

June 30, 2022

Pennsylvania SERS 401(a)



**Investment Measurement Service
Quarterly Review**

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Recession Call Waits For NBER Committee

ECONOMY

2 Despite two consecutive quarters of a decline in GDP, the United States is not officially in a recession—until a committee of the National Bureau of Economic Research determines that we are. The stock market, however, is not waiting and has already priced one in.

Challenges Galore As Stocks, Bonds Fall

INSTITUTIONAL INVESTORS

4 All investor types saw returns fall over the last year ending 2Q22, given the drops in both stocks and bonds. Uncertainty in 2022 creates challenges for planning. Investors have to factor in the invasion of Ukraine, inflation, market declines, higher rates, and recession concerns.

Most Major Indices Fall by Double Digits

EQUITY

6 The S&P 500 plunged 16.1% in 2Q22; all major U.S. indices across styles and market cap ranges also fell. Global indices followed suit; slowing global growth became clearer toward quarter-end, leading investors toward higher-quality and lower-volatility areas of the market.

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

Pain Is Widespread For Bond Investors

FIXED INCOME

8 The Bloomberg US Aggregate Bond Index posted its worst six-month return in its history. Market pricing reflects a Fed Funds rate of 3.4% at year-end. Double-digit negative returns were widespread across developed markets, and all EM indices saw losses as well.

Private RE Delivers; REITs Underperform

REAL ESTATE/REAL ASSETS

10 Core real estate delivered another robust quarter, although returns are expected to moderate for the rest of this year and into next. REITs both globally and in the United States lagged equities. Real assets saw widespread losses, with the notable exception of energy.

Persistence Amid Volatile Environment

PRIVATE EQUITY

11 First-half private equity fundraising and deal activity declined from last year's frenzied levels but volumes remained strong. With the public equity sell-off in 2Q, distributions have been the largest casualty as the strong seller's market has receded.

Illiquidity Premium Slowly Adjusting

PRIVATE CREDIT

12 The illiquidity premium between public and private credit had been whittled down close to zero, but we are seeing a slow adjustment. Fundraising slowed in the first half of 2022 as interest rate hikes and market volatility led to investor uncertainty.

Tough Environment Leads to Losses

HEDGE FUNDS/MACs

13 Hedge funds mostly fell in 2Q22 amid a confluence of major macroeconomic forces. Macro managers remained the best-performing strategy for the first half of 2022. Most of the managers in the Callan Multi-Asset Class (MAC) Style Groups generated negative returns, gross of fees.

DC Index Falls in 1Q22, After 4Q21 Gain

DEFINED CONTRIBUTION

15 The Callan DC Index™ fell 5.3% in 1Q22; the Age 45 Target Date Fund dropped 5.9%. Target date funds (TDFs) received the largest net inflows during the quarter. U.S. large cap had the largest percentage decrease in allocation; TDFs saw the largest increase.

Recession—Are We There Yet?

ECONOMY | Jay Kloepfer

GDP in 2Q22 fell 0.9%, after declining 1.6% in 1Q—so are we already in a recession? If so, that was fast; growth in 4Q21 was a rockin' 6.9%. The stock market already thinks so; investors fully priced in a recession during the first half of 2022, with particularly large declines in April and June and a bear market by midyear. Over history, the stock market moves to price in a recession well before the economic data begin to show a decline.

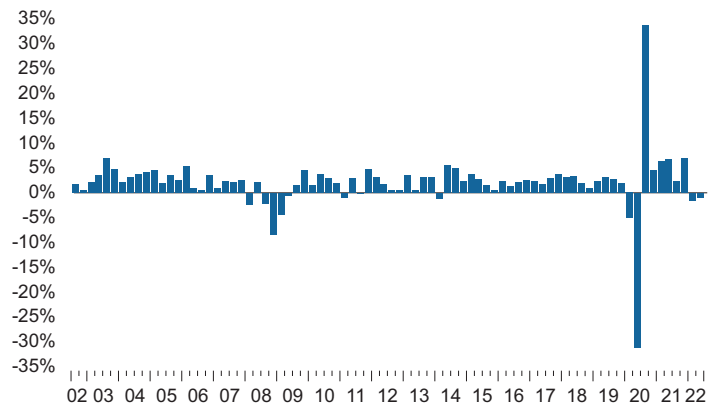
It turns out two consecutive quarters of falling GDP is a nice rule of thumb, but it is not the official definition of recession. So what is, and who gets to decide? First, the decider: the rather grandly named National Bureau of Economic Research Business Cycle Dating Committee. Second, the definition: "a significant decline in economic activity that is spread across the country and lasts more than a few months." The committee uses a number of measures of economic activity, and leans particularly hard on real personal income and nonfarm payroll employment. Interestingly, GDP is used sparingly; the focus of recession dating is typically on a monthly determination of peaks and troughs, while GDP is reported only quarterly.

Data preferences from this arcane Dating Committee aside, two consecutive quarters of GDP decline is still news, even if it does not necessarily indicate recession. The sources of the decline in 2Q GDP included a large decrease in private inventory investment, which subtracted 2 percentage points from GDP. The inventory drop was led by a decrease in retail trade, mainly general merchandise stores, along with motor vehicle dealers. Other detractors to growth were both residential and non-residential fixed investment; and federal, state, and local government spending.

Offsetting the declines were increases in exports and personal consumption expenditures (PCE). The rise in PCE reflected an increase in services (food services, accommodations, and health care) that was partly offset by a decrease in spending on goods (led by food and beverages). So ... more spending

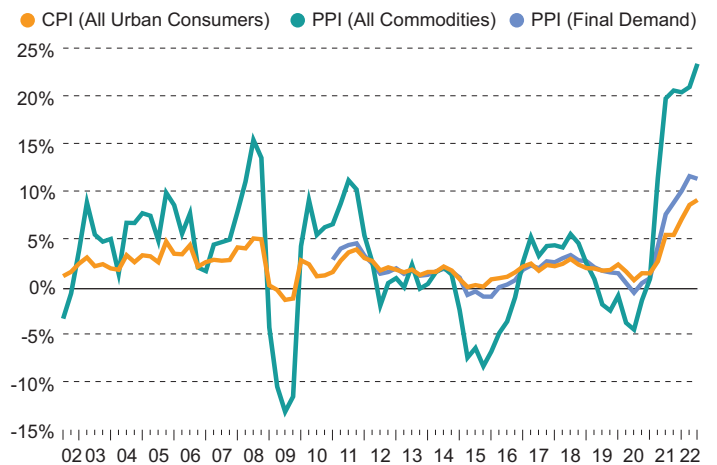
Quarterly Real GDP Growth

(20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

on restaurants and hotels and Airbnbs, and less food at home, even with the sharp rise in prices at the grocery store.

What is especially interesting is that the rise in the dollar helped imports and didn't seem to hurt exports, which is very weird, since that rise makes our exports more expensive and our imports cheaper. Exports fell sharply in 1Q as Russia invaded Ukraine, yet as the war intensified, exports shot back up in 2Q, growing by 18% and contributing almost 2 percentage points to GDP growth. Returning to the premise of the Dating Committee, that much more than GDP growth

should define a recession, somewhat anomalous components of GDP accounted for the declines in 1Q and 2Q. Both quarters were driven by huge changes in exports and inventories, neither of which are usually so important to a given quarter's GDP growth, and do not often reverse the course of growth coming from the rest of the economy. Other data on the broad economy during the first half of 2022 do not necessarily point to a recession, at least not yet. The job market was very robust through both 1Q and 2Q, as the U.S. economy added more than 2.7 million new jobs; since the invasion of Ukraine in February, the job market averaged almost 400,000 new jobs per month, substantially above the 200,000-250,000 rate that indicates an expanding economy. We still have room to recover from the pandemic, however, as we are half a million jobs short of the level set in February 2020.

Disposable personal income increased 6.6% in 2Q, in contrast to a decline of 1.3% in 1Q. Despite this robust growth, incomes could not keep up with inflation, which began ramping up in April 2021. After kicking off the year at 7.5% in January, inflation as measured by the CPI-U index has only gone up each month, reaching 9.1% in the June report. As a result, real disposable personal income (take-home pay, adjusted for inflation) decreased 0.5% in 2Q; while disappointing, this report was substantially better than in 1Q, when real disposable income fell an alarming 7.8%.

The mayhem in the capital markets continued during 2Q, as both stocks and bonds responded to the Fed and the ECB aggressively raising interest rates, Russia's war in Ukraine, concerns about an incipient recession, another COVID surge, and global economic weakness. However, the U.S. economy is still growing robustly. There may be something to this Dating

The Long-Term View

Index	2Q22	Periods Ended 6/30/22			
		1 Yr	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	-16.7	-13.9	10.6	12.6	8.1
S&P 500	-16.1	-10.6	11.3	13.0	8.0
Russell 2000	-17.2	-25.2	5.2	9.4	7.4
Global ex-U.S. Equity					
MSCI EAFE	-14.5	-17.8	2.2	5.4	3.9
MSCI ACWI ex USA	-13.7	-19.4	2.5	4.8	--
MSCI Emerging Markets	-11.4	-25.3	2.2	3.1	--
MSCI ACWI ex USA Small Cap	-17.5	-22.4	2.6	6.2	5.7
Fixed Income					
Bloomberg Agg	-4.7	-10.3	0.9	1.5	4.4
90-Day T-Bill	0.1	0.2	1.1	0.6	2.0
Bloomberg Long G/C	-12.3	-20.1	1.0	2.6	6.1
Bloomberg GI Agg ex US	-11.0	-18.8	-1.8	-1.1	2.8
Real Estate					
NCREIF Property	3.2	21.5	8.9	9.7	9.5
FTSE Nareit Equity	-17.0	-6.3	5.3	7.4	8.7
Alternatives					
CS Hedge Fund	-2.3	1.9	4.8	4.7	6.3
Cambridge PE*	-1.5	22.0	20.7	16.5	15.4
Bloomberg Commodity	-5.7	24.3	8.4	-0.8	1.8
Gold Spot Price	-7.5	2.0	7.8	1.2	7.0
Inflation – CPI-U	3.1	9.1	3.9	2.6	2.5

*Data for most recent period lags. Data as of 3/31/22.

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

Committee's methodical approach. The caveat to its work is that calling turning points relies on government data reported with lags, so the Committee can only designate a recession after it starts. We may be "there," but we will not know until the Committee decides.

Recent Quarterly Economic Indicators

	2Q22	1Q22	4Q21	3Q21	2Q21	1Q21	4Q20	3Q20
Employment Cost–Total Compensation Growth	5.1%	4.5%	4.0%	3.7%	2.9%	2.6%	2.5%	2.4%
Nonfarm Business–Productivity Growth	-6.2%*	-7.3%	6.3%	-3.9%	3.2%	2.2%	-2.8%	6.2%
GDP Growth	-0.9%	-1.6%	6.9%	2.3%	6.7%	6.3%	4.5%	33.8%
Manufacturing Capacity Utilization	79.8%	79.2%	78.6%	77.5%	76.8%	75.7%	75.0%	73.3%
Consumer Sentiment Index (1966=100)	57.8	63.1	69.9	74.8	85.6	80.2	79.8	75.6

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

*Estimate

Returns Fall Amid Challenging Environment

INSTITUTIONAL INVESTORS

Investors' performance holds up relatively well

- All investor types saw returns decline over the last year ending 2Q22, given the drops in both stocks and bonds over the same period.
- Relatively, their returns held up well, with all investor types outperforming broad U.S. equities and most topping the Bloomberg US Aggregate Bond Index. The sole exception was corporate defined benefit (DB) plans, not surprising given their typically heavy allocations to fixed income.
- Over much longer periods, all institutional investor types have seen returns roughly in line with a 60% S&P 500/40% Aggregate mix.

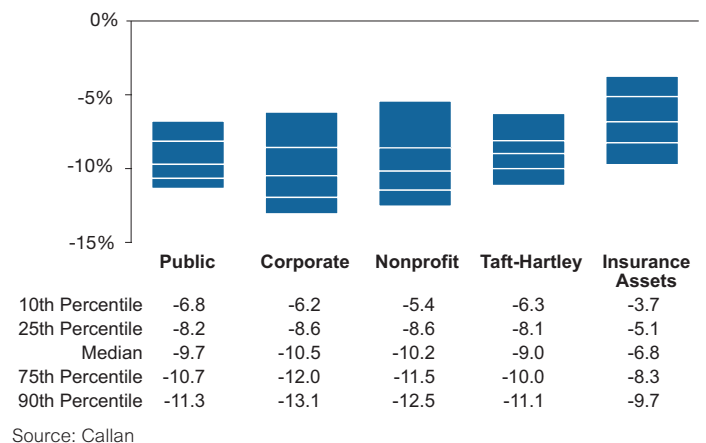
Strategic planning focus alters

- Drops in both stocks and bonds YTD have changed discussions about asset allocation.
- The questions that investors are focused on now include:
 - How does a yield of 4% change the demand for yield substitutes: investment grade credit, bank loans, high yield, private credit—maybe even real estate and infrastructure?
 - How should investors handle rebalancing, which is a natural outcome of a market downturn, except when everything goes down?

- What should they do about alternatives, which are now over target allocations?
- Uncertainty in the first half of 2022 creates new challenges for planning. Investors are trying to factor in the invasion of Ukraine, inflation, market declines, higher rates, and recession concerns into their decision-making.
- Geopolitical uncertainty has lessened the enthusiasm for emerging market overweights, and raised questions with a number of investors about the value of global ex-U.S. equity broadly to a U.S.-based investor.

Quarterly Returns, Callan Database Groups

(6/30/22)



Callan Database Median and Index Returns* for Periods Ended 6/30/22

Database Group	Quarter	1 Year	3 Years	5 Years	10 Years	20 Years
Public Database	-9.7	-9.4	5.9	6.4	7.8	7.1
Corporate Database	-10.5	-13.1	3.6	5.0	6.8	6.6
Nonprofit Database	-10.2	-10.6	5.2	5.9	7.3	6.9
Taft-Hartley Database	-9.0	-7.7	6.1	6.8	8.1	6.8
Insurance Assets Database	-6.8	-8.6	2.2	3.3	3.9	4.9
All Institutional Investors	-9.9	-10.1	5.2	6.0	7.5	6.9
Large (>\$1 billion)	-8.8	-7.9	6.1	6.7	7.8	7.2
Medium (\$100mm - \$1bn)	-10.1	-10.4	5.2	6.0	7.5	6.8
Small (<\$100 million)	-10.1	-10.7	4.8	5.6	7.1	6.6
60% S&P 500/40% Bloomberg Agg	-11.5	-10.2	6.5	7.5	8.6	7.2

*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.

- Real assets are under review with growing inflation concerns.
 - Renewed interest in inflation-sensitive investments that many investors had grown weary of such as energy, commodities, and other natural resources
 - Steadily growing interest in infrastructure among public plans

Corporate DB plan priorities

- In general, strong interest in de-risking continues despite rise in yields. Higher yields make for a better entry point into long duration, but how much higher can long-term yields go? Plans on a glidepath tied to funded status are adhering to de-risking their portfolio as funded status improves.
- Total return-oriented plans enjoyed a strong 1Q22 as rates rose, but most of these plans gave back some funded status improvement as equities continued their decline in June.
- We are having some discussions about pension risk transfer.

Public DB plan priorities

- 2020-21 gains drove improvements in funded status.
- Low projected returns mean downward pressure on actuarial discount rates. Moving to lower discount rates has not typically led to substantial changes in asset allocation, but perhaps greater comfort that the current risk posture has a better chance of achieving the plan discount rate.

- How will inflation impact large public plans?
- U.S. equity studies in 2Q22 saw large public plans examining fewer active managers and increasing the allocation to passive in an effort to increase net-of-fee returns. Global ex-U.S. equity studies recognize that foreign markets continue to lag but active managers, especially style-focused managers, are beating the indices net of fees.

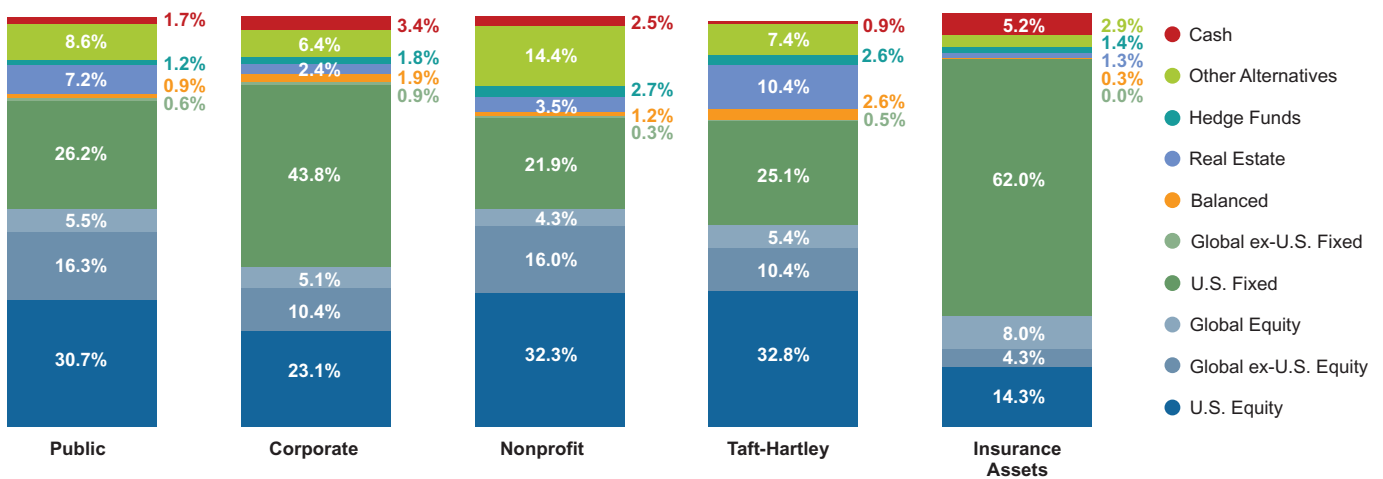
Defined contribution (DC) plan priorities

- House passed SECURE 2.0 Act; Senate has two versions moving through committees.
- Final version uncertain, but may include allowing CITs in 403(b) plans and pushing RMDs back to age 75
- Target date funds have been adding allocations to growth assets across the spectrum of retirement cohorts to increase income replacement ratios in light of low expected returns across asset classes. Fee sensitivity has led to more passive in large cap U.S. equity.

Nonprofit priorities

- They continue to expand the depth and breadth of their private markets investments in light of both high valuations in public markets growth assets and the potential for high inflation to erode the real values of their assets and distributions.

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

All major indices fall

- The S&P 500 plunged 16.1% in 2Q22; all major U.S. indices across styles and market cap ranges fell in the quarter.
- All sectors posted negative returns in the quarter. Energy continued to be the best-performing sector, and the only sector that has posted a gain year-to-date (YTD).
- Large cap stocks nominally outpaced smaller cap stocks. The performance spread between the Russell 1000 and the Russell 2000 Index was around 50 basis points.
- Value stocks have outperformed growth stocks across the market capitalization spectrum.
- Consumer Discretionary (-26%), Communication Services (-21%), and Information Technology (-20%) were the worst-performing sectors.

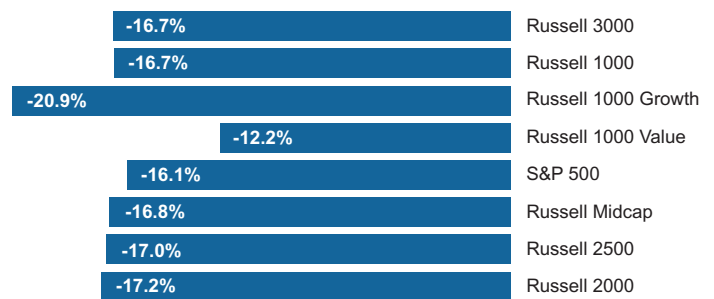
Volatile environment hits equity markets

- Rising interest rates and inflation along with geopolitical headlines all contributed to a volatile and risk-averse environment.
- Macroeconomic headlines and data releases will continue to impact equity markets.
- Inflation, rising interest rates, and supply-chain disruptions are all headwinds for equity markets.
- Active large cap growth managers have underperformed the Russell 1000 Growth Index meaningfully recently.
- Large tech firms that have sold-off (e.g., Meta) have become an increasingly large proportion of the value index.

- Federal Reserve interest rate hikes may derail the economy, resulting in lower corporate earnings in the near- to intermediate-term.
- With a potential economic slowdown, sell-side analysts have been cutting corporate earnings estimates.
- Longer-duration growth assets, such as growth stocks, are vulnerable during periods of high inflation because of higher interest rates discounting way-out future earnings.

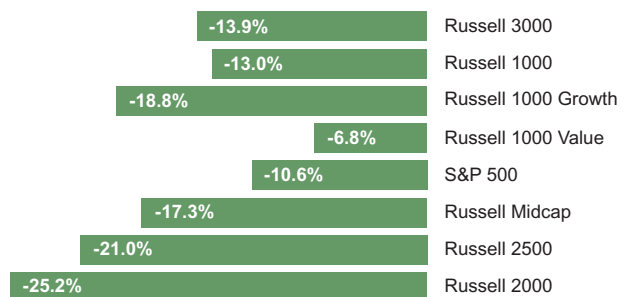
U.S. Equity: Quarterly Returns

(6/30/22)



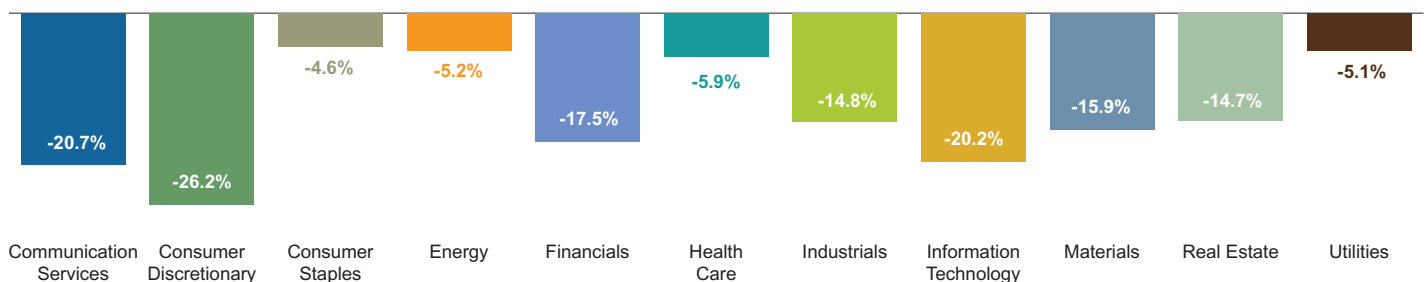
U.S. Equity: One-Year Returns

(6/30/22)



Sources: FTSE Russell and S&P Dow Jones Indices

Quarterly Performance of Industry Sectors (6/30/22)



Source: S&P Dow Jones Indices

Global Equity

- The war in Ukraine tested an already fragile supply chain, led to energy demand/supply imbalances, and created an inflationary environment that sparked fears of a recession.
- Slowing global growth and recession risk became clearer toward quarter-end, leading investors toward higher-quality and lower-volatility areas of the market to offer protection.

Wide divergence in country returns

- Optimism that the worst is behind China's COVID-19 lockdown buoyed the country to the only gain in 2Q22.
- Japan suffered from a weak yen, slowing growth, and continued supply chain disruptions.

Growth vs. value

- Value continued to outperform growth as most monetary policies focus on tightening.
- Energy was the only sector with positive YTD results.
- Information Technology had the worst sector return as interest rate increases dampened long duration growth attractiveness.

U.S. dollar vs. other currencies

- The U.S. dollar strengthened further against other major currencies given its global dominance and perceived safety.

The rise of the dollar

- The dollar hit a 20-year high after rising roughly 10% YTD.
- The dollar hit parity with the euro; first time since 2002.
- The yen dipped to a 24-year low against the dollar.
- Strong dollar may burden global ex-U.S. markets.

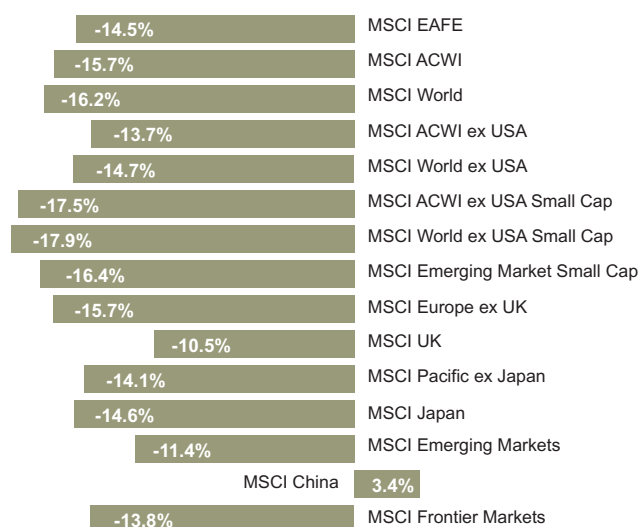
Strong currency yields purchasing power

- Dollar-denominated debt compounded by depreciating local currencies weighed on the economy.
- The dollar and global ex-U.S. equity have exhibited negative correlation over the past four decades.

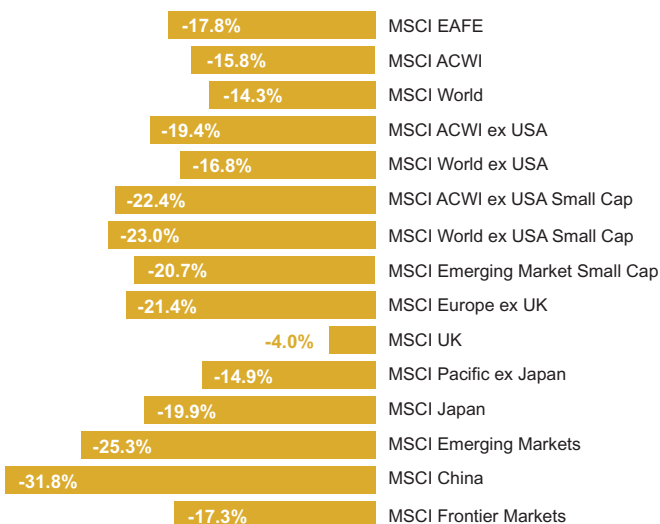
EM has fared better relative to prior downturns

- EM historically declined 26% during prior S&P 500 drawdowns greater than 10%.
- As of 2Q22, EM has corrected by 18% YTD.

Global ex-U.S. Equity: Quarterly Returns (U.S. Dollar, 6/30/22)



Global ex-U.S. Equity: One-Year Returns (U.S. Dollar, 6/30/22)



Source: MSCI

China presents upside opportunity

- Although divergence of China and EM ex-China is notable, China may support EM should fears of a U.S. recession fuel further drawdown.
- China offers favorable growth and valuation relative to other emerging markets.

Fixed Income

U.S. Fixed Income

Bonds hit hard as rates rise sharply (again)

- Bloomberg US Aggregate Bond Index posted its worst six-month return in its history.
- Yield curve flirted with inversion, but 2-year/10-year yield spread was slightly positive at quarter-end.
- TIPS underperformed nominal Treasuries, and 10-year breakeven spreads fell to 2.33% from 2.84% at 3/31/22.
- Fed raised rates by 75 bps, the largest increase since 1994, with further hikes expected.
- Market pricing reflects Fed Funds rate of 3.4% at year-end.

Spread sectors underperformed

- Investment grade corporates underperformed like-duration U.S. Treasuries by 205 bps; RMBS by 98 bps.
- High yield underperformed as spreads widened; excess return vs. U.S. Treasuries was -792 bps, hurt by equity market performance and worries over the impact of higher rates on the economy.
- Leveraged loans held up relatively well with lower-quality credits generally underperforming.

Securitized sectors continue to hang in

- Agency RMBS spreads widened in response to increased rate volatility.
- ABS spreads tightened, led by credit cards.

Municipal Bonds

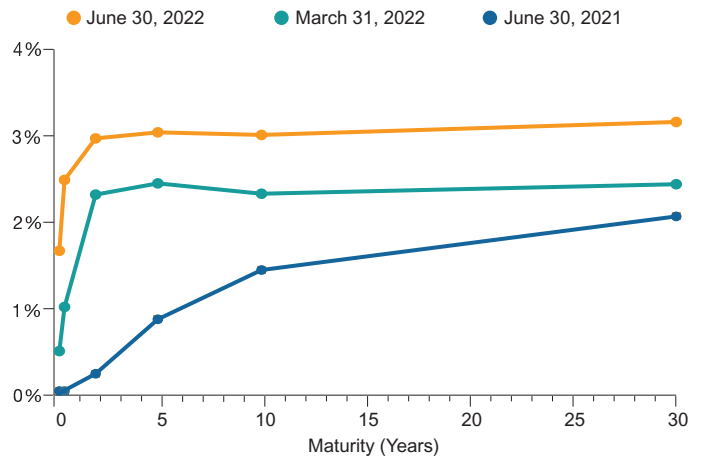
Returns hurt by rising rates

- Lower quality continued to underperform
- BBB: -4.5%; AAA: -2.5% (YTD BBB: -11.3%; AAA: -8.5%)
- Munis outperformed U.S. Treasuries (Bloomberg US Treasury: -3.8%)

Valuations relative to U.S. Treasuries at fair value

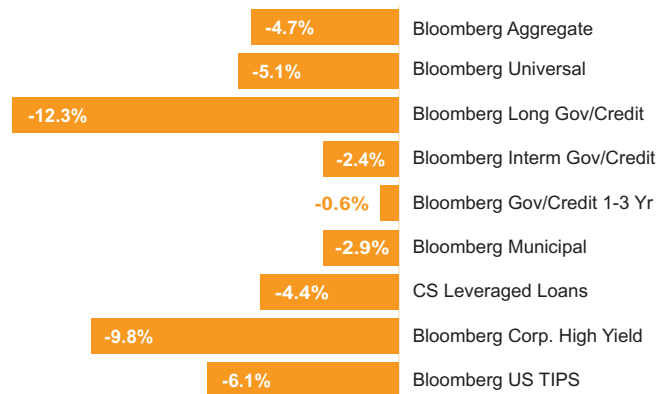
- 10-year AAA Muni/10-year U.S. Treasury yield ratio roughly 90%; in line with 10-year average
- Municipal Bond Index after-tax yield = 5.4% (source: Eaton Vance)

U.S. Treasury Yield Curves



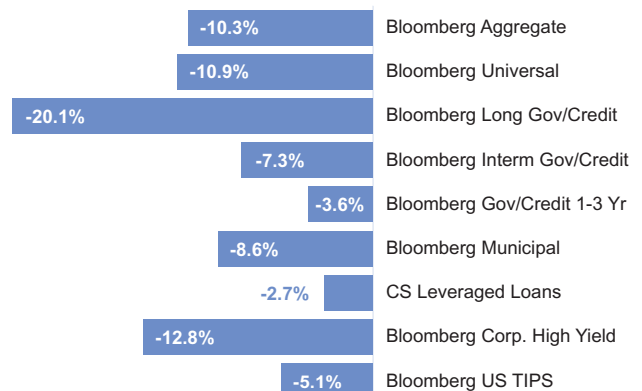
Source: Bloomberg

U.S. Fixed Income: Quarterly Returns (6/30/22)



Sources: Bloomberg and Credit Suisse

U.S. Fixed Income: One-Year Returns (6/30/22)



Sources: Bloomberg and Credit Suisse

FIXED INCOME (Continued)

Supply/demand

- Outflows of \$76 billion YTD; highest cycle outflow since data series began in 1992
- YTD supply down 14% vs. last year

Global Fixed Income

Negative returns driven by broad interest rate increases

- U.S. dollar continued to appreciate vs. yen, euro, and pound.
- Double-digit negative returns were widespread across developed markets.

Inflation and global recession fears drag on EMD

- All countries in the USD-denominated JPM EMBI Global Diversified Index posted negative returns, hurt by rising rates in the U.S.
- Local currency markets across the JPM GBI-EM Global Diversified were down only slightly, but USD strength eroded returns for U.S. investors.

Interest rates significantly increased

- First-half returns worst since inflation of 1970s
- Global phenomenon driven by recent inflationary pressure
- All fixed income asset classes negatively impacted
- Developed market duration becoming more compelling after broad repricing

Change in 10-Year Global Government Bond Yields

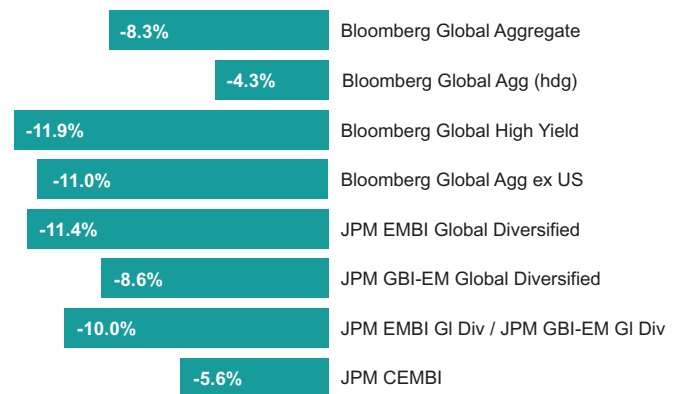
1Q22 to 2Q22



Source: Bloomberg

Global Fixed Income: Quarterly Returns

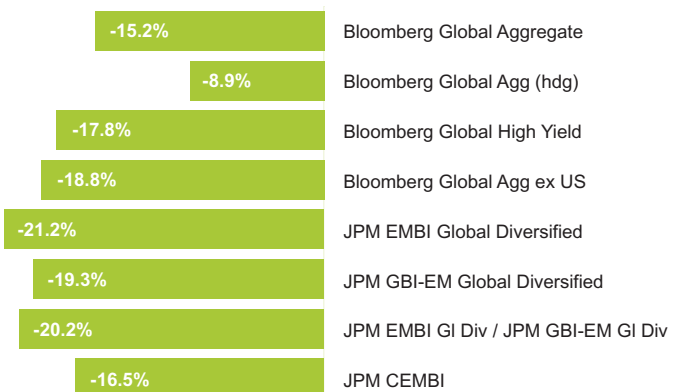
(6/30/22)



Sources: Bloomberg and JPMorgan Chase

Global Fixed Income: One-Year Returns

(6/30/22)



Sources: Bloomberg and JPMorgan Chase

Private RE Delivers; REITs Underperform

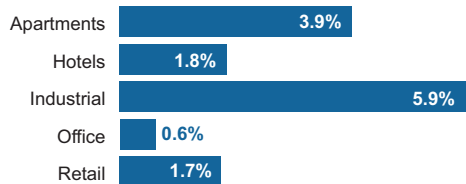
REAL ESTATE/REAL ASSETS | Munir Iman

Robust quarter for private real estate

Core real estate delivered another robust quarter, with strong fundamentals in the Industrial and Multifamily sectors; the NFI-ODCE Index (value-weighted, net of fees) gained 4.5% in 2Q22 and 12.0% year-to-date (YTD). Real estate returns are expected to moderate to 10% in 2022 and 8% in 2023.

- Income returns were positive across all sectors.
- Transaction volumes are slowing as interest rates rise and economic uncertainty increases.
- Industrial and Multifamily sectors are expected to see continued rent growth.
- Office vacancy is expected to stay above long-term averages for the near term.
- Property types with steady cash flows are experiencing cap rate compression due to the demand for logistics facilities coupled with the housing shortage.

Sector Quarterly Returns by Property Type (6/30/22)



Source: NCREIF

Callan Database Median and Index Returns* for Periods Ended 6/30/22

Private Real Assets	Quarter	Year to Date	1 Year	3 Years	5 Years	10 Years	15 Years
Real Estate ODCE Style	5.0	12.2	27.9	12.3	10.2	10.6	6.2
NFI-ODCE (value-weighted, net)	4.5	12.0	28.3	11.7	9.6	10.2	6.0
NCREIF Property	3.2	8.7	21.5	10.2	8.9	9.7	7.2
NCREIF Farmland	2.6	5.3	11.0	6.6	6.4	9.6	10.6
NCREIF Timberland	1.9	5.1	12.0	5.0	4.3	5.7	5.1
Public Real Estate							
Global Real Estate Style	-17.2	-20.6	-12.2	1.9	5.0	6.9	3.9
FTSE EPRA Nareit Developed	-17.4	-20.7	-13.5	-1.1	1.9	4.7	2.0
Global ex-U.S. Real Estate Style	-18.5	-21.5	-20.6	-1.2	3.7	6.2	1.4
FTSE EPRA Nareit Dev ex US	-17.7	-20.4	-21.1	-5.0	-0.2	3.3	0.1
U.S. REIT Style	-16.7	-20.0	-6.3	6.0	7.0	8.4	6.8
FTSE EPRA Nareit Equity REITs	-17.0	-20.2	-6.3	4.0	5.3	7.4	5.8

*Returns less than one year are not annualized.

Sources: Callan, FTSE Russell, NCREIF

Public real estate lags

REITs, both in the United States and globally, underperformed in 2Q22.

- The FTSE EPRA Nareit Developed Index, a measure of global REITs, fell 17.4% in 2Q22 compared to a 15.8% drop for global equities (MSCI World).
- The FTSE Nareit Equity REITs index, measuring U.S. REITs, dropped 17.0%, in contrast with the S&P 500 Index, which lost 16.1%.
- REITs are now trading at a discount to NAV and offer relative value given the strength of underlying fundamentals

Real assets see widespread drops

Following very strong 1Q results, real assets as a group posted negative returns in 2Q as concerns over slowing global growth mounted.

- A lone exception was the energy-heavy S&P GSCI Index, which eked out a 2.0% gain during the quarter while the Bloomberg Commodity TR Index fell 5.7%.
- WTI Crude closed the quarter at \$106/barrel, up from \$100 on 3/31/22 and \$76 at year-end. Gold (S&P Gold Spot Price Index: -7.5%), listed infrastructure (DJB Global Infrastructure: -7.1%), REITs (MSCI US REIT: -16.9%), and TIPS (Bloomberg TIPS: -6.1%) declined.

Persistence Amid Volatility

PRIVATE EQUITY | Gary Robertson

Fundraising ► Based on preliminary data, final closes for private equity partnerships in 2Q22 totaled \$233 billion of commitments in 486 partnerships. (Unless otherwise noted, all data in this commentary come from PitchBook.) The dollar volume was up 3% from 1Q22, but the number of funds fell 11%. For the first half, 2022 commitments are running 13% behind those of a year ago, with the number of funds down by 39%. While the figures point to a decline from 2021, the first-half results are in fact tracking to match last year's total because the second half of 2021 weakened as public equity markets grew volatile.

Buyouts ► New buyout transactions by count fell 12% from 1Q22 to 2,668, and disclosed deal value dropped 42% to \$125 billion. YTD numbers also saw declines of 16% in number of investments and 7% in disclosed value. Average buyout prices remained comparable to 2021, with a similar pattern in average leverage multiples.

VC Investments ► New rounds of financing in venture capital companies totaled 10,244, with \$125 billion of announced value. The number of investments preliminarily fell 24% from 1Q22, and announced value fell 25%. YTD numbers held up stronger, down only 15% for rounds and 13% for disclosed value.

Exits ► There were 522 private M&A exits of private equity-backed companies, with disclosed values totaling \$122 billion.

Private Equity Performance (%) (Pooled Horizon IRRs through 3/31/22*)

Strategy	Quarter	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years	25 Years
All Venture	-3.6	22.2	35.0	27.5	20.3	14.9	12.1	24.6
Growth Equity	-3.9	17.9	26.5	22.5	16.8	14.3	14.5	15.9
All Buyouts	-0.5	24.6	22.9	20.1	15.7	11.7	14.7	13.6
Mezzanine	1.5	17.2	13.3	12.7	11.9	10.5	11.0	10.3
Credit Opportunities	2.0	12.4	8.4	8.0	8.9	8.8	9.8	9.8
Control Distressed	3.0	33.5	20.8	15.6	13.3	11.1	12.3	12.3
All Private Equity	-1.5	22.6	24.9	21.0	16.1	12.4	13.6	14.6
S&P 500	-4.6	15.7	18.9	16.0	14.6	10.3	9.3	9.4
Russell 3000	-5.3	11.9	18.2	15.4	14.3	10.1	9.4	9.5

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

The preliminary private sale count fell 18% and the announced dollar volume dropped 26%. There were 42 private equity-backed IPOs in 2Q22 raising an aggregate \$7 billion, down 7% by count, with issuance being unchanged from 1Q22.

Venture-backed M&A exits totaled 680 transactions with disclosed value of \$23 billion. The number of sales declined 12% from 1Q22, and announced value plunged 56%. There were 67 VC-backed IPOs in 2Q22 with a combined float of \$10 billion; the count was down 9% and the issuance grew 25%.

Returns ► With the strong downturn in public equity markets, private equity outperformance has widened given private equity's more gradual quarterly mark-to-market valuation methodology.

Funds Closed 1/1/22 to 6/30/22

Strategy	No. of Funds	Amt (\$mm)	Share
Venture Capital	650	156,559	34%
Growth Equity	79	61,601	13%
Buyouts	205	185,235	40%
Mezzanine Debt	7	11,021	2%
Distressed	18	26,353	6%
Energy	5	1,930	0%
Secondary and Other	58	11,743	3%
Fund-of-Funds	12	4,325	1%
Totals	1,034	458,767	100%

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

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

- U.S. corporate yields rose dramatically at the end of 2021 and the first six months of 2022, due to higher interest rates from tighter Fed policy and a widening of high yield spreads. Spreads widened because of weaker credit conditions as the U.S. economic outlook worsened.
- The illiquidity premium between public and private credit had been whittled down close to zero, but we are seeing a slow adjustment with SOFR widening out 200 bps and new private loan pricing at a 75-100 bps wider spread. A full adjustment between the public and private markets may take several quarters.
- Private credit fundraising was robust leading into the COVID dislocation, with a particular focus on direct lending and distressed strategies.
- Fundraising slowed in the first half of 2022 as rate hikes and market volatility led to investor uncertainty.
- For mature private credit programs, demand for diversifying strategies is increasing to capture opportunities outside of traditional sponsor-backed direct lending.

A permanent part of portfolios

- Core yield and income-generating characteristics remain attractive in private credit portfolios, in spite of the shrinking illiquidity premium.
- Despite the shift from a low-yield environment, private credit has become a permanent asset class in many portfolios.

Attractive inflation-resistant characteristics

- Many direct lending assets are floating rate, which can add protection against rising rates.

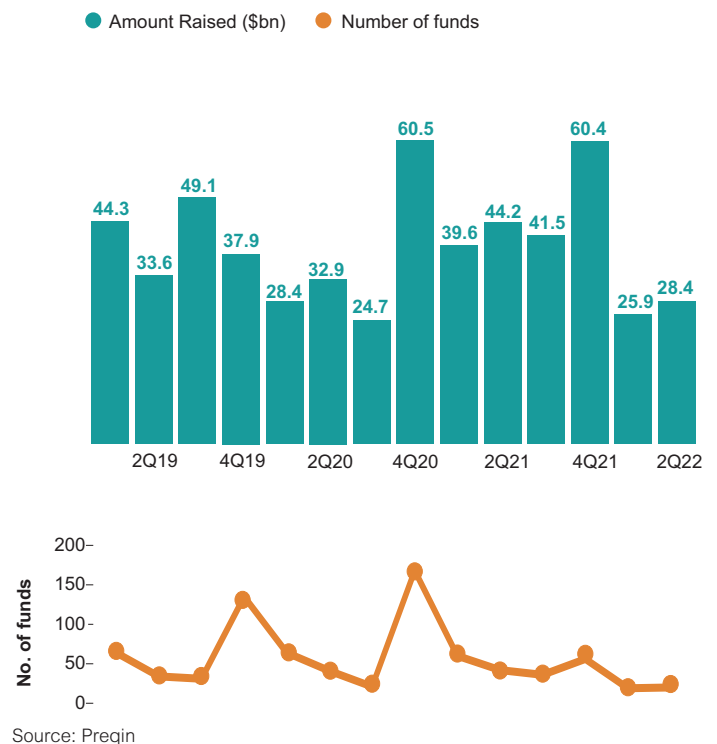
Distressed cycle on horizon a growing opportunity

- Distressed opportunities in U.S. and Europe are expected to increase across both corporate and non-corporate assets.
 - Enhances importance of seasoned workout talent across sub-strategy types
 - Brings the need for increased underwriting discipline

Continued evolution of pockets of opportunity

- Opportunities include those that offer diversification through differentiated collateral and/or low correlation to public markets, including specialty finance, asset-backed lending, and niche areas.

Private Credit Fundraising (\$bn)



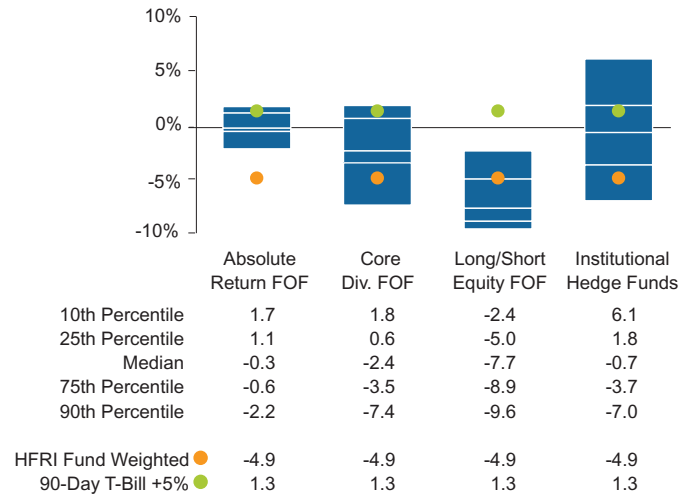
Tough Environment Leads to Losses

HEDGE FUNDS/MACs | Joe McGuane

Global markets sold off significantly in 2Q22 amid pressure from high inflation, rising interest rates, and Russia's invasion of Ukraine. In this challenging environment, hedge funds as a whole declined during 2Q, as equity hedge managers had a second quarter of disappointing returns. Event-driven strategies continued to struggle, as their deep value equity positions were the main detractor during the first half of the year while their credit positions held up fairly well. Relative value strategies remained in positive territory, as some managers continued to profit off a rising rate environment while others have been successful in capital structure arbitrage given the volatility in credit and equity markets. Macro managers remained the best-performing strategy for the first half of 2022, as commodity trading was the biggest driver of performance. Strong contributions also came from quantitative strategies.

Hedge Fund Style Group Returns

(6/30/22)



Sources: Callan, Credit Suisse, Federal Reserve

Callan Peer Group Median and Index Returns* for Periods Ended 6/30/22

Hedge Fund Universe	Quarter	Year to Date	1 Years	3 Years	5 Years	10 Years
Callan Institutional Hedge Fund Peer Group	-0.7	0.7	3.7	5.6	5.5	6.3
Callan Fund-of-Funds Peer Group	-2.8	-4.5	-4.5	4.8	4.4	5.0
Callan Absolute Return FOF Style	-0.3	1.1	3.4	5.4	4.9	5.0
Callan Core Diversified FOF Style	-2.4	-4.1	-3.9	4.8	4.0	4.7
Callan Long/Short Equity FOF Style	-7.7	-11.5	-12.3	3.2	3.9	5.2
BB GS Cross Asset Risk Premia 6% Vol Idx	4.4	5.0	3.4	-0.1	2.6	4.2
HFRI Fund Weighted Index	-4.9	-5.8	-5.7	6.1	5.1	5.0
HFRI Fixed Convertible Arbitrage	-4.4	-5.0	-2.1	6.1	4.9	5.1
HFRI Distressed/Restructuring	-3.7	-2.5	-1.6	7.4	5.6	5.7
HFRI Emerging Markets	-6.7	-13.0	-15.3	2.6	2.6	3.8
HFRI Equity Market Neutral	0.7	0.2	2.1	2.6	2.5	3.1
HFRI Event-Driven	-6.4	-7.6	-7.1	5.0	4.3	5.2
HFRI Relative Value	-2.6	-1.9	-1.0	3.6	3.6	4.5
HFRI Macro	1.8	8.6	8.0	7.8	5.3	3.1
HFRI Equity Hedge	-8.0	-12.0	-12.2	6.5	5.5	5.9
HFRI Multi-Strategy	-7.0	-8.8	-12.1	4.3	2.0	3.5
HFRI Merger Arbitrage	-2.9	-1.6	0.5	5.8	5.0	4.3
90-Day T-Bill + 5%	1.3	2.6	5.2	5.6	6.1	5.6

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

The median manager in the Callan Institutional Hedge Fund Peer Group fell 0.7%. Within this style group of 50 peers, the average rates manager gained 1.5%, driven by interest rate volatility. Meanwhile, hedged credit managers lost 4.6% from both performing and distressed credit.

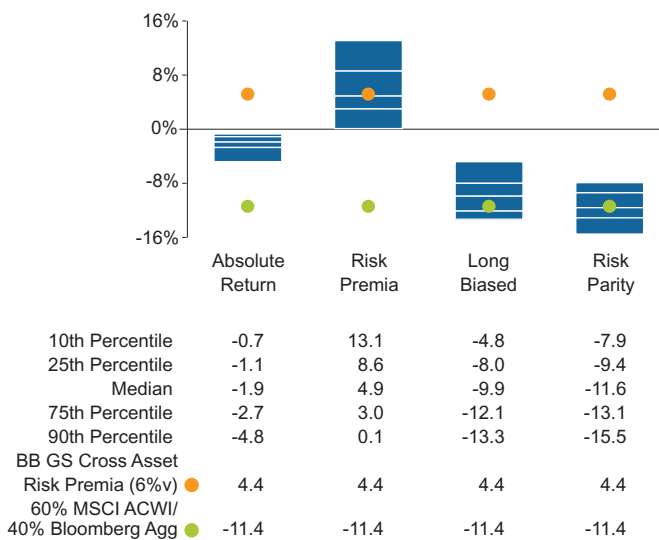
Within the HFRI indices, the best-performing strategy last quarter was again macro (+1.8%), aided by its exposure to commodities and rates trading. Equity hedge strategies had another difficult quarter (-8.0%), as growth-heavy managers experienced a sell-off.

Across the Callan Hedge FOF Database, the median Absolute Return FOF fell 0.3%, as a focus on lower beta strategies held up during the quarter. Meanwhile, the median Callan Long-Short Equity FOF dropped 7.7%, as a growth bias among

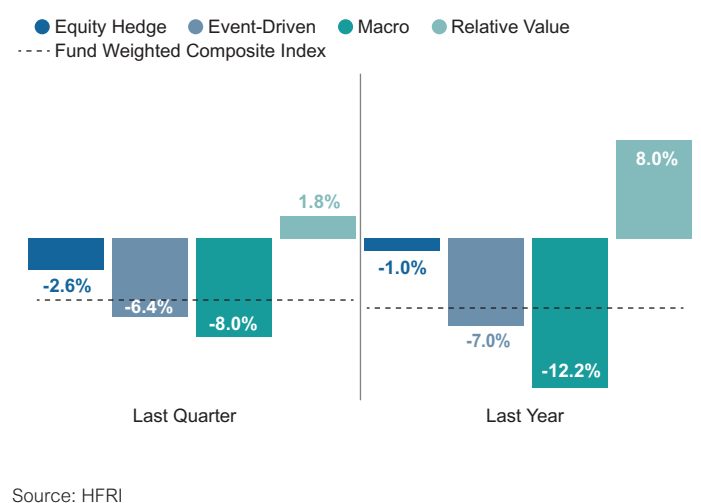
managers continued to be a drag on performance. The median Callan Core Diversified FOF declined 2.4%, as macro strategies were able to offset some of the negative performance from equity hedge and event-driven managers.

Measuring the quarter's performance of alternative risk premia, the Bloomberg GSAM Risk Premia Index increased 4.4% based upon a 6% volatility target. The median manager of the Callan Multi-Asset Class (MAC) Style Groups generated negative returns, gross of fees, consistent with their underlying risk exposures. For example, the median Callan Long Biased MAC manager fell 9.9%, as exposure to equity and fixed income continued to be a drag on performance. The Callan Risk Parity MAC index, which typically targets an equal risk-weighted allocation to the major asset classes with leverage, was down 11.6%. The Callan Risk Premia MAC held up the best during the quarter, up 4.9%.

MAC Style Group Returns (6/30/22)



HFRI Hedge Fund Strategy Returns (6/30/22)



Source: HFRI

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

DC Index Falls in 1Q22, Reversing 4Q21 Gain

DEFINED CONTRIBUTION | Patrick Wisdom

Performance: Index falls to begin year

- The Callan DC Index™ fell 5.3% in 1Q22, a reversal from its 4Q21 gain (5.0%).
- The Age 45 Target Date Fund dropped 5.9%.

Growth Sources: Losses drive decline in balances

- Balances within the DC Index declined by 5.4% after a 4.4% increase the previous quarter.
- Investment returns (-5.3%) primarily drove the decline.

Turnover: Net transfers rise

- Turnover (i.e., net transfer activity levels within DC plans) increased to 0.42% from the previous quarter's 0.19%.
- The Index's historical average (0.57%) remained unchanged and signaled that most participants have not drastically altered their allocations.

Net Cash Flow Analysis: TDFs stay atop leaderboard

- Target date funds (TDFs) received the largest net inflows in the Index, followed closely by stable value.
- Investors transferred assets out of U.S. large-cap equity (-47.4%), U.S. small/mid-cap equity (-16.5%), and global ex-U.S. equity (-3.1%).

Equity Allocation: Exposure falls slightly

- The Index's overall allocation to equity (72.0%) fell from the previous quarter's level (72.8%), driven by both investor outflows and declines in equity markets.

Asset Allocation: U.S. equity falls; target date funds gain

- U.S. large cap (26.9%) and U.S. small/mid cap (8.3%) had the largest percentage decreases in allocation.
- Target date funds (32.6%) and stable value (8.6%) had the largest percentage increases.

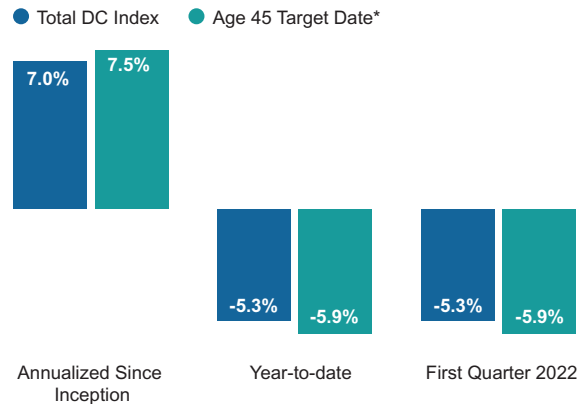
Prevalence of Asset Class: Balanced funds dip again

- The prevalence of a balanced fund (43.2%) decreased again to its lowest level since the inception of the Index in 2006.

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.

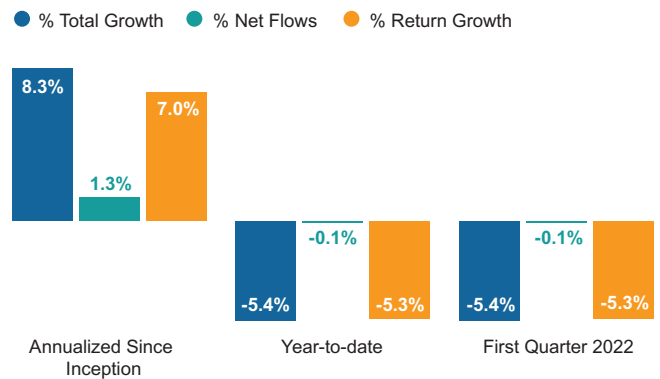
Investment Performance

(3/31/22)



Growth Sources

(3/31/22)



Net Cash Flow Analysis (1Q22)

(Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Target Date Funds	48.4%
Stable Value	42.2%
U.S. Fixed Income	-17.1%
U.S. Large Cap	-47.4%
Total Turnover**	0.42%

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.

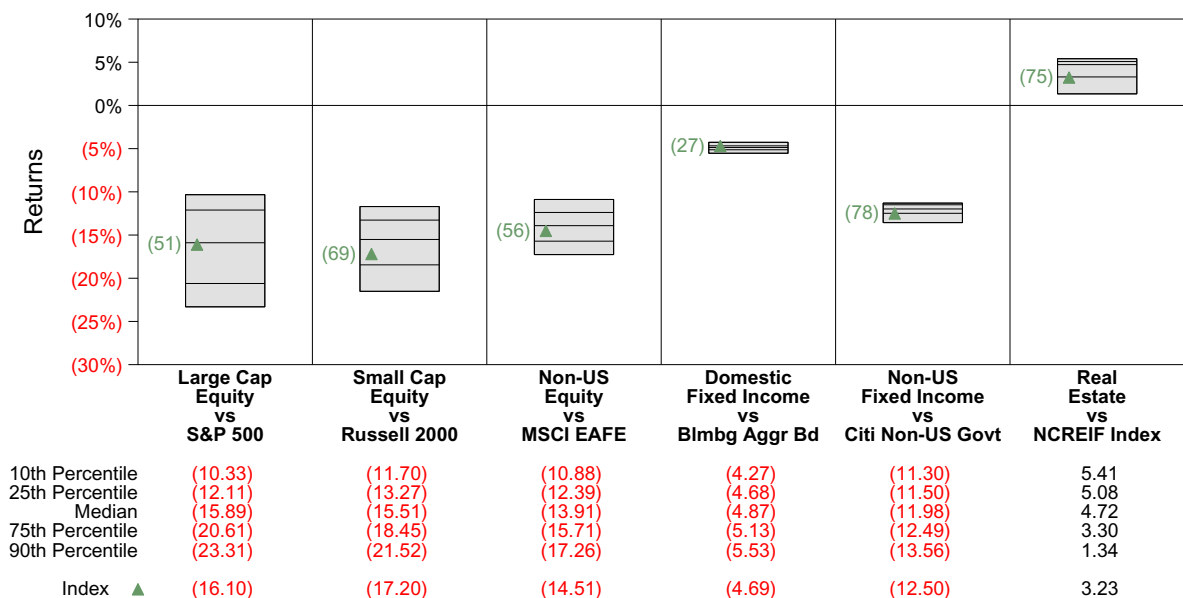
Market Overview

Active Management vs Index Returns

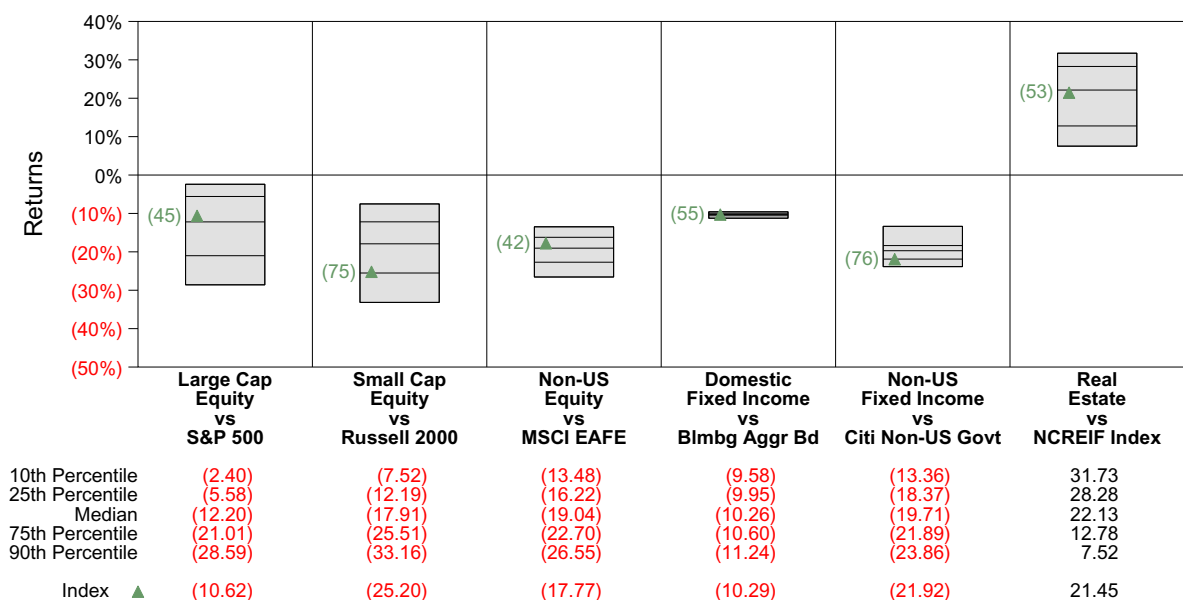
Market Overview

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 June 30, 2022



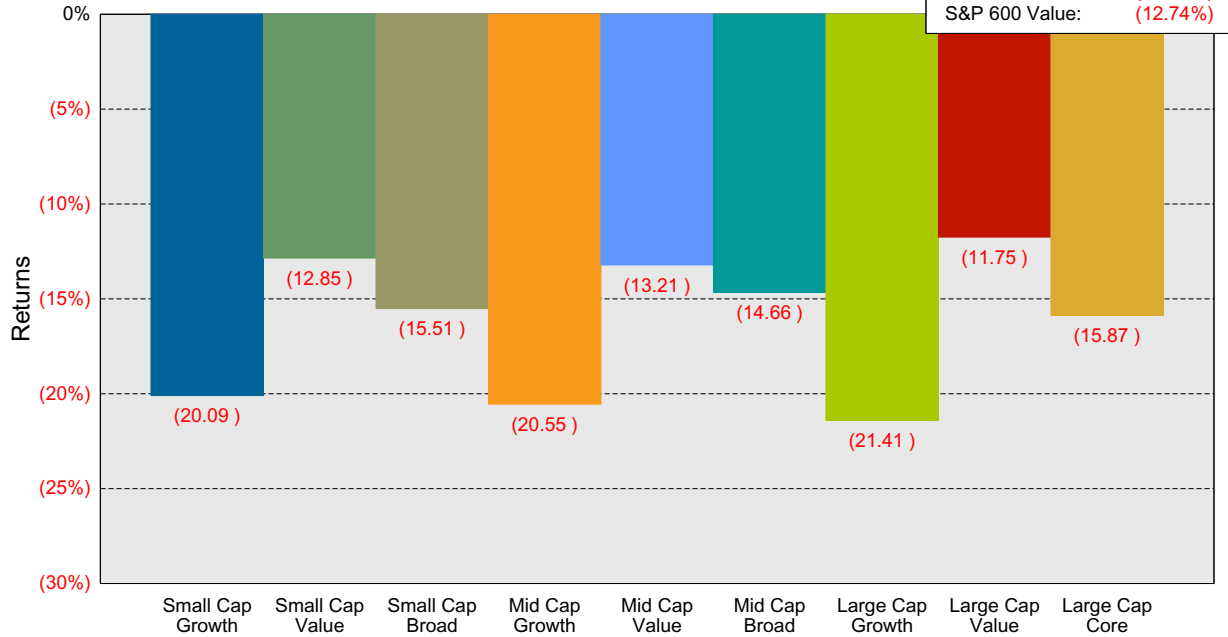
Range of Separate Account Manager Returns by Asset Class One Year Ended June 30, 2022



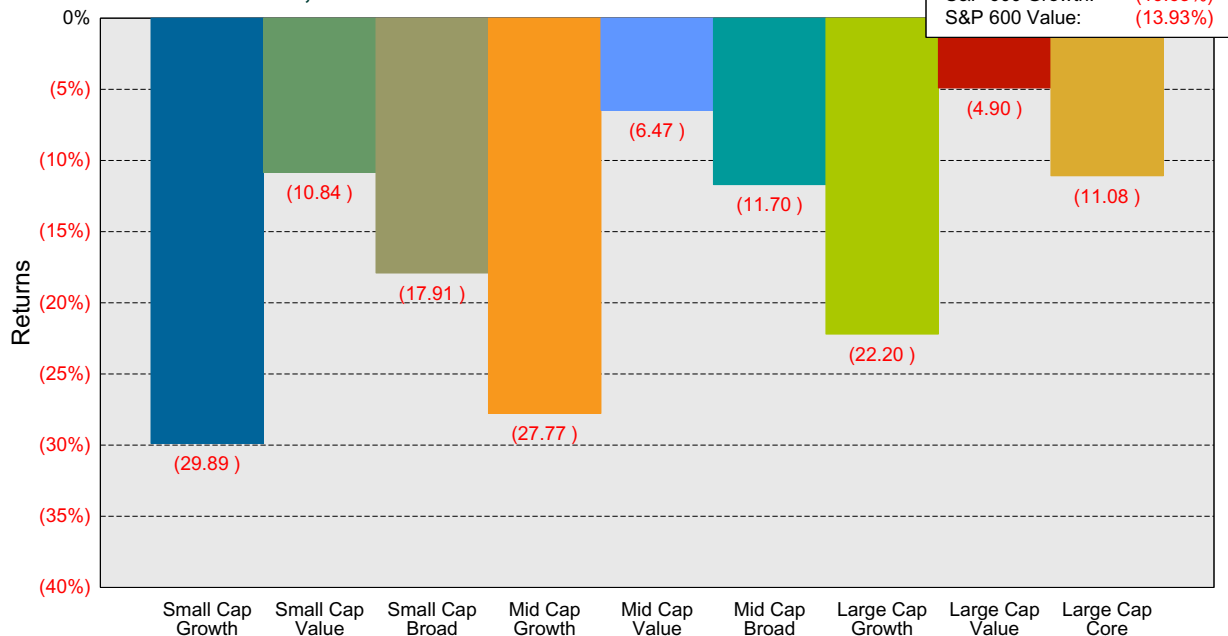
Domestic Equity Active Management Overview

The S&P 500 Index sank 16.1% in 2Q on concerns over rising rates and a slowing economy; the Index is down 20.0% YTD. All sectors posted negative returns, but the worst were Consumer Discretionary (-26%), Communication Services (-21%), and Technology (-20%). Energy, Utilities, and Consumer Staples each lost roughly 5%. Of note, Energy is the only sector to have a positive YTD return (+32%) while most others have negative double-digit results. Value outperformed growth by a substantial margin (Russell 1000 Value: -12.2%; Russell 1000 Growth: -20.9%) and the YTD differential is more than 15 percentage points.

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



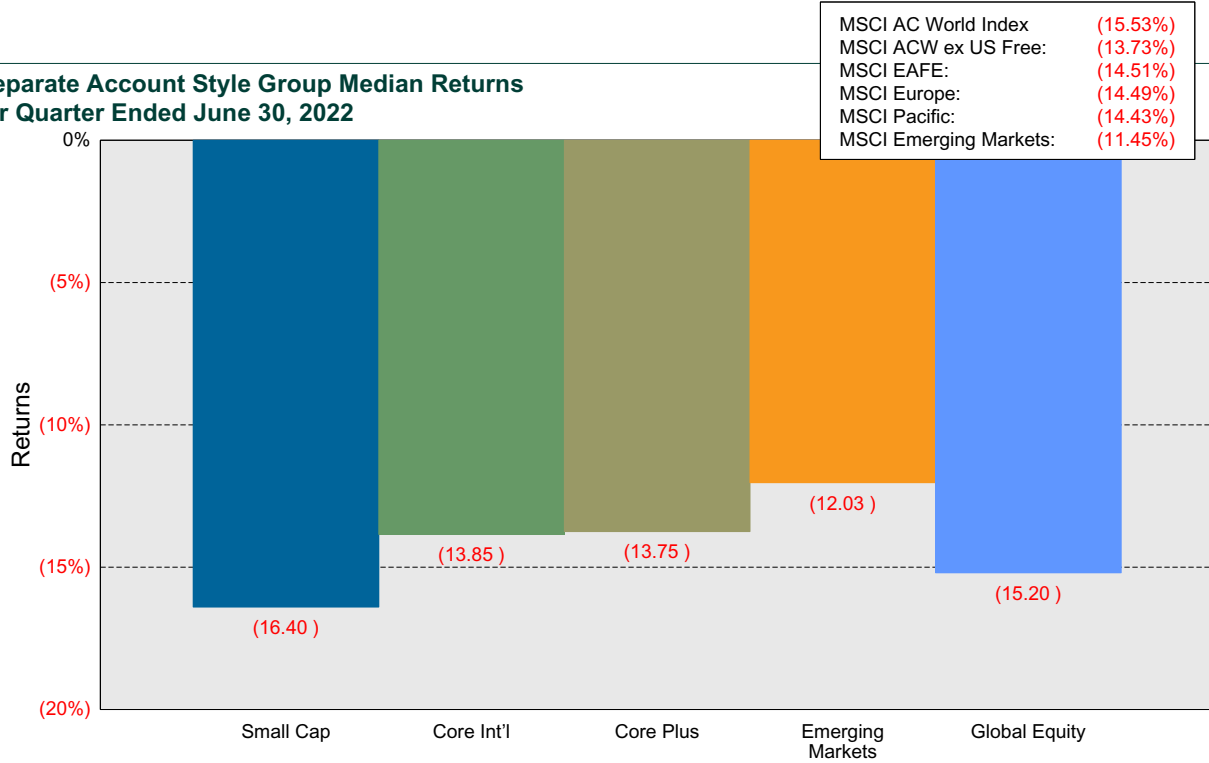
**Separate Account Style Group Median Returns
for One Year Ended June 30, 2022**



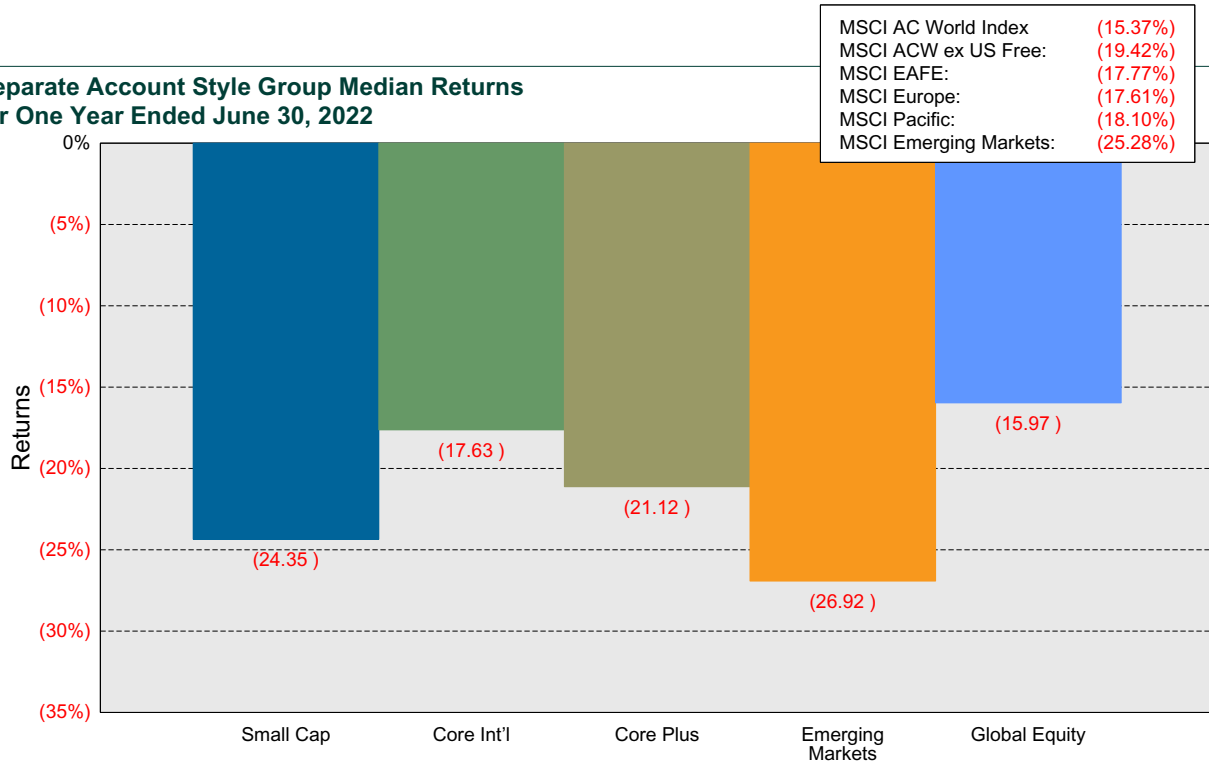
International Equity Active Management Overview

The MSCI ACWI ex USA Index sank 13.7% (Local: -8.3%), bringing its YTD loss to 18.4% (Local: -11.9%). The U.S. dollar continued to strengthen, benefiting from its safe haven status as well as attractive interest rates relative to other developed market countries. The yen lost 11% versus the greenback, the euro 6%, and the British pound 8%. Across developed market countries, losses were broad-based, with nearly all posting double-digit declines. As in the U.S., Value (MSCI ACWI ex USA Value: -11.9%) outperformed Growth (MSCI ACWI ex USA Growth: -15.7%). Technology (MSCI ACWI ex USA Technology: -23%) fared the worst with Energy (MSCI ACWI ex USA Energy: -5%) being the relative outperformer.

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



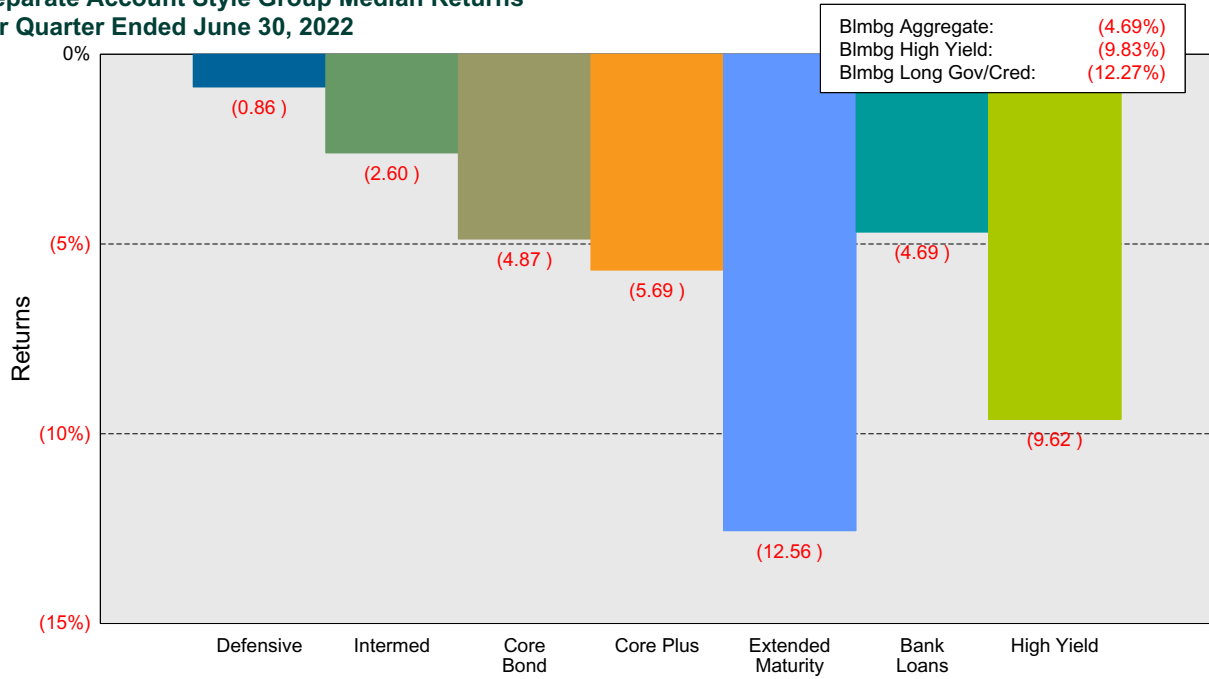
Separate Account Style Group Median Returns for One Year Ended June 30, 2022



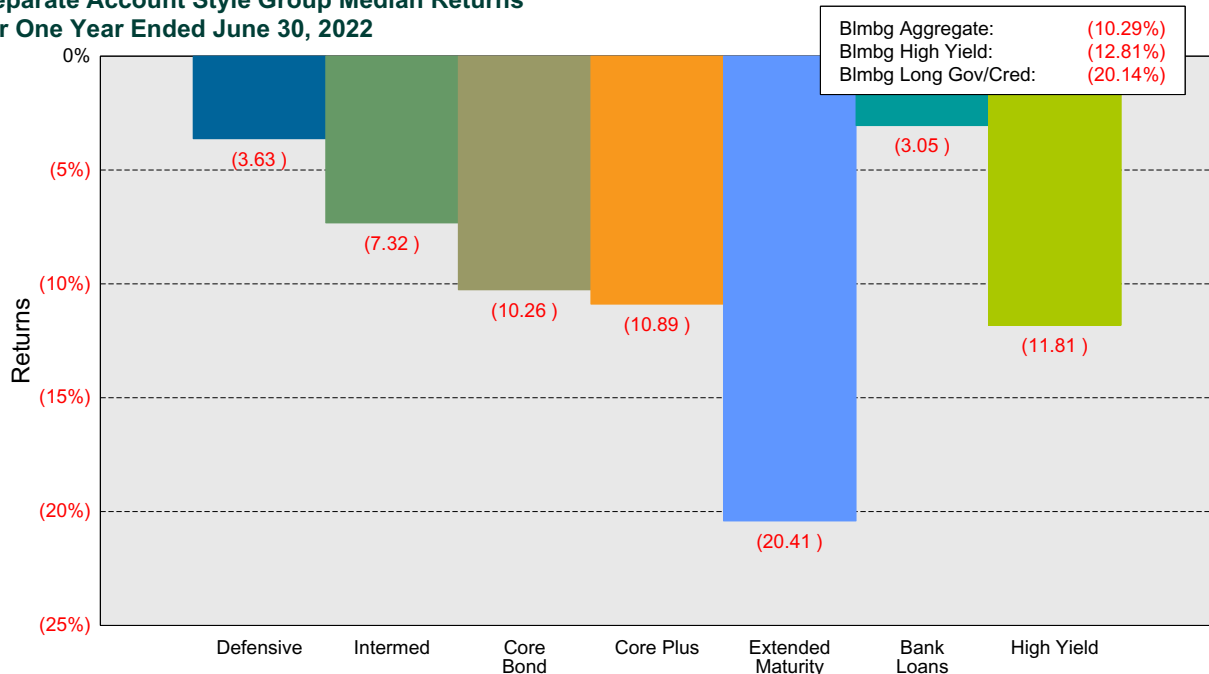
Domestic Fixed Income Active Management Overview

The Bloomberg US Aggregate Bond Index fell 4.7% in 2Q as rates rose sharply and spreads widened. Mortgages and corporates underperformed U.S. Treasuries, and the yield-to-worst of the Aggregate Index climbed to 3.7%. High yield corporates (Bloomberg High Yield: -9.8%) underperformed investment grade, and the Index is down 14.2% YTD. Rates were volatile during the quarter; the 10-year U.S. Treasury hit an intra-quarter high of 3.49% in June, the highest since 2011, before closing the quarter at 2.98%. TIPS (Bloomberg TIPS: -6.1%; -8.9% YTD) sharply underperformed nominal U.S. Treasuries for the quarter as longer-term inflation expectations declined.

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



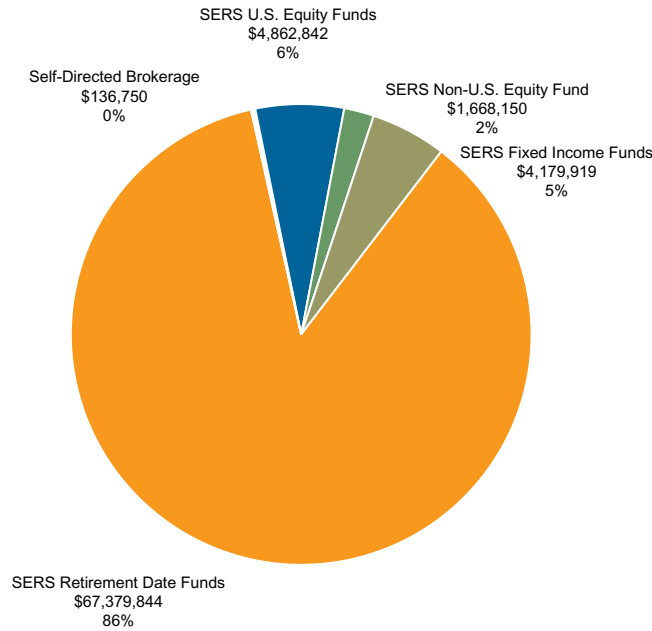
Separate Account Style Group Median Returns for One Year Ended June 30, 2022



Changes in Investment Fund Balances Period Ended June 30, 2022

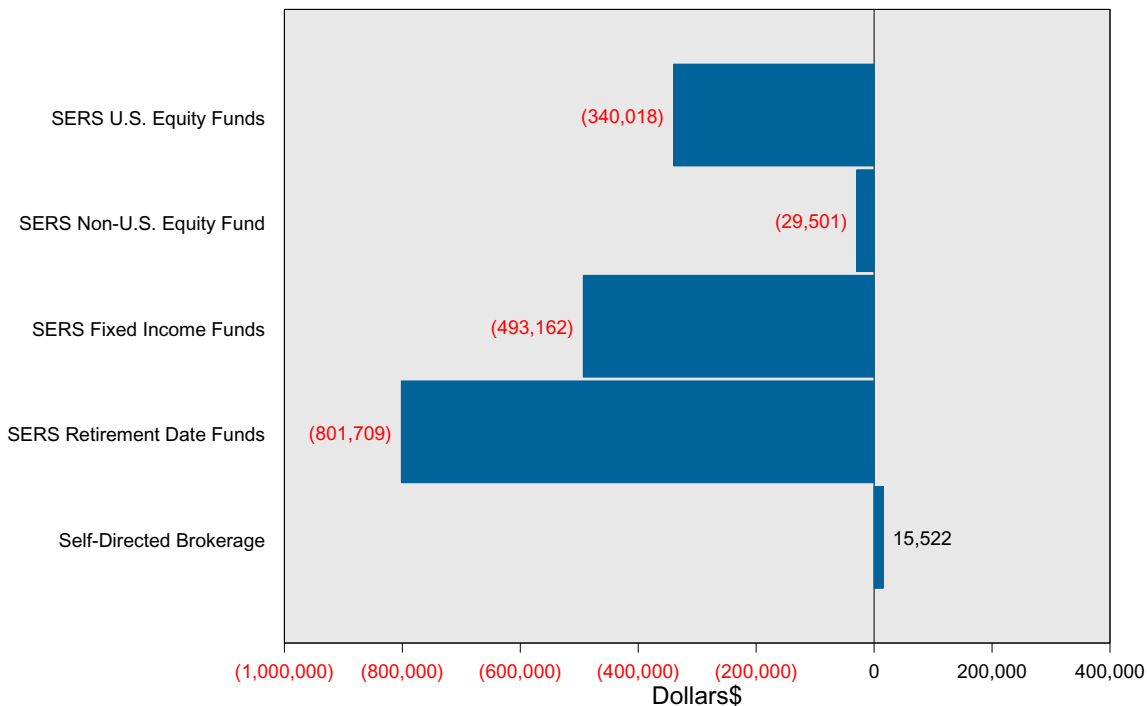
Allocation Across Investment Options

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



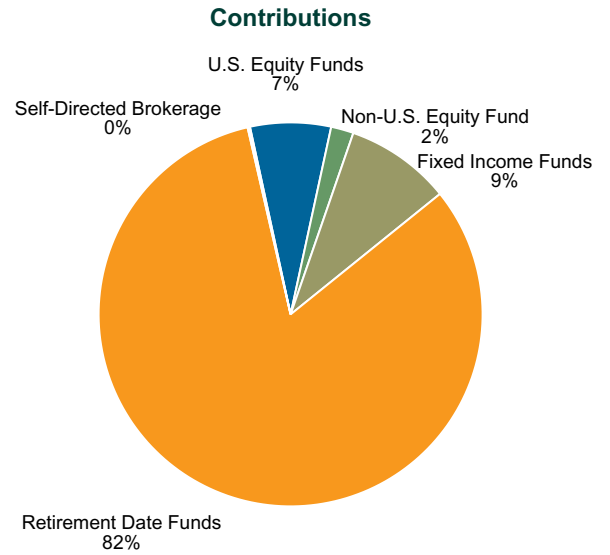
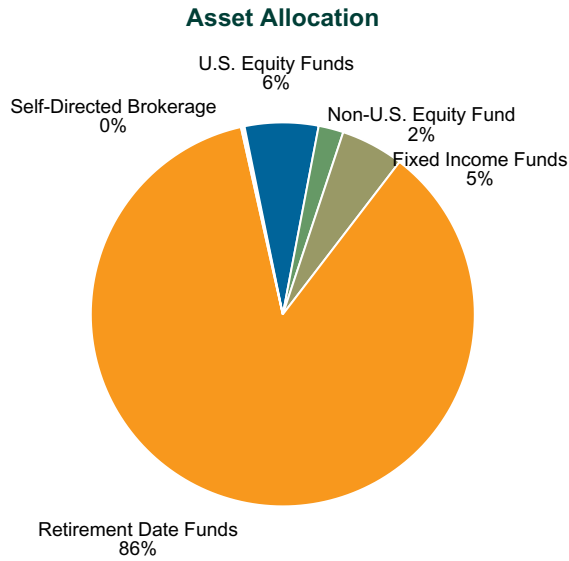
Changes in Fund Values

The chart below shows the net change in fund values across the various investment options for the quarter ended June 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.

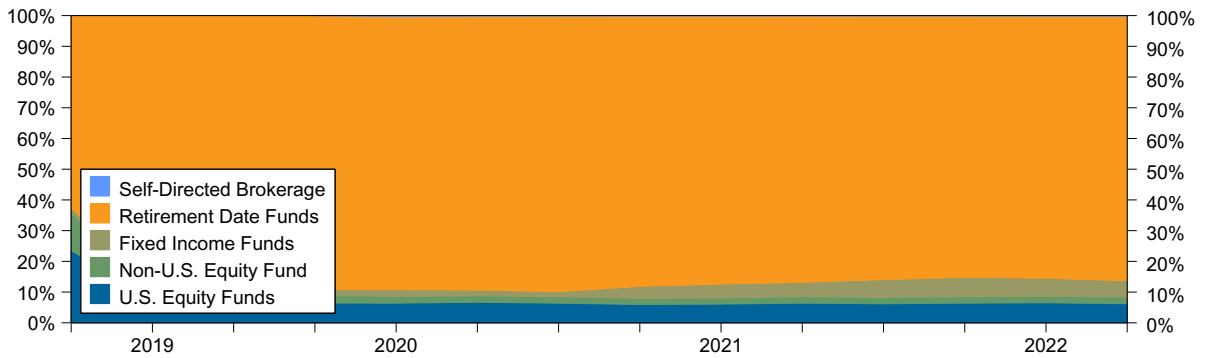


Asset Allocation

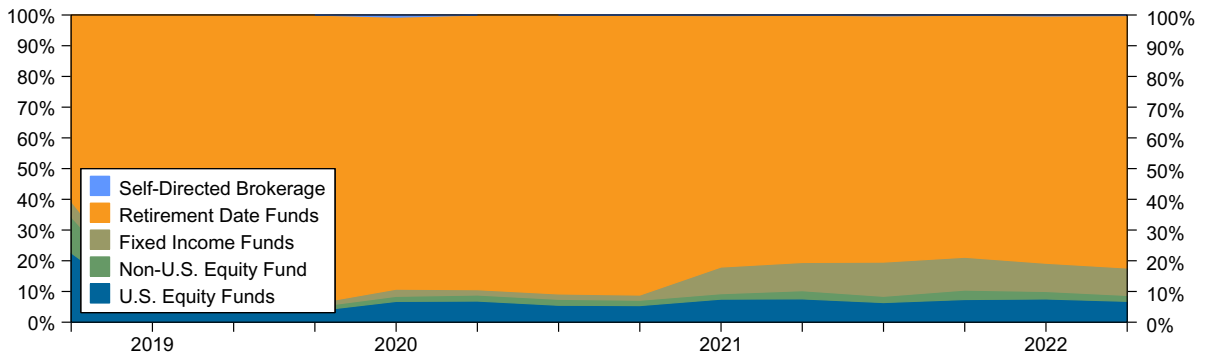
The charts below illustrate the historical asset allocation of the fund as well as the historical allocations of contributions to the fund. The pie charts on the top show the most recent allocations of both assets and contributions which include exchanges and transfers within the plan. The middle chart 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 June 30, 2022, with the distribution as of March 31, 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

	June 30, 2022			Inv. Return	March 31, 2022	
	Market Value	Weight	Net New Inv.		Market Value	Weight
SERS Retirement Date Funds	\$67,379,844	86.13%	\$9,250,418	\$(10,052,126)	\$68,181,553	85.36%
SERS Post Retirement Fund	1,154,857	1.48%	112,854	(108,868)	1,150,871	1.44%
SERS 2025 Retirement Fund	3,314,161	4.24%	373,623	(341,245)	3,281,783	4.11%
SERS 2030 Retirement Fund	6,605,531	8.44%	1,112,086	(750,494)	6,243,938	7.82%
SERS 2035 Retirement Fund	8,140,001	10.41%	1,012,472	(1,075,619)	8,203,148	10.27%
SERS 2040 Retirement Fund	7,812,917	9.99%	1,181,572	(1,112,054)	7,743,399	9.69%
SERS 2045 Retirement Fund	7,816,450	9.99%	858,916	(1,250,230)	8,207,764	10.28%
SERS 2050 Retirement Fund	9,113,409	11.65%	1,225,649	(1,511,033)	9,398,793	11.77%
SERS 2055 Retirement Fund	9,129,583	11.67%	1,344,046	(1,523,027)	9,308,564	11.65%
SERS 2060 Retirement Fund	8,545,383	10.92%	1,086,048	(1,436,214)	8,895,549	11.14%
SERS 2065 Retirement Fund	5,747,553	7.35%	943,152	(943,343)	5,747,744	7.20%
SERS U.S. Equity	\$4,862,842	6.22%	\$577,715	\$(917,734)	\$5,202,860	6.51%
SERS U.S. Large Company Idx Fund	2,973,578	3.80%	279,442	(539,315)	3,233,450	4.05%
SERS U.S. All Company Idx Fund	1,262,664	1.61%	209,344	(232,066)	1,285,386	1.61%
SERS U.S. SMID Company Idx Fund	626,600	0.80%	88,928	(146,352)	684,024	0.86%
SERS Non-U.S. Equity	\$1,668,150	2.13%	\$208,289	\$(237,791)	\$1,697,651	2.13%
SERS Global Non-U.S. Index Fund	1,668,150	2.13%	208,289	(237,791)	1,697,651	2.13%
SERS Fixed Income	\$4,179,919	5.34%	\$(445,369)	\$(47,792)	\$4,673,080	5.85%
SERS Short Term Investment Fund	2,925,767	3.74%	(665,727)	5,557	3,585,937	4.49%
SERS U.S. Short Term Bond Idx Fund	31,229	0.04%	4,325	(183)	27,086	0.03%
SERS U.S. TIPS Index Fund	244,409	0.31%	17,371	(15,501)	242,539	0.30%
SERS U.S. Bond Index Fund	978,514	1.25%	198,661	(37,665)	817,518	1.02%
SERS Self-Directed Brokerage	\$136,750	0.17%	\$23,899	\$(8,376)	\$121,227	0.15%
Total Fund	\$78,227,504	100.0%	\$9,614,951	\$(11,263,819)	\$79,876,372	100.0%

Investment Fund Returns

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

Returns for Periods Ended June 30, 2022

	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years
Net Performance					
Target Date Funds					
SERS Post Retirement Fund	(9.03%)	(13.69%)	(11.68%)	2.78%	3.93%
BlackRock Post Retirement Index	(9.14%)	(13.75%)	(11.68%)	2.72%	3.90%
Callan Tgt Date Ret Inc	(8.32%)	(12.87%)	(10.82%)	2.17%	3.20%
SERS 2025 Retirement Fund	(9.88%)	(14.50%)	(12.10%)	3.48%	4.75%
BlackRock 2025 Index	(10.04%)	(14.58%)	(12.11%)	3.42%	4.69%
Callan Target Date 2025	(10.33%)	(15.31%)	(12.67%)	3.62%	4.91%
SERS 2030 Retirement Fund	(11.21%)	(15.80%)	(12.88%)	4.21%	5.41%
BlackRock 2030 Index	(11.44%)	(15.90%)	(12.92%)	4.14%	5.33%
Callan Target Date 2030	(11.50%)	(16.64%)	(13.74%)	4.16%	5.37%
SERS 2035 Retirement Fund	(12.43%)	(17.02%)	(13.64%)	4.90%	6.03%
BlackRock 2035 Index	(12.73%)	(17.15%)	(13.71%)	4.82%	5.93%
Callan Target Date 2035	(12.61%)	(17.95%)	(14.44%)	4.81%	5.87%
SERS 2040 Retirement Fund	(13.58%)	(18.20%)	(14.41%)	5.47%	6.54%
BlackRock 2040 Index	(13.95%)	(18.34%)	(14.51%)	5.36%	6.43%
Callan Target Date 2040	(13.55%)	(18.71%)	(15.13%)	5.26%	6.23%
SERS 2045 Retirement Fund	(14.55%)	(19.20%)	(15.11%)	5.93%	6.92%
BlackRock 2045 Index	(14.97%)	(19.36%)	(15.25%)	5.79%	6.77%
Callan Target Date 2045	(14.20%)	(19.29%)	(15.41%)	5.62%	6.48%
SERS 2050 Retirement Fund	(15.11%)	(19.80%)	(15.56%)	6.13%	7.07%
BlackRock 2050 Index	(15.56%)	(19.97%)	(15.72%)	6.00%	6.93%
Callan Target Date 2050	(14.48%)	(19.57%)	(15.68%)	5.63%	6.48%
SERS 2055 Retirement Fund	(15.25%)	(19.95%)	(15.68%)	6.16%	7.09%
BlackRock 2055 Index	(15.71%)	(20.14%)	(15.86%)	6.03%	6.95%
Callan Target Date 2055	(14.62%)	(19.79%)	(15.83%)	5.63%	6.58%
SERS 2060 Retirement Fund	(15.26%)	(19.96%)	(15.69%)	6.14%	7.07%
BlackRock 2060 Index	(15.71%)	(20.15%)	(15.86%)	6.03%	6.95%
Callan Target Date 2060	(14.72%)	(19.87%)	(15.90%)	5.67%	6.63%
SERS 2065 Retirement Fund	(15.26%)	(19.97%)	(15.71%)	-	-
BlackRock 2065 Index	(15.72%)	(20.16%)	(15.88%)	-	-
Callan Target Date 2065	(14.99%)	(20.40%)	(17.37%)	5.70%	6.52%

Investment Fund Returns

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

Returns for Periods Ended June 30, 2022

	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
Net Performance				
Target Date Funds				
SERS Post Retirement Fund	4.04%	4.57%	4.51%	-
BlackRock Post Retirement Index	4.01%	4.53%	4.48%	5.29%
Callan Tgt Date Ret Inc	3.48%	3.96%	3.76%	3.79%
SERS 2025 Retirement Fund	4.91%	6.00%	4.51%	-
BlackRock 2025 Index	4.85%	5.94%	4.45%	5.97%
Callan Target Date 2025	4.98%	6.55%	4.63%	-
SERS 2030 Retirement Fund	5.52%	6.70%	4.75%	-
BlackRock 2030 Index	5.43%	6.61%	4.69%	6.28%
Callan Target Date 2030	5.63%	7.30%	4.83%	6.00%
SERS 2035 Retirement Fund	6.11%	7.35%	4.99%	-
BlackRock 2035 Index	5.99%	7.24%	4.90%	6.56%
Callan Target Date 2035	6.07%	7.89%	5.18%	-
SERS 2040 Retirement Fund	6.58%	7.91%	5.17%	-
BlackRock 2040 Index	6.45%	7.78%	5.05%	6.78%
Callan Target Date 2040	6.39%	8.27%	5.43%	6.23%
SERS 2045 Retirement Fund	6.92%	8.35%	5.27%	-
BlackRock 2045 Index	6.76%	8.20%	5.15%	6.98%
Callan Target Date 2045	6.61%	8.46%	5.32%	-
SERS 2050 Retirement Fund	7.05%	8.61%	-	-
BlackRock 2050 Index	6.89%	8.46%	5.32%	7.37%
Callan Target Date 2050	6.62%	8.49%	5.56%	-
SERS 2055 Retirement Fund	7.06%	8.76%	-	-
BlackRock 2055 Index	6.91%	8.62%	-	-
Callan Target Date 2055	6.69%	8.63%	-	-

*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 June 30, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended June 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	(16.11%)	(19.96%)	(10.62%)	10.61%	11.32%
S&P 500 Index	(16.10%)	(19.96%)	(10.62%)	10.60%	11.31%
Callan Lg Cap Broad MF	(16.14%)	(20.32%)	(12.66%)	8.69%	10.17%
SERS U.S. All Company Index Fund	(16.72%)	(21.12%)	(13.89%)	9.71%	10.54%
Russell 3000 Index	(16.70%)	(21.10%)	(13.87%)	9.77%	10.60%
Callan Multi Cap Brd MF	(15.56%)	(20.61%)	(14.21%)	7.70%	8.56%
SERS U.S. SMID Company Idx Fund	(20.54%)	(27.84%)	(29.54%)	4.86%	6.60%
Dow Jones US Completion	(20.66%)	(28.09%)	(29.99%)	4.57%	6.34%
Callan SMID Broad MFs	(17.10%)	(24.47%)	(21.97%)	5.77%	6.91%
International Equity					
SERS Global Non-U.S. Index Fund	(13.22%)	(18.15%)	(19.18%)	1.61%	2.78%
MSCI ACWI ex US	(13.73%)	(18.42%)	(19.42%)	1.35%	2.50%
Callan Non US Equity MFs	(13.46%)	(19.79%)	(19.63%)	1.45%	2.31%
Domestic Fixed Income					
SERS Short Term Investment Fund	0.16%	0.18%	0.20%	0.66%	1.18%
3-month Treasury Bill	0.10%	0.14%	0.17%	0.63%	1.11%
Callan Cash Database(1)	0.13%	0.03%	0.05%	0.72%	1.27%
SERS U.S. Short Term Bond Idx Fund	(0.63%)	(3.10%)	(3.58%)	0.30%	-
Blmbg Gov/Cred 1-3 Yr	(0.63%)	(3.11%)	(3.56%)	0.31%	1.07%
Callan Short US Govt MFs	(0.93%)	(3.89%)	(4.56%)	(0.11%)	0.67%
SERS U.S. TIPS Index Fund	(6.09%)	(8.88%)	(5.15%)	3.03%	-
Blmbg US TIPS	(6.08%)	(8.92%)	(5.14%)	3.04%	3.21%
Callan TIPS MFs	(6.14%)	(8.72%)	(5.38%)	3.04%	3.06%
SERS U.S. Bond Index Fund	(4.74%)	(10.30%)	(10.31%)	(0.95%)	0.87%
Blmbg Aggregate	(4.69%)	(10.35%)	(10.29%)	(0.93%)	0.88%
Callan Core Bond MFs	(5.07%)	(10.68%)	(10.70%)	(0.60%)	1.12%

(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 June 30, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended June 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	11.16%	12.97%	8.58%	9.12%
S&P 500 Index	11.14%	12.96%	8.54%	9.08%
Callan Lg Cap Broad MF	9.90%	12.16%	8.16%	8.78%
SERS U.S. All Company Index Fund	10.39%	12.55%	-	-
Russell 3000 Index	10.43%	12.57%	8.36%	9.14%
Callan Multi Cap Brd MF	8.20%	11.10%	7.02%	8.45%
SERS U.S. SMID Company Idx Fund	6.78%	10.37%	7.48%	9.58%
Dow Jones US Completion	6.53%	10.12%	7.23%	9.39%
Callan SMID Broad MFs	7.05%	10.44%	7.49%	8.91%
International Equity				
SERS Global Non-U.S. Index Fund	3.20%	5.04%	-	-
MSCI ACWI ex US	2.92%	4.83%	1.58%	5.78%
Callan Non US Equity MFs	2.71%	5.47%	2.15%	5.58%
Domestic Fixed Income				
SERS Short Term Investment Fund	1.01%	0.76%	0.94%	-
3-month Treasury Bill	0.89%	0.64%	0.75%	1.25%
Callan Cash Database(1)	1.13%	0.92%	1.15%	1.58%
Blmbg Gov/Cred 1-3 Yr	1.04%	1.01%	1.89%	2.21%
Callan Short US Govt MFs	0.62%	0.63%	1.79%	2.05%
Blmbg US TIPS	2.82%	1.73%	3.92%	4.44%
Callan TIPS MFs	2.68%	1.59%	3.62%	4.10%
SERS U.S. Bond Index Fund	1.39%	1.51%	3.22%	3.54%
Blmbg Aggregate	1.42%	1.54%	3.26%	3.57%
Callan Core Bond MFs	1.62%	1.78%	3.58%	3.81%

(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- 6/2022	2021	2020	2019	2018
Net Performance					
Target Date Funds					
SERS Post Retirement Fund	(13.69%)	6.95%	11.97%	15.65%	(3.47%)
BlackRock Post Retirement Index	(13.75%)	7.02%	11.80%	15.63%	(3.48%)
Callan Tgt Date Ret Inc	(12.87%)	6.33%	10.10%	13.21%	(3.04%)
SERS 2025 Retirement Fund	(14.50%)	8.99%	12.19%	18.60%	(4.86%)
BlackRock 2025 Index	(14.58%)	9.07%	12.01%	18.56%	(4.90%)
Callan Target Date 2025	(15.31%)	10.05%	12.58%	18.53%	(5.19%)
SERS 2030 Retirement Fund	(15.80%)	11.43%	12.88%	20.80%	(5.71%)
BlackRock 2030 Index	(15.90%)	11.50%	12.72%	20.70%	(5.76%)
Callan Target Date 2030	(16.64%)	11.63%	13.23%	20.43%	(6.12%)
SERS 2035 Retirement Fund	(17.02%)	13.80%	13.58%	22.84%	(6.50%)
BlackRock 2035 Index	(17.15%)	13.85%	13.44%	22.72%	(6.58%)
Callan Target Date 2035	(17.95%)	13.92%	14.28%	22.17%	(7.03%)
SERS 2040 Retirement Fund	(18.20%)	15.96%	14.14%	24.71%	(7.22%)
BlackRock 2040 Index	(18.34%)	15.97%	13.98%	24.62%	(7.33%)
Callan Target Date 2040	(18.71%)	15.84%	14.91%	23.62%	(7.89%)
SERS 2045 Retirement Fund	(19.20%)	17.72%	14.83%	26.05%	(7.85%)
BlackRock 2045 Index	(19.36%)	17.70%	14.65%	25.90%	(7.99%)
Callan Target Date 2045	(19.29%)	16.83%	15.52%	24.60%	(8.21%)
SERS 2050 Retirement Fund	(19.80%)	18.67%	15.20%	26.60%	(8.11%)
BlackRock 2050 Index	(19.97%)	18.62%	15.07%	26.48%	(8.26%)
Callan Target Date 2050	(19.57%)	17.17%	15.71%	24.89%	(8.44%)
SERS 2055 Retirement Fund	(19.95%)	18.83%	15.32%	26.67%	(8.13%)
BlackRock 2055 Index	(20.14%)	18.81%	15.18%	26.58%	(8.28%)
Callan Target Date 2055	(19.79%)	17.27%	15.83%	24.97%	(8.44%)
SERS 2060 Retirement Fund	(19.96%)	18.82%	15.31%	26.66%	(8.14%)
BlackRock 2060 Index	(20.15%)	18.81%	15.19%	26.58%	(8.28%)
Callan Target Date 2060	(19.87%)	17.41%	15.90%	25.08%	(8.35%)
SERS 2065 Retirement Fund	(19.97%)	18.77%	15.15%	-	-
BlackRock 2065 Index	(20.16%)	18.80%	15.19%	-	-
Callan Target Date 2065	(20.40%)	17.01%	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- 6/2022	2021	2020	2019	2018
Net Performance					
Domestic Equity					
SERS U.S. Large Company Index Fund	(19.96%)	28.70%	18.43%	31.51%	(4.39%)
S&P 500 Index	(19.96%)	28.71%	18.40%	31.49%	(4.38%)
Callan Lg Cap Broad MF	(20.32%)	25.50%	18.47%	30.14%	(4.54%)
SERS U.S. All Company Index Fund	(21.12%)	25.61%	21.20%	30.52%	(5.29%)
Russell 3000 Index	(21.10%)	25.66%	20.89%	31.02%	(5.24%)
Callan Multi Cap Brd MF	(20.61%)	24.17%	17.19%	29.12%	(6.82%)
SERS U.S. SMID Company Idx Fund	(27.84%)	12.89%	32.03%	28.20%	(9.32%)
Dow Jones US Completion	(28.09%)	12.36%	32.17%	27.94%	(9.57%)
Callan SMID Broad MFs	(24.47%)	19.56%	24.00%	29.40%	(8.69%)
International Equity					
SERS Global Non-U.S. Index Fund	(18.15%)	7.97%	11.15%	21.77%	(13.86%)
MSCI ACWI ex US	(18.42%)	7.82%	10.65%	21.51%	(14.20%)
Callan Non US Equity MFs	(19.79%)	9.47%	11.12%	22.83%	(15.04%)
Domestic Fixed Income					
SERS Short Term Investment Fund	0.18%	0.07%	0.67%	2.31%	2.09%
3-month Treasury Bill	0.14%	0.05%	0.67%	2.28%	1.87%
Callan Cash Database(1)	0.03%	0.13%	1.05%	2.65%	2.00%
SERS U.S. Short Term Bond Idx Fund	(3.10%)	(0.52%)	3.36%	4.02%	1.58%
Blmbg Gov/Cred 1-3 Yr	(3.11%)	(0.47%)	3.33%	4.03%	1.60%
Callan Short US Govt MFs	(3.89%)	(1.08%)	3.57%	3.52%	1.15%
SERS U.S. TIPS Index Fund	(8.88%)	5.87%	11.00%	8.40%	-
Blmbg US TIPS	(8.92%)	5.96%	10.99%	8.43%	(1.26%)
Callan TIPS MFs	(8.72%)	5.55%	10.29%	8.26%	(1.53%)
SERS U.S. Bond Index Fund	(10.30%)	(1.65%)	7.56%	8.69%	0.02%
Blmbg Aggregate	(10.35%)	(1.54%)	7.51%	8.72%	0.01%
Callan Core Bond MFs	(10.68%)	(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 June 30, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended June 30, 2022

	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years
Gross Performance					
Target Date Funds					
SERS Post Retirement Fund	(9.01%)	(13.66%)	(11.62%)	2.85%	4.00%
BlackRock Post Retirement Index	(9.14%)	(13.75%)	(11.68%)	2.72%	3.90%
Callan Tgt Date Ret Inc	(8.32%)	(12.87%)	(10.82%)	2.17%	3.20%
SERS 2025 Retirement Fund	(9.87%)	(14.47%)	(12.04%)	3.55%	4.82%
BlackRock 2025 Index	(10.04%)	(14.58%)	(12.11%)	3.42%	4.69%
Callan Target Date 2025	(10.33%)	(15.31%)	(12.67%)	3.62%	4.91%
SERS 2030 Retirement Fund	(11.20%)	(15.77%)	(12.82%)	4.28%	5.48%
BlackRock 2030 Index	(11.44%)	(15.90%)	(12.92%)	4.14%	5.33%
Callan Target Date 2030	(11.50%)	(16.64%)	(13.74%)	4.16%	5.37%
SERS 2035 Retirement Fund	(12.42%)	(16.99%)	(13.58%)	4.97%	6.10%
BlackRock 2035 Index	(12.73%)	(17.15%)	(13.71%)	4.82%	5.93%
Callan Target Date 2035	(12.61%)	(17.95%)	(14.44%)	4.81%	5.87%
SERS 2040 Retirement Fund	(13.56%)	(18.17%)	(14.35%)	5.54%	6.62%
BlackRock 2040 Index	(13.95%)	(18.34%)	(14.51%)	5.36%	6.43%
Callan Target Date 2040	(13.55%)	(18.71%)	(15.13%)	5.26%	6.23%
SERS 2045 Retirement Fund	(14.54%)	(19.17%)	(15.05%)	6.00%	6.99%
BlackRock 2045 Index	(14.97%)	(19.36%)	(15.25%)	5.79%	6.77%
Callan Target Date 2045	(14.20%)	(19.29%)	(15.41%)	5.62%	6.48%
SERS 2050 Retirement Fund	(15.10%)	(19.77%)	(15.50%)	6.20%	7.15%
BlackRock 2050 Index	(15.56%)	(19.97%)	(15.72%)	6.00%	6.93%
Callan Target Date 2050	(14.48%)	(19.57%)	(15.68%)	5.63%	6.48%
SERS 2055 Retirement Fund	(15.24%)	(19.92%)	(15.62%)	6.23%	7.16%
BlackRock 2055 Index	(15.71%)	(20.14%)	(15.86%)	6.03%	6.95%
Callan Target Date 2055	(14.62%)	(19.79%)	(15.83%)	5.63%	6.58%
SERS 2060 Retirement Fund	(15.24%)	(19.93%)	(15.63%)	6.21%	7.14%
BlackRock 2060 Index	(15.71%)	(20.15%)	(15.86%)	6.03%	6.95%
Callan Target Date 2060	(14.72%)	(19.87%)	(15.90%)	5.67%	6.63%
SERS 2065 Retirement Fund	(15.24%)	(19.94%)	(15.65%)	-	-
BlackRock 2065 Index	(15.72%)	(20.16%)	(15.88%)	-	-
Callan Target Date 2065	(14.99%)	(20.40%)	(17.37%)	5.70%	6.52%

Investment Fund Returns

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

Returns for Periods Ended June 30, 2022

	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
Gross Performance				
Target Date Funds				
SERS Post Retirement Fund	4.11%	4.64%	4.58%	-
BlackRock Post Retirement Index	4.01%	4.53%	4.48%	5.29%
Callan Tgt Date Ret Inc	3.48%	3.96%	3.76%	3.79%
SERS 2025 Retirement Fund	4.98%	6.07%	4.58%	-
BlackRock 2025 Index	4.85%	5.94%	4.45%	5.97%
Callan Target Date 2025	4.98%	6.55%	4.63%	-
SERS 2030 Retirement Fund	5.59%	6.77%	4.83%	-
BlackRock 2030 Index	5.43%	6.61%	4.69%	6.28%
Callan Target Date 2030	5.63%	7.30%	4.83%	6.00%
SERS 2035 Retirement Fund	6.18%	7.42%	5.06%	-
BlackRock 2035 Index	5.99%	7.24%	4.90%	6.56%
Callan Target Date 2035	6.07%	7.89%	5.18%	-
SERS 2040 Retirement Fund	6.65%	7.98%	5.23%	-
BlackRock 2040 Index	6.45%	7.78%	5.05%	6.78%
Callan Target Date 2040	6.39%	8.27%	5.43%	6.23%
SERS 2045 Retirement Fund	6.99%	8.42%	5.34%	-
BlackRock 2045 Index	6.76%	8.20%	5.15%	6.98%
Callan Target Date 2045	6.61%	8.46%	5.32%	-
SERS 2050 Retirement Fund	7.13%	8.68%	-	-
BlackRock 2050 Index	6.89%	8.46%	5.32%	7.37%
Callan Target Date 2050	6.62%	8.49%	5.56%	-
SERS 2055 Retirement Fund	7.13%	8.83%	-	-
BlackRock 2055 Index	6.91%	8.62%	-	-
Callan Target Date 2055	6.69%	8.63%	-	-

*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 June 30, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended June 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	(16.10%)	(19.96%)	(10.62%)	10.62%	11.32%
S&P 500 Index	(16.10%)	(19.96%)	(10.62%)	10.60%	11.31%
Callan Lg Cap Broad MF	(16.14%)	(20.32%)	(12.66%)	8.69%	10.17%
SERS U.S. All Company Index Fund	(16.72%)	(21.12%)	(13.88%)	9.71%	10.54%
Russell 3000 Index	(16.70%)	(21.10%)	(13.87%)	9.77%	10.60%
Callan Multi Cap Brd MF	(15.56%)	(20.61%)	(14.21%)	7.70%	8.56%
SERS U.S. SMID Company Idx Fund	(20.54%)	(27.84%)	(29.53%)	4.86%	6.60%
Dow Jones US Completion	(20.66%)	(28.09%)	(29.99%)	4.57%	6.34%
Callan SMID Broad MFs	(17.10%)	(24.47%)	(21.97%)	5.77%	6.91%
International Equity					
SERS Global Non-U.S. Index Fund	(13.21%)	(18.15%)	(19.17%)	1.63%	2.79%
MSCI ACWI ex US	(13.73%)	(18.42%)	(19.42%)	1.35%	2.50%
Callan Non US Equity MFs	(13.46%)	(19.79%)	(19.63%)	1.45%	2.31%
Domestic Fixed Income					
SERS Short Term Investment Fund	0.16%	0.18%	0.20%	0.66%	1.18%
3-month Treasury Bill	0.10%	0.14%	0.17%	0.63%	1.11%
Callan Cash Database(1)	0.13%	0.03%	0.05%	0.72%	1.27%
SERS U.S. Short Term Bond Idx Fund	(0.63%)	(3.10%)	(3.57%)	0.31%	-
Blmbg Gov/Cred 1-3 Yr	(0.63%)	(3.11%)	(3.56%)	0.31%	1.07%
Callan Short US Govt MFs	(0.93%)	(3.89%)	(4.56%)	(0.11%)	0.67%
SERS U.S. TIPS Index Fund	(6.09%)	(8.88%)	(5.15%)	3.03%	-
Blmbg US TIPS	(6.08%)	(8.92%)	(5.14%)	3.04%	3.21%
Callan TIPS MFs	(6.14%)	(8.72%)	(5.38%)	3.04%	3.06%
SERS U.S. Bond Index Fund	(4.74%)	(10.30%)	(10.30%)	(0.94%)	0.87%
Blmbg Aggregate	(4.69%)	(10.35%)	(10.29%)	(0.93%)	0.88%
Callan Core Bond MFs	(5.07%)	(10.68%)	(10.70%)	(0.60%)	1.12%

(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 June 30, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended June 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	11.16%	12.98%	8.59%	9.13%
S&P 500 Index	11.14%	12.96%	8.54%	9.08%
Callan Lg Cap Broad MF	9.90%	12.16%	8.16%	8.78%
SERS U.S. All Company Index Fund	10.39%	12.55%	-	-
Russell 3000 Index	10.43%	12.57%	8.36%	9.14%
Callan Multi Cap Brd MF	8.20%	11.10%	7.02%	8.45%
SERS U.S. SMID Company Idx Fund	6.79%	10.37%	7.48%	9.58%
Dow Jones US Completion	6.53%	10.12%	7.23%	9.39%
Callan SMID Broad MFs	7.05%	10.44%	7.49%	8.91%
International Equity				
SERS Global Non-U.S. Index Fund	3.21%	5.06%	-	-
MSCI ACWI ex US	2.92%	4.83%	1.58%	5.78%
Callan Non US Equity MFs	2.71%	5.47%	2.15%	5.58%
Domestic Fixed Income				
SERS Short Term Investment Fund	1.01%	0.76%	0.94%	-
3-month Treasury Bill	0.89%	0.64%	0.75%	1.25%
Callan Cash Database(1)	1.13%	0.92%	1.15%	1.58%
Blmbg Gov/Cred 1-3 Yr	1.04%	1.01%	1.89%	2.21%
Callan Short US Govt MFs	0.62%	0.63%	1.79%	2.05%
Blmbg US TIPS	2.82%	1.73%	3.92%	4.44%
Callan TIPS MFs	2.68%	1.59%	3.62%	4.10%
SERS U.S. Bond Index Fund	1.40%	1.51%	3.23%	3.54%
Blmbg Aggregate	1.42%	1.54%	3.26%	3.57%
Callan Core Bond MFs	1.62%	1.78%	3.58%	3.81%

(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- 6/2022	2021	2020	2019	2018
Gross Performance					
Target Date Funds					
SERS Post Retirement Fund	(13.66%)	7.03%	12.04%	15.72%	(3.41%)
BlackRock Post Retirement Index	(13.75%)	7.02%	11.80%	15.63%	(3.48%)
Callan Tgt Date Ret Inc	(12.87%)	6.33%	10.10%	13.21%	(3.04%)
SERS 2025 Retirement Fund	(14.47%)	9.06%	12.26%	18.67%	(4.80%)
BlackRock 2025 Index	(14.58%)	9.07%	12.01%	18.56%	(4.90%)
Callan Target Date 2025	(15.31%)	10.05%	12.58%	18.53%	(5.19%)
SERS 2030 Retirement Fund	(15.77%)	11.50%	12.96%	20.86%	(5.63%)
BlackRock 2030 Index	(15.90%)	11.50%	12.72%	20.70%	(5.76%)
Callan Target Date 2030	(16.64%)	11.63%	13.23%	20.43%	(6.12%)
SERS 2035 Retirement Fund	(16.99%)	13.88%	13.65%	22.93%	(6.43%)
BlackRock 2035 Index	(17.15%)	13.85%	13.44%	22.72%	(6.58%)
Callan Target Date 2035	(17.95%)	13.92%	14.28%	22.17%	(7.03%)
SERS 2040 Retirement Fund	(18.17%)	16.04%	14.22%	24.80%	(7.17%)
BlackRock 2040 Index	(18.34%)	15.97%	13.98%	24.62%	(7.33%)
Callan Target Date 2040	(18.71%)	15.84%	14.91%	23.62%	(7.89%)
SERS 2045 Retirement Fund	(19.17%)	17.79%	14.90%	26.12%	(7.78%)
BlackRock 2045 Index	(19.36%)	17.70%	14.65%	25.90%	(7.99%)
Callan Target Date 2045	(19.29%)	16.83%	15.52%	24.60%	(8.21%)
SERS 2050 Retirement Fund	(19.77%)	18.75%	15.27%	26.70%	(8.05%)
BlackRock 2050 Index	(19.97%)	18.62%	15.07%	26.48%	(8.26%)
Callan Target Date 2050	(19.57%)	17.17%	15.71%	24.89%	(8.44%)
SERS 2055 Retirement Fund	(19.92%)	18.91%	15.40%	26.75%	(8.07%)
BlackRock 2055 Index	(20.14%)	18.81%	15.18%	26.58%	(8.28%)
Callan Target Date 2055	(19.79%)	17.27%	15.83%	24.97%	(8.44%)
SERS 2060 Retirement Fund	(19.93%)	18.90%	15.38%	26.74%	(8.08%)
BlackRock 2060 Index	(20.15%)	18.81%	15.19%	26.58%	(8.28%)
Callan Target Date 2060	(19.87%)	17.41%	15.90%	25.08%	(8.35%)
SERS 2065 Retirement Fund	(19.94%)	18.85%	15.22%	-	-
BlackRock 2065 Index	(20.16%)	18.80%	15.19%	-	-
Callan Target Date 2065	(20.40%)	17.01%	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- 6/2022	2021	2020	2019	2018
Gross Performance					
Domestic Equity					
SERS U.S. Large Company Index Fund	(19.96%)	28.71%	18.44%	31.51%	(4.38%)
S&P 500 Index	(19.96%)	28.71%	18.40%	31.49%	(4.38%)
Callan Lg Cap Broad MF	(20.32%)	25.50%	18.47%	30.14%	(4.54%)
SERS U.S. All Company Index Fund	(21.12%)	25.62%	21.20%	30.53%	(5.29%)
Russell 3000 Index	(21.10%)	25.66%	20.89%	31.02%	(5.24%)
Callan Multi Cap Brd MF	(20.61%)	24.17%	17.19%	29.12%	(6.82%)
SERS U.S. SMID Company Idx Fund	(27.84%)	12.90%	32.04%	28.21%	(9.32%)
Dow Jones US Completion	(28.09%)	12.36%	32.17%	27.94%	(9.57%)
Callan SMID Broad MFs	(24.47%)	19.56%	24.00%	29.40%	(8.69%)
International Equity					
SERS Global Non-U.S. Index Fund	(18.15%)	7.98%	11.17%	21.79%	(13.85%)
MSCI ACWI ex US	(18.42%)	7.82%	10.65%	21.51%	(14.20%)
Callan Non US Equity MFs	(19.79%)	9.47%	11.12%	22.83%	(15.04%)
Domestic Fixed Income					
SERS Short Term Investment Fund	0.18%	0.07%	0.67%	2.31%	2.09%
3-month Treasury Bill	0.14%	0.05%	0.67%	2.28%	1.87%
Callan Cash Database(1)	0.03%	0.13%	1.05%	2.65%	2.00%
SERS U.S. Short Term Bond Idx Fund	(3.10%)	(0.51%)	3.37%	4.02%	1.58%
Blmbg Gov/Cred 1-3 Yr	(3.11%)	(0.47%)	3.33%	4.03%	1.60%
Callan Short US Govt MFs	(3.89%)	(1.08%)	3.57%	3.52%	1.15%
SERS U.S. TIPS Index Fund	(8.88%)	5.88%	11.00%	8.40%	-
Blmbg US TIPS	(8.92%)	5.96%	10.99%	8.43%	(1.26%)
Callan TIPS MFs	(8.72%)	5.55%	10.29%	8.26%	(1.53%)
SERS U.S. Bond Index Fund	(10.30%)	(1.64%)	7.56%	8.69%	0.03%
Blmbg Aggregate	(10.35%)	(1.54%)	7.51%	8.72%	0.01%
Callan Core Bond MFs	(10.68%)	(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
June 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	-9.0 70	-11.7 70	2.8 29	3.9 11	4.0 13	4.6 20			0.08 75
BlackRock Post Retirement Index	-9.1 79	-11.7 70	2.7 34	3.9 17	4.0 14	4.5 20			
SERS 2025 Retirement Fund Callan Target Date 2025	-9.9 28	-12.1 39	3.5 58	4.7 54	4.9 56	6.0 77			0.08 74
BlackRock 2025 Index	-10.0 33	-12.1 39	3.4 62	4.7 56	4.8 63	5.9 80			
SERS 2030 Retirement Fund Callan Target Date 2030	-11.2 34	-12.9 33	4.2 47	5.4 47	5.5 54	6.7 74			0.08 72
BlackRock 2030 Index	-11.4 49	-12.9 33	4.1 56	5.3 54	5.4 61	6.6 78			
SERS 2035 Retirement Fund Callan Target Date 2035	-12.4 40	-13.6 26	4.9 47	6.0 41	6.1 47	7.4 74			0.08 74
BlackRock 2035 Index	-12.7 56	-13.7 29	4.8 50	5.9 46	6.0 55	7.2 78			
SERS 2040 Retirement Fund Callan Target Date 2040	-13.6 52	-14.4 29	5.5 40	6.5 26	6.6 35	7.9 70			0.08 72
BlackRock 2040 Index	-13.9 72	-14.5 33	5.4 44	6.4 33	6.4 44	7.8 71			
SERS 2045 Retirement Fund Callan Target Date 2045	-14.6 71	-15.1 33	5.9 27	6.9 21	6.9 32	8.3 59			0.08 74
BlackRock 2045 Index	-15.0 89	-15.2 39	5.8 35	6.8 33	6.8 39	8.2 70			
SERS 2050 Retirement Fund Callan Target Date 2050	-15.1 85	-15.6 42	6.1 26	7.1 13	7.1 21	8.6 44			0.08 72
BlackRock 2050 Index	-15.6 98	-15.7 55	6.0 29	6.9 19	6.9 30	8.5 53			
SERS 2055 Retirement Fund Callan Target Date 2055	-15.3 86	-15.7 40	6.2 22	7.1 12	7.1 21	8.8 44			0.08 77
BlackRock 2055 Index	-15.7 97	-15.9 53	6.0 27	6.9 21	6.9 36	8.6 51			
SERS 2060 Retirement Fund Callan Target Date 2060	-15.3 81	-15.7 40	6.1 25	7.1 17	7.1 30				0.08 78
BlackRock 2060 Index	-15.7 98	-15.9 49	6.0 30	6.9 26	6.9 54				

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
June 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 BlackRock 2065 Index	-15.3 77 -15.7 95	-15.7 26 -15.9 30							0.08 50
Domestic Equity									
SERS U.S. Large Company Stock Index Fund Callan Lg Cap Broad MF S&P 500 Index	-16.1 50 -16.1 50	-10.6 43 -10.6 43	10.6 24 10.6 24	11.3 36 11.3 36	11.2 27 11.1 27	13.0 35 13.0 35			0.02 100
SERS U.S. All Company Index Fund Callan Multi Cap Brd MF Russell 3000 Index	-16.7 61 -16.7 61	-13.9 48 -13.9 48	9.7 27 9.8 26	10.5 27 10.6 26	10.4 21 10.4 20	12.5 22 12.6 21			0.03 99
U.S. Small/Mid Company Stock Index Fund Callan SMID Broad MFs Dow Jones US Completion	-20.5 69 -20.7 70	-29.5 76 -30.0 77	4.9 62 4.6 63	6.6 53 6.3 55	6.8 57 6.5 58	10.4 52 10.1 54			0.03 100
International Equity									
SERS Global Non-U.S. Index Fund Callan Non US Equity MFs MSCI ACWI ex US	-13.2 46 -13.7 53	-19.2 48 -19.4 48	1.6 46 1.4 54	2.8 40 2.5 45	3.2 38 2.9 45	5.0 57 4.8 69			0.05 99
Domestic Fixed Income									
SERS Short Term Investment Fund Callan Cash Database 3-month Treasury Bill	0.2 43 0.1 54	0.2 42 0.2 43	0.7 72 0.6 78	1.2 73 1.1 87	1.0 77 0.9 89	0.8 77 0.6 90			0.00 100
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 Blmbg Gov/Cred 1-3 Yr	-0.6 19 -0.6 19	-3.6 30 -3.6 30	0.3 21 0.3 21		1.1 15 1.0 15	1.0 11 1.0 11			0.02 100
SERS U.S. TIPS Index Fund Callan TIPS MFs Blmbg US TIPS	-6.1 47 -6.1 47	-5.1 43 -5.1 43	3.0 51 3.0 50		3.2 35 2.8 28	1.7 25 1.7 25			0.02 99

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
June 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 22	-10.3 29	-0.9 80	0.9 76	1.4 89	1.5 93			0.02 98
Callan Core Bond MFs									
Blmbg Aggregate	-4.7 13	-10.3 28	-0.9 78	0.9 76	1.4 87	1.5 85			

Returns:
 above median
 third quartile
 fourth quartile

Return Consistency:
 above median
 third quartile
 fourth quartile

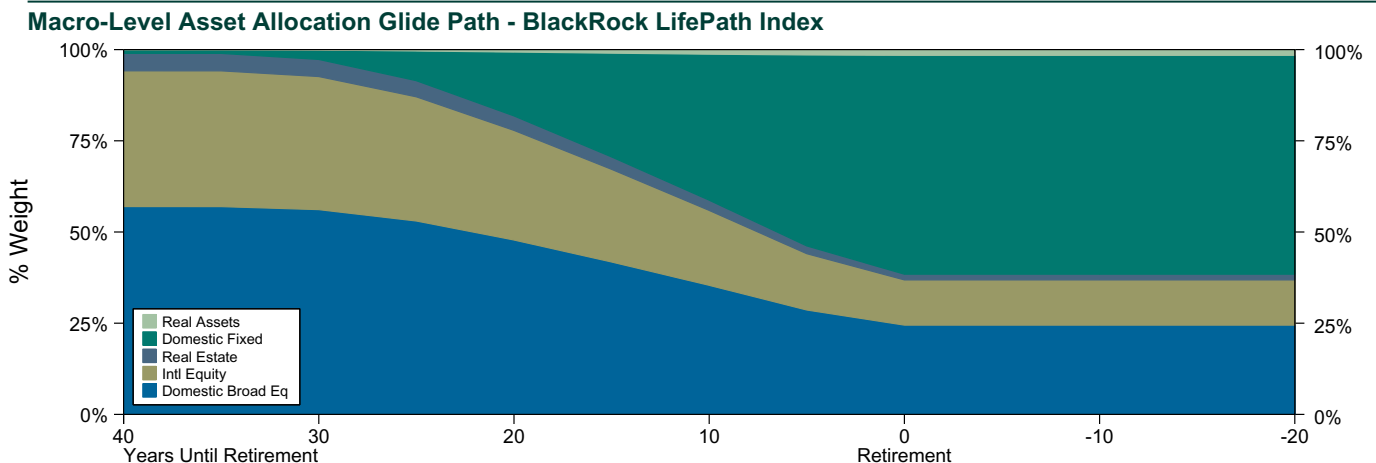
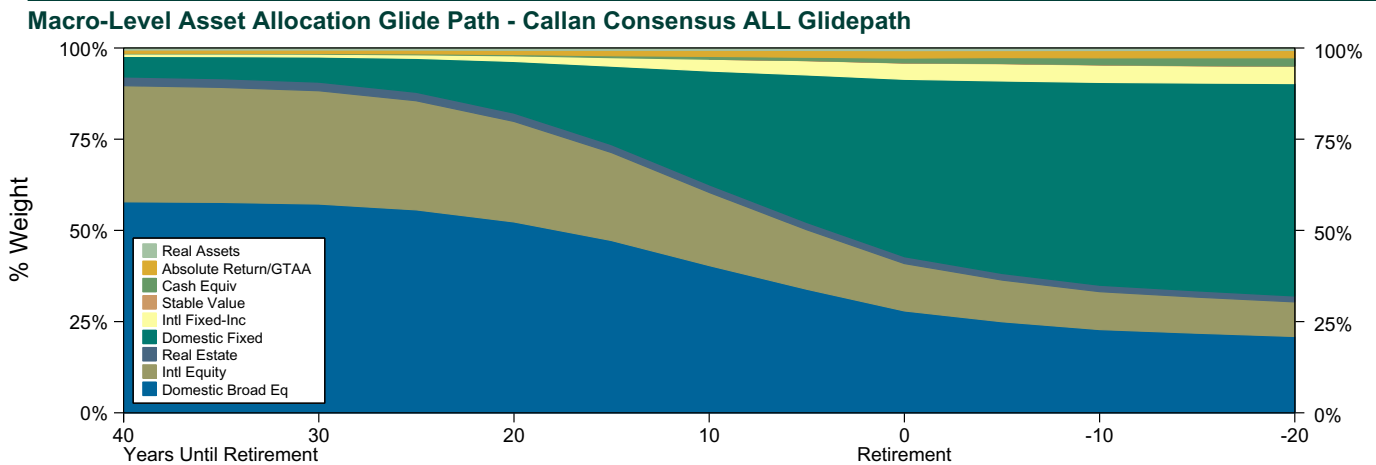
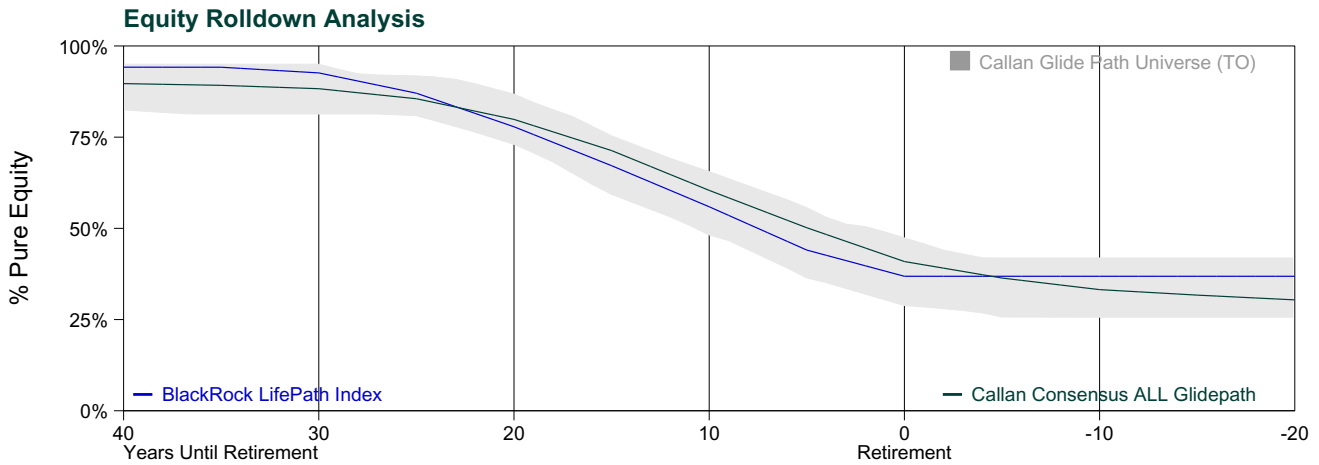
Risk Quadrant:

Return
Risk

Expense Ratio:
 below median
 second quartile
 first quartile

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

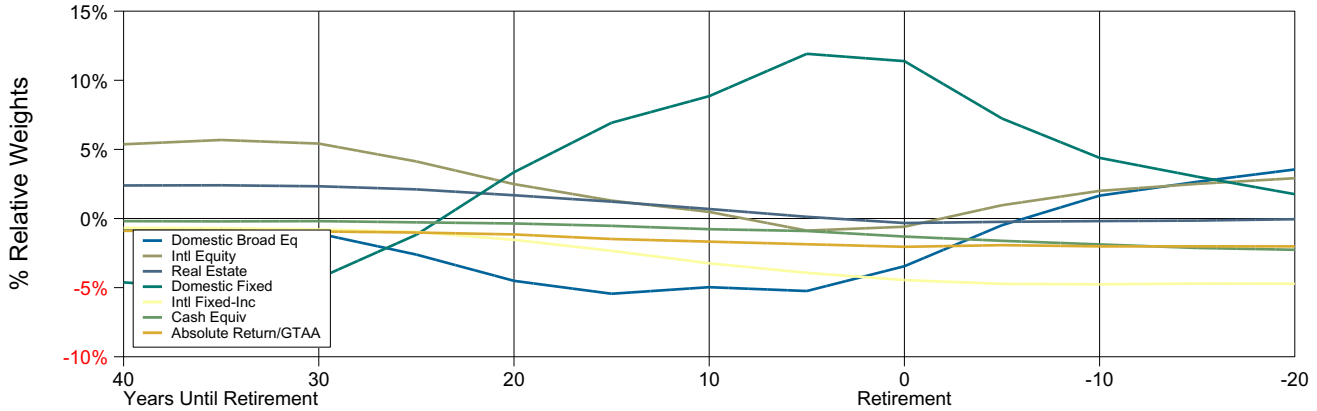
The following charts illustrate the asset allocation "glide path" underlying the relevant suite of target date funds. This analysis covers forty years of investor wealth accumulation up to retirement, as well as twenty years of wealth decumulation following retirement. The top chart shows the "pure"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



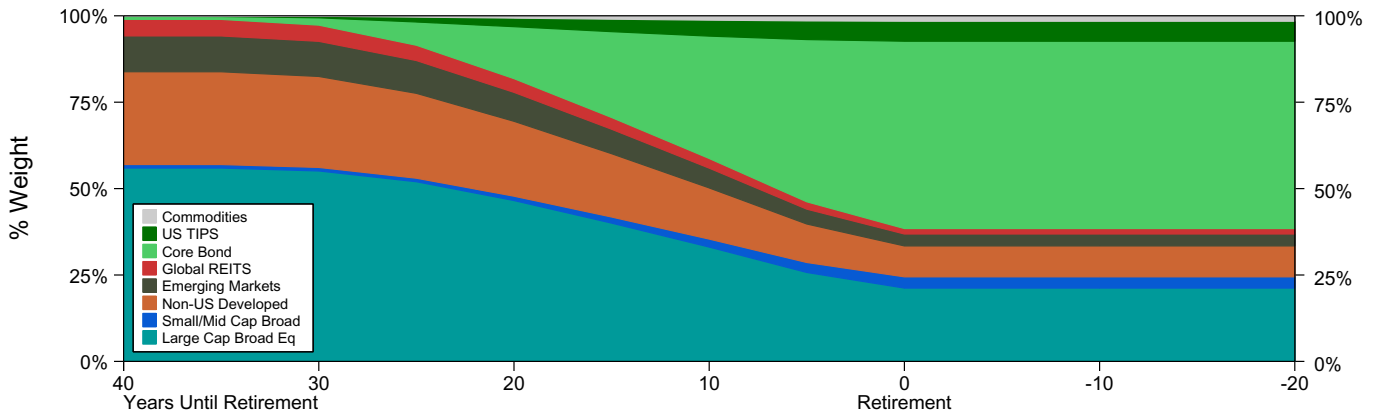
BlackRock LifePath Index Target Date Glide Path Analysis as of June 30, 2022

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.

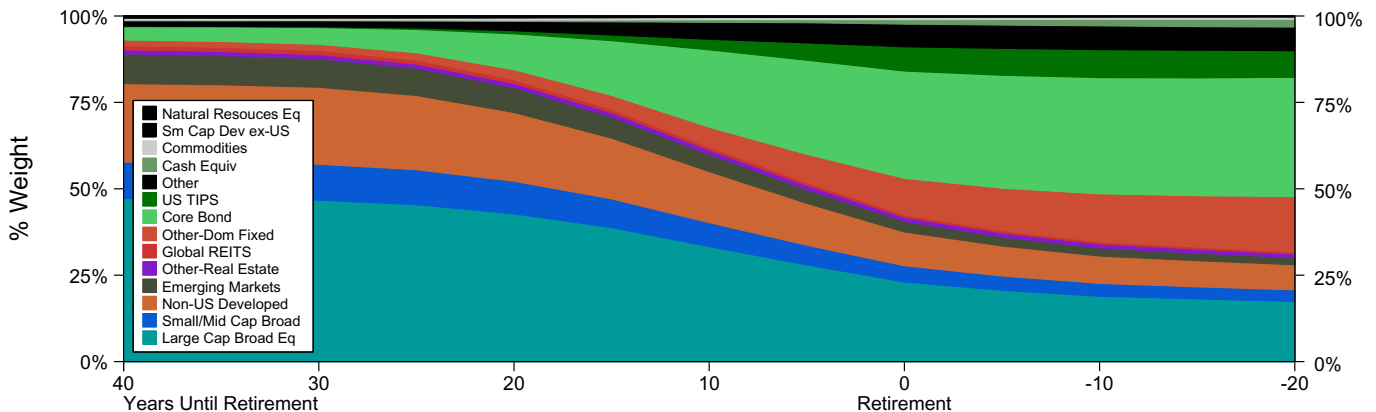
Relative Macro Asset Allocation - BlackRock LifePath Index vs. Callan Consensus ALL Glidep



Micro-Level Asset Allocation Glide Path - BlackRock LifePath Index



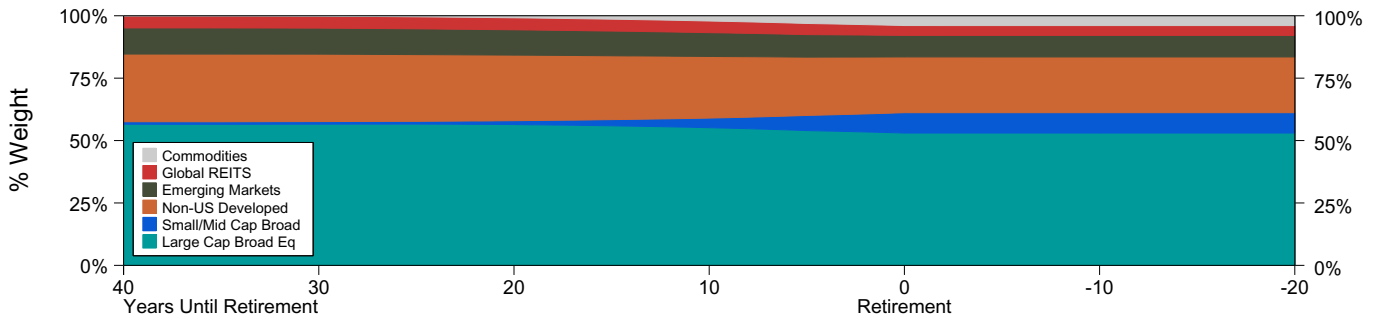
Micro-Level Asset Allocation Glide Path - Callan Consensus ALL Glidepath



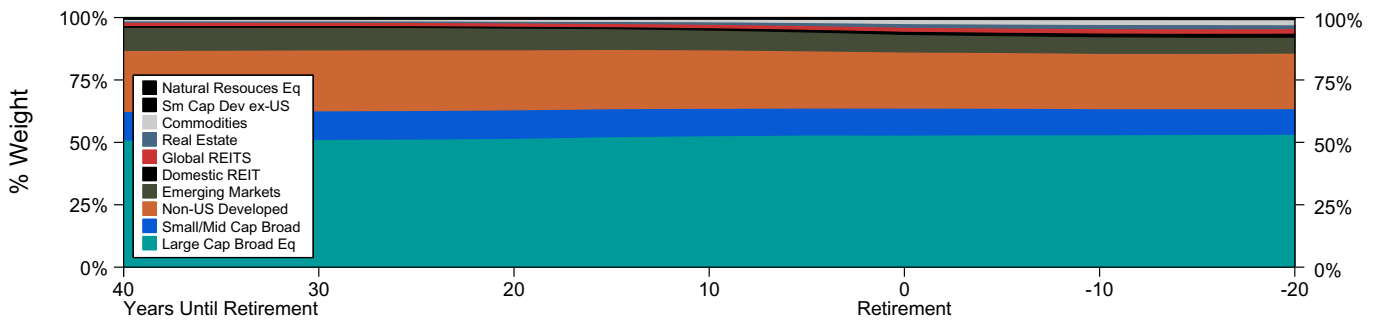
BlackRock LifePath Index Target Date Glide Path Analysis as of June 30, 2022

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.

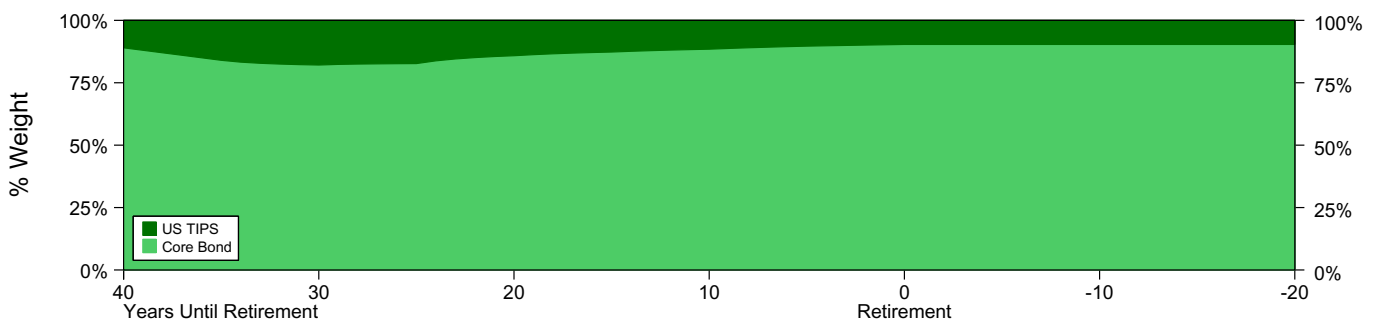
Micro-Level Equity Allocation Glide Path - BlackRock LifePath Index



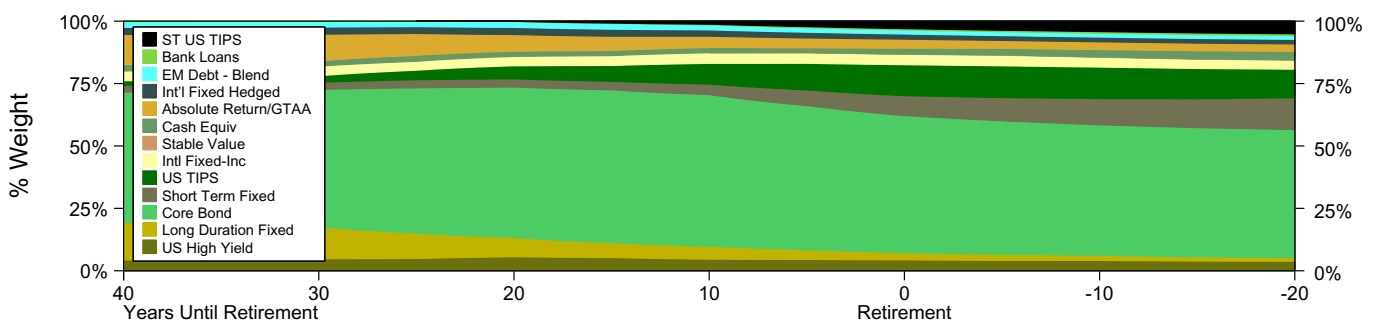
Micro-Level Equity Asset Allocation Glide Path - Callan Consensus ALL Glidepath



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



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

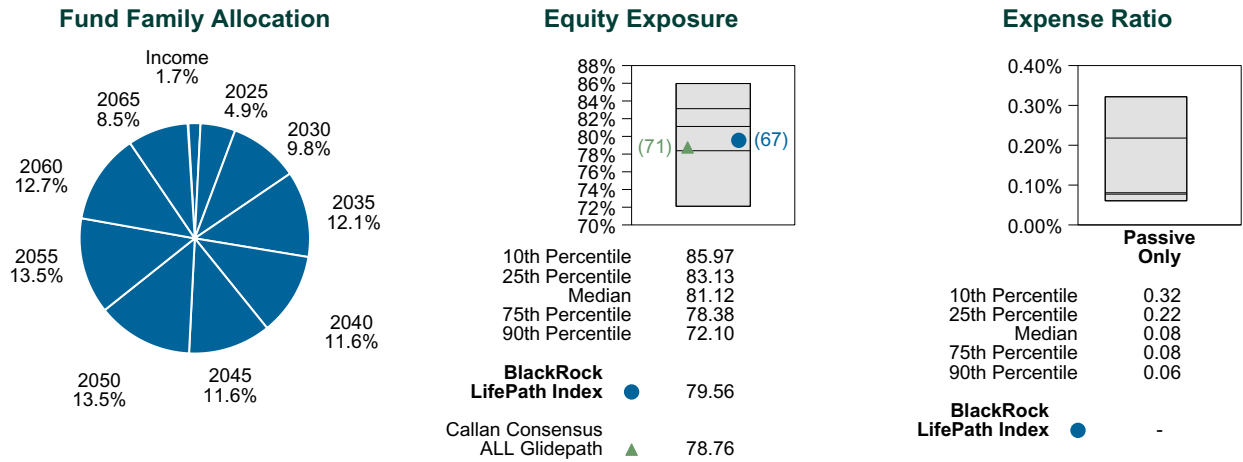


Pennsylvania SERS 401(a) - BlackRock LifePath Index Target Date Fund Family Analysis as of June 30, 2022

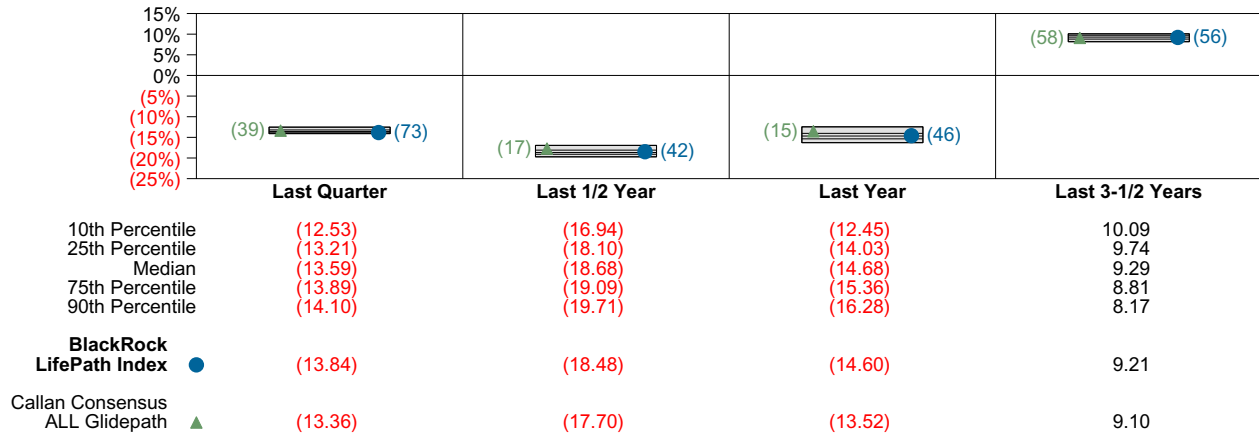
The following is an analysis of the client's suite of target date funds as an aggregated portfolio using actual proportions held by the client's participants. The upper-left pie chart shows the current client weights across target dates. The rest of the charts compare different attributes of the aggregated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

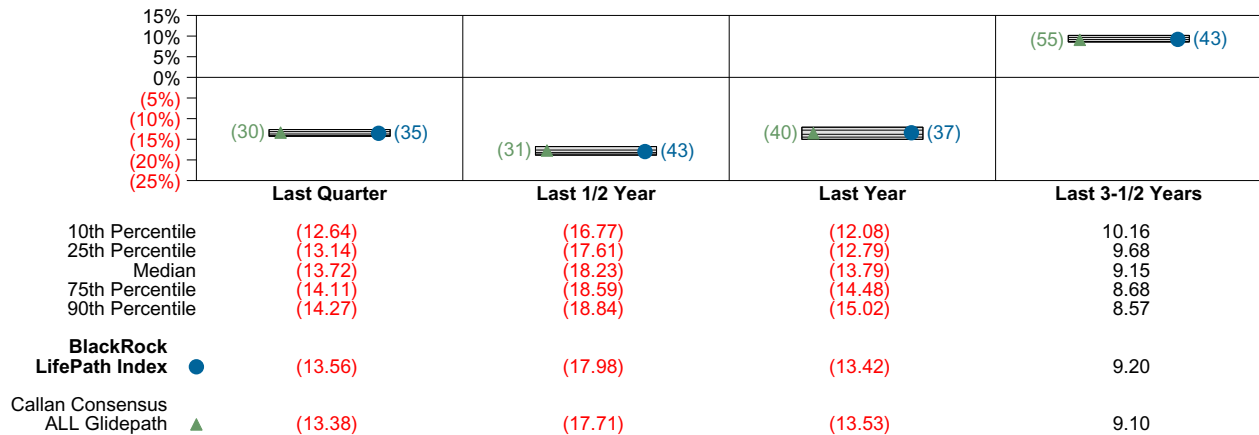
Fee/Return Type: Gross



Target Date Family Performance vs Peer Families



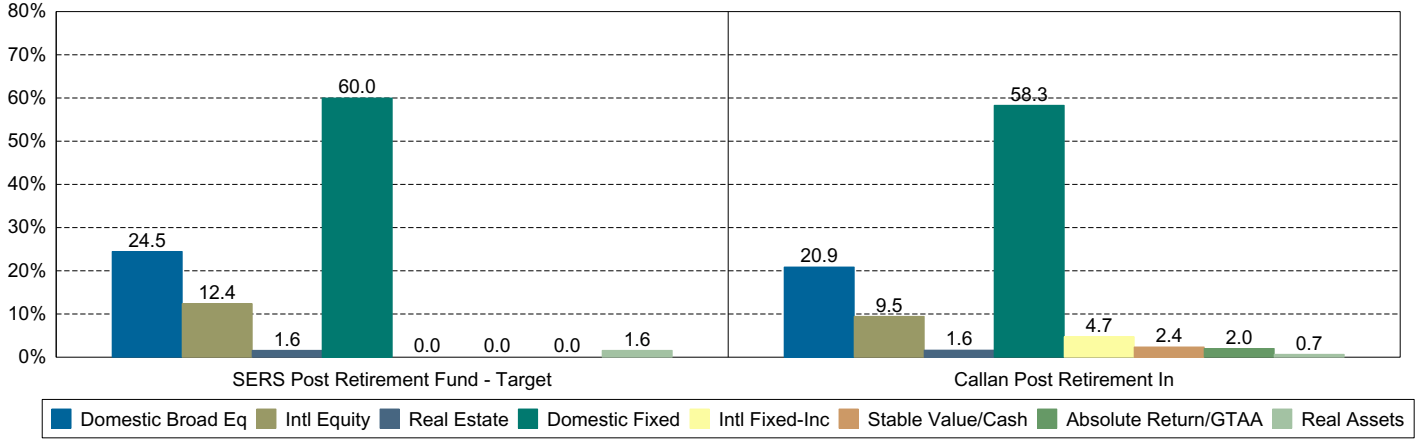
Target Date Family Glide Path Returns vs Peer Families



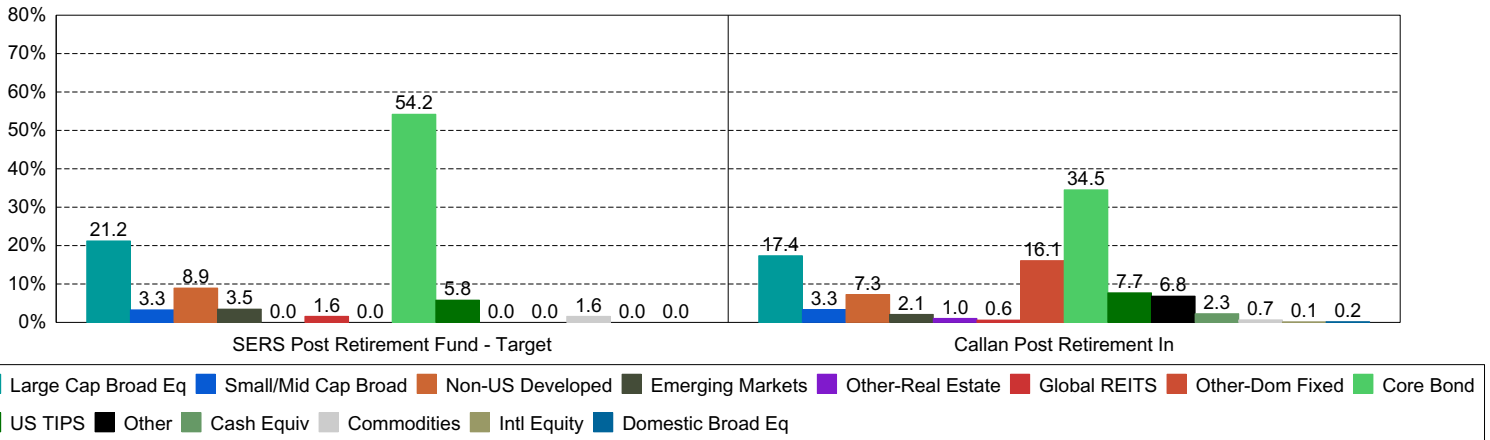
SERS Post Retirement Fund Target Date Fund Asset Allocation as of June 30, 2022

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.

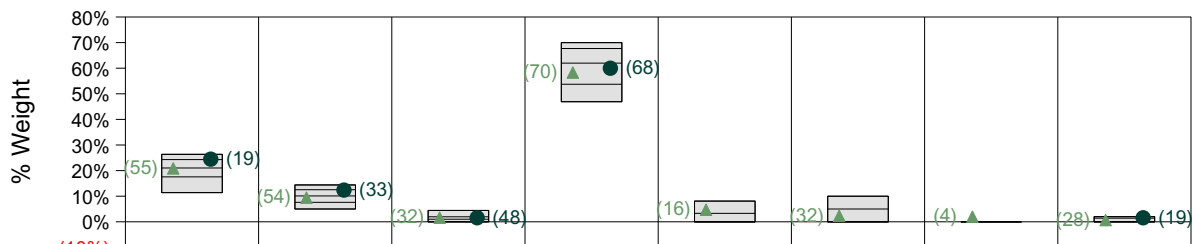
Macro-Level Asset Allocation



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	26.36	14.40	4.44	69.99	8.09	10.00	0.00	2.00
25th Percentile	24.30	12.53	1.96	67.69	3.30	5.00	0.00	1.42
Median	21.02	10.10	1.01	61.98	0.00	0.00	0.00	0.00
75th Percentile	17.55	7.60	0.00	53.73	0.00	0.00	0.00	0.00
90th Percentile	11.40	5.00	0.00	46.91	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	0.66

SERS Post Retirement Fund Period Ended June 30, 2022

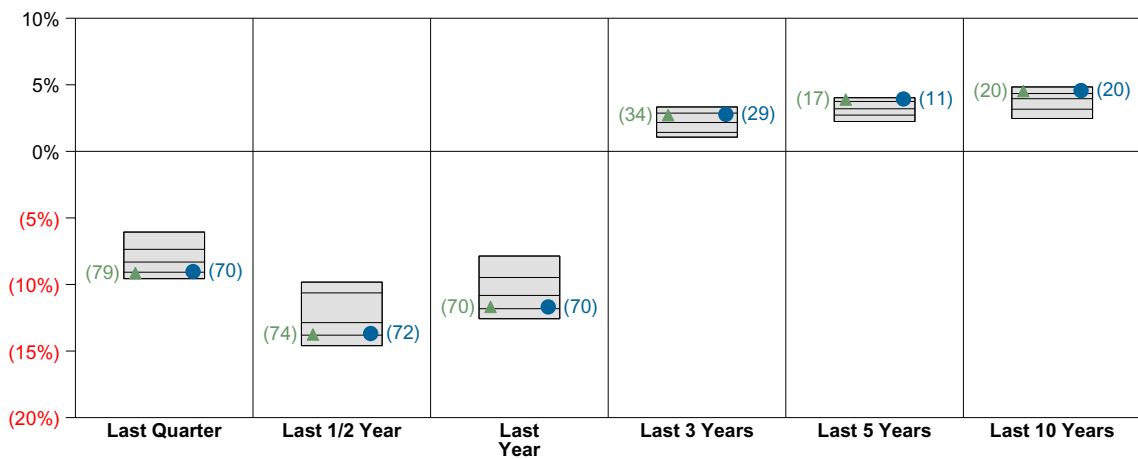
Investment Philosophy

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.

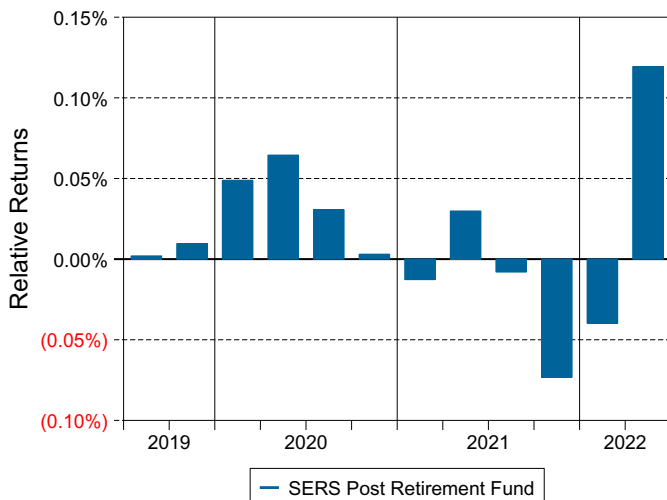
Quarterly Summary and Highlights

- SERS Post Retirement Fund's portfolio posted a (9.03)% return for the quarter placing it in the 70 percentile of the Callan Target Date Retirement Income group for the quarter and in the 70 percentile for the last year.
- SERS Post Retirement Fund's portfolio outperformed the BlackRock Post Retirement Index by 0.11% for the quarter and underperformed the BlackRock Post Retirement Index for the year by 0.00%.

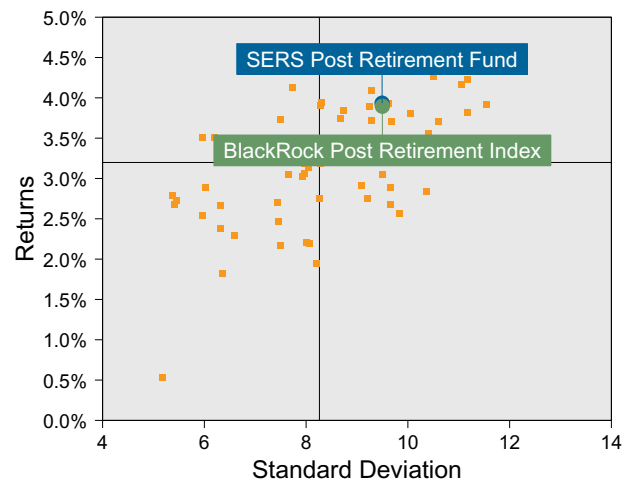
Performance vs Callan Target Date Retirement Income (Net)



Relative Returns vs BlackRock Post Retirement Index



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

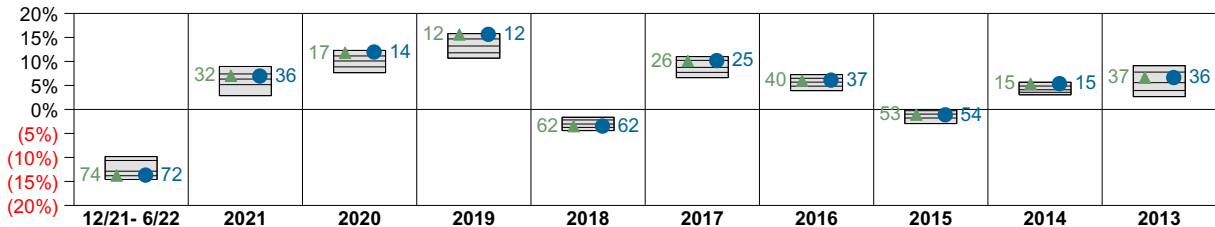


SERS Post Retirement Fund Return Analysis Summary

Return Analysis

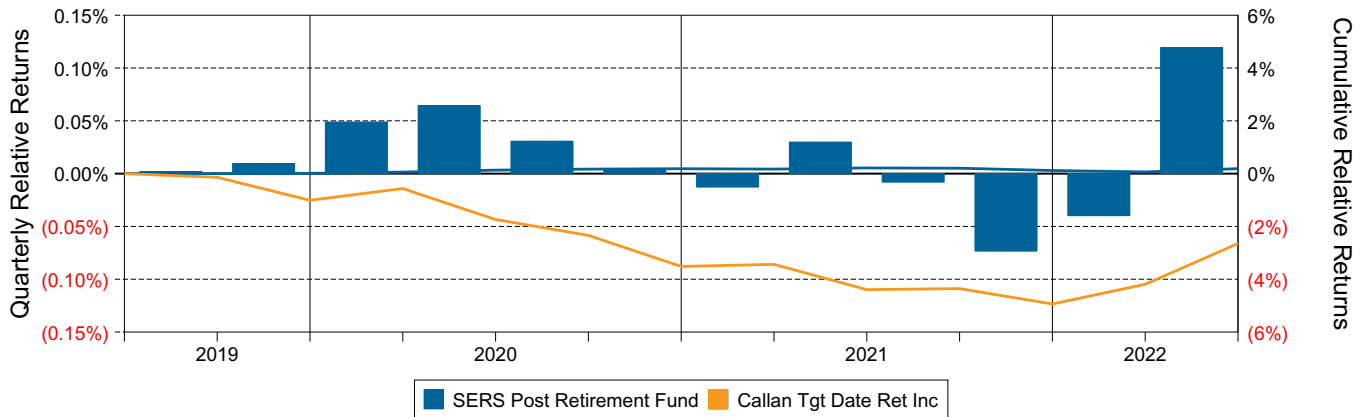
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate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

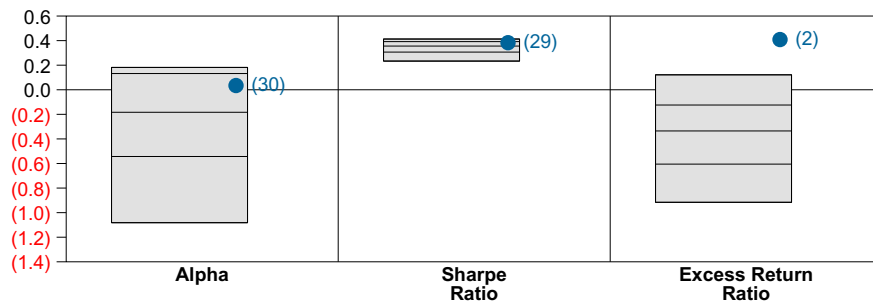


	12/21- 6/22	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	(9.82)	8.95	12.29	15.80	(1.63)	11.01	7.26	(0.02)	5.66	9.12
25th Percentile	(10.63)	7.39	11.14	14.69	(2.19)	10.22	6.49	(0.27)	4.87	7.78
Median	(12.87)	6.33	10.10	13.21	(3.04)	8.76	5.69	(0.97)	4.10	5.58
75th Percentile	(13.81)	5.17	8.87	11.80	(3.75)	7.72	4.85	(1.79)	3.57	3.94
90th Percentile	(14.59)	2.87	7.66	10.69	(4.41)	6.62	3.91	(2.95)	3.05	2.67
SERS Post Retirement Fund	● (13.69)	6.95	11.97	15.65	(3.47)	10.18	6.10	(1.12)	5.38	6.64
BlackRock Post Retirement Index	▲ (13.75)	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 June 30, 2022



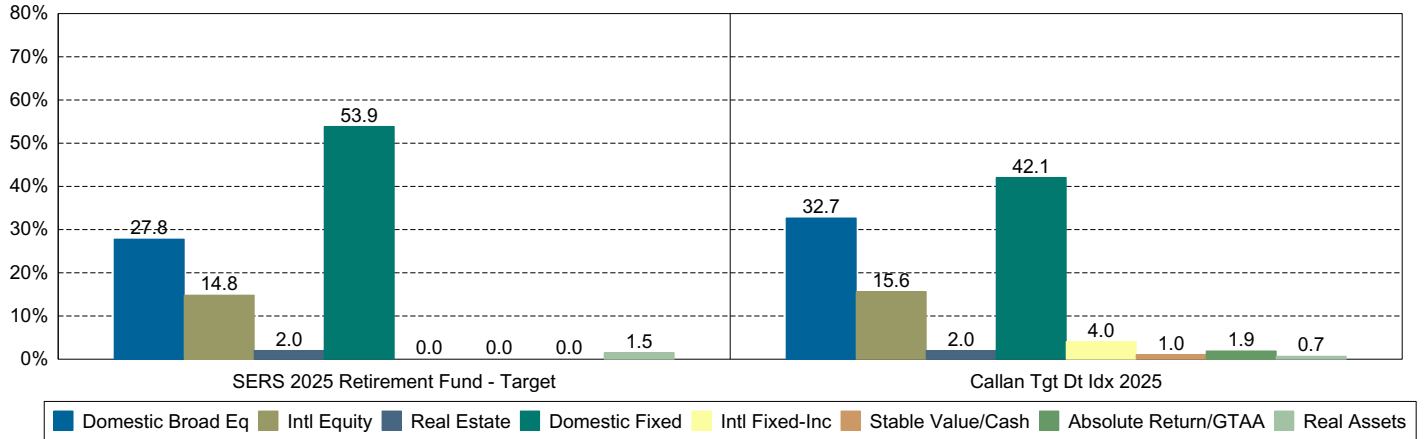
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.18	0.41	0.12
25th Percentile	0.13	0.39	(0.12)
Median	(0.18)	0.36	(0.34)
75th Percentile	(0.54)	0.31	(0.60)
90th Percentile	(1.08)	0.23	(0.92)
SERS Post Retirement Fund	● 0.03	● 0.38	● 0.41

SERS 2025 Retirement Fund

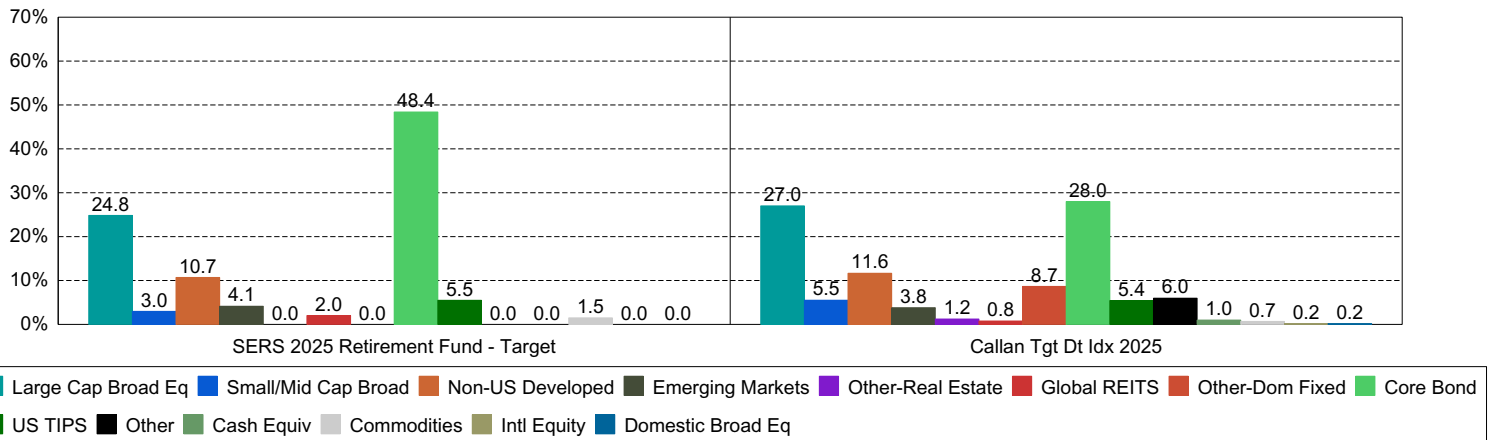
Target Date Fund Asset Allocation as of June 30, 2022

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.

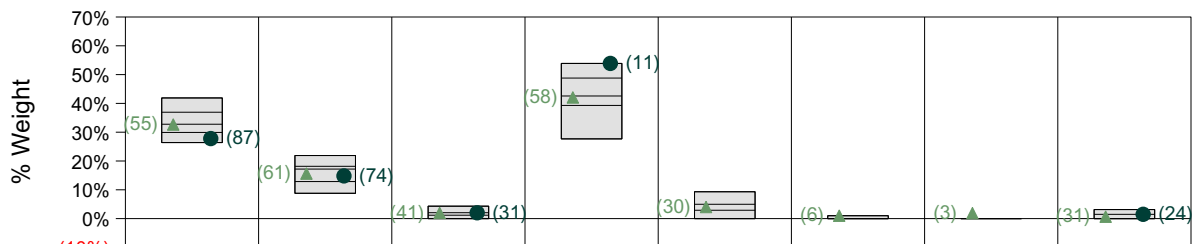
Macro-Level Asset Allocation



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	48.79	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	29.92	12.86	0.00	39.30	0.00	0.00	0.00	0.00
90th Percentile	26.40	8.78	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 June 30, 2022

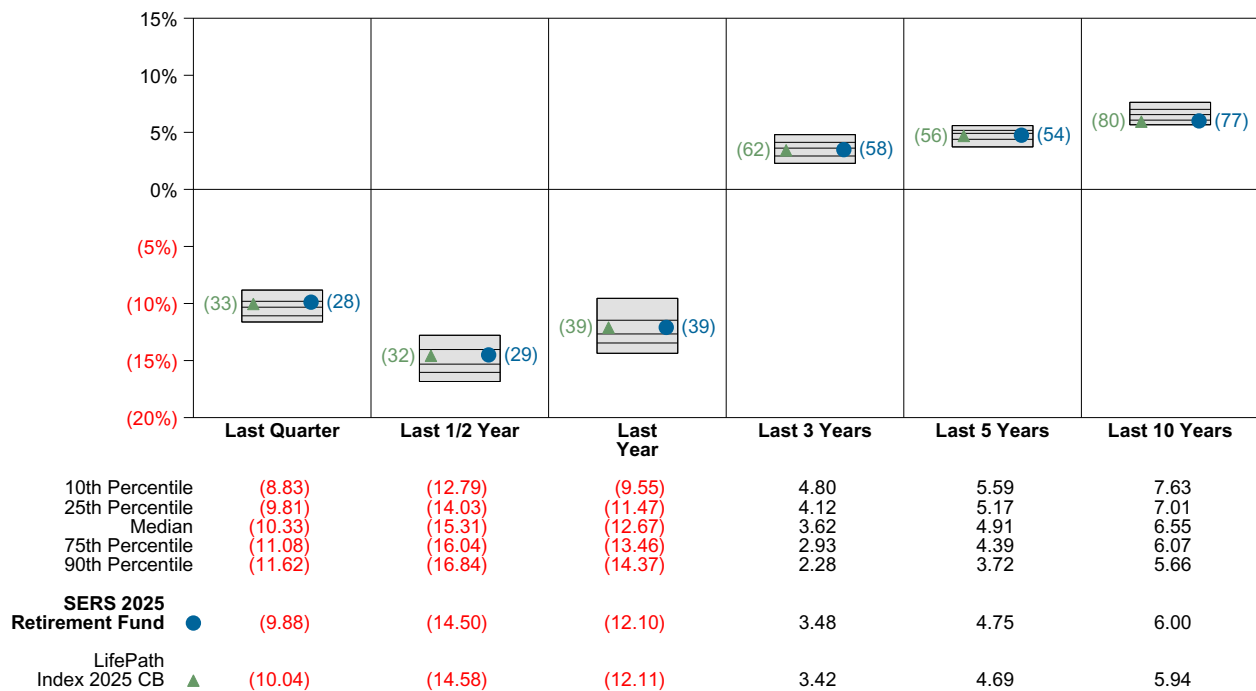
Investment Philosophy

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.

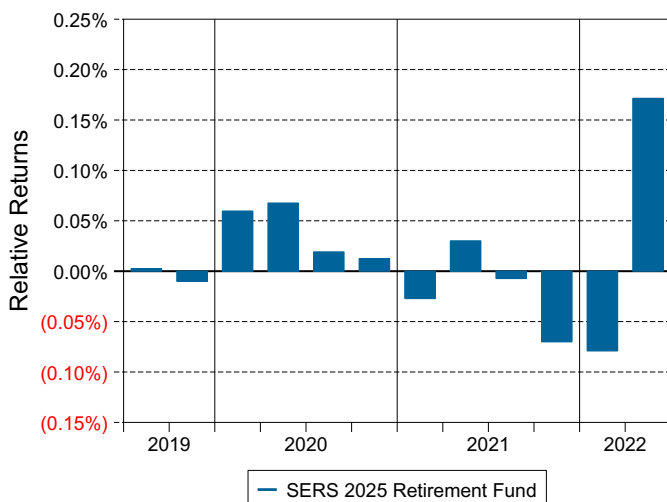
Quarterly Summary and Highlights

- SERS 2025 Retirement Fund's portfolio posted a (9.88)% return for the quarter placing it in the 28 percentile of the Callan Target Date 2025 group for the quarter and in the 39 percentile for the last year.
- SERS 2025 Retirement Fund's portfolio outperformed the LifePath Index 2025 CB by 0.15% for the quarter and outperformed the LifePath Index 2025 CB for the year by 0.01%.

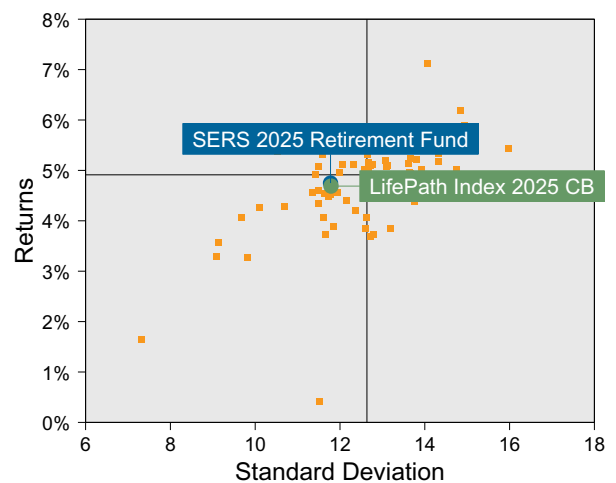
Performance vs Callan Target Date 2025 (Net)



Relative Return vs LifePath Index 2025 CB



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

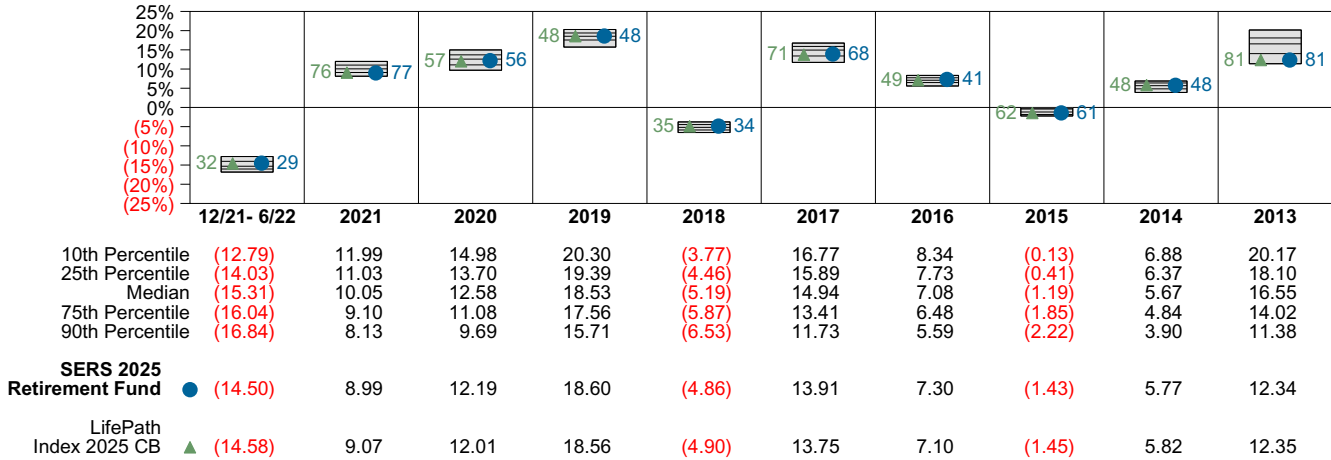


SERS 2025 Retirement Fund Return Analysis Summary

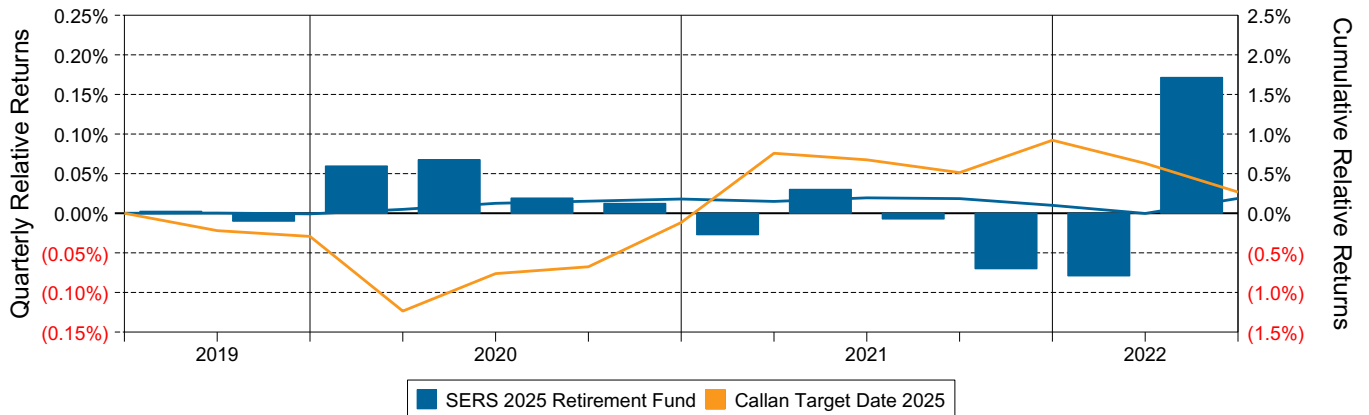
Return Analysis

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)

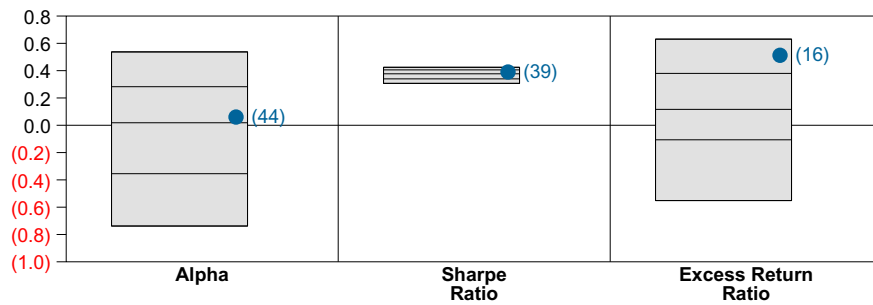


Cumulative and Quarterly Relative Returns vs LifePath Index 2025 CB



Risk Adjusted Return Measures vs LifePath Index 2025 CB

Rankings Against Callan Target Date 2025 (Net) Seven Years Ended June 30, 2022

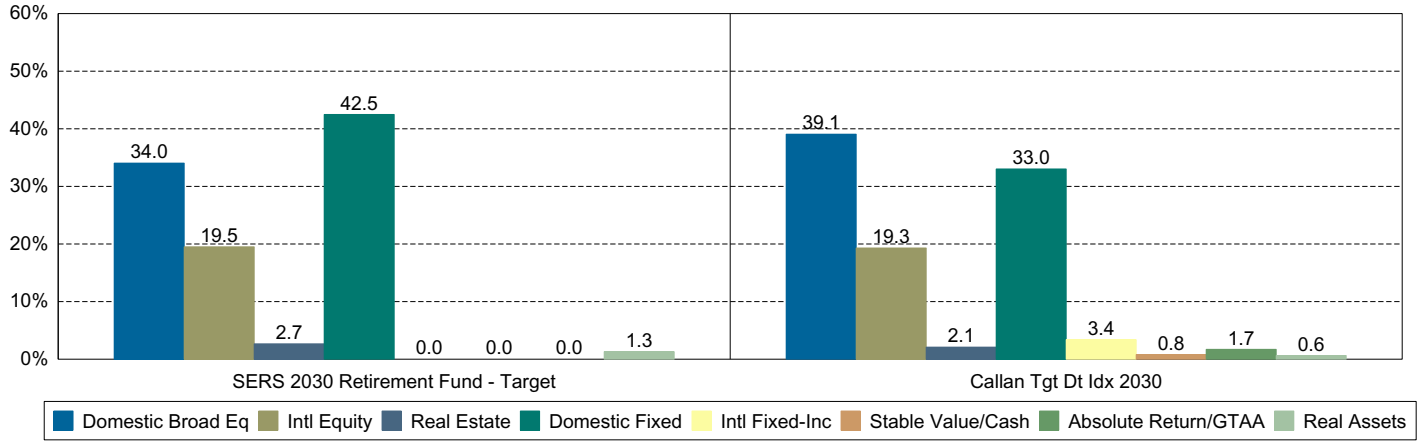


SERS 2030 Retirement Fund

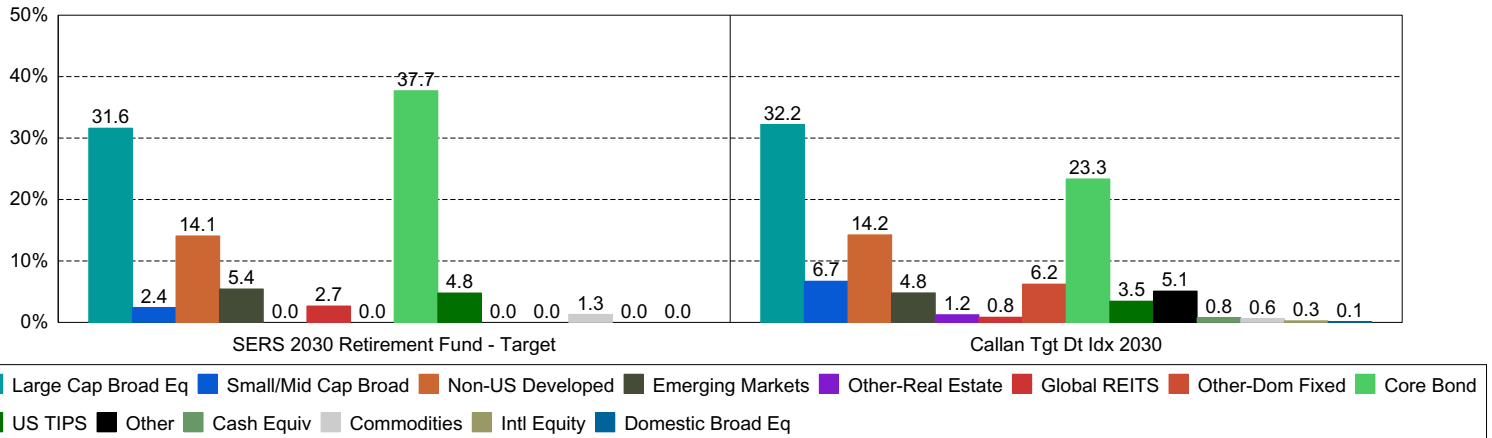
Target Date Fund Asset Allocation as of June 30, 2022

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.

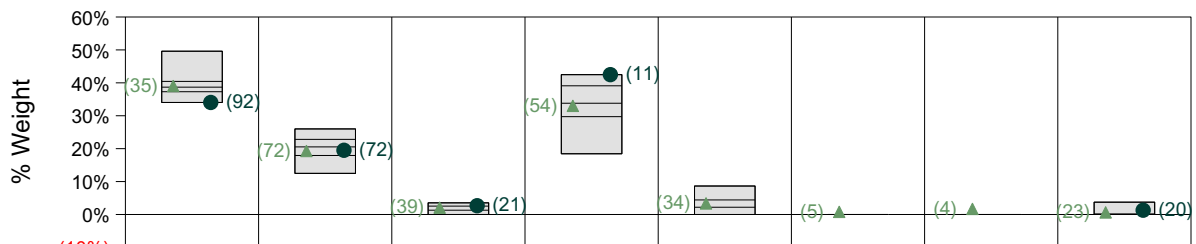
Macro-Level Asset Allocation



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	3.54	42.49	8.65	0.00	0.00	3.74
25th Percentile	40.44	22.82	2.54	39.10	4.42	0.00	0.00	0.17
Median	38.68	20.53	1.30	33.80	2.20	0.00	0.00	0.00
75th Percentile	37.30	17.93	0.00	29.72	0.00	0.00	0.00	0.00
90th Percentile	34.04	12.49	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	0.64

SERS 2030 Retirement Fund Period Ended June 30, 2022

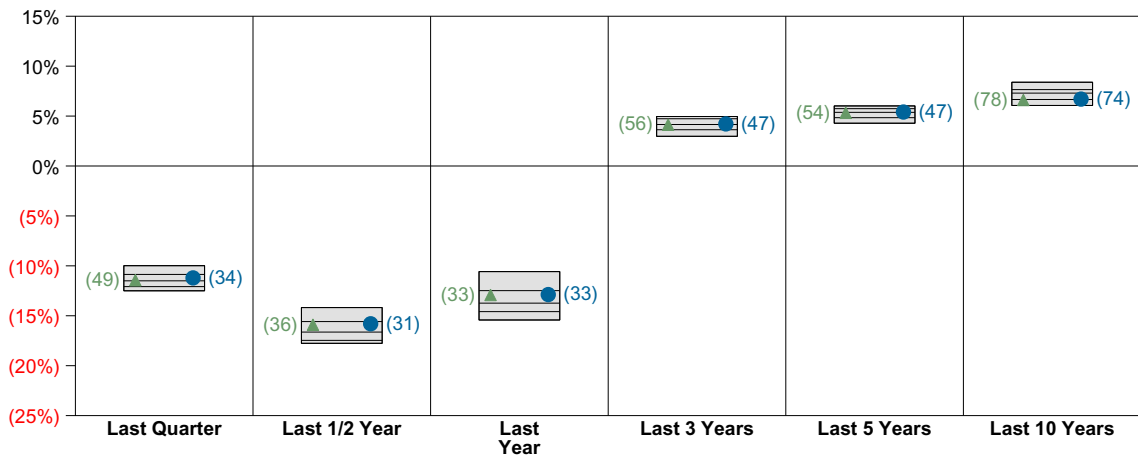
Investment Philosophy

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

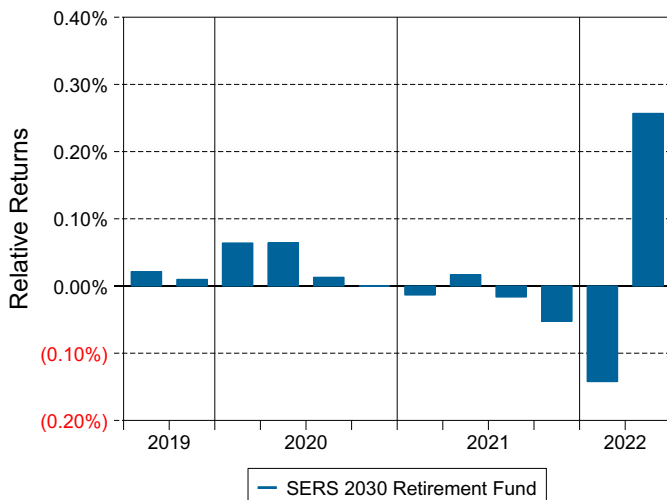
- SERS 2030 Retirement Fund's portfolio posted a (11.21)% return for the quarter placing it in the 34 percentile of the Callan Target Date 2030 group for the quarter and in the 33 percentile for the last year.
- SERS 2030 Retirement Fund's portfolio outperformed the LifePath Index 2030 CB by 0.23% for the quarter and outperformed the LifePath Index 2030 CB for the year by 0.04%.

Performance vs Callan Target Date 2030 (Net)

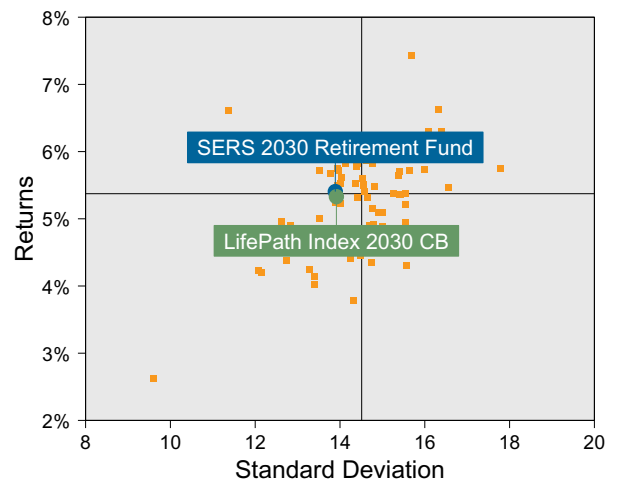


	Last Quarter	Last 1/2 Year	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(9.98)	(14.18)	(10.58)	4.96	6.02	8.39
25th Percentile	(10.86)	(15.58)	(12.49)	4.73	5.74	7.65
Median	(11.50)	(16.64)	(13.74)	4.16	5.37	7.30
75th Percentile	(12.08)	(17.46)	(14.59)	3.63	4.84	6.66
90th Percentile	(12.50)	(17.76)	(15.43)	2.97	4.28	6.06
SERS 2030 Retirement Fund	(11.21)	(15.80)	(12.88)	4.21	5.41	6.70
LifePath Index 2030 CB	(11.44)	(15.90)	(12.92)	4.14	5.33	6.61

Relative Return vs LifePath Index 2030 CB



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

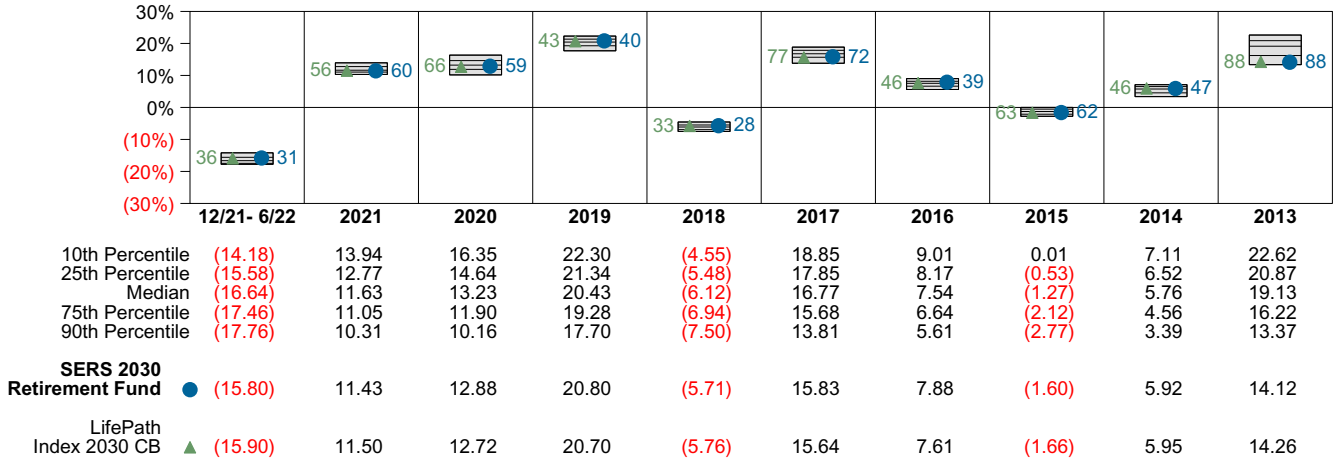


SERS 2030 Retirement Fund Return Analysis Summary

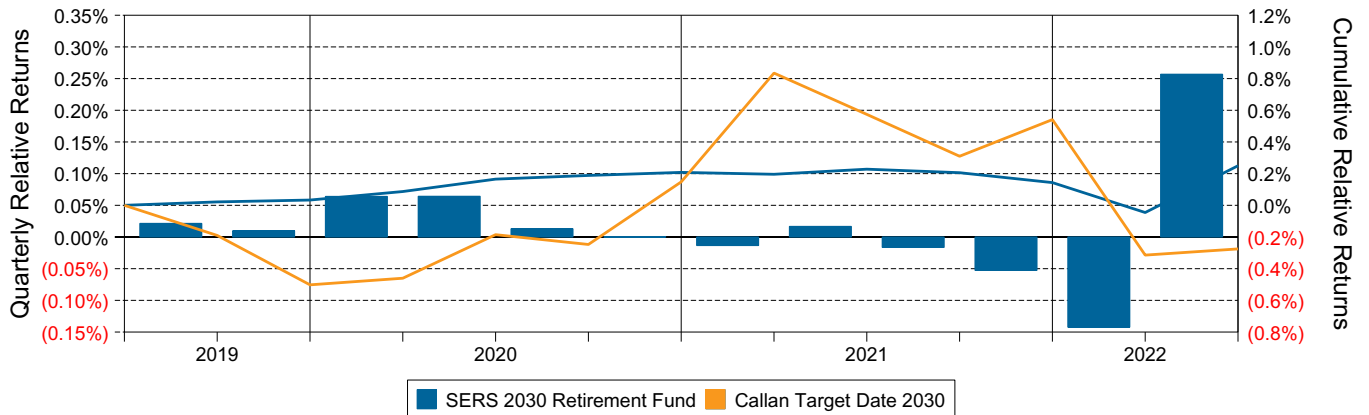
Return Analysis

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

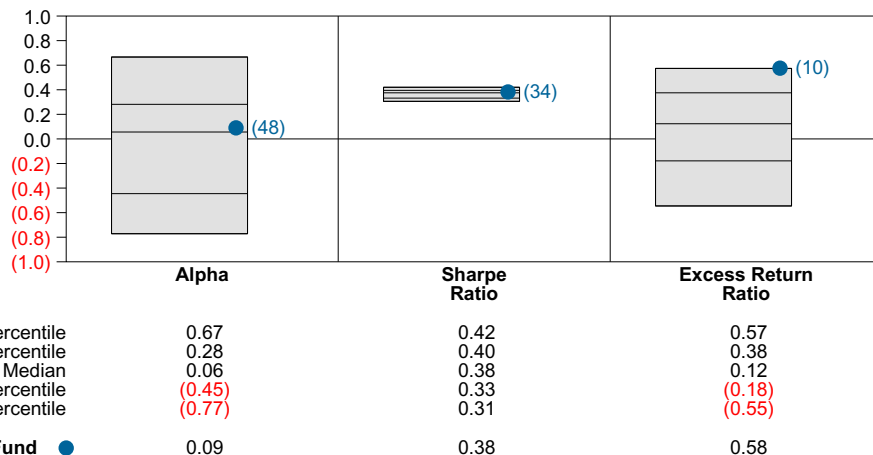
Performance vs Callan Target Date 2030 (Net)



Cumulative and Quarterly Relative 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 June 30, 2022

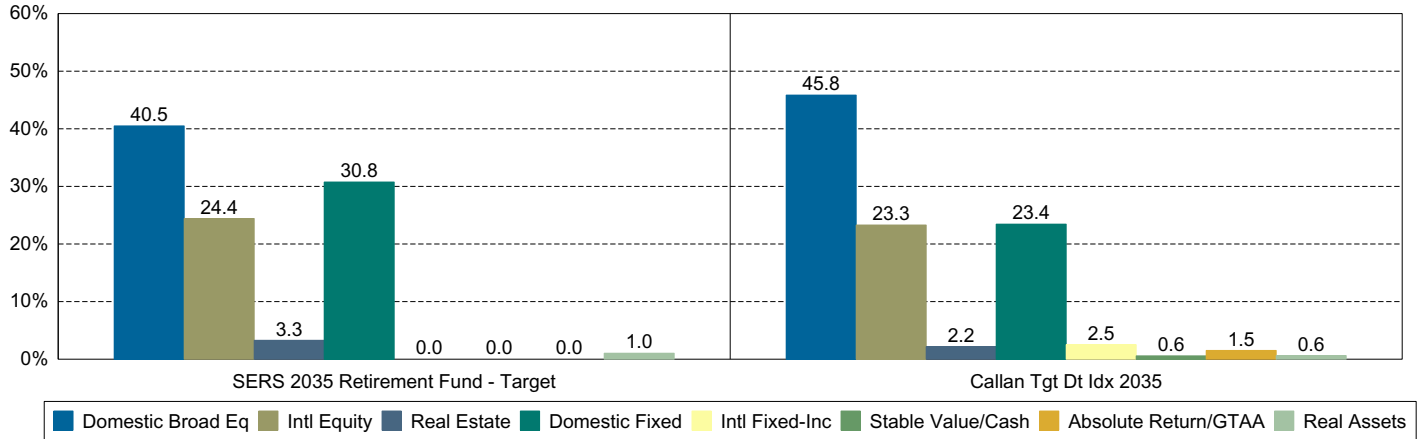


SERS 2035 Retirement Fund

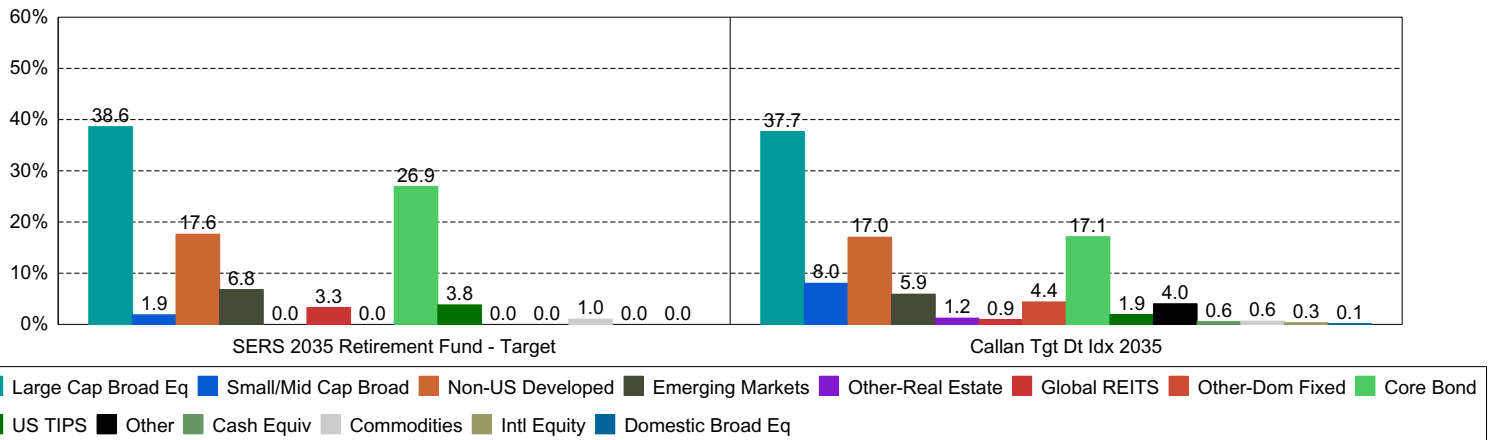
Target Date Fund Asset Allocation as of June 30, 2022

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.

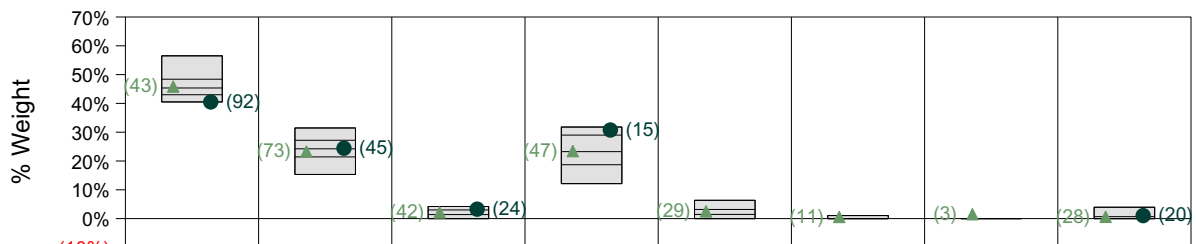
Macro-Level Asset Allocation



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	31.80	6.35	1.06	0.00	3.94
25th Percentile	48.40	27.19	3.01	28.99	3.18	0.00	0.00	0.67
Median	45.35	24.23	1.40	23.25	1.45	0.00	0.00	0.00
75th Percentile	43.01	21.43	0.00	18.70	0.00	0.00	0.00	0.00
90th Percentile	40.50	15.32	0.00	12.14	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 June 30, 2022

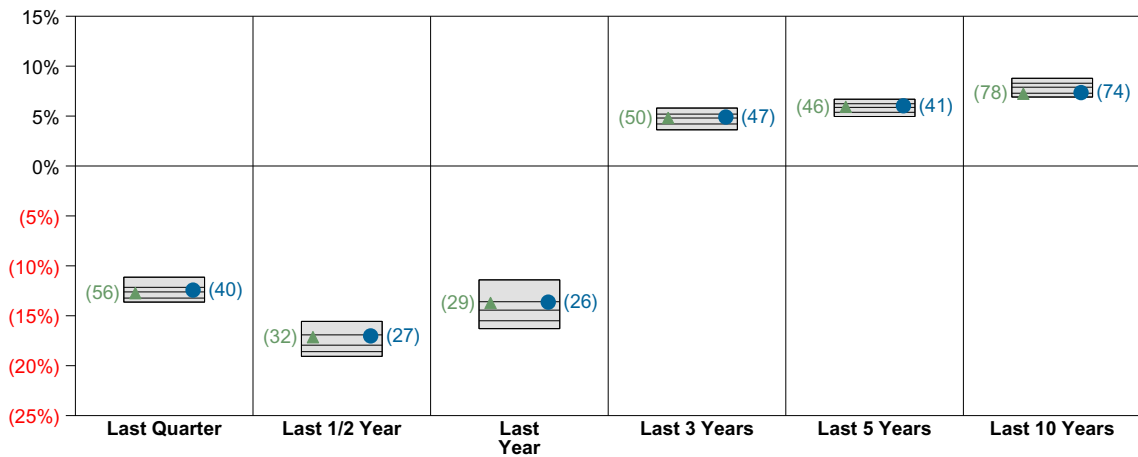
Investment Philosophy

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

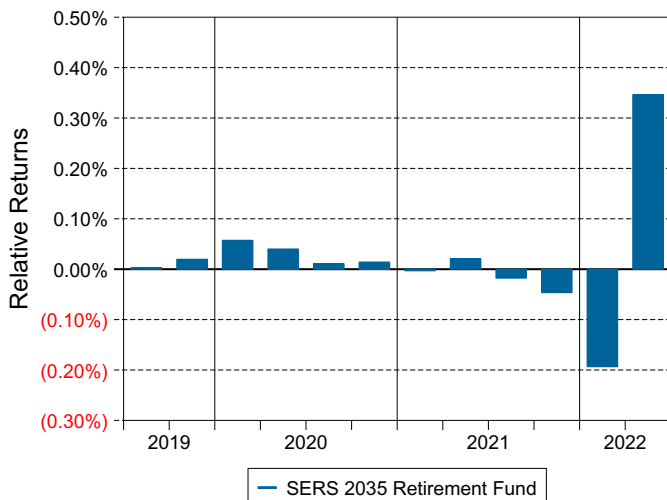
- SERS 2035 Retirement Fund's portfolio posted a (12.43)% return for the quarter placing it in the 40 percentile of the Callan Target Date 2035 group for the quarter and in the 26 percentile for the last year.
- SERS 2035 Retirement Fund's portfolio outperformed the LifePath Index 2035 CB by 0.30% for the quarter and outperformed the LifePath Index 2035 CB for the year by 0.08%.

Performance vs Callan Target Date 2035 (Net)

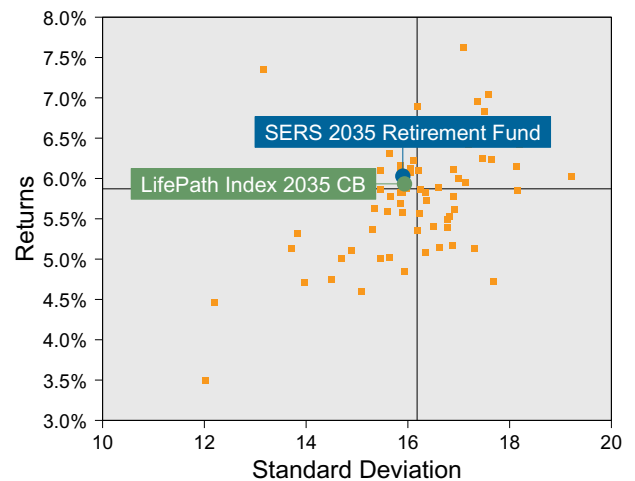


	Last Quarter	Last 1/2 Year	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(11.14)	(15.56)	(11.40)	5.80	6.69	8.79
25th Percentile	(12.15)	(16.92)	(13.60)	5.20	6.24	8.29
Median	(12.61)	(17.95)	(14.44)	4.81	5.87	7.89
75th Percentile	(13.23)	(18.59)	(15.50)	4.21	5.38	7.29
90th Percentile	(13.63)	(19.06)	(16.29)	3.62	4.96	6.91
SERS 2035 Retirement Fund	(12.43)	(17.02)	(13.64)	4.90	6.03	7.35
LifePath Index 2035 CB	(12.73)	(17.15)	(13.71)	4.82	5.93	7.24

Relative Return vs LifePath Index 2035 CB



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

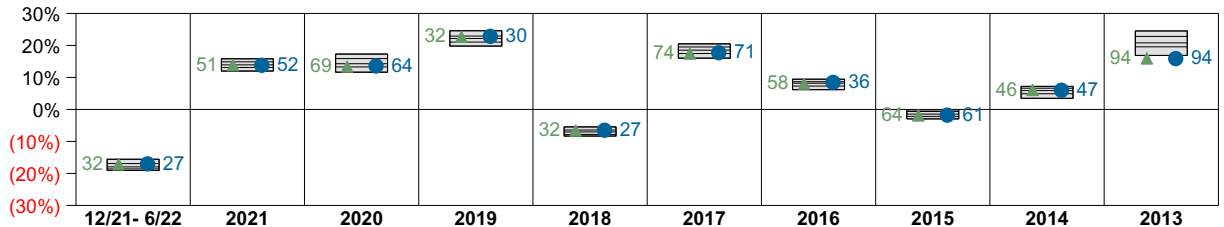


SERS 2035 Retirement Fund Return Analysis Summary

Return Analysis

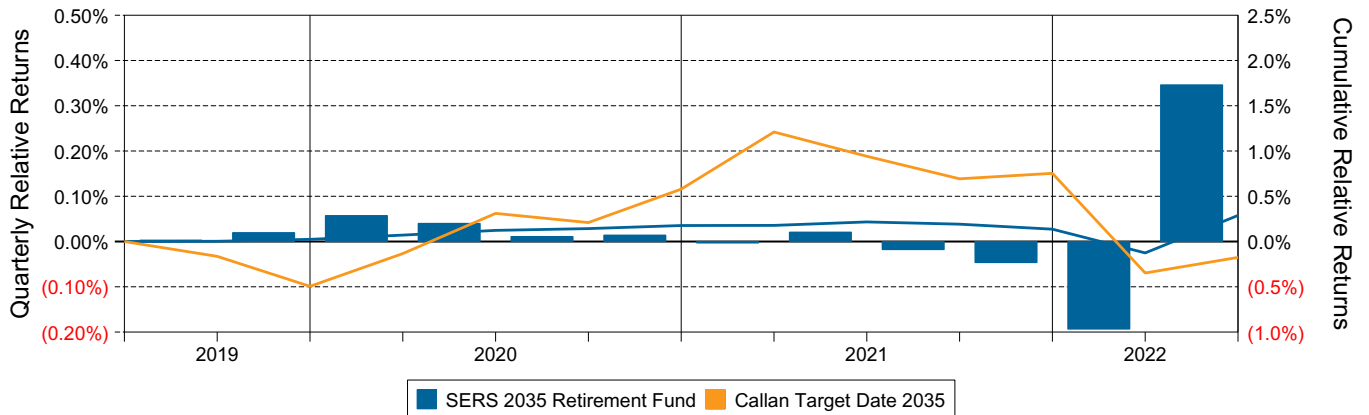
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate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

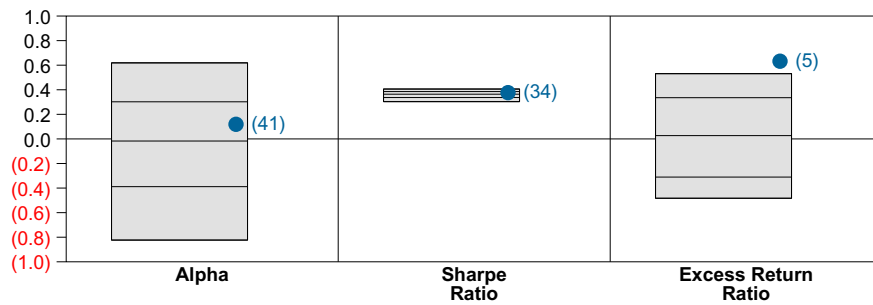


10th Percentile	(15.56)	15.82	17.31	24.59	(5.46)	20.49	9.45	(0.10)	7.21	24.53
25th Percentile	(16.92)	14.88	15.89	22.92	(6.42)	19.53	8.67	(0.64)	6.63	22.82
Median	(17.95)	13.92	14.28	22.17	(7.03)	18.51	8.20	(1.46)	5.89	20.81
75th Percentile	(18.59)	13.10	13.28	21.05	(7.82)	17.47	7.30	(2.17)	4.91	19.56
90th Percentile	(19.06)	11.99	11.64	19.80	(8.31)	16.04	6.17	(2.95)	3.47	16.87
SERS 2035 Retirement Fund	● (17.02)	13.80	13.58	22.84	(6.50)	17.72	8.44	(1.78)	5.99	15.88
LifePath Index 2035 CB	▲ (17.15)	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 June 30, 2022



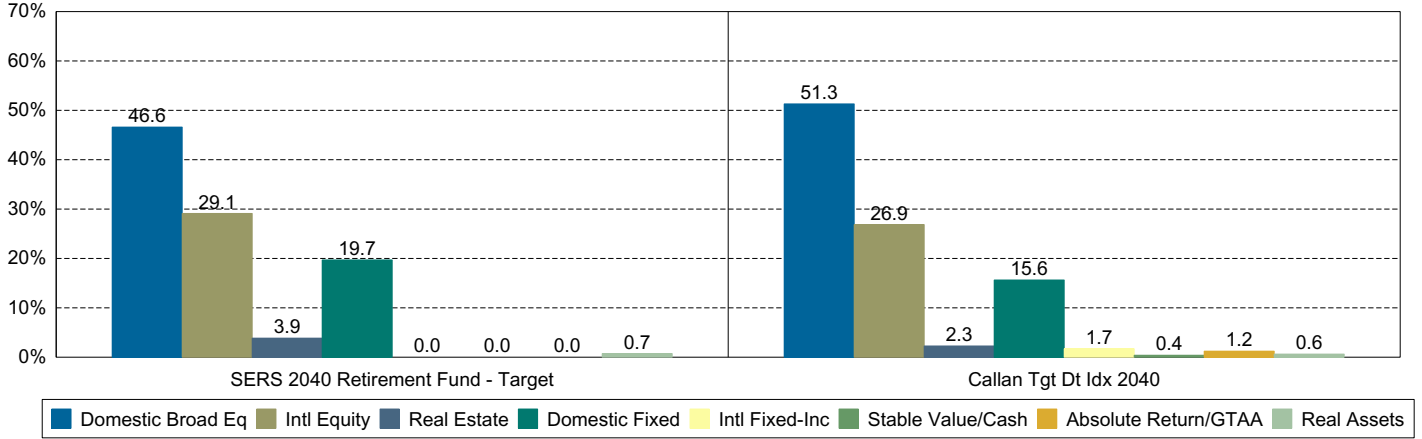
10th Percentile	0.62	0.41	0.53
25th Percentile	0.30	0.39	0.34
Median	(0.02)	0.36	0.03
75th Percentile	(0.39)	0.34	(0.31)
90th Percentile	(0.82)	0.30	(0.48)
SERS 2035 Retirement Fund	● 0.12	0.38	0.63

SERS 2040 Retirement Fund

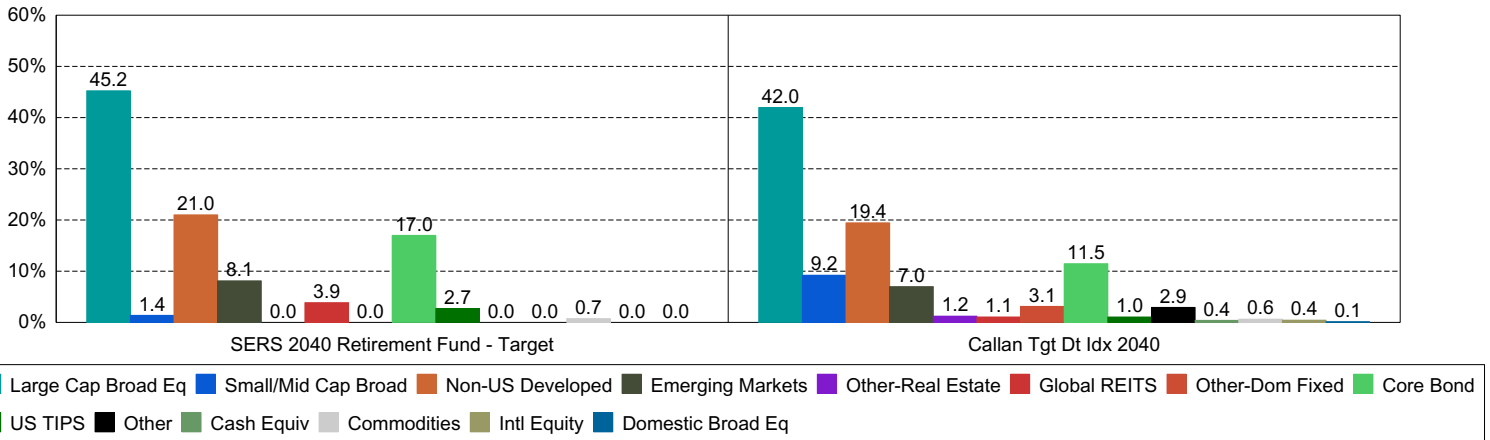
Target Date Fund Asset Allocation as of June 30, 2022

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.

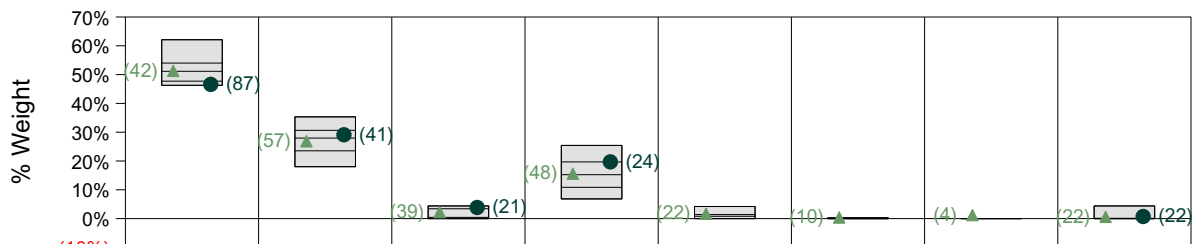
Macro-Level Asset Allocation



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	0.28	0.00	4.40
25th Percentile	54.00	30.65	3.42	19.69	1.40	0.00	0.00	0.11
Median	51.15	27.95	0.43	15.24	0.80	0.00	0.00	0.00
75th Percentile	47.72	23.54	0.00	10.87	0.00	0.00	0.00	0.00
90th Percentile	46.27	18.01	0.00	6.83	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	1.22	0.63

SERS 2040 Retirement Fund Period Ended June 30, 2022

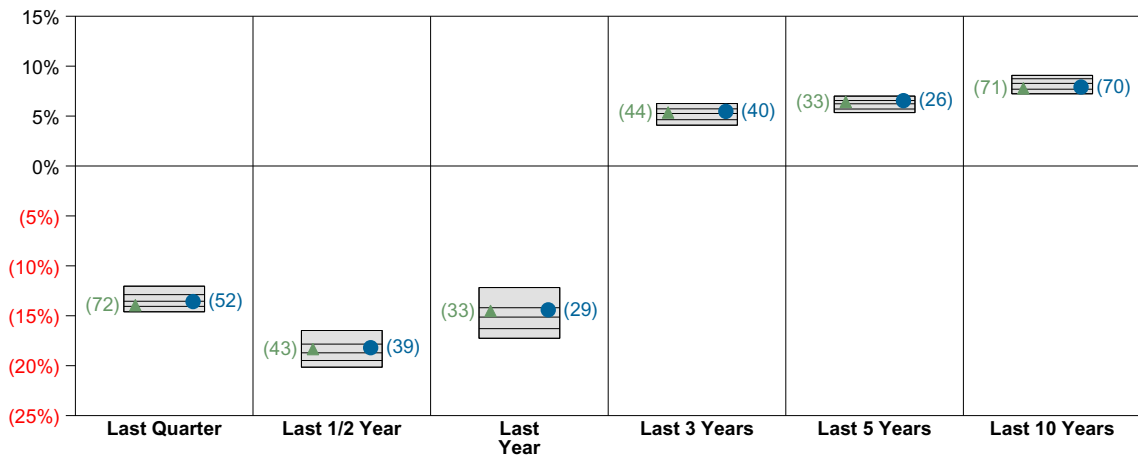
Investment Philosophy

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

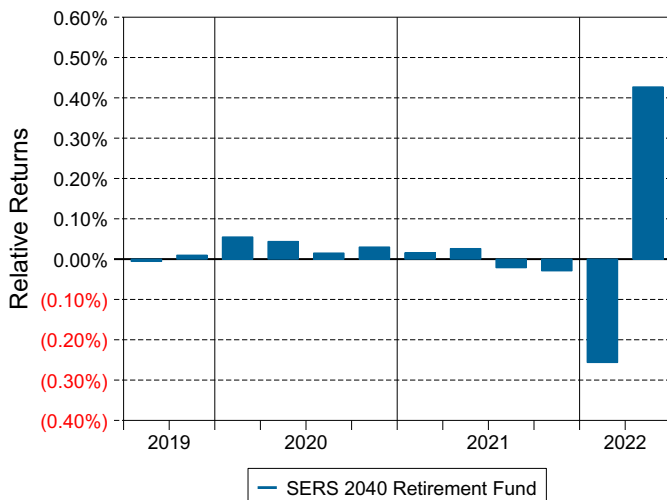
- SERS 2040 Retirement Fund's portfolio posted a (13.58)% return for the quarter placing it in the 52 percentile of the Callan Target Date 2040 group for the quarter and in the 29 percentile for the last year.
- SERS 2040 Retirement Fund's portfolio outperformed the LifePath Index 2040 CB by 0.37% for the quarter and outperformed the LifePath Index 2040 CB for the year by 0.10%.

Performance vs Callan Target Date 2040 (Net)

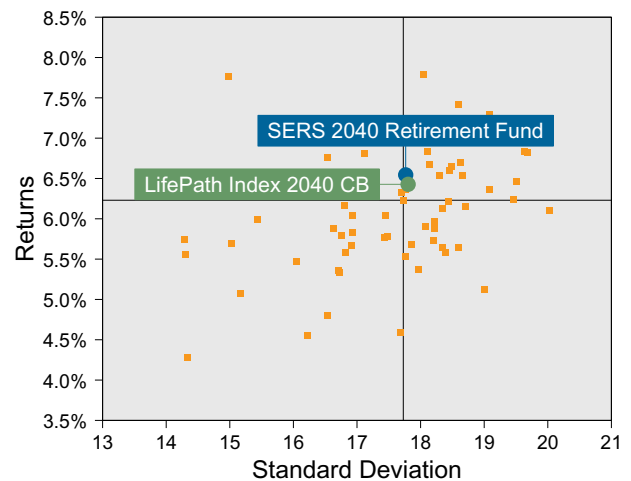


10th Percentile	(12.04)	(16.48)	(12.17)	6.26	7.00	9.07
25th Percentile	(12.88)	(17.84)	(14.20)	5.72	6.56	8.74
Median	(13.55)	(18.71)	(15.13)	5.26	6.23	8.27
75th Percentile	(14.06)	(19.48)	(16.29)	4.64	5.71	7.69
90th Percentile	(14.60)	(20.15)	(17.26)	4.09	5.35	7.23
SERS 2040 Retirement Fund	(13.58)	(18.20)	(14.41)	5.47	6.54	7.91
LifePath Index 2040 CB	(13.95)	(18.34)	(14.51)	5.36	6.43	7.78

Relative Return vs LifePath Index 2040 CB



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

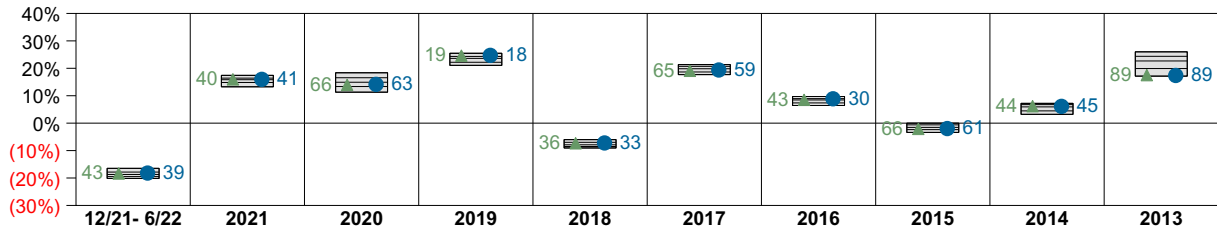


SERS 2040 Retirement Fund Return Analysis Summary

Return Analysis

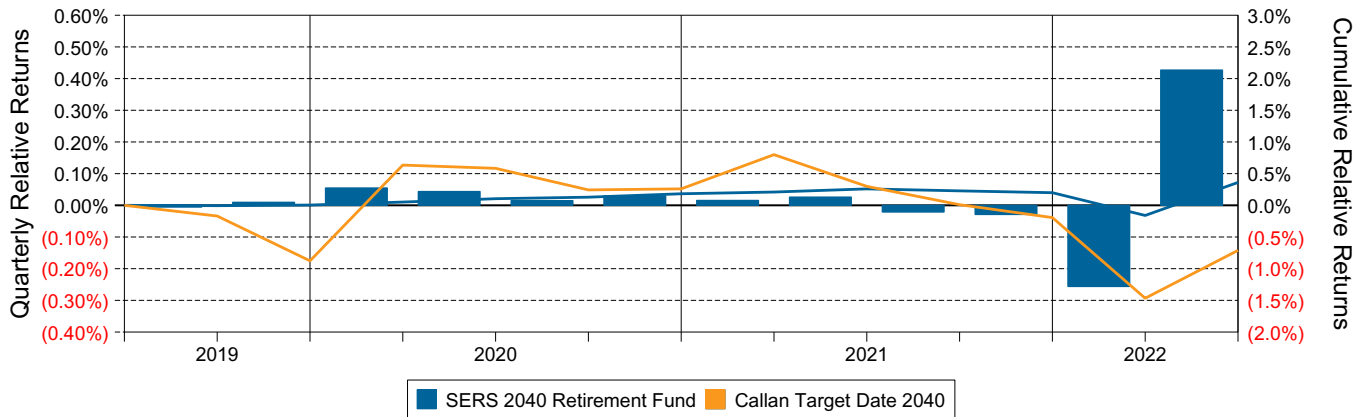
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate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

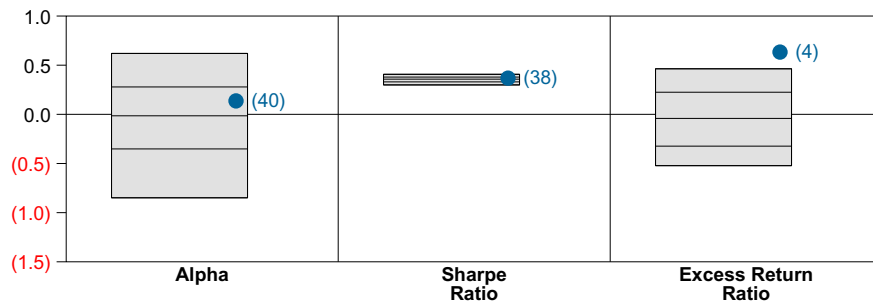


	12/21- 6/22	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	(16.48)	17.43	18.37	25.47	(6.01)	21.35	9.71	(0.03)	7.22	26.00
25th Percentile	(17.84)	16.42	16.56	24.33	(6.99)	20.71	8.94	(0.62)	6.76	24.36
Median	(18.71)	15.84	14.91	23.62	(7.89)	19.84	8.46	(1.54)	5.94	22.67
75th Percentile	(19.48)	14.83	13.35	22.20	(8.52)	18.66	7.38	(2.36)	4.47	19.91
90th Percentile	(20.15)	13.26	11.29	21.07	(9.05)	17.70	6.44	(3.38)	3.21	17.15
SERS 2040 Retirement Fund	● (18.20)	15.96	14.14	24.71	(7.22)	19.38	8.88	(1.98)	6.12	17.39
LifePath Index 2040 CB	▲ (18.34)	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 June 30, 2022



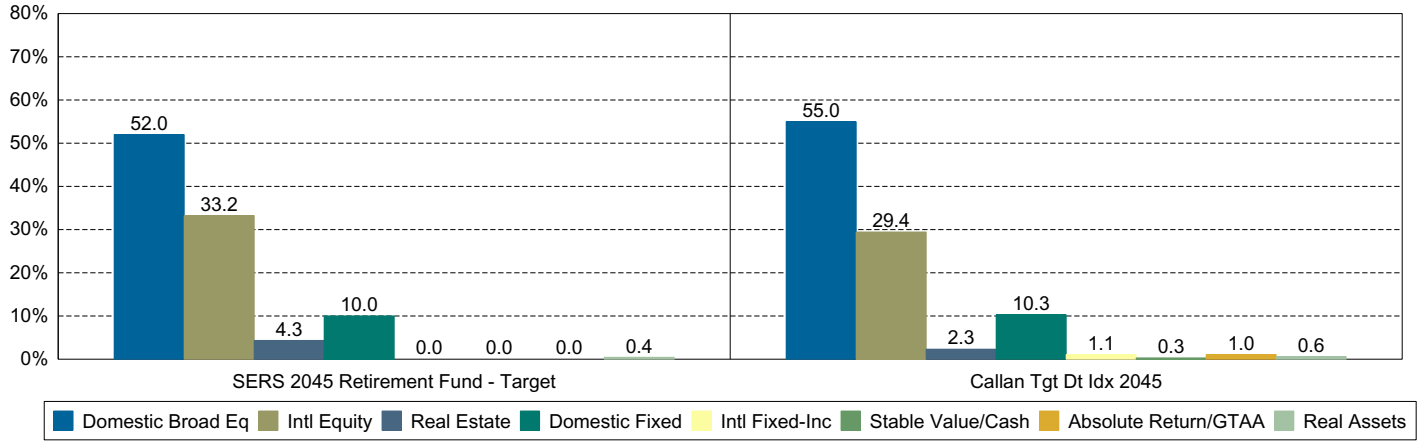
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.62	0.41	0.46
25th Percentile	0.28	0.38	0.23
Median	(0.01)	0.36	(0.04)
75th Percentile	(0.35)	0.33	(0.32)
90th Percentile	(0.85)	0.30	(0.52)
SERS 2040 Retirement Fund	● 0.14	0.37	0.63

SERS 2045 Retirement Fund

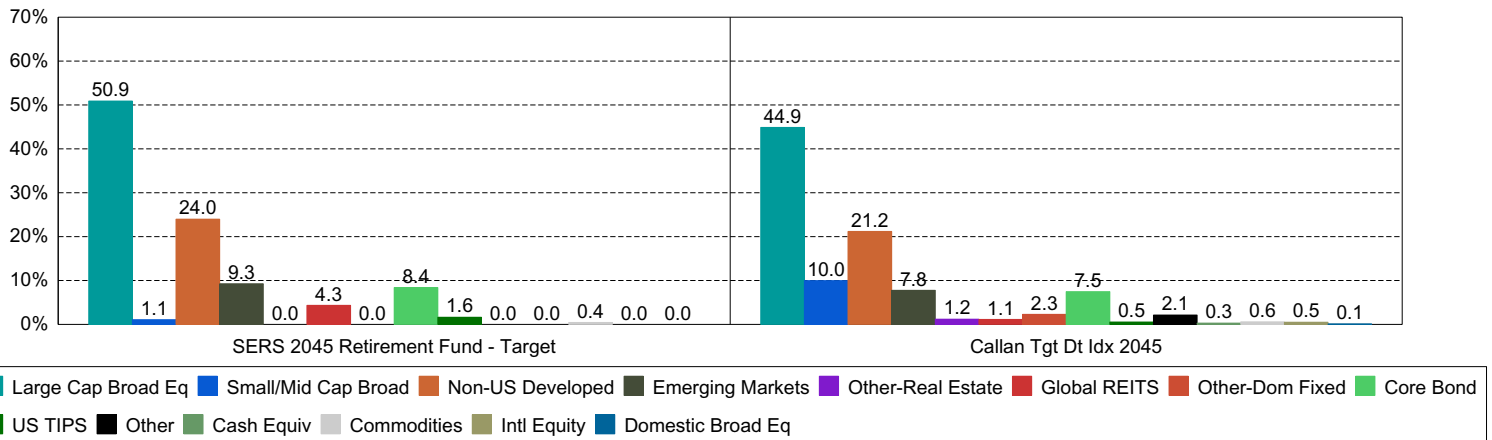
Target Date Fund Asset Allocation as of June 30, 2022

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.

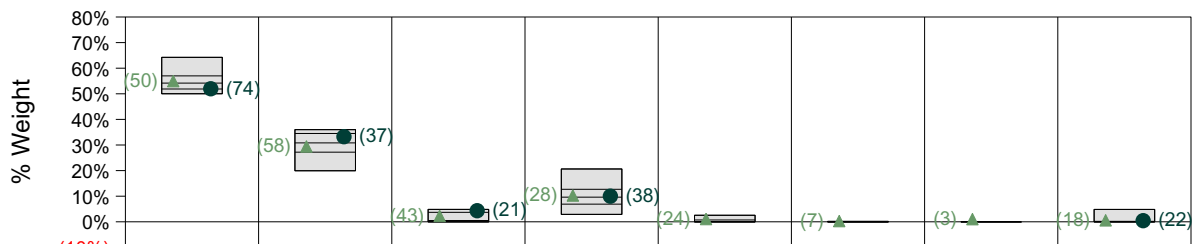
Macro-Level Asset Allocation



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	20.64	2.56	0.17	0.00	4.83
25th Percentile	57.00	34.50	3.70	12.70	0.72	0.00	0.00	0.18
Median	54.17	30.82	0.50	9.62	0.00	0.00	0.00	0.00
75th Percentile	51.87	27.20	0.00	6.90	0.00	0.00	0.00	0.00
90th Percentile	50.03	19.94	0.00	2.90	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	0.58

SERS 2045 Retirement Fund Period Ended June 30, 2022

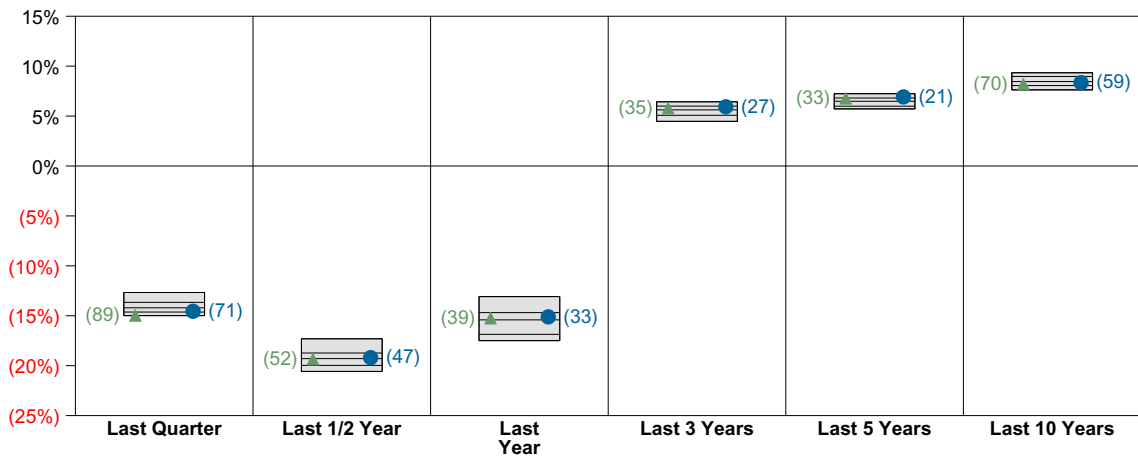
Investment Philosophy

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

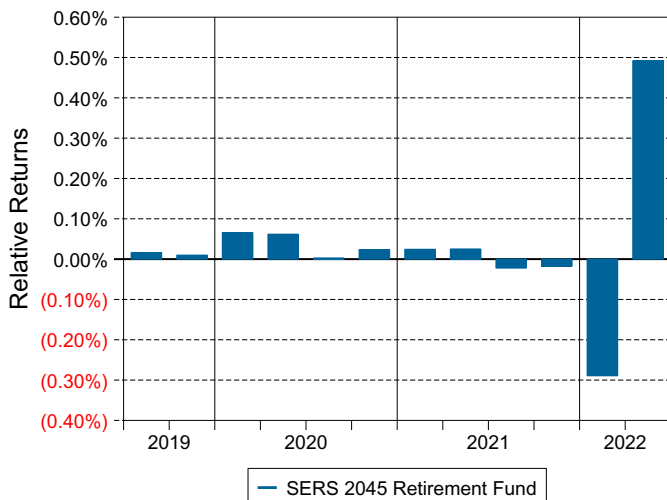
- SERS 2045 Retirement Fund's portfolio posted a (14.55)% return for the quarter placing it in the 71 percentile of the Callan Target Date 2045 group for the quarter and in the 33 percentile for the last year.
- SERS 2045 Retirement Fund's portfolio outperformed the LifePath Index 2045 CB by 0.42% for the quarter and outperformed the LifePath Index 2045 CB for the year by 0.14%.

Performance vs Callan Target Date 2045 (Net)

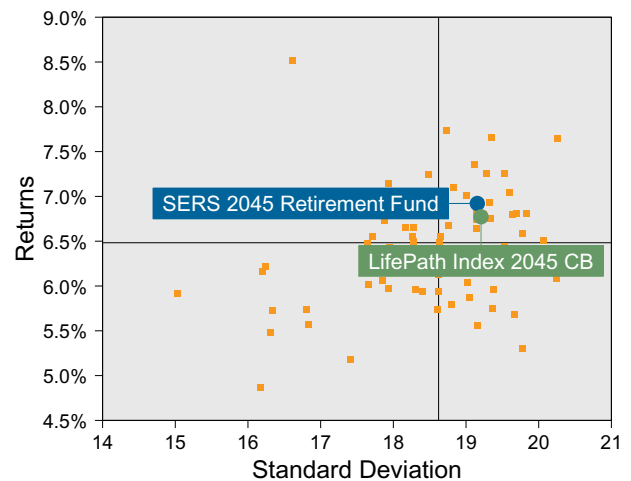


10th Percentile	(12.67)	(17.31)	(13.08)	6.43	7.24	9.34
25th Percentile	(13.66)	(18.73)	(14.69)	6.00	6.81	8.97
Median	(14.20)	(19.29)	(15.41)	5.62	6.48	8.46
75th Percentile	(14.63)	(19.97)	(16.86)	5.08	5.99	8.06
90th Percentile	(14.99)	(20.58)	(17.49)	4.47	5.72	7.62
SERS 2045 Retirement Fund	(14.55)	(19.20)	(15.11)	5.93	6.92	8.35
LifePath Index 2045 CB	(14.97)	(19.36)	(15.25)	5.79	6.77	8.20

Relative Return vs LifePath Index 2045 CB



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

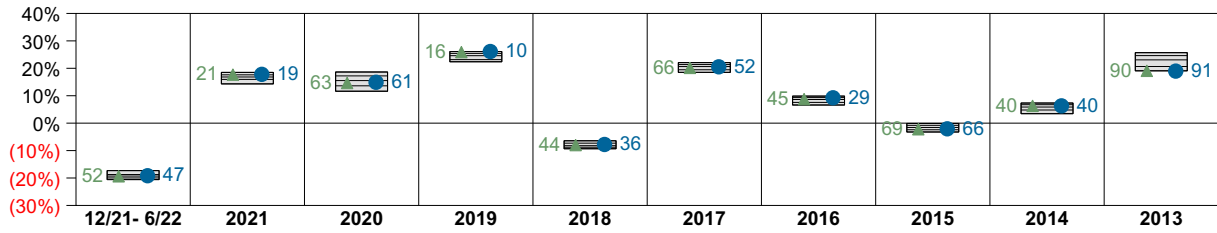


SERS 2045 Retirement Fund Return Analysis Summary

Return Analysis

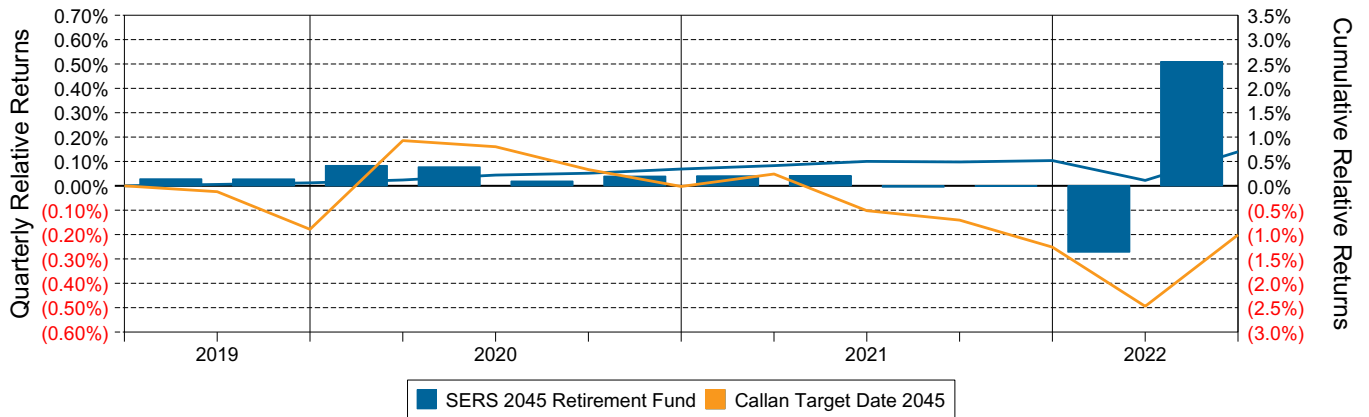
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate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

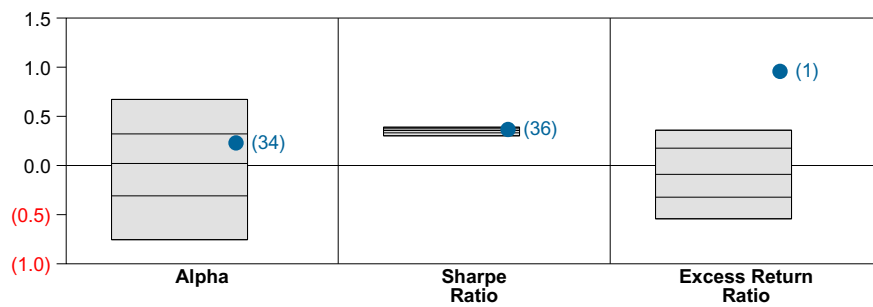


	12/21- 6/22	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	(17.31)	18.51	18.65	26.11	(6.43)	22.08	9.86	(0.12)	7.33	25.70
25th Percentile	(18.73)	17.61	17.23	25.44	(7.30)	21.36	9.32	(0.79)	6.73	24.63
Median	(19.29)	16.83	15.52	24.60	(8.21)	20.63	8.63	(1.57)	5.87	23.08
75th Percentile	(19.97)	15.96	13.61	23.16	(8.78)	19.47	7.56	(2.41)	4.80	20.66
90th Percentile	(20.58)	14.32	11.64	22.38	(9.33)	18.51	6.62	(3.23)	3.45	19.08
SERS 2045 Retirement Fund	● (19.17)	17.79	14.90	26.12	(7.78)	20.54	9.25	(2.07)	6.30	18.97
LifePath Index 2045 CB	▲ (19.36)	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 June 30, 2022

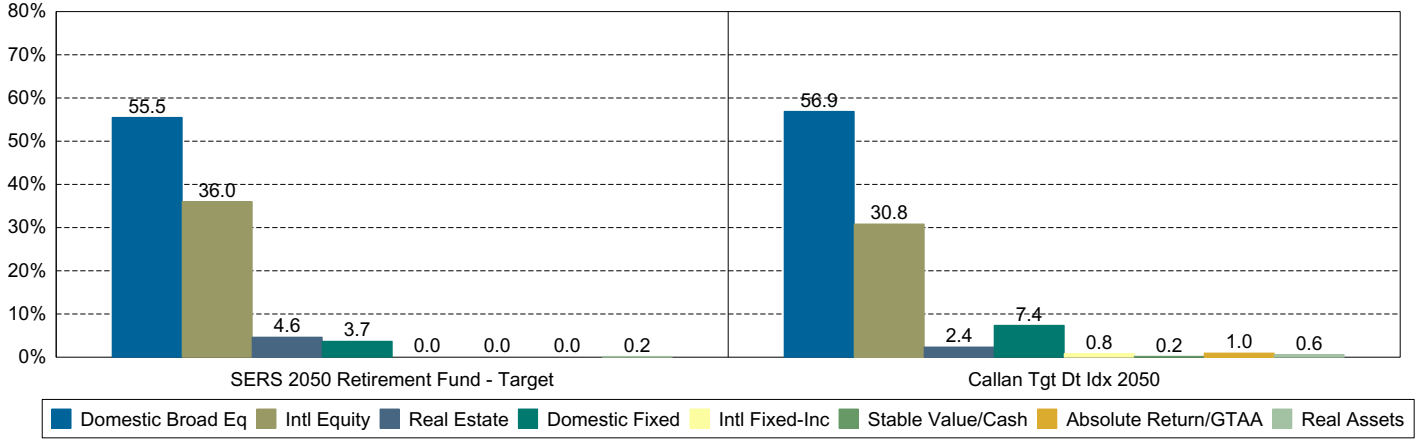


	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.67	0.39	0.36
25th Percentile	0.32	0.37	0.18
Median	0.02	0.36	(0.09)
75th Percentile	(0.31)	0.33	(0.32)
90th Percentile	(0.75)	0.30	(0.54)
SERS 2045 Retirement Fund	● 0.23	0.37	0.96

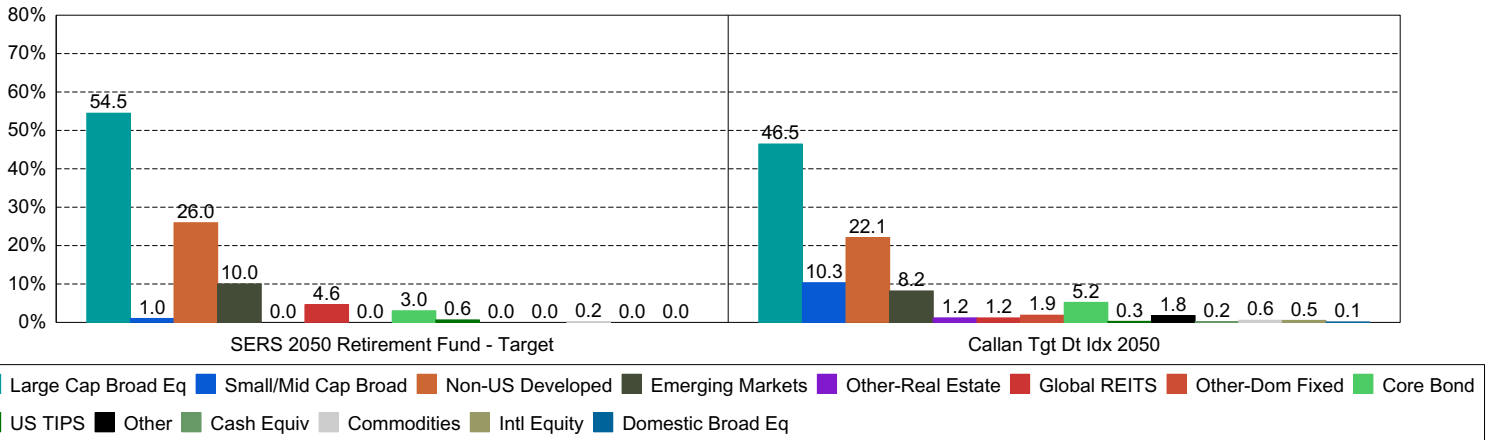
SERS 2050 Retirement Fund Target Date Fund Asset Allocation as of June 30, 2022

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.

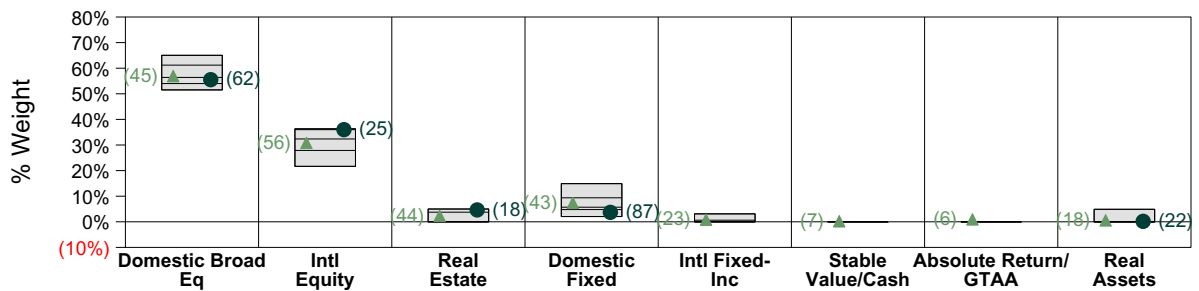
Macro-Level Asset Allocation



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	14.90	3.10	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	0.00	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	2.05	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 June 30, 2022

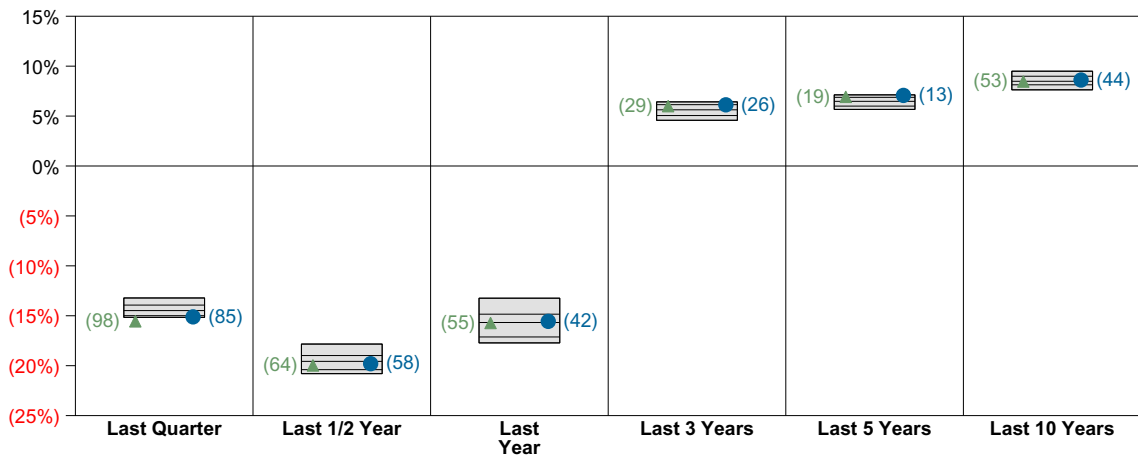
Investment Philosophy

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

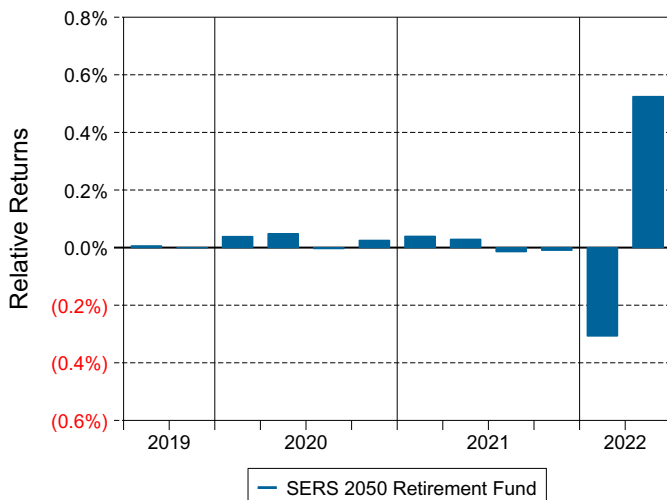
- SERS 2050 Retirement Fund's portfolio posted a (15.11)% return for the quarter placing it in the 85 percentile of the Callan Target Date 2050 group for the quarter and in the 42 percentile for the last year.
- SERS 2050 Retirement Fund's portfolio outperformed the LifePath Index 2050 CB by 0.44% for the quarter and outperformed the LifePath Index 2050 CB for the year by 0.16%.

Performance vs Callan Target Date 2050 (Net)

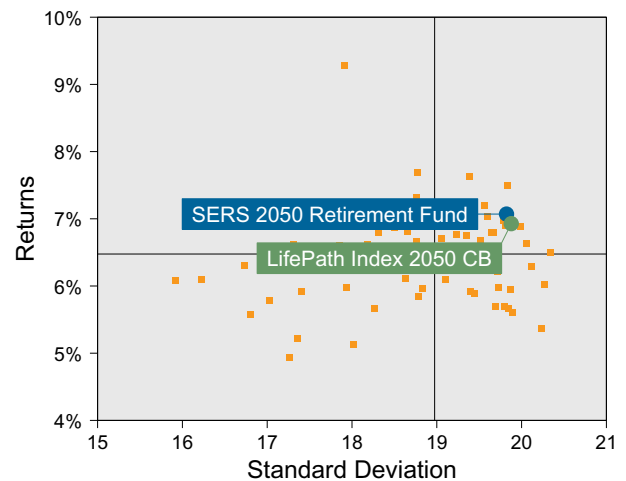


	Last Quarter	Last 1/2 Year	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(13.22)	(17.84)	(13.24)	6.42	7.13	9.50
25th Percentile	(13.93)	(18.99)	(14.84)	6.14	6.88	8.99
Median	(14.48)	(19.57)	(15.68)	5.63	6.48	8.49
75th Percentile	(14.99)	(20.40)	(17.12)	5.05	6.00	8.13
90th Percentile	(15.16)	(20.80)	(17.72)	4.58	5.67	7.63
SERS 2050 Retirement Fund	(15.11)	(19.80)	(15.56)	6.13	7.07	8.61
LifePath Index 2050 CB	(15.56)	(19.97)	(15.72)	6.00	6.93	8.46

Relative Return vs LifePath Index 2050 CB



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

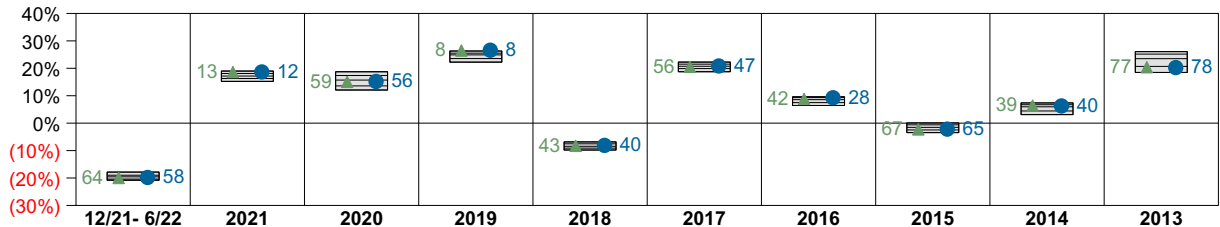


SERS 2050 Retirement Fund Return Analysis Summary

Return Analysis

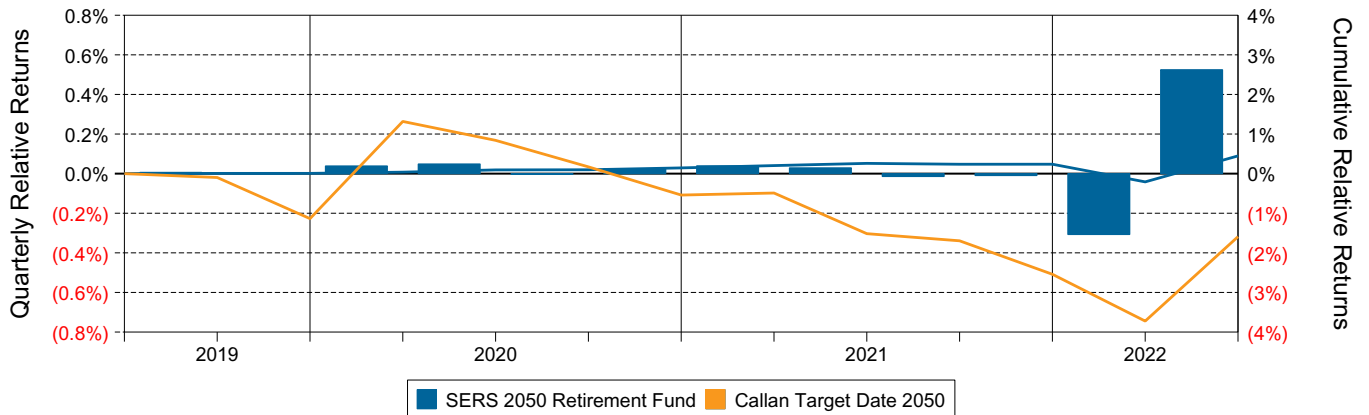
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate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

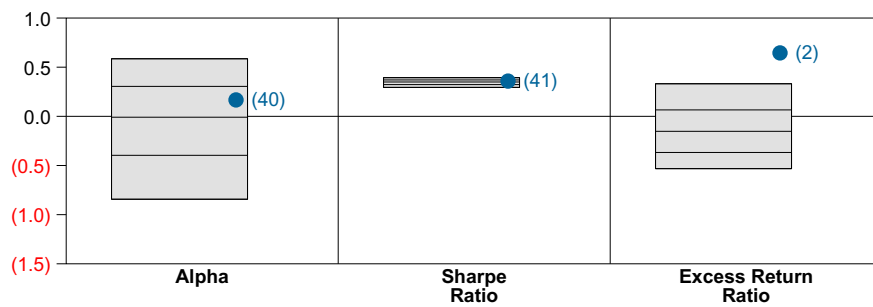


	12/21- 6/22	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	(17.84)	18.99	18.74	26.30	(6.84)	22.27	9.60	0.05	7.37	26.07
25th Percentile	(18.99)	18.10	17.38	25.51	(7.53)	21.51	9.32	(0.61)	6.72	25.18
Median	(19.57)	17.17	15.71	24.89	(8.44)	20.74	8.57	(1.54)	5.96	23.51
75th Percentile	(20.40)	16.27	13.59	23.55	(9.11)	19.91	7.49	(2.48)	4.45	20.69
90th Percentile	(20.80)	15.23	12.08	22.25	(9.80)	18.75	6.44	(3.45)	3.12	18.49
SERS 2050 Retirement Fund	● (19.80)	18.67	15.20	26.60	(8.11)	20.85	9.26	(2.17)	6.28	20.26
LifePath Index 2050 CB	▲ (19.97)	18.62	15.07	26.48	(8.26)	20.55	8.82	(2.26)	6.41	20.40

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 June 30, 2022



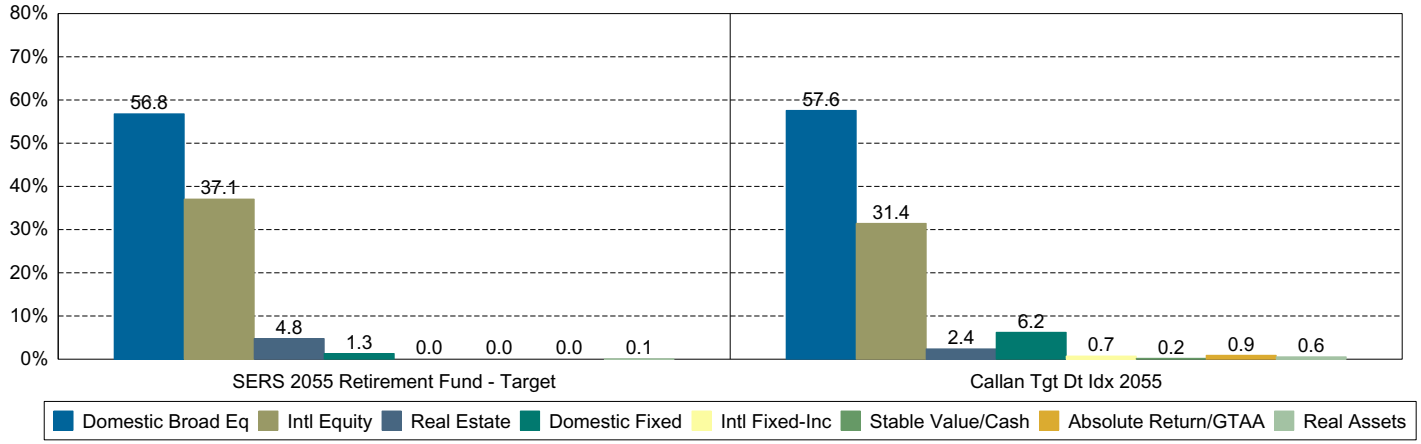
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.59	0.39	0.33
25th Percentile	0.30	0.37	0.07
Median	(0.01)	0.35	(0.15)
75th Percentile	(0.40)	0.32	(0.37)
90th Percentile	(0.84)	0.29	(0.53)
SERS 2050 Retirement Fund	● 0.17	0.36	0.65

SERS 2055 Retirement Fund

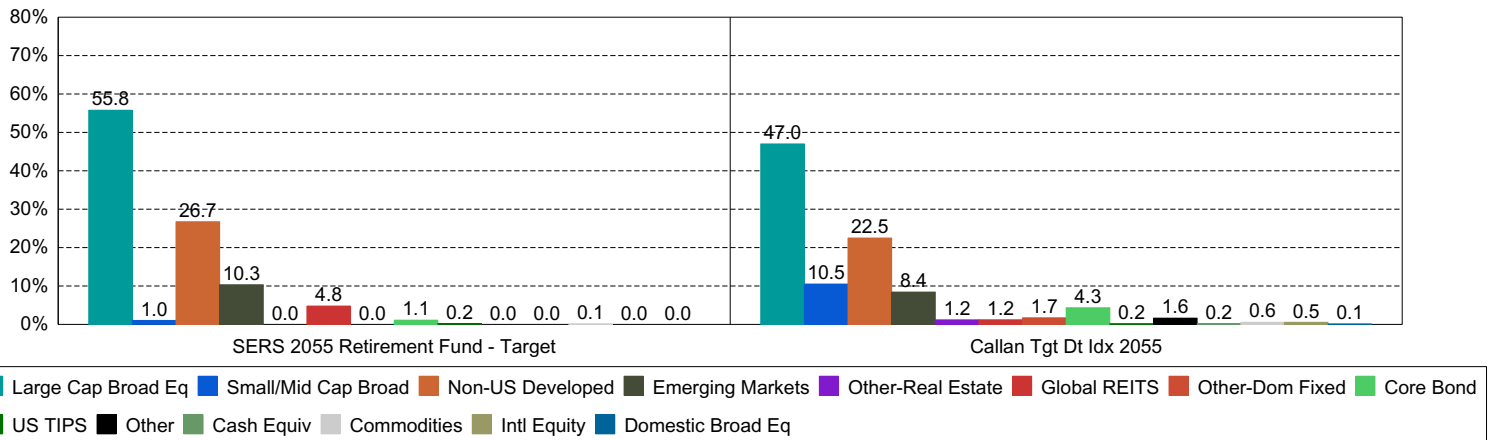
Target Date Fund Asset Allocation as of June 30, 2022

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.

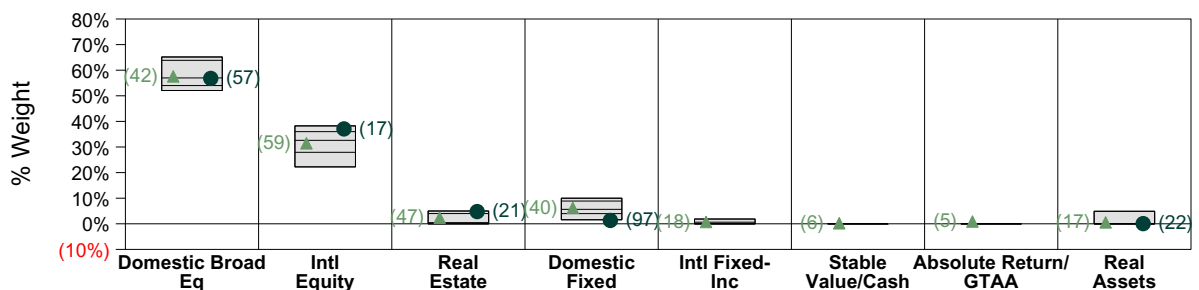
Macro-Level Asset Allocation



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	1.86	0.00	0.00	4.90
25th Percentile	63.85	36.00	4.00	8.89	0.62	0.00	0.00	0.01
Median	56.98	32.60	0.46	5.65	0.00	0.00	0.00	0.00
75th Percentile	54.00	27.93	0.00	3.98	0.00	0.00	0.00	0.00
90th Percentile	52.07	22.23	0.00	1.58	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 June 30, 2022

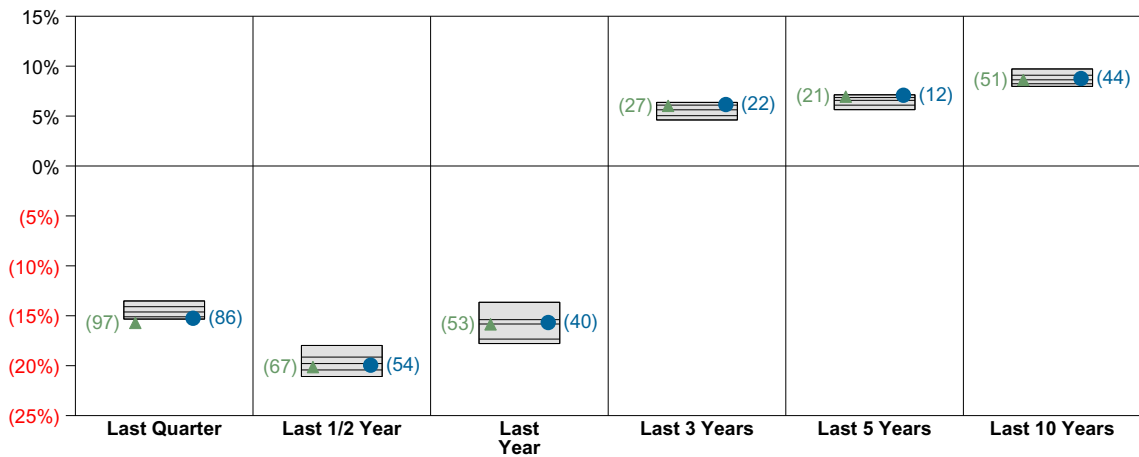
Investment Philosophy

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

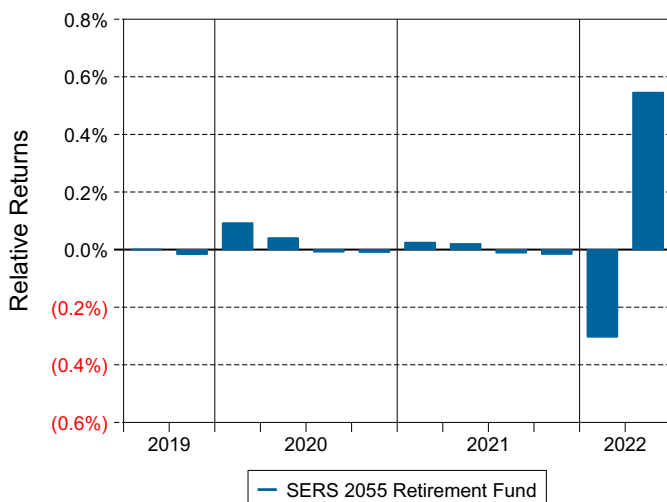
- SERS 2055 Retirement Fund's portfolio posted a (15.25)% return for the quarter placing it in the 86 percentile of the Callan Target Date 2055 group for the quarter and in the 40 percentile for the last year.
- SERS 2055 Retirement Fund's portfolio outperformed the LifePath Index 2055 CB by 0.46% for the quarter and outperformed the LifePath Index 2055 CB for the year by 0.18%.

Performance vs Callan Target Date 2055 (Net)

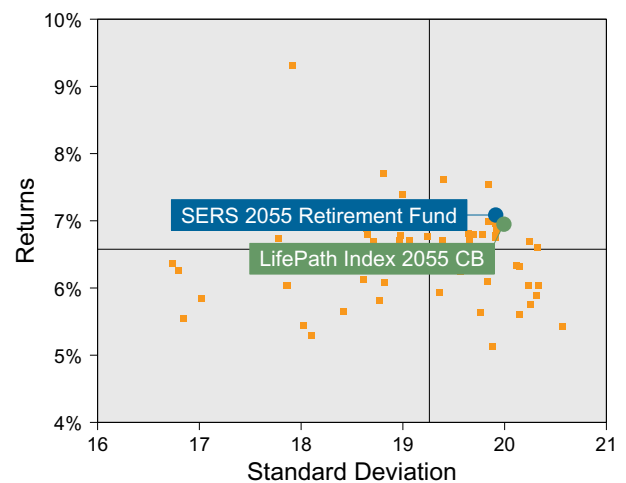


	Last Quarter	Last 1/2 Year	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(13.52)	(17.98)	(13.65)	6.37	7.13	9.72
25th Percentile	(14.09)	(19.14)	(15.39)	6.10	6.85	9.09
Median	(14.62)	(19.79)	(15.83)	5.63	6.58	8.63
75th Percentile	(15.10)	(20.43)	(17.34)	5.04	6.09	8.24
90th Percentile	(15.33)	(21.08)	(17.78)	4.61	5.64	7.97
SERS 2055 Retirement Fund	(15.25)	(19.95)	(15.68)	6.16	7.09	8.76
LifePath Index 2055 CB	(15.71)	(20.14)	(15.86)	6.03	6.95	8.62

Relative Return vs LifePath Index 2055 CB



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

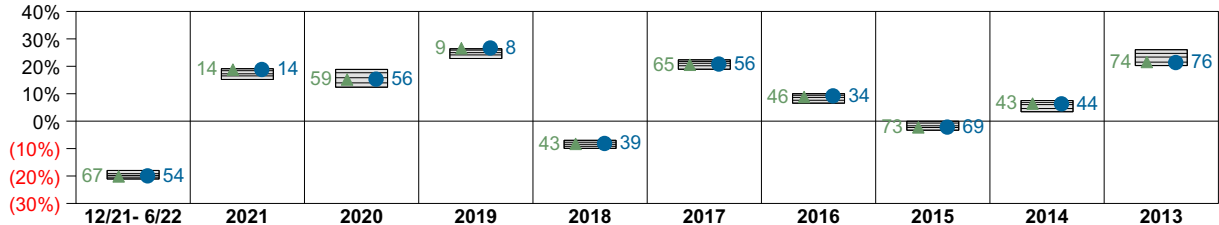


SERS 2055 Retirement Fund Return Analysis Summary

Return Analysis

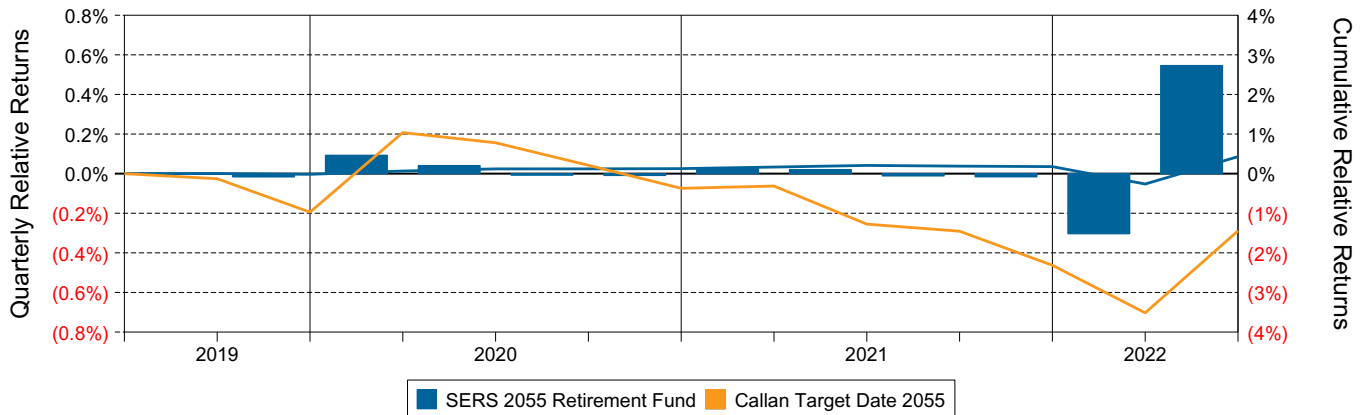
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate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

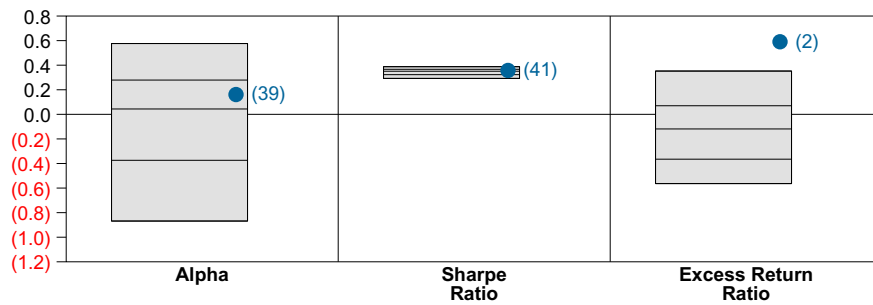


	12/21- 6/22	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	(17.98)	19.12	18.86	26.39	(6.99)	22.36	10.01	(0.05)	7.53	26.05
25th Percentile	(19.14)	18.40	17.65	25.90	(7.69)	21.77	9.44	(0.69)	6.85	24.70
Median	(19.79)	17.27	15.83	24.97	(8.44)	21.10	8.65	(1.69)	6.04	23.36
75th Percentile	(20.43)	16.50	13.95	24.15	(9.18)	20.20	7.61	(2.31)	4.60	21.51
90th Percentile	(21.08)	15.20	12.38	22.84	(9.93)	18.92	6.55	(3.30)	3.44	20.26
SERS 2055 Retirement Fund	● (19.95)	18.83	15.32	26.67	(8.13)	20.82	9.22	(2.17)	6.31	21.37
LifePath Index 2055 CB	▲ (20.14)	18.81	15.18	26.58	(8.28)	20.55	8.82	(2.26)	6.41	21.58

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 June 30, 2022



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.58	0.39	0.35
25th Percentile	0.28	0.37	0.07
Median	0.04	0.35	(0.12)
75th Percentile	(0.37)	0.32	(0.36)
90th Percentile	(0.87)	0.29	(0.56)
SERS 2055 Retirement Fund	● 0.16	0.36	0.59

SERS 2060 Retirement Fund Period Ended June 30, 2022

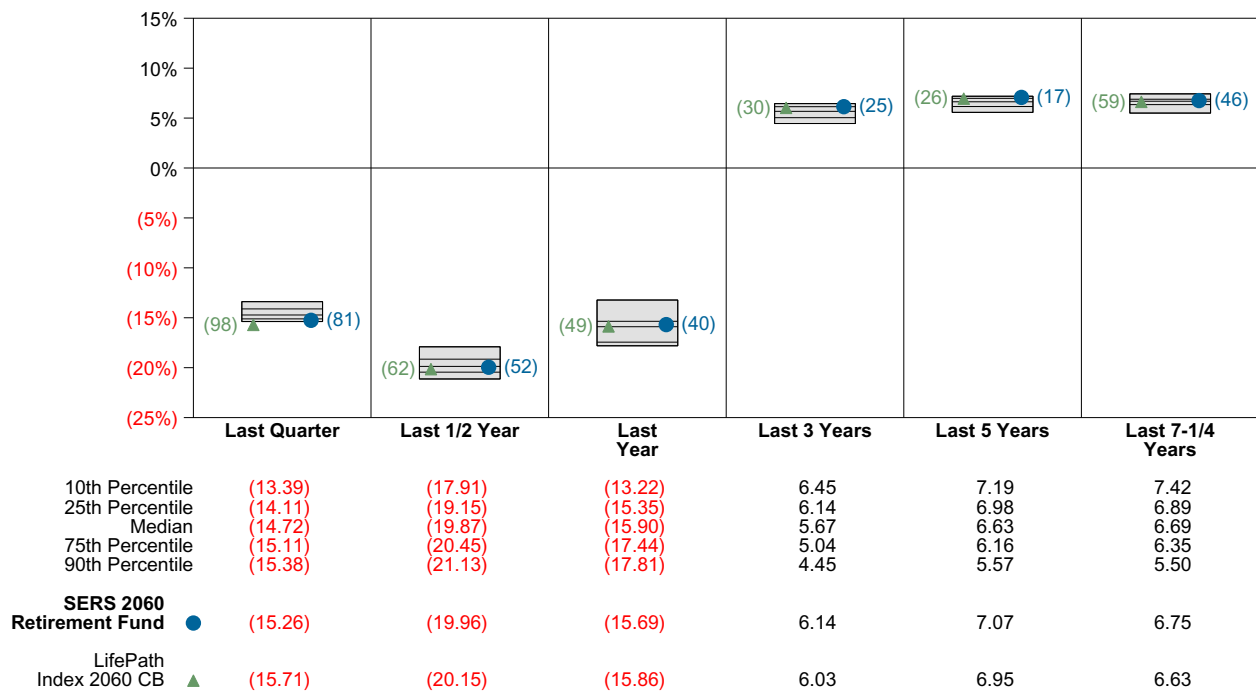
Investment Philosophy

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.

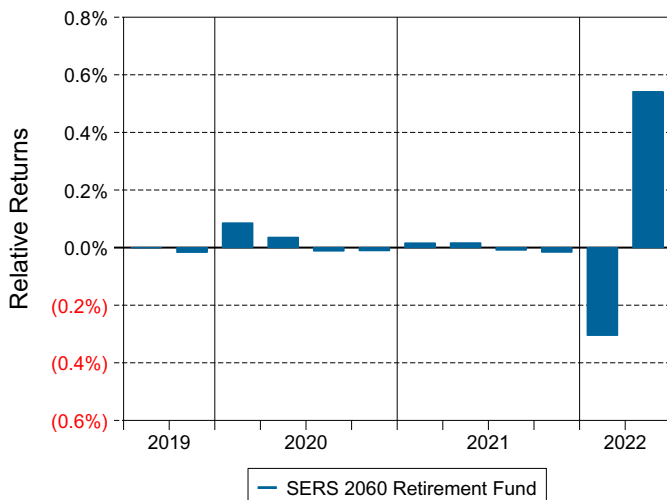
Quarterly Summary and Highlights

- SERS 2060 Retirement Fund's portfolio posted a (15.26)% return for the quarter placing it in the 81 percentile of the Callan Target Date 2060 group for the quarter and in the 40 percentile for the last year.
- SERS 2060 Retirement Fund's portfolio outperformed the LifePath Index 2060 CB by 0.46% for the quarter and outperformed the LifePath Index 2060 CB for the year by 0.18%.

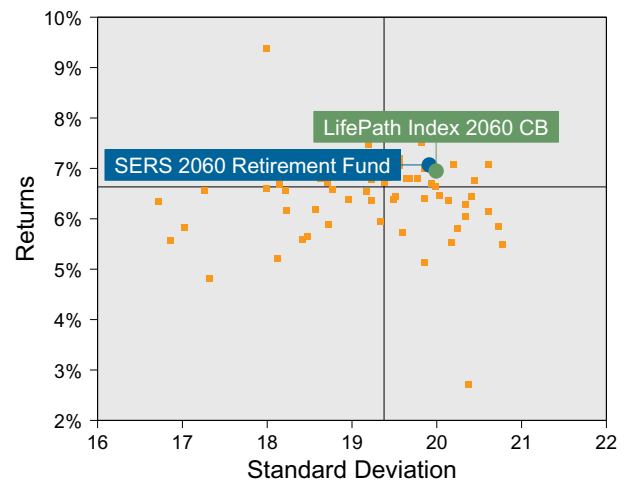
Performance vs Callan Target Date 2060 (Net)



Relative Return vs LifePath Index 2060 CB



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

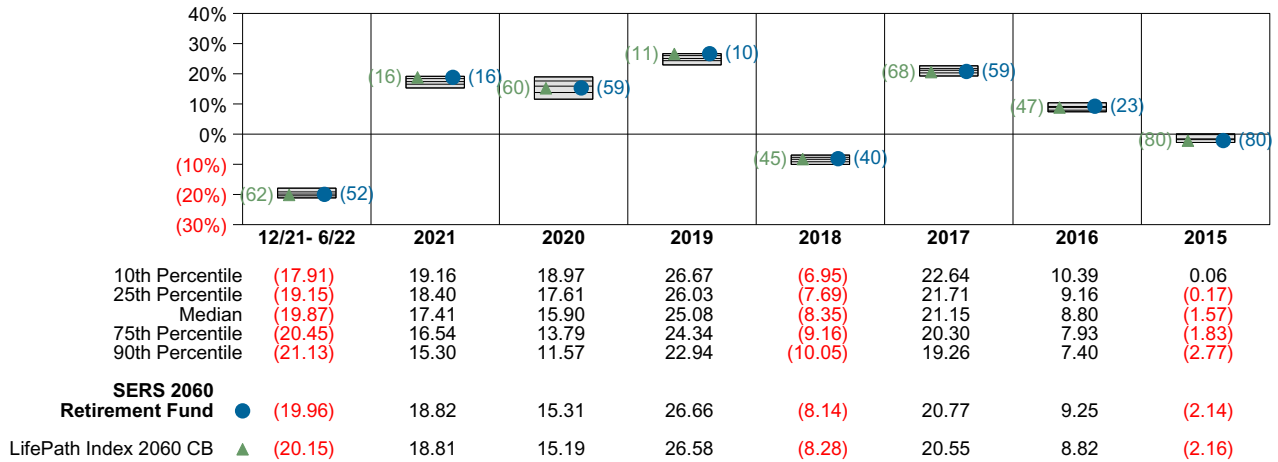


SERS 2060 Retirement Fund Return Analysis Summary

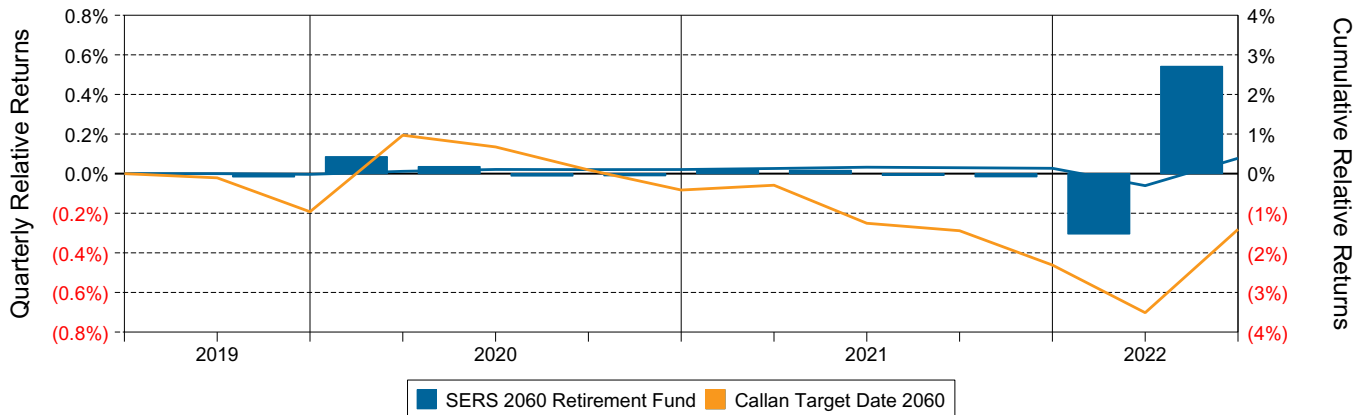
Return Analysis

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.

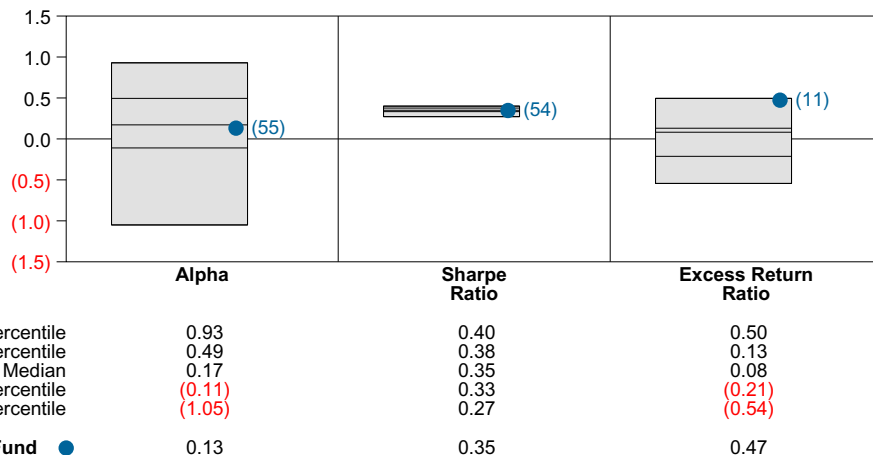
Performance vs Callan Target Date 2060 (Net)



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-Quarter Years Ended June 30, 2022



SERS 2065 Retirement Fund

Period Ended June 30, 2022

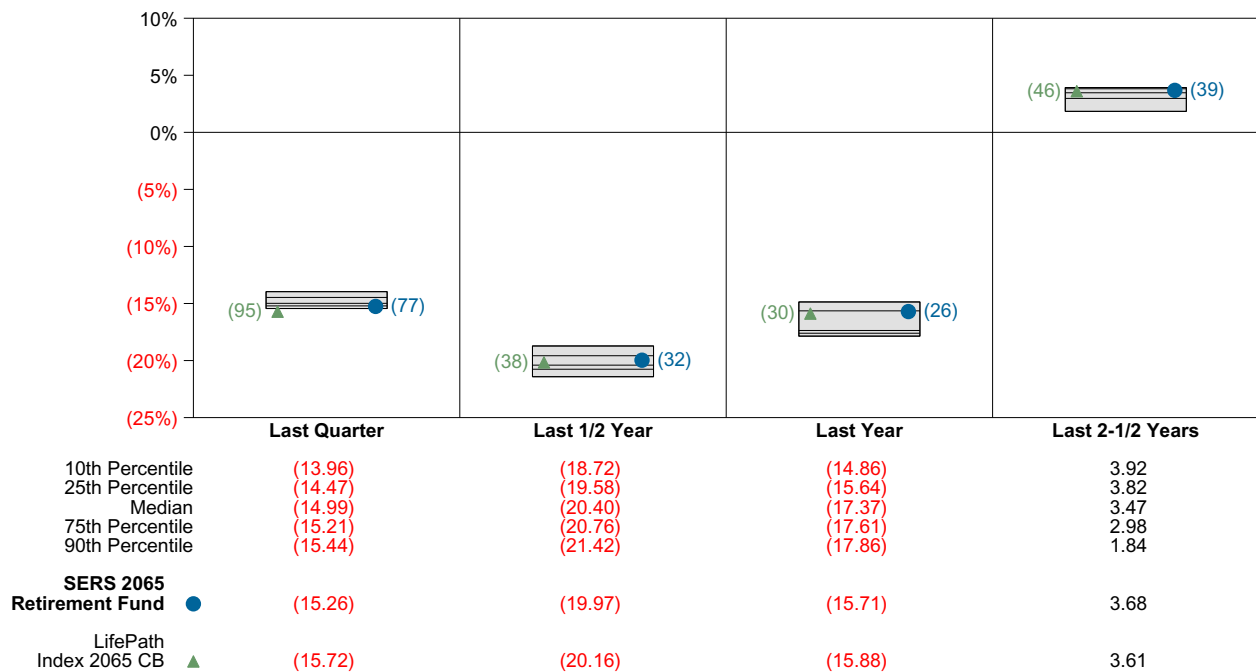
Investment Philosophy

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.

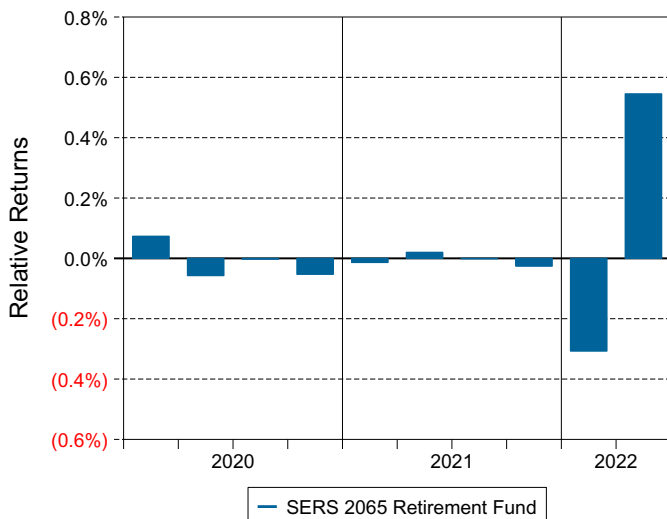
Quarterly Summary and Highlights

- SERS 2065 Retirement Fund's portfolio posted a (15.26)% return for the quarter placing it in the 77 percentile of the Callan Target Date 2065 group for the quarter and in the 26 percentile for the last year.
- SERS 2065 Retirement Fund's portfolio outperformed the LifePath Index 2065 CB by 0.46% for the quarter and outperformed the LifePath Index 2065 CB for the year by 0.18%.

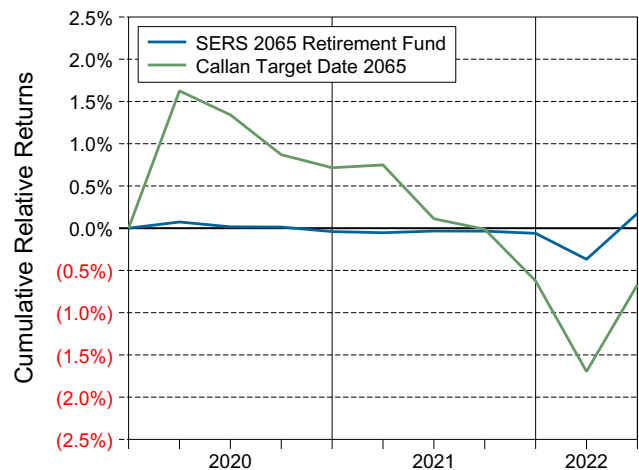
Performance vs Callan Target Date 2065 (Net)



Relative Return vs LifePath Index 2065 CB



Cumulative Returns vs LifePath Index 2065 CB



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

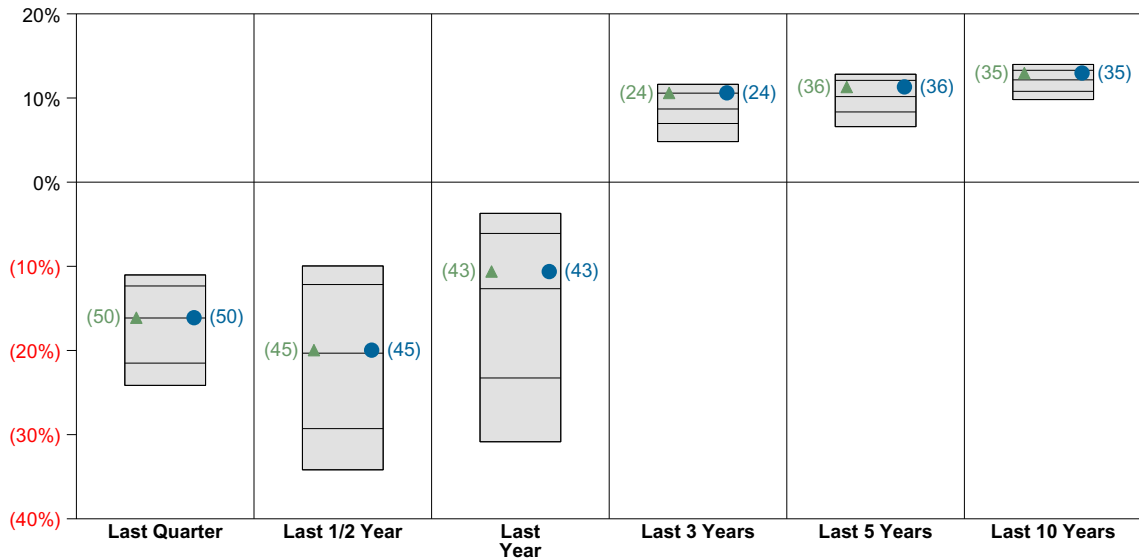
Investment Philosophy

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

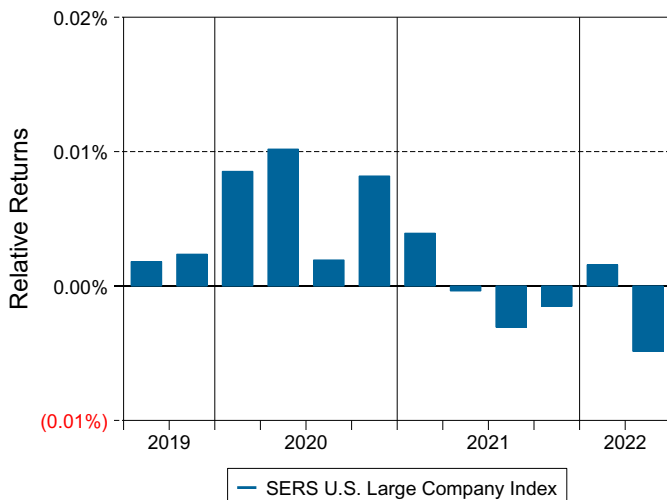
- SERS U.S. Large Company Index's portfolio posted a (16.11)% return for the quarter placing it in the 50 percentile of the Callan Large Cap Broad Equity Mut Funds group for the quarter and in the 43 percentile for the last year.
- SERS U.S. Large Company Index's portfolio underperformed the S&P 500 Index by 0.00% for the quarter and underperformed the S&P 500 Index for the year by 0.01%.

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

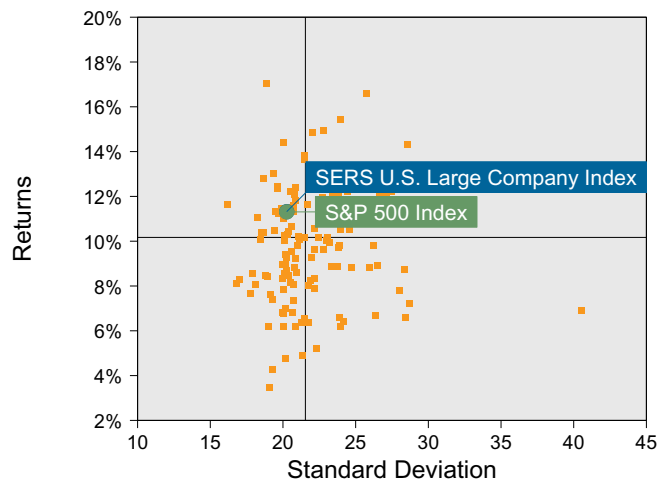


10th Percentile	(11.02)	(9.96)	(3.71)	11.63	12.82	13.99
25th Percentile	(12.34)	(12.16)	(6.09)	10.58	12.09	13.29
Median	(16.14)	(20.32)	(12.66)	8.69	10.17	12.16
75th Percentile	(21.50)	(29.28)	(23.27)	6.97	8.34	10.79
90th Percentile	(24.15)	(34.18)	(30.85)	4.82	6.60	9.81
SERS U.S. Large Company Index	● (16.11)	(19.96)	(10.62)	10.61	11.32	12.97
S&P 500 Index	▲ (16.10)	(19.96)	(10.62)	10.60	11.31	12.96

Relative Return vs S&P 500 Index



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

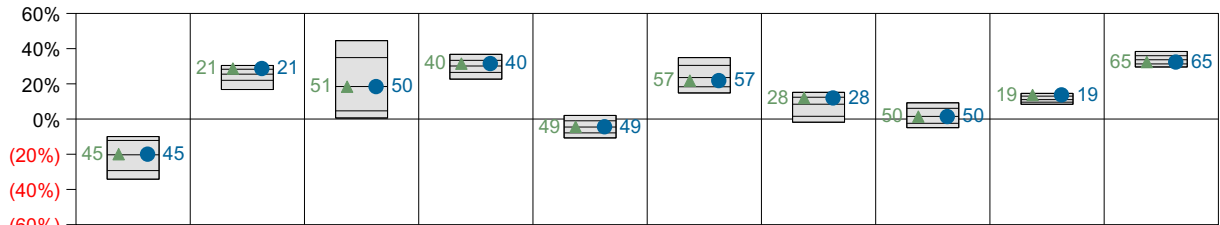


SERS U.S. Large Company Index Return Analysis Summary

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.

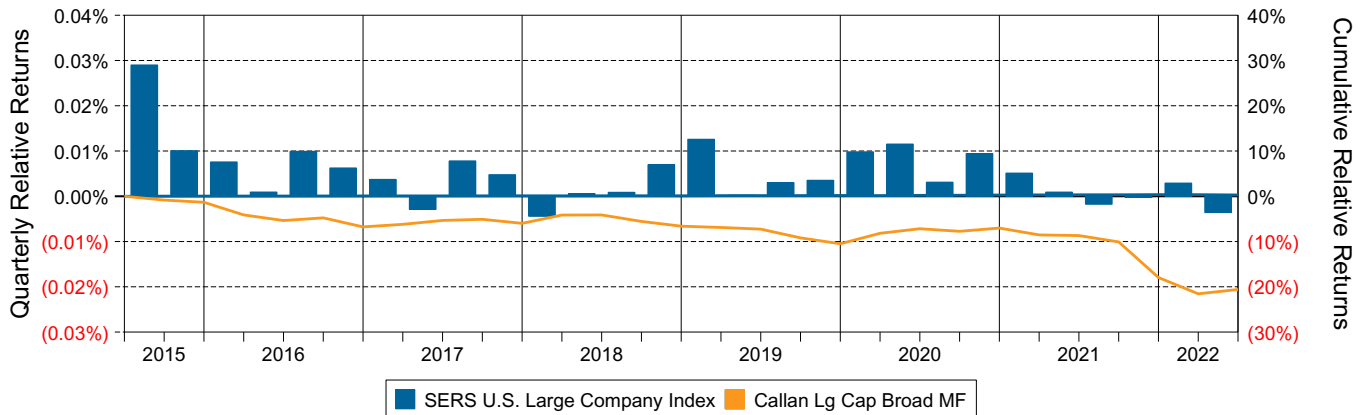
Performance vs Callan Large Cap Broad Equity Mut Funds (Institutional Net)



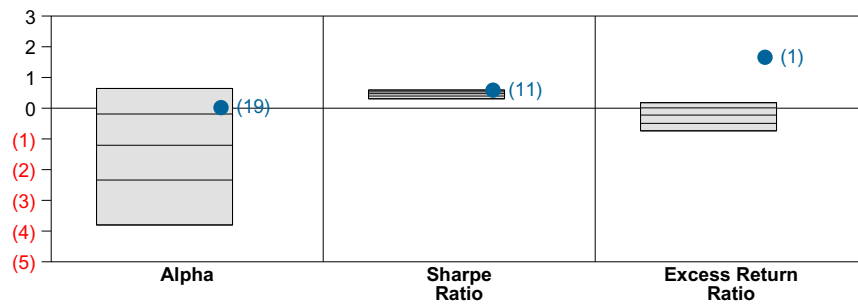
	12/21- 6/22	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	(9.96)	30.44	44.54	36.76	2.05	34.91	15.17	9.23	14.58	38.40
25th Percentile	(12.16)	28.29	34.90	33.34	(1.00)	30.48	12.39	6.09	13.01	35.98
Median	(20.32)	25.50	18.47	30.14	(4.54)	23.56	8.43	1.50	11.02	33.69
75th Percentile	(29.28)	22.00	4.64	26.51	(7.86)	18.33	1.56	(2.42)	9.59	31.31
90th Percentile	(34.18)	16.77	0.58	22.66	(10.72)	14.82	(1.82)	(4.91)	8.38	29.58

SERS U.S. Large Company Index	(19.96)	28.71	18.44	31.51	(4.38)	21.85	11.99	1.41	13.72	32.39
S&P 500 Index	(19.96)	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 June 30, 2022



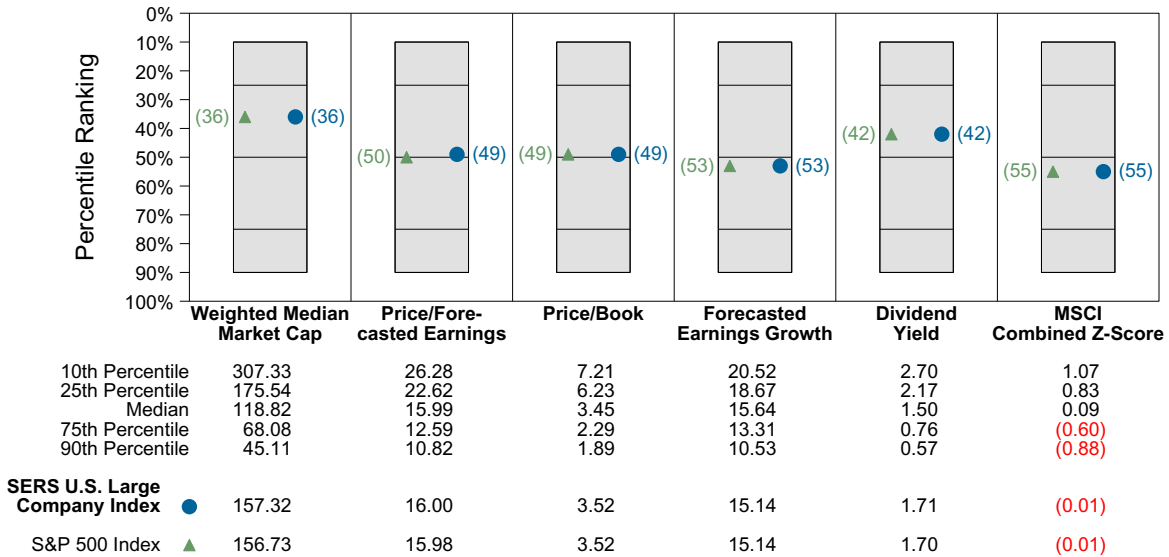
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.64	0.59	0.18
25th Percentile	(0.19)	0.53	0.01
Median	(1.21)	0.47	(0.22)
75th Percentile	(2.34)	0.40	(0.49)
90th Percentile	(3.80)	0.31	(0.74)
SERS U.S. Large Company Index	0.02	0.59	1.66

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

Portfolio Characteristics

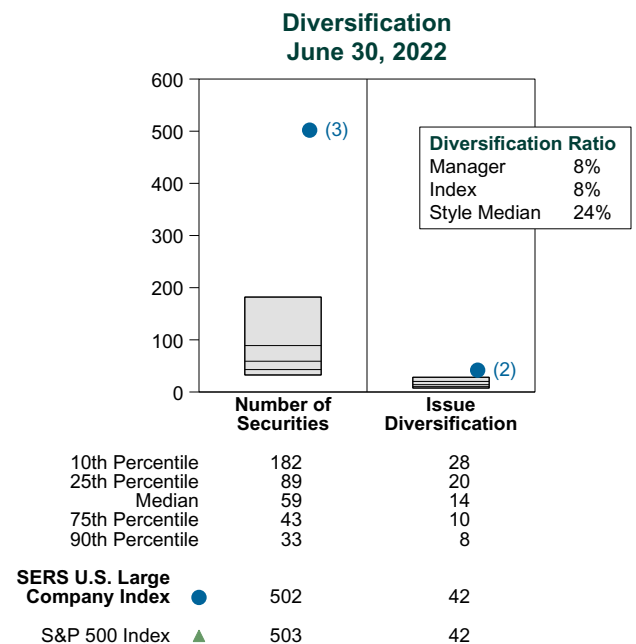
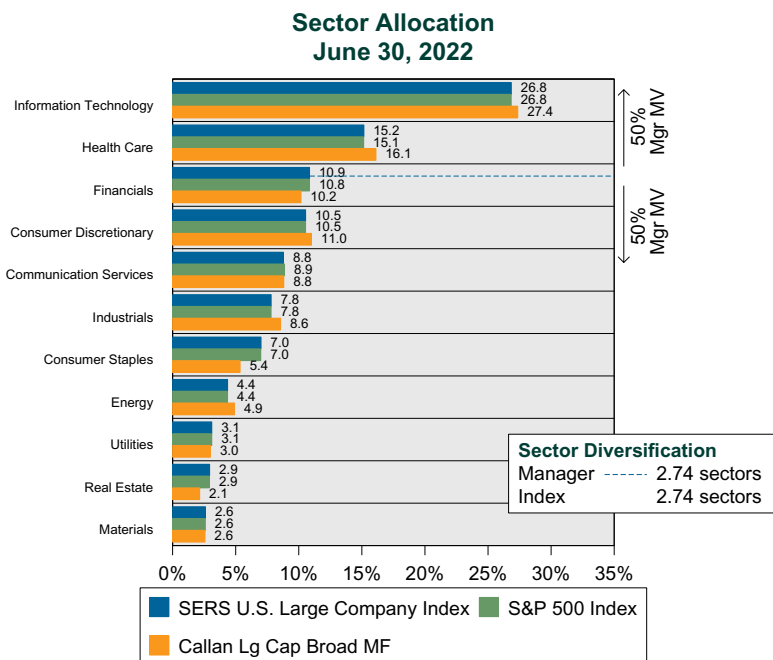
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against Callan Large Cap Broad Equity Mut Funds as of June 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 June 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	\$195,965	6.6%	(21.59)%	2212.84	21.20	0.67%	9.91%
Microsoft Corp	Information Technology	\$179,059	6.0%	(16.49)%	1920.84	23.92	0.97%	16.40%
Amazon.Com	Consumer Discretionary	\$86,632	2.9%	(34.84)%	1080.62	62.22	0.00%	40.50%
Alphabet Inc Cl A	Communication Services	\$61,100	2.1%	(21.65)%	655.44	17.99	0.00%	14.13%
Alphabet Inc Cl C	Communication Services	\$56,233	1.9%	(21.68)%	685.49	18.01	0.00%	14.13%
Tesla Mtrs Inc	Consumer Discretionary	\$52,679	1.8%	(37.51)%	697.93	48.51	0.00%	41.86%
Berkshire Hathaway Inc Del Cl B New	Financials	\$46,045	1.5%	(22.64)%	351.04	19.70	0.00%	85.46%
Unitedhealth Group	Health Care	\$44,920	1.5%	1.08%	481.87	22.12	1.28%	14.50%
Johnson & Johnson	Health Care	\$43,543	1.5%	0.79%	467.10	16.77	2.55%	4.00%
Nvidia Corp	Information Technology	\$35,394	1.2%	(44.43)%	378.98	26.04	0.11%	22.80%

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
Lamb Weston Hldgs Inc Com	Consumer Staples	\$965	0.0%	19.74%	10.32	24.78	1.37%	14.75%
At&t Inc	Communication Services	\$14,000	0.5%	18.89%	150.05	8.20	5.30%	(5.80)%
Monster Beverage Corp New	Consumer Staples	\$3,260	0.1%	16.02%	49.10	31.34	0.00%	14.77%
Lilly (Eli) & Co	Health Care	\$23,836	0.8%	13.60%	308.07	36.52	1.21%	15.50%
General Mls Inc	Consumer Staples	\$4,240	0.1%	12.23%	45.06	18.75	2.86%	4.41%
Merck & Co Inc	Health Care	\$21,654	0.7%	12.02%	230.55	12.37	3.03%	10.95%
Kellogg Co	Consumer Staples	\$1,681	0.1%	11.54%	24.10	16.97	3.25%	2.36%
Kimberly-Clark Corp	Consumer Staples	\$4,279	0.1%	10.73%	45.54	21.46	3.43%	5.41%
Dollar Gen Corp New	Consumer Discretionary	\$5,230	0.2%	10.51%	55.71	20.60	0.90%	11.07%
Cigna Corp New	Health Care	\$7,794	0.3%	10.45%	83.61	10.99	1.70%	11.10%

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
Royal Caribbean Cruises Ltd	Consumer Discretionary	\$730	0.0%	(58.33)%	8.90	(53.63)	0.00%	32.83%
Carnival Corp	Consumer Discretionary	\$654	0.0%	(57.22)%	8.60	(11.16)	0.00%	(151.40)%
Netflix Inc	Communication Services	\$7,239	0.2%	(53.32)%	77.69	15.33	0.00%	10.00%
Expedia Group Inc	Consumer Discretionary	\$1,337	0.0%	(51.54)%	14.37	11.13	0.00%	21.43%
Caesars Entertainment Inc Ne	Consumer Discretionary	\$760	0.0%	(50.49)%	8.21	(736.54)	0.00%	31.91%
Norwegian Cruise Line Hldgs Shs	Consumer Discretionary	\$436	0.0%	(49.17)%	4.66	(43.44)	0.00%	21.74%
Illumina Inc	Health Care	\$2,703	0.1%	(47.24)%	28.96	39.54	0.00%	1.40%
Align Technology Inc	Health Care	\$1,627	0.1%	(45.72)%	18.65	21.01	0.00%	32.56%
Nvidia Corp	Information Technology	\$35,394	1.2%	(44.43)%	378.98	26.04	0.11%	22.80%
Bath + Body Works Inc	Consumer Discretionary	\$602	0.0%	(43.39)%	6.16	6.23	2.97%	19.33%

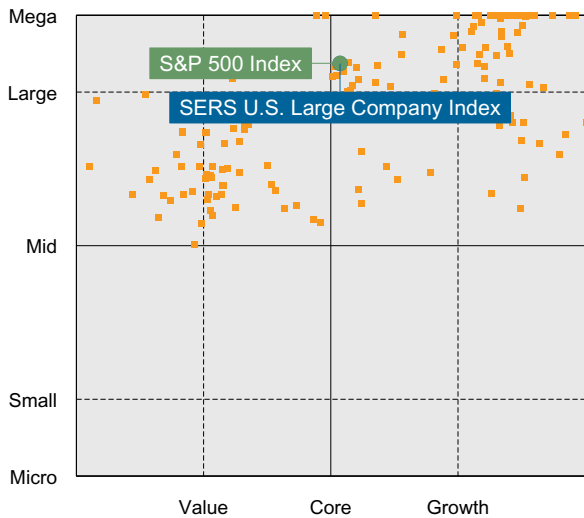
Historical Holdings Based Style Analysis

SERS U.S. Large Company Index

For Three Years Ended June 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.

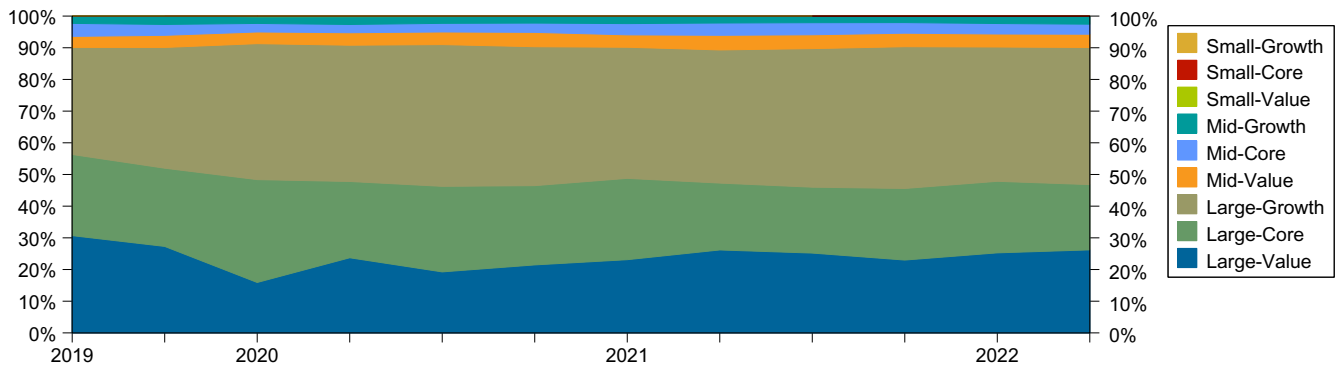
Average Style Map vs Callan Lg Cap Broad MF Holdings for Three Years Ended June 30, 2022



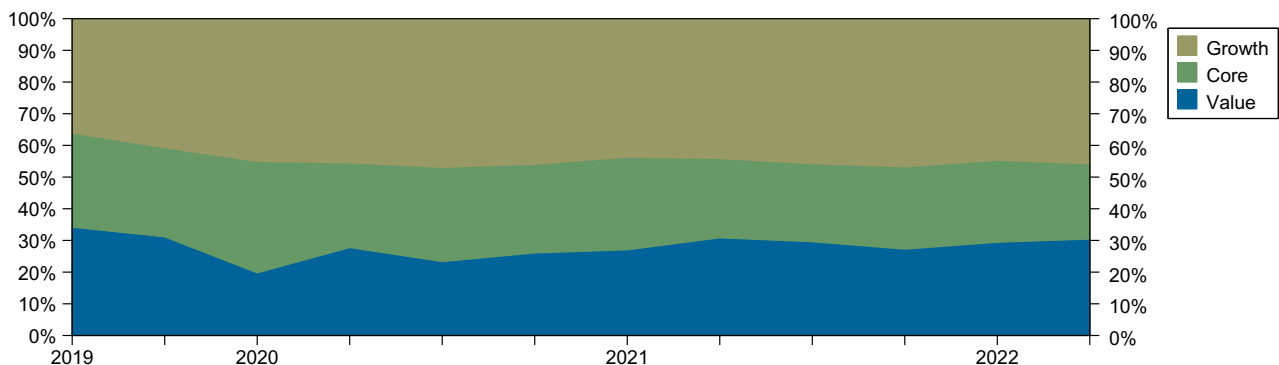
Average Style Exposure Matrix Holdings for Three Years Ended June 30, 2022

Large	23.9% (97)	24.4% (95)	42.0% (85)	90.3% (277)
Mid	4.1% (101)	3.3% (74)	2.3% (46)	9.6% (221)
Small	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)
Total	28.1% (203)	27.7% (171)	44.3% (132)	100.0% (506)
	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 June 30, 2022

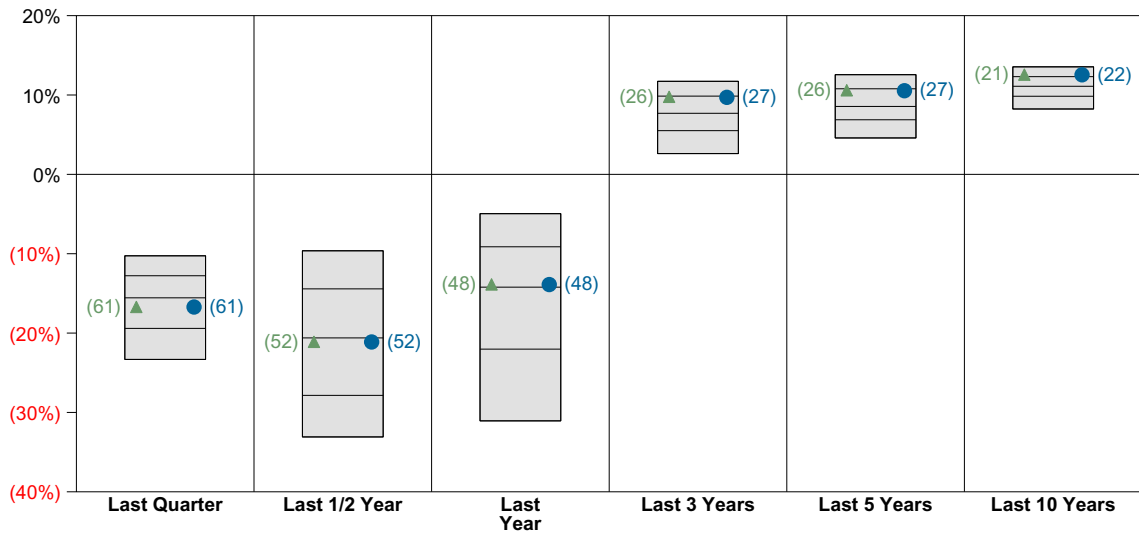
Investment Philosophy

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

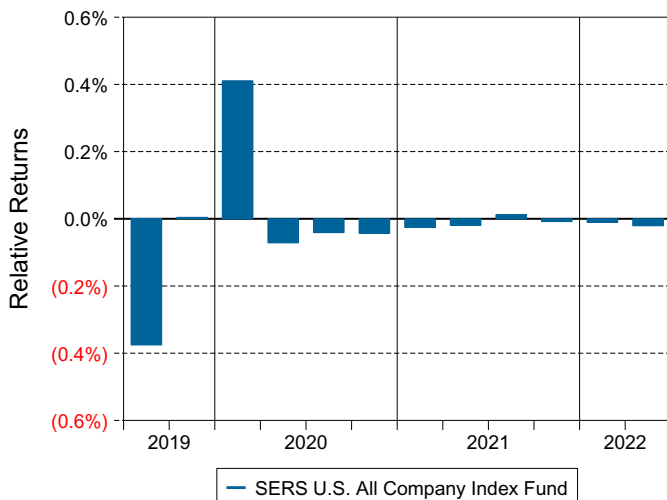
- SERS U.S. All Company Index Fund's portfolio posted a (16.72)% return for the quarter placing it in the 61 percentile of the Callan Multi Cap Broad Mutual Funds group for the quarter and in the 48 percentile for the last year.
- SERS U.S. All Company Index Fund's portfolio underperformed the Russell 3000 Index by 0.02% for the quarter and underperformed the Russell 3000 Index for the year by 0.02%.

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

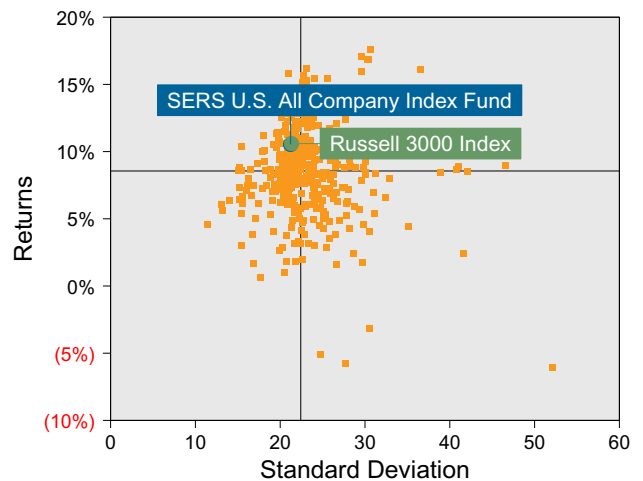


	Last Quarter	Last 1/2 Year	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
SERS U.S. All Company Index Fund ●	(16.72)	(21.12)	(13.89)	9.71	10.54	12.55
Russell 3000 Index ▲	(16.70)	(21.10)	(13.87)	9.77	10.60	12.57

Relative Return vs Russell 3000 Index



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

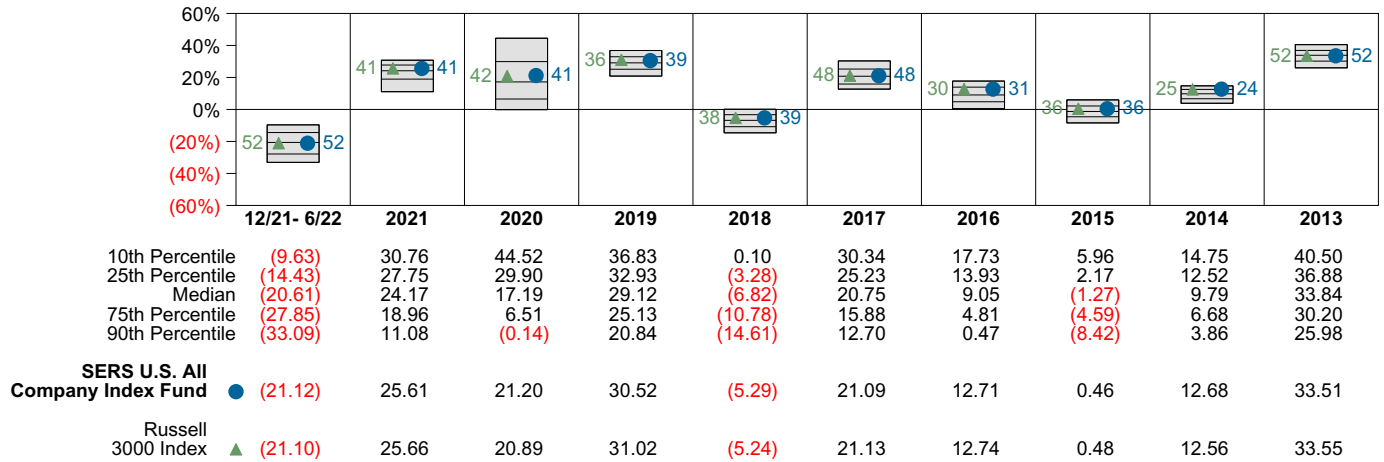


SERS U.S. All Company Index Fund Return Analysis Summary

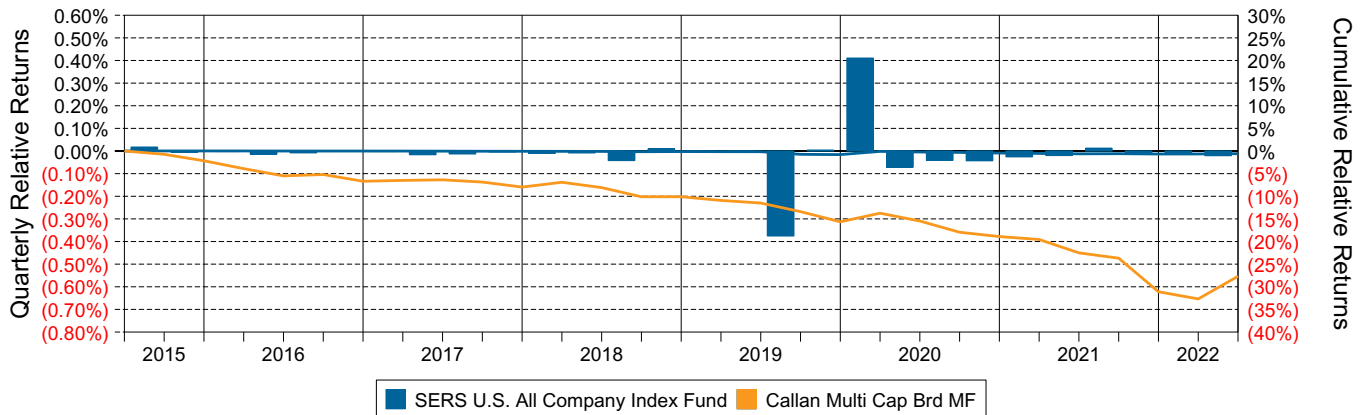
Return Analysis

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.

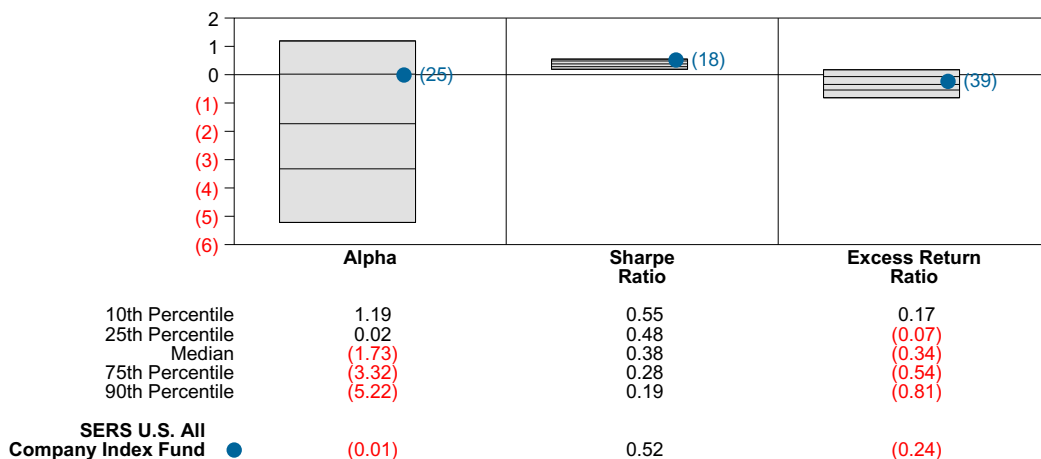
Performance vs Callan Multi Cap Broad Mutual Funds (Institutional Net)



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 June 30, 2022

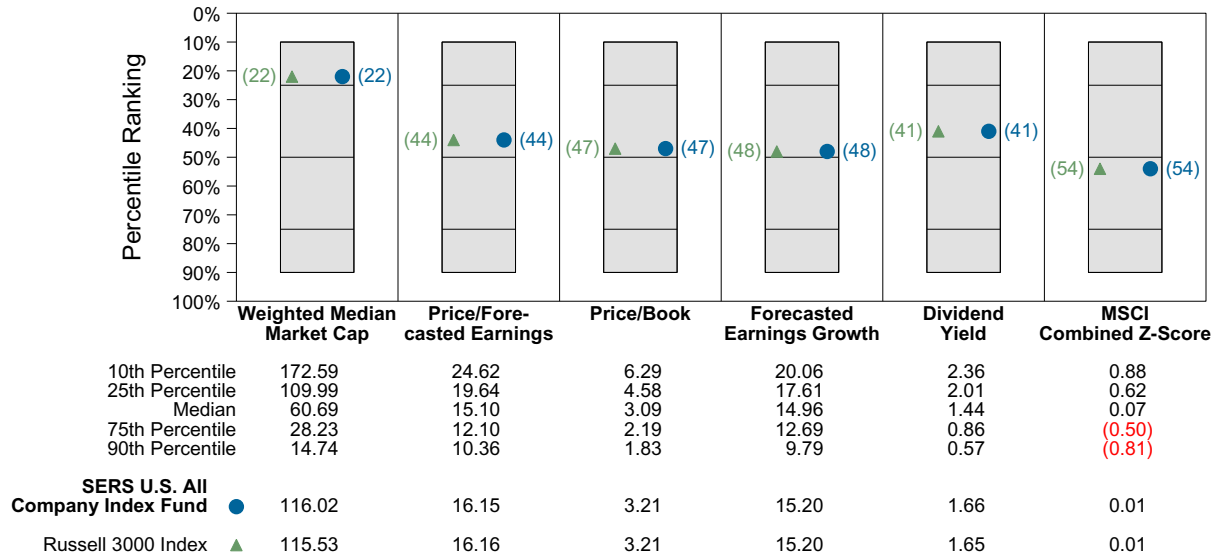


SERS U.S. All Company Index Fund Equity Characteristics Analysis Summary

Portfolio Characteristics

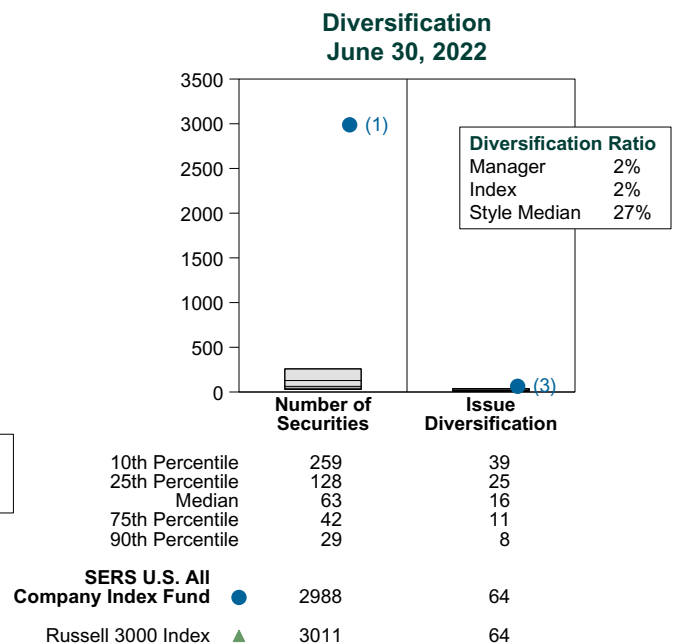
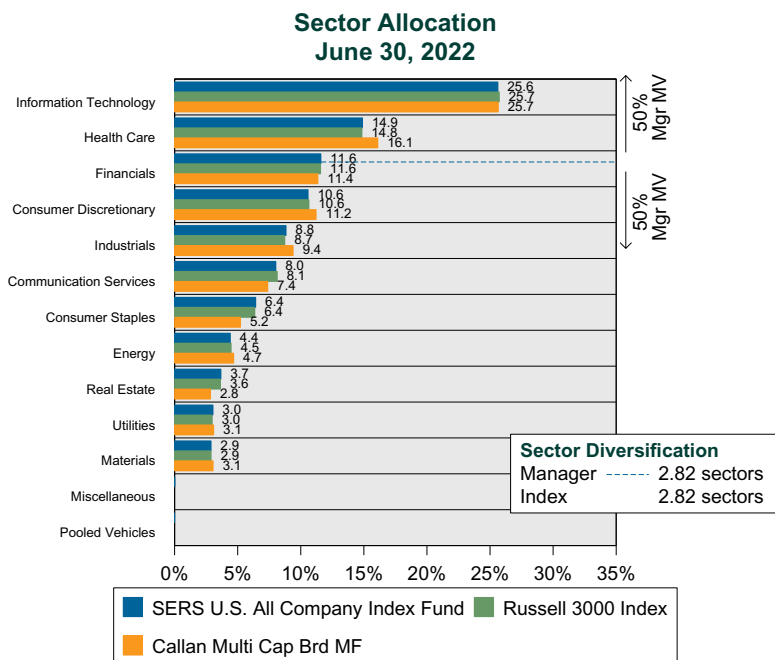
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against Callan Multi Cap Broad Mutual Funds as of June 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 June 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	\$70,403	5.6%	(21.59)%	2212.84	21.20	0.67%	9.91%
Microsoft Corp	Information Technology	\$64,716	5.1%	(16.49)%	1920.84	23.92	0.97%	16.40%
Amazon.Com	Consumer Discretionary	\$31,791	2.5%	(34.84)%	1080.62	62.22	0.00%	40.50%
Alphabet Inc Cl A	Communication Services	\$22,057	1.7%	(21.65)%	655.44	17.99	0.00%	14.13%
Alphabet Inc Cl C	Communication Services	\$20,230	1.6%	(21.68)%	685.49	18.01	0.00%	14.13%
Tesla Mtrs Inc	Consumer Discretionary	\$19,229	1.5%	(37.51)%	697.93	48.51	0.00%	41.86%
Berkshire Hathaway Inc Del Cl B New	Financials	\$16,533	1.3%	(22.64)%	351.04	19.70	0.00%	85.46%
Unitedhealth Group	Health Care	\$16,177	1.3%	1.08%	481.87	22.12	1.28%	14.50%
Johnson & Johnson	Health Care	\$15,681	1.2%	0.79%	467.10	16.77	2.55%	4.00%
Facebook Inc Cl A	Communication Services	\$12,424	1.0%	(27.48)%	369.83	12.66	0.00%	12.80%

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
Redbox Entertainment Inc Com Cl A	Financials	\$1	0.0%	213.58%	0.09	(8.62)	0.00%	-
Turning Point Therapeutics	Health Care	\$115	0.0%	180.25%	3.74	(10.81)	0.00%	-
Veru Inc	Consumer Staples	\$24	0.0%	133.96%	0.90	(21.28)	0.00%	(61.15)%
Gty Technology Holdings Inc	Information Technology	\$8	0.0%	93.81%	0.37	(24.74)	0.00%	-
Day One Biopharmaceuticals	Health Care	\$14	0.0%	80.43%	1.29	(8.70)	0.00%	-
Siga Technologies Inc	Health Care	\$19	0.0%	73.31%	0.84	17.55	0.00%	-
Scorpio Tankers Inc Shs	Energy	\$57	0.0%	61.92%	2.05	8.11	1.16%	-
Lulus Fashion Lounge Hol	Consumer Discretionary	\$2	0.0%	60.05%	0.42	16.29	0.00%	-
Convey Holding Parent	Health Care	\$5	0.0%	59.01%	0.76	47.71	0.00%	-
Valhi Inc New	Materials	\$4	0.0%	54.95%	1.28	4.74	0.71%	4.36%

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
Terawulf Inc	Materials	\$1	0.0%	(85.71)%	0.14	(12.00)	0.00%	(14.72)%
Velo3d Inc Common Stock	Information Technology	\$3	0.0%	(85.18)%	0.25	(3.81)	0.00%	31.50%
Avaya Hldgs Corp	Information Technology	\$6	0.0%	(82.32)%	0.19	0.98	0.00%	4.30%
Bird Global Inc Com Cl A	Industrials	\$2	0.0%	(82.20)%	0.13	(1.96)	0.00%	-
Core Scientific Inc Class A Com	Information Technology	\$11	0.0%	(81.90)%	0.48	(18.40)	0.00%	-
Boxed Inc	Consumer Discretionary	\$1	0.0%	(81.78)%	0.13	(1.57)	0.00%	-
Carvana Co Cl A	Consumer Discretionary	\$75	0.0%	(81.07)%	2.39	(4.38)	0.00%	-
Marathon Digital Holdings In	Information Technology	\$18	0.0%	(80.91)%	0.57	4.61	0.00%	-
Riot Blockchain Inc	Information Technology	\$16	0.0%	(80.31)%	0.57	5.63	0.00%	-
Endo Intl Plc Shs	Health Care	\$4	0.0%	(79.85)%	0.11	0.63	0.00%	(18.30)%

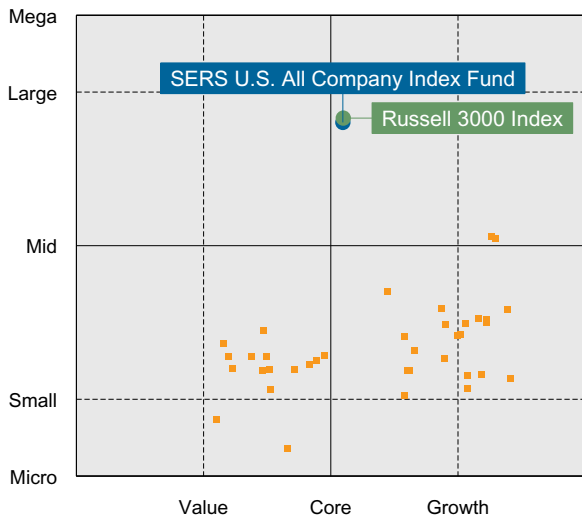
Historical Holdings Based Style Analysis

SERS U.S. All Company Index Fund

For Three and 3/4 Years Ended June 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.

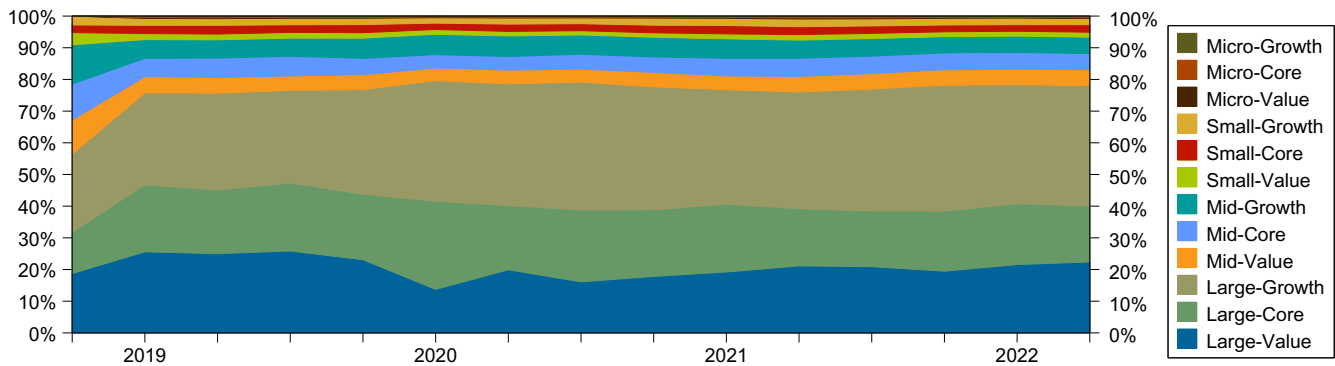
Average Style Map vs Callan SMID Broad MFs Holdings for Three and 3/4 Years Ended June 30, 2022



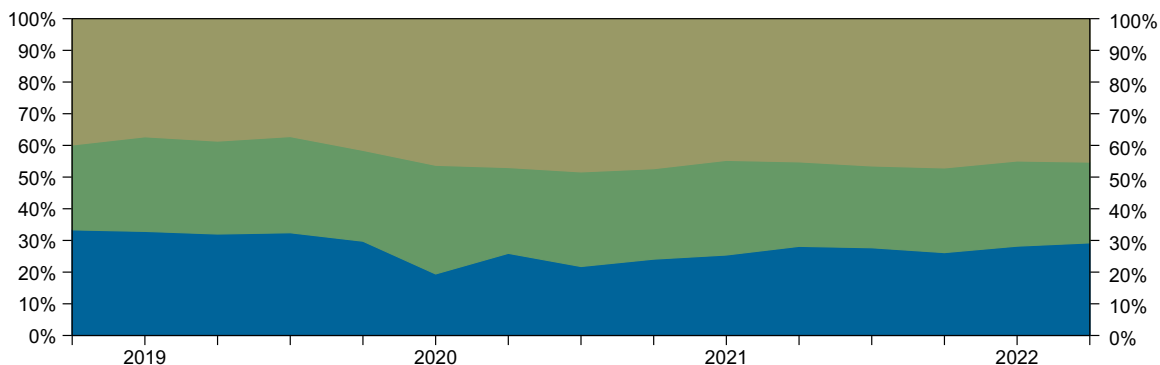
Average Style Exposure Matrix Holdings for Three and 3/4 Years Ended June 30, 2022

Large	20.7% (95)	20.1% (94)	35.3% (99)	76.0% (288)
	21.0% (99)	20.8% (97)	35.6% (103)	77.4% (299)
Mid	5.1% (164)	5.7% (204)	6.3% (223)	17.0% (591)
	4.6% (166)	5.3% (207)	5.9% (226)	15.8% (599)
Small	1.8% (296)	2.4% (475)	2.1% (371)	6.3% (1142)
	1.6% (309)	2.4% (498)	2.1% (391)	6.1% (1198)
Micro	0.2% (301)	0.3% (374)	0.1% (160)	0.7% (835)
	0.3% (320)	0.3% (405)	0.2% (173)	0.7% (898)
Total	27.8% (856)	28.4% (1147)	43.8% (853)	100.0% (2856)
	27.5% (894)	28.7% (1207)	43.7% (893)	100.0% (2994)
	Value	Core	Growth	Total

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 June 30, 2022

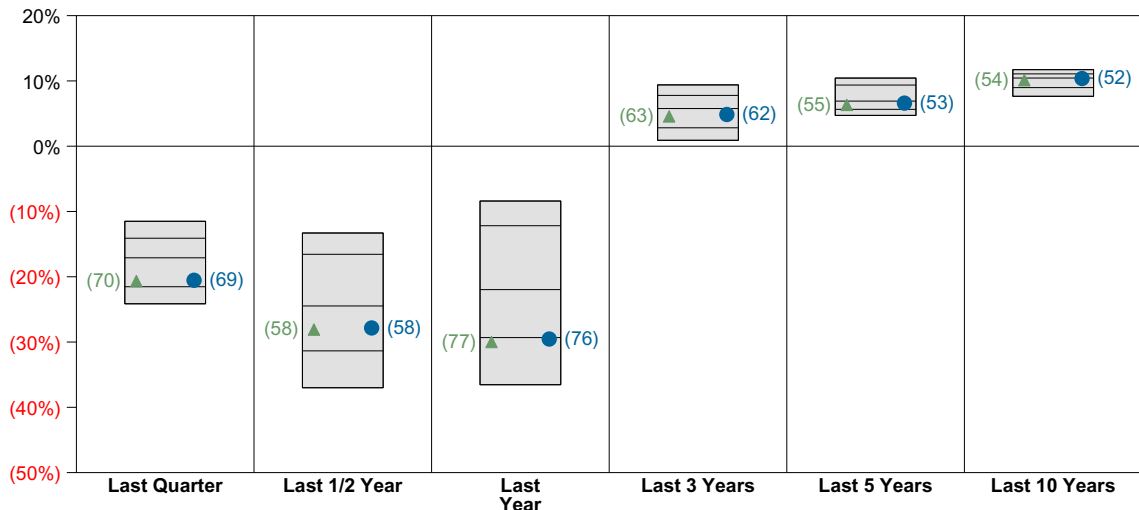
Investment Philosophy

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

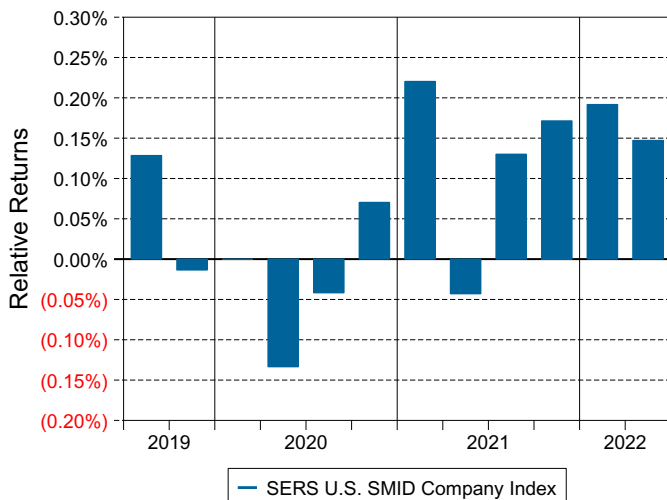
- SERS U.S. SMID Company Index's portfolio posted a (20.54)% return for the quarter placing it in the 69 percentile of the Callan Small/MidCap Broad Mutual Funds group for the quarter and in the 76 percentile for the last year.
- SERS U.S. SMID Company Index's portfolio outperformed the Dow Jones US Completion by 0.12% for the quarter and outperformed the Dow Jones US Completion for the year by 0.45%.

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

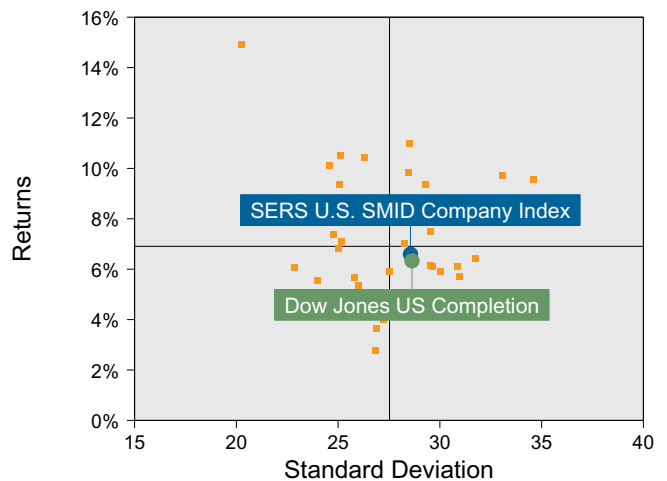


10th Percentile	(11.50)	(13.30)	(8.40)	9.39	10.44	11.73
25th Percentile	(14.10)	(16.56)	(12.18)	7.78	9.37	11.08
Median	(17.10)	(24.47)	(21.97)	5.77	6.91	10.44
75th Percentile	(21.53)	(31.35)	(29.32)	2.82	5.65	8.98
90th Percentile	(24.14)	(37.00)	(36.54)	0.90	4.72	7.64
SERS U.S. SMID Company Index	(20.54)	(27.84)	(29.54)	4.86	6.60	10.37
Dow Jones US Completion	(20.66)	(28.09)	(29.99)	4.57	6.34	10.12

Relative Return vs Dow Jones US Completion



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

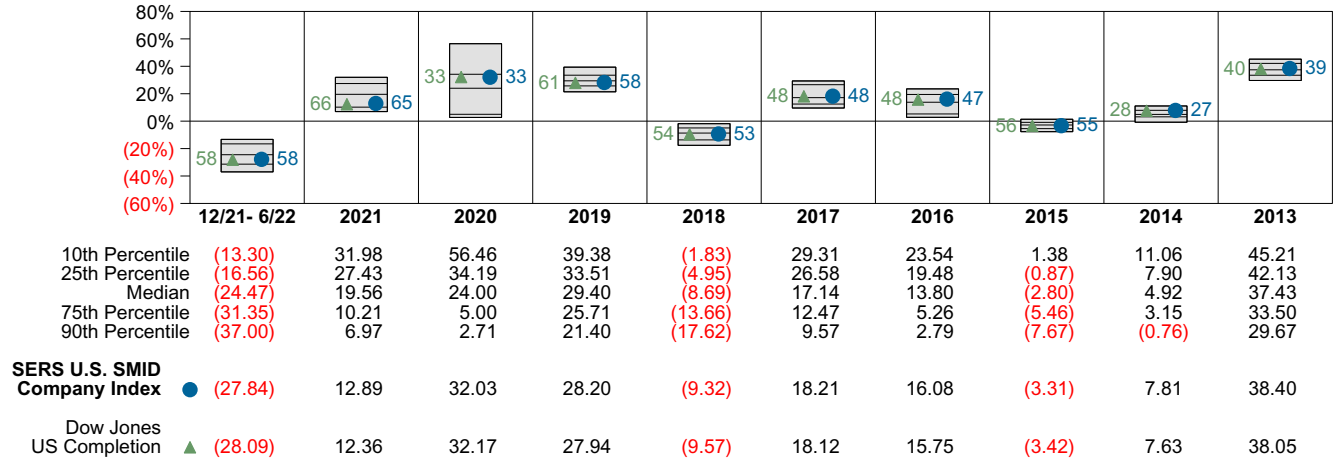


SERS U.S. SMID Company Index Return Analysis Summary

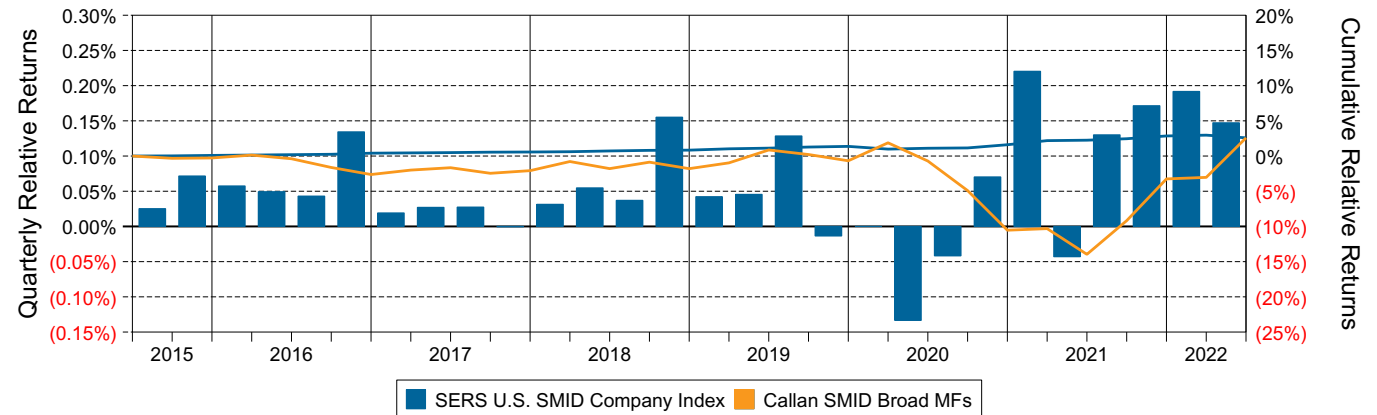
Return Analysis

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.

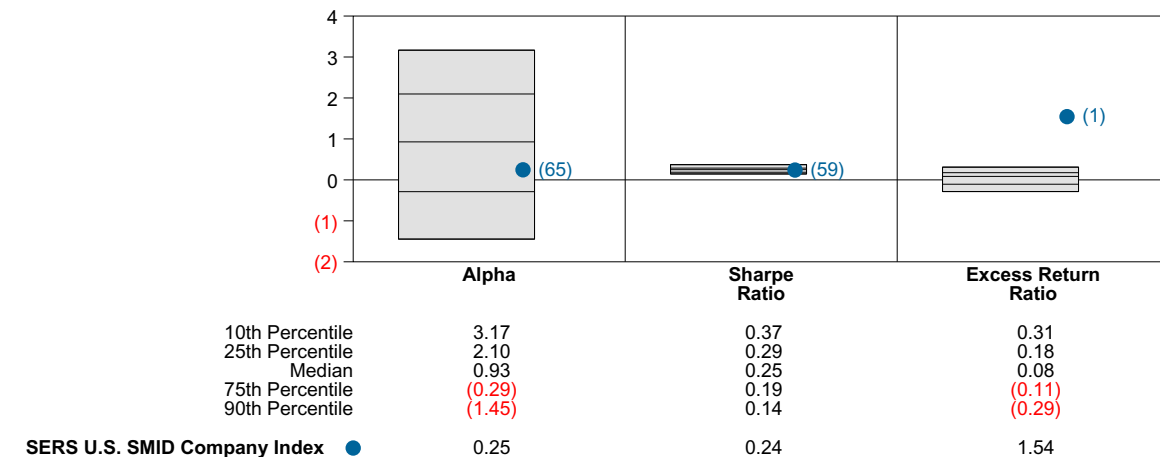
Performance vs Callan Small/MidCap Broad Mutual Funds (Institutional Net)



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 June 30, 2022

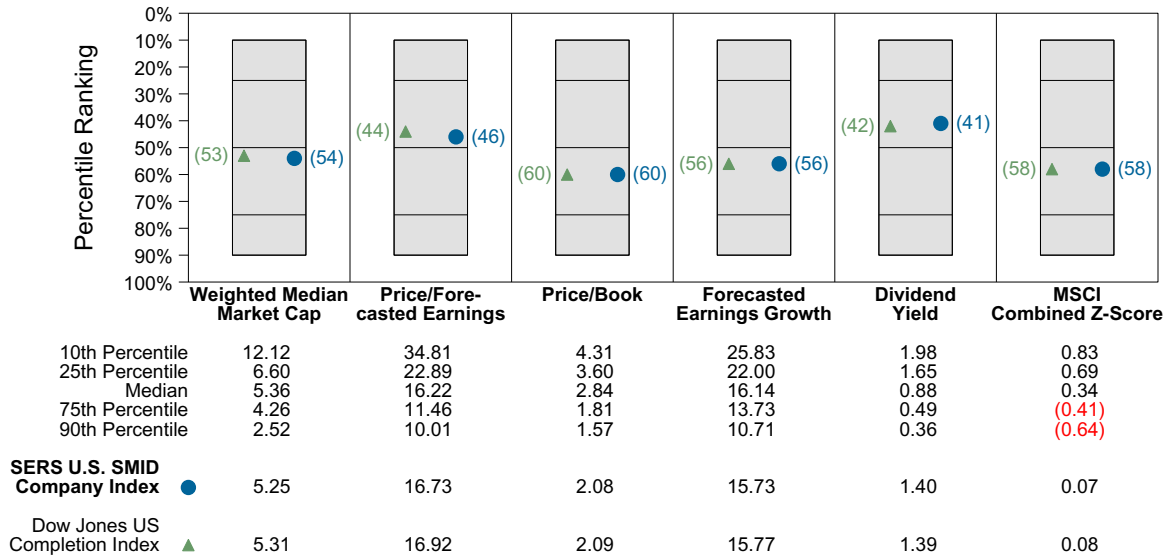


SERS U.S. SMID Company Index Equity Characteristics Analysis Summary

Portfolio Characteristics

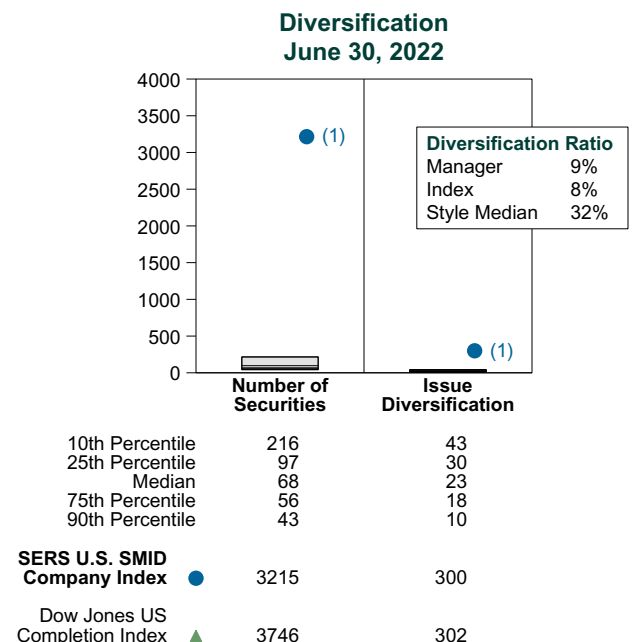
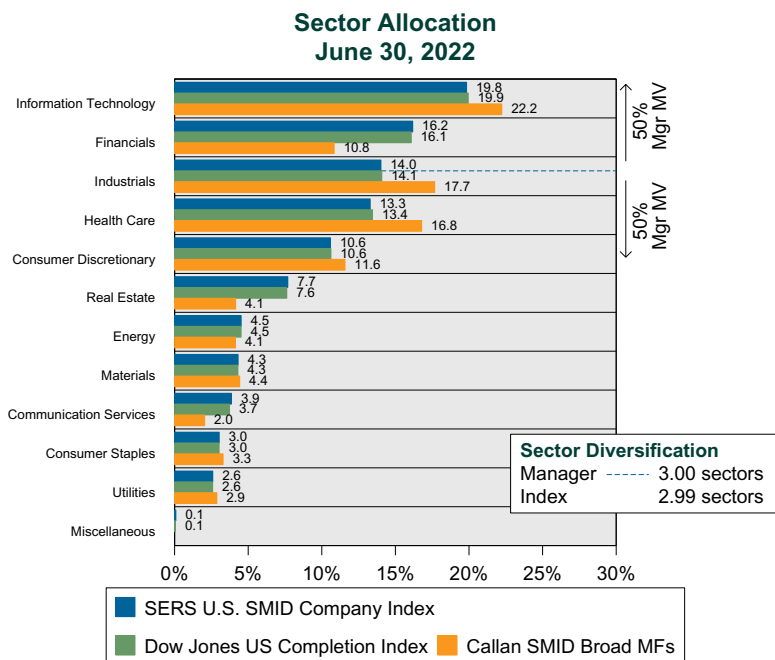
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against Callan Small/MidCap Broad Mutual Funds as of June 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 June 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	\$7,002	1.1%	(27.20)%	63.93	15.13	5.90%	19.80%
Palo Alto Networks Inc	Information Technology	\$5,318	0.8%	(20.65)%	49.21	54.20	0.00%	25.15%
Marvell Technology Group Ltd	Information Technology	\$4,066	0.6%	(39.24)%	37.00	16.81	0.55%	13.31%
CrowdStrike Hldgs Inc Cl A	Information Technology	\$3,948	0.6%	(25.77)%	35.97	116.89	0.00%	72.89%
Uber Technologies Inc	Industrials	\$3,791	0.6%	(42.65)%	40.18	(12.45)	0.00%	-
Airbnb Inc Cl A Com Usd0.0001 Cl A	Consumer Discretionary	\$3,729	0.6%	(48.13)%	34.05	40.02	0.00%	64.10%
Snowflake Inc Cl A	Information Technology	\$3,698	0.6%	(39.31)%	44.23	509.38	0.00%	-
Lululemon Athletica Inc	Consumer Discretionary	\$3,473	0.6%	(25.36)%	33.38	26.74	0.00%	20.10%
Cheniere Energy Inc	Energy	\$3,440	0.5%	(3.82)%	33.81	12.42	0.99%	-
Square Inc Cl A	Information Technology	\$3,393	0.5%	(54.68)%	31.89	48.17	0.00%	14.79%

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
Redbox Entertainment Inc Com Cl A	Financials	\$11	0.0%	213.58%	0.09	(8.62)	0.00%	-
Turning Point Therapeutics	Health Care	\$416	0.1%	180.25%	3.74	(10.81)	0.00%	-
Cid Created On Bank Faith For Id 090	Health Care	\$23	0.0%	168.60%	0.35	(4.47)	0.00%	-
Catalyst Biosciences Inc	Health Care	\$3	0.0%	158.33%	0.06	(2.33)	0.00%	-
Veru Inc	Consumer Staples	\$71	0.0%	133.96%	0.90	(21.28)	0.00%	(61.15)%
Rcm Technologies Inc	Industrials	\$20	0.0%	105.28%	0.21	9.72	0.00%	0.47%
Gty Technology Holdings Inc	Information Technology	\$34	0.0%	93.81%	0.37	(24.74)	0.00%	-
Altimmune Inc	Health Care	\$45	0.0%	92.24%	0.51	(5.54)	0.00%	-
Ziopharm Oncology Inc	Health Care	\$31	0.0%	90.33%	0.27	(5.17)	0.00%	-
Prophase Labs Inc Com	Health Care	\$21	0.0%	87.65%	0.20	20.03	0.00%	389.90%

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
Spero Therapeutics Inc	Health Care	\$2	0.0%	(91.49)%	0.02	(0.32)	0.00%	-
Northern Genesis Acquisition Common	Information Technology	\$11	0.0%	(91.42)%	0.18	(1.26)	0.00%	-
Dave Inc Class A Com	Information Technology	\$13	0.0%	(90.38)%	0.22	(2.67)	0.00%	-
Akerna Corp Com Cl A	Information Technology	\$2	0.0%	(87.85)%	0.01	(0.18)	0.00%	-
Eargo Inc	Health Care	\$2	0.0%	(85.81)%	0.03	(0.61)	0.00%	-
Terawulf Inc	Materials	\$5	0.0%	(85.71)%	0.14	(12.00)	0.00%	(14.72)%
Velo3d Inc Common Stock	Information Technology	\$9	0.0%	(85.18)%	0.25	(3.81)	0.00%	31.50%
Rubius Therapeutics Inc	Health Care	\$4	0.0%	(84.55)%	0.08	(0.43)	0.00%	-
Autoweb Inc	Communication Services	\$1	0.0%	(83.48)%	0.01	(0.94)	0.00%	(16.30)%
Avaya Hldgs Corp	Information Technology	\$19	0.0%	(82.32)%	0.19	0.98	0.00%	4.30%

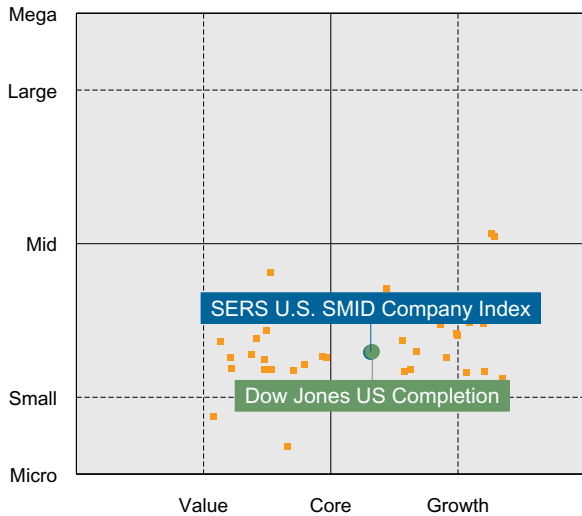
Historical Holdings Based Style Analysis

SERS U.S. SMID Company Index

For Three Years Ended June 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.

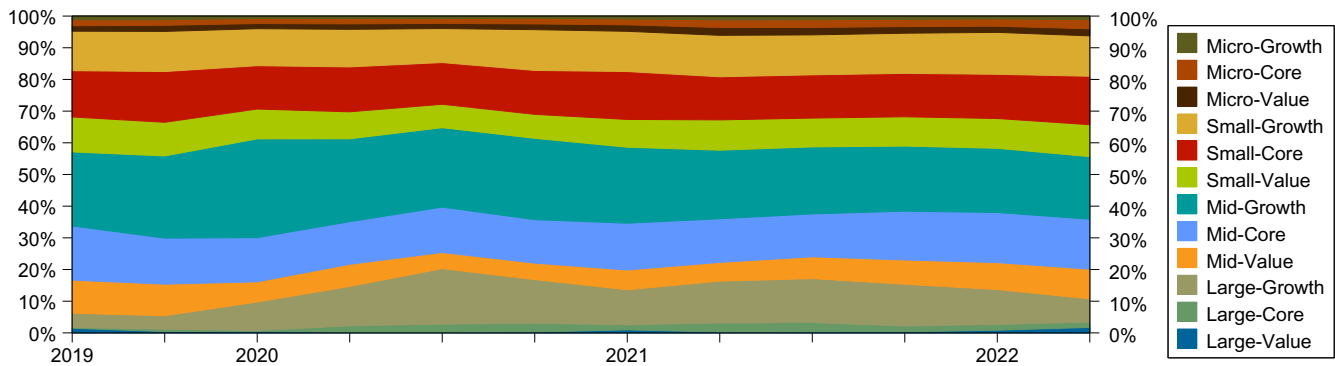
Average Style Map vs Callan SMID Broad MFs Holdings for Three Years Ended June 30, 2022



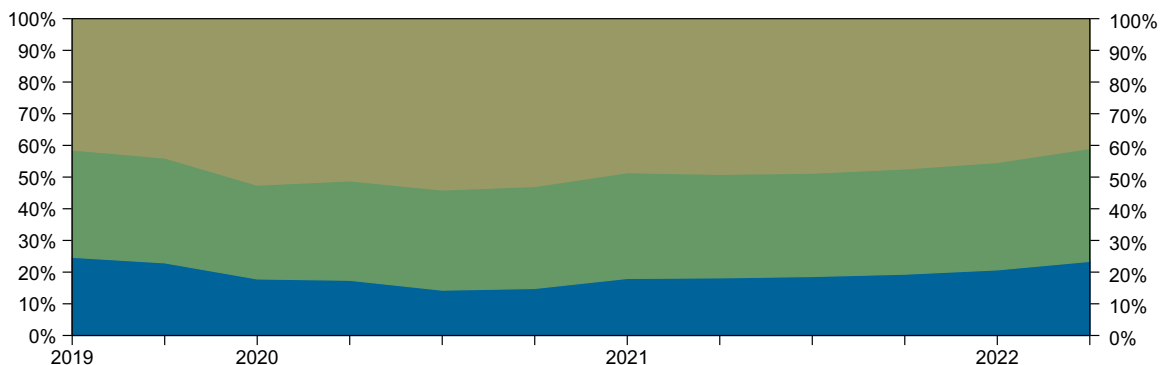
Average Style Exposure Matrix Holdings for Three Years Ended June 30, 2022

	0.6% (2)	1.8% (5)	10.9% (19)	13.3% (26)
Large	0.6% (2)	1.8% (4)	11.0% (19)	13.4% (25)
Mid	7.4% (65)	14.7% (136)	23.7% (184)	45.8% (385)
	7.3% (65)	14.7% (136)	23.8% (185)	45.8% (386)
Small	9.2% (294)	14.2% (525)	12.4% (397)	35.9% (1216)
	9.1% (294)	14.2% (523)	12.4% (400)	35.8% (1217)
Micro	2.0% (541)	2.0% (566)	1.0% (203)	5.0% (1310)
	1.9% (701)	2.2% (838)	1.0% (256)	5.0% (1795)
Total	19.2% (902)	32.8% (1232)	48.0% (803)	100.0% (2937)
	19.0% (1062)	32.8% (1501)	48.2% (860)	100.0% (3423)
	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 June 30, 2022

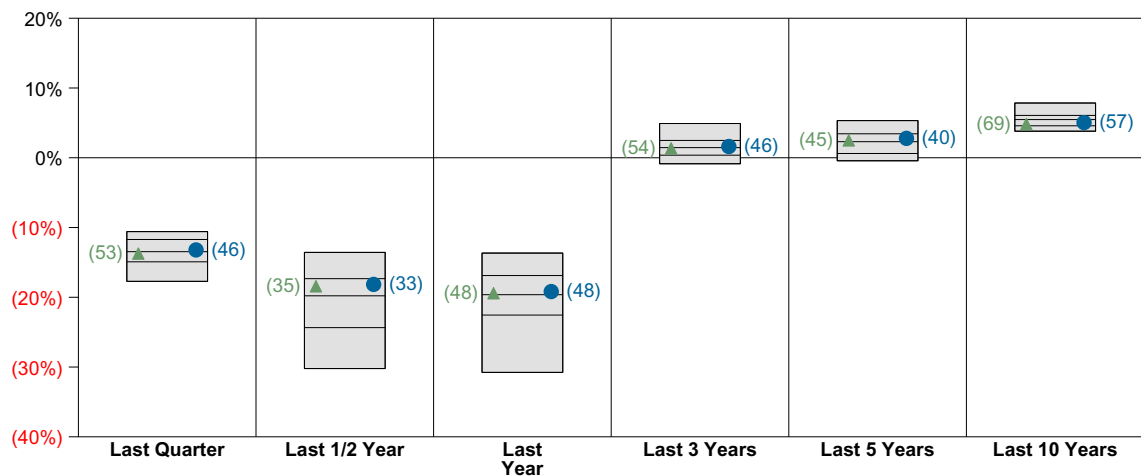
Investment Philosophy

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

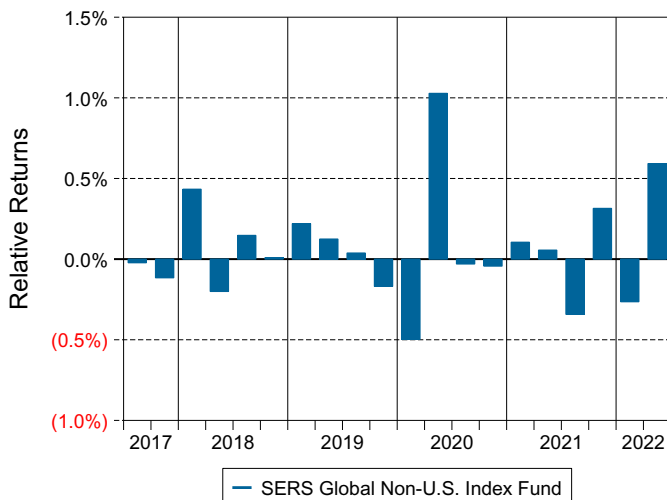
- SERS Global Non-U.S. Index Fund's portfolio posted a (13.22)% return for the quarter placing it in the 46 percentile of the Callan Non US Equity Mutual Funds group for the quarter and in the 48 percentile for the last year.
- SERS Global Non-U.S. Index Fund's portfolio outperformed the MSCI ACWI xUS by 0.51% for the quarter and outperformed the MSCI ACWI xUS for the year by 0.24%.

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

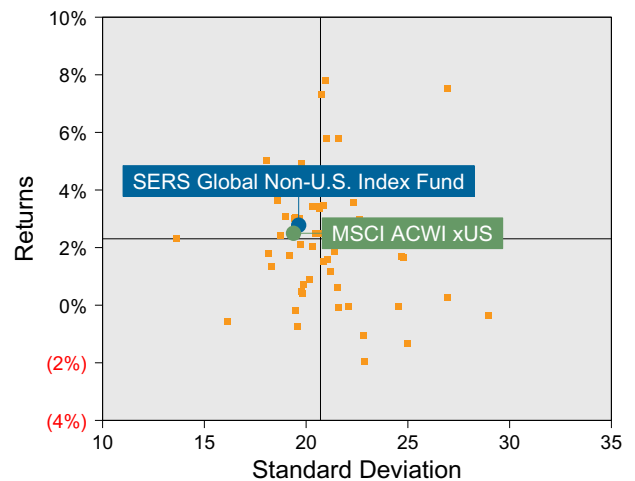


10th Percentile	(10.59)	(13.56)	(13.66)	4.91	5.33	7.85
25th Percentile	(11.72)	(17.33)	(16.88)	2.49	3.44	6.07
Median	(13.46)	(19.79)	(19.63)	1.45	2.31	5.47
75th Percentile	(14.92)	(24.35)	(22.55)	0.37	0.61	4.58
90th Percentile	(17.72)	(30.22)	(30.77)	(0.86)	(0.43)	3.81
SERS Global Non-U.S. Index Fund	(13.22)	(18.15)	(19.18)	1.61	2.78	5.04
MSCI ACWI xUS	(13.73)	(18.42)	(19.42)	1.35	2.50	4.83

Relative Return vs MSCI ACWI xUS



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

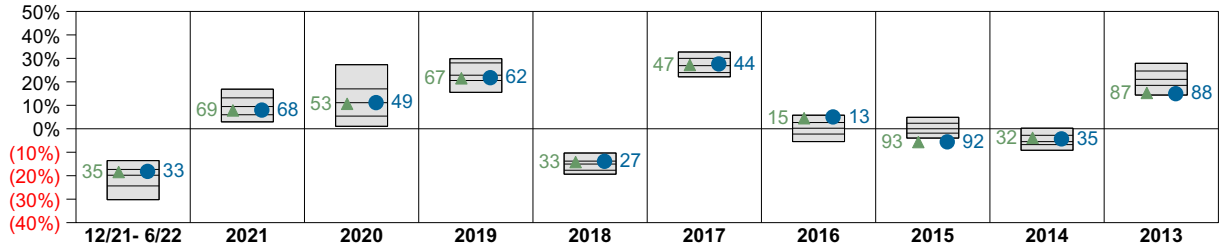


SERS Global Non-U.S. Index Fund Return Analysis Summary

Return Analysis

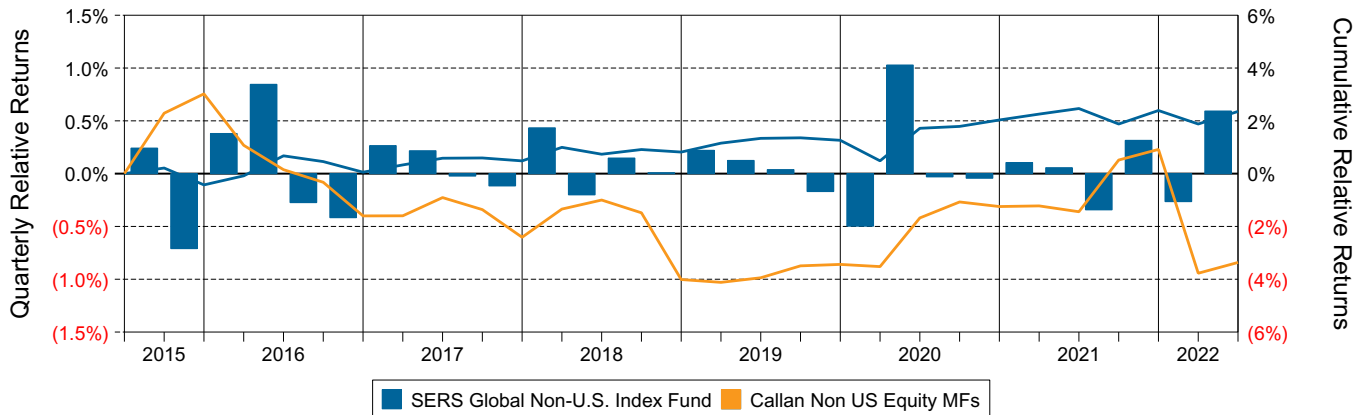
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate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



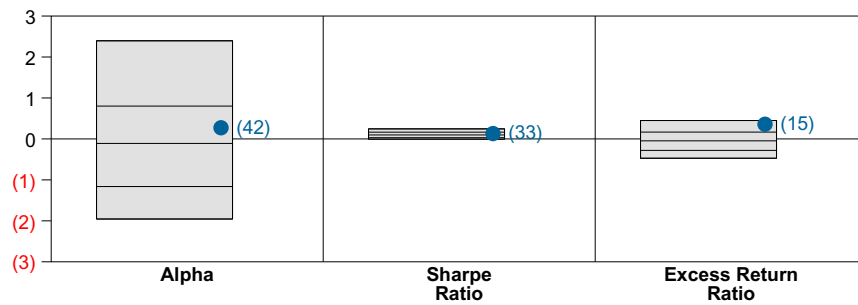
	12/21- 6/22	2021	2020	2019	2018	2017	2016	2015	2014	2013
SERS Global Non-U.S. Index Fund ●	(18.15)	7.97	11.15	21.77	(13.86)	27.63	5.05	(5.57)	(4.31)	14.95
MSCI ACWI xUS ▲	(18.42)	7.82	10.65	21.51	(14.20)	27.19	4.50	(5.66)	(3.87)	15.29

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 June 30, 2022



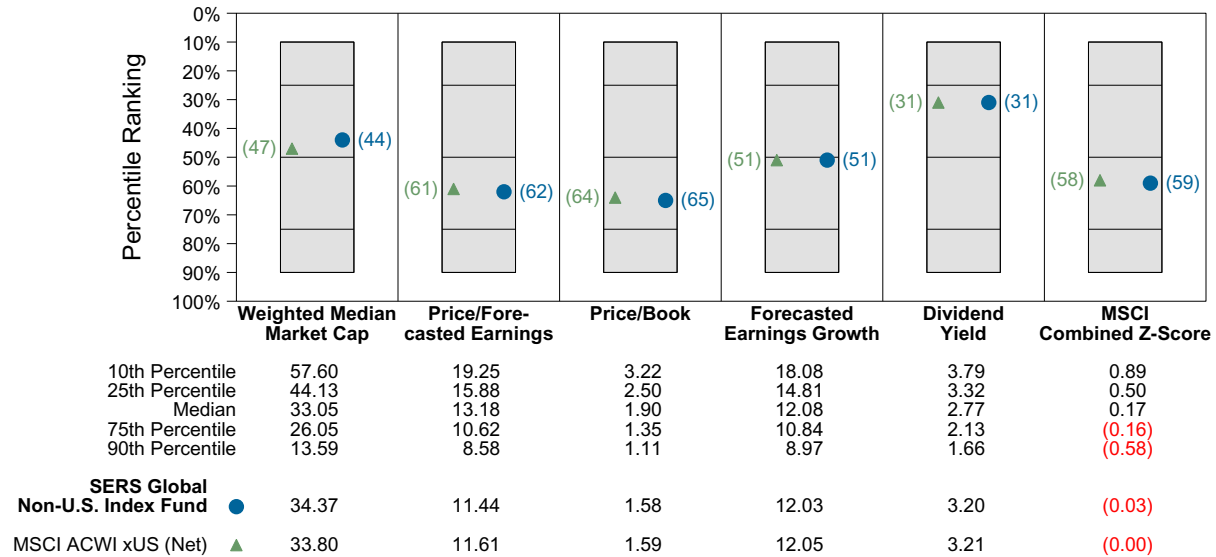
	Alpha	Sharpe Ratio	Excess Return Ratio
SERS Global Non-U.S. Index Fund ●	0.27	0.13	0.36

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

Portfolio Characteristics

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

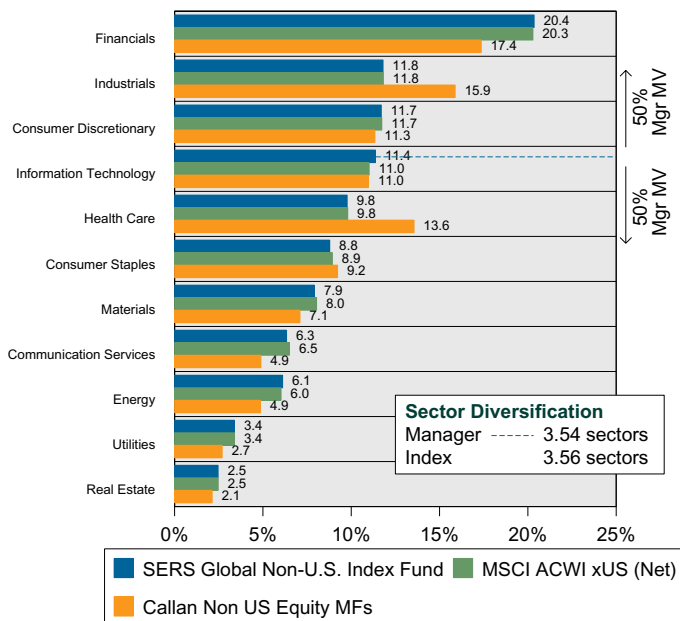
Portfolio Characteristics Percentile Rankings Rankings Against Callan Non US Equity Mutual Funds as of June 30, 2022



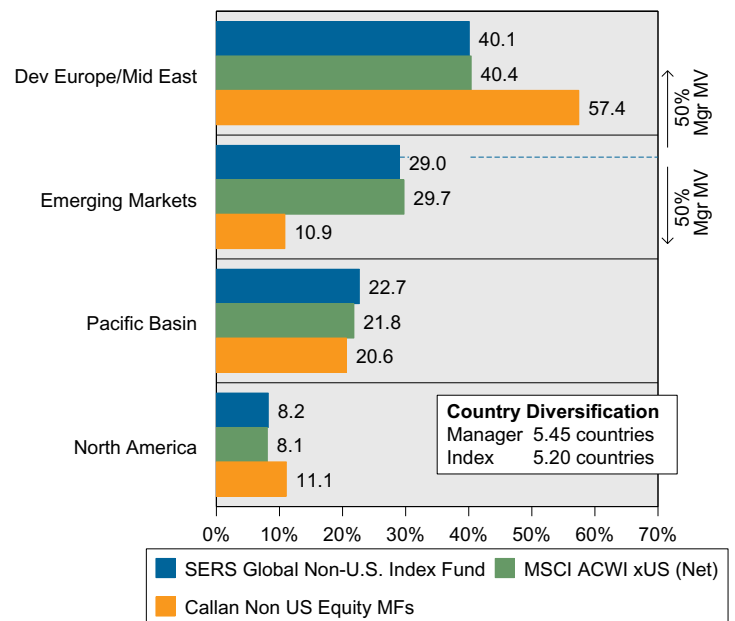
Sector Weights

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.

Sector Allocation June 30, 2022



Regional Allocation June 30, 2022



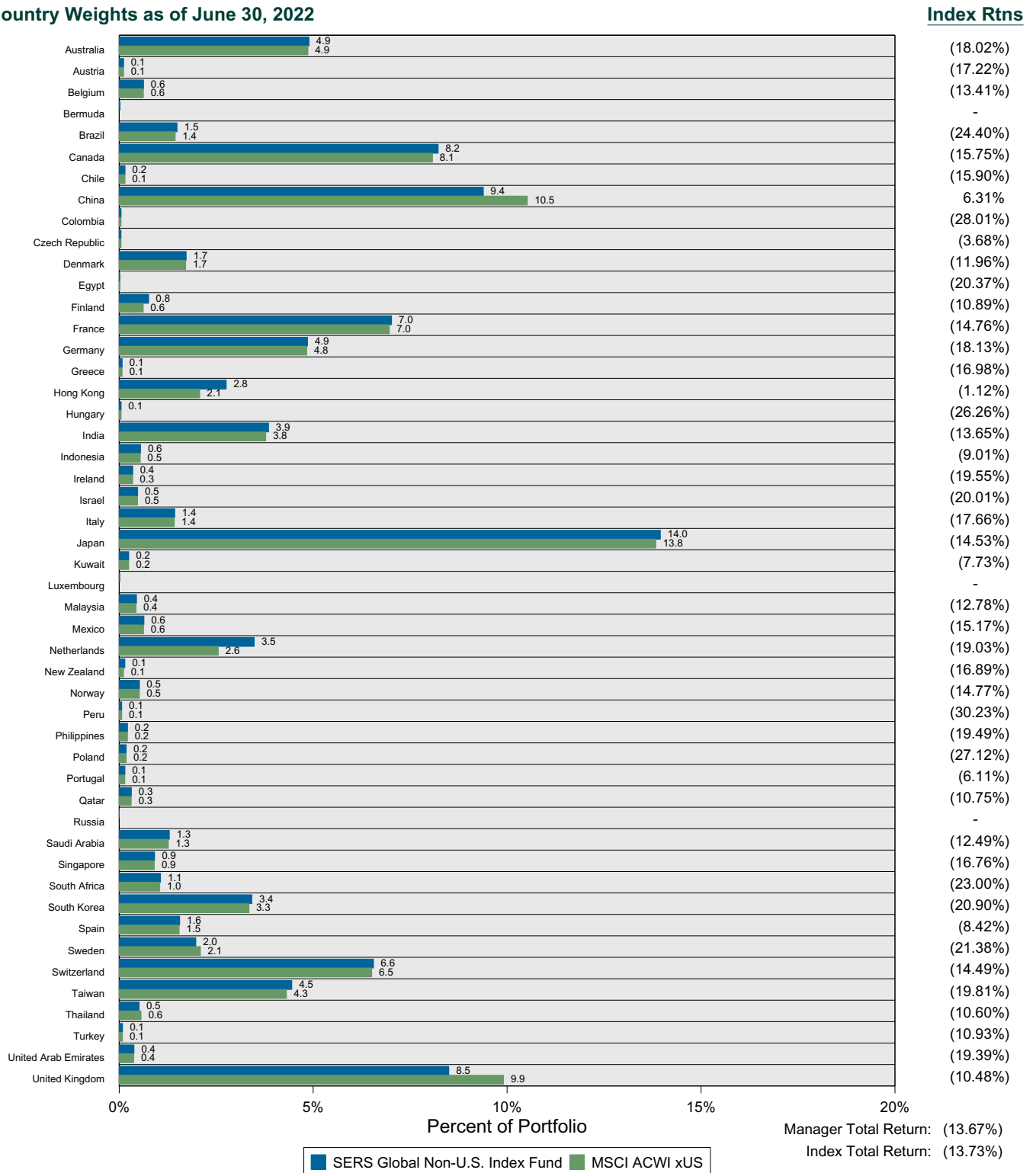
Country Allocation

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 June 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 June 30, 2022



SERS Global Non-U.S. Index Fund Top 10 Portfolio Holdings Characteristics as of June 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	\$30,753	1.8%	(22.75)%	415.12	13.75	2.31%	20.71%
Nestle S A Shs Nom New	Consumer Staples	\$25,117	1.5%	(8.87)%	320.11	22.62	2.51%	7.20%
Tencent Holdings Limited Shs Par Hkd	Communication Services	\$21,904	1.3%	(9.91)%	434.58	22.20	0.45%	11.47%
Roche Hldgs Ag Basel Div Rts Ctf	Health Care	\$17,919	1.1%	(16.44)%	233.77	15.09	2.92%	7.11%
Alibaba Group Holding Ltd	Consumer Discretionary	\$16,809	1.0%	(5.47)%	309.29	13.99	0.00%	(0.12)%
Samsung Electronics Co Ltd Ord	Information Technology	\$16,389	1.0%	(23.16)%	262.07	7.94	2.53%	17.45%
Astrazeneca Plc Ord	Health Care	\$15,578	0.9%	(1.68)%	203.23	18.19	1.95%	16.80%
Shell Plc Shs A	Energy	\$15,116	0.9%	(5.66)%	191.03	5.53	3.21%	6.31%
Asml Holding N V Asml Rev Stk Spl	Information Technology	\$14,849	0.9%	(29.30)%	193.70	24.79	1.21%	18.32%
Novo Nordisk B	Health Care	\$14,284	0.9%	(1.21)%	192.84	30.03	1.32%	17.41%

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
Inter Rao Ues	Utilities	\$0	0.0%	98.24%	6.35	2.64	7.11%	73.11%
Chongqing Changan Auto A	Consumer Discretionary	\$22	0.0%	90.00%	21.42	23.33	1.03%	-
Ningbo Deye Tech A	Industrials	\$34	0.0%	81.30%	9.99	63.93	0.31%	-
New Oriental Ed & Technology Spon Ad	Consumer Discretionary	\$241	0.0%	67.64%	3.46	46.06	0.00%	35.56%
Daqo New Energy Corp Spnsrd Adr New	Information Technology	\$322	0.0%	63.57%	5.32	4.54	0.00%	16.86%
Hygeia Healthcare Holdings Co	Health Care	\$174	0.0%	61.63%	4.10	39.33	0.00%	26.50%
Futu Hldgs Ltd Sponsored Ads	Financials	\$245	0.0%	60.04%	4.45	19.17	0.00%	-
Oao Tatneft Shs	Energy	\$0	0.0%	56.88%	17.09	4.17	6.89%	24.68%
Tal Ed Group Ads Repstg Com	Consumer Discretionary	\$156	0.0%	53.21%	2.44	(62.44)	0.00%	40.65%
China Ship.Dev.Co. A	Energy	\$8	0.0%	52.83%	5.36	23.33	0.00%	(9.65)%

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
Banco Espirito Santo E Comer Ord	Financials	\$0	0.0%	-	0.00	-	0.00%	-
Magazine Luiza Sa	Consumer Discretionary	\$104	0.0%	(68.82)%	3.02	30.00	1.79%	15.06%
Kornit Digital	Industrials	\$113	0.0%	(65.07)%	1.58	31.42	0.00%	13.10%
Americanas S A Reg Shs Com Shs	Consumer Discretionary	\$129	0.0%	(62.34)%	2.37	17.97	4.56%	17.07%
Hapvida Partp.E Invms.On	Health Care	\$375	0.0%	(58.02)%	7.47	20.59	0.80%	(20.53)%
Fastighets Ab Balder Shs B	Real Estate	\$232	0.0%	(56.96)%	5.03	10.13	0.00%	30.12%
Big Hit Entertainment	Communication Services	\$145	0.0%	(56.11)%	4.63	25.46	0.00%	31.90%
Takeaway Com	Consumer Discretionary	\$224	0.0%	(53.98)%	3.39	(5.77)	0.00%	-
Shopify Subd.Vtg.Shs.A	Information Technology	\$2,754	0.2%	(53.94)%	35.60	221.13	0.00%	(14.60)%
Nuvei Corporation Sub Vtg	Information Technology	\$185	0.0%	(52.08)%	2.35	14.75	0.00%	34.50%

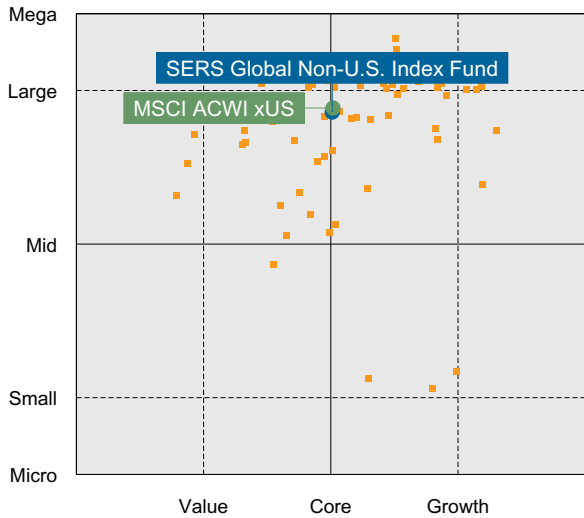
Historical Holdings Based Style Analysis

SERS Global Non-U.S. Index Fund

For Three Years Ended June 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.

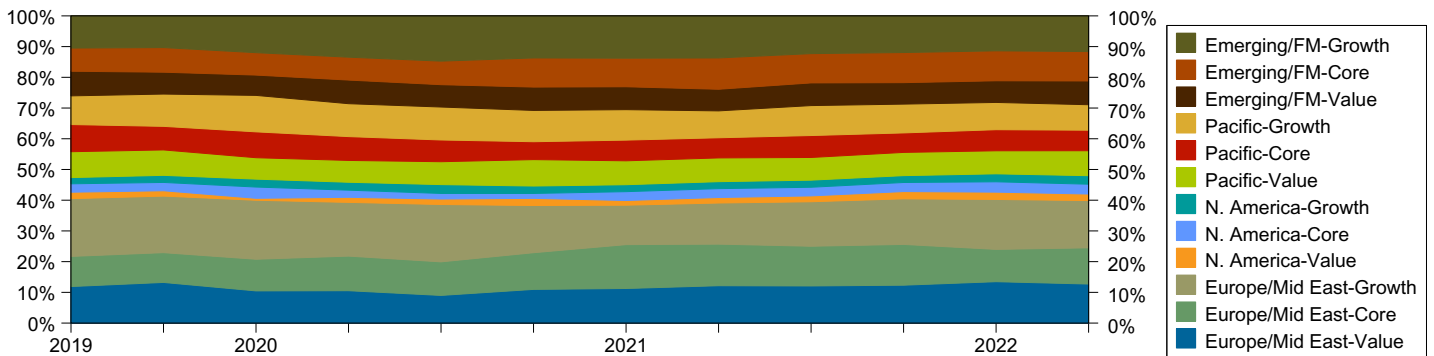
Average Style Map vs Callan Non US Equity MFs Holdings for Three Years Ended June 30, 2022



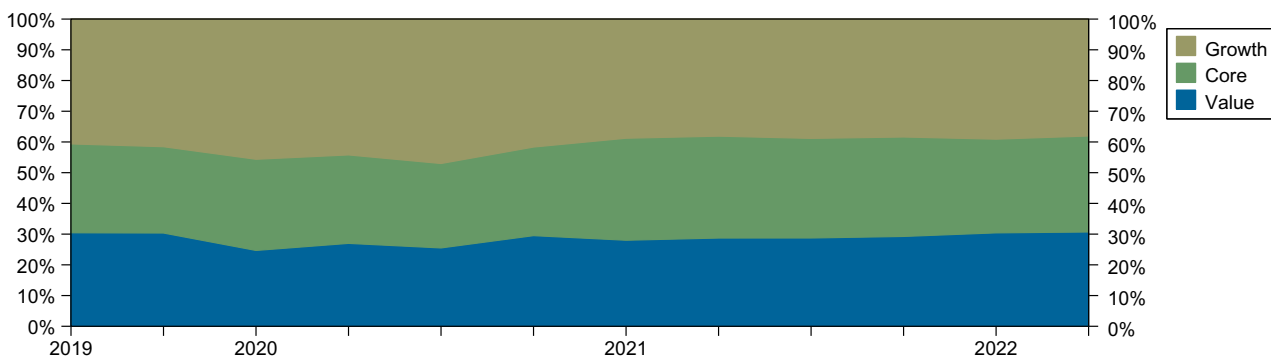
Average Style Exposure Matrix Holdings for Three Years Ended June 30, 2022

Europe/ Mid East	11.7% (132)	11.7% (121)	16.3% (156)	39.6% (409)
	11.9% (144)	11.5% (124)	16.8% (174)	40.2% (442)
N. America	1.9% (24)	2.7% (29)	2.4% (29)	7.0% (82)
	1.9% (26)	2.7% (31)	2.5% (34)	7.1% (91)
Pacific	7.7% (147)	7.2% (131)	9.9% (147)	24.8% (425)
	7.5% (148)	6.9% (132)	9.5% (146)	23.8% (426)
Emerging/ FM	7.3% (424)	8.8% (358)	12.4% (358)	28.6% (1140)
	7.4% (482)	8.9% (423)	12.5% (420)	28.8% (1325)
Total	28.6% (727)	30.4% (639)	41.0% (690)	100.0% (2056)
	28.8% (800)	30.1% (710)	41.2% (774)	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 June 30, 2022

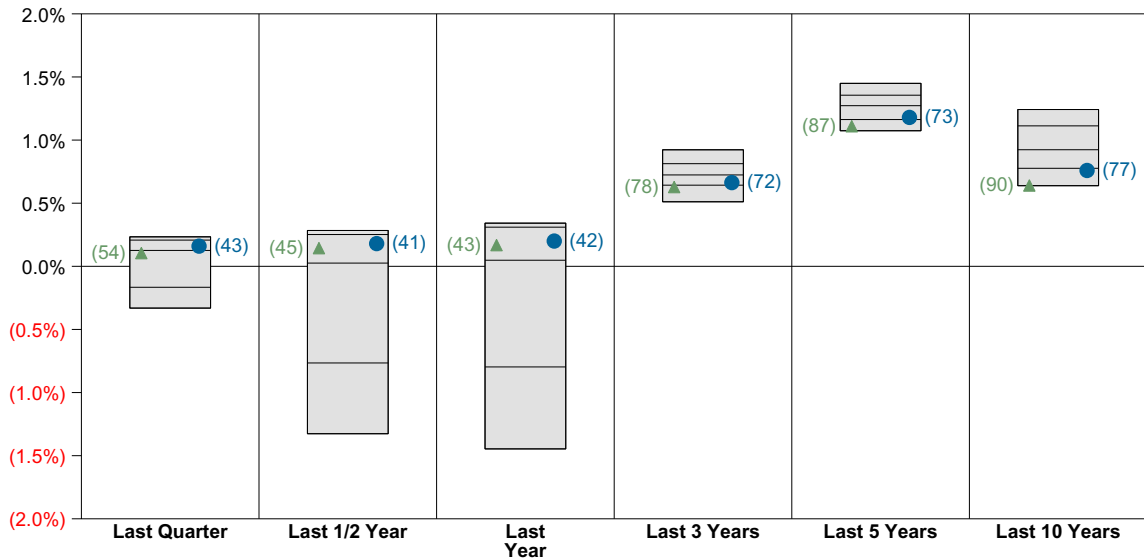
Investment Philosophy

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

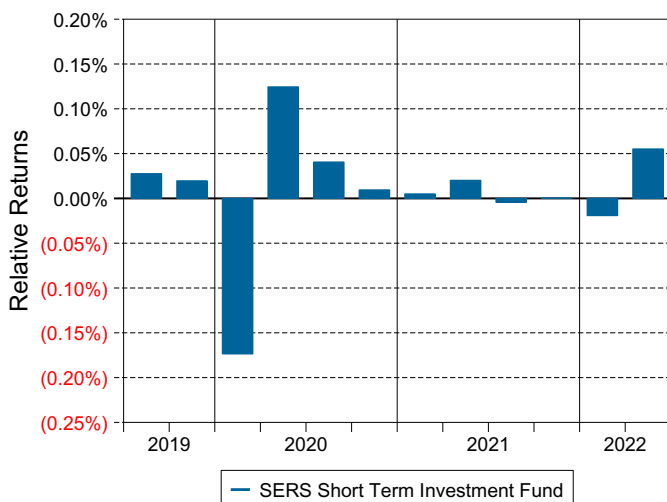
- SERS Short Term Investment Fund's portfolio posted a 0.16% return for the quarter placing it in the 43 percentile of the Callan Cash Database group for the quarter and in the 42 percentile for the last year.
- SERS Short Term Investment Fund's portfolio outperformed the 3-month Treasury Bill by 0.06% for the quarter and outperformed the 3-month Treasury Bill for the year by 0.03%.

Performance vs Callan Cash Database (Gross)

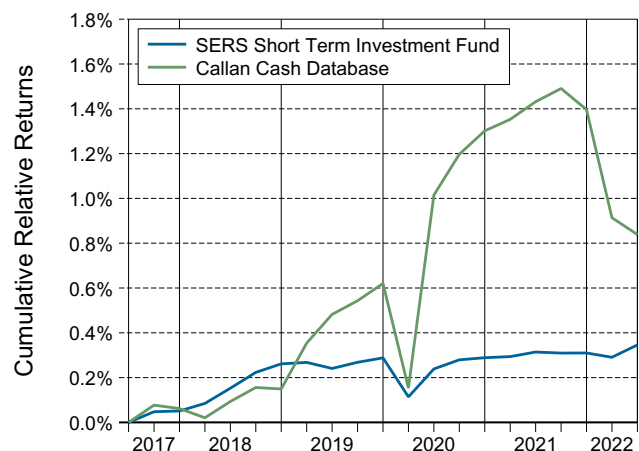


10th Percentile	0.23	0.28	0.34	0.92	1.45	1.24
25th Percentile	0.21	0.25	0.31	0.81	1.36	1.11
Median	0.13	0.03	0.05	0.72	1.27	0.92
75th Percentile	(0.17)	(0.77)	(0.80)	0.64	1.16	0.78
90th Percentile	(0.33)	(1.33)	(1.45)	0.51	1.07	0.64
SERS Short Term Investment Fund	● 0.16	0.18	0.20	0.66	1.18	0.76
3-month Treasury Bill	▲ 0.10	0.14	0.17	0.63	1.11	0.64

Relative Return vs 3-month Treasury Bill



Cumulative Returns vs 3-month Treasury Bill

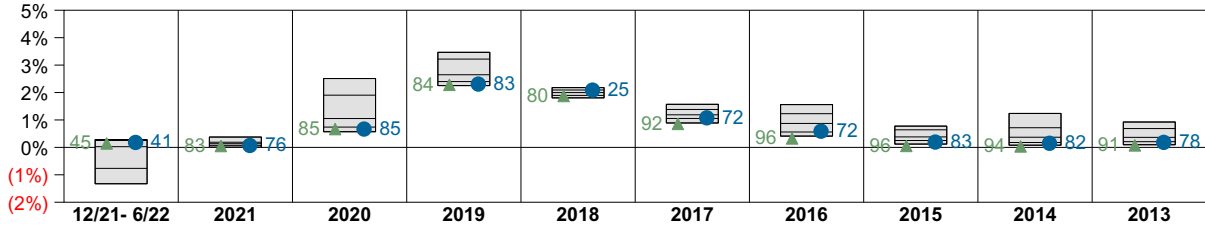


SERS Short Term Investment Fund Return Analysis Summary

Return Analysis

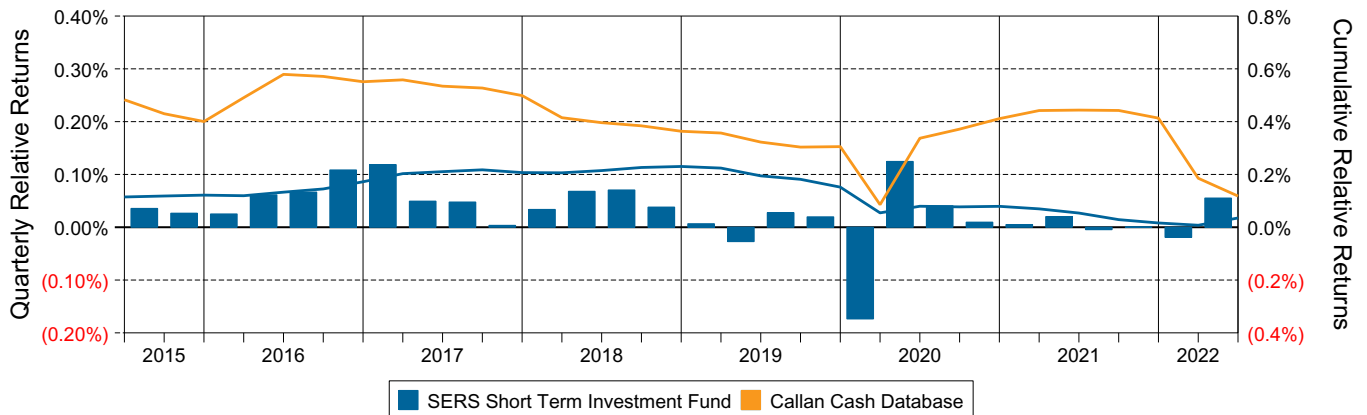
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate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

Performance vs Callan Cash Database (Gross)

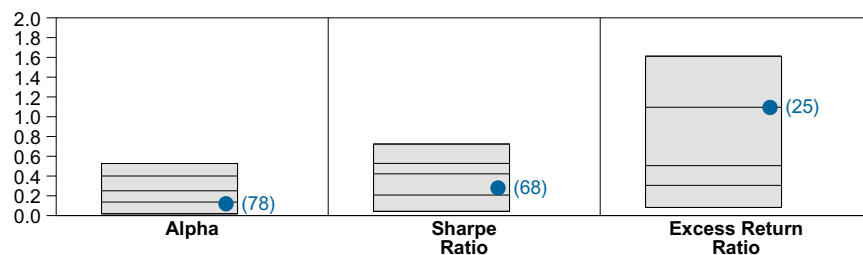


	12/21- 6/22	2021	2020	2019	2018	2017	2016	2015	2014	2013
SERS Short Term Investment Fund ●	0.18	0.07	0.67	2.31	2.09	1.08	0.59	0.19	0.15	0.18
3-month Treasury Bill ▲	0.14	0.05	0.67	2.28	1.87	0.86	0.33	0.05	0.03	0.07

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 June 30, 2022



	Alpha	Sharpe Ratio	Excess Return Ratio
SERS Short Term Investment Fund ●	0.12 (78)	0.28 (68)	1.09 (25)

SERS U.S. Short Term Bond Idx Fund

Period Ended June 30, 2022

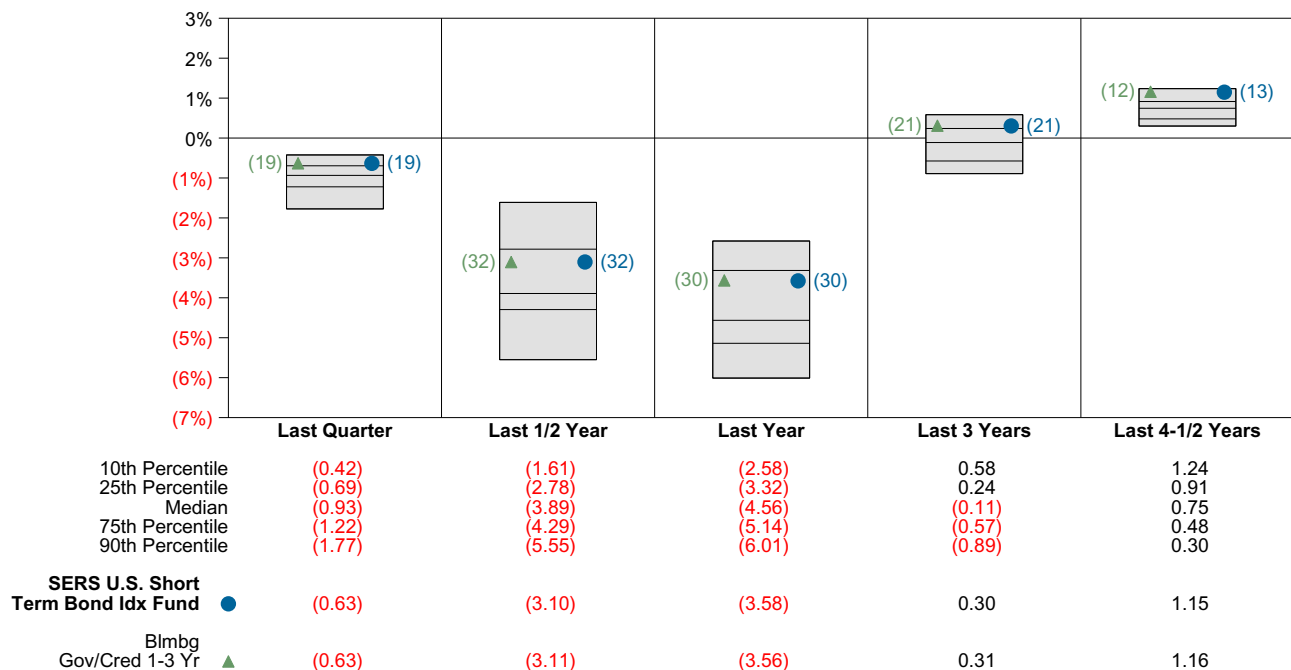
Investment Philosophy

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.

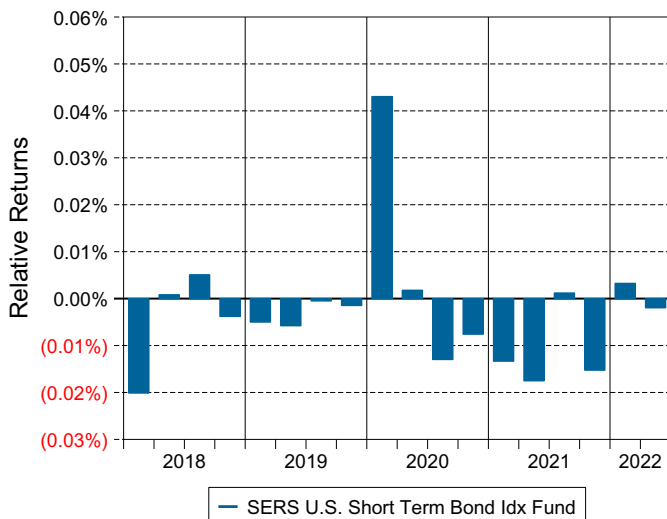
Quarterly Summary and Highlights

- SERS U.S. Short Term Bond Idx Fund's portfolio posted a (0.63)% return for the quarter placing it in the 19 percentile of the Callan Short US Gov Bond Mut Funds group for the quarter and in the 30 percentile for the last year.
- SERS U.S. Short Term Bond Idx Fund's portfolio underperformed 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%.

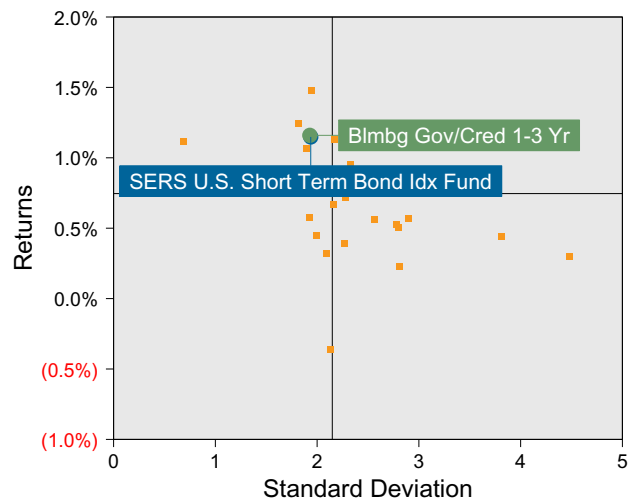
Performance vs Callan Short US Gov Bond Mut Funds (Institutional Net)



Relative Return vs Blmbg Gov/Cred 1-3 Yr



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



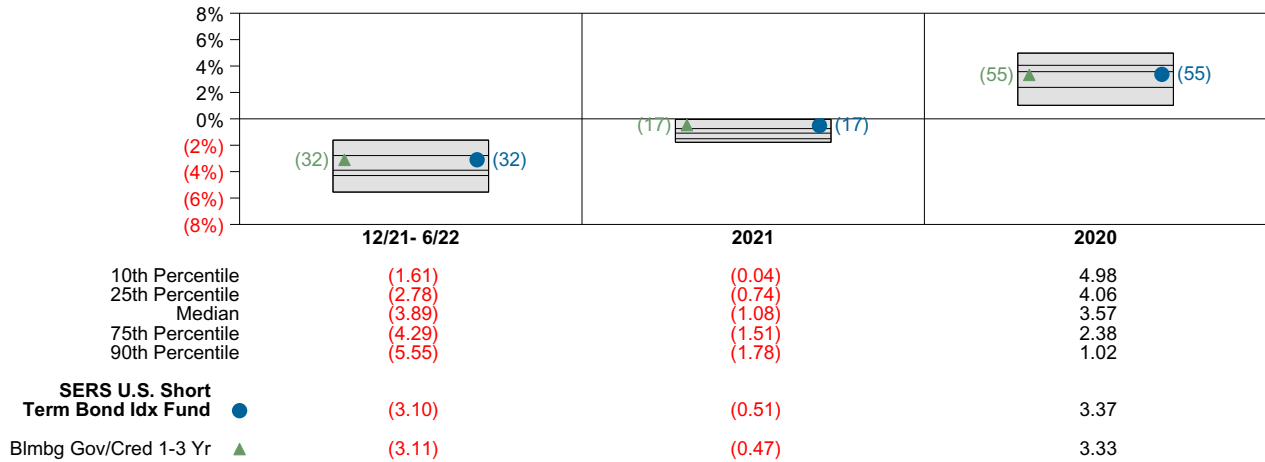
SERS U.S. Short Term Bond Idx Fund

Return Analysis Summary

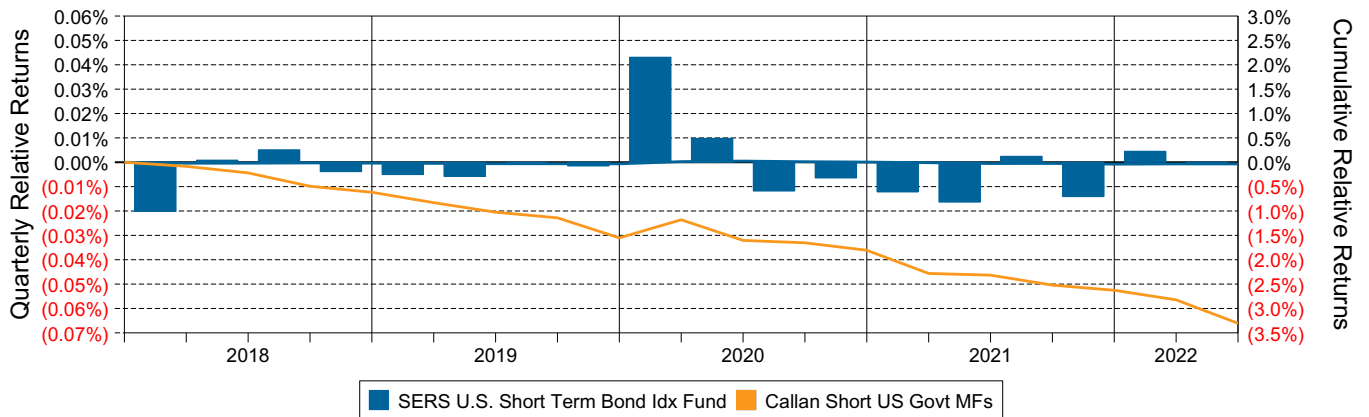
Return Analysis

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)



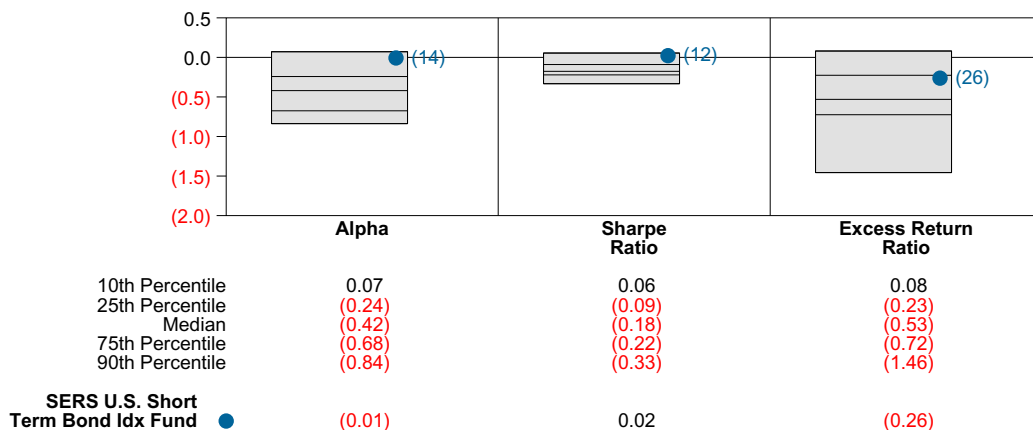
Cumulative and Quarterly Relative Returns vs Blmbg Gov/Cred 1-3 Yr



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

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

Four and One-Half Years Ended June 30, 2022



SERS U.S. Short Term Bond Idx Fund

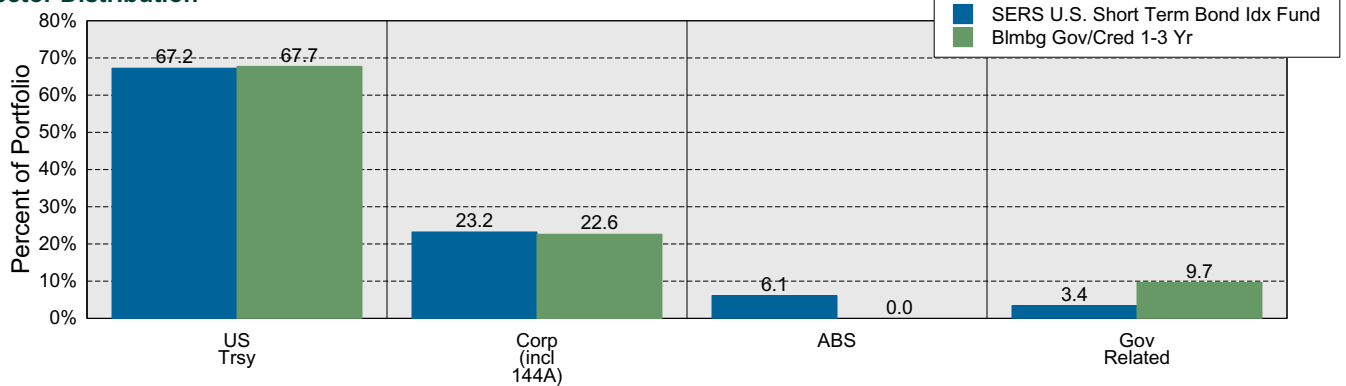
Portfolio Characteristics Summary

As of June 30, 2022

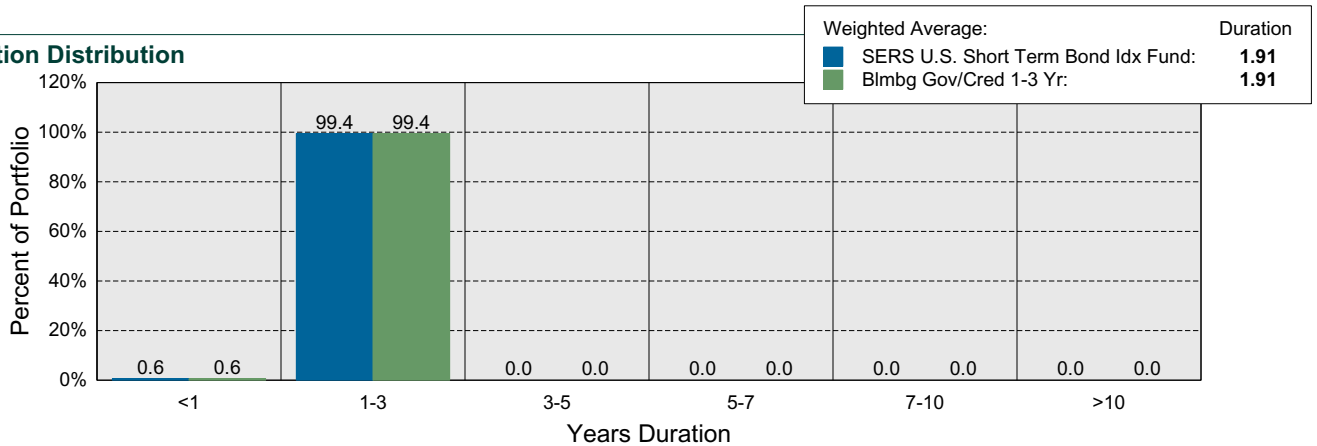
Portfolio Structure Comparison

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.

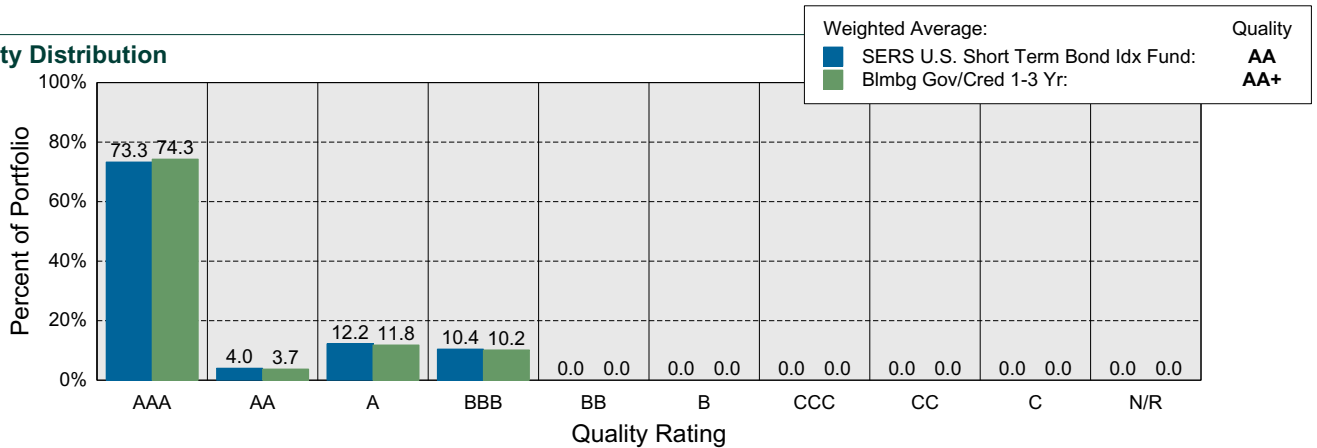
Sector Distribution



Duration Distribution



Quality Distribution



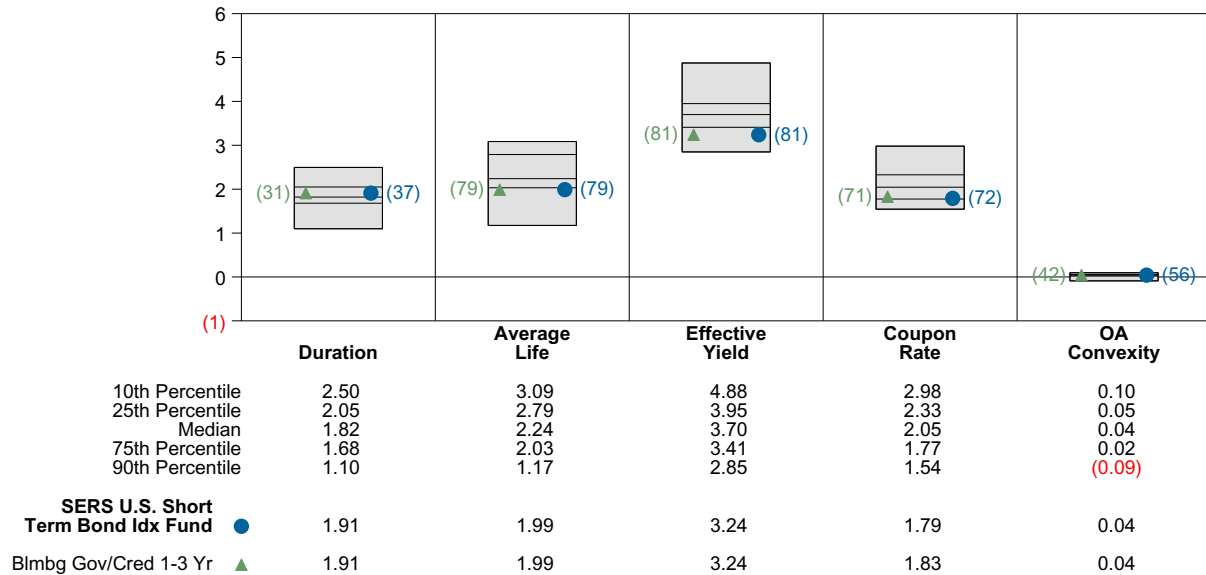
SERS U.S. Short Term Bond Idx Fund

Bond Characteristics Analysis Summary

Portfolio Characteristics

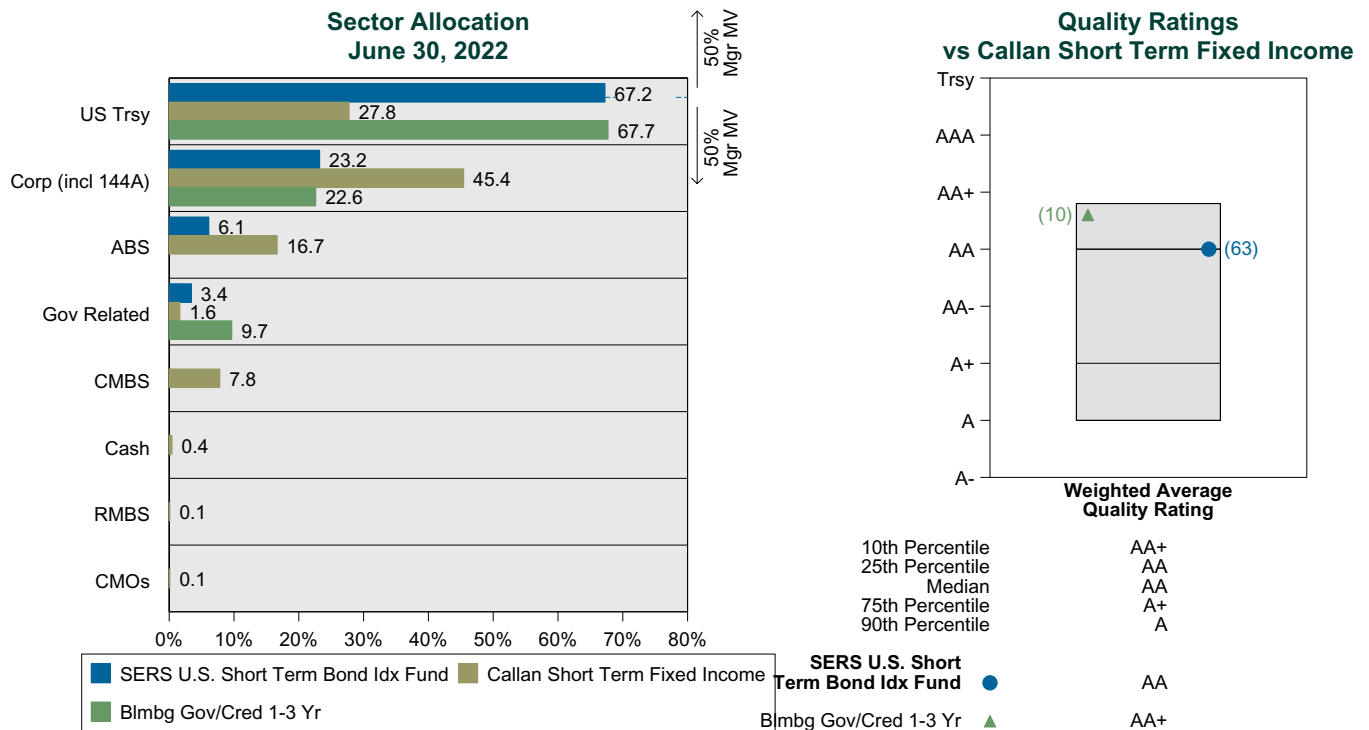
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

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

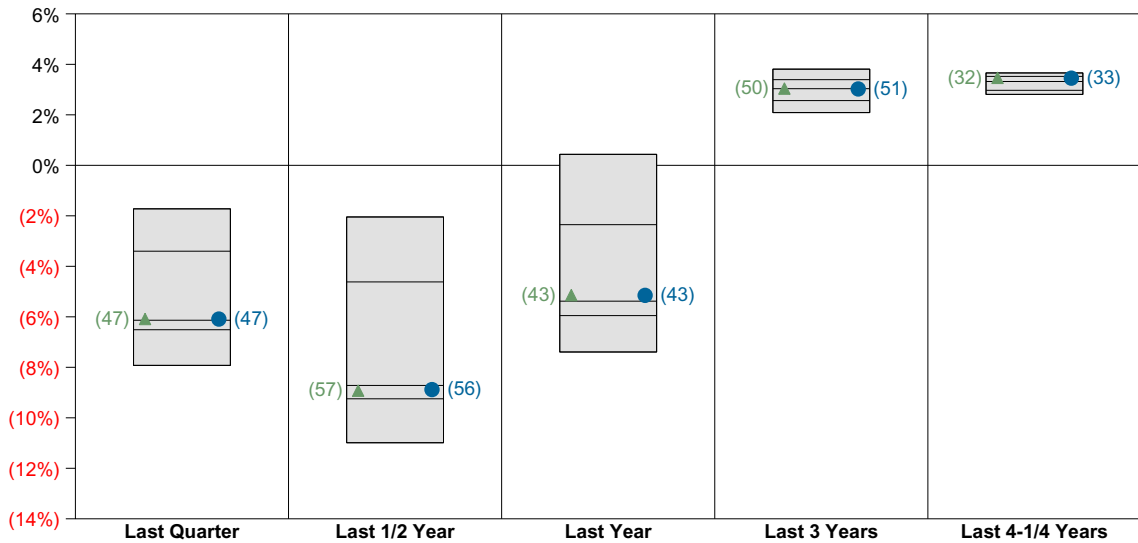
Investment Philosophy

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

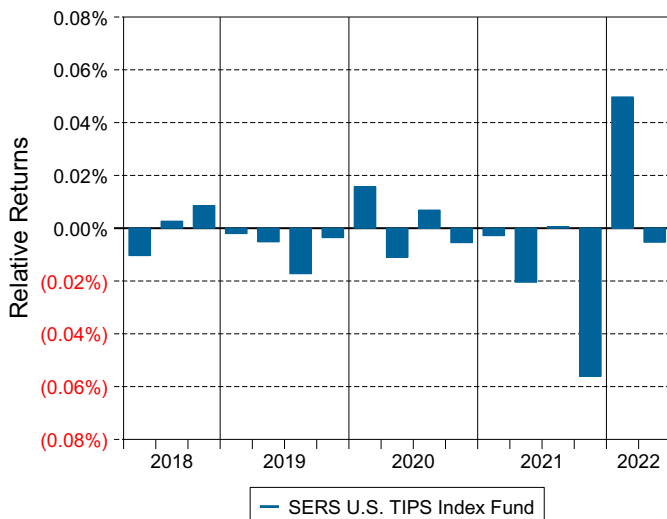
- SERS U.S. TIPS Index Fund's portfolio posted a (6.09)% return for the quarter placing it in the 47 percentile of the Callan Treas Infl Prot Securities MFs group for the quarter and in the 43 percentile for the last year.
- SERS U.S. TIPS Index Fund's portfolio underperformed the Blmbg TIPS by 0.00% for the quarter and underperformed the Blmbg TIPS for the year by 0.01%.

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

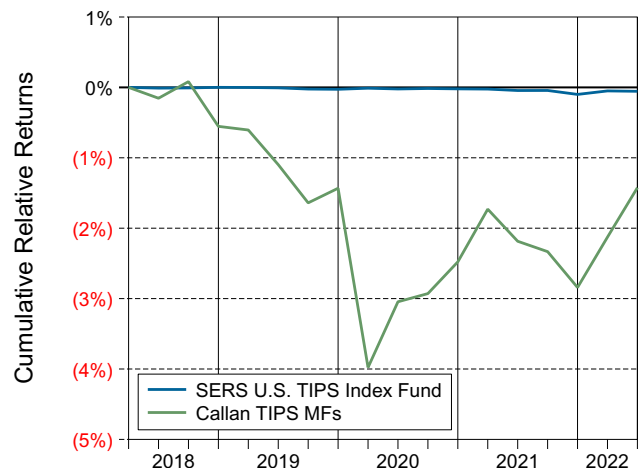


	Last Quarter	Last 1/2 Year	Last Year	Last 3 Years	Last 4-1/4 Years
10th Percentile	(1.72)	(2.05)	0.44	3.81	3.66
25th Percentile	(3.40)	(4.62)	(2.35)	3.39	3.52
Median	(6.14)	(8.72)	(5.38)	3.04	3.32
75th Percentile	(6.51)	(9.25)	(5.95)	2.56	2.97
90th Percentile	(7.92)	(10.99)	(7.39)	2.09	2.81
SERS U.S. TIPS Index Fund	(6.09)	(8.88)	(5.15)	3.03	3.45
Blmbg TIPS	(6.08)	(8.92)	(5.14)	3.04	3.47

Relative Return vs Blmbg TIPS



Cumulative Returns vs Blmbg TIPS



SERS U.S. TIPS Index Fund

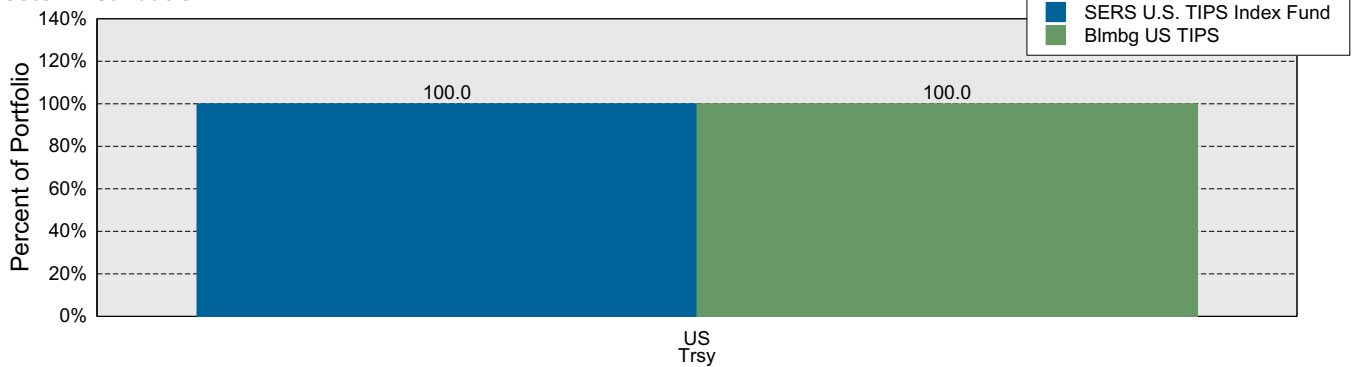
Portfolio Characteristics Summary

As of June 30, 2022

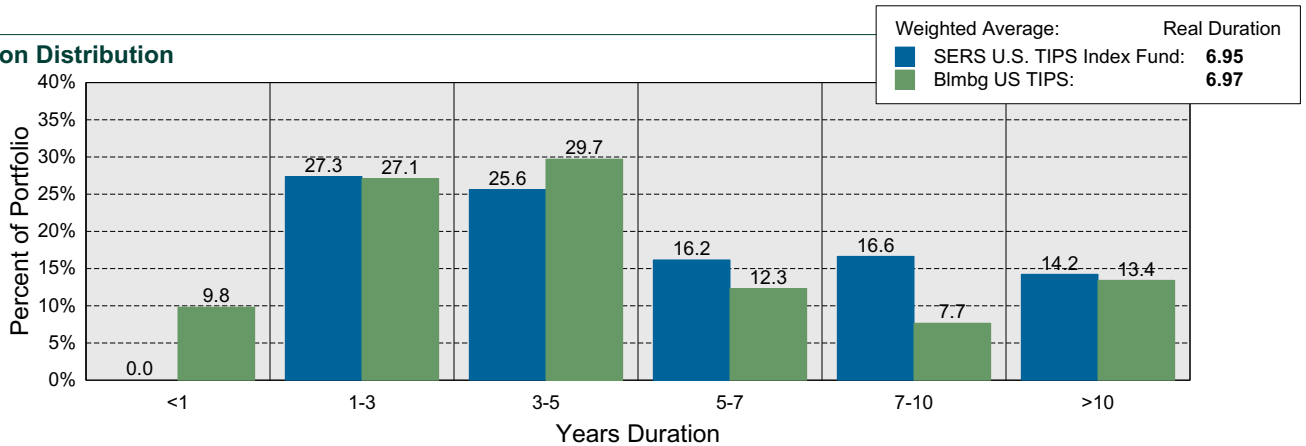
Portfolio Structure Comparison

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.

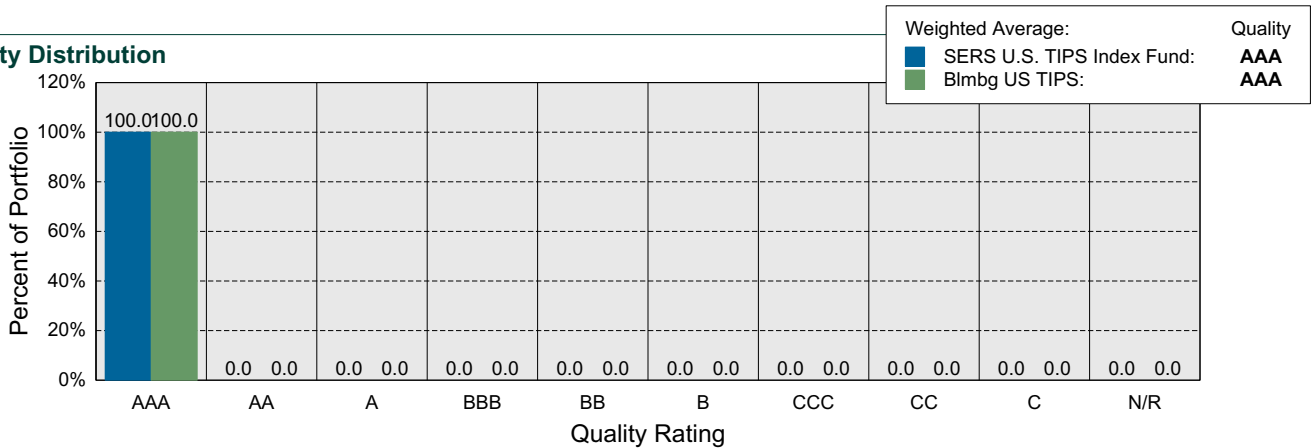
Sector Distribution



Duration Distribution



Quality Distribution

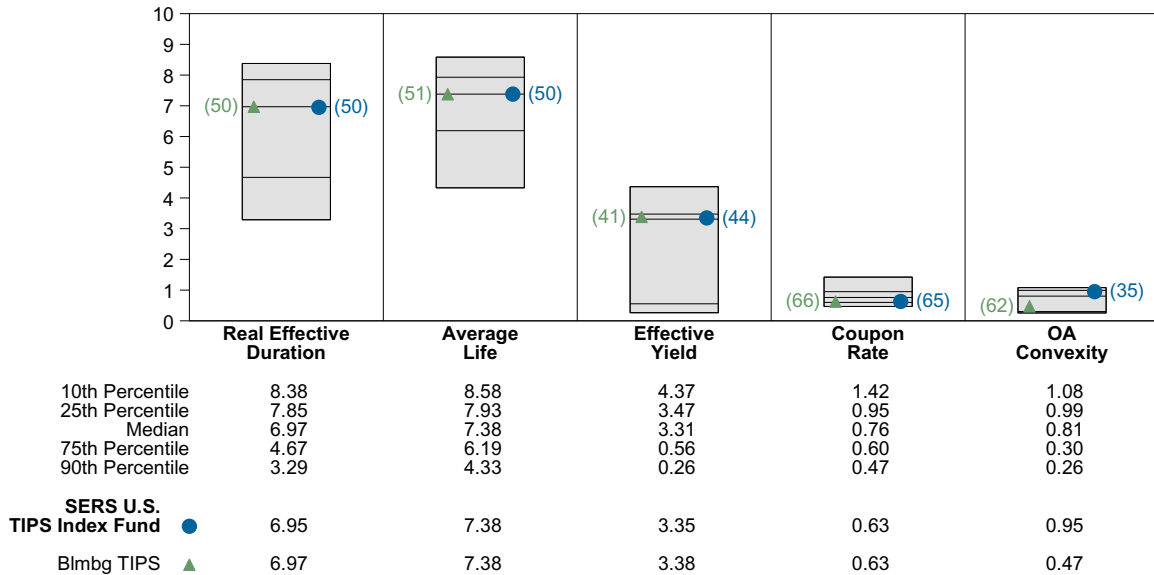


SERS U.S. TIPS Index Fund Bond Characteristics Analysis Summary

Portfolio Characteristics

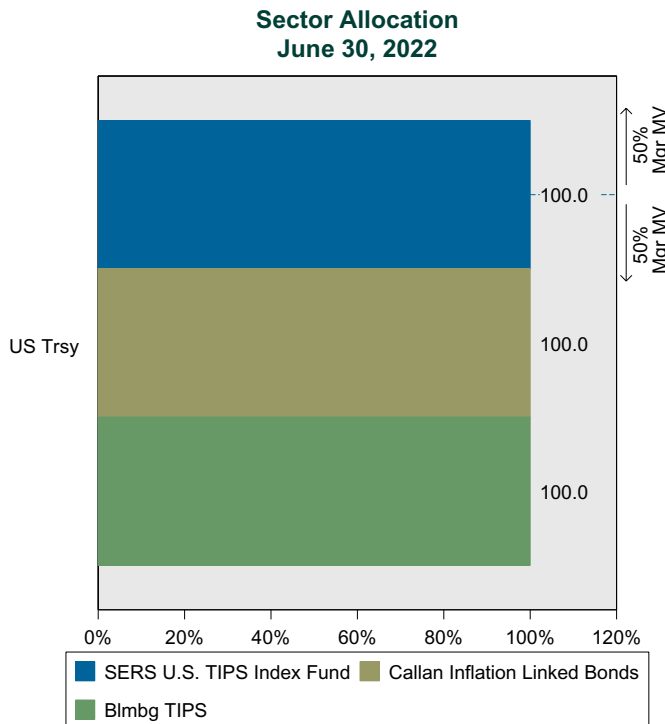
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

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

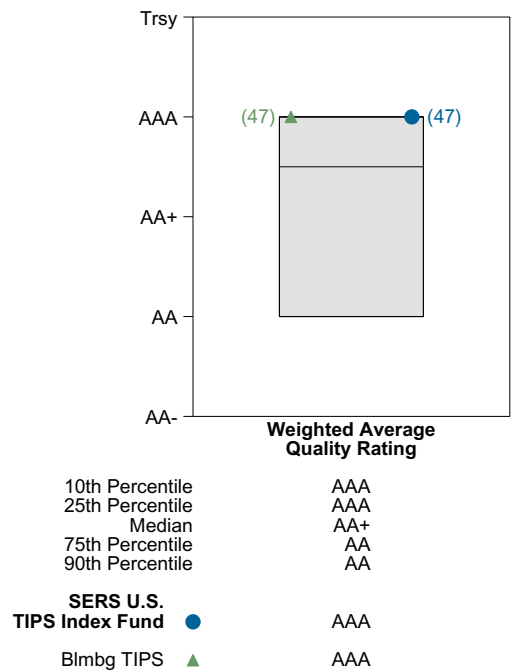


Sector Allocation and Quality Ratings

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.



Quality Ratings vs Callan Inflation Linked Bonds



SERS U.S. Bond Index Fund

Period Ended June 30, 2022

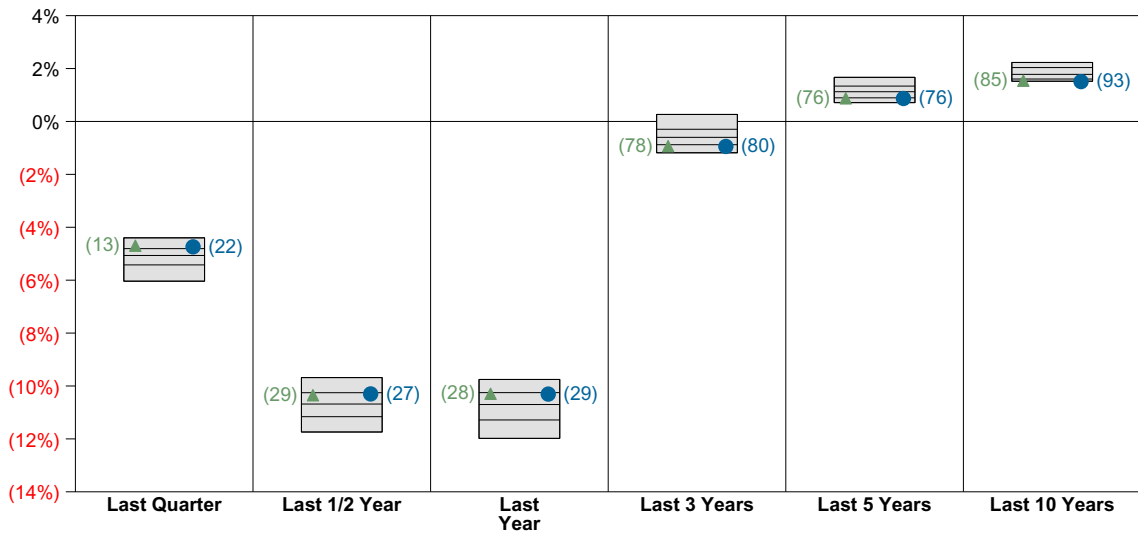
Investment Philosophy

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

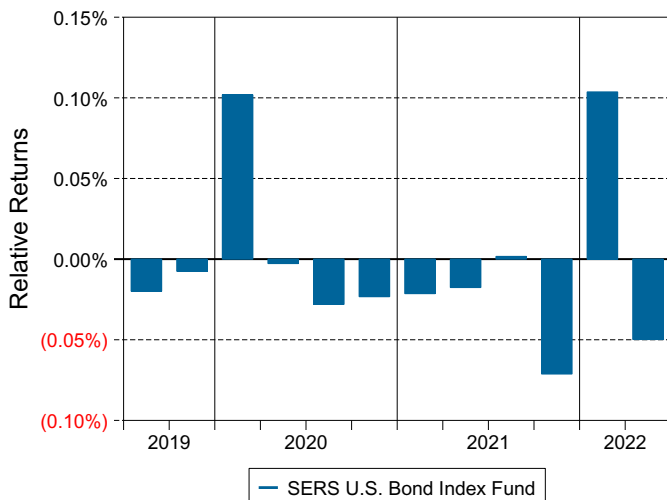
- SERS U.S. Bond Index Fund's portfolio posted a (4.74)% return for the quarter placing it in the 22 percentile of the Callan Core Bond Mutual Funds group for the quarter and in the 29 percentile for the last year.
- SERS U.S. Bond Index Fund's portfolio underperformed the Blmbg Aggregate by 0.05% for the quarter and underperformed the Blmbg Aggregate for the year by 0.01%.

Performance vs Callan Core Bond Mutual Funds (Institutional Net)

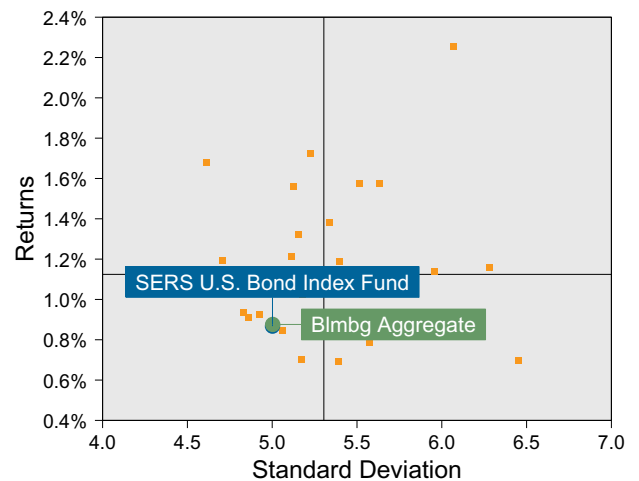


10th Percentile	(4.40)	(9.68)	(9.75)	0.27	1.67	2.23
25th Percentile	(4.81)	(10.25)	(10.25)	(0.30)	1.34	2.04
Median	(5.07)	(10.68)	(10.70)	(0.60)	1.12	1.78
75th Percentile	(5.42)	(11.16)	(11.28)	(0.88)	0.89	1.60
90th Percentile	(6.04)	(11.74)	(11.98)	(1.18)	0.71	1.52
SERS U.S. Bond Index Fund	● (4.74)	(10.30)	(10.31)	(0.95)	0.87	1.51
Blmbg Aggregate	▲ (4.69)	(10.35)	(10.29)	(0.93)	0.88	1.54

Relative Return vs Blmbg Aggregate



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

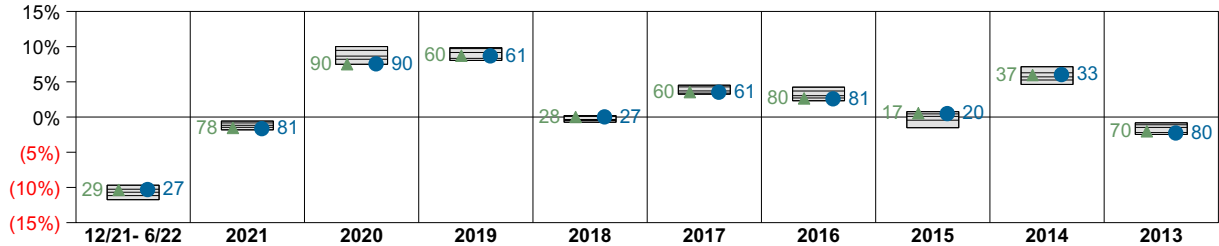


SERS U.S. Bond Index Fund Return Analysis Summary

Return Analysis

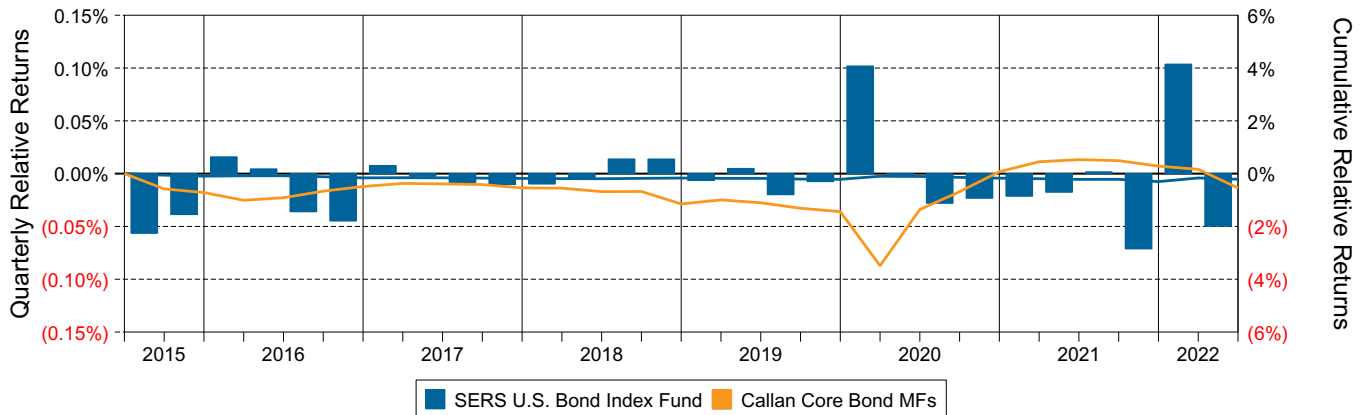
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate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

Performance vs Callan Core Bond Mutual Funds (Institutional Net)

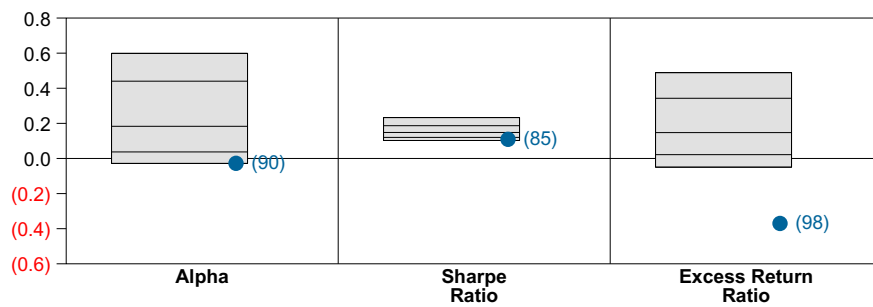


	12/21- 6/22	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	(9.68)	(0.57)	10.01	9.85	0.20	4.52	4.25	0.77	7.15	(0.82)
25th Percentile	(10.25)	(0.84)	9.47	9.72	0.09	4.28	3.70	0.45	6.29	(1.10)
Median	(10.68)	(1.17)	8.65	9.17	(0.35)	3.71	3.03	0.10	5.71	(1.47)
75th Percentile	(11.16)	(1.46)	8.21	8.33	(0.49)	3.40	2.71	(0.45)	5.26	(2.21)
90th Percentile	(11.74)	(1.82)	7.49	8.04	(0.73)	3.25	2.31	(1.52)	4.63	(2.48)
SERS U.S. Bond Index Fund	(10.30)	(1.65)	7.56	8.69	0.02	3.53	2.59	0.49	6.03	(2.26)
Blmbg Aggregate	(10.35)	(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 June 30, 2022



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.60	0.23	0.49
25th Percentile	0.44	0.19	0.34
Median	0.18	0.15	0.15
75th Percentile	0.04	0.12	0.02
90th Percentile	(0.03)	0.10	(0.05)
SERS U.S. Bond Index Fund	(0.03)	0.11	(0.37)

SERS U.S. Bond Index Fund

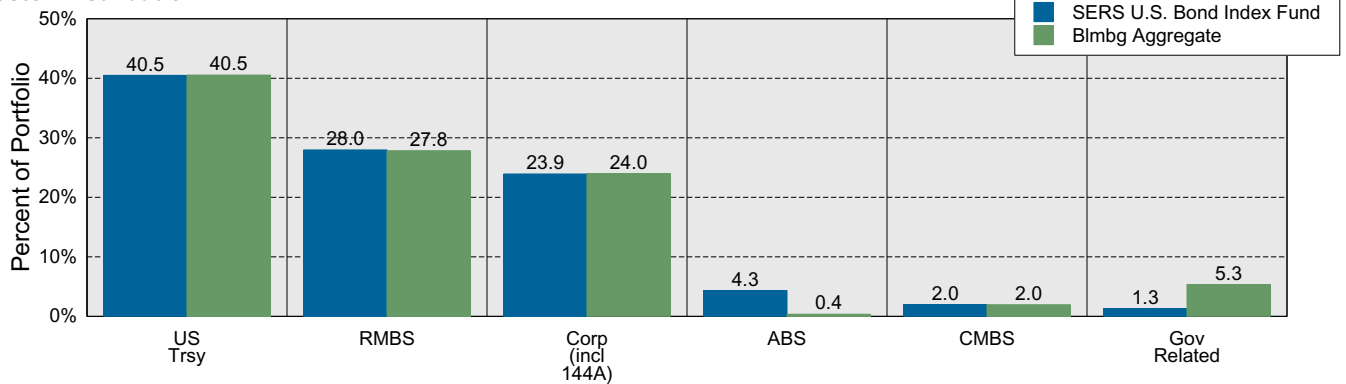
Portfolio Characteristics Summary

As of June 30, 2022

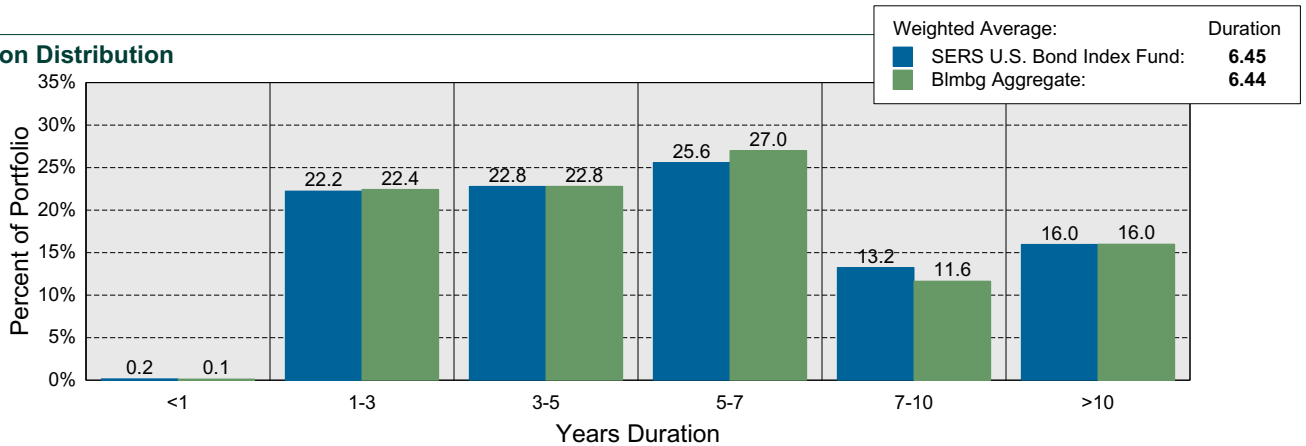
Portfolio Structure Comparison

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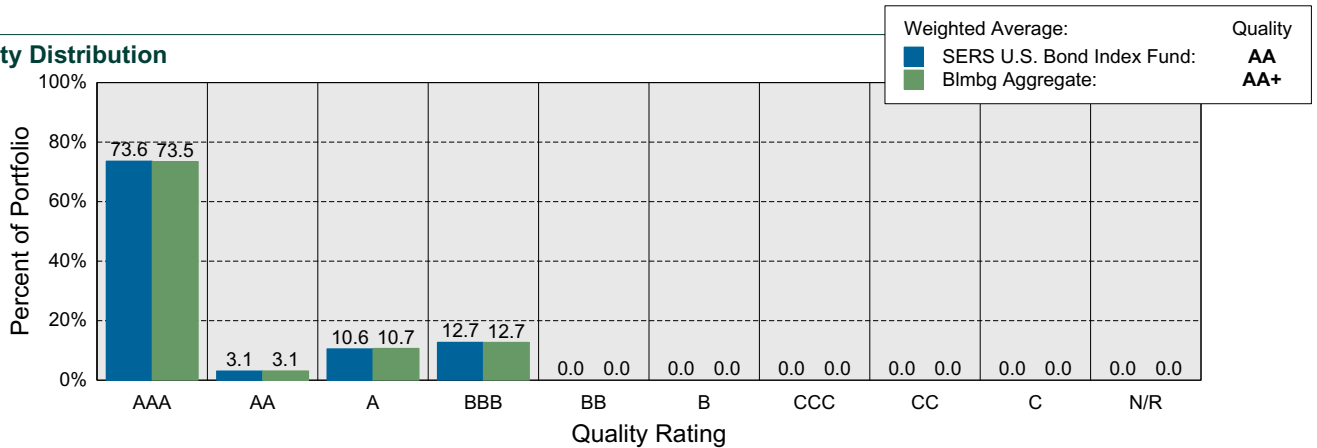
Sector Distribution



Duration Distribution



Quality Distribution



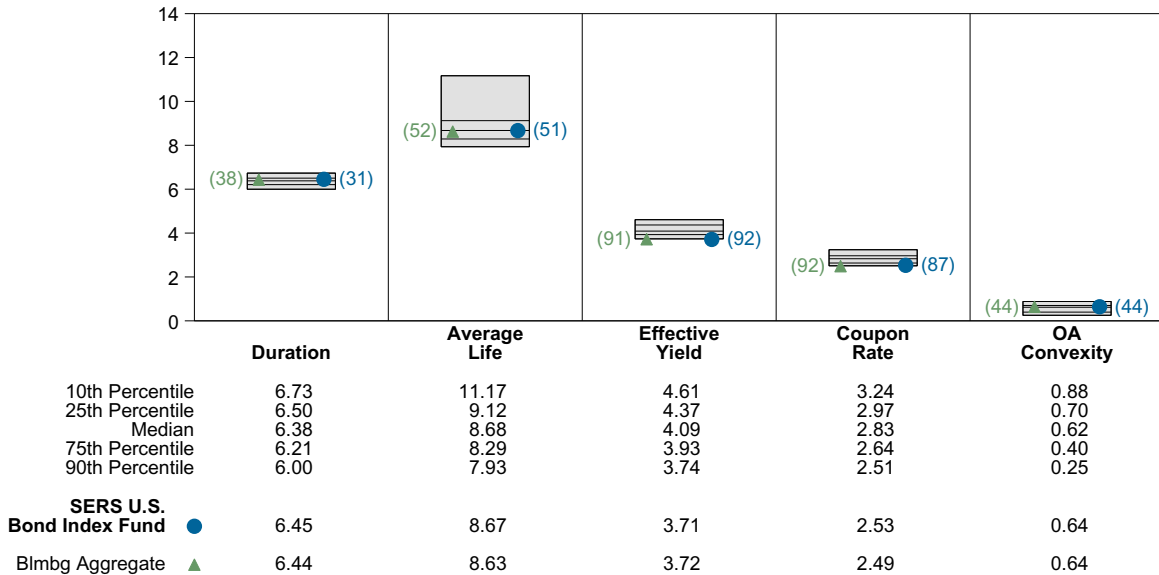
SERS U.S. Bond Index Fund

Bond Characteristics Analysis Summary

Portfolio Characteristics

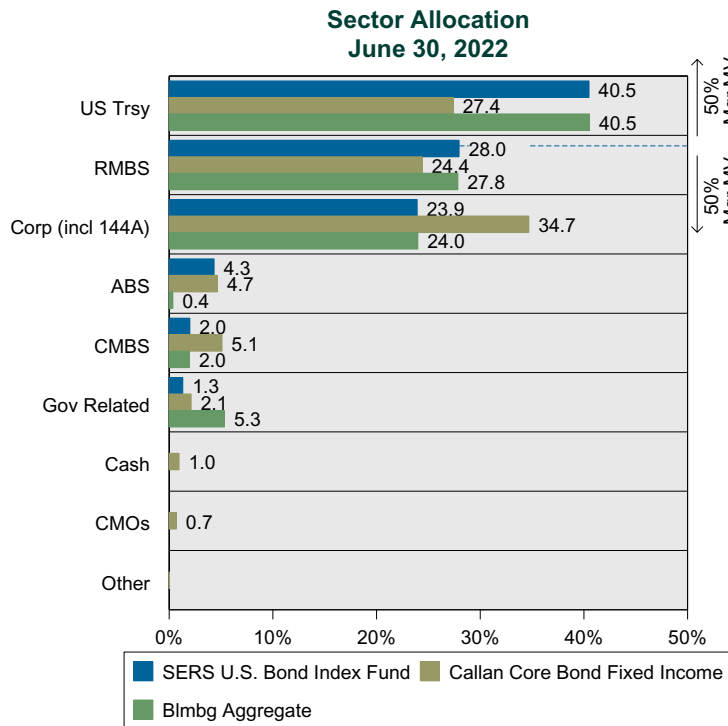
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

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

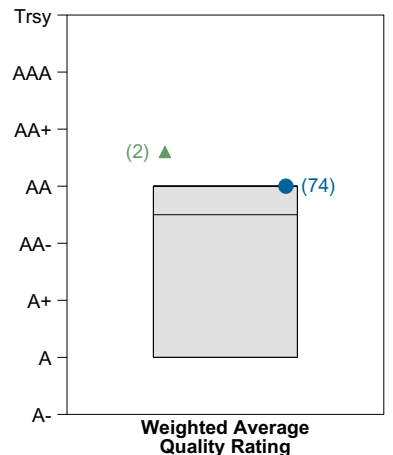


Sector Allocation and Quality Ratings

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.



Quality Ratings vs Callan Core Bond Fixed Income



10th Percentile	AA
25th Percentile	AA
Median	AA
75th Percentile	AA-
90th Percentile	A
SERS U.S. Bond Index Fund	AA
Blmbg Aggregate	AA+

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: ESG Interview Series](#) | Mark Wood of Callan discusses with Jon Hale, Director of ESG Strategy at Morningstar, the evolving definition of sustainable investments.

[Research Cafe: Private Equity](#) | In this session, private equity experts Ashley Kahn and Jonathan Farr provide actionable insights for institutional investors to help them negotiate with private equity managers, and offer private equity managers crucial information about how their peers determine fees and terms. This session also includes a special feature on credit line usage.

[Investing in Data Centers: The Real Assets of the Digital Age](#) | Lauren Sertich discusses investing in data centers, a growing sector in which institutional investors have more investment options as the universe of qualified managers/operators rapidly expands.

[Do Active Fixed Income Managers Add Value With Sector Rotation?](#) | Kevin Machiz analyzes whether institutional investors could take a DIY approach to strategic sector allocations and forego sector rotation within fixed income and still achieve results comparable to active managers. Our study found that the average manager has added value with sector rotation.

Blog Highlights

[SEC Proposes Rule to Enhance and Standardize Climate-Related Disclosures](#) | The U.S. Securities and Exchange Commission unveiled its proposed rule amendments designed to improve and standardize disclosures around climate change risks for public companies.

[Unprecedented Territory—and the Inherent Limits of Diversification](#) | Stock and bond markets around the globe were down together for the first four months of 2022. How often does that happen? Did diversification fail us?

[Rising Interest Rates Spur Look at Structured Credit](#) | Structured credit has seen increased interest from institutional investors as they explore ways to adapt their fixed income portfolios for an expected environment of rising rates.

[Hedge Fund Strategies: A Guide for Institutional Investors](#) | Hedge fund strategies are beginning to see renewed interest from institutional investors seeking diversification benefits and downside protection. But these strategies can be complex; this explainer educates investors about investing in these strategies.

Quarterly Periodicals

[Private Equity Update, 1Q22](#) | A high-level summary of private equity activity in the quarter through all the investment stages

[Active vs. Passive Charts, 1Q22](#) | A comparison of active managers alongside relevant benchmarks over the long term

[Market Pulse Flipbook, 1Q22](#) | 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, 1Q22](#) | 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, 1Q22](#) | Commentary on developments for hedge funds and multi-asset class (MAC) strategies

[Real Assets Update, 1Q22](#) | A summary of market activity for real assets and private real estate during the quarter

[Private Credit Update, 1Q22](#) | 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:

October Regional Workshop

Oct. 18, 2022 – Denver, CO

Oct. 20, 2022 – San Francisco, CA

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

September 20-22 – 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/



"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

