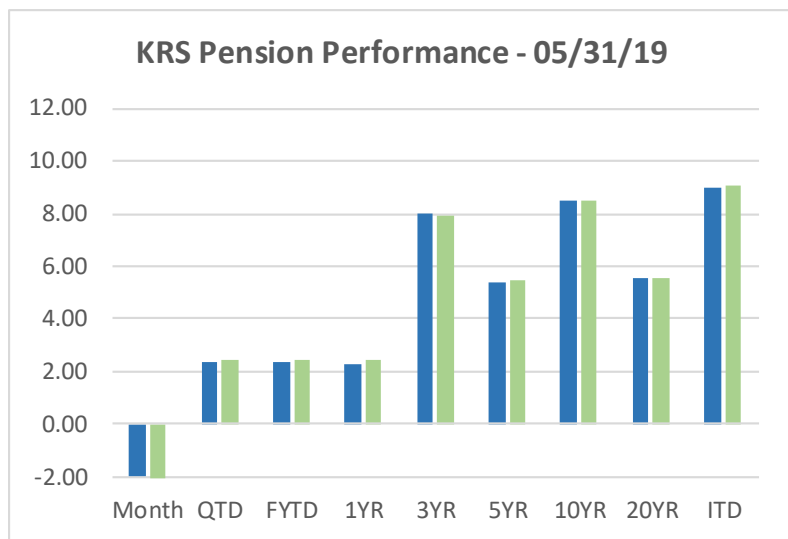
Non-U.S. equities held up a little better than their U.S. counter-parts, falling -5.3% per the MSCI ACWI Ex-U.S. Developed markets provided significant downside protection (roughly 270 bps) over emerging markets which fell over -7% during the month.

The KRS Non-U.S. Equity portfolio slightly edged out the index by 9 basis points during the month (-5.3% vs -5.3%). Stock selection was primarily responsible for the relative outperformance. While only two of the four active large cap managers outperformed their index, the return dispersion was skewed in KRS favor. The small cap allocation just slightly underperformed its index. Allocation decisions had little impact on relative performance.

Fixed Income

The fixed income market was really the only asset class that provided any meaningfully positive performance during the month. The core bond part of the market performed best returning 1.8%, followed by the intermediate credit space earning 1.1%. Leveraged loans were off 22 bps and the corporate high yield market fell roughly -1.2%.

The KRS core fixed income allocation performed well, adding 1%, driven by investments in both core and intermediate credit bonds. The KRS specialty credit allocation was able to deliver a positive 23 bps despite primarily consisting of high yield and leveraged loan investments, an area under pressure during the period.



Alternative Assets

The diversifying strategy group fell -0.3% during the period. The Opportunistic allocation was the only segment that provided a meaningfully positive return during the month (0.9%). The Absolute Return and Real Estate portfolios remained relatively flat during the tough period, returning +2 bps and -6 bps, respectively. The only real weakness in terms of performance during the month was from the Real Return allocation, which lost 59 bps. The Private Equity portion of the portfolio was positive, earning 11 bps.

Cash

The cash portfolio performed inline during the month (0.2% vs 0.2%). The cash allocation finished the period above target (3.7%) in part due to the continued transitioning of assets to the newly approved asset allocation.

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.
- Individual plan allocation and performance (pg.4).
- 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.
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| Private Equity Composite (Pension) | Private Equity Composite (Insurance) |
| Inception (07/01/02) to 06/30/11 | Inception (07/01/02) to 06/30/11 |
| 60.00% S&P 1500 Composite Index | 80.00% S&P 1500 Composite Index |
| 40.00% Barclays US Corporate High Yield Index | 20.00% Barclays US Corporate High Yield Index |
| 07/01/11 to 12/31/15 | 07/01/11 to 12/31/15 |
| 100.00% Russell 3000 Index + 4% (Qtr Lag) | 100.00% Russell 3000 Index + 4% (Qtr Lag) |
| 01/01/16 to Present | 01/01/16 to Present |
| 100.00% Russell 3000 Index + 3% (Qtr Lag) | 100.00% Russell 3000 Index + 3% (Qtr Lag) |
- | | |
|--|---|
| 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> | <u>Insurance Benchmark Composite 01/01/16 to 08/31/17</u> |
| US Equity: Russell 3000 (25.6%) | US Equity: Russell 3000 (26.5%) |
| Non US Equity: MSCI AXCI Ex-US IMI (25.2%) | Non US Equity: MSCI AXCI Ex-US IMI (26.5%) |
| Global Fixed Income: Barclays Universal Index (6.8%) | Global Fixed Income: Barclays Universal Index (6.0%) |
| Credit Fixed Income: Barclays US High Yield (7.2%) | Credit Fixed Income: Barclays US High Yield (6.0%) |
| Real Estate: NCREIF ODCE (5.0%) | Real Estate: NCREIF ODCE (5.0%) |
| Absolute Return: HFRI Diversified FOF (10.0%) | Absolute Return: HFRI Diversified FOF (10.0%) |
| Real Return: Allocation Specific (8.0%) | Real Return: Allocation Specific (8.0%) |
| Private Equity<5Yrs: Actual Performance | Private Equity<5Yrs: Actual Performance |
| Private Equity>5Yrs: Russell 3000 Index+3% (10.0%) | Private Equity>5Yrs: Russell 3000 Index+3% (10.0%) |
| Cash: Cit Grp 3-mos Treasury Bill (2.2%) | Cash: Cit Grp 3-mos Treasury Bill (2.0%) |
| <u>Pension Benchmark Composite 09/01/17 to 05/31/18 - Transition Period w/Sliding Targets</u> | <u>Insurance Benchmark Composite 09/01/17 to 05/31/18 - Transition Period w/Sliding Targets</u> |
| US Equity: Russell 3000 (23.6%) | US Equity: Russell 3000 (24.5%) |
| Non US Equity: MSCI AXCI Ex-US IMI (23.2%) | Non US Equity: MSCI AXCI Ex-US IMI (24.5%) |
| Global Fixed Income: Barclays Universal Index (9.0%) | Global Fixed Income: Barclays Universal Index (8.0%) |

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 Present

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%)

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

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 Present

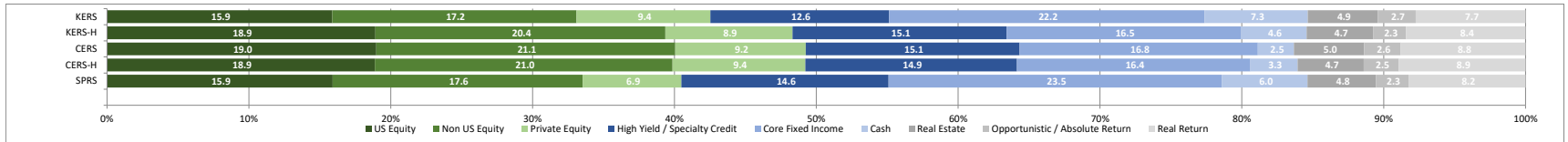
US Equity: Russell 3000 (17.9%)
Non US Equity: MSCI AXCI Ex-US IMI (21.9%)
Global Fixed Income: Barclays Universal Index (13.0%)
Credit Fixed Income: Barclays US High Yield (11.0%)
Real Estate: NCREIF ODCE (5.0%)
Absolute Return: HFRI Diversified FOF (10.0%)
Real Return<5yrs: Actual Performance
Real 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%)

KENTUCKY RETIREMENT SYSTEMS - PENSION FUND - NET RETURNS - 05/31/19

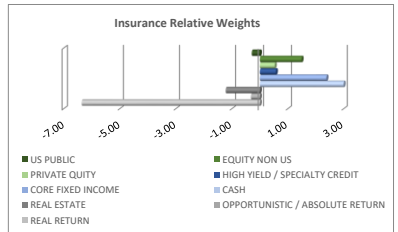
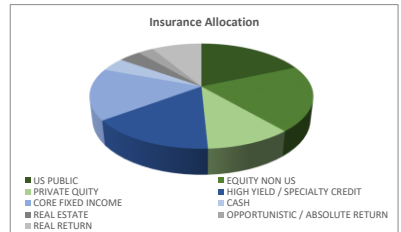
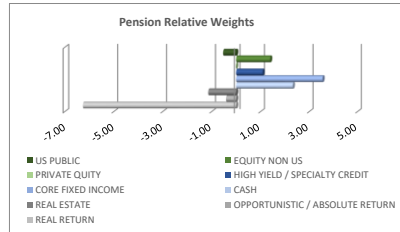
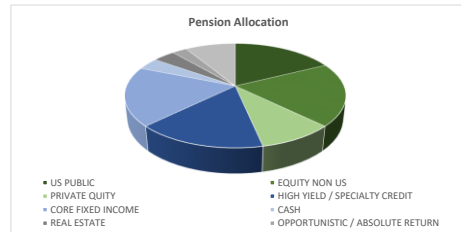
Structure	Benchmark	Inception	Market Value	% of Total	Month		QTD		Fiscal YTD		1 Year		3 Years		5 Years		10 Years		20 Years		ITD	
					KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark
TOTAL FUND	KY Ret. Blended Index	4/1/1984	12,330,498,821.63	100.00	-2.00	-2.06	6.09	6.93	2.35	2.45	2.30	2.44	8.00	7.88	5.41	5.48	8.47	8.50	5.51	5.56	8.96	9.07
GROWTH			7,736,210,608.60	62.74	-3.41	-3.41	7.80	7.80	1.13	1.13											1.13	1.13
US PUBLIC	KY Domestic Equity Blend	4/1/1984	2,178,749,658.46	17.67	-6.29	-6.47	14.25	14.04	0.68	1.83	1.40	2.50	10.82	11.55	8.47	9.25	13.29	13.98	6.33	6.46	11.07	11.13
EQUITY NON US	KY Ret.Int'l Eq. Blended Index	7/1/2000	2,415,904,883.10	19.59	-5.25	-5.34	11.14	10.30	-4.75	-5.24	-6.61	-7.14	7.37	6.72	2.50	1.55	6.33	6.29			2.84	3.07
PRIVATE QUITY	Russell 3000 + 3%(Qtr Lag)	7/1/2002	1,158,324,645.68	9.39	0.11	0.11	-1.99	-1.99	8.08	8.08	10.90	10.90	11.99	11.99	10.87	10.87	13.35	16.79			11.05	11.28
HIGH YIELD / SPECIALTY CREDIT	Bloomberg Barclays US High Yield		1,983,231,421.36	16.08	0.23	0.23	3.69	3.69	5.47	5.47	5.50	5.50									5.94	5.94
FIXED INCOME / LIQUIDITY			2,721,217,842.14	22.07	1.01	1.01	2.43	2.43	5.21	5.21											5.21	5.21
CORE FIXED INCOME	Bloomberg Barclays US Aggregate		2,262,232,694.76	18.35	1.17	1.78	2.79	3.01	5.86	6.53	5.78	6.40	2.56	2.50	2.77	2.70					3.15	3.92
CASH	Citigroup Treasury Bill-3 Month	1/1/1988	458,985,147.38	3.72	0.23	0.21	0.63	0.60	2.16	2.09	2.32	2.24	1.70	1.30	1.14	0.80	0.86	0.44	2.21	1.77	3.56	3.12
DIVERSIFYING STRATEGIES			1,873,289,091.80	15.19	-0.31	-0.31	4.41	4.41	3.47	3.47											3.47	3.47
REAL ESTATE	NCREIF NFI-ODCE Net 1 Qtr in Arrears Index	7/1/1984	476,441,752.85	3.86	-0.06	0.00	1.83	1.52	7.72	5.29	8.70	7.36	10.25	7.27	9.62	9.41	9.13	6.01	6.97	7.55	6.17	6.44
OPPORTUNISTIC / ABSOLUTE RETURN	HFRI Diversified		319,458,580.72	2.59	0.02	-0.59	0.98	4.26	0.47	0.50	0.65	0.27	3.70	3.82	2.26	2.47					3.78	2.82
REAL RETURN	Pension Real Return Custom Benchmark	7/1/2011	1,077,388,758.23	8.74	-0.59	-0.59	6.78	6.78	2.48	2.48	1.91	1.91	5.04	5.04	2.04	2.04					3.59	2.54

KENTUCKY RETIREMENT SYSTEMS - PENSION FUND - PLAN NET RETURNS - 05/31/19

Plan	Benchmark	Inception	Market Value	% of Total	Month		3 Months		Fiscal YTD		1 Year		3 Years		5 Years		10 Years		20 Years		ITD	
					KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark
KERS	KY Ret. KERS Plan Index		2,107,643,189.50	100.00	-1.60	-1.68	-0.04	0.51	2.67	2.94	2.51	2.99	7.37	7.44	5.04	5.26	8.28	8.39	5.42	5.50	8.91	9.04
KERS-H	KY Ret. KERS Haz Plan Index		661,547,507.99	100.00	-2.06	-2.16	0.01	0.05	2.19	2.36	2.14	2.35	7.95	8.03	5.44	5.35	8.49	8.47	5.52	5.54	8.97	9.06
CERS	KY Ret. CERS Plan Index		6,953,592,450.79	100.00	-2.11	-2.16	0.04	0.05	2.20	2.36	2.16	2.35	8.10	8.05	5.46	5.34	8.49	8.47	5.52	5.54	8.97	9.06
CERS-H	KY Ret. CERS Haz Plan Index		2,336,798,080.47	100.00	-2.10	-2.16	0.06	0.05	2.22	2.36	2.21	2.35	8.09	8.04	5.50	5.34	8.51	8.47	5.53	5.54	8.97	9.06
SPRS	KY Ret. SPRS Plan Index		270,917,586.29	100.00	-1.64	-1.68	0.31	0.51	2.63	2.83	2.49	2.81	7.52	7.68	4.88	5.18	8.20	8.38	5.38	5.50	8.89	9.03



Note: The above chart displays the average monthly allocation.

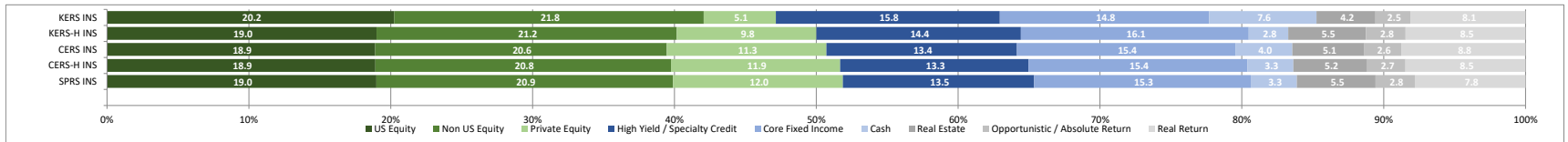


KENTUCKY RETIREMENT SYSTEMS - INSURANCE FUND - NET RETURNS - 05/31/19

Structure	Benchmark	Inception	Market Value	% of Total	Month		QTD		Fiscal YTD		1 Year		3 Years		5 Years		10 Years		20 Years		ITD	
					KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark
TOTAL FUND	KY Ret. Blended Index	4/1/1987	5,257,220,683.62	100.00	-2.08	-2.12	6.20	7.04	2.14	2.30	2.28	2.47	8.17	8.11	5.55	5.78	8.58	9.15	4.97	5.25	7.32	7.67
GROWTH			3,406,331,351.74	64.79	-3.41	-3.41	7.92	7.92	0.96	0.96											0.96	0.96
US PUBLIC	KY Domestic Equity Blend	7/1/1992	970,349,430.63	18.46	-6.28	-6.47	14.20	14.04	0.71	1.83	1.40	2.50	10.82	11.55	8.72	9.25	13.24	13.85	6.33	6.19	9.43	9.34
EQUITY NON US	KY Ret.Int'l Eq. Blended Index	4/1/2000	1,063,955,337.29	20.24	-5.27	-5.34	11.03	10.30	-4.91	-5.24	-6.77	-7.14	7.23	6.72	2.37	1.55	5.98	6.09			2.82	2.27
PRIVATE QUITY	Russell 3000 + 3%(Qtr Lag)	7/1/2002	553,430,445.01	10.53	0.18	0.18	-0.73	-0.73	7.59	7.59	12.56	12.56	13.32	13.32	13.68	13.68	15.14	16.81			10.15	10.74
HIGH YIELD / SPECIALTY CREDIT	Bloomberg Barclays US High Yield		818,596,138.81	15.57	0.35	0.35	3.29	3.29	5.44	5.44	5.38	5.38									5.63	5.63
FIXED INCOME / LIQUIDITY			1,057,521,593.51	20.12	0.96	0.96	2.33	2.33	5.10	5.10											5.10	5.10
CORE FIXED INCOME	Bloomberg Barclays US Aggregate	7/1/2013	834,897,733.82	15.88	1.18	1.78	2.76	2.94	5.85	6.53	5.64	6.40	2.56	2.50	2.40	2.70					2.80	3.09
CASH	Citigroup Treasury Bill-3 Month	7/1/1992	222,623,859.69	4.23	0.21	0.21	0.61	0.60	2.11	2.09	2.27	2.24	1.45	1.30	0.97	0.80	0.63	0.44	1.95	1.77	2.63	2.50
DIVERSIFYING STRATEGIES			793,514,768.74	15.09	-0.22	-0.22	4.12	4.12	3.56	3.56											3.56	3.56
REAL ESTATE	NCREIF NFI-ODCE Net 1 Qtr in Arrears Index	5/1/2009	198,762,196.00	3.78	-0.06	0.00	1.95	1.52	7.85	5.29	8.80	7.36	10.49	7.27	9.81	9.41					9.17	5.96
OPPORTUNISTIC / ABSOLUTE RETURN	HFRI Diversified		140,722,722.40	2.68	0.01	-0.59	0.99	4.26	0.52	0.50	0.66	0.27	3.69	3.82	2.29	2.47					3.73	2.82
REAL RETURN	Pension Real Return Custom Benchmark	7/1/2011	454,029,850.34	8.64	-0.46	-0.46	6.14	6.14	2.50	2.50	2.02	2.02	4.67	4.67	1.93	1.93					3.34	2.61

KENTUCKY RETIREMENT SYSTEMS - INSURANCE FUND - PLAN NET RETURNS - 05/31/19

Plan	Benchmark	Inception	Market Value	% of Total	Month		3 Months		Fiscal YTD		1 Year		3 Years		5 Years		10 Years		20 Years		ITD	
					KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark	KRS	Benchmark
KERS INS	KY Ins. KERS Plan Index		891,470,452.92	100.00	-2.21	-2.14	0.01	0.20	1.54	2.33	1.32	2.32	7.57	8.19	5.04	5.47	8.28	9.03	4.83	5.19	7.22	7.63
KERS-H INS	KY Ins. KERS Haz Plan Index		509,991,658.03	100.00	-2.08	-2.14	0.09	0.20	2.09	2.33	2.19	2.54	8.10	8.21	5.47	5.48	8.57	9.07	4.97	5.21	7.31	7.64
CERS INS	KY Ins. CERS Plan Index		2,386,857,344.08	100.00	-2.05	-2.14	0.11	0.20	2.20	2.31	2.40	2.52	8.24	8.18	5.62	5.56	8.63	9.08	5.00	5.21	7.33	7.65
CERS-H INS	KY Ins. CERS Haz Plan Index		1,276,792,411.59	100.00	-2.07	-2.14	0.10	0.20	2.23	2.31	2.47	2.52	8.29	8.17	5.68	5.56	8.66	9.08	5.01	5.21	7.34	7.65
SPRS INS	KY Ins. SPRS Plan Index		192,108,814.29	100.00	-2.07	-2.14	0.05	0.20	2.20	2.31	2.40	2.52	8.28	8.17	5.64	5.58	8.64	9.09	5.00	5.21	7.34	7.65



Note: The above chart displays the average monthly allocation.