

February 23 , 2021



**Pennsylvania State Employees'  
Retirement System – Defined  
Benefit Plan**

Fourth Quarter 2020

Executive Summary

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**Thomas H. Shingler**  
Senior Vice President

**Bud Pellecchia**  
Senior Vice President

**Britton M. Murdoch**  
Vice President

Callan

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**Market Environment**

# Stunning Recovery in Global Equity Markets in 4Q20

V-shaped rebound, ahead of the global economy

- Rebound since March bottom lifted the S&P 500 by 70% through December. However, the strong recovery was concentrated in a few stocks: mega cap and IT.
- Fed cut rates to zero, commenced QE, instituted multiple facilities to backstop money markets, credit markets, and the economy.
  - Fed expects to get paid back.
  - Further fiscal stimulus added at year-end
- Economic recovery will be uncertain in 2021.
- Release of vaccines a huge positive development. Distribution challenges may keep widespread inoculation from being achieved until mid-year.
- As COVID-19 infections surge anew, re-openings may be reversed in many states and localities.

## Returns for Periods ended 12/31/20

	1 Quarter	1 Year	5 Years	10 Years	25 Years
<b>U.S. Equity</b>					
Russell 3000	14.68	20.89	15.43	13.79	9.67
S&P 500	12.15	18.40	15.22	13.88	9.56
Russell 2000	31.37	19.96	13.26	11.20	9.05
<b>Global ex-U.S. Equity</b>					
MSCI World ex USA	15.85	7.59	7.64	5.19	5.17
MSCI Emerging Markets	19.70	18.31	12.81	3.63	--
MSCI ACWI ex USA Small Cap	18.56	14.24	9.37	5.95	6.49
<b>Fixed Income</b>					
Bloomberg Barclays Aggregate	0.67	7.51	4.44	3.84	5.16
90-day T-Bill	0.03	0.67	1.20	0.64	2.27
Bloomberg Barclays Long Gov/Credit	1.68	16.12	9.35	8.16	7.42
Bloomberg Barclays Global Agg ex-US	5.09	10.11	4.89	1.99	3.97
<b>Real Estate</b>					
NCREIF Property	1.15	1.60	5.91	9.00	9.09
FTSE Nareit Equity	11.57	-8.00	4.77	8.31	9.64
<b>Alternatives</b>					
CS Hedge Fund	6.39	6.36	4.07	3.81	7.26
Cambridge Private Equity*	10.38	17.87	13.87	13.82	15.05
Bloomberg Commodity	10.19	-3.12	1.03	-6.50	1.00
Gold Spot Price	-0.02	24.42	12.32	2.92	6.55
<b>Inflation - CPI-U</b>	0.07	1.36	1.95	1.74	2.13

\*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: 4Q20

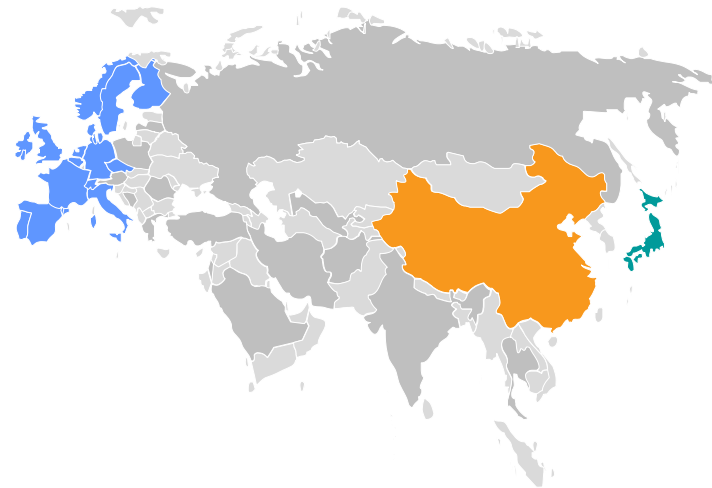
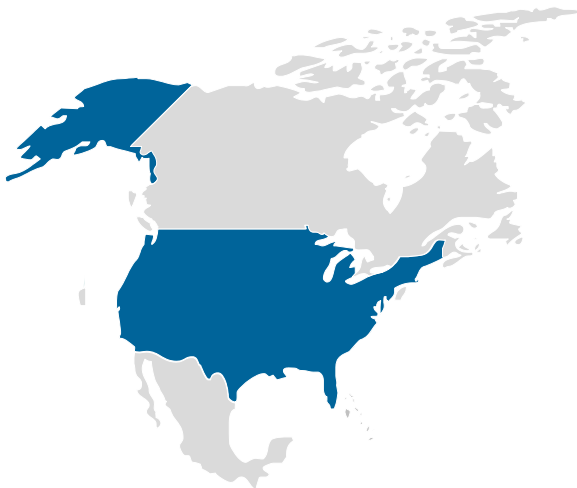
High degree of uncertainty

### U.S.

- 2Q GDP -31.4%, largest decline on record; 3Q gain of 33%, solid growth of 4% in 4Q
- Retail sales, durable goods, and personal spending rebounded in 2Q and 3Q, but growth slowed in August and September as stimulus waned.
- Unemployment dropped to 6.7% in November from 14.7% April peak.
  - 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 at least 2023.

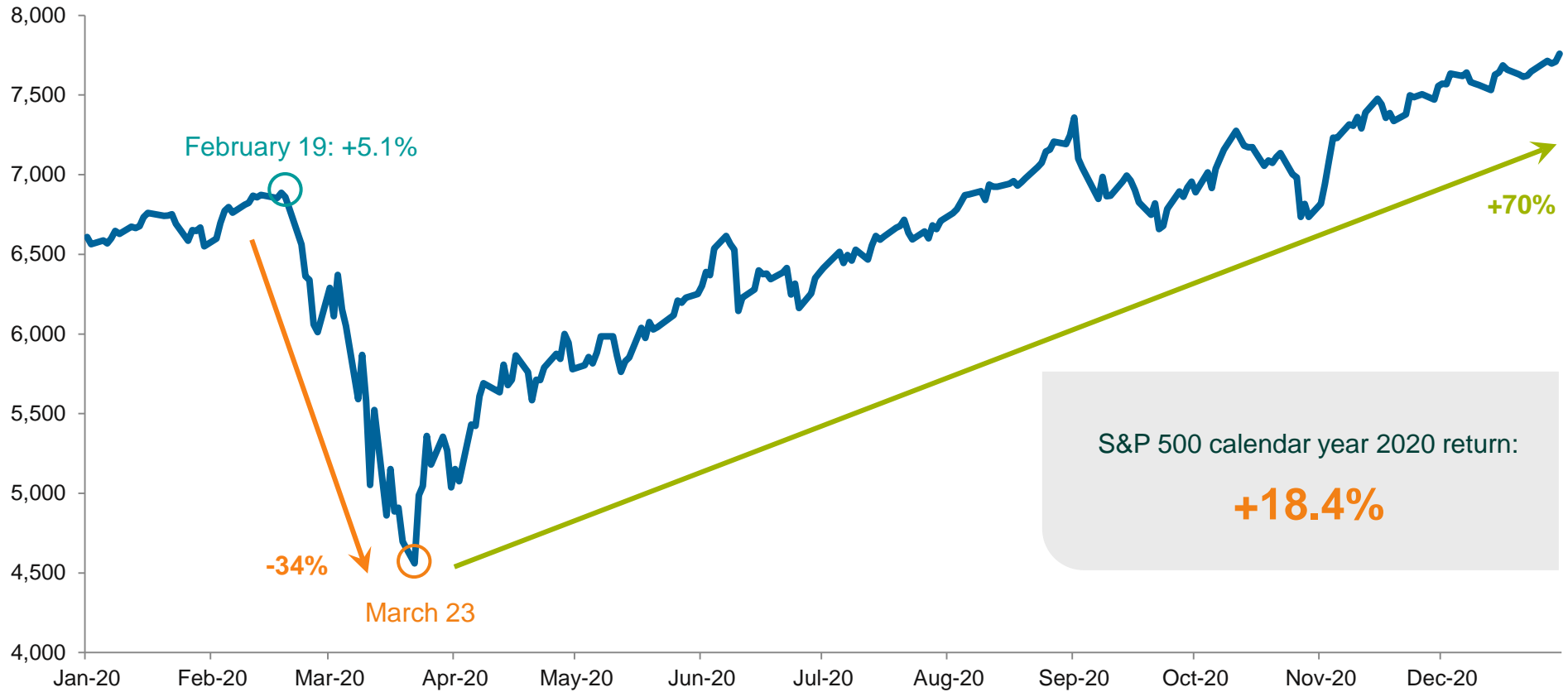
### Global

- Euro zone 1Q GDP contracted 3.7% (-14% annualized), followed by 11.7% drop (-39.2% annualized) in 2Q, largest Q drop on record; 12.5% jump (60% annualized!) in 3Q
- U.K. GDP sank 18.8% in 2Q (-57% annualized)—most ever, rebounded 16% (81% annualized) in 3Q
- Japan's economy shrank 8.3% (-29% annualized) in 2Q; third straight quarterly drop, dating back to 2019; 5.3% growth (22.9% annualized) in 3Q
- China's GDP fell 10% (-34% annualized) in 1Q, but rebounded 11.7% (56% annualized) in 2Q and is up 2.7% (11.3% annualized) in 3Q; only country expected to grow in 2020



# U.S. Equity Markets Rebound Over 70%

## S&P 500 Total Return Price Index Calendar Year 2020



- Substantial price appreciation in spite of poor earnings
- Low Treasury yields helping to support valuations

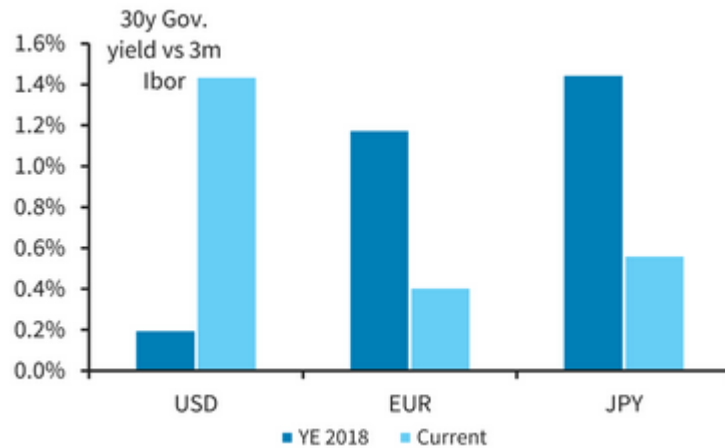
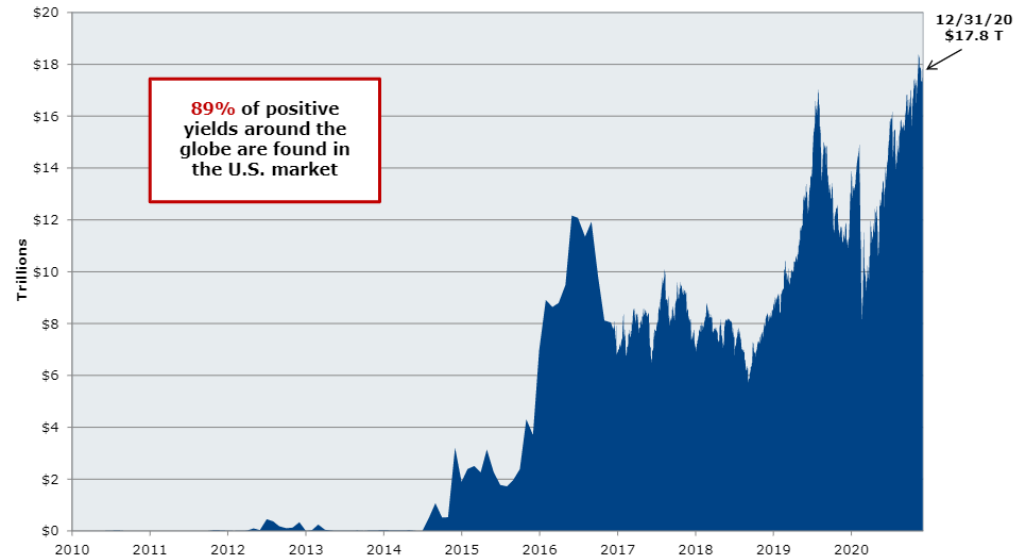
Source: S&P Dow Jones Indices  
Data as of 12/31/20

# Low and Negative Yields Fuel Demand for Credit

## U.S. credit attractive to international investors

- Central banks globally are adopting a “lower for longer” mindset toward rates.
- 89% of positive yields globally are in the U.S., spurring demand for U.S. corporate credit.
- Lower LIBOR rates have decreased currency hedging costs; combined with a steep Treasury curve, that makes U.S. credit attractive to non-U.S. investors.

Bloomberg Barclays Global Aggregate Negative-Yielding Debt Index



ICE BofA U.S. Corporate Index Option-Adjusted Spread



Sources: Baird, Bloomberg, Barclays Research, ICE BofA

# Diversification Remains Key Risk Control

## Periodic Table of Investment Returns

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
U.S. Fixed	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
8.43%	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%
High Yield	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
5.28%	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%
Real Estate Funds	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
4.64%	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%
Cash Equivalent	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
4.42%	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%
Hedge Funds	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
4.42%	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%
Small Cap	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
2.49%	-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%
Emerging Markets	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
-2.61%	-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%
Non-U.S. Fixed	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
-3.75%	-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%
Large Cap	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
-11.89%	-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%
		Cash Equivalent	Cash Equivalent	Non-U.S. Fixed	U.S. Fixed	Small Cap	Emerging Markets	Real Estate Funds	Cash Equivalent	Emerging Markets	Cash Equivalent	Non-U.S. Fixed	Non-U.S. Equity	Emerging Markets	Cash Equivalent	Cash Equivalent	Emerging Markets	Cash Equivalent	Real Estate Funds
		1.15%	1.33%	-8.65%	4.33%	-1.57%	-53.33%	-30.40%	0.13%	-18.42%	0.11%	-3.08%	-4.32%	-14.92%	0.33%	0.86%	-14.57%	2.28%	0.34%

- 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

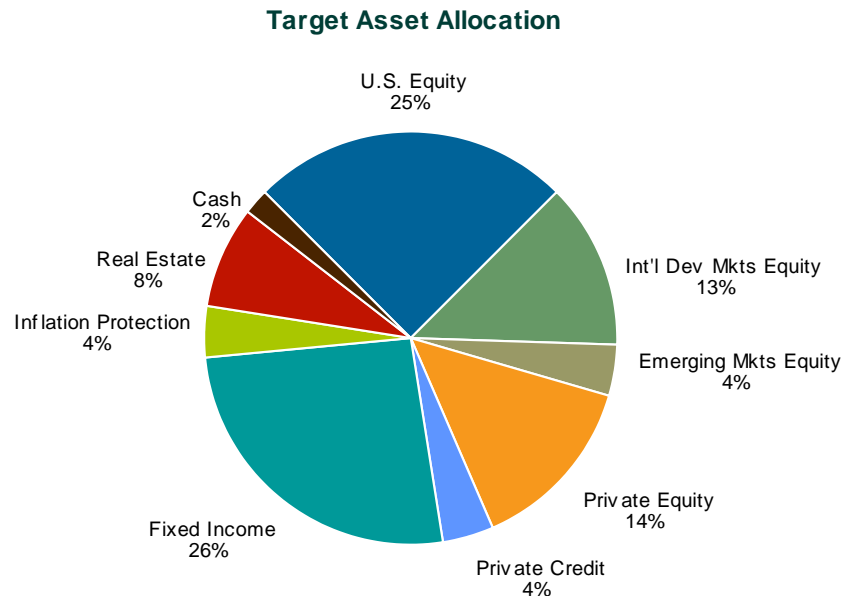
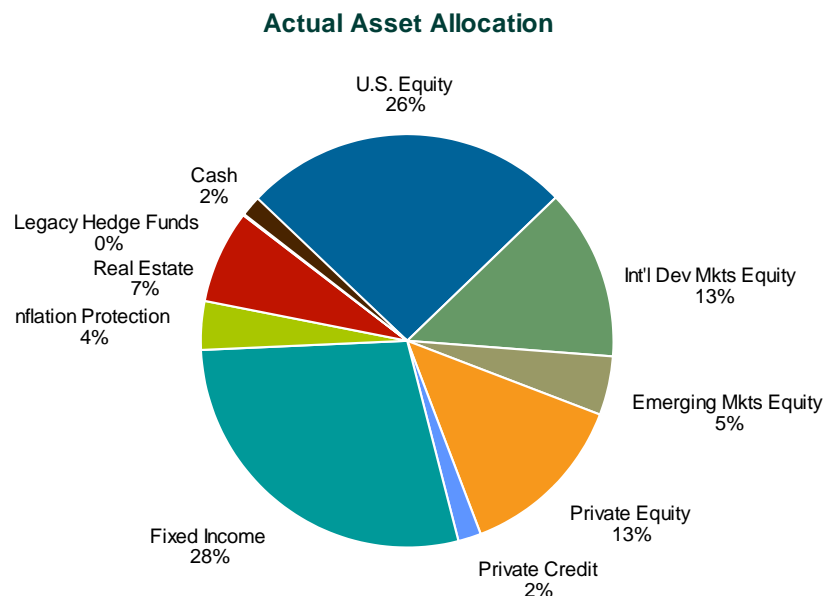
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**PA SERS Defined Benefit Plan  
Performance Review**



# Total Fund

## Actual Asset Allocation versus Target as of December 31, 2020



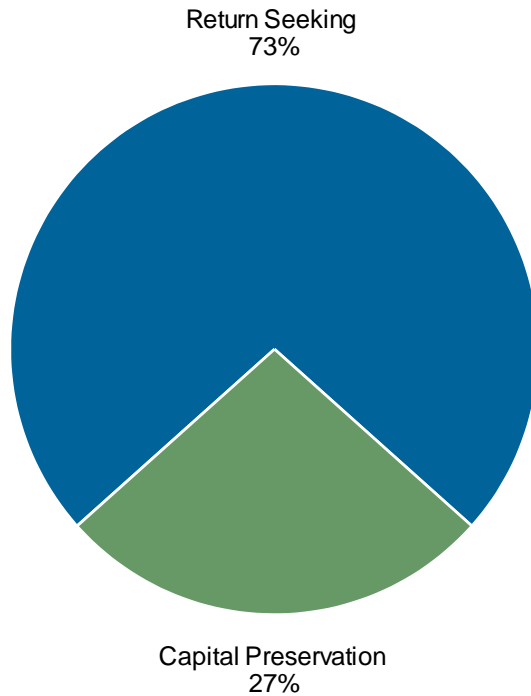
Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
U.S. Equity	8,895,654	25.8%	25.0%	0.8%	281,197
Int'l Dev Mkts Equity	4,614,137	13.4%	13.0%	0.4%	134,619
Emerging Mkts Equity	1,595,533	4.6%	4.0%	0.6%	217,220
Private Equity	4,601,147	13.4%	14.0%	(0.6%)	(222,949)
Private Credit	608,200	1.8%	4.0%	(2.2%)	(770,113)
Fixed Income	9,754,906	28.3%	26.0%	2.3%	795,871
Inflation Protection	1,292,353	3.8%	4.0%	(0.2%)	(85,960)
Real Estate	2,530,688	7.3%	8.0%	(0.7%)	(225,938)
Legacy Hedge Funds	25,191	0.1%	0.0%	0.1%	25,191
Cash	540,020	1.6%	2.0%	(0.4%)	(149,136)
<b>Total</b>	<b>34,457,828</b>	<b>100.0%</b>	<b>100.0%</b>		

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.

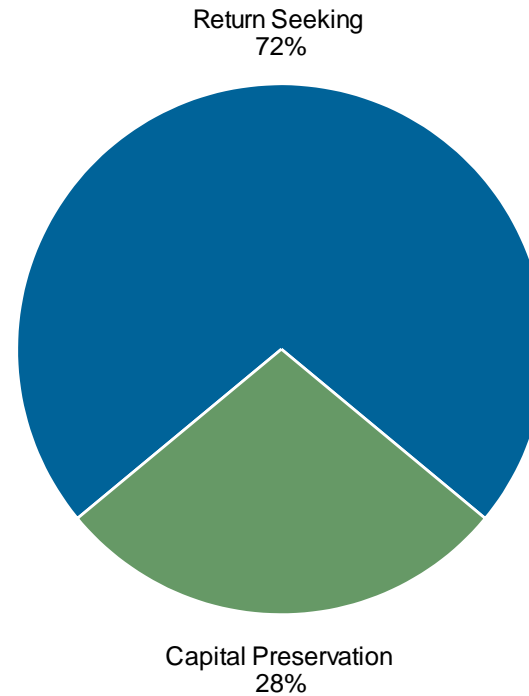
# Return Seeking and Capital Preservation Assets

As of December 31, 2020

### Actual Asset Allocation



### Target Asset Allocation



Return Seeking Assets include: Domestic Equity, International Developed Equity, Emerging Markets Equity, Opportunistic Fixed Income, Private Equity, Private Credit, and Real Estate  
Capital Preservation Assets include: Core Fixed Income, Inflation Protection (TIPS), and Cash

# Projected Risk, Liquidity and Correlation

	Capital Preservation Assets			Return Seeking Assets					
	Cash	Inflation Protection (TIPS)	Fixed Income <sup>^</sup>	U.S. Equity	Developed International Equity	Emerging Markets Equity	Private Credit	Real Estate	Private Equity
<b>Policy Target Asset Allocation</b>	2%	4%	26%	25%	13%	4%	4%	8%	14%
<b>Projected Return* (Geometric)</b>	1.00%	1.70%	1.75%	6.60%	6.50%	6.90%	6.25%	5.75%	8.00%
<b>Projected Risk* (Standard Deviation)</b>	0.90%	5.05%	3.75%	17.95%	19.90%	25.15%	14.60%	14.10%	27.80%
<b>Liquidity</b>	High	High	High	High	High	Medium	Low	Low	Low
<b>Correlation to U.S. Equity*</b>	-0.06	-0.08	-0.10	1.00	0.78	0.80	0.74	0.71	0.80
<b>Months of Benefit Payments**</b>	1.7	4.1	20.1						
<b>Months of Benefit Payments (Includes EE &amp; ER Contributions)**</b>	5.6	13.4	65.9						
<b>Cumulative Months of Benefit Payments (Includes EE &amp; ER Contributions)**</b>		84.9							

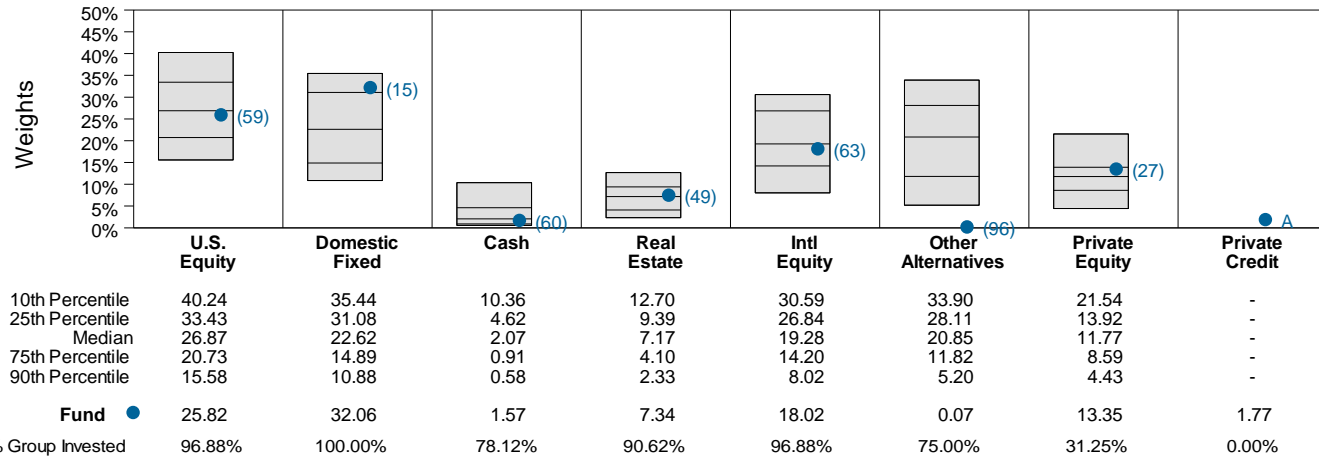
Source: \*Callan 2021 Capital Market Projections, \*\*SERS IO as of 12/31/2020

<sup>^</sup>Core and Opportunistic fixed Income combined until new fixed income structure has been implemented.

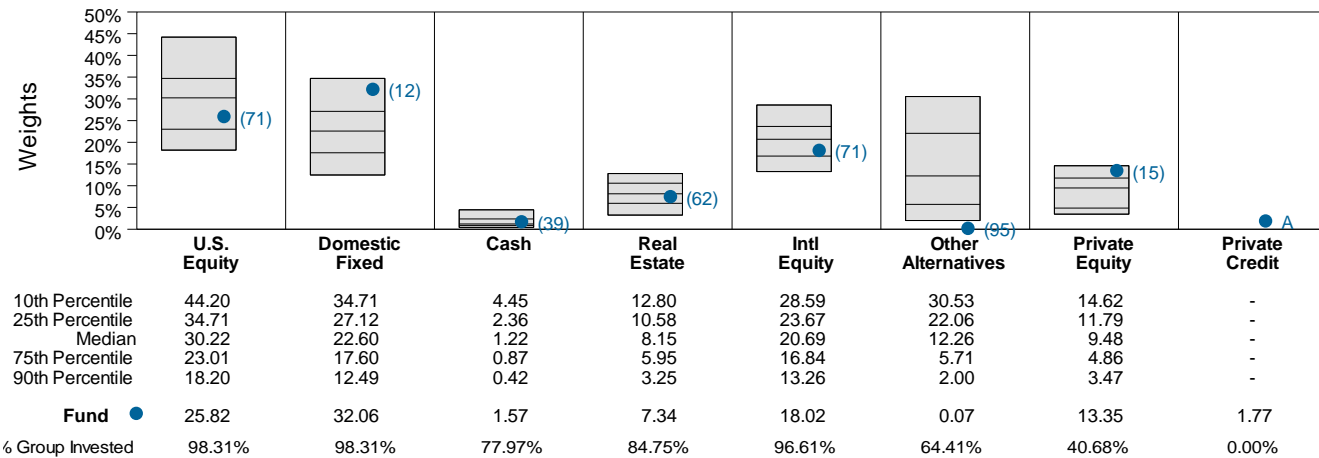
# Total Fund

## Actual Asset Allocation versus Very Large Public DB Plan (>\$10B) Peers and Large Public DB Plan (>\$1B) Peers as of December 31, 2020

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



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



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 December 31, 2020

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 December 31, 2020

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
U.S. Equity	26%	25%	16.86%	14.68%	0.54%	0.03%	0.57%
International. Developed	13%	13%	16.32%	16.10%	0.03%	(0.01%)	0.02%
Emerging Mkts Equity	4%	4%	20.35%	19.95%	0.02%	0.04%	0.05%
Private Equity	13%	14%	15.53%	15.53%	0.00%	(0.05%)	(0.05%)
Private Credit	2%	4%	7.21%	4.36%	0.05%	0.10%	0.15%
Fixed Income	29%	26%	2.30%	0.67%	0.49%	(0.29%)	0.20%
Inflation Protection	4%	4%	1.79%	1.62%	0.01%	(0.00%)	0.01%
Real Estate	7%	8%	3.93%	1.64%	0.17%	0.04%	0.22%
Multi-Strategy	0%	0%	0.00%	3.81%	0.00%	0.00%	0.00%
Legacy Hedge Funds	0%	0%	5.04%	7.94%	(0.00%)	(0.00%)	(0.00%)
Cash	2%	2%	0.04%	0.03%	0.00%	0.05%	0.05%
<b>Total</b>			<b>10.44%</b>	<b>= 9.23%</b>	<b>+ 1.30%</b>	<b>+ (0.09%)</b>	<b>1.21%</b>

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

## Year to Date Attribution Analysis versus Target – Gross of Fees as of December 31, 2020

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 an 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%	21.35%	20.89%	0.15%	(0.15%)	(0.00%)
International. Developed	15%	13%	9.84%	8.32%	0.24%	(0.93%)	(0.69%)
Emerging Mkts Equity	5%	4%	25.10%	18.39%	0.28%	(0.18%)	0.11%
Private Equity	13%	14%	22.49%	22.49%	0.00%	(0.31%)	(0.31%)
Private Credit	1%	4%	13.28%	2.12%	0.15%	0.33%	0.48%
Fixed Income	26%	26%	6.05%	7.51%	(0.26%)	(1.19%)	(1.46%)
Inflation Protection	4%	4%	11.20%	10.99%	0.01%	(0.08%)	(0.07%)
Real Estate	7%	8%	1.83%	0.25%	0.12%	0.09%	0.21%
Multi-Strategy	0%	0%	-	-	(0.04%)	0.02%	(0.01%)
Legacy Hedge Funds	0%	0%	3.59%	10.75%	(0.00%)	(0.00%)	(0.01%)
Cash	2%	2%	0.64%	0.67%	(0.00%)	0.27%	0.27%
<b>Total</b>			<b>12.01%</b>	<b>= 13.50%</b>	<b>+ 0.65%</b>	<b>+ (2.14%)</b>	<b>(1.49%)</b>

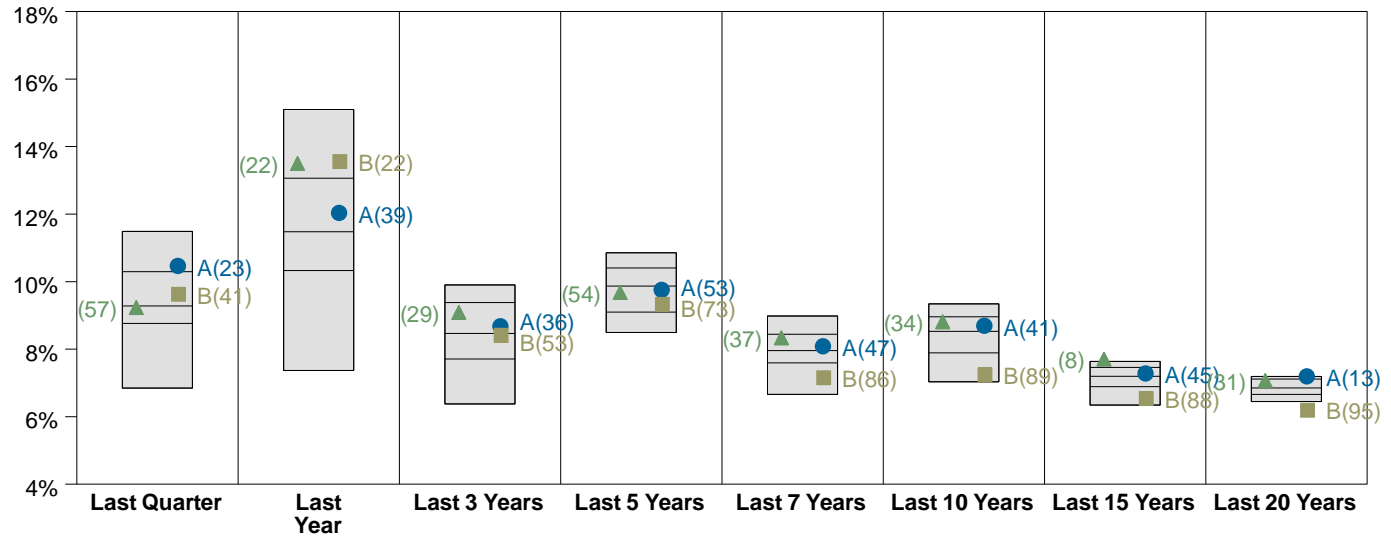
- **What helped relative attribution?**
  - Outperformance relative to target from Emerging Markets Equity, International Developed Equity, U.S. Equity and Real Estate managers
  - An underweight to Private Credit and Real Estate (attribution based on target return)
  - An overweight to Cash (attribution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

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# Total Fund

Gross of Fee Performance versus Very Large Public DB Plan (>\$10B) Peers and Benchmark as of December 31, 2020

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



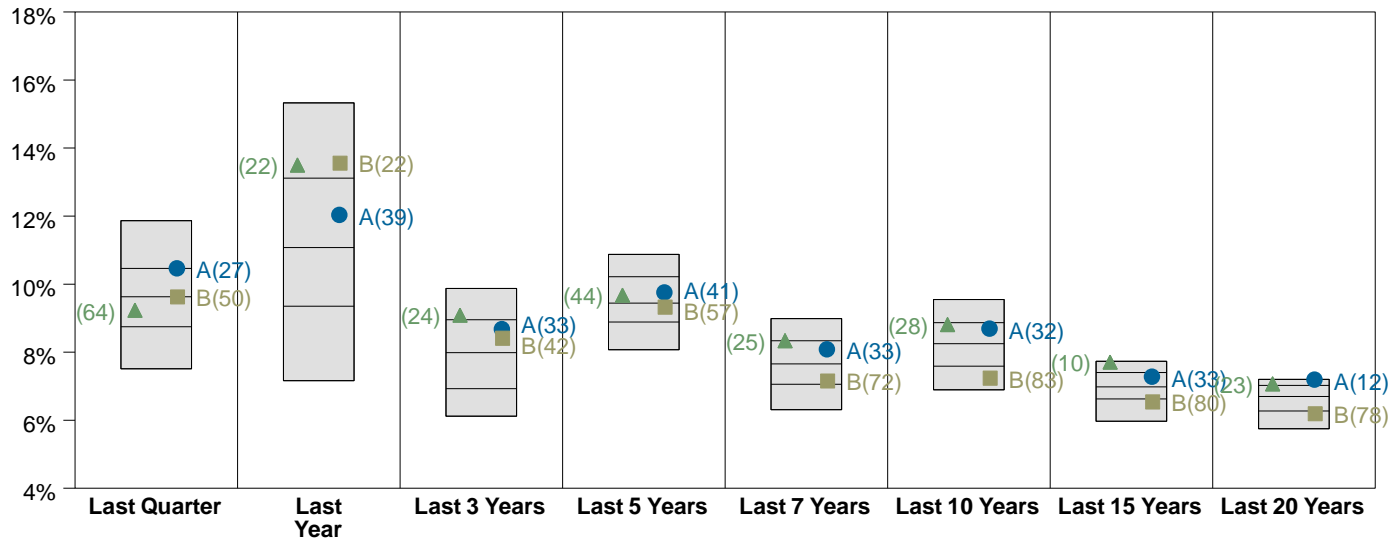
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 15 Years	Last 20 Years
10th Percentile	11.49	15.10	9.90	10.86	8.98	9.34	7.64	7.19
25th Percentile	10.30	13.06	9.38	10.41	8.44	8.96	7.46	7.12
Median	9.28	11.48	8.46	9.87	7.96	8.53	7.20	6.85
75th Percentile	8.76	10.33	7.71	9.10	7.59	7.89	6.89	6.66
90th Percentile	6.85	7.37	6.38	8.49	6.66	7.03	6.34	6.45
Total Fund	● A (23) 10.44	● A (39) 12.01	● A (36) 8.66	● A (53) 9.74	● A (47) 8.06	● A (41) 8.67	● A (45) 7.26	● A (13) 7.17
60% MSCI ACW	■ B (41) 9.62	■ B (22) 13.56	■ B (53) 8.41	■ B (73) 9.33	■ B (86) 7.15	■ B (89) 7.24	■ B (88) 6.54	■ B (95) 6.19
Total Fund Custom Benchmark	▲ (57) 9.23	▲ (22) 13.50	▲ (29) 9.09	▲ (54) 9.68	▲ (37) 8.34	▲ (34) 8.81	▲ (8) 7.71	▲ (81) 7.07

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 December 31, 2020

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	11.87	15.33	9.87	10.88	8.99	9.55	7.73	7.20
25th Percentile	10.47	13.11	8.96	10.22	8.33	8.87	7.40	7.02
Median	9.63	11.08	7.99	9.44	7.66	8.25	6.98	6.70
75th Percentile	8.75	9.35	6.93	8.89	7.06	7.59	6.62	6.27
90th Percentile	7.51	7.16	6.12	8.07	6.31	6.89	5.97	5.75
Total Fund	● A (27)	● A(39)	● A(33)	● A(41)	● A(33)	● A(32)	● A(33)	● A(12)
60% MSCI ACW	■ B(50)	■ B(22)	■ B(42)	■ B(57)	■ B(72)	■ B(83)	■ B(80)	■ B(78)
Total Fund Custom Benchmark	▲ (64)	▲ (22)	▲ (24)	▲ (44)	▲ (25)	▲ (28)	▲ (10)	▲ (23)
Total Fund	10.44	12.01	8.66	9.74	8.06	8.67	7.26	7.17
60% MSCI ACW	9.62	13.56	8.41	9.33	7.15	7.24	6.54	6.19
Total Fund Custom Benchmark	9.23	13.50	9.09	9.68	8.34	8.81	7.71	7.07

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.

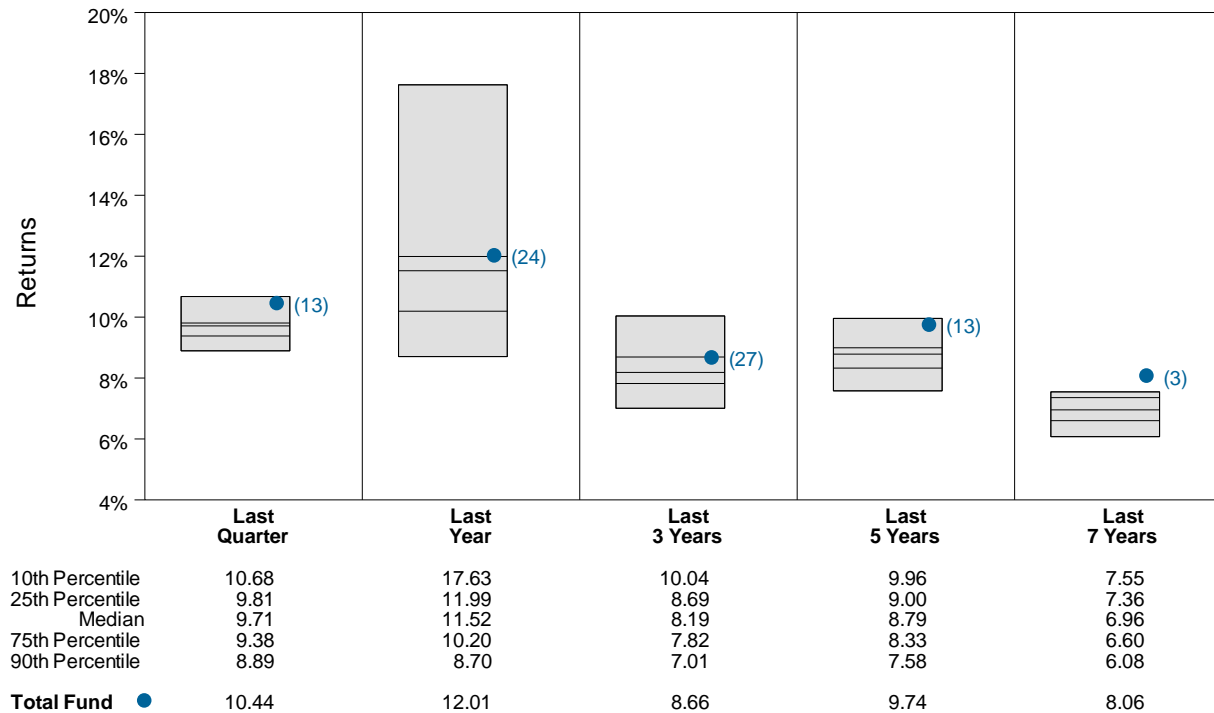


# Total Fund

## Asset Allocation-Adjusted Gross of Fee Performance versus Very Large Public DB Plan (>\$10B) Peers as of December 31, 2020

- 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



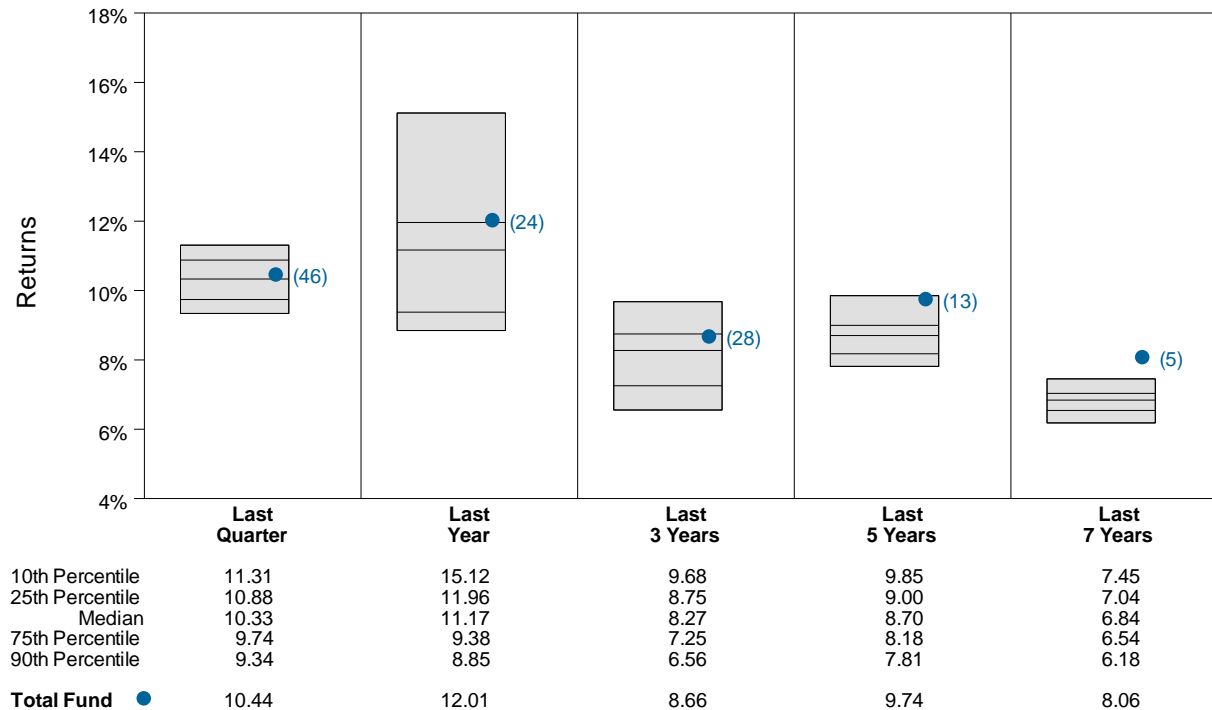
Current Quarter Target = 26.0% Blmbg Aggregate, 25.0% Russell 3000 Index, 14.0% Private Equity, 13.0% MSCI World ex US IMI, 7.2% NCREIF NFI-ODCE Eq Wt Net lagged 3 months, 4.0% MSCI EM IMI, 4.0% Blmbg:TIPS, 4.0% S&P:LSTA Lev Loan lagged 3 months+1.0%, 2.0% 3-month Treasury Bill, 0.8% FTSE EP/NA US Index 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 December 31, 2020

- 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

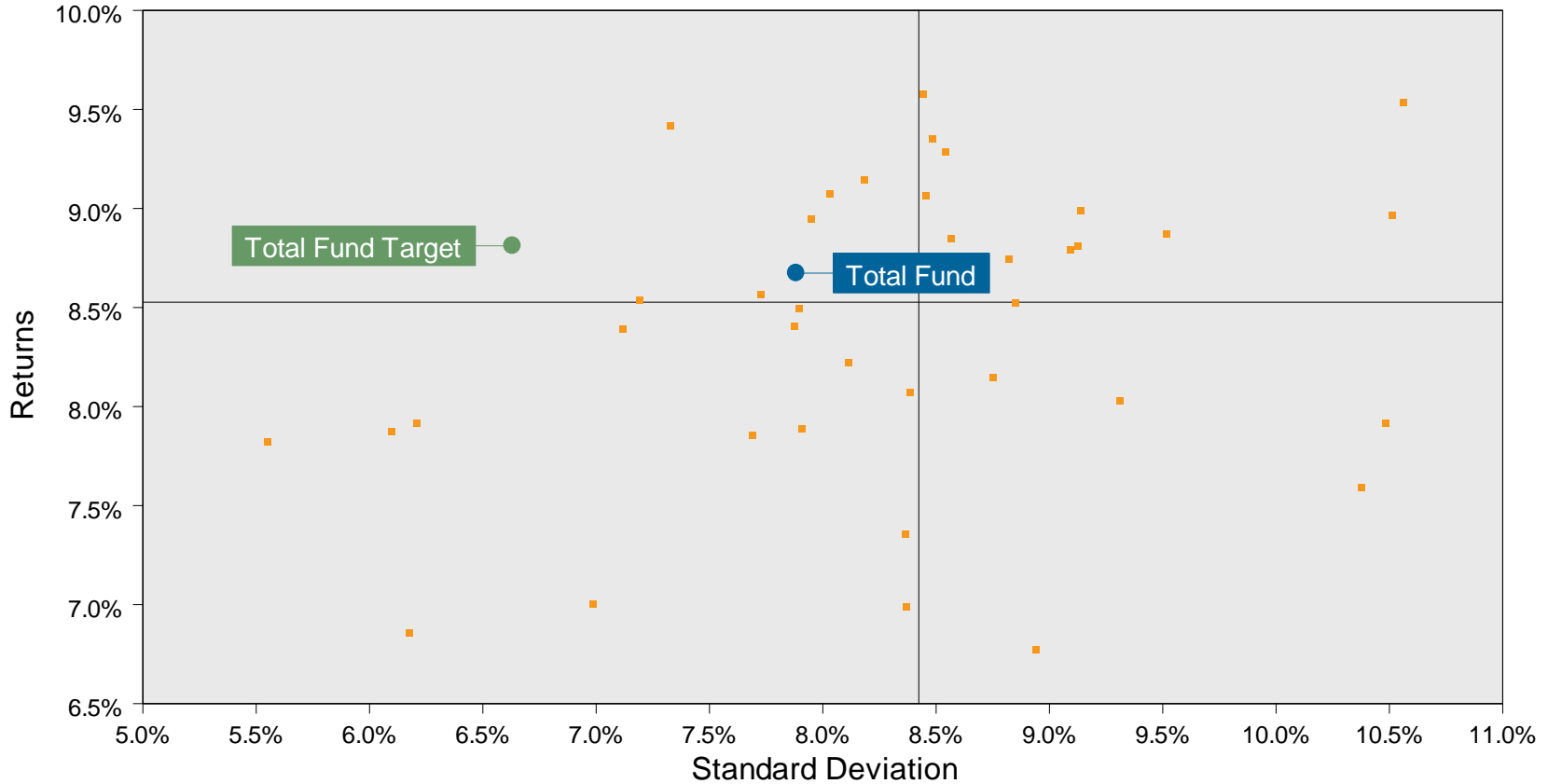


Current Quarter Target = 26.0% Blmbg Aggregate, 25.0% Russell 3000 Index, 14.0% Private Equity, 13.0% MSCI World ex US IMI, 7.2% NCREIF NFI-ODCE Eq Wt Net lagged 3 months, 4.0% MSCI EM IMI, 4.0% Blmbg:TIPS, 4.0% S&P:LSTA Lev Loan lagged 3 months+1.0%, 2.0% 3-month Treasury Bill, 0.8% FTSE EP/NA US Index 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 December 31, 2020

## Ten Year Annualized Risk vs Return



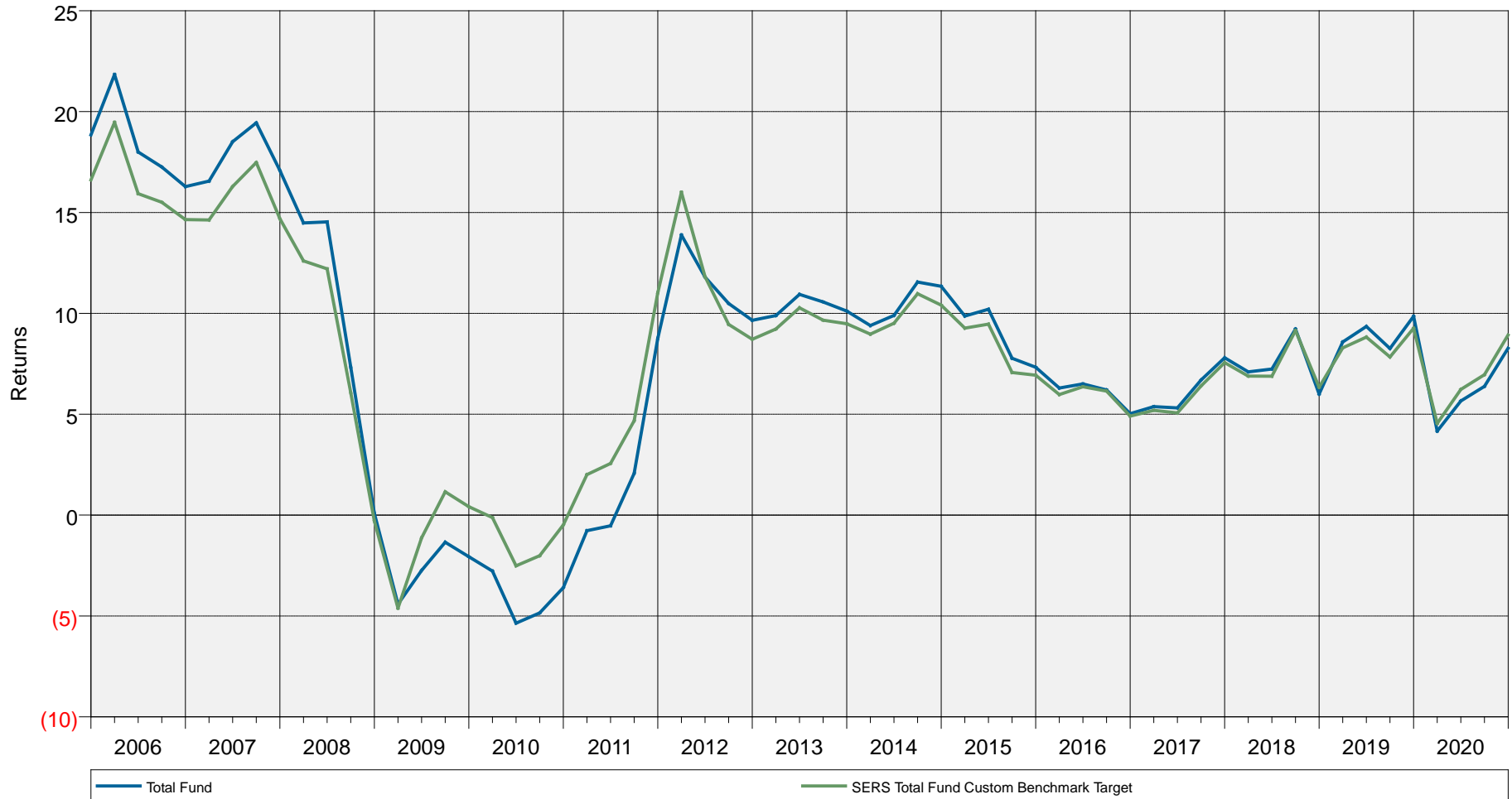
Squares represent membership of the Callan Public Fund Spons- V Lg DB (>10B)

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 December 31, 2020

Rolling 12 Quarter Gross of Fee Returns  
for 15 Years Ended December 31, 2020

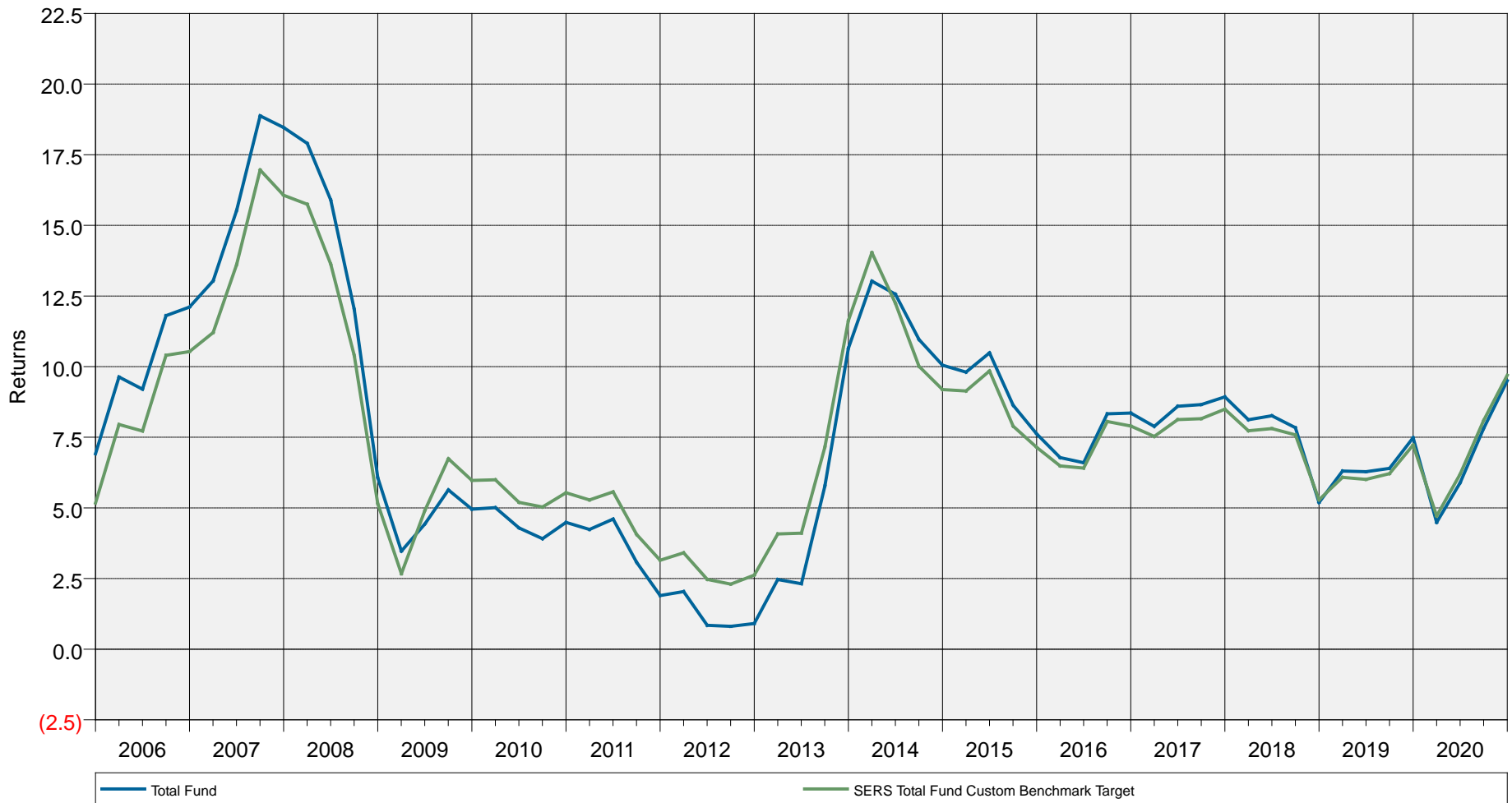


Current Quarter Target = 26.0% Blmbg Aggregate, 25.0% Russell 3000 Index, 14.0% Private Equity, 13.0% MSCI World ex US IMI, 7.2% NCREIF NFI-ODCE Eq Wt Net lagged 3 months, 4.0% MSCI EM IMI, 4.0% Blmbg:TIPS, 4.0% S&P:LSTA Lev Loan lagged 3 months+1.0%, 2.0% 3-month Treasury Bill, 0.8% FTSE EP/NA US Index 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 December 31, 2020

Rolling 20 Quarter Gross of Fee Returns  
for 15 Years Ended December 31, 2020



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 December 31, 2020

	Market Value \$(mm)	Ending Weight	Last Quarter	Year to Date	Last 3 Years	Last 5 Years
<b>Net Performance</b>						
<b>Total Fund</b>	<b>\$34,460</b>	<b>100.00%</b>	<b>10.09%</b>	<b>11.11%</b>	<b>7.99%</b>	<b>9.07%</b>
Total Fund Custom Benchmark(1)	-	-	9.23%	13.50%	9.09%	9.68%
Public Market Equiv Benchmark(2)	-	-	8.36%	13.24%	9.23%	10.41%
60/40 Index(3)	-	-	9.62%	13.56%	8.41%	9.33%
<b>U.S. Equity</b>	<b>\$8,896</b>	<b>25.81%</b>	<b>16.85%</b>	<b>21.28%</b>	<b>13.52%</b>	<b>14.41%</b>
Russell 3000 Index	-	-	14.68%	20.89%	14.49%	15.43%
<b>International Developed Markets Equity</b>	<b>\$4,614</b>	<b>13.39%</b>	<b>16.29%</b>	<b>9.62%</b>	<b>4.98%</b>	<b>8.80%</b>
MSCI World Ex US IMI	-	-	16.10%	8.32%	4.34%	7.92%
<b>Emerging Mkts Equity</b>	<b>\$1,596</b>	<b>4.63%</b>	<b>20.19%</b>	<b>24.45%</b>	<b>8.32%</b>	<b>14.66%</b>
MSCI EM IMI	-	-	19.95%	18.39%	5.78%	12.22%
<b>Private Equity</b>	<b>\$4,601</b>	<b>13.35%</b>	<b>13.46%</b>	<b>18.37%</b>	<b>13.21%</b>	<b>11.82%</b>
Burgiss Private Equity Index (Qtr lag)	-	-	8.08%	13.13%	12.25%	12.20%
Global Equity +3% (Qtr lag)(4)	-	-	8.81%	15.55%	14.15%	16.45%
<b>Private Credit</b>	<b>\$608</b>	<b>1.76%</b>	<b>5.58%</b>	<b>9.08%</b>	<b>9.71%</b>	<b>-</b>
S&P Levered Loan Index +1% (Qtr lag)	-	-	4.36%	2.27%	4.18%	5.06%
<b>Fixed Income</b>	<b>\$9,755</b>	<b>28.31%</b>	<b>2.24%</b>	<b>5.78%</b>	<b>4.68%</b>	<b>4.86%</b>
U.S. Agg Bond Index	-	-	0.67%	7.51%	5.34%	4.44%
<b>Inflation Protection (TIPS)</b>	<b>\$1,292</b>	<b>3.75%</b>	<b>1.76%</b>	<b>11.04%</b>	<b>5.74%</b>	<b>5.15%</b>
U.S. TIPS Index	-	-	1.62%	10.99%	5.92%	5.08%
<b>Real Estate</b>	<b>\$2,531</b>	<b>7.34%</b>	<b>3.49%</b>	<b>2.11%</b>	<b>3.44%</b>	<b>3.11%</b>
Real Estate Custom Bench (Qtr lag)(5)	-	-	1.64%	0.25%	4.04%	5.50%
CPI + 3% (Qtr lag)	-	-	1.68%	4.37%	4.79%	4.81%
<b>Cash</b>	<b>\$540</b>	<b>1.57%</b>	<b>0.04%</b>	<b>0.64%</b>	<b>1.68%</b>	<b>1.43%</b>
3-month Treasury Bill	-	-	0.03%	0.67%	1.60%	1.20%

(1) Total Fund Custom Benchmark returns provided by RVK prior to 12/31/2018. As of 01/01/2020, benchmark consists of: 26% Bloomberg US 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, 40% Bloomberg U.S. Agg Bond Index

(4) As of 01/01/2020 benchmark consists of 25% MSCI World ex US and 75% Russell 3000 + 3% with a 1 quarter 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 (1 Qtr lag) and 10% FTSE NAREIT Index (unlagged) Prior to 03/31/2019, benchmark history was provided by RVK.

# Asset Class Returns

As of December 31, 2020

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception
<b>Net Performance</b>					
<b>Total Fund</b>	<b>7.98%</b>	<b>6.47%</b>	<b>6.39%</b>	<b>7.92%</b>	<b>9.59%</b> <sup>(1/81)</sup>
Total Fund Custom Benchmark(1)	8.81%	7.71%	7.07%	8.32%	-
Public Market Equiv Benchmark(2)	9.12%	7.92%	7.22%	8.45%	-
60/40 Index(3)	7.24%	6.54%	6.19%	6.73%	-
<b>U.S. Equity</b>	<b>13.30%</b>	<b>8.83%</b>	<b>7.49%</b>	<b>9.25%</b>	<b>10.98%</b> <sup>(1/81)</sup>
Russell 3000 Index	13.79%	9.98%	7.82%	9.67%	11.38% <sup>(1/81)</sup>
<b>International Developed Markets Equity</b>	<b>6.47%</b>	<b>4.70%</b>	-	-	<b>6.57%</b> <sup>(1/02)</sup>
MSCI World ex US IMI	5.43%	4.71%	5.02%	5.36%	6.66% <sup>(1/02)</sup>
<b>Emerging Mkts Equity</b>	<b>4.00%</b>	<b>4.94%</b>	-	-	<b>8.36%</b> <sup>(1/02)</sup>
MSCI EM IMI	3.47%	6.63%	9.59%	5.51%	10.24% <sup>(1/02)</sup>
<b>Private Equity</b>	<b>11.52%</b>	<b>11.01%</b>	<b>8.07%</b>	<b>13.19%</b>	<b>11.11%</b> <sup>(1/86)</sup>
Burgiss Private Equity Index (Qtr lag)	12.72%	11.97%	9.16%	14.45%	16.73% <sup>(1/86)</sup>
Global Equity + 3% (Qtr lag)(4)	16.50%	12.44%	9.94%	12.69%	14.54% <sup>(1/86)</sup>
<b>Private Credit</b>	-	-	-	-	<b>8.89%</b> <sup>(12/17)</sup>
S&P Levered Loan Index +1% (Qtr lag)	5.27%	5.49%	5.65%	-	4.22% <sup>(12/17)</sup>
<b>Fixed Income</b>	<b>4.21%</b>	<b>5.06%</b>	<b>5.66%</b>	<b>5.86%</b>	<b>8.33%</b> <sup>(1/81)</sup>
U.S. Agg Bond Index	3.84%	4.49%	4.83%	5.16%	7.63% <sup>(1/81)</sup>
<b>Inflation Protection (TIPS)</b>	<b>3.12%</b>	<b>3.90%</b>	-	-	<b>3.68%</b> <sup>(2/03)</sup>
U.S. TIPS Index	3.81%	4.31%	5.40%	-	4.66% <sup>(2/03)</sup>
<b>Real Estate</b>	<b>6.97%</b>	<b>4.08%</b>	<b>6.26%</b>	<b>7.63%</b>	<b>8.21%</b> <sup>(3/84)</sup>
Real Estate Custom Bench (Qtr lag)(5)	9.01%	5.83%	7.01%	-	-
CPI +3% (Qtr lag)	4.77%	4.81%	5.04%	5.14%	5.60% <sup>(3/84)</sup>
<b>Cash</b>	<b>0.91%</b>	<b>1.54%</b>	<b>1.95%</b>	<b>2.62%</b>	<b>3.54%</b> <sup>(1/87)</sup>
3-month Treasury Bill	0.64%	1.23%	1.51%	2.27%	3.19% <sup>(1/87)</sup>

(1) Total Fund Custom Benchmark returns provided by RVK prior to 12/31/2018. As of 01/01/2020, benchmark consists of: 26% Bloomberg US 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% Russell 3000, 25% Bloomberg U.S. Agg Bond Index, 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

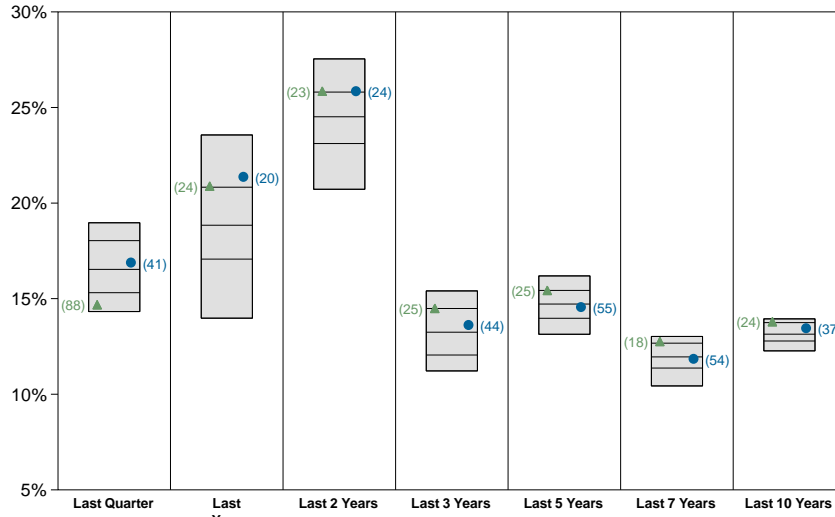
(3) Benchmark consists of 60% MSCI ACW IM Index, 40% Bloomberg U.S. Agg Bond Index

(4) As of 01/01/2020 benchmark consists of 25% MSCI World ex US and 75% Russell 3000 + 3% with a 1 quarter lag. Benchmark performance represents the historical benchmark linked to the current benchmark.

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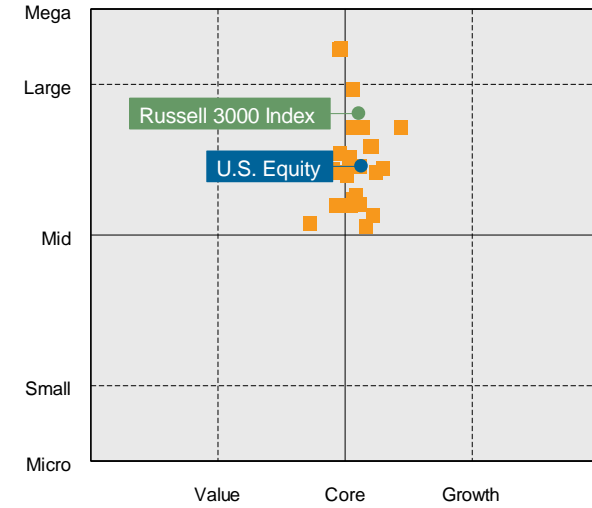
# U.S. Equity as of December 31, 2020

## Performance vs Public Fund - Domestic Equity (Gross)

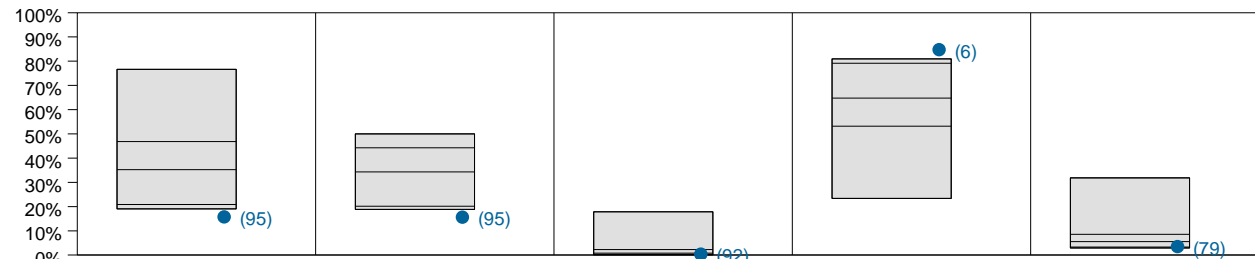


10th Percentile	18.97	23.56	27.54	15.40	16.19	13.02	13.94
25th Percentile	18.03	20.83	25.81	14.48	15.43	12.67	13.74
Median	16.53	18.84	24.51	13.24	14.72	11.95	13.14
75th Percentile	15.31	17.07	23.11	12.05	13.97	11.37	12.78
90th Percentile	14.33	13.98	20.72	11.22	13.13	10.43	12.27
<b>U.S. Equity</b> ●	16.86	21.35	25.83	13.60	14.54	11.83	13.43
Russell 3000 Index ▲	14.68	20.89	25.85	14.49	15.43	12.76	13.79

## Style Map vs Pub Pln- Dom Equity Holdings as of December 31, 2020



## Active Share vs. Pub Pln- Dom Equity



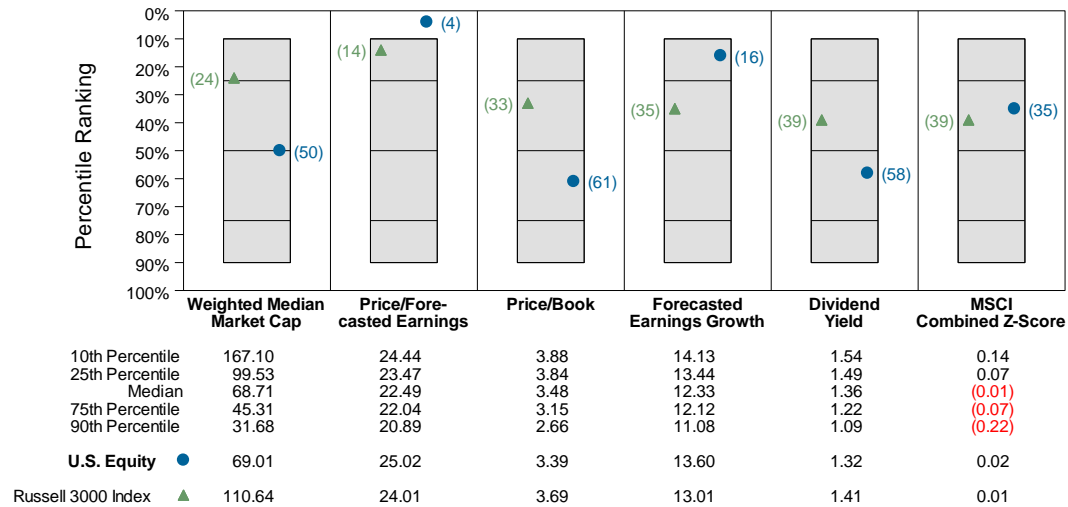
10th Percentile	76.64	50.00	17.87	80.95	31.85
25th Percentile	46.83	44.24	2.28	79.14	8.58
Median	35.23	34.32	0.78	64.77	5.52
75th Percentile	20.86	20.13	0.29	53.17	3.32
90th Percentile	19.05	18.84	0.16	23.36	2.95
<b>U.S. Equity</b> ●	15.51	15.36	0.15	84.49	3.25



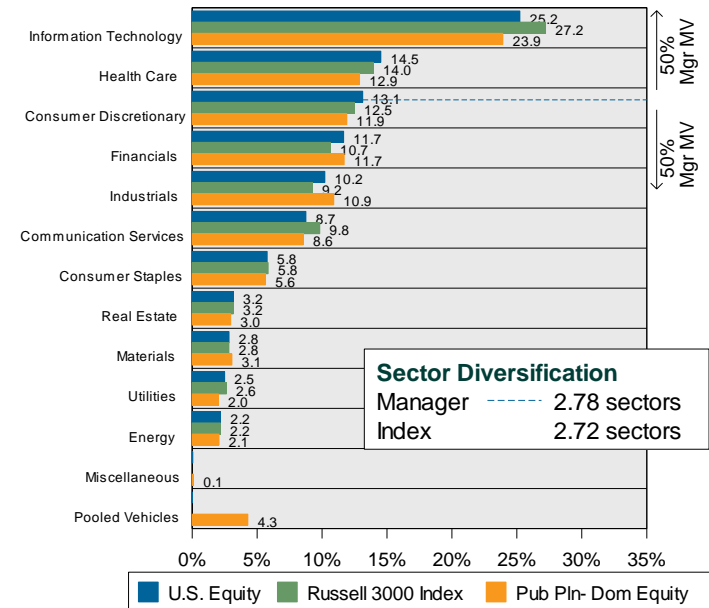
# U.S. Equity

As of December 31, 2020

Portfolio Characteristics Percentile Rankings  
Rankings Against Public Fund - Domestic Equity  
as of December 31, 2020

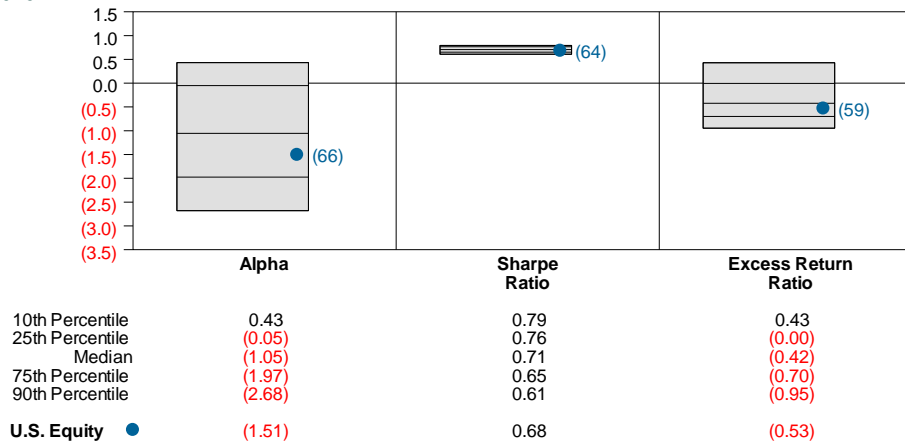


Sector Allocation  
December 31, 2020



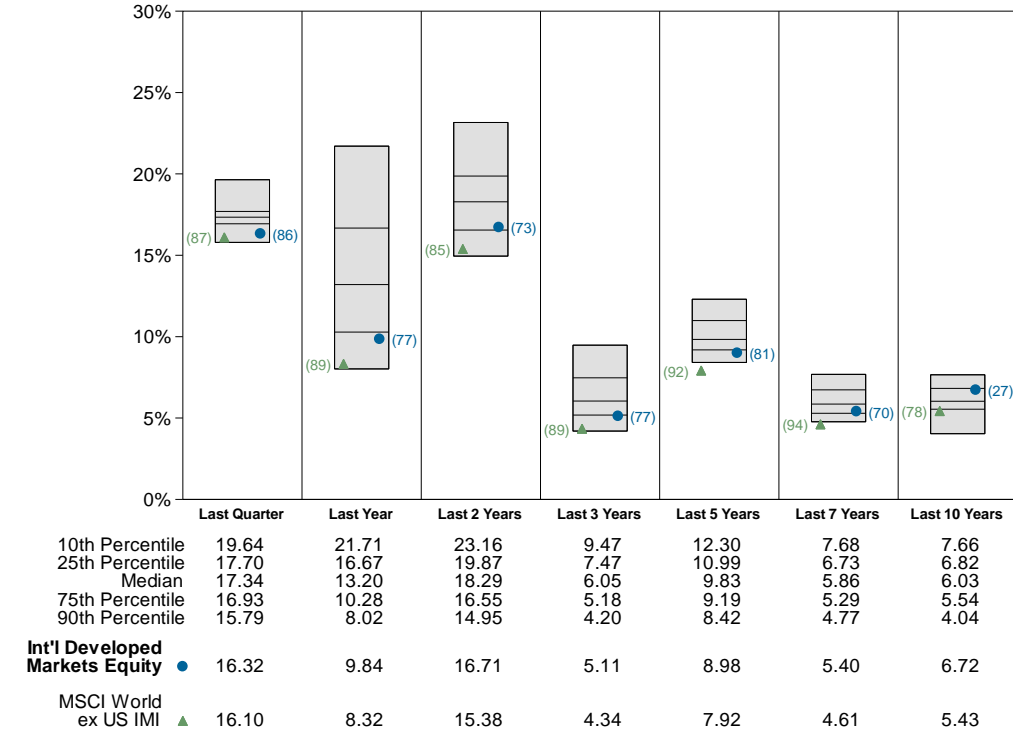
**Sector Diversification**  
Manager --- 2.78 sectors  
Index --- 2.72 sectors

Risk Adjusted Return Measures vs Russell 3000 Index  
Rankings Against Public Fund - Domestic Equity (Gross)  
Five Years Ended December 31 2020

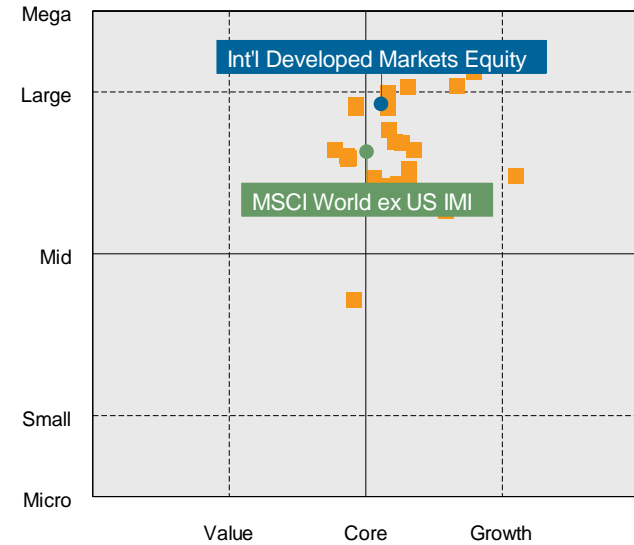


# International Equity as of December 31, 2020

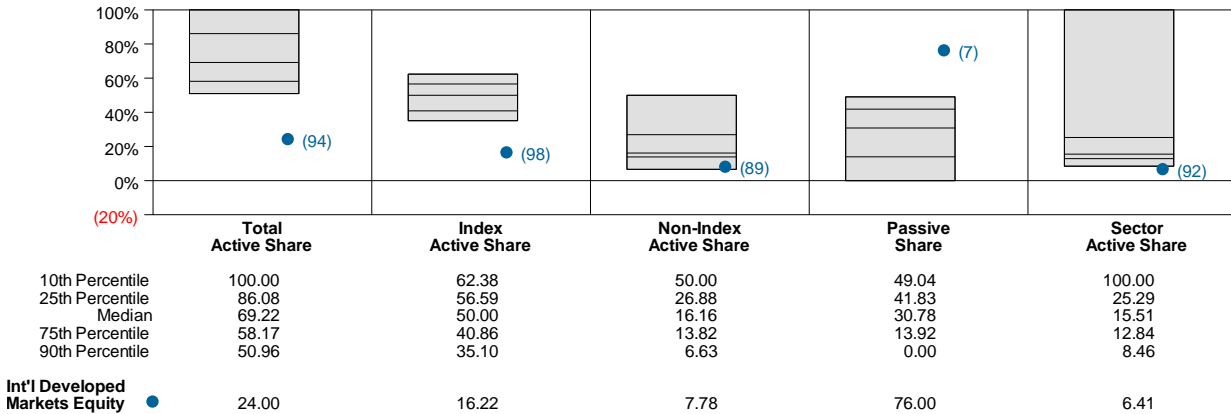
## Performance vs Public Fund - International Equity (Gross)



## Style Map vs Pub Pln- Intl Equity Holdings as of December 31, 2020



## Active Share vs. Pub Pln- Intl Equity



# International Equity

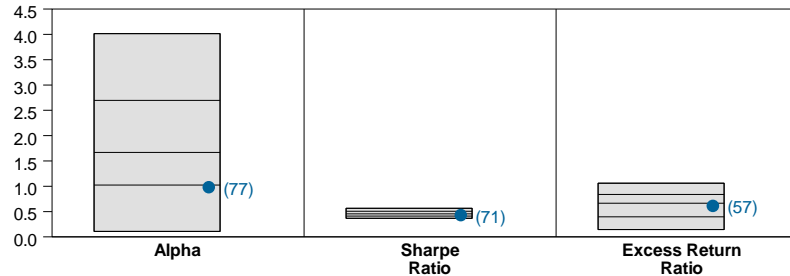
As of December 31, 2020

Portfolio Characteristics Percentile Rankings  
Rankings Against Public Fund - International Equity  
as of December 31, 2020



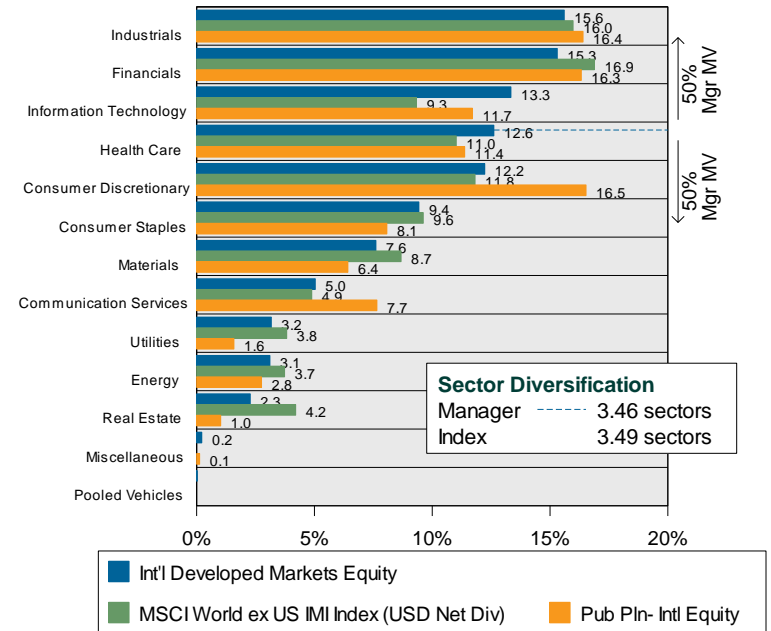
Int'l Developed Markets Equity	38.86	18.45	2.00	9.03	2.13	0.09
MSCI World ex US IMI Index (USD Net Div)	31.42	17.72	1.73	8.85	2.39	(0.00)

Risk Adjusted Return Measures vs MSCI World ex US IMI  
Rankings Against Public Fund - International Equity (Gross)  
Five Years Ended December 31, 2020



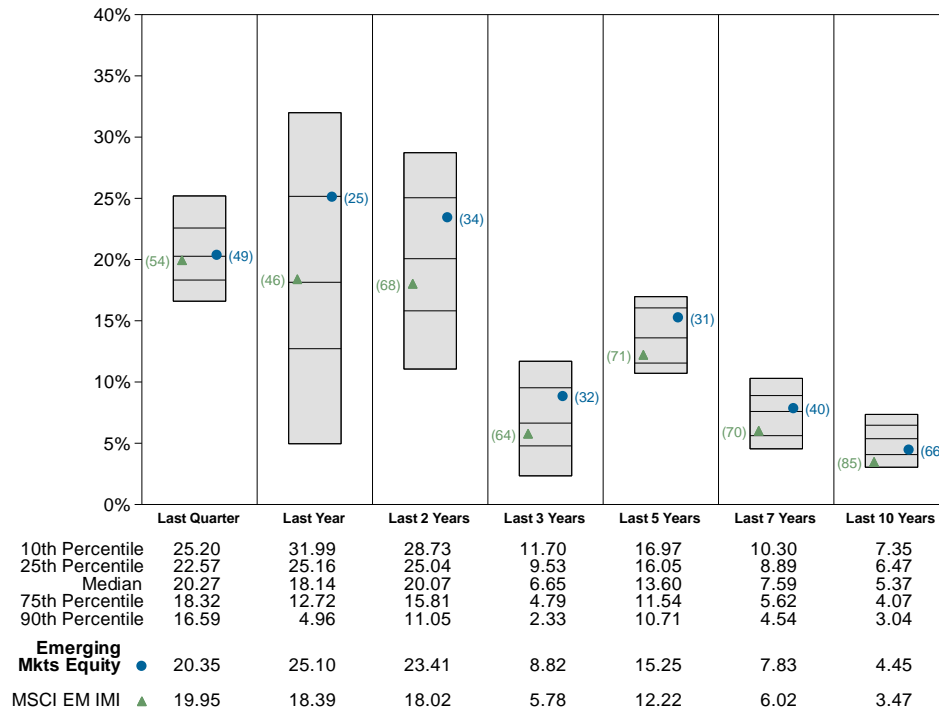
Int'l Developed Markets Equity	0.97	0.42	0.60
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## Sector Allocation December 31, 2020

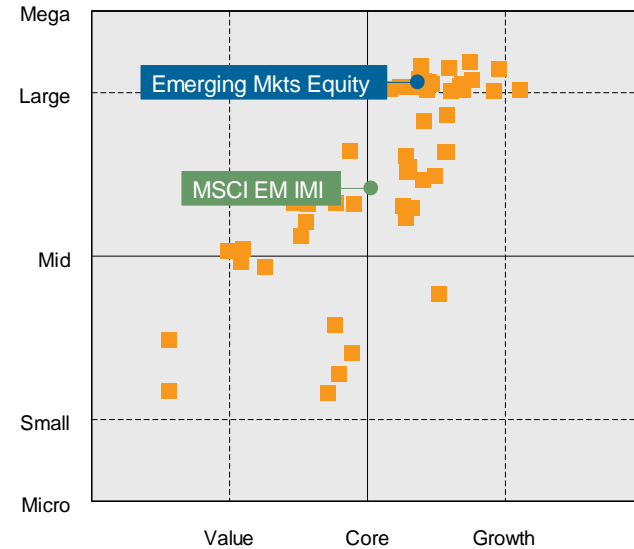


# Emerging Markets Equity as of December 31, 2020

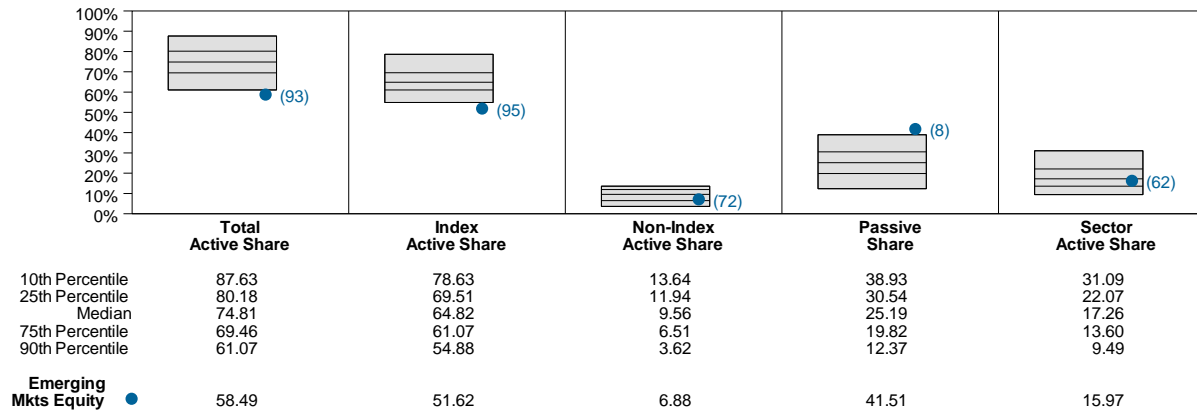
Performance vs Callan Emerging Broad (Gross)



Style Map vs Callan Emerging Broad Holdings as of December 31, 2020



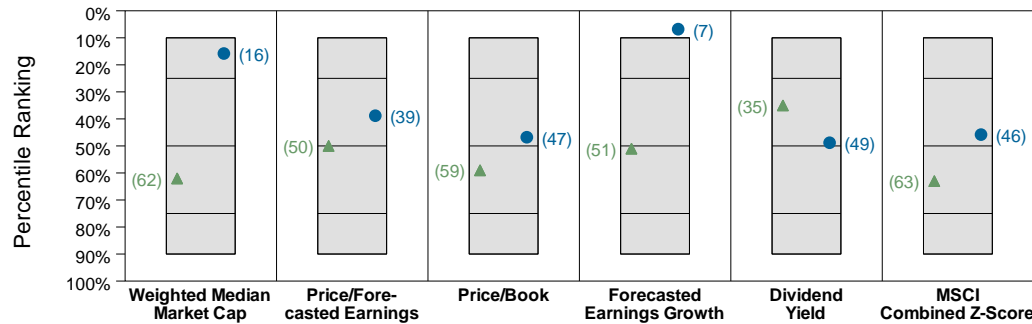
Active Share vs. Callan Emerging Broad



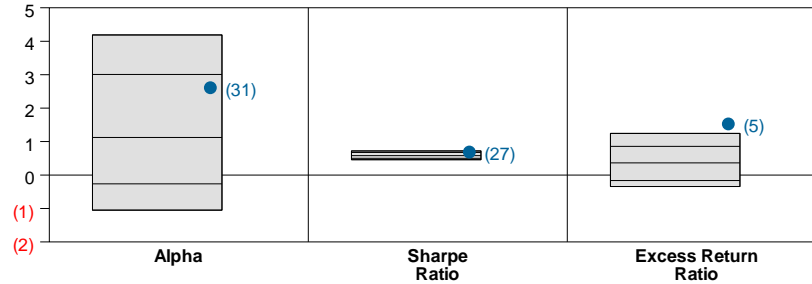
# Emerging Markets Equity

As of December 31, 2020

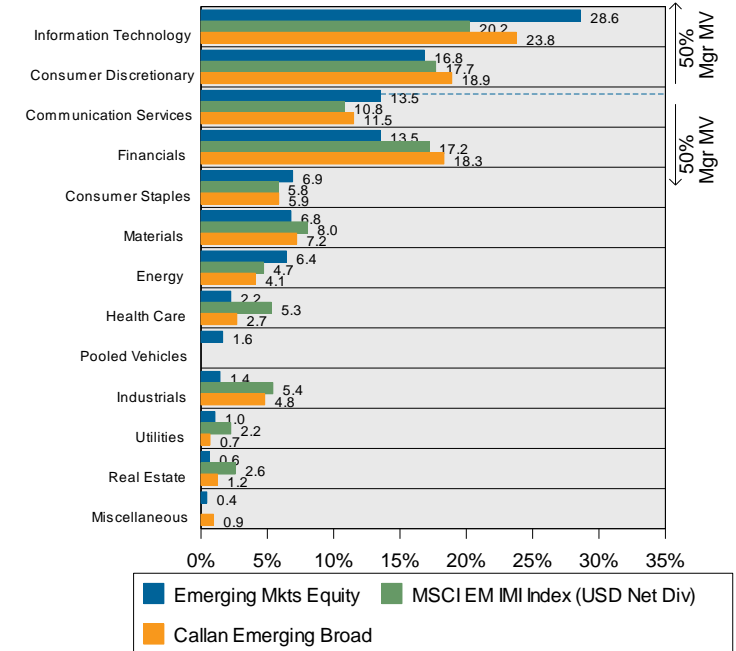
Portfolio Characteristics Percentile Rankings  
Rankings Against Callan Emerging Broad  
as of December 31, 2020



Risk Adjusted Return Measures vs MSCI EM IMI  
Rankings Against Callan Emerging Broad (Gross)  
Five Years Ended December 31, 2020

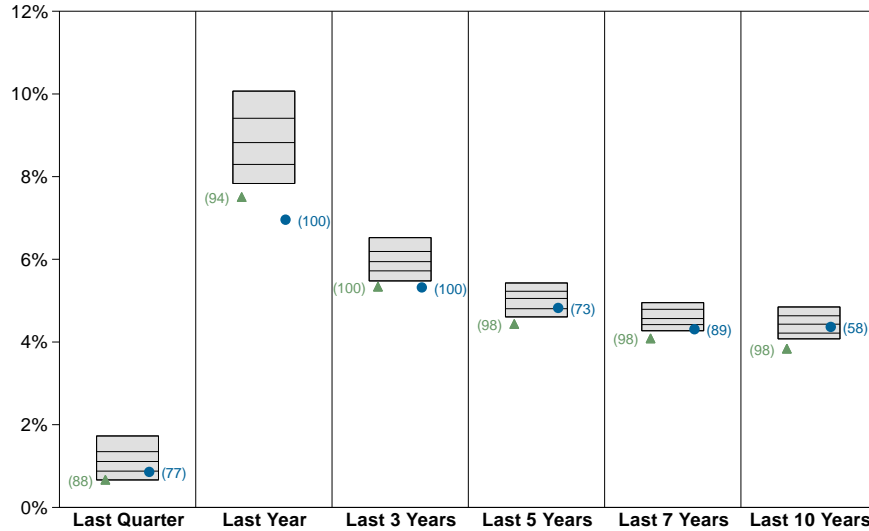


Sector Allocation  
December 31, 2020



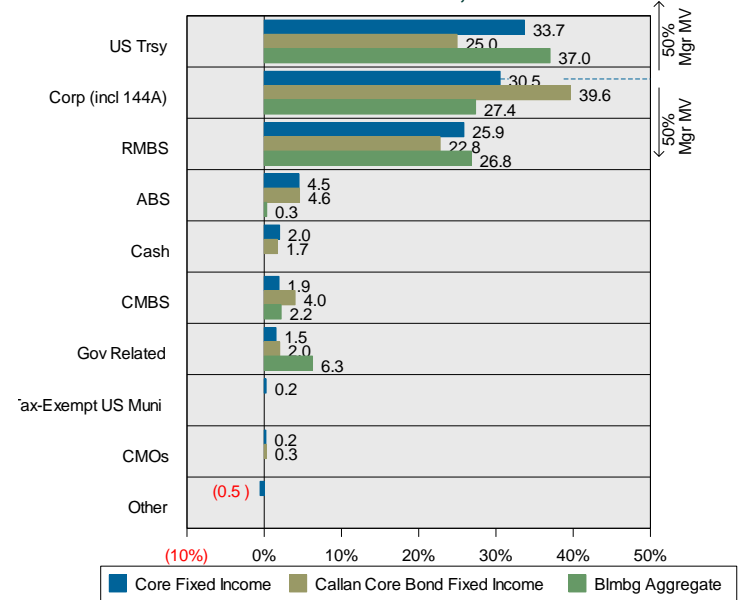
# Core Fixed Income As of December 31, 2020

Performance vs Callan Core Bond Fixed Income (Gross)

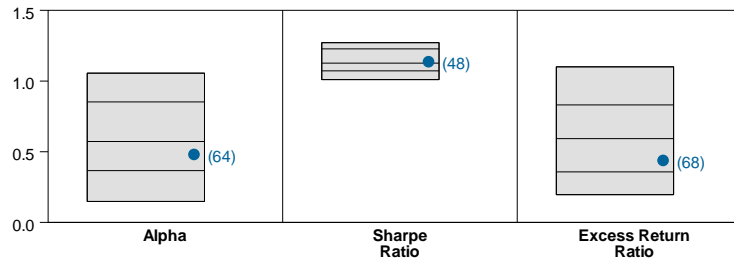


10th Percentile	1.73	10.07	6.52	5.43	4.95	4.85
25th Percentile	1.35	9.41	6.19	5.23	4.79	4.63
Median	1.11	8.82	5.94	5.05	4.57	4.43
75th Percentile	0.88	8.30	5.72	4.81	4.42	4.21
90th Percentile	0.66	7.83	5.48	4.61	4.27	4.08
<b>Core Fixed Income</b> ●	0.85	6.95	5.31	4.81	4.30	4.35
Blmbg Aggregate ▲	0.67	7.51	5.34	4.44	4.09	3.84

Sector Allocation December 31, 2020



Risk Adjusted Return Measures vs Blmbg Aggregate Rankings Against Public Fund - Domestic Fixed (Gross) Five Years Ended December 31, 2020

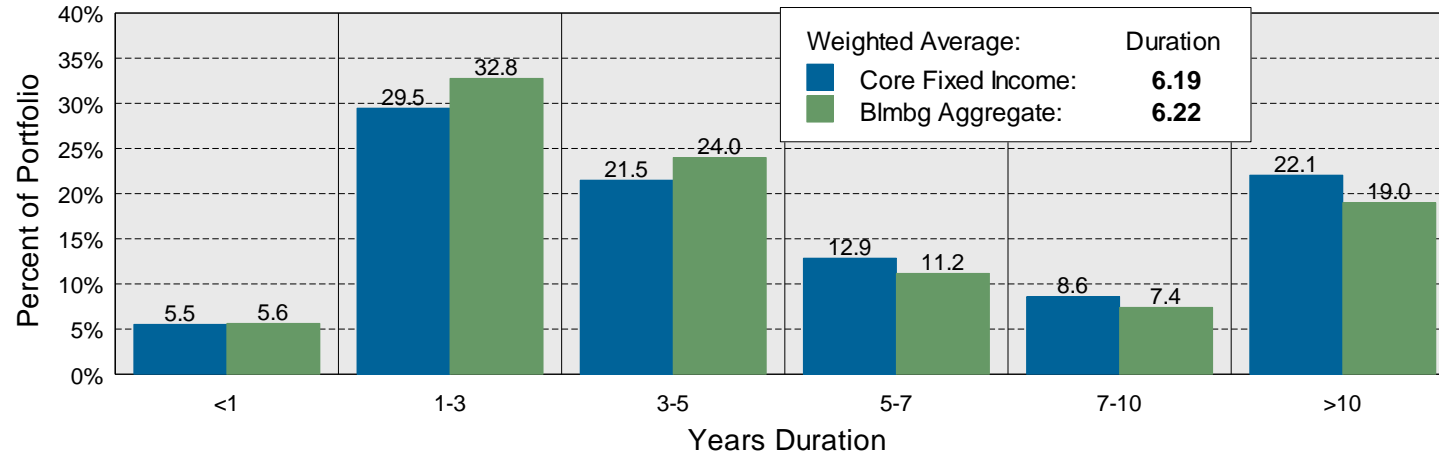


10th Percentile	1.06	1.27	1.10
25th Percentile	0.85	1.23	0.83
Median	0.57	1.13	0.59
75th Percentile	0.37	1.07	0.36
90th Percentile	0.15	1.01	0.20
<b>Core Fixed Income</b> ●	0.48	1.13	0.44

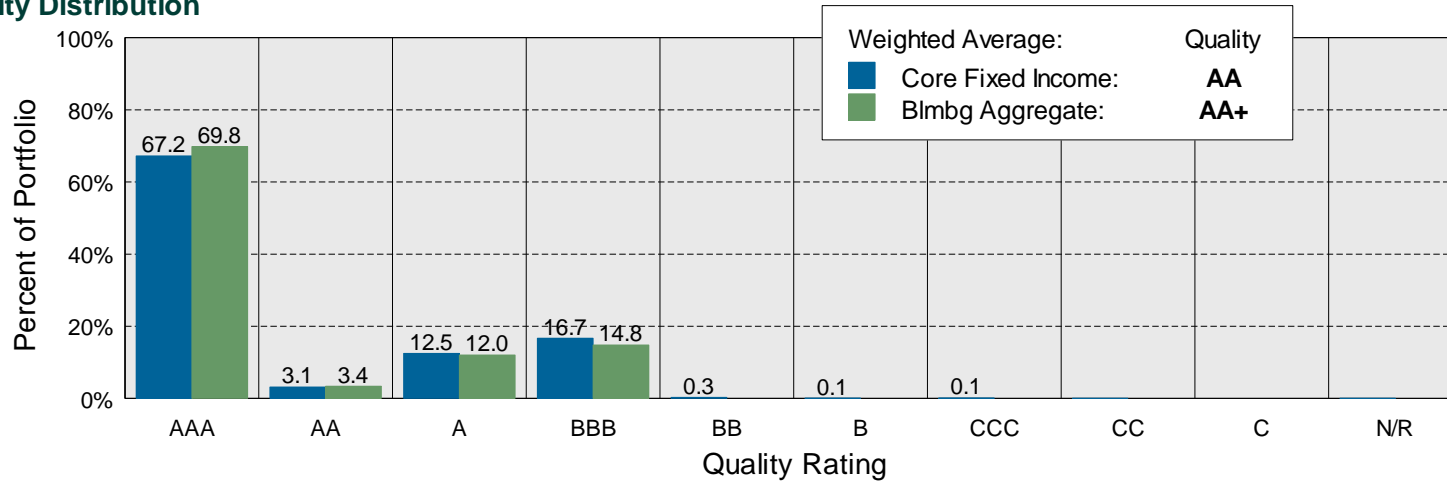
# Core Fixed Income

As of December 31, 2020

## Duration Distribution

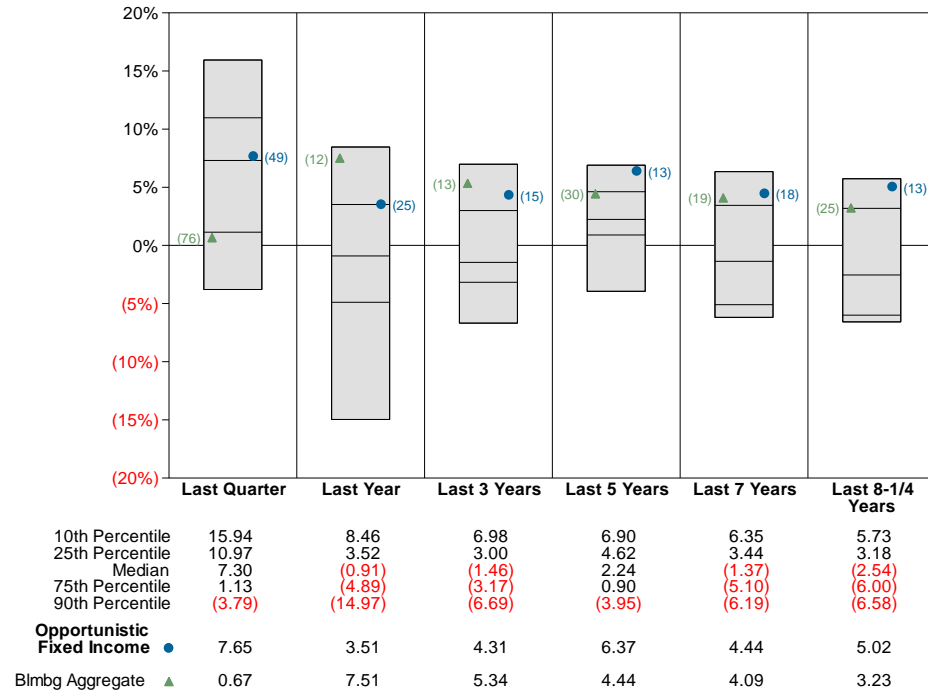


## Quality Distribution

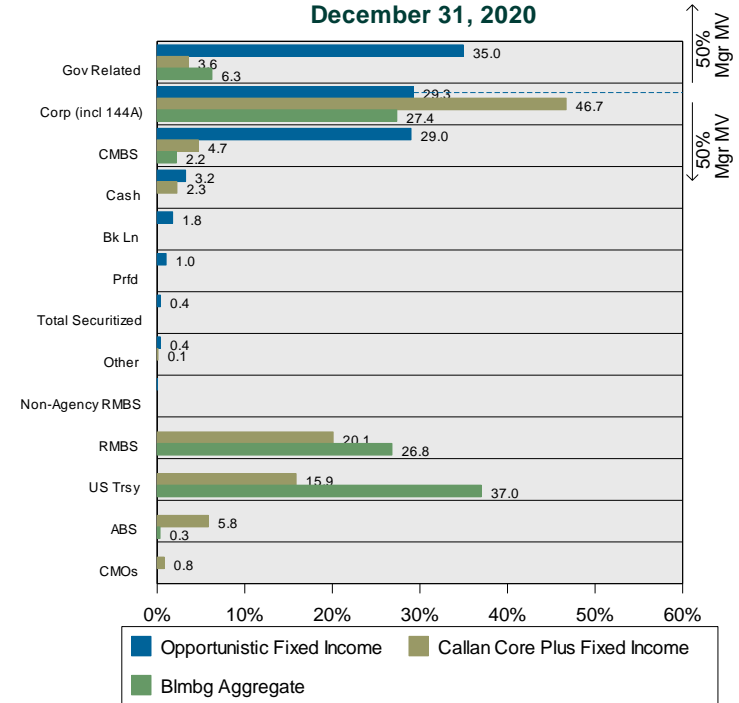


# Opportunistic Fixed Income As of December 31, 2020

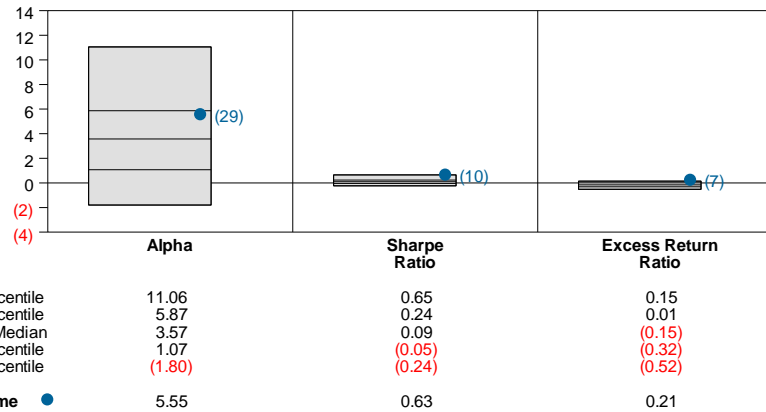
Performance vs Callan Alternative Investments DB (Gross)



Sector Allocation December 31, 2020



Risk Adjusted Return Measures vs Blmbg Aggregate Rankings Against Callan Alternative Investments DB (Gross) Five Years Ended December 31, 2020

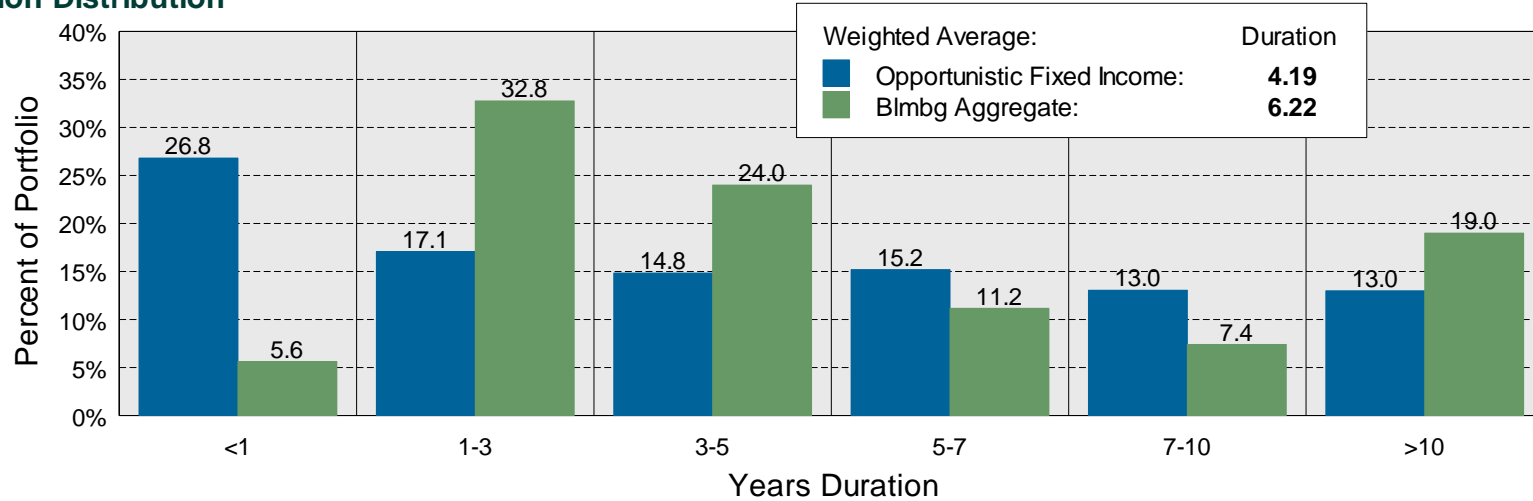




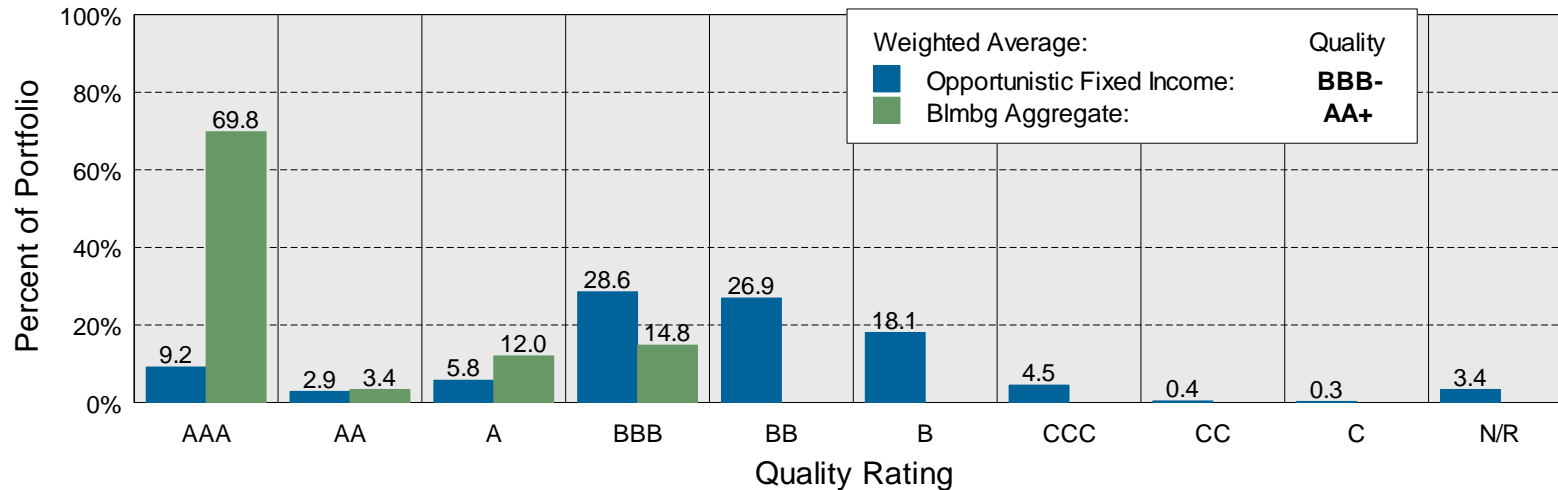
# Opportunistic Fixed Income

As of December 31, 2020

## Duration Distribution



## Quality Distribution



Callan

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**Appendix I – Investment Manager Returns**

# Investment Manager Returns

As of December 31, 2020

	Market Value \$(mm)	Ending Weight	Last Quarter	Year to Date	Last 3 Years	Last 5 Years
<b>Net Performance- Domestic Equity</b>						
<b>U.S. Equity</b>	<b>\$8,896</b>	<b>100.00%</b>	<b>16.85%</b>	<b>21.28%</b>	<b>13.52%</b>	<b>14.41%</b>
Russell 3000 Index (1)	-	-	14.68%	20.89%	14.49%	15.43%
MCM Russell 1000 Index	7,060	79.37%	13.72%	20.85%	14.83%	15.61%
Russell 1000 Index	-	-	13.69%	20.96%	14.82%	15.60%
MCM Russell 2000 Core Index	181	2.04%	30.54%	19.04%	9.95%	-
Russell 2000 Index	-	-	31.37%	19.96%	10.25%	13.26%
MCM Russell 2000 Val Index	651	7.31%	33.35%	4.66%	3.70%	-
Russell 2000 Value Index	-	-	33.36%	4.63%	3.72%	9.65%
Emerald Asset Management	1,004	11.28%	25.77%	36.46%	16.43%	-
Russell 2000 Growth Index	-	-	29.61%	34.63%	16.20%	16.36%

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception
<b>Net Performance- Domestic Equity</b>					
<b>U.S. Equity</b>	<b>13.30%</b>	<b>8.83%</b>	<b>7.49%</b>	<b>9.25%</b>	<b>10.98%</b> <sup>(1/81)</sup>
Russell 3000 Index (1)	13.79%	9.98%	7.82%	9.61%	11.28% <sup>(1/81)</sup>
MCM Russell 1000 Index	-	-	-	-	15.45% <sup>(1/12)</sup>
Russell 1000 Index	14.01%	10.07%	7.75%	9.75%	15.49% <sup>(1/12)</sup>
MCM Russell 2000 Core Index	-	-	-	-	11.61% <sup>(12/16)</sup>
Russell 2000 Index	11.20%	8.91%	8.74%	9.05%	11.84% <sup>(12/16)</sup>
MCM Russell 2000 Val Index	-	-	-	-	5.65% <sup>(12/16)</sup>
Russell 2000 Value Index	8.66%	6.92%	8.54%	9.34%	5.68% <sup>(12/16)</sup>
Emerald Asset Management	-	-	-	-	18.76% <sup>(12/16)</sup>
Russell 2000 Growth Index	13.48%	10.69%	8.52%	8.25%	17.66% <sup>(12/16)</sup>

\*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 December 31, 2020

	Market Value \$(mm)	Ending Weight	Last Quarter	Year to Date	Last 3 Years	Last 5 Years
<b>Net Performance- International Equity</b>						
<b>International Dev Mkts Equity</b>	<b>\$4,614</b>	<b>74.31%</b>	<b>16.29%</b>	<b>9.62%</b>	<b>4.98%</b>	<b>8.80%</b>
MSCI World ex US IMI	-	-	16.10%	8.32%	4.34%	7.92%
Walter Scott & Partners(1) MSCI World	690 -	11.11% -	14.71% 13.96%	21.14% 15.90%	16.42% 10.54%	16.35% 12.19%
BlackRock MSCI World Ex US Index MSCI World ex US	3,489 -	56.19% -	15.98% 15.85%	8.01% 7.59%	4.64% 4.22%	- 7.64%
Xponance Non-U.S. Small Cap MSCI ACWI ex US Small Cap	234 -	3.77% -	16.35% 18.56%	9.38% 14.24%	- 4.59%	- 9.37%
Harris Assoc Int'l SCV MSCI World ex US Sm Cap MSCI World ex US Sm Value	193 - -	3.11% - -	24.53% 17.55% 20.30%	7.32% 12.78% 2.58%	2.90% 5.04% 0.94%	8.31% 9.63% 7.25%
<b>Emerging Mkts Equity</b>	<b>\$1,596</b>	<b>25.69%</b>	<b>20.19%</b>	<b>24.45%</b>	<b>8.32%</b>	<b>14.66%</b>
MSCI EM IMI	-	-	19.95%	18.39%	5.78%	12.22%
Macquarie Emg Mkts Equity MSCI EM	563 -	9.07% -	16.86% 19.70%	20.54% 18.31%	8.04% 6.18%	14.68% 12.81%
Martin Currie Emg Mkts Equity MSCI EM	625 -	10.07% -	22.96% 19.70%	27.85% 18.31%	10.15% 6.18%	17.69% 12.81%
BlackRock Emg Mkts Index MSCI EM	14 -	0.23% -	19.53% 19.70%	17.85% 18.31%	5.87% 6.18%	- 12.81%
Leading Edge Emg Mkts Fund MSCI EM	280 -	4.50% -	20.28% 19.70%	18.30% 18.31%	- 6.18%	- 12.81%
GlobeFlex Emerging Small Cap MSCI EM Small Cap	113 -	1.82% -	21.41% 22.22%	16.55% 19.29%	3.15% 2.69%	9.77% 8.19%

(1) Walter Scott since inception returns were contained in the Global Mandates composite prior to 12/31/2019.

\*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 December 31, 2020

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception
<b>Net Performance- International Equity</b>					
<b>International Dev Mkts Equity</b>	<b>6.47%</b>	<b>4.70%</b>	-	-	<b>6.57%</b> (1/02)
MSCI World ex US IMI	5.43%	4.71%	5.02%	5.36%	6.66% (1/02)
Walter Scott & Partners(1) MSCI World	12.30% 9.87%	- 7.33%	- 6.02%	- 7.21%	10.31% (10/06) 6.96% (10/06)
BlackRock MSCI World Ex US Index MSCI World ex US	- 5.19%	- 4.47%	- 4.58%	- 5.17%	6.82% (6/17) 6.37% (6/17)
Xponance Non-U.S. Small Cap MSCI ACWI ex US Small Cap	- 5.95%	- 6.41%	- 8.52%	- 6.49%	7.19% (10/18) 8.31% (10/18)
Harris Assoc Int'l SCV MSCI World ex US Sm Cap MSCI World ex US Sm Value	6.36% 6.98% 5.54%	7.14% 5.90% 5.45%	- 8.51% 8.74%	- - 7.12%	10.79% (7/03) 9.75% (7/03) 9.23% (7/03)
<b>Emerging Mkts Equity</b>	<b>4.00%</b>	<b>4.94%</b>	-	-	<b>8.36%</b> (1/02)
MSCI EM IMI	3.47%	6.63%	9.59%	5.51%	10.24% (1/02)
Macquarie Emg Mkts Equity MSCI EM	- 3.63%	- 6.59%	- 9.59%	- -	7.06% (5/13) 5.38% (5/13)
Martin Currie Emg Mkts Equity MSCI EM	- 3.63%	- 6.59%	- 9.59%	- -	8.98% (1/14) 6.17% (1/14)
BlackRock Emg Mkts Index MSCI EM	- 3.63%	- 6.59%	- 9.59%	- -	9.52% (7/17) 9.81% (7/17)
Leading Edge Emg Mkts Fund MSCI EM	- 3.63%	- 6.59%	- 9.59%	- -	17.65% (11/18) 17.58% (11/18)
GlobeFlex Emerging Small Cap MSCI EM Small Cap	- 2.29%	- 6.82%	- 10.18%	- 5.18%	5.90% (8/13) 5.17% (8/13)

(1) Walter Scott since inception returns were contained in the Global Mandates composite prior to 12/31/2019.

\*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 December 31, 2020

	Market Value \$(mm)	Ending Weight	Last Quarter	Year to Date	Last 3 Years	Last 5 Years
<b>Net Performance - Fixed Income</b>						
<b>Fixed Income</b>	<b>\$9,755</b>	<b>56.83%</b>	<b>2.24%</b>	<b>5.78%</b>	<b>4.68%</b>	<b>4.86%</b>
Blmbg Aggregate	-	-	0.67%	7.51%	5.34%	4.44%
<b>Core Fixed Income</b>	<b>\$6,366</b>	<b>37.09%</b>	<b>0.82%</b>	<b>6.86%</b>	<b>5.21%</b>	<b>4.70%</b>
Blmbg Aggregate	-	-	0.67%	7.51%	5.34%	4.44%
PIMCO Core Bond Fund	724	4.22%	1.08%	7.65%	5.45%	4.96%
Blmbg Agg ex Treasury	-	-	1.56%	6.85%	5.33%	4.77%
Mellon Bond-Index	5,415	31.55%	0.67%	7.42%	5.29%	4.38%
Blmbg Aggregate (1)	-	-	0.67%	7.51%	5.34%	4.44%
BMO (TCH) Corp FI	227	1.32%	3.61%	10.58%	7.03%	7.28%
Blmbg Credit	-	-	2.79%	9.35%	6.80%	6.44%
<b>Nominal U.S. Treasuries</b>	<b>\$1,044</b>	<b>6.08%</b>	<b>(1.70%)</b>	<b>11.12%</b>	<b>6.73%</b>	<b>4.59%</b>
Blmbg US Treas Bell 10Y	-	-	(1.91%)	10.61%	6.40%	4.20%
PIMCO US Treasuries	693	4.04%	(1.86%)	10.95%	6.68%	4.79%
Blmbg US Treas Bell 10Y	-	-	(1.91%)	10.61%	6.40%	4.20%

\*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.

(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 December 31, 2020

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception
<b>Net Performance - Fixed Income</b>					
<b>Fixed Income</b>	<b>4.21%</b>	<b>5.06%</b>	<b>5.66%</b>	<b>5.86%</b>	<b>8.33%</b> (1/81)
Blmbg Aggregate	3.84%	4.49%	4.83%	5.16%	7.63% (1/81)
<b>Core Fixed Income</b>	<b>4.21%</b>	<b>4.82%</b>	<b>-</b>	<b>-</b>	<b>4.97%</b> (1/02)
Blmbg Aggregate	3.84%	4.49%	4.83%	5.16%	4.65% (1/02)
PIMCO Core Bond Fund	-	-	-	-	3.47% (1/13)
Blmbg Agg ex Treasury	4.11%	4.75%	-	-	3.60% (1/13)
Mellon Bond-Index	3.73%	4.37%	4.74%	5.14%	7.13% (4/84)
Blmbg Aggregate (1)	3.84%	4.49%	4.85%	5.23%	-
BMO (TCH) Corp FI	5.62%	5.78%	6.14%	-	6.17% (12/00)
Blmbg Credit	5.40%	5.60%	5.97%	5.94%	6.05% (12/00)
<b>Nominal U.S. Treasuries</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>3.47%</b> (9/11)
Blmbg US Treas Bell 10Y	4.44%	4.76%	4.89%	5.04%	3.44% (9/11)
PIMCO US Treasuries	-	-	-	-	3.64% (9/11)
Blmbg US Treas Bell 10Y	4.44%	4.76%	4.89%	5.04%	3.44% (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) 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 December 31, 2020

	Market Value \$(mm)	Ending Weight	Last Quarter	Year to Date	Last 3 Years	Last 5 Years
<b>Net Performance - Fixed Income</b>						
<b>Opportunistic Fixed Income</b>	<b>\$2,345</b>	<b>100.00%</b>	<b>7.51%</b>	<b>2.86%</b>	<b>3.74%</b>	<b>5.73%</b>
BAAM Keystone(1) HFRI FOF Comp Index	994 -	42.40% -	7.63% 7.94%	2.54% 10.71%	4.35% 4.82%	4.77% 4.52%
Brandywine Global Opp FI FTSE Wrld Gov't Bond Index	225 -	9.59% -	9.50% 2.77%	9.86% 10.11%	4.39% 4.96%	6.23% 4.78%
Eaton Vance GMARA(2) 3 Mo LIBOR Index +6%	225 -	9.60% -	3.15% 1.52%	5.56% 6.64%	- 7.78%	- 7.47%
Fidelity HY CMBS Bloomberg US CMBS Ex AAA Index	323 -	13.76% -	3.83% 4.42%	(5.48%) 4.13%	1.87% 5.46%	2.87% 5.40%
SEI Str. Credit: HY Bank Loans(3)(4) FTSE:HY Corp (1 month lag)	179 -	7.64% -	17.43% 3.28%	4.57% 6.41%	3.91% 5.31%	8.39% 7.37%
Stone Harbor Gbl HY FTSE High Yield Market Index	218 -	9.31% -	7.03% 6.45%	8.48% 6.29%	6.37% 5.87%	7.65% 8.40%
Stone Harbor EMD JPM Emg Mkts Bond Global Index	181 -	7.71% -	7.48% 5.49%	6.73% 5.88%	3.96% 4.94%	7.49% 6.84%

(1) Blackstone Keystone since inception returns were included in the Legacy Hedge Fund composite through 9/30/2017 and in the Multi-Strategy composite through 12/31/2019.

(2) Eaton Vance since inception returns were included in the Multi-Strategy composite through 12/31/2019.

(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 December 31, 2020

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception
<b>Net Performance - Fixed Income</b>					
<b>Opportunistic Fixed Income</b>	-	-	-	-	<b>4.36%</b> (10/12)
BAAM Keystone(1)	-	-	-	-	6.99% (7/12)
HFRI FOF Comp Index	3.31%	3.01%	3.73%	5.08%	4.50% (7/12)
Brandywine Global Opp FI	-	-	-	-	4.60% (2/11)
FTSE Wrld Gov't Bond Index	2.32%	3.88%	4.63%	4.33%	2.34% (2/11)
Eaton Vance GMARA(2)	-	-	-	-	4.68% (6/18)
3 Mo LIBOR Index +6%	6.89%	7.60%	7.81%	-	7.73% (6/18)
Fidelity HY CMBS	7.16%	5.63%	7.23%	-	7.93% (4/97)
Bloomberg US CMBS Ex AAA Index	5.47%	1.02%	-	-	-
SEI Str. Credit: HY Bank Loans(3)(4)	8.38%	-	-	-	11.17% (5/08)
FTSE:HY Corp (1 month lag)	6.49%	7.05%	7.58%	6.96%	7.48% (5/08)
Stone Harbor Glbl HY	6.05%	6.71%	7.74%	-	7.60% (7/00)
FTSE High Yield Market Index	6.49%	7.13%	7.58%	6.97%	7.15% (7/00)
Stone Harbor EMD	5.48%	6.95%	-	-	7.44% (4/05)
JPM Emg Mkts Bond Global Index	5.97%	6.76%	8.11%	9.21%	7.21% (4/05)

(1) Blackstone Keystone since inception returns were included in the Legacy Hedge Fund composite through 9/30/2017 and in the Multi-Strategy composite through 12/31/2019.

(2) Eaton Vance since inception returns were included in the Multi-Strategy composite through 12/31/2019.

(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 December 31, 2020

	Market Value \$(mm)	Ending Weight	Last Quarter	Year to Date	Last 3 Years	Last 5 Years
<b>Net Performance - Inflation Protection</b>						
<b>Inflation Protection (TIPS)</b>	<b>\$1,292</b>	<b>100.00%</b>	<b>1.76%</b>	<b>11.04%</b>	<b>5.74%</b>	<b>5.15%</b>
Blmbg US TIPS	-	-	1.62%	10.99%	5.92%	5.08%
NISA Inv Adv TIPS	578	44.74%	1.53%	10.89%	5.84%	5.06%
Blmbg US TIPS (1)	-	-	1.62%	10.99%	5.92%	5.08%
Brown Brothers TIPS	577	44.61%	1.30%	10.64%	5.77%	5.02%
Blmbg US TIPS	-	-	1.62%	10.99%	5.92%	5.08%
New Century Global TIPS	138	10.65%	4.75%	14.43%	5.86%	6.12%
Blmbg:Wld Infl-Lnk Unhdg	-	-	4.53%	12.54%	5.32%	5.69%

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception
<b>Net Performance - Inflation Protection</b>					
<b>Inflation Protection (TIPS)</b>	<b>3.12%</b>	<b>3.90%</b>	-	-	<b>3.68%</b> (2/03)
Blmbg US TIPS	3.81%	4.31%	5.40%	-	4.66% (2/03)
NISA Inv Adv TIPS	2.90%	-	-	-	3.69% (4/07)
Blmbg US TIPS (1)	2.90%	3.59%	4.86%	-	3.70% (4/07)
Brown Brothers TIPS	-	-	-	-	2.65% (2/12)
Blmbg US TIPS	3.81%	4.31%	5.40%	-	2.54% (2/12)
New Century Global TIPS	-	-	-	-	3.48% (2/12)
Blmbg:Wld Infl-Lnk Unhdg	3.95%	4.46%	5.82%	-	2.97% (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 December 31, 2020

	Market Value \$(mm)	Ending Weight	Last Quarter	Year to Date	Last 3 Years	Last 5 Years
<b>Net Performance - Private Equity</b>						
<b>Private Equity</b>	<b>\$4,601</b>	<b>88.32%</b>	<b>13.46%</b>	<b>18.37%</b>	<b>13.21%</b>	<b>11.82%</b>
Burgiss Private Equity Index (Qtr lag)	-	-	8.08%	13.13%	12.25%	12.20%
Global Equity +3% (Qtr lag)(1)	-	-	8.81%	15.55%	14.15%	16.45%
Buyouts	2,478	47.56%	12.46%	20.77%	14.06%	13.66%
Burgiss Buyout Index (Qtr lag)	-	-	8.47%	10.43%	10.52%	12.28%
Special Situations	453	8.69%	8.42%	9.32%	11.30%	10.38%
Burgiss Special Situations Idx (Qtr lag)	-	-	3.56%	2.33%	4.30%	5.95%
Growth Equity	1,094	20.99%	21.67%	37.49%	27.64%	17.05%
Burgiss Venture Capital Index (Qtr lag)	-	-	10.24%	25.35%	21.36%	15.20%
Keystone Legacy(2)	577	11.08%	7.81%	(6.30%)	-	-
<b>Private Credit</b>	<b>\$608</b>	<b>11.68%</b>	<b>5.58%</b>	<b>9.08%</b>	<b>9.71%</b>	<b>-</b>
S&P Levered Loan Index +1% (Qtr lag)	-	-	4.36%	2.27%	4.18%	5.06%
	<b>Last 10 Years</b>	<b>Last 15 Years</b>	<b>Last 20 Years</b>	<b>Last 25 Years</b>	<b>Since Inception</b>	
<b>Net Performance - Private Equity</b>						
<b>Private Equity</b>	<b>11.52%</b>	<b>11.01%</b>	<b>8.07%</b>	<b>13.19%</b>	<b>11.11%</b> (1/86)	
Burgiss Private Equity Index (Qtr lag)	12.72%	11.97%	9.16%	14.45%	16.73% (1/86)	
Global Equity + 3% (Qtr lag)(1)	16.50%	12.44%	9.94%	12.69%	14.54% (1/86)	
Buyouts	13.70%	13.06%	10.90%	15.94%	13.33% (4/86)	
Burgiss Buyout Index (Qtr lag)	12.43%	12.28%	11.48%	13.49%	19.23% (4/86)	
Special Situations	10.00%	11.40%	11.73%	12.24%	12.28% (1/95)	
Burgiss Special Situations Idx (Qtr lag)	7.94%	7.63%	8.87%	10.02%	10.19% (6/95)	
Growth Equity	13.06%	9.19%	1.59%	8.34%	7.87% (1/86)	
Burgiss Venture Capital Index (Qtr lag)	16.51%	12.49%	3.75%	15.51%	13.95% (1/86)	
Keystone Legacy(2)	-	-	-	-	(4.71%) (7/18)	
<b>Private Credit</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>8.89%</b> (12/17)	
S&P Levered Loan Index +1% (Qtr lag)	5.27%	5.49%	5.65%	-	4.22% (12/17)	

(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 7/31/2018, Keystone Legacy SPV consists of 163 non-core funds, prior performance in previous sub-asset classes

# Investment Manager Returns

As of December 31, 2020

	Market Value \$(mm)	Ending Weight	Last Quarter	Year to Date	Last 3 Years	Last 5 Years
<b>Net Performance - Real Estate</b>						
<b>Real Estate</b>	<b>\$2,531</b>	<b>100.00%</b>	<b>3.49%</b>	<b>2.11%</b>	<b>3.44%</b>	<b>3.11%</b>
Real Estate Custom Bench (Qtr lag)(1)	-	-	1.64%	0.25%	4.04%	5.50%
CPI+3% (Qtr lag)	-	-	1.68%	4.37%	4.79%	4.81%
Core/Core Plus Real Estate Funds	1,007	39.79%	2.35%	2.11%	4.93%	6.10%
NCREIF ODCE Index (Qtr lag)	-	-	0.37%	0.89%	4.64%	6.09%
Value Add/Oppportunistic SMA	717	28.32%	3.84%	8.22%	3.22%	1.75%
NCREIF ODCE Index (Qtr lag)	-	-	0.37%	0.89%	4.64%	6.09%
Value Add/Oppportunistic Funds	530	20.94%	0.87%	(1.54%)	4.25%	5.35%
NCREIF ODCE Index (Qtr lag)	-	-	0.37%	0.89%	4.64%	6.09%
Legacy Real Assets	5	0.21%	(2.99%)	(9.28%)	(2.52%)	(2.84%)
CPI+3% (Qtr lag)	-	-	1.68%	4.37%	4.79%	4.81%
REITS	272	10.75%	11.95%	(4.20%)	5.43%	4.93%
FTSE NAREIT US Index	-	-	13.02%	(9.59%)	2.96%	5.21%

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception
<b>Net Performance - Real Estate</b>					
<b>Real Estate</b>	<b>6.97%</b>	<b>4.08%</b>	<b>6.26%</b>	<b>7.63%</b>	<b>8.21%</b> (3/84)
Real Estate Custom Bench (Qtr lag) (1)	9.01%	5.83%	7.01%	-	- (3/84)
CPI+3% (Qtr lag)	4.77%	4.81%	5.04%	5.14%	5.60% (3/84)
Core/Core Plus Real Estate Funds	9.53%	6.53%	7.25%	8.49%	6.95% (9/86)
NCREIF ODCE Index (Qtr lag)	9.42%	5.69%	6.53%	7.50%	5.85% (9/86)
Value Add/Oppportunistic SMA	5.98%	2.45%	4.82%	6.34%	5.27% (6/88)
NCREIF ODCE Index (Qtr lag)	9.42%	5.69%	6.53%	7.50%	5.89% (6/88)
Value Add/Oppportunistic Funds	9.45%	4.55%	6.96%	8.51%	7.58% (3/84)
NCREIF ODCE Index (Qtr lag)	9.42%	5.69%	6.53%	7.50%	6.12% (3/84)
Legacy Real Assets	(0.52%)	1.30%	1.81%	3.58%	3.91% (3/93)
CPI+3% (Qtr lag)	4.77%	4.81%	5.04%	5.14%	5.20% (3/93)
REITS	7.13%	6.37%	9.09%	-	9.38% (4/96)
FTSE NAREIT US Index	8.51%	6.16%	9.21%	9.89%	9.77% (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.

Callan

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**Appendix II – Callan Update**

# Published Research Highlights from 4Q20

## Under the Hood of Alternative Beta



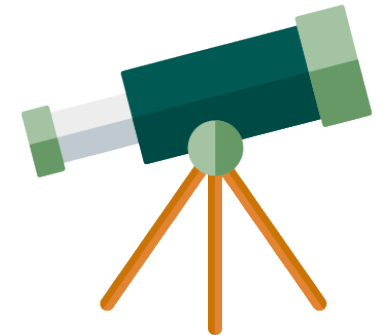
## A Primer on Green Building Certifications



## Private Equity 'Research Café'



## And coming in 2021: Our Capital Markets Assumptions



## Recent Blog Posts

**Will Boring Still Be Beautiful?**

James Veneruso

**The Private Equity Playbook: Playing Offense**

Alternatives Consulting Group

Plus our [blog](#) 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

## March Workshop - Virtual

**March 25, 2021**

**9:00 – 10:15am** (45 minutes prepared remarks; 30 minutes Q&A)

### A Fresh Look at Fixed Income – Generating Yield in a Zero Interest Rate Environment

As expectations for interest rates continue to fall, asset owners and fund managers are looking for new ways to generate returns. In this workshop, our consultants and specialists will share:

- How the drop in interest rate expectations impacts different types of investors.
- What Callan research has identified as potential approaches for garnering income and returns.
- What asset owners should consider as they evaluate options for their fixed income mandates.

This is your chance to step back and think differently about fixed income. You'll come away with a deeper understanding of the issues facing asset owners and how they are thinking about their options moving forward.

## 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:

**April 13, 2021 – April 15, 2021**

2-3 hour sessions over 3 days

### Join our next LIVE session in San Francisco:

**July 14, 2021 – July 15, 2021**

1.5 day session held in Callan's San Francisco office

## Save the Date!

### 2021 National Conference

**Summer 2021**

We can't wait to see you!

## Callan Updates

Firm updates by the numbers, as of Dec. 31, 2020

Total Associates: 198

### Ownership

- 100% employees
- Broadly distributed across 99 shareholders

### Leadership Changes

- No changes to leadership this quarter

Total General and Fund Sponsor Consultants: more than 45

Total Specialty and Research Consultants: more than 60

Total CFA/CAIA/FRMs: more than 55

Total Fund Sponsor Clients: more than 400

AUA: more than \$2.5 trillion

**“One of the silver linings of the current work-from-home environment is the record attendance we have seen for our virtual education events. This includes our webinars, workshops, and our fiduciary education series, the ‘Callan College.’ Since education has always been at the heart of Callan’s consulting business, it’s encouraging to see our clients and associates adapt to the current situation and make education an even greater priority.”**

*- CEO & Chief Research Officer Greg Allen on Callan's COVID-19 Response*





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## Disclaimers

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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.