

December 31, 2022

Pennsylvania SERS 457(b)



**Investment Measurement Service
Quarterly Review**

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Is a Recession Inevitable in 2023?

ECONOMY

2 The bond market is convinced a recession is inevitable in 2023, as shown by an inverted yield curve. Perhaps bond investors do not believe that we will achieve a “soft landing” from the current economic expansion. Robust current economic indicators conflict with this market expectation.

Rebound in 4Q for U.S., Global Bonds

FIXED INCOME

8 Bonds rose in 4Q but 2022 results remained negative. The gain for the Aggregate was driven by coupon income and spread tightening. The Municipal Bond Index 2022 return was the worst since 1981. Global fixed income 4Q gains were driven largely by U.S. dollar weakness.

Appetite Continues, but Strategies Shift

PRIVATE CREDIT

12 Investors took a new look at upper-middle-market direct lending as all-in spreads have widened and lenders are able to get tighter terms. On average, the asset class has generated net IRRs of 8% to 10% for trailing periods ended Sept. 30, 2022.

First Full-year Drop in Returns Since 2018

INSTITUTIONAL INVESTORS

4 All investor types finished 2022 with steep declines. The S&P 500 and Bloomberg Aggregate were down together for three straight quarters (through 3Q22), and for the year, the first time since 1969. But most investors performed better than a 60% stocks/40% bonds benchmark.

NPI Falls 3.5% and REITs Lag Equities

REAL ESTATE/REAL ASSETS

10 The NCREIF Property Index fell 3.5% during 4Q. The NCREIF ODCE Index dropped 5.2%. The FTSE EPRA Nareit Developed REIT Index rose 6.9% compared to a 9.8% gain for MSCI World. The FTSE Nareit Equity REITs Index increased 5.2%, compared to 7.6% for the S&P 500.

Year Ends on a High Note After Tough Start

HEDGE FUNDS/MACs

13 The median Callan Institutional Hedge Fund Peer rose 1.3%. Within the HFRI indices, the best-performing strategy was the emerging market index (+5.1%). Across the Callan Hedge FOF Database, all managers showed gains. The Callan MAC Style Groups also rose.

4Q Gains Can't Stem Big Losses in 2022

EQUITY

6 Stocks gained in 4Q but saw sharp drops over the full year. The drop for U.S. equities was broad-based, and almost every sector experienced negative returns. Global equities also rose in 4Q, as lower-than-expected U.S. inflation data buoyed market optimism at year-end.

Deceleration in 2022; 2023 Very Unclear

PRIVATE EQUITY

11 After a record-shattering 2021, private equity activity fell throughout 2022. On average, year-over-year transaction activity fell by about 20% and dollar volumes by 30%. However, fundraising and company investment and exit activity remain comparable to pre-pandemic levels.

DC Index Falls 4.6%, Third Straight Decline

DEFINED CONTRIBUTION

15 The Callan DC Index™ fell 4.6% in 3Q22 and 16.7% for the trailing one year. Balances within the Index declined by 4.7% after a 12.3% decrease the previous quarter. TDFs reclaimed the top spot in terms of quarterly net flows, garnering 73.6% of flows.

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

Is a Recession Inevitable in 2023?

ECONOMY | Jay Kloepfer

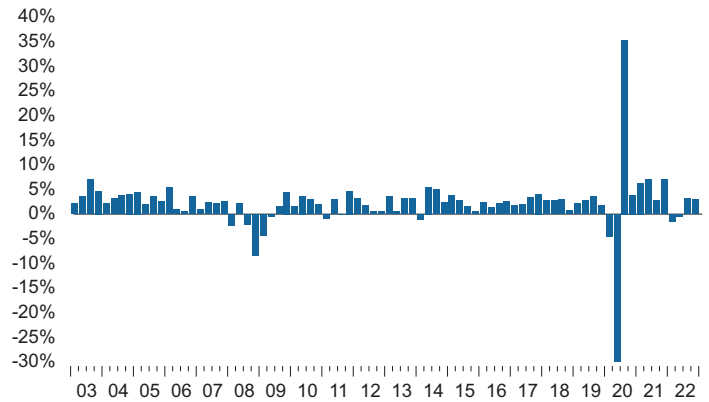
The bond market is convinced a recession is inevitable in 2023. The yield curve is inverted, and this phenomenon has preceded every recession in modern history. This inversion occurs when yields on the short end of the curve are higher than yields on the long end. A normal yield curve is upward sloping, with higher yields offered for taking on debt with greater maturities. An inverted yield curve implies that investors expect interest rates to fall, and that holding longer-dated debt will provide a greater return as rates drop. Why would investors expect interest rates to fall? They believe that a recession is coming, and the Federal Reserve will cut interest rates to stimulate economic growth.

Last year was anything but normal for almost all measures of the capital markets, interest rates, inflation, and the economy. It may be reasonable to be a bit skeptical that the bond market has called this recession correctly. First, the U.S. economy suffered two quarters in a row of GDP loss “way back” in 1Q and 2Q22! A consecutive quarterly decline in GDP is often the rule of thumb used to invoke recession, but last year, such was not the case. The economy resumed robust growth with a solid 3.2% annualized gain in 3Q, and a 2.9% increase in 4Q. As a result, GDP advanced 2.1% for the year, following a strong 5.9% jump in 2021. Where was the growth in 4Q22 and for the year? Consumer spending on services, led by international travel, food services, accommodation, and health care. We also re-built inventories and increased investment in software and equipment. The one large drag was a decline in home construction, as mortgage rates shot up from the low 2% range to over 7% in a matter of months.

Inflation burned out of control by mid-year 2022. Faced with huge increases in the price of daily staples and durable goods like autos, consumers quickly redirected their spending away from goods suffering steep inflation, and spending on such goods within GDP actually declined during the year. This wasn't always captured in the CPI; one of its failings as a measure of inflation is that it assumes a certain basket of goods will continue to be purchased at fixed weights even when prices shoot up. Clearly, higher prices for food staples and rent are impossible to avoid, but consumers substitute budget expenditures with great skill to

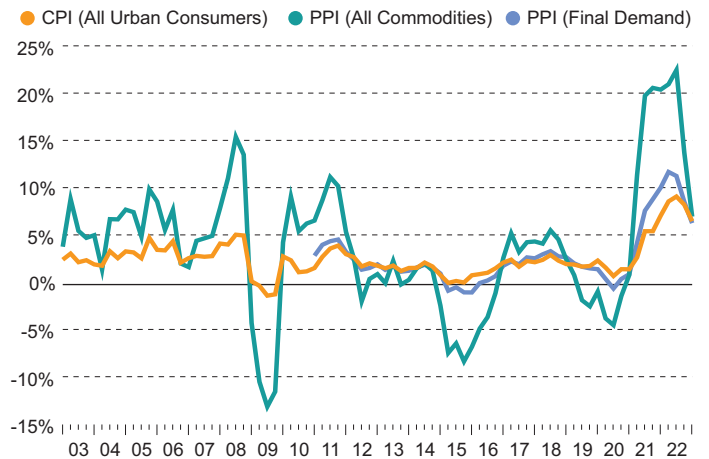
Quarterly Real GDP Growth

(20 Years)



Source: Bureau of Economic Analysis

Inflation Year-Over-Year



Source: Bureau of Labor Statistics

counter price hikes. Inflation measured by the CPI-U rose sharply year-over-year, cresting at 9% by June, but the rate of increase in prices flattened completely in the second half of the year. So while the year-over-year increase for 4Q CPI hit 6.5%, the quarterly CPI for 4Q came in at 0% (change over 3Q). The problem for consumers and businesses is that even though CPI has stopped rising, prices are now “permanently” higher.

While a disconnect remains in the job market between those looking for work and the jobs offered by employers, the job market notched serious gains in net new jobs throughout the year, adding over 4.5 million. The level of employment finally surpassed the

pre-pandemic peak in August 2022. Additions to the unemployment roll measured by weekly jobless claims continued to stay historically low, while continuing unemployment claims dropped from over 5 million at the start of 2021 to 1.7 million in December. Calendar year 2022 saw the lowest level of continuing claims in more than two decades.

With continued economic strength suggested by the robust job market and solid GDP growth, where is the concern over recession coming from in the bond market? The answer is a logic puzzle that can seem like a circular argument. The Fed raised rates quickly and by a large amount starting last March to battle the surge in inflation. The surge stemmed from supply chain dislocations as we emerged from the pandemic lockdown; from a surge in demand for workers, which drove wage growth; from a surge in demand from consumers; and then layered on top of these trends the disruption from the Russian invasion of Ukraine. The bond market suddenly “believed” in the Fed’s stated plans for interest rates through 2022, and yields moved quickly toward long-term equilibrium by mid-year 2022. The Fed’s primary tool to battle inflation is the Fed Funds rate. The premise is that higher rates cool demand for goods and services from all actors in the economy and wring inflation out of the economy. The reality is that higher rates appear to be working as advertised, as demand has lessened and inflation stopped rising month-to-month in the summer of 2022. The inverted yield curve says the bond market believes the very success of the Fed’s inflation policy is now certain to cause recession, and then a reversal of interest rate policy to fight said recession. Perhaps the bond market does not believe that we will achieve the holy grail of Fed policy, which is to engineer a “soft landing” from the current economic expansion.

Recent Quarterly Economic Indicators

	4Q22	3Q22	2Q22	1Q22
Employment Cost: Total Compensation Growth	5.1%	5.0%	5.1%	4.5%
Nonfarm Business: Productivity Growth	3.0%	1.4%	-4.1%	-5.9%
GDP Growth	2.9%	3.2%	-0.9%	-1.6%
Manufacturing Capacity Utilization	78.5%	79.2%	79.5%	79.1%
Consumer Sentiment Index (1966=100)	58.8	56.1	57.8	63.1

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

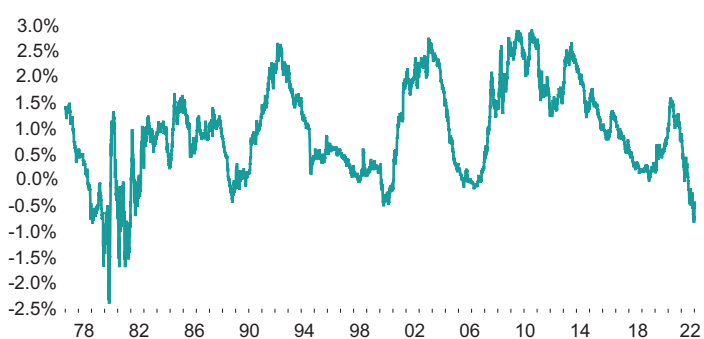
The Long-Term View

Index	4Q22	Periods Ended 12/31/22			
		1 Yr	5 Yrs	10 Yrs	25 Yrs
U.S. Equity					
Russell 3000	7.2	-19.2	8.8	12.1	7.7
S&P 500	7.6	-18.1	9.4	12.6	7.6
Russell 2000	6.2	-20.4	4.1	9.0	7.1
Global ex-U.S. Equity					
MSCI EAFE	17.3	-14.5	1.5	4.7	4.5
MSCI ACWI ex USA	14.3	-16.0	0.9	3.8	--
MSCI Emerging Markets	9.7	-20.1	-1.4	1.4	--
MSCI ACWI ex USA Small Cap	13.3	-20.0	0.7	5.2	6.9
Fixed Income					
Bloomberg Agg	1.9	-13.0	0.0	1.1	4.0
90-Day T-Bill	0.8	1.5	1.3	0.8	1.9
Bloomberg Long G/C	2.6	-27.1	-1.2	1.6	5.4
Bloomberg GI Agg ex US	6.8	-18.7	-3.1	-1.6	2.7
Real Estate					
NCREIF Property	-3.5	5.5	7.5	8.8	9.0
FTSE Nareit Equity	5.2	-24.4	3.7	6.5	7.9
Alternatives					
CS Hedge Fund	0.9	1.1	4.2	4.2	5.8
Cambridge PE*	-1.8	-3.8	16.8	15.3	14.3
Bloomberg Commodity	2.2	16.1	6.4	-1.3	1.9
Gold Spot Price	9.2	-0.1	6.9	0.9	7.6
Inflation – CPI-U	0.0	6.5	3.8	2.6	2.5

*Data for most recent period lags. Data as of 9/30/22. Sources: Bloomberg, Bureau of Economic Analysis, Credit Suisse, FTSE Russell, MSCI, NCREIF, Refinitiv/Cambridge, S&P Dow Jones Indices

It is true that we have never achieved a soft landing in the past, so the bond market may be justified in expecting that the Fed will overshoot and tip the U.S. into recession. Robust current economic indicators, especially in the labor market outside of technology, conflict with this market expectation.

10-Year Treasury vs. 2-Year Treasury Spread



Source: Federal Reserve Bank of St. Louis

Worst Year Since 2018 as Both Stocks and Bonds Fall

INSTITUTIONAL INVESTORS

Double-digit declines mark the end of a tough year

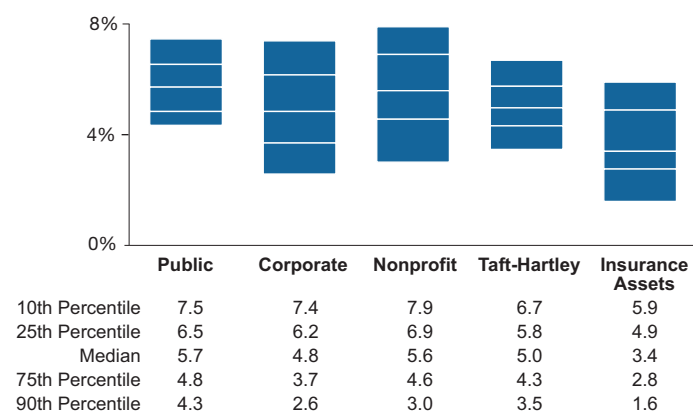
- All investor types finished 2022 with double-digit declines, as both equities and fixed income fell.
- Insurance assets fared the best during the year, while corporate plans saw the lowest returns.
- Most plan types performed better than a benchmark consisting of 60% S&P 500/40% Bloomberg Aggregate, but they had a harder time matching that benchmark over longer time periods.
- The declines in 2022 were far higher than those in 2018, which was the last year that saw drops in the value of portfolios for institutional investors.

Inflation and interest rates are top client concerns

- CPI-U was up more than 8% year-over-year in each month from March through September.
- The Fed has raised rates 425 bps since March, from 0.0%-0.25% to 4.25%-4.50% in December 2022.
- The S&P 500 and Bloomberg Aggregate were down together for three consecutive quarters (through 3Q22), and for the year, the first time since 1969.
- And there was no place to hide in 2022; every asset class except cash was down. It was the worst year for a 60/40 portfolio in decades.

- However, lower asset values but higher returns expected going forward is a silver lining for investors.
- Institutional investors have a greater chance of hitting return targets and can even reduce risk, after years of risking up to chase return.
- There are rising expectations for a recession; the yield curve is inverted.
- Geopolitical risk surrounding China was another area of focus as institutional investors try to understand how its COVID re-opening and tensions regarding Taiwan could impact markets.

Quarterly Returns, Callan Database Groups (12/31/22)



Source: Callan

Callan Database Median and Index Returns* for Periods Ended 12/31/22

Database Group	Quarter	1 Year	3 Years	5 Years	10 Years	20 Years
Public Database	5.7	-12.7	4.3	5.3	7.3	7.5
Corporate Database	4.8	-17.4	0.5	3.0	5.8	7.0
Nonprofit Database	5.6	-13.1	3.6	4.8	6.8	7.4
Taft-Hartley Database	5.0	-10.6	4.7	5.7	7.7	7.3
Insurance Assets Database	3.4	-10.0	1.0	2.6	4.0	5.0
All Institutional Investors	5.2	-13.3	3.4	4.7	6.9	7.3
Large (>\$1 billion)	4.9	-12.4	4.1	5.1	7.0	7.6
Medium (\$100mm - \$1bn)	5.2	-13.8	3.3	4.7	7.0	7.2
Small (<\$100 million)	5.5	-13.6	3.2	4.5	6.7	7.0
60% S&P 500/40% Bloomberg Agg	5.3	-15.9	4.0	6.1	8.1	7.4

*Returns less than one year are not annualized.

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

Return to normal in bonds

- The role of core bonds in portfolios was restored; cash is viable again as a liquidity tool.
- A 4.5% yield may change the demand for yield substitutes: IG credit, bank loans, high yield, private credit, even real estate and infrastructure?

Private markets: now over target allocations

- Downward marks are coming, gradually.
- Interest remains strong in all private assets.

Public defined benefit (DB) plan priorities

- Public DB plans are analyzing how the changes to Callan's Capital Markets Assumptions will affect their portfolios.
- Returns in 2022 gave back some of the funded status gains from 2020-21. But downward pressure on actuarial discount rates may now abate as capital markets expectations are higher following the market decline.

Corporate DB plan priorities

- Corporate DB plans focused on de-risking.
- The experience of 2022 has these plans questioning what they are doing with LDI, and why. Funded status no longer translates directly to contributions, or expense.

- Higher interest rates may increase discussions about pension risk transfer. Corporate DB plans appear to be inclined to keep the plan on the balance sheet.

Defined contribution (DC) plan priorities

- New regulations such as SECURE 2.0 and the U.S. Department of Labor's environmental, social, and governance (ESG) rule were on the minds of many sponsors.
- In investment manager searches, DC-friendly vehicles with competitive pricing are a key criterion.

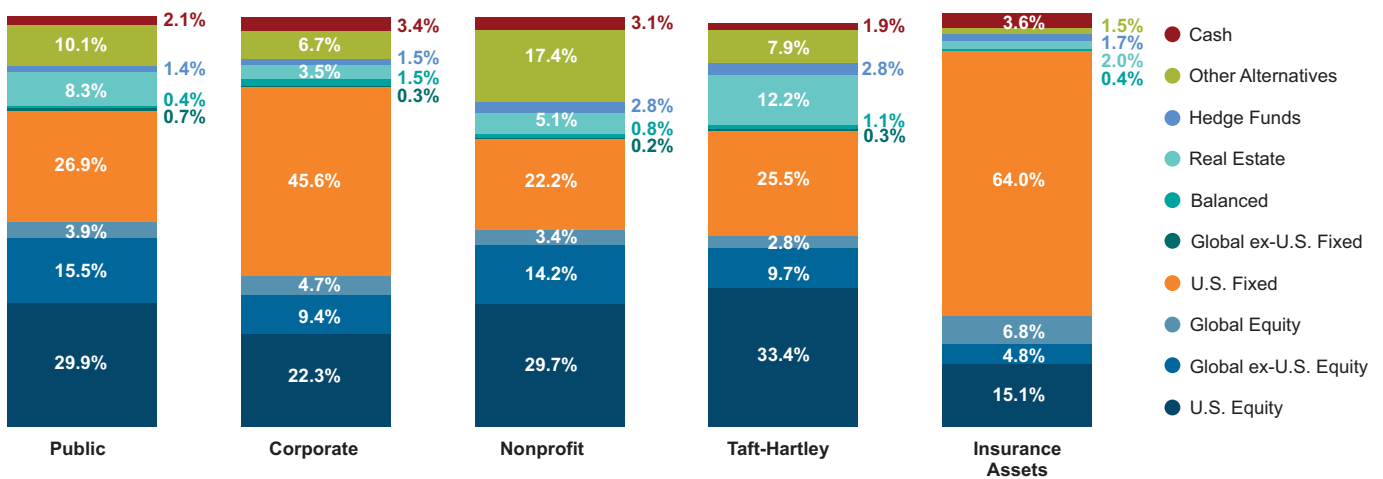
Nonprofit priorities

- Reviews of asset-allocation structures were likely in light of the changed market environment.

Insurance companies' priorities

- They are one of the few investors that "enjoyed" the spike in yields during 2022. Typically invested to match short-term liabilities, they are focused on investment income and use it to offset operating expenses.
- As interest rates rose, insurers sold bonds with lower book yields and took losses, then re-invested at much higher book yields.

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

Markets fall in final month of quarter after gains

- The S&P 500 Index posted positive returns in both October and November but fell in December. The index was up 7.6% during 4Q22 but ended 2022 down 18.1%.
- Energy was the best-performing sector during the quarter and 2022, returning 23% and 66% respectively. Consumer Discretionary and Communication Services were the only two sectors that posted negative returns in 4Q.
- Value stocks outperformed growth across the market capitalization spectrum, and for both 4Q and the full year.
- Large cap stocks (Russell 1000) outperformed small caps (Russell 2000) last quarter and for the year.
- Continued macroeconomic concerns (e.g., inflation, potential recession, geopolitical issues) led to higher volatility and a down-year for U.S. equities.

Market valuations have reset with the broad-based sell-off

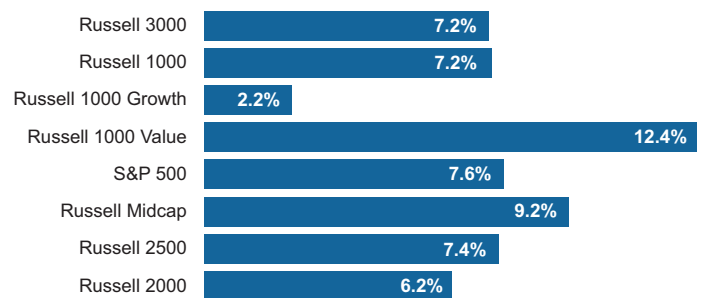
- The drop for equities in 2022 was broad-based, and almost every sector experienced negative returns. Higher interest rates impacted the growth-oriented sectors the most (e.g., Technology, Communication Services).
- Mega-cap technology stocks have underperformed, ending an extended period of market leadership.
- Large cap stocks are now trading around their average P/E ratio, but they are not yet “cheap.”
- Despite the recent outperformance of value stocks, value still looks attractive relative to growth heading into 2023.

Small cap valuations are attractive relative to large cap

- During 4Q22, the Russell 2000 was trading at a 30% discount to its historical P/E average.
- Relative to large caps, the Russell 2000's forward 12 months P/E is trading at the lowest level versus large cap stocks since the Dot-Com Bubble.
- Relative to large and mid caps, small caps have looked significantly cheaper on various valuation metrics recently.

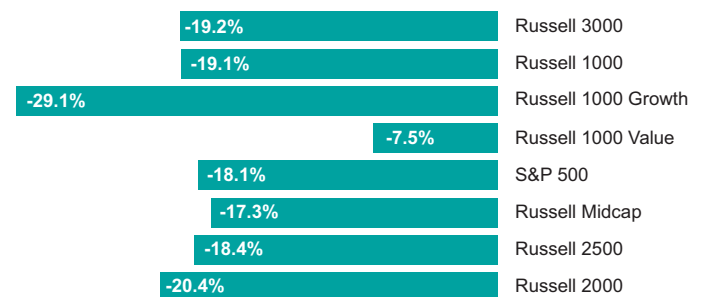
U.S. Equity: Quarterly Returns

(12/31/22)



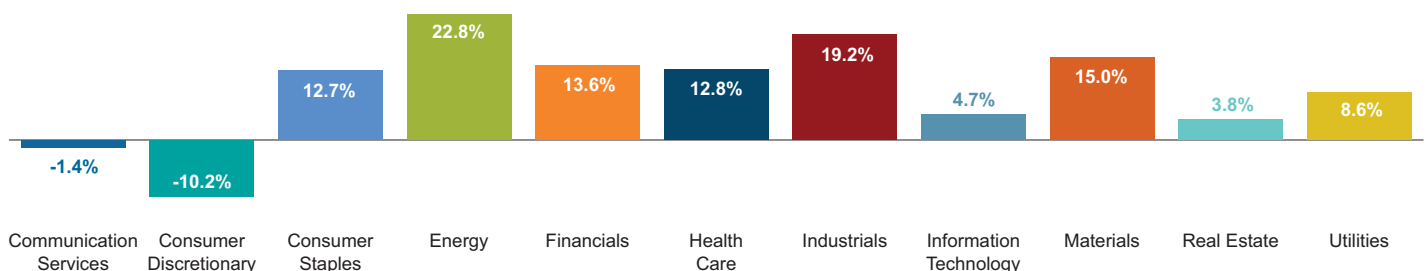
U.S. Equity: One-Year Returns

(12/31/22)



Sources: FTSE Russell and S&P Dow Jones Indices

Quarterly Performance of Industry Sectors (12/31/22)



Source: S&P Dow Jones Indices

Global Equity

Ending on a high note

4Q22 was a bright spot during a tough calendar year in global and global ex-U.S. equity markets.

Encouraging signs

- Lower-than-expected U.S. inflation data buoyed market optimism at the end of the year.
- The Fed slowed its pace of tightening, with further slowing expected in 2023.
- China reversed its zero-COVID policies, prompting exuberance from investors.

Value outpaces growth

- Value outpaced growth in developed and emerging markets.
- Economically sensitive sectors (e.g., Financials and Industrials) benefited from the anticipation of improved growth; Energy was the largest outperformer.

U.S. dollar vs. other currencies

- After reaching a multi-decade high, the dollar fell against all major currencies with signs of inflation easing.
- Despite the 7.7% decline in 4Q22, the dollar still gained nearly 8% over the full year.
- Global central banks' rate hikes and the U.S. Federal Reserve's slowing pace of tightening could prolong U.S. dollar decline.
- Continued weakening of the U.S. dollar would be a tailwind for non-U.S. equities.

What about style?

- A sustained shift to value after the recent prolonged growth cycle would likely favor non-U.S. equities over U.S. equities given the higher representation of traditional value sectors in global ex-U.S. equity universes.

China's reopening spurs hopes for emerging markets

- In addition to pivoting from its zero-COVID policy, Chinese regulators shifted to supportive policies to stabilize the property sector and tech/platform industry.

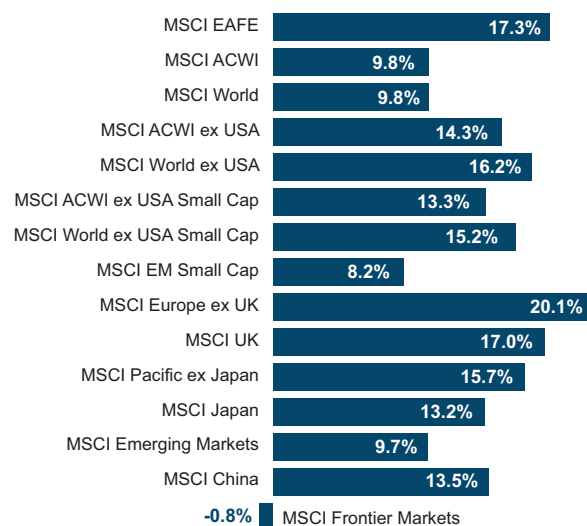
Reopening is expected to jump-start Chinese economy

- China's real GDP growth is estimated to reach 5.5% in 2023 and nearly 7% on a 4Q/4Q basis.
- Real consumption is projected to grow by 8.5% in 2023 as Chinese households have amassed \$2.6 trillion in savings.

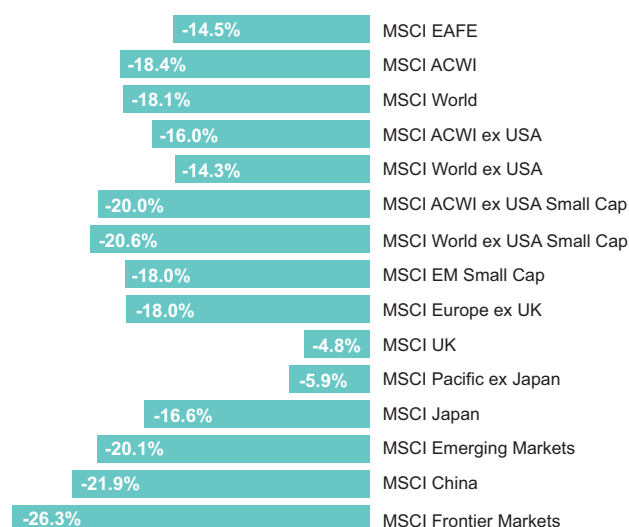
Recovery in China will spill over to other EM regions

- Growth in Chinese consumption is expected to have positive impact on tourism in Southeast Asia; goods exports in Europe, the Middle East, and Africa; and commodities in Latin America.

Global ex-U.S. Equity: Quarterly Returns (U.S. Dollar, 12/31/22)



Global ex-U.S. Equity: One-Year Returns (U.S. Dollar, 12/31/22)



Source: MSCI

Fixed Income

U.S. Fixed Income

Bonds were up in 4Q but 2022 results remain negative

- Gain for the Bloomberg US Aggregate Bond Index driven by coupon income and spread tightening; interest rates rose modestly

Rates were volatile intra-quarter

- U.S. Treasury 10-year yield: high 4.22% on 11/7; low 3.42% on 12/7
- Curve remained inverted at quarter-end: 10-year yield 3.88% and 2-year yield 4.41%; most since 1981

Fed raised rates bringing target to 4.25%-4.50%

- Median expectation from Fed is 5.1% for year-end 2023.
- Inflation showed signs of moderating but job market remained tight with solid wage growth.

Corporates and mortgages outperformed Treasuries in 4Q

- 4Q: Corporates +289 bps excess return; residential mortgage-backed securities (RMBS) +110 bps
- 2022: Corporates -125 bps excess return; RMBS -223 bps
- RMBS had worst month ever (September: -191 bps) and best month ever (November: +135 bps) in excess returns

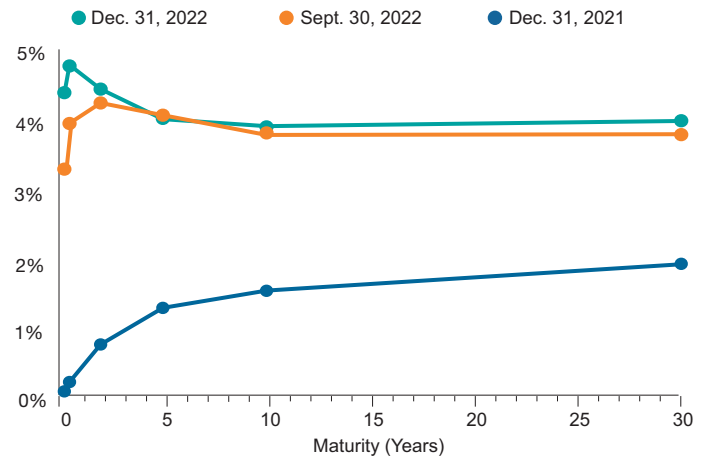
Valuations fair

- While absolute yields are higher, spreads have not widened materially, and most are close to historical averages.
- An economic slowdown could impact credit spreads.
- Higher yields have boosted forward-looking returns across sectors.

Economic slowdown clouds the corporate credit picture

- Despite prospects for an economic slowdown in 2023, fundamental credit metrics for many issuers are strong.
- Default rates are expected to tick up, albeit not to the same extent as in previous recessions.
- Investors may be biased toward higher-quality investment grade issuers as they weigh the threat of a looming recession and potential implications for increased volatility in lower-quality corporate credit markets.

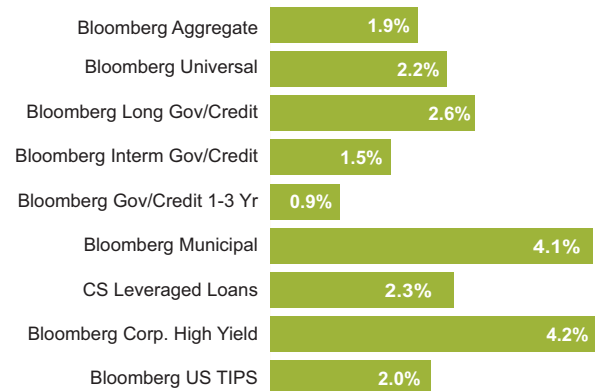
U.S. Treasury Yield Curves



Source: Bloomberg

U.S. Fixed Income: Quarterly Returns

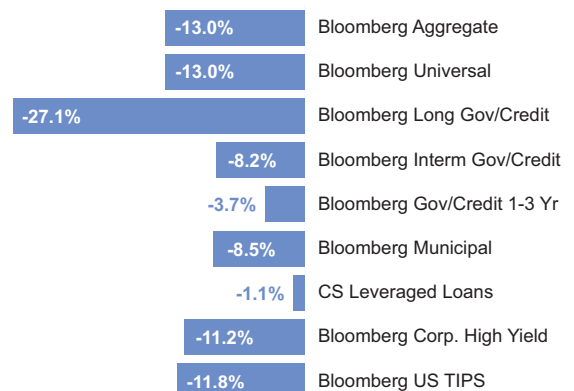
(12/31/22)



Sources: Bloomberg and Credit Suisse

U.S. Fixed Income: One-Year Returns

(12/31/22)



Sources: Bloomberg and Credit Suisse

FIXED INCOME (Continued)

TIPS: Beware of duration

- Despite a rise in inflation, TIPS saw marked declines in 2022 amid rising interest rates.
- TIPS, like nominal Treasuries, are sensitive to changes in interest rates, and as a result, shorter-duration TIPS fared better than full spectrum TIPS in 2022.
- Shorter-term TIPS exhibit a higher correlation to realized inflation but also provide a similar risk-adjusted return as that of full spectrum TIPS.

Municipal Bonds

Gains in 4Q but most 2022 results remain negative

- Municipal Bond Index calendar year return worst since 1981
- Higher quality outperformed in 4Q (AAA: +4.3%; AA: +4.1%; A: +4.0%; BBB: +3.9%; High Yield: +3.5%) and in 2022
- Munis outperformed most other fixed income sectors in 4Q and in 2022

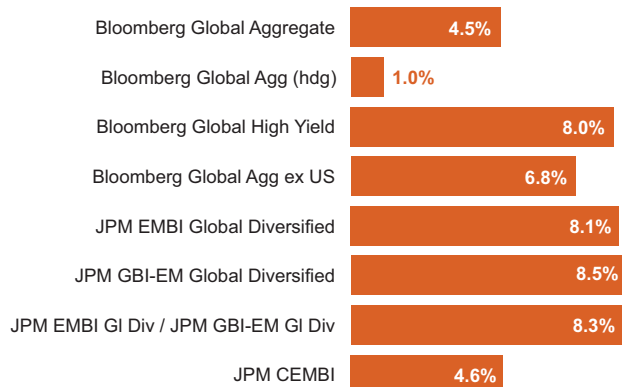
Valuations relative to U.S. Treasuries on the rich side

- 10-year AAA Muni/10-year U.S. Treasury yield ratio 68%; below 10-year average of 88%
- After-tax yield of Muni Bond Index = 6.0% (Source: Eaton Vance)

Supply/demand

- Mutual fund outflows hit a record \$122 billion in 2022, with tax loss harvesting being a key driver.
- ETFs saw inflows as some investors reinvested in them.
- Supply also down; \$71 billion in 4Q and the lowest in 13 years; 2022 issuance off roughly 20% from 2021

Global Fixed Income: Quarterly Returns (12/31/22)



Sources: Bloomberg and JPMorgan Chase

Credit quality remained stable

- State and local tax collections robust and reserves elevated; state revenues up 16% on average vs. 2021

Global Fixed Income

4Q returns driven largely by U.S. dollar weakness

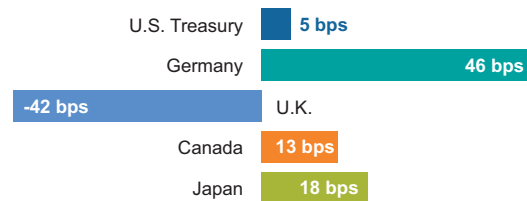
- U.S. dollar down 9% vs. euro, 10% vs. yen, 8% vs. pound
- For the year, dollar up 6% vs. euro, 13% vs. yen, and 11% vs. pound
- Rates up across most of Europe and in Japan
- Rates fell in the U.K.

Emerging market debt also did well

- Returns varied across countries but most were positive

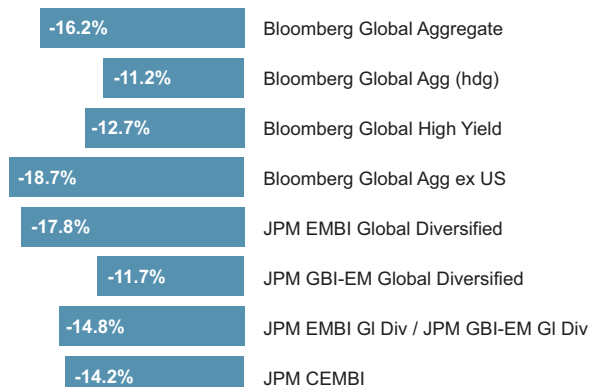
Change in 10-Year Global Government Bond Yields

3Q22 to 4Q22



Source: Bloomberg

Global Fixed Income: One-Year Returns (12/31/22)



Sources: Bloomberg and JPMorgan Chase

NPI Falls 3.5% and REITs Lag Equities

REAL ESTATE/REAL ASSETS | Kristin Bradbury, Munir Iman, and Aaron Quach

Negative appreciation in four major sectors

- The NCREIF Property Index, a measure of U.S. institutional real estate assets, fell 3.5% during 4Q22. The income return was 1.0% while the appreciation return was -4.5%.
- Hotels, which represent a small portion of the index, led property sector performance with a gain of 3.4%. Office finished last with a loss of 4.8%.
- Regionally, the South led with a loss of 2.5%, while the East was the worst performer with a loss of 3.9%.
- All major property sectors and regions, except for Hotel, experienced negative appreciation.
- The NCREIF Open-End Diversified Core Equity (ODCE) Index, representing equity ownership positions in U.S. core real estate, fell 5.2% during 4Q, with an income return of 0.59% and an appreciation return of -5.76%.

REITs lagged equity indices

- The FTSE EPRA Nareit Developed REIT Index, a measure of global real estate securities, rose 6.9% during 4Q22 compared to a 9.8% rise for global equities (MSCI World).
- U.S. REITs, as measured by the FTSE Nareit Equity REITs Index, rose 5.2%, in contrast with the S&P 500 Index, which gained 7.6%.
- Despite strong earnings, forward REIT earnings estimates continued to weaken, reflecting the potential for an economic slowdown as well as financing cost pressures.

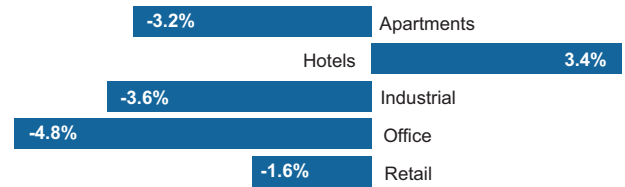
Callan Database Median and Index Returns* for Periods Ended 12/31/22

Private Real Assets	Quarter	Year to Date	1 Year	3 Years	5 Years	10 Years	15 Years
Real Estate ODCE Style	1.1	11.3	11.3	10.2	8.3	9.5	5.4
NFI-ODCE (value-weighted, net)	-5.2	6.5	6.5	9.0	7.7	9.1	5.3
NCREIF Property	-3.5	5.5	5.5	8.1	7.5	8.8	6.5
NCREIF Farmland	2.0	9.5	9.5	6.8	6.4	8.8	10.1
NCREIF Timberland	4.9	12.9	12.9	7.5	5.4	5.8	4.7
Public Real Estate							
Global Real Estate Style	7.0	-25.1	-25.1	-2.3	2.3	5.1	4.1
FTSE EPRA Nareit Developed	6.9	-25.1	-25.1	-4.9	-0.2	3.0	2.1
Global ex-U.S. Real Estate Style	11.0	-25.9	-25.9	-6.8	-0.9	3.9	2.1
FTSE EPRA Nareit Dev ex US	10.3	-24.3	-24.3	-8.7	-3.0	0.9	0.1
U.S. REIT Style	4.3	-24.9	-24.9	1.0	5.0	7.4	7.2
FTSE EPRA Nareit Equity REITs	5.2	-24.4	-24.4	-0.1	3.7	6.5	6.2

*Returns less than one year are not annualized. Sources: Callan, FTSE Russell, NCREIF

Sector Quarterly Returns by Property Type

(12/31/22)



Source: NCREIF

- The FTSE EPRA Nareit Asia Index (USD), representing the Asia/Pacific region, rose 9.0%, lifted by a rally in rate-sensitive Australian REITs.
- European REITs, as measured by the FTSE EPRA Nareit Europe Index (USD), rose 13.9%, driven by currency tailwinds in both the euro and the pound.

Real assets held up in the quarter

- Real assets as a group performed well in 4Q.
- The S&P GSCI Index rose 3.4%; Gold (S&P Gold Spot Price Index: +9.2%), REITs (MSCI US REIT: +5.2%), infrastructure (DJB Global Infrastructure: +9.6%), and TIPS (Bloomberg TIPS: +2.0%) all posted solid returns.
- Full year results remained poor, however, for most real assets outside of those related to energy. The Alerian MLP Index gained 30.9% as it benefited from higher energy prices.

Deceleration in 2022, with Trends for 2023 Very Unclear

PRIVATE EQUITY | Gary Robertson

Private equity showed a gradual decline in 2022, but fundraising and company investment and exit activity remain comparable to the pre-pandemic levels seen in 2018 and 2019.

Fundraising ► In 2022 private equity partnerships holding final closes raised \$870 billion across 2,211 partnerships (unless otherwise noted, all data is from PitchBook and 4Q numbers are very preliminary). The dollar amount is 16% lower than 2021, but partnerships plunged by 47%. 4Q had final closes totaling \$166 billion, down 21% from 3Q. The number of funds totaled 407, down 20%.

Buyouts ► New buyout investments for 2022 totaled 12,985, down 14% from 2021. Dollar volume fell 9% to \$837 billion. 4Q saw 2,625 new investments, a 20% decrease from 3Q, but dollar volume rose 27% to \$239 billion.

VC Investments ► The year produced 51,020 rounds of new investment in venture capital (VC) companies, down 16% from 2021. Announced volume of \$509 billion was down 31%. 4Q saw 9,280 new rounds, a 20% decline from 3Q, and dollar volume fell 21% to just \$81 billion.

Exits ► Last year saw 2,901 buyout-backed private M&A exits, down 23% from 2021, with proceeds of \$590 billion, down 26%. 4Q had 551 private exits, down 22% from 3Q, with proceeds

of \$132 billion, down 2%. The year's 201 buyout-backed IPOs dropped 55% from 2021, with proceeds of \$33 billion, down 75%. 4Q IPOs numbered 50, down 21% from 3Q, and proceeds of \$8 billion declined 27%. Venture-backed M&A exits for the year totaled 2,625, down 24% from 2021. Announced dollar volume of \$110 billion fell 57%. The final quarter had 462 exits, down 20% from 3Q, and value of only \$7 billion, plunging 72%. The year's 317 venture-backed IPOs sank 51% from 2021, with proceeds of \$41 billion, falling 75%. There were 106 in 4Q, up 33% from 3Q, but the \$8 billion of proceeds fell 47%.

Returns ► In 3Q, and in the two prior quarters, private equity fell by only about 35% of the public equity market's decline. With the upcoming 4Q valuations being subject to annual audits, continued moderate declines are likely.

Funds Closed 1/1/22 to 12/31/22

Strategy	No. of Funds	Amt (\$mm)	Share
Venture Capital	1,369	259,199	30%
Growth Equity	156	117,800	14%
Buyouts	477	362,629	42%
Mezzanine Debt	17	26,998	3%
Distressed/Special Credit	40	50,955	6%
Energy	7	2,340	0%
Secondary and Other	116	41,703	5%
Fund-of-funds	29	8,808	1%
Totals	2,211	870,432	100%

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

Private Equity Performance (%) (Pooled Horizon IRRs through 9/30/22*)

Strategy	Quarter	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years	25 Years
All Venture	-2.7	-9.1	28.4	23.8	19.4	13.6	12.4	20.6
Growth Equity	-1.8	-9.4	20.8	18.4	15.7	12.8	14.3	14.5
All Buyouts	-1.9	-1.5	18.5	16.1	15.3	10.6	14.7	13.1
Mezzanine	0.2	5.0	11.8	11.1	11.3	10.3	11.1	10.0
Credit Opportunities	0.7	3.9	8.4	7.2	8.3	8.6	9.9	9.5
Control Distressed	-0.2	11.3	19.4	13.8	12.7	10.5	11.9	11.9
All Private Equity	-1.8	-3.7	20.2	17.3	15.5	11.3	13.7	13.8
S&P 500	-4.9	-15.5	8.2	9.2	11.7	8.0	9.8	7.5
Russell 3000	-4.5	-17.6	7.7	8.6	11.4	7.9	9.9	7.5

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

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.

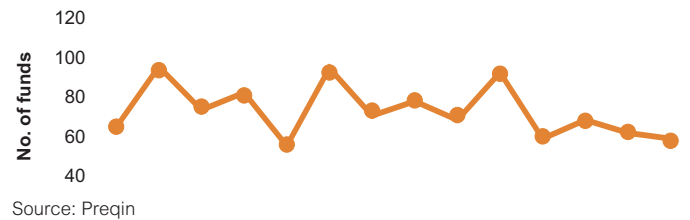
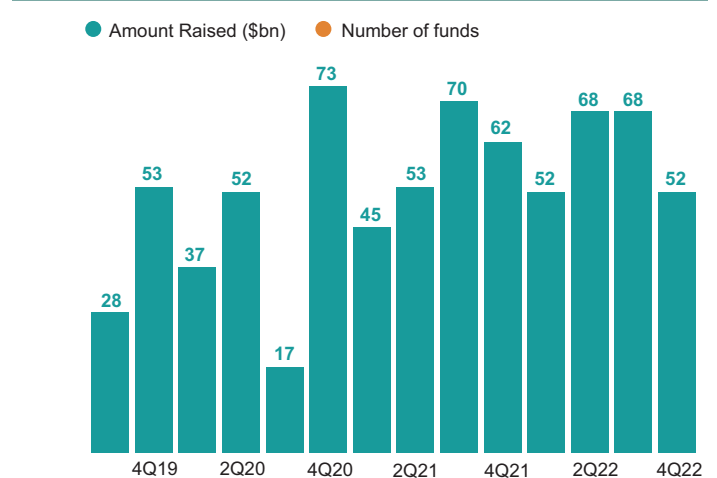
Investor Appetite Continues, but Strategies of Interest Shift

PRIVATE CREDIT | Catherine Beard

Upper-middle-market direct lending gets a new look

- During 4Q22, clients took a new look at upper-middle-market direct lending as all-in spreads have widened by over 400 bps and lenders are able to get tighter terms. Strong deal volume was driven partially by a shift from public to private market debt financings in the recent market environment.
- As economic headwinds are expected to create stress on over-levered companies, there is a renewed interest in stressed and distressed investment opportunities.
- Demand continued to be strong for less-competitive areas of private credit with high barriers to entry and attractive risk/reward opportunities such as specialty finance, non-sponsor, lower-middle-market, and opportunistic lending.
- LPs are seeking alternative structures designed to streamline the investment process while improving underlying liquidity. A number of GPs are launching evergreen structures and private, non-tradeable business development companies as a response to LP interest.
- Private credit performance varies across sub-asset class and underlying return drivers. On average, the asset class has generated net IRRs of 8% to 10% for trailing periods ended Sept. 30, 2022. Higher-risk strategies performed better than lower-risk strategies.
- As interest rates declined after the GFC, private credit attracted increased interest from institutional investors.
- Private credit fundraising was robust leading into the COVID dislocation, with a particular focus on direct lending, asset-based lending, and distressed strategies.
- In the current rising rate environment, a renewed focus has been placed on relative value, downside protection, and managers' internal workout resources.

Private Credit Fundraising (\$bn)



- There is also interest in strategies with strong collateral protection such as asset-based lending as well as capital solutions and distressed strategies.
- Larger sponsor-backed lending is seeing a new focus due to the disintermediation of high yield/broadly syndicated loans by private debt

Private Credit Performance (%) (Pooled Horizon IRRs through 9/30/22*)

Strategy	Quarter	1 Year	3 Years	5 Years	8 Years	10 Years	15 Years	20 Years
Senior Debt	-2.4	-3.5	4.6	5.1	5.7	5.9	6.3	6.1
Mezzanine	0.2	5.0	11.8	11.1	10.8	11.3	10.5	11.3
Credit Opportunities	0.7	3.9	8.4	7.2	6.6	8.3	8.6	9.7
Total Private Credit	-0.1	2.6	8.4	7.7	7.4	8.6	8.8	9.7

Source: Refinitiv/Cambridge

*Most recent data available at time of publication

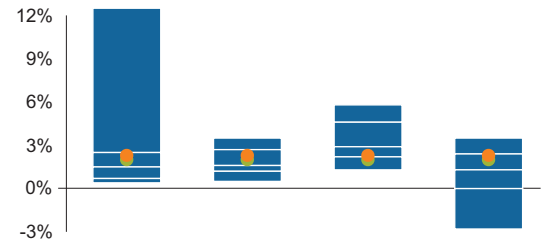
Managers See Declines but Outpace Benchmarks

HEDGE FUNDS/MACs | Joe McGuane

- Risk assets rallied in 4Q22, as U.S. inflation showed a steady decline from the peak over summer, boosting hopes for fewer rate increases heading into 2023. In addition, corporate earnings were generally better than expected, and China announced the lifting of its zero-COVID policy.
- As the quarter wore on, the Federal Reserve remained committed to tighter monetary conditions, signaling more rate hikes in 2023 in addition to the 50 basis point increase at its December meeting.
- Despite a December sell-off, the S&P 500 gained 8% for the quarter. Value significantly outperformed growth, and stocks across most sectors rebounded, with the energy sector notably higher for the quarter. Global ex-U.S. equities outperformed U.S. equities, as cooling energy prices dragged down inflation. China's reopening and easing of the zero-COVID policy led to Asian equities recovering their initial losses from October.

Hedge Fund Style Group Returns

(12/31/22)



	Absolute Return FOF	Core Div. FOF	Long/Short Equity FOF	Institutional Hedge Funds
10th Percentile	12.5	3.5	5.8	3.5
25th Percentile	2.5	2.7	4.6	2.4
Median	1.5	1.6	2.9	1.3
75th Percentile	0.7	1.2	2.2	0.0
90th Percentile	0.4	0.5	1.3	-2.8
HFRI Fund Weighted	2.3	2.3	2.3	2.3
90-Day T-Bill + 5%	2.0	2.0	2.0	2.0

Sources: Callan, Credit Suisse, Federal Reserve

Callan Peer Group Median and Index Returns* for Periods Ended 12/31/22

Hedge Fund Universe	Quarter	1 Year	3 Years	5 Years	10 Years	15 Years
Callan Institutional Hedge Fund Peer Group	1.3	4.8	6.4	6.0	6.2	6.7
Callan Fund-of-Funds Peer Group	1.9	-1.3	4.9	4.2	4.7	3.5
Callan Absolute Return FOF Style	1.5	4.0	5.6	4.8	5.1	3.9
Callan Core Diversified FOF Style	1.6	-1.2	5.0	4.1	4.4	3.4
Callan Long/Short Equity FOF Style	2.9	-10.4	2.2	3.5	4.8	3.6
HFRI Fund-Weighted Index	2.3	-4.2	5.7	4.4	4.7	3.6
HFRI Fixed Convertible Arbitrage	3.1	-1.2	6.3	5.1	5.1	4.9
HFRI Distressed/Restructuring	2.0	-3.1	7.8	4.9	4.8	4.2
HFRI Emerging Markets	5.1	-12.7	1.7	0.9	2.9	1.4
HFRI Equity Market Neutral	1.1	1.6	2.8	1.9	3.0	1.9
HFRI Event-Driven	3.3	-4.6	5.4	4.3	4.9	4.2
HFRI Relative Value	1.3	-0.8	3.3	3.4	4.0	4.3
HFRI Macro	-1.3	9.0	7.3	4.8	3.1	2.9
HFRI Equity Hedge	4.2	-10.2	5.7	4.5	5.6	3.6
HFRI Multi-Strategy	1.1	-9.8	3.7	1.8	2.9	2.8
HFRI Merger Arbitrage	2.5	2.9	6.2	5.7	4.6	4.0
90-Day T-Bill + 5%	2.0	6.5	5.7	6.3	5.8	5.7

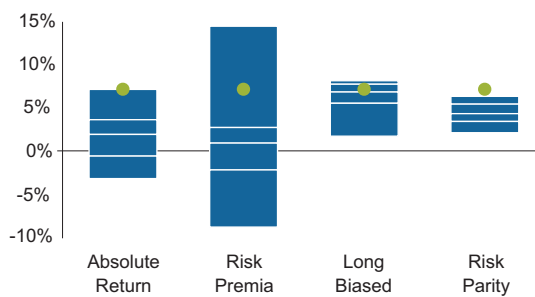
*Net of fees. Sources: Callan, Credit Suisse, Hedge Fund Research

- Hedge funds ended the final quarter on a positive note, as equity hedge managers clawed back some of their negative performance. Those with a focus on real estate, energy, and industrials saw positive gains while growth-focused managers continued to lag.
- Event-driven strategies had a nice quarter, driven primarily by their event equities that moved higher with the broader markets.
- Relative value strategies finished out the year on a strong note, as managers continued to benefit from elevated rate volatility levels, the convergence of key relative value relationships, global quantitative tightening, and uncertainty surrounding central bank actions.
- Macro strategies ended the quarter slightly lower, as losses were taken in short U.S. equities themes, along with short positions in the Chinese renminbi versus the U.S. dollar.
- The median Callan Institutional Hedge Fund Peer Group rose 1.3%.
- Within the HFRI indices, the best-performing strategy last quarter was the emerging market index (+5.1%), as Asian equities rallied in November and December.
- Across the Callan Hedge FOF Database, the median Absolute Return FOF rose 1.5%, as their allocations to multi-strategy managers put up solid returns on the year.

- The median Callan Long-Short Equity FOF increased 2.9%, as managers benefited from an equity rally in October and November.
- The Callan Core Diversified FOF gained 1.6%, as equity hedge exposure drove performance, offsetting some negative performance from macro managers.
- Within Callan’s database of liquid alternative solutions, the median Long Biased MAC manager generated a gain of 6.9%, as long equity exposure drove performance for the peer group.
- The Callan Risk Parity MAC index, which typically targets an equally risk-weighted allocation to the major asset classes with leverage, was up 4.4%.
- The Callan Absolute Return MAC peer returned a positive 2.0%, as a bias toward value equities and credit helped performance on the quarter.
- The Callan Risk Premia MAC peer rose 1.0%, as equity performance was slightly offset by currency exposure.

MAC Style Group Returns

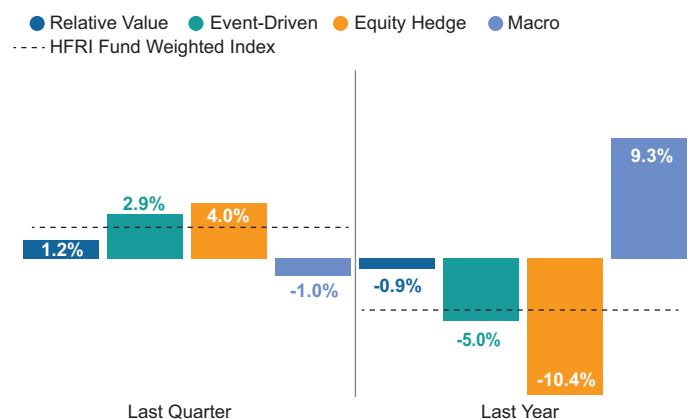
(12/31/22)



	Absolute Return	Risk Premia	Long Biased	Risk Parity
10th Percentile	7.2	14.5	8.2	6.4
25th Percentile	3.7	2.8	7.8	5.5
Median	2.0	1.0	6.9	4.4
75th Percentile	-0.5	-2.1	5.6	3.5
90th Percentile	-3.1	-8.7	1.8	2.2
60% MSCI ACWI/ 40% Bloomberg Agg	6.6	6.6	6.6	6.6

HFRI Hedge Fund-Weighted Strategy Returns

(12/31/22)



Source: HFRI

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

Third Straight Drop for DC Index

DEFINED CONTRIBUTION | Patrick Wisdom

Performance: Index dips for third straight quarter

- The Callan DC Index™ fell 4.6% in 3Q22, its third straight quarterly decline, which brought the Index's trailing one-year loss to 16.7%.
- The Age 45 Target Date Fund fell 6.1% in the quarter.

Growth Sources: Another decline in balances

- Balances within the DC Index declined by 4.7% after a 12.3% decrease the second quarter.

Turnover: Net transfers well below average

- Turnover (i.e., net transfer activity levels within DC plans) in the DC Index decreased to 0.14% from the previous quarter's 0.37%. With the decrease, the Index's historical average (0.56%) fell slightly.

Net Cash Flow Analysis: TDFs reclaim top spot

- After taking a back seat to stable value in 2Q22, TDFs reclaimed the top spot, garnering 73.6% of net flows.
- Investors withdrew assets from U.S. large cap equity (-33.1%); global ex-U.S. equity saw net inflows (+9.2%).

Equity Allocation: Drop in exposure

- The Index's overall allocation to equity (69.3%) fell slightly from the previous quarter's level (69.8%).

Asset Allocation: Capital preservation gains

- Stable value (10.0%) and U.S. fixed income (5.9%) were among the asset classes with the largest percentage increases in allocation.

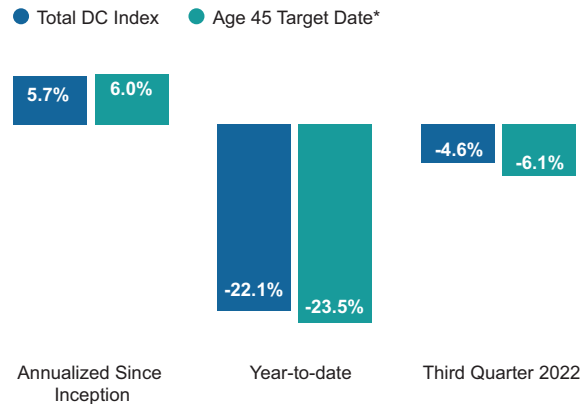
Prevalence of Asset Class: Balanced funds dip

- The prevalence of a balanced fund (40.9%) 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.

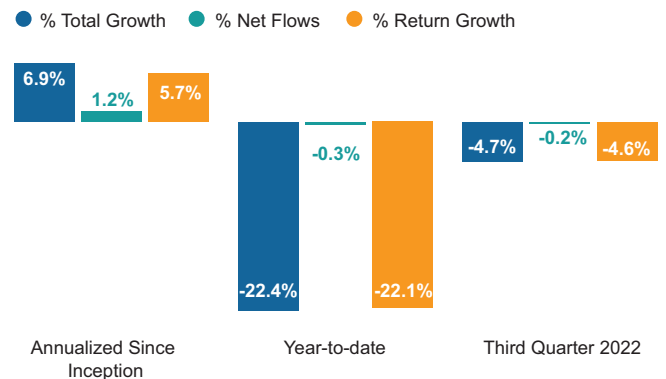
Investment Performance

(9/30/22)



Growth Sources

(9/30/22)



Net Cash Flow Analysis (3Q22)

(Top Two and Bottom Two Asset Gatherers)

Asset Class	Flows as % of Total Net Flows
Target Date Funds	73.6%
Brokerage Window	13.8%
U.S. Small/Mid Cap	-25.3%
U.S. Large Cap	-33.1%
Total Turnover**	0.1%

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.

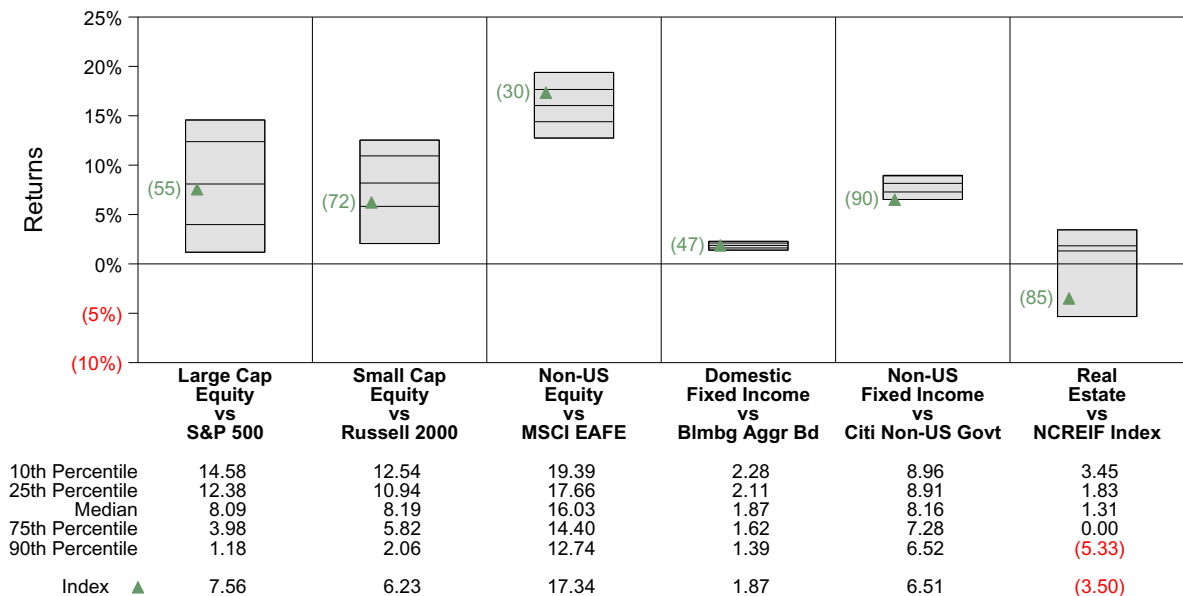
Market Overview

Active Management vs Index Returns

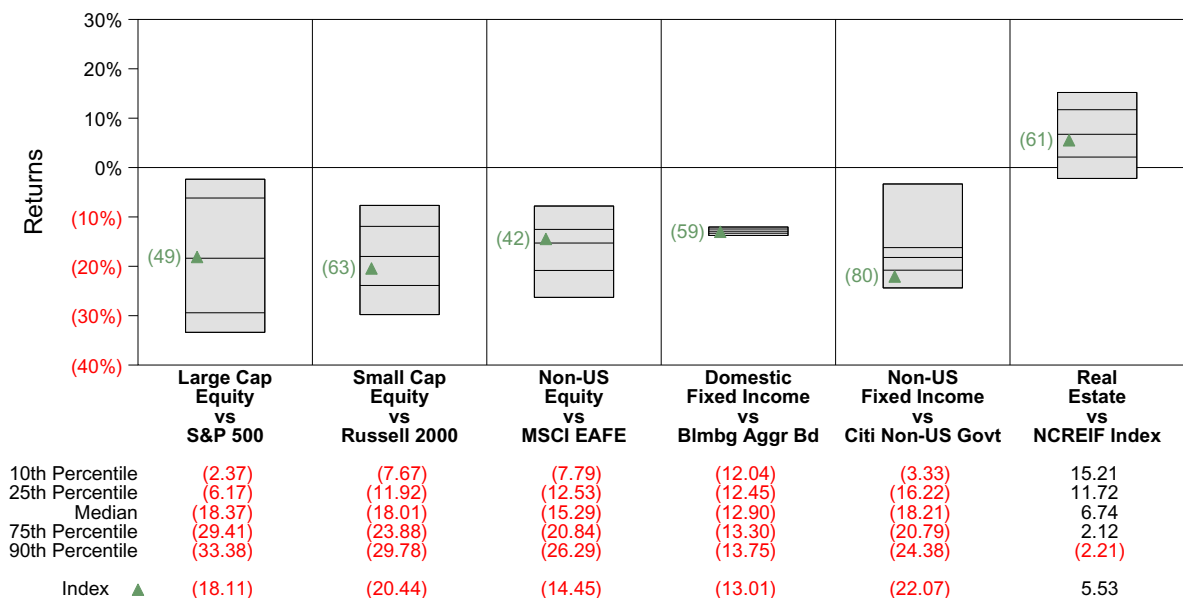
Market Overview

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 December 31, 2022



Range of Separate Account Manager Returns by Asset Class One Year Ended December 31, 2022

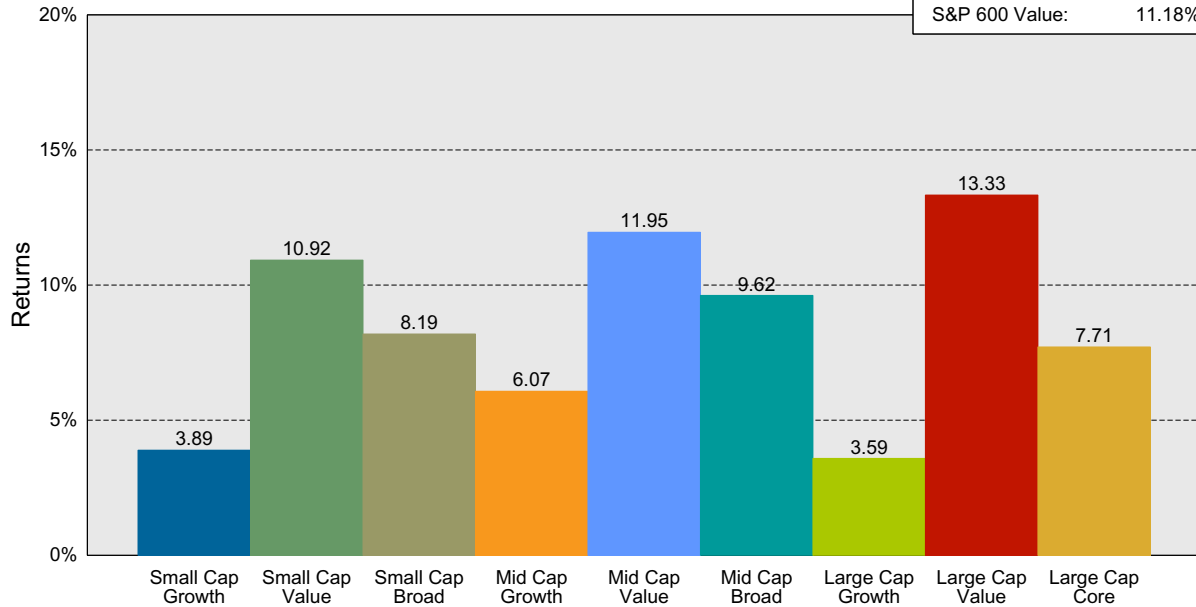


Domestic Equity Active Management Overview

U.S. stock indices posted positive returns in 4Q as investor sentiment improved, but the YTD results remained dismal with most indices posting double-digit declines. The S&P 500 Index rose 7.6% for the quarter, lowering its YTD loss to 18.1%. Returns were quite mixed across sectors with Energy (+22.8%) being the best and Consumer Discretionary (-10.2%) faring the worst. Value stocks trounced growth for the quarter (Russell 1000 Value: +12.4%; Russell 1000 Growth: +2.2%) and the year (Russell 1000 Value: -7.5%; Russell 1000 Growth: -29.1%). In 4Q, the Growth Index was hurt by relative underweights in Health Care, Financials, and Energy as well as significant underperformance from Tesla (-54%) and Amazon (-26%). Small cap stocks exhibited the same pattern in 4Q (Russell 2000 Value: +8.4%; Russell 2000 Growth: +4.1%) but values full year margin is smaller in the small cap space (Russell 2000 Value: -14.5%; Russell 2000 Growth: -26.4%).

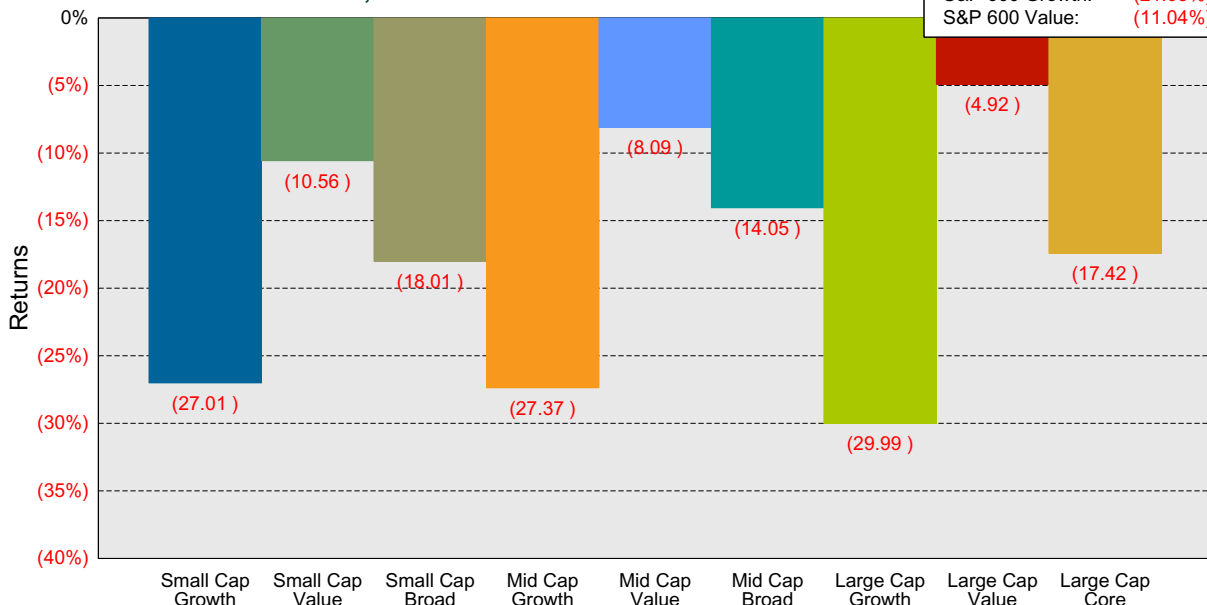
S&P 500:	7.56%
S&P 500 Growth:	1.45%
S&P 500 Value:	13.59%
S&P Mid Cap:	10.78%
S&P 600:	9.19%
S&P 600 Growth:	6.98%
S&P 600 Value:	11.18%

Separate Account Style Group Median Returns for Quarter Ended December 31, 2022



S&P 500:	(18.11%)
S&P 500 Growth:	(29.41%)
S&P 500 Value:	(5.22%)
S&P Mid Cap:	(13.06%)
S&P 600:	(16.10%)
S&P 600 Growth:	(21.08%)
S&P 600 Value:	(11.04%)

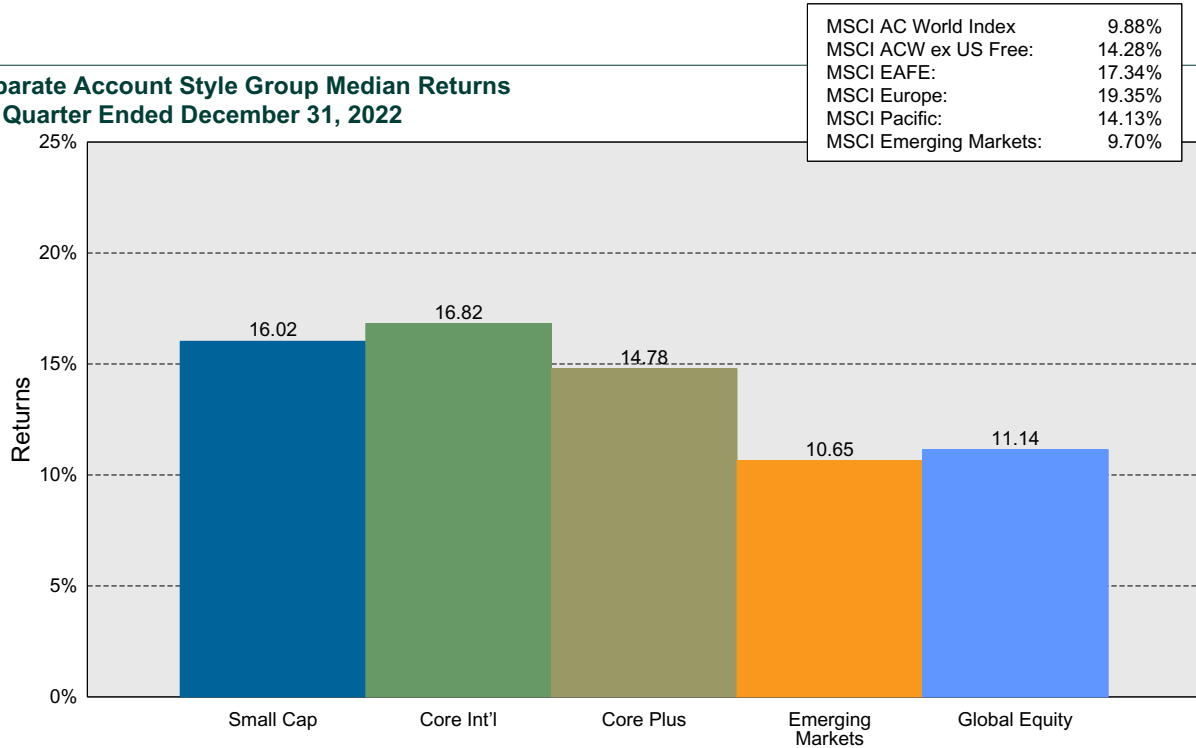
Separate Account Style Group Median Returns for One Year Ended December 31, 2022



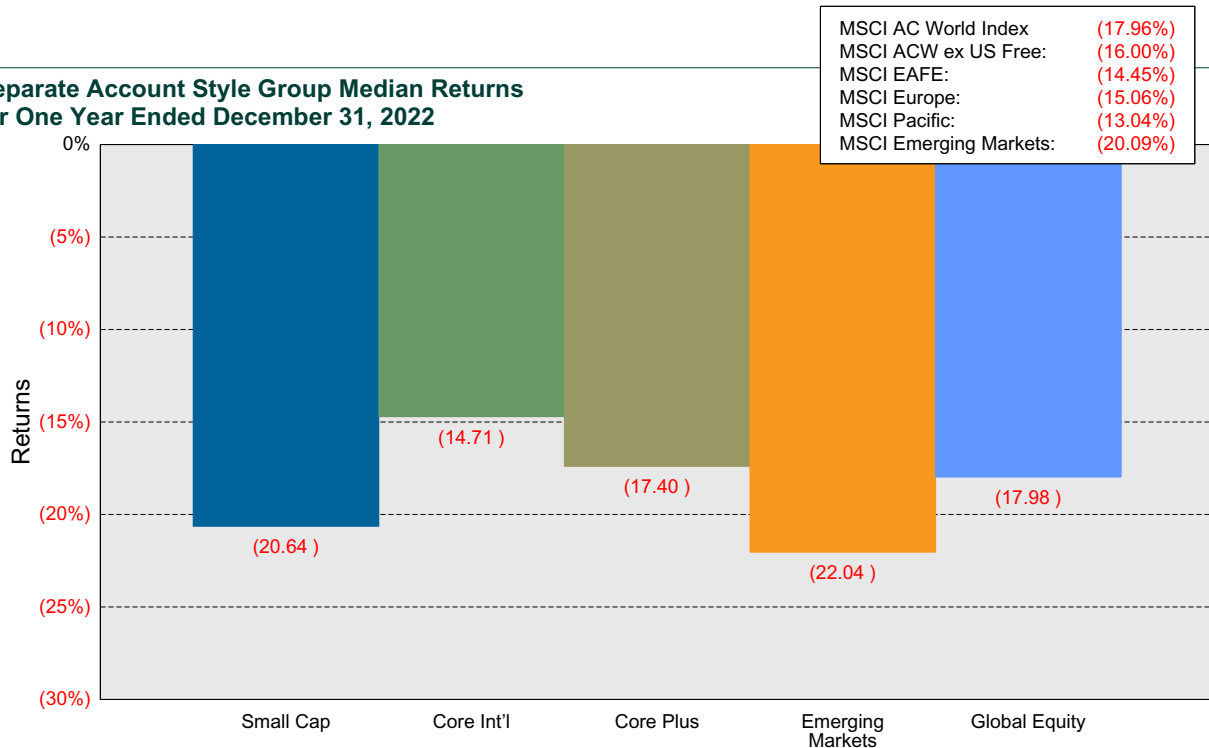
International Equity Active Management Overview

Global ex-U.S. markets posted strong results, and currency appreciation vs. the U.S. dollar further bolstered returns. The MSCI ACWI ex USA Index gained 14.3% (Local: +7.8%), reducing its YTD loss to 16.0% (Local: -9.6%). Across developed market countries, gains were broad-based and value outpaced growth, but by a smaller margin than in the U.S. (MSCI ACWI ex USA Value: +15.7%; MSCI ACWI ex USA Growth: +12.9%). Unlike in the U.S., all sectors of the ACWI ex USA Index delivered a positive return in 4Q. Emerging markets (MSCI Emerging Markets: +9.7%; Local: +6.6%) also rebounded in 4Q, but returns were mixed across countries. While many countries were up double-digits, India (+2.0%) and Brazil (+2.4%) weighed on broad market returns. China (MSCI China: +13.5%) outperformed.

Separate Account Style Group Median Returns for Quarter Ended December 31, 2022



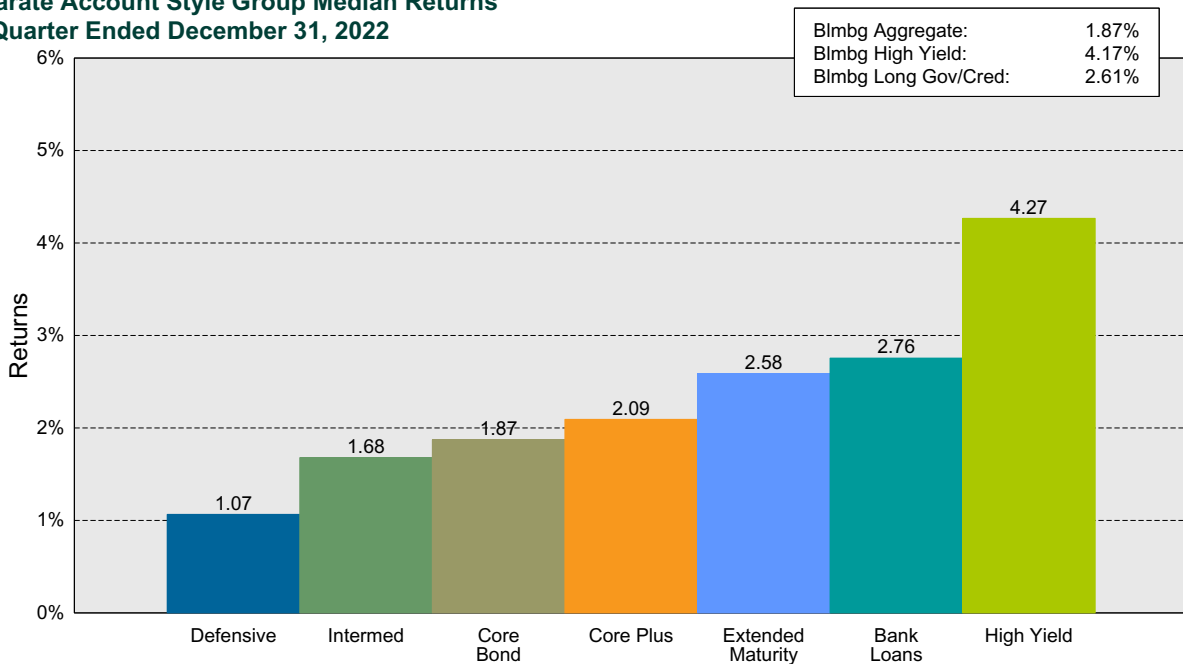
Separate Account Style Group Median Returns for One Year Ended December 31, 2022



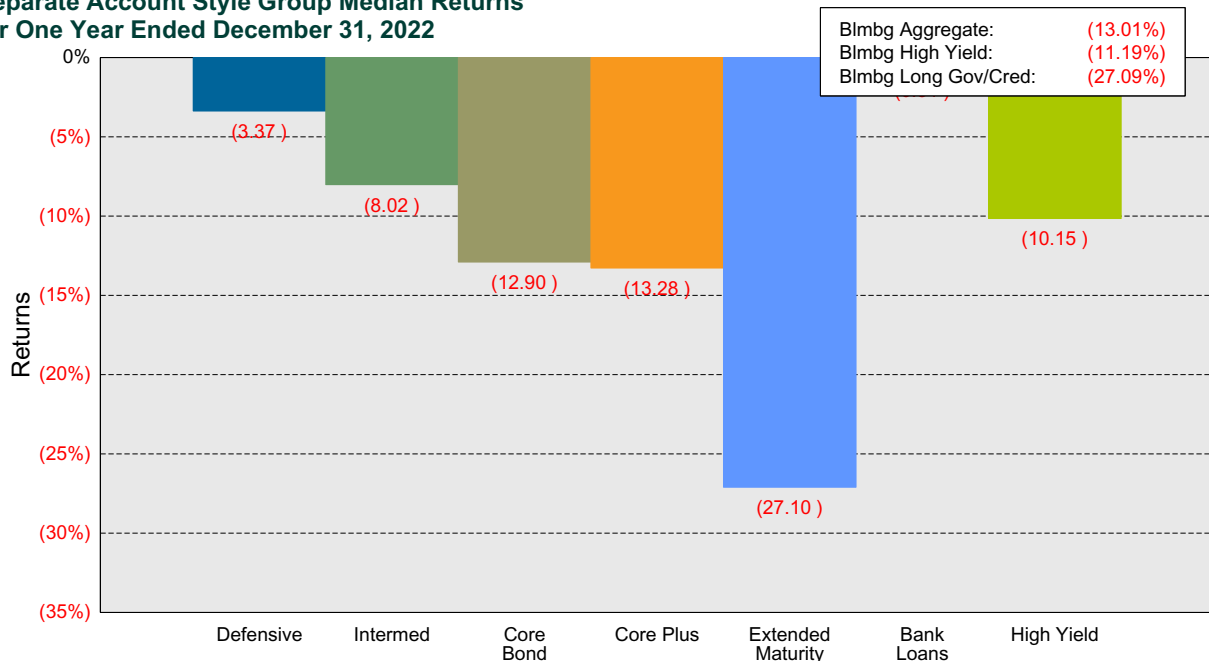
Domestic Fixed Income Active Management Overview

U.S. fixed income experienced its worst year ever in 2022, by a wide margin. The Bloomberg US Aggregate Bond Index sank 13.0%; the next worst calendar year was 1994 when the Aggregate fell 2.9%. The silver lining lies in the 4.68% yield-to-worst for the Index, up from 1.75% at the beginning of the year. The yield curve remained inverted at year-end; the 10-year Treasury yield was 3.88% and the 2-year yield was 4.41%. The inversion reflects investor expectations for the economy to slow and an eventual need for the Fed to lower rates. The fourth quarter brought some relief to bond investors as longer rates fell modestly and most spread sectors outperformed Treasuries. The Aggregate gained 1.9%. High yield corporates (Bloomberg High Yield Index: +4.2%) were star performers, but this Index was down 11.2% for the year.

Separate Account Style Group Median Returns for Quarter Ended December 31, 2022



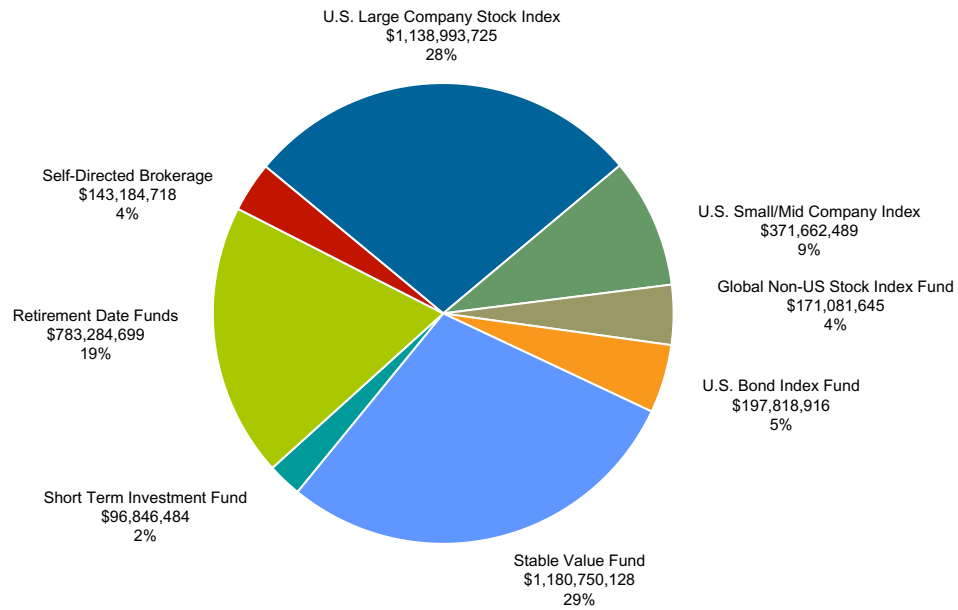
Separate Account Style Group Median Returns for One Year Ended December 31, 2022



Changes in Investment Fund Balances Period Ended December 31, 2022

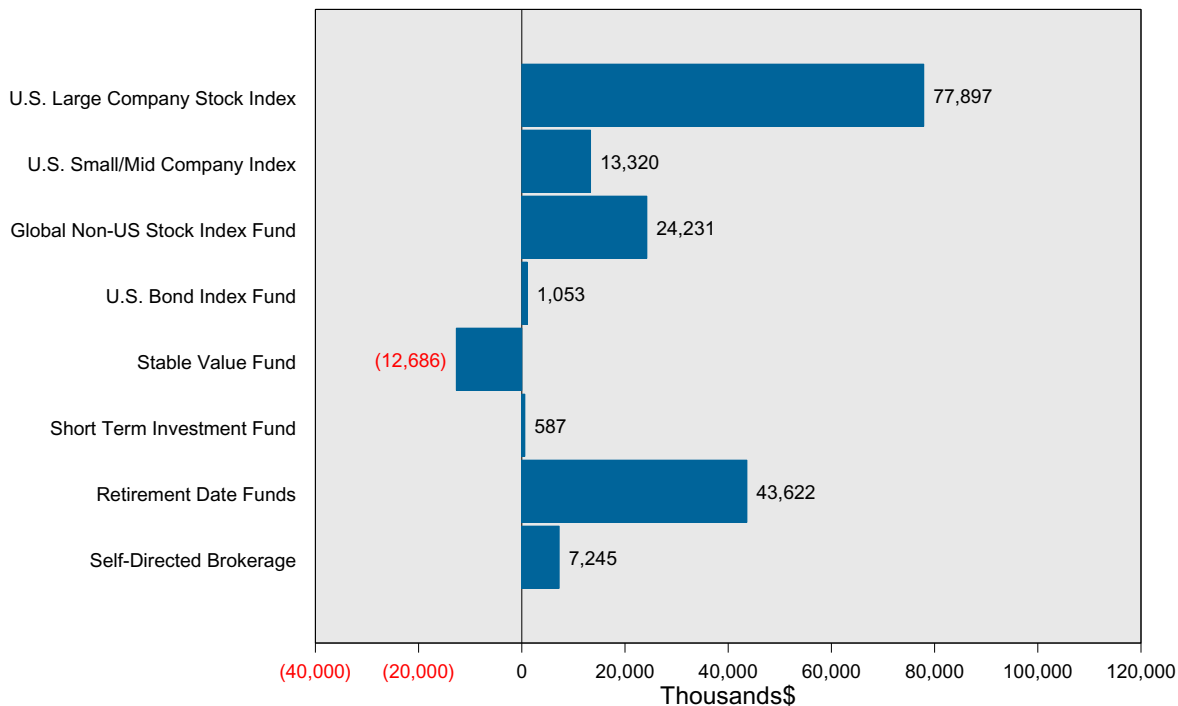
Allocation Across Investment Options

The chart below illustrates the allocation of the aggregate fund assets across the various investment options for the quarter ended December 31, 2022.



Changes in Fund Values

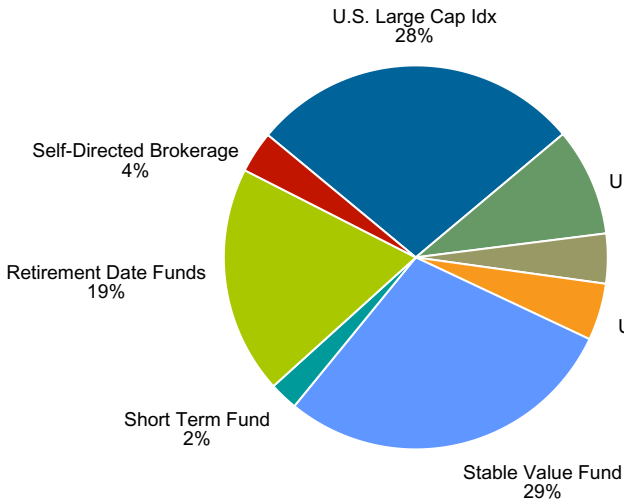
The chart below shows the net change in fund values across the various investment options for the quarter ended December 31, 2022. The change in value for each fund is the result of a combination of 3 factors: 1) market movements; 2) contributions or disbursements into or out of the funds by the participants (and any matching done by the company); and 3) transfers between funds by the participants.



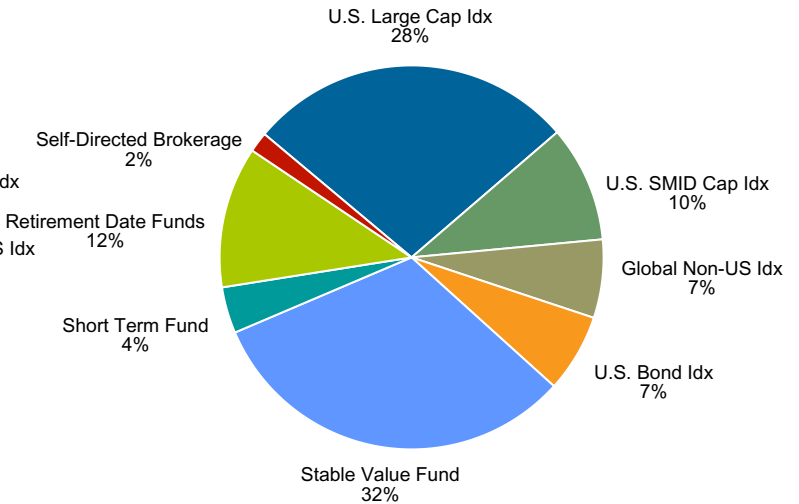
Asset Allocation

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.

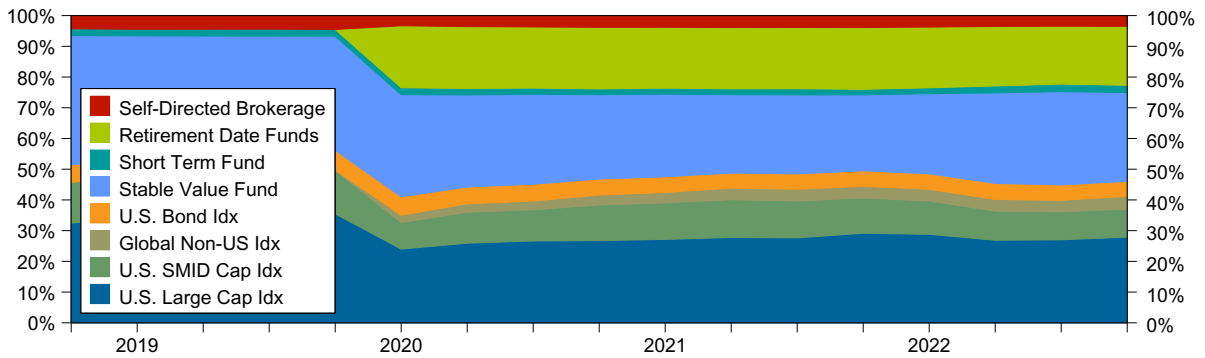
Asset Allocation



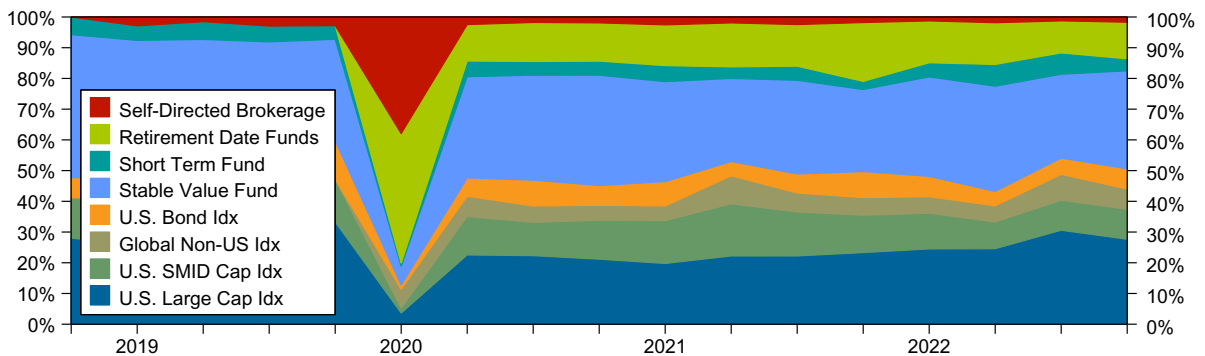
Contributions



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 December 31, 2022, with the distribution as of September 30, 2022. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

Asset Distribution Across Investment Managers

	December 31, 2022			September 30, 2022		
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
SERS Retirement Date Funds	\$783,284,699	19.18%	\$(4,462,690)	\$48,085,044	\$739,662,345	18.83%
SERS Post Retirement Fund	210,416,638	5.15%	(4,516,920)	9,563,286	205,370,273	5.23%
SERS 2025 Retirement Fund	135,338,060	3.31%	(2,881,830)	6,855,091	131,364,799	3.34%
SERS 2030 Retirement Fund	129,067,552	3.16%	(215,077)	7,766,902	121,515,727	3.09%
SERS 2035 Retirement Fund	114,356,957	2.80%	20,493	7,906,276	106,430,188	2.71%
SERS 2040 Retirement Fund	73,003,480	1.79%	408,870	5,621,395	66,973,216	1.70%
SERS 2045 Retirement Fund	59,706,928	1.46%	794,476	5,034,260	53,878,192	1.37%
SERS 2050 Retirement Fund	37,897,076	0.93%	941,669	3,303,943	33,651,464	0.86%
SERS 2055 Retirement Fund	13,888,250	0.34%	648,026	1,199,584	12,040,640	0.31%
SERS 2060 Retirement Fund	5,390,397	0.13%	117,342	472,369	4,800,686	0.12%
SERS 2065 Retirement Fund	4,219,359	0.10%	220,260	361,939	3,637,160	0.09%
SERS U.S. Equity	\$1,510,656,214	36.99%	\$(7,255,585)	\$98,473,155	\$1,419,438,644	36.13%
SERS U.S. Large Company Index Fund	1,138,993,725	27.89%	(1,865,507)	79,762,638	1,061,096,594	27.01%
SERS U.S. SMID Company Index Fund	371,662,489	9.10%	(5,390,078)	18,710,517	358,342,050	9.12%
SERS Non-U.S. Equity	\$171,081,645	4.19%	\$2,913,899	\$21,317,370	\$146,850,376	3.74%
SERS Global Non-US Index Fund	171,081,645	4.19%	2,913,899	21,317,370	146,850,376	3.74%
SERS Fixed Income	\$1,475,415,528	36.13%	\$(21,093,264)	\$10,046,934	\$1,486,461,857	37.84%
SERS Short Term Investment Fund	96,846,484	2.37%	(210,465)	797,261	96,259,687	2.45%
SERS Stable Value Fund	1,180,750,128	28.91%	(18,343,079)	5,657,414	1,193,435,792	30.38%
SERS U.S. Bond Index Fund	197,818,916	4.84%	(2,539,720)	3,592,259	196,766,378	5.01%
Self-Directed Brokerage Account	\$143,184,718	3.51%	\$(1,659,301)	\$8,903,815	\$135,940,205	3.46%
Total Fund	\$4,083,622,804	100.0%	\$(31,556,941)	\$186,826,318	\$3,928,353,426	100.0%

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended December 31, 2022

	Last Quarter	Last 1 Year	Last 3 Years	Last 5 Years
Net Performance				
Retirement Date Funds				
SERS Post Retirement Fund	4.69%	(14.63%)	0.74%	2.68%
BlackRock Post Retirement NL Index	4.75%	(14.54%)	0.75%	2.68%
Callan Tgt Date Ret Inc	4.22%	(12.88%)	0.58%	2.29%
SERS 2025 Retirement Fund	5.29%	(15.23%)	1.20%	3.18%
BlackRock 2025 NL Index	5.30%	(15.17%)	1.20%	3.16%
Callan Target Date 2025	5.90%	(15.16%)	1.73%	3.47%
SERS 2030 Retirement Fund	6.44%	(15.97%)	1.86%	3.78%
BlackRock 2030 NL Index	6.41%	(15.92%)	1.85%	3.75%
Callan Target Date 2030	6.71%	(16.04%)	2.32%	3.84%
SERS 2035 Retirement Fund	7.49%	(16.67%)	2.51%	4.35%
BlackRock 2035 NL Index	7.39%	(16.67%)	2.47%	4.29%
Callan Target Date 2035	7.65%	(16.80%)	2.84%	4.31%
SERS 2040 Retirement Fund	8.50%	(17.35%)	3.04%	4.83%
BlackRock 2040 NL Index	8.33%	(17.39%)	2.98%	4.75%
Callan Target Date 2040	8.39%	(17.40%)	3.27%	4.67%
SERS 2045 Retirement Fund	9.39%	(17.89%)	3.53%	5.21%
BlackRock 2045 NL Index	9.17%	(17.96%)	3.45%	5.11%
Callan Target Date 2045	8.93%	(17.94%)	3.54%	4.93%
SERS 2050 Retirement Fund	9.84%	(18.20%)	3.79%	5.40%
BlackRock 2050 NL Index	9.59%	(18.30%)	3.70%	5.29%
Callan Target Date 2050	9.23%	(18.04%)	3.67%	4.95%
SERS 2055 Retirement Fund	9.94%	(18.27%)	3.85%	5.44%
BlackRock 2055 NL Index	9.69%	(18.38%)	3.75%	5.33%
Callan Target Date 2055	9.28%	(18.20%)	3.70%	4.98%
SERS 2060 Retirement Fund	9.94%	(18.28%)	3.84%	5.43%
BlackRock 2060 NL Index	9.69%	(18.39%)	3.75%	5.32%
Callan Target Date 2060	9.23%	(18.21%)	3.78%	5.08%
SERS 2065 Retirement Fund	9.93%	(18.30%)	3.77%	-
BlackRock 2065 NL Index	9.70%	(18.40%)	3.74%	-
Callan Target Date 2065	9.24%	(18.60%)	3.72%	5.18%

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

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended December 31, 2022			
	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
Net Performance				
Retirement Date Funds				
SERS Post Retirement Fund	4.21%	4.02%	4.17%	-
BlackRock Post Retirement NL Index	4.19%	3.99%	-	-
Callan Tgt Date Ret Inc	3.66%	3.51%	3.61%	4.29%
SERS 2025 Retirement Fund	5.24%	5.29%	4.37%	-
BlackRock 2025 NL Index	5.17%	5.25%	-	-
Callan Target Date 2025	5.49%	5.86%	4.69%	-
SERS 2030 Retirement Fund	6.01%	5.99%	4.70%	-
BlackRock 2030 NL Index	5.92%	5.96%	-	-
Callan Target Date 2030	6.15%	6.64%	4.93%	6.98%
SERS 2035 Retirement Fund	6.74%	6.66%	5.02%	-
BlackRock 2035 NL Index	6.62%	6.60%	-	-
Callan Target Date 2035	6.77%	7.24%	5.30%	-
SERS 2040 Retirement Fund	7.37%	7.23%	5.26%	-
BlackRock 2040 NL Index	7.22%	7.16%	-	-
Callan Target Date 2040	7.25%	7.60%	5.60%	7.57%
SERS 2045 Retirement Fund	7.84%	7.68%	5.43%	-
BlackRock 2045 NL Index	7.65%	7.60%	-	-
Callan Target Date 2045	7.54%	7.87%	5.74%	-
SERS 2050 Retirement Fund	8.03%	7.94%	5.59%	-
BlackRock 2050 NL Index	7.84%	7.87%	-	-
Callan Target Date 2050	7.59%	7.94%	5.71%	-
SERS 2055 Retirement Fund	8.05%	8.06%	-	-
BlackRock 2055 NL Index	7.87%	8.00%	-	-
Callan Target Date 2055	7.73%	8.07%	-	-

*Funds not listed do not have longer term history.

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

Investment Fund Returns

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

	2022	2021	2020	2019	2018
Net Performance					
Retirement Date Funds					
SERS Post Retirement Fund	(14.63%)	6.95%	11.97%	15.65%	(3.47%)
BlackRock Post Retirement NL Index	(14.54%)	7.04%	11.80%	15.62%	(3.48%)
Callan Tgt Date Ret Inc	(12.88%)	6.31%	10.02%	13.21%	(3.04%)
SERS 2025 Retirement Fund	(15.23%)	8.99%	12.19%	18.60%	(4.86%)
BlackRock 2025 NL Index	(15.17%)	9.07%	12.03%	18.53%	(4.90%)
Callan Target Date 2025	(15.16%)	10.04%	12.58%	18.53%	(5.19%)
SERS 2030 Retirement Fund	(15.97%)	11.43%	12.88%	20.80%	(5.71%)
BlackRock 2030 NL Index	(15.92%)	11.51%	12.71%	20.70%	(5.77%)
Callan Target Date 2030	(16.04%)	11.63%	13.23%	20.43%	(6.12%)
SERS 2035 Retirement Fund	(16.67%)	13.80%	13.58%	22.84%	(6.50%)
BlackRock 2035 NL Index	(16.67%)	13.85%	13.42%	22.72%	(6.58%)
Callan Target Date 2035	(16.80%)	13.92%	14.28%	22.17%	(7.03%)
SERS 2040 Retirement Fund	(17.35%)	15.96%	14.14%	24.71%	(7.22%)
BlackRock 2040 NL Index	(17.39%)	15.99%	13.98%	24.61%	(7.32%)
Callan Target Date 2040	(17.40%)	15.84%	14.91%	23.62%	(7.87%)
SERS 2045 Retirement Fund	(17.89%)	17.72%	14.83%	26.05%	(7.85%)
BlackRock 2045 NL Index	(17.96%)	17.71%	14.64%	25.92%	(7.98%)
Callan Target Date 2045	(17.94%)	16.83%	15.52%	24.60%	(8.21%)
SERS 2050 Retirement Fund	(18.20%)	18.67%	15.20%	26.60%	(8.11%)
BlackRock 2050 NL Index	(18.30%)	18.61%	15.07%	26.48%	(8.25%)
Callan Target Date 2050	(18.04%)	17.17%	15.73%	24.89%	(8.44%)
SERS 2055 Retirement Fund	(18.27%)	18.83%	15.32%	26.67%	(8.13%)
BlackRock 2055 NL Index	(18.38%)	18.81%	15.18%	26.56%	(8.29%)
Callan Target Date 2055	(18.20%)	17.27%	15.83%	24.97%	(8.44%)
SERS 2060 Retirement Fund	(18.28%)	18.82%	15.31%	26.66%	(8.14%)
BlackRock 2060 NL Index	(18.39%)	18.80%	15.18%	26.56%	(8.29%)
Callan Target Date 2060	(18.21%)	17.45%	15.90%	25.08%	(8.35%)
SERS 2065 Retirement Fund	(18.30%)	18.77%	15.15%	-	-
BlackRock 2065 NL Index	(18.40%)	18.79%	15.18%	-	-
Callan Target Date 2065	(18.60%)	17.54%	16.46%	25.62%	(8.63%)

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

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended December 31, 2022

	Last Quarter	Last 1 Year	Last 3 Years	Last 5 Years
Net Performance				
Domestic Equity				
SERS U.S. Large Company Index	7.55%	(18.12%)	7.67%	9.43%
S&P 500 Index	7.56%	(18.11%)	7.66%	9.42%
Callan Lg Cap Broad MF	7.90%	(18.55%)	6.51%	8.15%
SERS U.S. SMID Company Index	5.25%	(26.13%)	3.26%	5.06%
Dow Jones US Completion	5.05%	(26.56%)	2.93%	4.76%
Callan SMID Broad MFs	7.35%	(21.59%)	4.75%	6.04%
International Equity				
SERS Global Non-US Index	14.48%	(15.92%)	0.30%	1.14%
MSCI ACWI ex US	14.28%	(16.00%)	0.07%	0.88%
Callan Non US Equity MFs	17.05%	(15.77%)	0.84%	1.33%
Domestic Fixed Income				
SERS Short Term Investment Fund	0.90%	1.59%	0.77%	1.34%
3-month Treasury Bill	0.84%	1.46%	0.72%	1.26%
Callan Cash Database(1)	0.93%	1.07%	0.82%	1.39%
SERS Stable Value Fund	0.53%	1.73%	1.90%	2.12%
3-month Treasury Bill	0.84%	1.46%	0.72%	1.26%
Callan Stable Value	0.58%	1.95%	1.99%	2.22%
SERS U.S. Bond Index Fund	1.89%	(12.94%)	(2.71%)	0.02%
Blmbg Aggregate	1.87%	(13.01%)	(2.71%)	0.02%
Callan Core Bond MFs	1.77%	(13.47%)	(2.41%)	0.23%

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

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

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended December 31, 2022			
	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
Net Performance				
Domestic Equity				
SERS U.S. Large Company Index	11.49%	12.57%	8.84%	9.84%
S&P 500 Index	11.48%	12.56%	8.81%	9.80%
Callan Lg Cap Broad MF	10.31%	11.71%	8.19%	9.51%
SERS U.S. SMID Company Index	8.38%	9.74%	7.92%	10.32%
Dow Jones US Completion	8.10%	9.49%	7.66%	10.12%
Callan SMID Broad MFs	8.89%	9.84%	7.92%	9.82%
International Equity				
SERS Global Non-US Index	5.13%	3.95%	-	-
MSCI ACWI ex US	4.80%	3.80%	1.52%	6.73%
Callan Non US Equity MFs	4.36%	4.55%	2.37%	6.71%
Domestic Fixed Income				
SERS Short Term Investment Fund	1.20%	0.89%	0.87%	-
3-month Treasury Bill	1.07%	0.76%	0.68%	1.27%
Callan Cash Database(1)	1.30%	1.08%	1.19%	1.65%
SERS Stable Value Fund	2.06%	2.14%	2.72%	-
3-month Treasury Bill	1.07%	0.76%	0.68%	1.27%
Callan Stable Value	2.17%	2.13%	2.63%	3.16%
SERS U.S. Bond Index Fund	0.88%	1.02%	2.61%	3.06%
Blmbg Aggregate	0.89%	1.06%	2.66%	3.10%
Callan Core Bond MFs	1.09%	1.20%	2.99%	3.32%

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

*Funds not listed do not have longer term history.

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

Investment Fund Returns

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

	2022	2021	2020	2019	2018
Net Performance					
Domestic Equity					
SERS U.S. Large Company Index	(18.12%)	28.70%	18.43%	31.51%	(4.39%)
S&P 500 Index	(18.11%)	28.71%	18.40%	31.49%	(4.38%)
Callan Lg Cap Broad MF	(18.55%)	25.50%	18.47%	30.14%	(4.54%)
SERS U.S. SMID Company Index	(26.13%)	12.89%	32.03%	28.20%	(9.32%)
Dow Jones US Completion	(26.56%)	12.36%	32.17%	27.94%	(9.57%)
Callan SMID Broad MFs	(21.59%)	19.56%	24.00%	29.40%	(8.69%)
International Equity					
SERS Global Non-US Index	(15.92%)	7.97%	11.15%	21.77%	(13.86%)
MSCI ACWI ex US	(16.00%)	7.82%	10.65%	21.51%	(14.20%)
Callan Non US Equity MFs	(15.77%)	9.47%	11.12%	22.83%	(15.04%)
Domestic Fixed Income					
SERS Short Term Investment Fund	1.59%	0.07%	0.67%	2.31%	2.09%
3-month Treasury Bill	1.46%	0.05%	0.67%	2.28%	1.87%
Callan Cash Database(1)	1.07%	0.13%	1.05%	2.65%	2.00%
SERS Stable Value Fund	1.73%	1.64%	2.32%	2.59%	2.34%
3-month Treasury Bill	1.46%	0.05%	0.67%	2.28%	1.87%
Callan Stable Value	1.95%	1.76%	2.36%	2.56%	2.21%
SERS U.S. Bond Index Fund	(12.94%)	(1.65%)	7.56%	8.69%	0.02%
Bimbg Aggregate	(13.01%)	(1.54%)	7.51%	8.72%	0.01%
Callan Core Bond MFs	(13.47%)	(1.17%)	8.65%	9.17%	(0.35%)

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

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

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended December 31, 2022

	Last Quarter	Last 1 Year	Last 3 Years	Last 5 Years
Gross Performance				
Retirement Date Funds				
SERS Post Retirement Fund	4.71%	(14.57%)	0.81%	2.75%
BlackRock Post Retirement NL Index	4.75%	(14.54%)	0.75%	2.68%
Callan Tgt Date Ret Inc	4.22%	(12.88%)	0.58%	2.29%
SERS 2025 Retirement Fund	5.31%	(15.17%)	1.27%	3.25%
BlackRock 2025 NL Index	5.30%	(15.17%)	1.20%	3.16%
Callan Target Date 2025	5.90%	(15.16%)	1.73%	3.47%
SERS 2030 Retirement Fund	6.46%	(15.91%)	1.93%	3.85%
BlackRock 2030 NL Index	6.41%	(15.92%)	1.85%	3.75%
Callan Target Date 2030	6.71%	(16.04%)	2.32%	3.84%
SERS 2035 Retirement Fund	7.51%	(16.61%)	2.57%	4.42%
BlackRock 2035 NL Index	7.39%	(16.67%)	2.47%	4.29%
Callan Target Date 2035	7.65%	(16.80%)	2.84%	4.31%
SERS 2040 Retirement Fund	8.52%	(17.29%)	3.11%	4.90%
BlackRock 2040 NL Index	8.33%	(17.39%)	2.98%	4.75%
Callan Target Date 2040	8.39%	(17.40%)	3.27%	4.67%
SERS 2045 Retirement Fund	9.41%	(17.84%)	3.60%	5.28%
BlackRock 2045 NL Index	9.17%	(17.96%)	3.45%	5.11%
Callan Target Date 2045	8.93%	(17.94%)	3.54%	4.93%
SERS 2050 Retirement Fund	9.86%	(18.15%)	3.86%	5.47%
BlackRock 2050 NL Index	9.59%	(18.30%)	3.70%	5.29%
Callan Target Date 2050	9.23%	(18.04%)	3.67%	4.95%
SERS 2055 Retirement Fund	9.96%	(18.22%)	3.92%	5.51%
BlackRock 2055 NL Index	9.69%	(18.38%)	3.75%	5.33%
Callan Target Date 2055	9.28%	(18.20%)	3.70%	4.98%
SERS 2060 Retirement Fund	9.96%	(18.23%)	3.91%	5.50%
BlackRock 2060 NL Index	9.69%	(18.39%)	3.75%	5.32%
Callan Target Date 2060	9.23%	(18.21%)	3.78%	5.08%
SERS 2065 Retirement Fund	9.95%	(18.25%)	3.84%	-
BlackRock 2065 NL Index	9.70%	(18.40%)	3.74%	-
Callan Target Date 2065	9.24%	(18.60%)	3.72%	5.18%

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

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended December 31, 2022			
	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
Gross Performance				
Retirement Date Funds				
SERS Post Retirement Fund	4.28%	4.09%	4.24%	-
BlackRock Post Retirement NL Index	4.19%	3.99%	-	-
Callan Tgt Date Ret Inc	3.66%	3.51%	3.61%	4.29%
SERS 2025 Retirement Fund	5.31%	5.36%	4.44%	-
BlackRock 2025 NL Index	5.17%	5.25%	-	-
Callan Target Date 2025	5.49%	5.86%	4.69%	-
SERS 2030 Retirement Fund	6.08%	6.06%	4.77%	-
BlackRock 2030 NL Index	5.92%	5.96%	-	-
Callan Target Date 2030	6.15%	6.64%	4.93%	6.98%
SERS 2035 Retirement Fund	6.81%	6.73%	5.09%	-
BlackRock 2035 NL Index	6.62%	6.60%	-	-
Callan Target Date 2035	6.77%	7.24%	5.30%	-
SERS 2040 Retirement Fund	7.44%	7.30%	5.33%	-
BlackRock 2040 NL Index	7.22%	7.16%	-	-
Callan Target Date 2040	7.25%	7.60%	5.60%	7.57%
SERS 2045 Retirement Fund	7.91%	7.75%	5.50%	-
BlackRock 2045 NL Index	7.65%	7.60%	-	-
Callan Target Date 2045	7.54%	7.87%	5.74%	-
SERS 2050 Retirement Fund	8.11%	8.01%	5.67%	-
BlackRock 2050 NL Index	7.84%	7.87%	-	-
Callan Target Date 2050	7.59%	7.94%	5.71%	-
SERS 2055 Retirement Fund	8.13%	8.13%	-	-
BlackRock 2055 NL Index	7.87%	8.00%	-	-
Callan Target Date 2055	7.73%	8.07%	-	-

*Funds not listed do not have longer term history.

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

Investment Fund Returns

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

	2022	2021	2020	2019	2018
Gross Performance					
Retirement Date Funds					
SERS Post Retirement Fund	(14.57%)	7.03%	12.04%	15.72%	(3.41%)
BlackRock Post Retirement NL Index	(14.54%)	7.04%	11.80%	15.62%	(3.48%)
Callan Tgt Date Ret Inc	(12.88%)	6.31%	10.02%	13.21%	(3.04%)
SERS 2025 Retirement Fund	(15.17%)	9.06%	12.26%	18.67%	(4.80%)
BlackRock 2025 NL Index	(15.17%)	9.07%	12.03%	18.53%	(4.90%)
Callan Target Date 2025	(15.16%)	10.04%	12.58%	18.53%	(5.19%)
SERS 2030 Retirement Fund	(15.91%)	11.50%	12.96%	20.86%	(5.63%)
BlackRock 2030 NL Index	(15.92%)	11.51%	12.71%	20.70%	(5.77%)
Callan Target Date 2030	(16.04%)	11.63%	13.23%	20.43%	(6.12%)
SERS 2035 Retirement Fund	(16.61%)	13.88%	13.65%	22.93%	(6.43%)
BlackRock 2035 NL Index	(16.67%)	13.85%	13.42%	22.72%	(6.58%)
Callan Target Date 2035	(16.80%)	13.92%	14.28%	22.17%	(7.03%)
SERS 2040 Retirement Fund	(17.29%)	16.04%	14.22%	24.80%	(7.17%)
BlackRock 2040 NL Index	(17.39%)	15.99%	13.98%	24.61%	(7.32%)
Callan Target Date 2040	(17.40%)	15.84%	14.91%	23.62%	(7.87%)
SERS 2045 Retirement Fund	(17.84%)	17.79%	14.90%	26.12%	(7.78%)
BlackRock 2045 NL Index	(17.96%)	17.71%	14.64%	25.92%	(7.98%)
Callan Target Date 2045	(17.94%)	16.83%	15.52%	24.60%	(8.21%)
SERS 2050 Retirement Fund	(18.15%)	18.75%	15.27%	26.70%	(8.05%)
BlackRock 2050 NL Index	(18.30%)	18.61%	15.07%	26.48%	(8.25%)
Callan Target Date 2050	(18.04%)	17.17%	15.73%	24.89%	(8.44%)
SERS 2055 Retirement Fund	(18.22%)	18.91%	15.40%	26.75%	(8.07%)
BlackRock 2055 NL Index	(18.38%)	18.81%	15.18%	26.56%	(8.29%)
Callan Target Date 2055	(18.20%)	17.27%	15.83%	24.97%	(8.44%)
SERS 2060 Retirement Fund	(18.23%)	18.90%	15.38%	26.74%	(8.08%)
BlackRock 2060 NL Index	(18.39%)	18.80%	15.18%	26.56%	(8.29%)
Callan Target Date 2060	(18.21%)	17.45%	15.90%	25.08%	(8.35%)
SERS 2065 Retirement Fund	(18.25%)	18.85%	15.22%	-	-
BlackRock 2065 NL Index	(18.40%)	18.79%	15.18%	-	-
Callan Target Date 2065	(18.60%)	17.54%	16.46%	25.62%	(8.63%)

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

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

Returns for Periods Ended December 31, 2022

	Last Quarter	Last 1 Year	Last 3 Years	Last 5 Years
Gross Performance				
Domestic Equity				
SERS U.S. Large Company Index	7.55%	(18.11%)	7.67%	9.44%
S&P 500 Index	7.56%	(18.11%)	7.66%	9.42%
Callan Lg Cap Broad MF	7.90%	(18.55%)	6.51%	8.15%
SERS U.S. SMID Company Index	5.25%	(26.12%)	3.27%	5.07%
Dow Jones US Completion	5.05%	(26.56%)	2.93%	4.76%
Callan SMID Broad MFs	7.35%	(21.59%)	4.75%	6.04%
International Equity				
SERS Global Non-US Index	14.49%	(15.91%)	0.31%	1.16%
MSCI ACWI ex US	14.28%	(16.00%)	0.07%	0.88%
Callan Non US Equity MFs	17.05%	(15.77%)	0.84%	1.33%
Domestic Fixed Income				
SERS Short Term Investment Fund	0.90%	1.59%	0.77%	1.34%
3-month Treasury Bill	0.84%	1.46%	0.72%	1.26%
Callan Cash Database(1)	0.93%	1.07%	0.82%	1.39%
SERS Stable Value Fund	0.54%	1.79%	1.96%	2.19%
3-month Treasury Bill	0.84%	1.46%	0.72%	1.26%
Callan Stable Value	0.58%	1.95%	1.99%	2.22%
SERS U.S. Bond Index Fund	1.89%	(12.93%)	(2.70%)	0.03%
Blmbg Aggregate	1.87%	(13.01%)	(2.71%)	0.02%
Callan Core Bond MFs	1.77%	(13.47%)	(2.41%)	0.23%

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

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

Investment Fund Returns

The table below details the rates of return for the Fund's investment funds over various time periods ended December 31, 2022. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized.

	Returns for Periods Ended December 31, 2022			
	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
Gross Performance				
Domestic Equity				
SERS U.S. Large Company Index	11.50%	12.58%	8.85%	9.84%
S&P 500 Index	11.48%	12.56%	8.81%	9.80%
Callan Lg Cap Broad MF	10.31%	11.71%	8.19%	9.51%
SERS U.S. SMID Company Index	8.38%	9.75%	7.93%	10.32%
Dow Jones US Completion	8.10%	9.49%	7.66%	10.12%
Callan SMID Broad MFs	8.89%	9.84%	7.92%	9.82%
International Equity				
SERS Global Non-US Index	5.14%	3.97%	-	-
MSCI ACWI ex US	4.80%	3.80%	1.52%	6.73%
Callan Non US Equity MFs	4.36%	4.55%	2.37%	6.71%
Domestic Fixed Income				
SERS Short Term Investment Fund	1.20%	0.89%	0.87%	-
3-month Treasury Bill	1.07%	0.76%	0.68%	1.27%
Callan Cash Database(1)	1.30%	1.08%	1.19%	1.65%
SERS Stable Value Fund	2.20%	2.34%	2.96%	-
3-month Treasury Bill	1.07%	0.76%	0.68%	1.27%
Callan Stable Value	2.17%	2.13%	2.63%	3.16%
SERS U.S. Bond Index Fund	0.89%	1.03%	2.62%	3.06%
Blmbg Aggregate	0.89%	1.06%	2.66%	3.10%
Callan Core Bond MFs	1.09%	1.20%	2.99%	3.32%

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

*Funds not listed do not have longer term history.

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

Investment Fund Returns

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

	2022	2021	2020	2019	2018
Gross Performance					
Domestic Equity					
SERS U.S. Large Company Index	(18.11%)	28.71%	18.44%	31.51%	(4.38%)
S&P 500 Index	(18.11%)	28.71%	18.40%	31.49%	(4.38%)
Callan Lg Cap Broad MF	(18.55%)	25.50%	18.47%	30.14%	(4.54%)
SERS U.S. SMID Company Index	(26.12%)	12.90%	32.04%	28.21%	(9.32%)
Dow Jones US Completion	(26.56%)	12.36%	32.17%	27.94%	(9.57%)
Callan SMID Broad MFs	(21.59%)	19.56%	24.00%	29.40%	(8.69%)
International Equity					
SERS Global Non-US Index	(15.91%)	7.98%	11.17%	21.79%	(13.85%)
MSCI ACWI ex US	(16.00%)	7.82%	10.65%	21.51%	(14.20%)
Callan Non US Equity MFs	(15.77%)	9.47%	11.12%	22.83%	(15.04%)
Domestic Fixed Income					
SERS Short Term Investment Fund	1.59%	0.07%	0.67%	2.31%	2.09%
3-month Treasury Bill	1.46%	0.05%	0.67%	2.28%	1.87%
Callan Cash Database(1)	1.07%	0.13%	1.05%	2.65%	2.00%
SERS Stable Value Fund	1.79%	1.72%	2.38%	2.66%	2.41%
3-month Treasury Bill	1.46%	0.05%	0.67%	2.28%	1.87%
Callan Stable Value	1.95%	1.76%	2.36%	2.56%	2.21%
SERS U.S. Bond Index Fund	(12.93%)	(1.64%)	7.56%	8.69%	0.03%
Bimbg Aggregate	(13.01%)	(1.54%)	7.51%	8.72%	0.01%
Callan Core Bond MFs	(13.47%)	(1.17%)	8.65%	9.17%	(0.35%)

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

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

Pennsylvania SERS 457(b)
Investment Manager Performance Monitoring Summary Report
December 31, 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									
Retirement Date Funds									
SERS Post Retirement Fund Callan Tgt Date Ret Inc	4.7 32	-14.6 79	0.7 45	2.7 25	4.2 19	4.0 19			0.08 76
BlackRock Post Retirement NL Index	4.7 31	-14.5 78	0.8 45	2.7 25	4.2 20	4.0 21			
SERS 2025 Retirement Fund Callan Target Date 2025	5.3 75	-15.2 53	1.2 69	3.2 64	5.2 65	5.3 83			0.08 74
BlackRock 2025 NL Index	5.3 75	-15.2 52	1.2 69	3.2 64	5.2 71	5.3 84			
SERS 2030 Retirement Fund Callan Target Date 2030	6.4 63	-16.0 48	1.9 68	3.8 52	6.0 58	6.0 79			0.08 72
BlackRock 2030 NL Index	6.4 68	-15.9 46	1.9 68	3.7 56	5.9 65	6.0 80			
SERS 2035 Retirement Fund Callan Target Date 2035	7.5 60	-16.7 46	2.5 69	4.3 46	6.7 53	6.7 79			0.08 74
BlackRock 2035 NL Index	7.4 67	-16.7 46	2.5 70	4.3 51	6.6 60	6.6 80			
SERS 2040 Retirement Fund Callan Target Date 2040	8.5 44	-17.3 49	3.0 62	4.8 35	7.4 36	7.2 74			0.08 71
BlackRock 2040 NL Index	8.3 54	-17.4 50	3.0 65	4.8 39	7.2 51	7.2 76			
SERS 2045 Retirement Fund Callan Target Date 2045	9.4 23	-17.9 48	3.5 50	5.2 28	7.8 30	7.7 65			0.08 74
BlackRock 2045 NL Index	9.2 37	-18.0 51	3.4 53	5.1 36	7.6 43	7.6 70			
SERS 2050 Retirement Fund Callan Target Date 2050	9.8 15	-18.2 56	3.8 43	5.4 17	8.0 15	7.9 50			0.08 71
BlackRock 2050 NL Index	9.6 27	-18.3 60	3.7 49	5.3 23	7.8 34	7.9 56			
SERS 2055 Retirement Fund Callan Target Date 2055	9.9 16	-18.3 52	3.8 36	5.4 14	8.1 12	8.1 52			0.08 78
BlackRock 2055 NL Index	9.7 30	-18.4 57	3.8 44	5.3 21	7.9 35	8.0 55			
SERS 2060 Retirement Fund Callan Target Date 2060	9.9 13	-18.3 52	3.8 45	5.4 18	8.0 19				0.08 77
BlackRock 2060 NL Index	9.7 26	-18.4 57	3.7 51	5.3 30	7.9 50				

Returns:
■ above median
■ third quartile
■ fourth quartile

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

Risk Quadrant:


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

Pennsylvania SERS 457(b)
Investment Manager Performance Monitoring Summary Report
December 31, 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	9.9 16	-18.3 34	3.8 46						0.08 56
BlackRock 2065 NL Index	9.7 23	-18.4 44	3.7 49						
Domestic Equity									
SERS U.S. Large Company Index Callan Lg Cap Broad MF	7.6 51	-18.1 47	7.7 32	9.4 27	11.5 17	12.6 26			0.02 100
S&P 500 Index	7.6 50	-18.1 47	7.7 32	9.4 28	11.5 17	12.6 26			
SERS U.S. Small/Mid Company Index Callan SMID Broad MFs	5.3 70	-26.1 66	3.3 65	5.1 70	8.4 60	9.7 57			0.03 98
Dow Jones US Completion	5.1 71	-26.6 67	2.9 68	4.8 73	8.1 67	9.5 62			
International Equity									
SERS Global Non-U.S. Index Fund Callan Non US Equity MFs	14.5 73	-15.9 52	0.3 63	1.1 58	5.1 32	4.0 71			0.05 99
MSCI ACWI ex US	14.3 73	-16.0 55	0.1 67	0.9 66	4.8 44	3.8 72			
Domestic Fixed Income									
SERS Short Term Investment Fund Callan Cash Database	0.9 73	1.6 33	0.8 55	1.3 66	1.2 77	0.9 79			0.00 100
3-month Treasury Bill	0.8 90	1.5 36	0.7 68	1.3 86	1.1 92	0.8 93			
Comments: Callan Cash Database includes STIF, enhanced cash, and money market funds.									
SERS Stable Value Fund Callan Stable Value	0.5 19	1.7 27	1.9 12	2.1 11	2.1 8	2.1 1			
3-month Treasury Bill	0.8 1	1.5 55	0.7 99	1.3 91	1.1 97	0.8 99			
SERS U.S. Bond Index Fund Callan Core Bond MFs	1.9 32	-12.9 23	-2.7 78	0.0 68	0.9 87	1.0 76			0.02 98
Blmbg Aggregate	1.9 34	-13.0 28	-2.7 78	0.0 68	0.9 86	1.1 69			

Returns:
 above median
 third quartile
 fourth quartile

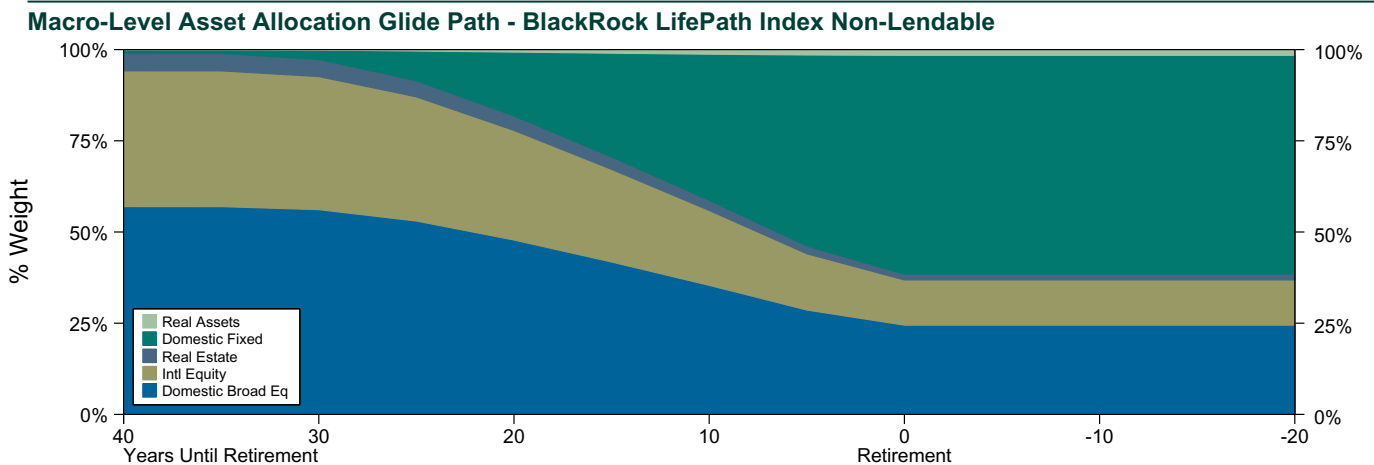
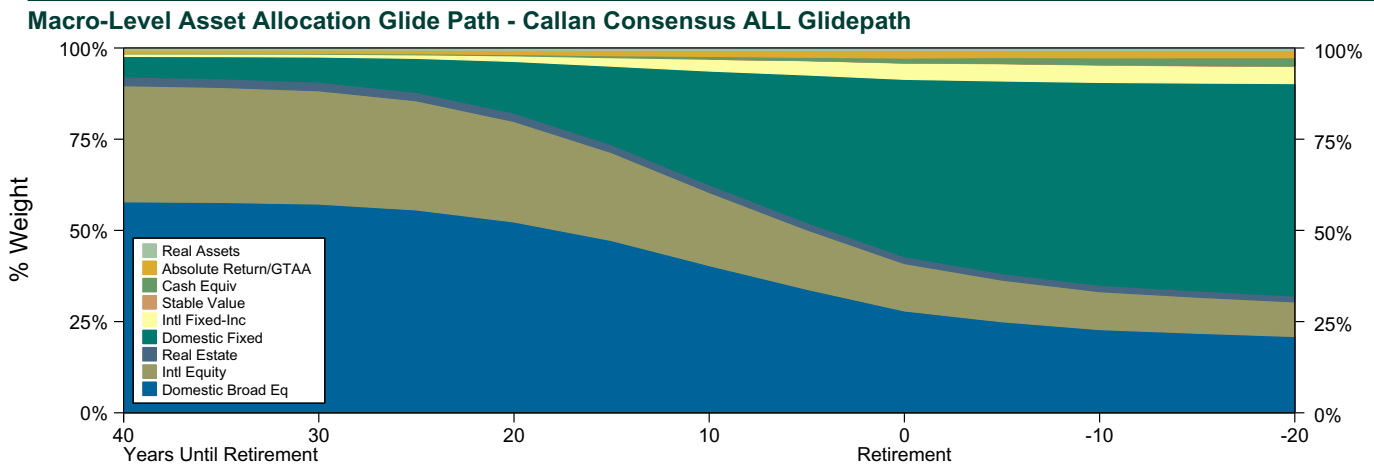
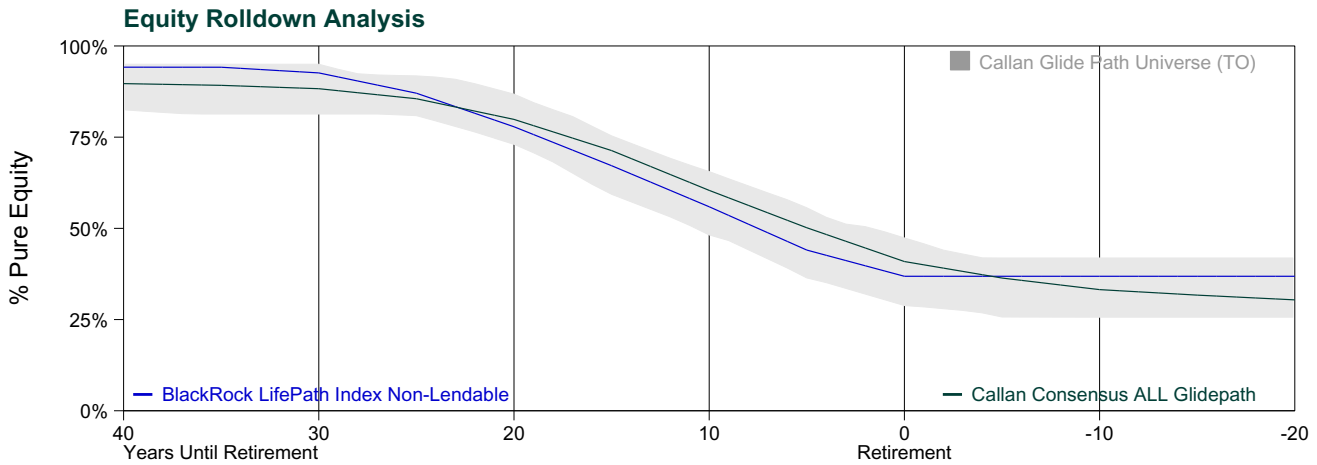
Return Consistency:
 above median
 third quartile
 fourth quartile

Risk Quadrant:

Expense Ratio:
 below median
 second quartile
 first quartile

Callan Consensus ALL Glidepath Target Date Glide Path Analysis as of December 31, 2022

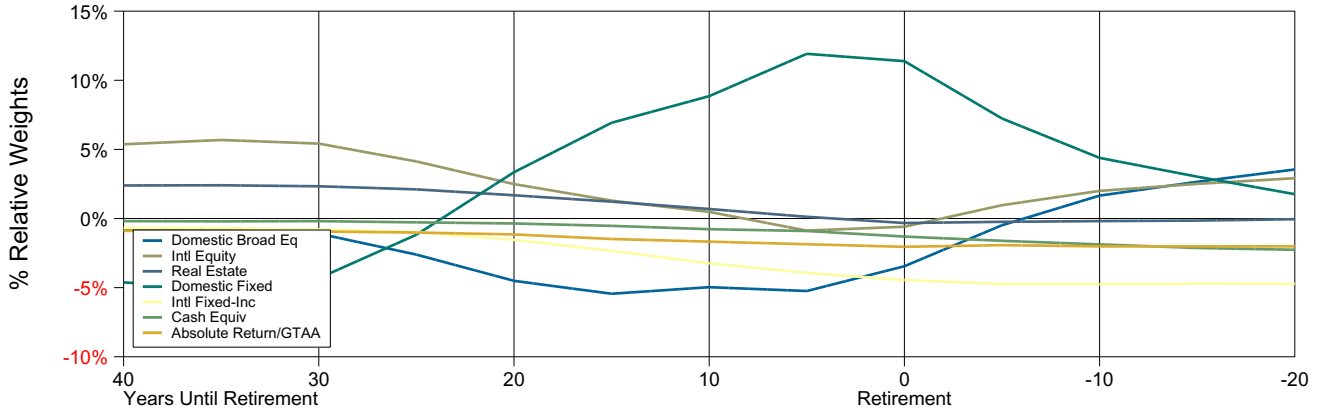
The following charts illustrate the asset allocation "glide path" underlying the relevant suite of target date funds. This analysis covers forty years of investor wealth accumulation up to retirement, as well as twenty years of wealth decumulation following retirement. The top chart shows the "pure"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



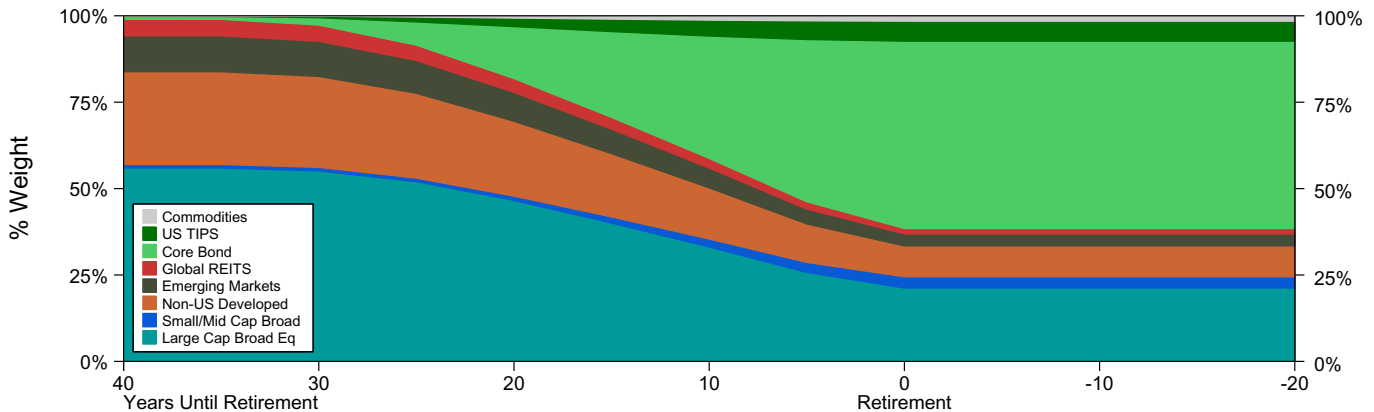
BlackRock LifePath Index Non-Lendable Target Date Glide Path Analysis as of December 31, 2022

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.

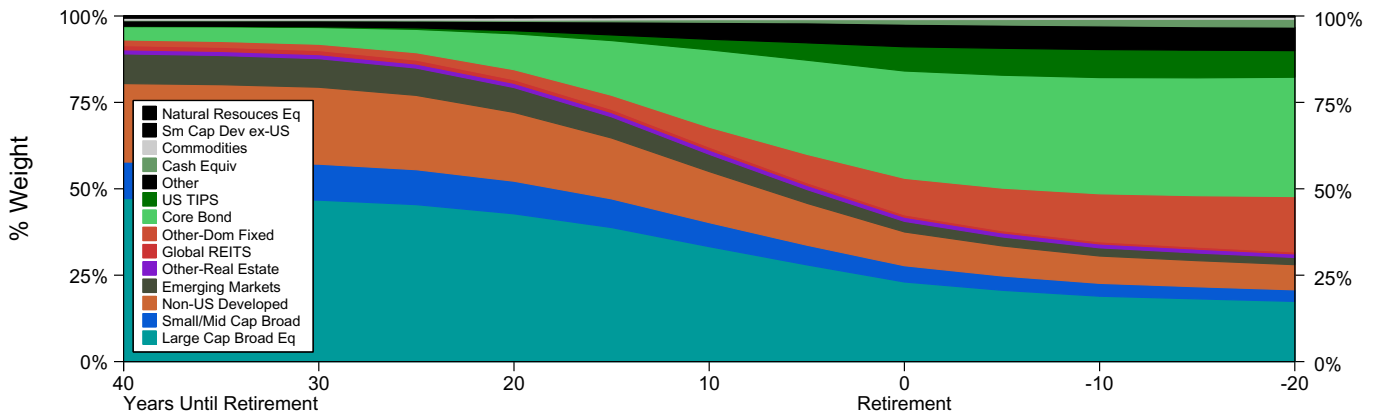
Relative Macro Asset Allocation - BlackRock LifePath Index Non-Lendable vs. Callan Consens



Micro-Level Asset Allocation Glide Path - BlackRock LifePath Index Non-Lendable



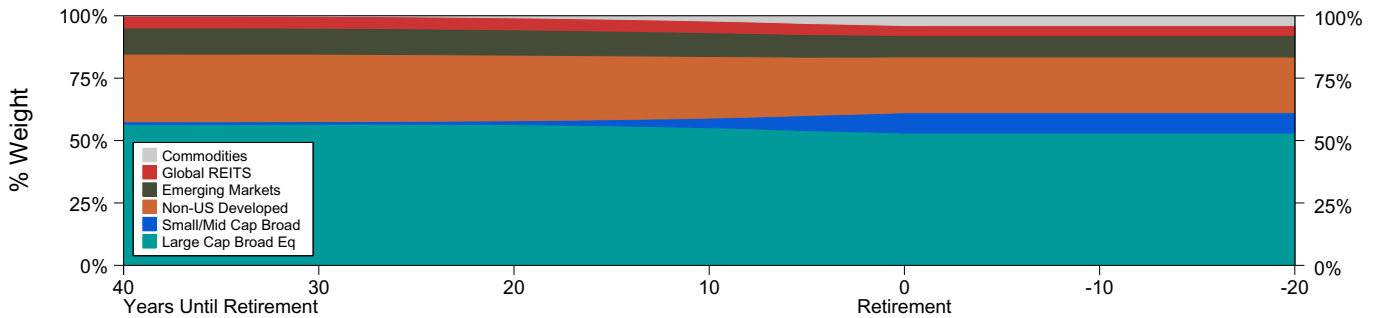
Micro-Level Asset Allocation Glide Path - Callan Consensus ALL Glidepath



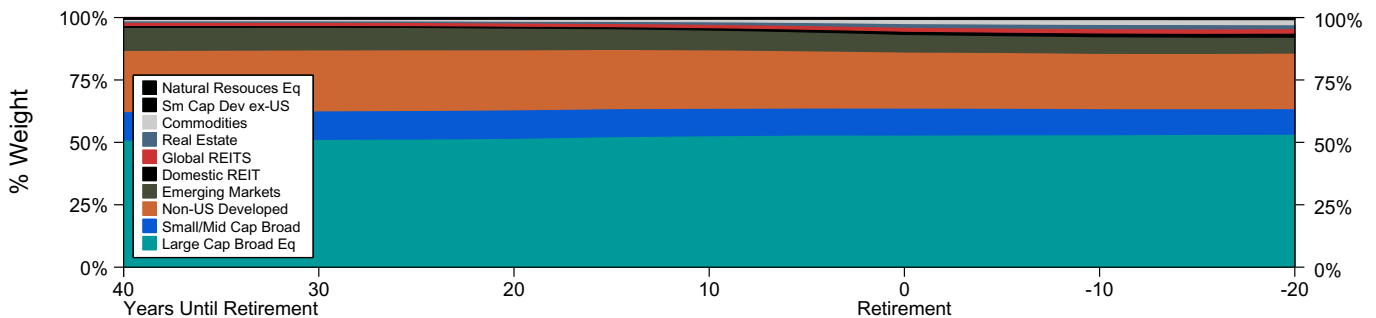
BlackRock LifePath Index Non-Lendable Target Date Glide Path Analysis as of December 31, 2022

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.

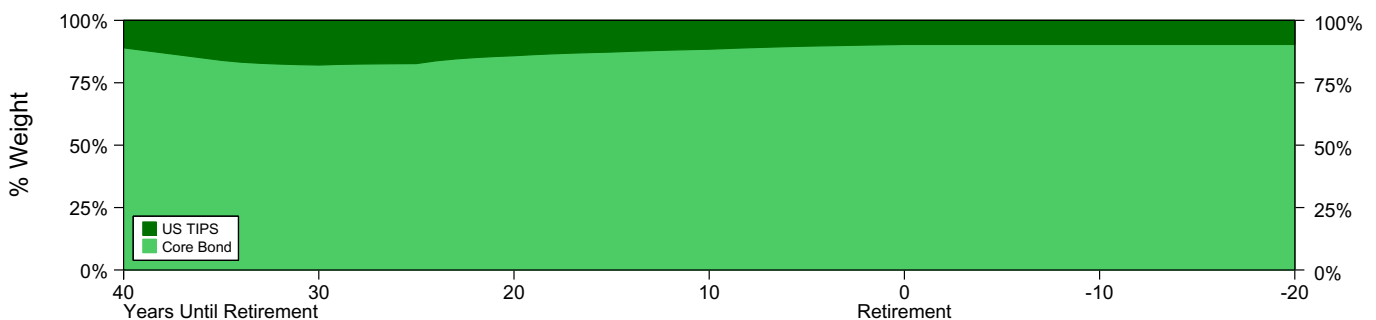
Micro-Level Equity Allocation Glide Path - BlackRock LifePath Index Non-Lendable



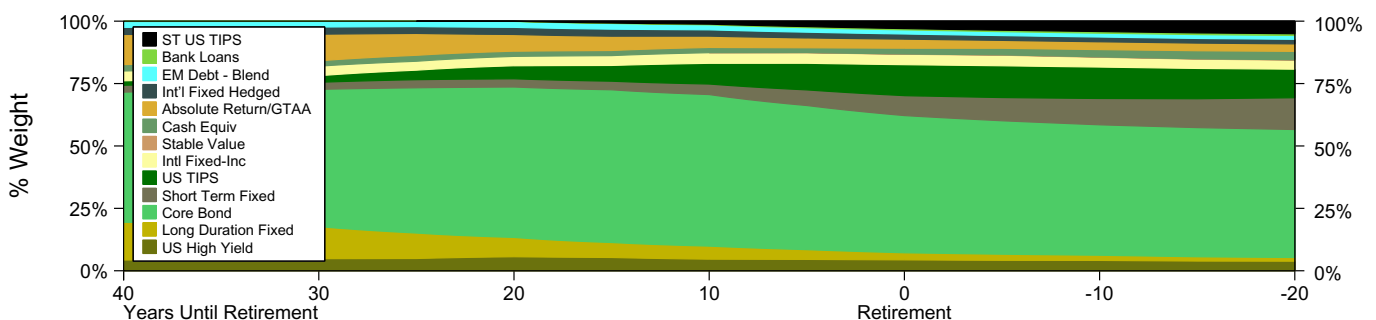
Micro-Level Equity Asset Allocation Glide Path - Callan Consensus ALL Glidepath



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



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



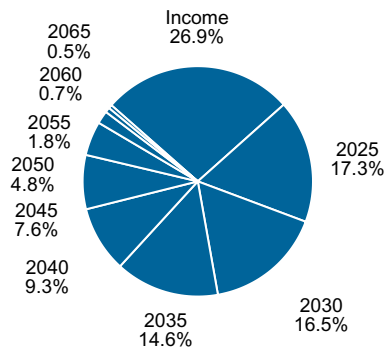
Pennsylvania SERS 457(b) - BlackRock LifePath Index Target Date Fund Family Analysis as of December 31, 2022

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).

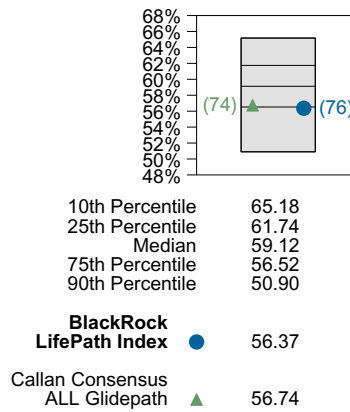
Glidepath Peer Group: ALL

Fee/Return Type: Gross

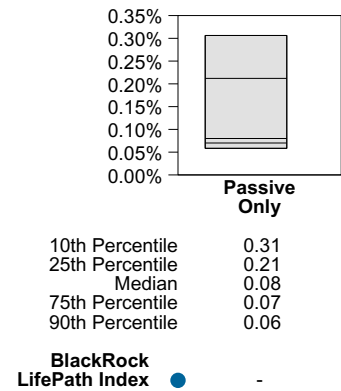
Fund Family Allocation



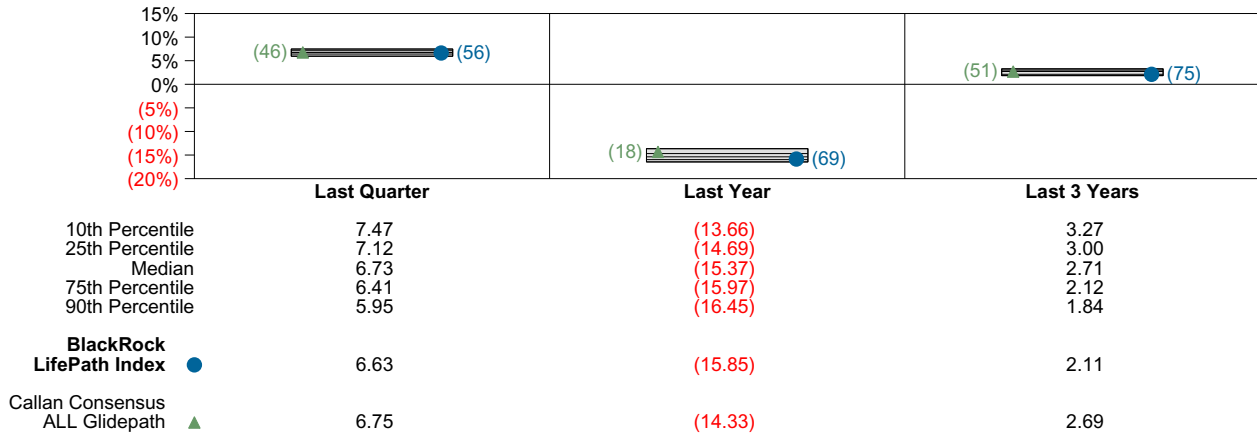
Equity Exposure



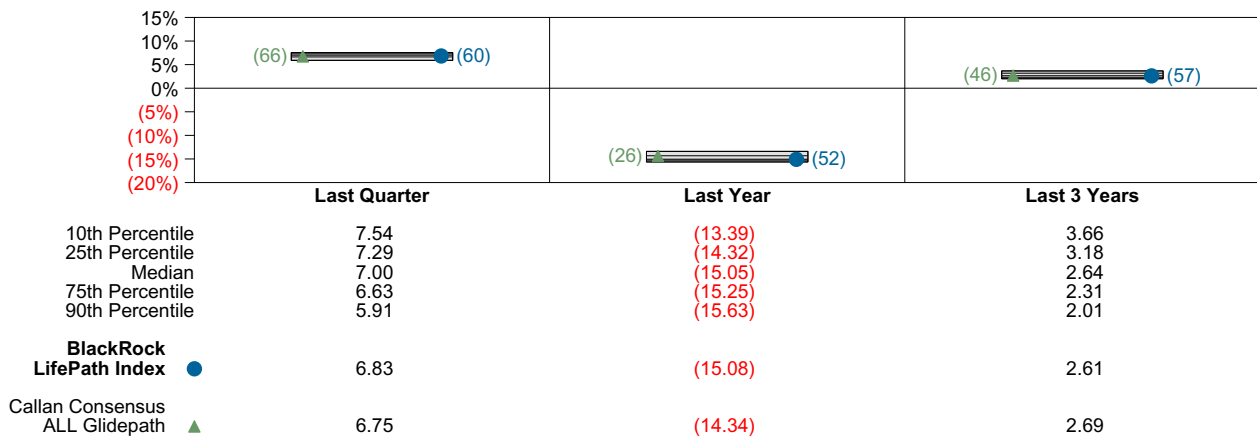
Expense Ratio



Target Date Family Performance vs Peer Families



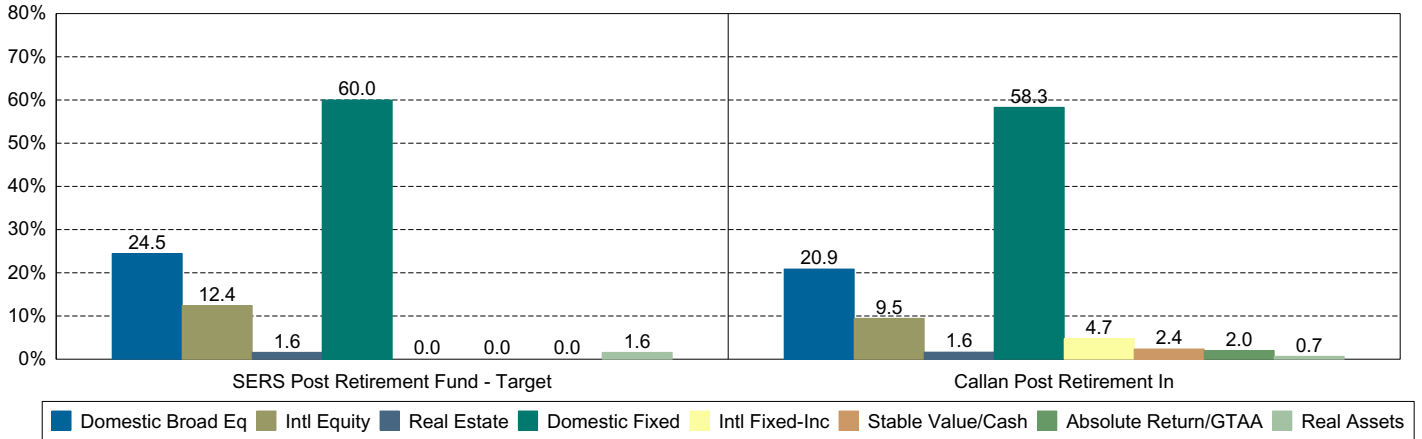
Target Date Family Glide Path Returns vs Peer Families



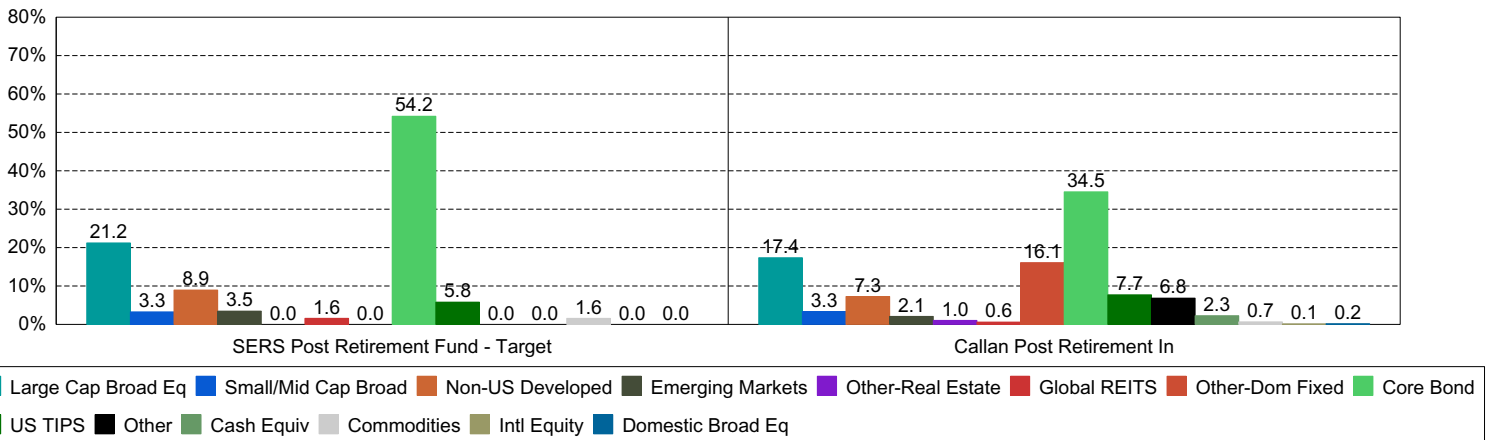
SERS Post Retirement Fund Target Date Fund Asset Allocation as of December 31, 2022

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

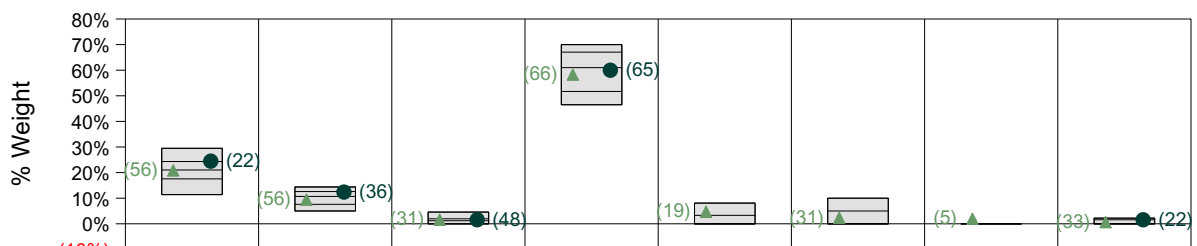
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date Retirement Income



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	29.49	14.40	4.58	69.99	8.09	10.00	0.00	2.21
25th Percentile	24.32	12.59	1.96	67.05	3.30	5.00	0.00	1.57
Median	21.02	10.70	1.21	61.00	0.00	0.00	0.00	0.00
75th Percentile	17.55	7.60	0.00	51.70	0.00	0.00	0.00	0.00
90th Percentile	11.40	5.00	0.00	46.50	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 December 31, 2022

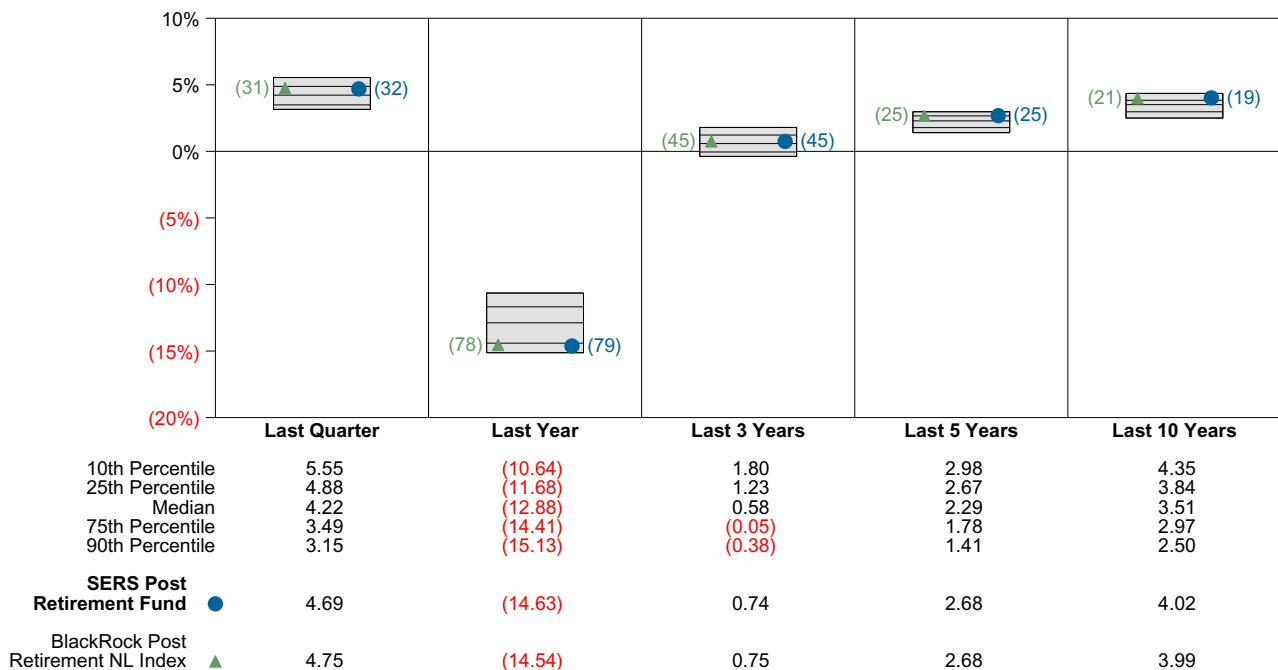
Investment Philosophy

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

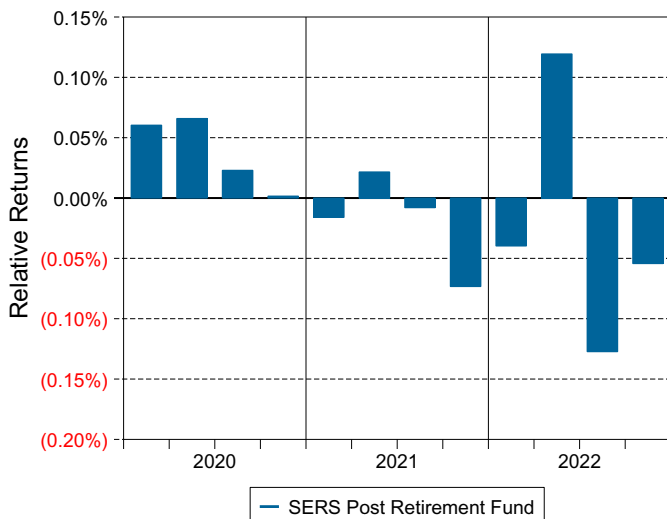
Quarterly Summary and Highlights

- SERS Post Retirement Fund's portfolio posted a 4.69% return for the quarter placing it in the 32 percentile of the Callan Target Date Retirement Income group for the quarter and in the 79 percentile for the last year.
- SERS Post Retirement Fund's portfolio underperformed the BlackRock Post Retirement NL Index by 0.06% for the quarter and underperformed the BlackRock Post Retirement NL Index for the year by 0.09%.

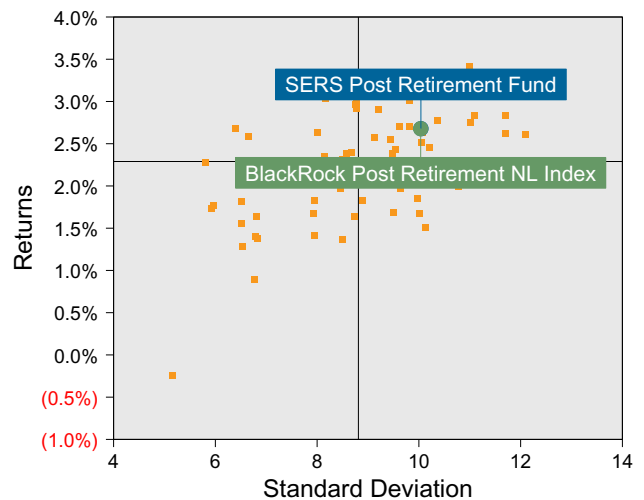
Performance vs Callan Target Date Retirement Income (Net)



Relative Returns vs BlackRock Post Retirement NL Index



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

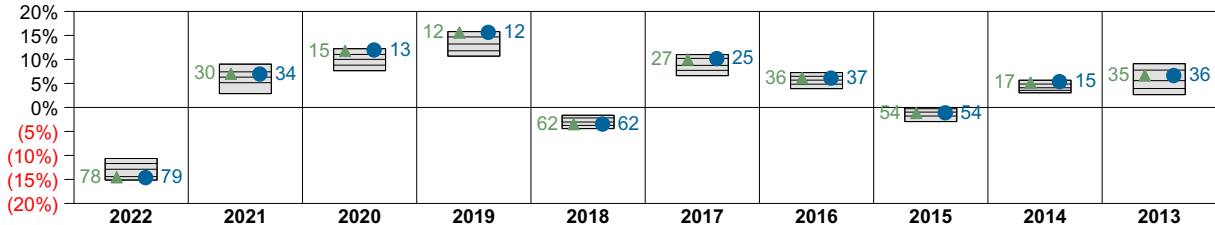


SERS Post Retirement Fund Return Analysis Summary

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.

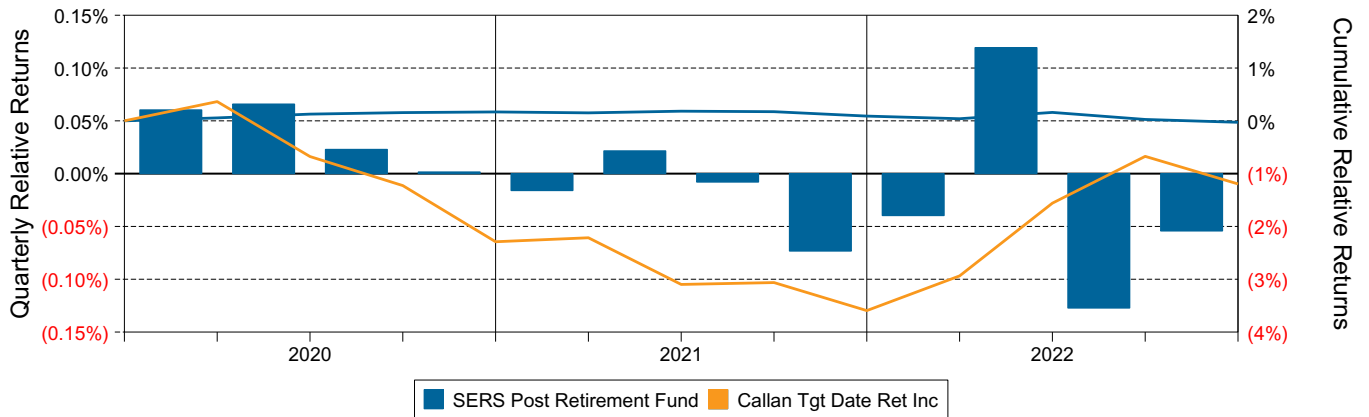
Performance vs Callan Target Date Retirement Income (Net)



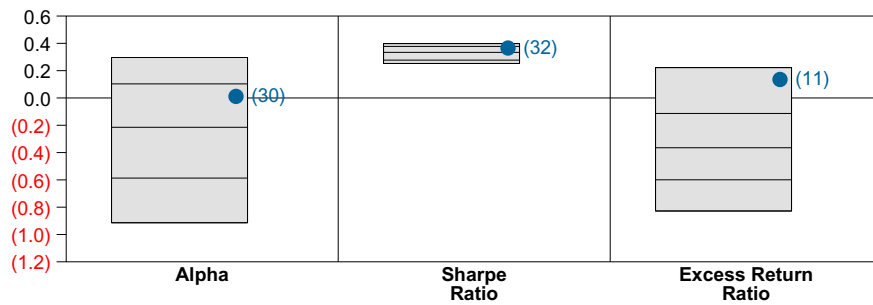
10th Percentile	(10.64)	9.02	12.24	15.80	(1.63)	11.01	7.26	(0.02)	5.66	9.12
25th Percentile	(11.68)	7.42	11.04	14.69	(2.19)	10.22	6.49	(0.27)	4.87	7.78
Median	(12.88)	6.31	10.02	13.21	(3.04)	8.76	5.69	(0.97)	4.10	5.58
75th Percentile	(14.41)	5.16	8.81	11.80	(3.75)	7.72	4.85	(1.79)	3.57	3.94
90th Percentile	(15.13)	2.88	7.66	10.68	(4.41)	6.62	3.91	(2.95)	3.05	2.67

SERS Post Retirement Fund	● (14.63)	6.95	11.97	15.65	(3.47)	10.18	6.10	(1.12)	5.38	6.64
BlackRock Post Retirement NL Index	▲ (14.54)	7.04	11.80	15.62	(3.48)	10.01	6.15	(1.13)	5.19	6.70

Cumulative and Quarterly Relative Returns vs BlackRock Post Retirement NL Index



Risk Adjusted Return Measures vs BlackRock Post Retirement NL Index Rankings Against Callan Target Date Retirement Income (Net) Seven Years Ended December 31, 2022

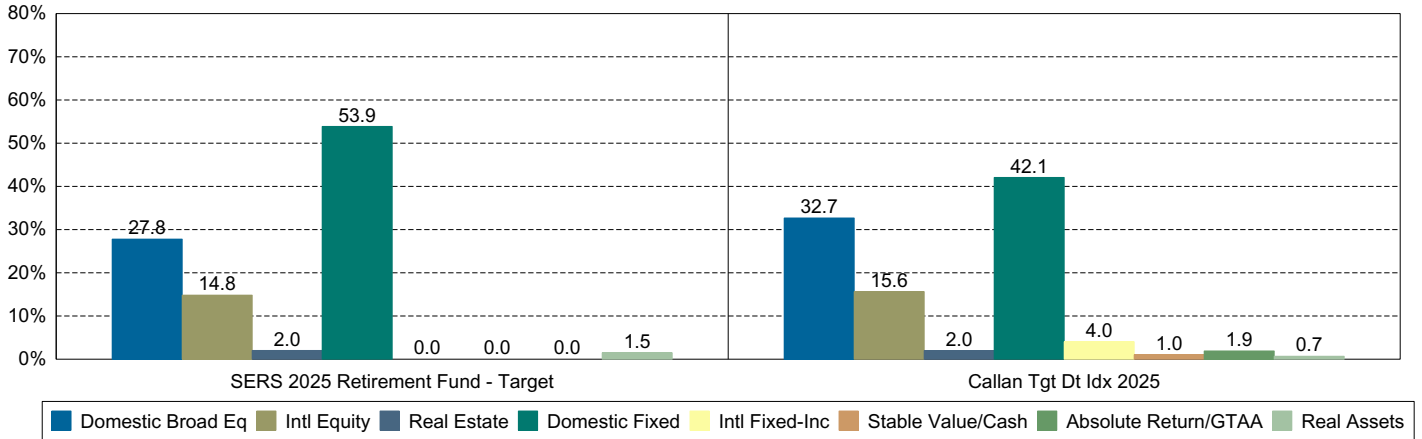


10th Percentile	0.30	0.40	0.22
25th Percentile	0.10	0.38	(0.11)
Median	(0.21)	0.33	(0.36)
75th Percentile	(0.59)	0.28	(0.60)
90th Percentile	(0.91)	0.25	(0.83)
SERS Post Retirement Fund	● 0.01	0.37	0.14

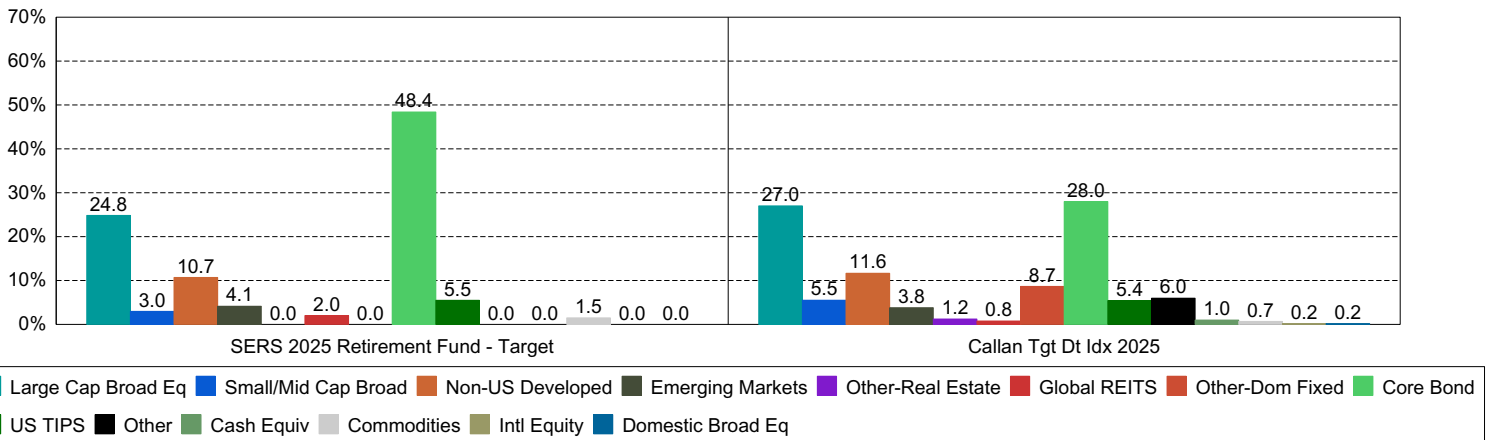
SERS 2025 Retirement Fund Target Date Fund Asset Allocation as of December 31, 2022

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.

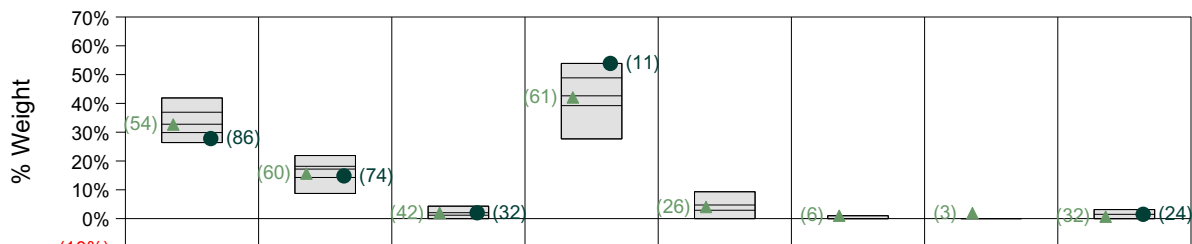
Macro-Level Asset Allocation



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	48.87	4.72	0.00	0.00	1.48
Median	32.76	17.19	1.18	42.63	2.90	0.00	0.00	0.00
75th Percentile	29.87	14.28	0.00	39.22	0.00	0.00	0.00	0.00
90th Percentile	26.40	8.73	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 December 31, 2022

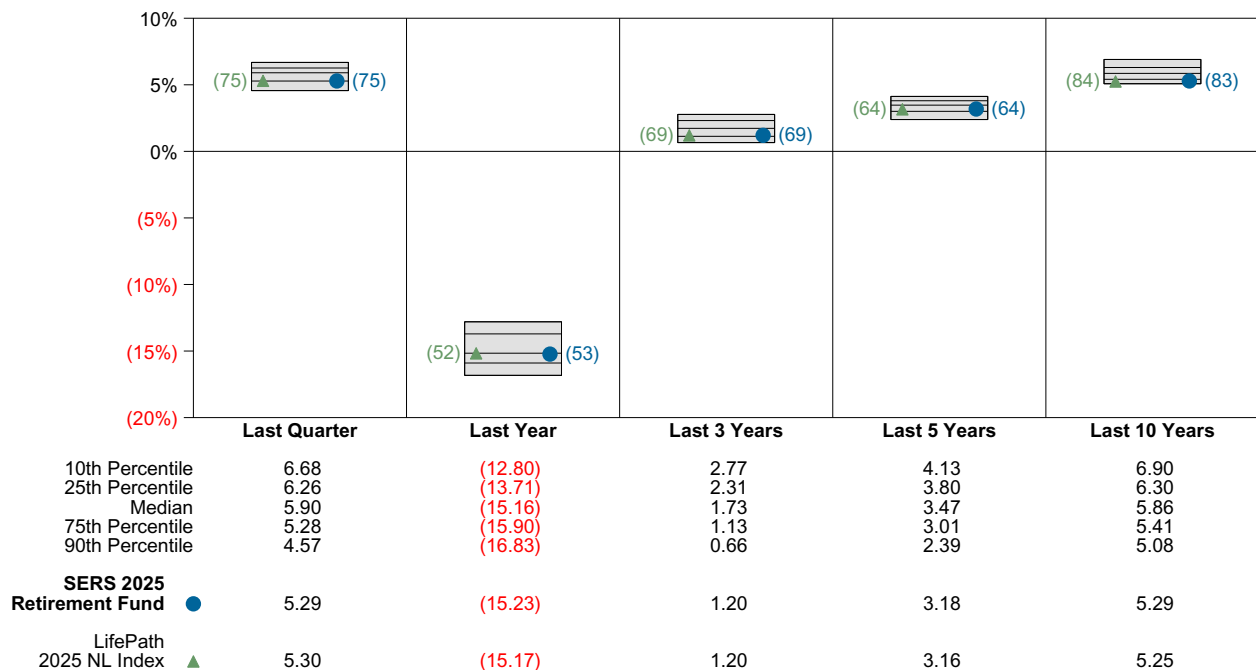
Investment Philosophy

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

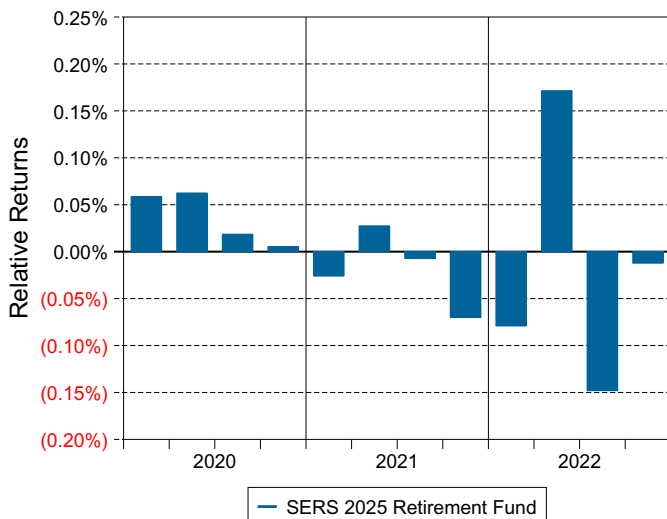
Quarterly Summary and Highlights

- SERS 2025 Retirement Fund's portfolio posted a 5.29% return for the quarter placing it in the 75 percentile of the Callan Target Date 2025 group for the quarter and in the 53 percentile for the last year.
- SERS 2025 Retirement Fund's portfolio underperformed the LifePath 2025 NL Index by 0.01% for the quarter and underperformed the LifePath 2025 NL Index for the year by 0.06%.

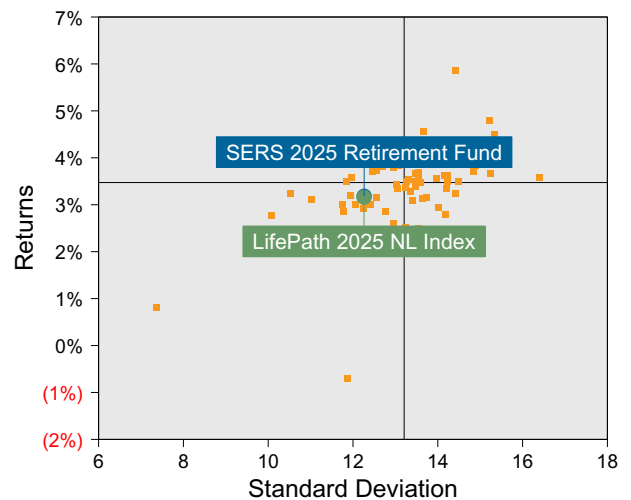
Performance vs Callan Target Date 2025 (Net)



Relative Return vs LifePath 2025 NL Index



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

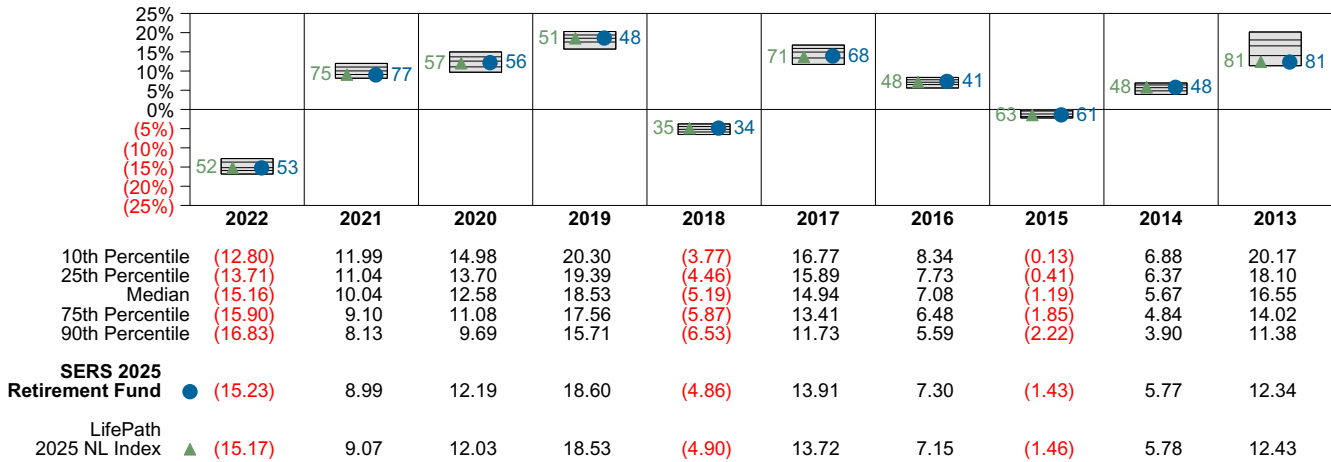


SERS 2025 Retirement Fund Return Analysis Summary

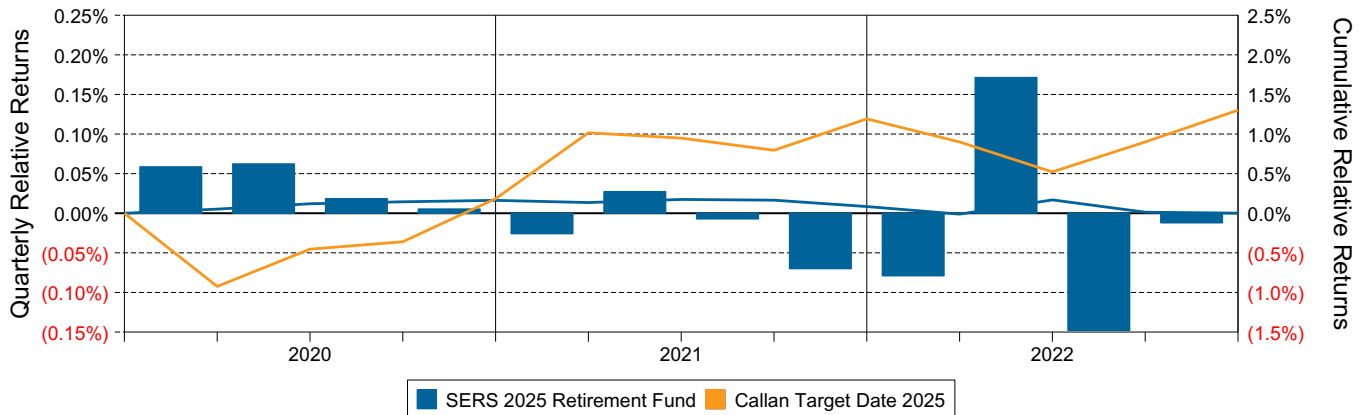
Return Analysis

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.

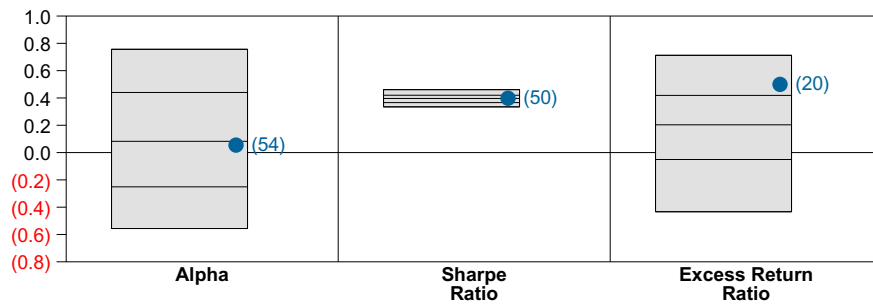
Performance vs Callan Target Date 2025 (Net)



Cumulative and Quarterly Relative Returns vs LifePath 2025 NL Index



Risk Adjusted Return Measures vs LifePath 2025 NL Index Rankings Against Callan Target Date 2025 (Net) Seven Years Ended December 31, 2022



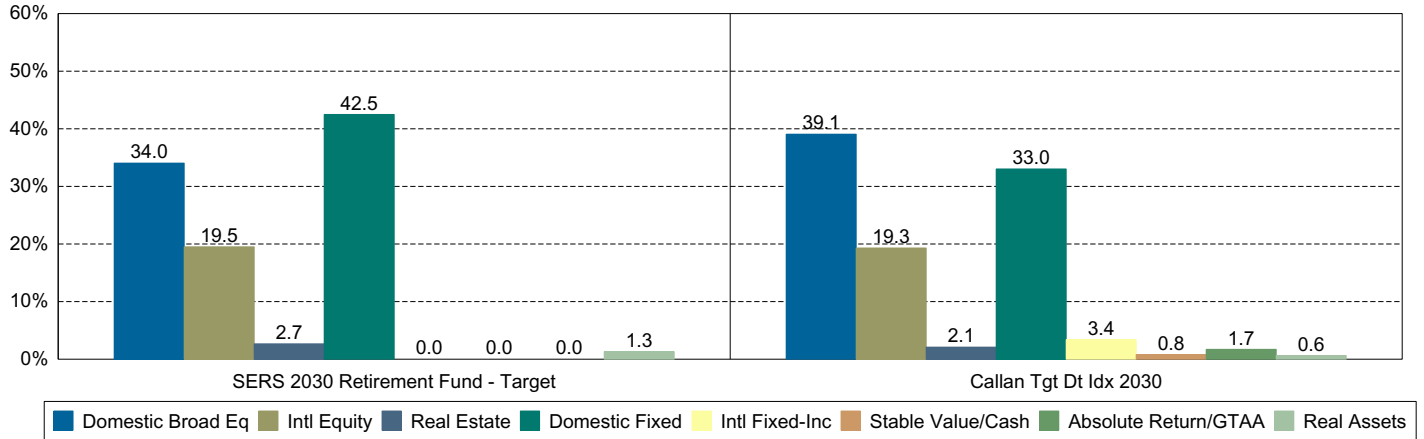
10th Percentile	0.76	0.46	0.71
25th Percentile	0.44	0.42	0.42
Median	0.08	0.40	0.20
75th Percentile	(0.25)	0.37	(0.05)
90th Percentile	(0.56)	0.33	(0.43)
SERS 2025 Retirement Fund	● 0.05	● 0.40	● 0.50

SERS 2030 Retirement Fund

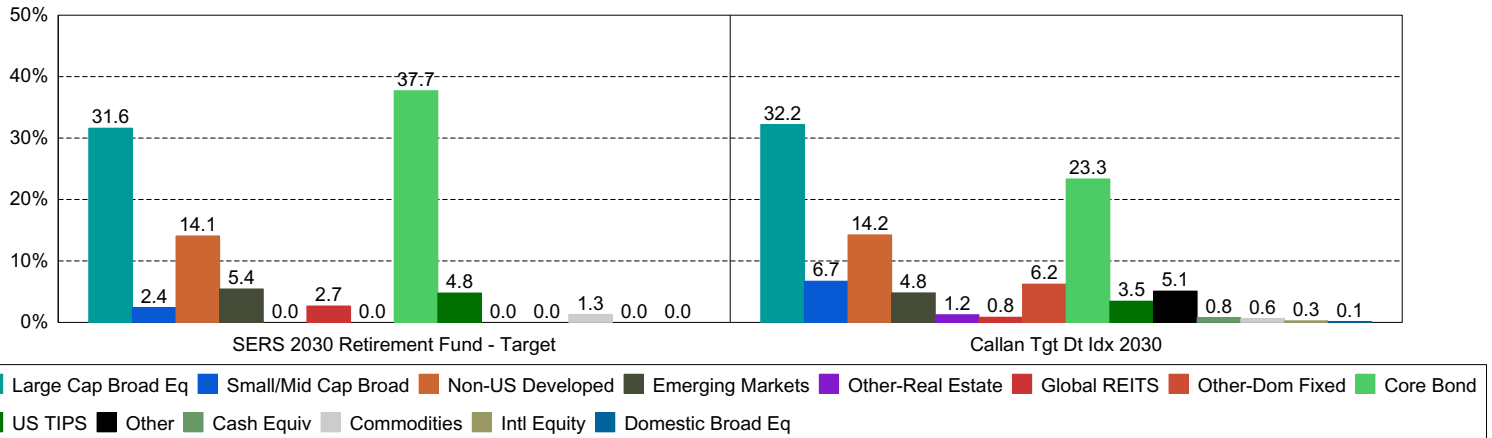
Target Date Fund Asset Allocation as of December 31, 2022

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

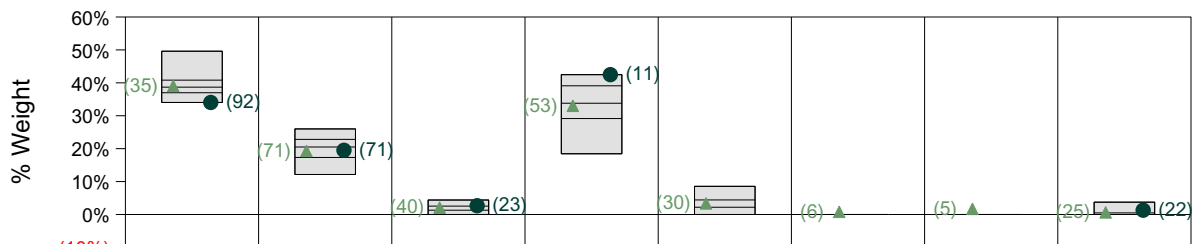
Macro-Level Asset Allocation



Micro-Level Asset Allocation



Macro Asset Allocation Rankings vs. Callan Target Date 2030



	Domestic Broad Eq	Intl Equity	Real Estate	Domestic Fixed	Intl Fixed-Inc	Stable Value/Cash	Absolute Return/GTAA	Real Assets
10th Percentile	49.61	26.00	4.40	42.49	8.56	0.00	0.00	3.74
25th Percentile	40.82	22.82	2.54	39.10	4.42	0.00	0.00	0.48
Median	38.68	20.51	1.30	33.80	2.20	0.00	0.00	0.00
75th Percentile	36.99	17.32	0.00	29.15	0.00	0.00	0.00	0.00
90th Percentile	34.04	12.15	0.00	18.45	0.00	0.00	0.00	0.00

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

SERS 2030 Retirement Fund

Period Ended December 31, 2022

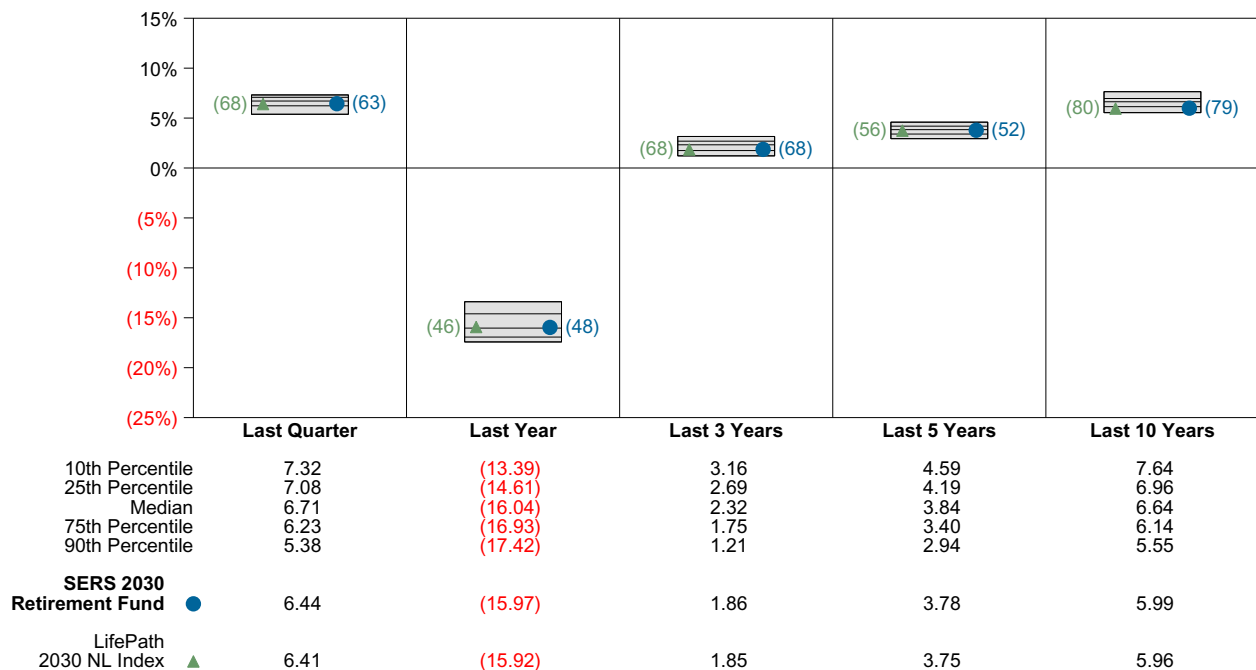
Investment Philosophy

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

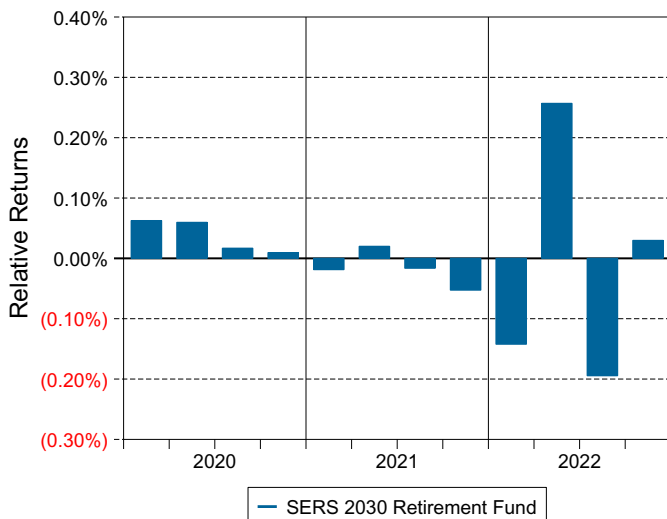
Quarterly Summary and Highlights

- SERS 2030 Retirement Fund's portfolio posted a 6.44% return for the quarter placing it in the 63 percentile of the Callan Target Date 2030 group for the quarter and in the 48 percentile for the last year.
- SERS 2030 Retirement Fund's portfolio outperformed the LifePath 2030 NL Index by 0.03% for the quarter and underperformed the LifePath 2030 NL Index for the year by 0.04%.

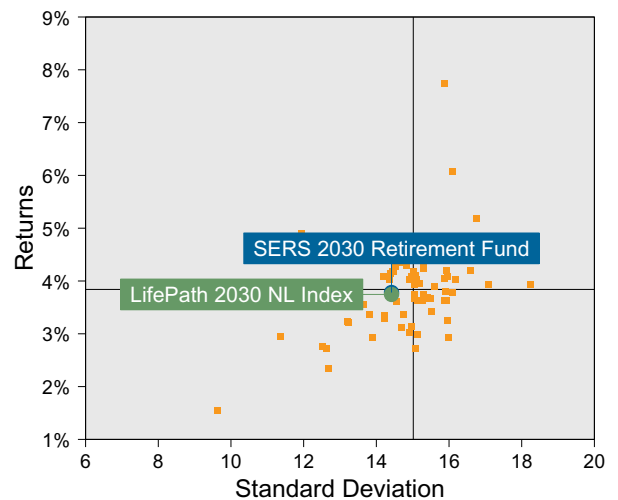
Performance vs Callan Target Date 2030 (Net)



Relative Return vs LifePath 2030 NL Index



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

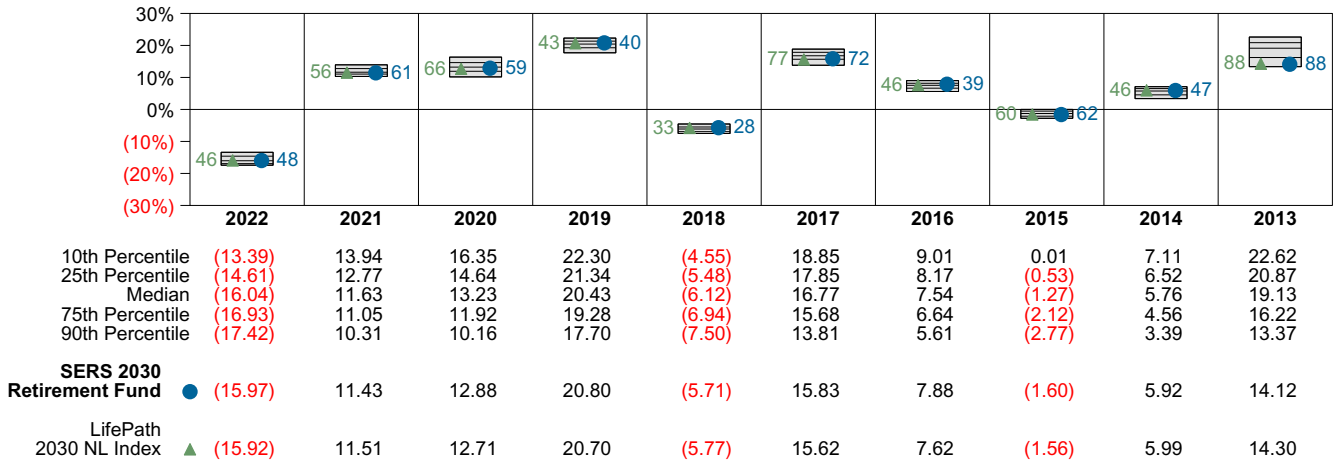


SERS 2030 Retirement Fund Return Analysis Summary

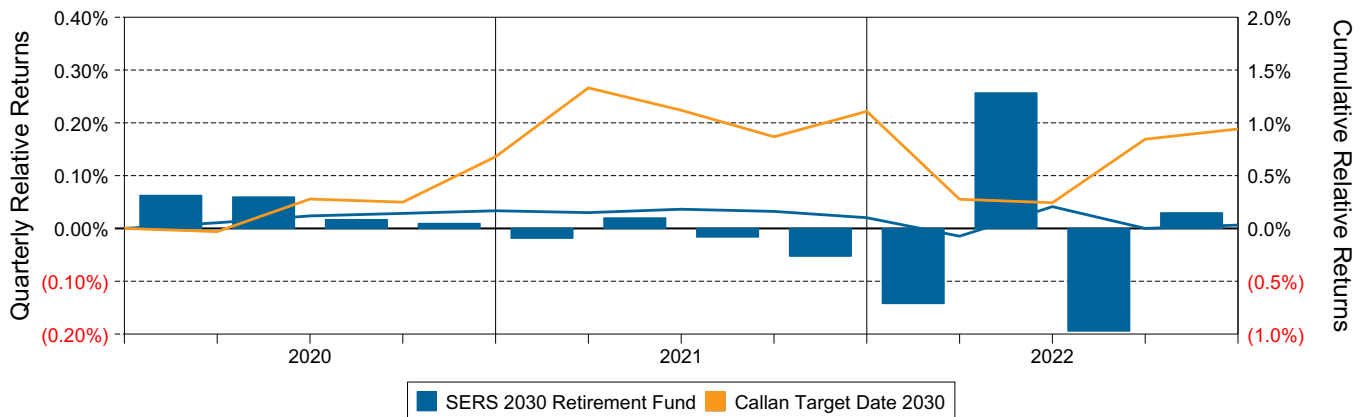
Return Analysis

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.

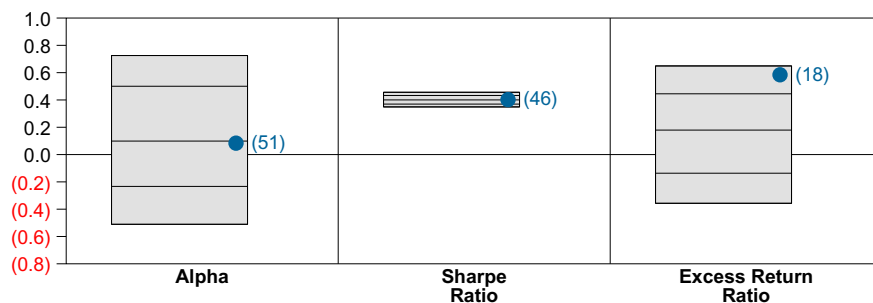
Performance vs Callan Target Date 2030 (Net)



Cumulative and Quarterly Relative Returns vs LifePath 2030 NL Index



Risk Adjusted Return Measures vs LifePath 2030 NL Index Rankings Against Callan Target Date 2030 (Net) Seven Years Ended December 31, 2022

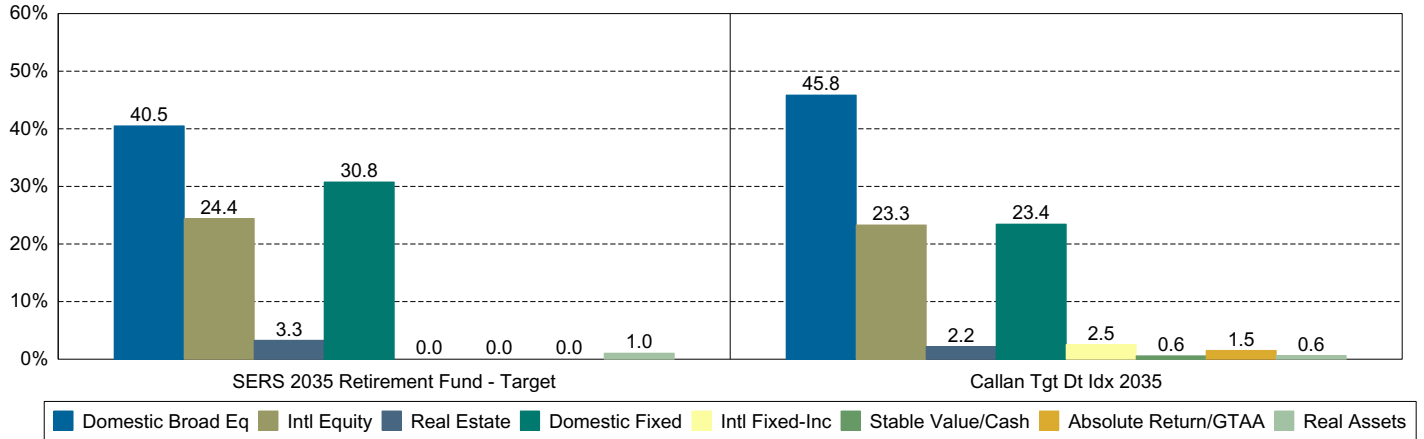


	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.73	0.46	0.65
25th Percentile	0.50	0.43	0.45
Median	0.10	0.40	0.18
75th Percentile	(0.23)	0.37	(0.14)
90th Percentile	(0.51)	0.35	(0.36)
SERS 2030 Retirement Fund	● 0.08	0.40	0.58

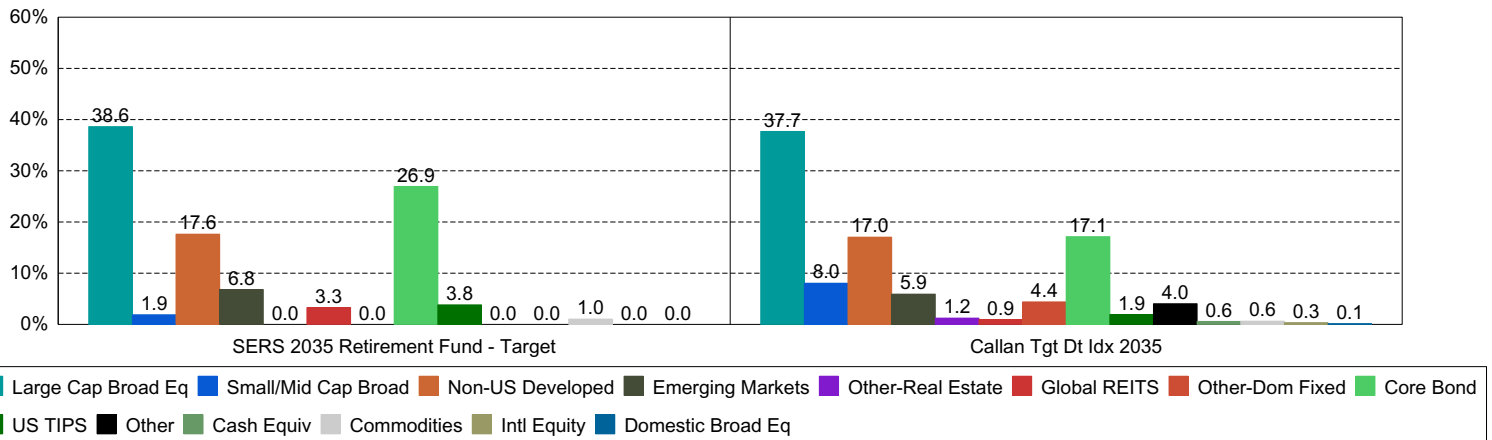
SERS 2035 Retirement Fund Target Date Fund Asset Allocation as of December 31, 2022

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.

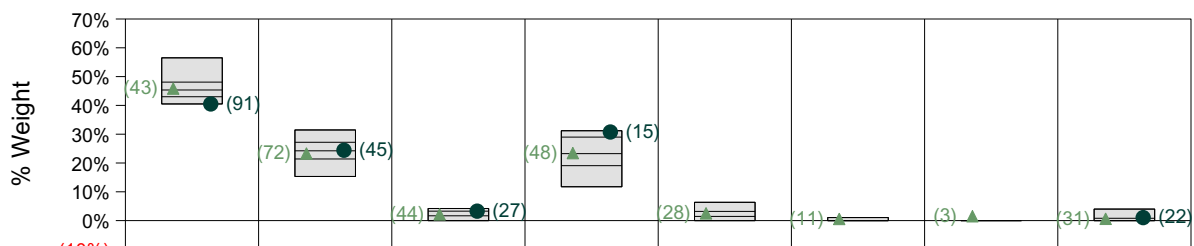
Macro-Level Asset Allocation



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	31.20	6.35	1.06	0.00	4.00
25th Percentile	48.09	27.19	3.28	28.99	3.19	0.00	0.00	0.81
Median	45.35	24.23	1.66	23.25	1.45	0.00	0.00	0.00
75th Percentile	43.01	21.40	0.00	19.07	0.00	0.00	0.00	0.00
90th Percentile	40.50	15.32	0.00	11.75	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 December 31, 2022

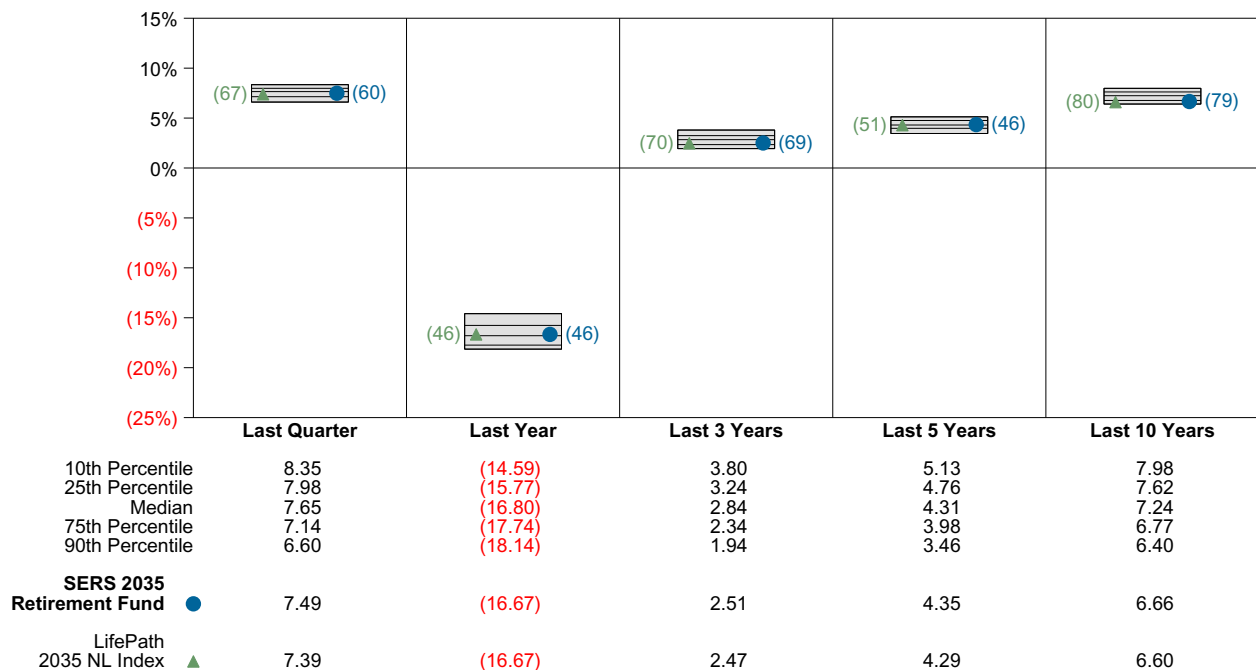
Investment Philosophy

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

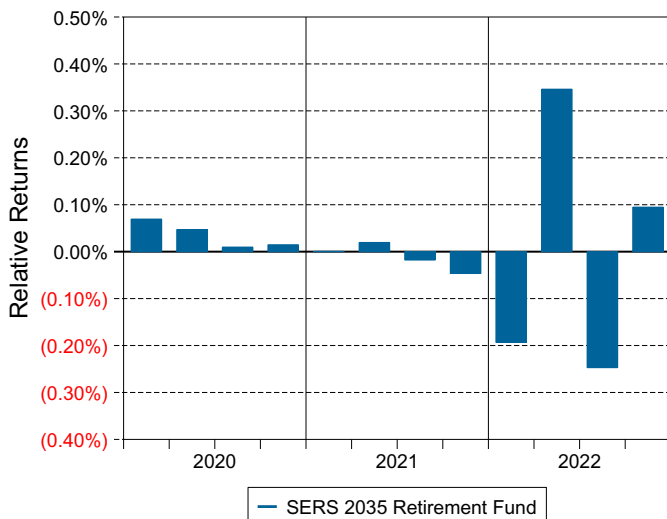
Quarterly Summary and Highlights

- SERS 2035 Retirement Fund's portfolio posted a 7.49% return for the quarter placing it in the 60 percentile of the Callan Target Date 2035 group for the quarter and in the 46 percentile for the last year.
- SERS 2035 Retirement Fund's portfolio outperformed the LifePath 2035 NL Index by 0.10% for the quarter and underperformed the LifePath 2035 NL Index for the year by 0.00%.

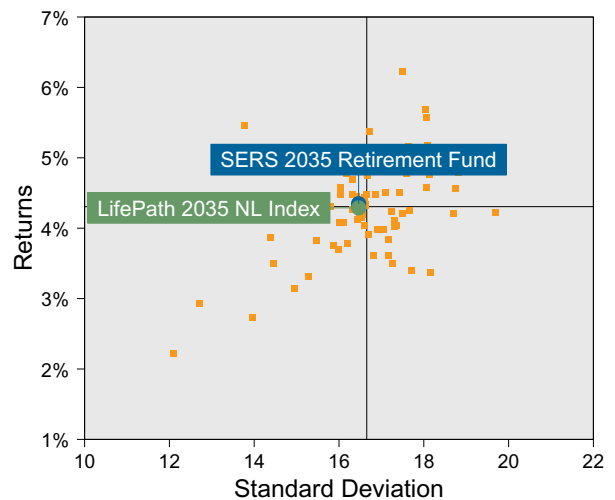
Performance vs Callan Target Date 2035 (Net)



Relative Return vs LifePath 2035 NL Index



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

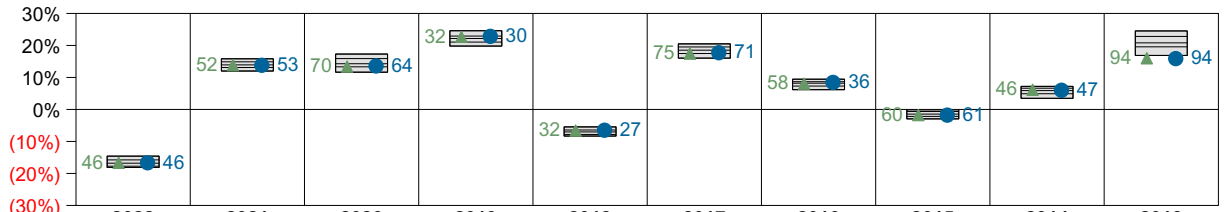


SERS 2035 Retirement Fund Return Analysis Summary

Return Analysis

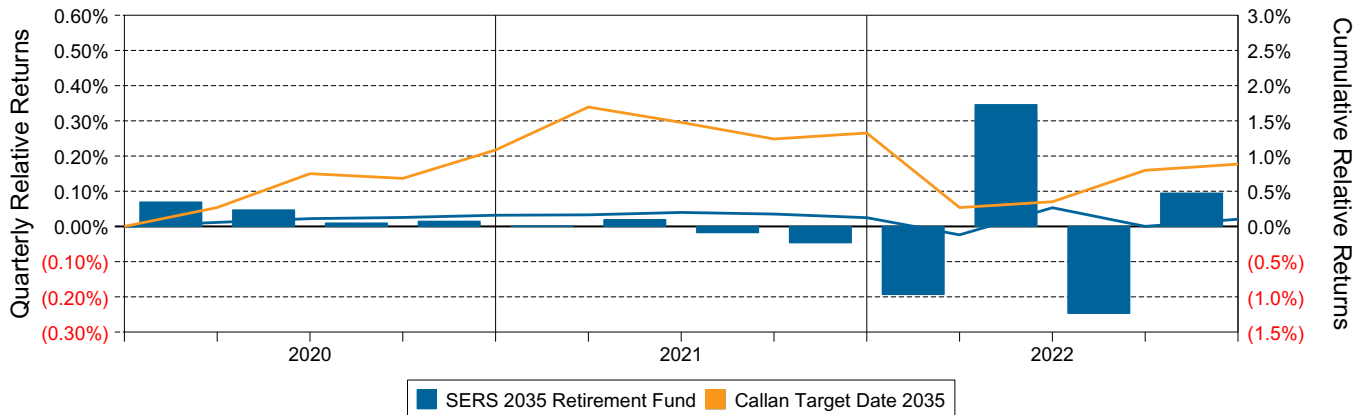
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate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

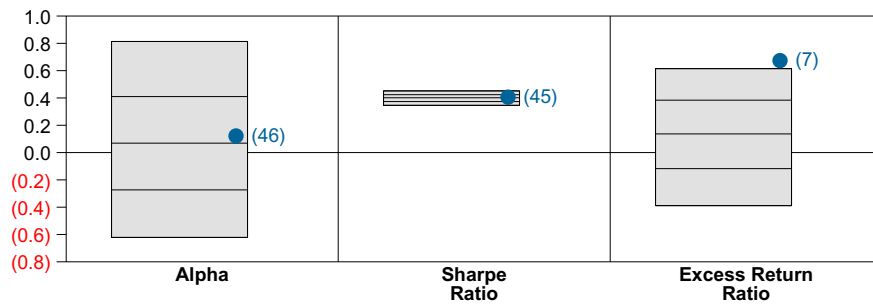


	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	(14.59)	15.82	17.31	24.59	(5.46)	20.49	9.45	(0.10)	7.21	24.53
25th Percentile	(15.77)	14.88	15.89	22.92	(6.42)	19.53	8.67	(0.64)	6.63	22.82
Median	(16.80)	13.92	14.28	22.17	(7.03)	18.51	8.20	(1.46)	5.89	20.81
75th Percentile	(17.74)	13.10	13.31	21.05	(7.82)	17.47	7.30	(2.17)	4.91	19.56
90th Percentile	(18.14)	12.00	11.64	19.80	(8.31)	16.04	6.17	(2.95)	3.47	16.87
SERS 2035 Retirement Fund	● (16.67)	13.80	13.58	22.84	(6.50)	17.72	8.44	(1.78)	5.99	15.88
LifePath 2035 NL Index	▲ (16.67)	13.85	13.42	22.72	(6.58)	17.47	8.06	(1.76)	6.17	16.00

Cumulative and Quarterly Relative Returns vs LifePath 2035 NL Index



Risk Adjusted Return Measures vs LifePath 2035 NL Index Rankings Against Callan Target Date 2035 (Net) Seven Years Ended December 31, 2022



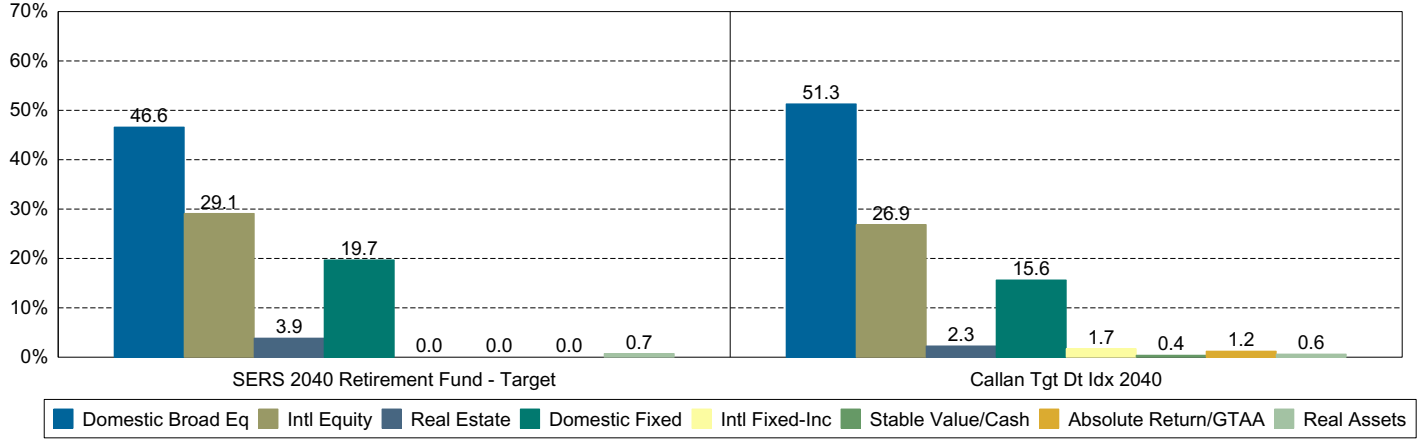
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.81	0.45	0.61
25th Percentile	0.41	0.42	0.38
Median	0.07	0.40	0.14
75th Percentile	(0.27)	0.37	(0.12)
90th Percentile	(0.62)	0.35	(0.39)
SERS 2035 Retirement Fund	● 0.12	0.41	0.67

SERS 2040 Retirement Fund

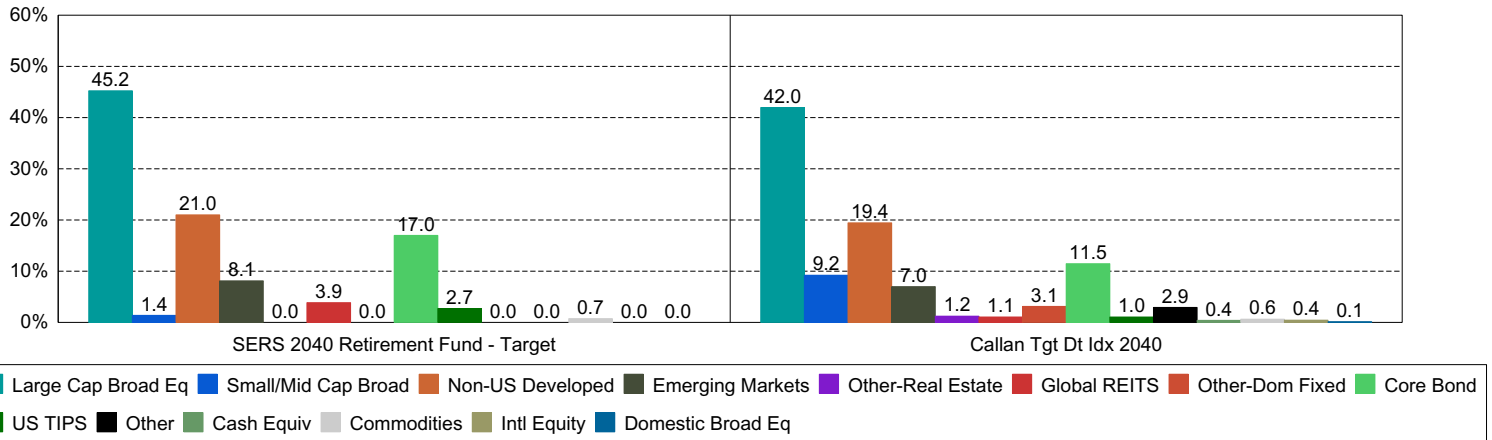
Target Date Fund Asset Allocation as of December 31, 2022

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.

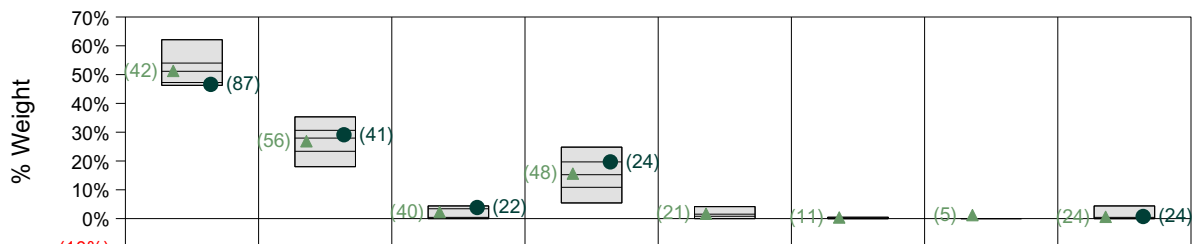
Macro-Level Asset Allocation



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	24.81	4.16	0.47	0.00	4.40
25th Percentile	54.00	30.65	3.42	19.69	1.54	0.00	0.00	0.43
Median	51.15	27.95	0.43	15.24	0.80	0.00	0.00	0.00
75th Percentile	47.25	23.37	0.00	10.87	0.00	0.00	0.00	0.00
90th Percentile	46.27	18.01	0.00	5.44	0.00	0.00	0.00	0.00

SERS 2040 Retirement Fund - Target	●	46.60	29.11	3.86	19.70	-	-	-	0.73
Callan Tgt Dt Idx 2040	▲	51.30	26.86	2.27	15.63	1.70	0.39	1.22	0.63

SERS 2040 Retirement Fund

Period Ended December 31, 2022

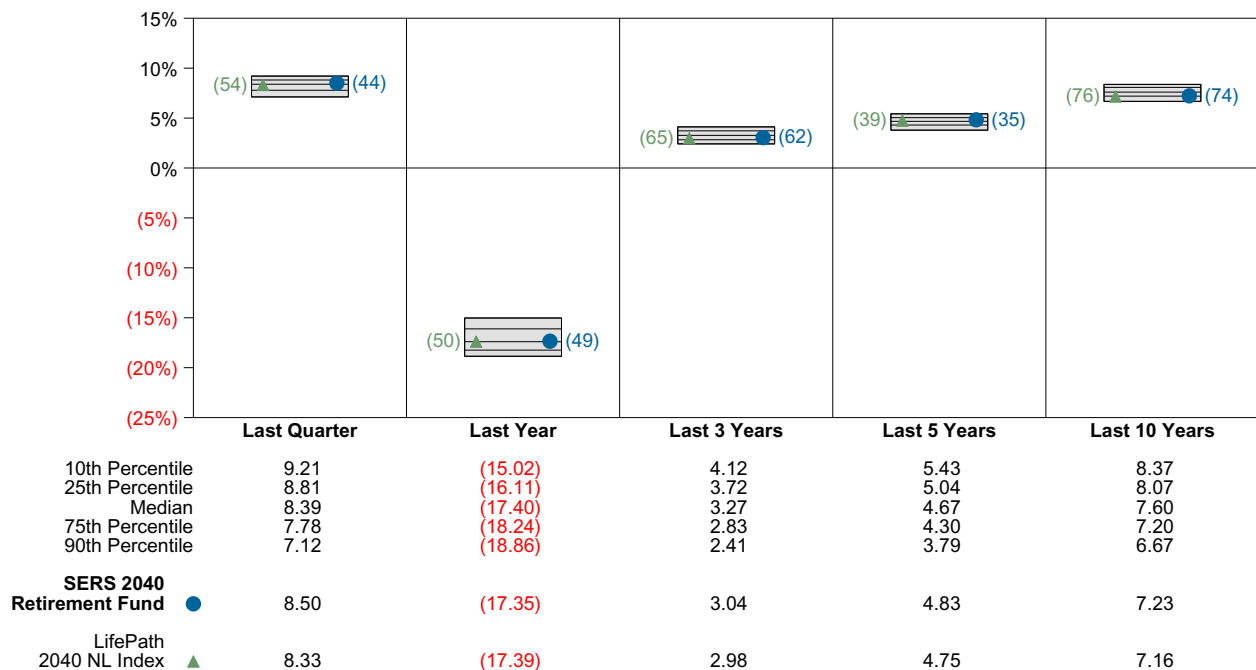
Investment Philosophy

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

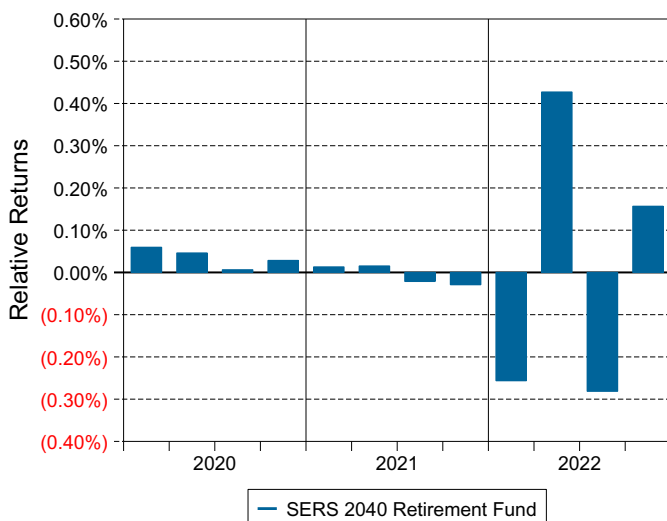
Quarterly Summary and Highlights

- SERS 2040 Retirement Fund's portfolio posted a 8.50% return for the quarter placing it in the 44 percentile of the Callan Target Date 2040 group for the quarter and in the 49 percentile for the last year.
- SERS 2040 Retirement Fund's portfolio outperformed the LifePath 2040 NL Index by 0.17% for the quarter and outperformed the LifePath 2040 NL Index for the year by 0.04%.

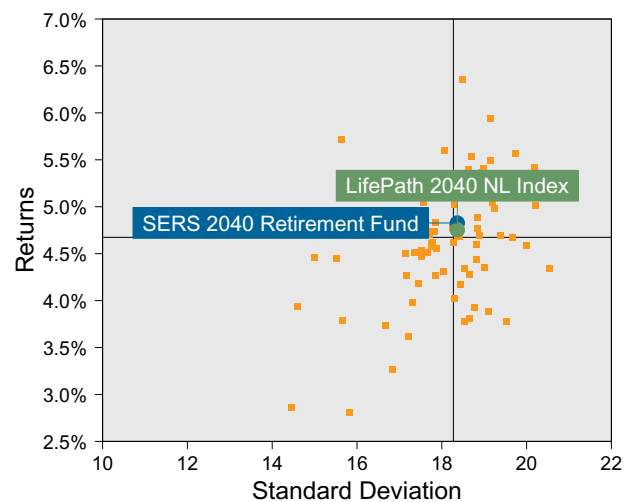
Performance vs Callan Target Date 2040 (Net)



Relative Return vs LifePath 2040 NL Index



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

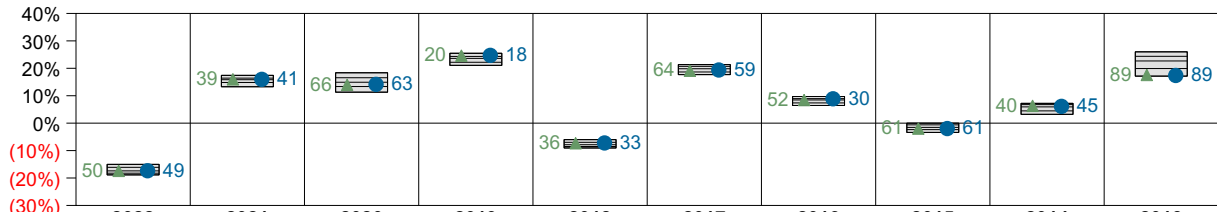


SERS 2040 Retirement Fund Return Analysis Summary

Return Analysis

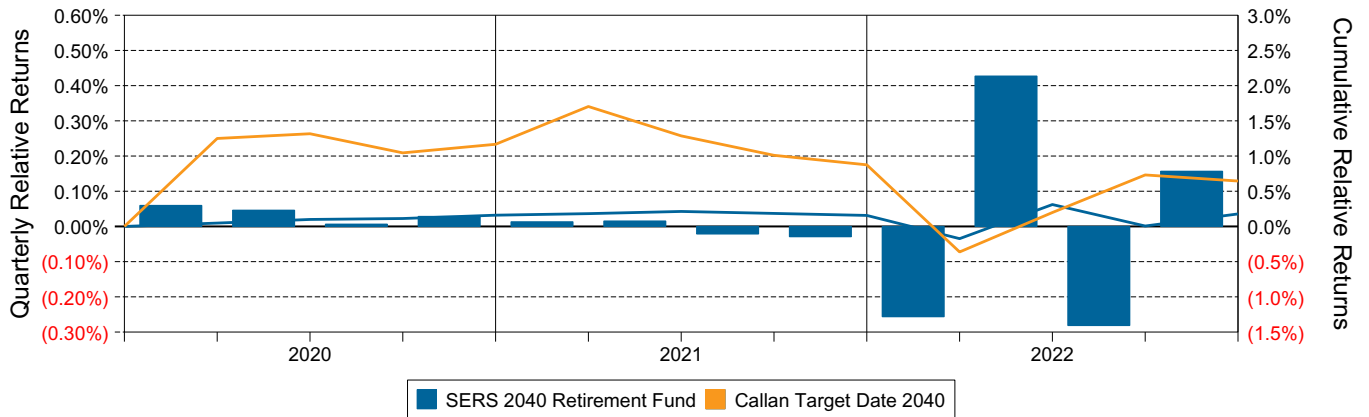
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate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

Performance vs Callan Target Date 2040 (Net)

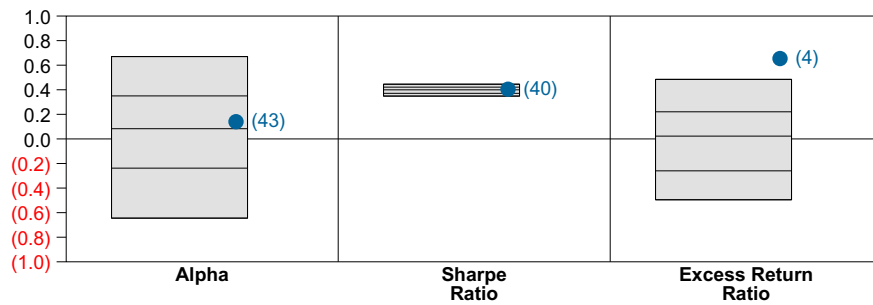


10th Percentile	(15.02)	17.43	18.37	25.47	(6.01)	21.35	9.71	(0.03)	7.22	26.00
25th Percentile	(16.11)	16.42	16.56	24.33	(6.99)	20.71	8.94	(0.62)	6.76	24.36
Median	(17.40)	15.84	14.91	23.62	(7.87)	19.84	8.46	(1.54)	5.94	22.67
75th Percentile	(18.24)	14.83	13.35	22.20	(8.52)	18.66	7.38	(2.36)	4.47	19.91
90th Percentile	(18.86)	13.27	11.29	21.07	(9.05)	17.70	6.44	(3.38)	3.21	17.15
SERS 2040 Retirement Fund	● (17.35)	15.96	14.14	24.71	(7.22)	19.38	8.88	(1.98)	6.12	17.39
LifePath 2040 NL Index	▲ (17.39)	15.99	13.98	24.61	(7.32)	19.13	8.43	(1.96)	6.32	17.59

Cumulative and Quarterly Relative Returns vs LifePath 2040 NL Index



Risk Adjusted Return Measures vs LifePath 2040 NL Index Rankings Against Callan Target Date 2040 (Net) Seven Years Ended December 31, 2022



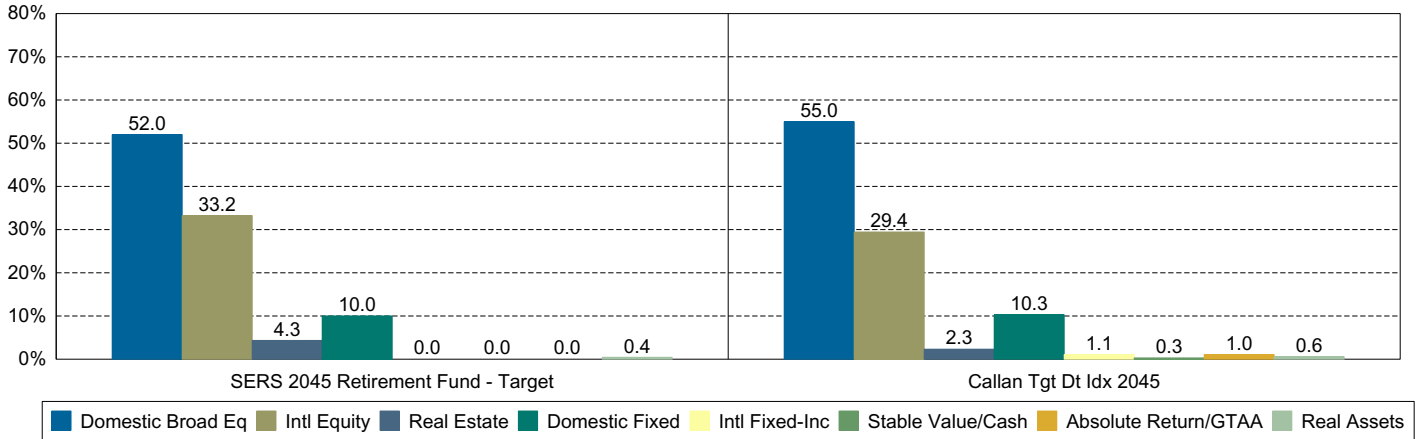
10th Percentile	0.67	0.45	0.48
25th Percentile	0.35	0.42	0.22
Median	0.08	0.40	0.02
75th Percentile	(0.24)	0.37	(0.26)
90th Percentile	(0.64)	0.35	(0.50)
SERS 2040 Retirement Fund	● 0.14	0.40	0.65

SERS 2045 Retirement Fund

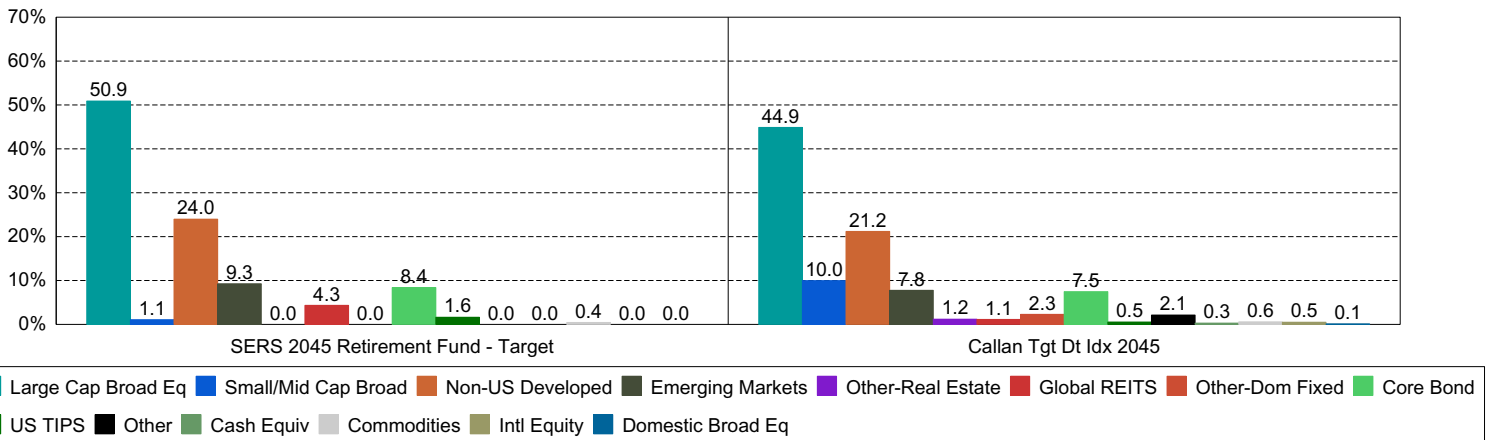
Target Date Fund Asset Allocation as of December 31, 2022

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.

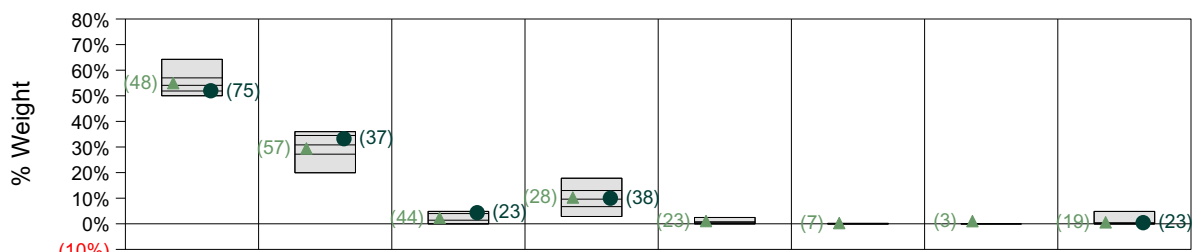
Macro-Level Asset Allocation



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	17.80	2.47	0.17	0.00	4.83
25th Percentile	57.00	34.50	4.00	13.00	0.80	0.00	0.00	0.43
Median	54.09	30.82	1.41	9.62	0.44	0.00	0.00	0.00
75th Percentile	51.87	27.20	0.00	6.71	0.00	0.00	0.00	0.00
90th Percentile	50.03	19.94	0.00	2.85	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 December 31, 2022

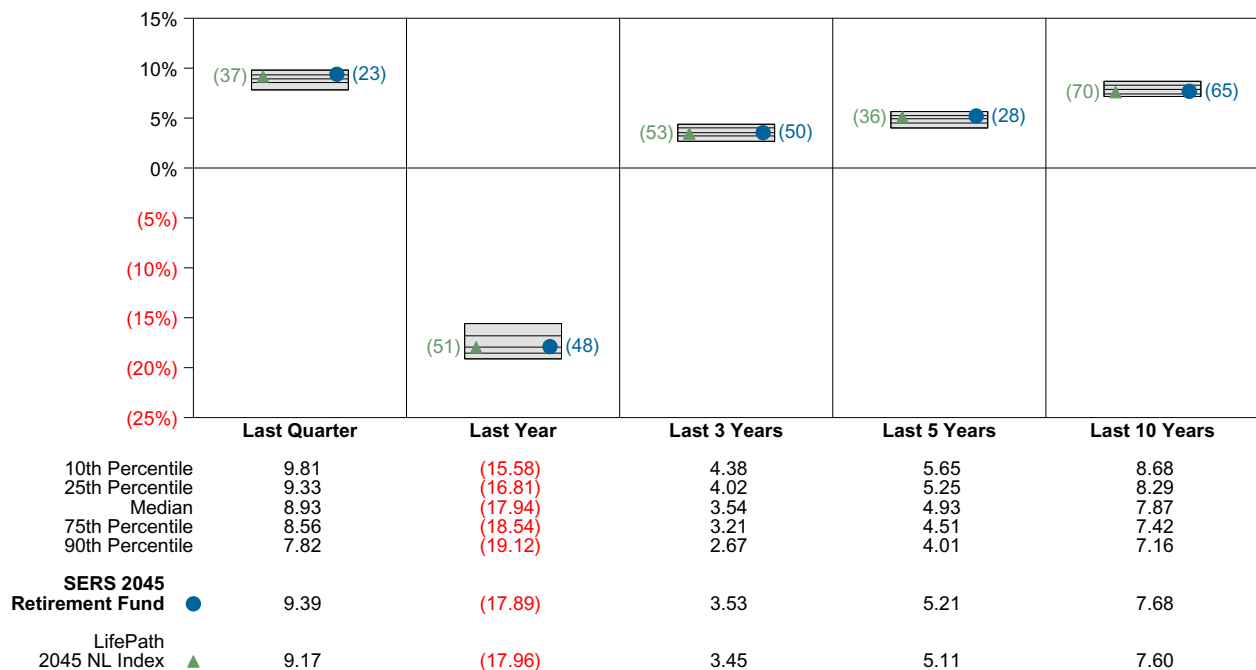
Investment Philosophy

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

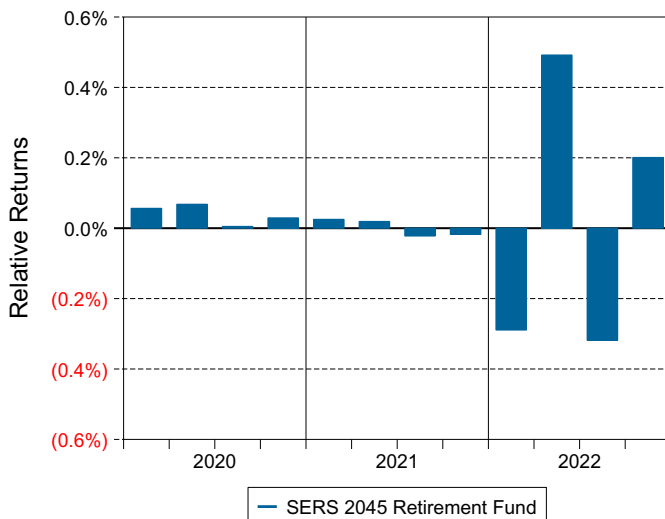
Quarterly Summary and Highlights

- SERS 2045 Retirement Fund's portfolio posted a 9.39% return for the quarter placing it in the 23 percentile of the Callan Target Date 2045 group for the quarter and in the 48 percentile for the last year.
- SERS 2045 Retirement Fund's portfolio outperformed the LifePath 2045 NL Index by 0.22% for the quarter and outperformed the LifePath 2045 NL Index for the year by 0.07%.

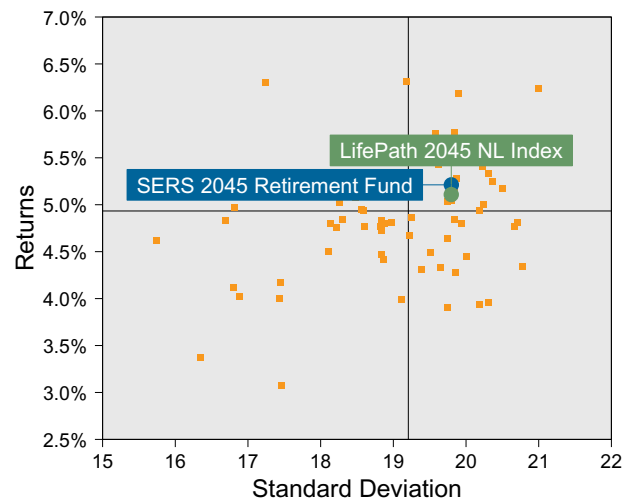
Performance vs Callan Target Date 2045 (Net)



Relative Return vs LifePath 2045 NL Index



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

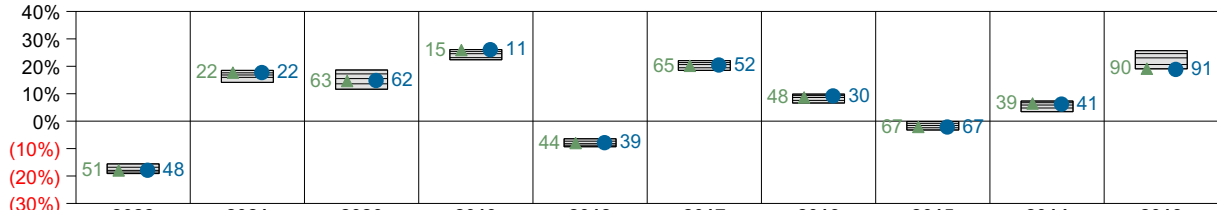


SERS 2045 Retirement Fund Return Analysis Summary

Return Analysis

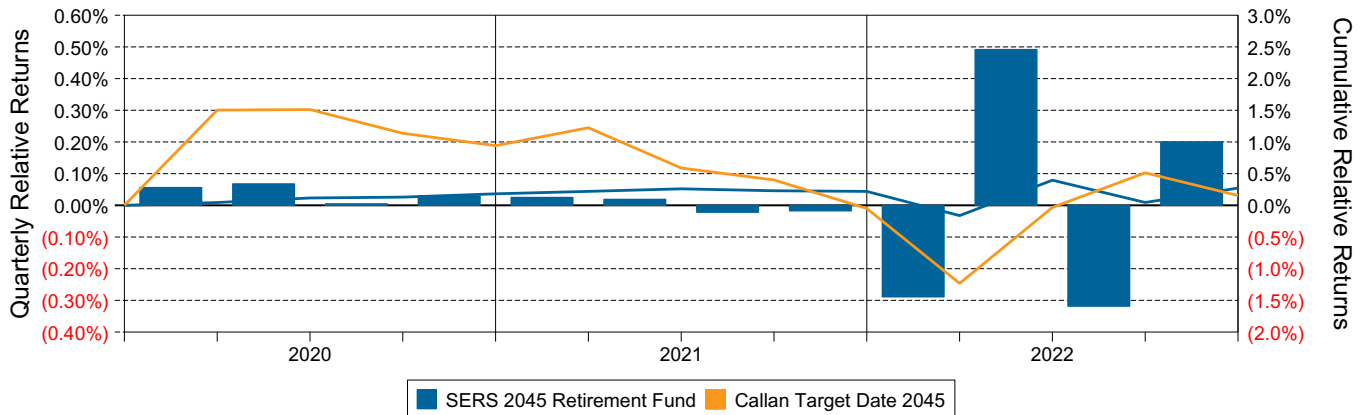
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate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

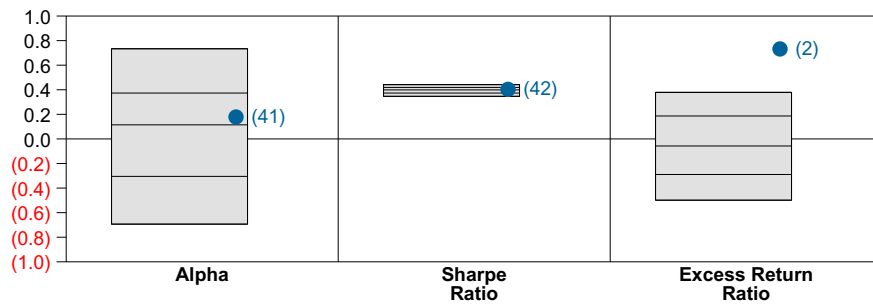


	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	(15.58)	18.52	18.65	26.11	(6.43)	22.08	9.86	(0.12)	7.33	25.70
25th Percentile	(16.81)	17.62	17.23	25.44	(7.30)	21.36	9.32	(0.79)	6.73	24.63
Median	(17.94)	16.83	15.52	24.60	(8.21)	20.63	8.63	(1.57)	5.87	23.08
75th Percentile	(18.54)	15.97	13.61	23.16	(8.78)	19.47	7.56	(2.41)	4.80	20.66
90th Percentile	(19.12)	14.14	11.64	22.38	(9.33)	18.51	6.62	(3.23)	3.45	19.08
SERS 2045 Retirement Fund	● (17.89)	17.72	14.83	26.05	(7.85)	20.47	9.20	(2.13)	6.22	18.86
LifePath 2045 NL F CBmrk	▲ (17.96)	17.71	14.64	25.92	(7.98)	20.18	8.65	(2.10)	6.45	19.13

Cumulative and Quarterly Relative Returns vs LifePath 2045 NL F CBmrk



Risk Adjusted Return Measures vs LifePath 2045 NL F CBmrk Rankings Against Callan Target Date 2045 (Net) Seven Years Ended December 31, 2022



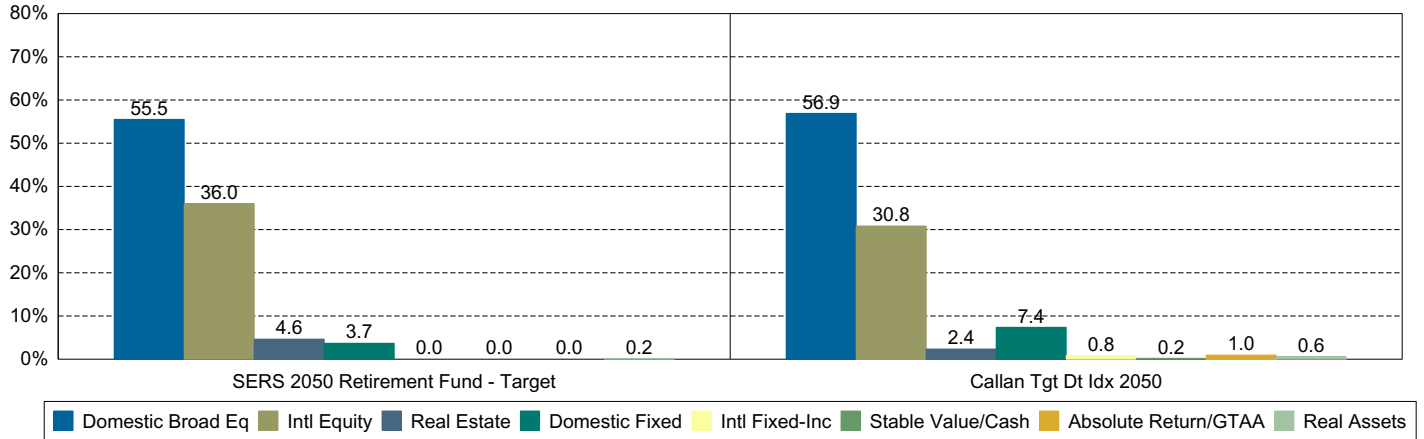
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.73	0.44	0.38
25th Percentile	0.37	0.42	0.19
Median	0.11	0.40	(0.06)
75th Percentile	(0.30)	0.37	(0.29)
90th Percentile	(0.69)	0.35	(0.50)
SERS 2045 Retirement Fund	● 0.18	0.40	0.73

SERS 2050 Retirement Fund

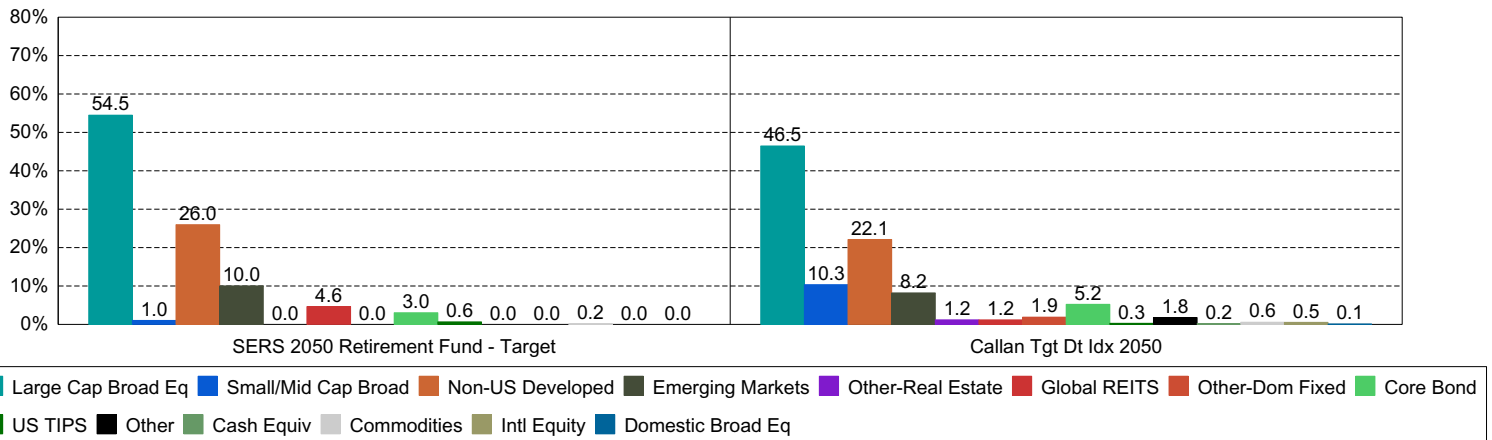
Target Date Fund Asset Allocation as of December 31, 2022

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.

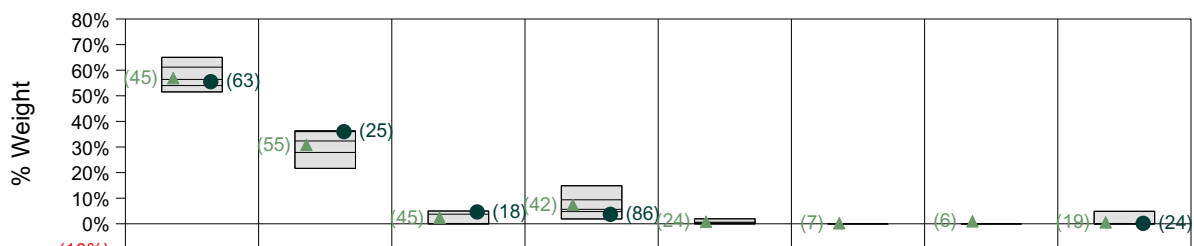
Macro-Level Asset Allocation



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	14.86	1.94	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	5.65	0.35	0.00	0.00	0.00
75th Percentile	54.00	27.87	0.00	4.78	0.00	0.00	0.00	0.00
90th Percentile	51.52	21.66	0.00	1.90	0.00	0.00	0.00	0.00
SERS 2050 Retirement Fund - Target	● 55.51	35.99	4.64	3.68	-	-	-	0.18
Callan Tgt Dt Idx 2050	▲ 56.90	30.83	2.35	7.37	0.82	0.21	0.95	0.56

SERS 2050 Retirement Fund

Period Ended December 31, 2022

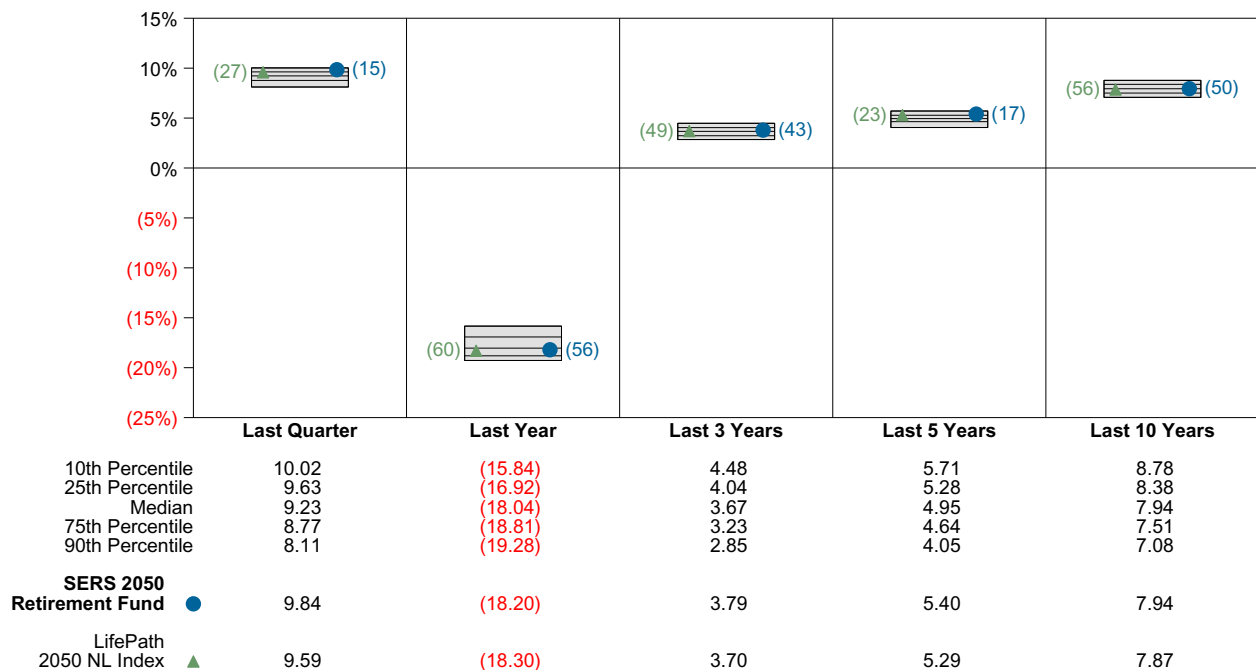
Investment Philosophy

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

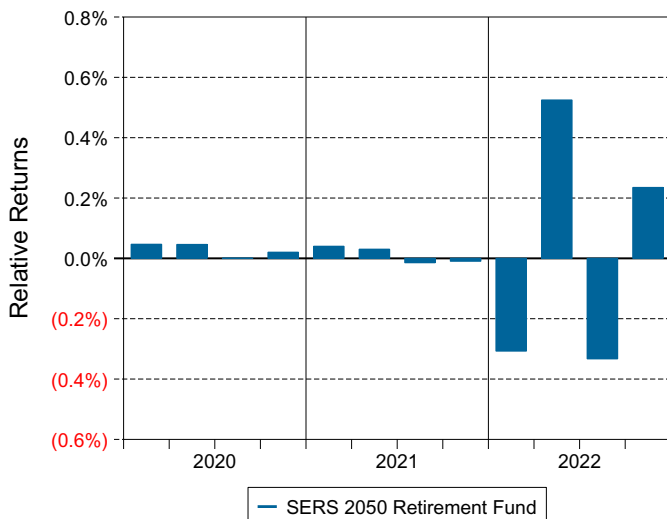
Quarterly Summary and Highlights

- SERS 2050 Retirement Fund's portfolio posted a 9.84% return for the quarter placing it in the 15 percentile of the Callan Target Date 2050 group for the quarter and in the 56 percentile for the last year.
- SERS 2050 Retirement Fund's portfolio outperformed the LifePath 2050 NL Index by 0.26% for the quarter and outperformed the LifePath 2050 NL Index for the year by 0.10%.

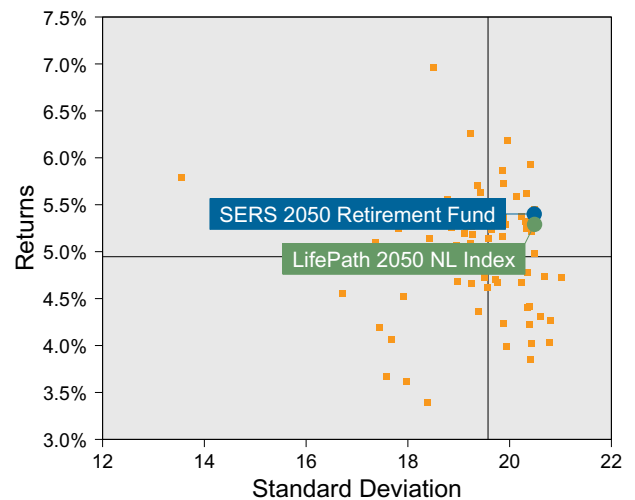
Performance vs Callan Target Date 2050 (Net)



Relative Return vs LifePath 2050 NL Index



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

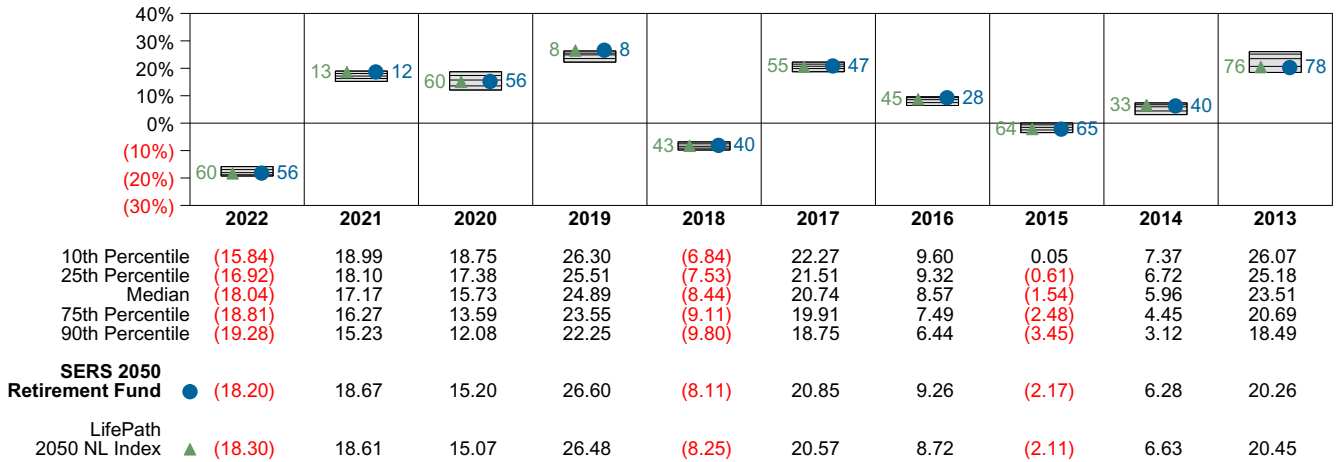


SERS 2050 Retirement Fund Return Analysis Summary

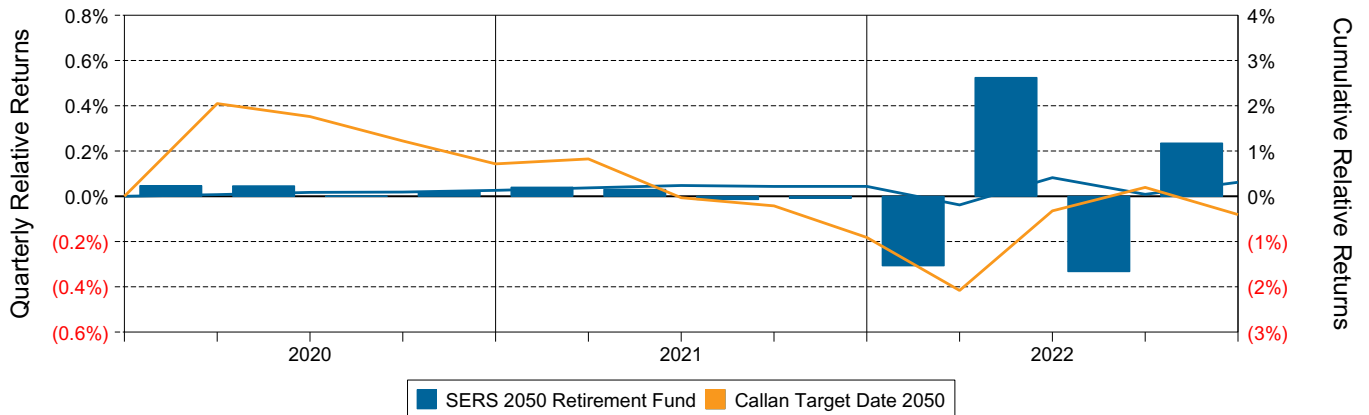
Return Analysis

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

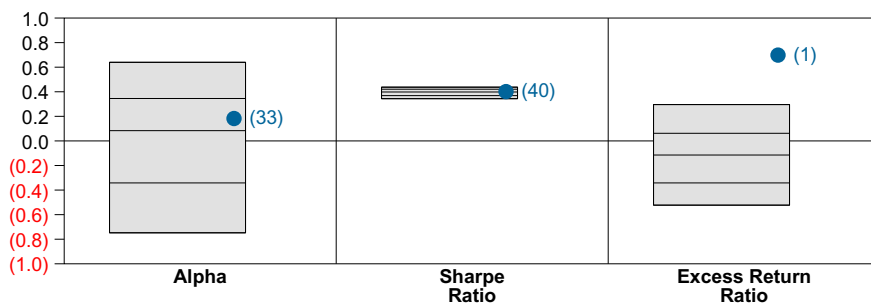
Performance vs Callan Target Date 2050 (Net)



Cumulative and Quarterly Relative Returns vs LifePath 2050 NL Index



Risk Adjusted Return Measures vs LifePath 2050 NL Index Rankings Against Callan Target Date 2050 (Net) Seven Years Ended December 31, 2022

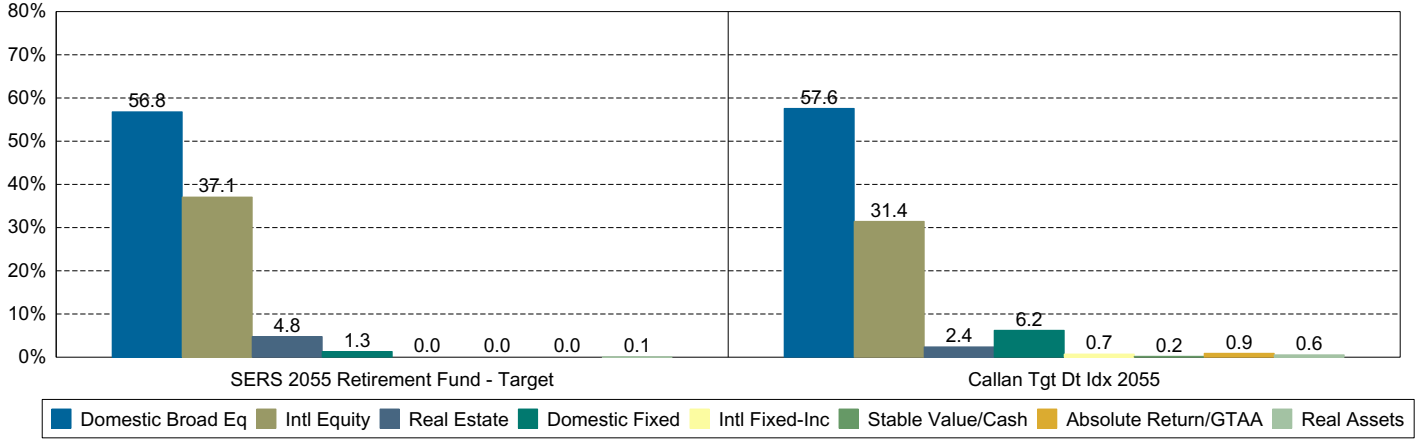


SERS 2055 Retirement Fund

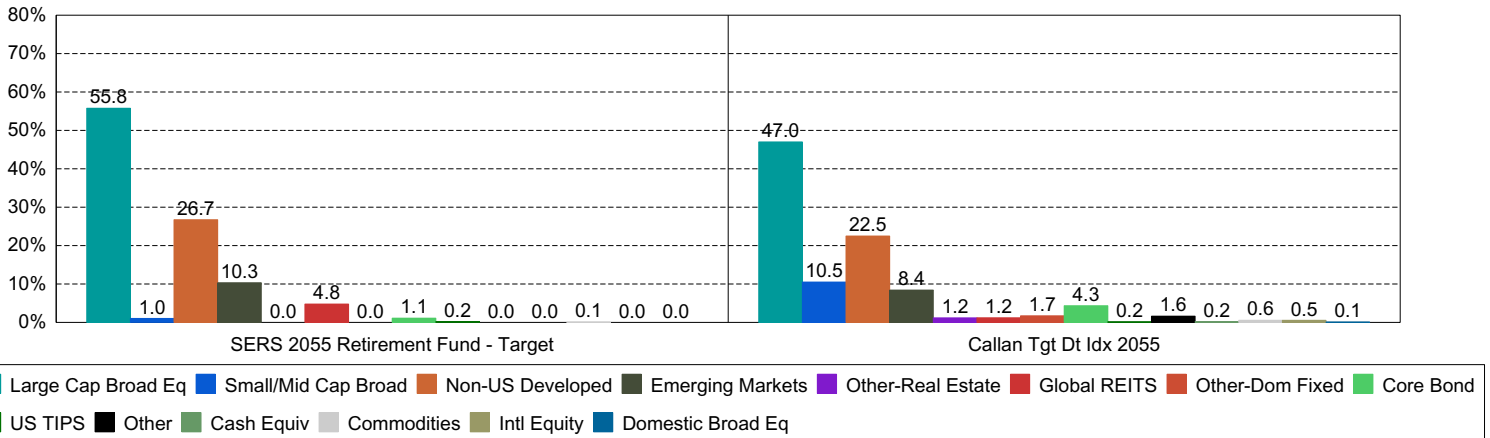
Target Date Fund Asset Allocation as of December 31, 2022

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.

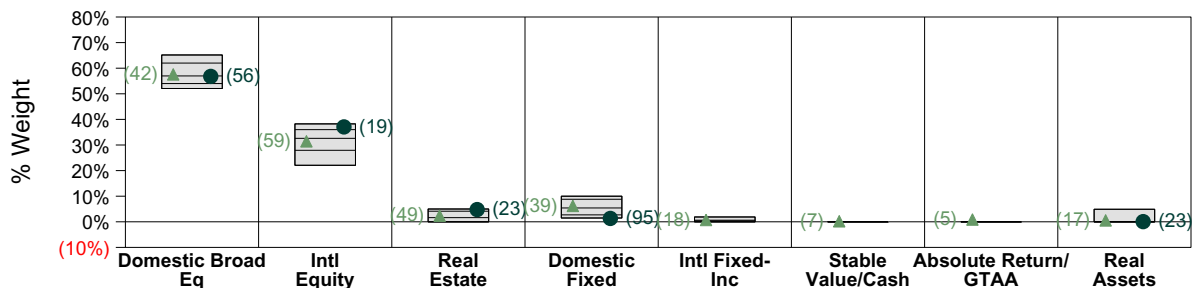
Macro-Level Asset Allocation



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	1.89	0.00	0.00	4.90
25th Percentile	62.00	36.00	4.13	8.80	0.62	0.00	0.00	0.06
Median	56.98	32.60	1.62	5.40	0.35	0.00	0.00	0.00
75th Percentile	54.00	27.93	0.00	2.70	0.00	0.00	0.00	0.00
90th Percentile	52.07	22.07	0.00	1.47	0.00	0.00	0.00	0.00
SERS 2055 Retirement Fund - Target	● 56.79	37.06	4.77	1.31	-	-	-	0.06
Callan Tgt Dt Idx 2055	▲ 57.58	31.44	2.38	6.22	0.72	0.20	0.90	0.55

SERS 2055 Retirement Fund

Period Ended December 31, 2022

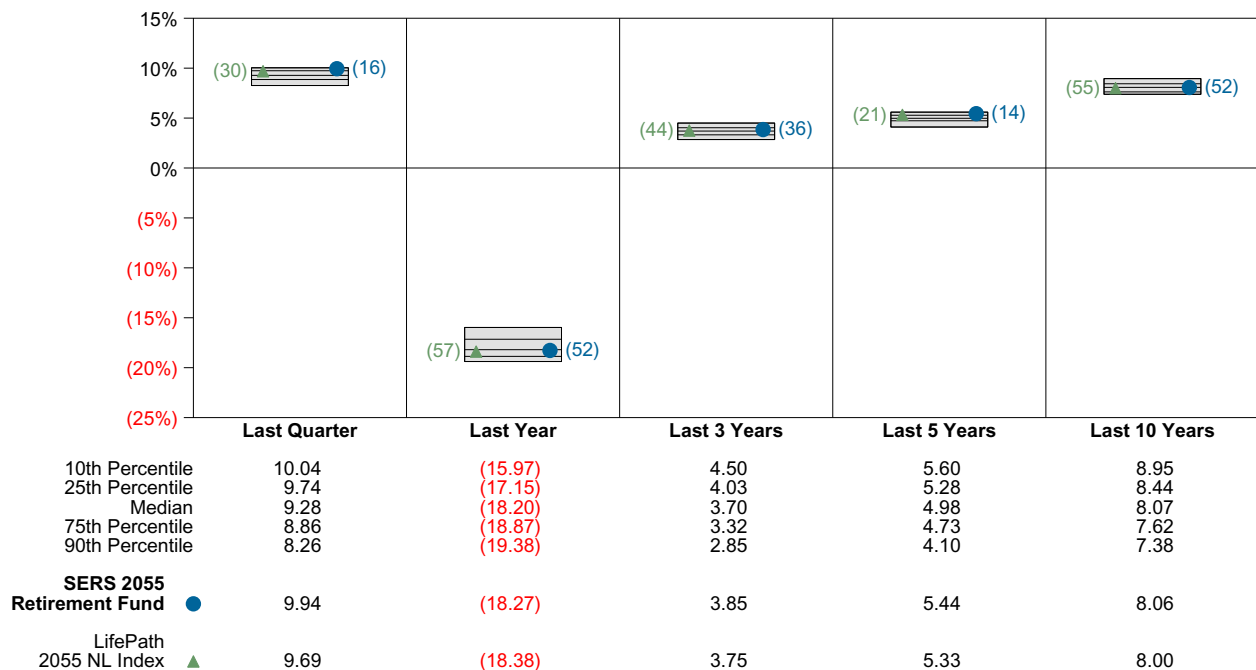
Investment Philosophy

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

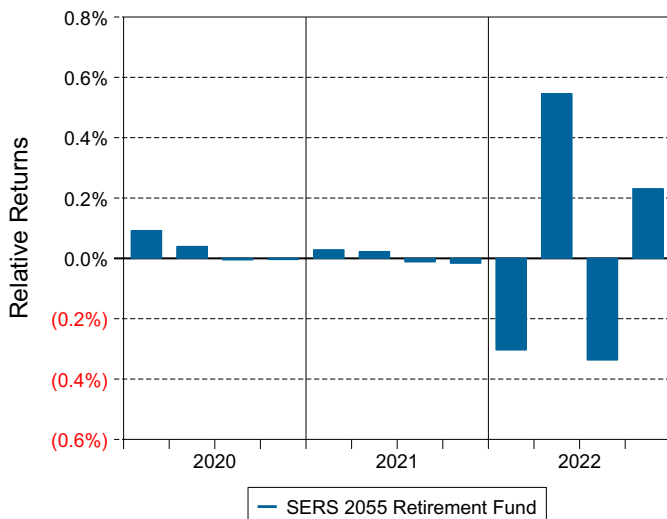
Quarterly Summary and Highlights

- SERS 2055 Retirement Fund's portfolio posted a 9.94% return for the quarter placing it in the 16 percentile of the Callan Target Date 2055 group for the quarter and in the 52 percentile for the last year.
- SERS 2055 Retirement Fund's portfolio outperformed the LifePath 2055 NL Index by 0.25% for the quarter and outperformed the LifePath 2055 NL Index for the year by 0.11%.

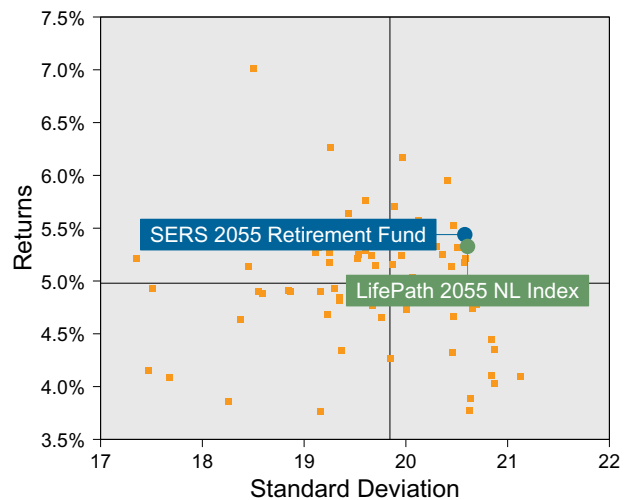
Performance vs Callan Target Date 2055 (Net)



Relative Return vs LifePath 2055 NL Index



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

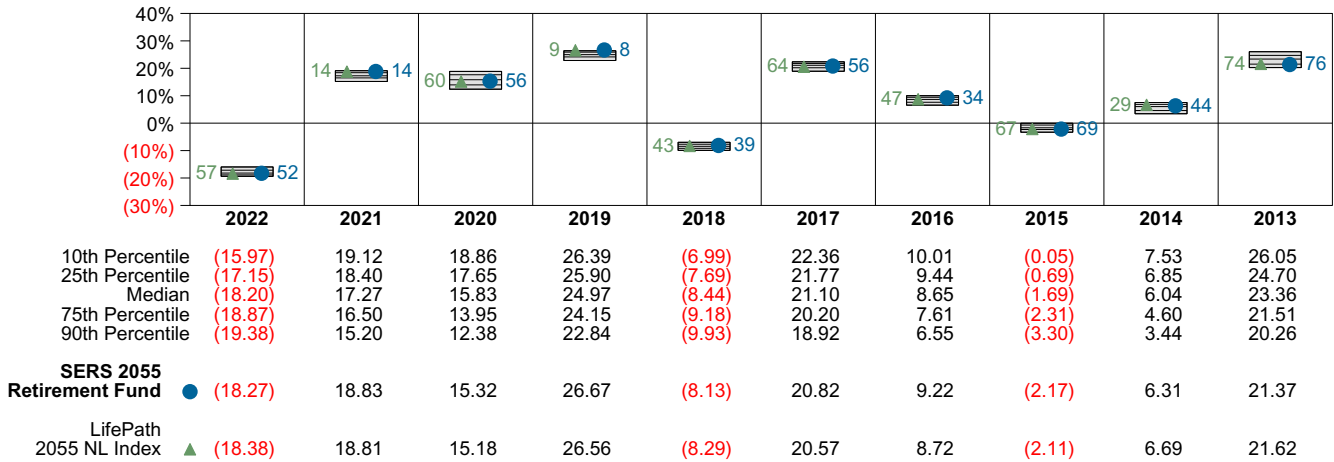


SERS 2055 Retirement Fund Return Analysis Summary

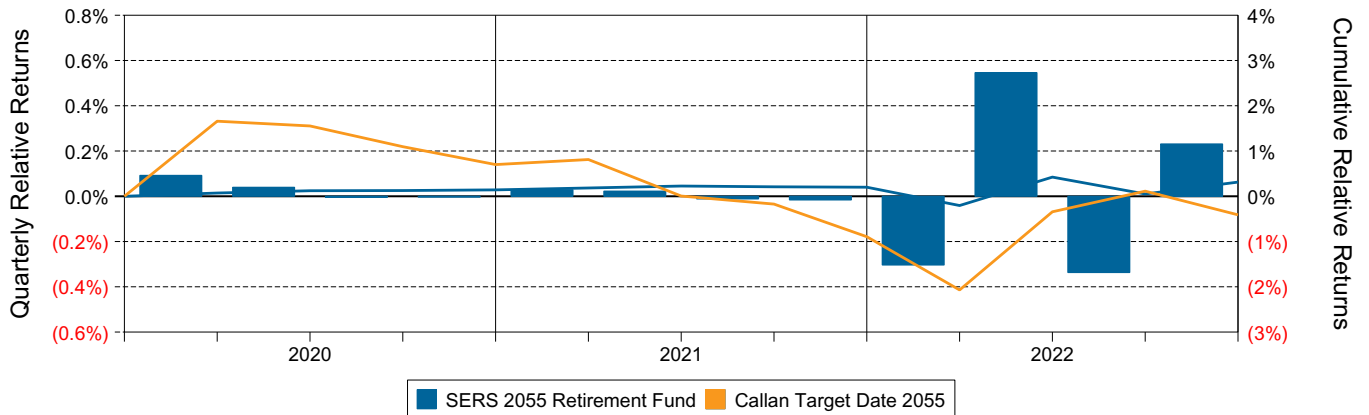
Return Analysis

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

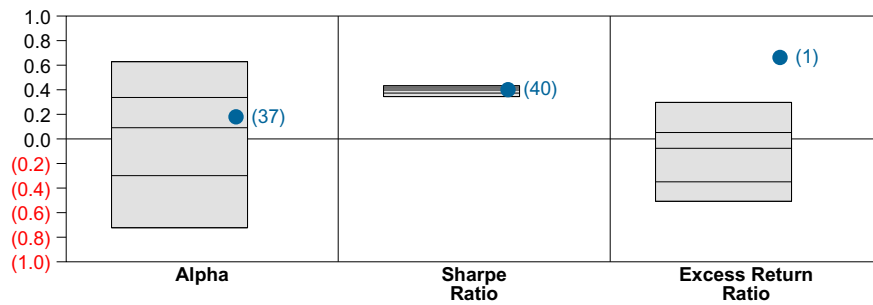
Performance vs Callan Target Date 2055 (Net)



Cumulative and Quarterly Relative Returns vs LifePath 2055 NL Index



Risk Adjusted Return Measures vs LifePath 2055 NL Index Rankings Against Callan Target Date 2055 (Net) Seven Years Ended December 31, 2022



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.63	0.43	0.30
25th Percentile	0.34	0.41	0.05
Median	0.09	0.40	(0.08)
75th Percentile	(0.30)	0.37	(0.35)
90th Percentile	(0.72)	0.34	(0.51)
SERS 2055 Retirement Fund	0.18	0.40	0.66

SERS 2060 Retirement Fund

Period Ended December 31, 2022

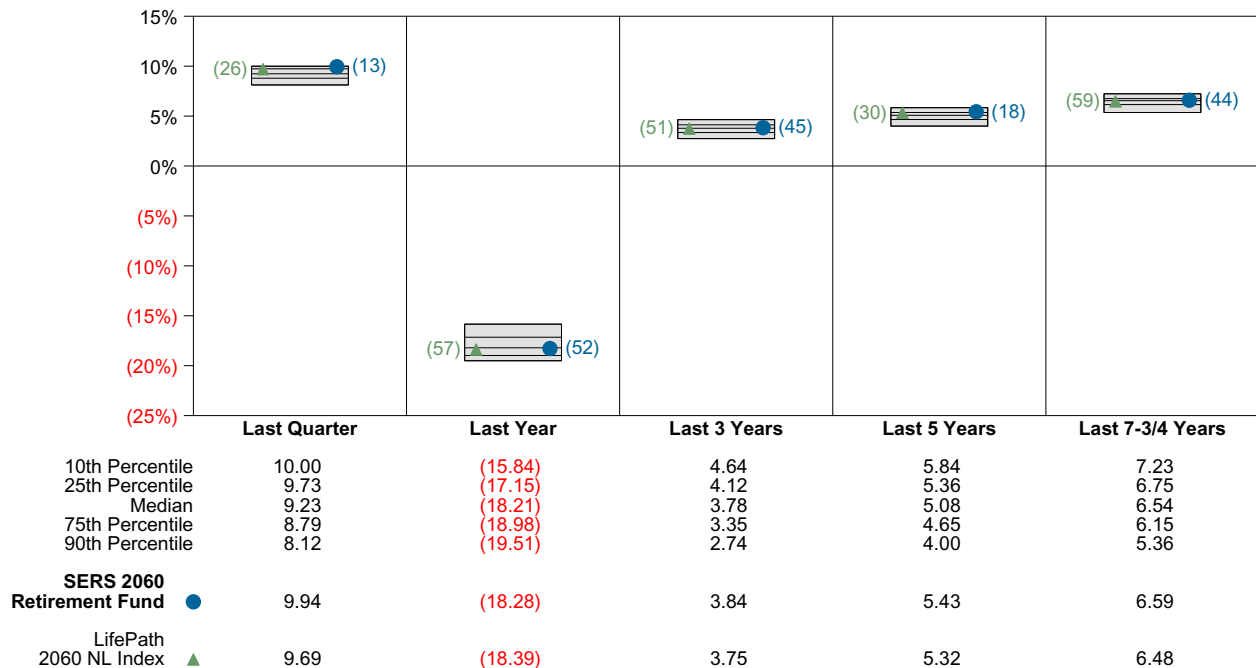
Investment Philosophy

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

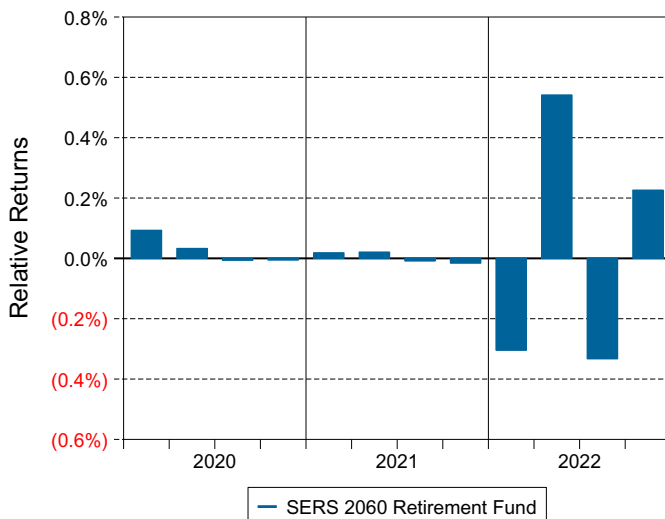
Quarterly Summary and Highlights

- SERS 2060 Retirement Fund's portfolio posted a 9.94% return for the quarter placing it in the 13 percentile of the Callan Target Date 2060 group for the quarter and in the 52 percentile for the last year.
- SERS 2060 Retirement Fund's portfolio outperformed the LifePath 2060 NL Index by 0.25% for the quarter and outperformed the LifePath 2060 NL Index for the year by 0.10%.

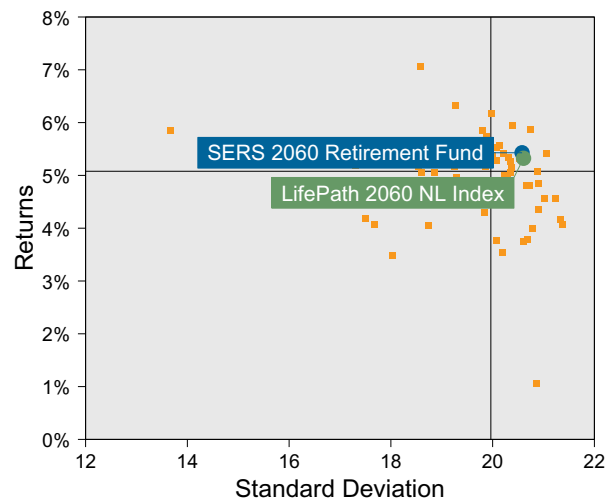
Performance vs Callan Target Date 2060 (Net)



Relative Return vs LifePath 2060 NL Index



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

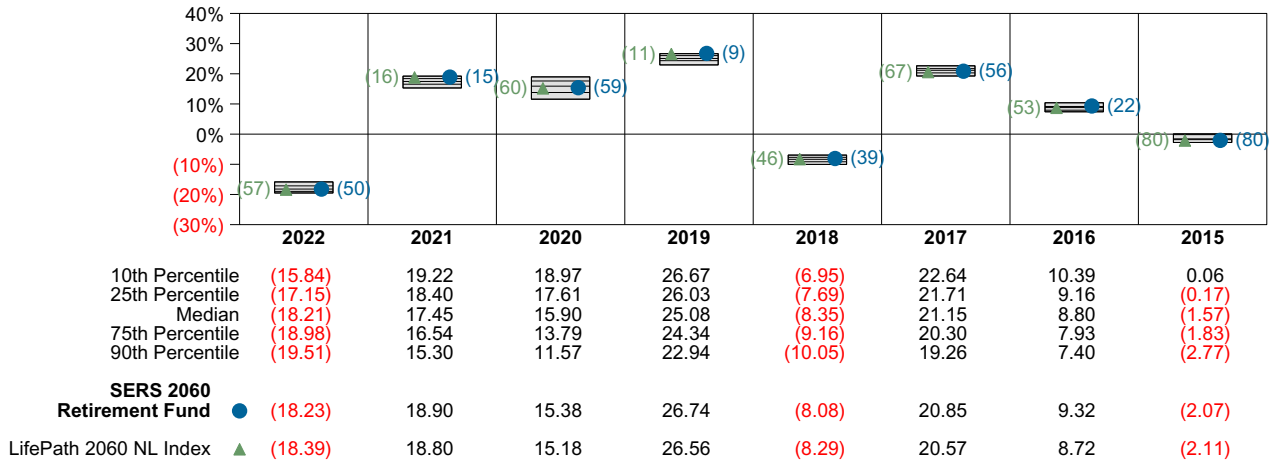


SERS 2060 Retirement Fund Return Analysis Summary

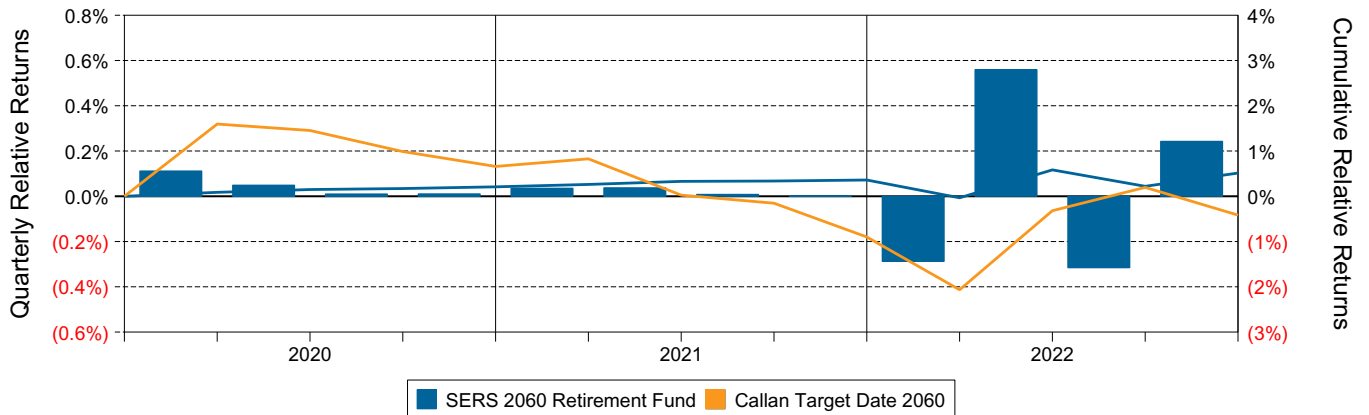
Return Analysis

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.

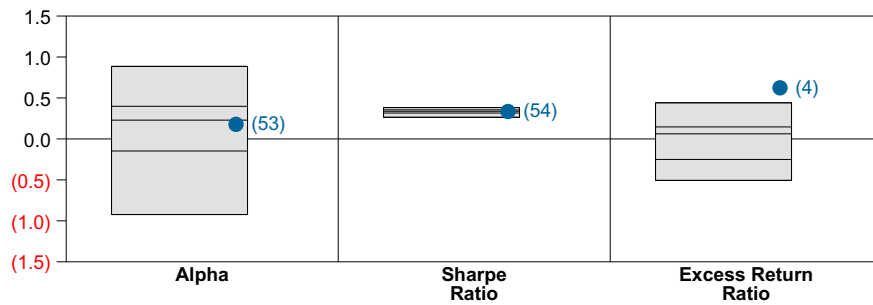
Performance vs Callan Target Date 2060 (Net)



Cumulative and Quarterly Relative Returns vs LifePath 2060 NL Index



Risk Adjusted Return Measures vs LifePath 2060 NL Index Rankings Against Callan Target Date 2060 (Net) Seven and Three-Quarter Years Ended December 31, 2022



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.89	0.38	0.44
25th Percentile	0.40	0.35	0.15
Median	0.23	0.34	0.06
75th Percentile	(0.15)	0.32	(0.25)
90th Percentile	(0.92)	0.26	(0.51)
SERS 2060 Retirement Fund	0.18	0.33	0.62

SERS 2065 Retirement Fund

Period Ended December 31, 2022

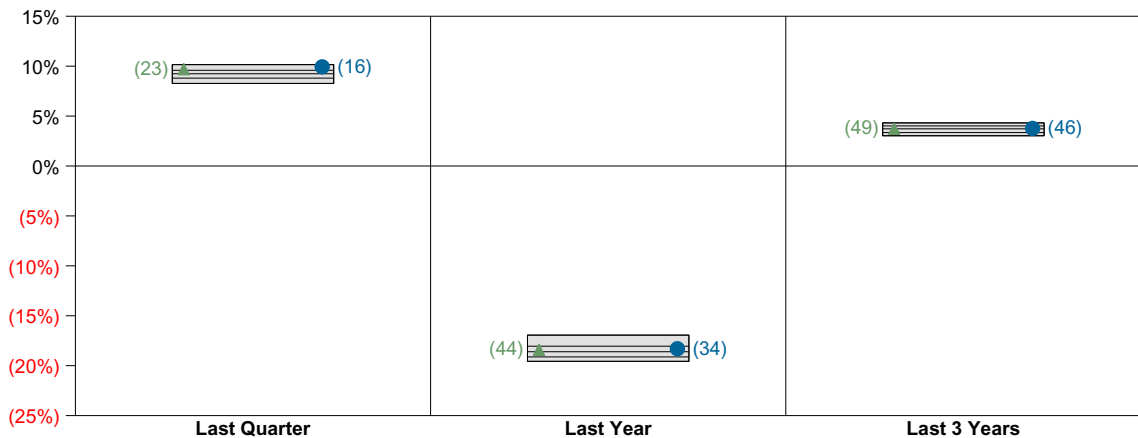
Investment Philosophy

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

Quarterly Summary and Highlights

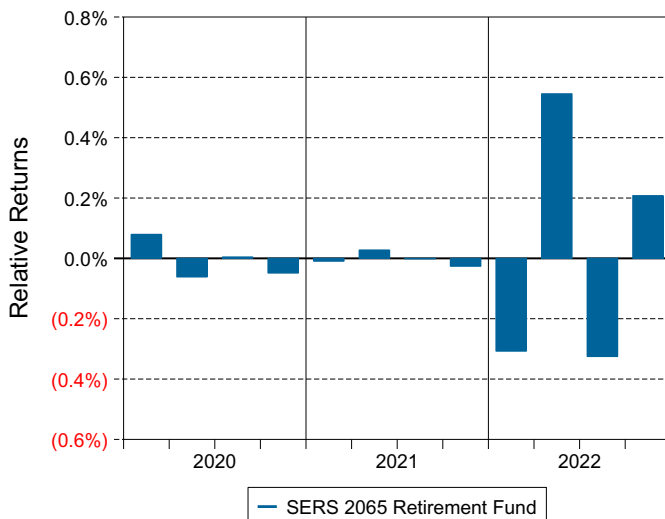
- SERS 2065 Retirement Fund's portfolio posted a 9.93% return for the quarter placing it in the 16 percentile of the Callan Target Date 2065 group for the quarter and in the 34 percentile for the last year.
- SERS 2065 Retirement Fund's portfolio outperformed the LifePath 2065 NL Index by 0.23% for the quarter and outperformed the LifePath 2065 NL Index for the year by 0.10%.

Performance vs Callan Target Date 2065 (Net)

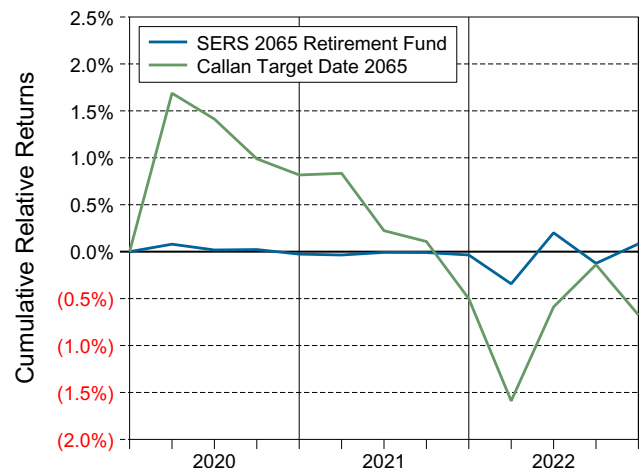


	Last Quarter	Last Year	Last 3 Years
10th Percentile	10.15	(16.94)	4.32
25th Percentile	9.59	(18.05)	4.01
Median	9.24	(18.60)	3.72
75th Percentile	8.80	(19.12)	3.35
90th Percentile	8.27	(19.57)	3.03
SERS 2065 Retirement Fund ●	9.93	(18.30)	3.77
LifePath 2065 NL Index ▲	9.70	(18.40)	3.74

Relative Return vs LifePath 2065 NL Index



Cumulative Returns vs LifePath 2065 NL Index



SERS U.S. Large Company Index Fund

Period Ended December 31, 2022

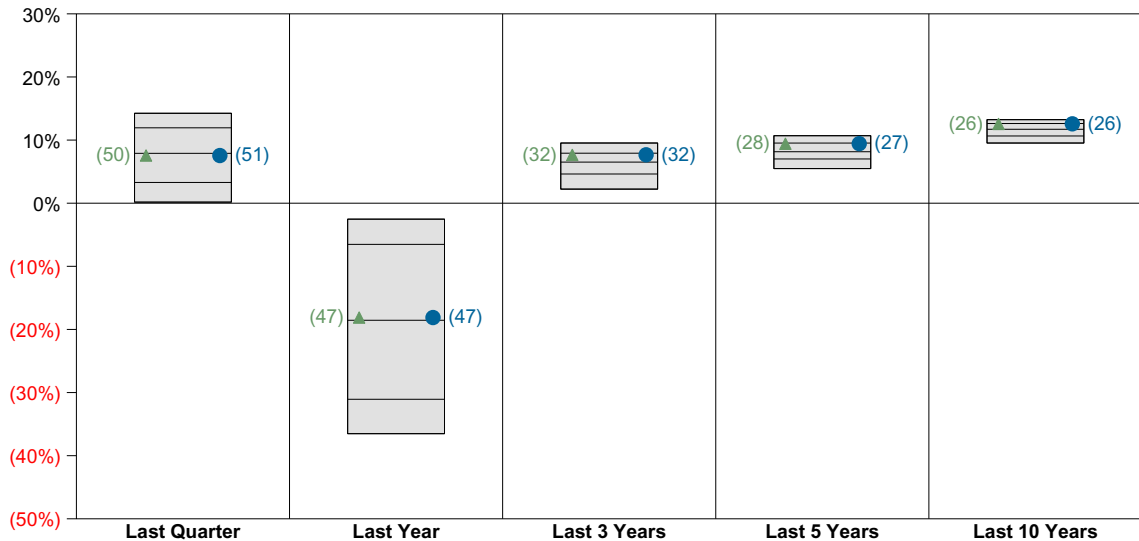
Investment Philosophy

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 Fund's portfolio posted a 7.55% return for the quarter placing it in the 51 percentile of the Callan Large Cap Broad Equity Mut Funds group for the quarter and in the 47 percentile for the last year.
- SERS U.S. Large Company Index Fund's portfolio underperformed the S&P 500 Index by 0.01% for the quarter and underperformed the S&P 500 Index for the year by 0.01%.

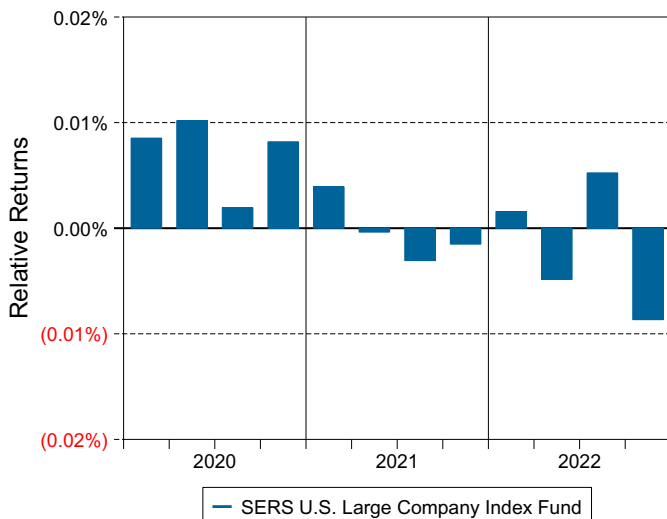
Performance vs Callan Large Cap Broad Equity Mut Funds (Institutional Net)



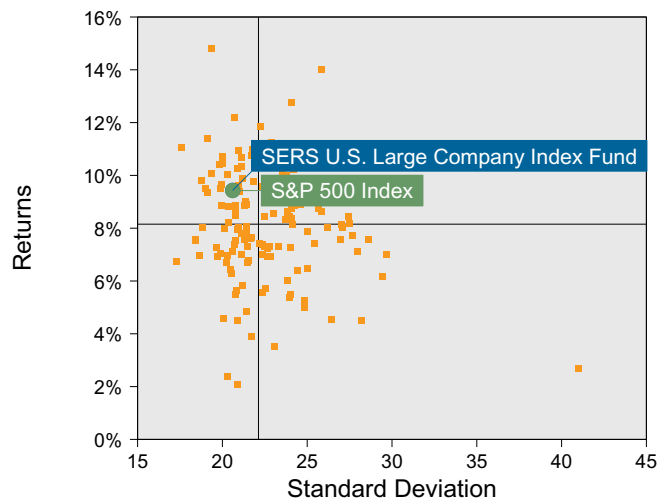
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	14.25	(2.53)	9.53	10.69	13.24
25th Percentile	11.95	(6.52)	7.92	9.53	12.63
Median	7.90	(18.55)	6.51	8.15	11.71
75th Percentile	3.29	(31.06)	4.63	7.01	10.65
90th Percentile	0.17	(36.52)	2.23	5.48	9.53

SERS U.S. Large Company Index Fund ● 7.55 (18.12) 7.67 9.43 12.57
S&P 500 Index ▲ 7.56 (18.11) 7.66 9.42 12.56

Relative Return vs S&P 500 Index



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

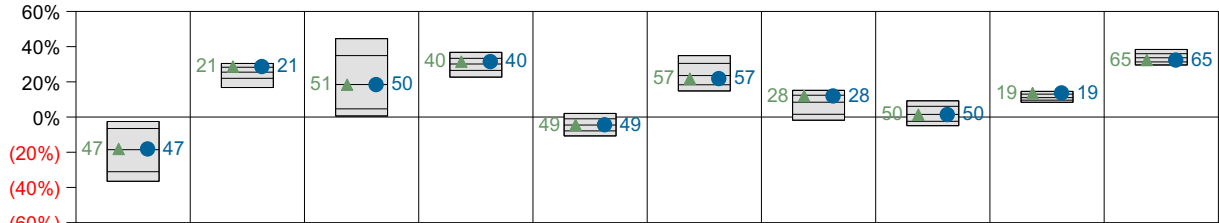


SERS U.S. Large Company Index Fund Return Analysis Summary

Return Analysis

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

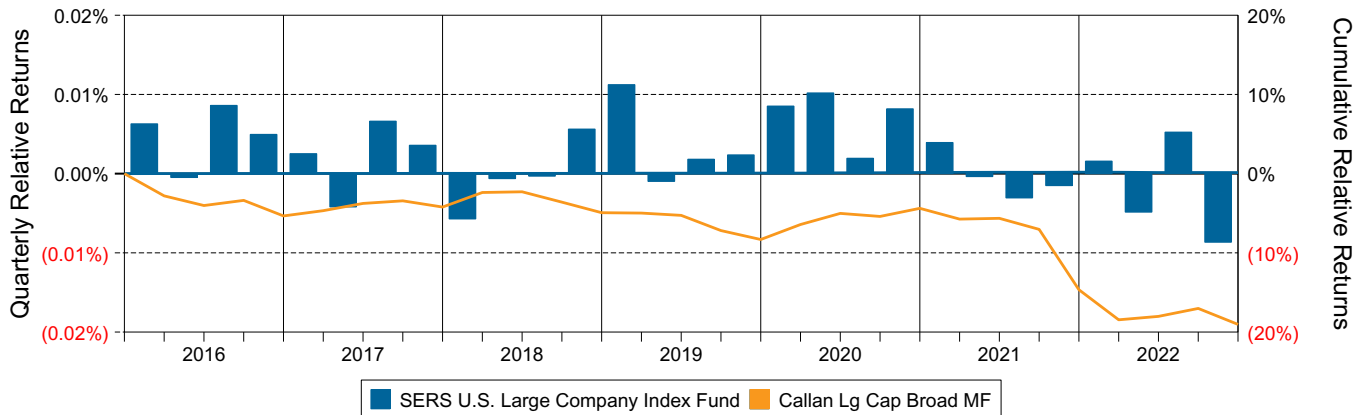
Performance vs Callan Large Cap Broad Equity Mut Funds (Institutional Net)



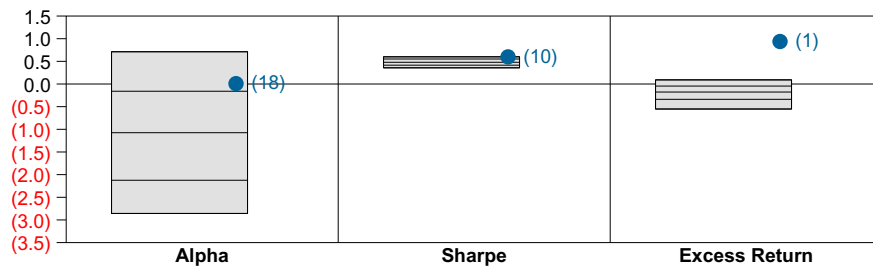
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	(2.53)	30.44	44.54	36.76	2.05	34.91	15.17	9.23	14.58	38.40
25th Percentile	(6.52)	28.29	34.90	33.34	(1.00)	30.48	12.39	6.09	13.01	35.98
Median	(18.55)	25.50	18.47	30.14	(4.54)	23.56	8.43	1.50	11.02	33.69
75th Percentile	(31.06)	22.00	4.64	26.51	(7.86)	18.33	1.56	(2.42)	9.59	31.31
90th Percentile	(36.52)	16.77	0.58	22.66	(10.72)	14.82	(1.82)	(4.91)	8.38	29.58

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
SERS U.S. Large Company Index Fund	● (18.12)	28.70	18.43	31.51	(4.39)	21.84	11.98	1.40	13.71	32.38
S&P 500 Index	▲ (18.11)	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 December 31, 2022



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.71	0.60	0.09
25th Percentile	(0.16)	0.55	(0.05)
Median	(1.07)	0.48	(0.18)
75th Percentile	(2.12)	0.42	(0.34)
90th Percentile	(2.86)	0.36	(0.55)

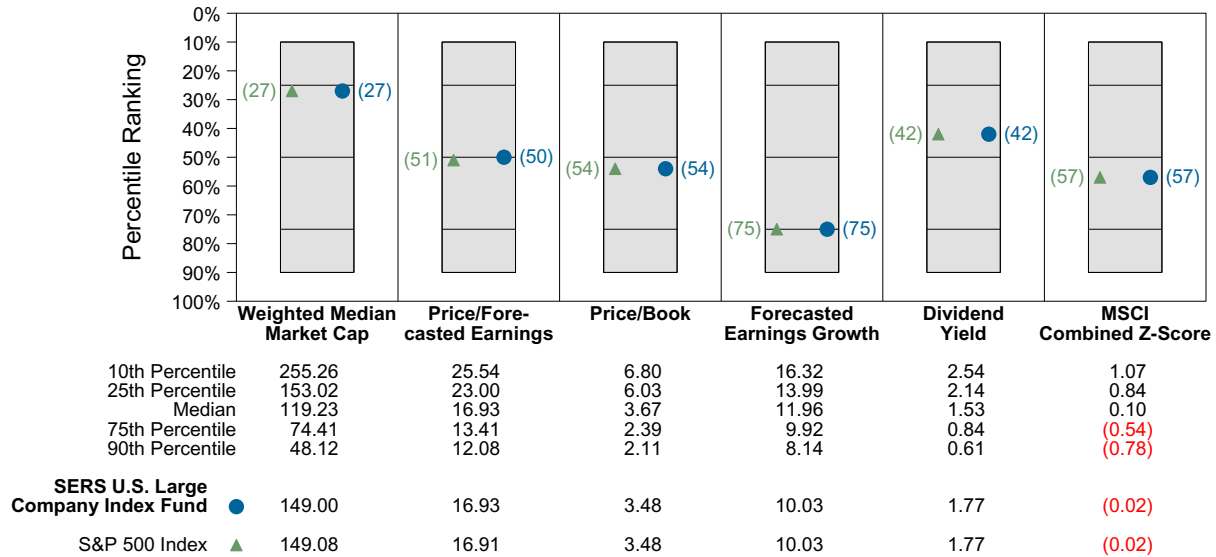
SERS U.S. Large Company Index Fund	●	0.01	0.60	0.94
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SERS U.S. Large Company Index Fund Equity Characteristics Analysis Summary

Portfolio Characteristics

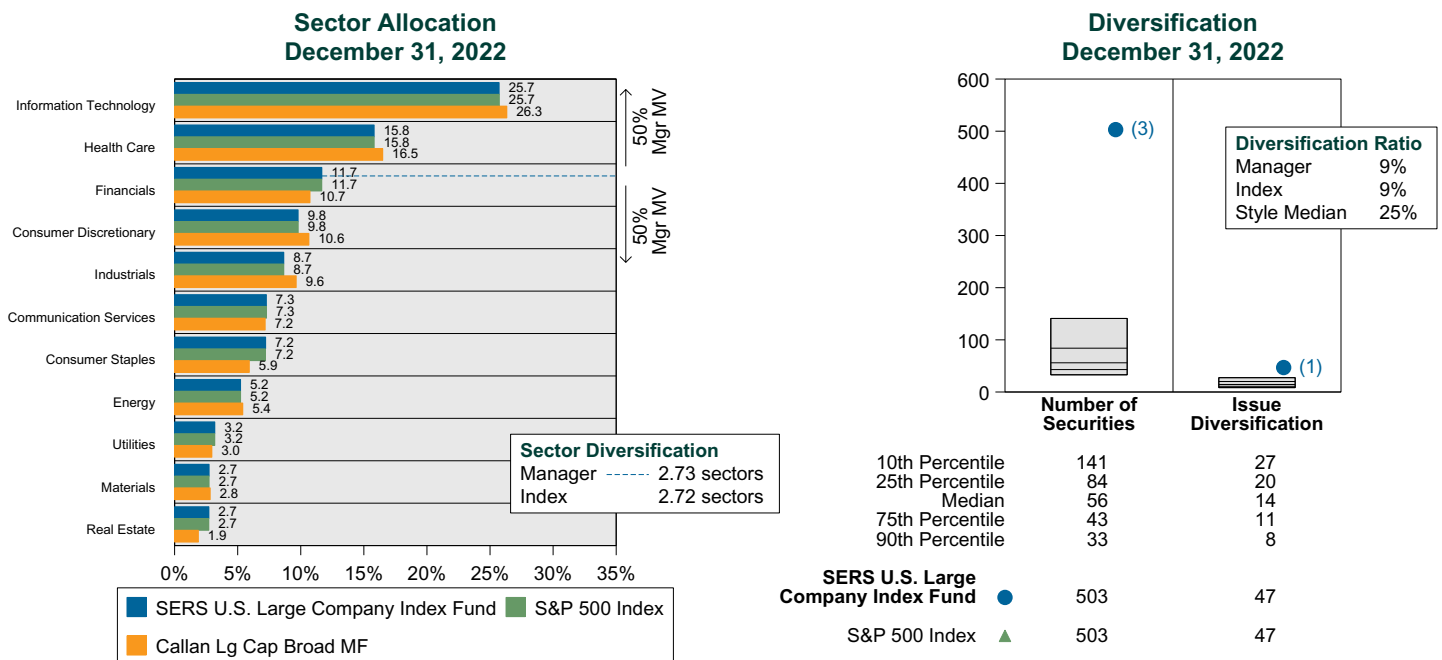
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against Callan Large Cap Broad Equity Mut Funds as of December 31, 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 Fund Top 10 Portfolio Holdings Characteristics as of December 31, 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	\$68,810,604	6.0%	(5.83)%	2066.94	20.48	0.71%	8.54%
Microsoft Corp	Information Technology	\$63,314,277	5.6%	3.26%	1787.73	23.13	1.13%	12.50%
Amazon.Com	Consumer Discretionary	\$26,403,921	2.3%	(25.66)%	856.94	51.16	0.00%	26.00%
Berkshire Hathaway Inc Del Cl B New	Financials	\$19,710,819	1.7%	15.68%	401.92	20.19	0.00%	14.40%
Alphabet Inc Cl A	Communication Services	\$18,664,146	1.6%	(8.09)%	527.00	16.97	0.00%	8.95%
Unitedhealth Group	Health Care	\$17,544,130	1.5%	5.30%	495.37	21.25	1.24%	14.09%
Alphabet Inc Cl C	Communication Services	\$16,638,760	1.5%	(7.72)%	540.01	16.99	0.00%	8.95%
Johnson & Johnson	Health Care	\$16,356,824	1.4%	8.83%	461.85	17.02	2.56%	3.60%
Exxon Mobil Corp	Energy	\$16,087,630	1.4%	27.35%	454.22	9.86	3.30%	25.42%
JPMorgan Chase & Co	Financials	\$13,930,620	1.2%	29.49%	393.34	10.43	2.98%	(1.33)%

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
Halliburton Co	Energy	\$1,262,303	0.1%	60.38%	35.73	13.41	1.22%	52.95%
Universal Hlth Svcs Inc Cl B	Health Care	\$319,574	0.0%	60.02%	9.04	13.02	0.57%	2.92%
Boeing Co	Industrials	\$3,779,488	0.3%	57.33%	113.53	80.17	0.00%	(31.46)%
Moderna Inc	Health Care	\$2,103,922	0.2%	51.90%	69.01	40.05	0.00%	(49.65)%
Schlumberger	Energy	\$2,694,707	0.2%	49.43%	75.81	17.88	1.31%	44.40%
Caterpillar	Industrials	\$4,415,286	0.4%	46.92%	124.67	15.78	2.00%	12.91%
Baker Hughes A Ge Co Cl A	Energy	\$1,045,560	0.1%	41.81%	29.57	17.81	2.57%	46.05%
Intuitive Surgical Inc	Health Care	\$3,320,982	0.3%	41.57%	93.77	48.60	0.00%	8.27%
Nike Inc Cl B	Consumer Discretionary	\$5,220,178	0.5%	41.20%	147.40	32.20	1.16%	7.44%
Dexcom Inc	Health Care	\$1,546,411	0.1%	40.60%	43.74	104.95	0.00%	32.90%

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
Tesla Mtrs Inc	Consumer Discretionary	\$11,709,448	1.0%	(53.56)%	388.97	22.89	0.00%	39.91%
Generac Hldgs Inc	Industrials	\$224,413	0.0%	(43.49)%	6.38	14.07	0.00%	0.43%
Catalent Inc	Health Care	\$288,976	0.0%	(37.80)%	8.10	12.99	0.00%	8.90%
Svb Finl Group	Financials	\$480,642	0.0%	(31.46)%	13.60	10.61	0.00%	8.00%
Lincoln National Corp	Financials	\$166,583	0.0%	(29.38)%	5.20	3.40	5.86%	8.20%
Centurylink Inc	Communication Services	\$176,573	0.0%	(28.30)%	5.40	6.93	0.00%	(16.75)%
Amazon.Com	Consumer Discretionary	\$26,403,921	2.3%	(25.66)%	856.94	51.16	0.00%	26.00%
Signature Bk New York N Y	Financials	\$254,295	0.0%	(23.41)%	7.25	6.23	1.94%	21.32%
Albemarle Corp	Materials	\$899,852	0.1%	(17.86)%	25.41	7.66	0.73%	77.17%
Warner Bros Discovery Inc	Communication Services	\$747,481	0.1%	(17.57)%	23.02	91.15	0.00%	(5.23)%

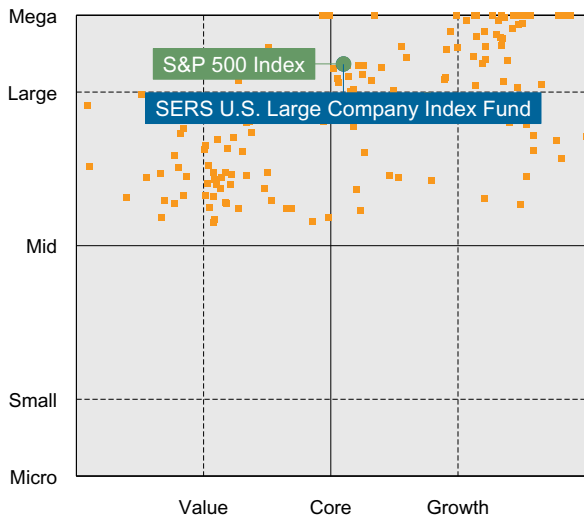
Historical Holdings Based Style Analysis

SERS U.S. Large Company Index Fund

For Three Years Ended December 31, 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.

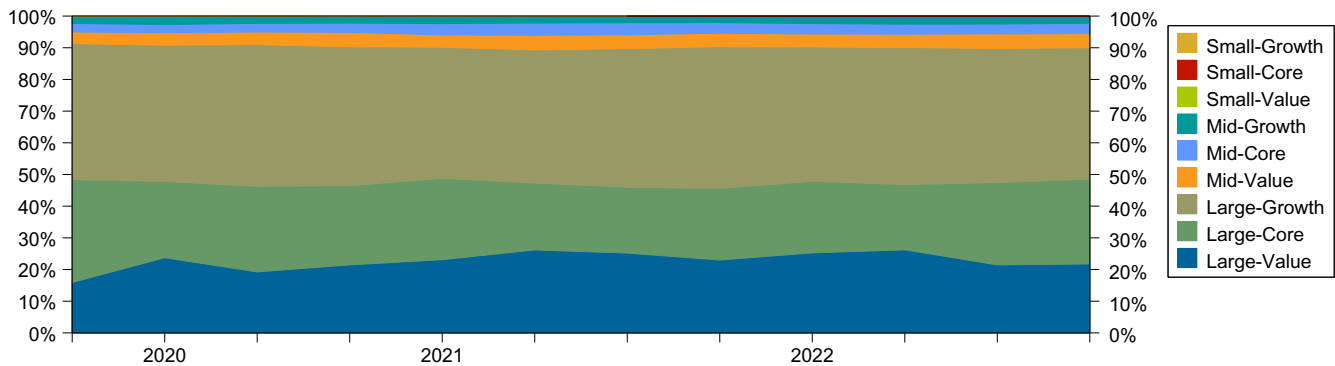
Average Style Map vs Callan Lg Cap Broad MF Holdings for Three Years Ended December 31, 2022



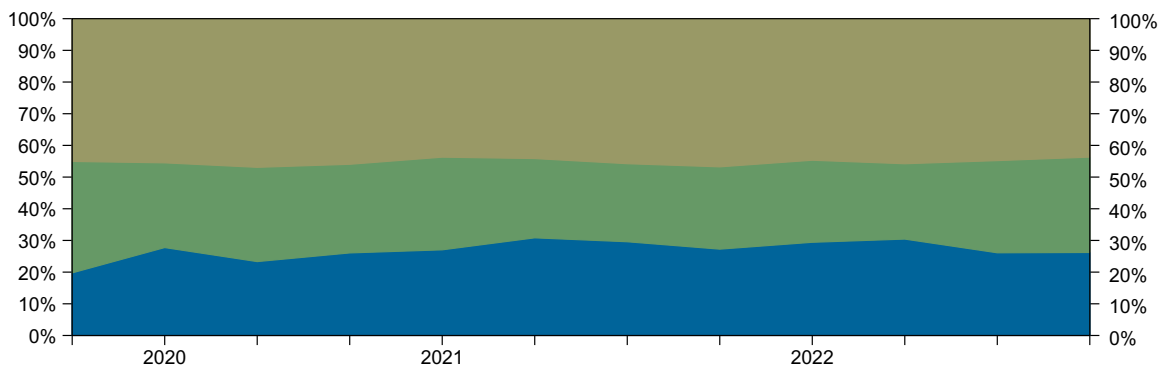
Average Style Exposure Matrix Holdings for Three Years Ended December 31, 2022

Large	22.7% (95)	24.6% (95)	43.0% (85)	90.3% (275)
Mid	4.2% (102)	3.2% (73)	2.2% (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	27.0% (202)	27.8% (170)	45.2% (132)	100.0% (504)
	Value	Core	Growth	Total

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



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



SERS U.S. SMID Company Stock Idx Period Ended December 31, 2022

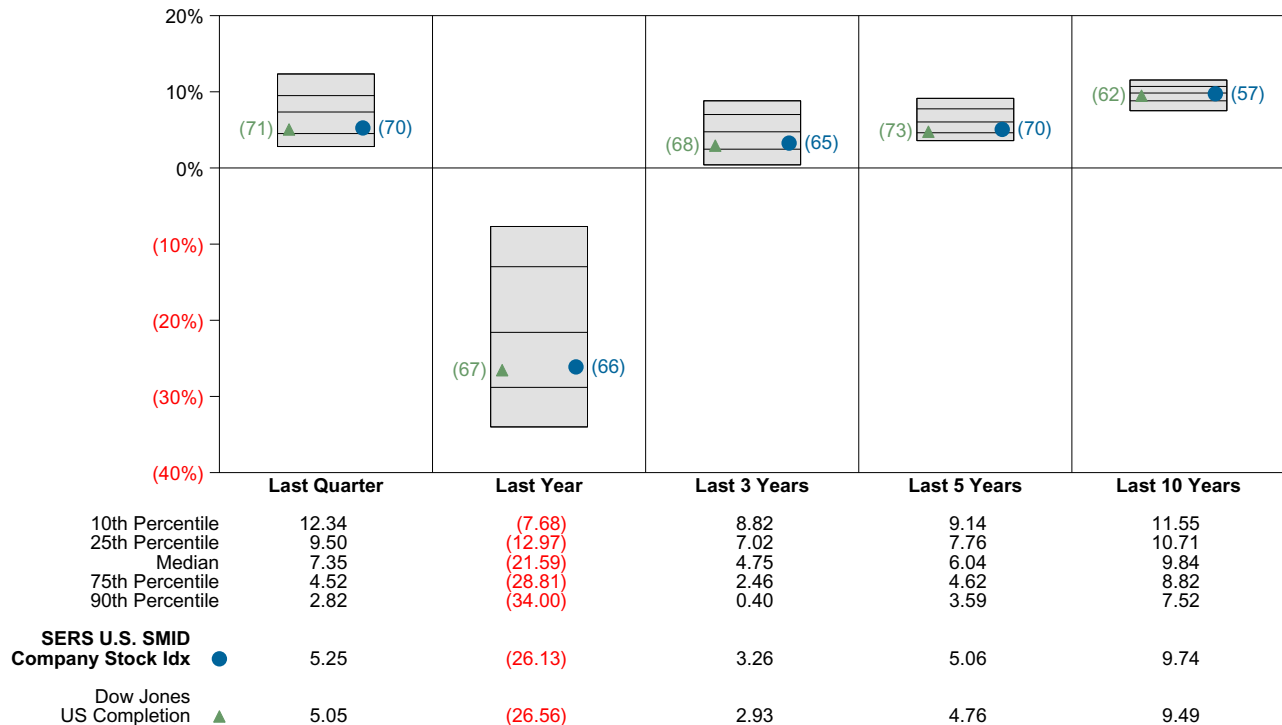
Investment Philosophy

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

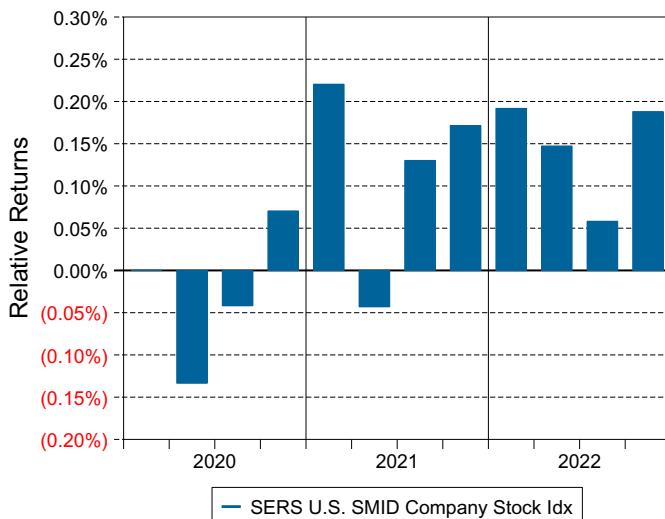
Quarterly Summary and Highlights

- SERS U.S. SMID Company Stock Idx's portfolio posted a 5.25% return for the quarter placing it in the 70 percentile of the Callan Small/MidCap Broad Mutual Funds group for the quarter and in the 66 percentile for the last year.
- SERS U.S. SMID Company Stock Idx's portfolio outperformed the Dow Jones US Completion by 0.20% for the quarter and outperformed the Dow Jones US Completion for the year by 0.43%.

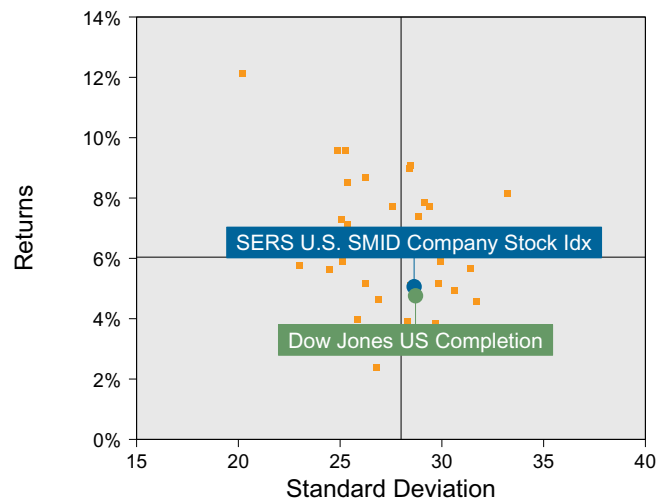
Performance vs Callan Small/MidCap Broad Mutual Funds (Institutional Net)



Relative Return vs Dow Jones US Completion



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

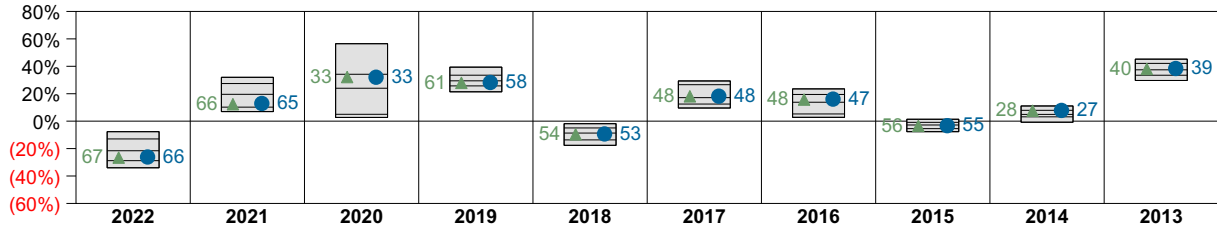


SERS U.S. SMID Company Stock Idx Return Analysis Summary

Return Analysis

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

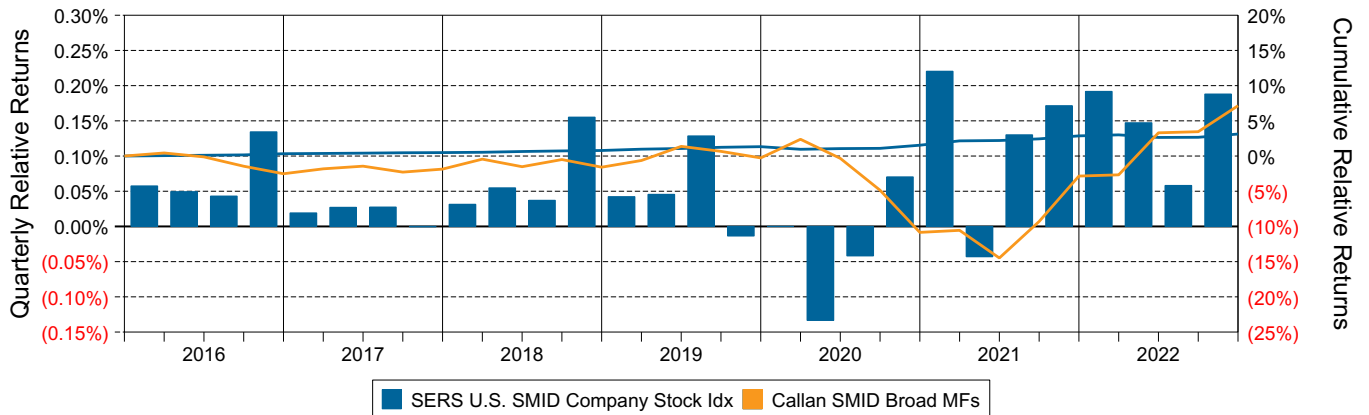
Performance vs Callan Small/MidCap Broad Mutual Funds (Institutional Net)



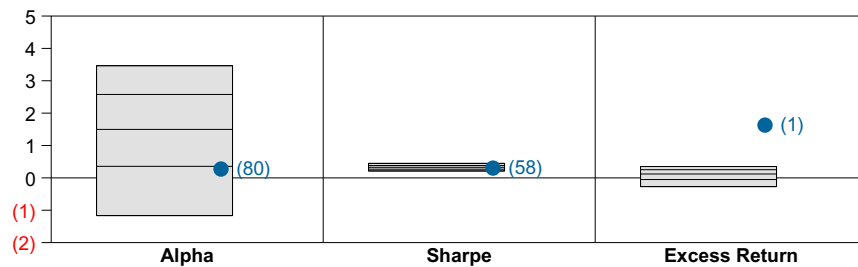
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	(7.68)	31.98	56.46	39.38	(1.83)	29.31	23.54	1.38	11.06	45.21
25th Percentile	(12.97)	27.43	34.19	33.51	(4.95)	26.58	19.48	(0.87)	7.90	42.13
Median	(21.59)	19.56	24.00	29.40	(8.69)	17.14	13.80	(2.80)	4.92	37.43
75th Percentile	(28.81)	10.21	5.00	25.71	(13.66)	12.47	5.26	(5.46)	3.15	33.50
90th Percentile	(34.00)	6.97	2.71	21.40	(17.62)	9.57	2.79	(7.67)	(0.76)	29.67

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
SERS U.S. SMID Company Stock Idx	● (26.13)	12.89	32.03	28.20	(9.32)	18.21	16.08	(3.31)	7.81	38.40
Dow Jones US Completion	▲ (26.56)	12.36	32.17	27.94	(9.57)	18.12	15.75	(3.42)	7.63	38.05

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 December 31, 2022



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	3.47	0.45	0.35
25th Percentile	2.58	0.38	0.25
Median	1.50	0.33	0.12
75th Percentile	0.36	0.27	(0.05)
90th Percentile	(1.17)	0.21	(0.27)

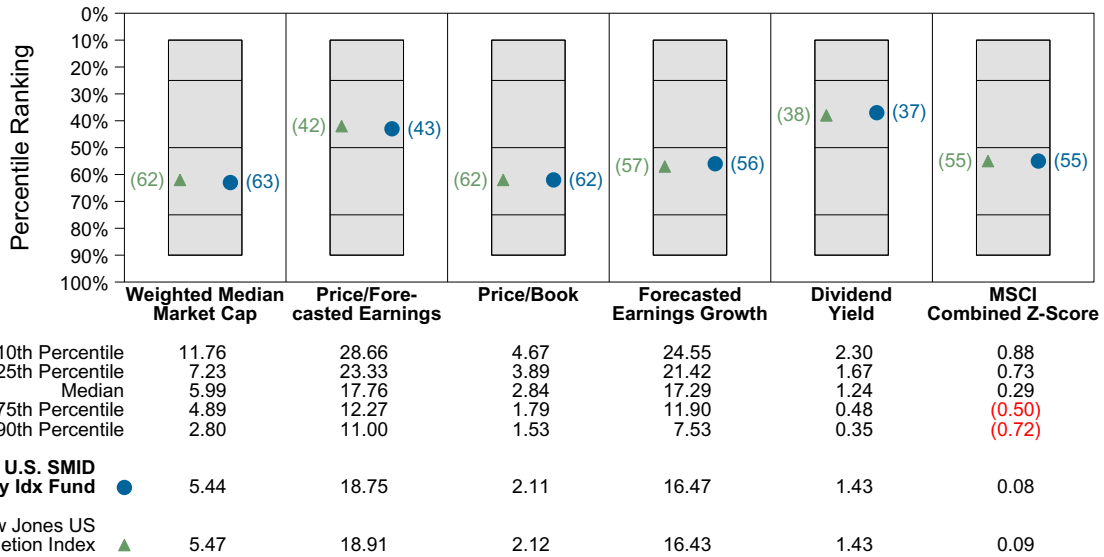
	Alpha	Sharpe Ratio	Excess Return Ratio
SERS U.S. SMID Company Stock Idx	● 0.27	0.30	1.63

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

Portfolio Characteristics

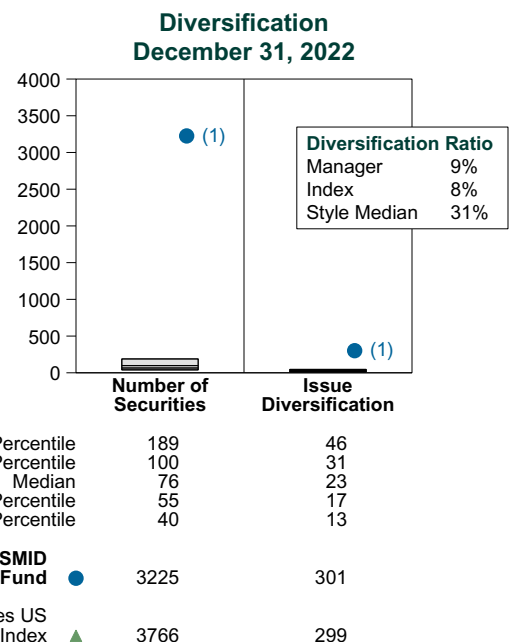
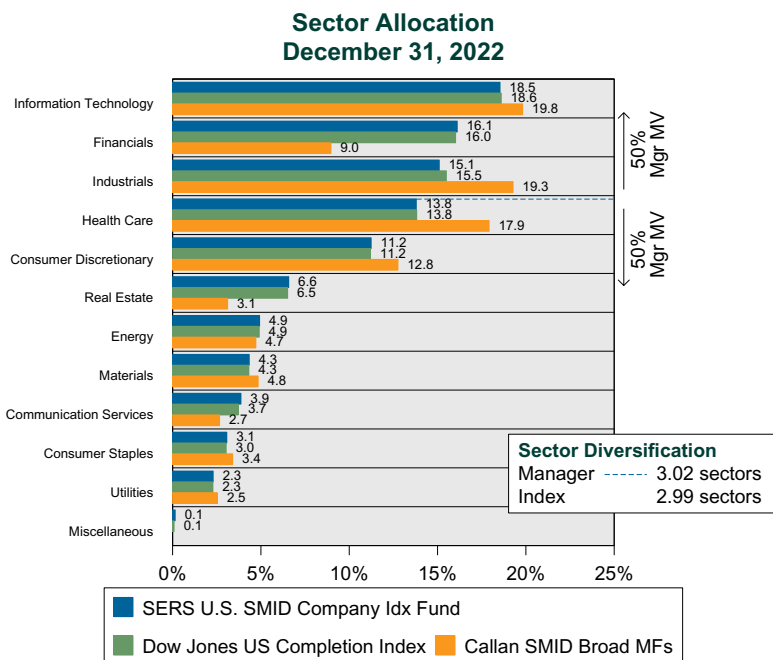
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against Callan Small/MidCap Broad Mutual Funds as of December 31, 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 Idx Fund Top 10 Portfolio Holdings Characteristics as of December 31, 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	\$3,356,432	0.9%	(10.51)%	52.07	14.48	8.13%	7.77%
Uber Technologies Inc	Industrials	\$3,181,313	0.9%	(6.68)%	49.32	(110.40)	0.00%	23.17%
Palo Alto Networks Inc	Information Technology	\$2,702,227	0.7%	(14.81)%	42.19	37.97	0.00%	25.67%
Snowflake Inc Cl A	Information Technology	\$2,635,392	0.7%	(15.54)%	46.16	304.76	0.00%	-
Cheniere Energy Inc	Energy	\$2,403,874	0.6%	(9.40)%	37.29	7.32	1.05%	-
Lululemon Athletica Inc	Consumer Discretionary	\$2,396,492	0.6%	15.37%	39.21	28.30	0.00%	20.00%
Airbnb Inc Cl A Com Usd0.0001 Cl A	Consumer Discretionary	\$2,195,082	0.6%	(18.61)%	34.05	30.91	0.00%	20.10%
Square Inc Cl A	Information Technology	\$2,177,114	0.6%	14.28%	33.77	36.99	0.00%	14.48%
Workday Inc Cl A	Information Technology	\$2,168,220	0.6%	9.93%	33.80	36.25	0.00%	13.00%
Marvell Technology Group Ltd	Information Technology	\$2,035,854	0.5%	(13.57)%	31.60	17.89	0.65%	18.65%

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
Cabaletta Bio	Health Care	\$18,126	0.0%	1323.08%	0.27	(5.84)	0.00%	-
Nine Energy Svc Inc	Energy	\$11,391	0.0%	450.43%	0.48	6.34	0.00%	-
Glycomimetics Inc	Health Care	\$7,135	0.0%	449.00%	0.16	(4.66)	0.00%	-
Madriral Pharmaceuticals Inc Com	Health Care	\$230,917	0.1%	346.61%	4.98	(16.68)	0.00%	-
Pds Biotechnology Corp	Health Care	\$29,412	0.0%	345.44%	0.38	(11.24)	0.00%	-
Summit Therapeutics Inc	Health Care	\$13,496	0.0%	269.26%	0.86	(3.94)	0.00%	-
Viking Therapeutics Inc	Health Care	\$46,425	0.0%	245.58%	0.72	(9.63)	0.00%	-
Kala Pharmaceuticals Inc	Health Care	\$2,020	0.0%	242.35%	0.06	(1.93)	0.00%	-
Immunovant Inc	Health Care	\$67,855	0.0%	218.10%	2.29	(10.71)	0.00%	-
Biovie Inc Cl A New	Health Care	\$4,417	0.0%	212.05%	0.25	(5.95)	0.00%	-

10 Worst Performers

Stock	Sector	Ending Market Value	Percent of Portfolio	Qtrly Return	Market Capital	Price/Forecasted Earnings Ratio	Dividend Yield	Forecasted Growth in Earnings
Palatin Technologies Inc	Health Care	\$1,486	0.0%	-	0.03	(1.21)	0.00%	-
Bitnile Holdings Inc	Industrials	\$593	0.0%	-	0.04	-	0.00%	103.71%
Camber Energy Inc	Energy	\$725	0.0%	(100.00)%	0.04	(0.19)	0.00%	-
Ibio Inc	Health Care	\$334	0.0%	(99.57)%	0.00	(0.14)	0.00%	-
Tricida Inc	Health Care	\$308	0.0%	(98.54)%	0.01	(0.14)	0.00%	-
Quotient	Health Care	\$69	0.0%	(93.83)%	0.00	(0.01)	0.00%	-
Agriify Corp	Industrials	\$38	0.0%	(92.39)%	0.00	(0.05)	0.00%	20.00%
Relmada Therapeutics Inc	Health Care	\$5,619	0.0%	(90.57)%	0.11	(1.05)	0.00%	-
Lucira Health	Health Care	\$125	0.0%	(89.62)%	0.00	(0.03)	0.00%	-
Waitr Hldgs Inc	Consumer Discretionary	\$152	0.0%	(88.07)%	0.00	(0.12)	0.00%	-

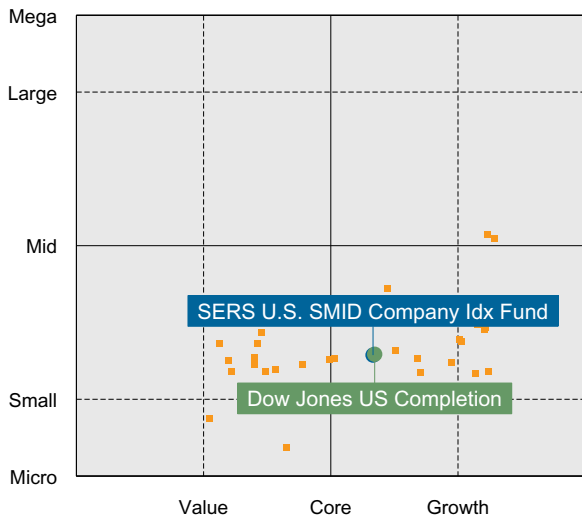
Historical Holdings Based Style Analysis

SERS U.S. SMID Company Idx Fund

For Three Years Ended December 31, 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.

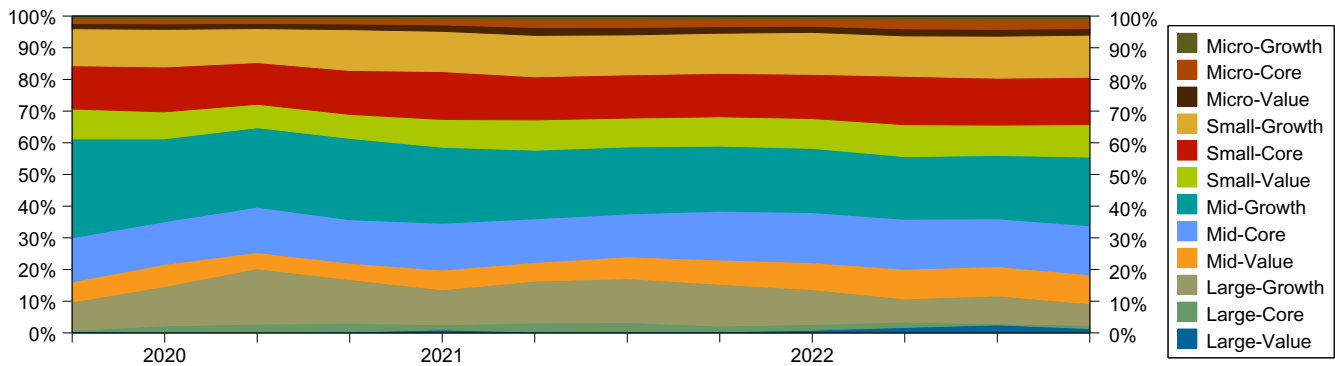
Average Style Map vs Callan SMID Broad MFs Holdings for Three Years Ended December 31, 2022



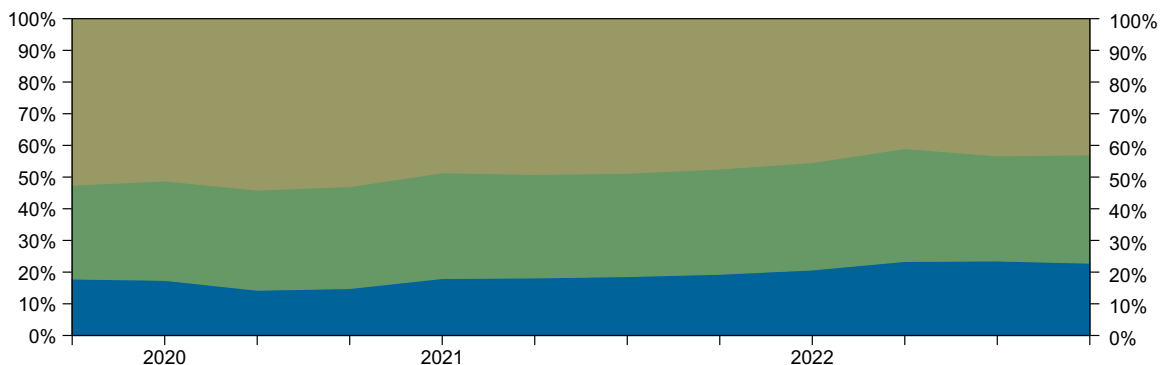
Average Style Exposure Matrix Holdings for Three Years Ended December 31, 2022

	0.8% (2)	1.8% (4)	11.5% (20)	14.1% (26)
Large	0.8% (2)	1.8% (4)	11.6% (20)	14.2% (26)
	7.2% (64)	14.6% (137)	23.1% (180)	44.9% (381)
Mid	7.2% (64)	14.6% (137)	23.2% (181)	44.9% (382)
	9.1% (290)	14.2% (526)	12.6% (395)	35.8% (1211)
Small	9.0% (290)	14.1% (525)	12.5% (398)	35.6% (1213)
	2.0% (557)	2.2% (624)	1.0% (209)	5.2% (1390)
Micro	1.9% (718)	2.3% (901)	1.0% (262)	5.2% (1881)
Total	19.1% (913)	32.8% (1291)	48.1% (804)	100.0% (3008)
	18.9% (1074)	32.8% (1567)	48.3% (861)	100.0% (3502)
	Value	Core	Growth	Total

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



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



SERS Global Non-U.S. Index Fund

Period Ended December 31, 2022

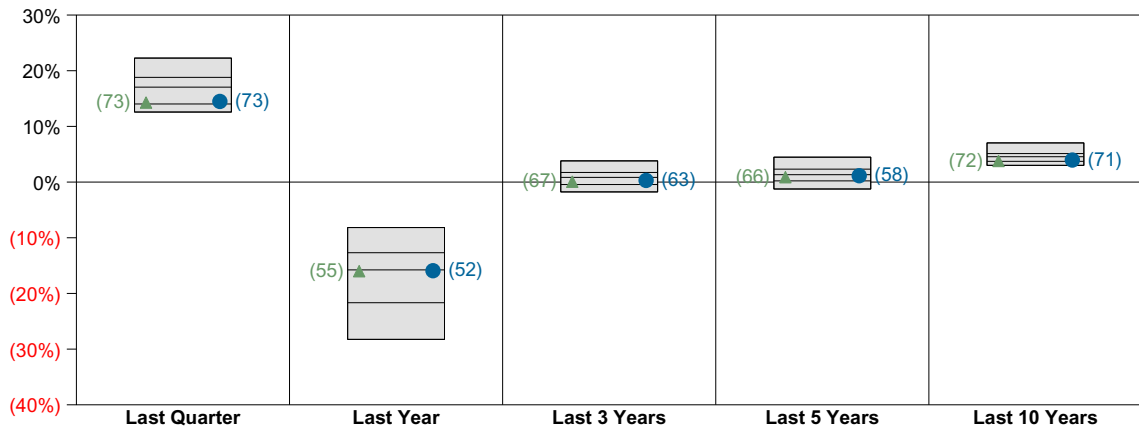
Investment Philosophy

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

Quarterly Summary and Highlights

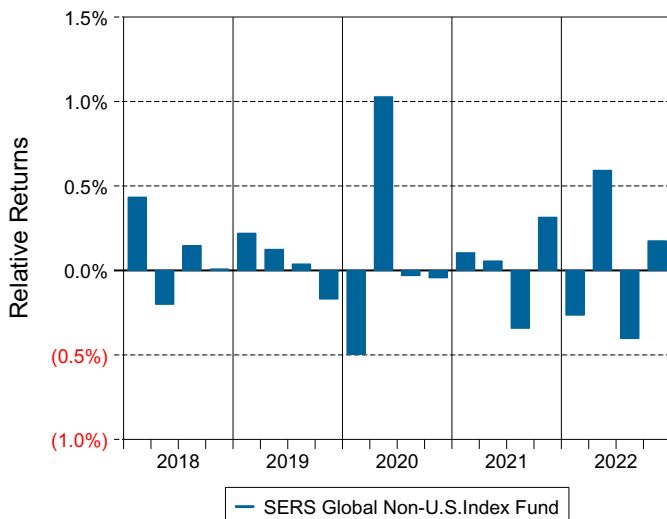
- SERS Global Non-U.S. Index Fund's portfolio posted a 14.48% return for the quarter placing it in the 73 percentile of the Callan Non US Equity Mutual Funds group for the quarter and in the 52 percentile for the last year.
- SERS Global Non-U.S. Index Fund's portfolio outperformed the MSCI ACWI xUS by 0.20% for the quarter and outperformed the MSCI ACWI xUS for the year by 0.08%.

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

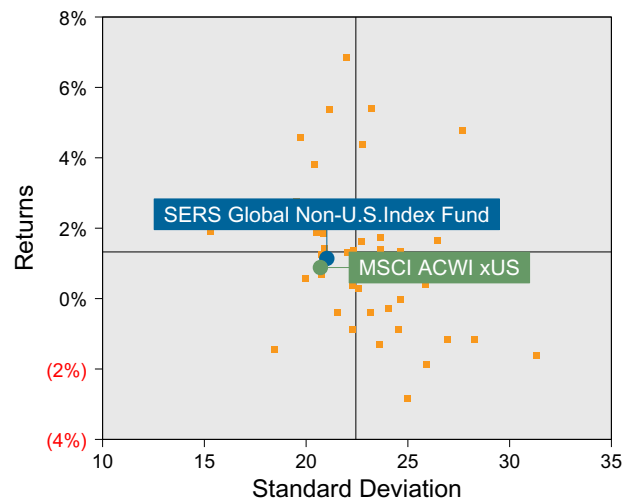


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	22.27	(8.17)	3.81	4.48	7.04
25th Percentile	18.81	(12.68)	1.73	2.32	5.12
Median	17.05	(15.77)	0.84	1.33	4.55
75th Percentile	14.03	(21.67)	(0.44)	0.22	3.73
90th Percentile	12.58	(28.25)	(1.77)	(1.24)	3.00
SERS Global Non-U.S. Index Fund	● 14.48	(15.92)	0.30	1.14	3.95
MSCI ACWI xUS	▲ 14.28	(16.00)	0.07	0.88	3.80

Relative Return vs MSCI ACWI xUS



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

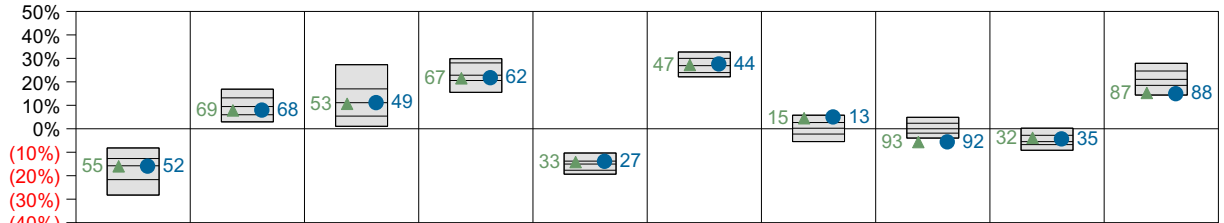


SERS Global Non-U.S.Index Fund Return Analysis Summary

Return Analysis

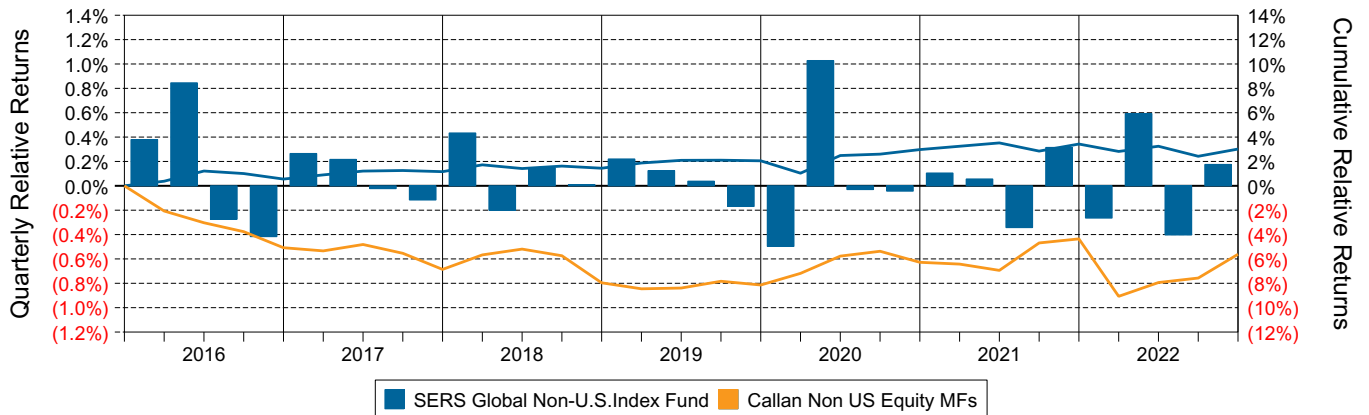
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate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

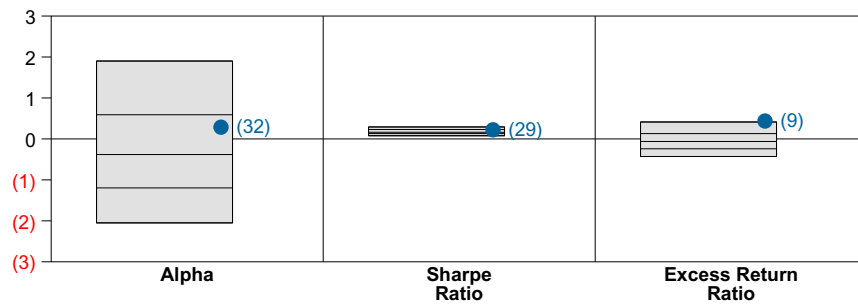


	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	(8.17)	16.88	27.31	29.86	(10.33)	32.71	5.78	4.89	0.25	27.89
25th Percentile	(12.68)	13.17	17.00	28.07	(13.79)	30.00	2.66	2.35	(2.78)	24.61
Median	(15.77)	9.47	11.12	22.83	(15.04)	26.90	0.23	0.02	(5.48)	21.05
75th Percentile	(21.67)	5.98	5.40	20.57	(17.67)	23.95	(2.25)	(1.86)	(6.75)	18.50
90th Percentile	(28.25)	2.94	1.05	15.53	(19.35)	22.13	(5.47)	(3.96)	(9.16)	14.36
SERS Global Non-U.S.Index Fund	● (15.92)	7.97	11.15	21.77	(13.86)	27.63	5.05	(5.57)	(4.31)	14.95
MSCI ACWI xUS	▲ (16.00)	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 December 31, 2022



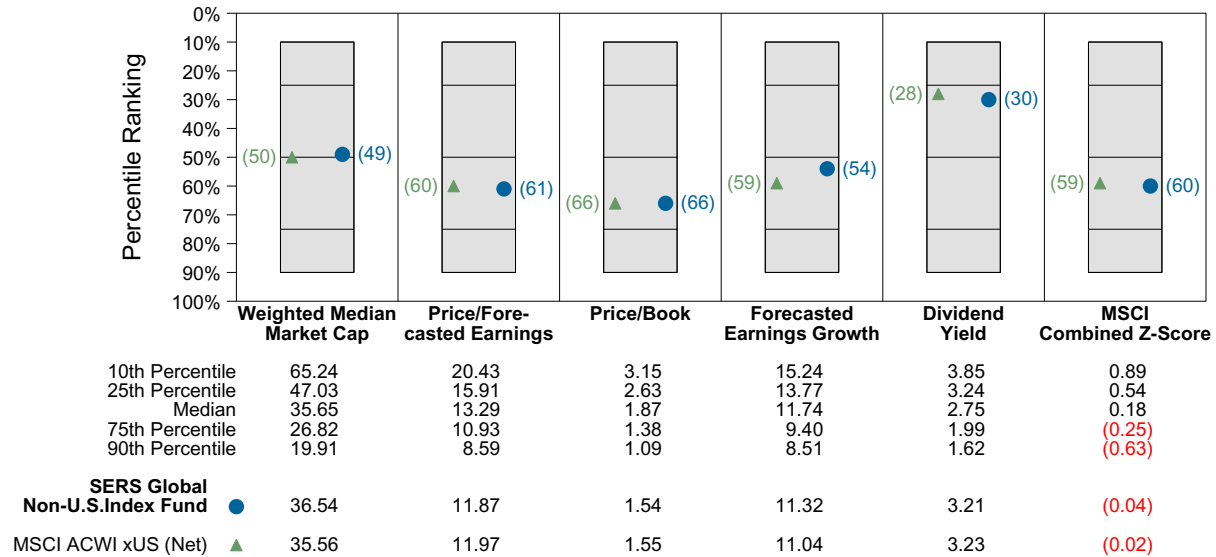
	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	1.90	0.29	0.41
25th Percentile	0.59	0.23	0.13
Median	(0.38)	0.16	(0.06)
75th Percentile	(1.20)	0.13	(0.24)
90th Percentile	(2.05)	0.08	(0.43)
SERS Global Non-U.S.Index Fund	● 0.29	0.22	0.44

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

Portfolio Characteristics

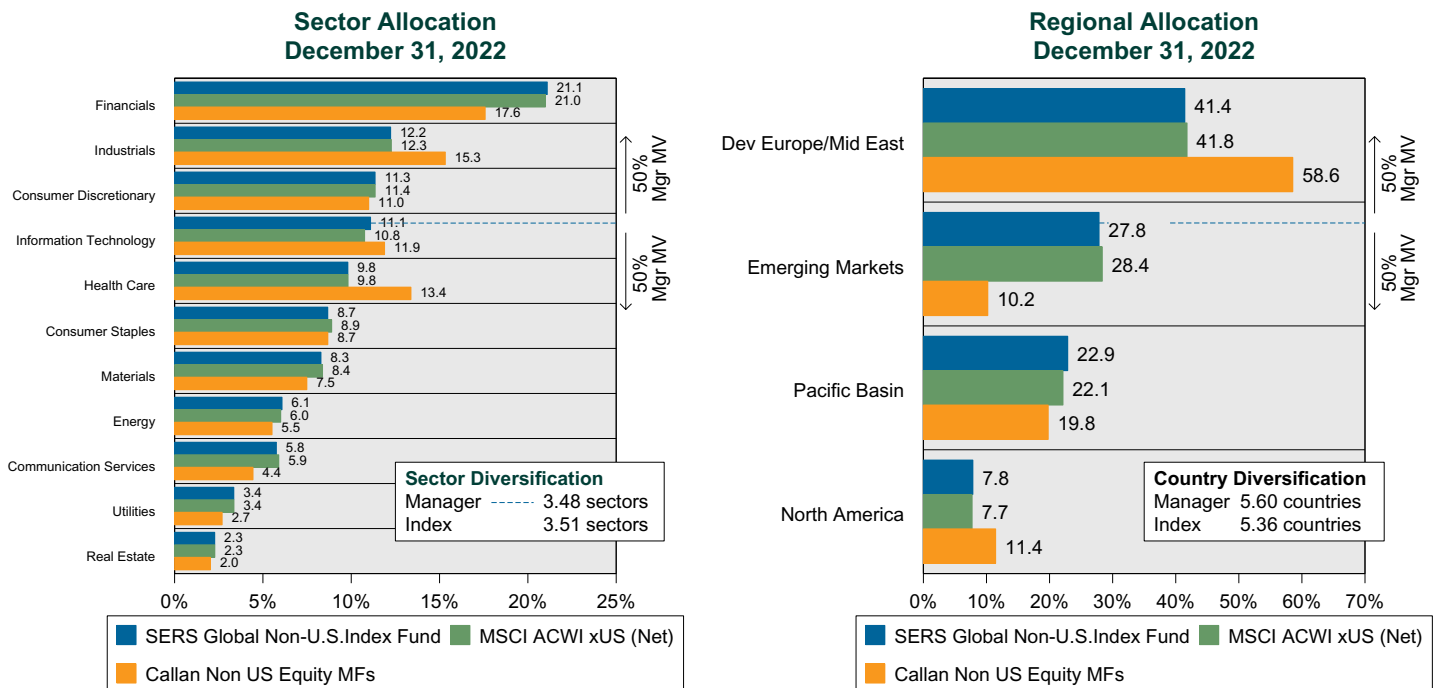
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Portfolio Characteristics Percentile Rankings Rankings Against Callan Non US Equity Mutual Funds as of December 31, 2022



Sector Weights

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



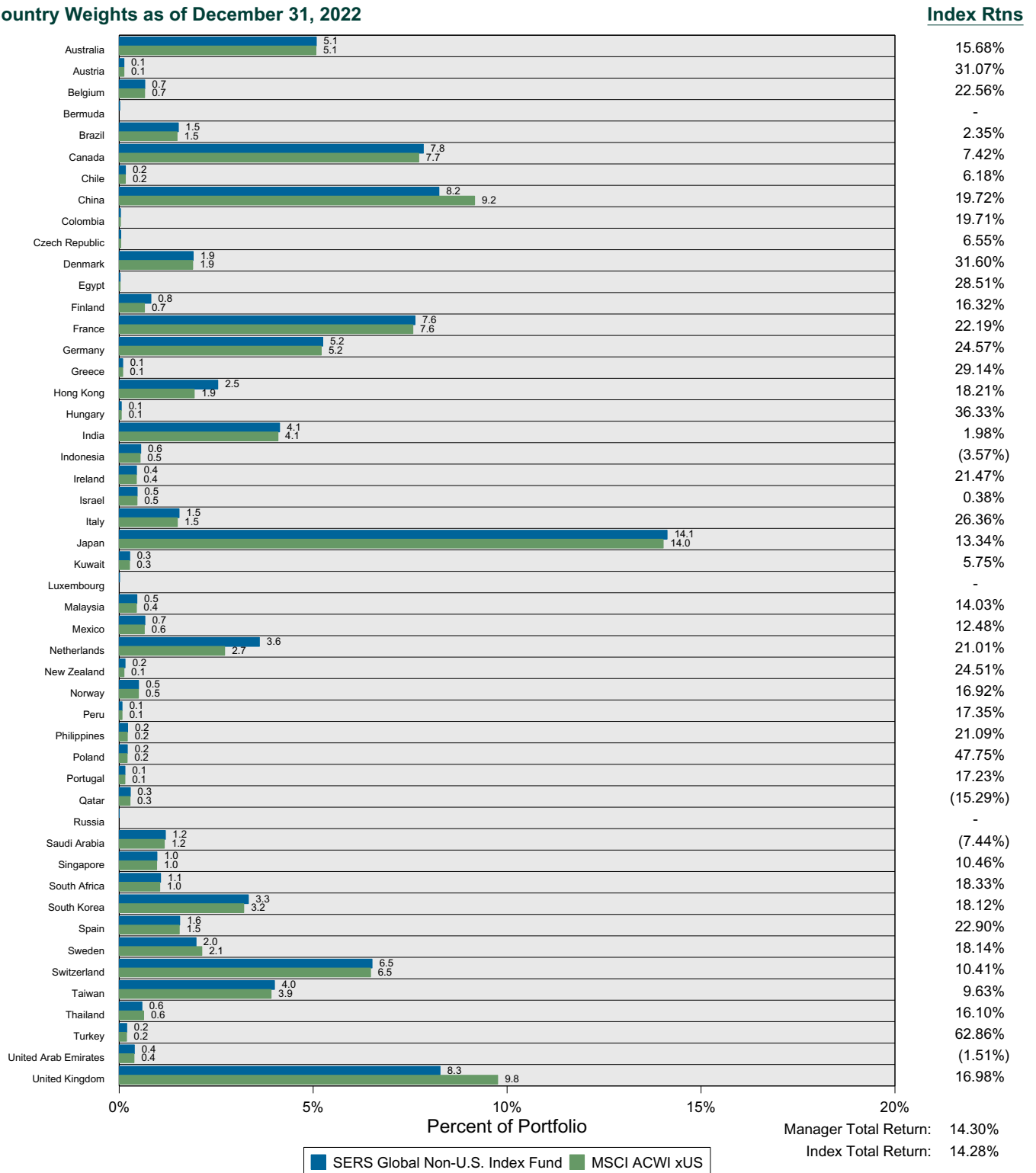
Country Allocation

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

Country Allocation

The chart below contrasts the portfolio's country allocation with that of the index as of December 31, 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 December 31, 2022



SERS Global Non-U.S. Index Fund Top 10 Portfolio Holdings Characteristics as of December 31, 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	\$2,829,650	1.7%	10.41%	378.38	12.17	2.45%	20.84%
Nestle S A Shs Nom New	Consumer Staples	\$2,454,779	1.4%	7.74%	318.46	20.93	2.61%	8.26%
Tencent Holdings Limited Shs Par Hkd	Communication Services	\$2,092,609	1.2%	32.08%	409.48	20.55	0.48%	10.10%
Novo Nordisk B	Health Care	\$1,717,227	1.0%	33.29%	234.58	30.63	1.19%	19.10%
Roche Hldgs Ag Basel Div Rts Ctf	Health Care	\$1,699,858	1.0%	(0.95)%	220.60	13.90	3.20%	6.30%
Asml Holding N V Asml Rev Stk Spl	Information Technology	\$1,684,049	1.0%	29.30%	218.56	26.87	1.28%	18.05%
Samsung Electronics Co Ltd Ord	Information Technology	\$1,643,652	1.0%	4.87%	261.07	14.84	2.61%	(5.00)%
Astrazeneca Plc Ord	Health Care	\$1,611,032	0.9%	24.27%	209.10	18.15	1.87%	15.64%
Shell Plc Shs A	Energy	\$1,565,988	0.9%	18.19%	197.83	5.84	3.04%	23.46%
Lvmh Moet Hennessy Lou Vuitt Ord	Consumer Discretionary	\$1,550,665	0.9%	28.93%	365.18	21.55	1.76%	14.50%

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
Rentokil Initial	Industrials	\$117,377	0.1%	463.60%	15.40	21.07	1.32%	15.83%
Hektas Ticaret	Materials	\$18,088	0.0%	125.37%	5.08	134.00	0.00%	19.18%
Longfor Properties	Real Estate	\$46,547	0.0%	120.33%	19.56	5.44	8.22%	10.58%
Shai.Baosight Software B	Information Technology	\$11,626	0.0%	116.99%	1.56	14.35	2.51%	52.41%
Tencent Music Entmt Group Spon Ads	Communication Services	\$45,878	0.0%	116.02%	6.93	18.65	0.00%	(1.87)%
Aselsan	Industrials	\$17,909	0.0%	111.13%	7.57	14.19	0.32%	38.75%
Iqiyi Inc Sponsored Ads	Communication Services	\$14,273	0.0%	107.18%	2.06	44.17	0.00%	(8.00)%
Turk Hava Yollari Ao Shs	Industrials	\$33,117	0.0%	97.65%	10.39	6.45	0.00%	6.70%
Meritz Secs.	Financials	\$10,234	0.0%	92.11%	3.04	6.92	1.60%	19.02%
Meritz Fire & Marne Ins Co L Shs	Financials	\$11,478	0.0%	90.62%	4.37	6.35	1.25%	(5.27)%

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
Nippon Yusen Kk Shs	Industrials	\$87,795	0.1%	(62.38)%	12.02	3.05	24.65%	(70.00)%
Haichang Ocean Pk Hldgs Ltd Shs	Consumer Discretionary	\$5,259	0.0%	(51.22)%	1.66	68.33	0.00%	(26.44)%
Mapletree Coml.Trust	Real Estate	\$22,550	0.0%	(49.82)%	6.52	17.54	5.72%	6.87%
Koito Manufacturing Co Ltd Shs	Consumer Discretionary	\$23,618	0.0%	(47.44)%	4.84	12.45	1.36%	(14.85)%
Bank Artos Indonesia	Financials	\$7,738	0.0%	(44.87)%	3.28	240.00	0.00%	-
Americanas S A Reg Shs Com Shs	Consumer Discretionary	\$9,440	0.0%	(41.02)%	1.66	24.08	6.35%	(24.00)%
Algonquin Pwr Utils Corp	Utilities	\$35,277	0.0%	(38.67)%	4.39	9.55	8.20%	3.90%
Magazine Luiza Sa	Consumer Discretionary	\$12,059	0.0%	(37.34)%	3.50	173.33	1.53%	15.06%
Fastighets Ab Balder Shs B	Real Estate	\$21,979	0.0%	(35.50)%	4.90	11.53	0.00%	16.04%
Goertek 'a'	Information Technology	\$1,152	0.0%	(34.56)%	8.27	11.80	1.19%	7.66%

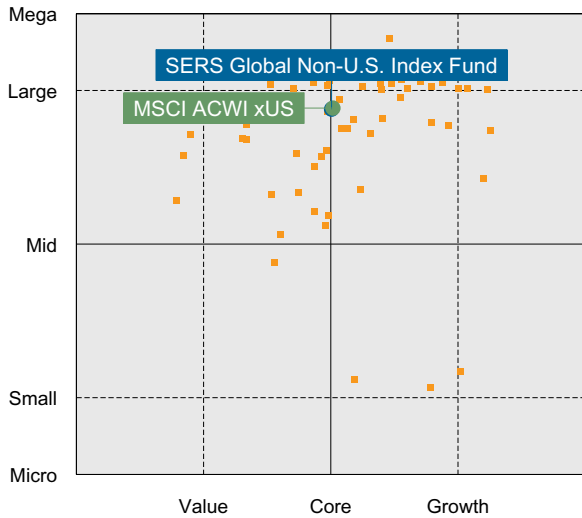
Historical Holdings Based Style Analysis

SERS Global Non-U.S. Index Fund

For Three Years Ended December 31, 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.

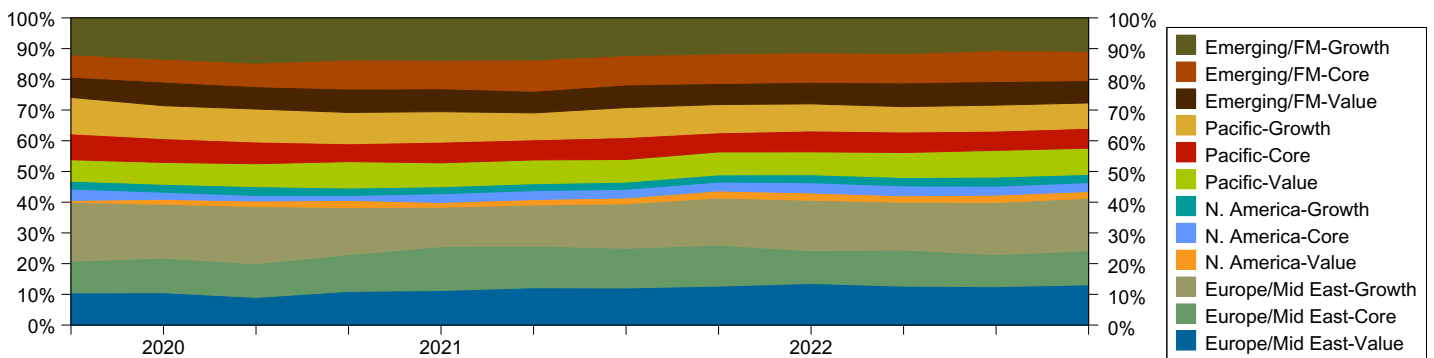
Average Style Map vs Callan Non US Equity MFs Holdings for Three Years Ended December 31, 2022



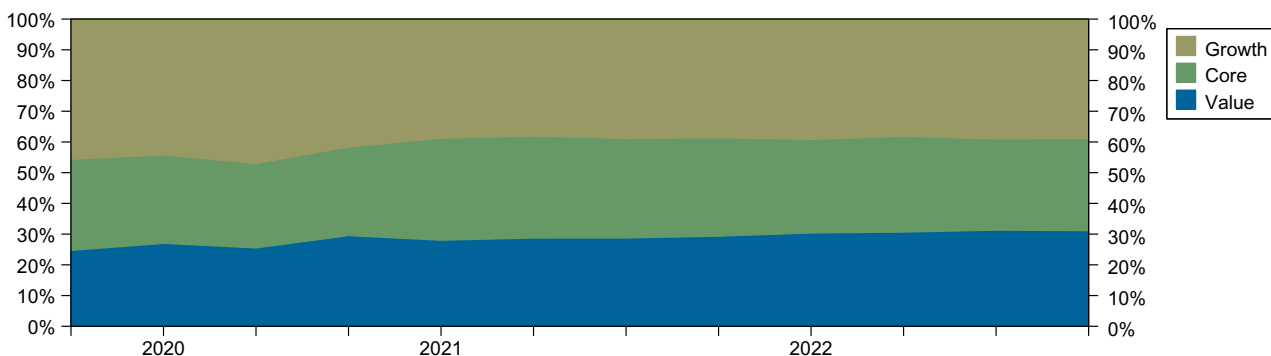
Average Style Exposure Matrix Holdings for Three Years Ended December 31, 2022

Europe/ Mid East	11.8% (135)	11.9% (124)	16.1% (152)	39.7% (411)
	11.8% (146)	11.7% (126)	16.5% (169)	39.9% (441)
N. America	1.9% (24)	2.8% (28)	2.6% (30)	7.2% (82)
	2.0% (27)	2.7% (30)	2.6% (34)	7.3% (91)
Pacific	7.8% (144)	6.8% (123)	9.6% (138)	24.2% (405)
	7.6% (145)	6.6% (123)	9.2% (138)	23.4% (406)
Emerging/ FM	7.3% (424)	9.1% (373)	12.5% (378)	28.9% (1175)
	7.4% (474)	9.3% (429)	12.6% (433)	29.3% (1336)
Total	28.7% (727)	30.6% (648)	40.7% (698)	100.0% (2073)
	28.8% (792)	30.3% (708)	40.9% (774)	100.0% (2274)
	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 December 31, 2022

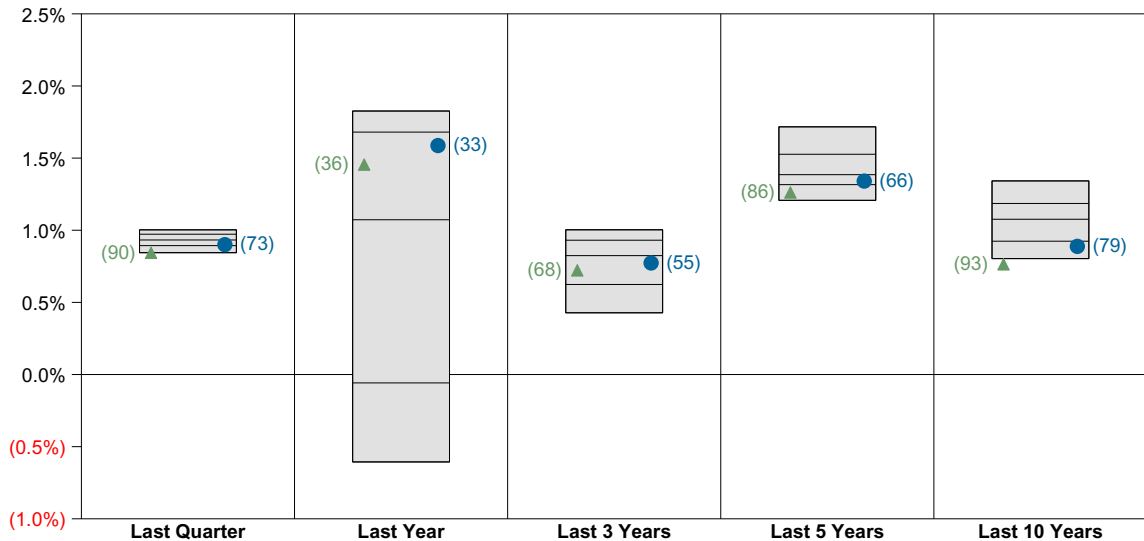
Investment Philosophy

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: a group that contains STIF, enhanced cash, and money market funds.

Quarterly Summary and Highlights

- SERS Short Term Investment Fund's portfolio posted a 0.90% return for the quarter placing it in the 73 percentile of the Callan Cash Database group for the quarter and in the 33 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 0.13%.

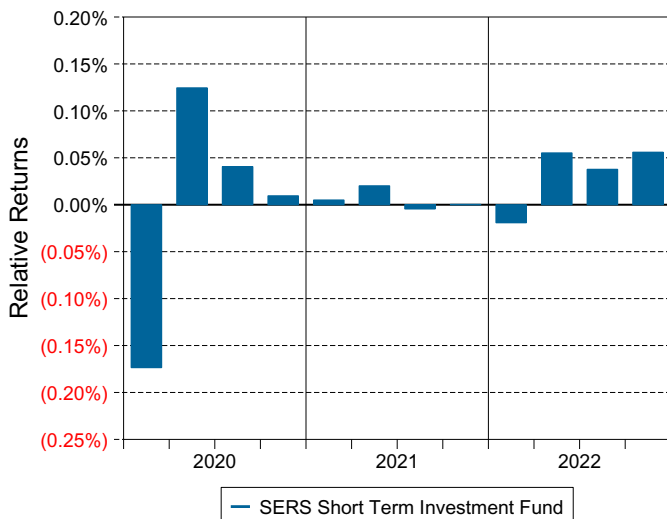
Performance vs Callan Cash Database (Gross)



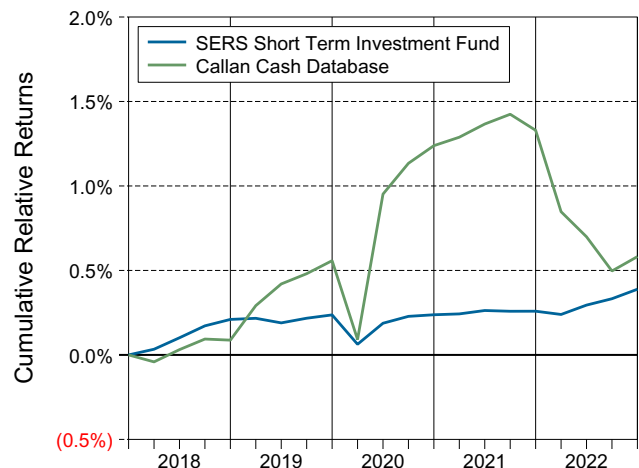
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	1.00	1.83	1.00	1.72	1.34
25th Percentile	0.97	1.68	0.93	1.53	1.19
Median	0.93	1.07	0.82	1.39	1.08
75th Percentile	0.89	(0.06)	0.62	1.32	0.92
90th Percentile	0.84	(0.61)	0.43	1.21	0.80

SERS Short Term Investment Fund	●	0.90	1.59	0.77	1.34	0.89
3-month Treasury Bill	▲	0.84	1.46	0.72	1.26	0.76

Relative Return vs 3-month Treasury Bill



Cumulative Returns vs 3-month Treasury Bill

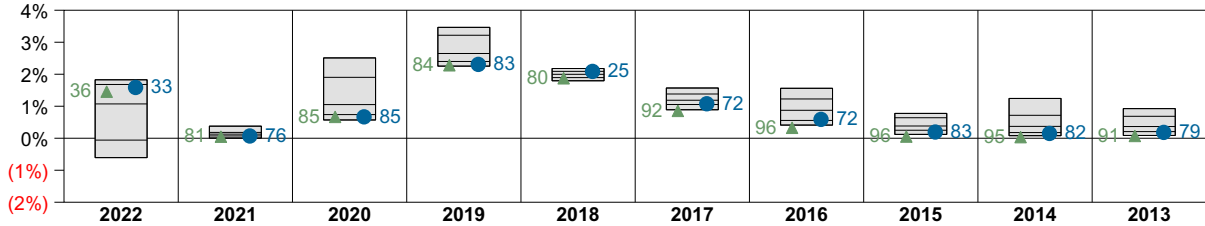


SERS Short Term Investment Fund Return Analysis Summary

Return Analysis

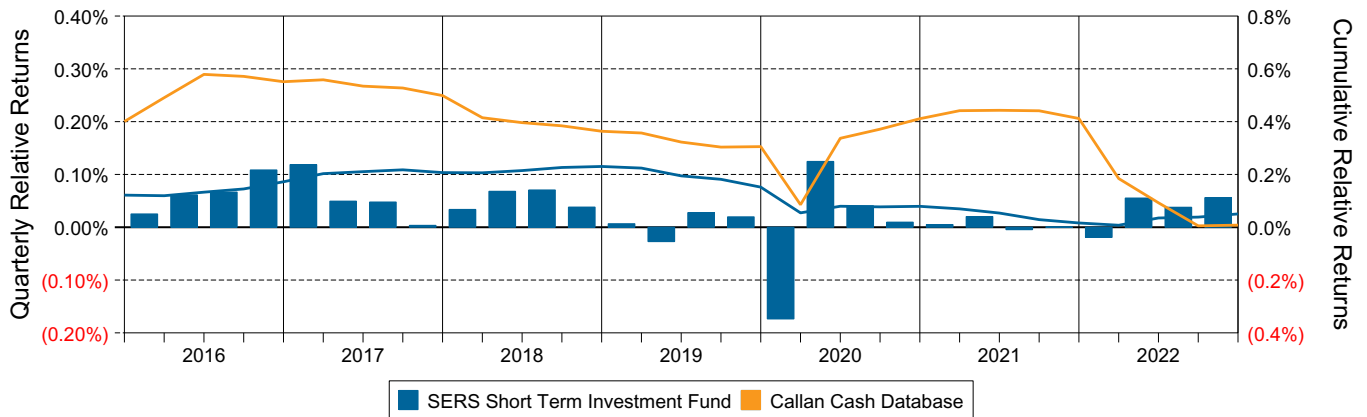
The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and 12 quarter rolling manager returns versus the appropriate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

Performance vs Callan Cash Database (Gross)

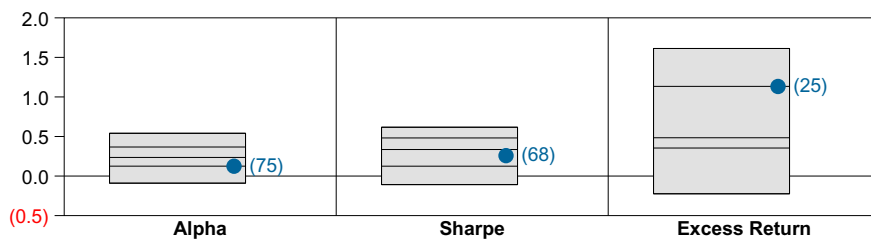


	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
SERS Short Term Investment Fund	1.59	0.07	0.67	2.31	2.09	1.08	0.59	0.19	0.15	0.18
3-month Treasury Bill	1.46	0.05	0.67	2.28	1.87	0.86	0.33	0.05	0.03	0.07

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 December 31, 2022



	Alpha	Sharpe Ratio	Excess Return Ratio
SERS Short Term Investment Fund	0.12	0.26	1.13

SERS Stable Value Fund

Period Ended December 31, 2022

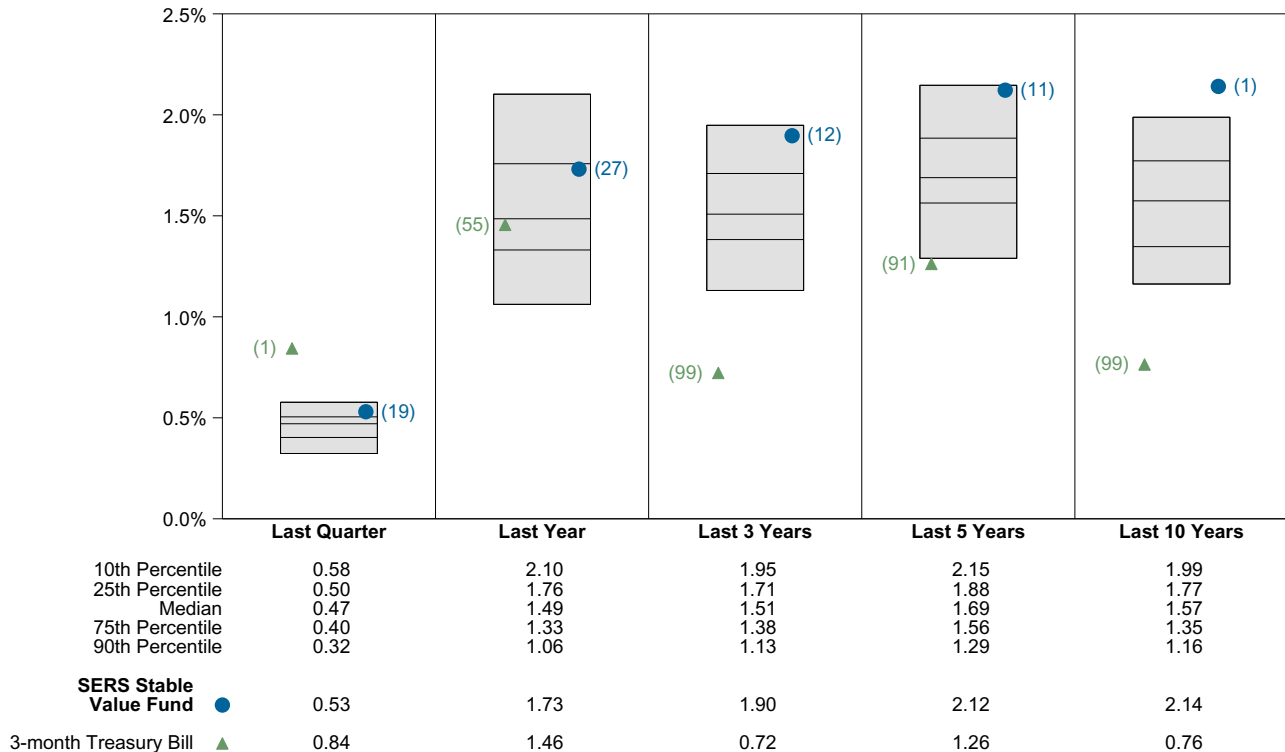
Investment Philosophy

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

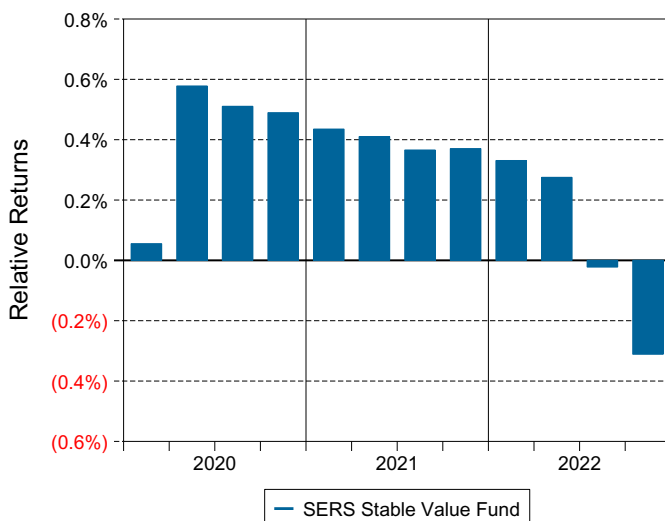
Quarterly Summary and Highlights

- SERS Stable Value Fund's portfolio posted a 0.53% return for the quarter placing it in the 19th percentile of the Callan Stable Value CT group for the quarter and in the 27th percentile for the last year.
- SERS Stable Value Fund's portfolio underperformed the 3-month Treasury Bill by 0.31% for the quarter and outperformed the 3-month Treasury Bill for the year by 0.28%.

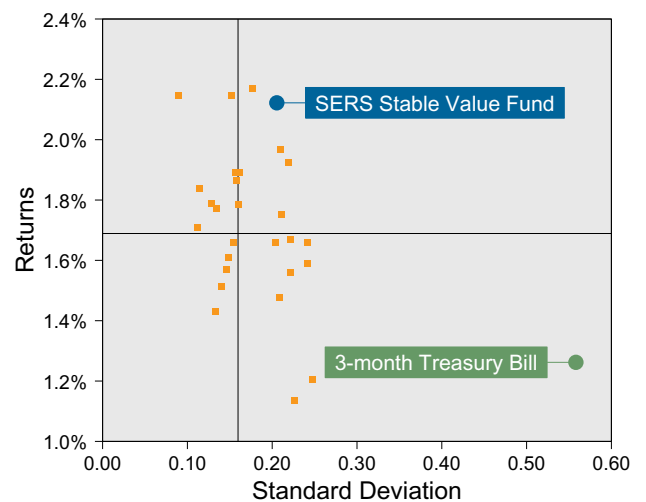
Performance vs Callan Stable Value CT (Institutional Net)



Relative Return vs 3-month Treasury Bill



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

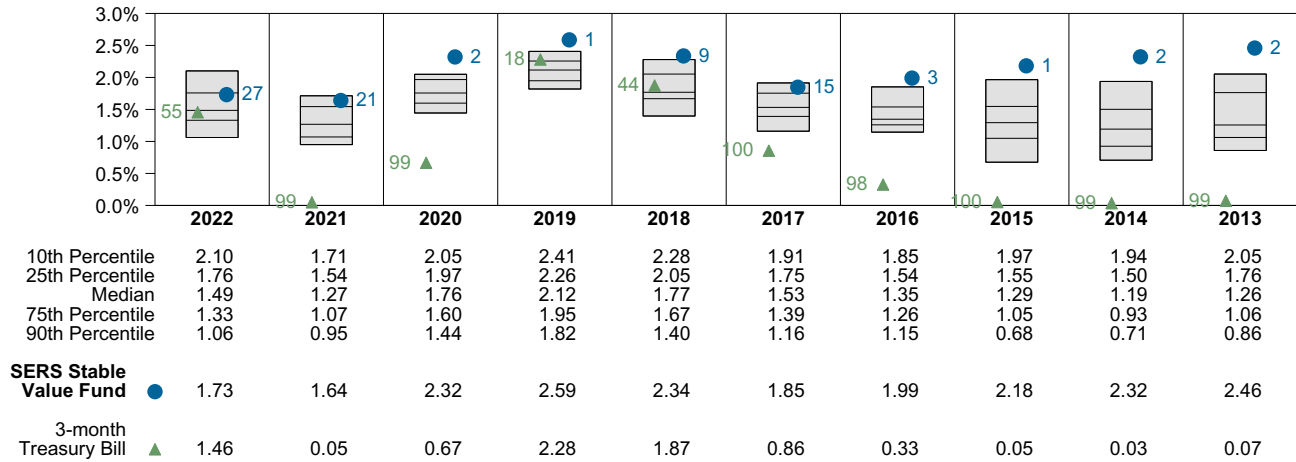


SERS Stable Value Fund Return Analysis Summary

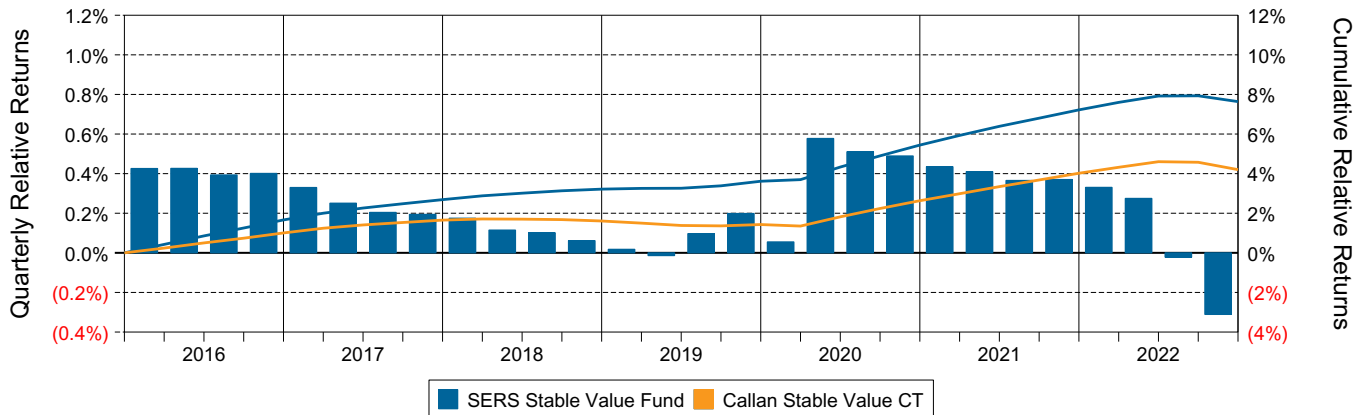
Return Analysis

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

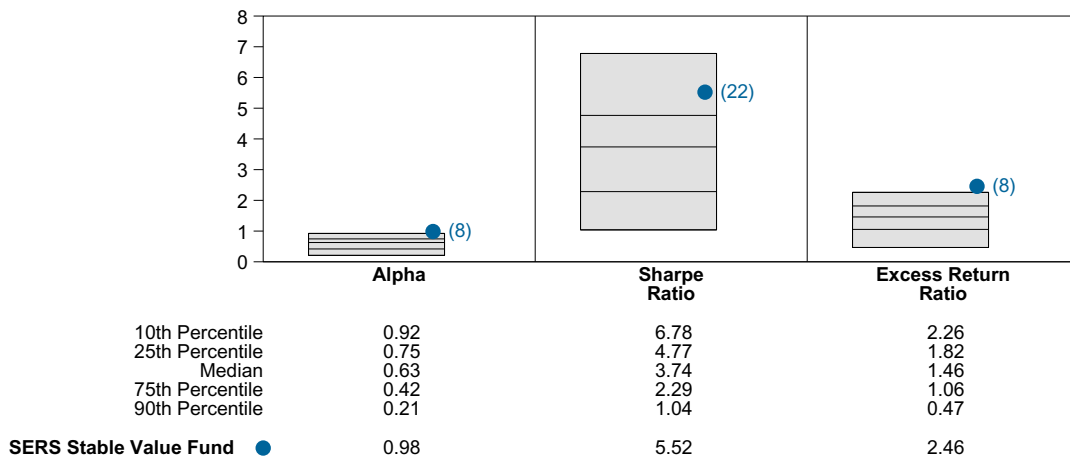
Performance vs Callan Stable Value CT (Institutional Net)



Cumulative and Quarterly Relative Returns vs 3-month Treasury Bill



Risk Adjusted Return Measures vs 3-month Treasury Bill Rankings Against Callan Stable Value CT (Institutional Net) Seven Years Ended December 31, 2022



SERS U.S. Bond Index Fund

Period Ended December 31, 2022

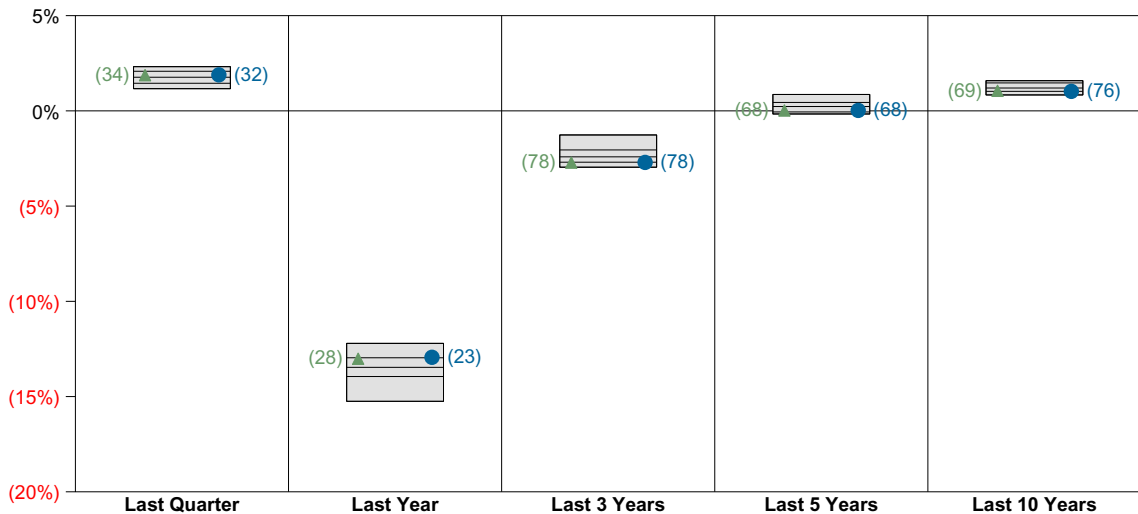
Investment Philosophy

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 1.89% return for the quarter placing it in the 32 percentile of the Callan Core Bond Mutual Funds group for the quarter and in the 23 percentile for the last year.
- SERS U.S. Bond Index Fund's portfolio outperformed the Blmbg Aggregate by 0.02% for the quarter and outperformed the Blmbg Aggregate for the year by 0.07%.

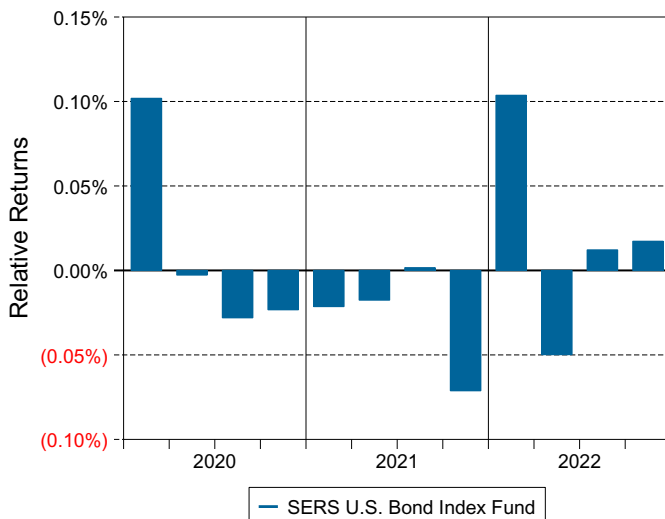
Performance vs Callan Core Bond Mutual Funds (Institutional Net)



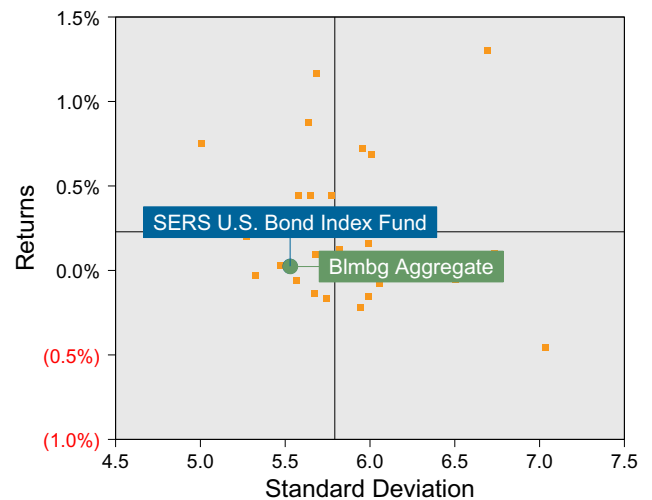
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	2.32	(12.21)	(1.26)	0.86	1.59
25th Percentile	2.08	(12.96)	(2.05)	0.44	1.47
Median	1.77	(13.47)	(2.41)	0.23	1.20
75th Percentile	1.45	(13.95)	(2.70)	(0.06)	1.03
90th Percentile	1.17	(15.25)	(2.96)	(0.16)	0.84

SERS U.S. Bond Index Fund	●	1.89	(12.94)	(2.71)	0.02	1.02
Blmbg Aggregate	▲	1.87	(13.01)	(2.71)	0.02	1.06

Relative Return vs Blmbg Aggregate



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

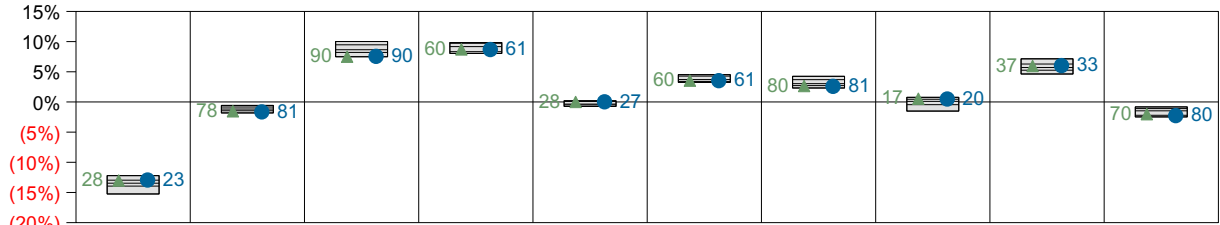


SERS U.S. Bond Index Fund Return Analysis Summary

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.

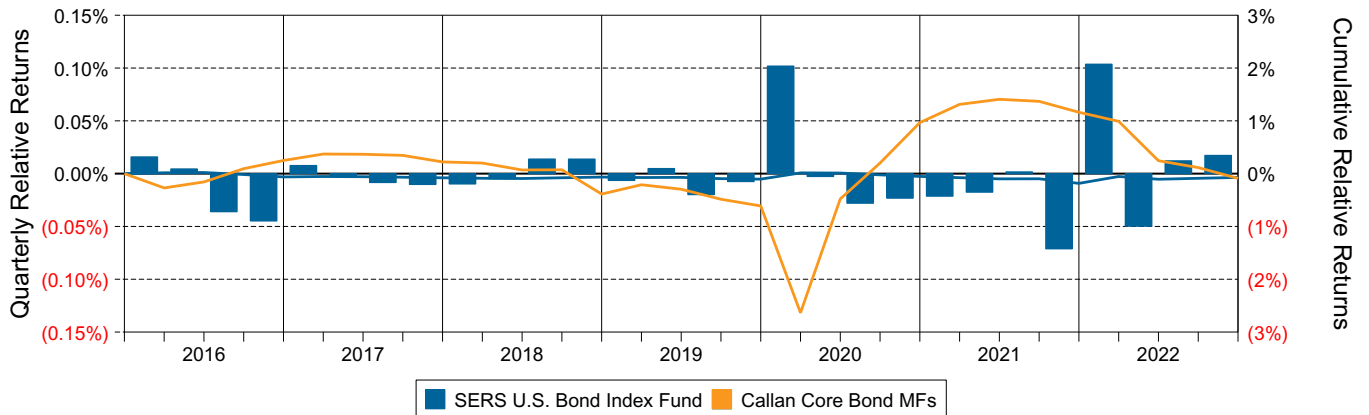
Performance vs Callan Core Bond Mutual Funds (Institutional Net)



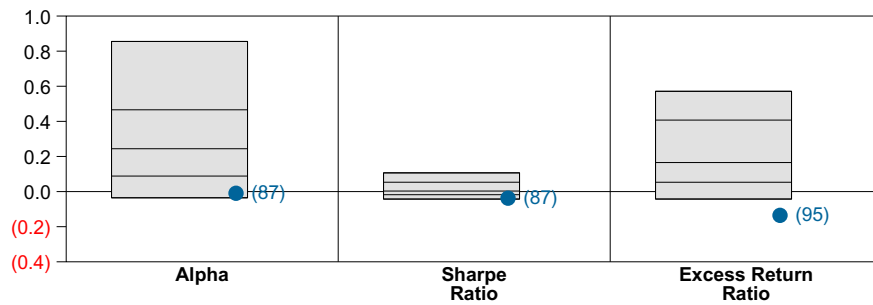
10th Percentile	(12.21)	(0.57)	10.01	9.85	0.20	4.52	4.25	0.77	7.15	(0.82)
25th Percentile	(12.96)	(0.84)	9.47	9.72	0.09	4.28	3.70	0.45	6.29	(1.10)
Median	(13.47)	(1.17)	8.65	9.17	(0.35)	3.71	3.03	0.10	5.71	(1.47)
75th Percentile	(13.95)	(1.46)	8.21	8.33	(0.49)	3.40	2.71	(0.45)	5.26	(2.21)
90th Percentile	(15.25)	(1.82)	7.49	8.04	(0.73)	3.25	2.31	(1.52)	4.63	(2.48)

SERS U.S. Bond Index Fund	● (12.94)	(1.65)	7.56	8.69	0.02	3.53	2.59	0.49	6.03	(2.26)
Blmbg Aggregate	▲ (13.01)	(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 December 31, 2022



10th Percentile	0.86	0.11	0.57
25th Percentile	0.47	0.05	0.41
Median	0.24	0.00	0.17
75th Percentile	0.09	(0.02)	0.05
90th Percentile	(0.04)	(0.04)	(0.04)

SERS U.S. Bond Index Fund	● (0.01)	(0.04)	(0.14)
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SERS U.S. Bond Index Fund

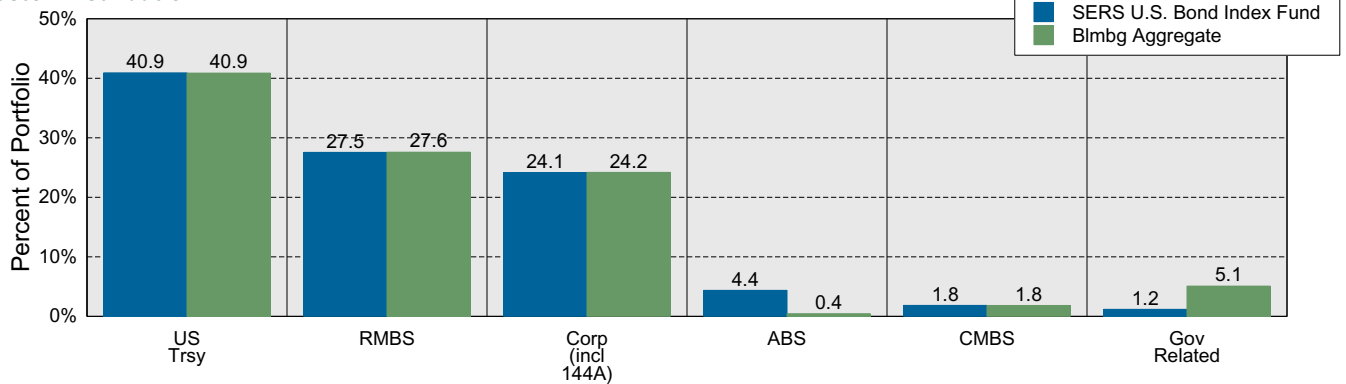
Portfolio Characteristics Summary

As of December 31, 2022

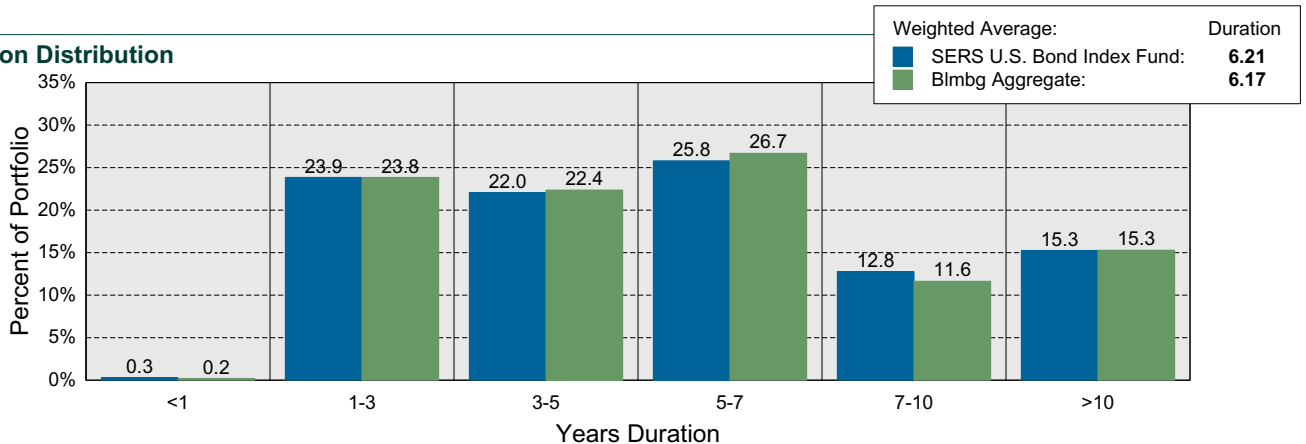
Portfolio Structure Comparison

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.

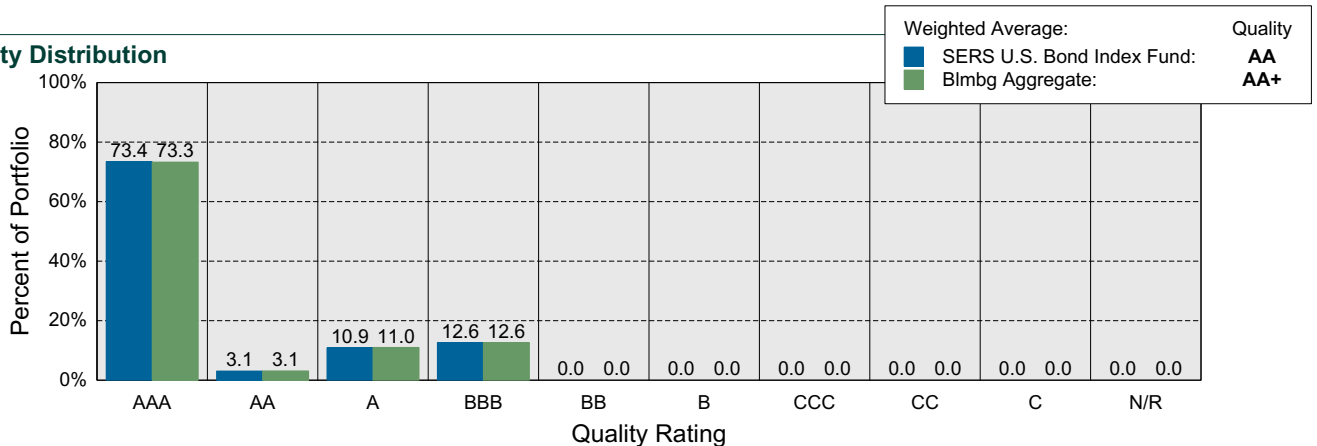
Sector Distribution



Duration Distribution



Quality Distribution



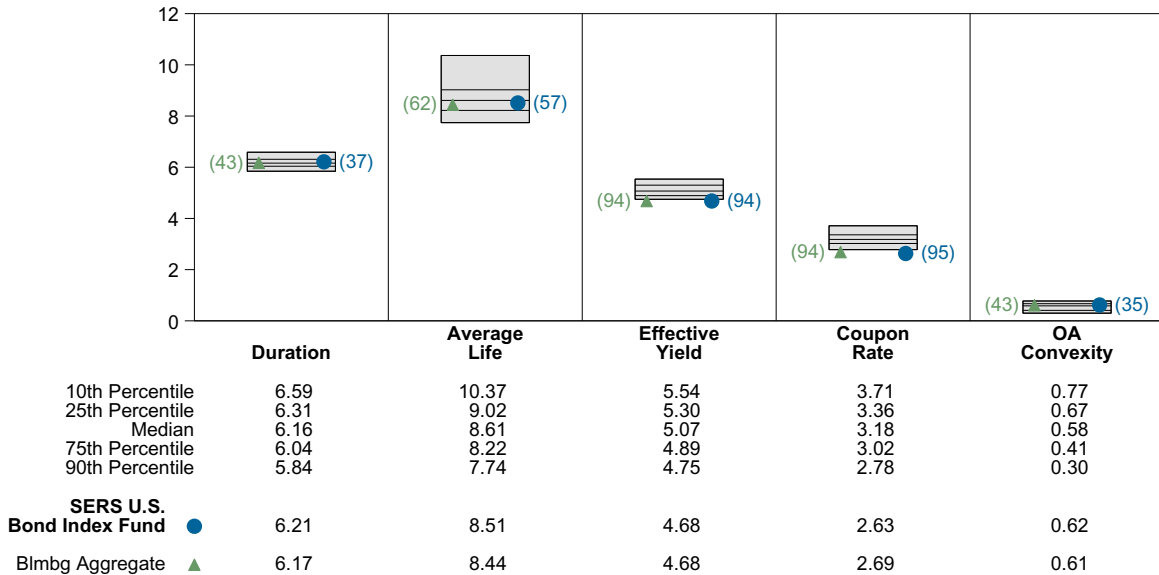
SERS U.S. Bond Index Fund

Bond Characteristics Analysis Summary

Portfolio Characteristics

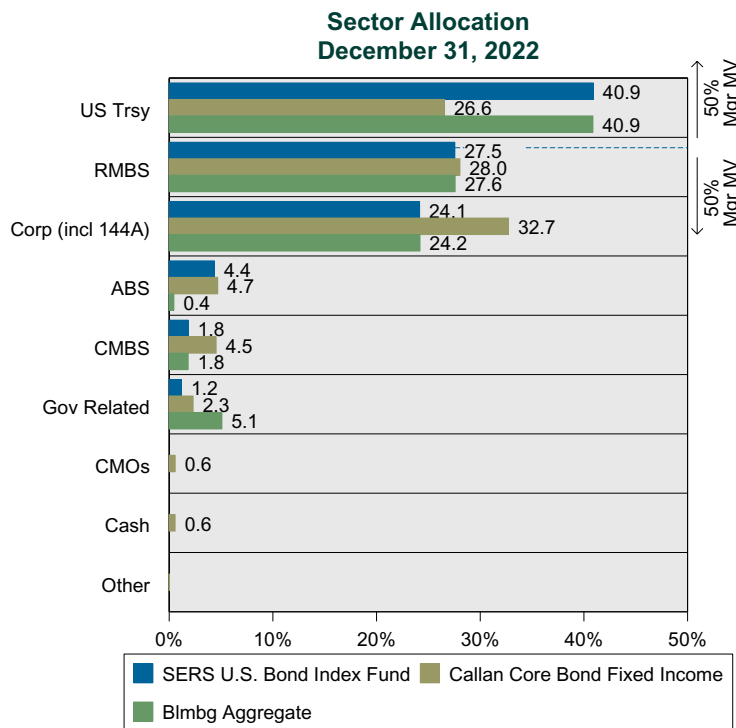
This graph compares the manager's portfolio characteristics with the range of characteristics for the portfolios which make up the manager's style group. This analysis illustrates whether the manager's current holdings are consistent with other managers employing the same style.

Fixed Income Portfolio Characteristics Rankings Against Callan Core Bond Fixed Income as of December 31, 2022

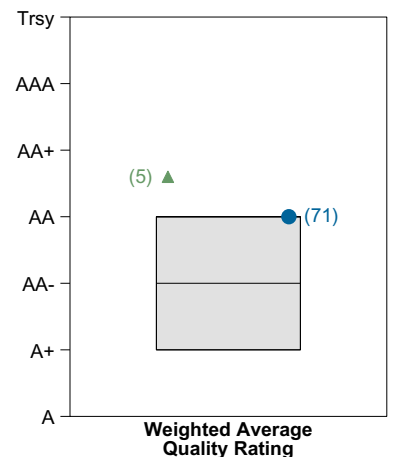


Sector Allocation and Quality Ratings

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

2022 ESG Survey | Callan's 10th annual survey assesses the status of environmental, social, and governance (ESG) investing in the U.S. institutional investment market.

Considering Currency: A Guide for Institutional Investors | This guide to currency trends over time provides institutional investors with multiple ways to benchmark and analyze their portfolios.

2022 Nuclear Decommissioning Funding Study | Julia Moriarty offers key insights into the status of nuclear decommissioning funding to make peer comparisons more accurate and relevant.

Blog Highlights

What DC Plan Sponsors Should Know About Recent Litigation Trends | Callan reviewed lawsuits filed against DC plans between January 2019 and August 2022, to provide an analysis of trends in litigation centered on the fiduciary duties outlined in ERISA.

How Does Your Public DB Plan Measure Up? | Most public DB plans saw sharp losses for the fiscal year ended 6/30/22. However, plan returns for fiscal year 2021 were the strongest in three decades.

Index Selection Within TDF Benchmarks Can Make a Big Difference | Most TDF providers build a custom benchmark for performance comparisons. While this approach is useful, it does not capture differences in glidepath design and asset allocation that are the major drivers of relative performance.

Webinar Replays

Callan's 2023-2032 Capital Markets Assumptions | During this webinar, Jay Kloepfer, Kevin Machiz, and Adam Lozinski described our 2023-2032 Capital Markets Assumptions, discussed the process

and rationale behind these long-term assumptions, and explained the potential implications for strategic recommendations.

Corporate Pension Hibernation | Callan specialists explore why closed and frozen plans might wish to hibernate in the current market, thereby deferring the decision to fully terminate until the future.

Research Cafe: ESG Interview Series | During this interview, Tom Shingler of Callan discusses with Sara Rosner, director of environment research and engagement for AllianceBernstein's responsible investing team, carbon emissions and why they matter to investors.

Quarterly Periodicals

Private Equity Update, 3Q22 | A high-level summary of private equity activity in the quarter through all the investment stages

Active vs. Passive Charts, 3Q22 | A comparison of active managers alongside relevant benchmarks over the long term

Market Pulse, 3Q22 | 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, 3Q22 | 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, 3Q22 | Commentary on developments for hedge funds and multi-asset class (MAC) strategies

Real Assets Update, 3Q22 | A summary of market activity for real assets and private real estate during the quarter

Private Credit Update, 3Q22 | A review of performance and fundraising activity for private credit during the quarter

Events

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

Please mark your calendar and look forward to upcoming invitations:

2023 National Conference

April 2-4, 2023 – Scottsdale, AZ

2023 June Workshops

June 27, 2023 – New York

June 29, 2023 – Chicago

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

Education: By the Numbers

50+

Unique pieces of research the Institute generates each year

525

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

3,700

Total attendees of the "Callan College" since 1994

Education

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

Introduction to Investments

March 1-2 – Chicago

May 23-25 – Virtual

This program familiarizes institutional investor trustees and staff and asset management advisers with basic investment theory, terminology, and practices. Our virtual session is held over three days with virtual modules of 2.5-3 hours, while the in-person session lasts one-and-a-half days. This course is designed for individuals with less than two years of experience with asset-management oversight and/or support responsibilities. Virtual tuition is \$950 per person and includes instruction and digital materials. In-person tuition is \$2,350 per person and includes instruction, all materials, breakfast and lunch on each day, and dinner on the first evening with the instructors.

Additional information including registration can be found at: callan.com/events-education



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

Greg Allen, CEO and Chief Research Officer

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