

May 2023



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

First Quarter 2023

Executive Summary

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Market Environment

Equity and Fixed Income Markets Up Together in 4Q22 and 1Q23

Declines for stocks and bonds in first three quarters of 2022 eased by market rebound

S&P 500 up 7.5% in both 1Q23 and 4Q22.

- Loss through first three quarters of 2022 was 23.8%; rebound in last two quarters reduced the loss to -9.7%. Similar loss reduction across all equity market segments: developed, emerging, small cap

Fixed income recovered as high inflation began to ease, leading to speculation about interest rates

- Bloomberg Aggregate: up 3% in 1Q, after a 1.9% rise in 4Q22, lowering the loss since the start of 2022 to 8.4%
- CPI-U: +5% year-over year for 1Q, down from 6.5% for the year ended Dec. 2022
- ▶ Inflation hit the highest rate (9%) in decades in June.
- ▶ Economic data show growth slowed in 2022; GDP gained only 1.1% in 1Q
 - Job market remains solid, providing support to Fed efforts to fight inflation

Returns for Periods ended 3/31/23

	Quarter	Year to Date				
		1 Year	5 Years	10 Years	25 Years	
U.S. Equity						
Russell 3000	7.18	7.18	-8.58	10.45	11.73	7.45
S&P 500	7.50	7.50	-7.73	11.19	12.24	7.39
Russell 2000	2.74	2.74	-11.61	4.71	8.04	6.84
Global ex-U.S. Equity						
MSCI World ex USA	8.02	8.02	-2.74	3.80	4.91	4.39
MSCI Emerging Markets	3.96	3.96	-10.70	-0.91	2.00	--
MSCI ACWI ex USA Small Cap	4.70	4.70	-10.37	1.67	5.06	6.45
Fixed Income						
Bloomberg Aggregate	2.96	2.96	-4.78	0.91	1.36	4.03
90-day T-Bill	1.07	1.07	2.50	1.41	0.87	1.90
Bloomberg Long Gov/Credit	5.76	5.76	-13.40	0.63	2.35	5.56
Bloomberg Global Agg ex-US	3.06	3.06	-10.72	-3.17	-0.99	2.80
Real Estate						
NCREIF Property	-1.81	-1.81	-1.63	6.71	8.34	8.79
FTSE Nareit Equity	2.68	2.68	-19.22	6.02	5.97	8.01
Alternatives						
CS Hedge Fund Index	0.16	0.16	-0.89	4.18	3.89	5.54
Cambridge Private Equity*	0.80	0.80	-8.16	16.14	15.12	14.10
Bloomberg Commodity	-5.36	-5.36	-12.49	5.36	-1.72	1.80
Gold Spot Price	8.76	8.76	1.65	8.40	2.21	7.81
Inflation - CPI-U	1.70	1.70	4.98	3.88	2.63	2.51

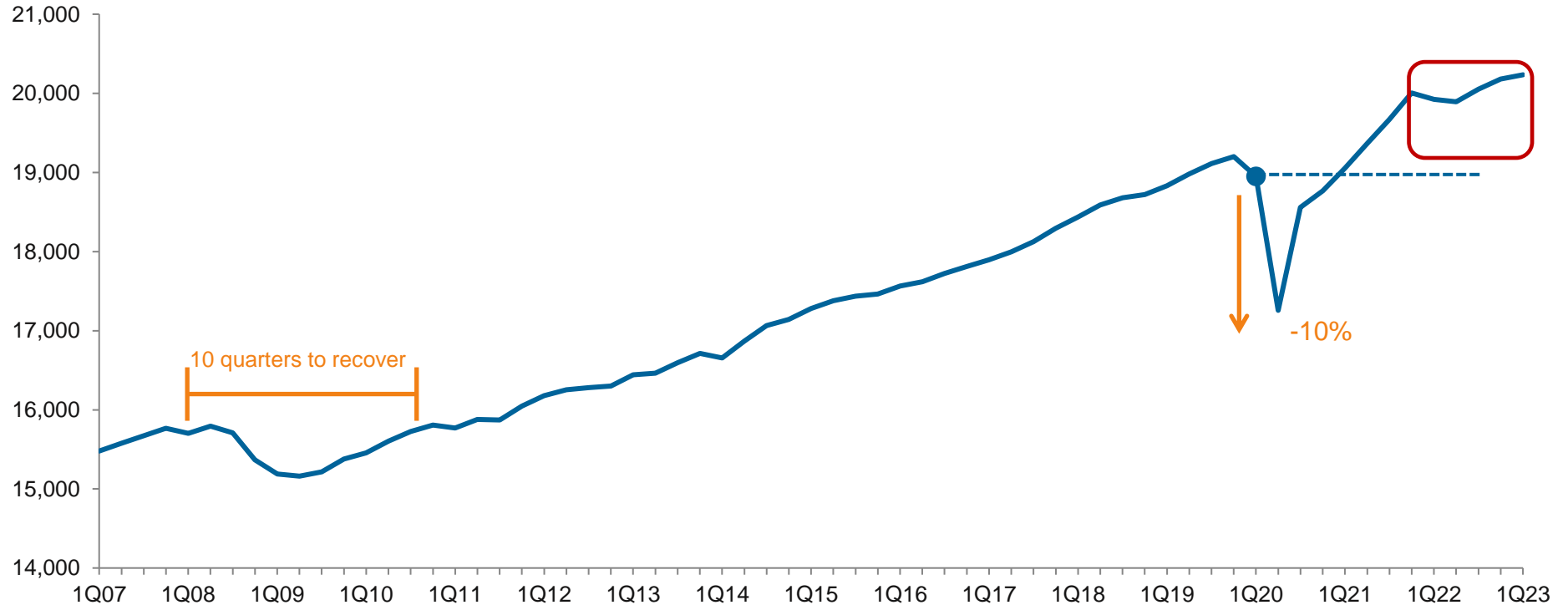
*Cambridge PE data as of 4Q22.

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

GDP Rose 1.1% in 1Q, Building on the Rebound in 3Q and 4Q

However, widespread expectations for a recession in 2023

Seasonally Adjusted Real GDP in Billions of Dollars Through 3/31/23

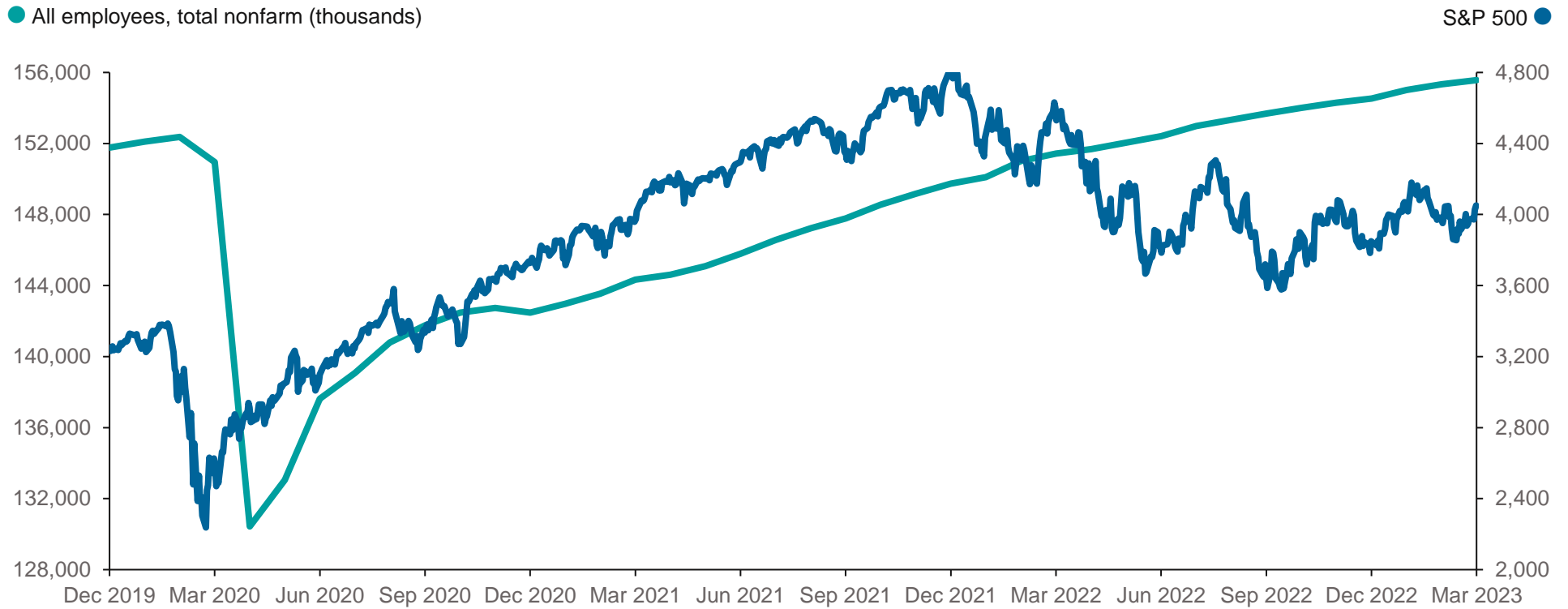


GDP rose 1.1% in 1Q23, after 2.1% growth in 2022.

- ▶ 2022 saw GDP decline in the first two quarters before gains of 3.2% in 3Q22 and 2.6% in 4Q.
- ▶ Loss of business and consumer confidence followed the start of the conflict in Ukraine.
- ▶ Consumer wealth hit by stock and bond market drop, and now a sharp slowdown in residential housing, as mortgage rates doubled from the start of the year.

Source: Federal Reserve Bank of St. Louis

The Stock Market Is Not the Economy



- ▶ The job market lost over 22 million jobs in the pandemic, but regained the pre-pandemic high water mark in the spring of 2022.
- ▶ Job growth remained robust through the market upheaval in 2022 and through 1Q23. Headline reports of layoffs in technology have been small relative to the size of the broad job market.

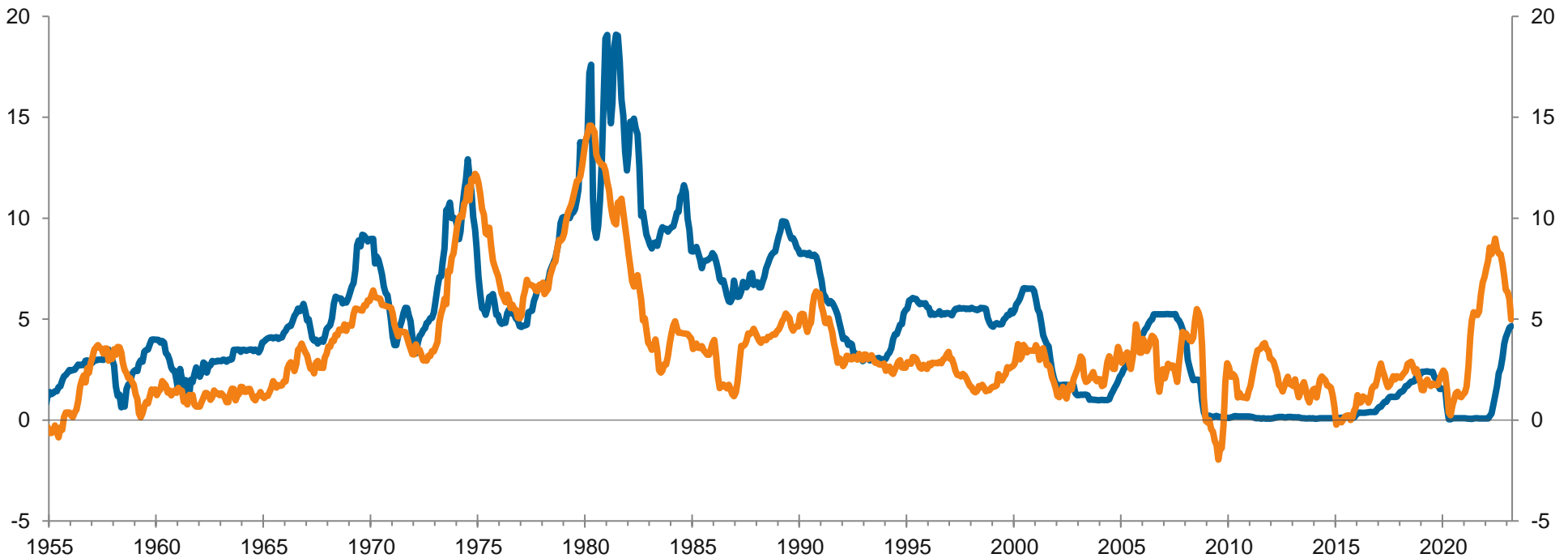
Sources: Federal Reserve Bank of St. Louis, S&P Dow Jones Indices

Inflation vs. Interest Rates Over the Long Term

Federal Funds vs. Consumer Price Index

● Federal Funds Effective Rate

● Consumer Price Index: All Urban Consumers, All Items for U.S.



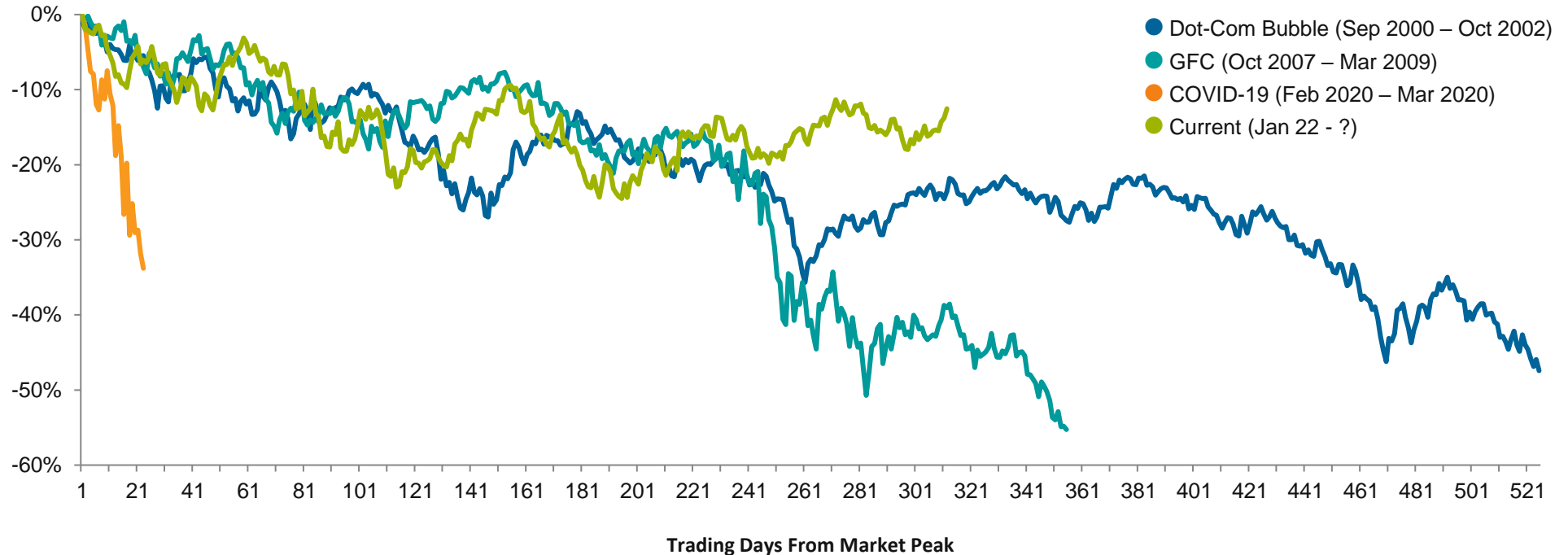
- ▶ The recent inflation spike capped out at 9% in June 2022, well above the last inflation peak from 2005–08.
- ▶ The gap between inflation and the Fed Funds rate reached an unprecedented level going back to 1955 but has closed quickly, as the Fed acted on rates and inflation has come down.
- ▶ Yield history suggests that the Fed Funds rate is typically above inflation, not below it.

Source: Federal Reserve Bank of St. Louis

Current Equity Drawdown: A More 'Typical' Correction?

S&P 500 Cumulative Returns

Market Peak-to-Trough for Recent Corrections vs. 1/4/22 Through 3/31/23



- ▶ While the COVID correction was swift and intense, the 2022 correction resembles the GFC and Dot-Com Bubble.
- ▶ The current drawdown has been 312 trading days through March.
- ▶ It would take another 43 trading days to get to the bottom of the GFC and 213 trading days to get to the bottom of the Dot-Com Bubble.

Sources: Callan, S&P Dow Jones Indices

U.S. Equity Market: Price Relative to History

S&P 500 Index at inflection points

S&P 500 Price Index



- ▶ The S&P is still up almost 80% from the pandemic low.
- ▶ Valuations fell dramatically throughout 2022.

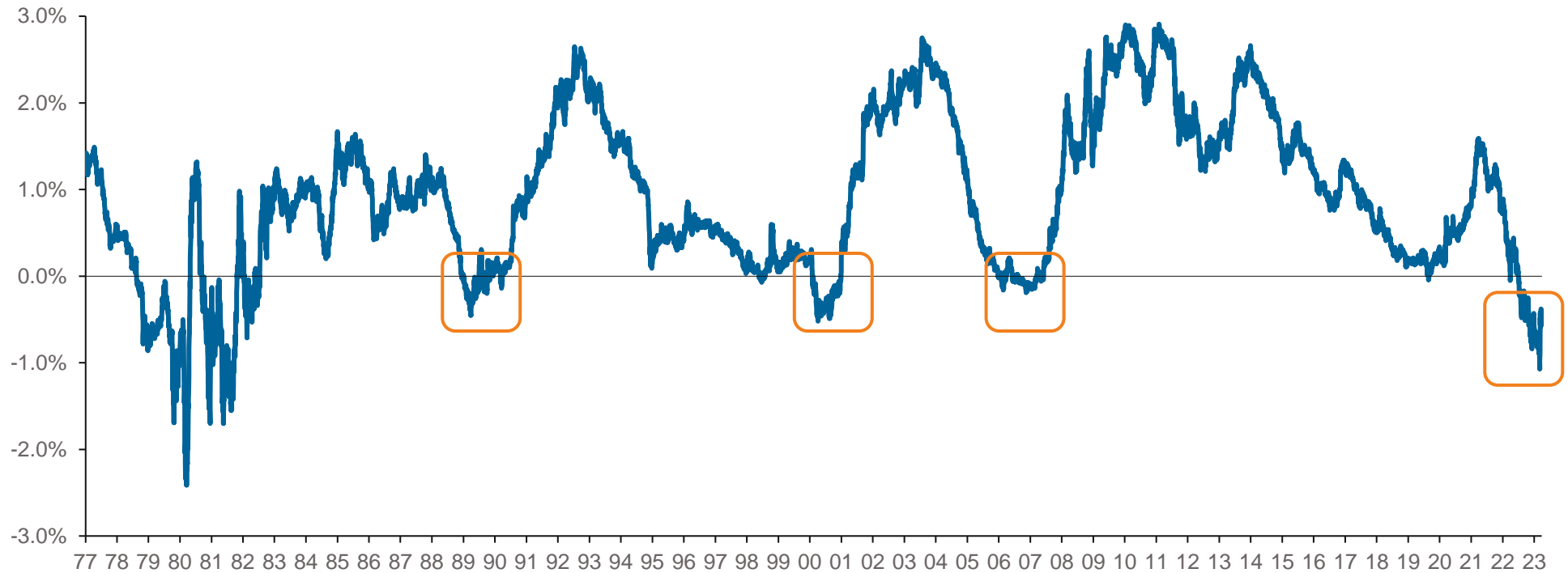
Sources: Compustat, FactSet, Federal Reserve, Refinitiv Datastream, S&P Dow Jones Indices, J.P. Morgan Asset Management.

Dividend yield is calculated as consensus estimates of dividends for the next 12 months, divided by most recent price, as provided by Compustat. Forward price-to-earnings ratio is a bottom-up calculation based on IBES estimates and FactSet estimates since January 2022. Returns are cumulative and based on S&P 500 Index price movement only, and do not include the reinvestment of dividends. Past performance is not indicative of future returns.

Guide to the Markets – U.S. Data are as of December 31, 2022.

Is the Bond Market Expecting a Recession?

10-Year Treasury vs. 2-Year Treasury Spread



- ▶ The 10-year to 2-year Treasury spread has been negative since July 2022.
- ▶ Inversion in this spread does not always forecast a recession, but most recessions are preceded by a yield curve inversion.
 - Yield curve inversion means investors expect a recession will occur and that interest rates will be cut, and therefore increase their demand for securities with longer duration, and therefore a higher potential for capital gain when rates fall.
- ▶ The 10-year Treasury-to-cash spread turned negative, which may be a better indicator of whether recession has already struck.

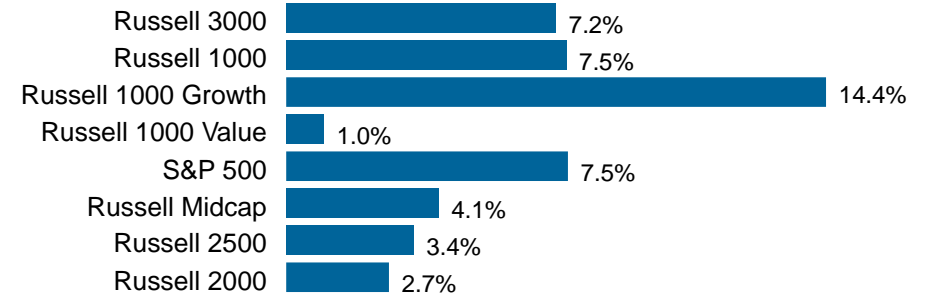
Source: Federal Reserve Bank of St. Louis

U.S. Equity Performance: 1Q23

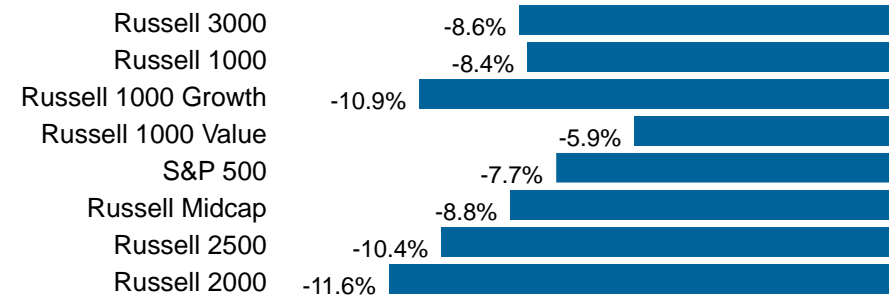
Large cap growth stocks lead broad indices higher; small cap indices hurt by regional bank sell-off

- The S&P 500 posted a second straight quarter of positive performance, gaining 7.5%; large cap growth led all styles, advancing 14.4%; Russell 2000 Value was an exception with a slight decline (0.7%) due to greater exposure to Financials, specifically small banks.
- Three sectors comprising 44% of S&P 500 (63% of Russell 1000 Growth) drove performance: Technology (+21.8%), Communication Services (+20.5%), and Consumer Discretionary (+16.1%). Financials, Energy, and Health Care were negative but had only a modest impact given smaller weights in these benchmarks.
- Small caps (Russell 2000) underperformed large caps (Russell 1000) and growth outperformed value during the quarter, a reversal of trend from 2022. Greater exposure to small banks in Russell 2000 (8.3%) versus Russell 1000 (3.3%) was one differentiator; strong returns for mega-cap Technology also increased divergence.

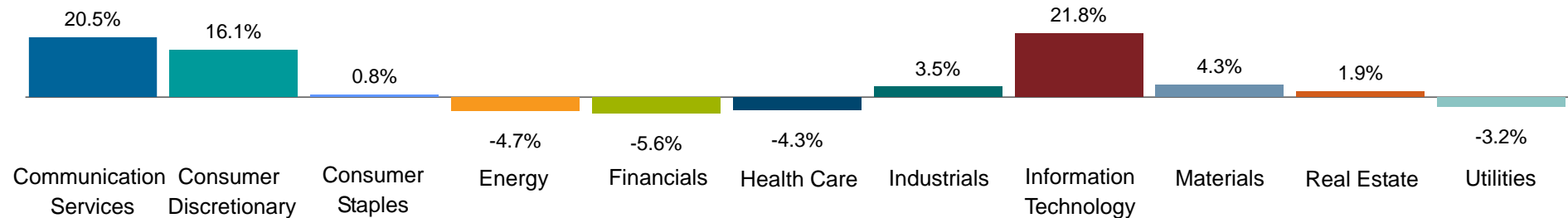
U.S. Equity: Quarter Ended 3/31/23



U.S. Equity: One-Year Returns Ended 3/31/23



Industry Sector Quarterly Performance (S&P 500) as of 3/31/23



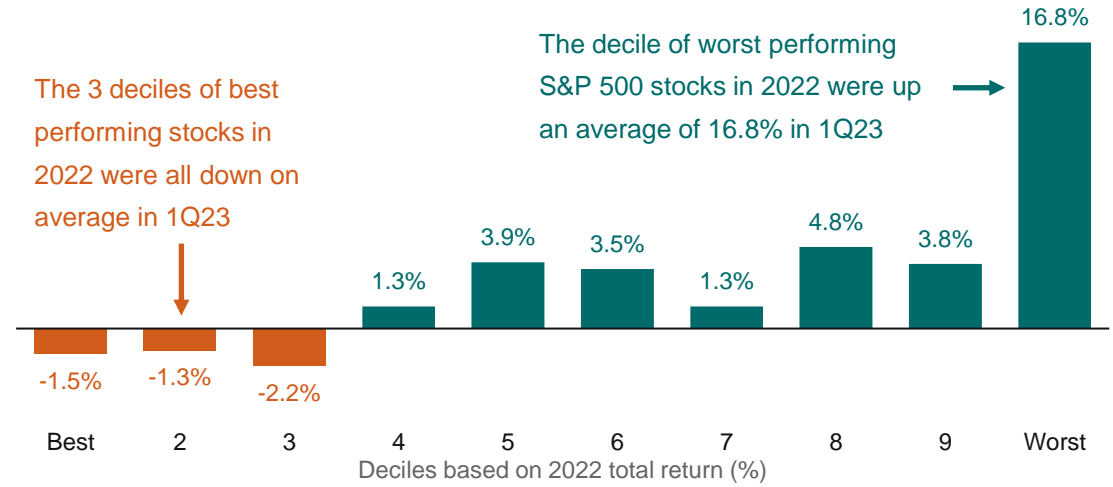
Sources: FTSE Russell, S&P Dow Jones Indices

U.S. Equity Overview

Worst to best: Large caps reverse 2022 trends during 1Q23

- Investors “bought the dip” as stock performance reversed from the prior year—the worst-performing stocks for 2022 became the best-performing stocks during 1Q23 in the S&P 500.
- The top chart illustrates the S&P 500 as deciles (10 groups of 50 stocks each) based on how stocks performed in 2022.
 - Decile 1 contains the 50 stocks that performed the best in 2022, decile 2 contains the 50 next best, etc.
 - Decile 10 contains the 50 stocks that did the worst in 2022.
- The three deciles containing the 150 best performing stocks in 2022 all averaged declines during 1Q23.
- On the flip side, the worst performers in 2022 averaged a gain of 16.8% during 1Q23, with strong absolute performance from mega-cap growth names such as NVIDIA, Meta, Tesla, and Salesforce.

S&P 500 Deciles: 1Q23 Avg Performance Based on 2022 Performance



Best-Performing S&P 500 Stocks in 1Q23

Name	Sector	Price	Market Cap (\$bn)	Total Return (%)	
				2022	QTD
NVIDIA	Technology	277.77	686.1	-50.27	90.10
Meta Platforms	Comm Svcs	211.94	549.5	-64.22	76.12
Tesla	Cons Discret	207.46	656.4	-65.03	68.42
Warner Bros Discovery	Comm Svcs	15.10	36.8	--	59.28
Align Technology	Health Care	334.14	25.6	-67.91	58.44
Advanced Micro Devices	Technology	98.01	157.9	-54.99	51.32
Salesforce	Technology	199.78	199.8	-47.83	50.68
West Pharmaceutical	Health Care	346.47	25.7	-49.70	47.32
General Electric	Industrials	95.60	104.2	-10.92	46.35
Catalent	Health Care	65.71	11.8	-64.84	45.99

Source: Bespoke Investment

Global/Global ex-U.S. Equity Performance: 1Q23

A reversal of 2022

1Q23 brought global and global ex-U.S. equity markets back to black.

Positive results despite hiccups

- ▶ The first quarter of the year was marked by the collapse of Silicon Valley Bank and Credit Suisse, which sent fears of a banking crisis across global markets.
- ▶ Despite a Fed hike during the period, investors began to price in lower rate expectations.
- ▶ Europe outperformed other regions, making up ground lost in 2022 as inflation eased and recession fears lessened.

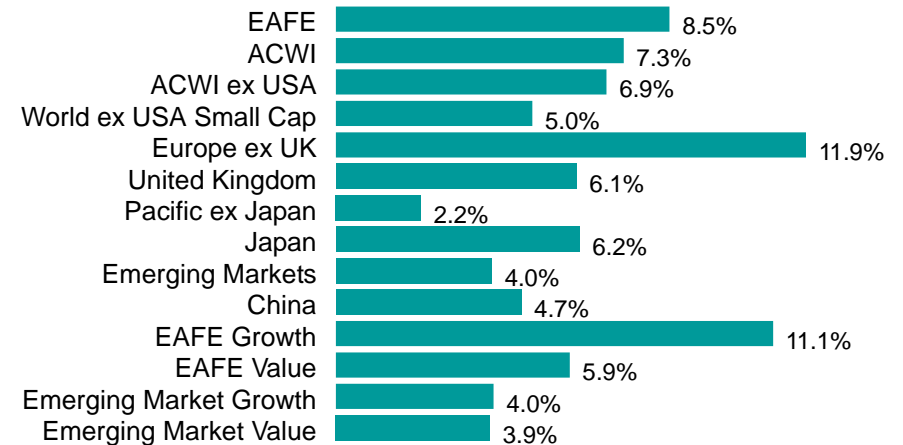
Growth vs. value

- ▶ Growth outpaced value across developed and emerging markets.
 - In a reversal from 2022, investors preferred growth alongside a drawdown in banks; Information Technology was the largest outperformer.

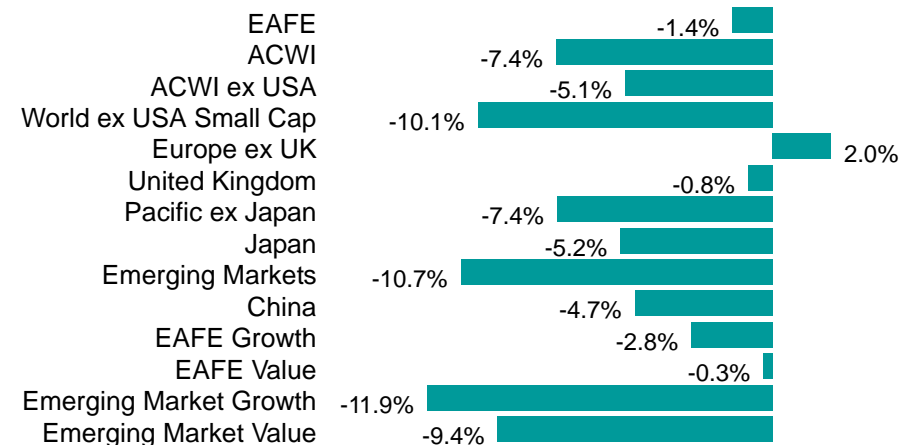
U.S. dollar vs. other currencies

- ▶ After some strength early in the quarter, the U.S. dollar declined 1% as interest rate differentials narrowed globally.

Global Equity Returns: Quarter Ended 3/31/23



Global Equity Returns: One Year Ended 3/31/23



Source: MSCI

Global/Global ex-U.S. Equity Key Themes

De-dollarization rhetoric crescendo

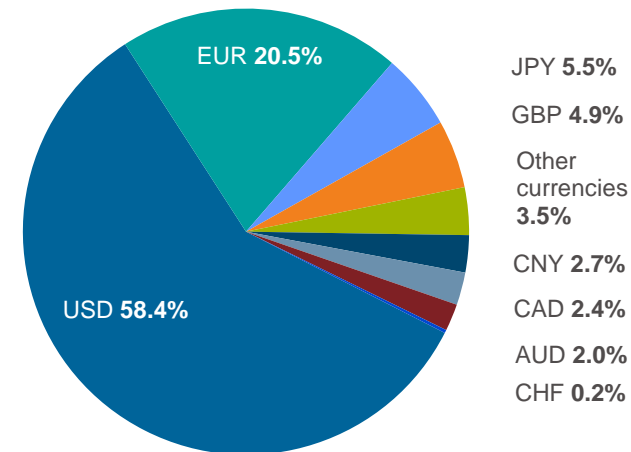
Dollar hegemony intact despite debt ceiling concerns

- ▶ Around \$2 trillion notes in circulation, half of which are outside of the U.S.
- ▶ Approximately 88% of all international transactions are done with the dollar.
- ▶ The U.S. dollar constituted 58% of global foreign exchange reserves as of 4Q22.
 - The euro was a distant second with 21%, followed by the yen with 6%.
 - The Chinese yuan only accounted for 3%.

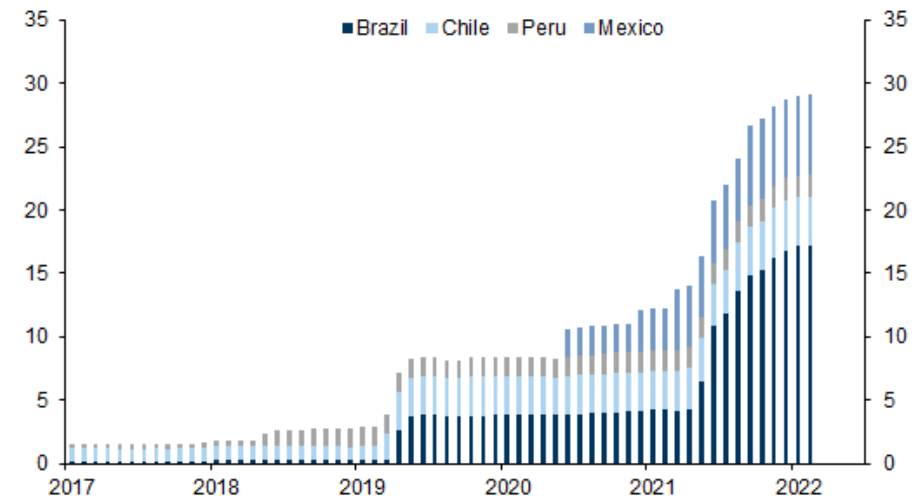
Geopolitics and de-globalization may erode dominance

- ▶ As the U.S. sanctioned more than \$300 billion of Russia's foreign currency reserves in February 2022 after the invasion of Ukraine, appetite to diversify reserve holdings increased.
- ▶ Bilateral trade agreements are starting to settle in local currencies and reducing reliance on the dollar.
 - Brazil, Chile, Peru, and Mexico have added nearly \$30 billion in yuan reserves combined over the past five years given the shifting commodity demand.
- ▶ Due to limited transparency and capital controls, the yuan may not replace the dollar as the reserve currency. However, the rise of bilateral trades may lead to diversified reserve holdings to mitigate dependence on the dollar.

Foreign Exchange Reserves by Currency (4Q22)



LatAm CNY Reserves (\$billion)



Sources: Goldman Sachs Global Investment Research, I/B/E/S, IMF, MSCI

U.S. Fixed Income Performance: 1Q23

Bloomberg Aggregate was positive in 1Q but mixed

- January: +3.1%
- February: -2.6%
- March: +2.5%

U.S. Treasury volatility was pronounced

- 2-year US Treasury yield high was 5.08% on 3/8 and low was 3.77% on 3/24
- MOVE Index highest since 2008

Yield curve remained inverted but was also volatile

- 2yr/10yr => 3/31: -58 bps; max 3/8: -109; min 3/23: -38
- 1yr/10yr => 3/31: -116 bps

Fed raised rates bringing target to 4.75%–5.00%

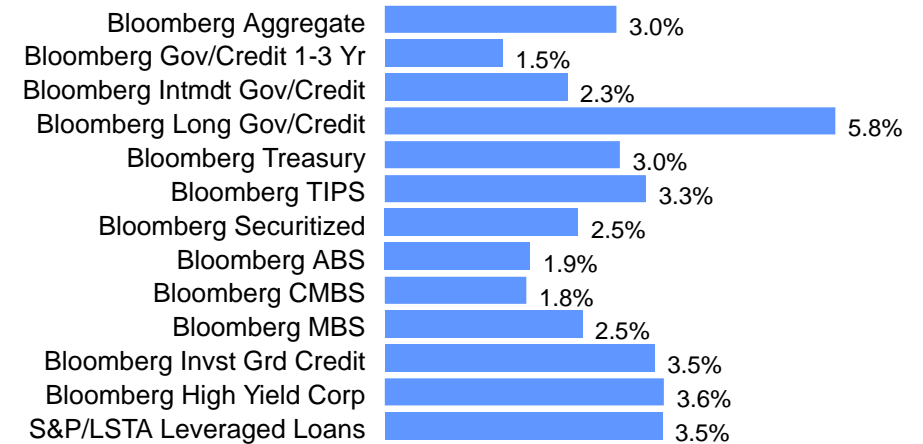
- Median expectation from Fed is 5.1% for year-end 2023; market pricing in Fed cuts by year-end
- Inflation moderated but still high and job market tight

Sector performance mixed

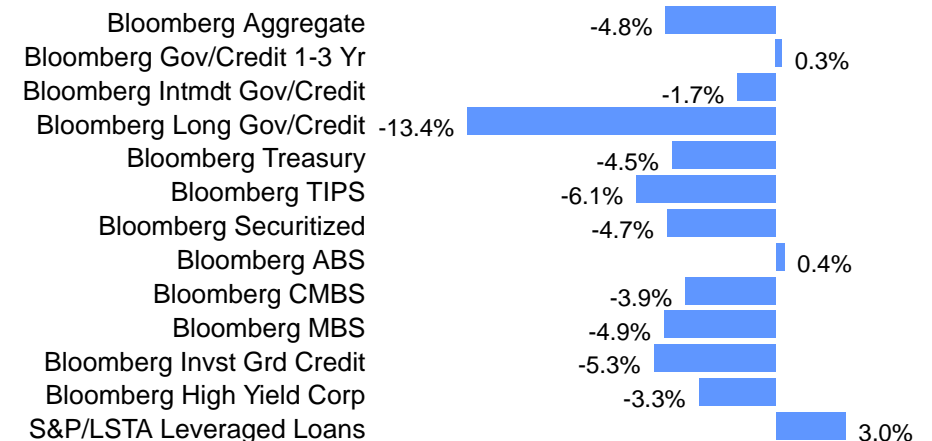
- Corporate Industrials excess return: +58 bps
- Corporate Financials excess return: -39 bps
- RMBS: -50 bps
- CMBS excess return: -74 bps
- High Yield excess return: +123 bps
- Valuations fair
- Credit spreads have not widened materially and are close to historical averages

Sources: Bloomberg, S&P Dow Jones Indices

U.S. Fixed Income Returns: Quarter Ended 3/31/23



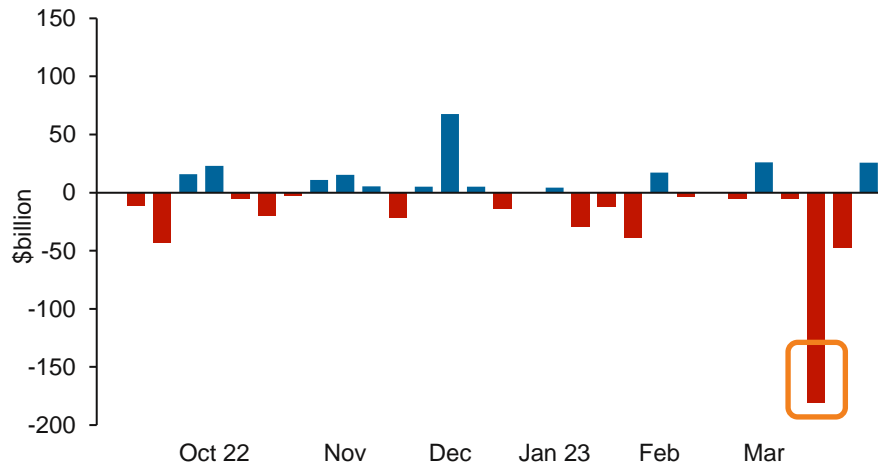
U.S. Fixed Income Returns: One Year Ended 3/31/23



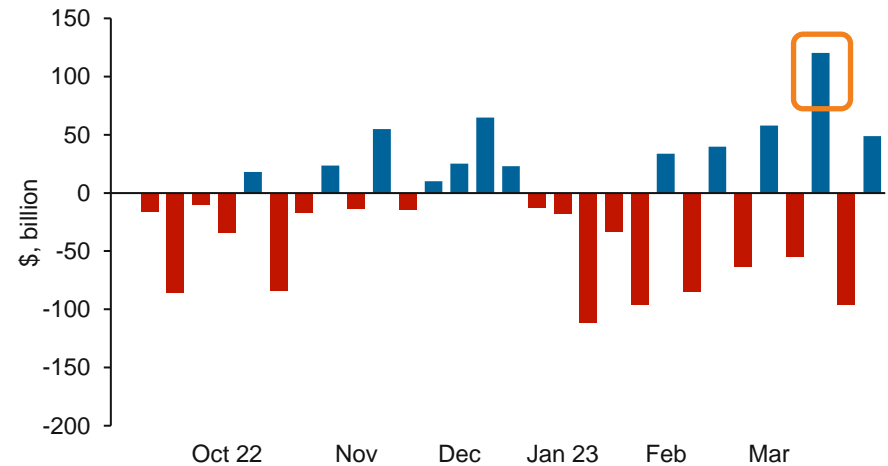
Fixed Income Themes

Regional bank contagion fears ignited as the FDIC took over Silicon Valley and Signature banks

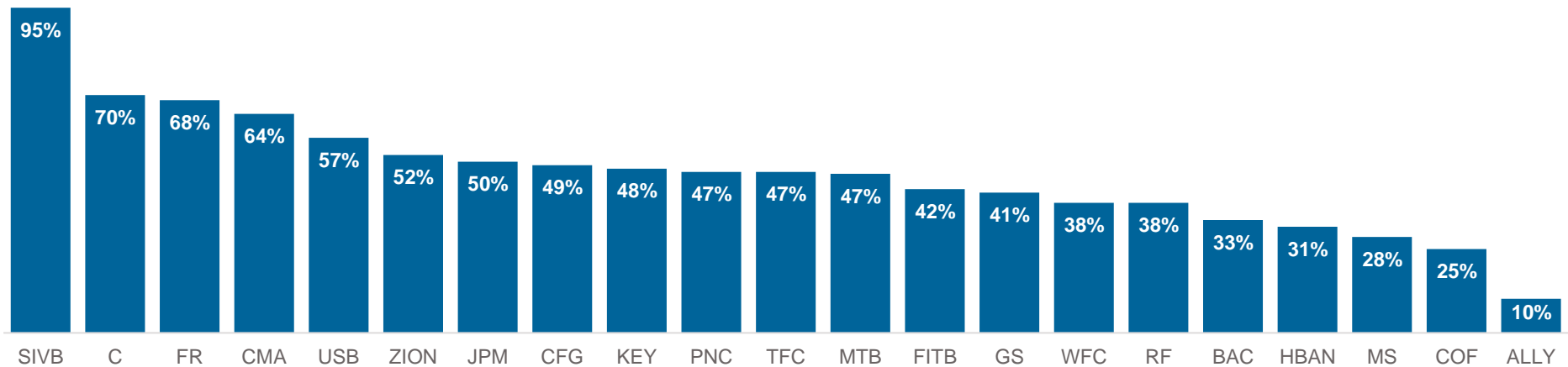
Small Banks – Deposits change from a week ago



Large Banks – Deposits change from a week ago



Uninsured Domestic U.S. Deposits as Percent of Total Deposits (ex-trust banks), 4Q22



Sources: Barclays, Federal Reserve

Diversification Remains Key Risk Control

Periodic Table of Investment Returns

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	1 Qtr. 2023
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	Large Cap	Real Estate Funds	Non-U.S. Equity
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%	28.71%	6.55%	8.02%
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	Real Estate Funds	Cash Equivalent	Large Cap
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%	21.02%	1.46%	7.50%
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	Small Cap	Hedge Funds	Emerging Markets
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%	14.82%	1.06%	3.96%
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	Non-U.S. Equity	High Yield	High Yield
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%	12.62%	-11.19%	3.57%
Real Estate Funds	Large Cap	Real Estate Funds	Non-U.S. Fixed	Hedge Funds	Large Cap	Large Cap	Large Cap	High Yield	Hedge Funds	Hedge Funds	Hedge Funds	Real Estate Funds	Non-U.S. Fixed	Non-U.S. Fixed	High Yield	Non-U.S. Equity	Hedge Funds	U.S. Fixed	Non-U.S. Fixed
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%	8.23%	-13.01%	3.06%
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	High Yield	Non-U.S. Equity	U.S. Fixed
11.13%	4.55%	13.86%	6.97%	-26.16%	18.57%	10.95%	0.10%	9.79%	7.44%	2.45%	-3.04%	2.75%	7.50%	-3.19%	9.31%	7.51%	5.28%	-14.29%	2.96%
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	Cash Equivalent	Large Cap	Small Cap
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%	0.05%	-18.11%	2.74%
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	U.S. Fixed	Non-U.S. Fixed	Cash Equivalent
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%	-1.54%	-18.70%	1.07%
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	Emerging Markets	Emerging Markets	Hedge Funds
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%	-2.54%	-20.09%	0.16%
Cash Equivalent	Non-U.S. Fixed	U.S. Fixed	Small Cap	Emerging Markets	Real Estate Funds	Cash Equivalent	Emerging Markets	Cash Equivalent	Non-U.S. Fixed	Non-U.S. Equity	Emerging Markets	Cash Equivalent	Cash Equivalent	Emerging Markets	Cash Equivalent	Real Estate Funds	Non-U.S. Fixed	Small Cap	Real Estate Funds
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%	-7.05%	-20.44%	-3.38%

- 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

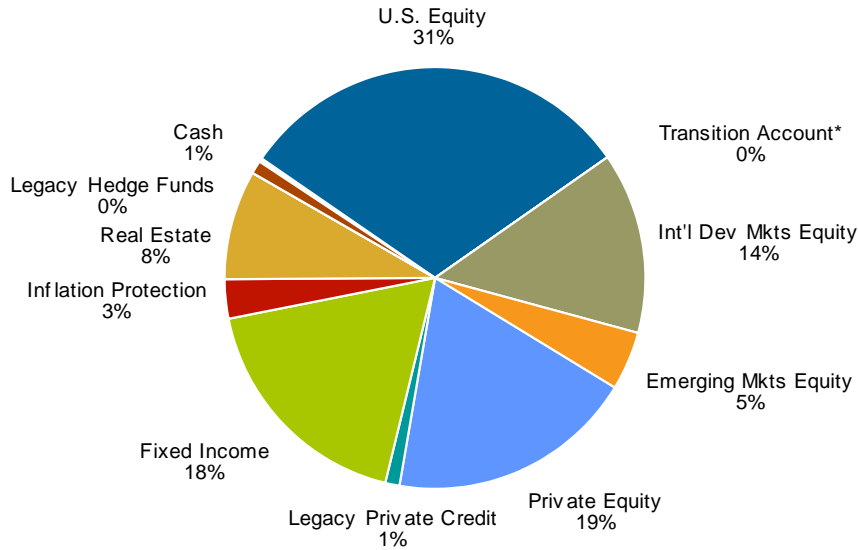
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**PA SERS Defined Benefit Plan
Performance Review**

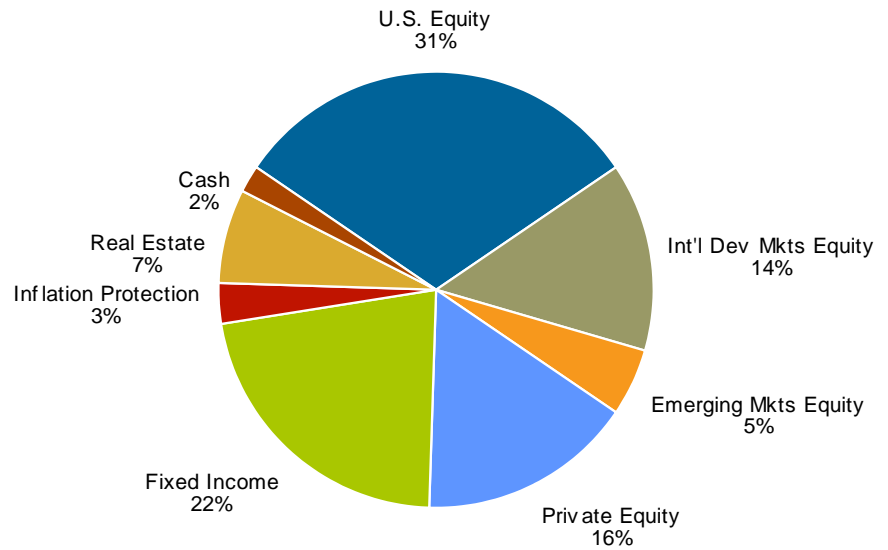
Total Fund

Actual Asset Allocation versus Target as of March 31, 2023

Actual Asset Allocation



Target Asset Allocation



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
U.S. Equity	10,679,551	30.7%	31.0%	(0.3%)	(88,946)
Transition Account*	1,002	0.0%	0.0%	0.0%	1,002
Int'l Dev Mkts Equity	4,835,243	13.9%	14.0%	(0.1%)	(27,949)
Emerging Mkts Equity	1,571,794	4.5%	5.0%	(0.5%)	(165,060)
Private Equity	6,617,175	19.0%	16.0%	3.0%	1,059,241
Legacy Private Credit	390,861	1.1%	0.0%	1.1%	390,861
Fixed Income	6,295,672	18.1%	22.0%	(3.9%)	(1,346,487)
Inflation Protection	1,041,855	3.0%	3.0%	(0.0%)	(257)
Real Estate	2,933,256	8.4%	7.0%	1.4%	501,660
Legacy Hedge Funds	17,079	0.0%	0.0%	0.0%	17,079
Cash	353,599	1.0%	2.0%	(1.0%)	(341,143)
Total	34,737,086	100.0%	100.0%		

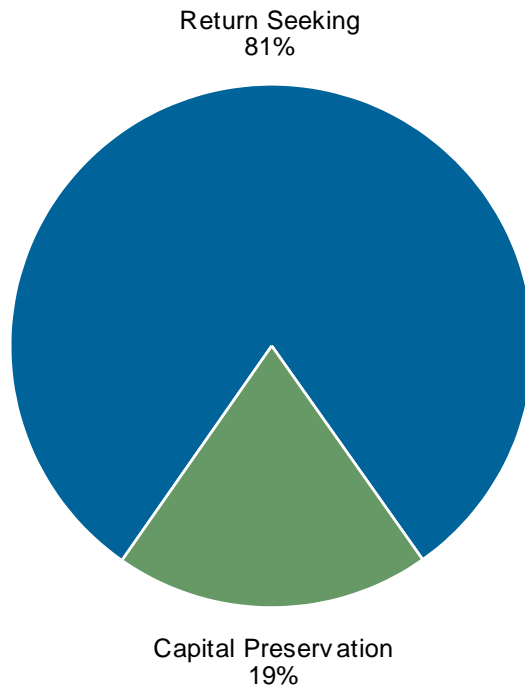
*Market values are shown net of accrued fees.

*Transition account market values are not included in any asset class and are excluded from these charts.

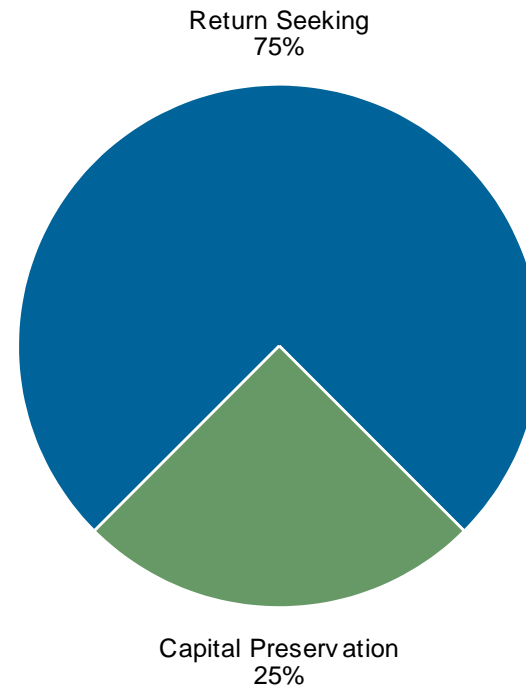
Return Seeking and Capital Preservation Assets

As of March 31, 2023

Actual Asset Allocation



Target Asset Allocation



*Return Seeking Assets: U.S. Equity, Int'l Developed Markets Equity, Emerging Markets Equity, Transition Account, Private Equity, Real Estate, Opportunistic Fixed Income, Legacy Hedge Funds and Legacy Private Credit.

*Capital Preservation Assets: Core Fixed Income, Nominal U.S. Treasuries, Inflation Protection (TIPS) and Cash.

*Market values are shown net of accrued fees.

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	Real Estate	Private Equity
Policy Target Asset Allocation	2%	3%	22%	31%	14%	5%	7%	16%
Projected Return* (Geometric)	2.75%	4.00%	4.25%	7.35%	7.25%	7.45%	7.30%	8.50%
Projected Risk* (Standard Deviation)	0.90%	5.30%	4.10%	18.05%	20.15%	25.70%	16.35%	27.60%
Liquidity	High	High	High	High	High	Medium	Low	Low
Correlation to U.S. Equity*	-0.06	-0.07	0.02	1.00	0.73	0.79	0.44	0.79
Months of Benefit Payments**	1.1	3.3	16.7					
Months of Benefit Payments (Includes EE & ER Contributions)**	3.8	11.3	57.6					
Cumulative Months of Benefit Payments (Includes EE & ER Contributions)**		72.8						

*Callan 2023 Capital Market Projections

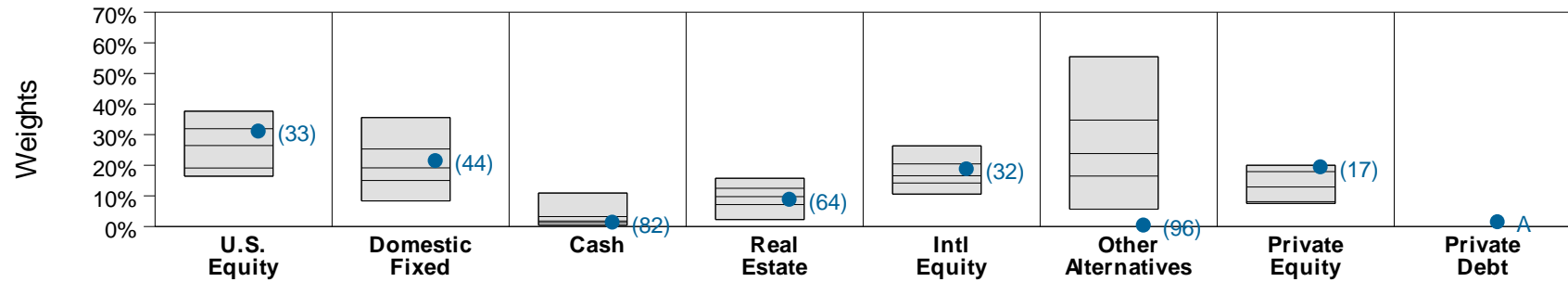
**Provided by SERS IO as of 3/31/2023. Benefit payment calculations for fixed income represent core fixed income , TIPS, treasury and cash allocations.

[^]Core and Opportunistic fixed Income combined

Total Fund

Actual Asset Allocation versus Very Large Public DB Plan (>\$10B) Peers as of March 31, 2023

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 Debt
10th Percentile	37.70	35.63	10.94	15.76	26.34	55.47	20.00	-
25th Percentile	31.92	25.32	3.26	12.48	20.47	34.76	17.90	-
Median	26.48	19.19	1.81	9.78	16.57	23.84	12.90	-
75th Percentile	19.13	15.01	1.25	7.19	14.18	16.45	8.10	-
90th Percentile	16.40	8.35	0.46	2.26	10.56	5.65	7.51	-
Fund ●	30.74	21.12	1.02	8.44	18.44	0.05	19.05	1.13
% Group Invested	96.67%	100.00%	83.33%	86.67%	96.67%	76.67%	20.00%	0.00%

* Current Quarter Target = 22% Bloomberg U.S. Agg Bond Index, 16% SERS Private Equity Composite, 31% Russell 3000 Index, 14% MSCI World ex US IMI Index, 7% NCREIF NFI-ODCE (Quarter lag), 5% MSCI Emerging Markets IMI Index, 3% Bloomberg US TIPS Index, 2% ICE BofAML 3 Mo US T-Bill Index.

Total Fund

One Quarter Attribution Analysis versus Target – Gross of Fees as of March 31, 2023

Note: Attribution is a snapshot 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, 2023

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
U.S. Equity	31%	31%	6.98%	7.18%	(0.06%)	(0.01%)	(0.07%)
Int'l Dev. Mkts Equity	13%	14%	8.41%	7.58%	0.11%	(0.04%)	0.07%
Emerging Markets	4%	5%	5.50%	3.94%	0.06%	0.00%	0.06%
Private Equity	19%	16%	1.18%	1.18%	0.00%	(0.11%)	(0.11%)
Legacy Private Credit	1%	0%	2.26%	2.26%	0.00%	(0.02%)	(0.02%)
Fixed Income	18%	22%	2.99%	2.96%	0.01%	0.04%	0.04%
Inflation Protection	3%	3%	3.61%	3.34%	0.01%	(0.00%)	0.01%
Real Estate	9%	7%	(2.33%)	(5.08%)	0.25%	(0.17%)	0.08%
Legacy Hedge Funds	0%	0%	2.28%	2.28%	0.00%	(0.00%)	(0.00%)
Cash	1%	2%	1.11%	1.07%	0.00%	0.01%	0.01%
Total			4.17%	4.10%	+ 0.38%	+ (0.30%)	0.07%

- **What helped relative attribution?**
 - Outperformance relative to target from Real Estate managers
 - Outperformance relative to target from non-U.S. Developed Markets Equity and Emerging Markets Equity managers
- **What hurt relative attribution?**
 - An overweight to Private Equity and Real Estate (attribution based on target return)
 - Underperformance relative to target from U.S. Equity managers (small cap underperformed large cap)

* Current Quarter Target = 22% Bloomberg U.S. Agg Bond Index, 16% SERS Private Equity Composite, 31% Russell 3000 Index, 14% MSCI World ex US IMI Index, 7% NCREIF NFI-ODCE (Quarter lag), 5% MSCI Emerging Markets IMI Index, 3% Bloomberg US TIPS Index, 2% ICE BofAML 3 Mo US T-Bill Index.
Returns are shown gross of fees

Total Fund

One Year Attribution Analysis versus Target – Gross of Fees as of March 31, 2023

Note: Attribution is a snapshot 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	31%	31%	(8.39%)	(8.58%)	0.06%	(0.13%)	(0.08%)
Int'l Dev. Mkts Equity	13%	14%	(2.33%)	(3.85%)	0.19%	(0.05%)	0.14%
Emerging Markets	3%	5%	(9.36%)	(10.74%)	0.05%	0.05%	0.11%
Private Equity	19%	15%	(6.88%)	(6.88%)	0.00%	0.03%	0.03%
Legacy Private Credit	2%	1%	8.17%	4.57%	0.10%	(0.14%)	(0.04%)
Fixed Income	20%	22%	(4.77%)	(4.78%)	0.01%	(0.01%)	(0.00%)
Inflation Protection	3%	3%	(6.97%)	(6.06%)	(0.03%)	(0.00%)	(0.03%)
Real Estate	8%	7%	1.42%	4.88%	(0.27%)	(0.01%)	(0.28%)
Legacy Hedge Funds	0%	0%	(11.02%)	(11.02%)	0.00%	(0.00%)	(0.00%)
Cash	2%	2%	2.75%	2.50%	0.00%	0.01%	0.01%
Total			(5.31%)	(5.16%)	+ 0.11%	+ (0.25%)	(0.14%)

What helped relative attribution?

- Outperformance relative to target from U.S. Equity, non-U.S. Developed Markets Equity and Emerging Markets Equity managers
- Outperformance relative to target from Legacy Private Credit managers
- An underweight as compared to target to Emerging Markets Equity helped performance (attribution based on target return)

What hurt relative attribution?

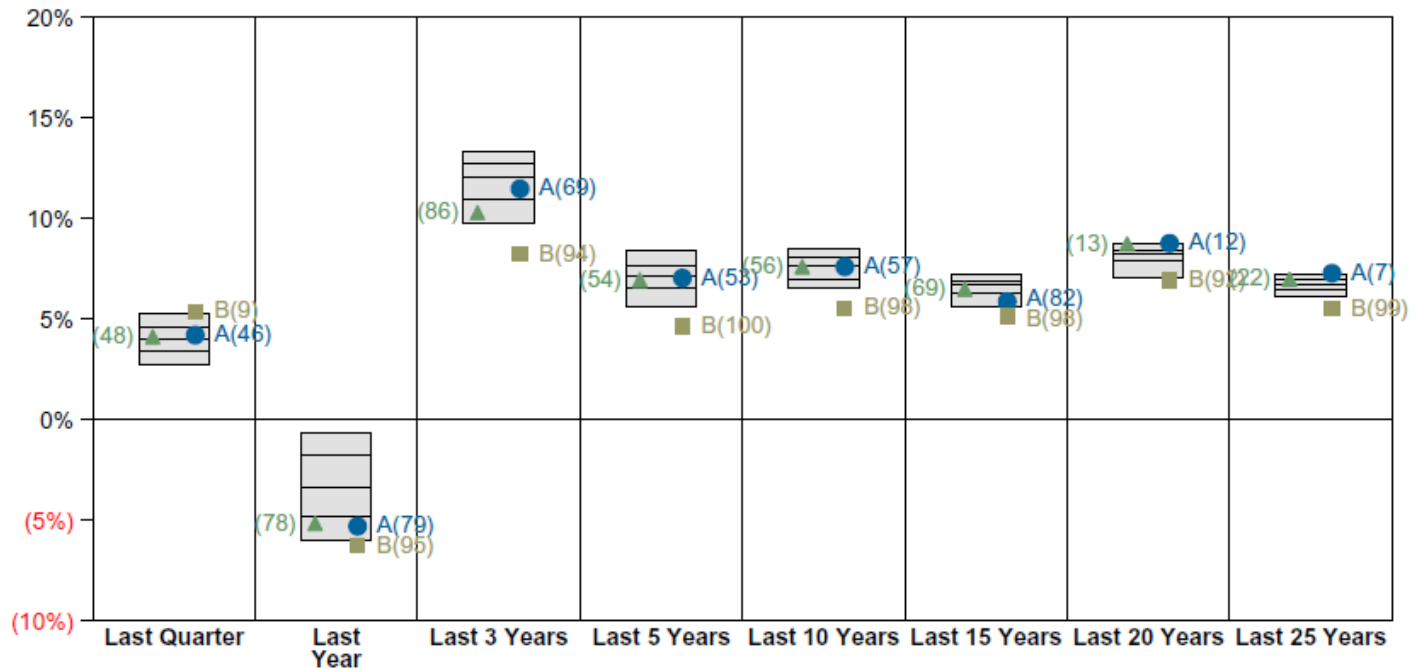
- Underperformance relative to target from Real Estate managers
- Relative weights as compared to target to U.S. Equity, non-U.S. Developed Markets Equity and Legacy Private Credit hurt performance (attribution based on target return)

* Current Quarter Target = 22% Bloomberg U.S. Agg Bond Index, 16% SERS Private Equity Composite, 31% Russell 3000 Index, 14% MSCI World ex US IMI Index, 7% NCREIF NFI-ODCE (Quarter lag), 5% MSCI Emerging Markets IMI Index, 3% Bloomberg US TIPS Index, 2% ICE BofAML 3 Mo US T-Bill Index.
Returns are shown gross of fees.

Total Fund

Gross of Fee Performance versus Very Large Public DB Plan (>\$10B) Peers and Benchmark as of March 31, 2023

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



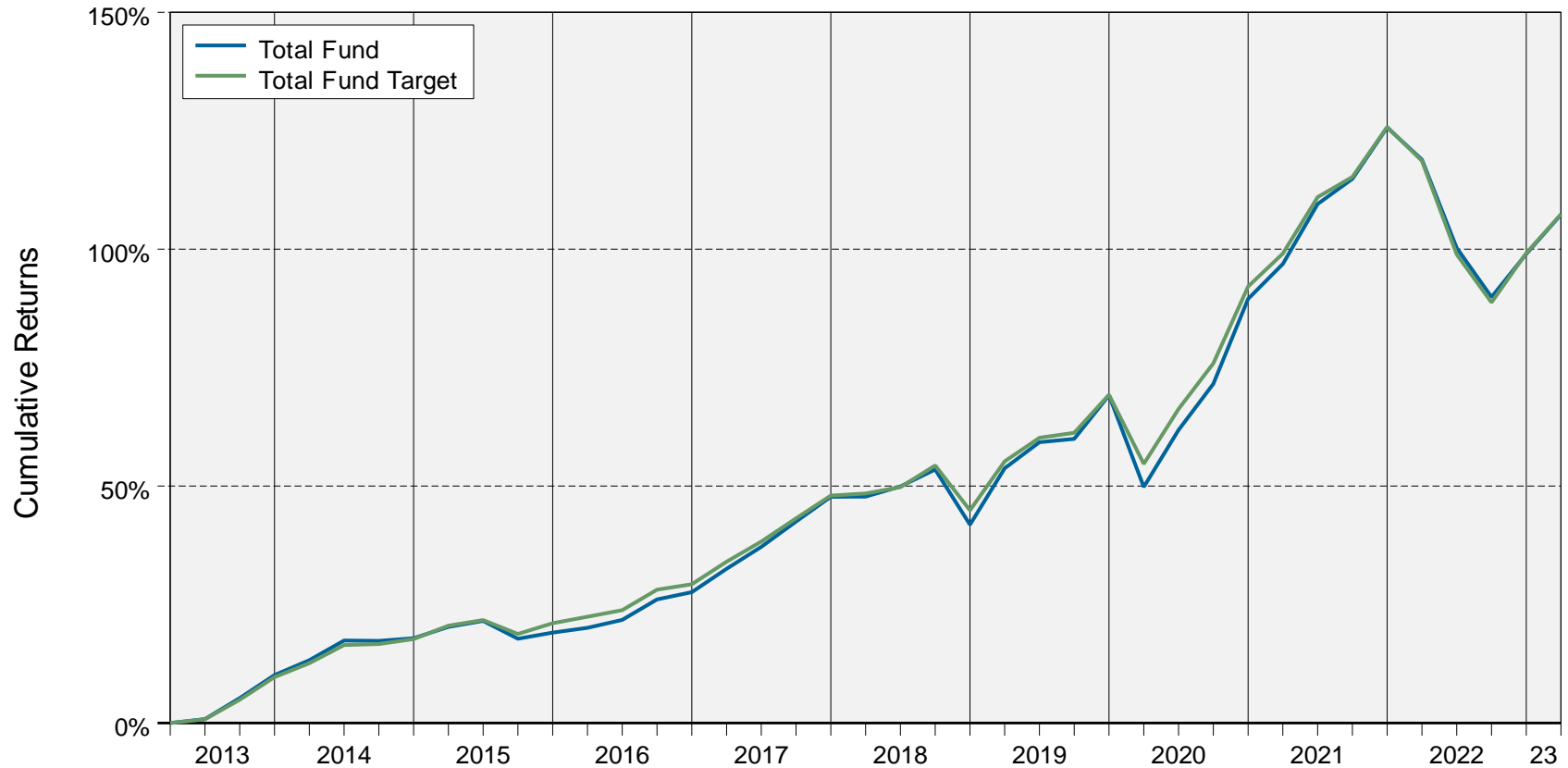
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years
10th Percentile	5.22	(0.70)	13.28	8.38	8.49	7.19	8.75	7.17
25th Percentile	4.59	(1.76)	12.68	7.64	8.01	6.86	8.39	6.92
Median	3.97	(3.36)	12.00	7.08	7.59	6.64	8.17	6.72
75th Percentile	3.36	(4.78)	10.90	6.50	6.95	6.23	7.87	6.39
90th Percentile	2.67	(5.98)	9.69	5.62	6.49	5.58	7.03	6.12
Total Fund	● A 4.17	(5.31)	11.43	7.01	7.56	5.84	8.73	7.24
60% MSCI ACW IMI/40% Blimbg U.S. Agg	■ B 5.36	(6.28)	8.18	4.62	5.51	5.11	6.89	5.49
Total Fund Custom Benchmark	▲ 4.10	(5.16)	10.26	6.91	7.57	6.46	8.71	6.95

* Current Quarter Target = 22% Bloomberg U.S. Agg Bond Index, 16% SERS Private Equity Composite, 31% Russell 3000 Index, 14% MSCI World ex US IMI Index, 7% NCREIF NFI-ODCE (Quarter lag), 5% MSCI Emerging Markets IMI Index, 3% Bloomberg US TIPS Index, 2% ICE BofAML 3 Mo US T-Bill Index.

Total Fund

Cumulative 10-year Returns vs Target as of March 31, 2023

Cumulative Returns Actual vs Target

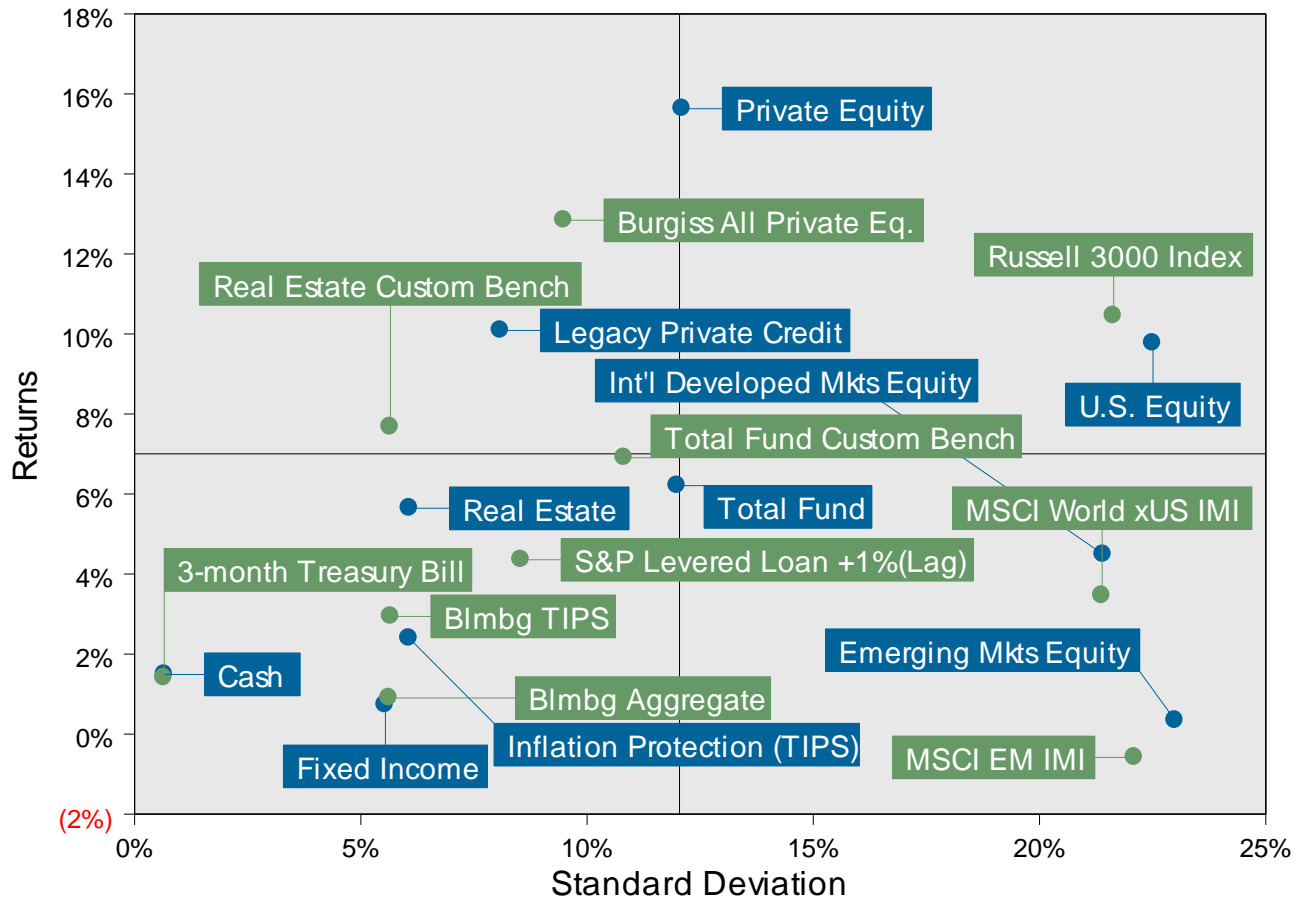


* Current Quarter Target = 22% Bloomberg U.S. Agg Bond Index, 16% SERS Private Equity Composite, 31% Russell 3000 Index, 14% MSCI World ex US IMI Index, 7% NCREIF NFI-ODCE (Quarter lag), 5% MSCI Emerging Markets IMI Index, 3% Bloomberg US TIPS Index, 2% ICE BofAML 3 Mo US T-Bill Index.

Total Fund

Asset Class Risk and Return as of March 31, 2023

Five Year Annualized Risk vs Return Asset Classes vs Benchmark Indices

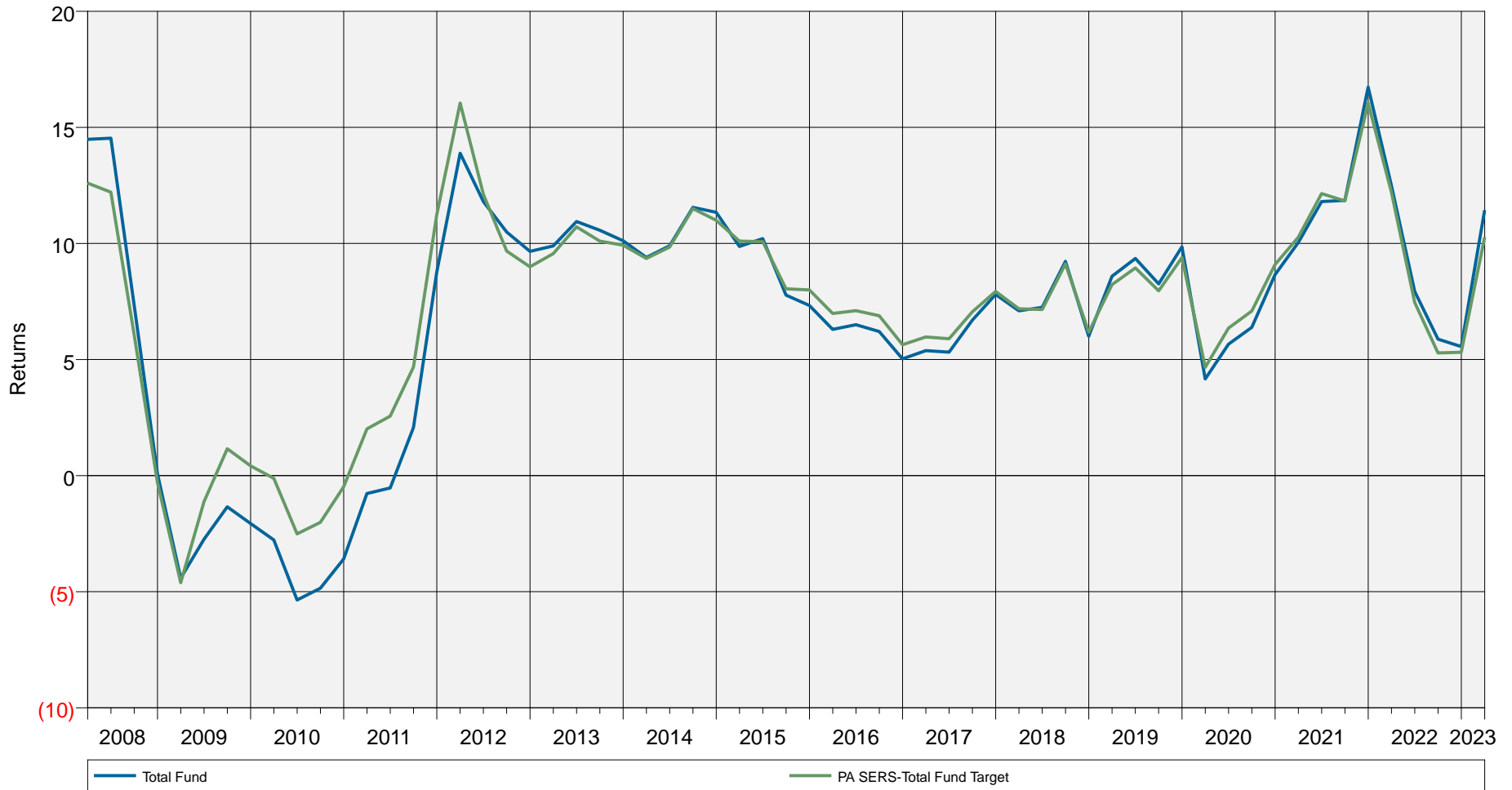


* Current Quarter Target = 22% Bloomberg U.S. Agg Bond Index, 16% SERS Private Equity Composite, 31% Russell 3000 Index, 14% MSCI World ex US IMI Index, 7% NCREIF NFI-ODCE (Quarter lag), 5% MSCI Emerging Markets IMI Index, 3% Bloomberg US TIPS Index, 2% ICE BofAML 3 Mo US T-Bill Index.

Total Fund

Rolling 3-year Gross of Fee Performance versus Benchmark as of March 31, 2023

Rolling 12 Quarter Gross of Fee Returns
for 15 Years Ended March 31, 2023



* Current Quarter Target = 22% Bloomberg U.S. Agg Bond Index, 16% SERS Private Equity Composite, 31% Russell 3000 Index, 14% MSCI World ex US IMI Index, 7% NCREIF NFI-ODCE (Quarter lag), 5% MSCI Emerging Markets IMI Index, 3% Bloomberg US TIPS Index, 2% ICE BofAML 3 Mo US T-Bill Index.

Total Fund

Rolling 5-year Gross of Fee Performance versus Benchmark as of March 31, 2023

Rolling 20 Quarter Gross of Fee Returns
for 15 Years Ended March 31, 2023



* Current Quarter Target = 22% Bloomberg U.S. Agg Bond Index, 16% SERS Private Equity Composite, 31% Russell 3000 Index, 14% MSCI World ex US IMI Index, 7% NCREIF NFI-ODCE (Quarter lag), 5% MSCI Emerging Markets IMI Index, 3% Bloomberg US TIPS Index, 2% ICE BofAML 3 Mo US T-Bill Index.

Asset Class Returns

As of March 31, 2023

	Market Value \$(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Net Performance						
Total Fund	\$34,737	100.00%	4.07%	(5.51%)	10.48%	6.21%
Total Fund Custom Benchmark(1)	-	-	4.10%	(5.16%)	10.26%	6.91%
Public Market Equiv Benchmark(2)	-	-	6.02%	(5.78%)	8.38%	6.09%
60/40 Index(3)	-	-	5.36%	(6.28%)	8.18%	4.62%
U.S. Equity	\$10,680	30.74%	6.97%	(8.41%)	18.96%	9.77%
Russell 3000 Index (4)	-	-	7.18%	(8.58%)	18.48%	10.45%
S&P 1500 Index	-	-	7.16%	(7.61%)	18.88%	10.83%
Int'l Developed Mkts Equity	\$4,835	13.92%	8.38%	(2.46%)	14.76%	4.49%
MSCI World ex US IMI	-	-	7.58%	(3.85%)	13.46%	3.46%
Emerging Mkts Equity	\$1,572	4.52%	5.38%	(9.82%)	9.37%	0.34%
MSCI EM IMI	-	-	3.94%	(10.74%)	9.18%	(0.58%)
Private Equity	\$6,617	19.05%	0.83%	(6.85%)	19.14%	15.63%
Burgiss Private Equity Index (Qtr lag)	-	-	0.01%	(5.85%)	13.80%	12.84%
Global Equity + 3% (Qtr lag)(5)	-	-	10.16%	(14.11%)	9.61%	11.63%
Legacy Private Credit Funds (6)	\$391	1.13%	1.98%	6.98%	10.99%	10.09%
S&P Levered Loan Index + 1% (Qtr lag)	-	-	2.97%	0.41%	3.62%	4.36%
Fixed Income	\$6,296	18.12%	2.96%	(4.87%)	(1.29%)	0.73%
Blmbg U.S. Agg Bond Index	-	-	2.96%	(4.78%)	(2.77%)	0.91%
Inflation Protection (TIPS)	\$1,042	3.00%	3.58%	(7.07%)	1.24%	2.40%
Blmbg U.S. TIPS Index	-	-	3.34%	(6.06%)	1.75%	2.94%
Real Estate	\$2,933	8.44%	(2.52%)	(0.20%)	8.42%	5.64%
Real Estate Custom Bench (Qtr lag)(7)	-	-	(5.08%)	4.88%	10.18%	7.67%
CPI + 3% (Qtr lag)	-	-	0.74%	9.46%	7.92%	6.78%
Cash	\$354	1.02%	1.11%	2.75%	1.02%	1.49%
3-month Treasury Bill	-	-	1.07%	2.50%	0.89%	1.41%

* All returns on this report are shown with 2- decimal precision. This may differ from the decimal precision shown in BNY Mellon reports.

(1) Current Quarter Target = 22% Bloomberg U.S. Agg Bond Index, 16% SERS Private Equity Composite, 31% Russell 3000 Index, 14% MSCI World ex US IMI Index, 7% NCREIF NFI-ODCE (Quarter lag), 5% MSCI Emerging Markets IMI Index, 3% Bloomberg US TIPS Index, 2% ICE BofAML 3 Mo US T-Bill Index. See page 75 for full benchmark history.

(2) The current public equivalent benchmark consists of: 22% Bloomberg U.S. Agg Bond Index, 31% Russell 3000, 14% MSCI World ex US IMI Index, 12% Russell 3000+ 3% (Qtr lag), 7% CPI+3% (Qtr Lag), 3% Bloomberg US TIPS Index, 5% MSCI EM IMI Index, 4% MSCI World ex US +3% (Qtr lag), 2% ICE BofAML 3 Mo US T-Bill Index. See page 75 for full benchmark history.

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

(4) Benchmark history is a blend of current and past benchmark indices. History prior to 12/31/2018 is provided by RVK.

(5) 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.

(6) Legacy Private Credit performance is included in the total fund starting at the composite's true inception date, 07/01/2022. The history is calculated and shown for informational purposes.

(7) As of 07/01/2022, the benchmark consists of 100% NCREIF NFI-ODCE (Qtr lag). From 03/31/2019 to 07/01/2022, the benchmark consists of 90% NCREIF ODCE Index (Qtr lag) and 10% FTSE NAREIT Index (unlagged).

Asset Class Returns

As of March 31, 2023

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception	
Net Performance						
Total Fund	6.83%	5.06%	7.90%	6.48%	9.24%	(1/81)
Total Fund Custom Benchmark(1)	7.57%	6.46%	8.71%	6.95%	-	
Public Market Equiv Benchmark(2)	7.49%	6.40%	8.66%	6.91%	-	
60/40 Index(3)	5.51%	5.11%	6.89%	5.49%	-	
U.S. Equity	10.95%	8.33%	9.81%	7.09%	10.57%	(1/81)
Russell 3000 Index (4)	11.73%	9.90%	10.44%	7.42%	10.87%	(1/81)
S&P 1500 Index	12.00%	10.05%	10.48%	7.58%	-	
Int'l Developed Mkts Equity	5.82%	3.25%	7.84%	-	6.11%	(1/02)
MSCI World ex US IMI	4.99%	3.15%	7.62%	4.68%	6.06%	(1/02)
Emerging Mkts Equity	3.00%	0.79%	7.04%	-	6.38%	(1/02)
MSCI EM IMI	2.14%	1.93%	9.39%	5.27%	8.16%	(1/02)
Private Equity	12.98%	9.94%	12.74%	12.55%	11.54%	(1/86)
Burgiss Private Equity Index (Qtr lag)	13.09%	10.16%	13.37%	12.92%	16.60%	(1/86)
Global Equity + 3% (Qtr lag)(5)	15.13%	12.00%	13.17%	11.07%	14.28%	(1/86)
Legacy Private Credit Funds (6)	-	-	-	-	10.09%	(4/18)
S&P Levered Loan Index + 1% (Qtr lag)	-	-	-	-	4.36%	(4/18)
Fixed Income	1.42%	3.43%	4.33%	4.62%	7.59%	(1/81)
Bloomberg U.S. Agg Bond Index	1.36%	2.71%	3.18%	4.03%	6.89%	(1/81)
Inflation Protection (TIPS)	1.39%	2.29%	2.96%	-	2.99%	(2/03)
Bloomberg U.S. TIPS Index	1.49%	2.93%	3.87%	4.92%	3.95%	(2/03)
Real Estate	6.74%	3.10%	6.68%	7.15%	8.27%	(3/84)
Real Estate Custom Bench (Qtr lag)(7)	8.88%	5.35%	7.79%	7.92%	-	
CPI + 3% (Qtr lag)	5.60%	5.33%	5.51%	5.47%	5.79%	(3/84)
Cash	1.12%	1.01%	1.58%	2.22%	3.40%	(1/87)
3-month Treasury Bill	0.87%	0.69%	1.31%	1.90%	3.13%	(1/87)

* All returns on this report are shown with 2- decimal precision. This may differ from the decimal precision shown in BNY Mellon reports.

(1)The current total fund benchmark consists of: 22% Bloomberg U.S. Agg Bond Index, 16% SERS Private Equity Composite, 31% Russell 3000 Index, 14% MSCI World ex US IMI Index, 7% NCREIF NFI-ODCE (Qtr lag), 5% MSCI Emerging Markets IMI Index, 3% Bloomberg US TIPS Index, 2% ICE BofAML 3 Mo US T-Bill Index. See page 75 for full benchmark history.

(2) The current public equivalent benchmark consists of: 22% Bloomberg U.S. Agg Bond Index, 31% Russell 3000, 14% MSCI World ex US IMI Index, 12% Russell 3000+ 3% (Qtr lag), 7% CPI+3% (Qtr Lag), 3% Bloomberg US TIPS Index, 5% MSCI EM IMI Index, 4% MSCI World ex US +3% (Qtr lag), 2% ICE BofAML 3 Mo US T-Bill Index. See page 75 for full benchmark history.

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

(4) Benchmark history is a blend of current and past benchmark indices. History prior to 12/31/2018 is provided by RVK.

(5) 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.

(6) Legacy Private Credit performance is included in the total fund starting at the composite's true inception date, 07/01/2022. The history is calculated and shown for informational purposes.

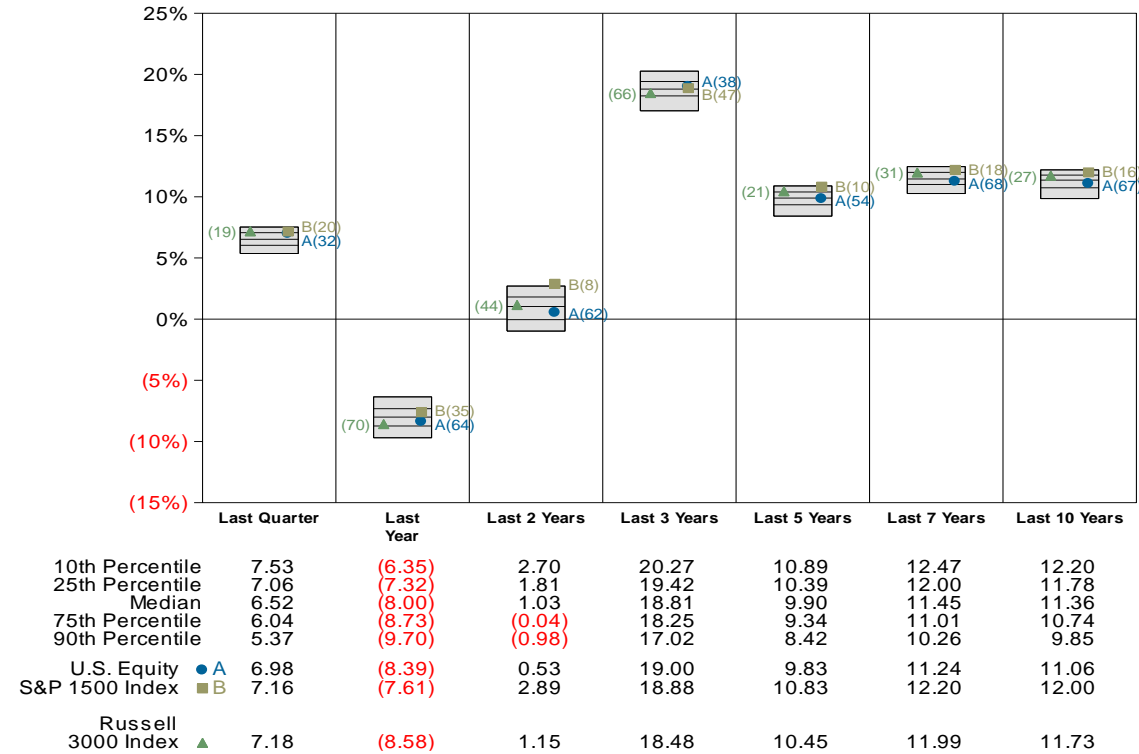
(7) As of 07/01/2022, the benchmark consists of 100% NCREIF NFI-ODCE (Qtr lag). From 03/31/2019 to 07/01/2022 the benchmark consists of 90% NCREIF ODCE Index (Qtr lag) and 10% FTSE NAREIT Index (unlagged).

Callan

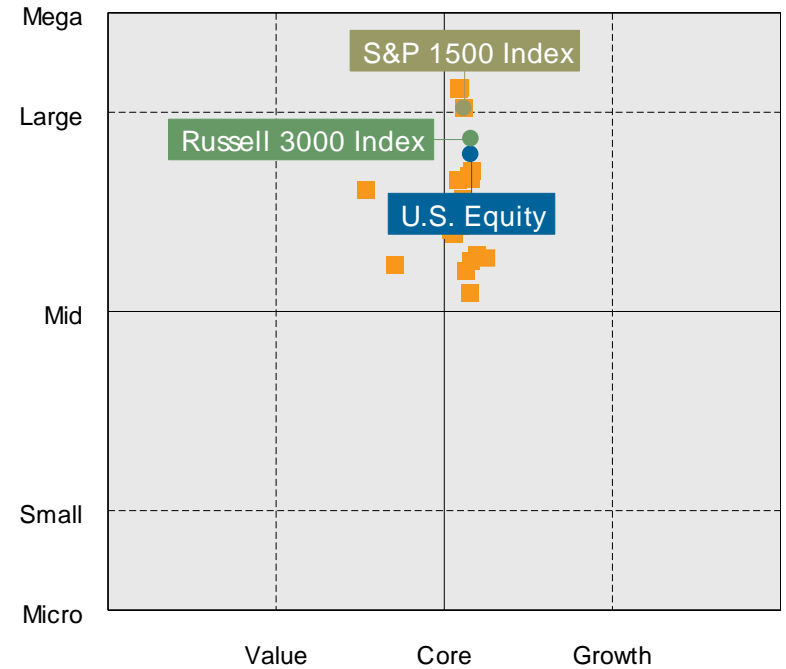
**Appendix I – Asset Class and Manager
Performance**

U.S. Equity as of March 31, 2023

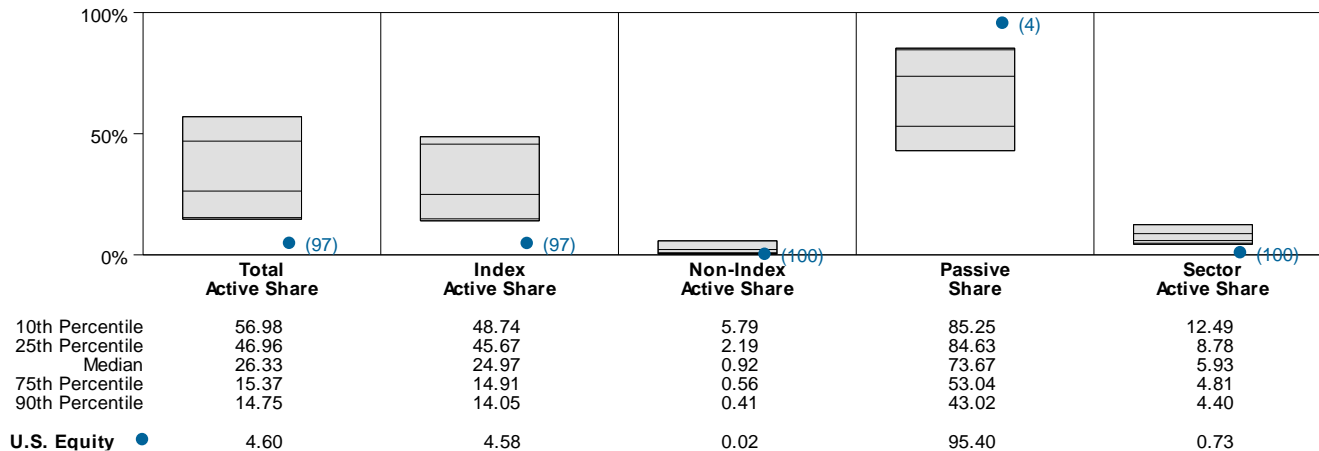
Performance vs Public Fund - Domestic Equity (Gross)



Style Map vs Pub Pln- Dom Equity Holdings as of March 31, 2023



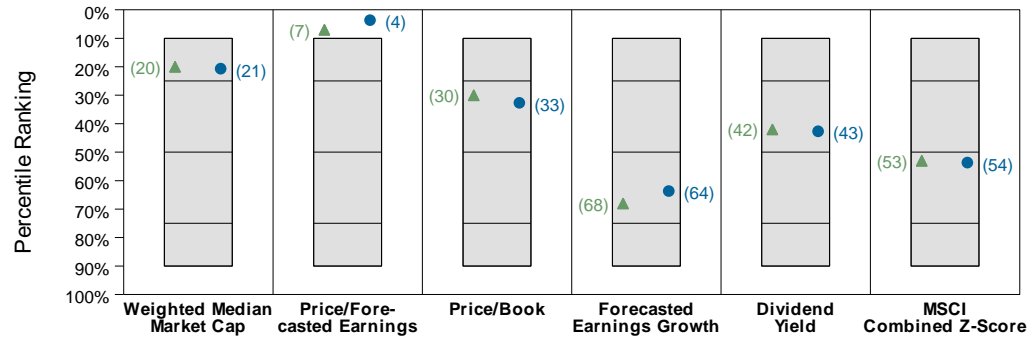
Active Share vs. Pub Pln- Dom Equity



U.S. Equity

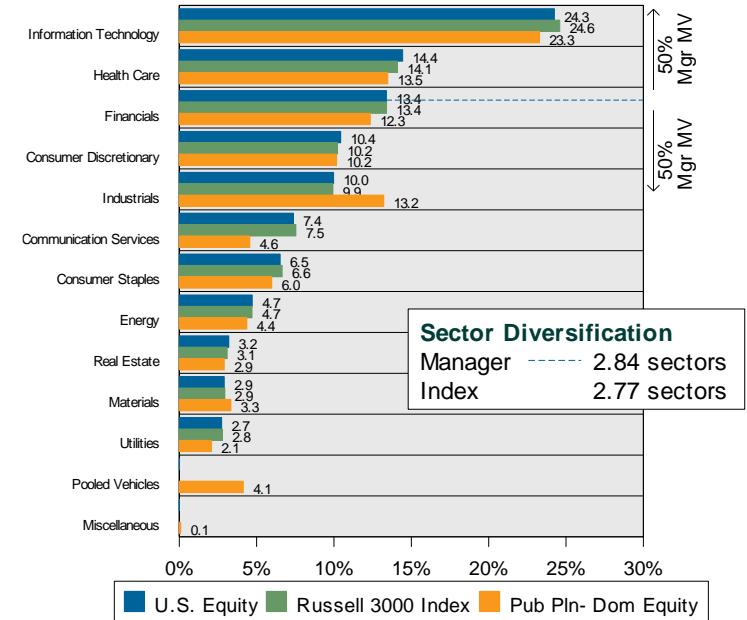
As of March 31, 2023

Portfolio Characteristics Percentile Rankings
Rankings Against Public Fund - Domestic Equity
as of March 31, 2023

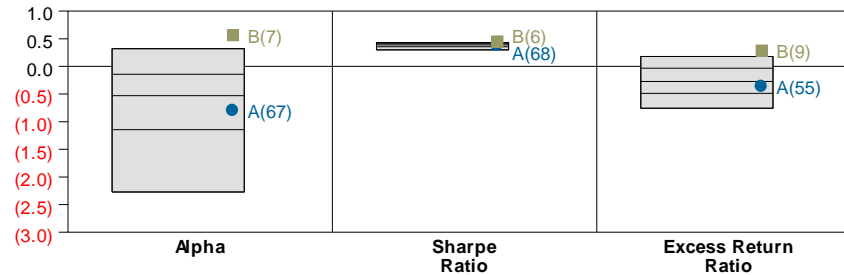


Percentile Ranking	Weighted Median Market Cap	Price/Forecasted Earnings	Price/Book	Forecasted Earnings Growth	Dividend Yield	MSCI Combined Z-Score
10th Percentile	162.71	18.36	3.63	12.24	1.67	0.06
25th Percentile	98.08	18.27	3.35	11.52	1.66	0.03
Median	78.98	17.41	3.06	11.11	1.57	(0.01)
75th Percentile	58.73	16.82	2.76	10.21	1.49	(0.03)
90th Percentile	41.76	15.40	2.41	9.63	1.43	(0.22)
U.S. Equity	● 110.72	18.61	3.21	10.67	1.61	(0.01)
Russell 3000 Index	▲ 120.35	18.44	3.31	10.50	1.62	(0.01)

Sector Allocation March 31, 2023



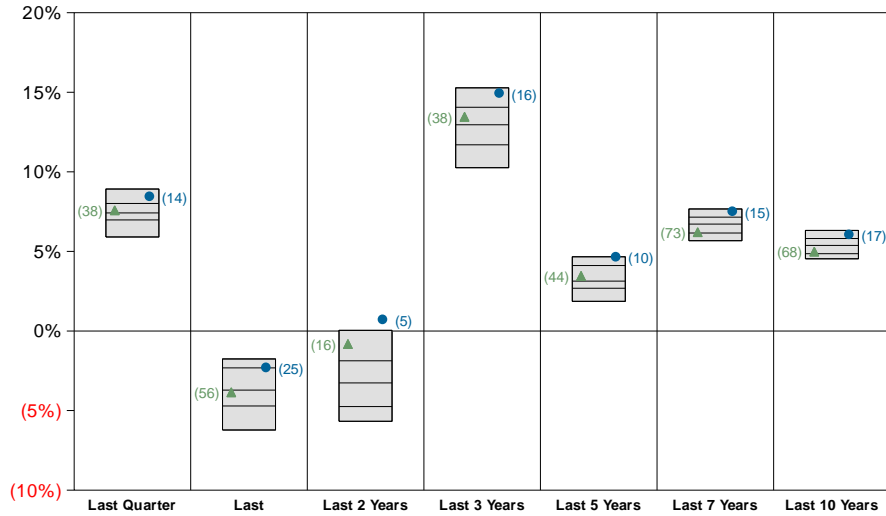
Risk Adjusted Return Measures vs Russell 3000 Index
Rankings Against Public Fund - Domestic Equity (Gross)
Five Years Ended March 31, 2023



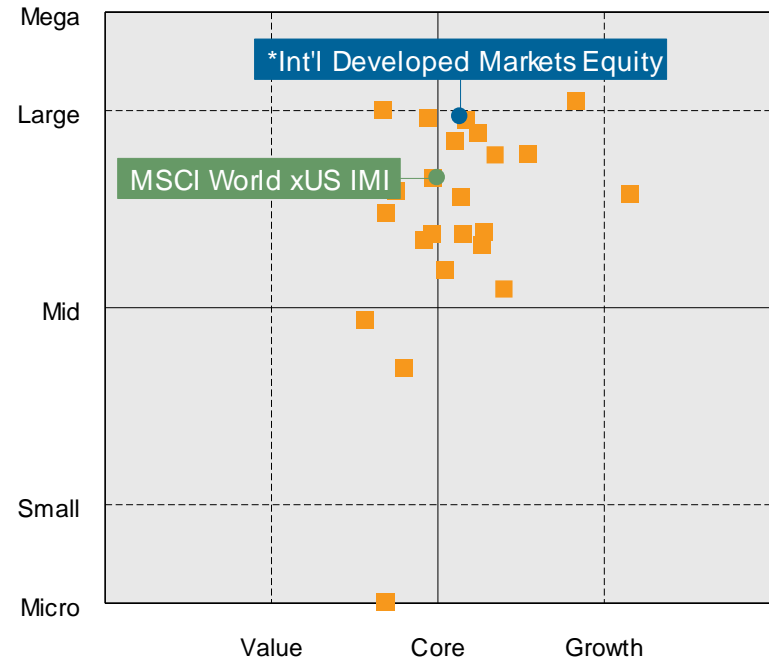
Metric	U.S. Equity	S&P 1500 Index
10th Percentile	0.32	0.43
25th Percentile	(0.14)	0.41
Median	(0.53)	0.39
75th Percentile	(1.14)	0.36
90th Percentile	(2.27)	0.30
U.S. Equity	● (0.80)	0.37
S&P 1500 Index	■ 0.57	0.45

International Equity as of March 31, 2023

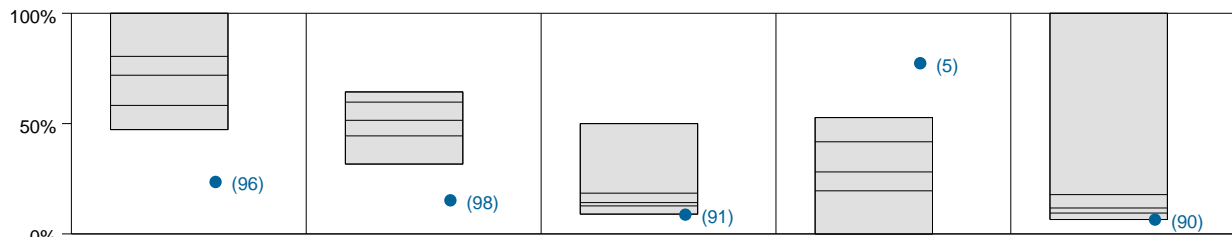
Performance vs Public Fund - International Equity (Gross)



Style Map vs Pub Pln- Intl Equity Holdings as of March 31, 2023



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	64.36	50.00	52.72	100.00
25th Percentile	80.43	59.75	18.47	41.75	17.81
Median	71.90	51.46	14.22	28.10	11.76
75th Percentile	58.25	44.44	12.73	19.57	9.47
90th Percentile	47.28	31.67	9.00	0.00	6.53
Int'l Developed Markets Equity	23.14	14.81	8.33	76.86	6.06

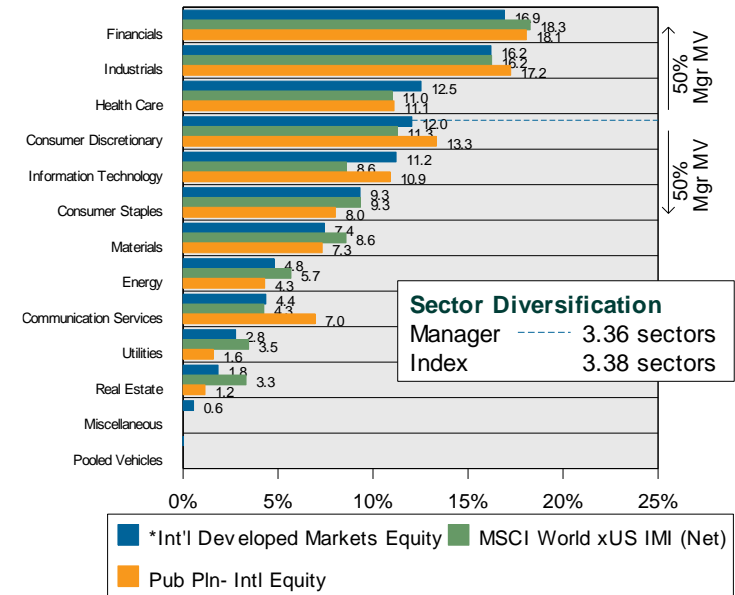
International Equity

As of March 31, 2023

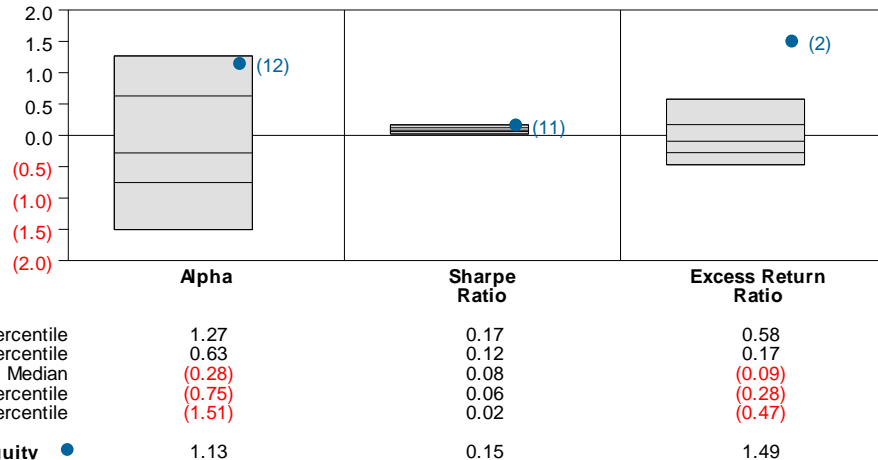
Portfolio Characteristics Percentile Rankings
Rankings Against Public Fund - International Equity
as of March 31, 2023



Sector Allocation
March 31, 2023

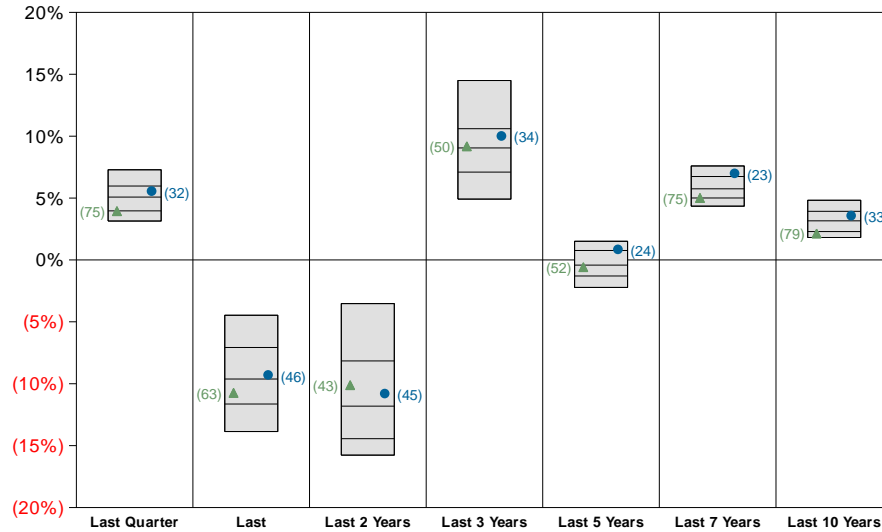


Risk Adjusted Return Measures vs MSCI World xUS IMI
Rankings Against Public Fund - International Equity (Gross)
Five Years Ended March 31, 2023



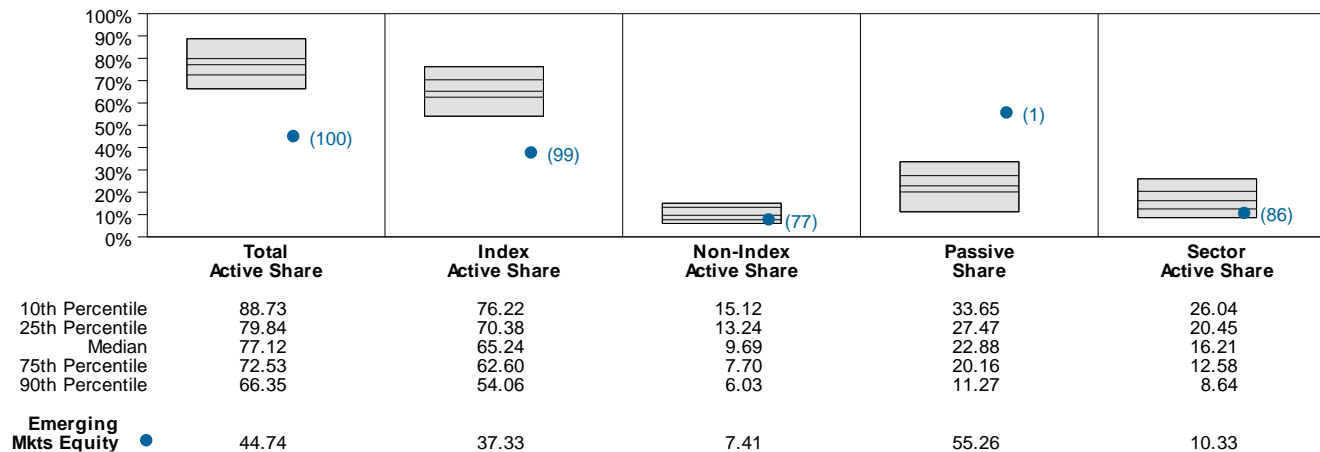
Emerging Markets Equity as of March 31, 2023

Performance vs Callan Emerging Broad (Gross)

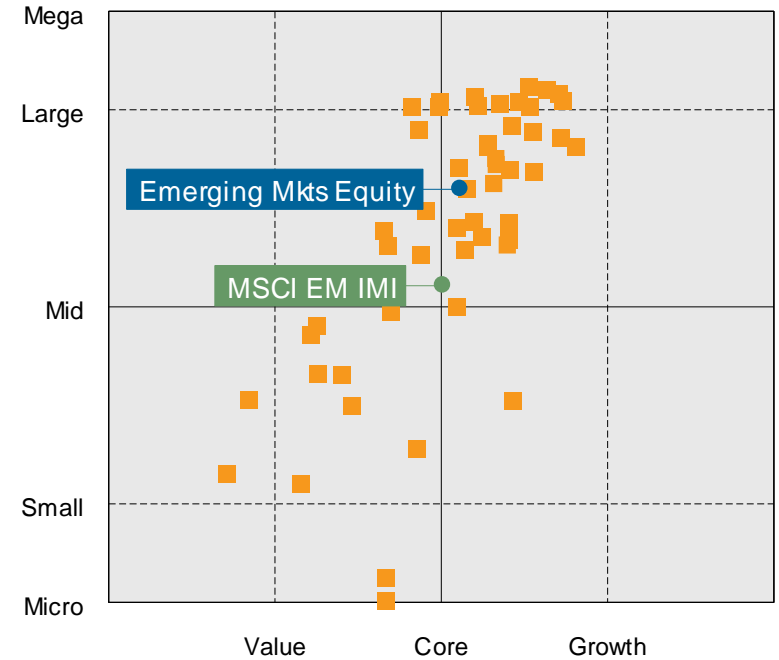


	Last Quarter	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
10th Percentile	7.28	(4.47)	(3.52)	14.49	1.51	7.60	4.82
25th Percentile	5.97	(7.07)	(8.16)	10.60	0.77	6.74	3.93
Median	5.08	(9.62)	(11.81)	9.05	(0.42)	5.75	3.17
75th Percentile	3.97	(11.64)	(14.44)	7.10	(1.30)	5.00	2.29
90th Percentile	3.15	(13.86)	(15.77)	4.92	(2.22)	4.34	1.81
Emerging Mkts Equity	5.50	(9.36)	(10.86)	9.96	0.79	6.93	3.51
MSCI EM IMI	3.94	(10.74)	(10.12)	9.18	(0.58)	5.01	2.14

Active Share vs. Callan Emerging Broad



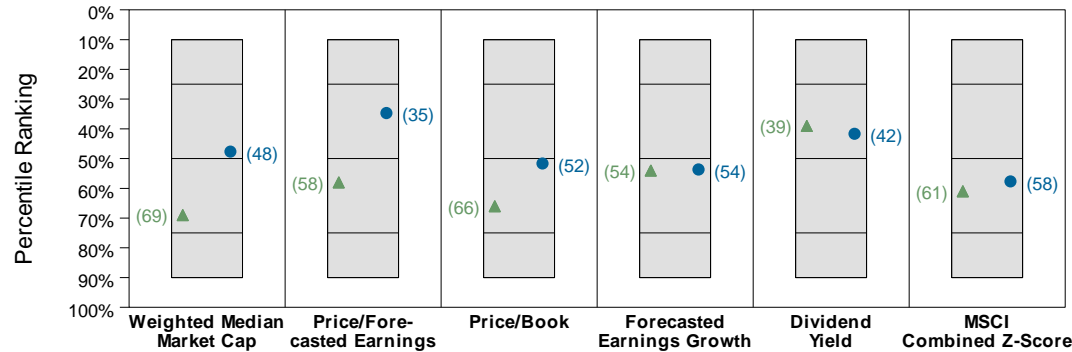
Style Map vs Callan Emerging Broad Holdings as of March 31, 2023



Emerging Markets Equity

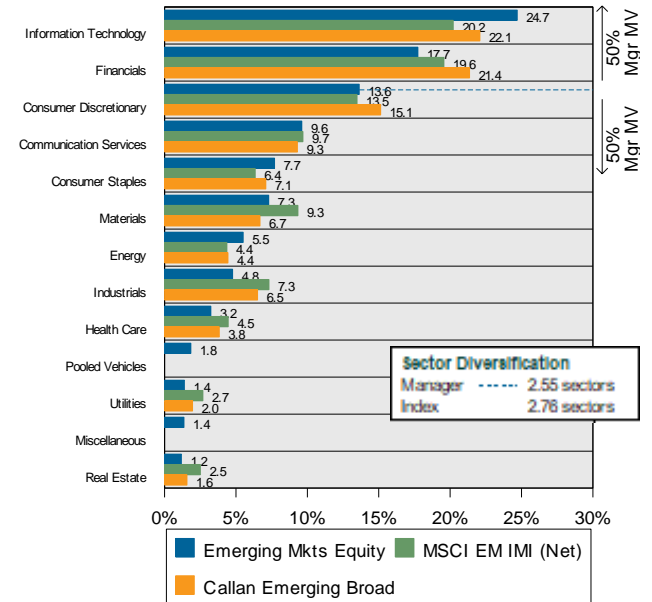
As of March 31, 2023

Portfolio Characteristics Percentile Rankings
Rankings Against Callan Emerging Broad
as of March 31, 2023

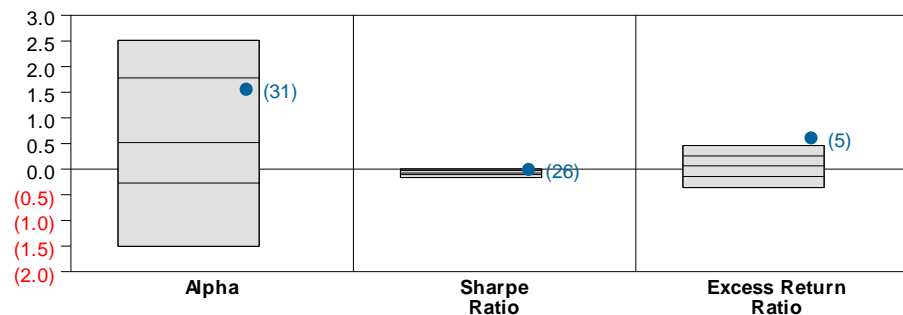


	Weighted Median Market Cap	Price/Forecasted Earnings	Price/Book	Forecasted Earnings Growth	Dividend Yield	MSCI Combined Z-Score
10th Percentile	52.91	17.85	2.66	16.58	5.28	0.54
25th Percentile	41.33	16.09	2.36	15.04	3.62	0.39
Median	28.77	12.88	1.62	12.66	2.43	0.16
75th Percentile	14.11	9.30	1.15	10.04	1.88	(0.26)
90th Percentile	7.14	7.24	0.91	8.94	1.51	(0.64)
Emerging Mkts Equity	32.34	14.14	1.58	12.34	2.63	0.09
MSCI EM IMI (Net)	17.45	11.82	1.37	12.43	2.86	(0.00)

Sector Allocation March 31, 2023



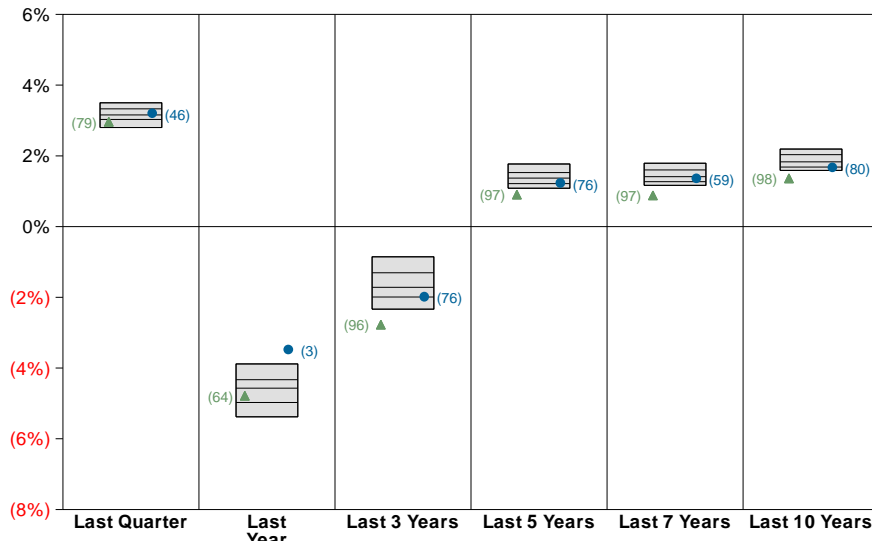
Risk Adjusted Return Measures vs MSCI EM IMI
Rankings Against Callan Emerging Broad (Gross)
Five Years Ended March 31, 2023



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	2.51	0.00	0.46
25th Percentile	1.78	(0.03)	0.26
Median	0.52	(0.08)	0.07
75th Percentile	(0.27)	(0.11)	(0.14)
90th Percentile	(1.51)	(0.16)	(0.36)
Emerging Mkts Equity	1.54	(0.03)	0.59

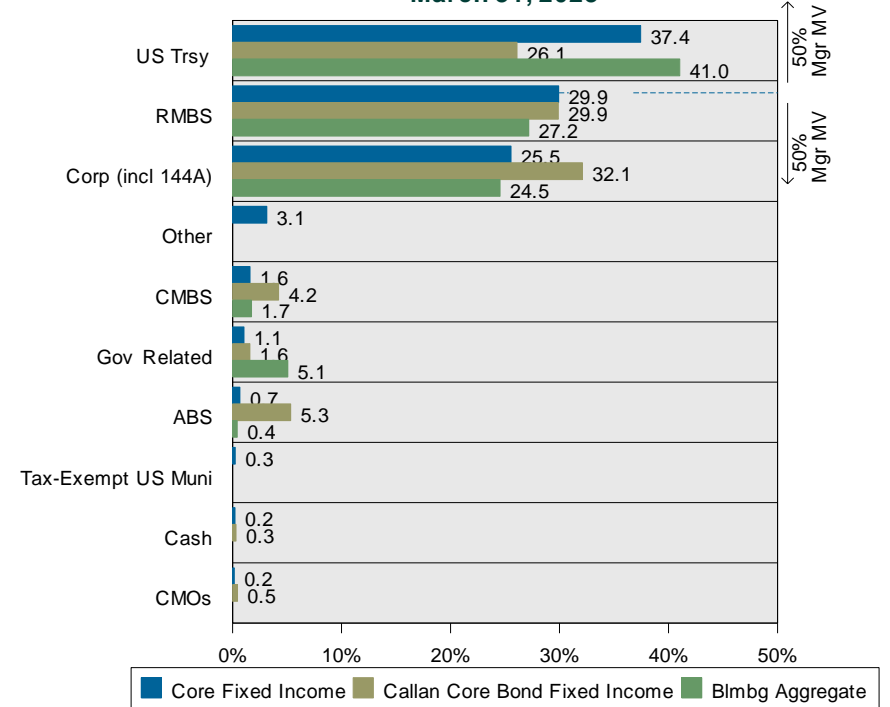
Core Fixed Income As of March 31, 2023

Performance vs Callan Core Bond Fixed Income (Gross)

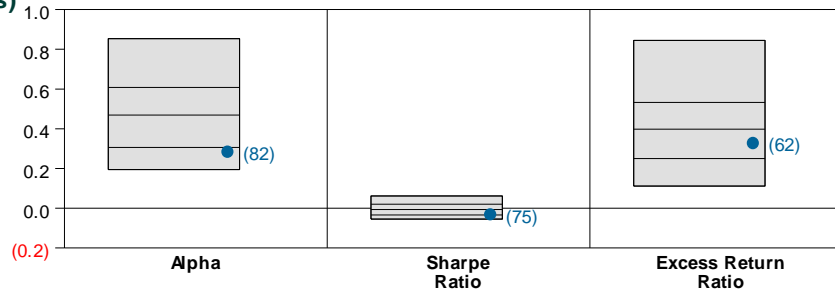


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years
10th Percentile	3.50	(3.88)	(0.86)	1.77	1.79	2.19
25th Percentile	3.33	(4.33)	(1.31)	1.53	1.60	2.03
Median	3.16	(4.57)	(1.72)	1.37	1.41	1.83
75th Percentile	3.03	(4.97)	(1.99)	1.21	1.27	1.68
90th Percentile	2.80	(5.38)	(2.34)	1.08	1.17	1.59
Core Fixed Income	3.18	(3.50)	(2.01)	1.21	1.34	1.65
Blmbg Aggregate	2.96	(4.78)	(2.77)	0.91	0.88	1.36

Sector Allocation
March 31, 2023



Risk Adjusted Return Measures vs Blmbg Aggregate
Rankings Against Callan Core Bond Fixed Income (Gross)
Five Years Ended March 31, 2023

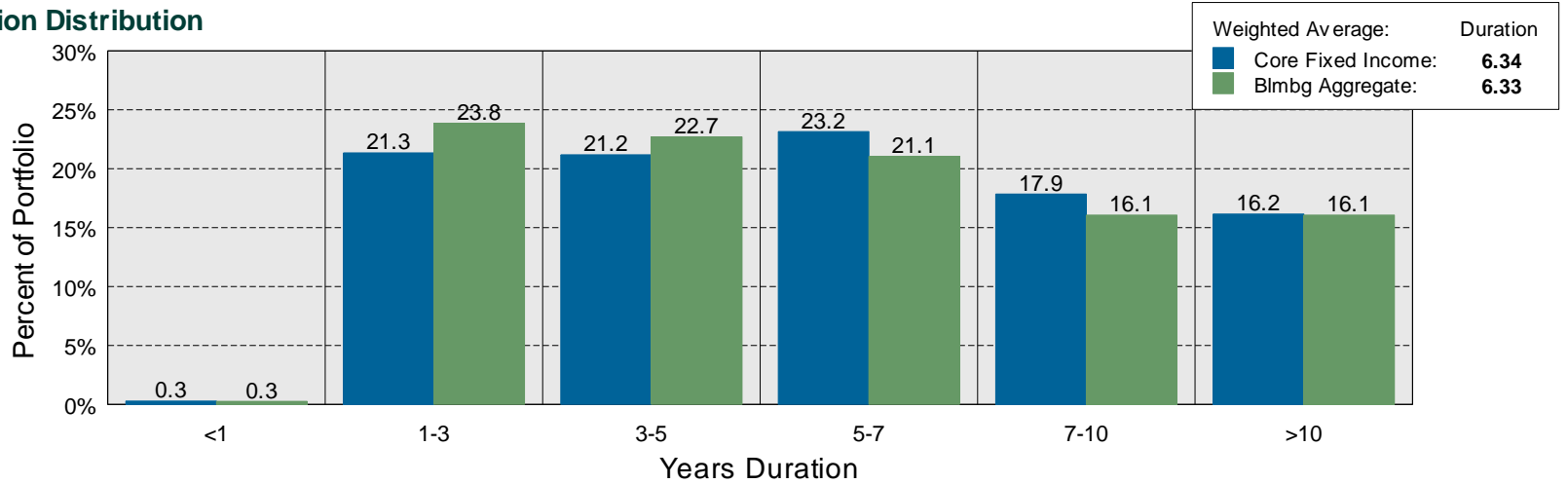


	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	0.85	0.06	0.84
25th Percentile	0.61	0.02	0.53
Median	0.47	(0.01)	0.40
75th Percentile	0.31	(0.03)	0.25
90th Percentile	0.19	(0.05)	0.11
Core Fixed Income	0.28	(0.04)	0.32

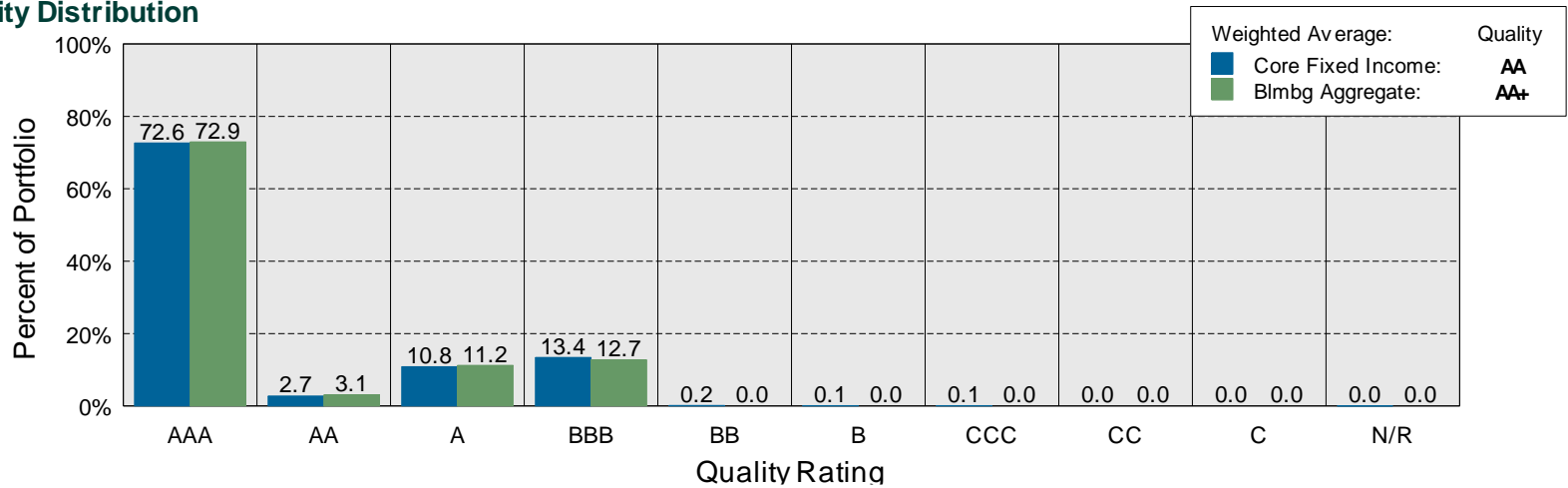
Core Fixed Income

As of March 31, 2023

Duration Distribution

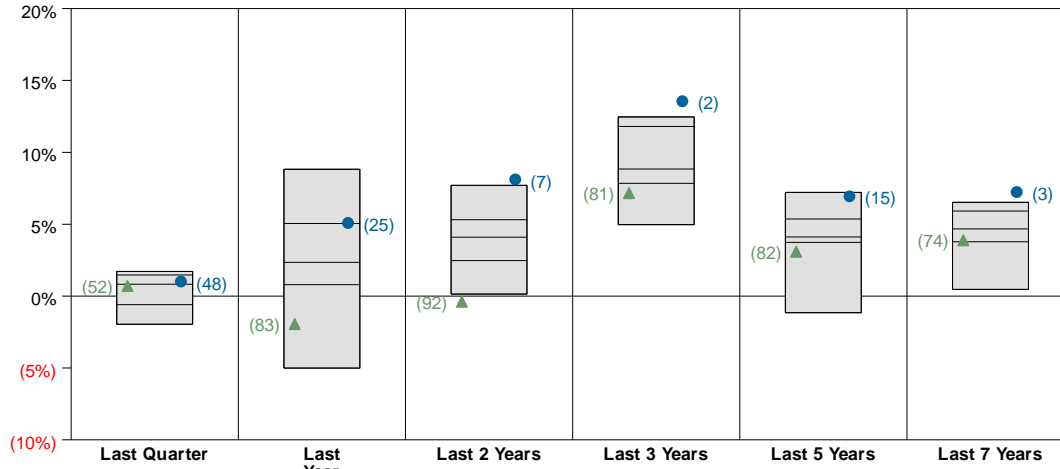


Quality Distribution



Opportunistic Fixed Income As of March 31, 2023

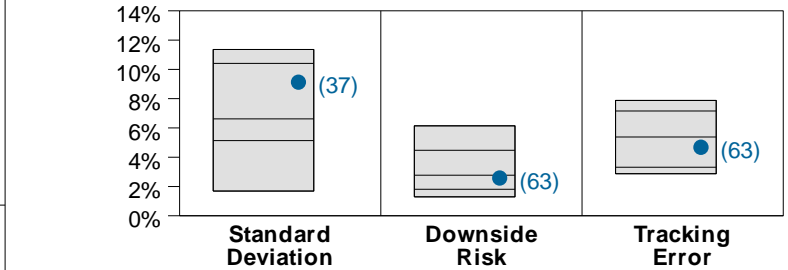
Performance vs Callan Absolute Rtn Hedge Fund of Funds (Net)



	Last Quarter	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 7 Years
10th Percentile	1.72	8.82	7.70	12.47	7.21	6.52
25th Percentile	1.47	5.05	5.32	11.80	5.37	5.91
Median	0.82	2.35	4.10	8.84	4.11	4.68
75th Percentile	(0.59)	0.79	2.47	7.84	3.74	3.78
90th Percentile	(1.96)	(5.00)	0.14	4.97	(1.15)	0.47

	Last Quarter	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 7 Years
Blackstone Keystone ●	0.94	5.02	8.04	13.49	6.87	7.17
HFRI Fund of Funds Composite Index ▲	0.70	(1.95)	(0.38)	7.16	3.10	3.88

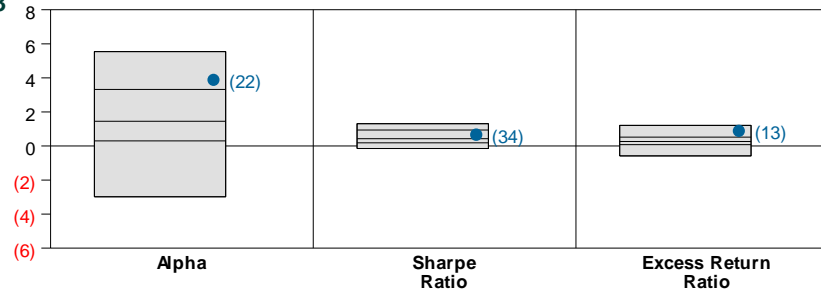
Risk Statistics Rankings vs HFRI Fund of Funds Composite Index Rankings Against Callan Absolute Rtn Hedge Fund of Funds (Net) Five Years Ended March 31, 2023



	Standard Deviation	Downside Risk	Tracking Error
10th Percentile	11.36	6.15	7.88
25th Percentile	10.41	4.47	7.17
Median	6.62	2.78	5.39
75th Percentile	5.14	1.82	3.32
90th Percentile	1.69	1.30	2.88

Blackstone Keystone ●	9.04	2.49	4.59
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Risk Adjusted Return Measures vs HFRI Fund of Funds Composite Index Rankings Against Callan Absolute Rtn Hedge Fund of Funds (Net) Five Years Ended March 31, 2023



	Alpha	Sharpe Ratio	Excess Return Ratio
10th Percentile	5.54	1.31	1.21
25th Percentile	3.32	0.94	0.52
Median	1.45	0.43	0.26
75th Percentile	0.30	0.19	0.08
90th Percentile	(2.98)	(0.15)	(0.58)

Blackstone Keystone ●	3.83	0.60	0.82
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Investment Manager Returns

As of March 31, 2023

	Market Value \$(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years	
Net Performance- Domestic Equity							
U.S. Equity	\$10,680	100.00%	6.97%	(8.41%)	18.96%	9.77%	
Russell 3000 Index (1)	-	-	7.18%	(8.58%)	18.48%	10.45%	
S&P 1500 Index	-	-	7.16%	(7.61%)	18.88%	10.83%	
MCM Russell 1000 Index	9,688	90.72%	7.48%	(8.11%)	18.71%	10.98%	
Russell 1000 Index	-	-	7.46%	(8.39%)	18.55%	10.87%	
S&P 500 Index	-	-	7.50%	(7.73%)	18.60%	11.19%	
MCM Russell 2000 Core Index	324	3.03%	2.88%	(11.37%)	18.11%	5.03%	
Russell 2000 Index	-	-	2.74%	(11.61%)	17.51%	4.71%	
S&P 600 Index	-	-	2.57%	(8.82%)	21.71%	6.30%	
MCM Russell 2000 Val Index	320	2.99%	(0.60%)	(12.74%)	21.11%	4.60%	
Russell 2000 Value Index	-	-	(0.66%)	(12.96%)	21.01%	4.55%	
S&P 600 Value Index	-	-	3.05%	(6.81%)	25.26%	6.30%	
Emerald Asset Management	348	3.26%	3.75%	(12.11%)	13.76%	5.51%	
Russell 2000 Growth Index	-	-	6.07%	(10.60%)	13.36%	4.26%	
S&P 600 Growth Index	-	-	2.14%	(10.91%)	18.04%	6.05%	
			Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception

Net Performance- Domestic Equity						
U.S. Equity	10.95%	8.33%	9.81%	7.09%	10.57%	(1/81)
Russell 3000 Index (1)	11.73%	9.90%	10.44%	7.42%	10.87%	(1/81)
S&P 1500 Index	12.00%	10.05%	10.48%	7.58%	-	
MCM Russell 1000 Index	12.07%	-	-	-	13.18%	(1/12)
Russell 1000 Index	12.01%	10.02%	10.48%	7.50%	13.16%	(1/12)
S&P 500 Index	12.24%	10.06%	10.37%	7.39%	13.29%	(1/12)
MCM Russell 2000 Core Index	-	-	-	-	6.66%	(12/16)
Russell 2000 Index	8.04%	8.10%	9.76%	6.84%	6.41%	(12/16)
S&P 600 Index	9.87%	9.64%	11.11%	8.60%	7.68%	(12/16)
MCM Russell 2000 Val Index	-	-	-	-	5.07%	(12/16)
Russell 2000 Value Index	7.22%	7.24%	9.24%	7.33%	5.04%	(12/16)
S&P 600 Value Index	9.45%	9.13%	10.82%	8.32%	7.07%	(12/16)
Emerald Asset Management	-	-	-	-	8.14%	(12/16)
Russell 2000 Growth Index	8.49%	8.67%	10.04%	5.85%	7.28%	(12/16)
S&P 600 Growth Index	10.12%	10.03%	11.29%	8.46%	8.05%	(12/16)

* All returns on this report are shown with 2- decimal precision. This may differ from the decimal precision shown in BNY Mellon reports.

** 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, 2023

	Market Value \$(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Net Performance- International Equity						
Int'l Developed Mkts Equity	\$4,835	100.00%	8.38%	(2.46%)	14.76%	4.49%
MSCI World ex US IMI	-	-	7.58%	(3.85%)	13.46%	3.46%
Walter Scott & Partners(1) MSCI World	733 -	15.17% -	10.63% 7.73%	(1.92%) (7.02%)	15.85% 16.40%	10.63% 8.01%
BlackRock MSCI World Ex US Index MSCI World ex US	3,749 -	77.54% -	8.15% 8.02%	(2.25%) (2.74%)	14.02% 13.49%	4.28% 3.80%
Xponance Non-U.S. Small Cap MSCI ACWI ex US Small Cap	214 -	4.42% -	5.64% 4.70%	(10.16%) (10.37%)	11.67% 15.04%	- 1.67%
Harris Assoc Int'l SCV MSCI World ex US Sm Cap MSCI World ex US Sm Value	135 - -	2.79% - -	6.98% 4.99% 4.55%	2.36% (10.13%) (7.38%)	22.93% 13.43% 15.22%	4.29% 1.54% 1.29%
	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception	

Net Performance- International Equity

Int'l Developed Mkts Equity	5.82%	3.25%	7.84%	-	6.11% (1/02)
MSCI World ex US IMI	4.99%	3.15%	7.62%	4.68%	6.06% (1/02)
Walter Scott & Partners(1) MSCI World	10.86% 8.85%	9.46% 6.60%	- 8.86%	- 5.79%	9.31% (10/06) 6.44% (10/06)
BlackRock MSCI World Ex US Index MSCI World ex US	- 4.91%	- 2.99%	- 7.40%	- 4.39%	5.07% (6/17) 4.61% (6/17)
Xponance Non-U.S. Small Cap MSCI ACWI ex US Small Cap	- 5.06%	- 4.21%	- 9.57%	- 6.45%	1.46% (10/18) 2.80% (10/18)
Harris Assoc Int'l SCV MSCI World ex US Sm Cap MSCI World ex US Sm Value	6.45% 5.54% 4.97%	6.72% 4.36% 4.13%	- 9.28% 9.36%	- - 7.16%	9.99% (7/03) 8.17% (7/03) 8.24% (7/03)

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(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, 2023

	Market Value \$(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Net Performance- Emerging Mkts Equity						
Emerging Mkts Equity	\$1,572	100.00%	5.38%	(9.82%)	9.37%	0.34%
MSCI EM IMI	-	-	3.94%	(10.74%)	9.18%	(0.58%)
Macquarie Emg Mkts Equity	331	21.04%	7.26%	(9.60%)	8.53%	(0.22%)
MSCI EM	-	-	3.96%	(10.70%)	7.83%	(0.91%)
Martin Currie Emg Mkts Equity	353	22.49%	5.09%	(11.23%)	7.08%	(0.31%)
MSCI EM	-	-	3.96%	(10.70%)	7.83%	(0.91%)
BlackRock Emg Mkts Index	535	34.06%	3.98%	(10.70%)	7.59%	(1.11%)
MSCI EM	-	-	3.96%	(10.70%)	7.83%	(0.91%)
Leading Edge Emg Mkts Fund	224	14.22%	4.09%	(8.33%)	8.67%	-
MSCI EM	-	-	3.96%	(10.70%)	7.83%	(0.91%)
GlobeFlex Emerging Small Cap	129	8.19%	5.97%	(7.42%)	23.61%	4.93%
MSCI EM Small Cap	-	-	3.87%	(10.99%)	20.68%	1.80%
	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception	
Net Performance- Emerging Mkts Equity						
Emerging Mkts Equity	3.00%	0.79%	7.04%	-	6.38%	<small>(1/02)</small>
MSCI EM IMI	2.14%	1.93%	9.39%	5.27%	8.16%	<small>(1/02)</small>
Macquarie Emg Mkts Equity	-	-	-	-	2.99%	<small>(5/13)</small>
MSCI EM	2.00%	1.69%	9.27%	-	1.94%	<small>(5/13)</small>
Martin Currie Emg Mkts Equity	-	-	-	-	3.40%	<small>(1/14)</small>
MSCI EM	2.00%	1.69%	9.27%	-	2.27%	<small>(1/14)</small>
BlackRock Emg Mkts Index	-	-	-	-	1.82%	<small>(7/17)</small>
MSCI EM	2.00%	1.69%	9.27%	-	2.04%	<small>(7/17)</small>
Leading Edge Emg Mkts Fund	-	-	-	-	2.94%	<small>(11/18)</small>
MSCI EM	2.00%	1.69%	9.27%	-	3.21%	<small>(11/18)</small>
GlobeFlex Emerging Small Cap	-	-	-	-	6.13%	<small>(8/13)</small>
MSCI EM Small Cap	3.18%	3.50%	10.53%	6.53%	4.06%	<small>(8/13)</small>

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Investment Manager Returns

As of March 31, 2023

	Market Value \$(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Net Performance - Fixed Income						
Fixed Income (1)	\$6,296	50.00%	2.96%	(4.87%)	(1.29%)	0.73%
Blmbg U.S. Agg Bond Index	-	-	2.96%	(4.78%)	(2.77%)	0.91%
Core Fixed Income	\$4,509	35.81%	3.18%	(3.54%)	(2.06%)	1.13%
Blmbg U.S. Agg Bond Index	-	-	2.96%	(4.78%)	(2.77%)	0.91%
PIMCO Core Bond Fund	528	4.20%	3.38%	(4.68%)	(1.23%)	1.17%
Blmbg Agg ex Treasury	-	-	2.93%	(4.95%)	(1.89%)	0.94%
Mellon Bond Index	3,981	31.61%	3.15%	(4.72%)	(2.80%)	0.88%
Blmbg U.S. Agg Bond Index (2)	-	-	2.96%	(4.78%)	(2.77%)	0.91%
Opportunistic Fixed Income	\$861	6.84%	0.79%	4.40%	10.42%	5.12%
BAAM Keystone (3)	861	6.84%	0.79%	4.48%	12.64%	6.27%
HFRI FOF Comp Index	-	-	0.70%	(1.95%)	7.16%	3.10%
Nominal U.S. Treasuries	\$789	6.26%	5.09%	(7.71%)	(6.75%)	0.23%
Blmbg US Treas Bell 10Y	-	-	3.76%	(6.79%)	(6.13%)	0.65%
Mellon Intermediate Treasury Index	269	2.14%	2.40%	(1.53%)	-	-
Blmbg Intmtd Treasury	-	-	2.27%	(1.54%)	(2.33%)	1.06%
Mellon Long Duration Index	519	4.12%	7.00%	(16.05%)	-	-
Blmbg Long Treasury	-	-	6.17%	(16.00%)	(11.33%)	(0.35%)
Legacy Fixed Income	\$137	1.09%	(1.45%)	-	-	-
Fidelity HY CMBS (4)	136	1.08%	(1.66%)	(6.12%)	3.54%	0.71%
Blmbg US CMBS Ex AAA Index (5)	-	-	0.15%	(8.21%)	0.03%	0.93%
SEI Str.Credit: HY Bank Loans (6)	0	0.00%	5.06%	1.40%	9.64%	6.90%
FTSE HY Corp (1 month lag)	-	-	1.89%	(5.30%)	1.31%	2.71%

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** 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 included the new fixed income sub-composite from 03/01/2021 to 06/30/2022. On 07/01/2022, the sub-composites of the new fixed income structure was liquidated and the managers reorganized under Core Fixed Income,

Opportunistic Fixed Income, Nominal US Treasuries and Legacy Fixed Income sub-composites.

(2) Benchmark history is a blend of current and past benchmark indices. History prior to 12/31/2018 is provided by RVK.

(3) Blackstone Keystone since inception returns were included in the Legacy Hedge Fund composite through 9/30/2017, included in the Multi-Strategy composite from 10/01/2017 through 12/31/2019, included in the Opportunistic Fixed composite from 01/01/2020 through 12/31/2020, included in the Private Credit from 01/01/2021 through 09/30/2021 and Opportunistic Fixed composite, thereafter.

(4) Fidelity was included in the Opportunistic Fixed composite prior to 03/01/2021, included in the High Yield under the new fixed income structure from 03/01/2021 through 06/30/2022, and Legacy Fixed Income Structure, thereafter.

(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 has a 1 month lag in valuation. On this chart, SEI's market value of \$483K has been rounded to \$0MM.

Investment Manager Returns

As of March 31, 2023

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception
Net Performance - Fixed Income					
Fixed Income (1)	1.42%	3.43%	4.33%	4.62%	7.59% ^(1/81)
Blmbg U.S. Agg Bond Index	1.36%	2.71%	3.18%	4.03%	6.89% ^(1/81)
Core Fixed Income	1.56%	3.39%	3.55%	-	3.88% ^(1/02)
Blmbg U.S. Agg Bond Index	1.36%	2.71%	3.18%	4.03%	3.53% ^(1/02)
PIMCO Core Bond Fund	1.54%	-	-	-	1.53% ^(1/13)
Blmbg Agg ex Treasury	1.60%	3.02%	-	-	1.55% ^(1/13)
Mellon Bond Index	1.32%	2.58%	3.07%	3.98%	6.36% ^(4/84)
Blmbg U.S. Agg Bond Index (2)	1.36%	2.71%	3.18%	4.09%	-
Opportunistic Fixed Income	4.53%	-	-	-	4.87% ^(10/12)
BAAM Keystone (3)	6.37%	-	-	-	7.24% ^(7/12)
HFRI FOF Comp Index	3.24%	2.06%	3.54%	3.75%	3.68% ^(7/12)
Nominal U.S. Treasuries	0.57%	-	-	-	1.00% ^(9/11)
Blmbg US Treas Bell 10Y	0.61%	2.41%	2.99%	3.79%	1.20% ^(9/11)
Mellon Intermediate Treasury Index	-	-	-	-	(3.07%) ^(3/21)
Blmbg Intmtd Treasury	0.90%	1.83%	2.45%	3.37%	(3.07%) ^(3/21)
Mellon Long Duration Index	-	-	-	-	(13.84%) ^(1/21)
Blmbg Long Treasury	1.45%	3.70%	4.31%	5.16%	(13.79%) ^(1/21)
Legacy Fixed Income	-	-	-	-	(3.14%) ^(7/22)
Fidelity HY CMBS (4)	3.20%	5.86%	5.89%	6.64%	7.16% ^(4/97)
Blmbg US CMBS Ex AAA Index (5)	1.92%	1.80%	1.00%	2.78%	3.27% ^(4/97)
SEI Str.Credit: HY Bank Loans (6)	7.15%	-	-	-	11.28% ^(5/08)
FTSE HY Corp (1 month lag)	3.86%	6.11%	6.90%	5.70%	6.17% ^(5/08)

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(1) Fixed Income included the new fixed income sub-composite from 03/01/2021 to 06/30/2022. On 07/01/2022, the sub-composites of the new fixed income structure was liquidated and the managers reorganized under Core Fixed Income,

Opportunistic Fixed Income, Nominal US Treasuries and Legacy Fixed Income sub-composites.

(2) Benchmark history is a blend of current and past benchmark indices. History prior to 12/31/2018 is provided by RVK.

(3) Blackstone Keystone since inception returns were included in the Legacy Hedge Fund composite through 9/30/2017, included in the Multi-Strategy composite from 10/01/2017 through 12/31/2019, included in the Opportunistic Fixed composite from 01/01/2020 through 12/31/2020, included in the Private Credit from 01/01/2021 through 09/30/2021 and Opportunistic Fixed composite, thereafter.

(4) Fidelity was included in the Opportunistic Fixed composite prior to 03/01/2021, included in the High Yield under the new fixed income structure from 03/01/2021 through 06/30/2022, and Legacy Fixed Income Structure, thereafter.

(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 has a 1 month lag in valuation. On this chart, SEI's market value of \$483K has been rounded to \$0MM.

Investment Manager Returns

As of March 31, 2023

	Market Value \$(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Net Performance - Inflation Protection						
Inflation Protection (TIPS)	\$1,042	100.00%	3.58%	(7.07%)	1.24%	2.40%
Blmbg U.S. TIPS Index	-	-	3.34%	(6.06%)	1.75%	2.94%
NISA Inv Adv TIPS	453	43.51%	3.52%	(6.17%)	1.75%	2.92%
Blmbg U.S. TIPS Index (1)	-	-	3.34%	(6.06%)	1.75%	2.94%
Brown Brothers TIPS	476	45.66%	3.44%	(5.92%)	1.60%	2.89%
Blmbg U.S. TIPS Index	-	-	3.34%	(6.06%)	1.75%	2.94%
New Century Global TIPS	113	10.83%	4.38%	(14.74%)	(1.40%)	(0.71%)
Blmbg Wrld Inflation Linked Unhdg	-	-	4.40%	(14.68%)	(1.01%)	(0.64%)

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception
Net Performance - Inflation Protection					
Inflation Protection (TIPS)	1.39%	2.29%	2.96%	-	2.99% ^(2/03)
Blmbg U.S. TIPS Index	1.49%	2.93%	3.87%	4.92%	3.95% ^(2/03)
NISA Inv Adv TIPS	1.49%	2.28%	-	-	2.95% ^(4/07)
Blmbg U.S. TIPS Index (1)	1.49%	2.28%	3.33%	4.48%	2.95% ^(4/07)
Brown Brothers TIPS	1.51%	-	-	-	1.80% ^(2/12)
Blmbg U.S. TIPS Index	1.49%	2.93%	3.87%	4.92%	1.70% ^(2/12)
New Century Global TIPS	0.74%	-	-	-	1.02% ^(2/12)
Blmbg Wrld Inflation Linked Unhdg	0.53%	1.57%	3.67%	4.49%	0.79% ^(2/12)

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(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, 2023

	Market Value \$(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Net Performance - Private Equity						
Private Equity	\$6,617	100.00%	0.83%	(6.85%)	19.14%	15.63%
Burgiss Private Equity Index (Qtr lag)	-	-	0.01%	(5.85%)	13.80%	12.84%
Global Equity + 3% (Qtr lag)(1)	-	-	10.16%	(14.11%)	9.61%	11.63%
Buyouts	3,685	55.69%	1.68%	(2.04%)	18.87%	15.52%
Burgiss Buyout Index (Qtr lag)	-	-	0.03%	(3.98%)	12.70%	11.51%
Special Situations	1,573	23.77%	1.65%	0.30%	20.11%	17.88%
Burgiss Special Situations Idx (Qtr lag)	-	-	0.00%	(0.59%)	5.23%	5.14%
Growth Equity	1,153	17.42%	(2.58%)	(22.85%)	26.30%	24.97%
Burgiss Venture Capital Index (Qtr lag)	-	-	(0.04%)	(11.64%)	21.23%	20.81%
Keystone Legacy (2)	207	3.13%	(0.61%)	(17.65%)	(4.81%)	-

	Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception
Net Performance - Private Equity					
Private Equity	12.98%	9.94%	12.74%	12.55%	11.54% ^(1/86)
Burgiss Private Equity Index (Qtr lag)	13.09%	10.16%	13.37%	12.92%	16.60% ^(1/86)
Global Equity + 3% (Qtr lag)(1)	15.13%	12.00%	13.17%	11.07%	14.28% ^(1/86)
Buyouts	14.09%	11.21%	15.04%	14.48%	13.57% ^(4/86)
Burgiss Buyout Index (Qtr lag)	12.62%	9.78%	14.23%	12.51%	18.93% ^(4/86)
Special Situations	13.04%	10.53%	14.32%	13.16%	13.29% ^(1/95)
Burgiss Special Situations Idx (Qtr lag)	7.00%	6.45%	9.20%	9.32%	9.84% ^(1/95)
Growth Equity	15.11%	10.53%	8.54%	8.43%	8.53% ^(1/86)
Burgiss Venture Capital Index (Qtr lag)	18.22%	13.19%	11.99%	13.58%	14.30% ^(1/86)
Keystone Legacy (2)	-	-	-	-	(4.25%) ^(7/18)

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(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 12/31/2022, Keystone Legacy SPV consists of 46 non-core funds, prior performance is reflected in previous sub-asset classes.

Investment Manager Returns

As of March 31, 2023

	Market Value \$(mm)	Ending Weight	Last Quarter	Last Year	Last 3 Years	Last 5 Years	
Net Performance - Real Estate							
Real Estate	\$2,933	100.00%	(2.52%)	(0.20%)	8.42%	5.64%	
Real Estate Custom Bench (Qtr lag) (1)	-	-	(5.08%)	4.88%	10.18%	7.67%	
CPI +3% (Qtr lag)	-	-	0.74%	9.46%	7.92%	6.78%	
Core/Core Plus Real Estate Funds	1,266	43.17%	(1.75%)	6.44%	8.70%	7.60%	
NCREIF ODCE Index (Qtr lag)	-	-	(5.08%)	7.56%	9.72%	8.31%	
Value Add/Oppportunistic SMA	598	20.40%	(5.51%)	(5.02%)	4.96%	2.75%	
NCREIF ODCE Index (Qtr lag)	-	-	(5.08%)	7.56%	9.72%	8.31%	
Value Add/Oppportunistic Funds	770	26.24%	(3.53%)	2.14%	8.49%	7.93%	
NCREIF ODCE Index (Qtr lag)	-	-	(5.08%)	7.56%	9.72%	8.31%	
REITS	299	10.18%	2.80%	(19.14%)	12.39%	4.93%	
FTSE NAREIT US Index	-	-	2.65%	(19.54%)	11.93%	3.43%	
			Last 10 Years	Last 15 Years	Last 20 Years	Last 25 Years	Since Inception

Net Performance - Real Estate						
Real Estate	6.74%	3.10%	6.68%	7.15%	8.27%	(3/84)
Real Estate Custom Bench (Qtr lag) (1)	8.88%	5.35%	7.79%	7.92%	-	
CPI +3% (Qtr lag)	5.60%	5.33%	5.51%	5.47%	5.79%	(3/84)
Core/Core Plus Real Estate Funds	8.82%	6.32%	7.76%	8.16%	7.21%	(9/86)
NCREIF ODCE Index (Qtr lag)	9.46%	5.38%	7.40%	7.77%	6.30%	(9/86)
Value Add/Oppportunistic SMA	4.91%	0.82%	4.47%	5.37%	5.13%	(6/88)
NCREIF ODCE Index (Qtr lag)	9.46%	5.38%	7.40%	7.77%	6.36%	(6/88)
Value Add/Oppportunistic Funds	9.35%	3.69%	7.68%	8.49%	7.91%	(3/84)
NCREIF ODCE Index (Qtr lag)	9.46%	5.38%	7.40%	7.77%	6.52%	(3/84)
REITS	5.55%	5.00%	8.88%	7.67%	9.01%	(4/96)
FTSE NAREIT US Index	6.18%	5.73%	8.83%	7.62%	9.32%	(4/96)

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(1) As of 07/01/2022, the benchmark consists of 100% NCREIF NFI-ODCE (Qtr lag). From 03/31/2019 to 07/01/2022, the 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.

Callan

Appendix II – Callan Update

Published Research Highlights from 1Q23

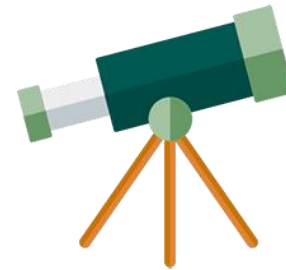
2023 DC Trends Survey and Webinar



Energy Transition Is Having a Moment, but Does It Have Staying Power?



2023-2032 Capital Markets Assumptions and Webinar



Research Café: ESG Interview Series Session



Recent Blog Posts

The PRT Decision: What Plan Sponsors Need to Know

Bill Emmett and Christopher Park

Can Institutional Investors Target 'Food Deserts' for Investment?

Aaron Quach

Risky Business Update: After a Year of Historic Losses, What Changed?

Julia Moriarty

Additional Reading

Alternatives Focus quarterly newsletter

Active vs. Passive quarterly charts

Capital Markets Review quarterly newsletter

Monthly Updates to the Periodic Table

Market Pulse Flipbook quarterly markets update

Real Estate Indicators market outlook

Callan Institute Events

Upcoming conferences, workshops, and webinars

Callan College

Intro to Alternatives

This course is for institutional investors, including trustees and staff members of public plans, corporate plans, and nonprofits. This session familiarizes trustees and staff with alternative investments like private equity, hedge funds, and real estate and how they can play a key role in any portfolio. You will learn about the importance of allocations to alternatives and how to consider integrating, evaluating, and monitoring them.

– August 23-24, 2023 – Virtual Session via Zoom

Intro to Investments—Learn the Fundamentals

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

- May 23–25, 2023 – Virtual Session via Zoom
- September 26–28, 2023 – Virtual Session via Zoom

Please visit our website at callan.com/events-education as we add dates to our 2023 calendar!

Mark Your Calendar

2023 Regional Workshops

June 27, 2023 – Denver

June 29, 2023 – San Francisco

October 24, 2023 – New York

October 26, 2023 – Chicago

2024 National Conference

April 8 –10, 2024 – San Francisco

Watch your email for further details and an invitation.

Webinars & Research Café Sessions

Webinar: DC – Managed Accounts

May 11, 2023 – 9:30am (PT)

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