

September 30, 2022

Pennsylvania SERS 401(a)



**Investment Measurement Service
Quarterly Review**

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Mayhem Continues in the Capital Markets

ECONOMY

2 Mayhem continued to plague the capital markets, with both stocks and bonds falling through the first three quarters of the year. But the underlying U.S. economy remains strong, with an uptick in GDP in 3Q and the job market reaching its pre-pandemic level in August.

Bonds Hit Hard as Rates Rose Sharply

FIXED INCOME

8 The Bloomberg US Aggregate saw its worst nine-month return in its history. The yield curve inverted at quarter-end; the 10-year was at 3.83% and 2-year at 4.22%. Negative returns for global fixed income were driven by broad interest rate increases.

Appeal for Investors in Low-Yield Climate

PRIVATE CREDIT

12 Clients moved away from new allocations to traditional sponsor-backed direct lending due to the increased competition and commoditization within the space. Demand has continued to be healthy for less-competitive areas of private credit with high barriers to entry.

Double-digit Declines for Last 12 Months

INSTITUTIONAL INVESTORS

4 Institutional investors saw double-digit losses over the year ending 9/30/22. Almost every asset class was down, and it was the worst start to a year for a 60/40 portfolio in decades. Despite inflation worries, the drop in stocks and bonds became the top concern of institutional investors.

NPI Shows Gains; REITs Lag Equities

REAL ESTATE/REAL ASSETS

10 The NCREIF Property Index rose 0.6% during 3Q22. The NCREIF Open-End Diversified Core Equity Index rose 0.5%. The FTSE EPRA Nareit Developed Asia Index (USD) fell 9.4%. The FTSE EPRA Nareit Developed Europe Index (USD) plunged 21.7%.

Managers in General Outpace Benchmarks

HEDGE FUNDS/MACs

13 Hedge funds fell but outperformed broader indices. The median member of the Callan Institutional Hedge Fund Peer Group rose 0.6%. The median manager of the Callan Multi-Asset Class (MAC) Style Groups saw lower returns, consistent with their underlying risk exposures.

First Three Quarters The Worst in Decades

EQUITY

6 The S&P 500 Index fell 4.9% in 3Q22, and equities are off to the worst three quarters in decades. All major U.S. indices across styles and market cap ranges were negative except for the Russell 2000 Growth. Global markets waned for three straight quarters as well.

Activity Reflects Pre-Pandemic Levels

PRIVATE EQUITY

11 All private equity activity measures dipped in 3Q22 compared to the previous quarter, except for an increase in IPOs. Steep year-to-date declines are largely in contrast to last year's stimulus-induced hyper-liquidity, with 2022 generally reflecting active pre-pandemic levels.

DC Index Sees Third-Worst Decline Ever

DEFINED CONTRIBUTION

15 The Callan DC Index™ fell 12.2% in 2Q22; the Age 45 Target Date Fund dropped 13.4%. Balances within the DC Index declined by 12.3%. Stable value received 47.7% of net flows, topping target date funds. U.S. large cap (25.1%) had the largest percentage decrease in allocation.

Broad Market Quarterly Returns

U.S. Equity
Russell 3000



Global ex-U.S. Equity
MSCI ACWI ex USA



U.S. Fixed Income
Bloomberg Agg



Global ex-U.S. Fixed Income
Bloomberg Global Agg ex US



Sources: Bloomberg, FTSE Russell, MSCI

Mayhem in the Capital Markets

ECONOMY | Jay Kloepfer

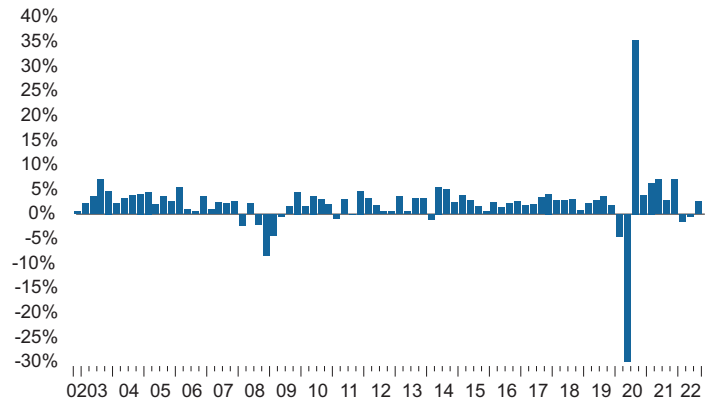
Capital markets abhor uncertainty, and we have seen nothing but uncertainty this year. The Russian invasion of Ukraine threw expectations for an orderly transition from the pandemic era out the window. Kinks in supply chains were expected to be smoothed, energy prices and inflation in general were projected to calm and subside after surging in 2021, and market participants anticipated an orderly transition from zero interest rate policy to a more “normal” yield curve. All these were key components to a consensus view that U.S. and global economies, and their capital markets, would slow gradually toward trend growth and reach the proverbial “Goldilocks” scenario: not too hot, not too cold. Like a soft landing for the Fed, the Goldilocks scenario is aspirational and has never really been achieved.

Instead, inflation is burning out of control. Global energy markets are surging and volatile. Geopolitical uncertainty is moving toward a level some experts liken to the period after World War II, when the United States and the Soviet Union were trying to figure out a new world order. This time, China represents a third axis of power with another agenda. Stock and bond markets around the globe are down together for three quarters in a row through September 2022. The S&P 500 plunged 24% year-to-date, and developed and emerging market equities are down a similar amount, punished by the strong dollar. While painful, such a drawdown in the equity markets is expected periodically. What is not expected is the 14.6% loss in the bond market (Bloomberg Aggregate) at the same time. The nine-month returns for the Aggregate are the worst in its history. There is no place to hide for a diversified portfolio.

The losses in both the bond and stock markets this year are primarily due to the sharp rise in interest rates. The lack of any yield cushion at the start of 2022 makes the rise in rates particularly painful for bonds. Rates have risen this much in the past, but the last time was during the regime change for monetary policy in the early 1980s. The giant capital losses were cushioned by yields as high as 14%. We began this year with the yield on the Aggregate at 1.75%; by Sept. 30, it reached 4.75%. With a duration of over

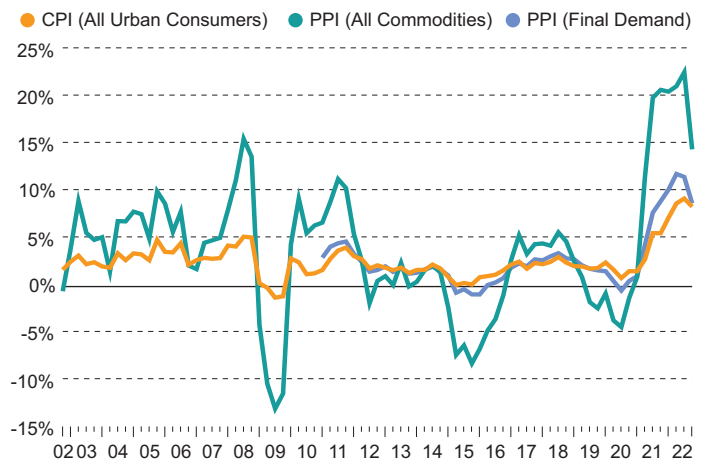
Quarterly Real GDP Growth

(20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

six years for the Aggregate, the capital loss implied by such a rate rise is close to 20%. The rising yield collected offsets some of this capital loss.

The Fed announced plans to raise rates aggressively in 2022, targeting a Fed Funds rate of 3.25% to 3.5% by December, but the market didn't really believe it until the Russian invasion in February. Then investors fully priced in the Fed's plans all at once. During the long period of zero interest rate policy over the past decade, we often mused that the best way to return to normal in the bond market would be to rip the “low-rate bandage” off and

move at once to the new normal. Get the pain over with, absorb the capital loss, and start collecting the higher yield. Be careful what you wish for.

Underneath this mayhem in the capital markets, the U.S. economy has been strong, with a particularly robust job market and healthy consumer spending. The economy added 263,000 jobs in September, down from the torrid pace set earlier this year, but for the quarter nonfarm employment increased by more than 1.1 million jobs. Even more importantly, we finally reached the pre-pandemic level for total employment in August 2022. Personal income growth has recovered from the withdrawal of pandemic support (transfer payments), rising 5.9% in 2Q and 5.5% in 3Q. Disposable income (after tax) rose by similar rates. However, inflation has taken a toll this year; real disposable income is 4% to 5% lower than the same month one year ago starting in May 2022, while real consumption expenditures are 6% to 7% higher.

Traditional measures of economic health are still out of whack as they often were during the pandemic. GDP is the biggest puzzle so far this year. GDP fell 1.6% in 1Q and another 0.6% in 2Q, while at the same time we generated more than 2 million new jobs. The GDP declines were deemed to be anomalies driven by inventory swings and net exports, not underlying economic weakness. Third quarter GDP grew by 2.6%, with strong contributions from exports, business fixed investment (equipment and intellectual property), and a resumption of government spending. However, fourth quarter GDP is now projected to fall. After all the mayhem, GDP growth will likely end up being positive in 2022—but it is projected to be negative in 2023, signaling more challenges ahead and the potential for a recession to extend through 2Q23.

The Long-Term View

Index	3Q22	Periods Ended 9/30/22			
		1 Yr	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	-4.5	-17.6	8.6	11.4	7.5
S&P 500	-4.9	-15.5	9.2	11.7	7.4
Russell 2000	-2.2	-23.5	3.6	8.6	6.7
Global ex-U.S. Equity					
MSCI EAFE	-9.4	-25.1	-0.8	3.7	3.5
MSCI ACWI ex USA	-9.9	-25.2	-0.8	3.0	--
MSCI Emerging Markets	-11.6	-28.1	-1.8	1.0	--
MSCI ACWI ex USA Small Cap	-8.4	-28.9	-0.6	4.4	5.6
Fixed Income					
Bloomberg Agg	-4.8	-14.6	-0.3	0.9	4.0
90-Day T-Bill	0.5	0.6	1.1	0.7	1.9
Bloomberg Long G/C	-9.0	-27.4	-1.2	1.4	5.5
Bloomberg GI Agg ex US	-8.8	-24.8	-4.0	-2.4	2.4
Real Estate					
NCREIF Property	0.6	16.1	8.6	9.5	9.4
FTSE Nareit Equity	-9.9	-16.4	2.9	6.3	7.7
Alternatives					
CS Hedge Fund	0.4	1.1	4.5	4.3	5.9
Cambridge PE*	-5.6	3.3	18.2	15.9	14.7
Bloomberg Commodity	-4.1	11.8	7.0	-2.1	1.5
Gold Spot Price	-7.5	-4.8	5.4	-0.6	6.6
Inflation – CPI-U	0.2	8.2	3.8	2.5	2.5

*Data for most recent period lags. Data as of 6/30/22.

Sources: Bloomberg, Bureau of Economic Analysis, Credit Suisse, FTSE Russell, MSCI, NCREIF, Refinitiv/Cambridge, S&P Dow Jones Indices

Recent Quarterly Economic Indicators

	3Q22	2Q22	1Q22	4Q21	3Q21	2Q21	1Q21	4Q20
Employment Cost–Total Compensation Growth	5.0%	5.1%	4.5%	4.0%	3.7%	2.9%	2.6%	2.5%
Nonfarm Business–Productivity Growth	0.3%	-4.1%	-5.9%	4.4%	-2.4%	2.7%	3.0%	-3.9%
GDP Growth	2.6%	-0.9%	-1.6%	6.9%	2.3%	6.7%	6.3%	4.5%
Manufacturing Capacity Utilization	79.7%	79.5%	79.1%	78.6%	77.5%	76.8%	75.7%	75.0%
Consumer Sentiment Index (1966=100)	56.1	57.8	63.1	69.9	74.8	85.6	80.2	79.8

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve, IHS Economics, Reuters/University of Michigan

Double-digit Declines for Last 12 Months

INSTITUTIONAL INVESTORS

Rough year but most investors topped benchmarks

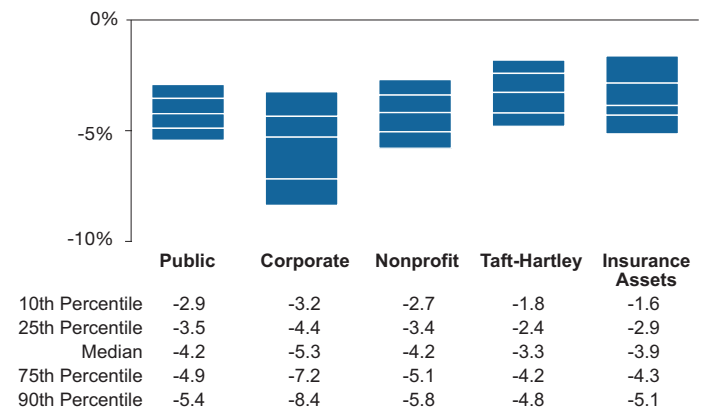
- Institutional investors saw double-digit losses over the year ending 9/30/22.
- Corporate defined benefit (DB) plans had the lowest returns, Taft-Hartley plans the best.
- All investor types aside from corporate DB plans outperformed a 60% S&P 500/40% Bloomberg Aggregate benchmark.
- And all types but corporate DB plans also outperformed equity and bond benchmarks.
- Over longer time periods, all investor types generally underperformed the stocks/bonds benchmark.

- Rebalancing is a natural outcome of a market downturn, except when everything goes down.
- Alternatives are now over target allocations.
 - *This stems from the denominator effect: the plunge in stocks and bonds is immediate but there is a delay in private market loss reporting, meaning the overweight is somewhat artificial.*
 - *This is not the time to hold back on re-upping private market commitments—the “overweight” will self-correct as appraisals reflect public market performance.*

Major concern shifts

- Declines in both equities and fixed income replaced inflation as the greatest concern for institutional investors in 3Q22.
- Almost every asset class was down, and it was the worst start to a year for a 60/40 portfolio in decades.
- But ... inflation is still burning out of control. One ray of hope: month-to-month inflation flattened to zero starting in June.
- Institutional investors are starting to ask questions about what to do now:
 - How does a yield of 4% change the demand for yield substitutes: investment grade credit, bank loans, high yield, private credit? Real estate and infrastructure?

Quarterly Returns, Callan Database Groups (9/30/22)



Source: Callan

Callan Database Median and Index Returns* for Periods Ended 9/30/22

Database Group	Quarter	1 Year	3 Years	5 Years	10 Years	20 Years
Public Database	-4.2	-13.4	4.1	4.8	6.8	7.3
Corporate Database	-5.3	-17.8	0.8	3.0	5.6	6.9
Nonprofit Database	-4.2	-14.5	3.6	4.3	6.3	7.4
Taft-Hartley Database	-3.3	-11.1	4.8	5.4	7.2	7.1
Insurance Assets Database	-3.9	-11.8	0.7	2.3	3.8	4.8
All Institutional Investors	-4.3	-14.3	3.4	4.3	6.5	7.2
Large (>\$1 billion)	-4.2	-13.0	4.2	5.0	6.8	7.5
Medium (\$100mm - \$1bn)	-4.3	-14.7	3.4	4.4	6.6	7.1
Small (<\$100 million)	-4.3	-14.5	3.0	4.0	6.2	6.8
60% S&P 500/40% Bloomberg Agg	-4.8	-14.9	3.9	5.7	7.5	7.4

*Returns less than one year are not annualized.

Source: Callan. Callan's database includes the following groups: public defined benefit (DB) plans, corporate DB plans, nonprofits, insurance assets, and Taft-Hartley plans. Approximately 10% to 15% of the database constituents are Callan's clients. All database group returns presented gross of fees. Past performance is no guarantee of future results. Reference to or inclusion in this report of any product, service, or entity should not be construed as a recommendation, approval, affiliation, or endorsement of such product, service, or entity by Callan.

Key issues for corporate DB plans

- Corporate plans are rethinking their approach to liability-driven investing (LDI). LDI portfolios were hammered by long duration exposure; the typical LDI plan treaded water in funded status.
- According to a survey of client activity, there was a big drop in concern about funded status in recent quarters; plans’ interest in alternative asset classes dropped significantly.

Key issues for public DB plans

- Downward pressure on actuarial discount rates continued into 2022, with the typical rate at or below 7%. This trend may abate now as capital markets expectations rise following the market decline.
- Inflation impacts future liabilities through pressure on salary, and hits plans now with COLAs.
- According to our survey, return enhancement remains the top issue of concern; interest in adding to alternatives stayed steady.
- Clients plan to make few changes with allocations to most traditional asset classes.

- The survey started tracking private credit in 3Q20, and since then interest in increasing allocations to the asset class has held steady, with no clients saying they plan to cut their allocations.

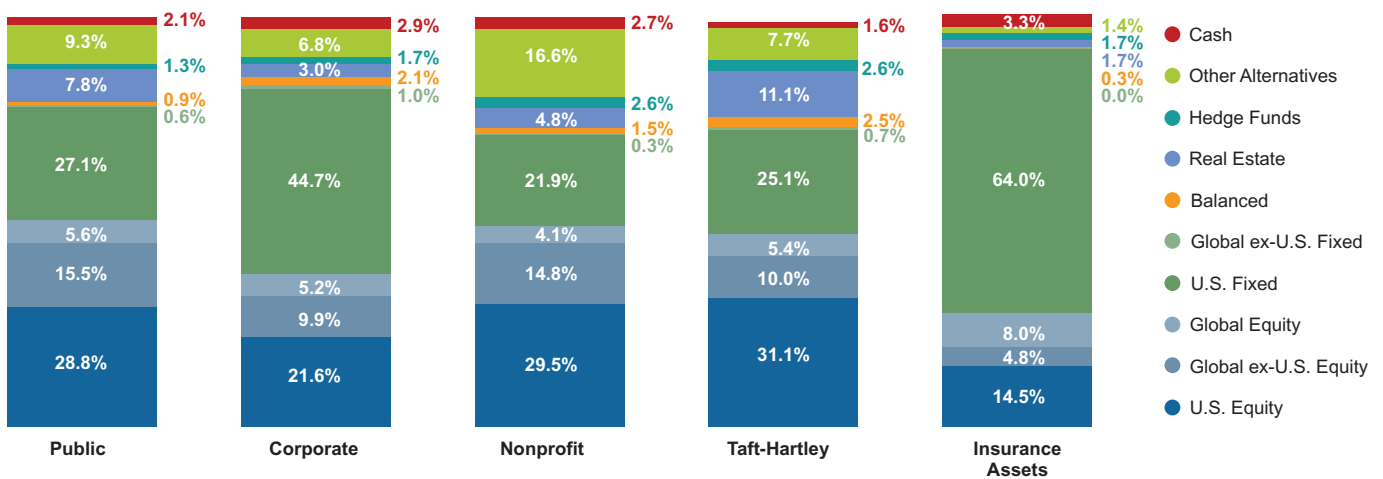
Key issues for defined contribution (DC) plans

- Use of passive target date funds hit an all-time high.
- Fees remained, as they have for years, the top issue, but some plans are focusing on participant communication amid the market turmoil.

Nonprofit priorities

- Nonprofits have expanded the depth and breadth of their private markets investments after a decade of high valuations in public markets growth assets. The inflation surge heightens concern about the erosion of the real values of their assets and distributions.
- According to our survey, there was a noticeable drop in their concerns about liquidity; interest in increasing private real estate allocations hit another high.
- There was also a significant decline in plans to increase private credit allocations between 1Q22 and 3Q22.

Average Asset Allocation, Callan Database Groups



Note: charts may not sum to 100% due to rounding. Other alternatives include but is not limited to: diversified multi-asset, private credit, private equity, and real assets. Source: Callan

Equity

U.S. Equities

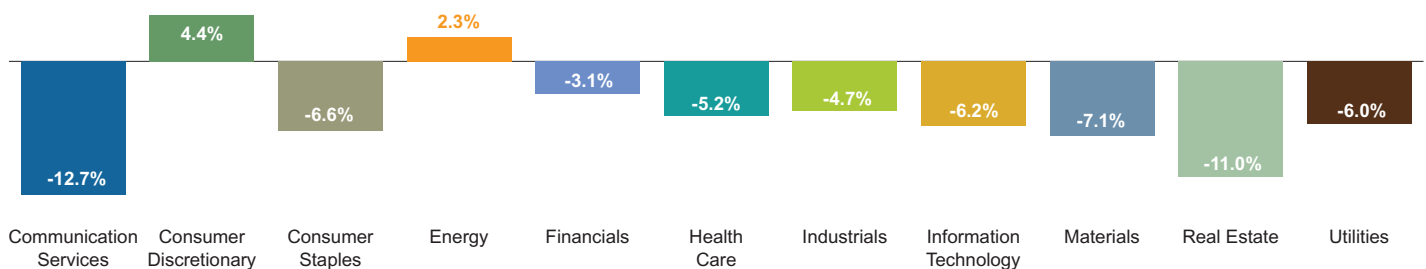
Worst three-quarter start to year in decades

- The S&P 500 Index fell 4.9% in 3Q22; all major U.S. indices across styles and market cap ranges were negative except for the Russell 2000 Growth Index, which gained 0.24%.
- During the quarter, all sectors posted negative returns except for Energy (+2%) and Consumer Discretionary (+4%). The return for Consumer Discretionary was aided by an exceptional July when the sector was up more than 18%. Returns for Real Estate and Communication Services were the worst, down 11% and 13%, respectively.
- Small cap (Russell 2000) outpaced large cap (Russell 1000) and growth outperformed value during the quarter, a reversal from previous quarters this year.
- Continued concerns around inflation and a potential recession, along with geopolitical headlines, contributed to a volatile and risk-averse environment.

More market difficulties; no place to hide

- The pullback of the U.S. equity markets was reminiscent of other periods marked by bearish sentiment, such as 2008 (Global Financial Crisis) and 2020 (start of pandemic).
- High inflation and interest rates continued to pressure the markets. While some inflationary data (particularly around energy) seemed to soften, other data points around food, shelter, and services remained elevated.
- U.S. equity did not provide a safe haven for investors. Like most other asset classes, it has not generated YTD gains and continues to be overshadowed by the outsized outperformance of commodities.

Quarterly Performance of Industry Sectors (9/30/22)



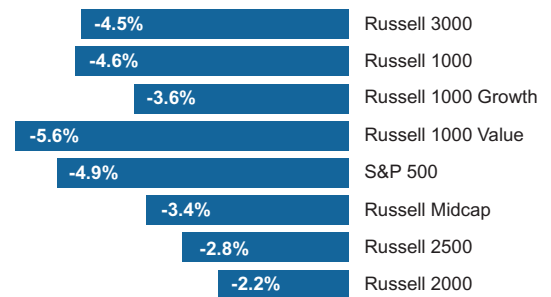
Source: S&P Dow Jones Indices

'Relief rally' but not for active managers

- The market experienced a "relief rally" in late June to August based on optimism that inflation had peaked, lessening the urgency for continued rate hikes.
- The rally was marked by a rebound of cyclical growth companies, and unprofitable companies outperformed profitable companies by wide margins across caps. Active managers underperformed significantly during this period.

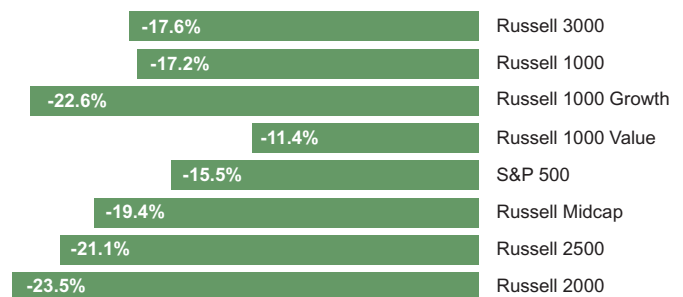
U.S. Equity: Quarterly Returns

(9/30/22)



U.S. Equity: One-Year Returns

(9/30/22)



Sources: FTSE Russell and S&P Dow Jones Indices

Global Equity

Market turmoil around the world

- Global and global ex-U.S. equity markets waned for three straight quarters due to inflation, rising rates, and fears of global recession.

Geopolitical and macro factors plague market

- Political instability in Italy and the U.K. as a result of prime minister departures weighed on the market.
- U.K. equities lost confidence as its newly elected prime minister Liz Truss announced her economic policy.
- China's COVID-19 lockdowns and growing concerns around the property sector sapped sentiment and economic activity.

Growth and value switch places globally

- Growth outpaced value in developed markets but lagged value in emerging markets.
- Rate-sensitive sectors in developed markets (e.g., Communication Services and Real Estate) were challenged given the tightening cycle by global central banks.
- The profitability of Chinese internet companies has compressed due to lockdowns and regulation, and a cyclical downturn in electronics weakened Taiwan and Korean semiconductors.

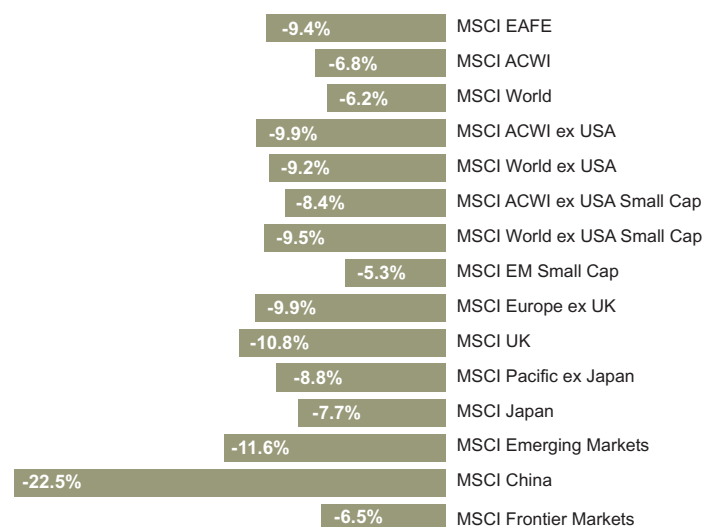
U.S. dollar vs. other currencies

- Growth and the interest rate differential as well as its safe-haven status fueled the U.S. dollar to its highest level in decades.
- The dollar gained vs. the euro and the yen by about 6%.

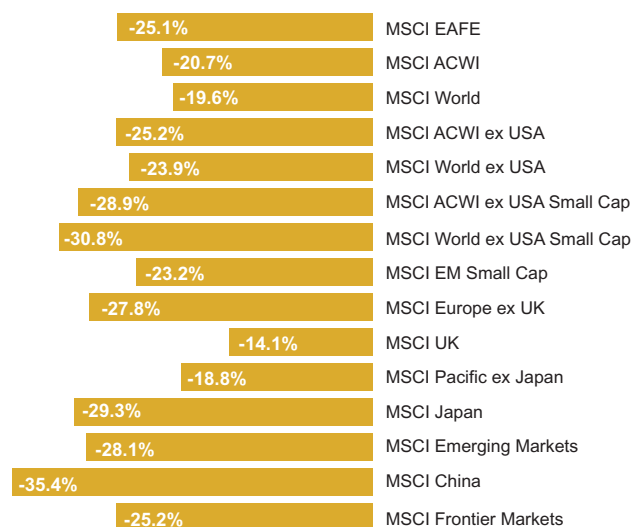
The case for global ex-U.S. equities

- Diversification: Global ex-U.S. equities remain a good diversifier to other public markets investments.
- Valuations/Yield: Valuation of U.S. stocks took off after the Global Financial Crisis (GFC); many of the tailwinds have dissipated—rates, inflation, and liquidity.
- Developed ex-U.S. stocks continue to be undervalued and currently provide a 1.6% yield premium to U.S. stocks (MSCI EAFE 3.5% vs. S&P 500 1.9%).

Global ex-U.S. Equity: Quarterly Returns (U.S. Dollar, 9/30/22)



Global ex-U.S. Equity: One-Year Returns (U.S. Dollar, 9/30/22)



Source: MSCI

- Economic exposure: Emerging market and developing economies' contribution to global GDP has increased while advanced economies' share has steadily decreased since the GFC.
- U.S. companies do not provide significant exposure to non-U.S. economies

Fixed Income

U.S. Fixed Income

Bonds hit hard as rates rose sharply (again)

- Bloomberg US Aggregate saw its worst nine-month return in its history—as did trailing 1-, 3-, 5-, and 10-year returns!
- 10-year annualized return for Aggregate is a mere 0.9%.
- Yield curve inverted at quarter-end; 10-year at 3.83% and 2-year at 4.22%
- 10-year at 4% briefly in late September; first time since 2009
- TIPS underperformed nominal Treasuries, and 10-year breakeven spreads fell to 2.11% from 2.33% as of 6/30/22.
- Fed raised rates by 150 bps during the quarter, bringing target to 3.0% to 3.25%.
- Median expectation from Fed is 4.4% at year-end and 4.6% at the end of 2023.
- Longer-term expectations are much lower.
- Volatility climbed to levels not seen since early 2020.

Spread sectors underperformed

- Mortgages had worst month ever vs. like-duration U.S. Treasuries in September; underperformed by 169 bps for 3Q.
- Corporates also underperformed: 33 bps of excess return.
- Bloomberg Corporate Bond Index yield-to-worst 5.7%
- High yield fared better and loans posted a positive return.
- Bloomberg High Yield Corp yield-to-worst 9.7%

Municipal Bonds

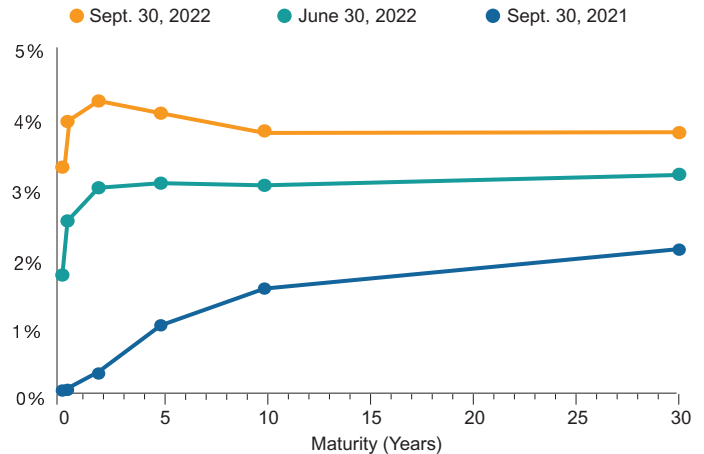
Municipal bond returns hurt by rising rates

- Lower quality continued to underperform.
- BBB: -4.1%; AAA: -3.5% (YTD BBB: -14.9%; AAA: -11.7%)

Valuations relative to U.S. Treasuries at fair value

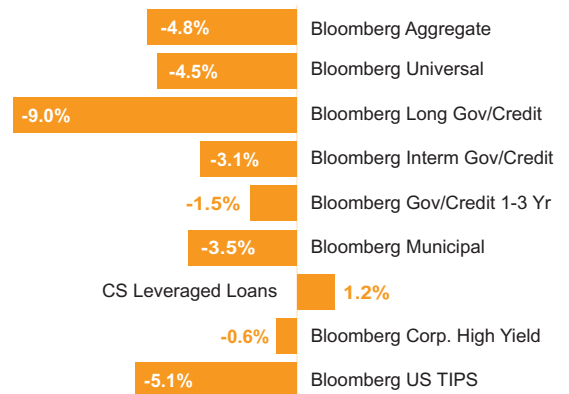
- 10-year AAA Muni/10-year U.S. Treasury yield ratio roughly 87%; in line with 10-year average
- Municipal Bond Index after-tax yield = 6.8% (source: Morgan Stanley)

U.S. Treasury Yield Curves



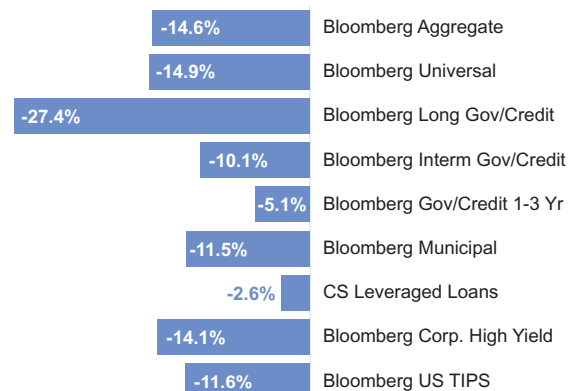
Source: Bloomberg

U.S. Fixed Income: Quarterly Returns (9/30/22)



Sources: Bloomberg and Credit Suisse

U.S. Fixed Income: One-Year Returns (9/30/22)



Sources: Bloomberg and Credit Suisse

FIXED INCOME (Continued)

Supply/demand

- Outflows of \$91.5 billion YTD—highest cycle outflow since data series began in 1992
- YTD issuance down 14% vs. last year

Credit quality remains stable to improving

- State revenues up more than 18% vs. 2021
- Number of defaults lower than 2021 and concentrated in senior living and industrial revenue bonds

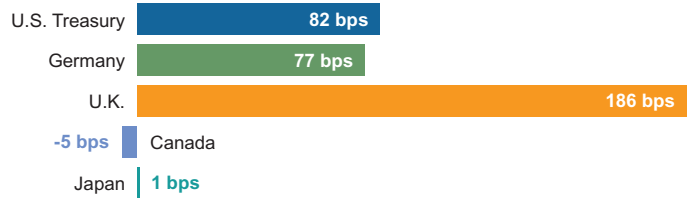
Global Fixed Income

Negative returns driven by broad interest rate increases

- U.S. dollar continued to appreciate vs. yen, euro, and pound
- Bank of Japan intervened to support currency for first time since 1998.
- Pound hit record low vs. U.S. dollar.
- Double-digit negative returns were widespread across developed markets.
- U.K. government bonds were hard-hit on U.K.'s “mini-budget” fiasco.
- ICE BofA U.K. Gilts Index -20.6% in 3Q
- Emerging market debt returns also sharply negative
- Most countries in the USD-denominated JPM EMBI Global Diversified Index posted negative returns, hurt by rising rates in the U.S.
- JPM GBI-EM Global Diversified also fell due largely to EM currency depreciation vs. the U.S. dollar.

Change in 10-Year Global Government Bond Yields

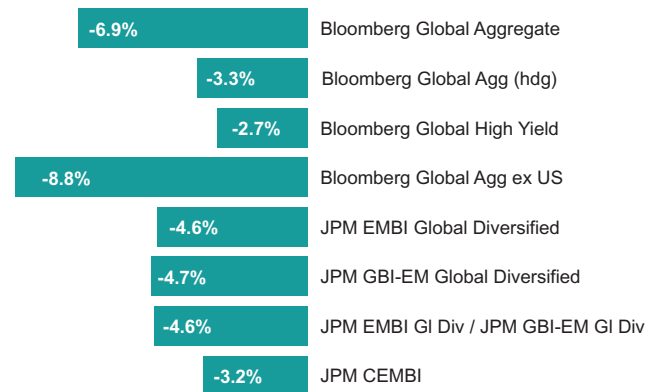
2Q22 to 3Q22



Source: Bloomberg

Global Fixed Income: Quarterly Returns

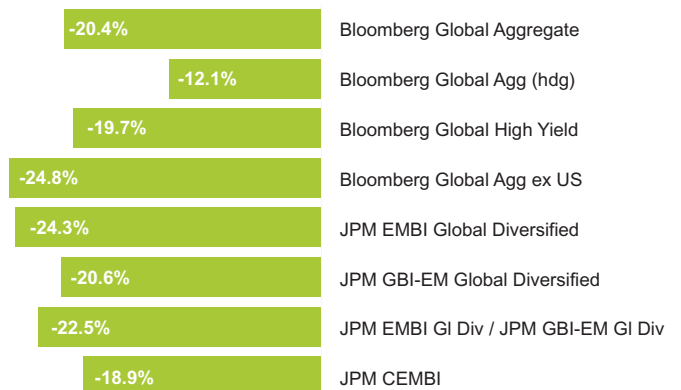
(9/30/22)



Sources: Bloomberg and JPMorgan Chase

Global Fixed Income: One-Year Returns

(9/30/22)



Sources: Bloomberg and JPMorgan Chase

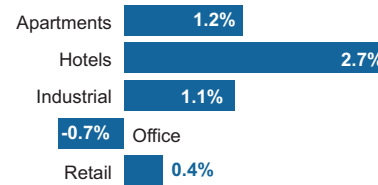
NPI Shows Gains but REITs Lag Equity Indices

REAL ESTATE/REAL ASSETS | Munir Iman

- The NCREIF Property Index, an unlevered measure of U.S. institutional real estate assets, rose 0.6% during 3Q22. The income return was 0.9%; the appreciation return was -0.4%.
- Hotels, which represent a small portion of the index, led property sector performance with a gain of 2.7%. Office finished last with a loss of 0.7%.
- Regionally, the South led with a 1.1% gain, while the Midwest was the worst performer but still rose 0.2%.
- The NCREIF Open-End Diversified Core Equity Index, representing equity ownership positions in U.S. core real estate with leverage, rose 0.3% during 3Q, with an income return of 0.6% and an appreciation return of -0.3%.
- U.S. REITs underperformed the S&P 500 (-4.9%) but exhibited strong performance relative to European REITs. Real estate securities underperformed on the cloudy economic outlook as well as a sizeable upward move in U.S. government bond yields.
- While all property sectors traded lower during the quarter, the sectors that were most resilient included self-storage and hotels amid strong fundamentals and pricing power. Malls also outperformed after being a meaningful laggard year to date.
- The poorest-performing sectors included data centers, due to fears around power costs and higher cost of capital; office,

Sector Quarterly Returns by Property Type

(9/30/22)



Source: NCREIF

- due to sluggish return-to-office momentum; and health care, due to labor cost pressures in senior housing.
- The FTSE EPRA Nareit Developed Asia Index (USD) fell 9.4% during the quarter.
- Australian REITs (-11.5%) were the weakest performers in the region, driven by concerns over slowing demand in office and cap rate expansion in industrial stocks.
- The FTSE EPRA Nareit Developed Europe Index (USD) fell 21.7% during the quarter, led by the United Kingdom (-25.9%), which lagged on the new government's approach to a debt-financed fiscal expansion that resulted in a sharp decline in the pound and government bonds.
- Continental Europe (-19.2%) performed better on a relative basis, but was still weighed down by currency headwinds, accelerating inflation, rate hike expectations, soaring energy prices, and continued conflict between Russia and Ukraine.

Callan Database Median and Index Returns* for Periods Ended 9/30/22

Private Real Assets	Quarter	Year to Date	1 Year	3 Years	5 Years	10 Years	15 Years
Real Estate ODCE Style	3.1	14.8	23.3	12.4	9.9	10.4	6.0
NFI-ODCE (value-weighted, net)	0.3	12.4	21.0	11.4	9.3	9.9	5.8
NCREIF Property	0.6	9.4	16.1	9.9	8.6	9.5	7.0
NCREIF Farmland	2.0	7.4	11.5	6.9	6.6	9.6	10.6
NCREIF Timberland	2.4	7.6	12.5	5.8	4.7	5.9	5.0
Public Real Estate							
Global Real Estate Style	-11.4	-29.9	-22.0	-3.7	2.0	5.1	2.8
FTSE EPRA Nareit Developed	-11.6	-29.9	-22.8	-6.5	-0.9	2.9	0.9
Global ex-U.S. Real Estate Style	-13.8	-32.0	-30.8	-8.6	-2.3	3.7	0.7
FTSE EPRA Nareit Dev ex US	-13.8	-31.4	-30.0	-10.1	-3.7	0.7	-1.2
U.S. REIT Style	-10.4	-28.3	-16.6	-0.4	4.5	7.1	5.8
FTSE EPRA Nareit Equity REITs	-9.9	-28.1	-16.4	-2.0	2.9	6.3	4.9

*Returns less than one year are not annualized.

Sources: Callan, FTSE Russell, NCREIF

Persistence Amid Volatility

PRIVATE EQUITY | Gary Robertson

Private equity activity measures in 3Q22 fell from 2Q, although totals reflect reasonable pre-pandemic levels. The IPO market for both venture capital and buyouts increased, but dollar volumes remained miniscule.

Fundraising ► Based on preliminary data, private equity partnerships holding final closes in 3Q totaled \$226 billion, with 484 new partnerships formed (unless otherwise noted, all data are from PitchBook). The dollar volume fell 6% from 2Q22, and the number of funds holding final closes declined 9%. So far, capital raised is running only 2% behind YTD 2021, but the number of funds trails by 31%.

Buyouts ► New buyout transactions and dollar volume fell moderately. Funds closed 2,881 company investments with \$152 billion of disclosed deal value, a 10% decrease in count and a 7% drop in dollar value from 2Q22.

VC Investments ► New financing rounds in venture capital companies totaled 9,985, with \$97 billion of announced value. The number of investments was down 17% from the prior quarter, and the announced value plunged 32%.

Exits ► There were 594 private M&A exits of private equity-backed companies (excluding venture capital), with disclosed values totaling \$128 billion. Exits fell 3% from the prior quarter

and announced dollar volume dropped 10%. There were 62 private equity-backed IPOs in 3Q raising \$11 billion, up from 46 totaling \$7 billion in 2Q.

Venture-backed M&A exits totaled 520 transactions with disclosed value of \$24 billion. The number of sales declined 26% but announced dollar volume fell only 4%. There were 104 VC-backed IPOs with a combined float of \$15 billion.

Returns ► With the strong 2Q retreat in public equity markets, private equity outperformance has widened given private equity's more gradual quarterly mark-to-market valuation methodology. While GPs have put forward persistently high valuations relative to public markets, continued declines are expected.

Funds Closed 1/1/22 to 9/30/22

Strategy	No. of Funds	Amt (\$mm)	Share
Venture Capital	1,030	222,528	32%
Growth Equity	106	81,859	12%
Buyouts	350	297,832	43%
Mezzanine Debt	13	24,423	3%
Distressed/Special Credit	29	36,121	5%
Energy	7	2,050	0%
Secondary and Other	81	29,338	4%
Fund-of-funds	20	5,807	1%
Totals	1,636	699,958	100%

Source: PitchBook (Figures may not total due to rounding.)

Private Equity Performance (%) (Pooled Horizon IRRs through 6/30/22*)

Strategy	Quarter	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years	25 Years
All Venture	-8.5	0.8	29.2	25.2	19.5	14.0	12.1	22.6
Growth Equity	-7.6	-3.1	21.4	19.7	16.1	13.1	14.1	14.9
All Buyouts	-4.5	5.4	19.7	17.6	15.8	10.8	14.5	13.3
Mezzanine	-0.5	9.3	12.1	11.9	11.6	10.3	11.0	10.1
Credit Opportunities	-1.7	5.4	7.9	7.4	8.8	8.6	9.8	9.6
Control Distressed	-1.1	20.5	20.0	14.5	13.4	10.7	12.0	12.0
All Private Equity	-5.7	3.6	21.2	18.6	15.9	11.5	13.5	14.1
S&P 500	-16.1	-10.6	10.6	11.3	13.0	8.5	9.1	8.0
Russell 3000	-16.7	-13.9	9.8	10.6	12.6	8.4	9.1	8.1

Note: Private equity returns are net of fees. Sources: Refinitiv/Cambridge and S&P Dow Jones Indices

*Most recent data available at time of publication

Note: Transaction count and dollar volume figures across all private equity measures are preliminary figures and are subject to update in subsequent versions of the *Capital Markets Review* and other Callan publications.

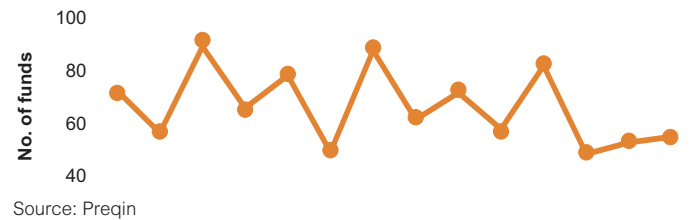
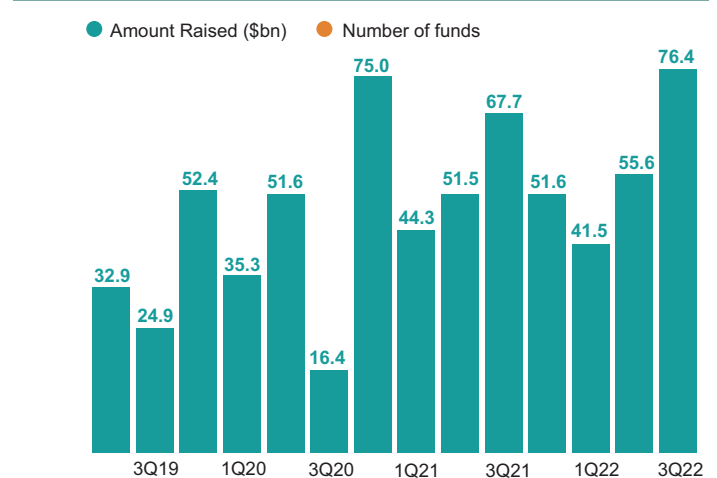
Appealing to Investors in Low-Yield Climate

PRIVATE CREDIT | Catherine Beard

Illiquidity premium close to zero

- There is continued strong private credit demand in a rising rate environment where the returns of floating-rate loans are bolstered.
- During 3Q22, clients moved away from new allocations to traditional sponsor-backed direct lending due to the increased competition and commoditization within the space.
- Demand has continued to be robust for less-competitive areas of private credit with high barriers to entry and attractive risk/reward opportunities.
 - Includes opportunistic lending, specialty finance, and industry or other niche-focused lending strategies such as venture debt and health care lending
- Limited partners (LPs) are seeking alternative structures designed to streamline the investment process while improving underlying liquidity. A number of general partners are launching evergreen structures as a response to LP interest.
- Private credit fundraising was robust leading into the COVID dislocation with a particular focus on direct lending, asset-based lending, and distressed strategies.
- Fundraising activity increased year-over-year, with \$68 billion in capital raised in 3Q21 vs. \$76 billion in 3Q22.
- The average fund size year-over-year increased from \$1.4 billion in 3Q21 to \$1.6 billion in 3Q22 as established managers grow fund sizes in response to strong LP demand.
- For mature private credit programs, demand is increasing for diversifying strategies like specialty finance and royalties' strategies to capture opportunities outside of traditional sponsor-backed direct lending.

Private Credit Fundraising (\$bn)



Source: Preqin

Private Credit Performance (%) (Pooled Horizon IRRs through 6/30/22*)

Strategy	Quarter	1 Year	3 Years	5 Years	8 Years	10 Years	15 Years	20 Years
Senior Debt	-2.2	0.0	5.3	6.3	6.3	6.5	6.8	6.7
Mezzanine	-0.5	9.3	12.1	11.9	11.1	11.6	10.3	11.0
Credit Opportunities	-1.7	5.4	7.9	7.4	6.4	8.8	8.6	9.8
Total Private Credit	-1.6	5.0	8.3	8.2	7.4	9.1	8.8	9.7

Source: Refinitiv/Cambridge

*Most recent data available at time of publication

Managers See Declines but Outpace Benchmarks

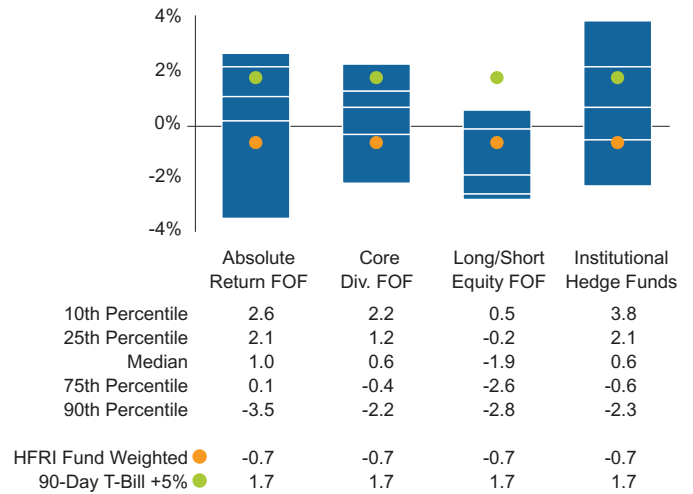
HEDGE FUNDS/MACs | Joe McGuane

Global markets were volatile throughout 3Q22, as persistent inflation, slowing economic growth, and interest rate hikes by central banks caused most asset classes to fall. The S&P 500 dropped 4.9% as U.S. equities ended 3Q back in bear market territory, reversing a bounce upward that began in the final weeks of 2Q. Within technology, the Nasdaq ended the quarter down 4.0%, as the communication and media sectors fell meaningfully for the quarter, slightly offset by mega-cap stocks like Apple, Amazon, and Tesla. Credit markets remained choppy for the quarter as high yield bond prices whipsawed.

Hedge funds again finished the quarter lower but outperformed broader market indices, as equity hedge strategies that focused on growth spaces like tech, media, and telecom continued to be a drag on performance. Some of those declines were offset by managers that focused on the energy sector.

Hedge Fund Style Group Returns

(9/30/22)



Sources: Callan, Credit Suisse, Federal Reserve

Callan Peer Group Median and Index Returns* for Periods Ended 9/30/22

Hedge Fund Universe	Quarter	Year to Date	1 Year	3 Years	5 Years	10 Years
Callan Institutional Hedge Fund Peer Group	0.6	3.2	4.0	5.4	6.0	6.2
Callan Fund-of-Funds Peer Group	0.5	-3.4	-3.5	4.7	3.8	4.3
Callan Absolute Return FOF Style	1.0	3.0	3.0	5.9	4.3	4.6
Callan Core Diversified FOF Style	0.6	-4.3	-4.2	4.7	3.7	4.1
Callan Long/Short Equity FOF Style	-1.9	-13.5	-15.5	2.7	2.9	4.3
HFRI Fund-Weighted Index	-0.7	-6.3	-5.9	6.1	4.5	4.6
HFRI Fixed Convertible Arbitrage	0.9	-4.1	-2.6	6.0	4.8	5.0
HFRI Distressed/Restructuring	-1.4	-5.0	-4.3	7.1	4.8	5.0
HFRI Emerging Markets	-5.5	-16.9	-17.3	1.8	0.7	2.9
HFRI Equity Market Neutral	0.7	0.4	1.0	2.5	2.1	3.0
HFRI Event-Driven	-0.4	-7.7	-6.8	5.2	4.0	4.9
HFRI Relative Value	0.0	-2.1	-1.9	3.5	3.3	4.1
HFRI Macro	1.8	10.5	10.1	7.8	5.6	3.1
HFRI Equity Hedge	-2.3	-13.8	-13.2	6.2	4.4	5.3
HFRI Multi-Strategy	-1.7	-10.8	-11.9	4.2	2.0	3.0
HFRI Merger Arbitrage	2.3	0.3	1.9	6.1	5.2	4.5
90-Day T-Bill + 5%	1.7	4.3	5.6	5.6	6.1	5.7

*Net of fees. Sources: Callan, Credit Suisse, Hedge Fund Research

Serving as a proxy for large, broadly diversified hedge funds with low-beta exposure to equity markets, the median member of the Callan Institutional Hedge Fund Peer Group rose 0.6%. Within this style group of 50 peers, the average rates manager gained 1.9%, driven by the continued volatility in interest rates. Meanwhile, hedged credit managers were slightly higher at 0.6%, as managers were actively trading around interest rate volatility. The average equity hedge manager gained 1.9%, as this group of managers was able to profit off dispersion in equity indices.

Within the HFRI indices, the best-performing strategy last quarter continued to be macro (+1.8%), aided by its exposure to commodities, currencies, and rates trading. Equity hedge had its third consecutive quarter of negative performance (-2.3%), as managers with a focus on growth sectors continued to be the main drag on performance.

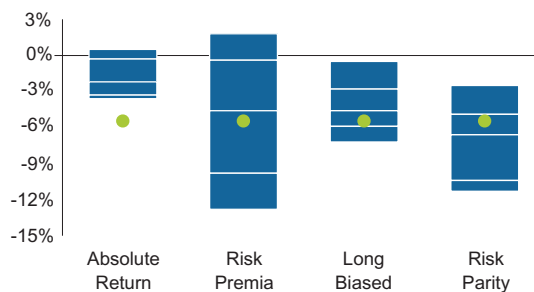
Across the Callan Hedge FOF Database, the median Absolute Return FOF gained 1.0%, the median Callan Long-Short

Equity FOF fell 1.9%, and the median Callan Core Diversified FOF rose 0.6%.

The Bloomberg GSAM Risk Premia Index increased 3.0% based upon a 6% volatility target. Within the underlying styles of the index's derivative-based risk premia, Bond Futures Value (+5.8%) and FX Trend (+4.7%) profited from the volatility in interest rates, along with commodity and currency exposures. The weakest risk premia strategy was FX G10 Value (-1.6%).

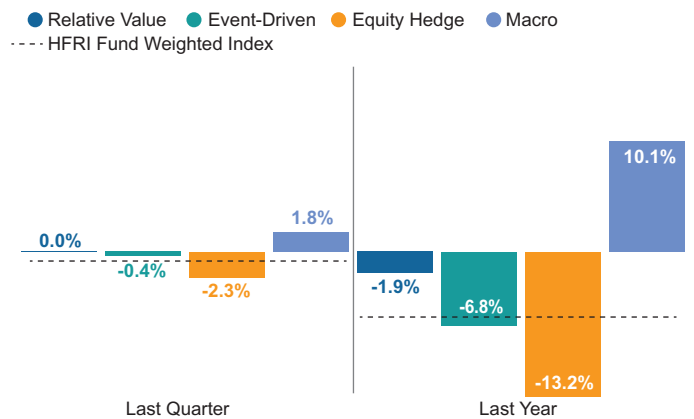
Within Callan's database of liquid alternative solutions, the median manager in the Callan Multi-Asset Class (MAC) Style Groups generated lower returns for the quarter, gross of fees, consistent with their underlying risk exposures. For example, the median Callan Long Biased MAC manager fell 4.6%, as exposure to equity and fixed income continued to be a drag on performance. The Callan Risk Parity MAC Index, which typically targets an equity risk-weighted allocation to the major asset classes with leverage, fell 6.6%.

MAC Style Group Returns (9/30/22)



10th Percentile	0.5	1.8	-0.5	-2.5
25th Percentile	-0.3	-0.4	-2.8	-4.9
Median	-2.2	-4.6	-4.6	-6.6
75th Percentile	-3.3	-9.8	-5.9	-10.4
90th Percentile	-3.6	-12.8	-7.2	-11.3
60% MSCI ACWI/ 40% Bloomberg Agg	-5.9	-5.9	-5.9	-5.9

HFRI Hedge Fund-Weighted Strategy Returns (9/30/22)



Source: HFRI

Sources: Bloomberg, Callan, Eurekahedge, S&P Dow Jones Indices

DC Index Sees Third-Worst Decline Ever

DEFINED CONTRIBUTION | Patrick Wisdom

Performance: Index dips again

- The Callan DC Index™ fell 12.2% in 2Q22, its third-largest quarterly decline ever.
- The Age 45 Target Date Fund fell 13.4%.

Growth Sources: Balances take a hit

- Balances within the DC Index declined by 12.3% after a 5.4% decrease the previous quarter.

Turnover: Net transfers fall

- Turnover (i.e., net transfer activity levels within DC plans) decreased to 0.37% from the previous quarter's 0.42%.

Net Cash Flow Analysis: Stable value takes top spot

- Bucking the trend of the last five quarters, TDFs (29.1% of net flows) took a back seat to stable value, which received 47.7% of net flows in perhaps a signal that some participants sought a flight to safety.
- Also of note, real return/TIPS (0.6%) did not attract a large share of flows, even as inflation has remained elevated.

Equity Allocation: Exposure drops sharply

- The Index's overall allocation to equity (69.8%) fell meaningfully from the previous quarter's level (72.0%), which had been within reach of the Index's high mark of 4Q07 (72.9%). The decrease was driven by a combination of investor outflows and declines in equity markets.

Asset Allocation: U.S. large cap equity falls

- U.S. large cap (25.1%) had the largest percentage decrease in allocation.
- Stable value (10.0%) had the largest percentage increase.

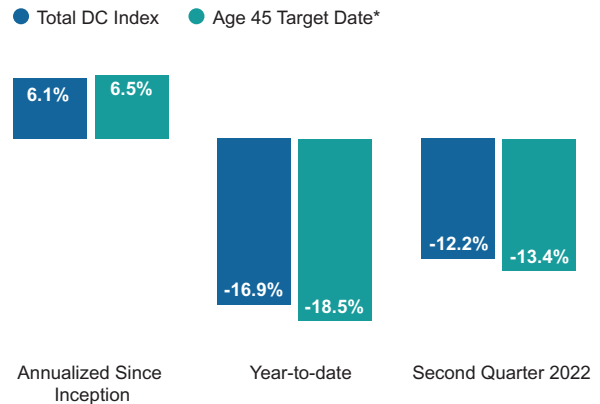
Prevalence of Asset Class: Balanced funds dip again

- The prevalence of a balanced fund (41.4%) decreased again to its lowest level since the inception of the Index in 2006.
- Other notable movements included a 1.1 percentage point decrease in the prevalence of a money market offering (49.6%); on the other hand, the prevalence of a real estate offering (21.8%) increased by 0.6 percentage points.

Underlying fund performance, asset allocation, and cash flows of more than 100 large defined contribution plans representing approximately \$400 billion in assets are tracked in the Callan DC Index.

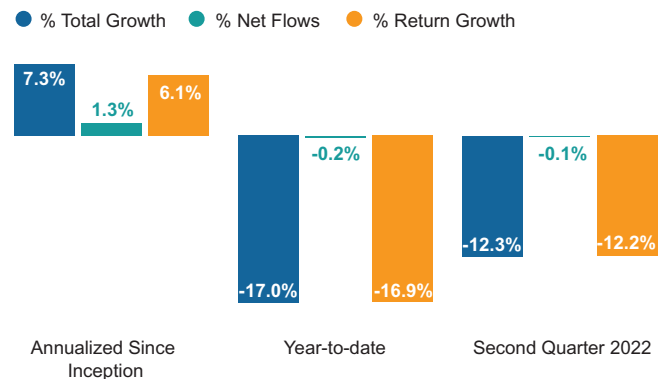
Investment Performance

(6/30/22)



Growth Sources

(6/30/22)



Net Cash Flow Analysis (2Q22)

(Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Stable Value	47.7%
Target Date Funds	29.1%
U.S. Fixed Income	-19.5%
U.S. Large Cap	-48.1%
Total Turnover**	0.37%

Data provided here is the most recent available at time of publication.

Source: Callan DC Index

Note: DC Index inception date is January 2006.

* The Age 45 Fund transitioned from the average 2035 TDF to the 2040 TDF in June 2018.

** Total Index "turnover" measures the percentage of total invested assets (transfers only, excluding contributions and withdrawals) that moved between asset classes.

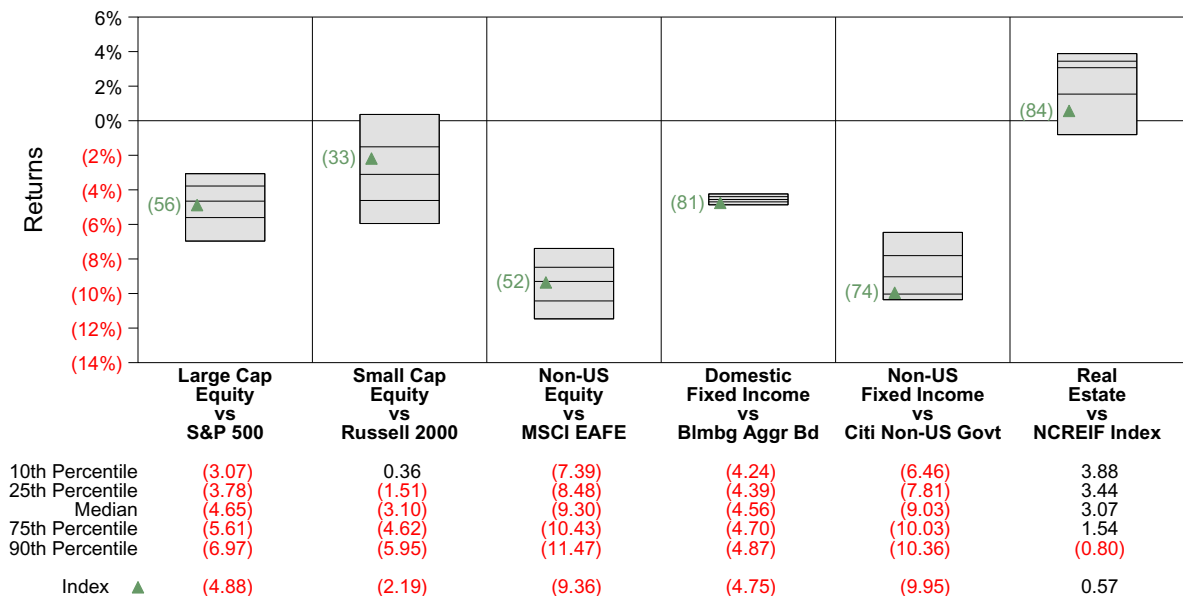
Market Overview

Active Management vs Index Returns

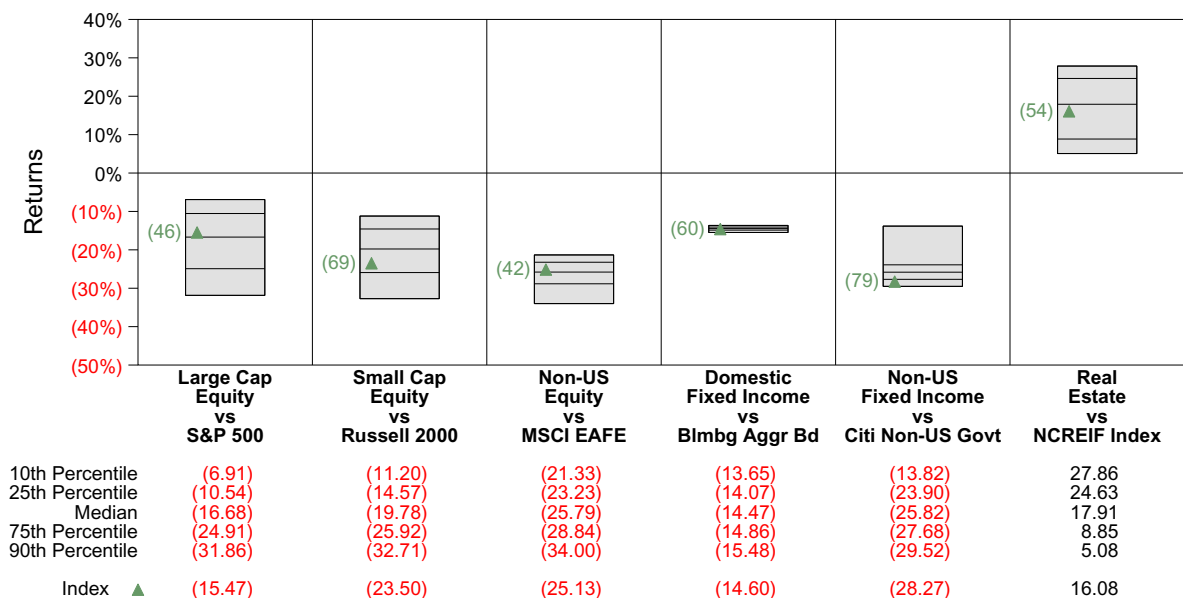
Market Overview

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 September 30, 2022



Range of Separate Account Manager Returns by Asset Class One Year Ended September 30, 2022

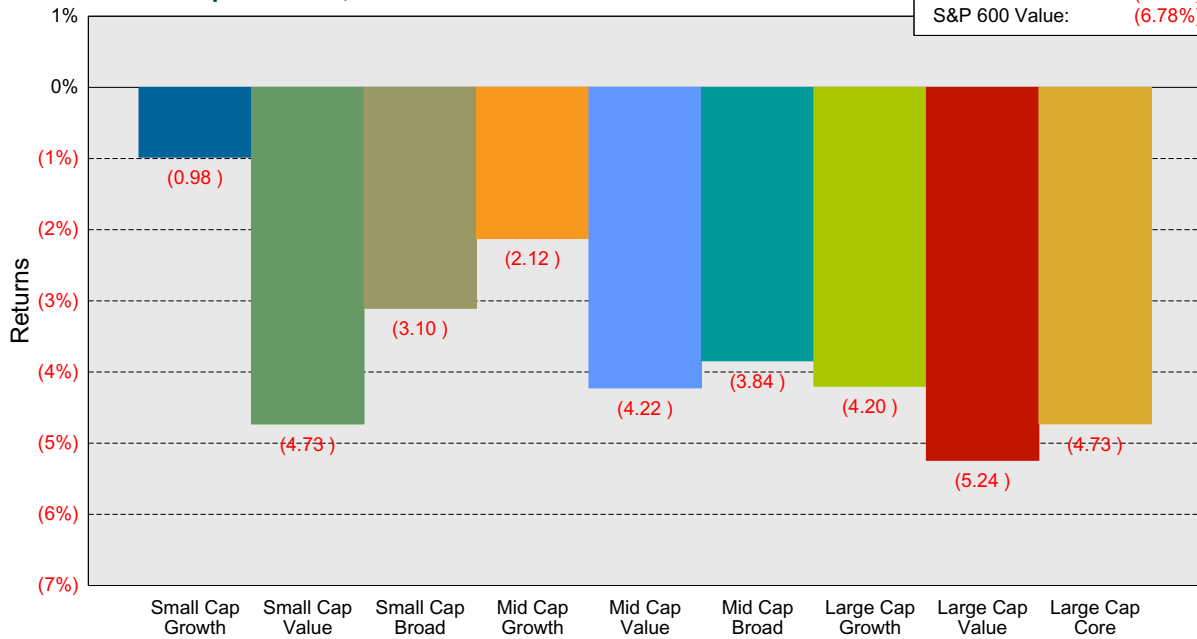


Domestic Equity Active Management Overview

The S&P 500 Index sank 4.9% in 3Q and is down 23.9% year-to-date (YTD). Returns were quite mixed across sectors with Energy (+2.3%) and Consumer Discretionary (+4.4%) posting positive results and Communication Services (-12.7%) and Real Estate (-11.0%) delivering the lowest returns. Somewhat counterintuitively, value underperformed growth (Russell 1000 Value: -5.6%; Russell 1000 Growth: -3.6%), but value remains ahead on a YTD basis (Russell 1000 Value: -17.8%; Russell 1000 Growth: -30.7%). Small caps outperformed large (Russell 2000: -2.2%; Russell 1000: -4.6%), narrowing the YTD differential (Russell 2000: -25.1%; Russell 1000: -24.6%).

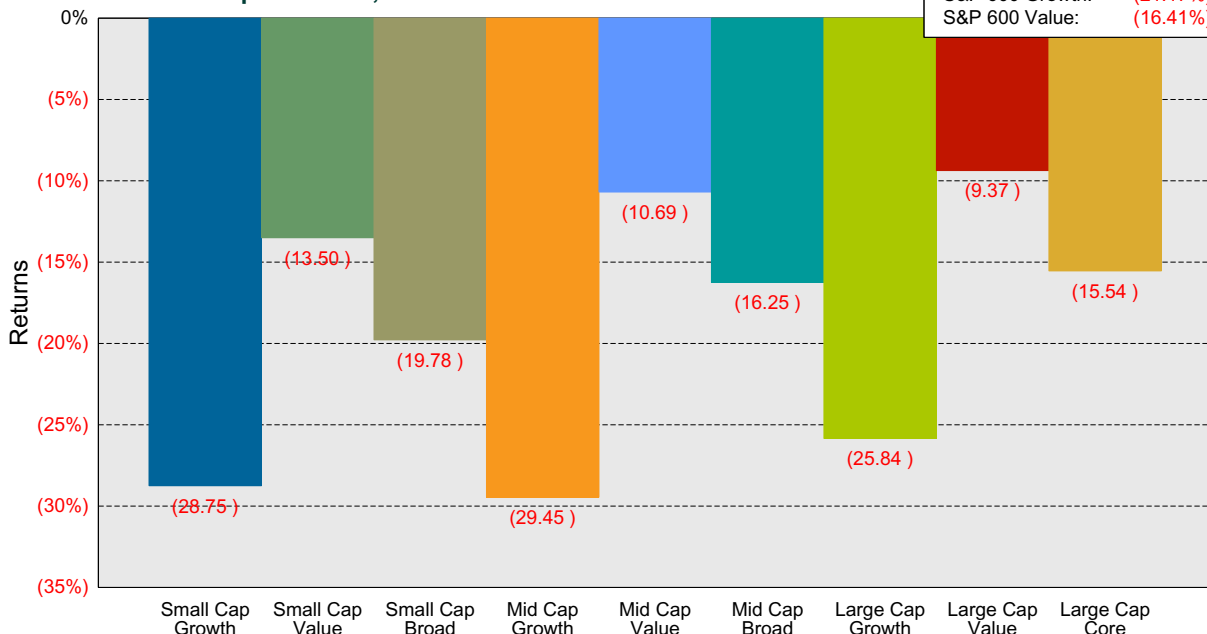
S&P 500:	(4.88%)
S&P 500 Growth:	(3.86%)
S&P 500 Value:	(5.82%)
S&P Mid Cap:	(2.46%)
S&P 600:	(5.20%)
S&P 600 Growth:	(3.38%)
S&P 600 Value:	(6.78%)

Separate Account Style Group Median Returns for Quarter Ended September 30, 2022



S&P 500:	(15.47%)
S&P 500 Growth:	(21.11%)
S&P 500 Value:	(9.63%)
S&P Mid Cap:	(15.25%)
S&P 600:	(18.83%)
S&P 600 Growth:	(21.17%)
S&P 600 Value:	(16.41%)

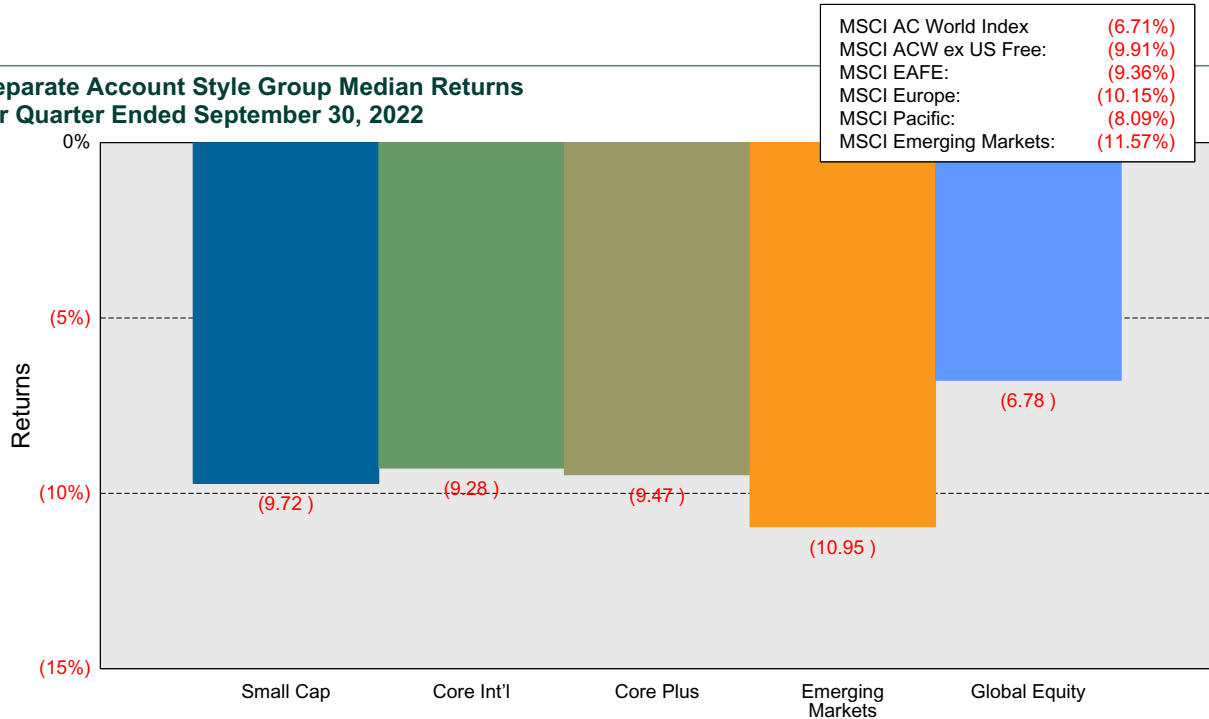
Separate Account Style Group Median Returns for One Year Ended September 30, 2022



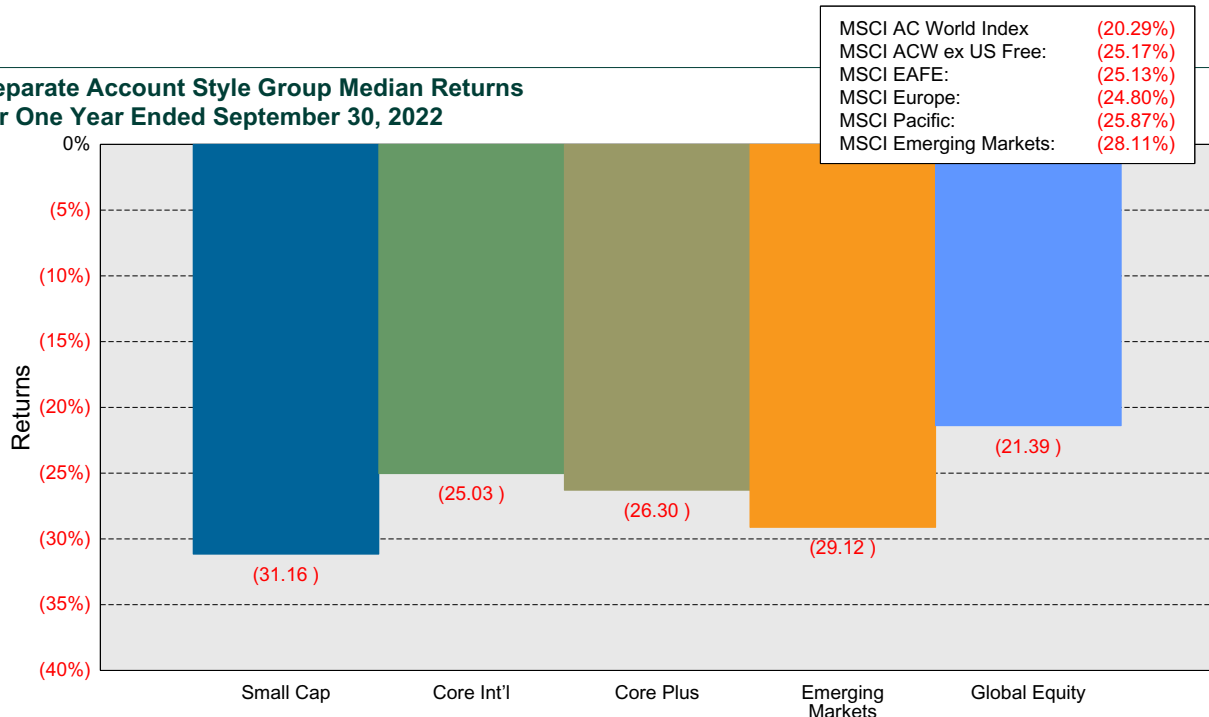
International Equity Active Management Overview

The MSCI ACWI ex USA Index fell 9.9% (Local: -4.9%), bringing its YTD loss to 26.5% (Local: -16.2%). The U.S. dollar continued to strengthen, benefiting from its safe haven status as well as attractive interest rates relative to other developed markets. The yen and euro lost 6% versus the greenback and the British pound fell 8%. Across developed market countries, losses were broad-based with several posting double-digit declines. As in the U.S., no sectors delivered a positive return in 3Q. Emerging markets (MSCI Emerging Markets: -11.6%; Local: -8.2%) underperformed developed markets for the quarter but returns were mixed across countries. China (MSCI China: -22.5%) was one of the worst performers while several countries posted positive returns; two of the best were India (+6.5%) and Brazil (+8.5%). Returns were also mixed across regions: Latin America (+3.6%), Emerging Europe (-12.4%), and Emerging Asia (-14.0%).

Separate Account Style Group Median Returns for Quarter Ended September 30, 2022



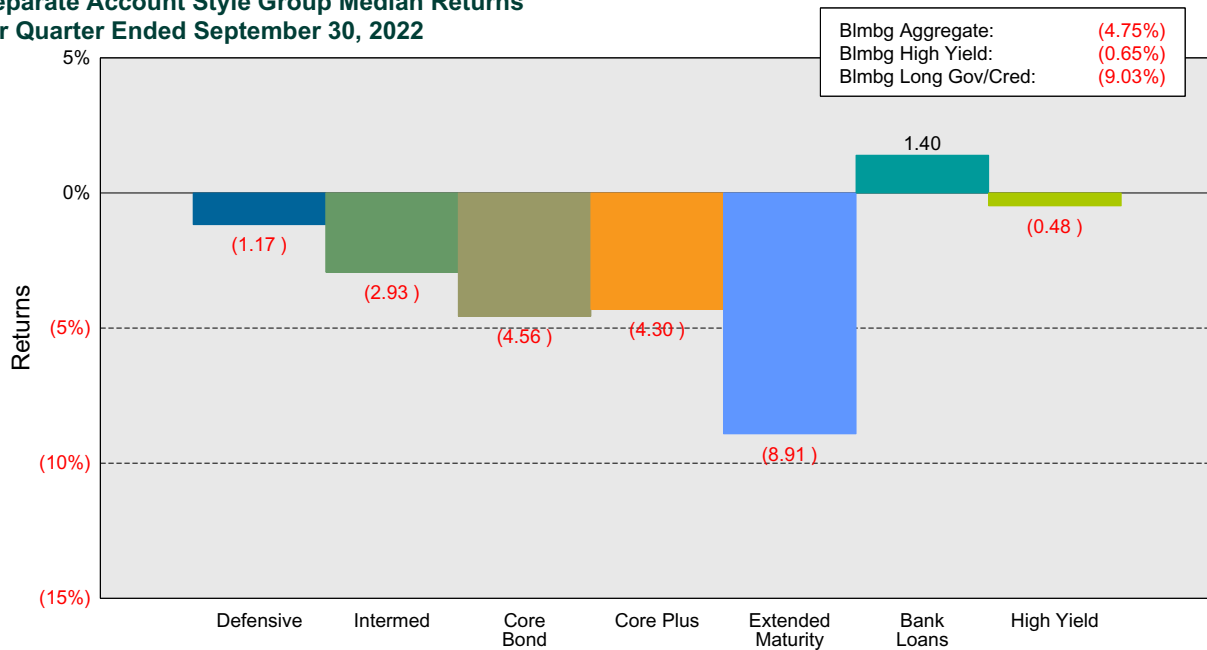
Separate Account Style Group Median Returns for One Year Ended September 30, 2022



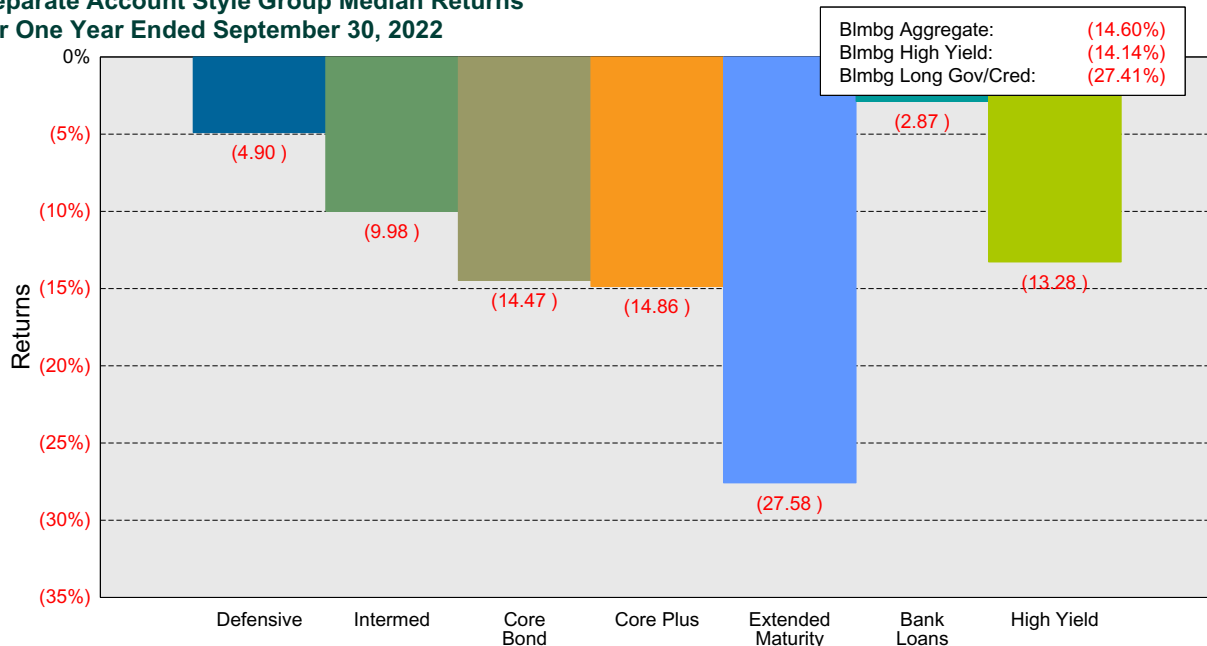
Domestic Fixed Income Active Management Overview

The 10-year U.S. Treasury briefly touched an intra-quarter high of 4.0% in late September, the highest since 2008, before closing the quarter at 3.83%. At quarter-end, the yield curve was inverted by about 40 bps. with the 10-year at 3.8% and the 2-year at 4.2%. The Bloomberg US Aggregate Bond Index fell 4.8% in 3Q, bringing its YTD loss to 14.6%, a historical worst for the first nine months of a year. Mortgages and corporates underperformed U.S. Treasuries, with mortgage-backed securities doing especially poorly, underperforming like-duration U.S. Treasuries by 160 bps on poor technicals and rising rates. The yield-to-worst of the Aggregate Index climbed to 4.75%, up sharply from 1.75% at the beginning of the year. TIPS (Bloomberg TIPS: -5.1%; -13.6% YTD) were not immune from the sell-off. High yield corporates (Bloomberg High Yield: -0.6%) fared better, but the Index is down a similar 14.7% YTD.

Separate Account Style Group Median Returns for Quarter Ended September 30, 2022



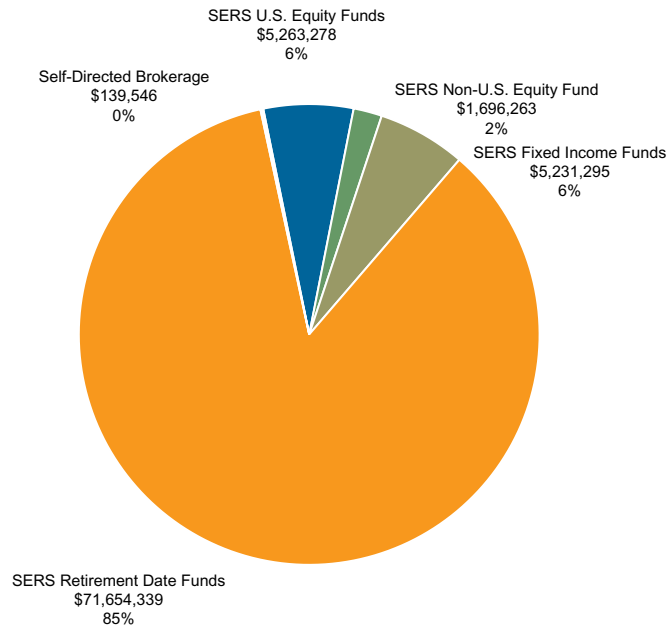
Separate Account Style Group Median Returns for One Year Ended September 30, 2022



Changes in Investment Fund Balances Period Ended September 30, 2022

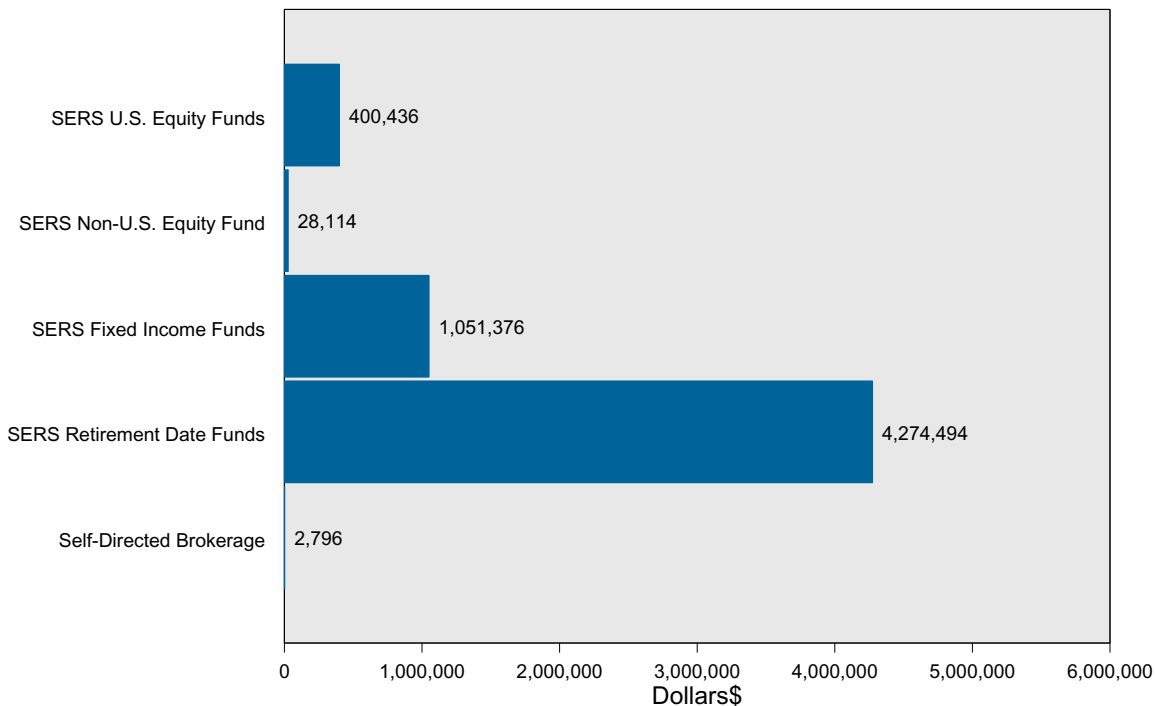
Allocation Across Investment Options

The chart below illustrates the allocation of the aggregate fund assets across the various investment options for the quarter ended September 30, 2022.



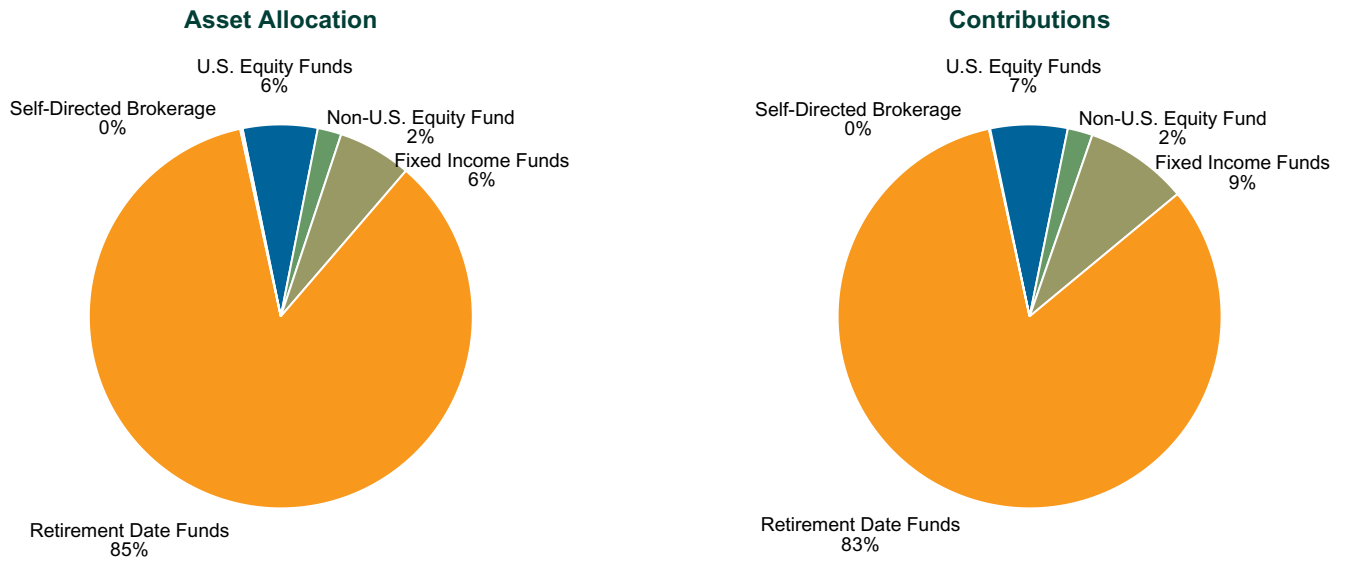
Changes in Fund Values

The chart below shows the net change in fund values across the various investment options for the quarter ended September 30, 2022. 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.

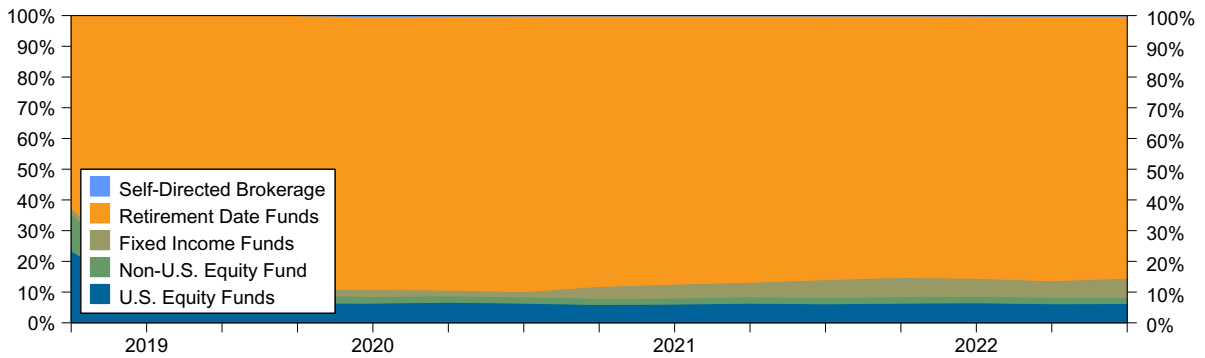


Asset Allocation

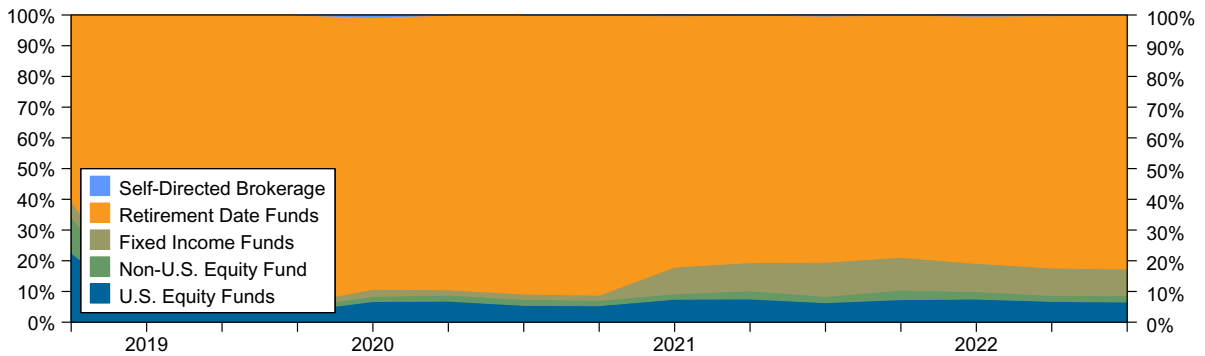
The charts below illustrate the historical asset allocation of the fund as well as the historical allocations of contributions to the fund. The pie charts on the top show the most recent allocations of both assets and contributions which include exchanges and transfers within the plan. The middle chart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



Historical Asset Allocation



Historical Allocation of Contributions



Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of September 30, 2022, with the distribution as of June 30, 2022. 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 Managers

	September 30, 2022			June 30, 2022		
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
SERS Retirement Date Funds	\$71,654,339	85.32%	\$9,812,913	\$(5,538,418)	\$67,379,844	86.13%
SERS Post Retirement Fund	1,230,510	1.47%	148,824	(73,171)	1,154,857	1.48%
SERS 2025 Retirement Fund	3,410,200	4.06%	311,154	(215,115)	3,314,161	4.24%
SERS 2030 Retirement Fund	7,808,242	9.30%	1,803,642	(600,930)	6,605,531	8.44%
SERS 2035 Retirement Fund	7,605,267	9.06%	(54,612)	(480,123)	8,140,001	10.41%
SERS 2040 Retirement Fund	8,327,261	9.92%	1,164,237	(649,893)	7,812,917	9.99%
SERS 2045 Retirement Fund	8,731,670	10.40%	1,644,430	(729,210)	7,816,450	9.99%
SERS 2050 Retirement Fund	9,575,597	11.40%	1,234,867	(772,679)	9,113,409	11.65%
SERS 2055 Retirement Fund	9,568,394	11.39%	1,210,401	(771,590)	9,129,583	11.67%
SERS 2060 Retirement Fund	9,045,064	10.77%	1,226,292	(726,611)	8,545,383	10.92%
SERS 2065 Retirement Fund	6,352,135	7.56%	1,123,679	(519,097)	5,747,553	7.35%
SERS U.S. Equity	\$5,263,278	6.27%	\$676,518	\$(276,082)	\$4,862,842	6.22%
SERS U.S. Large Company Index Fund	3,305,373	3.94%	526,744	(194,948)	2,973,578	3.80%
SERS U.S. All Company Index Fund	1,280,585	1.52%	74,892	(56,972)	1,262,664	1.61%
SERS U.S. SMID Company Index Fund	677,320	0.81%	74,882	(24,162)	626,600	0.80%
SERS Non-U.S. Equity	\$1,696,263	2.02%	\$218,797	\$(190,683)	\$1,668,150	2.13%
SERS Global Non-U.S. Index Fund	1,696,263	2.02%	218,797	(190,683)	1,668,150	2.13%
SERS Fixed Income	\$5,231,295	6.23%	\$1,103,843	\$(52,467)	\$4,179,919	5.34%
SERS Short Term Investment Fund	3,931,992	4.68%	989,196	17,030	2,925,767	3.74%
SERS U.S. Short Term Bond Index Fund	44,451	0.05%	13,810	(587)	31,229	0.04%
SERS U.S. TIPS Index Fund	269,889	0.32%	40,400	(14,920)	244,409	0.31%
SERS U.S. Bond Index Fund	984,963	1.17%	60,438	(53,989)	978,514	1.25%
SERS Self-Directed Brokerage	\$139,546	0.17%	\$13,523	\$(10,727)	\$136,750	0.17%
Total Fund	\$83,984,721	100.0%	\$11,825,594	\$(6,068,377)	\$78,227,504	100.0%

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended September 30, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended September 30, 2022

	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years
Net Performance					
Target Date Funds					
SERS Post Retirement Fund	(5.52%)	(18.45%)	(16.40%)	0.38%	2.26%
BlackRock Post Retirement Index	(5.40%)	(18.41%)	(16.30%)	0.37%	2.25%
Callan Tgt Date Ret Inc	(4.64%)	(16.76%)	(14.86%)	0.19%	1.93%
SERS 2025 Retirement Fund	(5.83%)	(19.49%)	(16.98%)	1.05%	2.84%
BlackRock 2025 Index	(5.69%)	(19.44%)	(16.87%)	1.05%	2.82%
Callan Target Date 2025	(5.21%)	(19.67%)	(16.89%)	1.40%	2.98%
SERS 2030 Retirement Fund	(6.23%)	(21.05%)	(17.94%)	1.69%	3.33%
BlackRock 2030 Index	(6.05%)	(20.99%)	(17.83%)	1.69%	3.30%
Callan Target Date 2030	(5.54%)	(21.49%)	(18.05%)	1.98%	3.34%
SERS 2035 Retirement Fund	(6.57%)	(22.47%)	(18.82%)	2.31%	3.79%
BlackRock 2035 Index	(6.34%)	(22.40%)	(18.71%)	2.31%	3.76%
Callan Target Date 2035	(5.91%)	(22.80%)	(18.96%)	2.49%	3.72%
SERS 2040 Retirement Fund	(6.88%)	(23.82%)	(19.69%)	2.81%	4.16%
BlackRock 2040 Index	(6.61%)	(23.74%)	(19.58%)	2.80%	4.12%
Callan Target Date 2040	(6.21%)	(23.86%)	(19.71%)	2.88%	3.98%
SERS 2045 Retirement Fund	(7.11%)	(24.94%)	(20.44%)	3.22%	4.44%
BlackRock 2045 Index	(6.81%)	(24.85%)	(20.33%)	3.20%	4.37%
Callan Target Date 2045	(6.42%)	(24.71%)	(20.16%)	3.16%	4.14%
SERS 2050 Retirement Fund	(7.15%)	(25.54%)	(20.84%)	3.42%	4.56%
BlackRock 2050 Index	(6.84%)	(25.45%)	(20.74%)	3.41%	4.50%
Callan Target Date 2050	(6.47%)	(24.97%)	(20.38%)	3.15%	4.19%
SERS 2055 Retirement Fund	(7.14%)	(25.67%)	(20.93%)	3.45%	4.58%
BlackRock 2055 Index	(6.83%)	(25.59%)	(20.84%)	3.44%	4.53%
Callan Target Date 2055	(6.54%)	(25.13%)	(20.74%)	3.21%	4.27%
SERS 2060 Retirement Fund	(7.14%)	(25.67%)	(20.93%)	3.44%	4.57%
BlackRock 2060 Index	(6.83%)	(25.60%)	(20.84%)	3.44%	4.52%
Callan Target Date 2060	(6.48%)	(25.13%)	(20.72%)	3.35%	4.32%
SERS 2065 Retirement Fund	(7.14%)	(25.68%)	(20.95%)	3.34%	-
BlackRock 2065 Index	(6.84%)	(25.62%)	(20.86%)	3.43%	-
Callan Target Date 2065	(6.69%)	(25.63%)	(21.21%)	3.38%	4.44%

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended September 30, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended September 30, 2022

	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
Net Performance				
Target Date Funds				
SERS Post Retirement Fund	3.69%	3.61%	3.91%	-
BlackRock Post Retirement Index	3.67%	3.58%	3.90%	5.19%
Callan Tgt Date Ret Inc	3.21%	3.15%	3.29%	4.21%
SERS 2025 Retirement Fund	4.81%	4.88%	3.90%	-
BlackRock 2025 Index	4.77%	4.83%	3.86%	6.32%
Callan Target Date 2025	5.05%	5.44%	4.13%	-
SERS 2030 Retirement Fund	5.50%	5.49%	4.12%	-
BlackRock 2030 Index	5.44%	5.42%	4.08%	6.69%
Callan Target Date 2030	5.66%	6.12%	4.33%	6.99%
SERS 2035 Retirement Fund	6.17%	6.07%	4.34%	-
BlackRock 2035 Index	6.09%	5.98%	4.27%	7.02%
Callan Target Date 2035	6.19%	6.63%	4.65%	-
SERS 2040 Retirement Fund	6.71%	6.54%	4.49%	-
BlackRock 2040 Index	6.62%	6.45%	4.40%	7.30%
Callan Target Date 2040	6.60%	6.97%	4.89%	7.56%
SERS 2045 Retirement Fund	7.08%	6.93%	4.58%	-
BlackRock 2045 Index	6.96%	6.82%	4.48%	7.60%
Callan Target Date 2045	6.85%	7.15%	4.78%	-
SERS 2050 Retirement Fund	7.22%	7.15%	4.76%	-
BlackRock 2050 Index	7.10%	7.05%	4.66%	7.95%
Callan Target Date 2050	6.88%	7.17%	5.05%	-
SERS 2055 Retirement Fund	7.22%	7.28%	-	-
BlackRock 2055 Index	7.12%	7.18%	-	-
Callan Target Date 2055	6.98%	7.28%	-	-

*Funds not shown do not have longer term historical performance.

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended September 30, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended September 30, 2022

	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years
Net Performance					
Domestic Equity					
SERS U.S. Large Company Index Fund	(4.88%)	(23.87%)	(15.47%)	8.17%	9.25%
S&P 500 Index	(4.88%)	(23.87%)	(15.47%)	8.16%	9.24%
Callan Lg Cap Broad MF	(4.80%)	(24.02%)	(17.20%)	6.34%	8.03%
SERS U.S. All Company Index Fund	(4.47%)	(24.65%)	(17.66%)	7.77%	8.56%
Russell 3000 Index	(4.46%)	(24.62%)	(17.63%)	7.70%	8.62%
Callan Multi Cap Brd MF	(4.54%)	(24.59%)	(18.15%)	5.80%	6.68%
SERS U.S. SMID Company Idx Fund	(2.73%)	(29.81%)	(29.22%)	4.43%	4.98%
Dow Jones US Completion	(2.79%)	(30.09%)	(29.63%)	4.16%	4.72%
Callan SMID Broad MFs	(2.59%)	(26.58%)	(22.77%)	5.05%	5.31%
International Equity					
SERS Global Non-U.S. Index Fund	(10.27%)	(26.56%)	(24.99%)	(1.41%)	(0.62%)
MSCI ACWI ex US	(9.91%)	(26.50%)	(25.17%)	(1.52%)	(0.81%)
Callan Non US Equity MFs	(10.03%)	(28.08%)	(26.31%)	(1.43%)	(0.92%)
Domestic Fixed Income					
SERS Short Term Investment Fund	0.50%	0.68%	0.69%	0.63%	1.22%
3-month Treasury Bill	0.46%	0.61%	0.62%	0.59%	1.15%
Callan Cash Database(1)	0.49%	0.34%	0.42%	0.67%	1.27%
SERS U.S. Short Term Bond Idx Fund	(1.47%)	(4.53%)	(5.08%)	(0.42%)	-
Blmbg Gov/Cred 1-3 Yr	(1.48%)	(4.54%)	(5.07%)	(0.41%)	0.70%
Callan Short US Govt MFs	(2.05%)	(5.66%)	(6.20%)	(1.05%)	0.17%
SERS U.S. TIPS Index Fund	(5.14%)	(13.57%)	(11.57%)	0.78%	-
Blmbg US TIPS	(5.14%)	(13.61%)	(11.57%)	0.79%	1.95%
Callan TIPS MFs	(5.10%)	(13.58%)	(11.73%)	0.72%	1.83%
SERS U.S. Bond Index Fund	(4.74%)	(14.55%)	(14.60%)	(3.26%)	(0.27%)
Blmbg Aggregate	(4.75%)	(14.61%)	(14.60%)	(3.26%)	(0.27%)
Callan Core Bond MFs	(4.70%)	(14.98%)	(15.01%)	(2.95%)	(0.07%)

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

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended September 30, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended September 30, 2022

	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
Net Performance				
Domestic Equity				
SERS U.S. Large Company Index Fund	11.42%	11.72%	8.07%	9.88%
S&P 500 Index	11.40%	11.70%	8.03%	9.84%
Callan Lg Cap Broad MF	10.37%	10.82%	7.61%	9.42%
SERS U.S. All Company Index Fund	10.85%	11.36%	-	-
Russell 3000 Index	10.90%	11.39%	7.92%	9.93%
Callan Multi Cap Brd MF	8.70%	9.89%	6.68%	9.25%
SERS U.S. SMID Company Idx Fund	8.07%	9.49%	7.32%	10.34%
Dow Jones US Completion	7.81%	9.25%	7.07%	10.16%
Callan SMID Broad MFs	8.38%	9.38%	7.12%	10.03%
International Equity				
SERS Global Non-U.S. Index Fund	3.48%	3.21%	-	-
MSCI ACWI ex US	3.29%	3.01%	0.57%	6.37%
Callan Non US Equity MFs	2.92%	3.54%	1.23%	6.16%
Domestic Fixed Income				
SERS Short Term Investment Fund	1.07%	0.80%	0.89%	-
3-month Treasury Bill	0.95%	0.68%	0.70%	1.25%
Callan Cash Database(1)	1.16%	0.95%	1.20%	1.64%
Blmbg Gov/Cred 1-3 Yr	0.78%	0.81%	1.63%	2.01%
Callan Short US Govt MFs	0.32%	0.35%	1.44%	1.75%
Blmbg US TIPS	2.21%	0.98%	3.25%	3.77%
Callan TIPS MFs	2.13%	0.82%	3.08%	3.49%
SERS U.S. Bond Index Fund	0.52%	0.85%	2.69%	3.05%
Blmbg Aggregate	0.54%	0.89%	2.74%	3.08%
Callan Core Bond MFs	0.80%	1.10%	3.04%	3.35%

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

*Funds not shown do not have longer term historical performance.

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.

	12/2021- 9/2022	2021	2020	2019	2018
Net Performance					
Target Date Funds					
SERS Post Retirement Fund	(18.45%)	6.95%	11.97%	15.65%	(3.47%)
BlackRock Post Retirement Index	(18.41%)	7.02%	11.80%	15.63%	(3.48%)
Callan Tgt Date Ret Inc	(16.76%)	6.31%	10.02%	13.21%	(3.04%)
SERS 2025 Retirement Fund	(19.49%)	8.99%	12.19%	18.60%	(4.86%)
BlackRock 2025 Index	(19.44%)	9.07%	12.01%	18.56%	(4.90%)
Callan Target Date 2025	(19.67%)	10.04%	12.58%	18.53%	(5.19%)
SERS 2030 Retirement Fund	(21.05%)	11.43%	12.88%	20.80%	(5.71%)
BlackRock 2030 Index	(20.99%)	11.50%	12.72%	20.70%	(5.76%)
Callan Target Date 2030	(21.49%)	11.63%	13.23%	20.43%	(6.12%)
SERS 2035 Retirement Fund	(22.47%)	13.80%	13.58%	22.84%	(6.50%)
BlackRock 2035 Index	(22.40%)	13.85%	13.44%	22.72%	(6.58%)
Callan Target Date 2035	(22.80%)	13.92%	14.28%	22.17%	(7.03%)
SERS 2040 Retirement Fund	(23.82%)	15.96%	14.14%	24.71%	(7.22%)
BlackRock 2040 Index	(23.74%)	15.97%	13.98%	24.62%	(7.33%)
Callan Target Date 2040	(23.86%)	15.84%	14.91%	23.62%	(7.89%)
SERS 2045 Retirement Fund	(24.94%)	17.72%	14.83%	26.05%	(7.85%)
BlackRock 2045 Index	(24.85%)	17.70%	14.65%	25.90%	(7.99%)
Callan Target Date 2045	(24.71%)	16.83%	15.52%	24.60%	(8.21%)
SERS 2050 Retirement Fund	(25.54%)	18.67%	15.20%	26.60%	(8.11%)
BlackRock 2050 Index	(25.45%)	18.62%	15.07%	26.48%	(8.26%)
Callan Target Date 2050	(24.97%)	17.17%	15.73%	24.89%	(8.44%)
SERS 2055 Retirement Fund	(25.67%)	18.83%	15.32%	26.67%	(8.13%)
BlackRock 2055 Index	(25.59%)	18.81%	15.18%	26.58%	(8.28%)
Callan Target Date 2055	(25.13%)	17.27%	15.83%	24.97%	(8.44%)
SERS 2060 Retirement Fund	(25.67%)	18.82%	15.31%	26.66%	(8.14%)
BlackRock 2060 Index	(25.60%)	18.81%	15.19%	26.58%	(8.28%)
Callan Target Date 2060	(25.13%)	17.45%	15.90%	25.08%	(8.35%)
SERS 2065 Retirement Fund	(25.68%)	18.77%	15.15%	-	-
BlackRock 2065 Index	(25.62%)	18.80%	15.19%	-	-
Callan Target Date 2065	(25.63%)	17.31%	16.43%	25.62%	(8.63%)

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.

	12/2021- 9/2022	2021	2020	2019	2018
Net Performance					
Domestic Equity					
SERS U.S. Large Company Index Fund	(23.87%)	28.70%	18.43%	31.51%	(4.39%)
S&P 500 Index	(23.87%)	28.71%	18.40%	31.49%	(4.38%)
Callan Lg Cap Broad MF	(24.02%)	25.50%	18.47%	30.14%	(4.54%)
SERS U.S. All Company Index Fund	(24.65%)	25.61%	21.20%	30.52%	(5.29%)
Russell 3000 Index	(24.62%)	25.66%	20.89%	31.02%	(5.24%)
Callan Multi Cap Brd MF	(24.59%)	24.17%	17.19%	29.12%	(6.82%)
SERS U.S. SMID Company Idx Fund	(29.81%)	12.89%	32.03%	28.20%	(9.32%)
Dow Jones US Completion	(30.09%)	12.36%	32.17%	27.94%	(9.57%)
Callan SMID Broad MFs	(26.58%)	19.56%	24.00%	29.40%	(8.69%)
International Equity					
SERS Global Non-U.S. Index Fund	(26.56%)	7.97%	11.15%	21.77%	(13.86%)
MSCI ACWI ex US	(26.50%)	7.82%	10.65%	21.51%	(14.20%)
Callan Non US Equity MFs	(28.08%)	9.47%	11.12%	22.83%	(15.04%)
Domestic Fixed Income					
SERS Short Term Investment Fund	0.68%	0.07%	0.67%	2.31%	2.09%
3-month Treasury Bill	0.61%	0.05%	0.67%	2.28%	1.87%
Callan Cash Database(1)	0.34%	0.13%	1.05%	2.65%	2.00%
SERS U.S. Short Term Bond Idx Fund	(4.53%)	(0.52%)	3.36%	4.02%	1.58%
Blmbg Gov/Cred 1-3 Yr	(4.54%)	(0.47%)	3.33%	4.03%	1.60%
Callan Short US Govt MFs	(5.66%)	(1.08%)	3.57%	3.52%	1.15%
SERS U.S. TIPS Index Fund	(13.57%)	5.87%	11.00%	8.40%	-
Blmbg US TIPS	(13.61%)	5.96%	10.99%	8.43%	(1.26%)
Callan TIPS MFs	(13.58%)	5.54%	10.79%	8.31%	(1.66%)
SERS U.S. Bond Index Fund	(14.55%)	(1.65%)	7.56%	8.69%	0.02%
Blmbg Aggregate	(14.61%)	(1.54%)	7.51%	8.72%	0.01%
Callan Core Bond MFs	(14.98%)	(1.17%)	8.65%	9.17%	(0.35%)

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

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended September 30, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended September 30, 2022

	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years
Gross Performance					
Target Date Funds					
SERS Post Retirement Fund	(5.51%)	(18.41%)	(16.34%)	0.45%	2.33%
BlackRock Post Retirement Index	(5.40%)	(18.41%)	(16.30%)	0.37%	2.25%
Callan Tgt Date Ret Inc	(4.64%)	(16.76%)	(14.86%)	0.19%	1.93%
SERS 2025 Retirement Fund	(5.81%)	(19.45%)	(16.92%)	1.12%	2.91%
BlackRock 2025 Index	(5.69%)	(19.44%)	(16.87%)	1.05%	2.82%
Callan Target Date 2025	(5.21%)	(19.67%)	(16.89%)	1.40%	2.98%
SERS 2030 Retirement Fund	(6.21%)	(21.01%)	(17.88%)	1.76%	3.40%
BlackRock 2030 Index	(6.05%)	(20.99%)	(17.83%)	1.69%	3.30%
Callan Target Date 2030	(5.54%)	(21.49%)	(18.05%)	1.98%	3.34%
SERS 2035 Retirement Fund	(6.56%)	(22.43%)	(18.77%)	2.38%	3.86%
BlackRock 2035 Index	(6.34%)	(22.40%)	(18.71%)	2.31%	3.76%
Callan Target Date 2035	(5.91%)	(22.80%)	(18.96%)	2.49%	3.72%
SERS 2040 Retirement Fund	(6.86%)	(23.78%)	(19.64%)	2.88%	4.23%
BlackRock 2040 Index	(6.61%)	(23.74%)	(19.58%)	2.80%	4.12%
Callan Target Date 2040	(6.21%)	(23.86%)	(19.71%)	2.88%	3.98%
SERS 2045 Retirement Fund	(7.09%)	(24.90%)	(20.39%)	3.29%	4.51%
BlackRock 2045 Index	(6.81%)	(24.85%)	(20.33%)	3.20%	4.37%
Callan Target Date 2045	(6.42%)	(24.71%)	(20.16%)	3.16%	4.14%
SERS 2050 Retirement Fund	(7.13%)	(25.50%)	(20.78%)	3.49%	4.63%
BlackRock 2050 Index	(6.84%)	(25.45%)	(20.74%)	3.41%	4.50%
Callan Target Date 2050	(6.47%)	(24.97%)	(20.38%)	3.15%	4.19%
SERS 2055 Retirement Fund	(7.12%)	(25.63%)	(20.87%)	3.52%	4.65%
BlackRock 2055 Index	(6.83%)	(25.59%)	(20.84%)	3.44%	4.53%
Callan Target Date 2055	(6.54%)	(25.13%)	(20.74%)	3.21%	4.27%
SERS 2060 Retirement Fund	(7.12%)	(25.63%)	(20.88%)	3.51%	4.64%
BlackRock 2060 Index	(6.83%)	(25.60%)	(20.84%)	3.44%	4.52%
Callan Target Date 2060	(6.48%)	(25.13%)	(20.72%)	3.35%	4.32%
SERS 2065 Retirement Fund	(7.12%)	(25.64%)	(20.90%)	3.41%	-
BlackRock 2065 Index	(6.84%)	(25.62%)	(20.86%)	3.43%	-
Callan Target Date 2065	(6.69%)	(25.63%)	(21.21%)	3.38%	4.44%

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended September 30, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended September 30, 2022

	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
Gross Performance				
Target Date Funds				
SERS Post Retirement Fund	3.76%	3.68%	3.98%	-
BlackRock Post Retirement Index	3.67%	3.58%	3.90%	5.19%
Callan Tgt Date Ret Inc	3.21%	3.15%	3.29%	4.21%
SERS 2025 Retirement Fund	4.88%	4.95%	3.97%	-
BlackRock 2025 Index	4.77%	4.83%	3.86%	6.32%
Callan Target Date 2025	5.05%	5.44%	4.13%	-
SERS 2030 Retirement Fund	5.57%	5.56%	4.20%	-
BlackRock 2030 Index	5.44%	5.42%	4.08%	6.69%
Callan Target Date 2030	5.66%	6.12%	4.33%	6.99%
SERS 2035 Retirement Fund	6.24%	6.14%	4.41%	-
BlackRock 2035 Index	6.09%	5.98%	4.27%	7.02%
Callan Target Date 2035	6.19%	6.63%	4.65%	-
SERS 2040 Retirement Fund	6.78%	6.61%	4.56%	-
BlackRock 2040 Index	6.62%	6.45%	4.40%	7.30%
Callan Target Date 2040	6.60%	6.97%	4.89%	7.56%
SERS 2045 Retirement Fund	7.15%	7.00%	4.65%	-
BlackRock 2045 Index	6.96%	6.82%	4.48%	7.60%
Callan Target Date 2045	6.85%	7.15%	4.78%	-
SERS 2050 Retirement Fund	7.29%	7.22%	4.83%	-
BlackRock 2050 Index	7.10%	7.05%	4.66%	7.95%
Callan Target Date 2050	6.88%	7.17%	5.05%	-
SERS 2055 Retirement Fund	7.29%	7.35%	-	-
BlackRock 2055 Index	7.12%	7.18%	-	-
Callan Target Date 2055	6.98%	7.28%	-	-

*Funds not shown do not have longer term historical performance.

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended September 30, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended September 30, 2022

	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years
Gross Performance					
Domestic Equity					
SERS U.S. Large Company Index Fund	(4.88%)	(23.86%)	(15.47%)	8.18%	9.25%
S&P 500 Index	(4.88%)	(23.87%)	(15.47%)	8.16%	9.24%
Callan Lg Cap Broad MF	(4.80%)	(24.02%)	(17.20%)	6.34%	8.03%
SERS U.S. All Company Index Fund	(4.47%)	(24.64%)	(17.66%)	7.77%	8.57%
Russell 3000 Index	(4.46%)	(24.62%)	(17.63%)	7.70%	8.62%
Callan Multi Cap Brd MF	(4.54%)	(24.59%)	(18.15%)	5.80%	6.68%
SERS U.S. SMID Company Idx Fund	(2.73%)	(29.81%)	(29.22%)	4.43%	4.99%
Dow Jones US Completion	(2.79%)	(30.09%)	(29.63%)	4.16%	4.72%
Callan SMID Broad MFs	(2.59%)	(26.58%)	(22.77%)	5.05%	5.31%
International Equity					
SERS Global Non-U.S. Index Fund	(10.27%)	(26.55%)	(24.98%)	(1.39%)	(0.60%)
MSCI ACWI ex US	(9.91%)	(26.50%)	(25.17%)	(1.52%)	(0.81%)
Callan Non US Equity MFs	(10.03%)	(28.08%)	(26.31%)	(1.43%)	(0.92%)
Domestic Fixed Income					
SERS Short Term Investment Fund	0.50%	0.68%	0.69%	0.63%	1.22%
3-month Treasury Bill	0.46%	0.61%	0.62%	0.59%	1.15%
Callan Cash Database(1)	0.49%	0.34%	0.42%	0.67%	1.27%
SERS U.S. Short Term Bond Idx Fund	(1.47%)	(4.53%)	(5.08%)	(0.41%)	-
Blmbg Gov/Cred 1-3 Yr	(1.48%)	(4.54%)	(5.07%)	(0.41%)	0.70%
Callan Short US Govt MFs	(2.05%)	(5.66%)	(6.20%)	(1.05%)	0.17%
SERS U.S. TIPS Index Fund	(5.14%)	(13.56%)	(11.57%)	0.79%	-
Blmbg US TIPS	(5.14%)	(13.61%)	(11.57%)	0.79%	1.95%
Callan TIPS MFs	(5.10%)	(13.58%)	(11.73%)	0.72%	1.83%
SERS U.S. Bond Index Fund	(4.74%)	(14.55%)	(14.60%)	(3.25%)	(0.27%)
Blmbg Aggregate	(4.75%)	(14.61%)	(14.60%)	(3.26%)	(0.27%)
Callan Core Bond MFs	(4.70%)	(14.98%)	(15.01%)	(2.95%)	(0.07%)

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

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended September 30, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended September 30, 2022

	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
Gross Performance				
Domestic Equity				
SERS U.S. Large Company Index Fund	11.42%	11.72%	8.08%	9.89%
S&P 500 Index	11.40%	11.70%	8.03%	9.84%
Callan Lg Cap Broad MF	10.37%	10.82%	7.61%	9.42%
SERS U.S. All Company Index Fund	10.86%	11.36%	-	-
Russell 3000 Index	10.90%	11.39%	7.92%	9.93%
Callan Multi Cap Brd MF	8.70%	9.89%	6.68%	9.25%
SERS U.S. SMID Company Idx Fund	8.07%	9.49%	7.33%	10.35%
Dow Jones US Completion	7.81%	9.25%	7.07%	10.16%
Callan SMID Broad MFs	8.38%	9.38%	7.12%	10.03%
International Equity				
SERS Global Non-U.S. Index Fund	3.50%	3.22%	-	-
MSCI ACWI ex US	3.29%	3.01%	0.57%	6.37%
Callan Non US Equity MFs	2.92%	3.54%	1.23%	6.16%
Domestic Fixed Income				
SERS Short Term Investment Fund	1.07%	0.80%	0.89%	-
3-month Treasury Bill	0.95%	0.68%	0.70%	1.25%
Callan Cash Database(1)	1.16%	0.95%	1.20%	1.64%
Blmbg Gov/Cred 1-3 Yr	0.78%	0.81%	1.63%	2.01%
Callan Short US Govt MFs	0.32%	0.35%	1.44%	1.75%
Blmbg US TIPS	2.21%	0.98%	3.25%	3.77%
Callan TIPS MFs	2.13%	0.82%	3.08%	3.49%
SERS U.S. Bond Index Fund	0.53%	0.86%	2.69%	3.05%
Blmbg Aggregate	0.54%	0.89%	2.74%	3.08%
Callan Core Bond MFs	0.80%	1.10%	3.04%	3.35%

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

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.

	12/2021- 9/2022	2021	2020	2019	2018
Gross Performance					
Target Date Funds					
SERS Post Retirement Fund	(18.41%)	7.03%	12.04%	15.72%	(3.41%)
BlackRock Post Retirement Index	(18.41%)	7.02%	11.80%	15.63%	(3.48%)
Callan Tgt Date Ret Inc	(16.76%)	6.31%	10.02%	13.21%	(3.04%)
SERS 2025 Retirement Fund	(19.45%)	9.06%	12.26%	18.67%	(4.80%)
BlackRock 2025 Index	(19.44%)	9.07%	12.01%	18.56%	(4.90%)
Callan Target Date 2025	(19.67%)	10.04%	12.58%	18.53%	(5.19%)
SERS 2030 Retirement Fund	(21.01%)	11.50%	12.96%	20.86%	(5.63%)
BlackRock 2030 Index	(20.99%)	11.50%	12.72%	20.70%	(5.76%)
Callan Target Date 2030	(21.49%)	11.63%	13.23%	20.43%	(6.12%)
SERS 2035 Retirement Fund	(22.43%)	13.88%	13.65%	22.93%	(6.43%)
BlackRock 2035 Index	(22.40%)	13.85%	13.44%	22.72%	(6.58%)
Callan Target Date 2035	(22.80%)	13.92%	14.28%	22.17%	(7.03%)
SERS 2040 Retirement Fund	(23.78%)	16.04%	14.22%	24.80%	(7.17%)
BlackRock 2040 Index	(23.74%)	15.97%	13.98%	24.62%	(7.33%)
Callan Target Date 2040	(23.86%)	15.84%	14.91%	23.62%	(7.89%)
SERS 2045 Retirement Fund	(24.90%)	17.79%	14.90%	26.12%	(7.78%)
BlackRock 2045 Index	(24.85%)	17.70%	14.65%	25.90%	(7.99%)
Callan Target Date 2045	(24.71%)	16.83%	15.52%	24.60%	(8.21%)
SERS 2050 Retirement Fund	(25.50%)	18.75%	15.27%	26.70%	(8.05%)
BlackRock 2050 Index	(25.45%)	18.62%	15.07%	26.48%	(8.26%)
Callan Target Date 2050	(24.97%)	17.17%	15.73%	24.89%	(8.44%)
SERS 2055 Retirement Fund	(25.63%)	18.91%	15.40%	26.75%	(8.07%)
BlackRock 2055 Index	(25.59%)	18.81%	15.18%	26.58%	(8.28%)
Callan Target Date 2055	(25.13%)	17.27%	15.83%	24.97%	(8.44%)
SERS 2060 Retirement Fund	(25.63%)	18.90%	15.38%	26.74%	(8.08%)
BlackRock 2060 Index	(25.60%)	18.81%	15.19%	26.58%	(8.28%)
Callan Target Date 2060	(25.13%)	17.45%	15.90%	25.08%	(8.35%)
SERS 2065 Retirement Fund	(25.64%)	18.85%	15.22%	-	-
BlackRock 2065 Index	(25.62%)	18.80%	15.19%	-	-
Callan Target Date 2065	(25.63%)	17.31%	16.43%	25.62%	(8.63%)

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.

	12/2021- 9/2022	2021	2020	2019	2018
Gross Performance					
Domestic Equity					
SERS U.S. Large Company Index Fund	(23.86%)	28.71%	18.44%	31.51%	(4.38%)
S&P 500 Index	(23.87%)	28.71%	18.40%	31.49%	(4.38%)
Callan Lg Cap Broad MF	(24.02%)	25.50%	18.47%	30.14%	(4.54%)
SERS U.S. All Company Index Fund	(24.64%)	25.62%	21.20%	30.53%	(5.29%)
Russell 3000 Index	(24.62%)	25.66%	20.89%	31.02%	(5.24%)
Callan Multi Cap Brd MF	(24.59%)	24.17%	17.19%	29.12%	(6.82%)
SERS U.S. SMID Company Idx Fund	(29.81%)	12.90%	32.04%	28.21%	(9.32%)
Dow Jones US Completion	(30.09%)	12.36%	32.17%	27.94%	(9.57%)
Callan SMID Broad MFs	(26.58%)	19.56%	24.00%	29.40%	(8.69%)
International Equity					
SERS Global Non-U.S. Index Fund	(26.55%)	7.98%	11.17%	21.79%	(13.85%)
MSCI ACWI ex US	(26.50%)	7.82%	10.65%	21.51%	(14.20%)
Callan Non US Equity MFs	(28.08%)	9.47%	11.12%	22.83%	(15.04%)
Domestic Fixed Income					
SERS Short Term Investment Fund	0.68%	0.07%	0.67%	2.31%	2.09%
3-month Treasury Bill	0.61%	0.05%	0.67%	2.28%	1.87%
Callan Cash Database(1)	0.34%	0.13%	1.05%	2.65%	2.00%
SERS U.S. Short Term Bond Idx Fund	(4.53%)	(0.51%)	3.37%	4.02%	1.58%
Blmbg Gov/Cred 1-3 Yr	(4.54%)	(0.47%)	3.33%	4.03%	1.60%
Callan Short US Govt MFs	(5.66%)	(1.08%)	3.57%	3.52%	1.15%
SERS U.S. TIPS Index Fund	(13.56%)	5.88%	11.00%	8.40%	-
Blmbg US TIPS	(13.61%)	5.96%	10.99%	8.43%	(1.26%)
Callan TIPS MFs	(13.58%)	5.54%	10.79%	8.31%	(1.66%)
SERS U.S. Bond Index Fund	(14.55%)	(1.64%)	7.56%	8.69%	0.03%
Blmbg Aggregate	(14.61%)	(1.54%)	7.51%	8.72%	0.01%
Callan Core Bond MFs	(14.98%)	(1.17%)	8.65%	9.17%	(0.35%)

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

Pennsylvania SERS 401(a)
Investment Manager Performance Monitoring Summary Report
September 30, 2022

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									
Target Date Funds									
SERS Post Retirement Fund Callan Tgt Date Ret Inc	-5.5 90	-16.4 81	0.4 39	2.3 24	3.7 19	3.6 20			0.08 76
BlackRock Post Retirement Index	-5.4 86	-16.3 80	0.4 39	2.2 24	3.7 20	3.6 21			
SERS 2025 Retirement Fund Callan Target Date 2025	-5.8 75	-17.0 52	1.1 64	2.8 60	4.8 67	4.9 83			0.08 74
BlackRock 2025 Index	-5.7 71	-16.9 49	1.0 64	2.8 61	4.8 68	4.8 84			
SERS 2030 Retirement Fund Callan Target Date 2030	-6.2 80	-17.9 47	1.7 63	3.3 51	5.5 61	5.5 77			0.08 72
BlackRock 2030 Index	-6.0 71	-17.8 45	1.7 63	3.3 52	5.4 65	5.4 78			
SERS 2035 Retirement Fund Callan Target Date 2035	-6.6 80	-18.8 44	2.3 60	3.8 44	6.2 53	6.1 77			0.08 74
BlackRock 2035 Index	-6.3 67	-18.7 43	2.3 60	3.8 48	6.1 63	6.0 81			
SERS 2040 Retirement Fund Callan Target Date 2040	-6.9 86	-19.7 48	2.8 53	4.2 35	6.7 39	6.5 72			0.08 71
BlackRock 2040 Index	-6.6 70	-19.6 46	2.8 53	4.1 37	6.6 49	6.4 77			
SERS 2045 Retirement Fund Callan Target Date 2045	-7.1 88	-20.4 56	3.2 44	4.4 26	7.1 34	6.9 68			0.08 74
BlackRock 2045 Index	-6.8 75	-20.3 54	3.2 47	4.4 32	7.0 43	6.8 70			
SERS 2050 Retirement Fund Callan Target Date 2050	-7.1 88	-20.8 61	3.4 37	4.6 16	7.2 24	7.2 51			0.08 71
BlackRock 2050 Index	-6.8 73	-20.7 57	3.4 39	4.5 20	7.1 32	7.0 61			
SERS 2055 Retirement Fund Callan Target Date 2055	-7.1 84	-20.9 58	3.4 34	4.6 17	7.2 26	7.3 51			0.08 78
BlackRock 2055 Index	-6.8 69	-20.8 53	3.4 34	4.5 22	7.1 39	7.2 54			
SERS 2060 Retirement Fund Callan Target Date 2060	-7.1 89	-20.9 58	3.4 42	4.6 21	7.2 45				0.08 77
BlackRock 2060 Index	-6.8 68	-20.8 54	3.4 42	4.5 25	7.1 51				

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 401(a)
Investment Manager Performance Monitoring Summary Report
September 30, 2022

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 Callan Target Date 2065	-7.1 88	-21.0 45	3.3 52						0.08 56
BlackRock 2065 Index	-6.8 61	-20.9 38	3.4 43						
Domestic Equity									
SERS U.S. Large Company Stock Index Fund Callan Lg Cap Broad MF	-4.9 52	-15.5 42	8.2 33	9.2 34	11.4 25	11.7 35			0.02 100
S&P 500 Index	-4.9 52	-15.5 42	8.2 33	9.2 34	11.4 25	11.7 35			
SERS U.S. All Company Index Fund Callan Multi Cap Brd MF	-4.5 47	-17.7 49	7.8 27	8.6 28	10.8 23	11.4 23			0.03 99
Russell 3000 Index	-4.5 47	-17.6 49	7.7 28	8.6 28	10.9 22	11.4 23			
U.S. Small/Mid Company Stock Index Fund Callan SMID Broad MFs	-2.7 54	-29.2 72	4.4 62	5.0 57	8.1 59	9.5 45			0.03 100
Dow Jones US Completion	-2.8 54	-29.6 73	4.2 62	4.7 62	7.8 60	9.2 54			
International Equity									
SERS Global Non-U.S. Index Fund Callan Non US Equity MFs	-10.3 59	-25.0 32	-1.4 50	-0.6 47	3.5 29	3.2 65			0.05 99
MSCI ACWI ex US	-9.9 48	-25.2 35	-1.5 52	-0.8 49	3.3 39	3.0 67			
Domestic Fixed Income									
SERS Short Term Investment Fund Callan Cash Database	0.5 48	0.7 38	0.6 57	1.2 59	1.1 73	0.8 79			0.00 100
3-month Treasury Bill	0.5 54	0.6 41	0.6 67	1.1 79	1.0 90	0.7 90			
Comments: Callan Cash Database includes STIF, enhanced cash, and money market funds.									
SERS U.S. Short Term Bond Idx Fund Callan Short US Govt MFs	-1.5 25	-5.1 24	-0.4 18						0.02 100
Blmbg Gov/Cred 1-3 Yr	-1.5 25	-5.1 24	-0.4 17	0.7 9	0.8 12	0.8 1			
SERS U.S. TIPS Index Fund Callan TIPS MFs	-5.1 54	-11.6 36	0.8 44						0.02 99
Blmbg US TIPS	-5.1 54	-11.6 35	0.8 44	2.0 42	2.2 32	1.0 26			

Returns:
■ above median
■ third quartile
■ fourth quartile

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

Risk Quadrant:

Return
Risk

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

Pennsylvania SERS 401(a)
Investment Manager Performance Monitoring Summary Report
September 30, 2022

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 U.S. Bond Index Fund	-4.7 51	-14.6 34	-3.3 81	-0.3 76	0.5 90	0.9 84			0.02 98
Callan Core Bond MFs									
Blmbg Aggregate	-4.8 55	-14.6 34	-3.3 81	-0.3 76	0.5 89	0.9 83			

Returns:
 above median
 third quartile
 fourth quartile

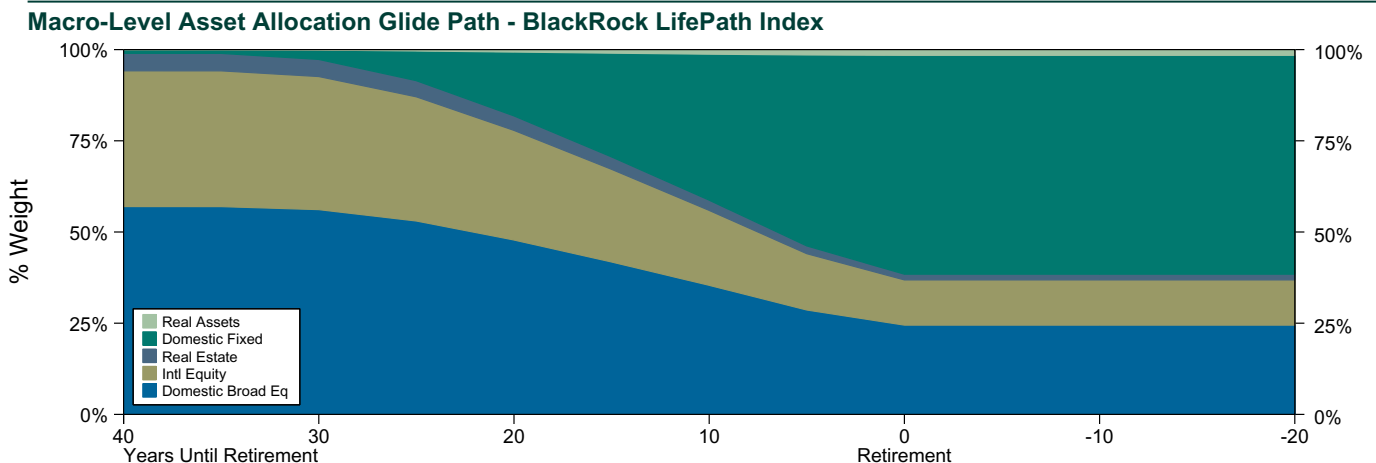
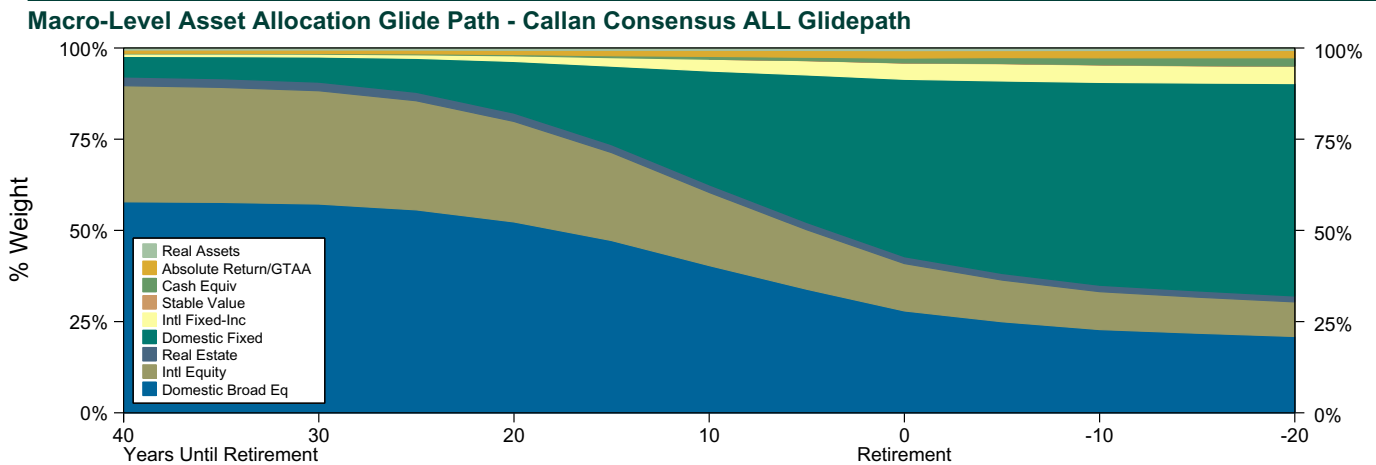
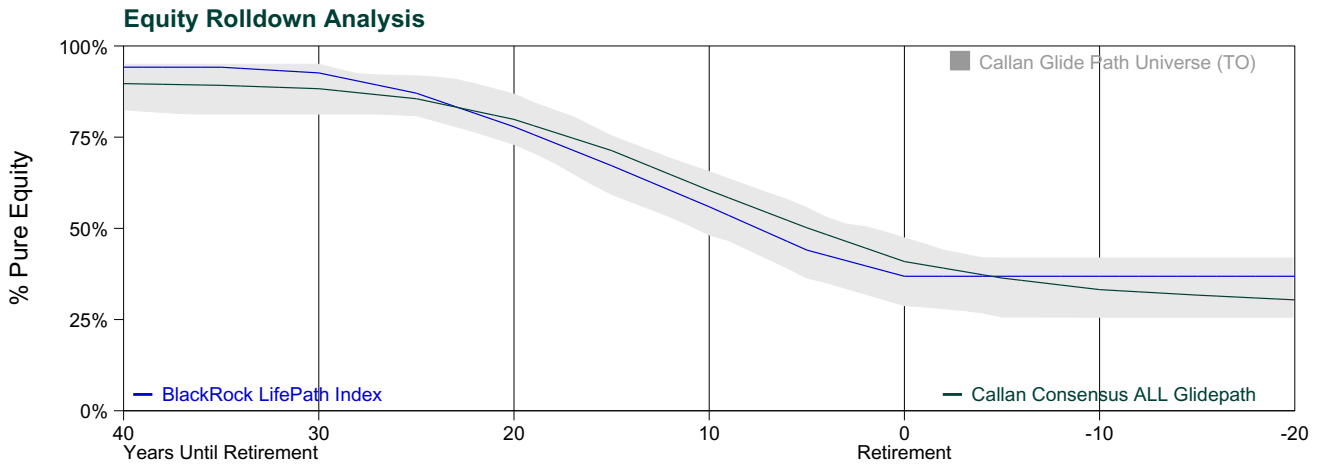
Return Consistency:
 above median
 third quartile
 fourth quartile

Risk Quadrant:

Expense Ratio:
 below median
 second quartile
 first quartile

Callan Consensus ALL Glidepath Target Date Glide Path Analysis as of September 30, 2022

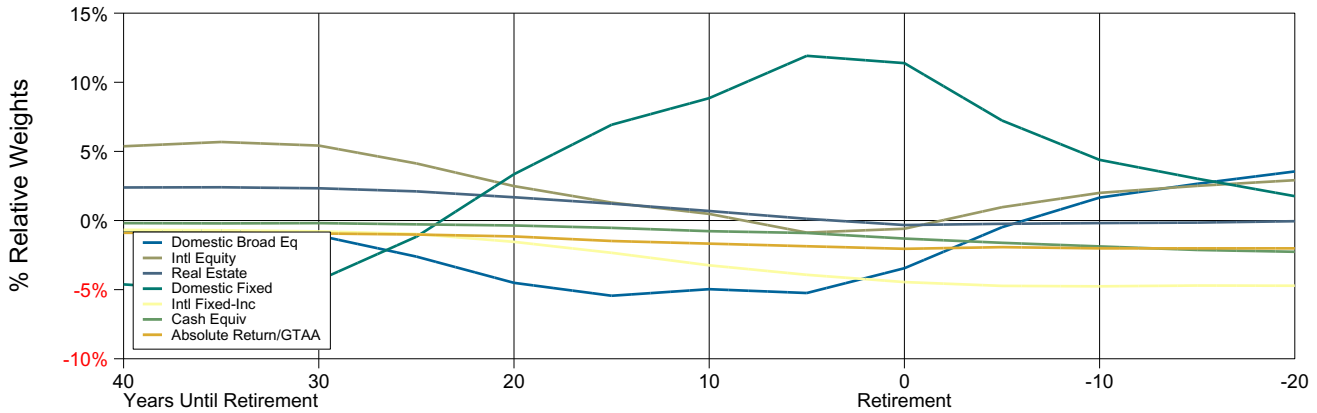
The following charts illustrate the asset allocation "glide path" underlying the relevant suite of target date funds. This analysis covers forty years of investor wealth accumulation up to retirement, as well as twenty years of wealth decumulation following retirement. The top chart shows the "pure" 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.



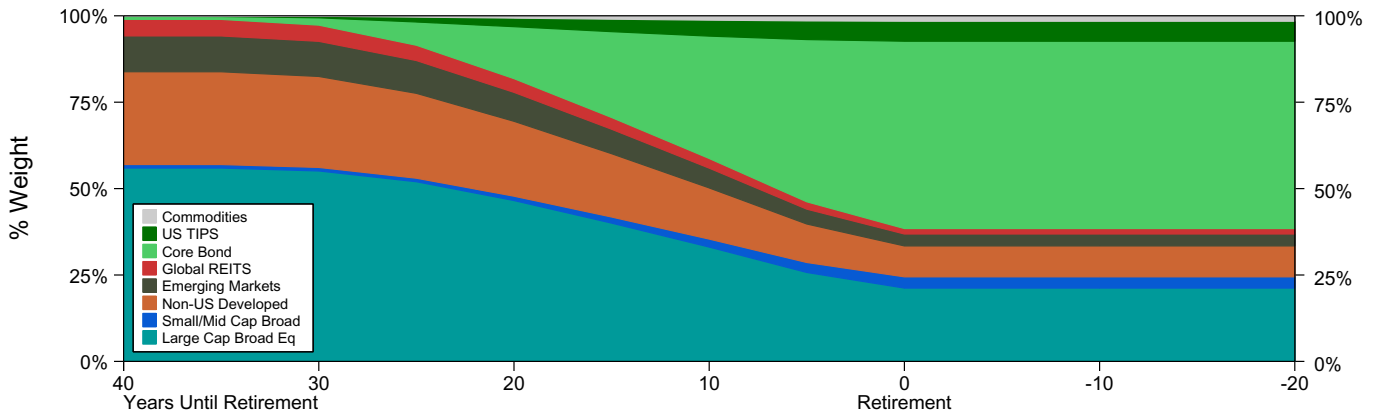
BlackRock LifePath Index Target Date Glide Path Analysis as of September 30, 2022

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.

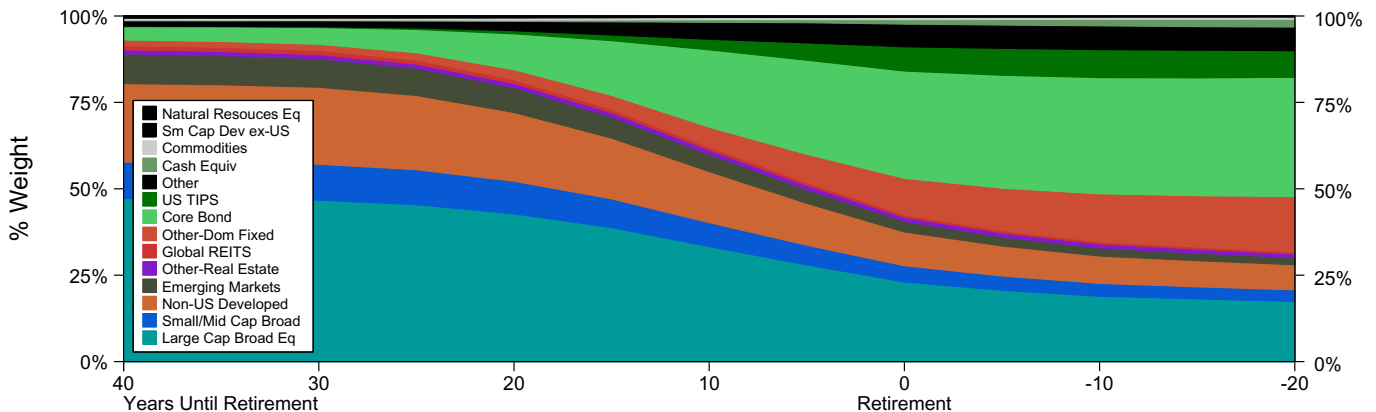
Relative Macro Asset Allocation - BlackRock LifePath Index vs. Callan Consensus ALL Glidep



Micro-Level Asset Allocation Glide Path - BlackRock LifePath Index



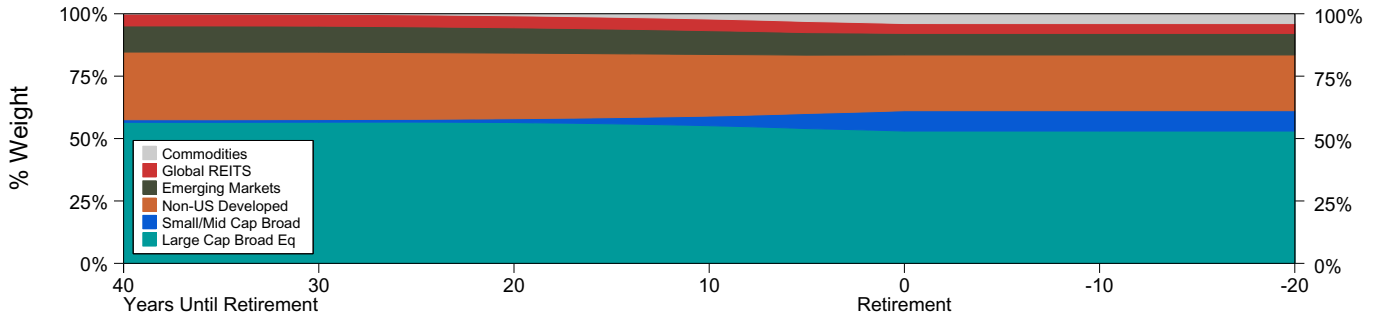
Micro-Level Asset Allocation Glide Path - Callan Consensus ALL Glidepath



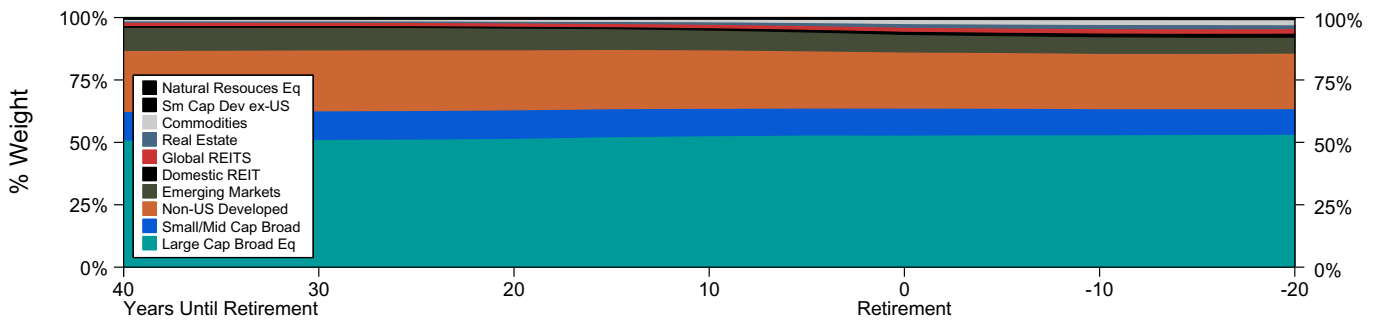
BlackRock LifePath Index Target Date Glide Path Analysis as of September 30, 2022

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.

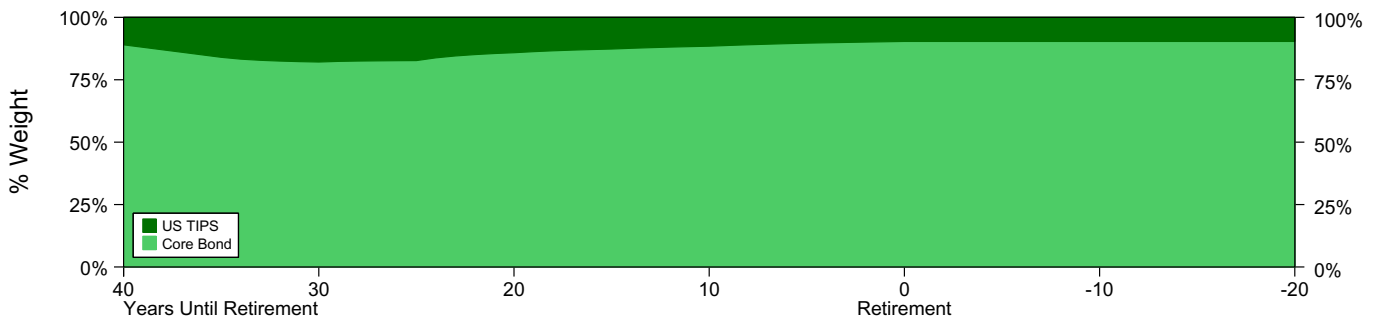
Micro-Level Equity Allocation Glide Path - BlackRock LifePath Index



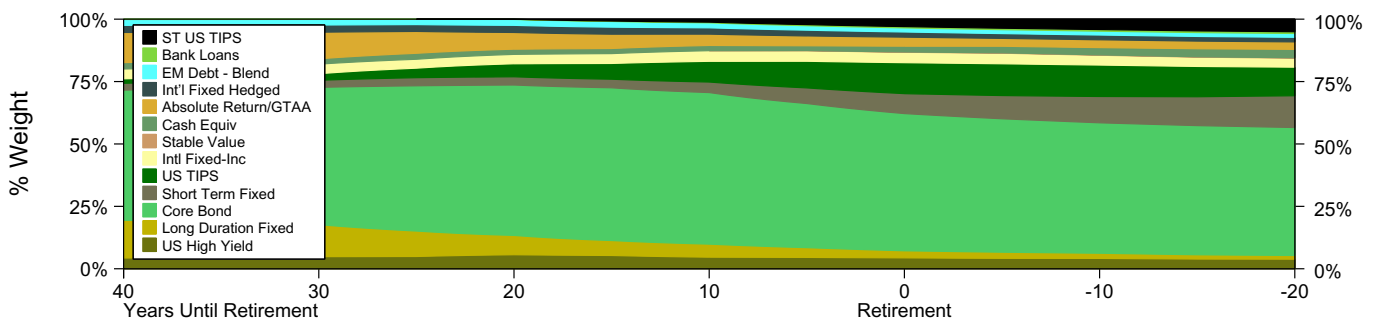
Micro-Level Equity Asset Allocation Glide Path - Callan Consensus ALL Glidepath



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



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

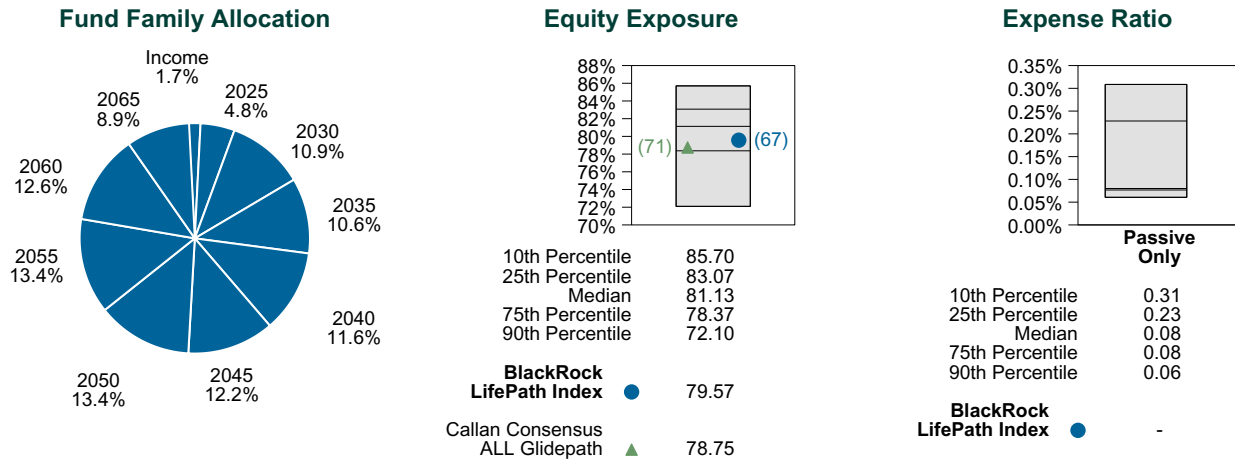


Pennsylvania SERS 401(a) - BlackRock LifePath Index Target Date Fund Family Analysis as of September 30, 2022

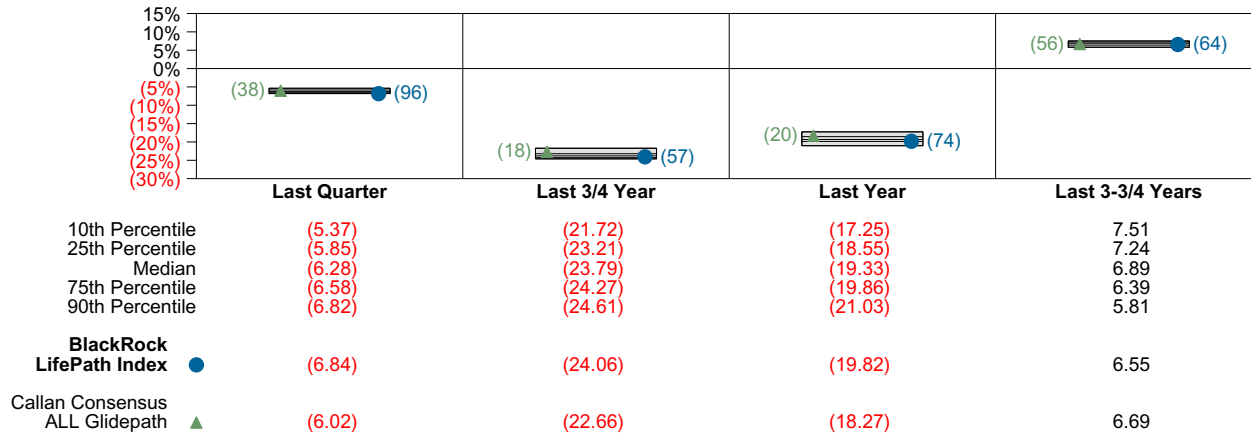
The following is an analysis of the client's suite of target date funds as an aggregated portfolio using actual proportions held by the client's participants. The upper-left pie chart shows the current client weights across target dates. The rest of the charts compare different attributes of the aggregated 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

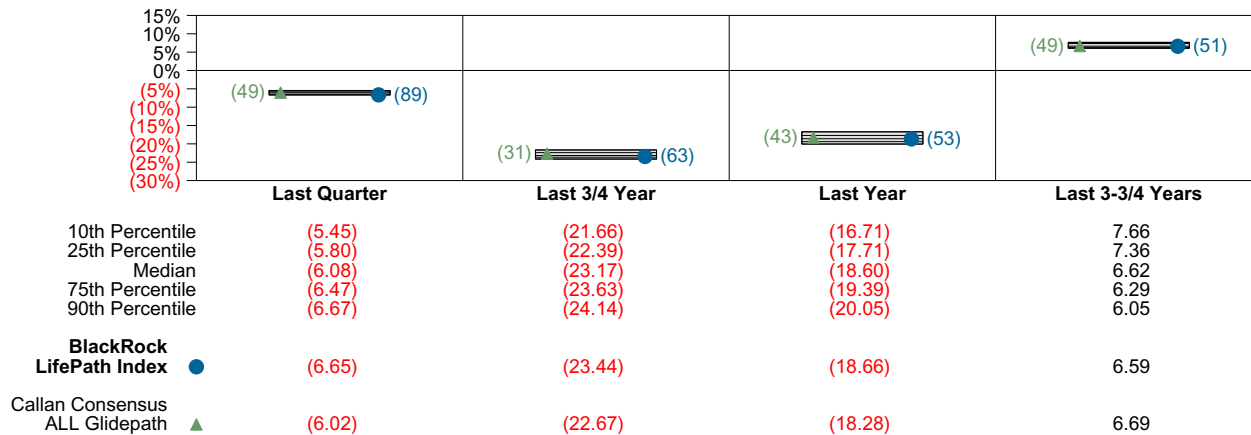
Fee/Return Type: Gross



Target Date Family Performance vs Peer Families



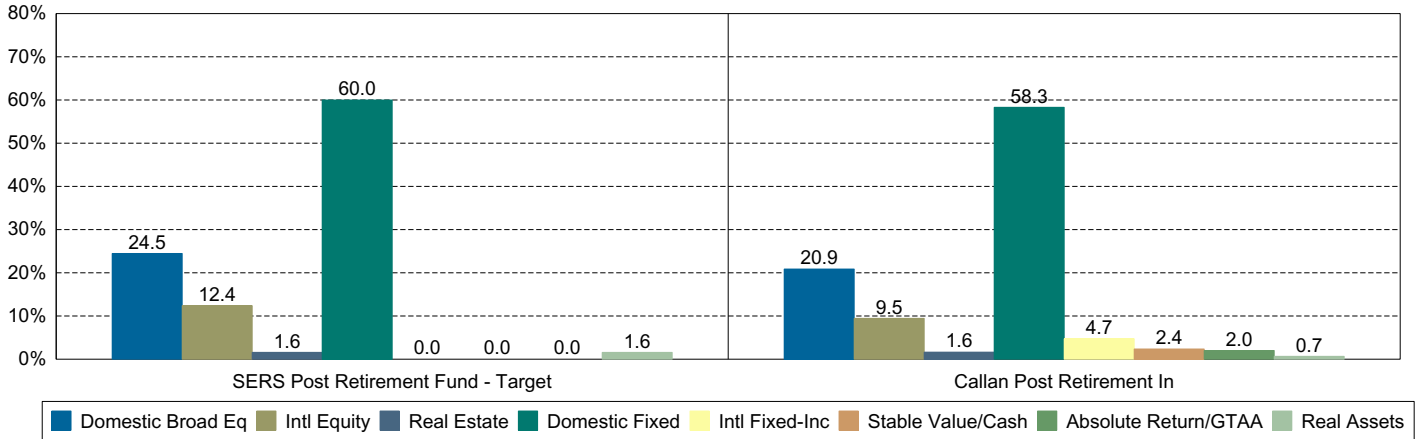
Target Date Family Glide Path Returns vs Peer Families



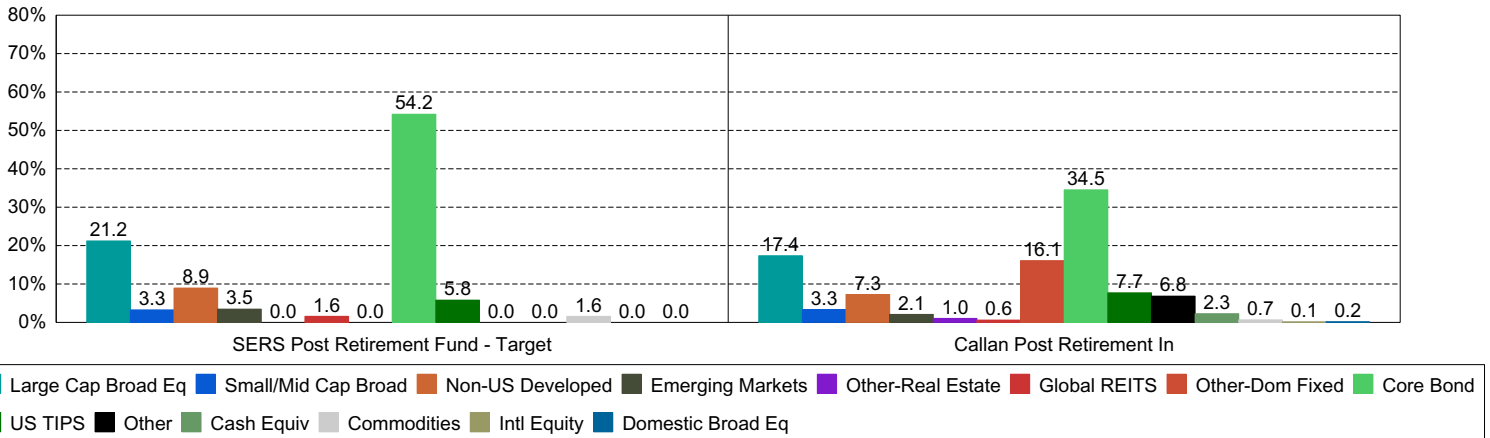
SERS Post Retirement Fund Target Date Fund Asset Allocation as of September 30, 2022

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.

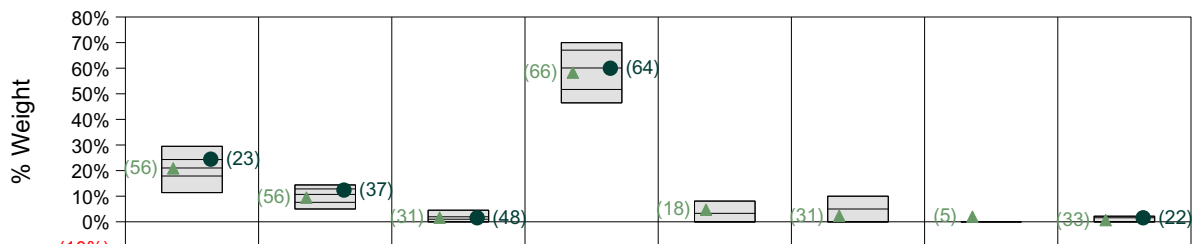
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date Retirement Income



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	29.49	14.40	4.53	69.99	8.09	10.00	0.00	2.19
25th Percentile	24.32	12.84	1.96	67.05	3.30	5.00	0.00	1.57
Median	21.02	10.70	1.01	60.08	0.00	0.00	0.00	0.00
75th Percentile	17.89	7.60	0.00	51.70	0.00	0.00	0.00	0.00
90th Percentile	11.40	5.00	0.00	46.45	0.00	0.00	0.00	0.00

SERS Post Retirement Fund - Target	●	24.47	12.39	1.58	59.99	-	-	1.57
Callan Post Retirement In	▲	20.86	9.45	1.63	58.30	4.72	2.36	2.01

SERS Post Retirement Fund Period Ended September 30, 2022

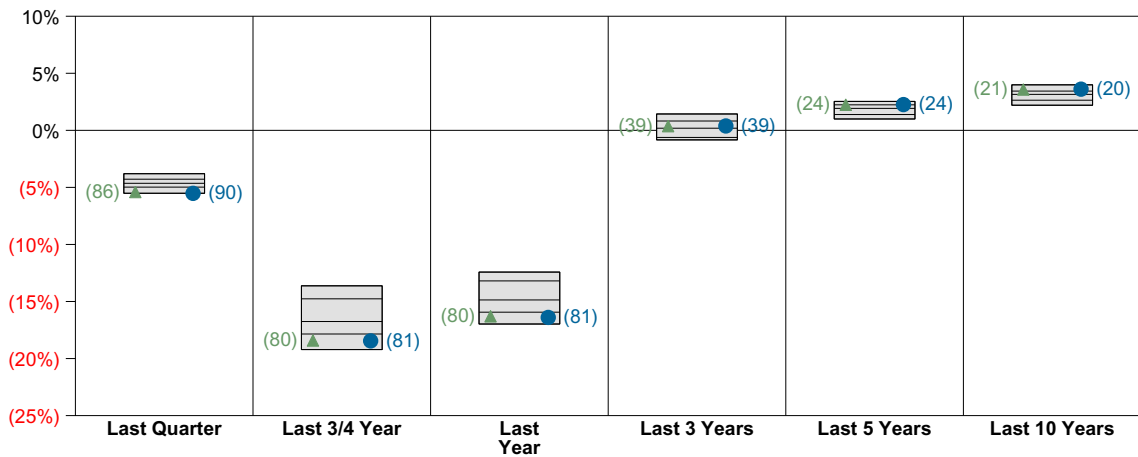
Investment Philosophy

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.

Quarterly Summary and Highlights

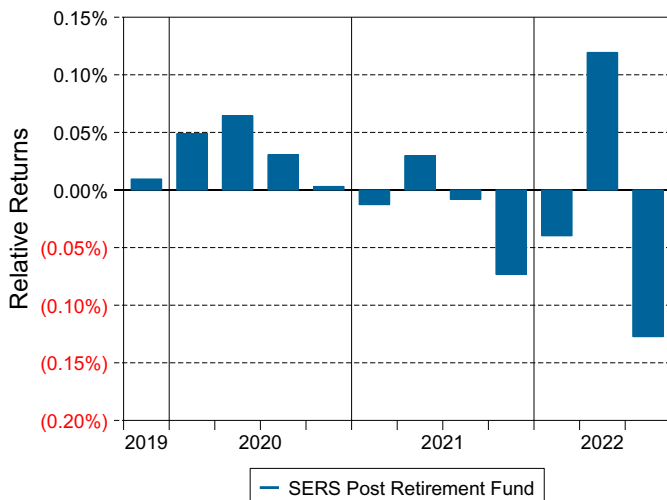
- SERS Post Retirement Fund's portfolio posted a (5.52)% return for the quarter placing it in the 90 percentile of the Callan Target Date Retirement Income group for the quarter and in the 81 percentile for the last year.
- SERS Post Retirement Fund's portfolio underperformed the BlackRock Post Retirement Index by 0.12% for the quarter and underperformed the BlackRock Post Retirement Index for the year by 0.10%.

Performance vs Callan Target Date Retirement Income (Net)

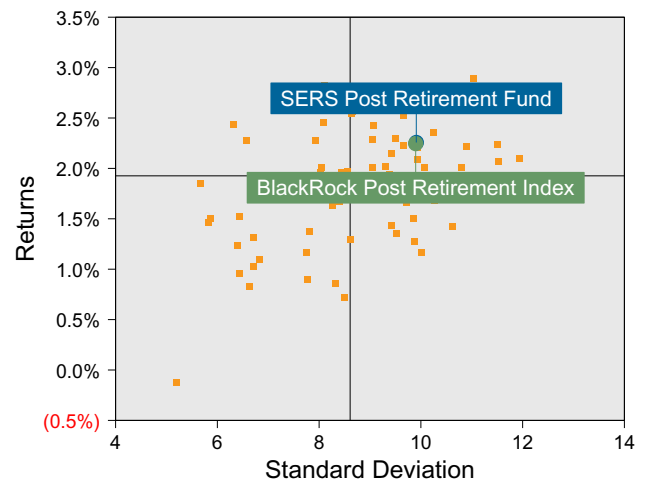


10th Percentile	(3.80)	(13.63)	(12.42)	1.43	2.54	3.99
25th Percentile	(4.28)	(14.77)	(13.20)	0.82	2.24	3.44
Median	(4.64)	(16.76)	(14.86)	0.19	1.93	3.15
75th Percentile	(4.98)	(17.85)	(15.94)	(0.62)	1.39	2.64
90th Percentile	(5.52)	(19.21)	(16.98)	(0.84)	0.99	2.20
SERS Post Retirement Fund	(5.52)	(18.45)	(16.40)	0.38	2.26	3.61
BlackRock Post Retirement Index	(5.40)	(18.41)	(16.30)	0.37	2.25	3.58

Relative Returns vs BlackRock Post Retirement Index



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

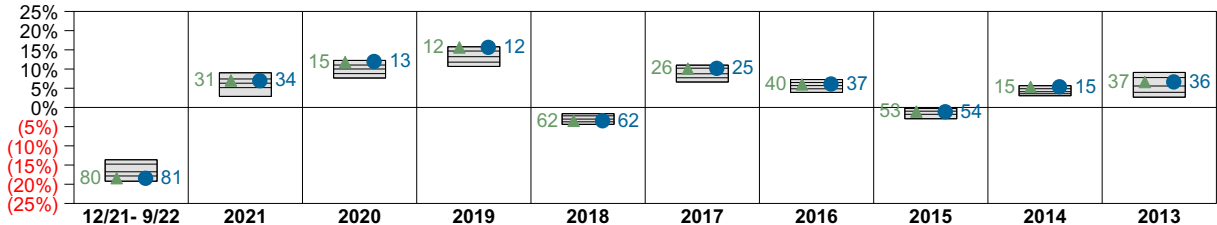


SERS Post Retirement Fund Return Analysis Summary

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.

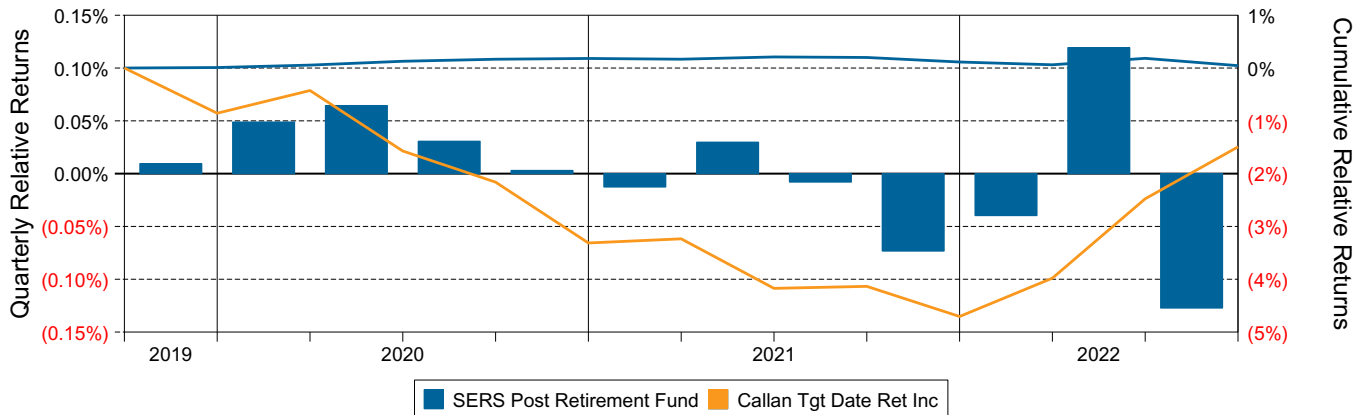
Performance vs Callan Target Date Retirement Income (Net)



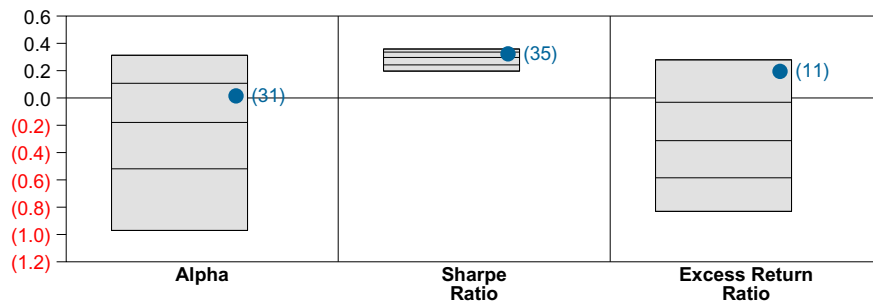
	12/21- 9/22	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	(13.63)	9.02	12.24	15.80	(1.63)	11.01	7.26	(0.02)	5.66	9.12
25th Percentile	(14.77)	7.42	11.04	14.69	(2.19)	10.22	6.49	(0.27)	4.87	7.78
Median	(16.76)	6.31	10.02	13.21	(3.04)	8.76	5.69	(0.97)	4.10	5.58
75th Percentile	(17.85)	5.16	8.81	11.80	(3.75)	7.72	4.85	(1.79)	3.57	3.94
90th Percentile	(19.21)	2.88	7.66	10.68	(4.41)	6.62	3.91	(2.95)	3.05	2.67

SERS Post Retirement Fund	● (18.45)	6.95	11.97	15.65	(3.47)	10.18	6.10	(1.12)	5.38	6.64
BlackRock Post Retirement Index	▲ (18.41)	7.02	11.80	15.63	(3.48)	10.10	6.01	(1.07)	5.36	6.63

Cumulative and Quarterly Relative Returns vs BlackRock Post Retirement Index



Risk Adjusted Return Measures vs BlackRock Post Retirement Index Rankings Against Callan Target Date Retirement Income (Net) Seven Years Ended September 30, 2022

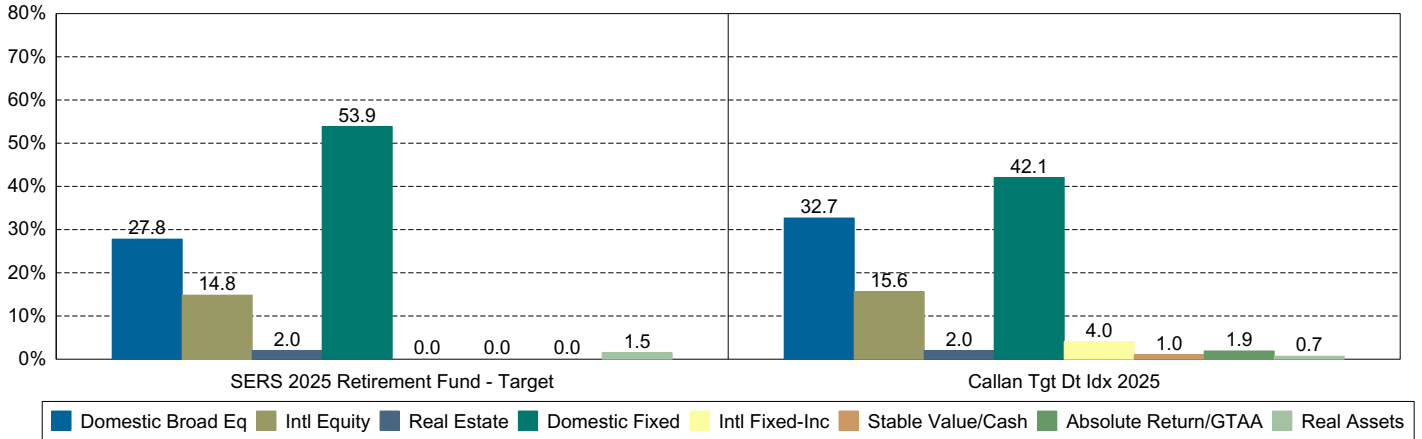


10th Percentile	0.31	0.36	0.28
25th Percentile	0.11	0.34	(0.03)
Median	(0.18)	0.30	(0.31)
75th Percentile	(0.52)	0.24	(0.58)
90th Percentile	(0.97)	0.20	(0.83)
SERS Post Retirement Fund	● 0.02	0.32	0.19

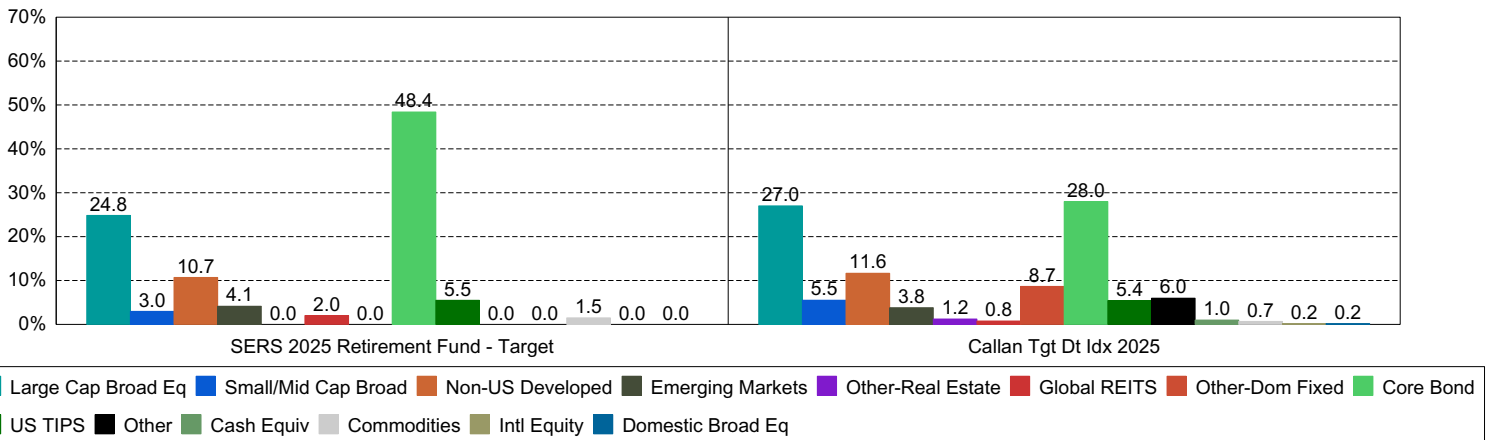
SERS 2025 Retirement Fund Target Date Fund Asset Allocation as of September 30, 2022

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.

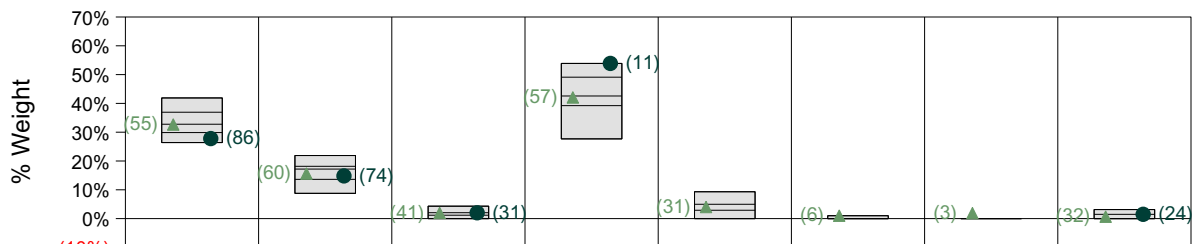
Macro-Level Asset Allocation



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	41.90	21.90	4.32	53.88	9.33	1.00	0.00	3.14
25th Percentile	36.94	18.16	2.04	49.10	4.97	0.00	0.00	1.48
Median	32.76	17.19	1.18	42.57	2.90	0.00	0.00	0.00
75th Percentile	29.87	13.63	0.00	39.22	0.00	0.00	0.00	0.00
90th Percentile	26.40	8.77	0.00	27.67	0.00	0.00	0.00	0.00

SERS 2025 Retirement Fund - Target	●	27.79	14.82	2.02	53.88	-	-	1.49
Callan Tgt Dt Idx 2025	▲	32.68	15.64	1.99	42.07	4.03	1.02	1.90

SERS 2025 Retirement Fund Period Ended September 30, 2022

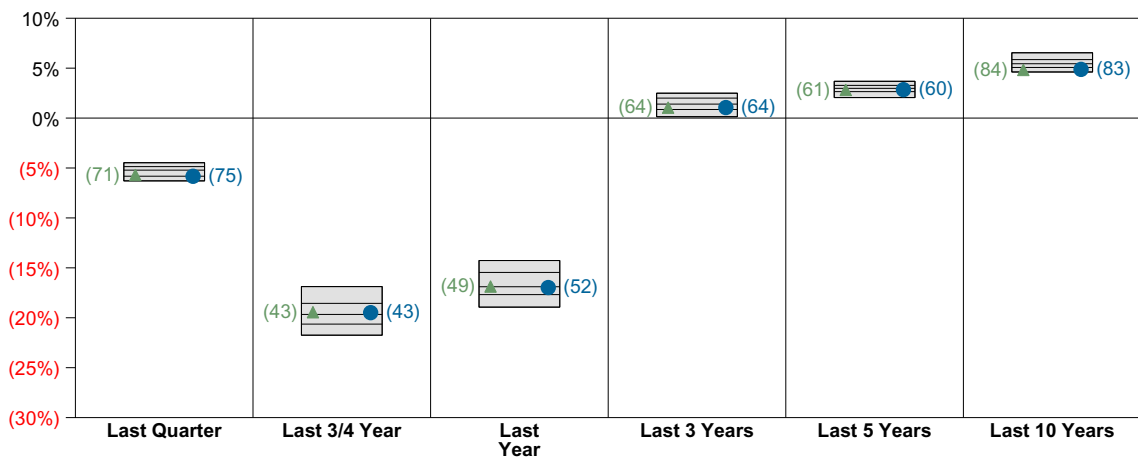
Investment Philosophy

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.

Quarterly Summary and Highlights

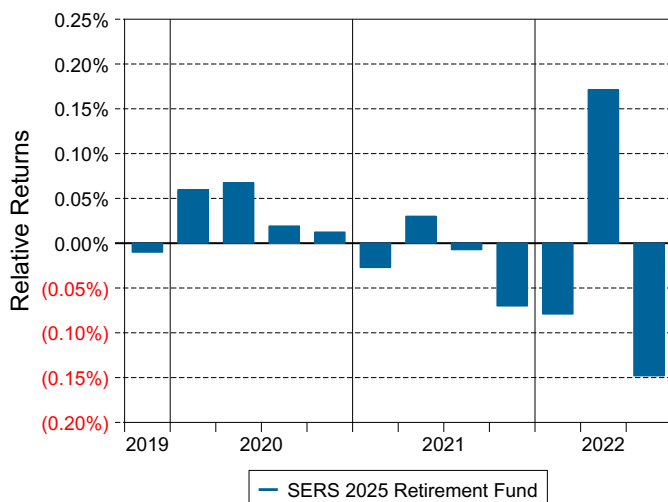
- SERS 2025 Retirement Fund's portfolio posted a (5.83)% return for the quarter placing it in the 75 percentile of the Callan Target Date 2025 group for the quarter and in the 52 percentile for the last year.
- SERS 2025 Retirement Fund's portfolio underperformed the LifePath Index 2025 CB by 0.14% for the quarter and underperformed the LifePath Index 2025 CB for the year by 0.10%.

Performance vs Callan Target Date 2025 (Net)

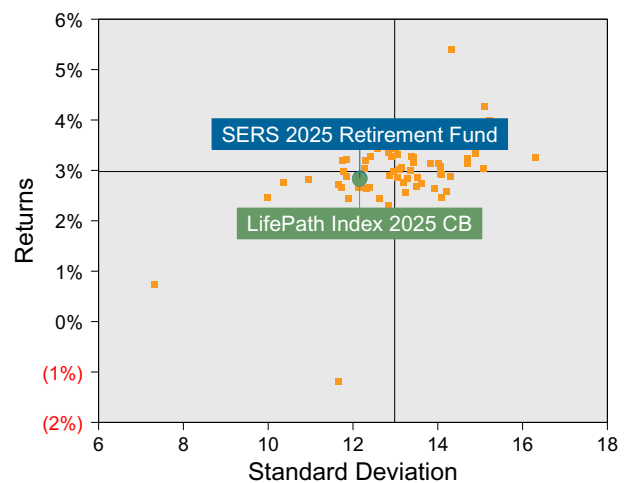


	Last Quarter	Last 3/4 Year	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(4.47)	(16.88)	(14.27)	2.49	3.68	6.54
25th Percentile	(4.86)	(18.56)	(15.46)	2.00	3.27	5.86
Median	(5.21)	(19.67)	(16.89)	1.40	2.98	5.44
75th Percentile	(5.82)	(20.63)	(17.68)	0.86	2.65	5.07
90th Percentile	(6.29)	(21.75)	(18.94)	0.14	2.05	4.62
SERS 2025 Retirement Fund	(5.83)	(19.49)	(16.98)	1.05	2.84	4.88
LifePath Index 2025 CB	(5.69)	(19.44)	(16.87)	1.05	2.82	4.83

Relative Return vs LifePath Index 2025 CB



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

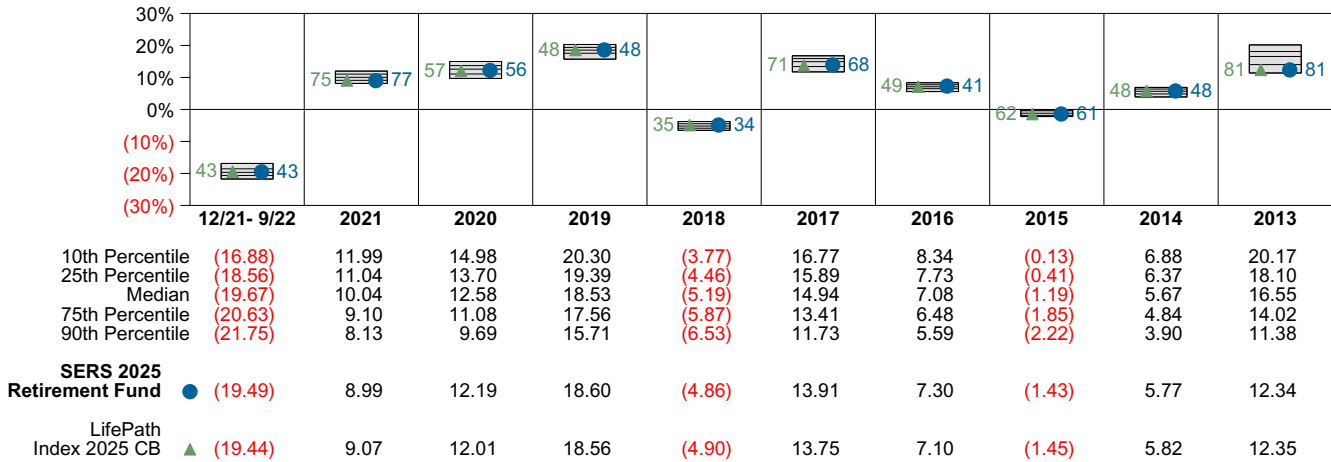


SERS 2025 Retirement Fund Return Analysis Summary

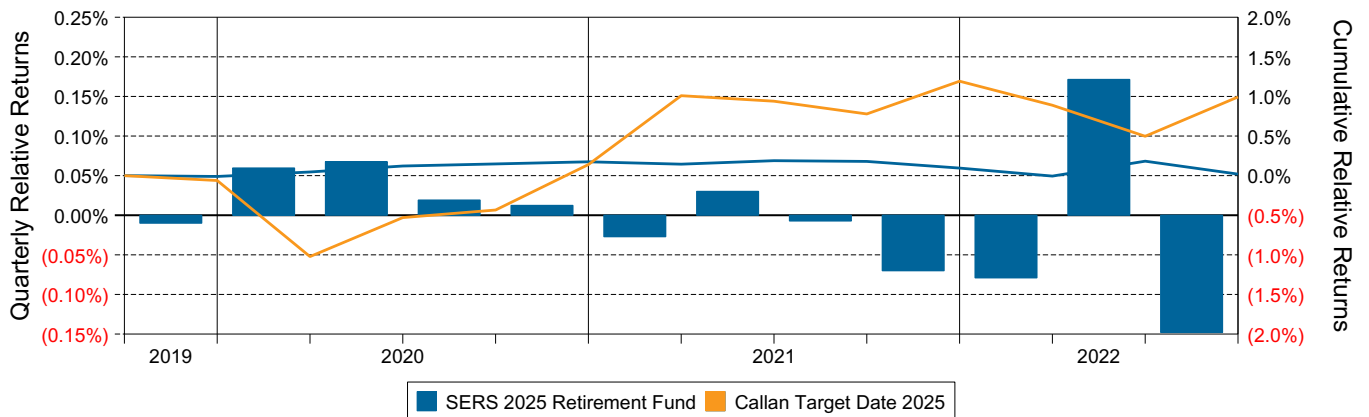
Return Analysis

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.

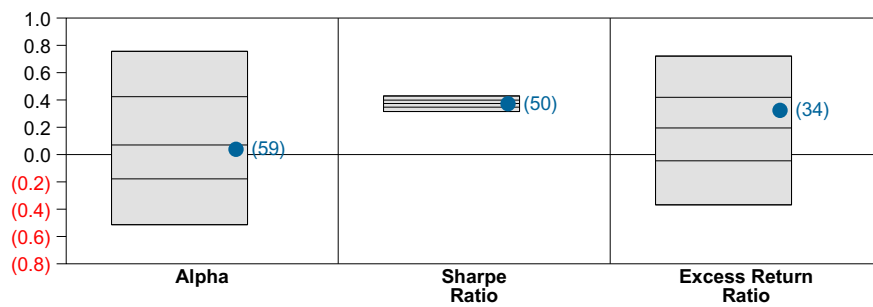
Performance vs Callan Target Date 2025 (Net)



Cumulative and Quarterly Relative Returns vs LifePath Index 2025 CB



Risk Adjusted Return Measures vs LifePath Index 2025 CB Rankings Against Callan Target Date 2025 (Net) Seven Years Ended September 30, 2022

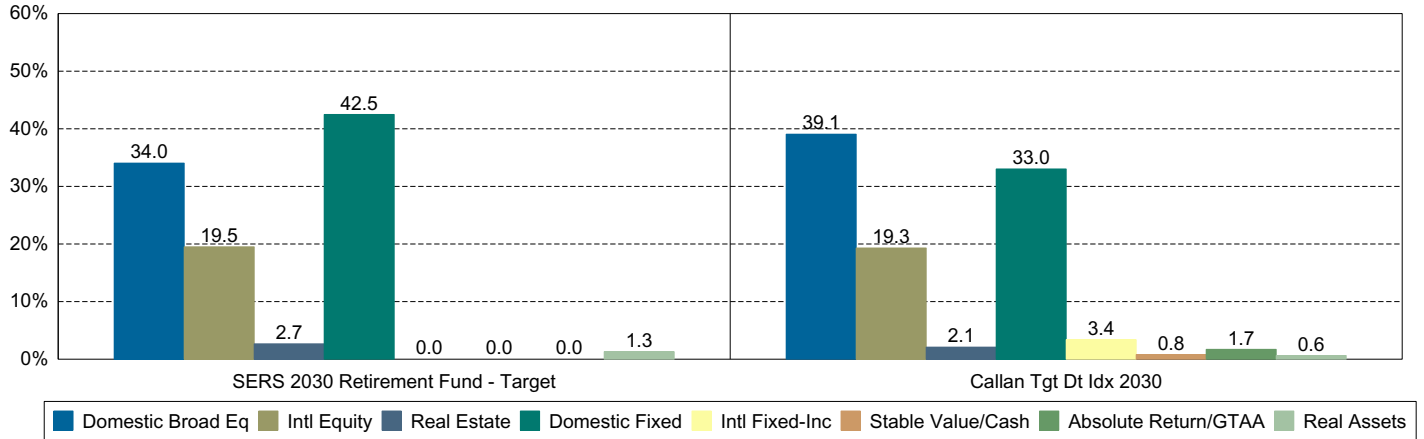


SERS 2030 Retirement Fund

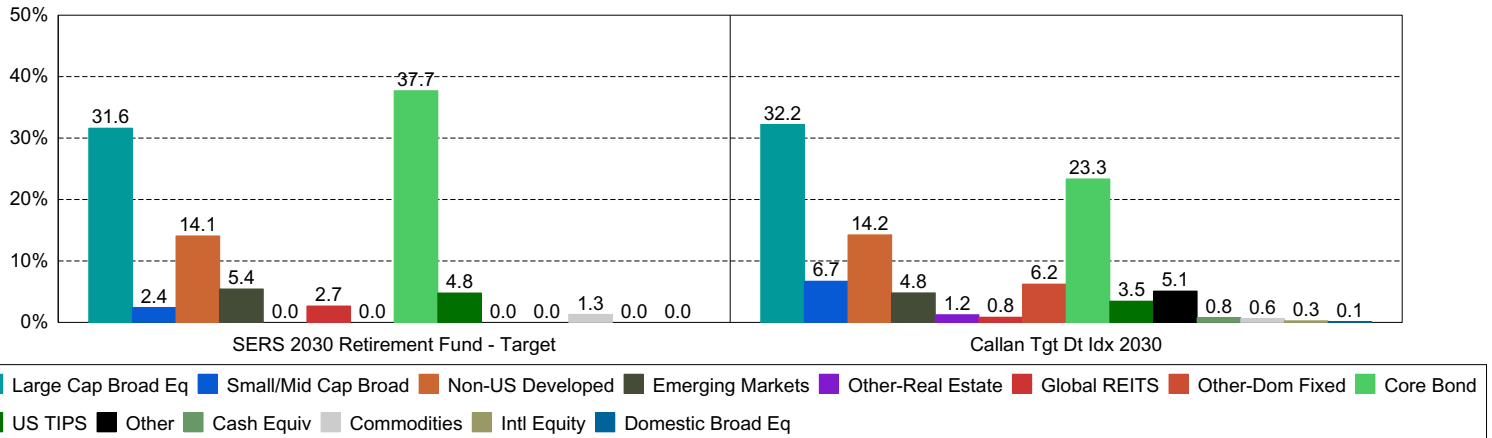
Target Date Fund Asset Allocation as of September 30, 2022

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.

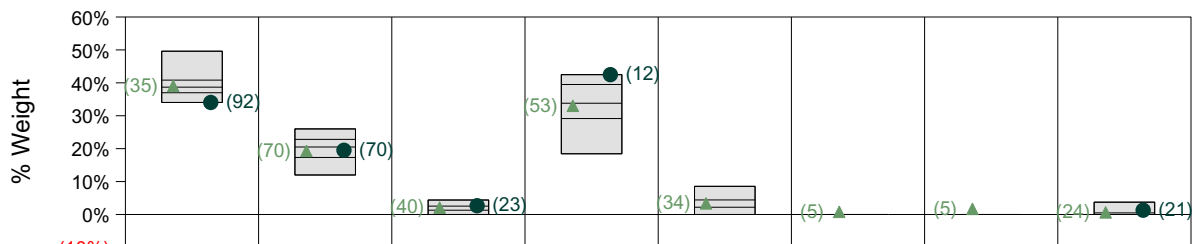
Macro-Level Asset Allocation



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	49.61	26.00	4.40	42.49	8.56	0.00	0.00	3.74
25th Percentile	40.82	22.82	2.54	39.49	4.42	0.00	0.00	0.48
Median	38.68	20.51	1.30	33.80	2.20	0.00	0.00	0.00
75th Percentile	36.99	17.32	0.00	29.15	0.00	0.00	0.00	0.00
90th Percentile	34.04	12.00	0.00	18.45	0.00	0.00	0.00	0.00

SERS 2030 Retirement Fund - Target	●	34.04	19.51	2.67	42.49	-	-	1.30
Callan Tgt Dt Idx 2030	▲	39.06	19.30	2.09	33.02	3.38	0.80	1.71

SERS 2030 Retirement Fund Period Ended September 30, 2022

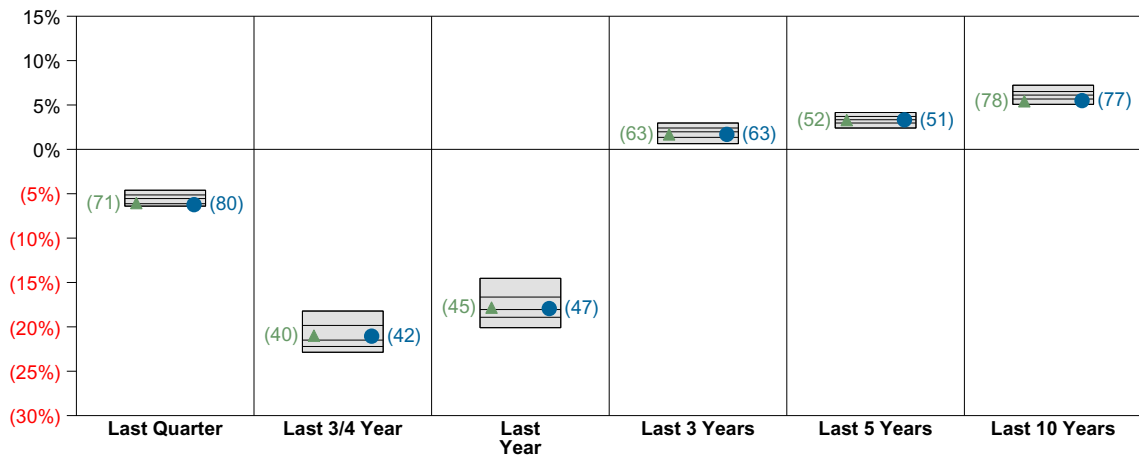
Investment Philosophy

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.

Quarterly Summary and Highlights

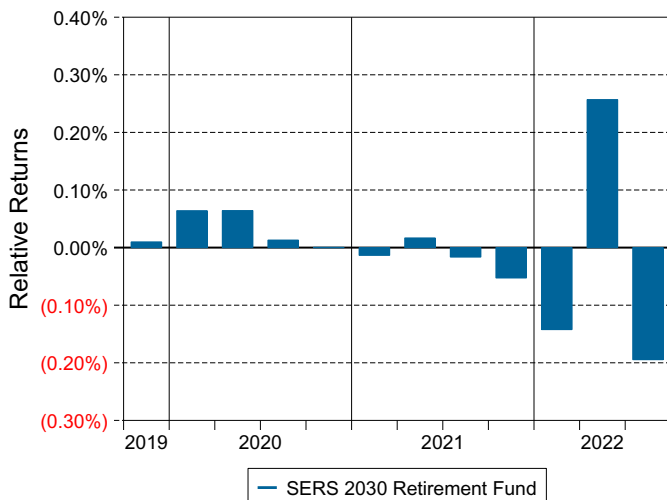
- SERS 2030 Retirement Fund's portfolio posted a (6.23)% return for the quarter placing it in the 80 percentile of the Callan Target Date 2030 group for the quarter and in the 47 percentile for the last year.
- SERS 2030 Retirement Fund's portfolio underperformed the LifePath Index 2030 CB by 0.18% for the quarter and underperformed the LifePath Index 2030 CB for the year by 0.11%.

Performance vs Callan Target Date 2030 (Net)

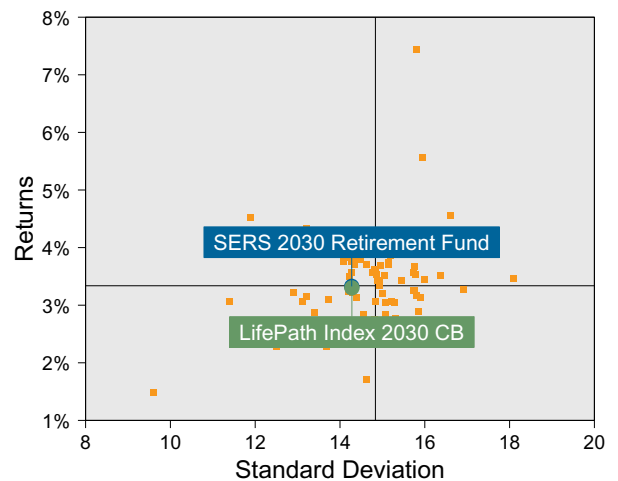


10th Percentile	(4.61)	(18.22)	(14.53)	2.97	4.15	7.23
25th Percentile	(5.14)	(19.84)	(16.64)	2.41	3.71	6.52
Median	(5.54)	(21.49)	(18.05)	1.98	3.34	6.12
75th Percentile	(6.12)	(22.21)	(18.92)	1.35	2.97	5.67
90th Percentile	(6.40)	(22.86)	(20.09)	0.64	2.40	5.07
SERS 2030 Retirement Fund	(6.23)	(21.05)	(17.94)	1.69	3.33	5.49
LifePath Index 2030 CB	(6.05)	(20.99)	(17.83)	1.69	3.30	5.42

Relative Return vs LifePath Index 2030 CB



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

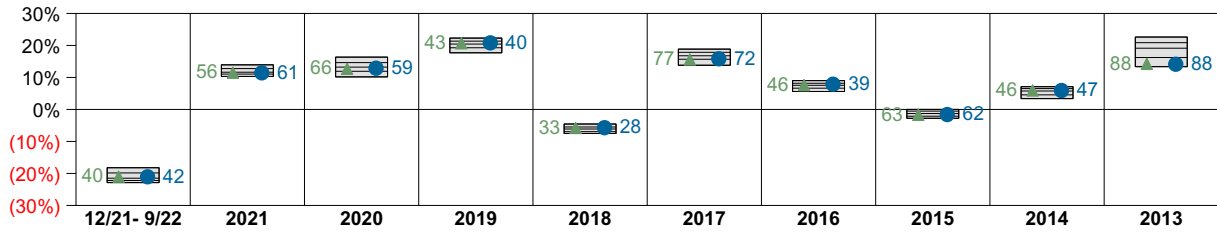


SERS 2030 Retirement Fund Return Analysis Summary

Return Analysis

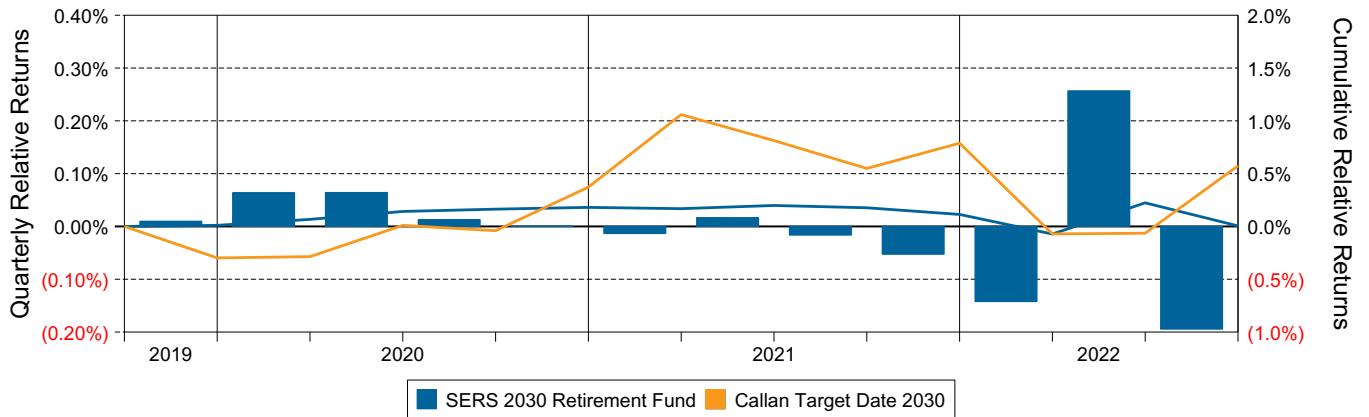
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate 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)

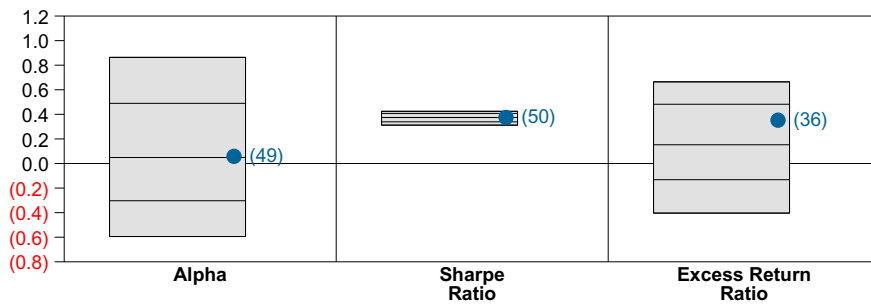


10th Percentile	(18.22)	13.94	16.35	22.30	(4.55)	18.85	9.01	0.01	7.11	22.62
25th Percentile	(19.84)	12.77	14.64	21.34	(5.48)	17.85	8.17	(0.53)	6.52	20.87
Median	(21.49)	11.63	13.23	20.43	(6.12)	16.77	7.54	(1.27)	5.76	19.13
75th Percentile	(22.21)	11.05	11.92	19.28	(6.94)	15.68	6.64	(2.12)	4.56	16.22
90th Percentile	(22.86)	10.31	10.16	17.70	(7.50)	13.81	5.61	(2.77)	3.39	13.37
SERS 2030 Retirement Fund	● (21.05)	11.43	12.88	20.80	(5.71)	15.83	7.88	(1.60)	5.92	14.12
LifePath Index 2030 CB	▲ (20.99)	11.50	12.72	20.70	(5.76)	15.64	7.61	(1.66)	5.95	14.26

Cumulative and Quarterly Relative Returns vs LifePath Index 2030 CB



Risk Adjusted Return Measures vs LifePath Index 2030 CB Rankings Against Callan Target Date 2030 (Net) Seven Years Ended September 30, 2022

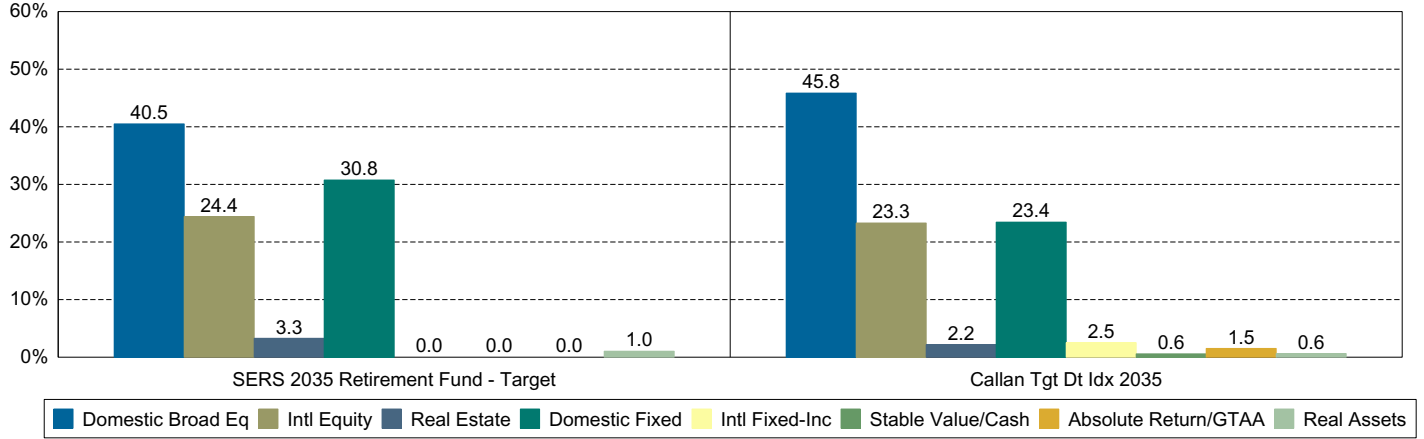


10th Percentile	0.86	0.42	0.66
25th Percentile	0.49	0.41	0.48
Median	0.05	0.37	0.15
75th Percentile	(0.30)	0.34	(0.13)
90th Percentile	(0.59)	0.31	(0.40)
SERS 2030 Retirement Fund	● 0.06	0.37	0.35

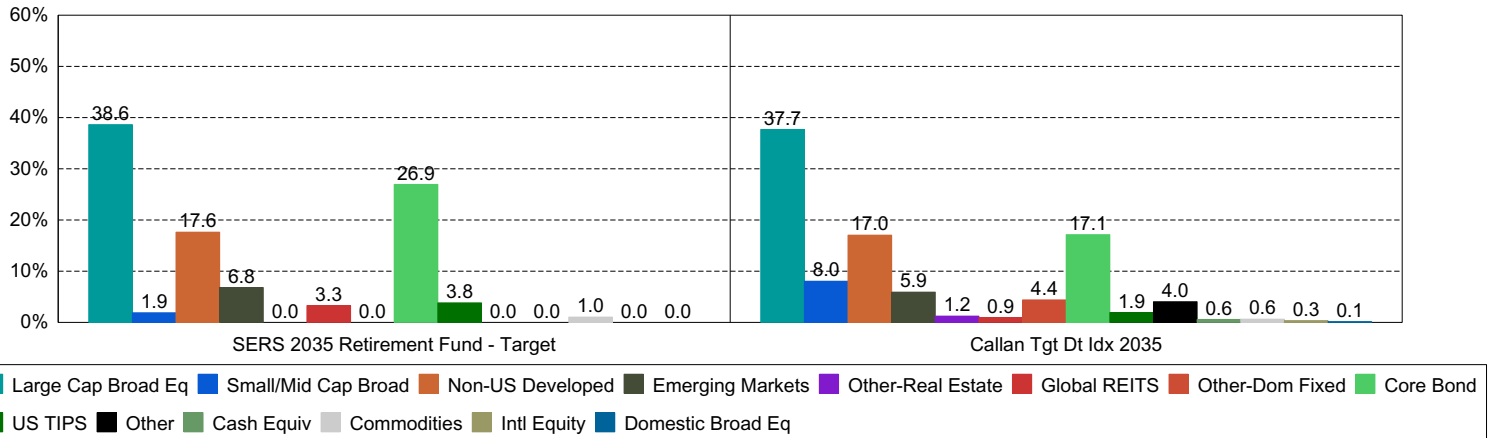
SERS 2035 Retirement Fund Target Date Fund Asset Allocation as of September 30, 2022

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.

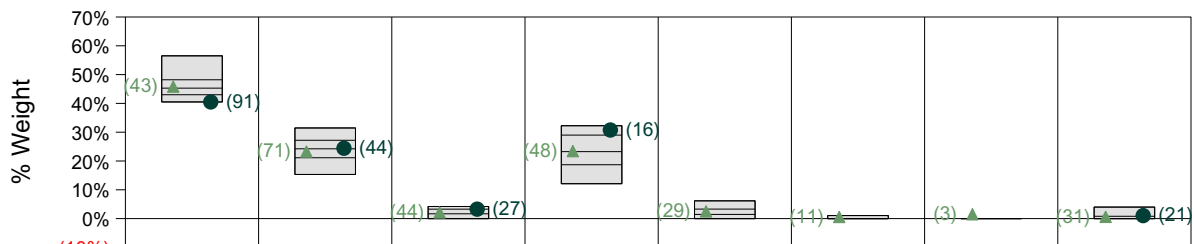
Macro-Level Asset Allocation



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	56.52	31.47	4.20	32.25	6.16	1.06	0.00	4.00
25th Percentile	48.20	27.19	3.28	28.99	3.30	0.00	0.00	0.81
Median	45.30	24.23	1.66	23.25	1.45	0.00	0.00	0.00
75th Percentile	43.01	21.13	0.00	18.70	0.00	0.00	0.00	0.00
90th Percentile	40.50	15.32	0.00	12.11	0.00	0.00	0.00	0.00

SERS 2035 Retirement Fund - Target	●	40.50	24.43	3.28	30.76	-	-	-	1.04
Callan Tgt Dt Idx 2035	▲	45.85	23.29	2.17	23.44	2.52	0.58	1.52	0.63

SERS 2035 Retirement Fund Period Ended September 30, 2022

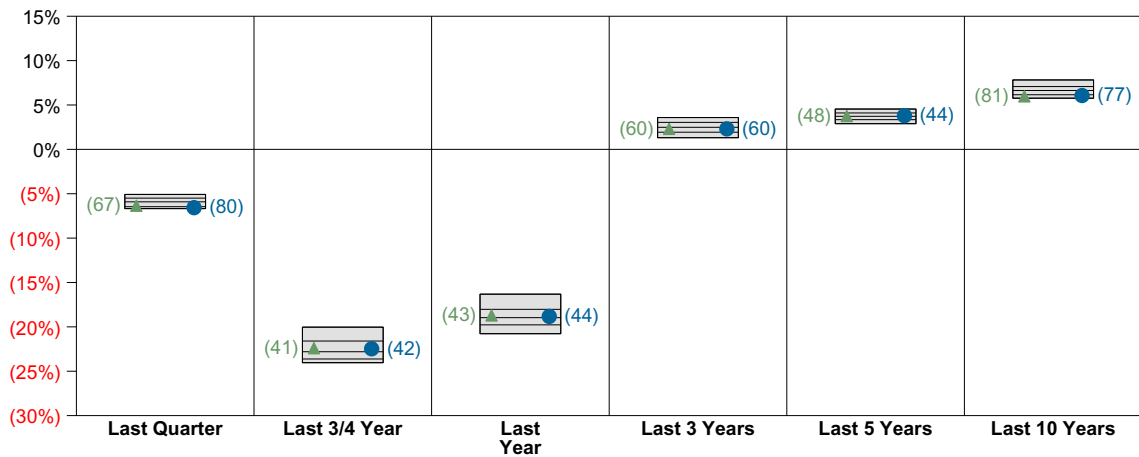
Investment Philosophy

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.

Quarterly Summary and Highlights

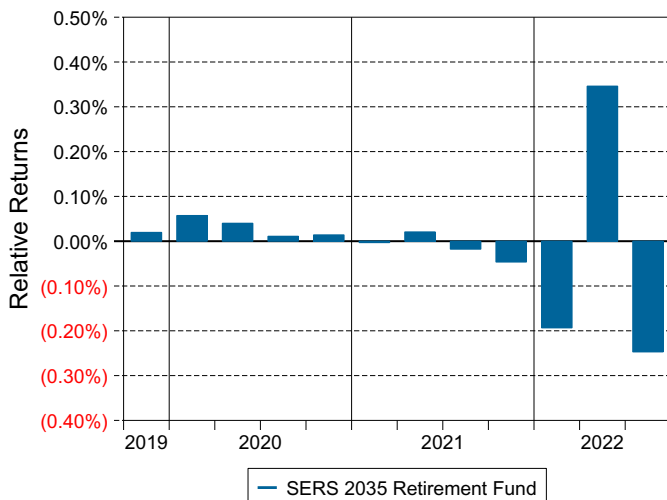
- SERS 2035 Retirement Fund's portfolio posted a (6.57)% return for the quarter placing it in the 80 percentile of the Callan Target Date 2035 group for the quarter and in the 44 percentile for the last year.
- SERS 2035 Retirement Fund's portfolio underperformed the LifePath Index 2035 CB by 0.23% for the quarter and underperformed the LifePath Index 2035 CB for the year by 0.12%.

Performance vs Callan Target Date 2035 (Net)

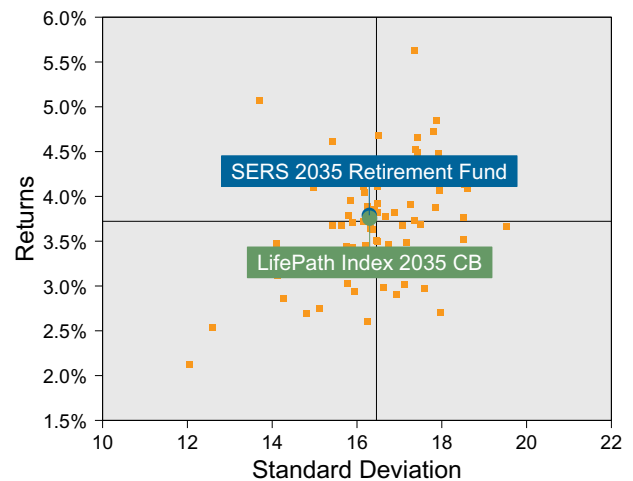


10th Percentile	(5.08)	(20.03)	(16.32)	3.59	4.54	7.82
25th Percentile	(5.50)	(21.60)	(18.02)	3.04	4.10	7.08
Median	(5.91)	(22.80)	(18.96)	2.49	3.72	6.63
75th Percentile	(6.46)	(23.62)	(19.77)	1.93	3.35	6.15
90th Percentile	(6.68)	(24.04)	(20.77)	1.31	2.89	5.77
SERS 2035 Retirement Fund	(6.57)	(22.47)	(18.82)	2.31	3.79	6.07
LifePath Index 2035 CB	(6.34)	(22.40)	(18.71)	2.31	3.76	5.98

Relative Return vs LifePath Index 2035 CB



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

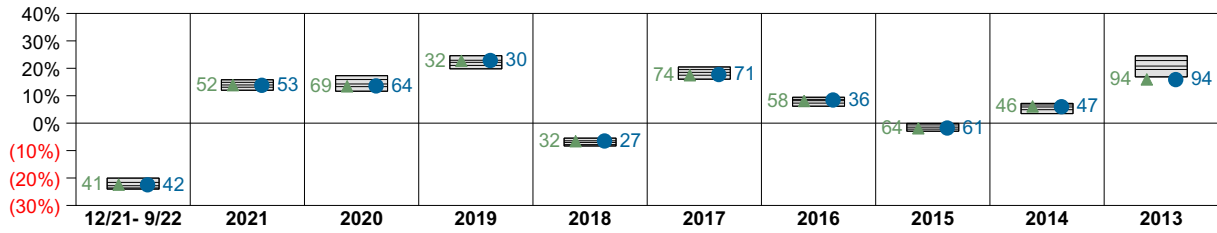


SERS 2035 Retirement Fund Return Analysis Summary

Return Analysis

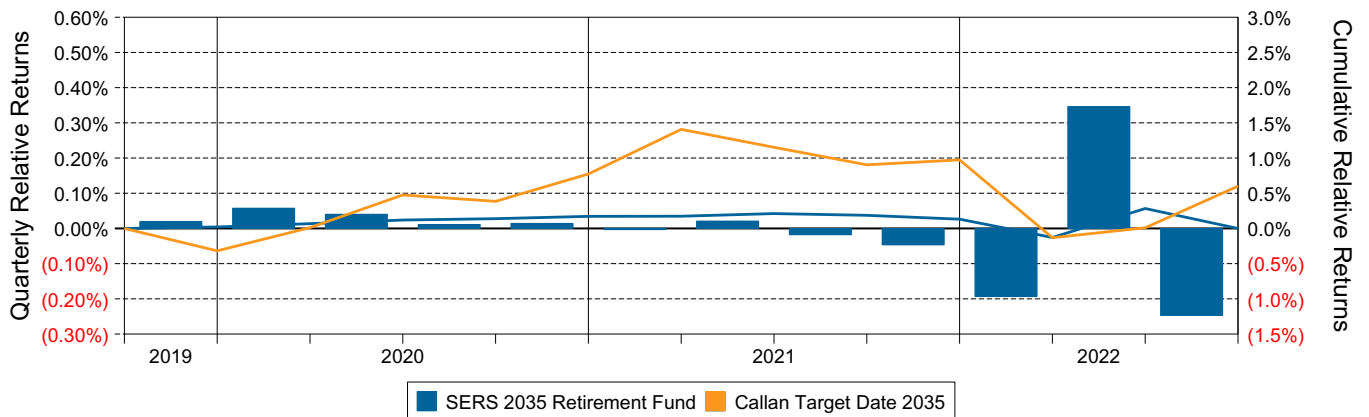
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate 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)

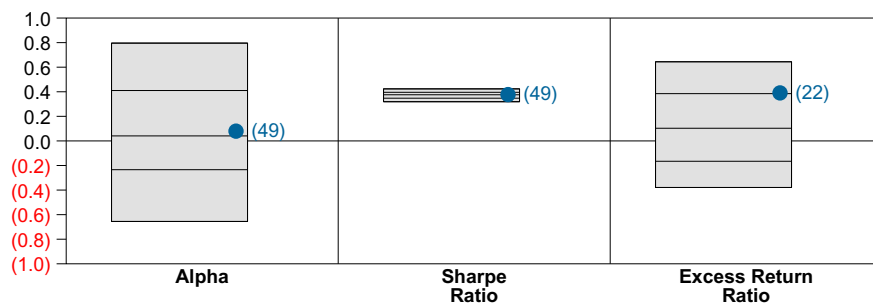


	12/21- 9/22	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	(20.03)	15.82	17.31	24.59	(5.46)	20.49	9.45	(0.10)	7.21	24.53
25th Percentile	(21.60)	14.88	15.89	22.92	(6.42)	19.53	8.67	(0.64)	6.63	22.82
Median	(22.80)	13.92	14.28	22.17	(7.03)	18.51	8.20	(1.46)	5.89	20.81
75th Percentile	(23.62)	13.10	13.31	21.05	(7.82)	17.47	7.30	(2.17)	4.91	19.56
90th Percentile	(24.04)	12.00	11.64	19.80	(8.31)	16.04	6.17	(2.95)	3.47	16.87
SERS 2035 Retirement Fund	● (22.47)	13.80	13.58	22.84	(6.50)	17.72	8.44	(1.78)	5.99	15.88
LifePath Index 2035 CB	▲ (22.40)	13.85	13.44	22.72	(6.58)	17.48	8.08	(1.86)	6.11	15.96

Cumulative and Quarterly Relative Returns vs LifePath Index 2035 CB



Risk Adjusted Return Measures vs LifePath Index 2035 CB Rankings Against Callan Target Date 2035 (Net) Seven Years Ended September 30, 2022



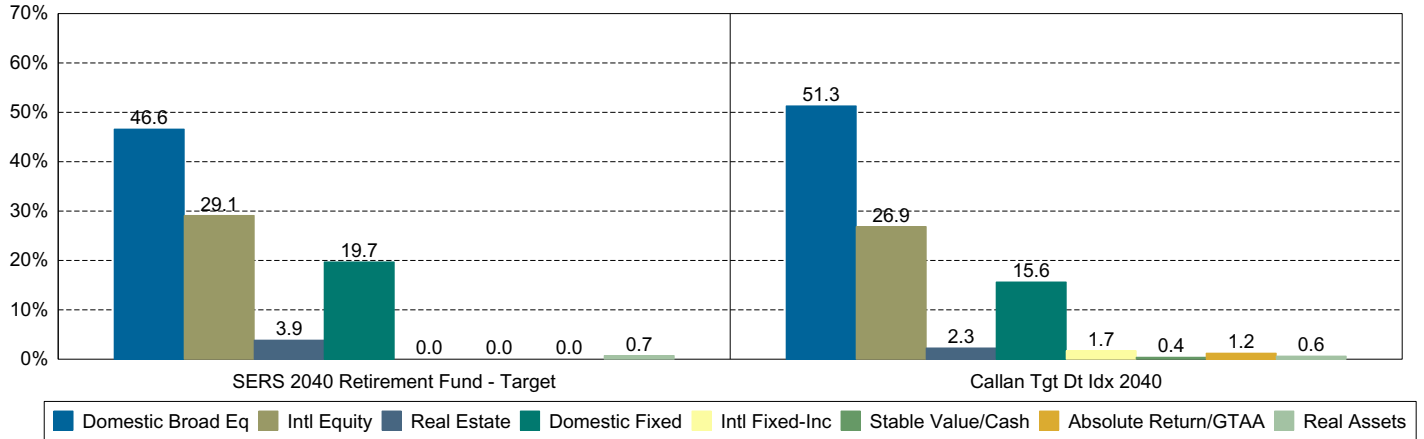
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.80	0.42	0.64
25th Percentile	0.41	0.40	0.38
Median	0.04	0.38	0.10
75th Percentile	(0.23)	0.35	(0.17)
90th Percentile	(0.66)	0.32	(0.38)
SERS 2035 Retirement Fund	● 0.08	0.38	0.39

SERS 2040 Retirement Fund

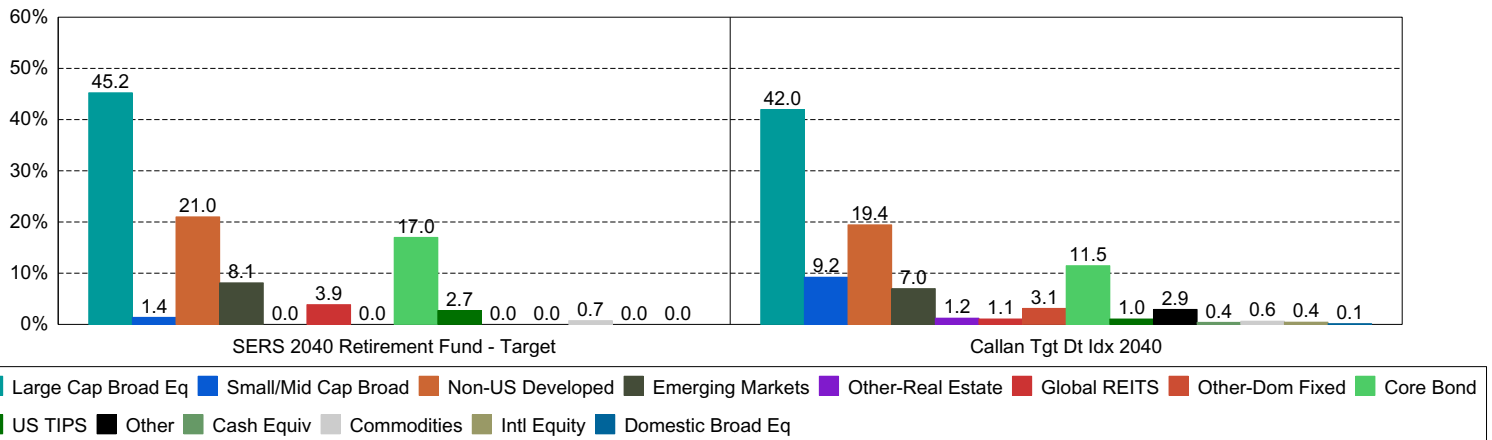
Target Date Fund Asset Allocation as of September 30, 2022

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.

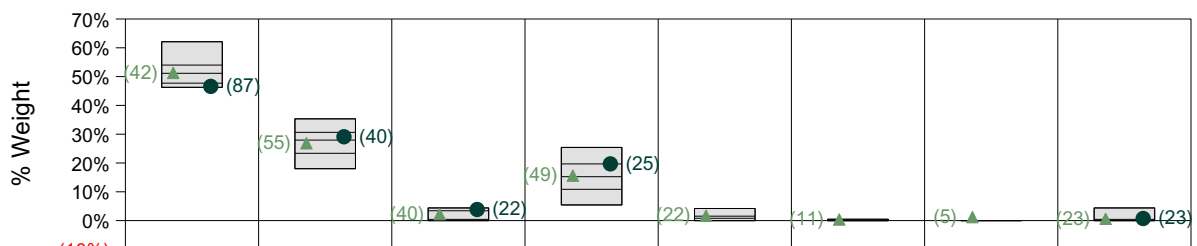
Macro-Level Asset Allocation



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	62.11	35.33	4.40	25.41	4.20	0.47	0.00	4.40
25th Percentile	54.00	30.65	3.42	19.69	1.54	0.00	0.00	0.43
Median	51.15	27.95	0.43	15.24	0.80	0.00	0.00	0.00
75th Percentile	47.72	23.37	0.00	10.87	0.00	0.00	0.00	0.00
90th Percentile	46.27	18.01	0.00	5.44	0.00	0.00	0.00	0.00
SERS 2040 Retirement Fund - Target	● 46.60	29.11	3.86	19.70	-	-	-	0.73
Callan Tgt Dt Idx 2040	▲ 51.30	26.86	2.27	15.63	1.70	0.39	1.22	0.63

SERS 2040 Retirement Fund Period Ended September 30, 2022

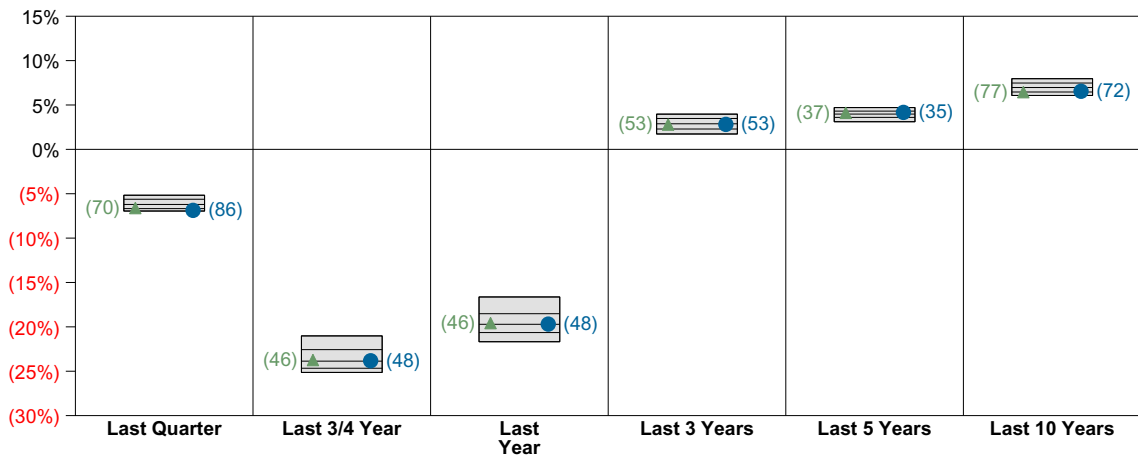
Investment Philosophy

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.

Quarterly Summary and Highlights

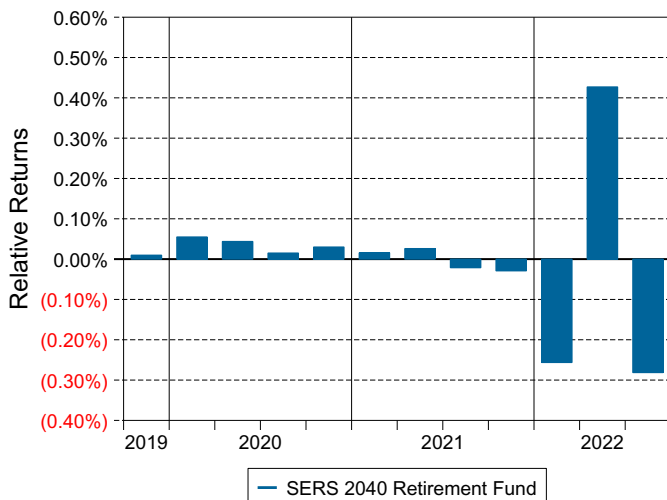
- SERS 2040 Retirement Fund's portfolio posted a (6.88)% return for the quarter placing it in the 86 percentile of the Callan Target Date 2040 group for the quarter and in the 48 percentile for the last year.
- SERS 2040 Retirement Fund's portfolio underperformed the LifePath Index 2040 CB by 0.26% for the quarter and underperformed the LifePath Index 2040 CB for the year by 0.11%.

Performance vs Callan Target Date 2040 (Net)

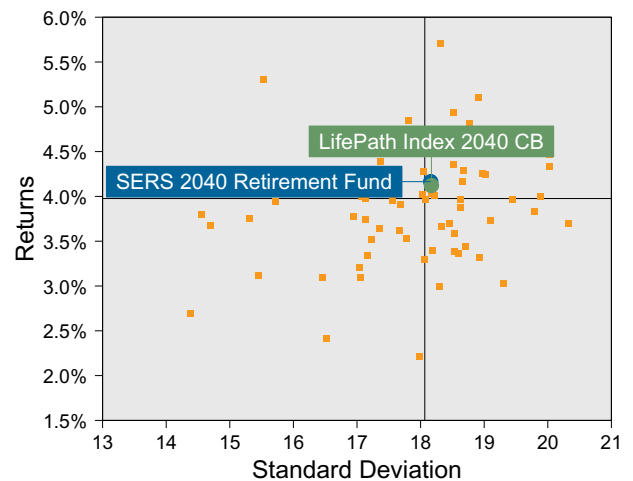


10th Percentile	(5.17)	(21.02)	(16.63)	3.97	4.71	7.96
25th Percentile	(5.62)	(22.57)	(18.52)	3.48	4.31	7.47
Median	(6.21)	(23.86)	(19.71)	2.88	3.98	6.97
75th Percentile	(6.68)	(24.66)	(20.64)	2.29	3.60	6.46
90th Percentile	(6.95)	(25.14)	(21.68)	1.73	3.11	6.07
SERS 2040 Retirement Fund	(6.88)	(23.82)	(19.69)	2.81	4.16	6.54
LifePath Index 2040 CB	(6.61)	(23.74)	(19.58)	2.80	4.12	6.45

Relative Return vs LifePath Index 2040 CB



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

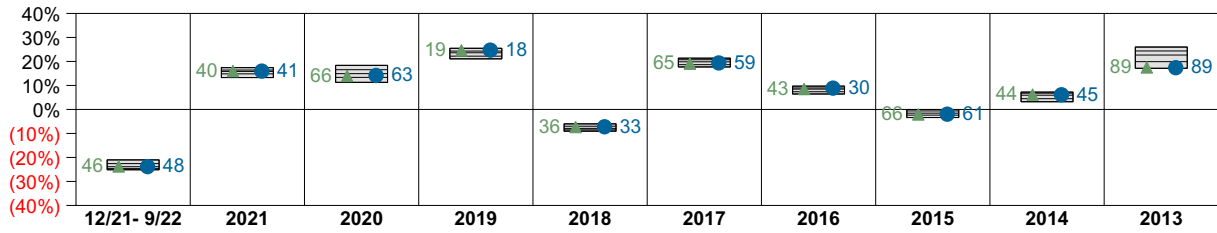


SERS 2040 Retirement Fund Return Analysis Summary

Return Analysis

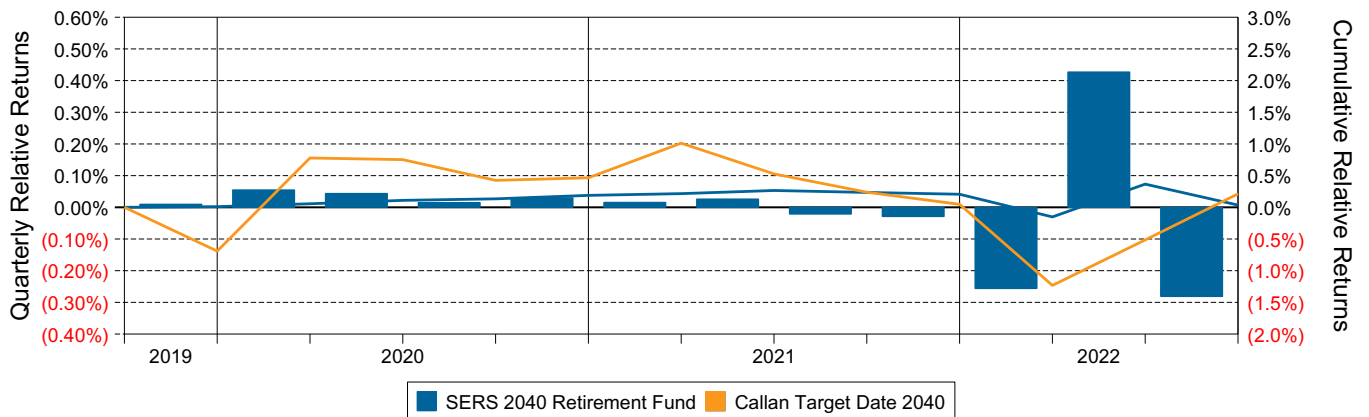
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate 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)

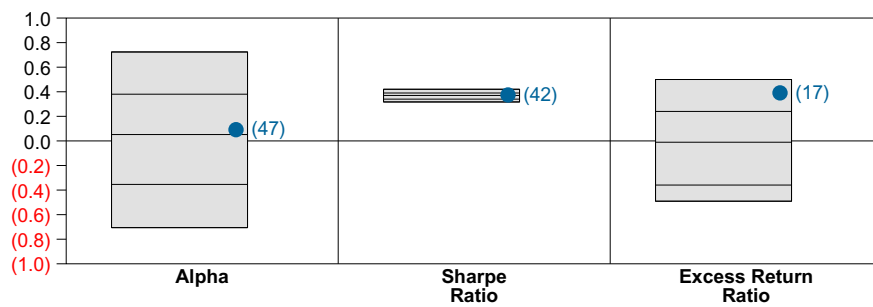


10th Percentile	(21.02)	17.43	18.37	25.47	(6.01)	21.35	9.71	(0.03)	7.22	26.00
25th Percentile	(22.57)	16.42	16.56	24.33	(6.99)	20.71	8.94	(0.62)	6.76	24.36
Median	(23.86)	15.84	14.91	23.62	(7.89)	19.84	8.46	(1.54)	5.94	22.67
75th Percentile	(24.66)	14.83	13.35	22.20	(8.52)	18.66	7.38	(2.36)	4.47	19.91
90th Percentile	(25.14)	13.27	11.29	21.07	(9.05)	17.70	6.44	(3.38)	3.21	17.15
SERS 2040 Retirement Fund	● (23.82)	15.96	14.14	24.71	(7.22)	19.38	8.88	(1.98)	6.12	17.39
LifePath Index 2040 CB	▲ (23.74)	15.97	13.98	24.62	(7.33)	19.09	8.51	(2.08)	6.21	17.52

Cumulative and Quarterly Relative Returns vs LifePath Index 2040 CB



Risk Adjusted Return Measures vs LifePath Index 2040 CB Rankings Against Callan Target Date 2040 (Net) Seven Years Ended September 30, 2022



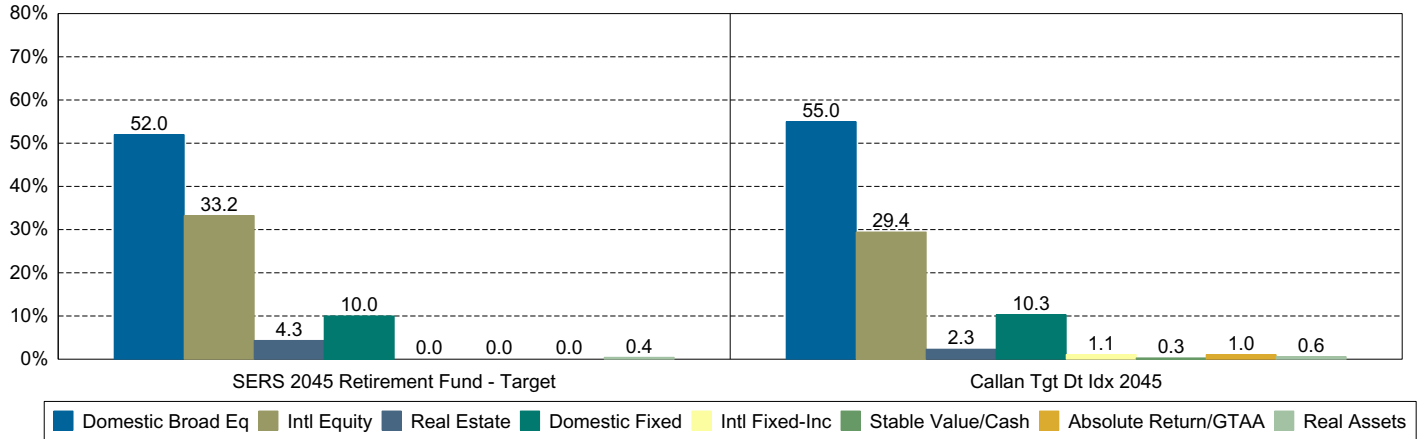
10th Percentile	0.72	0.42	0.50
25th Percentile	0.38	0.39	0.24
Median	0.05	0.37	(0.01)
75th Percentile	(0.35)	0.34	(0.36)
90th Percentile	(0.71)	0.32	(0.49)
SERS 2040 Retirement Fund	● 0.09	0.37	0.39

SERS 2045 Retirement Fund

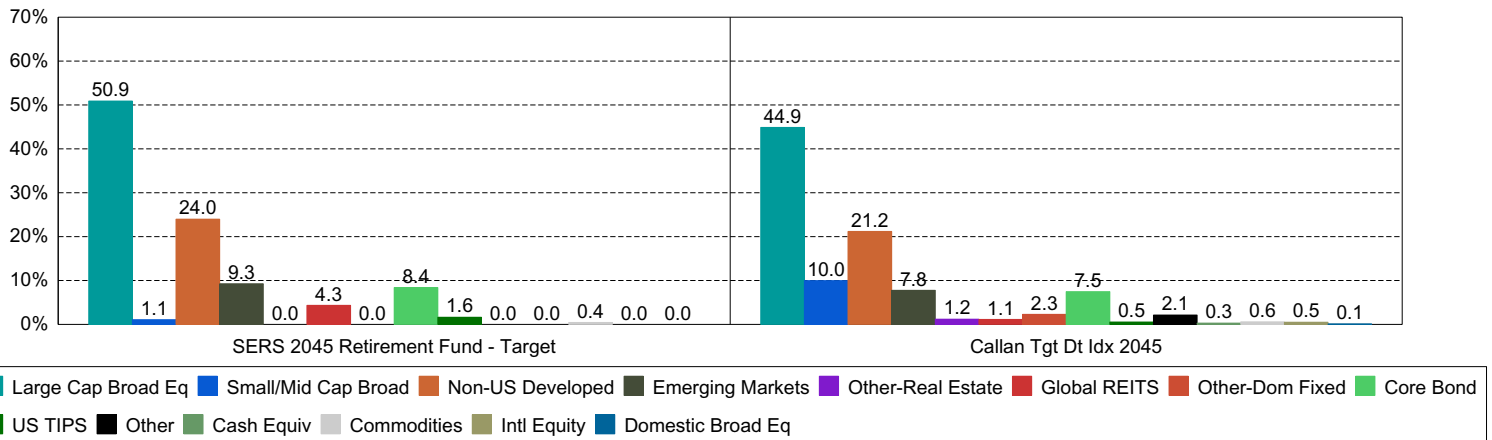
Target Date Fund Asset Allocation as of September 30, 2022

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.

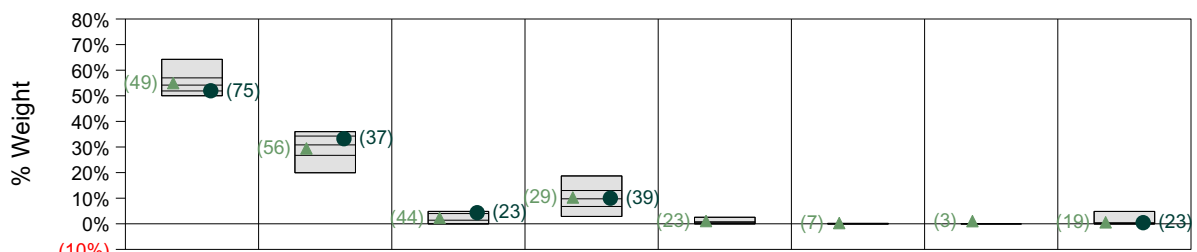
Macro-Level Asset Allocation



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	64.24	36.00	4.84	18.70	2.56	0.17	0.00	4.83
25th Percentile	57.00	34.27	4.00	13.00	0.80	0.00	0.00	0.43
Median	54.17	30.82	1.41	9.76	0.44	0.00	0.00	0.00
75th Percentile	51.90	26.74	0.00	6.77	0.00	0.00	0.00	0.00
90th Percentile	50.03	19.94	0.00	2.88	0.00	0.00	0.00	0.00

SERS 2045 Retirement Fund - Target	●	51.97	33.24	4.34	10.01	-	-	0.44
Callan Tgt Dt Idx 2045	▲	54.96	29.44	2.31	10.28	1.09	0.29	1.04

SERS 2045 Retirement Fund Period Ended September 30, 2022

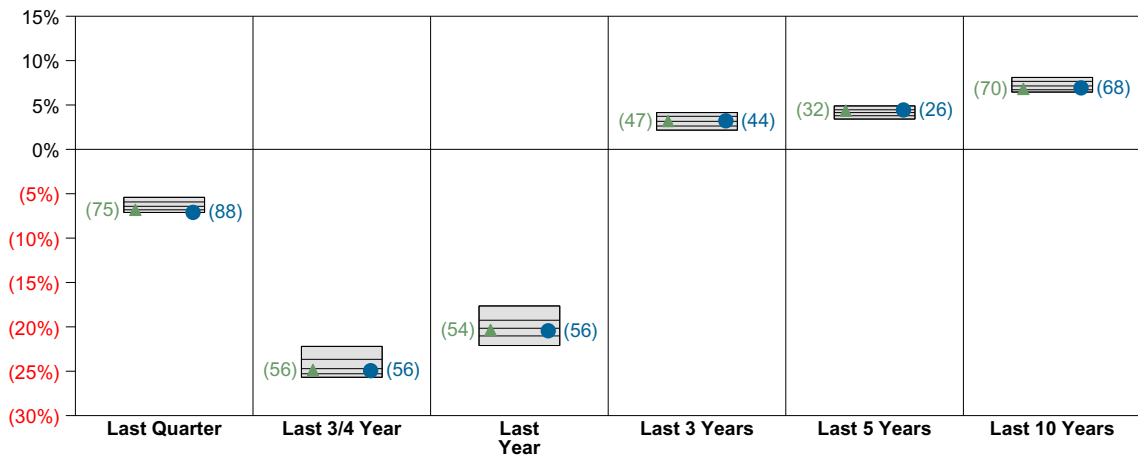
Investment Philosophy

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.

Quarterly Summary and Highlights

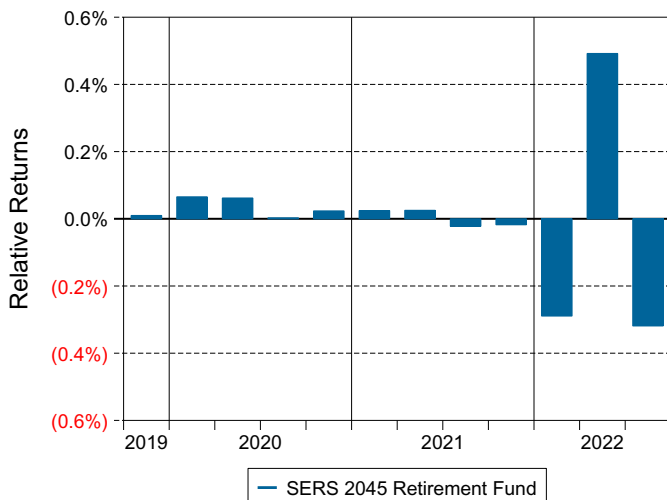
- SERS 2045 Retirement Fund's portfolio posted a (7.11)% return for the quarter placing it in the 88 percentile of the Callan Target Date 2045 group for the quarter and in the 56 percentile for the last year.
- SERS 2045 Retirement Fund's portfolio underperformed the LifePath Index 2045 CB by 0.30% for the quarter and underperformed the LifePath Index 2045 CB for the year by 0.11%.

Performance vs Callan Target Date 2045 (Net)

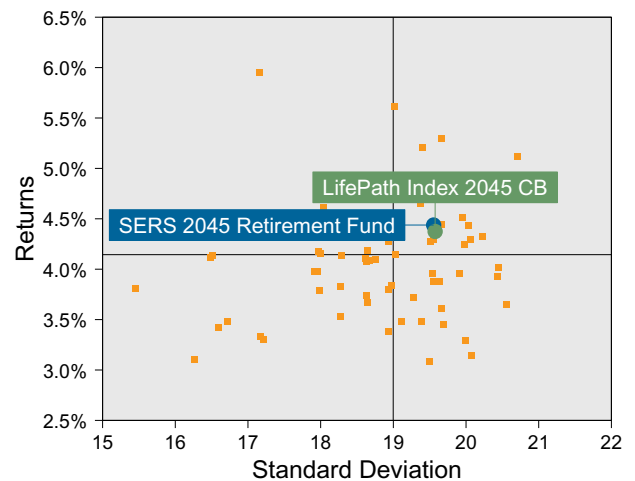


	Last Quarter	Last 3/4 Year	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(5.41)	(22.20)	(17.64)	4.15	4.89	8.10
25th Percentile	(5.92)	(23.66)	(19.25)	3.72	4.46	7.66
Median	(6.42)	(24.71)	(20.16)	3.16	4.14	7.15
75th Percentile	(6.81)	(25.29)	(21.02)	2.63	3.79	6.72
90th Percentile	(7.11)	(25.68)	(22.10)	2.16	3.41	6.45
SERS 2045 Retirement Fund	(7.11)	(24.94)	(20.44)	3.22	4.44	6.93
LifePath Index 2045 CB	(6.81)	(24.85)	(20.33)	3.20	4.37	6.82

Relative Return vs LifePath Index 2045 CB



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

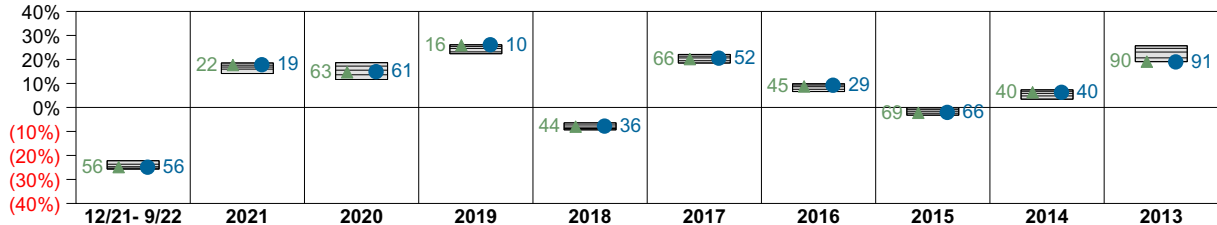


SERS 2045 Retirement Fund Return Analysis Summary

Return Analysis

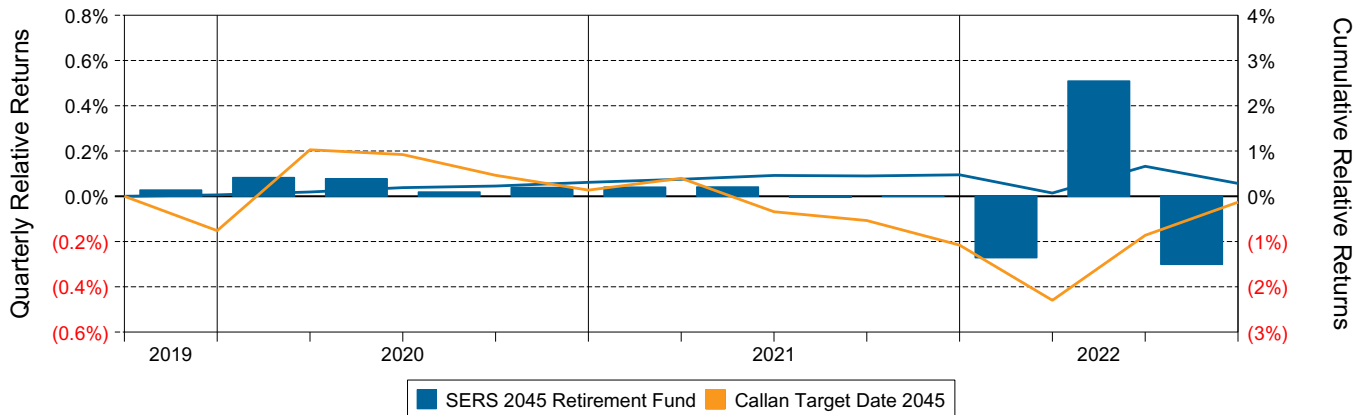
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate 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)

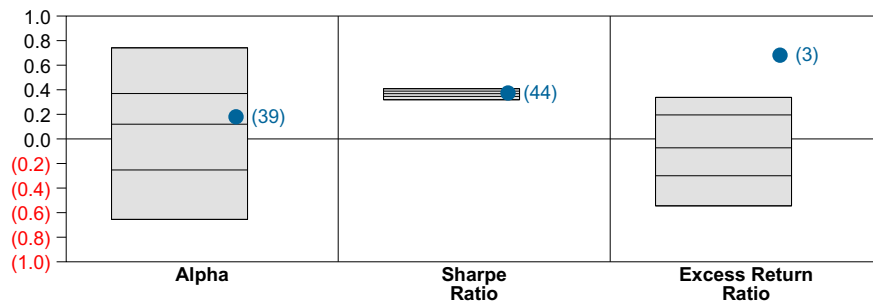


	12/21- 9/22	2021	2020	2019	2018	2017	2016	2015	2014	2013
SERS 2045 Retirement Fund ● (24.90)		17.79	14.90	26.12	(7.78)	20.54	9.25	(2.07)	6.30	18.97
LifePath Index 2045 CB ▲ (24.85)		17.70	14.65	25.90	(7.99)	20.15	8.77	(2.22)	6.31	19.09

Cumulative and Quarterly Relative Returns vs LifePath Index 2045 CB



Risk Adjusted Return Measures vs LifePath Index 2045 CB Rankings Against Callan Target Date 2045 (Net) Seven Years Ended September 30, 2022



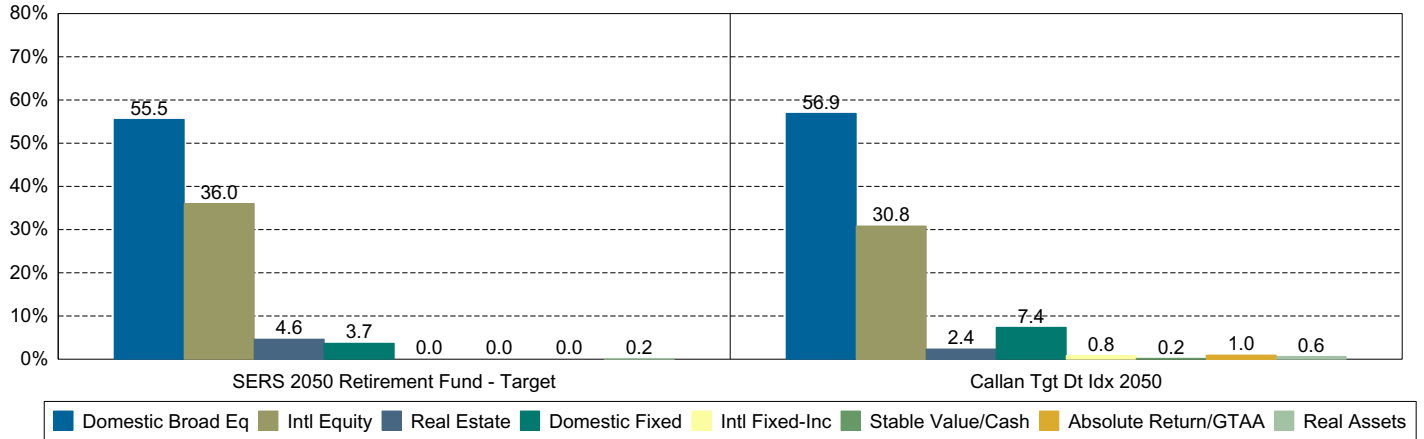
SERS 2045 Retirement Fund ●	0.18	0.37	0.68
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SERS 2050 Retirement Fund

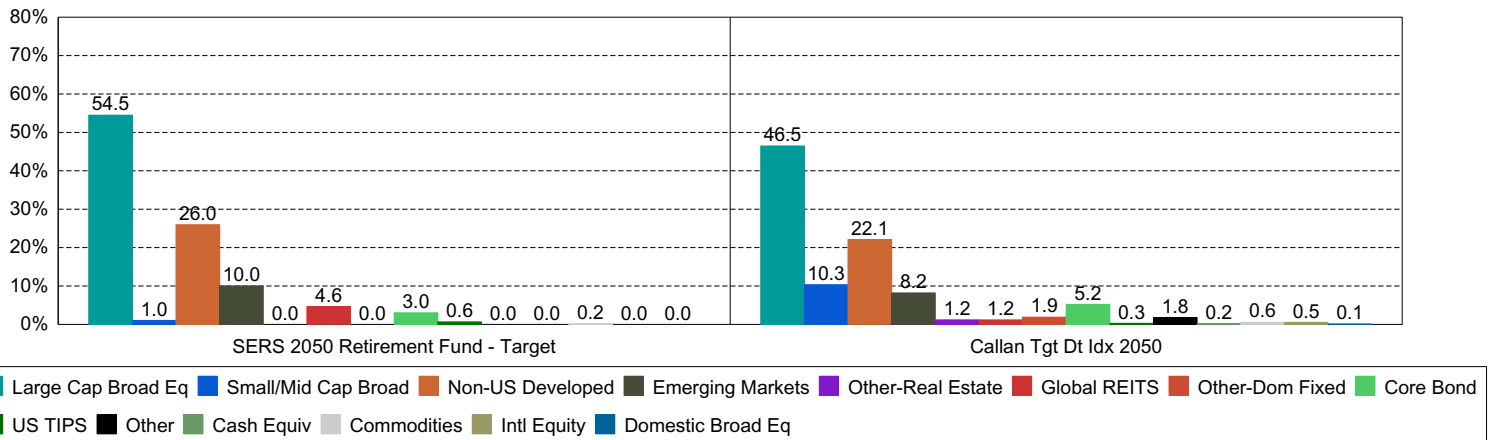
Target Date Fund Asset Allocation as of September 30, 2022

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.

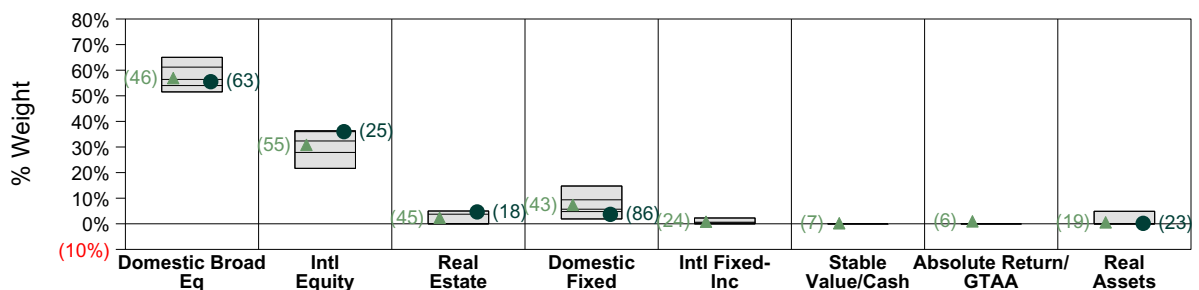
Macro-Level Asset Allocation



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	65.04	36.33	5.00	14.76	2.27	0.00	0.00	4.89
25th Percentile	61.20	35.99	3.75	9.38	0.62	0.00	0.00	0.00
Median	56.40	32.35	0.06	5.70	0.35	0.00	0.00	0.00
75th Percentile	54.00	27.87	0.00	4.78	0.00	0.00	0.00	0.00
90th Percentile	51.52	21.66	0.00	1.90	0.00	0.00	0.00	0.00

SERS 2050 Retirement Fund - Target	●	55.51	35.99	4.64	3.68	-	-	0.18
Callan Tgt Dt Idx 2050	▲	56.90	30.83	2.35	7.37	0.82	0.21	0.95

SERS 2050 Retirement Fund Period Ended September 30, 2022

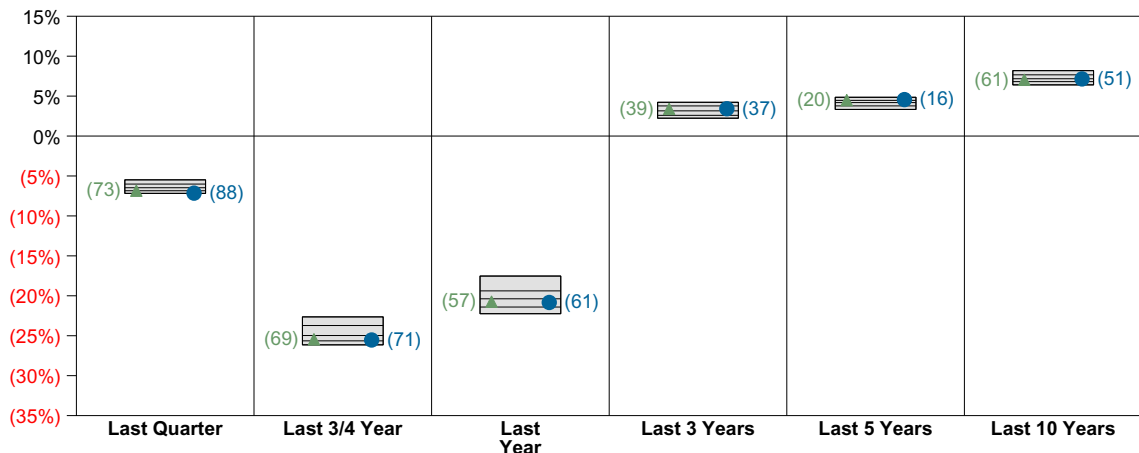
Investment Philosophy

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.

Quarterly Summary and Highlights

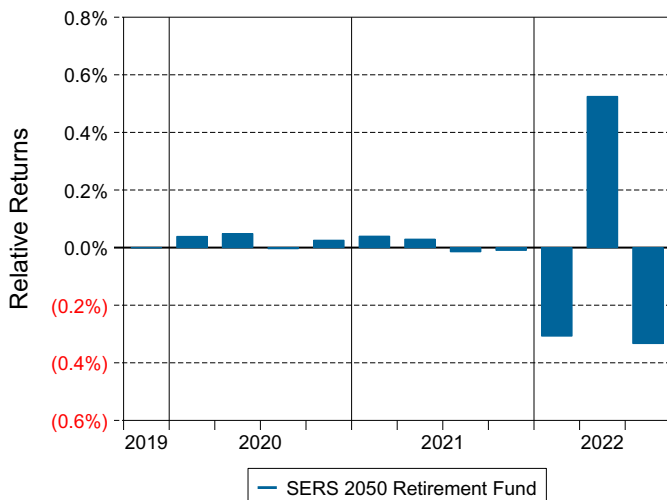
- SERS 2050 Retirement Fund's portfolio posted a (7.15)% return for the quarter placing it in the 88 percentile of the Callan Target Date 2050 group for the quarter and in the 61 percentile for the last year.
- SERS 2050 Retirement Fund's portfolio underperformed the LifePath Index 2050 CB by 0.31% for the quarter and underperformed the LifePath Index 2050 CB for the year by 0.10%.

Performance vs Callan Target Date 2050 (Net)

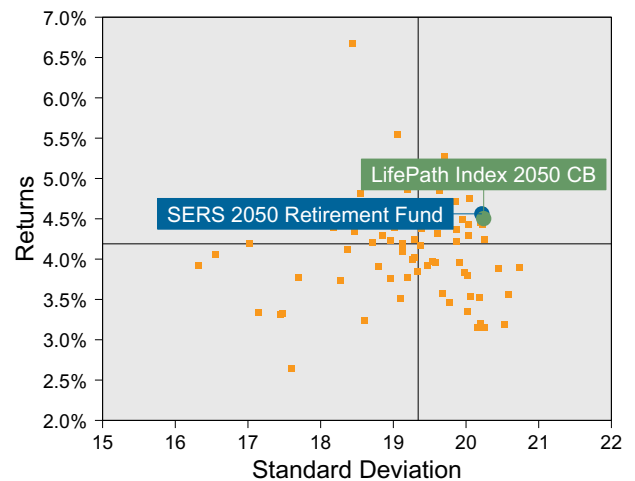


	Last Quarter	Last 3/4 Year	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(5.48)	(22.64)	(17.53)	4.23	4.85	8.19
25th Percentile	(6.01)	(23.72)	(19.39)	3.77	4.47	7.66
Median	(6.47)	(24.97)	(20.38)	3.15	4.19	7.17
75th Percentile	(6.85)	(25.64)	(21.41)	2.59	3.78	6.81
90th Percentile	(7.18)	(26.14)	(22.24)	2.23	3.33	6.41
SERS 2050 Retirement Fund	(7.15)	(25.54)	(20.84)	3.42	4.56	7.15
LifePath Index 2050 CB	(6.84)	(25.45)	(20.74)	3.41	4.50	7.05

Relative Return vs LifePath Index 2050 CB



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

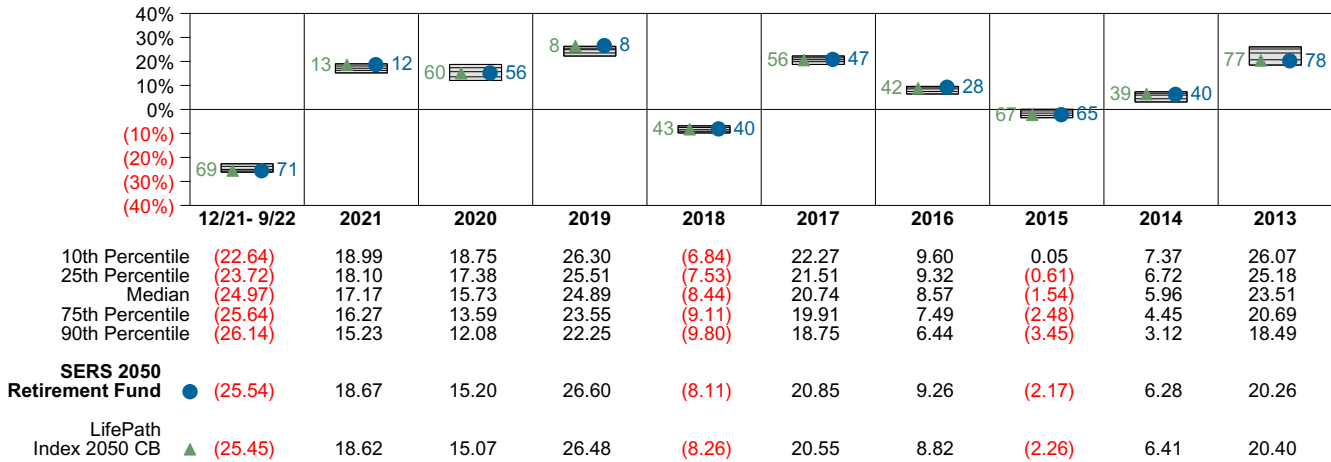


SERS 2050 Retirement Fund Return Analysis Summary

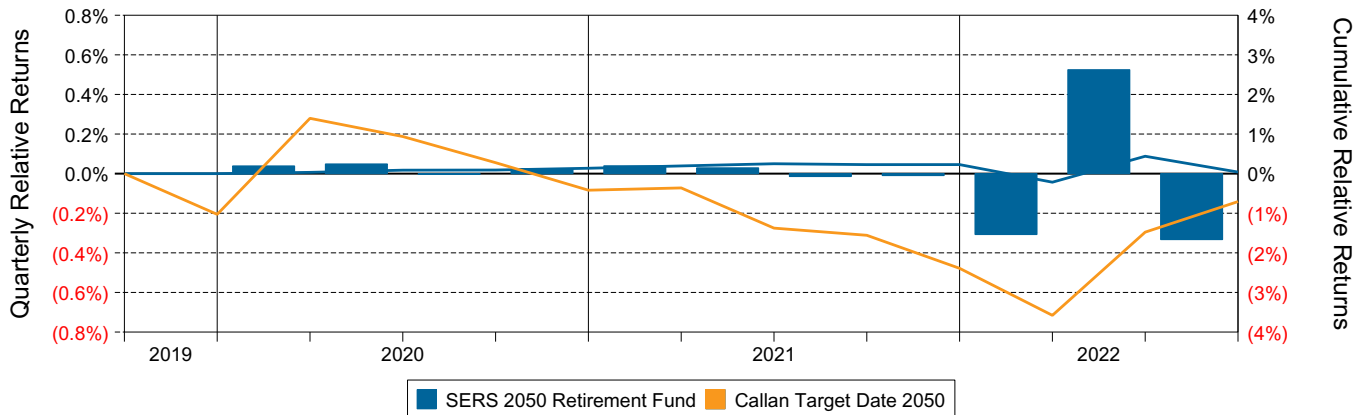
Return Analysis

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.

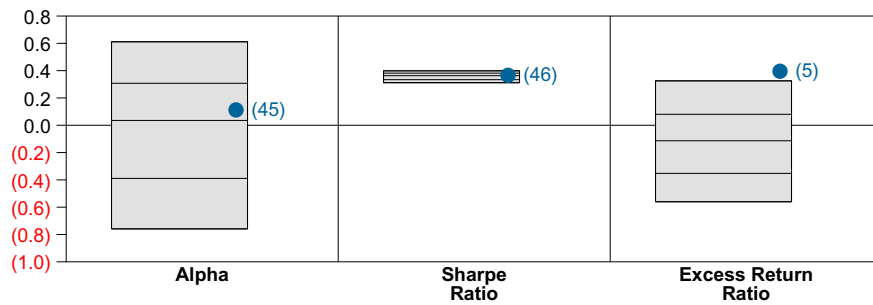
Performance vs Callan Target Date 2050 (Net)



Cumulative and Quarterly Relative Returns vs LifePath Index 2050 CB



Risk Adjusted Return Measures vs LifePath Index 2050 CB Rankings Against Callan Target Date 2050 (Net) Seven Years Ended September 30, 2022



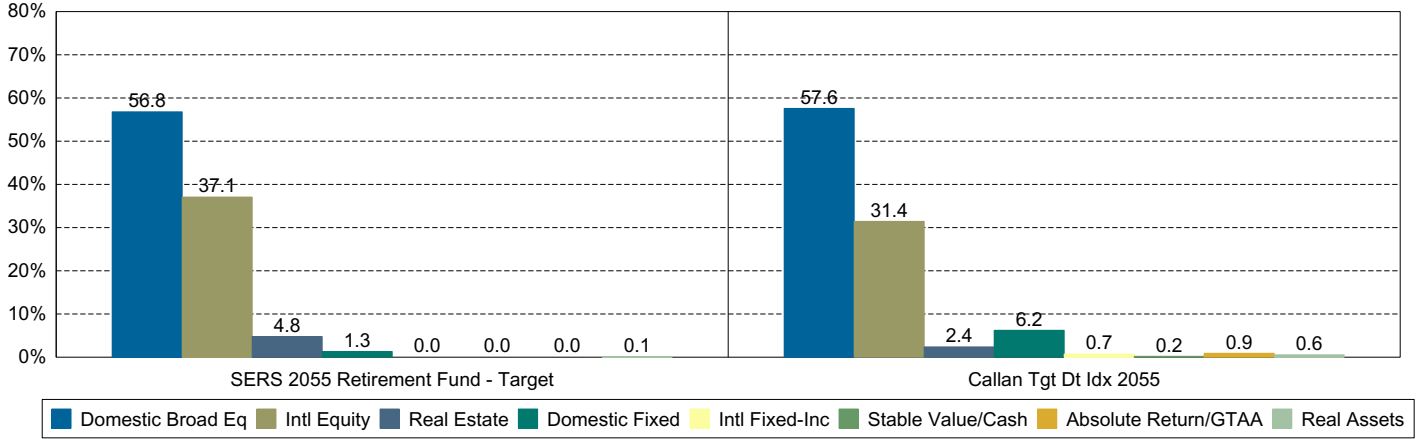
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.61	0.40	0.33
25th Percentile	0.31	0.38	0.08
Median	0.04	0.36	(0.11)
75th Percentile	(0.39)	0.33	(0.35)
90th Percentile	(0.76)	0.31	(0.56)
SERS 2050 Retirement Fund	● 0.11	0.37	0.40

SERS 2055 Retirement Fund

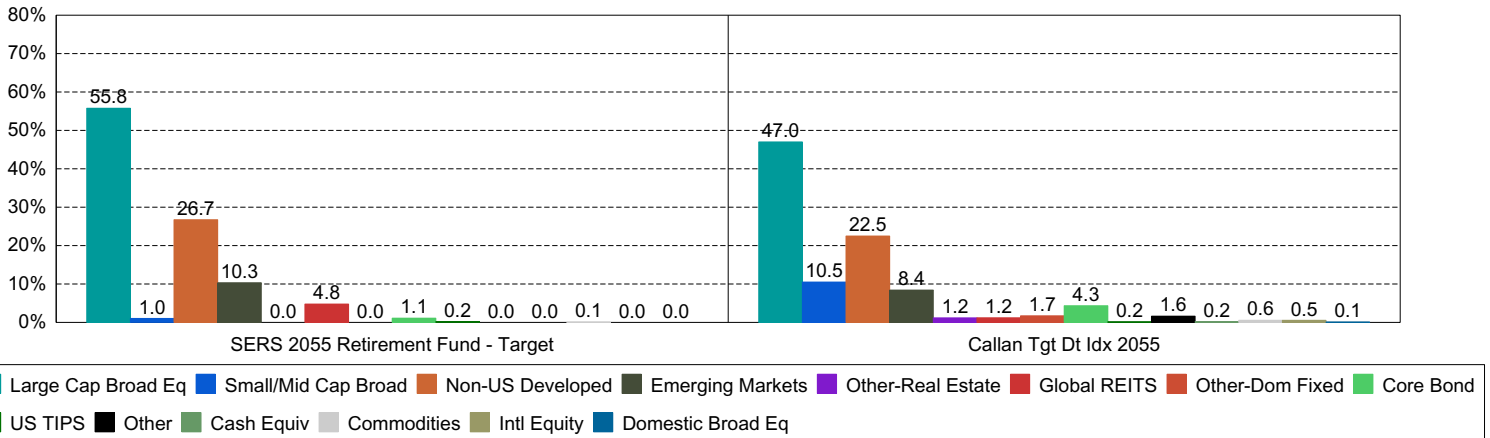
Target Date Fund Asset Allocation as of September 30, 2022

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.

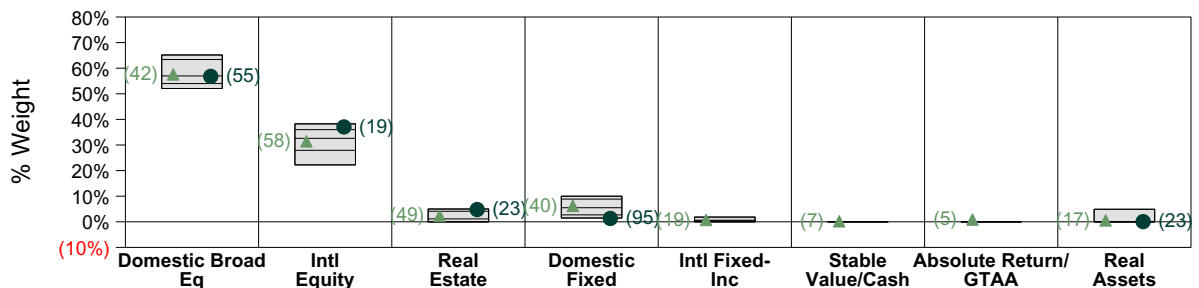
Macro-Level Asset Allocation



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	65.17	38.25	5.00	10.00	1.84	0.00	0.00	4.90
25th Percentile	63.39	36.00	4.12	8.87	0.62	0.00	0.00	0.06
Median	56.98	32.60	1.14	5.50	0.35	0.00	0.00	0.00
75th Percentile	54.00	27.93	0.00	2.70	0.00	0.00	0.00	0.00
90th Percentile	52.07	22.23	0.00	1.47	0.00	0.00	0.00	0.00

SERS 2055 Retirement Fund - Target	●	56.79	37.06	4.77	1.31	-	-	0.06
Callan Tgt Dt Idx 2055	▲	57.58	31.44	2.38	6.22	0.72	0.20	0.55

SERS 2055 Retirement Fund Period Ended September 30, 2022

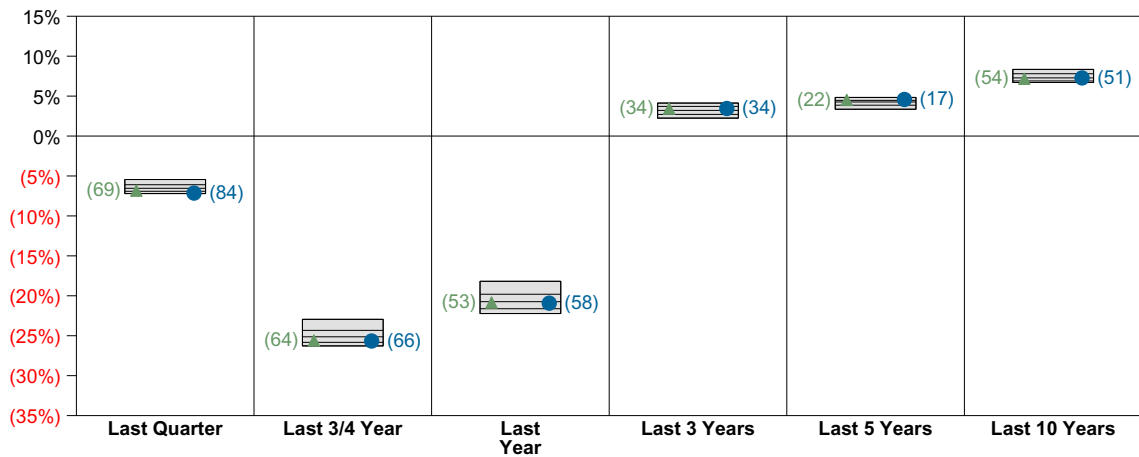
Investment Philosophy

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.

Quarterly Summary and Highlights

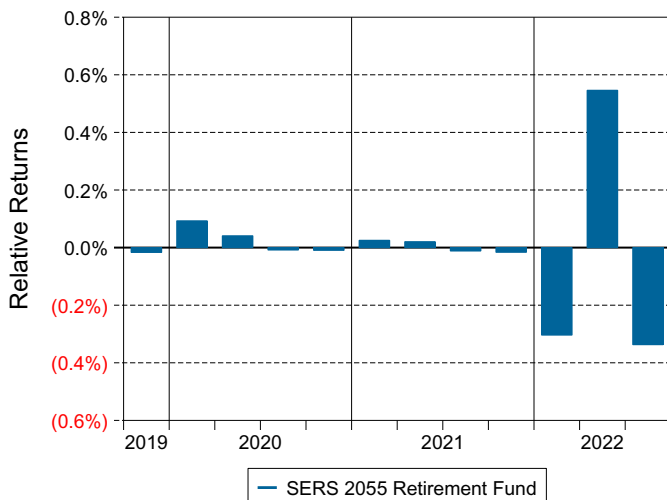
- SERS 2055 Retirement Fund's portfolio posted a (7.14)% return for the quarter placing it in the 84 percentile of the Callan Target Date 2055 group for the quarter and in the 58 percentile for the last year.
- SERS 2055 Retirement Fund's portfolio underperformed the LifePath Index 2055 CB by 0.31% for the quarter and underperformed the LifePath Index 2055 CB for the year by 0.09%.

Performance vs Callan Target Date 2055 (Net)

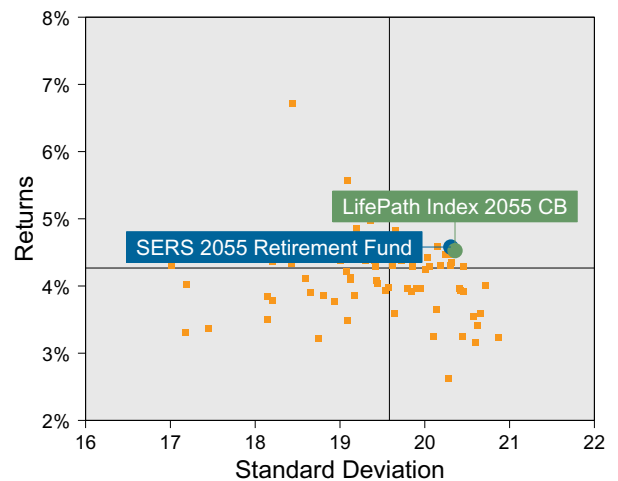


	Last Quarter	Last 3/4 Year	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(5.44)	(22.95)	(18.19)	4.13	4.83	8.34
25th Percentile	(6.10)	(24.33)	(19.81)	3.71	4.47	7.80
Median	(6.54)	(25.13)	(20.74)	3.21	4.27	7.28
75th Percentile	(6.92)	(25.83)	(21.62)	2.71	3.86	6.90
90th Percentile	(7.20)	(26.28)	(22.22)	2.24	3.36	6.70
SERS 2055 Retirement Fund	(7.14)	(25.67)	(20.93)	3.45	4.58	7.28
LifePath Index 2055 CB	(6.83)	(25.59)	(20.84)	3.44	4.53	7.18

Relative Return vs LifePath Index 2055 CB



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

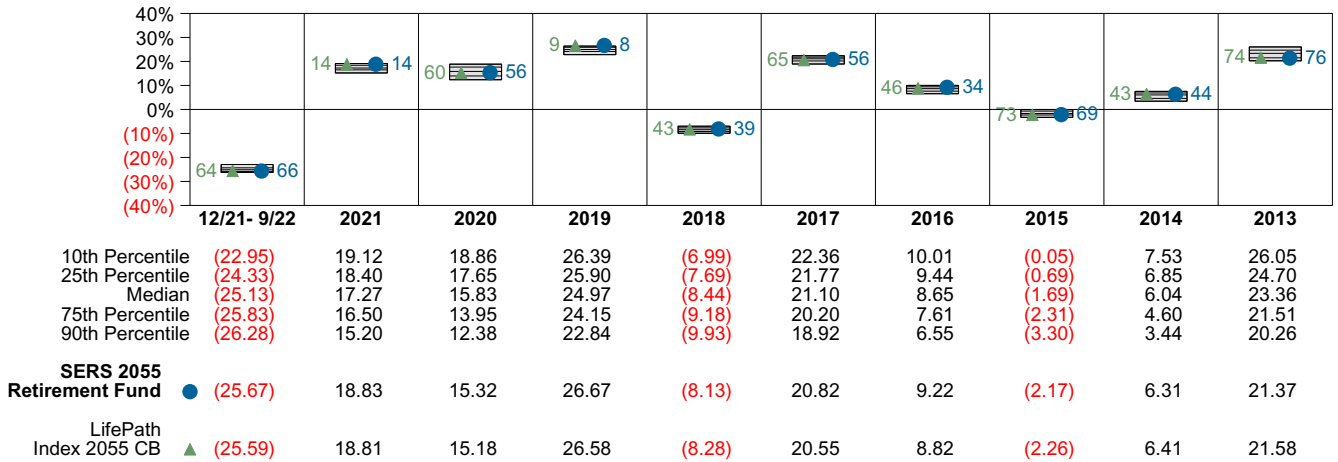


SERS 2055 Retirement Fund Return Analysis Summary

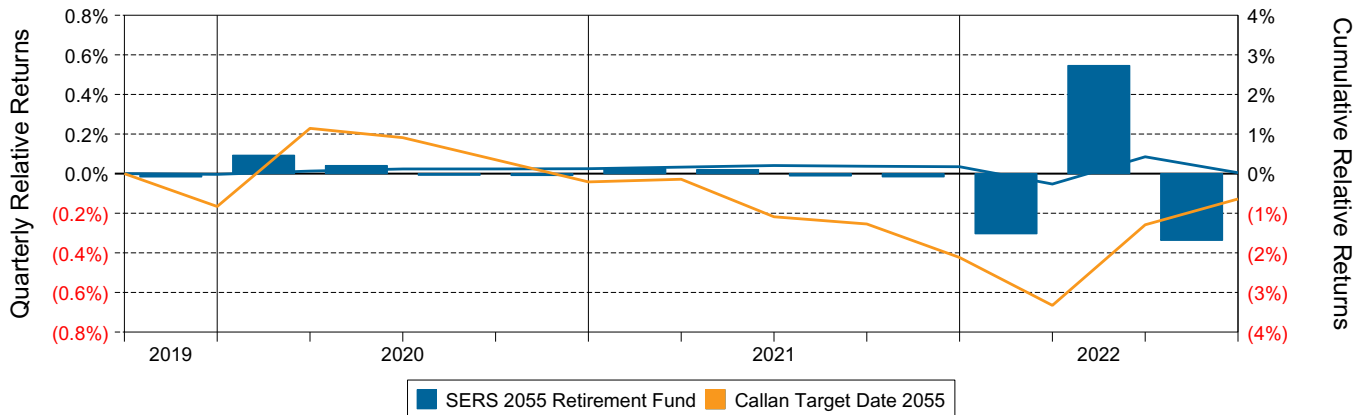
Return Analysis

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.

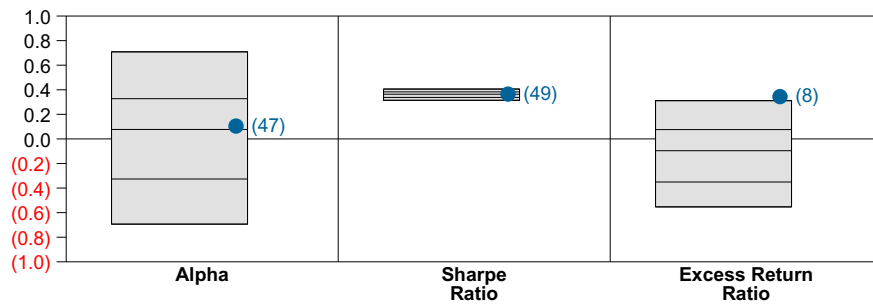
Performance vs Callan Target Date 2055 (Net)



Cumulative and Quarterly Relative Returns vs LifePath Index 2055 CB



Risk Adjusted Return Measures vs LifePath Index 2055 CB Rankings Against Callan Target Date 2055 (Net) Seven Years Ended September 30, 2022



10th Percentile	0.71	0.41	0.31
25th Percentile	0.33	0.38	0.08
Median	0.08	0.36	(0.10)
75th Percentile	(0.33)	0.34	(0.35)
90th Percentile	(0.69)	0.31	(0.55)
SERS 2055 Retirement Fund	0.10	0.36	0.34

SERS 2060 Retirement Fund Period Ended September 30, 2022

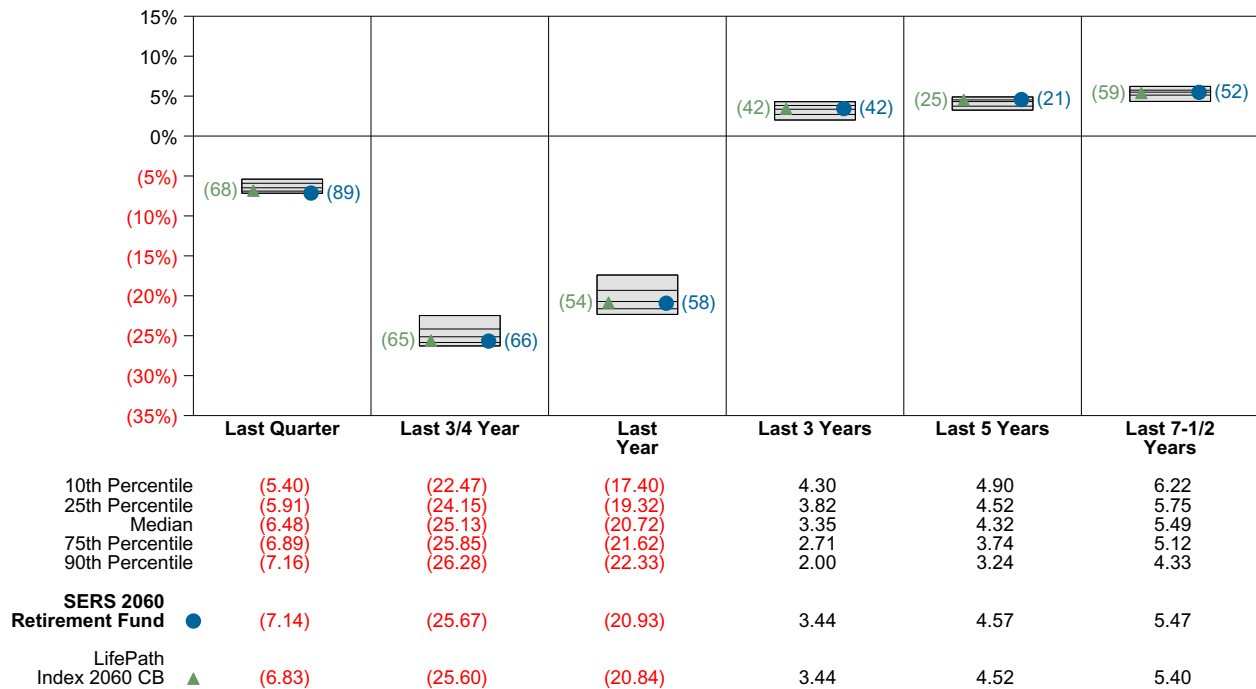
Investment Philosophy

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.

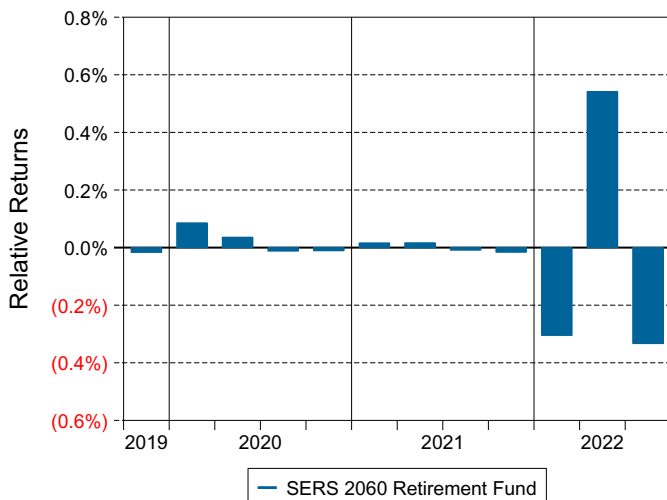
Quarterly Summary and Highlights

- SERS 2060 Retirement Fund's portfolio posted a (7.14)% return for the quarter placing it in the 89 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 underperformed the LifePath Index 2060 CB by 0.31% for the quarter and underperformed the LifePath Index 2060 CB for the year by 0.09%.

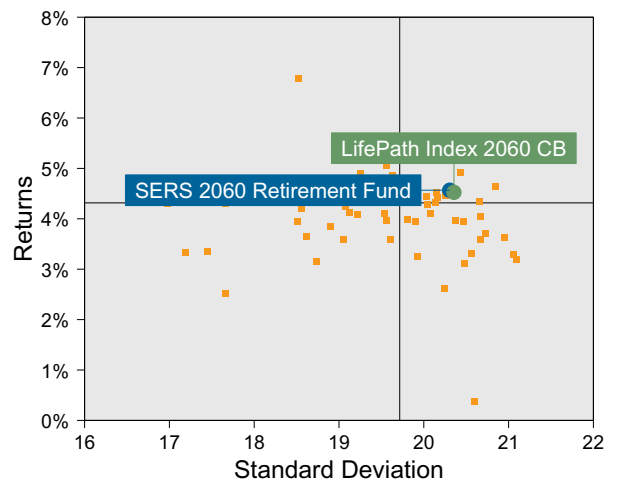
Performance vs Callan Target Date 2060 (Net)



Relative Return vs LifePath Index 2060 CB



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

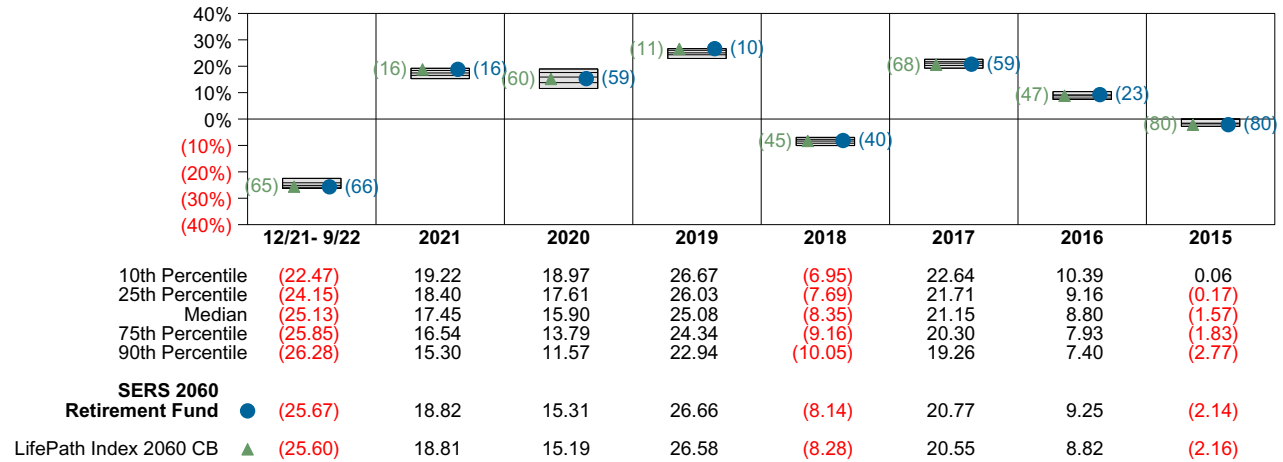


SERS 2060 Retirement Fund Return Analysis Summary

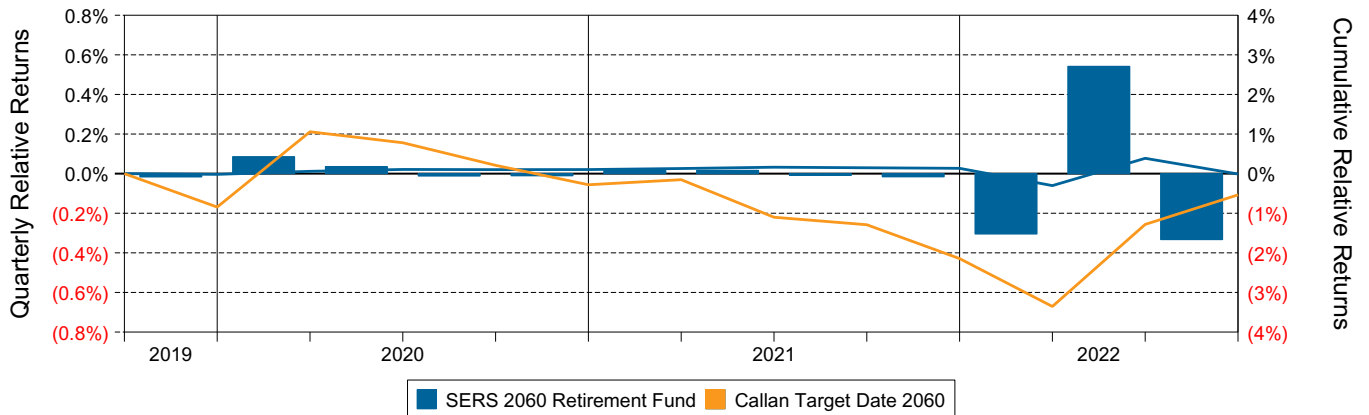
Return Analysis

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.

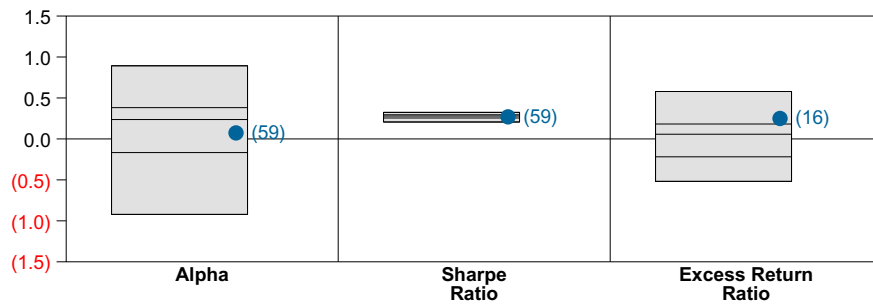
Performance vs Callan Target Date 2060 (Net)



Cumulative and Quarterly Relative Returns vs LifePath Index 2060 CB



Risk Adjusted Return Measures vs LifePath Index 2060 CB Rankings Against Callan Target Date 2060 (Net) Seven and One-Half Years Ended September 30, 2022



SERS 2065 Retirement Fund

Period Ended September 30, 2022

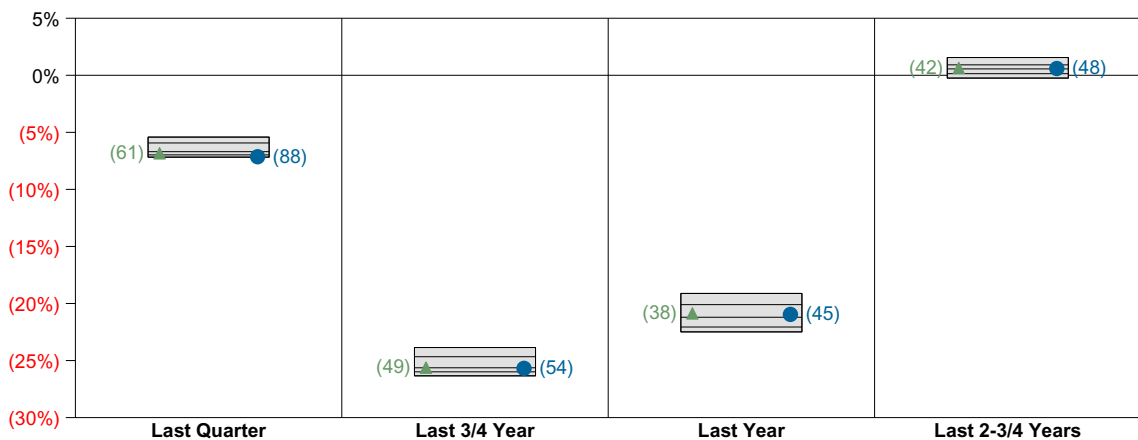
Investment Philosophy

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.

Quarterly Summary and Highlights

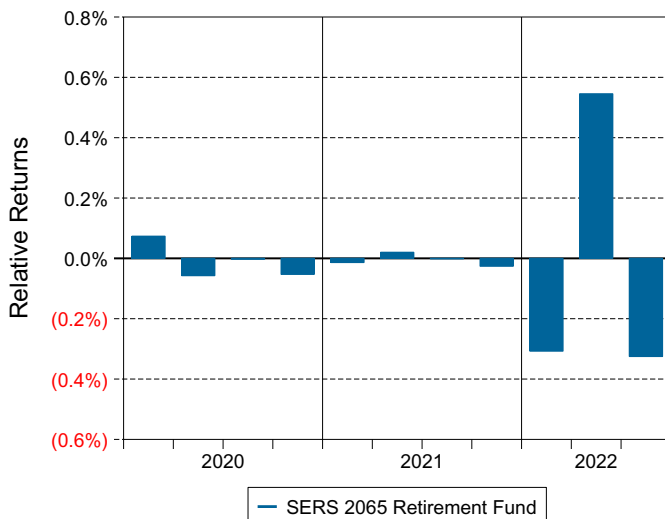
- SERS 2065 Retirement Fund's portfolio posted a (7.14)% return for the quarter placing it in the 88 percentile of the Callan Target Date 2065 group for the quarter and in the 45 percentile for the last year.
- SERS 2065 Retirement Fund's portfolio underperformed the LifePath Index 2065 CB by 0.30% for the quarter and underperformed the LifePath Index 2065 CB for the year by 0.09%.

Performance vs Callan Target Date 2065 (Net)

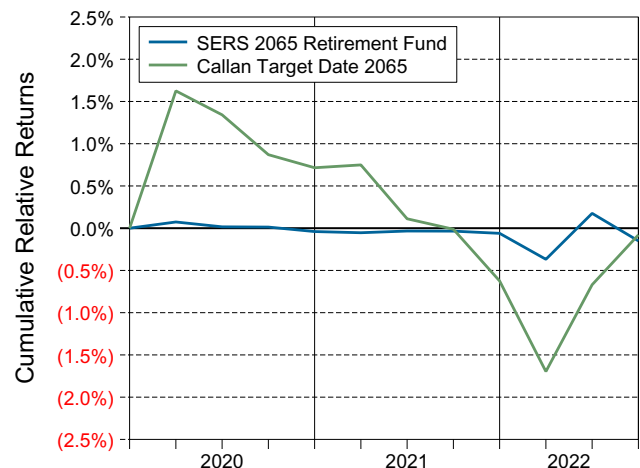


	Last Quarter	Last 3/4 Year	Last Year	Last 2-3/4 Years
10th Percentile	(5.42)	(23.86)	(19.12)	1.56
25th Percentile	(5.93)	(24.67)	(20.10)	0.91
Median	(6.69)	(25.63)	(21.21)	0.56
75th Percentile	(6.97)	(25.99)	(22.06)	0.14
90th Percentile	(7.17)	(26.34)	(22.49)	(0.25)
SERS 2065 Retirement Fund	(7.14)	(25.68)	(20.95)	0.59
LifePath Index 2065 CB	(6.84)	(25.62)	(20.86)	0.65

Relative Return vs LifePath Index 2065 CB



Cumulative Returns vs LifePath Index 2065 CB



SERS U.S. Large Company Index Period Ended September 30, 2022

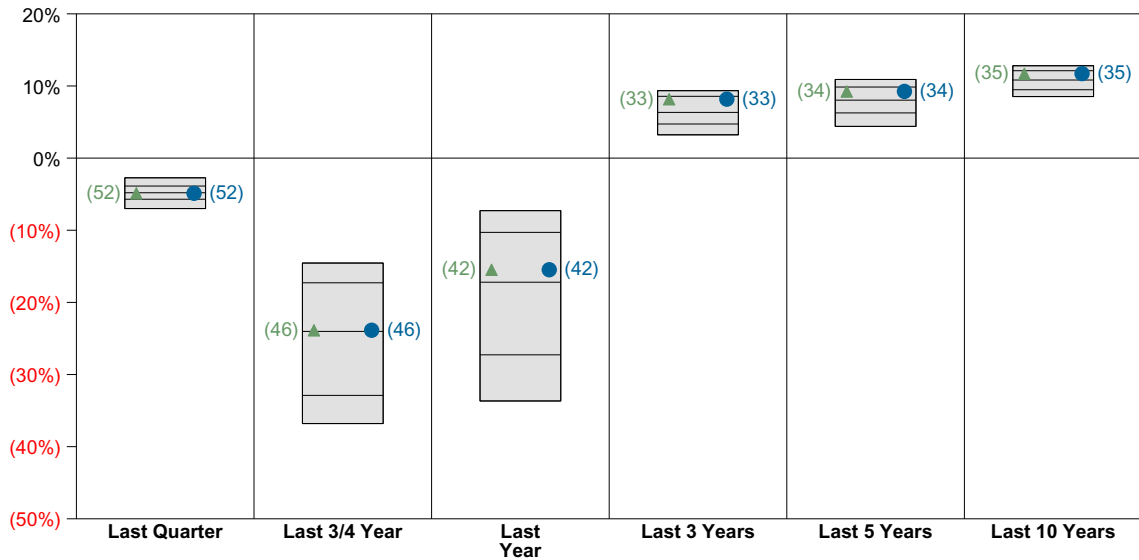
Investment Philosophy

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

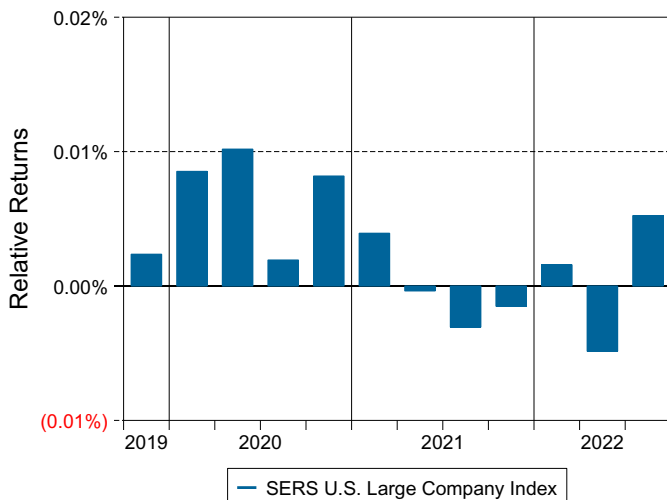
- SERS U.S. Large Company Index's portfolio posted a (4.88)% return for the quarter placing it in the 52 percentile of the Callan Large Cap Broad Equity Mut Funds group for the quarter and in the 42 percentile for the last year.
- SERS U.S. Large Company Index's portfolio outperformed the S&P 500 Index by 0.00% for the quarter and outperformed the S&P 500 Index for the year by 0.00%.

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

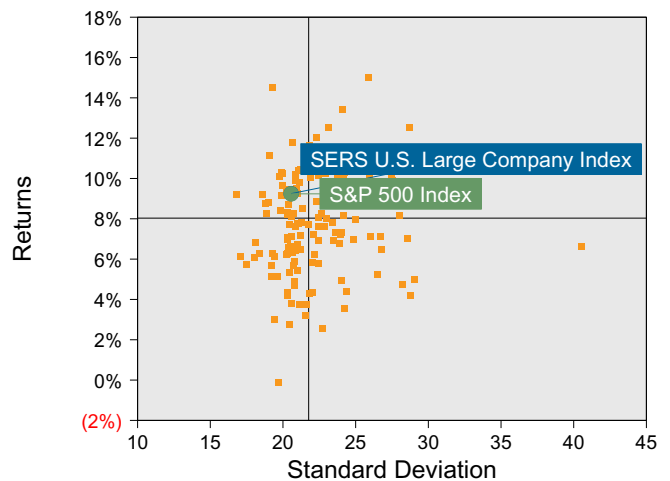


10th Percentile	(2.73)	(14.55)	(7.28)	9.35	10.90	12.81
25th Percentile	(3.87)	(17.29)	(10.29)	8.56	9.85	12.11
Median	(4.80)	(24.02)	(17.20)	6.34	8.03	10.82
75th Percentile	(5.70)	(32.89)	(27.27)	4.73	6.27	9.48
90th Percentile	(6.99)	(36.80)	(33.67)	3.23	4.40	8.53
SERS U.S. Large Company Index ●	(4.88)	(23.87)	(15.47)	8.17	9.25	11.72
S&P 500 Index ▲	(4.88)	(23.87)	(15.47)	8.16	9.24	11.70

Relative Return vs S&P 500 Index



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

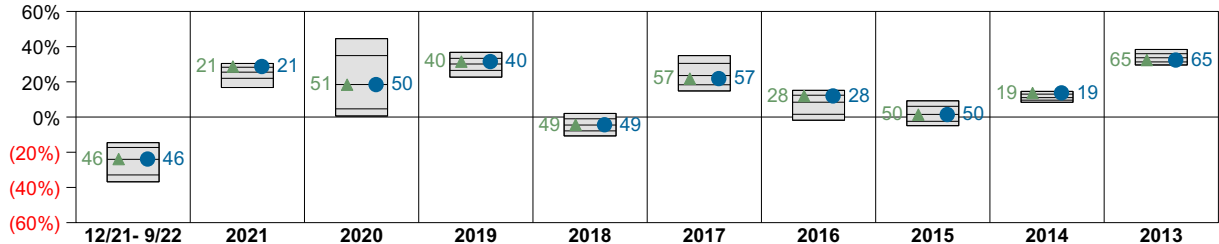


SERS U.S. Large Company Index Return Analysis Summary

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.

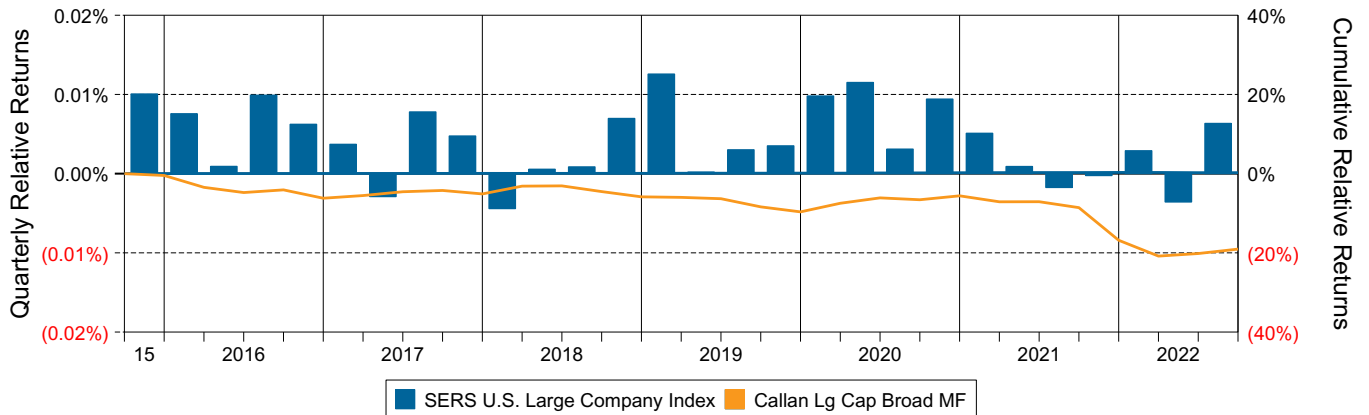
Performance vs Callan Large Cap Broad Equity Mut Funds (Institutional Net)



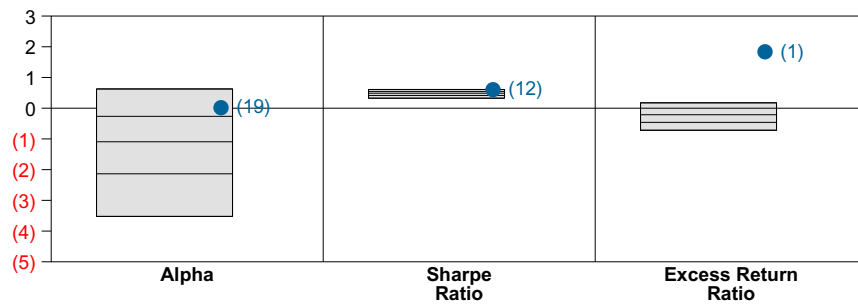
	12/21- 9/22	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	(14.55)	30.44	44.54	36.76	2.05	34.91	15.17	9.23	14.58	38.40
25th Percentile	(17.29)	28.29	34.90	33.34	(1.00)	30.48	12.39	6.09	13.01	35.98
Median	(24.02)	25.50	18.47	30.14	(4.54)	23.56	8.43	1.50	11.02	33.69
75th Percentile	(32.89)	22.00	4.64	26.51	(7.86)	18.33	1.56	(2.42)	9.59	31.31
90th Percentile	(36.80)	16.77	0.58	22.66	(10.72)	14.82	(1.82)	(4.91)	8.38	29.58

	12/21- 9/22	2021	2020	2019	2018	2017	2016	2015	2014	2013
SERS U.S. Large Company Index	(23.86)	28.71	18.44	31.51	(4.38)	21.85	11.99	1.41	13.72	32.39
S&P 500 Index	(23.87)	28.71	18.40	31.49	(4.38)	21.83	11.96	1.38	13.69	32.39

Cumulative and Quarterly Relative Returns 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 September 30, 2022



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.63	0.61	0.18
25th Percentile	(0.27)	0.55	0.00
Median	(1.09)	0.49	(0.21)
75th Percentile	(2.14)	0.41	(0.46)
90th Percentile	(3.52)	0.33	(0.72)

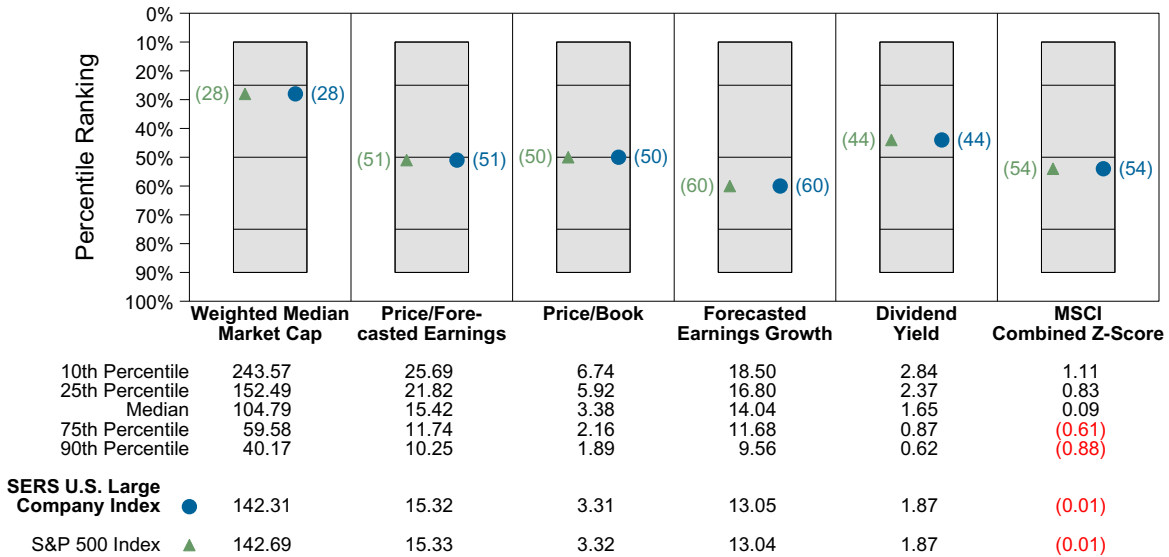
SERS U.S. Large Company Index	0.02	0.60	1.84
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SERS U.S. Large Company Index Equity Characteristics Analysis Summary

Portfolio Characteristics

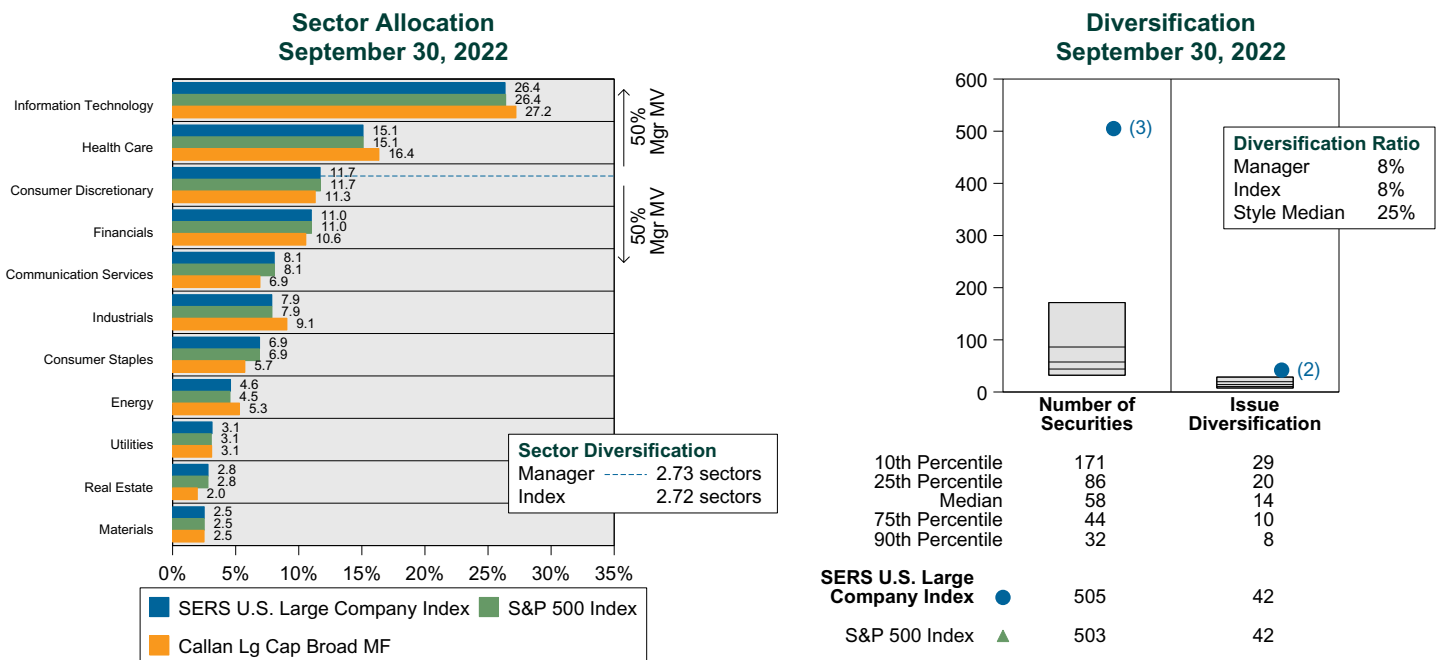
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against Callan Large Cap Broad Equity Mut Funds as of September 30, 2022



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 Top 10 Portfolio Holdings Characteristics as of September 30, 2022

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
Apple Inc	Information Technology	\$228,728	6.9%	1.22%	2220.98	21.38	0.67%	8.77%
Microsoft Corp	Information Technology	\$190,297	5.8%	(9.12)%	1736.94	22.02	1.17%	15.15%
Amazon.Com	Consumer Discretionary	\$109,727	3.3%	6.39%	1151.19	64.39	0.00%	33.25%
Tesla Mtrs Inc	Consumer Discretionary	\$77,401	2.3%	18.17%	831.15	48.81	0.00%	54.83%
Alphabet Inc Cl A	Communication Services	\$62,834	1.9%	(12.22)%	573.52	16.73	0.00%	10.15%
Alphabet Inc Cl C	Communication Services	\$56,468	1.7%	(13.83)%	592.57	16.82	0.00%	10.15%
Berkshire Hathaway Inc Del Cl B New	Financials	\$52,799	1.6%	(2.20)%	347.43	17.90	0.00%	14.36%
Unitedhealth Group	Health Care	\$51,756	1.6%	(1.36)%	472.41	20.96	1.31%	14.09%
Johnson & Johnson	Health Care	\$47,056	1.4%	(7.35)%	429.50	15.62	2.77%	3.70%
Exxon Mobil Corp	Energy	\$39,866	1.2%	2.91%	363.88	7.68	4.03%	24.71%

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
Constellation Energy Stock	Utilities	\$2,986	0.1%	45.53%	27.19	21.18	0.68%	-
Enphase Energy Inc	Information Technology	\$4,103	0.1%	42.12%	37.59	58.21	0.00%	32.23%
Etsy Inc	Consumer Discretionary	\$1,385	0.0%	36.77%	12.68	40.55	0.00%	(1.70)%
Netflix Inc	Communication Services	\$11,471	0.3%	34.64%	104.70	22.14	0.00%	7.70%
Biogen Inc	Health Care	\$4,241	0.1%	30.92%	39.10	16.78	0.00%	(5.90)%
Cardinal Health	Health Care	\$2,016	0.1%	28.52%	17.47	12.10	2.97%	10.00%
Albemarle Corp	Materials	\$3,373	0.1%	26.71%	30.97	10.89	0.60%	77.17%
Pg&e Corp	Utilities	\$2,029	0.1%	25.25%	30.82	10.46	0.00%	4.40%
On Semiconductor Corp	Information Technology	\$2,945	0.1%	23.89%	27.00	12.51	0.00%	19.21%
Paypal Holdings Inc	Information Technology	\$10,874	0.3%	23.24%	99.54	18.83	0.00%	9.39%

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
Charter Communications Inc N Cl A	Communication Services	\$3,693	0.1%	(35.25)%	48.73	8.33	0.00%	25.82%
Fedex Corp	Industrials	\$3,918	0.1%	(34.16)%	38.63	9.47	3.10%	9.06%
Catalent Inc	Health Care	\$1,439	0.0%	(32.56)%	13.02	18.04	0.00%	13.00%
Centurylink Inc	Communication Services	\$762	0.0%	(31.65)%	7.54	6.45	13.74%	(18.75)%
Vf Corp	Consumer Discretionary	\$1,082	0.0%	(31.50)%	11.62	10.14	6.69%	2.18%
Match Group Inc New	Communication Services	\$1,477	0.0%	(31.48)%	13.51	25.12	0.00%	21.45%
Intel Corp	Information Technology	\$11,593	0.4%	(30.41)%	105.81	10.17	5.67%	10.00%
Organon	Health Care	\$643	0.0%	(30.04)%	5.95	4.36	4.79%	-
Ball Corp	Materials	\$1,680	0.1%	(29.49)%	15.19	13.73	1.66%	8.14%
Newmont Mining Hldg	Materials	\$3,629	0.1%	(28.65)%	33.36	17.98	5.23%	(9.20)%

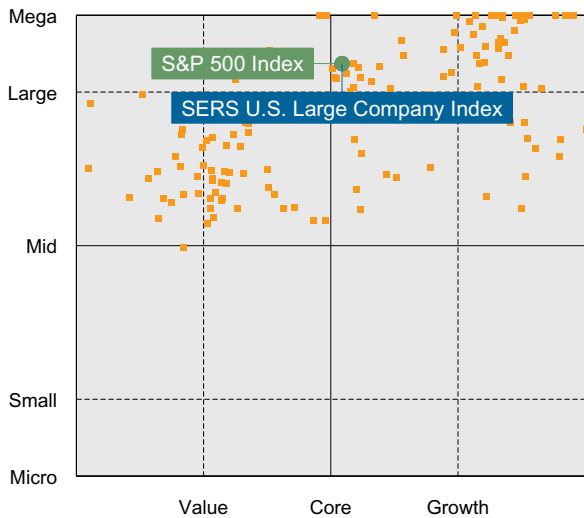
Historical Holdings Based Style Analysis

SERS U.S. Large Company Index

For Three Years Ended September 30, 2022

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.

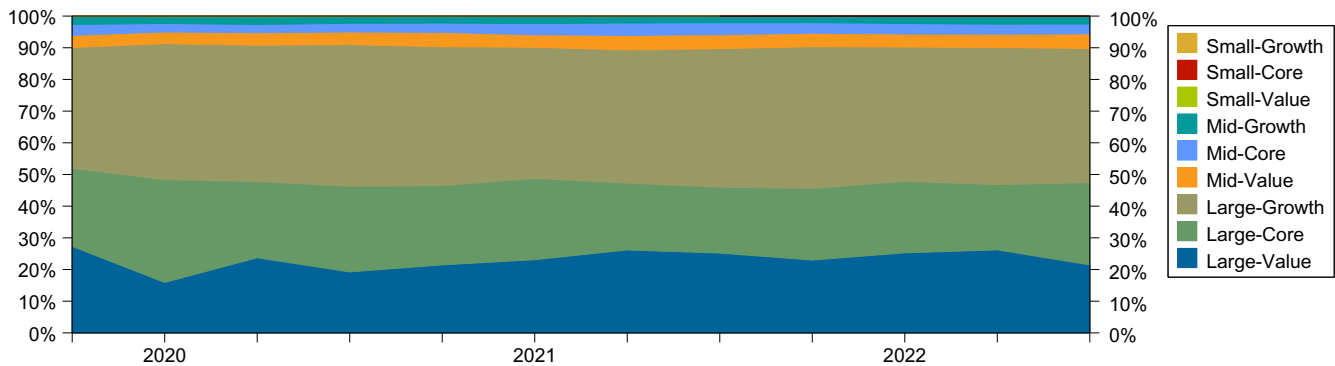
Average Style Map vs Callan Lg Cap Broad MF Holdings for Three Years Ended September 30, 2022



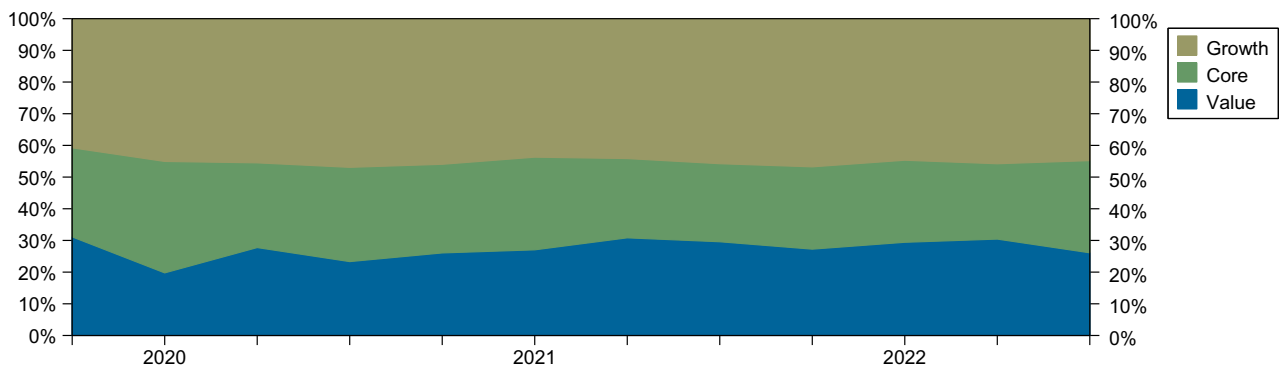
Average Style Exposure Matrix Holdings for Three Years Ended September 30, 2022

Large	23.2% (96)	24.4% (94)	42.7% (85)	90.3% (275)
	23.2% (96)	24.4% (94)	42.7% (85)	90.3% (275)
Mid	4.2% (102)	3.2% (73)	2.3% (47)	9.6% (222)
	4.2% (102)	3.2% (73)	2.3% (47)	9.6% (222)
Small	0.1% (5)	0.0% (2)	0.0% (1)	0.1% (8)
	0.1% (5)	0.0% (2)	0.0% (1)	0.1% (8)
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	27.4% (203)	27.6% (169)	45.0% (133)	100.0% (505)
	27.4% (203)	27.6% (169)	45.0% (133)	100.0% (505)
	Value	Core	Growth	Total

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



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



SERS U.S. All Company Index Fund

Period Ended September 30, 2022

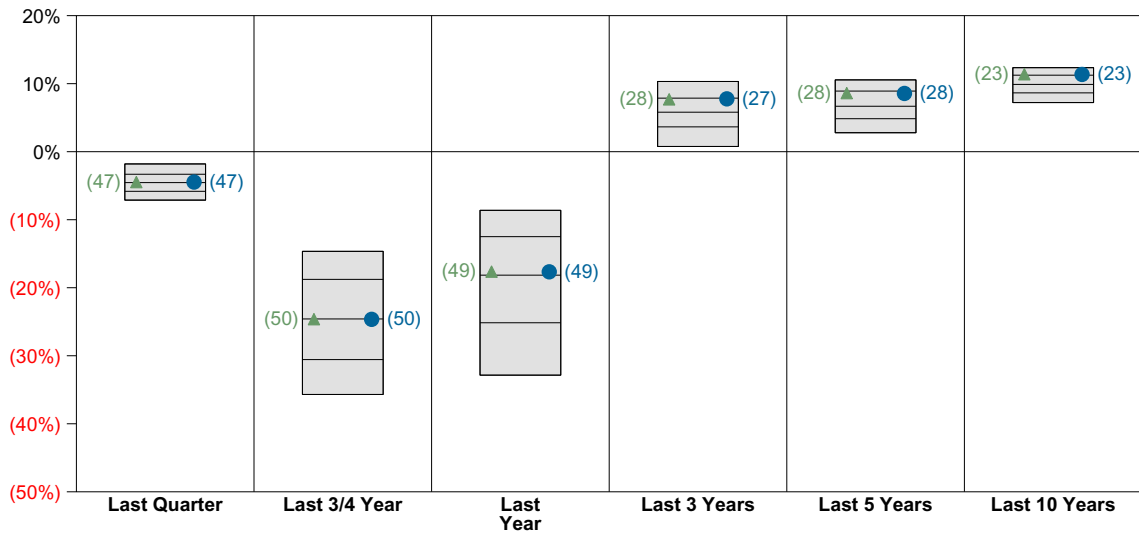
Investment Philosophy

The U.S. All Company Stock Index Fund's Investment objective is to track the performance of the Russell 3000 index. In meeting this objective, the Fund may invest in securities and a combination of other collective funds that together are designed to track the performance of the Index. The Fund will principally invest in other affiliated bank collective funds and equity securities, including common stock of U.S. companies. This fund is managed by Mellon Capital Management.

Quarterly Summary and Highlights

- SERS U.S. All Company Index Fund's portfolio posted a (4.47)% return for the quarter placing it in the 47 percentile of the Callan Multi Cap Broad Mutual Funds group for the quarter and in the 49 percentile for the last year.
- SERS U.S. All Company Index Fund's portfolio underperformed the Russell 3000 Index by 0.00% for the quarter and underperformed the Russell 3000 Index for the year by 0.04%.

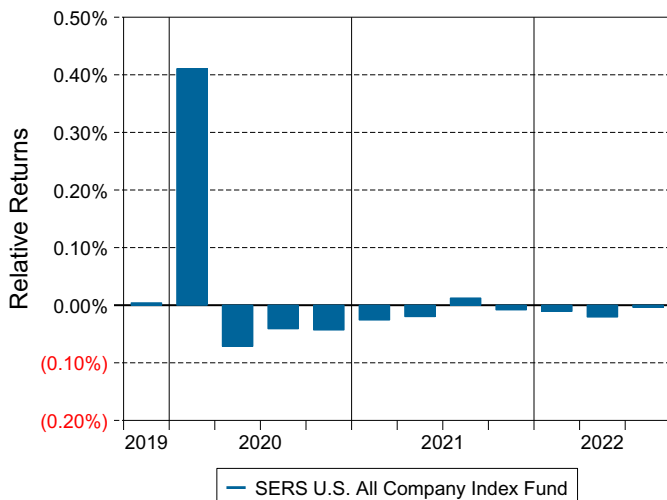
Performance vs Callan Multi Cap Broad Mutual Funds (Institutional Net)



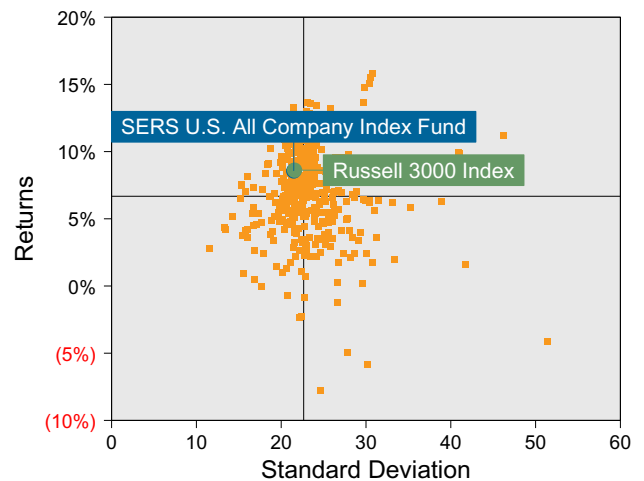
10th Percentile	(1.80)	(14.65)	(8.62)	10.32	10.56	12.35
25th Percentile	(3.32)	(18.77)	(12.49)	7.87	8.91	11.25
Median	(4.54)	(24.59)	(18.15)	5.80	6.68	9.89
75th Percentile	(5.83)	(30.57)	(25.15)	3.65	4.85	8.65
90th Percentile	(7.12)	(35.69)	(32.85)	0.77	2.78	7.22

SERS U.S. All Company Index Fund	●	(4.47)	(24.65)	(17.66)	7.77	8.56	11.36
Russell 3000 Index	▲	(4.46)	(24.62)	(17.63)	7.70	8.62	11.39

Relative Return vs Russell 3000 Index



Callan Multi Cap Broad Mutual Funds (Institutional Net) Annualized Five Year Risk vs Return

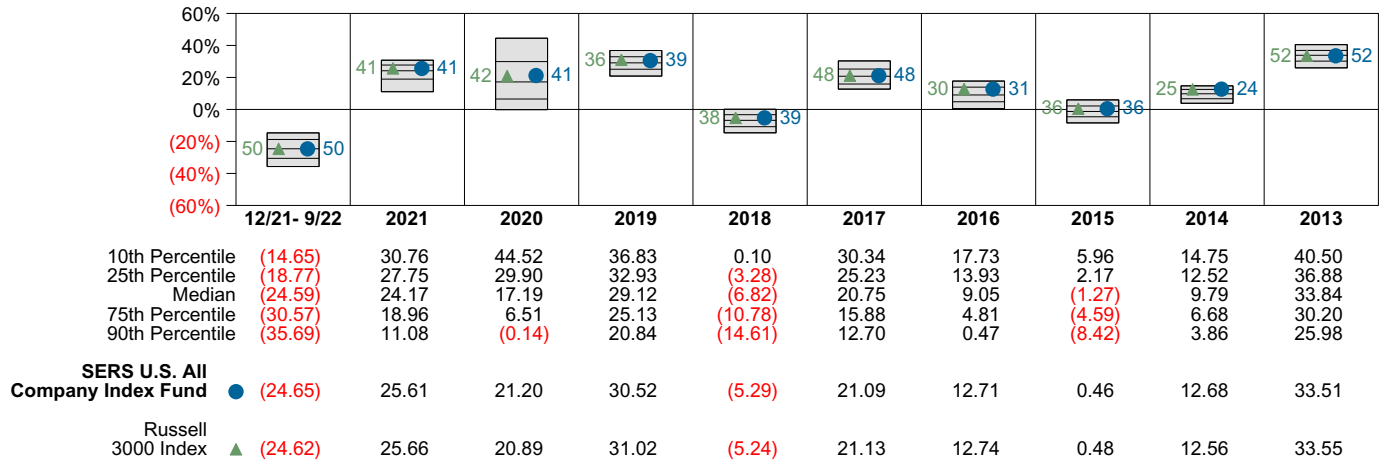


SERS U.S. All Company Index Fund Return Analysis Summary

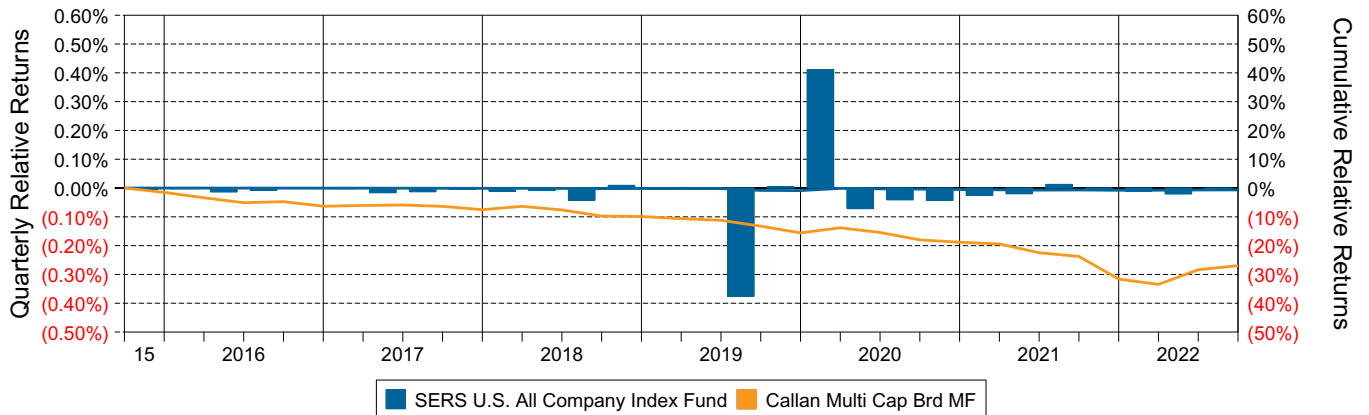
Return Analysis

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.

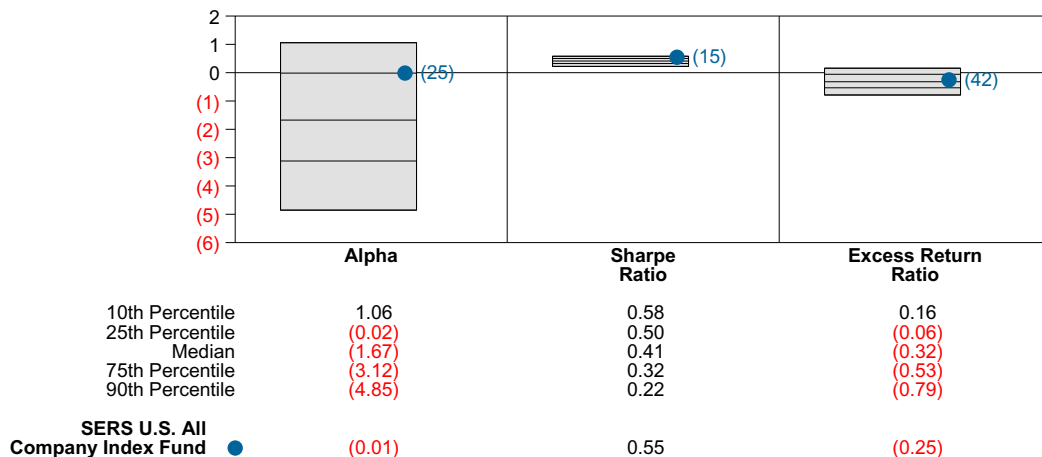
Performance vs Callan Multi Cap Broad Mutual Funds (Institutional Net)



Cumulative and Quarterly Relative Returns vs Russell 3000 Index



Risk Adjusted Return Measures vs Russell 3000 Index Rankings Against Callan Multi Cap Broad Mutual Funds (Institutional Net) Seven Years Ended September 30, 2022

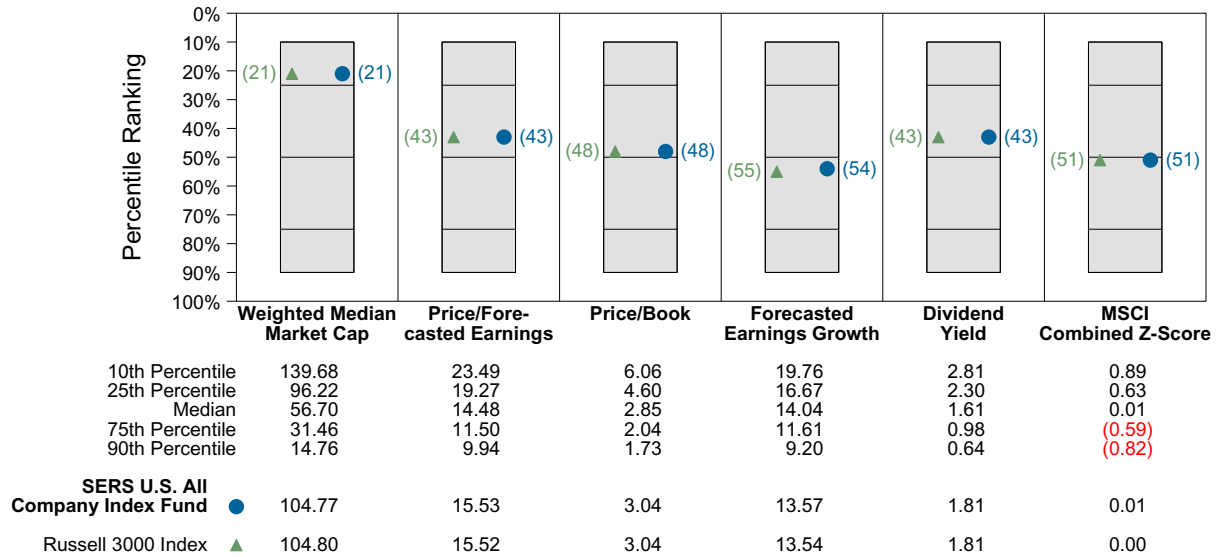


SERS U.S. All Company Index Fund Equity Characteristics Analysis Summary

Portfolio Characteristics

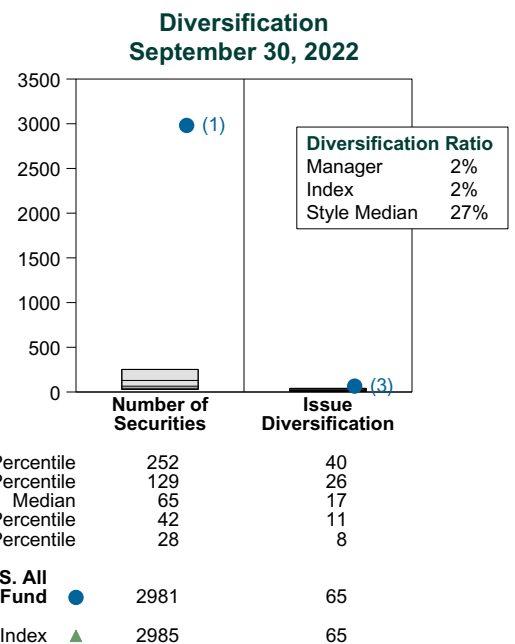
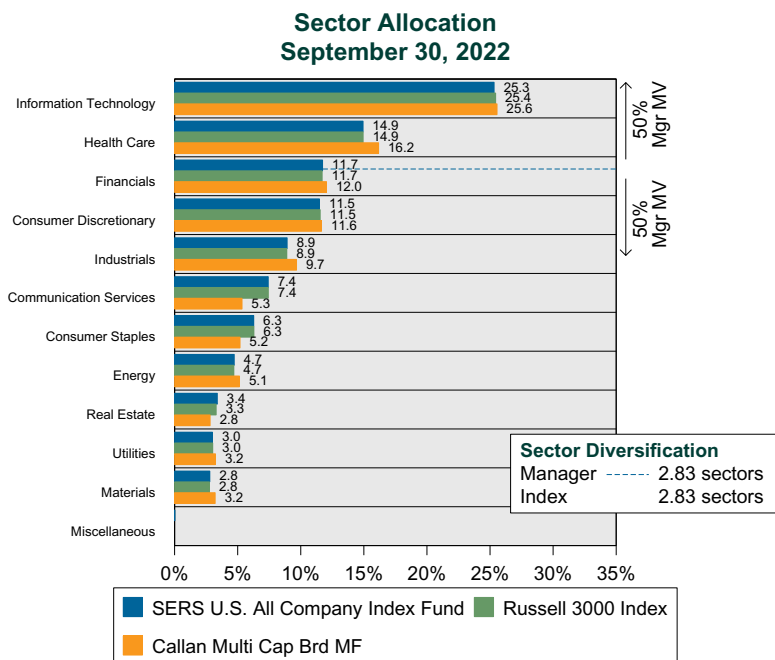
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against Callan Multi Cap Broad Mutual Funds as of September 30, 2022



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. All Company Index Fund Top 10 Portfolio Holdings Characteristics as of September 30, 2022

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
Apple Inc	Information Technology	\$75,865	5.9%	1.22%	2220.98	21.38	0.67%	8.77%
Microsoft Corp	Information Technology	\$62,562	4.9%	(9.12)%	1736.94	22.02	1.17%	15.15%
Amazon.Com	Consumer Discretionary	\$36,057	2.8%	6.39%	1151.19	64.39	0.00%	33.25%
Tesla Mtrs Inc	Consumer Discretionary	\$24,223	1.9%	18.17%	831.15	48.81	0.00%	54.83%
Alphabet Inc Cl A	Communication Services	\$20,654	1.6%	(12.22)%	573.52	16.73	0.00%	10.15%
Alphabet Inc Cl C	Communication Services	\$18,645	1.5%	(13.83)%	592.57	16.82	0.00%	10.15%
Berkshire Hathaway Inc Del Cl B New	Financials	\$17,287	1.3%	(2.20)%	347.43	17.90	0.00%	14.36%
Unitedhealth Group	Health Care	\$16,958	1.3%	(1.36)%	472.41	20.96	1.31%	14.09%
Johnson & Johnson	Health Care	\$15,428	1.2%	(7.35)%	429.50	15.62	2.77%	3.70%
Exxon Mobil Corp	Energy	\$13,066	1.0%	2.91%	363.88	7.68	4.03%	24.71%

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
Akero Therapeutics	Industrials	\$34	0.0%	238.85%	1.58	(9.90)	0.00%	-
Forma Therapeutics Holdings Common S	Health Care	\$26	0.0%	189.47%	0.95	(5.24)	0.00%	-
Velo3d Inc Common Stock	Information Technology	\$8	0.0%	185.51%	0.73	(11.90)	0.00%	31.50%
Ventyx Biosciences Inc Common Stock	Health Care	\$28	0.0%	185.46%	1.78	(16.79)	0.00%	-
Verve Therapeutics	Health Care	\$56	0.0%	124.80%	2.06	(11.89)	0.00%	-
Prothena Corp Plc Shs	Health Care	\$76	0.0%	123.32%	2.84	(18.60)	0.00%	-
Target Hospitality Corp	Consumer Discretionary	\$13	0.0%	121.02%	1.23	6.90	0.00%	-
1life Healthcare	Health Care	\$110	0.0%	118.78%	3.36	(9.71)	0.00%	-
Global Blood Therapeutics Inc	Health Care	\$156	0.0%	113.16%	4.60	(20.77)	0.00%	-
Prometheus Biosciences	Health Care	\$64	0.0%	109.02%	2.41	(16.18)	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
Cti Biopharma Corp	Health Care	\$20	0.0%	-	0.67	(35.06)	0.00%	-
Charge Enterprises Inc	Communication Services	\$8	0.0%	-	0.36	(5.91)	0.00%	-
Leafly Holdings Inc	Communication Services	\$0	0.0%	(84.91)%	0.03	(1.24)	0.00%	-
Vistagen Therapeutics Inc	Consumer Discretionary	\$1	0.0%	(82.78)%	0.03	(0.64)	0.00%	-
Faraday Futre Intlgt Elctr I	Consumer Discretionary	\$2	0.0%	(75.54)%	0.17	(0.46)	0.00%	-
Selectquote Inc Issuer_code 30	Financials	\$3	0.0%	(70.62)%	0.12	(1.59)	0.00%	-
Ironnet Inc	Information Technology	\$2	0.0%	(68.82)%	0.07	(1.16)	0.00%	-
Sc Health A	Information Technology	\$3	0.0%	(67.42)%	0.09	(0.69)	0.00%	-
Mullen Automotive Inc	Information Technology	\$4	0.0%	(66.67)%	0.17	(0.43)	0.00%	-
Loyalty Ventures Inc Com	Communication Services	\$1	0.0%	(66.02)%	0.03	(0.33)	0.00%	-

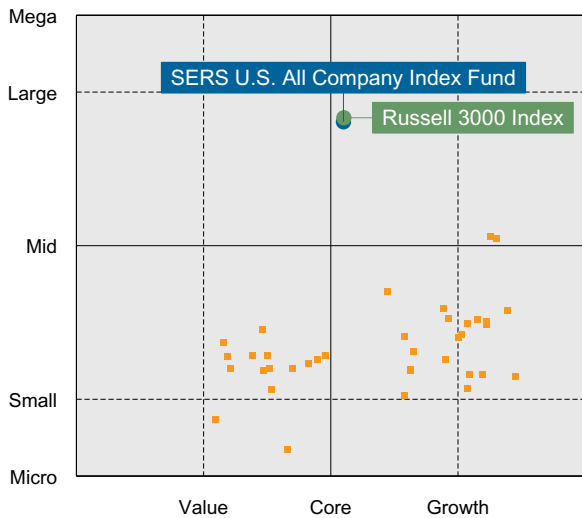
Historical Holdings Based Style Analysis

SERS U.S. All Company Index Fund

For Four Years Ended September 30, 2022

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.

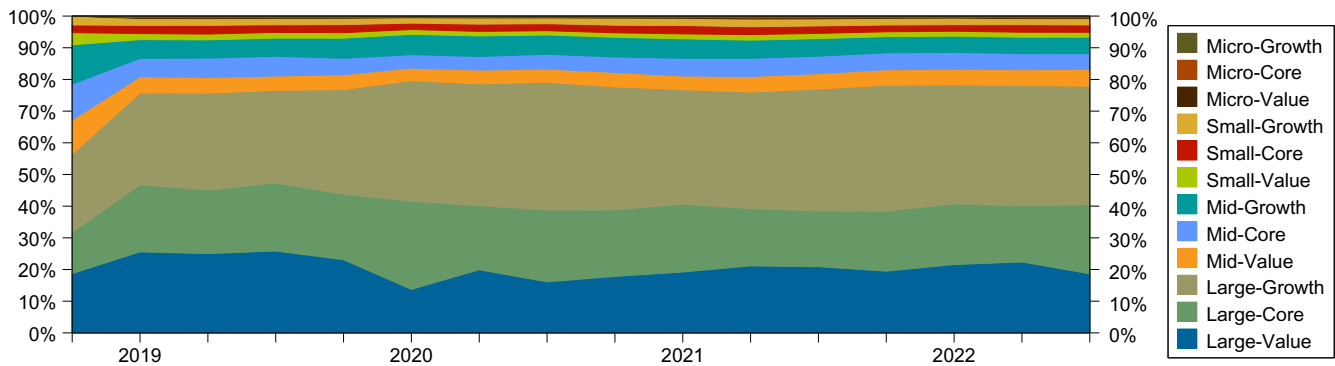
Average Style Map vs Callan SMID Broad MFs Holdings for Four Years Ended September 30, 2022



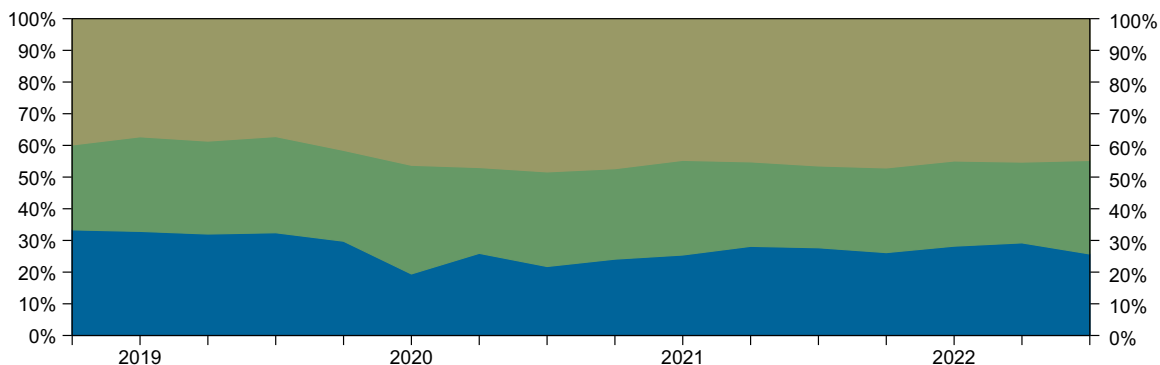
Average Style Exposure Matrix Holdings for Four Years Ended September 30, 2022

	Value	Core	Growth	Total
Large	20.6% (96)	20.2% (94)	35.4% (99)	76.2% (289)
	20.9% (99)	20.8% (97)	35.7% (103)	77.4% (299)
Mid	5.1% (165)	5.6% (203)	6.2% (222)	16.9% (590)
	4.7% (167)	5.3% (206)	5.8% (225)	15.8% (598)
Small	1.7% (296)	2.4% (477)	2.1% (371)	6.2% (1144)
	1.6% (309)	2.4% (499)	2.1% (389)	6.1% (1197)
Micro	0.2% (298)	0.3% (379)	0.1% (160)	0.7% (837)
	0.3% (317)	0.3% (408)	0.2% (173)	0.7% (898)
Total	27.6% (855)	28.5% (1153)	43.9% (852)	100.0% (2860)
	27.4% (892)	28.8% (1210)	43.8% (890)	100.0% (2992)

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



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



SERS U.S. SMID Company Index Period Ended September 30, 2022

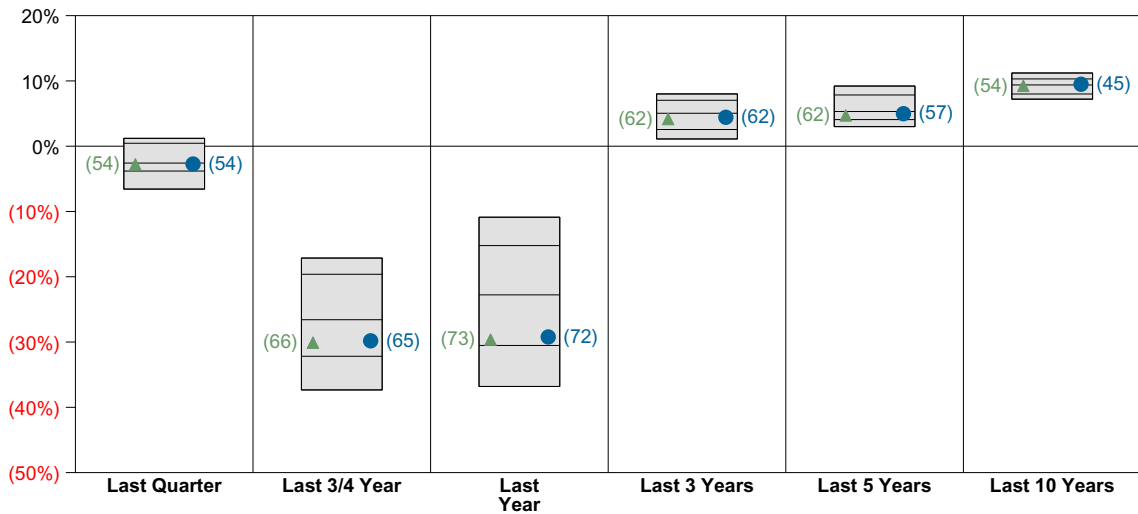
Investment Philosophy

The objective of the U.S. Small/Mid Company Stock Index Fund is to track the performance of the Dow Jones U.S. Completion Total Stock Market Index. In meeting this objective, the Fund may invest in securities, exchange-traded/mutual funds and a combination of other collective funds that together are designed to track the performance of the Dow Jones U.S. Completion Total Stock Market Index. This fund is managed by Mellon Capital Management.

Quarterly Summary and Highlights

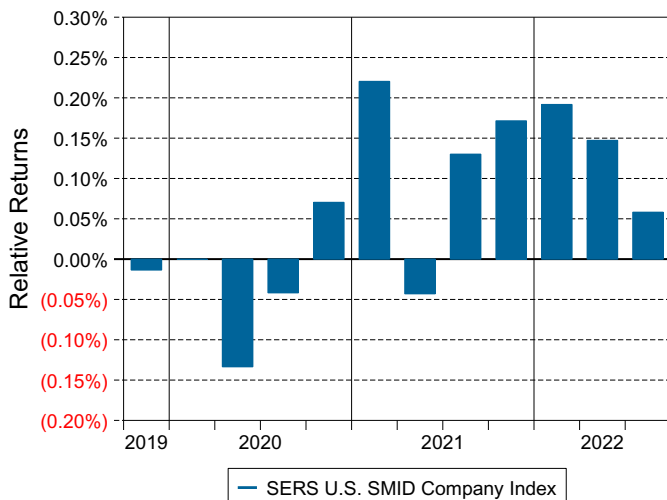
- SERS U.S. SMID Company Index's portfolio posted a (2.73)% return for the quarter placing it in the 54 percentile of the Callan Small/MidCap Broad Mutual Funds group for the quarter and in the 72 percentile for the last year.
- SERS U.S. SMID Company Index's portfolio outperformed the Dow Jones US Completion by 0.06% for the quarter and outperformed the Dow Jones US Completion for the year by 0.40%.

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

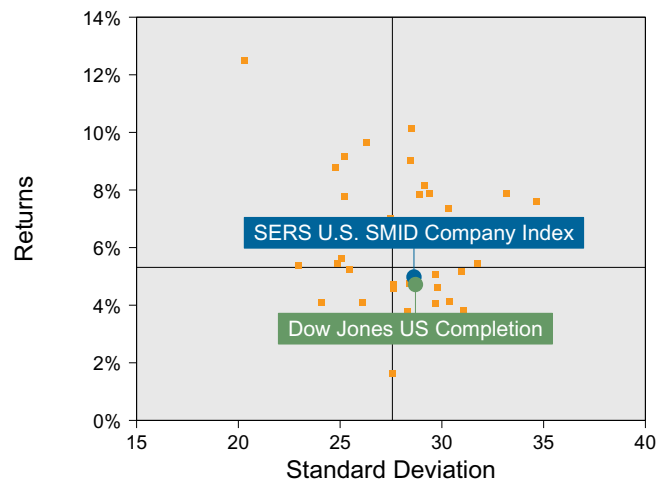


10th Percentile	1.21	(17.13)	(10.88)	8.01	9.21	11.21
25th Percentile	0.45	(19.62)	(15.23)	7.03	7.85	10.31
Median	(2.59)	(26.58)	(22.77)	5.05	5.31	9.38
75th Percentile	(3.81)	(32.18)	(30.52)	2.56	4.08	8.00
90th Percentile	(6.57)	(37.34)	(36.81)	1.11	3.00	7.21
SERS U.S. SMID Company Index	● (2.73)	(29.81)	(29.22)	4.43	4.98	9.49
Dow Jones US Completion	▲ (2.79)	(30.09)	(29.63)	4.16	4.72	9.25

Relative Return vs Dow Jones US Completion



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

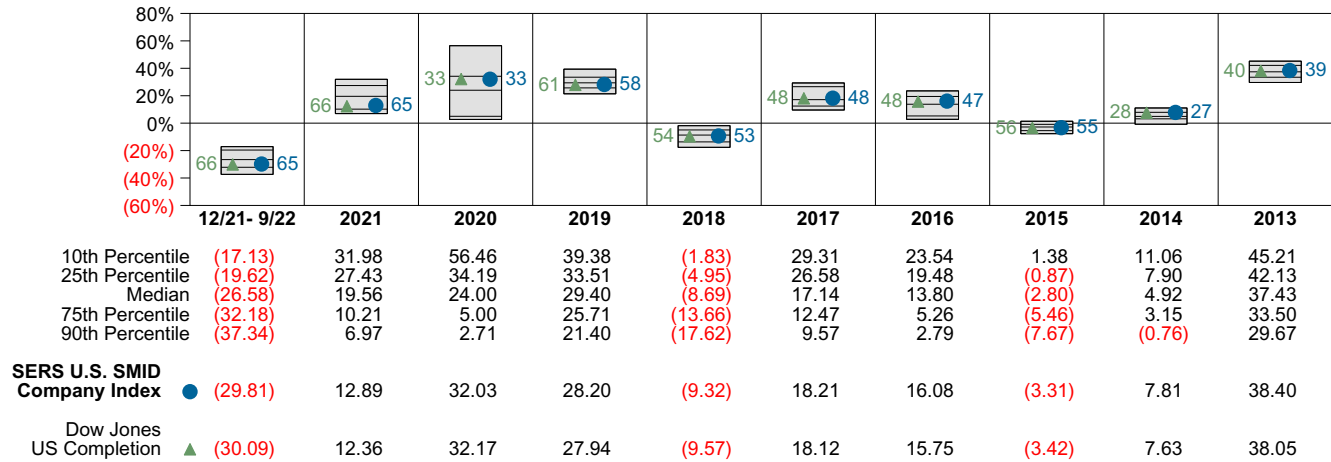


SERS U.S. SMID Company Index Return Analysis Summary

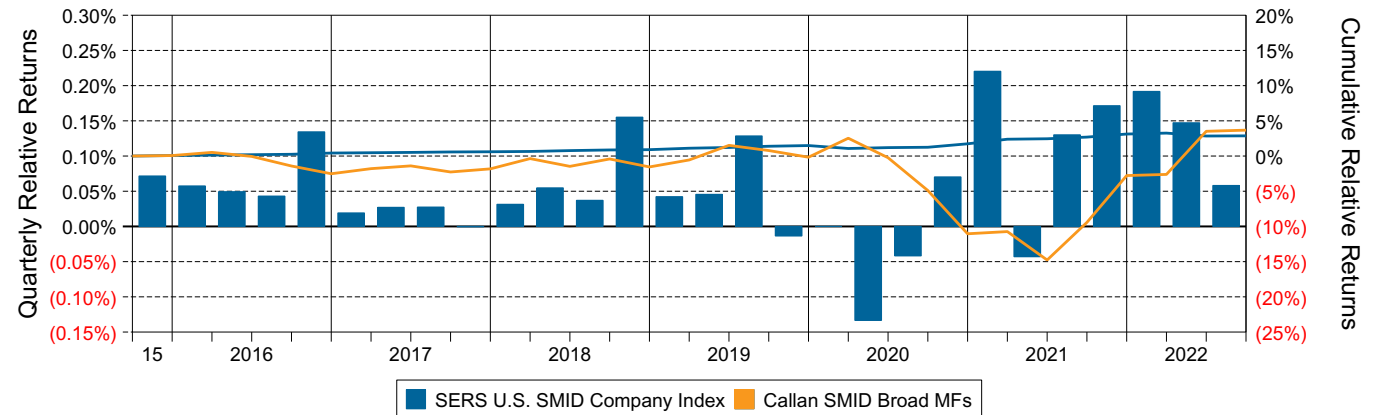
Return Analysis

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.

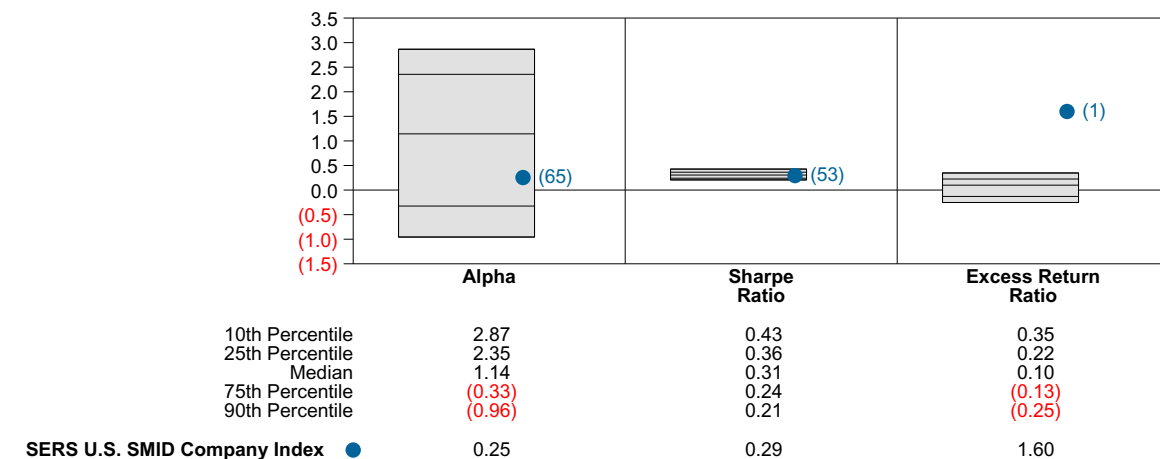
Performance vs Callan Small/MidCap Broad Mutual Funds (Institutional Net)



Cumulative and Quarterly Relative Returns 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 September 30, 2022

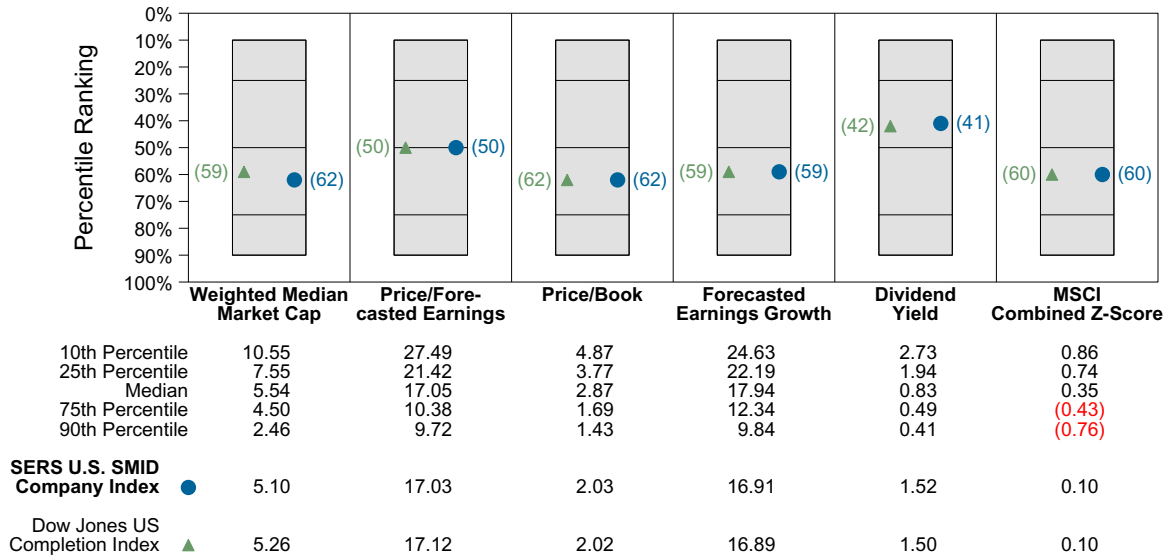


SERS U.S. SMID Company Index Equity Characteristics Analysis Summary

Portfolio Characteristics

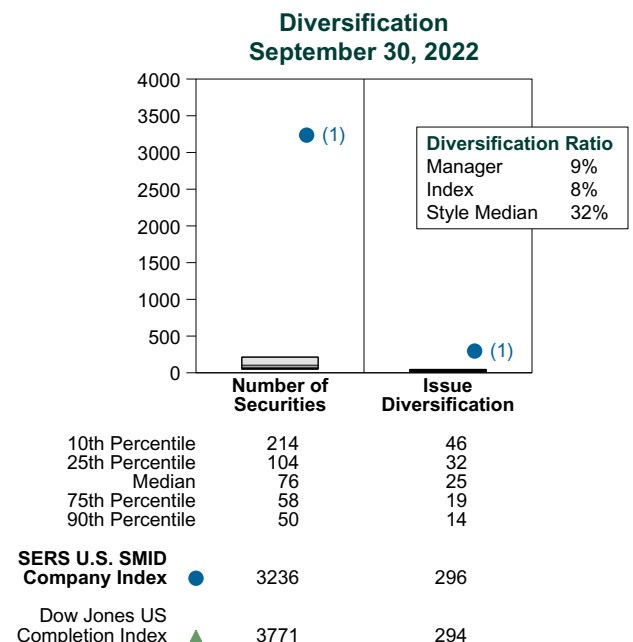
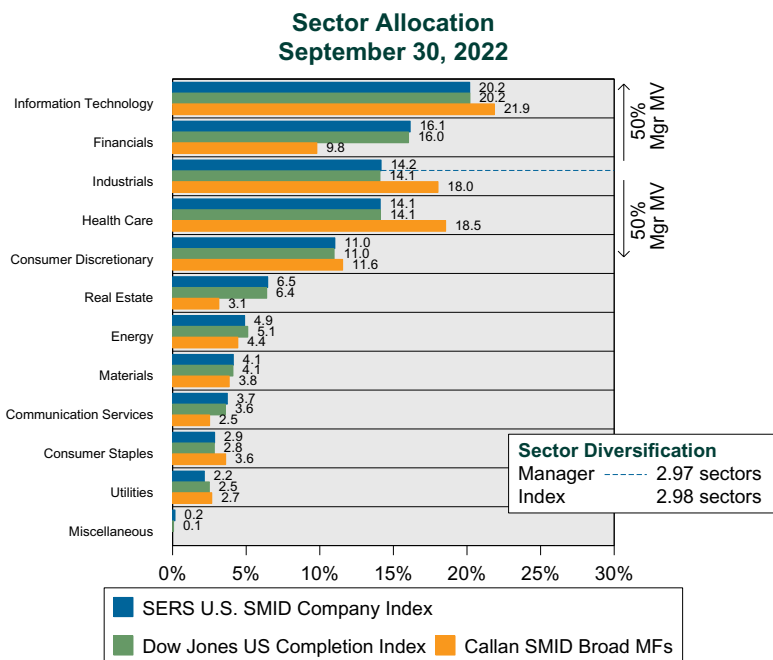
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against Callan Small/MidCap Broad Mutual Funds as of September 30, 2022



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. SMID Company Index Top 10 Portfolio Holdings Characteristics as of September 30, 2022

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
Blackstone Group Inc Com Cl A	Financials	\$7,095	1.0%	(7.11)%	58.73	14.97	6.97%	10.20%
Uber Technologies Inc	Industrials	\$6,338	0.9%	29.52%	52.47	(21.30)	0.00%	-
Palo Alto Networks Inc	Information Technology	\$5,956	0.9%	(0.52)%	49.01	50.10	0.00%	25.15%
Snowflake Inc Cl A	Information Technology	\$5,813	0.9%	22.22%	54.39	495.51	0.00%	-
Airbnb Inc Cl A Com Usd0.0001 Cl A	Consumer Discretionary	\$5,065	0.7%	17.92%	41.93	42.75	0.00%	45.95%
Cheniere Energy Inc	Energy	\$5,006	0.7%	24.99%	41.44	10.09	0.95%	-
Marvell Technology Group Ltd	Information Technology	\$4,405	0.7%	(1.30)%	36.59	16.30	0.56%	10.34%
CrowdStrike Hldgs Inc Cl A	Information Technology	\$4,249	0.6%	(2.22)%	35.41	97.64	0.00%	73.75%
Lululemon Athletica Inc	Consumer Discretionary	\$3,923	0.6%	2.55%	34.19	25.63	0.00%	20.20%
Workday Inc Cl A	Information Technology	\$3,659	0.5%	9.06%	30.60	36.99	0.00%	13.04%

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
Rhythm Pharmaceuticals Inc	Health Care	\$124	0.0%	490.39%	1.37	(7.30)	0.00%	-
Akero Therapeutics	Industrials	\$127	0.0%	238.85%	1.58	(9.90)	0.00%	-
Forma Therapeutics Holdings Common S	Health Care	\$87	0.0%	189.47%	0.95	(5.24)	0.00%	-
Velo3d Inc Common Stock	Information Technology	\$29	0.0%	185.51%	0.73	(11.90)	0.00%	31.50%
Ventyx Biosciences Inc Common Stock	Health Care	\$92	0.0%	185.46%	1.78	(16.79)	0.00%	-
Minerva Neurosciences Inc	Health Care	\$6	0.0%	179.94%	0.05	(2.01)	0.00%	-
Bioatla Inc	Health Care	\$27	0.0%	170.08%	0.28	(2.58)	0.00%	-
Spero Therapeutics Inc	Health Care	\$5	0.0%	170.03%	0.07	(1.15)	0.00%	-
Immuneering Corp Class A Com	Health Care	\$28	0.0%	164.66%	0.38	(6.38)	0.00%	-
Pliant Therapeutics	Health Care	\$84	0.0%	160.78%	1.02	(6.72)	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
Cti Biopharma Corp	Health Care	\$62	0.0%	-	0.67	(35.06)	0.00%	-
Charge Enterprises Inc	Communication Services	\$32	0.0%	-	0.36	(5.91)	0.00%	-
Contrafact Corp	Health Care	\$1	0.0%	(94.57)%	0.01	(0.14)	0.00%	-
Humanigen Inc	Health Care	\$1	0.0%	(89.09)%	0.02	(0.27)	0.00%	-
Otonomy Inc	Health Care	\$2	0.0%	(85.82)%	0.02	(0.48)	0.00%	-
Zovio Inc	Consumer Discretionary	\$1	0.0%	(85.24)%	0.00	(1.59)	0.00%	20.00%
Leafly Holdings Inc	Communication Services	\$1	0.0%	(84.91)%	0.03	(1.24)	0.00%	-
Forge Global Holdings Inc	Information Technology	\$22	0.0%	(83.19)%	0.30	(4.03)	0.00%	-
Vistagen Therapeutics Inc	Consumer Discretionary	\$4	0.0%	(82.78)%	0.03	(0.64)	0.00%	-
Agriify Corp	Industrials	\$1	0.0%	(77.94)%	0.01	(0.22)	0.00%	20.00%

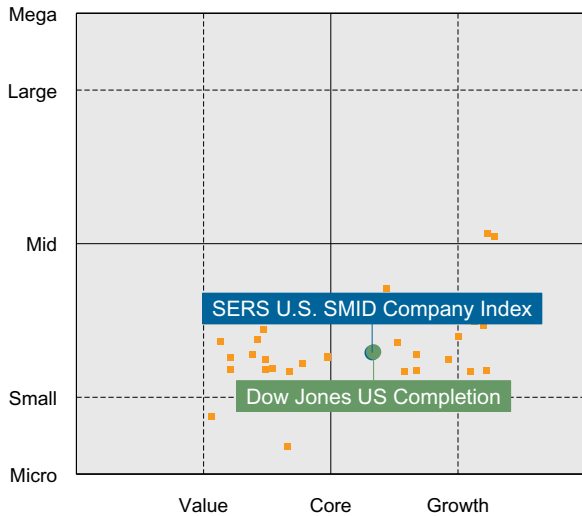
Historical Holdings Based Style Analysis

SERS U.S. SMID Company Index

For Three Years Ended September 30, 2022

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.

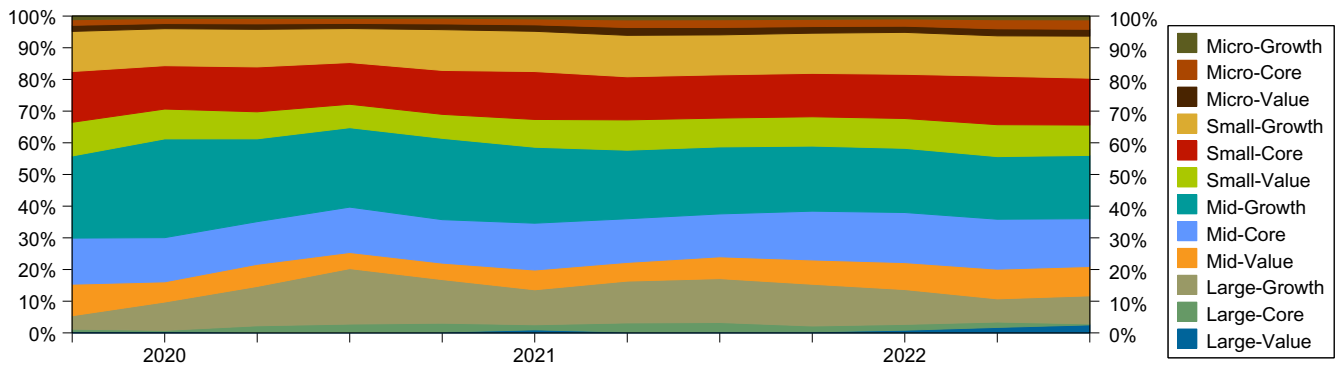
Average Style Map vs Callan SMID Broad MFs Holdings for Three Years Ended September 30, 2022



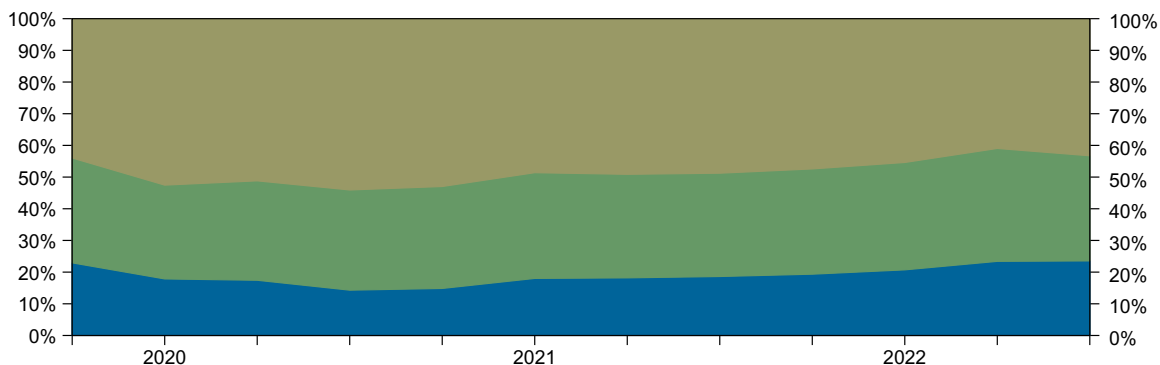
Average Style Exposure Matrix Holdings for Three Years Ended September 30, 2022

	0.7% (2)	1.8% (4)	11.3% (20)	13.8% (26)
Large	0.7% (2)	1.8% (4)	11.3% (20)	13.9% (26)
	7.3% (65)	14.5% (135)	23.4% (183)	45.2% (383)
Mid	7.2% (65)	14.5% (135)	23.5% (184)	45.3% (384)
	9.1% (291)	14.3% (527)	12.5% (395)	35.9% (1213)
Small	9.0% (291)	14.2% (526)	12.5% (399)	35.7% (1216)
	2.0% (552)	2.1% (591)	1.0% (205)	5.1% (1348)
Micro	1.9% (715)	2.3% (864)	1.0% (258)	5.1% (1837)
Total	19.1% (910)	32.7% (1257)	48.2% (803)	100.0% (2970)
	18.9% (1073)	32.8% (1529)	48.3% (861)	100.0% (3463)
	Value	Core	Growth	Total

SERS U.S. SMID Company Index Historical Cap/Style Exposures



SERS U.S. SMID Company Index Historical Style Only Exposures



SERS Global Non-U.S. Index Fund

Period Ended September 30, 2022

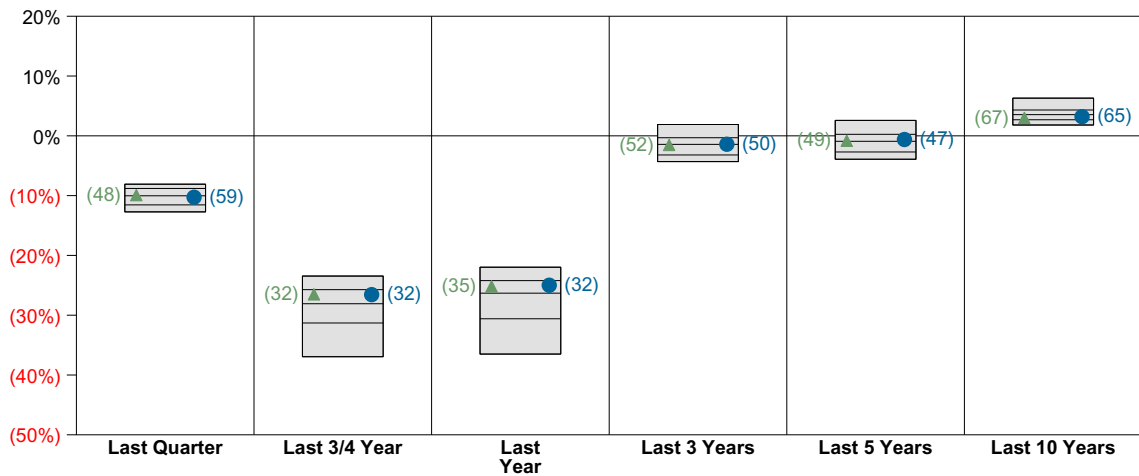
Investment Philosophy

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.

Quarterly Summary and Highlights

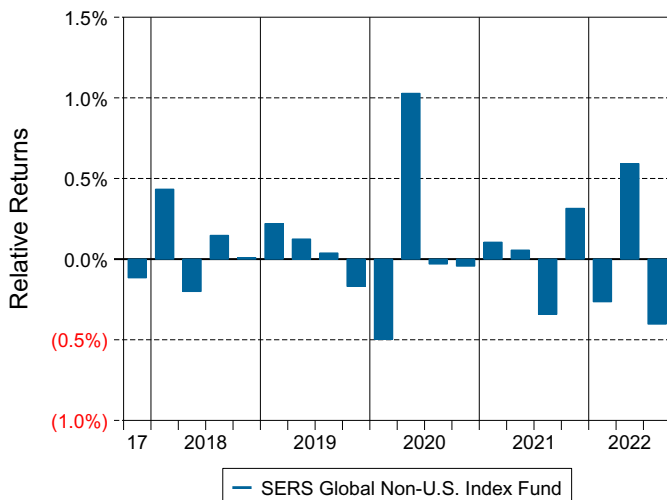
- SERS Global Non-U.S. Index Fund's portfolio posted a (10.27)% return for the quarter placing it in the 59 percentile of the Callan Non US Equity Mutual Funds group for the quarter and in the 32 percentile for the last year.
- SERS Global Non-U.S. Index Fund's portfolio underperformed the MSCI ACWI xUS by 0.36% for the quarter and outperformed the MSCI ACWI xUS for the year by 0.18%.

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

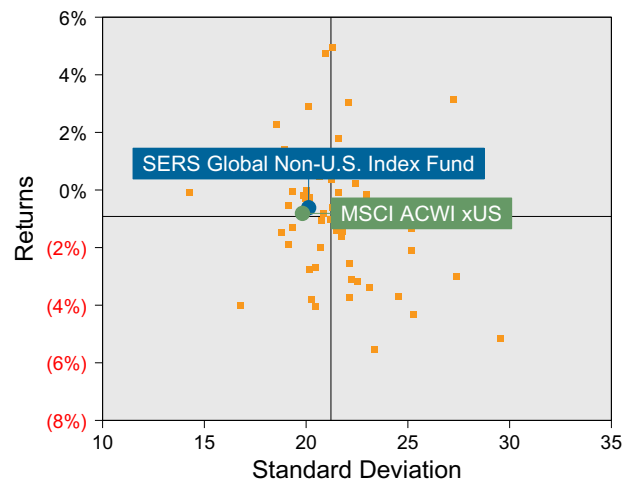


10th Percentile	(8.09)	(23.45)	(21.97)	1.89	2.58	6.31
25th Percentile	(8.80)	(25.72)	(24.21)	(0.32)	0.25	4.32
Median	(10.03)	(28.08)	(26.31)	(1.43)	(0.92)	3.54
75th Percentile	(11.55)	(31.30)	(30.60)	(3.20)	(2.70)	2.69
90th Percentile	(12.72)	(36.94)	(36.50)	(4.31)	(3.92)	1.81
SERS Global Non-U.S. Index Fund	● (10.27)	(26.56)	(24.99)	(1.41)	(0.62)	3.21
MSCI ACWI xUS	▲ (9.91)	(26.50)	(25.17)	(1.52)	(0.81)	3.01

Relative Return vs MSCI ACWI xUS



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

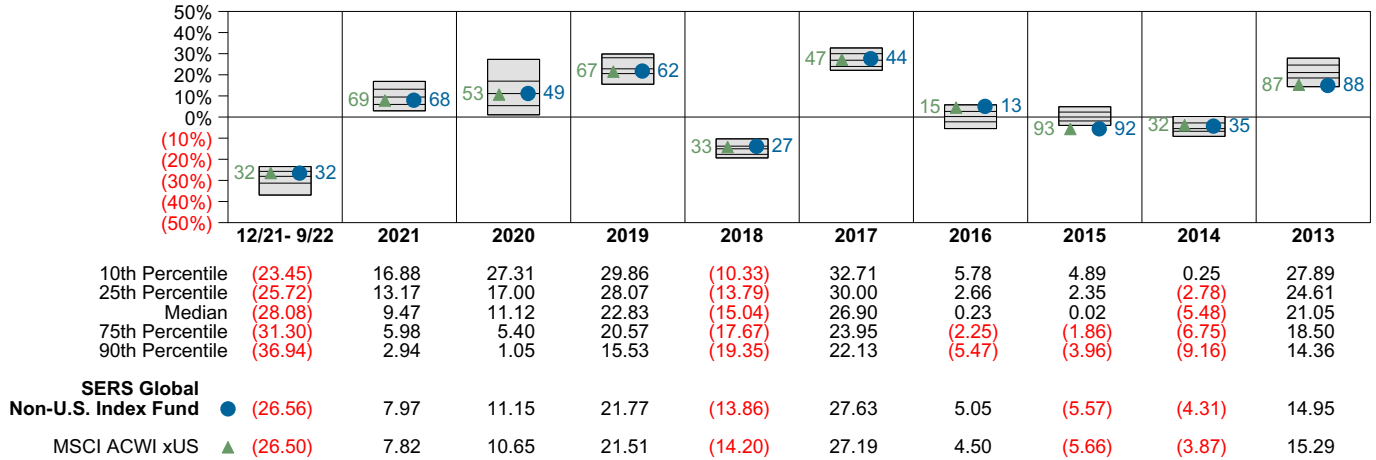


SERS Global Non-U.S. Index Fund Return Analysis Summary

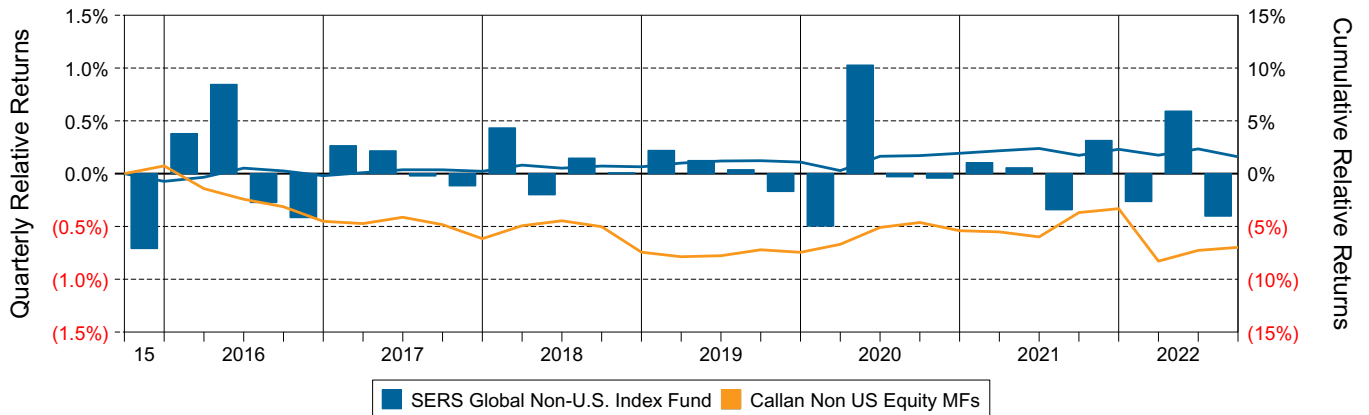
Return Analysis

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.

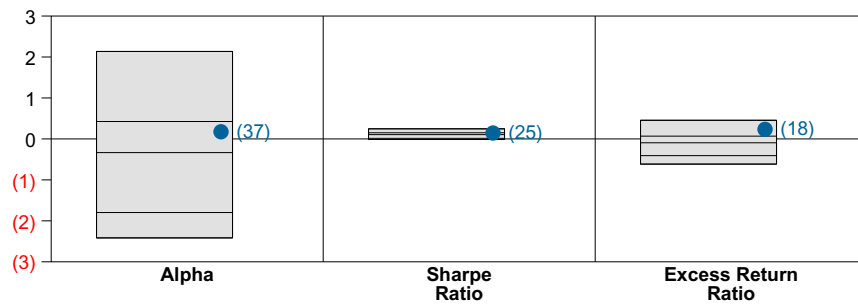
Performance vs Callan Non US Equity Mutual Funds (Institutional Net)



Cumulative and Quarterly Relative Returns vs MSCI ACWI xUS



Risk Adjusted Return Measures vs MSCI ACWI xUS Rankings Against Callan Non US Equity Mutual Funds (Institutional Net) Seven Years Ended September 30, 2022



10th Percentile	2.14	0.25	0.46
25th Percentile	0.42	0.15	0.07
Median	(0.33)	0.11	(0.09)
75th Percentile	(1.80)	0.01	(0.41)
90th Percentile	(2.42)	(0.01)	(0.62)

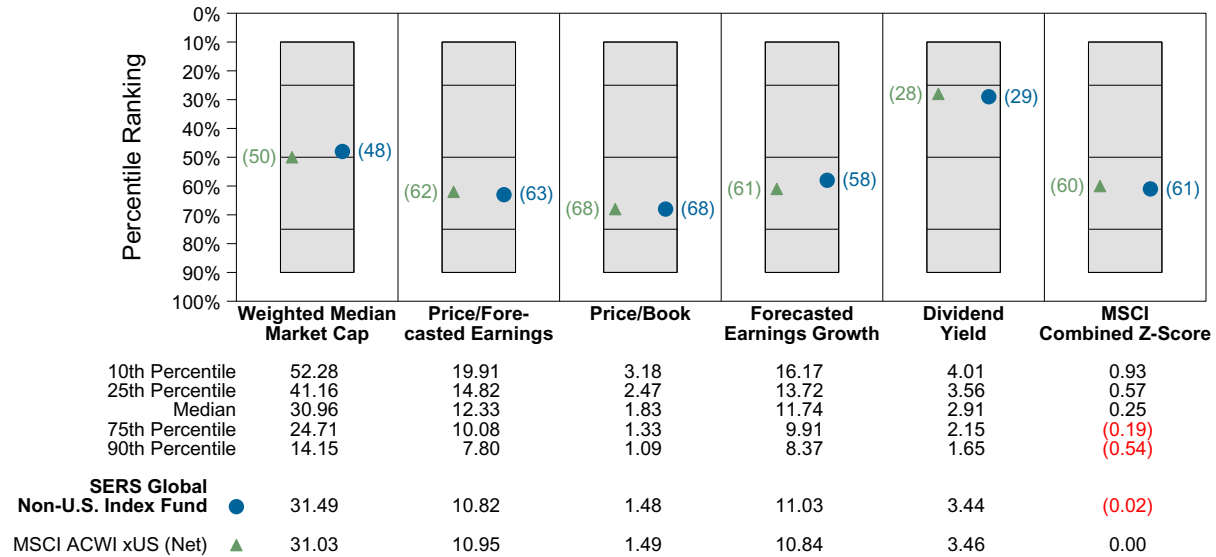
SERS Global Non-U.S. Index Fund ● 0.17 0.14 0.23

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

Portfolio Characteristics

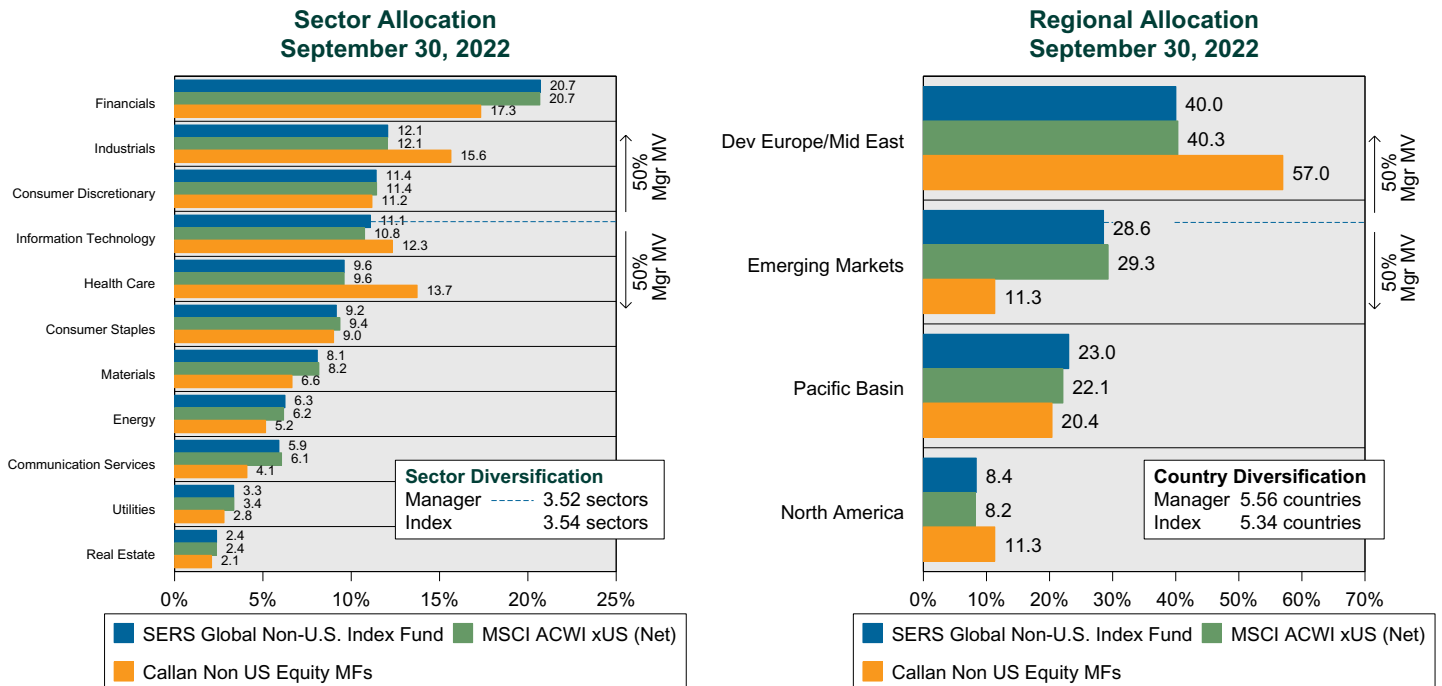
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against Callan Non US Equity Mutual Funds as of September 30, 2022



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.



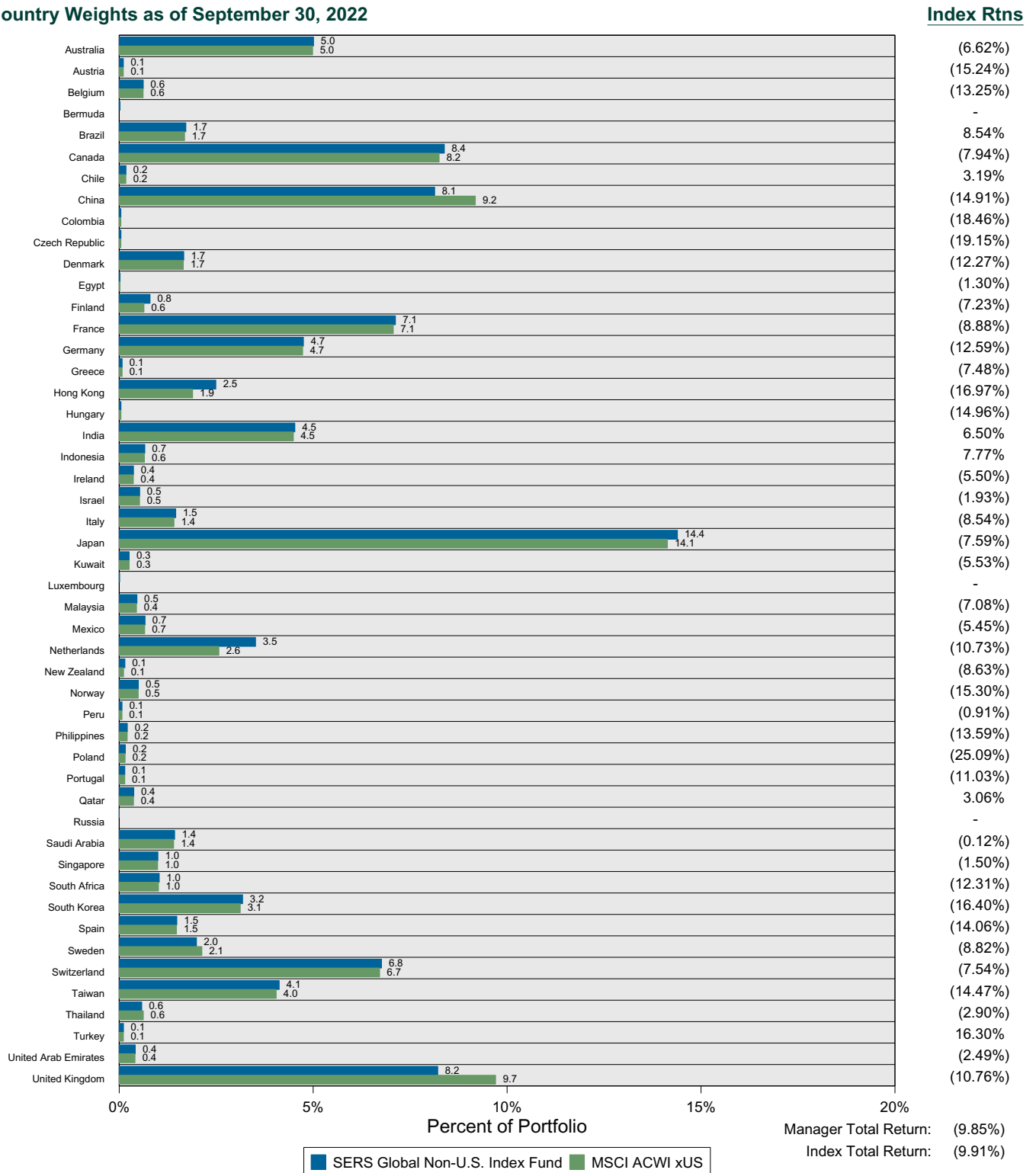
Country Allocation

SERS Global Non-U.S. Index Fund VS MSCI ACWI xUS (Net)

Country Allocation

The chart below contrasts the portfolio's country allocation with that of the index as of September 30, 2022. 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 September 30, 2022



SERS Global Non-U.S. Index Fund Top 10 Portfolio Holdings Characteristics as of September 30, 2022

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
Taiwan Semicond Manufac Co L Shs	Information Technology	\$28,938	1.7%	(16.49)%	344.66	11.22	2.61%	22.60%
Nestle S A Shs Nom New	Consumer Staples	\$26,672	1.6%	(6.54)%	299.17	21.45	2.61%	7.50%
Roche Hldgs Ag Basel Div Rts Ctf	Health Care	\$20,107	1.2%	(1.24)%	230.87	15.23	2.88%	5.26%
Tencent Holdings Limited Shs Par Hkd	Communication Services	\$18,646	1.1%	(29.31)%	325.65	17.11	0.60%	6.91%
Shell Plc Shs A	Energy	\$16,246	1.0%	(2.39)%	180.13	4.70	3.38%	24.69%
Samsung Electronics Co Ltd Ord	Information Technology	\$15,669	0.9%	(14.93)%	221.57	9.60	2.72%	(0.84)%
Asml Holding N V Asml Rev Stk Spl	Information Technology	\$15,037	0.9%	(10.66)%	172.66	23.70	1.38%	18.61%
Astrazeneca Plc Ord	Health Care	\$14,975	0.9%	(14.75)%	172.00	15.10	2.11%	15.70%
Novo Nordisk B	Health Care	\$14,463	0.9%	(8.85)%	174.81	26.48	1.46%	18.06%
Novartis	Health Care	\$14,458	0.9%	(9.13)%	184.45	11.76	4.10%	4.00%

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
Magazine Luiza Sa	Consumer Discretionary	\$222	0.0%	85.10%	5.59	92.22	0.93%	15.06%
Zhangzhou Pientzehuang Pharms.A	Health Care	\$33	0.0%	75.54%	22.70	49.05	0.45%	23.45%
China Ship.Dev.Co. A	Energy	\$14	0.0%	64.68%	8.86	28.02	0.00%	(9.65)%
Jiangsu Yuyue Mdeqt.& Supp.'a'	Health Care	\$6	0.0%	57.44%	4.07	16.44	1.04%	27.49%
Dar Al Arkan RI Est Dvlp	Real Estate	\$197	0.0%	56.69%	4.85	33.26	0.00%	(10.27)%
Adani Exports Ltd.	Industrials	\$1,065	0.1%	53.18%	48.43	162.76	0.03%	(18.45)%
Huadian Power Intl.'a'	Utilities	\$12	0.0%	50.68%	6.84	12.35	4.20%	(39.32)%
Bajaj Finserv	Financials	\$338	0.0%	49.04%	32.86	43.99	0.02%	20.07%
Electricite De France Edf Shs	Utilities	\$579	0.0%	42.74%	45.27	22.23	4.66%	(9.01)%
Ningbo Deye Tech A	Industrials	\$15	0.0%	41.73%	14.16	58.38	0.20%	-

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
Natwest Group Plc Shs	Financials	\$1,165	0.1%	(99.13)%	24.37	5.41	5.24%	6.49%
Cifi Holdings (Group)	Real Estate	\$36	0.0%	(80.91)%	0.96	1.19	14.42%	(1.39)%
Country Garden Services H	Real Estate	\$262	0.0%	(68.89)%	4.97	5.50	3.18%	19.60%
Gsk Plc Ord	Health Care	\$5,217	0.3%	(65.96)%	59.29	9.57	7.18%	9.57%
Ming Yuan Cloud Holdings	Information Technology	\$38	0.0%	(65.18)%	1.16	(592.00)	1.46%	-
Country Garden Hldgs Co Ltd	Real Estate	\$165	0.0%	(64.78)%	5.66	2.25	21.06%	10.00%
Xpeng Inc	Consumer Discretionary	\$445	0.0%	(64.60)%	7.85	(15.09)	0.00%	-
Pop Mart International Group	Consumer Discretionary	\$90	0.0%	(64.17)%	2.54	15.08	1.30%	20.22%
Smooere International Holdings	Consumer Staples	\$186	0.0%	(63.24)%	7.27	11.96	2.98%	-
Lufax Hldg 2 Amer. Depy. Shs.2:1	Financials	\$150	0.0%	(60.19)%	6.20	2.93	6.69%	0.10%

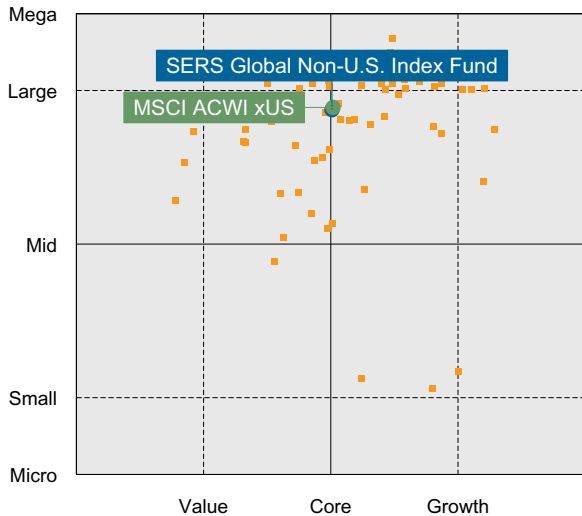
Historical Holdings Based Style Analysis

SERS Global Non-U.S. Index Fund

For Three Years Ended September 30, 2022

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.

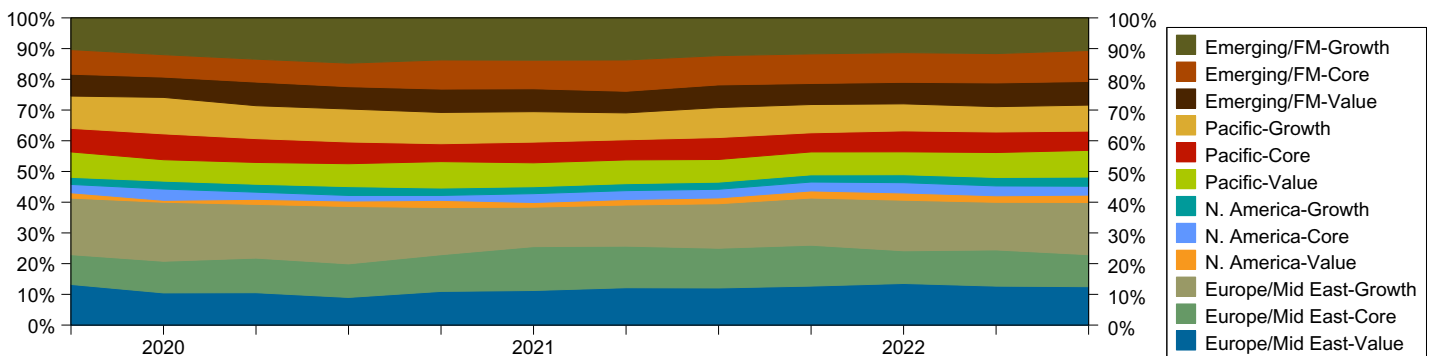
Average Style Map vs Callan Non US Equity MFs Holdings for Three Years Ended September 30, 2022



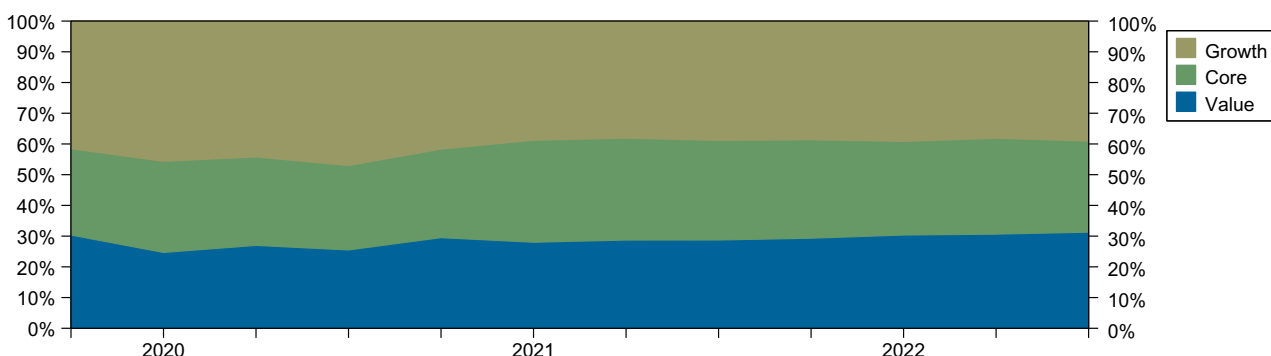
Average Style Exposure Matrix Holdings for Three Years Ended September 30, 2022

Europe/ Mid East	11.8% (134)	11.8% (122)	16.2% (155)	39.7% (411)
	11.9% (145)	11.5% (124)	16.6% (171)	40.0% (440)
N. America	1.9% (24)	2.8% (29)	2.5% (30)	7.2% (83)
	2.0% (26)	2.7% (31)	2.6% (34)	7.2% (91)
Pacific	7.7% (146)	6.9% (126)	9.8% (143)	24.4% (415)
	7.5% (147)	6.7% (127)	9.4% (143)	23.6% (417)
Emerging/ FM	7.3% (423)	9.0% (366)	12.4% (367)	28.7% (1156)
	7.4% (480)	9.2% (429)	12.5% (427)	29.1% (1336)
Total	28.7% (727)	30.4% (643)	40.9% (695)	100.0% (2065)
	28.8% (798)	30.1% (711)	41.1% (775)	100.0% (2284)
	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 September 30, 2022

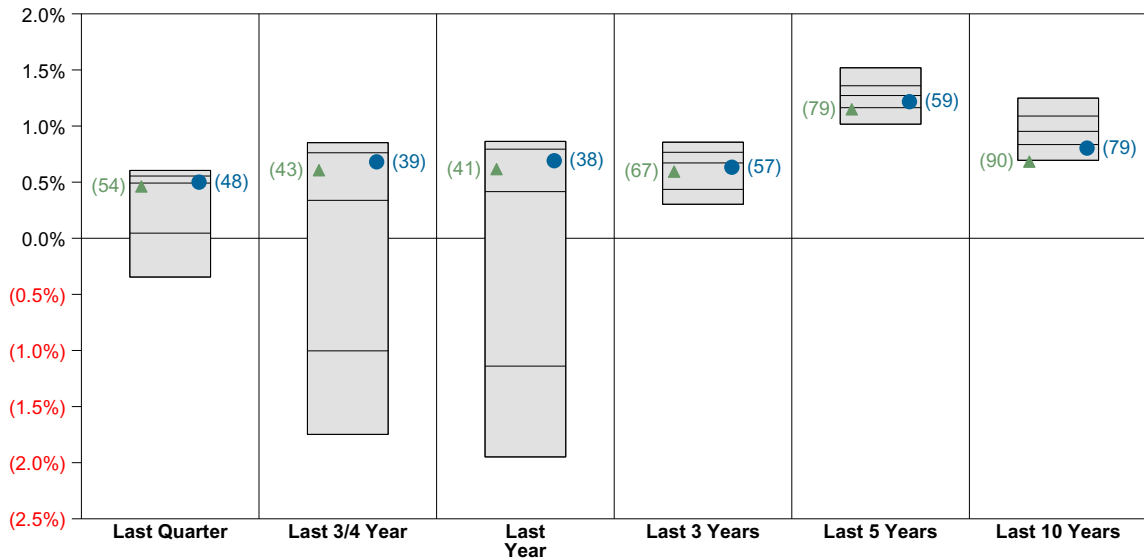
Investment Philosophy

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, which includes STIF, enhanced cash, and money market funds.

Quarterly Summary and Highlights

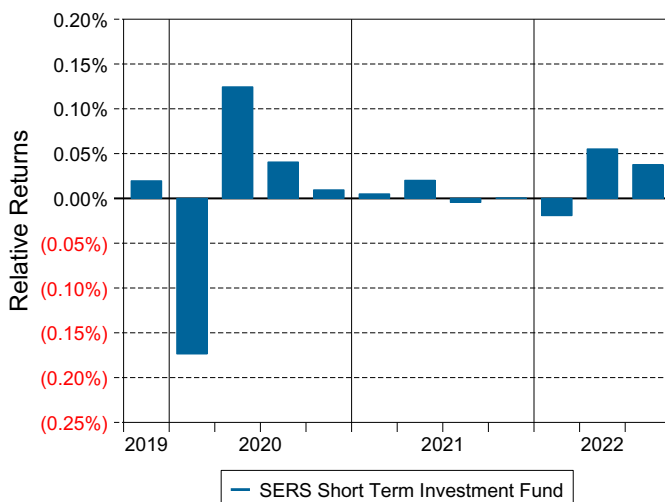
- SERS Short Term Investment Fund's portfolio posted a 0.50% return for the quarter placing it in the 48 percentile of the Callan Cash Database group for the quarter and in the 38 percentile for the last year.
- SERS Short Term Investment Fund's portfolio outperformed the 3-month Treasury Bill by 0.04% for the quarter and outperformed the 3-month Treasury Bill for the year by 0.07%.

Performance vs Callan Cash Database (Gross)

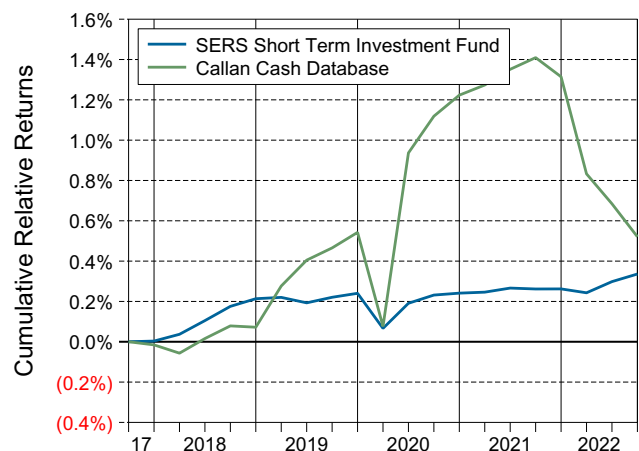


10th Percentile	0.60	0.85	0.86	0.86	1.52	1.25
25th Percentile	0.55	0.76	0.79	0.77	1.36	1.09
Median	0.49	0.34	0.42	0.67	1.27	0.95
75th Percentile	0.05	(1.00)	(1.14)	0.44	1.16	0.84
90th Percentile	(0.35)	(1.75)	(1.95)	0.30	1.02	0.69
SERS Short Term Investment Fund	● 0.50	0.68	0.69	0.63	1.22	0.80
3-month Treasury Bill	▲ 0.46	0.61	0.62	0.59	1.15	0.68

Relative Return vs 3-month Treasury Bill



Cumulative Returns vs 3-month Treasury Bill

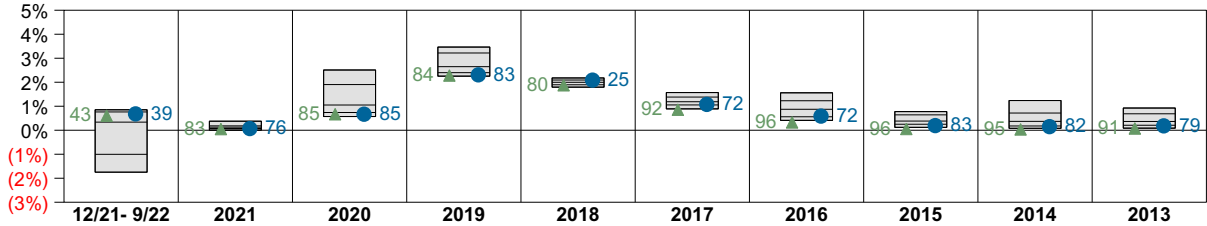


SERS Short Term Investment Fund Return Analysis Summary

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

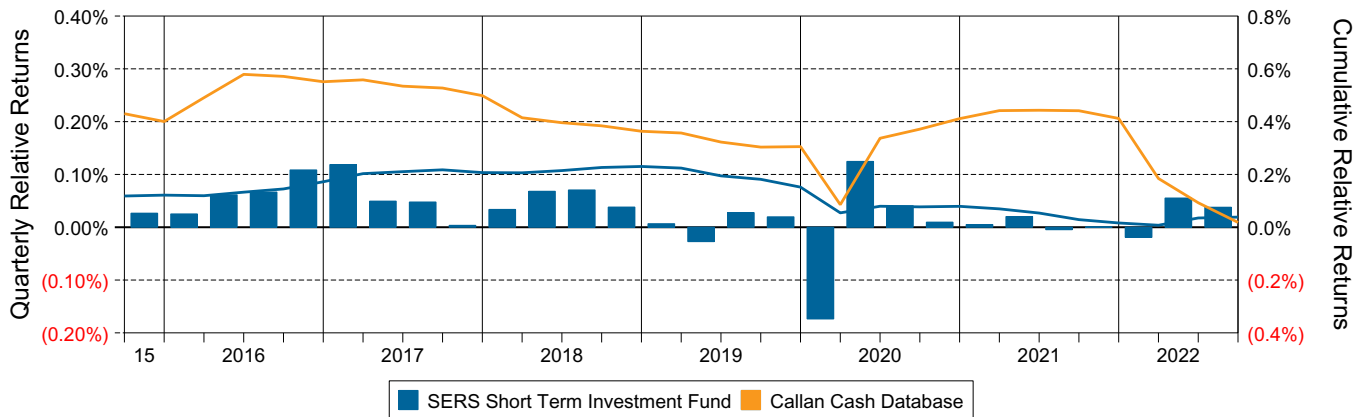
Performance vs Callan Cash Database (Gross)



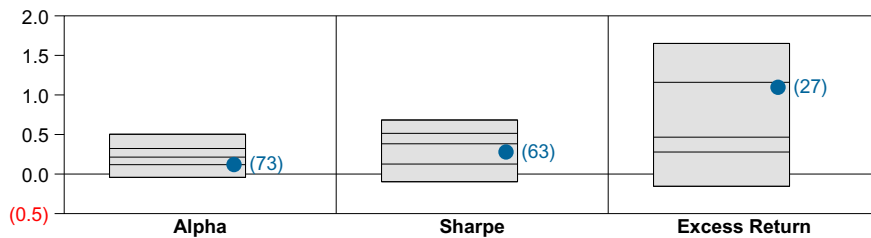
	12/21- 9/22	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	0.85	0.38	2.51	3.47	2.18	1.57	1.56	0.78	1.24	0.93
25th Percentile	0.76	0.18	1.90	3.22	2.09	1.38	1.23	0.64	0.72	0.69
Median	0.34	0.13	1.05	2.65	2.00	1.19	0.87	0.38	0.37	0.37
75th Percentile	(1.00)	0.07	0.74	2.40	1.89	1.05	0.56	0.25	0.18	0.21
90th Percentile	(1.75)	0.01	0.57	2.25	1.80	0.89	0.41	0.12	0.08	0.09

SERS Short Term Investment Fund	●	0.68	0.07	0.67	2.31	2.09	1.08	0.59	0.19	0.15	0.18
3-month Treasury Bill	▲	0.61	0.05	0.67	2.28	1.87	0.86	0.33	0.05	0.03	0.07

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



Risk Adjusted Return Measures vs 3-month Treasury Bill Rankings Against Callan Cash Database (Gross) Seven Years Ended September 30, 2022



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.50	0.68	1.65
25th Percentile	0.32	0.51	1.16
Median	0.21	0.38	0.47
75th Percentile	0.12	0.13	0.28
90th Percentile	(0.04)	(0.10)	(0.15)

SERS Short Term Investment Fund	●	0.12	0.28	1.10
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SERS U.S. Short Term Bond Idx Fund

Period Ended September 30, 2022

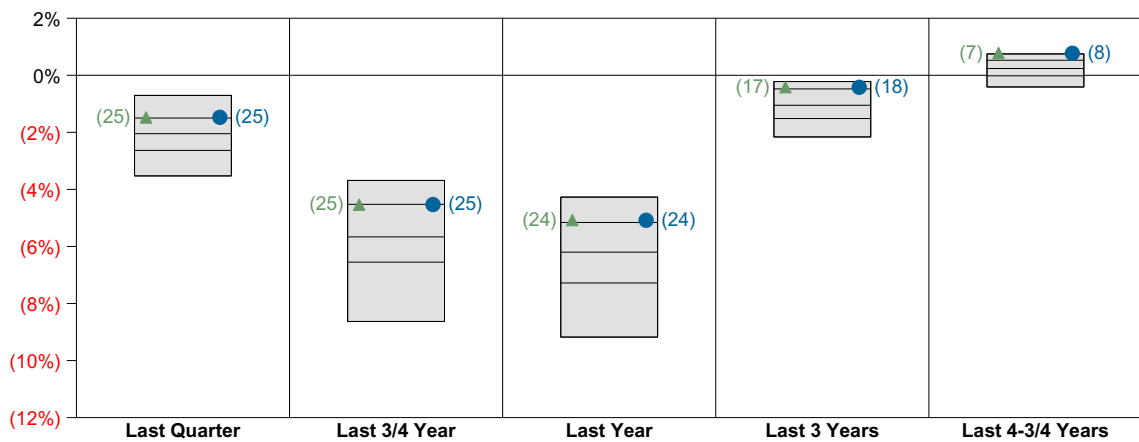
Investment Philosophy

The Fund's investment objective is to seek to track the performance of the Bloomberg Barclays U.S. 1-3 Year Government/Credit Index ("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 Index. The Fund will principally invest in other affiliated bank collective funds, debt securities of U.S. corporations and the U.S. government, its agencies and instrumentalities, including mortgage-related and asset-backed securities. This fund is managed by Mellon Capital Management.

Quarterly Summary and Highlights

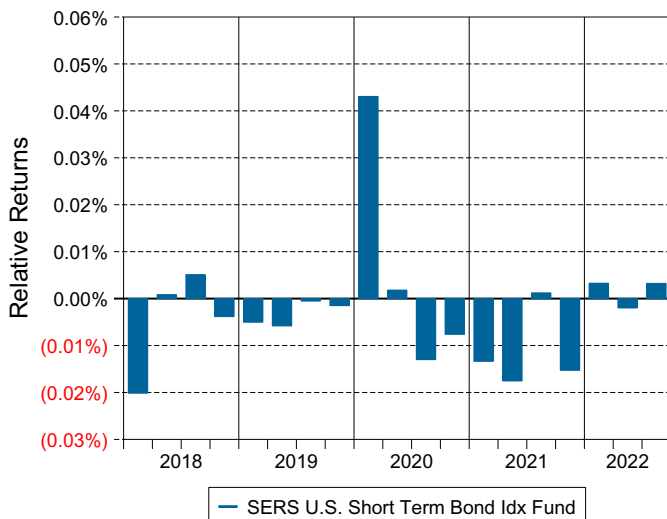
- SERS U.S. Short Term Bond Idx Fund's portfolio posted a (1.47)% return for the quarter placing it in the 25 percentile of the Callan Short US Gov Bond Mut Funds group for the quarter and in the 24 percentile for the last year.
- SERS U.S. Short Term Bond Idx Fund's portfolio outperformed the Blmbg Gov/Cred 1-3 Yr by 0.00% for the quarter and underperformed the Blmbg Gov/Cred 1-3 Yr for the year by 0.01%.

Performance vs Callan Short US Gov Bond Mut Funds (Institutional Net)

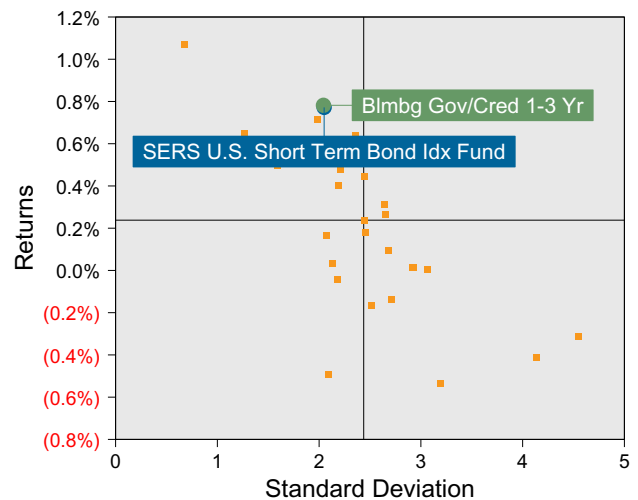


	Last Quarter	Last 3/4 Year	Last Year	Last 3 Years	Last 4-3/4 Years
10th Percentile	(0.71)	(3.69)	(4.27)	(0.22)	0.75
25th Percentile	(1.50)	(4.52)	(5.16)	(0.48)	0.53
Median	(2.05)	(5.66)	(6.20)	(1.05)	0.24
75th Percentile	(2.63)	(6.55)	(7.28)	(1.52)	(0.02)
90th Percentile	(3.53)	(8.63)	(9.18)	(2.16)	(0.41)
SERS U.S. Short Term Bond Idx Fund	(1.47)	(4.53)	(5.08)	(0.42)	0.77
Blmbg Gov/Cred 1-3 Yr	(1.48)	(4.54)	(5.07)	(0.41)	0.78

Relative Return vs Blmbg Gov/Cred 1-3 Yr



Callan Short US Gov Bond Mut Funds (Institutional Net) Annualized Four and Three-Quarter Year Risk vs Return



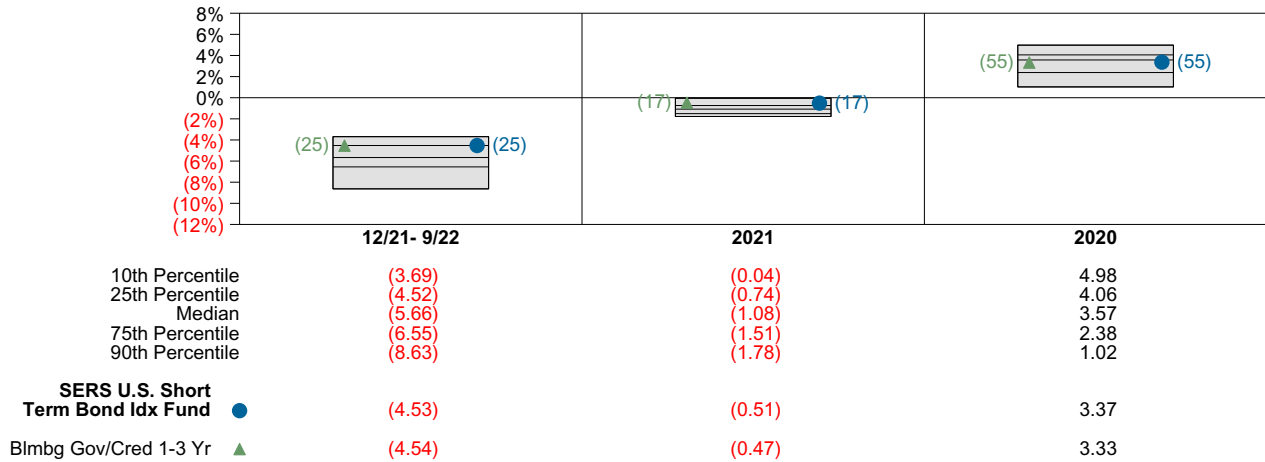
SERS U.S. Short Term Bond Idx Fund

Return Analysis Summary

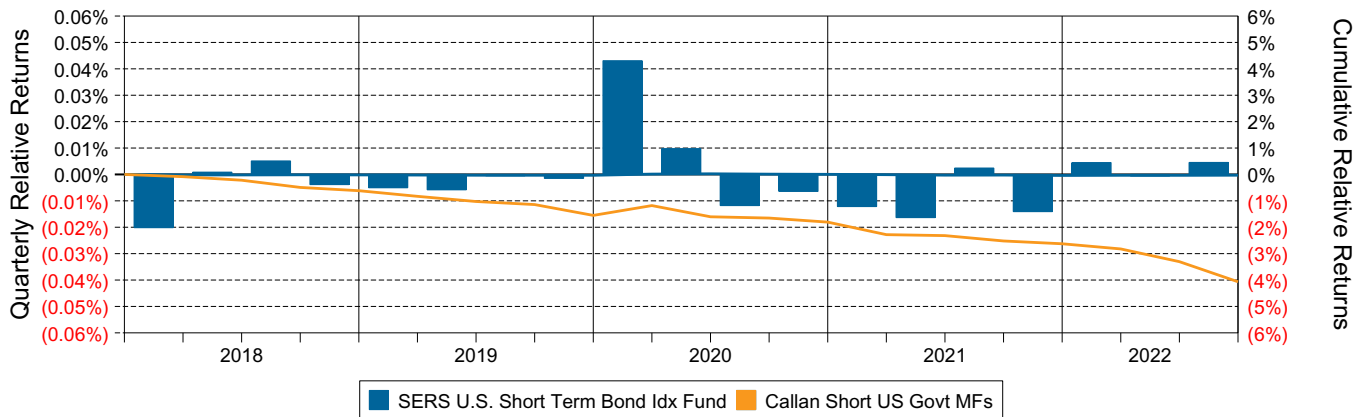
Return Analysis

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

Performance vs Callan Short US Gov Bond Mut Funds (Institutional Net)



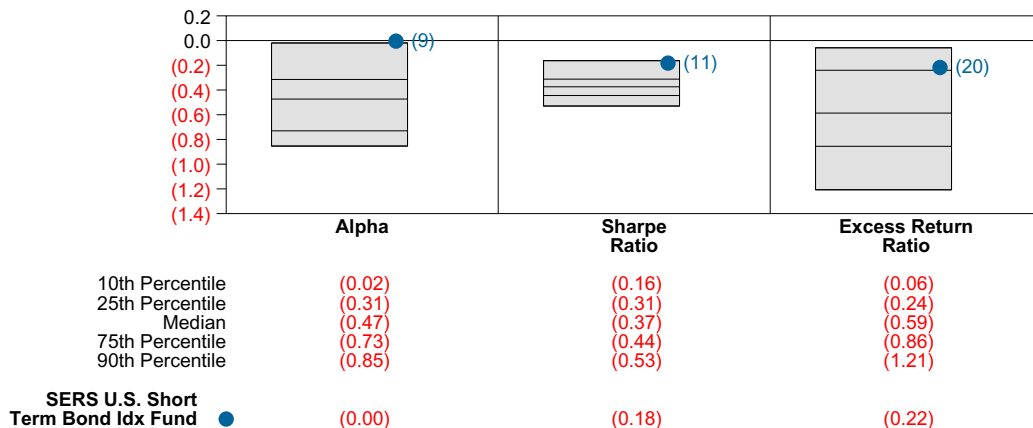
Cumulative and Quarterly Relative Returns vs Blmbg Gov/Cred 1-3 Yr



Risk Adjusted Return Measures vs Blmbg Gov/Cred 1-3 Yr

Rankings Against Callan Short US Gov Bond Mut Funds (Institutional Net)

Four and Three-Quarter Years Ended September 30, 2022



SERS U.S. Short Term Bond Idx Fund

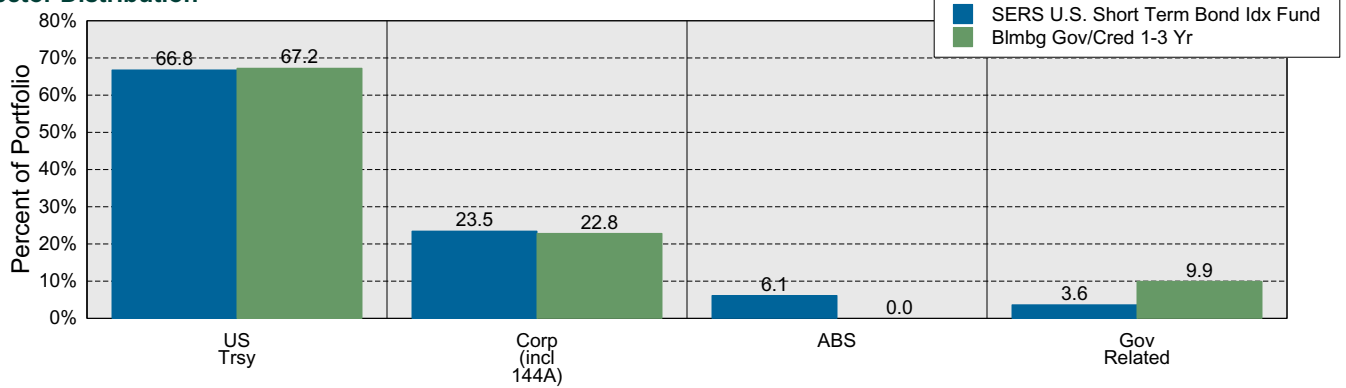
Portfolio Characteristics Summary

As of September 30, 2022

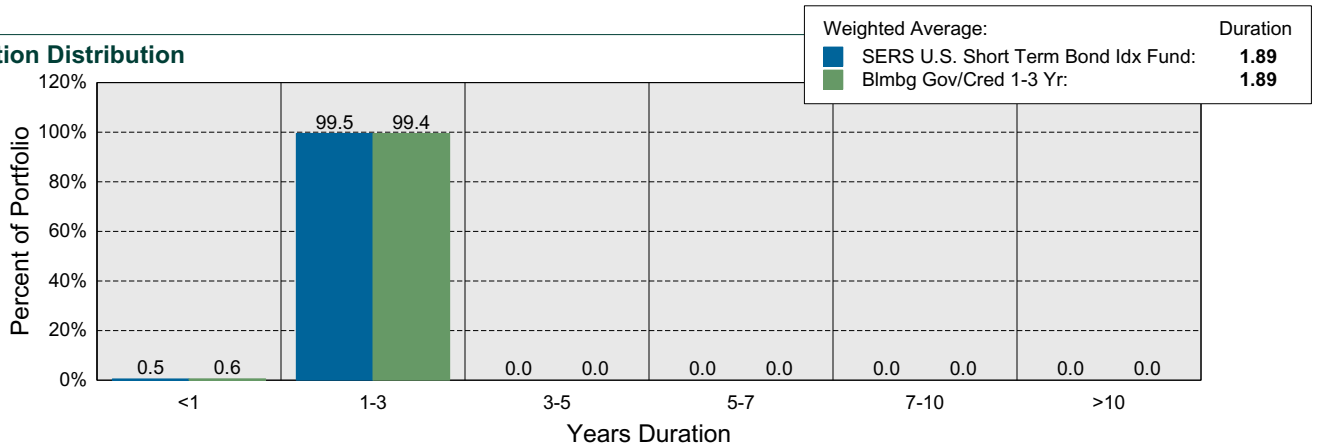
Portfolio Structure Comparison

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.

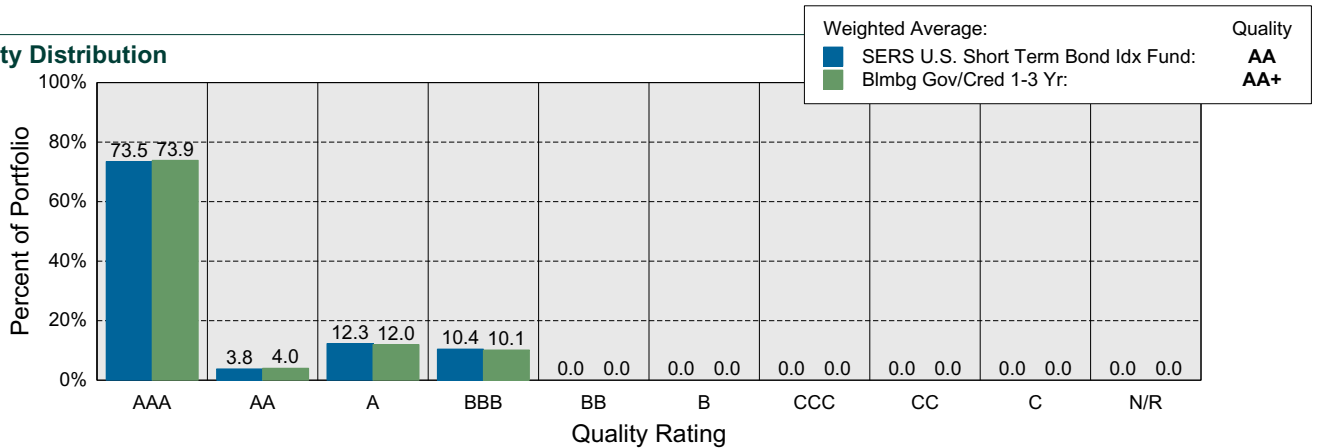
Sector Distribution



Duration Distribution



Quality Distribution



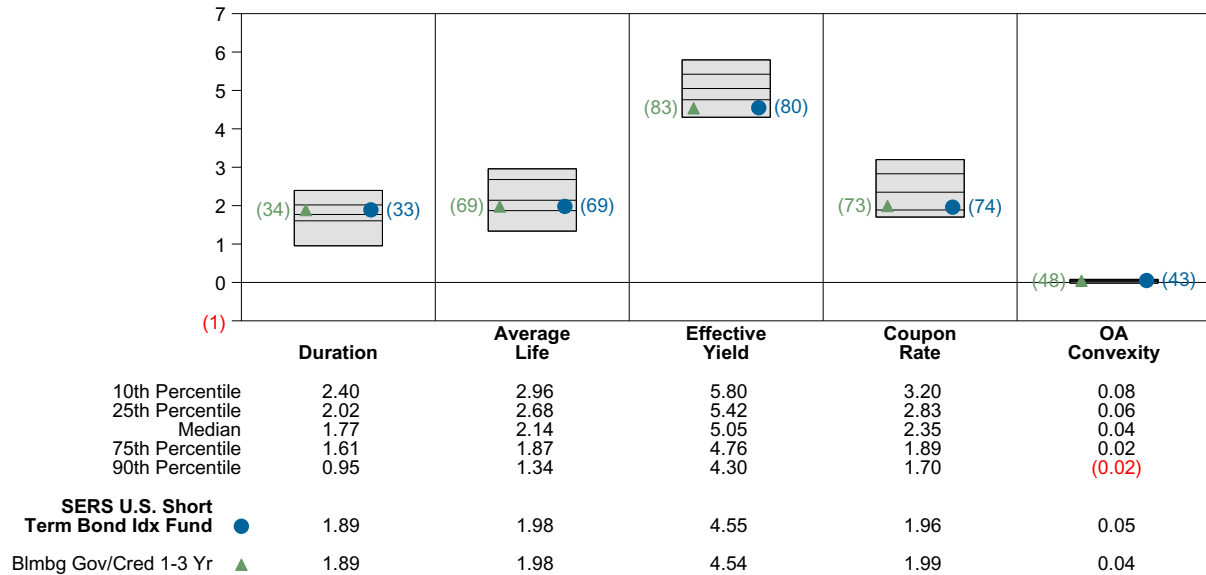
SERS U.S. Short Term Bond Idx Fund

Bond Characteristics Analysis Summary

Portfolio Characteristics

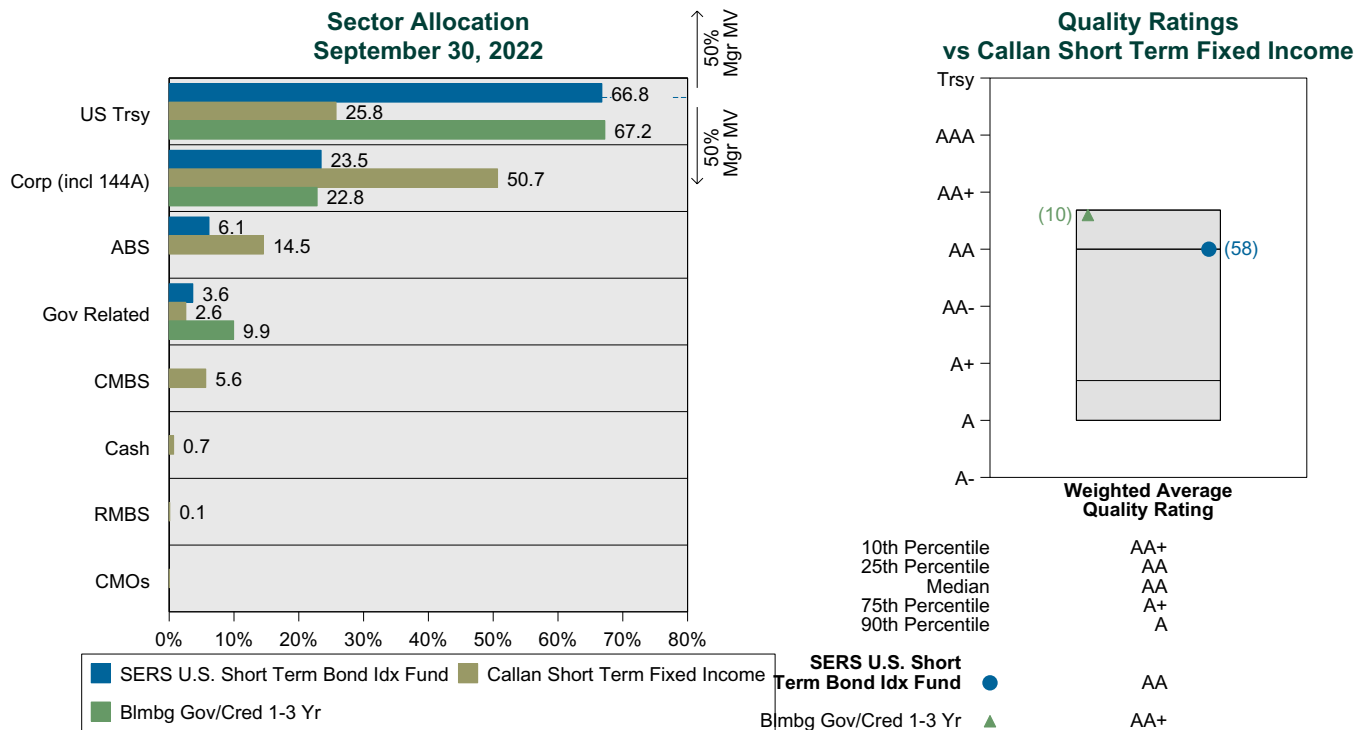
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Fixed Income Portfolio Characteristics Rankings Against Callan Short Term Fixed Income as of September 30, 2022



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.



SERS U.S. TIPS Index Fund

Period Ended September 30, 2022

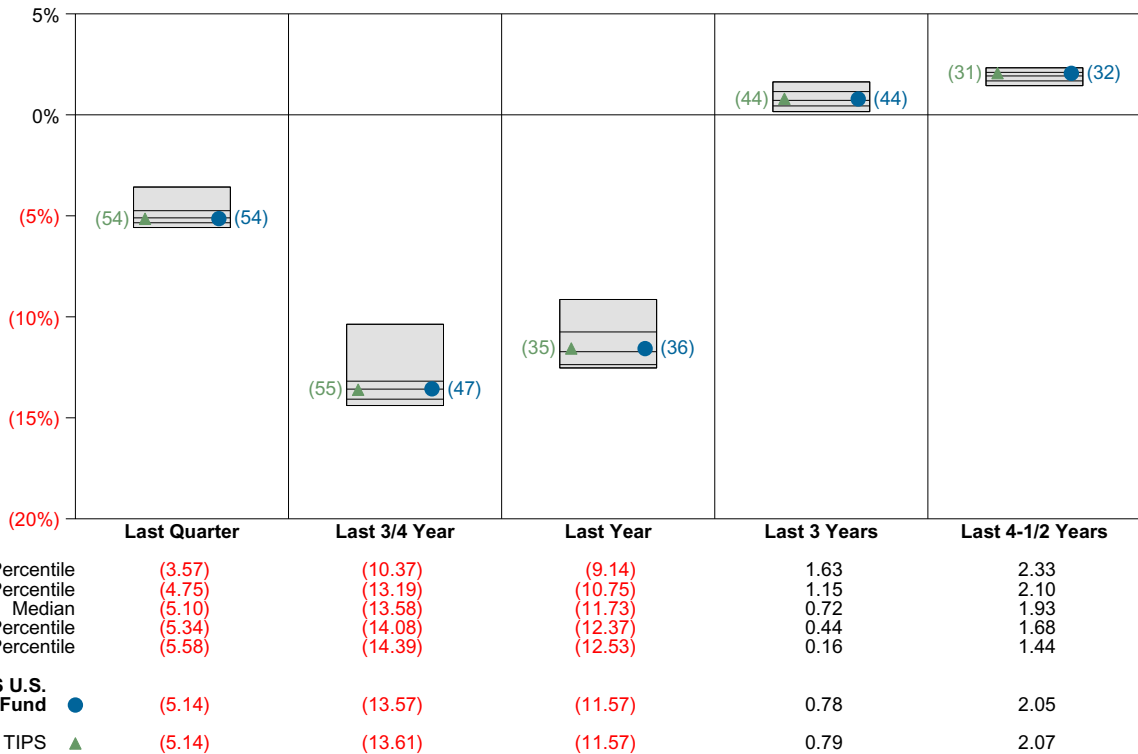
Investment Philosophy

The objective of the U.S. Treasury Inflation Protected Security Index Fund is to track the performance of the U.S. inflation-linked government bond market (otherwise known as Treasury Inflation Protected Securities, or "TIPS"). This fund is managed by Mellon Capital Management.

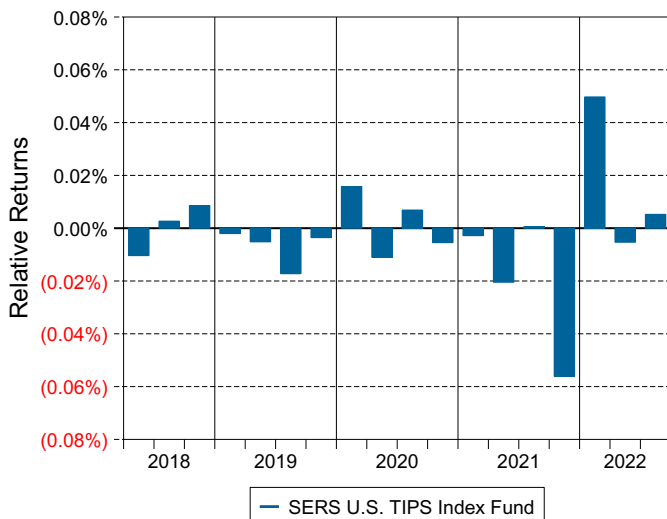
Quarterly Summary and Highlights

- SERS U.S. TIPS Index Fund's portfolio posted a (5.14)% return for the quarter placing it in the 54 percentile of the Callan Treas Infl Prot Securities MFs group for the quarter and in the 36 percentile for the last year.
- SERS U.S. TIPS Index Fund's portfolio outperformed the Blmbg TIPS by 0.00% for the quarter and underperformed the Blmbg TIPS for the year by 0.01%.

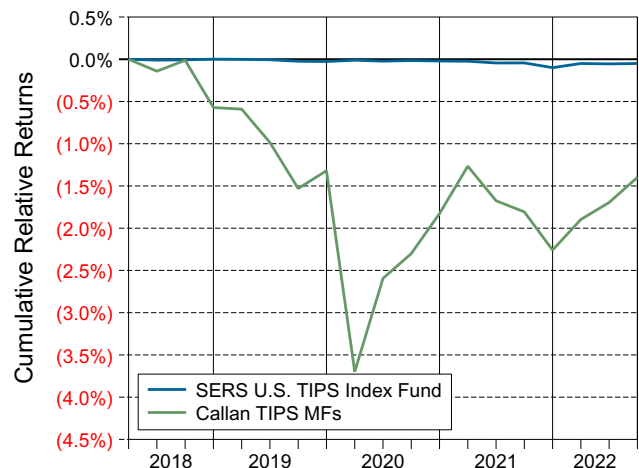
Performance vs Callan Treas Infl Prot Securities MFs (Institutional Net)



Relative Return vs Blmbg TIPS



Cumulative Returns vs Blmbg TIPS



SERS U.S. TIPS Index Fund

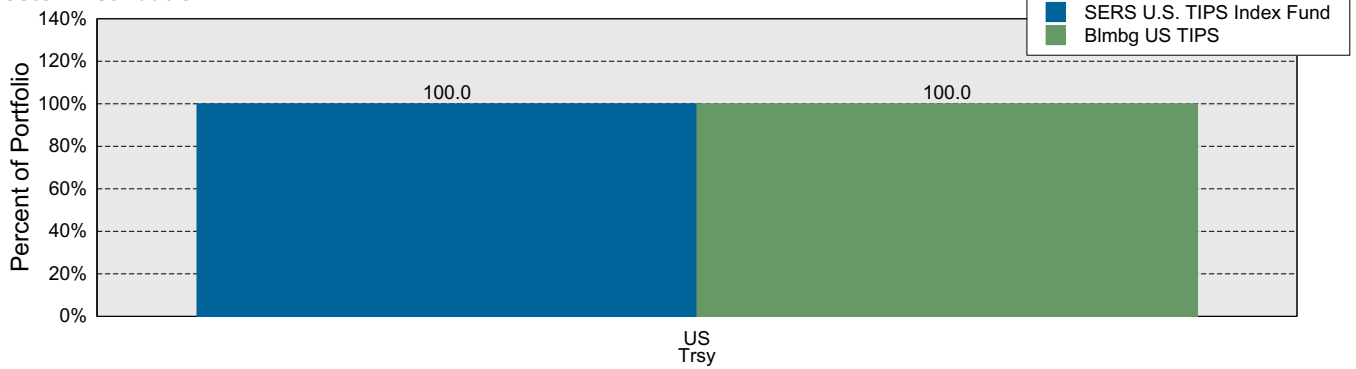
Portfolio Characteristics Summary

As of September 30, 2022

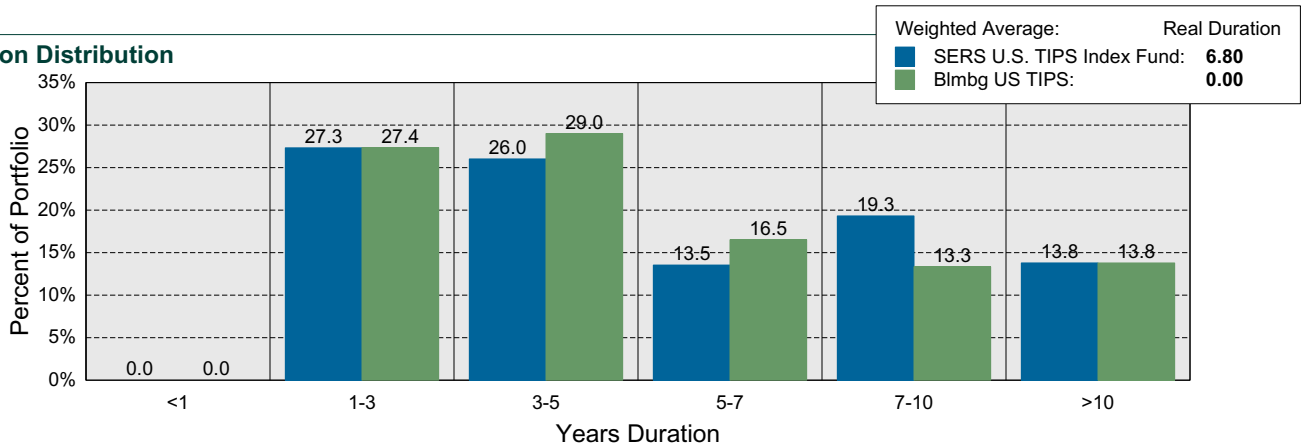
Portfolio Structure Comparison

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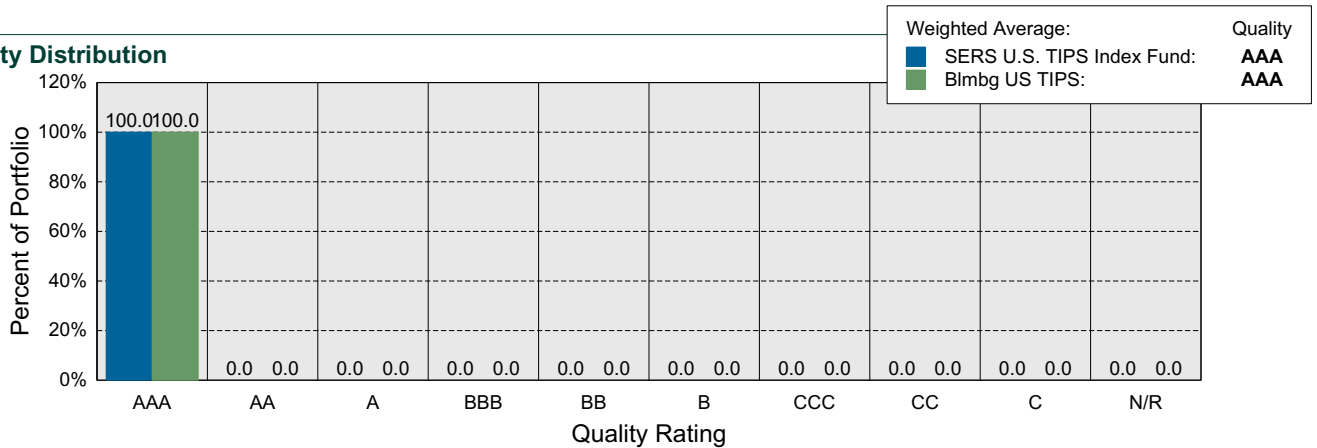
Sector Distribution



Duration Distribution



Quality Distribution

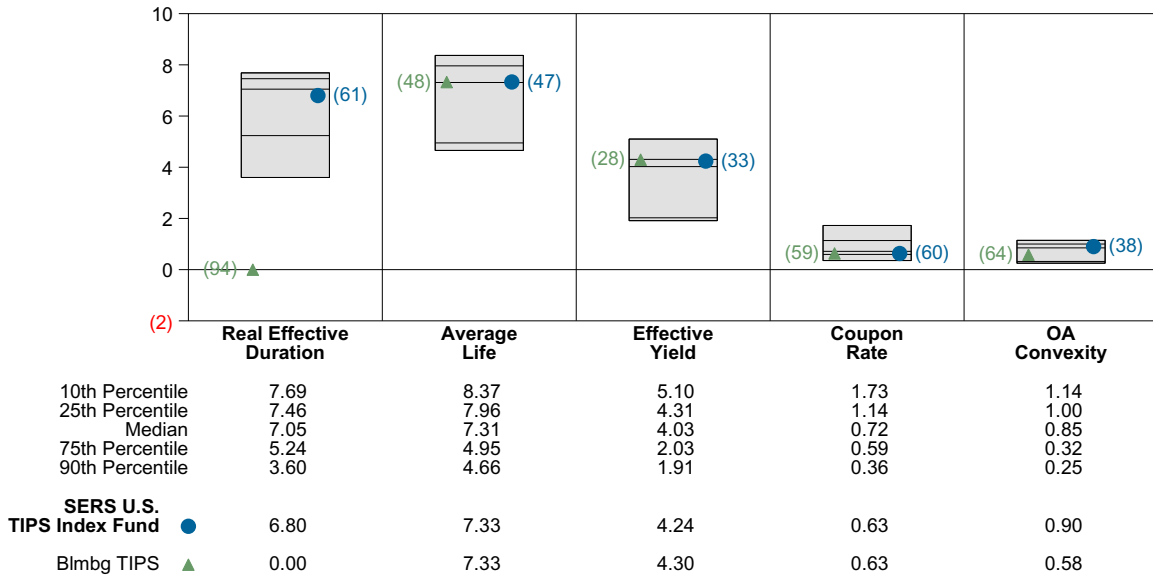


SERS U.S. TIPS Index Fund Bond Characteristics Analysis Summary

Portfolio Characteristics

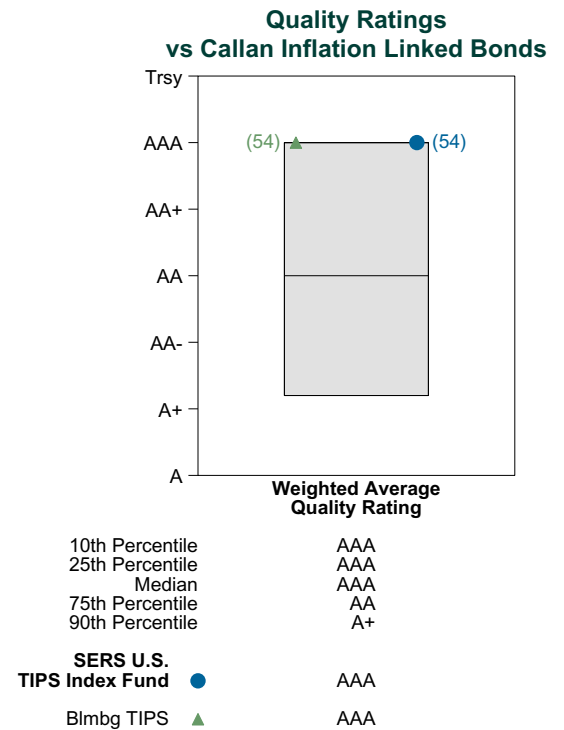
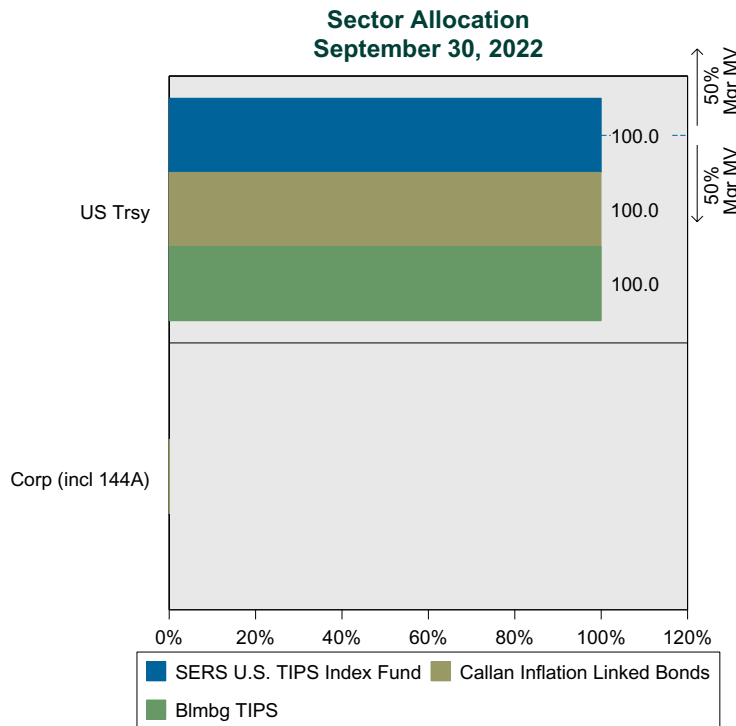
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Fixed Income Portfolio Characteristics Rankings Against Callan Inflation Linked Bonds as of September 30, 2022



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.



SERS U.S. Bond Index Fund

Period Ended September 30, 2022

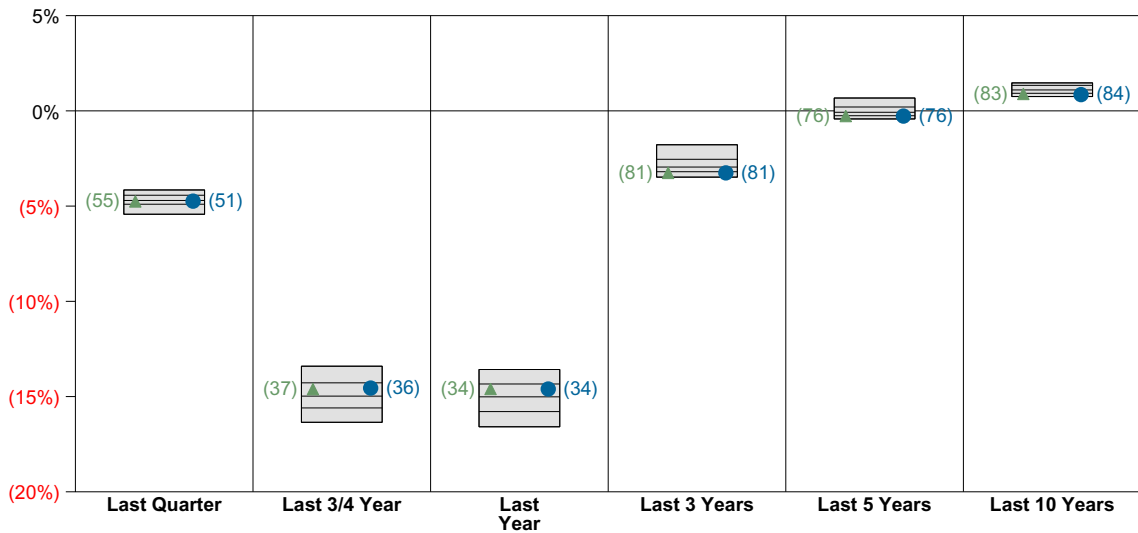
Investment Philosophy

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 (4.74)% return for the quarter placing it in the 51 percentile of the Callan Core Bond Mutual Funds group for the quarter and in the 34 percentile for the last year.
- SERS U.S. Bond Index Fund's portfolio outperformed the Blmbg Aggregate by 0.01% for the quarter and underperformed the Blmbg Aggregate for the year by 0.00%.

Performance vs Callan Core Bond Mutual Funds (Institutional Net)

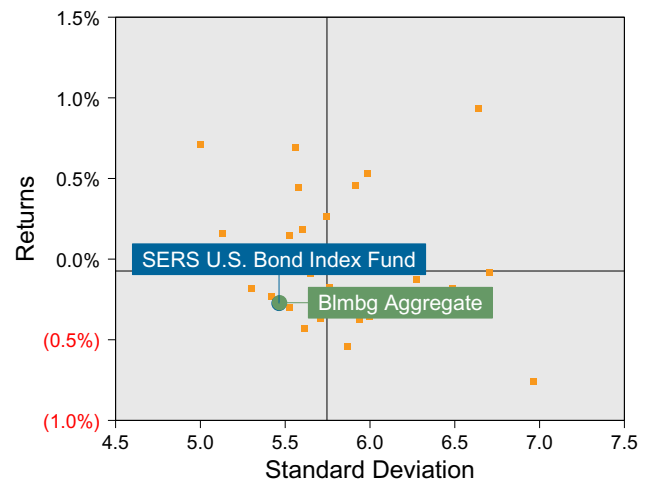
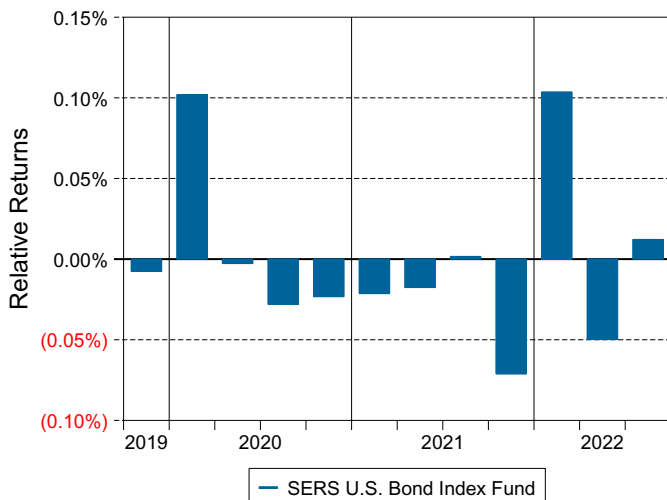


10th Percentile	(4.15)	(13.41)	(13.58)	(1.78)	0.68	1.47
25th Percentile	(4.43)	(14.28)	(14.34)	(2.54)	0.20	1.34
Median	(4.70)	(14.98)	(15.01)	(2.95)	(0.07)	1.10
75th Percentile	(4.90)	(15.60)	(15.79)	(3.20)	(0.25)	0.92
90th Percentile	(5.43)	(16.35)	(16.59)	(3.48)	(0.42)	0.75

SERS U.S. Bond Index Fund	●	(4.74)	(14.55)	(14.60)	(3.26)	(0.27)	0.85
Blmbg Aggregate	▲	(4.75)	(14.61)	(14.60)	(3.26)	(0.27)	0.89

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

Relative Return vs Blmbg Aggregate

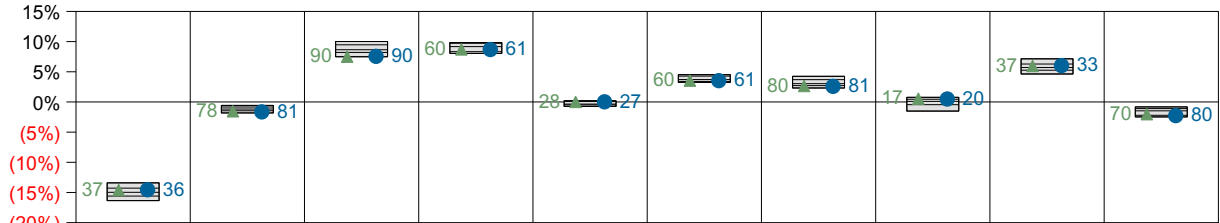


SERS U.S. Bond Index Fund Return Analysis Summary

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.

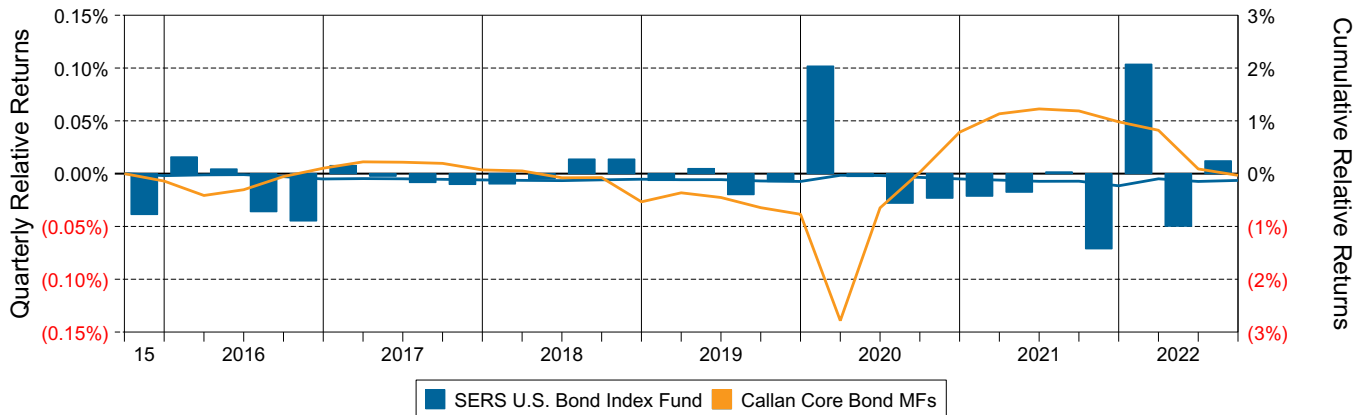
Performance vs Callan Core Bond Mutual Funds (Institutional Net)



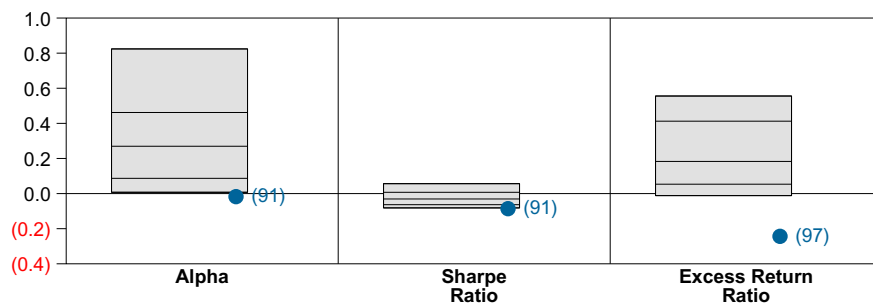
10th Percentile	(13.41)	(0.57)	10.01	9.85	0.20	4.52	4.25	0.77	7.15	(0.82)
25th Percentile	(14.28)	(0.84)	9.47	9.72	0.09	4.28	3.70	0.45	6.29	(1.10)
Median	(14.98)	(1.17)	8.65	9.17	(0.35)	3.71	3.03	0.10	5.71	(1.47)
75th Percentile	(15.60)	(1.46)	8.21	8.33	(0.49)	3.40	2.71	(0.45)	5.26	(2.21)
90th Percentile	(16.35)	(1.82)	7.49	8.04	(0.73)	3.25	2.31	(1.52)	4.63	(2.48)

SERS U.S. Bond Index Fund	● (14.55)	(1.65)	7.56	8.69	0.02	3.53	2.59	0.49	6.03	(2.26)
Blmbg Aggregate	▲ (14.61)	(1.54)	7.51	8.72	0.01	3.54	2.65	0.55	5.97	(2.02)

Cumulative and Quarterly Relative Returns vs Blmbg Aggregate



Risk Adjusted Return Measures vs Blmbg Aggregate Rankings Against Callan Core Bond Mutual Funds (Institutional Net) Seven Years Ended September 30, 2022



SERS U.S. Bond Index Fund	● (0.02)	(0.09)	(0.24)
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SERS U.S. Bond Index Fund

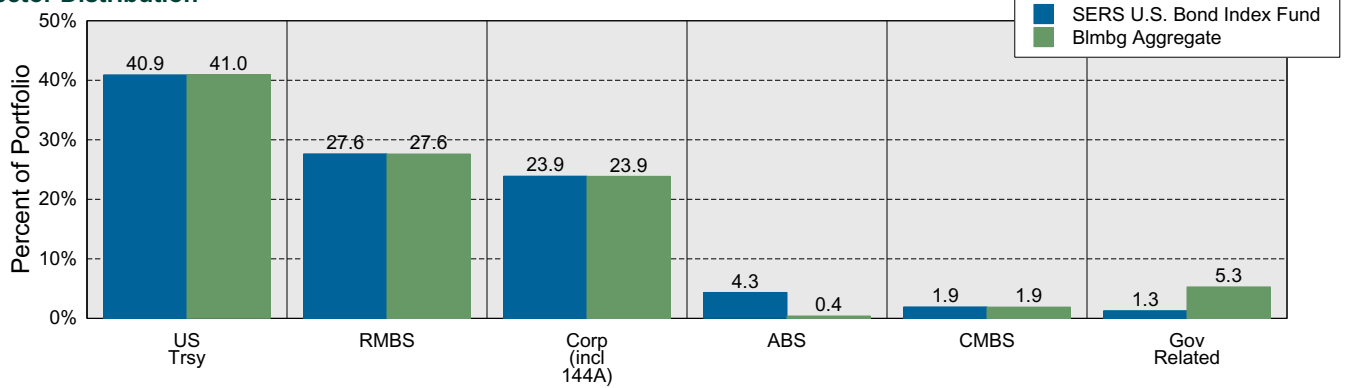
Portfolio Characteristics Summary

As of September 30, 2022

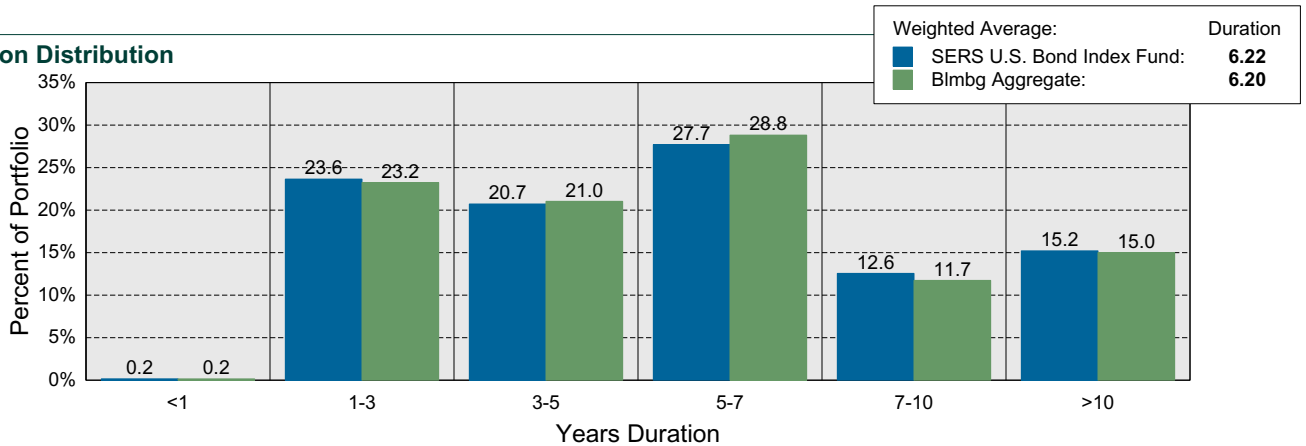
Portfolio Structure Comparison

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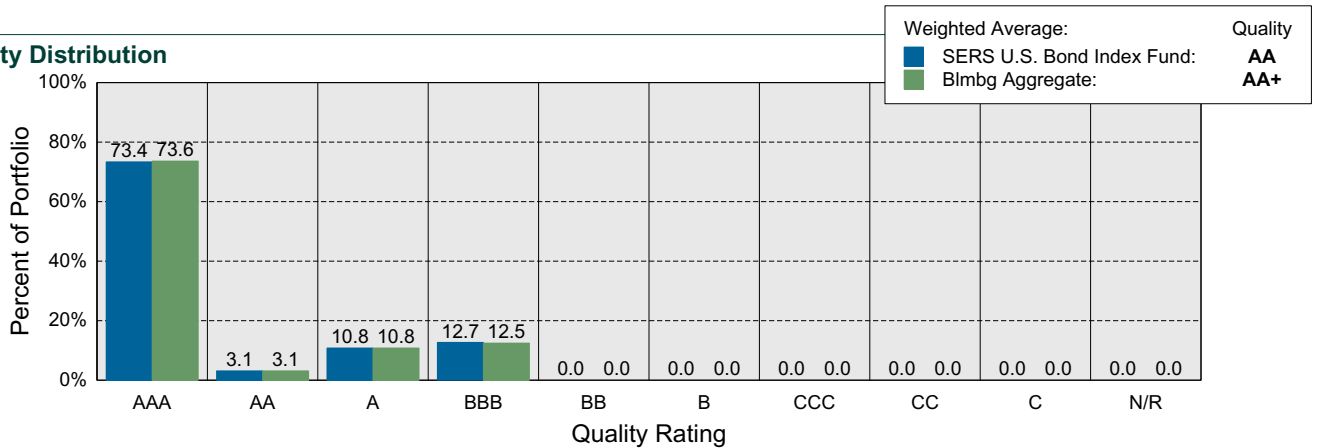
Sector Distribution



Duration Distribution



Quality Distribution



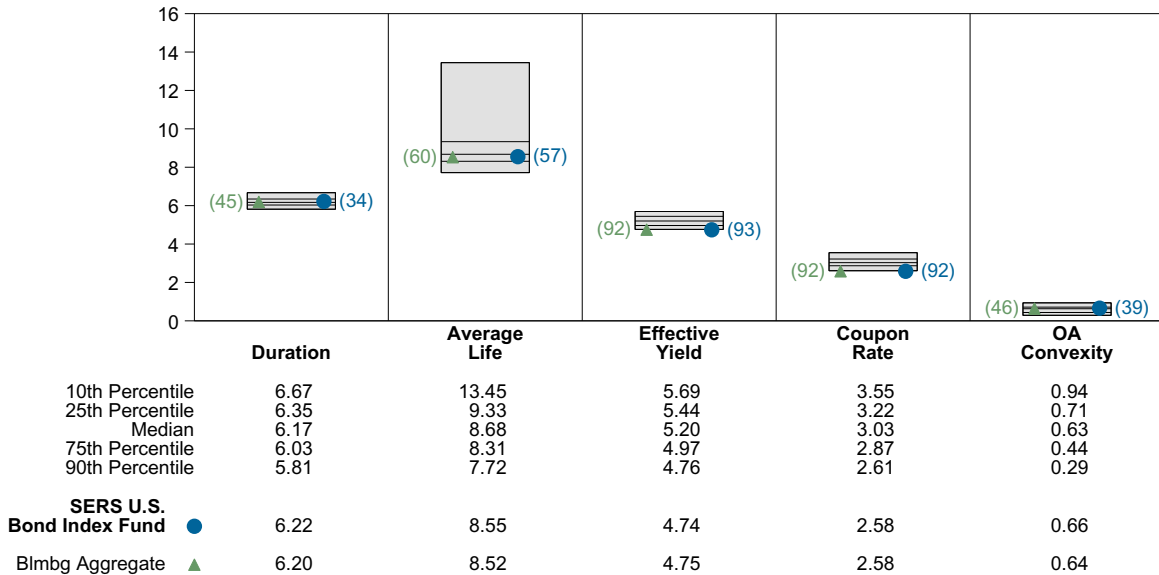
SERS U.S. Bond Index Fund

Bond Characteristics Analysis Summary

Portfolio Characteristics

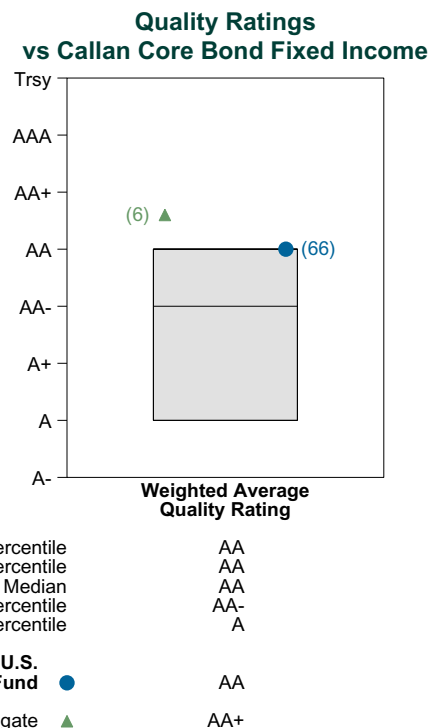
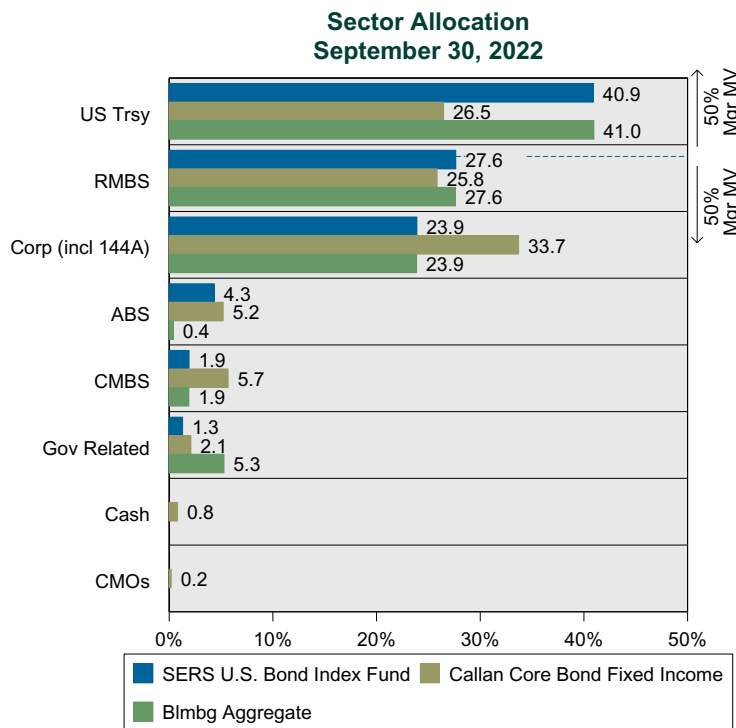
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Fixed Income Portfolio Characteristics Rankings Against Callan Core Bond Fixed Income as of September 30, 2022



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 Aggregate 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.

Quarterly Highlights

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/research-library to see all of our publications, and www.callan.com/blog to view our blog. For more information contact Barb Gerraty at 415-274-3093 / institute@callan.com.

New Research from Callan's Experts

[Research Cafe: Preliminary Mid-Year Capital Markets Assumptions](#) | In this coffee break session, our experts, Jay Kloepfer and Adam Lozinski, describe our preliminary 2023-2032 Capital Markets Assumptions, discuss the process and rationale behind the adjustments of these long-term projections, and explain the potential implications for strategic recommendations.

[Is Financial Wellness the Right Prescription for Your DC Plan?](#) Jana Steele discusses what financial wellness is and how it can be incorporated effectively into a defined contribution (DC) plan.

Blog Highlights

[Do Active Core Plus Fixed Income Managers Add Value With Sector Rotation?](#) | To help answer this question, we used benchmark indices and risk-adjusted them to disentangle an active manager's contribution to performance from a strategic overweight to credit vs. the contribution added by true sector rotation. This provides a quantitative framework for evaluating potential performance, which can be balanced against other considerations, including fees and expenses, complexity, and desired risk and performance patterns.

[Bubbles Bursting Everywhere](#) | The S&P 500 posted its worst six-month return in over 50 years to start the year. Inflation is surging, hitting 40-year highs in the United States. At the same time, interest rates are rising, and, to top it off, a recession may be on the horizon. For institutional investors, navigating these treacherous cross-currents requires an understanding of just how we arrived at this point.

[The Fading Unicorn: How Volatility, Inflation, and Rate Hikes Impact Venture Capital](#) | With Fed rate hikes, skyrocketing prices, and a Nasdaq selloff, venture capital (VC) limited partners have no shortage of worries. The unicorn stampede of the past decade has begun to fade, with many technology companies drastically declining

in value in the public markets. By understanding venture capital's relationship with interest rates, inflation, and the public markets, institutional investors can better navigate the effect on their portfolios in 2022 and beyond.

[Target Date Funds and the Ever-Evolving Glidepath](#) | In 2021 and the first half of 2022, multiple target date fund (TDF) providers announced changes to their strategic TDF glidepaths. The timing of these changes was unique, as capital markets adjusted to a post-pandemic world and a vastly different global outlook.

Quarterly Periodicals

[Private Equity Update, 2Q22](#) | A high-level summary of private equity activity in the quarter through all the investment stages

[Active vs. Passive Charts, 2Q22](#) | A comparison of active managers alongside relevant benchmarks over the long term

[Market Pulse, 2Q22](#) | 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 Markets Review, 2Q22](#) | Analysis and a broad overview of the economy and public and private markets activity each quarter across a wide range of asset classes

[Hedge Fund Update, 2Q22](#) | Commentary on developments for hedge funds and multi-asset class (MAC) strategies

[Real Assets Update, 2Q22](#) | A summary of market activity for real assets and private real estate during the quarter

[Private Credit Update, 2Q22](#) | A review of performance and fundraising activity for private credit during the quarter

Events

A complete list of all upcoming events can be found on our website: callan.com/events-education.

Please mark your calendar and look forward to upcoming invitations:

2023 Capital Markets Projections Webinar

Jan. 18, 2023 – Virtual

2023 National Conference

April 2-4, 2023 – Scottsdale, AZ

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

March 1-2 – Chicago

May 23-25 – Virtual

This program familiarizes institutional investor trustees and staff and asset management advisers with basic investment theory, terminology, and practices. Our virtual session is held over three days with virtual modules of 2.5-3 hours, while the in-person session lasts one-and-a-half days. This course is designed for individuals with less than two years of experience with asset-management oversight and/or support responsibilities. Virtual tuition is \$950 per person and includes instruction and digital materials. In-person 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 registration can be found at: callan.com/events-education



“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

List of Callan’s Investment Manager Clients

Confidential – For Callan Client Use Only

Callan takes its fiduciary and disclosure responsibilities to clients very seriously. We recognize that there are numerous potential conflicts of interest encountered in the investment consulting industry, and that it is our responsibility to manage those conflicts effectively and in the best interest of our clients. At Callan, we employ a robust process to identify, manage, monitor, and disclose potential conflicts on an ongoing basis.

The list below is an important component of our conflicts management and disclosure process. It identifies those investment managers that pay Callan fees for educational, consulting, software, database, or reporting products and services. We update the list quarterly because we believe that our fund sponsor clients should know the investment managers that do business with Callan, particularly those investment manager clients that the fund sponsor clients may be using or considering using. Please note that if an investment manager receives a product or service on a complimentary basis (e.g., attending an educational event), they are not included in the list below. Callan is committed to ensuring that we do not consider an investment manager’s business relationship with Callan, or lack thereof, in performing evaluations for or making suggestions or recommendations to its other clients. Please refer to Callan’s ADV Part 2A for a more detailed description of the services and products that Callan makes available to investment manager clients through our Institutional Consulting Group, Independent Adviser Group, and Fund Sponsor Consulting Group. Due to the complex corporate and organizational ownership structures of many investment management firms, parent and affiliate firm relationships are not indicated on our list.

Fund sponsor clients may request a copy of the most currently available list at any time. Fund sponsor clients may also request specific information regarding the fees paid to Callan by particular fund manager clients. Per company policy, information requests regarding fees are handled exclusively by Callan’s Compliance department.

Manager Name
[REDACTED]
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Manager Name
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