



City of Milwaukee  
Employees' Retirement System

Bernard J. Allen  
Executive Director

David M. Silber, CFA, CAIA  
Chief Investment Officer

Melody Johnson  
Deputy Director

September 1, 2023

Mr. Jim Owczarski  
City Clerk  
Room 205, City Hall

Dear Mr. Owczarski:

Please be advised that an Investment Committee Meeting of the Annuity and Pension Board has been scheduled for **Thursday, September 7, 2023 at 9:00 a.m.** This meeting will be conducted via teleconference.

*Special Notice: Instructions for the public on how to observe the meeting will be available on the ERS's website ([www.cmers.com](http://www.cmers.com)) prior to the meeting.*

The agenda is as follows:

Please be advised that the Investment Committee may vote to convene in closed session on the following item (I.) as provided in Section 19.85(1)(e), Wisconsin State Statutes, to deliberate or negotiate the purchasing of public properties, the investing of public funds, or conducting other specified public business, whenever competitive or bargaining reasons require a closed session. The Investment Committee may then vote to reconvene in open session following the closed session.

- I. Approval of Mesirow Private Equity Fund IX, L.P. Side Letter Revision.
- II. Callan Private Equity Pacing and Reinvestments 2024 Presentation.
- III. Due Diligence Reports.
  - a. Abbott Capital.
  - b. Neuberger Berman.
- IV. Approval of 2024 Private Equity Commitment Recommendation.
- V. Approval of Private Equity Statement of Investment Policy Update.

Please be advised that the Investment Committee may vote to convene in closed session on the following item (VI.), as provided in Section 19.85(1)(g), Wisconsin State Statutes, to confer with legal counsel concerning strategy to be adopted by the body with respect to litigation in which it is or is likely to become involved. The Investment Committee may then vote to reconvene in open session following the closed session.

- VI. Reams Asset Management Presentation.
- VII. Loomis Sayles Guideline Presentation.
- VIII. Approval of Reams Asset Management Guideline Change.
- IX. CMERS 2<sup>nd</sup> Quarter 2023 Performance Update.
- X. Informational.
  - a. Chief Investment Officer Report.
  - b. Preliminary Performance Report and Asset Allocation.
  - c. Adjusted Quarterly Cost Basis of Equity.
  - d. Class Action Income 2023 YTD.
  - e. Callan 2<sup>nd</sup> Quarter 2023 Performance Report.

Sincerely,

Bernard J. Allen  
Executive Director

BJA:jmw



## Memorandum

**To:** City of Milwaukee Employees' Retirement System  
**From:** Callan LLC  
**Date:** September 7, 2023  
**Subject:** Private Equity Pacing and Reinvestments 2024

### CMERS Private Equity Funding

#### *Background*

Callan, in conjunction with CMERS Staff, prepares an annual update to the Commitment Pacing Projection Model for CMERS' portfolio. The model determines an appropriate commitment amount for the upcoming year for CMERS to maintain its private equity exposure at the targeted level over the long-term. The commitment planning supports CMERS' four existing managers on an ongoing basis and fosters the benefits of dollar-cost-averaging into the private equity market.

CMERS initiated its private equity program in 2010 with a 5% initial allocation. In 2017 and 2019, CMERS increased its private equity asset allocation target to 8% then 10%, and recently to 12% as of June 30, 2023. The last 12 months ended 1Q23, saw significant volatility in equity assets.

Based on the March 31, 2023 total plan value, CMERS' private equity portfolio NAV is currently 13.6%, a decrease from 14.1% last year. CMERS remains within its private equity asset allocation range of 9% to 17%, but is above its stated 12% target. A lower March 31, 2023 total plan value was used this year for the projection, rather than June 30, 2023 value used last year, in order to make the projection more conservative given the expectation of continued near-term capital markets volatility.

#### *Private Equity Program History*

The program was initiated in 2010 with the hiring of Abbott and Mesirow as core managers. Because the selected Mesirow vehicle had initiated investment in 2008, CMERS has vintage year exposure since 2008. In 2013, Neuberger Berman was added as a specialty manager employing a secondary investment strategy. In 2014, Private Advisors (now called Apogem Capital) was added as a specialist in the U.S. small buyouts area. Reinvestments have been made with all the managers over time.

The portfolio is currently only 59% paid-in and has returned 88 cents for every dollar paid-in, so it is still considered to be in the process of maturing. Overall, CMERS' Private Equity Program is performing well.

## Private Equity Portfolio Performance Benchmarking

The table below details CMERS historical commitments by manager, vehicle, and strategy. All returns cited are net of fund-of-funds and underlying partnership fees and expenses.

**CMERS Private Equity Manager and Vehicle Detail as of 3/31/23 (in \$000)**

Vehicle	Year	Commits	Paid-In	Uncalled	%PI	Distributions	NAV	DPI	RVPI	TVPI	IRR
<b>Core</b>											
Abbott AP 2010	2010	35,000	34,650	350	99%	51,498	20,742	1.49	0.60	2.08	14.76%
Abbott AP 2011	2011	55,000	54,725	275	100%	79,030	42,440	1.44	0.78	2.22	16.70%
Abbott AP 2012	2012	40,000	39,600	400	99%	50,709	38,672	1.28	0.98	2.26	17.79%
Abbott AP 2013	2013	35,000	34,650	350	99%	42,729	37,818	1.23	1.09	2.32	19.38%
Abbott AP 2014	2014	35,000	34,300	700	98%	40,095	41,136	1.17	1.20	2.37	20.02%
Abbott AP 2015	2015	25,000	24,394	606	98%	17,838	33,734	0.73	1.38	2.11	20.31%
Abbott AP 2016	2016	20,000	19,518	483	98%	9,095	28,618	0.47	1.47	1.93	22.23%
Abbott AP 2018	2018	20,000	17,480	2,520	87%	4,325	21,694	0.25	1.24	1.49	21.05%
Abbott AP 2019	2019	20,000	15,120	4,880	76%	3,140	17,915	0.21	1.18	1.39	23.64%
Abbott AP 2020	2020	40,000	19,890	20,110	50%	2,360	20,365	0.12	1.02	1.14	12.59%
Abbott AP 2021	2021	20,000	6,340	13,660	32%	-	6,700	0.00	1.06	1.06	4.31%
Abbott AP 2022	2022	35,000	8,118	26,882	23%	-	8,182	0.00	1.01	1.01	1.45%
Abbott AP 2023	2023	30,000	-	30,000	0%	-	-	0.00	0.00	0.00	0.00%
<b>Abbott Total</b>		<b>410,000</b>	<b>308,784</b>	<b>101,216</b>	<b>75%</b>	<b>300,819</b>	<b>318,016</b>	<b>0.97</b>	<b>1.03</b>	<b>2.00</b>	<b>17.73%</b>
<b>Core</b>											
Mesirow MPF V	2010	75,000	70,500	4,500	94%	128,415	42,270	1.82	0.60	2.42	16.90%
Mesirow MPF VI	2013	60,000	53,400	6,600	89%	68,923	69,974	1.29	1.31	2.60	21.40%
Mesirow MPF VII	2017	100,000	78,000	22,000	78%	7,000	124,189	0.09	1.59	1.68	18.70%
Mesirow MPF VIII	2020	120,000	41,400	78,600	35%	-	43,294	0.00	1.05	1.05	3.20%
Mesirow MPF IX	2023	100,000	0	100,000	0%	-	-	0.00	0.00	0.00	nm
<b>Mesirow Total</b>		<b>455,000</b>	<b>243,300</b>	<b>211,700</b>	<b>53%</b>	<b>204,338</b>	<b>279,726</b>	<b>0.84</b>	<b>1.15</b>	<b>1.99</b>	<b>18.00%</b>
<b>Specialty - Secondary</b>											
NB SOF III	2013	30,000	31,350	6,318	105%	39,506	8,008	1.26	0.26	1.52	16.8%
NB SOF IV	2017	25,000	24,125	6,832	97%	18,397	18,114	0.76	0.75	1.51	22.7%
NB SOF V	2021	100,000	19,475	83,910	19%	3,385	23,096	0.17	1.19	1.36	nm
<b>Neuberger Total</b>		<b>155,000</b>	<b>74,950</b>	<b>97,060</b>	<b>37%</b>	<b>61,287</b>	<b>49,218</b>	<b>0.82</b>	<b>0.66</b>	<b>1.47</b>	<b>20.30%</b>
<b>Specialty - Small Buyouts</b>											
PASCPEF VI	2014	30,000	32,860	5,645	81%	38,878	21,558	1.18	0.66	1.84	18.92%
PASCPEF VII	2016	15,000	16,354	2,986	80%	12,432	15,252	0.76	0.93	1.69	19.14%
PASCPEF VIII	2018	15,000	15,168	3,344	78%	7,035	18,436	0.46	1.22	1.68	26.35%
PASCPEF IX	2019	35,000	23,572	13,238	62%	6,040	30,225	0.26	1.28	1.54	38.76%
APEF X	2021	30,000	-	30,000	0%	-	992	n/a	n/a	n/a	n/a
<b>Private Advisors Total</b>		<b>125,000</b>	<b>87,954</b>	<b>55,214</b>	<b>56%</b>	<b>64,384</b>	<b>86,461</b>	<b>0.73</b>	<b>0.98</b>	<b>1.72</b>	<b>21.78%</b>
<b>Total Private Equity</b>		<b>1,145,000</b>	<b>714,988</b>	<b>465,189</b>	<b>59%</b>	<b>630,829</b>	<b>733,421</b>	<b>0.88</b>	<b>1.03</b>	<b>1.91</b>	<b>n/a</b>

DPI = Distributions/Paid-In Capital

RVPI = Residual Value (NAV)/Paid-In Capital

TVPI = (Distributions + NAV)/Paid-In Capital

Note: Returns are Net of all fund-of-funds and partnership fees and expenses

The portfolio's since-inception (2008) Total Value created versus the amount Paid-In (TVPI ratio) of 1.91x, ranks high in the second quartile compared to the Refinitiv/Cambridge peer group database Median and Upper Quartiles of 1.51x and 2.13x, respectively, specific to CMERS investment timeframe.

Similarly, the portfolio's since-inception Distributed Value versus the amount Paid-In (DPI ratio) of 0.88x, ranks high in the second quartile versus the Refinitiv/Cambridge peer group database Median and Upper Quartiles of 0.40x and 1.24x, respectively, specific to CMERS investment timeframe.

### *Pacing Model Inputs and Assumptions*

The commitment pacing projection updates take into account changes in CMERS' total plan value, the private equity portfolio's uncalled capital, net asset value, and the timing of the managers' fundraising. Other inputs include CMERS' projected return, CMERS projected actuarial net cash flows, and Callan's projected private equity return. The model's future private equity cash flow assumptions for both existing private equity assets and new commitments reflect historical industry flows based on the Refinitiv/Cambridge database. Because the allocation is currently above target, this year's model employs two assumption adjustments to make the model more conservative and reduce the allocation to target more rapidly. The first is modeling the private equity target as 10%, not 12%, and the second is lowering the return assumption to match SWIB's current discount rate of 6.8% from Callan's 2023 projected 10-year plan return of 7.0%.

Each manager's portfolio is modeled separately to more closely match their specific strategies to the database cash flows, and then the separate projections are compiled into a total portfolio projection. The commitments are calibrated so that core managers will approximate 70% of the portfolio, and specialty managers (secondary and small-buyouts) 30%. If managers have balances outstanding on working capital lines of credit, the NAV and uncalled inputs are adjusted to reflect the holdings on a cash basis to be conservative and fully reflect the invested balances.

### *Commitment Pacing Projection*

The total plan value and private equity data used is as of 1Q23. Callan's model indicates that the commitments to CMERS' four managers shown in the following table over the next 10 years will result in CMERS's achieving and maintaining its targeted private equity exposure. Specifically for 2024, the indicated new commitments to two managers total \$70 million. It is important to keep in mind that while the projection forecasts 10 years of commitments, the goal of the modeling is to determine an appropriate amount for only the coming year. Next year the model will be recalibrated to determine a new 2025 commitment amount, so over time the model forecasts are self-correcting.

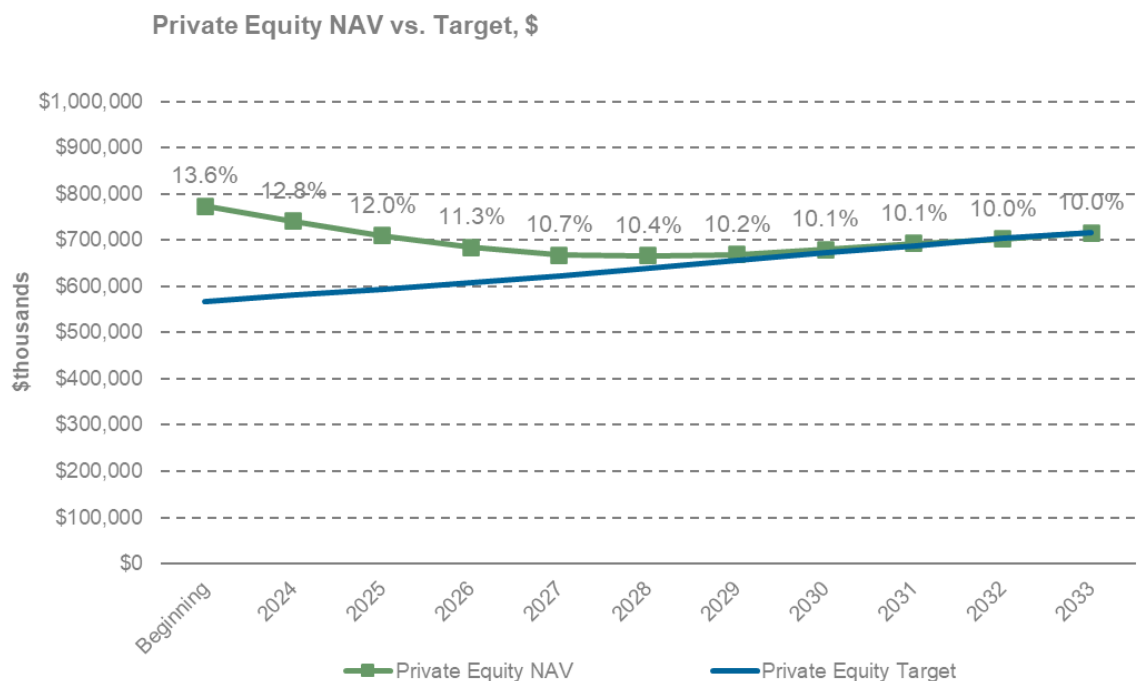
CMERS has a strong base of uncalled commitments with \$465 million, or 82% of the current private equity target. Adjusted for line-of-credit draws the uncalled drops to \$425 million or 75% of the current target, which will help support the long-term private equity exposure; however, based on ongoing pacing refinements, the intent is to gradually reduce the allocation toward its 12% target. It is important to bear in mind that future commitments must offset increasing distributions as the portfolio matures.



Based on the commitment amounts in the following table, CMERS' private equity funding (NAV versus the target) is projected to develop as shown in the following line graph.

Manager Commitment Summary - 2023 Projection (\$000)						
	Year	Abbott	Mesirow	NB Sec	AC SBO	Total
1	2024	40,000	-	-	30,000	70,000
2	2025	40,000	-	75,000	-	115,000
3	2026	40,000	-	-	30,000	70,000
4	2027	40,000	170,000	-	-	210,000
5	2028	45,000	-	80,000	45,000	170,000
6	2029	45,000	-	-	-	45,000
7	2030	45,000	-	-	45,000	90,000
8	2031	45,000	175,000	80,000	-	300,000
9	2032	45,000	-	-	45,000	90,000
10	2033	45,000	-	-	-	45,000
Total		430,000	345,000	235,000	195,000	1,205,000
Yrly Avg		43,000	34,500	23,500	19,500	120,500
Mgr %		36%	29%	20%	16%	100%

## CMERS Funded Level Projection (\$000)



## *Reinvestment Recommendations*

Staff and Callan recommend that CMERS approve two reinvestment commitments, for Abbott and Apogem, totaling \$70 million as follows:

- Abbott Capital's Annual Program 2024 (AP 2024): \$40 million
- Apogem Capital Private Equity Fund XI (APEF XI) \$30 million

Both managers' since-inception cumulative performance has been strong (above median), and is reviewed in more detail in the next section of this commentary.

## Fundraising Timing

**Abbott:** AP 2024 will hold a first close in December 2023, and participants in that close will have the first year's management fee waived. Underlying investments will begin in January 2024.

**Apogem:** APEF XI expects to initiate fundraising in mid-2024 and states that early-closer fee discounts will be available.

## **Abbott Capital Management Reinvestment**

### *Firm Summary*

Abbott is an independent registered investment adviser founded in 1986 to provide investors with private equity portfolio management. The firm is 100% owned by its ten active Managing Directors (95%) and one retired co-founder, Ray Held (5%).

The firm has 57 employees of which 18 are investment professionals, with 10 senior (Vice President and above), and 8 are junior investment professionals (Analyst through Senior Associate). Abbott has offices in New York and London, and manages fund-of-funds, secondary funds, co-investment funds, and separate accounts. Assets under management (uncalled commitments plus net asset value) are approximately \$14.3 billion. Abbott has a diversified client base and works with 22 public plan clients which constitute a majority of their assets.

The firm is performing well and has been stable. In January 2023, in a planned transition, Len Pangburn, Managing Director, and Co-President, became the sole President. Jonathan Roth, who previously filled the President role for many years, became a Senior Advisor for the duration of 2023, and will fully retire in 2024. The firm is managed on a consensus basis by the firm's ten Managing Directors.

### *Strategy Summary*

The Annual Program (AP) funds afford investors the ability to tailor exposure across four strategies: Venture Capital and Growth Equity, North America Buyouts, Small Buyouts, and Europe. Abbott's suggested allocation for AP 2024 is 30% Venture/Growth, 30% North American Buyouts, 20% Small Buyouts, and 20% European Private Equity. The 2024 suggested allocations are unchanged from the prior AP 2023 vehicle. Of note, Abbott's small buyouts tend to be larger (>\$500 million) than Apogem/Private Advisors' so little overlap is expected. Up to 25% of the investments will be "Opportunistic" comprising secondary and co-investments, unchanged from AP 2023. Staff and Callan concur the suggested mix is appropriate, reflecting institutional portfolios generally and the private equity opportunity set.

Abbott has represented that the terms and conditions of the AP 2024 vehicle will not be changed appreciably. Callan encourages clients to always have documents reviewed by competent legal counsel.

### *Performance*

The following table shows the 13.25-year (since 2010) inception-to-date returns for CMERS' AP vehicle investments with customized benchmarks for each of its vehicles. CMERS' four most mature AP vehicles have fully returned all paid-in capital, with significant remaining unrealized values. Based on interim valuations as of March 31, 2023, CMERS' first six vehicles have net total returns (TVPI) of more than 2x cost. Many of the same highly successful, experienced general partners that have produced the strong performance in the more mature vehicles shown in the table below are also present in the recent, less mature vehicles.

## Abbott - CMERS Composite - as of 3/31/2023 (in \$000s)

Vehicle	AP 2010	AP 2011	AP 2012	AP 2013	AP 2014	AP 2015	AP 2016	AP 2018	AP 2019	AP 2020	AP 2021	AP 2022	AP 2023	Total
VYs	2010-15	2010-16	2012-16	2012-16	2013-17	2015-19	2016-19	2018-20	2019-21	2020-22	2021-23	2022-23	2023-23	2010-1Q23
Committed	35,000	55,000	40,000	35,000	35,000	25,000	20,000	20,000	20,000	40,000	20,000	35,000	30,000	410,000
Paid-In	34,650	54,725	39,600	34,650	34,300	24,394	19,518	17,480	15,120	19,890	6,340	8,118	0	308,784
% PI	99%	100%	99%	99%	98%	98%	98%	87%	76%	50%	32%	23%	0%	75%
Uncalled	350	275	400	350	700	606	483	2,520	4,880	20,110	13,660	26,882	30,000	101,216
Distributed	51,498	79,030	50,709	42,729	40,095	17,838	9,095	4,325	3,140	2,360	0	0	0	300,819
NAV	20,742	42,440	38,672	37,818	41,136	33,734	28,618	21,694	17,915	20,365	6,700	8,182	0	318,016
DPI	1.49	1.44	1.28	1.23	1.17	0.73	0.47	0.25	0.21	0.12	0.00	0.00	0.00	0.97
RVPI	0.60	0.78	0.98	1.09	1.20	1.38	1.47	1.24	1.18	1.02	1.06	1.01	0.00	1.03
TVPI	2.08	2.22	2.26	2.32	2.37	2.11	1.93	1.49	1.39	1.14	1.06	1.01	0.00	2.00
IRR	14.8%	16.7%	17.8%	19.4%	20.0%	20.3%	22.2%	21.1%	23.6%	12.6%	4.3%	1.5%	0.0%	17.7%
DPI Quartile	Second	Second	Second	Second	Second	Second	Second	First	First	Second	Second	Second	NM	Second
TVPI Quartile	Second	Second	Second	Second	Second	Second	Second	Second	Second	Second	Second	First	NM	Second
IRR Quartile	Second	Second	Second	Second	Second	Second	Second	Second	First	Second	Second	First	NM	Second

NA=Not Available, NM=Not Meaningful

Key: First Second Third Fourth

## Refinitiv/Cambridge All Region, All PE Benchmarks - as of 3/31/2023

Vintage Year	2010-15	2010-16	2012-16	2012-16	2013-17	2015-19	2016-19	2018-20	2019-21	2020-22	2021-23	2022-23	2023-23	2010-1Q23
Sample Size	1,267	1,514	1,179	1,179	1,218	1,389	1,093	875	902	803	542	205	8	3,171
DPI - Upper	1.66	1.60	1.47	1.47	1.28	0.76	0.60	0.22	0.05	0.00	0.00	0.00	0.00	1.09
DPI - Median	1.15	1.06	0.95	0.95	0.73	0.27	0.19	0.02	0.00	0.00	0.00	0.00	0.00	0.27
RVPI - Upper	1.29	1.37	1.49	1.49	1.65	1.68	1.69	1.53	1.32	1.16	1.06	0.99	0.94	1.40
RVPI - Median	0.71	0.81	0.96	0.96	1.11	1.27	1.29	1.25	1.11	1.01	0.97	0.89	0.85	1.04
TVPI - Upper	2.68	2.64	2.65	2.65	2.61	2.24	2.12	1.70	1.39	1.20	1.08	1.00	0.94	2.12
TVPI - Median	1.89	1.89	1.92	1.92	1.92	1.67	1.61	1.40	1.17	1.03	0.97	0.90	0.85	1.49
IRR - Upper	21.7%	22.4%	23.1%	23.1%	24.8%	27.3%	27.9%	27.3%	20.9%	14.9%	7.6%	-0.5%	-6.4%	23.0%
IRR - Median	14.3%	14.6%	15.2%	15.2%	16.3%	18.0%	18.9%	17.2%	10.8%	2.6%	-3.1%	-14.2%	-15.3%	13.7%

DPI = Distributions/Paid-In Capital

RVPI = Residual Value (NAV)/Paid-In Capital

TVPI = (Distribution + NAV) / Paid-In Capital

Note: Returns are net of all underlying partnership fees and expenses, and net of Abbott's fees

## Return Commentary

- The composite DPI of 0.97x is second quartile versus the Refinitiv/Cambridge database median of 0.27x and an upper quartile of 1.09x.
- The composite TVPI of 2.00x is second quartile versus the comparable database median of 1.49x and an upper quartile of 2.12x.
- The composite IRR of 17.7% is second quartile versus the comparable database median of 13.7% and an upper quartile of 23.0%.
- All funds older than three years have double-digit IRRs that meet private equity return expectations, and all vehicles have first or second quartile return rankings relative to the Refinitiv/Cambridge peer database.

## **Apogem Capital (formerly PA Capital and Private Advisors) Small Buyouts Reinvestment**

### *Firm Summary*

Apogem's predecessor, Private Advisors, was founded in 1997 as an asset management firm with separate private equity and hedge fund businesses. In 2010, Private Advisors sold a majority interest to New York Life Investment Management (NYLIM), with employees retaining an approximate one-third ownership stake. In 2019, Private Advisors underwent a name change to PA Capital (PA). In early-2022, NYLIM combined PA with two other private markets subsidiaries: GoldPoint Partners, which focused on private equity, and Madison Capital Funding, which focuses on private lending. As part of private markets business reorganization, NYLIM purchased the outstanding employee equity and now owns 100% of the business. The combined firm was renamed Apogem Capital.

GoldPoint's third-party asset management business will be phased out. The prior head of PA is now CEO of Apogem. The private equity and private credit divisions of Apogem continue to be separately staffed and managed business units. The relatively small hedge fund-of-funds business also remains as a fourth business unit under the private equity organization. Apogem's private equity business will continue to pursue the same strategy and product lines as PA Capital prior to the business reorganization. Both CMERS Staff and Callan have been monitoring the business transition, and believe the private equity division has benefitted from larger staffing and enhanced resources.

Apogem's Private Equity business has four separate private equity products: 1) Small Buyouts fund-of-funds, 2) Secondary funds, 3) Co-Investment funds, and 4) GP-Stakes funds. The business unit also has a private Real Assets product, and a long/short equity hedge funds product. The private equity unit is headquartered in Richmond, VA with additional offices in New York, NY, Cleveland, OH, Chicago, IL, and Park City, UT.

Apogem's total assets under management are approximately \$39 billion (Uncalled+NAV), of which \$21 billion are overseen by the private equity unit. Of the \$21 billion, approximately \$2.8 billion are related to legacy GoldPoint programs that are inactive (liquidating), and \$18.0 billion represents active ongoing products and accounts. Of the \$18.0 billion, approximately \$6.9 billion are in third-party assets, and \$11.1 billion are internal accounts related to New York Life Insurance Company. Callan views PA as a specialty niche manager with a diversified private equity platform (primaries, secondaries, and co-investments) with a conservative small-fund orientation.

The private equity unit has a total of 36 investment professionals supported by over 100 back office and other corporate services professionals (HR, IT, IR, ODD, Legal, Compliance, etc.). The primary partnerships and co-investments team working directly on the fund-of-funds in which CMERS is investing consists of 21 investment professionals with 10 senior professionals (5 Managing Directors, 1 Director, and 4 VPs) and 11 junior professionals (Senior Analysts, Analysts, and Associates). In lieu of equity ownership, investment professionals broadly share in the carried interest of the funds, which is typically split 60% to employees and 40% to NYLIM. Senior professionals also participate in a long-term incentive compensation plan where 20% to 25% of annual compensation will be allocated to a phantom stock program that provides appreciation based on the growth and success of the firm, with each year's allocation subject to a three-year vesting period. A temporary plan has been in place for the past two years as the details of the long-term plan are being finalized.



## *Strategy Summary*

The Apogem Private Equity Fund XI (APEF XI) vehicle will be a continuation of the prior fund series' strategy. The funds invest in small partnerships (defined as raising less than \$1 billion, but primarily under \$500 million) domiciled in the U.S., investing in buyouts, growth equity, and distressed/restructuring strategies. Buyouts are expected to constitute most of the portfolio. APEF XI will also include up to 30% co-investments, and have a moderate allocation to secondary investments at the manager's discretion. Apogem represents that APEF XI terms will not change appreciably from APEF X.

## *Performance*

The table on the following page shows the 9.25-year (since 2014) inception-to-date returns for CMERS' Apogem vehicle investments with customized benchmarks for its vehicles.

The portfolio is only 56% paid-in, so is still somewhat early in its development. CMERS' most mature PA VI vehicle (81% paid-in) has fully returned all paid-in capital, with a profit of 18 cents on the dollar, and still has a NAV valued at 66% of original cost (RVPI of 0.66x).

## PA Capital - CMERS Composite - as of 3/31/2023 (in \$000s)

Vehicle	PA VI	PA VII	PA VIII	PA IX	PA X	Total
Fund Vintage Year	2014	2016	2018	2019	2021	
Underlying Years	2014 - 2017	2016 - 2018	2017 - 2019	2019 - 2022	2019 - 1Q23	2014-1Q23
Committed	30,000	15,000	15,000	35,000	30,000	125,000
Paid-In	32,860	16,354	15,168	23,572	0	87,954
% PI	81%	80%	78%	62%	0%	56%
Uncalled	5,645	2,986	3,344	13,238	30,000	55,214
Distributed	38,878	12,432	7,035	6,040	0	64,384
NAV	21,558	15,252	18,436	30,225	992	86,461
DPI	1.18	0.76	0.46	0.26	0.00	0.73
RVPI	0.66	0.93	1.22	1.28	0.00	0.98
TVPI	1.84	1.69	1.68	1.54	0.00	1.72
IRR	18.9%	19.1%	26.3%	38.8%	0.0%	21.8%
DPI Quartile	Second	Second	Second	First	NM	Second
TVPI Quartile	Third	Third	Second	First	NM	Second
IRR Quartile	Third	Third	Second	First	NM	Second

Key:

First Second Third Fourth

## Refinitiv/Cambridge U.S. BO Benchmarks - as of 3/31/2023

Vintage Year	2014 - 2017	2016 - 2018	2017 - 2019	2019 - 2022	2019 - 1Q23	2014-1Q23
Sample Size	154	123	131	166	170	369
DPI - Upper	1.41	1.08	0.51	0.06	0.06	0.90
DPI - Median	1.09	0.56	0.29	0.00	0.00	0.27
DPI - Lower	0.55	0.33	0.06	0.00	0.00	0.00
RVPI - Upper	1.29	1.44	1.48	1.33	1.33	1.35
RVPI - Median	0.97	1.19	1.29	1.15	1.15	1.13
RVPI - Lower	0.68	0.89	1.12	1.00	1.00	0.92
TVPI - Upper	2.28	2.19	1.89	1.39	1.39	1.98
TVPI - Median	1.98	1.83	1.58	1.21	1.20	1.50
TVPI - Lower	1.67	1.57	1.39	1.04	1.03	1.19
IRR - Upper	27.0%	29.6%	29.4%	24.7%	24.7%	26.7%
IRR - Median	20.6%	21.9%	21.4%	13.5%	13.1%	17.8%
IRR - Lower	14.2%	15.8%	15.5%	3.4%	3.2%	9.4%

DPI = Distributions/Paid-In Capital

RVPI = Residual Value (NAV)/Paid-In Capital

TVPI = (Distribution + NAV) / Paid-In Capital

Note: Returns are net of all underlying partnership fees and expenses, and net of PA's fees

## Comments on Apogem's NAV Valuations

As the Apogem portfolio has developed, CMERS Staff and Callan have noted that DPIs (measuring exited companies) benchmark well, while TVPIs tend to lag given relatively low NAV valuations (RVPIs). Apogem has stated that the underlying small fund general partners in its portfolios use lower and more conservative valuations than larger funds and the market in general. Key Apogem assertions have been:

1. Because many of Apogem's GPs are tenured and oversubscribed, the GPs have less incentive to mark companies higher within their acceptable ranges compared to newer GPs seeking to attract new investors.
2. A preponderance of Apogem's GPs began valuation processes prior to mark-to-market accounting requirements and have a bias to hold companies conservatively.
3. The valuation methodologies of small companies are less reliant on comparable public security mark-to-market considerations given the differences in the scale of the businesses and relevance of public listing as an exit method. For much of the period since 2014, the public markets have experienced a record-breaking bull market with rapidly advancing public security valuations, which are reflected in the U.S. Buyouts benchmarks.

In 2021, CMERS Staff and Callan undertook a comprehensive quantitative analysis of all 97 realized companies in CMERS' Apogem portfolio at that time. The analysis compared the realized exit value to the unrealized valuation two-quarters before final exit. The conclusion was that the companies had an average 50% increase in value at exit (e.g., if a company is marked at 2x cost six-months previous to exit it is realized at 3x cost). Apogem's first two funds are lagging current TVPI medians by less than 15%, so it is reasonable to expect that as the funds become realized, the TVPI will increase to competitive levels.

#### *Return Commentary*

- The composite DPI of 0.73x is second quartile versus the Refinitiv/Cambridge database median of 0.27x and upper quartile of 0.90x.
- The composite TVPI of 1.72x is second quartile versus the comparable database median of 1.50x and an upper quartile of 1.98x.
- The first two funds' TVPIs are currently below median but, as discussed above, are expected to eventually achieve second quartile results as the remaining companies are sold.
- The composite IRR of 21.8% is second quartile versus the comparable database median of 17.8% and an upper quartile of 26.7%.
- All funds, except the most recent, have double-digit IRRs and meet private equity return expectations. However, the first two funds' IRRs (while being approximately 19%) rank below median relative to the U.S. Buyouts database. There is some possibility that the IRRs will improve to second quartile levels; however, the IRR calculation does place greater weighting on early cash flows.

## Summary

- **Program Summary:** The private equity program has four managers, with two core managers targeting a total of 70% of the exposure, and two specialty managers targeting 30% of the portfolio. The core managers provide exposure across all key strategy types and both U.S. and Non-U.S. exposure, capturing the institutional private equity opportunity set broadly. The secondary manager enhances the portfolio's liquidity profile, and the small buyout manager broadens the portfolio's market capitalization exposure and targets return enhancement.
- **Funding Summary:** Using the March 31, 2023 total plan value and March 31, 2023 private equity values, CMERS' private equity exposure is 13.6%. The exposure remains within the strategic range of 9% to 17%, and is expected to revert to the 12% target over time.
- **Performance Summary:** Performance has been excellent. All of the four managers' and the total portfolio's since-inception returns are above the Refinitiv/Cambridge database's median benchmarks.
- **Recommendations:** Based on the pacing analysis results, CMERS Staff and Callan recommend the following commitments totaling \$70 million for 2024 be approved to continue to dollar-cost-average across vintage years.
  - Abbott Annual Program 2024: \$40 million.
  - Apogem Private Equity Fund XI: \$30 million.

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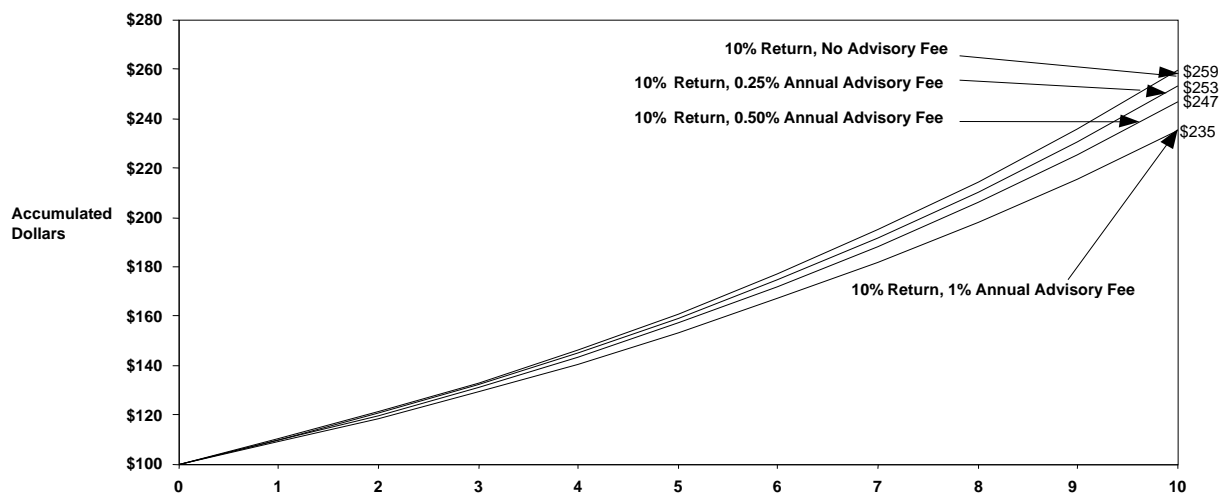
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The following graphical and tabular example illustrates the cumulative effect of investment advisory fees on a \$100 investment growing at 10% over ten years. Fees are assumed to be paid monthly.

In addition to asset-based investment advisory fees, some strategies may include performance-based fees ("carry") that may further lower the returns realized by investors. These performance-based fees can be substantial, are most prevalent in "Alternative" strategies like hedge funds and many types of private markets, but can occur elsewhere. The effect of performance-based fees are dependent on investment outcomes and are not included in the example below.

The Cumulative Effect of Advisory Fees



	Accumulated Dollars at End of Years									
	1	2	3	4	5	6	7	8	9	10
No Fee	110.0	121.0	133.1	146.4	161.1	177.2	194.9	214.4	235.8	259.4
25 Basis Points	109.7	120.4	132.1	145.0	159.1	174.5	191.5	210.1	230.6	253.0
50 Basis Points	109.5	119.8	131.1	143.5	157.1	172.0	188.2	206.0	225.5	246.8
100 Basis Points	108.9	118.6	129.2	140.7	153.3	166.9	181.8	198.0	215.6	234.9

10% Annual Return Compounded Monthly, Annual Fees Paid Monthly.

## Disclosure

The table below indicates whether one or more of the candidates listed in this report is, itself, a client of Callan as of the date of the most recent quarter end. These clients pay Callan for educational, software, database and/or reporting products and services; refer to our Form ADV 2A for additional information. Given the complex corporate and organizational ownership structures of investment management firms and/or trust/custody or securities lending firms, the parent and affiliate firm relationships are not listed here if they don't separately contract with Callan.

The client list below may include parent companies who allow their affiliates to use some of the services included in their client contract (e.g., educational services including published research and attendance at conferences and workshops). Because Callan's investment manager client list changes periodically, the information below may not reflect changes since the most recent quarter end. Fund sponsor clients are welcome to request a complete list of Callan's investment manager clients at any time.

As a matter of policy, Callan follows strict procedures so that investment manager client relationships do not affect the outcome or process by which Callan's searches or evaluations are conducted.

<b>Firm</b>	<b>Is an Investment Manager Client of Callan*</b>	<b>Is Not an Investment Manager Client of Callan*</b>
Abbott Capital Management		X
Apogem Capital		X

\*Based upon Callan manager clients as of the most recent quarter end.

# Memorandum

**To:** CMERS Investment Committee  
**From:** David Walters, CFA, CAIA, CTP  
**Date:** September 7, 2023  
**Re:** Abbott Capital – Due Diligence Meeting: June 21, 2023  
**Due Diligence Team:** Erich Sauer and David Walters

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## **Background**

Abbott Capital (Abbott) is one of the four managers hired by the Employees' Retirement System (ERS) to invest its Private Equity allocation via fund of funds. The ERS has committed a total of \$410 million to 13 of Abbott's Annual Program (AP) vehicles:

AP 2010 - \$35M	AP 2015 - \$25M	AP 2021 - \$20M
AP 2011 - \$55M	AP 2016 - \$20M	AP 2022 - \$35M
AP 2012 - \$40M	AP 2018 - \$20M	AP 2023 - \$30M
AP 2013 - \$35M	AP 2019 - \$20M	
AP 2014 - \$35M	AP 2020 - \$40M	

In addition, the ERS is currently considering a \$40 million commitment to AP 2024. As of March 31, 2023, the ERS' invested capital in the AP funds listed above totaled \$315.9 million.

## **Key Takeaways from Recent Meeting**

- Jonathan Roth retired from his role as president effective January 1, 2023. Managing director Len Pangburn assumed the sole responsibility of president as of Mr. Roth's retirement date. As prior memos have mentioned, Abbott communicated its plan for this transition well in advance and has successfully navigated the retirement of key individuals in the past. ERS staff expects Abbott to successfully navigate this retirement as well, but will monitor the situation closely.
- AUM has seen significant growth over the past few years, much of it due to increases in the NAVs of existing investments. Abbott's modest increase in capital deployed each year shows that they are still taking a measured approach to asset growth.
- Abbott has been stable overall, and key managing directors remain in place. Performance has been strong, particularly in our early funds. AP 2010 through AP 2015 all have TVPI multiples ranging from 2.1X to 2.3X, with all funds up through AP 2014 having returned 100% of the capital contributed. Staff remains comfortable with Abbott's abilities as a Private Equity Fund of Funds manager.

## **Firm Summary**

Abbott is a Limited Liability Company that is 100% independently owned. Abbott was founded in 1986 and private equity investment management is its only business. The firm is registered as an investment adviser with the SEC. The company's ten managing directors own the majority of the company, with a residual ownership of 5% held by one retired co-founder. The firm's managing directors appear committed to keeping Abbott independent and owned from within.

Abbott has 58 employees, a number which has been relatively consistent over the past several years, and all but two of them work in its New York City headquarters. Those two, including one managing director, are European nationals who work at the firm's satellite office in London. The London office appears stable, and Abbott expects staffing to remain at level of two employees for

the foreseeable future. Abbott has experienced very little turnover since its founding, with only one senior member of the firm leaving for anything other than retirement purposes.

Abbott had \$14.3 billion in assets as of September 30, 2022, including unfunded commitments, which is up from the \$12.1 billion the firm held in December 2020. Abbott has always claimed that they take a measured approach to asset growth, given that capacity in top-tier private equity funds is finite. Fortunately, much of the recent asset growth has come from strong returns in existing investments, with new flows into the firm playing a smaller role. Abbott estimates that they have committed approximately \$1 billion on average each year since 2020. While this amount has grown, the firm described it as a manageable increase in commitments over time given that the managers they invest with have increased fund sizes as the overall market has grown as well. Abbott analyzed their commitments in recent years and estimated there was available capacity with target managers to commit an additional 50% if desired.

Abbott discontinued its ACE program in January 2015, which was a significant portion of Abbott's total AUM. Unlike the AP Funds, fundraising for the ACE Funds took place every 2-4 years. This decision allowed Abbott to focus its offerings on the AP Funds as well as the existing Select Buyout Funds, Select Venture Funds, and Secondary Funds. Beginning with AP2015, Abbott has also offered AP investors the ability to customize private equity allocations at the strategy level. Abbott was successful in marketing the advantages, such as increased commitment flexibility, of the AP Funds to existing clients and brought additional investors into AP2016 and subsequent funds. Abbott has more than 126 institutional clients, including public pension plans, corporate pension plans, endowments, and foundations.

### **Investment Team**

Abbott has 19 dedicated investment professionals. As mentioned above, Jonathan Roth stepped down from his role as president of the firm at the beginning of 2023. He remains available to the firm as an executive advisor for the balance of 2023. Len Pangburn replaced Mr. Roth as president effective January 1, 2023. Mr. Pangburn joined Abbott in 2005 and served as co-president alongside Mr. Roth since October 2021.

Abbott has a history of navigating this type of transition successfully, first with the firm's co-founders in the early 2000s, and more recently with CIO Thad Gray. In addition, Abbott is a partnership, with the managing directors collectively responsible for the direction of the firm, which should serve to provide stability. Mr. Pangburn noted that the five most senior partners of the firm have worked together since 2007. The entire investment team is involved in the research, due diligence, and discussions on investments, but Abbott's investment committee, comprised of senior members of the investment team, has final decision-making authority.

### **Investment Philosophy and Process**

Abbott's investment philosophy is based upon the idea manager skill has more of an effect on returns than sector allocation or the macroeconomic conditions at the time the fund begins making commitments. Thus, Abbott focuses on making commitments to the best private equity managers and then allowing them to find the best opportunities. As a consequence, Abbott's industry allocations end up being a result of investments that the underlying managers make.

Abbott's objective is to create a fund that is diversified by manager and vintage year. They target a total of 25-40 managers over a three-year period. The manager count is consistent with our earlier AP funds, but Abbott let the commitment period of those earlier funds go out to as long as five years, which they have since determined was too long. The fact remains that many of the underlying funds will end up in multiple AP funds, allowing an investor to take a year off, as the

ERS did in 2017, and not worry about completely missing out on a group of underlying funds. Abbott's core target allocations remain unchanged since AP 2020 and are as follows:

North American Private Equity	30%	Small Buyouts	20%
Ex-North America Private Equity	20%	Venture and Growth Equity	30%

The team at Abbott remains confident they can hit these precise targets since they typically have enough visibility about client commitments, and the upcoming manager pipeline, to properly size positions, but they do retain the ability to come in under a target if the opportunities in that area are not attractive. ERS staff will monitor to make sure this is the case, and they are not stretching into second-tier managers in order to fill an allocation.

Beginning with AP 2022, the fund increased its target allocation to opportunistic investments, comprised of secondaries and co-investments, from 20% to 25%. Abbott favors secondary transactions that are smaller than dedicated secondary funds, typically in the range of \$10-50 million. The firm's growth has caused the typical transaction size to increase in recent years and reduced their interest in secondary opportunities of less than \$10 million. Abbott targets low competition deals where they have an advantage in the purchase process, which is typically due to an existing relationship with the GP. Similarly, co-investments are sourced from Abbott's existing GP relationships. Abbott's goal is to split the opportunistic allocation evenly between secondaries and co-investments. The firm is willing to come in below the 25% opportunistic target and diverge from the even split between secondaries and co-investments when deal flow is slow or not compelling.

Abbott's investment team identifies potential investments by relying on its deep network of relationships and by screening its internal deal tracking system, which includes data on over 10,500 funds that Abbott has interacted with during the past 37 years. In addition, Abbott has an "open door" policy, which means it will meet with any private equity manager at least once. This is the case even though Abbott requires managers to have a performance track record before a commitment is considered. Abbott says it has established some great relationships with managers because of its "open door" policy, even though Abbott did not invest with them until they completed their first fund.

Abbott follows a rigorous process when evaluating potential investments. The investment team typically reviews about 750 investment opportunities in a given year, and commits to fewer than 6%. The investment review starts with a one-page memo that is discussed at the team's weekly meeting. A majority of the potential investments are eliminated after this initial review. For investments that look promising, Abbott assigns a deal lead, who is responsible for coordinating preliminary quantitative analysis and follow-on meetings that are attended by multiple Abbott team members. Once the deal team has enough information, the deal goes to the investment committee, and then, if approved, in-depth due diligence commences.

Due diligence on a manager can take anywhere from 2-12 months. Every investment manager that Abbott commits to goes through the same level of due diligence regardless of whether or not it was in a prior fund. The due diligence process involves a full quantitative and qualitative analysis of the potential investment. Quantitative analysis includes things like: confirmation of cash flows, loss rate, performance benchmarking, purchase price multiples, as well as attribution by team member, in order to determine who the key members of the team really are.



Abbott's qualitative analysis is a distinguishing feature. In addition to the meetings described above, the team typically meets with at least five underlying portfolio companies that the private equity manager has previously invested in to understand if and how they added value. The team also uses its industry contacts to speak with 10-20 references, separate from those provided by the manager. The final stage involves a discussion and a vote by Abbott's whole investment team. While each person on the team gets to vote, the votes of the senior members (managing directors) are what determine if an investment is approved or not. Abbott shared a due diligence book used to evaluate a potential GP with staff while visiting the firm's offices. The book was impressive for its depth of analysis and the breadth of resources used.

Despite the recent slowdown in private equity fundraising, top-tier funds remain frequently oversubscribed. Abbott has seen constrained allocations on approximately one fourth of their investments over the past five years. In addition, GPs are using the favorable environment to push back on terms like due diligence requests or even hurdle rates. Abbott is approaching this very carefully, and many GPs view having Abbott in their fund as a "stamp of approval," which can help to balance the negotiations, but ERS staff will continue to monitor this issue closely.

### **Legal and Compliance**

Mary Hornby is Abbott's General Counsel, designated Chief Compliance Officer (CCO), and a managing director at the firm. One of her main responsibilities is to conduct a deep legal due diligence, including a review of the legal documents, and lead negotiations on the underlying private equity managers that the investment team has approved for commitments. When Abbott is negotiating with managers, they reference a proprietary database that contains major terms and conditions governing fund investments. Items that Abbott negotiates include, but are not limited to, fees, carried interest, key people and diversification. Abbott has indicated in the past that they are willing to decline an investment over poor contract terms.

Ms. Hornby gained the CCO designation upon the departure of Monique Horton in 2022. Abbott hired Peter Doro as Director of Compliance to work with Ms. Hornby to develop and implement the firm's compliance policies. Mr. Doro previously worked with Abbott as a third-party compliance consultant and is responsible for the daily testing and monitoring of compliance. Abbott's policies include a Compliance Manual, which cover topics such as the Code of Ethics, Trading, and Information Security, among others. The Compliance Manual is updated at least annually and employees are required to certify that they have read and understand certain critical policies and procedures at least annually.

Abbott's Investment Team is primarily responsible for monitoring compliance with investment guidelines. Each Abbott fund of funds is governed by its respective Limited Partnership Agreement. In general, the Limited Partnership Agreements supersede the ERS' Investment Policy and Guidelines. However, the ERS has negotiated side letters with respect to each Abbott fund of funds which supersede the Limited Partnership Agreements and provide the ERS with certain investment protections.

### **Monitoring**

Abbott monitors its investments at multiple levels. Members of the investment team, including the managing directors, are responsible for monitoring every investment that Abbott makes. In addition, Abbott joins the Advisory Boards of approximately half its underlying funds. Abbott also maintains a proprietary database in eFront, an industry leading private equity software system that allows them to compare underlying funds. eFront allows for automated data communication between underlying portfolio funds, Abbott, and Abbott clients.

Other monitoring activities take place when the Investment Team attends manager meetings, analyzes reports, and engages in dialogue with the manager. Abbott views the benefits of taking an active approach to monitoring its existing investments as twofold; first, it can give Abbott a direct line to the private equity managers who are managing the portfolio of companies; and second, it allows Abbott to see an additional perspective of the manager that may impact how they view future fundraisings.

### **Reporting**

Lauren Massey and Paolo Parziale are both managing directors, and head the firm's Operations and Administration Departments, respectively. Abbott divides its accounting group between separate accounts and fund of funds. As soon as Abbott makes a commitment to an underlying manager, Ms. Massey and Mr. Parziale work with the manager to coordinate reporting requirements. They may suggest to the manager how they can improve back-office controls at this point as well. Abbott's Operations Department reviews valuations with the investment team and makes sure that the Net Asset Value is reasonable. In addition, Abbott's Operations and Administration Departments do an annual check of every confirmation, capital call, and distribution. In 2020, Abbott created a formal valuation committee, primarily to review co-investment valuations as that segment grew but also approve any portfolio fund valuation adjustments.

Typically, Abbott has provided quarterly reports to the ERS within 75-90 days after the end of a quarter, which has been an acceptable timeline. Abbott's Annual Financial Statements can take up to 150 days to complete but they have been able to provide estimated values earlier to avoid causing a delay in the ERS' year-end reporting schedule.

### **Disaster Recovery**

Abbott has a formal business continuity plan that it tests once a year. The firm recently switched to cloud-based back up of data and systems and can access the production and back up environment in less than one hour, allowing users to connect remotely. The most recent test of the disaster recovery system was in July 2022. Abbott uses third-party vendors to perform system assessments, vendor assessments, and phishing tests. They also have an endpoint threat management vendor responsible for monitoring systems for attempted breaches.

### **Summary**

The amount of due diligence Abbott conducts with private equity managers along with the high bar the investment team sets before making a commitment to a manager gives ERS Staff confidence that Abbott's fund of funds partnerships will be able to generate attractive returns over time. The Investment Team's experience and deep network of relationships are also very important. Abbott has a reputation of being a significant long-term investor and a value-added limited partner which gives them the ability to access many top-tier managers. ERS Staff is impressed that Abbott has continued to make innovative improvements to its business model over time.

While not considered major, ERS Staff will continue to monitor the succession of Len Pangburn to president, the increased allocation to opportunistic investments, firm AUM, and trends with respect to GP terms.

# Memorandum

**To:** CMERS Investment Committee  
**From:** Erich Sauer, CFA, CAIA  
**Date:** September 7, 2023  
**Re:** Neuberger Berman Due Diligence Meeting June 20, 2023  
**Team:** Erich Sauer and Dave Walters

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## **Background**

Neuberger Berman (NB) is one of the four managers hired by the Employees' Retirement System (ERS) to invest its Private Equity allocation. The ERS has committed a total of \$155 million to NB's Secondary Opportunity Funds (SOF) - \$30 million to SOF III, \$25 million to SOF IV, and \$100 million to SOF V. The SOF vehicles are dedicated to secondary private equity investments, which involve purchasing another investor's pre-existing investment and/or commitment to a private company, private portfolio, or private fund. As of March 31, 2023, NB SOF III has called \$31.7 million against CMERS' \$30 million commitment, SOF IV has called \$24.0 million of CMERS' \$25 million commitment, and SOF V has called \$19.5 million of CMERS' \$100 million commitment.

## **Key Takeaways From Most Recent Meeting**

- NB has maintained a deep, experienced, and stable investment team that focuses exclusively on secondary market transactions in private equity. Ben Perl's elevation to Global Co-Head of Secondaries should provide long term continuity to the platform.
- NB has established a market-leading position in GP-led secondaries that should serve investors well as GP-led becomes increasingly important in the secondary market.
- NB believes the buying opportunity in the market today is the most attractive they have seen in the past decade.
- Performance for SOF III and SOF IV has been strong, and staff remains confident in NB's abilities as a private equity secondary manager.

## **Firm Summary**

Neuberger Berman Private Equity (NBPE) is the private equity division of Neuberger Berman, LLC, an independent, privately-owned firm, and a registered investment advisor. NB is 100% owned by its employees and related parties. NB has assets under management of \$436 billion, of which the PE platform manages approximately \$81 billion across primary funds, co-investments, secondary investments, and direct strategies. To serve their client base, NBPE employs 220 investment professionals in offices across the globe. The majority of the secondary team is based in the firm's New York headquarters, and has managed nearly \$15 billion in commitments since inception. Investors in the funds are primarily institutional, including public, corporate, and private pensions, endowments, foundations, sovereign wealth funds, and government entities.

The Secondary team is led by eight Managing Directors. Brian Talbot, Tristram Perkins, and Ethan Falkove are the primary architects of the strategy and have been working together for over 25 years, including time at predecessor firms Deutsche Bank and Lehman Brothers. Ben Perl has been with the secondary team for 16 years, and was recently promoted to Global Co-Head of Secondaries, alongside Mr. Perkins. Peter Bock, Philipp Patschkowski, and Boriana Karastoyanova joined the secondary team more recently, but all have extensive experience in the private equity markets. Finally, Frank Guglielmo has been with the team for 11 years, and was recently promoted to Managing Director.

The growth of the team in recent years is a result of the increasing importance of GP-led secondaries in the strategy. GP-led deals require more intensive analysis and take longer to complete than traditional LP secondaries. The eight Managing Directors are collectively responsible for the funds' investment strategy, asset allocation, portfolio construction, research, due diligence, asset selection, sourcing, transaction execution, and portfolio monitoring.

NBPE typically launches a new Secondary Opportunity Fund every four years. SOF V held its final close in August of 2022, for a total fund size of \$4.9 billion.

### **Investment Philosophy and Process**

NB's investment objective is to construct a portfolio of high quality and seasoned assets primarily from the middle market sector, which they define as transaction sizes ranging from \$1 million to \$300 million. These secondary funds are different from CMERS' other three private equity managers, in that they achieve their private equity exposure mainly by purchasing investments from other investors, as opposed to building their exposure mainly through investing directly with the underlying private equity managers. NB focuses on transactions with minimal competition, which they believe gives them the best chance of making purchases at attractive valuations.

The two main components of return for a secondary investment are the discount to fair value paid for the investment and the future appreciation or depreciation of the investment. As the market has grown more efficient, secondary transactions conducted in a competitive auction process can often trade at par, or even at a slight premium. However, by focusing on transactions sourced on a proprietary or limited competition basis, the SOF vehicles have typically been able to purchase investments at transaction discounts close to 15%. Still, the appreciation of the underlying portfolio companies has historically provided the largest contribution to return throughout the history of the SOF platform. This largely stems from the high quality assets selected for the portfolio and the ability of the underlying management teams and fund managers to generate and/or realize value in the marketplace.

Discounts for secondary offerings can approach extreme levels during times of market turmoil, distress, or dislocation. Historically, secondary investments have traded at 30-40% discounts during these market environments, most recently in the 2008-2010 timeframe. The current market has not reached those extremes, but NB noted they are seeing 15-20% discounts on good quality assets, which is the most favorable pricing in the last decade.

The average transaction size throughout the history of the SOF platform has been approximately \$47 million. This is likely a competitive advantage given that approximately 75% of all secondary capital in the marketplace is focused on transaction sizes greater than \$100 million. NB feels that focusing on smaller deal sizes provides a more fertile investment backdrop because these deals are often considerably less competitive and are frequently exclusive transactions that are able to be privately negotiated. Historically, the vast majority of the investments on the SOF platform have been purchased in a limited competition situation. As intermediaries have become more involved in the sale process, these deals can be harder to find, but the team remains disciplined, and will pass on deals that do not satisfy the return or quality thresholds for purchase.

Neuberger is able to offset some of the impact of intermediaries by leveraging its reputation with GPs as a highly desirable secondary purchaser. This is due both to the relationships and experience of the secondary team, and also the potential access they can provide GPs to the broader NB private equity platform. GPs typically exert more control over the sale process in the middle market space, which is to Neuberger's benefit.

The team will utilize lines of credit to finance working capital needs associated with underlying SOF investments held in the portfolio. As SOF I and II reached the end of their lives, NB was able to sell the remaining portfolios into the secondary market at prices at or above par. They may use this mechanism to opportunistically sell the remainder of SOF III in the next few years, if pricing becomes strong again.

### **GP-Led Transactions**

Beginning with SOF III, the team has been increasingly focused on “structured” or “GP-led” transactions, which can be more complex than a typical secondary purchase. The earliest GP-led transactions were typically the purchase of an entire fund near the end of its life to provide liquidity to all LPs. Other types could be the recapitalization of a fund early in its life to provide distributions to LPs and mitigate the J-curve, or the lift-out of a team from an organization such as a bank that might want (or need) to exit the private equity business. As the GP-led secondary space has grown, single asset transactions have become more common. This involves creating a new vehicle to allow a GP to hold a single company (typically the highest quality, highest conviction company in the portfolio) longer than the life of the original vehicle.

Because fewer secondary managers have the expertise and the capital to be involved in GP-led, NB is able to find transactions that are not as competitive. GP-led transactions make up approximately 26% of SOF III and 45% of SOF IV. In 2022, GP-led transactions accounted for approximately 48% of all volume in the secondary market. Accordingly, NB expects GP-led transactions to comprise approximately 50% of SOF V when the portfolio is fully invested.

The secondary team also manages the Strategic Capital fund, a dedicated GP-led fund that is investing alongside the SOFs in all the same deals, so it should not place any additional demands on the secondary team’s time. It is likely to benefit our investments in SOF IV and V, as it will give NB additional capital to take on transactions that would have been too large for the secondary fund alone.

Although the SOFs emphasize private equity secondaries of leveraged buyout funds, the fund documents provide the team with the ability to invest in credit related, energy, venture capital, infrastructure, real estate funds, fund of funds, as well as portfolios of direct investments, royalties, and co-investments. Historically, these investments have not been a material portion of the portfolio. Although the SOFs have a global mandate, investments have primarily been within the U.S. and Western Europe.

### **Due Diligence**

Once a potential investment has been identified, the team conducts a multi-step evaluation that includes both a top-down analysis of the manager as well as a bottom-up analysis of the underlying portfolio. The top-down analysis involves assessing the track record, investment strategy, capabilities, and stability of the fund manager. This is also the point where NB looks at the competitive dynamic of the sale process and the pricing expectations of the seller.

The bottom-up analysis is a bit more involved, beginning with an in-depth due diligence on the underlying portfolio companies. NB then works with the manager to gain insights into current performance and future prospects for the underlying investments. The team often has greater access to the managers than many other secondary buyers, as managers may view a secondary sale to NB as an introduction to the NB primary funds platform. The team also leverages internal resources across the entire NB organization, as well as third party due diligence resources, to understand things like industry valuations, competition, and growth rates.



Next, the team builds a proprietary investment model by independently valuing each underlying portfolio company, constructing financial performance projections, and evaluating multiple exit scenarios. NB then runs these projections through a discounted cash flow model that takes into account the fees and carried interest of the underlying fund.

NB believes that this rigorous due diligence process is what gives it a competitive advantage in the secondary market, and especially with respect to the structured transactions mentioned above. The very large secondary funds that purchase hundreds of secondary interests at a time through competitive auctions have no need to evaluate the underlying portfolio companies, so they never developed the capability. Some smaller players may have the expertise to do similar valuation work to NB, but they do not have the capital to compete for the same size transactions. This competitive positioning should allow NB to continue to find structured transaction opportunities that have limited competition or even exclusive access.

A majority of the NB Secondary Investment Committee generally convenes weekly to review the upcoming transaction pipeline, due diligence findings, and investment approval requests for all deals greater than \$10 million. Unanimous approval is required, but it is rare for investments to not be approved once they have survived the lengthy due diligence process. The last step in the process relies on the legal team to conduct final negotiations and ultimately close transactions.

### **Compliance and Reporting**

Joseph Bertini is the Chief Compliance Officer for NB's alternatives business. Mr. Bertini is responsible for overseeing the testing and monitoring of compliance issues facing NBPE and reports to Brad Cetron, NB's Global Head of Compliance. Mr. Bertini, along with NBPE's other in-house attorneys, are involved in the day to day legal work for the business as well as performing the compliance role. Routine compliance, policy, oversight, and internal audit is implemented by NB's Legal and Compliance Department, which employs 123 individuals tasked with monitoring all NB employees.

NBPE has made a significant commitment to develop and maintain best-in-class reporting capabilities. NBPE takes a proactive approach toward underlying portfolio company valuation so that final audited reports are able to be distributed to NBPE SOF investors within five months of fiscal year-end. This is made possible with close back office relationships between NBPE and the underlying GPs' back office departments.

### **Internal Controls**

NB has established an Operating Committee to oversee the daily activities of the firm, as well as an Operational Risk Committee (ORC), which provides oversight of the risk evaluation process focused upon operational issues, solutions, costs, and implementation tracking.

NBPE has a six-person Valuation Committee that meets quarterly to approve and submit its quarterly report to the ORC. This report summarizes the private equity mark-to-market values and highlights any outliers that diverge from the GP reported valuations. The Valuation Committee also ensures that these processes are consistent with stated valuation procedures in the funds' governing documents.

The secondary team continually monitors and records financial and accounting data being distributed from managers. NBPE maintains a staff of financial reporting analysts who read, distill, verify, and record key information. This information is further verified and augmented by participating in conference calls, due diligence, and annual meetings. NB has an industry leading back office that provides accurate administration and execution of all fund related transactions,

adhering to detailed procedures and controls for such items as capital calls, cash (stock) distributions, cash receipts, cash disbursements, and sales of private securities.

Only designated members of the in house legal team are authorized to sign the legal documents for any given transaction. It is important to note that although the legal team works within NBPE, it is independent of NBPE and reports to compliance.

### **Information Systems & Disaster Recovery**

NBPE relies upon NB shared services for Information Technology and Business Continuity implementation. The Business Continuity plan has been designed to protect employees, clients' interests, and to permit the firm to resume operations as quickly as possible in the event of an emergency or business disruption. NB also maintains a contract with a third party vendor to provide physical recovery work space for all critical NB business functions.

NB employs automated failovers for critical applications in a disaster recovery situation. Data is written to both the primary and secondary data centers simultaneously, in order to ensure no time lag in the event a failover is required. NB's test of the failover in September of 2022 showed four applications that were not recovered successfully. Those applications were tested again in the fourth quarter of 2022, and passed.

### **Conclusion**

ERS Staff has been pleased with NB's capabilities in the secondary private equity market. The secondary team has been stable and has worked well together for over 20 years. Staff continues to be impressed by the extensive knowledge and experience of the key managing directors, Messrs. Talbot, Perkins, and Falkove, and establishing Mr. Perl as the clear future leader bodes well for the long-term stability of the platform. NB's proprietary deal flow sourcing, GP access, middle market focus, and strong due diligence capability should give them an advantage against other players in the space, especially in dealing with more complex transactions.

Performance for both SOF III and SOF IV has been strong. As of March 31, 2023, SOF III had a TVPI of 1.5x. The fund has been mostly realized, having distributed 1.25x invested capital. SOF IV had a TVPI of 1.5x, and has distributed 0.8x invested capital. This is a nice result for a 2017 vintage fund, and highlights one of the attractive attributes of the strategy, which is that it returns capital quickly. ERS staff has confidence in NB's ability to successfully implement a secondary private equity fund of funds strategy for our Fund.

**PRIVATE EQUITY**  
**STATEMENT OF INVESTMENT POLICY**  
~~December~~September 2023~~19~~

**THE MILWAUKEE EMPLOYEES'**  
**RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**  
789 N. Water Street, 3<sup>rd</sup> Floor  
Milwaukee, WI 53202  
(414) 286-3557

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**THE MILWAUKEE EMPLOYEES'  
RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE**

**STATEMENT OF INVESTMENT POLICY**

This policy applies to the Private Equity assets within the Milwaukee Employees' Retirement System of the City of Milwaukee ("ERS").

**PURPOSE OF THIS STATEMENT OF INVESTMENT POLICY**

This policy provides the broad strategic framework for managing the Private Equity assets.

**GOALS AND OBJECTIVES**

***A. The Role of Private Equity***

The primary role of private equity is:

- Enhance ERS long-term total risk-adjusted return
- Provide diversification to the ERS overall investment program

***B. Allocation***

The target allocation to private equity (measured as actual Private Equity Net Asset Value) is ~~10~~12% of total Plan assets, with a minimum and maximum allowable range of ~~7~~9% - ~~15~~17% of Plan assets. The range is designed to accommodate fluctuations in the valuation of the Program or the total Plan and the illiquid nature of private equity.

***C. Performance Benchmark***

ERS Private Equity performance is benchmarked on a long-term, 10 year, rolling basis against the Russell 3000 stock index plus 200 basis points on a quarter lag, net of fees and expenses.

The private equity portfolio and manager returns will also be benchmarked against peer group information from a recognized private equity database provider. It is expected that the vehicles will attain performance rankings above the median levels of return evidenced in the database.

Attainment of these objectives does not guarantee continued investment by ERS in a specific manager's vehicles, nor does failure to achieve these guidelines ensure a lack of future investment support for follow-on vehicles. Providers are selected at the discretion of the Board.

## **RISK MANAGEMENT POLICIES**

### ***A. Private Equity Sectors and Diversification***

Diversification is an important element for the long-term success of the private equity program. The private equity portfolio will achieve diversification by a number of measures including strategy, industry, capitalization, geography, manager, vehicle, and time. Key strategies of focus may include, but are not limited to:

- Venture Capital
- Growth Equity
- Buyouts
- Special Situations:
  - Restructuring / Distressed Securities
  - Mezzanine Debt
  - Secondary Investments
  - Co-Investments

By geography, ERS expects the majority of investments to be U.S. domiciled, but the portfolio will also have exposure to developed international markets, and potentially a modest exposure in emerging markets.

### ***B. Investment Vehicles***

This policy authorizes commitments to private equity fund-of-funds and secondary vehicles that insulate ERS from liability in excess of the amounts committed.

### ***C. Liquidity***

Private equity investments are illiquid and typically have expected legal lives of 10-13 years. Investments are typically held until full liquidation, as selling prior to maturity generally results in a discount to fair market value. ERS manages liquidity risk primarily through its asset allocation policy, and by annual investment pacing to minimize the probability of the portfolio exceeding the stated exposure ranges around the target. The Board recognizes that lowering the private equity target allocation may result in the need to gradually manage the private equity portfolio to the new target level in a prudent and economic manner.

### ***D. Vintage Year Risk***

The vintage year of an investment or a portfolio of investments is defined as the year of the first capital draw (including draws made by the manager from a line of credit). Vintage year risk refers to the variability of private equity returns over time. ERS will manage vintage year risk by seeking to dollar-cost-average the portfolio's pace of investments in underlying partnerships through an annual commitment pacing review as part of the ongoing strategic planning process. It will also seek to diversify investments within a vintage year so that no single investment may have outsized influence if it underperforms its vintage year peers.

***E. Derivatives***

ERS may invest in Fund-of-Funds whose strategy includes the use of derivative instruments for purposes of minimizing risks and enhancing returns and shall comply with ERS Derivatives Policy. Staff shall endeavor to secure provisions in investment agreements that the partnerships conform to these limitations.

***F. Real Estate***

Real estate is not within the scope of this policy and investment in partnerships targeted primarily to real estate equity and/or debt will be minimized or avoided.

## **INVESTMENT PROCEDURES**

The Program shall be implemented and monitored as follows:

1. Role of the Board:

- Set the allocation to Private Equity;
- Establish goals and objectives for the Private Equity program;
- Monitor the Private Equity performance and compliance at Investment Committee meetings;
- Approve the selection of the private equity managers;
- Approve the annual commitment pacing review;
- Approve the Side Letter for investment vehicles.

2. Role of the Investment Staff:

- Assist the Board in establishing the private equity allocation within the total portfolio, and the goals and objectives of the private equity allocation;
- Work with the Investment Consultant with respect to the assumptions used in the development of the Consultant's annual commitment pacing reviews and reinvestment evaluations;
- Work with the Investment Consultant with respect to periodic policy document updates;
- Work with the Investment Consultant with respect to manager searches;
- Conduct due diligence on ERS' existing investment managers at least once every two years;
- Prepare funding procedures and coordinate the receipt and distribution of capital through the ERS' custodian with respect to funding of new and/or existing private equity investments or dispositions of investments; and,
- Monitor the Private Equity performance and compliance.

3. Role of the Investment Consultant

- Regularly review the private equity portfolio for which the Investment Consultant has been retained, and evaluate such portfolio's investment strategy, as it relates to the overall Fund;
- Provide the Board and Staff with relevant, reliable and timely research and information requests to fulfill their responsibilities;
- Regularly review and discuss the investment strategy and other relevant issues with Staff;
- Assist the Board and Staff in establishing appropriate asset allocation targets and ranges;
- Conduct annual commitment pacing reviews and reinvestment evaluations as deemed appropriate;
- Conduct manager searches and evaluations as requested; and,
- Monitor and review existing partnerships and vehicles on an ongoing basis for adherence to ERS' private equity objectives and guidelines.



# Guideline Updates

## 1. THE RATIONALE FROM THE INVESTMENT TEAM TO PURSUE THE USE OF US TREASURY FUTURES.

- INTEREST RATE FUTURES ARE AN EFFICIENT AND LIQUID TOOL USED TO MANAGE PORTFOLIO DURATION AND YIELD CURVE EXPOSURES. INTEREST RATE FUTURES ALLOWS US TO ADJUST PORTFOLIO DURATION/YIELD CURVE EXPOSURES UP OR DOWN IN AN EFFICIENT MANNER WITHOUT INCURRING TRADING COSTS AND TURNOVER OF INDIVIDUAL CASH BONDS. THIS ALLOWS US THE POTENTIAL TO RETAIN INCOME AND YIELD IN THE PORTFOLIO.

## 2. THE RATIONALE FROM THE INVESTMENT TEAM FOR THE REQUEST TO INVEST IN INDIVIDUAL BANK LOANS.

- THE TEAM'S PREFERENCE IS TO INVEST IN INDIVIDUAL BANK LOANS GIVEN THE RISKS WE SEE MORE BROADLY IN THE LOAN MARKET AND WE ARE WORKING TO GET ALL OF OUR FD ACCOUNTS SET UP. TODAY, WE ARE STILL <1% IN BANK LOANS ACROSS MSFD ACCOUNTS BUT HAVE ADDED UBER AND CARNIVAL EXPOSURES MORE RECENTLY IN '23.
- WE ARE COMFORTABLE WITH AN AGGREGATE 15% LIMIT ON INDIVIDUAL LOANS/LOAN FUND EXPOSURE.

## 3. THE RATIONALE FROM THE INVESTMENT TEAM TO PURSUE THE USE OF CDX.

- CREDIT DEFAULT SWAPS ARE AN EFFICIENT AND LIQUID TOOL USED TO 1) MANAGE DEFAULT RISK OF A BASKET OF ISSUERS AND/OR 2) TO INCREASE/DECREASE EXPOSURE TO CREDIT MARKETS. CDX ALLOWS US TO ADJUST CREDIT EXPOSURE UP OR DOWN IN THE PORTFOLIO IN AN EFFICIENT MANNER WITHOUT INCURRING TRADING COSTS OF INDIVIDUAL CORPORATE CASH BONDS AND WE CAN ALSO USE CDX AS A WAY TO HELP GAIN EXPOSURE WHILE PUTTING PHYSICAL CAPITAL TO WORK.

## 4. THE RATIONALE FROM THE INVESTMENT TEAM TO ELIMINATE THE 144A PERCENTAGE LIMIT.

- 144A-FOR-LIFE SECURITIES HAVE ENJOYED A GROWING PRESENCE IN THE HIGH YIELD UNIVERSE, POINTING TO BROAD MARKET ACCEPTANCE, ADEQUATE LIQUIDITY AND PUBLIC-MARKET LEVELS OF TRANSPARENCY. 144A-FOR-LIFE SECURITIES CURRENTLY REPRESENT APPROXIMATELY 86% OF NEW US HIGH YIELD DEAL VOLUME.
- THE SIZE AND SCOPE OF THE 144A MARKET HAS REACHED A POINT WHERE NOT INVESTING IN THESE SECURITIES COULD BE COSTLY. WE BELIEVE THAT INVESTORS SHOULD EXAMINE THEIR GUIDELINES IN ORDER TO TAKE ADVANTAGE OF THE POTENTIAL OPPORTUNITIES OFFERED IN THE 144A MARKET.

# Guideline Updates Cont.

## 5. THE RATIONALE FROM THE INVESTMENT TEAM TO PURSUE THE USE OF CURRENCY FORWARDS (BOTH DELIVERABLE AND NON-DELIVERABLE).

- CURRENCY FORWARDS ARE USED TO MANAGE THE PORTFOLIO'S FOREIGN CURRENCY RISK AND MAY BE UTILIZED FOR BOTH HEDGING AND NON-HEDGING PURPOSES. WE UTILIZE FX FORWARDS TO EXPRESS A STRATEGIC VIEW IN OUR CLIENTS' PORTFOLIOS WHETHER WE ARE HEDGING CURRENCY RISK AWAY OR TO OBTAIN CURRENCY EXPOSURE. IF WE ANTICIPATE CURRENCY WEAKNESS WE WILL USE FX DERIVATIVES TO REDUCE SUCH CURRENCY RISK OR IF WE DO PERCEIVE VALUE IN A CURRENCY WE WILL OVERLAY SUCH DERIVATIVES TO GAIN EXPOSURE TO SUCH A CURRENCY.
- IN ORDER TO COVER ITS DERIVATIVES OBLIGATIONS, THE PORTFOLIO WILL ENSURE IT MAINTAINS LIQUID ASSETS SUFFICIENT TO MEET ITS OBLIGATIONS, CONSISTENT WITH THE LOOMIS SAYLES COVER POLICIES AND PROCEDURES AS TO NOT CREATE LEVERAGE IN THE PORTFOLIO. A SHORT POSITION IN A FORWARD CONTRACT IS CONSIDERED COVERED SO LONG AS THE ACCOUNT OWNS SECURITIES DENOMINATED IN THE SAME CURRENCY AS THE FORWARD CONTRACT IN AN AMOUNT EQUAL TO OR GREATER THAN THE AMOUNT REQUIRED TO BE DELIVERED UNDER THE FORWARD CONTRACT.

## 6. THE RATIONALE FROM THE INVESTMENT TEAM TO PURSUE THE USE OF THE SENIOR LOAN FUND.

- WE BELIEVE CREDIT RISKS ARE GREATER IN THE LOAN MARKET TODAY AND IN DETERIORATING CREDIT CONDITIONS, PRICING COULD REFLECT THE POTENTIAL FOR LOWER RECOVERY VALUES -- CREATING POTENTIAL OPPORTUNITY. IN ADDITION, IF A WAVE OF CREDIT DOWNGRADES WERE TO COME IN SINGLE B QUALITY LOANS, CLO'S HAVE LIMITED CAPACITY TO OWN/BUY CCC RATED SECURITIES. A REDUCED BID FROM THE CLO MARKET HAS THE POTENTIAL TO PUT PRESSURE ON BANK LOAN VALUATIONS ACROSS ALL CREDIT QUALITIES, WHICH IN TURN, MAY CREATE OPPORTUNITIES/ENTRY POINTS FOR SPECIFIC IDIOSYNCRATIC RISK/ISSUERS WHERE WE ARE COMFORTABLE WITH THE UNDERLYING CREDIT FUNDAMENTALS. WE'VE JUST BEGUN TO ADD INDIVIDUAL BANK LOANS WHERE PERMISSIBLE, BUT HAVE NOT BEEN ADDING VIA THE LOAN FUND GIVEN THE RISKS WE BELIEVE EXIST MORE BROADLY IN THE LOAN MARKET.
- WE ARE COMFORTABLE WITH AN AGGREGATE 15% LIMIT ON INDIVIDUAL LOANS/LOAN FUND EXPOSURE.

## **EXHIBIT A**

**Manager:** Loomis, Sayles & Company  
**Role:** Opportunistic Fixed Income

### **Objectives and Guidelines**

#### **Investment Objectives**

<b>Time Horizon</b>	<b>Performance Standard</b>	
	<b><u>Universe</u></b>	<b><u>Index</u></b>
Less than one market cycle (rolling 3-year periods).	Rank in upper 50% of a Peer Group. <sup>1</sup>	
One market cycle (rolling 5-year periods).	Rank in the upper 40% of a Peer Group <sup>1</sup>	Exceed (after fees) the Benchmark Index + 1.0%. <sup>2</sup>

#### **Investment Guidelines**

- The effective duration of the aggregate portfolio should be no less than 50% and no more than 250% of the Bloomberg ~~Barelays~~-US Aggregate Index.
- Up to 20% of the market value of the portfolio may be issues rated between BB+ and B- by Standard and Poor's and Fitch or between Ba1 to B3 by Moody's. If the ratings assigned to an instrument by Standard & Poor's, Moody's, and/or Fitch are not the same, the highest rating of these ratings agencies will be used.
- If an instrument is not rated by Standard & Poor's, Moody's, and Fitch, the equivalent rating determined by the Loomis Sayles Research Department will be used.
- ~~Up to and an additional~~ 5% of the market value of the portfolio may be invested in issues not rated by Standard & Poor's, Moody's, and Fitch.~~non-rated issues.~~
- Loomis must notify ERS of the downgrade of corporate, non-corporate and 144(a) securities below B- or B3 by ~~both~~ Standard and Poor's ~~and~~ Moody's Investors Service and Fitch within three (3) business days. Loomis must provide quarterly credit updates so long as it retains the security(ies). Corporate, non-corporate and 144(a) securities rated below B- and B3 by ~~both~~ Standard and Poor's, ~~and~~ Moody's Investors Service and Fitch may not exceed 3% of the market value of the portfolio.
- Asset-backed securities that are downgraded below BBB- or Baa3 by ~~both~~ Standard and Poores, ~~and~~ Moody's Investor Services and Fitch must be sold within 90 days following the downgrade. Loomis must notify ERS of the downgrade in writing within 3 business days and provide a written update to ERS on the downgraded security on a weekly basis.
- The average quality of the portfolio must be BBB-/Baa3 or better. ~~Unrated~~-U.S. Treasury and U.S. Federal Government Agency securities are permissible and will be treated as AAA/Aaa rated for purposes of average quality calculations.

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- No security, except securities issued or guaranteed by the U.S. Government or its agencies or instrumentalities, or index derivatives, will comprise more than 5% of the portfolio at the time of purchase.<sup>7</sup>
- Up to 20% of the market value of the portfolio may be invested in total equities (common and preferred) as determined at the time of purchase. Common stock shall be limited to 5% of the market value of the portfolio, as determined at the time of purchase.
- Sector limitations (as a percentage of the portfolio's market value) are limited to the following ranges:

Sector	Min	Max
US Treasuries	0%	100%
US Agencies	0%	50%
Corporates	0%	100%
Mortgage-Backed Securities	0%	50%
Asset-Backed Securities, including a 5% sub-limit in Collateralized Loan Obligations	0%	25%
Investment Grade Yankees and Non-Corporates <sup>(3)</sup>	0%	25%
Non-Investment Grade Yankees and Non-Corporates <sup>(3)</sup>	0%	20%
Non-US Dollar / Non-Canadian Dollar	0%	20%
144(a) Securities	0%	<del>100%</del> 50%
<u>Individual Bank Loans*, including the Loomis Sayles Senior Floating Rate Fund, LLC<sup>(4)</sup></u>	<u>0%</u>	<u>15%</u>
Canadian Dollar Issues	0%	20%
<u>Eligible derivatives include currency forwards (deliverable and non-deliverable) and futures on securities, indices, interest rates, bank loans and currencies ("Futures")<sup>(5)</sup></u>	<u>N/A</u>	<u>N/A</u>
<u>Long-only (sell protection) Index Credit Default Swaps</u>	<u>0%</u>	<u>30%<sup>(6)</sup></u>

- Minimum credit ratings for individual holdings, specific to the sectors, are as follows:

Sector	Minimum Rating
Corporates & Non-Corporates	B-/B3
Asset-Backed Securities	BBB-/Baa3
Collateralized Loan Obligations	BB-/Ba3

144(a) Securities	B-/B3
Cash equivalents, commercial paper and repurchase agreements	A1/P1

<sup>1</sup> As measured by the Callan Core Opportunistic Fixed Income Peer Group

<sup>2</sup> As measured by the Bloomberg Barclays Capital Aggregate Index

<sup>3</sup> Canadian issued bonds do not count towards the Yankee limit.

<sup>4</sup> Senior Floating Rate Fund, LLC provides BB-rated average quality type of exposure to the bank loan market and is managed with a primary focus on attractive risk/return trade-offs within the bank loan sector. The strategy is based on seeking a combination of high current income generation and protection of capital in all economic environments. We focus more on risk vs. return than on return at any risk. We use significant diversification among issuers and industries to increase our ability to deliver the best attributes of the asset class reliably and transparently; we are not trying to pick winners as much as avoid losers.

<sup>5</sup> Eligible derivatives Futures may be used for both hedging and non-hedging purposes. Derivatives used to manage duration, interest rate and yield curve strategies may require notional amounts in excess of the portfolio's market value. Futures and other duration-related derivatives will be limited by the duration restriction on the portfolio.

<sup>6</sup> Notional limit of 30%. Index credit default swaps shall not be used to create leverage or for speculative purposes and will be calculated at their notional value for guideline purposes. Liabilities resulting from CDX must be fully collateralized by cash, cash equivalents and U.S Treasuries.

\* Investment in individual bank loans will generate a transaction cost associated with both the purchase and sale of these loans. The counterparty on these trades determines how they will settle and most choose ClearPar. ClearPar is the primary platform and supported by most banks. Bank loans that do not settle on this platform are prohibitively labor intensive and it is not likely many trades will occur away from the ClearPar platform.

Portfolios participating in a bank loan trade will be charged by ClearPar a pro-rata share of the trade (a "subtrade"). ClearPar will deliver the invoice to the Loomis and, in turn, Loomis will deliver this invoice to your custodian to pay from the assets of the portfolio. While you may elect to pay the invoice directly, directing the custodian to pay the invoices from the portfolio assets will facilitate proper performance calculations for your portfolio. As of the current date, the subtrade fee structure is as follows:

<u>Subtrades per Master Trade</u>	<u>Subtrade Fee per Subtrade</u>
<u>1-5</u>	<u>\$19</u>
<u>6-21</u>	<u>\$110 divided by number of subtrades</u>
<u>22 or more</u>	<u>\$5</u>

There is also a volume discount schedule that is applied once trades on the platform exceed 5,000.

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**Manager:** Reams Asset Management  
**Role:** Opportunistic Fixed Income

### Objectives and Guidelines

#### Investment Objectives

Time Horizon	Performance Standard	
	<u>Universe</u>	<u>Index</u>
Less than one market cycle (rolling 3-year periods).	Rank in upper 50% of a Peer Group. <sup>1</sup>	
One market cycle (rolling 5-year periods).	Rank in upper 40% of a Peer Group. <sup>1</sup>	Exceed (after fees) the Benchmark Index + 1.0%. <sup>2</sup>

#### Investment Guidelines

- The duration of the aggregate portfolio should be no more than 2 years below or above the Barclays Capital Aggregate Index.
- A maximum of 20% of the market value of the portfolio may be invested in corporate, non-corporate and 144(a) securities rated at or below BB+ or Ba1. An additional 5% of the market value of the portfolio may be invested in non-rated issues.
- A maximum of 10% of the market value of the portfolio may be invested in non-dollar securities.
- Corporate, non-corporate and 144(a) securities that are downgraded below B- or B3 by both Standard and Poors and Moody's Investor Services must be sold within 90 days following the downgrade. Reams must notify ERS of the downgrade in writing within 3 business days and provide a written update to ERS on the downgraded security on a weekly basis.
- Asset-backed securities that are downgraded below BBB- or Baa3 by both Standard and Poors and Moody's Investor Services must be sold within 90 days following the downgrade. Reams must notify ERS of the downgrade in writing within 3 business days and provide a written update to ERS on the downgraded security on a weekly basis.
- The average quality of the portfolio must be A-/A3 or better. Unrated U.S. Treasury and U.S. Federal Government Agency securities are permissible and will be treated as AAA rated for purposes of average quality calculations.
- No one security or aggregation of one company's securities, except securities issued or guaranteed by the U.S. Government or its agencies, will comprise more than 2% of the portfolio, as determined at the time of purchase.
- Long-only (sell protection) indexed credit default swaps may be utilized to gain exposure in the fixed income market with a notional value limit of 30% of the portfolio. The indexed credit default swaps shall not be used to create leverage or for speculative purposes and will be calculated at their notional value for guideline purposes. In addition, any portfolio liabilities resulting from the indexed credit default swaps must be fully collateralized by cash, cash equivalents, or U.S. Treasury securities.
- A maximum of 3% of the portfolio, at the time of purchase, may be invested in the Reams Unconstrained Bond Fund, a commingled fund, managed by Reams, subject to guidelines set forth in the goals and guidelines of the commingled vehicle.

- Currency forwards may be used by the manager to hedge, enhance returns, increase liquidity, and/or gain exposure to certain markets in a more efficient way. Total currency forward notional exposure, excluding those utilized to hedge, cannot exceed a maximum of 10% of account market value. Acceptable currencies must be from the IMF Recognized group of 10 “G10” developed nations.
- Sector limitations (as a percentage of the portfolio’s market value) are limited to the following ranges:

Sector	Min	Max
US Treasuries	0%	100%
US Agencies	0%	80%*
Corporates	0%	100%
Mortgage-Backed Securities	0%	80%**
Asset-Backed Securities	0%	25%
Non-Corporates <sup>(3)</sup>	0%	20%
Emerging Market Debt <sup>(4)</sup>	0%	0%
Non-Dollar Securities	0%	10%
144(a) Securities	0	25%

\*US Agencies excluding Mortgage-Backed Securities Max is 50%.

\*\*Non-Agency Mortgage-Backed Securities Max is 25%.

- Minimum credit ratings for individual holdings, specific to the sectors, are as follows:

Sector	Minimum Rating
Corporates & Non-Corporates	B-/B3
Asset-Backed Securities	BBB-/Baa3
144(a) Securities	B-/B3
Cash equivalents, commercial paper and repurchase agreements	A1/P1

<sup>1</sup> As measured by the Callan Fixed Income Core Opportunistic Peer Group

<sup>2</sup> As measured by the Barclays Capital Aggregate Index

<sup>3</sup> Non-Corporates replaced Yankees in the Barclays Capital Aggregate Index and include dollar denominated supranational, sovereign, foreign agency, and foreign local debt.

<sup>4</sup> Emerging markets as defined by the International Finance Corporation.

# **2nd Quarter 2023 Performance Report**

September 7, 2023

Employees' Retirement System



# Presentation Agenda

- Fund Overview
- Public Equity
- Fixed Income
- Absolute Return
- Private Equity
- Recent Performance Update
- Appendix: Manager Charts & Statistics

# Market Environment

Asset Class	Benchmark	Target Weight	Benchmark Return Q2 2023
Public Equity	MSCI ACWI IMI	44%	5.9%
Fixed Income	Bloomberg U.S. Agg.	23%	-0.8%
Real Assets <sup>(1)</sup>	Blended Benchmark	13%	-2.8%
Private Equity <sup>(1)</sup>	Russell 3000 + 2%	10%	7.8%
Absolute Return	90-Day T-Bill + 3%	10%	2.0%

	Q2 2023
<b>CMERS Benchmark</b>	<b>3.0%</b>

<sup>(1)</sup>Real Estate and Private Equity benchmark returns are reported on a 1-quarter lag.

# Relative Performance Expectations

		Q2 2023		Q2 2023	Q2 2023
<b>Value Equity Bias</b>	Russell 3000 Value	4.0%	Russell 3000 Growth	12.5%	↓↓
<b>Small Cap Equity Bias</b>	Russell 2000	5.2%	Russell 1000	8.6%	↓
<b>Fixed Income Credit</b>	Loomis Sayles (net)	-0.3%	Bloomberg US Agg.	-0.8%	↑
<b>Private Equity<sup>(1)(2)</sup></b>	CMERS PE (net)	2.6%	PE Benchmark	7.8%	↓↓

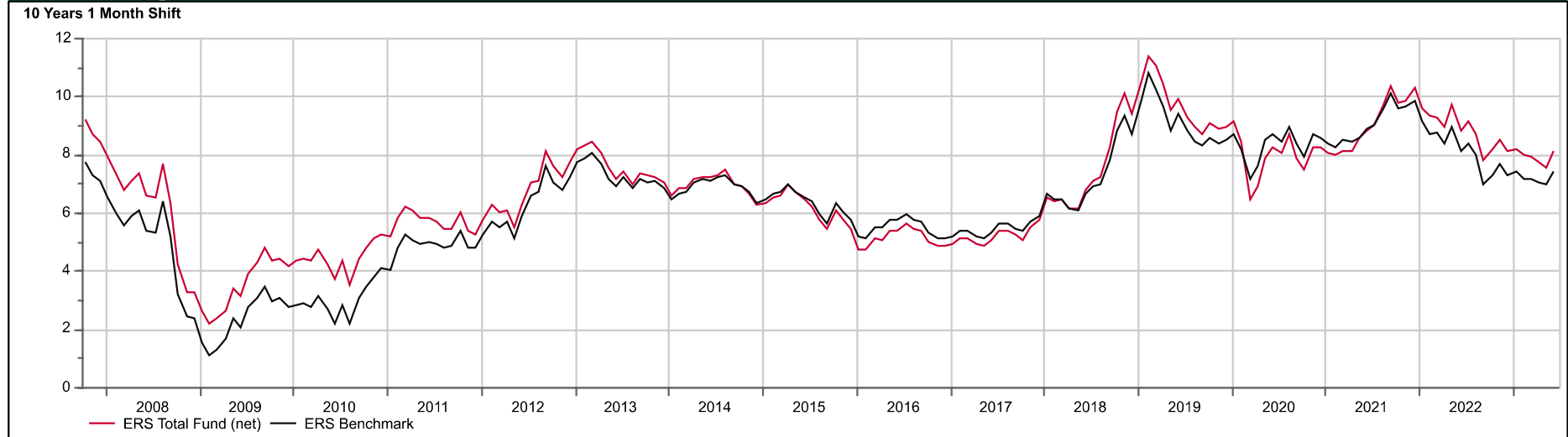
	Q2 2023
<b>CMERS Total Fund (net)</b>	<b>2.2%</b>
<b>CMERS Benchmark</b>	<b>3.0%</b>

<sup>(1)</sup>Private Equity benchmark return is reported on a 1-quarter lag.

<sup>(2)</sup> All of the Fund's Q4 2022 and Q1 2023 Private Equity returns are reflected in the April-June time period.

# Total Fund Performance

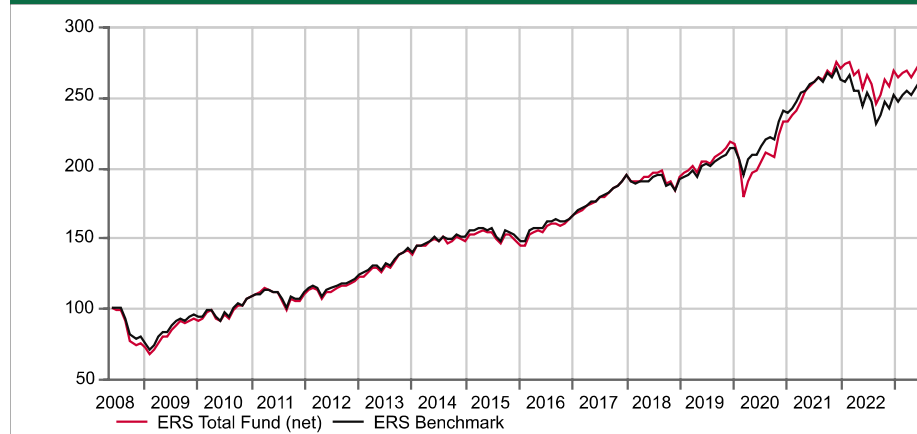
## 10 Year Rolling Returns – 11/1/1997 to 6/30/2023



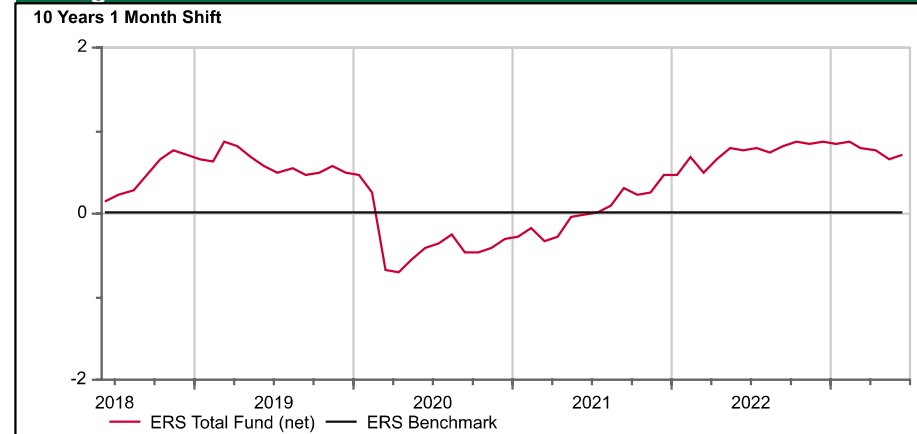
## Trailing Returns

	Annualized Return							
	QTR	YTD	1 Year	3 Year	5 Year	7 Year	10 Year	15 Year
ERS Total Fund (net)	2.2	5.6	6.4	11.2	7.2	8.5	8.1	6.9
ERS Benchmark	3.0	7.4	6.6	7.5	6.4	7.4	7.4	6.5

## Investment Growth –7/1/2008 to 6/30/2023



## Rolling Excess Returns –7/1/2008 to 6/30/2023



# ERS Fund Attribution – 2nd Quarter 2023

Asset Class	Benchmark	Average Weight %	Policy Weight %	+/-	Portfolio Return	Benchmark Return	+/-	Attribution Effect(%)			
								Broad Category Group Allocation	Manager Selection	Style Bias	Total Active Return
<b>Public Equity</b>	MSCI ACWI IMI NR USD	43.6	44.0	-0.4	4.9	5.9	-1.0	0.0	0.1	-0.6	-0.5
<b>Fixed Income</b>	Bbg US Agg Bond TR USD	22.4	23.0	-0.6	-0.6	-0.8	0.2	0.0	0.1	0.0	0.0
<b>Private Equity<sup>(2)</sup></b>	Russell 3000 (Qtr Lag) + 200bps <sup>(1)</sup>	12.9	10.0	2.9	2.6	7.8	-5.2	0.2	-0.7	0.0	-0.5
<b>Real Assets<sup>(2)</sup></b>	Real Assets Benchmark <sup>(1)</sup>	12.2	13.0	-0.8	-1.8	-2.8	1.0	0.0	0.1	0.0	0.2
<b>Absolute Return</b>	90 Day T-Bill +3%	8.9	10.0	-1.1	1.0	2.0	-1.0	0.0	-0.1	0.0	-0.1
<b>Total</b>		100.0	100.0	0.0	2.2	3.0	-0.9	0.1	-0.4	-0.6	-0.9

## Main Drivers of Q2 2023 Relative Performance

**Private Equity**

Impact %

**-0.67%**

Attribution Category

**Manager Selection**

**Public Equity**

**-0.57%**

**Style Bias**

**Value, International, and Small exposures all detracted.**

**Overweight Private Equity**

**0.15%**

**Overall Allocation**

**Manager Performance**

**Brandes**

**0.11%**

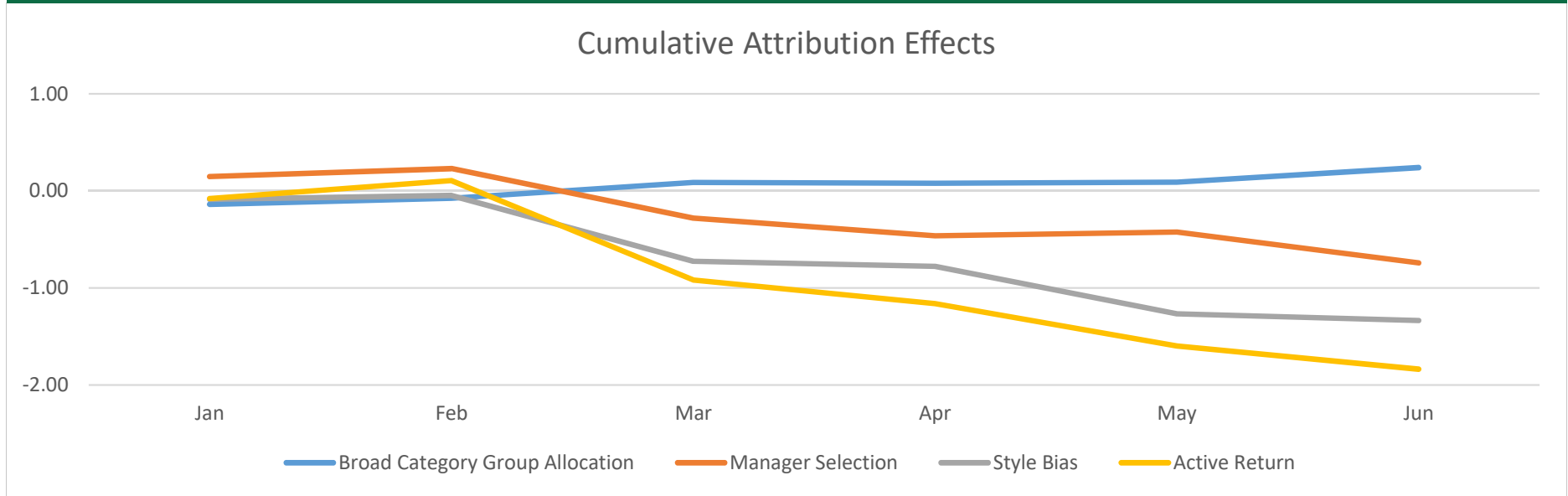
**Manager Selection**

<sup>(1)</sup>Real Estate and Private Equity benchmark returns are reported on a 1-quarter lag.

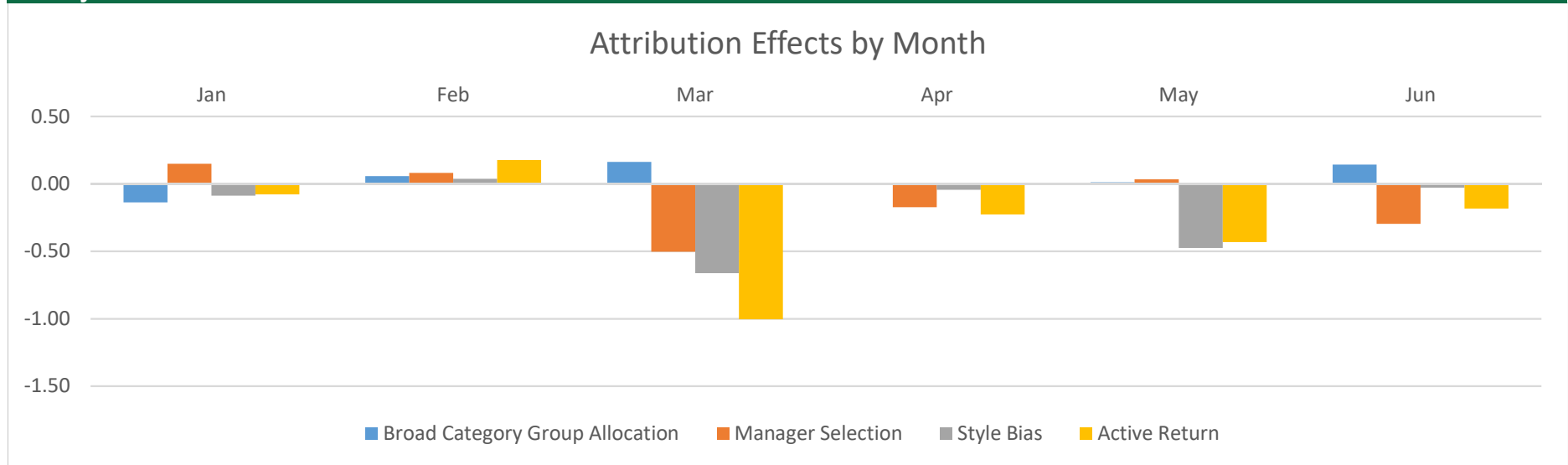
<sup>(2)</sup> All of the Fund's Q4 2022 and Q1 2023 Private Equity returns are reflected in the April-June time period.

# Year-to-Date 2023 Attribution

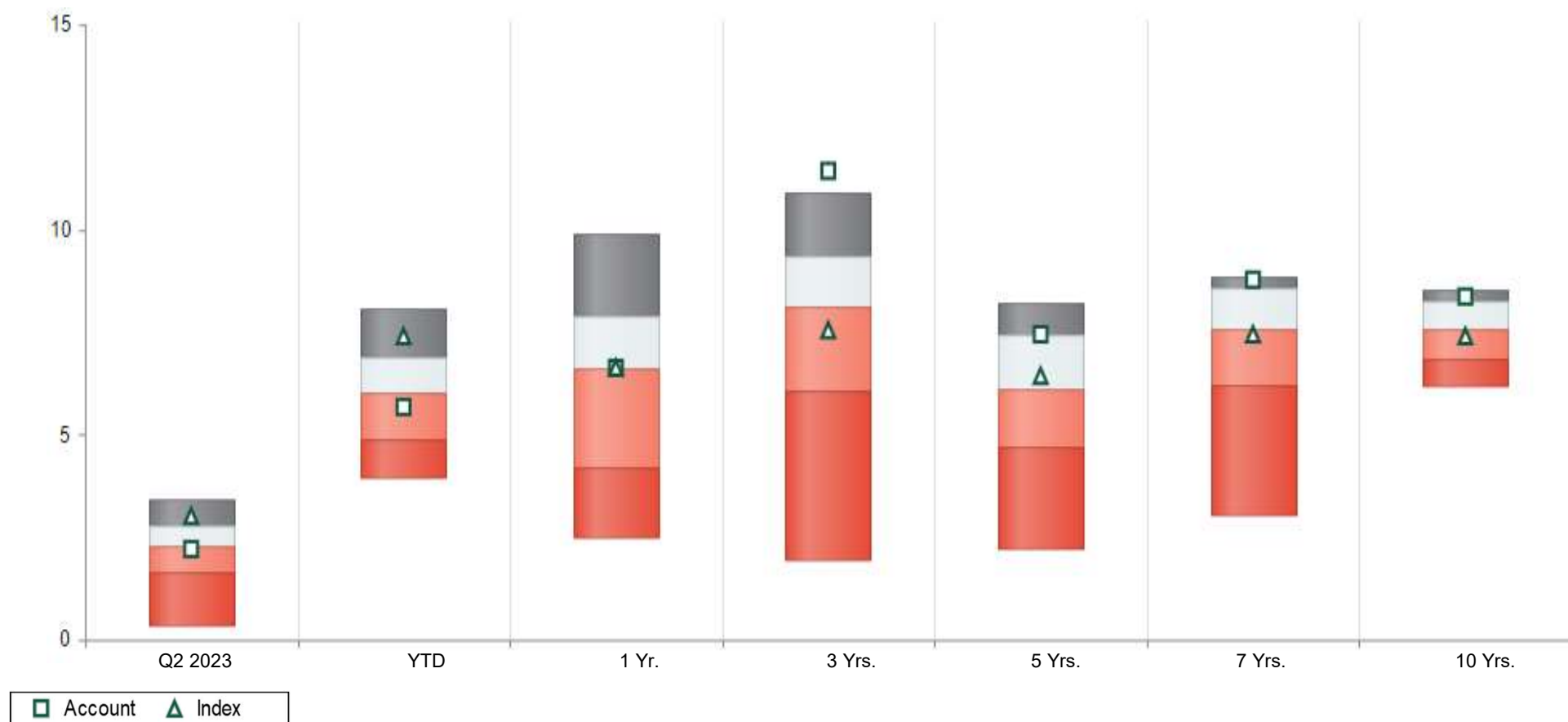
## Cumulative Attribution Effects



## Monthly Attribution Effects

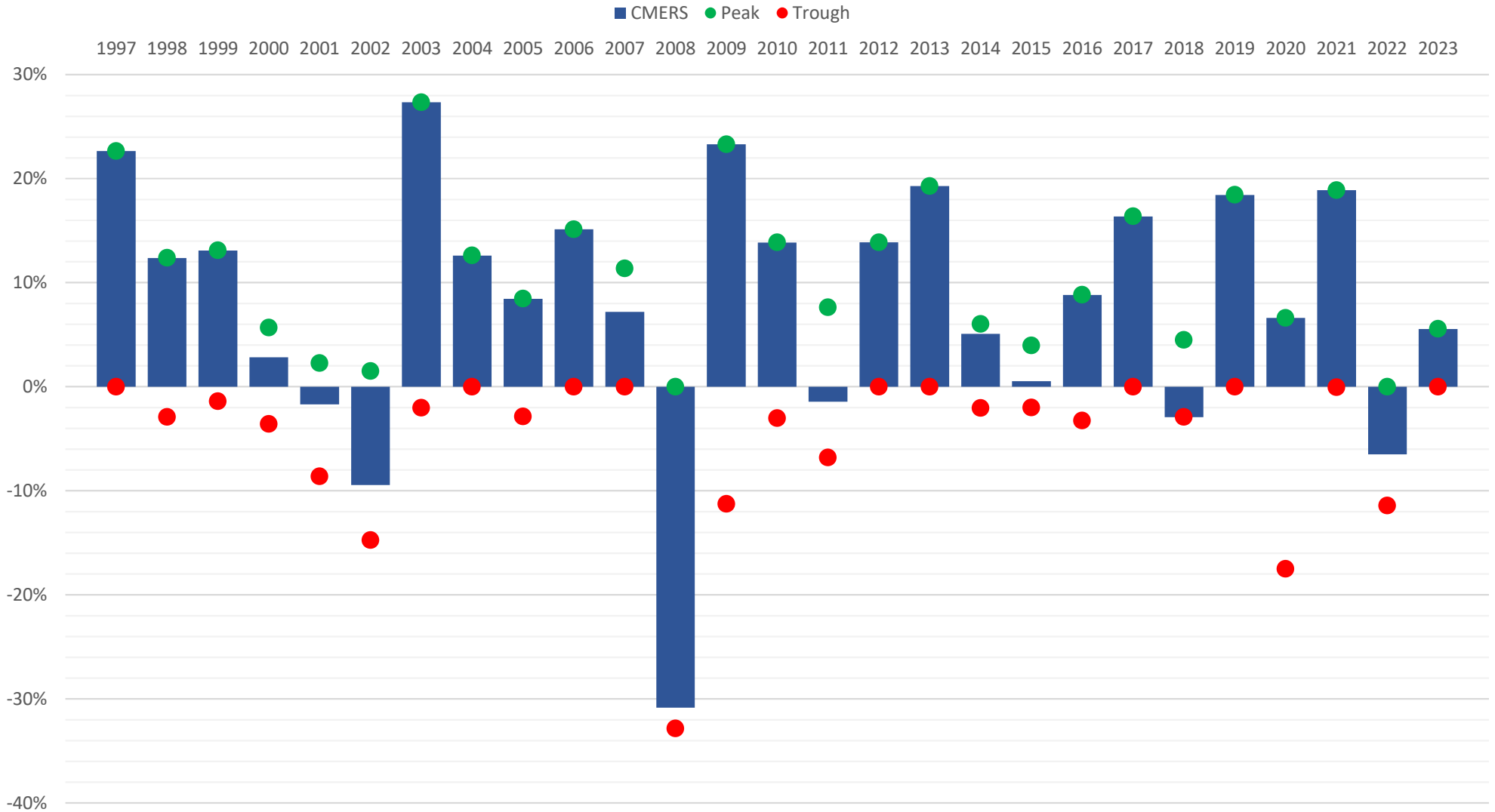


# Total Fund vs Universe



	Q2 2023	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.
Account Return	2.2	5.7	6.6	11.4	7.4	8.8	8.4
Percentile Rank	59	58	50	7	21	15	23
Index Return	3.0	7.4	6.6	7.5	6.4	7.4	7.4
Percentile Rank	17	17	50	61	44	52	56
1st Quartile	2.8	6.9	7.9	9.3	7.4	8.6	8.3
Median	2.3	6.0	6.6	8.1	6.1	7.6	7.5
3rd Quartile	1.6	4.9	4.2	6.1	4.7	6.2	6.8
Observations	50	49	49	49	45	41	27

# Annual Returns, Peaks, and Troughs



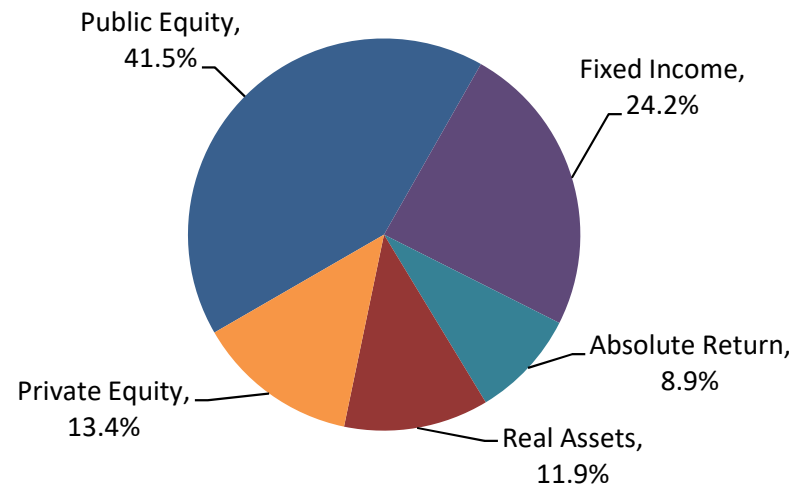
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	YTD 2023
CMERS	22.7%	12.4%	13.1%	2.8%	-1.7%	-9.4%	27.3%	12.6%	8.5%	15.1%	7.2%	-30.8%	23.3%	13.9%	-1.4%	13.9%	19.3%	5.1%	0.5%	8.8%	16.4%	-2.9%	18.4%	6.6%	18.9%	-6.5%	5.6%
Peak	22.7%	12.4%	13.1%	5.7%	2.3%	1.5%	27.3%	12.6%	8.5%	15.1%	11.4%	0.0%	23.3%	13.9%	7.6%	13.9%	19.3%	6.0%	4.0%	8.8%	16.4%	4.5%	18.4%	6.6%	18.9%	0.0%	5.6%
Trough	0.0%	-2.9%	-1.4%	-3.6%	-8.6%	-14.7%	-2.0%	0.0%	-2.9%	0.0%	0.0%	-32.9%	-11.3%	-3.0%	-6.8%	0.0%	0.0%	-2.1%	-2.0%	-3.3%	0.0%	-2.9%	0.0%	-17.5%	0.0%	-11.4%	0.0%

\*Net of Fees



# Asset Allocation as of June 30, 2023

## Actual Asset Allocation\*



## Actual Asset Allocation vs. Recently Approved Policy Target



# YTD Market Value Change

December 31, 2022 Market Value including City Reserve & PABF Accounts			\$ 5,550,112,010
Monthly Cash Outflows thru	<u>June 30, 2023</u>		
Retiree Payroll Expense		\$ (228,994,370)	
PABF Payroll Expense		\$ (19,442)	
Expenses Paid		\$ (8,426,055)	
GPS Benefit Payments		\$ (4,667,775)	
Sub-Total Monthly Cash Outflows			\$ (242,107,643)
Monthly Cash Inflows thru	<u>June 30, 2023</u>		
Contributions		\$ 118,066,940	
PABF Contribution		\$ 19,456	
Sub-Total Monthly Contributions			\$ 118,086,396
Capital Market Gain/(Loss)			<u>\$ 311,597,534</u>
Value including City Reserve & PABF Accounts as of	<u>June 30, 2023</u>		<u>\$ 5,737,688,298</u>
Less City Reserve Account <sup>1</sup>			\$ 83,117,063
Less PABF Fund <sup>2</sup>			\$ 2,511
Net Projected ERS Fund Value as of	<u>June 30, 2023</u>		<u><u>\$ 5,654,568,724</u></u>

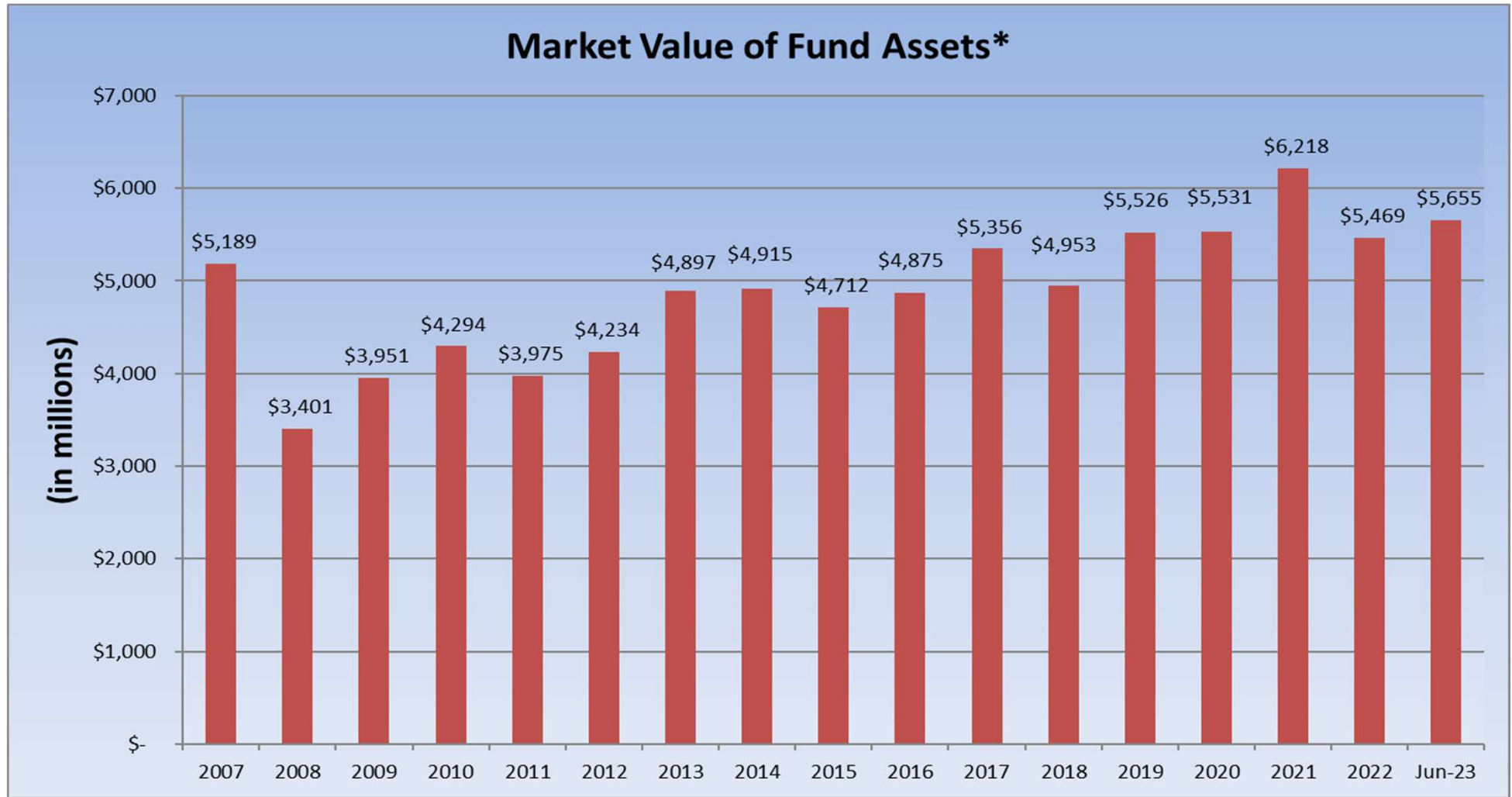
1 The City Reserve Account balance equals the market value currently held in the Baird account.

2 PABF Fund balance equals the market value currently held in the PABF account.

Monthly Cash Outflows, Monthly Cash Inflows, and Capital Market Gain/(Loss) amounts are calculated using estimates of cash flows into and out of the Fund. These amounts are not audited and may not tie to CMERS Financial Statements.

# Fund Value of Assets: 2007 – June 30, 2023

(Year Ended Dates Reflect 12/31 Fund Values)



Most recent Actuarial valuation projects benefit payments to total \$5.4 billion in next 10 years.

<b>Benefit Payments</b>	\$5.4 billion
<b>Expenses</b>	\$272 million
<b>Contributions</b>	\$1.5 billion
<b>Investment Gain</b>	\$4.6 billion

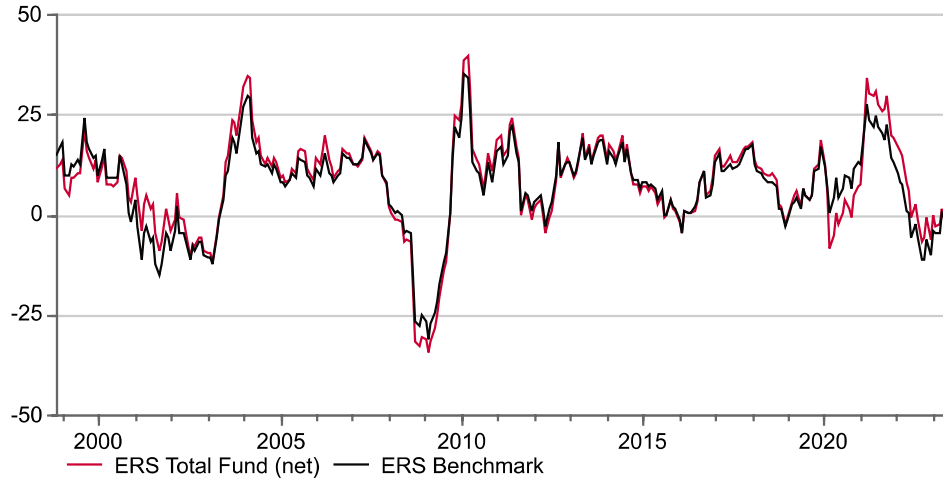
15 1/2 Year Estimates (1/1/2008 - 6/30/2023)

Benefit Payments, Expenses, Contributions, and Investment Gain amounts are calculated using estimates of cash flows into and out of the Fund. These amounts are not audited and may not tie to CMERS Financial Statements.

# Total Fund Rolling Returns as of June 30, 2023

## 1 Year Rolling Returns – 12/1/1997 to 6/30/2023

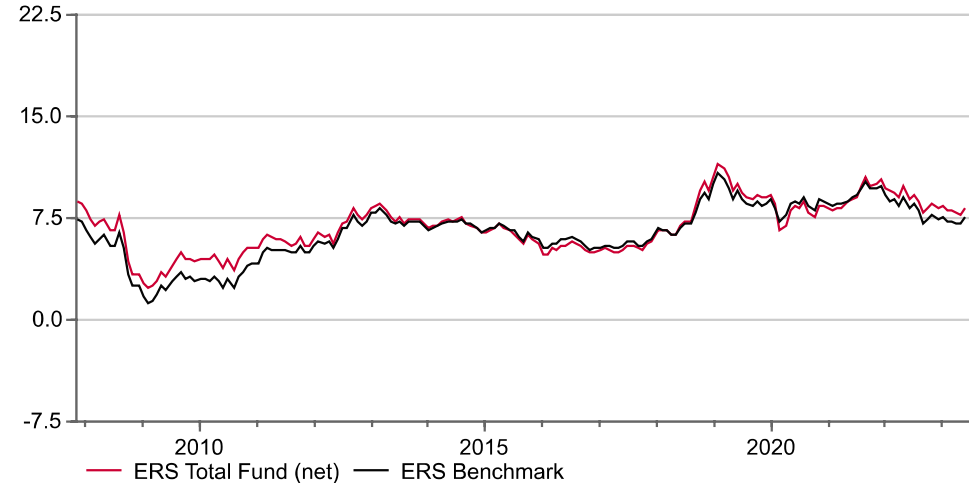
### 1 Year 1 Month Shift



©FactSet Research Systems

## 10 Year Rolling Returns – 12/1/1997 to 6/30/2023

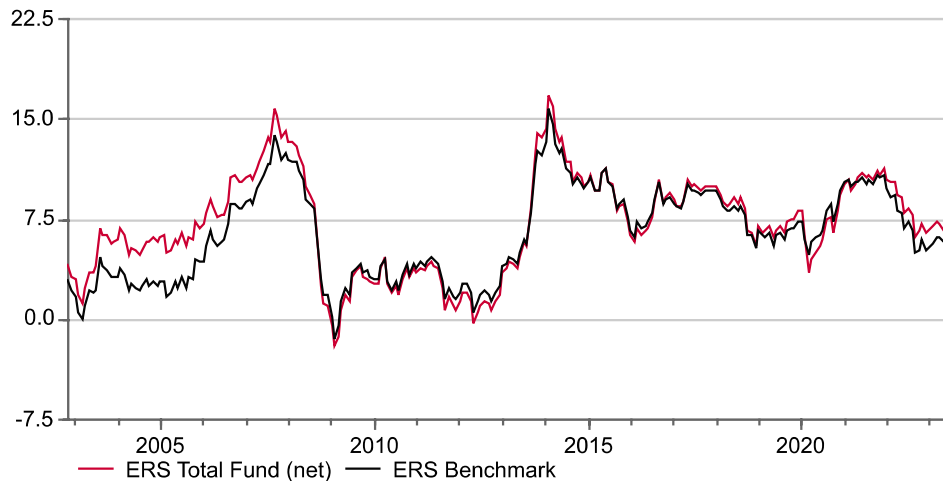
### 10 Years 1 Month Shift



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## 5 Year Rolling Returns – 12/1/1997 to 6/30/2023

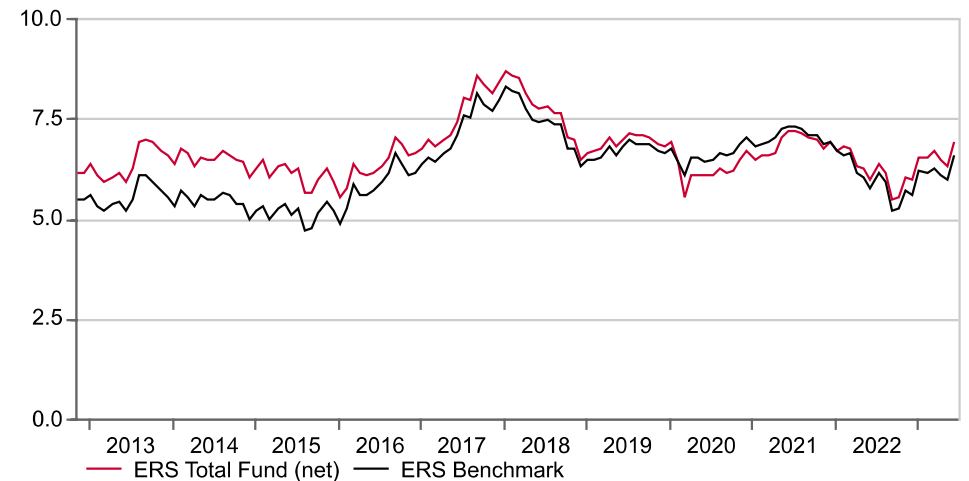
### 5 Years 1 Month Shift



©FactSet Research Systems

## 15 Year Rolling Returns – 12/1/1997 to 6/30/2023

### 15 Years 1 Month Shift

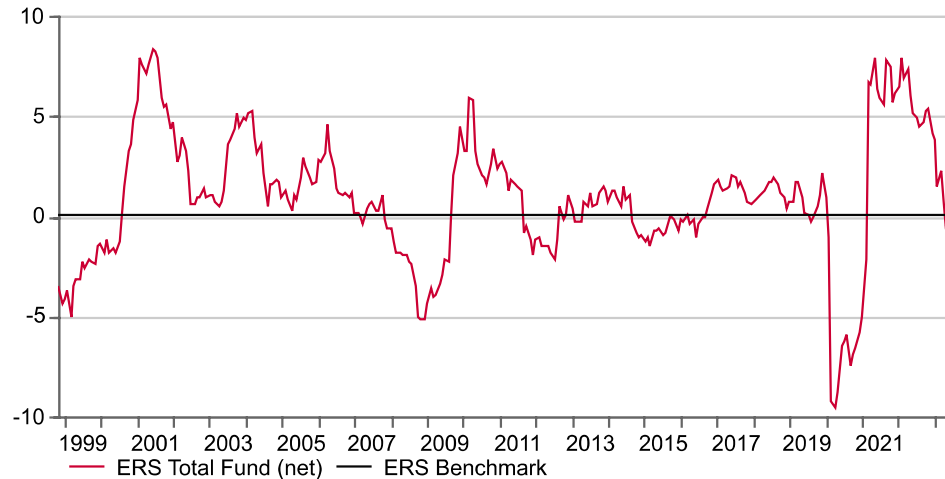


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# Total Fund Rolling Excess Returns as of June 30, 2023

## 1 Year Rolling Excess Returns – 12/1/1997 to 6/30/2023

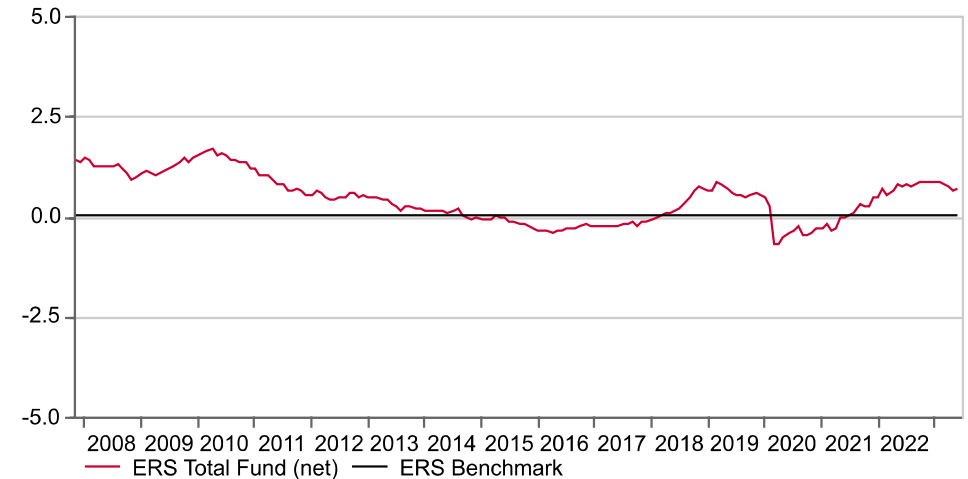
### 1 Year 1 Month Shift



©FactSet Research Systems

## 10 Year Rolling Excess Returns – 12/1/1997 to 6/30/2023

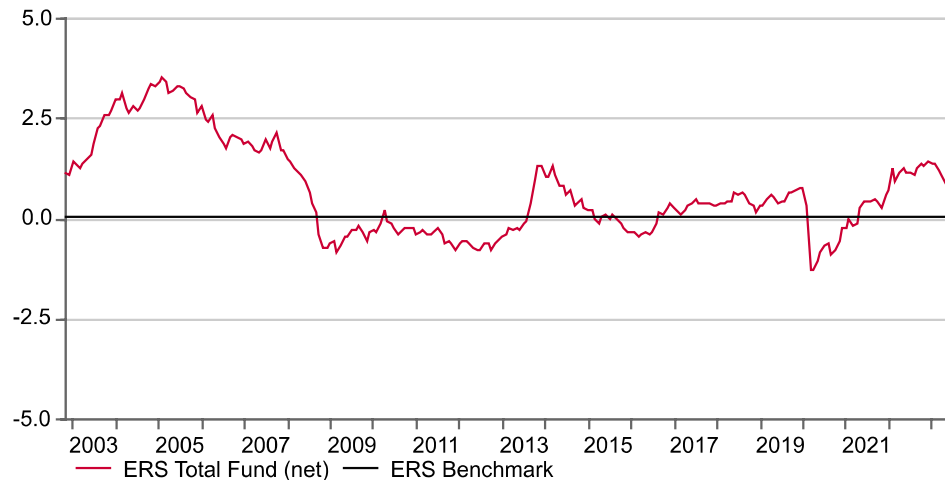
### 10 Years 1 Month Shift



©FactSet Research Systems

## 5 Year Rolling Excess Returns – 12/1/1997 to 6/30/2023

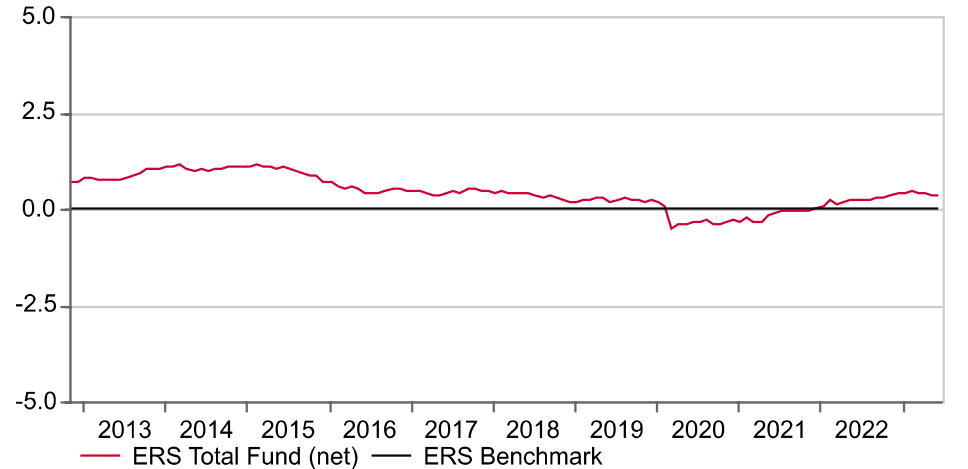
### 5 Years 1 Month Shift



©FactSet Research Systems

## 15 Year Rolling Excess Returns – 12/1/1997 to 6/30/2023

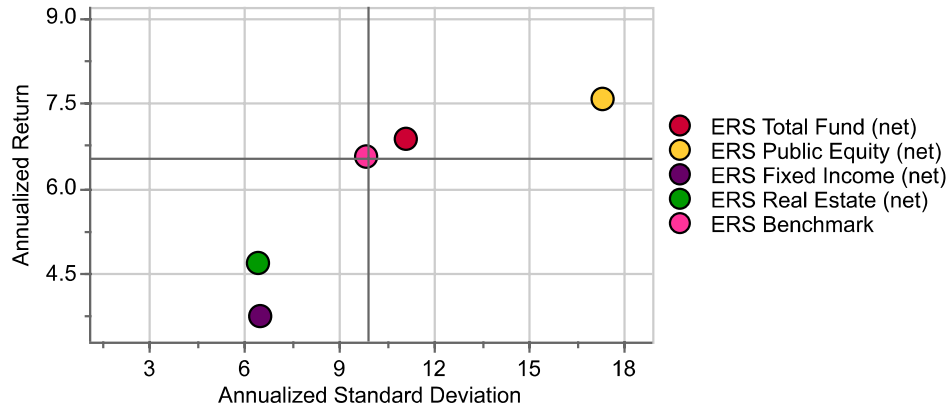
### 15 Years 1 Month Shift



©FactSet Research Systems

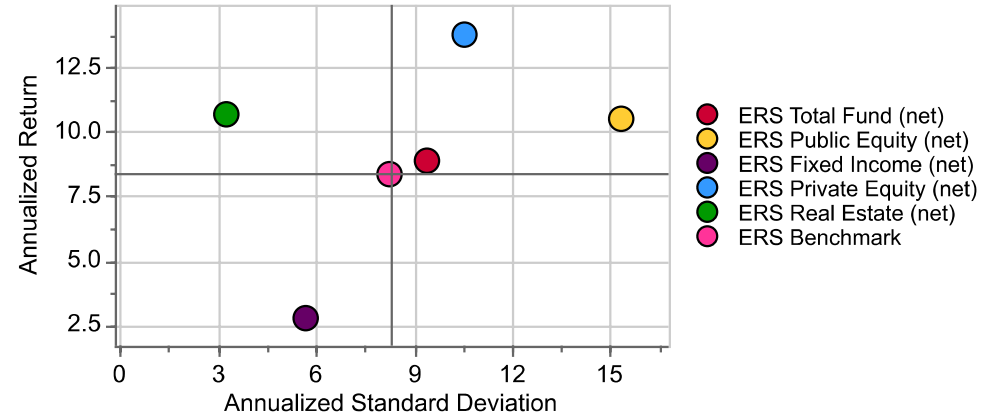
# Total Fund Statistics

## 15 Year Risk-Reward – 7/1/2008 to 6/30/2023



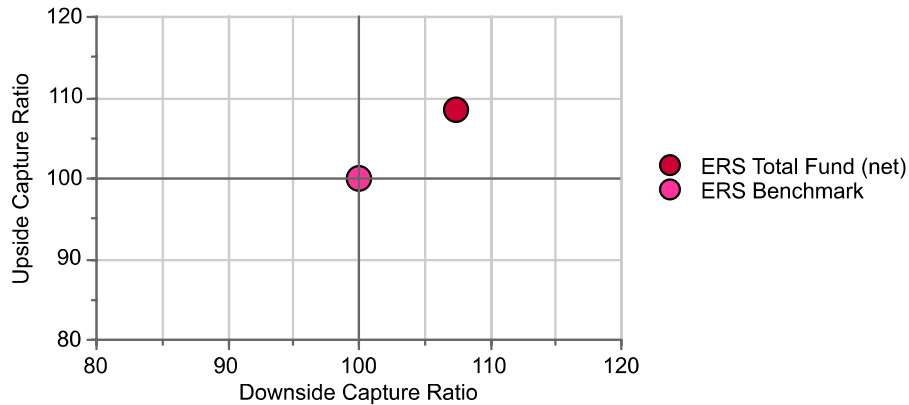
©FactSet Research Systems

## Risk-Reward Since Private Equity Inception – 7/1/2010 to 6/30/2023



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## 15 Year Upside-Downside – 7/1/2008 to 6/30/2023



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## Batting Average



## 15 Year Risk – 7/1/2008 to 6/30/2023

	Annualized Return	Standard Deviation	Sharpe Alpha	Information Ratio	Tracking Ratio	Error	Beta
ERS Total Fund (net)	6.9	11.1	0.0	0.6	0.0	2.8	1.1
ERS Benchmark	6.5	9.9	0.0	0.6	--	--	1.0

## Risk – 7/1/2013 to 6/30/2023

	Annualized Return	Standard Deviation	Sharpe Alpha	Information Ratio	Tracking Ratio	Error	Beta
ERS Total Fund (net)	8.1	9.0	0.0	0.8	0.1	3.1	1.1
ERS Benchmark	7.4	7.8	0.0	0.8	--	--	1.0

# Notable CMERS Manager Events

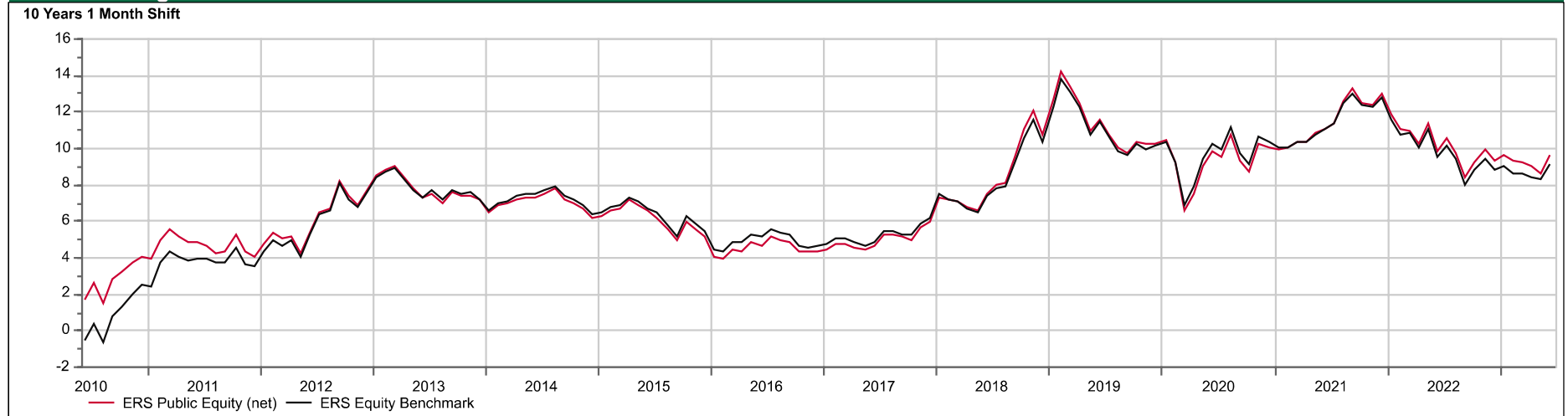
Manager	Event	Date
Loomis Sayles	Elaine Stokes, co-head and portfolio manager of the Loomis Sayles Full Discretion team, announced plans to retire in February 2024. Matt Eagan, currently co-head of the team with Elaine, will become the sole head of the team. Matt will continue to be supported by Brian Kennedy as a co-portfolio manager of CMERS' strategy.	June 2023
Mesirow	Tom Galuhn, President, has transitioned to a Senior Advisor role and Marc Sachs has transitioned from Chief Executive Officer to Chairman of Mesirow Private Equity. Both individuals will continue to be members of the Investment Committee for the next several years. As part of the firm's long-term succession planning, Bob DeBolt was promoted to Chief Executive Officer of Private Equity while Kristina Pierce and Ryan Fredronich, both members of the Investment Committee, were promoted to Senior Managing Director.	July 2023

# Public Equity



# Public Equity Performance

## 10 Year Rolling Returns – 7/1/2000 to 6/30/2023



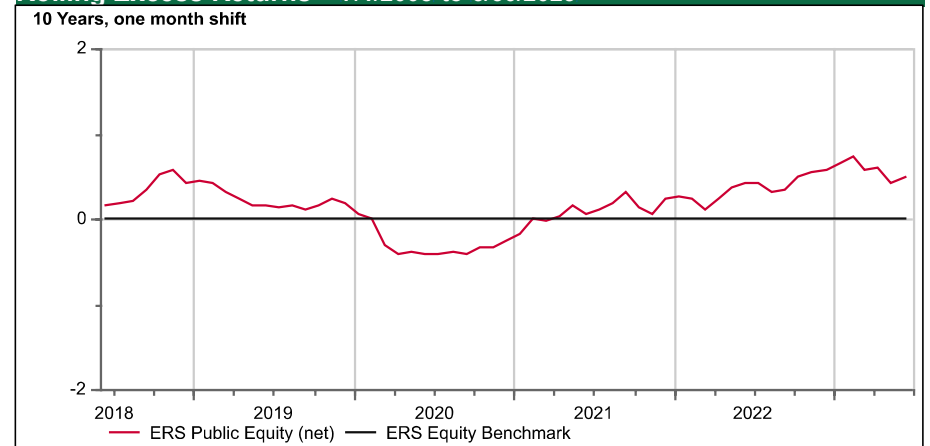
## Trailing Returns

	Annualized Return							
	QTR	YTD	1 Year	3 Year	5 Year	7 Year	10 Year	15 Year
ERS Public Equity (Gross)	5.1	12.2	17.1	13.5	8.3	10.8	9.9	7.9
ERS Public Equity (Net)	5.0	12.0	16.7	13.2	7.9	10.4	9.5	7.6
ERS Public Equity Benchmark	5.9	13.2	16.1	11.0	7.6	9.7	9.0	7.4
MSCI AC World IMI	5.9	13.2	16.1	11.0	7.6	9.7	8.6	6.6

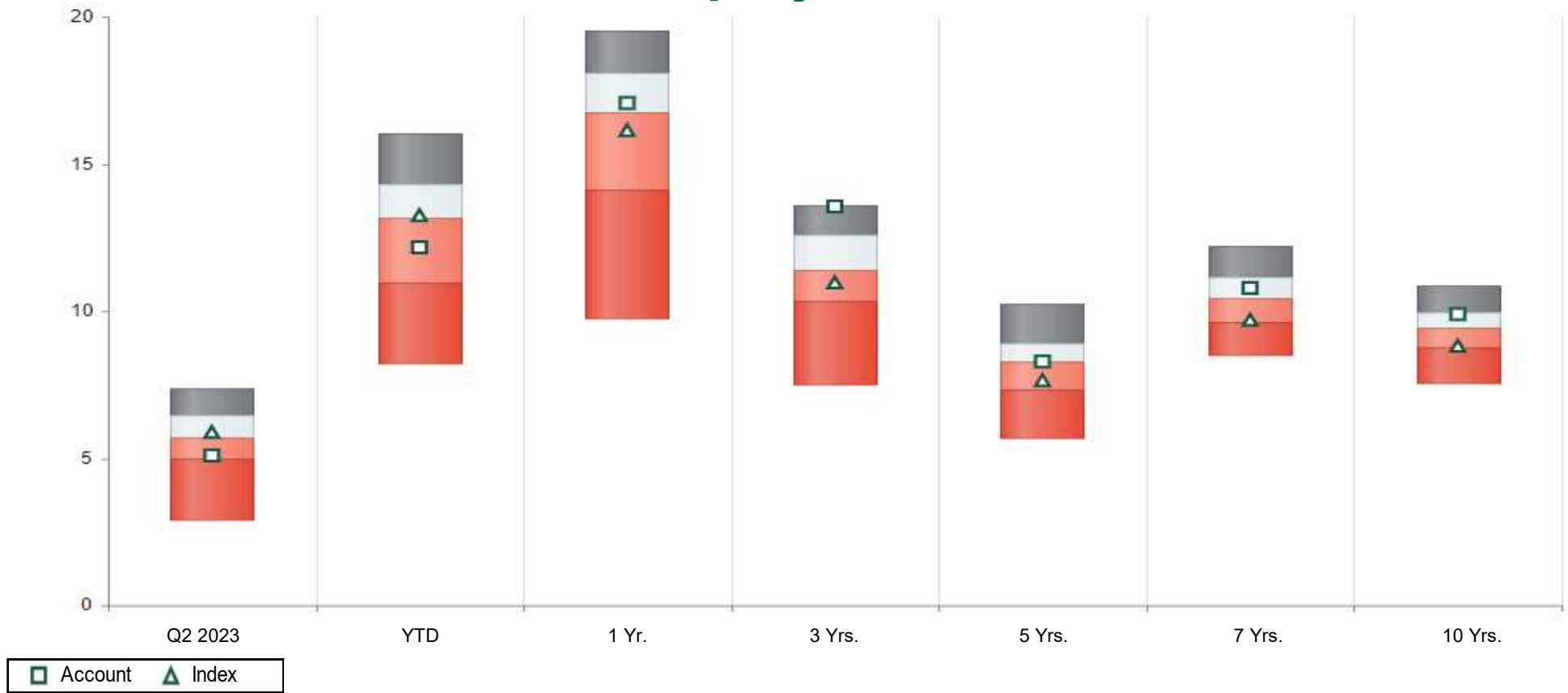
## Investment Growth – 7/1/2008 to 6/30/2023



## Rolling Excess Returns – 7/1/2008 to 6/30/2023



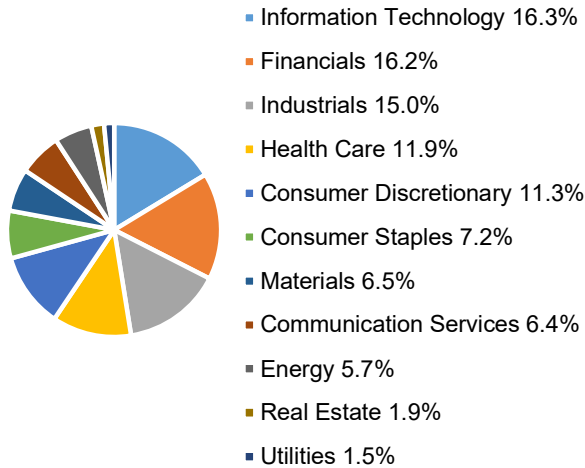
# Public Equity vs Universe



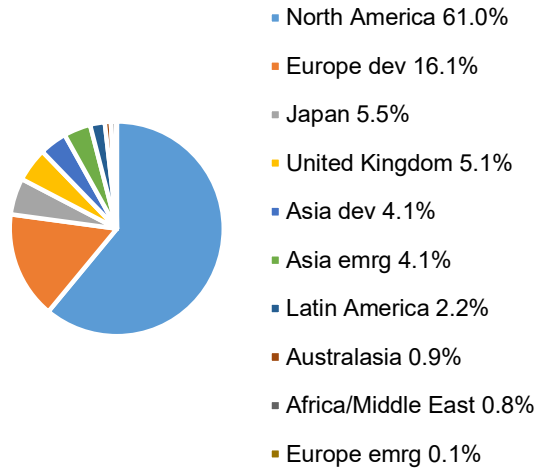
	Q2 2023	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.
Account Return	5.1	12.2	17.1	13.5	8.3	10.8	9.9
Percentile Rank	70	68	43	11	49	35	28
Index Return	5.9	13.2	16.1	11.0	7.6	9.7	9.0
Percentile Rank	44	46	61	67	70	73	3rd Quartile
1st Quartile	6.5	14.3	18.1	12.6	8.9	11.1	10.0
Median	5.7	13.2	16.8	11.4	8.3	10.4	9.4
3rd Quartile	5.0	11.0	14.1	10.3	7.3	9.6	8.8
Observations	128	129	129	129	128	123	112

# Public Equity Portfolio Snapshot

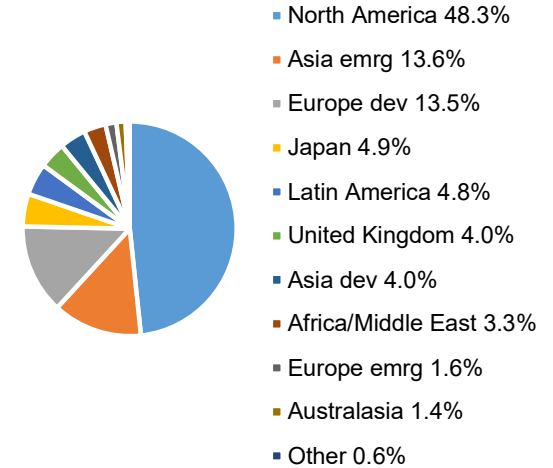
## Equity Sector Exposure (GICS)



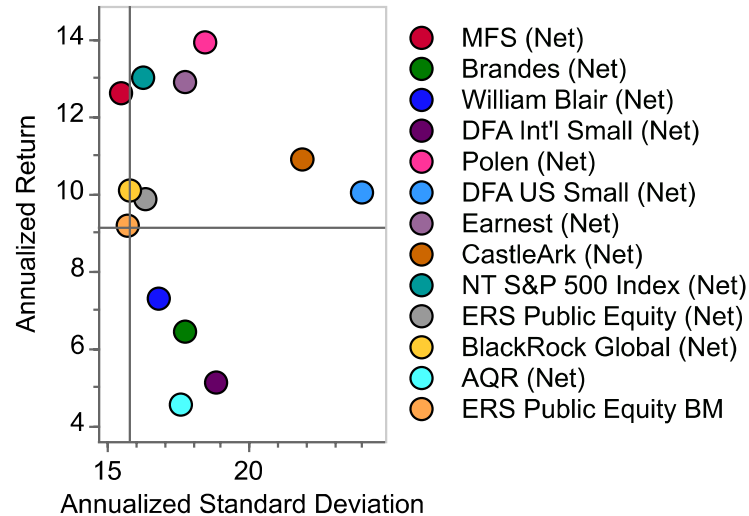
## Regional Exposure by Domicile



## Regional Exposure by Source of Revenue



## Risk – Reward – 8/1/2016 to 6/30/2023



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## Top 10 Holdings

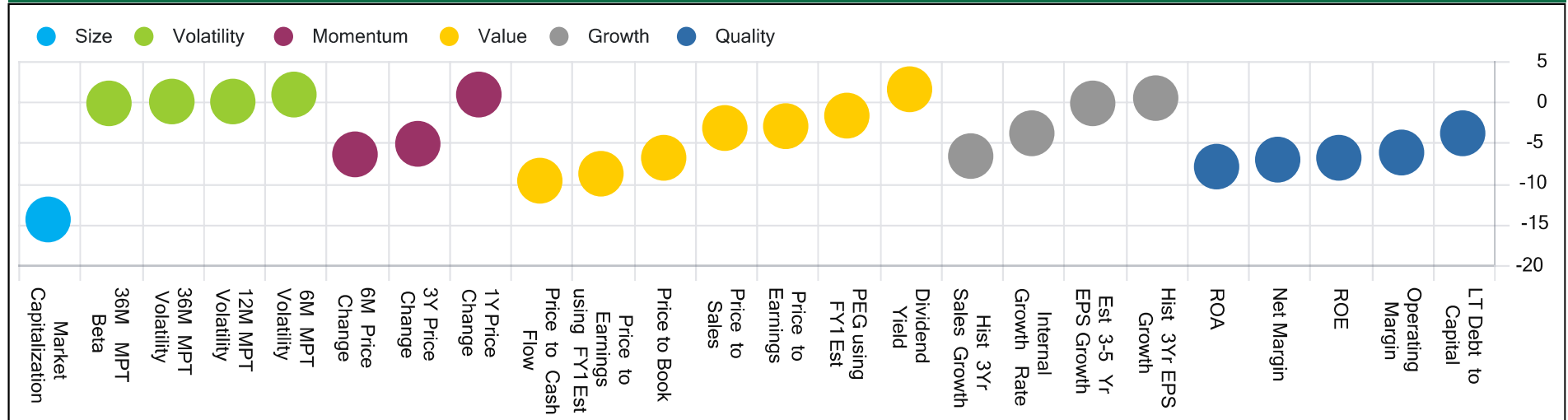
Portfolio Date 6/30/23	Weight %	Return %
Microsoft Corporation	2.0	18.4
Apple Inc.	1.4	17.8
Alphabet Inc.	1.3	15.8
Amazon.com, Inc.	1.1	26.2
Taiwan Semi Mfg. Co.	0.9	7.9
Visa Inc.	0.7	5.5
Exxon Mobil Corporation	0.7	-1.3
Adobe Incorporated	0.6	26.9
Berkshire Hathaway Inc.	0.6	10.4
Chevron Corporation	0.6	-1.7

## Top 10 Managers

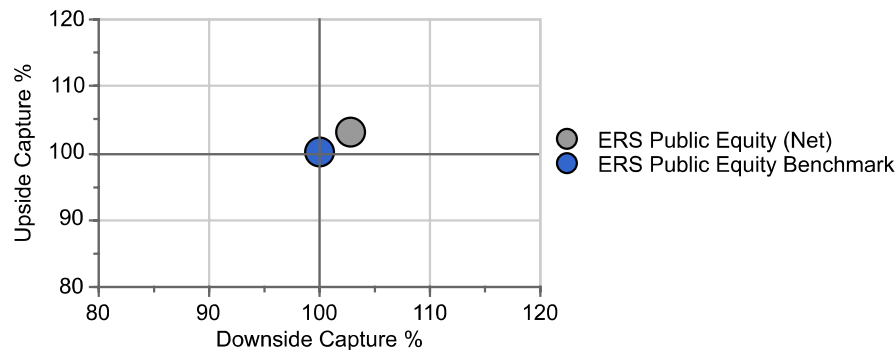
Portfolio Date 6/30/23	Weight %
Brandes Int'l Value	14.2
BlackRock Global Core	11.2
William Blair Int'l Growth	10.0
MFS Global Growth	9.2
BlackRock R1000 Value Index	8.4
NTQA S&P 500 Index Core	8.3
DFA US Small Cap Value	7.8
DFA Int'l Small Cap Value	6.8
DFA US Large Cap Value	6.2
Polen US Large Cap Growth	5.4

# Public Equity Statistics

## Characteristics Tilt vs MSCI ACWI IMI 6/30/2023



## 15 Year Upside-Downside – 7/1/2008 to 6/30/2023



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## Batting Average



## 15 Year Risk – 7/1/2008 to 6/30/2023

	Annualized Return	Standard Deviation	Sharpe Alpha	Information Ratio	Tracking Error	Beta
ERS Public Equity (Net)	7.6	17.3	0.0	0.4	0.0	1.0
ERS Public Equity Benchmark	7.4	16.6	0.0	0.4	--	1.0

## Risk – 7/1/2013 to 6/30/2023

	Annualized Return	Standard Deviation	Sharpe Alpha	Information Ratio	Tracking Error	Beta
ERS Public Equity (Net)	9.5	15.1	0.0	0.6	0.1	1.8
ERS Public Equity Benchmark	9.0	14.6	0.0	0.6	--	1.0

# Public Equity Valuation Characteristics

As of June 30, 2023

	Price/ Earnings	P/E using FY2 Est	Price/ Book	Price/ CF	Dividend Yield
ERS Public Equity	13.6	12.8	1.5	7.5	2.33
MSCI AC World IMI	17.1	15.1	2.5	9.5	2.15

Domestic Managers	Price/ Earnings	P/E using FY2 Est	Price/ Book	Price/ CF	Dividend Yield	Global & International Managers	Price/ Earnings	P/E using FY2 Est	Price/ Book	Price/ CF	Dividend Yield
BlackRock R1000 Value Index	15.8	13.9	2.2	9.6	2.36	AQR Emerging Markets Core	7.5	7.3	1.1	4.0	6.02
CastleArk Small Growth	23.8	19.6	4.2	15.7	0.33	BlackRock Global Core	17.5	15.1	2.6	10.0	2.11
DFA Large Value	12.8	11.7	1.9	7.4	2.39	Brandes Int'l Value	9.2	8.9	0.9	4.1	4.53
DFA Small Value	8.2	9.1	1.0	4.8	1.83	DFA Int'l Small Value	8.4	8.3	0.7	4.1	3.82
Earnest Mid Core	18.3	14.6	2.6	10.9	1.52	MFS Global Growth	27.7	21.6	4.8	18.3	1.05
NT S&P 500 Index	22.6	18.3	3.9	14.0	1.55	William Blair Int'l Growth	25.1	19.6	4.1	17.5	1.54
Polen Large Growth	39.4	26.4	8.3	24.7	0.35						

\*"Price/Earnings" and "P/E using FY2 Est" values exclude companies with negative earnings from calculations.

# P/E Ratio Comparisons in the U.S. Since 1980 - As of June 30, 2023

## Value vs. Growth

### Relative Price to Earnings

31-Dec-1982 to 30-Jun-2023 (Monthly)



© FactSet Research Systems

## Large vs. Small

### Relative Price to Earnings

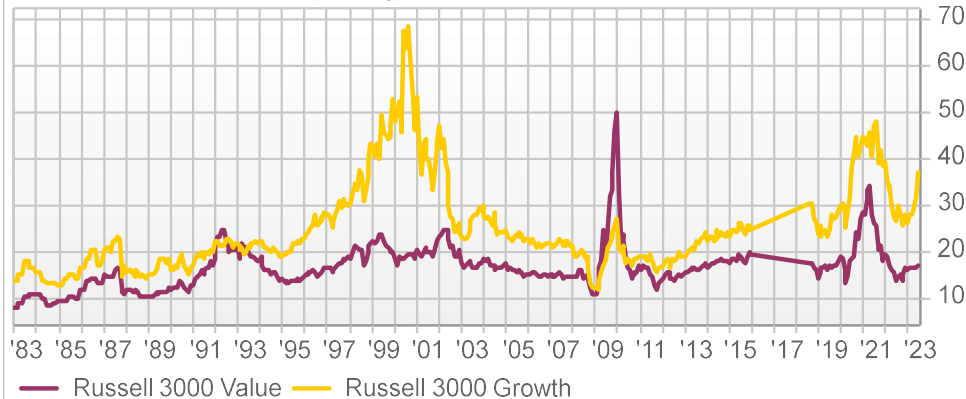
31-Dec-1982 to 30-Jun-2023 (Monthly)



© FactSet Research Systems

### Price to Earnings - Russell 3000 Value vs Russell 3000 Growth

31-Dec-1982 to 30-Jun-2023 (Monthly)



© FactSet Research Systems

### Relative Price to Earnings

31-Dec-1982 to 30-Jun-2023 (Monthly)



© FactSet Research Systems

Price to Earnings ratios for Value vs. Growth charts include companies with negative earnings in calculations.

Price to Earnings ratios for Large vs Small: Top chart includes companies with negative earnings in calculations; bottom chart excludes companies with negative earnings from calculation.

# Relative Investment Performance – Active Equity Managers

As of June 30, 2023

## Outperforming Equity Managers

	2nd Qtr	YTD	1 Year	3 Year	5 Year	7 Year	10 Year
Brandes <i>MSCI EAFE</i>	4.8% 1.8%	16.4% 4.8%	24.2% 5.4%	15.5% 6.6%	4.5% 0.1%	7.0% 0.1%	5.9% 0.5%
DFA U.S. Small Value <i>Russell 2000 Value</i>	4.4% 1.3%	5.1% 2.6%	16.1% 10.1%	25.9% 10.5%	7.4% 3.9%	10.6% 2.9%	9.5% 2.2%
Polen <i>S&amp;P 500</i>	9.7% 1.0%	25.1% 8.2%	19.1% 0.5%	5.5% 9.1%	11.7% 0.6%	14.6% 1.2%	14.9% 2.1%
AQR <i>MSCI EM</i>	1.8% 0.9%	7.8% 2.9%	2.9% 1.1%	3.9% 1.6%	1.2% 0.3%	N/A	N/A
William Blair <i>MSCI ACWI ex US</i>	3.1% 0.4%	11.9% 2.0%	15.1% 1.8%	5.4% 2.3%	5.2% 1.2%	7.8% 0.9%	6.5% 1.3%
DFA International <i>MSCI EAFE Small Cap</i>	0.9% 0.3%	7.4% 1.9%	15.3% 5.1%	12.7% 7.0%	2.2% 0.9%	6.1% 0.4%	6.1% 0.1%
ERS Public Equity <i>ERS Equity Benchmark</i>	5.0% 0.9%	12.0% 1.3%	16.7% 0.5%	13.2% 2.2%	7.9% 0.3%	10.4% 0.7%	9.5% 0.5%

Relative outperformance in blue

Relative underperformance in red

\*Returns net of fees

# Relative Investment Performance – Active Equity Managers

As of June 30, 2023

## Underperforming Equity Managers

	2nd Qtr	YTD	1 Year	3 Year	5 Year	7 Year	10 Year
CastleArk <i>Russell 2000 Growth</i>	5.2% 1.9%	10.4% 3.2%	15.9% 2.6%	10.3% 4.2%	7.1% 2.9%	11.6% 2.3%	N/A
Earnest <i>Russell MidCap</i>	4.0% 0.8%	8.7% 0.3%	10.2% 4.7%	13.8% 1.3%	11.0% 2.5%	13.3% 3.1%	12.6% 2.3%
DFA U.S. Large Value <i>Russell 1000 Value</i>	3.4% 0.7%	4.5% 0.6%	12.9% 1.3%	16.3% 2.0%	6.9% 1.2%	N/A	N/A
BlackRock Global Alpha Tilts <i>MSCI ACWI</i>	6.0% 0.1%	14.0% 0.0%	17.5% 1.0%	11.5% 0.6%	8.0% 0.1%	10.6% 0.6%	N/A
MFS <i>MSCI ACWI</i>	6.1% 0.1%	15.0% 1.1%	17.3% 0.8%	11.8% 0.8%	11.4% 3.3%	13.1% 3.2%	11.7% 2.9%
ERS Public Equity <i>ERS Equity Benchmark</i>	5.0% 0.9%	12.0% 1.3%	16.7% 0.5%	13.2% 2.2%	7.9% 0.3%	10.4% 0.7%	9.5% 0.5%

Relative outperformance in blue

Relative underperformance in red

\*Returns net of fees



# Relative Investment Performance – Passive Equity Managers & Other

## As of June 30, 2023

### Passive Equity Managers

	2nd Qtr	YTD	1 Year	3 Year	5 Year	7 Year	10 Year
Northern Trust S&P 500 Index <i>S&amp;P 500</i>	8.7% 0.0%	16.9% 0.0%	19.6% 0.0%	14.6% 0.0%	12.3% 0.0%	13.4% 0.0%	12.9% 0.0%
BlackRock Russell 1000 Value Index <i>Russell 1000 Value</i>	4.1% 0.0%	5.1% 0.0%	11.6% 0.0%	14.3% 0.0%	8.2% 0.1%	N/A	N/A

### Real Assets Manager

	2nd Qtr	YTD	1 Year	3 Year	5 Year	7 Year	10 Year
Principal Diversified Real Assets <i>Blended Benchmark</i>	-0.8% 0.4%	0.5% 0.6%	-0.7% 0.2%	8.8% 0.9%	4.0% 0.4%	4.6% 0.4%	N/A

Relative outperformance in blue

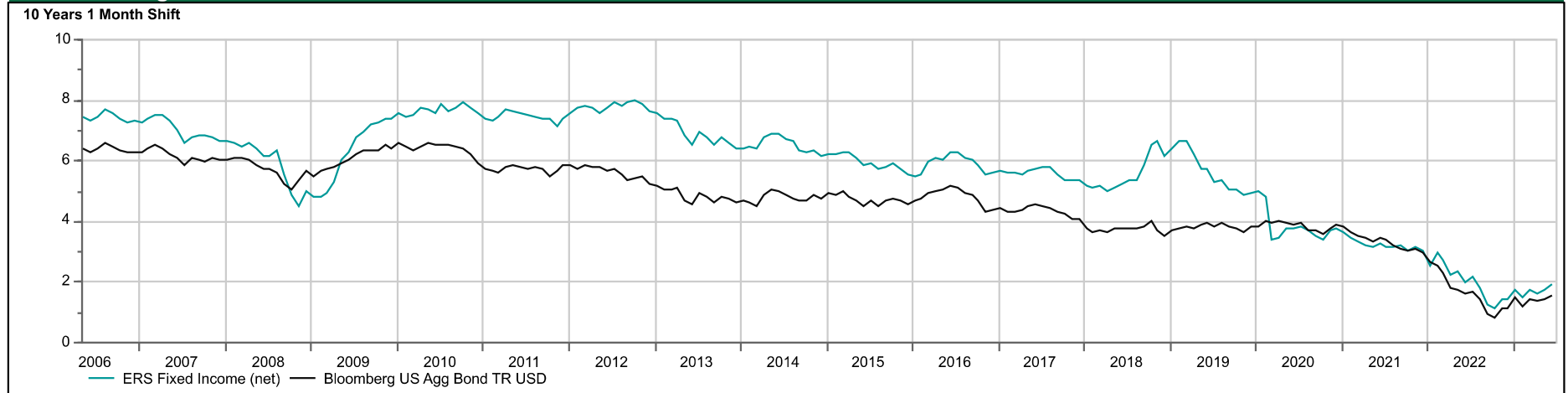
Relative underperformance in red

\*Returns net of fees

# Fixed Income

# Fixed Income Performance

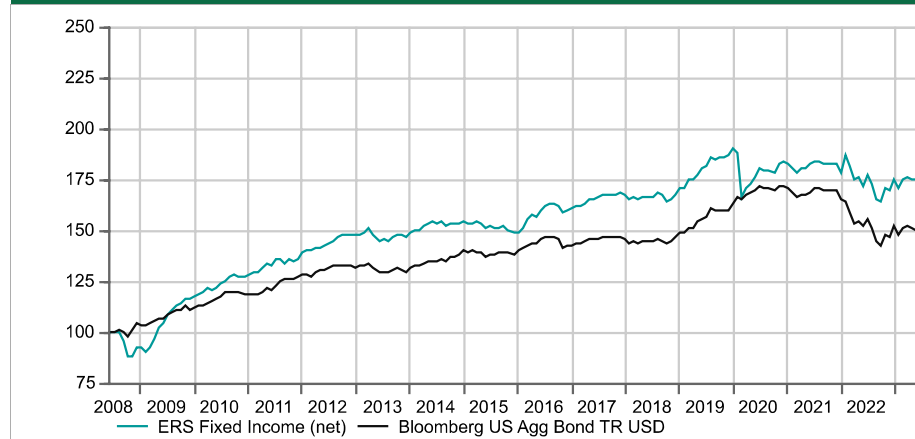
## 10 Year Rolling Returns – 6/1/1996 to 6/30/2023



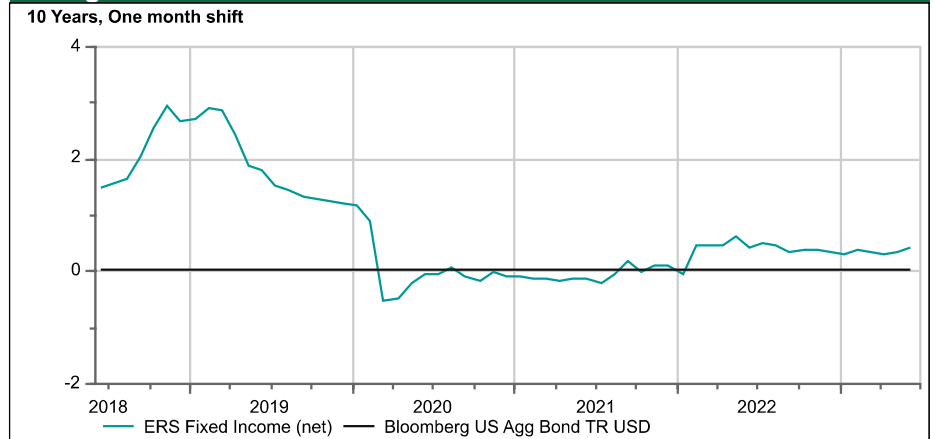
## Trailing Returns

	Annualized Return							
	QTR	YTD	1 Year	3 Year	5 Year	7 Year	10 Year	15 Year
Total Fixed Income (Gross)	-0.6	3.0	1.5	-0.1	1.1	1.4	2.0	3.9
Total Fixed Income (Net)	-0.7	2.9	1.4	-0.2	1.0	1.2	1.9	3.8
Bloomberg US Aggregate	-0.8	2.1	-0.9	-4.0	0.8	0.4	1.5	2.7

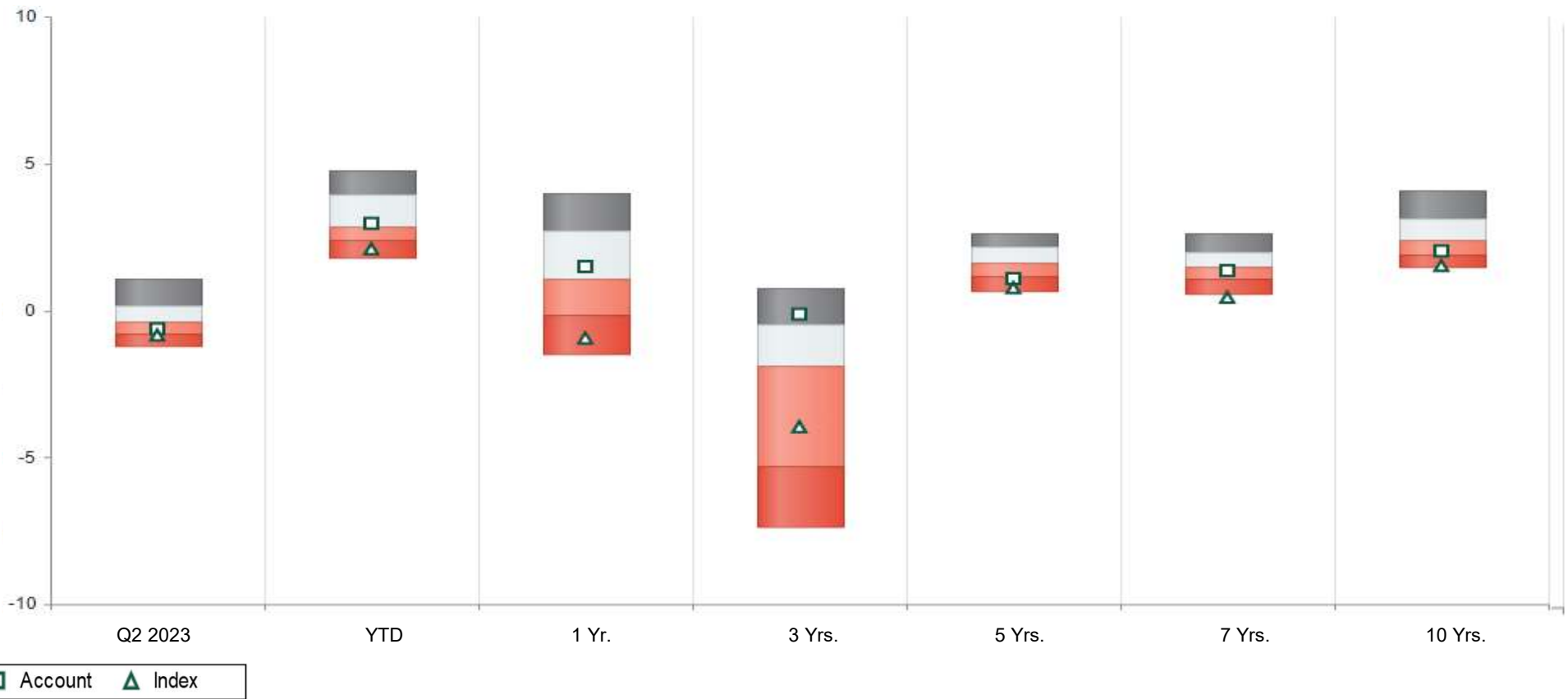
## Investment Growth –7/1/2008 to 6/30/2023



## Rolling Excess Return –7/1/2008 to 6/30/2023



# Fixed Income vs Universe



	Q2 2023	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.
Account Return	-0.6	3.0	1.5	-0.1	1.1	1.4	2.0
Percentile Rank	66	49	42	20	83	58	69
Index Return	-0.8	2.1	-0.9	-4.0	0.8	0.4	1.5
Percentile Rank	79	86	86	71	90	93	89
1st Quartile	0.2	4.0	2.7	-0.5	2.2	2.0	3.1
Median	-0.4	2.9	1.1	-1.9	1.6	1.5	2.4
3rd Quartile	-0.8	2.4	-0.1	-5.3	1.2	1.0	1.9
Observations	94	94	92	94	94	93	90

# Relative Investment Performance – Fixed Income Managers

## As of June 30, 2023

	2nd Qtr	YTD	1 Year	3 Year	5 Year	7 Year	10 Year
Reams	-0.6%	3.3%	1.9%	-2.3%	3.3%	2.4%	2.8%
<i>Bloomberg U.S. Agg.</i>	0.2%	1.3%	2.9%	1.7%	2.5%	1.9%	1.3%
Loomis Sayles	-0.3%	3.0%	2.9%	0.0%	2.2%	3.2%	3.3%
<i>Bloomberg U.S. Agg.</i>	0.6%	0.9%	3.8%	3.9%	1.4%	2.7%	1.8%
BlackRock Index	-1.3%	1.8%	-2.0%	N/A	N/A	N/A	N/A
<i>Bloomberg U.S. Government</i>	0.0%	0.2%	0.1%				
ERS Fixed Income	-0.7%	2.9%	1.4%	-0.2%	1.0%	1.2%	1.9%
<i>Bloomberg U.S. Agg.</i>	0.2%	0.8%	2.3%	3.7%	0.2%	0.8%	0.4%

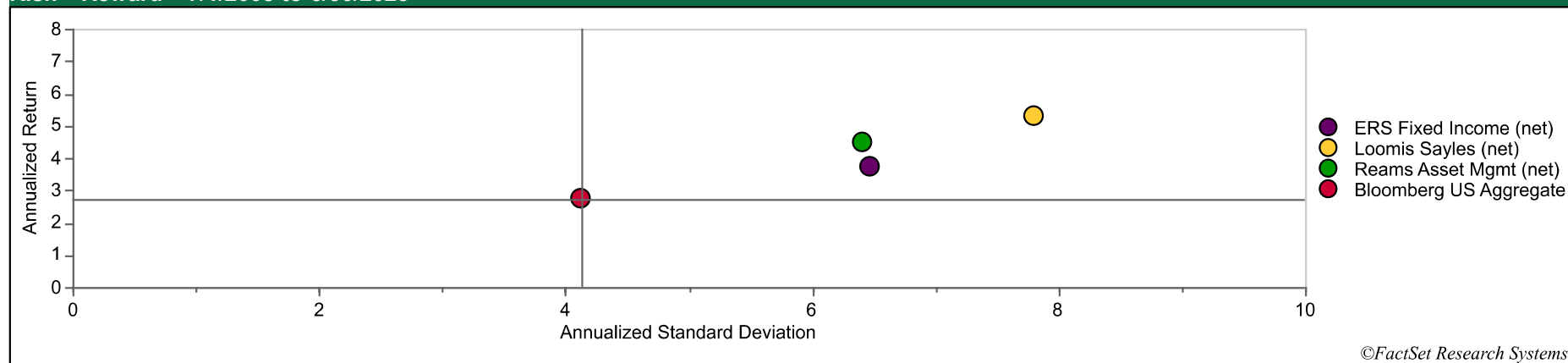
Relative outperformance in blue

Relative underperformance in red

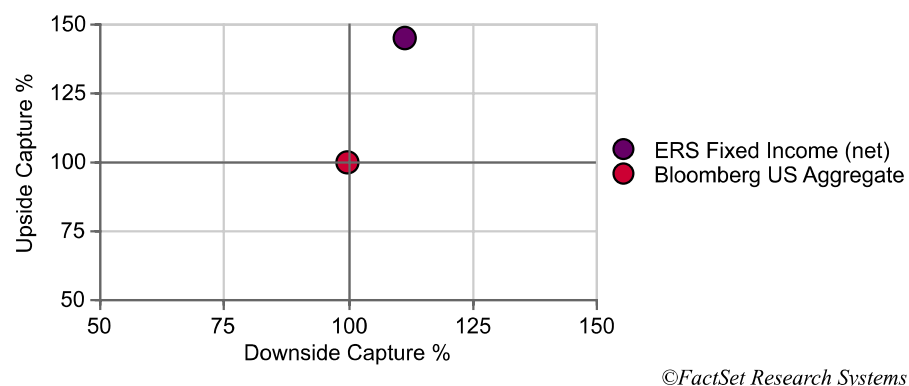
\*Returns net of fees

# Fixed Income Statistics

## Risk – Reward – 7/1/2008 to 6/30/2023



## 15 Year Upside-Downside – 7/1/2008 to 6/30/2023



## Batting Average



## 15 Year Risk – 7/1/2008 to 6/30/2023

	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Total Fixed Income (Net)	3.8	6.5	0.1	0.5	0.1	4.8
Bloomberg US Aggregate	2.7	4.1	0.0	0.5	--	--

## Risk – 7/1/2013 to 6/30/2023

	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Total Fixed Income (Net)	1.9	6.1	0.0	0.1	0.0	4.5
Bloomberg US Aggregate	1.5	4.3	0.0	0.1	--	--

# Absolute Return

# Relative Investment Performance – Absolute Return Managers

As of June 30, 2023

	2nd Qtr	YTD	1 Year	3 Year	5 Year	7 Year
UBS A&Q <i>1 Year Libor / SOFR + 4%</i>	1.0% 1.2%	1.9% 2.4%	6.1% 1.6%	9.1% 3.8%	7.9% 1.7%	7.2% 1.1%
Aptitude <i>SOFR + 4%</i>	1.1% 1.0%	1.3% 3.0%	N/A	N/A	N/A	N/A
ERS Absolute Return <i>3 Month T-Bill + 3%</i>	1.0% 1.0%	1.8% 2.3%	5.9% 1.4%	14.4% 9.8%	5.5% 0.9%	5.4% 0.9%

Relative outperformance in blue

Relative underperformance in red

## Risk Adjusted Returns (6/30/14 - 6/30/23)

	Return	Std Dev	Sharpe Ratio	Max Drawdown
ERS Public Equity (net)	7.9%	15.6%	0.4	-25.3%
ERS Fixed Income (net)	1.4%	6.4%	0.0	-13.6%
ERS Absolute Return (net)	5.5%	9.8%	0.5	-27.1%

\*Returns net of fees



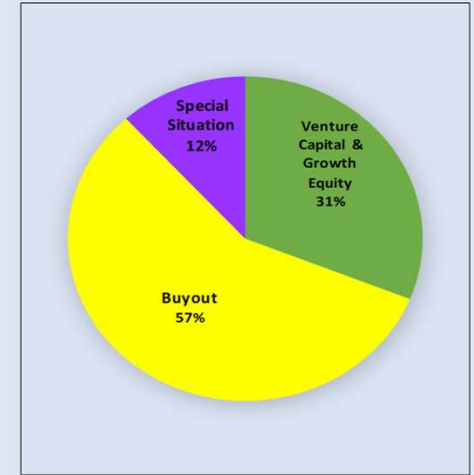
# Private Equity

# Milwaukee ERS Private Equity Portfolio as of March 31, 2023

## PE Summary - Portfolio Capital Calls, Distributions & NAV

Partnership	Vintage Year	Committed	Invested Capital*	Uncalled Commitments*	Distributions*	NAV	TVPI*
Abbott 2010	2010	35,000,000	34,650,405	349,595	51,497,942	20,742,203	2.08
Abbott 2011	2011	55,000,000	54,730,191	269,809	79,029,752	42,440,031	2.22
Abbott 2012	2012	40,000,000	39,600,000	400,000	50,709,417	38,672,199	2.26
Abbott 2013	2013	35,000,000	34,650,000	350,000	42,729,311	37,817,857	2.32
Abbott 2014	2014	35,000,000	34,300,000	700,000	40,095,486	41,136,281	2.37
Abbott 2015	2015	25,000,000	25,050,000	-	18,493,750	33,733,767	2.08
Abbott 2016	2016	20,000,000	19,717,500	282,500	9,295,000	28,617,956	1.92
Abbott 2018	2018	20,000,000	17,480,000	2,520,000	4,325,000	21,694,496	1.49
Abbott 2019	2019	20,000,000	15,120,000	4,880,000	3,140,000	17,914,734	1.39
Abbott 2020	2020	40,000,000	19,890,000	20,110,000	2,360,000	20,364,567	1.14
Abbott 2021	2021	20,000,000	6,339,749	13,660,251	-	6,699,998	1.06
Abbott 2022	2022	35,000,000	8,118,483	26,881,517	-	8,181,565	1.01
Mesirow V	2008	75,000,000	71,096,194	3,903,806	128,398,045	42,270,043	2.40
Mesirow VI	2013	60,000,000	53,400,000	6,600,000	68,916,748	69,973,816	2.60
Mesirow VII	2017	100,000,000	78,014,499	21,985,501	6,998,942	124,188,523	1.68
Mesirow VIII	2020	120,000,000	41,400,000	78,600,000	-	43,293,536	1.05
Neuberger Berman III	2013	30,000,000	31,753,099	-	39,871,974	8,007,552	1.51
Neuberger Berman IV	2017	25,000,000	23,998,659	1,001,341	18,270,282	18,114,066	1.52
Neuberger Berman V	2021	100,000,000	19,475,000	80,525,000	3,405,413	23,096,115	1.36
Private Advisors VI	2014	30,000,000	33,270,978	-	39,182,601	21,557,747	1.83
Private Advisors VII	2016	15,000,000	17,976,022	-	14,766,141	15,251,517	1.67
Private Advisors VIII	2018	15,000,000	15,537,292	-	6,817,225	18,435,661	1.63
Private Advisors IX	2019	35,000,000	29,504,555	5,495,445	12,181,395	30,224,676	1.44
Private Advisors X	2022	30,000,000	-	30,000,000	-	991,622	N/A
Total ERS		1,015,000,000	725,072,626	298,514,765	640,484,424	733,420,528	1.89
% of ERS Fund				5.3%		12.9%	

## Sub-Asset Class Breakdown



## NAV by Vintage Year



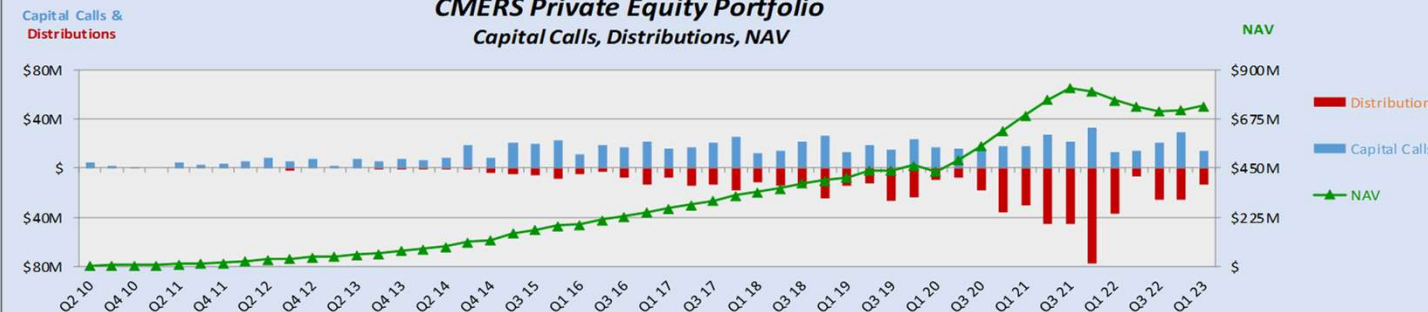
## Vintage Year\*\*



## Age of Investment\*\*\*



## CMERS Private Equity Portfolio Capital Calls, Distributions, NAV



\* Invested capital, uncalled commitments, and distributions will not necessarily match partnership statement. Estimates reflect best efforts to incorporate actual ERS experience. TVPI stands for "Total Value to Paid in Capital."

\*\* Vintage Year Investments Prior to 2005 are deemed to not be material figures and are not illustrated in above graph. Excludes Neuberger Berman.

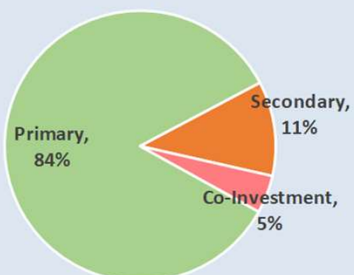
\*\*\* Portfolio Companies by Age of Investment figures have not been fully adjusted for overlapping investments. Excludes Neuberger Berman.

# Private Equity Continued

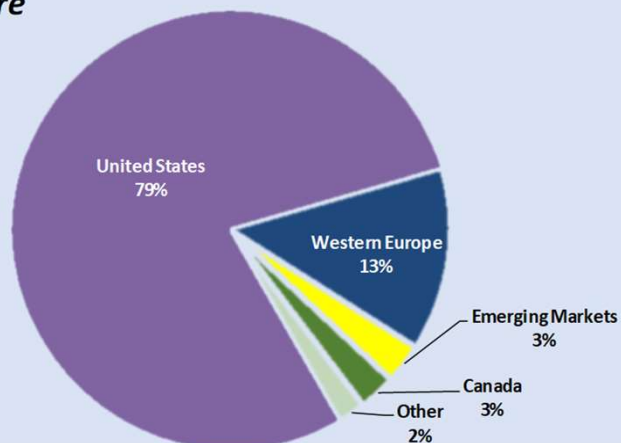
Total Managers	208*
Number of Partnerships	599*
Number of Portfolio Companies	6,015*

\*Data in the above table is estimated. Actual data may be slightly different.

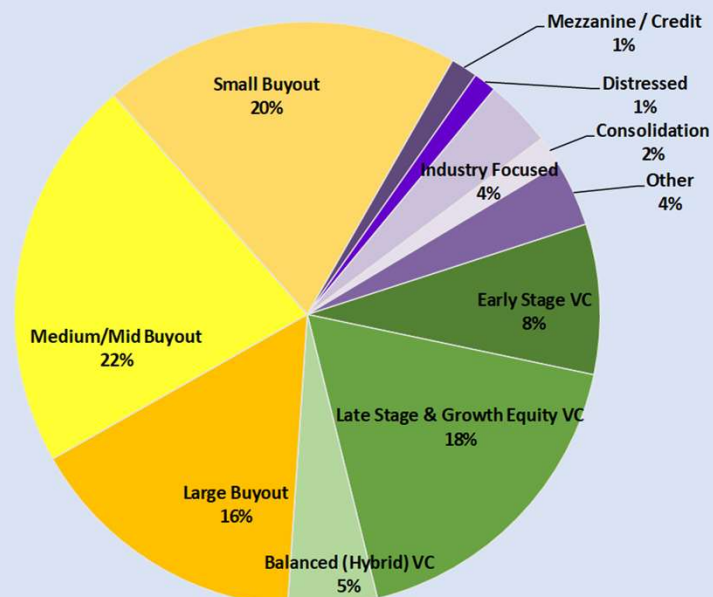
## Transaction Type



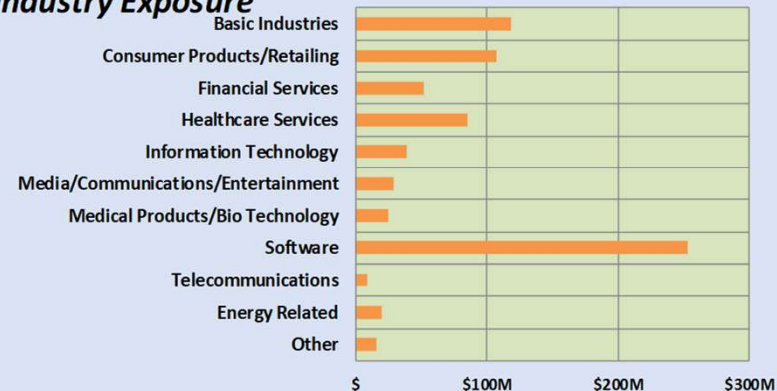
## Geographic Exposure



## Strategy Exposure



## Industry Exposure



# Performance Update

# Performance Update

Estimated ERS Total Fund Market Value is \$5.58 billion as of September 6, 2023

Period	ERS Fund*	Benchmark
2 <sup>nd</sup> Quarter YTD	5.6%	7.4%
July	1.6%	1.6%
August (Estimate)	-1.3%	-1.3%
September MTD (Estimate)	-0.8%	0.0%
YTD Through September 6, 2023 (Estimate)	5.1%	7.7%

\*Returns Net of Fees

# Appendix

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# BlackRock Russell 1000 Value Portfolio Snapshot – June 30, 2023

## Rolling Returns Since Inception 4/1/2017 (One Year, One Month Shift)



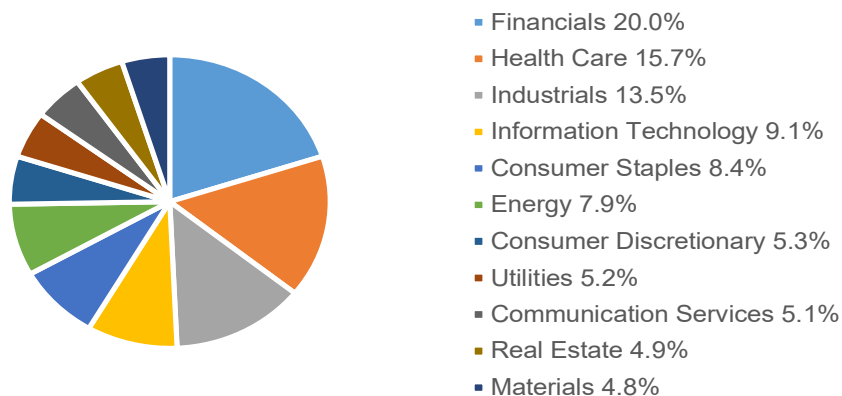
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Berkshire Hathaway Inc.	3.21	10.44
Exxon Mobil Corporation	2.24	-1.33
Johnson & Johnson	2.21	7.61
JPMorgan Chase & Co.	2.19	12.42
Procter & Gamble Company	1.49	2.67
Chevron Corporation	1.40	-2.59
Merck & Co., Inc.	1.23	9.15
Walmart Inc.	1.15	7.01
Cisco Systems, Inc.	1.09	-0.21
Pfizer Inc.	1.07	-9.13

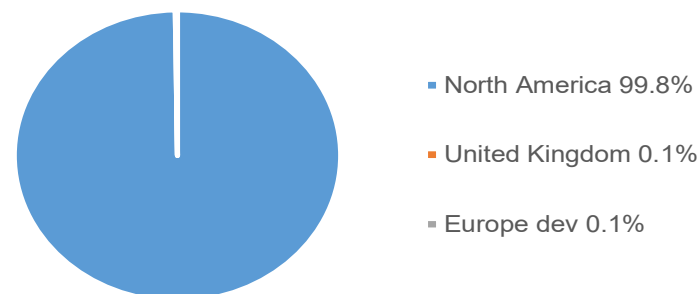
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	Inception 4/1/2017
BlackRock R1000 Value (Net)	4.1	5.1	11.6	14.3	8.2	7.9
Russell 1000 Value	4.1	5.1	11.5	14.3	8.1	7.8

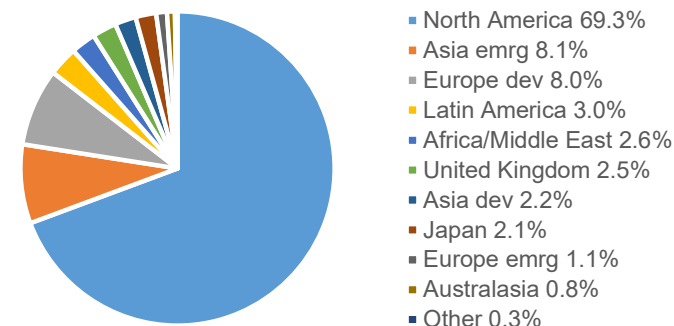
## Equity Sector Exposure (GICS)



## Regional Exposure by Domicile



## Regional Exposure by Source of Revenue

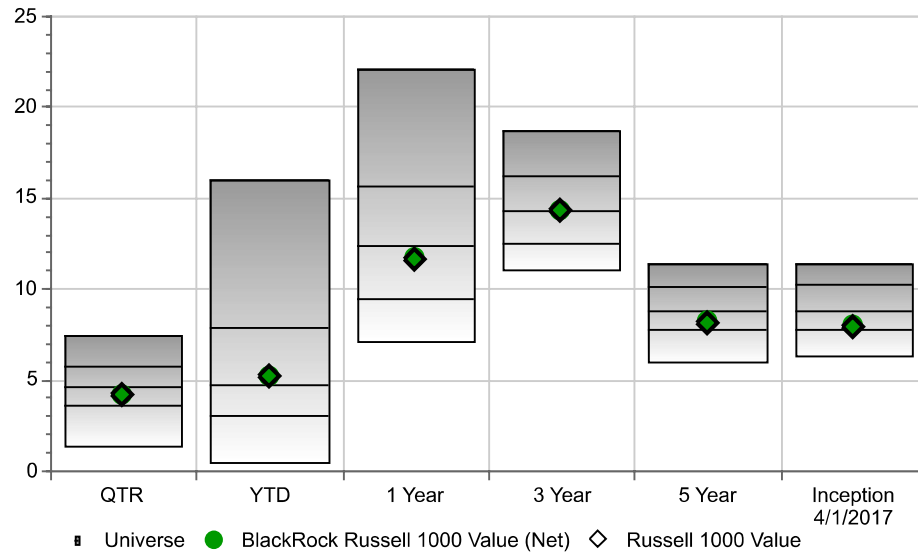




# BlackRock Russell 1000 Value vs Universe & Benchmark

## Performance Relative to Peer Group as of 6/30/2023

Universe: Lipper US:Large-Cap Value



©FactSet Research Systems

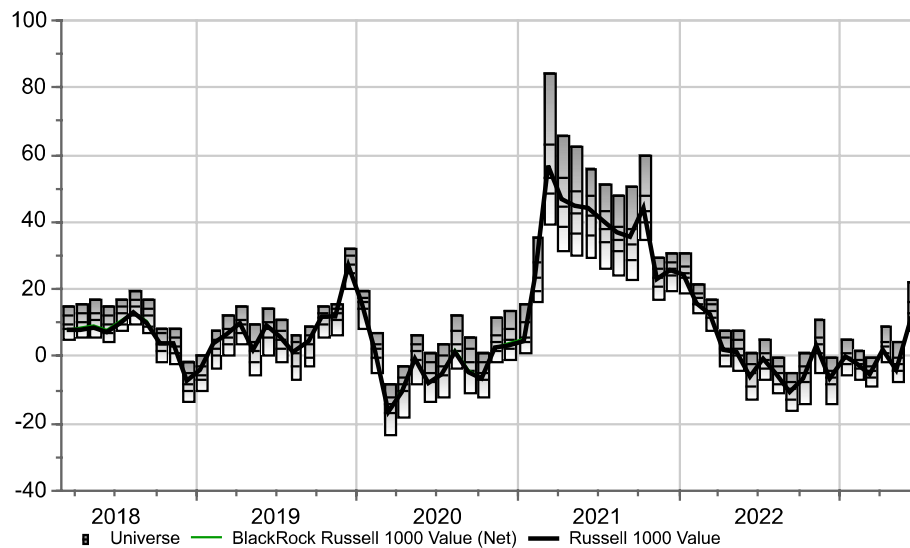
## Investment Growth Since Inception 4/1/2017



©FactSet Research Systems

## Rolling Returns 4/1/2017 –6/30/2023 (1 Year, 1 Month Shift)

Universe: Lipper US:Large-Cap Value



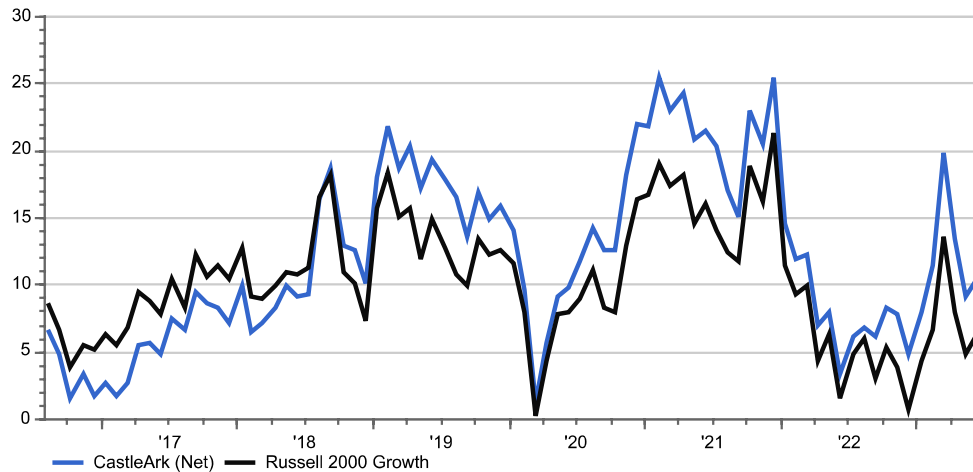
©FactSet Research Systems

## Risk Since Inception 4/1/2017

	Return	Std Dev	Sharpe Ratio	Tracking Error
BlackRock R1000 Value (Net)	7.9	17.2	0.4	0.1
Russell 1000 Value	7.8	17.3	0.4	--

# CastleArk Portfolio Snapshot – June 30, 2023

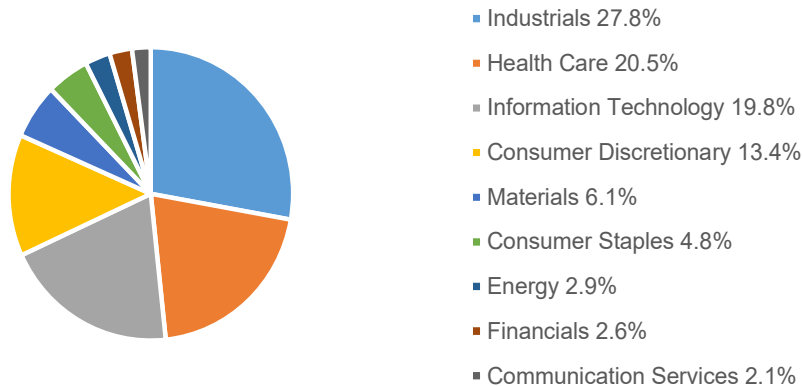
## Rolling Returns Since Inception 9/1/2013 (Three Year, One Month Shift)



## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	Inception 9/1/2013
CastleArk (Net)	5.2	10.4	15.9	10.3	7.1	9.6
Russell 2000 Growth	7.1	13.6	18.5	6.1	4.2	8.4

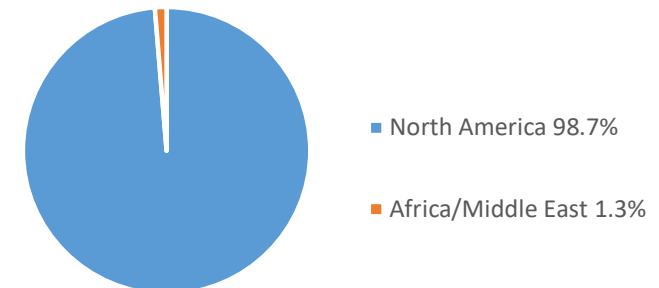
## Equity Sector Exposure (GICS)



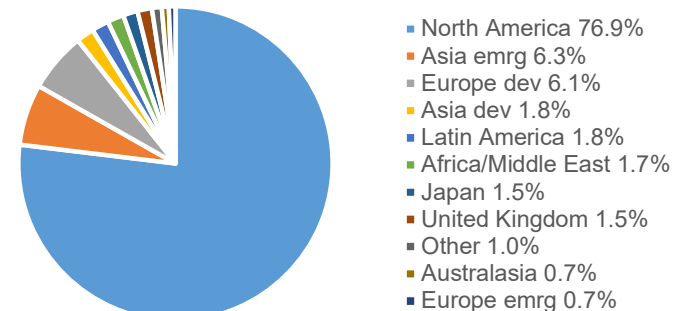
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Celsius Holdings, Inc.	2.08	60.52
API Group Corporation	1.87	21.26
TransMedics Group, Inc.	1.86	10.89
ATI, Inc.	1.81	12.09
Inspire Medical Systems, Inc.	1.73	38.69
Wingstop, Inc.	1.63	9.14
Rambus Inc.	1.59	25.19
Manhattan Associates, Inc.	1.56	29.08
PulteGroup, Inc.	1.51	33.56
Super Micro Computer, Inc.	1.48	11.30

## Regional Exposure by Domicile



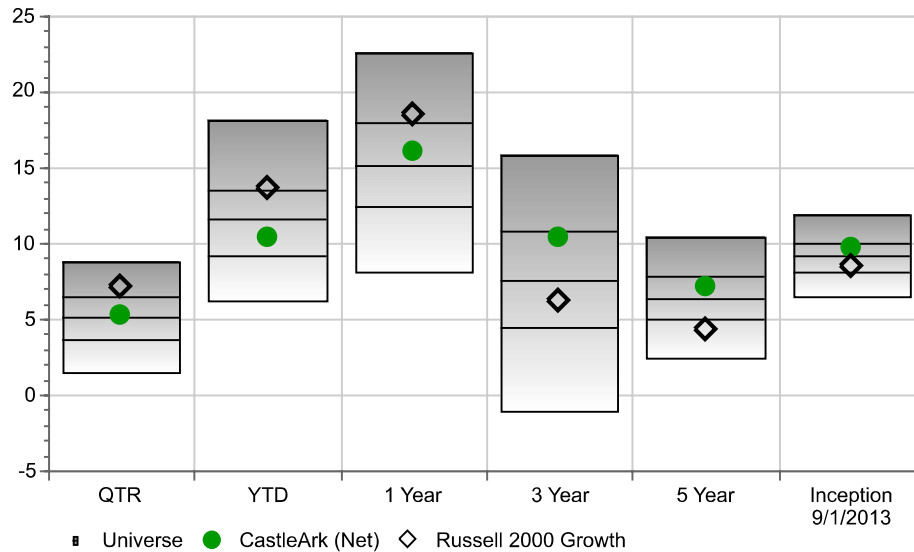
## Regional Exposure by Source of Revenue



# CastleArk vs Universe & Benchmark

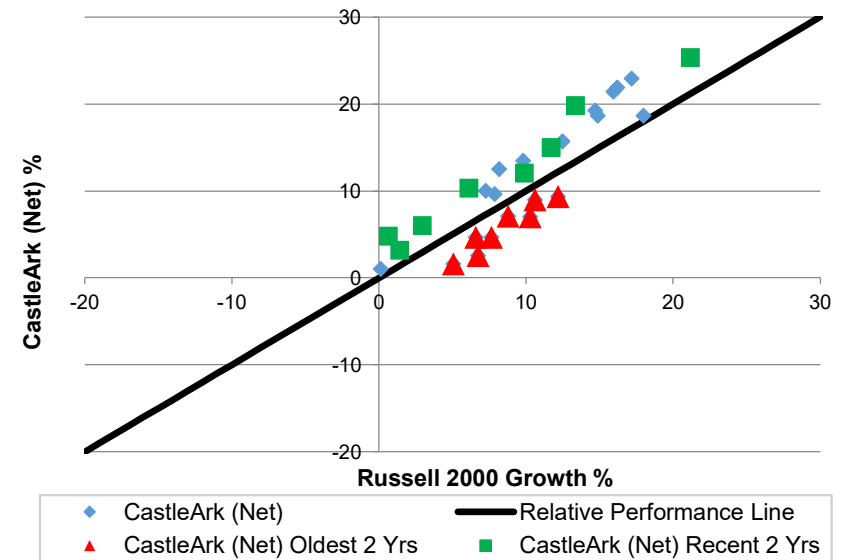
## Performance Relative to Peer Group as of 6/30/2023

Universe: Lipper US Small-Cap Growth



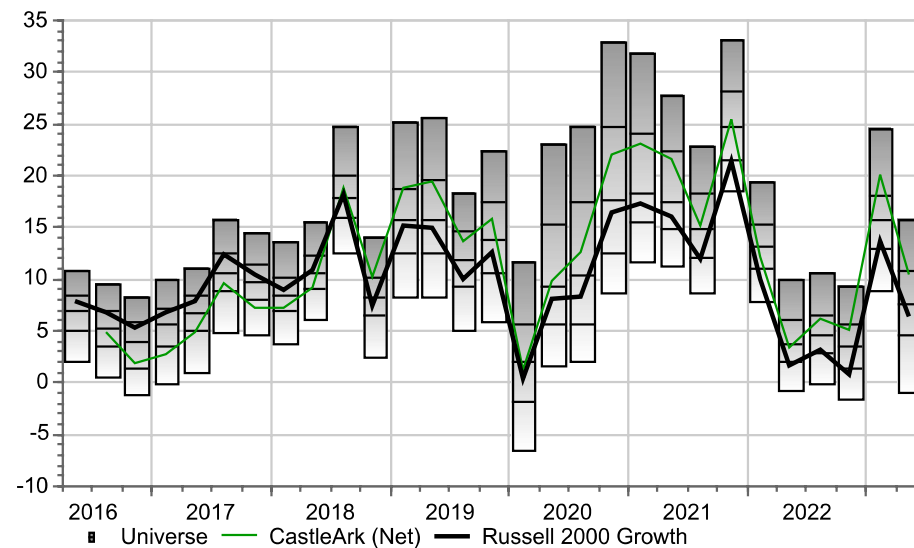
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 9/1/2013 –6/30/2023 (3 Year, 3 Month Shift)

Universe: Lipper US:Small-Cap Growth



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## Over/Under Benchmark Analysis

20	Outperform
8	Underperform
28	# Observations
71%	% Outperform

# CastleArk Attribution Analysis – June 30, 2023

## Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Celsius Holdings, Inc.	1.55	1.06	0.60
PulteGroup, Inc.	1.45	1.45	0.45
Inspire Medical Systems, Inc.	1.83	1.19	0.42
Manhattan Associates, Inc.	1.45	1.45	0.40
Sterling Infrastructure, Inc.	0.92	0.84	0.39
DoubleVerify Holdings, Inc.	1.23	1.23	0.36
APi Group Corporation	1.66	1.66	0.36
SUMMIT MATERIALS, INC.	0.82	0.82	0.29
Penumbra, Inc.	1.24	1.24	0.29
KB Home	1.01	0.96	0.27

## Top 10 Leading Detractors

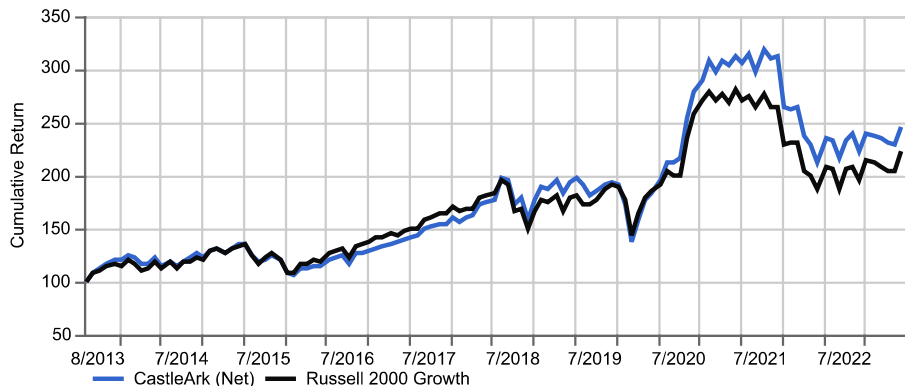
	Avg. Weights	Relative Weights	Active Return
Super Micro Computer, Inc.	0.48	-0.09	-0.44
Xponential Fitness, Inc.	1.05	1.03	-0.38
Alteryx, Inc.	0.33	0.33	-0.31
Prometheus Bioscience, Inc.	0.00	-0.49	-0.29
Wix.Com LTD.	1.09	1.09	-0.28
Impinj, Inc.	0.39	0.22	-0.26
Certara, Inc.	0.91	0.91	-0.25
PagerDuty, Inc.	0.84	0.62	-0.24
Fox Factory Holding Corp.	0.66	0.28	-0.24
Planet Fitness, Inc.	1.01	1.01	-0.22

## Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	-0.3	0.1	-0.4	0.0	0.0	0.0
Consumer Discretionary	7.4	0.2	1.4	-0.6	-0.2	-0.7
Consumer Staples	-0.7	23.4	7.2	0.0	0.6	0.6
Energy	-3.5	15.0	5.0	0.1	0.3	0.3
Financials	-3.0	1.4	2.7	0.1	0.0	0.1
Health Care	-1.8	6.7	13.7	-0.5	-1.4	-1.8
Industrials	3.7	9.3	9.5	0.2	-0.1	0.1
Information Technology	-0.5	0.0	7.8	-0.5	-1.4	-1.8
Materials	0.9	8.4	-0.7	-0.1	0.5	0.5
Real Estate	-2.1	0.0	6.1	0.0	0.0	0.0
Utilities	-1.7	0.0	-2.6	0.2	0.0	0.2
Cash	1.6	1.3	0.0	0.0	0.0	0.0
Total	0.0	4.6	7.3	-1.0	-1.6	-2.6

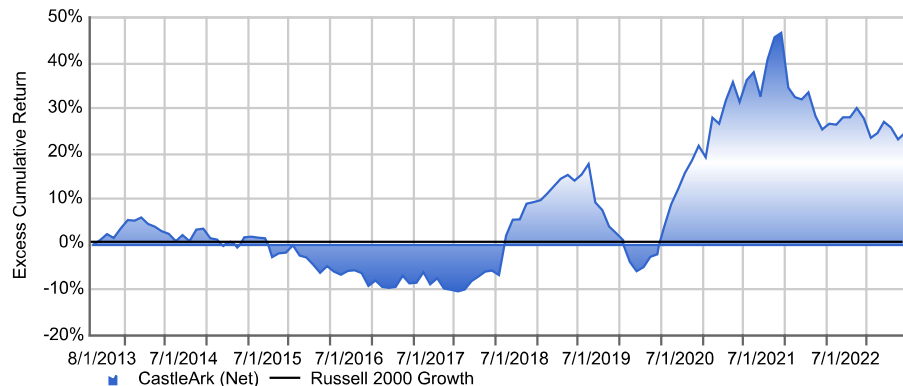
# CastleArk Inception Performance & Statistics

## Investment Growth Since Inception 9/1/2013



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## Relative Cumulative Performance Since Inception 9/1/2013

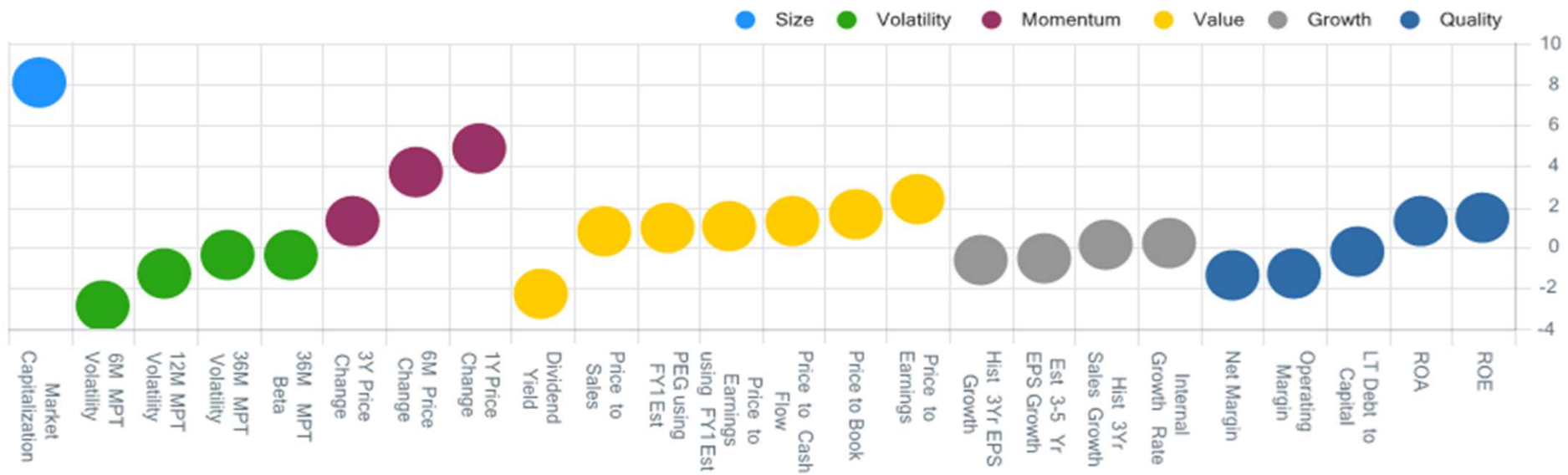


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## Risk Since Inception 9/1/2013

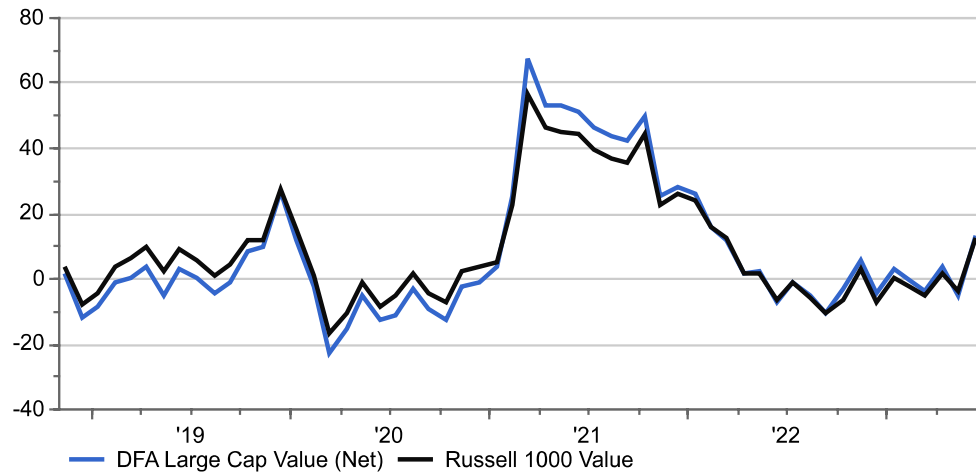
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
CastleArk (Net)	9.6	20.3	1.3	0.4	0.2	5.0	1.0
Russell 2000 Growth	8.4	20.0	--	0.4	--	--	1.0

## Characteristics Tilt vs Benchmark 6/30/2023



# DFA LCV Portfolio Snapshot – June 30, 2023

## Rolling Returns Since Inception 12/1/2017 (One Year, One Month Shift)



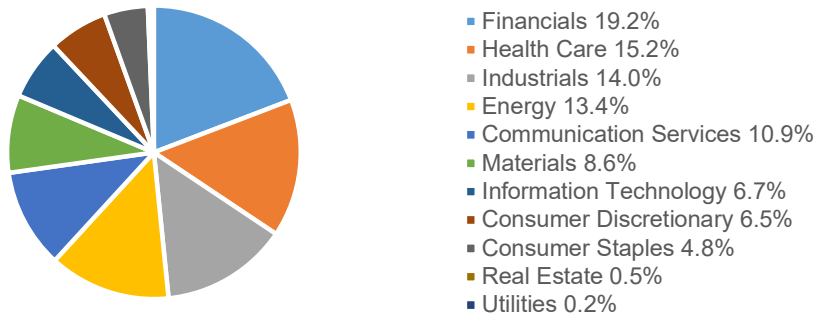
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Exxon Mobil Corporation	4.52	-1.33
JPMorgan Chase & Co.	3.47	12.42
Meta Platforms, Inc.	3.14	35.41
Chevron Corporation	2.99	-2.59
Pfizer Inc.	2.15	-9.13
Berkshire Hathaway Inc.	2.11	10.44
Comcast Corporation	1.75	10.37
Verizon Communications Inc.	1.72	-2.76
Bank of America Corporation	1.36	1.08
Linde Plc	1.18	7.57

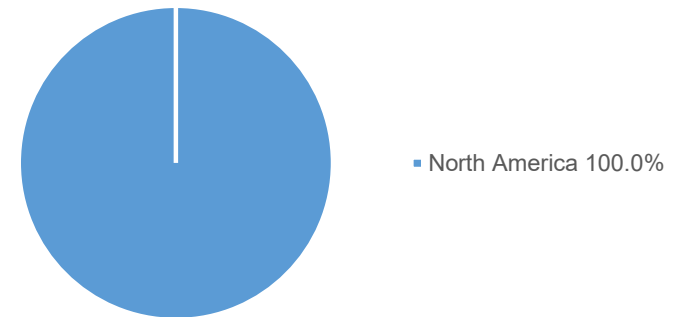
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	Inception 12/1/2017
DFA US Large Value	3.4	4.5	12.9	16.3	6.9	6.3
Russell 1000 Value	4.1	5.1	11.5	14.3	8.1	7.2

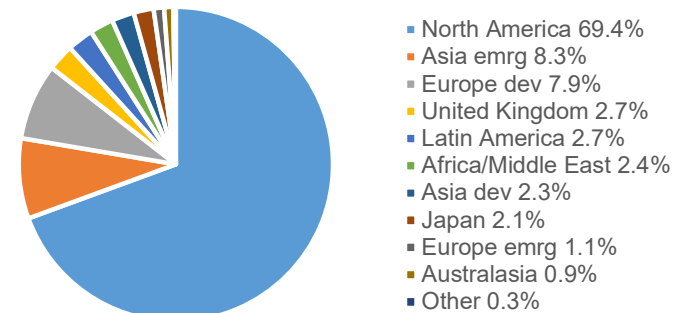
## Equity Sector Exposure (GICS)



## Regional Exposure by Domicile



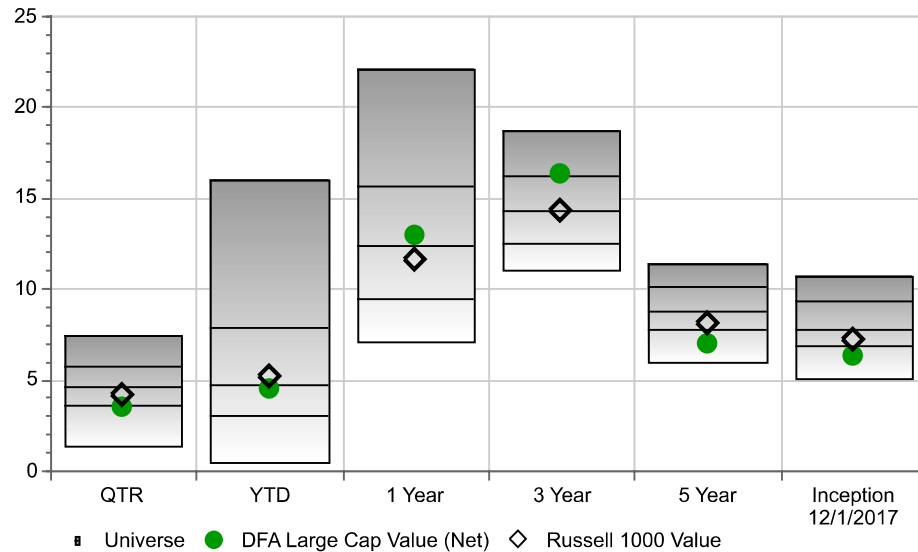
## Regional Exposure by Source of Revenue



# DFA LCV vs Universe & Benchmark

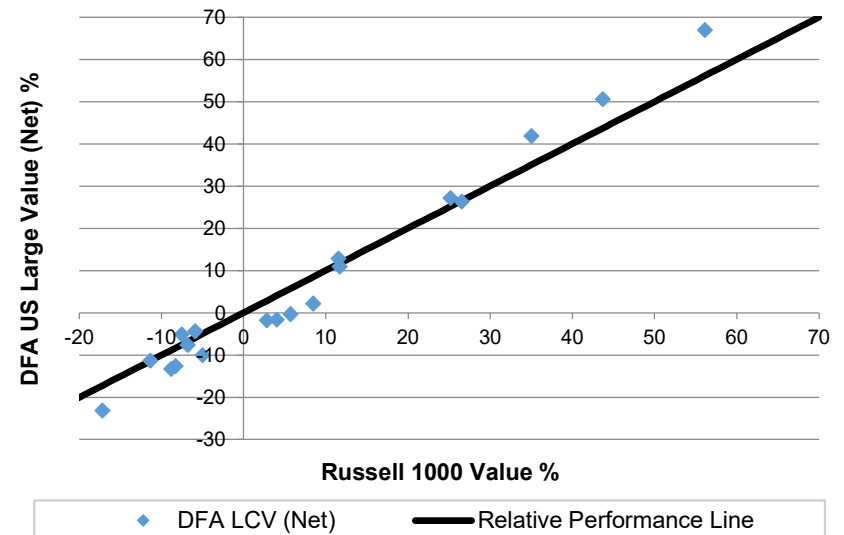
## Performance Relative to Peer Group as of 6/30/2023

Universe: Lipper US Large Cap Value



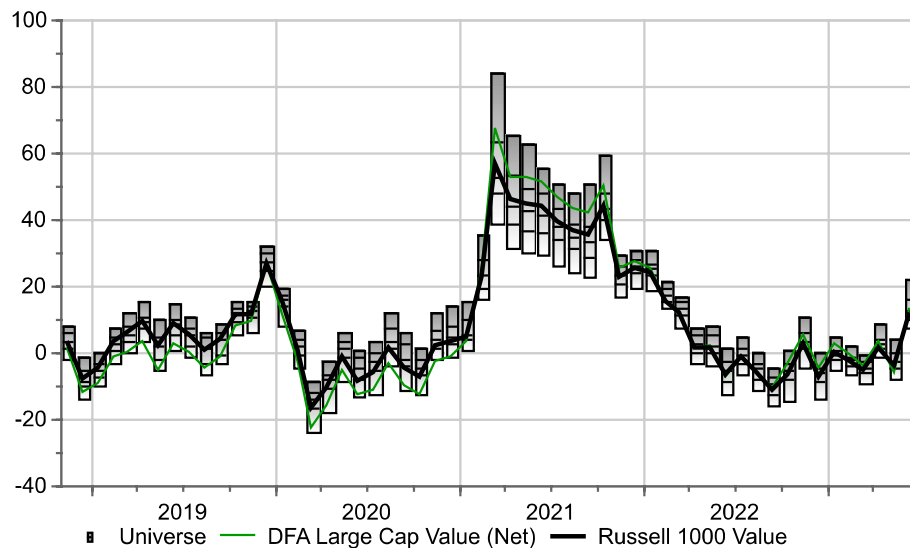
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## One-Year Rolling Return Versus Benchmark



## Rolling Returns 12/1/2017 –6/30/2023 (1 Year, 1 Month Shift)

Universe: Lipper US Large Cap Value



©FactSet Research Systems

## Over/Under Benchmark Analysis

8	Outperform
11	Underperform
19	# Observations
42%	% Outperform

## DFA LCV Attribution Analysis – June 30, 2023

### Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
D.R. Horton, Inc.	0.94	0.86	0.20
JPMorgan Chase & Co.	3.43	1.28	0.13
PulteGroup, Inc.	0.47	0.43	0.13
Republic Services, Inc.	0.89	0.74	0.10
Comcast Corporation	1.87	0.97	0.09
Delta Air Lines, Inc.	0.15	0.15	0.08
Quanta Services, Inc.	0.48	0.42	0.08
Meta Platforms, Inc.	2.52	0.23	0.07
Lennar Corporation	0.51	0.36	0.07
PACCAR Inc	0.64	0.44	0.07

### Top 10 Leading Detractors

	Avg. Weights	Relative Weights	Active Return
Johnson & Johnson	0.00	-2.27	-0.17
Alphabet Inc.	0.00	-0.89	-0.14
Pfizer Inc.	2.53	1.31	-0.14
Netflix, Inc.	0.00	-0.47	-0.13
Eli Lilly and Company	0.00	-0.33	-0.11
AT&T Inc.	1.25	0.57	-0.11
Berkshire Hathaway Inc.	2.14	-1.01	-0.10
S&P Global, Inc.	0.07	-0.56	-0.09
Walmart Inc.	0.30	-0.86	-0.08
Oracle Corporation	0.00	-0.26	-0.07

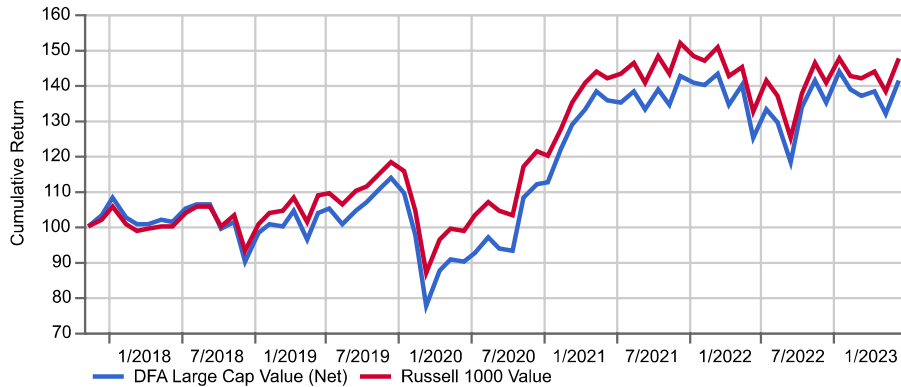
### Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	1.6	4.3	9.1	0.1	-0.5	-0.4
Consumer Discretionary	-0.2	13.5	7.0	0.0	0.4	0.4
Consumer Staples	-2.2	-2.8	0.7	0.1	-0.2	-0.1
Energy	7.0	-0.9	-1.2	-0.3	0.0	-0.3
Financials	-0.8	5.0	5.1	0.0	0.0	0.0
Health Care	-1.5	-2.0	1.3	0.0	-0.5	-0.5
Industrials	1.6	10.5	8.3	0.1	0.3	0.4
Information Technology	-0.5	5.2	4.7	0.0	0.0	0.0
Materials	4.3	0.9	0.8	-0.1	0.0	-0.1
Real Estate	-4.2	9.8	3.1	0.0	0.0	0.1
Utilities	-5.4	10.2	-2.9	0.4	0.0	0.4
Cash	0.3	1.3	0.0	0.0	0.0	0.0
Total	0.0	3.5	3.7	0.2	-0.4	-0.2



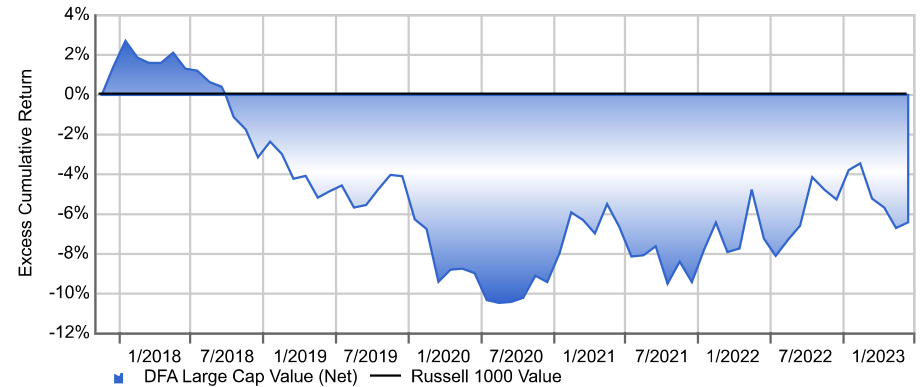
# DFA LCV Inception Performance & Statistics

## Investment Growth Since Inception 12/1/2017



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## Relative Cumulative Performance Since Inception 12/1/2017

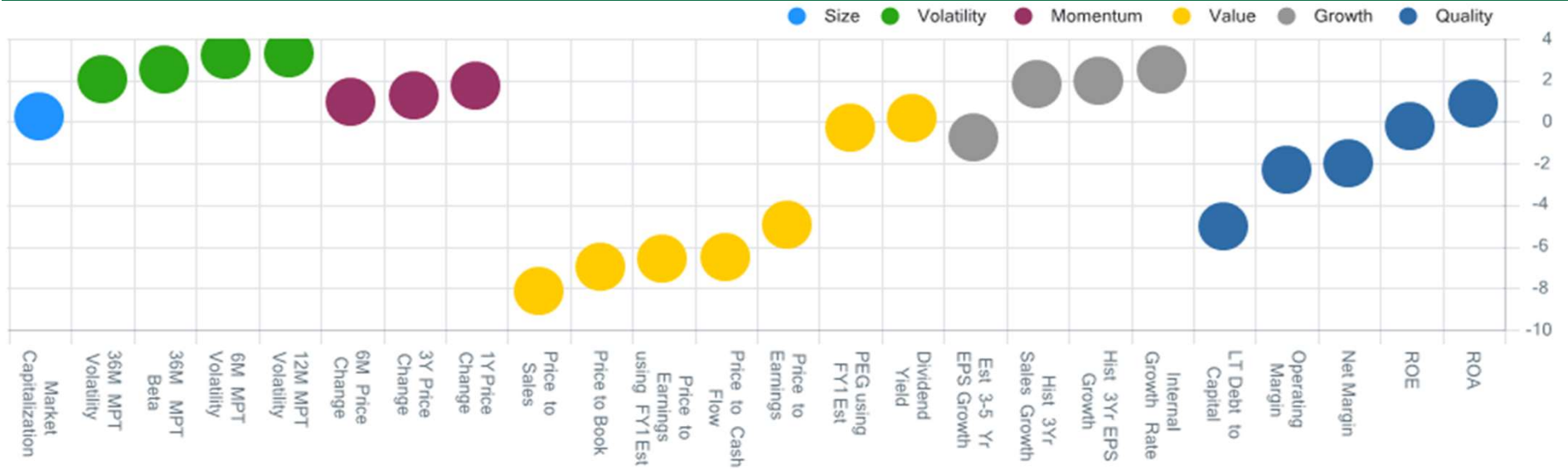


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## Risk Since Inception 12/1/2017

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
DFA US Large Value	6.3	21.0	-1.2	0.2	-0.2	4.0	1.1
Russell 1000 Value	7.2	18.2	--	0.3	--	--	1.0

## Characteristics Tilt vs Benchmark 6/30/2023



# DFA US SCV Portfolio Snapshot – June 30, 2023

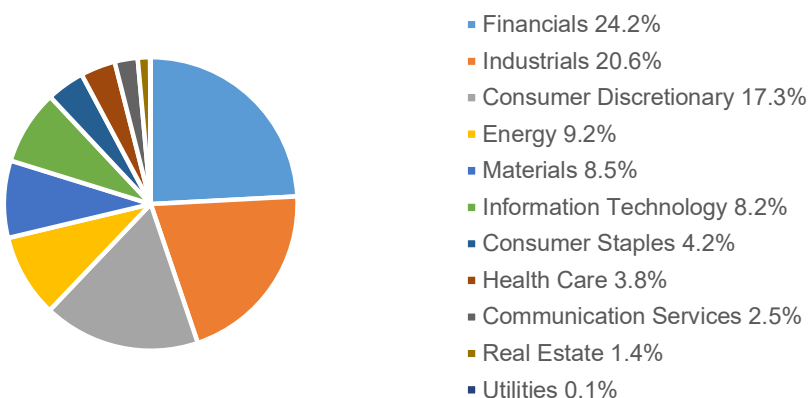
## Rolling Returns Since Inception 10/1/1996 (Ten Year, One Month Shift)



## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	15 Year
DFA Small Cap Value (Net)	4.4	5.1	16.1	25.9	7.4	9.5	10.2
Russell 2000 Value	3.2	2.5	6.0	15.4	3.5	7.3	7.7

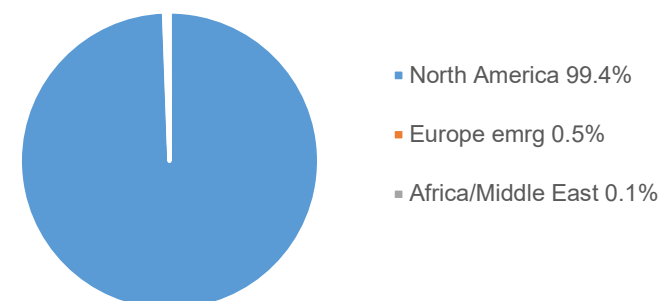
## Equity Sector Exposure (GICS)



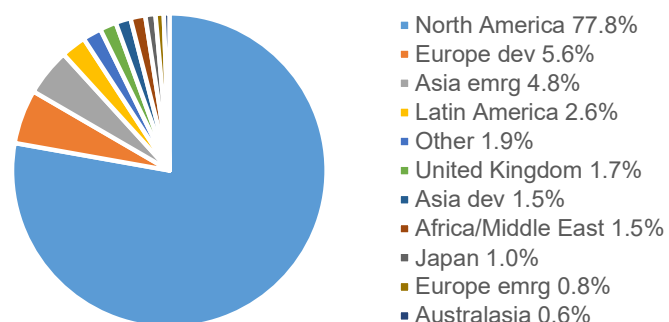
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
New York Community Bancorp, Inc.	1.14	26.39
Taylor Morrison Home Corporation	0.95	27.47
Amkor Technology, Inc.	0.87	14.62
Triton International Ltd.	0.80	32.81
Commercial Metals Company	0.74	8.02
Avnet, Inc.	0.71	12.26
Air Lease Corporation	0.71	6.81
Murphy Oil Corporation	0.70	4.39
United States Steel Corporation	0.69	-3.95
Transocean Ltd.	0.69	10.22

## Regional Exposure by Domicile



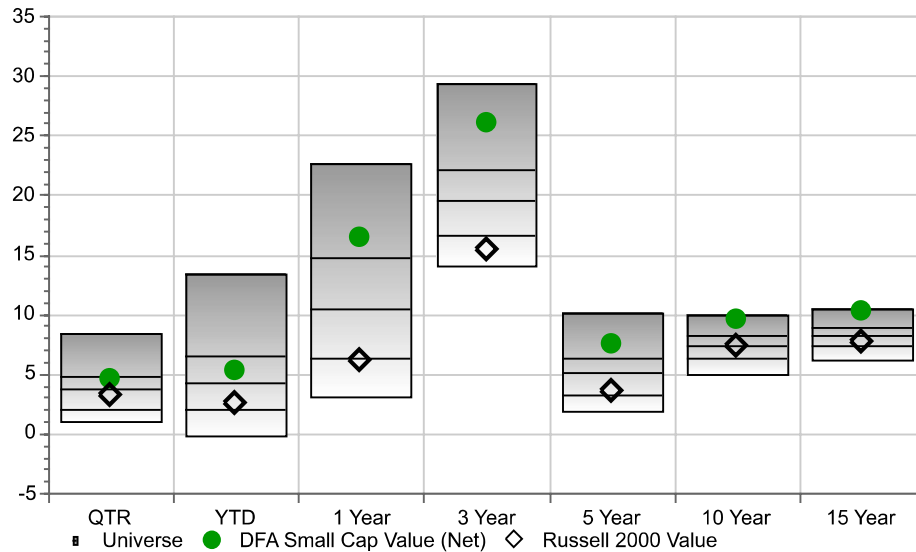
## Regional Exposure by Source of Revenue



# DFA US SCV vs Universe & Benchmark

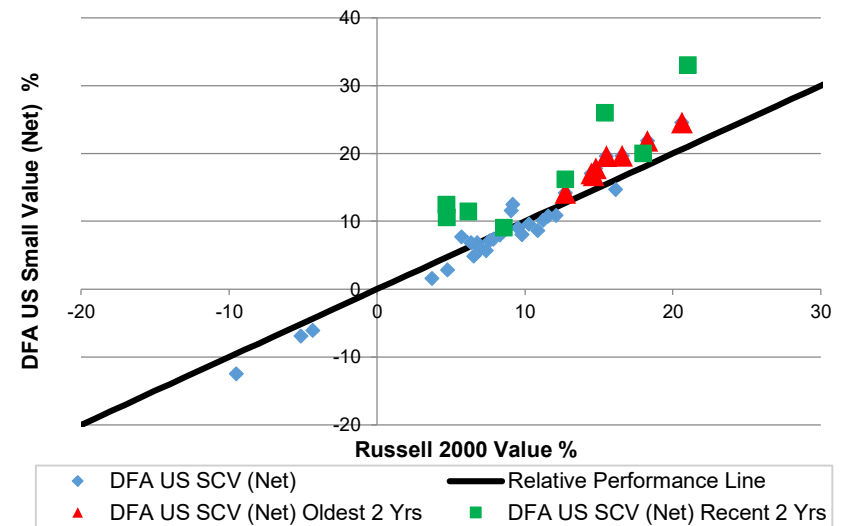
## Performance Relative to Peer Group as of 6/30/2023

Universe: Lipper US Small Cap Value



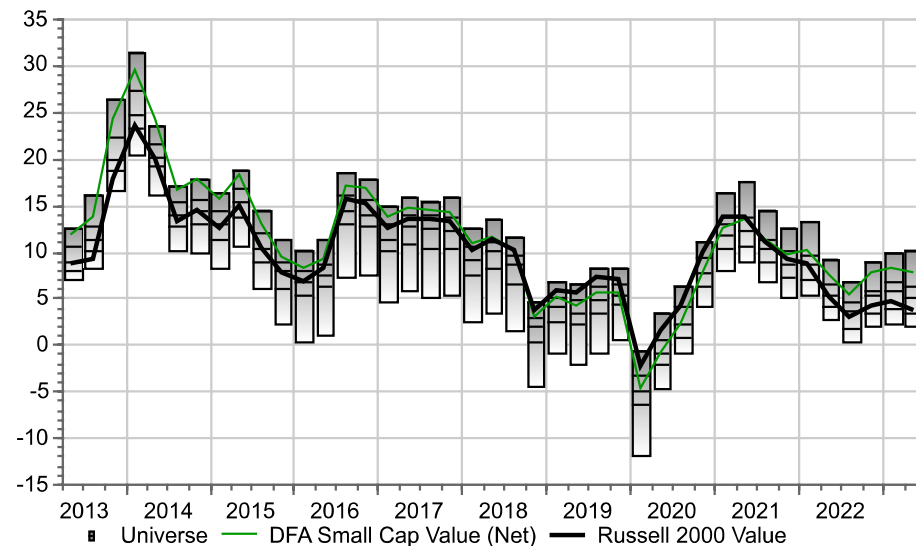
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 7/1/2008 –6/30/2023 (5 Year, 3 Month Shift)

Universe: Lipper US Small Cap Value



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## Over/Under Benchmark Analysis

21	Outperform
19	Underperform
40	# Observations
53%	% Outperform

## DFA US SCV Attribution Analysis – June 30, 2023

### Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Super Micro Computer, Inc.	0.42	0.42	0.47
New York Community Bancorp, Inc.	0.99	0.99	0.24
Thor Industries, Inc.	0.45	0.45	0.15
TechnipFMC plc	0.65	0.65	0.14
Taylor Morrison Home Corporation	0.84	0.49	0.12
Toll Brothers, Inc.	0.38	0.38	0.12
American Equity Investment Life Hldg. Co.	0.57	0.32	0.12
National Western Life Group, Inc.	0.23	0.17	0.11
Kim Family Trusts	0.80	0.62	0.10
Beacon Roofing Supply, Inc.	0.33	0.25	0.10

### Top 10 Leading Detractors

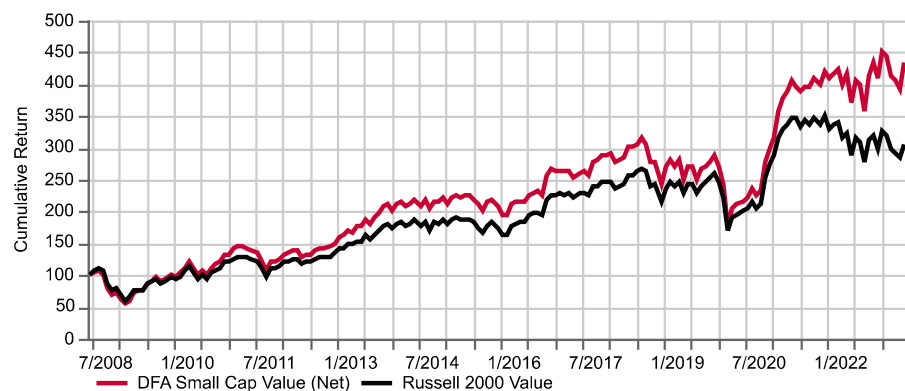
	Avg. Weights	Relative Weights	Active Return
ImmunoGen, Inc.	0.00	-0.08	-0.17
Equitrans Midstream Corporation	0.00	-0.19	-0.13
APi Group Corporation	0.03	-0.41	-0.09
Weis Markets, Inc.	0.38	0.26	-0.08
Light & Wonder, Inc.	0.00	-0.52	-0.08
IONQ, INC.	0.00	-0.07	-0.08
Chinook Therapeutics, Inc.	0.00	-0.11	-0.07
Foot Locker, Inc.	0.44	0.17	-0.07
Itron, Inc.	0.00	-0.23	-0.07
Ashland Inc.	0.38	0.38	-0.06

### Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	-0.4	-1.0	-1.2	0.0	0.0	0.0
Consumer Discretionary	5.3	7.4	5.4	0.1	0.3	0.5
Consumer Staples	1.9	-6.0	-5.9	-0.2	0.0	-0.2
Energy	3.2	4.5	6.1	0.1	-0.1	0.0
Financials	-0.7	0.4	-2.3	0.0	0.7	0.7
Health Care	-6.1	1.7	7.7	-0.3	-0.3	-0.5
Industrials	5.5	9.6	8.5	0.3	0.2	0.5
Information Technology	2.0	13.9	10.8	0.1	0.3	0.4
Materials	3.8	-0.5	0.8	-0.1	-0.1	-0.2
Real Estate	-9.6	2.2	1.5	0.1	0.0	0.1
Utilities	-5.0	-4.2	-4.0	0.3	0.0	0.3
Total	0.0	4.6	2.8	0.7	1.0	1.8

# DFA US SCV 15 Year Performance & Statistics

## Investment Growth – 15 Years



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## Relative Cumulative Performance – 15 Years

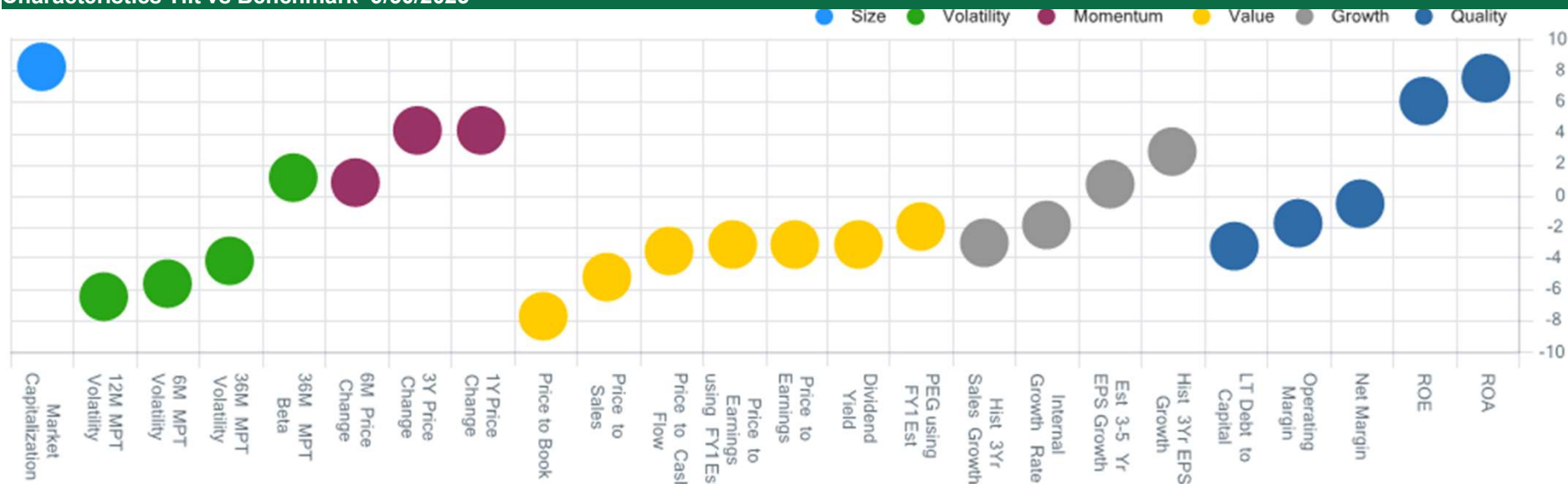


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## Risk – 15 Years

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
DFA Small Cap Value (Net)	10.2	23.5	2.0	0.4	0.6	4.0	1.1
Russell 2000 Value	7.7	21.5	--	0.3	--	--	1.0

## Characteristics Tilt vs Benchmark 6/30/2023



# Earnest Portfolio Snapshot – June 30, 2023

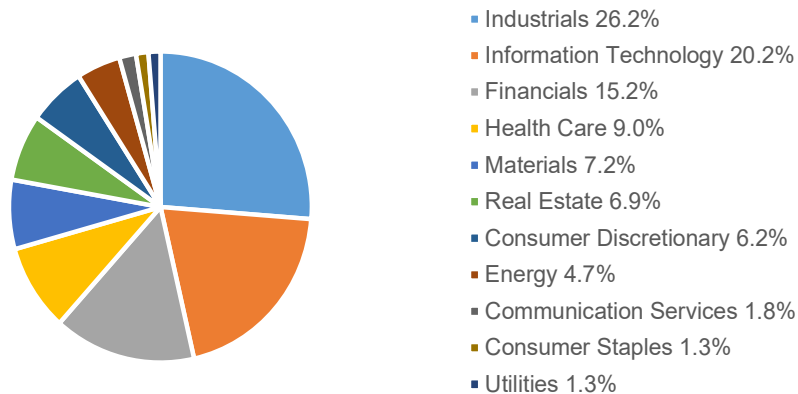
## Rolling Returns Since Inception 5/1/2005 (Ten Year, One Month Shift)



## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	15 Year
Earnest (Net)	4.0	8.7	10.2	13.8	11.0	12.6	10.7
Russell Midcap	4.8	9.0	14.9	12.5	8.5	10.3	9.6

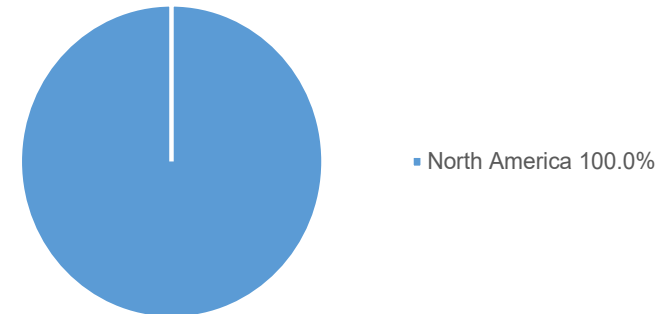
## Equity Sector Exposure (GICS)



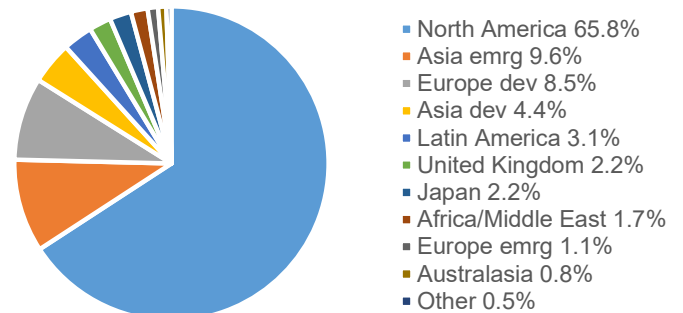
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Republic Services, Inc.	2.98	13.64
Synopsys, Inc.	2.62	12.73
Entegris, Inc.	2.57	35.26
Darden Restaurants, Inc.	2.49	8.54
Keysight Technologies, Inc.	2.44	3.70
CBRE Group, Inc.	2.34	10.85
Masco Corporation	2.28	16.09
ANSYS, Inc.	2.25	-0.76
D.R. Horton, Inc.	2.11	24.86
Raymond James Financial, Inc.	2.03	11.71

## Regional Exposure by Domicile



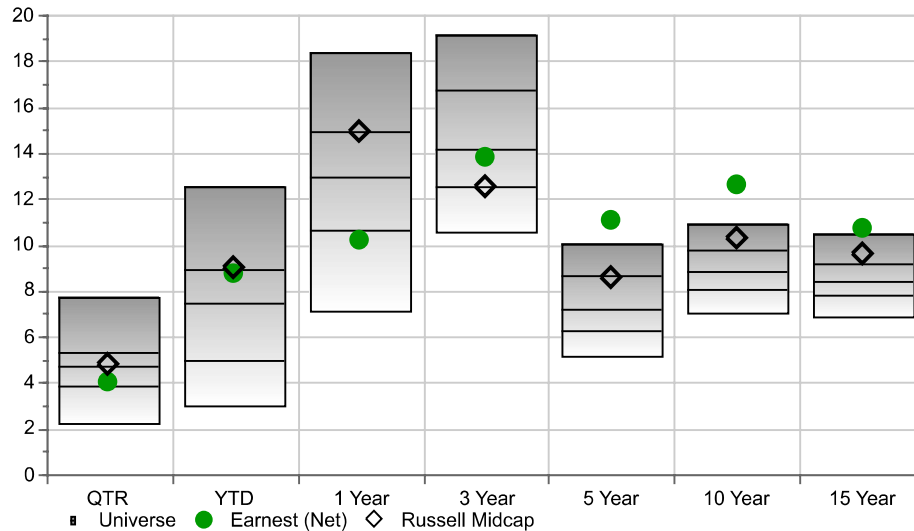
## Regional Exposure by Source of Revenue



# Earnest vs Universe & Benchmark

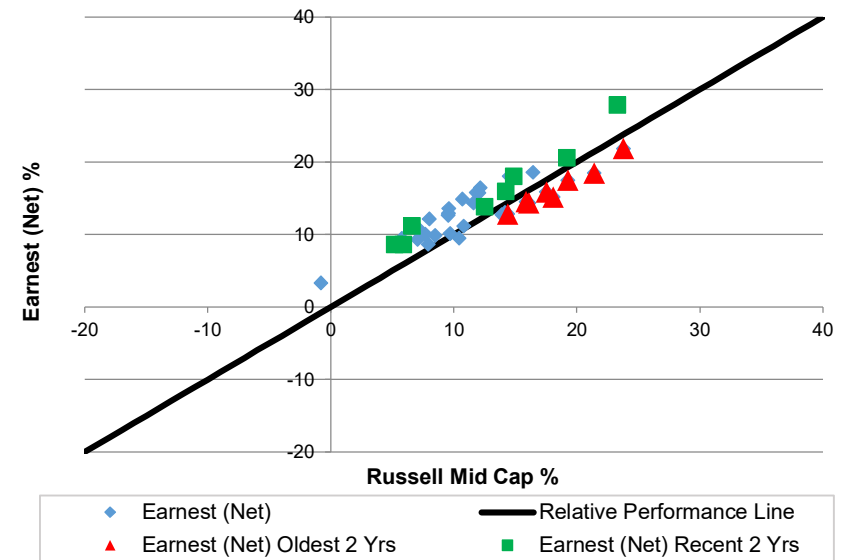
## Performance Relative to Peer Group as of 6/30/2023

Universe: Lipper US: Mid Cap Core



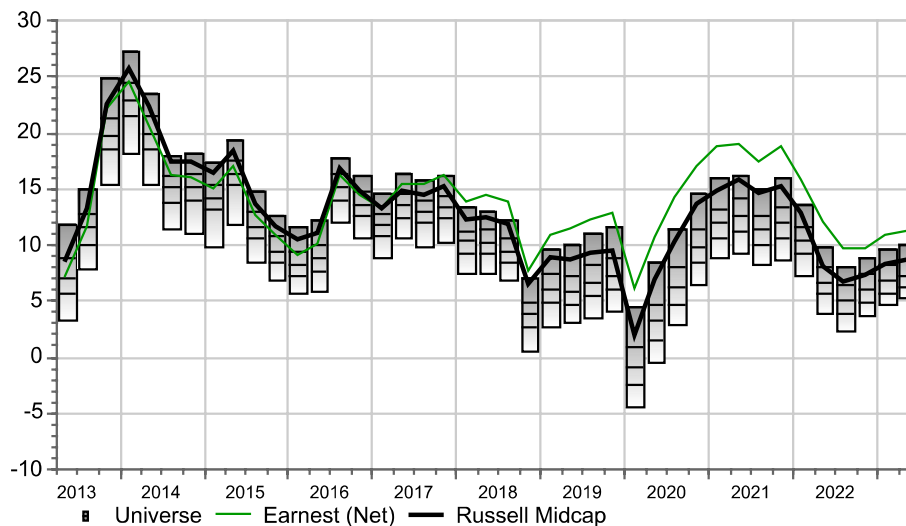
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 7/1/2008 –6/30/2023 (5 Year, 3 Month Shift)

Universe: Lipper US: Mid Cap Core



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## Over/Under Benchmark Analysis

29	Outperform
11	Underperform
40	# Observations
73%	% Outperform

## Earnest Attribution Analysis – June 30, 2023

### Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Entegris, Inc.	2.15	2.01	0.71
D.R. Horton, Inc.	1.93	1.58	0.37
Republic Services, Inc.	2.89	2.58	0.34
Woodward, Inc.	1.56	1.50	0.32
Masco Corporation	2.12	2.00	0.31
Snap-on Incorporated	1.87	1.73	0.29
Applied Materials, Inc.	1.41	1.41	0.27
Synopsys, Inc.	2.58	1.93	0.26
AmerisourceBergen Corporation	1.56	1.28	0.26
Arrow Electronics, Inc.	1.70	1.63	0.26

### Top 10 Leading Detractors

	Avg. Weights	Relative Weights	Active Return
Catalent, Inc	1.42	1.33	-0.62
Bio-Rad Laboratories, Inc.	1.78	1.68	-0.38
Agilent Technologies, Inc.	2.03	1.63	-0.24
KeyCorp	0.88	0.78	-0.23
Sensata Technologies Holding PLC	1.93	1.86	-0.22
Spirit AeroSystems Holdings, Inc.	1.64	1.61	-0.20
Sealed Air Corporation	1.38	1.31	-0.19
Progressive Corporation	2.09	2.09	-0.18
Scotts Miracle-Gro Company	1.69	1.66	-0.17
Palantir Technologies Inc.	0.00	-0.20	-0.14

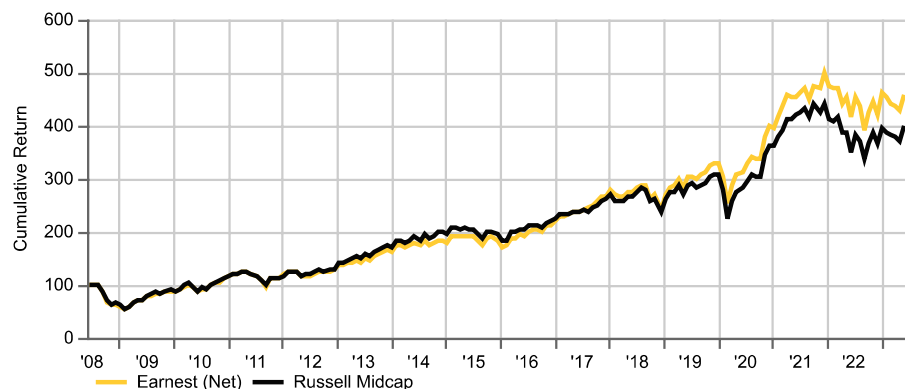
### Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	-1.7	-1.5	2.5	0.0	-0.1	0.0
Consumer Discretionary	-6.3	13.6	7.0	-0.1	0.4	0.2
Consumer Staples	-2.7	-3.5	0.8	0.1	-0.1	0.0
Energy	-0.2	5.7	1.8	0.0	0.2	0.2
Financials	2.3	0.5	2.9	0.0	-0.4	-0.4
Health Care	-0.6	-4.5	0.9	0.0	-0.7	-0.6
Industrials	8.1	7.3	11.0	0.5	-0.9	-0.5
Information Technology	3.6	9.7	7.6	0.1	0.4	0.4
Materials	1.0	-5.1	1.0	0.0	-0.5	-0.5
Real Estate	-1.3	6.4	3.9	0.0	0.2	0.2
Utilities	-4.4	-6.4	-2.1	0.3	-0.1	0.2
Cash	2.2	1.3	0.0	-0.1	0.0	-0.1
Total	0.0	4.0	4.8	0.8	-1.6	-0.8

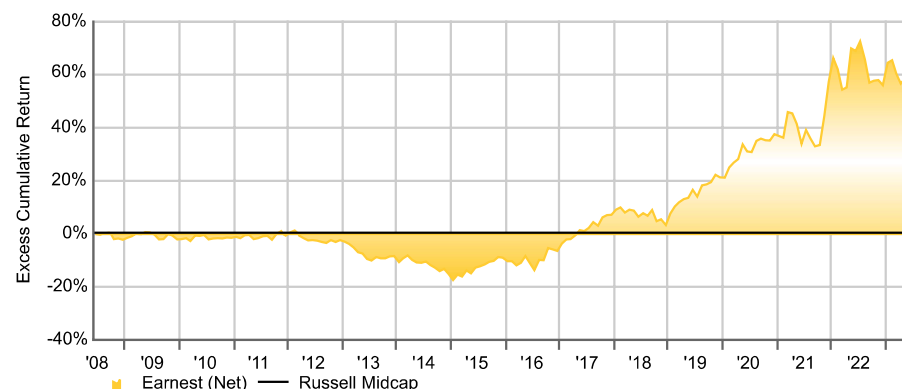


# Earnest 15 Year Performance & Statistics

## Investment Growth – 15 Years



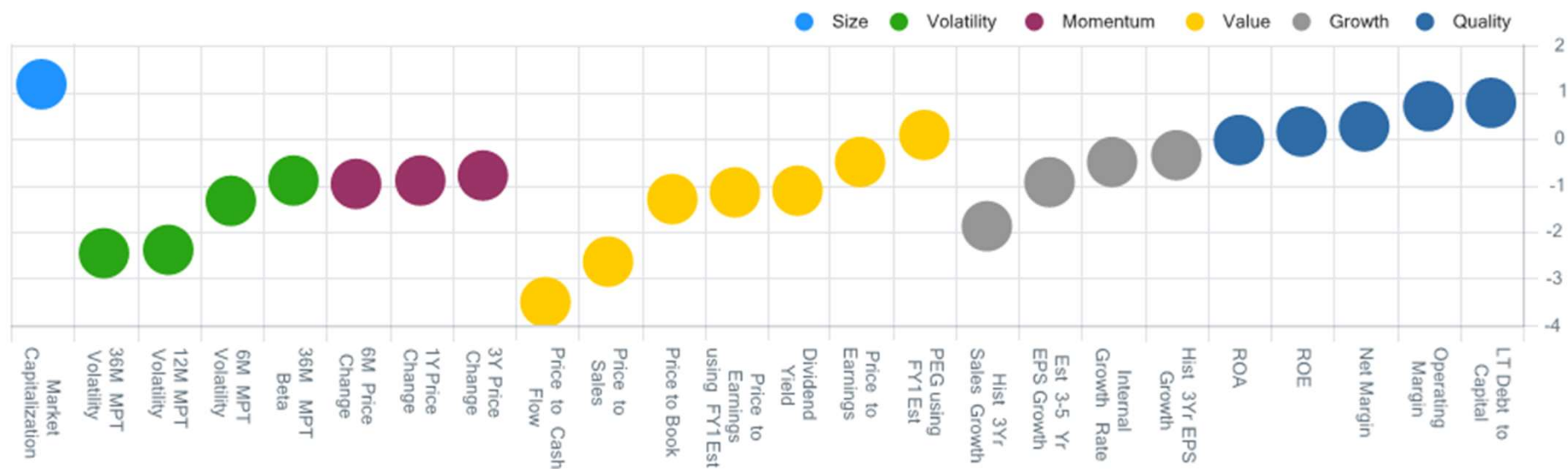
## Relative Cumulative Performance – 15 Years



## Risk – 15 Years

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Earnest (Net)	10.7	18.8	1.1	0.5	0.3	3.6	1.0
Russell Midcap	9.6	18.7	--	0.5	--	--	1.0

## Characteristics Tilt vs Benchmark 6/30/2023



# Northern Trust S&P 500 Portfolio Snapshot – June 30, 2023

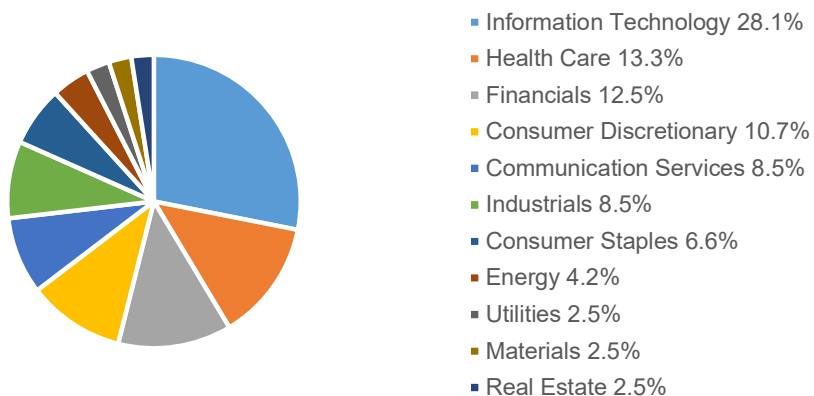
## Rolling Returns Since 10/1/1999 (Ten Year, One Month Shift)



## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	15 Year
NT S&P 500 Index (Net)	8.7	16.9	19.6	14.6	12.3	12.9	10.9
S&P 500	8.7	16.9	19.6	14.6	12.3	12.9	10.9

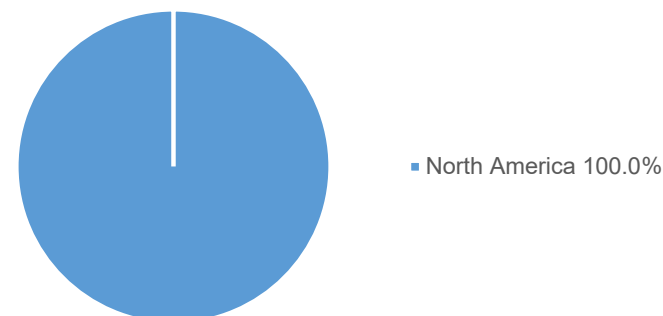
## Equity Sector Exposure (GICS)



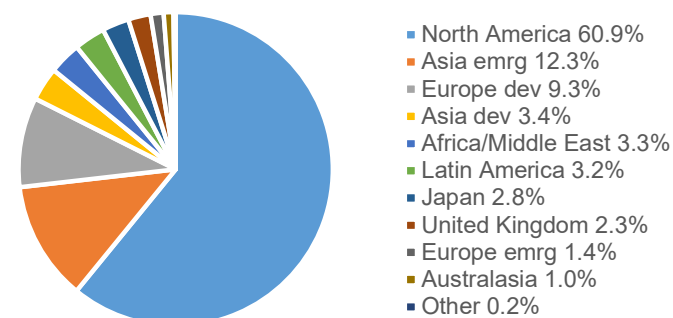
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Apple Inc.	7.69	17.79
Microsoft Corporation	6.73	18.36
Alphabet Inc.	3.59	15.83
Amazon.com, Inc.	3.07	26.21
NVIDIA Corporation	2.79	52.31
Tesla, Inc.	1.86	26.18
Meta Platforms, Inc.	1.71	35.41
Berkshire Hathaway Inc.	1.63	10.44
UnitedHealth Group Incorporated	1.19	2.10
Exxon Mobil Corporation	1.10	-1.33

## Regional Exposure by Domicile



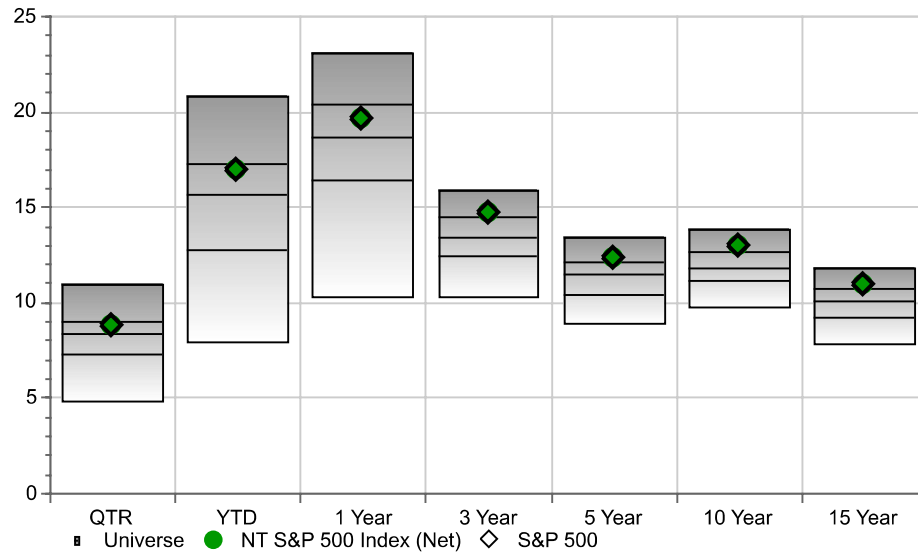
## Regional Exposure by Source of Revenue



# Northern Trust S&P 500 vs Universe & Benchmark

## Performance Relative to Peer Group as of 6/30/2023

Universe: Lipper US: Large Cap Core



©FactSet Research Systems

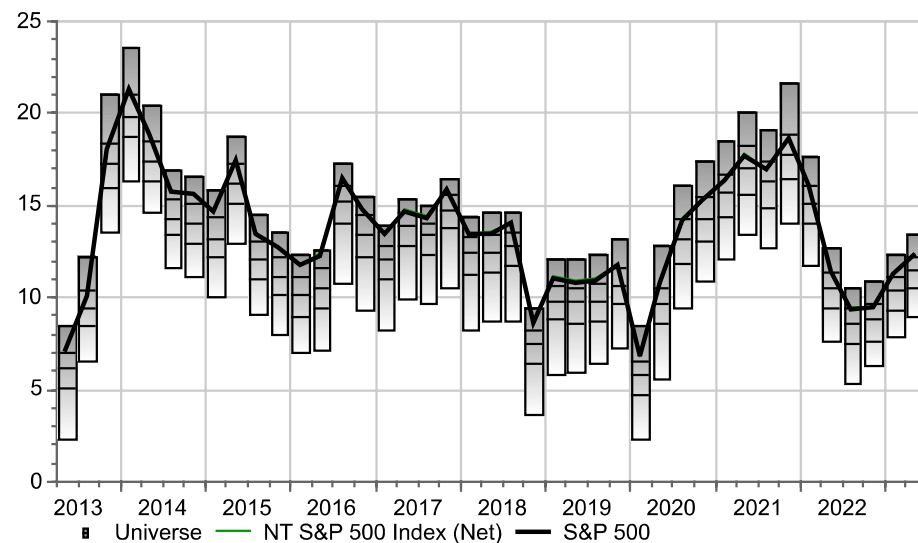
## Investment Growth – 15 Years



©FactSet Research Systems

## Rolling Returns 7/1/2008 –6/30/2023 (5 Year, 3 Month Shift)

Universe: Lipper US: Large Cap Core



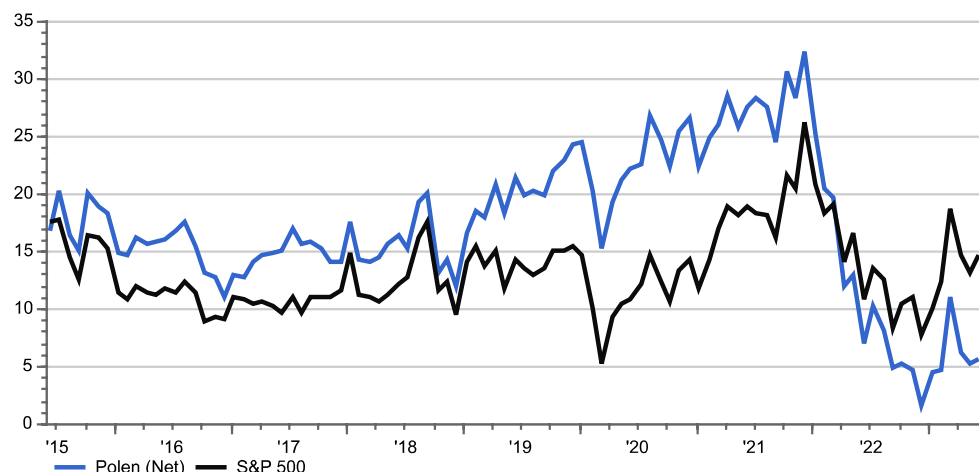
©FactSet Research Systems

## Risk – 15 Years

	Return	Std Dev	Sharpe Ratio	Tracking Error
NT S&P 500 Index (Net)	10.9	16.1	0.6	0.2
S&P 500	10.9	16.1	0.6	--

# Polen Portfolio Snapshot – June 30, 2023

## Rolling Returns Since Inception 7/1/2012 (Three Year, One Month Shift)

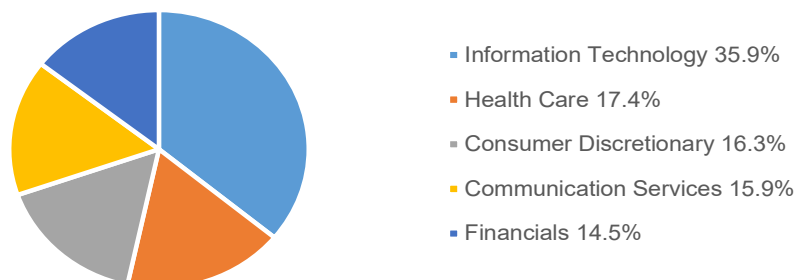


©FactSet Research Systems

## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	Inception 7/1/2012
Polen (Net)	9.7	25.1	19.1	5.5	11.7	14.9	14.3
S&P 500	8.7	16.9	19.6	14.6	12.3	12.9	13.5
S&P 500 Growth	10.6	21.2	18.3	11.8	13.0	14.5	14.7

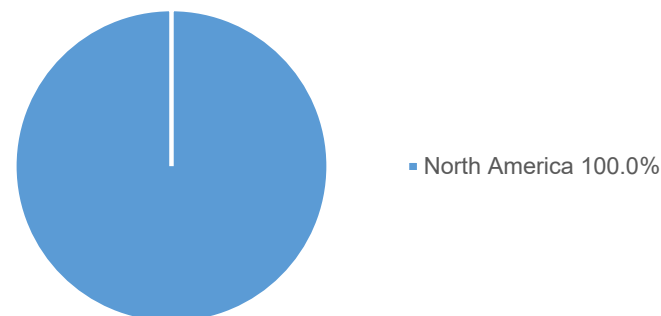
## Equity Sector Exposure (GICS)



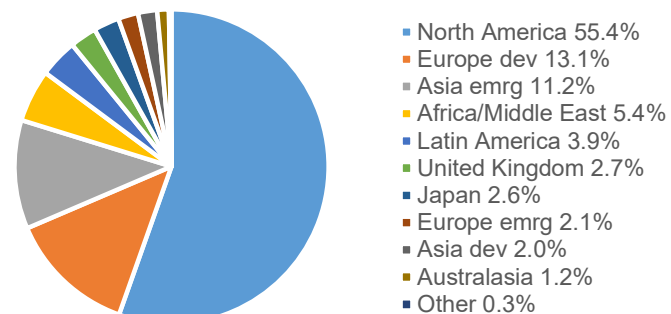
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Amazon.com, Inc.	9.65	26.21
Netflix, Inc.	8.37	27.50
Alphabet Inc.	7.00	16.32
ServiceNow, Inc.	6.47	20.93
Microsoft Corporation	5.99	18.36
Adobe Incorporated	5.84	26.89
Mastercard Incorporated	5.16	8.39
Visa Inc.	4.83	5.55
Salesforce, Inc.	4.52	5.75
Airbnb, Inc.	4.14	3.02

## Regional Exposure by Domicile



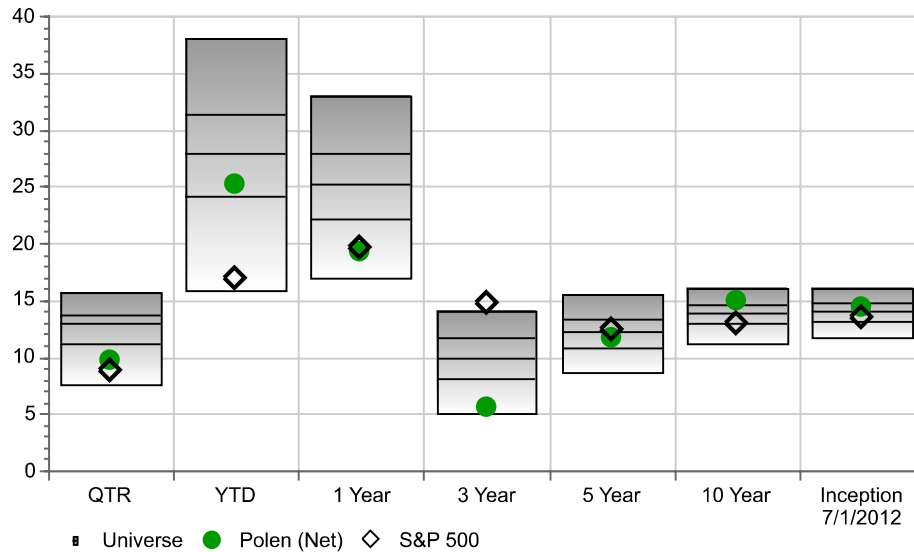
## Regional Exposure by Source of Revenue



# Polen vs Universe & Benchmark

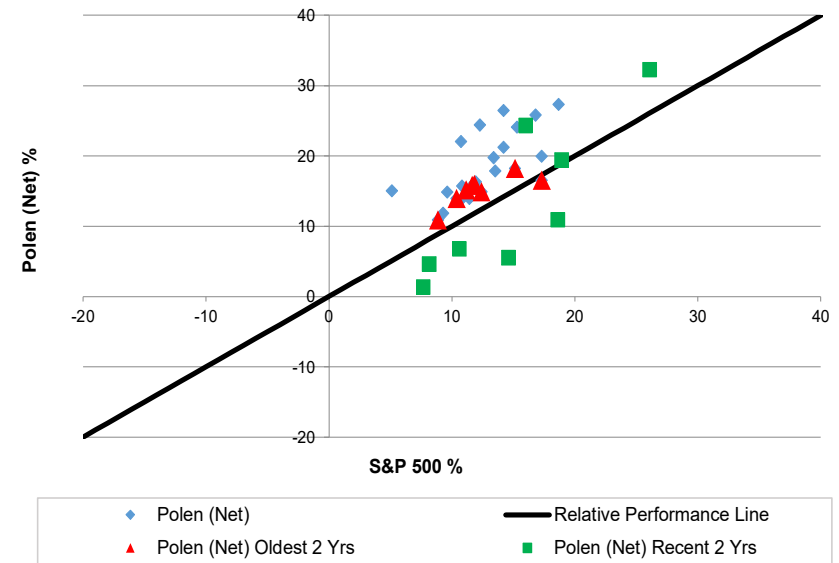
## Performance Relative to Peer Group as of 6/30/2023

Universe: Lipper US Large Cap Growth



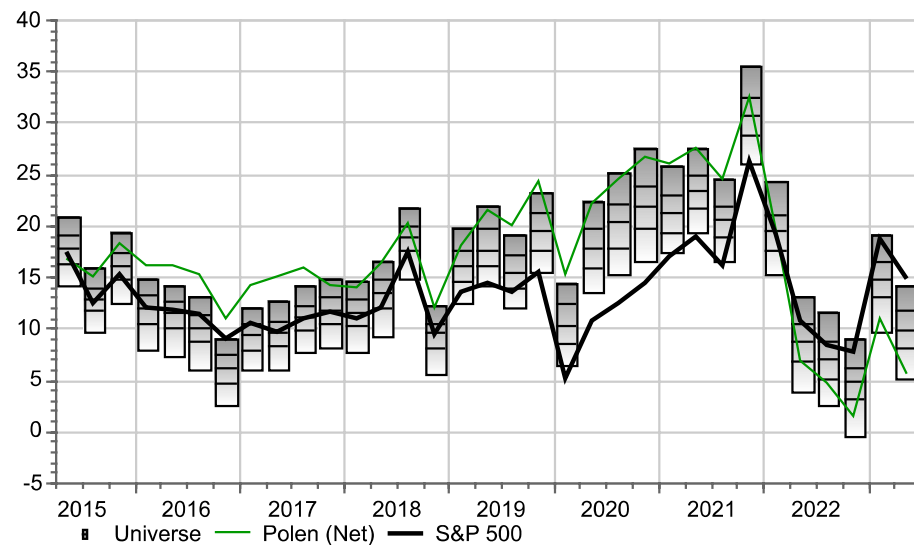
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 7/1/2012 – 6/30/2023 (3 Year, 3 Month Shift)

Universe: Lipper US Large Cap Growth



©FactSet Research Systems

## Over/Under Benchmark Analysis

27	Outperform
6	Underperform
33	# Observations
82%	% Outperform

## Polen Attribution Analysis – June 30, 2023

### Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Netflix, Inc.	7.31	6.86	1.85
Amazon.com, Inc.	9.70	6.89	1.76
ServiceNow, Inc.	6.00	5.71	1.19
Adobe Incorporated	5.00	4.48	1.18
Alphabet Inc.	6.88	3.31	0.57
Salesforce, Inc.	6.52	5.92	0.38
Mastercard Incorporated	5.17	4.27	0.35
Accenture plc	4.04	3.51	0.30
Abbott Laboratories	3.95	3.43	0.28
Visa Inc.	4.93	3.87	0.20

### Top 10 Leading Detractors

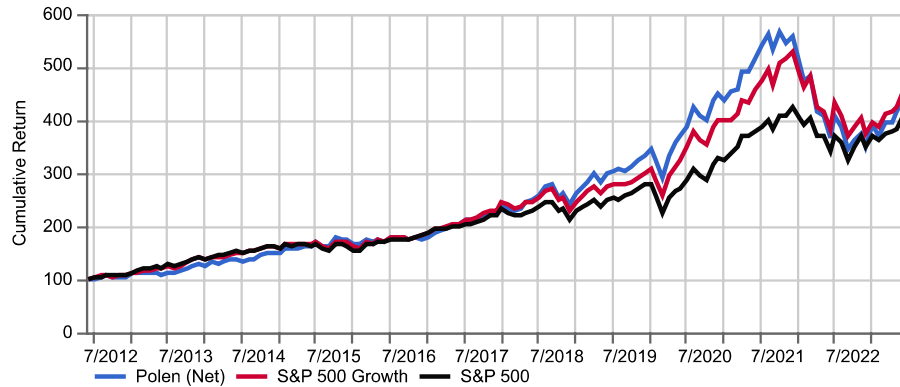
	Avg. Weights	Relative Weights	Active Return
Apple Inc.	0.00	-7.29	-1.29
NVIDIA Corporation	0.00	-2.20	-1.07
Illumina, Inc.	3.18	3.09	-0.71
Meta Platforms, Inc.	0.00	-1.53	-0.50
Tesla, Inc.	0.00	-1.48	-0.41
PayPal Holdings, Inc.	2.53	2.30	-0.33
Eli Lilly and Company	0.00	-0.88	-0.30
Thermo Fisher Scientific Inc.	3.33	2.71	-0.30
Broadcom Inc.	0.00	-0.83	-0.29
NIKE, Inc.	2.29	1.86	-0.21

### Sector Attribution

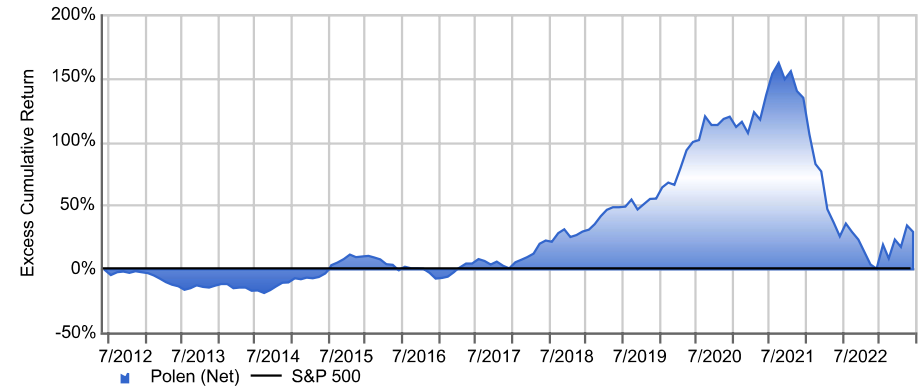
	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	5.8	22.1	13.1	0.2	1.3	1.5
Consumer Discretionary	6.0	14.8	14.6	0.3	0.0	0.4
Consumer Staples	-7.2	0.0	0.5	0.6	0.0	0.6
Energy	-4.5	0.0	-0.9	0.4	0.0	0.4
Financials	-0.1	2.9	5.4	0.0	-0.3	-0.3
Health Care	4.2	-2.4	3.0	-0.2	-1.1	-1.3
Industrials	-8.4	0.0	6.3	0.2	0.0	0.2
Information Technology	10.8	12.2	17.2	0.9	-1.8	-0.9
Materials	-2.5	0.0	3.3	0.1	0.0	0.1
Real Estate	-2.6	0.0	2.5	0.2	0.0	0.2
Utilities	-2.8	0.0	-2.5	0.3	0.0	0.3
Cash	1.2	1.3	1.3	-0.1	0.0	-0.1
Total	0.0	9.8	8.7	2.9	-1.8	1.1

# Polen Inception Performance & Statistics

## Investment Growth Since Inception 7/1/2012



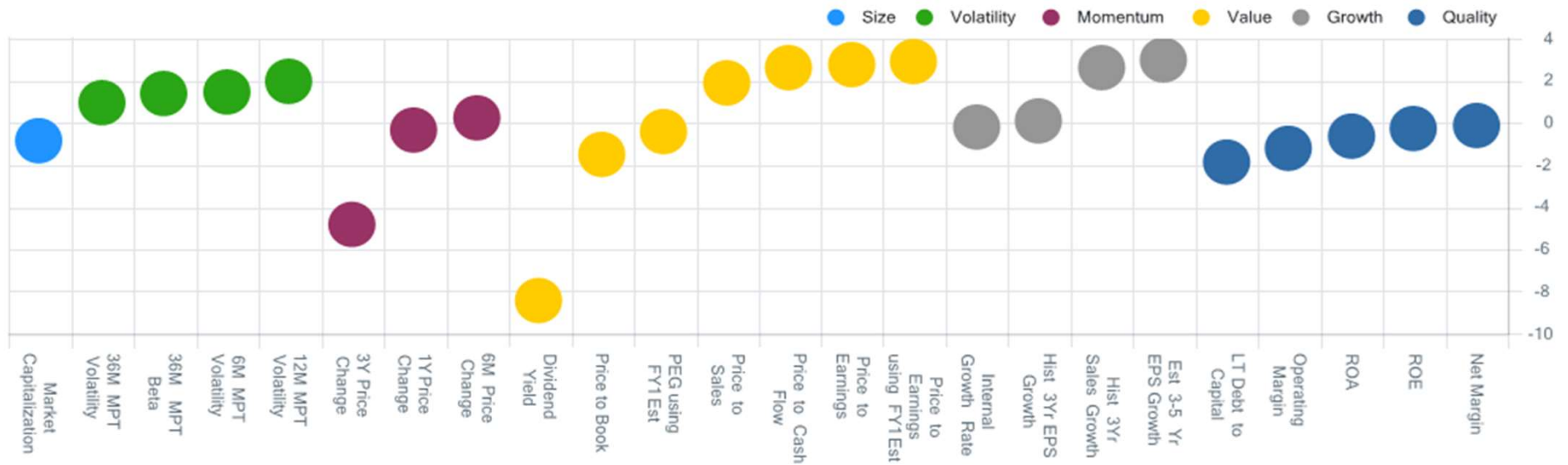
## Relative Cumulative Performance Since Inception 7/1/2012



## Risk Since Inception 7/1/2012

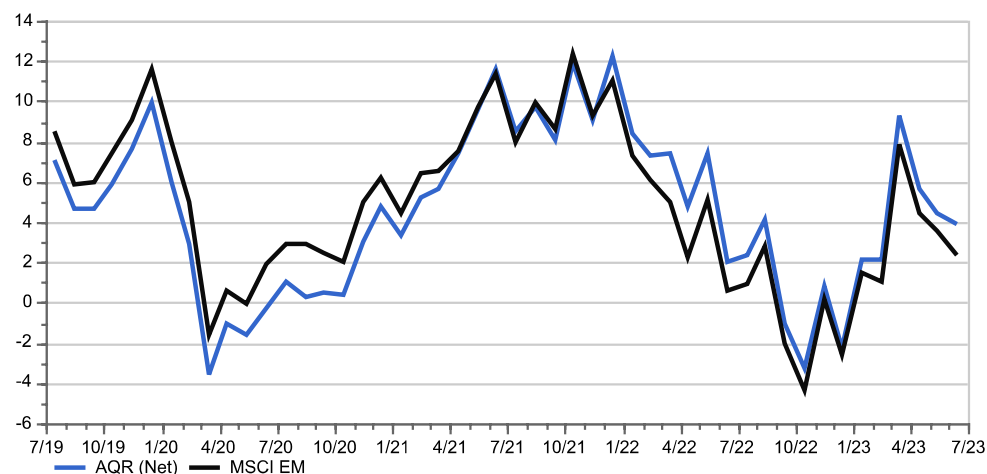
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Polen (Net)	14.3	16.1	0.6	0.8	0.1	6.7	1.0
S&P 500	13.5	14.3	--	0.9	--	--	1.0
S&P 500 Growth	14.7	15.5	--	0.9	--	--	1.0

## Characteristics Tilt vs Benchmark 6/30/2023



# AQR Portfolio Snapshot – June 30, 2023

## Rolling Returns Since Inception 8/1/2016 (Three Year, One Month Shift)



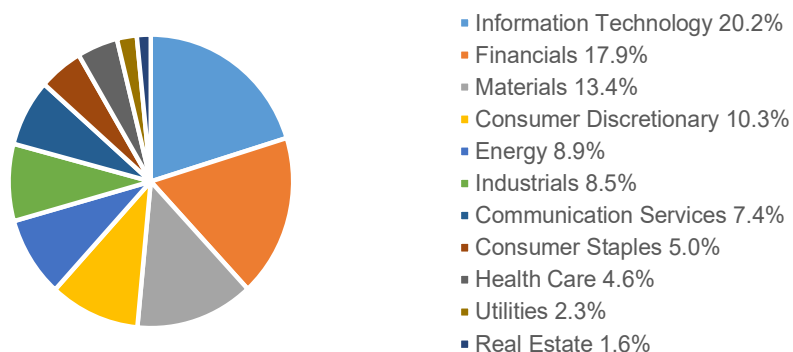
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Taiwan Semi Mfg. Co. Ltd.	5.19	6.15
Tencent Holdings Ltd.	2.99	-13.24
Samsung Electronics Co., Ltd.	2.91	12.02
Petroleo Brasileiro S.A	1.66	57.49
Alibaba Group Holding Limited	1.51	-18.99
Larsen & Toubro Limited	1.37	14.59
Kia Corp.	1.32	7.95
China Construction Bank Corporation	1.30	-0.22
Meituan	1.20	-14.63
Saudi Basic Industries Corp.	1.18	-2.36

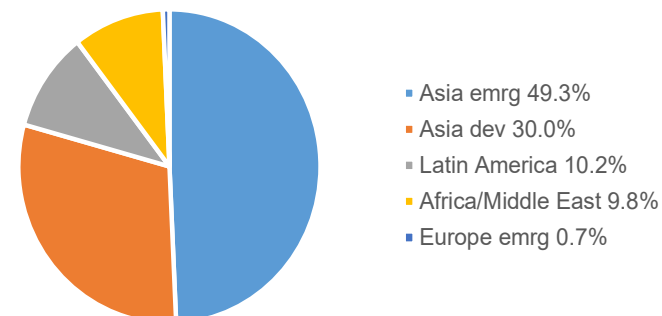
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	Inception 8/1/16
AQR (Net)	1.8	7.8	2.9	3.9	1.2	4.5
MSCI EM	0.9	4.9	1.7	2.3	0.9	4.3

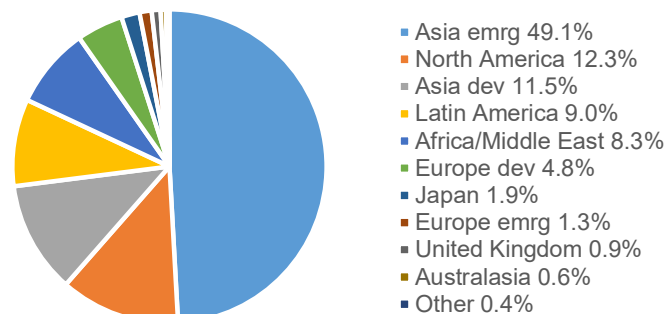
## Equity Sector Exposure (GICS)



## Regional Exposure by Domicile



## Regional Exposure by Source of Revenue

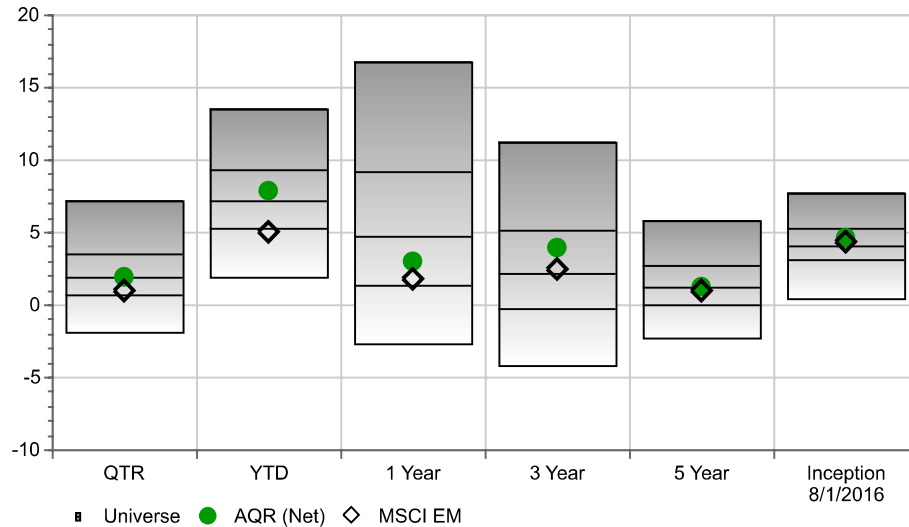




# AQR vs Universe & Benchmark

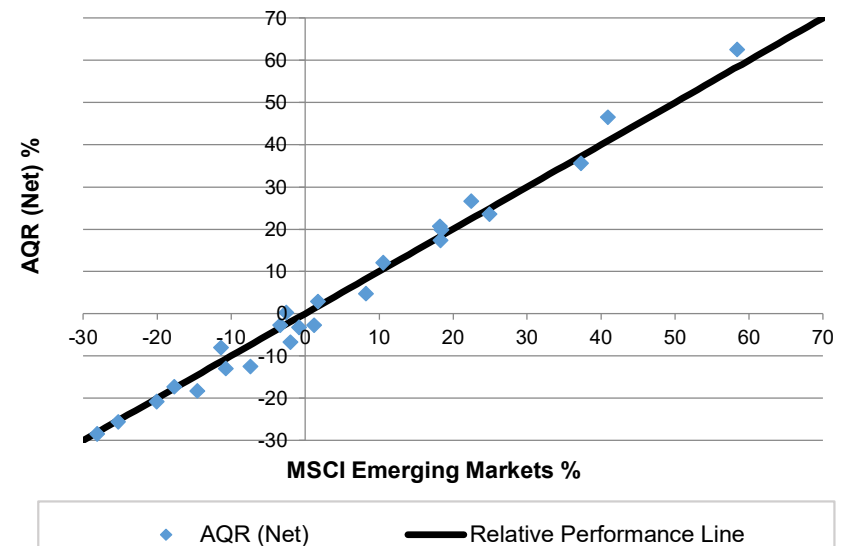
## Performance Relative to Peer Group as of 6/30/2023

Universe: Lipper US Emerging Markets



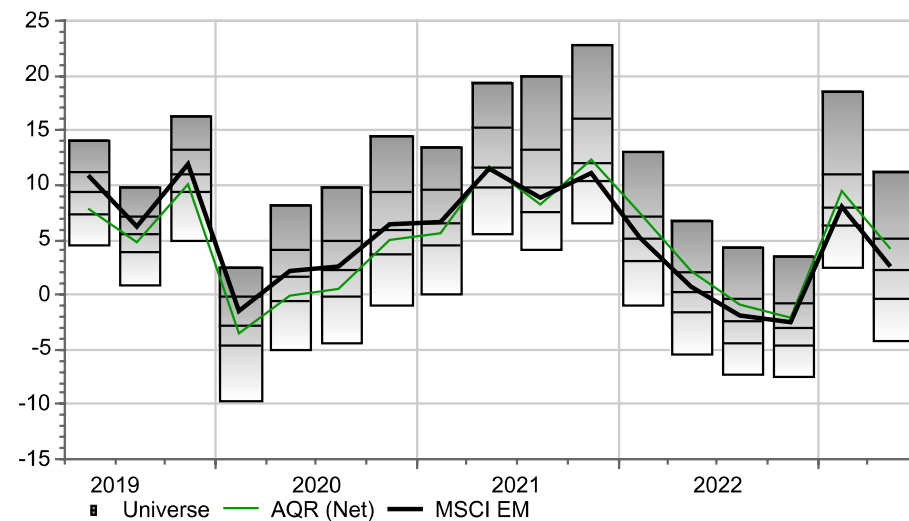
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## One-Year Rolling Return Versus Benchmark



## Rolling Returns 8/1/2016 –6/30/2023 (3 Year, 3 Month Shift)

Universe: Lipper US Emerging Markets



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## Over/Under Benchmark Analysis

11 Outperform  
13 Underperform  
24 # Observations  
46% % Outperform

## AQR Attribution Analysis – June 30, 2023

### Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Tencent Holdings Ltd.	3.04	-1.20	3.23
Alibaba Group Holding Limited	2.08	-0.49	3.05
Meituan	0.96	-0.29	1.23
JD.com, Inc.	0.76	0.03	1.16
China Nat'l Bldg. Material Co. Ltd. CI H	0.85	0.80	0.97
PT Adaro Energy Indonesia Tbk	0.89	0.85	0.86
Exxaro Resources Limited	0.96	0.92	0.78
China Hongqiao Group Ltd.	0.57	0.54	0.67
Absa Group Limited	0.60	0.48	0.63
China Resources Land Limited	0.68	0.46	0.60

### Top 10 Leading Detractors

	Avg. Weights	Relative Weights	Active Return
Samsung Electronics Co., Ltd.	2.72	-1.54	-1.32
Petroleo Brasileiro SA Pfd	1.21	0.86	-1.14
Volcan Investments Ltd.	1.06	1.02	-0.57
Taiwan Semi Mfg. Co. Ltd.	5.61	-0.97	-0.57
Klabin S.A.	1.08	1.04	-0.57
Coal India Ltd.	1.11	1.04	-0.53
PT Astra International Tbk	0.65	0.52	-0.43
Aurobindo Pharma Ltd	0.57	0.54	-0.40
Doosan Bobcat, Inc.	0.70	0.67	-0.37
Indian Oil Corp. Ltd.	0.60	0.56	-0.30

### Sector Attribution

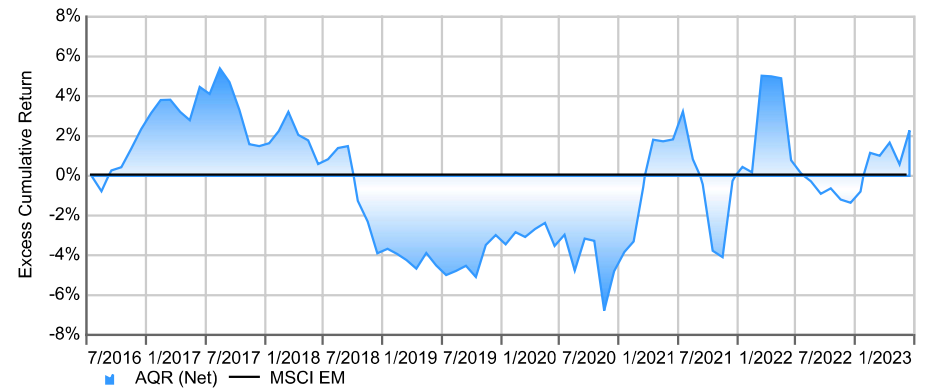
	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	-4.6	-7.2	-6.6	0.4	-0.1	0.3
Consumer Discretionary	-1.7	-10.0	-6.1	0.1	-0.5	-0.3
Consumer Staples	-3.1	-1.5	-0.1	0.0	0.0	0.0
Energy	6.1	4.9	12.1	0.6	-0.7	-0.1
Financials	-3.5	3.0	5.8	-0.1	-0.4	-0.6
Health Care	-0.1	0.4	-2.3	-0.1	0.1	0.1
Industrials	5.1	5.3	1.9	0.1	0.3	0.4
Information Technology	-2.2	4.3	4.9	-0.1	-0.1	-0.2
Materials	3.7	1.6	-4.3	-0.2	0.5	0.5
Real Estate	-0.4	-8.9	-4.8	0.0	-0.1	0.0
Utilities	0.7	7.4	4.1	0.0	0.1	0.1
Total	0.0	1.1	1.0	0.8	-0.7	0.2

# AQR Inception Performance & Statistics

## Investment Growth Since Inception 8/1/2016



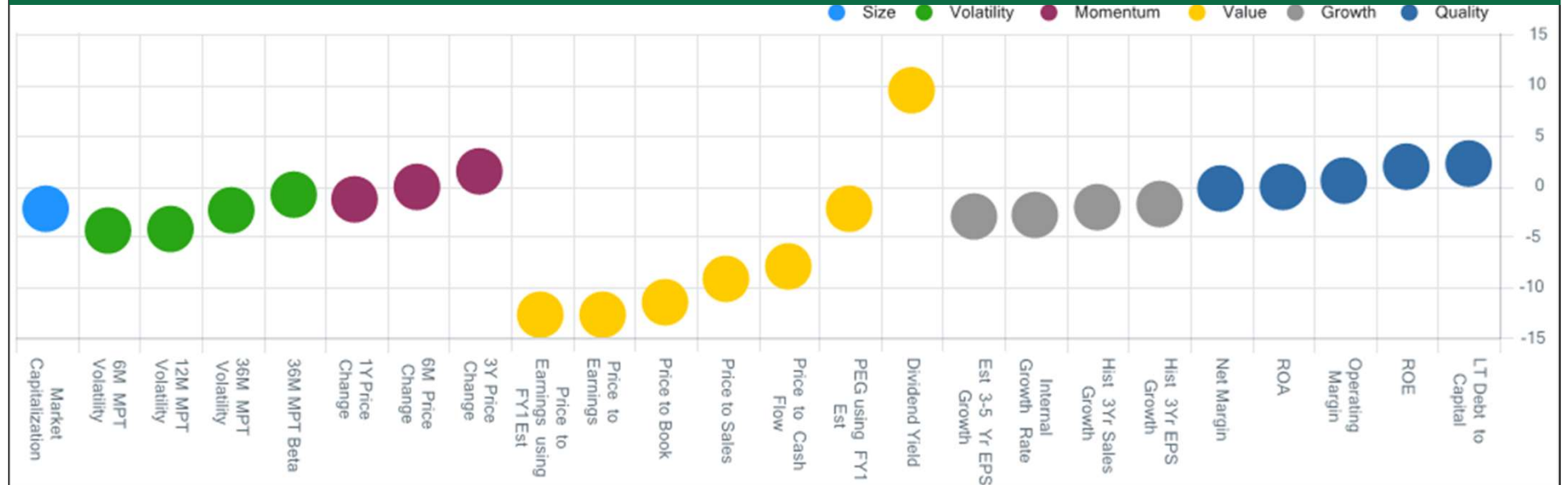
## Relative Cumulative Performance Since Inception 8/1/2016



## Risk Since Inception 8/1/2016

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
AQR (Net)	4.5	17.6	0.3	0.2	0.1	3.4	1.0
MSCI EM	4.3	17.1	--	0.2	--	--	1.0

## Characteristics Tilt vs Benchmark 6/30/2023



# Brandes Portfolio Snapshot – June 30, 2023

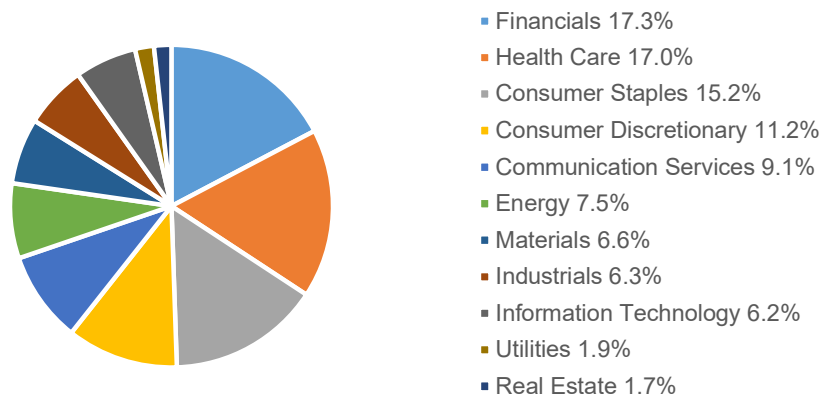
## Rolling Returns Since Inception 2/1/1998 (Ten Year, One Month Shift)



## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	15 Year
Brandes (Net)	4.8	16.4	24.2	15.5	4.5	5.9	3.9
MSCI EAFE	3.0	11.7	18.8	8.9	4.4	5.4	3.4
MSCI EAFE Value	3.2	9.3	17.4	11.3	2.9	4.1	2.4

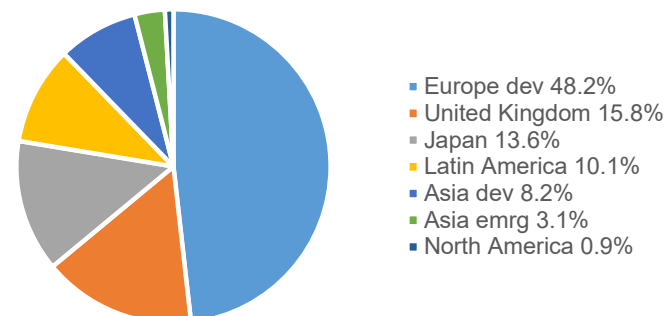
## Equity Sector Exposure (GICS)



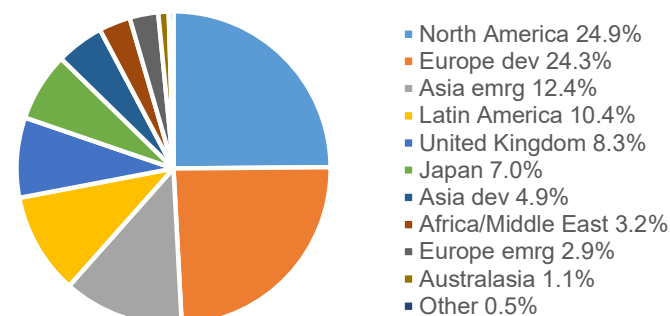
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Takeda Pharmaceutical Company Limited	3.56	-4.17
Heidelberg Materials AG	2.58	16.64
SAP SE	2.50	10.09
Sanofi	2.35	2.07
Rolls-Royce Holdings plc	2.24	4.22
GSK plc	2.24	0.97
Alibaba Group Holding Limited	2.21	-18.99
Embraer S.A.	2.17	-6.27
WPP plc	2.11	-9.06
Intesa Sanpaolo S.p.A.	2.11	6.05

## Regional Exposure by Domicile



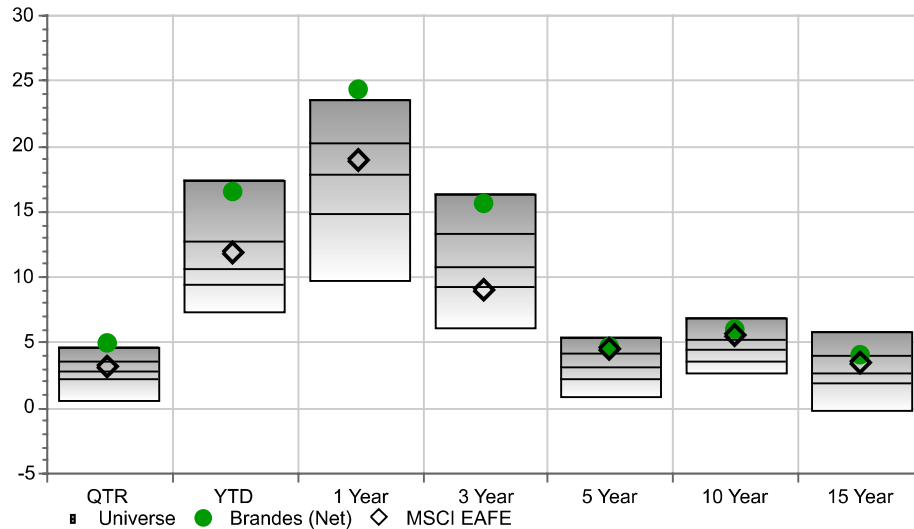
## Regional Exposure by Source of Revenue



# Brandes vs Universe & Benchmark

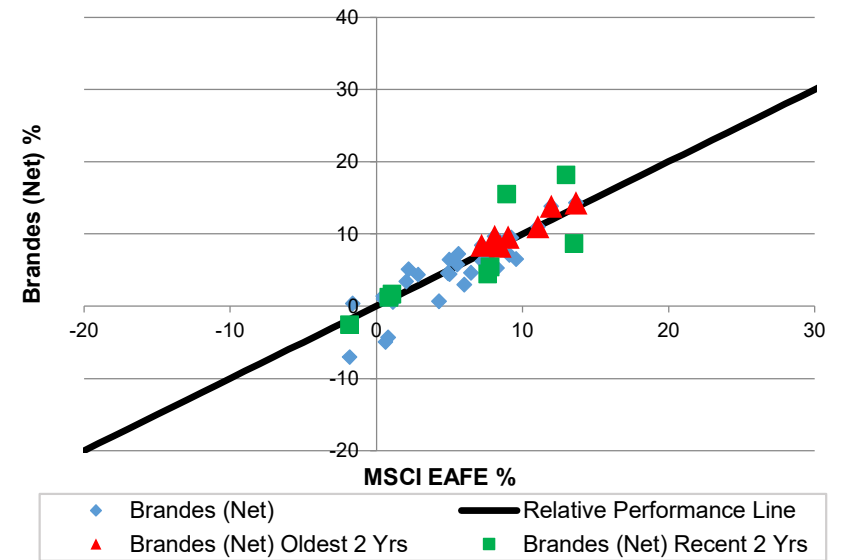
## Performance Relative to Peer Group as of 6/30/2023

Universe: Lipper US Int'l Multi-Cap Value



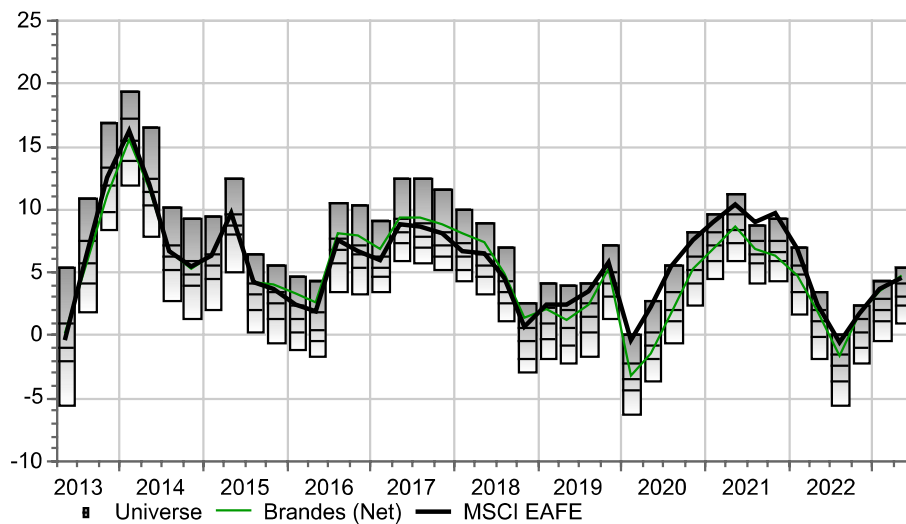
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 7/1/2008 – 6/30/2023 (5 Year, 3 Month Shift)

Universe: Lipper US Int'l Multi Cap Value



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## Over/Under Benchmark Analysis

20	Outperform
20	Underperform
40	# Observations
50%	% Outperform

## Brandes Attribution Analysis – June 30, 2023

### Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Petroleo Brasileiro S.A	1.57	1.57	0.81
CEMEX, S.A.B. de C.V.	1.99	1.99	0.55
Grifols, S.A.	1.59	1.57	0.41
Koninklijke Philips N.V.	1.89	1.78	0.40
Heidelberg Materials AG	2.61	2.54	0.36
Marks and Spencer Group PLC	1.23	1.23	0.23
MS&AD Insurance Group Holdings, Inc.	1.66	1.57	0.22
Mitsubishi UFJ Financial Group, Inc.	1.71	1.21	0.21
ENGIE SA.	1.84	1.65	0.20
Telefonica SA	1.02	0.85	0.20

### Top 10 Leading Detractors

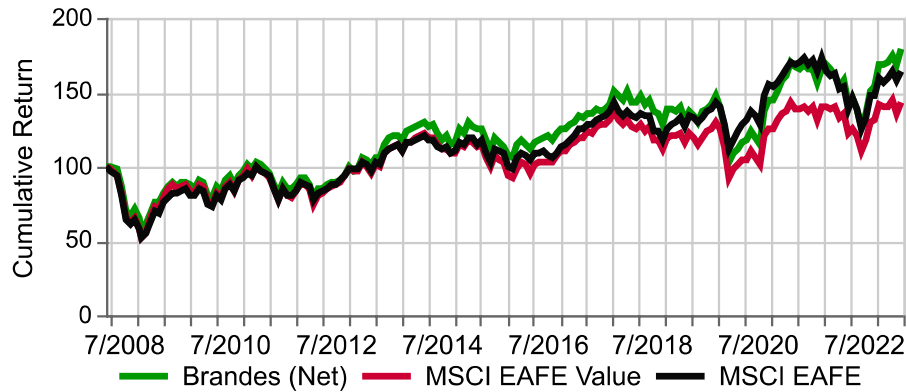
	Avg. Weights	Relative Weights	Active Return
Alibaba Group Holding Limited	2.48	2.48	-0.56
Swatch Group AG	2.37	2.28	-0.31
WPP plc	2.18	2.10	-0.21
Embraer S.A.	2.33	2.33	-0.16
Takeda Pharmaceutical Company Limited	3.91	3.59	-0.16
Taisho Pharmaceutical Holdings Co., Ltd.	1.19	1.19	-0.13
Telecom Italia S.p.A.	0.66	0.64	-0.12
Carrefour SA	2.21	2.14	-0.10
Kingfisher Plc	1.25	1.21	-0.07
Societe BIC SA	0.71	0.71	-0.04

### Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	3.9	1.2	-2.5	-0.2	0.0	0.1
Consumer Discretionary	-1.9	-5.1	5.3	-0.1	-1.2	-1.1
Consumer Staples	5.4	1.0	-0.6	-0.2	0.0	0.1
Energy	2.4	13.9	0.0	-0.1	0.8	0.9
Financials	-1.0	7.2	4.7	0.0	0.6	0.4
Health Care	3.6	5.2	2.0	0.0	0.7	0.5
Industrials	-9.3	0.0	6.2	-0.4	-0.7	-0.7
Information Technology	-2.2	9.3	5.9	-0.1	0.0	0.1
Materials	-0.5	15.3	-1.6	0.0	1.0	1.2
Real Estate	-0.4	5.7	-1.9	0.0	0.0	0.2
Utilities	-1.6	12.5	4.0	0.0	0.1	0.1
Cash	1.7	0.7	0.0	0.0	0.0	0.0
Total	0.0	4.6	3.0	-1.2	1.4	1.7

# Brandes 15 Year Performance & Statistics

## Investment Growth – 15 Years



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## Relative Cumulative Performance – 15 Years

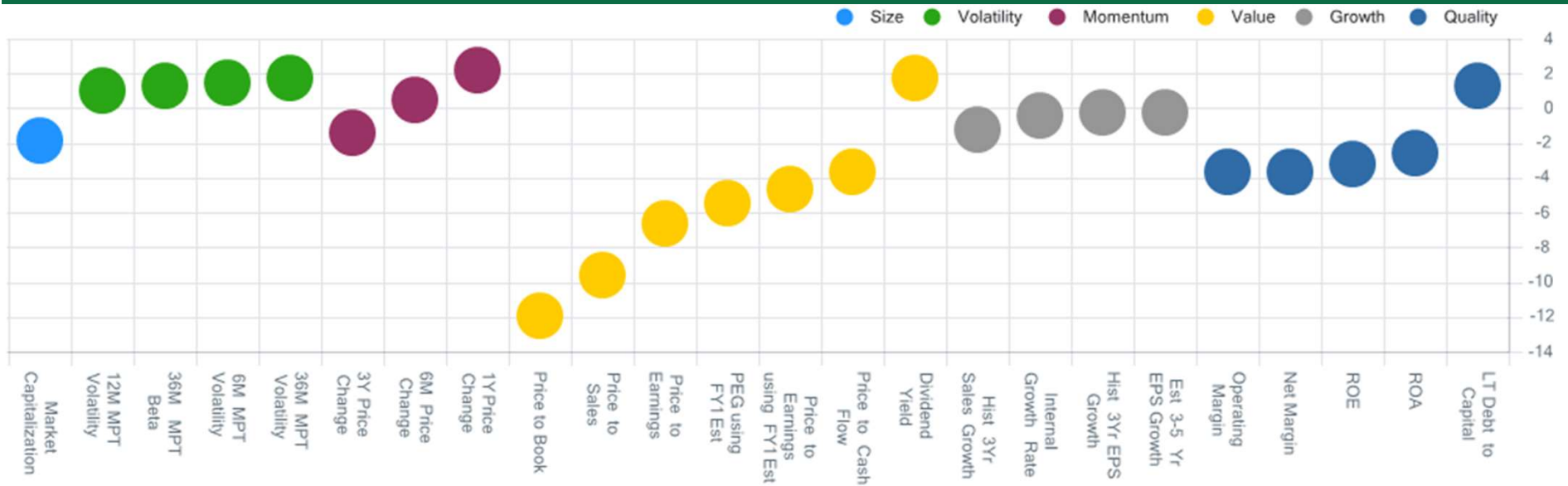


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## Risk – 15 Years

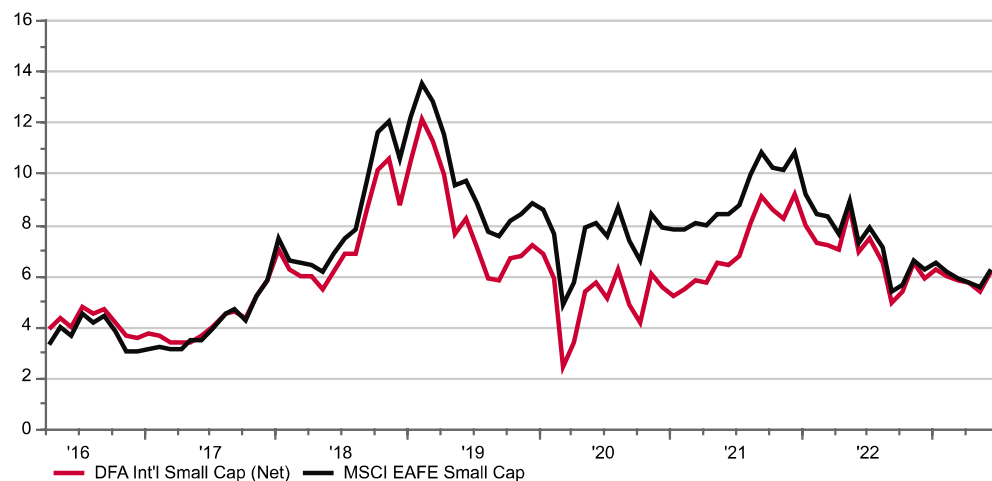
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Brandes (Net)	3.9	18.6	0.7	0.2	0.1	5.3	1.0
MSCI EAFE	3.4	17.9	--	0.1	--	--	1.0
MSCI EAFE Value	2.4	19.3	--	0.1	--	--	1.1

## Characteristics Tilt vs Benchmark 6/30/2023



# DFA International Portfolio Snapshot – June 30, 2023

## Rolling Returns Since Inception 5/1/2006 (Ten Year, One Month Shift)



©FactSet Research Systems

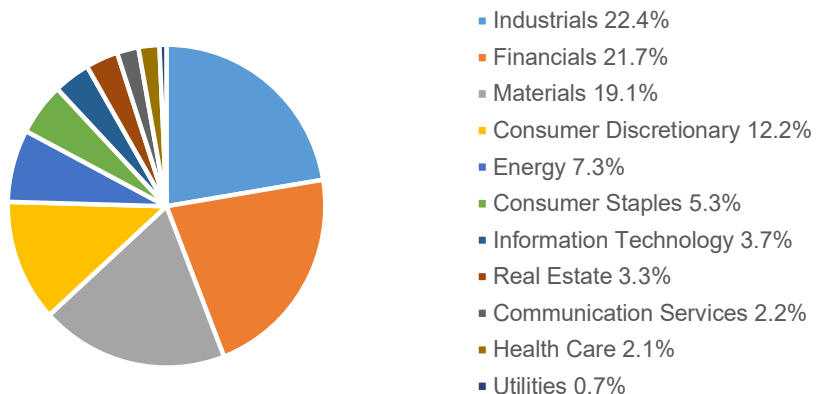
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Banco de Sabadell, S.A.	1.05	6.48
Banco BPM S.p.A.	0.99	26.07
Alamos Gold Inc	0.83	-2.26
Jyske Bank A/S	0.82	8.55
Helvetia Holding AG	0.81	1.64
Crescent Point Energy Corp.	0.69	-3.61
MEG Energy Corp.	0.69	-1.31
ASR Nederland N.V.	0.68	18.06
Elis SA	0.66	4.23
Rexel SA	0.66	10.43

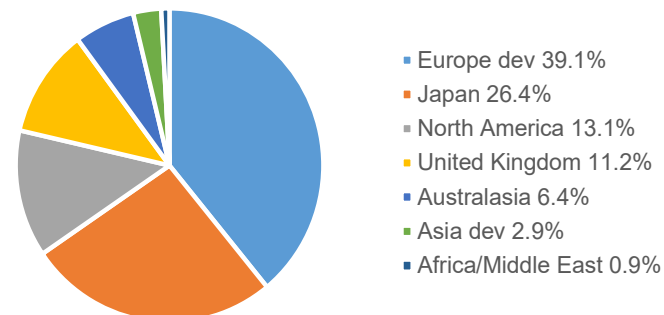
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	15 Year
DFA Int'l Small Cap (Net)	0.9	7.4	15.3	12.7	2.2	6.1	4.8
MSCI EAFE Small Cap	0.6	5.5	10.2	5.7	1.3	6.2	4.5
MSCI World ex US Small Cap	0.7	5.3	10.6	9.8	1.9	5.4	4.7

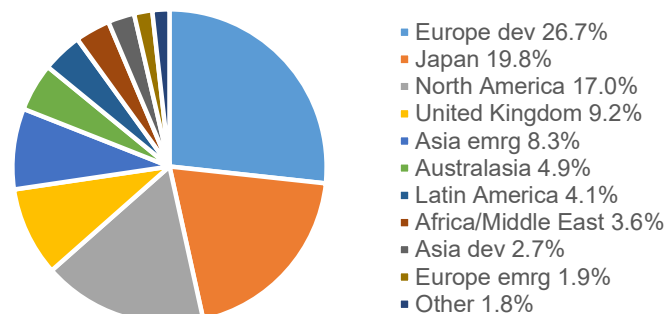
## Equity Sector Exposure (GICS)



## Regional Exposure by Domicile



## Regional Exposure by Source of Revenue

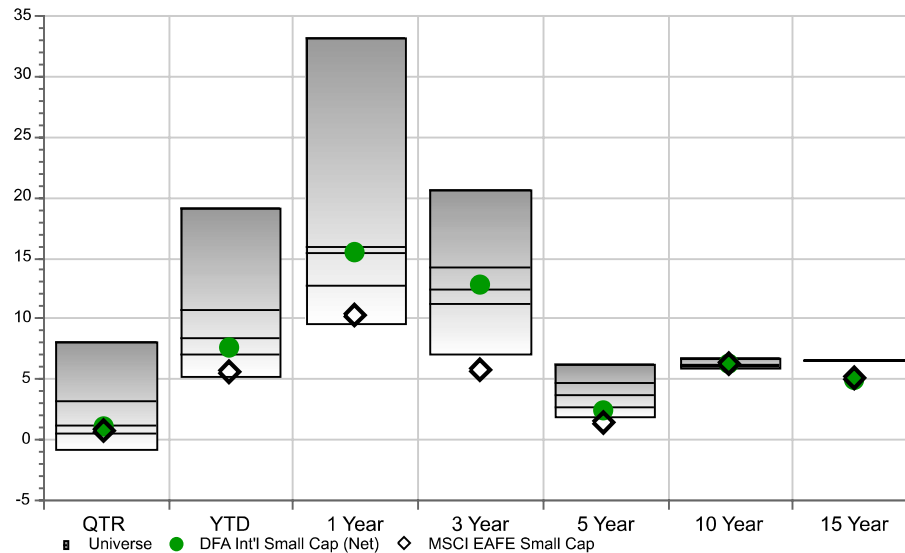




# DFA International vs Universe & Benchmark

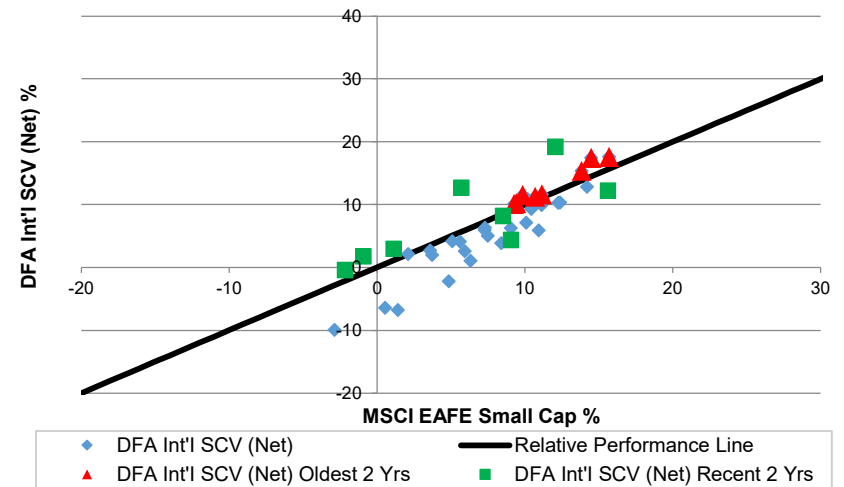
## Performance Relative to Peer Group as of 6/30/2023

Universe: Lipper US: Int'l Sm/Mid Cap Value



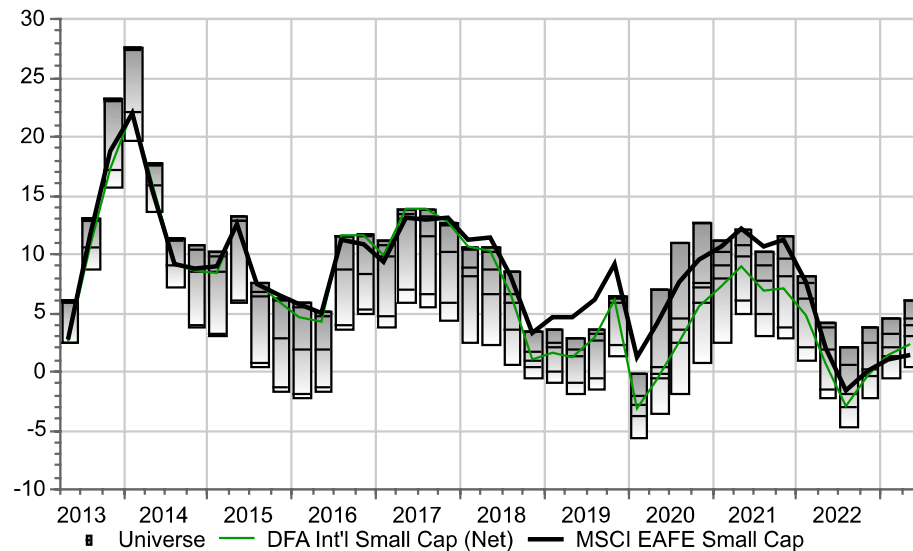
©FactSet Research Systems

## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 7/1/2008 – 6/30/2023 (5 Year, 3 Month Shift)

Universe: Lipper US: Int'l Sm/Mid Cap Value



©FactSet Research Systems

## Over/Under Benchmark Analysis

15	Outperform
25	Underperform
40	# Observations
38%	% Outperform

## DFA International Attribution Analysis – June 30, 2023

### Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Banco BPM S.p.A.	0.83	0.61	0.14
SCOR SE	0.38	0.23	0.07
ASR Nederland N.V.	0.62	0.36	0.06
Banco de Sabadell, S.A.	0.94	0.71	0.06
Jyske Bank A/S	0.76	0.62	0.05
EQB, Inc.	0.22	0.22	0.05
Marks and Spencer Group PLC	0.41	0.24	0.05
Linamar Corporation	0.42	0.42	0.05
BW LPG Limited	0.13	0.10	0.04
Cargotec Oyj	0.46	0.38	0.04

### Top 10 Leading Detractors

	Avg. Weights	Relative Weights	Active Return
K+S Aktiengesellschaft	0.56	0.42	-0.07
Pan American Silver Corp.	0.45	0.45	-0.06
OceanaGold Corporation	0.29	0.29	-0.06
Dampskibsselskabet NORDEN A/S	0.27	0.22	-0.06
Perseus Mining Limited	0.22	0.15	-0.05
Aperam SA	0.36	0.29	-0.05
Konica Minolta, Inc.	0.28	0.21	-0.05
B2Gold Corp.	0.53	0.53	-0.05
Signify N.V.	0.45	0.29	-0.04
Kemira Oyj	0.44	0.37	-0.04

### Sector Attribution

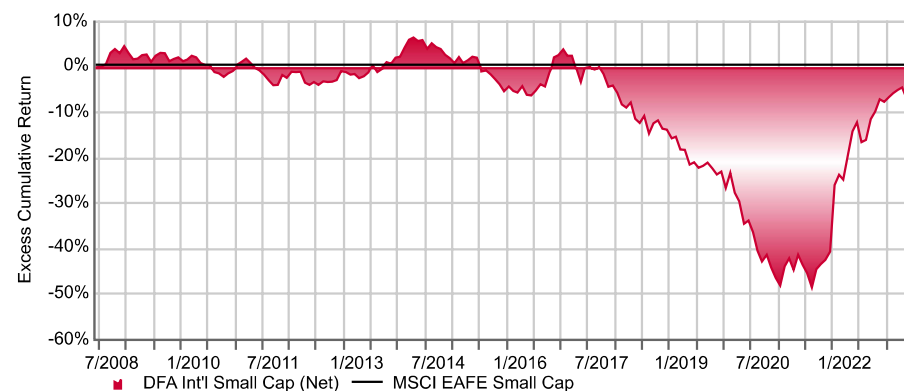
	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	-2.0	-4.9	-3.5	0.1	-0.1	0.0
Consumer Discretionary	-0.9	1.4	1.0	0.0	-0.1	0.0
Consumer Staples	-1.0	-0.3	-1.0	0.0	-0.1	0.0
Energy	4.8	-1.8	-3.3	-0.3	0.0	-0.1
Financials	9.9	5.5	4.6	0.3	0.1	0.6
Health Care	-4.2	5.5	2.6	-0.1	0.0	0.0
Industrials	-1.7	2.0	0.3	0.0	0.4	0.4
Information Technology	-5.9	-3.0	3.5	-0.2	-0.2	-0.4
Materials	10.0	-3.9	-2.7	-0.3	-0.5	-0.6
Real Estate	-7.0	-0.9	-3.1	0.2	0.0	0.3
Utilities	-2.2	7.1	6.3	-0.1	0.0	-0.1
Total	0.0	0.7	0.5	-0.3	-0.4	0.2

# DFA International Inception Performance & Statistics

## Investment Growth – 15 Years



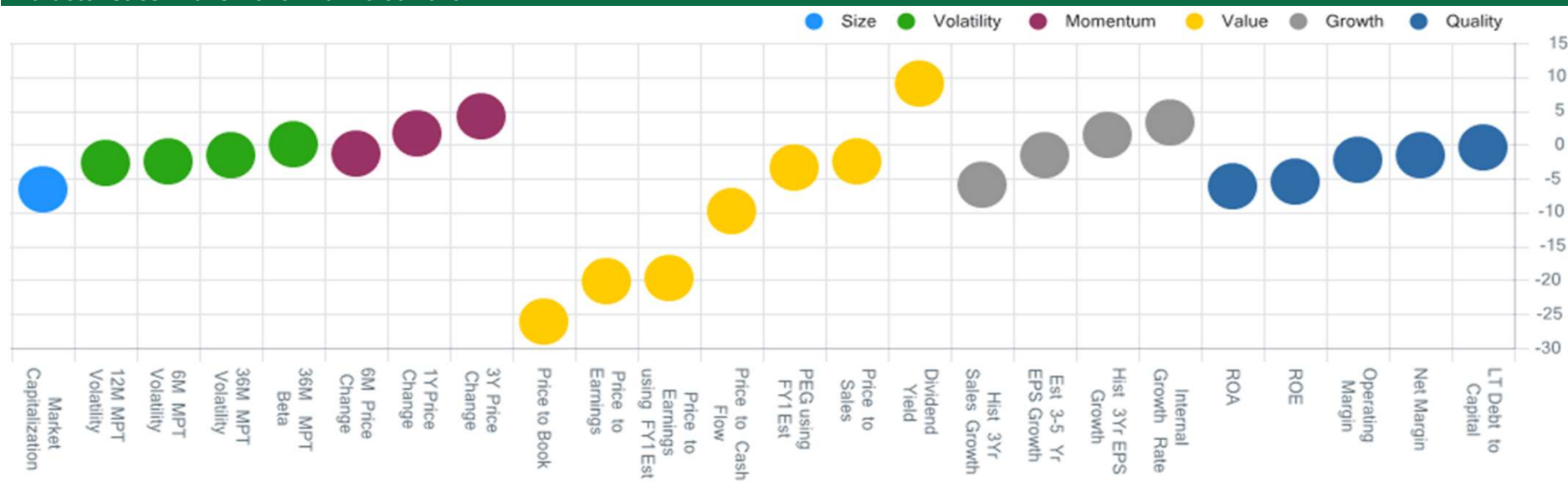
## Relative Cumulative Performance – 15 Years



## Risk – 15 Years

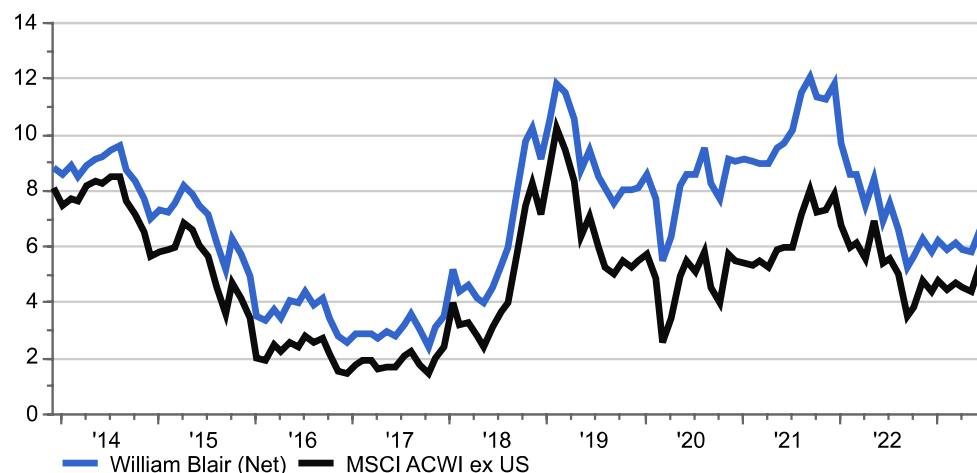
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
DFA Int'l Small Cap (Net)	4.8	20.4	-0.1	0.2	0.0	4.5	1.0
MSCI EAFE Small Cap	4.5	19.3	--	0.2	--	--	1.0
MSCI World ex US Small Cap Value	4.7	19.9	--	0.2	--	--	1.0

## Characteristics Tilt vs Benchmark 6/30/2023



# William Blair Portfolio Snapshot – June 30, 2023

## Rolling Returns Since Inception 1/1/2004 (Ten Year, One Month Shift)

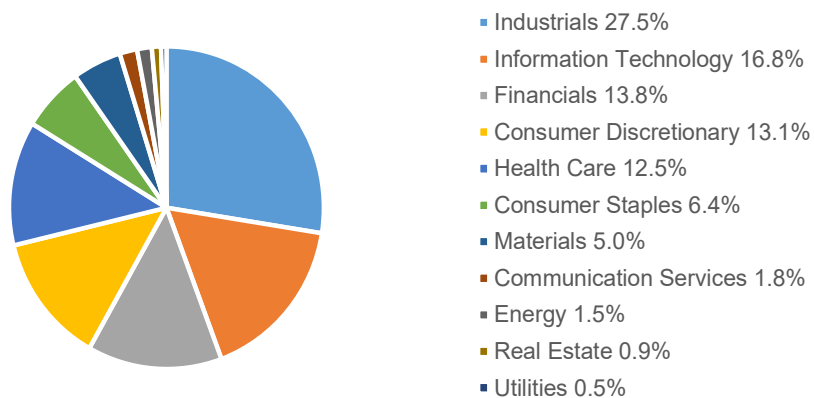


©FactSet Research Systems

## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	15 Year
William Blair (Net)	3.1	11.9	15.1	5.4	5.2	6.5	4.7
MSCI ACWI ex US	2.7	9.9	13.3	7.7	4.0	5.2	3.3
MSCI ACWI ex US Growth	2.1	11.0	13.7	4.3	4.4	6.0	3.7

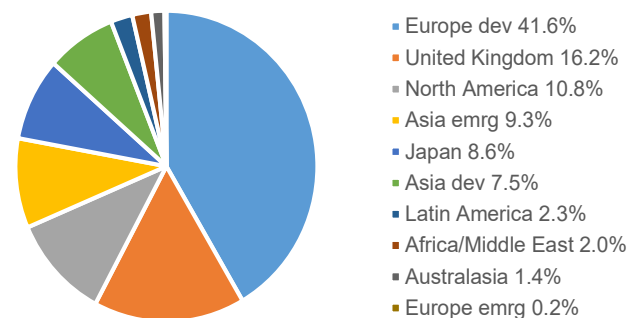
## Equity Sector Exposure (GICS)



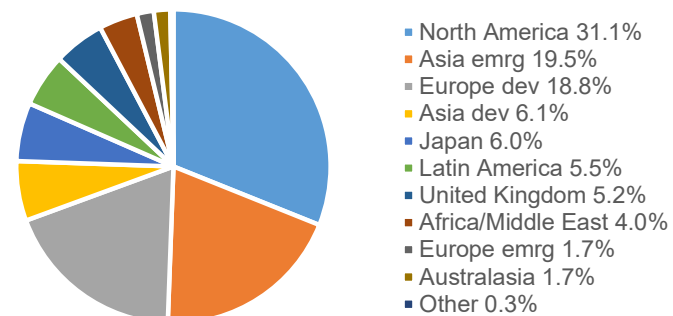
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
ASML Holding NV	1.96	6.80
Novo Nordisk A/S	1.72	1.72
Linde Plc	1.68	7.57
Taiwan Semi Mfg. Co. Ltd.	1.64	6.15
DSV A/S	1.56	8.53
AstraZeneca	1.55	3.23
AIA Group Limited	1.55	-2.68
Amadeus IT Group SA	1.53	13.51
Keyence Corporation	1.51	-3.06
Compass Group Plc	1.49	12.13

## Regional Exposure by Domicile



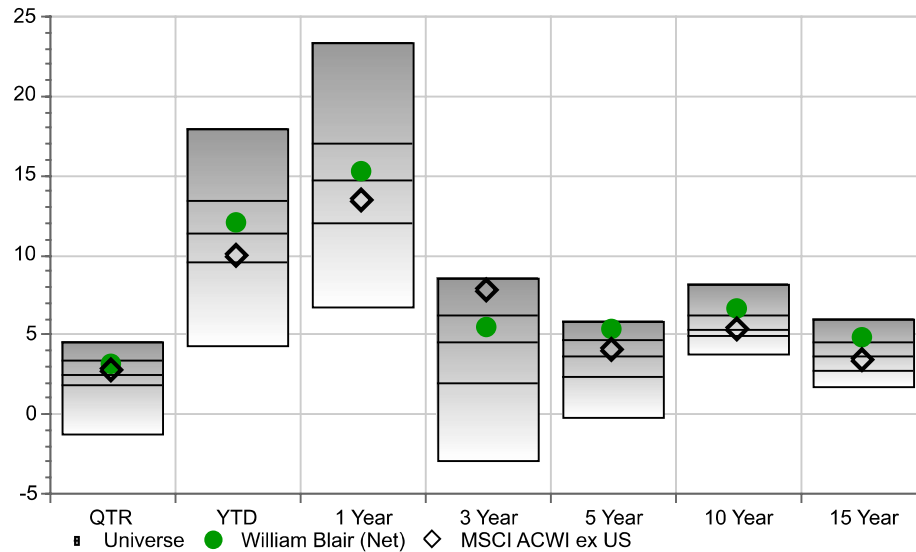
## Regional Exposure by Source of Revenue



# William Blair vs Universe & Benchmark

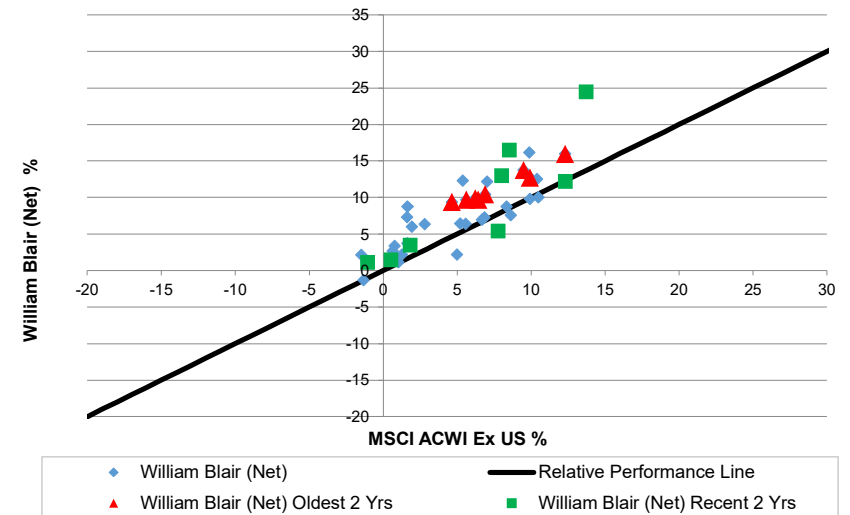
## Performance Relative to Peer Group as of 6/30/2023

Universe: Lipper US:International Multi-Cap Growth



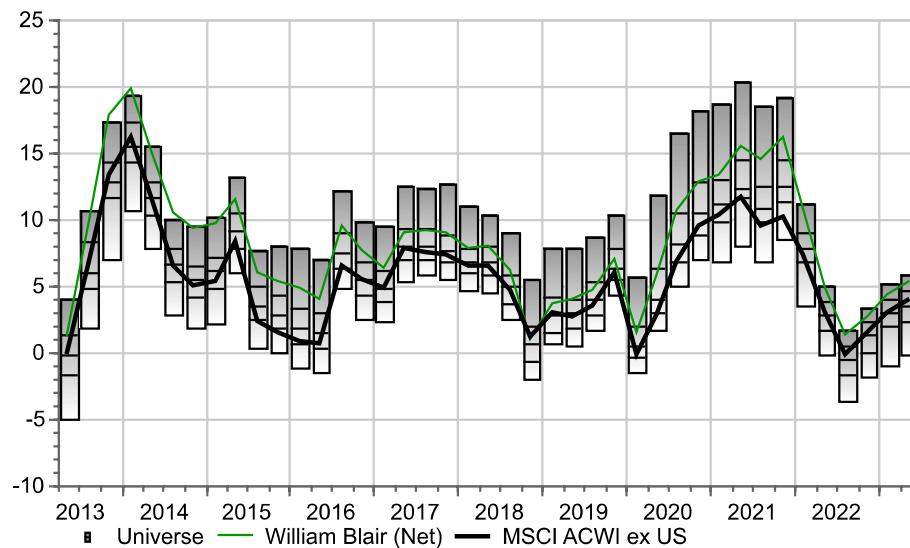
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 7/1/2008 – 6/30/2023 (5 Year, 3 Month Shift)

Universe: Lipper US:International Multi-Cap Growth



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## Over/Under Benchmark Analysis

34	Outperform
6	Underperform
40	# Observations
85%	% Outperform

# William Blair Attribution Analysis – June 30, 2023

## Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Abcam plc	0.15	0.15	0.22
Amadeus IT Group SA	1.49	1.35	0.18
Compass Group Plc	1.65	1.45	0.17
ICON plc	1.03	1.03	0.16
DAIKIN INDUSTRIES, LTD.	1.29	1.09	0.15
Experian Plc	0.96	0.82	0.14
Dollarama Inc.	1.05	0.98	0.13
Linde Plc	1.39	1.39	0.12
DSV A/S	1.45	1.30	0.11
London Stock Exchange Group plc	1.29	1.12	0.11

## Top 10 Leading Detractors

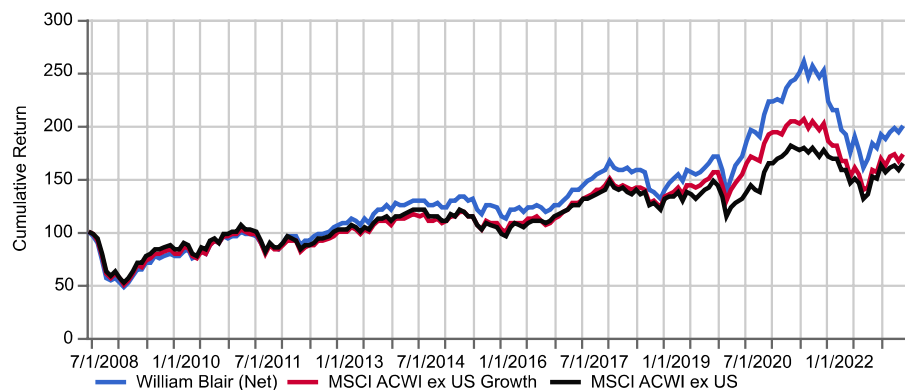
	Avg. Weights	Relative Weights	Active Return
Teleperformance SA	0.47	0.42	-0.28
China Tourism Group Duty Free Corp. Ltd.	0.32	0.31	-0.16
Beijer Ref AB	0.30	0.30	-0.09
Sartorius Stedim Biotech S.A.	0.46	0.43	-0.09
TechnoPro Holdings, Inc.	0.31	0.31	-0.07
Carl Zeiss Meditec AG	0.28	0.26	-0.06
Infineon Technologies AG	1.01	0.80	-0.06
Wuliangye Yibin Co., Ltd. Class A	0.22	0.22	-0.05
EDP Energias de Portugal, S.A.	0.41	0.39	-0.05
Kweichow Moutai Co., Ltd. Class A	0.41	0.41	-0.05

## Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	-4.1	-0.9	-4.5	0.3	0.0	0.4
Consumer Discretionary	1.2	2.0	1.8	0.0	-0.3	0.0
Consumer Staples	-2.9	1.0	-0.5	0.1	0.1	0.2
Energy	-3.4	2.3	3.4	0.0	0.0	-0.1
Financials	-7.1	6.2	4.9	-0.1	0.1	0.0
Health Care	3.2	1.7	1.5	-0.1	-0.1	0.0
Industrials	13.8	3.6	5.5	0.6	-1.0	-0.1
Information Technology	3.8	5.0	6.1	0.2	-0.2	0.0
Materials	-3.5	4.2	-2.7	0.2	0.3	0.5
Real Estate	-1.1	2.8	-2.5	0.0	0.0	0.1
Utilities	-2.3	-2.7	3.6	0.0	-0.1	-0.1
Cash	2.5	1.2	0.0	0.0	0.0	0.0
Total	0.0	3.3	2.5	1.3	-1.1	0.9

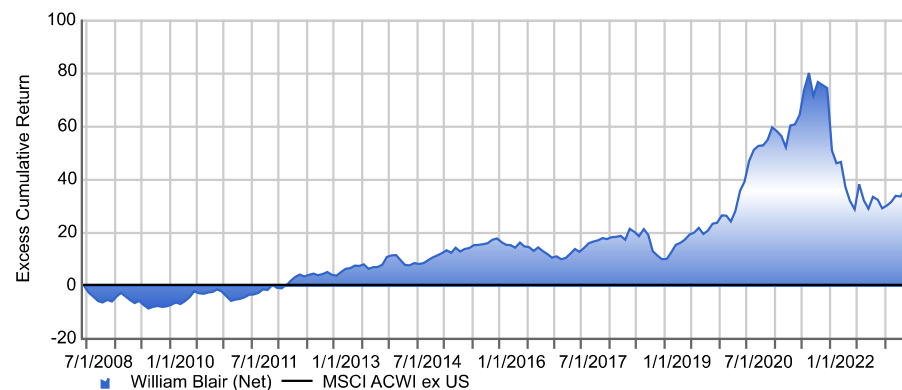
# William Blair 15 Year Performance & Statistics

## Investment Growth – 15 Years



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## Relative Cumulative Performance – 15 Years

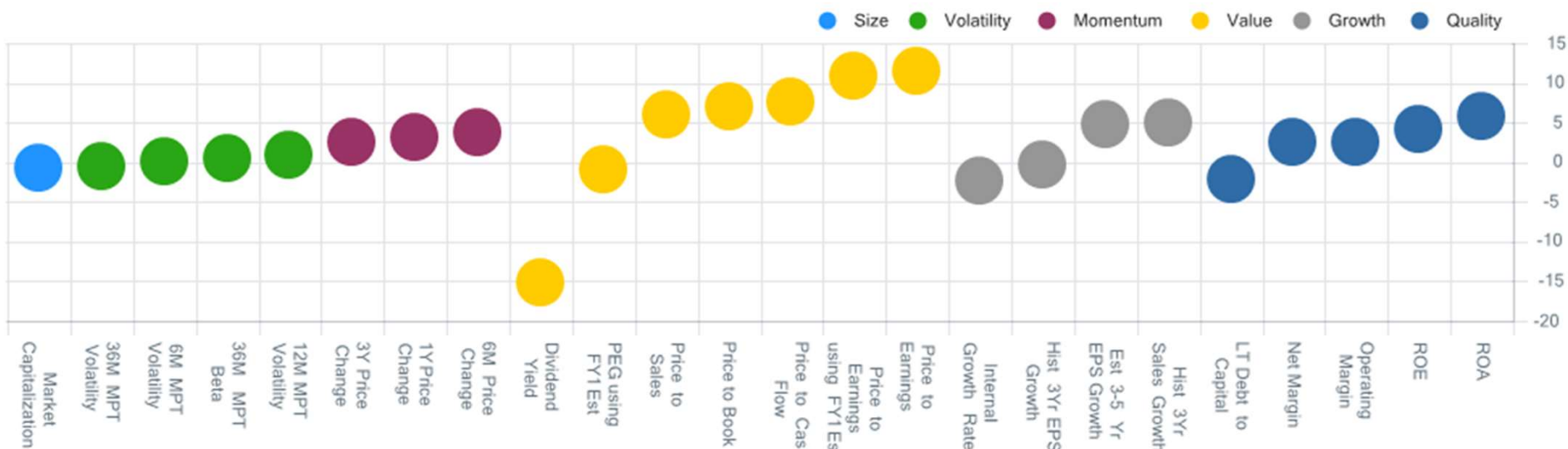


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## Risk – 15 Years

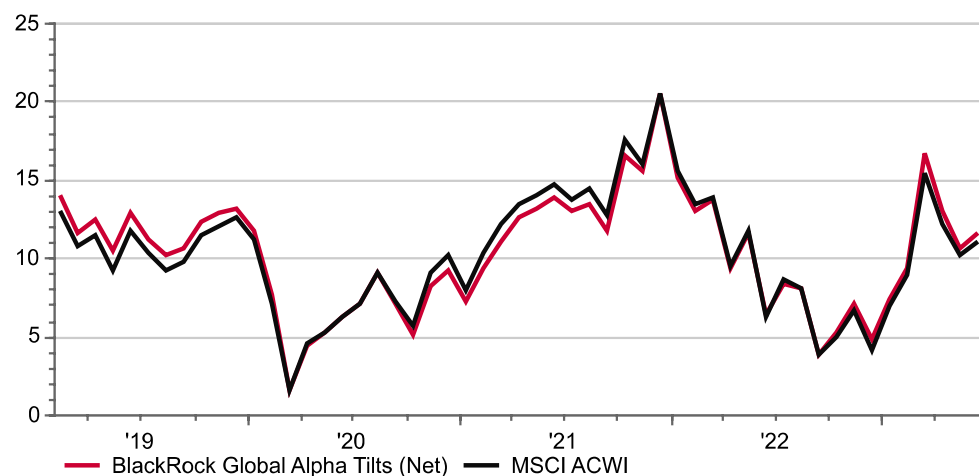
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
William Blair (Net)	4.7	18.3	1.5	0.2	0.2	5.5	1.0
MSCI ACWI ex US	3.3	18.1	--	0.1	--	--	1.0
MSCI ACWI ex US Growth	3.7	17.8	--	0.2	--	--	1.0

## Characteristics Tilt vs Benchmark 6/30/2023



# BlackRock Global Portfolio Snapshot – June 30, 2023

## Rolling Returns Since Inception 3/1/2016 (Three Year, One Month Shift)



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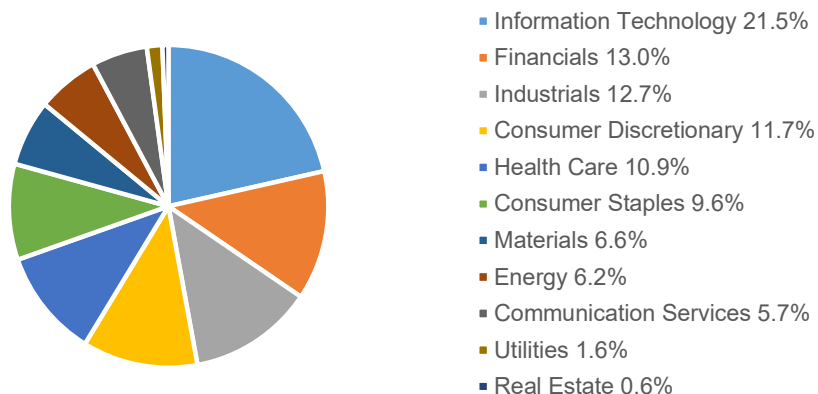
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Apple Inc.	4.98	17.79
Microsoft Corporation	4.83	18.36
Amazon.com, Inc.	2.80	26.21
NVIDIA Corporation	2.52	52.31
Alphabet Inc.	2.48	15.80
Walmart Inc.	1.48	7.01
Chevron Corporation	1.31	-2.59
Visa Inc.	1.26	5.55
Meta Platforms, Inc.	1.17	35.41
Bristol-Myers Squibb Company	1.16	-6.95

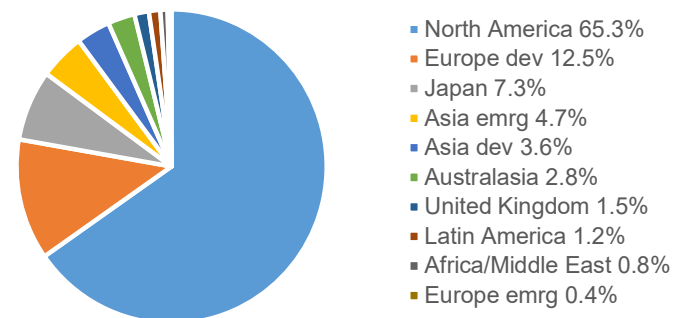
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	Inception 3/1/2016
BlackRock Global Alpha Tilts (Net)	6.0	14.0	17.5	11.5	8.0	11.2
MSCI ACWI	6.2	13.9	16.5	11.0	8.1	10.7

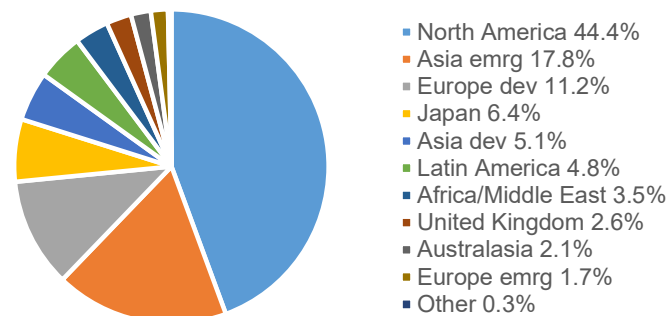
## Equity Sector Exposure (GICS)



## Regional Exposure by Domicile



## Regional Exposure by Source of Revenue

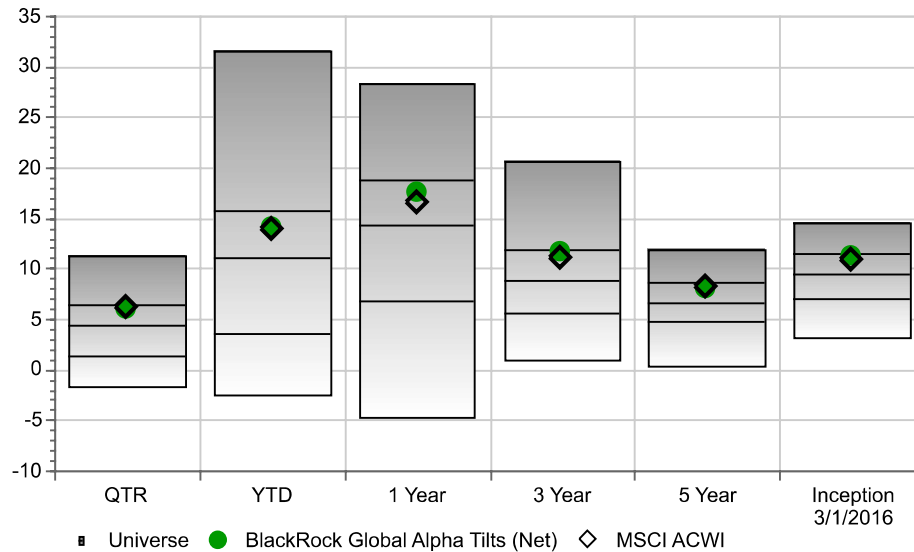




# BlackRock Global vs Universe & Benchmark

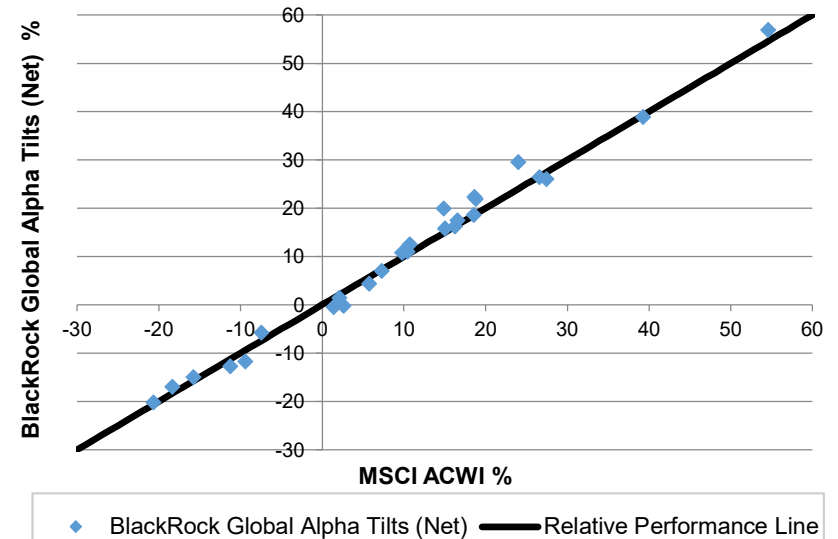
## Performance Relative to Peer Group as of 6/30/2023

Universe: Lipper US:Global



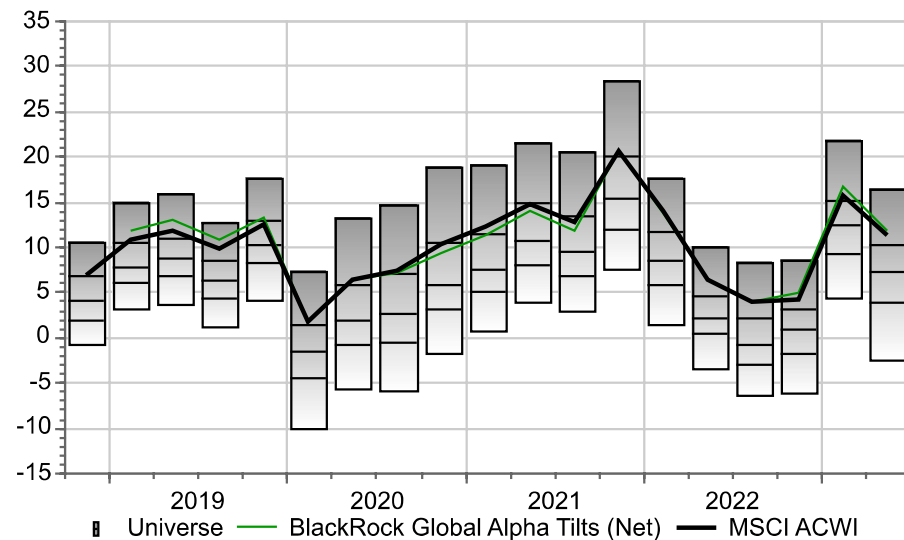
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## One-Year Rolling Return Versus Benchmark



## Rolling Returns 3/1/2016 – 6/30/2023 (3 Year, 3 Month Shift)

Universe: Lipper US Global Equity



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## Over/Under Benchmark Analysis

16	Outperform
10	Underperform
26	# Observations
62%	% Outperform

# BlackRock Global Attribution Analysis – June 30, 2023

## Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
NVIDIA Corporation	1.73	0.46	0.27
Adobe Incorporated	1.19	0.88	0.24
Microsoft Corporation	4.50	0.88	0.15
S&P Global, Inc.	1.07	0.87	0.14
Mitsubishi Corporation	0.43	0.35	0.13
Amazon.com, Inc.	2.07	0.39	0.11
Applied Materials, Inc.	0.57	0.39	0.07
Alphabet Inc.	2.56	0.44	0.07
Mercedes-Benz Group AG	0.71	0.61	0.07
Walmart Inc.	1.32	0.96	0.06

## Top 10 Leading Detractors

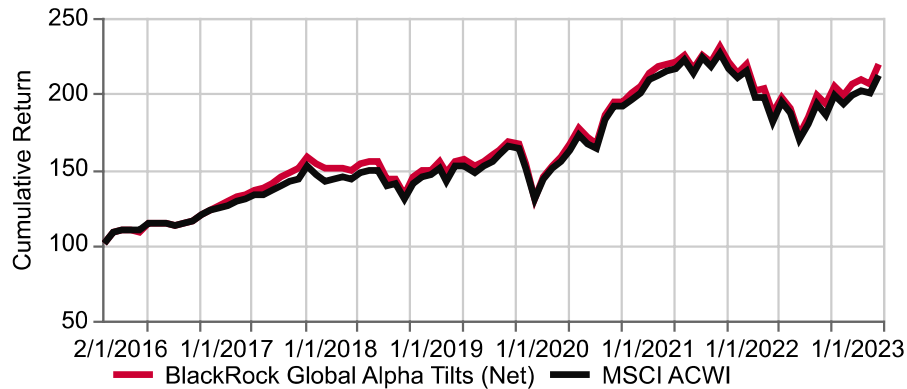
	Avg. Weights	Relative Weights	Active Return
Tesla, Inc.	0.16	-0.69	-0.15
Agilent Technologies, Inc.	1.03	0.97	-0.14
Equinor ASA	0.23	-0.29	-0.09
Bristol-Myers Squibb Company	1.24	1.01	-0.08
General Dynamics Corporation	0.89	0.80	-0.06
JPMorgan Chase & Co.	0.14	-0.52	-0.06
Taiwan Semi Mfg. Co. Ltd.	0.66	-0.05	-0.05
Texas Instruments Incorporated	0.22	-0.04	-0.05
Mettler-Toledo International Inc.	0.37	0.31	-0.05
Tencent Holdings Ltd.	0.82	0.36	-0.05

## Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	-1.6	9.3	7.1	0.0	0.1	0.1
Consumer Discretionary	-1.5	9.5	8.6	0.0	0.1	0.1
Consumer Staples	2.1	2.8	0.1	-0.2	0.3	0.1
Energy	1.7	0.2	0.9	-0.1	0.0	-0.1
Financials	-2.5	5.6	5.1	0.0	0.1	0.1
Health Care	1.8	-0.5	2.4	0.0	-0.4	-0.4
Industrials	1.9	5.3	6.1	0.0	0.0	-0.1
Information Technology	-0.7	16.1	14.8	-0.2	0.2	0.1
Materials	1.4	-4.0	-0.8	-0.1	-0.2	-0.3
Real Estate	-1.4	1.1	0.7	0.1	0.0	0.1
Utilities	-1.2	4.7	0.0	0.1	0.1	0.2
Total	0.0	6.0	6.2	-0.3	0.2	-0.2

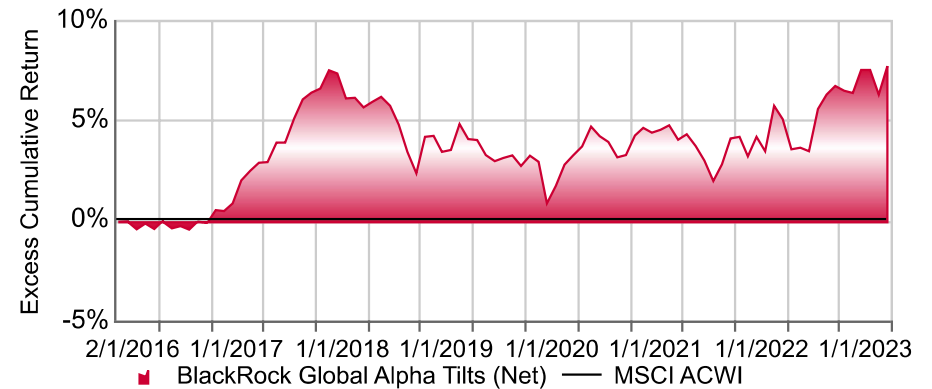
# BlackRock Global Inception Performance & Statistics

## Investment Growth Since Inception 3/1/2016



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## Relative Cumulative Performance Since Inception 3/1/2016

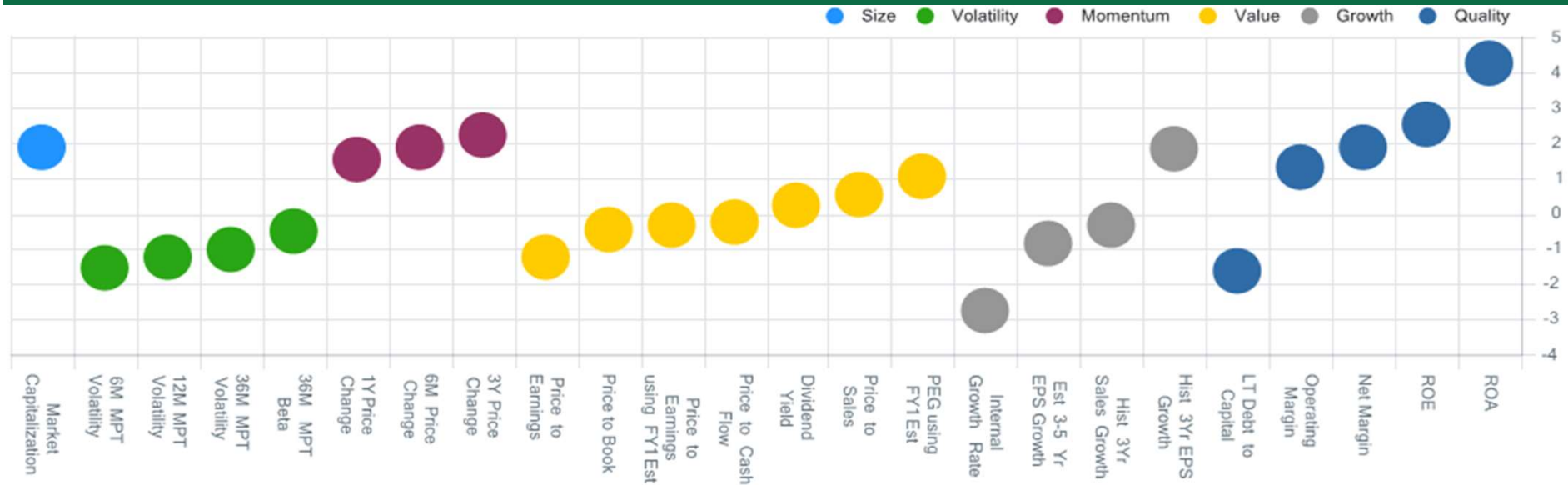


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## Risk Since Inception 3/1/2016

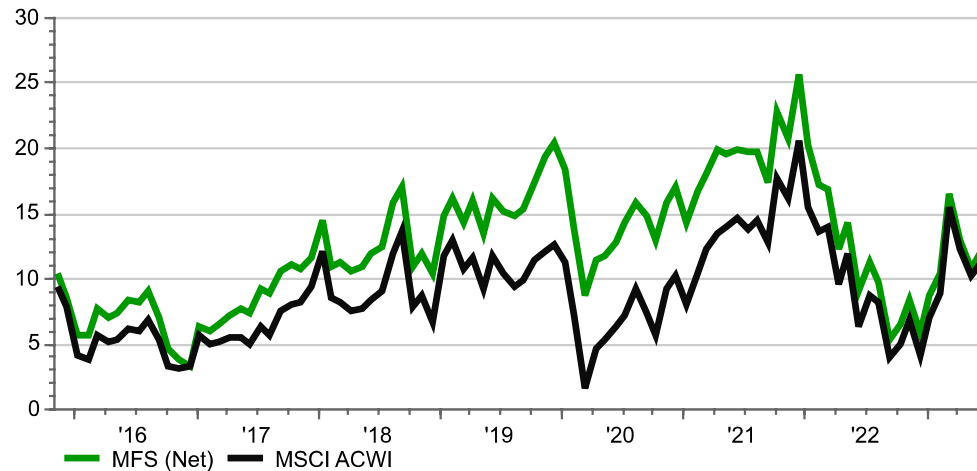
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
BlackRock Global Alpha Tilts (Net)	11.2	15.6	0.4	0.6	0.3	1.6	1.0
MSCI ACWI	10.7	15.3	--	0.6	--	--	1.0

## Characteristics Tilt vs Benchmark 6/30/2023



# MFS Portfolio Snapshot – June 30, 2023

## Rolling Returns Since Inception 12/1/2012 (Three Year, One Month Shift)

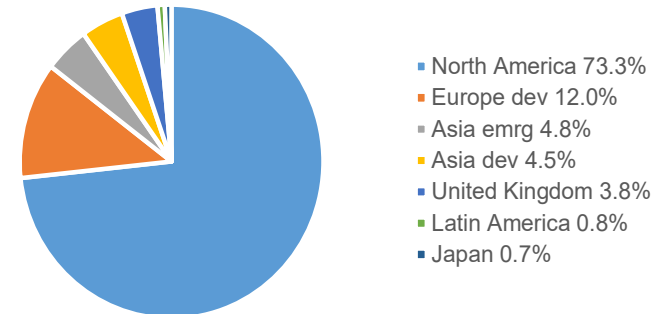


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## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Microsoft Corporation	6.42	18.36
Alphabet Inc.	4.09	15.40
Accenture plc	2.86	8.40
Visa Inc.	2.84	5.55
Apple Inc.	2.58	17.79
Canadian Pacific Kansas City Limited	2.57	5.16
Taiwan Semi Mfg. Co. Ltd.	2.43	6.15
ICON plc	2.21	17.14
Tencent Holdings Ltd.	2.15	-13.24
Church & Dwight Co., Inc.	2.03	13.70

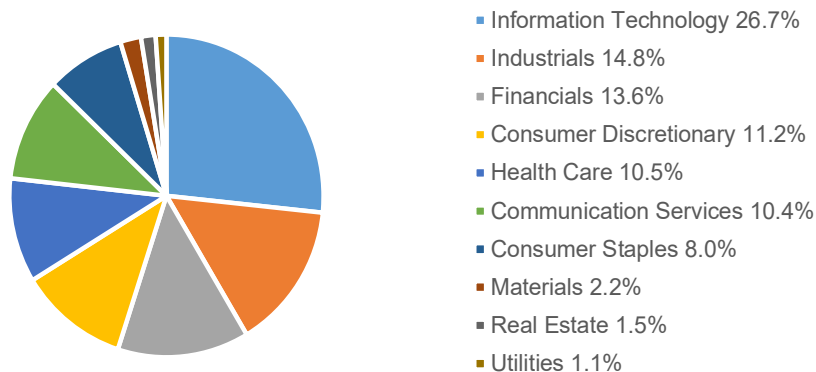
## Regional Exposure by Domicile



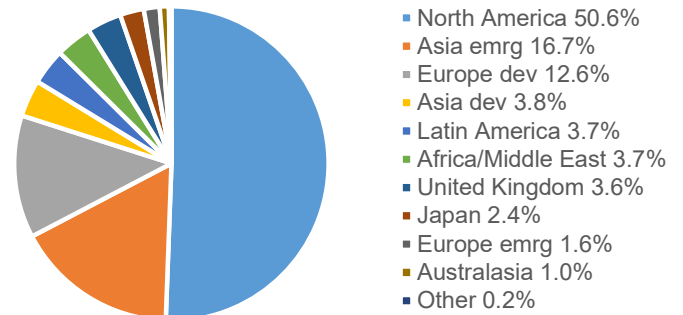
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	Inception 12/1/2012
MFS (Net)	6.1	15.0	17.3	11.8	11.4	11.7	11.8
MSCI ACWI	6.2	13.9	16.5	11.0	8.1	8.8	9.1
MSCI ACWI Growth	9.2	24.2	23.1	9.6	10.4	11.0	11.1

## Equity Sector Exposure (GICS)



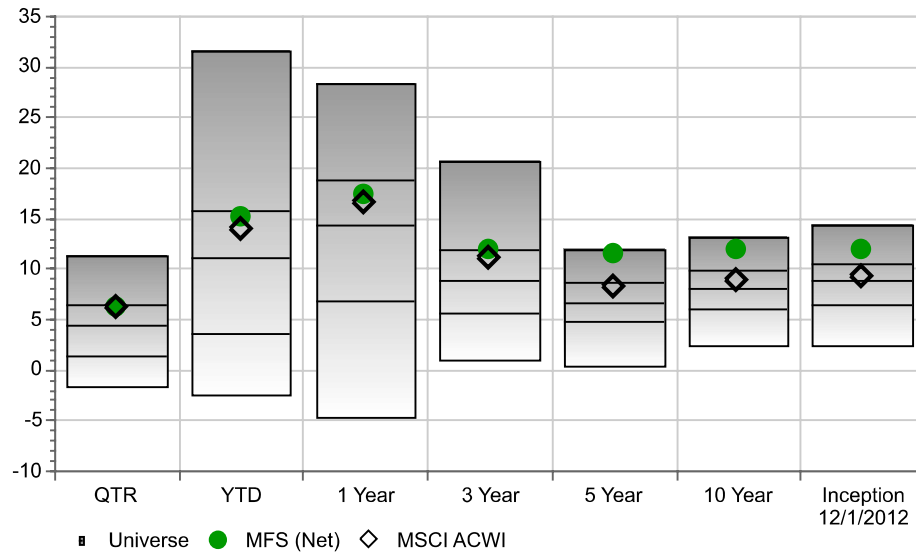
## Regional Exposure by Source of Revenue



# MFS vs Universe & Benchmark

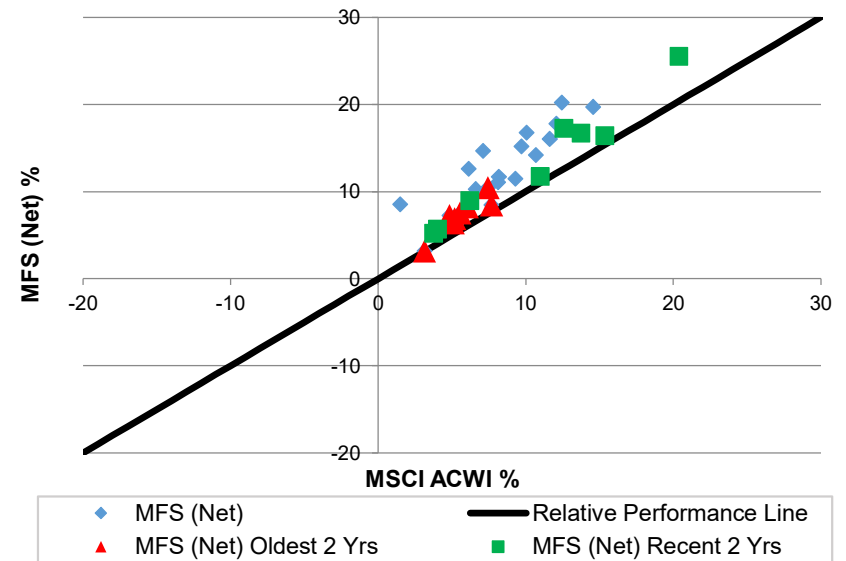
## Performance Relative to Peer Group as of 6/30/2023

Universe: Lipper US:Global



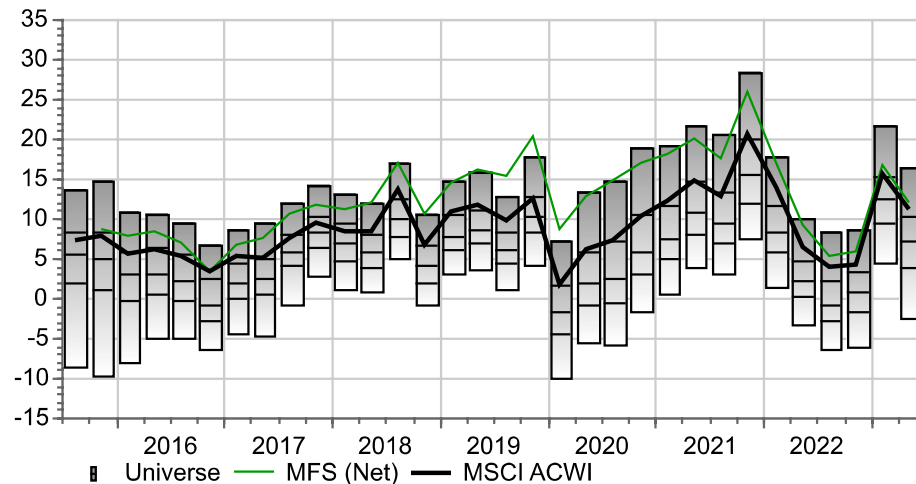
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 12/1/2012 – 6/30/2023 (3 Year, 3 Month Shift)

Universe: Lipper US Global Equity



©FactSet Research Systems

## Over/Under Benchmark Analysis

31	Outperform
0	Underperform
31	# Observations
100%	% Outperform

## MFS Attribution Analysis – June 30, 2023

### Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Alphabet Inc.	5.09	2.96	0.45
Adobe Incorporated	1.89	1.59	0.43
ICON plc	1.94	1.94	0.35
Microsoft Corporation	5.42	1.80	0.32
STERIS plc	1.70	1.67	0.30
Church & Dwight Co., Inc.	2.43	2.40	0.29
B&M European Value Retail SA	1.08	1.08	0.22
Accenture plc	2.85	2.55	0.22
Eaton Corporation plc	0.65	0.53	0.19
Sherwin-Williams Company	1.07	0.98	0.18

### Top 10 Leading Detractors

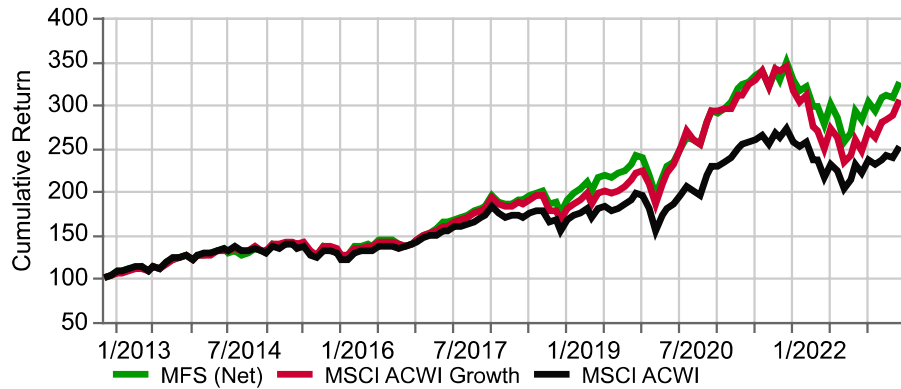
	Avg. Weights	Relative Weights	Active Return
NVIDIA Corporation	0.00	-1.27	-0.61
Amazon.com, Inc.	0.00	-1.67	-0.43
Apple Inc.	2.40	-2.11	-0.37
Meta Platforms, Inc.	0.00	-0.89	-0.29
Tencent Holdings Ltd.	2.28	1.82	-0.27
Tesla, Inc.	0.00	-0.86	-0.24
NAVER Corp.	1.67	1.64	-0.18
Eli Lilly and Company	0.00	-0.52	-0.18
Broadcom Inc.	0.00	-0.48	-0.17
Burberry Group plc	1.05	1.03	-0.16

### Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	4.4	3.4	7.1	0.0	-0.5	-0.4
Consumer Discretionary	1.1	0.9	8.6	0.0	-1.1	-0.9
Consumer Staples	1.8	-0.2	0.1	-0.1	0.0	-0.1
Energy	-4.9	0.0	0.9	0.3	0.0	0.3
Financials	-2.7	8.6	5.1	0.0	0.4	0.5
Health Care	-1.6	3.5	2.4	0.1	0.1	0.2
Industrials	2.8	10.7	6.1	0.0	0.5	0.6
Information Technology	3.6	11.2	14.8	0.4	-1.0	-0.5
Materials	-2.8	10.8	-0.8	0.2	0.2	0.4
Real Estate	-1.1	-4.1	0.7	0.1	-0.1	0.0
Utilities	-1.7	-7.3	0.0	0.1	-0.1	0.0
Cash	1.1	1.3	0.0	-0.1	0.0	-0.1
Total	0.0	6.2	6.2	1.0	-1.6	-0.1

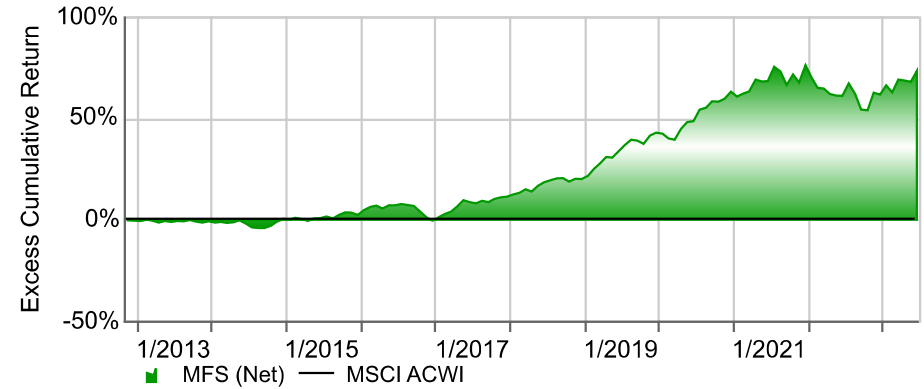
# MFS Inception Performance & Statistics

## Investment Growth Since Inception 12/1/2012



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## Relative Cumulative Performance Since Inception 12/1/2012

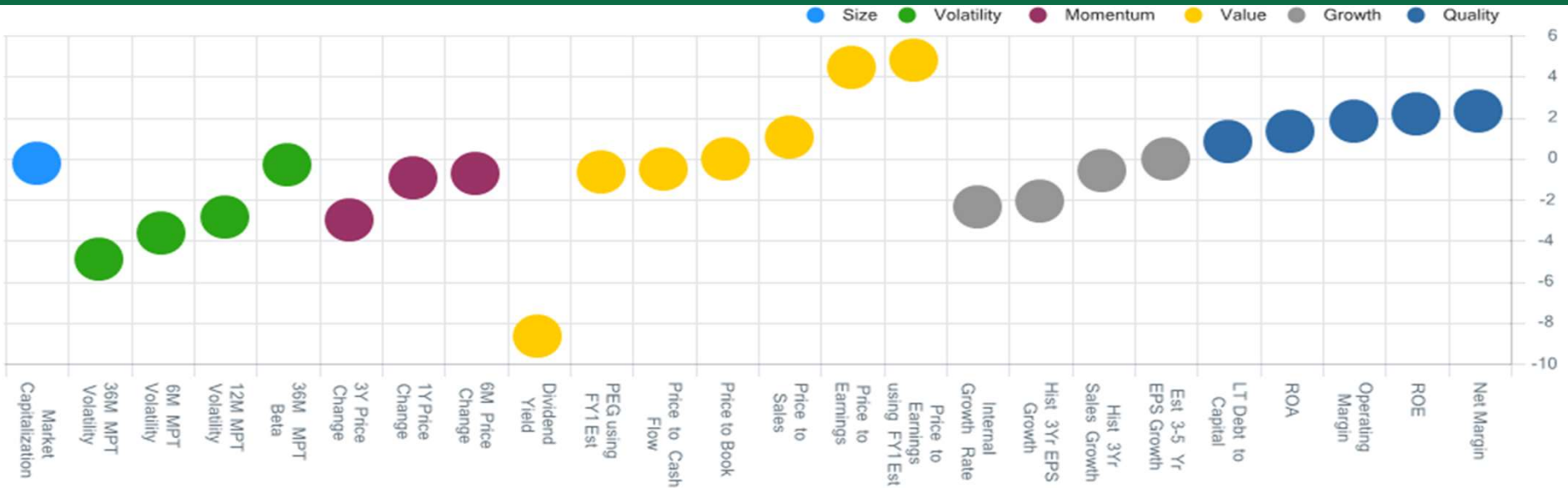


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## Risk Since Inception 12/1/2012

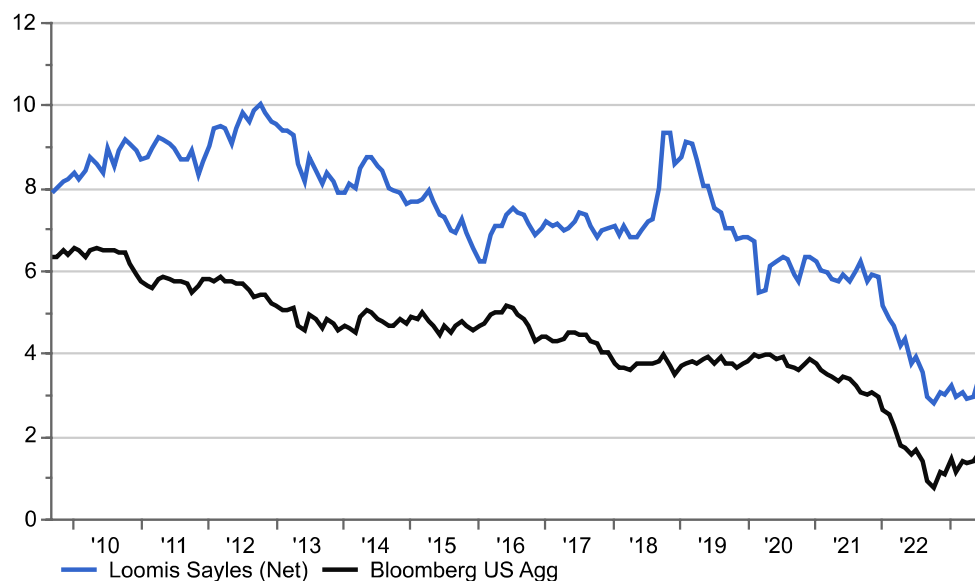
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
MFS (Net)	11.8	14.3	2.6	0.8	0.8	3.2	1.0
MSCI ACWI	9.1	14.2	--	0.6	--	--	1.0
MSCI ACWI Growth	11.1	15.2	--	0.7	--	--	1.0

## Characteristics Tilt vs Benchmark 6/30/2023



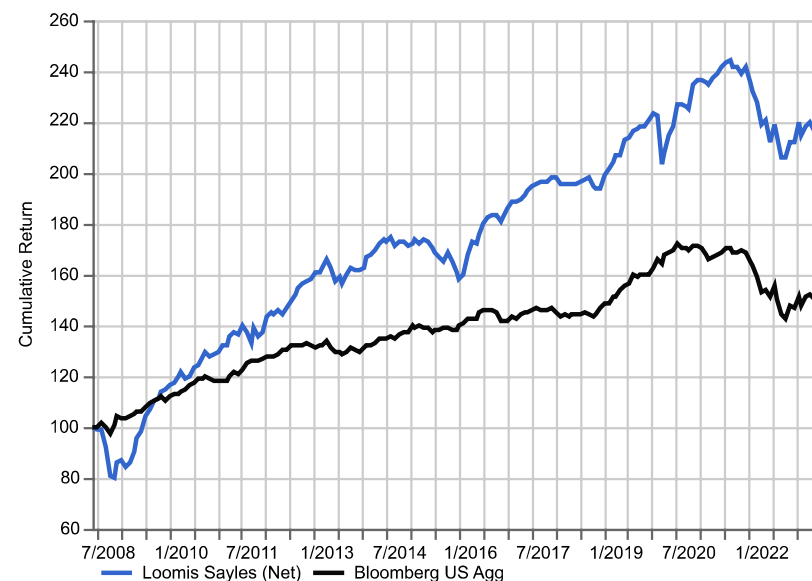
# Loomis Sayles Portfolio Snapshot – June 30, 2023

## Rolling Returns Since 10/1/1999 (Ten Year, One Month Shift)



©FactSet Research Systems

## Investment Growth – 15 Years



©FactSet Research Systems

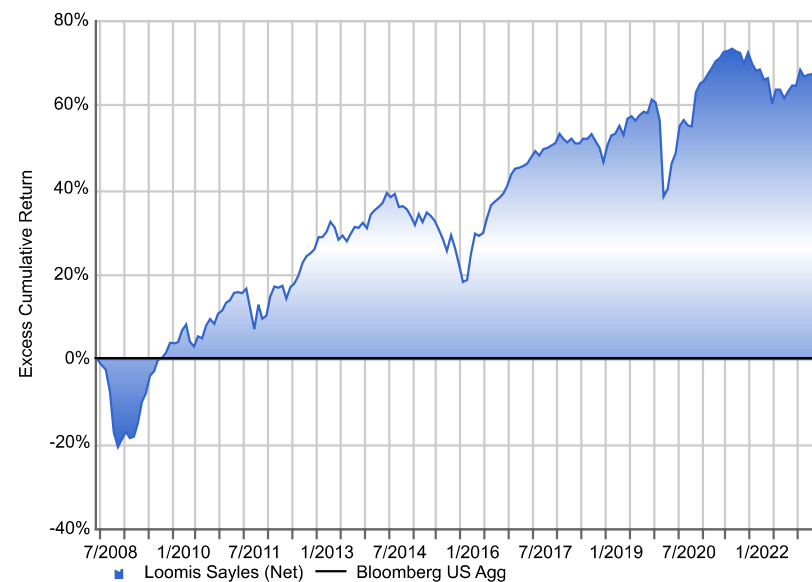
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	15 Year
Loomis Sayles (Net)	-0.3	3.0	2.9	0.0	2.2	3.3	5.3
Bloomberg US Aggregate	-0.8	2.1	-0.9	-4.0	0.8	1.5	2.7

## Risk – 15 Years

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error
Loomis Sayles (Net)	5.3	7.8	2.5	0.6	0.4	6.4
Bloomberg US Aggregate	2.7	4.1	--	0.5	--	--

## Relative Cumulative Performance – 15 Years



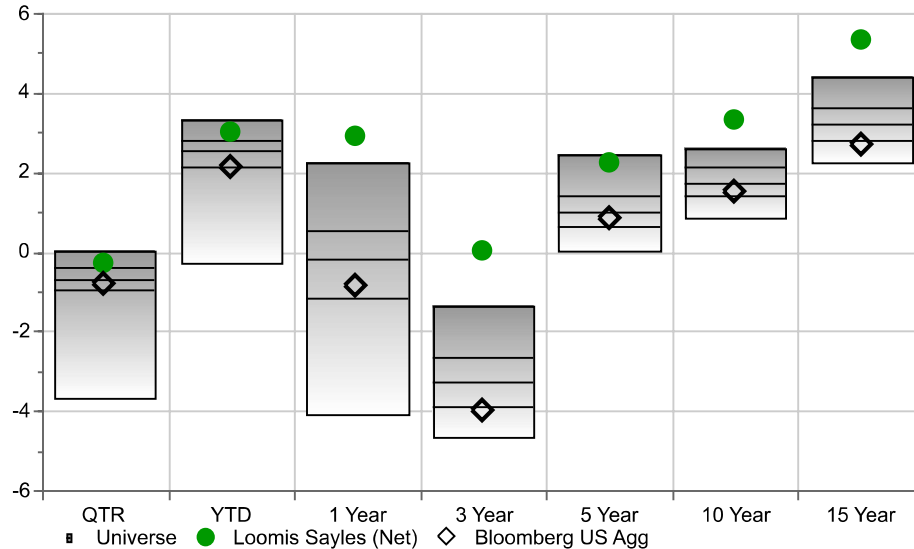
©FactSet Research Systems



# Loomis Sayles vs Universe & Benchmark

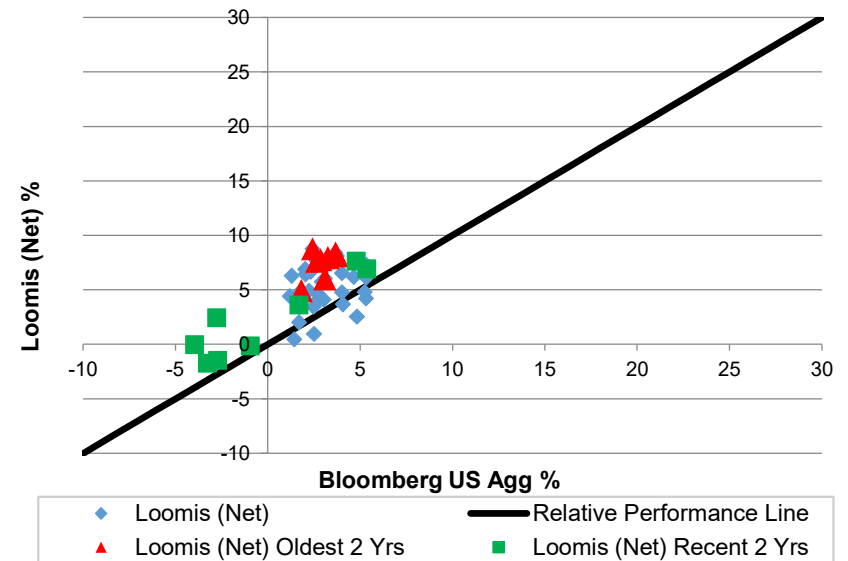
## Performance Relative to Peer Group as of 6/30/2023

Universe: Lipper US Core Plus Bond



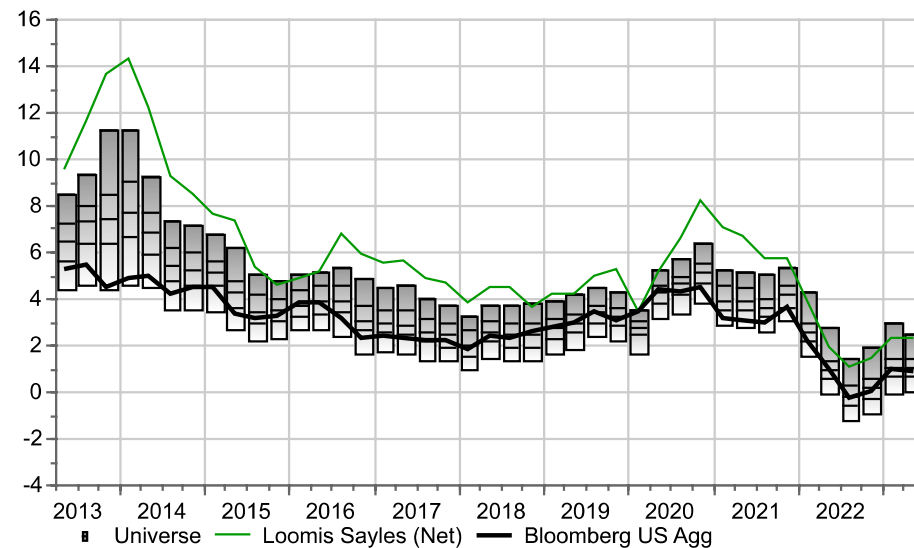
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 7/1/2008 – 6/30/2023 (5 Year, 3 Month Shift)

Universe: Lipper US:Core Plus Bond



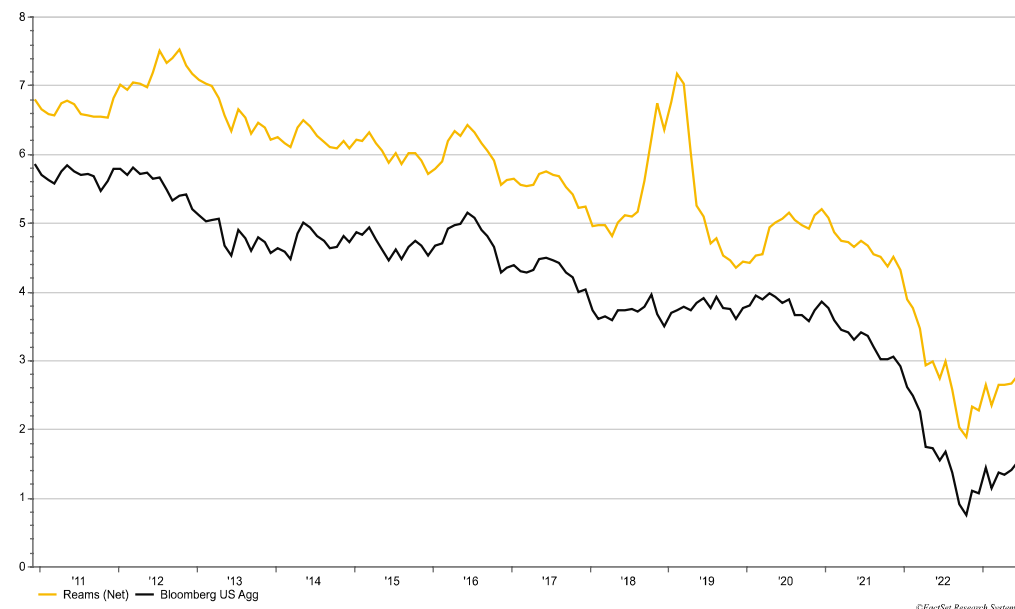
©FactSet Research Systems

## Over/Under Benchmark Analysis

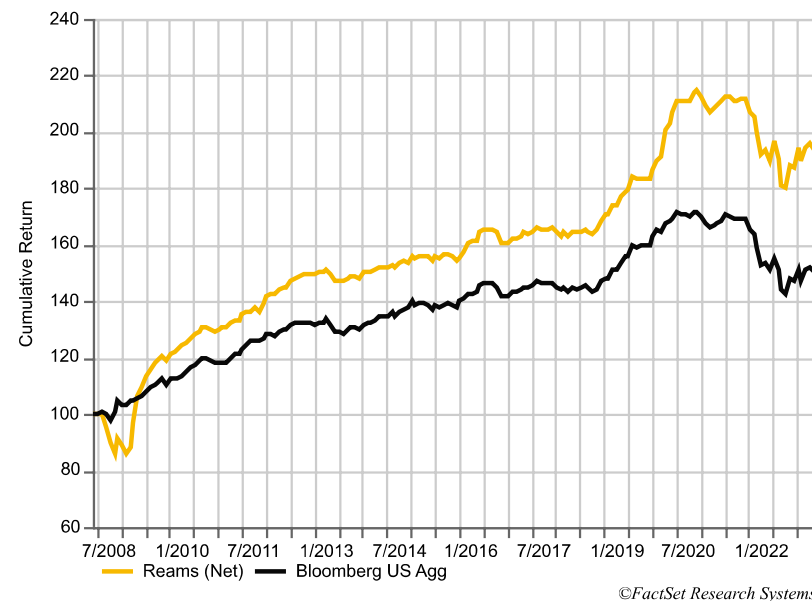
34	Outperform
6	Underperform
40	# Observations
85%	% Outperform

# Reams Portfolio Snapshot – June 30, 2023

## Rolling Returns Since Inception 1/1/2001 (Ten Year, One Month Shift)



## Investment Growth – 15 Years



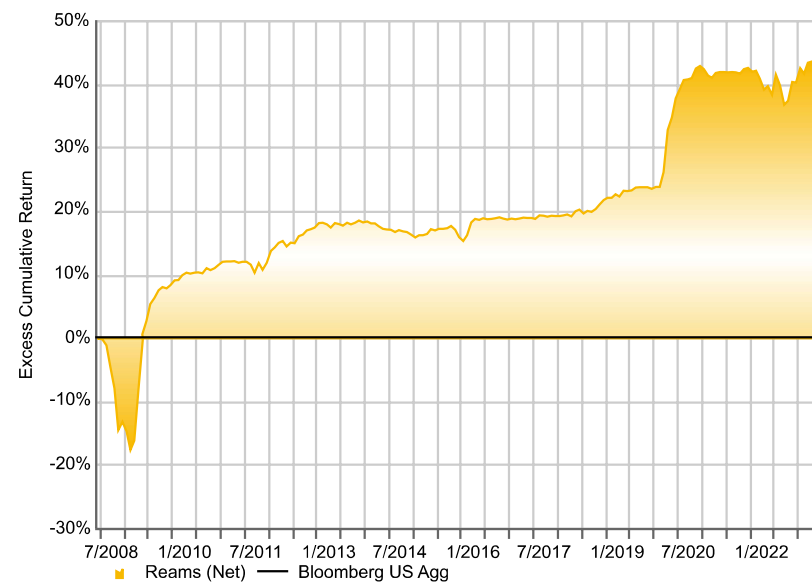
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	15 Year
Reams (Net)	-0.6	3.3	1.9	-2.3	3.3	2.8	4.5
Bloomberg US Aggregate	-0.8	2.1	-0.9	-4.0	0.8	1.5	2.7

## Risk – 15 Years

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Reams (Net)	4.5	6.4	1.6	0.6	0.4	4.6	1.1
Bloomberg US Aggregate	2.7	4.1	--	0.5	--	--	1.0

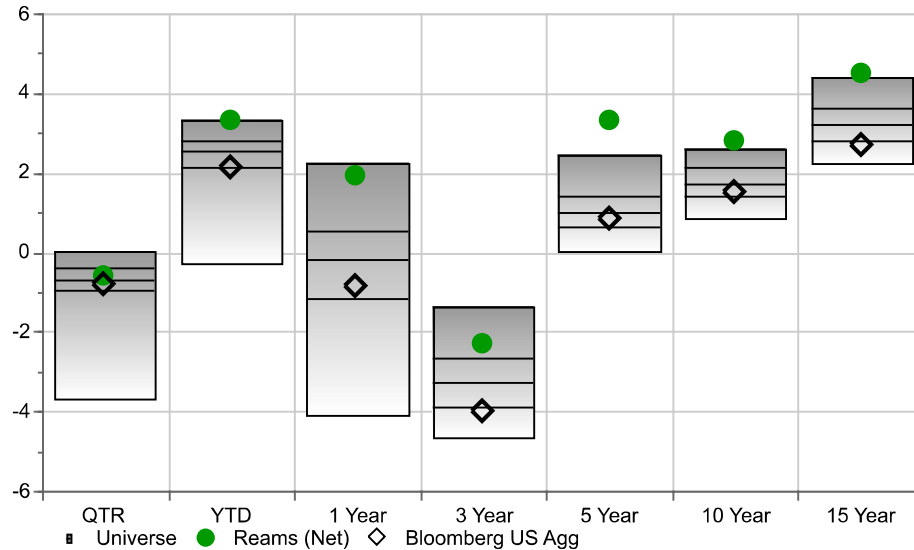
## Relative Cumulative Performance – 15 Years



# Reams vs Universe & Benchmark

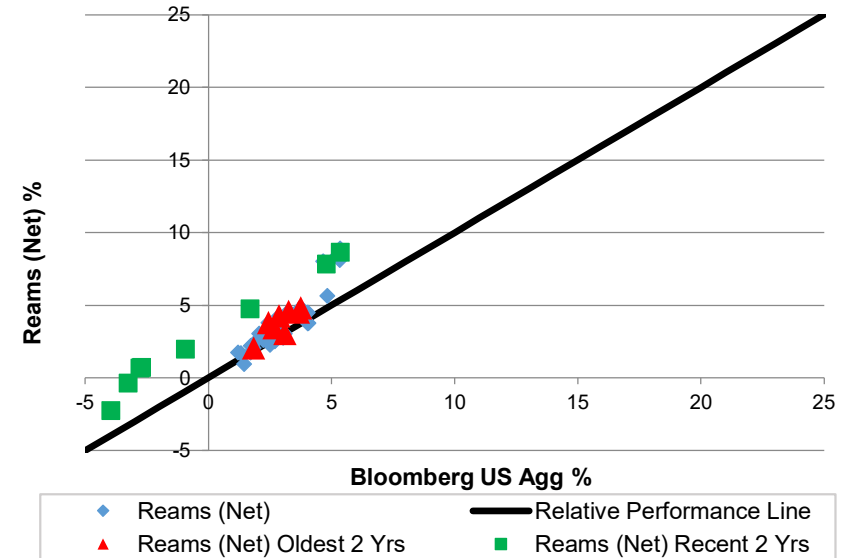
## Performance Relative to Peer Group as of 6/30/2023

Universe: Lipper US Core Plus Bond



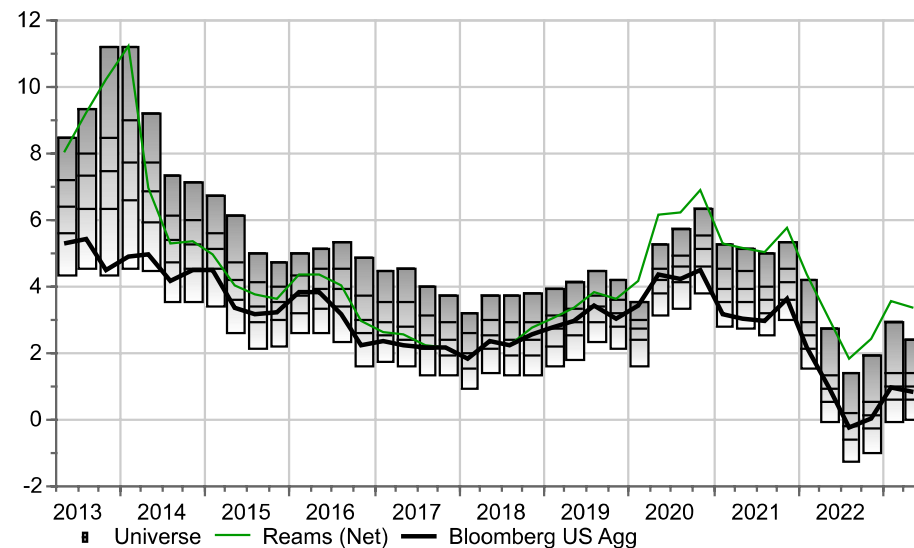
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 7/1/2008 –6/30/2023 (5 Year, 3 Month Shift)

Universe: Lipper US Core Plus Bond



©FactSet Research Systems

## Over/Under Benchmark Analysis

33	Outperform
7	Underperform
40	# Observations
83%	% Outperform

# Milwaukee Employees' Retirement System - July 2023 Performance

## Fund as of July 31, 2023

\*Fund value of \$5.73b.

\*Fund return of 1.6% in July, net of fees, outperformed by approximately 1bp

\*Primary Relative Perf. Drivers:

### Manager Selection

Real Estate Managers -11bp  
Public Equity Style Bias 10bp  
Primarily US Small Cap Value

\*Fund has underperformed the benchmark in YTD and 1-year periods, while outperforming in 5-, 10-, 15- and 20-year periods.

## August Update (as of 8/30/23)

\*Fund return -1.3% MTD

\*Fund return 5.9% YTD

\*Fund value \$5.63b

\*9 out of 16 active mandates outperforming YTD.

\*Fixed Income and Real Assets asset classes outperforming their respective benchmarks YTD.

\*Investment Change: \$332.9m

\*Benefits & Expenses: 324.1m

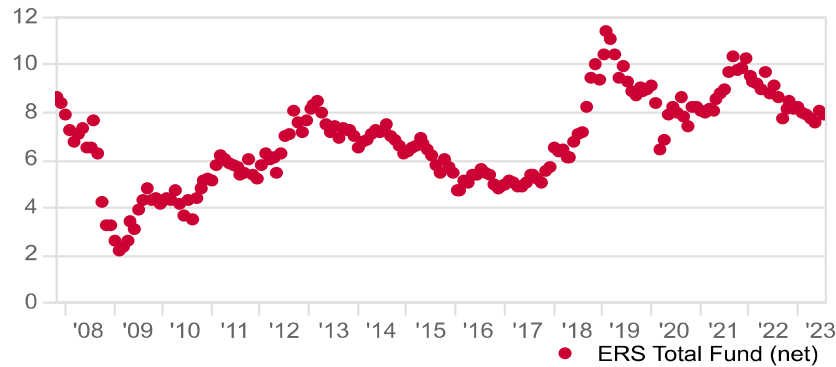
\*Contributions: 149.7m

## Monthly Withdrawals:

Progress continued toward increased Fixed Income allocation. Details can be found in item X. b. Preliminary Performance Report and Asset Allocation.

## Total Fund - 10-Year Rolling Returns

11/28/1997 to 07/31/2023



## Return Data

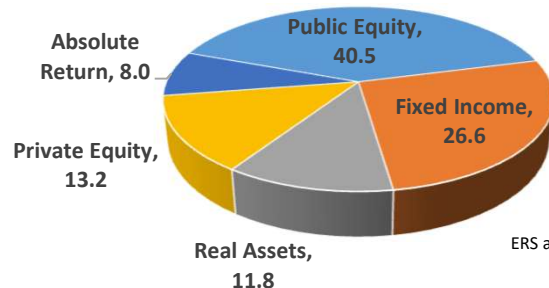
Source Data: Monthly Return

	1 Month	YTD	1 Year	5 Year	10 Year	15 Year	20 Year
Total Fund (net)	1.6	7.3	4.2	7.2	7.8	7.1	7.6
ERS Benchmark	1.6	9.2	4.3	6.5	7.2	6.7	7.2

## Total Fund - 20-Year Risk & Return Data

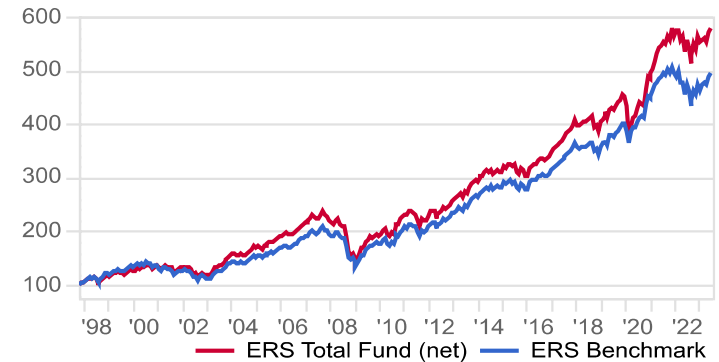
	Return	Std Dev	Tracking Error	Info Ratio (arith)	Sharpe Ratio	Alpha	Beta
Total Fund (net)	7.6	10.2	2.5	0.2	0.6	-0.2	1.1
ERS Benchmark	7.2	9.1	--	--	0.6	0.0	1.0

## ERS Allocation as of July 31, 2023



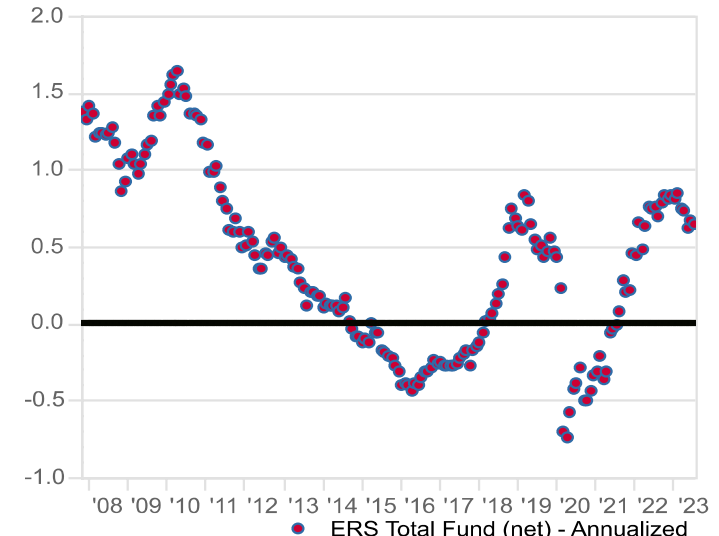
## Growth of \$100 - Total Fund & ERS Benchmark

11/28/1997 to 07/31/2023

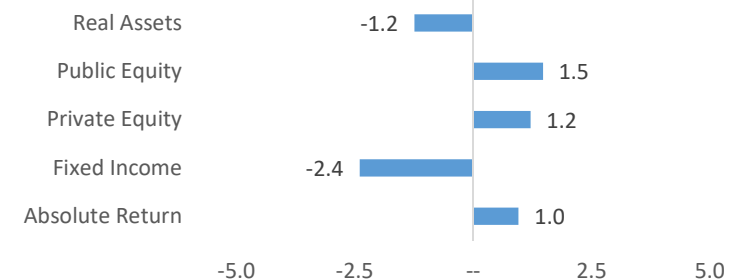


## Total Fund - 10-Year Rolling Excess Returns

11/28/1997 to 07/31/2023



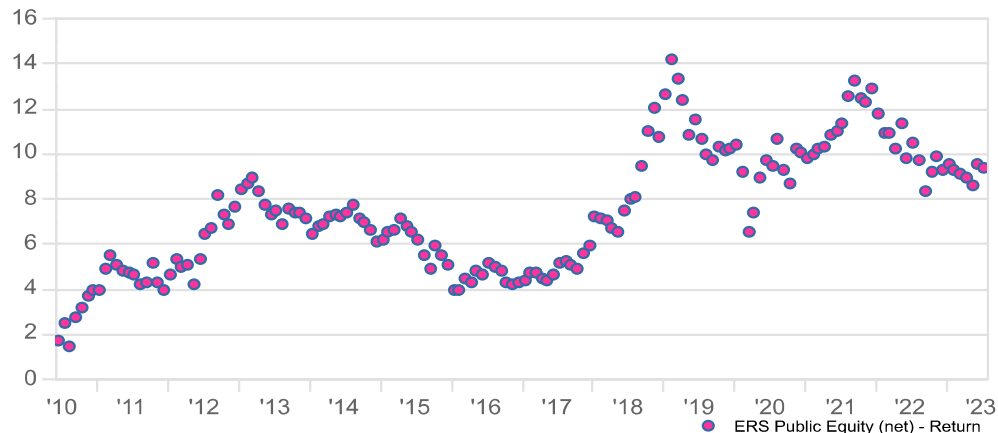
## Asset Allocation vs Policy as of July 31, 2023



# Milwaukee Employees' Retirement System - July 2023 Performance

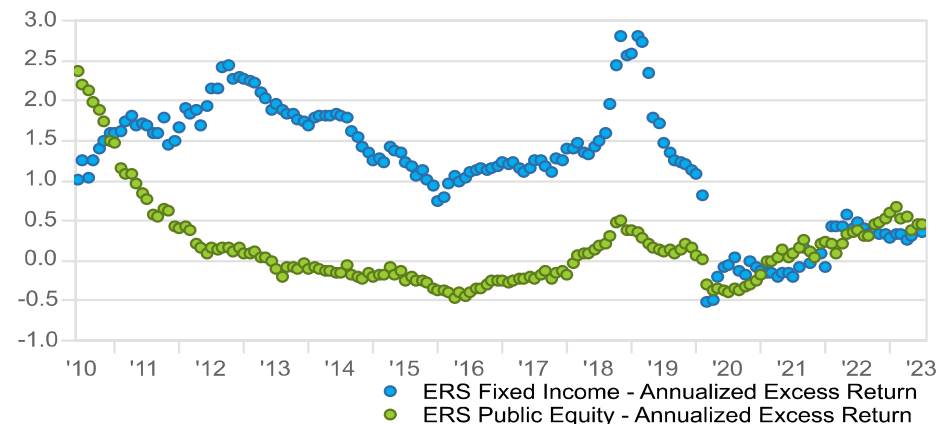
## Public Equity - 10-Year Rolling Returns

06/30/2000 to 07/31/2023



## Asset Class - 10-Year Rolling Excess Returns

06/30/2000 to 07/31/2023

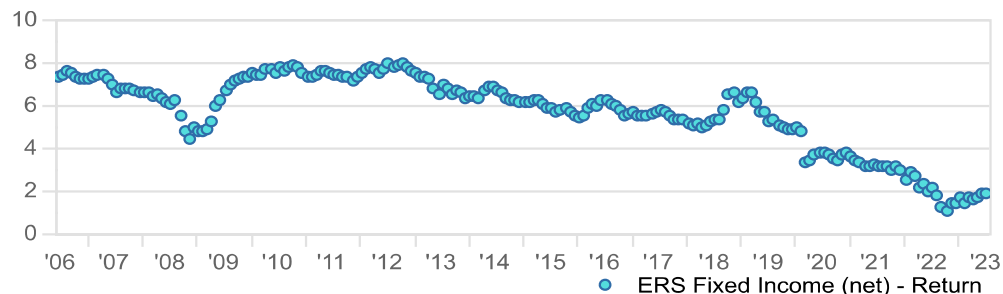


## Return Data

	1 Month	YTD	1 Year	5 Year	10 Year	15 Year	20 Year
Public Equity	4.0	16.6	14.0	8.6	9.7	8.4	8.8
Public Equity (net)	4.0	16.4	13.6	8.2	9.4	8.0	8.4
Public Equity Benchmark	3.8	17.6	12.5	7.9	8.9	7.8	8.2
MSCI ACWI IMI NR USD	3.8	17.6	12.5	7.9	8.5	7.1	8.4

## Fixed Income - 10-Year Rolling Returns

06/28/1996 to 07/31/2023

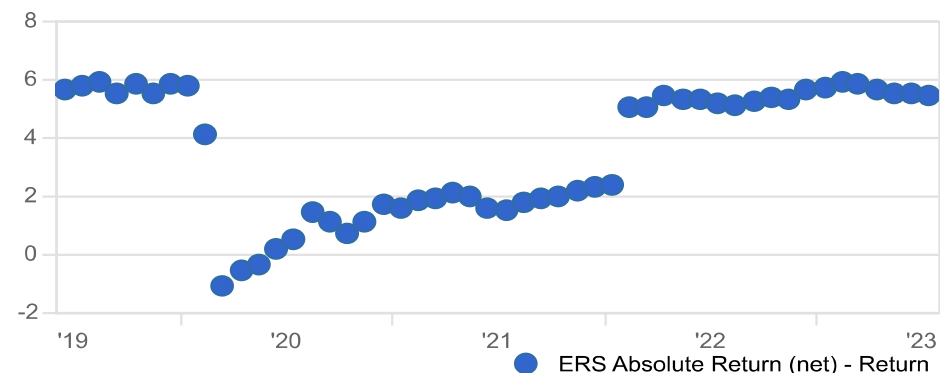


## Risk Adjusted Returns (6/30/14 - 07/31/23)

	Return	Std Dev	Sharpe Ratio	Max Drawdown
Public Equity (net)	8.3	15.6	0.5	-25.3
Fixed Income (net)	1.4	6.3	0.0	-13.6
Absolute Return (net)	5.5	9.7	0.4	-27.1

## Absolute Return - 5-Year Rolling Returns

06/30/2014 to 07/31/2023



## Return Data

	1 Month	YTD	1 Year	5 Year	10 Year	15 Year	20 Year
Fixed Income	0.2	3.1	-1.3	1.1	2.0	3.9	4.5
Fixed Income (net)	0.2	3.1	-1.5	0.9	1.8	3.8	4.4
Bbg US Agg Bond TR USD	-0.1	2.0	-3.4	0.7	1.5	2.7	3.2

## Return Data

	1 Month	YTD	1 Year	3 Year	5 Year	7 Year
Absolute Return (net)	0.5	2.2	7.0	13.6	5.4	5.3
90-Day T-Bill + 3%	0.7	4.7	7.6	4.7	4.7	4.5

**MERS PERFORMANCE ESTIMATES**  
**July 31, 2023**

Account	2022 Return	1st Quarter 2023	2nd Quarter 2023	Jul 2023	YTD Thru 7/31/23
<b>Northern Trust S&amp;P 500 Index</b>	-18.10%	7.50%	8.75%	3.21%	20.66%
S&P 500	-18.11%	7.50%	8.74%	3.21%	20.65%
Difference	0.01%	0.00%	0.01%	0.00%	0.01%
<b>BlackRock Russell 1000 Value Index</b>	-7.54%	1.02%	4.09%	3.52%	8.86%
Russell 1000 Value	-7.54%	1.01%	4.07%	3.52%	8.82%
Difference	0.00%	0.02%	0.01%	0.01%	0.04%
<b>DFA US Large Cap Value</b>	-4.95%	1.13%	3.42%	4.24%	9.02%
Russell 1000 Value	-7.54%	1.01%	4.07%	3.52%	8.82%
Difference	2.59%	0.12%	-0.66%	0.73%	0.21%
<b>Polen</b>	-37.54%	14.15%	9.75%	4.70%	31.16%
S&P 500	-18.11%	7.50%	8.74%	3.21%	20.65%
Difference	-19.43%	6.65%	1.00%	1.49%	10.51%
<b>Earnest</b>	-15.13%	4.69%	4.11%	3.08%	12.34%
Russell MidCap	-17.32%	4.06%	4.76%	3.97%	13.33%
Difference	2.18%	0.63%	-0.65%	-0.89%	-0.99%
<b>CastleArk</b>	-27.99%	5.14%	5.35%	1.90%	12.87%
Russell 2000 Growth	-26.36%	6.07%	7.05%	4.68%	18.86%
Difference	-1.63%	-0.94%	-1.70%	-2.78%	-5.99%
<b>DFA US Small Cap Value</b>	-1.67%	0.83%	4.61%	7.75%	13.65%
Russell 2000 Value	-14.48%	-0.66%	3.18%	7.55%	10.24%
Difference	12.81%	1.49%	1.43%	0.20%	3.41%
<b>Brandes</b>	-6.88%	11.24%	4.87%	5.15%	22.67%
MSCI EAFE	-14.45%	8.47%	2.95%	3.24%	15.28%
Difference	7.57%	2.78%	1.92%	1.91%	7.39%
<b>William Blair</b>	-28.99%	8.58%	3.18%	1.48%	13.69%
MSCI ACWI ex US	-15.57%	7.00%	2.67%	4.10%	14.36%
Difference	-13.42%	1.58%	0.51%	-2.62%	-0.67%
<b>DFA Int'l Small Cap Value</b>	-9.75%	6.53%	0.87%	5.63%	13.51%
MSCI EAFE Small Cap	-21.39%	4.92%	0.58%	4.43%	10.20%
Difference	11.64%	1.61%	0.30%	1.19%	3.31%
<b>AQR</b>	-20.81%	5.87%	1.85%	6.46%	14.79%
MSCI EM	-20.09%	3.96%	0.90%	6.23%	11.42%
Difference	-0.72%	1.92%	0.95%	0.24%	3.37%
<b>BlackRock Global Alpha Tilts</b>	-16.81%	7.56%	6.09%	3.71%	18.35%
MSCI EAFE	-18.36%	7.31%	6.18%	3.66%	18.11%
Difference	1.55%	0.26%	-0.09%	0.05%	0.24%
<b>MFS</b>	-18.15%	8.46%	6.23%	2.24%	17.80%
MSCI ACWI	-18.36%	7.31%	6.18%	3.66%	18.11%
Difference	0.22%	1.16%	0.05%	-1.42%	-0.31%
<b>BlackRock Gov't Bond Index</b>	-12.31%	3.19%	-1.36%	-0.34%	1.44%
Bloomberg Gov't Bond	-12.32%	2.98%	-1.35%	-0.34%	1.24%
Difference	0.01%	0.21%	-0.01%	0.00%	0.20%
<b>Reams</b>	-11.39%	4.03%	-0.58%	0.01%	3.44%
Bloomberg US Aggregate	-13.01%	2.96%	-0.84%	-0.07%	2.02%
Difference	1.62%	1.07%	0.26%	0.08%	1.42%
<b>Loomis Sayles</b>	-12.21%	3.28%	-0.23%	0.65%	3.72%
Bloomberg US Aggregate	-13.01%	2.96%	-0.84%	-0.07%	2.02%
Difference	0.80%	0.32%	0.62%	0.72%	1.70%
<b>UBS</b>	8.91%	0.93%	0.96%	0.51%	2.41%
SOFR + 4%	4.90%	2.08%	2.18%	0.74%	5.08%
Difference	4.01%	-1.15%	-1.22%	-0.23%	-2.67%
<b>Aptitude</b>		0.18%	1.15%	0.40%	1.74%
SOFR + 4%		2.08%	2.18%	0.74%	5.08%
Difference		-1.90%	-1.03%	-0.34%	-3.34%
<b>Principal</b>	-5.88%	1.28%	-0.82%	2.70%	3.16%
Blended Benchmark	-5.06%	1.11%	-1.20%	3.64%	3.54%
Difference	-0.82%	0.17%	0.38%	-0.94%	-0.38%
<b>Baird</b>	-1.80%	1.32%	0.47%	0.53%	2.35%
Bloomberg Govt/Credit 1-3 Year	-3.69%	1.51%	-0.37%	0.42%	1.56%
Difference	1.89%	-0.19%	0.85%	0.11%	0.79%
<b>Total MERS</b>	<b>-6.49%</b>	<b>3.33%</b>	<b>2.16%</b>	<b>1.65%</b>	<b>7.29%</b>

The calculation for the Fund's total rate of return is based on the Modified Dietz method. Although periodic cash flows (i.e., contributions, redemptions) are not time weighted, they are accounted for in the Fund's total rate of return. Therefore, this estimated rate of return may vary slightly from the rate of return reported by the custodian.

The returns shown are gross of fees (except Total MERS, DFA International Small Cap Value, William Blair International Growth, AQR, Principal, UBS, and Aptitude)

# ACTUAL ALLOCATIONS

July 31, 2023

		Target	Market Value	Allocation
<b>EQUITY</b>				
<b>Public Equity</b>				
Domestic				
Passive Large Cap Equity	Northern Trust (S&P 500)	3.45%	\$ 193,404,812	3.38%
	BlackRock (Russell 1000 Value)	3.45%	\$ 194,726,818	3.40%
	Sub-Total Passive Large Cap Equity	6.90%	\$ 388,131,630	6.78%
Active Large Cap Equity	Polen (S&P 500)	1.94%	\$ 125,334,572	2.19%
	DFA (Russell 1000 Value)	2.46%	\$ 146,030,283	2.55%
	Sub-Total Active Large Cap Equity	4.40%	\$ 271,364,855	4.74%
Active Mid/Small Cap Equity	Earnest Partners (Russell MidCap)	1.77%	\$ 104,789,819	1.83%
	CastleArk (Russell 2000 Growth)	1.42%	\$ 82,505,193	1.44%
	DFA (Russell 2000 Value)	3.05%	\$ 187,224,516	3.27%
	Sub-Total Active Mid/Small Cap Equity	6.24%	\$ 374,519,528	6.54%
Total Domestic		17.55%	\$ 1,034,016,013	18.05%
International				
Active International Equity	Brandes (MSCI EAFE)	5.14%	\$ 329,149,392	5.75%
	William Blair (MSCI ACWI ex US)	3.91%	\$ 224,457,523	3.92%
	DFA (MSCI EAFE Small Cap)	2.84%	\$ 162,280,934	2.83%
	AQR (MSCI EM)	1.76%	\$ 103,636,469	1.81%
Total International		13.65%	\$ 819,524,319	14.31%
Global				
Active Global Equity	BlackRock (MSCI ACWI)	4.29%	\$ 256,764,641	4.48%
	MFS (MSCI ACWI)	3.51%	\$ 208,145,628	3.63%
Total Global		7.80%	\$ 464,910,268	8.12%
<b>Total Public Equity</b>		<b>39.00%</b>	<b>\$ 2,318,450,600</b>	<b>40.47%</b>
<b>Private Equity</b>				
	Abbott Capital (Russell 3000 Quarter Lag + 2%)	4.20%	\$ 316,345,654	5.52%
	Mesirow (Russell 3000 Quarter Lag + 2%)	4.20%	\$ 289,320,218	5.05%
	Neuberger Berman (Russell 3000 Quarter Lag + 2%)	1.80%	\$ 56,853,959	0.99%
	Apogem (Russell 3000 Quarter Lag + 2%)	1.80%	\$ 94,250,692	1.65%
Total Private Equity		12.00%	\$ 756,770,523	13.21%
<b>TOTAL EQUITY (Public Equity + Private Equity)</b>		<b>51.00%</b>	<b>\$ 3,075,221,123</b>	<b>53.68%</b>
<b>FIXED INCOME &amp; ABSOLUTE RETURN</b>				
<b>Fixed Income</b>				
Cash		1.00%	\$ 91,873,590	1.60%
Passive Fixed Income	BlackRock (Bloomberg US Government)	7.22%	\$ 375,188,234	6.55%
Active Fixed Income	Reams (Bloomberg US Aggregate)	12.83%	\$ 638,939,150	11.15%
	Loomis Sayles (Bloomberg US Aggregate)	7.95%	\$ 418,039,708	7.30%
	Sub-Total Active Fixed Income	20.78%	\$ 1,056,978,858	18.45%
Total Fixed Income		29.00%	\$ 1,524,040,682	26.60%
<b>Absolute Return</b>				
	Aptitude (SOFR + 4%)	3.00%	\$ 166,041,443	2.90%
	UBS (SOFR + 4%)	4.00%	\$ 289,683,855	5.06%
Total Absolute Return		7.00%	\$ 455,725,297	7.96%
<b>TOTAL FIXED INCOME &amp; ABSOLUTE RETURN</b>		<b>36.00%</b>	<b>\$ 1,979,765,980</b>	<b>34.56%</b>
<b>REAL ASSETS</b>				
Private Real Estate - Core	JP Morgan (NFI-ODCE)	2.50%	\$ 133,917,120	2.34%
	Morgan Stanley (NFI-ODCE)	2.70%	\$ 150,080,228	2.62%
	LaSalle (NFI-ODCE)	2.30%	\$ 114,635,931	2.00%
	Prologis (NFI-ODCE)	1.30%	\$ 88,322,143	1.54%
	New Core Fund (NFI-ODCE)	0.90%	\$ -	0.00%
	Sub-Total Private Real Estate - Core	9.70%	\$ 486,955,422	8.50%
Private Real Estate - Non-Core	Non-Core Real Estate (NFI-ODCE)	0.00%	\$ 11,161,355	0.19%
Public Real Assets	Principal (Blended Benchmark)	3.30%	\$ 175,345,333	3.06%
<b>TOTAL REAL ASSETS</b>		<b>13.00%</b>	<b>\$ 673,462,110</b>	<b>11.76%</b>
<b>TOTAL ERS</b>			<b>\$ 5,728,449,213</b>	<b>100.00%</b>
<b>Total City Reserve Fund R. W. Baird 83,559,950</b>				

# PROJECTED TARGET ALLOCATIONS

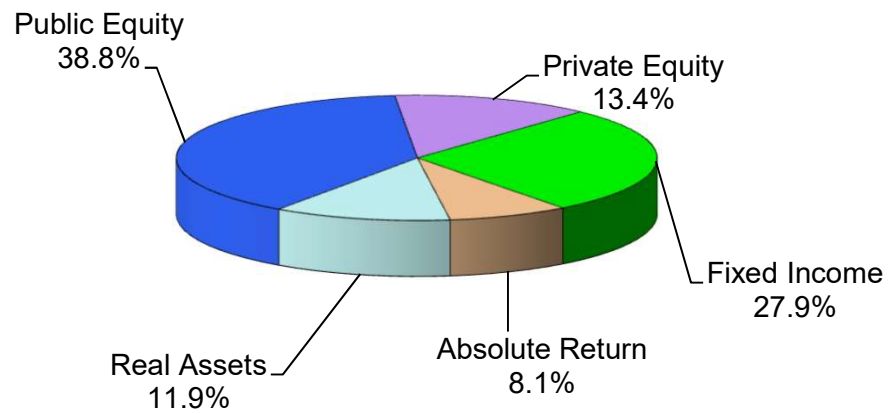
Aug 30, 2023

		Target	Market Value	Allocation
<b>EQUITY</b>				
<b>Public Equity</b>				
Domestic				
Passive Large Cap Equity	Northern Trust (S&P 500)	3.45%	\$ 186,507,520	3.32%
	BlackRock (Russell 1000 Value)	3.45%	\$ 183,735,253	3.27%
	Sub-Total Passive Large Cap Equity	6.90%	\$ 370,242,773	6.58%
Active Large Cap Equity	Polen (S&P 500)	1.94%	\$ 117,700,091	2.09%
	DFA (Russell 1000 Value)	2.46%	\$ 135,734,096	2.41%
	Sub-Total Active Large Cap Equity	4.40%	\$ 253,434,187	4.51%
Active Mid/Small Cap Equity	Earnest Partners (Russell MidCap)	1.77%	\$ 98,748,938	1.76%
	CastleArk (Russell 2000 Growth)	1.42%	\$ 76,970,628	1.37%
	DFA (Russell 2000 Value)	3.05%	\$ 173,302,244	3.08%
	Sub-Total Active Mid/Small Cap Equity	6.24%	\$ 349,021,810	6.20%
Total Domestic		17.55%	\$ 972,698,770	17.29%
International				
Active International Equity	Brandes (MSCI EAFE)	5.14%	\$ 313,306,761	5.57%
	William Blair (MSCI ACWI ex US)	3.91%	\$ 210,016,396	3.73%
	DFA (MSCI EAFE Small Cap)	2.84%	\$ 152,623,214	2.71%
	AQR (MSCI EM)	1.76%	\$ 98,041,447	1.74%
Total International		13.65%	\$ 773,987,818	13.76%
Global				
Active Global Equity	BlackRock (MSCI ACWI)	4.29%	\$ 238,900,444	4.25%
	MFS (MSCI ACWI)	3.51%	\$ 195,495,156	3.48%
Total Global		7.80%	\$ 434,395,600	7.72%
<b>Total Public Equity</b>		<b>39.00%</b>	<b>\$ 2,181,082,187</b>	<b>38.77%</b>
<b>Private Equity</b>				
	Abbott Capital (Russell 3000 Quarter Lag + 2%)	4.20%	\$ 314,218,154	5.59%
	Mesirow (Russell 3000 Quarter Lag + 2%)	4.20%	\$ 288,420,218	5.13%
	Neuberger Berman (Russell 3000 Quarter Lag + 2%)	1.80%	\$ 56,635,677	1.01%
	Apogem (Russell 3000 Quarter Lag + 2%)	1.80%	\$ 92,092,451	1.64%
<b>Total Private Equity</b>		<b>12.00%</b>	<b>\$ 751,366,500</b>	<b>13.36%</b>
<b>TOTAL EQUITY (Public Equity + Private Equity)</b>		<b>51.00%</b>	<b>\$ 2,932,448,687</b>	<b>52.13%</b>
<b>FIXED INCOME &amp; ABSOLUTE RETURN</b>				
<b>Fixed Income</b>				
Cash		1.00%	\$ 42,751,299	0.76%
Passive Fixed Income	BlackRock (Bloomberg US Government)	7.22%	\$ 393,707,781	7.00%
Active Fixed Income	Reams (Bloomberg US Aggregate)	12.83%	\$ 698,778,762	12.42%
	Loomis Sayles (Bloomberg US Aggregate)	7.95%	\$ 433,411,269	7.70%
	Sub-Total Active Fixed Income	20.78%	\$ 1,132,190,031	20.13%
<b>Total Fixed Income</b>		<b>29.00%</b>	<b>\$ 1,568,649,110</b>	<b>27.88%</b>
<b>Absolute Return</b>				
	Aptitude (SOFR + 4%)	3.00%	\$ 166,041,443	2.95%
	UBS (SOFR + 4%)	4.00%	\$ 289,683,855	5.15%
<b>Total Absolute Return</b>		<b>7.00%</b>	<b>\$ 455,725,297</b>	<b>8.10%</b>
<b>TOTAL FIXED INCOME &amp; ABSOLUTE RETURN</b>		<b>36.00%</b>	<b>\$ 2,024,374,408</b>	<b>35.99%</b>
<b>REAL ASSETS</b>				
Private Real Estate - Core	JP Morgan (NFI-ODCE)	2.50%	\$ 133,917,120	2.38%
	Morgan Stanley (NFI-ODCE)	2.70%	\$ 150,080,228	2.67%
	LaSalle (NFI-ODCE)	2.30%	\$ 114,635,884	2.04%
	Prologis (NFI-ODCE)	1.30%	\$ 88,322,143	1.57%
	New Core Fund (NFI-ODCE)	0.90%	\$ -	0.00%
	Sub-Total Private Real Estate - Core	9.70%	\$ 486,955,375	8.66%
Private Real Estate - Non-Core	Non-Core Real Estate (NFI-ODCE)	0.00%	\$ 11,159,181	0.20%
Public Real Assets	Principal (Blended Benchmark)	3.30%	\$ 170,609,729	3.03%
<b>TOTAL REAL ASSETS</b>		<b>13.00%</b>	<b>\$ 668,724,285</b>	<b>11.89%</b>
<b>TOTAL ERS</b>			<b>\$ 5,625,547,380</b>	<b>100.00%</b>
<b>Total City Reserve Fund</b>	<b>R. W. Baird</b>		<b>82,988,249</b>	

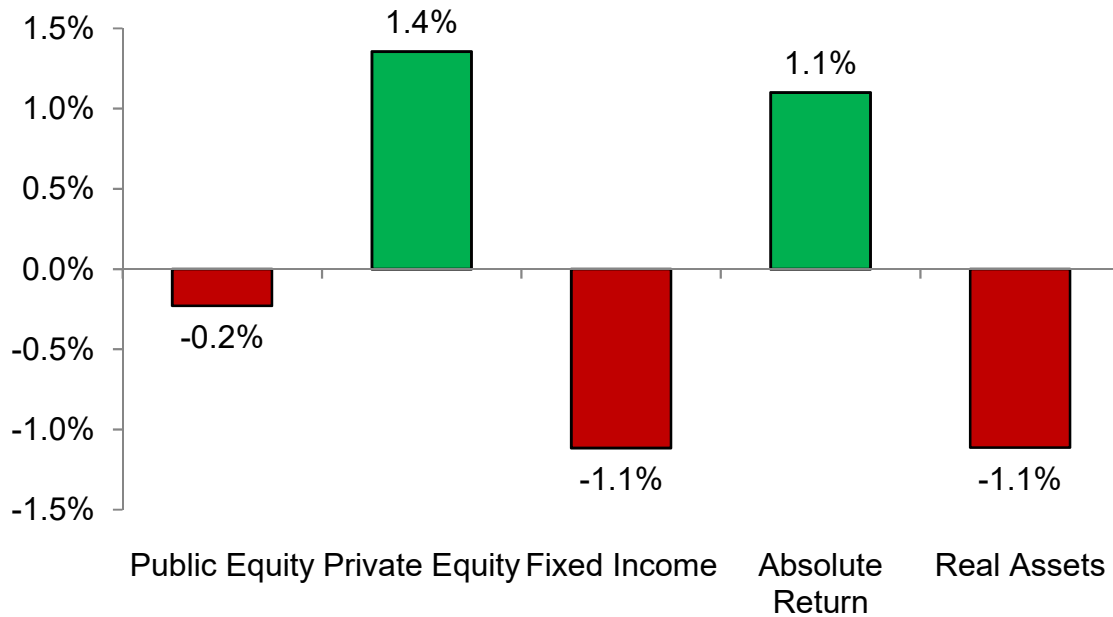


# PROJECTED VERSUS POLICY ALLOCATIONS

## Asset Mix Using Projected Balances



## Asset Allocation vs. Current Policy Benchmark



## YTD Market Value Change

December 31, 2022 Market Value including City Reserve & PABF Accounts			\$ 5,550,112,010
Monthly Cash Outflows thru	<u>August 30, 2023</u>		
Retiree Payroll Expense		\$ (305,469,808)	
PABF Payroll Expense		\$ (20,754)	
Expenses Paid		\$ (12,540,055)	
GPS Benefit Payments		\$ (6,084,041)	
Sub-Total Monthly Cash Outflows			\$ (324,114,658)
Monthly Cash Inflows thru	<u>August 30, 2023</u>		
Contributions		\$ 149,652,144	
PABF Contribution		\$ 22,747	
Sub-Total Monthly Contributions			\$ 149,674,891
Capital Market Gain/(Loss)			<u>\$ 332,863,386</u>
Value including City Reserve & PABF Accounts as of	<u>August 30, 2023</u>		<u>\$ 5,708,535,629</u>
Less City Reserve Account <sup>1</sup>			\$ 82,988,249
Less PABF Fund <sup>2</sup>			\$ 2,522
Net Projected ERS Fund Value as of	<u>August 30, 2023</u>		<u><u>\$ 5,625,544,858</u></u>

1 The City Reserve Account balance equals the market value currently held in the Baird account.

2 PABF Fund balance equals the market value currently held in the PABF account.

# 2023 ESTIMATED MONTHLY CASH FLOWS

Revised 8/31/2023

(in 000's)

	<u>12/31/2022</u>	<u>1/31/2023</u>	<u>2/29/2023</u>	<u>3/31/2023</u>	<u>4/30/2023</u>	<u>5/31/2023</u>	<u>6/30/2023</u>	<u>7/31/2023</u>	<u>8/31/2023</u>	<u>9/30/2023</u>	<u>10/31/2023</u>	<u>11/30/2023</u>	
<b><u>Beginning Cash Account Balance</u></b>													
Townsend Cash Account	5,435	-	-	-	-	-	-	-					
Cash Contribution Account	-	-	-	-	-	-	-	-					
Milwaukee Cash Account	17,447	80,926	44,668	55,372	44,788	51,099	26,178	91,206					
Total Cash Available	22,883	80,926	44,668	55,372	44,788	51,099	26,178	91,206					
Less: Estimated Cash Needs for non-Investment Outflows	39,500	39,500	39,500	39,500	39,500	39,500	39,500	39,500					
Cash Available for Other Outflows	(16,617)	41,426	5,168	15,872	5,288	11,599	(13,322)	51,706					
<b><u>For Monthly Cash Outflows of:</u></b>													
Retiree Payroll Expense	(39,141)	(39,561)	(39,102)	(38,290)	(39,016)	(38,553)	(39,619)	(39,285)	(39,794)	(39,890)	(39,987)	(40,085)	(472,322)
Normal Retirement Payroll	(38,011)	(38,140)	(38,215)	(38,049)	(38,308)	(38,271)	(38,890)	(38,598)	(38,695)	(38,791)	(38,888)	(38,986)	(461,842)
Retiree Lump Sum Payments	(1,130)	(1,421)	(886)	(241)	(708)	(283)	(729)	(687)	(1,099)	(1,099)	(1,099)	(1,099)	(10,480)
Real Estate Capital Calls	-	-	-	(43)	-	-	-	-	-	-	-	-	(43)
Private Equity Capital Calls	(826)	(1,620)	(11,248)	(3,017)	(13,730)	(25,576)	(300)	(2,244)	-	-	-	-	(58,560)
Expenses Paid through City	(1,949)	(1,554)	(1,410)	(566)	(2,112)	(835)	(1,588)	(2,526)	(1,949)	(1,949)	(1,949)	(1,949)	(20,336)
PABF Payroll	(2)	(12)	(2)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(26)
Sub-Total Monthly Cash Outflows	(41,917)	(42,747)	(51,761)	(41,917)	(54,859)	(64,965)	(41,508)	(44,056)	(41,744)	(41,840)	(41,937)	(42,035)	(551,287)
<b><u>For Monthly Cash Inflows:</u></b>													
Sponsoring Agency and Employee Contribution	2,514	2,483	3,470	2,779	2,530	2,438	2,263	3,225	2,275	2,280	2,286	2,292	30,835
Real Estate Distributions	2,400	42	11,651	345	251	3,330	0	-	-	-	-	-	18,020
Private Equity Distributions	235	3,647	9,453	2,389	3,376	11,468	314	7,456	-	-	-	-	38,339
Miscellaneous Income	164	315	277	218	213	269	296	213	80	80	80	80	2,285
Security Lending Transfer	792	-	-	-	-	-	-	-	-	-	-	-	792
City and Agency Required Contribution	101,853	-	-	-	-	-	19,560	6,537	-	-	-	-	127,950
PABF Inflow	2	2	14	1	-	-	2	1	1	1	1	1	27
Sub-Total Monthly Cash Inflows	107,961	6,489	24,865	5,733	6,370	17,506	22,437	17,431	2,356	2,361	2,367	2,373	218,248
Net Monthly Cash Inflows/(Outflows) Before Withdrawals	66,043	(36,258)	(26,896)	(36,184)	(48,489)	(47,460)	(19,071)	(26,625)	(39,388)	(39,479)	(39,570)	(39,662)	(333,039)
Net Monthly Cash Surplus (Need)	49,426	5,168	(21,728)	(20,312)	(43,201)	(35,860)	(32,394)	25,081	(39,388)	(39,479)	(39,570)	(39,662)	(231,919)
<b><u>Monthly Cash Withdrawals (Additions)</u></b>													
AQR													
BlackRock Global Alpha Tilts				9,900		39,600	11,500	5,300					
BlackRock Russell 1000 Value Index					3,000	17,600	9,000	6,300					
BlackRock US Government Bond Index				(50,000)	(44,000)	(15,000)	(59,000)	(8,000)					
Brandes			12,500	12,900	14,300	20,800	19,800	14,500					
CastleArk						5,300	4,500	1,400					
Dimensional Fund Advisors US Large Cap					4,500	9,100	5,000	6,500					
Dimensional Fund Advisors International				6,800	7,500	19,700	7,600	5,500					
Dimensional Fund Advisors US Small Cap						11,700	10,500	8,200					
Earnest						6,700	6,400	3,500					
Loomis Sayles			5,100			(35,000)	(41,000)	(18,000)					
MFS	(36,000)			8,200	8,900	13,300	12,800	9,100					
Northern Trust S&P 500 Index				6,000	15,600	22,100	8,900	4,000					
Polen			4,000	4,600	5,000	7,700	7,500	5,500					
Principal													
Reams			7,000	(47,000)		(94,000)		(66,000)					
UBS A&Q	28,000			75,000	20,000		50,000						
Goldman/Aptitude						(6,262)							
William Blair			9,000	9,100	10,100	14,800	13,500	5,400					
Sub-Total Monthly Cash Withdrawals	(8,000)	-	37,600	35,500	44,900	38,138	67,000	(16,800)					
<b><u>Estimated Month-End Cash Balance</u></b>													
Cash Available	41,426	5,168	15,872	15,188	1,699	2,278	34,606	8,281					
Estimated Cash Needs for non-Investment Outflows	39,500	39,500	39,500	39,500	39,500	39,500	39,500	39,500					
Total Cash Estimated on Hand For Next Month	80,926	44,668	55,372	54,688	41,199	41,778	74,106	47,781					

## Adjusted Quarterly Cost Basis of Equity June 30, 2023

Date	Market Value of Total Fund	Equity as Percent of Portfolio on a Market Value Basis %	Cost Value of Total Fund	Equity as Percent of Portfolio on Cost Basis %
Jun-16	4,753,379,711	58.9%	4,167,278,877	56.8%
Sep-16	4,878,963,087	59.2%	4,265,248,439	52.6%
Dec-16	4,875,173,931	58.7%	4,259,899,650	51.6%
Mar-17	5,054,238,404	59.5%	4,296,075,081	54.0%
Jun-17	5,141,650,168	59.6%	4,238,775,000	54.0%
Sep-17	5,253,079,121	60.3%	4,219,738,169	54.0%
Dec-17	5,356,413,868	60.7%	4,347,067,963	54.6%
Mar-18	5,360,763,834	54.5%	4,493,669,234	48.5%
Jun-18	5,364,526,404	52.8%	4,508,052,439	47.2%
Sep-18	5,416,752,057	53.2%	4,475,388,278	47.5%
Dec-18	4,952,685,618	50.7%	4,457,976,536	48.9%
Mar-19	5,287,164,709	52.5%	4,458,818,165	48.5%
Jun-19	5,368,388,543	52.2%	4,439,503,880	48.5%
Sep-19	5,336,312,140	51.6%	4,409,684,126	48.6%
Dec-19	5,525,553,595	53.1%	4,370,713,537	48.7%
Mar-20	4,532,932,039	47.6%	4,421,955,418	47.5%
Jun-20	4,904,369,177	52.6%	4,216,408,115	50.3%
Sep-20	5,077,501,527	52.0%	4,228,679,409	49.0%
Dec-20	5,531,306,606	53.5%	4,270,905,026	47.9%
Mar-21	5,693,916,321	53.5%	4,338,199,305	46.1%
Jun-21	6,012,966,775	52.3%	4,337,113,221	45.0%
Sep-21	6,026,295,778	48.4%	4,378,190,704	42.2%
Dec-21	6,218,053,813	47.6%	4,473,429,725	41.0%
Mar-22	6,156,069,941	46.5%	4,642,000,891	41.1%
Jun-22	5,633,734,690	44.6%	4,548,655,130	43.9%
Sep-22	5,276,131,314	43.7%	4,538,899,040	44.8%
Dec-22	5,469,372,844	46.0%	4,476,020,934	44.5%
Mar-23	5,644,257,058	47.6%	4,501,213,423	44.4%
Jun-23	5,654,571,235	43.9%	4,551,510,198	39.4%

## Class Action Income 2023 YTD

Asset Description	Date(s)	Amount
Allergan, Inc.	1/11/2023 \$	82
USA Technologies, Inc.	2/13/2023 \$	10,120
JP Morgan Chase Bank	3/23/2023 \$	568
The Bank of New York Mellon	5/12/2023 \$	428
Nine Bank Settlement - Foreign Exchange Benchmark Rates	5/4/2023 \$	6,101
Array Biopharma, Inc.	5/23/2023 \$	2,363
Valeant Pharmaceuticals Int'l Inc.	7/20/2023 \$	59,687
Teva Pharmaceutical	8/1/2023 \$	4,511
GSE Bonds	8/7/2023 \$	25
<b>Total Class Action Income Received in 2023 YTD</b>	<b>\$</b>	<b>83,884</b>

June 30, 2023



## City of Milwaukee Employees' Retirement System

Investment Measurement Service  
Quarterly Review

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## U.S. EQUITY

## Large cap growth stocks lead broad indices higher

- The S&P 500 posted a second straight quarter of positive performance, gaining 8.7%; large cap growth led all styles, advancing 12.8%.
- All U.S. equity indices produced positive returns; small value and low volatility produced the lowest 2Q returns.
- Nine of the 11 S&P Index sectors produced a positive 2Q23 return.
- Similar to 1Q23, 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 from returns for the Russell 2000 (+5.2%) while Health Care was the only small cap sector to produce double-digit returns (+11.2%).

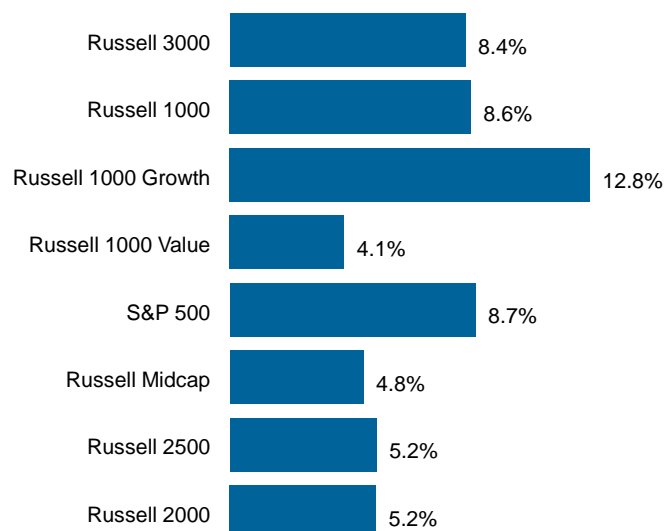
## Index concentration is a significant 2Q theme

- 10 stocks within the S&P 500 Index contributed 80% of the 16.9% return YTD through 6/30; average appreciation is 82%, and these stocks had an average forward price/earnings ratio of 36x.
- 2Q return for the S&P 500 Index was 8.7%; the equal weight S&P 500 Index returned 4%.
- The YTD return difference is nearly 10 percentage points; if this gap holds through year-end, it would be the largest since 1998.

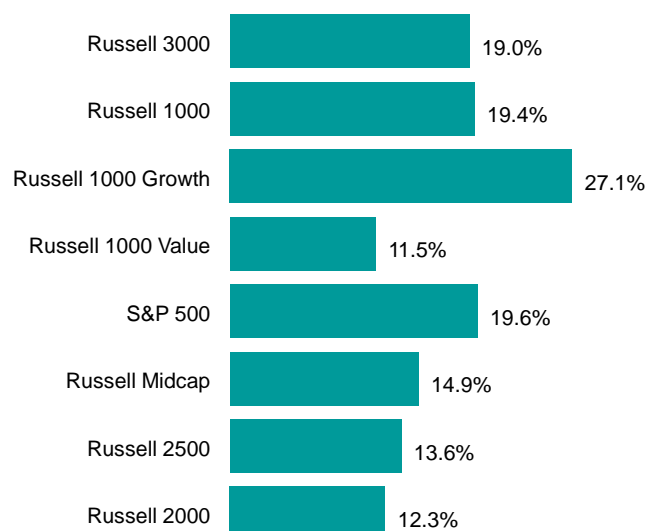
## Small cap valuations point to potential opportunity

- Small cap continues to trade at a meaningful discount to its historical valuations; large cap (particularly growth) continues to trade at a premium to its historical valuations.
- Favorable developments in the inflation data could give the small cap market a boost in performance.
- One recent issue that caused this relative valuation gap is debt; on average, small cap companies have a higher exposure to variable rate debt than large cap counterparts.

## U.S. Equity: Quarterly Returns

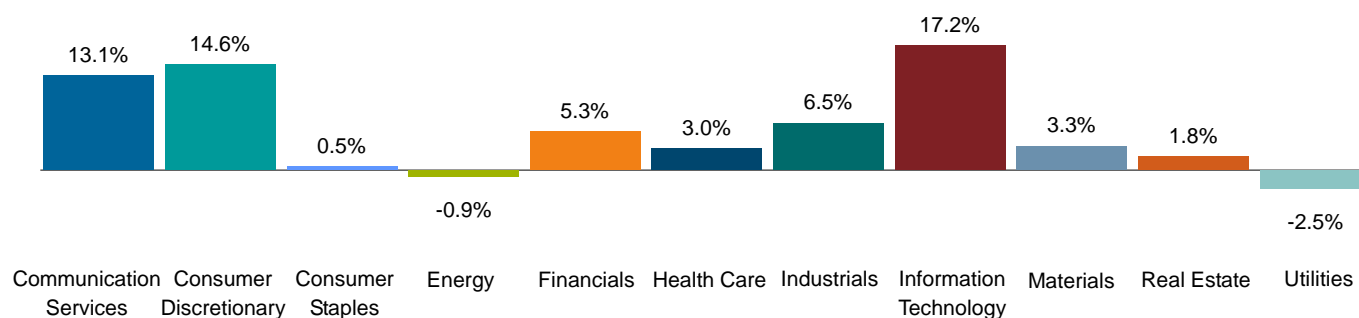


## U.S. Equity: One-Year Returns



Sources: FTSE Russell, S&amp;P Dow Jones Indices

## S&amp;P Sector Returns, Quarter Ended 6/30/23



Source: S&amp;P Dow Jones Indices

## GLOBAL EQUITY

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

### Technology stocks lead markets higher

- 2Q23 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. However, outside of the U.S., growth and value index returns were relatively balanced.

### Japan's turn

- Valuation below historical levels
- Economic recovery; in 1Q Japan transitioned out of a recession as GDP grew 2.7%.
- Next 12 months consensus earnings estimates show Japan outpacing China, EM, and Europe, and only trailing the U.S.

### India vs. China

#### Economics

- Chinese geopolitical tensions have, in part, driven outside investment elsewhere compared to India, with Prime Minister Modi's visit to the U.S. highlighting its place in the world economy.
- China's New Espionage Law (effective July 2023) likely contributing to less foreign investment; \$20 billion ended 1Q23 versus \$100 billion ended 1Q22.

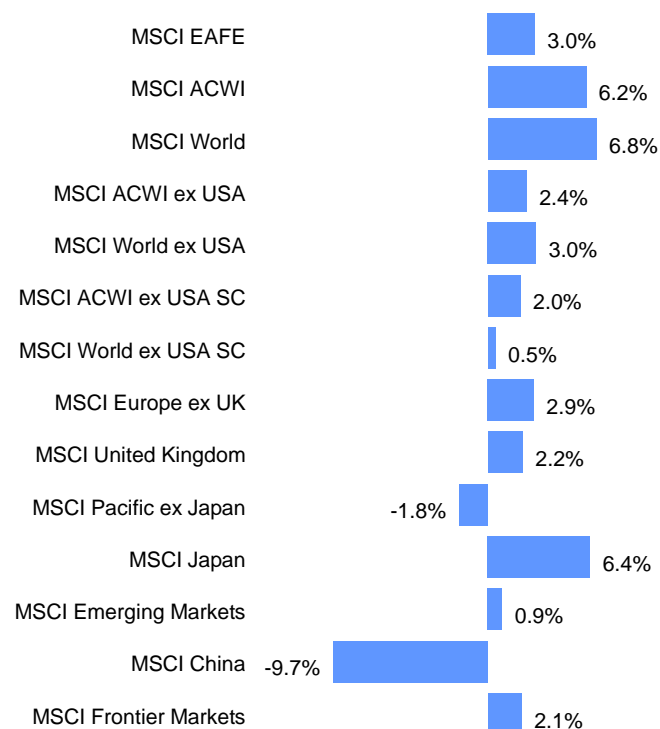
#### Asset flows

- India's equity market has more than doubled since 2010.

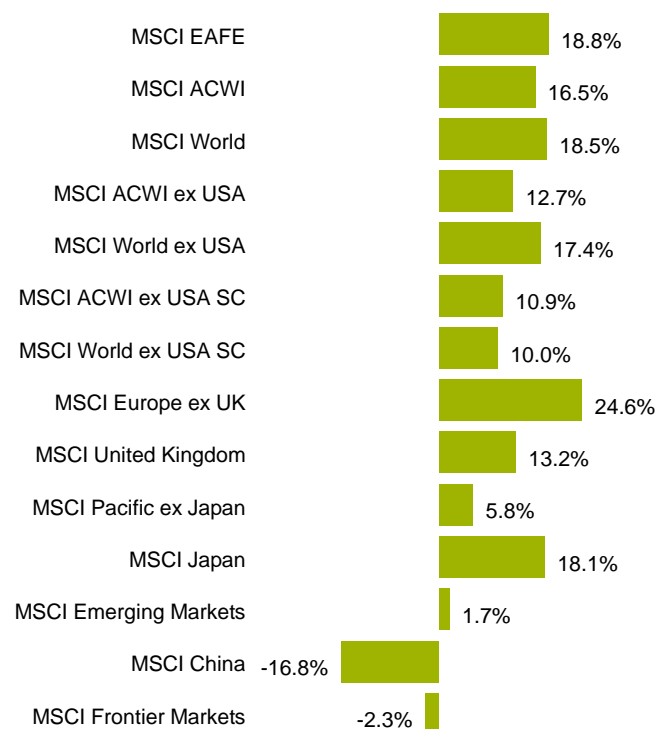
#### Growth

- India surpassing China with % of population in the middle class in 2030, and from 2023 to 2030 will contribute twice as much growth from this group than China in the Asia Pacific region.

## Global Equity: Quarterly Returns



## Global Equity: One-Year Returns



Source: MSCI

## U.S. FIXED INCOME

## Bloomberg Aggregate down as rates rose

Risk appetite and solid economic news spurred returns for spread sectors and lower quality.

- Corporate excess return: +131 bps
- Mortgage excess return: +76 bps
- High yield corporates excess return: +279 bps
- AA excess return: +84 bps
- BBB excess return: +157 bps

## Yield curve inversion steepened

- 2- year U.S. Treasury: 4.87%; 10-year: 3.81%

## TIPS performed in line with nominal U.S. Treasuries

- Five-year breakeven spreads narrowed to 2.18% from 2.40% 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: 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.

## MUNICIPAL BONDS

Municipal bonds outperformed U.S. Treasuries in 2Q

- Bloomberg Municipal Bond Index: -0.1%; Bloomberg U.S. Treasury Index: -1.4%
- Lower quality munis outperformed (AAA: -0.4%; AA: -0.2%; A: +0.2%; BBB: +0.7%)

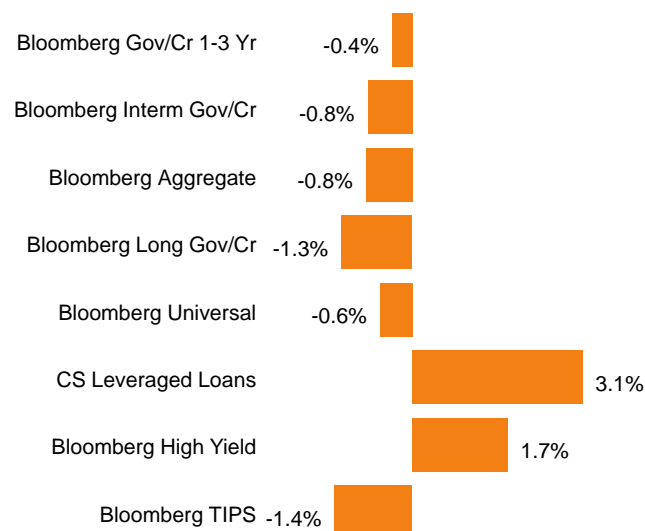
## Muni curve inverted; less so than U.S. Treasury curve

- 2-year AAA Muni yield: 2.93%; 10-year AAA Muni yield: 2.56%

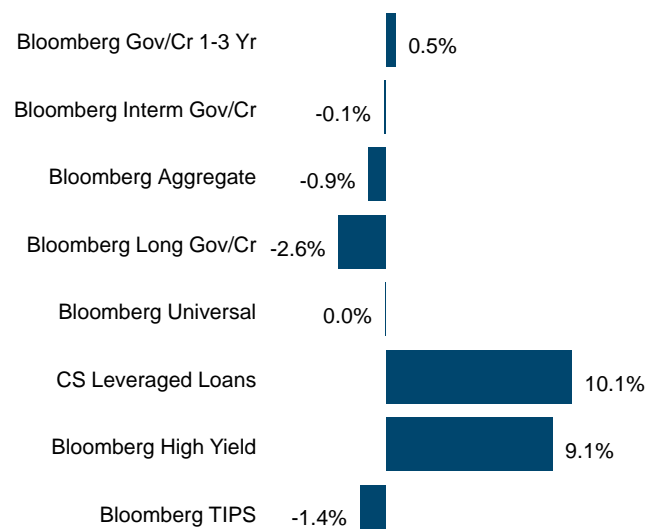
## Valuations relative to U.S. Treasuries remain rich

- 10-year AAA Muni/10-year U.S. Treasury yield ratio 67%; below 10-year median of 87%
- After-tax yield 5.95% (Bloomberg Municipal Bond Index)

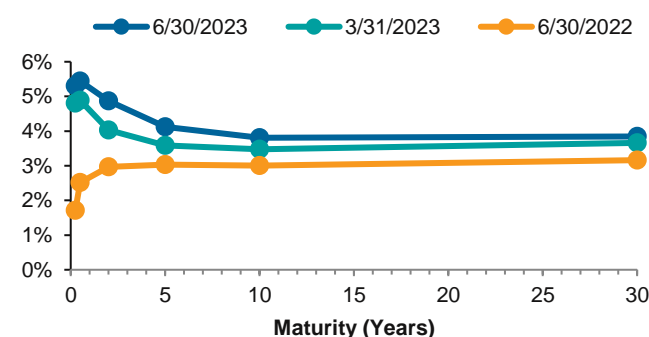
## U.S. Fixed Income: Quarterly Returns



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



## U.S. Treasury Yield Curves



Sources: Bloomberg, Credit Suisse

**MUNICIPAL BONDS (continued)****Supply/demand**

- Outflows of roughly \$8 billion YTD, mostly from short-term bond funds (record was \$122 billion in 2022)
- Supply remained muted; YTD about 25% below 2022

**Fundamentals remain sound**

- “Rainy Day” fund balances and state tax revenues continued to be robust
- Upgrades continued to significantly outpace downgrades in 1Q

**Source: Eaton Vance****GLOBAL FIXED INCOME****Global Aggregate down unhedged but up hedged**

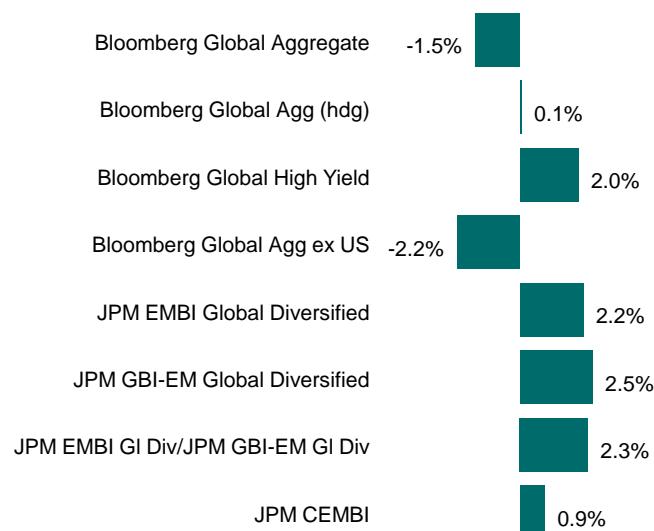
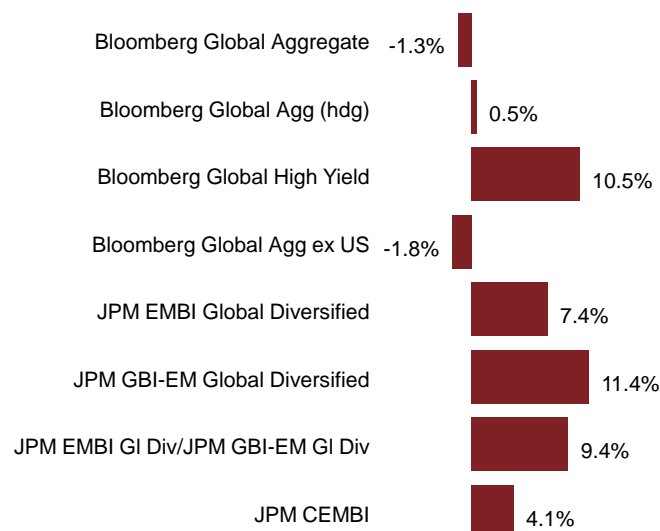
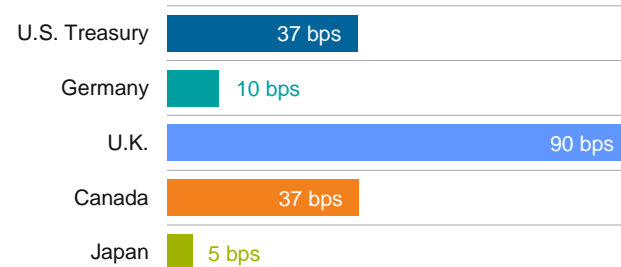
- Rates mixed; up in the U.S., Great Britain, and Australia and flat to slightly down across other developed markets
- Japan (-8%) worst performer on sharp yen deprecation
- Bank of England surprised markets with 50 bp increase to combat sticky inflation.

**U.S. dollar mixed**

- Euro: +0.4% vs dollar
- British pound: +2.8% vs dollar
- Canadian dollar: +2.3% vs dollar
- Japanese yen: -7.9% vs dollar
- Australian dollar: -0.6% vs dollar
- Chinese yuan: -5.4% vs dollar
- Mexican peso: +5.3% vs dollar
- Brazilian real: +5.1% vs dollar

**Emerging market debt delivered solid results**

- Growth differentials have improved as inflation has peaked in many markets

**Global Fixed Income: Quarterly Returns****Global Fixed Income: One-Year Returns****Change in 10-Year Global Government Bond Yields****1Q23 to 2Q23**

Sources: Bloomberg, JP Morgan



## Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of June 30, 2023, with the distribution as of March 31, 2023. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

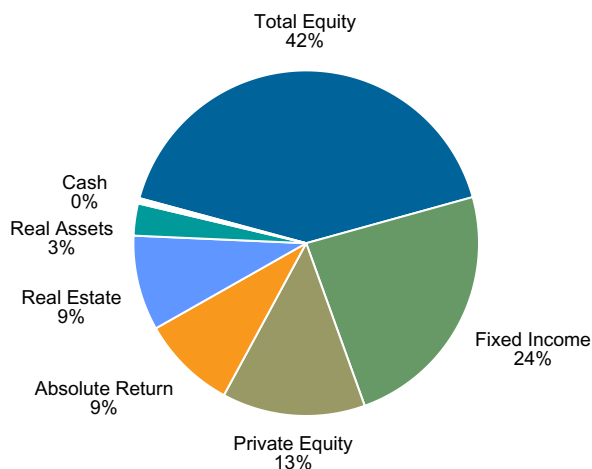
### Asset Distribution Across Investment Managers

	June 30, 2023				March 31, 2023	
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
<b>Total Domestic Equity</b>	<b>\$1,043,274,649</b>	<b>18.45%</b>	<b>\$(118,900,000)</b>	<b>\$59,253,237</b>	<b>\$1,102,921,412</b>	<b>19.54%</b>
BlackRock Russell 1000 Value	196,812,142	3.48%	(20,600,000)	8,012,876	209,399,266	3.71%
DFA Large Cap Value	145,130,285	2.57%	(13,600,000)	4,837,997	153,892,289	2.73%
Northern Trust Global	196,053,805	3.47%	(43,700,000)	17,163,837	222,589,968	3.94%
Polen Capital Management	127,299,751	2.25%	(17,300,000)	11,841,706	132,758,045	2.35%
Earnest Partners LLC	108,085,419	1.91%	(6,700,000)	4,419,653	110,365,766	1.96%
DFA Small Cap Value	184,304,459	3.26%	(11,700,000)	8,422,637	187,581,822	3.32%
CastleArk Management	85,588,788	1.51%	(5,300,000)	4,554,531	86,334,257	1.53%
<b>Total Global Equity</b>	<b>\$479,794,665</b>	<b>8.49%</b>	<b>\$(64,300,000)</b>	<b>\$29,065,396</b>	<b>\$515,029,268</b>	<b>9.12%</b>
BlackRock Global Alpha Tilts	263,174,618	4.65%	(33,900,000)	15,803,799	281,270,819	4.98%
MFS Investment Management	216,620,046	3.83%	(30,400,000)	13,261,597	233,758,449	4.14%
<b>Total International Equity</b>	<b>\$826,346,553</b>	<b>14.61%</b>	<b>\$(116,477,233)</b>	<b>\$29,029,974</b>	<b>\$913,793,812</b>	<b>16.19%</b>
AQR Emerging Markets	97,347,551	1.72%	(176,541)	1,941,602	95,582,490	1.69%
Brandes Investment Partners	333,090,442	5.89%	(48,000,000)	17,108,737	363,981,705	6.45%
William Blair & Company	235,054,431	4.16%	(34,101,692)	8,140,310	261,015,812	4.62%
DFA International Small Cap	160,854,130	2.84%	(34,199,000)	1,839,324	193,213,805	3.42%
<b>Total Fixed Income</b>	<b>\$1,342,963,859</b>	<b>23.75%</b>	<b>\$285,000,000</b>	<b>\$(7,745,629)</b>	<b>\$1,065,709,488</b>	<b>18.88%</b>
BlackRock US Govt Bond	329,949,091	5.84%	109,000,000	(4,312,193)	225,261,284	3.99%
Reams Asset Management	638,855,953	11.30%	141,000,000	(2,791,482)	500,647,435	8.87%
Loomis, Sayles & Company, L.P.	374,158,815	6.62%	35,000,000	(641,953)	339,800,768	6.02%
<b>Total Private Equity</b>	<b>\$756,784,797</b>	<b>13.38%</b>	<b>\$25,088,391</b>	<b>\$18,904,321</b>	<b>\$712,792,085</b>	<b>12.63%</b>
Abbott Capital Management 2010	20,217,203	0.36%	(525,000)	(140,742)	20,882,945	0.37%
Abbott Capital Management 2011	41,065,031	0.73%	(1,375,000)	(761,259)	43,201,290	0.77%
Abbott Capital Management 2012	37,672,199	0.67%	(1,000,000)	231	38,671,968	0.69%
Abbott Capital Management 2013	36,242,857	0.64%	(1,575,000)	100,372	37,717,485	0.67%
Abbott Capital Management 2014	40,436,281	0.72%	(700,000)	(165,296)	41,301,577	0.73%
Abbott Capital Management 2015	32,008,767	0.57%	(1,725,000)	679,778	33,053,989	0.59%
Abbott Capital Management 2016	27,432,956	0.49%	(1,185,000)	820,896	27,797,060	0.49%
Abbott Capital Management 2018	22,439,496	0.40%	795,000	629,120	21,015,376	0.37%
Abbott Capital Management 2019	19,314,734	0.34%	1,450,000	324,408	17,540,326	0.31%
Abbott Capital Management 2020	23,244,567	0.41%	2,980,000	(27,457)	20,292,024	0.36%
Abbott Capital Management 2021	7,789,998	0.14%	1,127,500	(28,642)	6,691,140	0.12%
Abbott Capital Management 2022	8,181,565	0.14%	0	435,497	7,746,068	0.14%
Mesirow V	40,095,043	0.71%	(2,175,000)	547,814	41,722,229	0.74%
Mesirow VI	67,813,816	1.20%	(2,160,000)	1,419,841	68,553,975	1.21%
Mesirow VII	124,188,523	2.20%	0	4,260,512	119,928,011	2.12%
Mesirow VIII	57,222,836	1.01%	14,400,000	178,510	42,644,326	0.76%
NB Secondary Opp Fund III	7,825,308	0.14%	(159,463)	1,092,535	6,892,236	0.12%
NB Secondary Opp Fund IV	17,935,762	0.32%	(145,453)	1,059,201	17,022,014	0.30%
NB Secondary Opp Fund V	31,407,163	0.56%	8,861,048	3,325,679	19,220,436	0.34%
Private Advisors VI	21,065,641	0.37%	(393,691)	130,535	21,328,797	0.38%
Private Advisors VII	14,754,279	0.26%	(429,738)	413,985	14,770,032	0.26%
Private Advisors VIII	18,550,423	0.33%	182,262	820,013	17,548,148	0.31%
Private Advisors IX	32,403,557	0.57%	2,235,756	2,917,168	27,250,633	0.48%
Apogem Capital X	7,476,792	0.13%	6,605,170	871,622	-	-
<b>Absolute Return</b>	<b>\$503,607,200</b>	<b>8.91%</b>	<b>\$(88,738,000)</b>	<b>\$5,142,250</b>	<b>\$587,202,949</b>	<b>10.40%</b>
Aptitude	165,381,331	2.92%	6,262,000	1,813,858	157,305,473	2.79%
UBS A & Q	338,225,868	5.98%	(95,000,000)	3,328,392	429,897,476	7.62%
<b>Real Assets</b>	<b>\$170,737,718</b>	<b>3.02%</b>	<b>\$(264,977)</b>	<b>\$(1,142,905)</b>	<b>\$172,145,601</b>	<b>3.05%</b>
Principal DRA	170,737,718	3.02%	(264,977)	(1,142,905)	172,145,601	3.05%
<b>Total Real Estate</b>	<b>\$504,244,149</b>	<b>8.92%</b>	<b>\$(4,393,571)</b>	<b>\$(10,262,612)</b>	<b>\$518,900,332</b>	<b>9.19%</b>
Real Estate	504,244,149	8.92%	(4,393,571)	(10,262,612)	518,900,332	9.19%
<b>Total Cash</b>	<b>\$26,817,645</b>	<b>0.47%</b>	<b>\$(29,702,057)</b>	<b>\$757,592</b>	<b>\$55,762,110</b>	<b>0.99%</b>
Cash	26,817,645	0.47%	(29,702,057)	757,592	55,762,110	0.99%
<b>Total Fund</b>	<b>\$5,654,571,235</b>	<b>100.0%</b>	<b>\$(112,687,447)</b>	<b>\$123,001,624</b>	<b>\$5,644,257,058</b>	<b>100.0%</b>

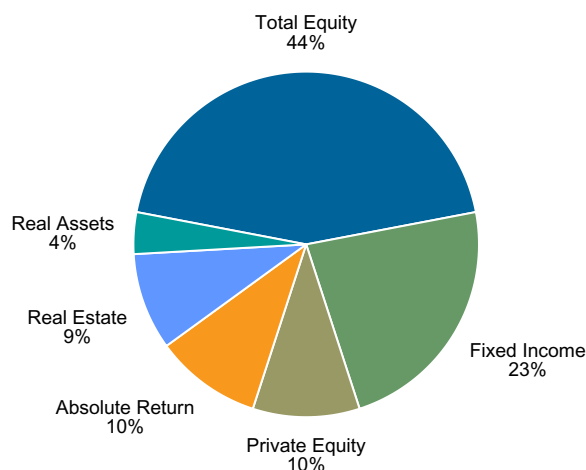
## Actual vs Target Asset Allocation As of June 30, 2023

The first chart below shows the Fund's asset allocation as of June 30, 2023. The second chart shows the Fund's target asset allocation as outlined in the investment policy statement.

**Actual Asset Allocation**



**Target Asset Allocation**



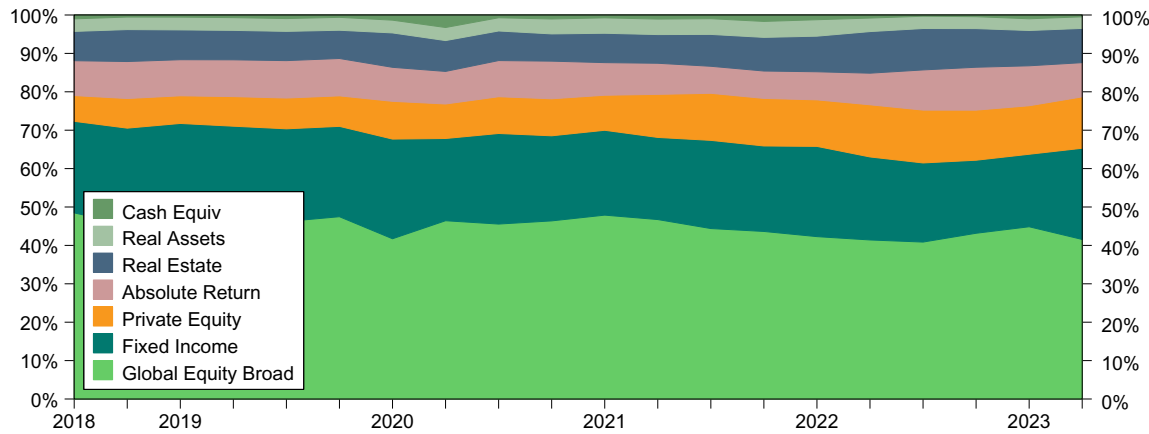
Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Total Equity	2,349,416	41.5%	44.0%	(2.5%)	(138,595)
Fixed Income	1,342,964	23.8%	23.0%	0.8%	42,412
Private Equity	756,785	13.4%	10.0%	3.4%	191,328
Absolute Return	503,607	8.9%	10.0%	(1.1%)	(61,850)
Real Estate	504,244	8.9%	9.1%	(0.2%)	(10,322)
Real Assets	170,738	3.0%	3.9%	(0.9%)	(49,791)
Cash	26,818	0.5%	0.0%	0.5%	26,818
Total	5,654,571	100.0%	100.0%		

\* Current Quarter Target = 44.0% MSCI ACWI IMI, 23.0% Blmbg:Aggregate, 10.0% Russell 3000 Index lagged 3 months+2.0%, 10.0% 3-month Treasury Bill+3.0%, 9.1% NCREIF NFI-ODCE Eq Wt Net lagged 3 months and 3.9% Principal DRA Blend Index.

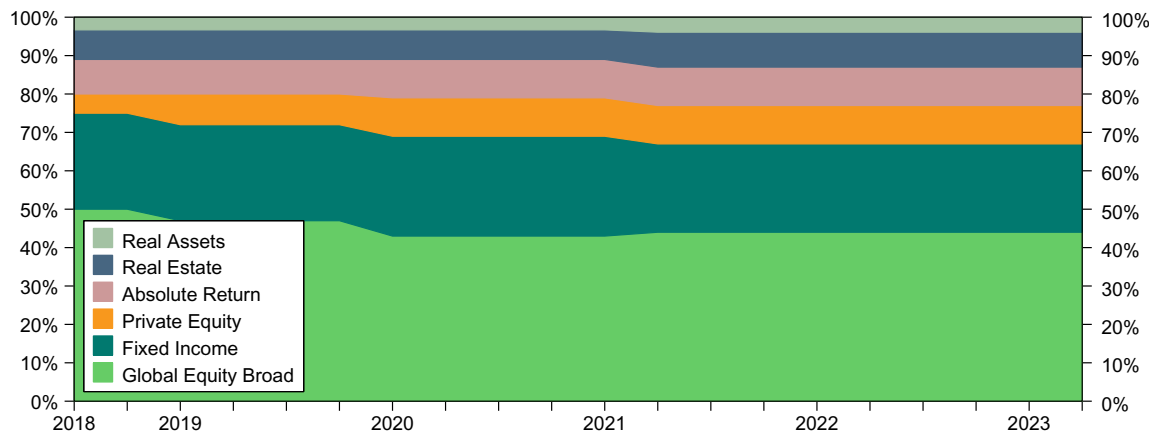
## Actual vs Target Historical Asset Allocation

The Historical asset allocation for a fund is by far the largest factor explaining its performance. The charts below show the fund's historical actual asset allocation, the fund's historical target asset allocation, and the historical asset allocation of the average fund in the Callan Public Fund Sponsor Database.

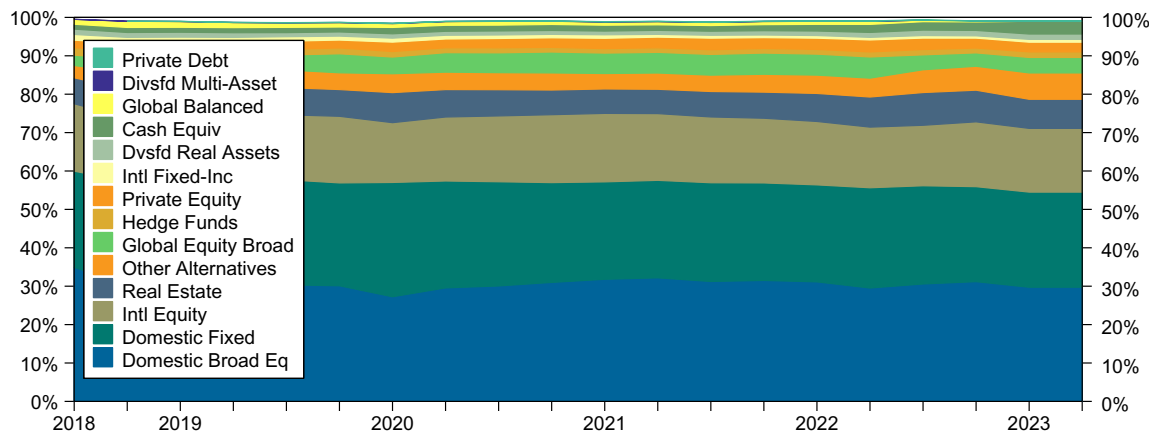
### Actual Historical Asset Allocation



### Target Historical Asset Allocation



### Average Callan Public Fund Sponsor Database Historical Asset Allocation



\* Current Quarter Target = 44.0% MSCI ACWI IMI, 23.0% Blmbg:Aggregate, 10.0% Russell 3000 Index lagged 3 months+2.0%, 10.0% 3-month Treasury Bill+3.0%, 9.1% NCREIF NFI-ODCE Eq Wt Net lagged 3 months and 3.9% Principal DRA Blend Index.



## Total Fund Period Ended June 30, 2023

### Investment Philosophy

The Public Fund Sponsor Database consists of public employee pension total funds including both Callan Associates client and surveyed non-client funds. Current Quarter Target = 44.0% MSCI ACWI IMI, 23.0% Blmbg Aggregate, 10.0% Russell 3000 Index lagged 3 months+2.0%, 10.0% 3-month Treasury Bill+3.0%, 9.1% NCREIF NFI-ODCE Eq Wt Net lagged 3 months and 3.9% Principal Blended Benchmark.

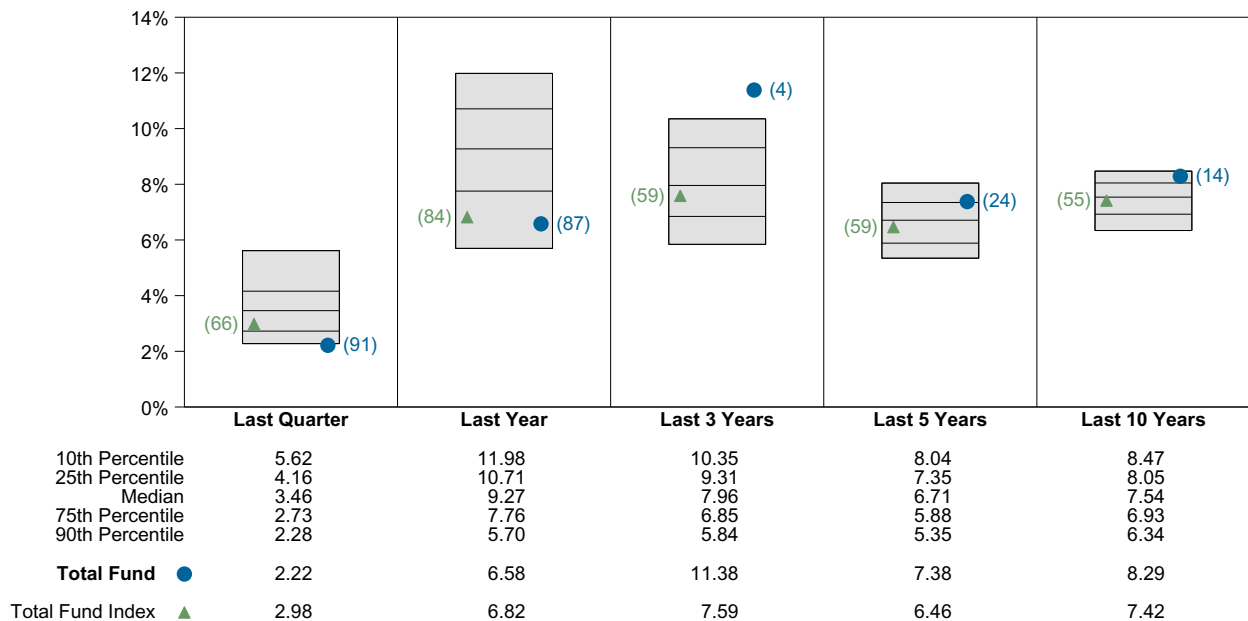
### Quarterly Summary and Highlights

- Total Fund's portfolio posted a 2.22% return for the quarter placing it in the 91 percentile of the Callan Public Fund Sponsor Database group for the quarter and in the 87 percentile for the last year.
- Total Fund's portfolio underperformed the Total Fund Index by 0.76% for the quarter and underperformed the Total Fund Index for the year by 0.24%.

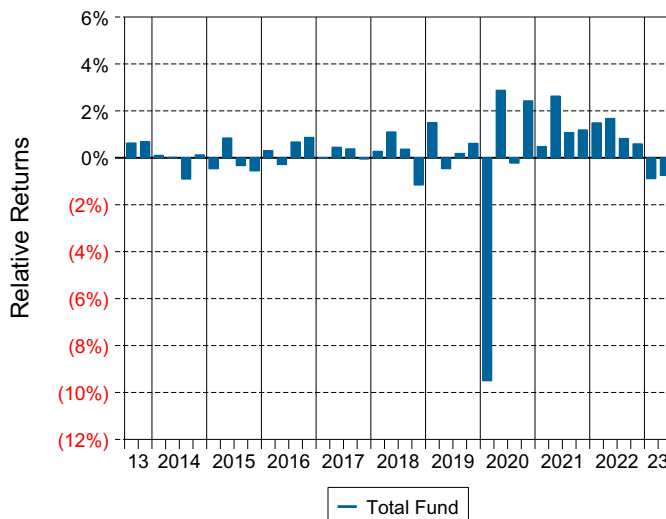
### Quarterly Asset Growth

Beginning Market Value	\$5,644,257,058
Net New Investment	\$-112,687,447
Investment Gains/(Losses)	\$123,001,624
Ending Market Value	\$5,654,571,235

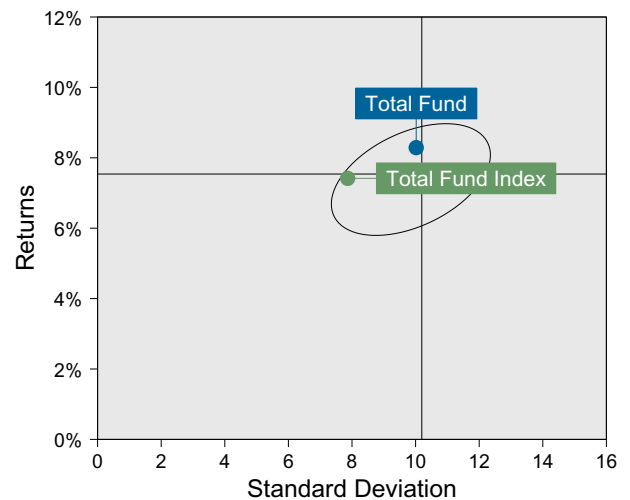
### Performance vs Callan Public Fund Sponsor Database (Gross)



### Relative Return vs Total Fund Index



### Callan Public Fund Sponsor Database (Gross) Annualized Ten Year Risk vs Return

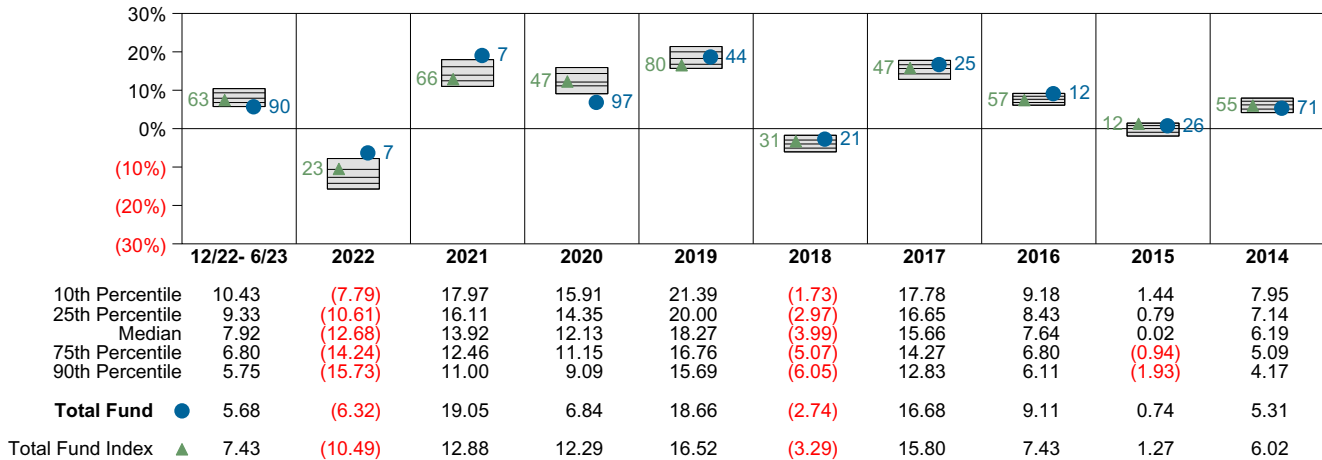


## Total Fund Return Analysis Summary

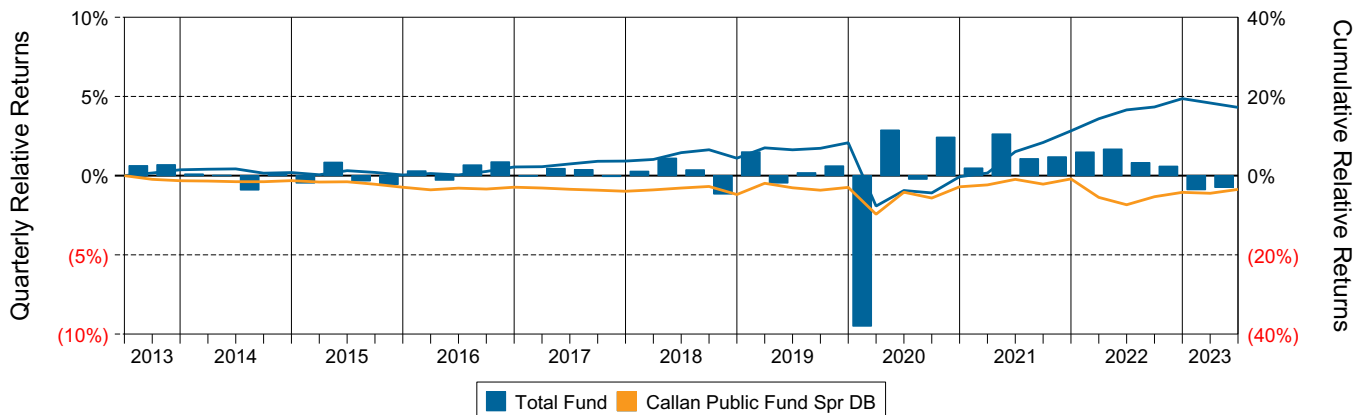
### Return Analysis

The graphs below analyze the manager's return on both a risk-adjusted and unadjusted basis. The first chart illustrates the manager's ranking over different periods versus the appropriate style group. The second chart shows the historical quarterly and cumulative manager returns versus the appropriate market benchmark. The last chart illustrates the manager's ranking relative to their style using various risk-adjusted return measures.

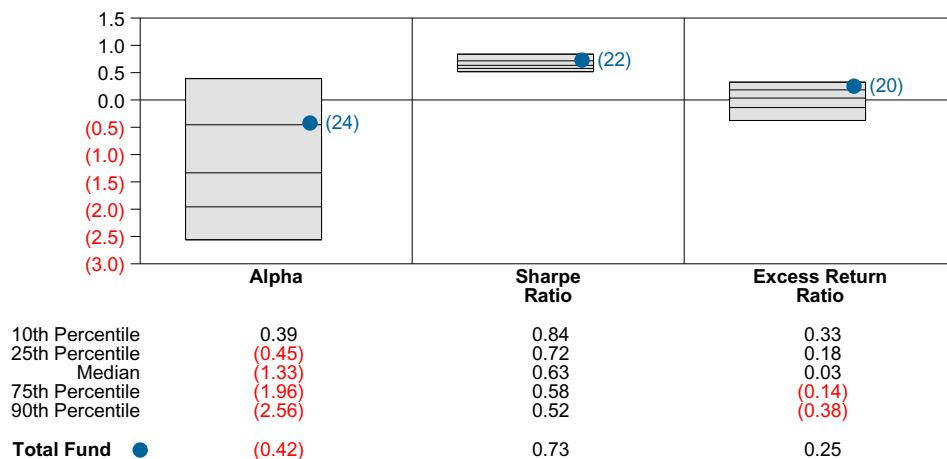
### Performance vs Callan Public Fund Sponsor Database (Gross)



### Cumulative and Quarterly Relative Returns vs Total Fund Index



### Risk Adjusted Return Measures vs Total Fund Index Rankings Against Callan Public Fund Sponsor Database (Gross) Ten Years Ended June 30, 2023



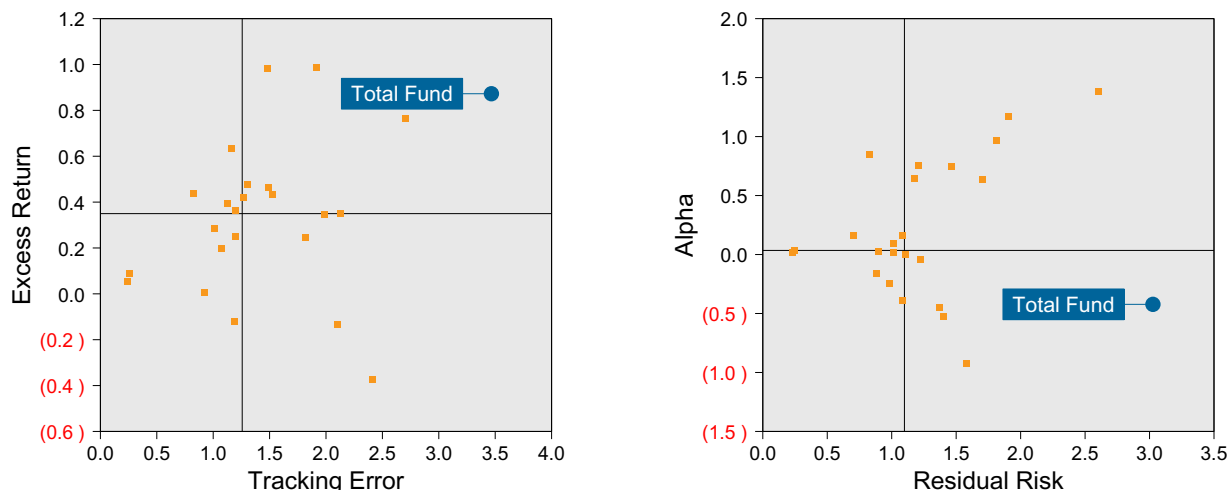
## Total Fund

### Total Fund vs Target Risk Analysis

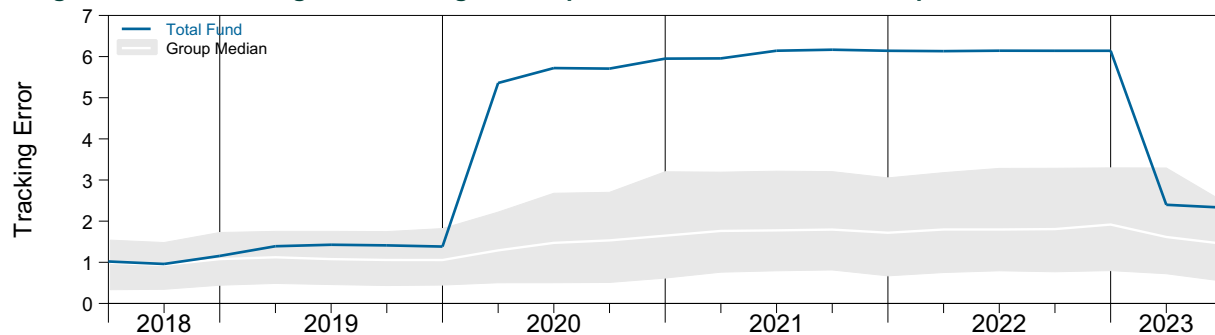
#### Risk Analysis

The graphs below analyze the performance and risk of the fund relative to the appropriate target mix. This relative performance is compared to a peer group of funds wherein each member fund is measured against its own target mix. The first scatter chart illustrates the relationship, called Excess Return Ratio, between excess return and tracking error relative to the target. The second scatter chart displays the relationship, sometimes called Information Ratio, between alpha (market-risk or "beta" adjusted return) and residual risk (non-market or "unsystematic" risk). The third chart shows tracking error patterns over time compared to the range of tracking error patterns for the peer group. The last two charts show the ranking of the fund's risk statistics versus the peer group.

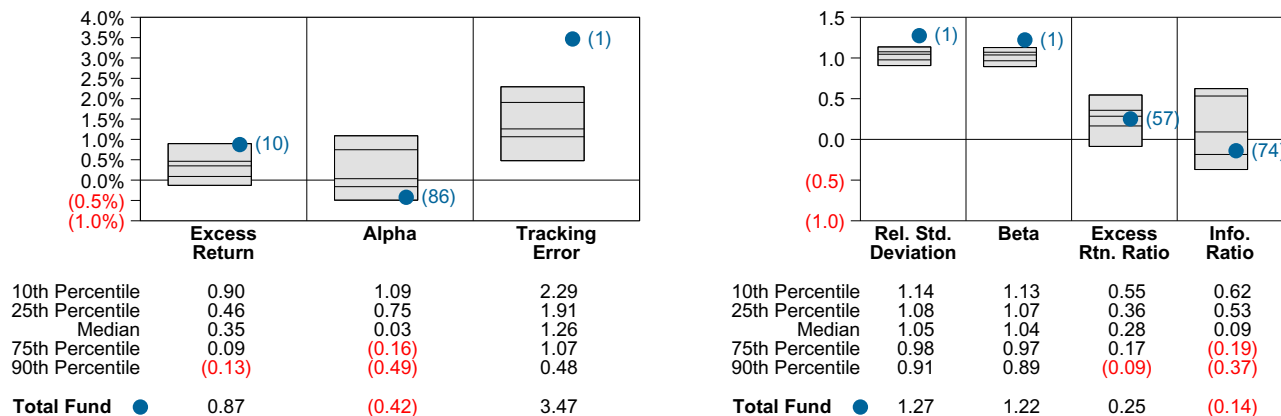
#### Risk Analysis vs Callan Public Fund Sponsor Database Ten Years Ended June 30, 2023



#### Rolling 12 Quarter Tracking Error vs Targets Compared to Callan Public Fund Sponsor Database



#### Risk Statistics Rankings vs Targets Rankings Against Callan Public Fund Sponsor Database Ten Years Ended June 30, 2023



## Investment Manager Returns and Peer Group Rankings

The table below details the rates of return and peer group rankings for the Fund's investment managers over various time periods ended June 30, 2023. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns and Rankings for Periods Ended June 30, 2023

	Last Quarter		Last Year		Last 3 Years		Last 5 Years		Since Inception	
<b>Total Public Equity</b>	<b>4.94%</b>		<b>16.84%</b>		<b>13.35%</b>		<b>8.14%</b>		<b>10.04%</b>	(1/16)
MSCI ACWI IMI	5.89%		16.14%		10.97%		7.65%		9.22%	(1/16)
<b>Total Domestic Equity</b>	<b>5.73%</b>	<b>97</b>	<b>15.22%</b>	<b>89</b>	<b>15.22%</b>	<b>10</b>	<b>10.15%</b>	<b>66</b>	<b>7.91%</b>	(7/98)
Russell 3000 Index	8.39%	14	18.95%	23	13.89%	57	11.39%	13	7.72%	(7/98)
Pub Pln- Dom Equity	7.69%		18.39%		14.07%		10.67%		-	
BlackRock Russell 1000 Value	4.05%	52	11.54%	62	14.34%	81	8.28%	67	7.94%	(4/17)
Russell 1000 Value Index	4.07%	52	11.54%	62	14.30%	82	8.11%	71	7.79%	(4/17)
Callan Large Cap Value	4.22%		12.34%		16.40%		8.77%		-	
DFA Large Cap Value	3.39%	71	13.06%	39	16.47%	48	7.09%	93	7.19%	(11/17)
Russell 1000 Value Index	4.07%	52	11.54%	62	14.30%	82	8.11%	71	7.64%	(11/17)
Callan Large Cap Value	4.22%		12.34%		16.40%		8.77%		-	
Northern Trust Global	8.74%	34	19.62%	29	14.61%	46	12.34%	34	10.72%	(8/88)
S&P 500 Index	8.74%	34	19.59%	30	14.60%	46	12.31%	34	10.67%	(8/88)
Callan Large Cap Core	8.44%		18.14%		14.38%		11.72%		-	
Polen Capital Management	9.73%	82	19.38%	87	5.82%	91	12.06%	70	14.72%	(7/12)
S&P 500 Index	8.74%	87	19.59%	86	14.60%	7	12.31%	66	13.54%	(7/12)
Callan Large Cap Growth	12.29%		25.13%		11.31%		12.98%		-	
Earnest Partners LLC	4.10%	79	10.80%	83	14.41%	46	11.59%	8	11.14%	(5/05)
Russell MidCap Index	4.76%	58	14.92%	58	12.50%	56	8.46%	60	9.52%	(5/05)
Callan Mid Capitalization	5.00%		15.75%		14.23%		9.07%		-	
DFA Small Cap Value	4.59%	27	16.83%	18	26.42%	6	7.72%	19	11.63%	(11/96)
Russell 2000 Value Index	3.18%	62	6.01%	85	15.43%	82	3.54%	91	8.76%	(11/96)
Callan Small Cap Value	3.63%		11.39%		18.35%		5.89%		-	
CastleArk Management	5.28%	59	16.67%	51	10.91%	24	7.77%	51	10.27%	(9/13)
Russell 2000 Growth Index	7.05%	27	18.53%	36	6.10%	71	4.22%	95	8.40%	(9/13)
Callan Small Cap Growth	5.46%		16.97%		8.52%		7.92%		-	
<b>Total Global Equity</b>	<b>6.10%</b>	<b>48</b>	<b>17.78%</b>	<b>50</b>	<b>11.89%</b>	<b>45</b>	<b>9.74%</b>	<b>29</b>	<b>9.27%</b>	(4/10)
MSCI World	6.83%	35	18.51%	40	12.18%	42	9.07%	45	9.13%	(4/10)
Callan Global Equity	5.93%		17.79%		11.54%		8.71%		-	
BlackRock Global Alpha Tilts	6.06%	48	17.73%	51	11.68%	47	8.27%	56	11.52%	(3/16)
MSCI ACWI Gross	6.35%	42	17.13%	56	11.51%	50	8.64%	51	11.27%	(3/16)
Callan Global Equity	5.93%		17.79%		11.54%		8.71%		-	
MFS Investment Management	6.15%	46	17.75%	51	12.20%	42	11.97%	7	12.27%	(12/12)
MSCI ACWI Gross	6.35%	42	17.13%	56	11.51%	50	8.64%	51	9.65%	(12/12)
Callan Global Equity	5.93%		17.79%		11.54%		8.71%		-	
<b>Total International Equity</b>	<b>3.26%</b>	<b>10</b>	<b>17.88%</b>	<b>8</b>	<b>11.45%</b>	<b>1</b>	<b>4.63%</b>	<b>36</b>	<b>6.87%</b>	(5/96)
MSCI EAFE	2.95%	28	18.77%	5	8.93%	28	4.39%	42	4.63%	(5/96)
Pub Pln- Intl Equity	2.65%		14.50%		7.80%		4.16%		-	
AQR Emerging Markets	2.03%	43	3.53%	64	4.71%	35	1.85%	47	5.02%	(8/16)
MSCI EM Gross	1.04%	69	2.22%	76	2.72%	55	1.32%	61	4.66%	(8/16)
Callan Emerging Broad	1.91%		4.66%		3.22%		1.72%		-	
Brandes Investment Partners	4.86%	6	24.67%	3	16.04%	3	4.93%	49	7.72%	(2/98)
MSCI EAFE	2.95%	64	18.77%	43	8.93%	51	4.39%	65	4.69%	(2/98)
Callan NonUS Eq	3.21%		18.10%		9.01%		4.90%		-	
William Blair & Company	3.15%	53	15.65%	79	5.98%	84	5.70%	29	7.47%	(12/03)
MSCI ACWIxUS Gross	2.67%	71	13.33%	92	7.75%	69	4.01%	74	6.39%	(12/03)
Callan NonUS Eq	3.21%		18.10%		9.01%		4.90%		-	
DFA International Small Cap	0.99%	36	15.75%	22	13.23%	7	2.65%	39	4.72%	(5/06)
MSCI EAFE Small	0.58%	54	10.18%	77	5.70%	64	1.31%	61	3.92%	(5/06)
Callan Intl Small Cap	0.62%		12.38%		7.41%		2.07%		-	

## Investment Manager Returns and Peer Group Rankings

The table below details the rates of return and peer group rankings for the Fund's investment managers over various time periods ended June 30, 2023. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns and Rankings for Periods Ended June 30, 2023

	Last Quarter		Last Year		Last 3 Years		Last 5 Years		Since Inception	
<b>Total Fixed Income</b>	<b>(0.69%)</b>	<b>83</b>	<b>1.47%</b>	<b>26</b>	<b>(0.09%)</b>	<b>11</b>	<b>1.08%</b>	<b>86</b>	<b>6.58%</b>	(12/87)
Bimbg Aggregate	(0.84%)	94	(0.94%)	93	(3.96%)	96	0.77%	95	5.44%	(12/87)
Pub Pln- Dom Fixed	(0.33%)		0.54%		(2.28%)		1.47%		-	
BlackRock US Govt Bond	(1.33%)	97	(1.99%)	100	-		-		(7.17%)	(12/21)
Bimbg Government	(1.35%)	97	(2.08%)	100	(4.71%)	100	0.46%	100	(7.35%)	(12/21)
Callan Core Bond FI	(0.64%)		(0.34%)		(3.39%)		1.28%		-	
Reams Asset Management	(0.59%)	69	2.08%	9	(2.14%)	28	3.43%	2	4.99%	(1/01)
Bimbg Aggregate	(0.84%)	88	(0.94%)	89	(3.96%)	98	0.77%	98	3.66%	(1/01)
Callan Core Plus FI	(0.48%)		0.41%		(2.60%)		1.56%		-	
Loomis, Sayles & Company, L.P.	(0.23%)	22	3.04%	3	0.13%	4	2.34%	11	8.08%	(12/87)
Bimbg Aggregate	(0.84%)	88	(0.94%)	89	(3.96%)	98	0.77%	98	5.44%	(12/87)
Callan Core Plus FI	(0.48%)		0.41%		(2.60%)		1.56%		-	
<b>Total Private Equity</b>	<b>2.61%</b>		<b>(4.13%)</b>		<b>27.20%</b>		<b>20.66%</b>		<b>13.14%</b>	(6/10)
Private Equity Benchmark (3)	7.62%		(5.92%)		20.97%		13.34%		-	
Abbott Capital Management 2010	(0.66%)		(13.64%)		21.86%		17.57%		1.55%	(6/10)
Abbott Capital Management 2011	(1.74%)		(16.05%)		24.03%		19.49%		4.88%	(6/11)
Abbott Capital Management 2012	0.02%		(11.66%)		26.12%		20.59%		12.13%	(7/12)
Abbott Capital Management 2013	0.29%		(10.32%)		26.09%		20.84%		12.93%	(5/13)
Abbott Capital Management 2014	(0.39%)		(8.61%)		27.77%		21.44%		12.48%	(4/14)
Abbott Capital Management 2015	2.13%		(2.87%)		28.26%		20.75%		14.54%	(4/15)
Abbott Capital Management 2016	3.02%		(0.83%)		29.35%		20.54%		13.70%	(3/16)
Abbott Capital Management 2018	2.93%		1.23%		24.17%		15.88%		15.88%	(7/18)
Abbott Capital Management 2019	1.83%		(0.30%)		28.60%		-		20.03%	(1/20)
Abbott Capital Management 2020	(0.08%)		(2.92%)		-		-		22.64%	(1/21)
Abbott Capital Management 2021	(0.37%)		(2.64%)		-		-		5.13%	(2/21)
Abbott Capital Management 2022	5.62%		(0.86%)		-		-		(1.35%)	(2/22)
Mesirow V	1.40%		(12.01%)		22.87%		17.42%		15.02%	(6/10)
Mesirow VI	2.12%		(9.95%)		28.72%		24.06%		14.14%	(7/13)
Mesirow VII	3.55%		(0.80%)		25.37%		13.32%		3.70%	(6/17)
Mesirow VIII	0.43%		(4.21%)		-		-		(2.02%)	(9/20)
NB Secondary Opp Fund III	15.94%		8.89%		20.54%		12.54%		12.51%	(12/13)
NB Secondary Opp Fund IV	6.23%		(0.22%)		23.96%		22.84%		21.07%	(4/17)
NB Secondary Opp Fund V	13.08%		(11.89%)		-		-		101.73%	(3/22)
Private Advisors VI	0.62%		1.38%		33.53%		24.27%		14.21%	(4/15)
Private Advisors VII	2.82%		11.68%		27.49%		18.02%		15.41%	(1/17)
Private Advisors VIII	4.60%		22.63%		30.95%		-		20.32%	(8/18)
Private Advisors IX	9.88%		30.52%		24.82%		-		27.77%	(2/20)
<b>Absolute Return</b>	<b>0.96%</b>		<b>5.67%</b>		<b>15.27%</b>		<b>6.10%</b>		<b>5.78%</b>	(6/14)
90 Day T-Bill + 3%	1.89%		6.59%		4.27%		4.55%		4.08%	(6/14)
Aptitude	1.14%	52	-		-		-		4.26%	(9/22)
1-month LIBOR + 4%	2.25%	2	8.10%	10	5.49%	83	5.70%	25	7.03%	(9/22)
Callan Abs Rtn Hedge FoF	1.20%		3.83%		6.97%		4.06%		-	
UBS A & Q	0.85%	57	5.90%	13	9.01%	31	7.84%	1	6.20%	(12/14)
1-month LIBOR + 4%	2.25%	2	8.10%	10	5.49%	83	5.70%	25	5.30%	(12/14)
Callan Abs Rtn Hedge FoF	1.20%		3.83%		6.97%		4.06%		-	
<b>Real Assets</b>	<b>(0.66%)</b>		<b>0.06%</b>		<b>9.43%</b>		<b>4.50%</b>		<b>5.43%</b>	(1/16)
Principal DRA	(0.66%)	62	0.06%	47	9.43%	68	4.50%	68	5.43%	(1/16)
Principal DRA Blend Index (1)	(1.19%)	66	(0.53%)	48	7.93%	74	3.61%	79	4.67%	(1/16)
Callan Alternative Inv DB	1.62%		(1.03%)		14.09%		5.56%		-	
<b>Total Real Estate</b>	<b>(1.98%)</b>		<b>(6.09%)</b>		<b>10.75%</b>		<b>8.59%</b>		<b>6.91%</b>	(7/86)
Real Estate	(1.98%)	87	(6.09%)	50	10.75%	22	8.59%	16	6.91%	(7/86)
Blended Benchmark (2)	(3.50%)	95	(3.69%)	37	8.17%	38	7.13%	30	-	
Callan Tot Real Est DB	(0.78%)		(6.00%)		7.35%		6.14%		-	
<b>Total Fund</b>	<b>2.22%</b>	<b>91</b>	<b>6.58%</b>	<b>87</b>	<b>11.38%</b>	<b>4</b>	<b>7.38%</b>	<b>24</b>	<b>-</b>	
Total Fund Index*	2.98%	66	6.82%	84	7.59%	59	6.46%	59	-	
Callan Public Fund Spr DB	3.46%		9.27%		7.96%		6.71%		-	

\* Current Quarter Target = 44.0% MSCI ACWI IMI, 23.0% Bimbg:Aggregate, 10.0% Russell 3000 Index lagged 3 months+2.0%, 10.0% 3-month Treasury Bill+3.0%, 9.1% NCREIF NFI-ODCE Eq Wt Net lagged 3 months and 3.9% Principal DRA Blend Index.

(1) Current Principal DRA Blend Index = 15% Bloomberg US TIPS Idx, 15% Bloomberg Commodity Idx, 30% S&P Global Infrastructure Idx, 15% S&P Global Natural Resources Idx and 25% FTSE EPRA/NAREIT Developed Market Idx.  
(2) Blended Benchmark = NCREIF (NPI) through 6/30/06, NCREIF (NPI 1 Qtr Arrears) through 12/31/13 and NFI-ODCE (1 Qtr Arrears) thereafter.

(3) Private Equity Benchmark = Russell 3000 Index lagged 3 months+3.0% through 12/31/19, Russell 3000 Index lagged 3 months+2.0% thereafter.

## Investment Manager Returns and Peer Group Rankings

The table below details the rates of return and peer group rankings for the Fund's investment managers over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

	12/2022- 6/2023		2022		2021		2020		2019
<b>Total Public Equity</b>	<b>12.02%</b>		<b>(15.78%)</b>		<b>20.92%</b>		<b>14.78%</b>		<b>26.90%</b>
MSCI ACWI IMI	13.25%		(18.40%)		18.22%		16.25%		26.35%
<b>Total Domestic Equity</b>	<b>10.41%</b>	<b>97</b>	<b>(15.68%)</b>	<b>11</b>	<b>28.12%</b>	<b>14</b>	<b>16.35%</b>	<b>74</b>	<b>29.24%</b>
Russell 3000 Index	16.17%	12	(19.21%)	77	25.66%	54	20.89%	26	31.02%
Pub Pln- Dom Equity	14.74%		(17.97%)		25.82%		18.63%		30.20%
BlackRock Russell 1000 Value	5.12%	43	(7.54%)	80	25.18%	80	3.28%	47	26.79%
Russell 1000 Value Index	5.12%	43	(7.54%)	79	25.16%	80	2.80%	52	26.54%
Callan Large Cap Value	4.76%		(5.04%)		28.39%		3.04%		26.52%
DFA Large Cap Value	4.56%	52	(4.95%)	49	27.52%	65	(1.56%)	90	26.71%
Russell 1000 Value Index	5.12%	43	(7.54%)	79	25.16%	80	2.80%	52	26.54%
Callan Large Cap Value	4.76%		(5.04%)		28.39%		3.04%		26.52%
Northern Trust Global	16.90%	30	(18.08%)	55	28.69%	53	18.42%	53	31.54%
S&P 500 Index	16.89%	30	(18.11%)	56	28.71%	53	18.40%	53	31.49%
Callan Large Cap Core	15.72%		(17.69%)		28.98%		19.19%		30.50%
Polen Capital Management	25.23%	62	(37.72%)	89	24.84%	43	35.13%	54	38.85%
S&P 500 Index	16.89%	89	(18.11%)	6	28.71%	20	18.40%	98	31.49%
Callan Large Cap Growth	26.80%		(30.09%)		24.28%		35.54%		34.49%
Earnest Partners LLC	8.97%	53	(15.13%)	52	26.09%	48	21.61%	41	38.38%
Russell MidCap Index	9.01%	53	(17.32%)	58	22.58%	58	17.10%	48	30.54%
Callan Mid Capitalization	9.27%		(14.34%)		25.38%		16.17%		31.00%
DFA Small Cap Value	5.45%	40	(1.69%)	10	40.61%	16	3.85%	45	18.79%
Russell 2000 Value Index	2.50%	79	(14.48%)	84	28.27%	64	4.63%	37	22.39%
Callan Small Cap Value	4.64%		(10.51%)		31.82%		2.88%		24.31%
CastleArk Management	10.69%	73	(28.21%)	62	12.30%	42	45.10%	46	23.28%
Russell 2000 Growth Index	13.55%	46	(26.36%)	44	2.83%	80	34.63%	73	28.48%
Callan Small Cap Growth	13.38%		(27.10%)		10.91%		44.48%		30.25%
<b>Total Global Equity</b>	<b>14.56%</b>	<b>40</b>	<b>(17.35%)</b>	<b>47</b>	<b>19.03%</b>	<b>54</b>	<b>18.78%</b>	<b>43</b>	<b>31.05%</b>
MSCI World	15.09%	36	(18.14%)	52	21.82%	28	15.90%	55	27.67%
Callan Global Equity	13.86%		(17.81%)		19.46%		17.02%		27.49%
BlackRock Global Alpha Tilts	14.08%	49	(16.80%)	43	18.73%	56	16.53%	52	26.86%
MSCI ACWI Gross	14.26%	46	(17.96%)	51	19.04%	54	16.82%	51	27.30%
Callan Global Equity	13.86%		(17.81%)		19.46%		17.02%		27.49%
MFS Investment Management	15.15%	35	(18.14%)	52	19.56%	49	22.42%	32	37.31%
MSCI ACWI Gross	14.26%	46	(17.96%)	51	19.04%	54	16.82%	51	27.30%
Callan Global Equity	13.86%		(17.81%)		19.46%		17.02%		27.49%
<b>Total International Equity</b>	<b>12.51%</b>	<b>6</b>	<b>(15.36%)</b>	<b>20</b>	<b>13.08%</b>	<b>13</b>	<b>10.84%</b>	<b>71</b>	<b>21.68%</b>
MSCI EAFE	11.67%	15	(14.45%)	15	11.26%	23	7.82%	90	22.01%
Pub Pln- Intl Equity	10.26%		(16.98%)		8.41%		12.74%		22.89%
AQR Emerging Markets	8.22%	33	(20.29%)	38	1.23%	36	18.26%	49	20.54%
MSCI EM Gross	5.10%	83	(19.74%)	35	(2.22%)	55	18.69%	44	18.90%
Callan Emerging Broad	6.81%		(22.16%)		(0.60%)		18.17%		22.12%
Brandes Investment Partners	16.63%	5	(6.79%)	4	14.42%	18	(1.30%)	96	15.31%
MSCI EAFE	11.67%	63	(14.45%)	43	11.26%	52	7.82%	65	22.01%
Callan NonUS Eq	12.45%		(15.29%)		11.50%		11.19%		23.78%
William Blair & Company	12.02%	58	(28.57%)	95	13.27%	30	31.44%	6	31.58%
MSCI ACWIxUS Gross	9.86%	87	(15.57%)	51	8.29%	71	11.13%	50	22.13%
Callan NonUS Eq	12.45%		(15.29%)		11.50%		11.19%		23.78%
DFA International Small Cap	7.70%	42	(9.42%)	5	16.47%	14	1.47%	89	21.62%
MSCI EAFE Small	5.53%	81	(21.39%)	52	10.10%	72	12.34%	45	24.96%
Callan Intl Small Cap	7.07%		(20.63%)		12.78%		11.08%		24.96%



## Investment Manager Returns and Peer Group Rankings

The table below details the rates of return and peer group rankings for the Fund's investment managers over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

	12/2022- 6/2023		2022		2021		2020		2019	
<b>Total Fixed Income</b>	<b>2.90%</b>	<b>35</b>	<b>(6.83%)</b>	<b>8</b>	<b>(0.36%)</b>	<b>40</b>	<b>(1.82%)</b>	<b>98</b>	<b>11.82%</b>	<b>5</b>
Bimbg Aggregate	2.09%	85	(13.01%)	67	(1.54%)	90	7.51%	66	8.72%	58
Pub Pln- Dom Fixed	2.74%		(12.32%)		(0.80%)		8.37%		8.98%	
BlackRock US Govt Bond	1.82%	94	(12.43%)	23	-		-		-	
Bimbg Government	1.59%	96	(12.32%)	19	(2.28%)	100	7.94%	85	6.83%	100
Callan Core Bond FI	2.50%		(12.89%)		(1.04%)		8.69%		9.17%	
Reams Asset Management	3.40%	6	(11.39%)	13	(1.23%)	91	17.28%	2	8.82%	92
Bimbg Aggregate	2.09%	89	(13.01%)	42	(1.54%)	97	7.51%	93	8.72%	93
Callan Core Plus FI	2.79%		(13.26%)		(0.25%)		9.27%		10.01%	
Loomis, Sayles & Company, L.P.	3.03%	30	(12.12%)	18	2.13%	5	7.14%	94	14.42%	1
Bimbg Aggregate	2.09%	89	(13.01%)	42	(1.54%)	97	7.51%	93	8.72%	93
Callan Core Plus FI	2.79%		(13.26%)		(0.25%)		9.27%		10.01%	
<b>Total Private Equity</b>	<b>2.49%</b>		<b>(4.88%)</b>		<b>67.66%</b>		<b>22.14%</b>		<b>16.63%</b>	
Private Equity Benchmark (3)	15.92%		(15.10%)		34.08%		17.99%		6.65%	
Abbott Capital Management 2010	(0.66%)		(16.87%)		65.55%		24.43%		16.52%	
Abbott Capital Management 2011	(1.74%)		(18.97%)		76.29%		29.13%		19.64%	
Abbott Capital Management 2012	0.02%		(13.14%)		72.85%		29.04%		17.91%	
Abbott Capital Management 2013	0.29%		(12.51%)		70.21%		28.65%		21.13%	
Abbott Capital Management 2014	(0.39%)		(9.41%)		75.52%		26.51%		19.74%	
Abbott Capital Management 2015	2.13%		(0.79%)		75.81%		16.62%		15.14%	
Abbott Capital Management 2016	3.02%		2.90%		71.04%		20.02%		9.08%	
Abbott Capital Management 2018	2.93%		7.44%		47.06%		22.73%		7.26%	
Abbott Capital Management 2019	1.83%		7.54%		57.22%		10.04%		-	
Abbott Capital Management 2020	(0.08%)		0.81%		65.36%		-		-	
Abbott Capital Management 2021	(0.37%)		1.72%		-		-		-	
Abbott Capital Management 2022	5.27%		-		-		-		-	
Mesirow V	1.40%		(19.60%)		78.52%		21.39%		16.29%	
Mesirow VI	2.12%		(13.41%)		88.26%		29.10%		22.73%	
Mesirow VII	3.55%		(0.68%)		60.27%		16.43%		3.33%	
Mesirow VIII	0.43%		(2.15%)		10.14%		-		-	
NB Secondary Opp Fund III	13.96%		(2.34%)		30.34%		4.23%		12.18%	
NB Secondary Opp Fund IV	5.31%		0.29%		48.73%		14.80%		14.76%	
NB Secondary Opp Fund V	9.61%		-		-		-		-	
Private Advisors VI	0.62%		9.97%		83.78%		16.54%		17.98%	
Private Advisors VII	2.82%		21.61%		52.55%		3.97%		11.23%	
Private Advisors VIII	4.65%		27.61%		47.25%		15.78%		(4.08%)	
Private Advisors IX	9.83%		24.00%		37.25%		-		-	
<b>Absolute Return</b>	<b>1.65%</b>		<b>26.46%</b>		<b>8.87%</b>		<b>(14.04%)</b>		<b>12.79%</b>	
90 Day T-Bill + 3%	3.71%		4.46%		3.05%		3.67%		5.28%	
Aptitude	1.33%	46	-		-		-		-	
1-month LIBOR + 4%	4.43%	2	5.80%	21	4.11%	77	4.63%	45	6.32%	30
Callan Abs Rtn Hedge FoF	1.31%		3.34%		6.76%		4.03%		4.71%	
UBS A & Q	1.72%	24	8.85%	13	8.08%	45	12.18%	14	9.53%	4
1-month LIBOR + 4%	4.43%	2	5.80%	21	4.11%	77	4.63%	45	6.32%	30
Callan Abs Rtn Hedge FoF	1.31%		3.34%		6.76%		4.03%		4.71%	
<b>Real Assets</b>	<b>0.76%</b>		<b>(5.29%)</b>		<b>18.24%</b>		<b>4.69%</b>		<b>15.39%</b>	
Principal DRA	0.76%	46	(5.29%)	84	18.24%	44	4.69%	23	15.39%	16
Principal DRA Blend Index (1)	(0.09%)	47	(5.07%)	84	15.87%	47	2.08%	32	14.86%	17
Callan Alternative Inv DB	(0.58%)		9.37%		13.64%		(0.47%)		7.84%	
<b>Total Real Estate</b>	<b>(4.95%)</b>		<b>13.88%</b>		<b>23.85%</b>		<b>0.76%</b>		<b>6.21%</b>	
Real Estate	(4.95%)	73	13.88%	24	23.85%	34	0.76%	53	6.21%	65
Blended Benchmark (2)	(8.40%)	89	21.68%	12	14.83%	58	0.89%	52	5.26%	73
Callan Tot Real Est DB	(3.13%)		8.21%		18.95%		1.17%		7.71%	
<b>Total Fund</b>	<b>5.68%</b>	<b>90</b>	<b>(6.32%)</b>	<b>7</b>	<b>19.05%</b>	<b>7</b>	<b>6.84%</b>	<b>97</b>	<b>18.66%</b>	<b>44</b>
Total Fund Index*	7.43%	63	(10.49%)	23	12.88%	66	12.29%	47	16.52%	80
Callan Public Fund Spr DB	7.92%		(12.68%)		13.92%		12.13%		18.27%	

\* Current Quarter Target = 44.0% MSCI ACWI IMI, 23.0% Bimbg:Aggregate, 10.0% Russell 3000 Index lagged 3 months+2.0%, 10.0% 3-month Treasury Bill+3.0%, 9.1% NCREIF NFI-ODCE Eq Wt Net lagged 3 months and 3.9% Principal DRA Blend Index.

(1) Current Principal DRA Blend Index = 15% Bloomberg US TIPS Idx, 15% Bloomberg Commodity Idx, 30% S&P Global Infrastructure Idx, 15% S&P Global Natural Resources Idx and 25% FTSE EPRA/NAREIT Developed Market Idx.  
(2) Blended Benchmark = NCREIF (NPI) through 6/30/06, NCREIF (NPI 1 Qtr Arrears) through 12/31/13 and NFI-ODCE (1 Qtr Arrears) thereafter.

(3) Private Equity Benchmark = Russell 3000 Index lagged 3 months+3.0% through 12/31/19, Russell 3000 Index lagged 3 months+2.0% thereafter.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended June 30, 2023. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended June 30, 2023

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Net of Fee Returns</b>					
<b>Total Domestic Equity</b>	<b>5.66%</b>	<b>14.94%</b>	<b>14.96%</b>	<b>9.89%</b>	<b>11.59%</b>
Russell 3000 Index	8.39%	18.95%	13.89%	11.39%	12.34%
BlackRock Russell 1000 Value	4.05%	11.53%	14.33%	8.26%	-
Russell 1000 Value Index	4.07%	11.54%	14.30%	8.11%	9.22%
DFA Large Cap Value	3.35%	12.86%	16.27%	6.88%	-
Russell 1000 Value Index	4.07%	11.54%	14.30%	8.11%	9.22%
Northern Trust Global	8.74%	19.61%	14.60%	12.32%	12.88%
S&P 500 Index	8.74%	19.59%	14.60%	12.31%	12.86%
Polen Capital Management	9.70%	18.99%	5.41%	11.61%	14.86%
S&P 500 Index	8.74%	19.59%	14.60%	12.31%	12.86%
Earnest Partners LLC	3.96%	10.21%	13.85%	11.02%	12.62%
Russell MidCap Index	4.76%	14.92%	12.50%	8.46%	10.32%
DFA Small Cap Value	4.42%	16.27%	26.01%	7.40%	9.34%
Russell 2000 Value Index	3.18%	6.01%	15.43%	3.54%	7.29%
CastleArk Management	5.11%	16.08%	10.23%	7.08%	-
Russell 2000 Growth Index	7.05%	18.53%	6.10%	4.22%	8.83%
<b>Total Global Equity</b>	<b>6.02%</b>	<b>17.42%</b>	<b>11.62%</b>	<b>9.43%</b>	<b>10.06%</b>
MSCI World	6.83%	18.51%	12.18%	9.07%	9.50%
BlackRock Global Alpha Tilts	6.01%	17.48%	11.55%	8.10%	-
MSCI ACWI Gross	6.35%	17.13%	11.51%	8.64%	9.32%
MFS Investment Management	6.05%	17.26%	11.72%	11.49%	11.70%
MSCI ACWI Gross	6.35%	17.13%	11.51%	8.64%	9.32%
<b>Total International Equity</b>	<b>3.14%</b>	<b>17.34%</b>	<b>10.94%</b>	<b>4.13%</b>	<b>5.96%</b>
MSCI EAFE Index	2.95%	18.77%	8.93%	4.39%	5.41%
AQR Emerging Markets	1.85%	2.72%	3.92%	1.08%	-
MSCI EM Gross	1.04%	2.22%	2.72%	1.32%	3.33%
Brandes Investment Partners	4.76%	24.19%	15.60%	4.52%	5.93%
MSCI EAFE Index	2.95%	18.77%	8.93%	4.39%	5.41%
William Blair & Company	3.03%	15.11%	5.49%	5.22%	6.47%
MSCI ACWI ex-US Index	2.67%	13.33%	7.75%	4.01%	5.24%
DFA International Small Cap	0.87%	15.25%	12.68%	2.18%	6.06%
MSCI EAFE Small	0.58%	10.18%	5.70%	1.31%	6.19%

\*Net returns are simulated with the use of fee schedules through March 31, 2019. Actual fees paid are used thereafter.



## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods ended June 30, 2023. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

### Returns for Periods Ended June 30, 2023

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Net of Fee Returns</b>					
<b>Total Fixed Income</b>	<b>(0.71%)</b>	<b>1.35%</b>	<b>(0.20%)</b>	<b>0.97%</b>	<b>1.86%</b>
Bimbg Aggregate	(0.84%)	(0.94%)	(3.96%)	0.77%	1.52%
BlackRock US Govt Bond	(1.34%)	(2.00%)	-	-	-
Bimbg Government	(1.35%)	(2.08%)	(4.71%)	0.46%	0.97%
Reams Asset Management	(0.62%)	1.95%	(2.27%)	3.29%	2.81%
Bimbg Aggregate	(0.84%)	(0.94%)	(3.96%)	0.77%	1.52%
Loomis, Sayles & Company, L.P.	(0.27%)	2.88%	(0.01%)	2.19%	3.32%
Bimbg Aggregate	(0.84%)	(0.94%)	(3.96%)	0.77%	1.52%
<b>Total Private Equity</b>	<b>2.61%</b>	<b>(4.13%)</b>	<b>27.20%</b>	<b>20.66%</b>	<b>17.28%</b>
Private Equity Benchmark	7.62%	(5.92%)	20.97%	13.34%	-
Abbott Capital Management 2010	(0.66%)	(13.64%)	21.86%	17.57%	16.05%
Abbott Capital Management 2011	(1.74%)	(16.05%)	24.03%	19.49%	15.95%
Abbott Capital Management 2012	0.02%	(11.66%)	26.12%	20.59%	14.89%
Abbott Capital Management 2013	0.29%	(10.32%)	26.09%	20.84%	13.16%
Abbott Capital Management 2014	(0.39%)	(8.61%)	27.77%	21.44%	-
Abbott Capital Management 2015	2.13%	(2.87%)	28.26%	20.75%	-
Abbott Capital Management 2016	3.02%	(0.83%)	29.35%	20.54%	-
Abbott Capital Management 2018	2.93%	1.23%	24.17%	15.88%	-
Abbott Capital Management 2019	1.83%	(0.30%)	28.60%	-	-
Abbott Capital Management 2020	(0.08%)	(2.92%)	-	-	-
Abbott Capital Management 2021	(0.37%)	(2.64%)	-	-	-
Abbott Capital Management 2022	5.62%	(0.86%)	-	-	-
Mesirow V	1.40%	(12.01%)	22.87%	17.42%	17.79%
Mesirow IV	2.12%	(9.95%)	28.72%	24.06%	14.14%
Mesirow VII	3.55%	(0.80%)	25.37%	13.32%	-
Mesirow VIII	0.43%	(4.21%)	-	-	-
NB Secondary Opp Fund III	15.94%	8.89%	20.54%	12.54%	-
NB Secondary Opp Fund IV	6.23%	(0.22%)	23.96%	22.84%	-
NB Secondary Opp Fund V	13.08%	(11.89%)	-	-	-
Private Advisors VI	0.62%	1.38%	33.53%	24.27%	-
Private Advisors VII	2.82%	11.68%	27.49%	18.02%	-
Private Advisors VIII	4.60%	22.63%	30.95%	-	-
Private Advisors IX	9.88%	30.52%	24.82%	-	-
<b>Absolute Return</b>	<b>0.96%</b>	<b>5.67%</b>	<b>15.19%</b>	<b>5.99%</b>	<b>-</b>
90 Day T-Bill + 3%	1.89%	6.59%	4.27%	4.55%	3.99%
Aptitude	1.14%	-	-	-	-
1-month LIBOR + 4%	2.25%	8.10%	5.49%	5.70%	5.14%
UBS A & Q	0.85%	5.90%	9.01%	7.84%	-
1-month LIBOR + 4%	2.25%	8.10%	5.49%	5.70%	5.14%
<b>Real Assets</b>	<b>(0.82%)</b>	<b>(0.58%)</b>	<b>8.74%</b>	<b>3.94%</b>	<b>-</b>
Principal DRA	(0.82%)	(0.58%)	8.74%	3.94%	-
Principal DRA Blend Index	(1.19%)	(0.53%)	7.93%	3.61%	-
<b>Total Real Estate</b>	<b>(2.08%)</b>	<b>(6.41%)</b>	<b>10.40%</b>	<b>8.27%</b>	<b>9.87%</b>
Real Estate	(2.08%)	(6.41%)	10.40%	8.27%	9.87%
Blended Benchmark	(3.50%)	(3.69%)	8.17%	7.13%	8.68%
<b>Total Fund</b>	<b>2.16%</b>	<b>6.35%</b>	<b>11.14%</b>	<b>7.13%</b>	<b>8.01%</b>
Total Fund Index	2.98%	6.82%	7.59%	6.46%	7.42%

\*Net returns are simulated with the use of fee schedules through March 31, 2019. Actual fees paid are used thereafter.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

	12/2022- 6/2023	2022	2021	2020	2019
<b>Net of Fee Returns</b>					
<b>Total Domestic Equity</b>	<b>10.26%</b>	<b>(15.89%)</b>	<b>27.88%</b>	<b>16.09%</b>	<b>28.94%</b>
Russell 3000 Index	16.17%	(19.21%)	25.66%	20.89%	31.02%
BlackRock Russell 1000 Value	5.11%	(7.55%)	25.17%	3.27%	26.77%
Russell 1000 Value Index	5.12%	(7.54%)	25.16%	2.80%	26.54%
DFA Large Cap Value	4.47%	(5.12%)	27.35%	(1.78%)	26.42%
Russell 1000 Value Index	5.12%	(7.54%)	25.16%	2.80%	26.54%
Northern Trust Global	16.89%	(18.09%)	28.68%	18.41%	31.53%
S&P 500 Index	16.89%	(18.11%)	28.71%	18.40%	31.49%
Polen Capital Management	25.07%	(37.97%)	24.34%	34.59%	38.27%
S&P 500 Index	16.89%	(18.11%)	28.71%	18.40%	31.49%
Earnest Partners LLC	8.69%	(15.58%)	25.59%	20.96%	37.65%
Russell MidCap Index	9.01%	(17.32%)	22.58%	17.10%	30.54%
DFA Small Cap Value	5.12%	(2.12%)	40.38%	3.74%	18.58%
Russell 2000 Value Index	2.50%	(14.48%)	28.27%	4.63%	22.39%
CastleArk Management	10.32%	(28.58%)	11.55%	44.12%	22.47%
Russell 2000 Growth Index	13.55%	(26.36%)	2.83%	34.63%	28.48%
<b>Total Global Equity</b>	<b>14.37%</b>	<b>(17.55%)</b>	<b>18.80%</b>	<b>18.48%</b>	<b>30.55%</b>
MSCI World	15.09%	(18.14%)	21.82%	15.90%	27.67%
BlackRock Global Alpha Tilts	13.93%	(16.89%)	18.67%	16.39%	26.48%
MSCI ACWI Gross	14.26%	(17.96%)	19.04%	16.82%	27.30%
MFS Investment Management	14.92%	(18.50%)	19.05%	21.88%	36.74%
MSCI ACWI Gross	14.26%	(17.96%)	19.04%	16.82%	27.30%
<b>Total International Equity</b>	<b>12.25%</b>	<b>(15.75%)</b>	<b>12.57%</b>	<b>10.28%</b>	<b>21.08%</b>
MSCI EAFE Index	11.67%	(14.45%)	11.26%	7.82%	22.01%
AQR Emerging Markets	7.83%	(20.93%)	0.47%	17.38%	19.64%
MSCI EM Gross	5.10%	(19.74%)	(2.22%)	18.69%	18.90%
Brandes Investment Partners	16.41%	(7.15%)	14.00%	(1.69%)	14.86%
MSCI EAFE Index	11.67%	(14.45%)	11.26%	7.82%	22.01%
William Blair & Company	11.77%	(28.91%)	12.77%	30.84%	31.01%
MSCI ACWI ex-US Index	9.86%	(15.57%)	8.29%	11.13%	22.13%
DFA International Small Cap	7.46%	(9.80%)	15.89%	0.81%	21.00%
MSCI EAFE Small	5.53%	(21.39%)	10.10%	12.34%	24.96%

\*Net returns are simulated with the use of fee schedules through March 31, 2019. Actual fees paid are used thereafter.

## Investment Manager Returns

The table below details the rates of return for the Fund's investment managers over various time periods. Negative returns are shown in red, positive returns in black. Returns for one year or greater are annualized. The first set of returns for each asset class represents the composite returns for all the fund's accounts for that asset class.

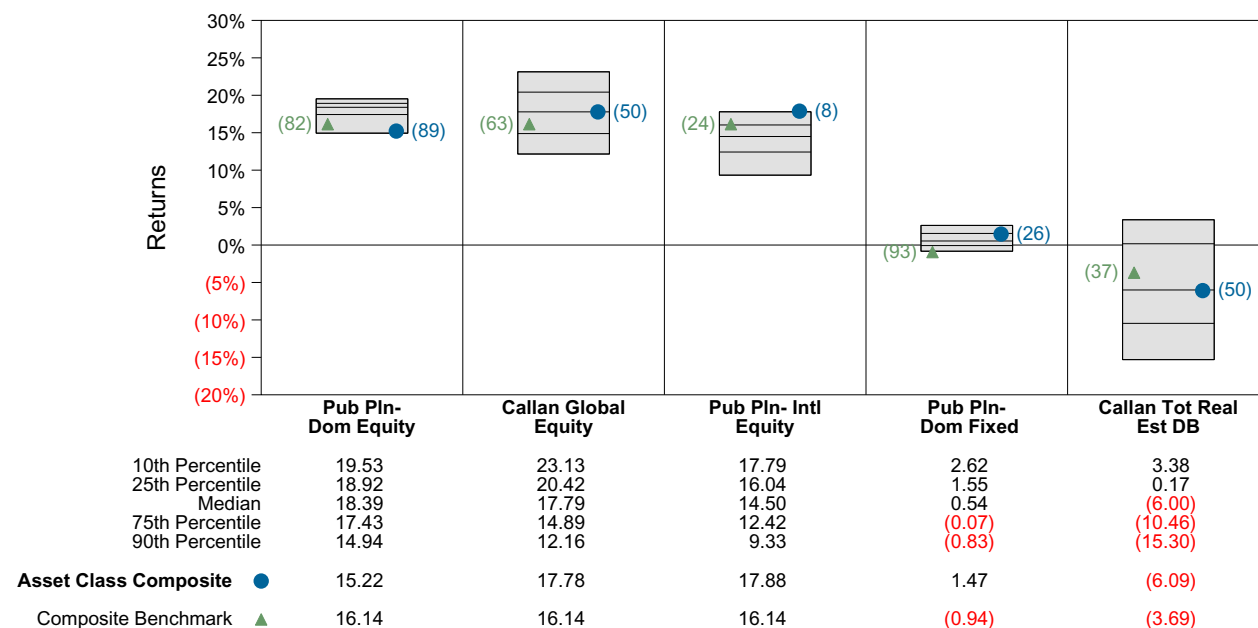
	12/2022- 6/2023	2022	2021	2020	2019
<b>Net of Fee Returns</b>					
<b>Total Fixed Income</b>	<b>2.84%</b>	<b>(6.93%)</b>	<b>(0.45%)</b>	<b>(1.91%)</b>	<b>11.68%</b>
Blmbg Aggregate	2.09%	(13.01%)	(1.54%)	7.51%	8.72%
BlackRock US Govt Bond	1.81%	(12.44%)	-	-	-
Blmbg Government	1.59%	(12.32%)	(2.28%)	7.94%	6.83%
Reams Asset Management	3.34%	(11.50%)	(1.36%)	17.11%	8.65%
Blmbg Aggregate	2.09%	(13.01%)	(1.54%)	7.51%	8.72%
Loomis, Sayles & Company, L.P.	2.95%	(12.26%)	1.98%	6.99%	14.25%
Blmbg Aggregate	2.09%	(13.01%)	(1.54%)	7.51%	8.72%
<b>Total Private Equity</b>	<b>2.49%</b>	<b>(4.88%)</b>	<b>67.66%</b>	<b>22.14%</b>	<b>16.63%</b>
Private Equity Benchmark	15.92%	(15.10%)	34.08%	17.99%	6.65%
Abbott Capital Management 2010	(0.66%)	(16.87%)	65.55%	24.43%	16.52%
Abbott Capital Management 2011	(1.74%)	(18.97%)	76.29%	29.13%	19.64%
Abbott Capital Management 2012	0.02%	(13.14%)	72.85%	29.04%	17.91%
Abbott Capital Management 2013	0.29%	(12.51%)	70.21%	28.65%	21.13%
Abbott Capital Management 2014	(0.39%)	(9.41%)	75.52%	26.51%	19.74%
Abbott Capital Management 2015	2.13%	(0.79%)	75.81%	16.62%	15.14%
Abbott Capital Management 2016	3.02%	2.90%	71.04%	20.02%	9.08%
Abbott Capital Management 2018	2.93%	7.44%	47.06%	22.73%	7.26%
Abbott Capital Management 2019	1.83%	7.54%	57.22%	10.04%	-
Abbott Capital Management 2020	(0.08%)	0.81%	65.36%	-	-
Abbott Capital Management 2021	(0.37%)	1.72%	-	-	-
Abbott Capital Management 2022	5.27%	-	-	-	-
Mesirow V	1.40%	(19.60%)	78.52%	21.39%	16.29%
Mesirow IV	2.12%	(13.41%)	88.26%	29.10%	22.73%
Mesirow VII	3.55%	(0.68%)	60.27%	16.43%	3.33%
Mesirow VIII	0.43%	(2.15%)	10.14%	-	-
NB Secondary Opp Fund III	13.96%	(2.34%)	30.34%	4.23%	12.18%
NB Secondary Opp Fund IV	5.31%	0.29%	48.73%	14.80%	14.76%
NB Secondary Opp Fund V	9.61%	-	-	-	-
Private Advisors VI	0.62%	9.97%	83.78%	16.54%	17.98%
Private Advisors VII	2.82%	21.61%	52.55%	3.97%	11.23%
Private Advisors VIII	4.65%	27.61%	47.25%	15.78%	(4.08%)
Private Advisors IX	9.83%	24.00%	37.25%	-	-
<b>Absolute Return</b>	<b>1.65%</b>	<b>26.46%</b>	<b>8.77%</b>	<b>(14.21%)</b>	<b>12.52%</b>
90 Day T-Bill + 3%	3.71%	4.46%	3.05%	3.67%	5.28%
Aptitude	1.33%	-	-	-	-
1-month LIBOR + 4%	4.43%	5.80%	4.11%	4.63%	6.32%
UBS A & Q	1.72%	8.85%	8.08%	12.18%	9.53%
1-month LIBOR + 4%	4.43%	5.80%	4.11%	4.63%	6.32%
<b>Real Assets</b>	<b>0.45%</b>	<b>(5.91%)</b>	<b>17.51%</b>	<b>4.02%</b>	<b>14.84%</b>
Principal DRA	0.45%	(5.91%)	17.51%	4.02%	14.84%
Principal DRA Blend Index	(0.09%)	(5.07%)	15.87%	2.08%	14.86%
<b>Total Real Estate</b>	<b>(5.14%)</b>	<b>13.58%</b>	<b>23.45%</b>	<b>0.39%</b>	<b>5.95%</b>
Real Estate	(5.14%)	13.58%	23.45%	0.39%	5.95%
Blended Benchmark	(8.40%)	21.68%	14.83%	0.89%	5.26%
<b>Total Fund</b>	<b>5.56%</b>	<b>(6.51%)</b>	<b>18.80%</b>	<b>6.59%</b>	<b>18.34%</b>
Total Fund Index	7.43%	(10.49%)	12.88%	12.29%	16.52%

\*Net returns are simulated with the use of fee schedules through March 31, 2019. Actual fees paid are used thereafter.

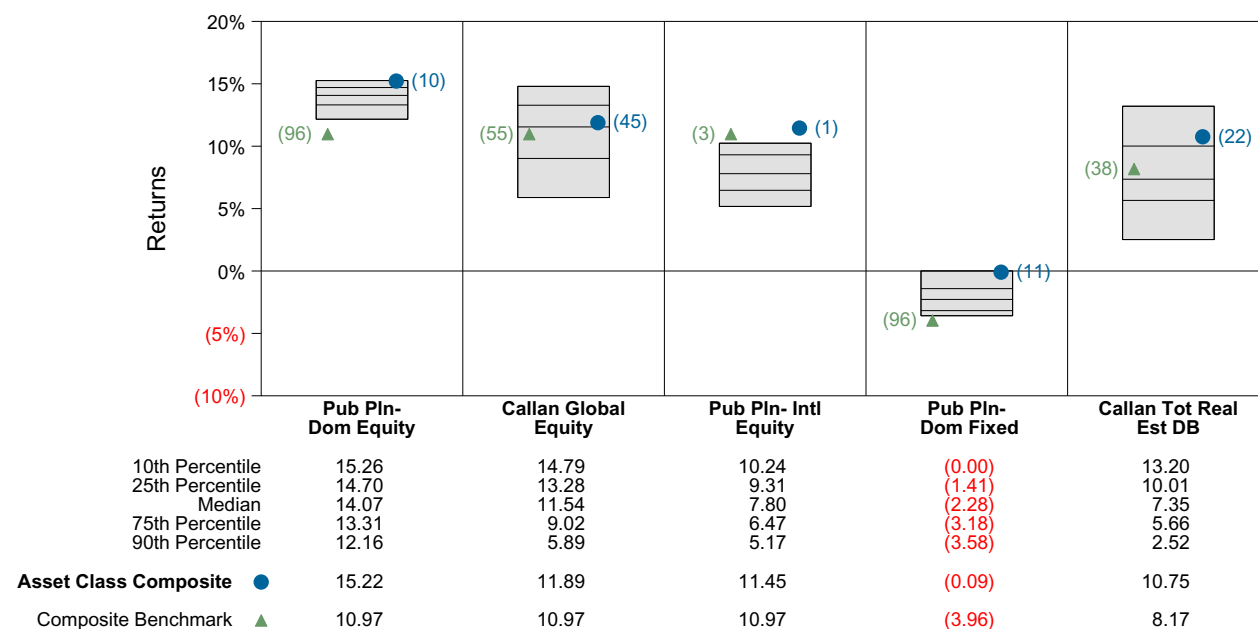
## Asset Class Rankings

The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases.

### Total Asset Class Performance One Year Ended June 30, 2023



### Total Asset Class Performance Three Years Ended June 30, 2023

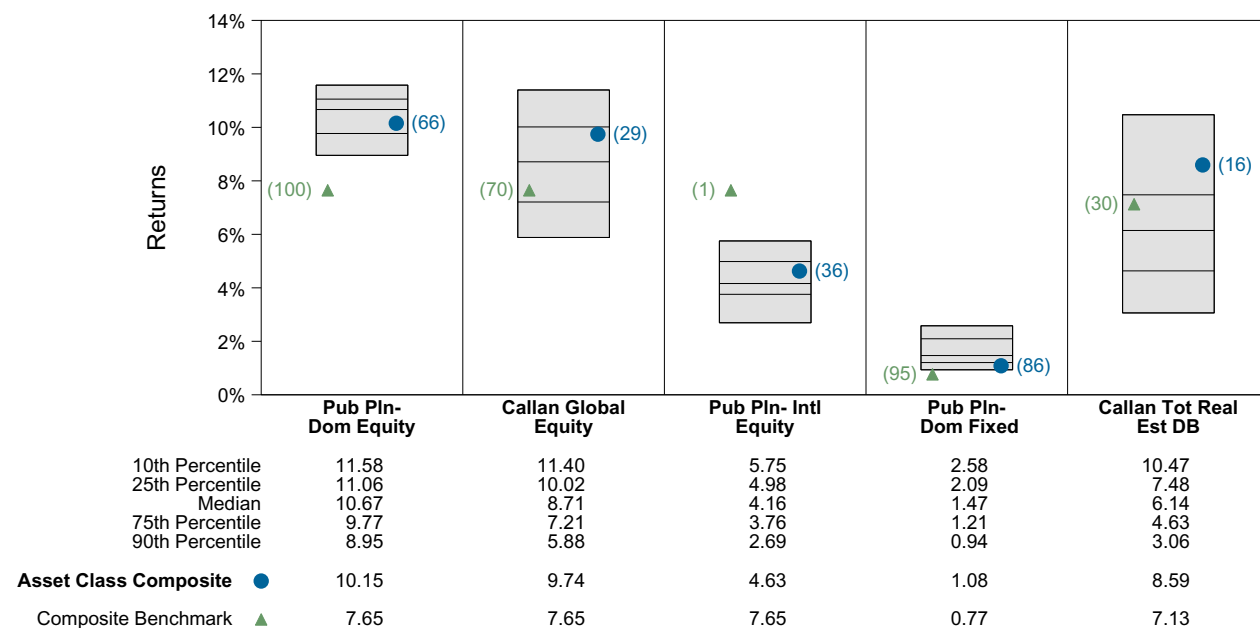


\* Current Quarter Target = 44.0% MSCI ACWI IMI, 23.0% Blmbg:Aggregate, 10.0% Russell 3000 Index lagged 3 months+2.0%, 10.0% 3-month Treasury Bill+3.0%, 9.1% NCREIF NFI-ODCE Eq Wt Net lagged 3 months and 3.9% Principal DRA Blend Index.

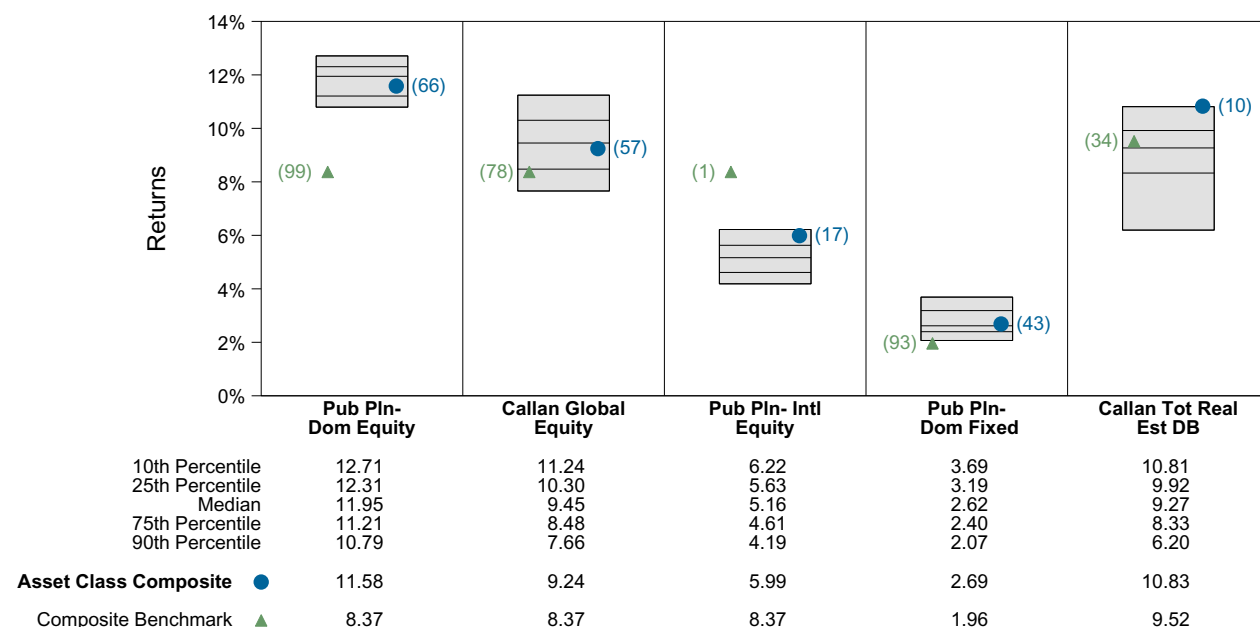
## Asset Class Rankings

The charts below show the rankings of each asset class component of the Total Fund relative to appropriate comparative databases.

### Total Asset Class Performance Five Years Ended June 30, 2023



### Total Asset Class Performance Twelve and One-Half Years Ended June 30, 2023

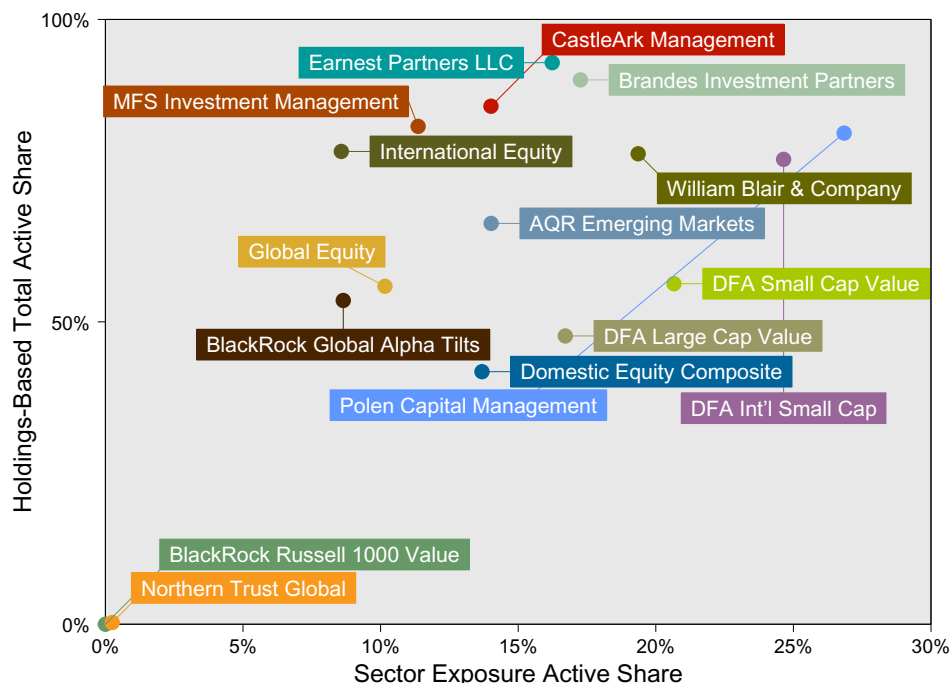


\* Current Quarter Target = 44.0% MSCI ACWI IMI, 23.0% Blmbg:Aggregate, 10.0% Russell 3000 Index lagged 3 months+2.0%, 10.0% 3-month Treasury Bill+3.0%, 9.1% NCREIF NFI-ODCE Eq Wt Net lagged 3 months and 3.9% Principal DRA Blend Index.

## Active Share Structure Analysis For One Quarter Ended June 30, 2023

This analysis compares multiple portfolios and composites in an active share context, illustrating the varying degrees of active risk taken by individual portfolios, and how they combine into active risk profiles for composites and the equity structure. Two sources of active share (active risk) are shown: 1) Total Holdings-Based Active Share based on individual position comparisons to the index (and the subcomponent from holding non-index securities), and 2) Sector Exposure Active Share that quantifies the more macro-level sector differences from the index.

### Active Share Analysis Ended June 30, 2023



	Index	Total Act Share	Non-Idx Act Share	Sector Act Share	Number Securities	Security Diverse
<b>Domestic Equity Composite</b>	<b>Russell 3000</b>	<b>41.76%</b>	<b>0.62%</b>	<b>13.68%</b>	<b>1863</b>	<b>128.76</b>
BlackRock Russell 1000 Value	Russell 1000 Value	0.00%	0.00%	0.00%	844	70.61
DFA Large Cap Value	Russell 1000 Value	47.67%	2.10%	16.71%	330	43.36
Northern Trust Global	S&P 500	0.28%	0.00%	0.25%	502	35.94
Polen Capital Management	S&P 500	81.21%	3.81%	26.84%	23	7.00
Earnest Partners LLC	Russell MidCap	92.85%	10.26%	16.24%	59	23.26
DFA Small Cap Value	Russell 2000 Value	56.30%	14.85%	20.66%	948	116.14
CastleArk Management	Russell 2000 Growth	85.65%	24.86%	14.01%	110	37.61
<b>Global Equity</b>	<b>MSCI World</b>	<b>55.88%</b>	<b>5.76%</b>	<b>10.16%</b>	<b>686</b>	<b>45.71</b>
BlackRock Global Alpha Tilts	MSCI ACWI GD	53.53%	2.84%	8.64%	645	44.11
MFS Investment Management	MSCI ACWI GD	82.32%	2.92%	11.36%	73	21.35
<b>International Equity</b>	<b>MSCI EAFE</b>	<b>78.17%</b>	<b>28.75%</b>	<b>8.57%</b>	<b>2537</b>	<b>80.22</b>
AQR Emerging Markets	MSCI EM GD	66.27%	2.67%	14.02%	359	32.78
Brandes Investment Partners	MSCI EAFE	90.00%	16.31%	17.26%	65	22.93
William Blair & Company	MSCI ACWI xUS GD	77.79%	11.65%	19.36%	271	41.67
DFA Int'l Small Cap	MSCI EAFE Small	76.87%	16.16%	24.64%	1876	159.00

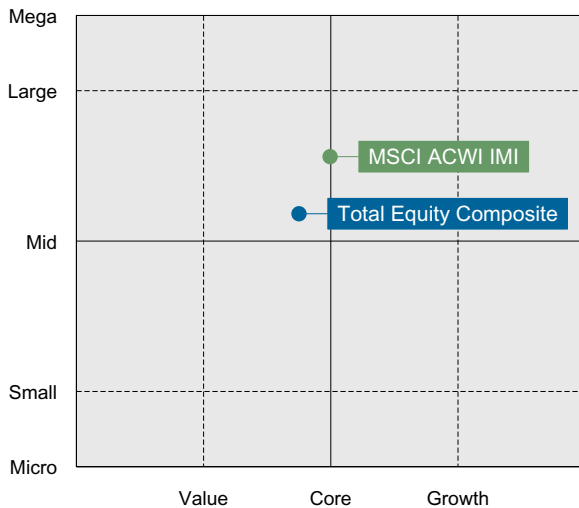
## Current Holdings Based Style Analysis

### Total Equity Composite

#### As of June 30, 2023

This page analyzes the current investment style of a portfolio utilizing a detailed holdings-based style analysis to determine actual exposures to various regional and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the current market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the current portfolio and index weights and stock counts (in parentheses) in each region/style segment of the market. The middle chart illustrates the total exposures and stock counts in the three style segments, with a legend showing the total growth, value, and "combined Z" (growth - value) scores. The bottom chart exhibits the sector weights as well as the style weights within each sector.

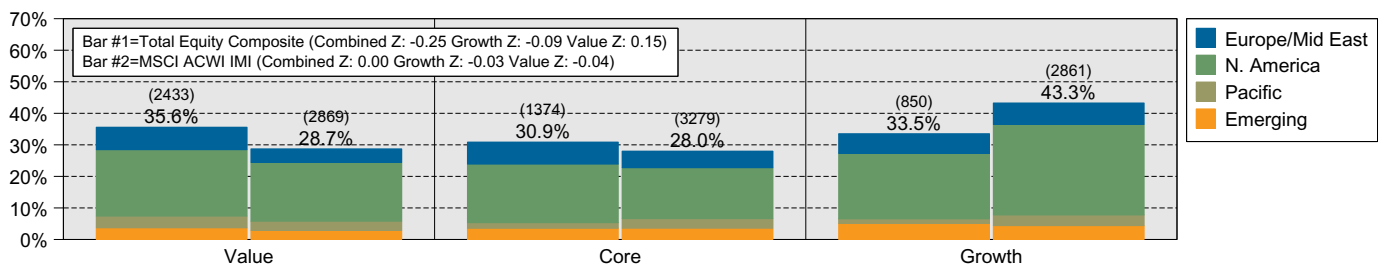
**Style Map vs Callan Public Fund Spr DB Holdings as of June 30, 2023**



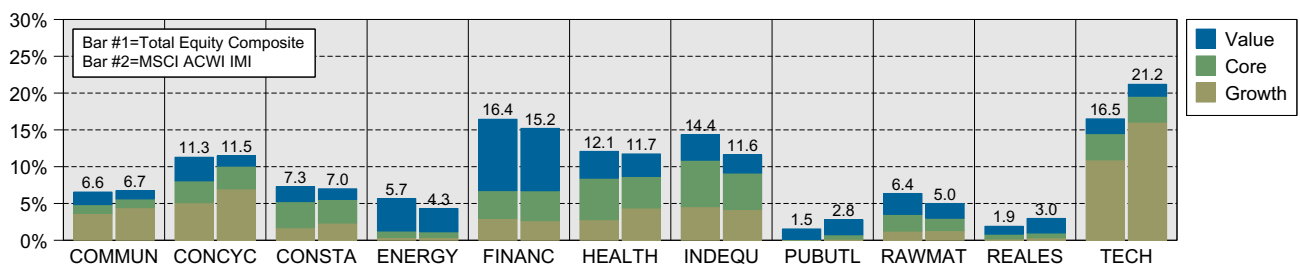
**Style Exposure Matrix Holdings as of June 30, 2023**

Europe/ Mid East	7.1% (425)	7.0% (282)	6.2% (151)	20.3% (858)
	4.3% (472)	5.3% (514)	6.8% (510)	16.3% (1496)
N. America	21.0% (965)	18.6% (674)	20.8% (353)	60.4% (1992)
	18.7% (892)	16.1% (1109)	28.7% (741)	63.6% (2742)
Pacific	3.7% (850)	1.8% (250)	1.5% (103)	7.0% (1203)
	2.9% (508)	3.0% (535)	3.4% (505)	9.3% (1548)
Emerging	3.7% (193)	3.5% (168)	5.1% (243)	12.3% (604)
	2.9% (997)	3.6% (1121)	4.4% (1105)	10.8% (3223)
<b>Total</b>	35.6% (2433)	30.9% (1374)	33.5% (850)	100.0% (4657)
	28.7% (2869)	28.0% (3279)	43.3% (2861)	100.0% (9009)
	Value	Core	Growth	Total

**Combined Z-Score Style Distribution Holdings as of June 30, 2023**



**Sector Weights Distribution Holdings as of June 30, 2023**



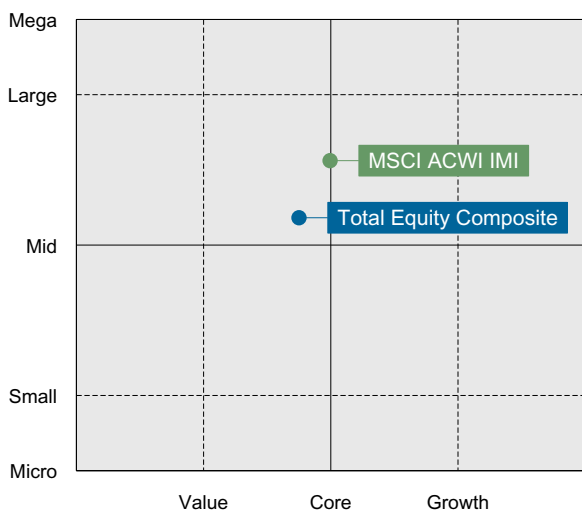
## Current Holdings Based Style Analysis

### Total Equity Composite

#### As of June 30, 2023

This page analyzes the current investment style of a portfolio utilizing a detailed holdings-based style analysis to determine actual exposures to various regional and style segments of the international/global equity market. The market is segmented quarterly by region and style. The style segments are determined using the "Combined Z Score", based on the eight fundamental factors used in the MSCI stock style scoring system. The upper-left style map illustrates the current market capitalization and style score of the portfolio relative to indices and/or peers. The upper-right style exposure matrix displays the current portfolio and index weights and stock counts (in parentheses) in each capitalization/style segment of the market. The middle chart illustrates the total exposures and stock counts in the three style segments, with a legend showing the total growth, value, and "combined Z" (growth - value) scores. The bottom chart exhibits the sector weights as well as the style weights within each sector.

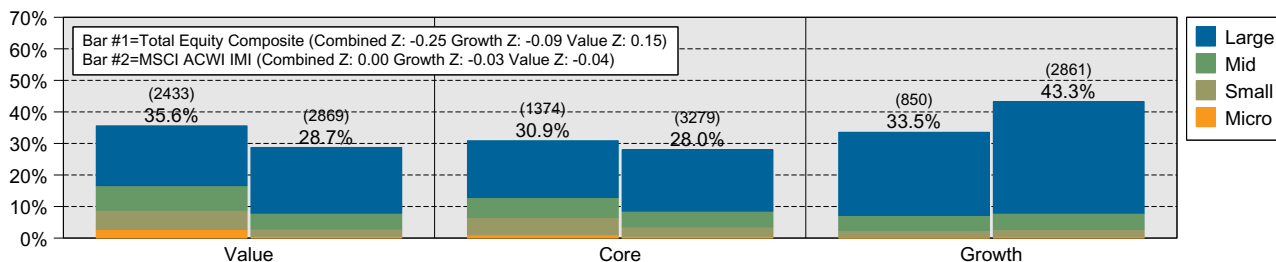
**Style Map vs Callan Public Fund Spr DB**  
Holdings as of June 30, 2023



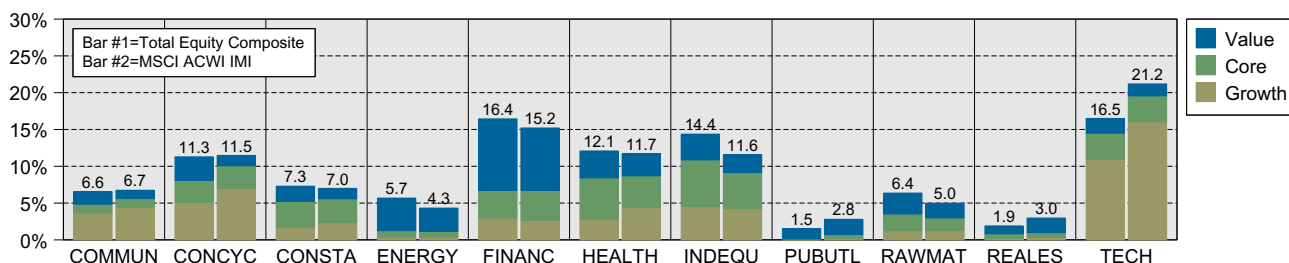
**Style Exposure Matrix**  
Holdings as of June 30, 2023

	Value	Core	Growth	Total
Large	19.0% (238) 20.8% (319)	18.0% (196) 19.5% (256)	26.3% (231) 35.4% (326)	63.3% (665) 75.7% (901)
Mid	7.8% (322) 5.0% (527)	6.4% (306) 5.0% (617)	4.8% (289) 5.1% (658)	19.0% (917) 15.1% (1802)
Small	6.1% (463) 2.3% (1063)	5.5% (440) 2.9% (1364)	2.2% (217) 2.4% (1177)	13.8% (1120) 7.6% (3604)
Micro	2.7% (1410) 0.5% (960)	1.0% (432) 0.6% (1042)	0.1% (113) 0.4% (700)	3.9% (1955) 1.6% (2702)
<b>Total</b>	<b>35.6% (2433)</b> 28.7% (2869)	<b>30.9% (1374)</b> 28.0% (3279)	<b>33.5% (850)</b> 43.3% (2861)	<b>100.0% (4657)</b> 100.0% (9009)

**Combined Z-Score Style Distribution**  
Holdings as of June 30, 2023



**Sector Weights Distribution**  
Holdings as of June 30, 2023

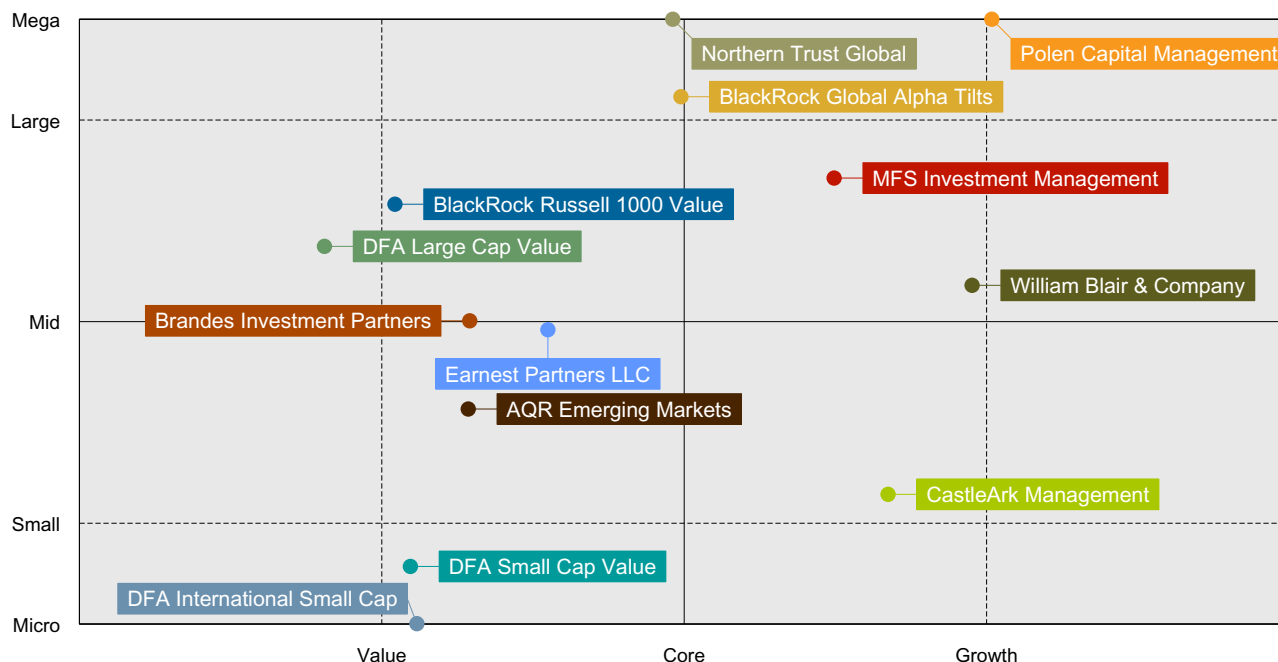




## Global Holdings Based Style Analysis For One Quarter Ended June 30, 2023

This page analyzes and compares the investment styles of multiple portfolios using a detailed holdings-based style analysis methodology. The size component of style is measured by the weighted median market capitalization of the holdings. The value/core/growth style dimension is captured by the "Combined Z-Score" of the portfolio. This score is based on eight fundamental factors used in the MSCI stock style scoring system. The table below gives a more detailed breakdown of several relevant style metrics on the portfolios.

### Style Map Holdings for One Quarter Ended June 30, 2023



	Weight %	Wtd Median Mkt Cap	Combined Z-Score	Growth Z-Score	Value Z-Score	Number of Securities	Security Diversification
BlackRock Russell 1000 Value	8.38%	69.40	(0.97)	(0.44)	0.53	844	70.61
DFA Large Cap Value	6.18%	51.63	(1.21)	(0.40)	0.81	330	43.36
Northern Trust Global	8.34%	195.97	(0.03)	(0.04)	(0.01)	502	35.94
Polen Capital Management	5.42%	205.39	0.96	0.37	(0.59)	23	7.00
Earnest Partners LLC	4.60%	19.21	(0.45)	(0.26)	0.19	59	23.26
DFA Small Cap Value	7.84%	2.60	(0.92)	(0.20)	0.72	948	116.14
CastleArk Management	3.64%	5.69	0.64	0.15	(0.49)	110	37.61
MFS Investment Management	9.22%	80.43	0.47	0.04	(0.43)	73	21.35
BlackRock Global Alpha Tilts	11.20%	125.59	(0.00)	(0.03)	(0.03)	645	44.11
AQR Emerging Markets	4.14%	12.70	(0.72)	(0.11)	0.61	359	32.78
Brandes Investment Partners	14.18%	20.22	(0.72)	(0.23)	0.49	65	22.93
William Blair & Company	10.00%	35.19	0.90	0.25	(0.65)	271	41.67
DFA International Small Cap	6.85%	1.66	(0.90)	(0.15)	0.74	1876	159.00



## Quarterly Highlights

The Callan Institute provides research to update clients on the latest industry trends and carefully structured educational programs to enhance the knowledge of industry professionals. Visit [www.callan.com/research-library](http://www.callan.com/research-library) to see all of our publications, and [www.callan.com/blog](http://www.callan.com/blog) to view our blog. For more information contact Barb Gerraty at 415-274-3093 / [institute@callan.com](mailto:institute@callan.com).

## New Research from Callan's Experts

**2023 Private Credit Fees and Terms Study** | Catherine Beard and Jared Ungar assess private credit partnerships in our first fees and terms study for this asset class.

**2Q23 Real Assets Reporter: Life Sciences Investments** | Christine Mays describes life sciences investments and the role they can play in institutional portfolios.

**The Critical Underlying Technology Behind Digital Assets: A Primer for Institutional Investors** | This paper provides background on key concepts around digital assets: blockchains and distributed ledgers; cryptography; validation protocols; smart contracts; and tokenization.

### Blog Highlights

**Biodiversity: A Relatively New Theme for ESG-Focused Investors** | Biodiversity investments include companies that support the sustainable use of natural resources and ecosystem services or technologies, or products or services that reduce biodiversity threats or restore natural habitats.

**Higher Interest Rates Meet Lower Valuations: Implications for the CRE Industry** | The commercial real estate (CRE) industry, already facing challenges with economic uncertainty, the shift to remote work, and recent layoffs by many major office tenants, now confronts higher interest rates and plummeting pricing.

**How to Improve DC Plans with DEI** | For defined contribution (DC) plan sponsors, understanding the diversity within the employee population supports inclusiveness and equality in access and opportunities.

### Webinar Replays

**Research Cafe: ESG Interview Series** | During this interview, Aaron Quach, Callan ESG team member, interviews Jan Mende, Callan real assets specialist and author of our white paper on energy transition. They will discuss the growing opportunities for investment within the energy transition space and how they can be incorporated into the portfolios of institutional investors.

### Quarterly Periodicals

**Private Equity Update, 1Q23** | A high-level summary of private equity activity in the quarter through all the investment stages

**Active vs. Passive Charts, 1Q23** | A comparison of active managers alongside relevant benchmarks over the long term

**Market Pulse, 1Q23** | A quarterly market reference guide covering trends in the U.S. economy, developments for institutional investors, and the latest data on the capital markets

**Capital Markets Review, 1Q23** | Analysis and a broad overview of the economy and public and private markets activity each quarter across a wide range of asset classes

**Hedge Fund Update, 1Q23** | Commentary on developments for hedge funds and multi-asset class (MAC) strategies

**Real Assets Update, 1Q23** | A summary of market activity for real assets and private real estate during the quarter

**Private Credit Update, 1Q23** | A review of performance and fundraising activity for private credit during the quarter

## Events

A complete list of all upcoming events can be found on our website: [callan.com/events-education](https://callan.com/events-education).

*Please mark your calendar and look forward to upcoming invitations:*

**Webinar: The End of the Low-Yield Environment**  
**Aug 9, 2023 – Virtual**

**2023 October Workshops**  
**Oct. 24, 2023 – New York**  
**Oct. 26, 2023 – Chicago**

**2024 National Conference**  
**April 8-10, 2024 – San Francisco**

**For more information about events, please contact Barb Gerraty: 415-274-3093 / [gerraty@callan.com](mailto:gerraty@callan.com)**

## Education: By the Numbers

**50+** Unique pieces of research the Institute generates each year

**525** Attendees (on average) of the Institute's annual National Conference

**3,700** Total attendees of the "Callan College" since 1994

## Education

Founded in 1994, the "Callan College" offers educational sessions for industry professionals involved in the investment decision-making process.

### Introduction to Investments

**Sept. 26-28 – Virtual**

This program familiarizes institutional investor trustees and staff and asset management advisers with basic investment theory, terminology, and practices. This course is designed for individuals with less than two years of experience with asset-management oversight and/or support responsibilities.

### Alternative Investments

**Aug. 23-24 – Virtual**

Alternative investments like private equity, hedge funds, and real estate can play a key role in any portfolio. In our "Callan College" on Alternatives, you will learn about the importance of allocations to alternatives, and how to consider integrating, evaluating, and monitoring them.

Our virtual sessions are held over two to three days with virtual modules of 2.5-3 hours, while in-person sessions run either a full day or one-and-a-half days. Virtual tuition is \$950 per person and includes instruction and digital materials. In-person tuition is \$2,350 per person and includes instruction, all materials, breakfast and lunch on each day, and dinner on the first evening with the instructors.

Additional information including registration can be found at: [callan.com/events-education](https://callan.com/events-education)



**"Research is the foundation of all we do at Callan, and sharing our best thinking with the investment community is our way of helping to foster dialogue to raise the bar across the industry."**

Greg Allen, CEO and Chief Research Officer



## List of Callan's Investment Manager Clients

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Callan takes its fiduciary and disclosure responsibilities to clients very seriously. We recognize that there are numerous potential conflicts of interest encountered in the investment consulting industry, and that it is our responsibility to manage those conflicts effectively and in the best interest of our clients. At Callan, we employ a robust process to identify, manage, monitor, and disclose potential conflicts on an ongoing basis.

The list below is an important component of our conflicts management and disclosure process. It identifies those investment managers that pay Callan fees for educational, consulting, software, database, or reporting products and services. We update the list quarterly because we believe that our fund sponsor clients should know the investment managers that do business with Callan, particularly those investment manager clients that the fund sponsor clients may be using or considering using. Please note that if an investment manager receives a product or service on a complimentary basis (e.g., attending an educational event), they are not included in the list below. Callan is committed to ensuring that we do not consider an investment manager's business relationship with Callan, or lack thereof, in performing evaluations for or making suggestions or recommendations to its other clients. Please refer to Callan's ADV Part 2A for a more detailed description of the services and products that Callan makes available to investment manager clients through our Institutional Consulting Group, Independent Adviser Group, and Fund Sponsor Consulting Group. Due to the complex corporate and organizational ownership structures of many investment management firms, parent and affiliate firm relationships are not indicated on our list.

Fund sponsor clients may request a copy of the most currently available list at any time. Fund sponsor clients may also request specific information regarding the fees paid to Callan by particular fund manager clients. Per company policy, information requests regarding fees are handled exclusively by Callan's Compliance department.

### Manager Name

abrdn (Aberdeen Standard Investments)

ABS Global Investments

Acadian Asset Management LLC

Adams Street Partners, LLC

Aegon Asset Management

AllianceBernstein

Allspring Global Investments, LLC

AlphaSimplex Group, LLC

Altrinsic Global Advisors, LC

American Capital Management, Inc.

American Century Investments

Amundi US, Inc.

Antares Capital LP

Apollo Global Management, Inc.

AQR Capital Management

Ares Management LLC

Ariel Investments, LLC

Aristotle Capital Management, LLC

### Manager Name

Atlanta Capital Management Co., LLC

AXA Investment Managers

Baillie Gifford International, LLC

Baird Advisors

Barings LLC

Baron Capital Management, Inc.

Barrow, Hanley, Mewhinney & Strauss, LLC

BentallGreenOak

Beutel, Goodman & Company Ltd.

Bissell Ballantyne LLC

BlackRock

Blackstone Group (The)

Blue Owl Capital, Inc.

BNY Mellon Asset Management

Boston Partners

Brandes Investment Partners, L.P.

Brandywine Global Investment Management, LLC

Brightwood Capital Advisors, LLC

Manager Name
Brookfield Asset Management Inc.
Brown Brothers Harriman & Company
Capital Group
Cardinal Capital, LLC
CastleArk Management, LLC
CIBC Asset Management Inc.
ClearBridge Investments, LLC
Cohen & Steers Capital Management, Inc.
Columbia Threadneedle Investments North America
Comvest Partners
CQS
Credit Suisse Asset Management, LLC
D.E. Shaw Investment Management, LLC
DePrince, Race & Zollo, Inc.
Diamond Hill Capital, Inc.
Dimensional Fund Advisors L.P.
Doubleline
DWS
EARNEST Partners, LLC
Epoch Investment Partners , Inc. * (See new name)
Fayez Sarofim & Company
Federated Hermes, Inc.
Fidelity Institutional Asset Management
Fiera Capital Corporation
First Eagle Investment Management, LLC
First Hawaiian Bank Wealth Management Division
First Sentier Investors
Fisher Investments
Franklin Templeton
Fred Alger Management, LLC
GAM (USA) Inc.
Glenmede Investment Management, LP
GlobeFlex Capital, L.P.
GoldenTree Asset Management, LP
Goldman Sachs
Golub Capital
Great Lakes Advisors, LLC
Guggenheim Investments
GW&K Investment Management
Harbor Capital Advisors

Manager Name
Hardman Johnston Global Advisors LLC
Heitman LLC
Hotchkis & Wiley Capital Management, LLC
Impax Asset Management LLC
Income Research + Management
Insight Investment
Intech Investment Management LLC
Intercontinental Real Estate Corporation
Invesco
J.P. Morgan
Janus
Jarislowsky Fraser Global Investment Management
Jennison Associates LLC
Jobs Peak Advisors
KeyCorp
Kohlberg Kravis Roberts & Co. (KKR)
Lazard Asset Management
LGIM America
Lincoln National Corporation
Longview Partners
Loomis, Sayles & Company, L.P.
Lord, Abbett & Company
LSV Asset Management
MacKay Shields LLC
Macquarie Asset Management (MAM)
Manulife Investment Management
Marathon Asset Management, L.P.
MetLife Investment Management
MFS Investment Management
MidFirst Bank
Mondrian Investment Partners Limited
Montag & Caldwell, LLC
Morgan Stanley Investment Management
MUFG Union Bank, N.A.
Natixis Investment Managers
Neuberger Berman
Newton Investment Management
Northern Trust Asset Management
Nuveen
Oaktree Capital Management, L.P.

Manager Name
P/E Investments
Pacific Investment Management Company
Pacific Ridge Capital Partners, LLC
Pantheon Ventures
Parametric Portfolio Associates LLC
Partners Group (USA) Inc.
Pathway Capital Management, LP
PFM Asset Management LLC
PGIM
PGIM DC Solutions
PGIM Fixed Income
PGIM Quantitative Solutions LLC
Pictet Asset Management
PineBridge Investments
Polen Capital Management, LLC
Pretium Partners, LLC
Principal Asset Management
Putnam Investments, LLC
Raymond James Investment Management
RBC Global Asset Management
Regions Financial Corporation
Robeco Institutional Asset Management, US Inc.
S&P Dow Jones Indices
Sands Capital Management
Schroder Investment Management North America Inc.
Segall Bryant & Hamill

Manager Name
Silvercrest Asset Management Group
SLC Management
Smith Graham & Co. Investment Advisors, L.P.
Sprucegrove Investment Management Ltd
State Street Global Advisors
Strategic Global Advisors, LLC
*TD Global Investment Solutions – TD Epoch
T. Rowe Price Associates, Inc.
The TCW Group, Inc.
Thompson, Siegel & Walmsley LLC
Tri-Star Trust Bank
UBS Asset Management
VanEck
Vanguard Group, Inc. (The)
Versus Capital Group
Victory Capital Management Inc.
Virtus Investment Partners, Inc.
Vontobel Asset Management
Voya
Walter Scott & Partners Limited
WCM Investment Management
Wellington Management Company, LLP
Western Asset Management Company LLC
Westfield Capital Management Company, LP
William Blair & Company LLC
Xponance, Inc.



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Past performance is no guarantee of future results.