

February 25, 2020



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

Fourth Quarter 2019

Executive Summary

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Market Environment

Does Strong 2019 Spell Problems for 2020 and Beyond?

Fed rate cuts, solid corporate fundamentals, and even lower unemployment propelled U.S. equity markets in Q4.

Equity markets around the globe surged in Q4, and closed the year with outsized returns.

- S&P 500 Index was up 31.5%, MSCI World ex USA Index was up 22.5%, and MSCI Emerging Markets Index was up 18.4%. One-year results look particularly strong thanks to the sharp drop in Q4 2018 - lower starting point.

Prospect of a trade deal helped boost global ex-U.S. markets.

- Economic weakness, trade concerns remain for developed ex-U.S. and EM equities.

Fixed income markets enjoyed an “outlier” year.

- Bloomberg Aggregate Index was up 8.7%, contrary to all forecasts
- Investment grade credit the strongest performer in the U.S.; long credit was up 22.4%
- Yield curve shifted lower across maturities; inverted from 90-day to 10-year in April, then from 2- to 10-year in August, but ended the year no longer inverted.

Returns for Periods ended December 31, 2019

	1 Quarter	1 Year	5 Years	10 Years	25 Years
U.S. Equity					
Russell 3000	9.10	31.02	11.24	13.42	10.21
S&P 500	9.07	31.49	11.70	13.56	10.22
Russell 2000	9.94	25.52	8.23	11.83	9.35
Global ex-U.S. Equity					
MSCI World ex USA	7.86	22.49	5.42	5.32	5.31
MSCI Emerging Markets	11.84	18.44	5.61	3.68	--
MSCI ACWI ex USA Small Cap	11.01	22.42	7.04	6.92	5.93
Fixed Income					
Bloomberg Barclays Aggregate	0.18	8.72	3.05	3.75	5.56
90-day T-Bill	0.46	2.28	1.07	0.58	2.47
Bloomberg Barclays Long Gov/Credit	-1.12	19.59	5.42	7.59	7.90
Bloomberg Barclays Global Agg ex-US	0.67	5.09	1.62	1.50	4.38
Real Estate					
NCREIF Property	1.55	6.42	8.25	10.17	9.34
FTSE Nareit Equity	-0.76	26.00	7.21	11.94	10.64
Alternatives					
CS Hedge Fund	2.44	9.31	2.65	4.25	7.84
Cambridge Private Equity*	0.90	9.50	12.37	13.75	15.30
Bloomberg Commodity	4.42	7.69	-3.92	-4.73	1.70
Gold Spot Price	3.41	18.87	5.16	3.34	5.66
Inflation - CPI-U	0.08	2.29	1.82	1.75	2.18

*Cambridge PE data through September 30, 2019.

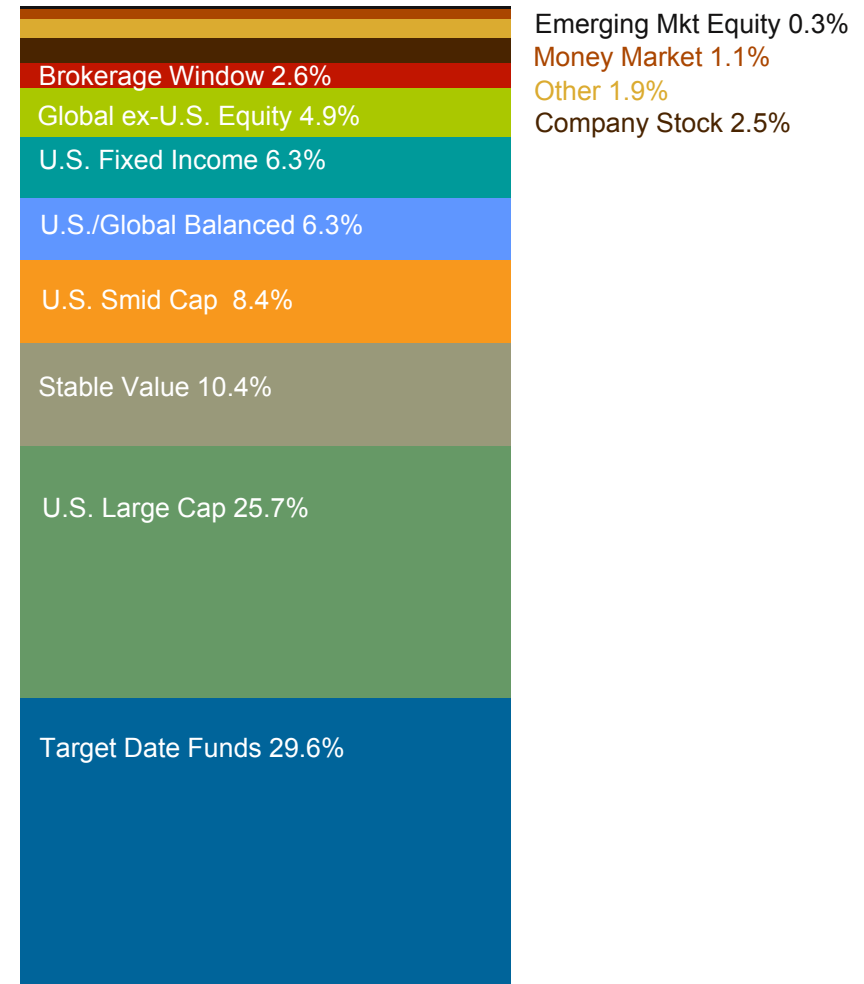
Source: Callan

Callan DC Index™

Net Cash Flow Analysis (as % of Total Net Flows)

Asset Class	3Q19
Alternatives/Other	-0.79%
Brokerage Window	-2.81%
Company Stock	-9.68%
Emerging Market Equity	-1.23%
Global Equity	-2.48%
High Yield	0.42%
Money Market	4.14%
Global ex-U.S. Equity	-5.92%
Global/Global ex-U.S. Fixed Income	-0.27%
Real Estate	0.59%
Real Return/TIPS	-0.10%
Specialty Equity/Sector	0.12%
Stable Value	9.69%
Target Date Funds	26.18%
U.S. Fixed Income	57.73%
U.S. Large Cap	-52.23%
U.S. Smid Cap	-19.09%
U.S./Global Balanced	-5.39%
Total Turnover*	0.35%

Asset Allocation as of 9/30/2019



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

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

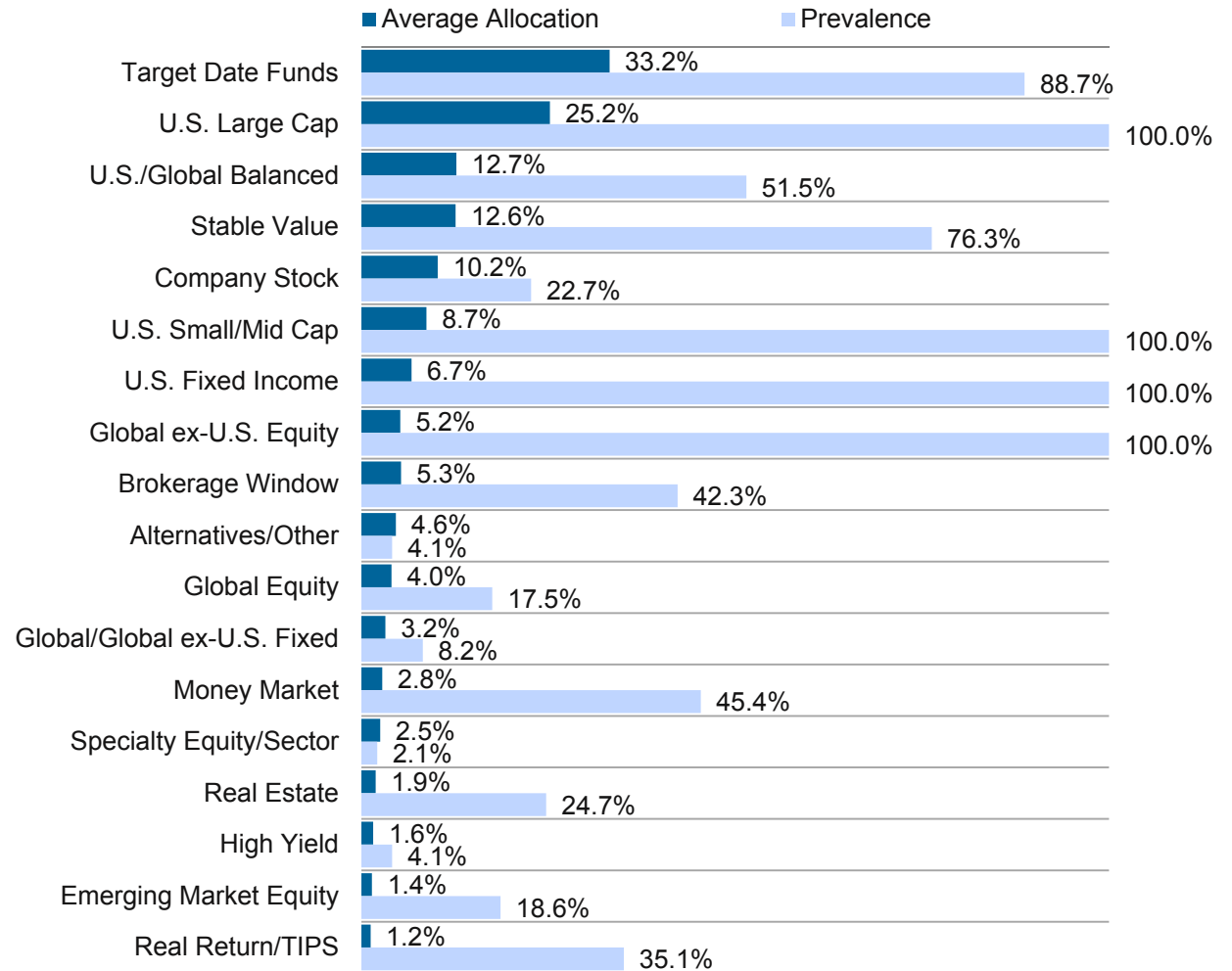
Source: Callan

Callan DC Index™

Prevalence of PA SERS 401a Funds versus Callan's DC Index:

- **The Target Date Funds** allocation of approximately 89% is higher than the average of 33%. The Target Date Funds are the default investment for participants enrolled in the Plan.
- **Investments in Large Cap Stock Index Fund** represents approximately 4% of the Plan, a smaller percentage compared to the average allocation of 25%.
- It is important to note that the DC Index presents typical allocations. Asset allocation figures from the Index do not represent ideal allocations but rather demonstrate how the SERS plan differs from others.

Prevalence of Funds in DC Plans as of September 30, 2019



Source: Callan

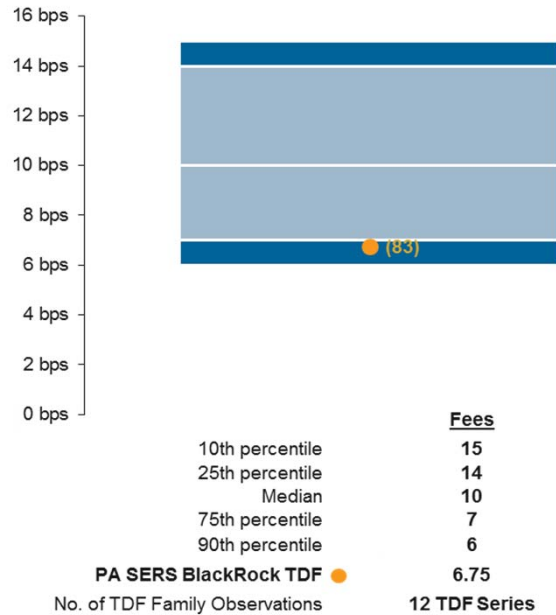
Defined Contribution & Deferred Compensation Trends

TDF fee compression

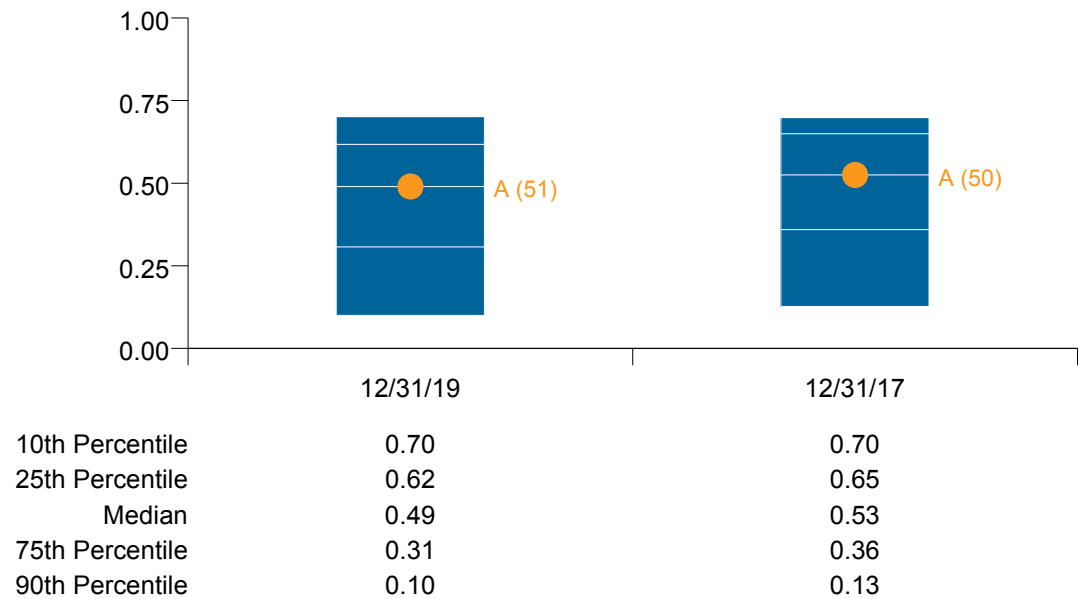
TDFs feeling the squeeze

- TDFs are not immune to fee compression experienced across other asset classes.
- In just the past two years, the median fee across all vintages (mutual funds and collective trusts) has been reduced by 4 bps, a reduction of nearly 10%.
- PA SERS current TDF Fee of 6.75 bps places the TDF suite in the 83rd Percentile of passive CIT target date fund peers' fees.

Effective Annual Fee
Group: Passive CIT TDF Family



Cheapest Fee for Various Periods
Group: Callan Target Date 2035



Callan 2020 DC Trends Survey - Fiduciary Positioning

- For the fourth year in a row, plan sponsors ranked reviewing plan fees as the most important step they took over the past 12 months to improve the fiduciary position of their DC plan. This action ranked significantly higher than any other activity undertaken.
- Implementing, updating, or reviewing the investment policy statement came in second. Conducting formal fiduciary training ranked third, followed by replacing fund manager(s), conducting a plan audit, and reviewing compliance.

Rank of actions taken to improve fiduciary positioning

	2016	2017	2018	2019	Ranking
	Reviewed plan fees	Reviewed plan fees	Reviewed plan fees	Reviewed plan fees	4.0
	Updated or reviewed IPS	Updated or reviewed IPS	Implemented, updated or reviewed IPS	Implemented, updated, or reviewed IPS	2.1
	Reviewed compliance	Conducted formal fiduciary training	Conducted plan audit	Conducted formal fiduciary training	1.9
	Conducted formal fiduciary training	Changed investment menu	Changed investment menu	Replaced fund manager(s)	1.7
	Changed investment menu	Conducted plan audit	Conducted formal fiduciary training	Conducted plan audit	1.5
	Replaced fund manager(s)	Reviewed compliance with fiduciary rule	Reviewed compliance	Reviewed compliance	1.2
	Other (e.g., plan audit, operational processes)	Replaced fund manager(s)	Replaced fund manager(s)	Changed investment menu	1.1
	Reviewed/changed QDIA	Audited security protocols	Audited security protocols	Audited security protocols	0.8
	Audited security protocols	Changed/hired investment consultant	Reviewed/changed QDIA	Reviewed/changed QDIA	0.6
	Changed communication approach	Reviewed/changed QDIA	Changed/hired investment consultant	Other (e.g., operational processes)	0.6

(5=Most important. Total ranking is weighted average score.)

Additional categories (2019): Changed/hired investment consultant (0.4); evaluated/implemented 3(38) discretionary services (0.3); implemented a written fee payment policy statement (0.2); changed recordkeeper (0.1); changed trustee/custodian (0.1).

Consultant Survey: Historical Analysis

Fees, retirement income solutions, and SECURE Act are top of mind

As in past quarters, fees continued to be the most important issue for defined contribution plan sponsors in the fourth quarter.

As one consultant noted, “Fee benchmarking is top-of-mind for DC plans.” This includes both investment management and administrative fees, such as recordkeeper services and fees.

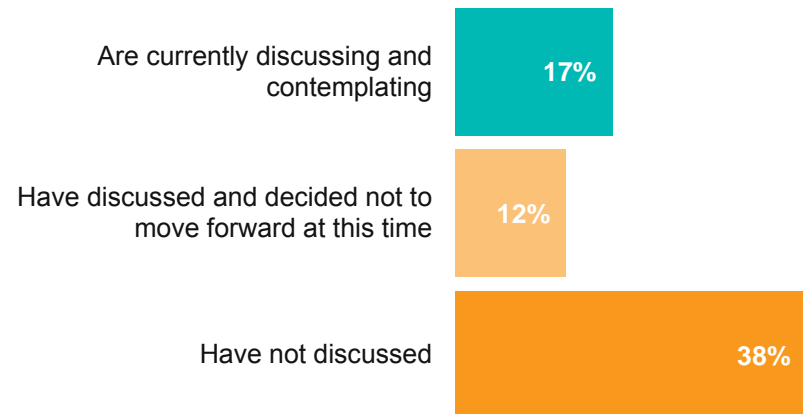
One corporate DC client “is considering reducing the number of options and overall complexity of the plan with the ancillary benefit of potentially reducing fees through better economies of scale.”

Some clients are also discussing post-retirement options. One plan is examining “the inclusion of QLAC annuities within the TDF structure as a means to deliver predictable retirement income and to manage longevity risk.” Another consultant reported that a plan had “some high-level interest in retirement income but was not close to implementation.”

As noted previously, a major new issue for DC plans this past quarter stemmed from the signing into law of the SECURE Act. As a consultant noted, “We don’t know all of the ramifications of this legislation but know it’s going to have wide-ranging impacts.”

Ranking of Issues by DC Clients (4 = most important)

DC Clients’ Discussions About A Post-Retirement Option



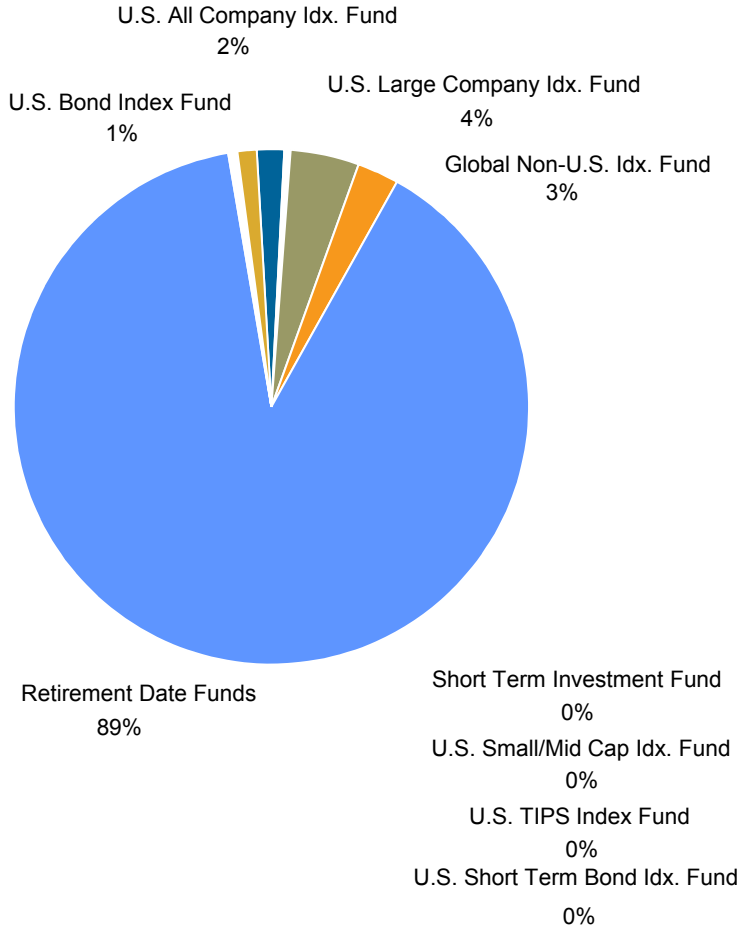
Callan

PA SERS 401(a) Plan Performance Review

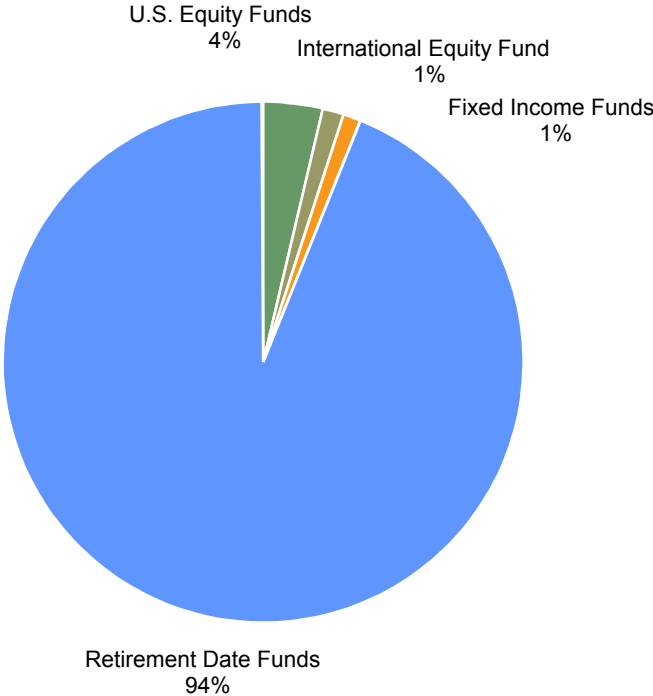
401(a) Plan Asset Allocation & Contributions

As of December 31, 2019

Asset Allocation



Contributions



Asset Allocation

As of December 31, 2019

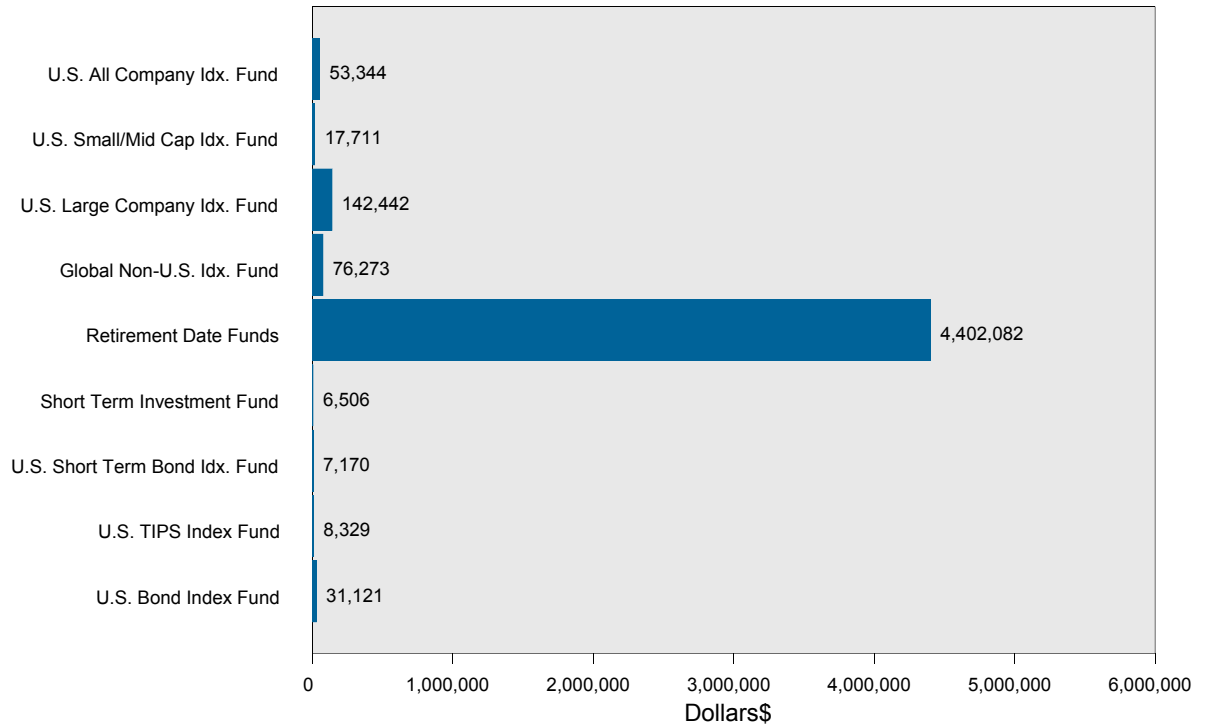
	December 31, 2019			September 30, 2019		
	Market Value	% of Total	Net New Inv.	Inv. Return	Market Value	% of Total
SERS Retirement Date Funds	\$7,988,209	89.16%	\$3,951,921	\$450,161	\$3,586,127	85.09%
SERS Post Retirement Fund	148,993	1.66%	113,633	3,677	31,683	0.75%
SERS 2020 Retirement Fund	0	0.00%	(44,501)	386	44,115	1.05%
SERS 2025 Retirement Fund	377,981	4.22%	147,651	14,109	216,221	5.13%
SERS 2030 Retirement Fund	995,922	11.12%	660,639	43,691	291,592	6.92%
SERS 2035 Retirement Fund	664,646	7.42%	308,235	33,731	322,680	7.66%
SERS 2040 Retirement Fund	787,809	8.79%	359,664	44,919	383,227	9.09%
SERS 2045 Retirement Fund	1,280,645	14.29%	680,982	77,506	522,157	12.39%
SERS 2050 Retirement Fund	1,055,827	11.78%	499,444	65,129	491,254	11.66%
SERS 2055 Retirement Fund	1,010,538	11.28%	451,715	64,509	494,314	11.73%
SERS 2060 Retirement Fund	1,089,607	12.16%	224,471	76,253	788,882	18.72%
SERS 2065 Retirement Fund	576,240	6.43%	549,988	26,252	-	-
SERS U.S. Equity	\$575,910	6.43%	\$172,394	\$41,103	\$362,412	8.60%
SERS U.S. Large Company Idx Fund	387,901	4.33%	114,689	27,753	245,459	5.82%
SERS U.S. All Company Idx Fund	154,035	1.72%	42,133	11,211	100,691	2.39%
SERS U.S. SMID Company Idx Fund	33,974	0.38%	15,573	2,139	16,262	0.39%
International Equity						
SERS Global Non-U.S. Index Fund	232,204	2.59%	60,126	16,147	155,931	3.70%
SERS Fixed Income	\$163,043	1.82%	\$52,751	\$374	\$109,918	2.61%
SERS Short Term Investment Fund	13,841	0.15%	6,458	48	7,334	0.17%
SERS U.S. Short Term Bond Idx Fund	18,141	0.20%	7,093	77	10,972	0.26%
SERS U.S. TIPS Index Fund	21,522	0.24%	8,204	124	13,193	0.31%
SERS U.S. Bond Index Fund	109,539	1.22%	30,996	125	78,419	1.86%
Total Fund	\$8,959,366	100.0%	\$4,237,192	\$507,785	\$4,214,389	100.0%

Changes in Market Values and Contributions

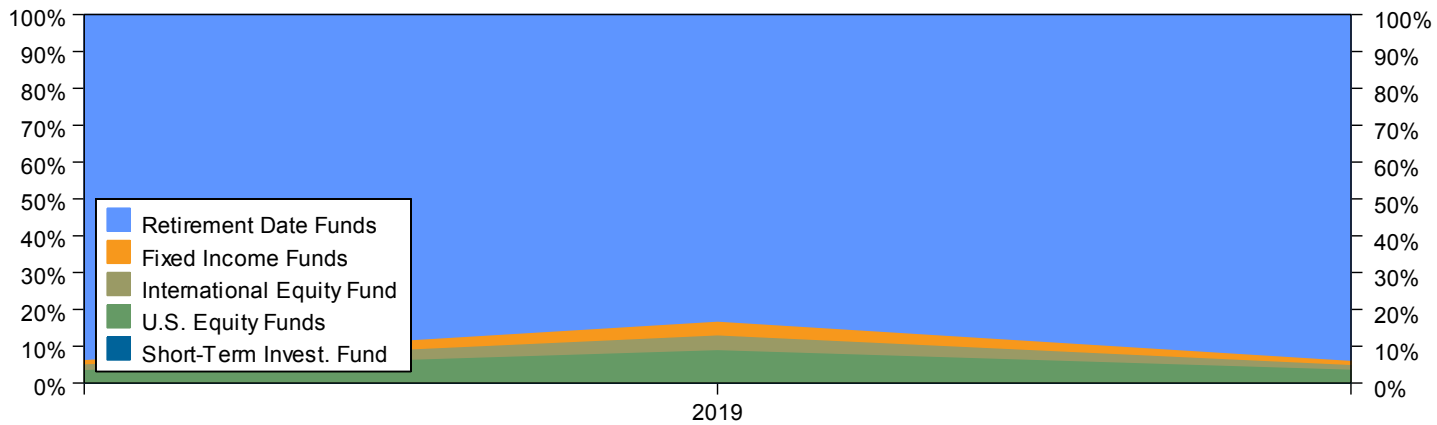
As of December 31, 2019

- The chart to the right shows the net change in fund values across the various investment options for the quarter. The change in value for each fund is the result of:

- Investment returns;
- Participant contributions, employer match, distributions, withdrawals; and
- Transfers between funds by participants.



Historical Allocation of Contributions



Cumulative Performance - Net of Fees

As of December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
Net Performance					
Target Date Funds					
SERS Post Retirement Fund	3.58%	15.63%	7.13%	5.22%	5.44%
BlackRock Post Retirement Index	3.57%	15.63%	7.11%	5.20%	5.43%
Callan Tgt Date 2000-2010	3.35%	14.39%	6.83%	5.14%	5.73%
SERS 2025 Retirement Fund	4.82%	18.59%	8.71%	6.32%	7.08%
BlackRock 2025 Index	4.84%	18.56%	8.65%	6.24%	7.04%
Callan Target Date 2025	4.79%	18.51%	8.71%	6.32%	7.64%
SERS 2030 Retirement Fund	5.89%	20.77%	9.67%	6.96%	7.80%
BlackRock 2030 Index	5.88%	20.70%	9.57%	6.84%	7.74%
Callan Target Date 2030	5.71%	20.42%	9.60%	6.97%	8.36%
SERS 2035 Retirement Fund	6.88%	22.84%	10.56%	7.55%	8.48%
BlackRock 2035 Index	6.86%	22.72%	10.44%	7.40%	8.39%
Callan Target Date 2035	6.50%	22.17%	10.31%	7.46%	8.96%
SERS 2040 Retirement Fund	7.78%	24.71%	11.35%	8.05%	9.06%
BlackRock 2040 Index	7.77%	24.62%	11.21%	7.88%	8.97%
Callan Target Date 2040	7.07%	23.58%	10.84%	7.76%	9.41%
SERS 2045 Retirement Fund	8.39%	26.03%	11.83%	8.36%	9.49%
BlackRock 2045 Index	8.38%	25.90%	11.65%	8.16%	9.39%
Callan Target Date 2045	7.57%	24.60%	11.21%	8.08%	9.62%
SERS 2050 Retirement Fund	8.66%	26.60%	12.01%	8.47%	9.76%
BlackRock 2050 Index	8.66%	26.48%	11.84%	8.27%	9.65%
Callan Target Date 2050	7.68%	24.87%	11.23%	8.02%	9.80%
SERS 2055 Retirement Fund	8.68%	26.66%	12.02%	8.47%	9.91%
BlackRock 2055 Index	8.70%	26.58%	11.86%	8.28%	9.81%
Callan Target Date 2055	7.83%	24.97%	11.38%	8.19%	9.90%
SERS 2060 Retirement Fund	8.68%	26.65%	11.99%	8.47%	-
BlackRock 2060 Index	8.70%	26.58%	11.86%	8.30%	-
Callan Target Date 2060	7.83%	25.04%	11.47%	8.41%	10.35%

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 December 31, 2019

	Last 10 Years	Last 15 Years	Last 20 Years
Net Performance			
Target Date Funds			
SERS Post Retirement Fund	6.14%	-	-
BlackRock Post Retirement Index	6.13%	5.44%	5.60%
Callan Tgt Date 2000-2010	6.23%	4.79%	-
SERS 2025 Retirement Fund	7.50%	-	-
BlackRock 2025 Index	7.46%	5.94%	4.78%
Callan Target Date 2025	8.01%	6.05%	-
SERS 2030 Retirement Fund	8.07%	-	-
BlackRock 2030 Index	8.00%	6.21%	4.79%
Callan Target Date 2030	8.59%	6.21%	4.40%
SERS 2035 Retirement Fund	8.58%	-	-
BlackRock 2035 Index	8.50%	6.44%	4.78%
Callan Target Date 2035	9.03%	6.51%	-
SERS 2040 Retirement Fund	9.03%	-	-
BlackRock 2040 Index	8.93%	6.62%	4.73%
Callan Target Date 2040	9.30%	6.73%	3.95%
SERS 2045 Retirement Fund	9.36%	-	-
BlackRock 2045 Index	9.25%	6.75%	4.72%
Callan Target Date 2045	9.36%	7.13%	-
SERS 2050 Retirement Fund	9.59%	-	-
BlackRock 2050 Index	9.46%	7.01%	5.37%
Callan Target Date 2050	9.38%	7.57%	-

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 performance history.

Cumulative Performance - Net of Fees

As of December 31, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
Net Performance					
Domestic Equity					
SERS U.S. Large Company Index Fund	9.07%	31.49%	15.27%	11.70%	14.73%
S&P 500 Index	9.07%	31.49%	15.27%	11.70%	14.73%
Callan Lg Cap Broad MF	8.76%	30.14%	14.69%	10.58%	13.86%
SERS U.S. All Company Index Fund	9.10%	30.51%	14.37%	11.11%	14.29%
Russell 3000 Index	9.10%	31.02%	14.57%	11.24%	14.38%
Callan Multi Cap Brd MF	8.24%	29.12%	12.95%	9.39%	12.85%
SERS U.S. SMID Company Idx Fund	8.84%	28.18%	11.15%	9.03%	12.62%
Dow Jones US Completion	8.82%	27.91%	10.96%	8.84%	12.42%
Callan SMID Broad MFs	7.68%	29.40%	12.48%	9.18%	12.02%
International Equity					
SERS Global Non-U.S. Index Fund	8.73%	21.72%	10.16%	5.78%	5.51%
MSCI ACWI ex US	8.92%	21.51%	9.87%	5.51%	5.44%
Callan Non US Equity MFs	9.02%	22.83%	9.96%	5.60%	6.20%
Domestic Fixed Income					
SERS Short Term Investment Fund	0.48%	2.31%	1.82%	1.25%	0.94%
3-month Treasury Bill	0.46%	2.28%	1.67%	1.07%	0.78%
Callan Cash Database(1)	0.53%	2.62%	1.99%	1.41%	1.09%
SERS U.S. Short Term Bond Idx Fund	0.58%	3.99%	-	-	-
Blmbg Gov/Cred 1-3 Yr	0.59%	4.03%	2.15%	1.67%	1.40%
Callan Short US Govt MFs	0.29%	3.52%	1.74%	1.26%	0.99%
SERS U.S. TIPS Index Fund	0.78%	8.36%	-	-	-
Blmbg US TIPS	0.79%	8.43%	3.32%	2.62%	1.08%
Callan TIPS MFs	0.91%	8.26%	3.13%	2.32%	0.91%
SERS U.S. Bond Index Fund	0.17%	8.66%	4.00%	2.99%	2.64%
Blmbg Aggregate	0.18%	8.72%	4.03%	3.05%	2.72%
Callan Core Bond MFs	0.15%	9.17%	4.17%	3.12%	2.71%

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

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

Cumulative Performance - Net of Fees

As of December 31, 2019

	Last 10 Years	Last 15 Years	Last 20 Years
Net Performance			
Domestic Equity			
SERS U.S. Large Company Index Fund	13.57%	9.03%	6.10%
S&P 500 Index	13.56%	9.00%	6.06%
Callan Lg Cap Broad MF	12.67%	8.85%	5.96%
Russell 3000 Index	13.42%	9.03%	6.39%
Callan Multi Cap Brd MF	12.00%	8.23%	6.74%
SERS U.S. SMID Company Idx Fund	12.92%	9.33%	7.49%
Dow Jones US Completion	12.72%	9.13%	7.12%
Callan SMID Broad MFs	12.28%	8.91%	8.28%
International Equity			
SERS Global Non-U.S. Index Fund	5.11%	-	-
MSCI ACWI ex US	4.97%	5.25%	-
Callan Non US Equity MFs	5.93%	5.31%	3.78%
Domestic Fixed Income			
SERS Short Term Investment Fund	0.73%	1.56%	-
3-month Treasury Bill	0.58%	1.39%	1.78%
Callan Cash Database(1)	0.91%	1.81%	2.14%
Blmbg Gov/Cred 1-3 Yr	1.54%	2.46%	3.19%
Callan Short US Govt MFs	1.36%	2.31%	3.10%
Blmbg US TIPS	3.36%	3.78%	5.51%
Callan TIPS MFs	3.01%	3.51%	4.76%
SERS U.S. Bond Index Fund	3.68%	4.09%	4.98%
Blmbg Aggregate	3.75%	4.15%	5.03%
Callan Core Bond MFs	4.04%	4.38%	5.08%

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 performance history.

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

Calendar Year Performance - Net of Fees

As of December 31, 2019

	2019	2018	2017	2016	2015
Net Performance					
Target Date Funds					
SERS Post Retirement Fund	15.63%	(3.49%)	10.17%	6.09%	(1.14%)
BlackRock Post Retirement Index	15.63%	(3.48%)	10.10%	6.01%	(1.07%)
Callan Tgt Date 2000-2010	14.39%	(3.15%)	10.16%	5.79%	(0.48%)
SERS 2025 Retirement Fund	18.59%	(4.88%)	13.90%	7.28%	(1.43%)
BlackRock 2025 Index	18.56%	(4.90%)	13.75%	7.10%	(1.45%)
Callan Target Date 2025	18.51%	(5.19%)	15.03%	7.08%	(1.19%)
SERS 2030 Retirement Fund	20.77%	(5.71%)	15.82%	7.87%	(1.61%)
BlackRock 2030 Index	20.70%	(5.76%)	15.64%	7.61%	(1.66%)
Callan Target Date 2030	20.42%	(6.12%)	16.81%	7.58%	(1.31%)
SERS 2035 Retirement Fund	22.84%	(6.50%)	17.68%	8.41%	(1.80%)
BlackRock 2035 Index	22.72%	(6.58%)	17.48%	8.08%	(1.86%)
Callan Target Date 2035	22.17%	(7.03%)	18.54%	8.20%	(1.46%)
SERS 2040 Retirement Fund	24.71%	(7.24%)	19.35%	8.86%	(2.00%)
BlackRock 2040 Index	24.62%	(7.33%)	19.09%	8.51%	(2.08%)
Callan Target Date 2040	23.58%	(7.89%)	19.84%	8.48%	(1.55%)
SERS 2045 Retirement Fund	26.03%	(7.85%)	20.44%	9.16%	(2.15%)
BlackRock 2045 Index	25.90%	(7.99%)	20.15%	8.77%	(2.22%)
Callan Target Date 2045	24.60%	(8.21%)	20.63%	8.63%	(1.58%)
SERS 2050 Retirement Fund	26.60%	(8.12%)	20.83%	9.24%	(2.20%)
BlackRock 2050 Index	26.48%	(8.26%)	20.55%	8.82%	(2.26%)
Callan Target Date 2050	24.87%	(8.44%)	20.76%	8.61%	(1.56%)
SERS 2055 Retirement Fund	26.66%	(8.15%)	20.81%	9.21%	(2.18%)
BlackRock 2055 Index	26.58%	(8.28%)	20.55%	8.82%	(2.26%)
Callan Target Date 2055	24.97%	(8.44%)	21.12%	8.65%	(1.67%)
SERS 2060 Retirement Fund	26.65%	(8.15%)	20.76%	9.23%	(2.15%)
BlackRock 2060 Index	26.58%	(8.28%)	20.55%	8.82%	(2.16%)
Callan Target Date 2060	25.04%	(8.35%)	21.14%	8.80%	(1.57%)

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

Calendar Year Performance - Net of Fees

As of December 31, 2019

	2019	2018	2017	2016	2015
Net Performance					
Domestic Equity					
SERS U.S. Large Company Index Fund	31.49%	(4.40%)	21.83%	11.97%	1.39%
S&P 500 Index	31.49%	(4.38%)	21.83%	11.96%	1.38%
Callan Lg Cap Broad MF	30.14%	(4.54%)	23.56%	8.43%	1.50%
SERS U.S. All Company Index Fund	30.51%	(5.30%)	21.05%	12.69%	0.45%
Russell 3000 Index	31.02%	(5.24%)	21.13%	12.74%	0.48%
Callan Multi Cap Brd MF	29.12%	(6.82%)	20.75%	9.05%	(1.26%)
SERS U.S. SMID Company Idx Fund	28.18%	(9.34%)	18.18%	16.05%	(3.32%)
Dow Jones US Completion	27.91%	(9.57%)	18.12%	15.75%	(3.42%)
Callan SMID Broad MFs	29.40%	(8.69%)	17.14%	13.80%	(2.80%)
International Equity					
SERS Global Non-U.S. Index Fund	21.72%	(13.91%)	27.57%	5.00%	(5.63%)
MSCI ACWI ex US	21.51%	(14.20%)	27.19%	4.50%	(5.66%)
Callan Non US Equity MFs	22.83%	(15.04%)	26.90%	0.23%	0.02%
Domestic Fixed Income					
SERS Short Term Investment Fund	2.31%	2.09%	1.08%	0.59%	0.19%
3-month Treasury Bill	2.28%	1.87%	0.86%	0.33%	0.05%
Callan Cash Database(1)	2.62%	2.00%	1.19%	0.95%	0.40%
SERS U.S. Short Term Bond Idx Fund	3.99%	1.55%	-	-	-
Blmbg Gov/Cred 1-3 Yr	4.03%	1.60%	0.84%	1.28%	0.65%
Callan Short US Govt MFs	3.52%	1.15%	0.59%	0.64%	0.35%
SERS U.S. TIPS Index Fund	8.36%	(1.27%)	-	-	-
Blmbg US TIPS	8.43%	(1.26%)	3.01%	4.68%	(1.44%)
Callan TIPS MFs	8.26%	(1.53%)	3.12%	4.63%	(1.76%)
SERS U.S. Bond Index Fund	8.66%	0.00%	3.50%	2.56%	0.46%
Blmbg Aggregate	8.72%	0.01%	3.54%	2.65%	0.55%
Callan Core Bond MFs	9.17%	(0.35%)	3.71%	3.03%	0.10%

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

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

Performance Summary & Expense Ratios as of December 31, 2019

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
Gross of Fee Performance									
Target Date Funds									
SERS Post Retirement Fund Callan Tgt Date 2000-2010 BlackRock Post Retirement Index	3.6 35	15.7 12	7.2 33	5.3 38	5.5 61	6.2 51			0.08 95
SERS 2025 Retirement Fund Callan Target Date 2025 BlackRock 2025 Index	4.8 43	18.7 43	8.8 46	6.4 43	7.2 70	7.6 65			0.08 95
SERS 2030 Retirement Fund Callan Target Date 2030 BlackRock 2030 Index	5.9 38	20.9 39	9.8 44	7.0 44	7.9 68	8.2 62			0.08 96
SERS 2035 Retirement Fund Callan Target Date 2035 BlackRock 2035 Index	6.9 22	22.9 26	10.7 34	7.6 35	8.6 69	8.7 64			0.08 97
SERS 2040 Retirement Fund Callan Target Date 2040 BlackRock 2040 Index	7.8 16	24.8 18	11.4 28	8.1 27	9.1 63	9.1 55			0.08 97
SERS 2045 Retirement Fund Callan Target Date 2045 BlackRock 2045 Index	8.4 12	26.1 10	11.9 19	8.4 24	9.6 56	9.4 46			0.08 96
SERS 2050 Retirement Fund Callan Target Date 2050 BlackRock 2050 Index	8.7 8	26.7 8	12.1 16	8.6 20	9.8 47	9.7 40			0.08 97
SERS 2055 Retirement Fund Callan Target Date 2055 BlackRock 2055 Index	8.7 9	26.8 7	12.1 17	8.6 24	10.0 43				0.08 96
SERS 2060 Retirement Fund Callan Target Date 2060 BlackRock 2060 Index	8.7 8	26.7 10	12.1 21	8.6 40					0.08 95

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

- The SERS 401(a) Plan per participant administrative fee of \$4.95 ranks in the bottom decile (Cheaper than 90% of peers) of comparably sized plans in Callan's database.

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 December 31, 2019

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
Domestic Equity									
SERS U.S. Large Company Stock Index Fund Callan Lg Cap Broad MF S&P 500 Index	9.1 42	31.5 40	15.3 45	11.7 39	14.7 37	13.6 34			0.01 99
SERS U.S. All Company Index Fund Callan Multi Cap Brd MF Russell 3000 Index	9.1 34	30.5 39	14.4 39	11.1 27	14.3 26				0.03 99
U.S. Small/Mid Company Stock Index Fund Callan SMID Broad MFs Dow Jones US Completion	8.8 29	28.2 58	11.2 52	9.1 51	12.7 38	12.9 40			0.03 100
International Equity									
SERS Global Non-U.S. Index Fund Callan Non US Equity MFs MSCI ACWI ex US	8.7 59	21.8 62	10.2 49	5.9 43	5.6 65	5.2 62			0.06 100
Domestic Fixed Income									
SERS Short Term Investment Fund Callan Cash Database 3-month Treasury Bill	0.5 79	2.3 83	1.8 76	1.2 78	0.9 79	0.7 79			0.00 100
Comments: Callan Cash Database includes STIF, enhanced cash, and money market funds.									
SERS U.S. Short Term Bond Idx Fund Callan Short US Govt MFs Blmbg Gov/Cred 1-3 Yr	0.6 1	4.0 26							0.03 99
SERS U.S. TIPS Index Fund Callan TIPS MFs Blmbg US TIPS	0.8 60	8.4 34							0.03 99
SERS U.S. Bond Index Fund Callan Core Bond MFs Blmbg Aggregate	0.2 43	8.7 61	4.0 64	3.0 64	2.7 56	3.7 82			0.03 98

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

- The SERS 401(a) Plan per participant administrative fee of \$4.95 ranks in the bottom decile (Cheaper than 90% of peers) of comparably sized plans in Callan's database.

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



Defined Contribution and Deferred Compensation Projects for 2020

- Plan Administration and Investment Management Fee Evaluation Study
- Target Date Fund Suitability Analysis
- Investment Policy Statement Review

Callan

Appendix – Callan Update

Published Research Highlights from 4Q19

Callan's 2019 Investment Management Fee Study



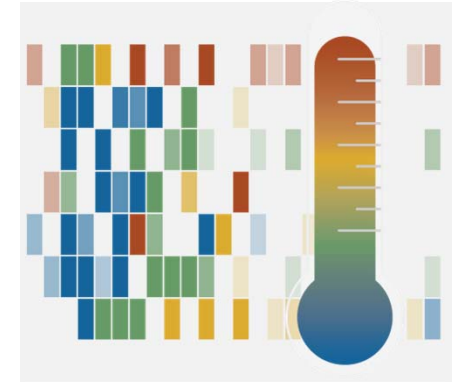
Long-Dated Private Equity Funds: More Illiquidity Please



Gold: Real Asset, Risk Mitigator, or Pet Rock?



Real Estate Indicators: Too Hot to Touch or Cool Enough to Handle?



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What You Need to Know About the SECURE Act

James Veneruso

ESG: What the Future May Hold

Mike Stellato

10 Questions to Address When Evaluating Infrastructure Managers

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Additional Reading

Private Equity Trends quarterly newsletter

Active vs. Passive quarterly charts

Capital Market Review quarterly newsletter

Monthly Updates to the Periodic Table

Market Pulse Flipbook quarterly markets update

Real Assets Reporter quarterly newsletter

Callan Institute Events

Upcoming Conferences, Workshops, and Webinars

“Callan College”

These sessions provide institutional investors across the industry with basic- to intermediate-level instruction.

Introduction to Investments

San Francisco, April 21–22, 2020

Chicago, July 21-22, 2020

Chicago, October 13-14, 2020

Introduction to Alternative Investments

San Francisco, June 16, 2020

Chicago, November 3, 2020

All sessions qualify for continuing education credits

Register at [callan.com/callan-institute-events](https://www.callan.com/callan-institute-events)

“The Introduction to Alternative Investments sessions are a great opportunity for investors of all types to get a thorough introduction to alternative investments and meet the Callan team.”

Pete Keliuotis
Executive Vice President



2020 DC Trends Webinar

February 20, 2020, at 9:30 am (PST)

During this webinar, Callan experts Jamie McAllister and Greg Ungerman will offer key insights from our *DC Trends Survey*. They will discuss in detail the SECURE Act, retirement income solutions, and plan leakage as well as other key findings. They will be joined by an industry specialist, Marla Kreindler, a partner at Morgan Lewis.

Regional Workshops

San Francisco, June 23, 2020

Chicago, June 25, 2020

Atlanta, October 27, 2020

Portland, October 29, 2020

On-Demand Webinars

Visit our website for On-Demand webinar options at <https://www.callan.com/on-demand-webinars/>

Our most recent webinar covered Callan’s Capital Market Assumptions.

Callan Updates

Firm updates by the numbers, as of December 31, 2019

Total Associates: 194

Ownership

- 100% employees
- Broadly distributed across 93 shareholders

Leadership Changes

- No executive additions or departures
- No leadership changes this quarter

Total General and Fund Sponsor Consultants: more than 45

Total Specialty and Research Consultants: more than 60

Total CFA/CAIA/FRMs: more than 55

Total Fund Sponsor Clients: more than 400

AUA: more than \$2.5 trillion

“The Callan culture that we have all built together over the years is the reason we like coming to work each day ... Our culture of supporting and caring about each other, of appreciating and respecting each other while still having some fun and good humor has been the key to our longevity and success. We never want to diminish it.”

— Ron Peyton, Executive Chairman

