

September 28, 2021



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

Second Quarter 2021

Executive Summary

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Market Environment

Continued Surge in Global Equity Markets in 2Q21

Global equity continued to surge in 2Q:

- Year-over-year returns from June are eye-popping:
 - S&P 500: +41%
 - MSCI World ex-USA: +34%
 - Emerging Markets: +41%
 - U.S. Small Cap: +62% (!)
- The initial recovery was concentrated in a few stocks (FAANG) and U.S. mega cap.
- Market rotation to small cap and value with the flip from a “COVID trade” to a “GDP growth trade” in November, with the announcement of vaccines
- Economic recovery now looking very strong in 2021, into 2022. Fed projects GDP growth of 7.0% in 2021, although initial GDP estimate for 2Q is 6.5% and 1Q was revised down to 6.3%.
- Initial distribution challenges and resistance to vaccination have stalled the achievement of widespread inoculation in the U.S. Restricted availability of the vaccine outside the U.S. means inoculation rates have been held back in countries around the globe.

Returns for Periods ended 6/30/21

| | 1 Quarter | 1 Year | 5 Years | 10 Years | 25 Years |
|-------------------------------------|-----------|--------|---------|----------|----------|
| U.S. Equity | | | | | |
| Russell 3000 | 8.24 | 44.16 | 17.89 | 14.70 | 9.87 |
| S&P 500 | 8.55 | 40.79 | 17.65 | 14.84 | 9.76 |
| Russell 2000 | 4.29 | 62.03 | 16.47 | 12.34 | 9.33 |
| Global ex-U.S. Equity | | | | | |
| MSCI World ex USA | 5.65 | 33.60 | 10.36 | 5.70 | 5.37 |
| MSCI Emerging Markets | 5.05 | 40.90 | 13.03 | 4.29 | -- |
| MSCI ACWI ex USA Small Cap | 6.35 | 47.04 | 11.97 | 7.02 | 6.60 |
| Fixed Income | | | | | |
| Bloomberg Barclays Aggregate | 1.83 | -0.33 | 3.03 | 3.39 | 5.14 |
| 90-day T-Bill | 0.00 | 0.09 | 1.17 | 0.63 | 2.17 |
| Bloomberg Barclays Long Gov/Credit | 6.44 | -1.86 | 5.45 | 7.30 | 7.48 |
| Bloomberg Barclays Global Agg ex-US | 0.92 | 4.60 | 1.63 | 0.99 | 3.79 |
| Real Estate | | | | | |
| NCREIF Property | 1.72 | 5.42 | 5.74 | 8.59 | 9.04 |
| FTSE Nareit Equity | 12.02 | 38.02 | 6.31 | 9.41 | 10.23 |
| Alternatives | | | | | |
| CS Hedge Fund | 3.02 | 16.60 | 5.63 | 4.24 | 7.05 |
| Cambridge Private Equity* | 9.48 | 54.21 | 18.83 | 15.07 | 15.52 |
| Bloomberg Commodity | 13.30 | 45.61 | 2.40 | -4.44 | 1.31 |
| Gold Spot Price | 3.26 | -1.61 | 6.05 | 1.66 | 6.33 |
| Inflation - CPI-U | 2.57 | 5.39 | 2.43 | 1.87 | 2.22 |

*Cambridge PE data through 03/31/21

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

Market Environment: 2Q21

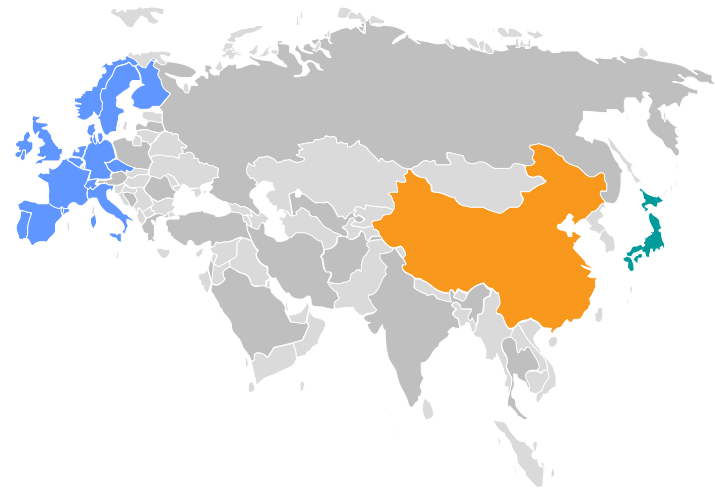
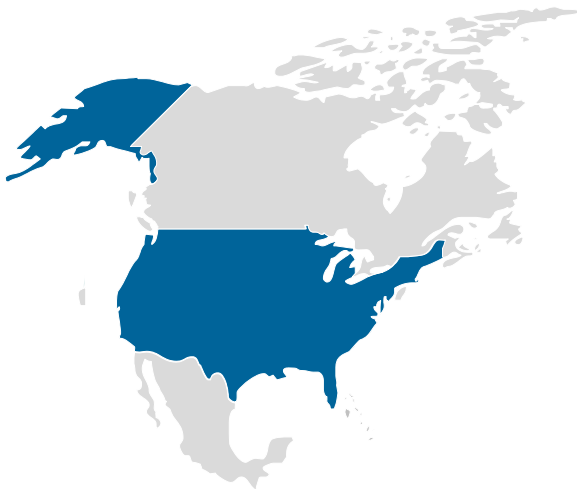
Strong growth worldwide, but continued uncertainty from uneven vaccine rollout

U.S.

- 2020 GDP loss of 3.4% for the year is the deepest recession in 75 years. GDP rose 6.5% in the second quarter, and the Fed still expects 7.0% growth for the year.
- Consumer spending, non-residential investment, and exports drove GDP gains. Consumers ramped up spending on food services, accommodations, and recreation services (gambling!), along with motor vehicles.
- Unemployment dropped to 6.0% in March but held steady at 5.9% through June, despite another large monthly gain of 850,000 jobs.
 - Considerable slack left in the job market, as measured by number of jobs still lost and the number unemployed compared to pre-pandemic levels.

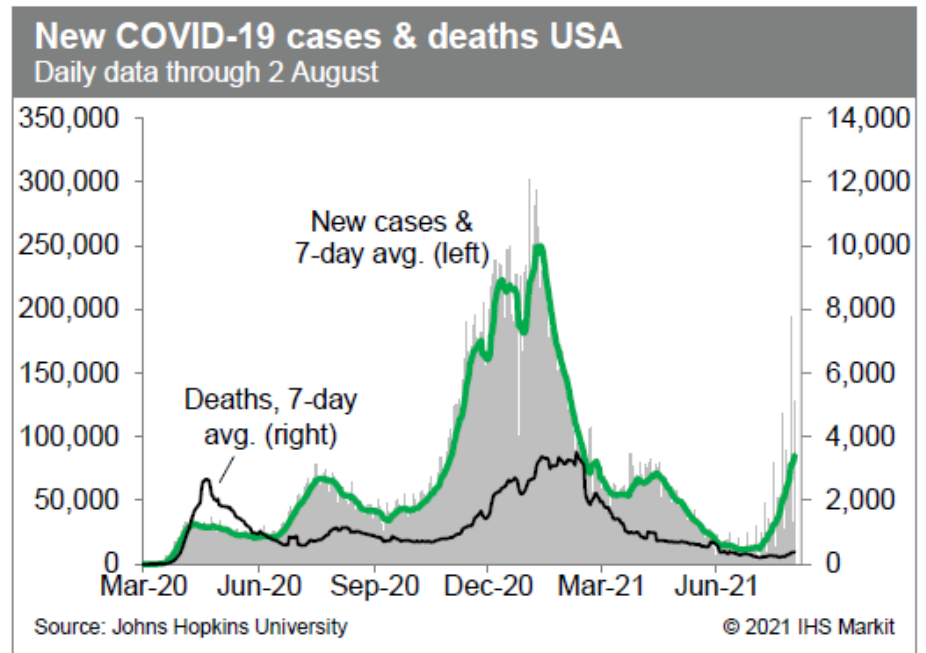
Global

- Euro zone GDP expanded 8.2% in 2Q21, after shrinking in 4Q20 and 1Q21.
- U.K. GDP on track for 7.2% growth in 2021, per OECD, although the organization warns the U.K. may face a longer road to recovery than the euro zone due to the double-whammy of the pandemic and Brexit.
- Japan's economy is expected to grow much more modestly than other developed nations in 2021; OECD expects 2.6% for the year.
- China's GDP grew 5.3% in 2Q21, after slowing to just 1.6% in 1Q21. China was one of the few economies to see growth in GDP during 2020.



Will the Delta Variant Derail U.S. and Global Growth?

- The Delta variant of the COVID-19 virus is driving a sharp upswing in cases and hospitalizations.
 - Trend is likely to worsen before it improves.
 - Delta variant now accounts for 83% of new cases, and represents a “new” pandemic among the unvaccinated.
 - Largest increases in cases occurring in areas with low vaccination rates
 - New case loads exceed those seen last summer by a substantial amount.
- New official containment measures may be unpopular and unlikely, but voluntary reductions in consumer and business activity (and spending) could slow growth in 2Q21.
 - Estimates of the impact on GDP range from -0.25% to -1%
 - Real risk of a more pronounced slowdown, depending on the shape of the surge in cases

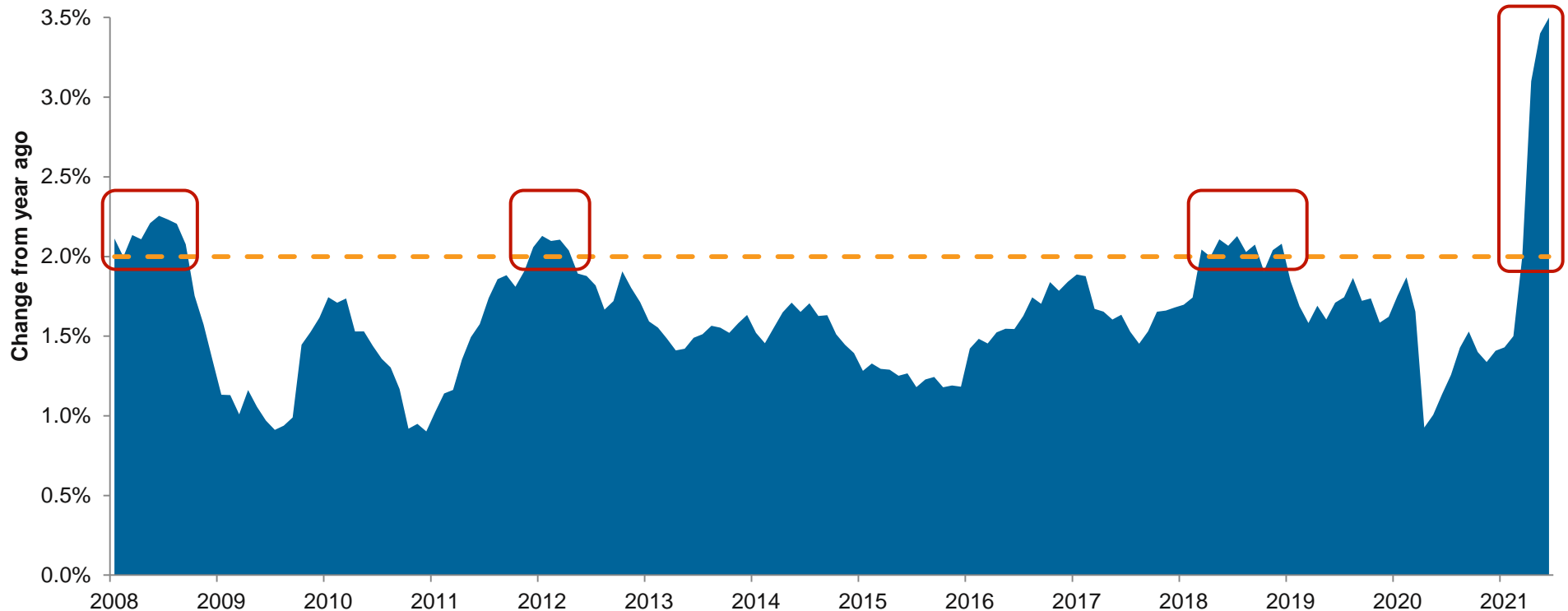


Source: Johns Hopkins University, IHS Markit

The Fed's New Inflation Framework

Targeting core personal consumption expenditures index

Personal Consumption Expenditures Excluding Food and Energy (Chain-Type Price Index)



- Inflation worries are in the headlines.
- Inflation has consistently undershot the Fed's 2% target, prompting a change in its inflation framework.
- Fed's aim is to achieve an average of 2% inflation over the medium term, not specifically defined.
- PCE is the Fed's target, different from and typically lower than CPI-U, which flashed a year-over-year change of 3.5% in June 2021.

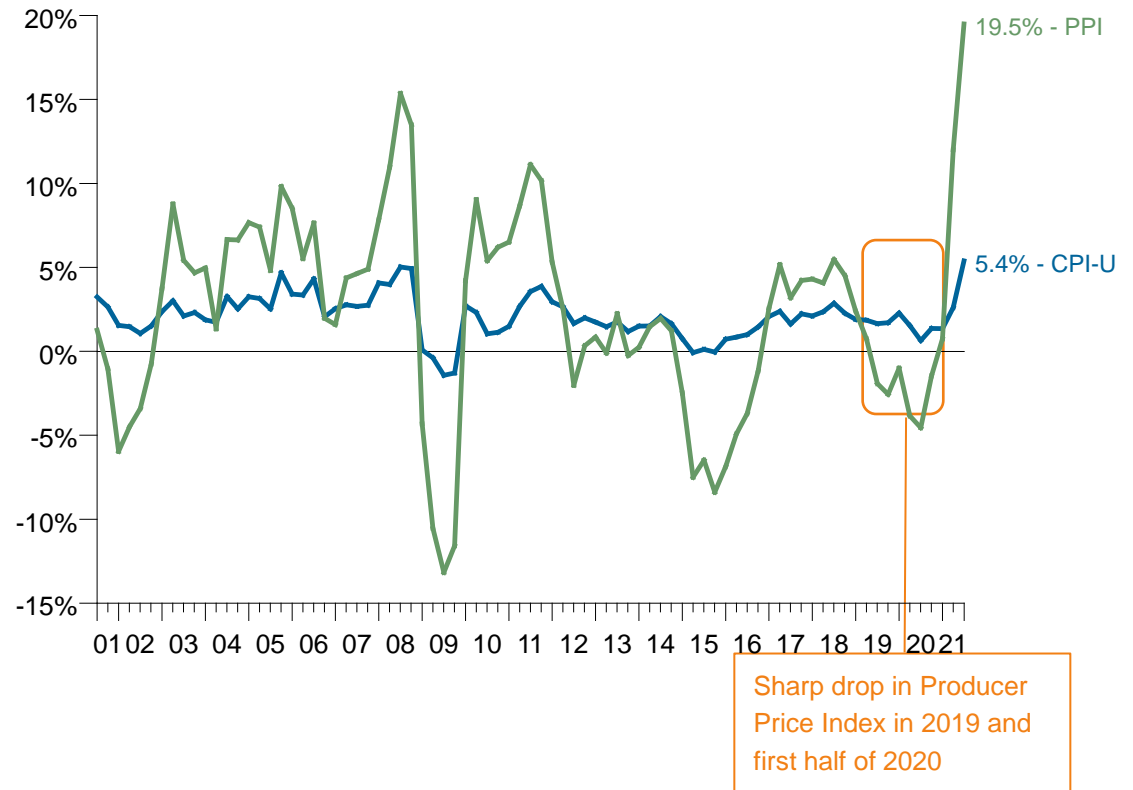
Sources: FRED, U.S. Bureau of Economic Analysis

Inflation Rebounds and Spurs Headline Concerns

CPI and PPI shoot up in 2Q21, but off a depressed base from one year ago

- Inflation fell sharply at the onset of the pandemic, starting in February 2020.
 - The recovery to pre-pandemic levels in the Consumer Price Index required a 2.6% year-over-year change
 - 5.4% jump in CPI-U represents kinks in supply chains and labor markets after a year of global economic disruption and shutdown; many markets cannot simply restart instantaneously
 - Producer prices had been tumbling for more than a year prior to the pandemic; recovery to 2018 price **levels** generates eye-popping year-over-year percent change that misrepresents whether we're seeing a "true" spike in inflation.

Consumer and Producer Price Indexes – Inflation Year-Over-Year



Diversification Remains Key Risk Control

Periodic Table of Investment Returns

| 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2 Qtrs. 2021 |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Non-U.S. Fixed | 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 | Small Cap |
| 22.37% | 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% | 17.54% |
| U.S. Fixed | 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 | Large Cap |
| 10.26% | 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% | 15.25% |
| Real Estate Funds | 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 | Non-U.S. Equity |
| 4.57% | 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% | 9.92% |
| Hedge Funds | 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 | Emerging Markets |
| 3.04% | 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% | 7.45% |
| Cash Equivalent | 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 |
| 1.78% | 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% | 5.96% |
| High Yield | 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 | Real Estate Funds |
| -1.37% | 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% | 5.64% |
| Emerging Markets | 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 | High Yield |
| -6.16% | 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% | 3.62% |
| Non-U.S. Equity | 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 | Cash Equivalent |
| -15.80% | 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% | 0.02% |
| Small Cap | 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 | U.S. Fixed |
| -20.48% | 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% | -1.60% |
| | | 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 |
| | | 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% | -4.42% |

- 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

DOL Offers Tips on Cybersecurity Best Practices

- The U.S. Department of Labor (DOL) issued guidance on cybersecurity best practices in two new publications, which provide a framework for plan sponsors to follow when structuring their own cybersecurity practices and reviewing service providers.
- The first [document](#) details steps plan sponsors should follow to hire a service provider with strong cybersecurity practices and includes the following tips:
 1. Ask about the service provider's information security standards, practices and policies, and audit results, and compare them to the industry standards adopted by other financial institutions.
 2. Look for service providers that follow a recognized standard for information security and use an outside auditor to review and validate cybersecurity.
 3. Ask the service provider how it validates its practices, and what levels of security standards it has met and implemented. Look for contract provisions that give you the right to review audit results demonstrating compliance with the standard.
 4. Evaluate the service provider's track record in the industry, including information security incidents, other litigation, and legal proceedings related to the vendor's services.
 5. Ask whether the service provider has experienced past security breaches, what happened, and how the service provider responded.
 6. Find out if the service provider has insurance policies that would cover losses caused by cybersecurity and identity theft breaches (including breaches caused by internal threats, such as misconduct by the service provider's employees or contractors, and breaches caused by external threats, such as a third party hijacking a plan participant's account).
 7. When you contract with a service provider, make sure that the contract requires ongoing compliance with cybersecurity and information security standards—and beware contract provisions that limit the service provider's responsibility for IT security breaches. Also, try to include terms in the contract that would enhance cybersecurity protection for the plan and its participants.
- The second document provides tips for cybersecurity program [best practices](#) that largely mirror accepted industry best practices, such as those advanced by the SPARK Data Security Oversight Board.
- The new guidance from the DOL is a welcome aid to plan sponsors facing uncertain boundaries with respect to their fiduciary obligations in an increasingly important area of overall plan governance. Sponsors would be wise to review these tips to ensure that, at a minimum, these recommendations are incorporated into their vendor selection processes, and internal governance, as appropriate.

Defined Contribution Industry Developments

2Q21 Key Themes

Congress Looks to Build Upon SECURE 1.0

- On May 5, the Ways and Means Committee of the U.S. House of Representatives voted unanimously to advance the Securing a Strong Retirement Act, and on May 20, the Senate introduced the Retirement Security and Savings Act.
- The bills were similar in scope and could serve as the basis of a SECURE 2.0 package
- Key provisions in both bills included permitting matching contributions on behalf of employees who are repaying student loans; increasing the starting age for required minimum distributions; and creating a retirement savings “lost-and-found” database.
- CITs would be allowed in 403(b) plans, which could result in fee savings and use of stable value funds.
- Both bills still need to pass through their respective chambers before SECURE 2.0 can become a reality.

Déjà vu: GAO Asked to Review Target Date Fund Market

- On May 7, a House of Representatives committee requested the Government Accountability Office (GAO) conduct a review of target date funds (TDFs).
- The request signaled 14 specific areas the House committee would like the GAO to examine, including risk and fees levels present in the universe of TDFs.
- The request for review marks the first serious attention by lawmakers into TDFs since the release of the U.S. Department of Labor’s 2013 “Target Date Retirement Funds: Tips for ERISA Plan Fiduciaries.”

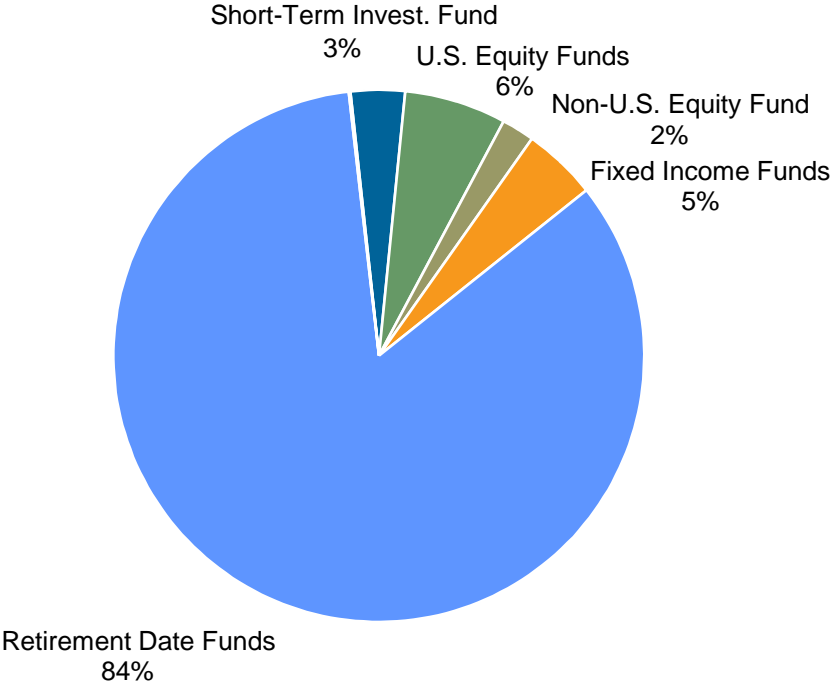
Callan

PA SERS 401(a) Plan Performance Review

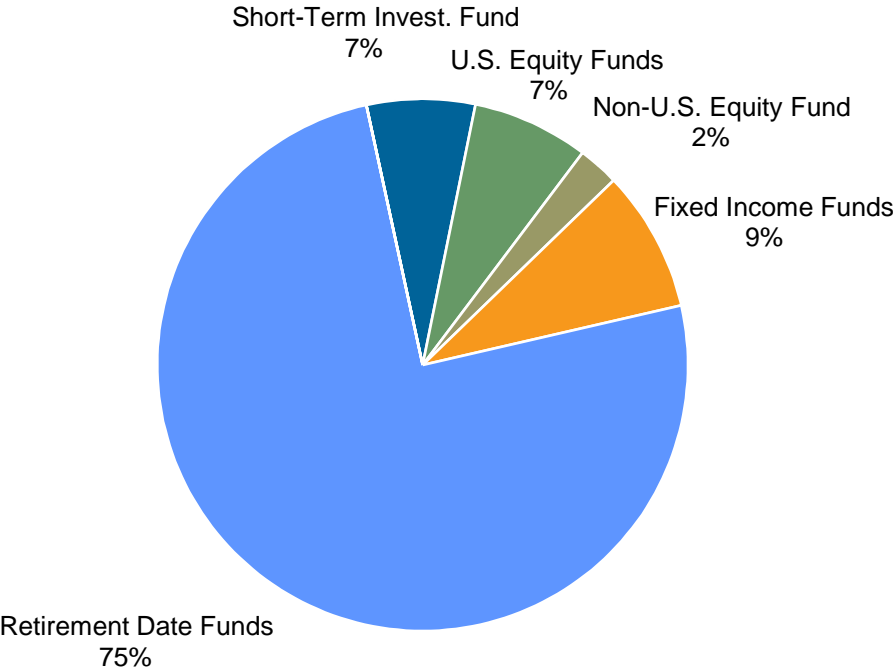
401(a) Plan Asset Allocation & Contributions

As of June 30, 2021

Asset Allocation



Contributions



Asset Allocation

As of June 30, 2021

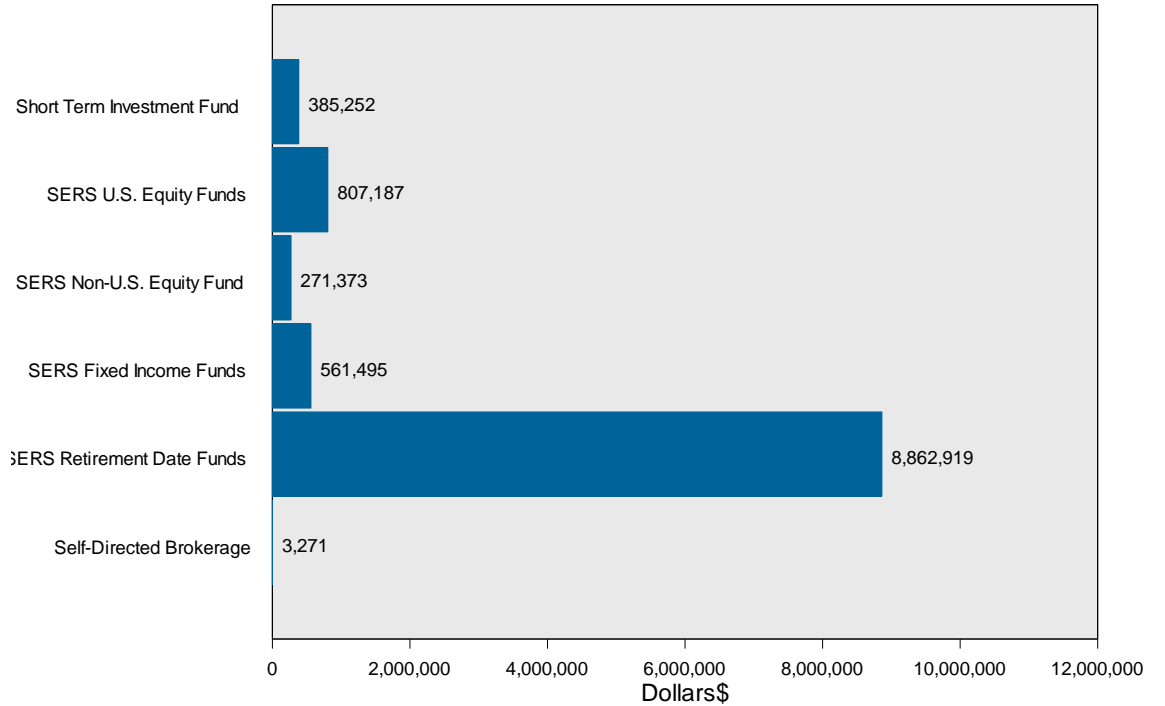
| | June 30, 2021 | | Net New Inv. | Inv. Return | March 31, 2021 | |
|------------------------------------|---------------------|---------------|--------------------|--------------------|---------------------|---------------|
| | Market Value | % of Total | | | Market Value | % of Total |
| SERS Retirement Date Funds | \$47,466,654 | 86.72% | \$6,147,238 | \$2,715,681 | \$38,603,736 | 87.28% |
| SERS Post Retirement Fund | 819,886 | 1.50% | 105,146 | 30,173 | 684,567 | 1.55% |
| SERS 2025 Retirement Fund | 2,279,322 | 4.16% | 384,053 | 91,198 | 1,804,071 | 4.08% |
| SERS 2030 Retirement Fund | 4,813,082 | 8.79% | 542,017 | 227,393 | 4,043,672 | 9.14% |
| SERS 2035 Retirement Fund | 5,047,230 | 9.22% | 778,174 | 256,157 | 4,012,900 | 9.07% |
| SERS 2040 Retirement Fund | 4,865,471 | 8.89% | 611,985 | 274,394 | 3,979,091 | 9.00% |
| SERS 2045 Retirement Fund | 6,237,516 | 11.40% | 795,888 | 377,408 | 5,064,220 | 11.45% |
| SERS 2050 Retirement Fund | 6,620,810 | 12.10% | 728,306 | 416,397 | 5,476,107 | 12.38% |
| SERS 2055 Retirement Fund | 6,581,892 | 12.02% | 874,585 | 407,812 | 5,299,495 | 11.98% |
| SERS 2060 Retirement Fund | 6,479,480 | 11.84% | 819,071 | 404,510 | 5,255,900 | 11.88% |
| SERS 2065 Retirement Fund | 3,721,965 | 6.80% | 508,013 | 230,241 | 2,983,712 | 6.75% |
| SERS U.S. Equity | \$3,503,298 | 6.40% | \$570,376 | \$236,810 | \$2,696,111 | 6.10% |
| SERS U.S. Large Company Idx Fund | 2,046,209 | 3.74% | 228,199 | 148,640 | 1,669,371 | 3.77% |
| SERS U.S. All Company Idx Fund | 914,976 | 1.67% | 227,166 | 57,362 | 630,448 | 1.43% |
| SERS U.S. SMID Company Idx Fund | 542,112 | 0.99% | 115,011 | 30,809 | 396,292 | 0.90% |
| SERS Non-U.S. Equity | | | | | | |
| SERS Global Non-U.S. Index Fund | 1,138,891 | 2.08% | 222,318 | 49,055 | 867,518 | 1.96% |
| SERS Fixed Income | \$2,569,626 | 4.69% | \$550,090 | \$11,406 | \$2,008,131 | 4.54% |
| SERS Short Term Investment Fund | 1,854,621 | 3.39% | 384,985 | 267 | 1,469,369 | 3.32% |
| SERS U.S. Short Term Bond Idx Fund | 71,940 | 0.13% | 15,159 | (31) | 56,813 | 0.13% |
| SERS U.S. TIPS Index Fund | 142,177 | 0.26% | 34,157 | 3,823 | 104,197 | 0.24% |
| SERS U.S. Bond Index Fund | 500,889 | 0.92% | 115,790 | 7,347 | 377,752 | 0.85% |
| Self-Directed Brokerage | | | | | | |
| SERS Self-Directed Brokerage | 57,818 | 0.11% | 697 | 2,574 | 54,547 | 0.12% |
| Total Fund | \$54,736,287 | 100.0% | \$7,490,719 | \$3,015,526 | \$44,230,042 | 100.0% |

Changes in Market Values and Contributions

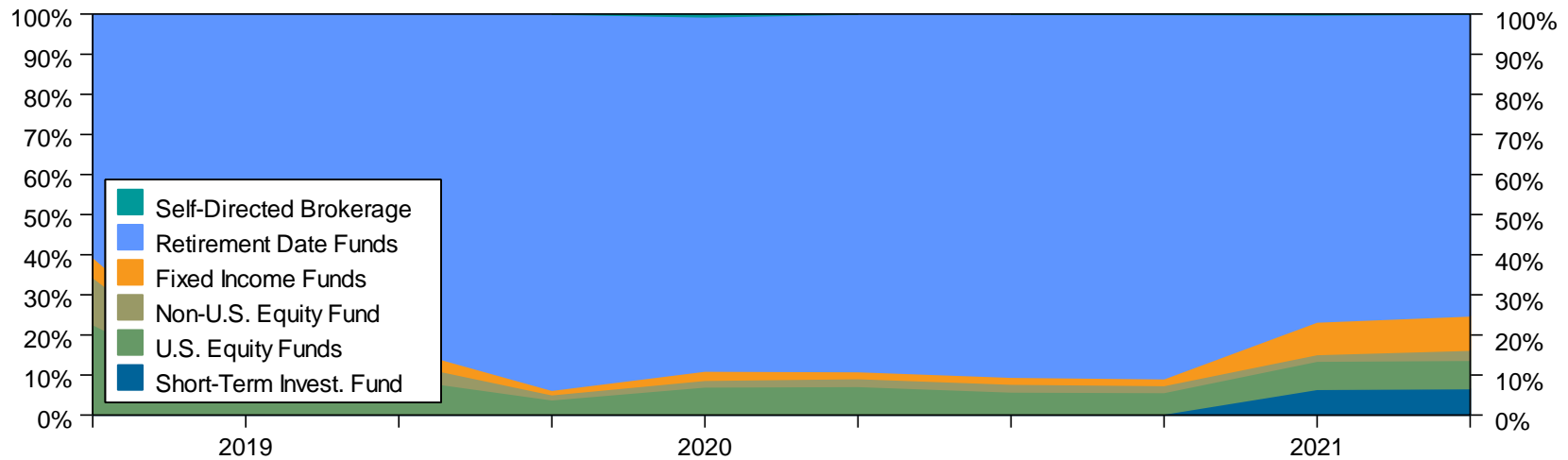
As of June 30, 2021

● 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, employer match, distributions, withdrawals; and
3. Transfers between funds by participants.



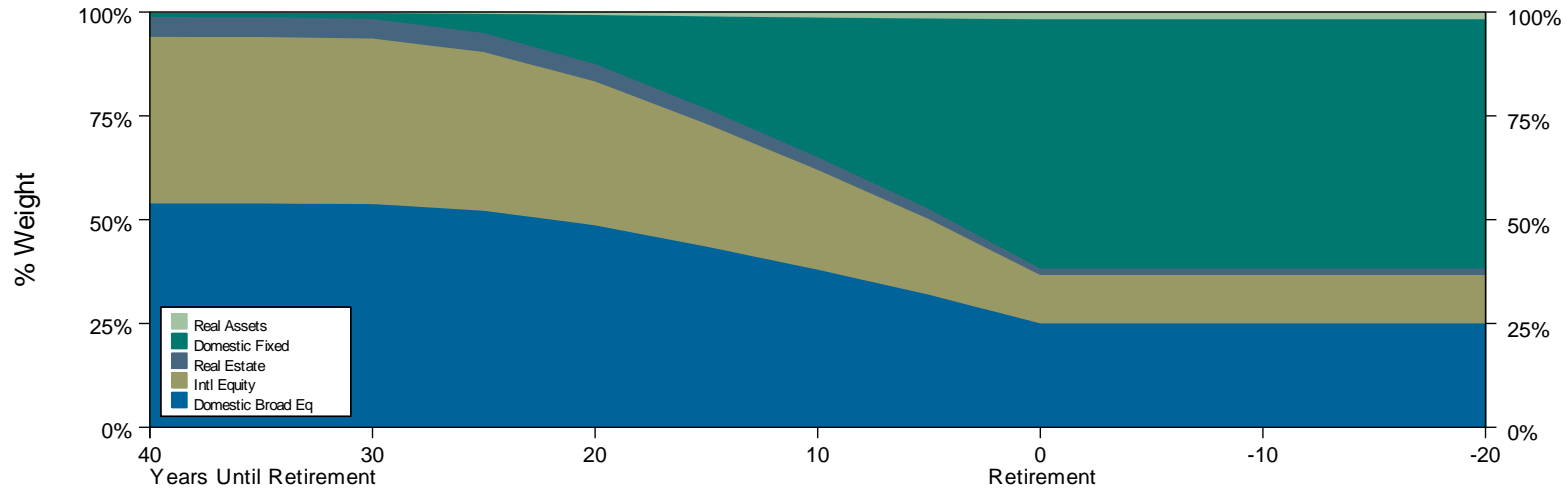
Historical Allocation of Contributions



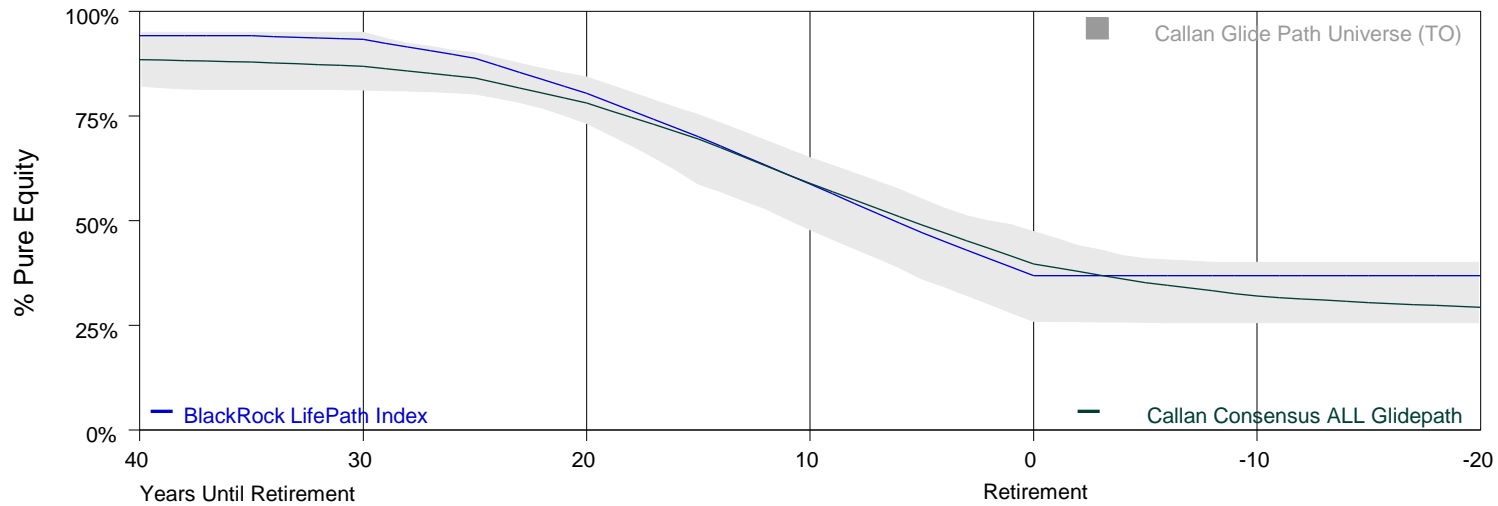
Blackrock LifePath Retirement Funds

Glidepath and Equity Roll-down Exposure as of June 30, 2021

BlackRock LifePath Retirement Funds Glidepath



BlackRock LifePath Retirement Funds Equity Roll-down Exposure



Cumulative Performance - Net of Fees

As of June 30, 2021

| | Last Quarter | Year to Date | Last Year | Last 3 Years | Last 5 Years |
|---------------------------------|--------------|--------------|-----------|--------------|--------------|
| Net Performance | | | | | |
| Target Date Funds | | | | | |
| SERS Post Retirement Fund | 4.16% | 4.53% | 15.80% | 9.42% | 7.82% |
| BlackRock Post Retirement Index | 4.13% | 4.51% | 15.74% | 9.36% | 7.77% |
| Callan Tgt Date Ret Inc | 3.45% | 3.94% | 14.03% | 8.09% | 6.79% |
| SERS 2025 Retirement Fund | 4.73% | 6.00% | 20.20% | 10.32% | 9.46% |
| BlackRock 2025 Index | 4.70% | 6.00% | 20.16% | 10.25% | 9.38% |
| Callan Target Date 2025 | 4.69% | 6.75% | 21.79% | 10.39% | 9.92% |
| SERS 2030 Retirement Fund | 5.39% | 7.69% | 25.04% | 11.43% | 10.67% |
| BlackRock 2030 Index | 5.37% | 7.68% | 25.02% | 11.34% | 10.57% |
| Callan Target Date 2030 | 5.26% | 8.06% | 25.90% | 11.44% | 11.12% |
| SERS 2035 Retirement Fund | 6.02% | 9.34% | 29.86% | 12.49% | 11.85% |
| BlackRock 2035 Index | 6.00% | 9.32% | 29.81% | 12.39% | 11.73% |
| Callan Target Date 2035 | 5.79% | 9.48% | 29.93% | 12.34% | 12.10% |
| SERS 2040 Retirement Fund | 6.58% | 10.83% | 34.34% | 13.41% | 12.88% |
| BlackRock 2040 Index | 6.55% | 10.79% | 34.23% | 13.30% | 12.74% |
| Callan Target Date 2040 | 6.15% | 10.81% | 33.62% | 12.92% | 12.86% |
| SERS 2045 Retirement Fund | 7.05% | 12.05% | 37.96% | 14.19% | 13.64% |
| BlackRock 2045 Index | 7.02% | 12.00% | 37.86% | 14.03% | 13.46% |
| Callan Target Date 2045 | 6.49% | 11.79% | 36.12% | 13.41% | 13.42% |
| SERS 2050 Retirement Fund | 7.30% | 12.71% | 39.86% | 14.59% | 13.97% |
| BlackRock 2050 Index | 7.27% | 12.63% | 39.73% | 14.44% | 13.81% |
| Callan Target Date 2050 | 6.55% | 11.97% | 37.03% | 13.70% | 13.62% |
| SERS 2055 Retirement Fund | 7.34% | 12.82% | 40.13% | 14.67% | 14.01% |
| BlackRock 2055 Index | 7.32% | 12.76% | 40.09% | 14.54% | 13.87% |
| Callan Target Date 2055 | 6.65% | 12.17% | 38.11% | 13.87% | 13.79% |
| SERS 2060 Retirement Fund | 7.34% | 12.80% | 40.10% | 14.66% | 14.00% |
| BlackRock 2060 Index | 7.32% | 12.76% | 40.09% | 14.54% | 13.87% |
| Callan Target Date 2060 | 6.66% | 12.24% | 38.24% | 14.06% | 13.96% |
| SERS 2065 Retirement Fund | 7.34% | 12.77% | 40.02% | - | - |
| BlackRock 2065 Index | 7.32% | 12.76% | 40.09% | - | - |
| Callan Target Date 2065 | 6.66% | 12.08% | 39.15% | 14.06% | - |

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, 2021

| | Last 7 Years | Last 10 Years | Last 15 Years | Last 20 Years |
|---------------------------------|--------------------|---------------------|---------------------|---------------------|
| Net Performance | | | | |
| Target Date Funds | | | | |
| SERS Post Retirement Fund | 6.09% | 6.32% | 6.15% | - |
| BlackRock Post Retirement Index | 6.04% | 6.28% | 6.12% | 6.04% |
| Callan Tgt Date Ret Inc | 5.14% | 5.48% | 5.38% | 4.45% |
| | | | | |
| SERS 2025 Retirement Fund | 7.08% | 7.52% | 6.55% | - |
| BlackRock 2025 Index | 7.00% | 7.46% | 6.48% | 6.16% |
| Callan Target Date 2025 | 7.32% | 7.98% | 6.70% | - |
| | | | | |
| SERS 2030 Retirement Fund | 7.86% | 8.25% | 6.91% | - |
| BlackRock 2030 Index | 7.75% | 8.16% | 6.85% | 6.43% |
| Callan Target Date 2030 | 8.09% | 8.73% | 7.12% | 6.56% |
| | | | | |
| SERS 2035 Retirement Fund | 8.60% | 8.94% | 7.30% | - |
| BlackRock 2035 Index | 8.48% | 8.82% | 7.19% | 6.67% |
| Callan Target Date 2035 | 8.69% | 9.38% | 7.48% | - |
| | | | | |
| SERS 2040 Retirement Fund | 9.25% | 9.53% | 7.58% | - |
| BlackRock 2040 Index | 9.10% | 9.39% | 7.47% | 6.84% |
| Callan Target Date 2040 | 9.26% | 9.90% | 7.84% | 6.97% |
| | | | | |
| SERS 2045 Retirement Fund | 9.72% | 9.98% | 7.79% | - |
| BlackRock 2045 Index | 9.55% | 9.84% | 7.69% | 7.00% |
| Callan Target Date 2045 | 9.63% | 10.13% | 7.92% | - |
| | | | | |
| SERS 2050 Retirement Fund | 9.93% | 10.24% | - | - |
| BlackRock 2050 Index | 9.77% | 10.10% | 7.94% | 7.41% |
| Callan Target Date 2050 | 9.78% | 10.24% | 7.90% | - |
| | | | | |
| SERS 2055 Retirement Fund | 9.93% | 10.40% | - | - |
| BlackRock 2055 Index | 9.78% | 10.25% | - | - |
| Callan Target Date 2055 | 9.92% | 10.56% | - | - |

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 June 30, 2021

| | Last Quarter | Year to Date | Last Year | Last 3 Years | Last 5 Years |
|------------------------------------|--------------|--------------|-----------|--------------|--------------|
| Net Performance | | | | | |
| Domestic Equity | | | | | |
| SERS U.S. Large Company Index Fund | 8.55% | 15.26% | 40.81% | 18.69% | 17.66% |
| S&P 500 Index | 8.55% | 15.25% | 40.79% | 18.67% | 17.65% |
| Callan Lg Cap Broad MF | 8.36% | 14.79% | 41.72% | 18.13% | 17.33% |
| SERS U.S. All Company Index Fund | 8.22% | 15.06% | 43.98% | 18.65% | 17.82% |
| Russell 3000 Index | 8.24% | 15.11% | 44.16% | 18.73% | 17.89% |
| Callan Multi Cap Brd MF | 7.12% | 14.62% | 42.91% | 16.42% | 16.08% |
| SERS U.S. SMID Company Idx Fund | 7.08% | 15.61% | 61.92% | 18.68% | 18.90% |
| Dow Jones US Completion | 7.12% | 15.41% | 61.59% | 18.50% | 18.70% |
| Callan SMID Broad MFs | 5.33% | 14.55% | 49.31% | 15.09% | 16.64% |
| International Equity | | | | | |
| SERS Global Non-U.S. Index Fund | 5.54% | 9.34% | 35.84% | 9.74% | 11.27% |
| MSCI ACWI ex US | 5.48% | 9.16% | 35.72% | 9.38% | 11.08% |
| Callan Non US Equity MFs | 5.50% | 9.16% | 36.25% | 8.62% | 10.57% |
| Domestic Fixed Income | | | | | |
| SERS Short Term Investment Fund | 0.02% | 0.05% | 0.17% | 1.40% | 1.31% |
| 3-month Treasury Bill | (0.00%) | 0.02% | 0.09% | 1.34% | 1.17% |
| Callan Cash Database(1) | 0.08% | 0.12% | 0.38% | 1.66% | 1.48% |
| SERS U.S. Short Term Bond Idx Fund | 0.03% | (0.03%) | 0.39% | 2.95% | - |
| Blmbg Gov/Cred 1-3 Yr | 0.04% | 0.00% | 0.44% | 2.96% | 1.88% |
| Callan Short US Govt MFs | 0.09% | (0.38%) | 0.07% | 2.71% | 1.50% |
| SERS U.S. TIPS Index Fund | 3.23% | 1.71% | 6.49% | 6.52% | - |
| Blmbg US TIPS | 3.25% | 1.73% | 6.51% | 6.53% | 4.17% |
| Callan TIPS MFs | 3.16% | 1.83% | 6.88% | 6.10% | 4.03% |
| SERS U.S. Bond Index Fund | 1.81% | (1.64%) | (0.42%) | 5.35% | 3.01% |
| Blmbg Aggregate | 1.83% | (1.60%) | (0.33%) | 5.34% | 3.03% |
| Callan Core Bond MFs | 1.99% | (1.13%) | 1.19% | 5.99% | 3.61% |

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

Cumulative Performance - Net of Fees

As of June 30, 2021

| | Last 7 Years | Last 10 Years | Last 15 Years | Last 20 Years |
|------------------------------------|--------------------|---------------------|---------------------|---------------------|
| Net Performance | | | | |
| Domestic Equity | | | | |
| SERS U.S. Large Company Index Fund | 14.12% | 14.86% | 10.77% | 8.65% |
| S&P 500 Index | 14.10% | 14.84% | 10.73% | 8.61% |
| Callan Lg Cap Broad MF | 13.34% | 14.20% | 10.55% | 8.49% |
| SERS U.S. All Company Index Fund | 13.93% | 14.68% | - | - |
| Russell 3000 Index | 13.95% | 14.70% | 10.78% | 8.92% |
| Callan Multi Cap Brd MF | 11.85% | 12.75% | 9.64% | 8.60% |
| SERS U.S. SMID Company Idx Fund | 13.24% | 14.09% | 11.35% | 10.76% |
| Dow Jones US Completion | 13.06% | 13.87% | 11.14% | 10.57% |
| Callan SMID Broad MFs | 12.46% | 12.30% | 10.47% | 9.77% |
| International Equity | | | | |
| SERS Global Non-U.S. Index Fund | 5.58% | 5.68% | - | - |
| MSCI ACWI ex US | 5.33% | 5.45% | 4.85% | 6.46% |
| Callan Non US Equity MFs | 5.46% | 6.32% | 5.33% | 6.46% |
| Domestic Fixed Income | | | | |
| SERS Short Term Investment Fund | 1.00% | 0.76% | 1.27% | - |
| 3-month Treasury Bill | 0.87% | 0.63% | 1.08% | 1.37% |
| Callan Cash Database(1) | 1.20% | 0.98% | 1.54% | 1.78% |
| Blmbg Gov/Cred 1-3 Yr | 1.70% | 1.49% | 2.49% | 2.74% |
| Callan Short US Govt MFs | 1.46% | 1.30% | 2.41% | 2.74% |
| Blmbg US TIPS | 3.34% | 3.40% | 4.56% | 5.16% |
| Callan TIPS MFs | 3.00% | 3.00% | 4.34% | 4.87% |
| SERS U.S. Bond Index Fund | 3.26% | 3.35% | 4.38% | 4.53% |
| Blmbg Aggregate | 3.28% | 3.39% | 4.43% | 4.56% |
| Callan Core Bond MFs | 3.57% | 3.76% | 4.76% | 4.77% |

(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 June 30, 2021

| 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 | 4.2 13 | 15.8 28 | 9.4 15 | 7.8 18 | 6.1 14 | 6.3 16 | | | 0.08 80 |
| BlackRock Post Retirement Index | 4.1 14 | 15.7 29 | 9.4 16 | 7.8 19 | 6.0 14 | 6.3 17 | | | |
| SERS 2025 Retirement Fund Callan Target Date 2025 | 4.7 47 | 20.2 66 | 10.3 55 | 9.5 63 | 7.1 59 | 7.5 70 | | | 0.08 79 |
| BlackRock 2025 Index | 4.7 49 | 20.2 67 | 10.2 57 | 9.4 64 | 7.0 62 | 7.5 72 | | | |
| SERS 2030 Retirement Fund Callan Target Date 2030 | 5.4 35 | 25.0 61 | 11.4 51 | 10.7 64 | 7.9 59 | 8.3 69 | | | 0.08 78 |
| BlackRock 2030 Index | 5.4 37 | 25.0 61 | 11.3 56 | 10.6 67 | 7.8 63 | 8.2 72 | | | |
| SERS 2035 Retirement Fund Callan Target Date 2035 | 6.0 30 | 29.9 51 | 12.5 42 | 11.9 63 | 8.6 57 | 8.9 66 | | | 0.08 79 |
| BlackRock 2035 Index | 6.0 32 | 29.8 53 | 12.4 47 | 11.7 66 | 8.5 62 | 8.8 72 | | | |
| SERS 2040 Retirement Fund Callan Target Date 2040 | 6.6 19 | 34.3 39 | 13.4 35 | 12.9 47 | 9.2 52 | 9.5 65 | | | 0.08 78 |
| BlackRock 2040 Index | 6.6 20 | 34.2 41 | 13.3 38 | 12.7 57 | 9.1 64 | 9.4 69 | | | |
| SERS 2045 Retirement Fund Callan Target Date 2045 | 7.0 8 | 38.0 26 | 14.2 30 | 13.6 38 | 9.7 41 | 10.0 54 | | | 0.08 79 |
| BlackRock 2045 Index | 7.0 10 | 37.9 28 | 14.0 37 | 13.5 47 | 9.6 53 | 9.8 63 | | | |
| SERS 2050 Retirement Fund Callan Target Date 2050 | 7.3 6 | 39.9 11 | 14.6 26 | 14.0 34 | 9.9 42 | 10.2 50 | | | 0.08 78 |
| BlackRock 2050 Index | 7.3 8 | 39.7 14 | 14.4 30 | 13.8 44 | 9.8 50 | 10.1 59 | | | |
| SERS 2055 Retirement Fund Callan Target Date 2055 | 7.3 7 | 40.1 8 | 14.7 22 | 14.0 35 | 9.9 48 | 10.4 56 | | | 0.08 82 |
| BlackRock 2055 Index | 7.3 7 | 40.1 9 | 14.5 29 | 13.9 46 | 9.8 59 | 10.2 60 | | | |
| SERS 2060 Retirement Fund Callan Target Date 2060 | 7.3 9 | 40.1 11 | 14.7 24 | 14.0 47 | | | | | 0.08 80 |
| BlackRock 2060 Index | 7.3 10 | 40.1 11 | 14.5 35 | 13.9 60 | | | | | |

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 June 30, 2021

| 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 | 7.3 2 | 40.0 19 | | | | | | | 0.08 34 |
| Domestic Equity | | | | | | | | | |
| SERS U.S. Large Company Stock Index Fund Callan Lg Cap Broad MF S&P 500 Index | 8.5 49 | 40.8 57 | 18.7 48 | 17.7 48 | 14.1 45 | 14.9 43 | | | 0.02 99 |
| SERS U.S. All Company Index Fund Callan Multi Cap Brd MF Russell 3000 Index | 8.2 37 | 44.0 43 | 18.7 39 | 17.8 39 | 13.9 31 | 14.7 27 | | | 0.03 99 |
| U.S. Small/Mid Company Stock Index Fund Callan SMID Broad MFs Dow Jones US Completion | 7.1 23 | 61.9 22 | 18.7 29 | 18.9 35 | 13.2 38 | 14.1 30 | | | 0.03 100 |
| International Equity | | | | | | | | | |
| SERS Global Non-U.S. Index Fund Callan Non US Equity MFs MSCI ACWI ex US | 5.5 49 | 35.8 52 | 9.7 43 | 11.3 42 | 5.6 48 | 5.7 65 | | | 0.06 99 |
| Domestic Fixed Income | | | | | | | | | |
| SERS Short Term Investment Fund Callan Cash Database 3-month Treasury Bill | 0.0 92 | 0.2 88 | 1.4 85 | 1.3 81 | 1.0 83 | 0.8 83 | | | 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 | 0.0 68 | 0.4 32 | 2.9 35 | | | | | | 0.03 100 |
| SERS U.S. TIPS Index Fund Callan TIPS MFs Blmbg US TIPS | 3.2 35 | 6.5 69 | 6.5 32 | | | | | | 0.03 99 |

Returns:
 above median
 third quartile
 fourth quartile

Return Consistency:
 above median
 third quartile
 fourth quartile

Risk Quadrant:

Expense Ratio:
 below median
 second quartile
 first quartile

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, 2021

| 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 | 1.8 73 | -0.4 99 | 5.3 90 | 3.0 95 | 3.3 82 | 3.4 90 | | | 0.03 98 |
| Callan Core Bond MFs | | | | | | | | | |
| Bimbg Aggregate | 1.8 72 | -0.3 99 | 5.3 90 | 3.0 93 | 3.3 79 | 3.4 86 | | | |

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 2Q21

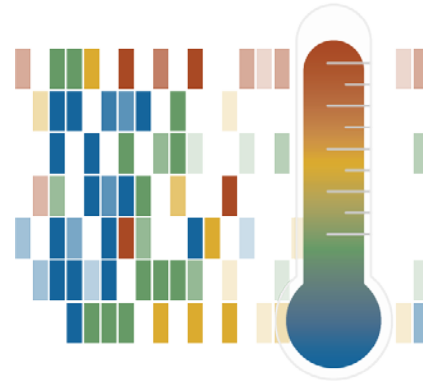
'Proptech' and Commercial Real Estate



A Guide to Implementing a China A-Shares Allocation



Real Estate Indicators, 1Q21 Update



Webinar on Inflation and Institutional Investors



Recent Blog Posts

Capital Markets Assumptions and the Future

Greg Allen

When the Passive Index Is an Active Decision

Weston Lewis

Putting Values into Action: A Practical Guide for Institutional Investors

Brad Penter and
Lauren Mathias

Additional Reading

Private Equity Trends quarterly newsletter

Active vs. Passive quarterly charts

Capital Markets 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

Intro to Investments - Learn the Fundamentals

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

Join our next virtual sessions (2-3 hour sessions over 3 days):

Aug. 17, 2021 – Aug. 19, 2021

Oct. 26, 2021 – Oct. 28, 2021

Join our next LIVE session in Chicago (1.5-day session):

Oct. 6, 2021 – Oct. 7, 2021

Alternative Investments

Alternative investments like private equity, hedge funds, and real estate can play a key role in any portfolio. You will learn about the importance of allocations to alternatives, and how to consider integrating, evaluating, and monitoring them.

Join our next virtual session (2-3 hour sessions over 2 days):

Oct. 19, 2021 – Oct. 20, 2021

Fall Regional Workshops

Join us in person!

Our regional workshops will be covering ESG topics this Fall. Watch your email for further details and an invitation.

November 2, 2021, in Atlanta

St. Regis Hotel

Eighty-Eight West Paces Ferry Road, Atlanta, GA 30305

November 5, 2021, in San Francisco

Palace Hotel

2 New Montgomery St, San Francisco, CA 94105

Agenda

8:30am - Breakfast

9:30am - Workshop

Webinars

Research Café: Property Technology

Aug. 30, 2021 – 9:30am (PT)

Market Intelligence

Oct. 15, 2021 – 9:30am (PT)

Callan Updates

Firm updates by the numbers, as of June 30, 2021

Total Associates: ~200

Ownership

- 100% employees
- Broadly distributed across 99 shareholders

Leadership Changes

- No changes to leadership this quarter

Total General and Fund Sponsor Consultants: more than 55

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 \$3 trillion

“With Callan at the forefront of ESG research and education, we are thrilled to be part of this working group of our peers to bring further transparency and insights to the rapidly changing ESG landscape. There is growing interest from institutional investors to incorporate financially material ESG factors into their investment processes, and we believe the move toward more ESG incorporation is consistent with a long-term investment approach.”

— Tom Shingler, leader of Callan’s ESG team, on the formation of the Investment Consultants Sustainability Working Group – US.



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