

June 30, 2020

Pennsylvania SERS 457(b)



**Investment Measurement Service
Quarterly Review**

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U.S. EQUITY

U.S. equity markets bounced back from March lows in 2Q20 (Russell 1000: +21.8%). The S&P 500 (+20.5%) recorded its best quarterly performance since 1998. Three sectors (Technology, Consumer Discretionary, and Energy) posted returns in excess of 30%. Technology (+30.5%) continues to be a top performer with “FAAMG” stocks up 35% in the quarter. Many Technology stocks benefited from the “stay at home” environment. Energy stocks (+30.5%) rebounded after OPEC+ and non-OPEC production cuts buoyed crude prices.

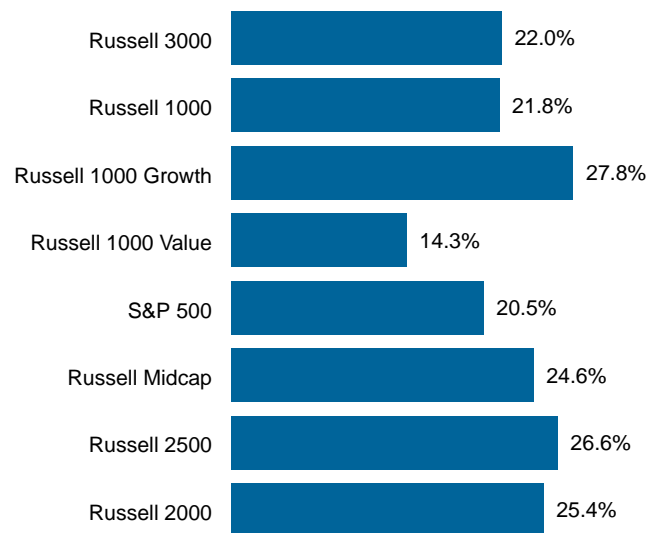
Small cap (Russell 2000: +25.4%) outgained large cap

- From the first to the second quarter, the Russell 2000 swung from its worst quarterly performance to one of its three best quarterly returns since the inception of the index.
- The Russell 2000 still lags the Russell 1000 on a year to date and trailing one-year basis, exemplifying the extreme dislocation between large and small cap performance in the first quarter.
- Better-than-expected economic data and Fed actions helped shift investment sentiment in favor of small cap.

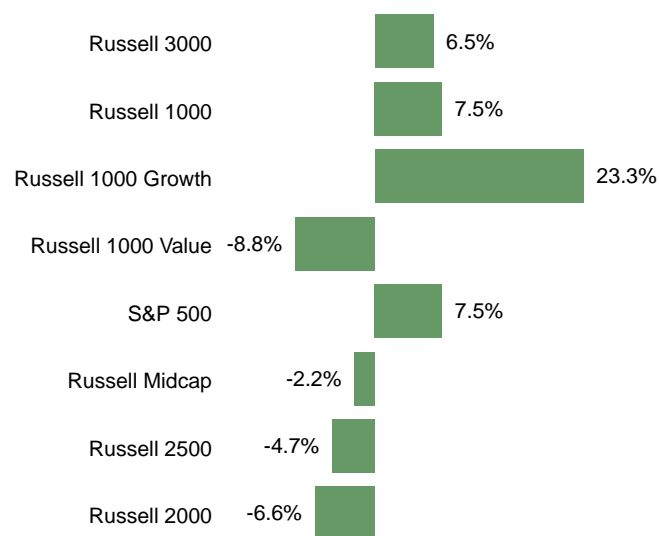
Growth outpaced value across market capitalizations

- Value indices underperformed their growth counterparts across the market cap spectrum during the first quarter decline as well as during the second quarter recovery (Russell 1000 Growth: +27.8%; Russell 1000 Value: +14.3%; Russell 2000 Growth: +30.6%; Russell 2000 Value: +18.9%).
- Persistently low interest rates, a flatter yield curve, and slower economic growth are some of the headwinds for the value factor.

U.S. Equity: Quarterly Returns

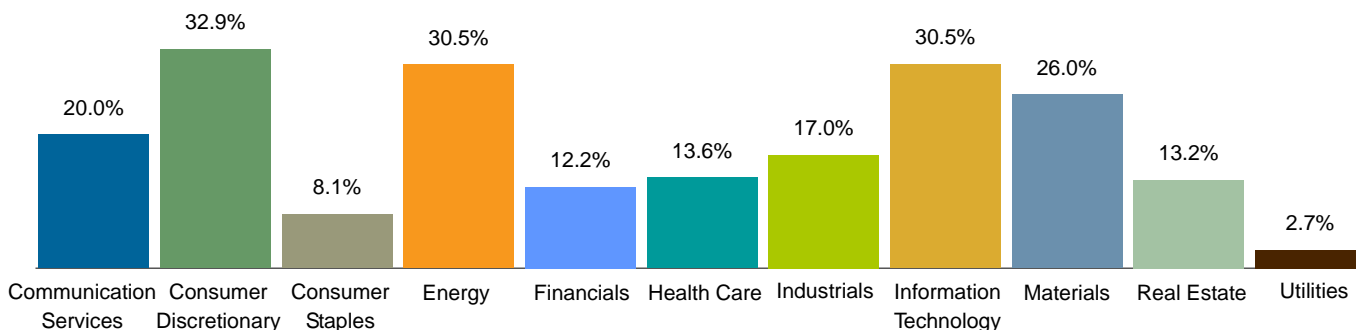


U.S. Equity: One-Year Returns



Sources: FTSE Russell, S&P Dow Jones Indices

S&P Sector Returns, Quarter Ended June 30, 2020



Source: S&P Dow Jones Indices

GLOBAL/GLOBAL EX-U.S. EQUITY

Accommodative monetary policies coupled with massive fiscal stimulus helped fuel the second quarter market recovery after the first quarter's declines.

Global/Developed ex-U.S.

- Developed markets with the most success at mitigating the coronavirus led; Australia (+28.9%), New Zealand (+28.1%), and Germany (+26.5%) were the top performers.
- Countries' inability to "flatten the curve" acted as headwinds to their equity markets, namely the U.K. (+7.8%).
- Every sector in MSCI EAFE except Energy (-0.03%) posted positive returns, led by cyclicals; Information Technology (+23.4%) companies also provided strong returns as working-from-home trends continued to support the sector.
- Factor performance in developed ex-U.S. markets was led by momentum and quality, reflecting the cyclical rebound (momentum) coupled with continued pandemic uncertainty (quality, flight to safety); growth continued to outperform value (EAFE Growth: +17.0% vs. EAFE Value: +12.4%).

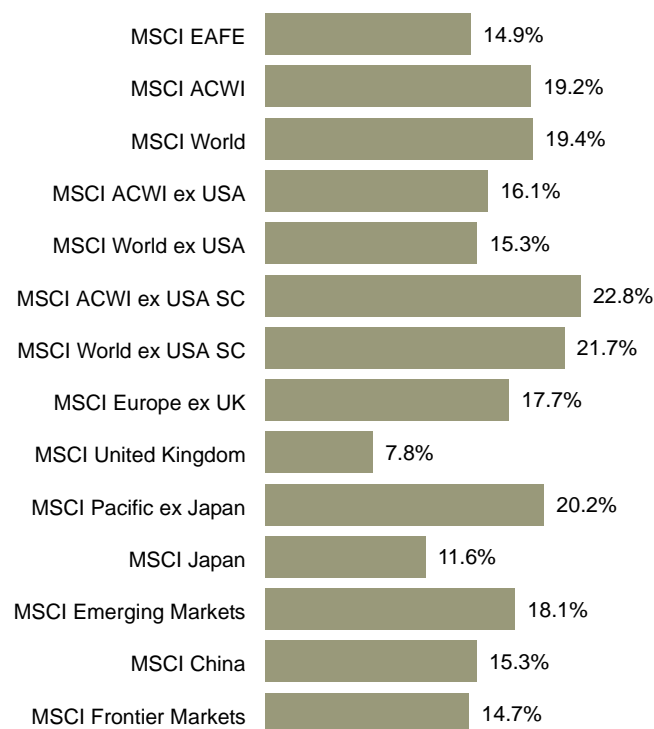
Emerging Markets

- Emerging markets produced their strongest quarterly gains in over a decade as fiscal and monetary stimulus from countries aided the second quarter rebound across all countries and sectors.
- Most EM countries ended lockdowns during the period, but Latin America, India, and some parts of Southeast Asia ended the second quarter with cases surging.
- Commodity-linked economies such as South Africa (+27.2%), Brazil (+22.9%), and Russia (+18.7%) recovered on the strength of metals, mining, and oil-related securities after being some of the worst-performing countries in 1Q20.
- China (+15.6%) lagged the index as U.S.-China trade tensions reignited and additional sanctions were imposed.
- Every sector posted positive returns, most in double digits.
- Factor performance reflected a risk-on mentality. Growth outperformed value (EM Growth: +22.1% vs. EM Value: +13.8%)

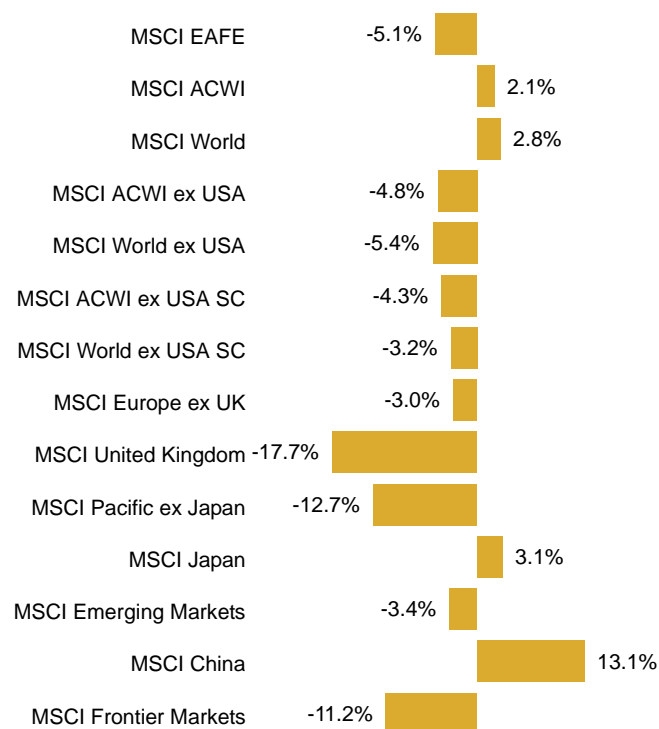
Global ex-U.S. Small Cap

- Global ex-U.S. small caps rallied during the second quarter as lockdowns eased and economies reopened.
- A risk-on mindset pervaded the global ex-U.S. small cap market that fueled double-digit returns for every sector in the MSCI ACWI ex-USA Small Cap Index.
- Australia (+47.1%) was the top-performing country; Japan (+12.8%) and the U.K. (+14.8%) were two of the worst-performing countries.

Global Equity: Quarterly Returns



Global Equity: One-Year Returns



Source: MSCI

U.S. FIXED INCOME

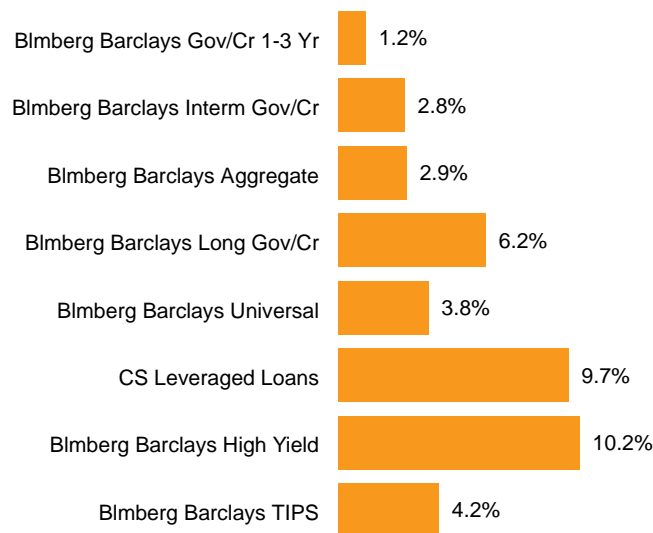
U.S. Treasury yields were range-bound

- The 10-year U.S. Treasury yield reached a high of 0.91% in June before closing the quarter at 0.66%, down slightly from the 1Q20 quarter-end level of 0.70%.
- After strong performance in 1Q20, U.S. Treasury returns lagged other “spread” sectors as risk appetites rebounded, fueled by massive Fed stimulus programs as well as improved liquidity.
- The Fed left rates on hold at 0% - 0.25% for the foreseeable future, anchoring the low end of the yield curve.
- TIPS outperformed nominal Treasuries as expectations for inflation rose. The 10-year breakeven spread ended the quarter at 1.34%, up from 0.87% as of the end of 1Q20.

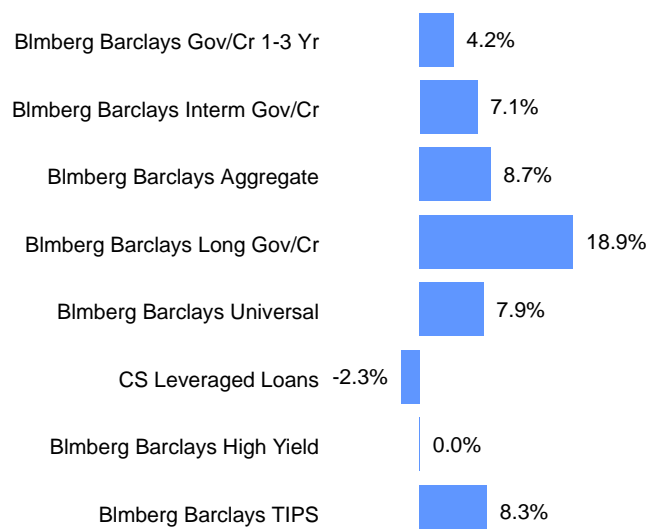
Corporate credit rallied due to spread widening

- Corporate credit rebounded amid improving investor confidence and economic data. However, fallen angels continued to spark concern with nearly half the investment grade bond market now rated BBB.
- Investment grade corporate spreads narrowed by 122 bps to 150 bps despite companies issuing record amounts of debt totaling \$1.4 trillion (+9.0%); the Fed provided continued support through the announcements of the Primary and Secondary Market Corporate Credit Facilities.
- In a reversal from 1Q20, lower quality outperformed as BBB-rated credit (+11.2%) outperformed single A (+7.0%), AA (+5.0%), and AAA (+1.7%).
- High yield corporates also posted sharp returns (+10.2%). CCC-rated high yield corporates (+9.1%) lagged BB-rated corporates (+11.5%).
- The high yield default rate reached a 10-year high (6.2%).
- Energy (+40.0%) was the highest-performing high yield bond sub-sector, reflecting sharply higher oil prices.

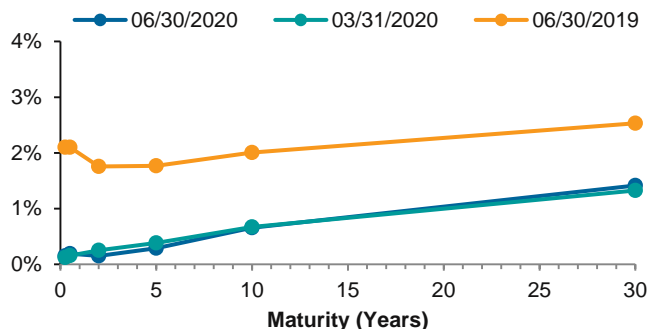
U.S. Fixed Income: Quarterly Returns



U.S. Fixed Income: One-Year Returns



U.S. Treasury Yield Curves



Sources: Bloomberg, Bloomberg Barclays, Credit Suisse

GLOBAL FIXED INCOME

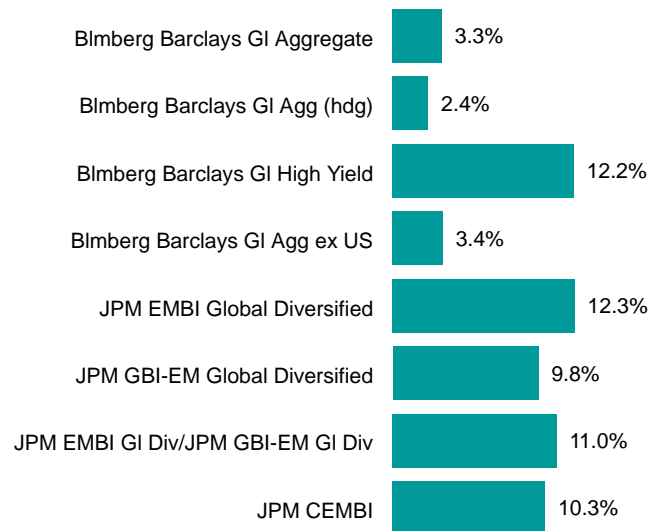
Global ex-U.S. fixed income rose amid rate cuts

- Developed market sovereign bond yields ended the quarter lower amid rate cuts overseas, and the unhedged Bloomberg Barclays Global Aggregate ex-US benchmark posted positive returns (+3.4%)
- The ECB expanded the stimulus program announced in March from €750 billion to €1.35 trillion.
- The U.S. dollar depreciated modestly against a basket of developed market currencies, most notably the Australian and New Zealand dollars (-12.5%; -8.4% respectively). The dollar was roughly flat versus the yen.

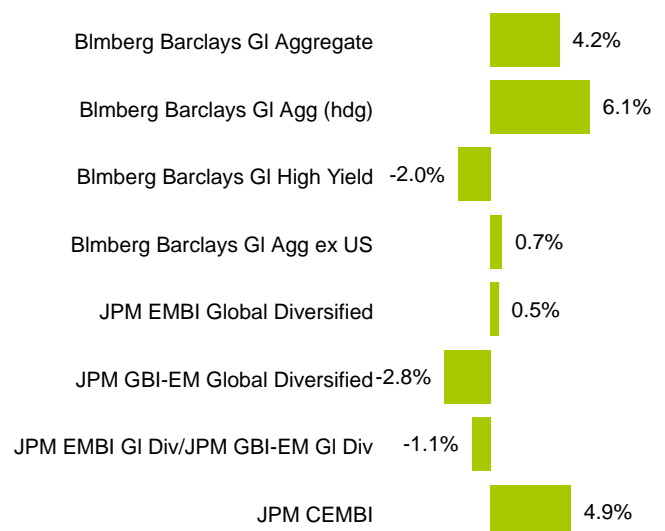
Emerging market debt made up ground

- The J.P. Morgan EMBI Global Diversified dollar-denominated benchmark posted strong returns (+12.3%) as oil prices rose and central bank liquidity measures took effect. However, the index remains slightly below year-end 2019 levels.
- Higher-yielding countries led the way in 2Q20 (+16.6%); however they remain down (-12.7%) relative to investment grade constituents year-to-date, according to index data from J.P. Morgan.
- Within the J.P. Morgan GBI-EM Global Diversified local currency-denominated benchmark (+9.8%), returns were positive for the vast majority of constituents. Oil-sensitive economies such as Mexico, Colombia, and South Africa rebounded to some degree, but remained down year-to-date.

Global Fixed Income: Quarterly Returns

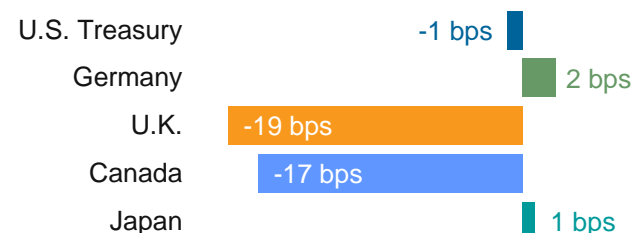


Global Fixed Income: One-Year Returns



Change in 10-Year Global Government Bond Yields

1Q20 to 2Q20



Sources: Bloomberg, Bloomberg Barclays, JP Morgan

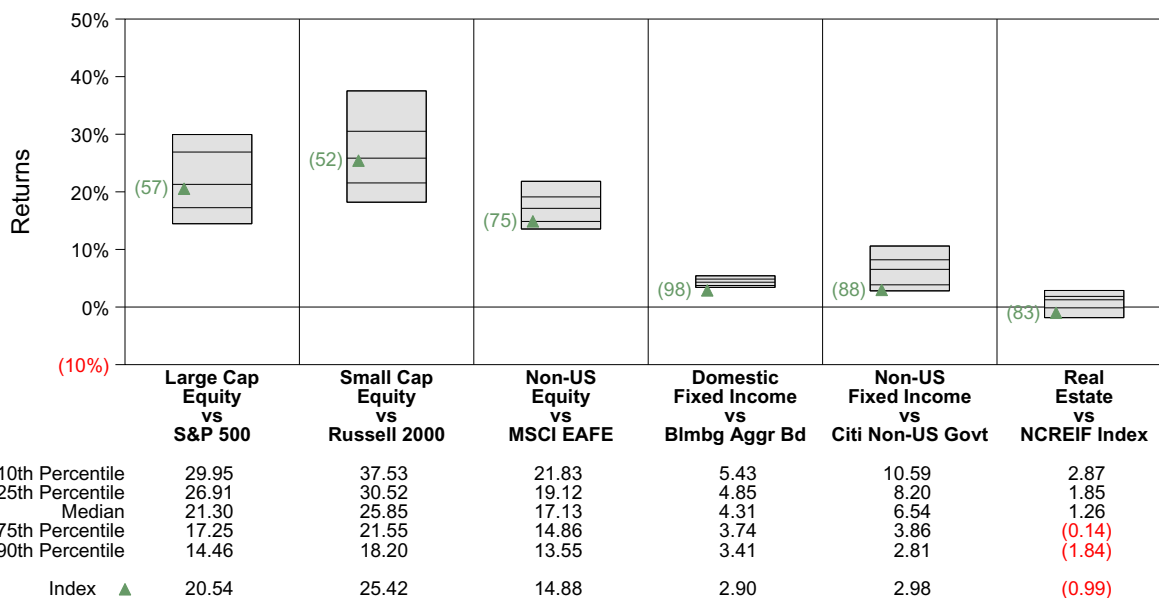
Market Overview

Active Management vs Index Returns

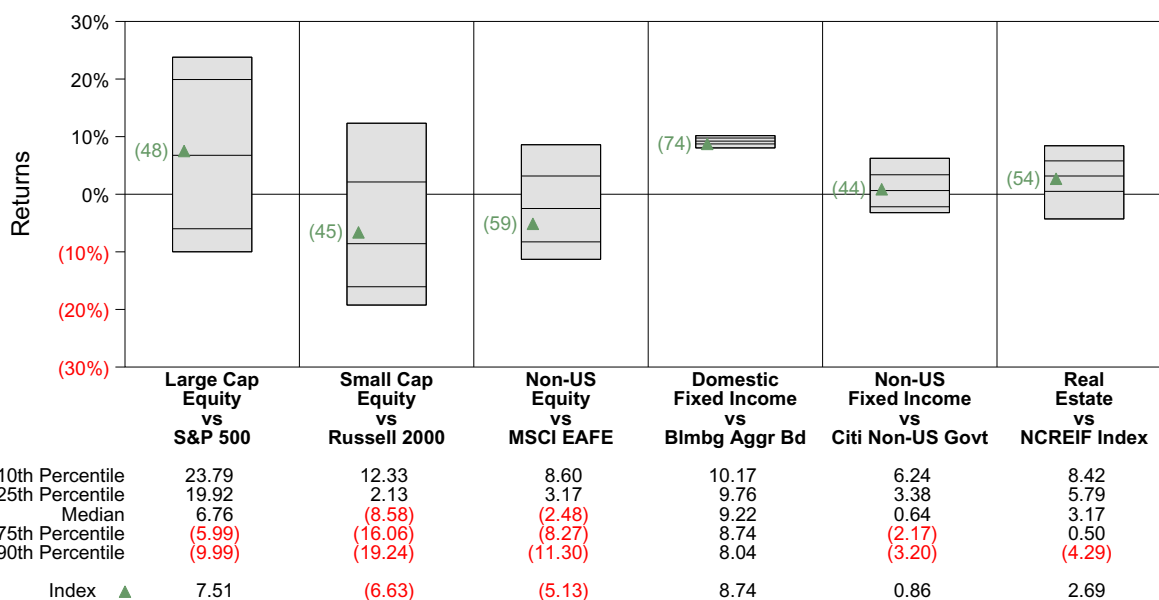
Market Overview

The charts below illustrate the range of returns across managers in Callan's Separate Account database over the most recent one quarter and one year time periods. The database is broken down by asset class to illustrate the difference in returns across those asset classes. An appropriate index is also shown for each asset class for comparison purposes. As an example, the first bar in the upper chart illustrates the range of returns for domestic equity managers over the last quarter. The triangle represents the S&P 500 return. The number next to the triangle represents the ranking of the S&P 500 in the Large Cap Equity manager database.

Range of Separate Account Manager Returns by Asset Class One Quarter Ended June 30, 2020



Range of Separate Account Manager Returns by Asset Class One Year Ended June 30, 2020

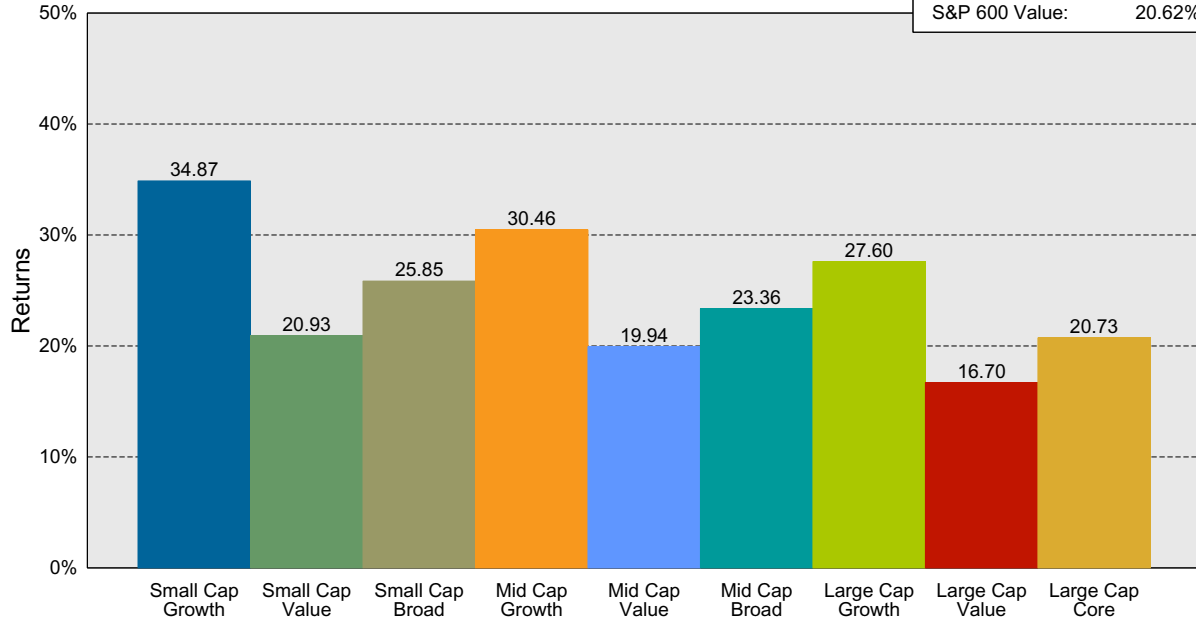


Domestic Equity Active Management Overview

U.S. stock markets posted double-digit returns in the second quarter, with some segments erasing all of the first quarter's sharp losses. Growth, benefiting from its 44% exposure to Technology, sharply outperformed value (R1000 Growth: +27.8%; R1000 Value: +14.3%) and the spread is even larger on a ytd basis (R1000 Growth: +9.8%; R1000 Value: -16.3%). Small caps outperformed large (RMicrocap +38.8%; R2000: +25.4%; R1000: +21.8%). Within the S&P 500 (+20.5%), several sectors posted returns over 30% (Energy, Consumer Discretionary, Technology) while Utilities (+2.7%) fared the worst. It is worth noting that the "FAAMG" stocks accounted for nearly 30% of the return for the S&P 500; collectively the group was up 35% for the quarter.

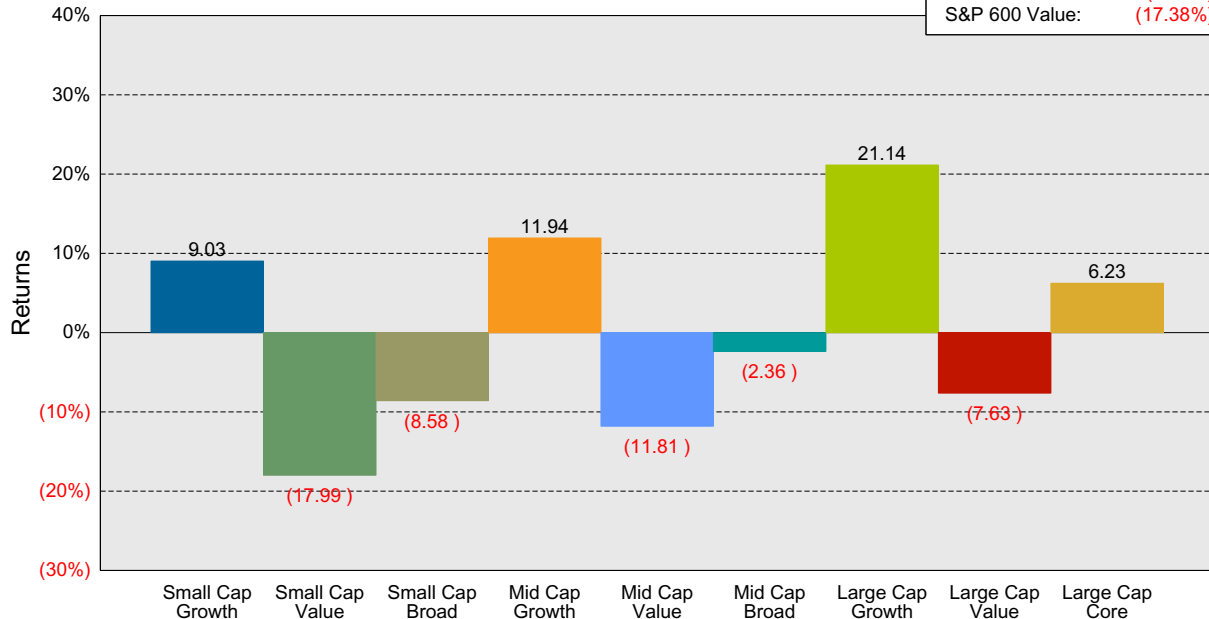
S&P 500:	20.54%
S&P 500 Growth:	26.23%
S&P 500 Value:	13.15%
S&P Mid Cap:	24.07%
S&P 600:	21.94%
S&P 600 Growth:	23.06%
S&P 600 Value:	20.62%

Separate Account Style Group Median Returns for Quarter Ended June 30, 2020



S&P 500:	7.51%
S&P 500 Growth:	17.75%
S&P 500 Value:	(4.50%)
S&P Mid Cap:	(6.70%)
S&P 600:	(11.29%)
S&P 600 Growth:	(5.68%)
S&P 600 Value:	(17.38%)

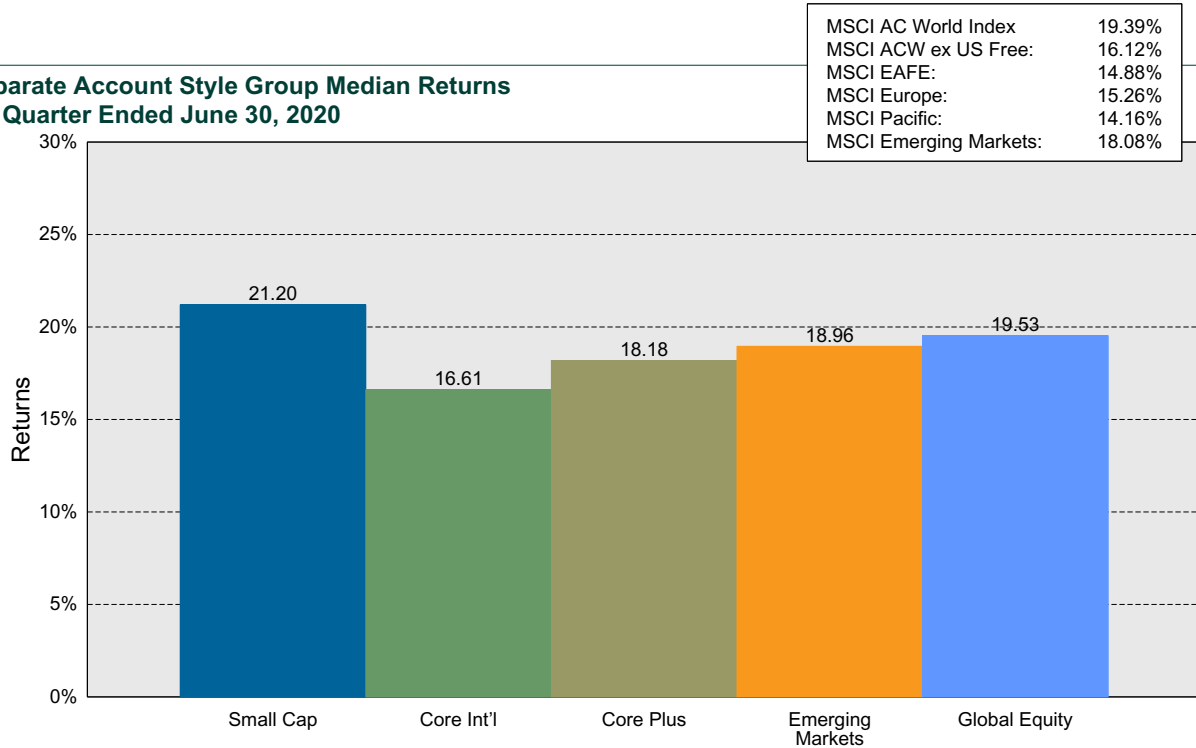
Separate Account Style Group Median Returns for One Year Ended June 30, 2020



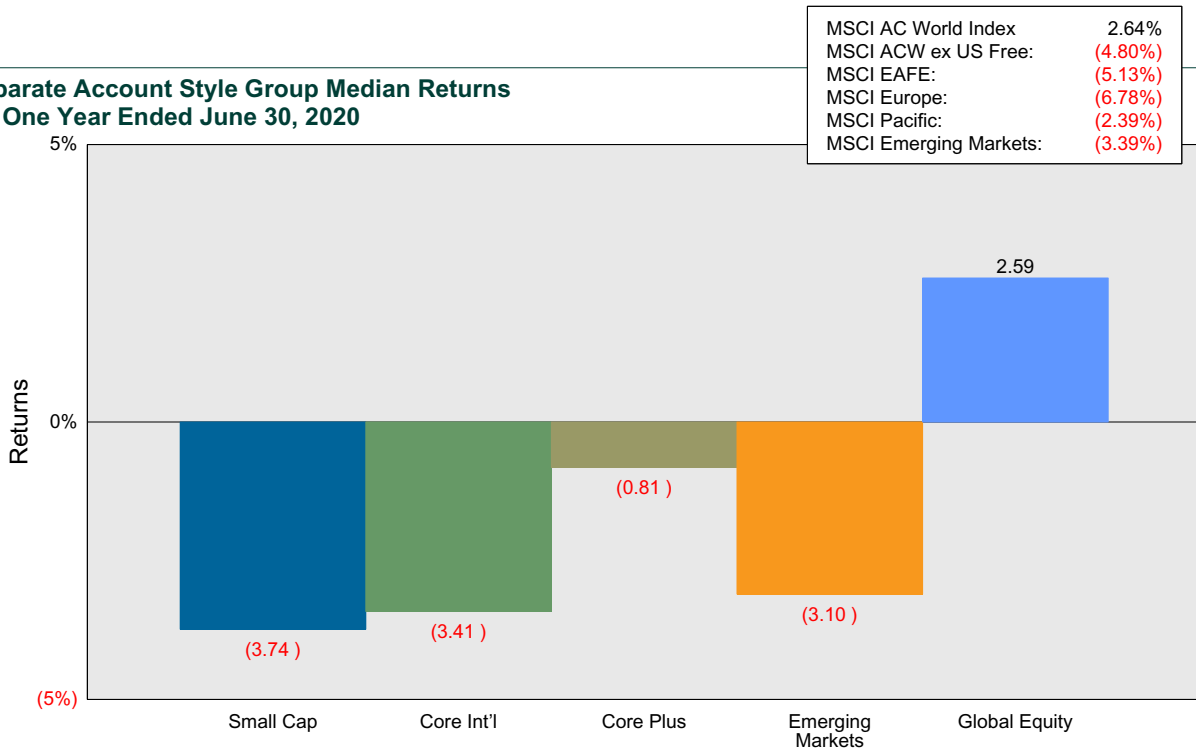
International Equity Active Management Overview

Outside of the U.S., double-digit returns were broad-based across developed and emerging markets (MSCI EAFE: +14.9%; MSCI EM: +18.1%) but both remain down roughly 10% over the six-month period. As in the U.S., growth outperformed value and the US, Technology and Consumer Discretionary were top performers and Utilities were the worst. Currency had a limited impact on developed market results this quarter; the US dollar was fairly flat vs the euro and yen and mixed versus other developed market currencies. In developed markets, Germany (+27%) and Australia (+29%) were top performers while Japan (+12%) and UK (+8%) were at the bottom of the pack. The BRIC countries all performed well in Q2 but most remain sharply down ytd (Brazil: +23%; -39%; Russia: +19%; -25%, China +15%, +4%; India +21%; -17%).

Separate Account Style Group Median Returns for Quarter Ended June 30, 2020



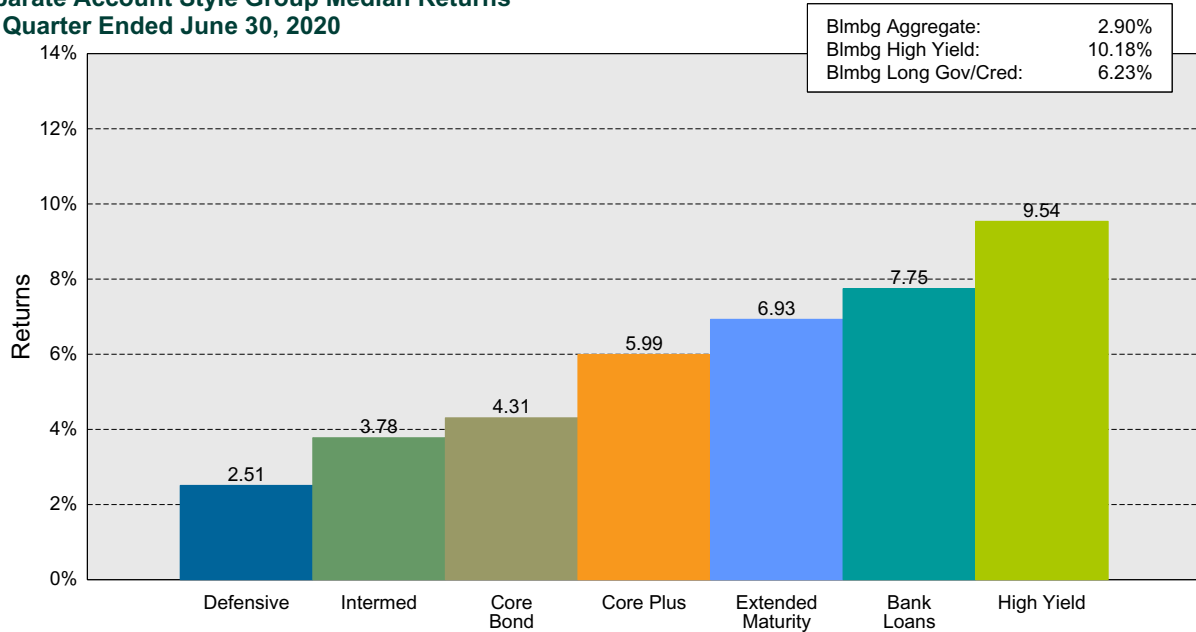
Separate Account Style Group Median Returns for One Year Ended June 30, 2020



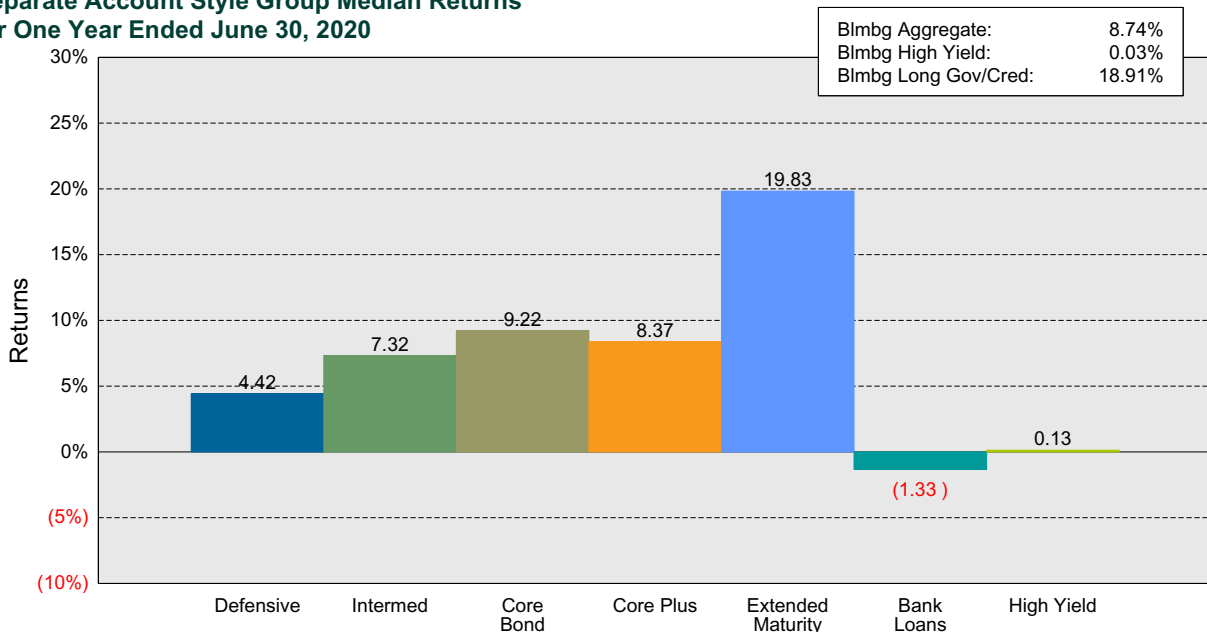
Domestic Fixed Income Active Management Overview

U.S. Treasury yields were range-bound in the second quarter; the 10-year U.S. Treasury yield closed the quarter at 0.66%; down only 4 bps from March 31 but off far more sharply from the year-end level of 1.92%. As a result, the Bloomberg Barclays US Treasury Index was up a modest 0.5% for the quarter. Other sectors recovered from sharp underperformance in the first quarter as investor confidence improved. For the quarter, the Bloomberg Barclays US Aggregate Bond Index gained 2.9%, with non-Treasury sectors faring the best. This is a stark contrast to the first quarter, when U.S. Treasuries were virtually the lone sector to post a positive return. The Bloomberg Barclays US Corporate Bond Index rose 9.0% in the second quarter but has underperformed like-duration U.S. Treasuries by 540 bps ytd. The Bloomberg Barclays High Yield Bond Index posted a double-digit return (+10.2%) in Q2 but remains down 3.8% ytd. Meanwhile, default rates and downgrades escalated. Defaults in Q2 across bank loans and bonds hit a quarterly record of more than \$80 billion.

Separate Account Style Group Median Returns for Quarter Ended June 30, 2020



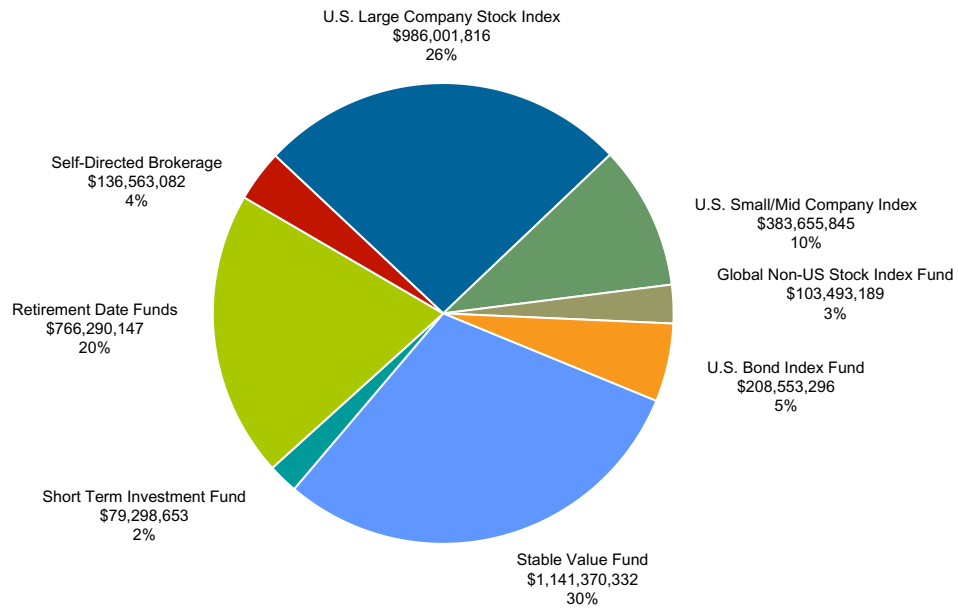
Separate Account Style Group Median Returns for One Year Ended June 30, 2020



Changes in Investment Fund Balances Period Ended June 30, 2020

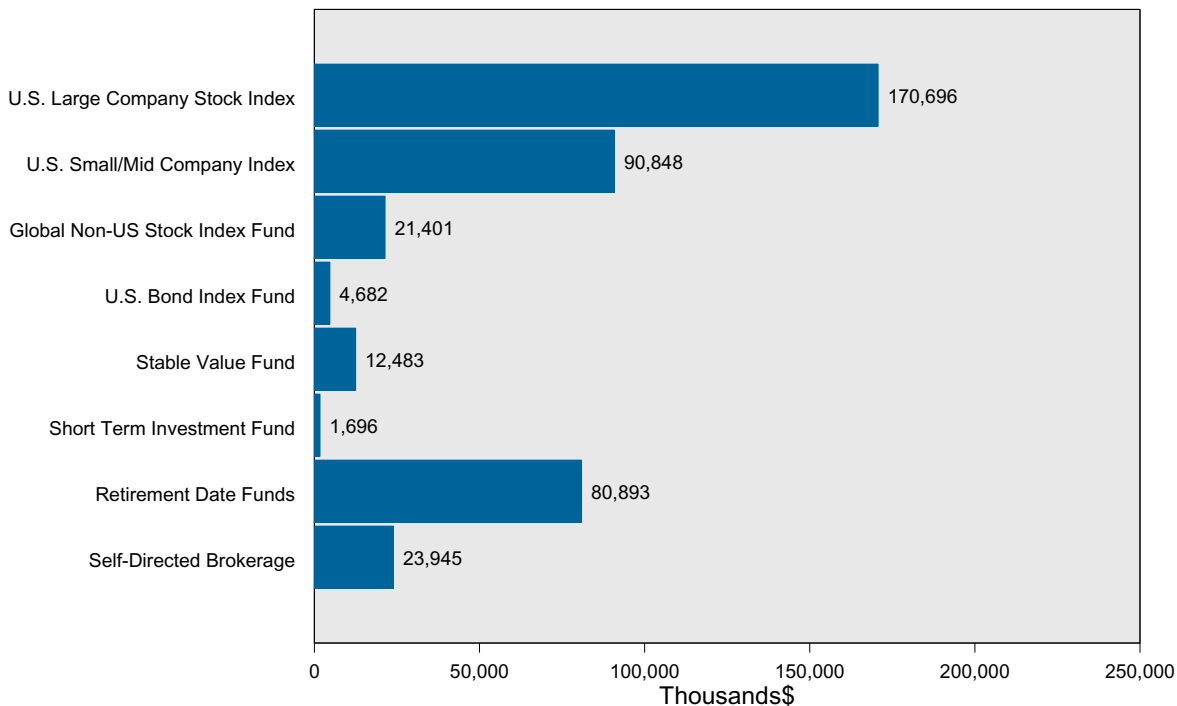
Allocation Across Investment Options

The chart below illustrates the allocation of the aggregate fund assets across the various investment options for the quarter ended June 30, 2020.



Changes in Fund Values

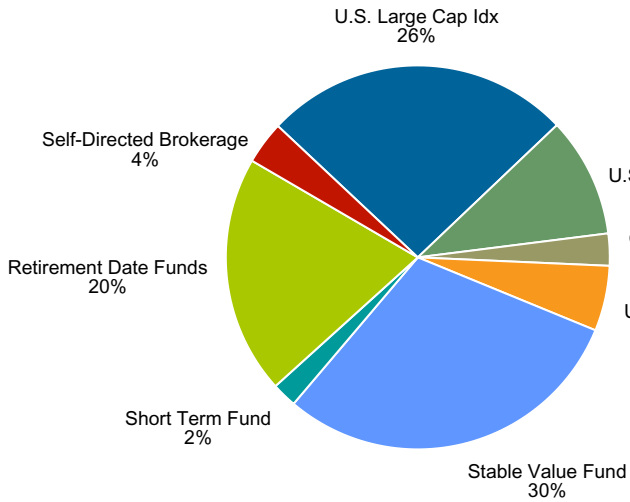
The chart below shows the net change in fund values across the various investment options for the quarter ended June 30, 2020. The change in value for each fund is the result of a combination of 3 factors: 1) market movements; 2) contributions or disbursements into or out of the funds by the participants (and any matching done by the company); and 3) transfers between funds by the participants.



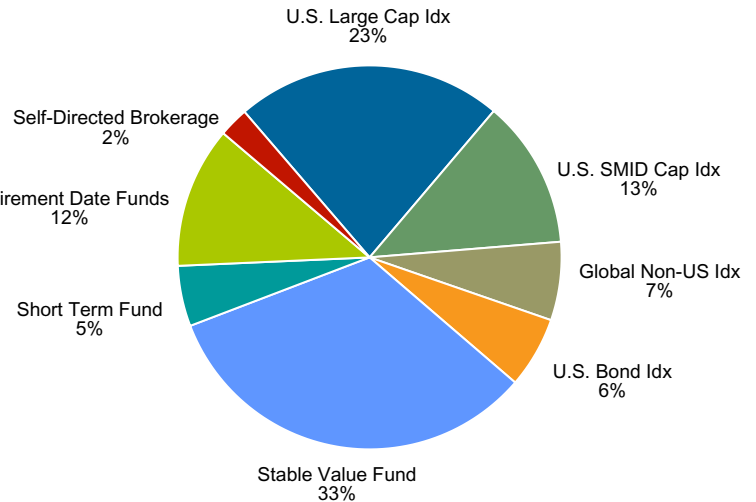
Asset Allocation

The charts below illustrate the historical asset allocation of the fund as well as the historical allocations of contributions to the fund. The pie charts on the top show the most recent allocations of both assets and contributions which include exchanges and transfers within the plan. The middle chart displays the historical allocation of fund assets. The bottom chart illustrates the historical allocation of contributions.

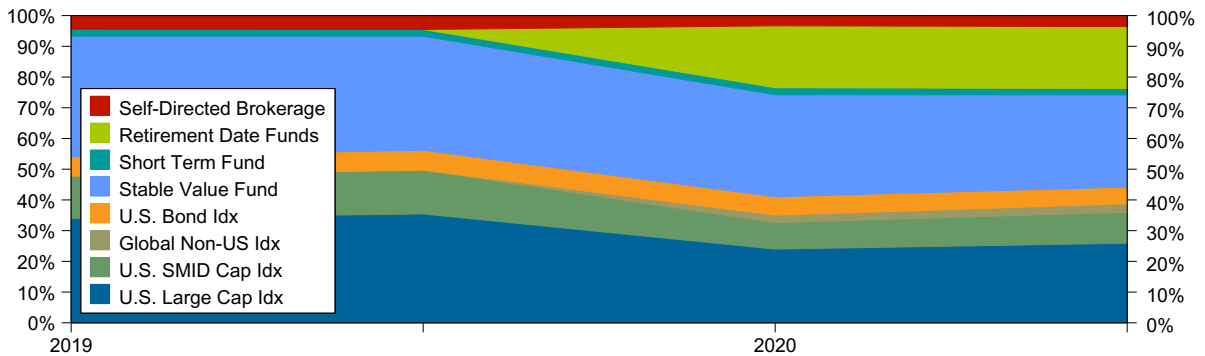
Asset Allocation



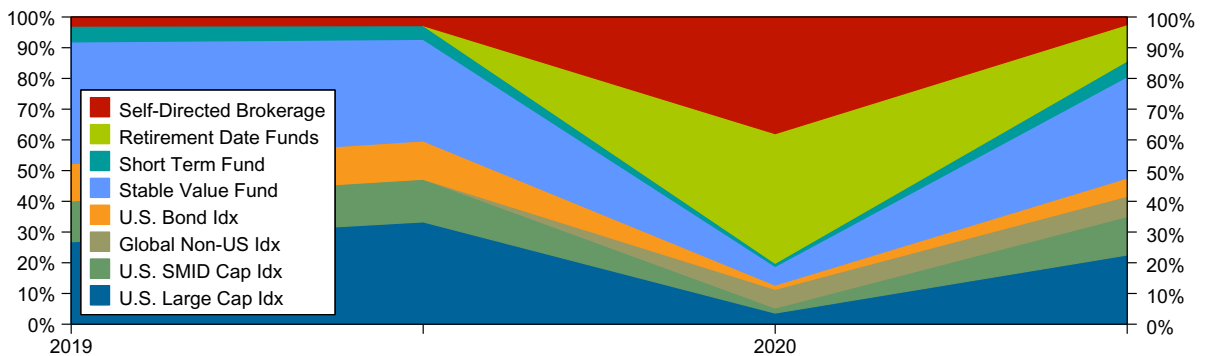
Contributions



Historical Asset Allocation



Historical Allocation of Contributions



Investment Fund Balances

The table below compares the fund's investment fund balances as of June 30, 2020 with that of March 31, 2020. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

Asset Distribution Across Investment Funds

	June 30, 2020		Net New Inv. \$(000)	Inv. Return \$(000)	March 31, 2020	
	Market Value \$(000)	% of Total Weight			Market Value \$(000)	% of Total Weight
SERS Retirement Date Funds	\$766,290	20.14%	\$(7,452)	\$88,345	\$685,397	20.17%
SERS Post Retirement Fund	243,112	6.39%	(3,612)	21,319	225,405	6.63%
SERS 2025 Retirement Fund	136,125	3.58%	(2,821)	14,223	124,723	3.67%
SERS 2030 Retirement Fund	126,853	3.33%	(892)	15,253	112,491	3.31%
SERS 2035 Retirement Fund	111,567	2.93%	(1,356)	14,968	97,955	2.88%
SERS 2040 Retirement Fund	64,557	1.70%	573	9,391	54,594	1.61%
SERS 2045 Retirement Fund	46,139	1.21%	230	7,174	38,734	1.14%
SERS 2050 Retirement Fund	27,020	0.71%	13	4,332	22,675	0.67%
SERS 2055 Retirement Fund	7,230	0.19%	320	1,116	5,794	0.17%
SERS 2060 Retirement Fund	2,712	0.07%	108	420	2,184	0.06%
SERS 2065 Retirement Fund	976	0.03%	(15)	149	842	0.02%
SERS U.S. Equity	\$1,369,658	35.99%	\$2,649	\$258,895	\$1,108,114	32.61%
SERS U.S. Large Company Index	986,002	25.91%	3,466	167,229	815,306	23.99%
SERS U.S. SMID Company Index	383,656	10.08%	(818)	91,665	292,808	8.62%
SERS International Equity	\$103,493	2.72%	\$6,522	\$14,879	\$82,092	2.42%
SERS Global Non-US IdxFund	103,493	2.72%	6,522	14,879	82,092	2.42%
SERS Fixed Income	\$1,429,222	37.56%	\$6,874	\$11,988	\$1,410,360	41.50%
SERS Short Term Investment Fund	79,299	2.08%	1,630	66	77,602	2.28%
SERS Stable Value Fund	1,141,370	29.99%	6,286	6,197	1,128,887	33.22%
SERS U.S. Bond Index Fund	208,553	5.48%	(1,042)	5,724	203,871	6.00%
Self-Directed Brokerage						
Self-Directed Brokerage Account	136,563	3.59%	2,449	21,496	112,618	3.31%
SERS 457(b) Total Fund	\$3,805,226	100.0%	\$11,042	\$395,602	\$3,398,582	100.0%

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended June 30, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended June 30, 2020

	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years
Net Performance					
Retirement Date Funds					
SERS Post Retirement Fund	9.54%	1.07%	6.15%	5.85%	5.23%
BlackRock Post Retirement Index	9.47%	0.96%	6.02%	5.80%	5.19%
Callan Tgt Date Ret Inc	8.56%	0.53%	4.71%	4.92%	4.53%
SERS 2025 Retirement Fund	11.57%	(1.06%)	4.88%	6.08%	5.77%
BlackRock 2025 Index	11.49%	(1.19%)	4.75%	5.99%	5.69%
Callan Target Date 2025	12.32%	(1.61%)	4.27%	5.72%	5.68%
SERS 2030 Retirement Fund	13.51%	(2.79%)	3.89%	6.10%	5.98%
BlackRock 2030 Index	13.44%	(2.91%)	3.73%	5.99%	5.87%
Callan Target Date 2030	13.82%	(2.73%)	3.88%	5.91%	5.98%
SERS 2035 Retirement Fund	15.37%	(4.37%)	2.93%	6.11%	6.19%
BlackRock 2035 Index	15.33%	(4.46%)	2.81%	6.00%	6.05%
Callan Target Date 2035	15.76%	(3.62%)	3.18%	5.94%	6.11%
SERS 2040 Retirement Fund	17.13%	(5.84%)	2.04%	6.09%	6.33%
BlackRock 2040 Index	17.08%	(5.93%)	1.93%	5.97%	6.18%
Callan Target Date 2040	17.14%	(4.75%)	2.48%	5.85%	6.22%
SERS 2045 Retirement Fund	18.48%	(6.74%)	1.50%	6.06%	6.41%
BlackRock 2045 Index	18.41%	(6.86%)	1.34%	5.90%	6.23%
Callan Target Date 2045	18.20%	(5.43%)	2.19%	5.85%	6.29%
SERS 2050 Retirement Fund	19.11%	(7.16%)	1.22%	6.02%	6.42%
BlackRock 2050 Index	19.05%	(7.24%)	1.13%	5.88%	6.25%
Callan Target Date 2050	18.46%	(5.79%)	1.89%	5.76%	6.28%
SERS 2055 Retirement Fund	19.20%	(7.16%)	1.24%	6.02%	6.41%
BlackRock 2055 Index	19.15%	(7.29%)	1.12%	5.88%	6.25%
Callan Target Date 2055	18.73%	(6.04%)	1.69%	5.78%	6.28%
SERS 2060 Retirement Fund	19.19%	(7.17%)	1.23%	6.00%	6.41%
BlackRock 2060 Index	19.15%	(7.28%)	1.13%	5.88%	6.28%
Callan Target Date 2060	18.71%	(6.07%)	1.71%	5.86%	6.58%
SERS 2065 Retirement Fund	19.08%	(7.26%)	-	-	-
BlackRock 2065 Index	19.15%	(7.28%)	-	-	-
Callan Target Date 2065	18.79%	(5.58%)	2.24%	5.85%	-

*Target Date funds replaced risk-based funds in 1Q20.

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended June 30, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended June 30, 2020			
	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
Net Performance				
Retirement Date Funds				
SERS Post Retirement Fund	5.47%	6.19%	-	-
BlackRock Post Retirement Index	5.43%	6.15%	5.40%	5.50%
Callan Tgt Date Ret Inc	4.59%	5.36%	4.50%	4.36%
SERS 2025 Retirement Fund	6.41%	7.72%	-	-
BlackRock 2025 Index	6.34%	7.63%	5.84%	4.69%
Callan Target Date 2025	6.67%	8.34%	5.82%	-
SERS 2030 Retirement Fund	6.76%	8.20%	-	-
BlackRock 2030 Index	6.65%	8.09%	6.00%	4.63%
Callan Target Date 2030	7.10%	8.83%	5.99%	4.12%
SERS 2035 Retirement Fund	7.06%	8.64%	-	-
BlackRock 2035 Index	6.95%	8.50%	6.12%	4.55%
Callan Target Date 2035	7.41%	9.16%	6.26%	-
SERS 2040 Retirement Fund	7.32%	9.01%	-	-
BlackRock 2040 Index	7.18%	8.85%	6.21%	4.44%
Callan Target Date 2040	7.58%	9.44%	6.37%	3.58%
SERS 2045 Retirement Fund	7.51%	9.32%	-	-
BlackRock 2045 Index	7.35%	9.15%	6.27%	4.38%
Callan Target Date 2045	7.63%	9.44%	6.85%	-
SERS 2050 Retirement Fund	7.62%	9.57%	-	-
BlackRock 2050 Index	7.47%	9.40%	6.46%	4.82%
Callan Target Date 2050	7.67%	9.62%	5.94%	-
SERS 2055 Retirement Fund	7.70%	9.70%	-	-
BlackRock 2055 Index	7.55%	9.53%	-	-
Callan Target Date 2055	7.79%	9.64%	-	-

*Funds not listed do not have longer term history.

*Target Date funds replaced risk-based funds in 1Q20.

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	12/2019- 6/2020	2019	2018	2017	2016
Net Performance					
Retirement Date Funds					
SERS Post Retirement Fund	1.07%	15.65%	(3.47%)	10.18%	6.10%
BlackRock Post Retirement Index	0.96%	15.63%	(3.48%)	10.10%	6.01%
Callan Tgt Date Ret Inc	0.53%	13.21%	(3.04%)	8.76%	5.69%
SERS 2025 Retirement Fund	(1.06%)	18.60%	(4.86%)	13.91%	7.30%
BlackRock 2025 Index	(1.19%)	18.56%	(4.90%)	13.75%	7.10%
Callan Target Date 2025	(1.61%)	18.51%	(5.19%)	14.94%	7.07%
SERS 2030 Retirement Fund	(2.79%)	20.80%	(5.71%)	15.83%	7.88%
BlackRock 2030 Index	(2.91%)	20.70%	(5.76%)	15.64%	7.61%
Callan Target Date 2030	(2.73%)	20.43%	(6.12%)	16.77%	7.58%
SERS 2035 Retirement Fund	(4.37%)	22.84%	(6.50%)	17.72%	8.44%
BlackRock 2035 Index	(4.46%)	22.72%	(6.58%)	17.48%	8.08%
Callan Target Date 2035	(3.62%)	22.17%	(7.03%)	18.51%	8.20%
SERS 2040 Retirement Fund	(5.84%)	24.71%	(7.22%)	19.38%	8.88%
BlackRock 2040 Index	(5.93%)	24.62%	(7.33%)	19.09%	8.51%
Callan Target Date 2040	(4.75%)	23.59%	(7.89%)	19.84%	8.48%
SERS 2045 Retirement Fund	(6.74%)	26.05%	(7.85%)	20.47%	9.20%
BlackRock 2045 Index	(6.86%)	25.90%	(7.99%)	20.15%	8.77%
Callan Target Date 2045	(5.43%)	24.60%	(8.21%)	20.63%	8.63%
SERS 2050 Retirement Fund	(7.16%)	26.60%	(8.11%)	20.85%	9.26%
BlackRock 2050 Index	(7.24%)	26.48%	(8.26%)	20.55%	8.82%
Callan Target Date 2050	(5.79%)	24.89%	(8.44%)	20.72%	8.61%
SERS 2055 Retirement Fund	(7.16%)	26.67%	(8.13%)	20.82%	9.22%
BlackRock 2055 Index	(7.29%)	26.58%	(8.28%)	20.55%	8.82%
Callan Target Date 2055	(6.04%)	24.97%	(8.44%)	21.10%	8.65%
SERS 2060 Retirement Fund	(7.17%)	26.66%	(8.14%)	20.77%	9.25%
BlackRock 2060 Index	(7.28%)	26.58%	(8.28%)	20.55%	8.82%
Callan Target Date 2060	(6.07%)	25.08%	(8.35%)	21.15%	8.80%
SERS 2065 Retirement Fund	(7.26%)	-	-	-	-
BlackRock 2065 Index	(7.28%)	-	-	-	-
Callan Target Date 2065	(5.58%)	25.62%	(8.63%)	-	-

*Target Date funds replaced risk-based funds in 1Q20.

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended June 30, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended June 30, 2020				
	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years
Net Performance					
Domestic Equity					
SERS U.S. Large Company Index	20.56%	(3.06%)	7.53%	10.75%	10.75%
S&P 500 Index	20.54%	(3.08%)	7.51%	10.73%	10.73%
Callan Lg Cap Broad MF	20.75%	(3.30%)	6.71%	10.00%	9.58%
SERS SMID Company Index	30.96%	(5.73%)	1.05%	6.45%	6.77%
Dow Jones US Completion	31.12%	(5.60%)	1.05%	6.31%	6.59%
Callan SMID Broad MFs	25.92%	(5.90%)	0.94%	8.13%	7.44%
International Equity					
SERS Global Non-US Index	17.31%	(10.53%)	(4.43%)	1.47%	2.58%
MSCI ACWI ex US	16.12%	(11.00%)	(4.80%)	1.14%	2.26%
Callan Non US Equity MFs	17.85%	(9.06%)	(2.32%)	1.04%	2.36%
Domestic Fixed Income					
SERS Short Term Investment Fund	0.14%	0.54%	1.62%	1.85%	1.34%
3-month Treasury Bill	0.02%	0.60%	1.63%	1.77%	1.19%
Callan Cash Database(1)	0.44%	0.78%	1.95%	2.05%	1.50%
SERS Stable Value Fund	0.60%	1.23%	2.57%	2.37%	2.21%
3-month Treasury Bill	0.02%	0.60%	1.63%	1.77%	1.19%
Callan Stable Value	0.58%	1.18%	2.49%	2.35%	2.15%
SERS U.S. Bond Index Fund	2.89%	6.24%	8.82%	5.34%	4.29%
Blmbg Aggregate	2.90%	6.14%	8.74%	5.32%	4.30%
Callan Core Bond MFs	4.89%	6.02%	8.53%	5.31%	4.39%

(1) Callan Cash Database includes STIF, enhanced cash, and money market funds.

*The Global Non-U.S. Stock Index Fund replaced the International Company Stock Index Fund in 1Q20.

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended June 30, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended June 30, 2020			
	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
Net Performance				
Domestic Equity				
SERS U.S. Large Company Index	12.14%	14.01%	8.87%	5.97%
S&P 500 Index	12.13%	13.99%	8.83%	5.91%
Callan Lg Cap Broad MF	11.47%	13.12%	8.64%	5.88%
SERS SMID Company Index	9.37%	12.39%	8.78%	7.13%
Dow Jones US Completion	9.20%	12.18%	8.58%	6.80%
Callan SMID Broad MFs	9.18%	12.25%	8.76%	8.02%
International Equity				
SERS Global Non-US Index	3.98%	5.23%	-	-
MSCI ACWI ex US	3.71%	4.97%	4.44%	-
Callan Non US Equity MFs	4.15%	6.14%	4.53%	3.46%
Domestic Fixed Income				
SERS Short Term Investment Fund	1.00%	0.77%	1.52%	-
3-month Treasury Bill	0.86%	0.64%	1.34%	1.66%
Callan Cash Database(1)	1.18%	0.96%	1.74%	2.03%
SERS Stable Value Fund	2.24%	2.53%	3.23%	-
3-month Treasury Bill	0.86%	0.64%	1.34%	1.66%
Callan Stable Value	2.04%	2.15%	2.83%	3.52%
SERS U.S. Bond Index Fund	3.94%	3.78%	4.36%	5.11%
Blmbg Aggregate	3.96%	3.82%	4.39%	5.14%
Callan Core Bond MFs	3.97%	4.08%	4.63%	5.17%

(1) Callan Cash Database includes STIF, enhanced cash, and money market funds.

*Funds not listed do not have longer term history.

*The Global Non-U.S. Stock Index Fund replaced the International Company Stock Index Fund in 1Q20.

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	12/2019- 6/2020	2019	2018	2017	2016
Net Performance					
Domestic Equity					
SERS U.S. Large Company Index	(3.06%)	31.51%	(4.39%)	21.84%	11.98%
S&P 500 Index	(3.08%)	31.49%	(4.38%)	21.83%	11.96%
Callan Lg Cap Broad MF	(3.30%)	30.14%	(4.54%)	23.56%	8.43%
SERS SMID Company Index	(5.73%)	28.20%	(9.32%)	18.21%	16.08%
Dow Jones US Completion	(5.60%)	27.91%	(9.57%)	18.12%	15.75%
Callan SMID Broad MFs	(5.90%)	29.40%	(8.69%)	17.14%	13.80%
International Equity					
SERS Global Non-US Index	(10.53%)	21.77%	(13.86%)	27.63%	5.05%
MSCI ACWI ex US	(11.00%)	21.51%	(14.20%)	27.19%	4.50%
Callan Non US Equity MFs	(9.06%)	22.83%	(15.04%)	26.90%	0.23%
Domestic Fixed Income					
SERS Short Term Investment Fund	0.54%	2.31%	2.09%	1.08%	0.59%
3-month Treasury Bill	0.60%	2.28%	1.87%	0.86%	0.33%
Callan Cash Database(1)	0.78%	2.69%	2.00%	1.19%	0.95%
SERS Stable Value Fund	1.23%	2.59%	2.34%	1.85%	1.99%
3-month Treasury Bill	0.60%	2.28%	1.87%	0.86%	0.33%
Callan Stable Value	1.18%	2.55%	2.24%	1.97%	1.89%
SERS U.S. Bond Index Fund	6.24%	8.69%	0.02%	3.53%	2.59%
Bimbg Aggregate	6.14%	8.72%	0.01%	3.54%	2.65%
Callan Core Bond MFs	6.02%	9.17%	(0.35%)	3.71%	3.03%

(1) Callan Cash Database includes STIF, enhanced cash, and money market funds.

*The Global Non-U.S. Stock Index Fund replaced the International Company Stock Index Fund in 1Q20.

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended June 30, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended June 30, 2020

	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years
Gross Performance					
Retirement Date Funds					
SERS Post Retirement Fund	9.56%	1.10%	6.23%	5.92%	5.30%
BlackRock Post Retirement Index	9.47%	0.96%	6.02%	5.80%	5.19%
Callan Tgt Date Ret Inc	8.56%	0.53%	4.71%	4.92%	4.53%
SERS 2025 Retirement Fund	11.59%	(1.03%)	4.95%	6.15%	5.84%
BlackRock 2025 Index	11.49%	(1.19%)	4.75%	5.99%	5.69%
Callan Target Date 2025	12.32%	(1.61%)	4.27%	5.72%	5.68%
SERS 2030 Retirement Fund	13.53%	(2.75%)	3.95%	6.17%	6.06%
BlackRock 2030 Index	13.44%	(2.91%)	3.73%	5.99%	5.87%
Callan Target Date 2030	13.82%	(2.73%)	3.88%	5.91%	5.98%
SERS 2035 Retirement Fund	15.39%	(4.34%)	3.00%	6.19%	6.26%
BlackRock 2035 Index	15.33%	(4.46%)	2.81%	6.00%	6.05%
Callan Target Date 2035	15.76%	(3.62%)	3.18%	5.94%	6.11%
SERS 2040 Retirement Fund	17.15%	(5.80%)	2.11%	6.16%	6.39%
BlackRock 2040 Index	17.08%	(5.93%)	1.93%	5.97%	6.18%
Callan Target Date 2040	17.14%	(4.75%)	2.48%	5.85%	6.22%
SERS 2045 Retirement Fund	18.50%	(6.71%)	1.56%	6.13%	6.47%
BlackRock 2045 Index	18.41%	(6.86%)	1.34%	5.90%	6.23%
Callan Target Date 2045	18.20%	(5.43%)	2.19%	5.85%	6.29%
SERS 2050 Retirement Fund	19.13%	(7.14%)	1.29%	6.09%	6.48%
BlackRock 2050 Index	19.05%	(7.24%)	1.13%	5.88%	6.25%
Callan Target Date 2050	18.46%	(5.79%)	1.89%	5.76%	6.28%
SERS 2055 Retirement Fund	19.22%	(7.13%)	1.31%	6.09%	6.48%
BlackRock 2055 Index	19.15%	(7.29%)	1.12%	5.88%	6.25%
Callan Target Date 2055	18.73%	(6.04%)	1.69%	5.78%	6.28%
SERS 2060 Retirement Fund	19.21%	(7.14%)	1.30%	6.08%	6.48%
BlackRock 2060 Index	19.15%	(7.28%)	1.13%	5.88%	6.28%
Callan Target Date 2060	18.71%	(6.07%)	1.71%	5.86%	6.58%
SERS 2065 Retirement Fund	19.10%	(7.23%)	-	-	-
BlackRock 2065 Index	19.15%	(7.28%)	-	-	-
Callan Target Date 2065	18.79%	(5.58%)	2.24%	5.85%	-

*Target Date funds replaced risk-based funds in 1Q20.

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended June 30, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended June 30, 2020			
	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
Gross Performance				
Retirement Date Funds				
SERS Post Retirement Fund	5.54%	6.26%	-	-
BlackRock Post Retirement Index	5.43%	6.15%	5.40%	5.50%
Callan Tgt Date Ret Inc	4.59%	5.36%	4.50%	4.36%
SERS 2025 Retirement Fund	6.48%	7.79%	-	-
BlackRock 2025 Index	6.34%	7.63%	5.84%	4.69%
Callan Target Date 2025	6.67%	8.34%	5.82%	-
SERS 2030 Retirement Fund	6.83%	8.27%	-	-
BlackRock 2030 Index	6.65%	8.09%	6.00%	4.63%
Callan Target Date 2030	7.10%	8.83%	5.99%	4.12%
SERS 2035 Retirement Fund	7.14%	8.71%	-	-
BlackRock 2035 Index	6.95%	8.50%	6.12%	4.55%
Callan Target Date 2035	7.41%	9.16%	6.26%	-
SERS 2040 Retirement Fund	7.39%	9.08%	-	-
BlackRock 2040 Index	7.18%	8.85%	6.21%	4.44%
Callan Target Date 2040	7.58%	9.44%	6.37%	3.58%
SERS 2045 Retirement Fund	7.58%	9.39%	-	-
BlackRock 2045 Index	7.35%	9.15%	6.27%	4.38%
Callan Target Date 2045	7.63%	9.44%	6.85%	-
SERS 2050 Retirement Fund	7.69%	9.64%	-	-
BlackRock 2050 Index	7.47%	9.40%	6.46%	4.82%
Callan Target Date 2050	7.67%	9.62%	5.94%	-
SERS 2055 Retirement Fund	7.77%	9.77%	-	-
BlackRock 2055 Index	7.55%	9.53%	-	-
Callan Target Date 2055	7.79%	9.64%	-	-

*Funds not listed do not have longer term history.

*Target Date funds replaced risk-based funds in 1Q20.

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	12/2019- 6/2020	2019	2018	2017	2016
Gross Performance					
Retirement Date Funds					
SERS Post Retirement Fund	1.10%	15.72%	(3.41%)	10.25%	6.18%
BlackRock Post Retirement Index	0.96%	15.63%	(3.48%)	10.10%	6.01%
Callan Tgt Date Ret Inc	0.53%	13.21%	(3.04%)	8.76%	5.69%
SERS 2025 Retirement Fund	(1.03%)	18.67%	(4.80%)	13.99%	7.37%
BlackRock 2025 Index	(1.19%)	18.56%	(4.90%)	13.75%	7.10%
Callan Target Date 2025	(1.61%)	18.51%	(5.19%)	14.94%	7.07%
SERS 2030 Retirement Fund	(2.75%)	20.86%	(5.63%)	15.91%	7.95%
BlackRock 2030 Index	(2.91%)	20.70%	(5.76%)	15.64%	7.61%
Callan Target Date 2030	(2.73%)	20.43%	(6.12%)	16.77%	7.58%
SERS 2035 Retirement Fund	(4.34%)	22.93%	(6.43%)	17.77%	8.50%
BlackRock 2035 Index	(4.46%)	22.72%	(6.58%)	17.48%	8.08%
Callan Target Date 2035	(3.62%)	22.17%	(7.03%)	18.51%	8.20%
SERS 2040 Retirement Fund	(5.80%)	24.80%	(7.17%)	19.45%	8.95%
BlackRock 2040 Index	(5.93%)	24.62%	(7.33%)	19.09%	8.51%
Callan Target Date 2040	(4.75%)	23.59%	(7.89%)	19.84%	8.48%
SERS 2045 Retirement Fund	(6.71%)	26.12%	(7.78%)	20.54%	9.25%
BlackRock 2045 Index	(6.86%)	25.90%	(7.99%)	20.15%	8.77%
Callan Target Date 2045	(5.43%)	24.60%	(8.21%)	20.63%	8.63%
SERS 2050 Retirement Fund	(7.14%)	26.70%	(8.05%)	20.94%	9.31%
BlackRock 2050 Index	(7.24%)	26.48%	(8.26%)	20.55%	8.82%
Callan Target Date 2050	(5.79%)	24.89%	(8.44%)	20.72%	8.61%
SERS 2055 Retirement Fund	(7.13%)	26.75%	(8.07%)	20.90%	9.30%
BlackRock 2055 Index	(7.29%)	26.58%	(8.28%)	20.55%	8.82%
Callan Target Date 2055	(6.04%)	24.97%	(8.44%)	21.10%	8.65%
SERS 2060 Retirement Fund	(7.14%)	26.74%	(8.08%)	20.85%	9.32%
BlackRock 2060 Index	(7.28%)	26.58%	(8.28%)	20.55%	8.82%
Callan Target Date 2060	(6.07%)	25.08%	(8.35%)	21.15%	8.80%
SERS 2065 Retirement Fund	(7.23%)	-	-	-	-
BlackRock 2065 Index	(7.28%)	-	-	-	-
Callan Target Date 2065	(5.58%)	25.62%	(8.63%)	-	-

*Target Date funds replaced risk-based funds in 1Q20.

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended June 30, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended June 30, 2020				
	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years
Gross Performance					
Domestic Equity					
SERS U.S. Large Company Index	20.56%	(3.06%)	7.54%	10.75%	10.76%
S&P 500 Index	20.54%	(3.08%)	7.51%	10.73%	10.73%
Callan Lg Cap Broad MF	20.75%	(3.30%)	6.71%	10.00%	9.58%
SERS SMID Company Index	30.97%	(5.73%)	1.06%	6.45%	6.77%
Dow Jones US Completion	31.12%	(5.60%)	1.05%	6.31%	6.59%
Callan SMID Broad MFs	25.92%	(5.90%)	0.94%	8.13%	7.44%
International Equity					
SERS Global Non-US Index	16.89%	(10.85%)	(4.76%)	1.36%	2.52%
MSCI ACWI ex US	16.12%	(11.00%)	(4.80%)	1.14%	2.26%
Callan Non US Equity MFs	17.85%	(9.06%)	(2.32%)	1.04%	2.36%
Domestic Fixed Income					
SERS Short Term Investment Fund	0.14%	0.54%	1.62%	1.85%	1.34%
3-month Treasury Bill	0.02%	0.60%	1.63%	1.77%	1.19%
Callan Cash Database(1)	0.44%	0.78%	1.95%	2.05%	1.50%
SERS Stable Value Fund	0.61%	1.26%	2.64%	2.48%	2.41%
3-month Treasury Bill	0.02%	0.60%	1.63%	1.77%	1.19%
Callan Stable Value	0.58%	1.18%	2.49%	2.35%	2.15%
SERS U.S. Bond Index Fund	2.89%	6.24%	8.82%	5.35%	4.29%
Blmbg Aggregate	2.90%	6.14%	8.74%	5.32%	4.30%
Callan Core Bond MFs	4.89%	6.02%	8.53%	5.31%	4.39%

(1) Callan Cash Database includes STIF, enhanced cash, and money market funds.

*The Global Non-U.S. Stock Index Fund replaced the International Company Stock Index Fund in 1Q20.

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended June 30, 2020. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended June 30, 2020			
	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
Gross Performance				
Domestic Equity				
SERS U.S. Large Company Index	12.15%	14.01%	8.88%	5.97%
S&P 500 Index	12.13%	13.99%	8.83%	5.91%
Callan Lg Cap Broad MF	11.47%	13.12%	8.64%	5.88%
SERS SMID Company Index	9.38%	12.39%	8.78%	7.13%
Dow Jones US Completion	9.20%	12.18%	8.58%	6.80%
Callan SMID Broad MFs	9.18%	12.25%	8.76%	8.02%
International Equity				
SERS Global Non-US Index	3.94%	5.21%	-	-
MSCI ACWI ex US	3.71%	4.97%	4.44%	-
Callan Non US Equity MFs	4.15%	6.14%	4.53%	3.46%
Domestic Fixed Income				
SERS Short Term Investment Fund	1.00%	0.77%	1.52%	-
3-month Treasury Bill	0.86%	0.64%	1.34%	1.66%
Callan Cash Database(1)	1.18%	0.96%	1.74%	2.03%
SERS Stable Value Fund	2.47%	2.80%	3.50%	-
3-month Treasury Bill	0.86%	0.64%	1.34%	1.66%
Callan Stable Value	2.04%	2.15%	2.83%	3.52%
SERS U.S. Bond Index Fund	3.95%	3.79%	4.36%	5.11%
Blmbg Aggregate	3.96%	3.82%	4.39%	5.14%
Callan Core Bond MFs	3.97%	4.08%	4.63%	5.17%

(1) Callan Cash Database includes STIF, enhanced cash, and money market funds.

*Funds not listed do not have longer term history.

*The Global Non-U.S. Stock Index Fund replaced the International Company Stock Index Fund in 1Q20.

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	12/2019- 6/2020	2019	2018	2017	2016
Gross Performance					
Domestic Equity					
SERS U.S. Large Company Index	(3.06%)	31.51%	(4.38%)	21.85%	11.99%
S&P 500 Index	(3.08%)	31.49%	(4.38%)	21.83%	11.96%
Callan Lg Cap Broad MF	(3.30%)	30.14%	(4.54%)	23.56%	8.43%
SERS SMID Company Index	(5.73%)	28.21%	(9.32%)	18.21%	16.08%
Dow Jones US Completion	(5.60%)	27.91%	(9.57%)	18.12%	15.75%
Callan SMID Broad MFs	(5.90%)	29.40%	(8.69%)	17.14%	13.80%
International Equity					
SERS Global Non-US Index	(10.85%)	21.79%	(13.85%)	27.65%	5.06%
MSCI ACWI ex US	(11.00%)	21.51%	(14.20%)	27.19%	4.50%
Callan Non US Equity MFs	(9.06%)	22.83%	(15.04%)	26.90%	0.23%
Domestic Fixed Income					
SERS Short Term Investment Fund	0.54%	2.31%	2.09%	1.08%	0.59%
3-month Treasury Bill	0.60%	2.28%	1.87%	0.86%	0.33%
Callan Cash Database(1)	0.78%	2.69%	2.00%	1.19%	0.95%
SERS Stable Value Fund	1.26%	2.66%	2.41%	2.16%	2.31%
3-month Treasury Bill	0.60%	2.28%	1.87%	0.86%	0.33%
Callan Stable Value	1.18%	2.55%	2.24%	1.97%	1.89%
SERS U.S. Bond Index Fund	6.24%	8.69%	0.03%	3.53%	2.59%
Bimbg Aggregate	6.14%	8.72%	0.01%	3.54%	2.65%
Callan Core Bond MFs	6.02%	9.17%	(0.35%)	3.71%	3.03%

(1) Callan Cash Database includes STIF, enhanced cash, and money market funds.

*The Global Non-U.S. Stock Index Fund replaced the International Company Stock Index Fund in 1Q20.

Pennsylvania SERS 457(b)
Investment Manager Performance Monitoring Summary Report
June 30, 2020

Investment Manager	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	10 Year Return	5 Year Return Consistency	5 Year Risk Quadrant	Expense Ratio
Net of Fee Performance									
Retirement Date Funds									
SERS Post Retirement Fund Callan Tgt Date Ret Inc	9.5 27	6.2 16	5.8 8	5.2 10	5.5 14	6.2 19			0.07 97
BlackRock Post Retirement Idx	9.5 28	6.0 19	5.8 9	5.2 11	5.4 15	6.1 19			
SERS 2025 Retirement Fund Callan Target Date 2025	11.6 69	4.9 28	6.1 30	5.8 43	6.4 59	7.7 69			0.07 97
BlackRock 2025 Index	11.5 70	4.8 34	6.0 37	5.7 48	6.3 63	7.6 71			
SERS 2030 Retirement Fund Callan Target Date 2030	13.5 55	3.9 50	6.1 37	6.0 50	6.8 66	8.2 70			0.07 98
BlackRock 2030 Index	13.4 57	3.7 52	6.0 43	5.9 56	6.6 69	8.1 73			
SERS 2035 Retirement Fund Callan Target Date 2035	15.4 59	2.9 60	6.1 38	6.2 47	7.1 65	8.6 71			0.07 98
BlackRock 2035 Index	15.3 61	2.8 62	6.0 48	6.1 56	6.9 68	8.5 75			
SERS 2040 Retirement Fund Callan Target Date 2040	17.1 50	2.0 62	6.1 35	6.3 43	7.3 63	9.0 63			0.07 98
BlackRock 2040 Index	17.1 52	1.9 64	6.0 45	6.2 51	7.2 72	8.9 68			
SERS 2045 Retirement Fund Callan Target Date 2045	18.5 42	1.5 62	6.1 37	6.4 42	7.5 58	9.3 55			0.07 98
BlackRock 2045 Index	18.4 44	1.3 65	5.9 47	6.2 52	7.3 70	9.1 65			
SERS 2050 Retirement Fund Callan Target Date 2050	19.1 24	1.2 59	6.0 38	6.4 42	7.6 53	9.6 51			0.07 98
BlackRock 2050 Index	19.0 28	1.1 59	5.9 44	6.2 52	7.5 68	9.4 61			
SERS 2055 Retirement Fund Callan Target Date 2055	19.2 28	1.2 58	6.0 37	6.4 43	7.7 55	9.7 48			0.07 98
BlackRock 2055 Index	19.1 31	1.1 59	5.9 46	6.2 52	7.6 63	9.5 55			
SERS 2060 Retirement Fund Callan Target Date 2060	19.2 28	1.2 58	6.0 44	6.4 56					0.07 98
BlackRock 2060 Index	19.1 31	1.1 59	5.9 49	6.3 62					

Returns:
■ above median
■ third quartile
■ fourth quartile

Return Consistency:
■ above median
■ third quartile
■ fourth quartile

Risk Quadrant:


Expense Ratio:
■ below median
■ second quartile
■ first quartile

Pennsylvania SERS 457(b)
Investment Manager Performance Monitoring Summary Report
June 30, 2020

Investment Manager	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	10 Year Return	5 Year Return Consistency	5 Year Risk Quadrant	Expense Ratio
SERS 2065 Retirement Fund	19.1 32								0.07 83
Callan Target Date 2065									
LifePath Index 2065	19.1 29								
Domestic Equity									
SERS U.S. Large Company Index	20.6 52	7.5 47	10.7 47	10.7 44	12.1 43	14.0 41			0.02 99
Callan Lg Cap Broad MF									
S&P 500 Index	20.5 52	7.5 47	10.7 47	10.7 44	12.1 43	14.0 42			
SERS U.S. Small/Mid Company Index	31.0 34	1.1 50	6.4 57	6.8 52	9.4 49	12.4 47			0.03 100
Callan SMID Broad MFs									
Dow Jones US Completion	31.1 34	1.0 50	6.3 57	6.6 52	9.2 50	12.2 50			
International Equity									
SERS Global Non-U.S. Index Fund	17.3 59	-4.4 58	1.5 49	2.6 48	4.0 53	5.2 63			0.06 99
Callan Non US Equity MFs									
MSCI ACWI ex US	16.1 70	-4.8 59	1.1 50	2.3 52	3.7 60	5.0 70			
Domestic Fixed Income									
SERS Short Term Investment Fund	0.1 82	1.6 80	1.8 81	1.3 80	1.0 82	0.8 82			0.00 100
Callan Cash Database									
3-month Treasury Bill	0.0 98	1.6 80	1.8 82	1.2 92	0.9 93	0.6 96			
Comments: Callan Cash Database includes STIF, enhanced cash, and money market funds.									
SERS Stable Value Fund	0.6 25	2.6 20	2.4 37	2.2 37	2.2 25	2.5 16			
Callan Stable Value									
3-month Treasury Bill	0.0 99	1.6 98	1.8 97	1.2 99	0.9 99	0.6 100			
SERS U.S. Bond Index Fund	2.9 93	8.8 41	5.3 47	4.3 58	3.9 54	3.8 86			0.03 98
Callan Core Bond MFs									
Blmbg Aggregate	2.9 93	8.7 42	5.3 48	4.3 57	4.0 52	3.8 80			

Returns:
■ above median
■ third quartile
■ fourth quartile

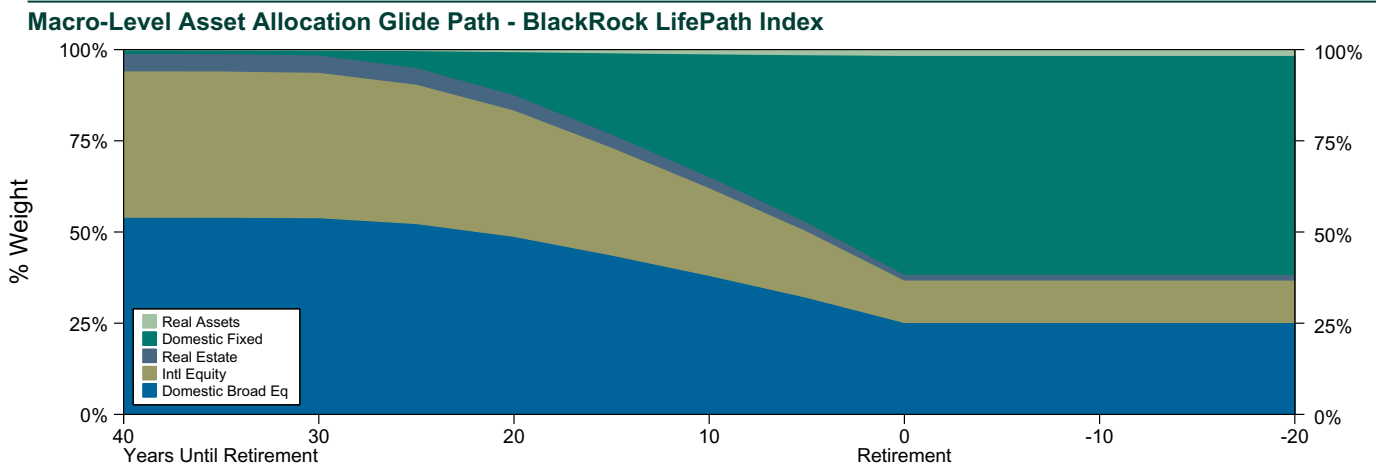
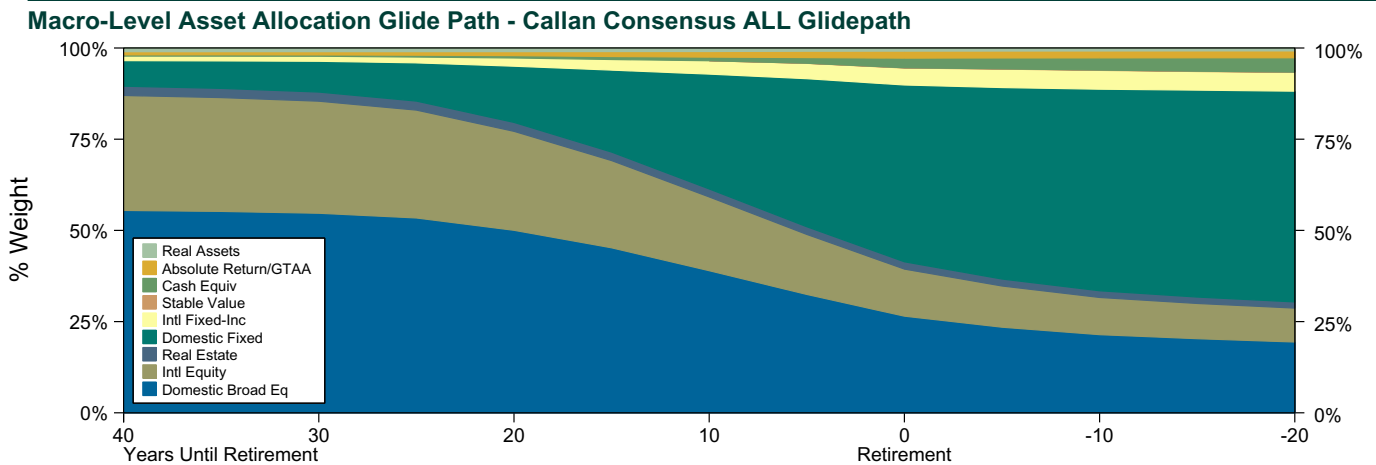
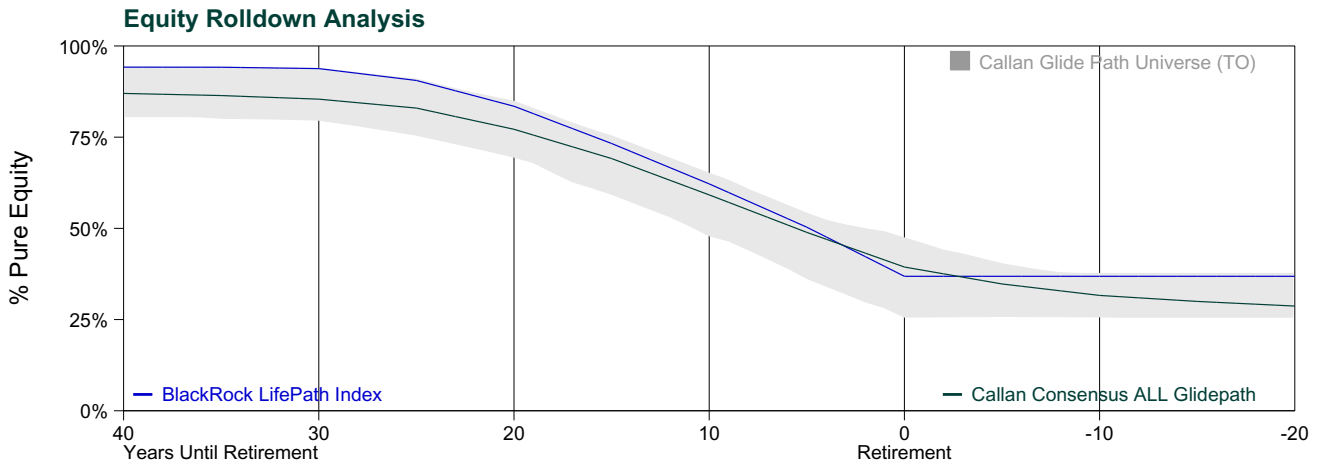
Return Consistency:
■ above median
■ third quartile
■ fourth quartile

Risk Quadrant:


Expense Ratio:
■ below median
■ second quartile
■ first quartile

Callan Consensus ALL Glidepath Target Date Glide Path Analysis as of June 30, 2020

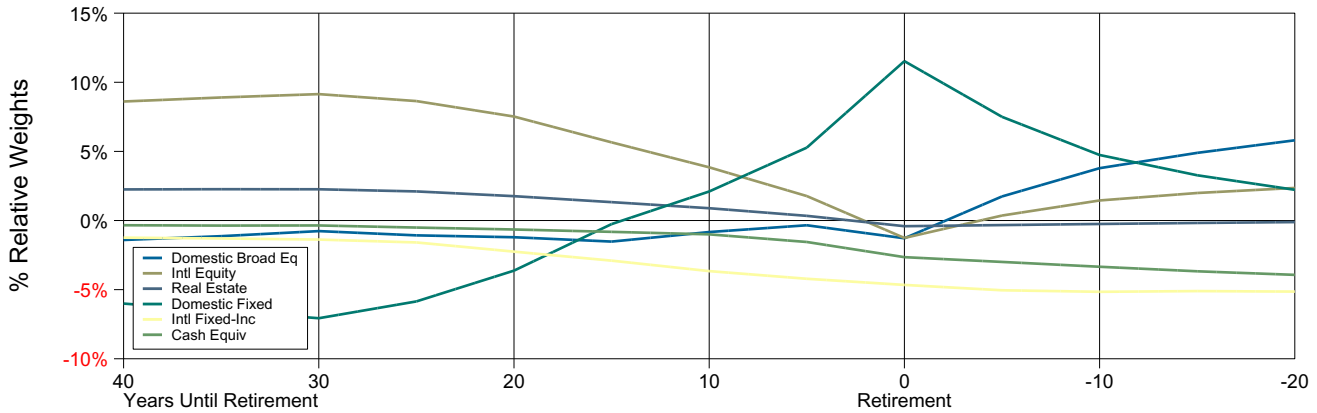
The following charts illustrate the asset allocation "glide path" underlying the relevant suite of target date funds. This analysis covers forty years of investor wealth accumulation up to retirement, as well as twenty years of wealth decumulation following retirement. The top chart shows the "pure" equity exposure (public equities excluding REITs) versus the peer group and index. The subsequent charts show more asset allocation detail at the high "macro" level.



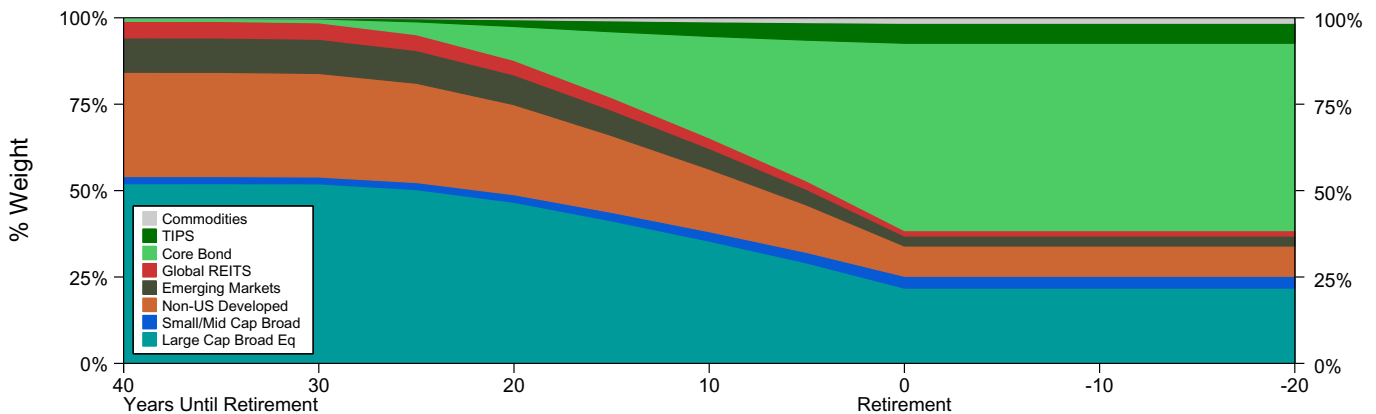
BlackRock LifePath Index Target Date Glide Path Analysis as of June 30, 2020

The following charts illustrate the asset allocation "glide path" underlying the relevant suite of target date funds. This analysis covers forty years of investor wealth accumulation up to retirement, as well as twenty years of wealth decumulation following retirement. The top chart highlights any significant "macro-level" differences between the manager's asset allocation glide path and that of the glide path index. The bottom two charts illustrate the asset allocation glide paths of both the manager and index at the more detailed "micro" level.

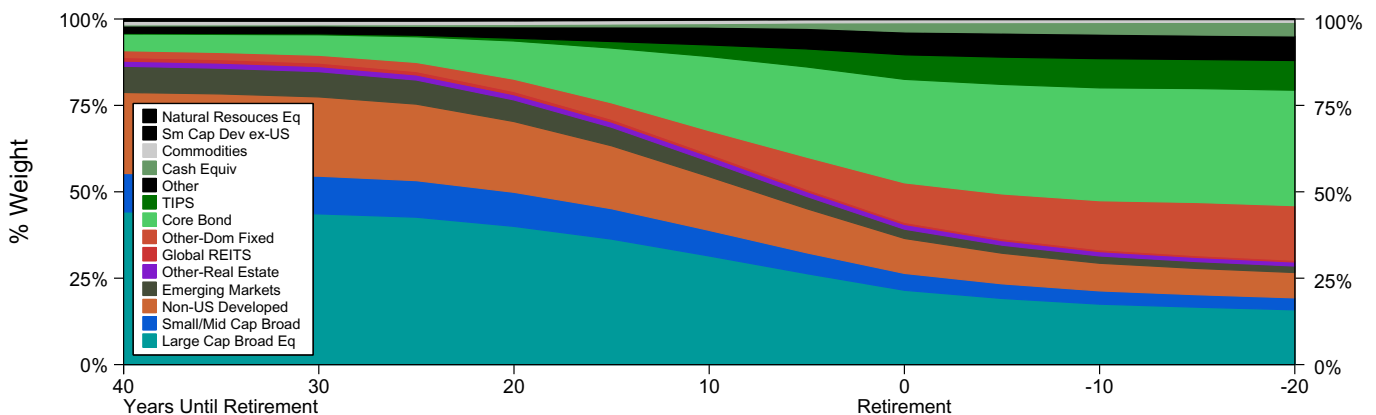
Relative Macro Asset Allocation - BlackRock LifePath Index vs. Callan Consensus ALL Glidep



Micro-Level Asset Allocation Glide Path - BlackRock LifePath Index



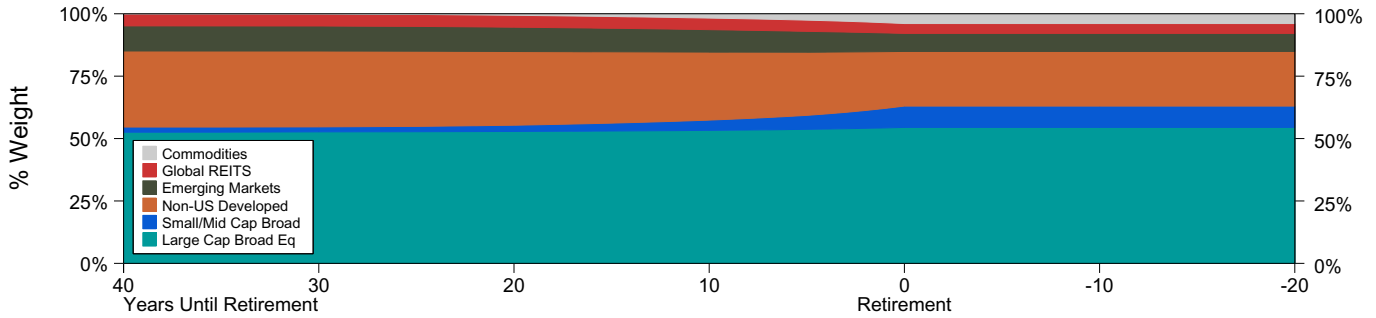
Micro-Level Asset Allocation Glide Path - Callan Consensus ALL Glidepath



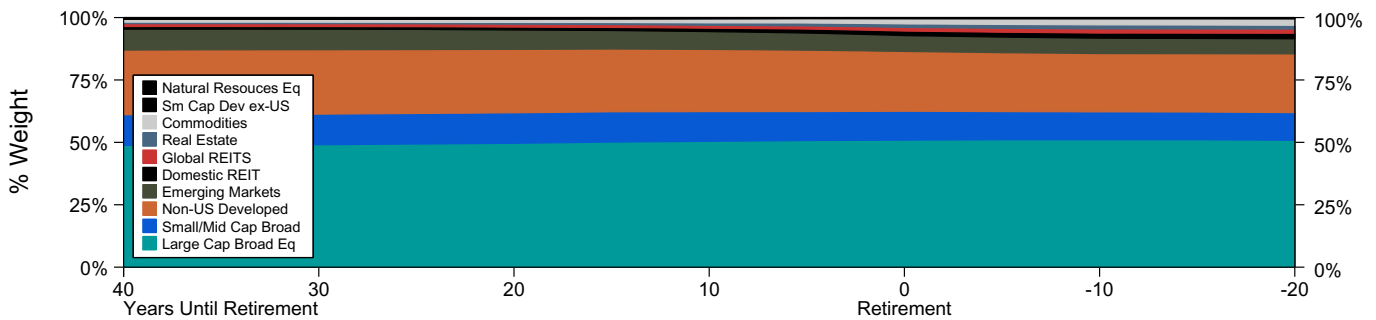
BlackRock LifePath Index Target Date Glide Path Analysis as of June 30, 2020

The first two charts below illustrate the detailed composition over time of the "risky", or "growth" portion of the glide paths for both the manager and index, defined to be all public equity and real estate asset classes. These charts highlight both the levels of diversification and aggressiveness within the wealth creation portion of the glide paths. The last two charts serve a similar purpose but focus on the composition over time of the remaining wealth preservation portion (non-equity) of the manager and index glide paths.

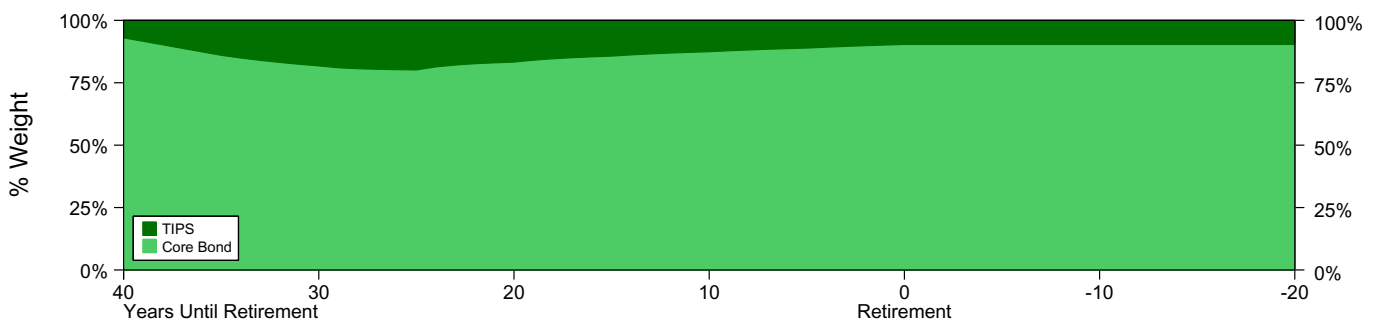
Micro-Level Equity Allocation Glide Path - BlackRock LifePath Index



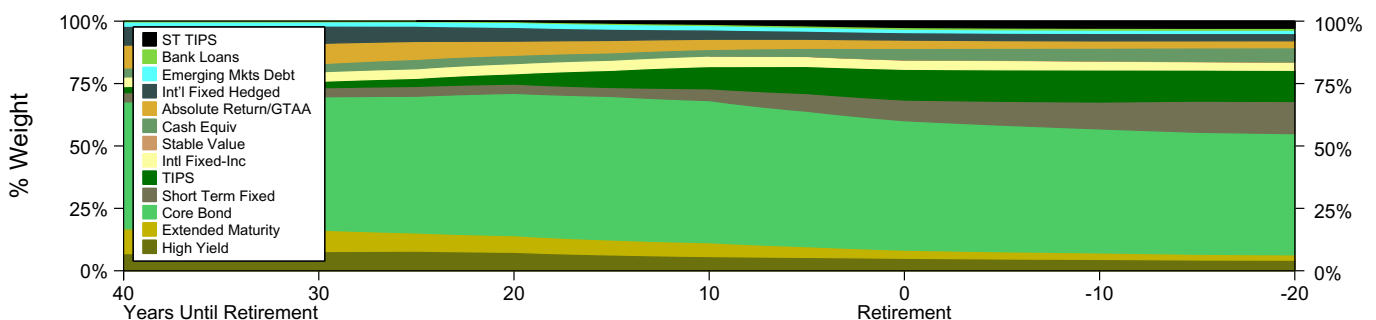
Micro-Level Equity Asset Allocation Glide Path - Callan Consensus ALL Glidepath



Micro-Level Non-Equity Allocation Glide Path - BlackRock LifePath Index



Micro-Level Non-Equity Asset Allocation Glide Path - Callan Consensus ALL Glidep



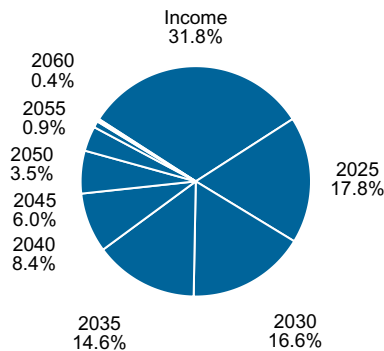
Pennsylvania SERS 457(b) - BlackRock LifePath Index Target Date Fund Family Analysis as of June 30, 2020

The following is an analysis of the client's suite of target date funds as an aggregated portfolio using actual proportions held by the client's participants. The upper-left pie chart shows the current client weights across target dates. The rest of the charts compare different attributes of the aggregated client target date portfolio to a peer group of target date fund families, as well as target date indices, by mimicking the client target date weights using these alternatives. The first two charts evaluate the aggregate client equity exposure and expense ratio via target date funds. The last two charts analyze aggregate client target date performance on both an actual return basis as well as a "glide path return" basis (simulated returns using each funds' asset allocation "glide path" weights and index returns).

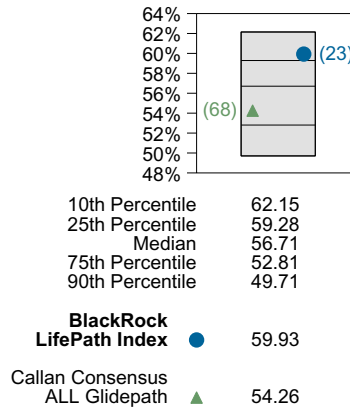
Glidepath Peer Group: ALL

Fee/Return Type: Gross

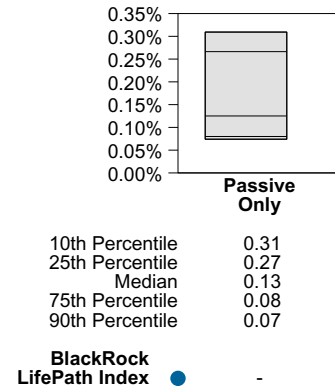
Fund Family Allocation



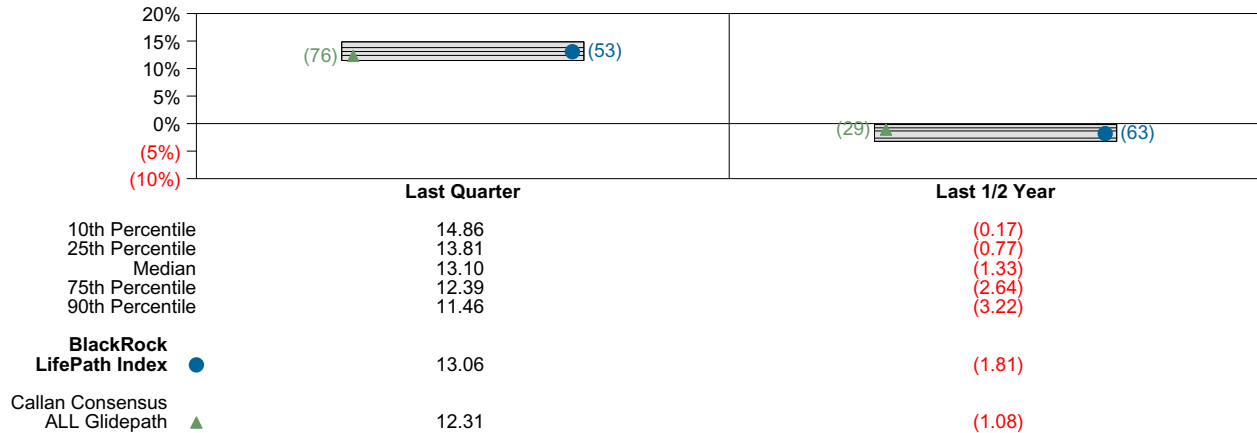
Equity Exposure



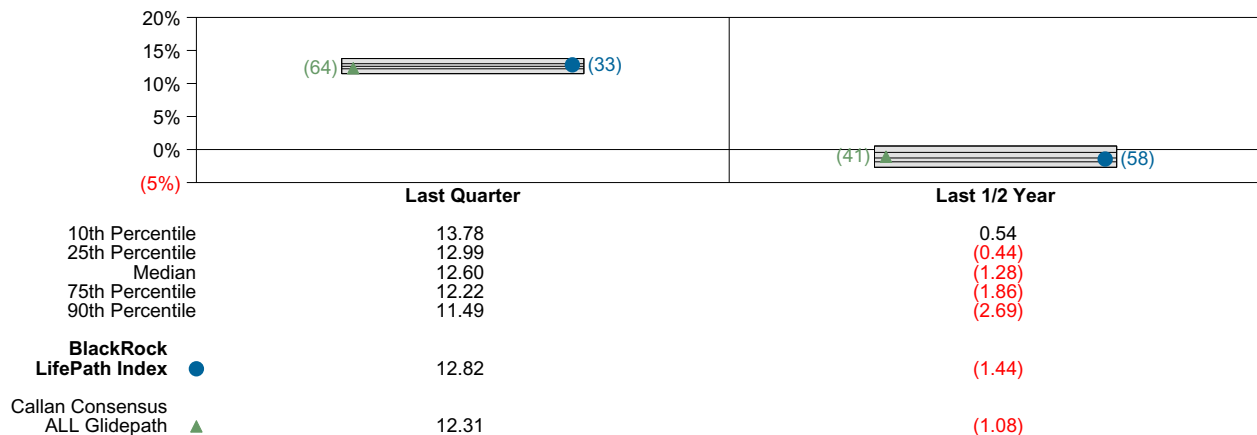
Expense Ratio



Target Date Family Performance vs Peer Families



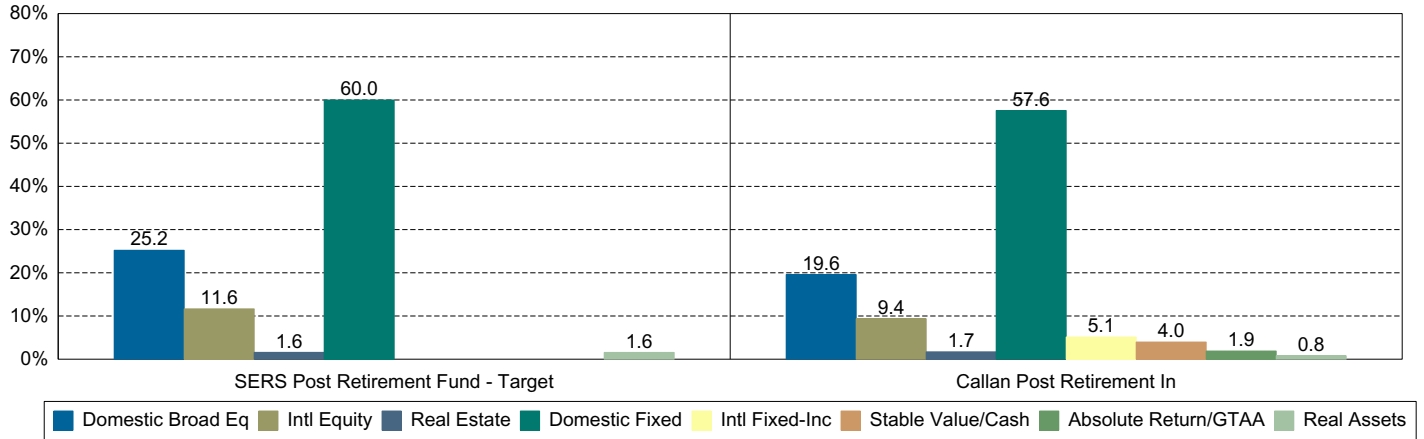
Target Date Family Glide Path Returns vs Peer Families



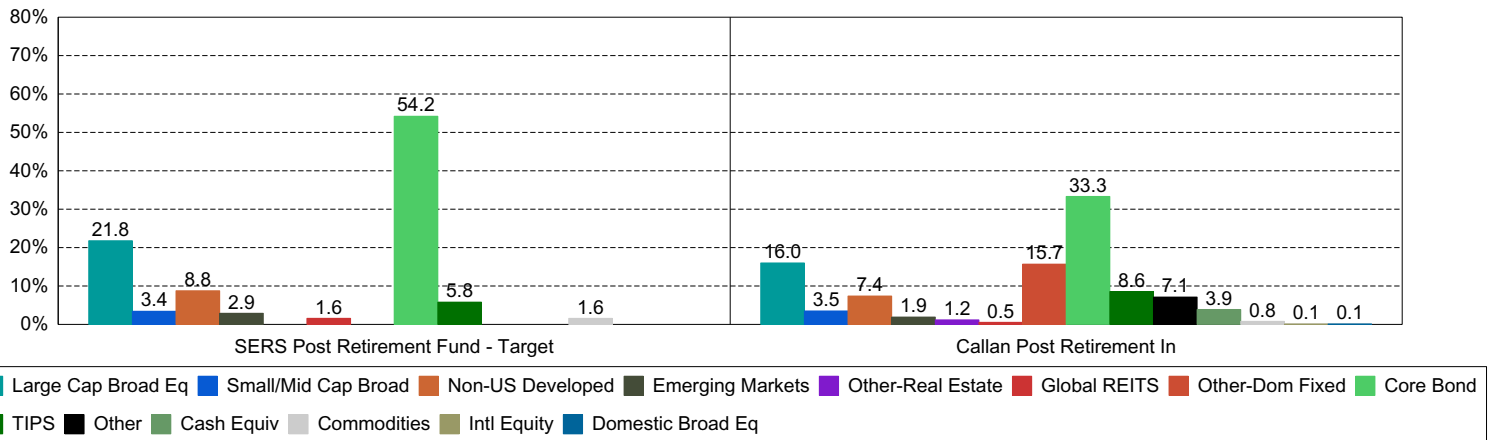
SERS Post Retirement Fund Target Date Fund Asset Allocation as of June 30, 2020

The charts below illustrate the current target asset allocation of the relevant target date fund based on its underlying glide path and compares it to an index. The top charts compare target asset allocation at a high "macro" asset class level, while the middle charts show a more detailed "micro" level view. The bottom chart compares the current "macro" level target asset allocation, and index, to a relevant peer group of target date funds by ranking the various target asset class weights versus those peer target date funds.

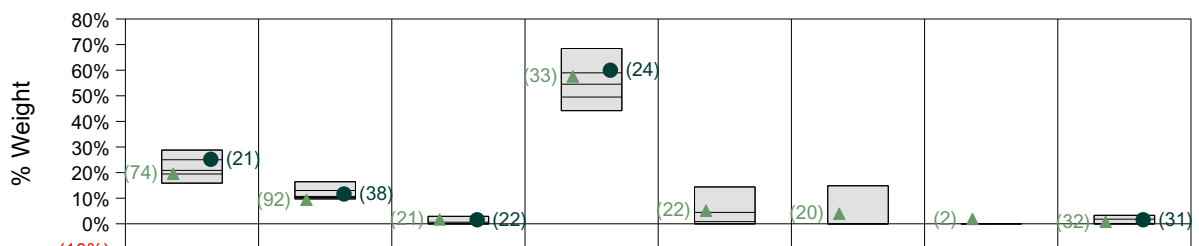
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date 2000-2010



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	28.80	16.44	2.92	68.47	14.41	14.86	0.00	3.32
25th Percentile	25.02	13.01	0.62	58.97	4.46	0.00	0.00	1.80
Median	20.86	10.70	0.00	54.53	0.84	0.00	0.00	0.00
75th Percentile	19.46	10.26	0.00	49.51	0.00	0.00	0.00	0.00
90th Percentile	15.88	9.72	0.00	44.20	0.00	0.00	0.00	0.00

SERS Post Retirement Fund - Target	●	25.21	11.65	1.58	59.99	-	-	-	1.57
Callan Post Retirement In	▲	19.59	9.37	1.71	57.56	5.13	3.97	1.89	0.79

SERS Post Retirement Fund Period Ended June 30, 2020

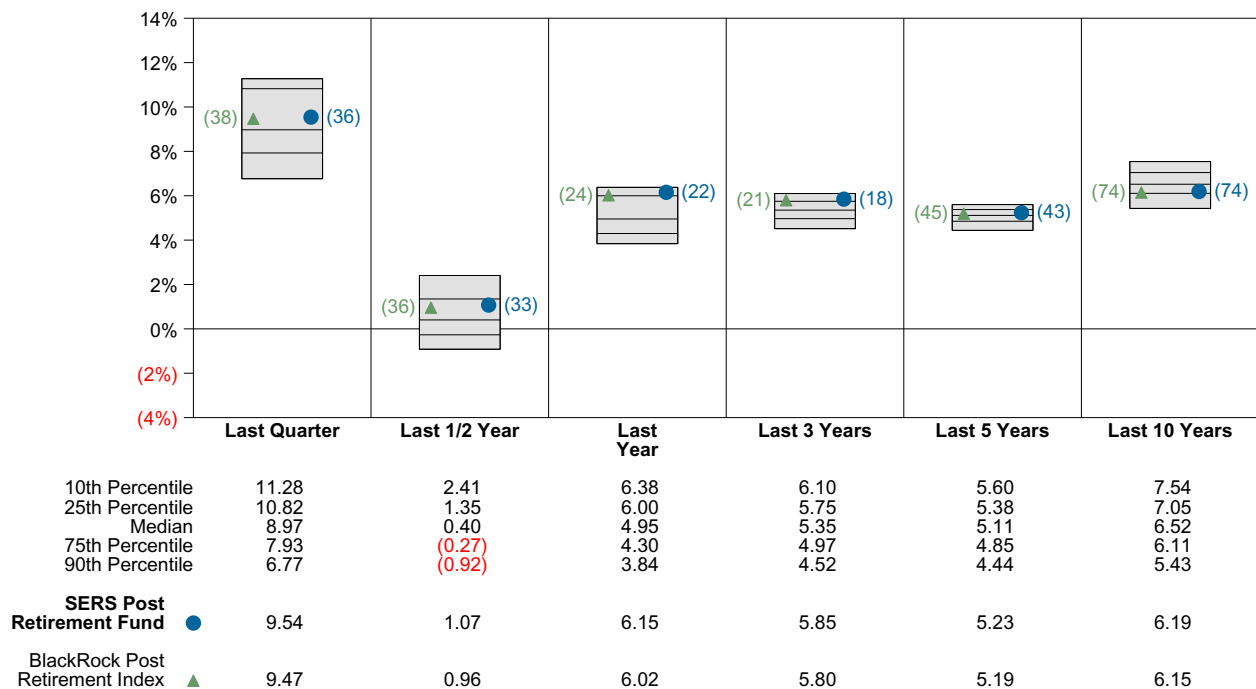
Investment Philosophy

The BlackRock LifePath(R) Index Retirement Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches. Target Date funds replaced risk-based funds in 1Q20.

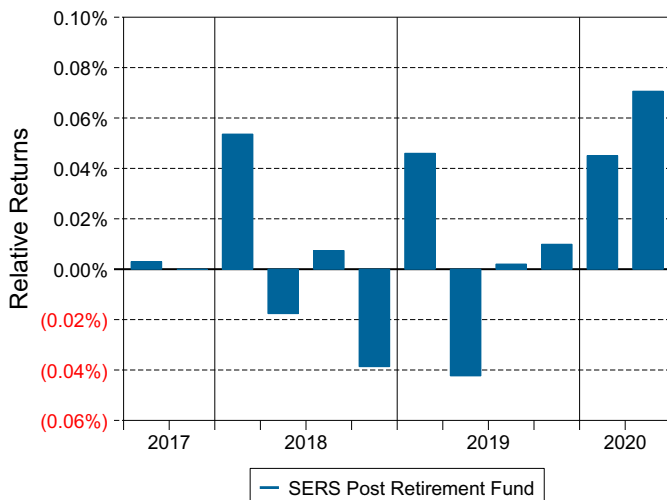
Quarterly Summary and Highlights

- SERS Post Retirement Fund's portfolio posted a 9.54% return for the quarter placing it in the 36 percentile of the Callan Target Date 2000-2010 group for the quarter and in the 22 percentile for the last year.
- SERS Post Retirement Fund's portfolio outperformed the BlackRock Post Retirement Index by 0.07% for the quarter and outperformed the BlackRock Post Retirement Index for the year by 0.13%.

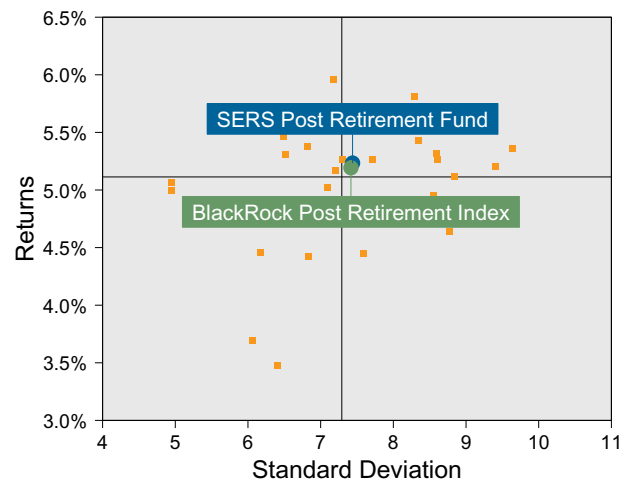
Performance vs Callan Target Date 2000-2010 (Net)



Relative Returns vs BlackRock Post Retirement Index



Callan Target Date 2000-2010 (Net) Annualized Five Year Risk vs Return

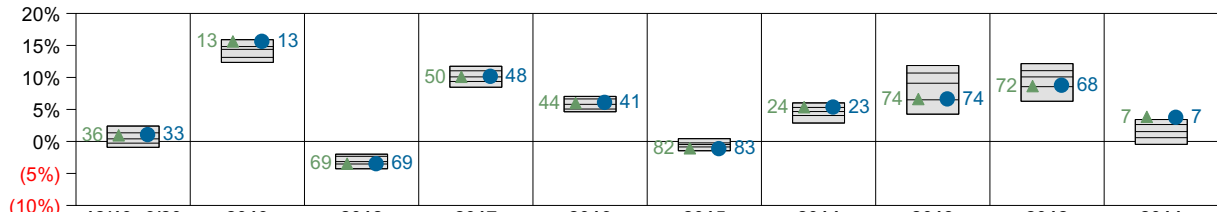


SERS Post Retirement Fund Return Analysis Summary

Return Analysis

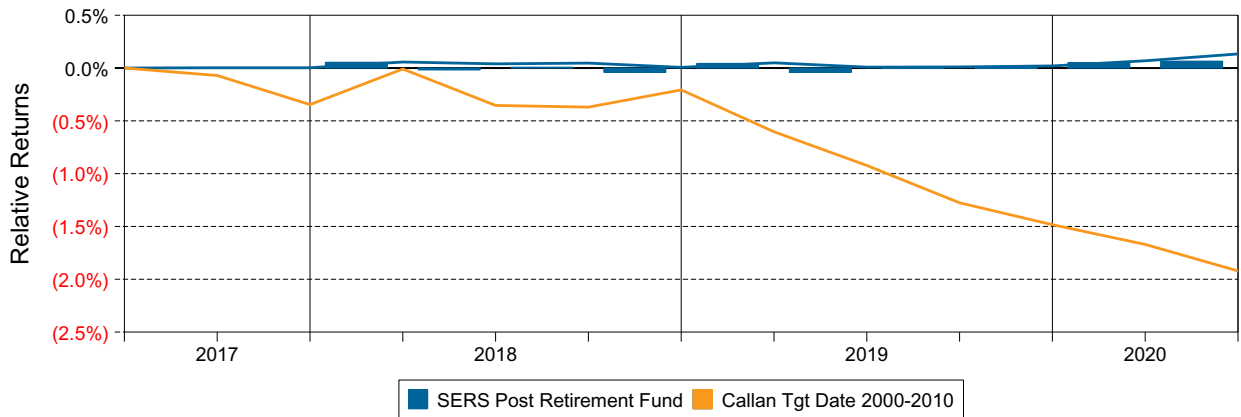
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan Target Date 2000-2010 (Net)

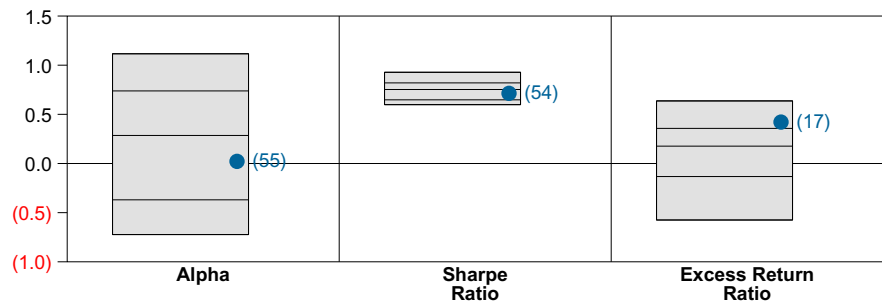


10th Percentile	2.41	15.90	(1.99)	11.74	7.04	0.43	6.02	11.86	12.16	3.42
25th Percentile	1.35	14.83	(2.33)	11.04	6.64	(0.22)	5.31	10.69	11.06	2.64
Median	0.40	14.39	(3.15)	10.09	5.80	(0.48)	4.67	9.10	10.08	1.54
75th Percentile	(0.27)	13.13	(3.53)	9.37	5.06	(0.86)	4.05	6.50	8.56	0.59
90th Percentile	(0.92)	12.35	(4.27)	8.47	4.64	(1.45)	2.88	4.26	6.28	(0.46)
SERS Post Retirement Fund	● 1.07	15.65	(3.47)	10.18	6.10	(1.12)	5.38	6.64	8.79	3.78
BlackRock Post Retirement Index	▲ 0.96	15.63	(3.48)	10.10	6.01	(1.07)	5.36	6.63	8.65	3.85

Cumulative and Quarterly Relative Return vs BlackRock Post Retirement Index



Risk Adjusted Return Measures vs BlackRock Post Retirement Index Rankings Against Callan Target Date 2000-2010 (Net) Seven Years Ended June 30, 2020

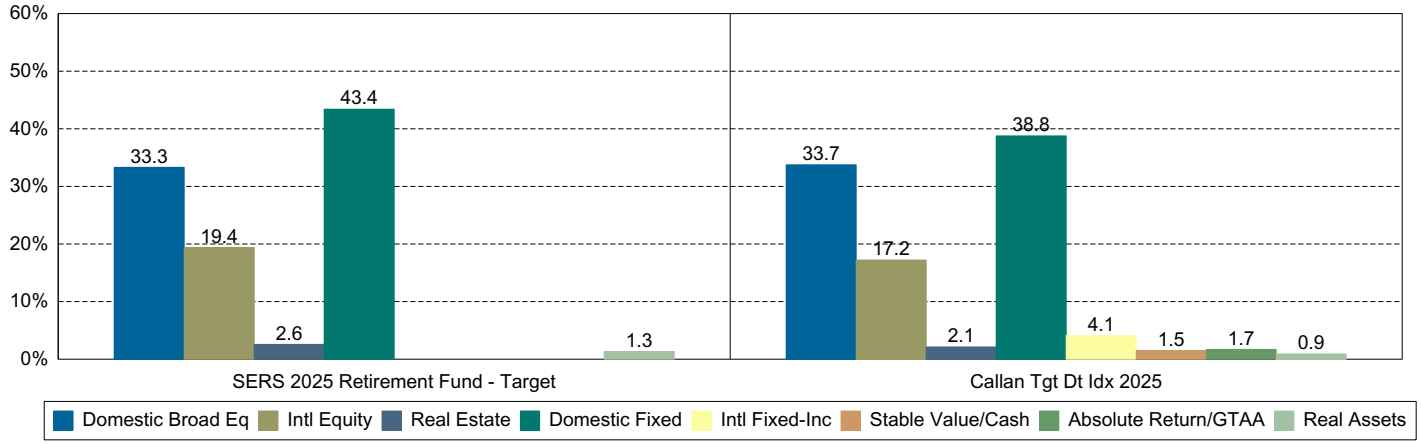


10th Percentile	1.12	0.93	0.64
25th Percentile	0.74	0.82	0.36
Median	0.29	0.75	0.18
75th Percentile	(0.37)	0.65	(0.13)
90th Percentile	(0.72)	0.60	(0.57)
SERS Post Retirement Fund	● 0.02	0.71	0.42

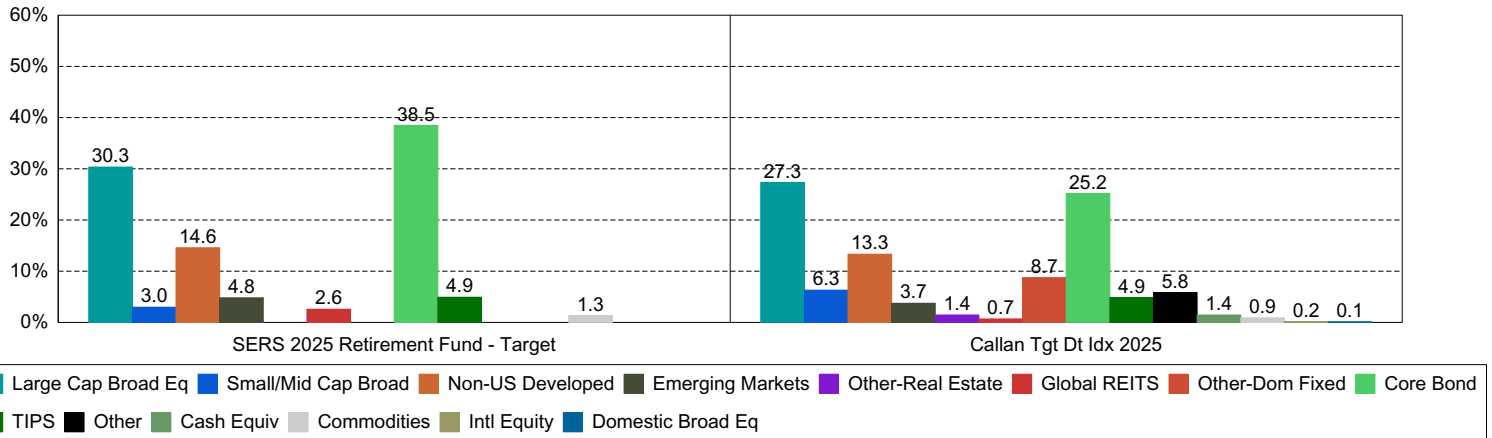
SERS 2025 Retirement Fund Target Date Fund Asset Allocation as of June 30, 2020

The charts below illustrate the current target asset allocation of the relevant target date fund based on its underlying glide path and compares it to an index. The top charts compare target asset allocation at a high "macro" asset class level, while the middle charts show a more detailed "micro" level view. The bottom chart compares the current "macro" level target asset allocation, and index, to a relevant peer group of target date funds by ranking the various target asset class weights versus those peer target date funds.

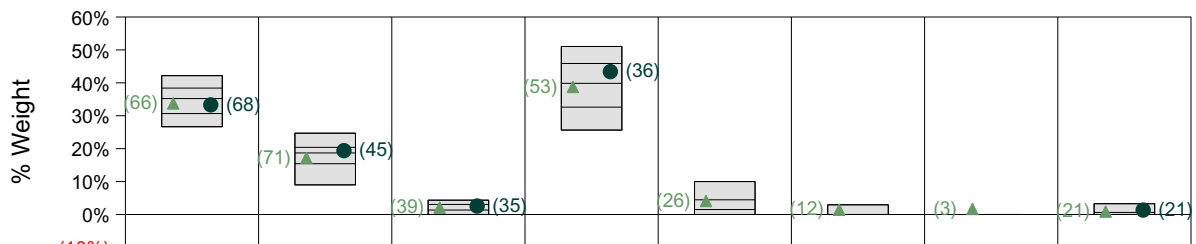
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date 2025



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	42.18	24.70	4.35	51.04	10.00	2.95	0.00	3.28
25th Percentile	38.40	20.40	3.05	45.88	4.46	0.00	0.00	0.62
Median	35.22	18.70	1.35	39.84	1.50	0.00	0.00	0.00
75th Percentile	30.66	15.43	0.00	32.61	0.00	0.00	0.00	0.00
90th Percentile	26.66	9.00	0.00	25.64	0.00	0.00	0.00	0.00

SERS 2025 Retirement Fund - Target	●	33.31	19.39	2.57	43.40	-	-	1.33
Callan Tgt Dt Idx 2025	▲	33.75	17.21	2.12	38.76	4.10	1.46	0.90

SERS 2025 Retirement Fund Period Ended June 30, 2020

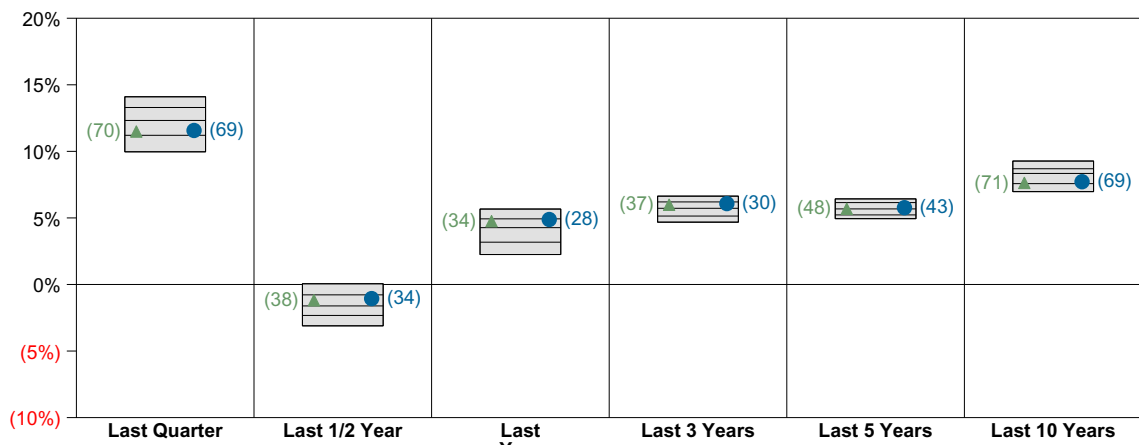
Investment Philosophy

The BlackRock LifePath(R) Index 2025 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches. Target Date funds replaced risk-based funds in 1Q20.

Quarterly Summary and Highlights

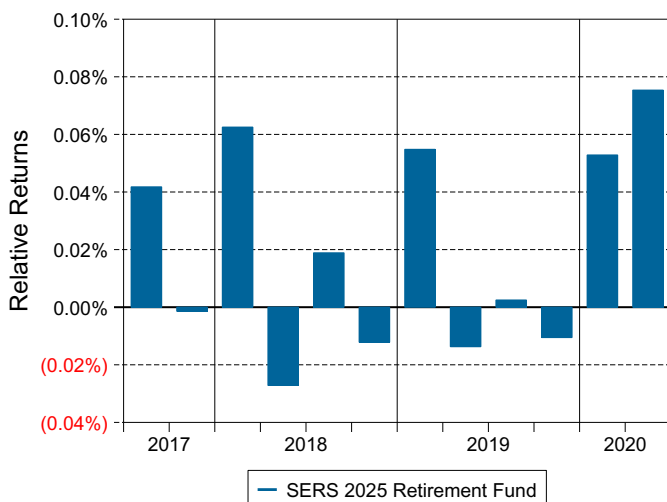
- SERS 2025 Retirement Fund's portfolio posted a 11.57% return for the quarter placing it in the 69 percentile of the Callan Target Date 2025 group for the quarter and in the 28 percentile for the last year.
- SERS 2025 Retirement Fund's portfolio outperformed the LifePath Index 2025 CB by 0.08% for the quarter and outperformed the LifePath Index 2025 CB for the year by 0.13%.

Performance vs Callan Target Date 2025 (Net)

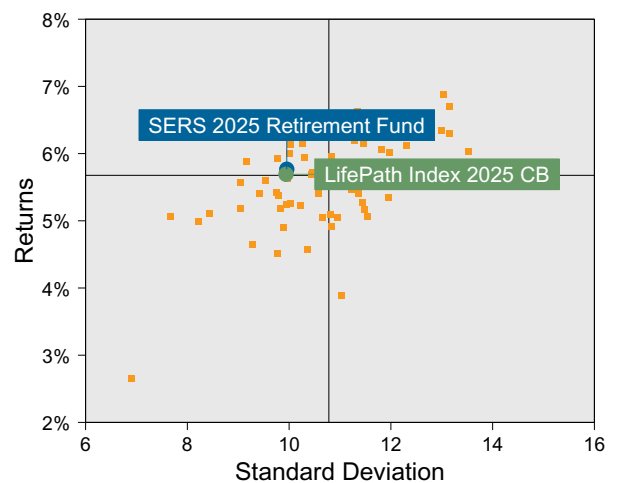


10th Percentile	14.10	0.05	5.67	6.64	6.43	9.27
25th Percentile	13.30	(0.78)	4.93	6.20	6.15	8.69
Median	12.32	(1.61)	4.27	5.72	5.68	8.34
75th Percentile	11.21	(2.33)	3.18	5.14	5.23	7.58
90th Percentile	9.97	(3.11)	2.25	4.68	4.94	6.97
SERS 2025 Retirement Fund	● 11.57	(1.06)	4.88	6.08	5.77	7.72
LifePath Index 2025 CB	▲ 11.49	(1.19)	4.75	5.99	5.69	7.63

Relative Return vs LifePath Index 2025 CB



Callan Target Date 2025 (Net) Annualized Five Year Risk vs Return

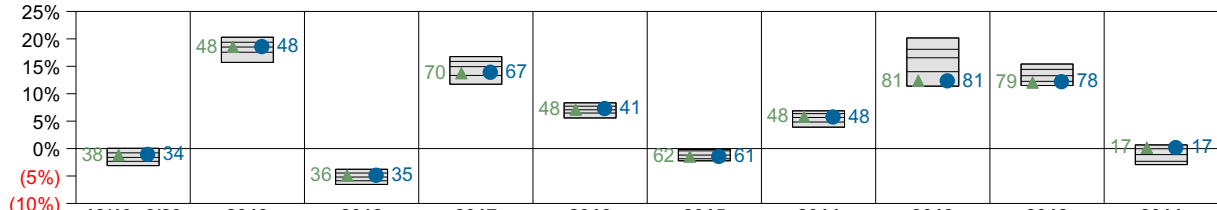


SERS 2025 Retirement Fund Return Analysis Summary

Return Analysis

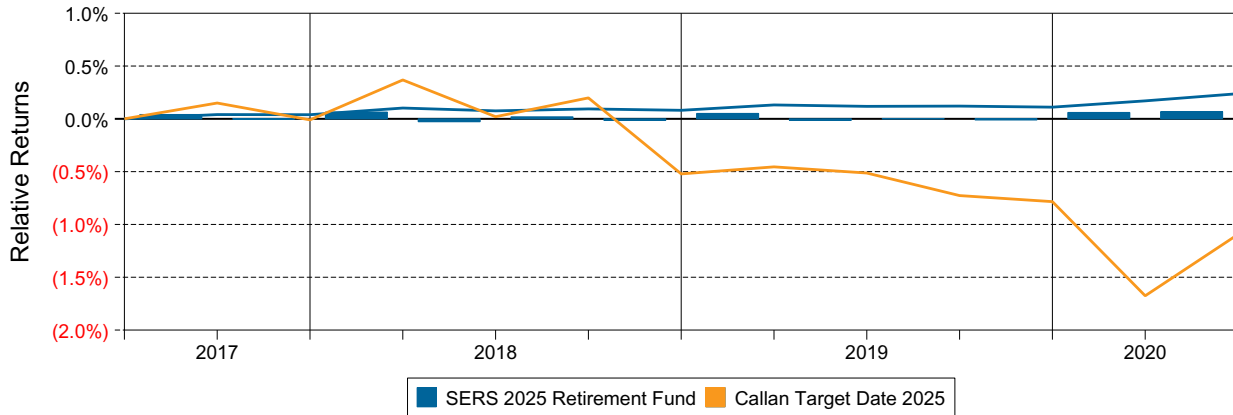
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan Target Date 2025 (Net)

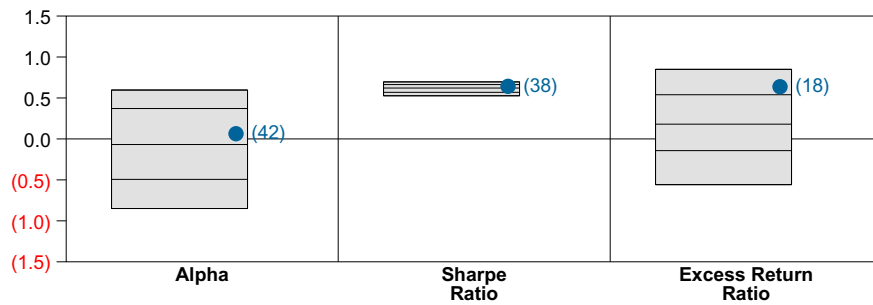


	12/19- 6/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	0.05	20.30	(3.77)	16.77	8.34	(0.13)	6.88	20.17	15.41	0.67
25th Percentile	(0.78)	19.39	(4.46)	15.89	7.73	(0.41)	6.37	18.10	14.44	(0.03)
Median	(1.61)	18.51	(5.19)	14.94	7.07	(1.19)	5.67	16.55	13.28	(1.09)
75th Percentile	(2.33)	17.56	(5.87)	13.33	6.48	(1.85)	4.84	14.02	12.26	(2.32)
90th Percentile	(3.11)	15.71	(6.53)	11.73	5.59	(2.23)	3.90	11.38	11.50	(2.92)
SERS 2025 Retirement Fund	● (1.06)	18.60	(4.86)	13.91	7.30	(1.43)	5.77	12.34	12.20	0.18
LifePath Index 2025 CB	▲ (1.19)	18.56	(4.90)	13.75	7.10	(1.45)	5.82	12.35	12.04	0.16

Cumulative and Quarterly Relative Return vs LifePath Index 2025 CB



Risk Adjusted Return Measures vs LifePath Index 2025 CB Rankings Against Callan Target Date 2025 (Net) Seven Years Ended June 30, 2020



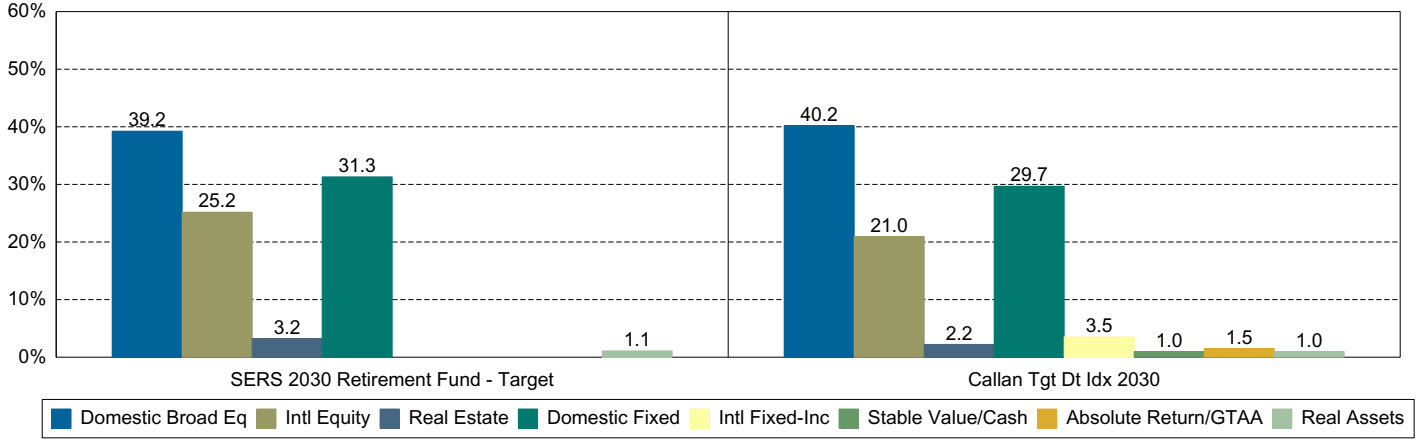
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.60	0.70	0.85
25th Percentile	0.37	0.66	0.54
Median	(0.07)	0.62	0.18
75th Percentile	(0.49)	0.57	(0.14)
90th Percentile	(0.85)	0.53	(0.56)
SERS 2025 Retirement Fund	● 0.06	0.64	0.64

SERS 2030 Retirement Fund

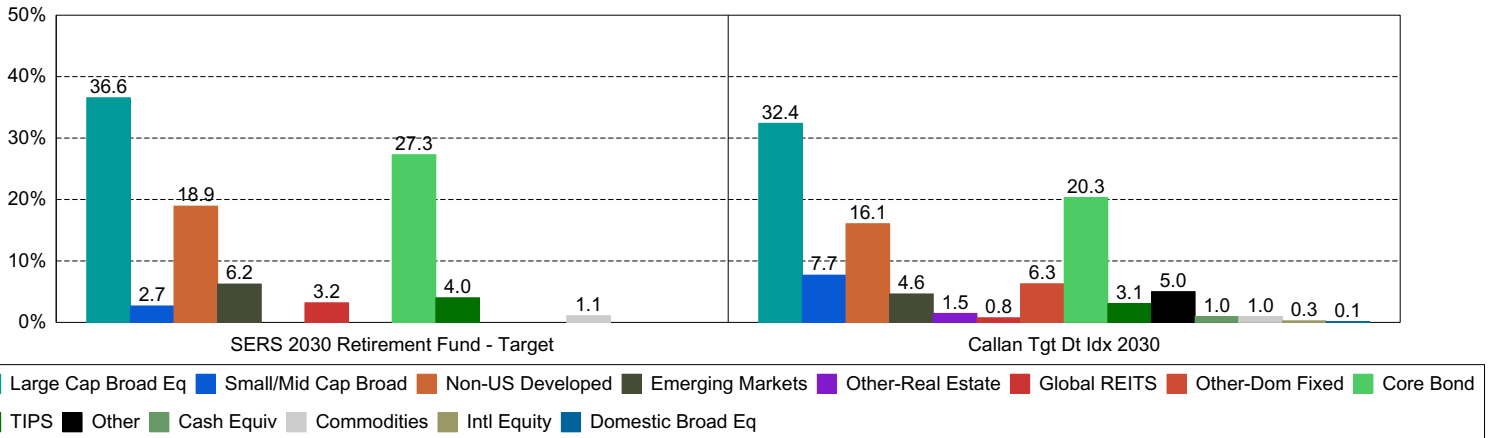
Target Date Fund Asset Allocation as of June 30, 2020

The charts below illustrate the current target asset allocation of the relevant target date fund based on its underlying glide path and compares it to an index. The top charts compare target asset allocation at a high "macro" asset class level, while the middle charts show a more detailed "micro" level view. The bottom chart compares the current "macro" level target asset allocation, and index, to a relevant peer group of target date funds by ranking the various target asset class weights versus those peer target date funds.

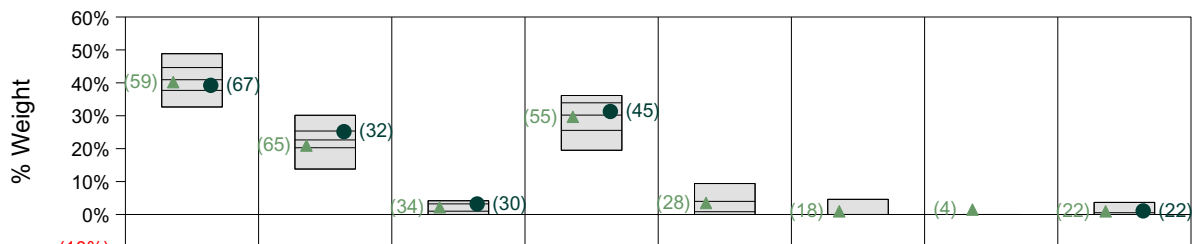
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date 2030



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	48.85	30.14	4.18	36.14	9.40	4.60	0.00	3.67
25th Percentile	44.64	25.36	3.23	33.93	3.98	0.00	0.00	0.54
Median	40.95	22.65	1.00	30.20	0.84	0.00	0.00	0.00
75th Percentile	37.71	20.28	0.00	25.56	0.00	0.00	0.00	0.00
90th Percentile	32.66	13.81	0.00	19.50	0.00	0.00	0.00	0.00

SERS 2030 Retirement Fund - Target	●	39.24	25.17	3.20	31.31	-	-	1.09
Callan Tgt Dt Idx 2030	▲	40.21	20.96	2.22	29.68	3.51	0.96	1.50

SERS 2030 Retirement Fund Period Ended June 30, 2020

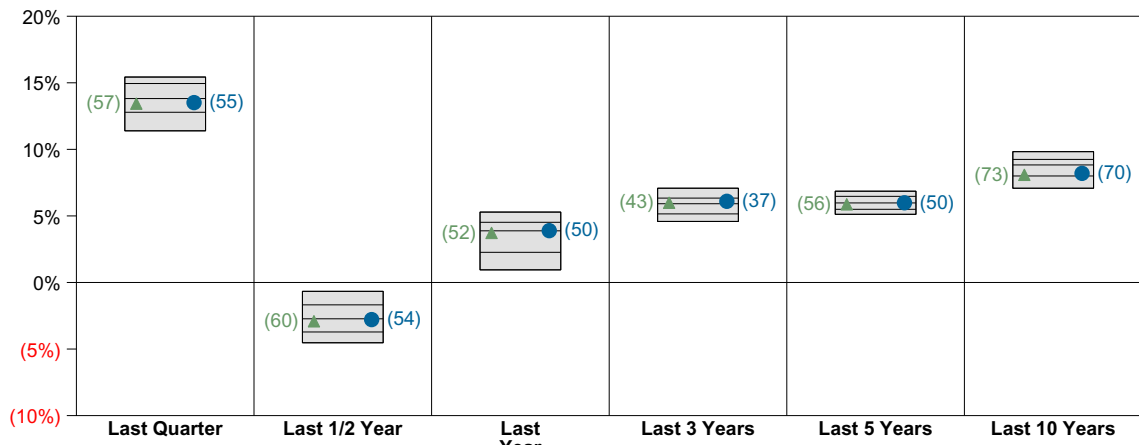
Investment Philosophy

The BlackRock LifePath(R) Index 2030 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches. Target Date funds replaced risk-based funds in 1Q20.

Quarterly Summary and Highlights

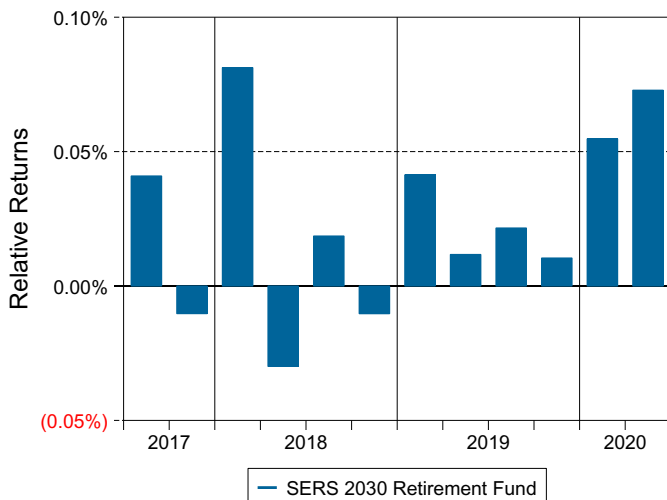
- SERS 2030 Retirement Fund's portfolio posted a 13.51% return for the quarter placing it in the 55 percentile of the Callan Target Date 2030 group for the quarter and in the 50 percentile for the last year.
- SERS 2030 Retirement Fund's portfolio outperformed the LifePath Index 2030 CB by 0.07% for the quarter and outperformed the LifePath Index 2030 CB for the year by 0.17%.

Performance vs Callan Target Date 2030 (Net)

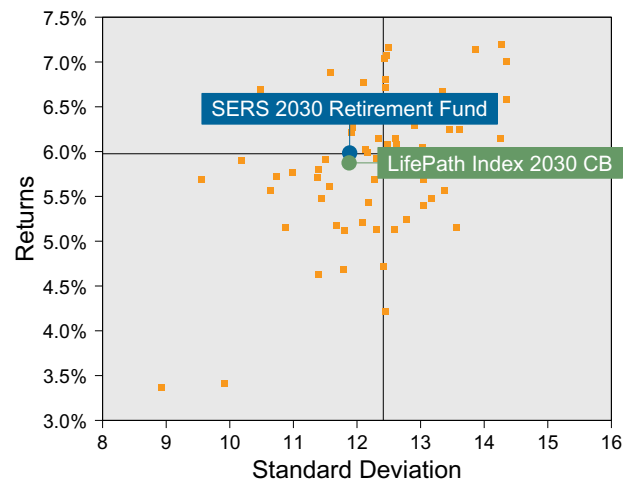


10th Percentile	15.43		5.29	7.08	6.86	9.83	
25th Percentile	14.95	(0.67)	4.52	6.34	6.47	9.24	
Median	13.82	(1.68)	3.88	5.91	5.98	8.83	
75th Percentile	12.79	(2.73)	2.27	5.15	5.50	8.00	
90th Percentile	11.39	(3.72)	0.95	4.58	5.12	7.08	
		(4.53)					
SERS 2030 Retirement Fund	●	13.51	(2.79)	3.89	6.10	5.98	8.20
LifePath Index 2030 CB	▲	13.44	(2.91)	3.73	5.99	5.87	8.09

Relative Return vs LifePath Index 2030 CB



Callan Target Date 2030 (Net) Annualized Five Year Risk vs Return

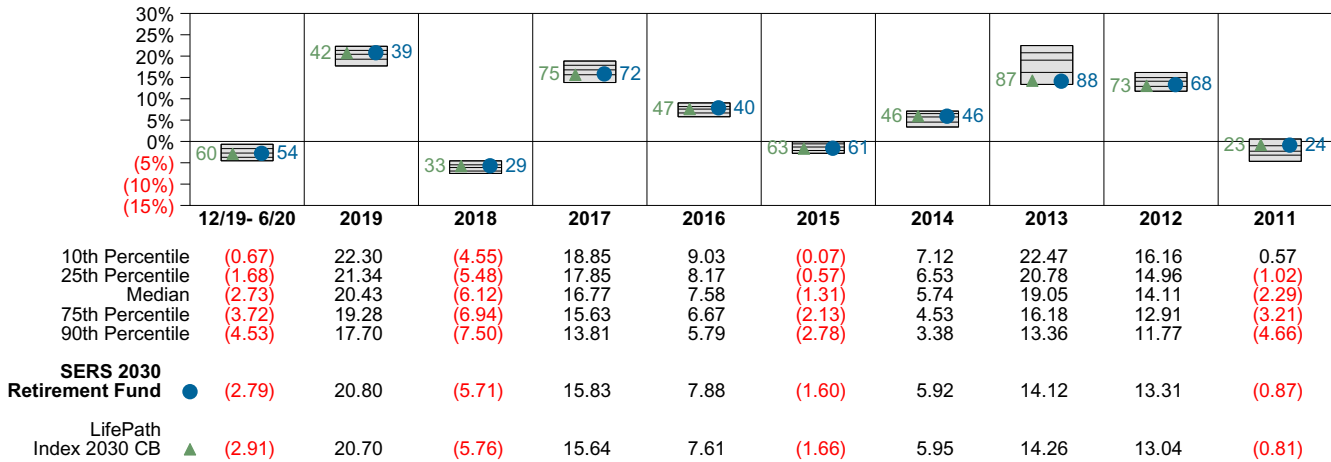


SERS 2030 Retirement Fund Return Analysis Summary

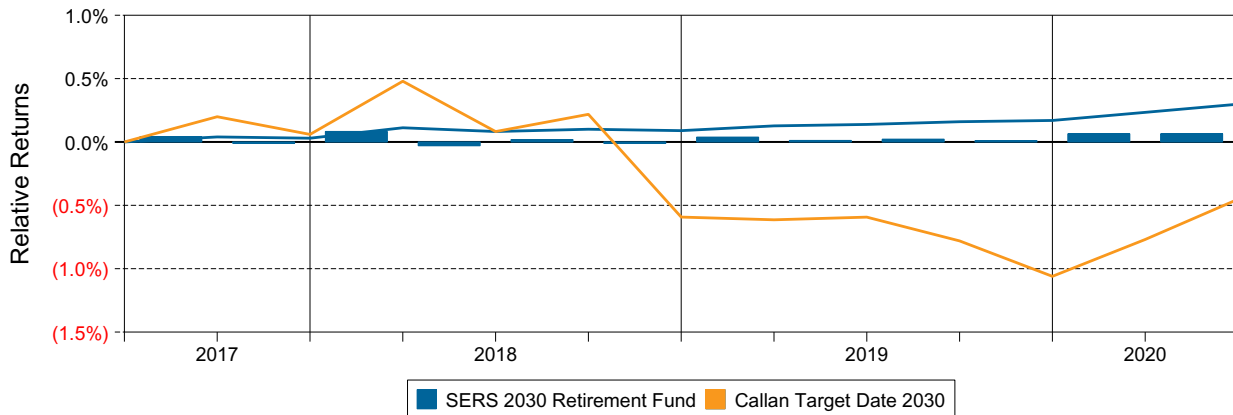
Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

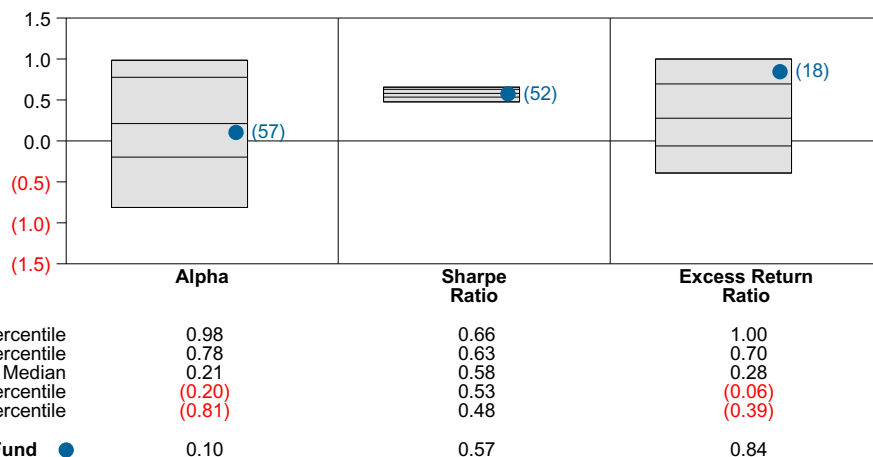
Performance vs Callan Target Date 2030 (Net)



Cumulative and Quarterly Relative Return vs LifePath Index 2030 CB



Risk Adjusted Return Measures vs LifePath Index 2030 CB Rankings Against Callan Target Date 2030 (Net) Seven Years Ended June 30, 2020

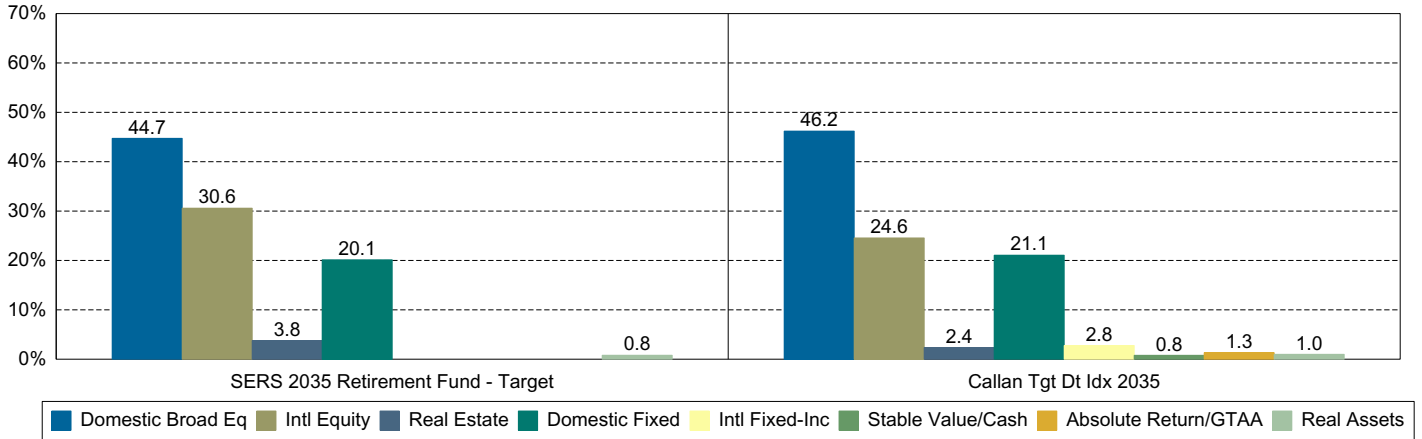


SERS 2035 Retirement Fund

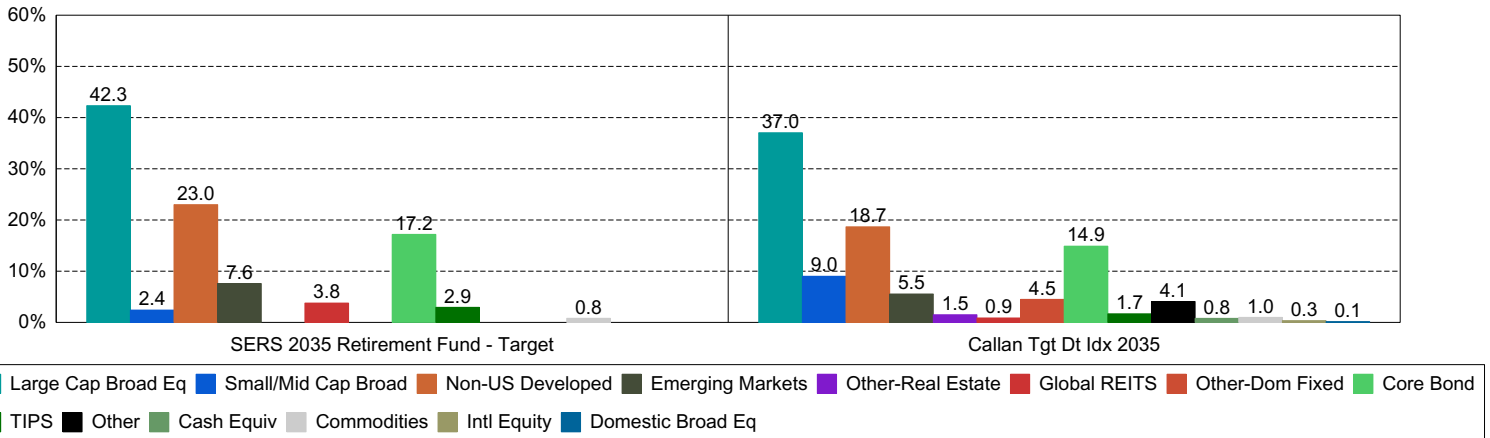
Target Date Fund Asset Allocation as of June 30, 2020

The charts below illustrate the current target asset allocation of the relevant target date fund based on its underlying glide path and compares it to an index. The top charts compare target asset allocation at a high "macro" asset class level, while the middle charts show a more detailed "micro" level view. The bottom chart compares the current "macro" level target asset allocation, and index, to a relevant peer group of target date funds by ranking the various target asset class weights versus those peer target date funds.

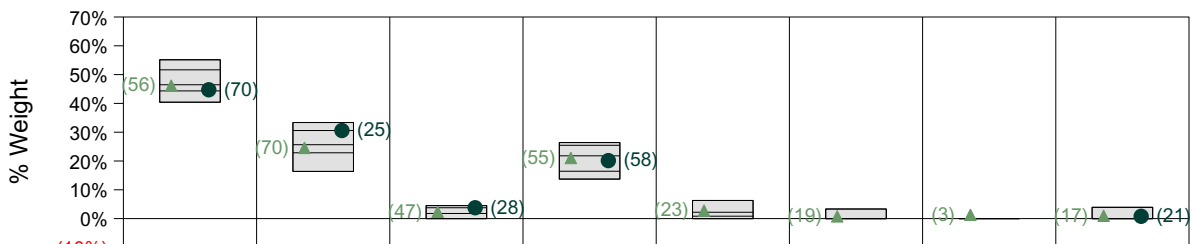
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date 2035



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	55.15	33.36	4.52	26.41	6.30	3.33	0.00	3.91
25th Percentile	51.66	30.58	3.77	25.45	2.20	0.00	0.00	0.00
Median	46.47	25.66	1.78	21.80	0.83	0.00	0.00	0.00
75th Percentile	44.34	22.85	0.00	16.45	0.00	0.00	0.00	0.00
90th Percentile	40.41	16.38	0.00	13.71	0.00	0.00	0.00	0.00

SERS 2035 Retirement Fund - Target	●	44.73	30.58	3.77	20.13	-	-	0.80
Callan Tgt Dt Idx 2035	▲	46.19	24.55	2.35	21.06	2.77	0.79	1.31

SERS 2035 Retirement Fund Period Ended June 30, 2020

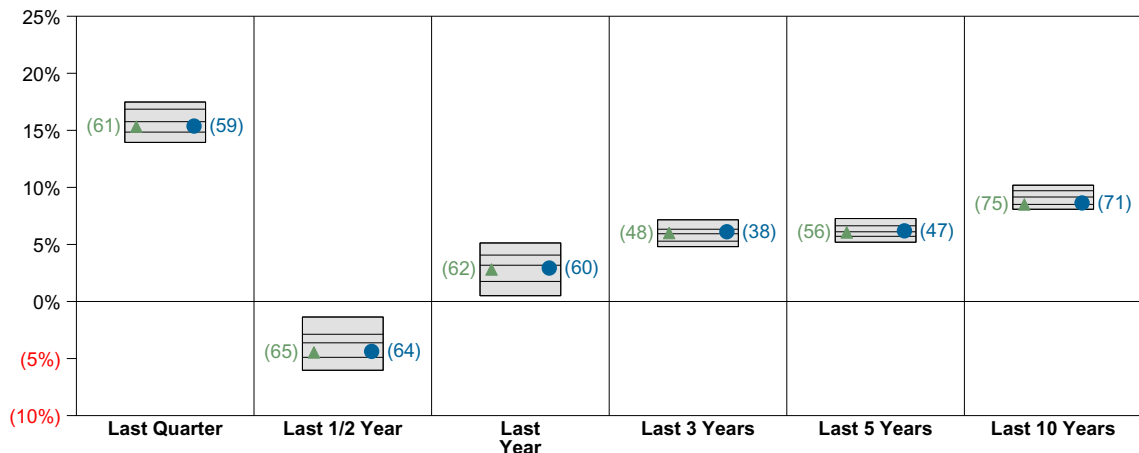
Investment Philosophy

The BlackRock LifePath(R) Index 2035 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches. Target Date funds replaced risk-based funds in 1Q20.

Quarterly Summary and Highlights

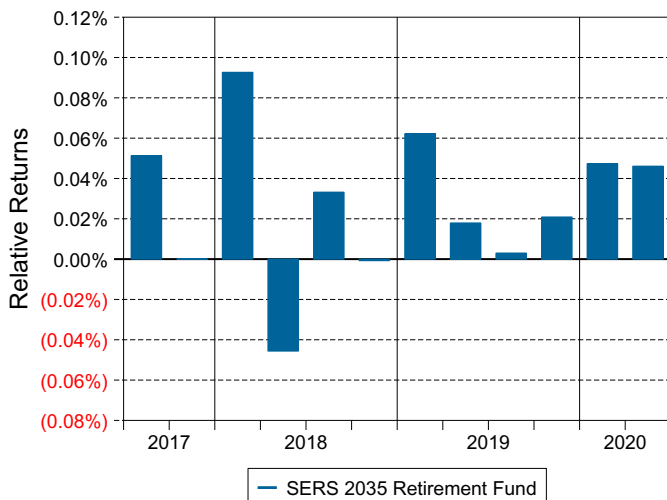
- SERS 2035 Retirement Fund's portfolio posted a 15.37% return for the quarter placing it in the 59 percentile of the Callan Target Date 2035 group for the quarter and in the 60 percentile for the last year.
- SERS 2035 Retirement Fund's portfolio outperformed the LifePath Index 2035 CB by 0.05% for the quarter and outperformed the LifePath Index 2035 CB for the year by 0.12%.

Performance vs Callan Target Date 2035 (Net)

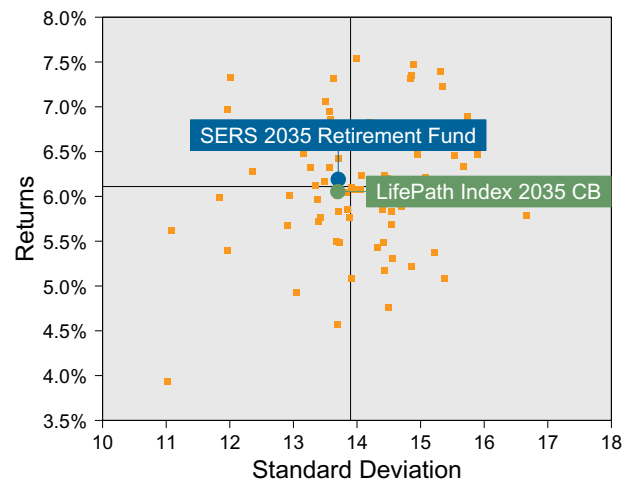


10th Percentile	17.48	(1.36)	5.13	7.16	7.27	10.19
25th Percentile	16.86	(2.87)	4.07	6.33	6.64	9.71
Median	15.76	(3.62)	3.18	5.94	6.11	9.16
75th Percentile	14.85	(4.89)	1.76	5.29	5.71	8.51
90th Percentile	13.94	(6.03)	0.51	4.81	5.19	8.08
SERS 2035 Retirement Fund	15.37	(4.37)	2.93	6.11	6.19	8.64
LifePath Index 2035 CB	15.33	(4.46)	2.81	6.00	6.05	8.50

Relative Return vs LifePath Index 2035 CB



Callan Target Date 2035 (Net) Annualized Five Year Risk vs Return

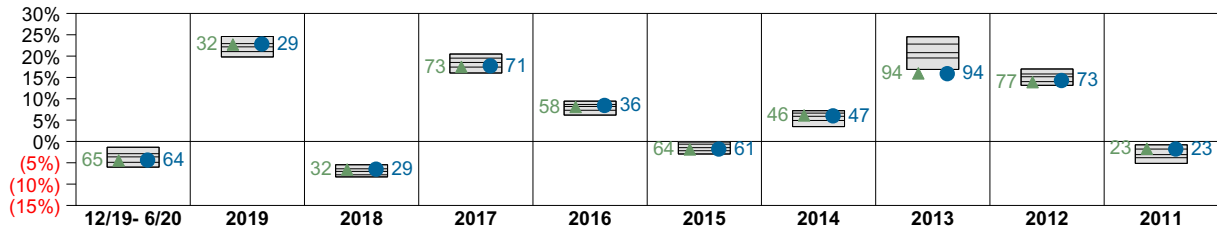


SERS 2035 Retirement Fund Return Analysis Summary

Return Analysis

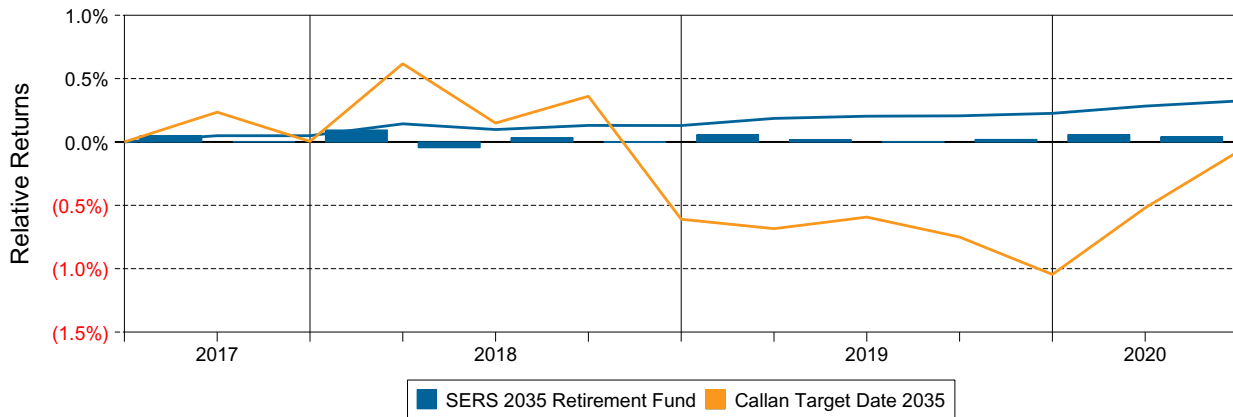
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan Target Date 2035 (Net)

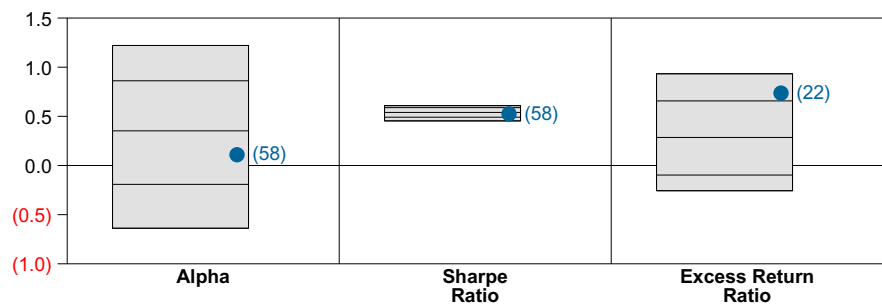


	12/19- 6/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	(1.36)	24.59	(5.46)	20.49	9.45	(0.10)	7.21	24.53	16.98	(0.79)
25th Percentile	(2.87)	22.92	(6.41)	19.53	8.67	(0.64)	6.63	22.82	15.81	(1.79)
Median	(3.62)	22.17	(7.03)	18.51	8.20	(1.46)	5.89	20.81	15.16	(3.09)
75th Percentile	(4.89)	21.05	(7.82)	17.42	7.30	(2.17)	4.91	19.56	14.02	(3.81)
90th Percentile	(6.03)	19.80	(8.31)	16.04	6.17	(2.95)	3.47	16.87	13.15	(5.15)
SERS 2035 Retirement Fund ●	(4.37)	22.84	(6.50)	17.72	8.44	(1.78)	5.99	15.88	14.28	(1.77)
LifePath Index 2035 CB ▲	(4.46)	22.72	(6.58)	17.48	8.08	(1.86)	6.11	15.96	13.90	(1.71)

Cumulative and Quarterly Relative Return vs LifePath Index 2035 CB



Risk Adjusted Return Measures vs LifePath Index 2035 CB Rankings Against Callan Target Date 2035 (Net) Seven Years Ended June 30, 2020



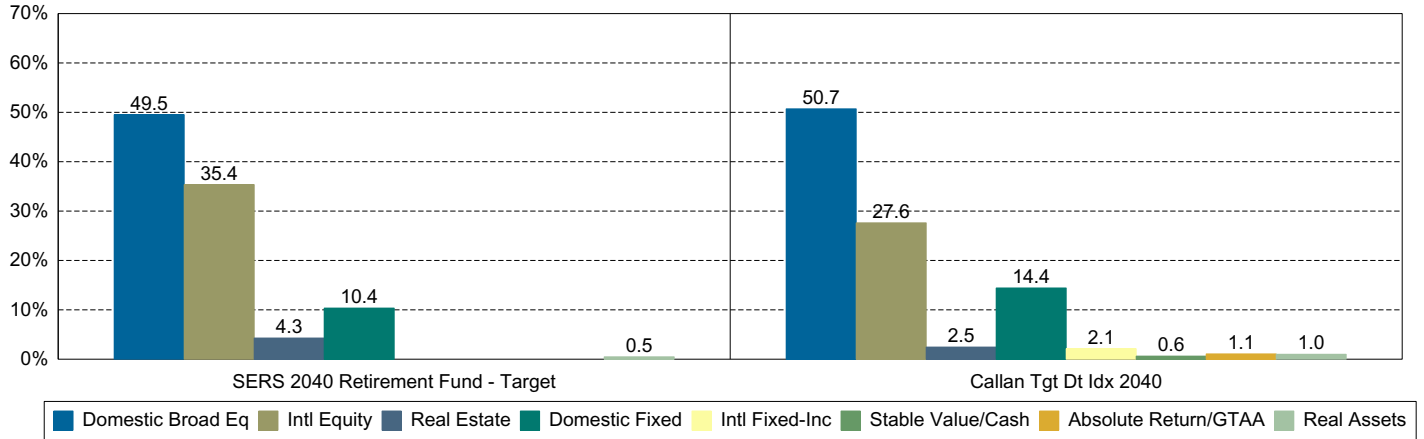
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	1.22	0.61	0.93
25th Percentile	0.86	0.59	0.66
Median	0.35	0.54	0.29
75th Percentile	(0.19)	0.49	(0.10)
90th Percentile	(0.64)	0.45	(0.26)
SERS 2035 Retirement Fund ●	0.11	0.53	0.74

SERS 2040 Retirement Fund

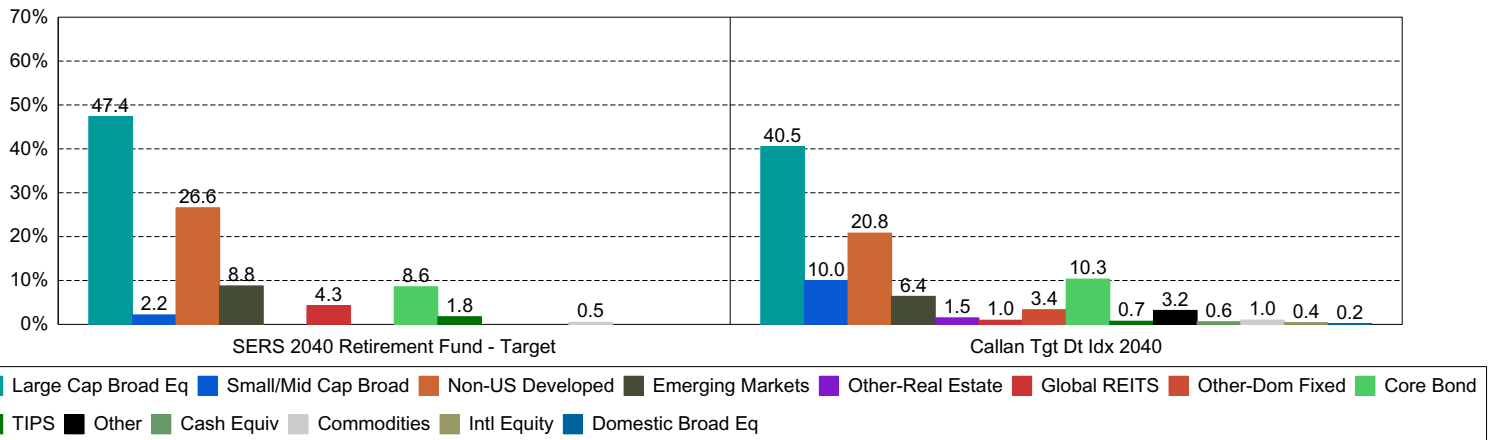
Target Date Fund Asset Allocation as of June 30, 2020

The charts below illustrate the current target asset allocation of the relevant target date fund based on its underlying glide path and compares it to an index. The top charts compare target asset allocation at a high "macro" asset class level, while the middle charts show a more detailed "micro" level view. The bottom chart compares the current "macro" level target asset allocation, and index, to a relevant peer group of target date funds by ranking the various target asset class weights versus those peer target date funds.

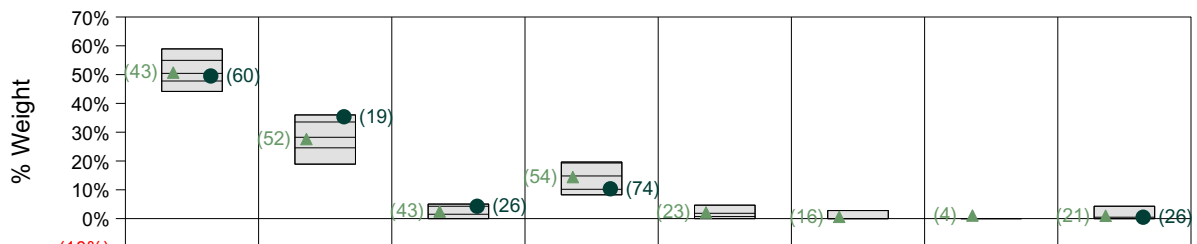
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date 2040



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	58.93	36.00	5.05	19.64	4.67	2.80	0.00	4.30
25th Percentile	54.94	33.55	4.28	19.30	1.84	0.00	0.00	0.48
Median	50.43	28.23	1.51	14.80	0.70	0.00	0.00	0.00
75th Percentile	47.78	24.57	0.00	10.18	0.00	0.00	0.00	0.00
90th Percentile	44.16	18.90	0.00	8.26	0.00	0.00	0.00	0.00

SERS 2040 Retirement Fund - Target	●	49.52	35.36	4.28	10.35	-	-	-	0.48
Callan Tgt Dt Idx 2040	▲	50.70	27.62	2.45	14.42	2.12	0.62	1.07	1.00

SERS 2040 Retirement Fund Period Ended June 30, 2020

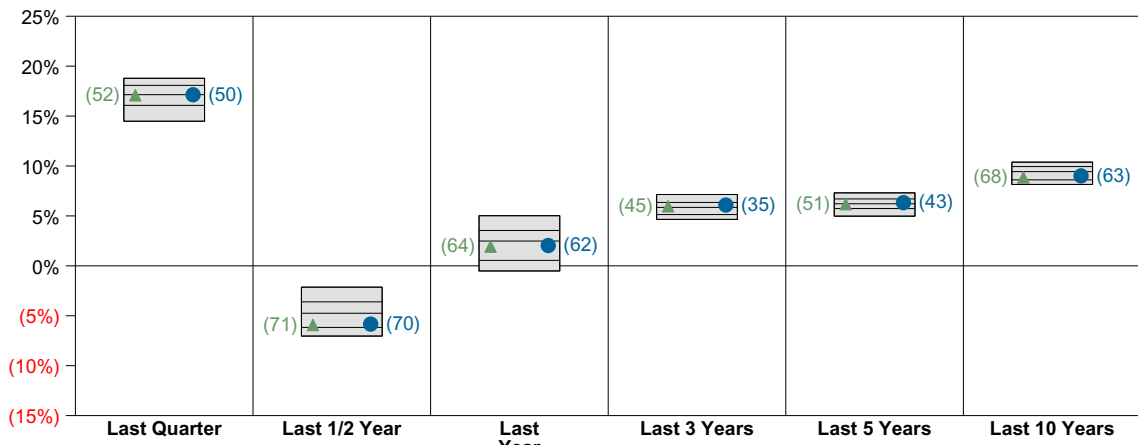
Investment Philosophy

The BlackRock LifePath(R) Index 2040 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches. Target Date funds replaced risk-based funds in 1Q20.

Quarterly Summary and Highlights

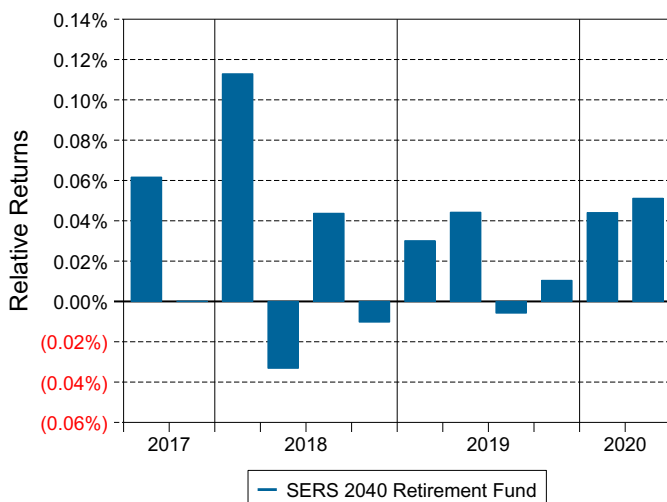
- SERS 2040 Retirement Fund's portfolio posted a 17.13% return for the quarter placing it in the 50 percentile of the Callan Target Date 2040 group for the quarter and in the 62 percentile for the last year.
- SERS 2040 Retirement Fund's portfolio outperformed the LifePath Index 2040 CB by 0.05% for the quarter and outperformed the LifePath Index 2040 CB for the year by 0.10%.

Performance vs Callan Target Date 2040 (Net)

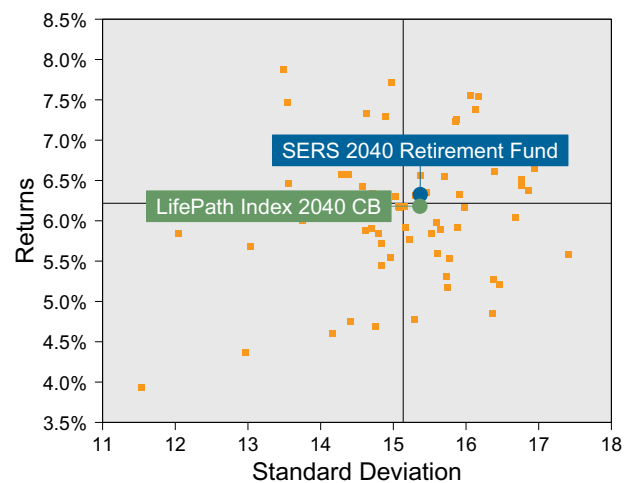


10th Percentile	18.79	(2.13)	5.02	7.14	7.31	10.39
25th Percentile	18.08	(3.61)	3.54	6.35	6.70	9.94
Median	17.14	(4.75)	2.48	5.85	6.22	9.44
75th Percentile	16.07	(6.17)	0.55	5.14	5.74	8.61
90th Percentile	14.48	(7.04)	(0.51)	4.65	4.98	8.15
SERS 2040 Retirement Fund	17.13	(5.84)	2.04	6.09	6.33	9.01
LifePath Index 2040 CB	17.08	(5.93)	1.93	5.97	6.18	8.85

Relative Return vs LifePath Index 2040 CB



Callan Target Date 2040 (Net) Annualized Five Year Risk vs Return

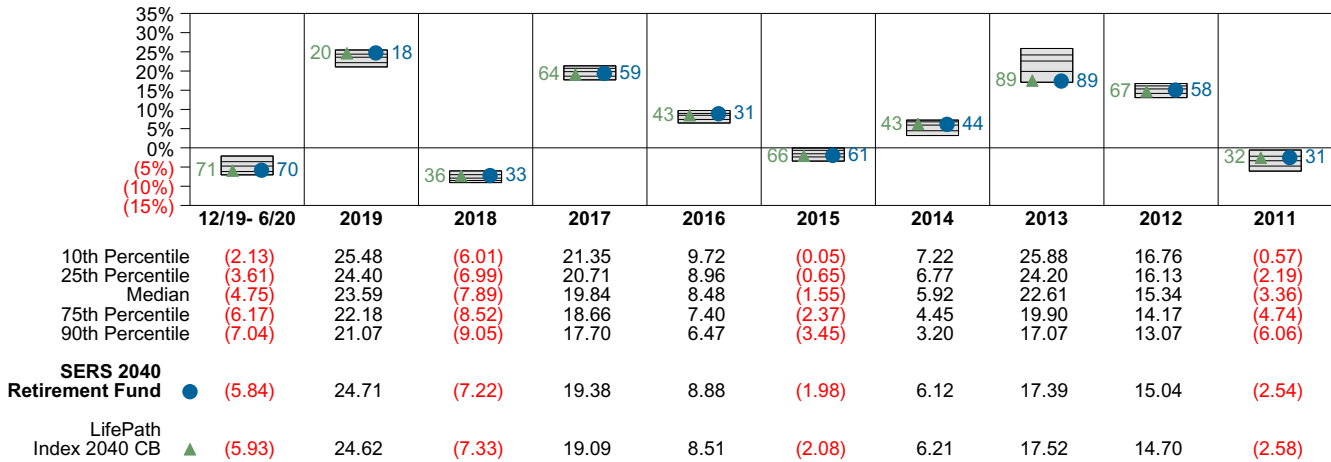


SERS 2040 Retirement Fund Return Analysis Summary

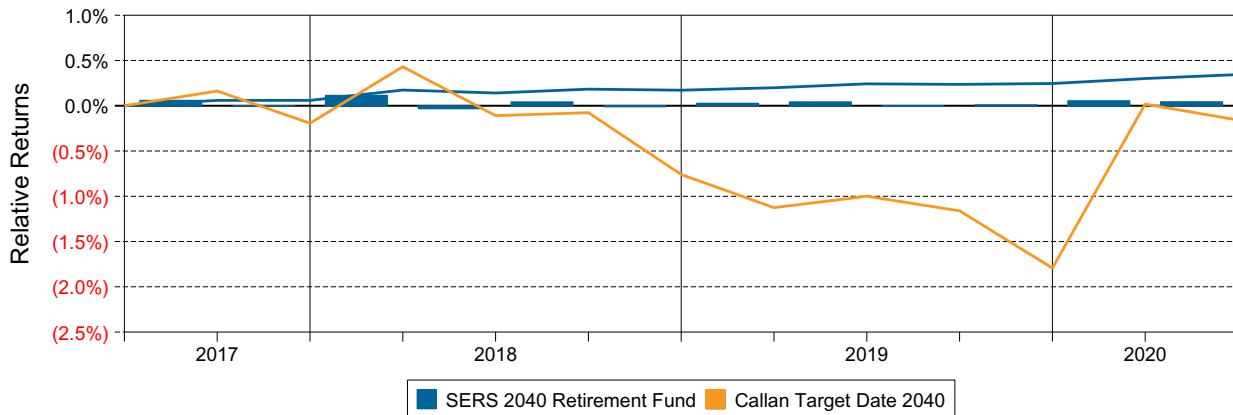
Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

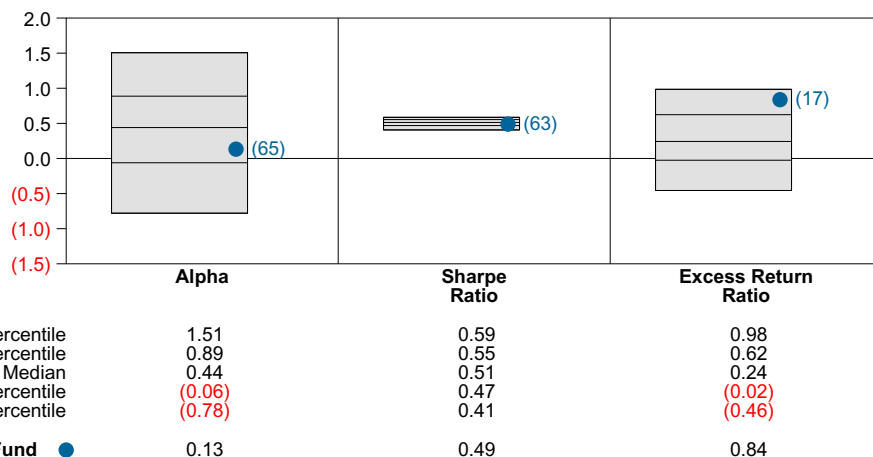
Performance vs Callan Target Date 2040 (Net)



Cumulative and Quarterly Relative Return vs LifePath Index 2040 CB



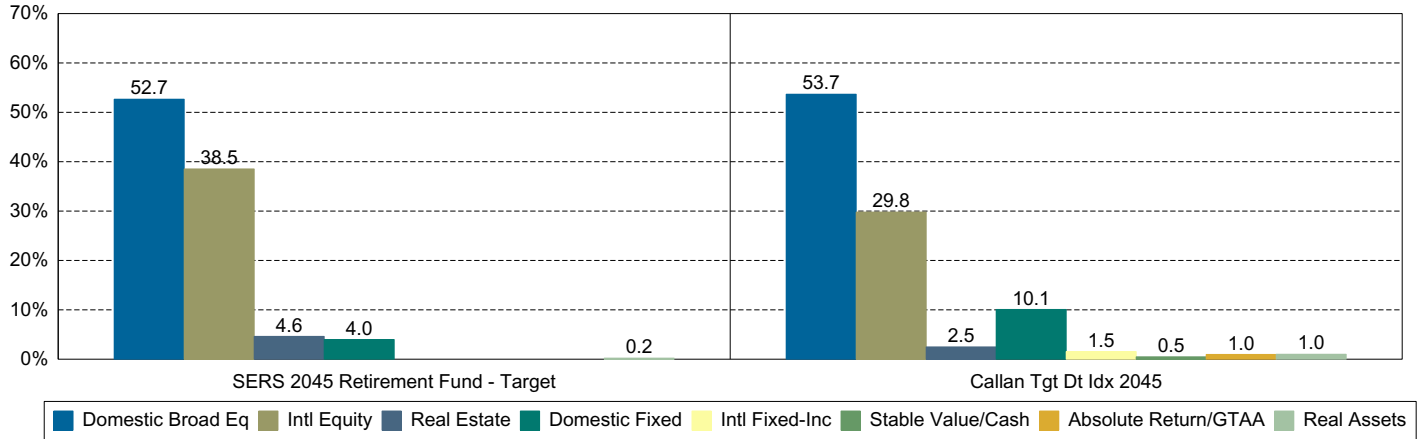
Risk Adjusted Return Measures vs LifePath Index 2040 CB Rankings Against Callan Target Date 2040 (Net) Seven Years Ended June 30, 2020



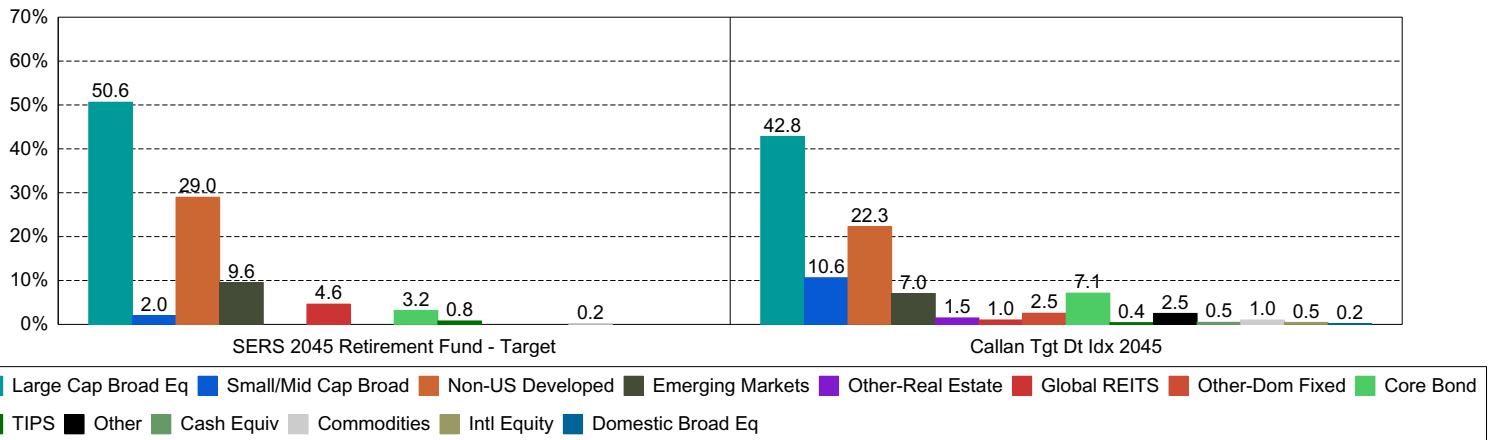
SERS 2045 Retirement Fund Target Date Fund Asset Allocation as of June 30, 2020

The charts below illustrate the current target asset allocation of the relevant target date fund based on its underlying glide path and compares it to an index. The top charts compare target asset allocation at a high "macro" asset class level, while the middle charts show a more detailed "micro" level view. The bottom chart compares the current "macro" level target asset allocation, and index, to a relevant peer group of target date funds by ranking the various target asset class weights versus those peer target date funds.

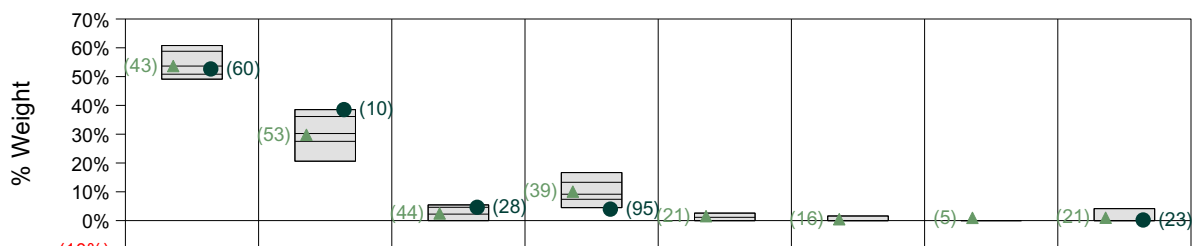
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date 2045



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	60.79	38.53	5.45	16.68	2.60	1.60	0.00	4.16
25th Percentile	58.80	36.14	4.62	13.30	1.14	0.00	0.00	0.00
Median	53.66	30.23	2.25	9.16	0.00	0.00	0.00	0.00
75th Percentile	50.83	27.52	0.00	7.40	0.00	0.00	0.00	0.00
90th Percentile	49.10	20.62	0.00	4.50	0.00	0.00	0.00	0.00
SERS 2045 Retirement Fund - Target	● 52.66	38.53	4.62	3.98	-	-	-	0.21
Callan Tgt Dt Idx 2045	▲ 53.67	29.79	2.48	10.07	1.54	0.48	0.96	1.00

SERS 2045 Retirement Fund Period Ended June 30, 2020

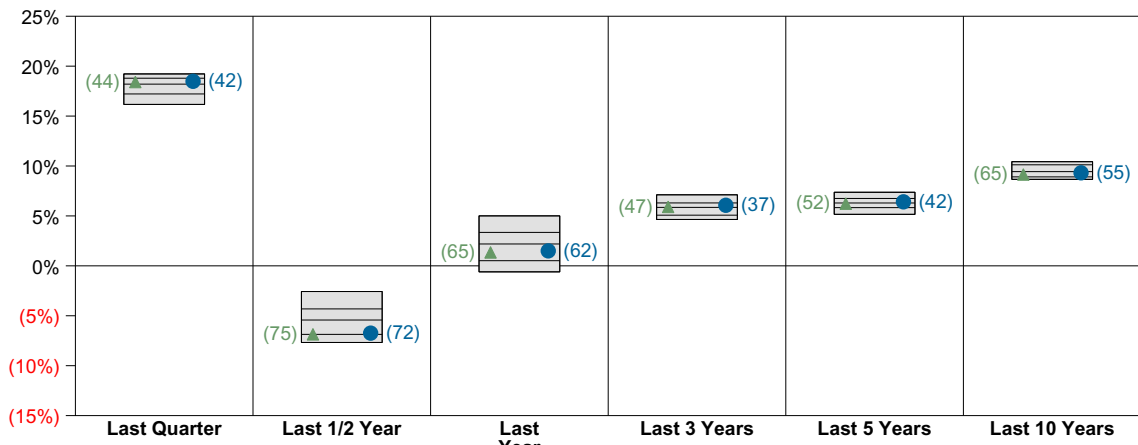
Investment Philosophy

The BlackRock LifePath(R) Index 2045 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches. Target Date funds replaced risk-based funds in 1Q20.

Quarterly Summary and Highlights

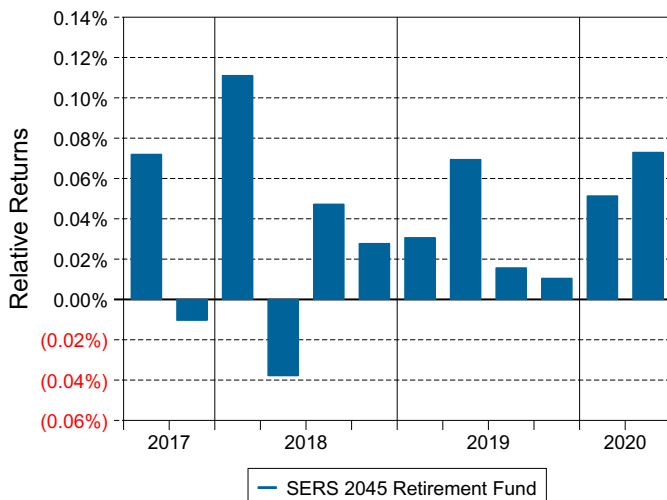
- SERS 2045 Retirement Fund's portfolio posted a 18.48% return for the quarter placing it in the 42 percentile of the Callan Target Date 2045 group for the quarter and in the 62 percentile for the last year.
- SERS 2045 Retirement Fund's portfolio outperformed the LifePath Index 2045 CB by 0.07% for the quarter and outperformed the LifePath Index 2045 CB for the year by 0.15%.

Performance vs Callan Target Date 2045 (Net)

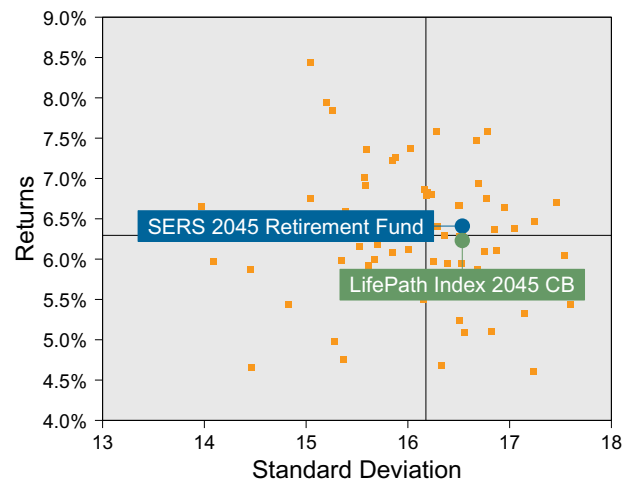


	Last Quarter	Last 1/2 Year	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	19.22	(2.57)	5.01	7.12	7.37	10.43
25th Percentile	18.79	(4.31)	3.35	6.30	6.75	10.12
Median	18.20	(5.43)	2.19	5.85	6.29	9.44
75th Percentile	17.22	(6.86)	0.52	5.08	5.83	8.91
90th Percentile	16.17	(7.68)	(0.60)	4.64	5.16	8.66
SERS 2045 Retirement Fund	● 18.48	(6.74)	1.50	6.06	6.41	9.32
LifePath Index 2045 CB	▲ 18.41	(6.86)	1.34	5.90	6.23	9.15

Relative Return vs LifePath Index 2045 CB



Callan Target Date 2045 (Net) Annualized Five Year Risk vs Return

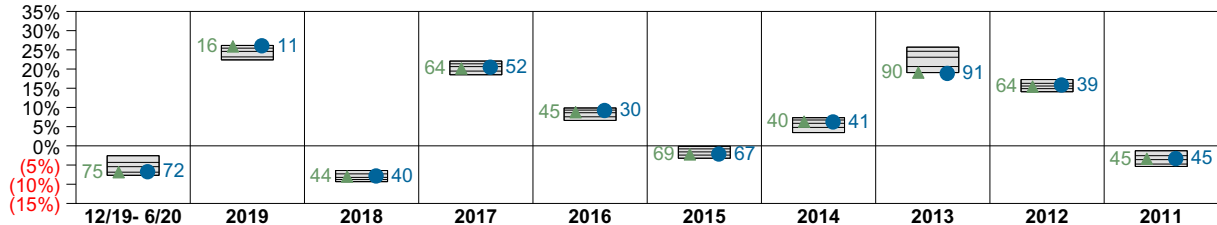


SERS 2045 Retirement Fund Return Analysis Summary

Return Analysis

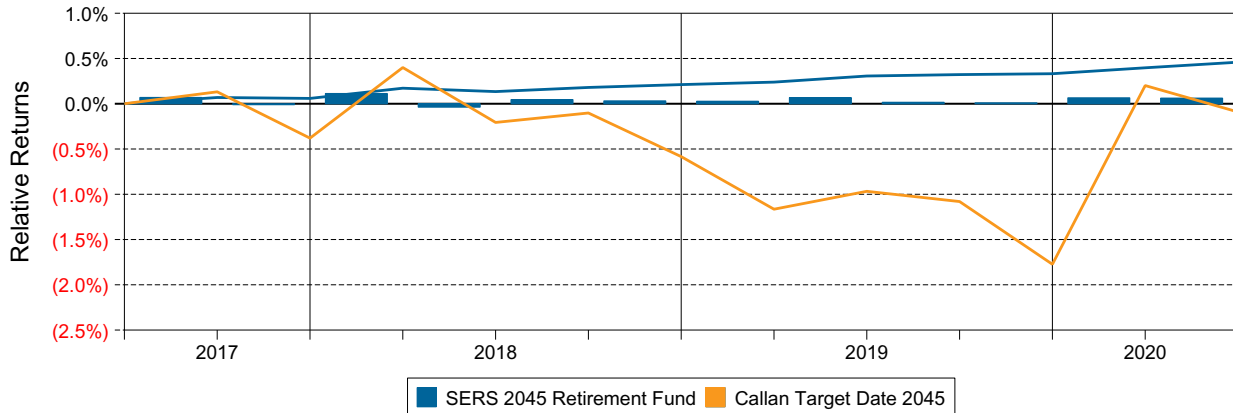
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

Performance vs Callan Target Date 2045 (Net)

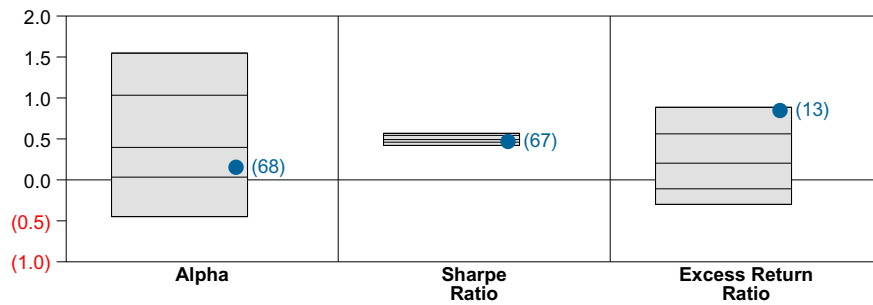


	12/19- 6/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	(2.57)	26.14	(6.43)	22.08	9.86	(0.12)	7.33	25.70	17.26	(1.27)
25th Percentile	(4.31)	25.44	(7.30)	21.36	9.31	(0.79)	6.73	24.63	16.28	(2.56)
Median	(5.43)	24.60	(8.21)	20.63	8.63	(1.57)	5.87	23.08	15.58	(3.59)
75th Percentile	(6.86)	23.16	(8.78)	19.47	7.56	(2.41)	4.80	20.66	14.90	(4.74)
90th Percentile	(7.68)	22.38	(9.33)	18.51	6.62	(3.23)	3.45	19.08	14.09	(5.37)
SERS 2045 Retirement Fund	(6.74)	26.05	(7.85)	20.47	9.20	(2.13)	6.22	18.86	15.84	(3.32)
LifePath Index 2045 CB	(6.86)	25.90	(7.99)	20.15	8.77	(2.22)	6.31	19.09	15.43	(3.36)

Cumulative and Quarterly Relative Return vs LifePath Index 2045 CB



Risk Adjusted Return Measures vs LifePath Index 2045 CB Rankings Against Callan Target Date 2045 (Net) Seven Years Ended June 30, 2020



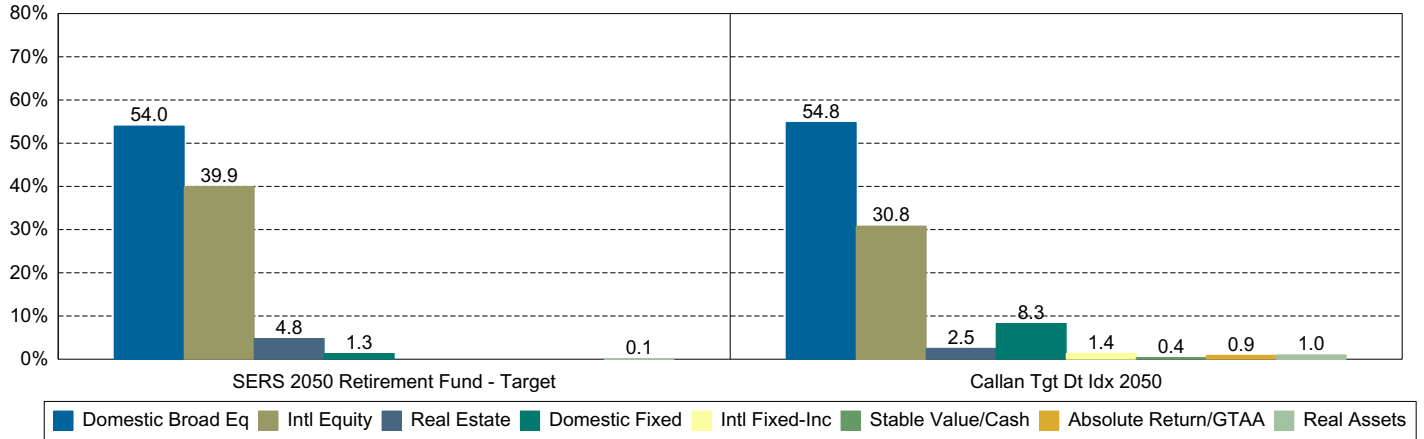
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	1.55	0.57	0.89
25th Percentile	1.03	0.54	0.56
Median	0.40	0.49	0.20
75th Percentile	0.03	0.46	(0.11)
90th Percentile	(0.45)	0.42	(0.30)
SERS 2045 Retirement Fund	0.15	0.47	0.85

SERS 2050 Retirement Fund

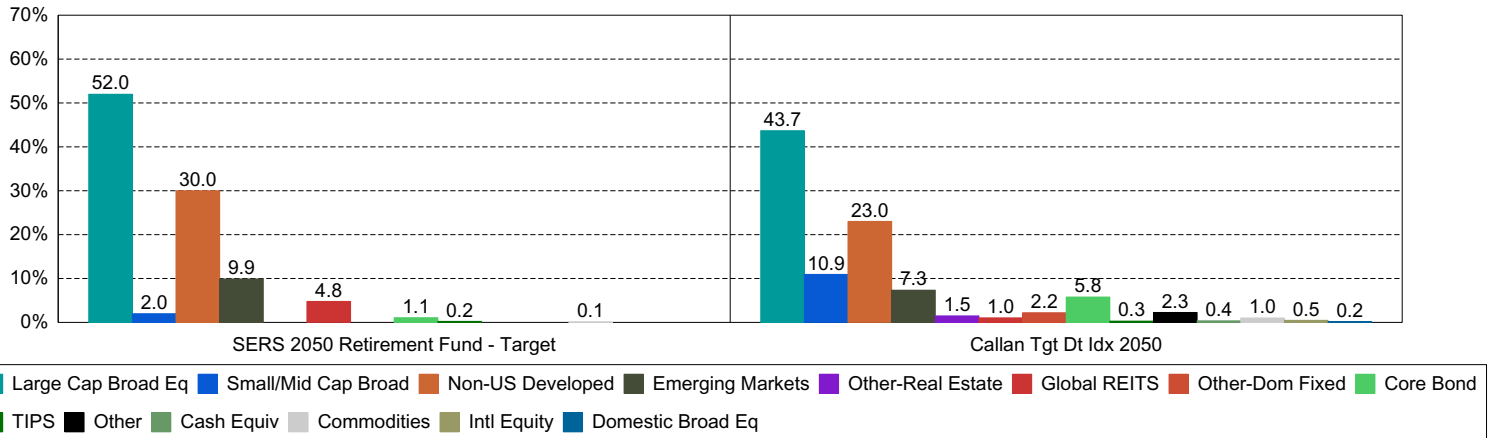
Target Date Fund Asset Allocation as of June 30, 2020

The charts below illustrate the current target asset allocation of the relevant target date fund based on its underlying glide path and compares it to an index. The top charts compare target asset allocation at a high "macro" asset class level, while the middle charts show a more detailed "micro" level view. The bottom chart compares the current "macro" level target asset allocation, and index, to a relevant peer group of target date funds by ranking the various target asset class weights versus those peer target date funds.

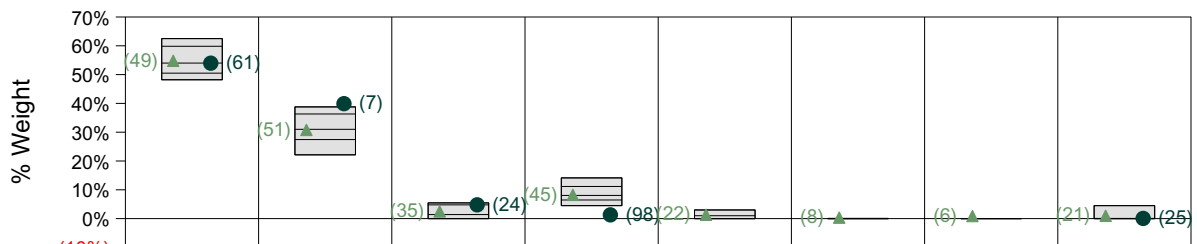
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date 2050



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	62.50	38.79	5.45	14.14	3.00	0.07	0.00	4.50
25th Percentile	59.83	36.33	4.77	11.16	1.00	0.00	0.00	0.06
Median	54.00	31.00	1.40	8.05	0.00	0.00	0.00	0.00
75th Percentile	50.50	27.44	0.00	6.46	0.00	0.00	0.00	0.00
90th Percentile	48.20	22.14	0.00	4.50	0.00	0.00	0.00	0.00
SERS 2050 Retirement Fund - Target	● 53.96	39.90	4.77	1.30	-	-	-	0.06
Callan Tgt Dt Idx 2050	▲ 54.80	30.81	2.51	8.26	1.36	0.36	0.90	1.00

SERS 2050 Retirement Fund Period Ended June 30, 2020

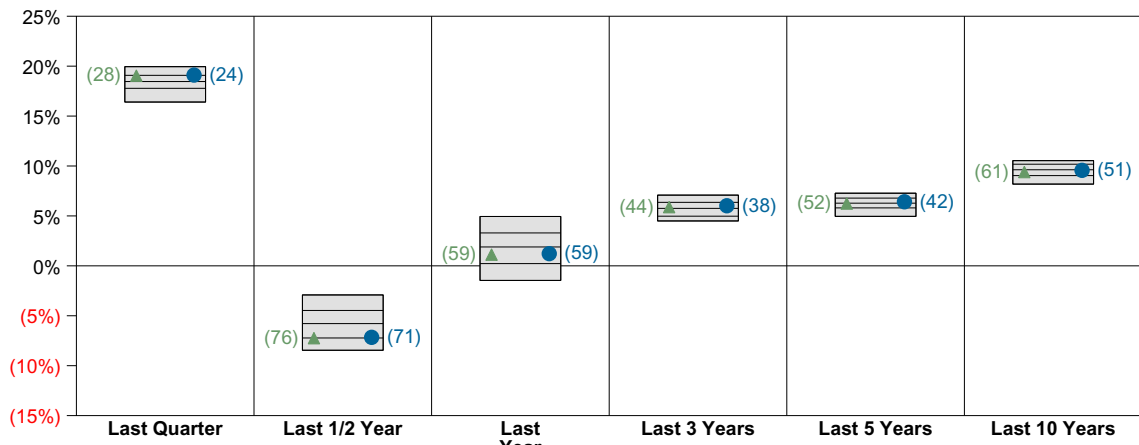
Investment Philosophy

The BlackRock LifePath(R) Index 2050 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches. Target Date funds replaced risk-based funds in 1Q20.

Quarterly Summary and Highlights

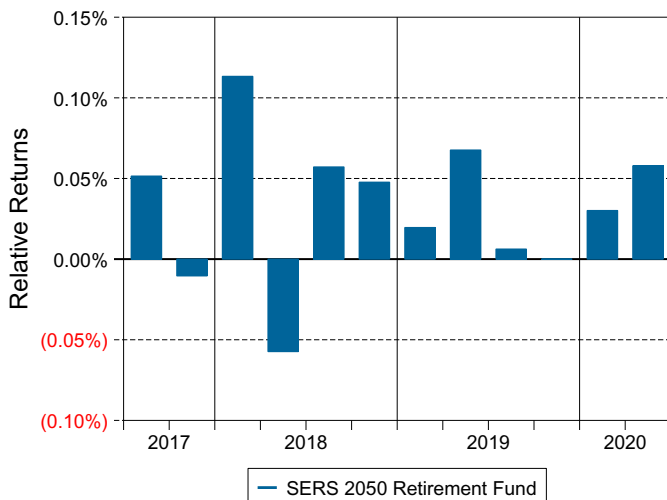
- SERS 2050 Retirement Fund's portfolio posted a 19.11% return for the quarter placing it in the 24 percentile of the Callan Target Date 2050 group for the quarter and in the 59 percentile for the last year.
- SERS 2050 Retirement Fund's portfolio outperformed the LifePath Index 2050 CB by 0.06% for the quarter and outperformed the LifePath Index 2050 CB for the year by 0.09%.

Performance vs Callan Target Date 2050 (Net)

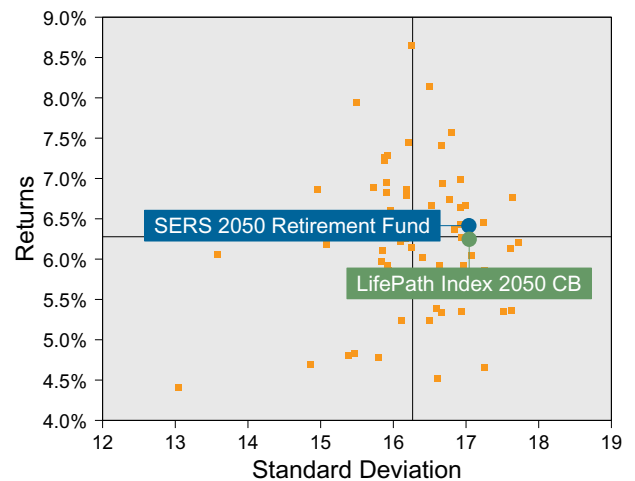


10th Percentile	19.95	(2.91)	4.94	7.08	7.27	10.54
25th Percentile	19.08	(4.47)	3.30	6.36	6.78	10.18
Median	18.46	(5.79)	1.89	5.76	6.28	9.62
75th Percentile	17.78	(7.22)	0.22	4.97	5.80	9.04
90th Percentile	16.41	(8.46)	(1.46)	4.49	4.95	8.19
SERS 2050 Retirement Fund	● 19.11	(7.16)	1.22	6.02	6.42	9.57
LifePath Index 2050 CB	▲ 19.05	(7.24)	1.13	5.88	6.25	9.40

Relative Return vs LifePath Index 2050 CB



Callan Target Date 2050 (Net) Annualized Five Year Risk vs Return

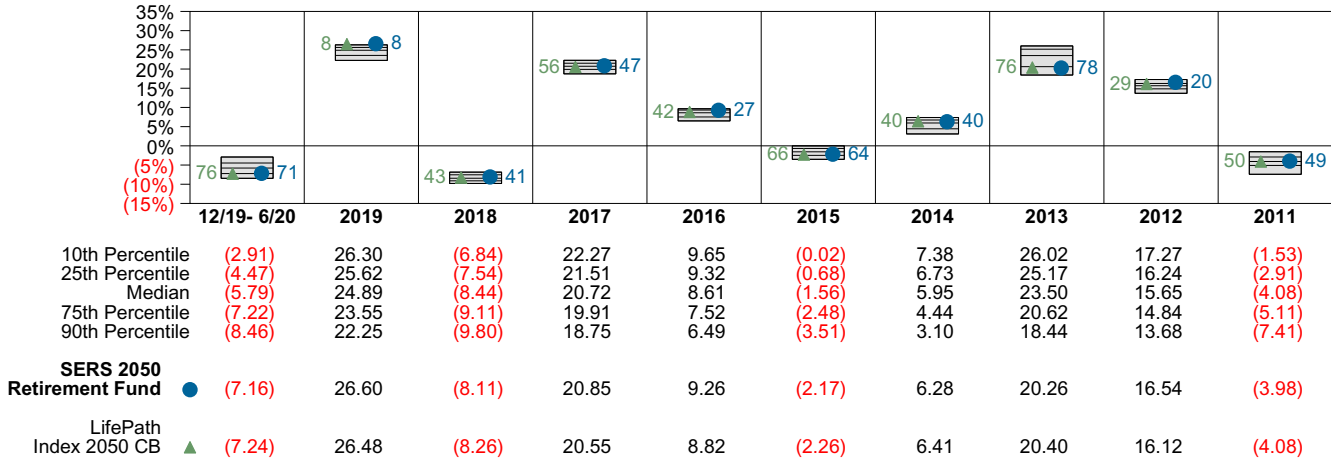


SERS 2050 Retirement Fund Return Analysis Summary

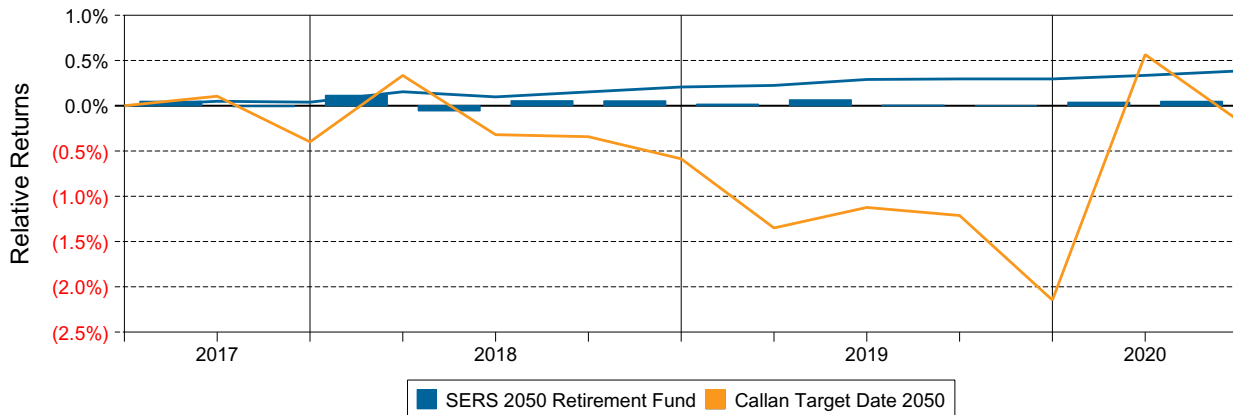
Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

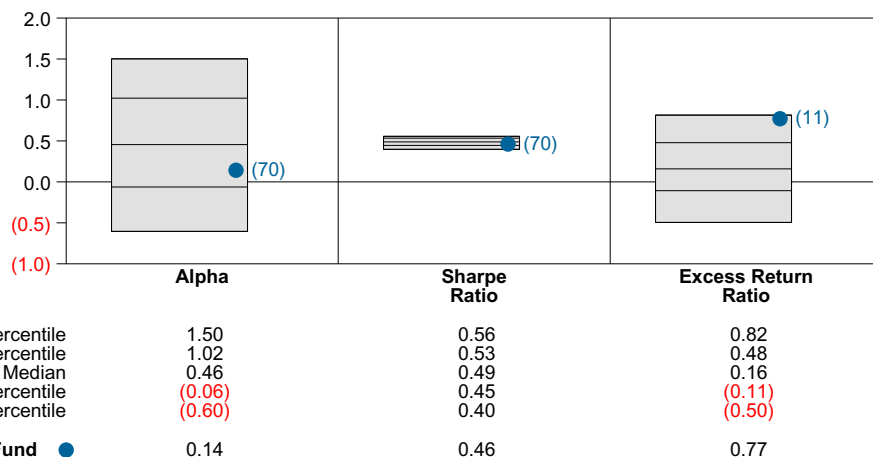
Performance vs Callan Target Date 2050 (Net)



Cumulative and Quarterly Relative Return vs LifePath Index 2050 CB



Risk Adjusted Return Measures vs LifePath Index 2050 CB Rankings Against Callan Target Date 2050 (Net) Seven Years Ended June 30, 2020

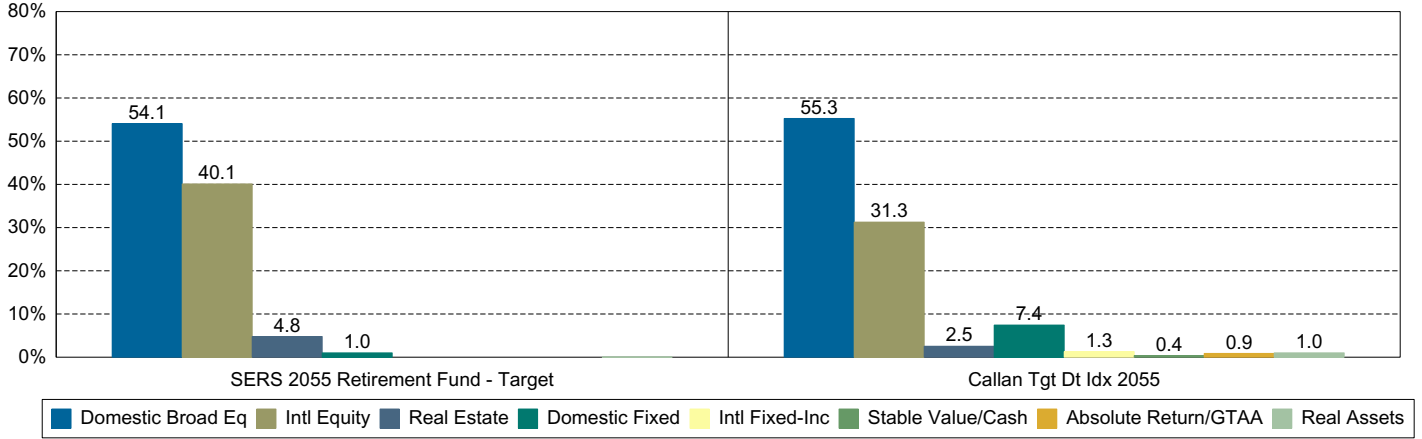


SERS 2055 Retirement Fund

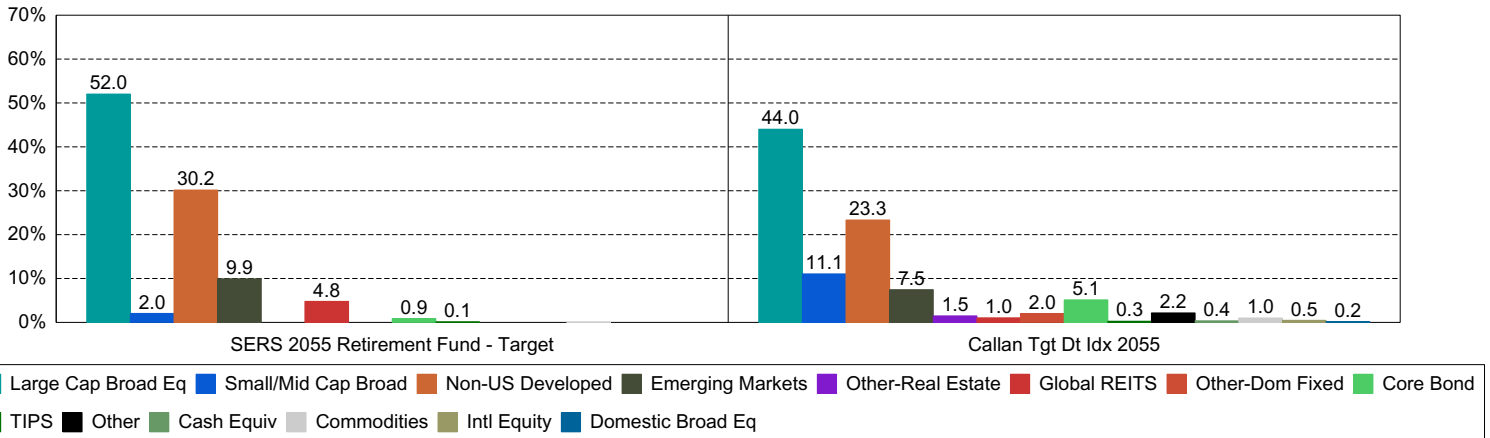
Target Date Fund Asset Allocation as of June 30, 2020

The charts below illustrate the current target asset allocation of the relevant target date fund based on its underlying glide path and compares it to an index. The top charts compare target asset allocation at a high "macro" asset class level, while the middle charts show a more detailed "micro" level view. The bottom chart compares the current "macro" level target asset allocation, and index, to a relevant peer group of target date funds by ranking the various target asset class weights versus those peer target date funds.

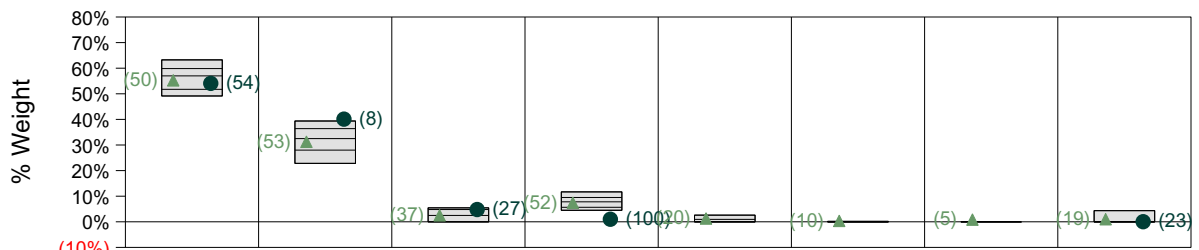
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date 2055



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	63.25	39.37	5.45	11.68	2.60	0.18	0.00	4.36
25th Percentile	59.85	36.40	4.79	9.50	0.95	0.00	0.00	0.00
Median	57.00	32.50	2.49	7.80	0.00	0.00	0.00	0.00
75th Percentile	51.75	28.00	0.00	5.67	0.00	0.00	0.00	0.00
90th Percentile	49.15	22.82	0.00	4.50	0.00	0.00	0.00	0.00

SERS 2055 Retirement Fund - Target	●	54.07	40.11	4.79	1.00	-	-	0.04
Callan Tgt Dt Idx 2055	▲	55.26	31.26	2.53	7.43	1.29	0.36	0.87

SERS 2055 Retirement Fund Period Ended June 30, 2020

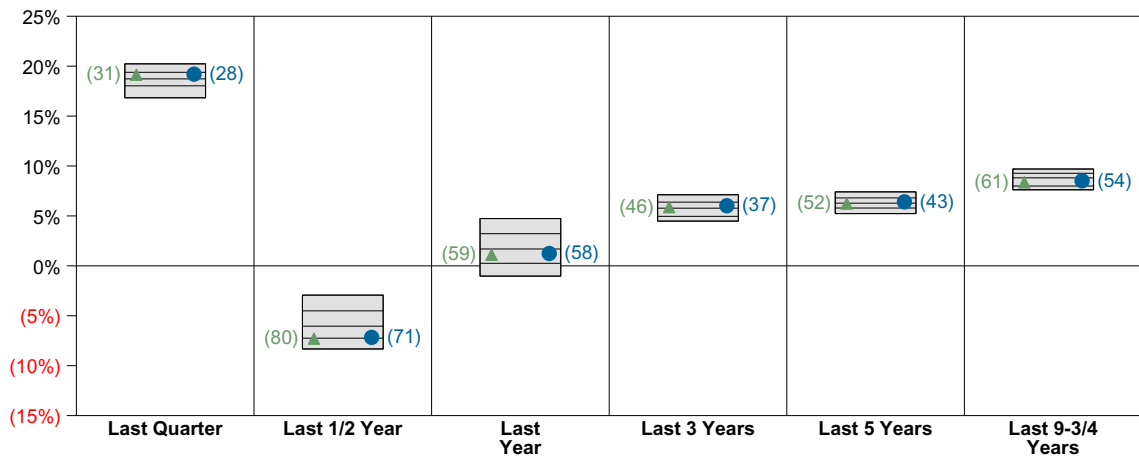
Investment Philosophy

The BlackRock LifePath(R) Index 2055 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches. Target Date funds replaced risk-based funds in 1Q20.

Quarterly Summary and Highlights

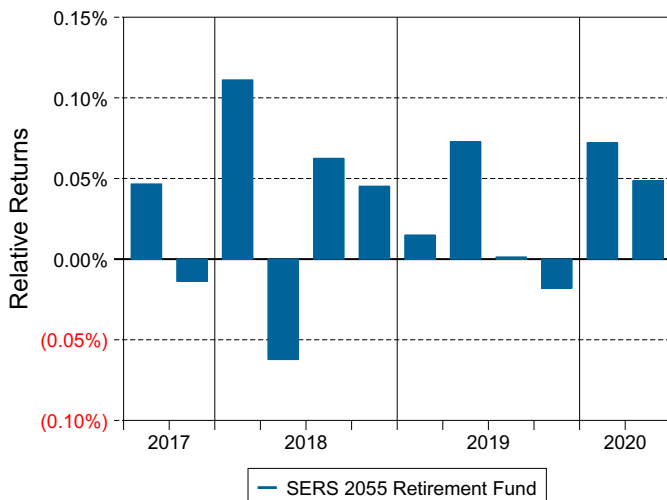
- SERS 2055 Retirement Fund's portfolio posted a 19.20% return for the quarter placing it in the 28 percentile of the Callan Target Date 2055 group for the quarter and in the 58 percentile for the last year.
- SERS 2055 Retirement Fund's portfolio outperformed the LifePath Index 2055 CB by 0.05% for the quarter and outperformed the LifePath Index 2055 CB for the year by 0.12%.

Performance vs Callan Target Date 2055 (Net)

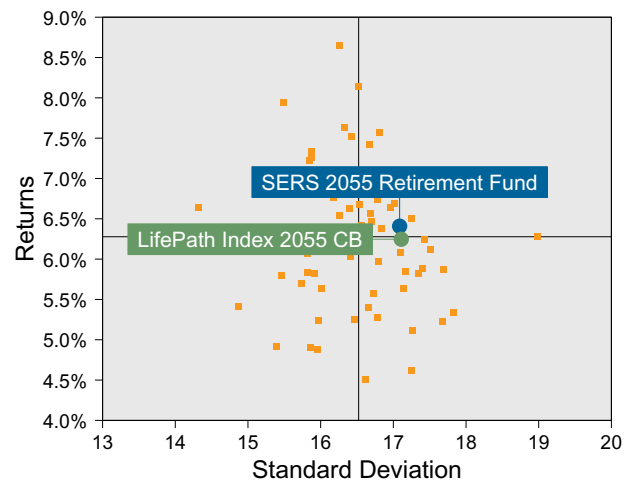


	Last Quarter	Last 1/2 Year	Last Year	Last 3 Years	Last 5 Years	Last 9-3/4 Years
10th Percentile	20.23	(2.93)	4.73	7.12	7.41	9.70
25th Percentile	19.39	(4.51)	3.22	6.38	6.80	9.27
Median	18.73	(6.04)	1.69	5.78	6.28	8.81
75th Percentile	18.03	(7.25)	0.25	4.96	5.79	7.99
90th Percentile	16.83	(8.33)	(1.03)	4.48	5.23	7.62
SERS 2055 Retirement Fund	● 19.20	(7.16)	1.24	6.02	6.41	8.52
LifePath Index 2055 CB	▲ 19.15	(7.29)	1.12	5.88	6.25	8.37

Relative Return vs LifePath Index 2055 CB



Callan Target Date 2055 (Net) Annualized Five Year Risk vs Return

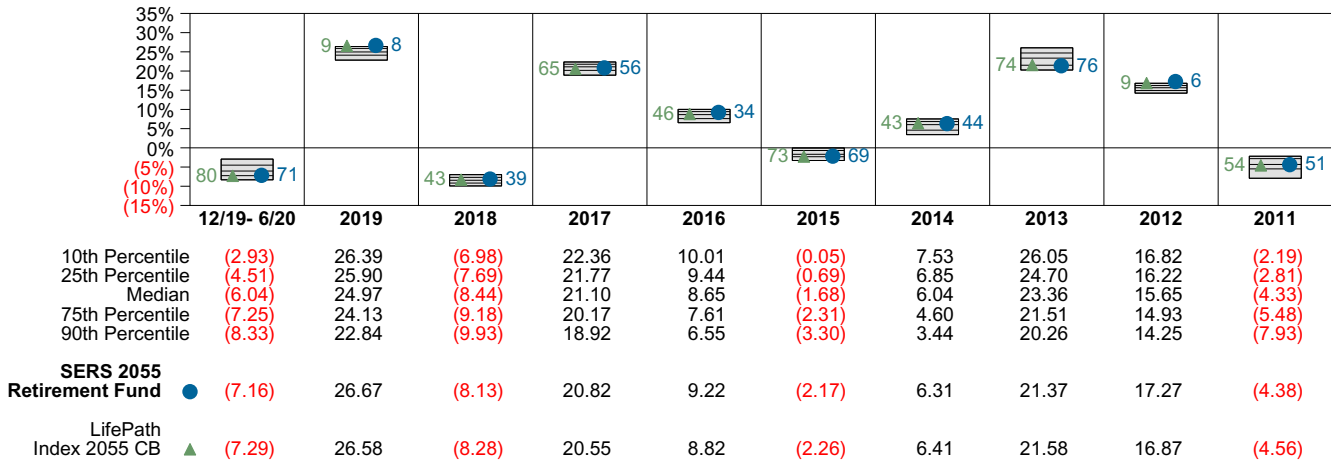


SERS 2055 Retirement Fund Return Analysis Summary

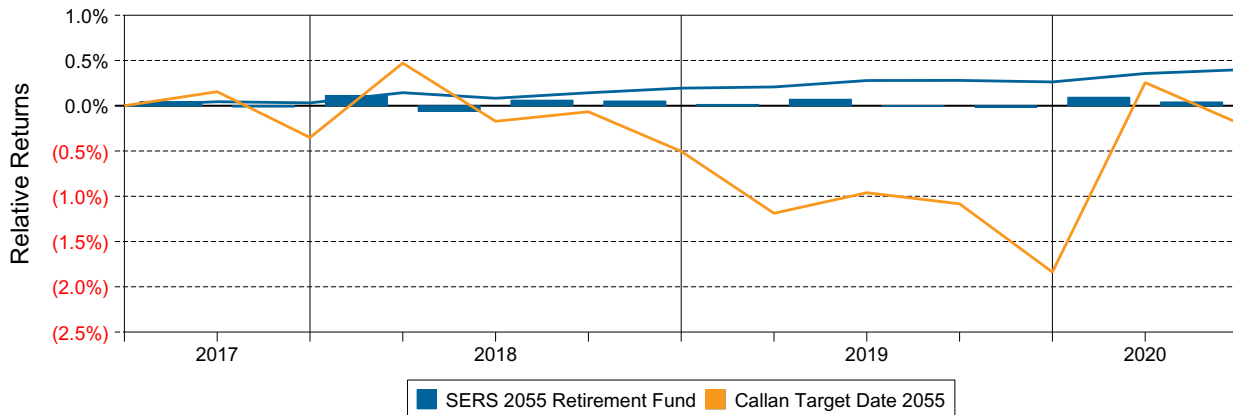
Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

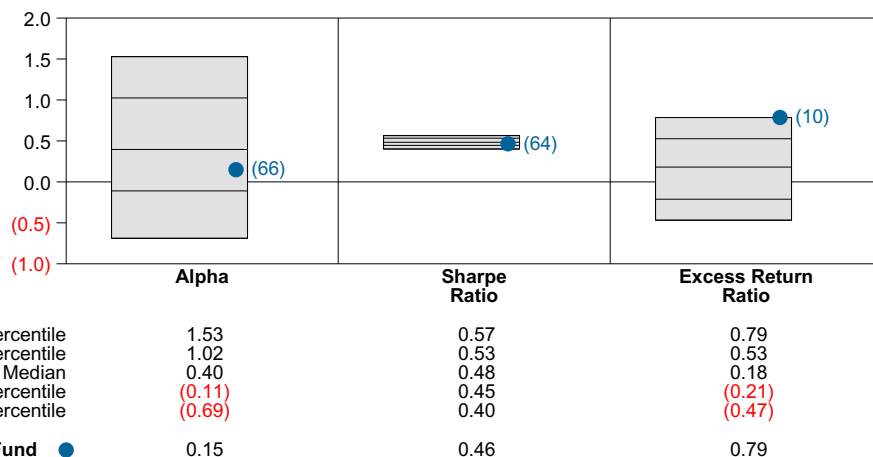
Performance vs Callan Target Date 2055 (Net)



Cumulative and Quarterly Relative Return vs LifePath Index 2055 CB



Risk Adjusted Return Measures vs LifePath Index 2055 CB Rankings Against Callan Target Date 2055 (Net) Seven Years Ended June 30, 2020



SERS 2060 Retirement Fund Period Ended June 30, 2020

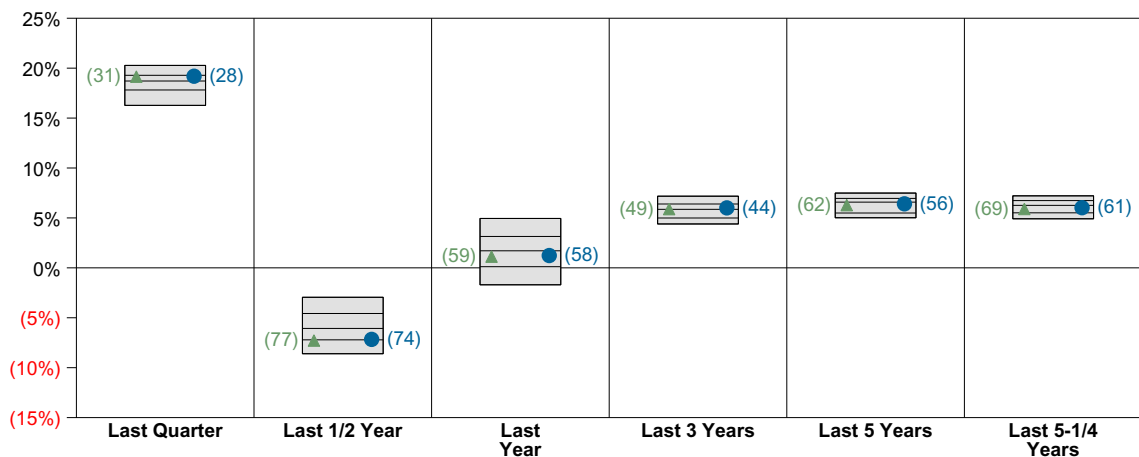
Investment Philosophy

The BlackRock LifePath(R) Index 2060 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches. Target Date funds replaced risk-based funds in 1Q20.

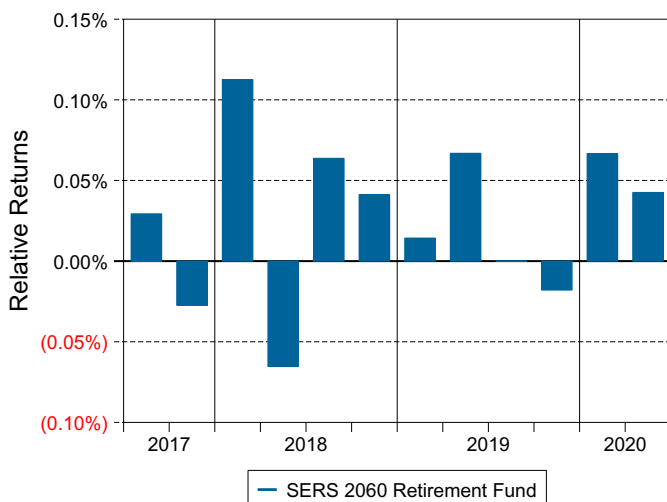
Quarterly Summary and Highlights

- SERS 2060 Retirement Fund's portfolio posted a 19.19% return for the quarter placing it in the 28 percentile of the Callan Target Date 2060 group for the quarter and in the 58 percentile for the last year.
- SERS 2060 Retirement Fund's portfolio outperformed the LifePath Index 2060 CB by 0.04% for the quarter and outperformed the LifePath Index 2060 CB for the year by 0.11%.

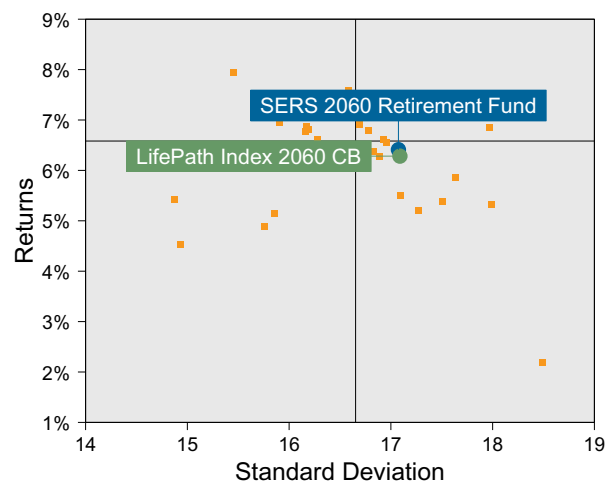
Performance vs Callan Target Date 2060 (Net)



Relative Return vs LifePath Index 2060 CB



Callan Target Date 2060 (Net) Annualized Five Year Risk vs Return

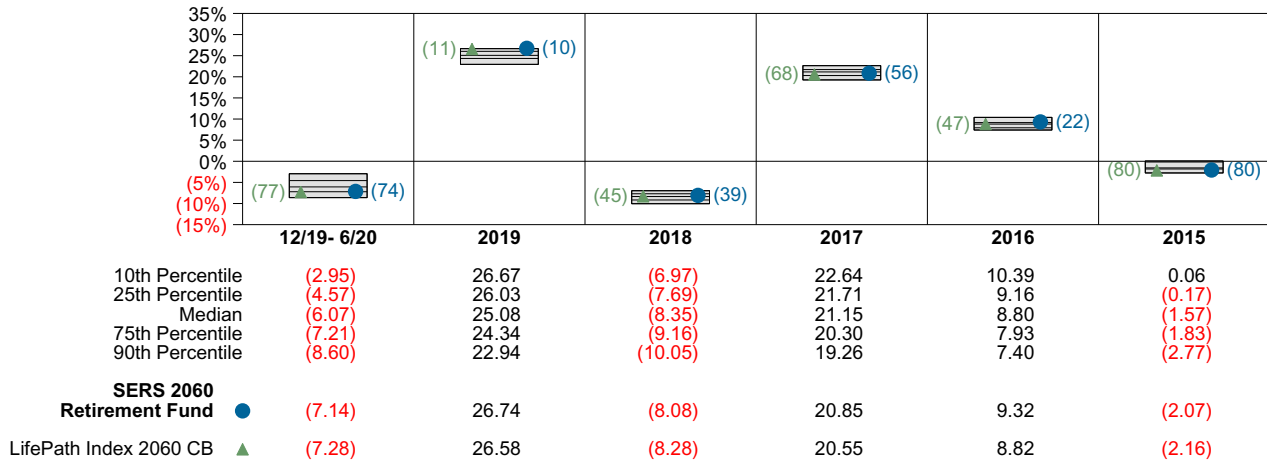


SERS 2060 Retirement Fund Return Analysis Summary

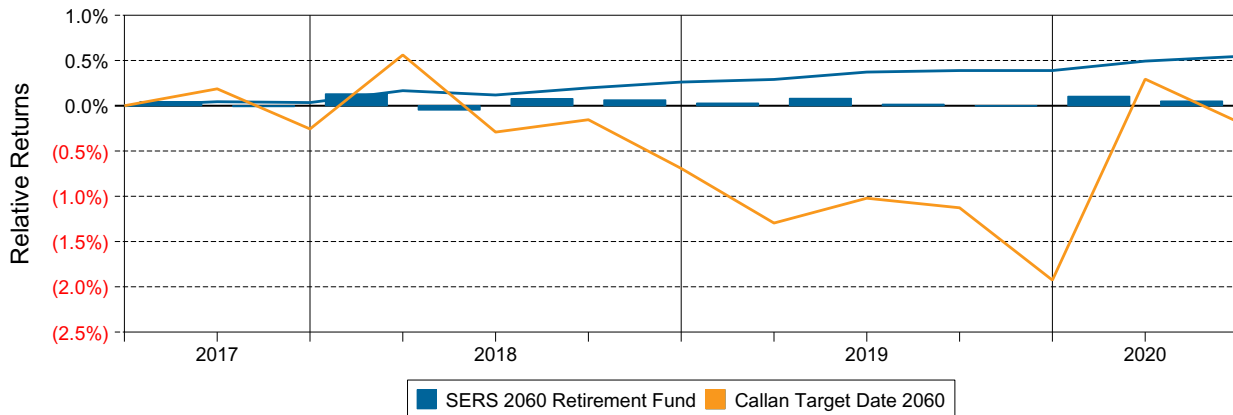
Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

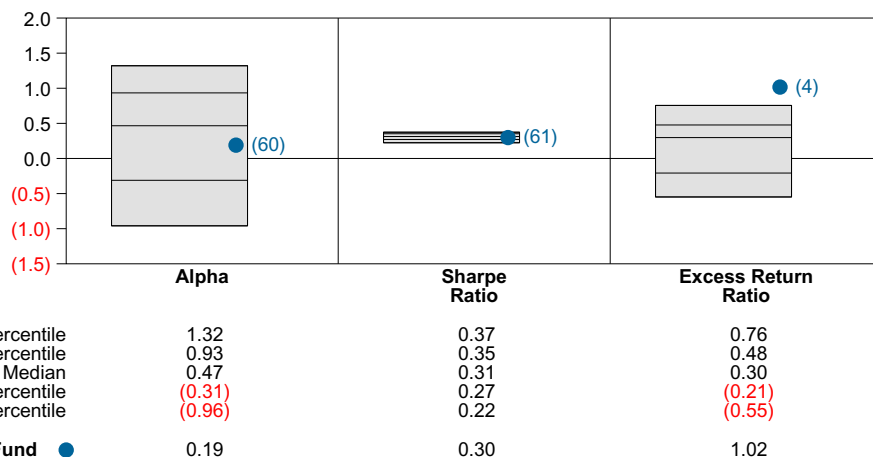
Performance vs Callan Target Date 2060 (Net)



Cumulative and Quarterly Relative Return vs LifePath Index 2060 CB



Risk Adjusted Return Measures vs LifePath Index 2060 CB Rankings Against Callan Target Date 2060 (Net) Five and One-Quarter Years Ended June 30, 2020



SERS 2065 Retirement Fund

Period Ended June 30, 2020

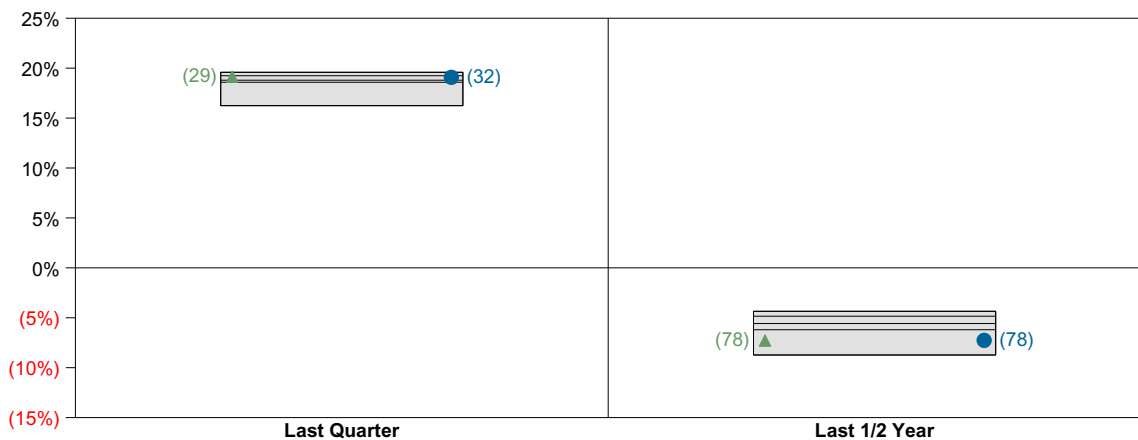
Investment Philosophy

The BlackRock LifePath(R) Index 2065 Fund (the "Fund") seeks to provide for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase based on quantitatively measured risk that investors, on average, may be willing to accept. The Fund will be diversified across global asset classes, with allocations changing over the investment horizon to become more heavily oriented toward debt and debt-like securities, on the premise that individuals investing for retirement desire to reduce investment risk in their retirement accounts as their retirement date approaches. Target Date funds replaced risk-based funds in 1Q20.

Quarterly Summary and Highlights

- SERS 2065 Retirement Fund's portfolio posted a 19.08% return for the quarter placing it in the 32 percentile of the Callan Target Date 2065 group for the quarter and in the 78 percentile for the last one-half year.
- SERS 2065 Retirement Fund's portfolio underperformed the LifePath Index 2065 CB by 0.07% for the quarter and outperformed the LifePath Index 2065 CB for the one-half year by 0.01%.

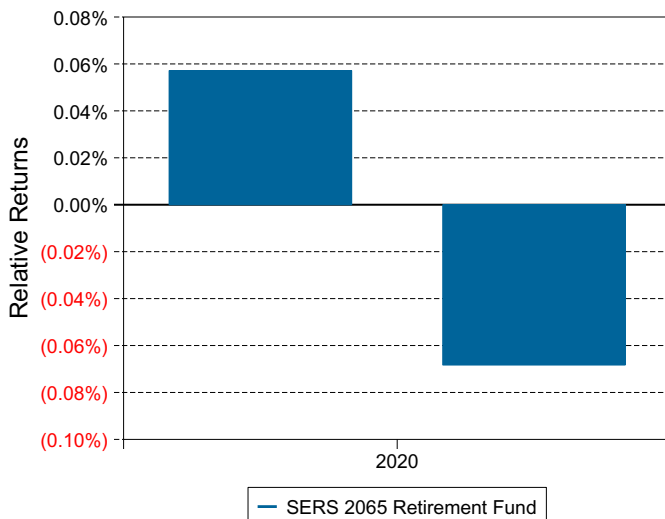
Performance vs Callan Target Date 2065 (Net)



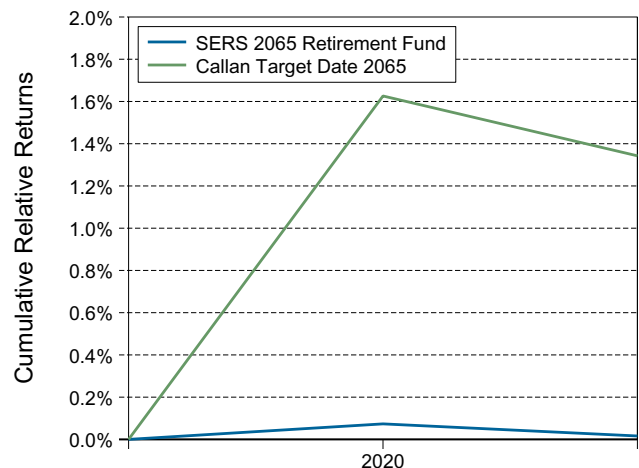
	Last Quarter	Last 1/2 Year
10th Percentile	19.58	(4.35)
25th Percentile	19.24	(4.84)
Median	18.79	(5.58)
75th Percentile	18.59	(6.20)
90th Percentile	16.25	(8.73)

SERS 2065 Retirement Fund ●	19.08	(7.26)
LifePath Index 2065 CB ▲	19.15	(7.28)

Relative Return vs LifePath Index 2065 CB



Cumulative Returns vs LifePath Index 2065 CB



SERS U.S. Large Company Index Fund

Period Ended June 30, 2020

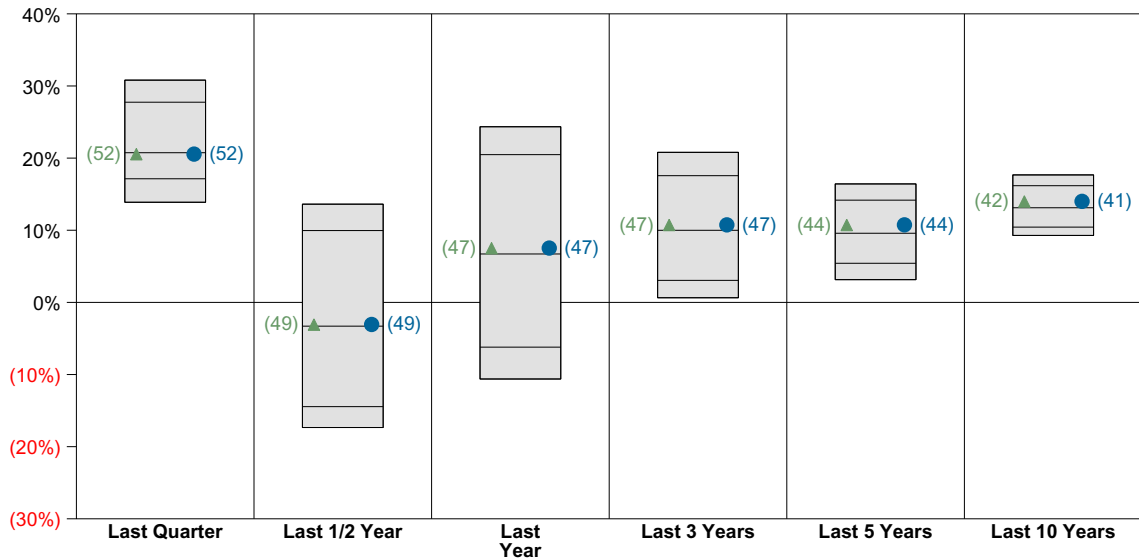
Investment Philosophy

The strategy seeks to replicate the performance and characteristics of the S&P 500 Index with minimal tracking error. Mellon Capital uses full replication to construct the portfolio, holding each security in the index in its proportionate weight. This fund is managed by Mellon Capital Management.

Quarterly Summary and Highlights

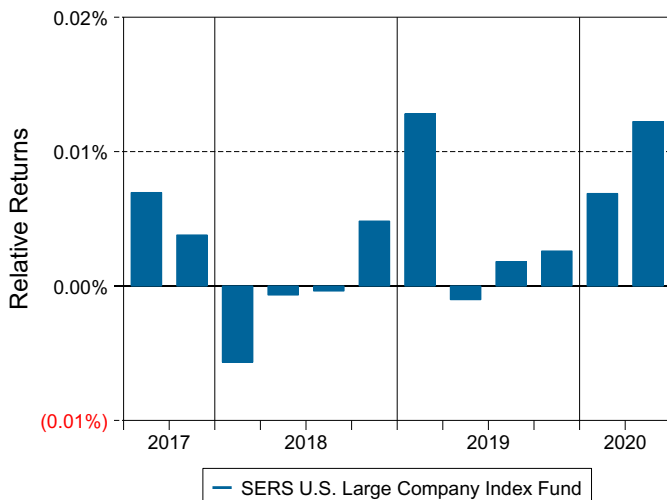
- SERS U.S. Large Company Index Fund's portfolio posted a 20.56% return for the quarter placing it in the 52 percentile of the Callan Large Cap Broad Equity Mut Funds group for the quarter and in the 47 percentile for the last year.
- SERS U.S. Large Company Index Fund's portfolio outperformed the S&P 500 Index by 0.01% for the quarter and outperformed the S&P 500 Index for the year by 0.02%.

Performance vs Callan Large Cap Broad Equity Mut Funds (Institutional Net)

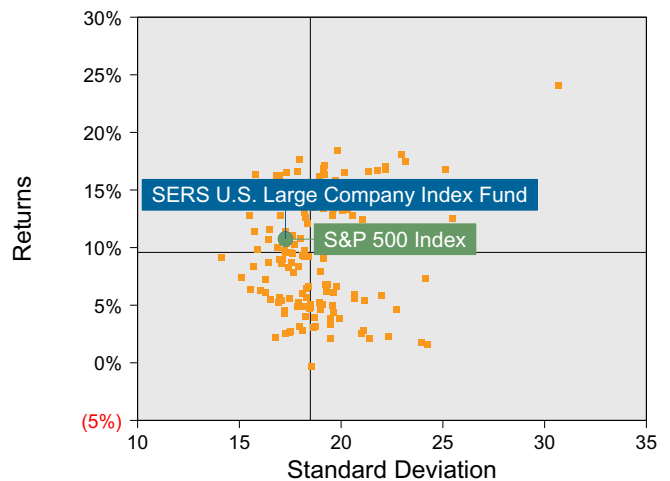


	Last Quarter	Last 1/2 Year	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	30.81	13.62	24.35	20.80	16.42	17.67
25th Percentile	27.75	9.96	20.48	17.57	14.17	16.17
Median	20.75	(3.30)	6.71	10.00	9.58	13.12
75th Percentile	17.14	(14.45)	(6.21)	3.05	5.42	10.44
90th Percentile	13.88	(17.35)	(10.62)	0.64	3.15	9.28
SERS U.S. Large Company Index Fund	20.56	(3.06)	7.53	10.75	10.75	14.01
S&P 500 Index	20.54	(3.08)	7.51	10.73	10.73	13.99

Relative Return vs S&P 500 Index



Callan Large Cap Broad Equity Mut Funds (Institutional Net) Annualized Five Year Risk vs Return

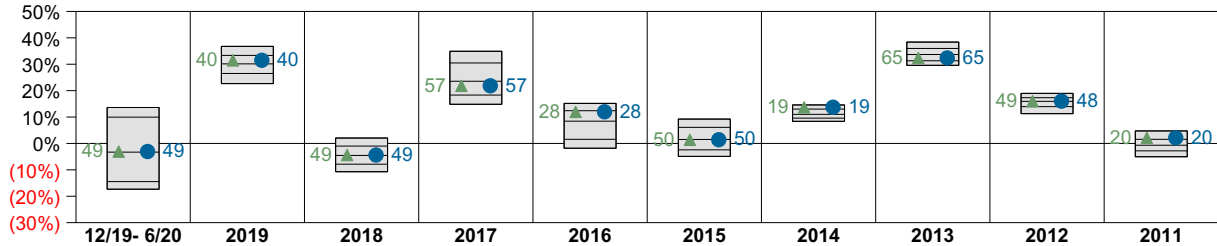


SERS U.S. Large Company Index Fund Return Analysis Summary

Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

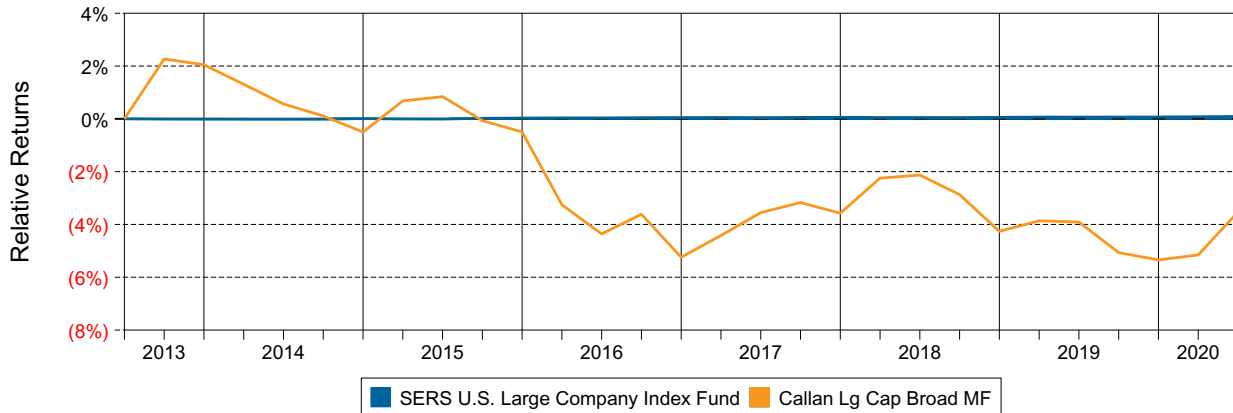
Performance vs Callan Large Cap Broad Equity Mut Funds (Institutional Net)



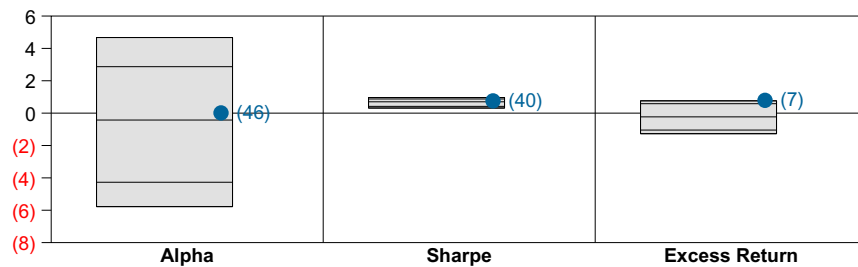
	12/19- 6/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	13.62	36.76	2.05	34.91	15.17	9.23	14.58	38.40	18.96	4.74
25th Percentile	9.96	33.34	(1.00)	30.48	12.39	6.09	13.01	35.98	17.33	1.57
Median	(3.30)	30.14	(4.54)	23.56	8.43	1.50	11.02	33.69	15.94	(0.67)
75th Percentile	(14.45)	26.51	(7.86)	18.33	1.56	(2.42)	9.59	31.31	13.94	(2.81)
90th Percentile	(17.35)	22.66	(10.72)	14.82	(1.82)	(4.91)	8.38	29.58	11.29	(5.04)

SERS U.S. Large Company Index Fund	● (3.06)	31.51	(4.39)	21.84	11.98	1.40	13.71	32.38	16.03	2.14
S&P 500 Index	▲ (3.08)	31.49	(4.38)	21.83	11.96	1.38	13.69	32.39	16.00	2.11

Cumulative and Quarterly Relative Return vs S&P 500 Index



Risk Adjusted Return Measures vs S&P 500 Index Rankings Against Callan Large Cap Broad Equity Mut Funds (Institutional Net) Seven Years Ended June 30, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	4.67	0.96	0.76
25th Percentile	2.87	0.88	0.58
Median	(0.43)	0.70	(0.23)
75th Percentile	(4.27)	0.42	(1.05)
90th Percentile	(5.78)	0.32	(1.27)

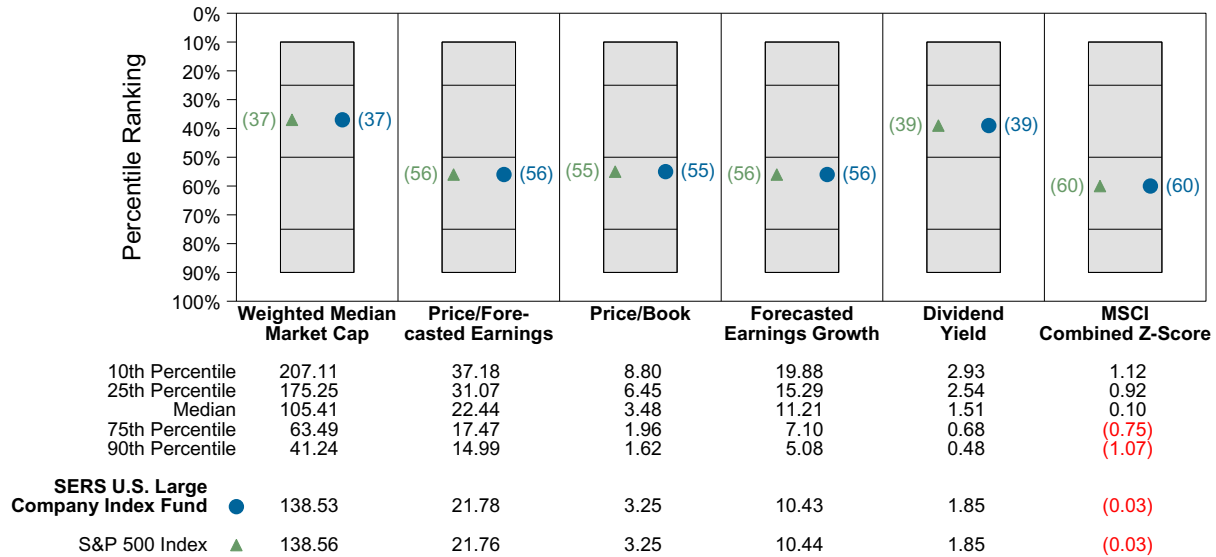
SERS U.S. Large Company Index Fund	● 0.01	0.76	0.79
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SERS U.S. Large Company Index Fund Equity Characteristics Analysis Summary

Portfolio Characteristics

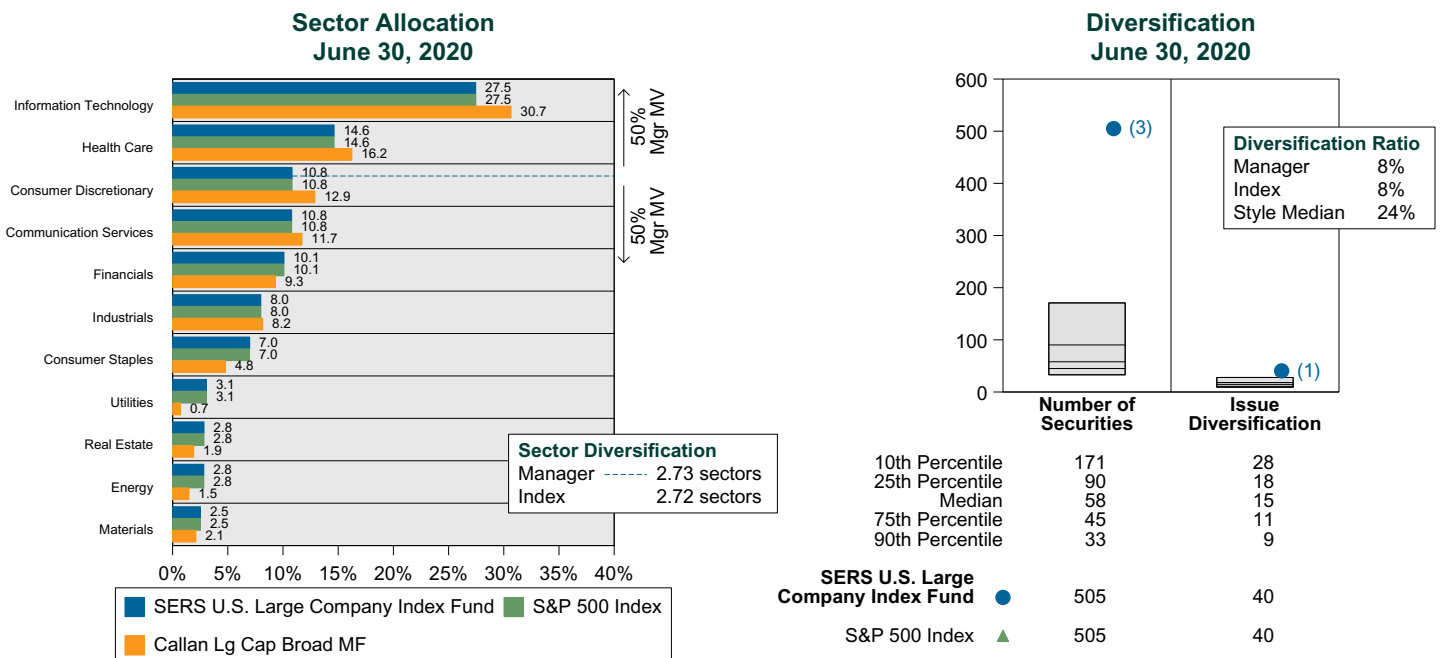
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against Callan Large Cap Broad Equity Mut Funds as of June 30, 2020



Sector Weights

The graph below contrasts the manager's sector weights with those of the benchmark and median sector weights across the members of the peer group. The magnitude of sector weight differences from the index and the manager's sector diversification are also shown. Diversification by number and concentration of holdings are also compared to the benchmark and peer group. Issue Diversification represents by count, and Diversification Ratio by percent, the number of holdings that account for half of the portfolio's market value.



SERS U.S. Large Company Index Fund Top 10 Portfolio Holdings Characteristics as of June 30, 2020

10 Largest Holdings

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Microsoft Corp	Information Technology	\$59,222,243	6.0%	29.40%	1543.31	32.69	1.00%	15.00%
Apple Inc	Information Technology	\$57,034,546	5.8%	43.84%	1581.16	25.63	0.90%	12.91%
Amazon.Com	Consumer Discretionary	\$44,354,824	4.5%	41.50%	1376.03	98.35	0.00%	36.60%
Facebook Inc Cl A	Communication Services	\$20,952,060	2.1%	36.13%	546.00	26.77	0.00%	16.40%
Alphabet Inc Cl A	Communication Services	\$16,327,411	1.7%	22.04%	425.49	29.48	0.00%	4.80%
Alphabet Inc Cl C	Communication Services	\$15,864,662	1.6%	21.57%	475.20	29.13	0.00%	21.68%
Johnson & Johnson	Health Care	\$14,217,549	1.4%	8.00%	370.50	16.77	2.87%	4.61%
Berkshire Hathaway Inc Del Cl B New	Financials	\$13,316,729	1.4%	(2.36)%	248.26	17.62	0.00%	25.60%
Visa Inc Com Cl A	Information Technology	\$12,505,942	1.3%	20.10%	325.90	34.12	0.62%	8.96%
Procter & Gamble Co	Consumer Staples	\$11,359,073	1.2%	9.42%	296.01	22.98	2.65%	7.53%

10 Best Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Apache Corp	Energy	\$196,405	0.0%	223.91%	5.10	(7.74)	0.74%	(25.00)%
Halliburton Co	Energy	\$439,140	0.0%	90.16%	11.39	(62.71)	1.39%	(16.10)%
Marathon Oil Corp	Energy	\$186,679	0.0%	86.02%	4.84	(5.32)	0.00%	5.97%
Paypal Holdings Inc Common Stock Usd	Information Technology	\$7,850,247	0.8%	81.98%	204.54	46.70	0.00%	17.78%
Gap	Consumer Discretionary	\$103,478	0.0%	79.26%	4.71	(13.04)	0.00%	(15.83)%
Ebay	Consumer Discretionary	\$1,331,597	0.1%	75.10%	36.86	14.68	1.22%	11.69%
Dish Network Corp Cl A	Communication Services	\$341,058	0.0%	72.64%	9.86	18.01	0.00%	(11.00)%
Freeport-Mcmoran Inc Cl B	Materials	\$646,295	0.1%	71.41%	16.80	22.91	0.00%	260.90%
Viacomcbs Inc Cl B	Communication Services	\$490,799	0.0%	68.20%	13.09	5.65	4.12%	(3.03)%
Abiomed Inc	Health Care	\$419,108	0.0%	66.41%	10.88	64.50	0.00%	60.37%

10 Worst Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Xerox Holdings Corp	Information Technology	\$108,273	0.0%	(17.95)%	3.26	7.91	6.54%	(0.66)%
Biogen Inc	Health Care	\$1,678,149	0.2%	(15.43)%	43.66	8.30	0.00%	(5.40)%
Cincinnati Finl Corp	Financials	\$379,015	0.0%	(14.33)%	10.30	18.15	3.75%	(5.78)%
General Electric Co	Industrials	\$2,296,704	0.2%	(13.85)%	59.74	26.07	0.59%	2.00%
Coty Inc Com Cl A	Consumer Staples	\$52,490	0.0%	(13.36)%	3.41	12.25	11.19%	(9.00)%
Molosen Coors Beverage	Consumer Staples	\$245,625	0.0%	(11.92)%	6.75	10.40	0.00%	(3.50)%
Wells Fargo & Co New	Financials	\$3,665,194	0.4%	(9.00)%	104.96	14.46	7.97%	3.36%
Nisource	Utilities	\$323,788	0.0%	(8.19)%	8.70	16.91	3.69%	4.89%
Consolidated Edison	Utilities	\$920,003	0.1%	(6.80)%	24.03	16.29	4.25%	2.94%
Walgreens Boots Alliance Inc	Consumer Staples	\$1,203,123	0.1%	(6.28)%	37.19	7.27	4.32%	1.50%

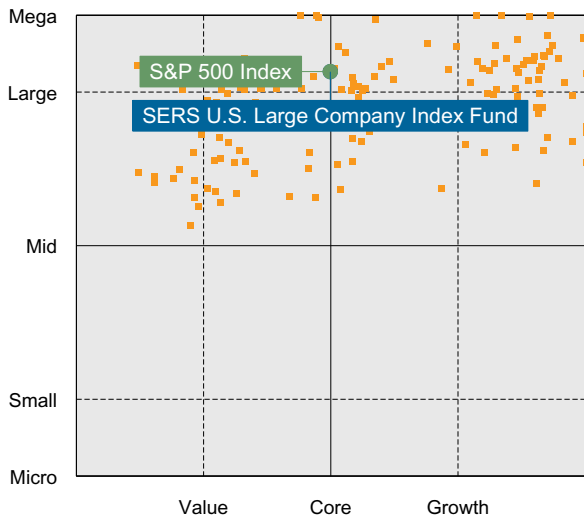
Historical Holdings Based Style Analysis

SERS U.S. Large Company Index Fund

For Three Years Ended June 30, 2020

This page analyzes the historical investment style of a portfolio utilizing a detailed holdings-based style analysis to determine average actual exposures to various market capitalization and style segments of the domestic equity market. The market is segmented quarterly by capitalization and style. The capitalization segments are dictated by capitalization decile breakpoints. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the average historical market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the average historical portfolio and index weights and stock counts (in parentheses) in each capitalization/style segment of the market. The next two style exposure charts illustrate the actual quarterly cap/style and style only segment exposures of the portfolio through history.

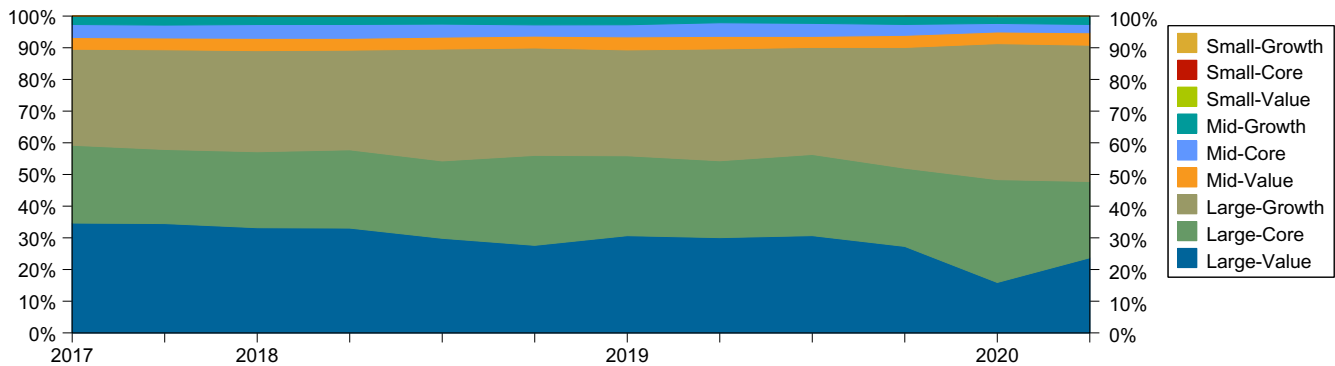
Average Style Map vs Callan Lg Cap Broad MF Holdings for Three Years Ended June 30, 2020



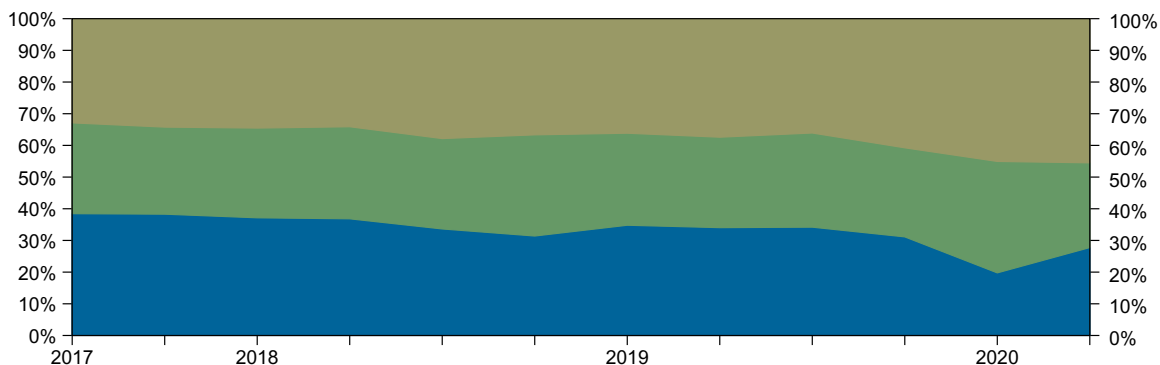
Average Style Exposure Matrix Holdings for Three Years Ended June 30, 2020

Large	29.3% (101)	25.5% (93)	35.1% (87)	89.8% (281)
	29.2% (102)	25.5% (93)	35.1% (87)	89.9% (282)
Mid	3.8% (89)	3.8% (78)	2.5% (49)	10.1% (216)
	3.8% (89)	3.8% (78)	2.5% (49)	10.1% (216)
Small	0.0% (4)	0.0% (1)	0.0% (1)	0.1% (6)
	0.0% (4)	0.0% (1)	0.0% (1)	0.1% (6)
Micro	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Total	33.1% (194)	29.3% (172)	37.6% (137)	100.0% (503)
	33.1% (195)	29.3% (172)	37.6% (137)	100.0% (504)
	Value	Core	Growth	Total

SERS U.S. Large Company Index Fund Historical Cap/Style Exposures



SERS U.S. Large Company Index Fund Historical Style Only Exposures



SERS U.S. SMID Company Stock Idx Period Ended June 30, 2020

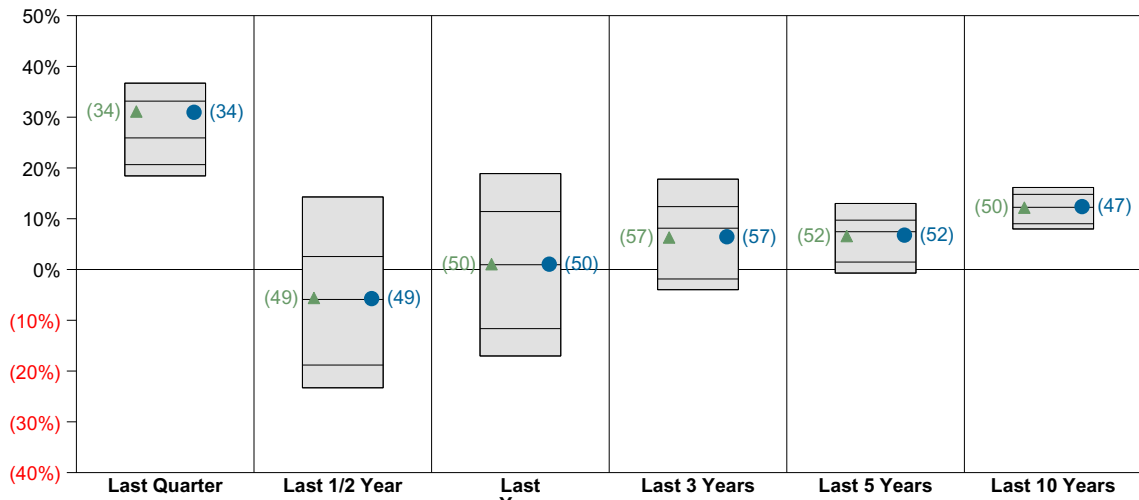
Investment Philosophy

The U.S. Small/Mid Company Stock Index Fund seeks to match the performance and overall characteristics of the Dow Jones U.S. Completion Total Stock Market Index in a risk-controlled, cost-effective manner. The Fund's approach to quality indexing aims to minimize tracking error, manage transaction costs and replicate the majority of the index and sample from the remaining smaller securities. This fund is managed by Mellon Capital Management.

Quarterly Summary and Highlights

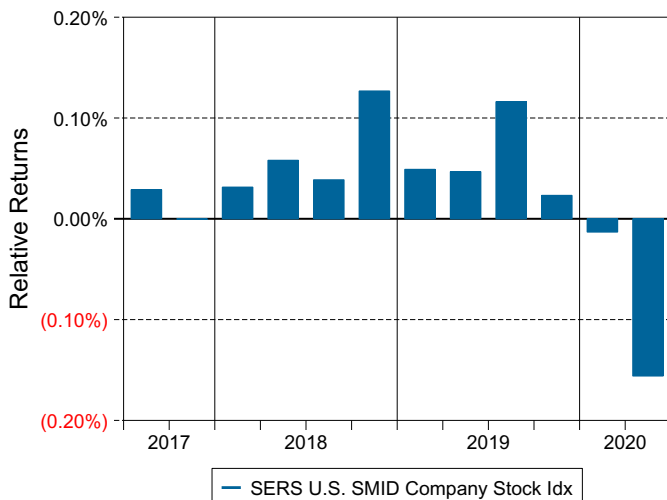
- SERS U.S. SMID Company Stock Idx's portfolio posted a 30.96% return for the quarter placing it in the 34 percentile of the Callan Small/MidCap Broad Mutual Funds group for the quarter and in the 50 percentile for the last year.
- SERS U.S. SMID Company Stock Idx's portfolio underperformed the Dow Jones US Completion by 0.16% for the quarter and outperformed the Dow Jones US Completion for the year by 0.00%.

Performance vs Callan Small/MidCap Broad Mutual Funds (Institutional Net)

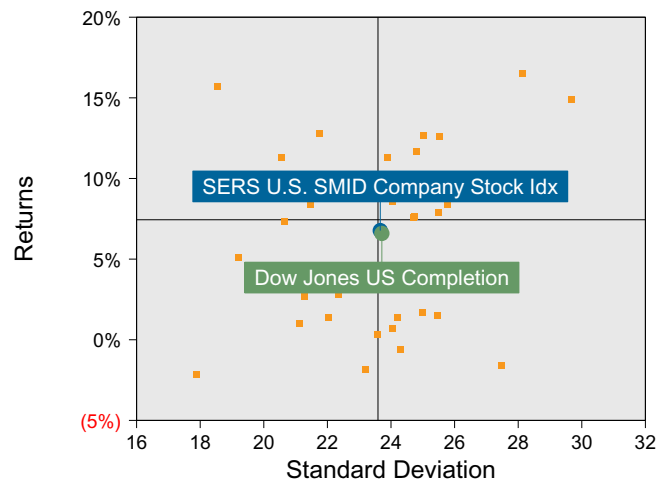


10th Percentile	36.70	14.29	18.89	17.79	13.00	16.15
25th Percentile	33.16	2.55	11.41	12.38	9.71	14.80
Median	25.92	(5.90)	0.94	8.13	7.44	12.25
75th Percentile	20.65	(18.82)	(11.65)	(1.87)	1.46	9.01
90th Percentile	18.44	(23.30)	(17.03)	(3.98)	(0.71)	7.98
SERS U.S. SMID Company Stock Idx	30.96	(5.73)	1.05	6.45	6.77	12.39
Dow Jones US Completion	31.12	(5.60)	1.05	6.31	6.59	12.18

Relative Return vs Dow Jones US Completion



Callan Small/MidCap Broad Mutual Funds (Institutional Net) Annualized Five Year Risk vs Return

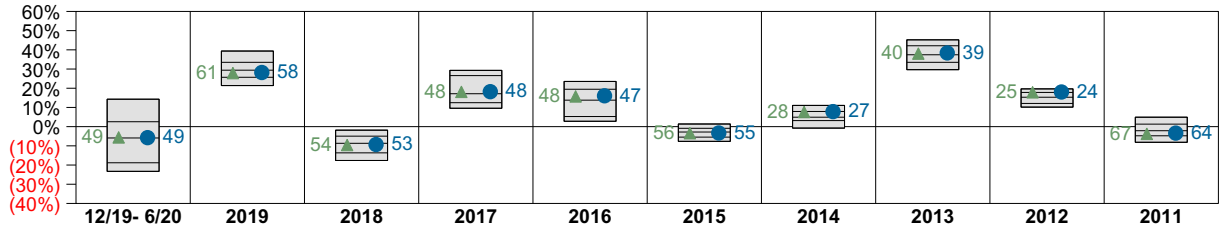


SERS U.S. SMID Company Stock Idx Return Analysis Summary

Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

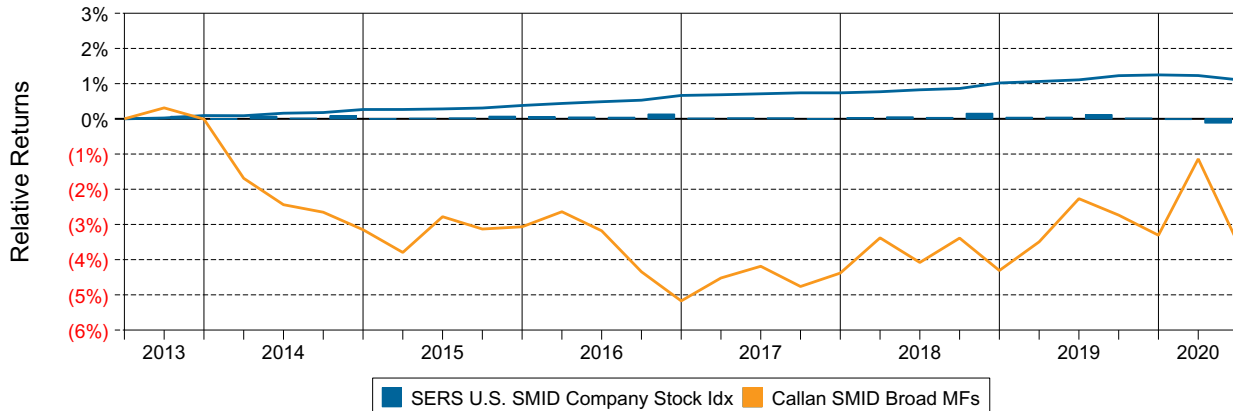
Performance vs Callan Small/MidCap Broad Mutual Funds (Institutional Net)



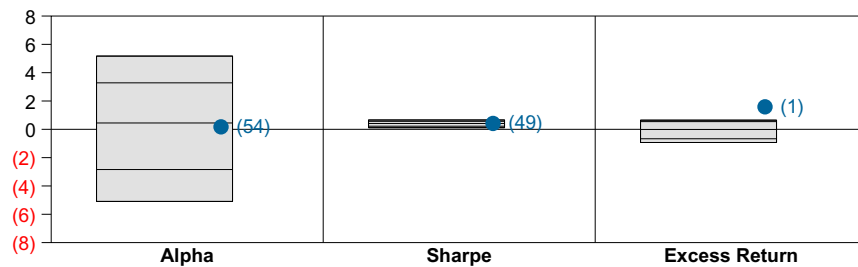
	12/19- 6/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	14.29	39.38	(1.83)	29.31	23.54	1.38	11.06	45.21	19.66	4.92
25th Percentile	2.55	33.51	(4.95)	26.58	19.48	(0.87)	7.90	42.13	17.83	1.30
Median	(5.90)	29.40	(8.69)	17.14	13.80	(2.80)	4.92	37.43	15.32	(2.13)
75th Percentile	(18.82)	25.71	(13.66)	12.47	5.26	(5.46)	3.15	33.50	12.08	(4.76)
90th Percentile	(23.30)	21.40	(17.62)	9.57	2.79	(7.67)	(0.76)	29.67	10.16	(8.15)

SERS U.S. SMID Company Stock Idx	● (5.73)	28.20	(9.32)	18.21	16.08	(3.31)	7.81	38.40	18.04	(3.38)
Dow Jones US Completion	▲ (5.60)	27.91	(9.57)	18.12	15.75	(3.42)	7.63	38.05	17.89	(3.76)

Cumulative and Quarterly Relative Return vs Dow Jones US Completion



Risk Adjusted Return Measures vs Dow Jones US Completion Rankings Against Callan Small/MidCap Broad Mutual Funds (Institutional Net) Seven Years Ended June 30, 2020



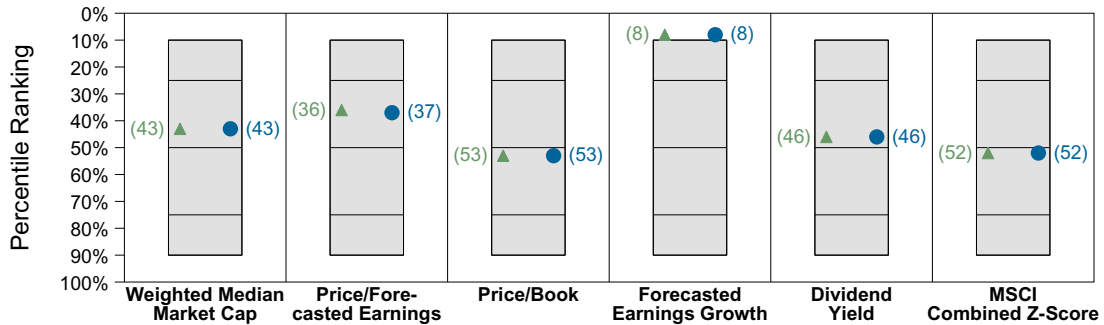
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	5.17	0.66	0.65
25th Percentile	3.28	0.57	0.54
Median	0.45	0.41	(0.01)
75th Percentile	(2.84)	0.22	(0.67)
90th Percentile	(5.09)	0.11	(0.93)
SERS U.S. SMID Company Stock Idx	● 0.17	0.42	1.59

SERS U.S. SMID Company Idx Fund Equity Characteristics Analysis Summary

Portfolio Characteristics

This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

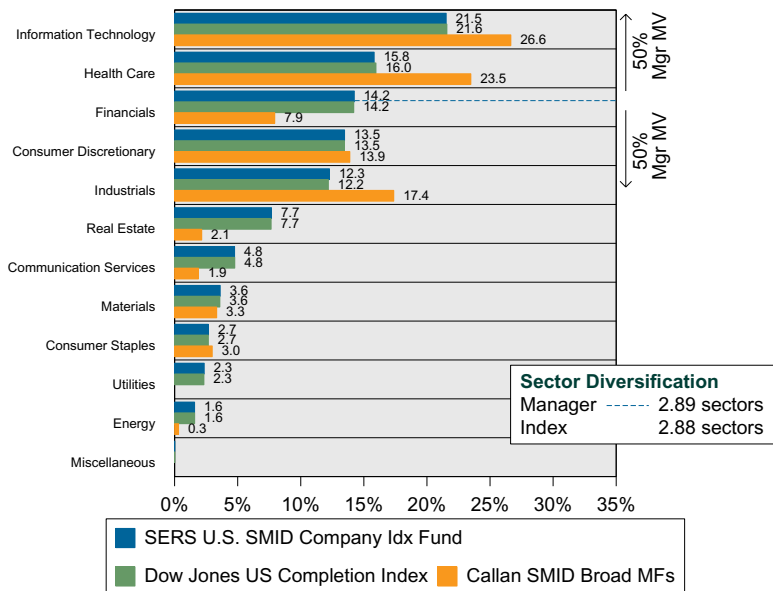
Portfolio Characteristics Percentile Rankings Rankings Against Callan Small/MidCap Broad Mutual Funds as of June 30, 2020



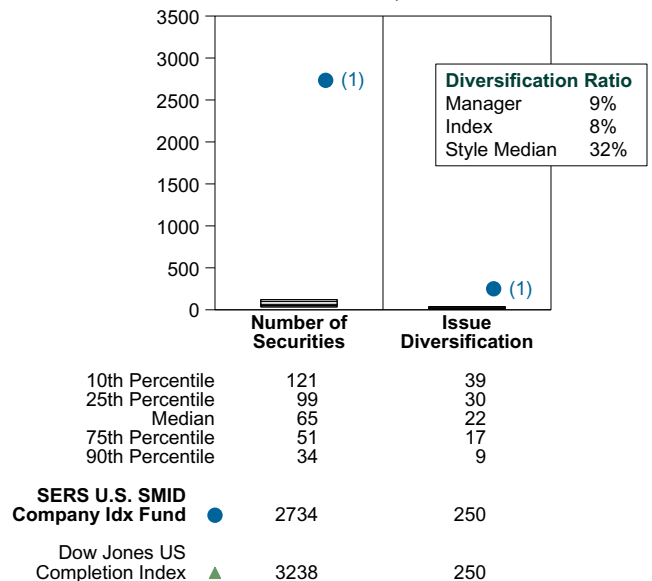
Sector Weights

The graph below contrasts the manager's sector weights with those of the benchmark and median sector weights across the members of the peer group. The magnitude of sector weight differences from the index and the manager's sector diversification are also shown. Diversification by number and concentration of holdings are also compared to the benchmark and peer group. Issue Diversification represents by count, and Diversification Ratio by percent, the number of holdings that account for half of the portfolio's market value.

Sector Allocation June 30, 2020



Diversification June 30, 2020



SERS U.S. SMID Company Idx Fund Top 10 Portfolio Holdings Characteristics as of June 30, 2020

10 Largest Holdings

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Tesla Mtrs Inc	Consumer Discretionary	\$12,515,521	3.3%	106.07%	200.17	139.62	0.00%	282.38%
Blackstone Group Inc Com Cl A	Financials	\$3,008,391	0.8%	25.30%	37.96	22.60	3.48%	15.84%
Square Inc Cl A	Information Technology	\$2,844,442	0.7%	100.35%	38.09	171.47	0.00%	28.80%
Lululemon Athletica Inc	Consumer Discretionary	\$2,837,315	0.7%	64.60%	38.94	61.92	0.00%	16.20%
Veeva Sys Inc Cl A Com	Health Care	\$2,502,156	0.7%	49.91%	31.64	85.18	0.00%	17.05%
Splunk Inc	Information Technology	\$2,494,628	0.7%	57.41%	31.57	779.22	0.00%	20.20%
Nxp Semiconductors	Information Technology	\$2,489,584	0.6%	38.00%	31.82	19.87	1.32%	10.72%
Workday Inc Cl A	Information Technology	\$2,434,309	0.6%	43.88%	32.60	75.85	0.00%	21.75%
Twilio Inc Cl A	Information Technology	\$2,228,898	0.6%	145.19%	28.25	3657.00	0.00%	45.20%
Costar Group Inc	Industrials	\$2,221,458	0.6%	21.02%	27.97	67.60	0.00%	46.53%

10 Best Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Workhorse Group Inc	Consumer Discretionary	\$99,994	0.0%	860.60%	1.23	(63.93)	0.00%	-
Celldex Therapeutics Inc New	Health Care	\$9,413	0.0%	698.45%	0.47	(4.30)	0.00%	-
Microvision Inc Del	Information Technology	\$7,165	0.0%	689.75%	0.19	(15.11)	0.00%	-
Veritone Inc	Information Technology	\$16,675	0.0%	537.74%	0.40	(18.10)	0.00%	-
Novavax Inc	Health Care	\$372,363	0.1%	513.85%	4.83	16.72	0.00%	-
Overstock.Com	Consumer Discretionary	\$77,565	0.0%	469.76%	1.15	(45.63)	0.00%	(23.80)%
Navidea Biopharmaceuticals I	Health Care	\$3,821	0.0%	415.17%	0.09	(7.70)	0.00%	-
Vaxart Inc	Health Care	\$27,737	0.0%	398.64%	0.66	63.21	0.00%	(35.45)%
Carparts Com Inc	Information Technology	\$25,845	0.0%	394.92%	0.34	(120.28)	0.00%	-
Camping World Hldgs Inc Cl A	Consumer Discretionary	\$68,283	0.0%	380.43%	1.02	33.00	1.18%	(5.20)%

10 Worst Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Ready Capital Corporation	Financials	\$26,541	0.0%	(78.89)%	0.49	8.66	11.51%	4.75%
Vivus Inc	Health Care	\$1,116	0.0%	(77.24)%	0.01	(0.46)	0.00%	(38.00)%
Millendo Therapeutics Inc	Health Care	\$352	0.0%	(66.66)%	0.03	(1.01)	0.00%	-
Seachange Intl Inc	Information Technology	\$2,212	0.0%	(59.41)%	0.06	(14.52)	0.00%	(23.59)%
On Deck Cap Inc	Financials	\$3,304	0.0%	(53.26)%	0.04	(1.22)	0.00%	9.87%
Corenergy Infrastructure Tr	Real Estate	\$9,632	0.0%	(49.99)%	0.12	(0.73)	2.19%	(2.18)%
Eovfem Biosciences Inc	Health Care	\$3,284	0.0%	(46.79)%	0.22	(2.03)	0.00%	73.50%
Tailored Brands Inc	Consumer Discretionary	\$4,355	0.0%	(46.09)%	0.05	4.62	0.00%	(5.55)%
Lsb Inds Inc	Materials	\$2,131	0.0%	(44.77)%	0.03	(0.62)	0.00%	(40.89)%
Recro Pharma Inc	Health Care	\$7,319	0.0%	(44.31)%	0.11	(70.00)	0.00%	-

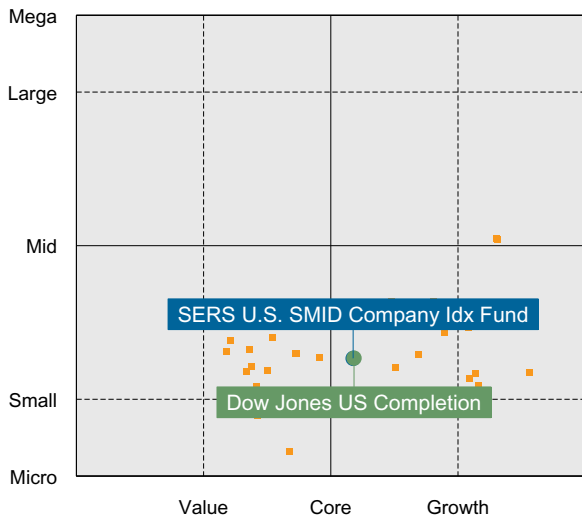
Historical Holdings Based Style Analysis

SERS U.S. SMID Company Idx Fund

For Three Years Ended June 30, 2020

This page analyzes the historical investment style of a portfolio utilizing a detailed holdings-based style analysis to determine average actual exposures to various market capitalization and style segments of the domestic equity market. The market is segmented quarterly by capitalization and style. The capitalization segments are dictated by capitalization decile breakpoints. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the average historical market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the average historical portfolio and index weights and stock counts (in parentheses) in each capitalization/style segment of the market. The next two style exposure charts illustrate the actual quarterly cap/style and style only segment exposures of the portfolio through history.

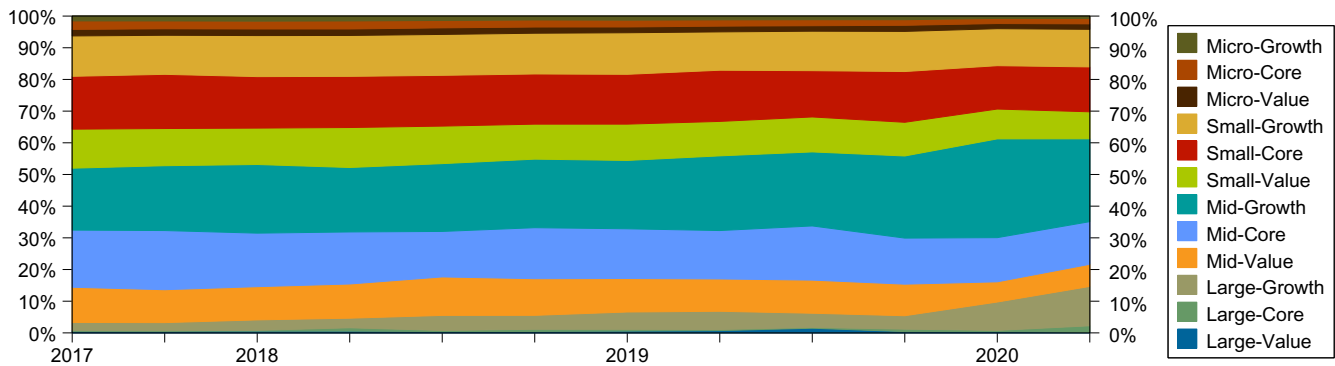
Average Style Map vs Callan SMID Broad MFs Holdings for Three Years Ended June 30, 2020



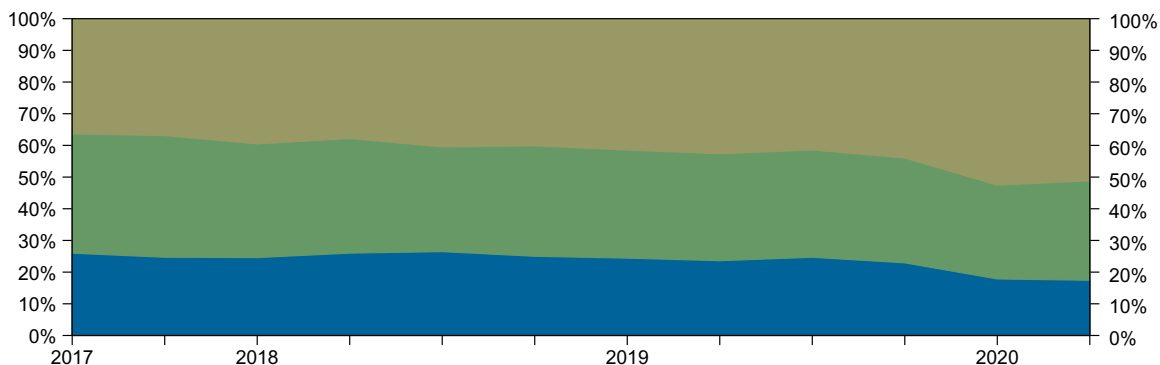
Average Style Exposure Matrix Holdings for Three Years Ended June 30, 2020

	Value	Core	Growth	Total
Large	0.6% (2)	0.6% (3)	5.2% (10)	6.3% (15)
	0.6% (2)	0.5% (2)	5.2% (10)	6.3% (14)
Mid	10.1% (84)	15.9% (131)	23.1% (167)	49.0% (382)
	10.1% (85)	15.9% (131)	23.1% (168)	49.1% (384)
Small	11.1% (318)	15.7% (489)	12.5% (378)	39.3% (1185)
	11.0% (318)	15.7% (490)	12.6% (381)	39.2% (1189)
Micro	1.9% (456)	2.2% (590)	1.3% (247)	5.3% (1293)
	1.9% (558)	2.3% (827)	1.3% (294)	5.4% (1679)
Total	23.6% (860)	34.3% (1213)	42.0% (802)	100.0% (2875)
	23.5% (963)	34.4% (1450)	42.1% (853)	100.0% (3266)

SERS U.S. SMID Company Idx Fund Historical Cap/Style Exposures



SERS U.S. SMID Company Idx Fund Historical Style Only Exposures



SERS Global Non-U.S.Index Fund

Period Ended June 30, 2020

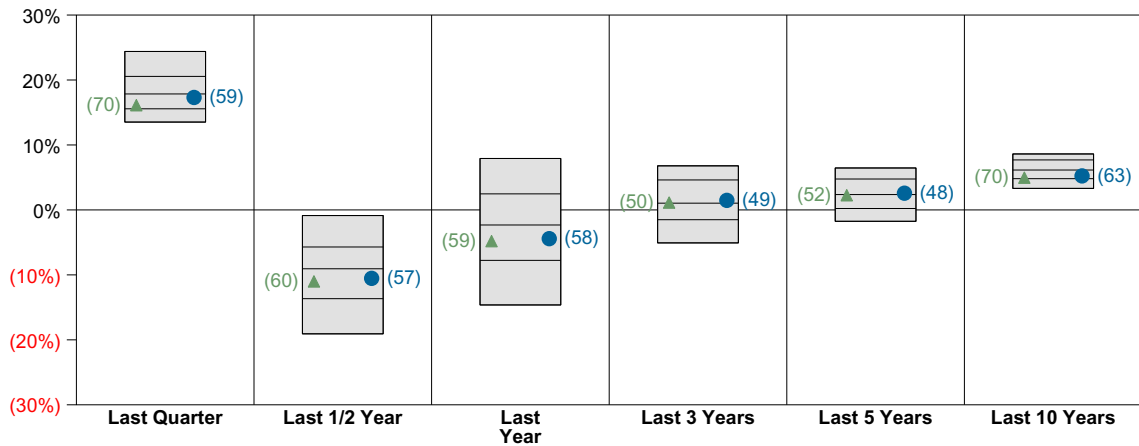
Investment Philosophy

The Global Non-U.S. Stock Index Fund seeks to track the performance of the MSCI All Country World Index (ACWI) ex-U.S. Index. In meeting this objective, the assets of the Fund may be invested in securities, and a combination of other collective funds that are designed to track the performance of such Index. The Fund will principally invest in a combination of other affiliated bank collective funds, equity securities and derivatives, including common stock of foreign companies, depository receipts, financial futures and over-the-counter derivatives that represent developed and emerging market equity securities. This fund is managed by Mellon Capital Management. The Global Non-U.S. Stock Index Fund replaced the International Company Stock Index Fund in 1Q20.

Quarterly Summary and Highlights

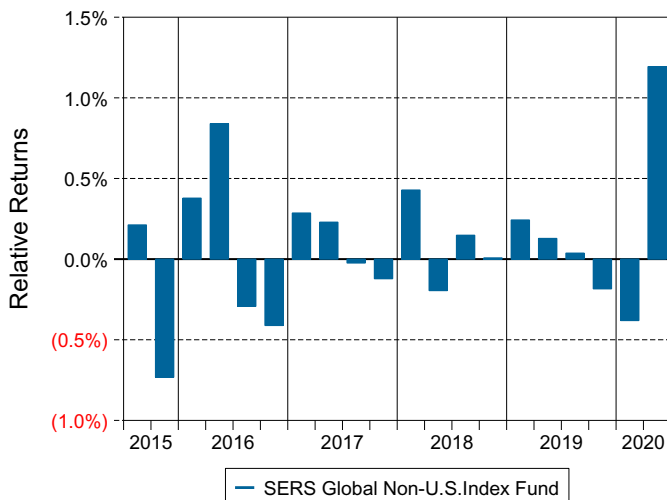
- SERS Global Non-U.S.Index Fund's portfolio posted a 17.31% return for the quarter placing it in the 59 percentile of the Callan Non US Equity Mutual Funds group for the quarter and in the 58 percentile for the last year.
- SERS Global Non-U.S.Index Fund's portfolio outperformed the MSCI ACWI ex US by 1.19% for the quarter and outperformed the MSCI ACWI ex US for the year by 0.37%.

Performance vs Callan Non US Equity Mutual Funds (Institutional Net)

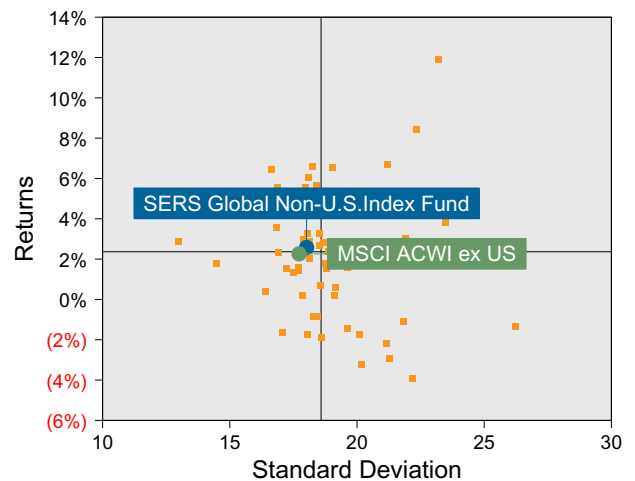


10th Percentile	24.39	(0.87)	7.92	6.79	6.46	8.61
25th Percentile	20.55	(5.71)	2.47	4.61	4.76	7.70
Median	17.85	(9.06)	(2.32)	1.04	2.36	6.14
75th Percentile	15.57	(13.66)	(7.77)	(1.51)	0.22	4.81
90th Percentile	13.52	(19.08)	(14.63)	(5.08)	(1.75)	3.31
SERS Global Non-U.S.Index Fund	● 17.31	(10.53)	(4.43)	1.47	2.58	5.23
MSCI ACWI ex US	▲ 16.12	(11.00)	(4.80)	1.14	2.26	4.97

Relative Return vs MSCI ACWI ex US



Callan Non US Equity Mutual Funds (Institutional Net) Annualized Five Year Risk vs Return

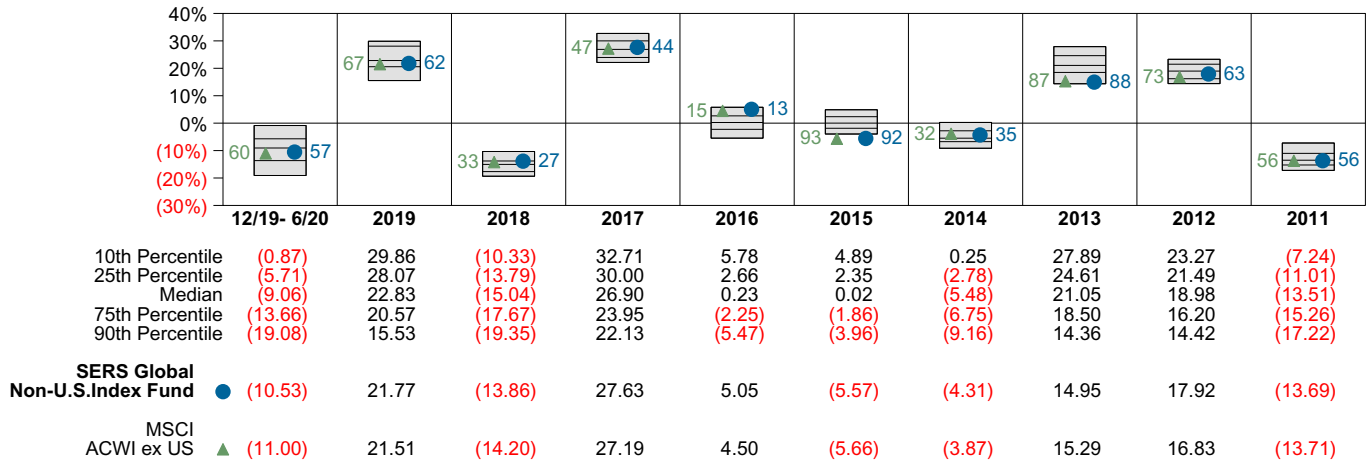


SERS Global Non-U.S.Index Fund Return Analysis Summary

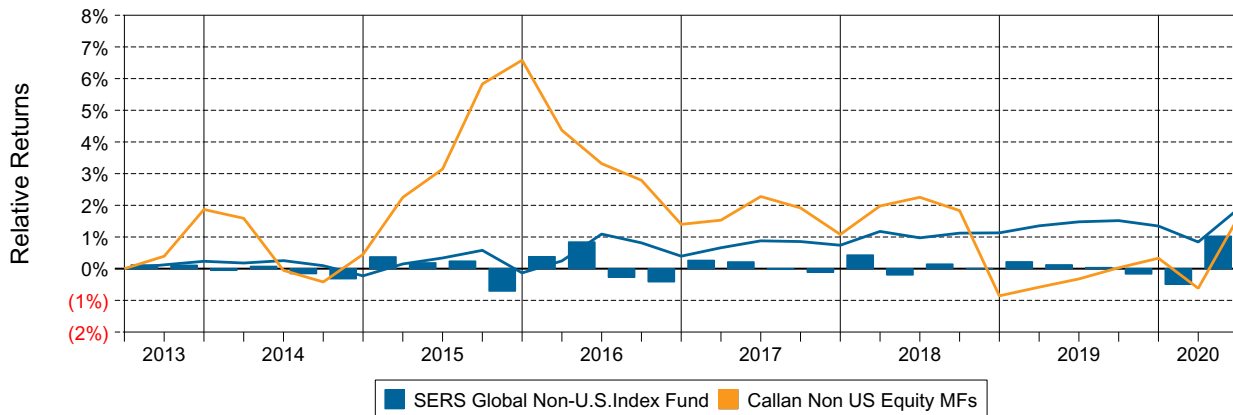
Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

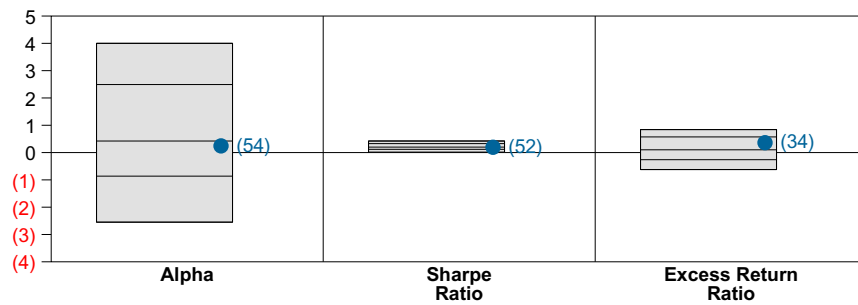
Performance vs Callan Non US Equity Mutual Funds (Institutional Net)



Cumulative and Quarterly Relative Return vs MSCI ACWI ex US



Risk Adjusted Return Measures vs MSCI ACWI ex US Rankings Against Callan Non US Equity Mutual Funds (Institutional Net) Seven Years Ended June 30, 2020

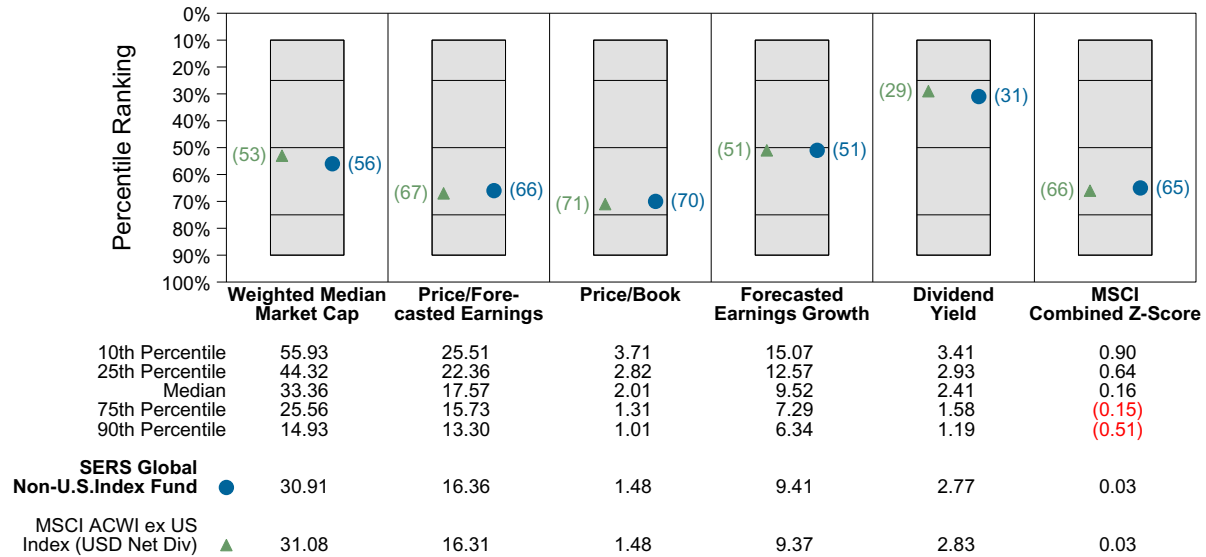


SERS Global Non-U.S.Index Fund Equity Characteristics Analysis Summary

Portfolio Characteristics

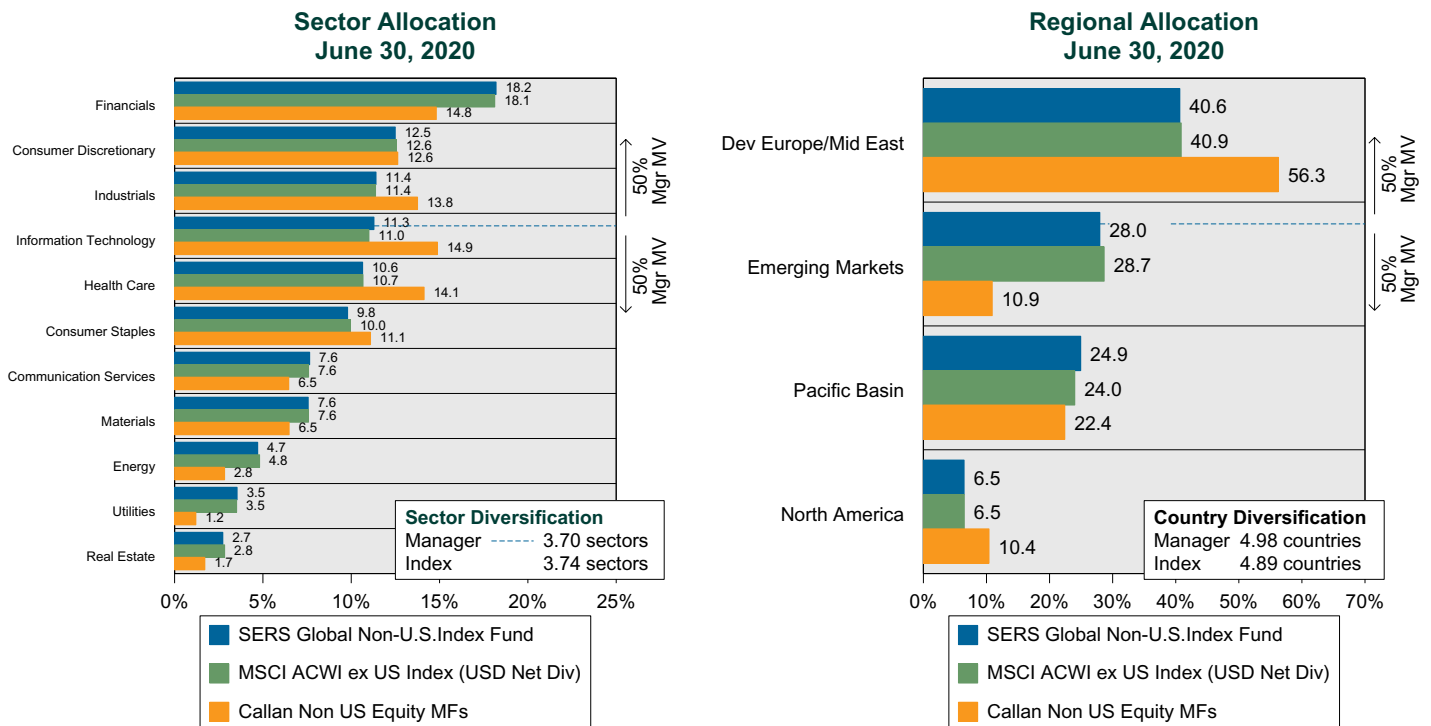
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against Callan Non US Equity Mutual Funds as of June 30, 2020



Sector Weights

The graph below contrasts the manager's sector weights with those of the benchmark and median sector weights across the members of the peer group. The magnitude of sector weight differences from the index and the manager's sector diversification are also shown. The regional allocation chart compares the manager's geographical region weights with those of the benchmark as well as the median region weights of the peer group.



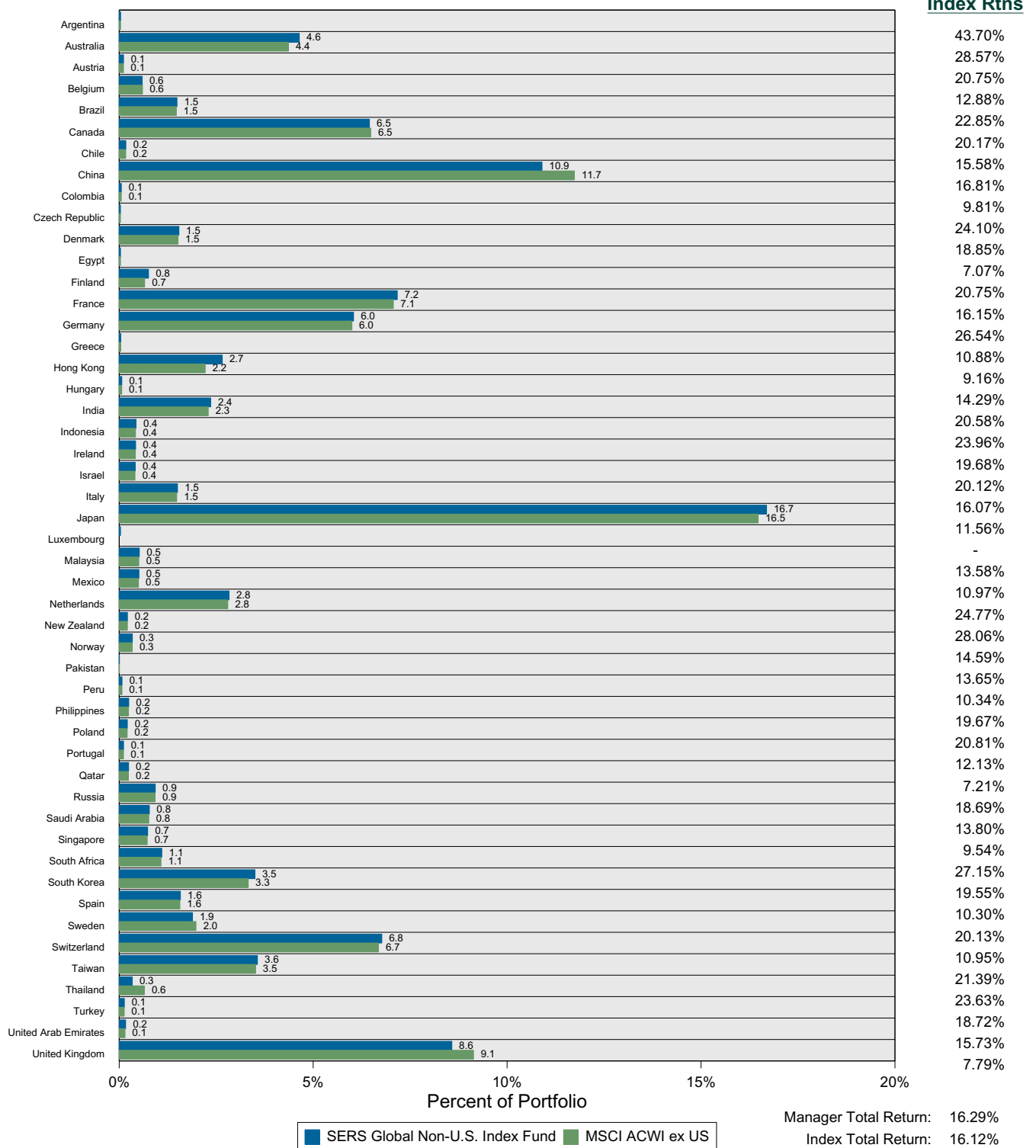
Country Allocation

SERS Global Non-U.S. Index Fund VS MSCI ACWI ex US Index (USD Net Div)

Country Allocation

The chart below contrasts the portfolio's country allocation with that of the index as of June 30, 2020. This chart is useful because large deviations in country allocation relative to the index are often good predictors of tracking error in the subsequent quarter. To the extent that the portfolio allocation is similar to the index, the portfolio should experience more "index-like" performance. In order to illustrate the performance effect on the portfolio and index of these country allocations, the individual index country returns are also shown.

Country Weights as of June 30, 2020



SERS Global Non-U.S. Index Fund Top 10 Portfolio Holdings Characteristics as of June 30, 2020

10 Largest Holdings

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Alibaba Group Hldg Ltd Sponsored Ads	Consumer Discretionary	\$2,122,104	2.1%	10.78%	578.66	23.74	0.00%	23.38%
Tencent Holdings Limited Shs Par Hkd	Communication Services	\$1,930,925	1.9%	27.35%	614.60	33.11	0.24%	21.37%
Nestle S A Shs Nom New	Consumer Staples	\$1,700,320	1.6%	5.89%	328.96	23.19	2.58%	4.79%
Taiwan Semicond Manufac Co L Shs	Information Technology	\$1,377,122	1.3%	18.02%	275.08	18.36	3.19%	14.48%
Roche Hldgs Ag Basel Div Rts Ctf	Health Care	\$1,258,570	1.2%	6.88%	243.45	15.87	2.74%	5.80%
Samsung Electronics Co Ltd Ord	Information Technology	\$1,103,629	1.1%	12.74%	262.05	11.67	2.68%	(7.20)%
Novartis	Health Care	\$966,188	0.9%	9.21%	214.59	14.67	3.58%	6.30%
Asml Holding N V Asml Rev Stk Spl	Information Technology	\$808,234	0.8%	35.89%	156.29	37.85	0.73%	22.80%
Sap Se Shs	Information Technology	\$754,105	0.7%	28.91%	171.04	23.36	1.27%	8.40%
Astrazeneca Plc Ord	Health Care	\$706,148	0.7%	16.43%	136.54	22.91	2.59%	18.35%

10 Best Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Afterpay Touch Group	Information Technology	\$45,767	0.0%	264.94%	11.25	(777.64)	0.00%	-
Sasol	Materials	\$22,477	0.0%	252.45%	4.76	11.71	10.44%	(14.30)%
Nio Inc Ads	Consumer Discretionary	\$36,798	0.0%	177.35%	6.98	(10.65)	0.00%	-
Wix Com	Information Technology	\$67,521	0.1%	154.87%	13.30	193.67	0.00%	18.38%
Pinduoduo Inc Sponsored Ads	Consumer Discretionary	\$115,776	0.1%	137.96%	58.29	(2043.81)	0.00%	-
Top Glove Corporation Bhd Shs	Health Care	\$30,685	0.0%	132.53%	10.12	21.47	0.87%	31.89%
Cenovus Energy Inc	Energy	\$25,459	0.0%	131.07%	5.73	(4.60)	0.00%	(8.50)%
China Intl.Trvl.Ser.'a'	Consumer Discretionary	\$3,194	0.0%	129.88%	42.51	71.14	0.36%	45.00%
Brookfield Asset Mgmt Inc Cl A Ltd V	Financials	\$229,528	0.2%	129.00%	51.75	20.49	1.46%	(6.16)%
Shopify Subd.Vtg.Shs.A	Information Technology	\$517,528	0.5%	128.60%	99.74	1670.12	0.00%	-

10 Worst Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Rentokil Initial	Industrials	\$60,003	0.1%	(71.18)%	11.85	47.86	0.29%	-
Lend Lease Corp Ltd Ord	Real Estate	\$28,762	0.0%	(41.85)%	5.86	15.83	4.85%	12.51%
Grupo Televisa S A Ord Part Ctf	Communication Services	\$13,464	0.0%	(35.64)%	3.03	(21.48)	3.43%	7.05%
Seiko Epson Corp Suwa Shs	Information Technology	\$16,333	0.0%	(31.56)%	4.57	17.94	5.03%	60.80%
Genting Berhad Ord	Consumer Discretionary	\$10,782	0.0%	(31.19)%	3.71	12.76	3.05%	(4.34)%
Vp China Greenchip Fund	Industrials	\$8,227	0.0%	(28.14)%	1.63	3.23	4.04%	9.33%
Soho China Limited	Real Estate	\$3,944	0.0%	(28.07)%	1.82	27.00	0.00%	22.30%
Dongfeng Motor Group Co Ltd Shs H	Consumer Discretionary	\$8,828	0.0%	(26.57)%	1.71	3.00	8.26%	3.36%
Guangzhou Automobile Group C Shs H	Consumer Discretionary	\$10,903	0.0%	(25.87)%	2.23	6.44	3.96%	19.20%
Konami Hldgs Corp Shs	Communication Services	\$15,533	0.0%	(25.40)%	4.78	16.90	1.25%	33.20%

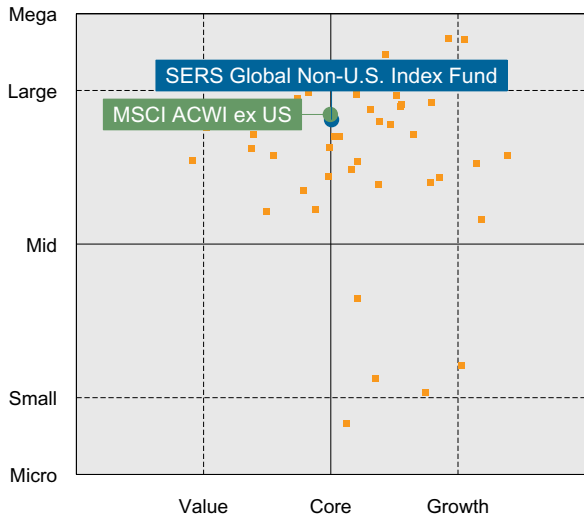
Historical Holdings Based Style Analysis

SERS Global Non-U.S. Index Fund

For Three Years Ended June 30, 2020

This page analyzes the historical investment style of a portfolio utilizing a detailed holdings-based style analysis to determine average actual exposures to various region and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the average historical market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the average historical portfolio and index weights and stock counts (in parentheses) in each region/style segment of the market. The next two style exposure charts illustrate the actual quarterly region/style and style only segment exposures of the portfolio through history.

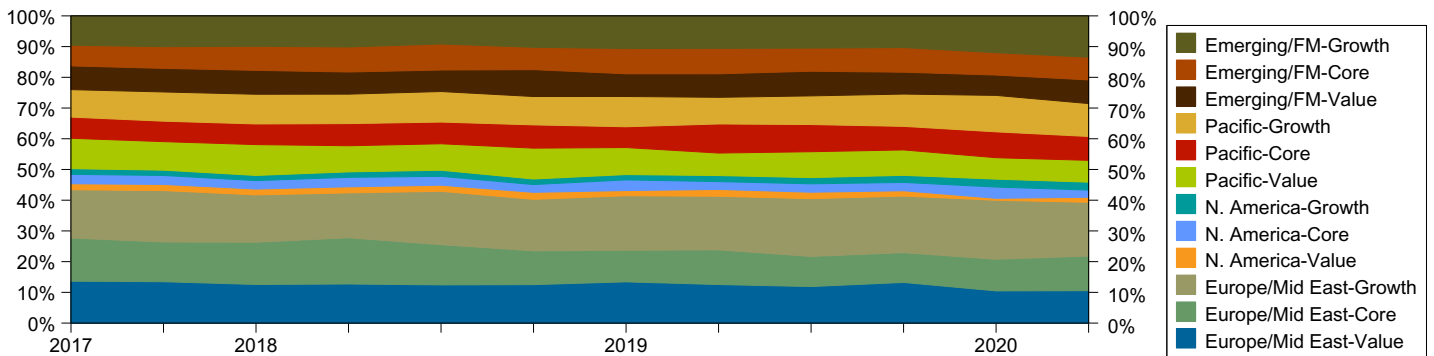
Average Style Map vs Callan Non US Equity MFs Holdings for Three Years Ended June 30, 2020



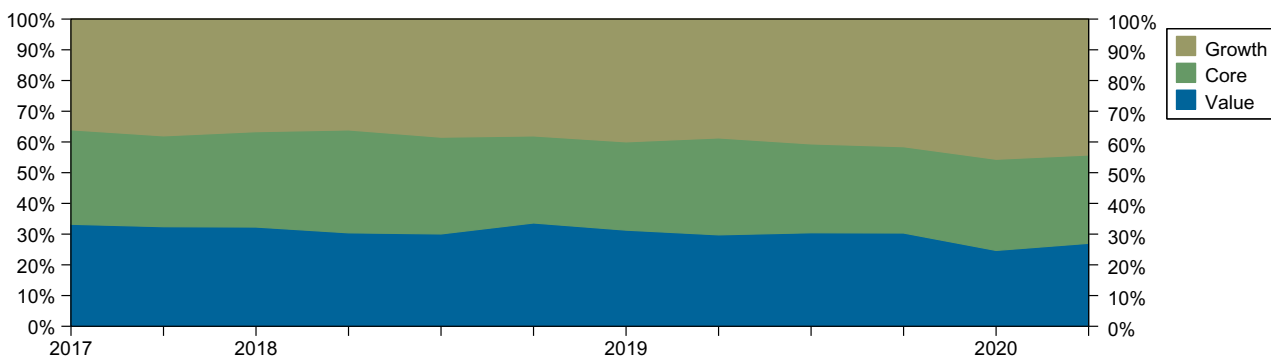
Average Style Exposure Matrix Holdings for Three Years Ended June 30, 2020

Europe/ Mid East	12.5% (126)	11.9% (122)	17.1% (174)	41.5% (422)
	12.8% (136)	11.7% (126)	17.1% (186)	41.7% (448)
N. America	1.8% (28)	2.9% (28)	2.0% (31)	6.7% (87)
	1.8% (29)	2.9% (29)	2.0% (32)	6.7% (90)
Pacific	8.6% (150)	7.6% (145)	9.8% (173)	26.0% (468)
	8.4% (151)	7.2% (145)	9.4% (173)	24.9% (469)
Emerging/ FM	7.6% (356)	7.7% (299)	10.5% (302)	25.8% (957)
	7.9% (405)	8.0% (351)	10.8% (354)	26.7% (1110)
Total	30.5% (660)	30.0% (594)	39.5% (680)	100.0% (1934)
	30.9% (721)	29.8% (651)	39.3% (745)	100.0% (2117)
	Value	Core	Growth	Total

SERS Global Non-U.S. Index Fund Historical Region/Style Exposures



SERS Global Non-U.S. Index Fund Historical Style Only Exposures



SERS Short Term Investment Fund

Period Ended June 30, 2020

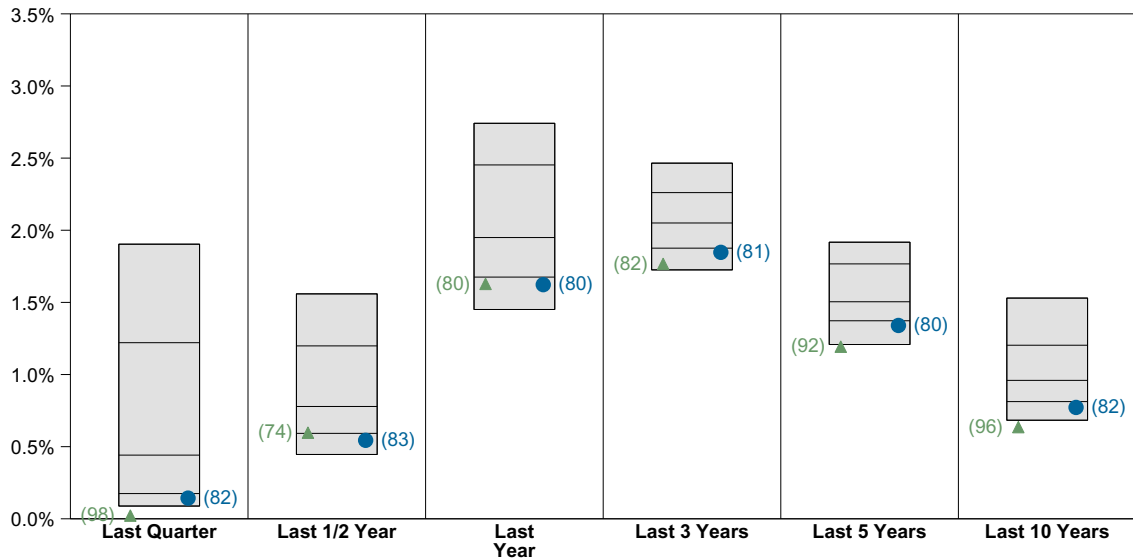
Investment Philosophy

The Short Term Investment Fund seeks to achieve the highest current income consistent with maintaining liquidity and safety of principal. This fund is managed by the Pennsylvania State Treasurer. It is compared against the Callan Cash database: a group that contains STIF, enhanced cash, and money market funds.

Quarterly Summary and Highlights

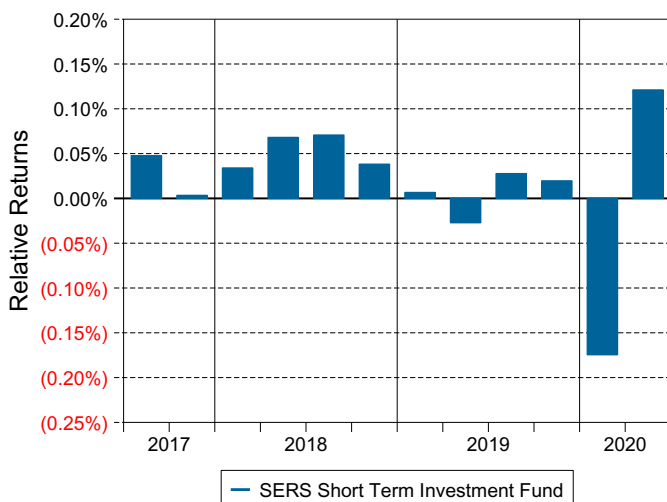
- SERS Short Term Investment Fund's portfolio posted a 0.14% return for the quarter placing it in the 82 percentile of the Callan Cash Database group for the quarter and in the 80 percentile for the last year.
- SERS Short Term Investment Fund's portfolio outperformed the 3-month Treasury Bill by 0.12% for the quarter and underperformed the 3-month Treasury Bill for the year by 0.01%.

Performance vs Callan Cash Database (Gross)

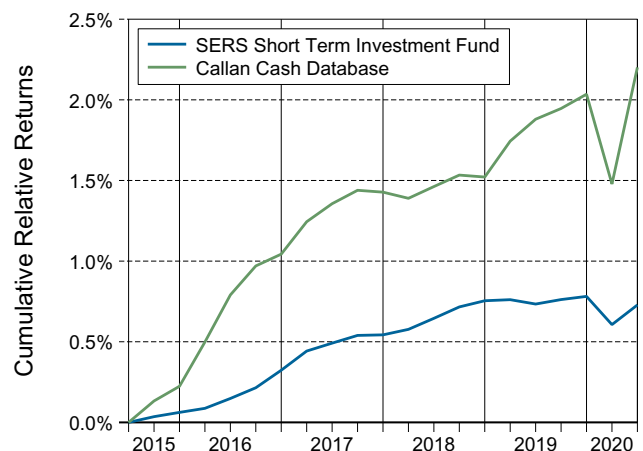


10th Percentile	1.90	1.56	2.74	2.47	1.92	1.53
25th Percentile	1.22	1.20	2.45	2.26	1.77	1.20
Median	0.44	0.78	1.95	2.05	1.50	0.96
75th Percentile	0.17	0.59	1.68	1.88	1.37	0.81
90th Percentile	0.09	0.45	1.45	1.73	1.21	0.68
SERS Short Term Investment Fund	● 0.14	0.54	1.62	1.85	1.34	0.77
3-month Treasury Bill	▲ 0.02	0.60	1.63	1.77	1.19	0.64

Relative Return vs 3-month Treasury Bill



Cumulative Returns vs 3-month Treasury Bill

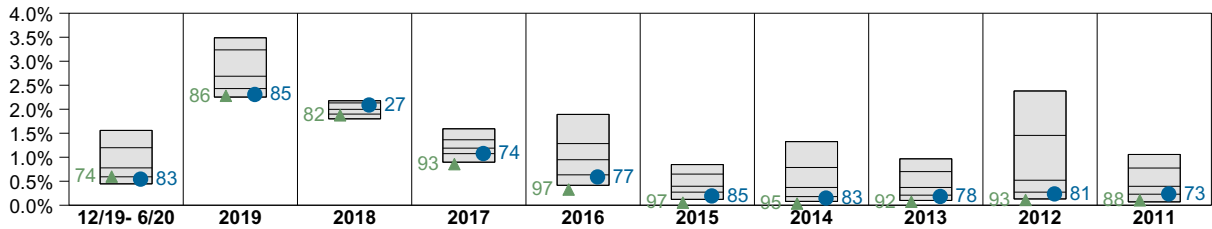


SERS Short Term Investment Fund Return Analysis Summary

Return Analysis

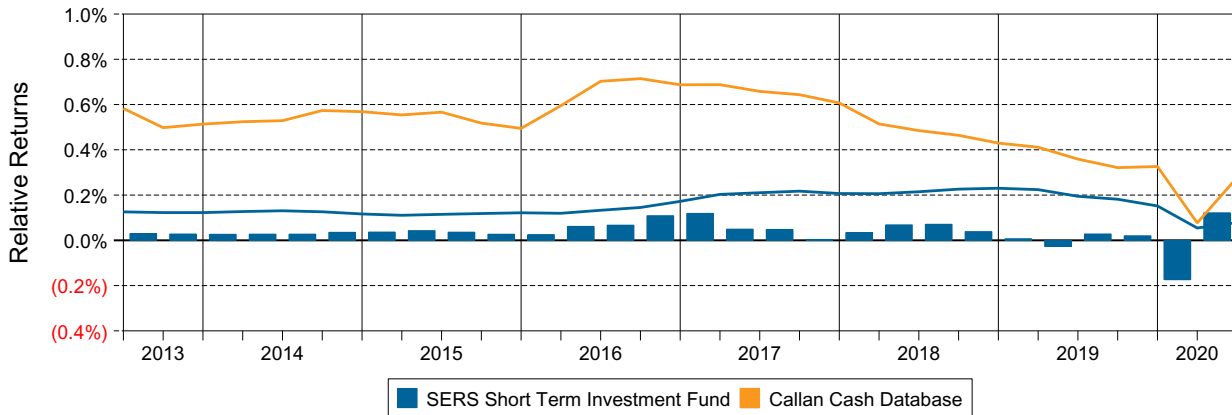
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures. The Callan Cash Database includes STIF, enhanced cash, and money market funds.

Performance vs Callan Cash Database (Gross)

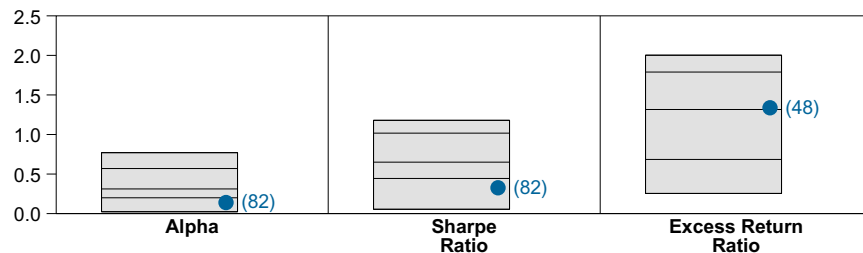


Period	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	SERS Short Term Investment Fund	3-month Treasury Bill
12/19- 6/20	1.56	1.20	0.78	0.59	0.45	0.54	0.60
2019	3.49	3.24	2.69	2.43	2.25	2.31	2.28
2018	2.18	2.13	2.00	1.90	1.80	2.09	1.87
2017	1.59	1.36	1.19	1.08	0.90	1.08	0.86
2016	1.89	1.28	0.95	0.63	0.41	0.59	0.33
2015	0.85	0.65	0.40	0.27	0.12	0.19	0.05
2014	1.33	0.79	0.37	0.18	0.08	0.15	0.03
2013	0.97	0.70	0.37	0.21	0.10	0.18	0.07
2012	2.38	1.45	0.52	0.27	0.13	0.24	0.11
2011	1.06	0.78	0.39	0.23	0.07	0.24	0.10

Rolling 12 Quarter and Quarterly Relative Return vs 3-month Treasury Bill



Risk Adjusted Return Measures vs 3-month Treasury Bill Rankings Against Callan Cash Database (Gross) Seven Years Ended June 30, 2020



Measure	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	SERS Short Term Investment Fund
Alpha	0.77	0.57	0.31	0.20	0.02	0.14
Sharpe Ratio	1.18	1.02	0.65	0.44	0.05	0.33
Excess Return Ratio	2.00	1.79	1.32	0.68	0.25	1.34

SERS Stable Value Fund Period Ended June 30, 2020

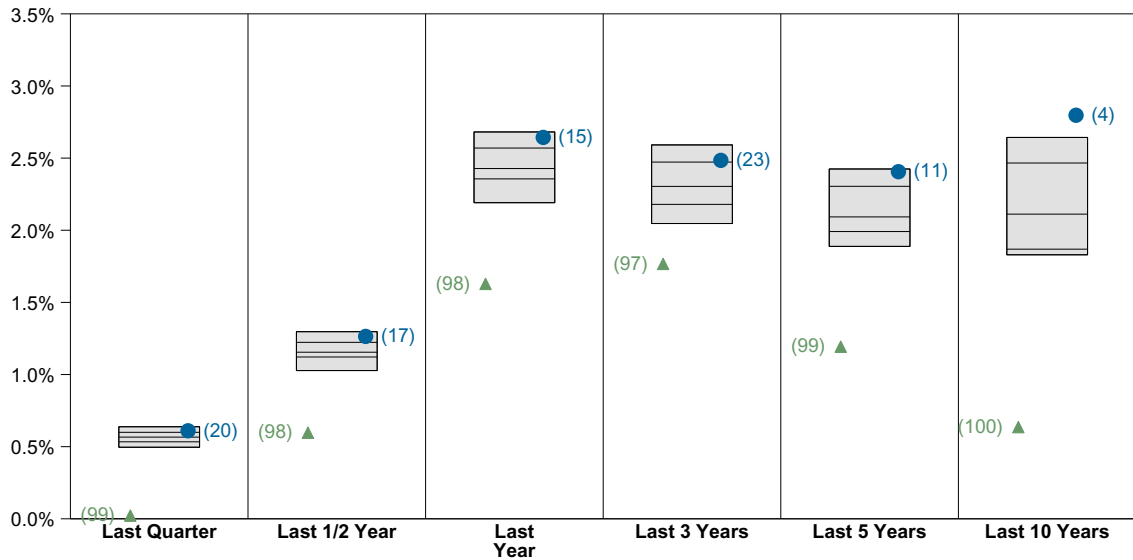
Investment Philosophy

The Stable Value Fund seeks to provide safety of principal and a stable yield consistent with that of a high-quality blend of short and intermediate fixed income securities, with the flexibility to move to cash equivalents to preserve principal. This fund is managed by Invesco.

Quarterly Summary and Highlights

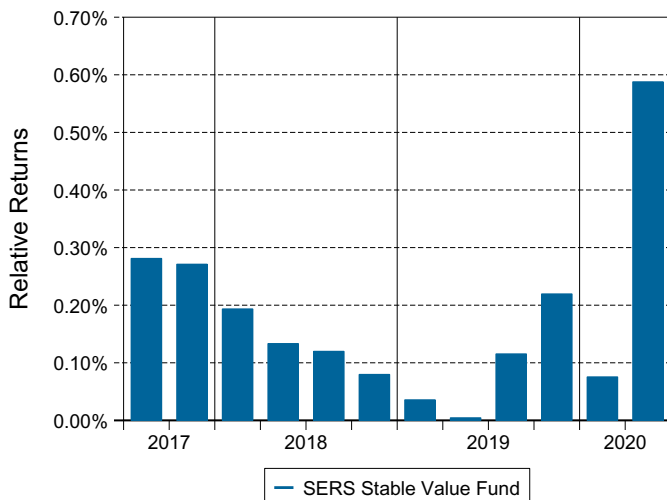
- SERS Stable Value Fund's portfolio posted a 0.61% return for the quarter placing it in the 20 percentile of the Callan Stable Value CT group for the quarter and in the 15 percentile for the last year.
- SERS Stable Value Fund's portfolio outperformed the 3-month Treasury Bill by 0.59% for the quarter and outperformed the 3-month Treasury Bill for the year by 1.01%.

Performance vs Callan Stable Value CT (Gross)

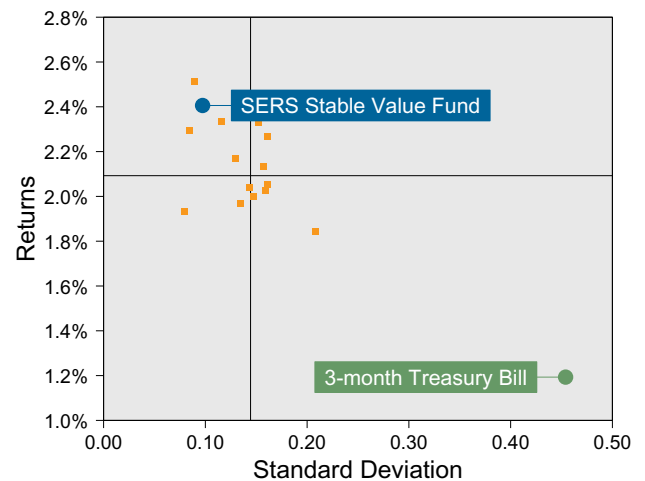


10th Percentile	0.64	1.30	2.68	2.59	2.42	2.64
25th Percentile	0.60	1.22	2.57	2.47	2.30	2.47
Median	0.57	1.15	2.43	2.30	2.09	2.11
75th Percentile	0.53	1.12	2.36	2.18	1.99	1.87
90th Percentile	0.50	1.03	2.19	2.05	1.89	1.83
SERS Stable Value Fund	● 0.61	1.26	2.64	2.48	2.41	2.80
3-month Treasury Bill	▲ 0.02	0.60	1.63	1.77	1.19	0.64

Relative Return vs 3-month Treasury Bill



Callan Stable Value CT (Gross) Annualized Five Year Risk vs Return

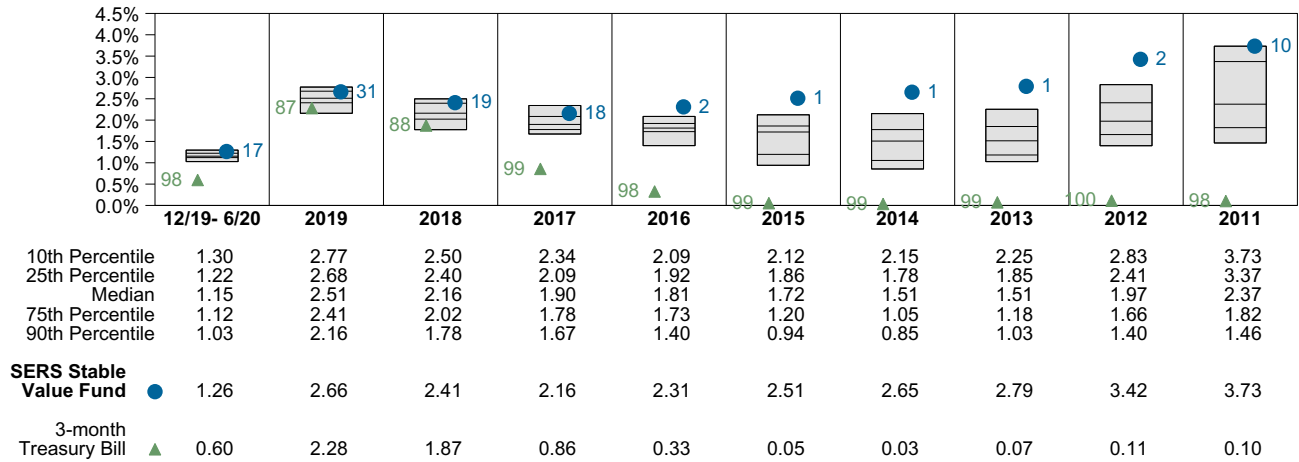


SERS Stable Value Fund Return Analysis Summary

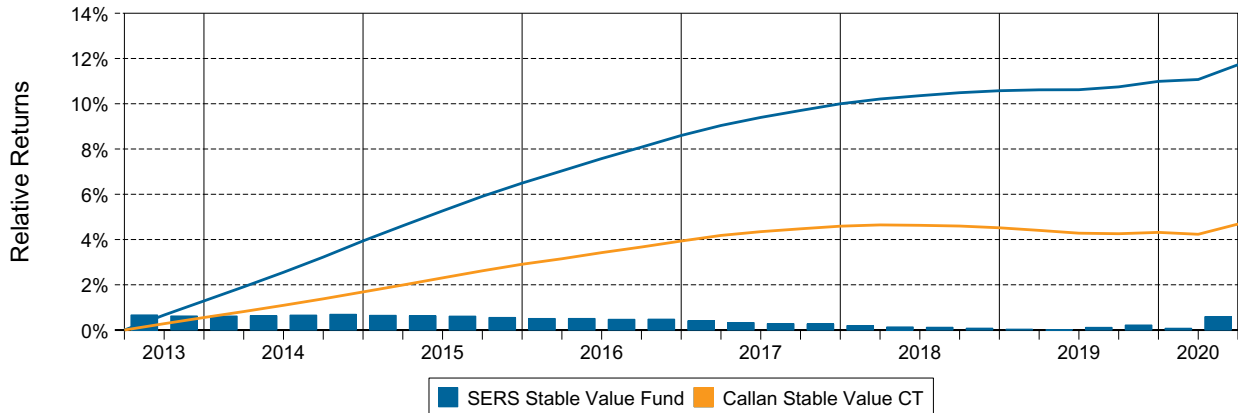
Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

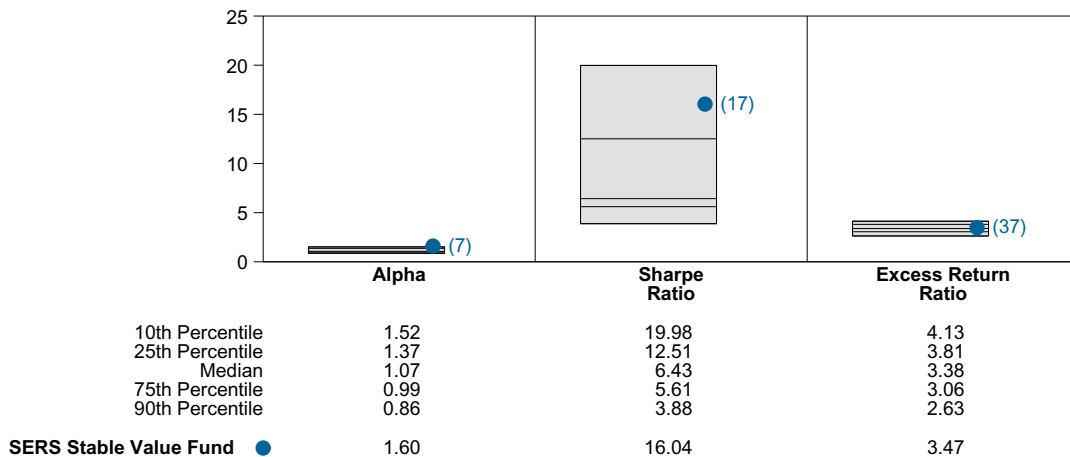
Performance vs Callan Stable Value CT (Gross)



Cumulative and Quarterly Relative Return vs 3-month Treasury Bill



Risk Adjusted Return Measures vs 3-month Treasury Bill Rankings Against Callan Stable Value CT (Gross) Seven Years Ended June 30, 2020



SERS U.S. Bond Index Fund

Period Ended June 30, 2020

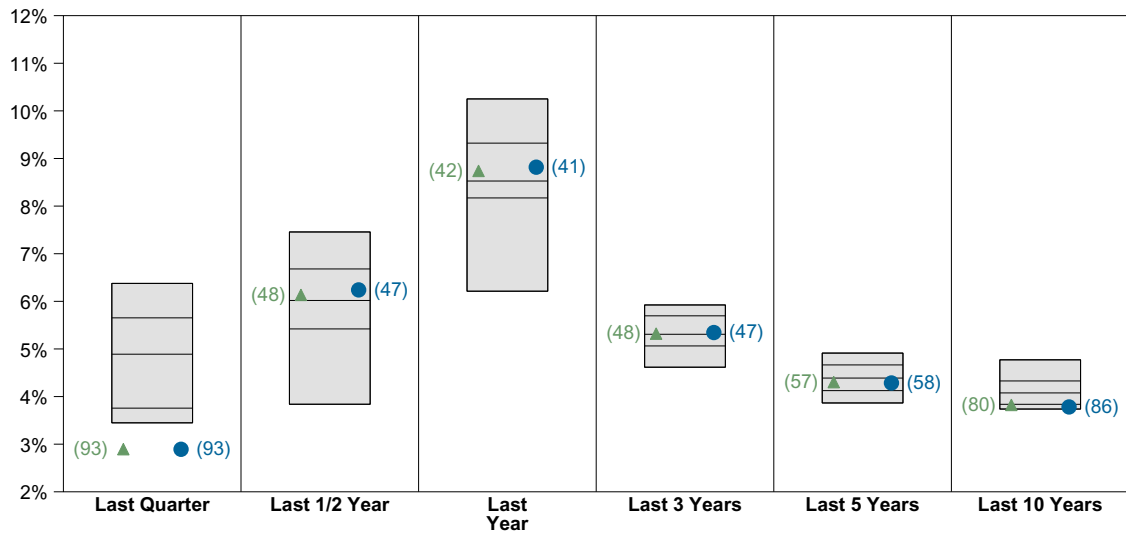
Investment Philosophy

The objective of the Fund is to track the performance of the Bloomberg US Aggregate Bond Index. In meeting this objective, the Fund may invest in securities (including those issued through private placements) and a combination of other collective funds that together are designed to track the performance of the Bloomberg US Aggregate Bond Index. This fund is managed by Mellon Capital Management.

Quarterly Summary and Highlights

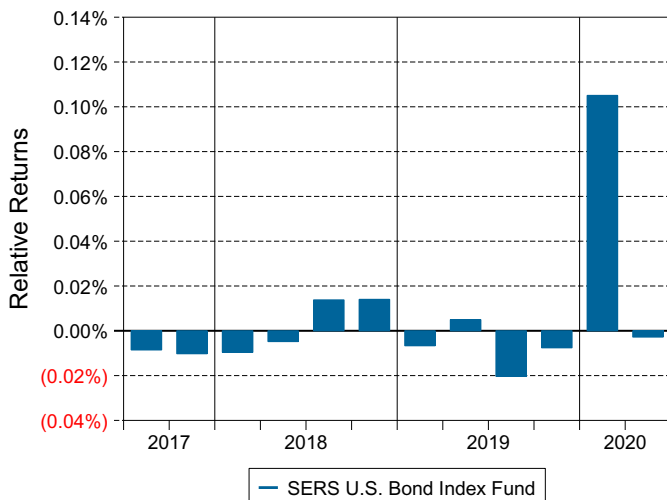
- SERS U.S. Bond Index Fund's portfolio posted a 2.89% return for the quarter placing it in the 93 percentile of the Callan Core Bond Mutual Funds group for the quarter and in the 41 percentile for the last year.
- SERS U.S. Bond Index Fund's portfolio underperformed the Blmbg Aggregate by 0.00% for the quarter and outperformed the Blmbg Aggregate for the year by 0.08%.

Performance vs Callan Core Bond Mutual Funds (Institutional Net)

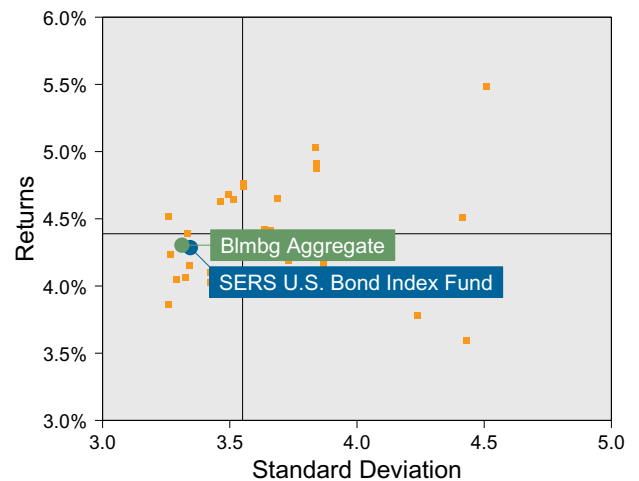


10th Percentile	6.38	7.46	10.25	5.92	4.91	4.77
25th Percentile	5.65	6.68	9.32	5.70	4.66	4.33
Median	4.89	6.02	8.53	5.31	4.39	4.08
75th Percentile	3.76	5.42	8.17	5.06	4.12	3.84
90th Percentile	3.45	3.84	6.21	4.62	3.87	3.74
SERS U.S. Bond Index Fund	● 2.89	6.24	8.82	5.34	4.29	3.78
Blmbg Aggregate	▲ 2.90	6.14	8.74	5.32	4.30	3.82

Relative Return vs Blmbg Aggregate



Callan Core Bond Mutual Funds (Institutional Net) Annualized Five Year Risk vs Return

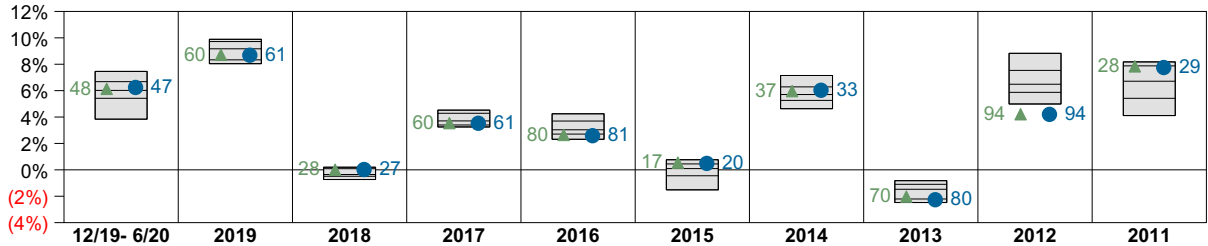


SERS U.S. Bond Index Fund Return Analysis Summary

Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

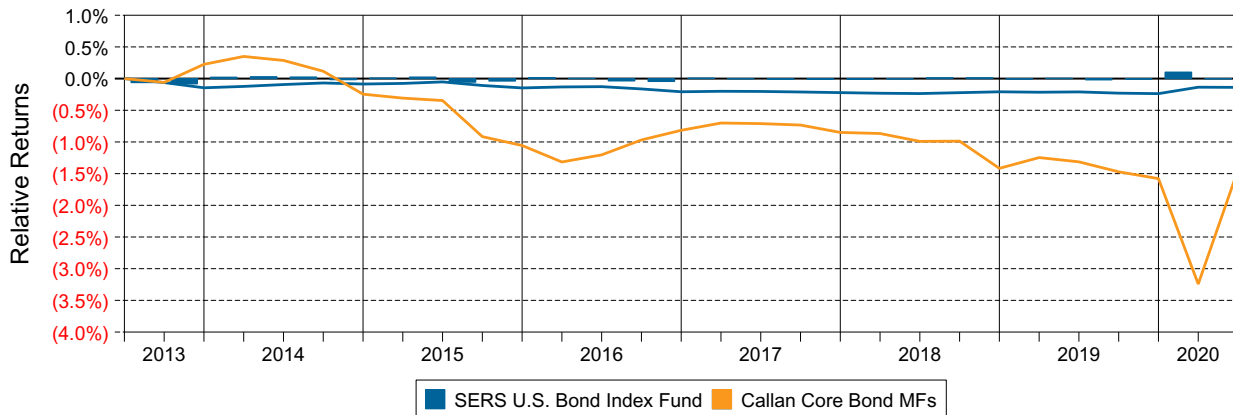
Performance vs Callan Core Bond Mutual Funds (Institutional Net)



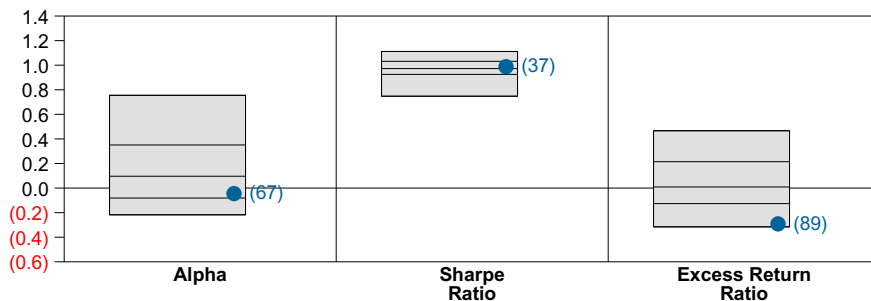
	12/19- 6/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
10th Percentile	7.46	9.89	0.20	4.52	4.25	0.77	7.15	(0.82)	8.83	8.18
25th Percentile	6.68	9.72	0.09	4.28	3.70	0.45	6.29	(1.10)	7.53	7.88
Median	6.02	9.17	(0.35)	3.71	3.03	0.10	5.71	(1.47)	6.49	6.71
75th Percentile	5.42	8.33	(0.49)	3.40	2.71	(0.45)	5.26	(2.21)	5.87	5.42
90th Percentile	3.84	8.04	(0.73)	3.25	2.31	(1.52)	4.63	(2.48)	4.99	4.11

	12/19- 6/20	2019	2018	2017	2016	2015	2014	2013	2012	2011
SERS U.S. Bond Index Fund	6.24	8.69	0.02	3.53	2.59	0.49	6.03	(2.26)	4.20	7.75
Blmbg Aggregate	6.14	8.72	0.01	3.54	2.65	0.55	5.97	(2.02)	4.21	7.84

Cumulative and Quarterly Relative Return vs Blmbg Aggregate



Risk Adjusted Return Measures vs Blmbg Aggregate Rankings Against Callan Core Bond Mutual Funds (Institutional Net) Seven Years Ended June 30, 2020



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.75	1.11	0.47
25th Percentile	0.35	1.03	0.21
Median	0.10	0.97	0.01
75th Percentile	(0.08)	0.93	(0.13)
90th Percentile	(0.22)	0.75	(0.32)
SERS U.S. Bond Index Fund	(0.05)	0.99	(0.29)

SERS U.S. Bond Index Fund

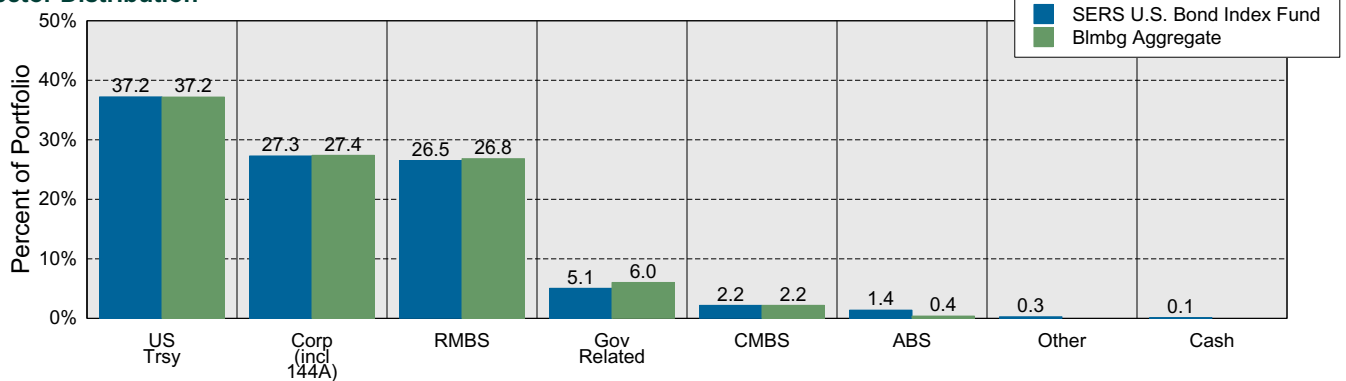
Portfolio Characteristics Summary

As of June 30, 2020

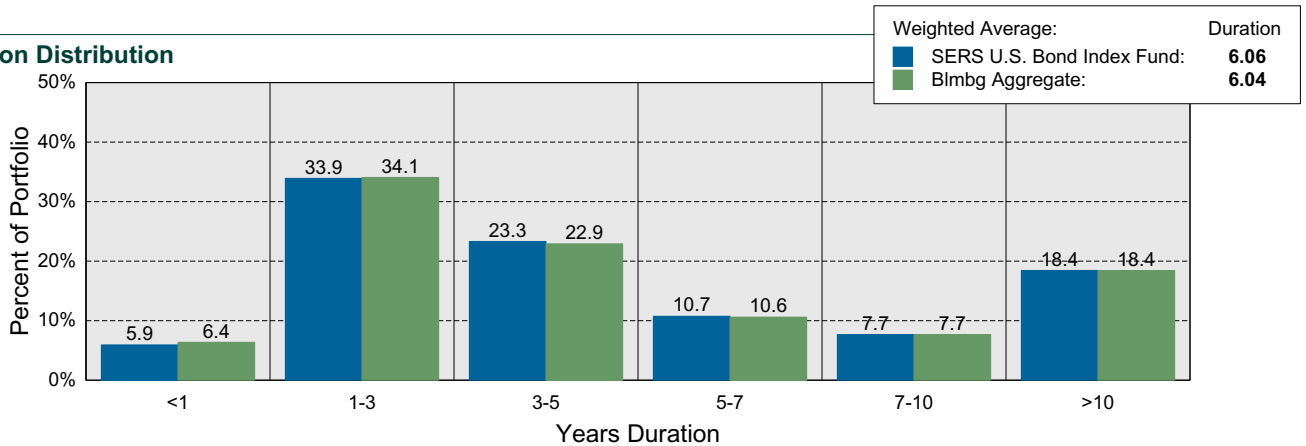
Portfolio Structure Comparison

The charts below compare the structure of the portfolio to that of the index from the three perspectives that have the greatest influence on return. The first chart compares the two portfolios across sectors. The second chart compares the duration distribution. The last chart compares the distribution across quality ratings.

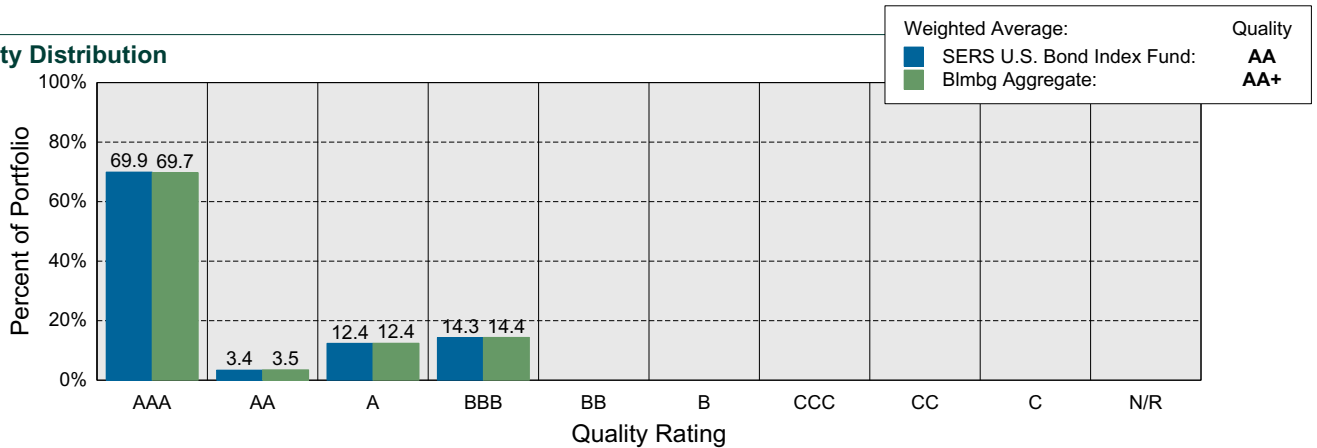
Sector Distribution



Duration Distribution



Quality Distribution



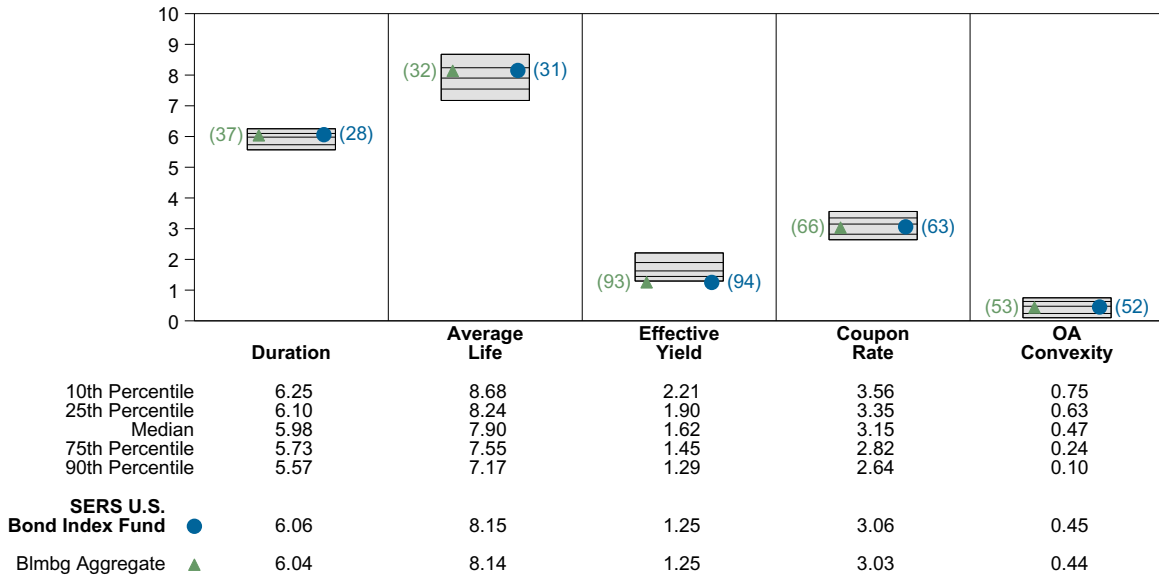
SERS U.S. Bond Index Fund

Bond Characteristics Analysis Summary

Portfolio Characteristics

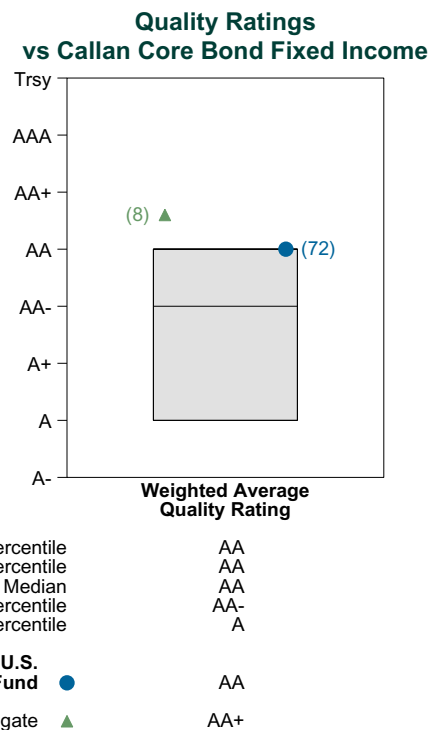
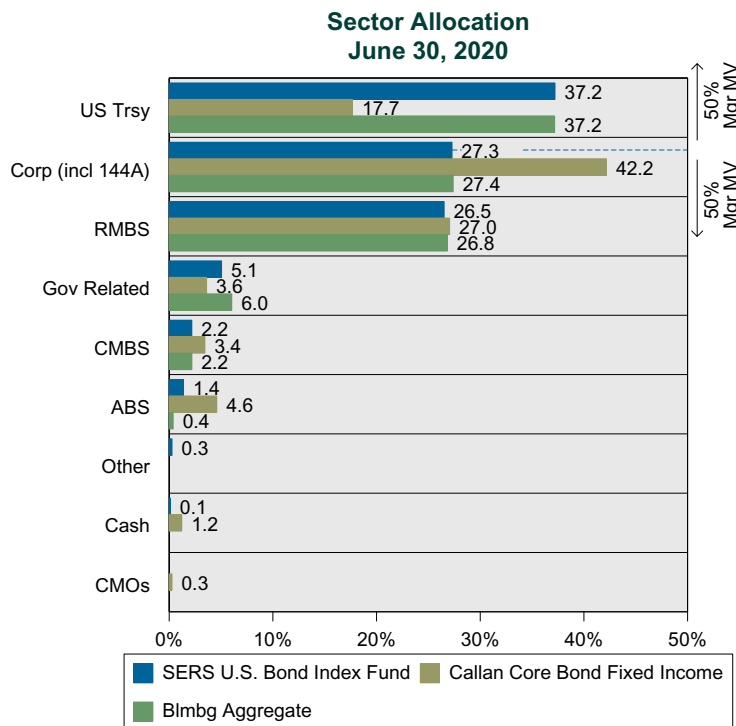
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Fixed Income Portfolio Characteristics Rankings Against Callan Core Bond Fixed Income as of June 30, 2020



Sector Allocation and Quality Ratings

The first graph compares the manager's sector allocation with the average allocation across all the members of the manager's style. The second graph compares the manager's weighted average quality rating with the range of quality ratings for the style.



Equity Market Indicators

The market indicators included in this report are regarded as measures of equity or fixed income performance results. The returns shown reflect both income and capital appreciation.

Standard & Poor's 500 Index is designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries. The index is capitalization-weighted, with each stock weighted by its proportion of the total market value of all 500 issues. Thus, larger companies have a greater effect on the index.

Fixed Income Market Indicators

90-Day U.S. Treasury Bills provide a measure of riskless return. The rate of return is the average interest rate available on the beginning of each month for a Treasury Bill maturing in ninety days.

Bloomberg Barclays Aggregate Bond Index is a combination of the Mortgage Backed Securities Index and the intermediate and long-term components of the Government/Credit Bond Index.

International Equity Market Indicators

Morgan Stanley Capital International (MSCI) EAFE Index is composed of approximately 1000 equity securities representing the stock exchanges of Europe, Australia, New Zealand and the Far East. The index is capitalization-weighted and is expressed in terms of U.S. dollars.

Callan Databases

In order to provide comparative investment results for use in evaluating a fund's performance, Callan gathers rate of return data from investment managers. These data are then grouped by type of assets managed and by the type of investment manager. Except for mutual funds, the results are for tax-exempt fund assets. The databases, excluding mutual funds, represent investment managers who handle over 80% of all tax-exempt fund assets.

Equity Funds

Equity funds concentrate their investments in common stocks and convertible securities. The funds included maintain well-diversified portfolios.

Middle Capitalization - Mutual Funds who invest primarily in mid-range companies with market capitalizations between core equity companies and small capitalization companies. The average market capitalization is approximately \$7 billion. Invests in securities with greater volatility than the broader market as measured by the risk statistics Beta and Standard Deviation. The Middle Capitalization Style Group consists of the Middle Capitalization Growth Equity and the Middle Capitalization Value Equity Style Groups.

Fixed Income Funds

Fixed Income funds concentrate their investments in bonds, preferred stocks, and money market securities. The funds included maintain well-diversified portfolios.

Core Bond - Mutual Funds that construct portfolios to approximate the investment results of the Bloomberg Barclays Capital Government/Credit Bond Index or the Bloomberg Barclays Capital Aggregate Bond Index with a modest amount of variability in duration around the index. The objective is to achieve value added from sector and/or issue selection.

Balanced Funds

Balanced funds diversify their investments among common stocks, bonds, preferred stocks and money market securities. The funds included maintain well-diversified equity and fixed income portfolios.

Mutual Fund Balanced Funds - The Mutual Fund Balanced Fund Database consists of open-end mutual fund balanced products.

Risk/Reward Statistics

The risk statistics used in this report examine performance characteristics of a manager or a portfolio relative to a benchmark (market indicator) which assumes to represent overall movements in the asset class being considered. The main unit of analysis is the excess return, which is the portfolio return minus the return on a risk free asset (3 month T-Bill).

Alpha measures a portfolio's return in excess of the market return adjusted for risk. It is a measure of the manager's contribution to performance with reference to security selection. A positive alpha indicates that a portfolio was positively rewarded for the residual risk which was taken for that level of market exposure.

Beta measures the sensitivity of rates of portfolio returns to movements in the market index. A portfolio's beta measures the expected change in return per 1% change in the return on the market. If a beta of a portfolio is 1.5, a 1 percent increase in the return on the market will result, on average, in a 1.5 percent increase in the return on the portfolio. The converse would also be true.

Downside Risk stems from the desire to differentiate between "good risk" (upside volatility) and "bad risk" (downside volatility). Whereas standard deviation punishes both upside and downside volatility, downside risk measures only the standard deviation of returns below the target. Returns above the target are assigned a deviation of zero. Both the frequency and magnitude of underperformance affect the amount of downside risk.

Excess Return Ratio is a measure of risk adjusted relative return. This ratio captures the amount of active management performance (value added relative to an index) per unit of active management risk (tracking error against the index.) It is calculated by dividing the manager's annualized cumulative excess return relative to the index by the standard deviation of the individual quarterly excess returns. The Excess Return Ratio can be interpreted as the manager's active risk/reward tradeoff for diverging from the index when the index is mandated to be the "riskless" market position.

Information Ratio measures the manager's market risk-adjusted excess return per unit of residual risk relative to a benchmark. It is computed by dividing alpha by the residual risk over a given time period. Assuming all other factors being equal, managers with lower residual risk achieve higher values in the information ratio. Managers with higher information ratios will add value relative to the benchmark more reliably and consistently.

R-Squared indicates the extent to which the variability of the portfolio returns are explained by market action. It can also be thought of as measuring the diversification relative to the appropriate benchmark. An r-squared value of .75 indicates that 75% of the fluctuation in a portfolio return is explained by market action. An r-squared of 1.0 indicates that a portfolio's returns are entirely related to the market and it is not influenced by other factors. An r-squared of zero indicates that no relationship exists between the portfolio's return and the market.

Relative Standard Deviation is a simple measure of a manager's risk (volatility) relative to a benchmark. It is calculated by dividing the manager's standard deviation of returns by the benchmark's standard deviation of returns. A relative standard deviation of 1.20, for example, means the manager has exhibited 20% more risk than the benchmark over that time period. A ratio of .80 would imply 20% less risk. This ratio is especially useful when analyzing the risk of investment grade fixed-income products where actual historical durations are not available. By using this relative risk measure over rolling time periods one can illustrate the "implied" historical duration patterns of the portfolio versus the benchmark.

Residual Portfolio Risk is the unsystematic risk of a fund, the portion of the total risk unique to the fund (manager) itself and not related to the overall market. This reflects the "bets" which the manager places in that particular asset market. These bets may reflect emphasis in particular sectors, maturities (for bonds), or other issue specific factors which the manager considers a good investment opportunity. Diversification of the portfolio will reduce or eliminate the residual risk of that portfolio.

Risk/Reward Statistics

Rising Declining Periods refer to the sub-asset class cycles vis-a-vis the broader asset class. This is determined by evaluating the cumulative relative sub-asset class index performance to that of the broader asset class index. For example, to determine the Growth Style cycle, the S&P 500 Growth Index (sub-asset class) performance is compared to that of the S&P 500 Index (broader asset class).

Sharpe Ratio is a commonly used measure of risk-adjusted return. It is calculated by subtracting the "risk-free" return (usually 3 Month Treasury Bill) from the portfolio return and dividing the resulting "excess return" by the portfolio's risk level (standard deviation). The result is a measure of return gained per unit of risk taken.

Sortino Ratio is a downside risk-adjusted measure of value-added. It measures excess return over a benchmark divided by downside risk. The natural appeal is that it identifies value-added per unit of truly bad risk. The danger of interpretation, however, lies in these two areas: (1) the statistical significance of the denominator, and (2) its reliance on the persistence of skewness in return distributions.

Standard Deviation is a statistical measure of portfolio risk. It reflects the average deviation of the observations from their sample mean. Standard deviation is used as an estimate of risk since it measures how wide the range of returns typically is. The wider the typical range of returns, the higher the standard deviation of returns, and the higher the portfolio risk. If returns are normally distributed (ie. has a bell shaped curve distribution) then approximately 2/3 of the returns would occur within plus or minus one standard deviation from the sample mean.

Total Portfolio Risk is a measure of the volatility of the quarterly excess returns of an asset. Total risk is composed of two measures of risk: market (non-diversifiable or systematic) risk and residual (diversifiable or unsystematic) risk. The purpose of portfolio diversification is to reduce the residual risk of the portfolio.

Tracking Error is a statistical measure of a portfolio's risk relative to an index. It reflects the standard deviation of a portfolio's individual quarterly or monthly returns from the index's returns. Typically, the lower the Tracking Error, the more "index-like" the portfolio.

Treynor Ratio represents the portfolio's average excess return over a specified period divided by the beta relative to its benchmark over that same period. This measure reflects the reward over the risk-free rate relative to the systematic risk assumed.

Note: Alpha, Total Risk, and Residual Risk are annualized.

Research and Educational Programs

The Callan Institute provides research to update clients on the latest industry trends and carefully structured educational programs to enhance the knowledge of industry professionals. Visit www.callan.com/library to see all of our publications, and www.callan.com/blog to view our blog “Perspectives.” For more information contact Barb Gerraty at 415-274-3093 / institute@callan.com.

New Research from Callan’s Experts

[Coping with COVID-19: How Work Is Evolving for Investment Managers](#) | Callan surveyed over 100 investment managers regarding how their firms were responding to the COVID-19 pandemic, focusing on office closures and reopenings, work-from-home approaches, business travel, and meetings. Respondents reflected a wide variety of firms by location, employee size, assets under management, and ownership structure.

[Breaking Bad: Better Call Hedge Funds?](#) | In his latest *Hedge Fund Monitor*, Callan’s Jim McKee discusses four opportunities for hedge fund investors arising from the market dislocations stemming from the COVID-19 pandemic.

[Real Estate Indicators: Too Hot to Touch or Cool Enough to Handle?](#) | Callan’s Real Assets Consulting group identifies seven indicators, based on spreads in real estate and fixed income markets, that, combined with an understanding of prevailing market dynamics, have helped signal when the institutional real estate market is overheated or cooled.

Blog Highlights

[Guidance on Substantial Workforce Cuts and DC Plan Terminations](#) | Employers that reduce their workforce or discontinue defined contribution (DC) plan eligibility for certain employee groups may experience an inadvertent “partial plan termination.” If not properly managed, this event could result in a disqualification of the entire plan.

[‘Social Washing’ and How COVID-19 Has Emphasized the ‘S’ in ESG](#) | While ESG-savvy investors are most likely familiar with “greenwashing,” which refers to the misrepresentation of environmental impact, the term “social washing” has gained new prominence as the investment community evaluates corporations’

responses to the sudden challenges presented by the coronavirus. Social washing refers to statements or policies that make a company appear more socially responsible than it actually is.

[Nonprofits and the Pandemic: What to Do Now](#) | For nonprofits, this environment creates unique challenges, with many organizations not only contending with the health crisis but also the impact of portfolio returns on their organization’s ability to fund grants, provide scholarships, and support programs and operations essential to their constituents. At the same time, these organizations face a potential decline in philanthropic contributions.

Quarterly Periodicals

[Private Equity Trends, 1Q20](#) | A high-level summary of private equity activity in the quarter through all the investment stages

[Active vs. Passive Charts, 1Q20](#) | A comparison of active managers alongside relevant benchmarks over the long term

[Market Pulse Flipbook, 1Q20](#) | A quarterly market reference guide covering trends in the U.S. economy, developments for institutional investors, and the latest data on the capital markets

[Capital Market Review, 1Q20](#) | Analysis and a broad overview of the economy and public and private market activity each quarter across a wide range of asset classes

[Hedge Fund Quarterly, 1Q20](#) | Commentary on developments for hedge funds and multi-asset class (MAC) strategies

[Real Assets Reporter, 1Q20](#) | In this quarter’s edition, we discuss the implications of the COVID-19 pandemic on the prospects for farmland investments. In addition, it includes analysis of the performance of real estate and other real assets in 1Q20.

Events

Miss out on a Callan conference or workshop? Event summaries and speakers' presentations are available on our website: www.callan.com/library/

Please mark your calendar and look forward to upcoming invitations:

Upcoming Webinars

August 20

Credit Dislocation—Opportunities in Private Credit

For more information about events, please contact Barb Gerraty: 415-274-3093 / gerraty@callan.com

Education: By the Numbers

50+

Unique pieces of research the Institute generates each year

525

Attendees (on average) of the Institute's annual National Conference

3,700

Total attendees of the "Callan College" since 1994

Education

Founded in 1994, the "Callan College" offers educational sessions for industry professionals involved in the investment decision-making process.

Introduction to Investments—Virtual

This program familiarizes institutional investor trustees and staff and asset management advisers with basic investment theory, terminology, and practices. It is held over three days with virtual modules of 2.5-3 hours. This course is designed for individuals with less than two years of experience with asset-management oversight and/or support responsibilities. Tuition is \$950 per person and includes instruction and digital materials.

Next Session: October 13-15, 2020

Additional information including registration can be found at: www.callan.com/cc-introduction-virtual/

Introduction to Investments—In Person

This program familiarizes institutional investor trustees and staff and asset management advisers with basic investment theory, terminology, and practices. It lasts one-and-a-half days and is designed for individuals with less than two years of experience with asset-management oversight and/or support responsibilities. Tuition is \$2,350 per person and includes instruction, all materials, breakfast and lunch on each day, and dinner on the first evening with the instructors.

Additional information including dates and registration can be found at: www.callan.com/callan-college-intro-2/



"Research is the foundation of all we do at Callan, and sharing our best thinking with the investment community is our way of helping to foster dialogue to raise the bar across the industry."

Greg Allen, CEO and Chief Research Officer