

December 5, 2022



**Pennsylvania State Employees'
Retirement System – 401(a) Plan**

Third Quarter 2022

Executive Summary

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Market Environment

Equity and Fixed Income Markets Both Fell Again in 3Q22

Negative returns for stocks and bonds at the same time for three quarters are extremely unusual

Global equity markets down sharply in each quarter, starting with Russian invasion

- Similar impact year-to-date across all equity market segments: developed, emerging, small cap

Fixed income down with sharply higher inflation and interest rates

- Bloomberg Aggregate: -14.6% year-to-date, worst 9 months ever for the index
- CPI-U: +8.2% for the year ended 3Q22

Number of times stocks and bonds have been down together

- 38 quarters in almost 100 years, about 10% of the quarters
- But just twice on annual basis

Inflation spiked to highest rate in decades

Economic data show growth hit 'pause'

- GDP rose 2.6% in 3Q22 after falling in both 2Q22 and 1Q22; expect another loss in 4Q
- Forecasters have cut growth estimates for 2022 to below 0%, and to 1.5% for 2023.

Returns for Periods ended 9/30/22

	1 Quarter	Year to Date	1 Year	5 Years	10 Years	25 Years
U.S. Equity						
Russell 3000	-4.46	-24.62	-17.63	8.62	11.39	7.48
S&P 500	-4.88	-23.87	-15.47	9.24	11.70	7.45
Russell 2000	-2.19	-25.10	-23.50	3.55	8.55	6.73
Global ex-U.S. Equity						
MSCI World ex USA	-9.20	-26.23	-23.91	-0.39	3.62	3.69
MSCI Emerging Markets	-11.57	-27.16	-28.11	-1.80	1.05	--
MSCI ACWI ex USA Small Cap	-8.37	-29.37	-28.93	-0.56	4.44	5.64
Fixed Income						
Bloomberg Aggregate	-4.75	-14.61	-14.60	-0.27	0.89	4.02
90-day T-Bill	0.46	0.61	0.62	1.15	0.68	1.92
Bloomberg Long Gov/Credit	-9.03	-28.94	-27.41	-1.17	1.35	5.51
Bloomberg Global Agg ex-US	-8.85	-23.88	-24.77	-4.03	-2.39	2.42
Real Estate						
NCREIF Property	3.23	12.25	19.15	9.19	9.76	9.51
FTSE Nareit Equity	-9.94	-28.13	-16.41	2.93	6.26	7.73
Alternatives						
CS Hedge Fund Index	0.35	0.14	1.08	4.53	4.35	5.87
Cambridge Private Equity*	-5.60	-2.04	3.34	18.22	15.90	14.75
Bloomberg Commodity	-4.11	13.57	11.80	6.96	-2.14	1.47
Gold Spot Price	-7.49	-8.56	-4.84	5.41	-0.59	6.62
Inflation - CPI-U	0.17	6.46	8.20	3.76	2.52	2.47

*Cambridge PE data through 06/30/22.

Sources: Bloomberg, Callan, Cambridge, Credit Suisse, FTSE Russell, MSCI, NCREIF, S&P Dow Jones Indices

Diversification Remains Key Risk Control

Periodic Table of Investment Returns

2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	3 Qtrs. 2022
Emerging Markets	Emerging Markets	Emerging Markets	Emerging Markets	Emerging Markets	U.S. Fixed	Emerging Markets	Small Cap	Real Estate Funds	Emerging Markets	Small Cap	Large Cap	Real Estate Funds	Small Cap	Emerging Markets	Real Estate Funds	Large Cap	Small Cap	Large Cap	Real Estate Funds
55.82%	25.55%	34.00%	32.17%	39.38%	5.24%	78.51%	26.85%	14.96%	18.23%	38.82%	13.69%	13.95%	21.31%	37.28%	7.36%	31.49%	19.96%	28.71%	12.36%
Small Cap	Non-U.S. Equity	Real Estate Funds	Non-U.S. Equity	Real Estate Funds	Non-U.S. Fixed	High Yield	Emerging Markets	U.S. Fixed	Non-U.S. Equity	Large Cap	Real Estate Funds	Large Cap	High Yield	Non-U.S. Equity	Cash Equivalent	Small Cap	Large Cap	Real Estate Funds	Cash Equivalent
47.25%	20.38%	20.15%	25.71%	14.84%	4.39%	58.21%	18.88%	7.84%	16.41%	32.39%	11.46%	1.38%	17.13%	24.21%	1.87%	25.52%	18.40%	21.02%	0.61%
Non-U.S. Equity	Small Cap	Non-U.S. Equity	Small Cap	Hedge Funds	Cash Equivalent	Non-U.S. Equity	Real Estate Funds	High Yield	Small Cap	Non-U.S. Equity	U.S. Fixed	U.S. Fixed	Large Cap	Large Cap	U.S. Fixed	Non-U.S. Equity	Emerging Markets	Small Cap	Hedge Funds
39.42%	18.33%	14.47%	18.37%	12.56%	2.06%	33.67%	15.26%	4.98%	16.35%	21.02%	5.97%	0.55%	11.96%	21.83%	0.01%	22.49%	18.31%	14.82%	0.14%
High Yield	Non-U.S. Fixed	Hedge Funds	Large Cap	Non-U.S. Equity	Real Estate Funds	Small Cap	High Yield	Non-U.S. Fixed	Large Cap	Real Estate Funds	Small Cap	Cash Equivalent	Emerging Markets	Small Cap	High Yield	Emerging Markets	Non-U.S. Fixed	Non-U.S. Equity	U.S. Fixed
28.97%	12.54%	7.61%	15.79%	12.44%	-10.70%	27.17%	15.12%	4.36%	16.00%	12.90%	4.89%	0.05%	11.19%	14.65%	-2.08%	18.44%	10.11%	12.62%	-14.61%
Large Cap	Real Estate Funds	Large Cap	Real Estate Funds	Non-U.S. Fixed	Hedge Funds	Large Cap	Large Cap	Large Cap	High Yield	Hedge Funds	Hedge Funds	Hedge Funds	Real Estate Funds	Non-U.S. Fixed	Non-U.S. Fixed	High Yield	Non-U.S. Equity	Hedge Funds	High Yield
28.68%	12.00%	4.91%	15.27%	11.03%	-19.07%	26.47%	15.06%	2.11%	15.81%	9.73%	4.13%	-0.71%	7.79%	10.51%	-2.15%	14.32%	7.59%	8.23%	-14.74%
Non-U.S. Fixed	High Yield	Small Cap	Hedge Funds	U.S. Fixed	High Yield	Hedge Funds	Hedge Funds	Cash Equivalent	Real Estate Funds	High Yield	High Yield	Non-U.S. Equity	Non-U.S. Equity	High Yield	Hedge Funds	Hedge Funds	U.S. Fixed	High Yield	Large Cap
19.36%	11.13%	4.55%	13.86%	6.97%	-26.16%	18.57%	10.95%	0.10%	9.79%	7.44%	2.45%	-3.04%	2.75%	7.50%	-3.19%	9.31%	7.51%	5.28%	-23.87%
Hedge Funds	Large Cap	Cash Equivalent	High Yield	Large Cap	Small Cap	Non-U.S. Fixed	Non-U.S. Equity	Hedge Funds	Hedge Funds	Cash Equivalent	Cash Equivalent	Small Cap	U.S. Fixed	Hedge Funds	Large Cap	U.S. Fixed	High Yield	Cash Equivalent	Non-U.S. Fixed
15.44%	10.88%	3.06%	11.85%	5.49%	-33.79%	7.53%	8.95%	-2.52%	7.67%	0.07%	0.04%	-4.41%	2.65%	7.12%	-4.38%	8.72%	7.11%	0.05%	-23.88%
Real Estate Funds	Hedge Funds	High Yield	Non-U.S. Fixed	Cash Equivalent	Large Cap	U.S. Fixed	U.S. Fixed	Small Cap	U.S. Fixed	U.S. Fixed	Emerging Markets	High Yield	Non-U.S. Fixed	Real Estate Funds	Small Cap	Non-U.S. Fixed	Hedge Funds	U.S. Fixed	Small Cap
8.28%	9.64%	2.74%	8.16%	5.00%	-37.00%	5.93%	6.54%	-4.18%	4.21%	-2.02%	-2.19%	-4.47%	1.49%	6.66%	-11.01%	5.09%	6.36%	-1.54%	-25.10%
U.S. Fixed	U.S. Fixed	U.S. Fixed	Cash Equivalent	High Yield	Non-U.S. Equity	Cash Equivalent	Non-U.S. Fixed	Non-U.S. Equity	Non-U.S. Fixed	Emerging Markets	Non-U.S. Fixed	Non-U.S. Fixed	Hedge Funds	U.S. Fixed	Non-U.S. Equity	Real Estate Funds	Cash Equivalent	Emerging Markets	Non-U.S. Equity
4.10%	4.34%	2.43%	4.86%	1.87%	-43.56%	0.21%	4.95%	-12.21%	4.09%	-2.60%	-3.09%	-6.02%	1.25%	3.54%	-14.09%	4.39%	0.67%	-2.54%	-26.23%
Cash Equivalent	Cash Equivalent	Non-U.S. Fixed	U.S. Fixed	Small Cap	Emerging Markets	Real Estate Funds	Cash Equivalent	Emerging Markets	Cash Equivalent	Non-U.S. Fixed	Non-U.S. Equity	Emerging Markets	Cash Equivalent	Cash Equivalent	Emerging Markets	Cash Equivalent	Real Estate Funds	Non-U.S. Fixed	Emerging Markets
1.15%	1.33%	-8.65%	4.33%	-1.57%	-53.33%	-30.40%	0.13%	-18.42%	0.11%	-3.08%	-4.32%	-14.92%	0.33%	0.86%	-14.57%	2.28%	0.34%	-7.05%	-27.16%

- Bloomberg Barclays Corp High Yield ● Bloomberg Barclays Global Aggregate ex US ● Bloomberg Barclays US Aggregate
- Credit Suisse Hedge Fund ● ICE BofAML US 3-Month Treasury Bill ● MSCI Emerging Markets ● MSCI World ex USA
- NFI-ODCE (value-weighted net) ● Russell 2000 ● S&P 500

Topical DC Updates

SECURE 2.0 Status Update:

- Congress is still reconciling the three bills with the potential for a final bill to be voted on before 2022 year end.
- CITs to be available for 403(b) plans
- Required minimum distributions (RMDs) pushed back to age 75
- Allowing a company match for those paying off student loans
- Many other features to expand coverage and saving

DOL Rules Update:

- DOL waiting until after mid-term election for final ESG rule
- DOL expected to re-engage on Fiduciary Rule in 2023

Callan 2023 DC Research Projects:

- Managed account selection and ongoing monitoring check list
- Retirement income evaluation framework versus target date funds
- Brokerage window filters and screens for participant usage
- Stable value fund evaluation in a sharply rising rate environment

Callan DC Insights: Litigation – Money, Money, Money

Note: While PA SERS 401a Plan is not subject to ERISA, Callan is providing this for fiduciary informational purposes.

Takeaway: Alleged excessive fees continue to be one of the most common claims in defined contribution (DC) litigation. The fees in question could be investment manager fees, costs for plan administration, or other sources of revenue that service providers receive. Plan sponsors should consistently apply prudent processes to help demonstrate compliance with their fiduciary obligations outlined in the Employee Retirement Income Security Act (ERISA).

Background: DC plans use investment management and administrative services that incur fees paid by participants, the plan, or the plan sponsor. ERISA requires plan fiduciaries to act prudently, and such prudence is demonstrated by following a process to select and monitor the suite of services and actual utilization, including a review of the fees for these services.

Callan's review of trends in DC litigation includes 165 lawsuits filed against mid- to jumbo-sized plans (between \$175 million to \$10 billion-plus) over the past four years. Nearly three-quarters include a breach of prudence claim based on the administrative and/or service fees. The lawsuits allege the plan fiduciary did not undertake a prudent process since the fees are allegedly excessive.

The claims of excessive fees in these lawsuits raise an issue similar to the allegations in many lawsuits around fund selection—identifying an appropriate benchmark. These lawsuits typically argue that plans should use a comparison group made up of a select group of DC plans (usually 15-20) based on publicly available fee information. Further, three out of five lawsuits with allegations of excessive fees include claims that the plan sponsor had not conducted an RFP during the class period, arguing that this process could have identified the allegedly excessive fees.

At the same time, 64% of these lawsuits include a reference to the use of revenue-sharing that could potentially be used to pay administrative or other fees. It is notable that five lawsuits in this time period include a claim that the plan fiduciaries should have selected more expensive investment options that included a revenue-sharing component. The majority of recordkeepers have the ability to reallocate revenue-sharing back to the participant accounts that generated such revenue, and these lawsuits allege the net cost of the fund should be the primary consideration. While ERISA does not include guidance on revenue-sharing, documenting the decisions made and rationale can be used to demonstrate a prudent process.

Another 10 lawsuits include claims that the plan had failed to disclose fees in a way to support participant decision-making (e.g., rebated revenue-sharing would result in lower net investment management fees). Plan fees paid by participants are generally disclosed annually and based on the Department of Labor's 404(5)(a) regulations. These regulations describe in detail which fees should be disclosed and do not require this level of detail.

Callan DC Insights: Litigation – Money, Money, Money (Cont.)

Note: While PA SERS 401a Plan is not subject to ERISA, Callan is providing this for fiduciary informational purposes.

Bottom Line: Plan fiduciaries can seek to protect themselves against these claims by conducting regular fee benchmarking studies or formal vendor searches, negotiating fees, and documenting the use of revenue-sharing, if any. Callan recommends conducting a recordkeeper and/or trustee search every five to seven years (or more frequently if there are significant changes to the plan or population, such as a merger or acquisition), interspersed with regular fee benchmarking. These benchmarks should include an evaluation of revenue-sharing, net investment management fees, and indirect compensation. A plan sponsor should be keenly aware of the revenue generated from the plan and have documentation describing who pays for that revenue and that it is reasonable for the services rendered.

Callan DC Insights: Managing Risk – Managed Accounts

Takeaway: While claims against fund selection or plan fees continue to be the most common allegations in lawsuits against plan fiduciaries, managed account services have become a new focus in defined contribution (DC) litigation. While these types of lawsuits have yet to identify consistent claims, the potential expansion of litigation requires DC plan sponsors to carefully review the utilization and outcomes of ancillary services, like managed account services.

Background: A managed account product determines the appropriate investment allocations in a retirement account on behalf of participants who elect to use the service, rebalances the account on an ongoing basis, and adjusts the allocation based on the time until the participant will likely retire. Managed accounts typically seek to incorporate a participant's total financial picture, including non-retirement assets, spousal assets, etc. The fees for this service are paid via an asset-based charge deducted from participant accounts.

There are important fiduciary considerations around offering this type of service. Plan fiduciaries that elect to offer a managed account product are required to make prudent decisions around the provider selection—which is often limited to one or two providers based on the recordkeeper. “ERISA’s fiduciary provisions require plan fiduciaries, when selecting and monitoring service providers...to act prudently and solely in the interest of the plan’s participants and beneficiaries. Responsible plan fiduciaries also must ensure that arrangements with their service providers are ‘reasonable’ and that only ‘reasonable’ compensation is paid for services. Fundamental to the ability of fiduciaries to discharge these obligations is obtaining information sufficient to enable them to make informed decisions about an employee benefit plan’s services, the costs of such services, and the service providers.” (DOL 2014 Fact Sheet, emphasis added)

The providers themselves typically are considered fiduciaries for the recommended asset allocations under ERISA section 3(38), as the provider implements the advice by taking discretionary control of the participant’s account. However, not all managed account services would fall into that fiduciary category, including retirement projections (“at retirement you will have \$X dollars per month”) or retirement income calculations (“now that you are retired, we project you can take \$Y dollars from the plan”), among others.

As detailed in the previous DC Insights in this series, Callan’s review of trends in DC litigation includes 165 lawsuits filed against mid- to jumbo-sized plans (\$175 million to \$10 billion-plus) over the past four years. Of these, nearly one in five include a claim made against managed account services. 42% of these lawsuits include allegations that the managed account service fees are too high based on the services offered. This claim may be partnered with claims that the plan sponsor did not monitor the revenue that the recordkeeper receives in conjunction with these services. Further, 31% allege that the managed account services underperform based on other plan options (e.g., the target date fund) and 15% include allegations against the managed account provider itself, claiming that the managed account provider breached its duty of loyalty by directing assets into proprietary recordkeeper investments.

Callan DC Insights: Managing Risk – Managed Accounts (Cont.)

While not direct allegations of a breach, a number of these lawsuits also note the limited number of participants who input personalized information into the product and the seemingly minor variations in the asset allocation driven by those customizations. Typically, these claims are used to support an allegation that the fees were too high for this type of service.

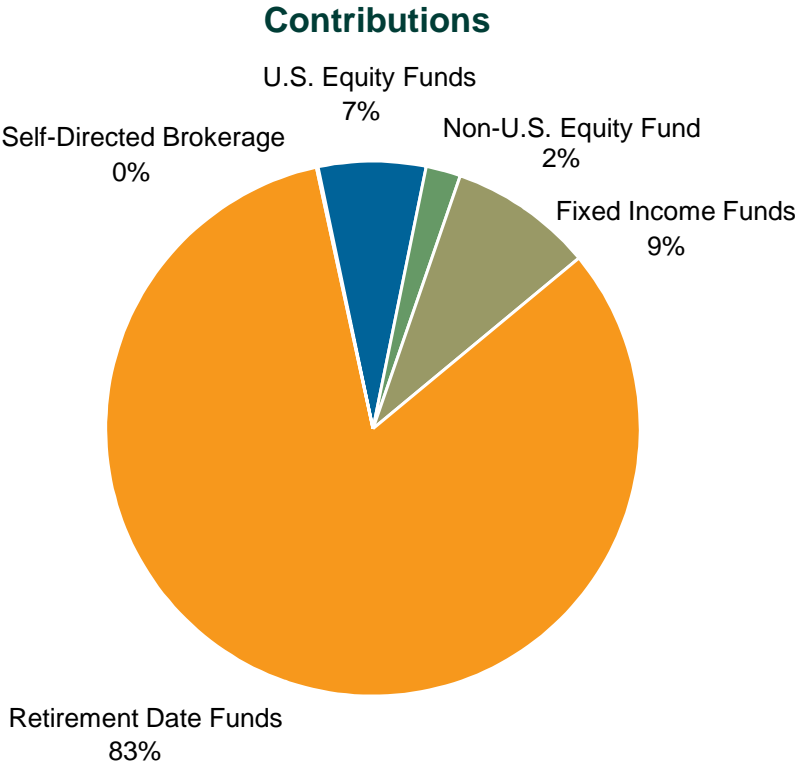
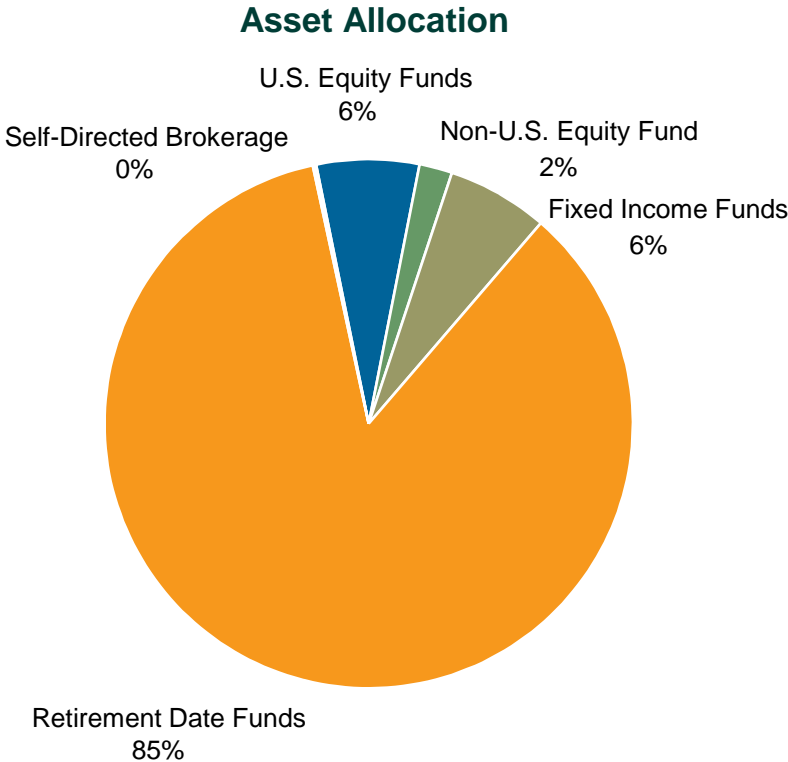
Bottom Line: The pace of new litigation and novel claims being explored reinforces the need for plan fiduciaries to follow a process to review and select any service providers and to monitor those service providers on an ongoing basis. Plan fiduciaries should document the process and decisions made to demonstrate their due diligence. Callan recommends conducting a managed account evaluation every three to five years, including a review of the service offered, utilization, projected returns, fees, and revenue shared with other parties. On an ongoing basis, the plan fiduciaries should monitor the performance of managed accounts as they would any other investment.

Callan

PA SERS 401(a) Plan Performance Review

401(a) Plan Asset Allocation & Contributions

As of September 30, 2022



Asset Allocation

As of September 30, 2022

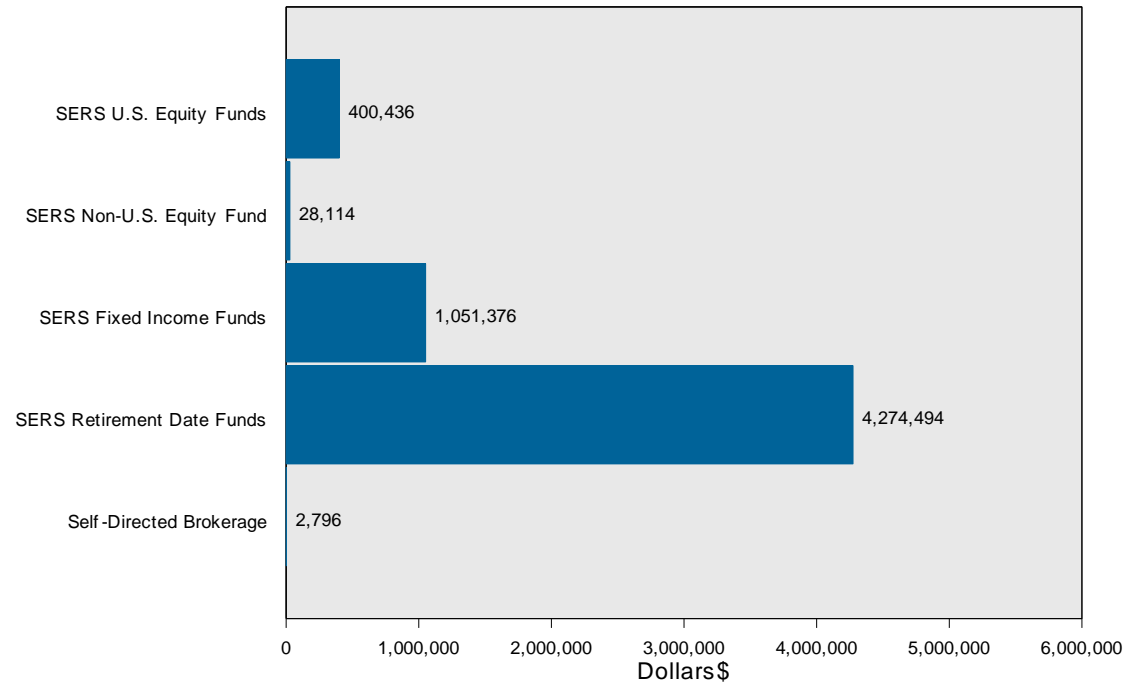
	September 30, 2022			June 30, 2022		
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
SERS Retirement Date Funds	\$71,654,339	85.32%	\$9,812,913	\$(5,538,418)	\$67,379,844	86.13%
SERS Post Retirement Fund	1,230,510	1.47%	148,824	(73,171)	1,154,857	1.48%
SERS 2025 Retirement Fund	3,410,200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

Changes in Market Values and Contributions

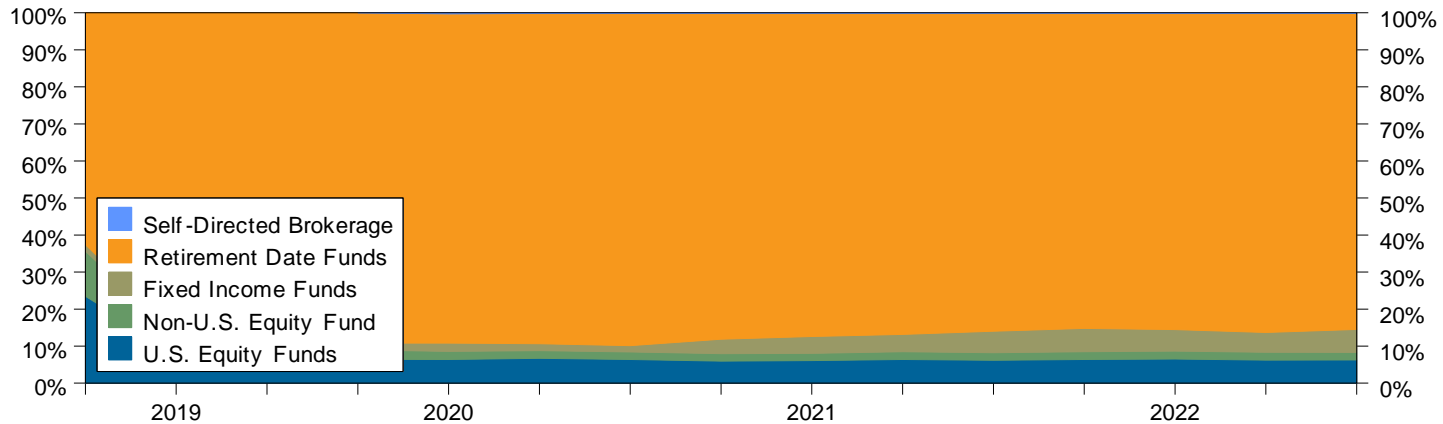
As of September 30, 2022

- The chart to the right shows the change in fund values across the various investment options for the quarter ended September 30, 2022. The change in value for each fund is the result of a combination of 3 factors.

1. Market movements
2. Contributions or disbursements into or out of the fund by the participants (and any matching done by the company)
3. Transfers between funds by the participants.



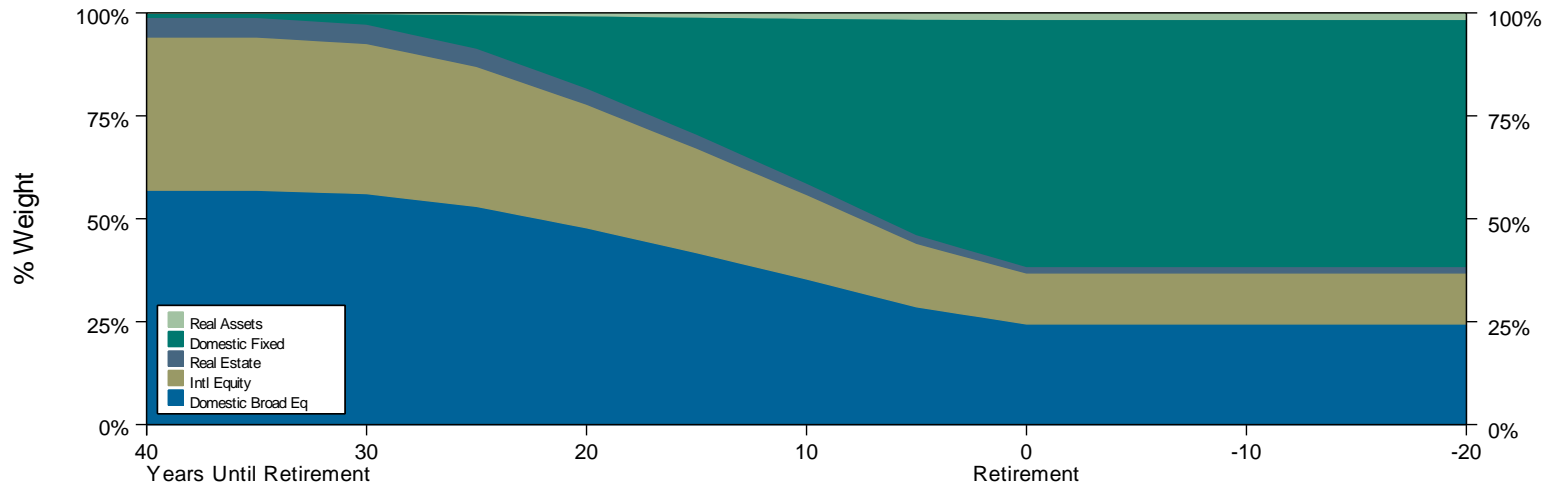
Historical Asset Allocation



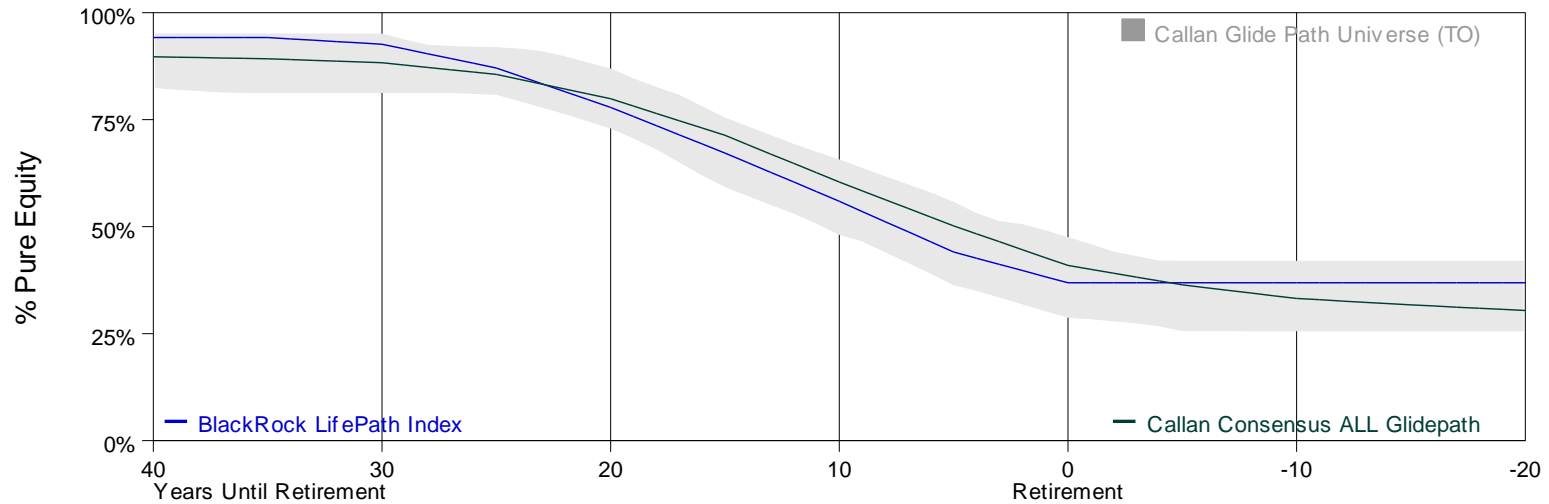
Blackrock LifePath Retirement Funds

Glidepath and Equity Roll-down Exposure as of September 30, 2022

BlackRock LifePath Retirement Funds Glidepath



BlackRock LifePath Retirement Funds Equity Roll-down Exposure



Cumulative Performance - Net of Fees

As of September 30, 2022

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

Note: SERS Funds are the top fund in each grouping followed by each fund's respective benchmark and median peer.

Cumulative Performance - Net of Fees

As of September 30, 2022

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

Note: SERS Funds are the top fund in each grouping followed by each fund's respective benchmark and median peer.

Funds not listed do not have longer term history.

Cumulative Performance - Net of Fees

As of September 30, 2022

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

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

Cumulative Performance - Net of Fees

As of September 30, 2022

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

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

*Funds not listed do not have longer term history.

Performance Summary & Expense Ratios as of September 30, 2022

Investment Manager	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	10 Year Return	5 Year Return Consistency	5 Year Risk Quadrant	Expense Ratio
Net of Fee Performance									
Target Date Funds									
SERS Post Retirement Fund Callan Tgt Date Ret Inc	-5.5 90	-16.4 81	0.4 39	2.3 24	3.7 19	3.6 20			0.08 76
BlackRock Post Retirement Index	-5.4 86	-16.3 80	0.4 39	2.2 24	3.7 20	3.6 21			
SERS 2025 Retirement Fund Callan Target Date 2025	-5.8 75	-17.0 52	1.1 64	2.8 60	4.8 67	4.9 83			0.08 74
BlackRock 2025 Index	-5.7 71	-16.9 49	1.0 64	2.8 61	4.8 68	4.8 84			
SERS 2030 Retirement Fund Callan Target Date 2030	-6.2 80	-17.9 47	1.7 63	3.3 51	5.5 61	5.5 77			0.08 72
BlackRock 2030 Index	-6.0 71	-17.8 45	1.7 63	3.3 52	5.4 65	5.4 78			
SERS 2035 Retirement Fund Callan Target Date 2035	-6.6 80	-18.8 44	2.3 60	3.8 44	6.2 53	6.1 77			0.08 74
BlackRock 2035 Index	-6.3 67	-18.7 43	2.3 60	3.8 48	6.1 63	6.0 81			
SERS 2040 Retirement Fund Callan Target Date 2040	-6.9 86	-19.7 48	2.8 53	4.2 35	6.7 39	6.5 72			0.08 71
BlackRock 2040 Index	-6.6 70	-19.6 46	2.8 53	4.1 37	6.6 49	6.4 77			
SERS 2045 Retirement Fund Callan Target Date 2045	-7.1 88	-20.4 56	3.2 44	4.4 26	7.1 34	6.9 68			0.08 74
BlackRock 2045 Index	-6.8 75	-20.3 54	3.2 47	4.4 32	7.0 43	6.8 70			
SERS 2050 Retirement Fund Callan Target Date 2050	-7.1 88	-20.8 61	3.4 37	4.6 16	7.2 24	7.2 51			0.08 71
BlackRock 2050 Index	-6.8 73	-20.7 57	3.4 39	4.5 20	7.1 32	7.0 61			
SERS 2055 Retirement Fund Callan Target Date 2055	-7.1 84	-20.9 58	3.4 34	4.6 17	7.2 26	7.3 51			0.08 78
BlackRock 2055 Index	-6.8 69	-20.8 53	3.4 34	4.5 22	7.1 39	7.2 54			
SERS 2060 Retirement Fund Callan Target Date 2060	-7.1 89	-20.9 58	3.4 42	4.6 21	7.2 45				0.08 77
BlackRock 2060 Index	-6.8 68	-20.8 54	3.4 42	4.5 25	7.1 51				

Returns:
■ above median
■ third quartile
■ fourth quartile

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

Risk Quadrant:

 Return
 Risk

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

Note: For returns, each SERS Fund and corresponding benchmark return are shown with their respective peer group rankings. For returns, lower peer group rankings are more desirable (e.g. 25th percentile equates to top quartile performance). Expense Ratio: Higher peer group rankings are more desirable (e.g. 75th percentile equates to bottom quartile/cheapest fees).

Performance Summary & Expense Ratios as of September 30, 2022

Investment Manager	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	10 Year Return	5 Year Return Consistency	5 Year Risk Quadrant	Expense Ratio
SERS 2065 Retirement Fund Callan Target Date 2065 BlackRock 2065 Index	-7.1 88	-21.0 45	3.3 52						0.08 56
Domestic Equity									
SERS U.S. Large Company Stock Index Fund Callan Lg Cap Broad MF S&P 500 Index	-4.9 52	-15.5 42	8.2 33	9.2 34	11.4 25	11.7 35			0.02 100
SERS U.S. All Company Index Fund Callan Multi Cap Brd MF Russell 3000 Index	-4.5 47	-17.7 49	7.8 27	8.6 28	10.8 23	11.4 23			0.03 99
U.S. Small/Mid Company Stock Index Fund Callan SMID Broad MFs Dow Jones US Completion	-2.7 54	-29.2 72	4.4 62	5.0 57	8.1 59	9.5 45			0.03 100
U.S. Small/Mid Company Stock Index Fund Callan SMID Broad MFs Dow Jones US Completion	-2.8 54	-29.6 73	4.2 62	4.7 62	7.8 60	9.2 54			
International Equity									
SERS Global Non-U.S. Index Fund Callan Non US Equity MFs MSCI ACWI ex US	-10.3 59	-25.0 32	-1.4 50	-0.6 47	3.5 29	3.2 65			0.05 99
SERS Global Non-U.S. Index Fund Callan Non US Equity MFs MSCI ACWI ex US	-9.9 48	-25.2 35	-1.5 52	-0.8 49	3.3 39	3.0 67			
Domestic Fixed Income									
SERS Short Term Investment Fund Callan Cash Database 3-month Treasury Bill	0.5 48	0.7 38	0.6 57	1.2 59	1.1 73	0.8 79			0.00 100
SERS Short Term Investment Fund Callan Cash Database 3-month Treasury Bill	0.5 54	0.6 41	0.6 67	1.1 79	1.0 90	0.7 90			
Comments: Callan Cash Database includes STIF, enhanced cash, and money market funds.									
SERS U.S. Short Term Bond Idx Fund Callan Short US Govt MFs Blmbg Gov/Cred 1-3 Yr	-1.5 25	-5.1 24	-0.4 18						0.02 100
SERS U.S. Short Term Bond Idx Fund Callan Short US Govt MFs Blmbg Gov/Cred 1-3 Yr	-1.5 25	-5.1 24	-0.4 17	0.7 9	0.8 12	0.8 1			
SERS U.S. TIPS Index Fund Callan TIPS MFs Blmbg US TIPS	-5.1 54	-11.6 36	0.8 44						0.02 99
SERS U.S. TIPS Index Fund Callan TIPS MFs Blmbg US TIPS	-5.1 54	-11.6 35	0.8 44	2.0 42	2.2 32	1.0 26			

Returns:
 above median
 third quartile
 fourth quartile

Return Consistency:
 above median
 third quartile
 fourth quartile

Risk Quadrant:
 above median
 third quartile
 fourth quartile

Expense Ratio:
 below median
 second quartile
 first quartile

Note: For returns, each SERS Fund and corresponding benchmark return are shown with their respective peer group rankings. For returns, lower peer group rankings are more desirable (e.g. 25th percentile equates to top quartile performance). Expense Ratio: Higher peer group rankings are more desirable (e.g. 75th percentile equates to bottom quartile/cheapest fees).

Performance Summary & Expense Ratios as of September 30, 2022

Investment Manager	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	10 Year Return	5 Year Return Consistency	5 Year Risk Quadrant	Expense Ratio
SERS U.S. Bond Index Fund	-4.7 51	-14.6 34	-3.3 81	-0.3 76	0.5 90	0.9 84			0.02 98
Callan Core Bond MFs									
BImbg Aggregate	-4.8 55	-14.6 34	-3.3 81	-0.3 76	0.5 89	0.9 83			

Returns:
 above median
 third quartile
 fourth quartile

Return Consistency:
 above median
 third quartile
 fourth quartile

Risk Quadrant:

Expense Ratio:
 below median
 second quartile
 first quartile

Note: For returns, each SERS Fund and corresponding benchmark return are shown with their respective peer group rankings. For returns, lower peer group rankings are more desirable (e.g. 25th percentile equates to top quartile performance). Expense Ratio: Higher peer group rankings are more desirable (e.g. 75th percentile equates to bottom quartile/cheapest fees).

401(a) Plan Investment Structure

Lineup Mapped to Callan's Clean Sheet



Callan

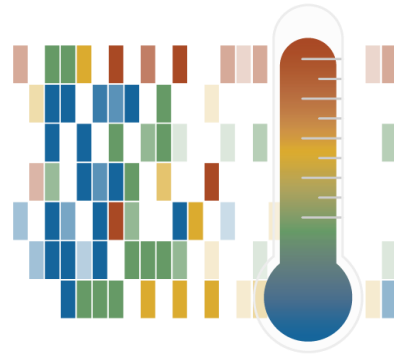
Appendix – Callan Update

Published Research Highlights from 3Q22

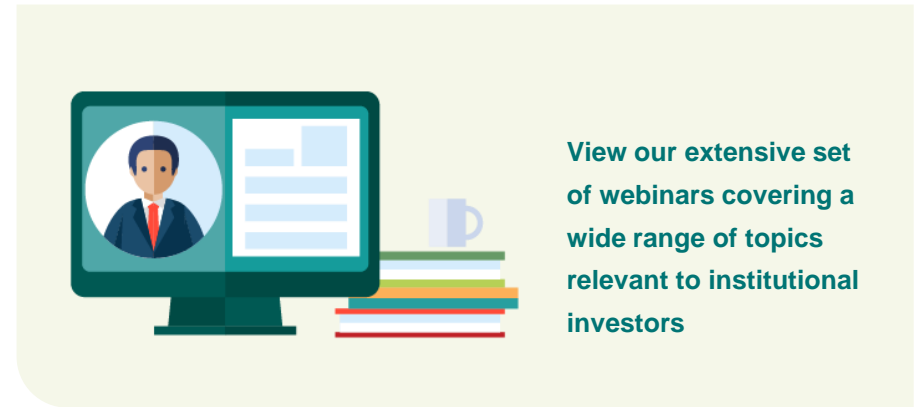
Research Café: Preliminary 2023 CMAs



Real Estate Indicators: Cool Enough or Too Hot?



On-Demand Webinars callan.com/ondemand-webinars



Recent Blog Posts

Bubbles Bursting Everywhere

Janet Becker-
Wold

The Fading Unicorn

Ashley Kahn

Target Date Funds and the Ever-Evolving Glidepath

Dario Buechi

Additional Reading

- Alternatives Focus* quarterly newsletter
- Active vs. Passive quarterly charts
- Capital Markets Review* quarterly newsletter
- Monthly Updates to the Periodic Table
- Market Pulse Flipbook* quarterly markets update
- Real Estate Indicators* market outlook

Callan Institute Events

Upcoming conferences, workshops, and webinars

Callan College

Intro to Alternatives

This course is for institutional investors, including trustees and staff members of public plans, corporate plans, and nonprofits. This session familiarizes trustees and staff with alternative investments like private equity, hedge funds, and real estate and how they can play a key role in any portfolio. In our “Callan College” on Alternatives, you will learn about the importance of allocations to alternatives, and how to consider integrating, evaluating, and monitoring them.

Intro to Investments—Learn the Fundamentals

This course is for institutional investors, including trustees and staff members of public plans, corporate plans, and nonprofits. This session familiarizes trustees and staff with basic investment theory, terminology, and practices.

- March 1–2, 2023 – In Person Session – Chicago
- May 24–25, 2023 – Virtual Session via Zoom

Please visit our website at www.callan.com/events-education as we add dates to our 2023 calendar!

Mark Your Calendar

Callan Institute’s 2023 National Conference

April 2–4, 2023
Scottsdale, Arizona

Watch your email for further details and an invitation.

Webinars & Research Café Sessions

Webinar: Rebalancing During This Unusual Market Environment

November 9, 2022 – 9:30am (PT)

Callan Updates

Firm updates by the numbers, as of 9/30/22

Total Associates: ~200

Ownership

- 100% employees
- 71% of employees are equity owners
- 55% of shareholders identify as women or minority

Total General and Investment Consultants: more than 55

Total Specialty and Research Consultants: more than 50

Total CFA/CAIA/FRMs: more than 55

Total Institutional Investor Clients: more than 475

Assets Under Advisement: more than \$3 trillion

Key Hires

- Paul Choi, VP, Global Manager Research (Non-U.S. Equity)

DEI Updates

- Adopted the CFA Institute’s Diversity, Equity, and Inclusion Code in 1Q22
- Launched our new Diversity, Equity & Belonging (DEB) program in 2Q22

“Not only is our Diversity, Equity & Belonging (DEB) initiative critical to Callan’s success, we hope it will ultimately influence our entire industry. Supporting this initiative from the position of CEO is the best way for me to ensure its success. As the executive sponsor, I can make sure our team has the support and the resources to effect real change.” — Greg Allen, CEO, Chief Research Officer & DEB Executive Sponsor



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