

September 24, 2019



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

Second Quarter 2019

Executive Summary

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**Thomas H. Shingler**  
Senior Vice President

**Bud Pellecchia**  
Senior Vice President

**Britton M. Murdoch**  
Vice President

Callan

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**Market Environment**

# Does Strong First Half Spell Problems for Second Half of 2019 and 2020?

## Central bank policy front and center

- Fed adopted dovish tone in January, a sharp reversal in stance. Rates held constant through Q2; rate cuts now expected in Q3 or Q4 2019.

## However, U.S. economy remains strong, labor market very tight, reaching the limits of full employment

- Solid Q1 GDP growth (3.2%) moderated in Q2 (2.1%), will soften further in face of slowing global economy, trade uncertainty.
- Policy reversal simultaneously stoked fears of coming slowdown and fed a rally in bonds.

## The slowdown in Europe and China weighing on global growth

- China suffering dramatic slowdown in growth: industrial output, retail sales, implied GDP.

## Inflation remains stuck below 2% in U.S., weaker overseas

- Wage pressures building in U.S. have yet to translate into headline inflation.

## Returns for Periods ended June 30, 2019

	1 Quarter	1 Year	5 Years	10 Years	25 Years
<b>U.S. Equity</b>					
Russell 3000	4.10	8.98	10.19	14.67	9.98
S&P 500	4.30	10.42	10.71	14.70	9.97
Russell 2000	2.10	-3.31	7.06	13.45	9.26
<b>Non-U.S. Equity</b>					
MSCI World ex USA	3.79	1.29	2.04	6.75	5.01
MSCI Emerging Markets	0.61	1.22	2.49	5.81	--
MSCI ACWI ex USA Small Cap	1.21	-5.94	2.77	8.48	5.32
<b>Fixed Income</b>					
Bloomberg Barclays Aggregate	3.08	7.87	2.95	3.90	5.50
3-Month T-Bill	0.64	2.31	0.87	0.49	2.52
Bloomberg Barclays Long Gov/Credit	6.59	13.82	5.68	7.62	7.73
Bloomberg Barclays Global Agg ex-US	3.42	4.10	-0.12	2.10	4.49
<b>Real Estate</b>					
NCREIF Property	1.51	6.51	8.83	9.25	9.36
FTSE NAREIT Equity	1.24	11.21	7.92	15.46	10.25
<b>Alternatives</b>					
CS Hedge Fund	2.35	2.46	2.36	5.03	7.84
Cambridge Private Equity*	4.86	12.71	12.30	14.83	15.32
Bloomberg Commodity	-1.19	-6.75	-9.15	-3.74	1.69
Gold Spot Price	8.87	12.69	1.35	4.31	5.32
<b>Inflation - CPI-U</b>	0.76	1.65	1.45	1.73	2.22

\*Cambridge PE data are available through December 31, 2018.

Source: Callan

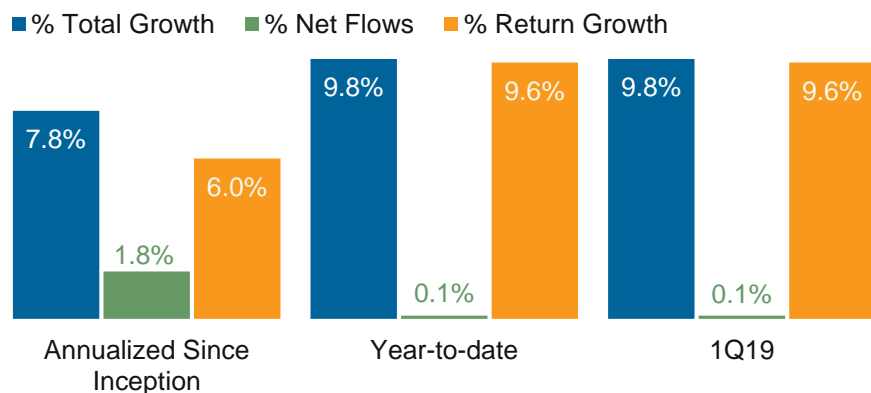
# Defined Contribution / Deferred Compensation Trends

## A Return to “Normal”

During the first quarter several metrics returned to their “normal” (if such a thing exists!) state:

- Target date funds returned to their perch atop the asset classes with regard to flows, capturing 73% of inflows in the first quarter. The prior quarter saw stable value capture the majority of inflows.
- Total flows, although representing just 13 basis points of the total growth figure (9.77%), were positive; this comes after 2 consecutive quarters of net outflows.

### Growth Source



### First Quarter 2019 Flows

DC Asset Mix Name	Flows
Alternatives / Other	-1.92%
Brokerage Window	-6.74%
Company Stock	-11.86%
Emerging Market Equity	-0.80%
Global Equity	-3.16%
High Yield	0.10%
Money Market	4.25%
Non-U.S. Equity	-13.77%
Non-U.S. / Global Fixed Income	0.87%
Real Estate	0.39%
Real Return / TIPS	-2.10%
Specialty Equity / Sector	-0.41%
Stable Value	-11.11%
Target Date Funds	73.22%
U.S. Fixed Income	21.27%
U.S. Large Cap	-24.86%
U.S. Smid Cap	-5.42%
U.S. / Global Balanced	-16.65%

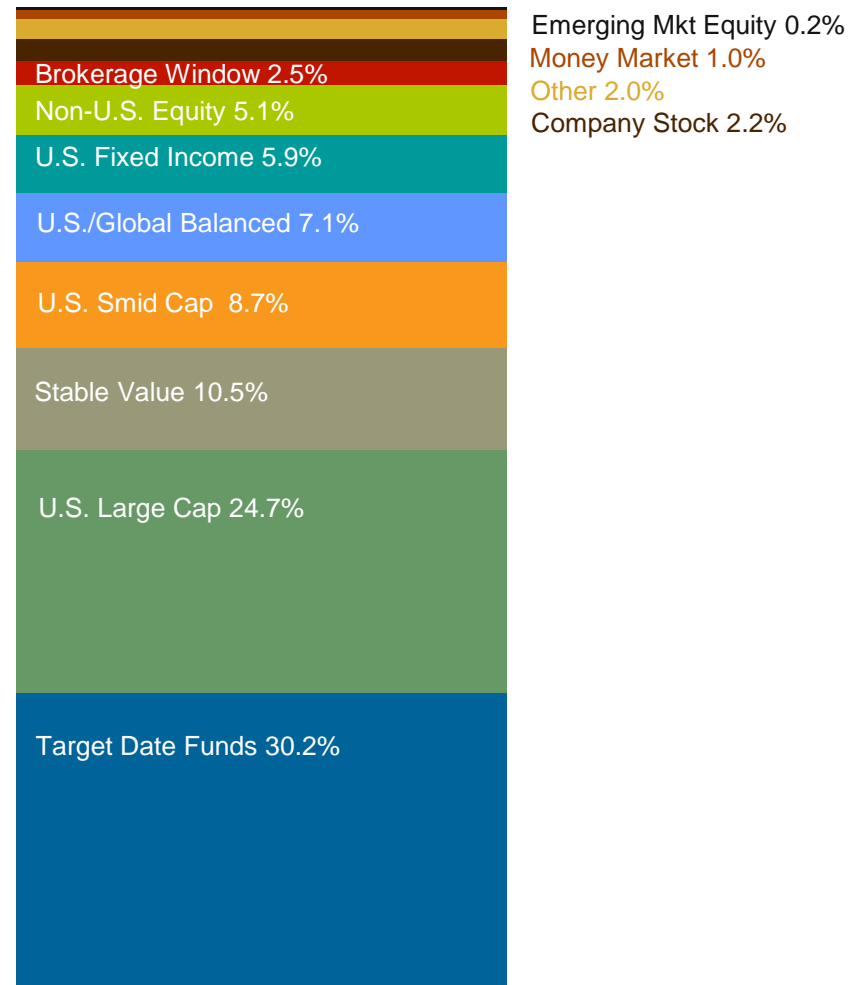
Source: Callan DC

# Callan DC Index™ Net Cash Flow Analysis and Asset Allocation

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

Asset Class	1Q19
Alternatives/Other	-1.92%
Brokerage Window	-6.74%
Company Stock	-11.86%
Emerging Market Equity	-0.80%
Global Equity	-3.16%
High Yield	0.10%
Money Market	4.25%
Non-U.S. Equity	-13.77%
Non-U.S./Global Fixed Income	0.87%
Real Estate	0.39%
Real Return/TIPS	-2.10%
Specialty Equity/Sector	-0.41%
Stable Value	-11.11%
Target Date Funds	73.22%
U.S. Fixed Income	21.27%
U.S. Large Cap	-24.86%
U.S. Smid Cap	-5.42%
U.S./Global Balanced	-16.65%
<b>Total Turnover*</b>	<b>0.48%</b>

## Asset Allocation as of March 31, 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.

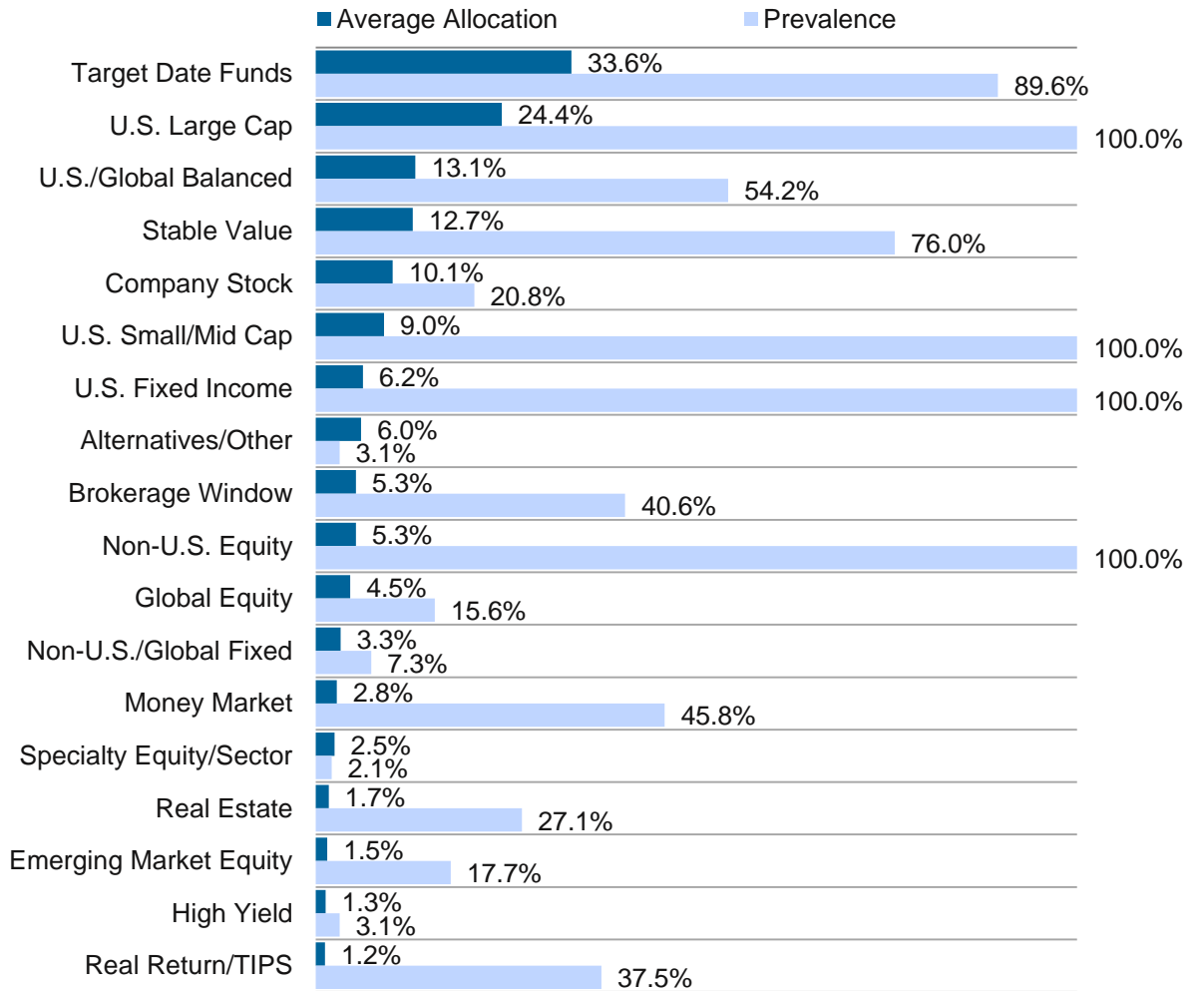
Source: Callan

# Callan DC Index™

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

- **The Target Date Funds** allocation of 86% is higher than the average of 34%. The Target Date Funds are the default investment for participants enrolled in the Plan.
- **Investments in Large Cap Stock Index Fund** represents approximately 5% of the Plan, a smaller percentage compared to the average allocation of 24%.
- 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 March 31, 2019



Source: Callan

# Consultant Survey: Second Quarter 2019

## Defined Contribution: Significant Issues and Trends

- Fees, litigation dominate discussion for DC plan sponsors
- Other topics of interest:

*“We are interested in legislation that will impact public sector DC plans, such as the SECURE Act, or legislation that will permit CITs in more plans. Clients are very interested in safe harbors for automatic features. Additionally, every plan is increasingly interested in cybersecurity, and the pace at which this interest increases is almost exponential year to year.”*

### Ranking of issues in order of most importance by Defined Contribution clients (4 = most important)



**30%** of DC clients have seriously discussed **financial wellness** with their consultant

**10%** of DC clients have seriously discussed the **Secure Act** with their consultant

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## Defined Contribution Trends

### Other Areas of Focus

#### Continued Legislative Watch

- In a scene reminiscent of Beckett's "Waiting for Godot," the team is monitoring the status of the SECURE Act. The Act was passed overwhelmingly by the House but has stalled in the Senate with opposition from Ted Cruz and Pat Toomey. As of this writing the SECURE language could be included within the broader budget language.

#### Record keeper Capabilities

- Financial wellness and record keeper capabilities remain areas of conversation with clients and record keepers.

#### Managed Accounts

- It is not uncommon to have record keepers offer fee reductions in return for a client agreeing to offer a managed account service. As such, there is more attention being paid to the process by which managed accounts are evaluated.



Callan

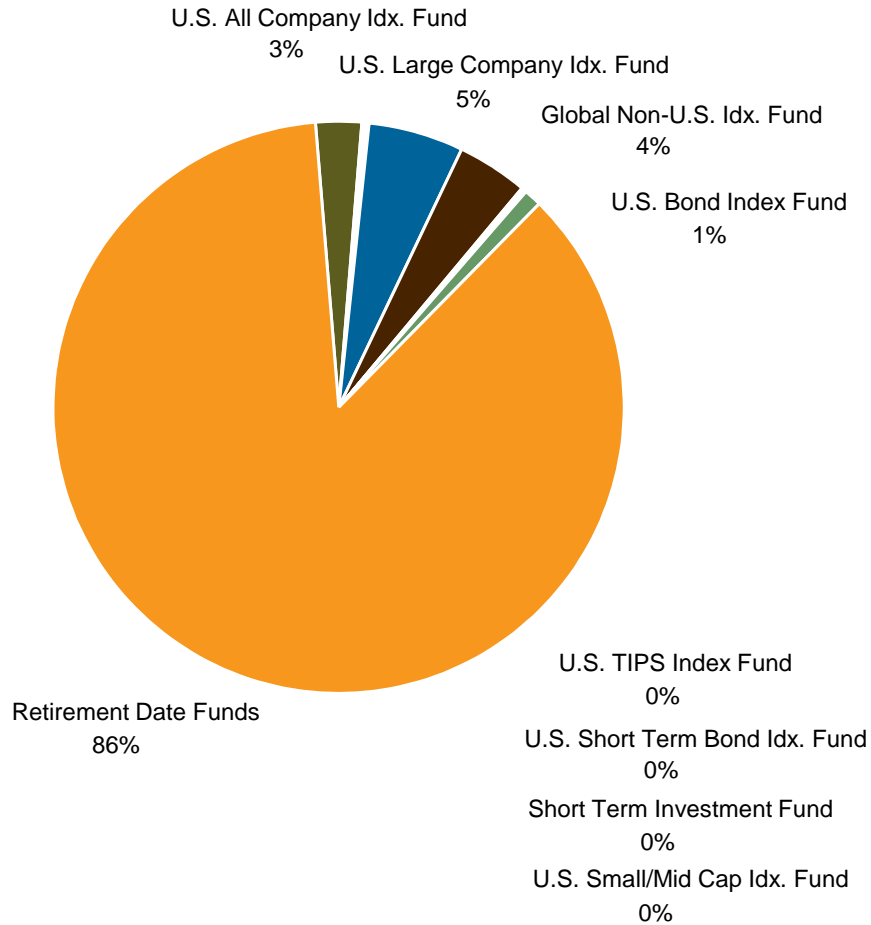
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**PA SERS 401(a) Plan Performance Review**

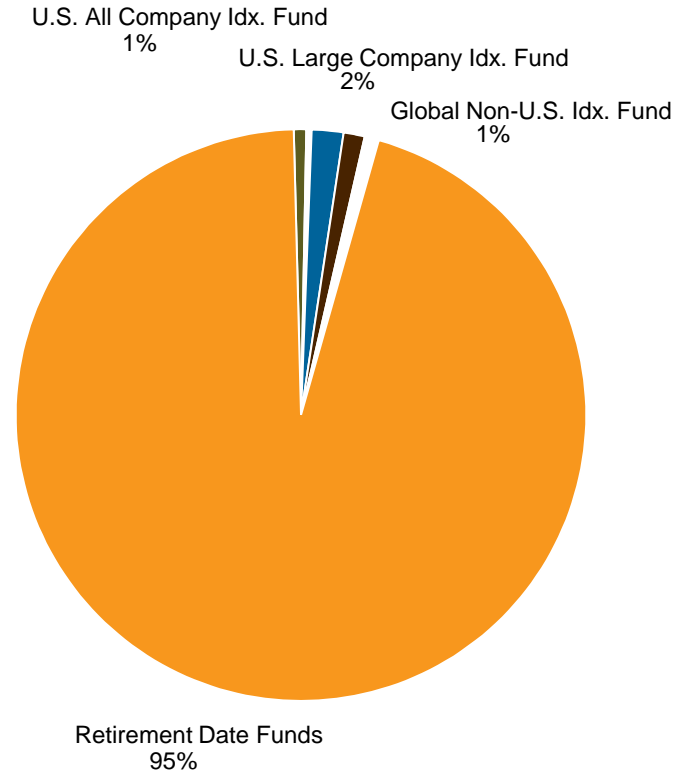
# 401(a) Plan Asset Allocation & Contributions

As of June 30, 2019

## Asset Allocation



## Contributions



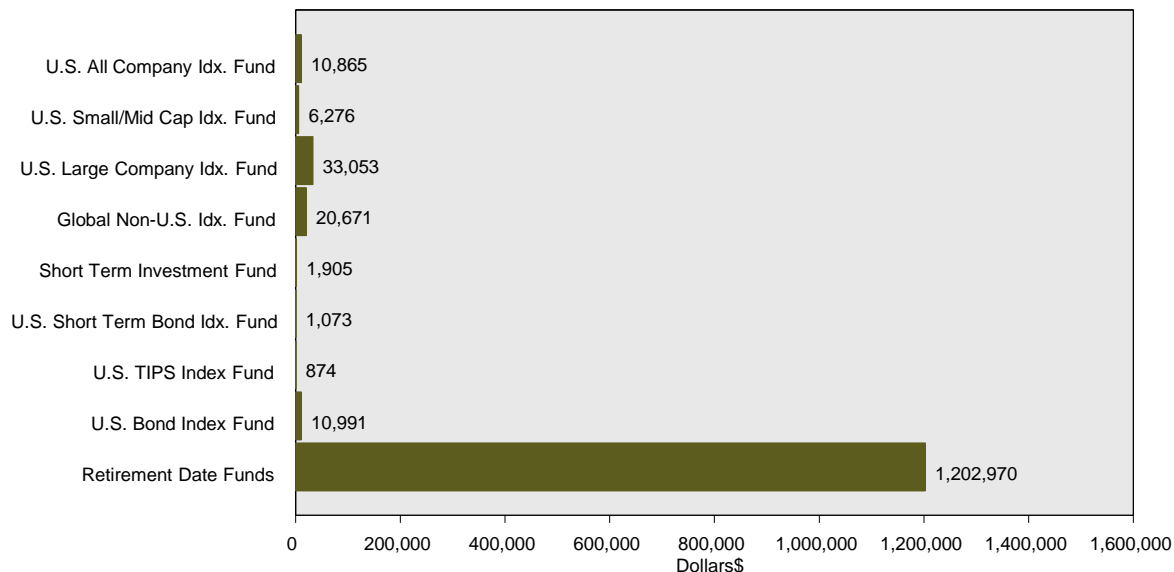
# Asset Allocation and Changes in Market Values

As of June 30, 2019

	June 30, 2019			Inv. Return	March 31, 2019	
	Market Value	% of Total	Net New Inv.		Market Value	% of Total
<b>SERS Retirement Date Funds</b>	<b>\$1,445,172</b>	<b>86.26%</b>	<b>\$1,170,691</b>	<b>\$32,279</b>	<b>\$242,202</b>	<b>62.63%</b>
SERS Post Retirement Fund	11,061	0.66%	8,929	239	1,893	0.49%
SERS 2020 Retirement Fund	16,841	1.01%	13,186	360	3,294	0.85%
SERS 2025 Retirement Fund	108,559	6.48%	98,210	2,014	8,334	2.16%
SERS 2030 Retirement Fund	112,929	6.74%	93,696	2,512	16,721	4.32%
SERS 2035 Retirement Fund	125,035	7.46%	102,645	2,787	19,603	5.07%
SERS 2040 Retirement Fund	143,281	8.55%	110,158	3,269	29,854	7.72%
SERS 2045 Retirement Fund	257,140	15.35%	175,955	6,430	74,754	19.33%
SERS 2050 Retirement Fund	189,401	11.30%	165,863	4,281	19,258	4.98%
SERS 2055 Retirement Fund	187,650	11.20%	161,103	4,063	22,483	5.81%
SERS 2060 Retirement Fund	293,276	17.50%	240,946	6,323	46,008	11.90%
<b>SERS U.S. Equity</b>	<b>\$140,958</b>	<b>8.41%</b>	<b>\$45,580</b>	<b>\$4,614</b>	<b>\$90,763</b>	<b>23.47%</b>
SERS U.S. Large Company Idx Fund	90,723	5.41%	30,069	2,984	57,670	14.91%
SERS U.S. All Company Idx Fund	43,311	2.59%	9,333	1,532	32,446	8.39%
SERS U.S. Small/Mid Company Idx Fund	6,924	0.41%	6,179	97	648	0.17%
<b>International Equity</b>						
SERS Global Non-U.S. Index Fund	67,763	4.04%	18,799	1,872	47,092	12.18%
<b>SERS Fixed Income</b>	<b>\$21,515</b>	<b>1.28%</b>	<b>\$14,509</b>	<b>\$333</b>	<b>\$6,673</b>	<b>1.73%</b>
SERS Short Term Investment Fund	2,283	0.14%	1,897	7	379	0.10%
SERS U.S. Short Term Bond Idx Fund	1,244	0.07%	1,062	11	171	0.04%
SERS U.S. TIPS Index Fund	973	0.06%	855	18	99	0.03%
SERS U.S. Bond Index Fund	17,014	1.02%	10,694	297	6,024	1.56%
<b>Total Fund</b>	<b>\$1,675,407</b>	<b>100.0%</b>	<b>\$1,249,579</b>	<b>\$39,097</b>	<b>\$386,731</b>	<b>100.0%</b>

• 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:

1. Investment returns;
2. Participant contributions, company match, distributions, withdrawals; and
3. Transfers between funds by participants.



# Cumulative Performance - Net of Fees

As of June 30, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
<b>Net Performance</b>					
<b>Target Date Funds</b>					
SERS Post Retirement Fund	3.16%	6.55%	5.82%	4.22%	5.33%
BlackRock Post Retirement Index	3.21%	6.60%	5.82%	4.21%	5.31%
Callan Tgt Date 2000-2010	2.95%	6.29%	5.98%	4.28%	5.75%
SERS 2020 Retirement Fund	3.18%	6.43%	6.56%	4.55%	6.31%
BlackRock 2020 Index	3.22%	6.46%	6.54%	4.51%	6.26%
Callan Target Date 2020	3.08%	6.14%	6.94%	4.69%	6.87%
SERS 2025 Retirement Fund	3.20%	6.49%	7.60%	5.05%	7.09%
BlackRock 2025 Index	3.22%	6.46%	7.54%	4.99%	7.03%
Callan Target Date 2025	3.20%	6.13%	7.92%	5.14%	7.80%
SERS 2030 Retirement Fund	3.22%	6.49%	8.52%	5.50%	7.77%
BlackRock 2030 Index	3.21%	6.43%	8.42%	5.40%	7.69%
Callan Target Date 2030	3.29%	6.03%	8.87%	5.69%	8.46%
SERS 2035 Retirement Fund	3.23%	6.48%	9.39%	5.90%	8.41%
BlackRock 2035 Index	3.21%	6.38%	9.27%	5.78%	8.30%
Callan Target Date 2035	3.31%	5.73%	9.58%	5.98%	8.98%
SERS 2040 Retirement Fund	3.23%	6.42%	10.15%	6.24%	8.95%
BlackRock 2040 Index	3.19%	6.32%	10.00%	6.10%	8.83%
Callan Target Date 2040	3.34%	5.58%	10.08%	6.21%	9.48%
SERS 2045 Retirement Fund	3.21%	6.30%	10.59%	6.44%	9.39%
BlackRock 2045 Index	3.15%	6.14%	10.41%	6.27%	9.25%
Callan Target Date 2045	3.36%	5.49%	10.48%	6.30%	9.67%
SERS 2050 Retirement Fund	3.20%	6.27%	10.74%	6.48%	9.68%
BlackRock 2050 Index	3.13%	6.07%	10.55%	6.32%	9.54%
Callan Target Date 2050	3.38%	5.43%	10.60%	6.39%	9.72%
SERS 2055 Retirement Fund	3.20%	6.28%	10.73%	6.45%	9.89%
BlackRock 2055 Index	3.13%	6.08%	10.56%	6.29%	9.75%
Callan Target Date 2055	3.39%	5.41%	10.77%	6.43%	9.83%
SERS 2060 Retirement Fund	3.19%	6.26%	10.71%	-	-
BlackRock 2060 Index	3.13%	6.08%	10.56%	-	-
Callan Target Date 2060	3.40%	5.58%	10.97%	6.62%	10.30%

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 June 30, 2019

	Last 10 Years	Last 15 Years	Last 20 Years
<b>Net Performance</b>			
<b>Target Date Funds</b>			
SERS Post Retirement Fund	6.76%	-	-
BlackRock Post Retirement Index	6.76%	5.51%	5.53%
Callan Tgt Date 2000-2010	7.17%	4.86%	-
SERS 2020 Retirement Fund	7.90%	-	-
BlackRock 2020 Index	7.88%	5.81%	4.93%
Callan Target Date 2020	8.51%	5.58%	4.53%
SERS 2025 Retirement Fund	8.61%	-	-
BlackRock 2025 Index	8.58%	6.08%	4.99%
Callan Target Date 2025	9.40%	6.53%	-
SERS 2030 Retirement Fund	9.25%	-	-
BlackRock 2030 Index	9.18%	6.31%	5.01%
Callan Target Date 2030	9.94%	6.05%	4.65%
SERS 2035 Retirement Fund	9.81%	-	-
BlackRock 2035 Index	9.73%	6.51%	5.01%
Callan Target Date 2035	10.48%	6.89%	-
SERS 2040 Retirement Fund	10.31%	-	-
BlackRock 2040 Index	10.21%	6.66%	4.97%
Callan Target Date 2040	10.61%	6.32%	4.07%
SERS 2045 Retirement Fund	10.70%	-	-
BlackRock 2045 Index	10.59%	6.77%	4.88%
Callan Target Date 2045	10.68%	-	-
SERS 2050 Retirement Fund	11.00%	-	-
BlackRock 2050 Index	10.90%	7.02%	5.92%
Callan Target Date 2050	10.70%	-	-

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 June 30, 2019

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
<b>Net Performance</b>					
<b>Domestic Equity</b>					
SERS U.S. Large Company Index Fund	4.30%	10.42%	14.19%	10.72%	13.99%
S&P 500 Index	4.30%	10.42%	14.19%	10.71%	13.98%
Callan Lg Cap Broad MF	4.23%	9.03%	13.88%	9.72%	13.46%
SERS U.S. All Company Index Fund	4.09%	8.93%	13.97%	10.17%	13.77%
Russell 3000 Index	4.10%	8.98%	14.02%	10.19%	13.79%
Callan Multi Cap Brd MF	3.95%	6.80%	12.87%	8.42%	12.55%
SERS U.S. SMID Company Idx Fund	3.06%	2.14%	13.21%	7.84%	12.79%
Dow Jones US Completion	3.02%	1.87%	13.01%	7.65%	12.59%
Callan SMID Broad MFs	4.14%	3.52%	12.23%	7.70%	12.20%
<b>International Equity</b>					
SERS Global Non-U.S. Index Fund	3.10%	1.75%	9.47%	2.36%	6.50%
MSCI ACWI ex US	2.98%	1.29%	9.39%	2.16%	6.36%
Callan Non US Equity MFs	3.34%	(0.22%)	8.51%	2.29%	7.00%
<b>Domestic Fixed Income</b>					
SERS Short Term Investment Fund	0.61%	2.40%	1.58%	1.05%	0.80%
3-month Treasury Bill	0.64%	2.31%	1.38%	0.87%	0.65%
Callan Cash Database(1)	0.74%	2.74%	1.73%	1.30%	1.11%
SERS U.S. Short Term Bond Idx Fund	1.47%	4.23%	-	-	-
Blmbg Gov/Cred 1-3 Yr	1.48%	4.27%	1.59%	1.46%	1.31%
Callan Short US Govt MFs	1.40%	3.67%	1.11%	1.14%	0.94%
SERS U.S. TIPS Index Fund	2.85%	4.83%	-	-	-
Blmbg US TIPS	2.86%	4.84%	2.08%	1.76%	1.17%
Callan TIPS MFs	2.66%	4.37%	2.06%	1.36%	0.96%
SERS U.S. Bond Index Fund	3.08%	7.88%	2.26%	2.90%	2.55%
Blmbg Aggregate	3.08%	7.87%	2.31%	2.95%	2.62%
Callan Core Bond MFs	3.08%	7.80%	2.53%	2.91%	2.77%

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 June 30, 2019

	Last 10 Years	Last 15 Years	Last 20 Years
<b>Net Performance</b>			
<b>Domestic Equity</b>			
SERS U.S. Large Company Index Fund	14.71%	8.79%	5.95%
S&P 500 Index	14.70%	8.75%	5.90%
Callan Lg Cap Broad MF	13.81%	8.65%	6.01%
Russell 3000 Index	14.67%	8.88%	6.30%
Callan Multi Cap Brd MF	13.36%	8.25%	6.59%
SERS U.S. SMID Company Idx Fund	14.74%	9.62%	8.12%
Dow Jones US Completion	14.53%	9.43%	7.81%
Callan SMID Broad MFs	14.11%	9.24%	8.58%
<b>International Equity</b>			
SERS Global Non-U.S. Index Fund	6.66%	-	-
MSCI ACWI ex US	6.54%	5.85%	-
Callan Non US Equity MFs	7.39%	5.75%	4.58%
<b>Domestic Fixed Income</b>			
SERS Short Term Investment Fund	0.64%	1.54%	-
3-month Treasury Bill	0.49%	1.38%	1.85%
Callan Cash Database(1)	0.98%	1.82%	2.39%
Blmbg Gov/Cred 1-3 Yr	1.59%	2.46%	3.22%
Callan Short US Govt MFs	1.39%	2.34%	3.13%
Blmbg US TIPS	3.64%	4.07%	5.42%
Callan TIPS MFs	3.39%	3.77%	4.62%
SERS U.S. Bond Index Fund	3.82%	4.21%	4.88%
Blmbg Aggregate	3.90%	4.27%	4.93%
Callan Core Bond MFs	4.39%	4.53%	5.00%

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 June 30, 2019

	12/2018- 6/2019	2018	2017	2016	2015
<b>Net Performance</b>					
<b>Target Date Funds</b>					
SERS Post Retirement Fund	10.10%	(3.49%)	10.17%	6.09%	(1.14%)
BlackRock Post Retirement Index	10.11%	(3.48%)	10.10%	6.01%	(1.07%)
Callan Tgt Date 2000-2010	9.42%	(3.15%)	10.16%	5.79%	(0.48%)
SERS 2020 Retirement Fund	10.49%	(3.89%)	11.77%	6.64%	(1.27%)
BlackRock 2020 Index	10.47%	(3.88%)	11.67%	6.51%	(1.28%)
Callan Target Date 2020	10.64%	(4.29%)	12.61%	6.51%	(1.03%)
SERS 2025 Retirement Fund	11.87%	(4.88%)	13.90%	7.28%	(1.43%)
BlackRock 2025 Index	11.84%	(4.90%)	13.75%	7.10%	(1.45%)
Callan Target Date 2025	11.93%	(5.19%)	15.03%	7.08%	(1.19%)
SERS 2030 Retirement Fund	13.02%	(5.71%)	15.82%	7.87%	(1.61%)
BlackRock 2030 Index	12.97%	(5.76%)	15.64%	7.61%	(1.66%)
Callan Target Date 2030	13.10%	(6.12%)	16.81%	7.58%	(1.31%)
SERS 2035 Retirement Fund	14.12%	(6.50%)	17.68%	8.41%	(1.80%)
BlackRock 2035 Index	14.04%	(6.58%)	17.48%	8.08%	(1.86%)
Callan Target Date 2035	14.04%	(7.03%)	18.54%	8.20%	(1.46%)
SERS 2040 Retirement Fund	15.09%	(7.24%)	19.35%	8.86%	(2.00%)
BlackRock 2040 Index	15.01%	(7.33%)	19.09%	8.51%	(2.08%)
Callan Target Date 2040	14.79%	(7.89%)	19.84%	8.48%	(1.55%)
SERS 2045 Retirement Fund	15.80%	(7.85%)	20.44%	9.16%	(2.15%)
BlackRock 2045 Index	15.71%	(7.99%)	20.15%	8.77%	(2.22%)
Callan Target Date 2045	15.34%	(8.21%)	20.63%	8.63%	(1.58%)
SERS 2050 Retirement Fund	16.12%	(8.12%)	20.83%	9.24%	(2.20%)
BlackRock 2050 Index	16.02%	(8.26%)	20.55%	8.82%	(2.26%)
Callan Target Date 2050	15.42%	(8.44%)	20.74%	8.61%	(1.56%)
SERS 2055 Retirement Fund	16.15%	(8.15%)	20.81%	9.21%	(2.18%)
BlackRock 2055 Index	16.06%	(8.28%)	20.55%	8.82%	(2.26%)
Callan Target Date 2055	15.54%	(8.44%)	21.12%	8.65%	(1.69%)
SERS 2060 Retirement Fund	16.14%	(8.15%)	20.76%	9.23%	(2.15%)
BlackRock 2060 Index	16.06%	(8.28%)	20.55%	8.82%	(2.16%)
Callan Target Date 2060	15.63%	(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 June 30, 2019

	12/2018- 6/2019	2018	2017	2016	2015
<b>Net Performance</b>					
<b>Domestic Equity</b>					
SERS U.S. Large Company Index Fund	18.55%	(4.40%)	21.83%	11.97%	1.39%
S&P 500 Index	18.54%	(4.38%)	21.83%	11.96%	1.38%
Callan Lg Cap Broad MF	19.05%	(4.54%)	23.56%	8.43%	1.50%
SERS U.S. All Company Index Fund	18.70%	(5.30%)	21.05%	12.69%	0.45%
Russell 3000 Index	18.71%	(5.24%)	21.13%	12.74%	0.48%
Callan Multi Cap Brd MF	18.28%	(6.82%)	20.75%	9.05%	(1.26%)
SERS U.S. SMID Company Idx Fund	19.59%	(9.34%)	18.18%	16.05%	(3.32%)
Dow Jones US Completion	19.49%	(9.57%)	18.12%	15.75%	(3.42%)
Callan SMID Broad MFs	20.96%	(8.69%)	17.14%	13.80%	(2.80%)
<b>International Equity</b>					
SERS Global Non-U.S. Index Fund	13.97%	(13.91%)	27.57%	5.00%	(5.63%)
MSCI ACWI ex US	13.60%	(14.20%)	27.19%	4.50%	(5.66%)
Callan Non US Equity MFs	14.41%	(15.04%)	26.90%	0.23%	0.02%
<b>Domestic Fixed Income</b>					
SERS Short Term Investment Fund	1.22%	2.09%	1.08%	0.59%	0.19%
3-month Treasury Bill	1.24%	1.87%	0.86%	0.33%	0.05%
Callan Cash Database(1)	1.51%	2.00%	1.19%	0.95%	0.40%
SERS U.S. Short Term Bond Idx Fund	2.69%	1.55%	-	-	-
Blmbg Gov/Cred 1-3 Yr	2.71%	1.60%	0.84%	1.28%	0.65%
Callan Short US Govt MFs	2.48%	1.15%	0.59%	0.64%	0.35%
SERS U.S. TIPS Index Fund	6.13%	(1.27%)	-	-	-
Blmbg US TIPS	6.15%	(1.26%)	3.01%	4.68%	(1.44%)
Callan TIPS MFs	6.11%	(1.53%)	3.12%	4.63%	(1.76%)
SERS U.S. Bond Index Fund	6.10%	0.00%	3.50%	2.56%	0.46%
Blmbg Aggregate	6.11%	0.01%	3.54%	2.65%	0.55%
Callan Core Bond MFs	6.47%	(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 June 30, 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
<b>Gross of Fee Performance</b>									
<b>Target Date Funds</b>									
<b>SERS Post Retirement Fund</b> Callan Tgt Date 2000-2010	3.2 12	6.6 32	5.9 55	4.3 44	5.4 64	6.8 65			0.08 97
BlackRock Post Retirement Index	3.2 8	6.6 33	5.8 62	4.2 56	5.3 69	6.8 67			
<b>SERS 2020 Retirement Fund</b> Callan Target Date 2020	3.2 33	6.5 37	6.6 68	4.6 57	6.4 66	8.0 61			0.08 97
BlackRock 2020 Index	3.2 32	6.5 39	6.5 71	4.5 61	6.3 69	7.9 62			
<b>SERS 2025 Retirement Fund</b> Callan Target Date 2025	3.2 45	6.6 25	7.7 61	5.1 50	7.2 72	8.7 70			0.08 97
BlackRock 2025 Index	3.2 45	6.5 31	7.5 67	5.0 65	7.0 74	8.6 74			
<b>SERS 2030 Retirement Fund</b> Callan Target Date 2030	3.2 56	6.6 20	8.6 62	5.6 57	7.9 70	9.3 64			0.08 97
BlackRock 2030 Index	3.2 60	6.4 27	8.4 69	5.4 66	7.7 75	9.2 70			
<b>SERS 2035 Retirement Fund</b> Callan Target Date 2035	3.3 61	6.6 16	9.5 55	6.0 50	8.5 74	9.9 69			0.08 97
BlackRock 2035 Index	3.2 69	6.4 22	9.3 66	5.8 64	8.3 79	9.7 73			
<b>SERS 2040 Retirement Fund</b> Callan Target Date 2040	3.3 64	6.5 16	10.2 42	6.3 41	9.0 67	10.4 56			0.08 97
BlackRock 2040 Index	3.2 73	6.3 19	10.0 57	6.1 59	8.8 79	10.2 62			
<b>SERS 2045 Retirement Fund</b> Callan Target Date 2045	3.2 68	6.4 14	10.7 40	6.5 41	9.5 61	10.8 41			0.08 97
BlackRock 2045 Index	3.1 79	6.1 20	10.4 54	6.3 53	9.2 75	10.6 55			
<b>SERS 2050 Retirement Fund</b> Callan Target Date 2050	3.2 69	6.4 13	10.8 42	6.6 40	9.8 49	11.1 30			0.08 97
BlackRock 2050 Index	3.1 80	6.1 23	10.6 52	6.3 52	9.5 68	10.9 38			
<b>SERS 2055 Retirement Fund</b> Callan Target Date 2055	3.2 68	6.4 11	10.8 49	6.5 48	10.0 40				0.08 97
BlackRock 2055 Index	3.1 79	6.1 19	10.6 56	6.3 59	9.8 55				

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).

# Performance Summary & Expense Ratios

As of June 30, 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
<b>SERS 2060 Retirement Fund</b> Callan Target Date 2060	3.2 73	6.3 15	10.8 59						0.08 96
BlackRock 2060 Index	3.1 86	6.1 23	10.6 66						
<b>Domestic Equity</b>									
<b>SERS U.S. Large Company Stock Index Fund</b> Callan Lg Cap Broad MF	4.3 48	10.4 37	14.2 46	10.7 41	14.0 41	14.7 34			0.01 99
S&P 500 Index	4.3 48	10.4 37	14.2 46	10.7 41	14.0 42	14.7 36			
<b>SERS U.S. All Company Index Fund</b> Callan Multi Cap Brd MF	4.1 47	9.0 37	14.0 37	10.2 27	13.8 27				0.03 99
Russell 3000 Index	4.1 47	9.0 37	14.0 37	10.2 27	13.8 27	14.7 24			
<b>U.S. Small/Mid Company Stock Index Fund</b> Callan SMID Broad MFs	3.1 72	2.2 54	13.2 47	7.9 46	12.8 41	14.8 40			0.03 100
Dow Jones US Completion	3.0 73	1.9 54	13.0 48	7.7 51	12.6 43	14.5 44			
<b>International Equity</b>									
<b>SERS Global Non-U.S. Index Fund</b> Callan Non US Equity MFs	3.1 60	1.8 34	9.5 32	2.4 50	6.6 62	6.7 58			0.06 100
MSCI ACWI ex US	3.0 63	1.3 35	9.4 33	2.2 50	6.4 73	6.5 66			
<b>Domestic Fixed Income</b>									
<b>SERS Short Term Investment Fund</b> Callan Cash Database	0.6 93	2.4 85	1.6 79	1.0 83	0.8 84	0.6 86			0.00 100
3-month Treasury Bill	0.6 79	2.3 92	1.4 94	0.9 95	0.6 97	0.5 97			
<b>Comments:</b> Callan Cash Database includes STIF, enhanced cash, and money market funds.									
<b>SERS U.S. Short Term Bond Idx Fund</b> Callan Short US Govt MFs	1.5 44	4.3 28							0.03 99
Blmbg Gov/Cred 1-3 Yr	1.5 44	4.3 28	1.6 10	1.5 15	1.3 13	1.6 35			
<b>SERS U.S. TIPS Index Fund</b> Callan TIPS MFs	2.9 19	4.9 19							0.03 99
Blmbg US TIPS	2.9 19	4.8 19	2.1 47	1.8 18	1.2 27	3.6 31			

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).

# Performance Summary & Expense Ratios

As of June 30, 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
<b>SERS U.S. Bond Index Fund</b>	3.1 48	7.9 35	2.3 79	2.9 48	2.6 77	3.8 86			0.03 96
Callan Core Bond MFs									
BImbg Aggregate	3.1 50	7.9 39	2.3 77	2.9 37	2.6 69	3.9 84			

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

Conservative

**Tier I: Asset Allocation**

**Tier II: Passive Core Options**

**Tier II: Active Core Options**

**Tier III: Specialty Options**

**Target Date Funds**  
5 Year Increments

**Capital Preservation**  
U.S. Short Term Bond Index Fund

**Capital Preservation**  
Short Term Investment Fund

**Inflation Protection**  
U.S. TIPS Index Fund

**Core Fixed Income**  
U.S. Bond Index Fund

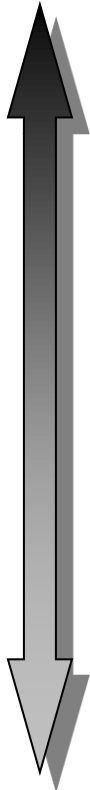
**Large-Cap US Equity**  
U.S. Large Co. Stock Index Fund

**All Cap U.S. Equity**  
U.S. All Cap Stock Index Fund

**Non-US Equity**  
Global Non-U.S. Stock Index Fund

**Small/Mid-Cap US Equity**  
U.S. Small/Mid Co. Stock Index Fund

**Self-Directed Brokerage Window**



Aggressive

Callan

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**Appendix – Callan Update**

# Published Research Highlights from 2Q19

## The Cobbler's Shoes: How Asset Managers Run Their Own 401(k) Plans

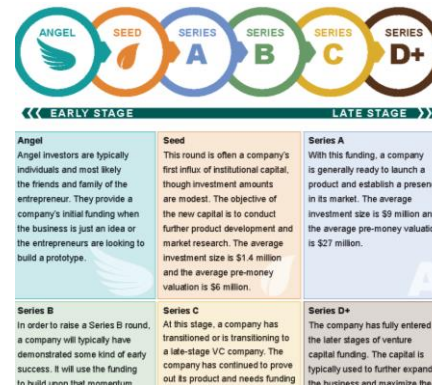


## Callan's Periodic Table Explained

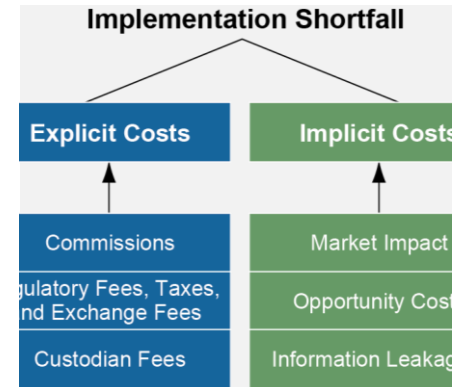
2013	2014	2015	2016	2017	2018
Small Cap Equity	Real Estate	Large Cap Equity	Small Cap Equity	Emerging Market Equity	Cash Equivalent
3.1%	1.38%	21.31%	37.28%	1.87%	
U.S. Fixed Income	High Yield	Non-U.S. Equity	U.S. Fixed Income	High Yield	Non-U.S. Fixed Income
32.4%	0.55%	17.13%	24.21%	0.01%	
Non-brokered Equity	Cash Equivalent	Large Cap Equity	Large Cap Equity	High Yield	
21.02%	5.97%	0.05%	11.96%	21.83%	-2.08%
High Yield	Real Estate	Emerging Market Equity	Small Cap Equity	Non-U.S. Fixed Income	
7.44%	4.89%	-0.79%	11.19%	14.65%	-2.15%

Explainer Video

## How to Distinguish Between Growth Equity and Late-Stage VC



## Two Questions to Help DC Plans Save on Litigation Costs



## Recent Blog Posts

**How STRIPS Can Help Corporate DB Plans**

Sweta Vaidya

**A Primer on Interval Funds**

Kristin Bradbury and David Welsch

**Legislative Fixes for the Student Debt Tsunami**

Jana Steele

## 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

# Callan Institute Events

## Upcoming Conferences, Workshops, and Webinars

### “Callan College” on Alternative Investments

October 29-30, 2019 in Chicago

#### Dive into Alternatives!

Alternative investments like private equity, hedge funds, and real estate can play a key role in any portfolio. In this one-and-a-half-day session, learn about the importance of allocations to alternatives, and how to consider integrating, evaluating, and monitoring them.

#### 3 Reasons You Should Attend

- 1 Enhance** your knowledge to maximize your plan’s long term returns
- 2 Learn** about new opportunities for greater diversification
- 3 Prepare** your plan’s portfolio for market ups and downs

*“This is 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



### Upcoming Webinar

ESG

**Webinars:** On-Demand now available at <https://www.callan.com/ondemandwebinar/>

### Regional Workshops

Denver, October 22, 2019

Chicago, October 24, 2019

### 40<sup>th</sup> National Conference

January 27–29, 2020

The Palace Hotel

San Francisco, CA

### “Callan College” Introduction to Investments

Atlanta, October 8–9, 2019

Chicago, October 29-30, 2019



## Callan Updates

Firm updates by the numbers, as of June 30, 2019

**Total Associates: 194**

### Ownership

- 100% employees
- Broadly distributed across more than 95 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 50**

**Total Fund Sponsor Clients: more than 400**

**AUA: more than \$2.4 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*

