



## **Executive Summary Second Quarter 2022**

Arkansas Public Employees  
Retirement System

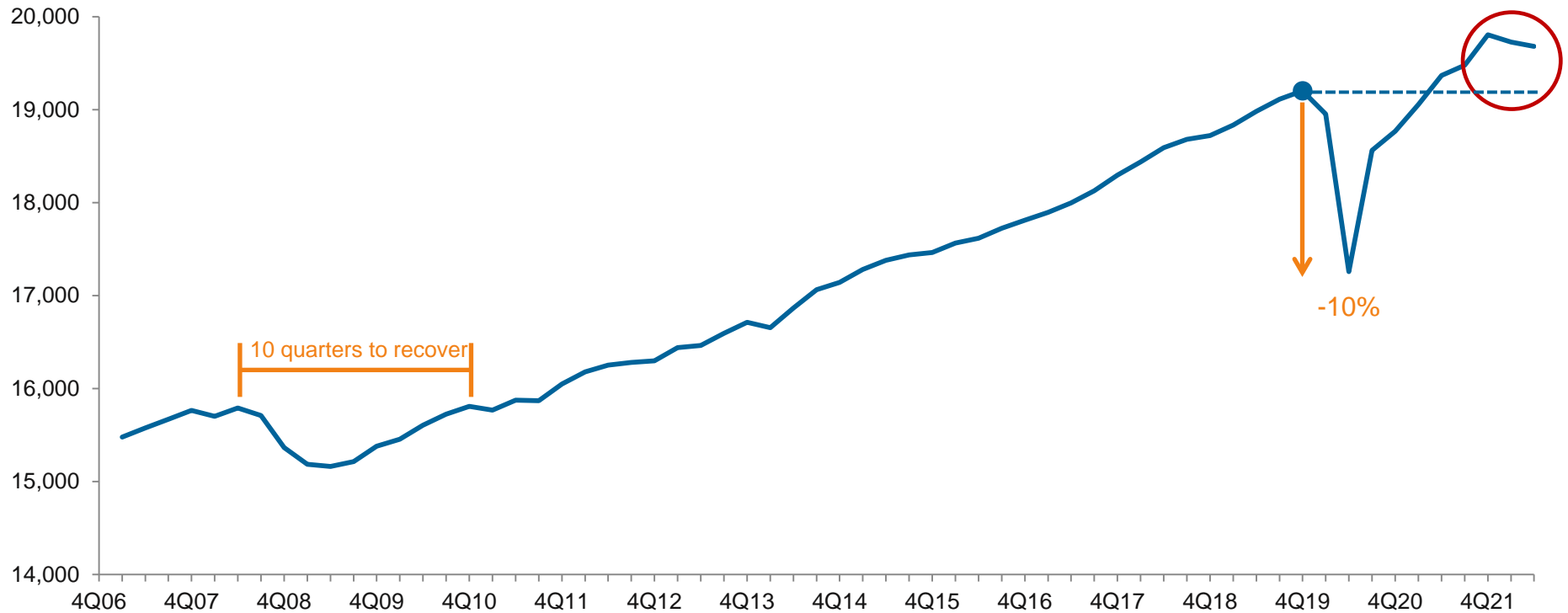
**Brianne Weymouth, CAIA**  
Senior Vice President

**John Jackson, CFA**  
Senior Vice President

# GDP Dropped for Two Consecutive Quarters in 2022

Recovered pre-pandemic level in 2Q21 after deepest drop in 75 years

Seasonally Adjusted Real GDP in Billions of Dollars



Consensus estimates for GDP growth in 2022 have been scaled back, from north of 4% at the start of the year to 0%, or lower

- 1Q22 GDP fell 1.6% in U.S., followed by a 0.9% drop in 2Q22.
- 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

# Equity and Fixed Income Markets Both Fell in 2Q22

Negative returns for stocks and bonds at the same time are unusual

## Global equity markets down sharply following the invasion of Ukraine

- Similar impact across developed markets
- Greater impact on small cap and emerging markets

## Fixed income down with sharply higher inflation and interest rates

- Bloomberg Aggregate: -10.4% year-to-date
- CPI-U: +9.1% for the year ended 2Q22

## Number of times stocks and bonds have been down together

- 37 quarters in almost 100 years, about 10% of the quarters
- But just twice on annual basis

## Inflation spiked to highest rate in decades

## Economic data show growth hit “pause”

- GDP fell 0.9% in 2Q22, after dropping 1.6% in 1Q22
- Forecasters have cut growth estimates for 2022 to 0%, or lower, and to 1.5% for 2023.

Returns for Periods ended 6/30/22

	1 Quarter	Year to Date	1 Year	5 Years	10 Years	25 Years
<b>U.S. Equity</b>						
Russell 3000	-16.70	-21.10	-13.87	10.60	12.57	8.06
S&P 500	-16.10	-19.96	-10.62	11.31	12.96	7.97
Russell 2000	-17.20	-23.43	-25.20	5.17	9.35	7.41
<b>Global ex-U.S. Equity</b>						
MSCI World ex USA	-14.66	-18.76	-16.76	2.66	5.37	4.07
MSCI Emerging Markets	-11.45	-17.63	-25.28	2.18	3.07	--
MSCI ACWI ex USA Small Cap	-17.55	-22.92	-22.45	2.55	6.22	5.68
<b>Fixed Income</b>						
Bloomberg Aggregate	-4.69	-10.35	-10.29	0.88	1.54	4.36
90-day T-Bill	0.10	0.14	0.17	1.11	0.64	1.96
Bloomberg Long Gov/Credit	-12.27	-21.88	-20.14	1.03	2.63	6.14
Bloomberg Global Agg ex-US	-11.01	-16.49	-18.78	-1.75	-1.06	2.83
<b>Real Estate</b>						
NCREIF Property	5.33	10.94	23.91	9.30	9.89	9.61
FTSE Nareit Equity	-17.00	-20.20	-6.27	5.30	7.39	8.67
<b>Alternatives</b>						
CS Hedge Fund	-2.30	-0.21	1.92	4.83	4.65	6.26
Cambridge Private Equity*	-1.51	3.61	22.01	20.68	16.50	15.43
Bloomberg Commodity	-5.66	18.44	24.27	8.39	-0.82	1.81
Gold Spot Price	-7.51	-1.16	2.02	7.79	1.20	6.97
<b>Inflation - CPI-U</b>	<b>3.06</b>	<b>6.28</b>	<b>9.06</b>	<b>3.88</b>	<b>2.59</b>	<b>2.49</b>

\*Cambridge PE data through 03/31/22.

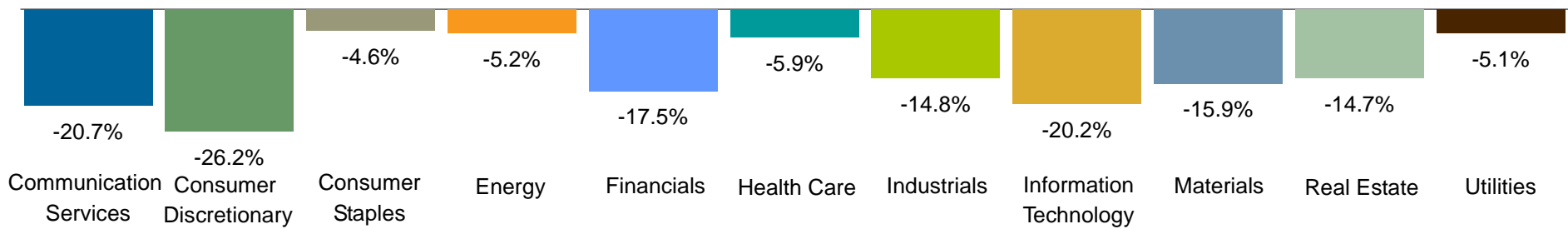
Sources: Bloomberg, Callan, Cambridge, Credit Suisse, FTSE Russell, MSCI, NCREIF, S&P Dow Jones Indices

# U.S. Equity Performance: 2Q22

## Worst first half since 1970

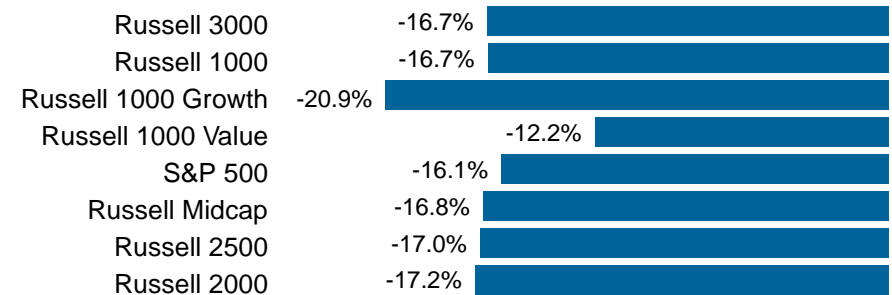
- The S&P 500 dropped by 16.1% in 2Q22; all major U.S. indices across styles and market cap ranges were negative in the quarter.
- All sectors posted negative returns over the quarter. Energy continues to be the best-performing sector, and it is the only sector that has posted positive returns YTD 2022.
- Large cap stocks nominally outpaced smaller cap stocks in the quarter. The performance spread between the Russell 1000 and the Russell 2000 Index was around 50 basis points.
- Value stocks have outperformed growth stocks across the market capitalization spectrum.
- Consumer Discretionary (-26%), Communication Services (-21%), and Information Technology (-20%) were the worst-performing sectors.
- Rising interest rates and inflation along with geopolitical headlines all contributed to a volatile and risk-averse environment.

### Industry Sector Quarterly Performance (S&P 500)

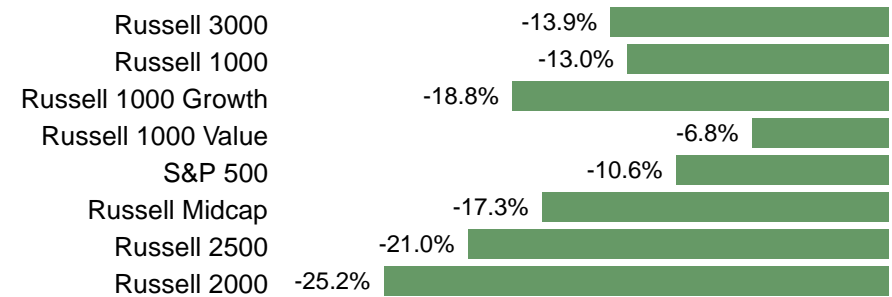


Sources: FTSE Russell, S&P Dow Jones Indices

### U.S. Equity: Quarterly Returns



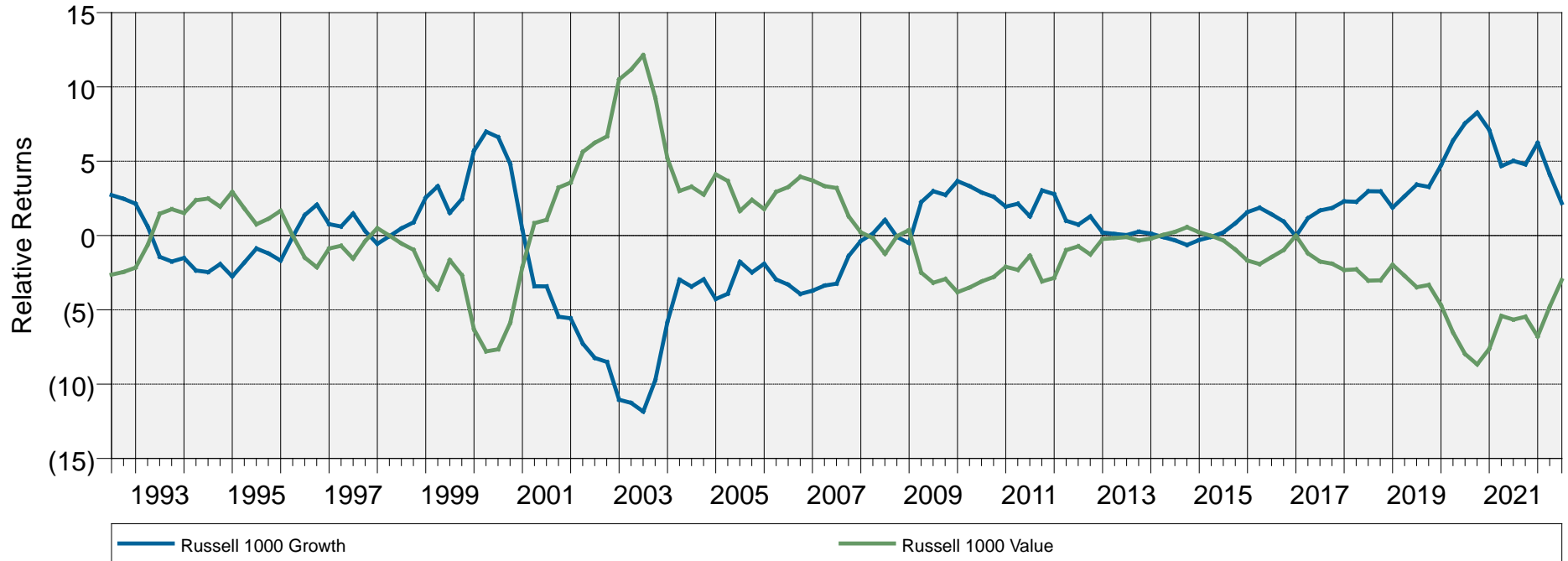
### U.S. Equity: One-Year Returns



# US Equity Background

## Cyclicality of Styles

Rolling 12 Quarter Relative Returns Relative To Russell 1000  
for 30 Years Ended June 30, 2022



- No style is consistently in favor
- The Russell 1000 Growth index was in favor during the Tech Bubble but underperformed the Russell 1000 Value index after the bubble burst
- Growth has been in favor since 2017 which has contributed to outperformance by LFUCG's US equity
- Value is potentially returning to favor which could lead to underperformance

# Global/Global ex-U.S. Equity Performance: 2Q22

## Fears of Recession

- The war in Ukraine pushed an already fragile supply chain, energy demand/supply imbalances, and inflationary environment into fears of a recession.
- Slowing global growth and recession risk became clearer toward quarter-end, leading investors toward higher-quality and lower-volatility areas of the market to offer protection.

## Wide divergence in country returns

- Optimism that the worst is behind China's COVID-19 lockdown buoyed the country to the only positive return in the quarter.
- Meanwhile Japan suffered from a weak yen, slowing growth, and continued supply chain disruptions.

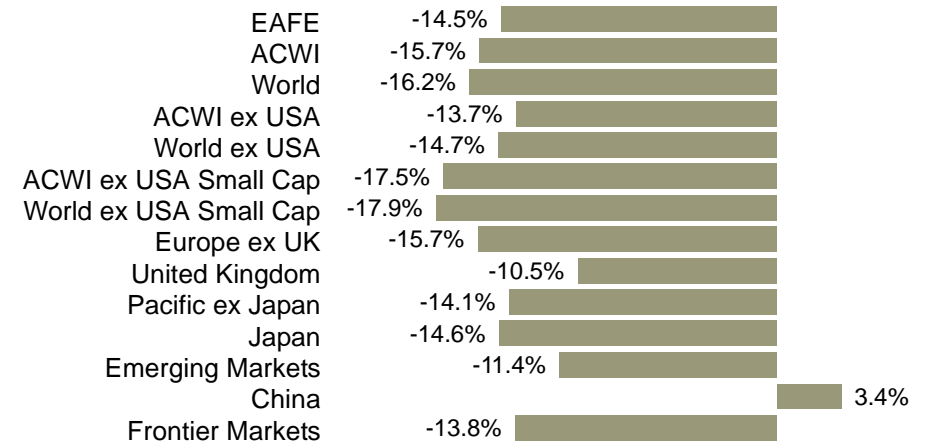
## Growth vs. value

- Value continues to outperform growth as most monetary policies focus on tightening.
  - Energy was the only sector with positive year-to-date results.
- Information Technology had the worst sector return as interest rate increases dampened long duration growth attractiveness.

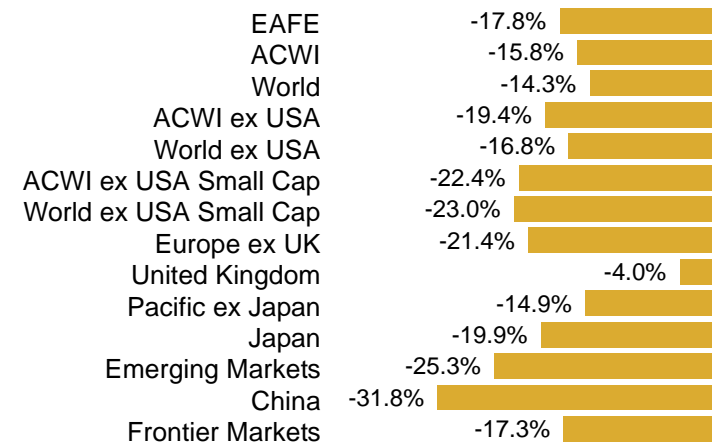
## U.S. dollar vs. other currencies

- The U.S. dollar strengthened further against other major currencies given its global dominance and perceived safety.

## Global Equity: Quarterly Returns



## Global Equity: One-Year Returns

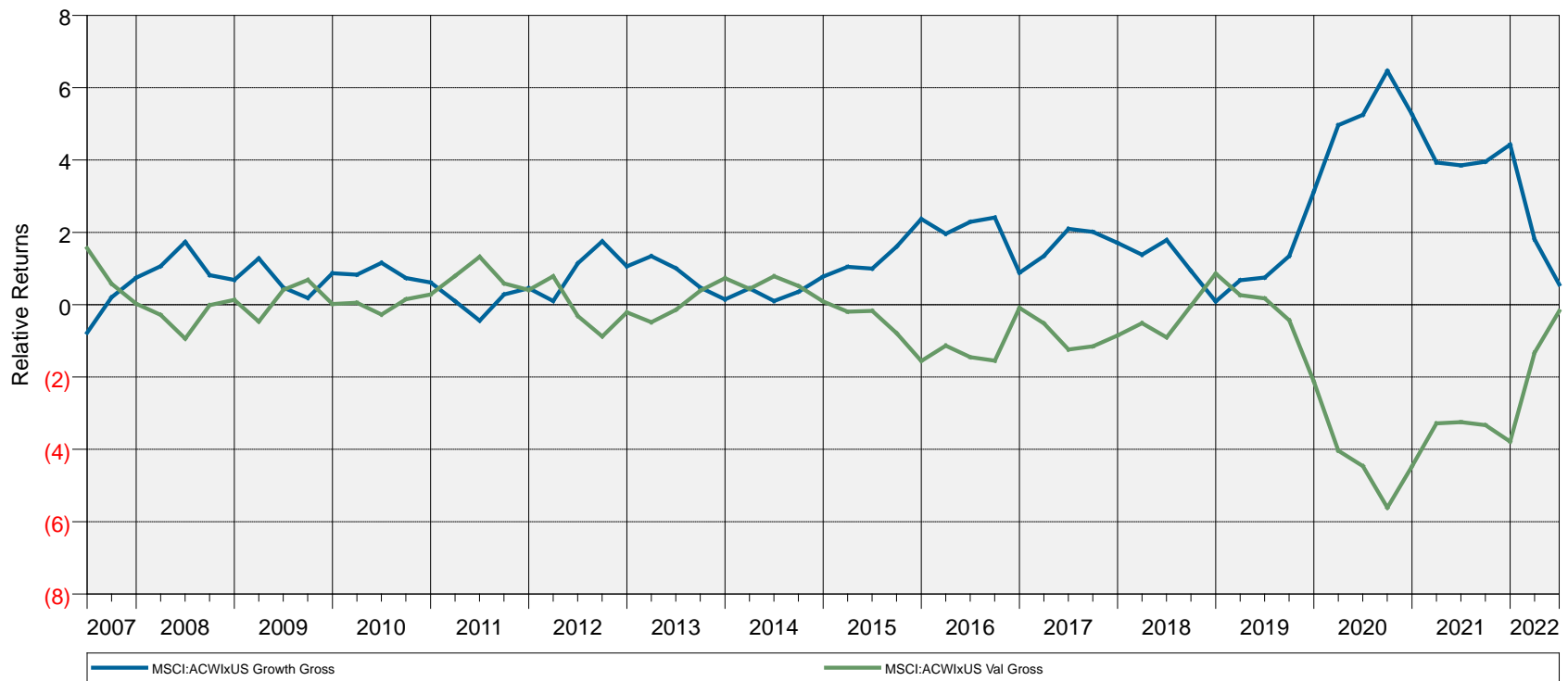


Source: MSCI

# Non-US Equity Background

## Cyclicality of Styles

Rolling 12 Quarter Relative Returns Relative To MSCI:ACWI ex US  
for 15 Years Ended June 30, 2022



- No style is consistently in favor
- Growth has been in favor since 2015 which has contributed to outperformance by LFUCG non-US equity
- Value is potentially returning to favor which could lead to underperformance

# U.S. Fixed Income Performance: 2Q22

## Bonds hit hard as rates rose sharply (again)

- Worst six-month return for Bloomberg US Aggregate in history
- Yield curve flirted with inversion but 2-year/10-year yield spread was slightly positive at quarter-end.
- TIPS underperformed nominal Treasuries, and 10-year breakeven spreads fell to 2.33% from 2.84% at 3/31/22.
- Fed raised rates by 75 bps, the largest increase since 1994, with further hikes expected.
  - Market pricing reflects Fed Funds rate of 3.4% at year-end.

## Spread sectors underperformed

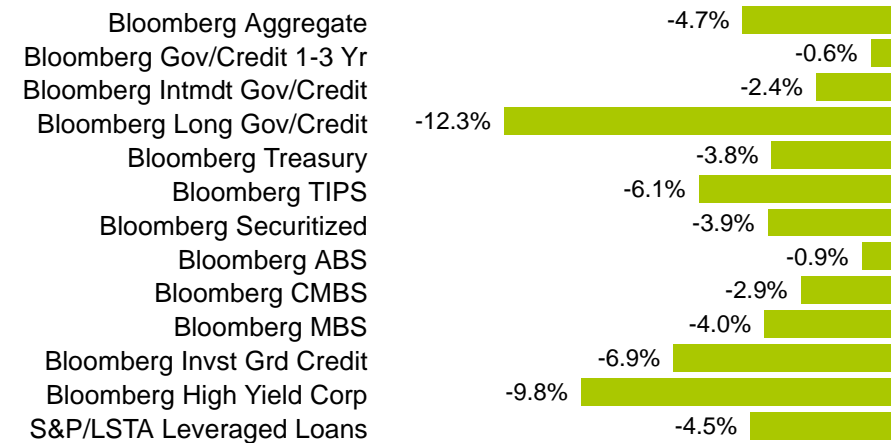
- Investment grade corporates underperformed like-duration U.S. Treasuries by 205 bps, RMBS by 98 bps.
- High yield underperformed as spreads widened; excess return vs. U.S. Treasuries was -792 bps.
  - Hurt by equity market performance and worries over the impact of higher rates on the economy
  - Yield-to-worst 8.9%

- Leveraged loans held up relatively well with lower-quality credits generally underperforming.

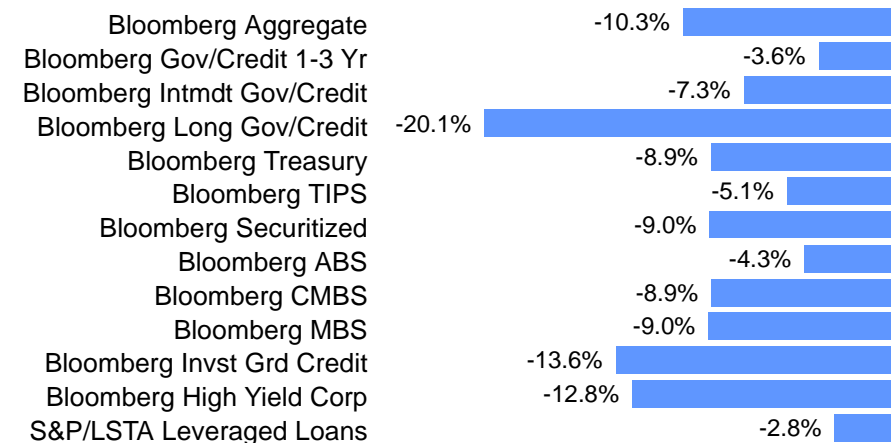
## Securitized sectors continue to hang in

- Agency RMBS spreads widened in response to increased rate volatility.
- ABS spreads tightened, led by credit cards.

## U.S. Fixed Income: Quarterly Returns



## U.S. Fixed Income: One-Year Returns



Sources: Bloomberg, S&P Dow Jones Indices



# U.S. Private Real Estate Performance: 2Q22

## Positive returns across sectors

### Another strong quarter for real estate

- Income returns were positive across sectors.
- Valuations are reflective of strong fundamentals in Industrial and Apartment and continued uncertainty despite a modest recovery in Office and Retail.
- Return dispersion by manager within the ODCE Index was due to the composition of underlying portfolios, and increased borrowing costs are impacting values.
- Niche sectors such as self-storage and life sciences continued to be accretive.

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
NCREIF ODCE	4.5%	28.3%	11.7%	9.6%	10.2%
Income	0.6%	2.9%	3.0%	3.1%	3.5%
Appreciation	3.9%	25.0%	8.4%	6.3%	6.5%
NCREIF Property Index	3.2%	21.5%	10.2%	8.9%	9.7%
Income	1.0%	4.1%	4.2%	4.4%	4.8%
Appreciation	2.3%	16.9%	5.8%	4.4%	4.7%

Returns are geometrically linked

### NCREIF Property Index Quarterly Returns by Region and Property Type



Source: NCREIF, ODCE return is net

# Multi-Asset Class (MAC) Performance: 2Q22

Most strategies fall but risk premia managers buck the trend

## Long biased MACs

- The median Callan Long Biased manager fell 9.9% in 2Q22, topping the 60% ACWI/40% Agg, which lost 11.3%, as long biased growth equity, fixed income, and currency exposure put downward pressure on the index.

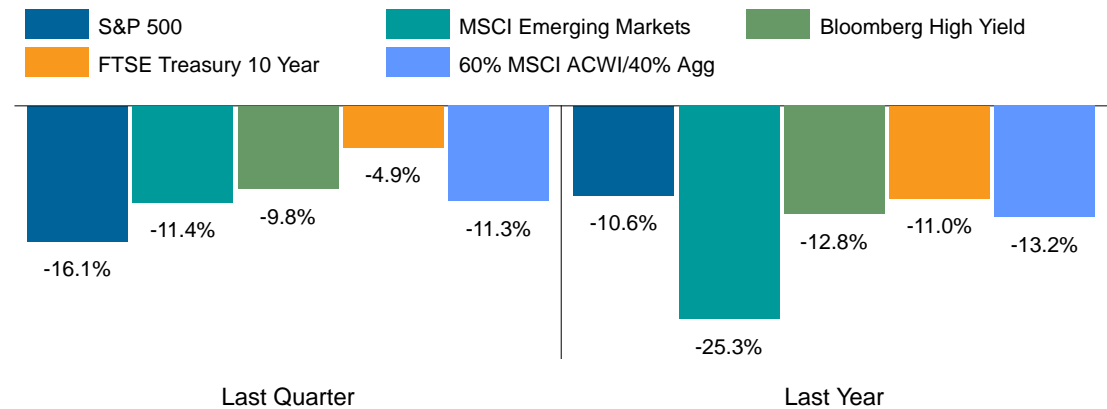
## Risk parity MACs

- The median Callan Risk Parity manager fell 11.6%, as emerging market equity, developed currency, and fixed income exposure were detractors, offset by commodity exposure.

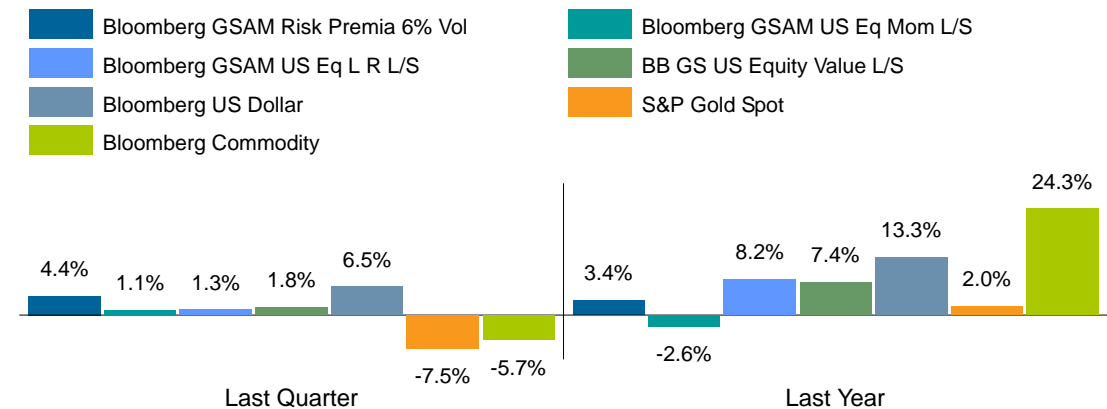
## Absolute return MACs

- The median Callan Absolute Return manager fell 1.9%, as equity and fixed income volatility pressured performance.
- Currencies were positive during the quarter, highlighted by a strong U.S. dollar, while the Japanese yen and Australian dollar were the biggest detractors.
- The Bloomberg GSAM Risk Premia 6% Vol moved up 4.4% in 2Q.
- The median Callan Risk Premia manager rose 4.9%, as a tilt toward value equity, the U.S. dollar, and commodity exposure helped.

### Traditional Market Beta Returns

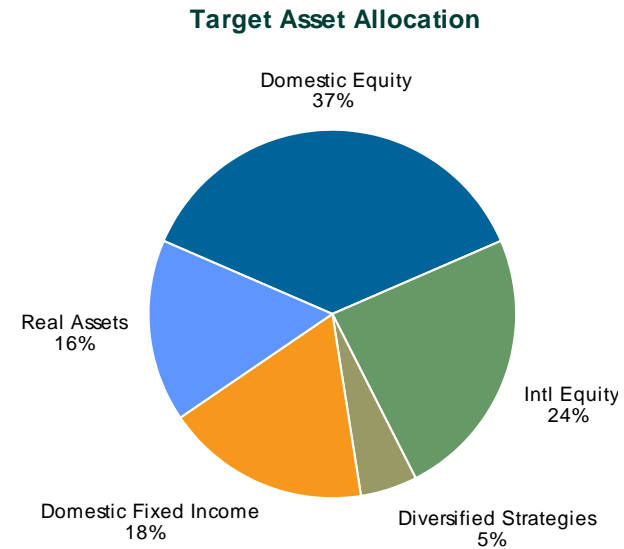
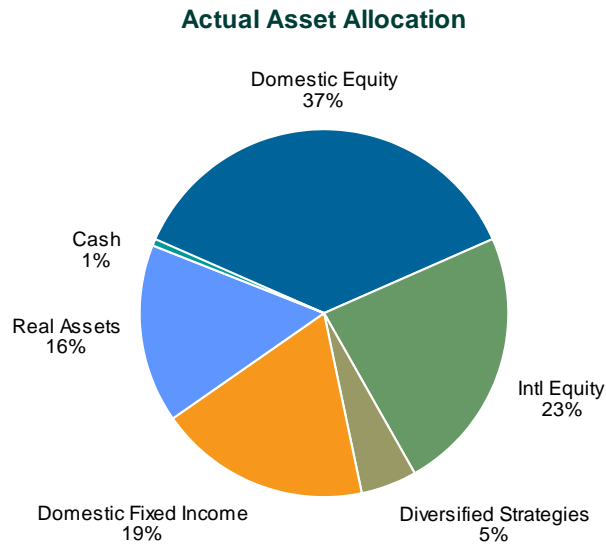


### Alternative Betas and Other Market Returns



Sources: Bloomberg, Bloomberg Goldman Sachs Asset Management, FTSE Russell, MSCI, S&P Dow Jones Indices

# Actual vs. Target Asset Allocation



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equity	3,724,325	36.9%	37.0%	(0.1%)	(12,257)
Intl Equity	2,362,700	23.4%	24.0%	(0.6%)	(61,029)
Diversified Strategies	492,914	4.9%	5.0%	(0.1%)	(12,029)
Domestic Fixed Income	1,876,311	18.6%	18.0%	0.6%	58,514
Real Assets	1,586,380	15.7%	16.0%	(0.3%)	(29,440)
Cash	56,241	0.6%	0.0%	0.6%	56,241
<b>Total</b>	<b>10,098,871</b>	<b>100.0%</b>	<b>100.0%</b>		

- 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, 2022			March 31, 2022		
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
<b>Domestic Equity</b>	<b>\$3,724,324,798</b>	<b>36.88%</b>	<b>\$(56,066,513)</b>	<b>\$(721,334,918)</b>	<b>\$4,501,726,230</b>	<b>39.70%</b>
Lazard Asset Mgmt	446,078,745	4.42%	(387,694)	(70,941,010)	517,407,449	4.56%
CastleArk Mgmt. LLC	477,660,827	4.73%	(26,000,886)	(112,840,595)	616,502,308	5.44%
Mellon S&P 500 Index Fd	595,915,258	5.90%	(1,372,487)	(114,576,072)	711,863,817	6.28%
Horrell Capital Passive	179,158,757	1.77%	(82,517)	(24,308,675)	203,549,949	1.80%
Wellington Management	482,686,719	4.78%	(15,927,025)	(65,520,157)	564,133,901	4.97%
Intech	415,117,893	4.11%	(10,507,113)	(120,218,376)	545,843,381	4.81%
LSV Asset Management	313,736,339	3.11%	(500,144)	(41,434,690)	355,671,172	3.14%
Stephens Investment Mgmt.	413,473,252	4.09%	(812,594)	(95,600,998)	509,886,844	4.50%
SSI Investment Mgmt.	400,497,007	3.97%	(476,054)	(75,894,347)	476,867,408	4.21%
<b>International Equity</b>	<b>\$2,362,699,733</b>	<b>23.40%</b>	<b>\$(2,484,745)</b>	<b>\$(390,813,960)</b>	<b>\$2,755,998,438</b>	<b>24.30%</b>
Artisan Partners	557,439,071	5.52%	(833,004)	(68,131,078)	626,403,153	5.52%
Mellon ACWI ex US Fund	537,127,453	5.32%	(92,200)	(85,057,116)	622,276,769	5.49%
Baillie Gifford Overseas	464,042,789	4.59%	(554,570)	(112,634,251)	577,231,609	5.09%
Lazard Asset Mgmt.	495,550,969	4.91%	(429,186)	(70,145,325)	566,125,479	4.99%
Acadian ACW ex US SmallCap	168,949,350	1.67%	(303,654)	(34,368,588)	203,621,593	1.80%
Franklin Templeton Intl SmallCap	139,323,031	1.38%	(272,132)	(20,460,418)	160,055,581	1.41%
Manning & Napier Advisors	267,071	0.00%	0	(17,184)	284,255	0.00%
<b>Diversified Strategies</b>	<b>\$492,914,307</b>	<b>4.88%</b>	<b>\$(718,405)</b>	<b>\$(24,015,984)</b>	<b>\$517,648,696</b>	<b>4.56%</b>
AQR Capital	145,704,816	1.44%	0	(21,824,716)	167,529,532	1.48%
Blackstone Alt. Asset Mgmt.	208,557,123	2.07%	(522,830)	1,197,473	207,882,480	1.83%
Newton Capital	138,652,368	1.37%	(195,575)	(3,388,741)	142,236,684	1.25%
<b>Domestic Fixed Income</b>	<b>\$1,876,311,131</b>	<b>18.58%</b>	<b>\$(975,585)</b>	<b>\$(122,655,613)</b>	<b>\$1,999,942,329</b>	<b>17.64%</b>
DoubleLine Capital	597,382,409	5.92%	(289,567)	(34,644,485)	632,316,461	5.58%
MacKay Shields	635,684,108	6.29%	(337,959)	(43,858,828)	679,880,895	6.00%
PGIM	643,244,615	6.37%	(348,058)	(44,152,300)	687,744,973	6.06%
<b>Real Assets</b>	<b>\$1,586,379,703</b>	<b>15.71%</b>	<b>\$(14,709,993)</b>	<b>\$99,276,915</b>	<b>\$1,501,812,781</b>	<b>13.24%</b>
<b>Energy</b>	<b>\$14,909</b>	<b>0.00%</b>	<b>\$0</b>	<b>\$(61)</b>	<b>\$14,970</b>	<b>0.00%</b>
CastleArk Glob Energy Fd	14,909	0.00%	0	(61)	14,970	0.00%
<b>REITS</b>	<b>\$115,027,044</b>	<b>1.14%</b>	<b>\$(5,740,425)</b>	<b>\$(25,932,696)</b>	<b>\$146,700,164</b>	<b>1.29%</b>
MCMEB DV Non-SL REIT Fd	115,027,044	1.14%	(5,740,425)	(25,932,696)	146,700,164	1.29%
<b>Core Real Estate</b>	<b>\$1,054,671,730</b>	<b>10.44%</b>	<b>\$(3,686,162)</b>	<b>\$81,110,704</b>	<b>\$977,247,188</b>	<b>8.62%</b>
Invesco Real Estate	644,061,218	6.38%	(474,694)	29,869,734	614,666,178	5.42%
Heitman Real Estate Trust LP	410,610,512	4.07%	(3,211,468)	51,240,970	362,581,010	3.20%
<b>Value Add Real Estate</b>	<b>\$330,299,846</b>	<b>3.27%</b>	<b>\$(6,623,100)</b>	<b>\$37,452,699</b>	<b>\$299,470,247</b>	<b>2.64%</b>
Harrison Street Fund VIII	30,586,588	0.30%	(746,628)	1,251,211	30,082,005	0.27%
Heitman Value Partners IV	64,547,775	0.64%	(4,931,450)	6,770,013	62,709,212	0.55%
LaSalle Inc & Growth VI LP	8,145,379	0.08%	(12,136)	67,052	8,090,463	0.07%
LaSalle Inc & Growth VII LP	40,555,299	0.40%	1,677,397	1,671,305	37,206,596	0.33%
Starwood SOF XII	16,483,367	0.16%	5,766,210	1,265,418	9,451,739	0.08%
TA Associates Realty Fund X	28,682	0.00%	(1,921)	6,435	24,168	0.00%
TA Associates Realty Fund XI	55,819,275	0.55%	(2,195,121)	9,712,312	48,302,084	0.43%
TA Associates Realty Fund XII	114,133,481	1.13%	(6,179,451)	16,708,952	103,603,980	0.91%
<b>Farmland</b>	<b>\$2,089,693</b>	<b>0.02%</b>	<b>\$2,089,693</b>	<b>\$0</b>	<b>-</b>	<b>-</b>
PGIM Agriculture	2,089,693	0.02%	2,089,693	0	-	-
<b>Timber</b>	<b>\$84,276,481</b>	<b>0.83%</b>	<b>\$(750,000)</b>	<b>\$6,646,269</b>	<b>\$78,380,213</b>	<b>0.69%</b>
Pinnacle	84,276,481	0.83%	(750,000)	6,646,269	78,380,213	0.69%
<b>Cash</b>	<b>\$56,240,859</b>	<b>0.56%</b>	<b>\$(6,337,218)</b>	<b>\$64,710</b>	<b>\$62,513,368</b>	<b>0.55%</b>
<b>Total Fund</b>	<b>\$10,098,870,531</b>	<b>100.0%</b>	<b>\$(81,292,460)</b>	<b>\$(1,159,478,851)</b>	<b>\$11,339,641,842</b>	<b>100.0%</b>

## Asset Class Performance and Market Values

	Market Value \$(Dollars)	Ending Weight	Last Quarter	Fiscal Year	Last 3 Years	Last 5 Years
<b>Domestic Equity</b> Russell 3000 Index	\$3,724,324,798 -	37.09% -	(16.11%) (16.70%)	(14.22%) (13.87%)	9.33% 9.77%	10.44% 10.60%
<b>International Equity</b> MSCIEAFE	\$2,362,699,733 -	23.53% -	(14.19%) (14.51%)	(22.24%) (17.77%)	2.70% 1.07%	3.44% 2.20%
<b>Diversified Strategies</b> Diversified Strategy Trgt**	\$492,914,307 -	4.91% -	(4.64%) (11.59%)	(4.53%) (12.51%)	3.43% 4.39%	5.35% 5.39%
<b>Domestic Fixed Income</b> Blmbg Aggregate	\$1,876,311,131 -	18.68% -	(6.13%) (4.69%)	(11.39%) (10.29%)	(0.42%) (0.93%)	1.56% 0.88%
<b>Real Assets</b> CPIU + 4%	\$1,586,379,703 -	15.80% -	6.65% 3.96%	29.59% 13.06%	13.67% 8.98%	10.71% 7.88%
<b>REITS</b> S&P DJ US Select REIT	\$115,027,044 -	1.15% -	(18.19%) (18.10%)	(6.07%) (6.41%)	2.21% 2.54%	- 4.28%
<b>Core Real Estate</b> NFI-ODCE Eq Wt Net	\$1,054,671,730 -	10.50% -	8.32% 4.35%	29.54% 28.90%	12.05% 12.28%	9.96% 10.07%
<b>Value Add Real Estate</b> NCREIF Total Index	\$330,299,846 -	3.29% -	12.67% 3.23%	55.47% 21.45%	24.37% 10.22%	20.00% 8.86%
<b>Timber</b> NCREIF Timberland Index	\$84,276,481 -	0.84% -	8.49% 1.87%	15.52% 12.01%	4.62% 5.03%	1.88% 4.32%
<b>Total Fund***</b> Benchmark*	\$10,042,629,672 -	100.00% -	(10.31%) (10.45%)	(10.54%) (9.88%)	6.40% 5.95%	7.03% 6.58%

- **Domestic Equity** led the benchmark in the second quarter, but has underperformed across longer time periods.
- **International Equity** outperformed in the second quarter and leads its benchmark over the last 3- and 5-year periods.
- **Diversified Strategies** outpaced the benchmark return in the second quarter and fiscal year, and nearly matches the index over 5 years.
- **Domestic Fixed Income** trailed the benchmark in the second quarter and fiscal year, but leads the Bloomberg Aggregate Index over other trailing time periods due to its Core Plus orientation.
- **Real Assets** outperformed the benchmark in the second quarter and continues to lead the benchmark over longer periods.

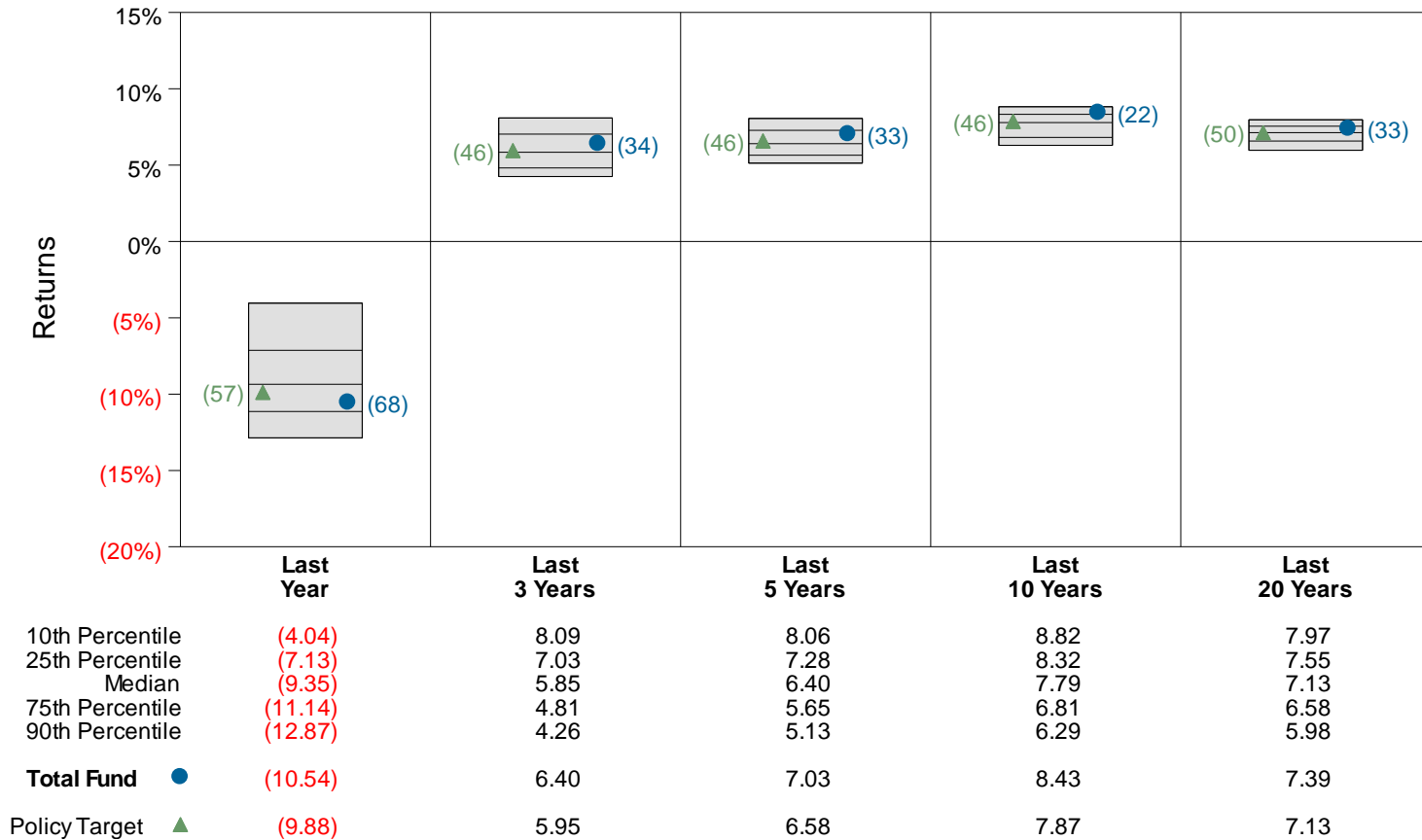
\* Benchmark consists of 37% Russell 3000 Index, 24% MSCI EAFE Index, 18% Blmbg Aggregate Index, 16% CPI All Urban Cons +4%, 3% MSCI World Index and 2% Blmbg Aggregate Index

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

\*\*\* Performance excludes In-House.

# Total Fund Performance

## Callan Public Fund Sponsor Database



The Total Fund trailed its policy benchmark for the last year and ranked at the 68<sup>th</sup> percentile of its peer group. Over the remaining trailing periods, the fund has beaten the benchmark return and ranked at or near the top third of peers.

*Policy Target consists of 37% Russell 3000 Index, 24% MSCI EAFE 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

	Last Quarter		Fiscal Year		Last 3 Years		Last 5 Years	
<b>Total Domestic Equity</b>	<b>(16.11%)</b>	<b>42</b>	<b>(14.22%)</b>	<b>58</b>	<b>9.33%</b>	<b>43</b>	<b>10.44%</b>	<b>30</b>
Russell 3000 Index	(16.70%)	76	(13.87%)	55	9.77%	21	10.60%	25
Pub Pln- Dom Equity	(16.24%)		(13.67%)		9.16%		9.98%	
Lazard Asset Mgmt.	(13.72%)	41	(11.18%)	58	7.33%	71	10.18%	50
Russell 3000 Index	(16.70%)	64	(13.87%)	61	9.77%	51	10.60%	47
Callan All Cap Broad	(15.61%)		(9.44%)		9.80%		10.13%	
CastleArk	(18.55%)	72	(16.43%)	68	12.64%	9	13.89%	10
Russell 3000 Growth Index	(20.83%)	84	(19.78%)	77	11.84%	20	13.63%	13
Callan All Cap Broad	(15.61%)		(9.44%)		9.80%		10.13%	
Mellon S&P 500 Index Fd	(16.11%)	59	(10.62%)	44	10.08%	58	11.00%	50
S&P 500 Index	(16.10%)	58	(10.62%)	44	10.60%	48	11.31%	45
Callan Large Cap Core	(15.87%)		(11.08%)		10.52%		11.04%	
Horrell Capital - Passive	(11.94%)	24	(4.78%)	13	11.44%	33	11.76%	21
Bloomberg Arkansas Index	(8.05%)	3	12.97%	1	19.50%	1	15.67%	2
S&P 500 Index	(16.10%)	59	(10.62%)	55	10.60%	39	11.31%	33
Callan All Cap Broad	(15.61%)		(9.44%)		9.80%		10.13%	
Wellington Management	(11.72%)	50	(4.43%)	43	8.07%	54	7.62%	66
Russell 1000 Value Index	(12.21%)	66	(6.82%)	79	6.87%	91	7.17%	77
Callan Large Cap Value	(11.75%)		(4.90%)		8.32%		8.50%	
INTECH	(22.25%)	63	(18.86%)	34	8.45%	65	11.48%	74
Russell 1000 Growth Index	(20.92%)	48	(18.77%)	34	12.58%	11	14.29%	16
Callan Large Cap Growth	(21.41%)		(22.20%)		9.32%		12.68%	
LSV Asset Management	(11.66%)	18	(7.34%)	21	8.27%	39	-	
Russell 2000 Value Index	(15.28%)	82	(16.28%)	88	6.18%	73	4.89%	76
Callan Small Cap Value	(12.85%)		(10.84%)		7.82%		6.19%	
Stephens Investment Mgmt.	(18.76%)	37	(25.37%)	25	4.59%	53	10.27%	41
Russell 2000 Growth Index	(19.25%)	45	(33.43%)	70	1.40%	89	4.80%	96
Callan Small Cap Growth	(20.09%)		(29.89%)		4.70%		9.76%	
SSI Investment Mgmt	(15.92%)	85	(21.69%)	94	9.77%	22	9.65%	27
ML All Conv	(15.65%)	80	(20.63%)	81	10.09%	17	10.04%	14
Callan Convert Bonds DB	(11.10%)		(16.61%)		6.72%		6.88%	

- Total **Domestic Equity** led the Russell 3000 Index in the second quarter and finished in the 42<sup>nd</sup> percentile of peers. The asset class performed modestly below its benchmark over longer periods, but it ranked ahead of its peer group median over the trailing three and five years.
- Lazard, LSV, and Stephens led their benchmarks and ranked ahead of the peer group median for the quarter. Stephens and LSV have outperformed the benchmark over longer periods.
- CastleArk and Wellington outperformed the benchmark, but ranked at or below median of peers for the quarter. CastleArk and Wellington lead their respective benchmarks over the last 3- and 5-year periods.
- SSI and Intech lagged their respective benchmarks for the second quarter and ranked below median of peers. These managers underperformed the benchmark over longer periods.

# Investment Manager Returns and Peer Group Rankings

	Last Quarter		Fiscal Year		Last 3 Years		Last 5 Years	
<b>International Equity</b>	<b>(14.19%)</b>	<b>87</b>	<b>(22.24%)</b>	<b>80</b>	<b>2.70%</b>	<b>39</b>	<b>3.44%</b>	<b>40</b>
MSCI EAFE	(14.51%)	93	(17.77%)	22	1.07%	78	2.20%	86
Pub Pln- Intl Equity	(13.30%)		(20.54%)		2.27%		3.12%	
Artisan Partners	(10.89%)	10	(11.47%)	4	7.24%	3	5.87%	8
MSCI EAFE	(14.51%)	56	(17.77%)	42	1.07%	75	2.20%	71
Callan NonUS Eq	(13.91%)		(19.04%)		2.42%		3.16%	
Mellon ACWI ex US Fund	(13.67%)	45	(19.22%)	50	1.65%	64	-	
MSCI ACWI ex US	(13.73%)	47	(19.42%)	51	1.35%	69	2.50%	65
Callan NonUS Eq	(13.91%)		(19.04%)		2.42%		3.16%	
Baillie Gifford Overseas	(19.52%)	96	(37.28%)	99	0.25%	84	2.26%	69
MSCI ACWIxUS Gross	(13.54%)	43	(19.01%)	50	1.81%	60	2.98%	53
Callan NonUS Eq	(13.91%)		(19.04%)		2.42%		3.16%	
Lazard Asset Mgmt.	(12.40%)	25	(19.41%)	51	1.11%	73	3.43%	39
MSCI ACWIxUS Gross	(13.54%)	43	(19.01%)	50	1.81%	60	2.98%	53
Callan NonUS Eq	(13.91%)		(19.04%)		2.42%		3.16%	
Acadian ACW ex US SmallCap	(16.90%)	60	(17.20%)	6	-	-	-	
MSCI ACWI ex US Small Cap	(17.55%)	71	(22.45%)	41	2.94%	28	2.55%	33
Callan Intl Small Cap	(16.40%)		(24.35%)		1.93%		1.65%	
Franklin Templeton Intl SmallCap	(12.80%)	3	(24.63%)	55	-	-	-	
MSCI ACWI ex US Small Cap	(17.55%)	71	(22.45%)	41	2.94%	28	2.55%	33
Callan Intl Small Cap	(16.40%)		(24.35%)		1.93%		1.65%	
<b>Diversified Strategies</b>	<b>(4.64%)</b>		<b>(4.53%)</b>		<b>3.43%</b>		<b>5.35%</b>	
Diversified Strategy Trgt**	(11.59%)		(12.51%)		4.39%		5.39%	
AQR Capital	(13.03%)	87	(13.21%)	73	0.37%	79	4.55%	44
Diversified Strategy Trgt**	(11.59%)	70	(12.51%)	71	4.39%	33	5.39%	23
Intl/Global Balanced DB	(8.91%)		(10.47%)		3.39%		4.19%	
Blackstone Alt. Asset Mgmt.	0.58%	1	2.33%	2	4.79%	24	5.85%	18
T-Bills + 4%	1.09%	1	4.17%	1	4.63%	26	5.11%	27
Intl/Global Balanced DB	(8.91%)		(10.47%)		3.39%		4.19%	
Newton Capital	(2.38%)	7	(4.13%)	14	4.88%	23	5.50%	22
LIBOR + 4%	1.28%	1	4.41%	1	4.65%	26	5.19%	26
Intl/Global Balanced DB	(8.91%)		(10.47%)		3.39%		4.19%	

- Total **International Equity** led the MSCI EAFE Index and ranked at the 87<sup>th</sup> percentile of peers for the second quarter. Artisan and Franklin Templeton returned in the top decile of their respective peer groups. Baillie Gifford was the largest detractor for the period.
- Over the last 3- and 5-year periods, Total International Equity leads the benchmark and ranks in the top half of peers.
- **Diversified Strategies** outperformed its target in the second quarter. AQR fell short of the target return and ranked in the bottom quartile of peers. BAAM trailed its benchmark but finished at the top of its peer group for the quarter. Newton trailed its benchmark and ranked in the top decile of its peer group.
- The Diversified Strategies portfolio lagged its benchmark over the last 3- and 5-year periods as strong equity markets have bolstered returns of the index.

\*\*60% MSCI World/40% Blmbg Aggregate



# Investment Manager Returns and Peer Group Rankings

	Last Quarter		Fiscal Year		Last 3 Years		Last 5 Years	
<b>Domestic Fixed Income</b>	<b>(6.13%)</b>	<b>87</b>	<b>(11.39%)</b>	<b>90</b>	<b>(0.42%)</b>	<b>75</b>	<b>1.56%</b>	<b>45</b>
Blmbg Aggregate Index	(4.69%)	48	(10.29%)	74	(0.93%)	95	0.88%	97
Pub Pln- Dom Fixed	(4.73%)		(9.26%)		0.03%		1.47%	
DoubleLine Capital	(5.48%)	42	(9.95%)	23	(0.99%)	94	1.10%	92
MacKay Shields	(6.45%)	81	(11.95%)	82	0.22%	22	1.81%	26
PGIM	(6.42%)	81	(12.20%)	88	(0.58%)	79	1.71%	29
Blmbg Aggregate Index	(4.69%)	13	(10.29%)	31	(0.93%)	93	0.88%	96
Callan Core Plus FI	(5.69%)		(10.89%)		(0.25%)		1.53%	
<b>Real Assets</b>	<b>6.65%</b>		<b>29.59%</b>		<b>13.67%</b>		<b>10.71%</b>	
CPIU + 4%	3.96%		13.06%		8.98%		7.88%	
<b>REITS</b>	<b>(18.19%)</b>		<b>(6.07%)</b>		<b>2.21%</b>		<b>-</b>	
S&P DJ US Select REIT	(18.10%)		(6.41%)		2.54%		4.28%	
MCM EB DV Non-SL REIT Fd	(18.19%)	81	(6.07%)	46	2.21%	92	-	
S&P DJ US Select REIT	(18.10%)	81	(6.41%)	61	2.54%	85	4.28%	92
Callan Real Estate REIT	(16.72%)		(6.26%)		6.00%		7.05%	
<b>Core Real Estate</b>	<b>8.32%</b>		<b>29.54%</b>		<b>12.05%</b>		<b>9.96%</b>	
NCREIF NFI-ODCE Eq Wt Net	4.35%		28.90%		12.28%		10.07%	
Invesco Real Estate	4.86%	49	27.17%	40	11.57%	38	9.99%	38
Heitman Real Estate Trust LP***	14.21%	1	33.47%	7	12.86%	20	10.27%	30
NFI-ODCE Equal Weight Net	4.35%	71	28.90%	25	12.28%	26	10.07%	37
Callan OE Core Cmngld RE	4.83%		26.29%		10.77%		9.29%	
<b>Value Add Real Estate</b>	<b>12.67%</b>		<b>55.47%</b>		<b>24.37%</b>		<b>20.00%</b>	
NCREIF Total Index	3.23%		21.45%		10.22%		8.86%	
Harrison Street Fund VIII	4.26%		-		-		-	
Heitman Value Partners IV	11.07%		35.33%		19.95%		-	
LaSalle Inc & Growth VI LP	0.83%		4.11%		(1.78%)		2.27%	
LaSalle Inc & Growth VII LP	4.30%		44.87%		15.07%		14.51%	
Starwood SOF XII	10.94%		-		-		-	
TA Associates Realty Fund X	28.83%		25.37%		13.74%		16.73%	
TA Associates Realty Fund XI	20.93%		85.77%		36.56%		25.86%	
TA Associates Realty Fund XII	16.70%		76.23%		-		-	
NCREIF Total Index	3.23%		21.45%		10.22%		8.86%	
<b>Timber</b>	<b>8.49%</b>		<b>15.52%</b>		<b>4.62%</b>		<b>1.88%</b>	
Pinnacle	8.49%		15.52%		4.62%		1.88%	
NCREIF Timberland Index	1.87%		12.01%		5.03%		4.32%	
<b>Total Fund</b>	<b>(10.31%)</b>	<b>68</b>	<b>(10.54%)</b>	<b>68</b>	<b>6.40%</b>	<b>34</b>	<b>7.03%</b>	<b>33</b>
Benchmark*	(10.45%)	71	(9.88%)	57	5.95%	46	6.58%	46
Callan Public Fund Spr DB	(9.71%)		(9.35%)		5.85%		6.40%	

- **Domestic Fixed Income** trailed the Bloomberg Aggregate Index in the second quarter and ranked in the bottom quartile of peers. Each of the Fixed Income managers trailed the benchmark for the quarter. DoubleLine was the lone manager to finish ahead of the peer group median in the quarter.
- The **Real Assets** composite led its real return benchmark during the quarter. The Value-Add Real Estate allocation posted the highest absolute return and the largest excess return over its benchmark.
- The **Total Fund** outperformed its benchmark and finished in the 68<sup>th</sup> percentile of peers for the quarter. Over the last 3- and 5-year periods, the fund has delivered positive returns relative to the benchmark and ranks at or near the top third of peers.

\*Policy Target consists of 37% Russell 3000 Index, 24% MSCI EAFE 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.

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## Investment Manager Organizational Developments

**Artisan Partners** – Effective July 1, 2022, **Artisan** announced the promotion of Ben Herrick to Associate Portfolio Manager for the International Value strategy.

Herrick joined the International Value team in December 2015 as a research analyst. His new responsibilities will center around sourcing, including screening and working with Lead PM David Samra on research prioritization.

In response to Herrick's promotion, Joe Vari is assuming the role of senior analyst. Vari will relinquish his sourcing and research prioritization responsibilities to focus exclusively on stock picking.

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# 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 – August 2022

#### Upcoming Projects:

- **Diversified Strategies Structure Study**
- **Fixed Income Structure Study**

# Total Fund Relative Attribution

## Relative Attribution Effects for Quarter ended June 30, 2022

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	40%	37%	(16.11%)	(16.70%)	0.24%	(0.18%)	0.06%
Domestic Fixed Income	18%	18%	(6.13%)	(4.69%)	(0.26%)	(0.01%)	(0.27%)
International Equity	25%	24%	(14.19%)	(14.51%)	0.08%	(0.02%)	0.06%
Diversified Strategies	5%	5%	(4.64%)	(11.59%)	0.32%	0.00%	0.32%
Real Assets	13%	16%	6.65%	3.96%	0.36%	(0.39%)	(0.04%)
<b>Total</b>			<b>(10.31%)</b>	<b>(10.45%)</b>	<b>+ 0.74%</b>	<b>+ (0.60%)</b>	<b>0.14%</b>

## One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	41%	37%	(14.22%)	(13.87%)	(0.16%)	(0.14%)	(0.30%)
Domestic Fixed Income	17%	18%	(11.39%)	(10.29%)	(0.21%)	(0.03%)	(0.24%)
International Equity	25%	24%	(22.24%)	(17.77%)	(1.26%)	(0.08%)	(1.35%)
Diversified Strategies	5%	5%	(4.53%)	(12.51%)	0.37%	0.01%	0.38%
Real Assets	12%	16%	29.59%	13.06%	1.56%	(0.69%)	0.87%
<b>Total</b>			<b>(10.54%)</b>	<b>(9.88%)</b>	<b>+ 0.27%</b>	<b>+ (0.93%)</b>	<b>(0.66%)</b>

## 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%	10.44%	10.60%	(0.07%)	0.08%	0.01%
Domestic Fixed Income	16%	18%	1.56%	0.88%	0.08%	(0.01%)	0.07%
International Equity	25%	24%	3.44%	2.20%	0.31%	(0.06%)	0.26%
Diversified Strategies	5%	5%	5.35%	5.39%	(0.01%)	0.00%	(0.00%)
Real Assets	14%	16%	10.71%	7.88%	0.26%	(0.13%)	0.13%
<b>Total</b>			<b>7.03%</b>	<b>6.58%</b>	<b>+ 0.57%</b>	<b>+ (0.12%)</b>	<b>0.45%</b>

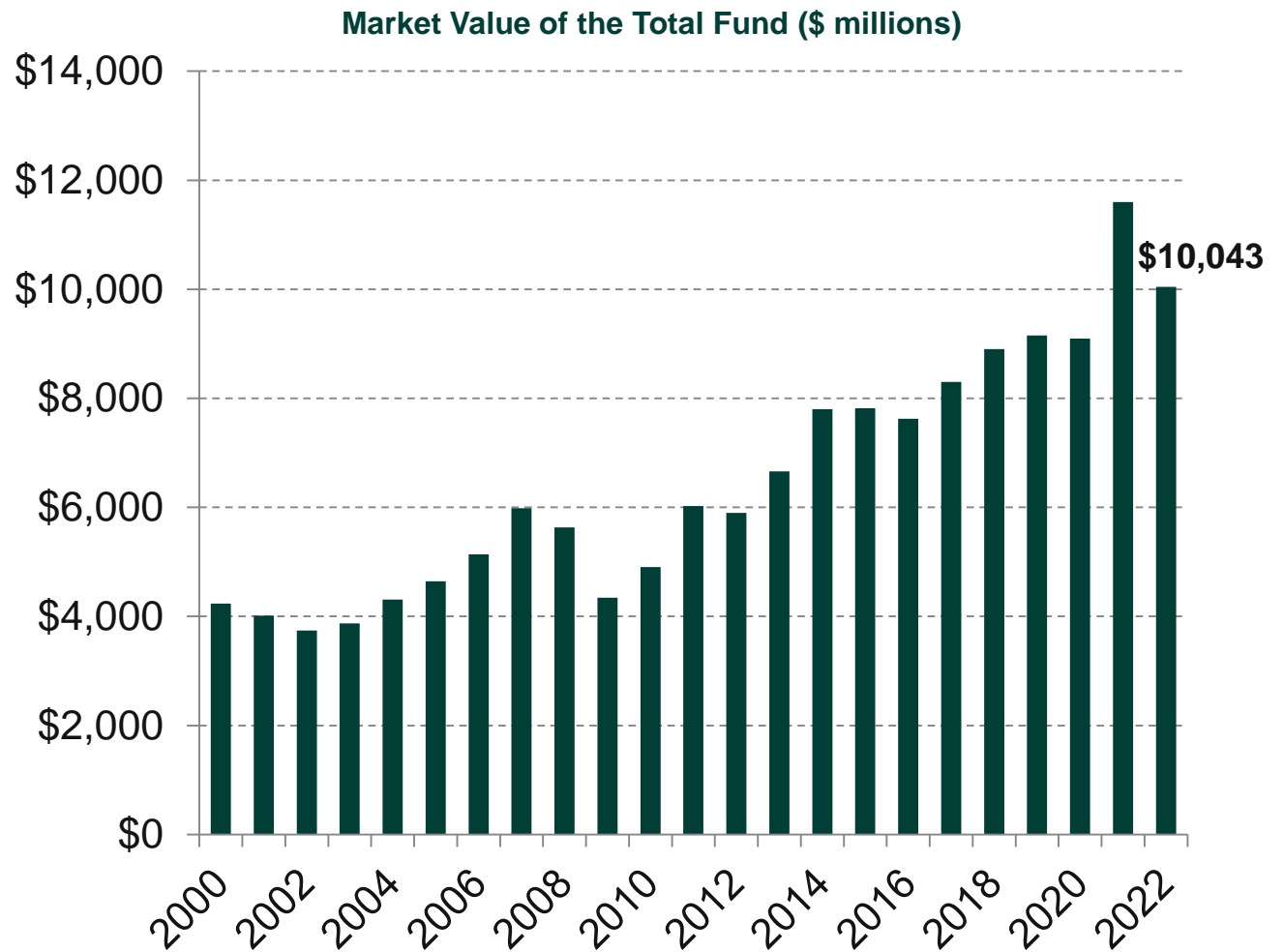
- Active management added value during the second quarter while asset allocation decisions were negative. Active management added value across all asset classes except Domestic Fixed Income. An underweight to Real Assets and an overweight to Domestic Equity were drags on relative performance.
- Over the last year, adverse asset allocation overshadowed value added through active management. Active management in Diversified Strategies and Real Assets added the most value for the period.
- Outperformance over the last five years is attributable to positive active management. Domestic Fixed Income, International Equity, and Real Assets managers added value during the period. An underweight to Real Assets was the largest detractor for the period, as asset allocation decisions were negative overall.

*Policy Target* consists of 37% Russell 3000 Index, 24% MSCI EAFE 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

As of June 30, 2022

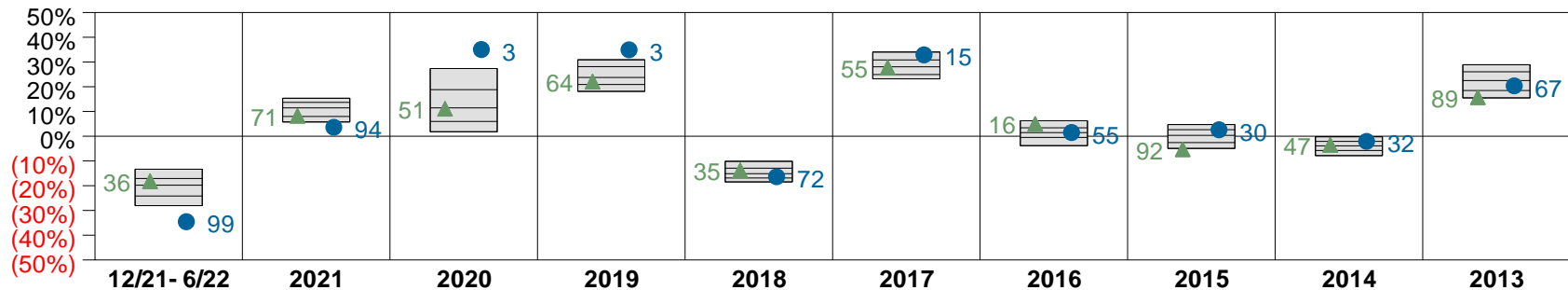
Fiscal Year Ending	Market Value
2000	\$4,236,749,732
2001	\$4,012,745,608
2002	\$3,739,381,695
2003	\$3,869,787,673
2004	\$4,307,589,827
2005	\$4,642,924,118
2006	\$5,136,985,259
2007	\$5,985,111,493
2008	\$5,633,155,289
2009	\$4,341,419,711
2010	\$4,907,734,835
2011	\$6,022,965,592
2012	\$5,896,862,618
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



# Baillie Gifford

## Annual Fund Performance

### Performance vs Callan Non-US Equity (Gross)



	12/21- 6/22	2021	2020	2019	2018	2017	2016	2015	2014	2013
10th Percentile	(13.29)	15.38	27.38	30.95	(10.10)	34.06	6.28	4.74	(0.22)	28.92
25th Percentile	(17.08)	13.67	18.82	28.12	(12.90)	30.86	3.39	2.67	(2.04)	26.05
Median	(19.80)	11.45	11.48	23.78	(15.13)	28.08	1.48	0.35	(3.85)	22.49
75th Percentile	(24.18)	7.99	5.96	20.94	(16.89)	24.96	(0.49)	(2.53)	(5.73)	18.48
90th Percentile	(28.04)	5.76	1.81	18.14	(18.48)	23.21	(3.79)	(4.89)	(7.82)	15.49
<b>Baillie Gifford Overseas</b>	● (34.94)	3.22	34.64	34.52	(16.76)	32.51	1.13	2.25	(2.50)	19.94
MSCI ACWIxUS Gross	▲ (18.15)	8.29	11.13	22.13	(13.77)	27.77	5.01	(5.25)	(3.44)	15.78