



Executive Summary Second Quarter 2023

Arkansas Public Employees
Retirement System

Brianne Weymouth, CAIA
Senior Vice President

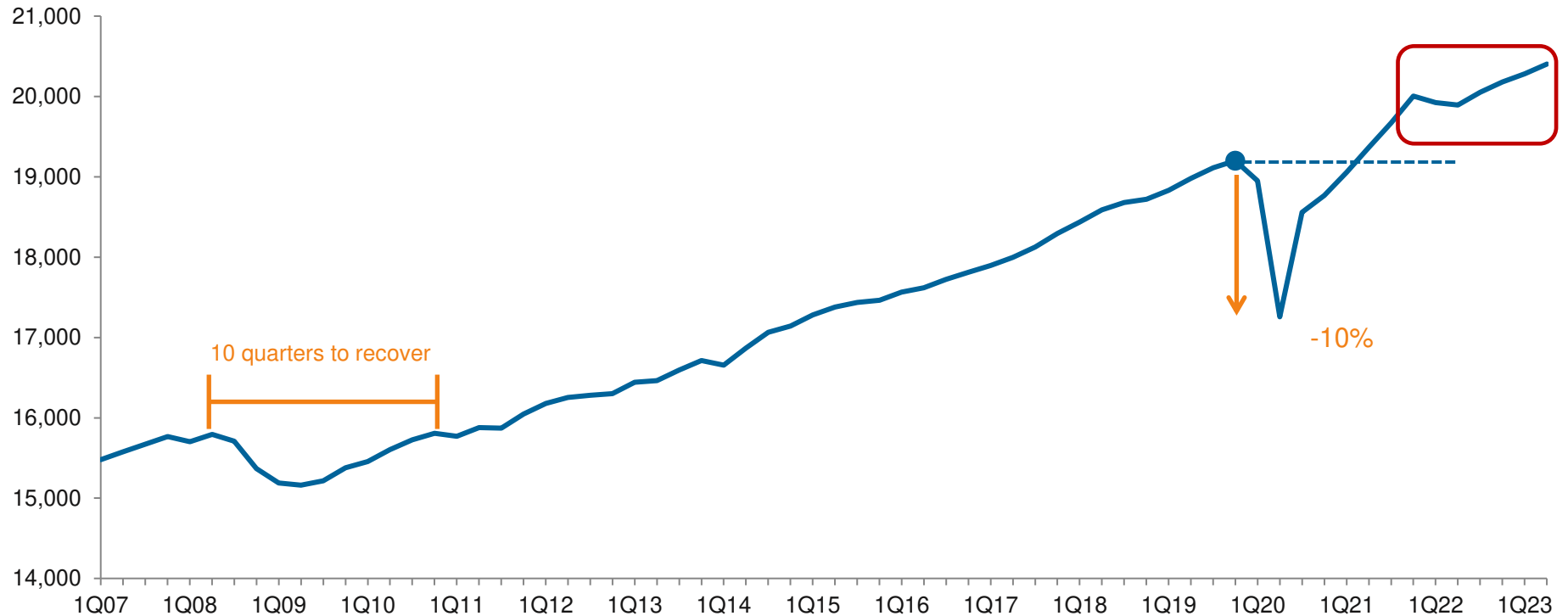
John Jackson, CFA
Senior Vice President

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GDP Rose 2.4% in 2Q, Building on the 2% Gain in 1Q

Widespread expectations for a recession in 2023 were proven wrong

Seasonally Adjusted Real GDP in Billions of Dollars Through 6/30/23



GDP rose 2.0% and 2.4% in the first two quarters, after 2.1% growth in 2022.

- ▶ Loss of business and consumer confidence followed the start of the conflict in Ukraine.
- ▶ Consumer wealth hit by stock and bond market drop in 2022, but has recently rebounded. Residential housing saw a sharp downturn, as mortgage rates doubled from the start of last year. But prices remain high due to strong demand and lack of supply.

Source: Federal Reserve Bank of St. Louis

Equity Markets Rebound Sharply in 1Q and 2Q; Fixed Income Markets Down in 2Q

Stocks and bonds still have ground to make up after first three quarters of 2022

S&P 500 up 16.9% in first half of 2023

- Loss through first three quarters of 2022 was 23.9%; rebound in the following three quarters reduced the loss to 2.9% since the start of 2022. Greater loss reduction in large cap (U.S. and global ex-U.S.) compared to emerging and small cap

Fixed income recovered as high inflation began to ease; speculation about interest rate cuts evaporated in 2Q

- Bloomberg Aggregate: up 3% in 1Q, but declined 0.8% in 2Q as Fed continued to raise rates
- CPI-U: +3% year-over year for 2Q, down from +6.5% for the year ended Dec. 2022

Inflation hit the highest rate (9%) in decades in June of 2022.

Economic data defied expectations of recession; GDP growth was revised up to 2.0% in 1Q, and hit 2.4% in 2Q

- Job market remains solid, providing support to Fed efforts to fight inflation

Returns for Periods ended 6/30/23

	Quarter	Year to Date	1 Year	5 Years	10 Years	25 Years
U.S. Equity						
Russell 3000	8.39	16.17	18.95	11.39	12.34	7.72
S&P 500	8.74	16.89	19.59	12.31	12.86	7.61
Russell 2000	5.21	8.09	12.31	4.21	8.26	7.26
Global ex-U.S. Equity						
MSCI World ex USA	3.03	11.29	17.41	4.58	5.40	4.49
MSCI Emerging Markets	0.90	4.89	1.75	0.93	2.95	--
MSCI ACWI ex USA Small Cap	2.05	6.84	10.93	2.62	5.75	6.73
Fixed Income						
Bloomberg Aggregate	-0.84	2.09	-0.94	0.77	1.52	3.90
90-day T-Bill	1.17	2.25	3.59	1.55	0.98	1.89
Bloomberg Long Gov/Credit	-1.29	4.39	-2.56	0.66	2.86	5.33
Bloomberg Global Agg ex-US	-2.16	0.83	-1.83	-2.65	-0.90	2.62
Real Estate						
NCREIF:NFI-ODCE Val Wt Nt	-2.88	-6.16	-10.73	5.56	7.77	7.26
FTSE Nareit Equity	2.62	5.37	-0.13	4.55	6.42	8.32
Alternatives						
CS Hedge Fund Index	1.71	1.87	3.17	4.52	4.06	5.49
Cambridge Private Equity*	2.12	2.12	-4.62	15.98	15.04	13.83
Bloomberg Commodity	-2.56	-7.79	-9.61	4.73	-0.99	2.04
Gold Spot Price	-2.86	5.65	6.76	8.99	4.66	7.76
Inflation - CPI-U	1.08	2.80	2.97	3.90	2.71	2.54

*Cambridge PE data through 03/31/2023.

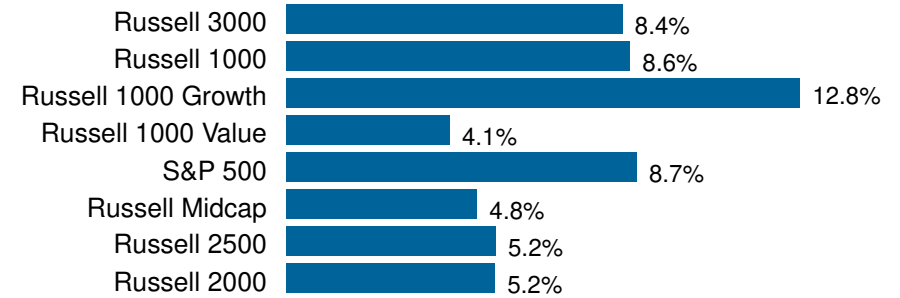
Sources: Bloomberg, Callan, Cambridge, Credit Suisse, FTSE Russell, MSCI, NCREIF, S&P Dow Jones Indices

U.S. Equity Performance: 2Q23

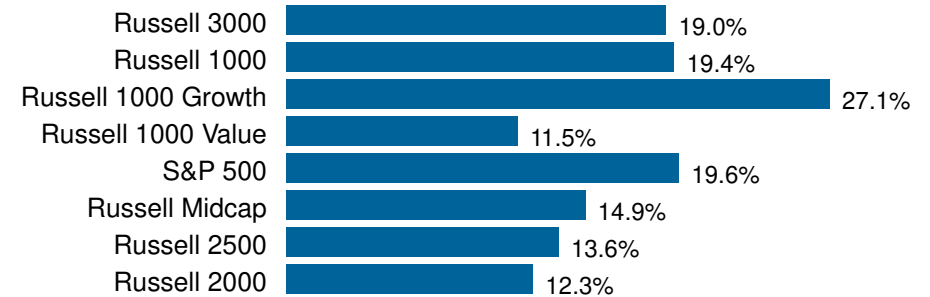
Large cap growth stocks lead broad indices higher; small cap indices continue to lag large caps

- ▶ The S&P 500 posted a third straight quarter of positive performance, gaining 8.7%; large cap growth led all styles, advancing 12.8%. All U.S. equity indices produced absolute positive returns; small value and low volatility produced the lowest 2Q returns.
- ▶ Nine of the 11 S&P 500 Index sectors produced a positive 2Q return. Information Technology (17.2%), Consumer Discretionary (14.6%), and Communication Services (13.1%) drove the overall index return; all other sectors underperformed the index.
- ▶ Similar to the first quarter, small caps (Russell 2000) underperformed large caps (Russell 1000) and growth outperformed value during the quarter, a reversal of trend from 2022. Financials (-1.1%) detracted returns for the Russell 2000 (5.2%) while Health Care was the only small cap sector to produce double digit returns (11.2%) within the small cap index.

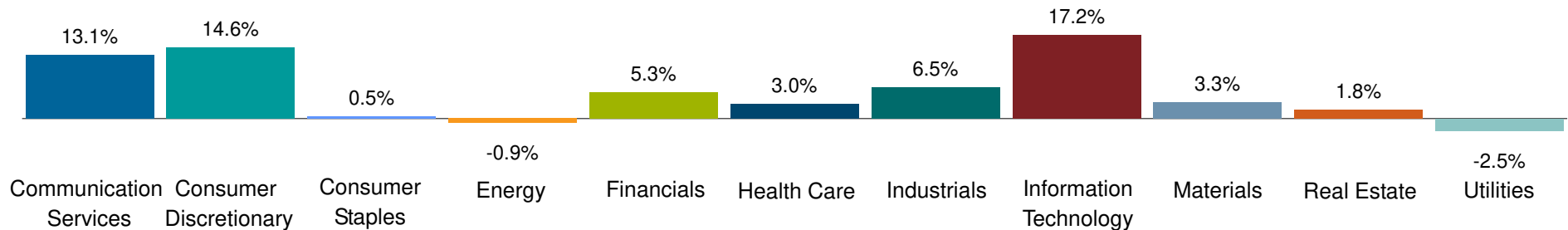
U.S. Equity: Quarter Ended 6/30/23



U.S. Equity: One-Year Returns Ended 6/30/23



Industry Sector Quarterly Performance (S&P 500) as of 6/30/23



Sources: FTSE Russell, S&P Dow Jones Indices

Global/Global ex-U.S. Equity Performance: 2Q23

Continued market rally

2Q23 continued global and global ex-U.S. equity markets positive performance from the prior quarter.

Technology stocks lead markets higher

- ▶ The second quarter of the year saw global markets led higher by mega cap technology stocks, in part due to increased optimism around artificial intelligence advancements.
- ▶ Market expectations of a recession decreased as inflation showed signs of abating while the Fed kept rates unchanged in June.
- ▶ Japan outperformed other regions in local currency as valuations continued to be attractive alongside the Bank of Japan's easy monetary policy.

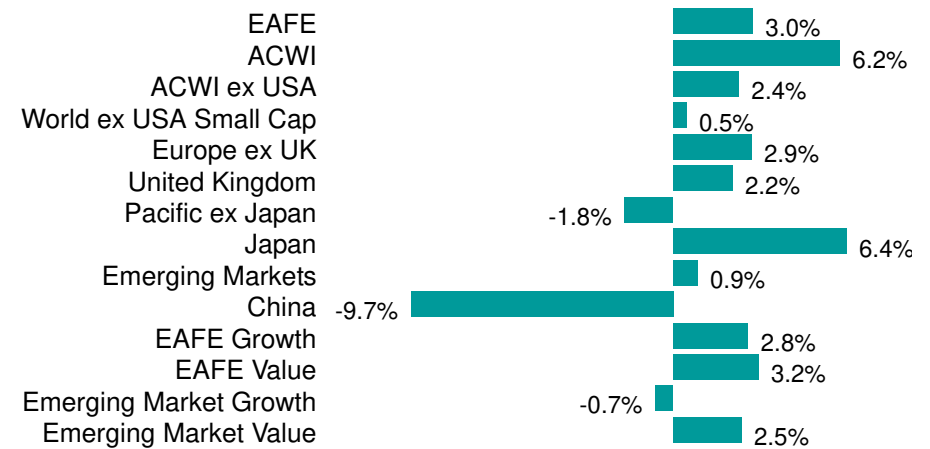
Developed vs. emerging markets

- ▶ Developed markets outperformed emerging markets as China weighed on EM indices.

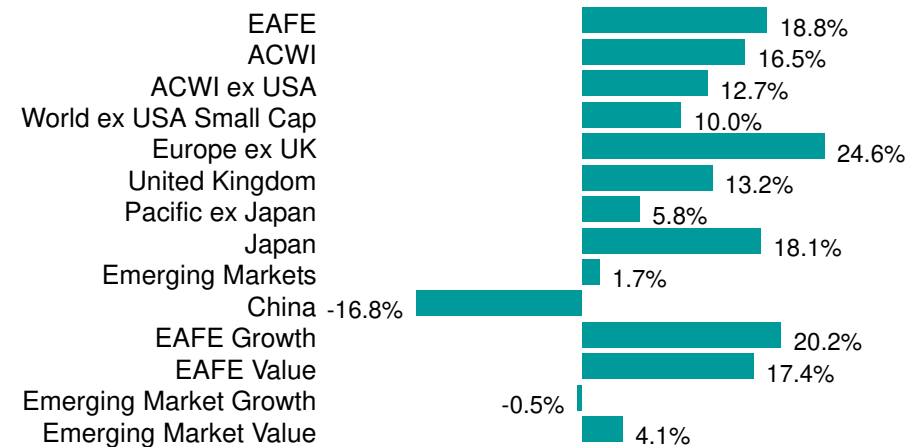
Growth vs. value

- ▶ Mega cap technology companies, which are primarily U.S.-based, led markets higher and resulted in large dispersions between U.S. growth and value indices. Outside of the U.S., growth and value index returns were relatively balanced.

Global Equity Returns: Quarter Ended 6/30/23



Global Equity Returns: One Year Ended 6/30/23



Source: MSCI

U.S. Fixed Income Performance: 2Q23

Bloomberg Aggregate down as rates rose, risk appetite and solid economic news spurred returns for spread sectors and lower quality

U.S. Treasury yield curve inversion steepened to 106 bps from 58 bps on 3/31

► 2- year UST: 4.87%; 10-year UST: 3.81%

TIPS performed in line with nominal U.S. Treasuries

► Five-year breakeven spreads narrowed to 2.18% from 2.4% on 3/31; Fed and markets expect inflation to trend down over longer periods

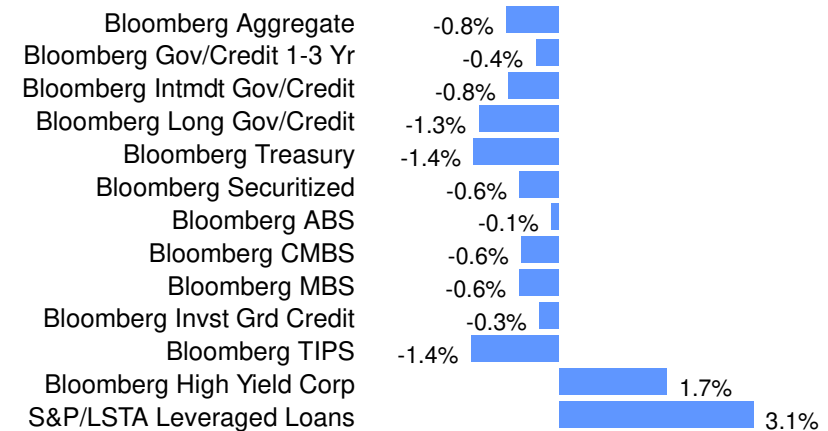
Fed Funds target raised to 5.00% - 5.25%

- Paused at June meeting but suggested that further hikes are likely
- Median expectation from Fed is 5.6% for year-end 2023
- Market expectations are similar at 5.4%; up sharply from expectations for cuts at the end of 1Q

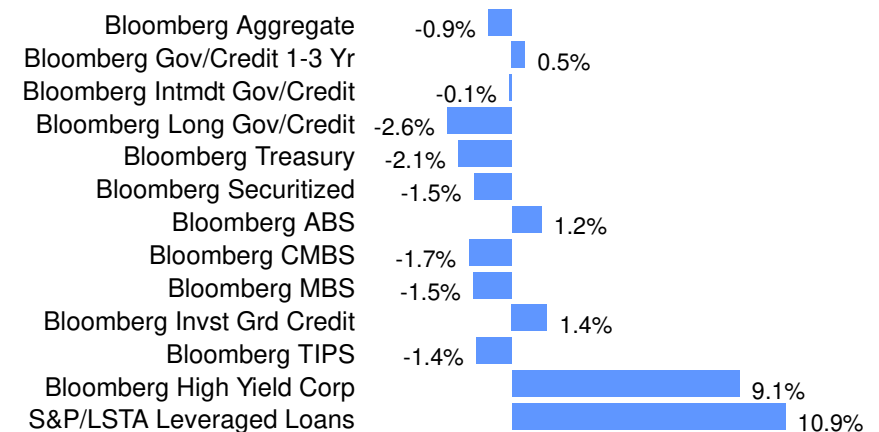
Valuations fair

- Credit spreads have not widened materially and are close to historical averages
- Demand has remained robust with muted issuance

U.S. Fixed Income Returns: Quarter Ended 6/30/23



U.S. Fixed Income Returns: One Year Ended 6/30/23

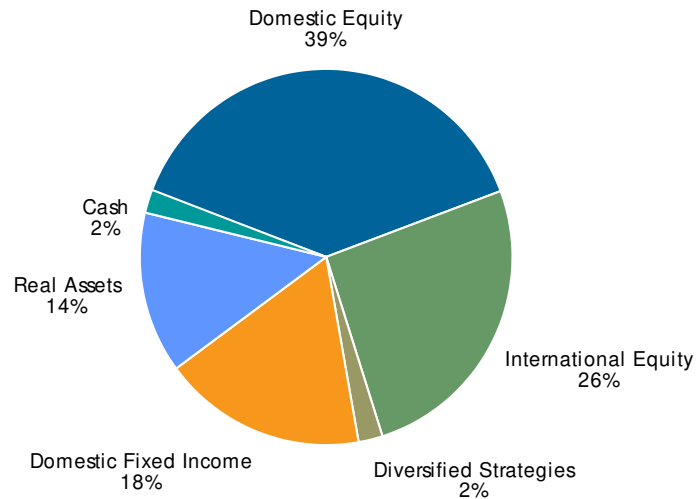


Sources: Bloomberg, S&P Dow Jones Indices

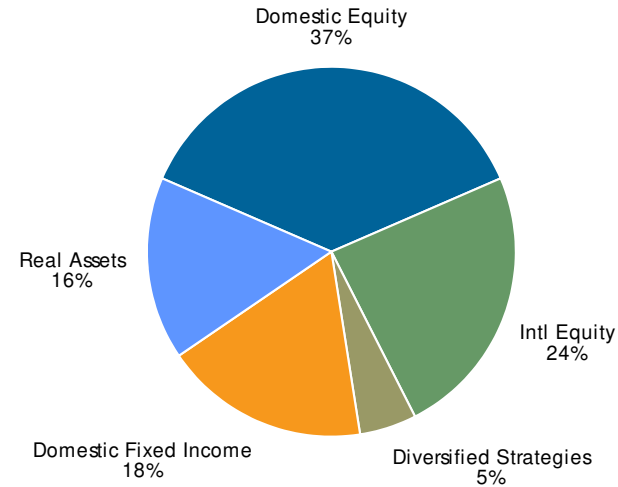
Actual vs. Target Asset Allocation

June 30, 2023

Actual Asset Allocation



Target Asset Allocation



Asset Class	\$Millions Actual	Weight Actual	Target	Percent Difference	\$Millions Difference
Domestic Equity	4,125	38.6%	37.0%	1.6%	170
International Equity	2,756	25.8%	24.0%	1.8%	190
Diversified Strategies	219	2.1%	5.0%	(2.9%)	(315)
Domestic Fixed Income	1,888	17.7%	18.0%	(0.3%)	(36)
Real Assets	1,485	13.9%	16.0%	(2.1%)	(225)
Cash	218	2.0%	0.0%	2.0%	218
Total	10,691	100.0%	100.0%		

- The APERS Investment Policy states that rebalancing to the target asset allocation should take place when the actual asset allocation falls outside of a +/- 5% range from the target asset allocation. All asset classes are within their allowable ranges.

Investment Manager Asset Allocation

June 30, 2023

	June 30, 2023				March 31, 2023	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Domestic Equity	\$4,125,287,213	38.59%	\$(43,653,760)	\$250,497,476	\$3,918,443,496	37.47%
Lazard Asset Mgmt	508,707,318	4.76%	(363,351)	24,402,116	484,668,553	4.63%
CastleArk Mgmt. LLC	517,998,778	4.85%	(394,021)	44,719,469	473,673,331	4.53%
Mellon S&P 500 Index Fd	769,549,140	7.20%	(20,195)	61,860,335	707,709,001	6.77%
Horrell Capital Passive	206,818,033	1.93%	(80,269)	9,326,633	197,571,669	1.89%
Wellington Management	472,588,558	4.42%	(351,063)	19,548,156	453,391,465	4.34%
Intech	377,898	0.00%	(430,837,145)	28,002,091	403,212,951	3.86%
Mellon Large Cap Growth	398,489,563	3.73%	390,000,000	8,489,563	-	-
LSV Asset Management	358,342,617	3.35%	(479,683)	18,132,101	340,690,199	3.26%
Stephens Investment Mgmt.	470,103,300	4.40%	(718,568)	23,781,953	447,039,914	4.27%
Froley Revy Investment	422,312,007	3.95%	(409,465)	12,235,059	410,486,413	3.93%
International Equity	\$2,755,549,927	25.77%	\$(2,456,377)	\$70,296,353	\$2,687,709,951	25.70%
Artisan Partners	691,962,595	6.47%	(881,547)	27,606,842	665,237,299	6.36%
Mellon ACWI ex US Fund	607,157,102	5.68%	(89,210)	15,275,893	591,970,420	5.66%
Baillie Gifford Overseas	538,088,001	5.03%	(524,252)	1,534,122	537,078,131	5.14%
Lazard Asset Mgmt.	576,526,548	5.39%	(428,039)	22,384,163	554,570,423	5.30%
Acadian ACW ex US SmallCap	187,373,390	1.75%	(286,675)	1,816,727	185,843,339	1.78%
Franklin Templeton Intl SmallCap	154,442,291	1.44%	(246,653)	1,678,606	153,010,339	1.46%
Diversified Strategies	\$219,312,434	2.05%	\$(152,914,630)	\$3,272,432	\$368,954,633	3.53%
AQR Capital	3	0.00%	(152,364,976)	35,100	152,329,880	1.46%
Blackstone Alt. Asset Mgmt.	219,312,431	2.05%	(549,281)	3,236,960	216,624,753	2.07%
Newton Capital	0	0.00%	(373)	373	0	0.00%
Domestic Fixed Income	\$1,887,972,633	17.66%	\$(916,939)	\$(2,358,888)	\$1,891,248,460	18.09%
DoubleLine Capital	600,332,285	5.62%	(281,049)	(465,050)	601,078,385	5.75%
MacKay Shields	639,242,354	5.98%	(318,585)	(2,044,152)	641,605,091	6.14%
PGIM	648,397,994	6.06%	(317,305)	150,315	648,564,984	6.20%
Real Assets	\$1,485,328,406	13.89%	\$(17,416,670)	\$(25,353,747)	\$1,528,098,822	14.61%
REITS	\$11,622,780	0.11%	\$(2,505)	\$328,658	\$11,296,627	0.11%
MCM EB DV Non-SL REIT Fd	11,622,780	0.11%	(2,505)	328,658	11,296,627	0.11%
Core Real Estate	\$941,802,742	8.81%	\$(4,247,556)	\$(19,671,395)	\$965,721,693	9.24%
Invesco Real Estate	579,019,606	5.42%	(476,037)	(14,489,293)	593,984,936	5.68%
Heitman Real Estate Trust LP	362,783,136	3.39%	(3,771,519)	(5,182,102)	371,736,757	3.55%
Value Add Real Estate	\$346,755,542	3.24%	\$(13,199,957)	\$(16,349,072)	\$376,304,570	3.60%
Clarion Lion Industrial Trust	81,860,518	0.77%	(244,014)	(743,434)	82,847,966	0.79%
Harrison Street Fund VIII	44,609,947	0.42%	2,312,500	32,479	42,264,968	0.40%
Heitman Value Partners IV	44,500,345	0.42%	(6,593,246)	(3,608,375)	54,701,966	0.52%
LaSalle Inc & Growth VI LP	5,548,168	0.05%	(21,276)	40,039	5,529,404	0.05%
LaSalle Inc & Growth VII LP	28,330,144	0.26%	(87,613)	(6,538,753)	34,956,511	0.33%
Starwood SOF XII	16,552,752	0.15%	(230,889)	(517,335)	17,300,976	0.17%
TA Associates Realty Fund X	8,283	0.00%	(24,470)	(551)	33,304	0.00%
TA Associates Realty Fund XI	23,372,673	0.22%	(1,364,530)	(5,393,995)	30,131,198	0.29%
TA Associates Realty Fund XII	101,972,712	0.95%	(6,946,419)	380,854	108,538,277	1.04%
Farmland	\$90,537,303	0.85%	\$1,229,495	\$1,708,481	\$87,599,327	0.84%
IFC Core Farmland Fund	52,722,782	0.49%	(362,547)	1,574,642	51,510,687	0.49%
PGIM Agriculture	37,814,521	0.35%	1,592,042	133,839	36,088,640	0.35%
Timber	\$94,610,040	0.88%	\$(1,196,147)	\$8,629,581	\$87,176,606	0.83%
Pinnacle	94,610,040	0.88%	(1,196,147)	8,629,581	87,176,606	0.83%
Cash	\$217,811,171	2.04%	\$153,414,500	\$1,756,783	\$62,639,888	0.60%
Total Fund	\$10,691,261,784	100.0%	\$(63,943,875)	\$298,110,409	\$10,457,095,250	100.0%

Asset Class Performance and Market Values

June 30, 2023

	Market Value \$(Dollars)	Ending Weight	Last Quarter	Fiscal Year	Last 3 Years	Last 5 Years
Domestic Equity	\$4,125,287,213	39.39%	6.43%	15.24%	12.40%	10.24%
Russell 3000 Index	-	-	8.39%	18.95%	13.89%	11.39%
International Equity	\$2,755,549,927	26.31%	2.62%	17.06%	8.76%	5.27%
Benchmark****	-	-	2.38%	12.47%	6.30%	2.87%
Diversified Strategies	\$219,312,434	2.09%	1.49%	4.75%	5.45%	5.01%
Diversified Strategy Trgt**	-	-	3.76%	10.49%	5.69%	6.19%
Domestic Fixed Income	\$1,887,972,633	18.03%	(0.13%)	0.82%	(2.32%)	1.57%
Blmbg Aggregate	-	-	(0.84%)	(0.94%)	(3.96%)	0.77%
Real Assets	\$1,485,339,942	14.18%	(1.67%)	(7.53%)	12.40%	6.68%
CPIU + 4%	-	-	2.04%	6.97%	9.78%	7.90%
REITS	\$11,622,780	0.11%	2.91%	(1.01%)	9.15%	3.01%
S&P DJ US Select REIT	-	-	2.92%	(0.69%)	9.17%	3.28%
Core Real Estate	\$941,802,742	8.99%	(2.04%)	(9.24%)	8.54%	6.23%
NFI-ODCE Eq Wt Net	-	-	(3.05%)	(10.51%)	7.59%	6.07%
Value Add Real Estate	\$346,755,542	3.31%	(4.42%)	(8.77%)	17.61%	14.76%
NCREIF Total Index	-	-	(1.98%)	(6.60%)	6.79%	5.90%
Farmland	\$90,537,303	0.86%	1.96%	4.68%	-	-
NCREIF Farmland Index	-	-	0.80%	8.19%	7.60%	6.45%
Timber	\$94,610,040	0.90%	9.93%	17.13%	10.74%	5.12%
NCREIF Timberland Index	-	-	1.71%	11.13%	8.67%	5.80%
Total Fund***	\$10,473,450,613	100.00%	2.91%	8.83%	8.58%	6.76%
Benchmark*	-	-	4.04%	11.50%	7.97%	7.09%

- **Domestic Equity** underperformed the benchmark in the second quarter and over the last 5-year period.
- **International Equity** outperformed the benchmark in the second quarter and leads its benchmark over longer time periods.
- **Diversified Strategies** underperformed the target return in the second quarter and trails the target over longer time periods.
- **Domestic Fixed Income** outperformed the benchmark in the second quarter and leads the index over longer trailing time periods.
- **Real Assets** underperformed the benchmark in the second quarter but has outperformed over the last 3-year period.

* Benchmark consists of 37% Russell 3000 Index, 24% MSCI ACWI ex US IMI Index, 18% Blmbg Aggregate Index, 16% CPI All Urban Cons +4%, 3% MSCI World Index and 2% Blmbg Aggregate Index

** 60% MSCI World and 40% Bloomberg Aggregate.

*** Performance excludes In-House Cash Accounts.

**** MSCI EAFE through 12/31/2020; MSCI ACWI ex US IMI (Net) thereafter

Total Fund Performance

June 30, 2023

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 20 Years
10th Percentile	5.62%	→ 11.98%	10.35%	8.04%	8.47%	8.20%
25th Percentile	→ 4.16%	→ 10.71%	9.31%	→ 7.35%	8.05%	7.82%
Median	3.46%	9.27%	→ 7.96%	→ 6.71%	→ 7.54%	→ 7.50%
75th Percentile	← 2.73%	← 7.76%	6.85%	5.88%	6.93%	7.07%
90th Percentile	2.28%	5.70%	5.84%	5.35%	6.34%	6.64%
● Total Fund	2.91% (69)	8.83% (59)	8.58% (38)	6.76% (47)	7.78% (39)	7.56% (42)
● Policy Target	4.04% (28)	11.50% (13)	7.97% (49)	7.09% (36)	7.62% (47)	7.45% (55)

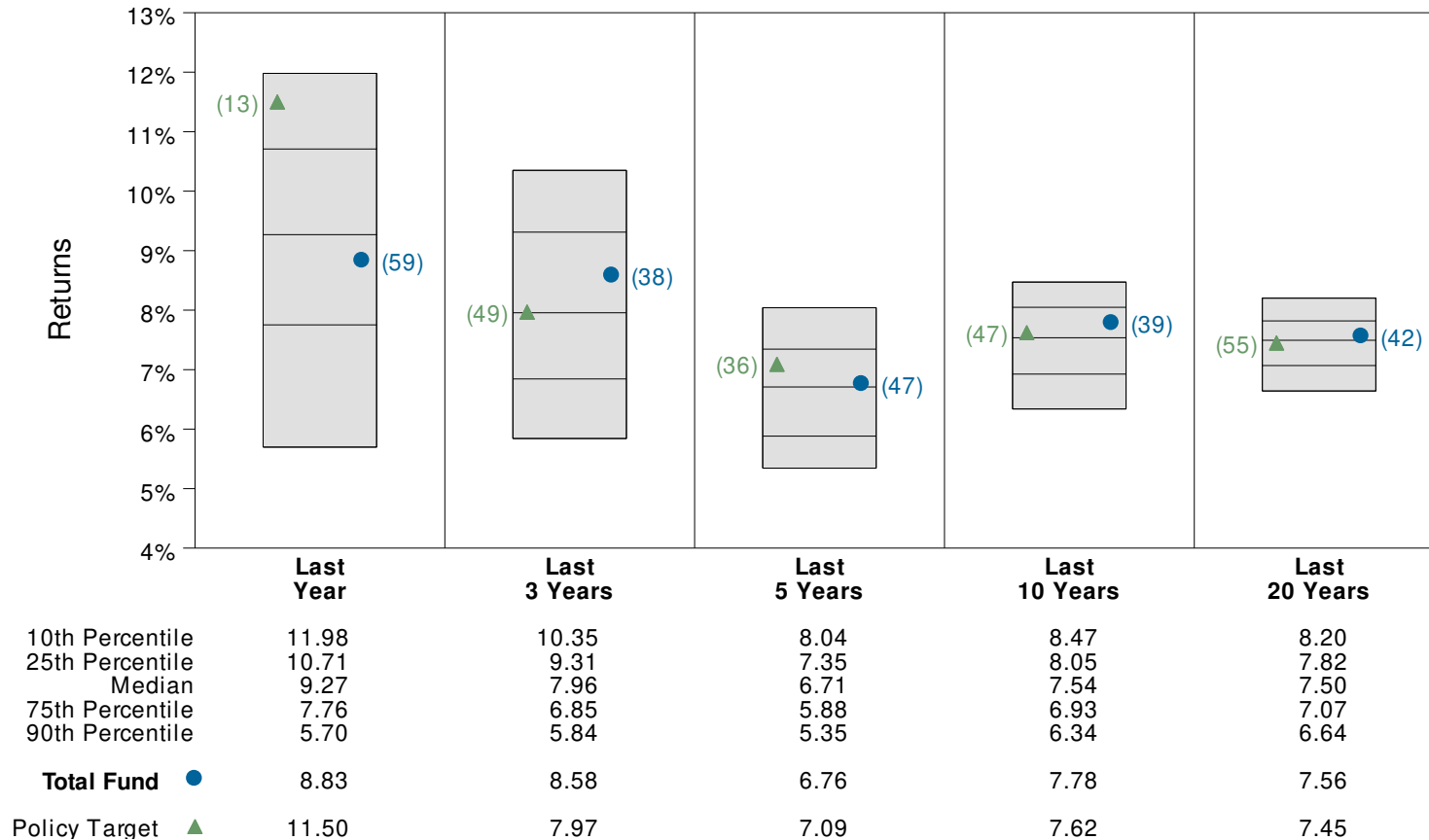
- The above chart shows the distribution of returns for the Callan Public Fund DB Peer Group across time periods ended June 30, 2023. Returns longer than one year annualized.
- The returns and peer group ranking for the APERS Total Fund and Total Fund Target are shown in the bottom two rows.
 - **The 25th percentile return** represents the value above which 25% of the returns fall. In other words, it's the point where a quarter of the peer group earned a higher return, and three-quarters of the peer group earned a lower return.
 - **The median return** represents the middle value in a distribution of returns. If we arrange all the returns in ascending order, the median is the value that separates the lower half from the higher half.
 - **The 75th percentile return** represents the value above which 75% of the returns fall. In other words, it's the point where three-quarters of the peer group earned a higher return, and a quarter of the peer group earned a lower return.

Policy Target consists of 37% Russell 3000 Index, 24% MSCI ACWI ex US IMI Index, 18% Blmbg Aggregate Index, 16% CPI All Urban Cons +4%, 3% MSCI World Index and 2% Blmbg Aggregate Index

Total Fund Performance

June 30, 2023

Callan Public Fund Sponsor Database



- The Total Fund underperformed its policy target for the last year and ranked at the 59th percentile of its peer group.
- Over the trailing 3-, 10-, and 20-year periods, the fund outpaced its benchmark and finished ahead of its peer group median.
- Over the last 5 years, the fund trailed its benchmark, but ranked in the top half of peers.

Policy Target consists of 37% Russell 3000 Index, 24% MSCI ACWI ex US IMI Index, 18% Blmbg Aggregate Index, 16% CPI All Urban Cons +4%, 3% MSCI World Index and 2% Blmbg Aggregate Index

Investment Manager Returns and Peer Group Rankings

June 30, 2023

	Last Quarter		Fiscal Year		Last 3 Years		Last 5 Years	
Total Domestic Equity	6.43%	85	15.24%	89	12.40%	87	10.24%	65
Russell 3000 Index	8.39%	14	18.95%	23	13.89%	57	11.39%	13
Pub Pln- Dom Equity	7.69%		18.39%		14.07%		10.67%	
Lazard Asset Mgmt.	5.04%	68	14.36%	63	11.77%	74	10.30%	54
Russell 3000 Index	8.39%	36	18.95%	42	13.89%	61	11.39%	40
Callan All Cap Broad	6.86%		17.70%		15.09%		10.42%	
CastleArk	9.45%	27	22.88%	21	14.66%	56	13.03%	15
Russell 3000 Growth Index	12.47%	10	26.60%	10	13.24%	65	14.39%	7
Callan All Cap Broad	6.86%		17.70%		15.09%		10.42%	
Mellon S&P 500 Index Fd	8.74%	34	19.60%	30	14.60%	46	11.99%	46
S&P 500 Index	8.74%	34	19.59%	30	14.60%	46	12.31%	34
Callan Large Cap Core	8.44%		18.14%		14.38%		11.72%	
Horrell Capital - Passive	4.72%	80	15.62%	57	16.33%	41	11.47%	39
Bloomberg Arkansas Index	8.95%	34	17.78%	44	29.37%	4	13.70%	10
S&P 500 Index	8.74%	34	19.59%	41	14.60%	57	12.31%	19
Callan All Cap Broad	6.86%		17.70%		15.09%		10.42%	
Wellington Management	4.31%	42	13.59%	35	15.82%	61	8.99%	44
Russell 1000 Value Index	4.07%	52	11.54%	62	14.30%	82	8.11%	71
Callan Large Cap Value	4.22%		12.34%		16.40%		8.77%	
LSV Asset Management	5.33%	16	14.83%	24	22.93%	16	5.85%	50
Russell 2000 Value Index	3.18%	62	6.01%	85	15.43%	82	3.54%	91
Callan Small Cap Value	3.63%		11.39%		18.35%		5.89%	
Stephens Investment Mgmt.	5.33%	57	14.39%	67	6.44%	67	7.41%	60
Russell 2000 Growth Index	7.05%	27	18.53%	36	6.10%	71	4.22%	95
Callan Small Cap Growth	5.46%		16.97%		8.52%		7.92%	
Froley Revy Investment	2.99%	46	5.86%	84	6.74%	47	8.65%	31
ML All Conv	4.63%	9	10.60%	24	8.56%	12	9.76%	16
Callan Convert Bonds DB	2.89%		8.56%		6.54%		6.96%	

- Total **Domestic Equity** underperformance over the last year has weighed on long-term results, as the composite trails the benchmark and peer group median over the trailing 3- and 5-year periods.
- LSV and Wellington led their respective benchmarks and ranked in the top half of peers for the quarter. Both managers have outperformed over the last 5-year period.
- CastleArk and Froley Revy trailed their respective benchmarks but ranked in the top half of their peer groups for the quarter. The strategies lagged their benchmarks over the last five years but ranked in the top third of peers.
- Lazard, and Stephens underperformed their respective benchmarks and ranked below their peer group median for the quarter. Over the last five years, Lazard trailed its benchmark and ranked just below median, while Stephens outperformed the benchmark and ranked at the 60th percentile of its peer group.

Investment Manager Returns and Peer Group Rankings

June 30, 2023

	Last Quarter		Fiscal Year		Last 3 Years		Last 5 Years	
International Equity	2.62%	51	17.06%	19	8.76%	29	5.27%	12
Benchmark(1)	2.38%	66	12.47%	73	6.30%	76	2.87%	87
Pub Pln- Intl Equity	2.65%		14.50%		7.80%		4.16%	
Artisan Partners	4.15%	21	24.77%	3	18.24%	1	9.75%	1
MSCI EAFE	2.95%	64	18.77%	43	8.93%	51	4.39%	65
Callan NonUS Eq	3.21%		18.10%		9.01%		4.90%	
Mellon ACWI ex US Fund	2.58%	76	13.11%	93	7.55%	72	3.84%	77
MSCI ACWI ex US	2.44%	79	12.72%	94	7.22%	77	3.52%	84
Callan NonUS Eq	3.21%		18.10%		9.01%		4.90%	
Baillie Gifford Overseas	0.29%	99	16.40%	71	1.03%	97	3.40%	85
MSCI ACWIxUS Gross	2.67%	71	13.33%	92	7.75%	69	4.01%	74
Callan NonUS Eq	3.21%		18.10%		9.01%		4.90%	
Lazard Asset Mgmt.	4.04%	25	16.69%	69	8.62%	56	4.52%	61
MSCI ACWIxUS Gross	2.67%	71	13.33%	92	7.75%	69	4.01%	74
Callan NonUS Eq	3.21%		18.10%		9.01%		4.90%	
Acadian ACW ex US SmallCap	0.98%	38	11.60%	69	-	38	-	39
MSCI ACWI ex US Small Cap	2.05%	13	10.93%	74	8.15%	38	2.62%	39
Callan Intl Small Cap	0.62%		12.38%		7.41%		2.07%	
Franklin Templeton Intl SmallCap	1.10%	28	11.59%	70	-	38	-	39
MSCI ACWI ex US Small Cap	2.05%	13	10.93%	74	8.15%	38	2.62%	39
Callan Intl Small Cap	0.62%		12.38%		7.41%		2.07%	
Diversified Strategies	1.49%		4.75%		5.45%		5.01%	
Diversified Strategy Trgt**	3.76%		10.49%		5.69%		6.19%	
Blackstone Alt. Asset Mgmt.	1.50%	60	6.22%	52	7.24%	29	5.66%	29
T-Bills + 4%	2.12%	50	7.59%	45	5.27%	50	5.55%	31
Intl/Global Balanced DB	2.18%		6.56%		5.29%		4.02%	

- Total **International Equity** outperformed the benchmark in the second quarter and over longer time periods. The composite ranks in the top quartile of peers over the last five years.
- Artisan and Lazard led their respective benchmarks for the second quarter, while Baillie Gifford, Acadian, and Franklin Templeton underperformed. Artisan, Lazard, Acadian, and Franklin Templeton ranked in the top half of their peer groups.
- Over the 5-year period, Artisan and Lazard have outperformed their respective benchmarks. Baillie Gifford modestly underperformed over the last five years.
- **Diversified Strategies** lagged its target in the second quarter and trails its benchmark over the last 3- and 5-year periods.
- BAAM has outpaced its target return and ranks in the top half of peers over the trailing 3- and 5-year periods.

(1) MSCI EAFE through 12/31/2020; MSCI ACWI ex US IMI (Net) thereafter

**60% MSCI World/40% Blmbg Aggregate

Investment Manager Returns and Peer Group Rankings

June 30, 2023

	Last Quarter		Fiscal Year		Last 3 Years		Last 5 Years	
Domestic Fixed Income	(0.13%)	27	0.82%	41	(2.32%)	51	1.57%	45
Blmbg Aggregate Index	(0.84%)	94	(0.94%)	93	(3.96%)	96	0.77%	95
Pub Pln- Dom Fixed	(0.33%)		0.54%		(2.28%)		1.47%	
DoubleLine Capital	(0.08%)	14	0.68%	46	(2.05%)	23	1.04%	90
MacKay Shields	(0.32%)	25	0.76%	46	(2.13%)	28	1.89%	23
PGIM	0.02%	10	1.01%	34	(2.78%)	62	1.71%	32
Blmbg Aggregate Index	(0.84%)	88	(0.94%)	89	(3.96%)	98	0.77%	98
Callan Core Plus FI	(0.48%)		0.41%		(2.60%)		1.56%	
Real Assets	(1.67%)		(7.53%)		12.40%		6.68%	
CPIU + 4%	2.04%		6.97%		9.78%		7.90%	
REITS	2.91%		(1.01%)		9.15%		3.01%	
S&P DJ US Select REIT	2.92%		(0.69%)		9.17%		3.28%	
MCM EB DV Non-SL REIT Fd	2.91%	39	(1.01%)	60	9.15%	32	3.01%	91
S&P DJ US Select REIT	2.92%	38	(0.69%)	48	9.17%	31	3.28%	87
Callan Real Estate REIT	2.64%		(0.71%)		8.59%		6.02%	
Core Real Estate	(2.04%)		(9.24%)		8.54%		6.23%	
NCREIF NFI-ODCE Eq Wt Net	(3.05%)		(10.51%)		7.59%		6.07%	
Invesco Real Estate	(2.44%)	85	(9.75%)	62	7.35%	60	6.06%	63
Heitman Real Estate Trust LP***	(1.41%)	75	(8.43%)	49	10.48%	30	6.57%	47
NCREIF NFI-ODCE Eq Wt Net	(3.05%)	89	(10.51%)	75	7.59%	57	6.07%	62
Callan OE Core Cmngld RE	(0.76%)		(8.78%)		7.86%		6.32%	
Value Add Real Estate	(4.42%)		(8.77%)		17.61%		14.76%	
NCREIF Total Index	(1.98%)		(6.60%)		6.79%		5.90%	
Clarion Lion Industrial Trust	(0.90%)		-		-		-	
Harrison Street Fund VIII	0.08%		15.91%		-		-	
Heitman Value Partners IV	(7.00%)		(3.62%)		17.32%		12.02%	
LaSalle Inc & Growth VI LP	0.73%		(31.68%)		(13.48%)		(7.46%)	
LaSalle Inc & Growth VII LP	(18.75%)		(26.01%)		1.78%		4.66%	
Starwood SOF XII	(3.03%)		6.13%		-		-	
TA Associates Realty Fund XI	(17.32%)		(38.36%)		12.22%		12.43%	
TA Associates Realty Fund XII	0.36%		(4.85%)		28.84%		-	
NCREIF Total Index	(1.98%)		(6.60%)		6.79%		5.90%	
Farmland	1.96%		4.68%		-		-	
IFC Core Farmland Fund	3.08%		-		-		-	
PGIM Agriculture	0.37%		0.81%		-		-	
NCREIF Farmland Index	0.80%		8.19%		7.60%		6.45%	
Timber	9.93%		17.13%		10.74%		5.12%	
Pinnacle	9.93%		17.13%		10.74%		5.12%	
NCREIF Timberland Index	1.71%		11.13%		8.67%		5.80%	
Total Fund	2.91%	69	8.83%	59	8.58%	38	6.76%	47
Benchmark*	4.04%	28	11.50%	13	7.97%	49	7.09%	36
Callan Public Fund Spr DB	3.46%		9.27%		7.96%		6.71%	

- **Domestic Fixed Income** leads the index over the last 3- and 5-year periods. All three managers delivered excess returns over the benchmark in the second quarter and have outperformed over longer periods.

- The **Real Assets** composite underperformed its target for the second quarter and over the last year. REITS performed in line with the benchmark for the quarter, Core Real Estate outperformed, but Value Add Real Estate detracted. The Farmland and Timber allocation also outperformed their respective benchmarks.

- The **Total Fund** underperformed its benchmark and ranked below its peer group median for the quarter. The Fund ranks in the top half of peers over the last 3- and 5-year periods.

*Policy Target consists of 37% Russell 3000 Index, 24% MSCI ACWI ex US IMI Index, 18% Blmbg Aggregate Index, 16% CPI All Urban Cons +4%, 3% MSCI World Index and 2% Blmbg Aggregate Index
 *** Funded July 8, 2015. Performance prior to October 1, 2015 represents fund composite returns.

Organizational Developments

2nd Quarter 2023

MacKay Shields – Core Plus Fixed Income

On May 9, 2023, Mackay Shields announced that Stephen Cianci, Senior Managing Director and Co-Head of Global Fixed Income, will be leaving the firm and remain as an advisor until June 30th. Cianci joined the firm in 2018, roughly a year before Dan Roberts, the former Head of Global Fixed Income, retired from the firm. This announcement comes within a year of former President Janelle Woodward's departure.

Effective immediately, the Global Fixed Income Team will be co-led by Neil Moriarty and Michael DePalma. DePalma joined MacKay Shields in 2019 and most recently served as Managing Director and Co-Head of Macro and Quantitative Solutions. He was previously involved in the management of credit strategies at Phase Capital and multi-sector, global, and credit strategies at AllianceBernstein. Moriarty joined the firm in January of 2018 alongside Cianci. Additionally, Thomas Musmanno will join the Global Fixed Income portfolio management team. Musmanno previously worked at Blackrock for more than twenty years and had responsibility for their \$75 billion Short Duration business, and he will also take on a newly created role of Chief Operating Officer of MacKay's non-Municipal fixed income business.

In the past, the team adhered to a top-down approach shaped by macroeconomic factors. Cianci was a strong voice in favor of a more bottom-up approach which conflicted with other team members. Callan will closely monitor to observe whether Moriarty and DePalma will implement the top-down centric investment style that MacKay used under Dan Roberts.

The frequency of recent departures raises the level of concern and puts the team and strategies it oversees under review. The recent level of turnover amongst firm leadership, portfolio management, and credit research professionals is unexpected from a firm that has historically not experienced a high level of personnel attrition.

Organizational Developments

2nd Quarter 2023

Invesco Real Estate – Core Real Estate – USA

Invesco shared the retirement of Bill Grubbs, Co-lead Portfolio Manager. Bill joined Invesco in 2005 and has since led the flagship open-end core diversified equity (“ODCE”) fund.

Michelle Foss has been selected as Bill’s successor and will be elevated to lead portfolio manager of the Core fund, effective October 1st, 2023. Michelle joined Invesco in 2013 and was handpicked by Bill as his replacement. Michelle was elevated to Co-Portfolio Manager in 2020.

PGIM Fixed Income – Core Plus Fixed Income

Lindsay Rosner, Senior Portfolio Manager on the multi-sector team, departed PGIM Fixed Income on June 9th to pursue a new opportunity. Rosner was part of the sector allocation team for the Core Plus strategy, and her responsibilities will be assumed by the remaining members of the multi-sector team. PGIM’s senior leadership will evaluate staffing needs but does not have near-term plans to immediately replace Rosner.

PGIM’s investment grade multi-sector team remains deep, and its lead portfolio managers have a long history of working together providing strong continuity. Rosner’s departure may impact long-term succession plans as it follows Senior PM Michael Collins’ announcement in January that he will retire in April 2024. Rosner had been assuming more of Collins’ responsibilities including client engagement and traveling for meetings. They typically allotted these responsibilities to Collins and Rosner to allow the other lead PMs—Greg Peters, Rich Piccirillo, and Robert Tipp—to remain on the desk. PGIM is one of the more well-resourced fixed income platforms with the capability to absorb Rosner’s responsibilities in the near-term, but Callan will monitor PGIM’s efforts to find a long-term replacement for Rosner and Collins, especially given their respective roles in client communication and engagement. No action is recommended at this time.

Organizational Developments

2nd Quarter 2023

Artisan Partners – International Value Equity

Artisan Partners International Value team's primary office location changed from San Francisco to Boston, effective July 5, 2023. Lead Portfolio Manager David Samra and one junior investment team member will be based in Boston. The rest of the investment team, including Co-Portfolio Manager Ian McGonigle and Associate Portfolio Manager Benjamin Herrick, will remain in the San Francisco office and there are no plans right now for any of the other team members to move to Boston. There is a formal mandate in place requiring all team members to spend at least one week every 2-3 months in the Boston office. No changes to the team or process will occur due to the change in primary office location. The decision to change the primary office location to Boston was driven by Samra's personal situation. Samra is originally from Massachusetts and is moving to be closer to family. Given the idiosyncratic nature of the move, the stability and tenure of the team, and proven consistency in executing the strategy's process, Callan does not have any immediate concerns. No action is recommended at this time.

Work Plan Update

Asset Liability Study

- Completed in February 2019. The Board decided to keep the current asset allocation unchanged

Investment Policy Review and Update – Completed in August 2019

Non-US Equity Structure Study

- The Board reviewed the Non-US Equity Structure Study at the November 2019 Board Meeting
- The Board selected a structure which included a new allocation to Non-US Small Cap Equity
- The Non-US Small Cap Equity search was concluded in November 2020 with the selection of Acadian Asset Management and Franklin Templeton Investments

Real Assets Structure Study

- The Board reviewed the Real Assets Structure at the February 2021 meeting. The Board chose to eliminate the Energy equity allocation, in favor of additional Core and Core Plus real estate, and Farmland. Additional Allocations to Value-add real estate were also approved
- At the May 2021 Board Meeting, the Board approved the Real Estate Pacing Study and new commitments to Starwood and Harrison Street Partners
- At the November 2021 Board Meeting, Farmland managers were interviewed and both IFC and PGIM were allocated \$50 million.
- Core Plus Real Estate Manager Interviews occurred at the February Board Meeting, all three managers, Carlyle, Principal, and Clarion, were hired to manage \$85 million.

Domestic Equity Structure Study

- Presented at the August 2022 Board Meeting. The Board decided to maintain the current Domestic Equity Structure.

Private Equity Education and Total Fund Asset Allocation Review

- Private equity education was provided at the Trustee Workshop in October 2022. In the November 2022 meeting the Board received an asset allocation review which included portfolios containing private equity.
- The Board requested that Callan complete a Private Equity pacing analysis using a 5% private equity target allocation for the Fund.

Work Plan Update

Total Fund Asset Allocation Review Update and Private Equity Pacing Study Analysis

- Presented at the February 2023 meeting

Private Equity Education, Pacing Study Review

- Additional Private Equity education provided on May 16th, 2023
- Private Equity Pacing Study results presented at the May 2023 meeting

Upcoming Projects:

- **Investment Policy Review**
- **Fixed Income Structure Study**

Total Fund Relative Attribution

June 30, 2023

Relative Attribution Effects for Quarter ended June 30, 2023

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return		
Domestic Equity	38%	37%	6.43%	8.39%	(0.75%)	0.05%	(0.70%)		
Domestic Fixed-Income	19%	18%	(0.13%)	(0.84%)	0.13%	(0.02%)	0.11%		
International Equity	26%	24%	2.62%	2.38%	0.06%	(0.04%)	0.02%		
Diversified Strategies	2%	5%	1.49%	3.76%	(0.05%)	0.01%	(0.04%)		
Real Assets	15%	16%	(1.67%)	2.04%	(0.55%)	0.02%	(0.53%)		
Total			2.91%	4.04%	+	(1.15%)	+	0.02%	(1.13%)

- Active management was the primary detractor for the quarter. Real Assets, Domestic Equity, and Diversified Strategies managers outweighed positive contributions from International Equity and Fixed Income managers. Variance from policy weights had a small positive impact overall, primarily driven by an overweight to Domestic Equity.

Three Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return		
Domestic Equity	40%	37%	12.40%	13.89%	(0.56%)	0.18%	(0.38%)		
Domestic Fixed-Income	17%	18%	(2.32%)	(3.96%)	0.28%	0.10%	0.38%		
International Equity	25%	24%	8.76%	6.30%	0.62%	(0.07%)	0.55%		
Diversified Strategies	4%	5%	5.45%	5.69%	0.01%	0.01%	0.02%		
Real Assets	13%	16%	12.40%	9.78%	0.17%	(0.13%)	0.04%		
Total			8.58%	7.97%	+	0.52%	+	0.09%	0.61%

- Over the last three years, active management had a positive impact on relative performance. Managers across International Equity, Fixed Income, International Equity, and Real Assets added meaningful contributions. The asset allocation effect was modest, but the fund benefited from an overweight to Domestic Equity and underweight to Fixed Income.

Five Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return		
Domestic Equity	40%	37%	10.24%	11.39%	(0.44%)	0.06%	(0.38%)		
Domestic Fixed-Income	17%	18%	1.57%	0.77%	0.10%	(0.06%)	0.04%		
International Equity	25%	24%	5.27%	2.87%	0.61%	(0.08%)	0.53%		
Diversified Strategies	5%	5%	5.01%	6.19%	(0.05%)	0.00%	(0.04%)		
Real Assets	14%	16%	6.68%	7.90%	(0.34%)	(0.14%)	(0.48%)		
Total			6.76%	7.09%	+	(0.11%)	+	(0.22%)	(0.33%)

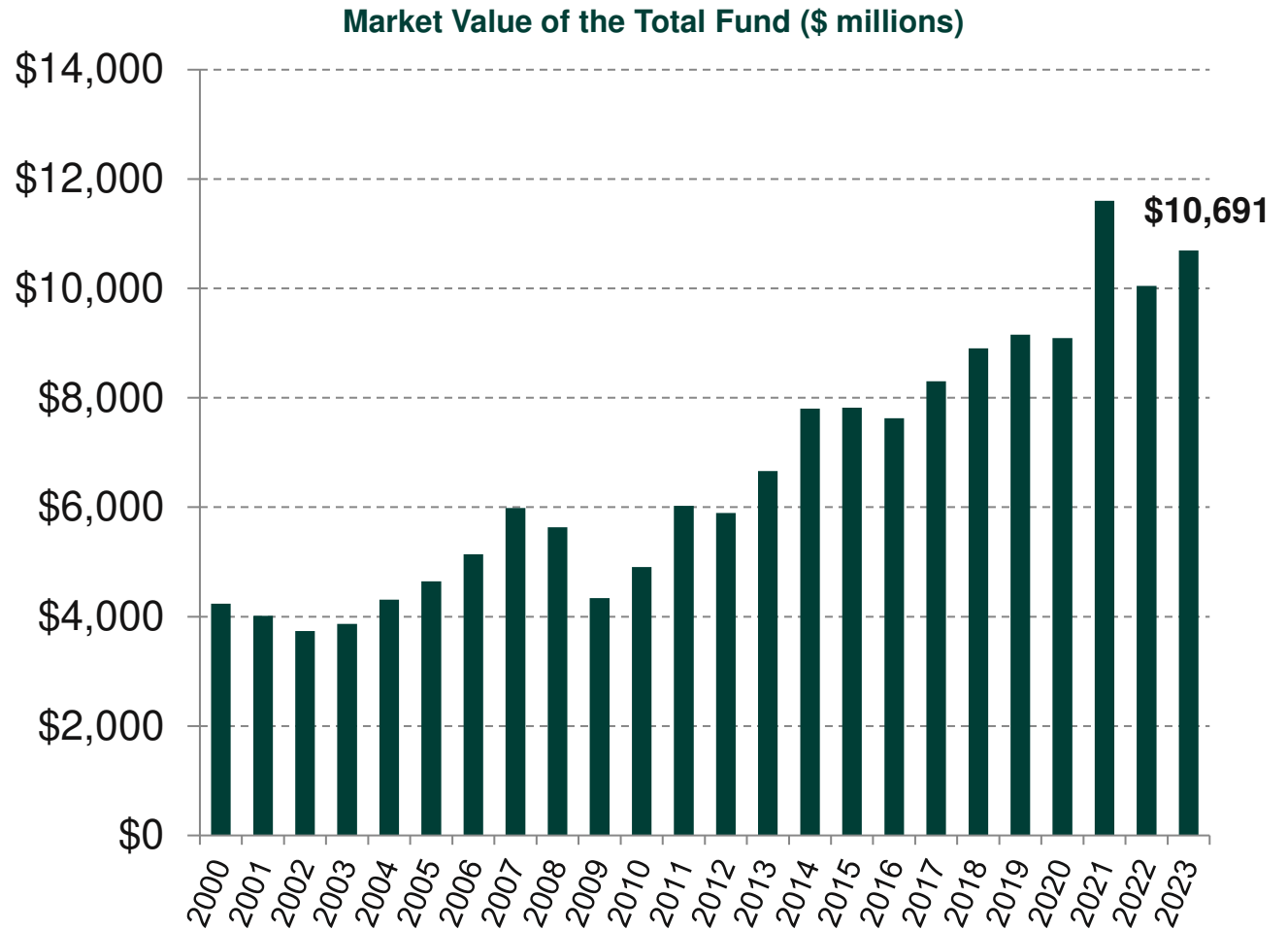
- The Fund narrowly trailed its policy benchmark return over the last five years. Active management within International Equity and Fixed Income added value, while Domestic Equity and Real Assets managers were the primary detractors. Underweights to Real Assets and Fixed Income and the overweight to International Equity also detracted.

Policy Target consists of 37% Russell 3000 Index, 24% MSCI ACWI ex US IMI Index, 18% Blmbg Aggregate Index, 16% CPI All Urban Cons +4%, 3% MSCI World Index and 2% Blmbg Aggregate Index

Historical Market Values of the Total Fund

Fiscal Year-End Market Values

Fiscal Year Ending	Market Value
2000	\$4,236,749,732
2001	\$4,012,745,608
2002	\$3,739,381,695
2003	\$3,869,787,673
2004	\$4,307,589,827
2005	\$4,642,924,118
2006	\$5,136,985,259
2007	\$5,985,111,493
2008	\$5,633,155,289
2009	\$4,341,419,711
2010	\$4,907,734,835
2011	\$6,022,965,592
2012	\$5,896,862,618
2013	\$6,662,631,673
2014	\$7,800,291,923
2015	\$7,820,289,128
2016	\$7,624,665,446
2017	\$8,301,352,120
2018	\$8,904,393,859
2019	\$9,153,121,783
2020	\$9,093,497,703
2021	\$11,602,695,185
2022	\$10,042,629,672
2023	\$10,691,261,784



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