Callan

June 8, 2021

Pennsylvania State Employees' Retirement System – Defined Benefit Plan

First Quarter 2021

Executive Summary

Thomas H. Shingler
Senior Vice President

Bud Pellecchia
Senior Vice President

Britton M. Murdoch
Vice President

Callan

Market Environment

Continued Surge in Global Equity Markets in 1Q21

Small cap leads in both U.S. and global ex-U.S. markets

Global equities continued to surge in 1Q

- Year-over-year returns from the bottom of the pandemic market crash are eye-popping:
  - S&P 500: +56%
  - MSCI World ex-USA: +46%
  - Emerging Markets: +58%
  - U.S. Small Cap: +95% (!)
- The initial recovery was concentrated in a few stocks (FAANG) and U.S. mega cap.
- Market rotation to small cap and value with the change from a "COVID trade" to a "GDP growth trade" in November, with the announcement of vaccines
- As COVID-19 infections surged in the new year, re-openings were reversed in many states and localities, but only temporarily.
- Economic recovery now looking very strong in 2021, into 2022. Fed projects GDP growth of 6.5% in 2021.
- Distribution challenges have kept widespread inoculation from being achieved until mid-year in the U.S.; it could be much later in countries around the globe.

Returns for Periods ended 3/31/21

	1 Quarter	1 Year	5 Years	10 Years	25 Years
U.S. Equity					
Russell 3000	6.35	62.53	16.64	13.79	9.71
S&P 500	6.17	56.35	16.29	13.91	9.59
Russell 2000	12.70	94.85	16.35	11.68	9.36
Global ex-U.S. Equity					
MSCI World ex USA	4.04	45.86	8.92	5.21	5.21
MSCI Emerging Markets	2.29	58.39	12.07	3.65	--
MSCI ACWI ex USA Small Cap	5.53	69.82	10.40	6.32	6.51
Fixed Income					
Bloomberg Barclays Aggregate	-3.37	0.71	3.10	3.44	5.09
90-day T-Bill	0.03	0.12	1.19	0.63	2.22
Bloomberg Barclays Long Gov/Credit	-10.41	-2.05	5.47	6.98	7.22
Bloomberg Barclays Global Agg ex-US	-5.29	7.15	2.13	1.26	3.80
Real Estate					
NCREIF Property	1.15	2.04	5.69	8.76	9.04
FTSE Nareit Equity	8.87	37.78	5.33	8.56	9.92
Alternatives					
CS Hedge Fund	2.85	20.19	5.12	3.88	7.20
Cambridge Private Equity*	10.38	17.87	13.87	13.82	15.05
Bloomberg Commodity	6.92	35.04	2.31	-6.28	0.97
Gold Spot Price	-9.47	7.45	6.78	1.77	6.01
Inflation - CPI-U	1.69	2.62	2.15	1.71	2.15

*Cambridge PE data through 09/30/20

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

Market Environment: 1Q21

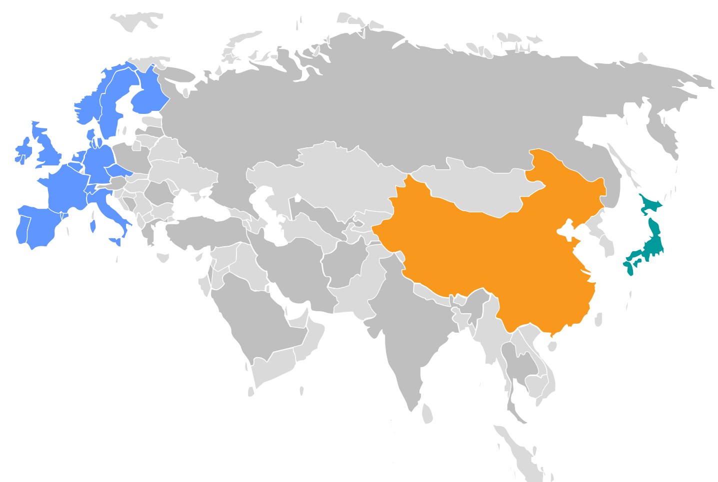
Growth worldwide with uncertainty coming from uneven vaccine rollout

U.S.

- 2020 GDP loss of 3.5% for the year is the deepest recession in 75 years. Fed expects 6.5% growth in 2021.
- Retail sales, durable goods, and personal spending rebounded late in 2020 and 1Q21 following the vaccine announcement and passage of new stimulus.
- Unemployment dropped to 6.0% in March, with an eye-popping 916,000-job gain.
  - Jobless claims decelerated to less than 1 million per week but are still elevated relative to prior recession peaks.
- Housing benefiting from relatively low mortgage rates
- Fed left rates close to 0% and expects to be on hold until 2023.

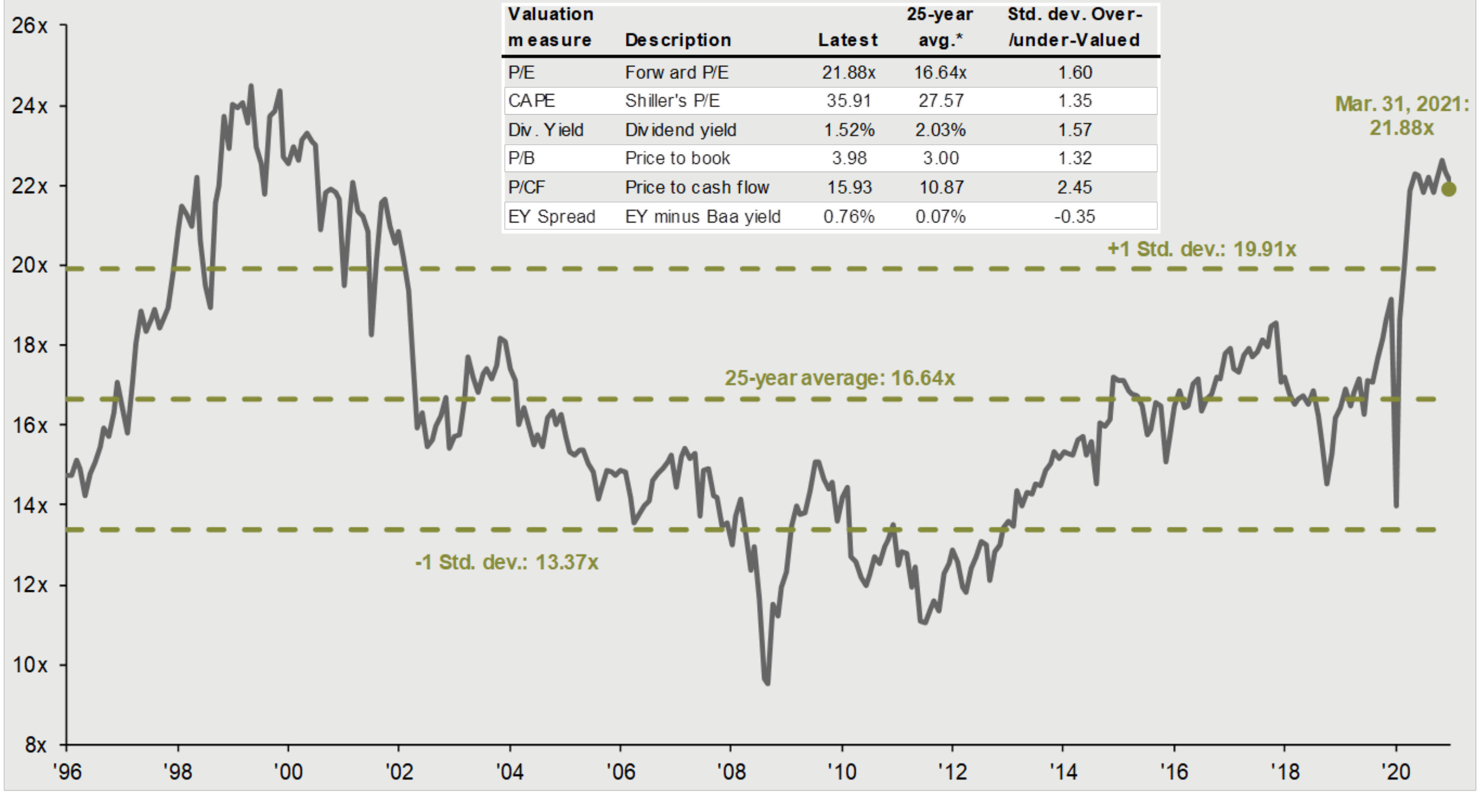
Global

- Euro zone GDP contracted 4.9% in 2020, after shrinking by 2.4% in 2019.
- U.K. GDP sank 7.3% in 2020—most ever, struck by the double-whammy of the pandemic and Brexit.
- Japan’s economy shrank 4.8% in 2020, continuing a decline that began in 4Q19.
- China’s GDP grew 2.3% in 2020, one of the few countries to see positive growth. 1Q21 growth inched up just 0.6%, far below expectations.



U.S. Equity Large Cap Valuations

S&P 500 Index: Forward P/E ratio



Valuation measure	Description	Latest	25-year avg.*	Std. dev. Over-/under-Valued
P/E	Forward P/E	21.88x	16.64x	1.60
CAPE	Shiller's P/E	35.91	27.57	1.35
Div. Yield	Dividend yield	1.52%	2.03%	1.57
P/B	Price to book	3.98	3.00	1.32
P/CF	Price to cash flow	15.93	10.87	2.45
EY Spread	EY minus Baa yield	0.76%	0.07%	-0.35

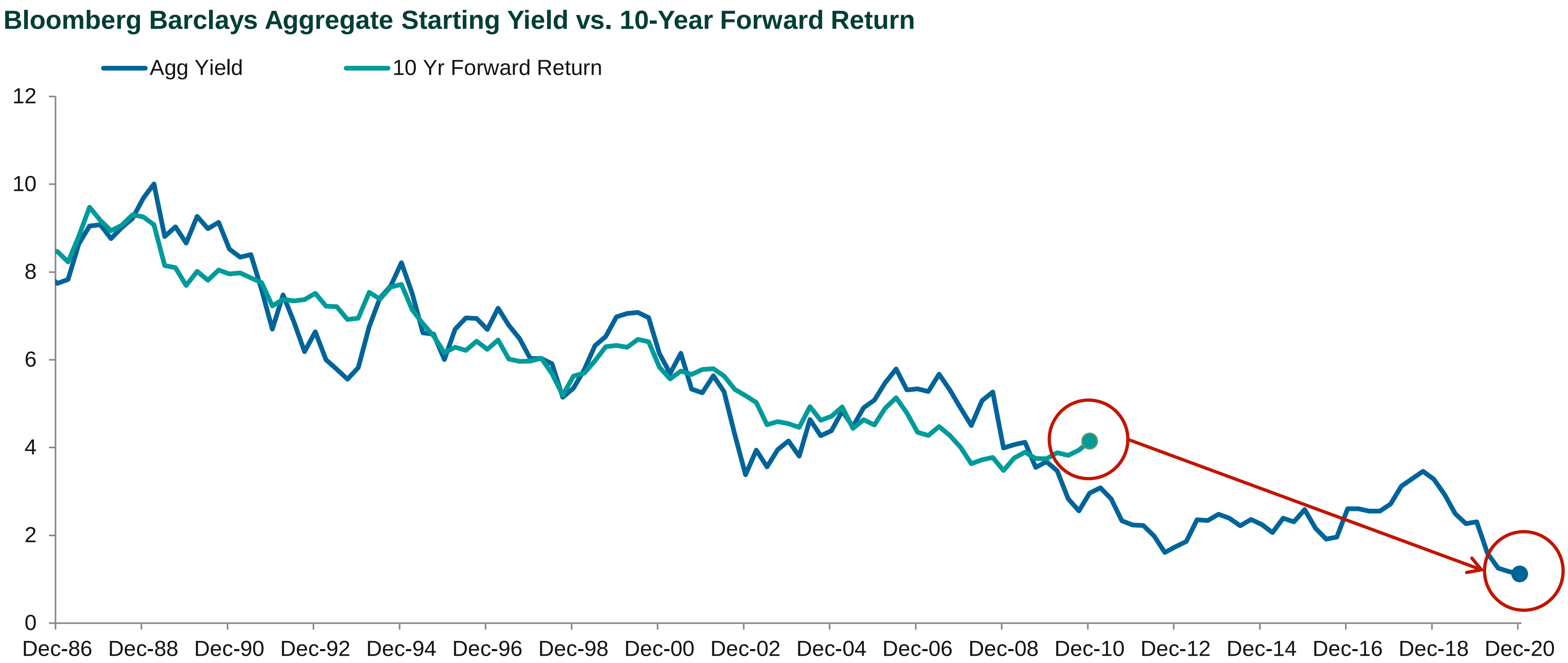
Price-to-earnings is price divided by consensus analyst estimates of earnings per share for the next 12 months as provided by IBES since February 1996, and FactSet for March 31, 2021. Current next 12-months consensus earnings estimates are $182. Average P/E and standard deviations are calculated using 25 years of IBES history. Shiller's P/E uses trailing 10 years of inflation-adjusted earnings as reported by companies. Dividend yield is calculated as the next 12-months consensus dividend divided by most recent price. Price-to-book ratio is the price divided by book value per share. Price-to-cash flow is price divided by NTM cash flow. EY minus Baa yield is the forward earnings yield (consensus analyst estimates of EPS over the next 12 months divided by price) minus the Moody's Baa seasoned corporate bond yield. Std. dev. over-/under-valued is calculated using the average and standard deviation over 25 years for each measure.

Guide to the Markets – U.S. Data are as of March 31, 2021.

- Valuations are 1.6 standard deviations above the 25-year average based on forecast earnings.
- Longer-term historical valuations are also elevated.
  - Shiller's cyclically adjusted price earnings (CAPE) ratio is 1.35 standard deviations above average.
- Stock prices reflect anticipated rather than historical earnings, looking well beyond a one-year timeframe.

Sources: FactSet, FRB, Robert Shiller, S&P Dow Jones Indices, Thomson Reuters, J.P. Morgan Asset Management

Starting Yield Strongly Predicted Returns

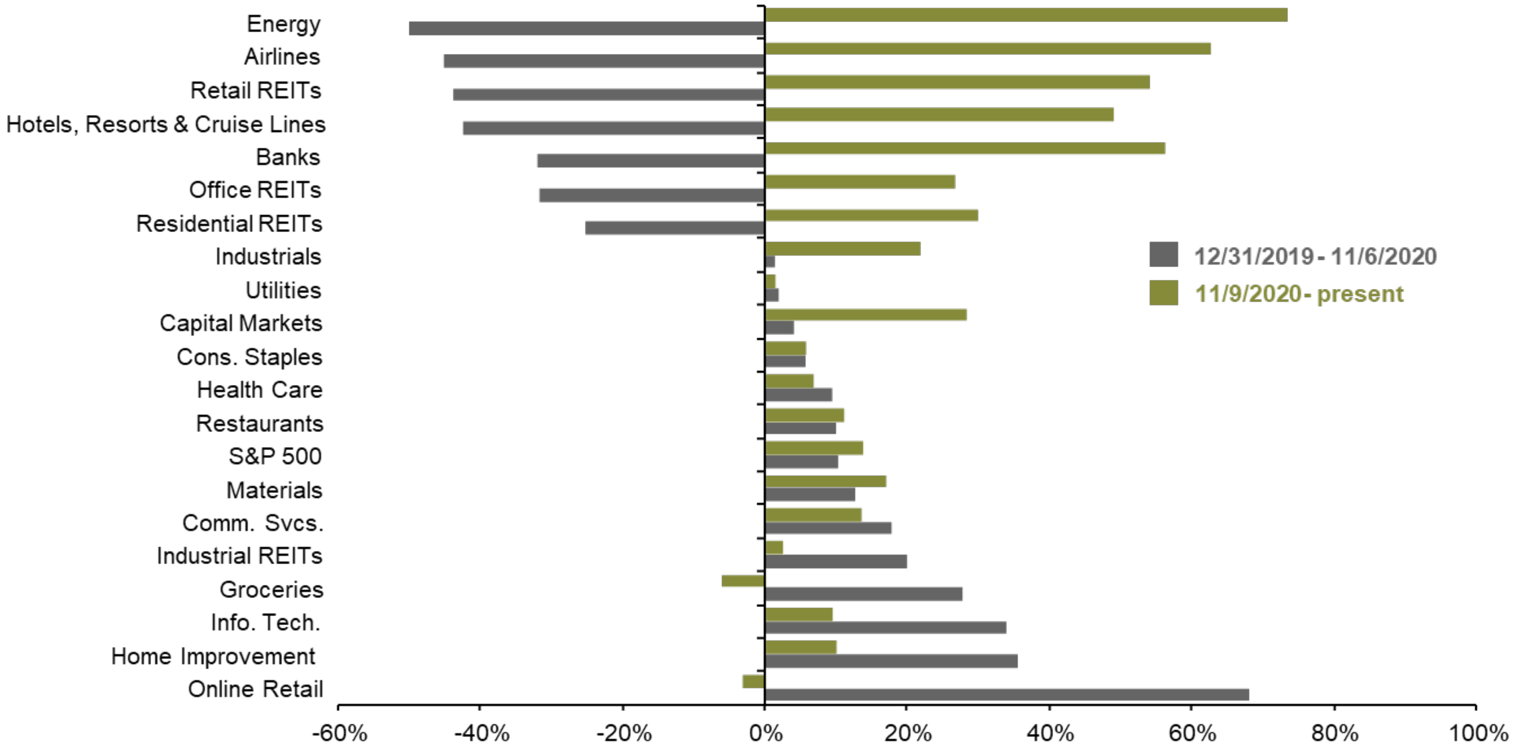


- Strong relationship between starting yields and subsequent 10-year returns

Sources: Bloomberg Barclays, St. Louis FRED

U.S. Stock Market Sector Leadership Through the Pandemic

COVID trade flipped to a 'GDP growth trade' with the announcement of vaccines in November



- Best-performing sectors employ far fewer workers than many of the underperforming sectors (health care, capital markets, banks, hospitality, transportation, energy).

Source: FactSet, Standard & Poor's, J.P. Morgan Asset Management. Nov. 6, 2020, chosen as the last business day before vaccine candidate is revealed to have more than 90% efficacy against the COVID-19 virus in global trials.
Guide to the Markets – U.S. Data are as of March 31, 2021.

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	1 Qtr. 2021
Non-U.S. Fixed 22.37%	Emerging Markets 55.82%	Emerging Markets 25.55%	Emerging Markets 34.00%	Emerging Markets 32.17%	Emerging Markets 39.38%	U.S. Fixed 5.24%	Emerging Markets 78.51%	Small Cap 26.85%	Real Estate Funds 14.96%	Emerging Markets 18.23%	Small Cap 38.82%	Large Cap 13.69%	Real Estate Funds 13.95%	Small Cap 21.31%	Emerging Markets 37.28%	Real Estate Funds 7.36%	Large Cap 31.49%	Small Cap 19.96%	Small Cap 12.70%
U.S. Fixed 10.26%	Small Cap 47.25%	Non-U.S. Equity 20.38%	Real Estate Funds 20.15%	Non-U.S. Equity 25.71%	Real Estate Funds 14.84%	Non-U.S. Fixed 4.39%	High Yield 58.21%	Emerging Markets 18.88%	U.S. Fixed 7.84%	Non-U.S. Equity 16.41%	Large Cap 32.39%	Real Estate Funds 11.46%	Large Cap 1.38%	High Yield 17.13%	Non-U.S. Equity 24.21%	Cash Equivalent 1.87%	Small Cap 25.52%	Large Cap 18.40%	Large Cap 6.17%
Real Estate Funds 4.57%	Non-U.S. Equity 39.42%	Small Cap 18.33%	Non-U.S. Equity 14.47%	Small Cap 18.37%	Hedge Funds 12.56%	Cash Equivalent 2.06%	Non-U.S. Equity 33.67%	Real Estate Funds 15.26%	High Yield 4.98%	Small Cap 16.35%	Non-U.S. Equity 21.02%	U.S. Fixed 5.97%	U.S. Fixed 0.55%	Large Cap 11.96%	Large Cap 21.83%	U.S. Fixed 0.01%	Non-U.S. Equity 22.49%	Emerging Markets 18.31%	Non-U.S. Equity 4.04%
Hedge Funds 3.04%	High Yield 28.97%	Non-U.S. Fixed 12.54%	Hedge Funds 7.61%	Large Cap 15.79%	Non-U.S. Equity 12.44%	Real Estate Funds -10.70%	Small Cap 27.17%	High Yield 15.12%	Non-U.S. Fixed 4.36%	Large Cap 16.00%	Real Estate Funds 12.90%	Small Cap 4.89%	Cash Equivalent 0.05%	Emerging Markets 11.19%	Small Cap 14.65%	High Yield -2.08%	Emerging Markets 18.44%	Non-U.S. Fixed 10.11%	Hedge Funds 2.85%
Cash Equivalent 1.78%	Large Cap 28.68%	Real Estate Funds 12.00%	Large Cap 4.91%	Real Estate Funds 15.27%	Non-U.S. Fixed 11.03%	Hedge Funds -19.07%	Large Cap 26.47%	Large Cap 15.06%	Large Cap 2.11%	High Yield 15.81%	Hedge Funds 9.73%	Hedge Funds 4.13%	Hedge Funds -0.71%	Real Estate Funds 7.79%	Non-U.S. Fixed 10.51%	Non-U.S. Fixed -2.15%	High Yield 14.32%	Non-U.S. Equity 7.59%	Emerging Markets 2.29%
High Yield -1.37%	Non-U.S. Fixed 19.36%	High Yield 11.13%	Small Cap 4.55%	Hedge Funds 13.86%	U.S. Fixed 6.97%	High Yield -26.16%	Hedge Funds 18.57%	Hedge Funds 10.95%	Cash Equivalent 0.10%	Real Estate Funds 9.79%	High Yield 7.44%	High Yield 2.45%	Non-U.S. Equity -3.04%	Non-U.S. Equity 2.75%	High Yield 7.50%	Hedge Funds -3.19%	Hedge Funds 9.31%	U.S. Fixed 7.51%	Real Estate Funds 1.89%
Emerging Markets -6.16%	Hedge Funds 15.44%	Large Cap 10.88%	Cash Equivalent 3.06%	High Yield 11.85%	Large Cap 5.49%	Small Cap -33.79%	Non-U.S. Fixed 7.53%	Non-U.S. Equity 8.95%	Hedge Funds -2.52%	Hedge Funds 7.67%	Cash Equivalent 0.07%	Cash Equivalent 0.04%	Small Cap -4.41%	U.S. Fixed 2.65%	Hedge Funds 7.12%	Large Cap -4.38%	U.S. Fixed 8.72%	High Yield 7.11%	High Yield 0.85%
Non-U.S. Equity -15.80%	Real Estate Funds 8.28%	Hedge Funds 9.64%	High Yield 2.74%	Non-U.S. Fixed 8.16%	Cash Equivalent 5.00%	Large Cap -37.00%	U.S. Fixed 5.93%	U.S. Fixed 6.54%	Small Cap -4.18%	U.S. Fixed 4.21%	U.S. Fixed -2.02%	Emerging Markets -2.19%	High Yield -4.47%	Non-U.S. Fixed 1.49%	Real Estate Funds 6.66%	Small Cap -11.01%	Non-U.S. Fixed 5.09%	Hedge Funds 6.36%	Cash Equivalent 0.02%
Small Cap -20.48%	U.S. Fixed 4.10%	U.S. Fixed 4.34%	U.S. Fixed 2.43%	Cash Equivalent 4.86%	High Yield 1.87%	Non-U.S. Equity -43.56%	Cash Equivalent 0.21%	Non-U.S. Fixed 4.95%	Non-U.S. Equity -12.21%	Non-U.S. Fixed 4.09%	Emerging Markets -2.60%	Non-U.S. Fixed -3.09%	Non-U.S. Fixed -6.02%	Hedge Funds 1.25%	U.S. Fixed 3.54%	Non-U.S. Equity -14.09%	Real Estate Funds 4.39%	Cash Equivalent 0.67%	U.S. Fixed -3.37%
		Cash Equivalent 1.33%	Non-U.S. Fixed -8.65%	U.S. Fixed 4.33%	Small Cap -1.57%	Emerging Markets -53.33%	Real Estate Funds -30.40%	Cash Equivalent 0.13%	Emerging Markets -18.42%	Cash Equivalent 0.11%	Non-U.S. Fixed -3.08%	Non-U.S. Equity -4.32%	Emerging Markets -14.92%	Cash Equivalent 0.33%	Cash Equivalent 0.86%	Emerging Markets -14.57%	Cash Equivalent 2.28%	Real Estate Funds 0.34%	Non-U.S. Fixed -5.29%

● 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

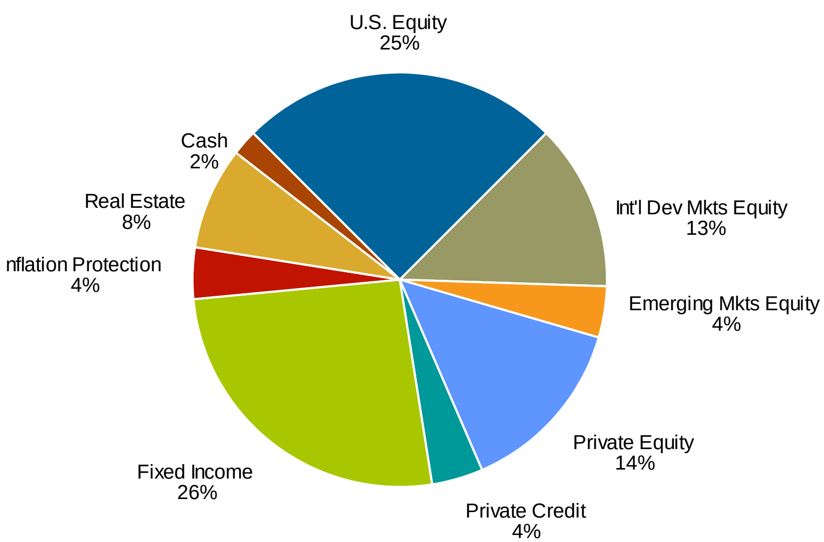
Callan

PA SERS Defined Benefit Plan Performance Review

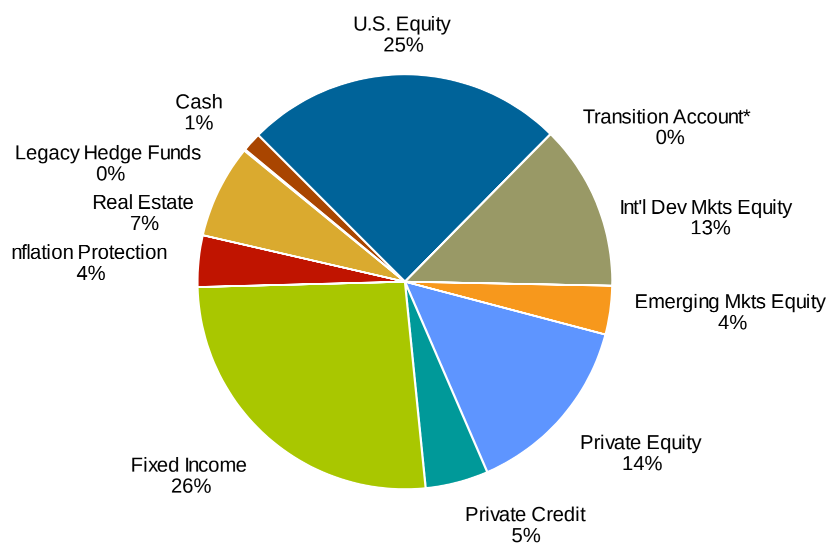
Total Fund

Actual Asset Allocation versus Target as of March 31, 2021

Target Asset Allocation



Actual Asset Allocation

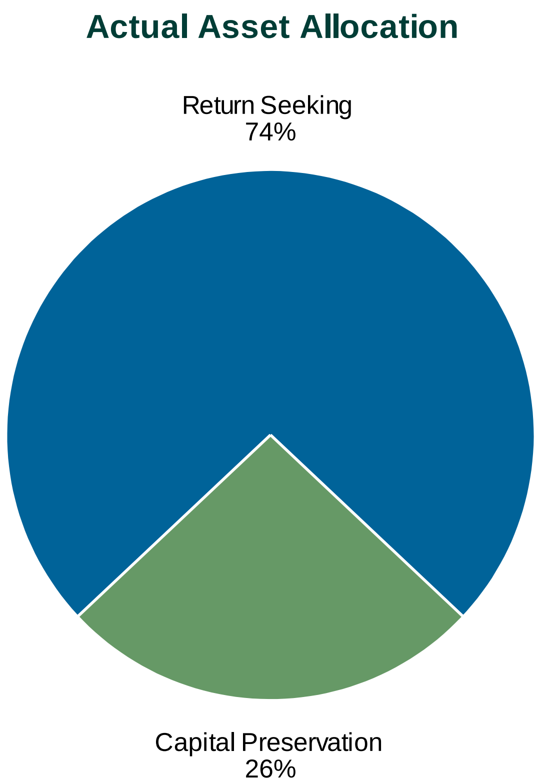


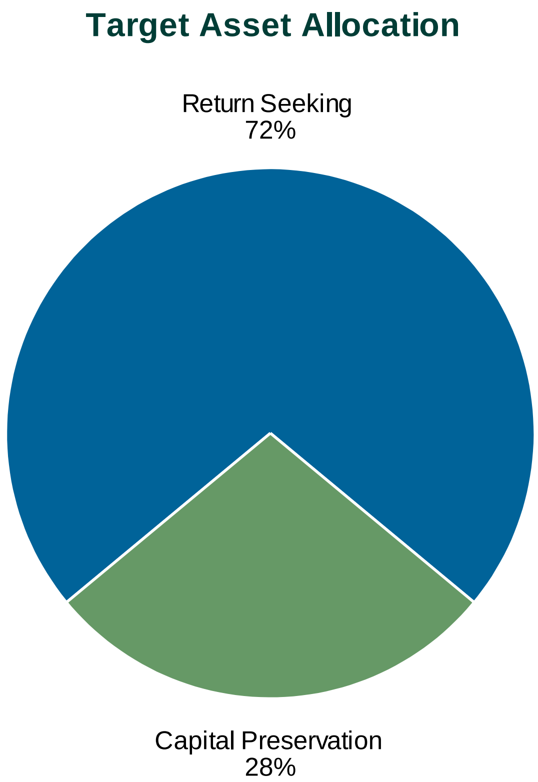
Asset Class	$000s Actual	Weight Actual	Target	Percent Difference	$000s Difference
U.S. Equity	8,835,251	25.0%	25.0%	0.0%	2,638
Transition Account*	1,666	0.0%	0.0%	0.0%	1,666
Int'l Dev Mkts Equity	4,566,094	12.9%	13.0%	(0.1%)	(26,865)
Emerging Mkts Equity	1,341,272	3.8%	4.0%	(0.2%)	(71,946)
Private Equity	5,100,363	14.4%	14.0%	0.4%	154,100
Private Credit	1,719,333	4.9%	4.0%	0.9%	306,115
Fixed Income	9,258,009	26.2%	26.0%	0.2%	72,092
Inflation Protection	1,399,957	4.0%	4.0%	(0.0%)	(13,261)
Real Estate	2,562,697	7.3%	8.0%	(0.7%)	(263,739)
Legacy Hedge Funds	24,740	0.1%	0.0%	0.1%	24,740
Cash	521,070	1.5%	2.0%	(0.5%)	(185,539)
Total	35,330,452	100.0%	100.0%		

Current Quarter Target = 26.0% Blmbg Aggregate, 25.0% Russell 3000 Index, 14.0% Private Equity, 13.0% MSCI World ex US IMI, 7.2% NCREIF NFI-ODCE Eq Wt Net lagged 3 months, 4.0% MSCI EM IMI, 4.0% Blmbg:TIPS, 4.0% S&P:LSTA Lev Loan lagged 3 months+1.0%, 2.0% 3-month Treasury Bill, 0.8% FTSE EP/NA US Index lagged 3 months, 0.0% HFRI Fund of Funds Compos and 0.0% S&P:LSTA Lev Loan.
*Transition account market values are not included in any asset class and are excluded from these charts.

Return Seeking and Capital Preservation Assets

As of March 31, 2021





Return Seeking Assets: U.S. Equity, Int'l Developed Markets Equity, Emerging Markets Equity, Opportunistic Fixed Income, High Yield, Private Equity, Private Credit, Real Estate and Legacy Hedge Funds.
Capital Preservation Assets: Core FI, Nominal Treas, Inflation Protection (TIPS), Interm Treas, Long Duration, Securitized, Interm Credit and Cash.
*Transition account market values are not included in any asset class and are excluded from these charts.

Projected Risk, Liquidity and Correlation

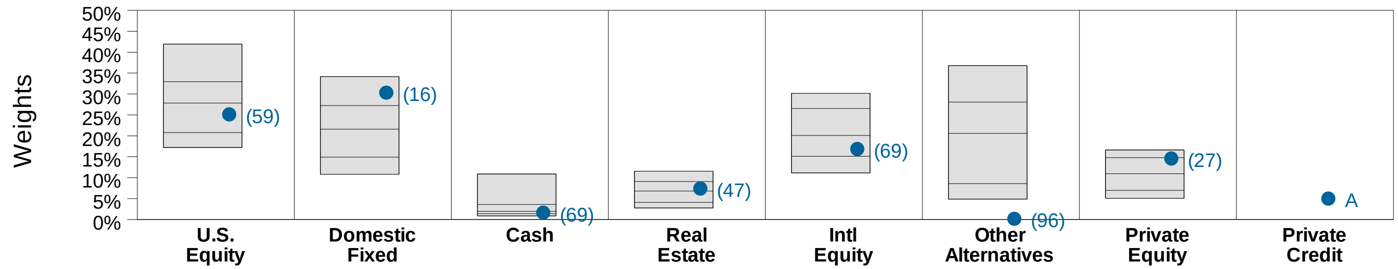
	Capital Preservation Assets			Return Seeking Assets					
	Cash	Inflation Protection (TIPS)	Fixed Income^	U.S. Equity	Developed International Equity	Emerging Markets Equity	Private Credit	Real Estate	Private Equity
Policy Target Asset Allocation	2%	4%	26%	25%	13%	4%	4%	8%	14%
Projected Return* (Geometric)	1.00%	1.70%	1.75%	6.60%	6.50%	6.90%	6.25%	5.75%	8.00%
Projected Risk* (Standard Deviation)	0.90%	5.05%	3.75%	17.95%	19.90%	25.15%	14.60%	14.10%	27.80%
Liquidity	High	High	High	High	High	Medium	Low	Low	Low
Correlation to U.S. Equity*	-0.06	-0.08	-0.10	1.00	0.78	0.80	0.74	0.71	0.80
Months of Benefit Payments**	1.7	4.6	26.6						
Months of Benefit Payments (Includes EE & ER Contributions)**	5.7	15.1	88.7						
Cumulative Months of Benefit Payments (Includes EE & ER Contributions)**		109.6							

Source: *Callan 2021 Capital Market Projections
**SERS IO as of 3/31/2021. Benefit payment calculations for fixed income represent core fixed income & treasury allocations.
^Core and Opportunistic fixed Income combined until new fixed income structure has been implemented.

Total Fund

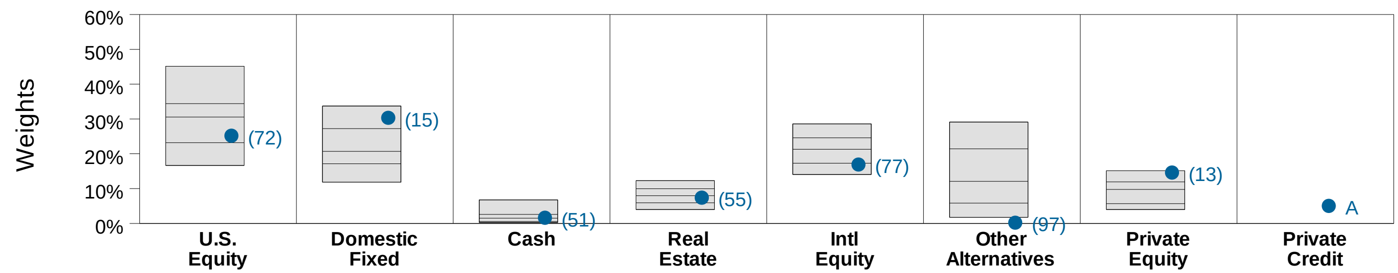
Actual Asset Allocation versus Very Large Public DB Plan (>$10B) Peers and Large Public DB Plan (>$1B) Peers as of March 31, 2021

Asset Class Weights vs Callan Public Fund Spons- V Lg DB (>10B)



	U.S. Equity	Domestic Fixed	Cash	Real Estate	Intl Equity	Other Alternatives	Private Equity	Private Credit
10th Percentile	41.92	34.14	10.86	11.54	30.17	36.78	16.61	-
25th Percentile	32.92	27.23	3.59	9.07	26.52	28.06	14.78	-
Median	27.83	21.58	1.95	6.81	20.08	20.58	10.93	-
75th Percentile	20.78	14.90	1.39	4.10	15.10	8.57	6.95	-
90th Percentile	17.20	10.82	0.86	2.76	11.12	4.86	5.06	-
Fund ●	25.01	30.17	1.47	7.25	16.72	0.07	14.44	4.87
% Group Invested	100.00%	100.00%	80.65%	93.55%	100.00%	70.97%	32.26%	0.00%

Asset Class Weights vs Callan Public Fund Spons - Large (>1B)



	U.S. Equity	Domestic Fixed	Cash	Real Estate	Intl Equity	Other Alternatives	Private Equity	Private Credit
10th Percentile	45.12	33.71	6.77	12.27	28.60	29.11	15.12	-
25th Percentile	34.40	27.23	2.58	9.98	24.59	21.42	11.92	-
Median	30.56	20.71	1.49	7.94	21.31	12.06	9.74	-
75th Percentile	23.19	17.12	0.54	5.91	17.28	5.82	5.67	-
90th Percentile	16.67	11.85	0.28	3.98	14.05	1.75	4.00	-
Fund ●	25.01	30.17	1.47	7.25	16.72	0.07	14.44	4.87
% Group Invested	98.33%	98.33%	78.33%	86.67%	96.67%	61.67%	43.33%	0.00%

Current Quarter Target = 26.0% Blmbg Aggregate, 25.0% Russell 3000 Index, 14.0% Private Equity, 13.0% MSCI World ex US IMI, 7.2% NCREIF NFI-ODCE Eq Wt Net lagged 3 months, 4.0% MSCI EM IMI, 4.0% Blmbg:TIPS, 4.0% S&P:LSTA Lev Loan lagged 3 months+1.0%, 2.0% 3-month Treasury Bill, 0.8% FTSE EP/NA US Index lagged 3 months, 0.0% HFRI Fund of Funds Compos and 0.0% S&P:LSTA Lev Loan.

Total Fund

One Quarter Attribution Analysis versus Target – Gross of Fees as of March 31, 2021

Note: Attribution is a snap shot in time. Asset allocation effect utilizes monthly asset class weights to calculate the overall effect on attribution. Asset class weights fluctuate month to month and are combined to calculate a quarterly attribution effect.

Relative Attribution Effects for Quarter ended March 31, 2021

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
U.S. Equity	26%	25%	6.84%	6.35%	0.13%	0.02%	0.15%
Int'l Dev. Mkts Equity	13%	13%	4.13%	4.17%	(0.01%)	0.00%	(0.00%)
Emerging Markets	5%	4%	3.11%	2.86%	0.02%	0.01%	0.03%
Private Equity	13%	14%	14.59%	14.59%	0.00%	(0.07%)	(0.07%)
Private Credit	4%	4%	6.66%	4.04%	0.12%	(0.01%)	0.11%
Fixed Income	26%	26%	(3.57%)	(3.37%)	(0.05%)	0.03%	(0.02%)
Inflation Protection	4%	4%	(1.72%)	(1.47%)	(0.01%)	0.01%	(0.00%)
Real Estate	7%	8%	2.92%	1.99%	0.07%	0.01%	0.08%
Multi-Strategy	0%	0%	0.00%	1.78%	0.00%	0.00%	0.00%
Legacy Hedge Funds	0%	0%	(1.41%)	1.88%	(0.00%)	(0.00%)	(0.00%)
Cash	1%	2%	0.03%	0.02%	0.00%	0.02%	0.02%
Total			**3.89% =**	**3.61% +**	**0.26% +**	**0.02%**	**0.28%**

- **What helped relative attribution?**
  - Outperformance relative to target from U.S. Equity, Private Credit and Real Estate managers
  - A slight underweight to Fixed Income and Cash (attribution based on target return)
  - A slight overweight to U.S. Equity (attribution based on target return)
- **What hurt relative attribution?**
  - A slight underweight during the quarter to Private Equity (attribution based on target return)
  - Underperformance relative to target from Fixed managers

Current Quarter Target = 26.0% Blmbg Aggregate, 25.0% Russell 3000 Index, 14.0% Private Equity, 13.0% MSCI World ex US IMI, 7.2% NCREIF NFI-ODCE Eq Wt Net lagged 3 months, 4.0% MSCI EM IMI, 4.0% Blmbg:TIPS, 4.0% S&P:LSTA Lev Loan lagged 3 months+1.0%, 2.0% 3-month Treasury Bill,0.8% FTSE EP/NA US Index lagged 3 months, 0.0% HFRI Fund of Funds Compos and 0.0% S&P:LSTA Lev Loan.

Total Fund

One Year Attribution Analysis versus Target – Gross of Fees as of March 31, 2021

Note: Attribution is a snap shot in time. Asset allocation effect utilizes monthly asset class weights to calculate the overall effect on attribution. Asset class weights fluctuate month to month and are combined to calculate a annual attribution effect.

One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
U.S. Equity	26%	25%	66.76%	62.53%	0.86%	(0.06%)	0.80%
Int'l Dev. Mkts Equity	13%	13%	49.67%	48.47%	0.14%	(0.01%)	0.13%
Emerging Markets	4%	4%	67.31%	61.09%	0.23%	0.10%	0.33%
Private Equity	13%	14%	37.08%	37.08%	0.00%	(0.39%)	(0.39%)
Private Credit	2%	4%	16.58%	4.34%	0.30%	0.60%	0.90%
Fixed Income	28%	26%	3.71%	0.71%	1.05%	(0.56%)	0.49%
Inflation Protection	4%	4%	7.68%	7.54%	0.01%	(0.02%)	(0.01%)
Real Estate	7%	8%	7.22%	4.22%	0.25%	0.18%	0.43%
Multi-Strategy	0%	0%	-	-	0.00%	0.00%	0.00%
Legacy Hedge Funds	0%	0%	2.06%	23.93%	(0.02%)	(0.00%)	(0.03%)
Cash	2%	2%	0.28%	0.12%	0.00%	0.08%	0.09%
Total			**31.42%** =	**28.67%** +	**2.83%** +	**(0.09%)**	**2.74%**

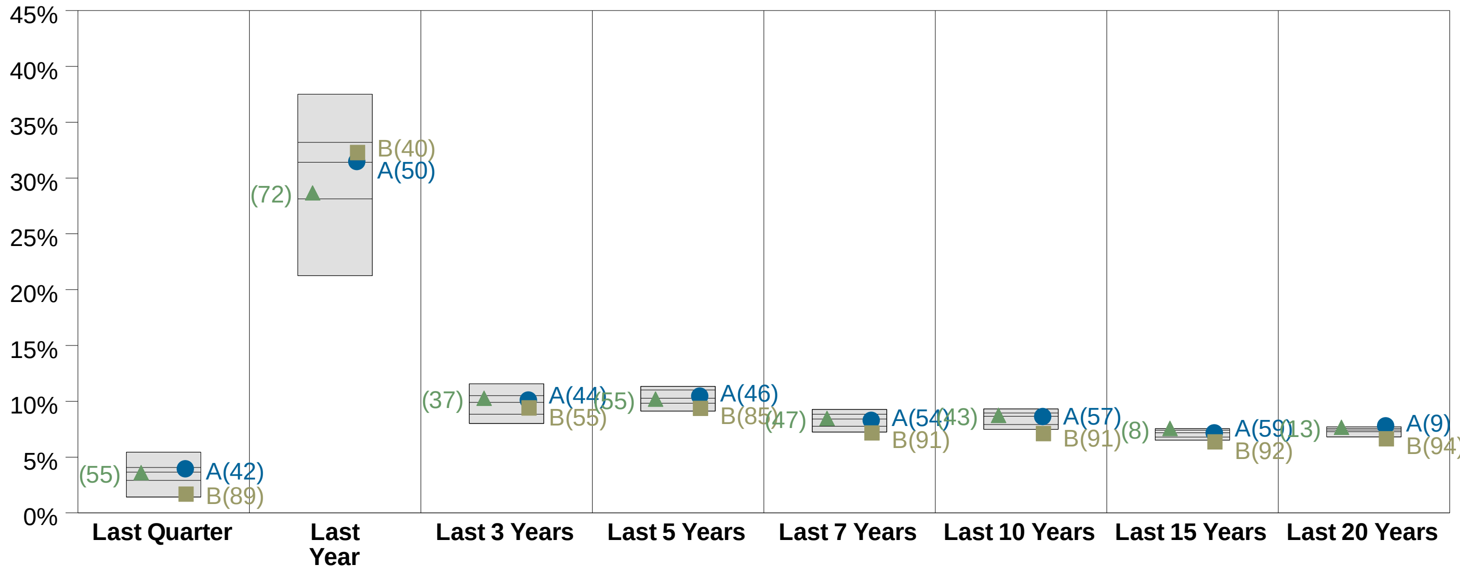
- **What helped relative attribution?**
  - Outperformance relative to target from Fixed Income, U.S. Equity, Private Credit, Real Estate and Emerging Markets Equity managers
  - An underweight to Private Credit and Real Estate (attribution based on target return)
- **What hurt relative attribution?**
  - An overweight to Fixed Income (attribution based on target return)
  - An underweight to Private Equity and U.S. Equity (attribution based on target return)

Current Quarter Target = 26.0% Blmbg Aggregate, 25.0% Russell 3000 Index, 14.0% Private Equity, 13.0% MSCI World ex US IMI, 7.2% NCREIF NFI-ODCE Eq Wt Net lagged 3 months, 4.0% MSCI EM IMI, 4.0% Blmbg:TIPS, 4.0% S&P:LSTA Lev Loan lagged 3 months+1.0%, 2.0% 3-month Treasury Bill,0.8% FTSE EP/NA US Index lagged 3 months, 0.0% HFRI Fund of Funds Compos and 0.0% S&P:LSTA Lev Loan.

Total Fund

Gross of Fee Performance versus Very Large Public DB Plan (>$10B) Peers and Benchmark as of March 31, 2021

Performance vs Callan Public Fund Spons- V Lg DB (>10B) (Gross)



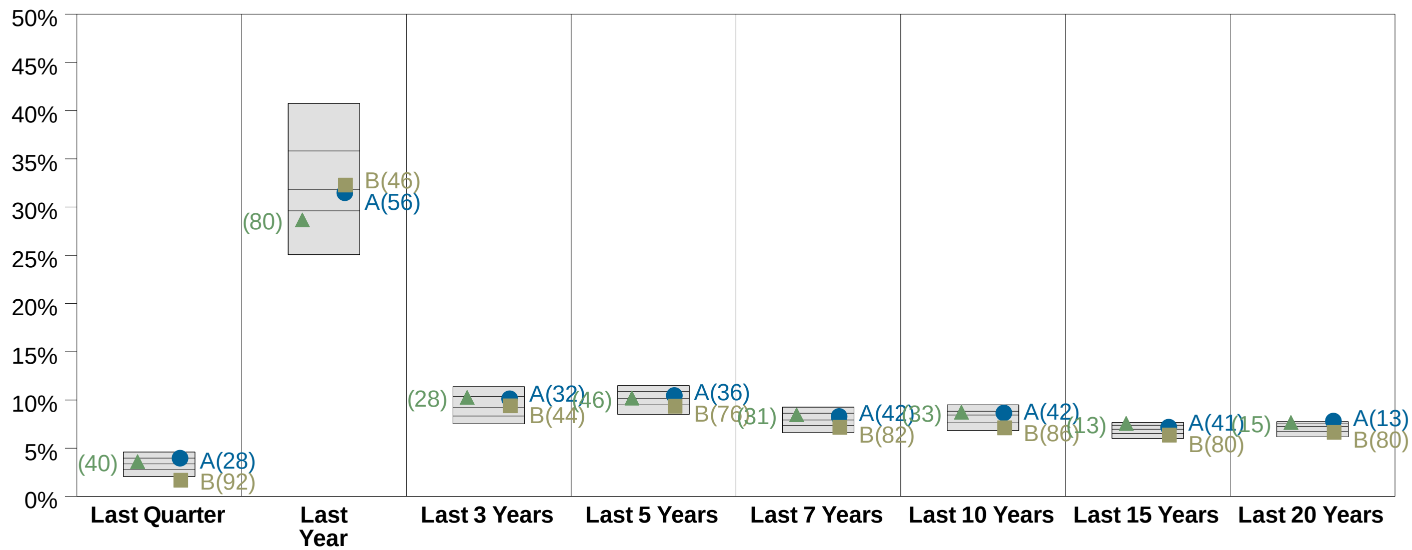
		Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
10th Percentile		5.45	37.50	11.57	11.34	9.27	9.32	7.56	7.72
25th Percentile		4.07	33.20	10.51	11.01	8.84	8.94	7.41	7.58
Median		3.65	31.41	9.90	10.27	8.42	8.66	7.18	7.42
75th Percentile		2.91	28.13	8.84	9.82	7.76	7.92	6.79	7.27
90th Percentile		1.43	21.25	8.01	9.12	7.24	7.49	6.51	6.81
Total Fund	● A	3.89	31.42	10.04	10.39	8.22	8.57	7.11	7.73
60% MSCI ACW MI/40% Blmbg U.S. Agg	■ B	1.68	32.28	9.40	9.36	7.17	7.11	6.36	6.64
Total Fund Custom Benchmark	▲	3.61	28.67	10.27	10.21	8.48	8.74	7.57	7.67

Current Quarter Target = 26.0% Blmbg Aggregate, 25.0% Russell 3000 Index, 14.0% Private Equity, 13.0% MSCI World ex US IMI, 7.2% NCREIF NFI-ODCE Eq Wt Net lagged 3 months, 4.0% MSCI EM IMI, 4.0% Blmbg:TIPS, 4.0% S&P:LSTA Lev Loan lagged 3 months+1.0%, 2.0% 3-month Treasury Bill, 0.8% FTSE EP/NA US Index lagged 3 months, 0.0% HFRI Fund of Funds Compos and 0.0% S&P:LSTA Lev Loan.

Total Fund

Gross of Fee Performance versus Large Public DB Plan (>$1B) Peers and Benchmark as of March 31, 2021

Performance vs Callan Public Fund Spons - Large (>1B) (Gross)



		Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
10th Percentile		4.61	40.75	11.39	11.50	9.27	9.50	7.66	7.75
25th Percentile		3.98	35.82	10.37	10.89	8.62	8.84	7.39	7.54
Median		3.38	31.85	9.21	10.15	7.93	8.44	6.97	7.27
75th Percentile		2.78	29.62	8.34	9.51	7.36	7.64	6.54	6.73
90th Percentile		2.06	25.06	7.53	8.52	6.61	6.83	6.01	6.18
Total Fund	● A	3.89	31.42	10.04	10.39	8.22	8.57	7.11	7.73
60% MSCI ACW MI/40% Blmbg U.S. Agg	■ B	1.68	32.28	9.40	9.36	7.17	7.11	6.36	6.64
Total Fund Custom Benchmark	▲	3.61	28.67	10.27	10.21	8.48	8.74	7.57	7.67

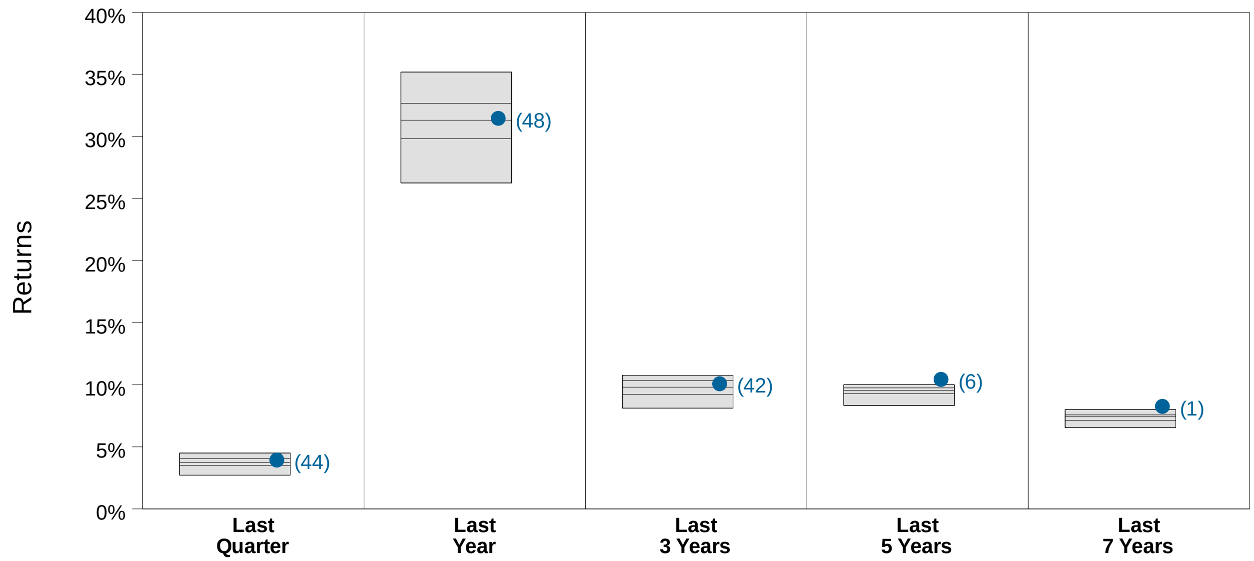
Current Quarter Target = 26.0% Blmbg Aggregate, 25.0% Russell 3000 Index, 14.0% Private Equity, 13.0% MSCI World ex US IMI, 7.2% NCREIF NFI-ODCE Eq Wt Net lagged 3 months, 4.0% MSCI EM IMI, 4.0% Blmbg:TIPS, 4.0% S&P:LSTA Lev Loan lagged 3 months+1.0%, 2.0% 3-month Treasury Bill, 0.8% FTSE EP/NA US Index lagged 3 months, 0.0% HFRI Fund of Funds Compos and 0.0% S&P:LSTA Lev Loan.

Total Fund

Asset Allocation-Adjusted Gross of Fee Performance versus Very Large Public DB Plan (>$10B) Peers as of March 31, 2021

- For this comparison, each fund in the Database is adjusted to have the same asset allocation as Pennsylvania SERS. This removes large asset allocation variances among plans and allows for a greater focus on manager performance.

Asset Allocation Adjusted Ranking



	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
10th Percentile	4.51	35.21	10.78	10.02	8.00
25th Percentile	4.06	32.69	10.34	9.76	7.58
Median	3.74	31.32	9.81	9.57	7.43
75th Percentile	3.52	29.84	9.23	9.30	7.14
90th Percentile	2.72	26.27	8.13	8.34	6.55
Total Fund ●	3.89	31.42	10.04	10.39	8.22

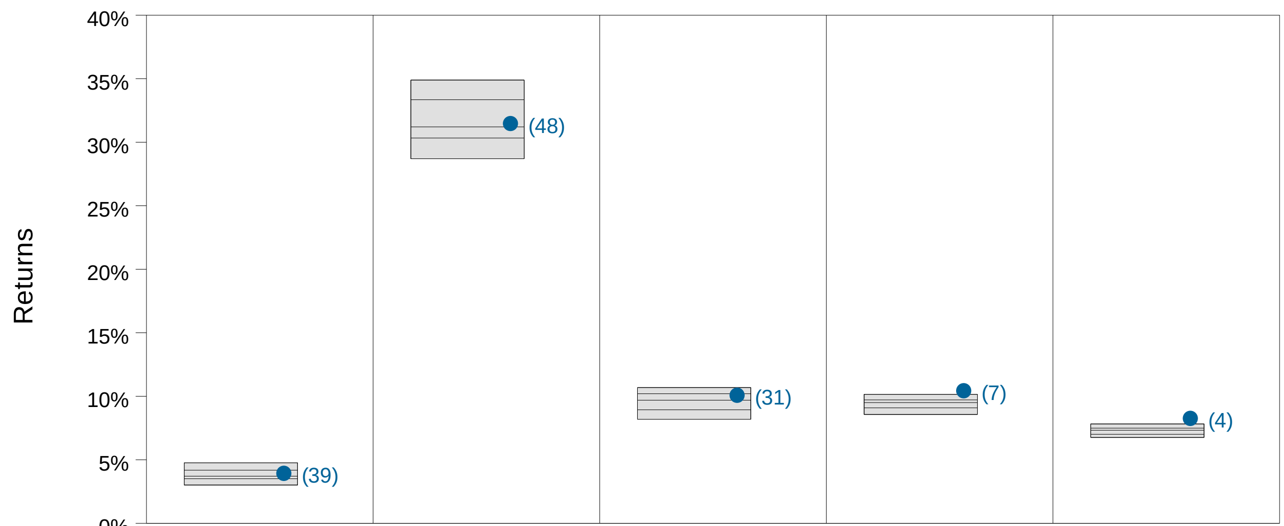
Current Quarter Target = 26.0% Blmbg Aggregate, 25.0% Russell 3000 Index, 14.0% Private Equity, 13.0% MSCI World ex US IMI, 7.2% NCREIF NFI-ODCE Eq Wt Net lagged 3 months, 4.0% MSCI EM IMI, 4.0% Blmbg:TIPS, 4.0% S&P:LSTA Lev Loan lagged 3 months+1.0%, 2.0% 3-month Treasury Bill, 0.8% FTSE EP/NA US Index lagged 3 months, 0.0% HFRI Fund of Funds Compos and 0.0% S&P:LSTA Lev Loan.

Total Fund

Asset Allocation-Adjusted Gross of Fee Performance versus Large Public DB Plan (>$1B) Peers as of March 31, 2021

- For this comparison, each fund in the Database is adjusted to have the same asset allocation as Pennsylvania SERS. This removes large asset allocation variances among plans and allows for a greater focus on manager performance.

Asset Allocation Adjusted Ranking



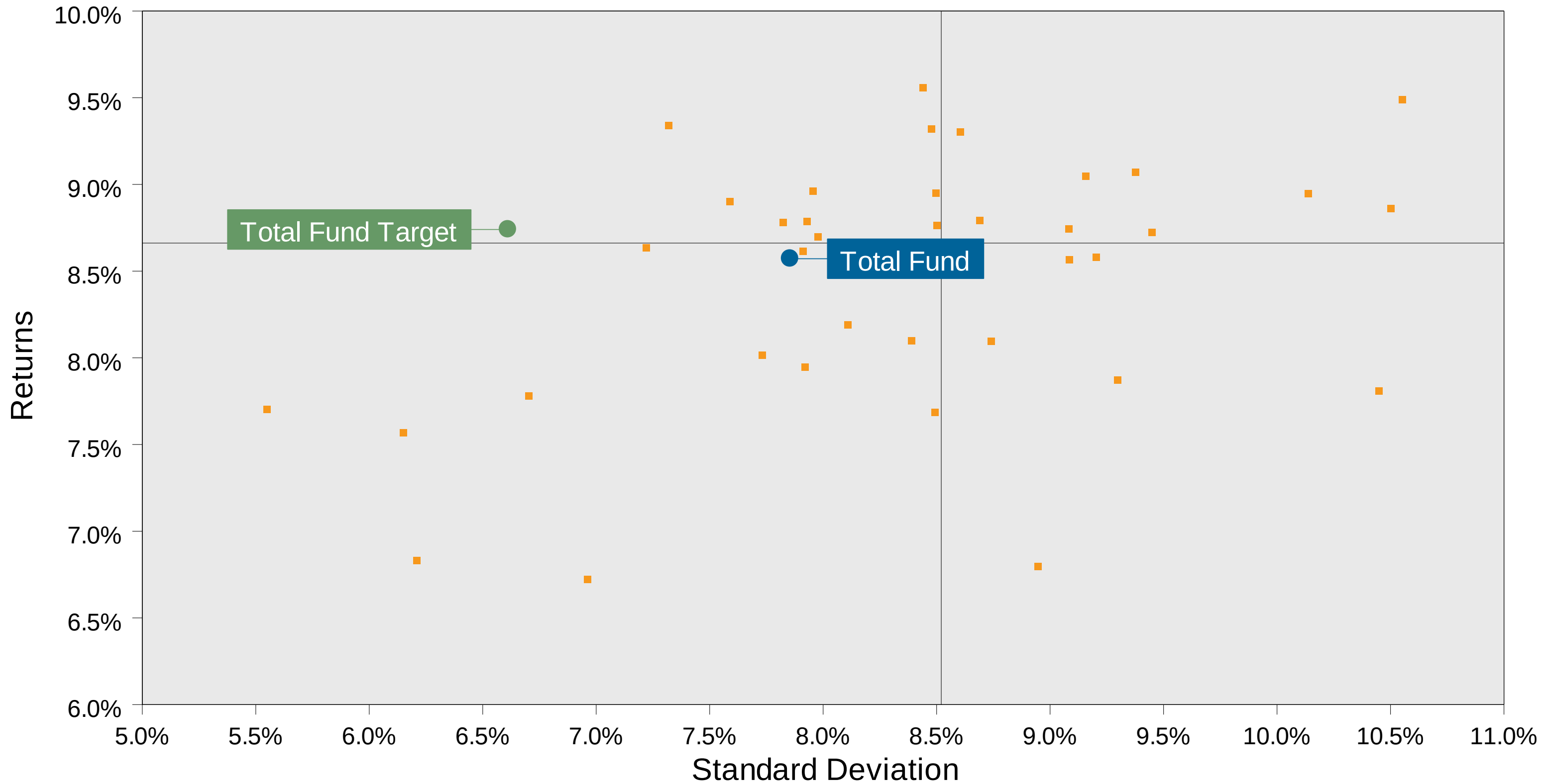
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years
10th Percentile	4.77	34.90	10.69	10.15	7.83
25th Percentile	4.19	33.35	10.20	9.72	7.50
Median	3.71	31.21	9.70	9.51	7.33
75th Percentile	3.51	30.34	8.94	9.10	7.01
90th Percentile	3.02	28.71	8.20	8.57	6.77
Total Fund ●	3.89	31.42	10.04	10.39	8.22

Current Quarter Target = 26.0% Blmbg Aggregate, 25.0% Russell 3000 Index, 14.0% Private Equity, 13.0% MSCI World ex US IMI, 7.2% NCREIF NFI-ODCE Eq Wt Net lagged 3 months, 4.0% MSCI EM IMI, 4.0% Blmbg:TIPS, 4.0% S&P:LSTA Lev Loan lagged 3 months+1.0%, 2.0% 3-month Treasury Bill, 0.8% FTSE EP/NA US Index lagged 3 months, 0.0% HFRI Fund of Funds Compos and 0.0% S&P:LSTA Lev Loan.

Total Fund

Risk vs. Return versus Very Large Public DB Plan (>$10B) Peers as of March 31, 2021

Ten Year Annualized Risk vs Return

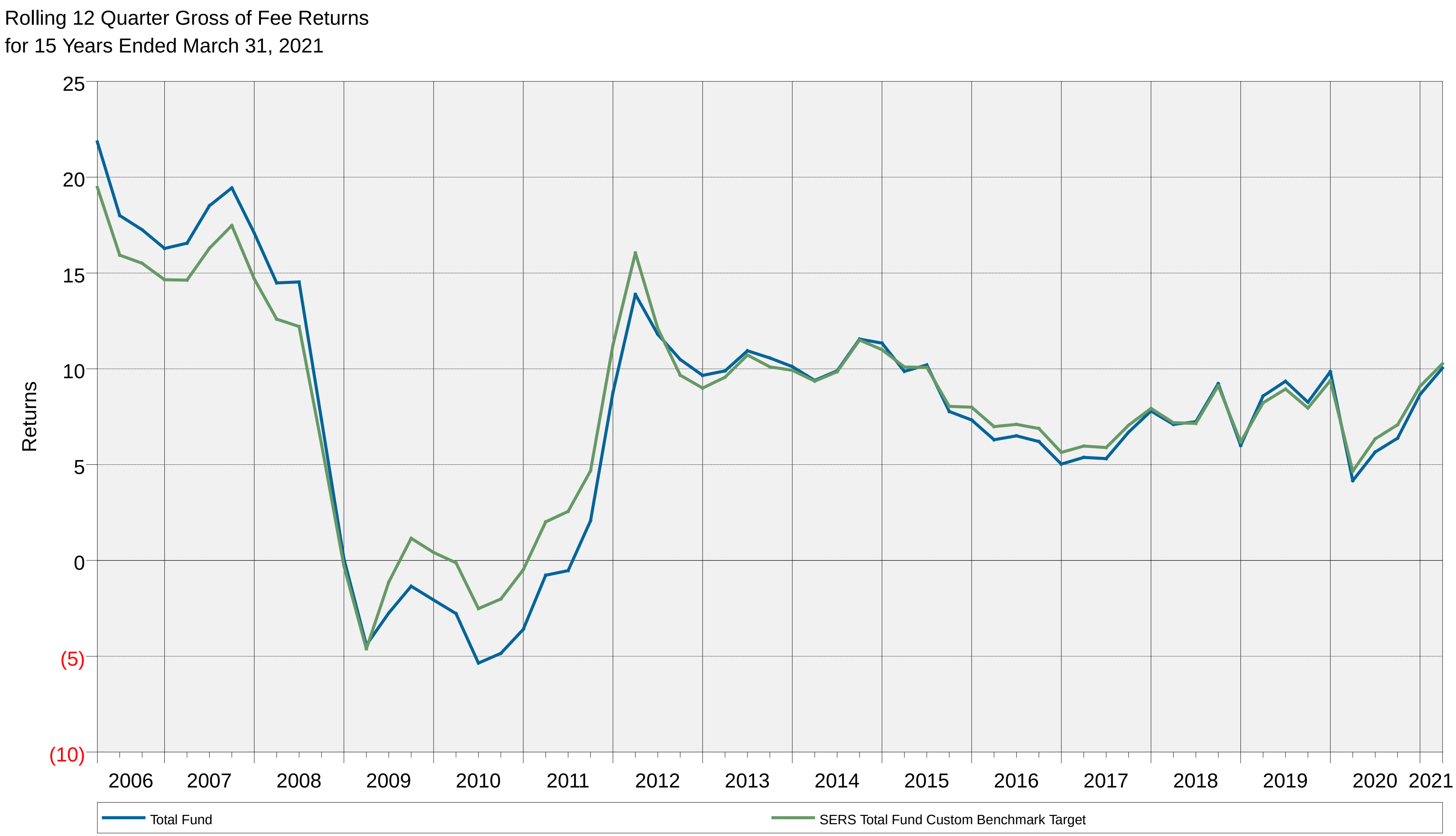


Squares represent membership of the Callan Public Fund Spons- V Lg DB (>10B)

Current Quarter Target = 26.0% Blmbg Aggregate, 25.0% Russell 3000 Index, 14.0% Private Equity, 13.0% MSCI World ex US IMI, 7.2% NCREIF NFI-ODCE Eq Wt Net lagged 3 months, 4.0% MSCI EM IMI, 4.0% Blmbg:TIPS, 4.0% S&P:LSTA Lev Loan lagged 3 months+1.0%, 2.0% 3-month Treasury Bill, 0.8% FTSE EP/NA US Index lagged 3 months, 0.0% HFRI Fund of Funds Compos and 0.0% S&P:LSTA Lev Loan.

Total Fund

Rolling 3-year Gross of Fee Performance versus Peers and Benchmark as of March 31, 2021

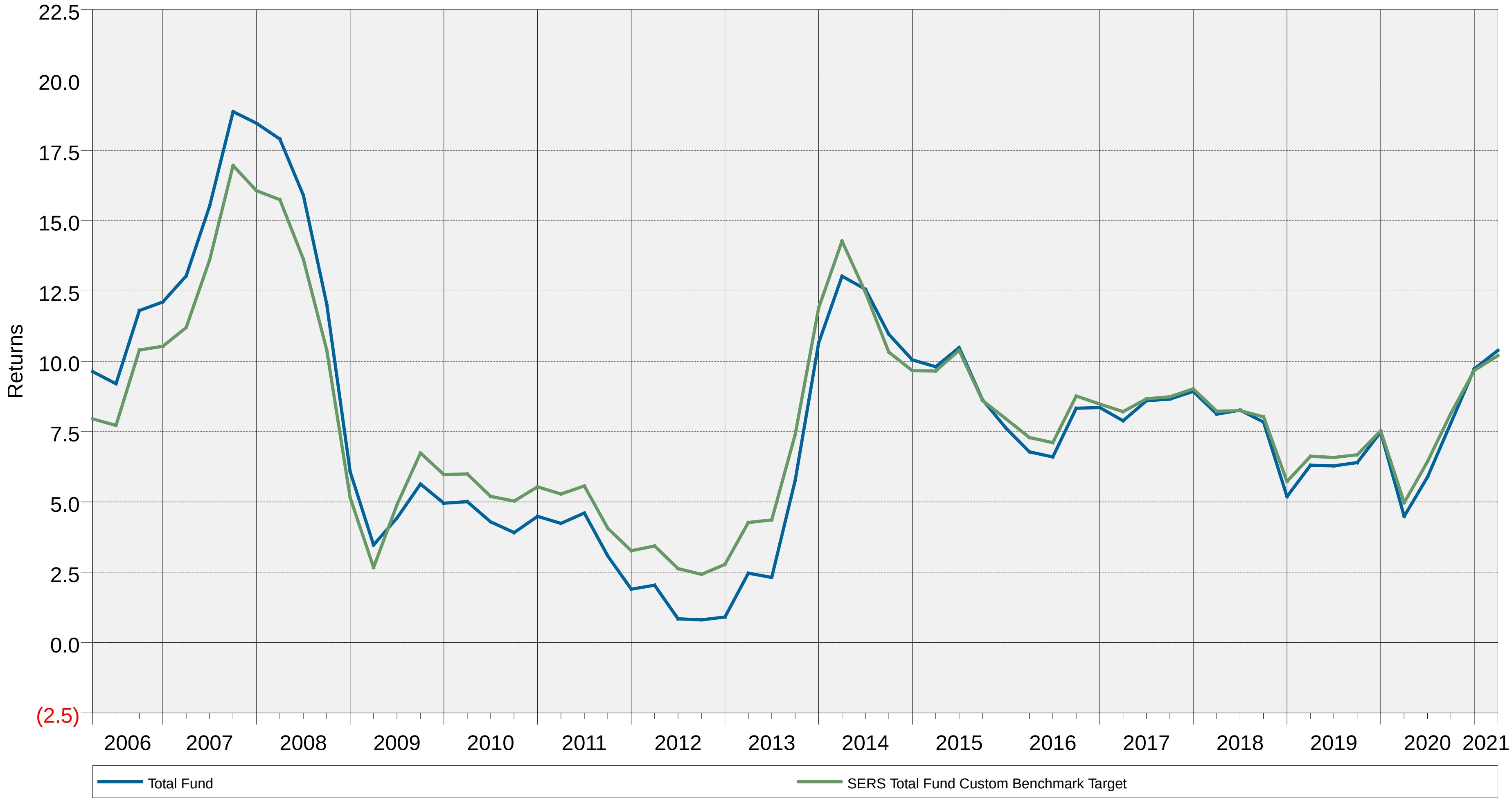


Current Quarter Target = 26.0% Blmbg Aggregate, 25.0% Russell 3000 Index, 14.0% Private Equity, 13.0% MSCI World ex US IMI, 7.2% NCREIF NFI-ODCE Eq Wt Net lagged 3 months, 4.0% MSCI EM IMI, 4.0% Blmbg:TIPS, 4.0% S&P:LSTA Lev Loan lagged 3 months+1.0%, 2.0% 3-month Treasury Bill, 0.8% FTSE EP/NA US Index lagged 3 months, 0.0% HFRI Fund of Funds Compos and 0.0% S&P:LSTA Lev Loan.

Total Fund

Rolling 5-year Gross of Fee Performance versus Peers and Benchmark as of March 31, 2021

Rolling 20 Quarter Gross of Fee Returns
for 15 Years Ended March 31, 2021



Current Quarter Target = 26.0% Blmbg Aggregate, 25.0% Russell 3000 Index, 14.0% Private Equity, 13.0% MSCI World ex US IMI, 7.2% NCREIF NFI-ODCE Eq Wt Net lagged 3 months, 4.0% MSCI EM IMI, 4.0% Blmbg:TIPS, 4.0% S&P:LSTA Lev Loan lagged 3 months+1.0%, 2.0% 3-month Treasury Bill, 0.8% FTSE EP/NA US Index lagged 3 months, 0.0% HFRI Fund of Funds Compos and 0.0% S&P:LSTA Lev Loan.

Asset Class Returns

As of March 31, 2021

	Market Value $(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Net Performance						
Total Fund	**$35,330**	**100.00%**	**3.52%**	**30.24%**	**9.29%**	**9.68%**
Total Fund Custom Benchmark(1)	-	-	3.61%	28.67%	10.27%	10.21%
Public Market Equiv Benchmark(2)	-	-	3.68%	26.92%	10.24%	10.76%
60/40 Index(3)	-	-	1.68%	32.28%	9.40%	9.36%
U.S. Equity	**$8,835**	**25.01%**	**6.83%**	**66.68%**	**16.42%**	**15.72%**
Russell 3000 Index	-	-	6.35%	62.53%	17.12%	16.64%
Int'l Developed Mkts Equity	**$4,566**	**12.92%**	**4.10%**	**49.48%**	**7.20%**	**10.13%**
MSCI World ex US IMI	-	-	4.17%	48.47%	6.41%	9.16%
Emerging Mkts Equity	**$1,341**	**3.80%**	**2.96%**	**66.41%**	**8.96%**	**14.41%**
MSCI EM IMI	-	-	2.86%	61.09%	6.33%	11.75%
Private Equity	**$5,100**	**14.44%**	**12.34%**	**29.86%**	**16.65%**	**14.13%**
Burgiss Private Equity Index (Qtr lag)	-	-	13.82%	23.38%	15.27%	14.70%
Global Equity + 3% (Qtr lag)(4)	-	-	15.61%	22.13%	17.15%	18.27%
Private Credit	**$1,719**	**4.87%**	**5.71%**	**12.53%**	**11.76%**	**-**
S&P Levered Loan Index + 1% (Qtr lag)	-	-	4.04%	4.34%	5.09%	6.28%
Fixed Income	**$9,258**	**26.20%**	**(3.59%)**	**3.53%**	**3.73%**	**3.65%**
Blmbg U.S. Agg Bond Index	-	-	(3.37%)	0.71%	4.65%	3.10%
Inflation Protection (TIPS)	**$1,400**	**3.96%**	**(1.75%)**	**7.57%**	**5.28%**	**3.84%**
Blmbg U.S. TIPS Index	-	-	(1.47%)	7.54%	5.68%	3.86%
Real Estate	**$2,563**	**7.25%**	**2.56%**	**7.14%**	**3.42%**	**3.33%**
Real Estate Custom Bench (Qtr lag)(5)	-	-	1.99%	4.22%	4.09%	5.22%
CPI + 3% (Qtr lag)	-	-	0.81%	4.36%	4.85%	4.95%
Cash	**$521**	**1.47%**	**0.03%**	**0.28%**	**1.56%**	**1.41%**
3-month Treasury Bill	-	-	0.02%	0.12%	1.49%	1.19%

(1) Total Fund Custom Benchmark returns provided by RVK prior to 12/31/2018. Starting 01/01/2020, benchmark consists of: 26% Bloomberg U.S. Agg Bond Index, 14% SERS Private Equity Composite, 25% Russell 3000 Index, 13% MSCI World ex US IMI Index, 8% Real Estate Custom Benchmark, 4% S&P/LSTA Leveraged Loan Index + 1% (Qtr lag), 4% MSCI Emerging Markets IMI Index, 4% Bloomberg US TIPS Index, 2% ICE BofAML 3 Mo US T-Bill Index
(2) Public Market Equivalent Benchmark returns provided by RVK prior to 12/31/2018. As of 01/01/2020, benchmark consists of: 26% Bloomberg U.S. Agg Bond Index, 25% Russell 3000,13% MSCI World ex US Index, 10.5% Russell 3000+ 3% (Qtr lag), 8% CPI+3% (Qtr Lag), 4% S&P/LSTA Levered Loan Index +1% (Qtr lag), 4% Bloomberg US TIPS Index, 4% MSCI Emerging Markets Index, 3.5% MSCI World ex US +3% (Qtr lag), 2% ICE BofAML 3 Mo US T-Bill Index.
(3) Benchmark consists of 60% MSCI ACW IMI Index and 40% Bloomberg U.S. Agg Bond Index.
(4) As of 01/01/2020 benchmark consists of 25% MSCI World ex US +3% (Qtr lag) and 75% Russell 3000 + 3% (Qtr lag). Benchmark performance represents the historical benchmark (Russell 3000 +3% Qtr lag) linked to the current benchmark.
(5) As of 03/31/2019 benchmark consists of 90% NCREIF ODCE Index (Qtr lag) and 10% FTSE NAREIT Index (unlagged).
Prior to 03/31/2019, benchmark history was provided by RVK.

Asset Class Returns

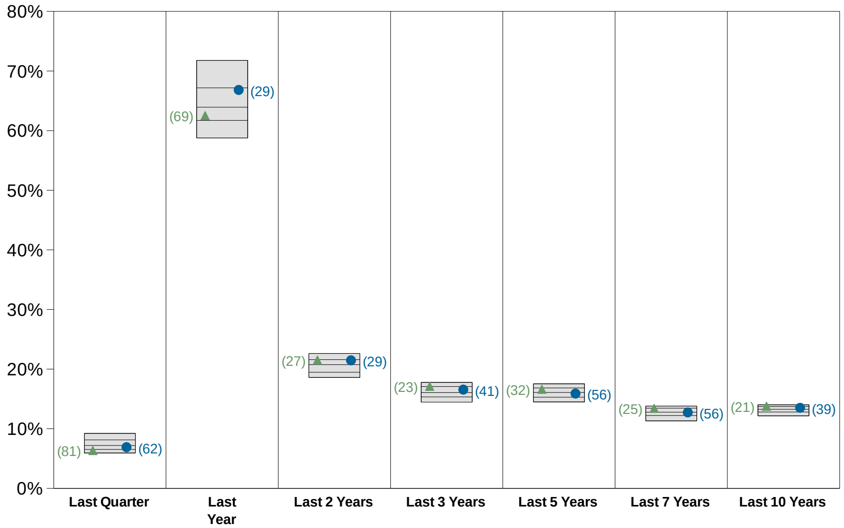
As of March 31, 2021

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception	
Net Performance						
Total Fund	**7.86%**	**6.31%**	**6.93%**	**7.90%**	**9.62%**	(1/81)
Total Fund Custom Benchmark(1)	8.74%	7.57%	7.67%	8.35%	-	
Public Market Equiv Benchmark(2)	9.06%	7.79%	7.83%	8.47%	-	
60/40 Index(3)	7.11%	6.36%	6.64%	6.72%	-	
U.S. Equity	**13.30%**	**8.79%**	**8.48%**	**9.29%**	**11.09%**	(1/81)
Russell 3000 Index	13.79%	10.05%	8.85%	9.71%	11.47%	(1/81)
Int'l Developed Mkts Equity	**6.53%**	**4.31%**	**-**	**-**	**6.70%**	(1/02)
MSCI World ex US IMI	5.47%	4.36%	6.01%	5.41%	6.80%	(1/02)
Emerging Mkts Equity	**4.16%**	**4.46%**	**-**	**-**	**8.41%**	(1/02)
MSCI EM IMI	3.61%	6.06%	10.01%	5.37%	10.26%	(1/02)
Private Equity	**12.02%**	**11.44%**	**9.13%**	**13.28%**	**11.40%**	(1/86)
Burgiss Private Equity Index (Qtr lag)	13.33%	12.40%	10.45%	14.52%	17.03%	(1/86)
Global Equity + 3% (Qtr lag)(4)	16.85%	13.32%	11.19%	13.09%	14.90%	(1/86)
Private Credit	**-**	**-**	**-**	**-**	**10.01%**	(12/17)
S&P Levered Loan Index + 1% (Qtr lag)	5.33%	5.66%	5.81%	-	5.14%	(12/17)
Fixed Income	**3.50%**	**4.73%**	**5.34%**	**5.73%**	**8.18%**	(1/81)
Blmbg U.S. Agg Bond Index	3.44%	4.29%	4.50%	5.09%	7.49%	(1/81)
Inflation Protection (TIPS)	**2.68%**	**3.80%**	**-**	**-**	**3.53%**	(2/03)
Blmbg U.S. TIPS Index	3.44%	4.37%	5.08%	-	4.51%	(2/03)
Real Estate	**6.78%**	**3.99%**	**6.30%**	**7.59%**	**8.23%**	(3/84)
Real Estate Custom Bench (Qtr lag)(5)	8.72%	5.61%	6.95%	8.03%	-	
CPI + 3% (Qtr lag)	4.74%	4.89%	5.04%	5.14%	5.58%	(3/84)
Cash	**0.90%**	**1.47%**	**1.82%**	**2.56%**	**3.52%**	(1/87)
3-month Treasury Bill	0.63%	1.16%	1.43%	2.22%	3.24%	(1/87)

(1) Total Fund Custom Benchmark returns provided by RVK prior to 12/31/2018. Starting 01/01/2020, benchmark consists of: 26% Bloomberg U.S. Agg Bond Index, 14% SERS Private Equity Composite, 25% Russell 3000 Index, 13% MSCI World ex US IMI Index, 8% Real Estate Custom Benchmark, 4% S&P/LSTA Leveraged Loan Index + 1% (Qtr lag), 4% MSCI Emerging Markets IMI Index, 4% Bloomberg US TIPS Index, 2% ICE BofAML 3 Mo US T-Bill Index,
(2) Public Market Equivalent Benchmark returns provided by RVK prior to 12/31/2018. As of 01/01/2020, benchmark consists of: 26% Bloomberg U.S. Agg Bond Index, 25% Russell 3000,13% MSCI World ex US Index, 10.5% Russell 3000+ 3% (Qtr lag), 8% CPI+3% (Qtr Lag), 4% S&P/LSTA Levered Loan Index +1% (Qtr lag), 4% Bloomberg US TIPS Index, 4% MSCI Emerging Markets Index, 3.5% MSCI World ex US +3% (Qtr lag), 2% ICE BofAML 3 Mo US T-Bill Index.
(3) Benchmark consists of 60% MSCI ACW IMI Index and 40% Bloomberg U.S. Agg Bond Index
(4) As of 01/01/2020 benchmark consists of 25% MSCI World ex US +3% (Qtr lag) and 75% Russell 3000 + 3% (Qtr lag). Benchmark performance represents the historical benchmark (Russell 3000 +3% Qtr lag) linked to the current benchmark.
(5) As of 03/31/2019 benchmark consists of 90% NCREIF ODCE Index (Qtr lag) and 10% FTSE NAREIT Index (unlagged)
Prior to 03/31/2019, benchmark history was provided by RVK.

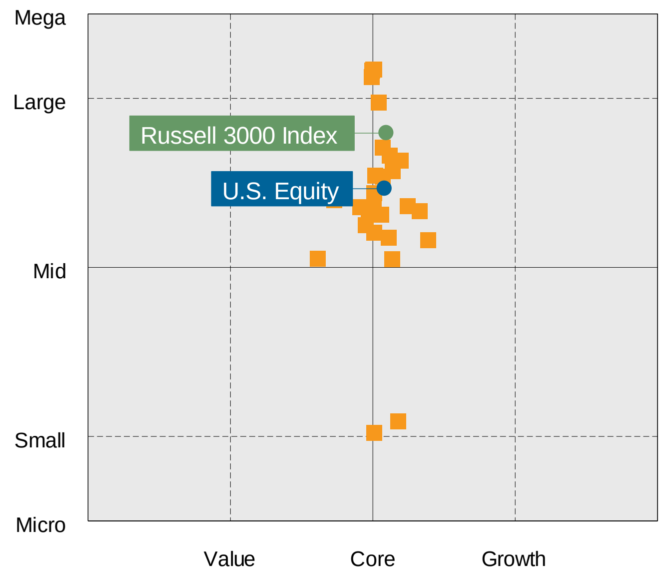
U.S. Equity as of March 31, 2021

Performance vs Public Fund - Domestic Equity (Gross)

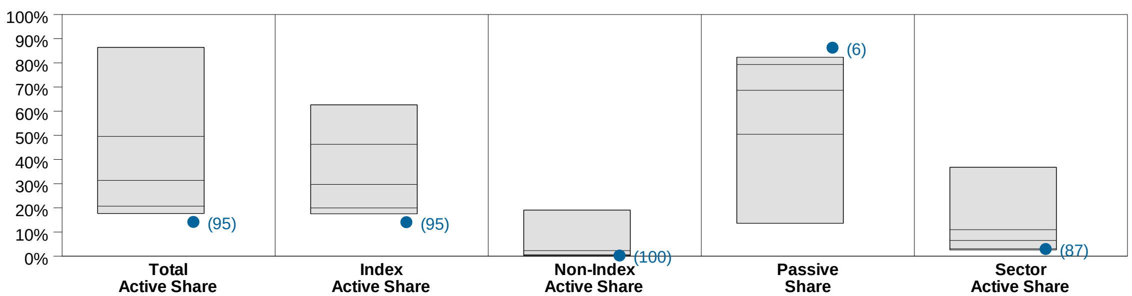


	Last Quarter	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
10th Percentile	9.22	71.79	22.62	17.77	17.53	13.81	14.01
25th Percentile	8.13	67.17	21.59	17.07	16.84	13.45	13.72
Median	7.19	63.93	20.75	16.07	16.09	12.77	13.25
75th Percentile	6.53	61.71	19.48	15.33	15.30	12.21	12.81
90th Percentile	5.93	58.77	18.59	14.46	14.49	11.31	12.16
U.S. Equity ●	6.84	66.76	21.41	16.50	15.84	12.66	13.44
Russell 3000 Index ▲	6.35	62.53	21.53	17.12	16.64	13.44	13.79

Style Map vs Pub Pln- Dom Equity
Holdings as of March 31, 2021



Active Share vs. Pub Pln- Dom Equity



	Total Active Share	Index Active Share	Non-Index Active Share	Passive Share	Sector Active Share
10th Percentile	86.39	62.63	19.08	82.31	36.78
25th Percentile	49.55	46.26	2.33	79.29	10.99
Median	31.39	29.69	0.67	68.61	6.51
75th Percentile	20.71	19.99	0.29	50.45	3.08
90th Percentile	17.69	17.52	0.14	13.61	2.63
U.S. Equity ●	13.96	13.88	0.08	86.04	2.78

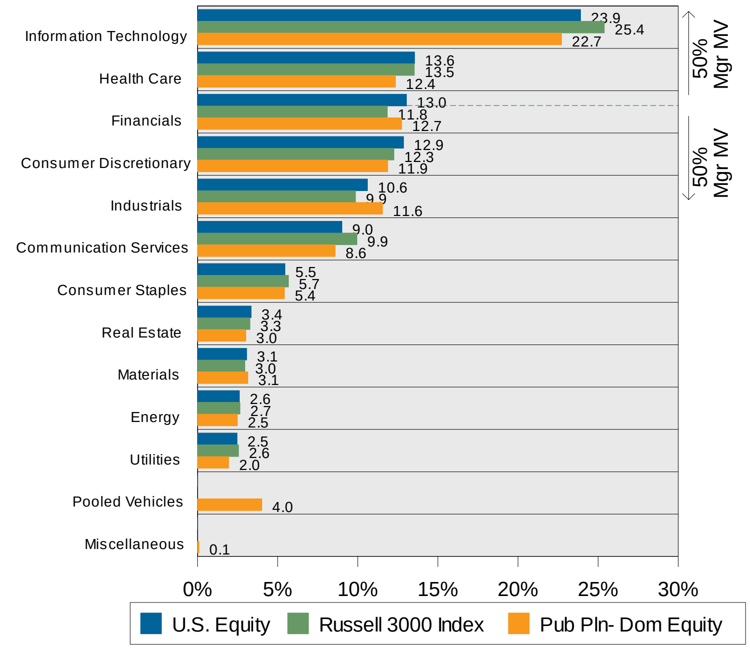
U.S. Equity

As of March 31, 2021

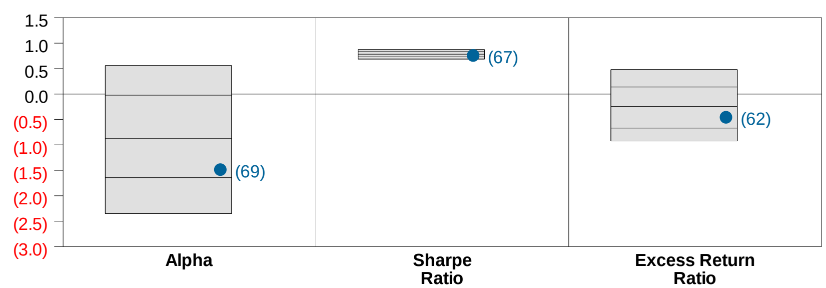
Portfolio Characteristics Percentile Rankings
Rankings Against Public Fund - Domestic Equity
as of March 31, 2021

	Weighted Median Market Cap	Price/Fore-casted Earnings	Price/Book	Forecasted Earnings Growth	Dividend Yield	MSCI Combined Z-Score
10th Percentile	168.40	26.60	4.06	16.85	1.46	0.15
25th Percentile	113.24	23.00	3.98	15.98	1.41	0.06
Median	68.47	22.19	3.55	15.35	1.29	(0.02)
75th Percentile	45.84	21.68	3.13	14.96	1.17	(0.03)
90th Percentile	21.79	20.49	2.82	13.45	0.99	(0.21)
U.S. Equity ●	74.71	24.04	3.50	15.87	1.31	(0.01)
Russell 3000 Index ▲	115.99	23.26	3.82	15.63	1.36	0.00

Sector Allocation
March 31, 2021



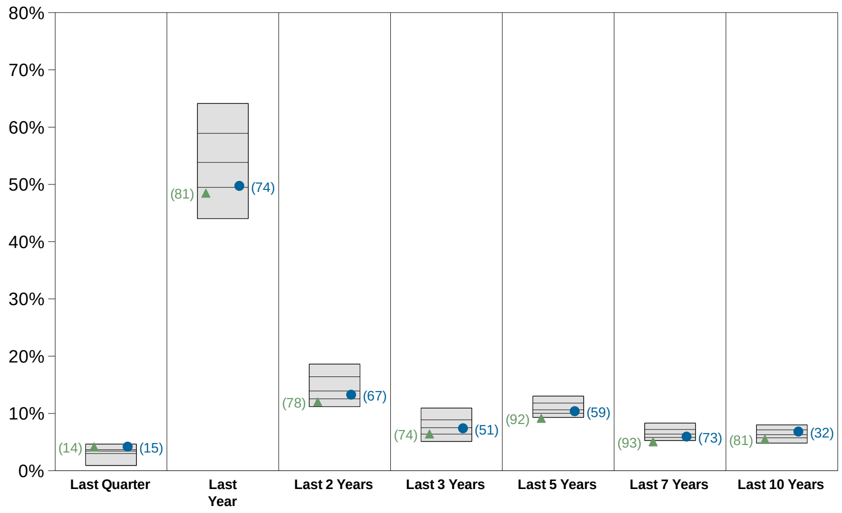
Risk Adjusted Return Measures vs Russell 3000 Index
Rankings Against Public Fund - Domestic Equity (Gross)
Five Years Ended March 31 2021



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.56	0.87	0.48
25th Percentile	(0.02)	0.83	0.14
Median	(0.88)	0.78	(0.24)
75th Percentile	(1.64)	0.73	(0.67)
90th Percentile	(2.35)	0.69	(0.92)
U.S. Equity ●	(1.50)	0.75	(0.47)

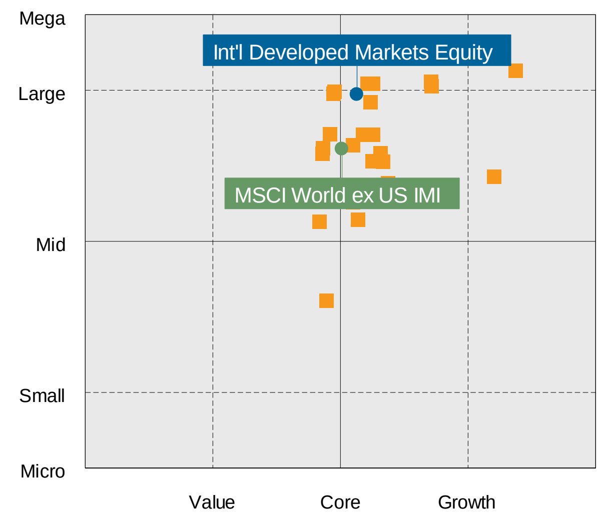
International Equity as of March 31, 2021

Performance vs Public Fund - International Equity (Gross)

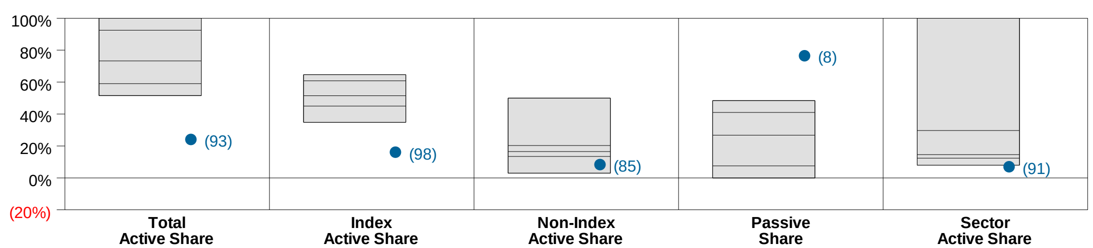


	Last Quarter	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
10th Percentile	4.64	64.15	18.61	10.94	13.04	8.31	8.01
25th Percentile	3.67	58.92	16.41	8.88	11.81	7.20	7.13
Median	3.43	53.84	13.91	7.51	10.62	6.39	6.28
75th Percentile	3.00	49.49	12.54	6.40	10.02	5.81	5.74
90th Percentile	0.91	44.01	11.17	5.11	9.30	5.25	4.81
Int'l Developed Markets Equity ●	4.13	49.67	13.20	7.34	10.32	5.88	6.78
MSCI World ex US IMI ▲	4.17	48.47	12.02	6.41	9.16	5.06	5.47

Style Map vs Pub Pln- Intl Equity
Holdings as of March 31, 2021



Active Share vs. Pub Pln- Intl Equity

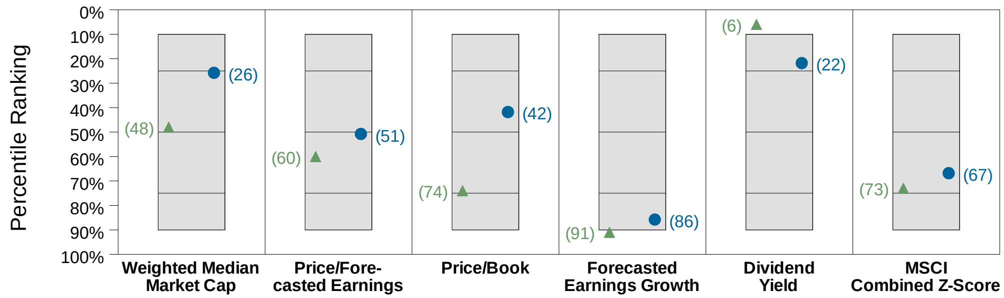


	Total Active Share	Index Active Share	Non-Index Active Share	Passive Share	Sector Active Share
10th Percentile	100.00	64.67	50.00	48.44	100.00
25th Percentile	92.51	60.81	20.25	41.00	29.69
Median	73.24	51.44	16.48	26.76	14.54
75th Percentile	59.00	44.98	13.47	7.49	12.36
90th Percentile	51.56	34.81	2.94	0.00	7.97
Int'l Developed Markets Equity ●	23.79	15.76	8.03	76.21	6.63

International Equity

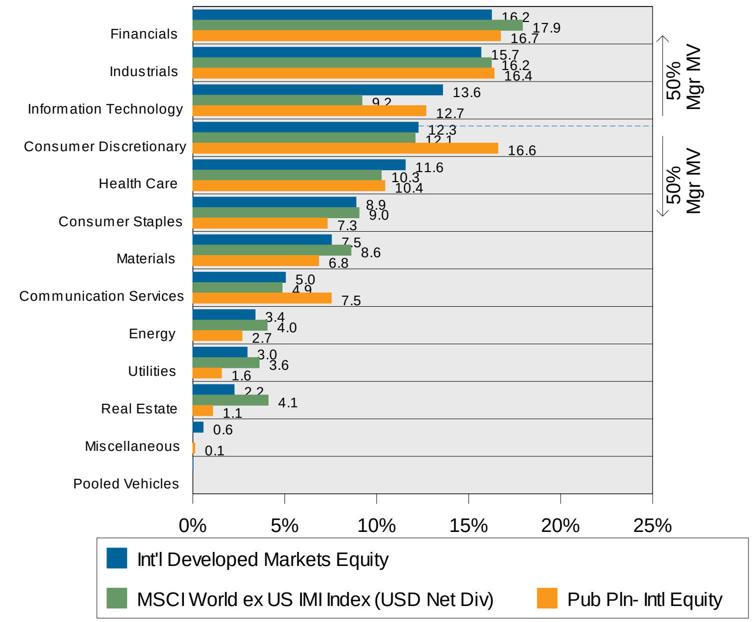
As of March 31, 2021

Portfolio Characteristics Percentile Rankings
Rankings Against Public Fund - International Equity
as of March 31, 2021

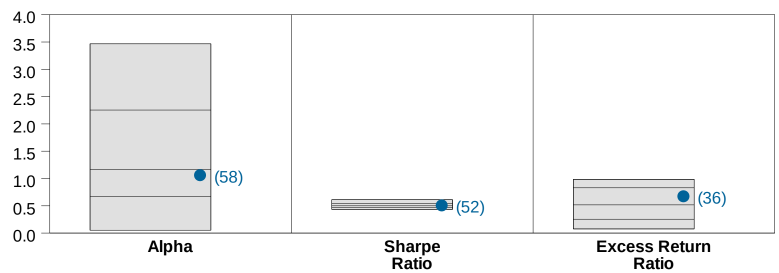


	Weighted Median Market Cap	Price/Fore-casted Earnings	Price/Book	Forecasted Earnings Growth	Dividend Yield	MSCI Combined Z-Score
10th Percentile	53.17	25.75	3.97	20.41	2.32	0.77
25th Percentile	41.73	19.57	2.49	15.23	2.09	0.30
Median	31.83	18.25	2.05	13.77	1.88	0.20
75th Percentile	25.84	16.55	1.82	12.40	1.68	(0.02)
90th Percentile	19.84	14.92	1.51	10.43	1.04	(0.09)
Int'l Developed Markets Equity ●	41.57	18.08	2.11	11.44	2.12	0.10
MSCI World ex US IMI Index (USD Net Div) ▲	32.22	17.37	1.84	10.30	2.35	(0.00)

Sector Allocation
March 31, 2021



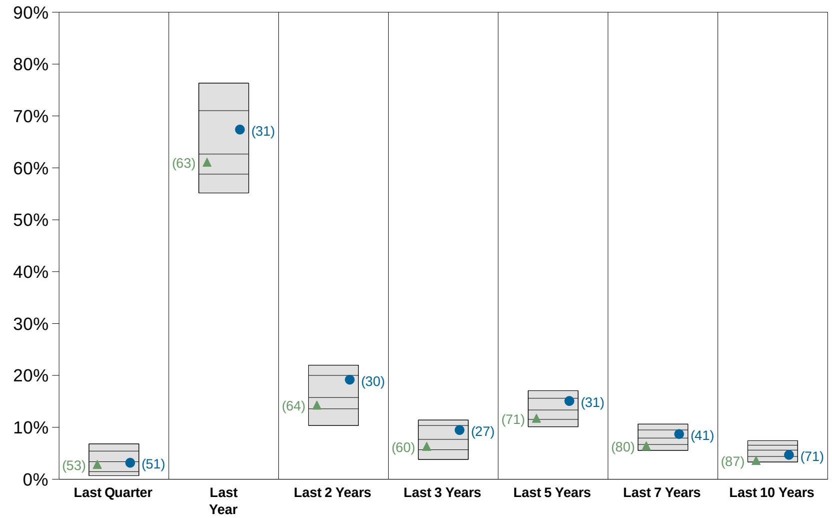
Risk Adjusted Return Measures vs MSCI World ex US IMI
Rankings Against Public Fund - International Equity (Gross)
Five Years Ended March 31, 2021



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	3.47	0.61	0.98
25th Percentile	2.25	0.54	0.83
Median	1.17	0.50	0.52
75th Percentile	0.67	0.47	0.25
90th Percentile	0.05	0.43	0.08
Int'l Developed Markets Equity ●	1.05	0.50	0.66

Emerging Markets Equity as of March 31, 2021

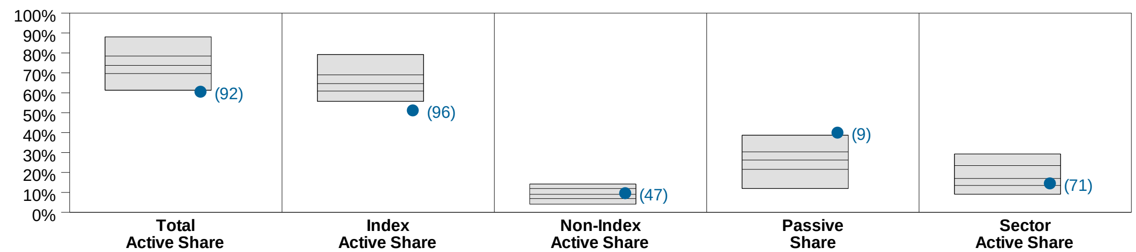
Performance vs Callan Emerging Broad (Gross)



	Last Quarter	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
10th Percentile	6.82	76.33	21.98	11.41	17.07	10.64	7.44
25th Percentile	5.42	71.04	20.01	10.35	15.60	9.50	6.56
Median	3.38	62.67	15.75	7.67	13.35	7.94	5.61
75th Percentile	1.46	58.80	13.57	5.68	11.53	6.69	4.38
90th Percentile	0.68	55.17	10.35	3.80	10.12	5.56	3.33
Emerging Mkts Equity ●	3.11	67.31	19.10	9.40	15.00	8.62	4.61
MSCI EM IMI ▲	2.86	61.09	14.29	6.33	11.75	6.44	3.61

Style Map vs Callan Emerging Broad
Holdings as of March 31, 2021

Active Share vs. Callan Emerging Broad

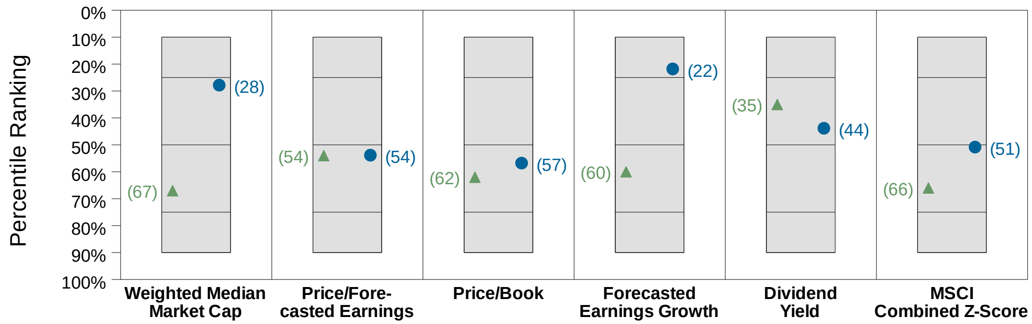


	Total Active Share	Index Active Share	Non-Index Active Share	Passive Share	Sector Active Share
10th Percentile	88.05	79.18	14.18	38.70	29.26
25th Percentile	78.45	69.01	11.97	30.37	23.49
Median	73.74	64.59	9.07	26.26	16.99
75th Percentile	69.63	60.86	6.90	21.55	13.50
90th Percentile	61.30	55.72	4.10	11.95	9.10
Emerging Mkts Equity ●	60.25	50.89	9.36	39.75	14.26

Emerging Markets Equity

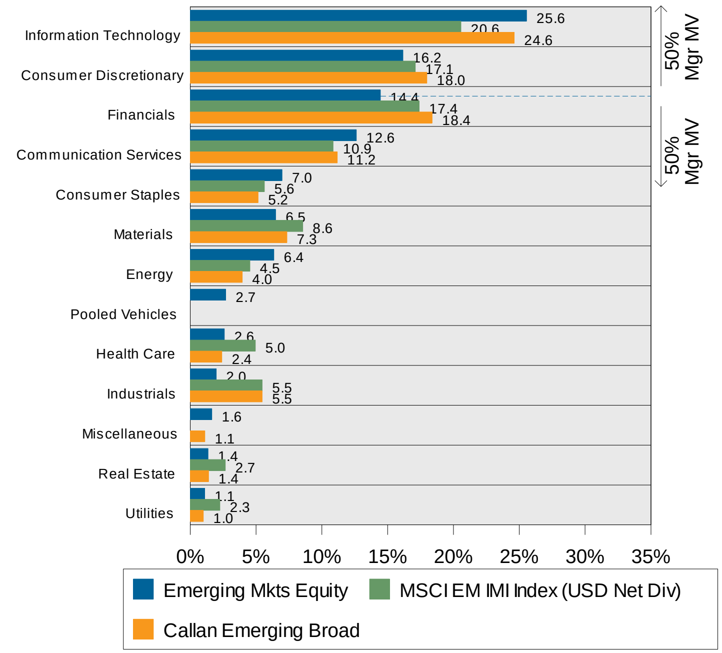
As of March 31, 2021

Portfolio Characteristics Percentile Rankings
Rankings Against Callan Emerging Broad
as of March 31, 2021

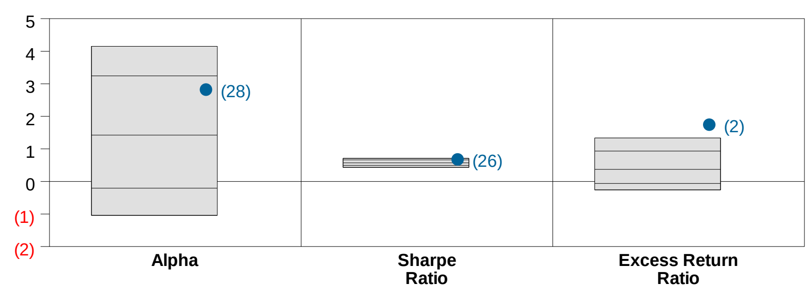


	Weighted Median Market Cap	Price/Fore-casted Earnings	Price/Book	Forecasted Earnings Growth	Dividend Yield	MSCI Combined Z-Score
10th Percentile	65.68	23.43	4.11	26.23	2.86	0.69
25th Percentile	54.66	20.00	3.02	22.98	2.26	0.53
Median	35.83	15.73	2.19	20.28	1.66	0.27
75th Percentile	18.01	11.70	1.53	17.22	1.36	(0.11)
90th Percentile	6.63	10.22	1.10	13.24	1.02	(0.66)
Emerging Mkts Equity ●	54.06	14.74	1.92	23.24	1.73	0.27
MSCI EM IMI Index (USD Net Div) ▲	24.99	15.07	1.73	19.43	1.96	0.04

Sector Allocation
March 31, 2021



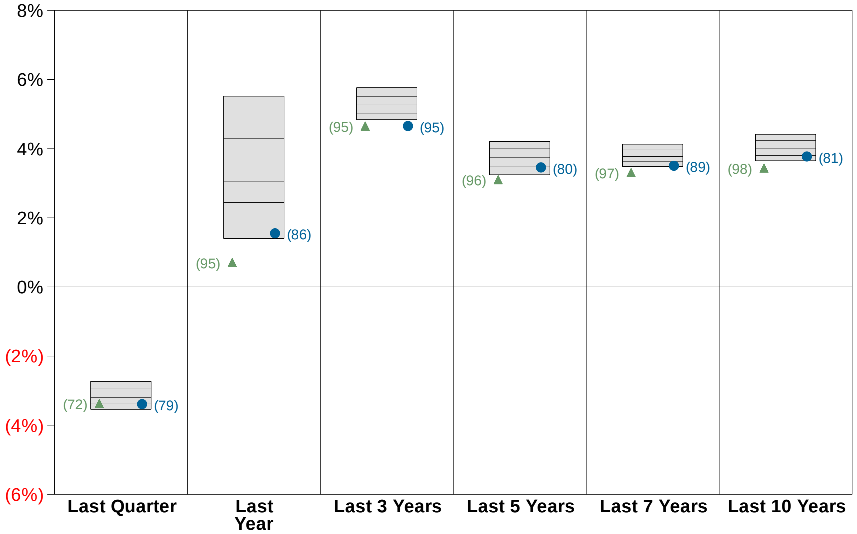
Risk Adjusted Return Measures vs MSCI EM IMI
Rankings Against Callan Emerging Broad (Gross)
Five Years Ended March 31, 2021



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	4.15	0.71	1.34
25th Percentile	3.24	0.66	0.93
Median	1.42	0.57	0.37
75th Percentile	(0.21)	0.49	(0.06)
90th Percentile	(1.04)	0.43	(0.26)
Emerging Mkts Equity ●	2.81	0.66	1.73

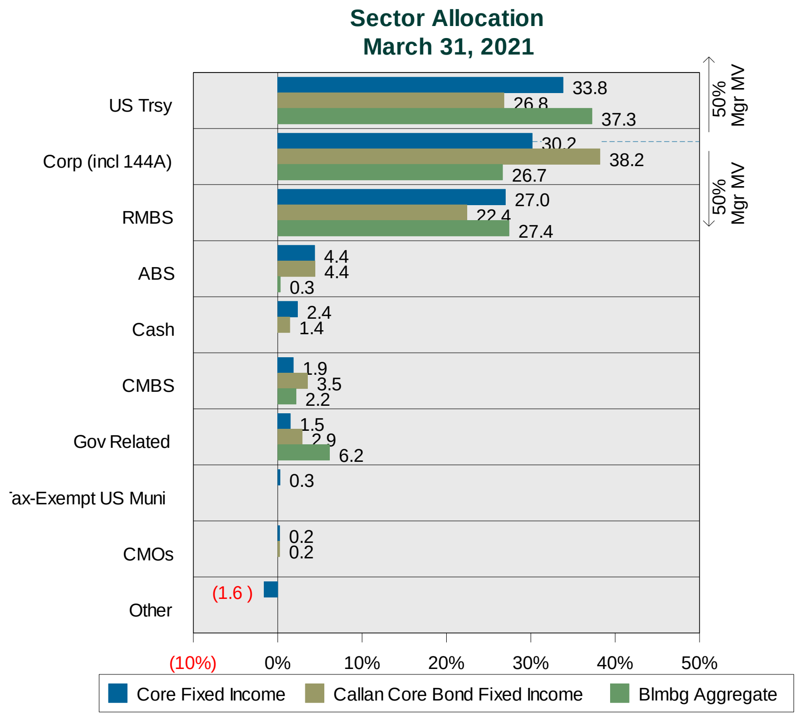
Core Fixed Income As of March 31, 2021

Performance vs Callan Core Bond Fixed Income (Gross)

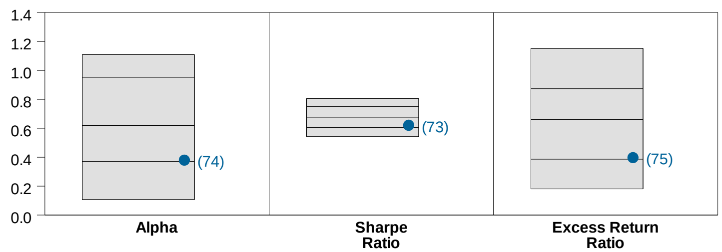


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
10th Percentile	(2.73)	5.52	5.77	4.21	4.13	4.42
25th Percentile	(2.95)	4.29	5.50	4.00	3.99	4.23
Median	(3.20)	3.04	5.29	3.74	3.77	4.00
75th Percentile	(3.38)	2.44	5.03	3.47	3.62	3.81
90th Percentile	(3.54)	1.40	4.84	3.24	3.49	3.65
Core Fixed Income ●	(3.40)	1.54	4.64	3.45	3.49	3.76
Blmbg Aggregate ▲	(3.37)	0.71	4.65	3.10	3.31	3.44

Sector Allocation
March 31, 2021



Risk Adjusted Return Measures vs Blmbg Aggregate
Rankings Against Public Fund - Domestic Fixed (Gross)
Five Years Ended March 31, 2021

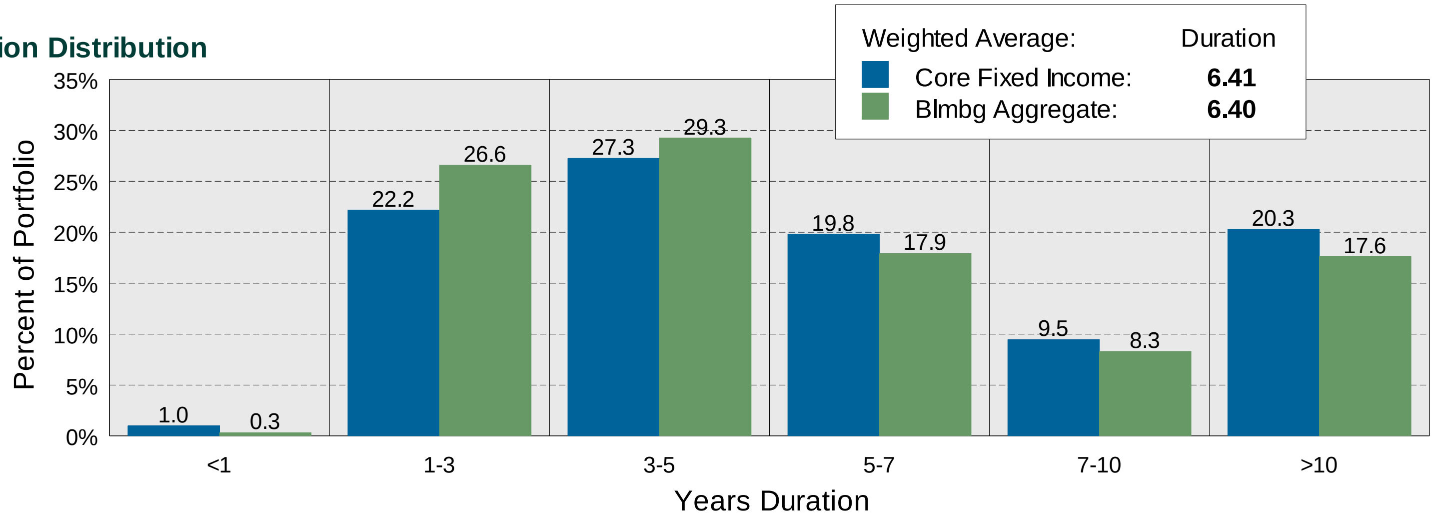


	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	1.11	0.81	1.15
25th Percentile	0.95	0.75	0.87
Median	0.62	0.68	0.66
75th Percentile	0.37	0.61	0.39
90th Percentile	0.11	0.54	0.18
Core Fixed Income ●	0.38	0.62	0.39

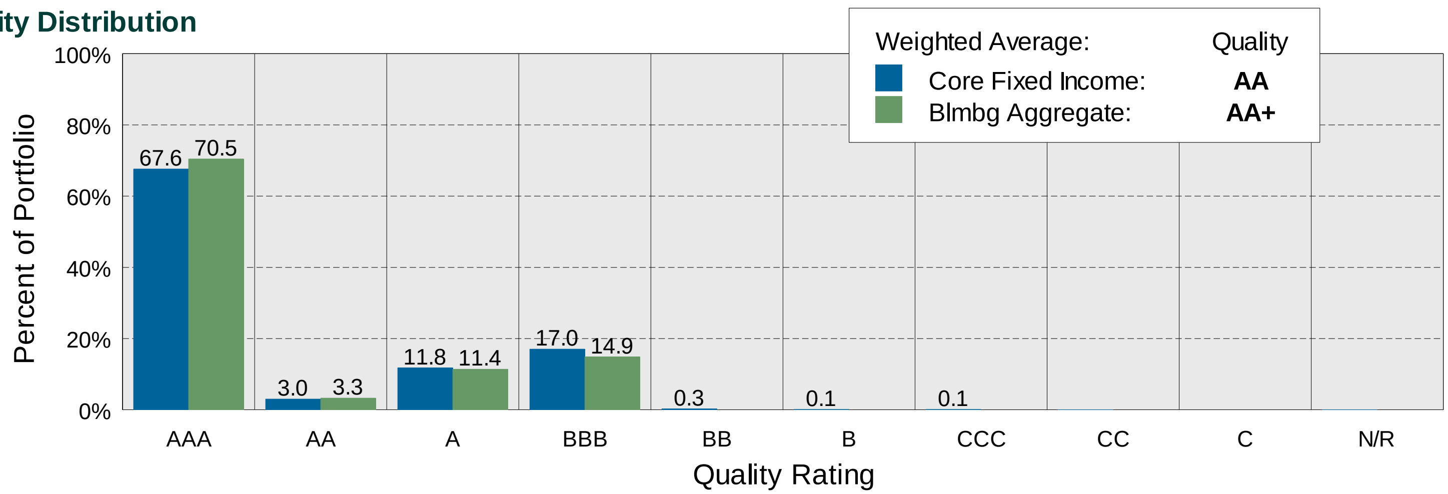
Core Fixed Income

As of March 31, 2021

Duration Distribution

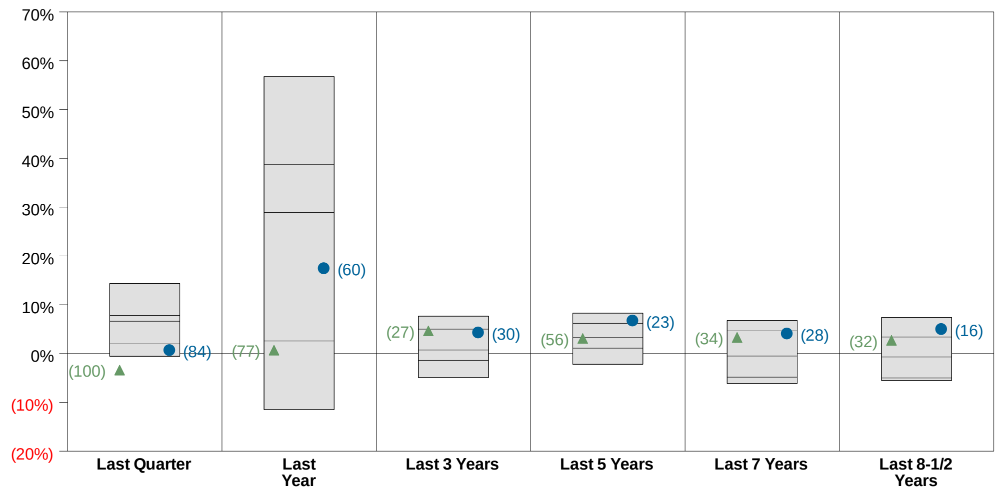


Quality Distribution



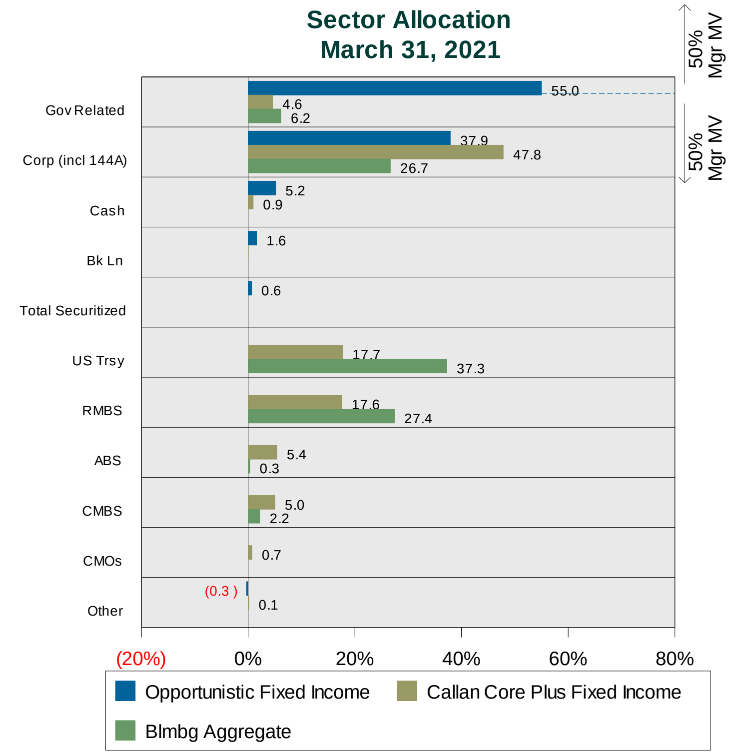
Opportunistic Fixed Income As of March 31, 2021

Performance vs Callan Alternative Investments DB (Gross)

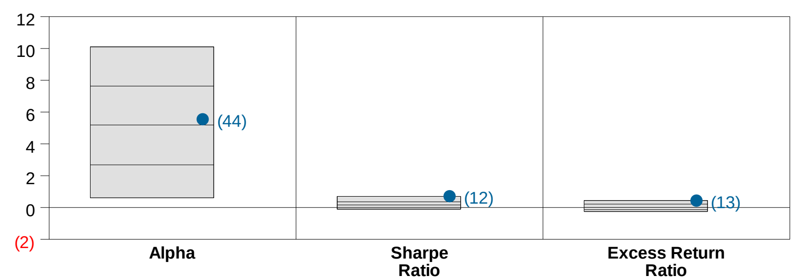


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 8-1/2 Years
10th Percentile	14.37	56.76	7.67	8.30	6.79	7.42
25th Percentile	7.80	38.76	5.00	6.19	4.65	3.39
Median	6.62	28.88	0.73	3.27	(0.51)	(0.70)
75th Percentile	1.99	2.58	(1.38)	1.11	(4.82)	(4.99)
90th Percentile	(0.55)	(11.49)	(4.93)	(2.19)	(6.14)	(5.52)
Opportunistic Fixed Income ●	0.62	17.39	4.24	6.66	4.00	4.94
Blmbg Aggregate ▲	(3.37)	0.71	4.65	3.10	3.31	2.72

Sector Allocation
March 31, 2021



Risk Adjusted Return Measures vs Blmbg Aggregate
Rankings Against Callan Alternative Investments DB (Gross)
Five Years Ended March 31, 2021

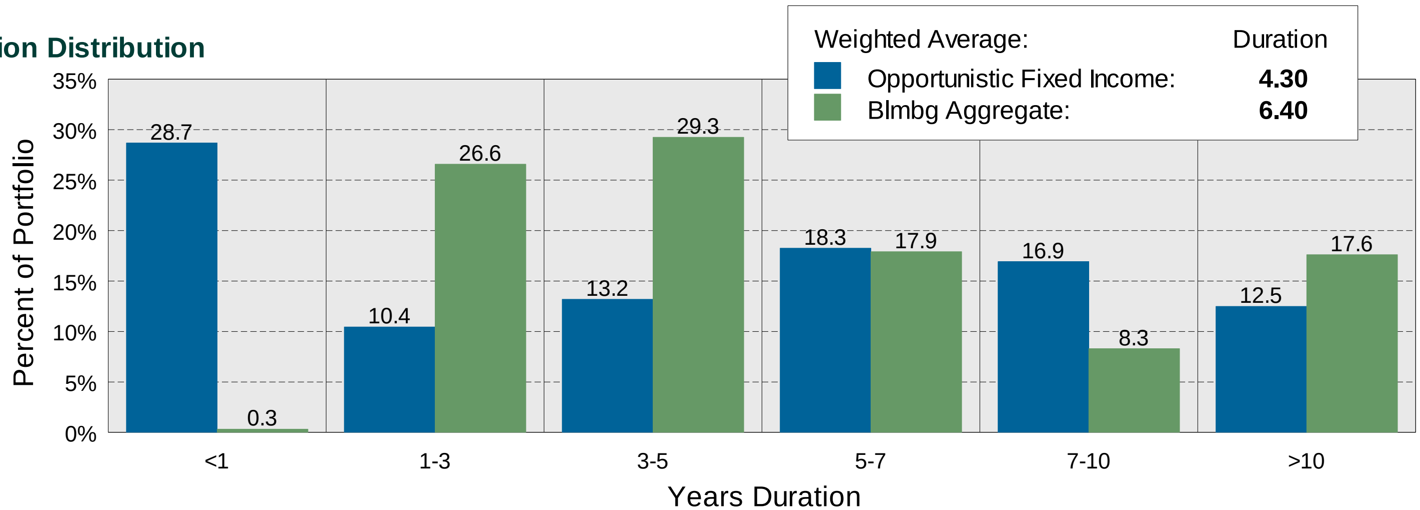


	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	10.10	0.70	0.44
25th Percentile	7.64	0.36	0.21
Median	5.19	0.16	0.01
75th Percentile	2.68	0.00	(0.13)
90th Percentile	0.61	(0.10)	(0.25)
Opportunistic Fixed Income ●	5.52	0.67	0.40

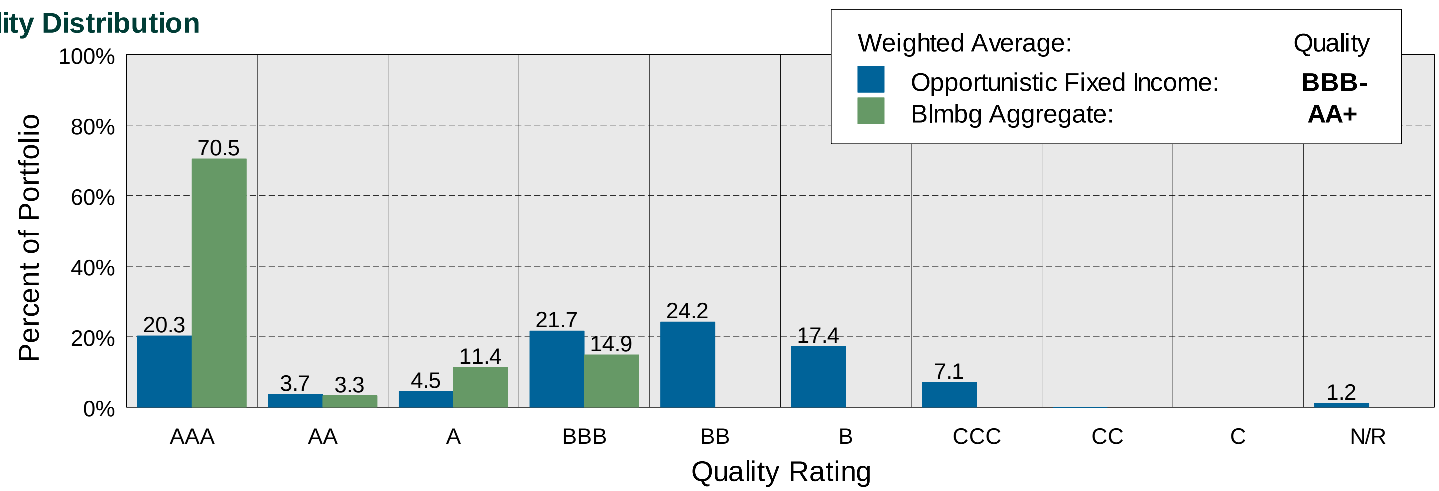
Opportunistic Fixed Income

As of March 31, 2021

Duration Distribution



Quality Distribution



Appendix I – Investment Manager Returns

Investment Manager Returns

As of March 31, 2021

	Market Value $(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Net Performance- Domestic Equity						
U.S. Equity	**$8,835**	**100.00%**	**6.83%**	**66.68%**	**16.42%**	**15.72%**
Russell 3000 Index (1)	-	-	6.35%	62.53%	17.12%	16.64%
MCM Russell 1000 Index	7,115	80.53%	5.93%	60.47%	17.33%	16.68%
Russell 1000 Index	-	-	5.91%	60.59%	17.31%	16.66%
MCM Russell 2000 Core Index	204	2.31%	12.76%	93.46%	14.48%	-
Russell 2000 Index	-	-	12.70%	94.85%	14.76%	16.35%
MCM Russell 2000 Val Index	788	8.92%	21.11%	96.83%	11.54%	-
Russell 2000 Value Index	-	-	21.17%	97.05%	11.57%	13.56%
Emerald Asset Management	728	8.24%	1.07%	82.89%	17.56%	-
Russell 2000 Growth Index	-	-	4.88%	90.20%	17.16%	18.61%

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception	
Net Performance- Domestic Equity						
U.S. Equity	**13.30%**	**8.79%**	**8.48%**	**9.29%**	**11.09%**	(1/81)
Russell 3000 Index (1)	13.79%	10.05%	8.85%	9.64%	11.38%	(1/81)
MCM Russell 1000 Index	-	-	-	-	15.73%	(1/12)
Russell 1000 Index	13.97%	10.17%	8.78%	9.77%	15.76%	(1/12)
MCM Russell 2000 Core Index	-	-	-	-	14.03%	(12/16)
Russell 2000 Index	11.68%	8.83%	9.76%	9.36%	14.23%	(12/16)
MCM Russell 2000 Val Index	-	-	-	-	10.07%	(12/16)
Russell 2000 Value Index	10.06%	7.38%	9.53%	9.99%	10.12%	(12/16)
Emerald Asset Management	-	-	-	-	17.87%	(12/16)
Russell 2000 Growth Index	13.02%	10.05%	9.68%	8.21%	17.85%	(12/16)

*Market values may not sum as a result of accounts funded within the quarter or accounts in the process of liquidation. The market values and performance of such accounts are included within their relevant composites.
(1) Benchmark history is a blend of current and past benchmark indices. History prior to 12/31/2018 is provided by RVK.

Investment Manager Returns

As of March 31, 2021

	Market Value $(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Net Performance- International Equity						
Int'l Developed Mkts Equity	**$4,566**	**100.00%**	**4.10%**	**49.48%**	**7.20%**	**10.13%**
MSCI World ex US IMI	-	-	4.17%	48.47%	6.41%	9.16%
Walter Scott & Partners(1)	696	15.25%	0.99%	46.36%	15.97%	16.11%
MSCI World	-	-	4.92%	54.03%	12.81%	13.36%
BlackRock MSCI World Ex US Index	3,477	76.15%	4.19%	46.55%	6.82%	-
MSCI World ex US	-	-	4.04%	45.86%	6.34%	8.92%
Xponance Non-U.S. Small Cap	246	5.40%	5.19%	60.39%	-	-
MSCI ACWI ex US Small Cap	-	-	5.53%	69.82%	6.61%	10.40%
Harris Assoc Int'l SCV	140	3.06%	11.10%	89.24%	7.91%	10.75%
MSCI World ex US Sm Cap	-	-	4.88%	65.17%	6.89%	10.55%
MSCI World ex US Sm Value	-	-	7.65%	61.67%	4.07%	8.59%

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception	
Net Performance- International Equity						
Int'l Developed Mkts Equity	**6.53%**	**4.31%**	**-**	**-**	**6.70%**	(1/02)
MSCI World ex US IMI	5.47%	4.36%	6.01%	5.41%	6.80%	(1/02)
Walter Scott & Partners(1)	12.19%	-	-	-	10.19%	(10/06)
MSCI World	9.88%	7.22%	7.01%	7.25%	7.19%	(10/06)
BlackRock MSCI World Ex US Index	-	-	-	-	7.50%	(6/17)
MSCI World ex US	5.21%	4.12%	5.58%	5.21%	7.04%	(6/17)
Xponance Non-U.S. Small Cap	-	-	-	-	8.62%	(10/18)
MSCI ACWI ex US Small Cap	6.32%	6.00%	9.28%	6.51%	9.79%	(10/18)
Harris Assoc Int'l SCV	7.26%	7.07%	-	-	11.29%	(7/03)
MSCI World ex US Sm Cap	7.14%	5.52%	9.13%	-	9.90%	(7/03)
MSCI World ex US Sm Value	5.91%	5.18%	9.41%	7.23%	9.55%	(7/03)

*Market values may not sum as a result of accounts funded within the quarter or accounts in the process of liquidation. The market values and performance of such accounts are included within their relevant composites.
(1) Walter Scott since inception returns were contained in the Global Mandates composite prior to 12/31/2019.

Investment Manager Returns

As of March 31, 2021

	Market Value $(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Net Performance- Emerging Mkts Equity						
Emerging Mkts Equity	**$1,341**	**100.00%**	**2.96%**	**66.41%**	**8.96%**	**14.41%**
MSCI EM IMI	-	-	2.86%	61.09%	6.33%	11.75%
Macquarie Emg Mkts Equity	432	32.19%	3.15%	66.13%	8.73%	14.31%
MSCI EM	-	-	2.29%	58.39%	6.48%	12.07%
Martin Currie Emg Mkts Equity	485	36.17%	2.09%	68.00%	10.44%	17.22%
MSCI EM	-	-	2.29%	58.39%	6.48%	12.07%
BlackRock Emg Mkts Index	15	1.10%	2.21%	57.77%	6.20%	-
MSCI EM	-	-	2.29%	58.39%	6.48%	12.07%
Leading Edge Emg Mkts Fund	286	21.36%	2.42%	64.42%	-	-
MSCI EM	-	-	2.29%	58.39%	6.48%	12.07%
GlobeFlex Emerging Small Cap	123	9.18%	9.11%	77.46%	6.12%	11.44%
MSCI EM Small Cap	-	-	7.67%	87.13%	5.19%	9.59%

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception	
Net Performance- Emerging Mkts Equity						
Emerging Mkts Equity	**4.16%**	**4.46%**	**-**	**-**	**8.41%**	(1/02)
MSCI EM IMI	3.61%	6.06%	10.01%	5.37%	10.26%	(1/02)
Macquarie Emg Mkts Equity	-	-	-	-	7.25%	(5/13)
MSCI EM	3.65%	5.95%	10.02%	-	5.50%	(5/13)
Martin Currie Emg Mkts Equity	-	-	-	-	8.97%	(1/14)
MSCI EM	3.65%	5.95%	10.02%	-	6.28%	(1/14)
BlackRock Emg Mkts Index	-	-	-	-	9.49%	(7/17)
MSCI EM	3.65%	5.95%	10.02%	-	9.79%	(7/17)
Leading Edge Emg Mkts Fund	-	-	-	-	16.83%	(11/18)
MSCI EM	3.65%	5.95%	10.02%	-	16.71%	(11/18)
GlobeFlex Emerging Small Cap	-	-	-	-	6.91%	(8/13)
MSCI EM Small Cap	3.33%	6.55%	10.62%	5.19%	6.02%	(8/13)

*Market values may not sum as a result of accounts funded within the quarter or accounts in the process of liquidation. The market values and performance of such accounts are included within their relevant composites.

Investment Manager Returns

As of March 31, 2021

	Market Value $(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Net Performance - Fixed Income						
Fixed Income (1)	**$9,258**	**100.00%**	**(3.59%)**	**3.53%**	**3.73%**	**3.65%**
Blmbg U.S. Agg Bond Index	-	-	(3.37%)	0.71%	4.65%	3.10%
Core Fixed Income	**$5,409**	**58.43%**	**(3.41%)**	**1.48%**	**4.54%**	**3.34%**
Blmbg U.S. Agg Bond Index	-	-	(3.37%)	0.71%	4.65%	3.10%
PIMCO Core Bond Fund	702	7.59%	(2.88%)	5.20%	4.98%	3.70%
Blmbg Agg ex Treasury	-	-	(2.85%)	4.00%	4.89%	3.56%
Mellon Bond-Index	4,491	48.51%	(3.51%)	0.49%	4.56%	3.02%
Blmbg U.S. Agg Bond Index (2)	-	-	(3.37%)	0.71%	4.65%	3.10%
BMO (TCH) Corp FI	216	2.34%	(4.68%)	10.75%	6.06%	5.44%
Blmbg Credit	-	-	(4.45%)	7.88%	5.95%	4.67%
Nominal U.S. Treasuries	**$644**	**6.96%**	**(8.86%)**	**(9.39%)**	**4.17%**	**1.71%**
Blmbg US Treas Bell 10Y	-	-	(7.02%)	(8.11%)	4.69%	1.74%
PIMCO US Treasuries	644	6.96%	(7.06%)	(7.75%)	4.80%	2.29%
Blmbg US Treas Bell 10Y	-	-	(7.02%)	(8.11%)	4.69%	1.74%

*Market values may not sum as a result of accounts funded within the quarter or accounts in the process of liquidation. The market values and performance of such accounts are included within their relevant composites.
(1) Fixed Income also includes the new fixed income sub-composite which was funded in 03/01/2021. Partial performance of the new fixed income sub-composite is not shown in this report.
(2) Benchmark history is a blend of current and past benchmark indices. History prior to 12/31/2018 is provided by RVK.

Investment Manager Returns

As of March 31, 2021

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception	
Net Performance - Fixed Income						
Fixed Income (1)	**3.50%**	**4.73%**	**5.34%**	**5.73%**	**8.18%**	(1/81)
Blmbg U.S. Agg Bond Index	3.44%	4.29%	4.50%	5.09%	7.49%	(1/81)
Core Fixed Income	**3.63%**	**4.63%**	**-**	**-**	**4.71%**	(1/02)
Blmbg U.S. Agg Bond Index	3.44%	4.29%	4.50%	5.09%	4.40%	(1/02)
PIMCO Core Bond Fund	-	-	-	-	2.99%	(1/13)
Blmbg Agg ex Treasury	3.73%	4.58%	-	-	3.13%	(1/13)
Mellon Bond-Index	3.33%	4.17%	4.41%	5.10%	6.98%	(4/84)
Blmbg U.S. Agg Bond Index (2)	3.44%	4.29%	4.53%	5.20%	-	
BMO (TCH) Corp FI	4.96%	5.50%	5.70%	-	5.84%	(12/00)
Blmbg Credit	4.83%	5.36%	5.51%	5.86%	5.74%	(12/00)
Nominal U.S. Treasuries	**-**	**-**	**-**	**-**	**2.38%**	(9/11)
Blmbg US Treas Bell 10Y	3.72%	4.46%	4.41%	4.92%	2.57%	(9/11)
PIMCO US Treasuries	-	-	-	-	2.76%	(9/11)
Blmbg US Treas Bell 10Y	3.72%	4.46%	4.41%	4.92%	2.57%	(9/11)

*Market values may not sum as a result of accounts funded within the quarter or accounts in the process of liquidation. The market values and performance of such accounts are included within their relevant composites.
(1) Fixed Income also includes the new fixed income sub-composite which was funded in 03/01/2021. Partial performance of the new fixed income sub-composite is not shown in this report.
(2) Benchmark history is a blend of current and past benchmark indices. History prior to 12/31/2018 is provided by RVK.

Investment Manager Returns

As of March 31, 2021

	Market Value $(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Net Performance - Fixed Income						
Fixed Income (1)	**$9,258**	**100.00%**	**(3.59%)**	**3.53%**	**3.73%**	**3.65%**
Blmbg U.S. Agg Bond Index	-	-	(3.37%)	0.71%	4.65%	3.10%
Opportunistic Fixed Income (2)	**$710**	**7.67%**	**0.49%**	**16.74%**	**3.62%**	**6.03%**
Brandywine Global Opp FI	140	1.51%	(4.66%)	17.34%	1.45%	3.42%
FTSE Wrld Gov't Bond Index	-	-	(5.68%)	1.82%	2.09%	2.15%
Eaton Vance GMARA (3)	187	2.02%	(0.21%)	14.59%	-	-
3 Month LIBOR Index + 6%	-	-	1.51%	6.28%	7.64%	7.44%
Fidelity HY CMBS (4)	331	3.58%	2.75%	15.81%	2.63%	3.40%
Blmbg US CMBS Ex AAA Index (5)	-	-	0.35%	12.90%	5.72%	4.92%
SEI Str. Credit: HY Bank Loans (6)(7)	136	1.47%	13.32%	15.99%	7.11%	13.99%
FTSE HY Corp (1 month lag)	-	-	2.62%	8.80%	6.15%	8.80%
Stone Harbor Glbl HY	128	1.38%	0.59%	23.99%	7.03%	7.17%
FTSE HY Market Index	-	-	0.94%	23.44%	6.47%	7.89%
Stone Harbor EMD	119	1.29%	(4.89%)	23.27%	2.19%	5.06%
JPM Emg Mkts Bond Global Index	-	-	(4.74%)	14.29%	3.87%	4.74%

*Market values may not sum as a result of accounts funded within the quarter or accounts in the process of liquidation.
The market values and performance of such accounts are included within their relevant composites.
(1) Fixed Income also includes the new fixed income sub-composite which was funded in 03/01/2021. Partial performance of the new fixed income sub-composite ($2.49mm, 26.94% of Fixed Income) is not shown in this report.
(2) Opportunistic Fixed Income last quarter return includes only 2 months performance for Fidelity High Yield CMBS.
(3) Eaton Vance since inception returns were included in the Multi-Strategy composite through 12/31/2019.
(4) On 03/01/2021, the Fidelity HY CMBS account switched from the Opportunistic Fixed composite to the High Yield composite under the new fixed income structure.
(5) Fidelity's blended benchmark consists of FTSE High Yield Market Index prior to 12/31/2009 and Blmbg US CMBS Ex AAA Index, thereafter.
(6) SEI HY Bank Loans since inception returns were included in the Fixed Income composite through 9/30/2017 and in the Multi-Strategy composite through 12/31/2019.
(7) SEI HY Bank Loans has a 1 month lag in valuation.

Investment Manager Returns

As of March 31, 2021

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception	
Net Performance - Fixed Income						
Opportunistic Fixed Income	**-**	**-**	**-**	**-**	**4.29%**	(10/12)
Brandywine Global Opp FI	3.89%	-	-	-	3.99%	(2/11)
FTSE Wrld Gov't Bond Index	1.66%	3.51%	4.49%	4.16%	1.70%	(2/11)
Eaton Vance GMARA (1)	-	-	-	-	4.18%	(6/18)
3 Month LIBOR Index + 6%	6.89%	7.52%	7.74%	-	7.60%	(6/18)
Fidelity HY CMBS (2)	6.94%	5.74%	7.16%	-	7.97%	(4/97)
Blmbg US CMBS Ex AAA Index	4.99%	1.04%	-	-	-	
SEI Str. Credit: HY Bank Loans (3)(4)	8.08%	-	-	-	12.02%	(5/08)
FTSE HY Corp (1 month lag)	6.18%	7.03%	7.20%	6.91%	7.54%	(5/08)
Stone Harbor Glbl HY	5.69%	6.55%	7.48%	-	7.54%	(7/00)
FTSE HY Market Index	6.17%	7.00%	7.31%	6.95%	7.11%	(7/00)
Stone Harbor EMD	4.69%	6.47%	-	-	6.98%	(4/05)
JPM Emg Mkts Bond Global Index	5.35%	6.31%	7.73%	8.80%	6.77%	(4/05)

*Market values may not sum as a result of accounts funded within the quarter or accounts in the process of liquidation.
The market values and performance of such accounts are included within their relevant composites.
(1) Eaton Vance since inception returns were included in the Multi-Strategy composite through 12/31/2019.
(2) On 03/01/2021, the Fidelity HY CMBS account switched from the Opportunistic Fixed composite to the High Yield composite under the new fixed income structure.
(3) SEI HY Bank Loans since inception returns were included in the Fixed Income composite through 9/30/2017 and in the Multi-Strategy composite through 12/31/2019.
(4) SEI HY Bank Loans has a 1 month lag in valuation.

Investment Manager Returns

As of March 31, 2021

	Market Value $(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Net Performance - Inflation Protection						
Inflation Protection (TIPS)	**$1,400**	**100.00%**	**(1.75%)**	**7.57%**	**5.28%**	**3.84%**
Blmbg U.S. TIPS Index	-	-	(1.47%)	7.54%	5.68%	3.86%
NISA Inv Adv TIPS	699	49.91%	(1.56%)	7.33%	5.56%	3.82%
Blmbg U.S. TIPS Index (1)	-	-	(1.47%)	7.54%	5.68%	3.86%
Brown Brothers TIPS	569	40.67%	(1.26%)	7.13%	5.60%	3.82%
Blmbg U.S. TIPS Index	-	-	(1.47%)	7.54%	5.68%	3.86%
New Century Global TIPS	132	9.43%	(4.11%)	11.38%	3.89%	4.20%
Blmbg Wrld Inflation Linked Unhdg	-	-	(3.35%)	11.45%	3.62%	3.99%

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception	
Net Performance - Inflation Protection						
Inflation Protection (TIPS)	**2.68%**	**3.80%**	**-**	**-**	**3.53%**	(2/03)
Blmbg U.S. TIPS Index	3.44%	4.37%	5.08%	-	4.51%	(2/03)
NISA Inv Adv TIPS	2.48%	-	-	-	3.51%	(4/07)
Blmbg U.S. TIPS Index (1)	2.49%	3.64%	4.53%	-	3.53%	(4/07)
Brown Brothers TIPS	-	-	-	-	2.44%	(2/12)
Blmbg U.S. TIPS Index	3.44%	4.37%	5.08%	-	2.31%	(2/12)
New Century Global TIPS	-	-	-	-	2.91%	(2/12)
Blmbg Wrld Inflation Linked Unhdg	3.24%	4.30%	5.73%	-	2.51%	(2/12)

*Market values may not sum as a result of accounts funded within the quarter or accounts in the process of liquidation.
The market values and performance of such accounts are included within their relevant composites.
(1) Benchmark history is a blend of current and past benchmark indices. History prior to 12/31/2018 is provided by RVK.

Investment Manager Returns

As of March 31, 2021

	Market Value $(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Net Performance - Private Equity						
Private Equity	**$5,100**	**100.00%**	**12.34%**	**29.86%**	**16.65%**	**14.13%**
Burgiss Private Equity Index (Qtr lag)	-	-	13.82%	23.38%	15.27%	14.70%
Global Equity + 3% (Qtr lag)(1)	-	-	15.61%	22.13%	17.15%	18.27%
Buyouts	2,749	53.89%	8.63%	27.14%	15.91%	15.18%
Burgiss Buyout Index (Qtr lag)	-	-	11.30%	17.72%	12.34%	14.24%
Special Situations	493	9.67%	11.38%	15.50%	14.91%	12.98%
Burgiss Special Situations Idx (Qtr lag)	-	-	5.24%	5.33%	5.11%	7.14%
Growth Equity	1,257	24.64%	20.91%	63.51%	35.25%	21.04%
Burgiss Venture Capital Index (Qtr lag)	-	-	25.35%	48.69%	29.02%	19.88%
Keystone Legacy (2)	602	11.80%	14.26%	7.37%	-	-

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception	
Net Performance - Private Equity						
Private Equity	**12.02%**	**11.44%**	**9.13%**	**13.28%**	**11.40%**	(1/86)
Burgiss Private Equity Index (Qtr lag)	13.33%	12.40%	10.45%	14.52%	17.03%	(1/86)
Global Equity + 3% (Qtr lag)(1)	16.85%	13.32%	11.19%	13.09%	14.90%	(1/86)
Buyouts	13.81%	13.09%	11.72%	15.78%	13.50%	(4/86)
Burgiss Buyout Index (Qtr lag)	12.78%	12.42%	12.31%	13.57%	19.44%	(4/86)
Special Situations	10.56%	11.79%	12.40%	12.69%	12.62%	(1/95)
Burgiss Special Situations Idx (Qtr lag)	7.96%	7.83%	9.17%	10.11%	10.30%	(6/95)
Growth Equity	14.31%	10.54%	3.21%	8.75%	8.39%	(1/86)
Burgiss Venture Capital Index (Qtr lag)	18.11%	14.07%	6.14%	15.85%	14.58%	(1/86)
Keystone Legacy (2)	-	-	-	-	0.46%	(7/18)

*Market values may not sum as a result of accounts funded within the quarter or accounts in the process of liquidation. The market values and performance of such accounts are included within their relevant composites.
(1) As of 01/01/2020 benchmark consists of 25% MSCI World ex US and 75% Russell 3000 + 3% with a 1 quarter lag.
(2) As of 12/31/2020, Keystone Legacy SPV consists of 119 non-core funds.

Investment Manager Returns

As of March 31, 2021

	Market Value $(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Net Performance - Private Credit						
Private Credit	**$1,719**	**100.00%**	**5.71%**	**12.53%**	**11.76%**	**-**
S&P Levered Loan Index +1% (Qtr lag)	-	-	4.04%	4.34%	5.09%	6.28%
Direct Lending	219	12.74%	8.92%	8.22%	-	-
Distressed Debt	162	9.40%	13.21%	19.48%	-	-
Diversified Credit	1,339	77.85%	4.43%	17.25%	-	-

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception
Net Performance - Private Credit					
Private Credit	**-**	**-**	**-**	**-**	**10.01%** (12/17)
S&P Levered Loan Index +1% (Qtr lag)	5.33%	5.66%	5.81%	-	5.14% (12/17)
Direct Lending	-	-	-	-	7.26% (1/20)
Distressed Debt	-	-	-	-	20.65% (1/20)
Diversified Credit	-	-	-	-	16.28% (1/20)

*Market values may not sum as a result of accounts funded within the quarter or accounts in the process of liquidation. The market values and performance of such accounts are included within their relevant composites.

Investment Manager Returns

As of March 31, 2021

	Market Value $(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Net Performance - Real Estate						
Real Estate	**$2,563**	**100.00%**	**2.56%**	**7.14%**	**3.42%**	**3.33%**
Real Estate Custom Bench (Qtr lag) (1)	-	-	1.99%	4.22%	4.09%	5.22%
CPI +3% (Qtr lag)	-	-	0.81%	4.36%	4.85%	4.95%
Core/Core Plus Real Estate Funds	1,017	39.67%	1.48%	2.51%	4.79%	5.73%
NCREIF ODCE Index (Qtr lag)	-	-	1.16%	0.75%	4.38%	5.67%
Value Add/Opportunistic SMA	707	27.59%	(0.69%)	6.90%	1.92%	1.50%
NCREIF ODCE Index (Qtr lag)	-	-	1.16%	0.75%	4.38%	5.67%
Value Add/Opportunistic Funds	539	21.03%	6.06%	1.76%	5.29%	6.21%
NCREIF ODCE Index (Qtr lag)	-	-	1.16%	0.75%	4.38%	5.67%
Legacy Real Assets	5	0.19%	(0.65%)	(9.08%)	(2.34%)	(2.60%)
CPI +3% (Qtr lag)	-	-	0.81%	4.36%	4.85%	4.95%
REITS	295	11.52%	8.56%	37.98%	7.32%	5.70%
FTSE NAREIT US Index	-	-	9.61%	39.55%	5.60%	5.65%

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception	
Net Performance - Real Estate						
Real Estate	**6.78%**	**3.99%**	**6.30%**	**7.59%**	**8.23%**	(3/84)
Real Estate Custom Bench (Qtr lag) (1)	8.72%	5.61%	6.95%	8.03%	-	
CPI +3% (Qtr lag)	4.74%	4.89%	5.04%	5.14%	5.58%	(3/84)
Core/Core Plus Real Estate Funds	9.25%	6.30%	7.13%	8.41%	6.94%	(9/86)
NCREIF ODCE Index (Qtr lag)	9.06%	5.45%	6.43%	7.51%	5.84%	(9/86)
Value Add/Opportunistic SMA	5.61%	2.37%	4.69%	6.16%	5.20%	(6/88)
NCREIF ODCE Index (Qtr lag)	9.06%	5.45%	6.43%	7.51%	5.88%	(6/88)
Value Add/Opportunistic Funds	9.32%	4.34%	7.09%	8.73%	7.70%	(3/84)
NCREIF ODCE Index (Qtr lag)	9.06%	5.45%	6.43%	7.51%	6.11%	(3/84)
Legacy Real Assets	(0.67%)	1.14%	1.81%	3.52%	3.85%	(3/93)
CPI +3% (Qtr lag)	4.74%	4.89%	5.04%	5.14%	5.18%	(3/93)
REITS	7.36%	6.70%	9.29%	9.64%	9.64%	(4/96)
FTSE NAREIT US Index	8.70%	6.64%	9.43%	10.08%	10.07%	(4/96)

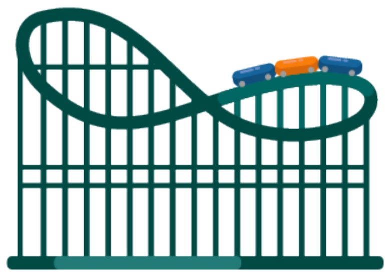
*Market values may not sum as a result of accounts funded within the quarter or accounts in the process of liquidation.
The market values and performance of such accounts are included within their relevant composites.
(1) As of 03/31/2019 benchmark consists of 90% NCREIF ODCE Index (1 Qtr lag) and 10% FTSE NAREIT Index (unlagged)
Prior to 03/31/2019, benchmark history was provided by RVK.

Appendix II – Callan Update

Published Research Highlights from 1Q21

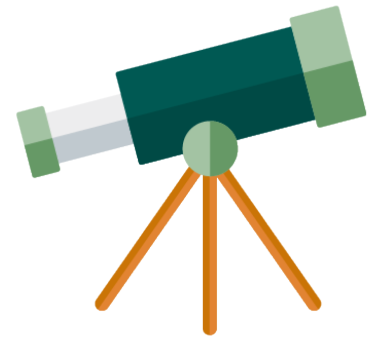
2021 Defined Contribution Survey

GameStopped—Or Just Getting Started?



Coping with COVID-19: Investment Manager Survey 3rd Edition

Callan's 2021-2030 Capital Markets Assumptions



Recent Blog Posts

Relief Bill Provides Shot in the Arm to Corporate Pensions

William Emmett & Sweta Vaidya

Why the Yield Curve Is Really Curving

Dario Buechi

Plus our <u>blog</u> contains a wide array of posts related to the pandemic

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

2021 National Conference

July 19-21, 2021

Salt Lake City, UT

We are excited to announce our confirmed speakers and workshop topics below. We will continue to update you as we finalize our lineup for this event!

Confirmed Conference Speakers:

– Niall Ferguson

– Scott Gottlieb, M.D.

This year's Callan-led workshops will cover the following topics:

– Callan's Fund Sponsor Cost of Doing Business Survey Results

– Defined Contribution: Are Managed Accounts Adding Value?

– How to Navigate Your Corporate DB Plan in This Low-Rate Era

– Real Estate Debt as an Alternative to Traditional Fixed Income in the Hunt for Yield

Callan College

Learn the Fundamentals

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

Join our next virtual session:

Aug. 17, 2021 – Aug. 19, 2021
2-3 hour sessions over 3 days

Join our next LIVE session in Chicago:

Oct. 6, 2021 – Oct. 7, 2021
1.5-day session held in Callan's Chicago office

Webinars

Research Café: Insurance Session
May 19, 2021 – 9:30am (PT)

Inflation and Why Debt Matters
May 25, 2021 – 9:30am (PT)

Callan Updates

Firm updates by the numbers, as of March 31, 2021

Total Associates: 195

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

“Dave brings decades of institutional investment experience, depth, and perspective in private markets to Callan. His experience at a major university endowment will add tremendous value to our nonprofit clients. His experience as a private equity fund-of-funds investor will contribute to our team’s ability to source compelling funds and build lasting portfolios for all of our clients invested in private equity.

-— Pete Keliuotis on the recent hiring of David Smith, senior vice president, to our Alternatives Consulting group.

Disclaimers

This report is for informational purposes only and should not be construed as legal or tax advice on any matter. Any decision you make on the basis of this content is your sole responsibility. You should consult with legal and tax advisers before applying any of this information to your particular situation.

This report may consist of statements of opinion, which are made as of the date they are expressed and are not statements of fact.

Reference to or inclusion in this report of any product, service or entity should not be construed as a recommendation, approval, affiliation or endorsement of such product, service or entity by Callan.

Past performance is no guarantee of future results.

The statements made herein may include forward-looking statements regarding future results. The forward-looking statements herein: (i) are best estimations consistent with the information available as of the date hereof and (ii) involve known and unknown risks and uncertainties such that actual results may differ materially from these statements. There is no obligation to update or alter any forward-looking statement, whether as a result of new information, future events or otherwise. Undue reliance should not be placed on forward-looking statements.