



**Alameda County Employees' Retirement Association  
BOARD OF RETIREMENT**

**INVESTMENT COMMITTEE/BOARD MEETING**

**ACERA MISSION:**

**To provide ACERA members and employers with flexible, cost-effective, participant-oriented benefits through prudent investment management and superior member services.**

**Wednesday, June 14, 2023  
9:30 a.m.**

LOCATION AND TELECONFERENCE	COMMITTEE MEMBERS	
<p>ACERA C.G. "BUD" QUIST BOARD ROOM 475 14<sup>TH</sup> STREET, 10<sup>TH</sup> FLOOR OAKLAND, CALIFORNIA 94612-1900 MAIN LINE: 510.628.3000 FAX: 510.268.9574</p> <p>The public can observe the meeting and offer public comment by using the below Webinar ID and Passcode after clicking on the below link or calling the below call-in number.</p> <p>Link: <a href="https://zoom.us/join">https://zoom.us/join</a> Call-In: 1 (669) 900-6833 US <b>Webinar ID: 879 6337 8479</b> <b>Passcode: 699406</b></p> <p>For help joining a Zoom meeting, see: <a href="https://support.zoom.us/hc/en-us/articles/201362193">https://support.zoom.us/hc/en-us/articles/201362193</a></p>	TARRELL GAMBLE CHAIR	APPOINTED
	GEORGE WOOD VICE CHAIR	ELECTED GENERAL
	OPHELIA BASGAL	APPOINTED
	KEITH CARSON	APPOINTED
	ROSS CLIPPINGER	ELECTED SAFETY
	JAIME GODFREY	APPOINTED
	ELIZABETH ROGERS	ELECTED RETIRED
	HENRY LEVY	TREASURER
	KELLIE SIMON	ELECTED GENERAL
	CYNTHIA BARON	ALTERNATE RETIRED <sup>1</sup>
KEVIN BRYANT	ALTERNATE SAFETY <sup>2</sup>	

<sup>1</sup> The Alternate Retired Member votes in the absence of the Elected Retired Member, or, if the Elected Retired Member is present, then votes if both Elected General members, or the Safety Member and an Elected General member, are absent.

<sup>2</sup> The Alternate Safety Member votes in the absence of the Elected Safety, either of the two Elected General Members, or both the Retired and Alternate Retired members.

*Note regarding accommodations:* If you require a reasonable modification or accommodation for a disability, please contact ACERA between 9:00 a.m. and 5:00 p.m. at least 72 hours before the meeting at [accommodation@acera.org](mailto:accommodation@acera.org) or at 510-628-3000.

Public comments are limited to four (4) minutes per person in total. The order of items on the agenda is subject to change without notice.

Board and Committee agendas and minutes and all documents distributed to the Board or a Committee in connection with a public meeting (unless exempt from disclosure) are posted online at [www.acera.org](http://www.acera.org) and also may be inspected at 475 14<sup>th</sup> Street, 10<sup>th</sup> Floor, Oakland, CA 94612-1900.

# ***INVESTMENT COMMITTEE/BOARD MEETING***

**NOTICE and AGENDA Wednesday, June 14, 2023**

**Call to Order:** 9:30 a.m.

## **Roll Call**

**Public Input (The Chair allows public input on each agenda item at the time the item is discussed)**

### **I. ACTION ITEMS: MATTERS FOR DISCUSSION AND POSSIBLE MOTION BY THE COMMITTEE**

1. Discussion of and Possible Motion to Recommend to the Board to Approve the Finalists for the ACERA's General Investment Consultant (GIC) Search

9:30 – 10:15

Valter Viola, Cortex Consulting  
Serafin Lim, ACERA  
Betty Tse, ACERA

2. Discussion of and Possible Motion to Recommend to the Board the Minimum Qualifications, and Scoring Matrix for the Emerging Markets Equity Manager Search

10:15 – 10:30

Eileen Neill, Verus Advisory  
Julius Cuaresma, ACERA  
Betty Tse, ACERA

### **Information Items: These items are not presented for Committee action but consist of status updates and cyclical reports**

1. Semiannual Performance Review for the Period Ending March 31, 2023 – Total Fund Review Highlighting Public Markets Asset Classes and Absolute Return

Joe Abdou, Verus Advisory  
Eileen Neill, Verus Advisory  
Julius Cuaresma, ACERA  
Clint Kuboyama, ACERA  
Betty Tse, ACERA

2. Semiannual Performance Review for the Period Ending December 31, 2022 – Private Equity

Faraz Shooshani, Verus Advisory  
Clint Kuboyama, ACERA  
John Ta, ACERA  
Betty Tse, ACERA

3. Semiannual Performance Review for the Period Ending December 31, 2022 – Private Credit

Faraz Shooshani, Verus Advisory  
Clint Kuboyama, ACERA  
Betty Tse, ACERA

***INVESTMENT COMMITTEE/BOARD MEETING***

**NOTICE and AGENDA Wednesday, June 14, 2023**

4. Semiannual Performance Review for the Period Ending December 31, 2022 – Real Assets

John Nicolini Verus Advisory  
Clint Kuboyama, ACERA  
Betty Tse, ACERA

**Trustee Remarks**

None

**Future Discussion Items**

None

**Establishment of Next Meeting Date**


July 12, 2023 at 9:30 a.m.



**ALAMEDA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

475 14th Street, Suite 1000, Oakland, CA 94612 | Phone: 510-628-3000 | Fax: 510-268-9574 | [www.acera.org](http://www.acera.org)

TO: Members of the Investment Committee

FROM: Betty Tse, Chief Investment Officer 

DATE: June 14, 2023

SUBJECT: Discussion of and Possible Motion to Recommend to the Board to approve the Finalists for ACERA's General Investment Consultant (GIC) Search

**Recommendation:**

Staff recommends that the Investment Committee select the following general investment consultants (GICs) to be included in the short list of candidates for further review and evaluations. GIC candidates with the highest scores (in alphabetical order):

- Aon;
- Meketa;
- NEPC

**Staff Scores Summary:**

The final scores for the firms, based on the average scores\* of Staff, are below (please see attachment #2 for detailed scores of all five candidates, by each evaluation criterion):

Rank	Firm	Score**
1	NEPC	81.4
2	AON	77.9
3	MEKETA	76.9
4	CALLAN	75.9
5	VERUS	72.8

\* Staff who participated in the scoring were Betty Tse, Serafin Lim, Clint Kuboyama, John Ta, Julius Cuaresma, Noe Reynoso, and Agnes Ducanes. Each individual had one vote.

\*\* Prepared by Staff. (See Attachment #2 for individual scores by each Evaluation Criterion.)

**Background:**

2022 Sep	Board authorized a Request for Proposal (RFP) for a General Investment Consultant (GIC)
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Oct	<b>Board adopted Search Criteria</b> for the RFP, including Minimum Qualifications (see Attachment #1) and Evaluation Criteria (see Attachment #1)
Dec	Staff provided an update regarding the <b>RFP submission deadline</b>
2023 Mar	Board authorized a <b>two-month extended timeline for Staff to complete due diligence</b> arising from constraints on human resources that were not present when the RFP was issued
May	Staff provided an update, disclosing the names of the <b>five Bidders</b> (below): <ol style="list-style-type: none"> <li>1. Aon Investments USA, Inc. (“AON”);</li> <li>2. Callan LLC (“CALLAN”);</li> <li>3. Meketa Investment Group (“MEKETA”);</li> <li>4. NEPC, LLC (“NEPC”); and</li> <li>5. Verus Advisory, Inc. (“VERUS”).</li> </ol>

In September 2022, the Board authorized Staff to issue a Request For Proposal (RFP), with Cortex Applied Research’s assistance, for a General Investment Consultant in anticipation of the expiration of the initial 5-year term<sup>1</sup> of the Verus’ Investment Consulting Services Agreement. In October 2022, the Board adopted the search criteria and evaluation criteria (see attachment #1) for the RFP in question. Staff has provided periodic status updates of the RFP to the Investment Committee in the last six months.

Following the approved search criteria, Staff along with Cortex issued the RFP and received five bids in response. These five bids, which have met all of our search criteria, include the following firms (in alphabetical order): Aon; Callan; Meketa; NEPC and Verus.

Investment Staff has applied the approved evaluation criteria to thoroughly review and score these five firms in the last few months and have scored the three firms named on the first page of this memo as the top three candidates recommended to you for further review.

**Discussion:**

The five firms that responded to our RFP are highly qualified firms which had also responded to our previous GIC RFP search in 2017. Although the total scores received by each of the five candidates are competitive amongst themselves, the score differential between the #1 score and the #5 score is about eight points. In addition to responding to our GIC RFP, four out of five candidates have also submitted their bid to serve ACERA’s Real Estate asset classes (see attachment #3), should you choose to consider combining the RE consulting service with the GIC service of a selected firm in the future. Staff has identified some attributes of these five candidates for your reference in the below section called Summary of Proposals.

**Summary of Proposals per the Board approved Evaluation Criteria:**

All firms offer advisory/non-discretionary (ND) services (similar to the GIC services that ACERA receives from Verus) and OCIO services to defined benefit (DB) pension funds and other types of institutional investors. Below are examples of the largest scoring contrasts among the five firms:

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<sup>1</sup> The General Investment Contract with our current consultant, Verus, continued to May 2023, and then auto-renews for successive 1-year terms.

## 1. ORGANIZATION (20%)

- **Size:**
  - NEPC and Aon have the most employees (> 300).
  - Verus has the fewest (82).
  - Callan and Meketa have between 195 and 250.
- **Accounts:**
  - NEPC has the most ND DB accounts, including Public and Corporate.
  - Aon has the fewest ND Public DB accounts and the fewest in ACERA's size range; i.e., Aon is focused more on **corporate** DB accounts.
- **Employee Ownership:** Except for Aon, the other firms are privately owned by employees.
  - Aon's parent company (Aon Plc) is public and offers these solutions: Commercial Risk, Health, Reinsurance, Wealth.
  - Verus is controlled by one shareholder; Meketa has three shareholders with more than 10%, while ownership in Callan and NEPC is shared amongst employees.

## 2. INVESTMENT TEAM (20%)

- All **lead consultants** are experienced (23+ years of consulting experience), with Meketa's lead consultant having the least experience.

## 3. INVESTMENT PROCESS (20%)

- All firms provided 10-year forecasted returns vs realized returns and exhibited similar levels of error.
- All firms rely on Monte Carlo simulations, scenario analyses, and stress tests for **risk/asset allocation**.
- All firms have dedicated asset allocation professionals except Verus.
- Dedicated manager research professionals reported: Aon (148), Callan (42), Meketa (60), NEPC (45), Verus (16)
  - All firms reported dedicated coverage in the private debt and infrastructure asset classes except Verus
  - Only Meketa and Callan reported dedicated coverage for the commodities asset class
- All firms have client portals to access manager research data online except Verus.
- All firms have research papers available online.
- All firms have dedicated operational due diligence professionals except Callan.

## 4. PERFORMANCE (15%)

- Firms provided performance data for the five largest clients
  - **ND clients**, where these clients i) have been ND clients for five years or longer and ii) the firm provided advisory services in the area of asset allocation during this period; and
  - **OCIO clients**, where these clients have been OCIO clients for five years or longer.
- Performance data included returns net of underlying managers' fees and relative to benchmark.
  - Aon consistently ranked #2 on both alpha and Sharpe Ratio for both ND and OCIO accounts; Aon therefore ranked highest overall since the highest ranking on each **single** performance metric varied across the firms.
  - Meketa ranked the lowest overall (e.g., lowest value added).
  - NEPC ranked in the middle:

- highest Sharpe Ratio for ND accounts and slightly above average for OCIO; and
- average alpha for ND accounts and below average for OCIO.
- Callan ranked the second highest in overall performance:
  - average Sharpe Ratios for ND and OCIO; and
  - highest aggregate alpha scores across ND and OCIO.
- Verus ranked fourth in overall performance:
  - lowest Sharpe Ratios for ND and OCIO; and
  - second highest aggregate alpha scores across ND and OCIO.

**5. FEES (10%) (Please see detailed Fee Proposals from all five candidates on p.6)**

- The range in **GIC fees (excluding real estate consulting)** is small (i.e., within 10%) of the average.
  - Callan and Meketa are the highest (\$817K and \$815K per year respectively), followed by Verus (\$786K), NEPC (\$780K), and Aon (\$738K).
- Aon is the only firm **not** bidding for real estate consulting.
  - **Total fees (including real estate consulting)** are highest for Meketa and Callan (~\$1.0M/year) and lowest for Verus (\$913K) and NEPC (\$860K).

**6. PERFORMANCE MEASUREMENT & REPORTING (5%)**

- All firms maintain some form of manager watchlist.
- Reports are customized to meet client’s needs.
- All firms use proprietary reporting systems and provide online portal access.

**7. ESG FACTORS (5%)**

- 31% of NEPC’s US public sector DB pension clients have an **ESG Policy** (highest among the firms), followed by Callan and Meketa (20% each), Aon (15%), and Verus (8%).

Please note that the total maximum score for each candidate is 95% per the seven Evaluation Criteria above. There is an up to 5% score allocated for reference checks which will be awarded after concluding reference checks for the finalists and will be reflected at the next presentation of the named finalists.

In the “Relative Strength and Weaknesses” section below, Staff will focus on highlighting the attributes of the three recommended shortlisted candidates noted on the first page of this memo.

**Relative Strengths and Weaknesses of Each of the Three Consultants on the Short List:**

**Aon Investments USA, Inc.**

**Strengths:**

1. Investment Performance – Aon receives the highest scores for both its non-discretionary and its OCIO performances for the five years ending 12/31/2021;
2. Investment process - it has the highest number of dedicated manager research professionals, more than double the size of manager research professionals of the next candidate in our recommended short list;

3. GIC Fee Proposal – it proposes the lowest bid amongst all five candidates.

**Weaknesses:**

1. Organization- it manages and/or sponsors investment funds;
2. Organization- it has multiple litigations and/or pending litigations;
3. Organization- it has requested substantial exceptions to ACERA’s standard contract terms.

**Meketa Investment Group**

**Strengths:**

1. Organization – It does not manage and/or sponsor investment funds;
2. Investment Team – it has very experienced and well-credentialed consultants in its Risk Committee;
3. Performance Measurement and Reporting – It offers proprietary client portal allowing access to investment research and data.

**Weaknesses:**

1. Investment performance – it receives the lowest score for its non-discretionary performance for the five-year period ending 12/31/2021;
2. Performance Measurement and Reporting – it does not offer any monthly performance reports;
3. GIC Fees – it proposes the second highest bid amongst all five candidates;

**NEPC, LLC**

**Strengths:**

1. Investment Performance – it has the strongest risk-adjusted returns for its non-discretionary performance, for the five-year period ending 12/31/2021;
2. GIC Fee proposal – it proposes the second lowest bid amongst all five candidates;
3. ESG Factors – it has solid experience with public pension plans and its proposed lead consultant is a founding member of the Investment Diversity Advisory Council;

**Weaknesses:**

1. Organization – it manages and/or sponsors investment funds;
2. Investment performance – its performance relative to benchmark, for the five-year period ending 12/31/2021, was below average;
3. Organization – its proposed lead consultant has been serving in his current capacity with NEPC for five years.

**Fee Proposals:**

All five firms confirmed that fees cover travel costs for the required meetings. The fee proposals below relate to these components: General Investment Consulting (“GIC”), excluding Specialized Real Estate Consulting.



**GIC Only (Does Not Include Discounts)**

<b>Firm</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>5-year Sum</b>
Aon	\$725,000	\$725,000	\$725,000	\$746,750	\$769,150	\$3,690,900
Callan	\$795,000	\$795,000	\$815,000	\$840,000	\$840,000	\$4,085,000
Meketa*	\$800,000	\$800,000	\$800,000	\$825,000	\$850,000	\$4,075,000
NEPC	\$750,000	\$750,000	\$775,000	\$800,000	\$825,000	\$3,900,000
Verus**	\$775,000	\$775,000	\$775,000	\$795,000	\$810,000	\$3,930,000

\* Meketa offers a discount if both GIC and RE services are provided, resulting in a reduction in total fees of \$129,500 over the 5-years

\*\* Verus offers a discount if both GIC and RE services are provided, resulting in a reduction in total fees of \$380,000 over the 5-years

**Next Steps:**

If the Investment Committee approves this recommendation, Staff will proceed to the next steps for each short-listed candidate, which will include:

1. site visit to each firm on the short list;
2. additional due diligence, including reference checks;
3. background investigations and legal due diligence; and
4. interviews of each of the short-listed candidates by the Investment Committee, estimated on August 9th, 2023 at the ICM.

**Conclusion:**

Based on Staff's evaluations and scoring of the five candidates in accordance with the Board approved Search and Evaluation Criteria, Staff recommends that the Investment Committee recommend to the Board the following three highest scoring GICs candidates for further review and evaluations (in alphabetical order): Aon, Meketa and NEPC.

**Attachments:**

- #1. Approved Search Criteria (Minimum Qualifications) and Approved Search Criteria (Evaluation Criteria)
- #2. Staffs' Evaluation Matrix Scoring Spreadsheet
- #3. Real Estate Consulting Fee Proposals
- #4. Cortex's Memo: Firm Profiles for ACERA's General Investment Consultant Search




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**MEMORANDUM**


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**TO:** INVESTMENT COMMITTEE OF ACERA  
**FROM:** VALTER VIOLA (CORTEX)  
**SUBJECT:** SEARCH CRITERIA FOR ACERA'S GENERAL INVESTMENT CONSULTANT (GIC) SEARCH  
**DATE:** OCTOBER 5, 2022  
**CC:** BETTY TSE (ACERA)

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Cortex is delighted to begin working with ACERA's Staff on the GIC Search. One of the first tasks in the Search is to establish the **criteria for evaluating firms**, including the **minimum qualifications** that firms must have in order to be considered by ACERA.

The table below summarizes the broad evaluation criteria that both Cortex and Staff recommend.

<b>Evaluation Criteria</b>	<b>Weight (%)</b>
1. Organization*	25
2. Investment Team	20
3. Investment Process*	20
4. Performance	15
5. Fee Proposal	10
6. Performance Measurement & Reporting	5
7. References	5
Total	100

The **25% weight to Organization\*** would cover such areas as a firm's history and ownership, organizational structure, and the nature of its business lines (e.g., non-discretionary vs discretionary/OCIO and other services). This would involve assessing any inherent conflicts of interest, and firms' policies for managing those conflicts. The **20% weight to Investment Team** would cover both public and private markets, any committees, as well as the proposed team for the account.

The **20% weight to Investment Process\*** would cover asset allocation, manager research, risk management, and other such considerations.

The **15% weight to Performance** would take into consideration the returns of firms' clients, including performance versus benchmarks, over a reasonable period of time. The risks taken to generate this performance would also be considered.

The remaining **20% would consider the Fee Proposal (10%), Performance Measurement & Reporting (5%), and References (5%).**

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\* *Environmental, social, and governance ("ESG") factors will also be considered in these evaluation criteria.*

The **minimum qualifications** that both Cortex and Staff recommend are below.

<b>Minimum Qualifications</b>
<p>a) <b>Fiduciary:</b> The Firm must agree to act as a fiduciary to ACERA.</p> <p>b) <b>Customized Services:</b> The Firm must be willing to customize services as instructed by ACERA.</p> <p>c) <b>Registered:</b> The Firm must be registered as an investment adviser under the Investment Advisers Act of 1940.</p> <p>d) <b>&gt; 10 Years of GIC Operations:</b> At the time of submission, the Firm must have been in continuous operation in the United States for at least ten (10) years providing general investment consulting services for institutional pension plans similar in asset size to ACERA. Alternatively, if the Firm has undergone a merger or acquisition, at least one of the predecessor firms must have been in continuous operation in the United States for at least ten (10) years providing general investment consulting services to institutional investment funds, at the time of submission.</p> <p>e) <b>Client Size and Number:</b> The Firm must currently provide investment advisory services to a minimum of five (5) institutional clients, each with total assets of at least \$1 billion.</p> <p>f) <b>Public Fund Experience:</b> The Firm currently has at least three (3) public fund clients, each with total assets of at least \$2 billion.</p> <p>g) <b>Lead Consultant’s Experience:</b> At the time of submission, the lead Investment Consultant to be assigned to ACERA’s account must have a minimum of ten (10) years’ experience in the institutional asset management industry, including at least five (5) years of experience providing investment consulting services directly to institutional fund clients such as ACERA.</p> <p>h) <b>Employees:</b> The Firms must be directly responsible for the management of the account, and all personnel responsible for working on the account must be employees of the Firm.</p> <p>i) <b>US Location:</b> The Firm must have its principal place of business within the United States and be subject to service or process in the United States.</p> <p>j) <b>No Conflict of Interest:</b> The Firm must not have, nor potentially have, a material conflict of interest involving ACERA including, but not limited to, the ACERA’s Board, staff, actuary, investment managers, or other consultants.</p> <p>k) <b>Conflicts of Interest Disclosure:</b> The Firm must agree to disclose all potential, current conflicts of interest as well as potential conflicts that might occur, and annually disclose all sources of revenue from sources and affiliations other than investment consulting. The Firm must agree to abide by ACERA’s <i>Conflict of Interest Policy</i> and <i>Conflict of Interest Code</i>. This policy and code can be found on ACERA’s website at <a href="https://www.acera.org/board-retirement">https://www.acera.org/board-retirement</a>.</p> <p>l) <b>Adequate Insurance:</b> The Firm must carry the following types of insurance or must have applied for it by contract execution:<sup>1</sup></p> <ul style="list-style-type: none"> <li>i) Commercial General Liability (combined single limit of \$1 million per occurrence and \$5 million in aggregate);</li> <li>ii) Auto Liability Insurance (combined single limit of \$1 million);</li> <li>iii) Workers' Compensation (Employer’s Liability with \$1 million limit);</li> <li>iv) Professional Liability (includes professional liability, fiduciary indemnity, and errors &amp; omissions with \$5 million minimum); and</li> <li>v) Data Breach (covering privacy liability, regulatory action, breach response expenses) of at least \$1 million.</li> </ul> <p>m) <b>Experience, Skills, and Resources:</b> The Firm must possess the experience, skills, and resources necessary to provide general investment consulting services in relation to the asset classes identified in the ACERA</p>

<sup>1</sup> Subject to change upon final contract negotiation.

### Minimum Qualifications

*General Investment Guidelines, Policies, and Procedures* and other investment policies (see ACERA website at <http://www.acera.org/investment-policies>).

- n) **Clear Business Lines:** Distinguish between Discretionary versus Non-Discretionary Practices, if applicable.
- o) **Financial Stability:** As part of ACERA's due diligence, the Firm must be willing to provide ACERA the ability to review the latest 3-5 years of the Firm's audited financial statements. In-office reviews are acceptable.
- p) **Consultant Background Checks:** Once selected by ACERA as the finalist Firm, the proposed Lead and Secondary Consultants as well as the key officers of the firm must consent to a background investigation. Award of a contract to the finalist Firm will be contingent on the results of such background investigations and successful contract negotiations.

I look forward to discussing the above at the Meeting on October 12, 2022.

Valter Viola

## Attachment 2

Evaluation Criteria (RFP Approved by Board on 9/22/2022 and Scoring Matrix approved on 10/20/2022)		Respondents				
	Weighting (%)	AON	Callan	Meketa	NEPC	Verus
1. Organization	<b>20.00</b>	<b>14.08</b>	<b>17.18</b>	<b>18.53</b>	<b>17.50</b>	<b>18.40</b>
2. Investment Team (Experience of individuals, Resources)	<b>20.00</b>	<b>15.34</b>	<b>14.80</b>	<b>16.20</b>	<b>16.66</b>	<b>13.18</b>
3. Investment Process	<b>20.00</b>	<b>18.84</b>	<b>16.82</b>	<b>18.01</b>	<b>17.84</b>	<b>14.17</b>
4. Performance	<b>15.00</b>	<b>12.69</b>	<b>11.40</b>	<b>8.38</b>	<b>11.08</b>	<b>10.01</b>
5. Performance Measurement & Reporting	<b>5.00</b>	<b>5.00</b>	<b>4.38</b>	<b>4.38</b>	<b>5.00</b>	<b>4.63</b>
6. Fee Proposal	<b>10.00</b>	<b>8.38</b>	<b>7.97</b>	<b>8.04</b>	<b>9.67</b>	<b>8.87</b>
7. References	<b>5.00</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>
8. ESG	<b>5.00</b>	<b>3.62</b>	<b>3.40</b>	<b>3.40</b>	<b>3.51</b>	<b>3.51</b>
<b>--&gt; TOTAL SCORE</b>	<b>100</b>	<b>77.9</b>	<b>75.9</b>	<b>76.9</b>	<b>81.4</b>	<b>72.8</b>
<b>Ranking</b>		<b>2</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>5</b>

## Real Estate Consulting Fee Proposals

## Real Estate Only

Firm	Year 1	Year 2	Year 3	Year 4	Year 5	5-year Sum
Aon	N/A	N/A	N/A	N/A	N/A	N/A
Callan	\$180,000	\$180,000	\$185,000	\$190,000	\$190,000	\$925,000
Meketa	\$250,000	\$250,000	\$250,000	\$265,000	\$280,000	\$1,295,000
NEPC	\$75,000	\$75,000	\$80,000	\$82,500	\$85,000	\$397,500
Verus	\$200,000	\$200,000	\$200,000	\$205,000	\$209,000	\$1,014,000

## MEMORANDUM

**TO: MEMBERS OF THE INVESTMENT COMMITTEE (ACERA)**  
**FROM: VALTER VIOLA (CORTEX)**  
**SUBJECT: FIRM PROFILES FOR ACERA'S GENERAL INVESTMENT CONSULTANT SEARCH**  
**DATE: JUNE 14, 2023**  
**CC: BETTY TSE, CHIEF INVESTMENT OFFICER (ACERA)**

This memo provides 1-page profiles of the five firms (in alphabetical order) submitting proposals related to ACERA's GENERAL INVESTMENT CONSULTANT (GIC) SEARCH. It covers the advisory/non-discretionary (ND) and OCIO services that the firms provide to defined benefit (DB) pension funds and other institutional investors.

## AON

1. ORGANIZATION (20%)	
1.	2 <sup>nd</sup> most <b>employees</b> (336), closest to NEPC (356)
2.	Most <b>accounts</b> (704 in total); most accounts in <b>ACERA's size range</b> (52 in \$5B - \$15B)
3.	Average number of <b>ND DB accounts</b> (85), including Public and Corporate
4.	Fewest <b>ND Public DB accounts</b> (19), similar to Verus (24), and fewest in ACERA's size range (1)
5.	Low <b>employee ownership</b> (parent is public)
6.	<b>Limit</b> on consultants' number of clients served? – No
7.	Firm-sponsored or managed investment <b>funds</b> ? – Yes
8.	Any revenue received by firm, or related company, from relationships with <b>money managers</b> recommended or mentioned to clients? – Yes
2. INVESTMENT TEAM (20%)	
9.	<b>Lead consultant</b> has 29 years of consulting experience
10.	Most staff dedicated to <b>asset allocation</b> (18)
11.	Most research staff dedicated to <b>real estate</b> (53%)
3. INVESTMENT PROCESS (20%)	
12.	Relies on Monte Carlo simulations, scenario analyses, and stress tests (like other firms) for <b>risk/asset allocation</b>
13.	Scoring reflects comparing/contrasting of capabilities, resources, experience, and suitability within the investment process
4. PERFORMANCE (15%)	
<b>ND</b>	• 2 <sup>nd</sup> highest <b>alpha</b> (+83 bps)
<b>Accounts</b>	• 2 <sup>nd</sup> highest <b>Sharpe Ratio</b> (1.20)
<b>OCIO</b>	• 2 <sup>nd</sup> highest <b>alpha</b> (+35 bps)
<b>Accounts</b>	• 2 <sup>nd</sup> highest <b>Sharpe Ratio</b> (0.98)
5. FEES (10%)	
14.	Lowest <b>GIC fee</b> (~ \$738K/year)
15.	Aon is the only firm <b>not</b> bidding for real estate consulting
6. PERFORMANCE MEASUREMENT & REPORTING (5%)	
16.	Maintains some form of manager watchlist, as all firms do
7. ESG FACTORS (5%)	
17.	15% of US public sector DB clients have an <b>ESG Policy</b> (similar % to Callan 20% and Meketa 20%)

## CALLAN

<b>1. ORGANIZATION (20%)</b>	
1.	Slightly below average number of <b>employees</b> (195), most similar to Meketa (250)
2.	Slightly more <b>accounts</b> than average (438 in total); average number of accounts in <b>ACERA's size range</b> (39)
3.	2 <sup>nd</sup> most <b>ND DB accounts</b> (113), including Public and Corporate
4.	Above average number of <b>ND Public DB accounts</b> (67), similar to Meketa and NEPC
5.	<b>Employee ownership</b> is broadly held
6.	<b>Limit</b> on consultants' number of clients served? – Yes
7.	Firm-sponsored or managed investment <b>funds</b> ? – Yes
8.	Any revenue received by firm, or related company, from relationships with <b>money managers</b> recommended or mentioned to clients? – Yes
<b>2. INVESTMENT TEAM (20%)</b>	
9.	<b>Lead consultant</b> has 31 years of consulting experience; has CFA designation (same as Verus); only lead consultant without Masters degree
10.	<b>Secondary consultant</b> has least experience (14 years), tied with Meketa; only secondary consultant without CFA designation
11.	Same number of staff dedicated to <b>asset allocation</b> as Meketa (8) and similar to NEPC (6)
<b>3. INVESTMENT PROCESS (20%)</b>	
12.	Relies on Monte Carlo simulations, scenario analyses, and stress tests (like other firms) for <b>risk/asset allocation</b>
13.	Scoring reflects comparing/contrasting of capabilities, resources, experience, and suitability within the investment process
<b>4. PERFORMANCE (15%)</b>	
<b>ND</b>	• Average <b>alpha</b> (+61 bps), same as NEPC
<b>Accounts</b>	• Average <b>Sharpe Ratio</b> (1.13)
<b>OCIO</b>	• Highest <b>alpha</b> (+56 bps)
<b>Accounts</b>	• Slightly below average <b>Sharpe Ratio</b> (0.80)
<b>5. FEES (10%)</b>	
14.	Highest <b>GIC fee</b> (~ \$817K/year), similar to Meketa
15.	2 <sup>nd</sup> highest <b>total fee</b> (\$1,002K/year), including real estate consulting
<b>6. PERFORMANCE MEASUREMENT &amp; REPORTING (5%)</b>	
16.	Maintains some form of manager watchlist, as all firms do
<b>7. ESG FACTORS (5%)</b>	
17.	20% of US public sector DB clients have an <b>ESG Policy</b> (similar % to Aon 15% and Meketa 20%)



## MEKETA

<b>1. ORGANIZATION (20%)</b>	
1.	Average number of <b>employees</b> (250), most similar to Callan (195)
2.	Average number of <b>accounts</b> (400 in total) but fewer number of accounts in <b>ACERA's size range</b> (17)
3.	Below average number of <b>ND DB accounts</b> (65), including Public and Corporate
4.	Above average number of <b>ND Public DB accounts</b> (64), similar to Callan and NEPC
5.	<b>Employee ownership</b> is somewhat concentrated (3 employees own between 10% and 50%)
6.	<b>Limit</b> on consultants' number of clients served? – Yes
7.	Firm-sponsored or managed investment <b>funds</b> ? – No
8.	Any revenue received by firm, or related company, from relationships with <b>money managers</b> recommended or mentioned to clients? – No
<b>2. INVESTMENT TEAM (20%)</b>	
9.	<b>Lead consultant</b> has shortest consulting experience (23 years), compared to 31+ for others; with firm for shortest time (5 years), tied with NEPC
10.	<b>Secondary consultant</b> has least experience (14 years), tied with Callan
11.	Same number of staff dedicated to <b>asset allocation</b> as Callan (8) and similar to NEPC (6)
<b>3. INVESTMENT PROCESS (20%)</b>	
12.	Relies on Monte Carlo simulations, scenario analyses, and stress tests (like other firms) for <b>risk/asset allocation</b>
13.	Scoring reflects comparing/contrasting of capabilities, resources, experience, and suitability within the investment process
<b>4. PERFORMANCE (15%)</b>	
<b>ND</b>	• Lowest <b>alpha</b> (+36 bps)
<b>Accounts</b>	• Below average <b>Sharpe Ratio</b> (1.10)
<b>OCIO</b>	• Lowest <b>alpha</b> (-109 bps)
<b>Accounts</b>	• Highest <b>Sharpe Ratio</b> (1.01)
<b>5. FEES (10%)</b>	
14.	2 <sup>nd</sup> highest <b>GIC fee</b> (~ \$815K/year), similar to Callan
15.	Highest <b>total fee</b> (\$1,048K/year), including real estate consulting
<b>6. PERFORMANCE MEASUREMENT &amp; REPORTING (5%)</b>	
16.	Maintains some form of manager watchlist, as all firms do
<b>7. ESG FACTORS (5%)</b>	
17.	20% of US public sector DB clients have an <b>ESG Policy</b> (similar % to Aon 15% and Callan)

**NEPC**

<b>1. ORGANIZATION (20%)</b>	
1.	Most <b>employees</b> (356)
2.	Slightly fewer <b>accounts</b> than average (354 in total); average number of accounts in <b>ACERA's size range</b> (40)
3.	Most <b>ND DB accounts</b> (159), including Public and Corporate
4.	Above average number of <b>ND Public DB accounts</b> (66), similar to Callan and Meketa
5.	<b>Employee ownership</b> is broadly held; 1 employee, largest concentration, owns < 10%
6.	<b>Limit</b> on consultants' number of clients served? – Yes
7.	Firm-sponsored or managed investment <b>funds</b> ? – Yes
8.	Any revenue received by firm, or related company, from relationships with <b>money managers</b> recommended or mentioned to clients? – Yes
<b>2. INVESTMENT TEAM (20%)</b>	
9.	<b>Lead consultant</b> has 35 years of consulting experience
10.	<b>Lead consultant</b> has been with firm for shortest time (5 years), tied with Meketa
11.	Similar number of <b>staff dedicated to asset allocation</b> as Meketa and Callan (both 8)
<b>3. INVESTMENT PROCESS (20%)</b>	
12.	Relies on Monte Carlo simulations, scenario analyses, and stress tests (like other firms) for <b>risk/asset allocation</b> ; only firm that seems to believe <b>tactical allocation*</b> across markets can add a unique source of alpha
13.	Scoring reflects comparing/contrasting of capabilities, resources, experience, and suitability within the investment process
	<i>* Firms define tactical asset allocation somewhat differently, so it is difficult to make more specific conclusions.</i>
<b>4. PERFORMANCE (15%)</b>	
<b>ND</b>	• Average <b>alpha</b> , same as Callan
<b>Accounts</b>	• Highest <b>Sharpe Ratio</b>
<b>OCIO</b>	• Below average <b>alpha</b>
<b>Accounts</b>	• Slightly above average <b>Sharpe Ratio</b>
<b>5. FEES (10%)</b>	
14.	Average <b>GIC fee</b> (~ \$780K/year)
15.	Lowest <b>total fee</b> (\$860K/year), including real estate consulting
<b>6. PERFORMANCE MEASUREMENT &amp; REPORTING (5%)</b>	
16.	Maintains some form of manager watchlist, as all firms do
<b>7. ESG FACTORS (5%)</b>	
17.	31% of US public sector DB clients have an <b>ESG Policy</b> (highest among firms)

**VERUS**

<b>1. ORGANIZATION (20%)</b>	
1.	Fewest <b>employees</b> (82)
2.	Fewest <b>number of accounts</b> (155 in total) and fewest in <b>ACERA's size range</b> (11)
3.	Fewest <b>ND DB accounts</b> (27), including Public and Corporate
4.	2 <sup>nd</sup> fewest <b>ND Public DB accounts</b> (24), similar to Aon (19), but slightly more than the average of other firms (9) in ACERA's size range
5.	<b>Employee ownership</b> is concentrated (e.g., controlled by 1 person)
6.	<b>Limit</b> on consultants' number of clients served? – No
7.	Firm-sponsored or managed investment <b>funds</b> ? – No
8.	Any revenue received by firm, or related company, from relationships with <b>money managers</b> recommended or mentioned to clients? – No
<b>2. INVESTMENT TEAM (20%)</b>	
9.	<b>Lead consultant</b> has 35 years of consulting experience; has CFA designation (same as Callan)
10.	No staff dedicated to <b>asset allocation</b> and only firm without an <b>asset allocation committee</b>
11.	Fewest staff dedicated to <b>manager research</b> (1-2), with most research staff dedicated to private equity (38%) and public equity (38%)
<b>3. INVESTMENT PROCESS (20%)</b>	
12.	Relies on Monte Carlo simulations, scenario analyses, and stress tests (like other firms) for <b>risk/asset allocation</b>
13.	Scoring reflects comparing/contrasting of capabilities, resources, experience, and suitability within the investment process.
<b>4. PERFORMANCE (15%)</b>	
<b>ND</b>	• Highest <b>alpha</b> (+95 bps)
<b>Accounts</b>	• Lowest <b>Sharpe Ratio</b> (1.09)
<b>OCIO</b>	• Above average <b>alpha</b> (+15 bps)
<b>Accounts</b>	• Lowest <b>Sharpe Ratio</b> (0.71)
<b>5. FEES (10%)</b>	
14.	Average <b>GIC fee</b> (~ \$786K/year)
15.	2 <sup>nd</sup> lowest <b>total fee</b> (\$913K/year), including real estate consulting
<b>6. PERFORMANCE MEASUREMENT &amp; REPORTING (5%)</b>	
16.	Maintains some form of manager watchlist, as all firms do
<b>7. ESG FACTORS (5%)</b>	
17.	8% of US public sector DB clients have an <b>ESG Policy</b> (lowest among firms)



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To: Members of the Investment Committee

From: Julius Cuaresma, Investment Analyst  
Eileen Neill, CFA, Senior Consultant, Verus

Date: June 14, 2023

Subject: Discussion of and Possible Motion to Recommend to the Board the Minimum Qualifications and Scoring Matrix for the Emerging Markets (EM) Equity Manager Search

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**Recommendation:**

Staff and Verus recommend adoption of the proposed Minimum Qualifications and Scoring Matrix for the Emerging Markets (EM) Equity Manager Search.

**Background:**

At the recent February Committee Meetings, the Board approved a new International Equity Structure. At the April Committee Meetings, the Board next approved a Modified International Equity Structure (“Modified Structure”) and, to effect this new Structure, the Board approved a Phased Implementation Transition Plan (“Implementation Plan”). Implementing this Modified Structure requires adding an EM Equity manager (current portfolio includes one EM manager). ACERA employs a Request for Information (“RFI”) process for procuring new investment managers. At the November 2021 Committee Meetings, the Board approved an EM Equity Manager RFI Search. At these June Committee Meetings, Staff and Verus recommend a similar RFI Search with updated materials.

**Discussion:**

Staff and Verus have updated the November 2021 EM RFI Minimum Qualifications and Scoring Matrix to incorporate recent Board-approved actions, i.e., the Modified Structure and the May 2022 ACERA General Investment Guidelines, Policies, and Procedures. Thus, Staff and Verus recommend the approval of the 1) Minimum Qualifications (Attachment #1) – this applies to all manager candidates; and 2) the Scoring Matrix (Attachment #2) to be employed in evaluating each RFI submission. Minimum Qualifications include various requirements, i.e., strategy performance history, firm and strategy AUM, and ESG/DEI information. Such Qualifications ensure a focused list of institutional quality manager candidates with demonstrated ability to manage assets in the size of the desired mandate. This list is expected to be comprised of the top 25 EM Equity strategies derived from screens based upon multiple criteria using Verus’ EM equity manager peer universe (eVestment). These managers will be subsequently invited to participate in the RFI process. The Scoring Matrix, or the evaluation criteria, ensures uniform and objective Staff and Verus evaluation.

**Conclusion:**

Upon Board approval of the Minimum Qualifications and Scoring Matrix, Staff and Verus will incorporate these into an RFI which will be distributed to the focused list of top 25 EM Equity strategies from the aforementioned screens. The expected timeline for the completion of the RFI process is six months from RFI posting (end of June/beginning of July) to RFI scoring completion. At the completion of the RFI process, Staff and Verus will provide the Committee with a recommended list of finalist managers to consider for hire. In addition to this EM RFI Action Item, Staff and Verus will provide Implementation Plan Information Item updates when appropriate (most recently in May) and estimated to be on a quarterly basis until completion of the named Plan.

**Attachments:**

- #1 Recommended Minimum Qualifications
- #2 Recommended Scoring Matrix

**ACERA EMERGING MARKETS (EM) EQUITY MANAGER SEARCH  
RECOMMENDED MINIMUM QUALIFICATIONS**

1. The Firm must agree to act as fiduciary to ACERA.
2. The Firm must be registered as an investment adviser under the Investment Advisers Act of 1940, a bank (as defined in that Act) or an insurance company qualified to perform investment management services under state law in more than one state, including the State of California.
3. Separate account for the active emerging markets equity mandate is acceptable; however, commingled account is preferred as long as other terms are equal.
4. The Firm must have \$1.4 billion or more in total Assets under Management (AUM) firm-wide as of 3/31/23. The proposed strategy should have \$1.8 billion or more in AUM as of 3/31/23. ACERA's investment portfolio (or account) should not comprise more than 25% of the Firm's total AUM at any time in accordance with ACERA's General Investment Guidelines, Policies and Procedures.
5. ACERA will only consider Emerging Investment Managers that meet all of the Minimum Qualifications for Proposal.
6. The Firm must be directly responsible for the management of the account, and all personnel responsible for the account must be employees of the Firm or a legal joint venture partner.
7. The Firm must have a minimum three-year, continuous performance history as of 3/31/23 managing the international emerging markets equity fund product for institutional investors by the existing portfolio manager or portfolio manager team. The manager's performance history must be documented, and real time (i.e. not simulated or back-tested) and in compliance with CFA Institute (CFAI) Global Investment Performance Standards (GIPS).
8. The product must currently be benchmarked against the MSCI Emerging Markets Index (either standard or IMI, and either gross or net of dividends).
9. If hired, the Firm must agree to accept the MSCI Emerging Markets Index (ND) as the ACERA mandate benchmark for the firm's proposed international emerging markets equity product.
10. The product must historically exhibit a median market capitalization commensurate with the MSCI Emerging Markets Index standard, either gross or net of dividends, with an average median market capitalization greater than \$6B.
11. The Firm must be able to provide monthly GIPS-compliant performance reports to ACERA, its General Consultant, and its Custodian Bank.
12. The Firm must be able to provide a minimum of monthly liquidity.
13. The Firm should carry the following minimum insurance coverage or should apply for it by contract execution (subject to change upon final contract negotiation):
  - a. Commercial General Liability – \$4,000,000
  - b. Crime Coverage
    - i. Employee Dishonesty Coverage - \$10,000,000
    - ii. Computer Theft Coverage - \$1,000,000
  - c. Error and Omissions (Professional Liability) - \$10,000,000
  - d. Fiduciary Liability - \$25,000,000, or 10% of the total assets managed in the ACERA account, whichever is higher, unless the proposed contract specifies otherwise
  - e. Workers' Compensation and Employer's Liability - \$1,000,000
14. The Firm must provide a description of its ESG policies and objectives and Diversity & Inclusion efforts and objectives.
15. The Firm must agree to attend ACERA's Investment Committee Meetings as needed.
16. The Firm must be willing to allow ACERA to review the latest 3-5 years of the firm's audited financial statements. In-office reviews are acceptable.
17. Once selected by ACERA as the recommended Firm, the Firm must consent to a background investigation of the investment management entity and key individuals.

**ACERA EMERGING MARKETS (EM) EQUITY MANAGER SEARCH  
RECOMMENDED SCORING MATRIX**

**A. Organization 30 Points**

1. History
2. Ownership, Organization, and Staffing
3. Compliance
4. Client Service

**B. Investment Team 35 Points**

1. Strategy
  - a. Philosophy
  - b. Process
  - c. ESG considerations/integration
2. Experience
3. Research Capabilities
4. Other Resources
5. Trading/Operations
6. Risk Management

**C. Performance and Risk 25 Points**

1. Consistency Beating Benchmark
2. Peer Group Ranking
3. Risk (to benchmark/tracking error, upside/downside)
4. Risk-Adjusted Returns

**D. Proposed Fee Schedule/Structure 10 Points**



**PERSPECTIVES  
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SUCCESS**



PERIOD ENDING: MARCH 31, 2023

Total Fund Review

Alameda County Employees' Retirement Association – Non-confidential

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# U.S. economics summary

- Real GDP increased at a 2.7% rate in the fourth quarter (0.9% year-over-year). The U.S. economy in Q4 was supported by mild but positive growth across most aspects of activity. First quarter GDP is expected to come in at 2.2%, according to the Atlanta Fed GDPNow forecast, as of April 10<sup>th</sup>.
- The inflation picture improved further. March headline inflation came in at 5.0% year-over-year—the lowest since Q2 2021. Core inflation has remained stubbornly high at 5.6% year-over-year. Many of the goods and services prices that initially contributed to high inflation have moderated or fallen.
- U.S. real personal consumption expenditures were modest in February at 2.5% year-over-year. Household purchases of services continued to climb, while goods purchases were flat. Purchasing trends around goods and services appear to have normalized for the first time since the pandemic.
- Although hiring activity may be slowing and layoffs are occurring in places, the labor participation rate is rebounding as workers who had left the job market during the pandemic are once again seeking employment.
- Consumer sentiment remained weak in Q1. According to the University of Michigan, households increasingly expect a recession in the near-term, especially lower income and younger Americans. Inflation fears have reportedly subsided, with expectations for 3.6% inflation over the next year.
- The U.S. housing market has faced a harsh winter season, as high prices and a significant jump in mortgage interest rates severely crimped demand. Existing home sales are as weak as during the lows of 2009-2011 following the U.S. housing bubble.

	Most Recent	12 Months Prior
Real GDP (YoY)	0.9% 12/31/22	5.7% 12/31/21
Inflation (CPI YoY, Core)	5.6% 3/31/23	8.5% 3/31/22
Inflation (CPI YoY, Headline)	5.0% 3/31/23	8.5% 3/31/22
Expected Inflation (5yr-5yr forward)	2.2% 3/31/23	2.4% 3/31/22
Fed Funds Target Range	4.75% – 5.00% 3/31/23	0.25% – 0.50% 3/31/22
10-Year Rate	3.47% 3/31/23	2.34% 3/31/22
U-3 Unemployment	3.5% 3/31/23	3.6% 3/31/22
U-6 Unemployment	6.7% 3/31/23	6.9% 3/31/22

# International economics summary

- Developed economies have experienced a sharp slowdown in growth. The IMF forecasts developed economy GDP to fall from 2.7% in 2022 to 1.3% in 2023. The deteriorating outlook was attributed to monetary tightening by central banks, as well as Russia’s invasion of Ukraine. Meanwhile, emerging market economic growth is expected to accelerate in 2023, rising from 3.9% to 4.0%.
- Inflation trends varied by country during the quarter but seem to suggest broad moderation. European nations continue to cope with very high inflation rates—much of which have been driven by surging energy costs. In many countries, higher energy prices are contributing to half of official inflation figures.
- Developed central banks, in response to inflation, have carried on with their tightening cycles. Both the European Central Bank and Bank of England raised rates in March, with the ECB increasing their Deposit Facility Rate by 50 bps to 3.00%, while the BOE implemented a 25 bps hike, bringing their policy rate to 4.25%.
- February 24<sup>th</sup> marked the one-year anniversary of Russia’s invasion of Ukraine. The war has created much uncertainty around Europe’s economic outlook, and led Finland to apply, and to be accepted as, a NATO member.
- China made progress on its reopening in Q1, as the country aims to ramp up economic activity following nearly three-years of lockdowns. Mobility data has picked up, while gauges of manufacturing and non-manufacturing activity have moved into expansionary territory. March non-manufacturing PMIs came in at 58.2—the highest level since 2011.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	0.9% 12/31/22	5.0% 3/31/23	3.5% 3/31/23
Eurozone	1.8% 12/31/22	6.9% 3/31/23	6.6% 2/28/23
Japan	0.4% 12/31/22	3.3% 3/31/23	2.5% 2/28/23
BRICS Nations	2.5% 12/31/22	2.9% 3/31/23	5.2% 12/31/21
Brazil	1.9% 12/31/22	4.7% 3/31/23	8.5% 3/31/23
Russia	(2.7%) 12/31/22	3.5% 3/31/23	3.5% 2/28/23
India	4.4% 12/31/22	5.7% 3/31/23	7.8% 3/31/23
China	2.9% 12/31/22	0.7% 3/31/23	5.6% 2/28/23

*NOTE: India lacks reliable government unemployment data. Unemployment rate shown above is estimated from the Centre for Monitoring Indian Economy. The Chinese unemployment rate represents the monthly surveyed urban unemployment rate in China.*

# Equity environment

- Global equities delivered another strong quarter in Q1 (MSCI ACWI +7.3%). A variety of risks are stacking up that could weigh on additional gains, including potential recession in many markets, persistent inflation problems, and tightening credit conditions.
- The outlook for domestic stocks remains challenged, especially against the backdrop of high inflation and expectations for slowing economic growth. Earnings growth has started to decline, with year-over-year S&P 500 earnings falling -4.9% in Q4 2022, the first decline seen since Q2 2020.
- The effects of currency volatility on portfolio performance was mixed during the first quarter. Over the past full year, currency movement led to a -8.5% loss for investors with unhedged exposure to international developed equity (MSCI EAFE unhedged -1.4%, MSCI EAFE hedged +7.1%), led by a -12.6% loss in Japanese equities (TOPIX unhedged -3.1%, TOPIX hedged +9.5%). We continue to believe that a thoughtful currency program may allow investors to reduce their total portfolio risk while also increasing long-term expected returns.
- Growth stocks delivered strong outperformance in the first quarter (Russell 1000 Growth +14.4% vs. Russell 1000 Value +1.0%), effectively reversing value's rally in Q4 2022. This divergence in style behavior appears to be, once again, mostly a result of relative sector returns.
- The CBOE VIX implied volatility index surged in March on the news of Silicon Valley Bank's failure, and the possibility of contagion across the financial sector, but ended the quarter at 18.7%—near the longer-term average.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
U.S. Large Cap (S&P 500)	7.5%		(7.7%)	
U.S. Small Cap (Russell 2000)	2.7%		(11.6%)	
U.S. Equity (Russell 3000)	7.2%		(8.6%)	
U.S. Large Value (Russell 1000 Value)	1.0%		(5.9%)	
US Large Growth (Russell 1000 Growth)	14.4%		(10.9%)	
Global Equity (MSCI ACWI)	7.3%	7.3%	(7.4%)	(4.8%)
International Large (MSCI EAFE)	8.5%		(1.4%)	
China (MSCI China)	4.7%		(4.7%)	
Emerging Markets (MSCI Emerging Markets)	4.0%	3.8%	(10.7%)	(6.6%)

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 3/31/23

# Fixed income environment

- The 10-year U.S. Treasury yield fell during the quarter from 3.88% to 3.47%. It appears increasingly likely that the U.S. has already reached, and is beyond, *peak interest rates*. The looming possibility of recession, effects of banking stress, and implications from the Federal Reserve that only one interest rate hike may remain, suggests that bond yields may have more room to fall than to rise.
- Silicon Valley Bank (SVB) failed and was transitioned to government ownership on March 10<sup>th</sup>. SVB is among the top 20 largest banks in the United States, with approximately 1% of all U.S. domestic bank deposits. New York regulators closed Signature Bank shortly thereafter, and more failures may follow. Banking stress has implications for the future actions of the Federal Reserve and for the economy.
- During the first quarter, fixed income markets delivered strong positive returns despite concerns related to the banking sector and the potential for additional Fed rate hikes. High yield credit performance led the way at 3.6%, followed by 3.5% from investment grade credit and 3.3% from bank loans.
- U.S. yield curve inversion reached even more extreme levels during Q1. The 10-year 2-year yield spread (short-term interest rates being higher than long-term interest rates) reached ~107 bps on March 8<sup>th</sup>, suggesting an incoming recession.
- Uncertainty around the path of Federal Reserve rate hikes and whether inflation is under control has contributed to considerable volatility in bond markets. As indicated by the ICE BofA “MOVE” Index, which measures the volatility priced into U.S. Treasury bonds, domestic and international banking stress further added to fixed income market choppiness in the first quarter.

	QTD Total Return	1 Year Total Return
Core Fixed Income (Bloomberg U.S. Aggregate)	3.0%	(4.8%)
Core Plus Fixed Income (Bloomberg U.S. Universal)	2.9%	(4.6%)
U.S. Treasuries (Bloomberg U.S. Treasury)	3.0%	(4.5%)
U.S. Long Treasuries (Bloomberg U.S. Long Treasury)	6.2%	(16.0%)
U.S. High Yield (Bloomberg U.S. Corporate HY)	3.6%	(3.3%)
Bank Loans (S&P/LSTA Leveraged Loan)	3.3%	2.5%
Emerging Market Debt Local (JPM GBI-EM Global Diversified)	5.2%	(0.7%)
Emerging Market Debt Hard (JPM EMBI Global Diversified)	1.9%	(6.9%)
Mortgage-Backed Securities (Bloomberg MBS)	2.5%	(4.9%)

Source: Bloomberg, as of 3/31/23

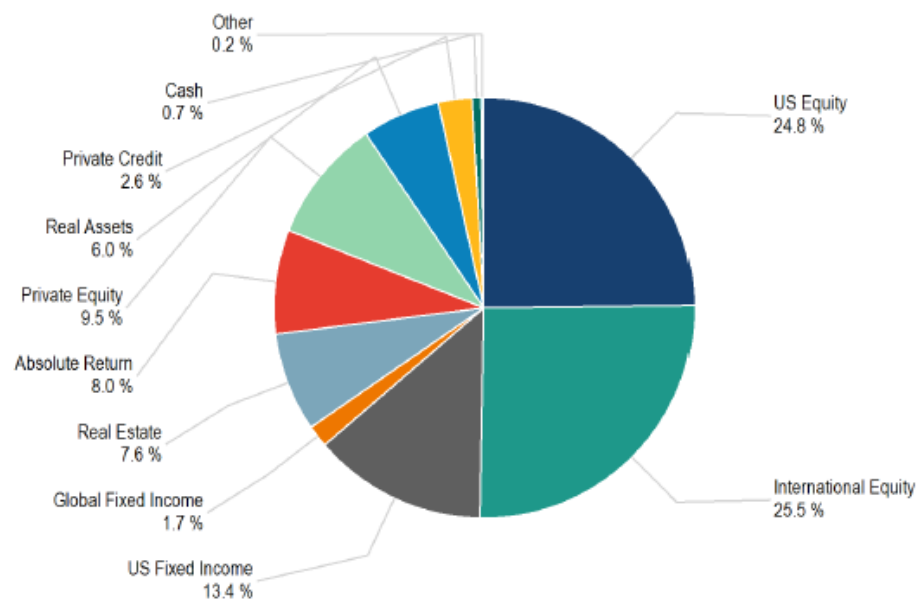
# Public real assets environment

- REITs – After rallying to begin the year, REITs and stocks pulled back on uncertainty about the stability of the banking system, followed by a rebound in March as fears abated. Self-storage and industrial REITs closed the first quarter with the highest total returns. On the other hand, office REIT stocks tanked during the first quarter (more than half of the 25 worst-performing REIT stocks came from the office sector).
- Listed Infrastructure – In the first quarter of 2023, energy prices stabilized, amid a warmer-than-expected winter and a continuing re-emergence of mobility lifting the airports and toll roads sectors. Bond yields came off recent highs, supporting longer-duration assets such as renewables, which performed well. Lower yields have also been positive for communication towers, though there has been some broad market pressure on real estate.
- Commodities – Commodities lost ground on both the quarter and the year, while during Q1, Energy and livestock were the worst-performing subsectors, while precious metals and industrial metals achieved price gains. Within energy, prices for natural gas, gas oil and heating oil were all sharply lower. In precious metals, gold achieved a robust price gain, while silver achieved a more modest price uplift. Within industrial metals, the price of nickel was sharply lower in the first quarter, while the decline in the price of lead was more muted. Copper and aluminum prices both advanced in the quarter.
- TIPS - The Bloomberg U.S. TIPS index returned 3.3% in the most recent quarter and is down 6.1% year-over-year. This comes against a backdrop of continued elevated inflation, low unemployment and the possibility of a recession looming on the horizon.

	QTD Total Return	1 Year Total Return
REITs (FTSE EPRA/NAREIT Global)	0.8%	(20.3%)
Listed Infrastructure (S&P Global Infrastructure)	3.9%	(3.45)%
Commodities (Bloomberg Commodity Index)	(5.4)%	(12.5)%
TIPS (Bloomberg US TIPS)	3.3%	(6.1%)

# Total Fund review

# Asset allocation

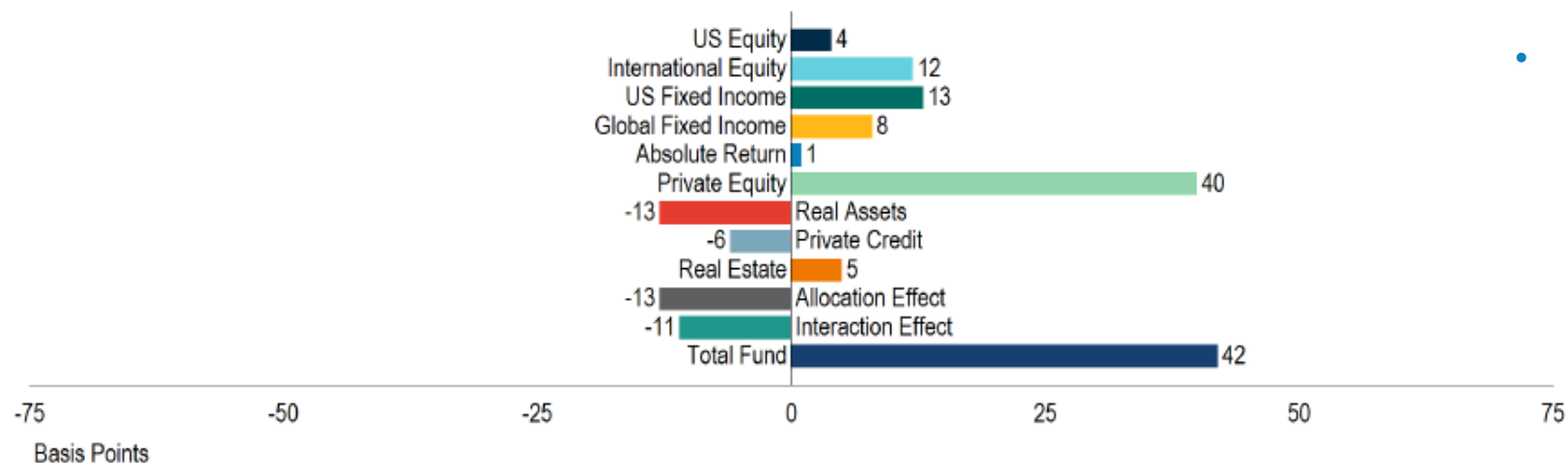


- Public markets comprise ~75% of ACERA's assets
- Majority of public markets assets are invested in equities (~50%)

	Current Balance (\$)	Current Allocation (%)	Policy (%)	Difference (%)	Within IPS Range?
US Equity	2,639,485,722	24.8	24.0	0.8	Yes
International Equity	2,720,213,440	25.5	24.0	1.5	Yes
US Fixed Income	1,429,262,662	13.4	12.0	1.4	Yes
Global Fixed Income	185,711,475	1.7	2.0	-0.3	Yes
Real Estate	813,219,591	7.6	9.0	-1.4	Yes
Absolute Return	852,044,092	8.0	8.0	0.0	Yes
Private Equity	1,008,111,320	9.5	11.0	-1.5	Yes
Real Assets	635,386,575	6.0	6.0	0.0	Yes
Private Credit	274,490,948	2.6	4.0	-1.4	Yes
Cash	73,705,070	0.7	0.0	0.7	Yes
Other	20,919,298	0.2	0.0	0.2	Yes
<b>Total</b>	<b>10,652,550,193</b>	<b>100.0</b>	<b>100.0</b>		

# Total Fund attribution

## 9 Months, Ending as of 3/31/23



- Main source of value-add: Selection within Private Equity

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
US Equity	9.93%	9.75%	0.19%	0.04%	-0.08%	0.00%	-0.03%
International Equity	10.58%	10.20%	0.38%	0.12%	-0.04%	0.01%	0.09%
US Fixed Income	0.93%	-0.09%	1.02%	0.13%	-0.14%	0.02%	0.01%
Global Fixed Income	2.54%	-0.71%	3.25%	0.08%	0.01%	-0.02%	0.07%
Absolute Return	2.08%	2.10%	-0.02%	0.01%	-0.04%	-0.02%	-0.05%
Private Equity	-3.96%	-6.76%	2.80%	0.40%	0.13%	-0.08%	0.44%
Real Assets	4.36%	5.89%	-1.53%	-0.13%	0.05%	-0.04%	-0.12%
Private Credit	7.10%	8.86%	-1.77%	-0.06%	-0.08%	0.02%	-0.12%
Real Estate	-7.02%	-7.50%	0.48%	0.05%	0.07%	-0.01%	0.11%
<b>Total</b>	<b>4.81%</b>	<b>4.39%</b>	<b>0.42%</b>	<b>0.65%</b>	<b>-0.13%</b>	<b>-0.11%</b>	<b>0.42%</b>



# Total Fund and composite performance

	Market Value (\$)	% of Portfolio	3 Mo (%)	6 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Total Fund</b>	<b>10,652,550,193</b>	<b>100.00</b>	<b>4.47</b>	<b>10.16</b>	<b>-4.53</b>	<b>12.57</b>	<b>6.44</b>	<b>8.47</b>	<b>7.74</b>	<b>9.33</b>	<b>Sep-85</b>
<i>Policy Index</i>			3.86	9.90	-5.11	12.36	6.77	8.50	8.09	9.62	Sep-85
<b>Total Fund w/o Overlay</b>	<b>10,631,630,895</b>	<b>99.80</b>	<b>4.44</b>	<b>10.07</b>	<b>-4.45</b>	<b>12.62</b>	<b>6.46</b>	<b>8.49</b>	<b>7.75</b>	<b>9.34</b>	<b>Sep-85</b>
<b>US Equity</b>	<b>2,639,485,722</b>	<b>24.78</b>	<b>7.02</b>	<b>14.87</b>	<b>-8.52</b>	<b>18.79</b>	<b>10.22</b>	<b>12.56</b>	<b>11.80</b>	<b>11.53</b>	<b>Sep-85</b>
<i>Russell 3000</i>			7.18	14.88	-8.58	18.48	10.45	11.99	11.73	11.10	Sep-85
<b>International Equity</b>	<b>2,720,213,440</b>	<b>25.54</b>	<b>8.41</b>	<b>23.97</b>	<b>-3.76</b>	<b>13.07</b>	<b>3.44</b>	<b>7.14</b>	<b>5.60</b>	<b>7.78</b>	<b>Dec-90</b>
<i>MSCI ACWI ex USA IMI Gross</i>			6.70	21.88	-5.34	12.72	2.84	6.32	4.76	6.02	Dec-90
<b>Total Fixed Income</b>	<b>1,614,974,137</b>	<b>15.16</b>	<b>3.39</b>	<b>6.23</b>	<b>-5.21</b>	<b>0.62</b>	<b>1.38</b>	<b>2.42</b>	<b>2.53</b>	<b>6.61</b>	<b>Sep-86</b>
<i>Fixed Income Blend</i>			3.14	6.03	-5.86	-2.39	0.36	0.87	1.23	5.63	Sep-86
<b>US Fixed Income</b>	<b>1,429,262,662</b>	<b>13.42</b>	<b>3.26</b>	<b>5.45</b>	<b>-4.45</b>	<b>-0.23</b>	<b>1.96</b>	<b>2.56</b>	<b>2.82</b>	<b>6.54</b>	<b>Sep-86</b>
<i>Bloomberg US Aggregate TR</i>			2.96	4.89	-4.78	-2.77	0.90	0.88	1.36	5.46	Sep-86
<b>Global Fixed Income*</b>	<b>185,711,475</b>	<b>1.74</b>	<b>4.41</b>	<b>12.60</b>	<b>-11.47</b>	<b>1.25</b>	<b>-1.50</b>	<b>1.07</b>	<b>1.05</b>	<b>5.76</b>	<b>Nov-01</b>
<i>FTSE WGBI TR</i>			3.51	7.47	-9.55	-5.29	-2.35	-1.06	-0.60	3.10	Nov-01

- Total Fund return outperformed Policy Index return over quarter ended 3/31/23
- Biggest positive contributors to outperformance for the quarter were International Equity, Fixed Income, Private Equity and Real Estate. Private Credit was only meaningful negative performance contributor for the quarter.

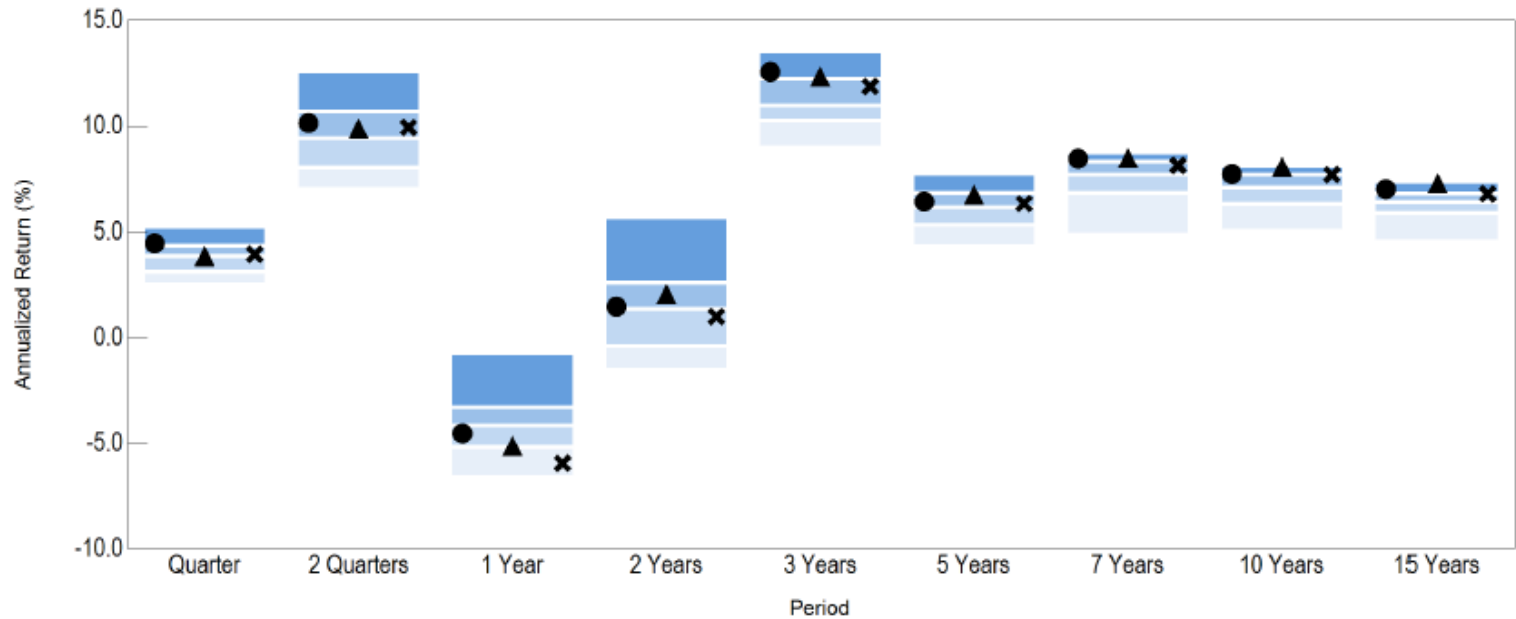
# Total Fund and composite performance (continued)

	Market Value (\$)	% of Portfolio	3 Mo (%)	6 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Absolute Return</b>	852,044,092	8.00	-0.23	-0.99	4.15	10.17	3.46	4.30	4.00	3.91	Sep-11
<i>Absolute Return Blend</i>			0.72	2.46	-1.93	7.17	3.10	3.59	3.77	3.84	Sep-11
<b>Private Equity</b>	1,008,111,320	9.46	1.90	2.05	-4.71	17.60	15.91	15.42	15.83	7.00	Nov-08
<i>Private Equity Blend</i>			0.56	-1.37	-8.17	17.56	15.69	16.99	16.05	17.29	Nov-08
<b>Real Assets</b>	635,386,575	5.96	1.69	8.88	-1.96	19.35	4.37	4.25	-1.10	-0.92	Sep-11
<i>Real Asset Blend</i>			1.56	13.31	-4.77	21.17	6.77	7.38	6.45	6.26	Sep-11
<b>Private Credit</b>	274,490,948	2.58	3.06	4.99	7.11	12.25	--	--	--	6.39	Oct-19
<i>S&amp;P/LSTA Leveraged Loan Index +1.75%</i>			3.67	6.93	4.47	10.46	5.47	6.44	5.59	5.65	Oct-19
<b>Cash</b>	73,705,070	0.69	0.93	1.96	2.31	1.00	1.30	1.19	0.85	2.95	Sep-85
<i>91 Day T-Bills</i>			1.07	1.93	2.50	0.88	1.32	1.17	0.83	3.04	Sep-85
<b>Real Estate</b>	813,219,591	7.63	-2.91	-8.11	-3.01	8.62	7.77	8.03	9.97	7.19	Mar-86
<i>Real Estate Blend</i>			-3.17	-7.98	-3.09	8.41	7.51	7.71	9.45	7.88	Mar-86
<b>Overlay</b>	20,919,298										

- Despite outperforming over the 6 months ending 3/31/23, Private Equity continues to lag the benchmark return on a Time Weighted Return (“TWR”) basis since-inception. However, Internal Rate of Return (“IRR”) is appropriate return metric for all private markets. Private Equity since inception IRR is 16.0% versus 14.1% for its benchmark as of 3/31/23.
- Although Real Assets continues to lag its benchmark since inception, more recent performance has closed the gap since the current program was implemented in 2017.

# Peer universe comparison

InvMetrics Public DB > \$1B Gross Return Comparison



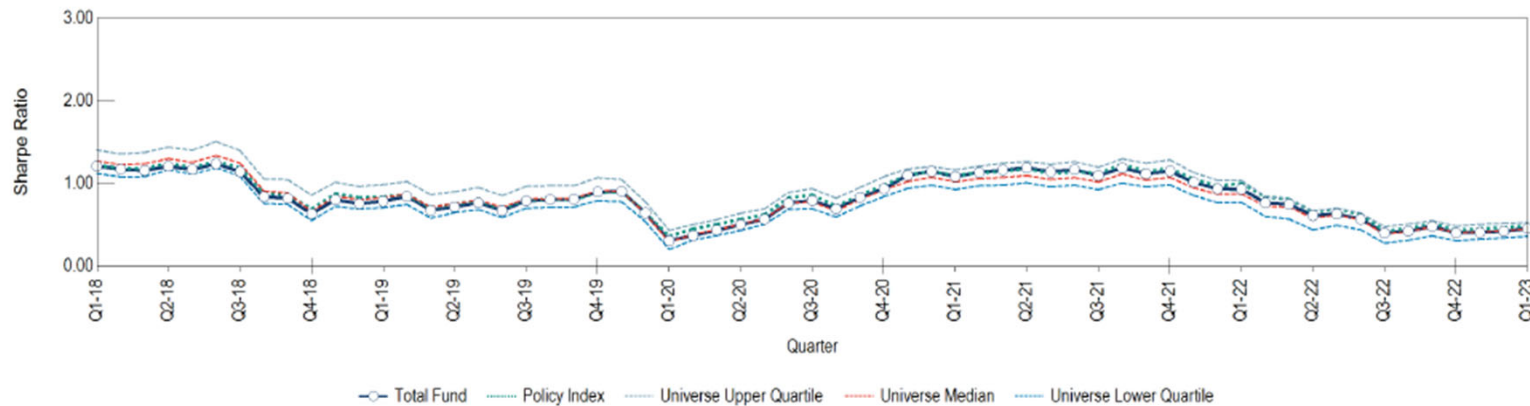
	Return (Rank)									
	Quarter	2 Quarters	1 Year	2 Years	3 Years	5 Years	7 Years	10 Years	15 Years	
5th Percentile	5.23	12.60	-0.75	5.66	13.52	7.74	8.74	8.10	7.37	
25th Percentile	4.37	10.73	-3.26	2.61	12.26	6.87	8.34	7.75	6.83	
Median	3.87	9.46	-4.14	1.40	11.00	6.19	7.72	7.12	6.45	
75th Percentile	3.16	8.06	-5.16	-0.37	10.31	5.36	6.88	6.34	5.92	
95th Percentile	2.55	7.04	-6.57	-1.52	9.03	4.33	4.90	5.08	4.58	
# of Portfolios	70	69	68	68	68	68	67	62	60	
● Total Fund	4.47 (21)	10.16 (33)	-4.53 (60)	1.47 (49)	12.57 (20)	6.44 (44)	8.47 (18)	7.74 (26)	7.03 (11)	
▲ Policy Index	3.86 (51)	9.90 (46)	-5.11 (75)	2.06 (35)	12.36 (24)	6.77 (30)	8.50 (15)	8.09 (7)	7.29 (6)	
✕ Allocation Index	3.94 (43)	9.95 (44)	-5.94 (89)	1.00 (54)	11.89 (34)	6.34 (47)	8.15 (32)	7.71 (29)	6.80 (27)	

- In most periods, ACERA compares favorably vs. peers (i.e., well above median)

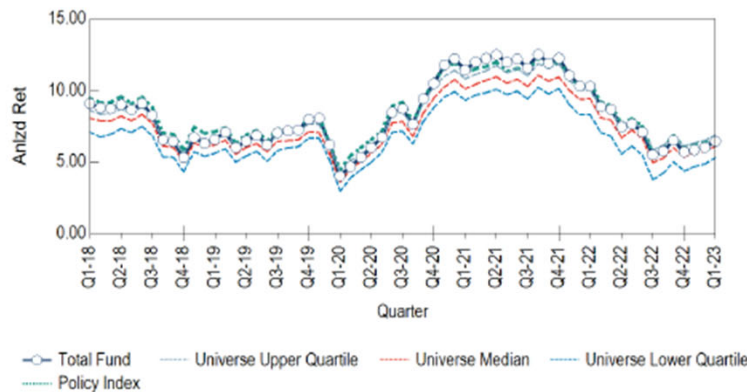
# Risk-adjusted trend vs. peers

- ACERA's risk-adjusted return ratio (Sharpe) has been consistently at, or near, peer median.
- Rolling 5-year returns have been on an upswing since Q3, 2022
- However, total fund volatility remains elevated relative to peers

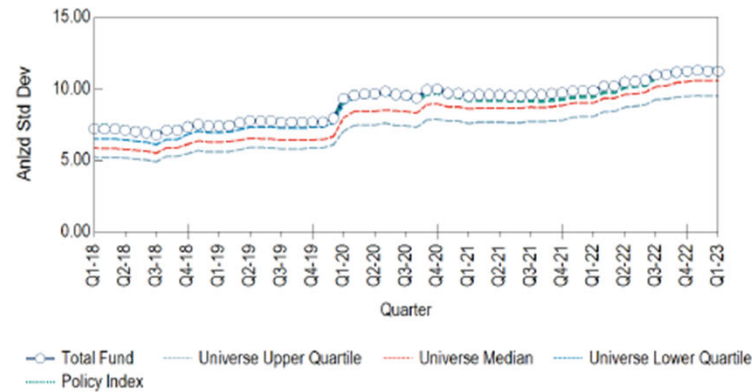
Rolling 5 Year Sharpe Ratio



Rolling 5 Year Annualized Return (%)

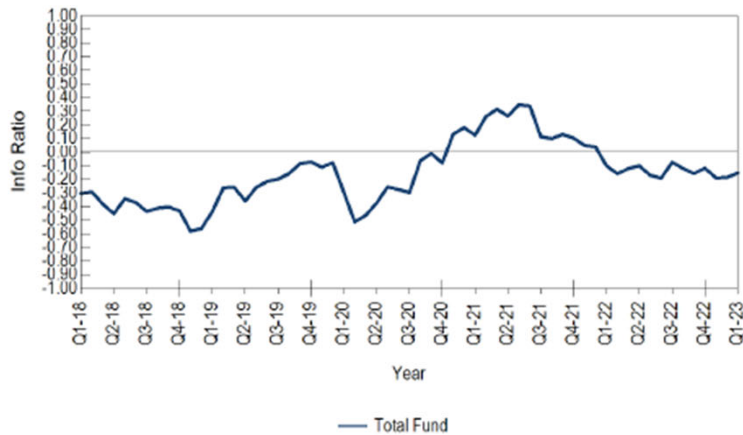


Rolling 5 Year Annualized Standard Deviation

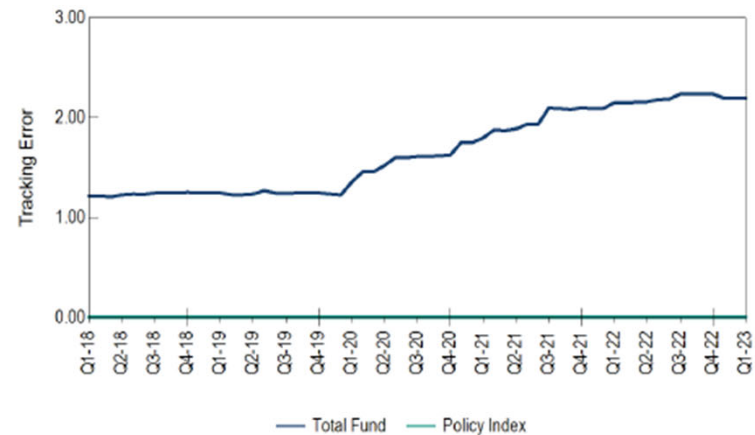


# Trend in risk-adjusted metrics

Rolling 5 Year Information Ratio

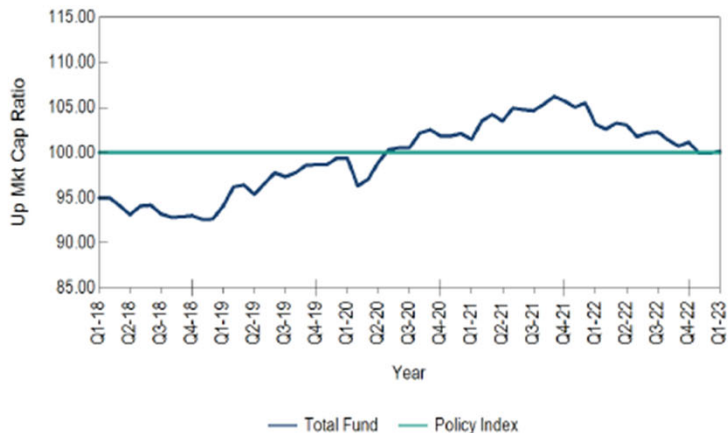


Rolling 5 Year Tracking Error

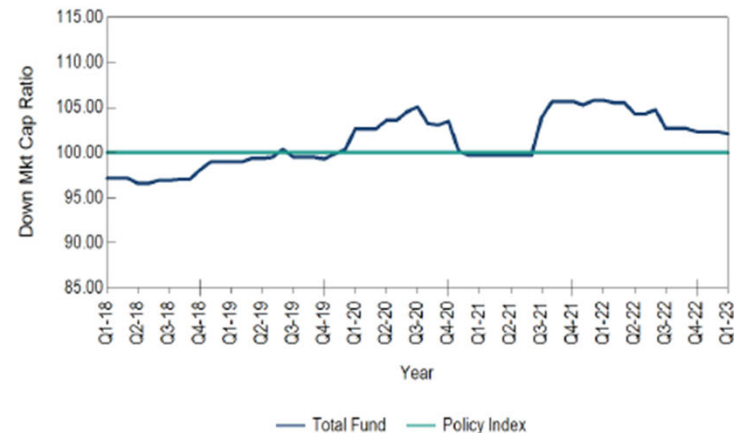


Risk-adjusted active returns have trended down recently as excess risk as increased

Rolling 5 Year Up Market Capture Ratio (%)



Rolling 5 Year Down Market Capture Ratio (%)



Downside capture has improved gradually while Up market capture has somewhat deteriorated recently

# Watch List

Manager	Date on Watchlist	Reason	Product Inception Date
Mondrian	9/30/22	Since inception return of 4.77% vs. benchmark (MSCI ACWI ex-US) return of 5.37% and MSCI ex-US Value return of 4.98%; 10-year gross-of-fees return (2.53%) places Mondrian in 86 <sup>th</sup> percentile of ACWI ex-US Large Cap Value Equity Universe. Firm has consistently been in bottom 2 deciles of that universe over cumulative time series.	November, 2003
Templeton	9/30/22	Since inception return of 2.69% vs benchmark (MSCI ACWI ex-US Small Cap) return of 2.93% and MSCI ACWI ex-US Value return of 2.74%.; 10-year return gross-of fees return (4.13%) places Templeton in the 97 <sup>th</sup> percentile of ACWI ex-US Small Cap managers.	April, 2011
TCW	3/1/23	Underperformance and organizational change (recent retirements and team shift). Underperformance vs. Russell 1000 Growth benchmark occurred over 1, 3, 5, and 10-year periods, placing the firm in the lowest quartile versus peers over majority of cumulative time periods.	June, 1999

# Appendix

# Glossary

**Active Return (aka Excess Return)** – The difference between the active manager’s return and the return on the manager’s benchmark index.

**Active Risk (aka Tracking Error)** – the volatility (standard deviation) of active return.

**Attribution** – A process by which sources of excess/active return (e.g. active decisions by investment management professionals) are decomposed into the following effects:

- **Allocation** – The amount of excess returns attributable to allocation decisions amongst various asset classes.
- **Selection** – The amount of excess return attributable to selection of individual investments/managers within asset classes.
- **Interaction** – The amount of excess return attributable to both allocation and selection decisions acting in concert with one another.

**Sharpe Ratio** - A measure of that explains the return of an investment compared to its risk. The Sharpe Ratio indicates excess portfolio return for each unit of risk over the risk free rate (usually short-term Treasuries or LIBOR) per unit of volatility. The higher the Sharpe Ratio, the greater its risk-adjusted return.

**Standard Deviation** - A measure of volatility, or risk. Measures risk by indicating how far from the average, or mean, return one is likely to fall in any given time period. The rules of statistics dictate that you will fall within 1 standard deviation of the mean 2/3 of the time and within 2 standard deviations 95% of the time. For example, if a security has an average annual rate of return of 10% and a standard deviation of 5%, then two-thirds of the time, one would expect to receive an annual rate of return between 5% and 15%.

**Time Weighted Return** – A measure of the compound rate of growth in a portfolio, which eliminates the distorting effects of growth rates created by inflows and outflows of money.



# Glossary (cont.)

**Upside Market Capture** – A measure of the manager’s performance in up markets relative to the market itself. A value of 110 suggests the manager performs ten percent better than the market when the market is up during the selected time period. The return for the market for each quarter is considered an up market if it is greater than or equal to zero. The Upside Capture Ratio is calculated by dividing the return of the manager during the up market periods by the return of the market for the same period. Generally, the higher the UMC Ratio, the better (If the manager’s UMC Ratio is negative, it means that during that specific time period, the manager’s return for that period was actually negative).<sup>1</sup>

**Downside Market Capture** - A measure of the manager’s performance in down markets relative to the market itself. A value of 90 suggests the manager’s loss is only nine tenths of the market’s loss during the selected time period. A market is considered down if the return for the benchmark is less than zero. The Downside Capture Ratio is calculated by dividing the return of the manager during the down market periods by the return of the market during the same periods. Generally, the lower the DMC Ratio, the better (If the manager’s DMC Ratio is negative, it means that during that specific time period, the manager’s return for that period was actually positive).<sup>1</sup>

# Glossary (cont.)

**Information Ratio** – the ratio of active return to active risk, i.e., how much excess return an active manager delivers per unit of tracking error. A common basis of comparison in manager searches.

*Active Return* =  $(R_P - R_B)$  ← The return difference between the portfolio return and the benchmark return

*Active Risk* =  $\sigma(R_P - R_B)$  ← The volatility of the Active Return

$$\text{Information Ratio} = \frac{\text{Active Return}}{\text{Active Risk}}$$

**Rearranging the formula...**

$$(\text{Information Ratio}) \times (\text{Active Risk}) = \text{Active Return}$$



**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**



**PERIOD ENDING: MARCH 31, 2023**

Investment Performance Review for

**Alameda County Employees' Retirement Association**

# U.S. economics summary

- Real GDP increased at a 2.7% rate in the fourth quarter (0.9% year-over-year). The U.S. economy in Q4 was supported by mild but positive growth across most aspects of activity. First quarter GDP is expected to come in at 2.2%, according to the Atlanta Fed GDPNow forecast, as of April 10<sup>th</sup>.
- The inflation picture improved further. March headline inflation came in at 5.0% year-over-year—the lowest since Q2 2021. Core inflation has remained stubbornly high at 5.6% year-over-year. Many of the goods and services prices that initially contributed to high inflation have moderated or fallen.
- U.S. real personal consumption expenditures were modest in February at 2.5% year-over-year. Household purchases of services continued to climb, while goods purchases were flat. Purchasing trends around goods and services appear to have normalized for the first time since the pandemic.
- Although hiring activity may be slowing and layoffs are occurring in places, the labor participation rate is rebounding as workers who had left the job market during the pandemic are once again seeking employment.
- Consumer sentiment remained weak in Q1. According to the University of Michigan, households increasingly expect a recession in the near-term, especially lower income and younger Americans. Inflation fears have reportedly subsided, with expectations for 3.6% inflation over the next year.
- The U.S. housing market has faced a harsh winter season, as high prices and a significant jump in mortgage interest rates severely crimped demand. Existing home sales are as weak as during the lows of 2009-2011 following the U.S. housing bubble.

	Most Recent	12 Months Prior
Real GDP (YoY)	0.9% 12/31/22	5.7% 12/31/21
Inflation (CPI YoY, Core)	5.6% 3/31/23	8.5% 3/31/22
Inflation (CPI YoY, Headline)	5.0% 3/31/23	8.5% 3/31/22
Expected Inflation (5yr-5yr forward)	2.2% 3/31/23	2.4% 3/31/22
Fed Funds Target Range	4.75% – 5.00% 3/31/23	0.25% – 0.50% 3/31/22
10-Year Rate	3.47% 3/31/23	2.34% 3/31/22
U-3 Unemployment	3.5% 3/31/23	3.6% 3/31/22
U-6 Unemployment	6.7% 3/31/23	6.9% 3/31/22

# International economics summary

- Developed economies have experienced a sharp slowdown in growth. The IMF forecasts developed economy GDP to fall from 2.7% in 2022 to 1.3% in 2023. The deteriorating outlook was attributed to monetary tightening by central banks, as well as Russia’s invasion of Ukraine. Meanwhile, emerging market economic growth is expected to accelerate in 2023, rising from 3.9% to 4.0%.
- Inflation trends varied by country during the quarter but seem to suggest broad moderation. European nations continue to cope with very high inflation rates—much of which have been driven by surging energy costs. In many countries, higher energy prices are contributing to half of official inflation figures.
- Developed central banks, in response to inflation, have carried on with their tightening cycles. Both the European Central Bank and Bank of England raised rates in March, with the ECB increasing their Deposit Facility Rate by 50 bps to 3.00%, while the BOE implemented a 25 bps hike, bringing their policy rate to 4.25%.
- February 24<sup>th</sup> marked the one-year anniversary of Russia’s invasion of Ukraine. The war has created much uncertainty around Europe’s economic outlook, and led Finland to apply, and to be accepted as, a NATO member.
- China made progress on its reopening in Q1, as the country aims to ramp up economic activity following nearly three-years of lockdowns. Mobility data has picked up, while gauges of manufacturing and non-manufacturing activity have moved into expansionary territory. March non-manufacturing PMIs came in at 58.2—the highest level since 2011.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	0.9% 12/31/22	5.0% 3/31/23	3.5% 3/31/23
Eurozone	1.8% 12/31/22	6.9% 3/31/23	6.6% 2/28/23
Japan	0.4% 12/31/22	3.3% 3/31/23	2.5% 2/28/23
BRICS Nations	2.5% 12/31/22	2.9% 3/31/23	5.2% 12/31/21
Brazil	1.9% 12/31/22	4.7% 3/31/23	8.5% 3/31/23
Russia	(2.7%) 12/31/22	3.5% 3/31/23	3.5% 2/28/23
India	4.4% 12/31/22	5.7% 3/31/23	7.8% 3/31/23
China	2.9% 12/31/22	0.7% 3/31/23	5.6% 2/28/23

*NOTE: India lacks reliable government unemployment data. Unemployment rate shown above is estimated from the Centre for Monitoring Indian Economy. The Chinese unemployment rate represents the monthly surveyed urban unemployment rate in China.*

# Equity environment

- Global equities delivered another strong quarter in Q1 (MSCI ACWI +7.3%). A variety of risks are stacking up that could weigh on additional gains, including potential recession in many markets, persistent inflation problems, and tightening credit conditions.
- The outlook for domestic stocks remains challenged, especially against the backdrop of high inflation and expectations for slowing economic growth. Earnings growth has started to decline, with year-over-year S&P 500 earnings falling -4.9% in Q4 2022, the first decline seen since Q2 2020.
- The effects of currency volatility on portfolio performance was mixed during the first quarter. Over the past full year, currency movement led to a -8.5% loss for investors with unhedged exposure to international developed equity (MSCI EAFE unhedged -1.4%, MSCI EAFE hedged +7.1%), led by a -12.6% loss in Japanese equities (TOPIX unhedged -3.1%, TOPIX hedged +9.5%). We continue to believe that a thoughtful currency program may allow investors to reduce their total portfolio risk while also increasing long-term expected returns.
- Growth stocks delivered strong outperformance in the first quarter (Russell 1000 Growth +14.4% vs. Russell 1000 Value +1.0%), effectively reversing value's rally in Q4 2022. This divergence in style behavior appears to be, once again, mostly a result of relative sector returns.
- The Cboe VIX implied volatility index surged in March on the news of Silicon Valley Bank's failure, and the possibility of contagion across the financial sector, but ended the quarter at 18.7%—near the longer-term average.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
U.S. Large Cap (S&P 500)	7.5%		(7.7%)	
U.S. Small Cap (Russell 2000)	2.7%		(11.6%)	
U.S. Equity (Russell 3000)	7.2%		(8.6%)	
U.S. Large Value (Russell 1000 Value)	1.0%		(5.9%)	
US Large Growth (Russell 1000 Growth)	14.4%		(10.9%)	
Global Equity (MSCI ACWI)	7.3%	7.3%	(7.4%)	(4.8%)
International Large (MSCI EAFE)	8.5%		(1.4%)	
China (MSCI China)	4.7%		(4.7%)	
Emerging Markets (MSCI Emerging Markets)	4.0%	3.8%	(10.7%)	(6.6%)

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 3/31/23

# Fixed income environment

- The 10-year U.S. Treasury yield fell during the quarter from 3.88% to 3.47%. It appears increasingly likely that the U.S. has already reached, and is beyond, *peak interest rates*. The looming possibility of recession, effects of banking stress, and implications from the Federal Reserve that only one interest rate hike may remain, suggests that bond yields may have more room to fall than to rise.
- Silicon Valley Bank (SVB) failed and was transitioned to government ownership on March 10<sup>th</sup>. SVB is among the top 20 largest banks in the United States, with approximately 1% of all U.S. domestic bank deposits. New York regulators closed Signature Bank shortly thereafter, and more failures may follow. Banking stress has implications for the future actions of the Federal Reserve and for the economy.
- During the first quarter, fixed income markets delivered strong positive returns despite concerns related to the banking sector and the potential for additional Fed rate hikes. High yield credit performance led the way at 3.6%, followed by 3.5% from investment grade credit and 3.3% from bank loans.
- U.S. yield curve inversion reached even more extreme levels during Q1. The 10-year 2-year yield spread (short-term interest rates being higher than long-term interest rates) reached ~107 bps on March 8<sup>th</sup>, suggesting an incoming recession.
- Uncertainty around the path of Federal Reserve rate hikes and whether inflation is under control has contributed to considerable volatility in bond markets. As indicated by the ICE BofA “MOVE” Index, which measures the volatility priced into U.S. Treasury bonds, domestic and international banking stress further added to fixed income market choppiness in the first quarter.

	QTD Total Return	1 Year Total Return
Core Fixed Income (Bloomberg U.S. Aggregate)	3.0%	(4.8%)
Core Plus Fixed Income (Bloomberg U.S. Universal)	2.9%	(4.6%)
U.S. Treasuries (Bloomberg U.S. Treasury)	3.0%	(4.5%)
U.S. Long Treasuries (Bloomberg U.S. Long Treasury)	6.2%	(16.0%)
U.S. High Yield (Bloomberg U.S. Corporate HY)	3.6%	(3.3%)
Bank Loans (S&P/LSTA Leveraged Loan)	3.3%	2.5%
Emerging Market Debt Local (JPM GBI-EM Global Diversified)	5.2%	(0.7%)
Emerging Market Debt Hard (JPM EMBI Global Diversified)	1.9%	(6.9%)
Mortgage-Backed Securities (Bloomberg MBS)	2.5%	(4.9%)

Source: Bloomberg, as of 3/31/23

# Public real assets environment

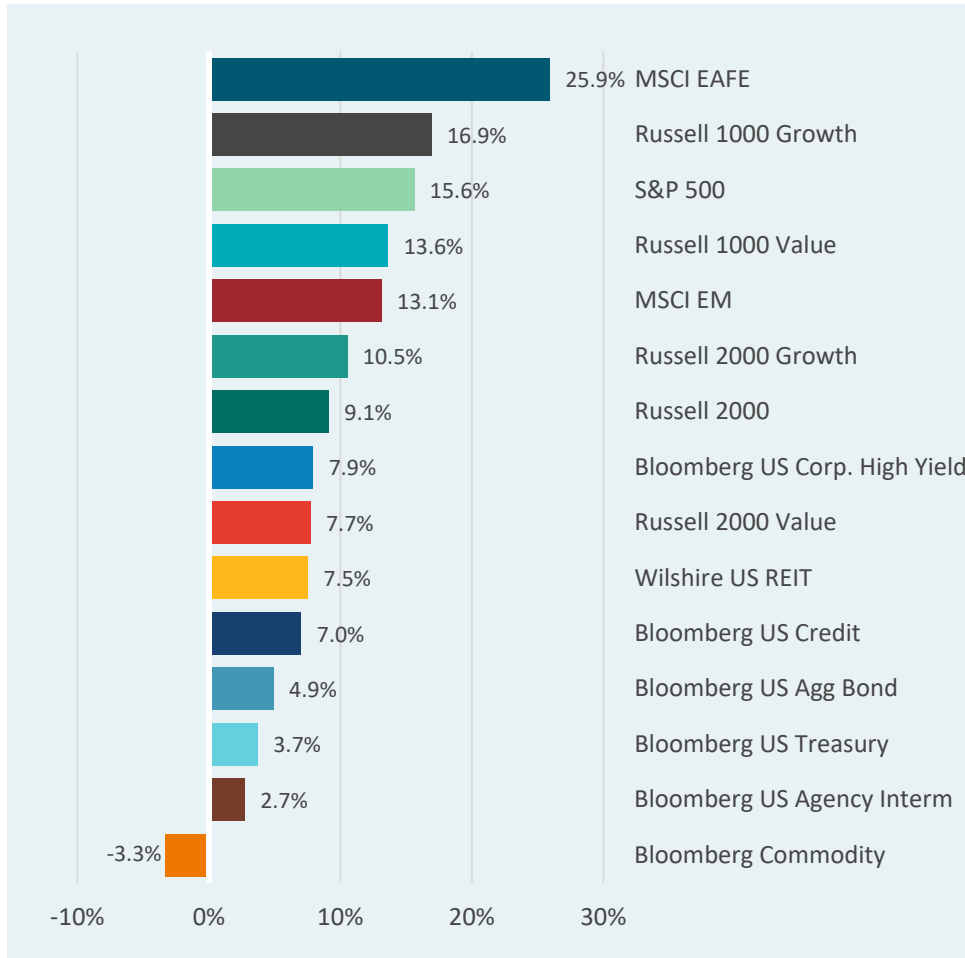
- REITs – After rallying to begin the year, REITs and stocks pulled back on uncertainty about the stability of the banking system, followed by a rebound in March as fears abated. Self-storage and industrial REITs closed the first quarter with the highest total returns. On the other hand, office REIT stocks tanked during the first quarter (more than half of the 25 worst-performing REIT stocks came from the office sector).
- Listed Infrastructure – In the first quarter of 2023, energy prices stabilized, amid a warmer-than-expected winter and a continuing re-emergence of mobility lifting the airports and toll roads sectors. Bond yields came off recent highs, supporting longer-duration assets such as renewables, which performed well. Lower yields have also been positive for communication towers, though there has been some broad market pressure on real estate.
- Commodities – Commodities lost ground on both the quarter and the year, while during Q1, Energy and livestock were the worst-performing subsectors, while precious metals and industrial metals achieved price gains. Within energy, prices for natural gas, gas oil and heating oil were all sharply lower. In precious metals, gold achieved a robust price gain, while silver achieved a more modest price uplift. Within industrial metals, the price of nickel was sharply lower in the first quarter, while the decline in the price of lead was more muted. Copper and aluminium prices both advanced in the quarter.
- TIPS - The Bloomberg U.S. TIPS index returned 3.3% in the most recent quarter and is down 6.1% year-over-year. This comes against a backdrop of continued elevated inflation, low unemployment and the possibility of a recession looming on the horizon.

	QTD Total Return	1 Year Total Return
REITs (FTSE EPRA/NAREIT Global)	0.8%	(20.3%)
Listed Infrastructure (S&P Global Infrastructure)	3.9%	(3.45)%
Commodities (Bloomberg Commodity Index)	(5.4)%	(12.5)%
TIPS (Bloomberg US TIPS)	3.3%	(6.1%)



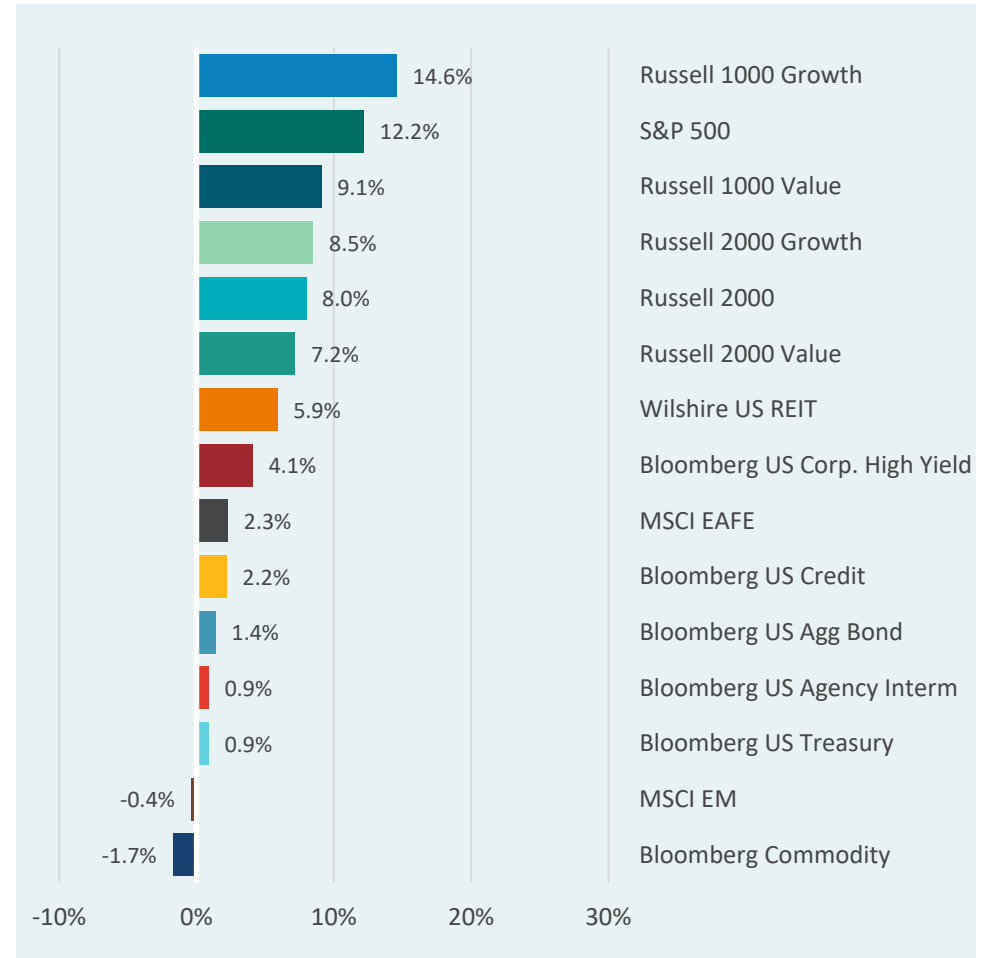
# Major asset class returns

SIX MONTHS ENDING MARCH



Source: Bloomberg, as of 3/31/23

TEN YEARS ENDING MARCH



Source: Bloomberg, as of 3/31/23. Annualized returns

- The composite fund returned 4.5% for the first quarter of 2023 and ranked in the 21<sup>st</sup> percentile among public funds greater than \$1 billion (median of 3.9%). The fund beat its policy index return of 3.9% during this time period. Longer term, the five (6.4%), and ten-year (7.7%) returns ranked in the 44<sup>th</sup> and 26<sup>th</sup> percentile of large public plans respectively.
- First quarter results were enhanced by the following factors:
  1. Aristotle gained 3.7% beating the Russell 1000 Value which gained 1.0%. An overweight in Information Technology and security selection in Consumer Discretionary and Information Technology contributed the most to relative performance.
  2. Capital Group gained 10.2% for the quarter outperforming the MSCI ACWI ex US Growth which gained 8.7%. Security selection and an above benchmark position in the Information Technology sector contributed to the outperformance.
- First quarter results were hindered by the following factors:
  1. TCW slightly underperformed the Russell 1000 Growth (14.0% vs 14.4%). Overweight positions in the Financials and Healthcare sectors contributed to the slight underperformance.

Total Fund  
 Manager Allocation Analysis (One Quarter)

Period Ending: March 31, 2023

	Beginning Market Value	Net Cash Flow	Net Investment Change	Ending Market Value
Absolute Return <sup>1</sup>	\$853,967,982	\$0	-\$1,923,890	\$852,044,092
Alta	\$5,249	\$0	\$0	\$5,249
Applied Research Investments	\$24,381	\$0	\$340	\$24,720
AQR	\$1,369,857	\$0	\$19,576	\$1,389,433
Arga Investment Management	\$27,659,059	\$0	\$2,809,131	\$30,468,189
Aristotle	\$146,854,896	-\$144,333	\$5,415,725	\$152,126,289
Baird Advisors	\$1,123,335,012	-\$195,471	\$37,555,311	\$1,160,694,852
Bivium Cash	\$243	\$0	\$3	\$246
BlackRock MSCI World ex-US Index Fd A	\$685,280,373	-\$20,000,000	\$55,724,463	\$721,004,836
BlackRock Russell 1000 Index Fund	\$1,997,412,298	-\$60,000,000	\$149,145,956	\$2,086,558,254
Brandywine	\$177,993,085	-\$127,309	\$7,845,699	\$185,711,475
Capital Group	\$557,533,975	-\$160,137	\$56,682,062	\$614,055,900
Cash Account	\$89,583,650	-\$16,405,474	\$526,894	\$73,705,070
Cedar Street	\$0	\$9,167,497	\$908,781	\$10,076,278
Denali Advisors	\$24,297,026	\$0	\$1,615,698	\$25,912,724
Dundas Partners	\$25,560,226	\$0	\$2,595,003	\$28,155,229
Global Alpha Capital Management	\$9,707,321	\$0	\$873,080	\$10,580,402
Huber	\$1,651	\$0	\$0	\$1,651
Kennedy	\$143,098,828	-\$294,249	-\$927,156	\$141,877,423
Loomis Sayles	\$261,160,164	-\$212,330	\$7,619,976	\$268,567,810
Mondrian	\$649,592,300	-\$531,637	\$58,940,595	\$708,001,257
Newton Emerging Mkt	\$9	\$0	\$0	\$9
OakBrook	\$116	\$0	\$1	\$117
Overlay	\$17,390,205	-\$30,000	\$3,559,093	\$20,919,298
Promethos Capital	\$21,699,058	\$0	\$1,833,087	\$23,532,145
Private Credit	\$265,355,620	\$895,149	\$8,240,180	\$274,490,948
Private Equity	\$984,939,496	\$4,445,334	\$18,726,490	\$1,008,111,320
Radin Capital Partners	\$9,510,283	-\$9,167,497	-\$302,191	\$40,595
Redwood	\$5,541,793	\$0	\$392,477	\$5,934,271
RVX Asset Management	\$6,177,865	\$0	-\$14,538	\$6,163,327
Real Assets <sup>1</sup>	\$622,899,785	\$1,940,436	\$10,546,354	\$635,386,575
Real Estate	\$805,881,908	\$31,699,240	-\$24,361,558	\$813,219,591
Sec. Lending	\$0	-\$700,429	\$700,429	\$0
TCW	\$110,730,445	-\$131,965	\$15,485,569	\$126,084,050
Templeton	\$243,335,025	\$0	\$20,540,121	\$263,875,146
Intl Transition	\$14,069	\$0	\$91	\$14,160
William Blair Emerging Mkts Growth	\$260,942,301	\$0	\$10,042,518	\$270,984,819
William Blair Small Cap Growth	\$124,798,692	-\$489,854	\$8,523,605	\$132,832,443
<b>Total</b>	<b>\$10,253,654,247</b>	<b>-\$60,443,028</b>	<b>\$459,338,975</b>	<b>\$10,652,550,193</b>

<sup>1</sup> Preliminary ending market value

Bivium

Manager Allocation Analysis (One Quarter)

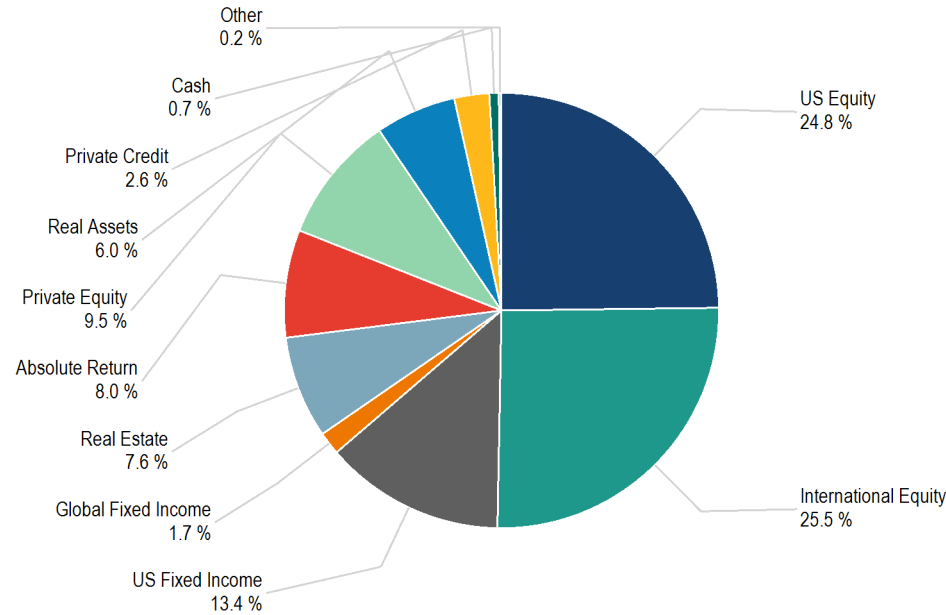
Period Ending: March 31, 2023

	Beginning Market Value	Net Cash Flow	Net Investment Change	Ending Market Value
Alta	\$5,249	\$0	\$0	\$5,249
Bivium Cash	\$243	\$0	\$3	\$246
Huber	\$1,651	\$0	\$0	\$1,651
OakBrook	\$116	\$0	\$1	\$117
<b>Total</b>	<b>\$7,259</b>	<b>\$0</b>	<b>\$4</b>	<b>\$7,263</b>

	Beginning Market Value	Net Cash Flow	Net Investment Change	Ending Market Value
Applied Research Investments	\$24,381	\$0	\$340	\$24,720
Arga Investment Management	\$27,659,059	\$0	\$2,809,131	\$30,468,189
Cedar Street	\$0	\$9,167,497	\$908,781	\$10,076,278
Denali Advisors	\$24,297,026	\$0	\$1,615,698	\$25,912,724
Dundas Partners	\$25,560,226	\$0	\$2,595,003	\$28,155,229
Global Alpha Capital Management	\$9,707,321	\$0	\$873,080	\$10,580,402
Promethos Capital	\$21,699,058	\$0	\$1,833,087	\$23,532,145
Radin Capital Partners	\$9,510,283	-\$9,167,497	-\$302,191	\$40,595
Redwood	\$5,541,793	\$0	\$392,477	\$5,934,271
RVX Asset Management	\$6,177,865	\$0	-\$14,538	\$6,163,327
<b>Total</b>	<b>\$130,177,012</b>	<b>\$0</b>	<b>\$10,710,868</b>	<b>\$140,887,880</b>

Total Fund  
Asset Allocation Compliance

Period Ending: March 31, 2023



	Current Balance (\$)	Current Allocation (%)	Policy (%)	Difference (%)	Within IPS Range?
US Equity	2,639,485,722	24.8	24.0	0.8	Yes
International Equity	2,720,213,440	25.5	24.0	1.5	Yes
US Fixed Income	1,429,262,662	13.4	12.0	1.4	Yes
Global Fixed Income	185,711,475	1.7	2.0	-0.3	Yes
Real Estate	813,219,591	7.6	9.0	-1.4	Yes
Absolute Return	852,044,092	8.0	8.0	0.0	Yes
Private Equity	1,008,111,320	9.5	11.0	-1.5	Yes
Real Assets	635,386,575	6.0	6.0	0.0	Yes
Private Credit	274,490,948	2.6	4.0	-1.4	Yes
Cash	73,705,070	0.7	0.0	0.7	Yes
Other	20,919,298	0.2	0.0	0.2	Yes
<b>Total</b>	<b>10,652,550,193</b>	<b>100.0</b>	<b>100.0</b>		

# Total Fund Performance Summary

Period Ending: March 31, 2023

	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
<b>Total Fund (Gross)</b>	4.47	21	10.16	33	-4.53	60	12.57	20	6.44	44	8.47	18	7.74	26	9.33	Sep-85
<b>Total Fund (Net)</b>	4.44	22	10.10	36	-4.65	61	12.40	24	6.27	50	8.26	30	7.49	39	9.14	
<i>Policy Index<sup>1</sup></i>	3.86	51	9.90	46	-5.11	75	12.36	24	6.77	30	8.50	15	8.09	7	9.62	Sep-85
<i>Allocation Index</i>	3.94	43	9.95	44	-5.94	89	11.89	34	6.34	47	8.15	32	7.71	29	--	Sep-85
<i>InvMetrics Public DB &gt; \$1B Gross Median</i>	3.87		9.46		-4.14		11.00		6.19		7.72		7.12		8.30	Sep-85
<b>Total Fund w/o Overlay (Gross)</b>	4.44	--	10.07	--	-4.45	--	12.62	--	6.46	--	8.49	--	7.75	--	9.34	Sep-85
<b>Total Fund w/o Overlay (Net)</b>	4.41	--	10.01	--	-4.56	--	12.45	--	6.30	--	8.28	--	7.51	--	9.14	
<b>US Equity (Gross)</b>	7.02	33	14.87	47	-8.52	68	18.79	49	10.22	36	12.56	10	11.80	22	11.53	Sep-85
<b>US Equity (Net)</b>	6.98	34	14.79	56	-8.65	74	18.62	56	10.06	44	12.34	16	11.54	34	--	
<i>Russell 3000</i>	7.18	21	14.88	45	-8.58	73	18.48	63	10.45	22	11.99	32	11.73	25	11.10	Sep-85
<i>InvMetrics All DB US Eq Gross Median</i>	6.39		14.84		-7.88		18.74		9.92		11.68		11.30		10.56	Sep-85
BlackRock Russell 1000 Index Fund (Gross)	7.47	24	15.25	44	-8.38	80	18.58	48	--	--	--	--	--	--	11.02	Apr-18
BlackRock Russell 1000 Index Fund (Net)	7.47	24	15.25	44	-8.39	80	18.57	48	--	--	--	--	--	--	11.01	
<i>Russell 1000</i>	7.46	24	15.24	44	-8.39	80	18.55	48	10.87	46	12.22	44	12.01	49	10.99	Apr-18
<b>Large Cap Active Equity (Gross)</b>	8.11	--	15.88	--	-9.36	--	15.72	--	6.74	--	10.19	--	10.05	--	7.63	Mar-00
<b>Large Cap Active Equity (Net)</b>	8.01	--	15.64	--	-9.82	--	15.16	--	6.23	--	9.70	--	9.59	--	7.19	
<i>Russell 1000</i>	7.46	--	15.24	--	-8.39	--	18.55	--	10.87	--	12.22	--	12.01	--	6.57	Mar-00
Aristotle (Gross)	3.69	19	14.79	41	-4.37	50	--	--	--	--	--	--	--	--	11.51	Oct-20
Aristotle (Net)	3.59	20	14.57	44	-4.84	59	--	--	--	--	--	--	--	--	11.03	
<i>Russell 1000 Value</i>	1.01	46	13.55	57	-5.91	75	17.93	73	7.50	78	9.02	83	9.13	84	14.15	Oct-20
TCW (Gross)	13.98	36	17.23	39	-14.74	81	13.33	83	11.67	57	13.48	58	12.63	76	7.98	Jun-99
TCW (Net)	13.87	37	16.96	42	-15.17	84	12.79	86	11.15	68	13.00	70	12.21	83	--	
<i>Russell 1000 Growth</i>	14.37	31	16.88	43	-10.90	50	18.57	25	13.66	19	15.01	22	14.59	23	6.77	Jun-99

Total Fund and asset class composites are ranked against InvestorForce universes. Managers are ranked against eVestment Alliance style universes. Ranking of 1 is a top ranking and a ranking of 100 is a bottom ranking. The InvestorForce Public DB > \$1B Gross universe consists of 70 members with a total market value of \$1.002.9 Trillion. Effective 1/1/2017, only traditional asset class (public equity, public fixed income, public real estate) investment management fees will be included in the gross of fee return calculation.

1. See Policy Index and Benchmark History.

# Total Fund Performance Summary

Period Ending: March 31, 2023

	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
<b>Small Cap Equity (Gross)</b>	<b>2.83</b>	<b>--</b>	<b>11.18</b>	<b>--</b>	<b>-9.97</b>	<b>--</b>	<b>23.04</b>	<b>--</b>	<b>9.23</b>	<b>--</b>	<b>12.55</b>	<b>--</b>	<b>11.03</b>	<b>--</b>	<b>13.08</b>	<b>Jul-85</b>
<b>Small Cap Equity (Net)</b>	<b>2.54</b>	<b>--</b>	<b>10.75</b>	<b>--</b>	<b>-10.72</b>	<b>--</b>	<b>22.05</b>	<b>--</b>	<b>8.32</b>	<b>--</b>	<b>11.58</b>	<b>--</b>	<b>10.12</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>Russell 2000</i>	<i>2.74</i>	<i>--</i>	<i>9.14</i>	<i>--</i>	<i>-11.61</i>	<i>--</i>	<i>17.51</i>	<i>--</i>	<i>4.71</i>	<i>--</i>	<i>8.55</i>	<i>--</i>	<i>8.04</i>	<i>--</i>	<i>9.02</i>	<i>Jul-85</i>
Kennedy (Gross)	-0.65	89	6.76	98	-13.32	94	23.58	60	5.25	78	8.73	67	9.06	50	10.59	Sep-10
Kennedy (Net)	-0.85	91	6.32	99	-14.05	96	22.62	71	4.37	88	7.80	82	8.17	74	9.71	
<i>Russell 2000 Value</i>	<i>-0.66</i>	<i>89</i>	<i>7.70</i>	<i>93</i>	<i>-12.96</i>	<i>93</i>	<i>21.01</i>	<i>83</i>	<i>4.55</i>	<i>86</i>	<i>7.86</i>	<i>81</i>	<i>7.22</i>	<i>90</i>	<i>8.84</i>	<i>Sep-10</i>
William Blair Small Cap Growth (Gross)	6.82	53	16.32	14	-6.10	21	22.13	18	--	--	--	--	--	--	11.69	Oct-19
William Blair Small Cap Growth (Net)	6.44	58	15.90	18	-6.86	24	21.11	21	--	--	--	--	--	--	10.86	
<i>Russell 2000 Growth</i>	<i>6.07</i>	<i>65</i>	<i>10.46</i>	<i>62</i>	<i>-10.60</i>	<i>52</i>	<i>13.36</i>	<i>85</i>	<i>4.26</i>	<i>94</i>	<i>8.74</i>	<i>94</i>	<i>8.49</i>	<i>95</i>	<i>4.74</i>	<i>Oct-19</i>
<b>International Equity (Gross)</b>	<b>8.41</b>	<b>22</b>	<b>23.97</b>	<b>36</b>	<b>-3.76</b>	<b>49</b>	<b>13.07</b>	<b>48</b>	<b>3.44</b>	<b>32</b>	<b>7.14</b>	<b>28</b>	<b>5.60</b>	<b>26</b>	<b>7.78</b>	<b>Dec-90</b>
<b>International Equity (Net)</b>	<b>8.37</b>	<b>23</b>	<b>23.85</b>	<b>36</b>	<b>-3.98</b>	<b>52</b>	<b>12.72</b>	<b>56</b>	<b>3.12</b>	<b>42</b>	<b>6.79</b>	<b>35</b>	<b>5.23</b>	<b>41</b>	<b>--</b>	<b>--</b>
<i>MSCI ACWI ex USA IMI Gross<sup>1</sup></i>	<i>6.70</i>	<i>68</i>	<i>21.88</i>	<i>72</i>	<i>-5.34</i>	<i>76</i>	<i>12.72</i>	<i>56</i>	<i>2.84</i>	<i>49</i>	<i>6.32</i>	<i>50</i>	<i>4.76</i>	<i>54</i>	<i>6.02</i>	<i>Dec-90</i>
<i>InvMetrics All DB ex-US Eq Gross Median</i>	<i>7.41</i>		<i>23.00</i>		<i>-3.85</i>		<i>12.94</i>		<i>2.81</i>		<i>6.32</i>		<i>4.85</i>		<i>6.58</i>	<i>Dec-90</i>
Bivium Intl Equity (Gross)	8.23	36	25.05	32	-3.33	35	14.00	52	--	--	--	--	--	--	6.98	Oct-18
Bivium Intl Equity (Net)	8.13	44	24.82	32	-3.60	46	13.01	66	--	--	--	--	--	--	6.25	
<i>MSCI ACWI ex USA Gross</i>	<i>7.00</i>	<i>70</i>	<i>22.38</i>	<i>68</i>	<i>-4.57</i>	<i>66</i>	<i>12.32</i>	<i>75</i>	<i>2.97</i>	<i>79</i>	<i>6.37</i>	<i>82</i>	<i>4.65</i>	<i>89</i>	<i>5.76</i>	<i>Oct-18</i>
BlackRock MSCI World ex-US Index Fd A (Gross)	8.15	50	25.71	56	-2.25	50	14.01	47	--	--	--	--	--	--	6.88	May-19
BlackRock MSCI World ex-US Index Fd A (Net)	8.14	50	25.69	56	-2.27	50	14.00	47	--	--	--	--	--	--	6.86	
<i>MSCI World ex US Gross</i>	<i>8.19</i>	<i>49</i>	<i>25.78</i>	<i>55</i>	<i>-2.19</i>	<i>50</i>	<i>14.06</i>	<i>46</i>	<i>4.34</i>	<i>34</i>	<i>6.88</i>	<i>43</i>	<i>5.44</i>	<i>70</i>	<i>6.94</i>	<i>May-19</i>
Capital Group (Gross)	10.17	41	25.80	38	-4.31	62	10.06	76	4.25	70	8.62	49	6.24	74	8.11	Dec-90
Capital Group (Net)	10.14	42	25.73	39	-4.43	62	9.83	77	4.02	77	8.39	51	5.97	83	--	
<i>MSCI ACWI ex USA Gross</i>	<i>7.00</i>	<i>98</i>	<i>22.38</i>	<i>74</i>	<i>-4.57</i>	<i>63</i>	<i>12.32</i>	<i>55</i>	<i>2.97</i>	<i>92</i>	<i>6.37</i>	<i>93</i>	<i>4.65</i>	<i>99</i>	<i>6.01</i>	<i>Dec-90</i>
<i>MSCI ACWI ex USA Growth Gross</i>	<i>8.69</i>	<i>71</i>	<i>22.76</i>	<i>73</i>	<i>-6.03</i>	<i>72</i>	<i>9.81</i>	<i>77</i>	<i>3.71</i>	<i>78</i>	<i>6.83</i>	<i>89</i>	<i>5.45</i>	<i>99</i>	<i>--</i>	<i>Dec-90</i>

1. See Policy Index and Benchmark History.

# Total Fund Performance Summary

Period Ending: March 31, 2023

	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Mondrian (Gross)	9.07	24	26.49	46	-1.98	86	12.41	96	2.06	91	4.88	95	4.15	86	5.86	Dec-03
Mondrian (Net)	8.99	25	26.29	51	-2.33	87	11.99	98	1.66	95	4.47	99	3.76	96	5.53	
MSCI ACWI ex USA Gross	7.00	56	22.38	88	-4.57	93	12.32	96	2.97	72	6.37	64	4.65	62	5.95	Dec-03
MSCI ACWI ex USA Value Gross	5.33	84	21.99	88	-3.32	90	14.54	70	1.90	92	5.65	72	3.67	97	5.51	Dec-03
Templeton (Gross)	8.44	24	24.94	29	-3.73	25	14.64	51	0.87	94	5.37	88	5.22	97	5.17	Apr-11
Templeton (Net)	8.44	24	24.75	30	-4.22	27	14.00	64	0.27	95	4.72	98	4.55	99	4.49	
MSCI ACWI ex US Small Cap Gross	4.81	80	18.85	73	-9.91	61	15.53	43	2.10	63	6.09	75	5.47	92	4.30	Apr-11
MSCI ACWI ex US Small Cap Value GD	3.96	91	19.53	64	-7.32	42	17.09	37	1.96	67	6.10	75	5.22	97	4.17	Apr-11
William Blair Emerging Mkts Growth (Gross)	3.85	77	--	--	--	--	--	--	--	--	--	--	--	--	0.11	Nov-22
William Blair Emerging Mkts Growth (Net)	3.85	77	--	--	--	--	--	--	--	--	--	--	--	--	0.11	
MSCI Emerging Markets Gross	4.02	74	14.20	70	-10.30	70	8.23	73	-0.53	72	5.31	76	2.37	83	2.61	Nov-22
eV Emg Mkts Equity Gross Median	5.06		15.71		-8.67		10.45		0.67		6.41		3.40		3.69	Nov-22
<b>Total Fixed Income (Gross)</b>	<b>3.39</b>	<b>27</b>	<b>6.23</b>	<b>27</b>	<b>-5.21</b>	<b>82</b>	<b>0.62</b>	<b>38</b>	<b>1.38</b>	<b>54</b>	<b>2.42</b>	<b>28</b>	<b>2.53</b>	<b>28</b>	<b>6.61</b>	<b>Sep-86</b>
<b>Total Fixed Income (Net)</b>	<b>3.36</b>	<b>29</b>	<b>6.16</b>	<b>30</b>	<b>-5.35</b>	<b>83</b>	<b>0.44</b>	<b>40</b>	<b>1.20</b>	<b>68</b>	<b>2.23</b>	<b>37</b>	<b>2.35</b>	<b>34</b>	<b>--</b>	<b>--</b>
Fixed Income Blend <sup>1</sup>	3.14	42	6.03	34	-5.86	85	-2.39	85	0.36	93	0.87	92	1.23	88	5.63	Sep-86
InvMetrics All DB Total Fix Inc Gross Median	3.05		5.36		-3.59		-0.16		1.46		1.87		2.10		5.84	Sep-86
<b>US Fixed Income (Gross)</b>	<b>3.26</b>	<b>40</b>	<b>5.45</b>	<b>43</b>	<b>-4.45</b>	<b>59</b>	<b>-0.23</b>	<b>38</b>	<b>1.96</b>	<b>31</b>	<b>2.56</b>	<b>22</b>	<b>2.82</b>	<b>16</b>	<b>6.54</b>	<b>Sep-86</b>
<b>US Fixed Income (Net)</b>	<b>3.23</b>	<b>42</b>	<b>5.39</b>	<b>46</b>	<b>-4.57</b>	<b>63</b>	<b>-0.37</b>	<b>41</b>	<b>1.81</b>	<b>41</b>	<b>2.40</b>	<b>27</b>	<b>2.66</b>	<b>21</b>	<b>--</b>	<b>--</b>
Bloomberg US Aggregate TR	2.96	59	4.89	66	-4.78	68	-2.77	84	0.90	86	0.88	91	1.36	89	5.46	Sep-86
InvMetrics All DB US Fix Inc Gross Median	3.08		5.28		-3.87		-0.71		1.65		1.73		2.05		6.25	Sep-86
Baird Advisors (Gross)	3.34	20	5.32	27	-4.33	40	-1.70	53	1.50	39	1.70	21	2.25	9	4.22	Oct-01
Baird Advisors (Net)	3.33	22	5.28	29	-4.40	44	-1.77	58	1.42	49	1.62	29	2.17	14	4.14	
Bloomberg US Aggregate TR	2.96	72	4.89	63	-4.78	71	-2.77	95	0.90	97	0.88	97	1.36	96	3.40	Oct-01
Loomis Sayles (Gross)	2.92	88	6.09	20	-4.53	43	2.85	7	2.98	7	4.30	1	3.97	1	7.20	Dec-00
Loomis Sayles (Net)	2.84	92	5.91	25	-4.89	62	2.51	8	2.64	15	3.95	1	3.63	1	6.85	
Bloomberg US Credit BAA TR	3.58	26	7.90	1	-5.49	82	0.81	19	1.86	39	2.54	27	2.55	31	5.29	Dec-00

1. See Policy Index and Benchmark History.



# Total Fund Performance Summary

Period Ending: March 31, 2023

	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Global Fixed Income (Gross)	4.41	--	12.60	--	-11.47	--	1.25	--	-1.50	--	1.07	--	1.05	--	5.76	Nov-01
Global Fixed Income (Net)	4.34	--	12.44	--	-11.75	--	0.92	--	-1.80	--	0.77	--	0.76	--	5.45	
FTSE WGBI TR	3.51	--	7.47	--	-9.55	--	-5.29	--	-2.35	--	-1.06	--	-0.60	--	3.10	Nov-01
Brandywine (Gross)	4.41	6	12.60	10	-11.47	93	1.25	50	-1.50	84	1.07	65	1.05	61	5.90	Dec-01
Brandywine (Net)	4.34	7	12.44	10	-11.75	94	0.92	53	-1.80	88	0.77	70	0.76	70	5.58	
Bloomberg Global Aggregate TR	3.01	57	7.69	50	-8.07	75	-3.43	90	-1.34	82	-0.27	86	0.07	84	3.44	Dec-01
FTSE WGBI TR	3.51	27	7.47	54	-9.55	85	-5.29	97	-2.35	93	-1.06	96	-0.60	94	3.23	Dec-01
Absolute Return (Gross)*	-0.23	91	-0.99	93	4.15	8	10.17	50	3.46	74	4.30	70	4.00	69	3.91	Sep-11
Absolute Return (Net)*	-0.23	91	-0.99	93	4.15	8	10.17	50	3.46	74	4.30	70	4.00	69	3.91	
Absolute Return Blend <sup>1</sup>	0.72	75	2.46	79	-1.93	63	7.17	81	3.10	76	3.59	76	3.77	70	3.84	Sep-11
HFRI Fund of Funds Composite Index	0.72	75	2.46	79	-1.93	63	7.17	81	3.10	76	3.89	75	3.24	76	3.48	Sep-11
InvMetrics All DB Hedge Funds Gross Median	2.44		6.70		-1.05		9.96		5.19		5.58		4.76		5.43	Sep-11
Private Equity (Gross)**	1.90	--	2.05	--	-4.71	--	17.60	--	15.91	--	15.42	--	15.83	--	7.00	Nov-08
Private Equity (Net)**	1.90	--	2.05	--	-4.71	--	17.60	--	15.91	--	15.42	--	15.83	--	7.00	
Private Equity Blend <sup>1</sup>	0.56	--	-1.37	--	-8.17	--	17.56	--	15.69	--	16.99	--	16.05	--	17.29	Nov-08
Refinitiv CJA Global All Private Equity 1Q Lagged	0.56	--	-1.37	--	-8.17	--	17.56	--	15.69	--	15.25	--	14.77	--	11.92	Nov-08
Real Assets (Gross)***	1.69	--	8.88	--	-1.96	--	19.35	--	4.37	--	4.25	--	-1.10	--	-0.92	Sep-11
Real Assets (Net)***	1.67	--	8.82	--	-2.08	--	19.20	--	4.29	--	4.19	--	-1.14	--	-0.95	
Real Asset Blend <sup>1</sup>	1.56	--	13.31	--	-4.77	--	21.17	--	6.77	--	7.38	--	6.45	--	6.26	Sep-11
Private Credit (Gross)****	3.06	--	4.99	--	7.11	--	12.25	--	--	--	--	--	--	--	6.39	Oct-19
Private Credit (Net)****	3.06	--	4.99	--	7.11	--	12.25	--	--	--	--	--	--	--	6.39	
S&P/LSTA Leveraged Loan Index +1.75%	3.67	--	6.93	--	4.47	--	10.46	--	5.47	--	6.44	--	5.59	--	5.65	Oct-19

1. See Policy Index and Benchmark History.

\* As of 3/31 with the exception of Dyal and AG OWL. Dyal and AG OWL 12/31 market values rolled forward and includes any cash flows from Q1 to derive 3/31 market value.

\*\* Private Equity is one quarter lagged. 12/31 market values rolled forward and includes any cash flows from Q1 to derive 3/31 market value.

\*\*\* As of 3/31 with the exception of Private Real Assets. Private Real Assets 12/31 market value is rolled forward and includes any cash flows from Q1 to derive 3/31 market value.

\*\*\*\* As of 3/31.

# Total Fund Performance Summary

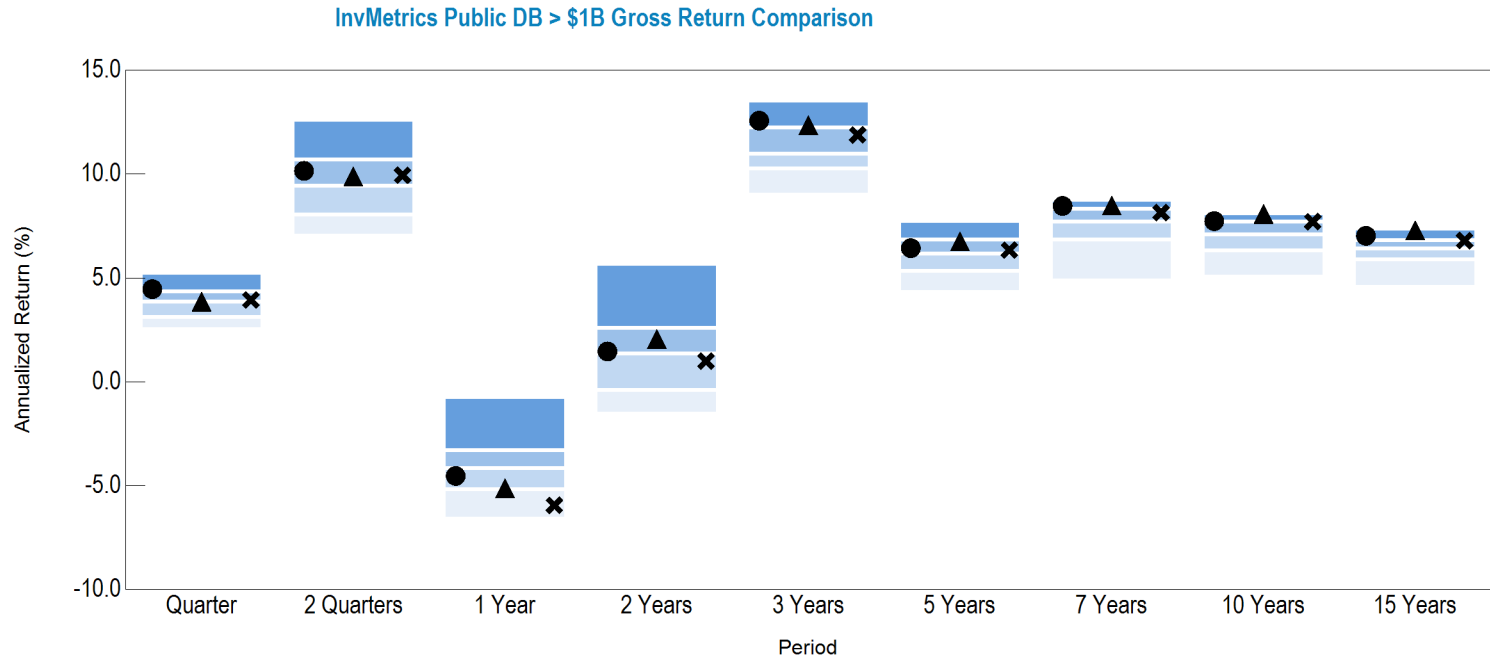
Period Ending: March 31, 2023

	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Cash (Gross)	0.93	--	1.96	--	2.31	--	1.00	--	1.30	--	1.19	--	0.85	--	2.95	Sep-85
Cash (Net)	0.93	--	1.96	--	2.31	--	1.00	--	1.30	--	1.19	--	0.85	--	2.95	
91 Day T-Bills	1.07	--	1.93	--	2.50	--	0.88	--	1.32	--	1.17	--	0.83	--	3.04	Sep-85
Real Estate (Gross)	-2.91	50	-8.11	62	-3.01	57	8.62	32	7.77	31	8.03	24	9.97	13	7.19	Mar-86
Real Estate (Net)	-2.91	50	-8.11	62	-3.01	57	8.62	32	7.77	31	7.93	29	9.58	21	6.23	
Real Estate Blend <sup>1</sup>	-3.17	64	-7.98	58	-3.09	58	8.41	43	7.51	41	7.71	36	9.45	24	7.88	Mar-86
NCREIF-ODCE	-3.17	64	-7.98	58	-3.09	58	8.41	43	7.51	41	7.71	36	9.45	24	7.34	Mar-86
InvMetrics All DB Real Estate Pub+Priv Gross Median	-2.93		-7.31		-2.78		8.14		7.18		7.13		8.56		--	Mar-86

1. See Policy Index and Benchmark History.

Total Fund  
Peer Universe Comparison

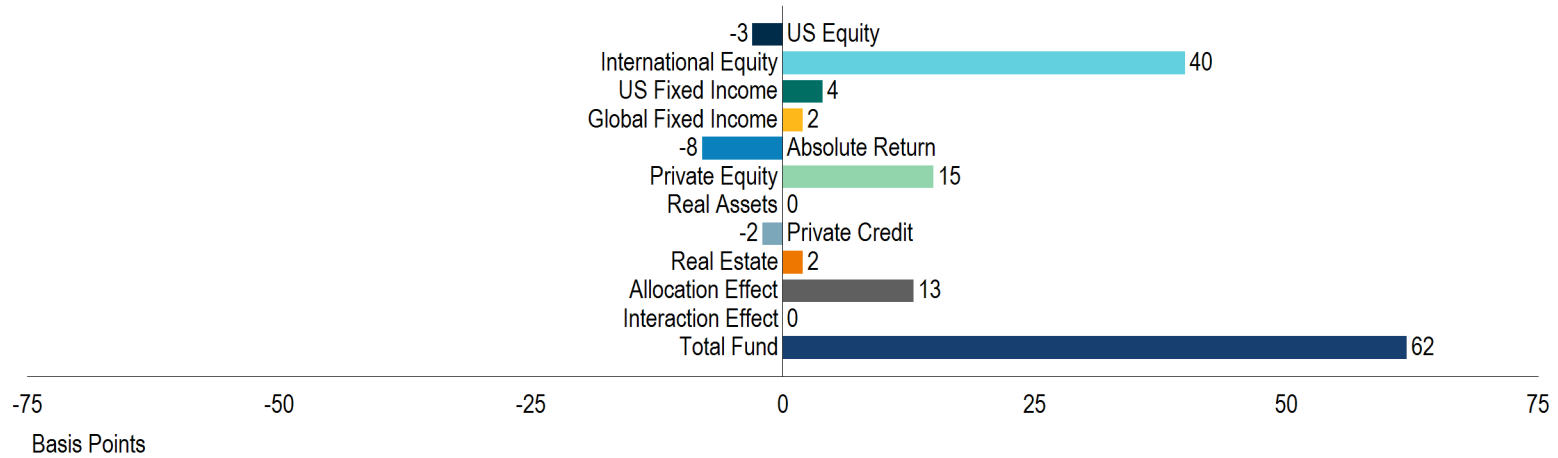
Period Ending: March 31, 2023



	Return (Rank)								
	Quarter	2 Quarters	1 Year	2 Years	3 Years	5 Years	7 Years	10 Years	15 Years
5th Percentile	5.23	12.60	-0.75	5.66	13.52	7.74	8.74	8.10	7.37
25th Percentile	4.37	10.73	-3.26	2.61	12.26	6.87	8.34	7.75	6.83
Median	3.87	9.46	-4.14	1.40	11.00	6.19	7.72	7.12	6.45
75th Percentile	3.16	8.06	-5.16	-0.37	10.31	5.36	6.88	6.34	5.92
95th Percentile	2.55	7.04	-6.57	-1.52	9.03	4.33	4.90	5.08	4.58
# of Portfolios	70	69	68	68	68	68	67	62	60
● Total Fund	4.47 (21)	10.16 (33)	-4.53 (60)	1.47 (49)	12.57 (20)	6.44 (44)	8.47 (18)	7.74 (26)	7.03 (11)
▲ Policy Index	3.86 (51)	9.90 (46)	-5.11 (75)	2.06 (35)	12.36 (24)	6.77 (30)	8.50 (15)	8.09 (7)	7.29 (6)
✕ Allocation Index	3.94 (43)	9.95 (44)	-5.94 (89)	1.00 (54)	11.89 (34)	6.34 (47)	8.15 (32)	7.71 (29)	6.80 (27)

Total Fund  
Performance Attribution (One Quarter)

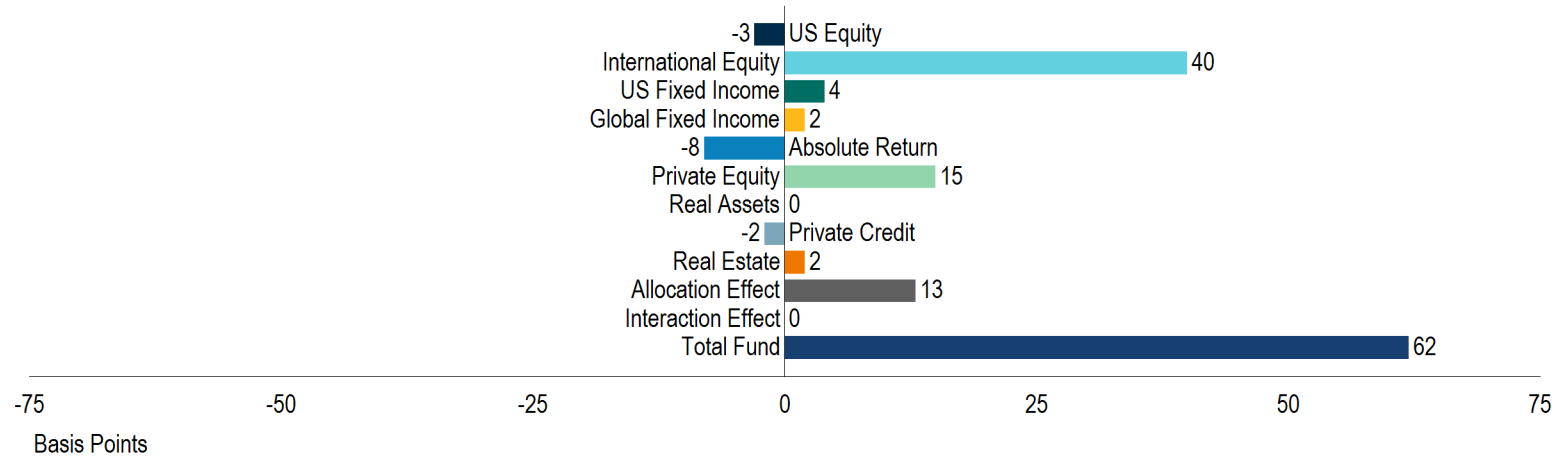
Period Ending: March 31, 2023



	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
US Equity	7.02%	7.18%	-0.16%	-0.03%	0.03%	0.00%	-0.01%
International Equity	8.41%	6.70%	1.71%	0.40%	0.02%	0.02%	0.44%
US Fixed Income	3.26%	2.96%	0.30%	0.04%	-0.02%	0.01%	0.03%
Global Fixed Income	4.41%	3.51%	0.89%	0.02%	0.00%	0.00%	0.02%
Absolute Return	-0.23%	0.72%	-0.95%	-0.08%	-0.02%	-0.01%	-0.11%
Private Equity	1.90%	0.56%	1.34%	0.15%	0.04%	-0.02%	0.17%
Real Assets	1.69%	1.56%	0.13%	0.00%	0.00%	0.00%	0.00%
Private Credit	3.06%	3.67%	-0.61%	-0.02%	0.00%	0.01%	-0.01%
Real Estate	-2.91%	-3.17%	0.26%	0.02%	0.07%	0.00%	0.09%
<b>Total</b>	<b>4.47%</b>	<b>3.85%</b>	<b>0.62%</b>	<b>0.49%</b>	<b>0.13%</b>	<b>0.00%</b>	<b>0.62%</b>

Total Fund  
Performance Attribution (6 Months)

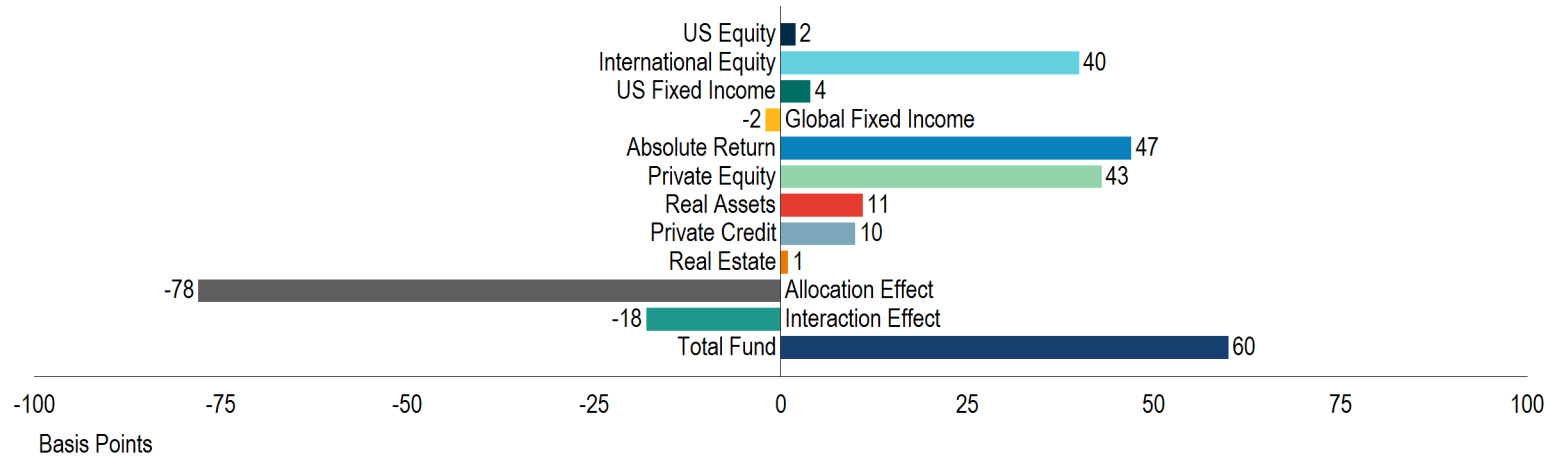
Period Ending: March 31, 2023



	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
US Equity	7.02%	7.18%	-0.16%	-0.03%	0.03%	0.00%	-0.01%
International Equity	8.41%	6.70%	1.71%	0.40%	0.02%	0.02%	0.44%
US Fixed Income	3.26%	2.96%	0.30%	0.04%	-0.02%	0.01%	0.03%
Global Fixed Income	4.41%	3.51%	0.89%	0.02%	0.00%	0.00%	0.02%
Absolute Return	-0.23%	0.72%	-0.95%	-0.08%	-0.02%	-0.01%	-0.11%
Private Equity	1.90%	0.56%	1.34%	0.15%	0.04%	-0.02%	0.17%
Real Assets	1.69%	1.56%	0.13%	0.00%	0.00%	0.00%	0.00%
Private Credit	3.06%	3.67%	-0.61%	-0.02%	0.00%	0.01%	-0.01%
Real Estate	-2.91%	-3.17%	0.26%	0.02%	0.07%	0.00%	0.09%
<b>Total</b>	<b>4.47%</b>	<b>3.85%</b>	<b>0.62%</b>	<b>0.49%</b>	<b>0.13%</b>	<b>0.00%</b>	<b>0.62%</b>

Total Fund  
Performance Attribution (One Year)

Period Ending: March 31, 2023

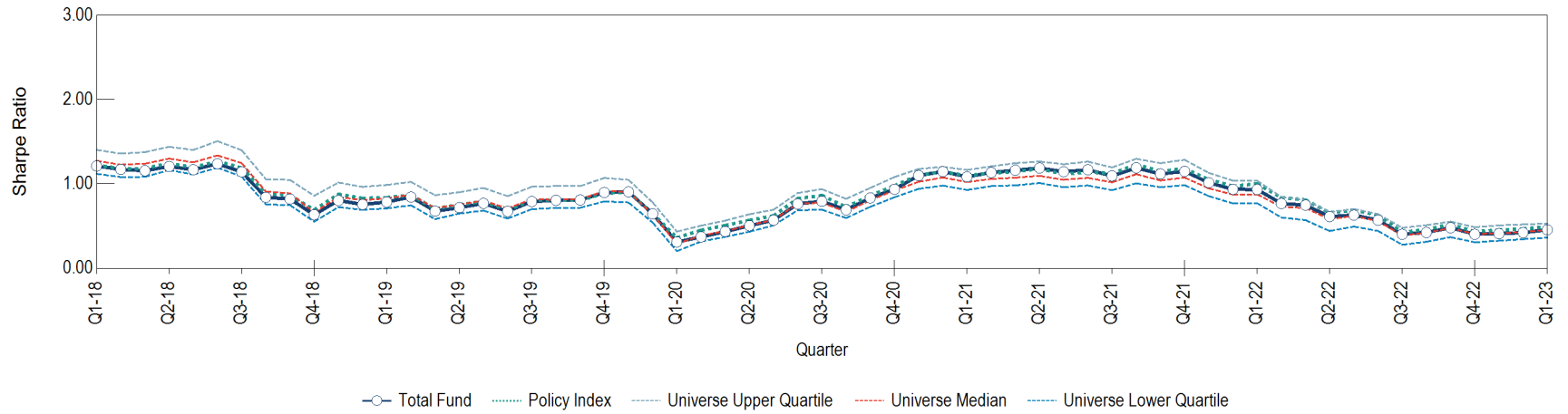


	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
US Equity	-8.52%	-8.58%	0.06%	0.02%	-0.25%	0.00%	-0.23%
International Equity	-3.76%	-5.34%	1.58%	0.40%	-0.07%	0.02%	0.35%
US Fixed Income	-4.45%	-4.78%	0.34%	0.04%	-0.01%	0.00%	0.03%
Global Fixed Income	-11.47%	-9.55%	-1.92%	-0.02%	0.01%	-0.01%	-0.02%
Absolute Return	4.15%	-1.93%	6.08%	0.47%	-0.09%	-0.07%	0.32%
Private Equity	-4.71%	-8.17%	3.46%	0.43%	-0.04%	-0.09%	0.30%
Real Assets	-1.96%	-4.77%	2.81%	0.11%	0.02%	0.02%	0.14%
Private Credit	7.11%	4.47%	2.64%	0.10%	-0.17%	-0.05%	-0.12%
Real Estate	-3.01%	-3.09%	0.08%	0.01%	-0.16%	0.00%	-0.16%
<b>Total</b>	<b>-4.45%</b>	<b>-5.05%</b>	<b>0.60%</b>	<b>1.56%</b>	<b>-0.78%</b>	<b>-0.18%</b>	<b>0.60%</b>

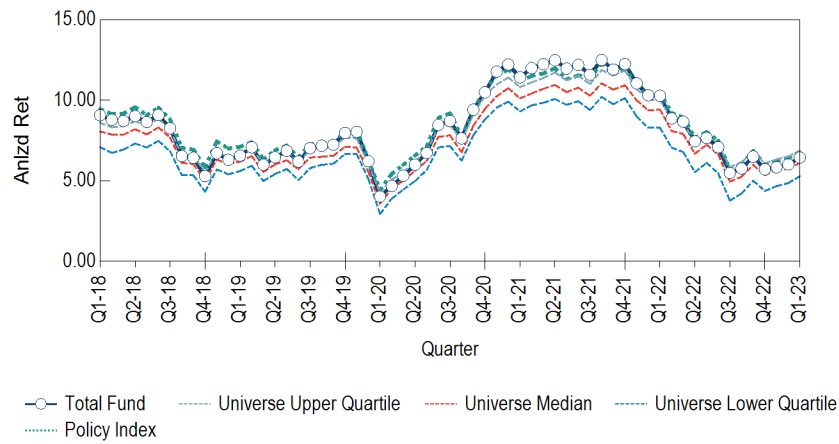
Total Fund  
Rolling Risk Statistics (5 Years)

Period Ending: March 31, 2023

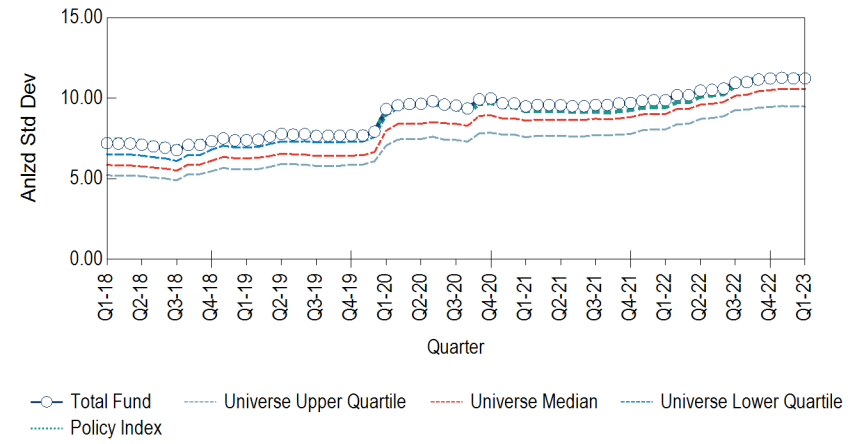
Rolling 5 Year Sharpe Ratio



Rolling 5 Year Annualized Return (%)



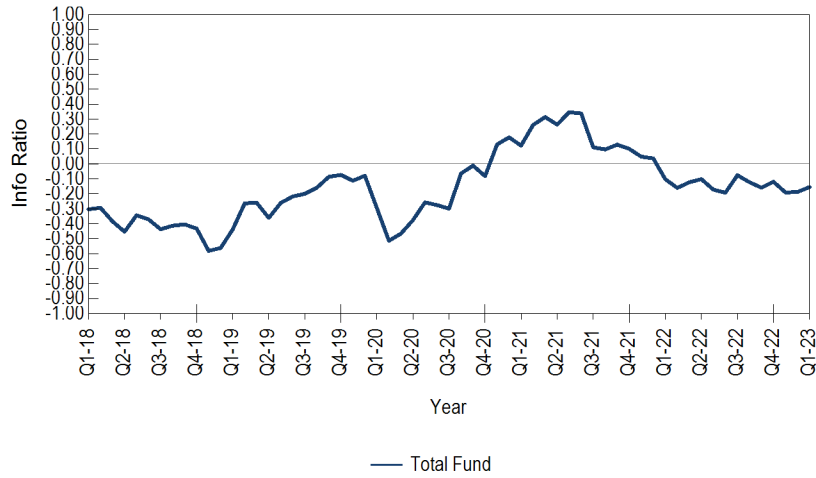
Rolling 5 Year Annualized Standard Deviation



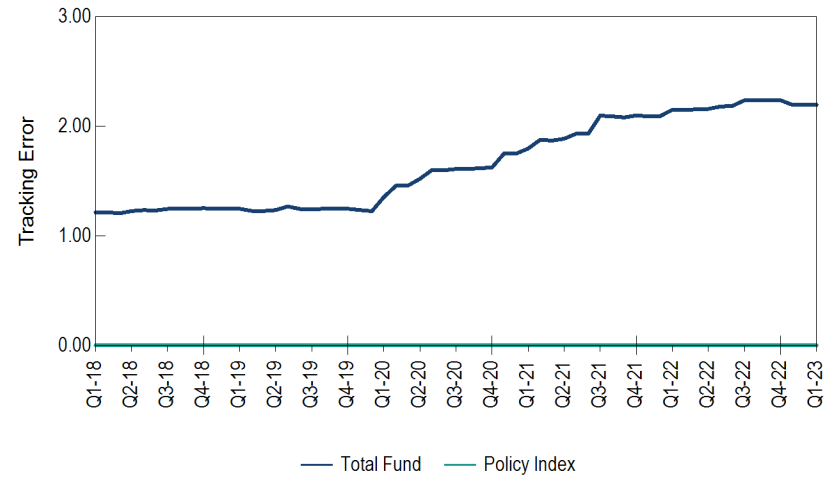
Total Fund  
Rolling Risk Statistics (5 Years)

Period Ending: March 31, 2023

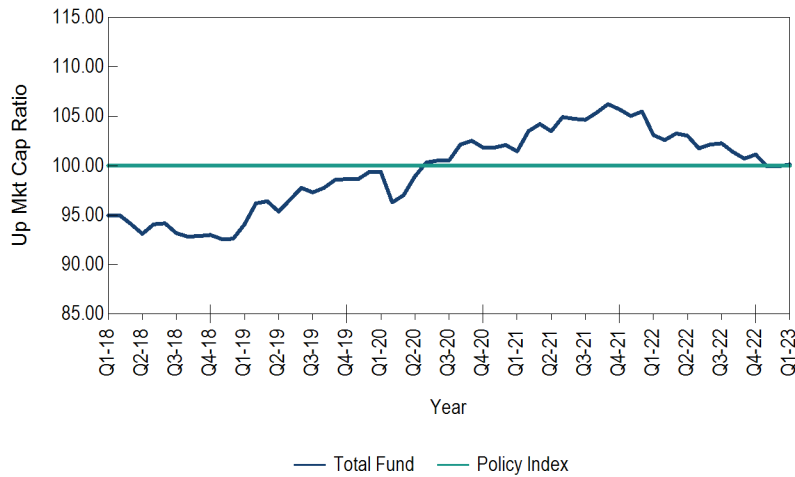
Rolling 5 Year Information Ratio



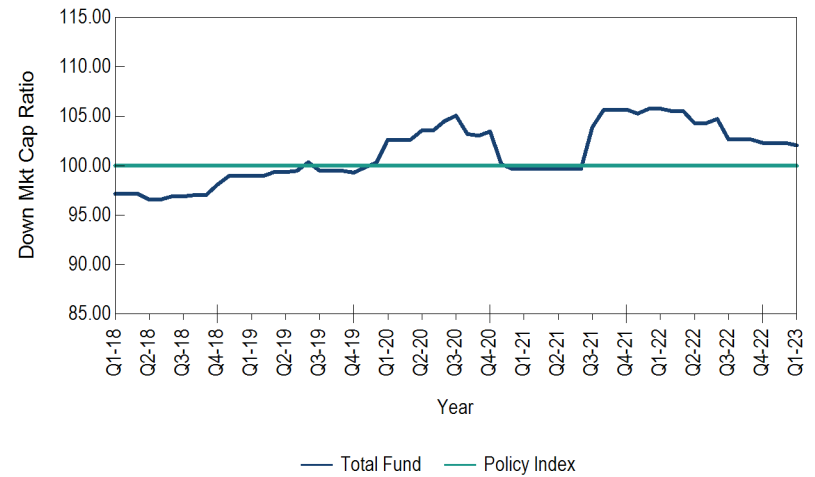
Rolling 5 Year Tracking Error



Rolling 5 Year Up Market Capture Ratio (%)



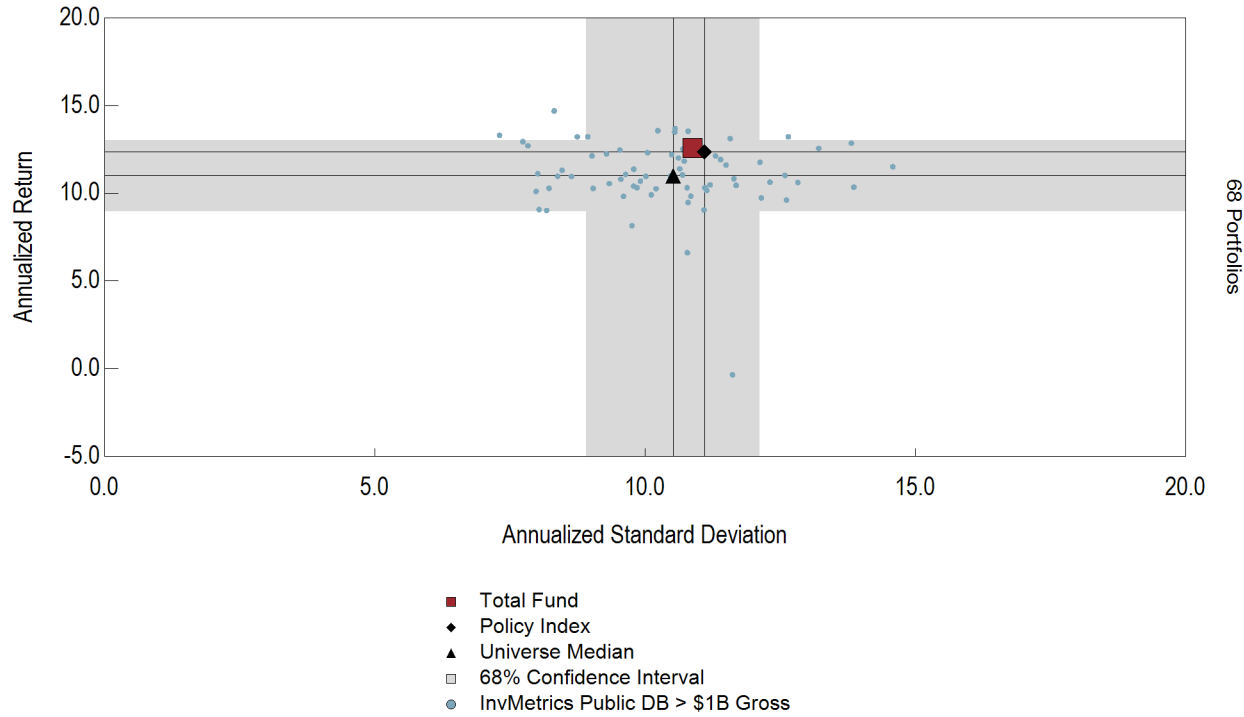
Rolling 5 Year Down Market Capture Ratio (%)





Total Fund  
Risk vs. Return (3 Years)

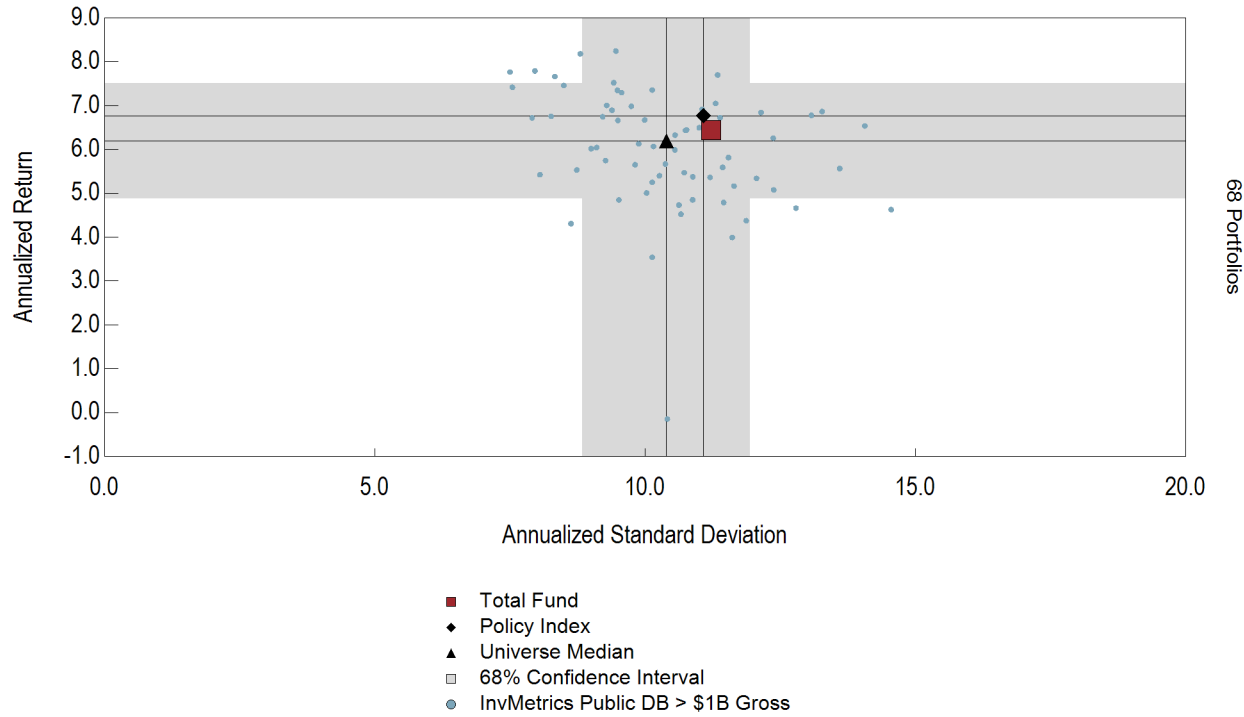
Period Ending: March 31, 2023



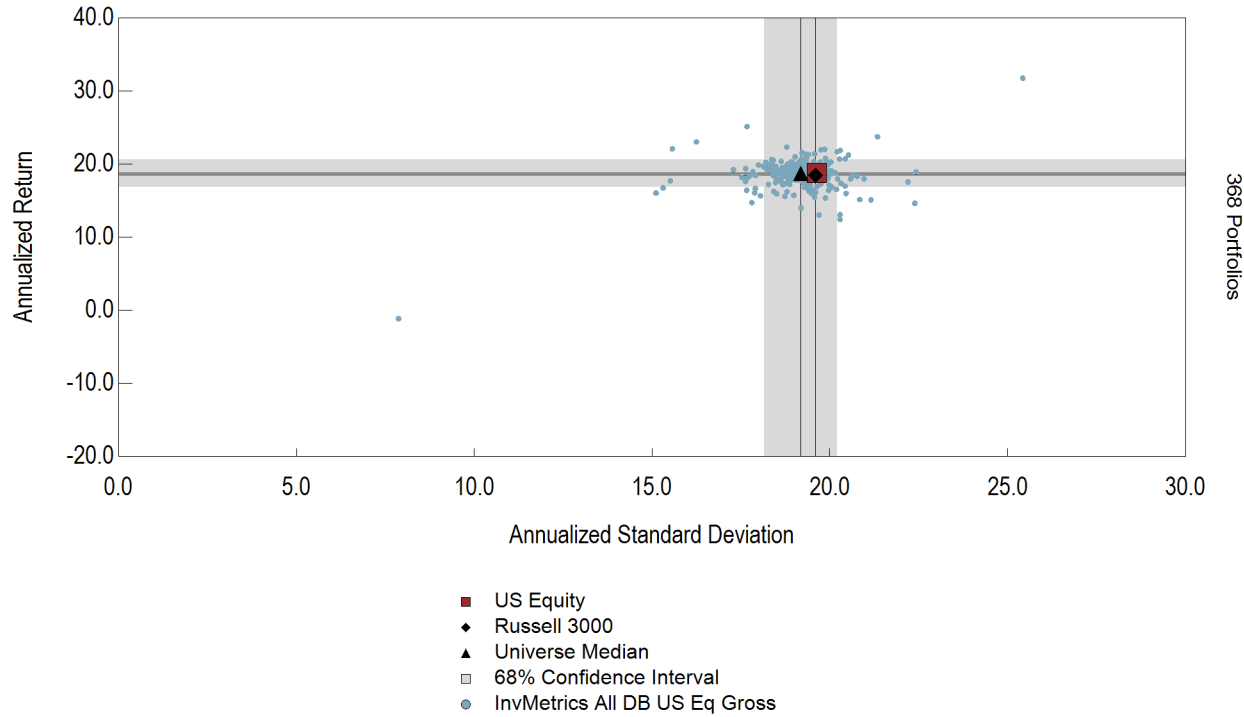
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
Total Fund	12.57%	20	10.88%	68	1.07	33	0.08	84	2.61%	55
Policy Index	12.36%	24	11.10%	70	1.03	42	--	--	0.00%	1
Allocation Index	11.89%	34	11.60%	81	0.95	62	-0.59	99	0.81%	1
InvMetrics Public DB > \$1B Gross Median	11.00%	--	10.52%	--	0.99	--	0.46	--	2.03%	--

Total Fund  
Risk vs. Return (5 Years)

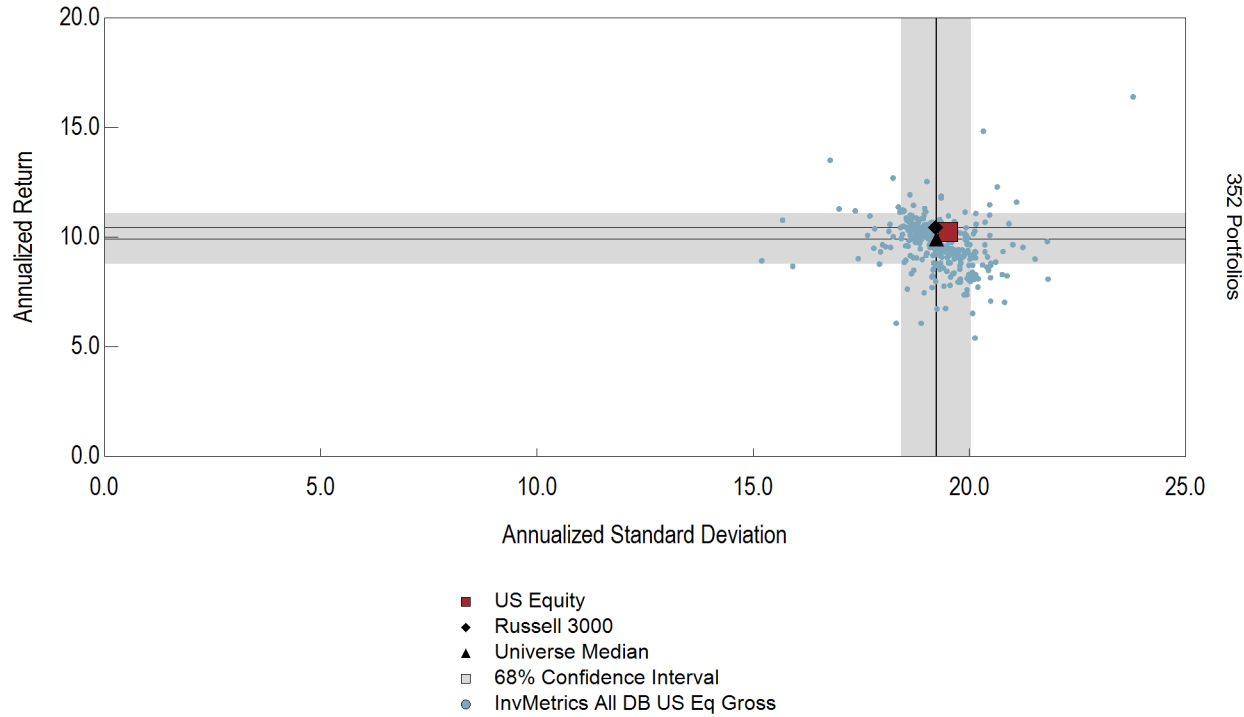
Period Ending: March 31, 2023



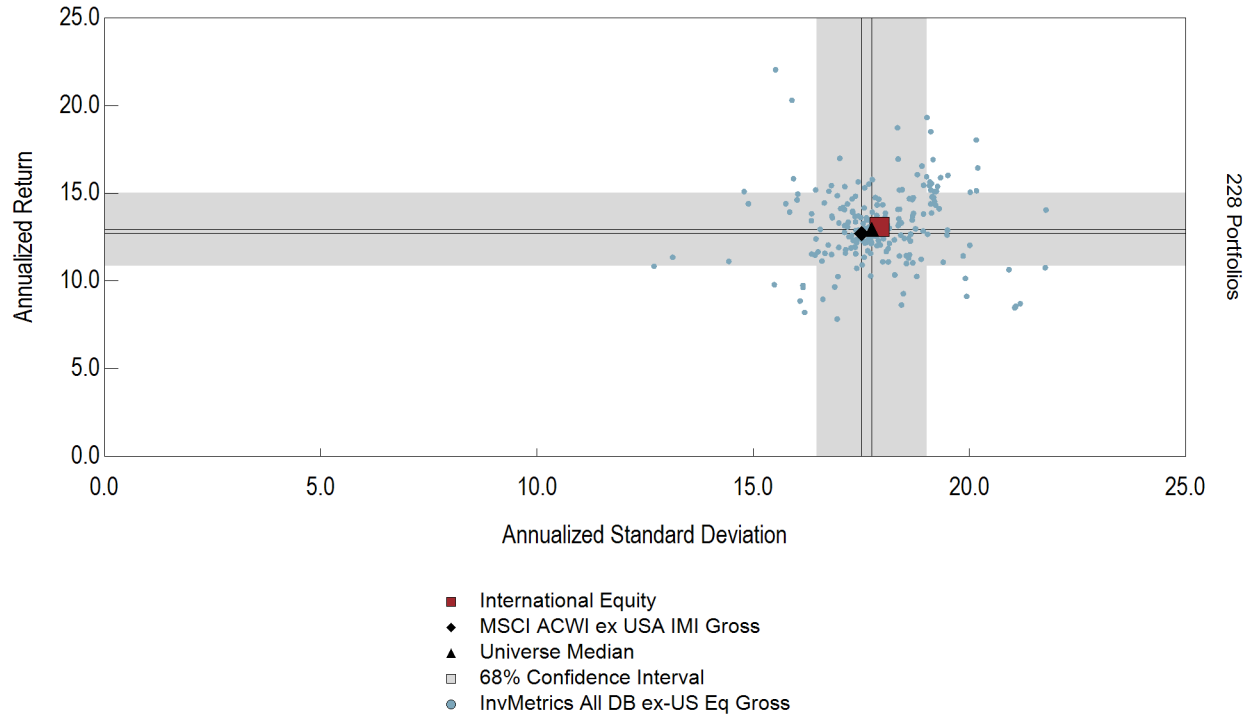
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
Total Fund	6.44%	44	11.22%	72	0.46	52	-0.15	82	2.20%	55
Policy Index	6.77%	30	11.08%	68	0.49	37	--	--	0.00%	1
Allocation Index	6.34%	47	11.52%	81	0.44	58	-0.60	99	0.71%	1
InvMetrics Public DB > \$1B Gross Median	6.19%	--	10.39%	--	0.46	--	0.17	--	1.81%	--



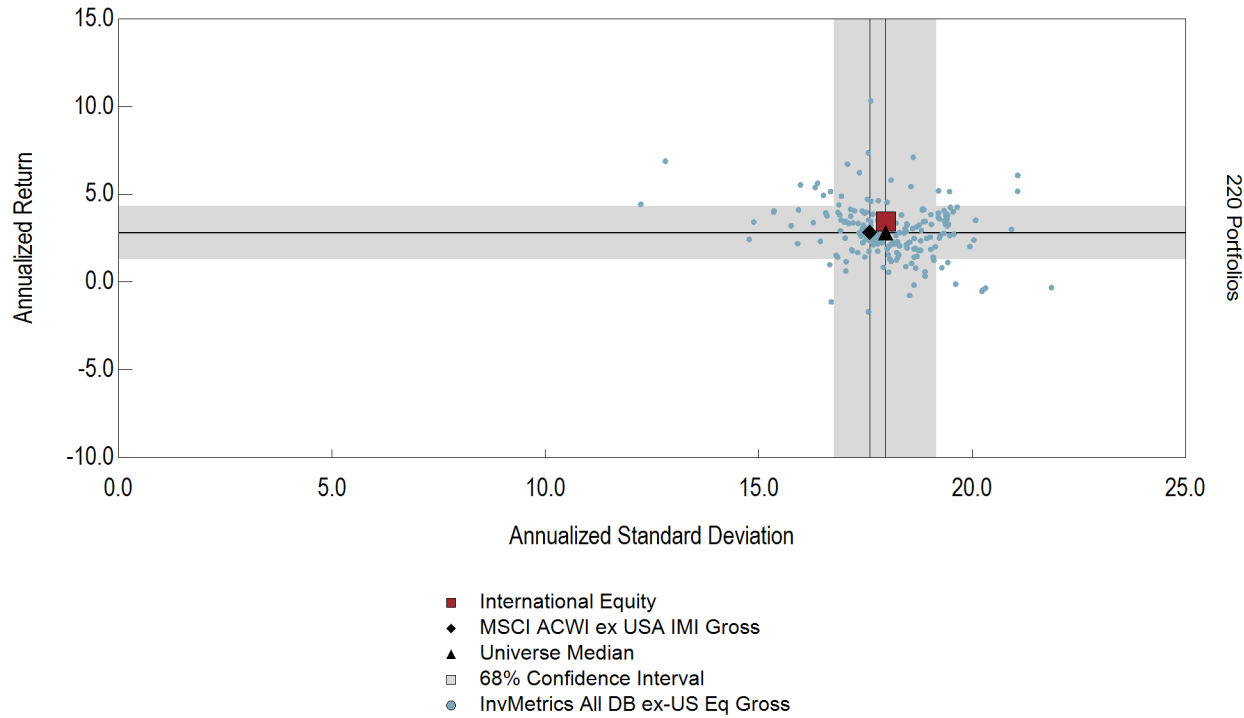
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
US Equity	18.79%	49	19.62%	84	0.91	65	0.48	20	0.65%	10
Russell 3000	18.48%	63	19.59%	83	0.90	76	--	--	0.00%	1
InvMetrics All DB US Eq Gross Median	18.74%	--	19.18%	--	0.94	--	0.10	--	2.40%	--



	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
US Equity	10.22%	36	19.51%	67	0.46	45	-0.28	40	0.83%	9
Russell 3000	10.45%	22	19.22%	49	0.47	26	--	--	0.00%	1
InvMetrics All DB US Eq Gross Median	9.92%	--	19.24%	--	0.45	--	-0.36	--	2.31%	--



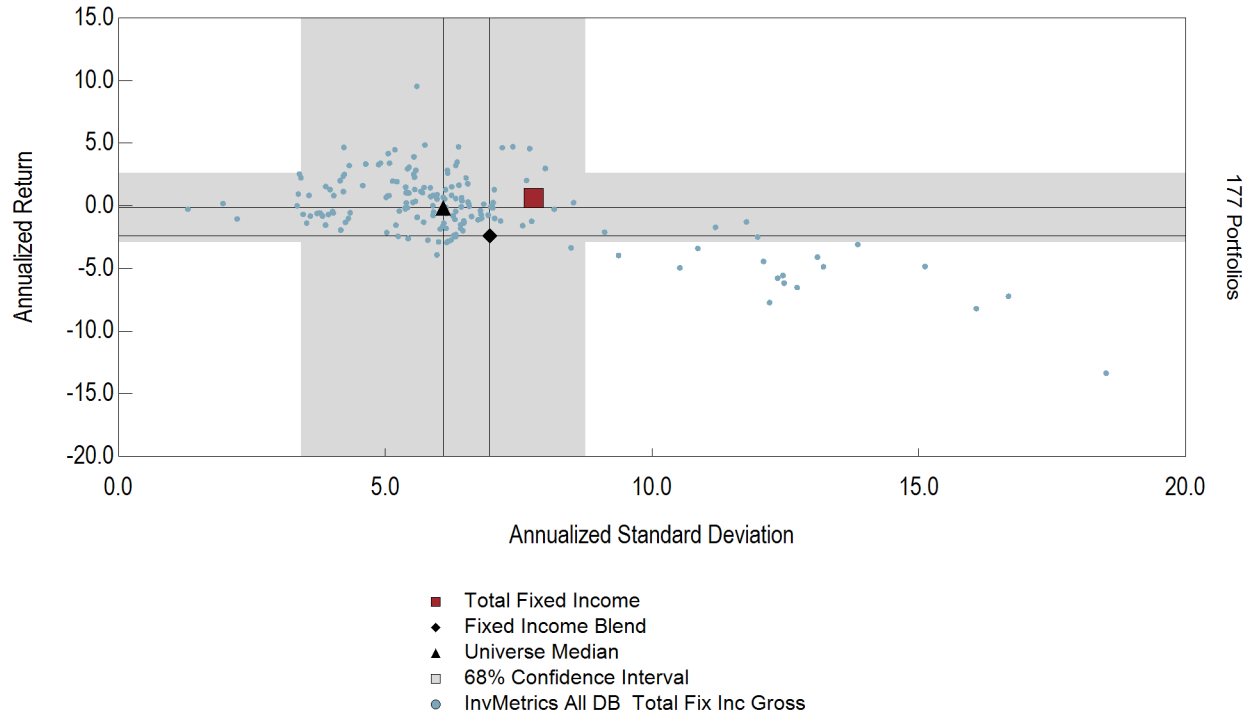
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
International Equity	13.07%	48	17.92%	57	0.68	50	0.18	60	2.01%	8
MSCI ACWI ex USA IMI Gross	12.72%	56	17.51%	35	0.68	52	--	--	0.00%	1
InvMetrics All DB ex-US Eq Gross Median	12.94%	--	17.74%	--	0.68	--	0.33	--	3.13%	--



	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
International Equity	3.44%	32	17.98%	51	0.12	33	0.33	14	1.81%	4
MSCI ACWI ex USA IMI Gross	2.84%	49	17.60%	32	0.09	48	--	--	0.00%	1
InvMetrics All DB ex-US Eq Gross Median	2.81%	--	17.97%	--	0.08	--	-0.01	--	3.01%	--

Total Fixed Income  
Risk vs. Return (3 Years)

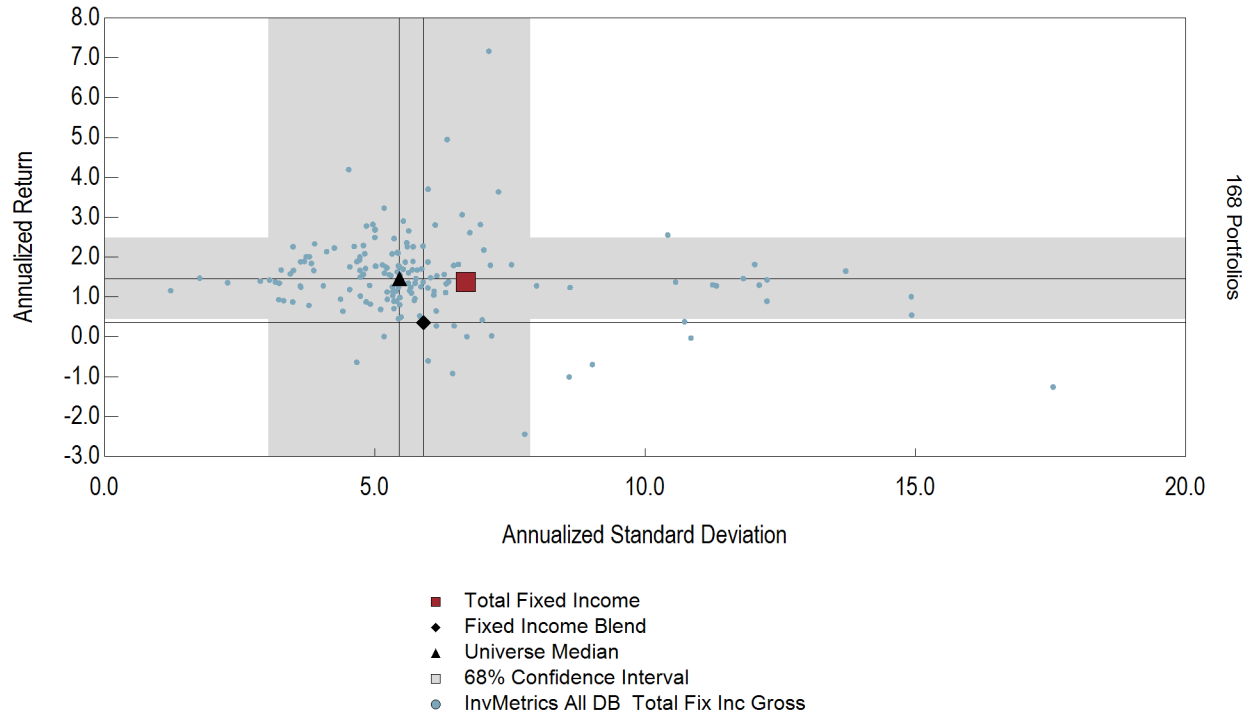
Period Ending: March 31, 2023



	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
Total Fixed Income	0.62%	38	7.78%	87	-0.03	37	1.56	37	1.93%	60
Fixed Income Blend	-2.39%	85	6.96%	79	-0.47	84	--	--	0.00%	1
InvMetrics All DB Total Fix Inc Gross Median	-0.16%	--	6.08%	--	-0.19	--	1.35	--	1.70%	--

Total Fixed Income  
Risk vs. Return (5 Years)

Period Ending: March 31, 2023



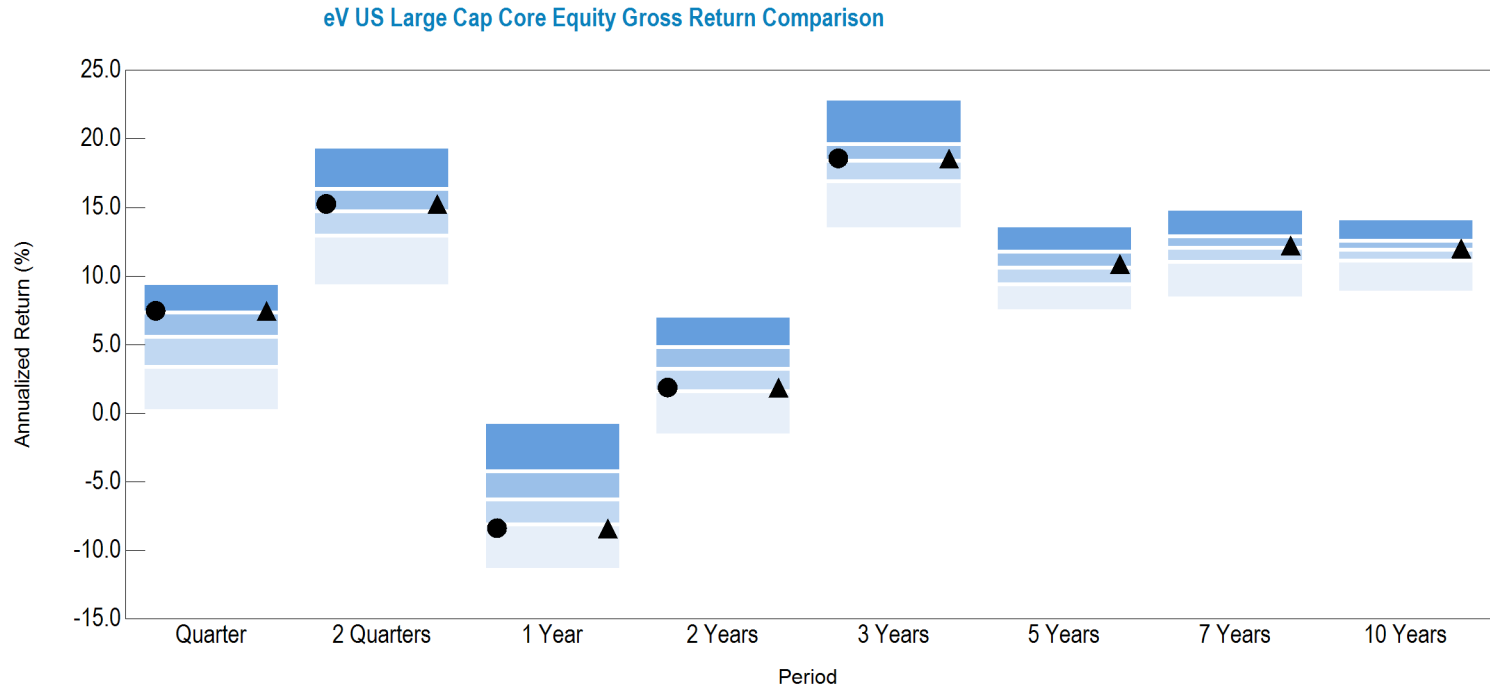
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
Total Fixed Income	1.38%	54	6.69%	83	0.01	56	0.46	21	2.22%	54
Fixed Income Blend	0.36%	93	5.90%	69	-0.16	95	--	--	0.00%	1
InvMetrics All DB Total Fix Inc Gross Median	1.46%	--	5.46%	--	0.02	--	0.27	--	2.19%	--



US Effective Style Map



	US Equity	BlackRock Russell 1000 Index Fund	TCW	Kennedy	William Blair Small Cap Growth	Russell 3000
Risk Free	0.00	0.00	0.00	0.02	0.00	0.00
Large Growth	0.47	0.51	0.94	0.03	0.05	0.48
Large Value	0.43	0.48	0.00	0.13	0.15	0.45
Small Growth	0.05	0.00	0.06	0.00	0.77	0.03
Small Value	0.05	0.00	0.00	0.83	0.02	0.03



	Quarter		2 Quarters		1 Year		2 Years		3 Years		5 Years		7 Years		10 Years	
<b>5th Percentile</b>	9.49		19.42		-0.64		7.11		22.92		13.68		14.88		14.20	
<b>25th Percentile</b>	7.38		16.37		-4.19		4.83		19.64		11.79		12.90		12.60	
<b>Median</b>	5.59		14.76		-6.27		3.27		18.45		10.65		12.07		11.94	
<b>75th Percentile</b>	3.39		12.98		-8.07		1.64		16.93		9.43		11.05		11.16	
<b>95th Percentile</b>	0.19		9.28		-11.41		-1.58		13.43		7.48		8.42		8.80	
<b># of Portfolios</b>	337		337		337		333		327		314		287		252	
<b>● BlackRock Russell 1000 Index Fund</b>	7.47	(24)	15.25	(44)	-8.38	(80)	1.88	(73)	18.58	(48)	--	(--)	--	(--)	--	(--)
<b>▲ Russell 1000</b>	7.46	(24)	15.24	(44)	-8.39	(80)	1.86	(73)	18.55	(48)	10.87	(46)	12.22	(44)	12.01	(49)

Characteristics

	Portfolio	Russell 1000
Number of Holdings	1,006	1,007
Weighted Avg. Market Cap. (\$B)	495.8	496.4
Median Market Cap. (\$B)	13.5	13.4
Price To Earnings	20.6	20.9
Price To Book	4.1	4.1
Price To Sales	2.3	2.3
Return on Equity (%)	25.6	25.6
Yield (%)	1.7	1.6
Beta	1.0	1.0

Top Holdings

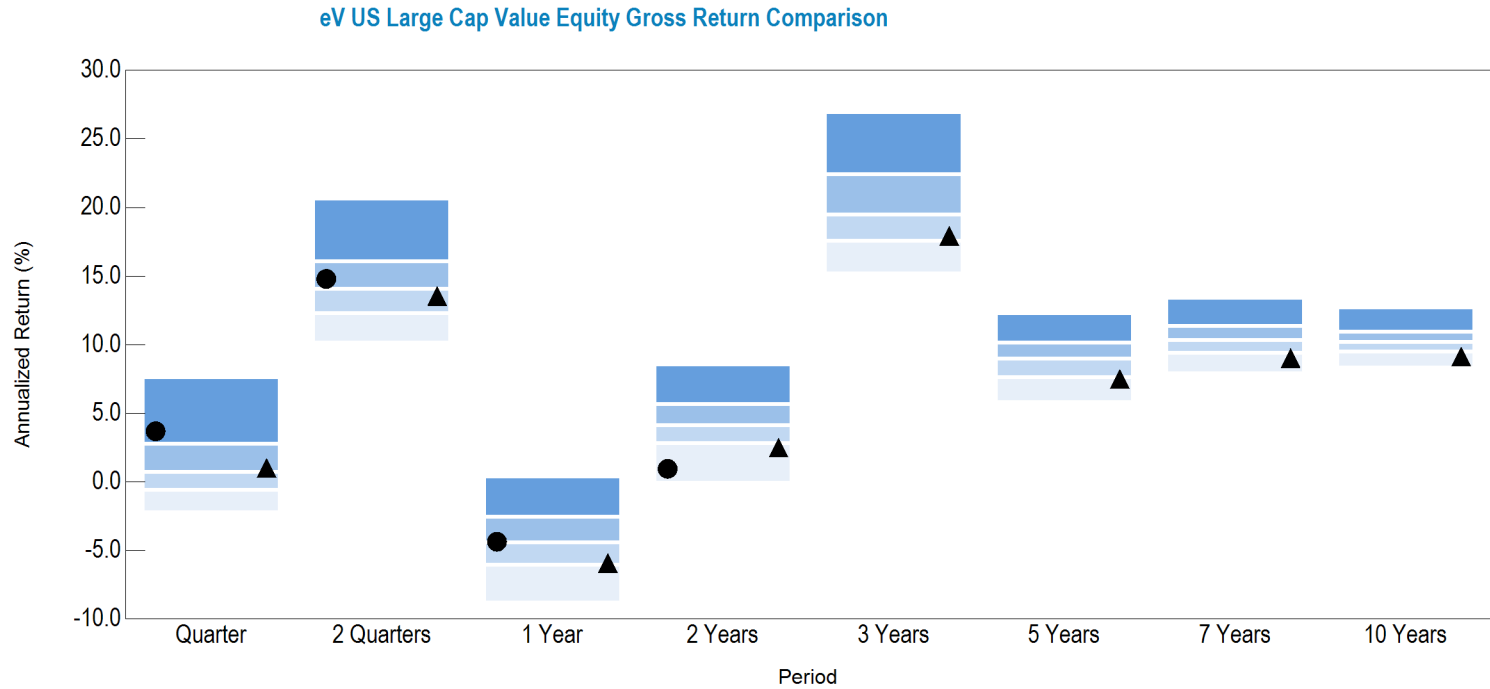
APPLE INC	6.5%
MICROSOFT CORP	5.7%
AMAZON.COM INC	2.4%
NVIDIA CORPORATION	1.7%
ALPHABET INC	1.6%
BERKSHIRE HATHAWAY INC	1.5%
ALPHABET INC	1.4%
TESLA INC	1.4%
META PLATFORMS INC	1.2%
EXXON MOBIL CORP	1.2%

Best Performers

	Return %
SOTERA HEALTH CO (SHC)	115.0%
CARVANA CO (CVNA)	106.5%
COINBASE GLOBAL INC	90.9%
NVIDIA CORPORATION (NVDA)	90.1%
OAK STREET HEALTH INC (OSH)	79.8%
META PLATFORMS INC (META)	76.1%
DRAFTKINGS INC (DKNG)	70.0%
SPOTIFY TECHNOLOGY S.A (SPOT)	69.2%
TESLA INC (TSLA)	68.4%
ROKU INC (ROKU)	61.7%

Worst Performers

	Return %
SIGNATURE BANK (SBNY)	-99.8%
SVB FINANCIAL GROUP (SIVBQ)	-99.6%
FIRST REPUBLIC BANK (FRCB)	-88.5%
PACWEST BANCORP (PACW)	-57.2%
LUMEN TECHNOLOGIES INC (LUMN)	-49.2%
WeWork Inc (WE)	-45.6%
ENVIVA INC (EVA)	-44.4%
WESTERN ALLIANCE BANCORPORATION (WAL)	-40.0%
ZIONS BANCORPORATION NATIONAL ASSOCIATION (ZION)	-38.6%
SCHWAB (CHARLES) CORP (SCHW)	-36.9%



	Return (Rank)															
5th Percentile	7.62	20.63	0.37	8.53	26.94	12.30	13.40	12.69								
25th Percentile	2.83	16.12	-2.53	5.69	22.43	10.19	11.38	10.99								
Median	0.74	14.09	-4.38	4.16	19.53	9.01	10.36	10.22								
75th Percentile	-0.54	12.31	-6.04	2.86	17.59	7.65	9.41	9.54								
95th Percentile	-2.21	10.20	-8.78	-0.02	15.20	5.83	7.93	8.36								
# of Portfolios	355	355	355	352	344	336	320	303								
● Aristotle	3.69	(19)	14.79	(41)	-4.37	(50)	0.95	(92)	--	(--)	--	(--)	--	(--)	--	(--)
▲ Russell 1000 Value	1.01	(46)	13.55	(57)	-5.91	(75)	2.50	(79)	17.93	(73)	7.50	(78)	9.02	(83)	9.13	(84)

**Characteristics**

	Portfolio	Russell 1000 Value
Number of Holdings	43	849
Weighted Avg. Market Cap. (\$B)	160.6	154.6
Median Market Cap. (\$B)	43.9	12.1
Price To Earnings	18.0	16.5
Price To Book	3.4	2.5
Price To Sales	2.5	1.7
Return on Equity (%)	25.1	15.1
Yield (%)	2.1	2.3
Beta		1.0

**Top Holdings**

MICROSOFT CORP	4.1%
CORTEVA INC	3.8%
MICROCHIP TECHNOLOGY INC	3.3%
ANSYS INC	3.3%
PARKER-HANNIFIN CORP	3.1%
SONY GROUP CORPORATION	3.1%
AMERIPRISE FINANCIAL INC	3.0%
DANAHER CORP	3.0%
LENNAR CORP	2.9%
ADOBE INC	2.9%

**Best Performers**

	Return %
ANSYS INC (ANSS)	37.8%
MICROSOFT CORP (MSFT)	20.5%
MICROCHIP TECHNOLOGY INC (MCHP)	19.8%
BLACKSTONE INC (BX)	19.5%
SONY GROUP CORPORATION (SONY)	18.8%
QUALCOMM INC. (QCOM)	16.7%
LENNAR CORP (LEN)	16.6%
PARKER-HANNIFIN CORP (PH)	15.9%
ADOBE INC (ADBE)	14.5%
ECOLAB INC. (ECL)	14.1%

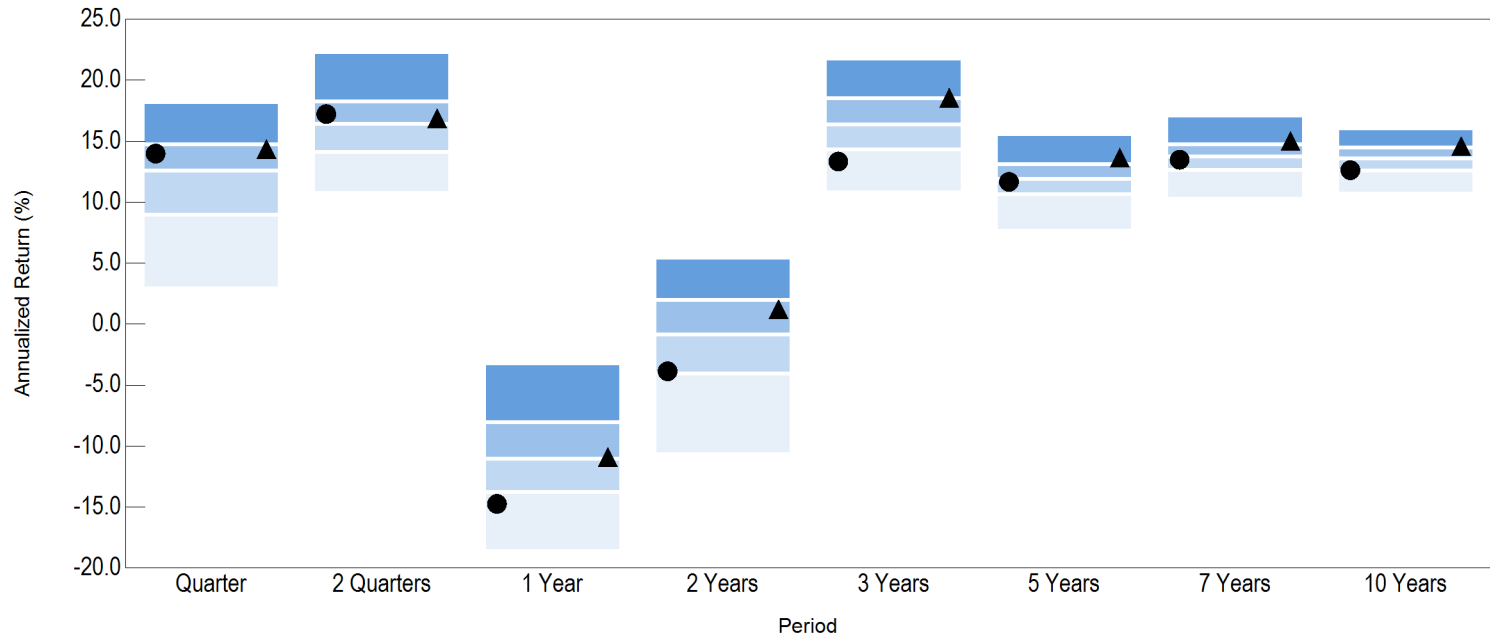
**Worst Performers**

	Return %
CULLEN/FROST BANKERS INC (CFR)	-20.7%
THE PNC FINANCIAL SERVICES GROUP INC (PNC)	-18.8%
COMMERCE BANCSHARES INC (CBSH)	-13.9%
HONEYWELL INTERNATIONAL INC (HON)	-10.3%
RPM INTERNATIONAL INC (RPM)	-10.0%
GENERAL DYNAMICS CORP (GD)	-7.5%
AMGEN INC (AMGN)	-7.1%
OSHKOSH CORP (OSK)	-5.3%
XYLEM INC (XYL)	-5.0%
DANAHER CORP (DHR)	-4.9%

**Aristotle Performance Attribution vs. Russell 1000 Value**

	Total Effects	Attribution Effects			Returns		Sector Weights				
		Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	0.29%	0.26%	0.12%	-0.10%	0.38%	-3.29%	4.89%	7.55%			
Materials	-0.04%	-0.13%	0.26%	-0.18%	2.66%	5.25%	10.14%	4.36%			
Industrials	-0.66%	-0.64%	0.02%	-0.05%	-1.91%	3.88%	11.65%	10.67%			
Consumer Discretionary	0.85%	0.62%	0.06%	0.17%	15.79%	5.13%	7.23%	5.79%			
Consumer Staples	-0.10%	-0.06%	-0.02%	-0.01%	-0.95%	-0.03%	8.76%	7.42%			
Health Care	0.75%	0.55%	0.36%	-0.16%	-2.65%	-5.68%	12.55%	17.59%			
Financials	0.63%	0.57%	0.17%	-0.11%	-3.45%	-5.60%	16.75%	20.38%			
Information Technology	1.95%	0.44%	1.08%	0.43%	19.74%	14.24%	16.59%	8.38%			
Communication Services	-1.25%	0.42%	-1.32%	-0.34%	12.25%	19.85%	0.00%	7.41%			
Utilities	0.15%	0.12%	0.04%	-0.02%	-1.13%	-3.17%	5.21%	5.91%			
Real Estate	-0.02%	-0.01%	-0.01%	0.00%	1.74%	2.00%	3.46%	4.54%			
Cash	-0.14%	0.00%	-0.14%	0.00%	0.31%	--	2.77%	0.00%			
<b>Portfolio</b>	<b>2.41%</b>	<b>=</b>	<b>2.16%</b>	<b>+</b>	<b>0.62%</b>	<b>+</b>	<b>-0.38%</b>	<b>3.52%</b>	<b>1.11%</b>	<b>100.00%</b>	<b>100.00%</b>

eV US Large Cap Growth Equity Gross Return Comparison



	Return (Rank)															
	Quarter		2 Quarters		1 Year		2 Years		3 Years		5 Years		7 Years		10 Years	
5th Percentile	18.20	22.26	-3.22	5.41	21.76	15.56	17.06	16.02								
25th Percentile	14.78	18.29	-7.99	2.00	18.55	13.17	14.79	14.52								
Median	12.63	16.43	-11.00	-0.82	16.41	11.93	13.77	13.61								
75th Percentile	8.97	14.13	-13.72	-4.00	14.36	10.69	12.69	12.63								
95th Percentile	2.98	10.78	-18.58	-10.63	10.85	7.66	10.30	10.71								
# of Portfolios	258	258	258	258	257	246	223	212								
● TCW	13.98	(36)	17.23	(39)	-14.74	(81)	-3.87	(75)	13.33	(83)	11.67	(57)	13.48	(58)	12.63	(76)
▲ Russell 1000 Growth	14.37	(31)	16.88	(43)	-10.90	(50)	1.21	(33)	18.57	(25)	13.66	(19)	15.01	(22)	14.59	(23)

Characteristics

	Portfolio	Russell 1000 Growth
Number of Holdings	33	509
Weighted Avg. Market Cap. (\$B)	426.8	818.2
Median Market Cap. (\$B)	94.7	17.0
Price To Earnings	41.4	28.0
Price To Book	8.5	9.5
Price To Sales	5.0	3.7
Return on Equity (%)	31.3	42.2
Yield (%)	0.6	1.0
Beta	1.0	1.0

Top Holdings

NVIDIA CORPORATION	7.2%
ALPHABET INC	6.4%
SERVICENOW INC	5.8%
MICROSOFT CORP	5.8%
VISA INC	5.5%
AMAZON.COM INC	5.2%
S&P GLOBAL INC	4.0%
MASTERCARD INC	3.7%
SALESFORCE INC	3.6%
ZOETIS INC	3.4%

Best Performers

	Return %
NVIDIA CORPORATION (NVDA)	90.1%
ALIGN TECHNOLOGY INC (ALGN)	58.4%
SALESFORCE INC (CRM)	50.7%
TRADE DESK INC (THE) (TTD)	35.9%
CROWDSTRIKE HOLDINGS INC (CRWD)	30.4%
ASML HOLDING NV (ASML)	24.9%
AMAZON.COM INC (AMZN)	23.0%
MICROSOFT CORP (MSFT)	20.5%
SERVICENOW INC (NOW)	19.7%
ALPHABET INC (GOOG)	17.2%

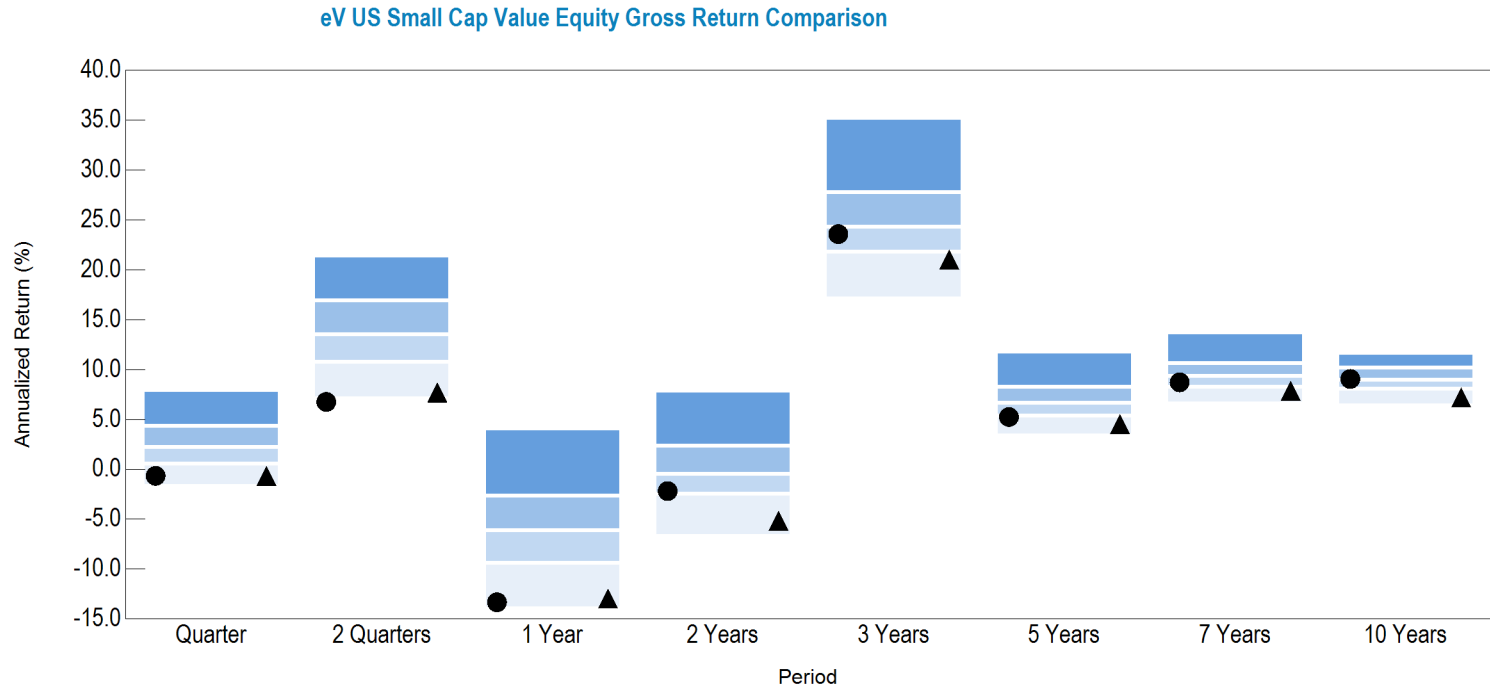
Worst Performers

	Return %
SCHWAB (CHARLES) CORP (SCHW)	-36.9%
ENPHASE ENERGY INC (ENPH)	-20.6%
UNITEDHEALTH GROUP INC (UNH)	-10.5%
HOME DEPOT INC. (THE) (HD)	-5.9%
INTUITIVE SURGICAL INC (ISRG)	-3.7%
AMERICAN TOWER CORP (AMT)	-3.5%
IQVIA HOLDINGS INC (IQV)	-2.9%
DEXCOM INC (DXCM)	2.6%
S&P GLOBAL INC (SPGI)	3.2%
MASTERCARD INC (MA)	4.7%



TCW Performance Attribution vs. Russell 1000 Growth

	Total Effects	Attribution Effects			Returns		Sector Weights				
		Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	0.31%	--	0.31%	--	--	-8.50%	0.00%	1.35%			
Materials	0.18%	--	0.18%	--	--	2.74%	0.00%	1.47%			
Industrials	0.46%	0.19%	0.37%	-0.10%	7.27%	5.21%	4.20%	8.14%			
Consumer Discretionary	-1.21%	-1.29%	-0.01%	0.09%	11.04%	19.83%	13.30%	14.22%			
Consumer Staples	0.54%	0.44%	0.31%	-0.22%	9.03%	2.47%	3.41%	6.14%			
Health Care	1.41%	1.66%	-0.32%	0.07%	10.81%	-1.20%	13.88%	13.51%			
Financials	-1.64%	-0.51%	-0.50%	-0.64%	-13.01%	0.50%	7.96%	3.27%			
Information Technology	0.46%	0.69%	-0.15%	-0.08%	24.25%	22.57%	40.64%	43.40%			
Communication Services	0.14%	0.04%	0.09%	0.01%	21.75%	21.02%	8.01%	6.79%			
Utilities	0.01%	--	0.01%	--	--	-3.86%	0.00%	0.05%			
Real Estate	-0.59%	-0.10%	-0.32%	-0.17%	-3.55%	2.01%	4.44%	1.65%			
Cash	-0.35%	0.00%	-0.35%	0.00%	0.64%	--	4.16%	0.00%			
<b>Portfolio</b>	<b>-0.28%</b>	<b>=</b>	<b>1.13%</b>	<b>+</b>	<b>-0.37%</b>	<b>+</b>	<b>-1.04%</b>	<b>14.15%</b>	<b>14.43%</b>	<b>100.00%</b>	<b>100.00%</b>



	Return (Rank)							
	Quarter	2 Quarters	1 Year	2 Years	3 Years	5 Years	7 Years	10 Years
5th Percentile	7.94	21.43	4.05	7.86	35.19	11.79	13.72	11.63
25th Percentile	4.40	16.99	-2.60	2.43	27.79	8.33	10.70	10.25
Median	2.28	13.58	-6.08	-0.41	24.36	6.72	9.40	9.00
75th Percentile	0.61	10.84	-9.33	-2.41	21.88	5.42	8.30	8.10
95th Percentile	-1.60	7.14	-13.90	-6.66	17.14	3.42	6.63	6.43
# of Portfolios	206	206	206	205	202	195	187	173
● Kennedy	-0.65 (89)	6.76 (98)	-13.32 (94)	-2.18 (74)	23.58 (60)	5.25 (78)	8.73 (67)	9.06 (50)
▲ Russell 2000 Value	-0.66 (89)	7.70 (93)	-12.96 (93)	-5.17 (92)	21.01 (83)	4.55 (86)	7.86 (81)	7.22 (90)

**Characteristics**

	Portfolio	Russell 2000 Value
Number of Holdings	243	1,358
Weighted Avg. Market Cap. (\$B)	3.3	2.4
Median Market Cap. (\$B)	2.2	0.9
Price To Earnings	12.4	10.5
Price To Book	1.9	1.6
Price To Sales	1.1	0.9
Return on Equity (%)	10.1	5.2
Yield (%)	1.7	2.5
Beta	0.9	1.0

**Top Holdings**

CASELLA WASTE SYSTEMS INC	1.1%
SOUTHSTATE CORPORATION	1.1%
HOME BANCSHARES INC	1.1%
GRAPHIC PACKAGING HOLDING CO	1.0%
BANNER CORP	1.0%
ATI INC	1.0%
BARRETT BUSINESS SERVICES INC	0.9%
KIRBY CORP	0.9%
ICF INTERNATIONAL INC	0.9%
WNS (HOLDINGS) LTD	0.9%

**Best Performers**

	Return %
Navitas Semiconductor Corp (NVTS)	108.3%
INTEST CORP (INTT)	101.4%
KIMBALL INTERNATIONAL INC (KBAL)	92.2%
BLUE BIRD CORP (BLBD)	90.8%
INDIE SEMICONDUCTOR INC A COMMON STOCK	81.0%
AXCELIS TECHNOLOGIES INC. (ACLS)	67.9%
LANTHEUS HOLDINGS INC (LNTH)	62.0%
ALLEGRO MICROSYSTEMS INC (ALGM)	59.9%
ONESPAN INC (OSPN)	56.4%
E.L.F. BEAUTY INC (ELF)	48.9%

**Worst Performers**

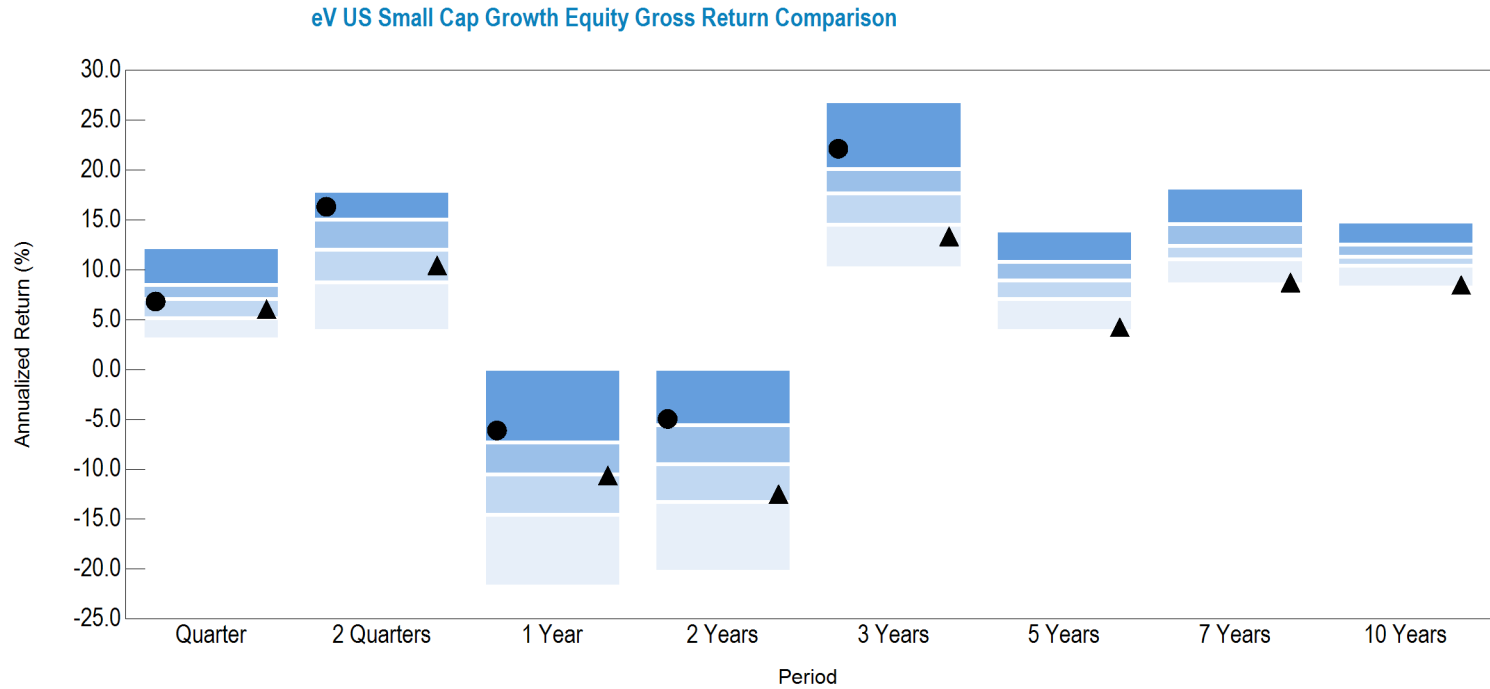
	Return %
FREQUENCY THERAPEUTICS INC (FREQ)	-86.9%
PACWEST BANCORP (PACW)	-57.2%
UNIVERSAL ELECTRONICS INC (UEIC)	-51.3%
FIRST FOUNDATION INC (FFWM)	-47.7%
CUTERA INC (CUTR)	-46.6%
METROPOLITAN BANK HOLDING CORP (MCB)	-42.2%
WESTERN ALLIANCE BANCORPORATION (WAL)	-40.0%
ASPEN AEROGELS INC (ASPN)	-36.8%
ADAPTHEALTH CORP (AHCO)	-35.3%
INVESTAR HOLDING CORP (ISTR)	-34.7%

**Kennedy Performance Attribution vs. Russell 2000 Value**

	Total Effects	Attribution Effects			Returns		Sector Weights				
		Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	-0.67%	-0.67%	0.00%	-0.01%	-10.18%	0.36%	6.40%	6.33%			
Materials	0.45%	0.24%	0.12%	0.09%	13.09%	7.19%	5.60%	4.09%			
Industrials	0.40%	0.15%	0.22%	0.03%	7.50%	6.39%	16.58%	13.48%			
Consumer Discretionary	-0.32%	-0.11%	-0.23%	0.02%	10.16%	11.31%	7.84%	9.75%			
Consumer Staples	0.19%	0.10%	0.03%	0.06%	4.78%	1.17%	4.42%	2.72%			
Health Care	0.27%	0.22%	0.07%	-0.03%	-4.22%	-6.39%	9.04%	10.25%			
Financials	0.03%	-0.83%	0.67%	0.19%	-13.77%	-10.90%	22.45%	29.07%			
Information Technology	1.05%	0.42%	0.40%	0.23%	20.06%	12.60%	8.65%	5.62%			
Communication Services	-0.31%	-0.42%	-0.01%	0.12%	-14.28%	0.36%	2.05%	2.88%			
Utilities	-0.10%	-0.11%	-0.01%	0.03%	-1.66%	0.61%	3.88%	5.00%			
Real Estate	-0.10%	-0.10%	-0.02%	0.01%	-0.37%	0.51%	9.47%	10.82%			
Cash	0.06%	0.00%	0.06%	0.00%	1.07%	--	3.63%	0.00%			
<b>Portfolio</b>	<b>0.95%</b>	<b>=</b>	<b>-1.11%</b>	<b>+</b>	<b>1.31%</b>	<b>+</b>	<b>0.75%</b>	<b>0.24%</b>	<b>-0.71%</b>	<b>100.00%</b>	<b>100.00%</b>

# Small Cap Growth Equity Peer Universe Comparison

Period Ending: March 31, 2023



	Quarter		2 Quarters		1 Year		2 Years		3 Years		5 Years		7 Years		10 Years	
<b>5th Percentile</b>	12.24	17.92	0.05	0.02	26.85	13.92	18.22	14.81								
<b>25th Percentile</b>	8.54	15.03	-7.30	-5.54	20.14	10.86	14.59	12.54								
<b>Median</b>	7.08	12.04	-10.46	-9.47	17.71	8.98	12.45	11.33								
<b>75th Percentile</b>	5.17	8.77	-14.49	-13.24	14.55	7.12	11.10	10.47								
<b>95th Percentile</b>	3.04	3.91	-21.68	-20.22	10.19	3.89	8.59	8.26								
<b># of Portfolios</b>	149	149	149	149	146	143	135	123								
<b>● William Blair Small Cap Growth</b>	6.82	(53)	16.32	(14)	-6.10	(21)	-4.94	(21)	22.13	(18)	--	(--)	--	(--)	--	(--)
<b>▲ Russell 2000 Growth</b>	6.07	(65)	10.46	(62)	-10.60	(52)	-12.48	(70)	13.36	(85)	4.26	(94)	8.74	(94)	8.49	(95)

Characteristics

	Portfolio	Russell 2000 Growth
Number of Holdings	3,494	1,091
Weighted Avg. Market Cap. (\$B)	259.3	3.4
Median Market Cap. (\$B)	10.8	1.4
Price To Earnings	17.4	15.9
Price To Book	3.2	3.6
Price To Sales	1.7	1.5
Return on Equity (%)	18.7	4.1
Yield (%)	2.2	0.9
Beta		1.0

Top Holdings

BWX TECHNOLOGIES INC	2.6%
BRINK'S CO (THE)	2.6%
CASELLA WASTE SYSTEMS INC	2.5%
PERFORMANCE FOOD GROUP COMPANY	1.9%
ALBANY INTERNATIONAL CORP.	1.9%
ENERGY RECOVERY INC	1.8%
MERIT MEDICAL SYSTEMS INC	1.8%
MERCURY SYSTEMS INC	1.8%
INSPIRE MEDICAL SYSTEMS INC	1.8%
ENCOMPASS HEALTH CORP	1.7%

Best Performers

	Return %
SOTERA HEALTH CO (SHC)	115.0%
ACV AUCTIONS INC	57.2%
GOOSEHEAD INSURANCE INC (GSHD)	52.0%
CERTARA INC (CERT)	50.0%
PDF SOLUTIONS INC (PDFS)	48.7%
ORION ENGINEERED CARBONS SA (OEC)	46.6%
SKYLINE CHAMPION CORP (SKY)	46.0%
VERTEX INC (VERX)	42.6%
SITIME CORP (SITM)	40.0%
THE BEAUTY HEALTH CO COMMON STOCK	38.8%

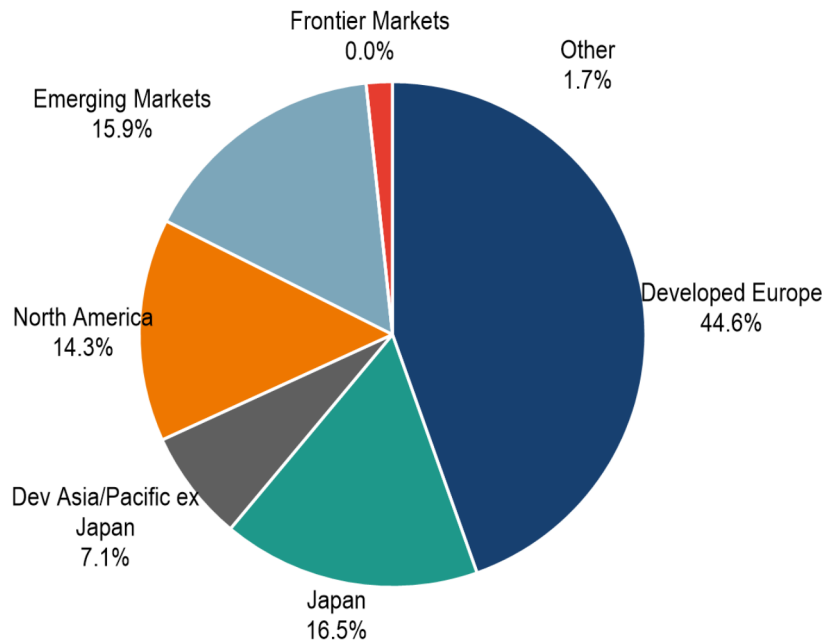
Worst Performers

	Return %
PACWEST BANCORP (PACW)	-57.2%
NATIONAL VISION HOLDINGS INC (EYE)	-51.4%
ALIGNMENT HEALTHCARE INC	-45.9%
TWIST BIOSCIENCE CORP (TWST)	-36.7%
STEM INC	-36.6%
HALOZYME THERAPEUTICS INC (HALO)	-32.9%
VERADIGM INC (MDRX)	-26.0%
OWENS & MINOR INC. (OMI)	-25.5%
GLOBUS MEDICAL INC (GMED)	-23.7%
AZENTA INC (AZTA)	-23.4%

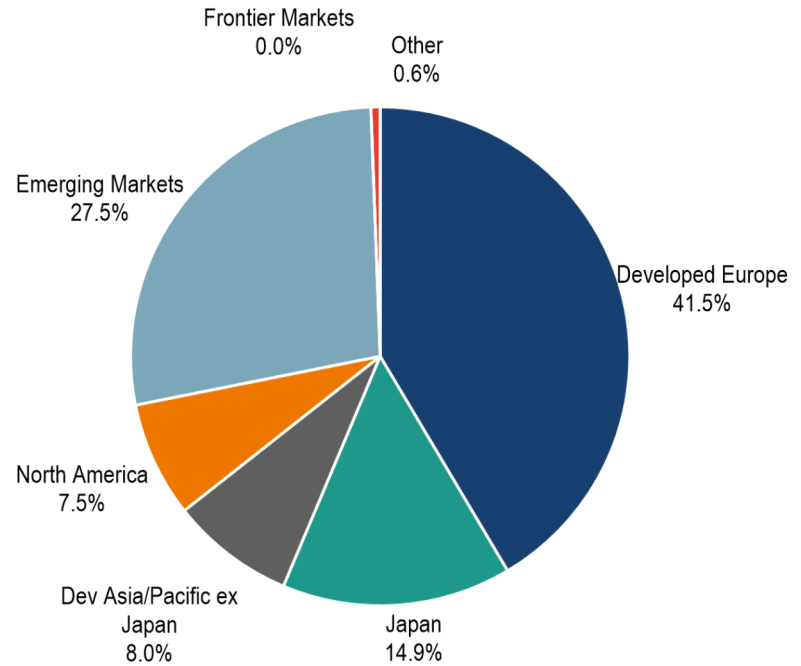
William Blair Small Cap Growth Performance Attribution vs. Russell 2000 Growth

	Total Effects	Attribution Effects			Returns		Sector Weights				
		Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	0.97%	1.01%	-0.10%	0.06%	5.80%	-7.32%	7.04%	7.38%			
Materials	0.30%	0.89%	-0.11%	-0.48%	30.50%	10.08%	1.92%	4.47%			
Industrials	0.05%	-0.05%	0.12%	-0.02%	8.01%	8.31%	22.51%	17.73%			
Consumer Discretionary	-0.47%	-0.52%	0.11%	-0.06%	7.71%	12.71%	12.41%	10.79%			
Consumer Staples	-0.02%	0.02%	0.00%	-0.03%	8.55%	8.72%	3.55%	4.53%			
Health Care	-1.31%	-1.30%	-0.01%	0.00%	-5.39%	-0.06%	23.64%	23.27%			
Financials	-0.25%	-0.33%	0.06%	0.02%	-6.48%	1.14%	2.45%	5.74%			
Information Technology	1.14%	1.32%	-0.09%	-0.09%	19.44%	12.31%	17.61%	19.84%			
Communication Services	-0.22%	-0.24%	0.16%	-0.15%	2.40%	12.88%	4.16%	2.27%			
Utilities	0.04%	--	0.04%	--	--	4.21%	0.00%	1.74%			
Real Estate	0.23%	0.31%	0.04%	-0.12%	15.02%	0.75%	1.31%	2.23%			
Cash	-0.27%	0.00%	-0.27%	0.00%	1.07%	--	2.85%	0.00%			
Unclassified	0.34%	0.00%	0.34%	0.00%	41.97%	--	0.55%	0.00%			
<b>Portfolio</b>	<b>0.53%</b>	<b>=</b>	<b>1.11%</b>	<b>+</b>	<b>0.29%</b>	<b>+</b>	<b>-0.87%</b>	<b>6.56%</b>	<b>6.02%</b>	<b>100.00%</b>	<b>100.00%</b>

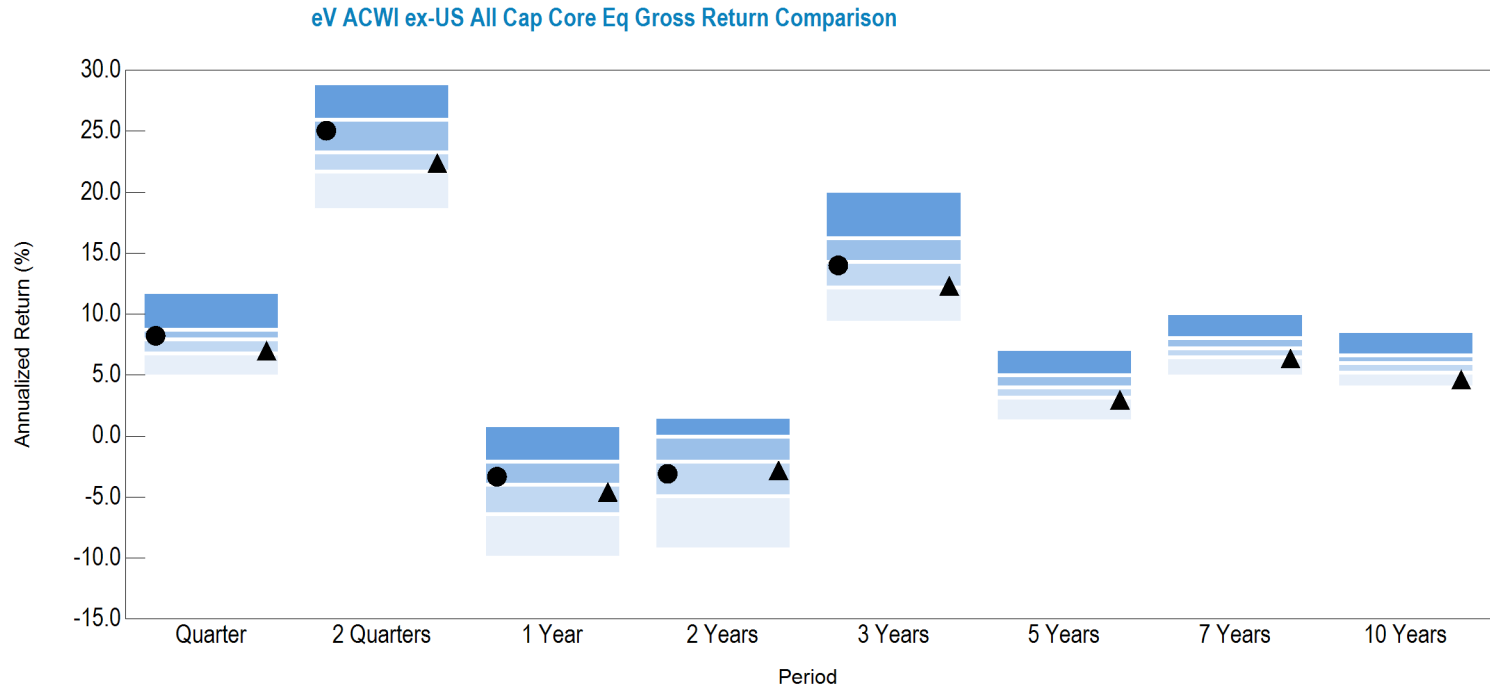
International Equity



MSCI ACWI ex US IMI







	Quarter		2 Quarters		1 Year		2 Years		3 Years		5 Years		7 Years		10 Years	
<b>Return (Rank)</b>																
5th Percentile	11.78		28.91		0.89		1.55		20.10		7.15		10.07		8.60	
25th Percentile	8.75		25.95		-2.05		-0.03		16.26		5.00		8.07		6.65	
Median	7.96		23.29		-3.97		-2.07		14.29		4.01		7.21		6.01	
75th Percentile	6.81		21.72		-6.39		-4.90		12.23		3.19		6.52		5.22	
95th Percentile	4.90		18.55		-9.96		-9.26		9.30		1.25		4.92		4.03	
# of Portfolios	56		56		56		56		54		51		49		42	
● Bivium Intl Equity	8.23	(36)	25.05	(32)	-3.33	(35)	-3.09	(65)	14.00	(52)	--	(--)	--	(--)	--	(--)
▲ MSCI ACWI ex USA Gross	7.00	(70)	22.38	(68)	-4.57	(66)	-2.82	(63)	12.32	(75)	2.97	(79)	6.37	(82)	4.65	(89)

Characteristics

	Portfolio	MSCI ACWI ex USA Gross
Number of Holdings	519	2,258
Weighted Avg. Market Cap. (\$B)	53.7	89.8
Median Market Cap. (\$B)	7.8	9.2
Price To Earnings	11.7	13.5
Price To Book	2.3	2.5
Price To Sales	0.9	1.2
Return on Equity (%)	14.6	14.8
Yield (%)	3.5	3.3
Beta	1.1	1.0

Top Holdings

TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	1.6%
ALIBABA GROUP HOLDING LTD	1.5%
SANDS CHINA LTD	1.2%
ITOCHU CORP	1.2%
BAIDU INC	1.1%
LOREAL SA	1.0%
ROCHE HOLDING AG	1.0%
POSCO HOLDINGS INC	0.9%
BMW	0.9%
AIRBUS SE	0.8%

Best Performers

	Return %
EASYJET (UKIR:EZJ)	64.0%
MERCADOLIBRE INC (MELI)	55.8%
INNER MONGOLIA YITAI COAL CO LTD	55.4%
ADVANTEST CORP	43.1%
ARYZTA AG	42.6%
WIWYNN CORPORATION	42.1%
PANDORA AS	40.0%
SOPRA STERIA GROUP (F:SOP)	39.2%
ASMPT LIMITED	38.7%
CECONOMY AG	37.3%

Worst Performers

	Return %
CREDIT SUISSE GROUP	-69.8%
DIRECT LINE INSURANCE GROUP PLC	-36.2%
EAST BUY HOLDING LIMITED	-36.0%
ANGLO AMERICAN PLATINUM LTD	-33.6%
PRECISION DRILLING CORP (PD.)	-33.0%
QUALICORP CONSULTORIA E CORRETORA DE SEGUROS SA	-29.2%
JINXIN FERTILITY GROUP LIMITED	-27.5%
CHINASOFT INTERNATIONAL LTD	-27.3%
GRUPO SBF	-24.9%
CHINA EDUCATION GROUP HOLDINGS LIMITED	-22.8%

**Bivium Intl Equity Performance Attribution vs. MSCI ACWI ex USA Gross**

	Attribution Effects				Returns		Sector Weights				
	Total Effects	Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	0.24%	0.12%	0.15%	-0.04%	2.46%	-0.02%	3.93%	6.01%			
Materials	0.32%	0.36%	0.02%	-0.05%	10.40%	6.06%	7.55%	8.37%			
Industrials	-0.02%	-0.04%	0.10%	-0.08%	9.21%	10.06%	14.91%	12.27%			
Consumer Discretionary	0.26%	0.24%	0.02%	0.00%	13.06%	11.21%	11.83%	11.35%			
Consumer Staples	0.13%	0.20%	0.03%	-0.10%	8.60%	6.55%	6.62%	8.89%			
Health Care	0.13%	0.12%	-0.05%	0.05%	5.72%	4.44%	11.77%	9.82%			
Financials	0.23%	0.03%	0.22%	-0.02%	1.68%	1.43%	16.74%	20.95%			
Information Technology	0.32%	0.21%	0.06%	0.04%	19.41%	17.04%	10.49%	10.76%			
Communication Services	-0.03%	0.20%	-0.15%	-0.08%	15.89%	11.74%	3.29%	5.90%			
Utilities	0.06%	0.04%	0.05%	-0.03%	4.62%	3.42%	2.13%	3.36%			
Real Estate	0.04%	0.06%	-0.06%	0.04%	1.40%	-1.64%	2.87%	2.28%			
Cash	-0.16%	0.00%	-0.16%	0.00%	1.07%	--	2.67%	0.00%			
Unclassified	-0.14%	0.00%	-0.07%	-0.07%	2.59%	5.20%	5.21%	0.05%			
<b>Portfolio</b>	<b>1.37%</b>	<b>=</b>	<b>1.55%</b>	<b>+</b>	<b>0.17%</b>	<b>+</b>	<b>-0.35%</b>	<b>8.30%</b>	<b>6.93%</b>	<b>100.00%</b>	<b>100.00%</b>

**Bivium Intl Equity Performance Attribution vs. MSCI ACWI ex USA Gross**

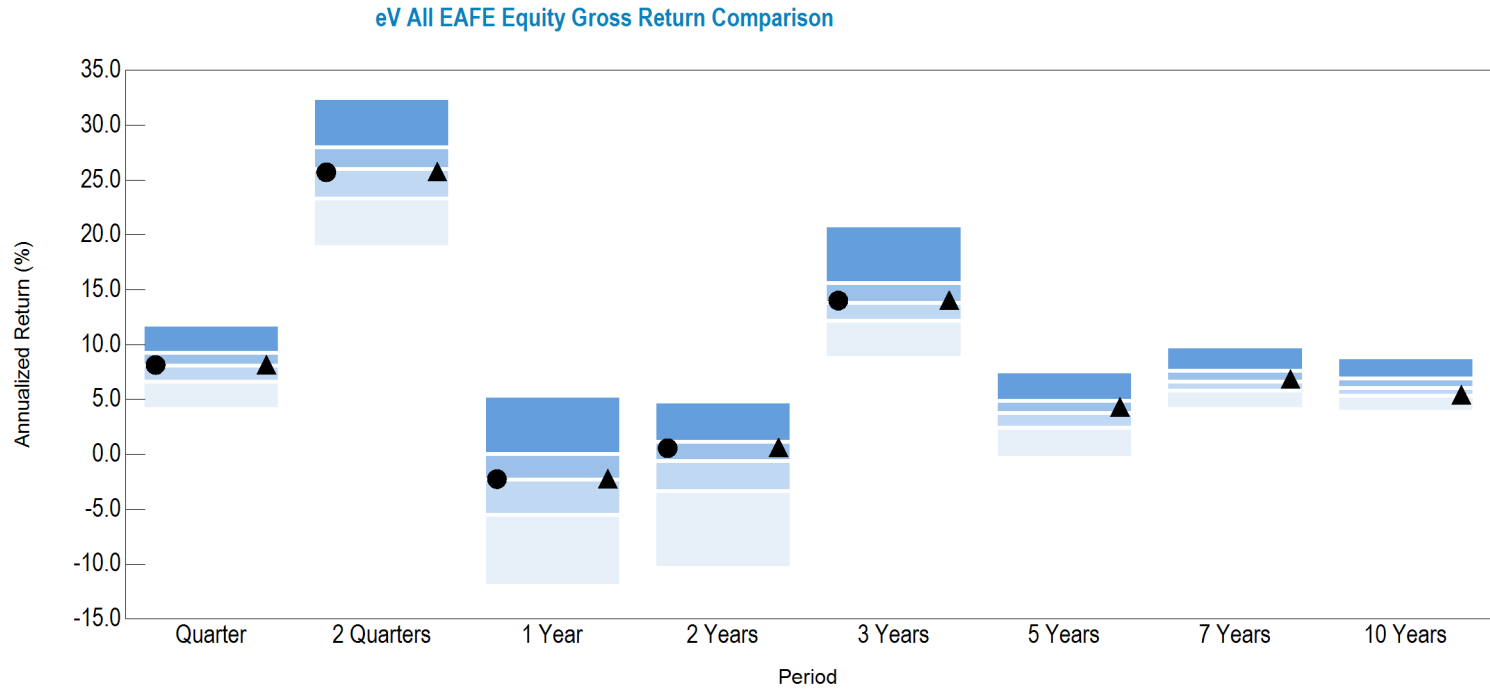
	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>Europe</b>									
Austria	-0.05%	2.42%	0.70%	0.12%	0.00%	-0.03%	0.01%	-0.01%	-0.04%
Belgium	3.41%	6.14%	0.40%	0.66%	-0.02%	0.01%	0.00%	0.01%	-0.01%
Czech Republic*	14.66%	32.90%	0.04%	0.04%	-0.01%	0.00%	0.00%	0.00%	-0.01%
Denmark	14.00%	12.83%	2.62%	1.90%	0.02%	0.03%	0.01%	0.01%	0.08%
Finland	-4.10%	-0.12%	0.55%	0.65%	-0.03%	0.01%	0.00%	0.00%	-0.02%
France	14.88%	14.52%	8.74%	7.57%	0.03%	0.07%	0.02%	0.00%	0.13%
Germany	11.52%	14.64%	3.13%	5.21%	-0.16%	-0.13%	-0.04%	0.06%	-0.27%
Greece*	--	15.43%	0.00%	0.09%	--	-0.01%	0.00%	--	-0.01%
Hungary*	-1.15%	3.06%	0.19%	0.05%	0.00%	-0.01%	0.01%	-0.01%	-0.01%
Ireland	-3.58%	21.48%	0.24%	0.44%	-0.10%	-0.03%	-0.01%	0.05%	-0.09%
Italy	3.03%	14.67%	0.68%	1.50%	-0.17%	-0.05%	-0.02%	0.09%	-0.15%
Luxembourg	15.89%	6.94%	0.30%	0.00%	0.00%	0.00%	0.00%	0.03%	0.03%
Netherlands	8.79%	16.53%	4.17%	2.72%	-0.21%	0.12%	0.02%	-0.11%	-0.18%
Norway	3.33%	-6.81%	0.49%	0.50%	0.05%	0.00%	0.00%	0.00%	0.05%
Poland*	5.94%	-1.20%	0.14%	0.21%	0.01%	0.01%	0.00%	0.00%	0.01%
Portugal	--	3.22%	0.00%	0.15%	--	0.01%	0.00%	--	0.00%
Spain	14.39%	15.50%	1.83%	1.55%	-0.02%	0.02%	0.00%	0.00%	0.01%
Sweden	6.43%	10.19%	3.00%	2.13%	-0.08%	0.03%	0.01%	-0.03%	-0.08%
Switzerland	11.16%	7.29%	7.06%	6.48%	0.25%	0.00%	0.01%	0.02%	0.28%
United Kingdom	12.77%	5.94%	8.53%	9.74%	0.66%	0.04%	-0.03%	-0.08%	0.59%

**Bivium Intl Equity Performance Attribution vs. MSCI ACWI ex USA Gross**

	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>AsiaPacific</b>									
Australia	10.28%	2.73%	2.02%	5.07%	0.39%	0.07%	0.04%	-0.23%	0.26%
China*	7.66%	4.85%	5.51%	9.17%	0.25%	0.04%	0.02%	-0.10%	0.21%
Hong Kong	8.42%	-2.47%	6.66%	1.94%	0.21%	-0.39%	-0.03%	0.51%	0.31%
India*	-2.87%	-6.14%	2.39%	4.10%	0.16%	0.23%	-0.03%	-0.07%	0.29%
Indonesia*	7.95%	6.40%	0.54%	0.54%	0.01%	0.00%	0.00%	0.00%	0.01%
Japan	7.06%	6.27%	15.98%	14.03%	0.11%	0.01%	-0.02%	0.02%	0.12%
Korea*	8.53%	8.57%	4.08%	3.21%	-0.08%	0.05%	0.06%	-0.02%	0.02%
Malaysia*	-3.07%	-3.99%	0.25%	0.44%	0.00%	0.02%	0.00%	0.00%	0.02%
New Zealand	16.52%	7.81%	0.65%	0.12%	0.01%	0.01%	-0.01%	0.05%	0.06%
Philippines*	9.78%	2.71%	0.81%	0.21%	0.01%	-0.04%	0.02%	0.04%	0.04%
Singapore	1.28%	5.88%	1.69%	0.97%	-0.05%	-0.01%	0.01%	-0.03%	-0.08%
Taiwan*	20.20%	14.55%	2.35%	3.92%	0.24%	-0.12%	-0.03%	-0.10%	0.01%
Thailand*	-1.63%	-0.58%	0.31%	0.63%	-0.01%	0.03%	-0.01%	0.00%	0.02%
<b>Americas</b>									
Argentina*	55.76%	4.74%	0.09%	0.00%	0.00%	0.00%	0.00%	0.05%	0.04%
Brazil*	-1.14%	-0.68%	3.24%	1.49%	0.00%	-0.20%	0.06%	0.00%	-0.14%
Canada	-1.69%	4.39%	3.44%	7.73%	-0.47%	0.09%	0.00%	0.26%	-0.12%
Chile*	1.53%	4.78%	0.09%	0.16%	0.01%	0.01%	-0.01%	0.00%	0.00%
Colombia*	0.86%	-11.50%	0.09%	0.03%	0.01%	-0.01%	0.00%	0.01%	0.00%
Mexico*	22.21%	21.91%	0.51%	0.65%	0.00%	-0.01%	-0.01%	0.00%	-0.02%
Peru*	--	8.27%	0.00%	0.07%	--	0.00%	0.00%	--	0.00%
United States	3.94%	7.59%	1.59%	0.00%	0.00%	0.02%	0.00%	-0.06%	-0.04%

**Bivium Intl Equity Performance Attribution vs. MSCI ACWI ex USA Gross**

	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>Other</b>									
Egypt*	--	-3.58%	0.00%	0.02%	--	0.00%	0.01%	--	0.00%
Israel	-9.59%	0.88%	0.25%	0.46%	-0.05%	0.01%	0.00%	0.02%	-0.01%
Kuwait*	--	-3.47%	0.00%	0.27%	--	0.03%	0.00%	--	0.03%
Qatar*	--	-0.75%	0.00%	0.28%	--	0.02%	0.00%	--	0.02%
Saudi Arabia*	--	0.12%	0.00%	1.16%	--	0.07%	0.00%	--	0.07%
South Africa*	8.28%	-0.33%	1.07%	1.05%	0.09%	0.00%	0.00%	0.00%	0.09%
Turkey*	5.90%	-8.89%	0.07%	0.19%	0.03%	0.02%	0.00%	-0.02%	0.03%
United Arab Emirates*	-2.10%	-7.75%	0.68%	0.38%	0.02%	-0.04%	0.00%	0.02%	0.00%
<b>Totals</b>									
Americas	1.45%	4.74%	9.05%	10.13%	-0.38%	0.03%	0.03%	0.04%	-0.28%
Europe	11.23%	10.59%	42.80%	41.71%	0.30%	0.03%	-0.02%	0.01%	0.32%
Asia/Pacific	7.66%	4.72%	43.24%	44.34%	1.28%	0.01%	0.03%	-0.03%	1.29%
Other	2.64%	-1.48%	2.07%	3.81%	0.20%	0.11%	0.00%	-0.09%	0.22%
Cash	1.07%	--	2.83%	0.00%	0.00%	-0.15%	0.00%	0.00%	-0.15%
<b>Total</b>	<b>8.34%</b>	<b>6.94%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>1.40%</b>	<b>0.03%</b>	<b>0.05%</b>	<b>-0.07%</b>	<b>1.40%</b>
<b>Totals</b>									
Developed	9.10%	8.06%	74.70%	71.64%	0.80%	0.03%	-0.03%	0.03%	0.83%
Emerging*	6.70%	4.10%	22.46%	28.36%	0.63%	0.14%	0.08%	-0.13%	0.72%
Cash	1.07%	--	2.83%	0.00%	0.00%	-0.15%	0.00%	0.00%	-0.15%



	Quarter		2 Quarters		1 Year		2 Years		3 Years		5 Years		7 Years		10 Years	
<b>5th Percentile</b>	11.82		32.45		5.35		4.79		20.83		7.55		9.82		8.84	
<b>25th Percentile</b>	9.28		28.03		0.08		1.17		15.64		4.90		7.63		6.97	
<b>Median</b>	8.10		26.05		-2.29		-0.60		13.81		3.80		6.69		6.06	
<b>75th Percentile</b>	6.64		23.33		-5.48		-3.32		12.23		2.47		5.82		5.36	
<b>95th Percentile</b>	4.15		18.92		-11.93		-10.31		8.80		-0.27		4.15		3.93	
<b># of Portfolios</b>	397		397		396		389		376		358		320		256	
<b>● BlackRock MSCI World ex-US Index Fd A</b>	8.15	(50)	25.71	(56)	-2.25	(50)	0.57	(32)	14.01	(47)	--	(--)	--	(--)	--	(--)
<b>▲ MSCI World ex US Gross</b>	8.19	(49)	25.78	(55)	-2.19	(50)	0.64	(31)	14.06	(46)	4.34	(34)	6.88	(43)	5.44	(70)

Characteristics

	Portfolio	MSCI World ex USA
Number of Holdings	884	883
Weighted Avg. Market Cap. (\$B)	81.7	81.8
Median Market Cap. (\$B)	12.5	12.7
Price To Earnings	14.5	14.5
Price To Book	2.5	2.5
Price To Sales	1.3	1.3
Return on Equity (%)	14.5	14.4
Yield (%)	3.2	3.3
Beta	1.0	1.0

Top Holdings

NESTLE SA, CHAM UND VEVEY	1.9%
ASML HOLDING NV	1.6%
NOVO NORDISK 'B'	1.5%
LVMH MOET HENNESSY LOUIS VUITTON SE	1.5%
ASTRAZENECA PLC	1.3%
SHELL PLC	1.2%
ROCHE HOLDING AG	1.1%
NOVARTIS AG	1.1%
BHP GROUP LTD	0.9%
TOYOTA MOTOR CORP	0.9%

Best Performers

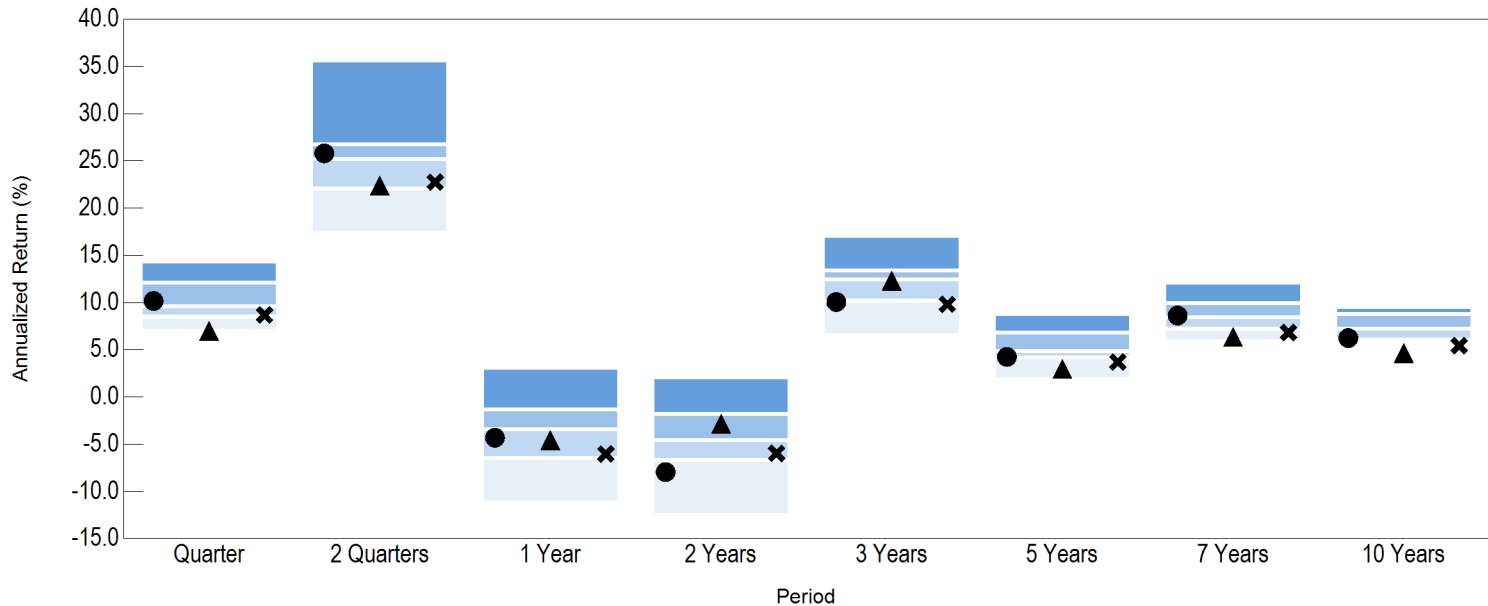
	Return %
NUVEI CORP COM	71.2%
SEA LIMITED (SE)	66.3%
ROLLS ROYCE HOLDINGS PLC	64.2%
ASM INTERNATIONAL NV	60.4%
RENESAS ELECTRONICS CORP	60.4%
STMICROELECTRONICS NV	51.0%
JD SPORTS FASHION PLC	44.7%
ADVANTEST CORP	43.1%
TELECOM ITALIA SPA	43.0%
PANDORA AS	40.0%

Worst Performers

	Return %
CREDIT SUISSE GROUP	-69.8%
NIHON M&A CENTER (J:NMAC)	-39.3%
DELIVERY HERO ORD (DHER)	-28.8%
DIASORIN SPA	-24.3%
NIPPON SHINYAKU CO LTD	-21.9%
KEPPEL CORP LTD	-21.8%
BEZEQ THE ISRAEL TELECOMMUNICATION CORP LTD	-21.1%
VONOVIA SE	-20.0%
ROCHE HOLDING AG	-19.6%
AKER BP ASA	-19.1%



eV ACWI ex-US Large Cap Growth Eq Gross Return Comparison



	Quarter		2 Quarters		1 Year		2 Years		3 Years		5 Years		7 Years		10 Years	
<b>5th Percentile</b>	14.32		35.58		3.09		2.06		17.03		8.74		12.07		9.51	
<b>25th Percentile</b>	12.12		26.79		-1.25		-1.76		13.45		6.86		10.00		8.81	
<b>Median</b>	9.64		25.25		-3.40		-4.50		12.50		4.89		8.49		7.29	
<b>75th Percentile</b>	8.58		22.13		-6.40		-6.62		10.26		4.19		7.23		6.12	
<b>95th Percentile</b>	7.07		17.42		-11.15		-12.48		6.57		1.90		5.99		5.74	
<b># of Portfolios</b>	43		43		43		43		42		38		32		23	
<b>● Capital Group</b>	10.17	(41)	25.80	(38)	-4.31	(62)	-7.95	(84)	10.06	(76)	4.25	(70)	8.62	(49)	6.24	(74)
<b>▲ MSCI ACWI ex USA Gross</b>	7.00	(98)	22.38	(74)	-4.57	(63)	-2.82	(36)	12.32	(55)	2.97	(92)	6.37	(93)	4.65	(99)
<b>✕ MSCI ACWI ex USA Growth Gross</b>	8.69	(71)	22.76	(73)	-6.03	(72)	-5.97	(62)	9.81	(77)	3.71	(78)	6.83	(89)	5.45	(99)

Characteristics

	Portfolio	MSCI ACWI ex USA Gross
Number of Holdings	217	2,258
Weighted Avg. Market Cap. (\$B)	107.5	89.8
Median Market Cap. (\$B)	29.2	9.2
Price To Earnings	19.0	13.5
Price To Book	3.5	2.5
Price To Sales	2.2	1.2
Return on Equity (%)	17.4	14.8
Yield (%)	1.9	3.3
Beta	1.1	1.0

Top Holdings

NOVO NORDISK 'B'	3.1%
EVOLUTION AB (PUBL)	2.7%
ASML HOLDING NV	2.7%
ASTRAZENECA PLC	2.6%
KEYENCE CORP	2.4%
LVMH MOET HENNESSY LOUIS VUITTON SE	2.2%
TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	2.2%
GENMAB A/S	1.9%
AIA GROUP LTD	1.9%
AIRBUS SE	1.9%

Best Performers

	Return %
NUVEI CORP COM	71.2%
SPOTIFY TECHNOLOGY S.A (SPOT)	69.2%
ASM INTERNATIONAL NV	60.4%
WIZZ AIR HOLDINGS PLC	60.3%
MERCADOLIBRE INC (MELI)	55.8%
STMICROELECTRONICS NV	51.0%
TCS GROUP HOLDING PLC	39.7%
EVOLUTION AB (PUBL)	37.6%
INFINEON TECHNOLOGIES AG	36.0%
GRUPO AEROPORTUARIO DEL PACIFICO SA	35.5%

Worst Performers

	Return %
COUNTRY GARDEN SERVICES HOLDINGS COMPANY LIMITED	-30.6%
KINGDEE INTERNATIONAL SOFTWARE GROUP CO LTD	-24.5%
EUROAPI SASU	-22.8%
WUXI BIOLOGICS (CAYMAN) INC	-19.3%
AKER BP ASA	-19.1%
REDE D OR SAO LUIZ SA COMMON STOCK	-18.5%
MEITUAN	-18.4%
GALP ENERGIA SGPS SA	-15.7%
KUAISHOU TECHNOLOGY COMMON STOCK USD.000053	-15.5%
GLENCORE PLC	-13.6%

**Capital Group Performance Attribution vs. MSCI ACWI ex USA Gross**

	Total Effects	Attribution Effects			Returns		Sector Weights				
		Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	-0.01%	-0.05%	0.10%	-0.06%	-2.20%	-0.03%	4.61%	6.01%			
Materials	-0.04%	-0.12%	0.03%	0.06%	5.05%	6.07%	5.01%	8.38%			
Industrials	0.62%	0.50%	0.02%	0.10%	14.67%	10.05%	12.92%	12.27%			
Consumer Discretionary	1.71%	1.64%	0.00%	0.08%	26.35%	11.17%	11.28%	11.39%			
Consumer Staples	0.20%	0.26%	0.02%	-0.08%	9.31%	6.54%	7.27%	8.89%			
Health Care	-0.38%	-0.22%	-0.18%	0.01%	2.77%	4.43%	15.91%	9.82%			
Financials	0.26%	-0.16%	0.43%	0.00%	0.48%	1.44%	13.13%	20.99%			
Information Technology	1.48%	0.37%	0.78%	0.33%	20.96%	17.07%	18.02%	10.74%			
Communication Services	-0.14%	-0.01%	-0.11%	-0.02%	10.94%	11.82%	3.86%	5.87%			
Utilities	0.08%	0.07%	0.07%	-0.06%	5.23%	3.40%	1.70%	3.36%			
Real Estate	0.12%	-0.24%	0.16%	0.21%	-12.24%	-1.63%	0.31%	2.28%			
Cash	-0.32%	0.00%	-0.32%	0.00%	1.07%	--	5.96%	0.00%			
<b>Portfolio</b>	<b>3.58%</b>	<b>=</b>	<b>2.04%</b>	<b>+</b>	<b>0.99%</b>	<b>+</b>	<b>0.55%</b>	<b>10.52%</b>	<b>6.94%</b>	<b>100.00%</b>	<b>100.00%</b>

Capital Group Performance Attribution vs. MSCI ACWI ex USA Gross

	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>Europe</b>									
Austria	3.69%	2.42%	0.00%	0.12%	0.00%	0.01%	0.00%	0.00%	0.00%
Belgium	2.23%	6.14%	1.00%	0.66%	-0.03%	-0.01%	0.01%	-0.01%	-0.04%
Czech Republic*	--	32.90%	0.00%	0.04%	--	-0.01%	0.00%	--	-0.01%
Denmark	8.21%	12.83%	7.56%	1.90%	-0.08%	0.27%	0.05%	-0.23%	0.02%
Finland	6.56%	-0.12%	0.29%	0.65%	0.04%	0.03%	-0.01%	-0.02%	0.04%
France	16.55%	14.52%	11.97%	7.57%	0.15%	0.28%	0.08%	0.09%	0.60%
Germany	20.94%	14.64%	2.34%	5.21%	0.32%	-0.18%	-0.05%	-0.18%	-0.09%
Greece*	--	15.43%	0.00%	0.09%	--	-0.01%	0.00%	--	-0.01%
Hungary*	--	3.06%	0.00%	0.05%	--	0.01%	0.00%	--	0.00%
Ireland	26.12%	21.48%	0.21%	0.44%	0.03%	-0.03%	-0.01%	-0.02%	-0.03%
Italy	22.94%	14.67%	0.27%	1.50%	0.12%	-0.08%	-0.02%	-0.10%	-0.08%
Luxembourg	33.43%	6.94%	0.41%	0.00%	0.00%	0.00%	0.01%	0.10%	0.11%
Netherlands	22.68%	16.53%	6.52%	2.72%	0.16%	0.32%	0.08%	0.23%	0.79%
Norway	-13.47%	-6.81%	0.63%	0.50%	-0.04%	-0.01%	-0.01%	-0.01%	-0.06%
Poland*	--	-1.20%	0.00%	0.21%	--	0.02%	0.00%	--	0.02%
Portugal	-15.68%	3.22%	0.26%	0.15%	-0.03%	-0.01%	0.00%	-0.02%	-0.05%
Spain	24.53%	15.50%	1.44%	1.55%	0.14%	-0.01%	0.00%	-0.01%	0.12%
Sweden	37.61%	10.19%	2.17%	2.13%	0.58%	0.00%	0.00%	0.01%	0.60%
Switzerland	9.67%	7.29%	5.41%	6.48%	0.15%	0.01%	-0.01%	-0.02%	0.12%
United Kingdom	7.65%	5.94%	7.95%	9.74%	0.18%	0.06%	-0.06%	-0.03%	0.14%

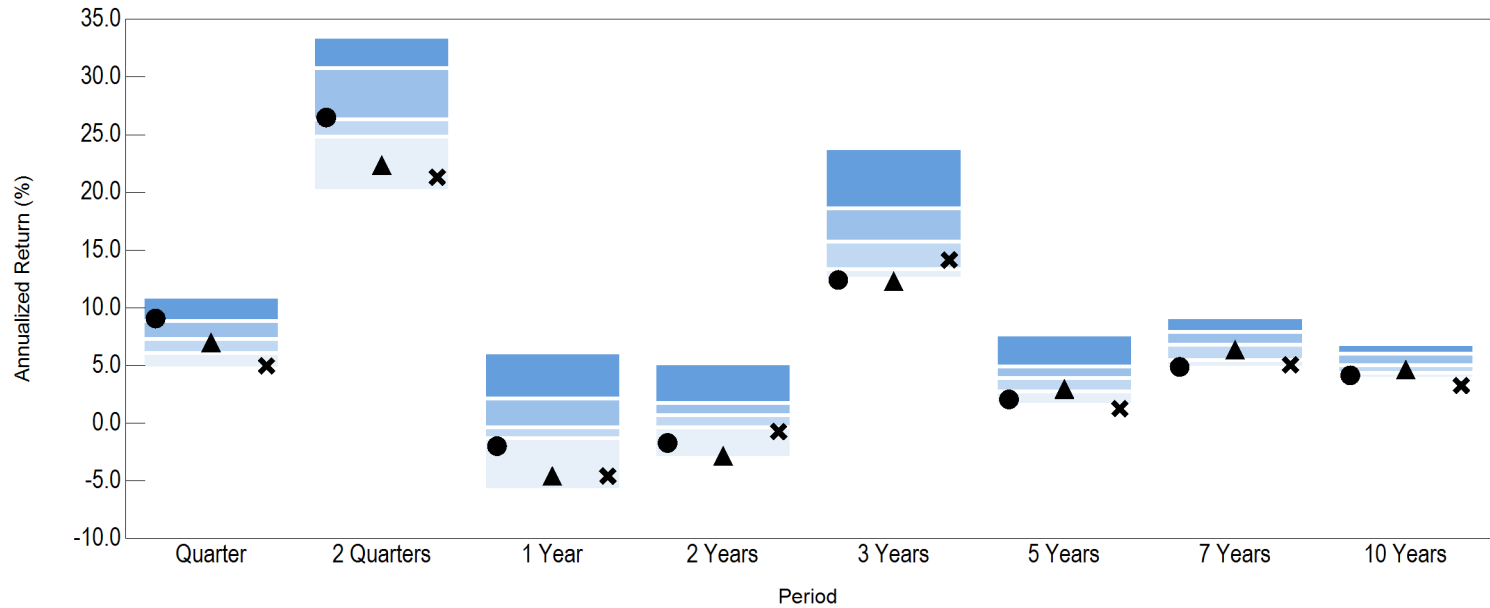
Capital Group Performance Attribution vs. MSCI ACWI ex USA Gross

	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>AsiaPacific</b>									
Australia	33.02%	2.73%	0.12%	5.07%	1.47%	0.11%	0.07%	-1.43%	0.22%
China*	-0.75%	4.85%	5.30%	9.17%	-0.53%	0.04%	0.03%	0.22%	-0.24%
Hong Kong	1.15%	-2.47%	4.20%	1.94%	0.07%	-0.19%	-0.02%	0.08%	-0.05%
India*	-2.89%	-6.14%	3.74%	4.10%	0.16%	0.05%	-0.03%	-0.01%	0.17%
Indonesia*	8.29%	6.40%	0.54%	0.54%	0.01%	0.00%	0.00%	0.00%	0.01%
Japan	11.70%	6.27%	15.12%	14.03%	0.77%	0.01%	-0.02%	0.06%	0.82%
Korea*	7.39%	8.57%	0.73%	3.21%	-0.04%	-0.15%	0.10%	0.03%	-0.06%
Malaysia*	--	-3.99%	0.00%	0.44%	--	0.04%	0.00%	--	0.05%
New Zealand	--	7.81%	0.00%	0.12%	--	0.00%	0.00%	--	0.00%
Philippines*	--	2.71%	0.00%	0.21%	--	0.01%	-0.01%	--	0.01%
Singapore	-2.05%	5.88%	1.73%	0.97%	-0.08%	-0.01%	0.01%	-0.06%	-0.14%
Taiwan*	19.60%	14.55%	3.80%	3.92%	0.21%	-0.01%	-0.01%	-0.01%	0.18%
Thailand*	4.87%	-0.58%	0.28%	0.63%	0.03%	0.03%	0.00%	-0.02%	0.04%
<b>Americas</b>									
Argentina*	55.76%	4.74%	0.80%	0.00%	0.00%	-0.01%	0.00%	0.41%	0.39%
Brazil*	-5.84%	-0.68%	3.33%	1.49%	-0.05%	-0.21%	0.01%	-0.06%	-0.30%
Canada	16.35%	4.39%	2.68%	7.73%	0.92%	0.10%	0.00%	-0.60%	0.42%
Chile*	1.53%	4.78%	0.08%	0.16%	0.01%	0.01%	-0.01%	0.00%	0.00%
Colombia*	--	-11.50%	0.00%	0.03%	--	0.01%	0.00%	--	0.01%
Mexico*	27.42%	21.91%	0.50%	0.65%	0.03%	-0.01%	-0.01%	-0.01%	0.00%
Peru*	--	8.27%	0.00%	0.07%	--	0.00%	0.00%	--	0.00%
United States	-12.23%	7.59%	0.62%	0.00%	0.00%	0.01%	0.00%	-0.13%	-0.12%

Capital Group Performance Attribution vs. MSCI ACWI ex USA Gross

	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>Other</b>									
Egypt*	--	-3.58%	0.00%	0.02%	--	0.00%	0.01%	--	0.00%
Israel	19.03%	0.88%	0.54%	0.46%	0.08%	0.00%	0.01%	0.01%	0.09%
Kuwait*	--	-3.47%	0.00%	0.27%	--	0.03%	0.00%	--	0.03%
Qatar*	--	-0.75%	0.00%	0.28%	--	0.02%	0.00%	--	0.02%
Saudi Arabia*	--	0.12%	0.00%	1.16%	--	0.07%	0.00%	--	0.07%
South Africa*	8.36%	-0.33%	0.92%	1.05%	0.09%	0.00%	0.00%	-0.01%	0.09%
Turkey*	--	-8.89%	0.00%	0.19%	--	0.02%	0.00%	--	0.03%
United Arab Emirates*	--	-7.75%	0.00%	0.38%	--	0.05%	0.00%	--	0.05%
<b>Totals</b>									
Americas	9.37%	4.74%	8.00%	10.13%	0.44%	0.06%	-0.01%	-0.09%	0.40%
Europe	14.33%	10.59%	49.02%	41.71%	1.65%	0.17%	0.03%	0.29%	2.14%
Asia/Pacific	7.12%	4.72%	35.54%	44.34%	0.97%	0.09%	0.13%	-0.19%	1.00%
Other	12.29%	-1.48%	1.45%	3.81%	0.58%	0.15%	0.02%	-0.36%	0.39%
Cash	1.07%	--	5.98%	0.00%	0.00%	-0.32%	0.00%	0.00%	-0.32%
Unclassified	--	--	0.00%	0.00%	--	0.00%	0.00%	--	0.00%
<b>Total</b>	<b>10.55%</b>	<b>6.94%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>3.64%</b>	<b>0.16%</b>	<b>0.17%</b>	<b>-0.35%</b>	<b>3.61%</b>
<b>Totals</b>									
Developed	12.70%	8.06%	73.43%	71.64%	3.21%	0.02%	0.13%	0.08%	3.44%
Emerging*	5.63%	4.10%	20.59%	28.36%	0.38%	0.18%	0.03%	-0.11%	0.49%
Cash	1.07%	--	5.98%	0.00%	0.00%	-0.32%	0.00%	0.00%	-0.32%

eV ACWI ex-US Large Cap Value Eq Gross Return Comparison



	Quarter		2 Quarters		1 Year		2 Years		3 Years		5 Years		7 Years		10 Years	
<b>5th Percentile</b>	10.94	33.45	6.10	5.15	23.83	7.69	9.14	6.86								
<b>25th Percentile</b>	8.86	30.79	2.19	1.77	18.64	4.92	7.96	6.05								
<b>Median</b>	7.33	26.33	-0.32	0.73	15.74	3.95	6.84	5.06								
<b>75th Percentile</b>	6.11	24.84	-1.26	-0.32	13.35	2.78	5.51	4.38								
<b>95th Percentile</b>	4.78	20.17	-5.78	-2.96	12.52	1.59	4.84	3.86								
<b># of Portfolios</b>	21	21	21	20	20	20	19	15								
● Mondrian	9.07 (24)	26.49 (46)	-1.98 (86)	-1.71 (87)	12.41 (96)	2.06 (91)	4.88 (95)	4.15 (86)								
▲ MSCI ACWI ex USA Gross	7.00 (56)	22.38 (88)	-4.57 (93)	-2.82 (95)	12.32 (96)	2.97 (72)	6.37 (64)	4.65 (62)								
✕ MSCI ACWI ex US IMI Value Net	4.97 (89)	21.32 (90)	-4.58 (93)	-0.72 (80)	14.14 (72)	1.27 (98)	5.06 (88)	3.27 (99)								

Characteristics

	Portfolio	MSCI ACWI ex USA Gross
Number of Holdings	62	2,258
Weighted Avg. Market Cap. (\$B)	49.5	89.8
Median Market Cap. (\$B)	23.8	9.2
Price To Earnings	11.9	13.5
Price To Book	1.6	2.5
Price To Sales	0.8	1.2
Return on Equity (%)	8.9	14.8
Yield (%)	3.9	3.3
Beta	1.0	1.0

Top Holdings

BANCO SANTANDER SA	3.7%
ENEL ENTE NAZIONALE PER L'ENERGIA ELETTRICA SPA, ROMA	3.7%
TAKEDA PHARMACEUTICAL CO LTD	3.6%
LLOYDS BANKING GROUP PLC	3.5%
CK HUTCHISON HOLDINGS LTD	3.4%
SANOFI	3.3%
SONY GROUP CORPORATION	3.3%
UNITED OVERSEAS BANK LTD	3.0%
NOVARTIS AG	2.9%
WPP PLC	2.9%

Best Performers

	Return %
HEIDELBERG MATERIALS AG	28.3%
ASSOCIATED BRITISH FOODS PLC	26.4%
MINEBEA MITSUMI INC	26.4%
BANCO SANTANDER SA	24.3%
KONINKLIJKE PHILIPS NV	22.2%
TESCO PLC	21.7%
mitsubishi electric corp	21.2%
WPP PLC	20.0%
SONY GROUP CORPORATION	18.9%
ENEL ENTE NAZIONALE PER L'ENERGIA ELETTRICA SPA, ROMA	17.9%

Worst Performers

	Return %
AURIZON HOLDINGS LTD	-9.2%
TOKIO MARINE HOLDINGS INC	-8.9%
ISS A/S	-3.8%
OTSUKA HOLDINGS CO LTD	-3.2%
KAO CORP	-2.5%
UNITED OVERSEAS BANK LTD	-2.3%
JARDINE MATHESON HOLDINGS LTD	-1.4%
TC ENERGY CORP (TRP.)	-0.9%
TELIA COMPANY AB	-0.4%
COCA-COLA BOTTLERS JAPAN HOLDINGS INC	-0.2%



**Mondrian Performance Attribution vs. MSCI ACWI ex USA Gross**

	Total Effects	Attribution Effects			Returns		Sector Weights				
		Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	0.44%	0.36%	-0.09%	0.17%	6.42%	-0.02%	6.34%	6.01%			
Materials	0.30%	0.79%	-0.01%	-0.48%	16.14%	6.06%	2.45%	8.37%			
Industrials	-0.05%	-0.08%	0.20%	-0.17%	8.65%	10.06%	17.32%	12.27%			
Consumer Discretionary	0.17%	0.40%	-0.08%	-0.14%	14.16%	11.21%	9.48%	11.35%			
Consumer Staples	0.63%	0.83%	0.12%	-0.32%	16.21%	6.55%	4.96%	8.89%			
Health Care	0.63%	0.48%	-0.24%	0.39%	9.42%	4.44%	16.66%	9.82%			
Financials	1.33%	1.33%	0.48%	-0.48%	8.16%	1.43%	12.20%	20.95%			
Information Technology	-1.48%	-1.51%	-0.41%	0.45%	2.62%	17.04%	7.46%	10.76%			
Communication Services	0.00%	-0.10%	0.06%	0.04%	10.91%	11.74%	6.96%	5.90%			
Utilities	0.75%	0.30%	-0.28%	0.73%	13.21%	3.42%	9.67%	3.36%			
Real Estate	0.19%	--	0.18%	--	--	-1.64%	0.00%	2.28%			
Cash	0.00%	--	--	--	--	--	0.00%	0.00%			
Unclassified	-0.05%	0.00%	0.00%	-0.05%	5.79%	8.02%	6.50%	0.05%			
<b>Portfolio</b>	<b>2.87%</b>	<b>=</b>	<b>2.80%</b>	<b>+</b>	<b>-0.07%</b>	<b>+</b>	<b>0.14%</b>	<b>9.80%</b>	<b>6.93%</b>	<b>100.00%</b>	<b>100.00%</b>

Mondrian Performance Attribution vs. MSCI ACWI ex USA Gross

	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>Europe</b>									
Austria	--	2.42%	0.00%	0.12%	--	0.01%	0.00%	--	0.00%
Belgium	--	6.14%	0.00%	0.66%	--	0.01%	-0.01%	--	0.00%
Czech Republic*	--	32.90%	0.00%	0.04%	--	-0.01%	0.00%	--	-0.01%
Denmark	-3.81%	12.83%	0.03%	1.90%	-0.31%	-0.09%	-0.03%	0.31%	-0.13%
Finland	--	-0.12%	0.00%	0.65%	--	0.05%	-0.01%	--	0.04%
France	14.02%	14.52%	7.69%	7.57%	-0.04%	0.01%	0.00%	0.00%	-0.03%
Germany	9.73%	14.64%	2.17%	5.21%	-0.25%	-0.20%	-0.06%	0.15%	-0.36%
Greece*	--	15.43%	0.00%	0.09%	--	-0.01%	0.00%	--	-0.01%
Hungary*	--	3.06%	0.00%	0.05%	--	0.01%	0.00%	--	0.00%
Ireland	--	21.48%	0.00%	0.44%	--	-0.06%	-0.01%	--	-0.07%
Italy	12.66%	14.67%	8.57%	1.50%	-0.03%	0.45%	0.13%	-0.14%	0.42%
Netherlands	22.14%	16.53%	2.69%	2.72%	0.15%	0.00%	0.00%	0.00%	0.15%
Norway	--	-6.81%	0.00%	0.50%	--	0.04%	0.03%	--	0.07%
Poland*	--	-1.20%	0.00%	0.21%	--	0.02%	0.00%	--	0.02%
Portugal	--	3.22%	0.00%	0.15%	--	0.01%	0.00%	--	0.00%
Spain	20.84%	15.50%	4.75%	1.55%	0.08%	0.23%	0.06%	0.17%	0.55%
Sweden	6.31%	10.19%	3.50%	2.13%	-0.08%	0.04%	0.01%	-0.05%	-0.08%
Switzerland	5.86%	7.29%	3.62%	6.48%	-0.09%	0.01%	-0.04%	0.04%	-0.08%
United Kingdom	12.92%	5.94%	20.41%	9.74%	0.66%	-0.34%	0.33%	0.73%	1.38%

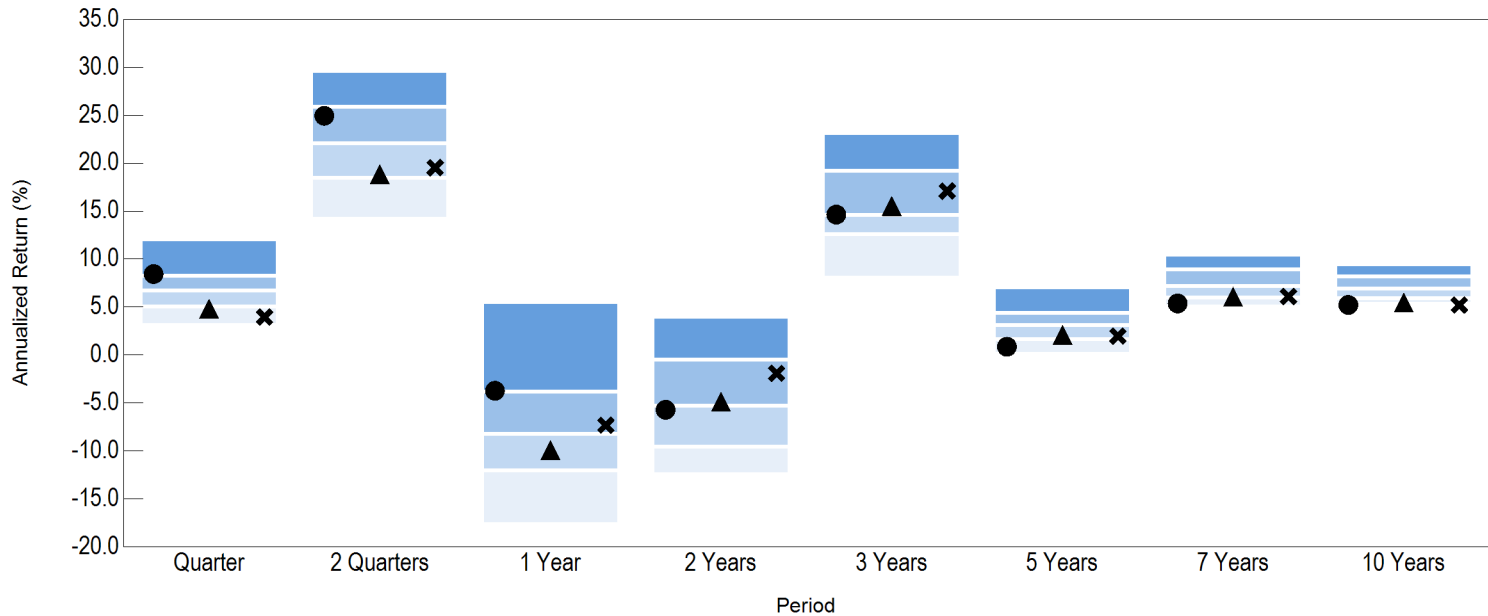
Mondrian Performance Attribution vs. MSCI ACWI ex USA Gross

	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>AsiaPacific</b>									
Australia	-9.20%	2.73%	1.61%	5.07%	-0.61%	0.08%	0.05%	0.42%	-0.07%
China*	--	4.85%	0.00%	9.17%	--	0.10%	0.04%	--	0.14%
Hong Kong	3.25%	-2.47%	4.22%	1.94%	0.11%	-0.19%	-0.02%	0.13%	0.04%
India*	--	-6.14%	0.00%	4.10%	--	0.54%	-0.03%	--	0.51%
Indonesia*	--	6.40%	0.00%	0.54%	--	0.02%	-0.02%	--	0.00%
Japan	7.34%	6.27%	34.73%	14.03%	0.15%	0.16%	-0.18%	0.22%	0.35%
Korea*	--	8.57%	0.00%	3.21%	--	-0.20%	0.13%	--	-0.07%
Malaysia*	--	-3.99%	0.00%	0.44%	--	0.04%	0.00%	--	0.05%
New Zealand	--	7.81%	0.00%	0.12%	--	0.00%	0.00%	--	0.00%
Philippines*	--	2.71%	0.00%	0.21%	--	0.01%	-0.01%	--	0.01%
Singapore	-2.26%	5.88%	3.96%	0.97%	-0.08%	-0.04%	0.02%	-0.25%	-0.34%
Taiwan*	--	14.55%	0.00%	3.92%	--	-0.29%	-0.03%	--	-0.32%
Thailand*	--	-0.58%	0.00%	0.63%	--	0.05%	-0.01%	--	0.04%
<b>Americas</b>									
Brazil*	--	-0.68%	0.00%	1.49%	--	0.17%	-0.06%	--	0.11%
Canada	-0.87%	4.39%	1.22%	7.73%	-0.41%	0.13%	0.00%	0.34%	0.06%
Chile*	--	4.78%	0.00%	0.16%	--	0.01%	-0.01%	--	0.00%
Colombia*	--	-11.50%	0.00%	0.03%	--	0.01%	0.00%	--	0.01%
Mexico*	--	21.91%	0.00%	0.65%	--	-0.04%	-0.06%	--	-0.10%
Peru*	--	8.27%	0.00%	0.07%	--	0.00%	0.00%	--	0.00%

Mondrian Performance Attribution vs. MSCI ACWI ex USA Gross

	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>Other</b>									
Egypt*	--	-3.58%	0.00%	0.02%	--	0.00%	0.01%	--	0.00%
Israel	--	0.88%	0.00%	0.46%	--	0.02%	0.01%	--	0.03%
Kuwait*	--	-3.47%	0.00%	0.27%	--	0.03%	0.00%	--	0.03%
Qatar*	--	-0.75%	0.00%	0.28%	--	0.02%	0.00%	--	0.02%
Saudi Arabia*	--	0.12%	0.00%	1.16%	--	0.07%	0.00%	--	0.07%
South Africa*	--	-0.33%	0.00%	1.05%	--	0.03%	0.04%	--	0.07%
Turkey*	--	-8.89%	0.00%	0.19%	--	0.02%	0.00%	--	0.03%
United Arab Emirates*	--	-7.75%	0.00%	0.38%	--	0.05%	0.00%	--	0.05%
<b>Totals</b>									
Americas	-0.87%	4.74%	1.22%	10.13%	-0.43%	0.26%	-0.14%	0.38%	0.08%
Europe	13.15%	10.59%	53.43%	41.71%	0.93%	0.28%	0.39%	0.26%	1.86%
Asia/Pacific	5.50%	4.72%	44.52%	44.34%	0.39%	0.00%	-0.04%	0.00%	0.34%
Other	--	-1.48%	0.00%	3.81%	--	0.24%	0.06%	--	0.30%
Cash	1.07%	--	0.84%	0.00%	0.00%	-0.04%	0.00%	0.00%	-0.04%
<b>Total</b>	<b>9.47%</b>	<b>6.94%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>0.88%</b>	<b>0.74%</b>	<b>0.27%</b>	<b>0.65%</b>	<b>2.54%</b>
<b>Totals</b>									
Developed	9.55%	8.06%	99.16%	71.64%	1.01%	0.25%	0.28%	0.39%	1.94%
Emerging*	--	4.10%	0.00%	28.36%	--	0.66%	-0.01%	--	0.64%
Cash	1.07%	--	0.84%	0.00%	0.00%	-0.04%	0.00%	0.00%	-0.04%

eV ACWI ex-US Small Cap Equity Gross Return Comparison



	Return (Rank)															
	Quarter		2 Quarters		1 Year		2 Years		3 Years		5 Years		7 Years		10 Years	
5th Percentile	12.06	29.60	5.48	3.98	23.09	7.03	10.45	9.41								
25th Percentile	8.32	25.88	-3.77	-0.42	19.23	4.40	8.94	8.23								
Median	6.74	22.11	-8.21	-5.22	14.64	3.13	7.21	6.95								
75th Percentile	5.10	18.54	-11.97	-9.50	12.61	1.72	6.04	5.96								
95th Percentile	3.14	14.22	-17.57	-12.39	8.12	0.17	5.07	5.33								
# of Portfolios	63	63	63	63	57	45	41	28								
● Templeton	8.44 (24)	24.94 (29)	-3.73 (25)	-5.70 (55)	14.64 (51)	0.87 (94)	5.37 (88)	5.22 (97)								
▲ MSCI ACWI ex US Small Cap Gross	4.81 (80)	18.85 (73)	-9.91 (61)	-4.88 (49)	15.53 (43)	2.10 (63)	6.09 (75)	5.47 (92)								
✕ MSCI ACWI ex US Small Cap Value GD	3.96 (91)	19.53 (64)	-7.32 (42)	-1.91 (33)	17.09 (37)	1.96 (67)	6.10 (75)	5.22 (97)								

Characteristics

	Portfolio	MSCI ACWI ex US Small Cap Gross
Number of Holdings	120	4,326
Weighted Avg. Market Cap. (\$B)	2.5	2.5
Median Market Cap. (\$B)	1.4	1.0
Price To Earnings	14.3	12.4
Price To Book	2.4	2.2
Price To Sales	1.2	0.9
Return on Equity (%)	14.1	11.1
Yield (%)	2.9	3.3
Beta	1.0	1.0

Top Holdings

ASICS CORP	2.2%
BARCO NV, KORTRIJK	2.2%
INTERPUMP GROUP SPA, SANT'ILARIO (RE)	2.1%
ISHARES MSCI EAFE SMALL-CAP ETF	2.1%
GERRESHEIMER GROUP	2.0%
TECHNOGYM SPA	2.0%
SANLORENZO SPA	2.0%
TGS ASA	1.9%
BUCHER INDUSTRIES AG, NIEDERWENINGEN	1.8%
KING YUAN ELECTRONICS CO LTD	1.7%

Best Performers

	Return %
GERRESHEIMER GROUP	47.5%
KING YUAN ELECTRONICS CO LTD	34.9%
TGS ASA	34.9%
BRUNCELLO CUCINELLI S.P.A.	34.5%
GLORY LTD	32.4%
JUMBO SA	31.3%
IMAX CORP (IMAX)	30.8%
IDOM INC	30.2%
JOHNSON SERVICE GROUP PLC	29.7%
ONESPAWORLD HOLDINGS LTD (OSW)	28.5%

Worst Performers

	Return %
PHOTOCURE ASA	-46.7%
M DIAS BRANCO INDUSTRIA ON (BR:MDB)	-26.0%
ANORA GROUP OYJ	-23.5%
VIDENDUM PLC	-15.7%
HITEJINRO (KO:JCL)	-15.4%
VALUE PARTNERS GROUP LTD	-13.8%
SECO SPA COMSTK	-13.5%
ANICOM HOLDINGS INC	-12.1%
GIANT MANUFACTURE CO LTD	-11.6%
CAMIL ALIMENTOS S/A	-10.8%

Templeton Performance Attribution vs. MSCI ACWI ex US Small Cap Gross

	Total Effects	Attribution Effects				Returns		Sector Weights					
		Selection Effect	Allocation Effect	Currency Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark				
Energy	0.94%	1.63%	0.11%	-0.12%	-0.68%	31.29%	-2.02%	2.48%	4.26%				
Materials	-0.07%	0.25%	-0.25%	0.08%	-0.15%	11.85%	8.15%	4.79%	11.65%				
Industrials	0.07%	-0.07%	0.12%	0.03%	-0.01%	8.22%	8.48%	23.51%	20.19%				
Consumer Discretionary	2.16%	0.91%	0.09%	0.22%	0.93%	14.40%	5.57%	23.17%	11.46%				
Consumer Staples	-0.98%	-0.67%	-0.05%	0.06%	-0.32%	-7.06%	2.85%	9.39%	6.36%				
Health Care	0.30%	0.32%	0.03%	-0.02%	-0.03%	4.29%	0.13%	6.66%	7.24%				
Financials	0.51%	0.50%	0.08%	-0.02%	-0.06%	3.64%	-0.79%	9.79%	11.13%				
Information Technology	-0.03%	-0.36%	0.32%	0.13%	-0.12%	11.30%	13.77%	14.11%	10.61%				
Communication Services	0.35%	0.39%	0.00%	0.02%	-0.06%	16.40%	5.19%	3.16%	3.70%				
Utilities	0.14%	--	0.17%	-0.03%	--	--	0.66%	0.00%	3.56%				
Real Estate	0.61%	--	0.65%	-0.04%	--	--	-1.63%	0.00%	9.84%				
Cash	-0.05%	0.00%	-0.05%	0.00%	0.00%	1.07%	--	1.33%	0.00%				
Unclassified	0.01%	0.00%	0.01%	0.00%	0.00%	5.37%	--	1.61%	0.00%				
<b>Portfolio</b>	<b>3.97%</b>	<b>=</b>	<b>2.91%</b>	<b>+</b>	<b>1.23%</b>	<b>+</b>	<b>0.32%</b>	<b>+</b>	<b>-0.49%</b>	<b>8.80%</b>	<b>4.83%</b>	<b>100.00%</b>	<b>100.00%</b>

Templeton Performance Attribution vs. MSCI ACWI ex US Small Cap Gross

	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>Europe</b>									
Austria	11.10%	8.70%	1.69%	0.65%	0.02%	0.02%	0.02%	0.02%	0.08%
Belgium	21.86%	6.26%	3.05%	1.01%	0.15%	0.00%	0.04%	0.31%	0.51%
Czech Republic*	--	10.32%	0.00%	0.02%	--	0.00%	0.00%	--	0.00%
Denmark	22.61%	6.09%	0.53%	1.42%	0.23%	0.00%	-0.01%	-0.15%	0.07%
Finland	-2.14%	9.35%	3.15%	1.07%	-0.12%	0.06%	0.03%	-0.24%	-0.26%
France	--	9.08%	0.00%	2.46%	--	-0.07%	-0.04%	--	-0.11%
Germany	28.04%	12.24%	5.13%	3.07%	0.48%	0.12%	0.05%	0.32%	0.97%
Greece*	31.31%	15.55%	1.27%	0.15%	0.02%	0.10%	0.02%	0.17%	0.32%
Hungary*	--	26.86%	0.00%	0.01%	--	0.00%	0.00%	--	0.00%
Ireland	--	12.01%	0.00%	0.17%	--	-0.01%	0.00%	--	-0.01%
Italy	15.09%	14.22%	9.83%	2.14%	0.02%	0.60%	0.14%	0.07%	0.82%
Luxembourg	7.06%	4.83%	1.68%	0.00%	0.00%	0.00%	0.03%	0.01%	0.04%
Netherlands	25.52%	8.48%	1.12%	1.28%	0.21%	0.00%	0.00%	-0.03%	0.18%
Norway	3.12%	0.08%	2.58%	1.59%	0.05%	0.02%	-0.07%	0.03%	0.03%
Poland*	--	5.63%	0.00%	0.29%	--	0.00%	-0.01%	--	0.00%
Portugal	--	13.25%	0.00%	0.18%	--	-0.01%	0.00%	--	-0.02%
Spain	-1.80%	5.83%	0.56%	1.29%	-0.10%	0.00%	-0.01%	0.05%	-0.05%
Sweden	12.33%	10.65%	3.62%	3.73%	0.06%	-0.01%	0.00%	0.00%	0.05%
Switzerland	6.79%	9.55%	4.33%	3.10%	-0.08%	0.04%	0.01%	-0.03%	-0.06%
United Kingdom	8.10%	4.79%	11.06%	9.83%	0.32%	-0.03%	0.04%	0.04%	0.37%

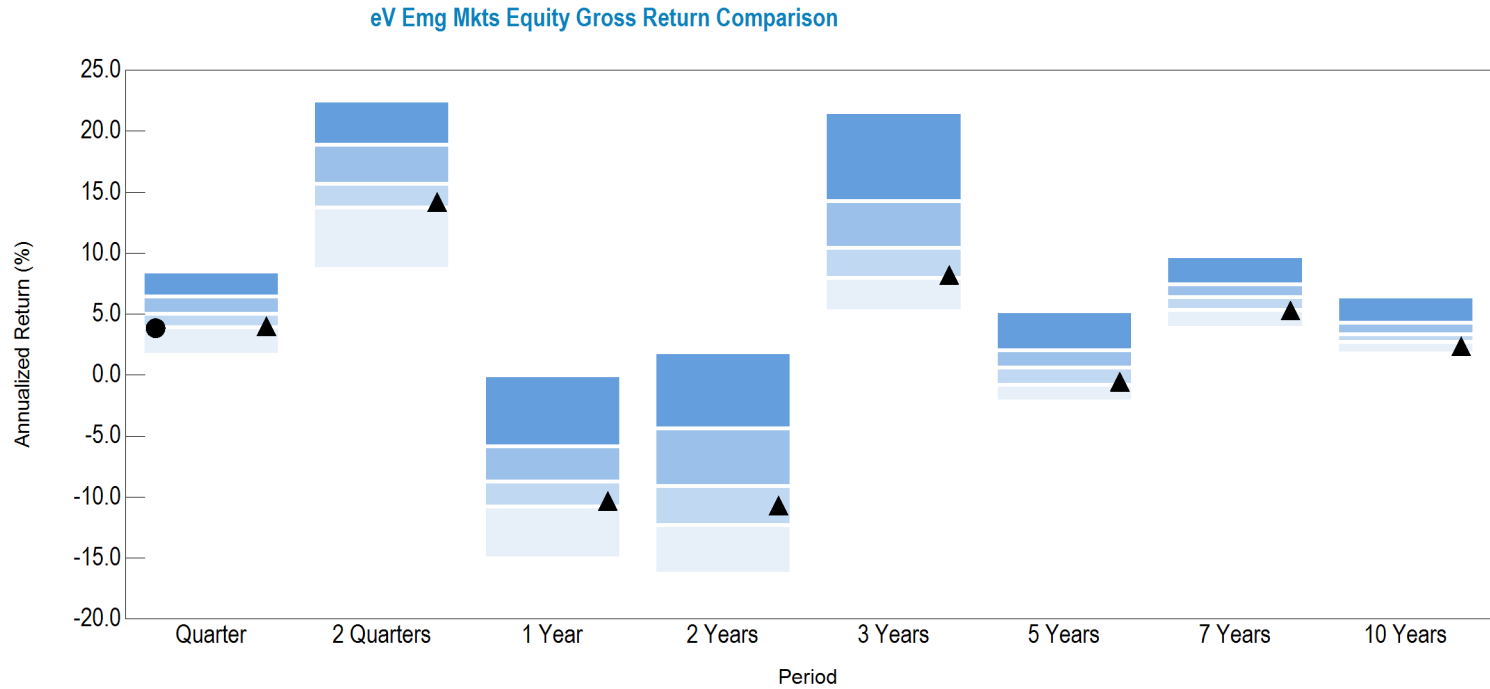


Templeton Performance Attribution vs. MSCI ACWI ex US Small Cap Gross

	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>AsiaPacific</b>									
Australia	--	-1.30%	0.00%	6.75%	--	0.31%	0.09%	--	0.40%
China*	14.07%	-3.35%	1.35%	2.64%	0.47%	0.10%	0.00%	-0.23%	0.34%
Hong Kong	-7.44%	3.09%	3.25%	1.44%	-0.15%	-0.02%	-0.01%	-0.19%	-0.37%
India*	--	-3.97%	0.00%	6.05%	--	0.56%	-0.04%	--	0.52%
Indonesia*	--	2.23%	0.00%	0.68%	--	0.04%	-0.03%	--	0.02%
Japan	6.17%	4.37%	20.38%	21.16%	0.38%	0.00%	0.00%	-0.01%	0.37%
Korea*	-4.17%	13.66%	4.49%	3.62%	-0.67%	0.11%	-0.01%	-0.16%	-0.72%
Malaysia*	--	2.87%	0.00%	0.77%	--	0.01%	0.01%	--	0.01%
New Zealand	--	0.79%	0.00%	0.86%	--	0.02%	0.01%	--	0.03%
Philippines*	4.38%	4.56%	1.11%	0.30%	0.00%	-0.02%	0.02%	0.00%	0.00%
Singapore	--	3.91%	0.00%	1.42%	--	0.02%	-0.01%	--	0.01%
Taiwan*	11.90%	15.30%	8.60%	5.15%	-0.17%	0.34%	0.03%	-0.12%	0.08%
Thailand*	1.48%	-4.80%	0.89%	1.13%	0.07%	0.03%	0.00%	-0.01%	0.08%
<b>Americas</b>									
Brazil*	-19.91%	0.19%	2.46%	1.44%	-0.28%	-0.09%	0.02%	-0.20%	-0.54%
Canada	15.12%	5.70%	4.30%	7.26%	0.69%	-0.03%	0.00%	-0.28%	0.37%
Chile*	--	10.55%	0.00%	0.21%	--	0.00%	-0.02%	--	-0.01%
Colombia*	--	-8.19%	0.00%	0.03%	--	0.01%	0.00%	--	0.00%
Mexico*	--	21.20%	0.00%	0.57%	--	-0.04%	-0.05%	--	-0.09%
United States	5.37%	7.59%	1.65%	0.00%	0.00%	0.05%	0.00%	-0.04%	0.01%

Templeton Performance Attribution vs. MSCI ACWI ex US Small Cap Gross

	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>Other</b>									
Egypt*	--	-18.92%	0.00%	0.07%	--	0.00%	0.01%	--	0.02%
Israel	-10.50%	-8.19%	0.56%	1.83%	-0.04%	0.14%	0.02%	0.03%	0.15%
Kuwait*	--	-1.70%	0.00%	0.31%	--	0.02%	0.00%	--	0.02%
Qatar*	--	-4.96%	0.00%	0.26%	--	0.03%	0.00%	--	0.03%
Saudi Arabia*	--	13.17%	0.00%	0.80%	--	-0.07%	0.00%	--	-0.07%
South Africa*	--	-8.28%	0.00%	1.02%	--	0.09%	0.04%	--	0.13%
Turkey*	--	-19.04%	0.00%	0.55%	--	0.12%	0.01%	--	0.13%
United Arab Emirates*	--	0.59%	0.00%	0.21%	--	0.01%	0.00%	--	0.01%
<b>Totals</b>									
Americas	2.94%	5.84%	8.41%	9.51%	-0.24%	0.00%	-0.05%	0.03%	-0.26%
Europe	12.77%	7.91%	49.59%	33.44%	1.63%	0.29%	0.25%	0.79%	2.94%
Asia/Pacific	5.25%	3.65%	40.06%	51.99%	0.85%	0.04%	0.06%	-0.19%	0.75%
Other	-10.50%	-5.23%	0.56%	5.06%	-0.27%	0.36%	0.08%	0.24%	0.41%
Cash	1.07%	--	1.37%	0.00%	0.00%	-0.05%	0.00%	0.00%	-0.05%
<b>Total</b>	<b>8.64%</b>	<b>4.83%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>1.97%</b>	<b>0.64%</b>	<b>0.34%</b>	<b>0.86%</b>	<b>3.81%</b>
<b>Totals</b>									
Developed	9.73%	5.17%	78.46%	73.70%	3.06%	0.01%	0.33%	0.20%	3.60%
Emerging*	4.92%	3.89%	20.17%	26.30%	0.24%	0.05%	0.01%	-0.06%	0.25%
Cash	1.07%	--	1.37%	0.00%	0.00%	-0.05%	0.00%	0.00%	-0.05%



	Quarter		2 Quarters		1 Year		2 Years		3 Years		5 Years		7 Years		10 Years	
<b>5th Percentile</b>	8.48	22.48	-0.04	1.85	21.54	5.20	9.73	6.42								
<b>25th Percentile</b>	6.49	18.92	-5.82	-4.32	14.30	2.08	7.47	4.34								
<b>Median</b>	5.06	15.71	-8.67	-9.07	10.45	0.67	6.41	3.40								
<b>75th Percentile</b>	3.94	13.77	-10.73	-12.28	8.01	-0.74	5.35	2.74								
<b>95th Percentile</b>	1.69	8.72	-15.01	-16.26	5.26	-2.14	3.89	1.81								
<b># of Portfolios</b>	398	398	397	383	367	328	292	230								
<b>● William Blair Emerging Mkts Growth</b>	3.85	(77)	--	(--)	--	(--)	--	(--)	--	(--)	--	(--)	--	(--)	--	(--)
<b>▲ MSCI Emerging Markets Gross</b>	4.02	(74)	14.20	(70)	-10.30	(70)	-10.69	(61)	8.23	(73)	-0.53	(72)	5.31	(76)	2.37	(83)

Characteristics

	Portfolio	MSCI Emerging Markets Gross
Number of Holdings	143	1,375
Weighted Avg. Market Cap. (\$B)	133.1	112.4
Median Market Cap. (\$B)	9.0	6.6
Price To Earnings	20.9	11.7
Price To Book	3.7	2.4
Price To Sales	3.5	1.0
Return on Equity (%)	20.4	15.2
Yield (%)	1.7	3.5
Beta		1.0

Top Holdings

TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	6.8%
TENCENT HOLDINGS LTD	5.0%
SAMSUNG ELECTRONICS CO LTD	4.4%
ALIBABA GROUP HOLDING LTD	3.2%
PT BANK CENTRAL ASIA TBK	3.2%
RELIANCE INDUSTRIES LTD	3.0%
AIA GROUP LTD	2.4%
WALMART DE MEXICO 'V'	2.4%
KWEICHOW MOUTAI CO LTD	2.3%
MERCADOLIBRE INC	2.3%

Best Performers

	Return %
PROSHARES ULTRA SEMICONDUCTORS (USD)	74.6%
ASMEDIA TECHNOLOGY INC	72.1%
ALCHIP TECHNOLOGIES INC	58.5%
ASPEED TECHNOLOGY INC	57.5%
MERCADOLIBRE INC (MELI)	55.8%
WIWYNN CORPORATION	42.1%
EMEMORY TECHNOLOGY INCORPORATED	40.3%
PARADE TECHNOLOGIES LTD	39.8%
ACCTON TECHNOLOGY (TW:ACC)	37.0%
GRUPO AEROPORTUARIO DEL PACIFICO SA	35.5%

Worst Performers

	Return %
DIXON TECHNOLOGIES (INDIA) LIMITED	-26.2%
Suzhou Maxwell Technologies Co Ltd	-25.6%
FINE ORGANIC INDUSTRIES LIMITED	-24.4%
JD.COM INC	-22.4%
ADANI PORTS & SPECIAL ECONOMIC ZONE LTD	-22.2%
FIRST ABU DHABI BANK P.J.S.C	-21.9%
DEVYANI INTERNATIONAL LTD	-19.4%
MEITUAN DIANPING USD0.00001 A B CLASS ISIN KYG596691041	-18.4%
BANCO BTG PACTUAL SA	-15.8%
ATUL LTD	-15.1%

William Blair Emerging Mkts Growth Performance Attribution vs. MSCI Emerging Markets Gross

	Attribution Effects				Returns		Sector Weights				
	Total Effects	Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	-0.42%	-0.29%	-0.07%	-0.06%	-5.48%	0.59%	5.96%	4.88%			
Materials	-0.14%	-0.54%	0.13%	0.27%	-3.58%	2.57%	3.51%	8.85%			
Industrials	0.47%	0.27%	-0.06%	0.26%	7.79%	2.35%	9.15%	6.06%			
Consumer Discretionary	-0.10%	-0.23%	-0.07%	0.19%	0.62%	1.46%	10.39%	14.07%			
Consumer Staples	0.31%	0.15%	-0.22%	0.37%	5.71%	2.76%	14.30%	6.44%			
Health Care	0.18%	0.20%	-0.16%	0.15%	1.11%	-4.74%	6.11%	4.07%			
Financials	-0.23%	-0.42%	0.03%	0.16%	-1.70%	-0.86%	23.10%	22.10%			
Information Technology	0.63%	0.53%	0.12%	-0.02%	17.02%	14.35%	19.81%	18.63%			
Communication Services	-0.35%	0.60%	-0.56%	-0.39%	18.91%	13.76%	3.39%	9.91%			
Utilities	0.43%	0.63%	0.39%	-0.59%	7.00%	-10.17%	0.57%	3.03%			
Real Estate	-0.04%	-0.03%	-0.03%	0.02%	-2.16%	-1.49%	2.06%	1.94%			
Cash	-0.01%	0.00%	-0.01%	0.00%	1.07%	--	0.15%	0.00%			
Unclassified	0.15%	0.00%	0.15%	0.00%	17.11%	--	1.50%	0.00%			
<b>Portfolio</b>	<b>0.89%</b>	<b>=</b>	<b>0.88%</b>	<b>+</b>	<b>-0.37%</b>	<b>+</b>	<b>0.37%</b>	<b>4.98%</b>	<b>4.09%</b>	<b>100.00%</b>	<b>100.00%</b>

William Blair Emerging Mkts Growth Performance Attribution vs. MSCI Emerging Markets Gross

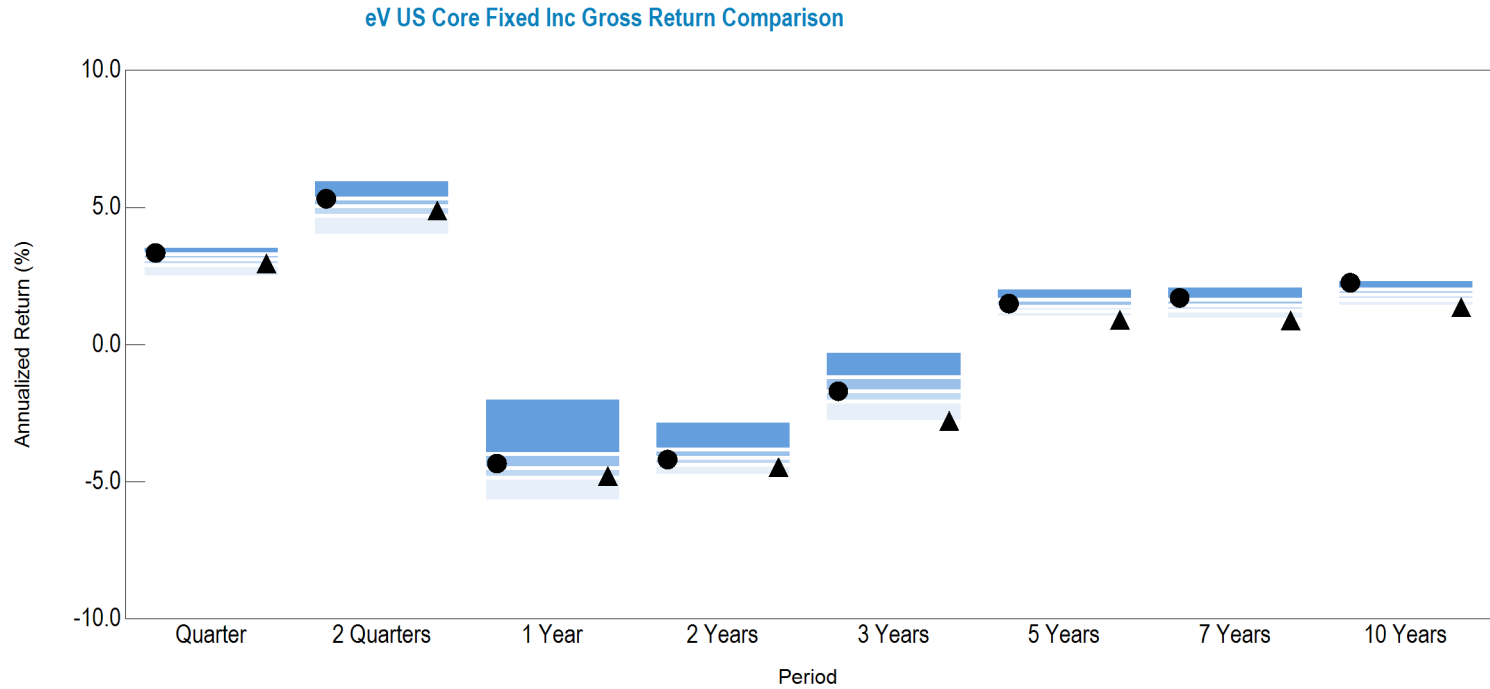
	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>Europe</b>									
Czech Republic*	--	32.90%	0.00%	0.14%	--	-0.03%	-0.01%	--	-0.04%
Greece*	--	15.43%	0.00%	0.32%	--	-0.03%	-0.01%	--	-0.04%
Hungary*	--	3.06%	0.00%	0.19%	--	0.02%	-0.01%	--	0.00%
Luxembourg	-2.47%	4.10%	0.52%	0.00%	0.00%	0.00%	0.00%	-0.03%	-0.03%
Poland*	5.94%	-1.20%	0.89%	0.72%	0.05%	-0.01%	0.00%	0.01%	0.05%
<b>AsiaPacific</b>									
China*	3.40%	4.85%	13.99%	32.32%	-0.66%	-0.23%	0.17%	0.37%	-0.35%
Hong Kong	6.30%	-2.39%	5.77%	0.00%	0.00%	-0.34%	-0.04%	0.51%	0.13%
India*	-3.12%	-6.14%	25.89%	14.44%	0.43%	-1.25%	0.09%	0.34%	-0.39%
Indonesia*	7.72%	6.40%	6.57%	1.91%	0.02%	-0.07%	0.19%	0.06%	0.20%
Korea*	9.86%	8.57%	6.82%	11.31%	0.15%	-0.38%	0.18%	-0.06%	-0.12%
Malaysia*	--	-3.99%	0.00%	1.57%	--	0.11%	0.01%	--	0.13%
Philippines*	19.93%	2.71%	1.18%	0.74%	0.12%	-0.02%	0.02%	0.07%	0.20%
Taiwan*	22.04%	14.55%	13.12%	13.81%	1.08%	-0.07%	-0.05%	-0.05%	0.91%
Thailand*	0.66%	-0.58%	3.61%	2.23%	0.03%	-0.08%	0.02%	0.02%	-0.02%
<b>Americas</b>									
Argentina*	55.76%	4.74%	0.98%	0.00%	0.00%	0.01%	0.00%	0.50%	0.51%
Brazil*	1.29%	-0.68%	7.41%	5.27%	0.14%	-0.19%	0.04%	0.06%	0.04%
Chile*	1.53%	4.78%	0.40%	0.56%	0.02%	0.01%	-0.04%	-0.01%	-0.01%
Colombia*	--	-11.50%	0.00%	0.12%	--	0.02%	0.00%	--	0.02%
Mexico*	14.62%	21.91%	3.14%	2.29%	-0.15%	0.07%	0.06%	-0.06%	-0.08%
Peru*	-2.41%	8.27%	0.39%	0.26%	-0.03%	0.01%	0.00%	-0.01%	-0.04%
United States	30.28%	7.59%	1.16%	0.00%	0.00%	0.04%	0.00%	0.26%	0.30%

William Blair Emerging Mkts Growth  
Equity Performance Attribution

Period Ending: March 31, 2023

William Blair Emerging Mkts Growth Performance Attribution vs. MSCI Emerging Markets Gross

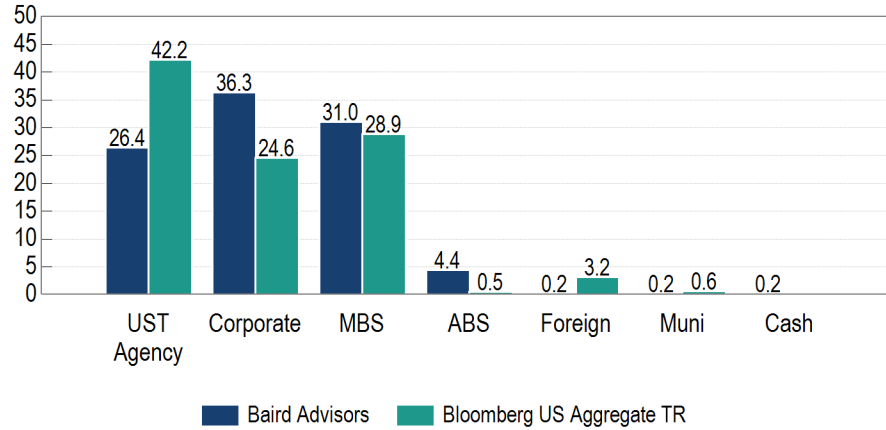
	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>Other</b>									
Egypt*	--	-3.58%	0.00%	0.09%	--	-0.01%	0.02%	--	0.01%
Kuwait*	--	-3.47%	0.00%	0.94%	--	0.07%	0.00%	--	0.07%
Qatar*	-3.92%	-0.75%	0.88%	0.99%	-0.03%	0.01%	0.00%	0.00%	-0.02%
Saudi Arabia*	9.05%	0.12%	1.99%	4.10%	0.37%	0.09%	0.00%	-0.19%	0.26%
South Africa*	-1.06%	-0.33%	3.28%	3.69%	-0.03%	0.00%	0.02%	0.00%	-0.01%
Turkey*	--	-8.89%	0.00%	0.67%	--	0.07%	0.02%	--	0.09%
United Arab Emirates*	-12.11%	-7.75%	1.85%	1.35%	-0.06%	-0.06%	0.00%	-0.02%	-0.14%
<b>Totals</b>									
Americas	10.75%	5.89%	13.48%	8.49%	0.55%	-0.19%	0.06%	0.32%	0.75%
Europe	2.82%	6.73%	1.41%	1.37%	-0.03%	0.00%	-0.02%	0.00%	-0.05%
Asia/Pacific	5.67%	4.76%	76.94%	78.32%	0.13%	-0.01%	0.57%	0.00%	0.69%
Other	-1.42%	-1.81%	8.01%	11.82%	0.06%	0.16%	0.05%	-0.02%	0.25%
Cash	1.07%	--	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>Total</b>	<b>5.74%</b>	<b>4.10%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>0.71%</b>	<b>-0.04%</b>	<b>0.66%</b>	<b>0.30%</b>	<b>1.63%</b>
<b>Totals</b>									
Developed	9.42%	--	7.46%	0.00%	0.00%	0.00%	-0.04%	0.44%	0.40%
Emerging*	5.45%	4.10%	92.38%	100.00%	0.58%	0.00%	0.70%	-0.04%	1.24%
Cash	1.07%	--	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%



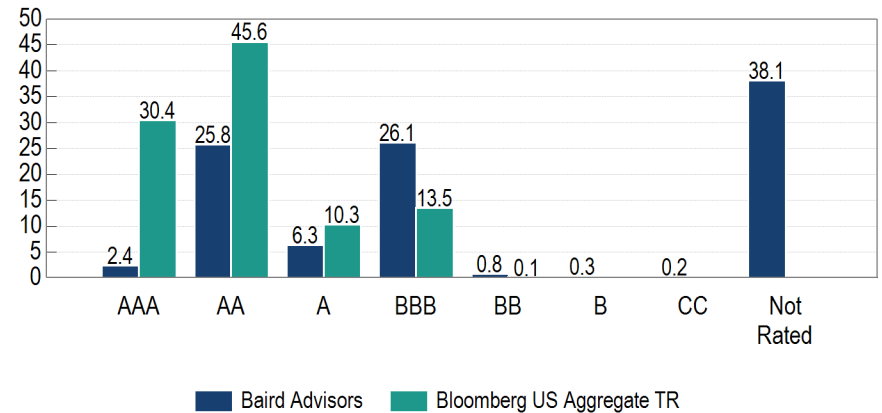
	Return (Rank)							
	Quarter	2 Quarters	1 Year	2 Years	3 Years	5 Years	7 Years	10 Years
<b>5th Percentile</b>	3.58	6.01	-1.95	-2.78	-0.24	2.06	2.13	2.38
<b>25th Percentile</b>	3.31	5.35	-3.96	-3.81	-1.18	1.65	1.65	2.02
<b>Median</b>	3.13	5.06	-4.49	-4.11	-1.68	1.40	1.44	1.83
<b>75th Percentile</b>	2.92	4.71	-4.84	-4.37	-2.05	1.23	1.26	1.66
<b>95th Percentile</b>	2.47	3.98	-5.69	-4.77	-2.81	1.00	0.94	1.39
<b># of Portfolios</b>	202	202	202	199	194	189	185	180
<b>● Baird Advisors</b>	3.34 (20)	5.32 (27)	-4.33 (40)	-4.19 (57)	-1.70 (53)	1.50 (39)	1.70 (21)	2.25 (9)
<b>▲ Bloomberg US Aggregate TR</b>	2.96 (72)	4.89 (63)	-4.78 (71)	-4.47 (84)	-2.77 (95)	0.90 (97)	0.88 (97)	1.36 (96)



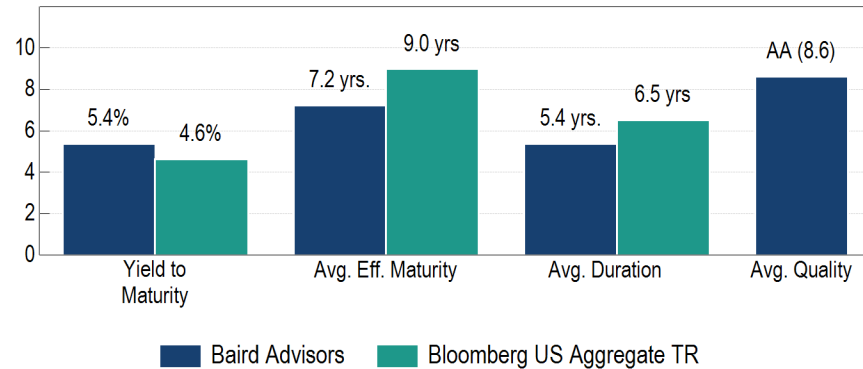
US Sector Allocation  
Baird Advisors



Credit Quality Allocation  
Baird Advisors



Characteristics  
Baird Advisors

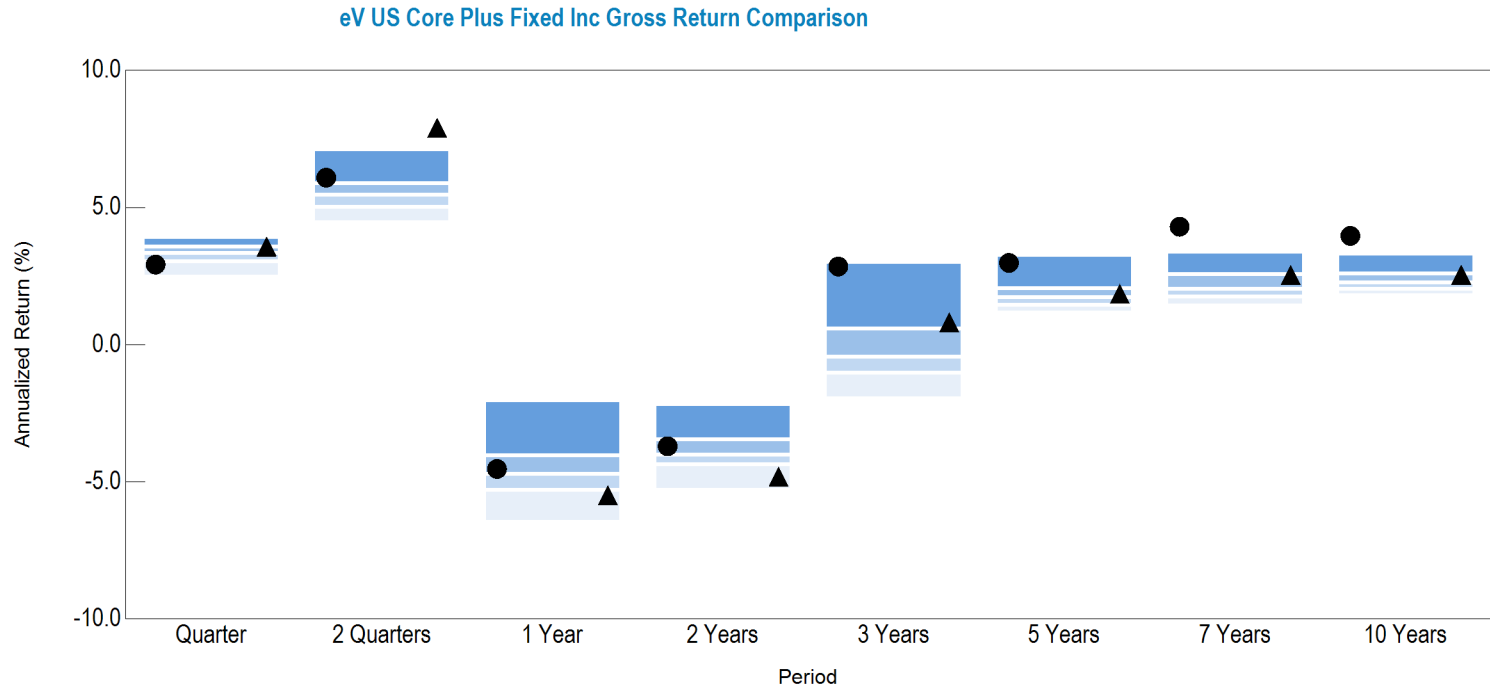


**PERFORMANCE BY QUALITY**

	<u>NUMBER OF ISSUES</u>	<u>FINAL MARKET VALUE (\$000)</u>	<u>FINAL MARKET VALUE %</u>	<u>QUARTERLY RETURN %</u>	<u>QUARTERLY CONTRIBUTION TO TOTAL RETURN %</u>
Cash & Equiv	1	-	0.0	1.20	0.00
Govt & Agency	171	605,883	52.2	3.50	1.83
AAA	42	117,230	10.1	1.10	0.11
AA	7	3,482	0.3	2.00	0.01
A	41	119,551	10.3	3.20	0.33
BAA	118	306,423	26.4	3.20	0.84
Below BAA	10	8,125	0.7	3.10	0.02
Other	0	-	0.0	0.00	0.00
<b>Total Account</b>	<b>390</b>	<b>\$1,160,695</b>	<b>100.0</b>	<b>3.14</b>	<b>3.14</b>

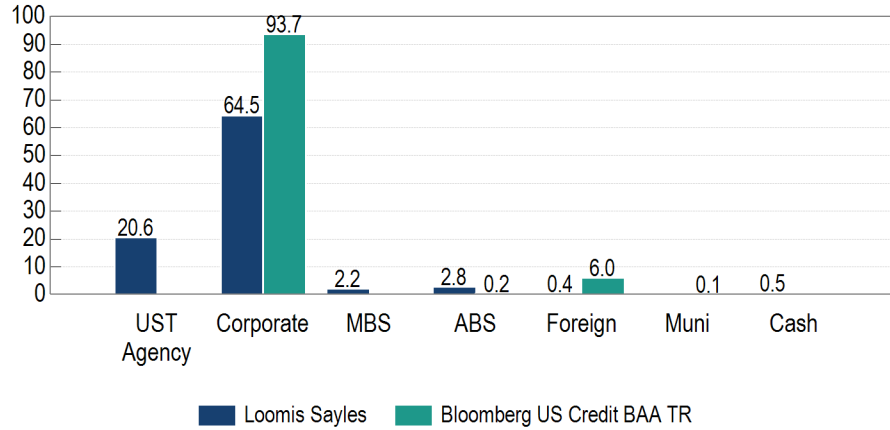
**PERFORMANCE BY DURATION**

	<u>NUMBER OF ISSUES</u>	<u>FINAL MARKET VALUE (\$000)</u>	<u>FINAL MARKET VALUE %</u>	<u>QUARTERLY RETURN %</u>	<u>QUARTERLY CONTRIBUTION TO TOTAL RETURN %</u>
Under 1 Year	16	30,178	2.6	1.50	0.04
1 - 3 Years	68	227,497	19.6	1.70	0.33
3 - 6 Years	191	470,082	40.5	2.80	1.14
Over 6 Years	115	432,939	37.3	4.40	1.63
<b>Total Account</b>	<b>390</b>	<b>\$1,160,695</b>	<b>100.0</b>	<b>3.14</b>	<b>3.14</b>

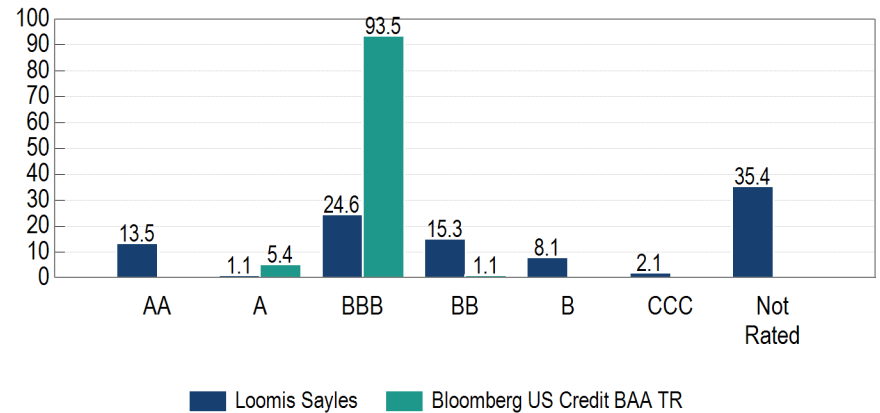


	Return (Rank)							
	Quarter	2 Quarters	1 Year	2 Years	3 Years	5 Years	7 Years	10 Years
5th Percentile	3.91	7.12	-2.05	-2.17	3.00	3.27	3.37	3.30
25th Percentile	3.58	5.91	-4.02	-3.44	0.60	2.08	2.60	2.61
Median	3.36	5.49	-4.70	-3.99	-0.44	1.74	2.05	2.27
75th Percentile	3.06	5.04	-5.27	-4.35	-1.00	1.46	1.76	2.04
95th Percentile	2.48	4.48	-6.45	-5.27	-1.93	1.18	1.45	1.81
# of Portfolios	123	123	123	121	120	114	110	102
● Loomis Sayles	2.92 (88)	6.09 (20)	-4.53 (43)	-3.70 (36)	2.85 (7)	2.98 (7)	4.30 (1)	3.97 (1)
▲ Bloomberg US Credit BAA TR	3.58 (26)	7.90 (1)	-5.49 (82)	-4.80 (90)	0.81 (19)	1.86 (39)	2.54 (27)	2.55 (31)

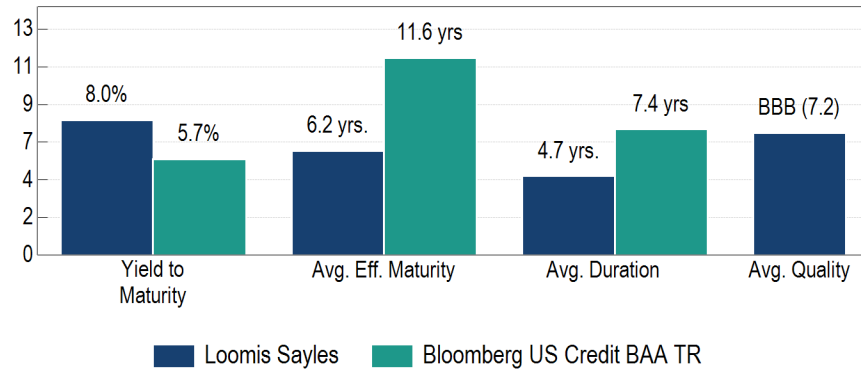
US Sector Allocation  
Loomis Sayles



Credit Quality Allocation  
Loomis Sayles



Characteristics  
Loomis Sayles



### Summary

Account Return	3.08
Benchmark Return	3.58
Excess Return	-0.49
Sector Allocation	-0.04
Security Selection	-0.44
Trading	-0.02
Pricing Differences	0.00
Compounding	0.00

### Details

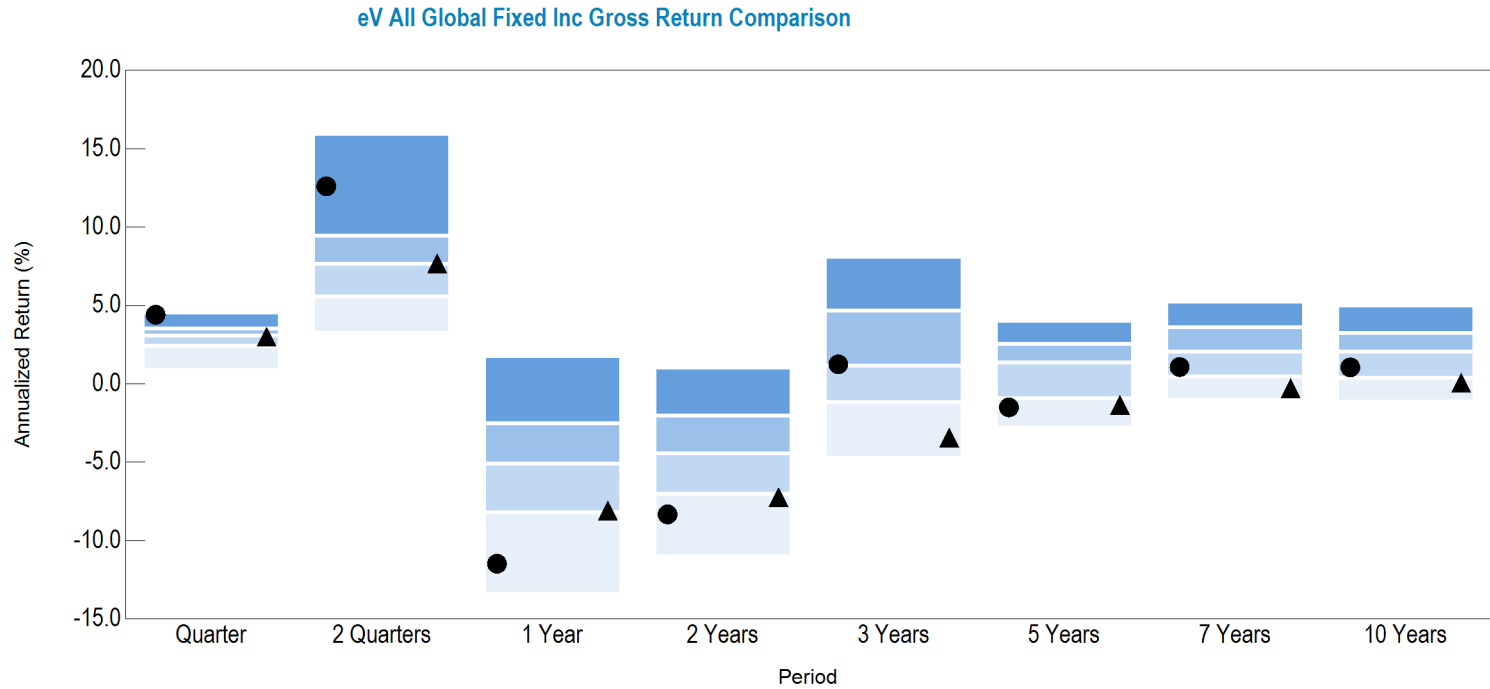
Scheme	Average Weight Account	Average Weight Benchmark	Return Account	Return Benchmark	Contribution to Return Account	Contribution to Return Benchmark	Sector Allocation Effect	Security Selection Effect	Total Effect	Excess Total Effect
Total	100.00	100.00	3.11	3.58	3.11	3.58	-0.04	-0.44	-0.47	-0.47
CASH	1.74	0.00	1.14	3.58	0.02	0.00	0.00	-0.08	-0.08	-0.08
AAA	22.12	0.00	1.78	3.58	0.99	0.00	0.00	0.27	0.27	0.27
AA	0.44	0.00	0.36	3.58	-0.19	0.00	0.00	-0.21	-0.21	-0.21
A	3.31	0.02	3.10	2.37	0.10	0.00	-0.04	0.02	-0.02	-0.02
BAA	33.31	99.97	3.89	3.58	1.34	3.58	0.00	0.10	0.10	0.10
BA	17.62	0.00	4.67	3.58	0.83	0.00	0.00	0.18	0.18	0.18
B	8.68	0.01	2.27	0.66	0.19	0.00	0.00	-0.11	-0.11	-0.11
CAA	3.78	0.00	-5.96	3.58	-0.23	0.00	0.00	-0.37	-0.37	-0.37
CA	0.42	0.00	-2.45	3.58	-0.01	0.00	0.00	-0.03	-0.03	-0.03
C	0.53	0.00	-12.71	3.58	-0.06	0.00	0.00	-0.08	-0.08	-0.08
NR	7.57	0.00	2.23	3.58	0.18	0.00	0.00	-0.09	-0.09	-0.09
Unclassified	0.49	0.00	4.60	3.58	-0.04	0.00	0.00	-0.04	-0.04	-0.04

Summary	
Account Return	3.08
Benchmark Return	3.58
Excess Return	-0.49
Sector Allocation	0.27
Security Selection	-0.74
Trading	-0.02
Pricing Differences	0.00
Compounding	0.00

## Details

Scheme	Average Weight Account	Average Weight Benchmark	Return Account	Return Benchmark	Contribution to Return Account	Contribution to Return Benchmark	Sector Allocation Effect	Security Selection Effect	Total Effect	Excess Total Effect
Total	100.00	100.00	3.11	3.58	3.11	3.58	0.27	-0.74	-0.47	-0.47
Less than 0.5	-4.36	0.05	0.47	-10.15	0.10	0.00	0.75	-0.70	0.05	0.05
0.5 - 1.0	8.58	1.09	1.17	0.94	0.09	0.01	-0.03	0.03	-0.01	-0.01
1.0 - 1.5	6.08	3.99	-1.69	0.96	0.04	0.04	-0.22	-0.06	-0.28	-0.28
1.5 - 2.0	4.46	5.65	2.65	1.41	0.11	0.08	0.04	0.05	0.09	0.09
2.0 - 2.5	5.01	5.09	1.53	0.82	0.04	0.05	0.06	0.02	0.07	0.07
2.5 - 3.0	4.95	5.28	1.71	1.74	0.05	0.09	-0.01	-0.06	-0.07	-0.07
3.0 - 3.5	5.98	4.28	2.20	1.73	0.11	0.08	-0.05	0.00	-0.05	-0.05
3.5 - 4.0	7.01	6.11	5.16	2.31	0.30	0.13	0.01	0.18	0.19	0.19
4.0 - 4.5	4.97	5.01	2.35	2.74	0.20	0.14	-0.02	0.01	-0.02	-0.02
4.5 - 5.0	7.13	3.97	4.18	3.13	0.28	0.12	-0.01	0.06	0.06	0.06
5.0 - 5.5	4.36	3.75	1.67	3.28	0.08	0.12	0.00	-0.07	-0.08	-0.08
5.5 - 6.0	13.07	4.45	3.70	3.51	0.17	0.16	0.03	-0.07	-0.05	-0.05
6.0 - 6.5	6.05	3.88	4.20	3.51	0.22	0.14	0.00	0.03	0.03	0.03
6.5 - 7.0	4.25	4.20	4.90	3.80	0.17	0.14	0.00	0.04	0.04	0.04
7.0 - 7.5	3.16	6.17	5.51	4.03	0.19	0.25	-0.01	0.05	0.04	0.04
7.5 - 8.0	-3.63	2.14	1.59	4.04	0.15	0.10	-0.03	0.03	0.00	0.00
8.0 - 8.5	0.22	1.29	1.61	4.09	0.07	0.04	0.01	0.00	0.01	0.01
8.5 - 9.0	0.27	1.66	0.73	4.50	-0.03	0.07	-0.02	0.00	-0.02	-0.02
9.0 - 9.5	0.31	1.72	2.92	4.65	0.02	0.08	-0.02	-0.01	-0.02	-0.02

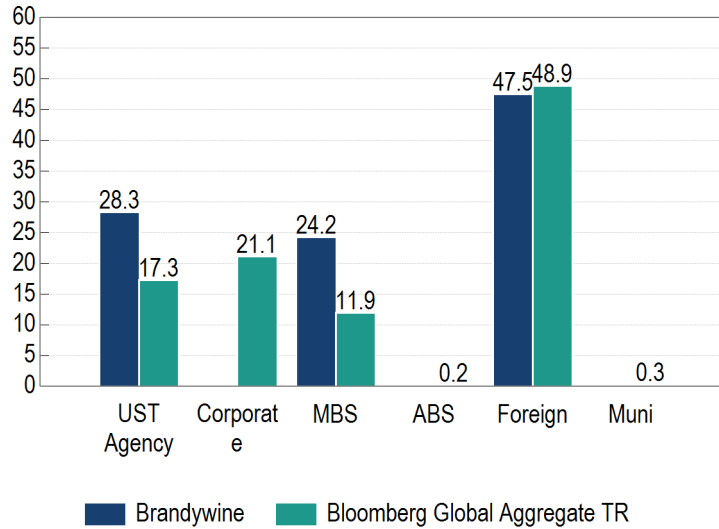
Scheme	Average Weight Account	Average Weight Benchmark	Return Account	Return Benchmark	Contribution to Return Account	Contribution to Return Benchmark	Sector Allocation Effect	Security Selection Effect	Total Effect	Excess Total Effect
9.5 - 10.0	0.11	1.39	6.28	4.97	0.02	0.08	-0.02	0.01	-0.01	-0.01
10.0 - 10.5	0.06	1.30	1.84	4.72	0.00	0.05	-0.01	-0.01	-0.02	-0.02
10.5 - 11.0	0.68	1.22	4.16	5.15	0.05	0.07	0.00	0.00	-0.01	-0.01
11.0 - 11.5	3.41	1.15	-2.02	5.08	-0.32	0.05	-0.10	-0.06	-0.16	-0.16
11.5 - 12.0	3.48	1.84	5.67	4.72	0.27	0.07	0.05	0.03	0.07	0.07
12.0 - 12.5	0.78	2.62	6.60	5.97	0.05	0.14	-0.04	0.01	-0.03	-0.03
12.5 - 13.0	0.46	3.43	11.98	5.75	0.06	0.16	-0.04	0.02	-0.02	-0.02
13.0 - 13.5	0.01	3.77	3.80	6.20	0.01	0.21	-0.09	0.01	-0.08	-0.08
13.5 - 14.0	0.66	3.34	1.55	5.90	-0.04	0.19	-0.08	-0.01	-0.09	-0.09
14.0 - 14.5	1.07	2.89	6.79	5.90	0.13	0.19	-0.03	0.00	-0.02	-0.02
14.5 - 15.0	0.35	1.95	7.04	5.62	0.05	0.13	-0.04	0.03	-0.01	-0.01
15.0 - 15.5	0.19	1.85	2.13	5.46	0.01	0.10	-0.03	-0.01	-0.04	-0.04
15.5 - 16.0	0.01	1.50	2.77	6.98	0.02	0.13	-0.06	0.00	-0.06	-0.06
16.0 - 16.5	1.69	1.00	0.37	6.60	-0.01	0.08	-0.02	0.03	0.01	0.01
16.5 - 17.0	7.60	0.52	-0.49	7.28	-0.09	0.05	0.13	-0.37	-0.25	-0.25
17.0 - 17.5	1.56	0.24	5.22	5.76	0.57	0.02	0.19	0.08	0.28	0.28
17.5 - 18.0	0.00	0.11	0.00	3.70	0.00	0.01	0.00	0.00	0.00	0.00
18.0 - 18.5	0.00	0.05	0.00	1.81	0.00	0.00	0.00	0.00	0.00	0.00
18.5 - 19.0	0.00	0.02	0.00	13.56	0.00	0.00	0.00	0.00	0.00	0.00
19.0 - 19.5	0.00	0.01	0.00	3.88	0.00	0.00	0.00	0.00	0.00	0.00
19.5 - 20.0	0.00	0.00	0.00	-1.61	0.00	0.00	0.00	0.00	0.00	0.00
20.0 - 20.5	0.00	0.00	0.00	2.89	0.00	0.00	0.00	0.00	0.00	0.00



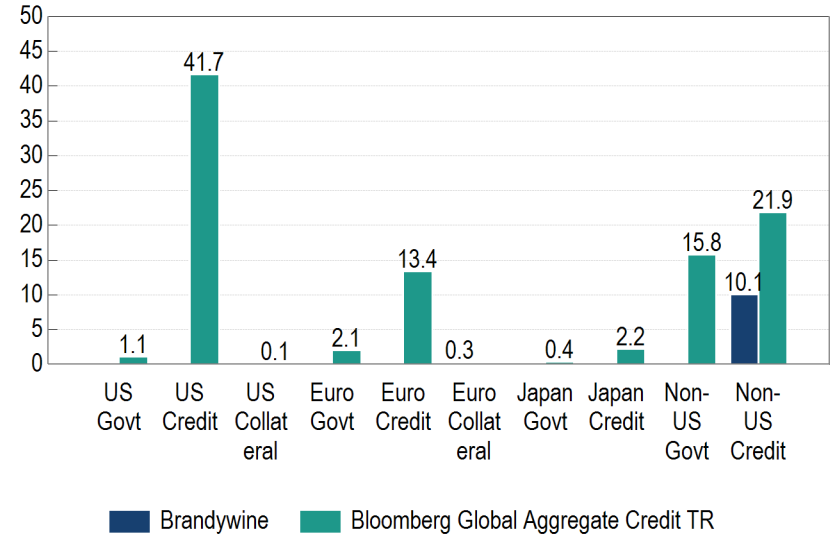
	Quarter		2 Quarters		1 Year		2 Years		3 Years		5 Years		7 Years		10 Years	
<b>5th Percentile</b>	4.54	15.91	1.76	1.02	8.09	3.99	5.24	4.98								
<b>25th Percentile</b>	3.54	9.47	-2.49	-1.99	4.70	2.58	3.65	3.27								
<b>Median</b>	3.10	7.67	-5.05	-4.39	1.20	1.39	2.07	2.07								
<b>75th Percentile</b>	2.43	5.60	-8.18	-6.99	-1.13	-0.90	0.47	0.42								
<b>95th Percentile</b>	0.89	3.27	-13.38	-10.97	-4.70	-2.77	-1.03	-1.11								
<b># of Portfolios</b>	528	528	528	519	507	468	422	344								
<b>● Brandywine</b>	4.41	(6)	12.60	(10)	-11.47	(93)	-8.32	(87)	1.25	(50)	-1.50	(84)	1.07	(65)	1.05	(61)
<b>▲ Bloomberg Global Aggregate TR</b>	3.01	(57)	7.69	(50)	-8.07	(75)	-7.24	(79)	-3.43	(90)	-1.34	(82)	-0.27	(86)	0.07	(84)



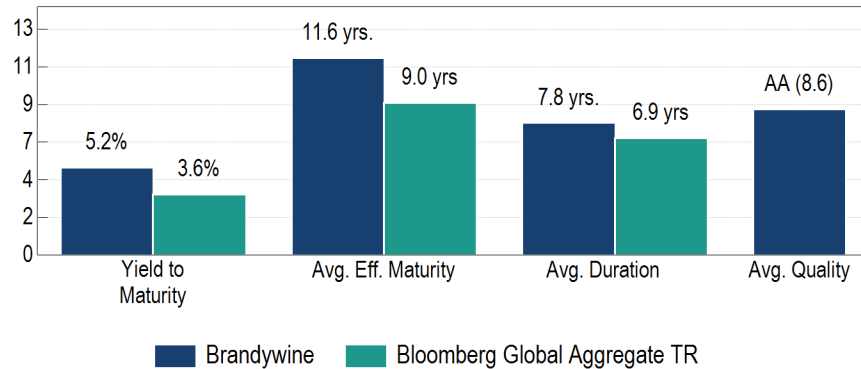
US Sector Allocation



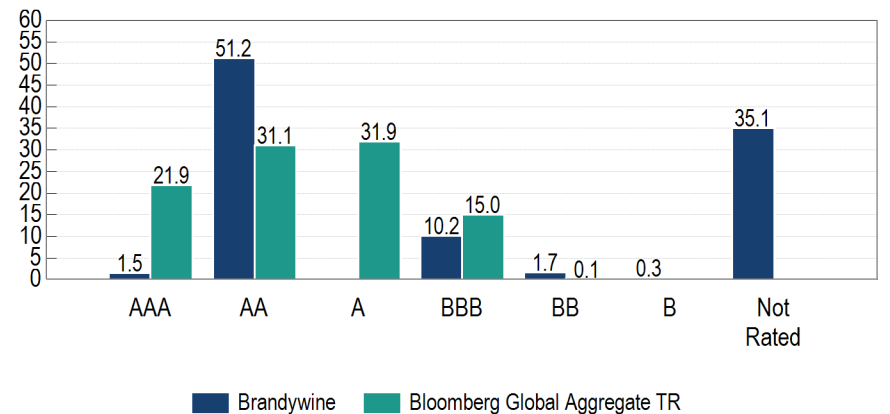
Global Sector Allocation



Characteristics  
Brandywine

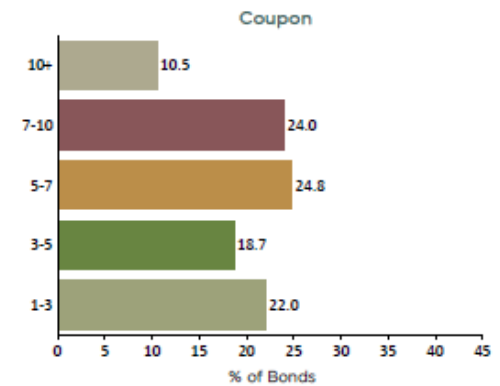
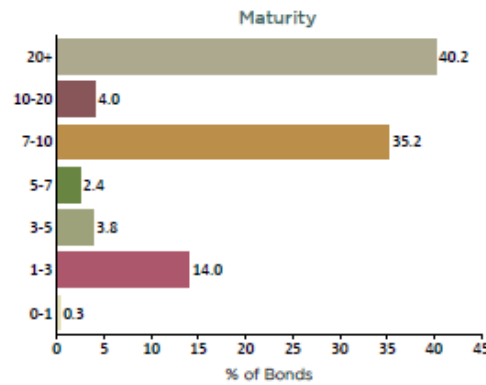


Credit Quality Allocation  
Brandywine



**Portfolio Characteristics**

	Portfolio	Primary Benchmark
Yield to Maturity (%)	6.97	3.12
Yield to Worst (%)	7.06	3.12
Modified Duration	8.89	7.54
Effective Duration	8.28	7.61
Average Maturity	15.83	9.73
Average Market Price	87.95	-
Average Coupon (%)	5.54	1.97
Current Yield (%)	6.16	-
# of Issues	154	1,218



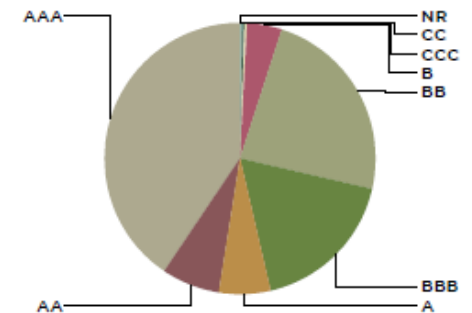
**Sector Breakdown**

	Market Value (%)	Duration Contribution (in Years)
Government Sovereign	72.40	5.66
Mortgage Backed Securities	13.15	1.06
Corporate Bond - High Yield	8.48	0.29
Corporate Bond - Investment Grade	1.09	0.04
Government Owned - No Guarantee	0.52	0.03
Government Sovereign Agency	0.14	0.01
Cash	3.96	-
Derivatives	0.26	1.79
<b>Total:</b>	<b>100.00</b>	<b>8.89</b>

**Portfolio Credit Quality (Blended Weighted Average Rating)**

Combined Rating	%	Cumulative %
AAA	40.6	40.6
AA	7.1	47.7
A	5.9	53.6
BBB	18.0	71.6
BB	23.6	95.2
B	4.0	99.2
CCC	0.4	99.7
CC	0.2	99.8
NR	0.2	100.0

Average Quality: A



PRIMARY BENCHMARK IS FTSE WGBI (USD)

All Averages are US DOLLAR - weighted by the net market value. Average Market Price includes accrued interest. The "Blended Weighted Average Rating" is determined as follows: in line with the methodology used by Barclays Global indices, the middle rating from the three major NRSROs (S & P, Moody's, and Fitch) will be assigned to each security. In the event that ratings are provided by only two agencies, the lowest rating will be assigned. If only one agency assigns a rating, that rating will be applied. If the security is not rated by one of the three major agencies, U.S. treasuries and certain U.S. agencies are given the U.S. issuer rating. Sovereign treasuries are given the sovereign issuer rating. All other unrated securities are given a rating equivalent to a defaulted bond. The equivalent numerical rating is assigned to each security based on the Security Level scale. A Portfolio Level scale is applied on the weighted average calculation to round for fractional numerical ratings and then converted to an alpha weighted average rating. Cash is included and received the highest rating.

Data included on this page show the aggregate holdings of the Brandywine Emerging Markets Debt Fund ("EMD Fund"), in which the portfolio is invested. Holdings in the EMD Fund are not subject to ACERA's Investment Guidelines. Please note that ACERA owns units of the EMD Fund, not the underlying holdings. Data and characteristics shown are for illustrative purposes only.

Derivatives market value represents the unrealized profit/loss of all derivatives in the portfolio.

Brandywine  
Country & Currency Allocation

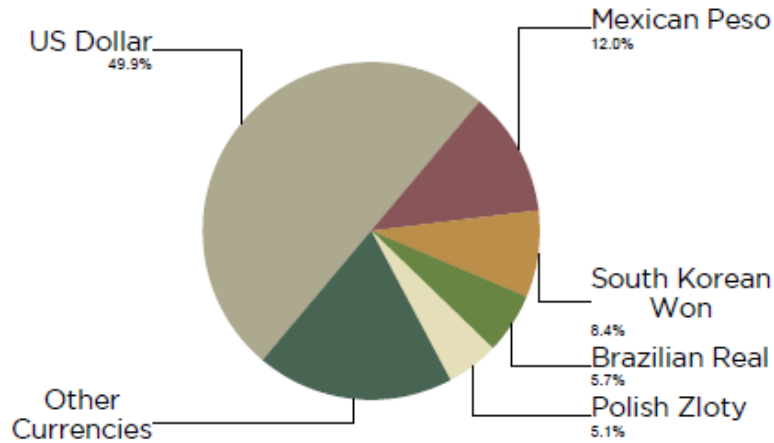
Period Ending: March 31, 2023

Country Allocation	3/31/2023			12/31/2022		Currency Allocation	3/31/2023			12/31/2022	
	Portfolio	Index	Active	Portfolio	Change		Portfolio	Index	Active	Portfolio	Change
*Mexico	12.61	0.78	11.83	10.35	2.26	US Dollar	(2.10)	42.73	(44.82)	3.70	(5.80)
*Brazil	10.32	-	10.32	7.57	2.75	*Colombian Peso	6.39	-	6.39	1.84	4.54
South Korea	7.24	-	7.24	7.42	(0.19)	*Brazilian Real	6.18	-	6.18	3.62	2.55
*Colombia	6.12	-	6.12	5.12	1.00	Canadian Dollar	7.89	1.78	6.11	-	7.89
*Poland	5.86	0.40	5.46	5.54	0.32	*Thai Baht	4.55	-	4.55	5.54	(0.99)
Spain	0.15	4.41	(4.26)	0.16	(0.01)	*Mexican Peso	5.31	0.78	4.54	3.40	1.92
*China	0.11	4.35	(4.24)	0.11	-	Norwegian Krone	4.57	0.14	4.43	5.07	(0.50)
United Kingdom	0.03	4.23	(4.20)	0.03	-	*Polish Zloty	4.32	0.40	3.91	4.94	(0.63)
*South Africa	4.04	-	4.04	4.92	(0.88)	South Korean Won	3.88	-	3.88	4.03	(0.16)
*Peru	3.46	-	3.46	5.37	(1.91)	**Chinese Yuan Renminbi	0.65	4.35	(3.69)	0.73	(0.08)
United States	39.30	42.73	(3.42)	31.65	7.66	*Indonesian Rupiah	3.45	-	3.45	3.30	0.15
Canada	0.16	1.78	(1.62)	0.45	(0.29)	*South African Rand	3.01	-	3.01	3.24	(0.23)
Australia	0.01	1.38	(1.36)	2.20	(2.19)	Euro	26.64	28.80	(2.16)	18.78	7.86
*Hungary	1.24	-	1.24	1.05	0.19	*Malaysian Ringgit	2.43	0.48	1.95	4.75	(2.33)
New Zealand	0.83	0.21	0.62	-	0.83	New Zealand Dollar	2.14	0.21	1.93	-	2.14
Israel	0.90	0.28	0.62	0.80	0.10	*Peruvian Nuevo Sol	1.60	-	1.60	1.06	0.54
Germany	5.19	5.66	(0.47)	5.15	0.04	Australian Dollar	-	1.38	(1.38)	0.21	(0.21)
Finland	0.01	0.45	(0.44)	-	0.01	*Hungarian Forint	0.97	-	0.97	1.66	(0.69)
*Chile	0.40	-	0.40	0.49	(0.09)	Singapore Dollar	-	0.38	(0.38)	-	-
*Uruguay	0.21	-	0.21	0.22	(0.01)	*Czech Koruna	0.31	-	0.31	1.05	(0.74)
*Zambia	0.20	-	0.20	0.20	-	Israeli Shekel	-	0.28	(0.28)	-	-
*Panama	0.19	-	0.19	0.20	(0.01)	Danish Krone	-	0.28	(0.28)	-	-
Puerto Rico	0.17	-	0.17	-	0.17	Swedish Krona	-	0.18	(0.18)	5.04	(5.04)
*Ukraine	0.15	-	0.15	0.18	(0.03)	British Pound Sterling	4.17	4.23	(0.06)	0.09	4.09
*India	0.14	-	0.14	-	0.14	Japanese Yen	13.65	13.61	0.04	22.35	(8.70)
Tanzania	0.10	-	0.10	0.10	-	*Chilean Peso	-	-	-	5.06	(5.06)
*Nigeria	0.09	-	0.09	0.09	-	*Philippine Peso	-	-	-	0.53	(0.53)
*Malaysia	0.50	0.48	0.02	1.77	(1.27)						
Other Countries	-	32.87	(32.87)	7.42	(7.42)	<b>Total:</b>	<b>100.00</b>	<b>100.00</b>	<b>-</b>	<b>100.00</b>	<b>-</b>
Derivative P/L	0.26	-	0.26	1.44	(1.18)						
<b>Total:</b>	<b>100.00</b>	<b>100.00</b>	<b>-</b>	<b>100.00</b>	<b>-</b>						

\*Emerging Markets are defined as any country and currency included in the JP Morgan Government Bond Index-Emerging Market or the JP Morgan Emerging Market Bond Index Global indices.

\*\*For reporting purposes we have grouped both offshore (CNH) and onshore (CNY) Chinese Yuan Renminbi exposure in a single line item. Please refer to the holdings section of this report for additional details.

**Source of Portfolio Duration by Currency Denomination**



**Modified Duration Contribution by Currency (In Years)**

Currency	3/31/2023				12/31/2022	
	0-3	>3-10	>10-20	>20+	Total	Total Change
US Dollar	0.04	1.28	0.83	2.28	4.44	(0.07)
*Mexican Peso	-	0.06	0.32	0.68	1.06	0.23
South Korean Won	-	0.40	-	0.35	0.75	(0.02)
*Brazilian Real	-	0.51	-	-	0.51	0.17
*Polish Zloty	-	0.45	-	-	0.45	0.02
*Colombian Peso	-	-	-	0.45	0.45	0.13
Euro	-	0.44	-	0.00	0.44	(0.79)
*South African Rand	-	0.03	-	0.28	0.31	(0.06)
*Peruvian Nuevo Sol	-	0.23	-	-	0.23	(0.18)
New Zealand Dollar	-	-	-	0.14	0.14	0.15
*Hungarian Forint	-	0.09	-	-	0.09	0.01
*Malaysian Ringgit	-	0.02	-	-	0.02	(0.04)
*Czech Koruna	-	-	-	-	-	(0.09)
Australian Dollar	-	-	-	-	-	(0.01)
<b>Total</b>	<b>0.04</b>	<b>3.51</b>	<b>1.14</b>	<b>4.19</b>	<b>8.89</b>	<b>(0.55)</b>

**Modified Duration Contribution by Country**

vs. FTSE WGBI (USD)

(In Years)

Country	3/31/2023				12/31/2022		Active	Change
	0-3	>3-10	>10-20	>20+	Total	Index		
Japan	-	-	-	-	-	1.69	(1.69)	-
United States	0.02	1.12	0.82	2.27	4.22	2.66	1.56	(0.03)
*Mexico	0.00	0.09	0.32	0.69	1.10	0.04	1.06	0.22
South Korea	-	0.40	-	0.35	0.76	-	0.76	(0.02)
*Brazil	-	0.54	-	0.00	0.54	-	0.54	0.16
*Colombia	-	0.02	-	0.46	0.48	-	0.48	0.13
United Kingdom	-	0.00	-	-	0.00	0.45	(0.45)	(0.00)
*Poland	-	0.45	-	-	0.45	0.01	0.44	0.02
*South Africa	-	0.03	-	0.28	0.31	-	0.31	(0.06)
Spain	-	-	-	0.00	0.00	0.30	(0.30)	(0.00)
*China	-	0.01	-	-	0.01	0.24	(0.24)	(0.00)
*Peru	-	0.23	-	-	0.23	-	0.23	(0.18)
New Zealand	-	-	-	0.14	0.14	0.01	0.13	0.15
Canada	0.00	0.00	-	-	0.01	0.12	(0.12)	(0.01)
Australia	-	0.00	-	-	0.00	0.09	(0.09)	(0.02)
*Hungary	-	0.09	-	-	0.09	-	0.09	0.01
Finland	-	-	0.00	-	0.00	0.03	(0.03)	0.00
Germany	-	0.44	-	-	0.44	0.41	0.03	(0.01)
*Malaysia	-	0.02	-	-	0.02	0.03	(0.01)	(0.04)
*Chile	0.00	0.01	-	-	0.01	-	0.01	(0.00)
*Panama	-	0.01	-	-	0.01	-	0.01	(0.00)
*India	-	0.01	-	-	0.01	-	0.01	0.01
*Zambia	-	0.01	-	-	0.01	-	0.01	(0.00)
Israel	0.01	0.02	-	-	0.02	0.02	0.01	(0.00)
Puerto Rico	0.00	0.01	-	-	0.01	-	0.01	0.01
*Ukraine	-	-	0.01	-	0.01	-	0.01	(0.00)
*Uruguay	0.00	-	-	-	0.00	-	0.00	(0.00)
*Nigeria	-	0.00	-	-	0.00	-	0.00	(0.00)
Tanzania	0.00	-	-	-	0.00	-	0.00	(0.00)
Other Countries	-	-	-	-	-	1.42	(1.42)	(0.87)
<b>Total</b>	<b>0.04</b>	<b>3.51</b>	<b>1.14</b>	<b>4.19</b>	<b>8.89</b>	<b>7.54</b>	<b>1.35</b>	<b>(0.55)</b>

\*Emerging Markets are defined as any country and currency included in the JP Morgan Government Bond Index-Emerging Market or the JP Morgan Emerging Market Bond Index Global indices.

Total Plan Policy Index	As of:																
	7/1/21	1/1/21	7/1/19	10/1/17	7/1/16	1/1/13	10/1/11	4/1/11	1/1/09	7/1/06	4/1/03	6/1/01	10/1/97	1/1/96	10/1/94	1/1/92	1/1/80
91-day US T-Bill													1%	1%	1%	1%	2%
Bloomberg US Aggregate	9%	11.40%	11.40%	11.25%	11.25%	11.25%	15%	18%	18%	21%	23%	26%	33%	29%	32%	37%	30%
Bloomberg US High Yield	1.2%	1.6%	1.6%	1.5%	1.5%	1.5%	2.0%	2.4%	2.4%	3%	3%	3%					
Bloomberg Commodity	0.3%	0.25%	0.75%	0.75%	0.75%												
FTSE WGBI ex US	3.8%	3.00%	3.00%	2.25%	2.25%	2.25%	3%	3.6%	3.6%	4%	4%	5%					
CPI-U +3% (RR)						5.00%	5%										
MSCI ACWI ex US									23%	22%	22%	22%					
MSCI ACWI ex US IMI	24%	25%	25%	26%	26%	27%	25%	23%									
MSCI EAFE													10%	10%	10%	10%	
MSCI Emg Mkts Free ex Malaysia													3%				
MSCI World net																	10%
NCREIF								6%	6%	9%	9%	9%					
NCREIF ODCE	9%	8%	8%	8%	8%	6%	6%										
Russell 3000	24%	25%	25%	28%	28%	32%	34%	37%	37%	41%	39%	35%	42%	49%	47%	40%	
HFRI FoF Composite	8%	9%	9%	9%													
Refinitiv CJA Global All Private Equity 1Q Lagged	11%	8%	8%	9%													
Russell 3000 +1% (PE)					18.00%	15.00%	10%										
Russell 3000 +1.5% (PE)								10%	10%								
Russell 3000 +4% (AI)													2%				
S&P 500																	55%
S&P Global Infrastructure	3.6%	3%	1.75%	1.75%	1.75%												
S&P Global Large Mid Commodity & Resource	2.1%	1.75%	2.50%	2.50%	2.50%												
S&P/LSTA Leveraged Loan+1.75%	4%	4%	4%														
Wilshire RE													9%	11%	10%	12%	3%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

US Equity Benchmark	As of:	
	1/1/92	1/1/80
Russell 3000	100%	0%
S&P 500	0%	100%
	<b>100.0%</b>	<b>100.0%</b>

International Equity Benchmark	As of:				
	4/1/11	6/1/01	10/1/97	1/1/92	1/1/80
MSCI ACWI ex US		100%			
MSCI ACWI ex US IMI	100%				
MSCI EAFE			77%	100%	
MSCI Emg Mkts Free ex Malaysia			23%		
MSCI World net					100%
	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Fixed Income Benchmark	As of:			
	7/1/21	6/1/19	6/1/01	1/1/80
Bloomberg US Aggregate	75.00%	71.25%	75%	100%
Bloomberg US High Yield	10.00%	10.00%	10%	
FTSE WGBI ex US	15.00%	18.75%	15%	
	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Absolute Return Benchmark	As of:	
	10/1/17	10/1/11
HFRI Fund of Funds Composite Index	100%	
LIBOR 1M +4%		100%
	<b>100.0%</b>	<b>100.0%</b>

Private Equity Benchmark	As of:	
	10/1/17	12/1/08
Refinitiv CJA Global All Private Equity 1Q Lagged	100%	
Russell 3000 +2.5%		100%
	<b>100.0%</b>	<b>100.0%</b>

Real Assets Benchmark	As of:		
	1/1/21	7/1/16	10/1/11
CPI-U +3%			100%
Bloomberg Commodity	5%	15%	
S&P Global Infrastructure	60%	35%	
S&P Global Large Mid Commodity & Resource	35%	50%	
	<b>100.00%</b>	<b>100.00%</b>	<b>100.0%</b>

Private Credit Benchmark	As of:
	11/1/19
S&P/LTSA Leveraged Loan Index +1.75%	100%
	<b>100.0%</b>

Real Estate Blend	As of:		
	10/1/11	6/1/01	4/1/86
NCREIF ODCE	100%		
NCREIF Property		100%	
Wilshire RE			100%
	<b>0.0%</b>	<b>100.0%</b>	<b>100.0%</b>

# Glossary

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**Allocation Effect:** An attribution effect that describes the amount attributable to the managers' asset allocation decisions, relative to the benchmark.

**Alpha:** The excess return of a portfolio after adjusting for market risk. This excess return is attributable to the selection skill of the portfolio manager. Alpha is calculated as:  $\text{Portfolio Return} - [\text{Risk-free Rate} + \text{Portfolio Beta} \times (\text{Market Return} - \text{Risk-free Rate})]$ .

**Benchmark R-squared:** Measures how well the Benchmark return series fits the manager's return series. The higher the Benchmark R-squared, the more appropriate the benchmark is for the manager.

**Beta:** A measure of systematic, or market risk; the part of risk in a portfolio or security that is attributable to general market movements. Beta is calculated by dividing the covariance of a security by the variance of the market.

**Book-to-Market:** The ratio of book value per share to market price per share. Growth managers typically have low book-to-market ratios while value managers typically have high book-to-market ratios.

**Capture Ratio:** A statistical measure of an investment manager's overall performance in up or down markets. The capture ratio is used to evaluate how well an investment manager performed relative to an index during periods when that index has risen (up market) or fallen (down market). The capture ratio is calculated by dividing the manager's returns by the returns of the index during the up/down market, and multiplying that factor by 100.

**Correlation:** A measure of the relative movement of returns of one security or asset class relative to another over time. A correlation of 1 means the returns of two securities move in lock step, a correlation of -1 means the returns of two securities move in the exact opposite direction over time. Correlation is used as a measure to help maximize the benefits of diversification when constructing an investment portfolio.

**Excess Return:** A measure of the difference in appreciation or depreciation in the price of an investment compared to its benchmark, over a given time period. This is usually expressed as a percentage and may be annualized over a number of years or represent a single period.

**Information Ratio:** A measure of a manager's ability to earn excess return without incurring additional risk. Information ratio is calculated as: excess return divided by tracking error.

**Interaction Effect:** An attribution effect that describes the portion of active management that is contributable to the cross interaction between the allocation and selection effect. This can also be explained as an effect that cannot be easily traced to a source.

**Portfolio Turnover:** The percentage of a portfolio that is sold and replaced (turned over) during a given time period. Low portfolio turnover is indicative of a buy and hold strategy while high portfolio turnover implies a more active form of management.

**Price-to-Earnings Ratio (P/E):** Also called the earnings multiplier, it is calculated by dividing the price of a company's stock into earnings per share. Growth managers typically hold stocks with high price-to-earnings ratios whereas value managers hold stocks with low price-to-earnings ratios.

**R-Squared:** Also called the coefficient of determination, it measures the amount of variation in one variable explained by variations in another, i.e., the goodness of fit to a benchmark. In the case of investments, the term is used to explain the amount of variation in a security or portfolio explained by movements in the market or the portfolio's benchmark.

**Selection Effect:** An attribution effect that describes the amount attributable to the managers' stock selection decisions, relative to the benchmark.

**Sharpe Ratio:** A measure of portfolio efficiency. The Sharpe Ratio indicates excess portfolio return for each unit of risk associated with achieving the excess return. The higher the Sharpe Ratio, the more efficient the portfolio. Sharpe ratio is calculated as:  $\text{Portfolio Excess Return} / \text{Portfolio Standard Deviation}$ .

**Sortino Ratio:** Measures the risk-adjusted return of an investment, portfolio, or strategy. It is a modification of the Sharpe Ratio, but penalizes only those returns falling below a specified benchmark. The Sortino Ratio uses downside deviation in the denominator rather than standard deviation, like the Sharpe Ratio.

**Standard Deviation:** A measure of volatility, or risk, inherent in a security or portfolio. The standard deviation of a series is a measure of the extent to which observations in the series differ from the arithmetic mean of the series. For example, if a security has an average annual rate of return of 10% and a standard deviation of 5%, then two-thirds of the time, one would expect to receive an annual rate of return between 5% and 15%.

**Style Analysis:** A return based analysis designed to identify combinations of passive investments to closely replicate the performance of funds

**Style Map:** A specialized form or scatter plot chart typically used to show where a Manager lies in relation to a set of style indices on a two-dimensional plane. This is simply a way of viewing the asset loadings in a different context. The coordinates are calculated by rescaling the asset loadings to range from -1 to 1 on each axis and are dependent on the Style Indices comprising the Map.

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# **PERSPECTIVES THAT DRIVE ENTERPRISE SUCCESS**



**PERIOD ENDING: MARCH 31, 2023**

**Absolute Return Performance Report**

**Alameda County Employees' Retirement Association**

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ACERA Performance **PAGE 6**

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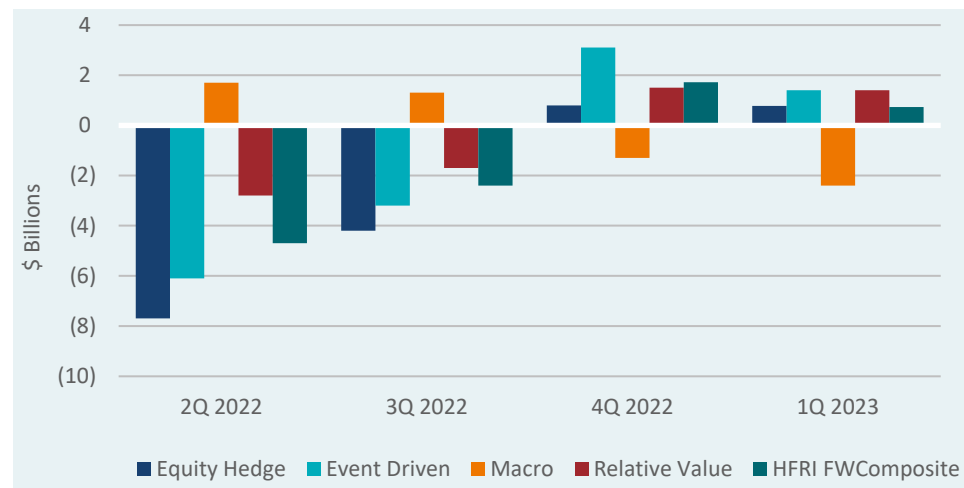
# Hedge Fund Environment

# Hedge fund market review

## Hedge funds see cash flows start to increase as returns stabilize

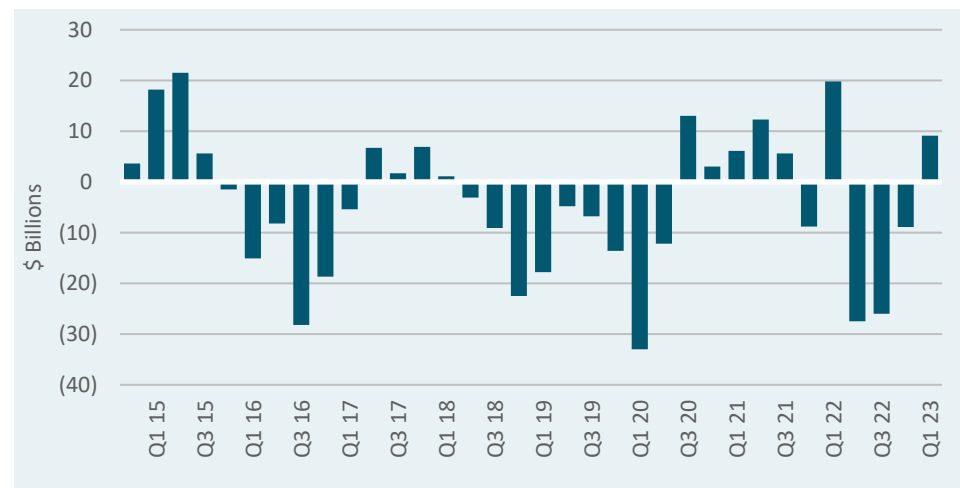
- Performance for Q1 (0.7% for the HFRI Composite) modest with many strategies up between 0.7% and 1.5% for the quarter.
- Investors added \$9.1 billion in Q1 2023 in a stark reversal of the net flows trend from 2022 (which saw outflows of approximately \$40 billion). This comes on the heels of strong inflows in Q1 and the best period of inflows since 2013-2015, which suggests that most investors were using their hedge fund allocations as a source of liquidity rather than exiting the space.
- Hedge funds generally saw positive performance in Q4 2022 and Q1 2023 led by event driven strategies. Macro strategies, which had been strong through Q3 2022 was the only major HFRI strategy with negative returns in both Q4 and Q1.

HFRI STRATEGY RETURNS, LAST 4 QUARTERS



Source: HFR

QUARTERLY NET FLOWS TO HEDGE FUNDS



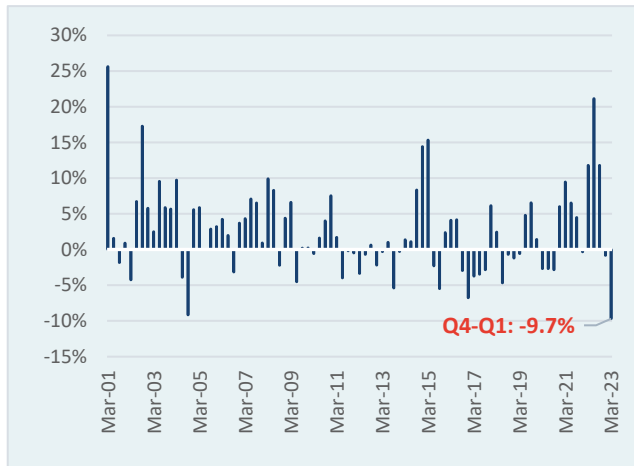
Source: HFR

# CTAs suffer reversal of fortune

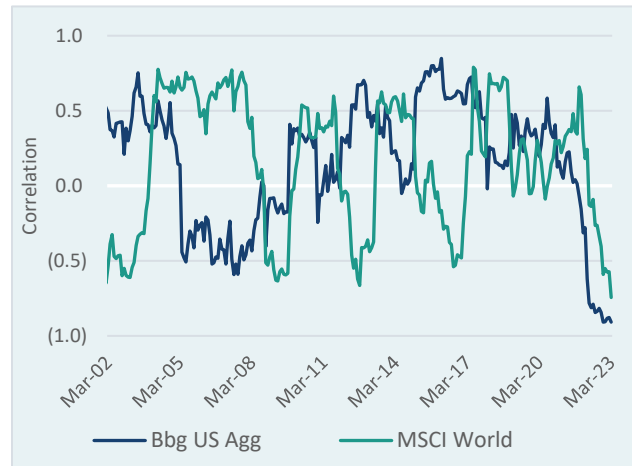
In 2021 and for most of 2022, systematic CTA strategies were the top performing hedge fund strategy. Trend following paid off after several years of mediocre returns from 2016-2020. This periodicity is typical of trend following/CTA type strategies, and the end of 2022 and first quarter of 2023 are a great example of the weak points for these strategies. CTA strategies, as proxied by the SocGen CTA Index, had their worst performance ever over a consecutive quarter period from Q4 '22 through Q1 '23, with data going back to 2000.

The source of pain is obvious when looking at their intermediate-term correlations to stocks and bonds, each of which were simultaneously at their all time most negative since 2000. Rolling 3-year performance for CTAs vs other strategy types is in the midst of reversing after COVID drawdowns begin to roll off and CTAs have suffered from the recent reversals in both stocks and bonds. As intermediate (6-12 month) trends in markets begin to flatten out and the first half of 2022 rolls off, look for CTA positioning to level out and potentially support further moves higher if they continue as they need to cover shorts or add to longs.

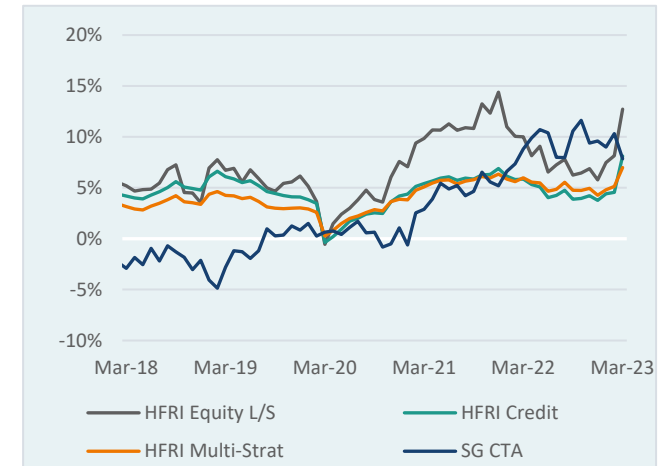
**ROLLING 6-MONTH RETURNS FOR CTA INDEX**



**12-MONTH CORRELATION VS CTA INDEX**



**CUMULATIVE RETURN LAST 12 MONTHS**



Source: HFR, MPI, Morningstar. SocGen, Data as of 9/30/2022

# ACERA Performance

# Allocations

## Target

Sub-categories	Target Allocations	Min./Max. Ranges
<b>AR Portfolio</b>	<b>8.0%</b>	<b>5% to 10.5%</b>
▪ <i>Fund of Funds*</i>	6.4%	4% to 8%
▪ <i>Other Alternatives/Oppportunistic</i>	1.6%	0% to 4.0%

## Current (as of 3/31/2023)

Sub-categories	Current Allocations	Min./Max. Ranges
<b>AR Portfolio</b>	<b>8.0%</b>	<b>5% to 10.5%</b>
▪ <i>Fund of Funds*</i>	6.3%	4% to 8%
▪ <i>Other Alternatives/Oppportunistic</i>	1.7%	0% to 4%

\* Funding second Fund of One manage completed in two tranches August and September 2022.

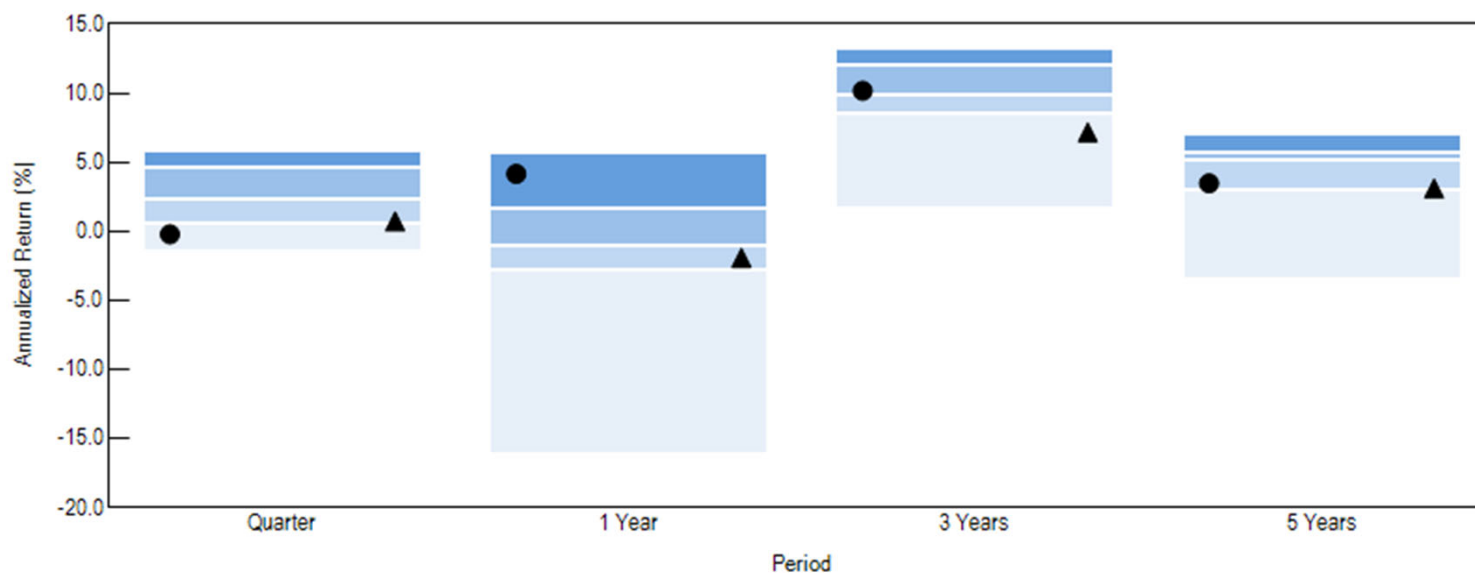
# Performance Summary

	Ending March 31, 2023															
	Market Value (\$)	% of Portfolio	3 Mo (%)	YTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	2022 (%)	2021 (%)	2020 (%)	2019 (%)	2018 (%)	Inception (%)	Inception Date
<b>Absolute Return*</b>	<b>852,044,092</b>	<b>100.0</b>	<b>-0.2</b>	<b>-0.2</b>	<b>-0.2</b>	<b>4.2</b>	<b>10.2</b>	<b>3.5</b>	<b>4.0</b>	<b>6.1</b>	<b>15.0</b>	<b>-0.6</b>	<b>1.8</b>	<b>-2.2</b>	<b>3.9</b>	<b>Sep-11</b>
<i>Absolute Return Blend</i>			<i>0.7</i>	<i>0.7</i>	<i>0.7</i>	<i>-1.9</i>	<i>7.2</i>	<i>3.1</i>	<i>3.8</i>	<i>-5.3</i>	<i>6.2</i>	<i>10.9</i>	<i>8.4</i>	<i>-4.0</i>	<i>3.8</i>	<i>Sep-11</i>



# Relative Performance

InvMetrics All DB Hedge Funds Gross Return Comparison  
Ending March 31, 2023



	Quarter		1 Year		3 Years		5 Years	
5th Percentile	5.7		5.7		13.2		6.9	
25th Percentile	4.6		1.8		12.1		5.8	
Median	2.4		-1.1		10.0		5.2	
75th Percentile	0.6		-2.8		8.6		3.1	
95th Percentile	-1.4		-16.1		1.7		-3.4	
# of Portfolios	127		115		109		93	
● Absolute Return	-0.2	(91)	4.2	(8)	10.2	(50)	3.5	(74)
▲ Absolute Return Blend	0.7	(75)	-1.9	(63)	7.2	(81)	3.1	(76)

# Portfolio Statistics\* (as of 3/31/2023)

	Benchmark HFRI FoF Composite	Absolute Return Portfolio	MSCI ACWI
Max Drawdown	-9.0	-10.5	-25.3
Sharpe Ratio	0.51	0.64	0.62
Beta	0.27	0.07	1.00
Correlation to MSCI ACWI	0.81	0.24	1.00
Annualized StDev	4.9	4.2	14.7

\*Since inception of AR Portfolio (9/2011)

Portfolio performance and risk targets are:

AR portfolio returns to exceed benchmark

Correlation to global equities less than or equal to 0.5

# Appendix

# Glossary

**Beta** - A measure of systematic (undiversifiable) or market risk, the part of risk in a portfolio or security that is attributable to general market movements. Beta is calculated by dividing the covariance of a security by the variance of the market.

**Correlation** – A measure of the relative movement of returns of one security or asset class relative to another over time. A correlation of 1 means the returns of two securities move in lock step, a correlation of -1 means the returns of two securities move in the exact opposite direction over time. Correlation is used as a measure to help optimize the benefits of diversification when constructing an investment portfolio.

**Internal Rate of Return (IRR)** – the interest rate which is the net present value of all the cash flows (both positive and negative) of an investment.

**Maximum Drawdown** – the maximum loss from a peak to a trough of a portfolio before a new peak attained. Maximum drawdown measures the downside risk over a specified time period.

**Standard Deviation** - A measure of volatility, or risk. Measures risk by indicating how far from the average, or mean, return one is likely to fall in any given time period. The rules of statistics dictate that you will fall within 1 standard deviation of the mean 2/3 of the time and within 2 standard deviations 95% of the time. For example, if a security has an average annual rate of return of 10% and a standard deviation of 5%, then two-thirds of the time, one would expect to receive an annual rate of return between 5% and 15%.

# Glossary

**Sharpe Ratio** - A measure of that explains the return of an investment compared to its risk. The Sharpe Ratio indicates excess portfolio return for each unit of risk over the risk free rate (usually short-term Treasuries or LIBOR) per unit of volatility. The higher the Sharpe Ratio, the greater its risk-adjusted return.

**Time Weighted Return** – A measure of the compound rate of growth in a portfolio, which eliminates the distorting effects of growth rates created by inflows and outflows of money.



**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**



PERIOD ENDING DECEMBER 31, 2022

Private Equity Review

**Alameda County Employees' Retirement Association**

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— Private Credit Portfolio

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- By Strategy
  - By Geography
  - By Industry
  - By Vintage Year
- 

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# Market Commentary

## DEBT RELATED

- **HY issuance and leveraged loan issuance both were down significantly.** In 2022, US high yield issuance at \$96.5 billion was down 77.5% compared to 2021<sup>1</sup>. Leverage loan issuance volume was \$1.1 trillion in 2022, down 24.5% from the \$1.4 trillion last year<sup>1</sup>.
- **Spreads loosened across the board.** US HY Credit Index increased by 161 bps or up 48.8%<sup>2</sup> versus the same period last year. BB and B index loosened by 56 bps and 247 bps, increasing by 18.2%<sup>2</sup> and 55.6%<sup>2</sup> versus the same period last year. In the meantime, CCC index spread increased by 69.8%<sup>2</sup> in 2022 from 2021.
- **Slight decrease in LBO debt except Large Corp, interest coverage decreased in US.** Large Corp total leverage averaged 5.9x (Debt / EBITDA) in 2022 for US new issue loans, up 0.7% from 2021<sup>3</sup>, and interest coverage averaged 3.0x (EBITDA / Cash Interest), down 13.5% from 2021<sup>3</sup>. Middle-market total leverage averaged 5.7x (Debt / EBITDA) in 2022 for US new issue loans, down 4.6% from 2021<sup>3</sup>, and interest coverage averaged 2.3x (EBITDA / Cash Interest), down 33.3% from 2021<sup>3</sup>. In Europe, 2022 new issue LBO Loan volume at \$36.2 billion was down 66.8% from 2021 and down 73.7% from \$137.7 billion peak in 2007<sup>4</sup>. European leverage multiples decreased 0.9% to 5.7x in 2022<sup>4</sup>, down from 6.1x from peak in 2007<sup>4</sup>.

## GLOBAL

- **Both investment activity and average deal size decreased.** During 2022, global PE firms invested in \$1.7 trillion worth of deals, down 14.7% from prior year, and closed on 67,894 transactions, down 10.9%<sup>5</sup>. Average deal size declined 4.3%<sup>5</sup>.
- **Private Markets\* dry powder decreased globally.** In 2022, global total dry powder was at \$2.6 trillion, down 13.9% from 2021<sup>5</sup>. Global total PE ex Venture Capital dry powder was down by 16.2% to \$1.3 trillion<sup>5</sup>. Global Venture Capital dry powder was down by 4.6% to \$583.1 billion<sup>5</sup>. Global Private Debt dry powder was down by 20.8% to \$395.2 billion<sup>5</sup>.

## US PRIVATE EQUITY (BUYOUT & GROWTH)

- **Fundraising activity increased.** In 2022, US buyout firms raised \$282.1 billion, up by 6.3% from prior year<sup>5</sup>. Average fund size was up 87.4%, from \$457.6 million in 2021 to \$857.6 million in 2022<sup>5</sup>. US growth strategy raised \$60.9 billion, down by 32.8% from \$90.6 billion in 2021.
- **Investment activity was down.** During 2022, US buyout firms invested in \$921.5 billion (-26.9% from 2021) into 7,495 deals (-17.8%)<sup>5</sup>. IT and Financial Services sectors declined the least, down from 2021 by 11.6% and 16.8%, respectively. B2B sector invested the most capital (\$281.5 billion<sup>5</sup>, -25.6% from 2021 and completed the most number of deals (2,879 deals<sup>5</sup>, -13.7% from 2021).
- **Dry powder decreased.** In 2022, US private equity dry powder was \$775.6 billion, down by 14.9% from 2021<sup>5</sup>.



# Market Commentary

- **LBO price multiples up.** As of December 31, 2022, US LBO purchase price multiple (Enterprise Value / EBITDA) was at 11.9x, a 4.3% increase from December 31, 2021<sup>3</sup>. Healthcare sector led the highest purchase price multiple at 14.4x, an increase of 5.2% from same time last year.
- **Exit activity decreased.** During 2022, US private equity firms exited 1,082 companies, representing \$295.8 billion in total transaction value<sup>5</sup>. This represented a 39.1% decrease in the number of exits and a 66.3% decrease in total transaction value compared to the same time last year<sup>5</sup>.

## US VENTURE CAPITAL

- **Fundraising activity increased.** US VC firms raised \$162.6 billion in 2022, a 5.5% increase from last year<sup>5</sup>. 769 funds closed in 2022, a 39.4% decrease from last year<sup>5</sup>. The average US VC fund size increased to \$211.5 million by 74.3% versus the same period last year<sup>5</sup>.
- **Investment activity decreased.** US VC firms deployed \$238.3 billion in capital in 2022, a 30.9% decrease from 2021. The number of deals closed at 15,852, a 14.4% decrease from last year<sup>5</sup>. Average deal size decreased 19.3% from 2021 due to fewer deals in late stage.
- **Dry powder increased.** In 2022, US VC dry powder was at \$289.0 billion, up 15.7% from 2021<sup>5</sup>.
- **Entry valuations and deal sizes mixed by stage:**
  - **Entry valuations.** Compared to December 31, 2021, the average pre-money valuations for all stages in 2022 are: up 9.7% at \$4.9 million<sup>5</sup> for Angel stage, up 16.7% at \$10.5 million<sup>5</sup> for Seed stage, up 19.0% at \$50.0 million<sup>5</sup> for early-stage VC, and down 10.2% at \$67.3 million<sup>5</sup> for late-stage VC.
  - **Deal sizes.** Average deal size increased for Angel stage and Seed stage by 6.8% to \$0.7 million<sup>5</sup> and 30.5% at \$3.9 million<sup>5</sup>, respectively. In the meantime, average deal size decreased for Early stage and Late stage by 11.6% to \$14.4 million<sup>5</sup> and 29.0% at \$23.2 million<sup>5</sup>, respectively. Across all stages, the average investment per deal decreased to \$10.5 million, a 19.8% decrease from prior year<sup>5</sup>. Over the past 3 years, the average deal size of Angel-, Seed-, Early- and Late-stage investments were down 92.2%, 86.6%, 101.0%, and 101.5%, respectively<sup>5</sup>.
- **Exit activity decreased significantly with smaller transactions.** US VC firms exited 1,208 companies in 2022, down by 37.2% from the same time last year, and down 7.2% from three years ago<sup>5</sup>. This represented \$71.4 billion in transaction value, down by 90.5% from the same period last year, but up by 73.5% from three years ago<sup>5</sup>. Largest sectors exited were Software and Pharma & Biotech.

## EX US

- **Ex-US fundraising activity was down.** In 2022, ex-US fundraising decreased 1.3% from the same time in 2021 to \$419.9 billion<sup>5</sup>. Fundraising in Asia decreased by 1.9% to \$124.0 billion<sup>5</sup>, while Europe was down by 40.8% to \$83.9 billion<sup>5</sup>.

# Market Commentary

- **Capital deployment decreased by VCs and Buyout managers in Europe and Asia.**
  - **In both Europe and Asia, VCs invested less capital into fewer deals.** In 2022, number of deals closed decreased by 16.0% in Europe with 15.9% in capital deployed at \$98.3 billion. Similar to Europe, Asia VC capital investment 74.9% less capital to \$32.2 billion, representing 63.1% fewer deals than 2021.
  - **Buyout deal activity and capital deployment dropped in Europe and in Asia.** In Europe, buyout firms transacted on \$638.6 billion in aggregate value (-18.2% from 2021)<sup>5</sup>. Asia buyout firms invested \$24.3 billion in aggregate value (-53.3%)<sup>5</sup>.
- **Dry powder decreased ex-US.** PE dry powder outside the US decreased 19.2% to \$1.6 trillion<sup>5</sup> in 2022. Dry powder outside the US was 58.8% less than dry powder in the US (\$3.8 trillion)<sup>5</sup>.
  - **Europe VC and buyout dry powder both down.** VC at \$17.3 billion and buyout at \$677.9 billion were down 22.8% and 16.6% from 2021, respectively<sup>5</sup>.
  - **In Asia, VC and buyout dry powder decreased in parallel with US and Europe, but growth dry powder increased.** VC at \$40.9 billion, buyout at \$218.9 billion, and growth at \$59.9 billion were down 6.7%, 25.3% and up 7.2% from 2021, respectively<sup>5</sup>.
- **Purchase price multiples decreased in Europe and Asia.** As of December 31, 2022, European buyout median purchase price multiples decreased 9.4% from 8.4x to 7.6x EBITDA from the same time last year<sup>5</sup>. Asia buyout median purchase price multiples decreased 39.3% from 7.1x to 4.3x EBITDA from the same time last year<sup>5</sup>.
- **Exit activity weakened in Europe and Asia.** Europe PE aggregate exit value amounted to \$254.9 billion in 2022, a 54.8% decrease from 2021, while Asia PE exit value dropped by 30.1% to \$158.2 billion<sup>5</sup>.

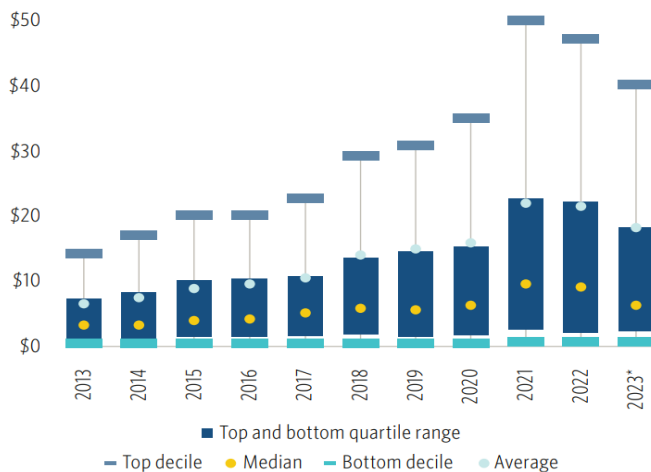
## Notes

1. *White & Case Debt Explorer (April 10, 2023)*
  2. *Guggenheim High-Yield Bank Loan Outlook (Q1 2023)*
  3. *S&P Global US LBO Review (4Q 2022)*
  4. *S&P Global LCD European Leveraged Buyout Review (4Q 2022)*
  5. *Pitchbook (December 31, 2022)*
- \* Include Buyout, Venture Capital, Private Debt, Fund of Funds and Secondaries.

# VC Valuations

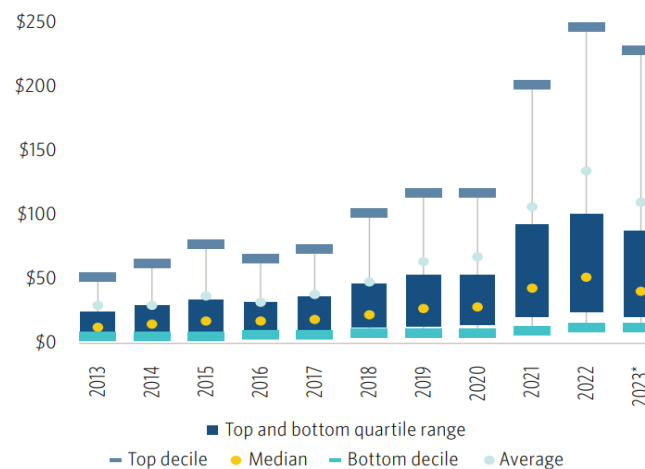
## Early-stage deal sizes continue to dip

Early-stage VC deal value (\$M) dispersion



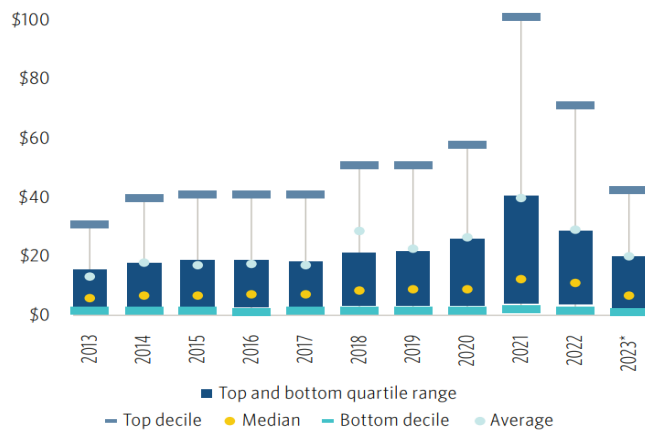
## Median early-stage VC valuation falls to eight-quarter low

Early-stage VC pre-money valuation (\$M) dispersion



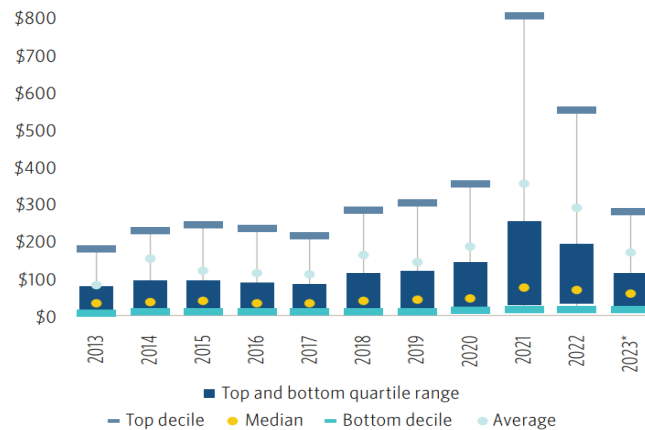
## Median late-stage deal value has fallen 40% YoY

Late-stage VC deal value (\$M) dispersion



## Top-decile valuation down 70% QoQ

Late-stage VC pre-money valuation (\$M) dispersion



Source: Pitchbook

Source: PitchBook • Geography: US  
\*As of March 31, 2023

Source: PitchBook • Geography: US  
\*As of March 31, 2023

# Private Equity portfolio

	Policy Target	Policy Range	Market Value %	Market Value \$(000)	Unfunded Commitment \$(000)	Market Value + Unfunded \$(000)
<b>ACERA Plan Assets - Total</b>				<b>\$10,253,590</b>		
<b>Private Equity:</b>	<b>11.0%</b>	<b>8-13%</b>	<b>9.8%</b>	<b>\$1,005,092</b>	<b>\$382,823</b>	<b>\$1,387,915</b>
Buyouts	60.0%	30-80%	59.5%	\$598,042	\$181,639	\$779,681
Venture Capital	20.0%	0-40%	23.6%	\$236,859	\$77,017	\$313,876
Debt-Related/Special Situations	20.0%	0-30%	16.9%	\$170,191	\$124,167	\$294,358

### Portfolio Summary

- As of December 31, 2022, the Private Equity portfolio had a total market value of \$1.0B, with \$598.0M in Buyouts, \$236.9M in Venture Capital, and \$170.2M in Debt-Related/Special Situations. Total market value is the current reported value of investments, excluding the remaining amount of unfunded commitments.
- Since its initial allocation to Private Equity in Q4 2008, ACERA has contributed \$1.4B towards its total \$1.6B Private Equity commitments.
- The portfolio exposure at 9.8% is below the 11.0% policy target approved in 2021, but within its 8-13% target range. Compared to December 31, 2021, portfolio exposure is up 1.5%. Buyout is very close to its policy target, Venture Capital is above its target, and Debt-Related / Special Situations is below its policy target; but all sub-asset classes are within policy ranges.

### Portfolio Activity

- In the third quarter of 2022, ACERA committed \$55M to Audax Fund VII. ACERA also committed \$43M to Atlas III during the year.

# Private Equity Portfolio Performance

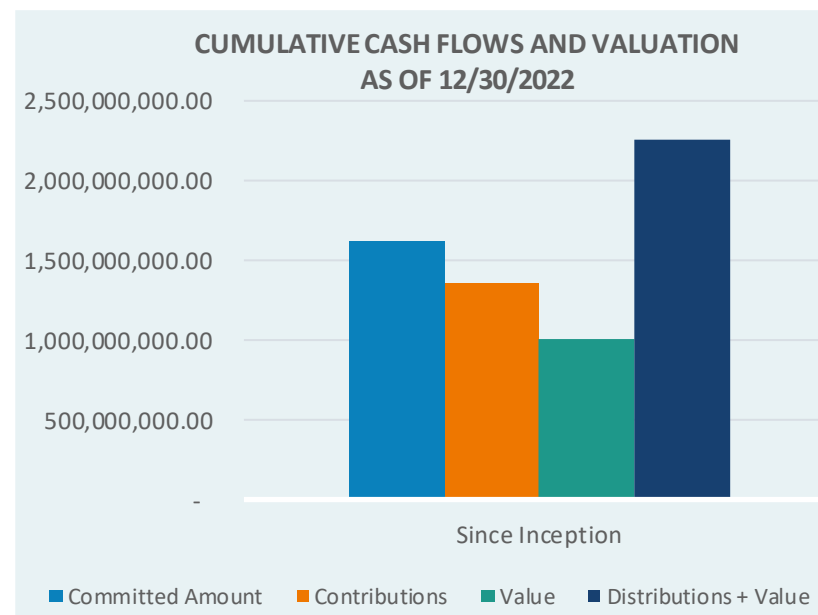
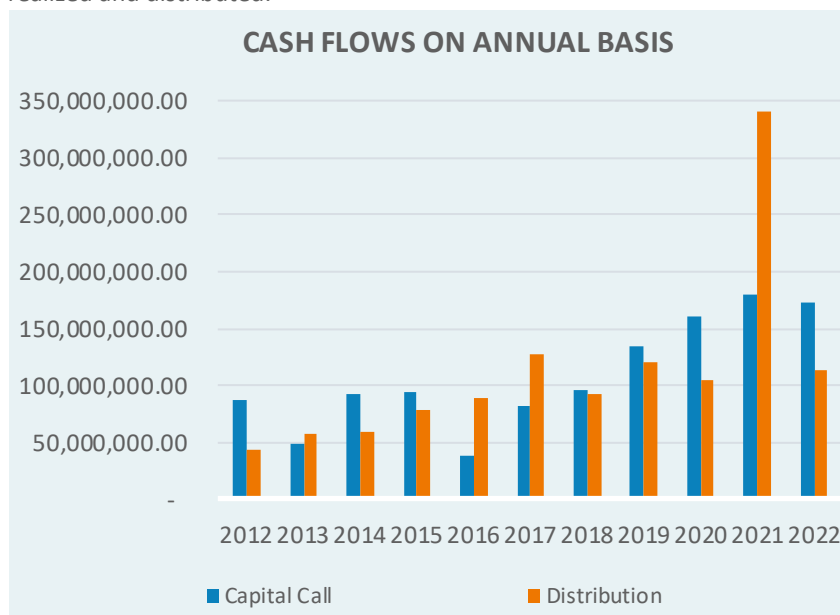
Period Ending: December 31, 2022

## Performance

- Current Private Equity portfolio is valued at \$1.0BM. Portfolio investments have a capital-weighted average life of 5.2 years. Since inception (2008):
  - The portfolio has produced 16.03% net IRR, outperforming its Refinitiv C|A Global PE benchmark pooled IRR of 14.07% by 1.96%. Portfolio returns rank above median on all measures: net IRR and Total Value Multiple (TVPI), and Distribution Multiple (DPI).
  - Relative to same Vintage global benchmark peers, Buyout ranks close to Median on IRR, at Median for TVPI, above Median for DPI; Venture Capital ranks above median on IRR and above Top-Quartile on TVPI & DPI; and Debt Related/ Special Situations ranks close to Median on IRR, and below Median on TVPI, and DPI.
- Together with \$1.2B in realized distributions (0.92x DPI), Private Equity's Total Value at \$2.3B is approximately \$895.7M above \$1.4B contributed capital (1.66x TVPI), net of fees. Return drivers include:
  - Buyout up \$463.0M/+0.60x cost (Great Hill Equity Partners V & VI; Sycamore; Peak Rock II, Audax VI, and Warburg XII leading) with 82.5% of called capital realized and distributed.

Since inception, the Buyout portfolio produced 15.95% net IRR versus its peer global benchmark 15.06% pooled IRR.

- Venture Capital up \$340.5M/+1.60x cost (General Catalyst VI; Khosla Ventures IV, V, and Seed B; Great Hill Equity Partners IV and VI; Third Rock Venture II and III; and NEA 13 leading), with 148.8% of called capital realized and distributed. Since inception, this portfolio produced 21.89% net IRR versus its peer global benchmark of 15.39% pooled IRR.
- Debt-Related / Special Situations was up \$92.2M/+0.25x cost (AG CSF1A (Annex) Dislocation; Peak Rock Credit II; Abry Senior Equity IV and V, and Advanced Securities II, Centerbridge Special Credit Partners; and OHA Strategic Credit Fund IB and II leading), with 78.8% of called capital. Since inception, this portfolio produced 9.16% net IRR versus its peer global benchmark of 12.58% pooled IRR.
- Contributions outpaced distributions by a ratio of 1.53:1.0 in 2022. Of \$1.2B in since-inception cash distributions, 51.2% were from Buyouts, 25.3% from Venture Capital, and 23.5% from Debt-Related/Special Situations.
- Within Private Equity, the current allocation of exposure is 59.5% to Buyouts, 23.6% to Venture Capital, and 16.9% to Debt / Special Situations.



## Portfolio Performance vs. Pooled Benchmark IRR

Period Ending: December 31, 2022

	1-Year	3-Year	5-Year	10-Year	Since Inception <sup>2</sup>
<b>Buyout</b>	<b>5.77%</b>	<b>21.43%</b>	<b>17.37%</b>	<b>17.13%</b>	<b>15.95%</b>
<i>Refinitiv C/A Global Buyout Benchmark<sup>1</sup></i>	-3.16%	17.80%	15.68%	15.17%	15.06%
<b>Venture Capital</b>	<b>-22.72%</b>	<b>30.80%</b>	<b>24.28%</b>	<b>22.72%</b>	<b>21.89%</b>
<i>Refinitiv C/A Global Venture Capital &amp; Growth Equity Benchmark<sup>1</sup></i>	-16.69%	21.28%	19.58%	17.19%	15.39%
<b>Debt-Related / Special Situation</b>	<b>-3.37%</b>	<b>6.25%</b>	<b>4.83%</b>	<b>7.54%</b>	<b>9.16%</b>
<i>Refinitiv C/A Global All Debt Benchmark<sup>1</sup></i>	3.90%	12.61%	9.90%	10.13%	12.58%
<b>Total Private Equity</b>	<b>-4.34%</b>	<b>20.66%</b>	<b>17.20%</b>	<b>17.02%</b>	<b>16.03%</b>
<i>Refinitiv C/A Global All Private Equity Benchmark<sup>1</sup></i>	-6.40%	17.71%	15.15%	13.98%	14.07%

**Identical cash flows from the portfolio inception through 12/31/2022 invested in the Russell 3000 Total Return index would yield a 12.66% (Long Nickels). The Private Equity Portfolio outperformed the Russell 3000 by 3.37%. Public Market Equivalent analysis provided by Solovis.**

<sup>1</sup> Benchmarks: Refinitiv C/A as of 12/31/2022, vintage 2008 through present.

<sup>2</sup> ACERA's inception date of November 21, 2008 vs. Refinitiv C/A's inception date of January 1, 2008.

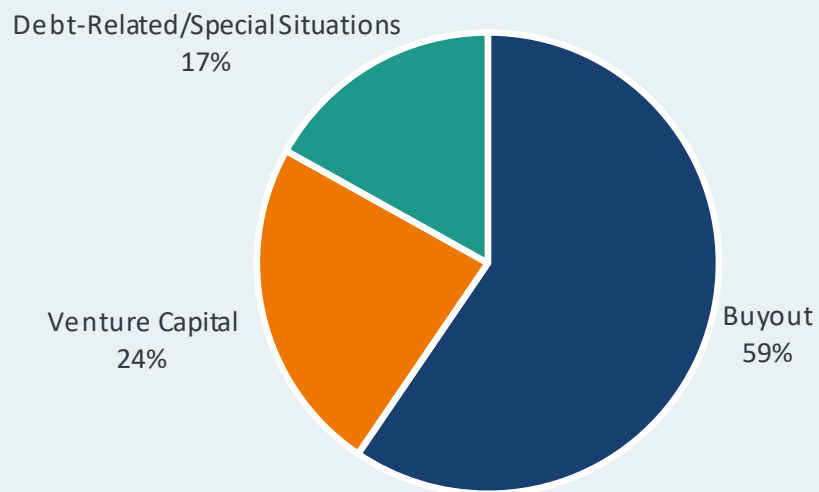
## Portfolio Diversification

Period Ending: December 31, 2022

Investment Type	Commitment	Current Exposure	Current Exposure as % of Private Equity
Buyout	861,995,686	598,041,780	59.5%
Venture Capital	288,600,000	236,859,376	23.6%
Debt-Related/Special Situations	470,247,675	170,190,776	16.9%
<b>Total Private Equity</b>	<b>1,620,843,361</b>	<b>1,005,091,932</b>	<b>100.0%</b>

Investment Type	Target Range	Target Exposure	Current Exposure as % of Target	Difference
Buyout	3.3%-8.8%	6.6%	5.8%	-0.8%
Venture Capital	0.0%-4.4%	2.2%	2.2%	0.0%
Debt-Related/Special Situations	0.0%-3.3%	2.2%	1.8%	-0.4%
<b>Total Private Equity</b>	<b>8%-13%</b>	<b>11.0%</b>	<b>9.8%</b>	<b>-1.2%</b>

### PRIVATE EQUITY PORTFOLIO: CURRENT EXPOSURE

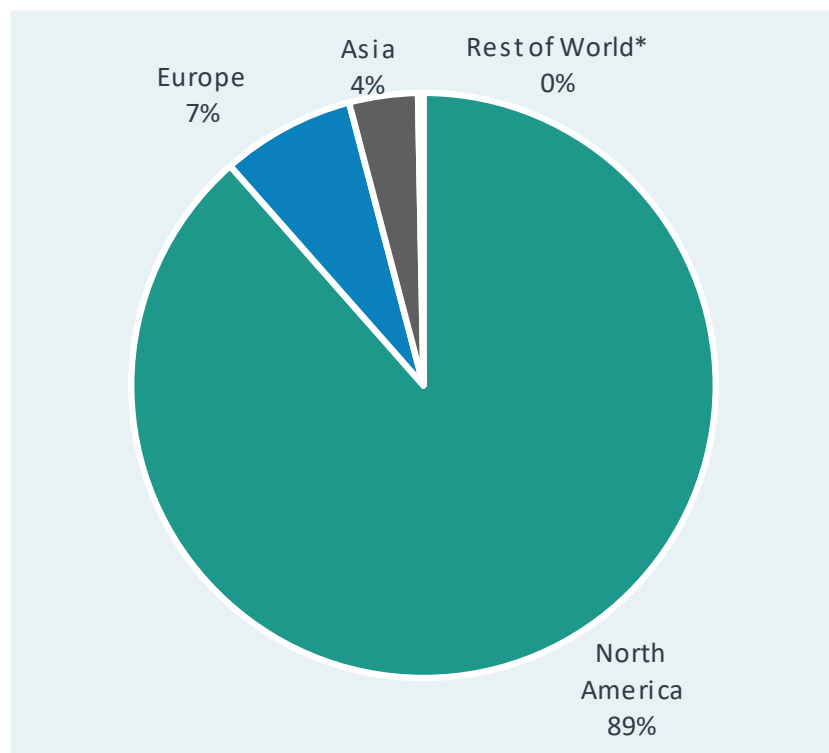




## Private Equity Portfolio Diversification

Period Ending: December 31, 2022

Geography	Current Exposure
North America	889,805,040
Europe	74,306,272
Asia	38,014,789
Rest of World*	2,965,831
<b>Total Private Equity</b>	<b>1,005,091,932</b>



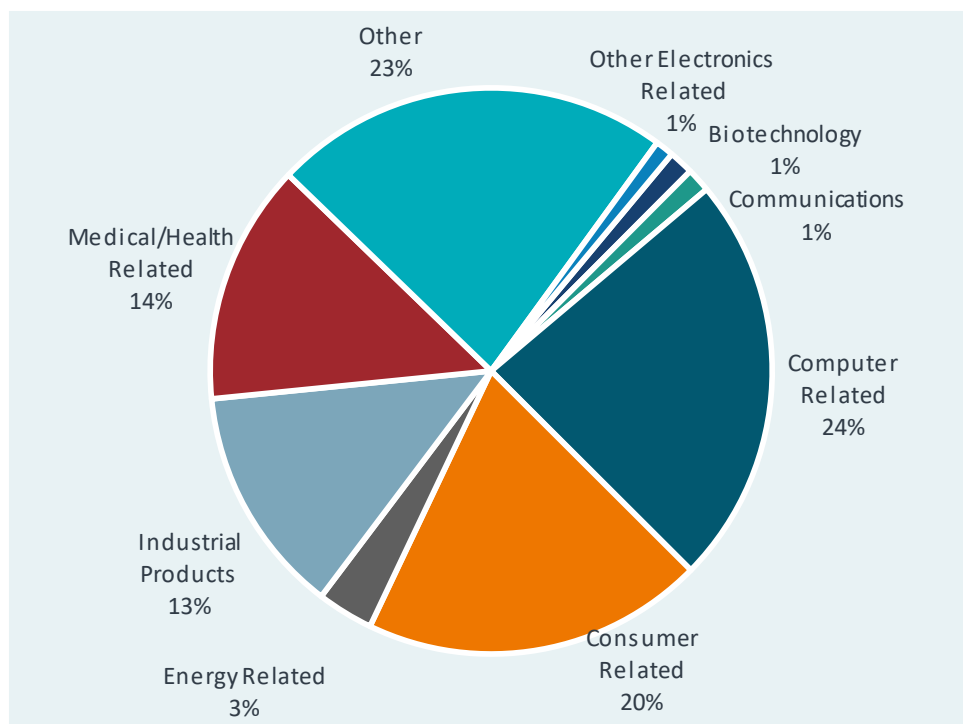
Based on the value of private equity portfolio companies as of December 31, 2022, as provided by the partnerships. Differences between reported value and the private equity portfolio valuation is due to temporary cash funds, fees, other expenses, and holdings with undisclosed industry breakdown.

\* Rest of World includes: Brazil, New Zealand, Kenya, Israel, United Arab Emirates, Australia, and Turkey.

## Private Equity Portfolio Diversification

Period Ending: December 31, 2022

Industry	Current Exposure
Biotechnology	14,262,267
Communications	13,822,370
Computer Related	236,391,706
Consumer Related	197,742,729
Energy Related	32,530,710
Industrial Products	131,564,424
Medical/Health Related	138,172,717
Other	230,039,520
Other Electronics Related	10,565,489
<b>Total Private Equity</b>	<b>1,005,091,932</b>

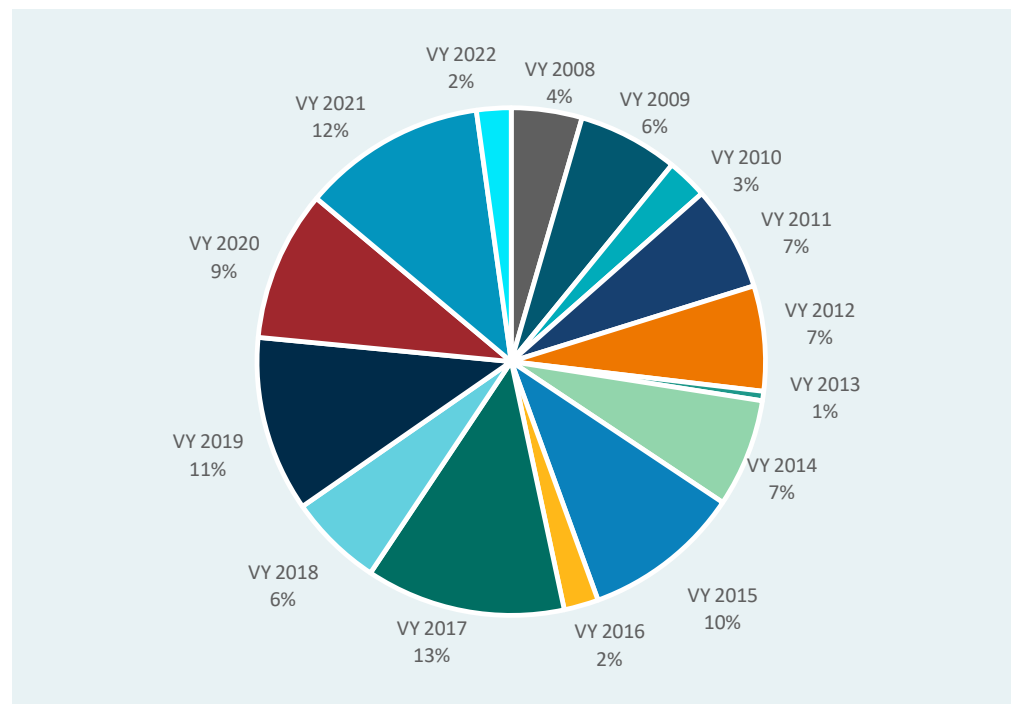


Based on the value of private equity portfolio companies as of December 31, 2022, as provided by the partnerships. Differences between reported value and the private equity portfolio valuation is due to temporary cash funds, fees, other expenses, and holdings with undisclosed industry breakdown.

# Private Equity Portfolio Diversification

Period Ending: December 31, 2022

Vintage Year	Commitment as of 12/31/2022	% of Portfolio Commitment
2008	72,370,855	4.5%
2009	103,500,000	6.4%
2010	42,500,000	2.6%
2011	108,189,282	6.7%
2012	108,500,000	6.7%
2013	10,000,000	0.6%
2014	112,080,000	6.9%
2015	163,250,000	10.1%
2016	35,000,000	2.2%
2017	205,501,820	12.7%
2018	98,000,000	6.0%
2019	181,000,000	11.2%
2020	155,951,404	9.6%
2021	189,000,000	11.7%
2022	36,000,000	2.2%
<b>Total Private Equity</b>	<b>1,620,843,361</b>	<b>100%</b>



- **As of December 31, 2022, the Private Equity Portfolio's market value is at 9.8%, below its target allocation of 11.0% approved in 2021, but within its target range.**

# Appendix

Private Credit Portfolio

	Policy Target	Policy Range	Market Value %	Market Value \$(000)	Unfunded Commitment \$(000)	Market Value + Unfunded \$(000)
<b>ACERA Plan Assets - Total</b>				<b>\$10,253,590</b>		
<b>Private Credit:</b>	<b>4.0%</b>	<b>3-5%</b>	<b>2.6%</b>	<b>\$265,356</b>	<b>\$113,063</b>	<b>\$378,419</b>
Private Credit	4.0%	3-5%	100.0%	\$265,356	\$113,063	\$378,419

### Portfolio Summary

- As of December 31, 2022, the Private Credit portfolio had a total market value of \$265.4M. Total market value is the current reported value of investments, excluding the remaining amount of unfunded commitments.
- Since ACERA's initial allocation to Private Credit in Q1 2019, the Plan has contributed \$270.8M towards its aggregate \$375M commitments. Unfunded commitments total \$113.1M.
- The portfolio exposure at 2.6% is below the policy target of 4.0% and policy range of 3-5%. Compared to December 31, 2021, ACERA's private credit exposure is up 1.3%.

### Portfolio Activity

- In the second half of 2022, ACERA made no new commitments toward its private credit portfolio.

# Private Credit Portfolio Performance

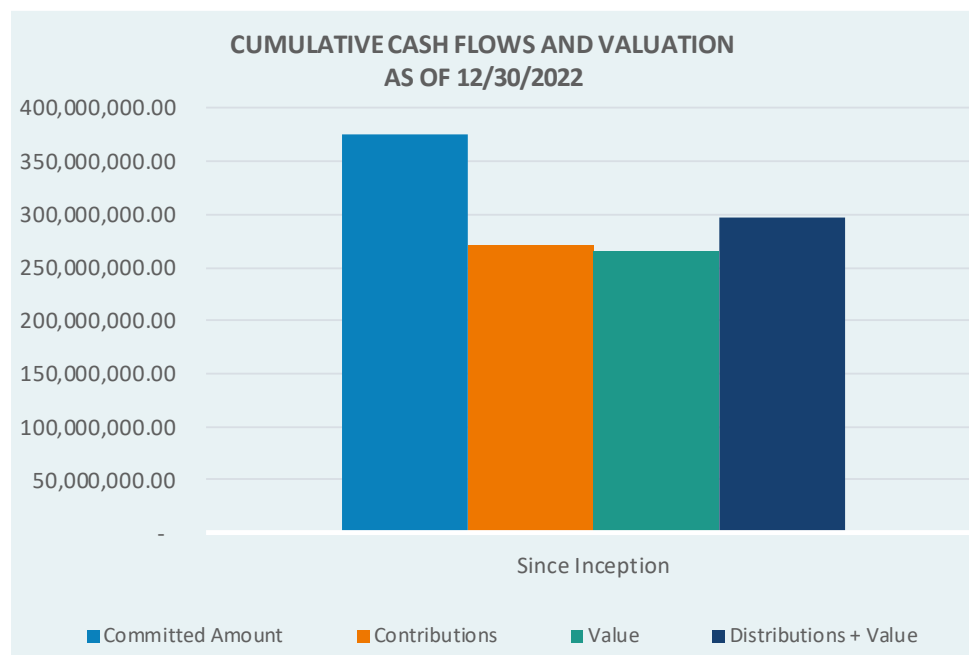
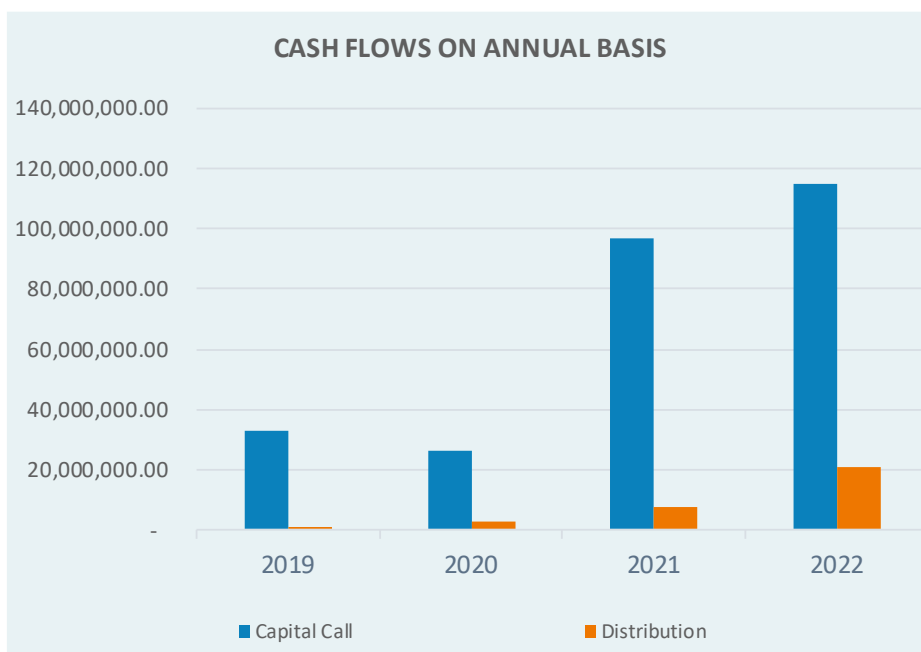
Period Ending: December 31, 2022


## Performance

- The Private Credit’s performance, as measured by net IRR, is 6.76%, 526 bps above the same cash flow invested in the S&P LSTA U.S. Leveraged Loan 100 Index of 1.50%. The capital-weighted average life of investments is 1.5 years. While IRR is a meaningful measure of performance at this stage, the portfolio is still growing and not yet mature.
- The portfolio is currently valued at \$265.4M. Together with \$31.5M in realized distributions (0.12x DPI), Private Credit’s Total Value at \$296.8M is approximately \$26.0M above \$270.8M cost (1.10x TVPI), net of fees.
- Capital calls continued to dominate the portfolio’s cash-flow activity as new investments are made to reach the target exposure.

— The Portfolio has five commitments to date:

▪ Owl Rock First Lien, LP ( <i>Levered</i> )	\$80M
▪ HPS Specialty Loan Fund V, LP ( <i>Unlevered</i> )	\$75M
▪ BlackRock Direct Lending Fund IX, LP ( <i>Unlevered</i> )	\$75M
▪ Monroe Private Credit Fund IV, L.P. ( <i>Unlevered</i> )	\$75M
▪ Ares Senior Direct Lending Fund II, L.P. ( <i>Levered</i> )	\$70M





**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**



**PERIOD ENDING: DECEMBER 31, 2022**

Real Assets Review

**Alameda County Employees' Retirement Association**



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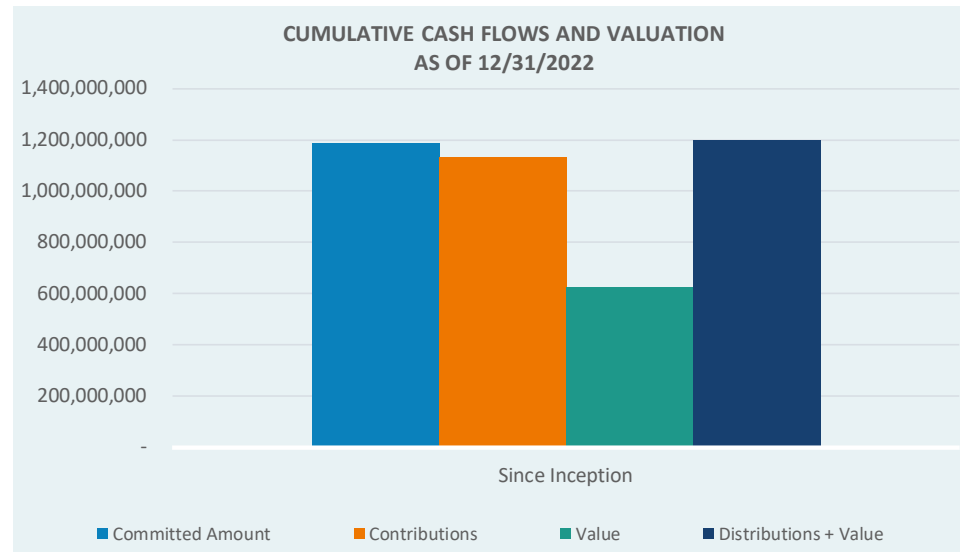
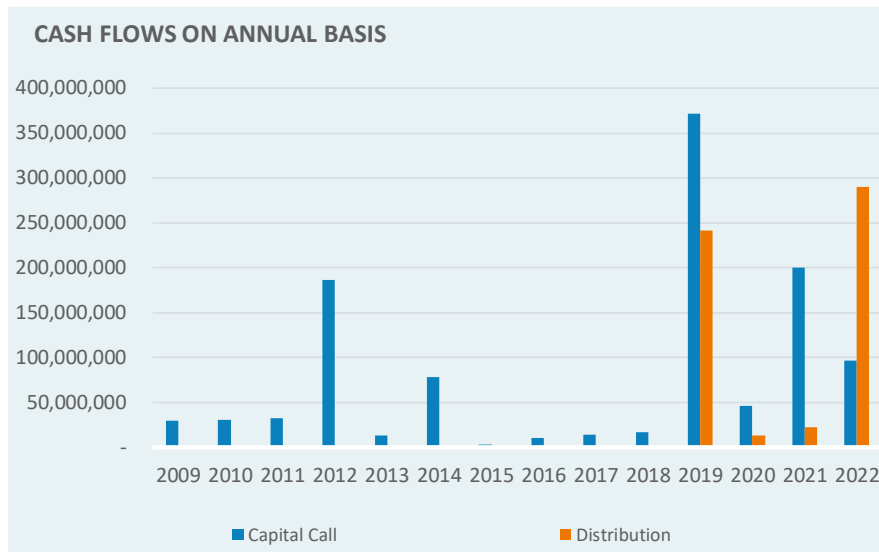
- RA Portfolio Diversification by Strategy
- RA Portfolio Diversification by Geography
- RA Portfolio Diversification by Vintage Year

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# Real Asset Performance

## Performance

— ACERA’s Real Asset Pool has produced a 1.25% IRR since inception. The portfolios performance has been driven primarily by the large weighting in commodity futures (Gresham and AQR) and poor returns from a couple early energy funds. That said, the portfolio is beginning to see the success of more recent fund investments in natural resources and infrastructure that have matured and are delivering top quartile or near top quartile returns.



## Real Assets Performance vs. Pooled Benchmark IRR

Period Ending: December 31, 2022

	1-Year	3-Year	5-Year	10-Year	Since Inception
<b>Natural Resources Funds</b>	<b>19.57%</b>	<b>21.30%</b>	<b>7.21%</b>	<b>1.43%</b>	<b>1.16%</b>
<i>S&amp;P Global Natural Resources Index</i> <sup>1</sup>	15.32%	13.00%	9.80%	6.88%	6.70%
<b>Infrastructure Funds</b>	<b>8.48%</b>	<b>11.87%</b>	<b>12.09%</b>		<b>11.46%</b>
<i>S&amp;P Global Infrastructure Index</i> <sup>1</sup>	-1.40%	2.39%	3.62%	3.71%	3.71%
<b>Liquid Pool Funds</b>	<b>7.01%</b>	<b>7.90%</b>	<b>5.18%</b>	<b>0.15%</b>	<b>0.41%</b>
<i>Bloomberg Commodity Index</i> <sup>1</sup>	0.00%	6.96%	4.11%	-1.36%	-1.20%
<b>Total Real Assets</b>	<b>8.19%</b>	<b>9.55%</b>	<b>6.27%</b>	<b>1.11%</b>	<b>1.25%</b>
<i>Blended Real Assets Benchmark</i> <sup>2</sup>	5.87%	7.14%	5.68%	6.46%	6.25%

<sup>1</sup> Benchmarks: Identical cash flows invested in the appropriate benchmarks through the life of the portfolio up through 12/31/2022. Analysis provided by Solovis.

<sup>2</sup> Blended Real Assets Benchmark calculated on a time-weighted return basis. Blended returns are weighted as follows: 60% S&P Global Infrastructure Index, 35% S&P Global Natural Resources Index, and 5% Bloomberg Commodity Index.

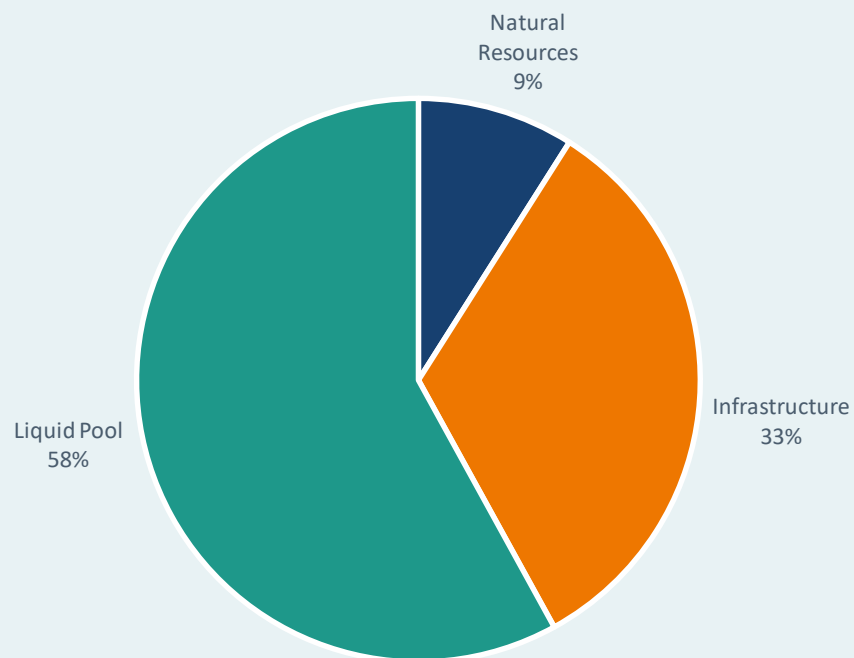
# Strategy

## Portfolio Diversification

Period Ending: December 31, 2022

Investment Type	Commitment	Current Exposure	Current Exposure as % of Portfolio
Natural Resources	104,000,000	55,915,451	9.0%
Infrastructure	240,000,000	207,108,517	33.1%
Liquid Pool	842,235,893	362,147,561	57.9%
<b>Total Portfolio</b>	<b>1,186,235,893</b>	<b>625,171,529</b>	<b>100.0%</b>

### REAL ASSETS PORTFOLIO: CURRENT EXPOSURE



# Geography

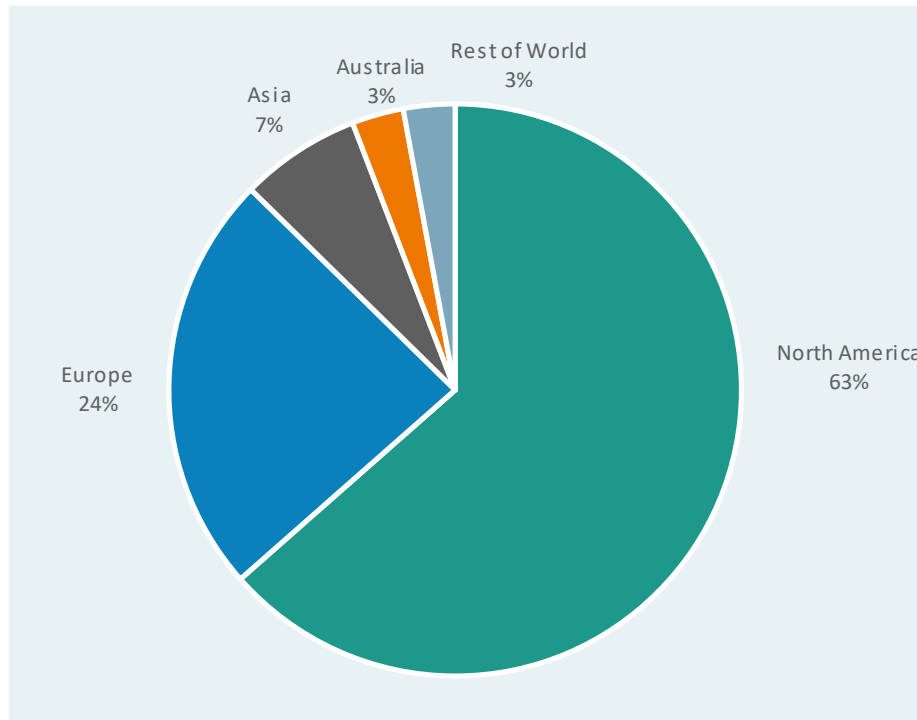
## Portfolio Diversification

Period Ending: December 31, 2022

Geography	Reported Fair Value
North America	141,191,584
Europe	53,035,322
Asia	15,144,123
Australia	6,494,380
Rest of World	6,476,074
<b>Total Portfolio*</b>	<b>222,341,482</b>

\* Excludes open-end vehicles and liquid assets.

\*\* Rest of World includes New Zealand and Senegal.

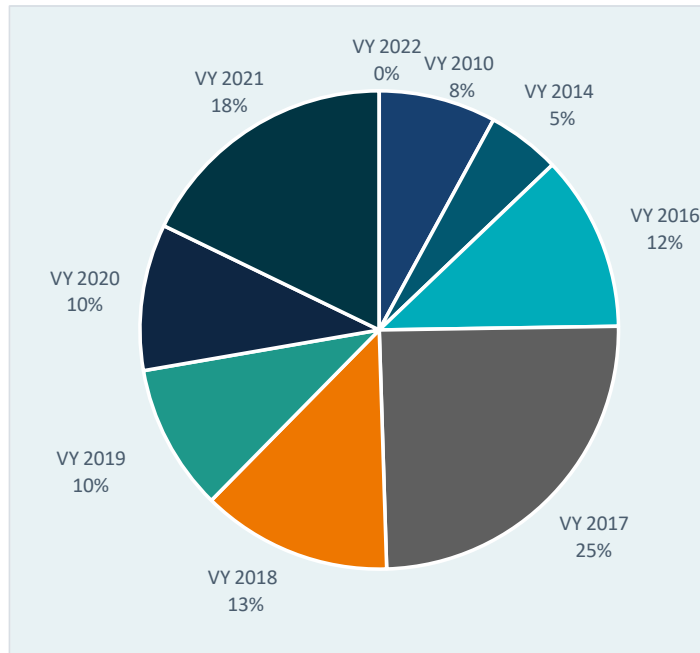


# Vintage Year Portfolio Diversification

Period Ending: December 31, 2022

Vintage Year	Commitment as of 12/31/2022	% of Portfolio Commitment	Reported Value as of 12/31/2022
2010	24,000,000	7.9%	0
2014	15,000,000	4.9%	9,483,992
2016	35,000,000	11.5%	43,135,202
2017	75,000,000	24.7%	76,619,620
2018	40,000,000	13.2%	39,099,159
2019	30,000,000	9.9%	12,354,472
2020	30,000,000	9.9%	15,593,780
2021	55,000,000	18.1%	26,055,257
2022	0	0.0%	0
<b>Total Portfolio</b>	<b>304,000,000</b>	<b>100%</b>	<b>222,341,482</b>

\* Excludes open-end vehicles and liquid assets.



- The opportunity set for new investments has been challenging within real assets this year. The relative outperformance within natural resources and infrastructure compared to the rest of the market has been encouraging for client portfolios but also brings some valuation concerns to the asset classes. We plan to bring an energy transition fund to ACERA in June. Plans to allocate to a second core infrastructure fund have been put on hold until we see valuations adjust to the new higher rate environment.





**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**

JUNE 2023  
Real Assets Outlook

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# Key themes

# Key themes for 2023

## Observations driving our outlook

### What's next for inflation...

In our Outlook last year, we said the following “We believe inflation will likely begin falling later in 2022” and though that turned out to be true, we came to that conclusion because we believed the Fed would choke off the pressures of inflation. Coming into 2023, it appeared as though inflation would continue to retreat lower, albeit slowly, but unexpected price increases have complicated the picture. There are now banking instability issues, geopolitics, a softening economy and a dozen other headline issues weighing on investors' minds. But staying on inflation, we believe the Fed will do what it says and keep policy tight until inflation returns to their target level. We do not want to be on the other side of that trade. We expect rates to stay higher for longer and that could present challenges and opportunities across private markets which have broadly failed to adjust equity values for the new higher rate environment.

### Dislocations in real estate

Market dynamics within real estate have shifted dramatically over the last year. The multi-decade decline in interest rates that have provided a tailwind in real estate reversed in mid-2022. Cap rates are typically correlated with changes in interest rates over the long term, however private real estate cap rates have not kept pace with the move to higher rates recently, reflecting reluctance to mark assets to the new rate regime. Transactions have slowed the last three quarters with wide bid-ask spreads persisting. Over the near term, we expect rising cap rates, slower growth and higher borrowing costs to continue to pressure private real estate valuations and likely trigger pockets of stress and distress. Further compounding issues, banks and other lenders have pulled back from the market creating a financing gap for asset owners.

### Values remain elevated across infrastructure

Infrastructure was one of the few bright spots in 2022 as valuations held-up and transaction activity was robust. In a year when inflation and rising interest rates depressed equity and debt valuations, slowed transaction activity and disrupted capital markets, real assets (excl. real estate) performed remarkably well. The issue we see today is that valuations are stretched, debt costs are going up, but equity valuations have yet to adjust to a higher interest rate environment. A slowing of transaction activity would be one sign that sponsors are becoming more price sensitive. Until we see valuations adjust lower, especially in core/core plus infrastructure, we would be cautious about putting fresh capital into the asset class.

### Declining interest in natural resources looks to continue

Commodity-related investments experienced a marked rebound in performance in 2021 and 2022, following years of disappointing performance. It was a vindication of sorts, in that when inflation finally took hold, the asset class delivered on the promise of providing an inflation hedge. After years of declining interest from investors, oil and gas companies rode high as they outperformed every other sector in the equity universe. And yet, with all this renewed attention, the fundraising environment for natural resource funds remains bleak. The challenging market for exits among oil/gas companies, the global trends in ESG and the declining rate of inflation, among other factors, has resulted in muted interest from institutional investors.

# Outlook summary

# Outlook summary

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
<b>Core real estate</b>	Core real estate was up 7.5% in 2022, primarily due to a strong start to the year in the first two quarters. The momentum has shifted however, as rising interest rates have put downward pressure on valuations. The appraisal process has been slow to recognize this as transactions have been falling since the 3 <sup>rd</sup> quarter of 2022, hampering the ability to find comparable sales. Redemption queues are as high as they've been since the GFC. We expect further write-downs to hit core real estate funds in 2023.	<ul style="list-style-type: none"> <li>— Cap rates have not yet fully adjusted to the new higher interest rate environment. 4<sup>th</sup> quarter of 2022 saw a modest adjustment, but we expect more to come over the next several quarters</li> <li>— Core real estate returns tend to have high correlation to overall GDP growth. There are risks to weakening fundamentals if a recession materializes.</li> </ul>	<p>We recommend clients continue to rebalance/reduce exposure to core ODCE funds where possible, although redemption exit queues are in place for most funds.</p> <p>We recommend continued diversification into alternative property types to reduce existing exposures to office, which may face longer term challenges.</p>	<b>Negative</b>
<b>Value-add real estate</b>	Transaction levels have slowed down dramatically as wide bid-ask spreads are persisting. Value-add GPs are seeing few opportunities right now as sellers are still reluctant to transact at the clearing prices currently being offered. Increasing borrowing costs will likely apply pressure on returns for strategies reliant upon higher leverage. An economic slowdown is expected to reduce rent growth opportunities.	<ul style="list-style-type: none"> <li>— Rising interest rates will increase borrowing costs on higher leveraged value-add strategies, pressuring total returns.</li> <li>— Slowing rent growth as the economy cools has the potential to further reduce forecasted returns</li> </ul>	We continue to favor strategies with limited focus on office and those less reliant on high leverage. Asset management value-add will be important as cap rate compression and market growth will be less reliable sources of return. Patience will be a virtue for management teams as transactions, when they happen today, have yet to fully adjust for higher borrowing costs.	<b>Neutral</b>
<b>Opportunistic real estate</b>	Over the last couple of years, pockets of stress have occurred in Covid-19 affected sectors such as office, retail and hospitality. The rising interest rate environment is producing stress and distress across the real estate spectrum as the cost of financing balloons, loan-to-values move up and lenders pull out of the market. Borrowers will be forced to get creative with financing as they often lack fresh equity capital and want to minimize their dilution. Preferred equity gap financing, structured solutions and investments in debt may see attractive opportunities. We could see the reemergence of NPL portfolios in Europe as banks shed assets to shore-up their balance sheets.	<ul style="list-style-type: none"> <li>— Rising interest rates will increase borrowing costs on higher leveraged strategies, pressuring total returns.</li> <li>— Competition could be a challenge as large sums of capital have been raised waiting for this opportunity to emerge.</li> <li>— Increasing construction costs due to materials and labor may pressure development strategies.</li> </ul>	<p>Non-core funds with vintage years during periods of economic stress tend to be some of the best performing vintages. The impact from higher rates will likely create more attractive entry points. Loans coming due at higher borrowing costs and at higher loan-to-values sets the stage for opportunities to provide rescue capital.</p> <p>GPs with experience in distressed situations and those able to be flexible up and down the cap stack are viewed favorably.</p>	<b>Positive</b>
<b>Real estate debt</b>	Lending rates have increased, both from floating rate base rates as well as spreads. Traditional lending sources (banks and insurance companies) are retreating from writing loans as they move to reduce risk across their balance sheets. The wall of maturities coming due over the next few years will need refinancing and private lenders are well positioned to take advantage of the opportunity.	<ul style="list-style-type: none"> <li>— Rising rates, while generally positive for lending strategies, could also decrease transaction volumes and therefore increase competition for deals.</li> <li>— Loan defaults are also on the horizon so having capabilities to structure workouts will be important</li> </ul>	Senior lending strategies look attractive as borrowing costs have risen, both in base rates and spreads. Private capital providers look attractive as there will be less competition from traditional lending sources.	<b>Positive</b>

# Outlook summary (continued)

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
REITs	REITs were down 27.0% in 2022, reflecting an implied cap rate increase across sectors. REITs rallied back in early 2023, erasing about half of the loss they experienced in 2022 but have more recently sold-off again as financials have come under pressure. While REITs valuations are somewhat pricing in a higher rate environment, we would not characterize the current valuations as cheap or compelling.	<ul style="list-style-type: none"> <li>REITs have higher leverage than core real estate</li> <li>Rising interest rates can have a negative effect on REITs and all yield-sensitive assets over short periods.</li> <li>REITs are sensitive to economic decline and general equity market volatility.</li> </ul>	Verus believes REITs can provide liquid exposure to real estate with the following caveats: high sensitivity to equity market volatility over shorter holding periods, higher leverage and higher exposures to non-core sectors. Active management is preferred. REIT valuations are currently at a slight discount; however, this has been volatile and difficult to time. If we see a substantial sell-off in 2023, we could pivot to a positive outlook, but we are not there yet.	Neutral
Commodities	Commodities had another impressive year in 2022, led by the energy sector, which was up +36% for the year. The asset classes final year returns masked what was a highly volatile year as Fed rate rises began putting pressure on inflation forces. While still early in the year, commodities are experiencing selling pressure as central banks continue to tighten monetary policy in order to stamp out inflation.	<ul style="list-style-type: none"> <li>Central banks have signaled their primary goal is to contain inflation which, if successful, would be a headwind for commodities.</li> <li>Investors have benefitted from steep backwardation in oil-related commodities, but as front month contracts move lower, the curve trade is likely to erode.</li> </ul>	Verus does not view commodity futures as an attractive asset class to hold long term. As an inflation hedge, commodities are one of the best exposures to own that benefits from early stages of inflation. We are even more cautious about a position in commodities this year and would consider reallocating some of your exposure to more attractive segments of the market.	Negative
TIPS	Rising inflation has led to positive total returns and outperformance of TIPS relative to nominal bonds. Breakeven rates have risen sharply following the lows in 2020, especially in 5-year break-evens. Currently, TIPS have a negative yield and are susceptible to rising rates though that can be offset if inflation continues to exceed market expectations. The other concern is the unwinding of the Fed balance sheet where TIPS are widely held, putting additional selling pressure on the bonds.	<ul style="list-style-type: none"> <li>Decreasing inflation expectations or rising nominal interest rates would be a headwind to TIPS.</li> <li>Continued low rates creates a high cost of carry.</li> </ul>	Low absolute current yields and uncertain inflation expectations has led to low total return expectations for TIPS, especially relative to other real asset investment opportunities. If inflation continues higher, TIPS could provide protection to portfolios.	Neutral

# Outlook summary (continued)

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
<b>Core Infrastructure</b>	Performance in core infrastructure was strong in 2022, as capital flowed into the sector and valuations improved, especially for energy-related assets. Along with performance, the high inflationary environment increased LP interest in the asset class. Fundraising continues to increase as more managers offer evergreen fund structures. We expect the higher interest rate environment to be a headwind to valuations and would not be surprised to see write-downs beginning to ripple through the open-end market in 2023. While relatively resilient to recessionary forces, sub-sectors linked to GDP like transportation and logistics may also face challenges.	<ul style="list-style-type: none"> <li>— Strong fundraising trends in infrastructure has elevated valuations and increased competition for high quality assets.</li> <li>— Infrastructure assets provide varying degrees of inflation protection. While some assets have contracted annual revenue increases tied to CPI, many others have pre-determined increases at 2-3% or no adjustments at all.</li> <li>— Core assets are sensitive to interest rates and with inflation trending down, increased costs of capital could erode margins and push valuations lower.</li> </ul>	Entry today is less attractive given rich valuations and an elevated interest rate environment. We prefer allocations to value-add, although core can still maintain defense characteristics from sectors less exposed to GDP risk. We would recommend waiting on new commitments to core open-end infrastructure funds until we get a better sense for the path of interest rates and/or we begin to see funds adjust valuations lower to account for the higher cost of capital environment.	<b>Negative</b>
<b>Value-add Infrastructure</b>	Transaction activity has been robust the past 12 months, despite the rising rate environment. As inflation slows and cost of capital stays elevated, we would expect that to cool as buyers adjust valuations lower. There remains a significant capital need for more modern infrastructure in order to keep up with the digital economy and electrification of the grid. We would be cautious about strategies that expose investors to technology risk and/or commercialization risk in both sectors.	<ul style="list-style-type: none"> <li>— Many GPs that have been successful in the sector have grown rapidly, raising \$15+ billion-dollar funds. Deploying this amount of capital while still delivering alpha becomes a challenge for most private market managers.</li> <li>— Increased interest rates will have two affects: eroding margins as the cost of debt increases and increasing cap rates as investors demand a higher equity return. The change in expectations around what is “market value” is likely to slow transactions.</li> </ul>	The asset class offers a compelling return profile that aligns well with long duration pools of capital. Value-add infrastructure comes with higher operational/execution risk than core so investors should expect a broader range of outcomes and greater emphasis on manager selection. Given the shift in interest rate environment, we expect valuations to improve but that transition could be bumpy.	<b>Neutral</b>
<b>Energy Transition</b>	New development projects of renewable assets will continue to accelerate as solar and wind farms are now the cheapest form of new build electricity. Outside of traditional solar & wind, there are potentially higher returning opportunities for newer technologies such as battery storage and CC&S. Policies like the Inflation Reduction Act will act as a catalyst, increasing adoption and making technologies more viable. Growth in electric vehicles is expected to strain our existing power generation capabilities and transmission infrastructure which presents an investment opportunity but does challenge the transition away from hydrocarbons.	<ul style="list-style-type: none"> <li>— The market is becoming more competitive with over 4x as much capital fundraised today as compared to the last decade.</li> <li>— Several approaches that reduce our carbon emissions such as green hydrogen and carbon capture technology are nascent and commercially unproven. Investments in this space will take venture-like risk and rely on significant cost reductions as well as favorable policy regimes to be successful.</li> </ul>	Energy demand growth will increase opportunities in the energy transition sector but the opportunity to achieve an attractive return remains difficult given competition. Sectors like EV infrastructure and Distributed Energy Resources offer decreased technology risk and attractive markets for growth. Tailwinds for the strategy make for interesting opportunities though we are seeing risk underpriced in the marketplace so backing the right manager will be critical.	<b>Neutral</b>



# Outlook summary (continued)

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
Oil & Gas	<p>Much of what we wrote about Oil/Gas investing in 2022 still applies now. The one crucial difference is that tightening central bank policy now brings demand uncertainty and higher financing costs for producers. Reinvestment in new oil &amp; gas supply is still an issue, even with higher commodity prices, as E&amp;P companies favor returning cash to investors and governments place additional burdens on hydrocarbon extraction. There remains tailwinds in favor of commodity producers but the demand picture from slowing economic activity adds additional risk. We still believe that private markets capital that funded a lot of the growth in energy production will continue to shrink as institutions shift capital towards cleaner forms of energy.</p>	<ul style="list-style-type: none"> <li>Oil/gas producers made record profits in 2022, though those are set to come down as commodity prices fall and operating costs skyrocket. The temptation to allocate capital to the sector is understandable but for private capital investors, we still believe the exit risk is too high for us to gain comfort. Older oil/gas funds are still struggling for liquidity and absent a complete reversal of a low carbon future, we think that will only get worse 7-10 years down the road as funds investing today look for an exit.</li> <li>Longer-term, oil demand is expected to decline as non-carbon sources of power outcompete hydrocarbons.</li> </ul>	<p>Higher commodity prices continue to reward owners of commodity producers with record profits. There was a time when investing in oil/gas funds was a reasonable strategy, albeit highly cyclical. Today, the challenges in liquidity, regulatory policy and demand uncertainty make underwriting formidable. For investors with a confident view on the direction of energy commodity prices, we would consider public market investment opportunities in E&amp;P over an illiquid private fund investment.</p>	Negative
Midstream Energy / MLPs	<p>Midstream indices were up around 30% in 2022, outperforming most other sectors. The last two Outlooks highlighted the challenges that private midstream funds would face in deploying capital to traditional gathering and processing deals and that was largely accurate. Public midstream companies are outcompeting private funds with a lower cost of capital and the opportunity set is narrower today than it was 10 years ago. While we were negative on the midstream asset class last year, we still find it challenging to recommend an investment in an asset class with long-term demand uncertainty.</p>	<ul style="list-style-type: none"> <li>The public midstream market appears stronger and more attractive than it has been in recent years but the long-term outlook for the asset class remains weak. The near-term performance for the asset class is likely to be attractive but tactical trades into the asset class have been incredibly challenging to time. After two years of exceptionally high returns, MLPs are still trailing listed infrastructure by a wide margin on a 5-, 7- and 10-year basis.</li> </ul>	<p>We retain a negative outlook for midstream energy, despite the positive tailwinds that higher oil/gas prices could bring to this sector in the near-term. Longer-term, we think the unknown risks remain too high for our comfort.</p>	Negative

# Outlook summary (continued)

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
Mining	<p>There has been a lot of hype around demand growth in industrial metals as the transition to clean energy moves forward. Notable price jumps in metals/minerals like Lithium, Cobalt and Copper over the past few years as demand has surged lend credibility to the story. We see the same long-term trends as others and have been positive on the sector for many years. Industrial metals did soften in 2022 and are down so far in 2023 though long-term the tailwinds of demand appear intact. That said, a global economic slowdown and uncertainty around China consumption has put near-term pressure on many mining commodities. We still prefer the tailwinds of mining to petroleum but would not be surprised if prices cool off in 2023.</p>	<ul style="list-style-type: none"> <li>— Global GDP growth and the economy in China are the two biggest risks in the sector. China represents a disproportionately large buyer of industrial metals, so its economy and industrial output have a large impact on metal prices.</li> <li>— Recycling, substitution and more efficient extraction methods are always a concern as commodity prices move higher. High commodity prices tend to end the same way, with lower commodity prices as either demand falls or with unexpected surges in supply.</li> <li>— Investors need to be keenly aware of the jurisdictions that they have exposure to, and the companies track record on ESG issues.</li> </ul>	<p>Longer-term, we believe the demand outlook looks favorable for several industrial metals. We would not be surprised to see near-term price weakness as new supply comes online but that could be a more interesting entry point. The mining majors are flush with cash which could trigger an M&amp;A cycle which would be good for the junior miners. However, there are a host of idiosyncratic risks in funding mining operations outside of the macro-economic environment. We will look for skilled GPs with a track record of successfully managing these risks while generating attractive returns.</p>	Positive
Timberland	<p>Timberland was up 12.9% in 2022, most of which was appreciation driven. Unlike other commodity sectors that experienced meaningfully higher prices, sawtimber prices, at least for southern pine, were up a modest 1.6% in 2022. Income, as a component of the NCREIF Timberland return, was actually lower in 2022 than it was in 2021. Land values went up in 2022 due to lower discount rates but we question how sustainable that will be if cash flows are flat to negative YoY. Housing starts have collapsed in the past 12 months as mortgage rates more than doubled, which is a bearish sign for lumber demand. Overall, we do not see returns keeping up with their 2021 and 2022 levels for the asset class.</p>	<ul style="list-style-type: none"> <li>— Projected lower inflation levels, slowing housing construction and higher input costs are just some of the issues creating headwinds for the asset class. The Southern U.S. timber region has yet to see the sawtimber price appreciation that other regions have experienced and appear set to miss out on the surging lumber prices that hit consumer the last few years.</li> <li>— Liquidity has been an issue for the asset class for the better part of a decade and fundraising trends have yet to improve to the point that we could see transactions becoming robust.</li> </ul>	<p>Despite the last two years of above average returns, we would continue to avoid allocations to timberland. There are more attractive options available in real assets and many that have cash flows that justify the higher valuation. Fundraising has been slow to non-existent for closed-end timber funds for several years which has resulted in a slow transaction market.</p>	Negative

# Outlook summary (continued)

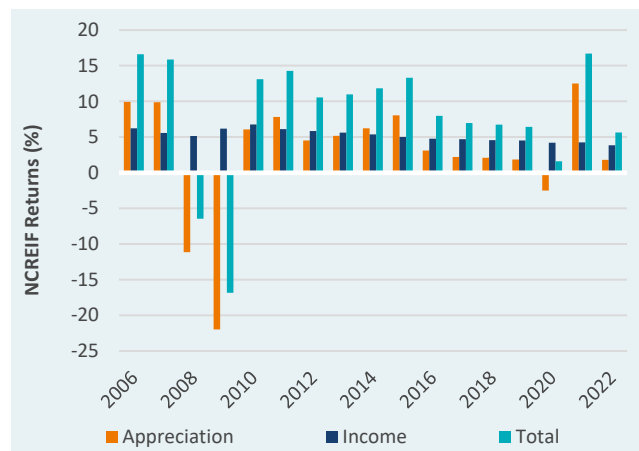
Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
<b>Agriculture</b>	<p>After several years of flat cropland prices, 2021 and 2022 saw a meaningful jump in land values on the back of higher commodity prices. Supply disruptions from Covid and more recently, the War in Ukraine, sent grain prices to multi-decade highs that have begun to stabilize in 2023. Fundraising has been slow in the last few years as income returns remained unattractive, and investors favored other asset classes. Still, agriculture investments remain a reasonable hedge against inflation and provide a stable return profile from land appreciation and yield. Structural drivers are making agriculture more attractive as global demand rises and the amount of arable land remains relatively stable.</p>	<ul style="list-style-type: none"> <li>— Agriculture is a highly illiquid asset class that is not suited to tactical investment opportunities. The asset class does look more attractive today, relative to recent history, but enthusiasm should be tempered given the long hold periods (&gt;10 years) and volatile commodity prices. We would recommend diversifying across crop types and geography within the U.S.</li> <li>— The War in Ukraine has revealed the extent to which Eastern Europe and Ukraine have been major suppliers of certain grains and their disruptions impact on global commodities. It has also highlighted the risk that comes from investing outside stable markets like the U.S. While Ukraine was not a preferred destination for U.S. institutional investors in agriculture, the returns available in emerging economies are not high enough to overcome the currency and economic/political risk.</li> </ul>	<p>Agriculture crops are broadly broken down into row and permanent crops with row crops benefiting the most from recent supply disruptions. Row crops also make up around 75% of all acreage planted in the U.S. so liquidity and market depth is greater, relative to permanent crops. That said, row crops have lower income potential and less value-add optionality. For investors seeking pure-play cropland investments, we would recommend diversifying across row and permanent crops focused on the U.S. market. The fragmented nature of farmland in the U.S. has made scaling a challenge so we would be weary of strategies seeking to deploy large pools of capital (&gt;\$1B). We also view agriculture investments where crop and land are a component of a broader value-add investment strategy as attractive.</p>	<b>Neutral</b>

# Current conditions and outlooks

# Real estate performance – Recent history

- Core real estate (NFI-ODCE Index) was up 7.5% in 2022, primarily due to a strong start to the year in the first two quarters. The momentum has shifted however as rising interest rates have put downward pressure on valuations. Returns turned negative in 4Q'22 (-5.0%) and continued in 1Q'23 (-3.3%). We expect further write-downs to hit core real estate funds in 2023.
- Property type sector dispersion remained high in 2022 with industrial (+14.6%) and multifamily (+7.1%) leading the way. Office and retail were the laggards with office turning negative at -3.4%.
- Public real estate securities (REITs) were early to recognize the changing landscape within real estate. In 2022, REITs were down 26.9% (Wilshire REIT Index). Valuations have rebounded a little in early 2023 with REITs returning a positive 2.3% in 1Q'23.
- Non-core real estate vintage funds have historically outperformed during recessionary years and early recovery periods (e.g., 2000-2003 and 2009-2011) as market dislocations created attractive entry valuations. Given the recent stress in the market, current non-core vintages could be attractive, especially opportunistic strategies with a focus on distress.

**NCREIF PROPERTY INDEX RETURNS (CORE)**



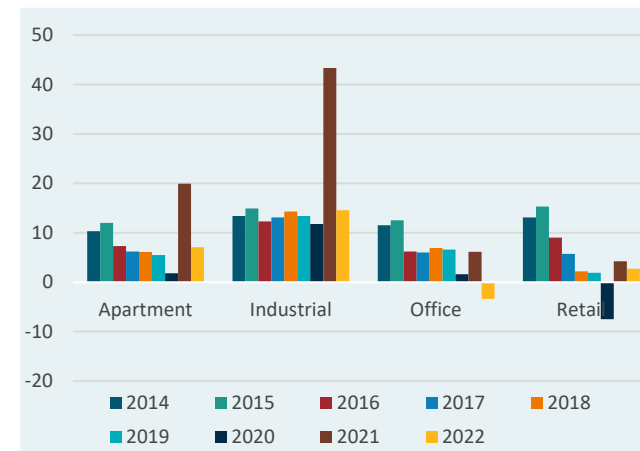
Source: NCREIF, as of 12/31/22

**VINTAGE YEAR MEDIAN RETURN (%)  
NON-CORE REAL ESTATE**



Source: Thomason Reuters, as of 9/30/22

**CORE SECTOR ANNUAL RETURNS (%)**

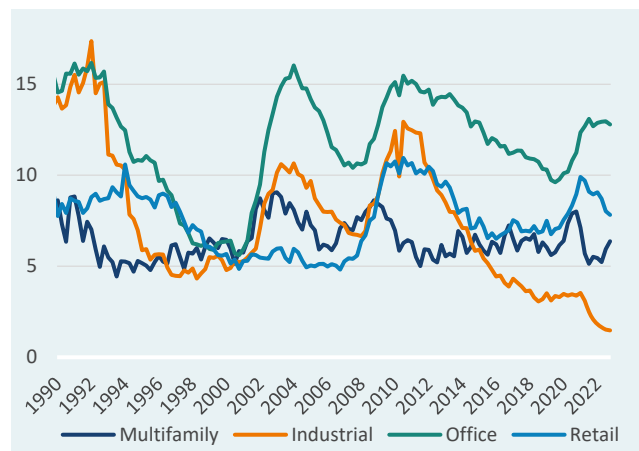


Source: NCREIF, as of 12/31/22

# Real estate fundamentals

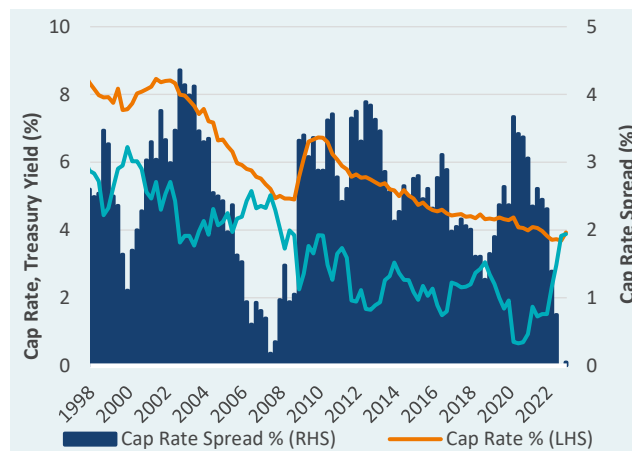
- Private real estate fundamentals have remained relatively steady in terms of vacancy rates and rental growth, with the office sector being a notable exception.
- Cap rates spreads however, have shrunk to zero as cap rates have yet to fully adjust to the higher interest rate environment. While cap rates and interest rates do not trade in lock step over shorter time periods, they generally correlate with each other over the long run. Since mid 2022, interest rates have climbed 2.5%, while cap rates have climbed only 0.5% combined in Q4'22 and Q1'22. The valuation process tends to lag, and we expect upward pressure on cap rates to continue through 2023.
- Vacancy rates for office have stayed elevated as the sector remains under pressure from continued work from home trends. Vacancy rates for industrial, retail and multifamily remain low, although there has been an uptick over the last couple of quarters.
- NOI growth has come down from the highs of 2021 and early 2022 but remain positive for all sectors including office, although office has been bouncing around zero.

VACANCY BY PROPERTY TYPE



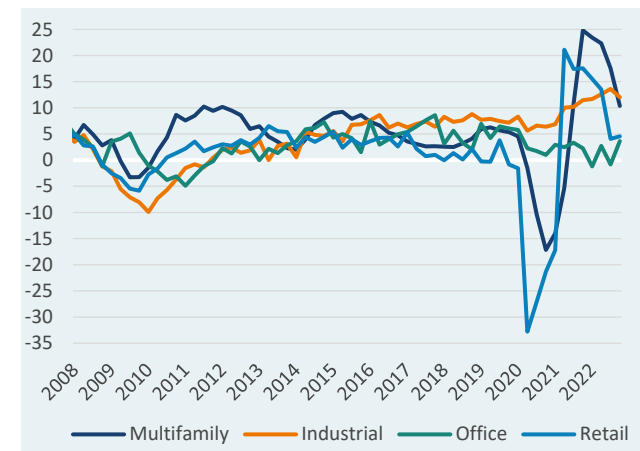
Source: NCREIF, as of 12/31/22

CAP RATE SPREADS



Source: FRED, NCREIF, as of 12/31/22

4-QTR ROLLING NOI GROWTH (%) BY PROPERTY TYPE

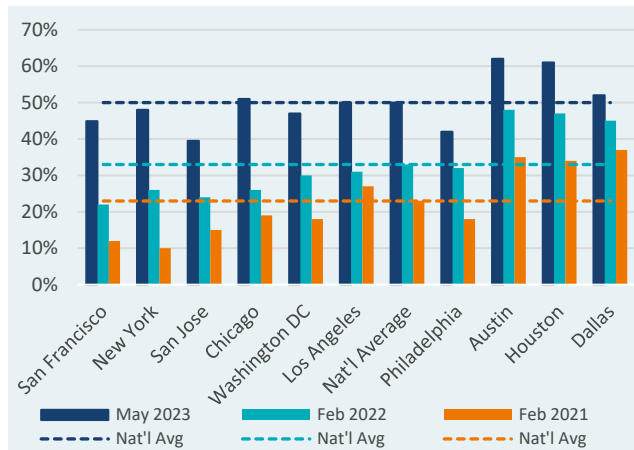


Source: NCREIF, as of 12/31/22

# Challenges in office

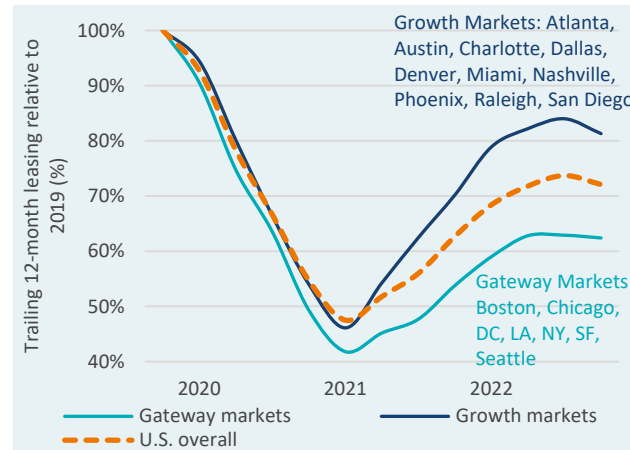
- Employees have increased office utilization from a year ago with the pandemic in the rearview mirror, however structural shifts remain with most companies embracing a hybrid work environment. Physical occupancy remains around 50% of pre-covid levels.
- Domestic migration has aided some office markets with stronger leasing volumes relative to gateway markets. Even growthier markets are still experiencing a decline in leasing relative to pre-pandemic levels.
- We continue to see a bifurcation in demand with new leasing activity gravitating towards newer office buildings with more attractive amenities. Office buildings delivered since 2015 have experienced positive net absorption since Covid began while all other buildings are facing net tenant outflows.
- The leasing cycle for office tends to average 5-7 years, so many leases are still paying at pre-pandemic levels. We are in the midst of the rental re-pricing as well as overall asset valuation uncertainty. It will take several years to work through the system and fully reset pricing. Capital seeking investment in the office sector has dried up and re-financing is a challenge as lenders are all reducing exposures to the sector.

## OFFICE PHYSICAL USAGE TRENDS



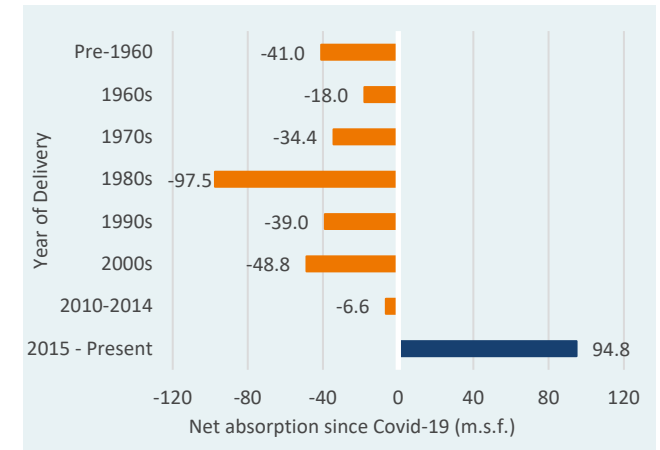
Source: Kastle, 5/8/23

## REGIONAL LEASING VOLUME TRACKING OFFICE RE-ENTRY



Source: JLL, March 2023

## FLIGHT TO QUALITY – NET LEASING ACTIVITY

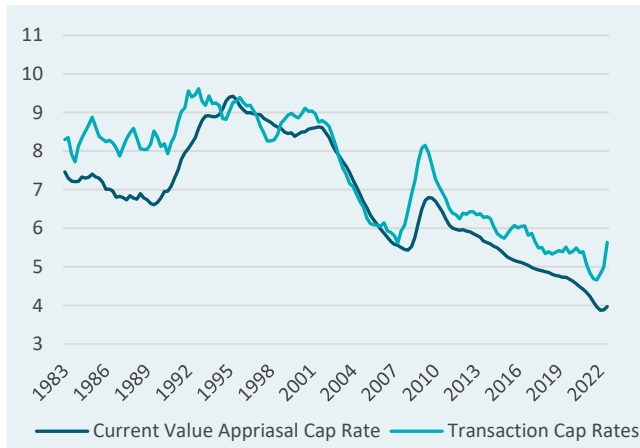


Source: JLL, March 2023

# Cap rates

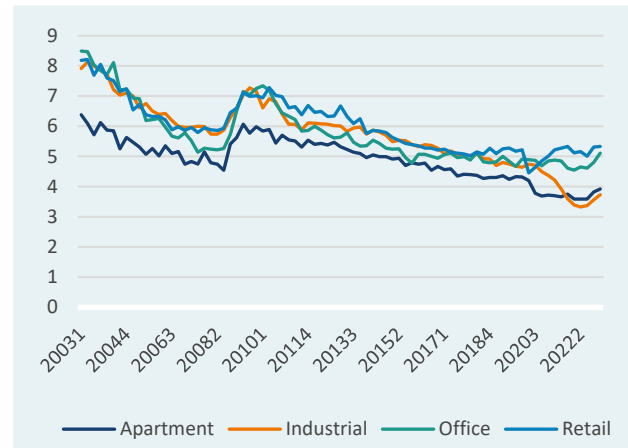
- Private real estate appraisal cap rates have been slow to react to the rising interest rate environment. This is not atypical, as the appraisal process generally lags when there is a decline in transaction volumes and fewer comparable sales or “comps” for appraisers to use as a data set.
- For transactions that are taking place, there is a widening gap with appraised values indicated there is more downside to come in private valuations as they adjust to “market”.
- We have also seen a widening gap over the last several years between property types as industrial and multifamily have been more in favor with investors versus office and retail. There has been a small uptick in cap rates for all property types over the last couple of quarters.
- We can also look to the public real estate markets for an idea of where cap rates are heading. We have seen implied cap rates move higher in the REIT market, lending additional credence to our view that cap rates in private real estate are set to move further this year. Usually, implied cap rates are more volatile but can be a leading indicator directionally as they are quicker to respond than the appraisal process.

**PRIVATE CAP RATES (4-QTR MOVING AVERAGES)**



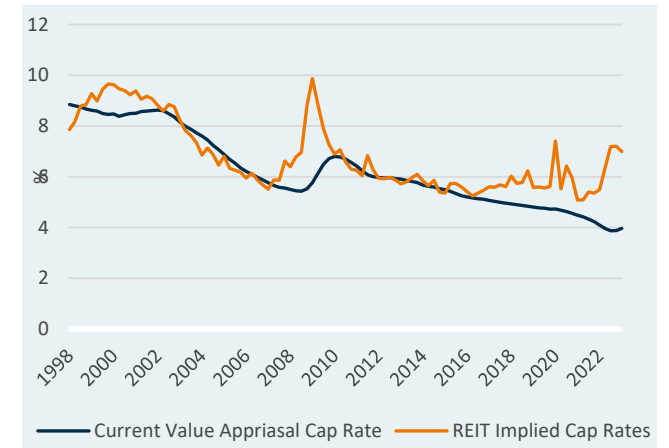
Source: NCREIF, 3/31/2023

**CURRENT VALUE CAP RATES BY PROPERTY TYPE**



Source: NCREIF, 3/31/2023

**PRIVATE CAP RATES VS REIT IMPLIED CAP RATES**



Source: NCREIF, JPMorgan, March 2023



# Real estate – New supply and absorption

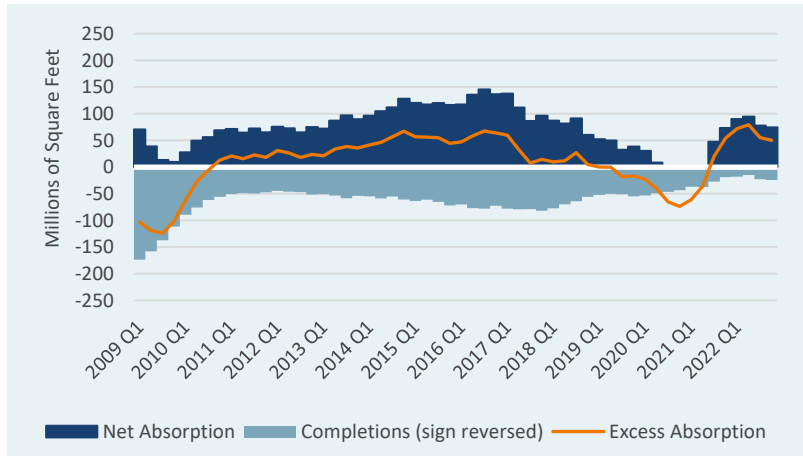
Demand has declined recently while new completions remains elevated.

Office remains severely oversupplied as demand has fallen off and completions in process pre-Covid continue to deliver.

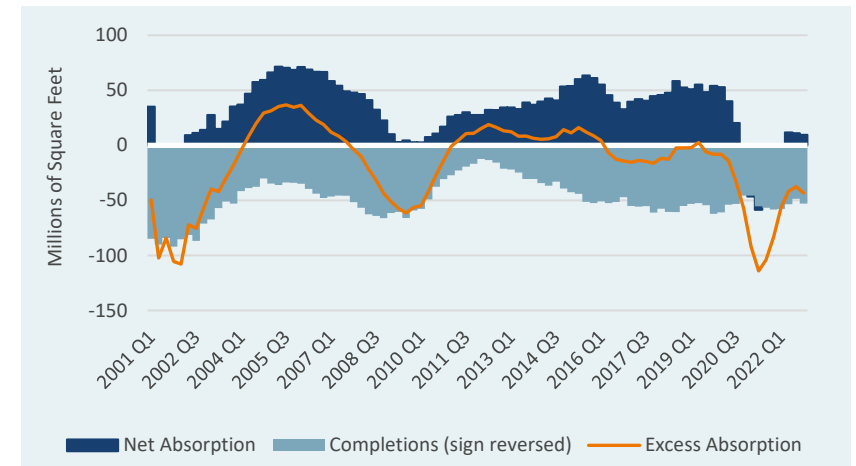
Demand has dropped recently for multi-family and industrial while completions remain elevated. Net absorption has turned negative on multifamily and is now flat in industrial.

Retail is the one bright spot for this metric, as new completions remain muted while leasing activity has picked up.

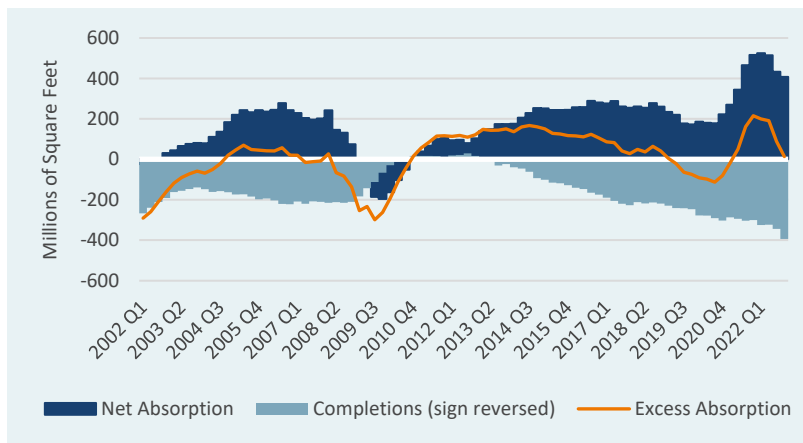
## RETAIL



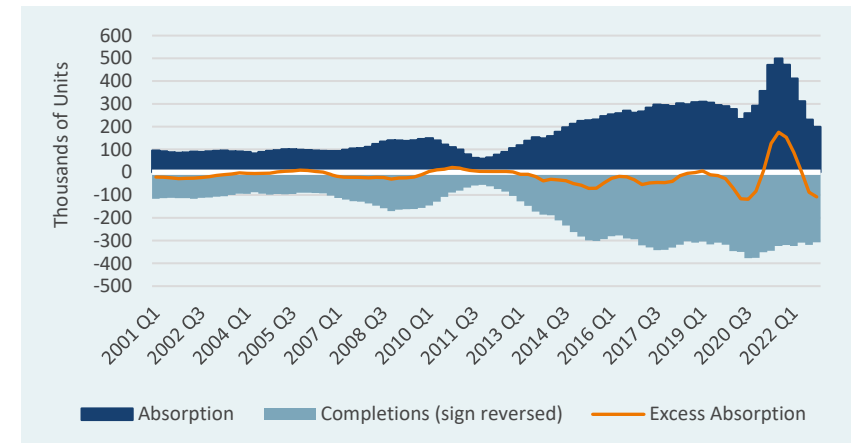
## OFFICE



## INDUSTRIAL



## MULTIFAMILY

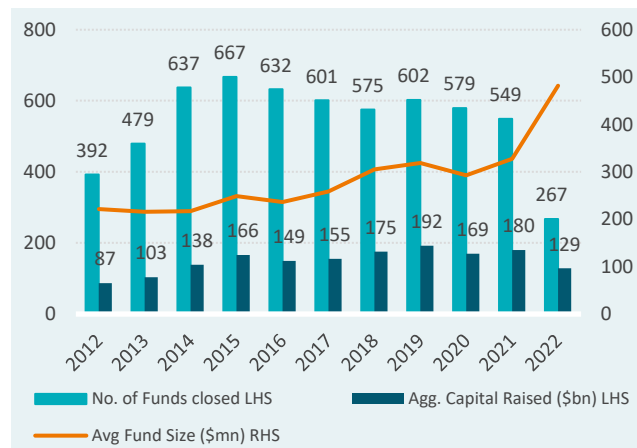


Source: American Realty Advisors utilizing CoStar data as of 12/31/22

# Real estate fundraising

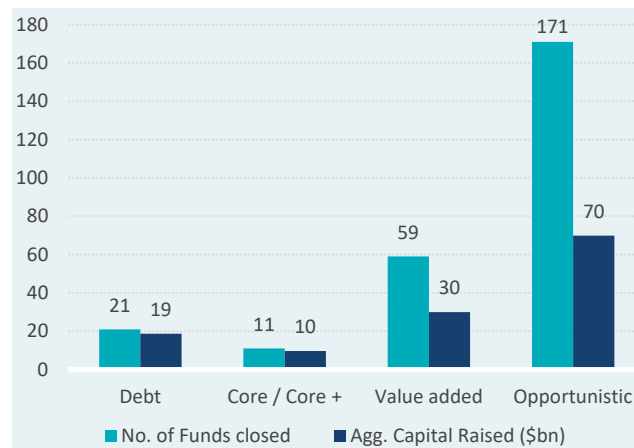
- The number of funds closed declined substantially over the last year with the total amount of capital raised coming down slightly, leading to a much higher average fund size.
- Dry powder in the closed-end fund space has come down in recent years off record highs but remain elevated. Transaction volumes declined in the second half of 2022.
- The majority of closed-end funds that closed the last couple of years were targeting opportunistic and distressed strategies, a shift from prior years where value add was substantially higher.
- Current core real estate open-end fund redemption queues total over \$33 billion from 20 core funds that Verus recently surveyed, which has grown more than two-fold in the last year. Core funds are in the process of re-pricing, delivering negative returns, and with some investor's overweight real estate, redemption activity has hit levels not seen since the GFC.

**HISTORICAL PRIVATE REAL ESTATE CLOSED-END FUNDRAISING (\$B)**



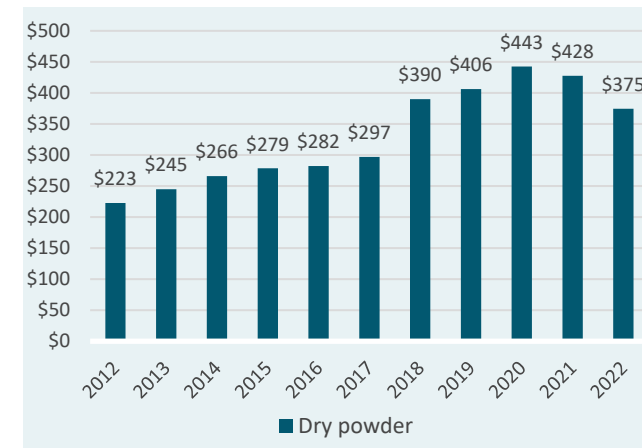
Source: Pitchbook, as of 12/31/22

**2022 PRIVATE REAL ESTATE CLOSED-END FUNDRAISING (\$B) BY STRATEGY**



Source: Pitchbook, as of 12/31/22 (Opportunistic includes Distressed)

**DRY POWDER (\$B) – CLOSED-END FUNDS**



Source: Pitchbook, 12/31/2022

# Real estate debt

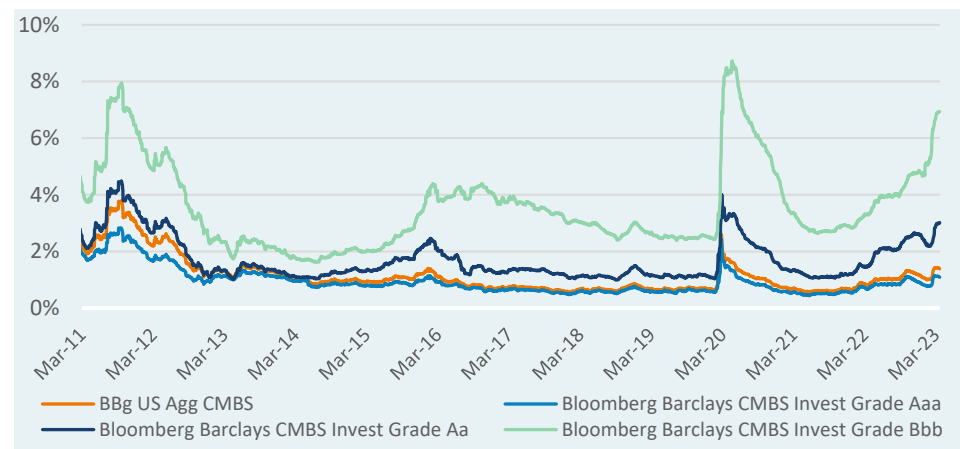
- Lending standards have tightened up for all loan types. Private lending spreads have widened, and lenders are requiring more conservative loan-to-values for new loans. CMBS spreads for most tranches have steadily increased over the last year.
- Rising interest rates are benefitting floating rate lending strategies going forward. Base rates have increased significantly as the Secured Overnight Financing Rate (SOFR) has risen from near zero to over 5% in the last year.
- Within real estate debt strategies, we are less favorable about the riskier segment of the loan market (i.e. construction loans, structured equity, etc.) as LTVs come down and lenders become owners. Having the capital and operational capabilities to assume ownership is necessary in this market environment.
- We would also caution that some evergreen debt strategies are experiencing defaults/write-downs and are likely to see additional valuation pressures, especially in the office sector.
- Transaction volumes have fallen off over the last several quarters, although for deals that are taking place, private capital is facing less competition from traditional lenders (banks and insurance companies) as many are de-risking their portfolios.

## PRIVATE LENDING SPREADS

	Stable Asset Whole Loans	Transitional Asset Whole Loans	Lower Risk Mezzanine	Transitional Asset Mezzanine & Preferred Equity	Developmental Asset Mezzanine & Preferred Equity
Capital Stack	0 - 60%	0 - 75%	50-65%	65-85%	65 - 85%
	LTV	LTV	LTV	LTC	LTC
Duration	2-5 Years	2-5 Years	2-7 Years	2-4 Years	2-4 Years
Typical Lending Spreads	SOFR + 1.5-2.0%	SOFR + 2.85 – 4.50%	SOFR + 4.0-6.0%	SOFR + 6.0 - 8.0%	SOFR + 12-15%

Source: PGIM, as of 3/31/23

## CMBS SPREADS

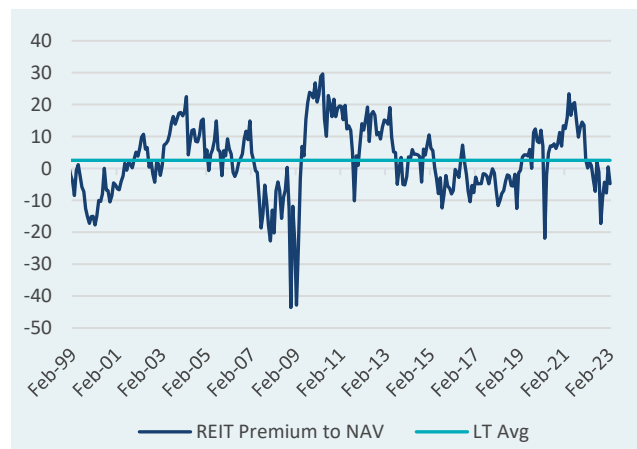


Source: Bloomberg, as of 3/22/2023

# REITs

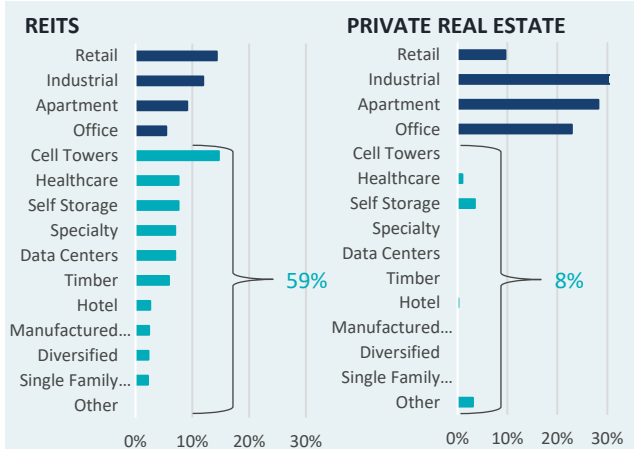
- REITs were earlier than private real estate in experiencing valuation adjustments in 2022, when interest rates began to rise. U.S. REITs were down 24% for the full year in 2022 but have seen a slight recovery in 1Q 2023 of +3%.
- REITs traded at a steep discount to NAV for much of the 2<sup>nd</sup> half of 2022, however a slight recovery in early 2023 has them now trading at less of a discount to NAV.
- Sector dispersion continues to be high, although most major sectors were off significantly in 2023 (office, industrial, apartments, healthcare and self-storage were all down over 22%.) Some segments of retail (shopping centers and free standing) were down less, only 7% and 13%. Office continues to be the biggest laggard, down 38% in 2022 and down another 16% in 1Q 2023.
- REITs do offer differentiated exposures vs private core real estate. Outside of the four main property types, core real estate exposure to niche property types is 8%, while REIT exposure to those same niche sectors is almost 60%.
- We are neutral on REITs given only modest discounts to NAV (which is likely overvalued) but given volatility in the asset class, that could change to positive if we see a deep drawdown later this year.

## REIT PREMIUM TO NAV



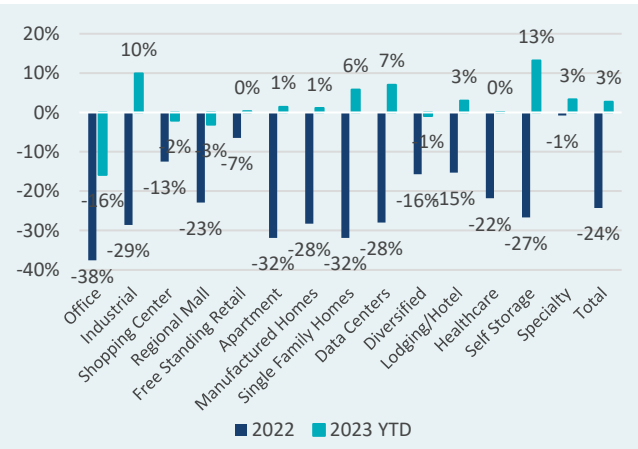
Source: JPMorgan, as of 2/28/23

## NICHE SECTOR WEIGHTS IN REITS VS PRIVATE RE



Source: NCREIF, FTSE, as of 12/31/22

## REIT PERFORMANCE BY SUB SECTOR



Source: Duff & Phelps, Bloomberg, as of 3/31/2023

# Commodities

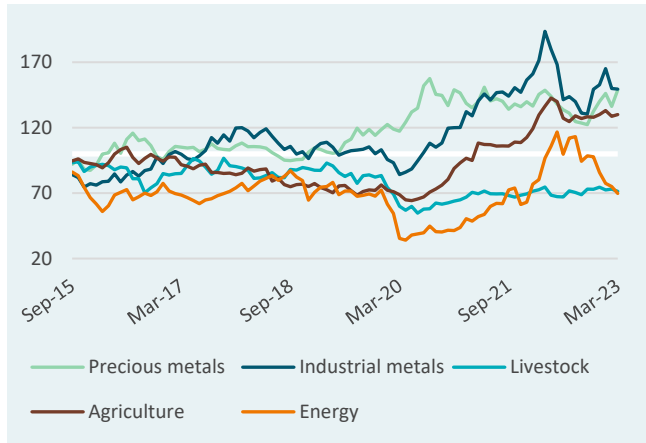
- Commodities were one of the few bright spots in 2022, up 16% for the year, led by energy commodities. During the first quarter of 2023, prices reversed themselves as inflation slowed and demand fell.
- The roll return component of the index remains positive though that has seen a sharp versal in 2023 and could turn negative if supply stocks build up across petroleum commodities.
- Commodities have been a rewarding asset class to own over the last 2 years, but we don't see those returns being sustained. We moved towards a negative outlook this year in commodities, as we see better opportunities to allocate investor capital.

## INDEX AND SECTOR PERFORMANCE

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Bloomberg Commodity	(0.2)	(5.4)	(5.4)	(12.5)	20.8	5.4	(1.7)
Bloomberg Agriculture	1.0	0.0	0.0	(3.6)	23.7	8.4	(0.5)
Bloomberg Energy	(6.9)	(18.7)	(18.7)	(25.1)	25.4	(1.5)	(9.2)
Bloomberg Grains	3.3	(2.4)	(2.4)	(7.8)	21.5	7.7	(2.0)
Bloomberg Industrial Metals	(0.3)	(2.1)	(2.1)	(22.1)	21.1	5.9	2.1
Bloomberg Livestock	(2.3)	(4.3)	(4.3)	(2.8)	6.0	(2.6)	(3.0)
Bloomberg Petroleum	(2.5)	(5.9)	(5.9)	(4.8)	49.4	6.6	(4.3)
Bloomberg Precious Metals	9.2	6.3	6.3	(0.4)	8.3	7.1	0.3
Bloomberg Softs	0.2	9.3	9.3	(2.3)	23.4	7.1	(1.6)

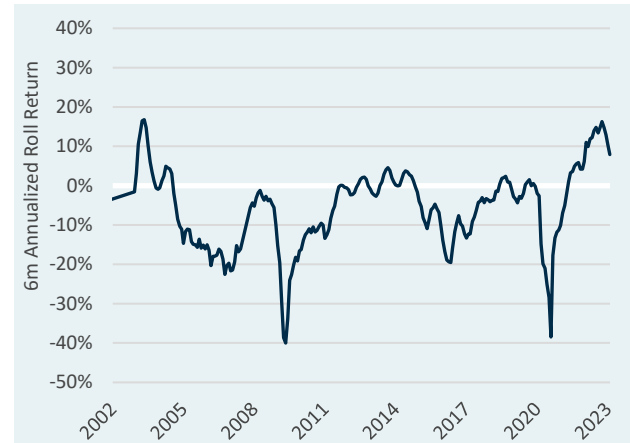
Source: Morningstar, as of 3/31/23

## SECTOR PERFORMANCE



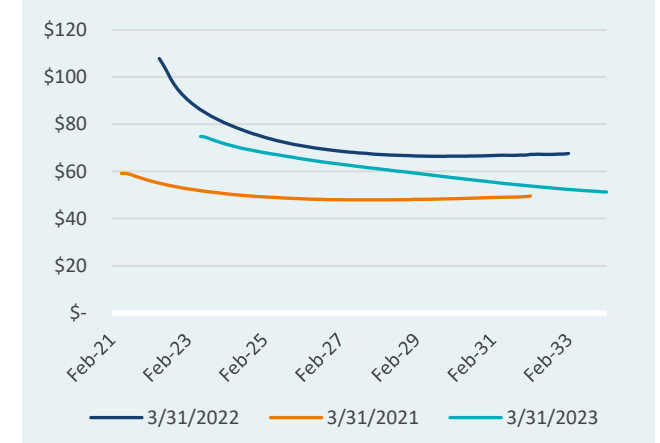
Source: Bloomberg, as of 3/31/2023

## ROLL RETURN



Source: Bloomberg, as of 3/31/2023

## CURVE SHAPE (WTI)

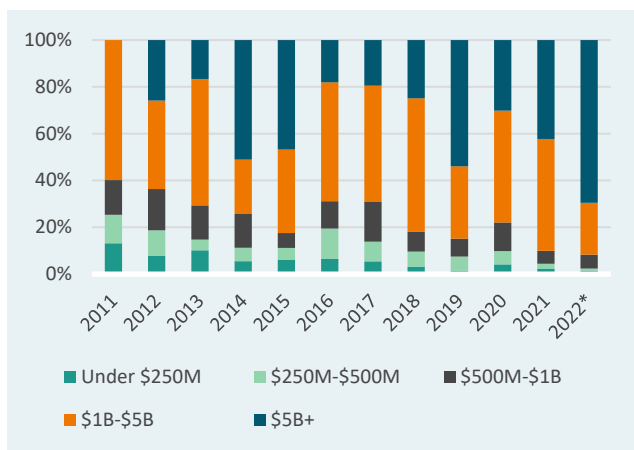


Source: Bloomberg, as of 3/31/23

# Private infrastructure

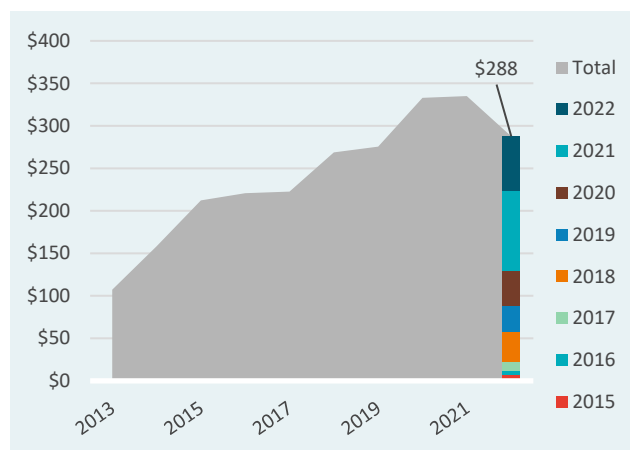
- Infrastructure fundraising slowed in 2022, much like we saw across other private market asset classes. Despite falling short of the all-time high-water mark for fundraising set in 2021, infrastructure continues to absorb much of the capital allocated to real assets. Several fundraising trends have come center stage: Mega-funds are the new normal with eight managers reaching a final close above \$5B in the year. Moreover, the top 10 managers by size make up 80% of the capital raised; Digitization and decarbonization focused funds made up nearly 50% of funds raised; Geographically, North America is in favor accounting for ~70% of fundraising.
- Dry powder is down relative to the last two years in part due to a slower fundraising and managers ability to take down larger deals. After a strong start, deal volumes declined 27% at the tail end of 2022 as financing became more expensive and economic uncertainty weighed on the market.
- Returns over the last year in infrastructure outperformed nearly all other private asset classes. In this regard, Infrastructure delivered on one of its key goals, to provide inflation protected returns. Going forward, we see headwinds for the asset class as higher financing costs, slowing inflation and slowing GDP growth become priced into what are fairly rich valuations.

INFRASTRUCTURE FUNDRAISE BY FUND SIZE (%)



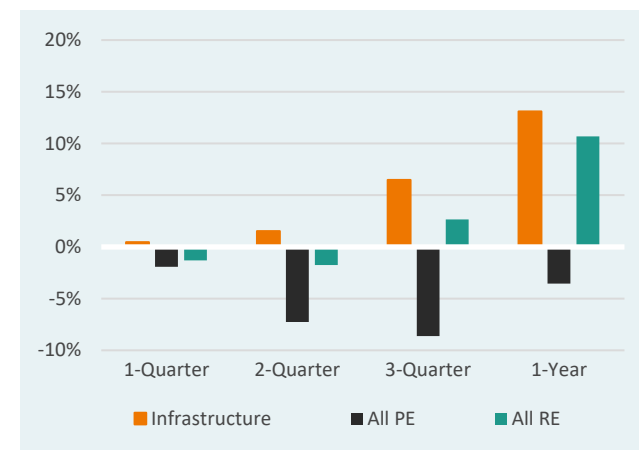
Source: Pitchbook, as of 9/30/2022

INFRASTRUCTURE MANAGER BY FUND SIZE



Source: Pitchbook, as of 9/30/2022

Q3 '22 TRAILING POOLED IRR

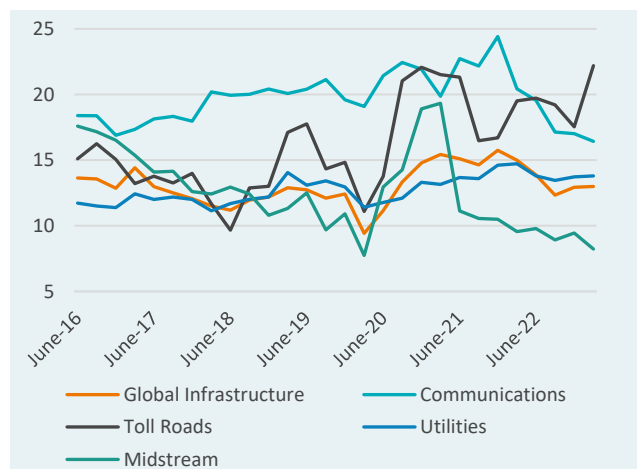


Source: Refinitiv C/A, as of 9/30/2022

# Private infrastructure (continued)

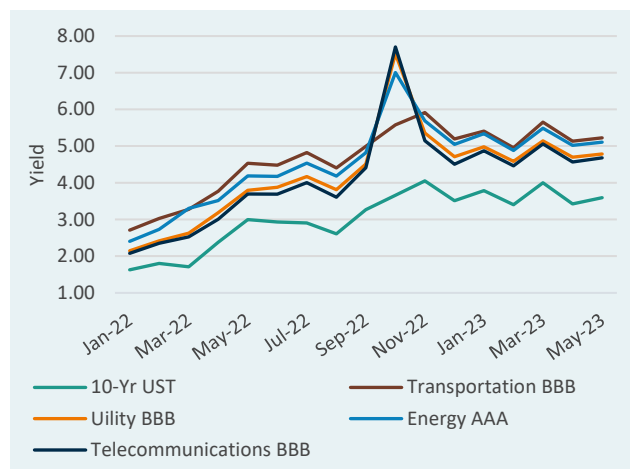
- Inflation brought forth a regime change in the cost of capital, a stark difference from the previous period of low interest rates, the impact of which has yet to be reflected in equity values. If rates stay elevated, discount rate increases should flow through to valuations. We expect that assets priced on ultra low interest rates and have bond-like fixed cash flows will be particularly susceptible to changing discount rates (ex. PPA contracts).
- Non-core infrastructure is arguably more sensitive to the rising cost of capital because of exposure to floating rate, non-investment grade debt. This can be somewhat offset by higher growth in cash flows and value-add potential by management teams. One trend we have noticed is the blurring of lines between infrastructure and traditional private equity buyouts as new industries around growing themes are added to the mix: Energy Transition, Healthcare, Waste and Digital Infrastructure have all been added into the fold. While many assets have infrastructure characteristics, many managers are accepting a period of significant investment and negative cash flow, along with development, technology, and commercial risks.
- Sector divergence is likely to be meaningful as we anticipate a decline in GDP over the coming quarters. Some areas of transportation that only recently recovered from pandemic impacts, are likely to feel the weight of recession forces as global trade slows. Telecommunications has data growth tailwinds, though valuations could come under pressure. Utilities and Social infrastructure should remain resilient.

## INFRASTRUCTURE VALUATIONS – EV/EBITDA



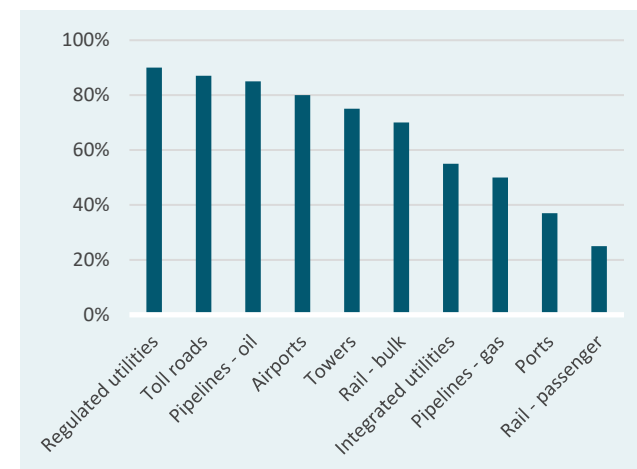
Source: Bloomberg; Dow Jones Brookfield; S&P Indices, as of 3/31/2023

## RISING COST OF CAPITAL



Source: Bloomberg; ICE BofA Indices, as of 3/31/2023

## DEGREE OF INFLATION PROTECTION BY SECTOR

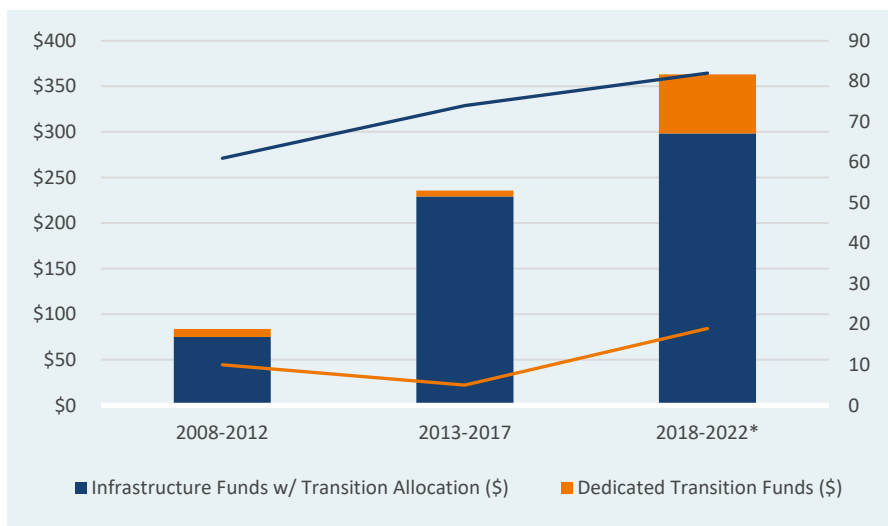


Source: First Sentier Investors

# Infrastructure – Energy transition

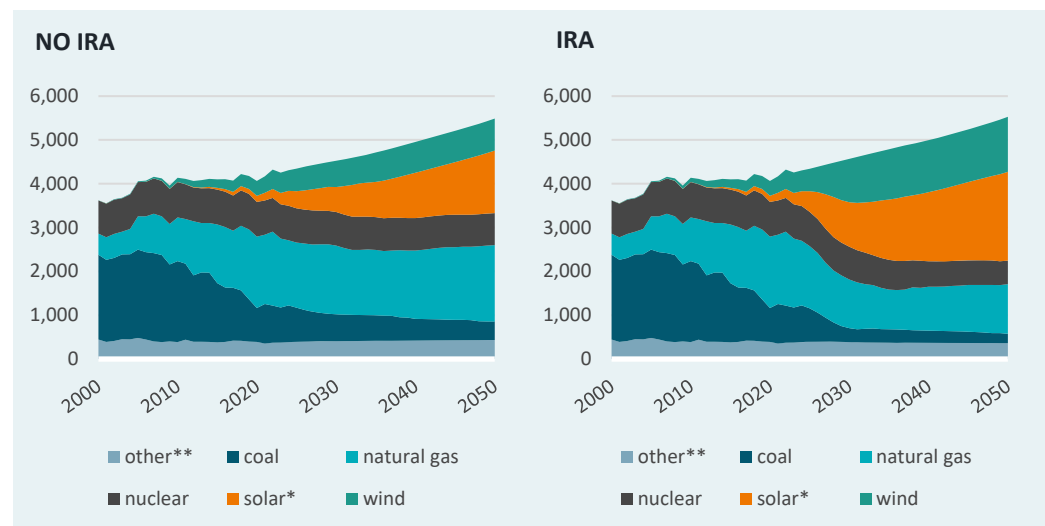
- Fundraising within energy transition infrastructure has ballooned over the past four years. Capital is coming from both infrastructure managers starting new sector focused strategies, while other are allocating a portion of their general infrastructure strategies to invest in clean energy themes. From 2018 to 2022, \$65B was raised for sustainable infrastructure as compared to the prior eight-year period ('08-'17) that raised \$6.5 billion. This doesn't account for the 82 general infrastructure funds which broadly plan to invest some portion of their capital in sustainable infrastructure. While the scale of capital needed to meet clean energy goals is vast, we see risk being underpriced and likely disappointing returns in the future for less experienced managers.
- Policy initiatives like the Bipartisan Infrastructure Bill (BIL) (2021) and the Inflation Reduction Act (IRA) (2022) have created an estimated \$400 billion in energy and climate funding, most of which is in the form of tax credits aimed at catalyzing private investment in clean energy, transportation and manufacturing. The IRA bill is widely considered to be the most consequential legislation ever passed for the clean energy industry.
- For the first time in 30 years electricity demand growth is estimated to increase to 2-4% a year, driven by the plug-in of the transportation sector (EV's). Growing energy demand, pared with net zero emissions targets will create large opportunities for renewables and the infrastructure required to deliver those electrons.

**FUNDRAISING IN ENERGY TRANSITION (\$B)**



Source: Pitchbook, as of 12/31/2022

**U.S. NET ELECTRICITY GENERATION BY FUEL (BILLION KW-HOURS)**



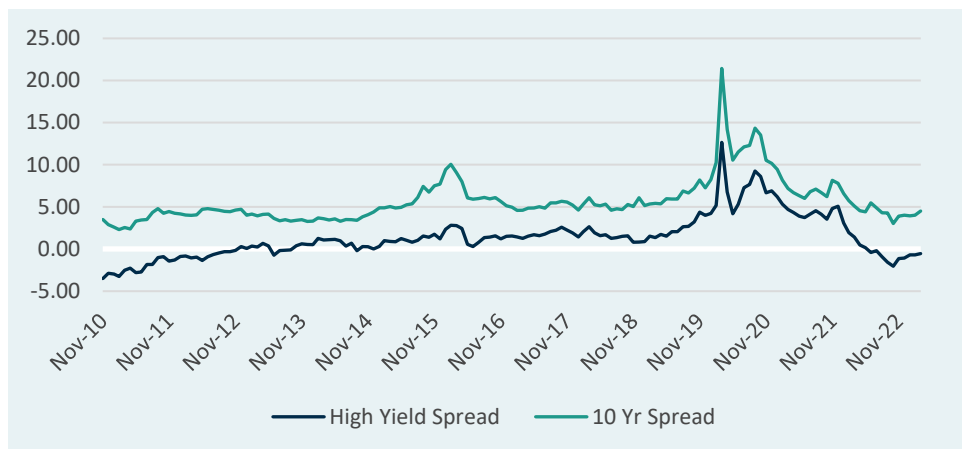
Source: Annual Energy Outlook 2023



# Midstream energy/MLPs

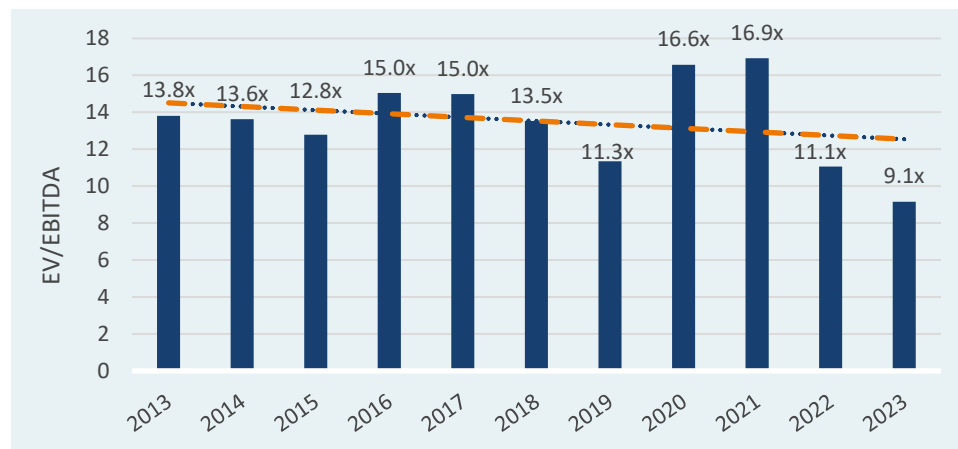
- Midstream energy stocks were up 31.0% in 2022. For the second year in a row, energy midstream stocks, had strong returns on both a relative and absolute return basis. Strong commodity prices led to growing volumes in both gas and oil, leading to higher earnings and at the same time, investor interest in companies that could deliver more near-term cash flows.
- Yields for listed midstream companies now trade slightly below high yield bonds but at a premium to Treasuries. The recent shift lower in relative yields is a function of the dramatic increase in interest rates but does reduce the relative attractiveness of the sectors yield income. We remain concerned about the long-term viability of the asset class and future growth opportunities.
- EV cars are not a fad or strictly the domain of green conscious consumers. They simply are more practical and efficient than ICE vehicles. With roughly 50% of oil demand coming from motor vehicle use, that is a powerful headwind for the suppliers of oil. Even if oil will be with us for decades to come, we struggle to justify a dedicated allocation to a commodity with growth headwinds when there are many other investment opportunities available.
- Natural gas does not face the same obvious demand challenges and, in fact, has strong tailwinds around export in the U.S. While some greener fuels like hydrogen could displace natural gas, that outcome is far from certain. That fact does not change our view though, that the midstream asset class fails to offer a compelling long-term investment thesis.

## MLP SPREADS VS HIGH YIELD & TREASURIES



Source: Bloomberg, as of 3/31/2023

## MIDSTREAM VALUATIONS (EV/EBITDA)

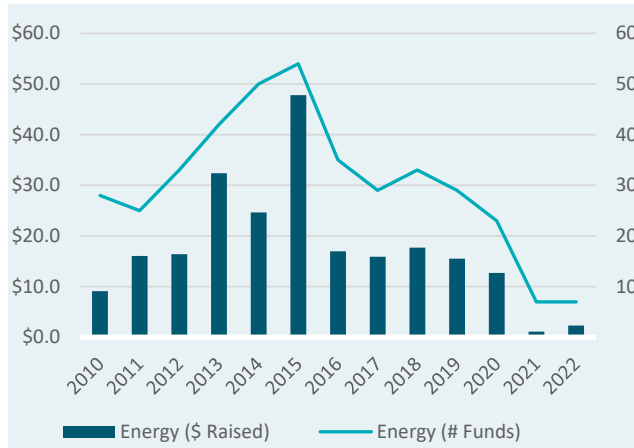


Source: Bloomberg; Alerian MLP Index, as of 3/31/2023

# Energy – Oil/gas

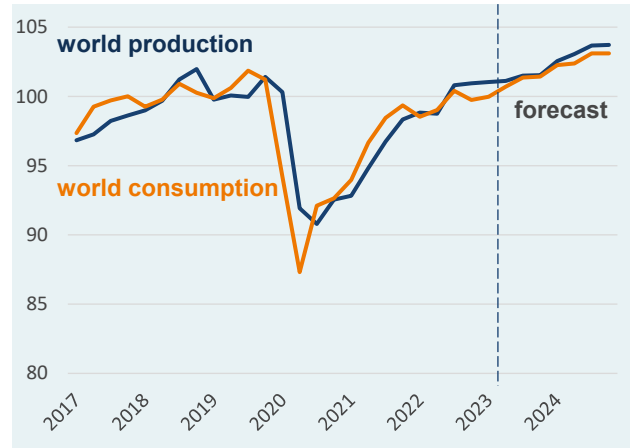
- According to Pitchbook figures, fundraising within oil/gas funds remains challenging though we have seen a notable uptick in traditional oil/gas GPs coming back to market for the first time in 5+ years. The spike in commodity prices and subsequent move higher in portfolio valuations has given confidence to the industry that some LPs will revisit allocating to oil and gas upstream funds. We expect that the top 3 or 4 GPs in the sector will find investors though fundraising is slow and could be challenged further if oil prices move lower from here.
- Some good news on the exit front, we have seen a few deals completed in 2023, mostly in the Permian basin. Strategics appear to be testing the M&A market by going after the most attractive assets in the Permian basin. With natural gas prices collapsing back down to \$2/MMBtu, liquidity for gas heavy assets is likely to remain elusive. If the oil/gas funds are able to raise new capital, we would not be surprised to see them buying some of these legacy sponsor-backed companies which would create an exit for older funds, though new capital has to wonder who will buy from them down the road.
- The problem of liquidity and the transition away from hydrocarbons remain existential threats to the private oil/gas sector. We could see a role for natural gas for decades to come but oil demand appears more in doubt. Electric vehicles are more efficient, require less maintenance and if we can resolve some of the supply chain challenges, will displace combustion engines globally. Investors interested in exposure to oil/gas would be better off in public market securities than illiquid private funds.

FUNDRAISING IN OIL/GAS



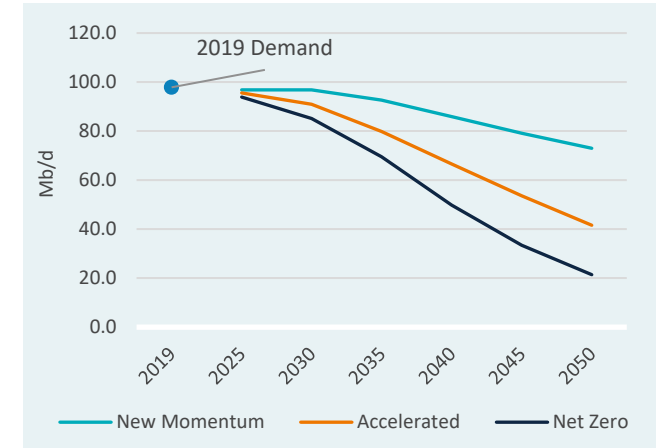
Source: Pitchbook, as of 12/31/2022

WORLD OIL PRODUCTION & CONSUMPTION\*



Source: EIA; \*includes all liquid fuels

GLOBAL OIL DEMAND FORECAST UNDER LOWER CARBON EMISSION SCENARIOS

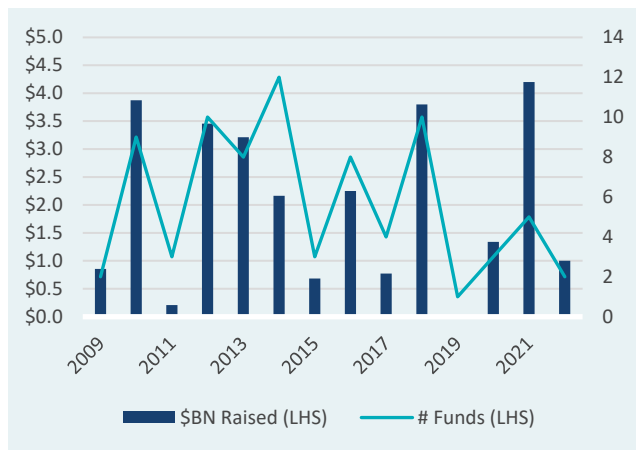


Source: BP Energy Outlook 2023

# Metals and mining

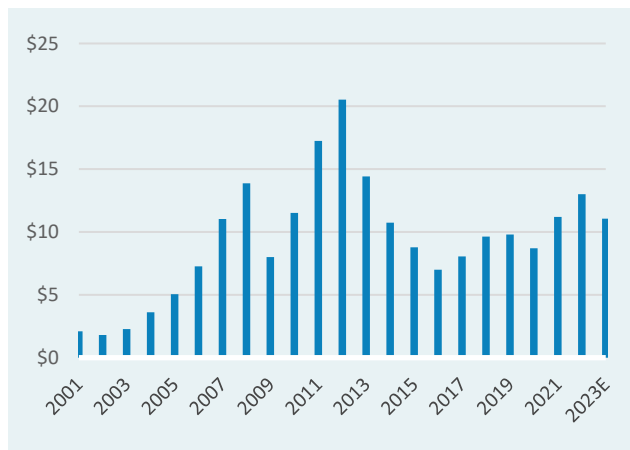
- Fundraising in the private equity mining segment picked up some in 2021 with a couple large funds in market, but subsequently declined in 2022. Raising equity capital in metals and mining has been a challenge since the global financial crisis but that has worsened in the last 5 years. We have seen some investor interest in royalty/streaming funds and in mining lending, where we have deployed client capital, but even that niche market is a small opportunity.
- After a modest recovery from a cyclical low in 2016, non-ferrous mining exploration budgets have been on the upswing, hitting a recent peak in 2022. Budgets are expected to decline in 2023, though the consensus is that more spending will be needed to meet future demand for metals/minerals important to clean energy. Prices moved lower in 2022 for industrial metals and are likely to face near-term headwinds if economic activity slows. Precious metals, on the other hand, have rallied the last several months as the banking crisis fueled the buying of safe-haven assets.
- We are more bullish on base/industrial metals which longer-term will benefit from a shift away from fossil fuels. We are less bullish on bulk and energy-related commodities. Our overall outlook within mining is positive with a notable challenge in finding enough investment opportunities that meet our underwriting criteria.

**FUNDRAISING IN MINING**



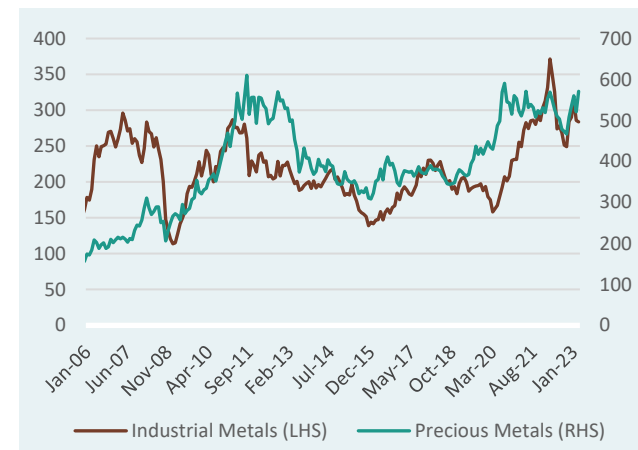
Source: Pitchbook, as of 12/31/2022

**CAPITAL EXPENDITURE IN MINING (\$B)**



Source: S&P Global Market Intelligence; Non-Ferrous budget

**METAL PRICES**

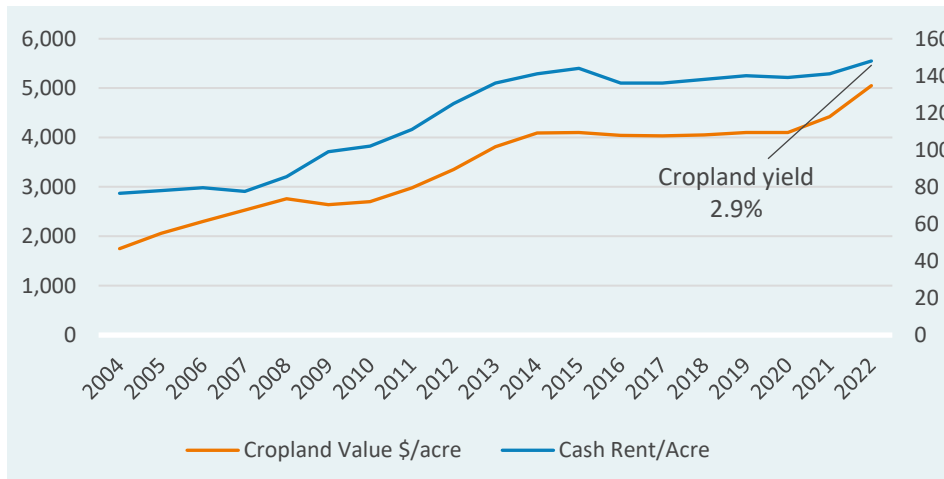


Source: Bloomberg, as of 3/31/2022

# Agriculture

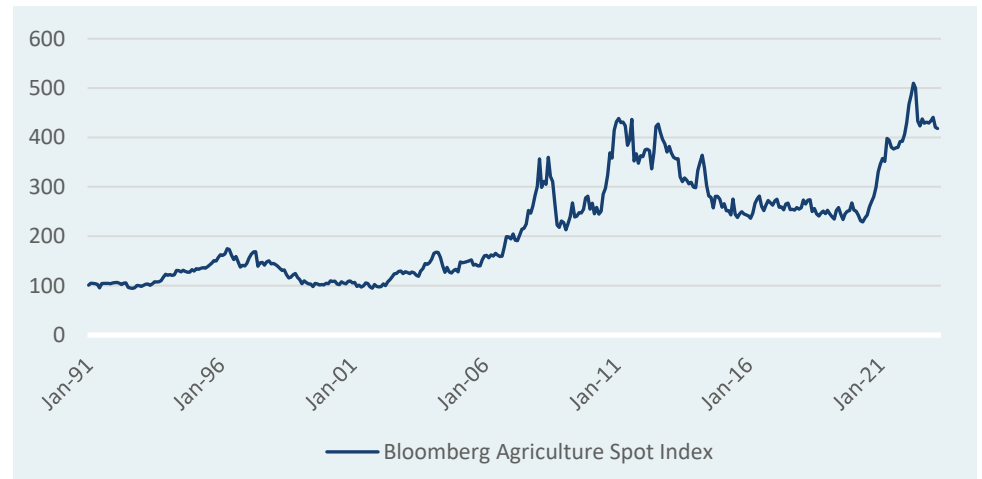
- Cropland values nationally rose in 2022 to \$5,050/acre, an increase of more than 14% over the prior years 8.0% rise. This is a notable change since 2015 when farmland values leveled off in a low agriculture price market. Verus has been generally bearish on farmland investments as income yields have trended around 3.0% and a catalyst for appreciation was lacking. The War in Ukraine and the subsequent global disruption in Ag crop supply chains has put a premium on stable countries with certainty of supply. Elevated crop prices is likely to reverse somewhat in the coming years but there is an improved outlook for Ag investing in the U.S. and certain other OECD countries.
- In the row crop segment, higher crop prices sent land values up double digits in many markets, though most expect elevated corn, wheat and soybean prices to come down. Permanent crops on the other hand, have seen land values come down or stay flat, as nut prices and citrus have declined for varying reasons. Ag investing is notoriously challenging, as the last 10 years have shown, with weather, tariffs, wars and changing consumer habits all playing a role in the asset classes returns. We believe diversifying across crop types and looking for strategies that can invest in post-farmgate assets is the best way to mitigate idiosyncratic events and capture a higher return.
- Following several years of poor returns in Agriculture, row crop assets spiked in value with higher crop prices. While we do not see the asset class as an overly compelling buying opportunity, on a relative basis, the Ag market looks more attractive today than in prior years.

## U.S. NATIONAL CROPLAND VALUES VS CASH RENTS



Source: USDA, as of 12/31/2022

## BLOOMBERG AGRICULTURE PRICES



Source: Bloomberg, as of 3/31/2023

# Appendix

# Detailed returns by asset class

Pooled Returns by asset class	1 Year	3 Year	5 Year	10 Year
NCREIF ODCE	7.5%	9.9%	8.7%	10.1%
Refinitiv Real Estate – Value-Add	8.5%	10.9%	10.1%	11.4%
Pitchbook Real Estate - Value-Add	19.3%	13.6%	12.4%	12.8%
Refinitiv Global Infrastructure	9.4%	10.8%	10.3%	10.7%
Refinitiv Global Natural Resources	25.2%	8.7%	5.1%	3.6%
Pitchbook Oil/Gas	33.7%	11.7%	6.9%	4.9%
Pitchbook Mining	8.6%	4.1%	2.3%	2.9%
NCREIF Timberland	12.9%	7.5%	5.4%	5.8%
NCREIF Farmland	9.6%	6.8%	6.4%	8.8%
<b>Public Index (as of 12/31/22)</b>				
Russell 3000	-19.2%	7.1%	8.8%	12.1%
MSCI ACWI	-18.0%	4.5%	5.8%	8.5%
S&P Global Infrastructure	-0.2%	1.7%	3.9%	6.5%
S&P Global Natural Resources	10.3%	11.6%	7.3%	4.9%
FTSE NAREIT Global	-23.6%	-5.1%	-0.1%	3.4%
FTSE NAREIT U.S.	-24.9%	-1.0%	3.0%	6.0%

Source: Refinitiv C/A as of September 30, 2022; Pitchbook as of September 30, 2022; NCREIF as of December 31, 2022

# The role of real assets

	Strategy	GDP sensitivity	Inflation sensitivity	Income orientation	Return enhancing	Risk reducing	Liquidity
Privately-traded real assets	Private real estate core	High	Moderate	High	Moderate	Moderate	Moderate
	Private real estate value added	High	Low	Moderate	High	Low	Low
	Private real estate opportunistic	High	Low	Low	High	Low	Low
	Private infrastructure	Moderate	Moderate	High	Moderate	Moderate	Low
	Timber	Low	Low	Low	Moderate	High	Low
	Farmland / agriculture	Low	Moderate	Moderate	High	High	Low
Publicly-traded real assets	TIPS	Low	Moderate	Low	Low	High	High
	Commodity futures	Moderate	High	Low	Low	Moderate	High
	REITs	Moderate	Low	Moderate	High	Low	High
	MLPs	Moderate	Moderate	High	High	Moderate	High
	Listed infrastructure	Moderate	Moderate	Moderate	High	Low	High
	Natural resources equity	Moderate	High	Low	High	Low	High

Note: the summary above was determined using historical averages and correlations on a relative basis within each category. It is important to note that investments within these asset classes are often heterogeneous and may possess different qualities and sensitivities (see Appendix for further details).

Magnitude	Low/None	Moderate	High

# Glossary of terms

**Adjusted Funds From Operations (AFFO):** A measurement which is helpful in analyzing real estate investment trusts (REITs). The AFFO typically equals the trust's funds from operations (FFO) but is adjusted for ongoing capital expenditures which are necessary for upkeep of the REIT's assets.

**Backwardation:** Also, sometimes called normal backwardation, is the market condition where the price of a commodities forward or futures contract is trading below the expected spot price at maturity.

**Capitalization Rates:** The rate of return of a real estate investment, which is calculated by dividing the property's net operating income by the property's purchase price.

**Core Real Estate:** This category of real estate will include a preponderance of stabilized properties. Core real estate should achieve relatively high income returns and exhibit relatively low volatility. Core real estate funds tend to use less leverage.

**Consumer Price Index (CPI):** A measure of purchasing power and inflation that takes the average prices of a basket of consumer goods and services, such as food, medical care, and transportation, and compares the same basket of goods in terms of prices to the same period in a previous year. Changes in CPI are used to assess price changes associated with the cost of living.

**Contango:** When the futures price of a commodity is above the expected future spot price. A futures or forward curve is upward sloping when the market is in contango.

**Double Promote:** A joint venture private equity structure is considered to have a "double promote" if the sponsor of a project is in fact comprised of two separate parties who each have a profit waterfall agreement or cash flow disbursements.

**Dry Powder:** Investment reserves raised by investment funds to cover future obligations or to purchase assets in the future.

**GDP:** The total value of all services and goods produced within a country's borders, for a given time period. This calculation includes both private and public consumption, government expenditures, investments, along with total exports net of total imports.

**Internal Rate of Return (IRR):** the IRR is the discount rate that equates the present value of cash outflows (investment) with the present value of cash inflows (return of capital). IRR is often referred to as a dollar-weighted rate of return that accounts for the timing of cash inflows and outflows.

**LIBOR:** Is a benchmark rate that some of the world's largest banks charge each other for short-term loans. It stands for London Interbank Offered Rate and serves as the first step in calculating interest rates on various loans throughout the world.

**Master Limited Partnerships (MLPs):** A limited partnership structure which is publicly traded on an exchange. MLPs combine the tax benefits of a limited partnership with the liquidity of publicly traded securities. To qualify as an MLP, the entity must generate 90% of its income from the production, processing and transportation of oil, natural gas and coal.

**Net Operating Income (NOI):** A calculation which is used to analyze real estate investments that generate income. NOI is the property's annual income generated by operations after deducting all expenses incurred from those operations. The growth rate in NOI is a common metric used in determining the health of a property.

**OPEC:** The Organization of Petroleum Exporting Countries (OPEC) is a group consisting of 12 of the world's major oil-exporting nations. OPEC is a cartel that aims to manage the supply of oil in an effort to influence the price of oil on the world market.

**Opportunistic Real Estate:** An opportunistic fund is one that includes preponderantly non-core assets. The fund as a whole is expected to derive most of its return from property appreciation which may result in volatile returns. These funds may employ a variety of tools such as development, significant leasing risk and potentially high leverage.

**Real Estate Investment Trusts (REITs):** A REIT is a company that owns and operates commercial real estate properties. REITs can be publicly traded or privately held. There are two main type of REITs: Equity REITs which generate income from the operation of properties, and Mortgage REITs, which invest in mortgages or mortgage securities.



# Glossary of terms (continued)

**Timber Investment Management Organizations (TIMOs):** A management group that invests in timberland assets for institutional investors. TIMOs will purchase, manage and sell various timberland properties on behalf of investors.

**Treasury Inflation Protected Securities (TIPS):** A treasury bond that is adjusted to eliminate the effects of inflation on interest and principal payments, as measured by the Consumer Price Index (CPI). TIPS are issued in terms of five, ten and twenty years and are auctioned twice per year.

**Value-Added Real Estate:** A value-added real estate fund often holds a combination of core assets and other assets characterized by less dependable cash flows. These strategies are likely to have moderate lease exposure and employ moderate leverage. Consequentially, these strategies seek significant returns from property appreciation and typically exhibit moderate volatility.

**Vacancy Rates:** The vacancy rate is calculated as the total number of unoccupied units of a property divided by the total units of the property, at a particular point in time.

**Vintage Year:** Represents the year the first capital call or portfolio company investment was made. .

# Notices & disclosures

**Past performance is no guarantee of future results.** This report or presentation is provided for informational purposes only and is directed to institutional clients and eligible institutional counterparties only and should not be relied upon by retail investors. Nothing herein constitutes investment, legal, accounting or tax advice, or a recommendation to buy, sell or hold a security or pursue a particular investment vehicle or any trading strategy. The opinions and information expressed are current as of the date provided or cited only and are subject to change without notice. This information is obtained from sources deemed reliable, but there is no representation or warranty as to its accuracy, completeness or reliability. This report or presentation cannot be used by the recipient for advertising or sales promotion purposes.

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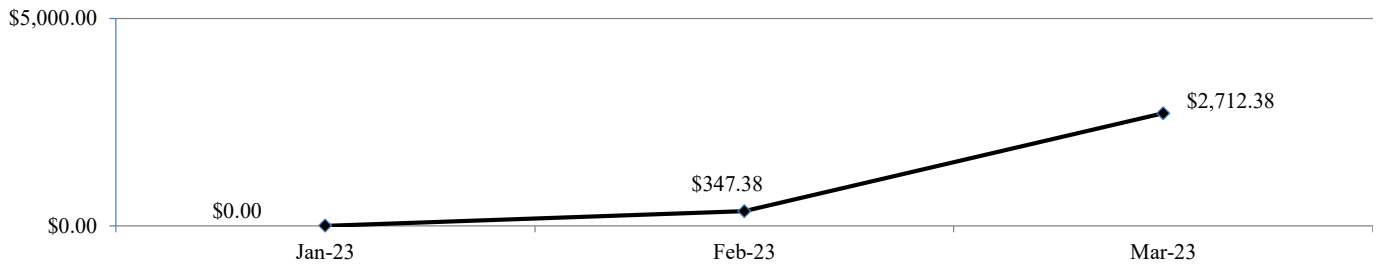


# Alameda County Employees' Retirement Association First Quarter 2023 Directed Brokerage Report

## Quarterly Commentary

In 1Q23, the total recaptured dollar amount for ACERA's Directed Brokerage (DB) Program was \$3,059.76. Since inception<sup>1</sup>, ACERA has recaptured \$2,114,441.69. For the quarter Capital Group directed the highest percentage (55.76%) of trading volume and also generated the largest recaptured directed commission dollar amount (\$2,712.38). Virtue (Knight Securities) received 88.65% of ACERA's directed trades among the network of correspondent brokers. On average the program continues to operate in compliance with ACERA's DB Policy; however, participating active management now make up less than 20% and 25% of domestic equity and international equity asset classes, respectively.

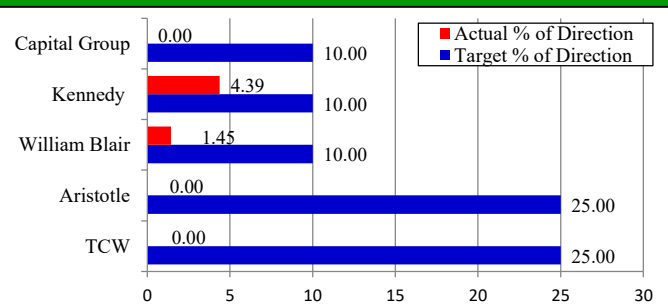
## Monthly Recaptured



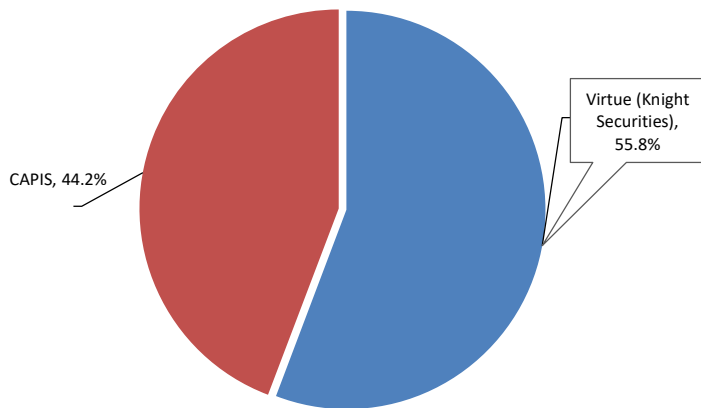
## Directed Commission \$<sup>2</sup>

Manager	1Q2023	YTD
Capital Group	0.00	0.00
Kennedy	2,712.38	2,712.38
William Blair	347.38	347.38
Aristotle Capital	0.00	0.00
TCW	0.00	0.00
<b>Total</b>	<b>\$3,059.76</b>	<b>\$3,059.76</b>

## Directed %<sup>3</sup>



## Directed % to Correspondent Brokers<sup>4</sup>



- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>Andes Capital Group</li> <li>B. Riley &amp; Co.</li> <li>Barclays (US Algo/DMA)</li> <li>BIDS Trading</li> <li>Bley Investment Group</li> <li>Cabrera Capital Markets</li> <li>CAPIS</li> <li>CAPIS Step Out</li> <li>CF Global Trading</li> <li>Cowen Securities (U.S.)</li> <li>Drexel Hamilton</li> <li>HSBC James Capel</li> <li>ICAP (U.S.)</li> <li>Imperial Capital</li> </ul> | <ul style="list-style-type: none"> <li>Instinet LLC</li> <li>ITG, Inc.</li> <li>LAM Securities</li> <li>Liquidnet</li> <li>Merrill Lynch (U.S.)</li> <li>Mischler Financial Group</li> <li>North South Capital</li> <li>O'Neil Securities</li> <li>Penserra Securities, LLC</li> <li>Pershing, LLC</li> <li>Piper Sandler</li> <li>Societe Generale</li> <li>State Street Global Markets (Europe)</li> <li>Virtue America LLC</li> </ul> |
|--|--|

**Brokers are selected at the discretion of the Investment Managers, pursuant to Best Execution and ACERA's DB Policy.**

1. ACERA's DB Program began in September 2006. Mondrian, Bivium do not participate in Commission Recapture; Blackrock, Newton, and Templeton are comingled accounts and do not participate.  
 2. Data provided by CAPIS. Directed Commission \$ - Dollar amount of commissions from directed trades - this amount is split among ACERA (22.75% for 1Q2023), CAPIS, & the Correspondent Brokers.  
 3. Data provided by Zeno Consulting Group (Zeno). Directed % - Calculated by dividing Manager's directed trading volume by its total trading volume and compared to its assigned target. Target percentages are ranges (e.g. up to 25% for TCW).  
 4. Data provided by CAPIS.



**INVESTMENT MANAGER,  
CONSULTANT, AND CUSTODIAN FEES**  
For Quarter Ending Mar 31, 2023

**INVESTMENT NET ASSET VALUE AND INVESTMENT MANAGER FEES  
FOR THE QUARTER ENDED MAR 31, 2023**

For the Quarter Ended Mar 31, 2023	NAV <sup>2</sup> (\$) As of 3/31/23	Q1 - Total Fees (\$)	bps of NAV
Name of Fund			
<b>Domestic Equity<sup>1</sup></b>			
Aristotle Capital	152,126,289	146,186	9.61
BlackRock R1000 Index Fund	2,086,558,258	44,633	0.21
Kennedy Capital	141,877,423	296,624	20.91
Trust Co. of the West	126,084,050	134,220	10.65
William Blair Small Cap Growth	132,832,443	258,602	19.47
Total Domestic Equity	2,639,478,463	880,264	3.33
<b>International Equity<sup>1</sup></b>			
BlackRock MSCI World ex-US	721,004,837	44,532	0.62
Bivium International Equity	140,888,126	279,968	19.87
Capital Group	614,055,900	175,920	2.86
Franklin Templeton Inv.	263,875,152	391,978	14.85
Mondrian	270,984,819	593,382	21.90
William Blair Emerging Market Growth	721,004,837	395,909	5.49
Total International Equity	2,731,813,671	1,881,689	6.89
<b>Fixed Income<sup>1</sup></b>			
Baird Advisors	1,160,694,852	193,137	1.66
Loomis Sayles	268,567,810	215,199	8.01
Brandywine Global FI	185,744,492	134,428	7.24
Total Fixed Income	1,615,007,154	542,763	3.36
<b>Real Estate<sup>4, 5, 6</sup></b>			
Total Real Estate	819,682,142	2,269,932	27.69
<b>Private Equity<sup>4, 5, 6</sup></b>			
Total Private Equity	1,008,233,998	3,453,129	34.25
<b>Absolute Return<sup>4, 5, 6</sup></b>			
Total Absolute Return	852,044,092	1,915,533	22.48
<b>Real Assets<sup>4, 5, 6</sup></b>			
Total Real Assets	635,474,754	1,144,280	18.01
<b>Private Credit<sup>4, 5, 6</sup></b>			
Total Private Credit	240,548,973	781,233	32.48
<b>Cash*</b>			
	93,369,574		
<b>TOTAL<sup>7</sup></b>	<b>10,635,652,822</b>	<b>12,898,824</b>	<b>12.13</b>

Notes:

\*Cash total includes the Parametric Cash Overlay NAV

1. Domestic, International Equity, and Fixed Income managers' fees are based on staff validated manager invoices.

2. NAVs may use estimates at the time of this report's production.

3. Some accounts contain submanaged funds; the fees shown include all assets in the account.

4. Sometimes fees may be estimates. According to the Limited Partnership Agreements, management fees are based on committed amounts and/or assets under management.

5. Detailed records regarding these investments of public pension funds are exempt from disclosure under California Government Code Section 6254.26

6. As of 1Q 2021, the management fee totals no longer includes estimates for other expenses and carried interest allocations. This additional information will be reported in the annual 7514.7 Alternative Investment Vehicles Information Report presented each December.

7. Previous quarter's amounts may change as estimates are trueed up to actual amounts. Each true up is made using the most recent information.

**CONSULTANT/CUSTODIAN FEES  
FOR THE QUARTER ENDED MAR 31, 2023**

	<b>Q1 - Fees (\$)</b>
<b>Consultant</b>	
Callan Associates	56,250
Verus Advisory, Inc.	193,750
Institutional Shareholders Services	15,675
Zeno Consulting Group	11,813
Sub-total Consultant	277,487
<b>Custodian</b>	
State Street Bank	148,873
<b>TOTAL OF CONSULTANT / CUSTODIAN FEES <sup>1</sup></b>	<b>426,360</b>

Notes:

1. Previous quarter's amounts may change as estimates are true up to actual amounts. Each true up is made using the most recent information.



**ALAMEDA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**

475 14th Street, Suite 1000, Oakland, CA 94612    800/838-1932    510/628-3000    fax: 510/268-9574    www.acera.org

TO:                    Members of the Investment Committee

FROM:                Agnes Ducanes – Administrative Specialist II *Aducanes*

DATE:                June 14, 2023

SUBJECT:            Quarterly Report on ACERA’s Investment Products and Services Introductions  
(IPSI) Program

In the first quarter of 2023, Staff received 23 investment products and services inquiries from prospective providers. We met with 5 managers who presented through the IPSI process.

The purpose of IPSI is to provide prospective vendors an opportunity to gain a better understanding of ACERA’s investment objectives and for Staff to learn about the vendors’ investment products/services through face-to-face meetings, teleconferences, or video conferences. Staff has designated the morning of the second Wednesday of every month as ACERA’s IPSI day. Each introductory session is approximately 45 minutes.

Below please find a chart depicting the types of IPSI sessions that were held in the first quarter of 2023.

<b>ASSET CLASS</b>	<b>Q1 '23</b>	<b>Q2 '23</b>	<b>Q3 '23</b>	<b>Q4'23</b>	<b>TOTAL</b>
<b>U.S. Equities</b>	0	0	0	0	0
<b>Int'l Equities</b>	0	0	0	0	0
<b>Fixed Income</b>	1	0	0	0	1
<b>Real Estate</b>	1	0	0	0	1
<b>Private Equities</b>	2	0	0	0	2
<b>Absolute Return</b>	0	0	0	0	0
<b>Real Assets</b>	1	0	0	0	1
<b>Private Credit</b>	0	0	0	0	0
<b>Other Services</b>	0	0	0	0	0
<b>TOTAL:</b>	<b>5</b>				<b>5</b>



475 14th Street, Suite 1000, Oakland, CA 94612 / Telephone (800) 838-1932 (510) 628-3000 / Fax: (510) 268-9574 / [www.acera.org](http://www.acera.org)

To: Members of the Investment Committee  
From: Julius Cuaresma, Investment Analyst  
Date: June 14, 2023 *JCC*  
Subject: Summary of Rebalancing and Cash Activities Completed in 1Q23

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**Recommendation:**

Not Applicable – this is an informational report.

**Background/Discussion:**

1. For the quarter ending January 31, 2023 (“1Q23”), there was no Board action required to rebalance the Total Fund. In accordance with ACERA’s General Investment Guidelines, Policies and Procedures, Section V: Asset Allocation and Rebalancing, Schedule IA: Asset Allocation Targets and Schedule IC: Asset Allocation Portfolio Rebalancing, no rebalancing signals were received during the period. The Summary of Rebalancing and Cash Activities are reported to the Investment Committee on a quarterly basis.
2. Regarding significant cash flows for 1Q23, Staff implemented the following changes to manage excess cash, to meet supplemental month-end retiree benefits, administrative payroll, capital calls and to provide operating funds:
  - a. **Month-end payroll and Total Fund Withdrawals:** Staff withdrew a net \$56.0 million (M) from the Total Fund SSB Cash Account (Account #HI1A) to supplement for month-end payroll for 1Q23. Staff wired out \$24.0 M in January, \$23.0 M in February, and \$25.0 M in March to ACERA’s JP Morgan Bank account. Fiscal Services wired in \$16.0 M to HI1A as subsequent employer contributions (\$0.0 M in January, \$0.0 M in February, and \$16.0 M in March). The reason for noting the incoming wires is not all employer contributions are received before the month-end and administrative payroll for that month.
  - b. **Capital Calls, Distributions:** In general, ACERA made wire payments of \$98.0 M in aggregate to meet capital calls and fund investments for ACERA’s privately placed investments. Distributions, which include cash and in-kind distributions and return of principal, totaled \$56.1 M for the 1Q23. This dollar amount does not include other incidental income from other programs<sup>1</sup>.
  - c. **Other Activity:** To meet the cash flow needs noted above (a. and b.) and to meet future cash flows for the next three months, the following transactions occurred:
    - I. In February, Staff redeemed: \$60.0 M from BlackRock Russell 1000; and \$20.0 M from BlackRock MSCI World ex-US Passive Index Fund.

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<sup>1</sup> Securities Lending Income, \$162.0 K, Securities Litigation Income, \$537.5 K, and Commission Recapture Income, \$1.0 K totaled \$700.5 K (dividend and interest income from the traditional managed accounts are re-invested and calculated separately, i.e., as part of the manager’s performance returns). Variance in Income data across other Committee reports are due to timing differences.

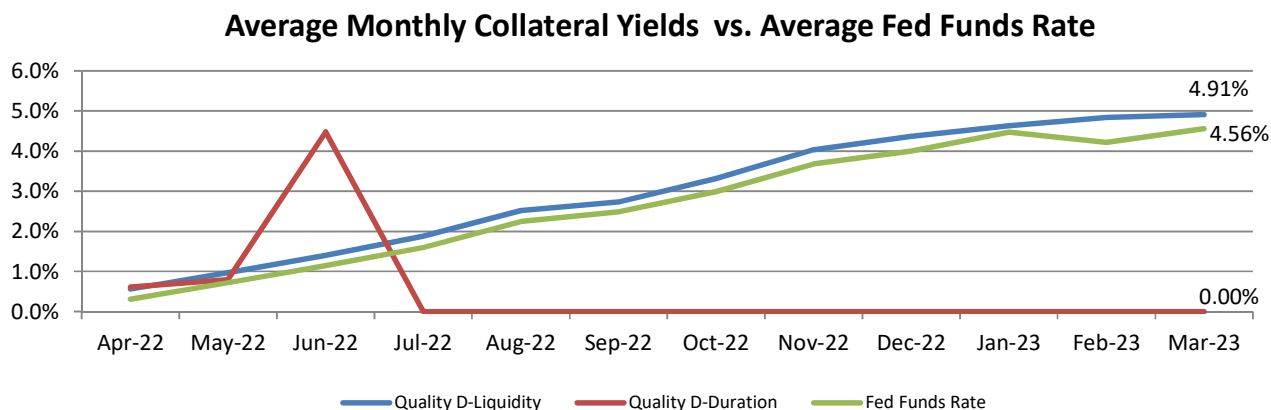
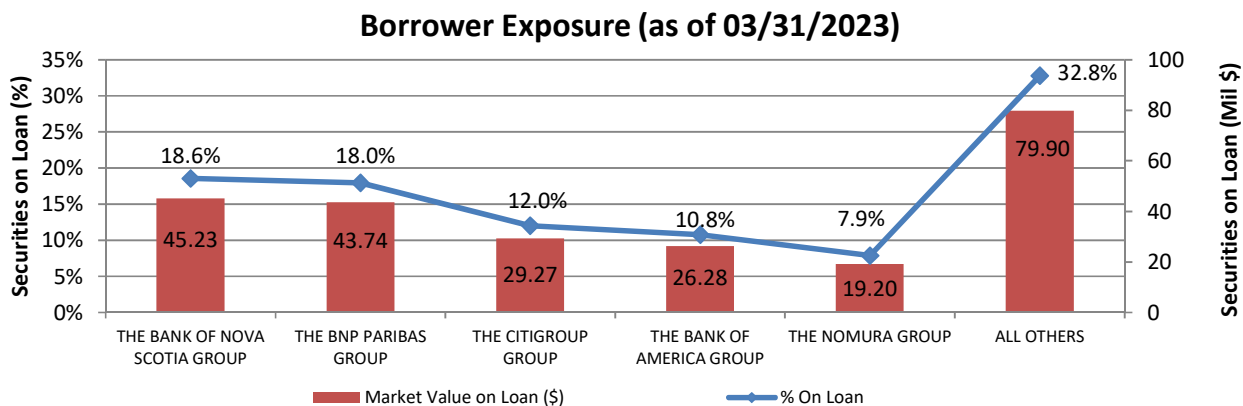
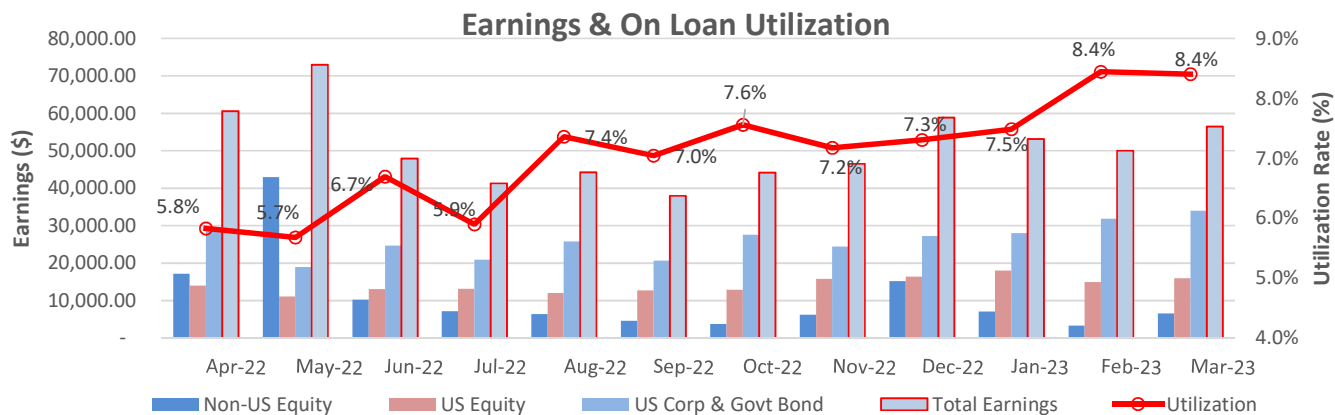


# Alameda County Employees' Retirement Association

## 1st Quarter 2023 Securities Lending Report

### Quarterly Summary

In 1Q2023, ACERA's earnings from Securities Lending activities were \$159,658.81. Fixed Income/Bonds generated the highest earnings of \$93,765.89. The average value of securities on loan was \$214,208,711.33. The average lendable amount for the same period was \$2.6 billion. The Bank of Nova Scotia was the largest borrower of ACERA's securities with 18.6% or \$45.23 million.



**Notes:**

- (1) Quality D Liquidity and Quality D Duration Funds are managed by an affiliate of State Street Bank (SSB); these funds are common pools in which many securities lending clients of SSB invest their cash collateral generated from their security lending activities. ACERA invests the cash collateral received from its security lending activities into Quality D Liquidity and Quality D Duration Funds. As of 03/31/2023, ACERA's NAV per unit of the Compass Fund (0.9999). Compass Fund is the new name for Quality D Liquidity. As of 03/31/2023, Compass Fund had 145,185,597.65 units; and Quality D Duration Funds matured and 100% of securities called.
- (2) Data represents past performance and is not necessarily indicative of future results.
- (3) Data Source: my.statestreet.com and Securities Finance Business Intelligence
- (4) Securities Lending income will be wired into ACERA's unallocated cash account a few days after months end.

*Securities Lending Report Provided by Staff*



## Investment Committee Workplan for 2023

June 14, 2023

Action Items	Information Items
<p>January 11</p> <p><b><u>Board Action Item:</u></b></p> <ol style="list-style-type: none"> <li>Proposed Findings Regarding State of Emergency Pursuant to Gov't Code §54953(e)(3): Staff Recommendation: The Board finds that it has reconsidered the circumstances of the state of emergency and (1) the state of emergency continues to directly impact the ability of the members to meet safely in person, and (2) state or local officials continue to impose or recommend measures to promote social distancing.</li> </ol>	<ol style="list-style-type: none"> <li>Semiannual Performance Review for the Period Ending June 30, 2022 – Real Estate</li> <li>Semiannual Performance Review for the Period Ending June 30, 2022 – Private Equity</li> <li>Semiannual Performance Review for the Period Ending June 30, 2022 – Private Credit</li> <li>Semiannual Performance Review for the Period Ending June 30, 2022 – Real Assets</li> <li>Proposed Investment Committee Work Plan for 2023</li> </ol>
<p>February 8</p> <ol style="list-style-type: none"> <li>Discussion of and Possible Motion to Recommend that the Board Approve the Proposed New Manager Structure for the International Equity Asset Class</li> <li>Discussion of and Possible Motion to Recommend that the Board Adopt the 2023 – 2029 Investment Plan for ACERA's Real Assets Asset Class</li> <li>Discussion of and Possible Motion to Recommend that the Board Adopt the 2023 - 2026 Updated Private Equity Investment Plan</li> </ol>	<ol style="list-style-type: none"> <li>2023 Capital Market Assumptions</li> <li>Investment Committee Work Plan 2023</li> </ol>
<p>March 8</p> <ol style="list-style-type: none"> <li>Discussion of and Possible Motion to Recommend to the Board to Approve an up to \$50 million Investment in Clayton, Dubilier, and Rice (CD&amp;R) XII as part of ACERA's Private Equity Portfolio – Buyouts, Pending Completion of Legal and Investment Due Diligence and Successful Contract Negotiations</li> </ol>	<ol style="list-style-type: none"> <li>Discussion of an up to \$10 Million Investment in Eclipse Fund V as part of ACERA's Private Equity Portfolio – Venture Capital</li> <li>Status Update on the General Investment Consultant (GIC) RFP Search</li> </ol>

**Notes:**

- This workplan is subject to change without prior notice. Periodic rearrangements of agenda items will be made to the workplan to provide a reasonable length of time for each meeting.
- Meeting date is assumed to be the second Wednesday of each month.
- Educational sessions may be added to the Agenda from time-to-time e.g., Portable Alpha, Market and Currency Overlay, Equity Overlay, and Emerging Managers in Private Equity investments. Recommendations and reports on ACERA's Real Estate, Private Equity, Absolute Return, Private Credit, and Real Assets investments will be added to the Agenda from time-to-time.
- The schedule of the Action/Information Items pertaining to the GIC RFP Search may be subject to change.



## Investment Committee Workplan for 2023

June 14, 2023

### Action Items

### Information Items

	Action Items	Information Items
		<ol style="list-style-type: none"> <li>3. <i>Quarterly report of ACERA’s investment manager, consultant, and custodian bank fees for the fourth quarter of 2022</i></li> <li>4. <i>Quarterly report on ACERA’s rebalancing activities for the fourth quarter 2022</i></li> <li>5. <i>Quarterly report on ACERA’s securities lending activities for the fourth quarter of 2022</i></li> <li>6. <i>Quarterly report on ACERA’s Directed Brokerage (DB) Program for the fourth quarter of 2022</i></li> <li>7. <i>Quarterly report on Investment Products and Services Introductions (IPSI) for the fourth quarter of 2020</i></li> <li>8. <i>Updated Investment Committee Work Plan 2023</i></li> </ol>
April 12	<ol style="list-style-type: none"> <li>1. Discussion and Possible Motion to Recommend that the Board Adopt a New Investment Plan for ACERA’s Real Estate Asset Class</li> <li>2. Discussion of and Possible Motion to Recommend that the Board Approve an up to \$38 Million Investment in Crestline Opportunity Fund V as part of ACERA’s Private Equity Portfolio – Debt-Related/Special Situations, Pending Completion of Legal and Investment Due Diligence and Successful Contract Negotiations</li> <li>3. Discussion and Possible Motion to Recommend that the Board Approve a Revised International Equity Asset Class Structure and Phased Implementation Transition Plan</li> </ol>	<ol style="list-style-type: none"> <li>1. Report on Investment Made Under Delegated Authority – Genstar Capital Partners XI<sup>3</sup> (\$40 Million)</li> <li>2. The Current State of ESG</li> </ol>
May 17	<ol style="list-style-type: none"> <li>1. Discussion of and Possible Motion to Recommend that the Board Approve an up to \$38 Million Investment in Davidson</li> </ol>	<ol style="list-style-type: none"> <li>1. Review of Trust Company of the West (TCW)</li> </ol>

**Notes:**

1. This workplan is subject to change without prior notice. Periodic rearrangements of agenda items will be made to the workplan to provide a reasonable length of time for each meeting.
2. Meeting date is assumed to be the second Wednesday of each month.
3. Educational sessions may be added to the Agenda from time-to-time e.g., Portable Alpha, Market and Currency Overlay, Equity Overlay, and Emerging Managers in Private Equity investments. Recommendations and reports on ACERA’s Real Estate, Private Equity, Absolute Return, Private Credit, and Real Assets investments will be added to the Agenda from time-to-time.
4. The schedule of the Action/Information Items pertaining to the GIC RFP Search may be subject to change.



## Investment Committee Workplan for 2023

June 14, 2023

	<b>Action Items</b>	<b>Information Items</b>
	<p>Kempner Opportunities Fund VI as part of ACERA’s Private Equity Portfolio – Debt-Related/Special Situations, Pending Completion of Legal and Investment Due Diligence and Successful Contract Negotiations</p> <p>2. Discussion of and Possible Motion to Recommend that the Board Approve an up to \$50 Million Investment in Grid Iron as part of ACERA’s Private Equity Portfolio – Buyouts Pending Completion of Legal and Investment Due Diligence and Successful Contract Negotiations</p>	<p>2. Semiannual Performance Review for the Period Ending December 31, 2023 – Real Estate (Tentative)</p>
June 14	<p>1. Discussion of and Possible Motion to Recommend to the Board to Approve the Finalists for the ACERA’s General Investment Consultant (GIC) Search</p> <p>2. Discussion of and Possible Motion to Recommend to the Board the Minimum Qualifications, and Scoring Matrix for the Emerging Markets Equity Manager Search</p>	<p>1. Semiannual Performance Review for the Period Ending March 31, 2023 – Total Fund Review Highlighting Public Markets Asset Classes and Absolute Return</p> <p>2. Semiannual Performance Review for the Period Ending December 31, 2022 – Private Equity</p> <p>3. Semiannual Performance Review for the Period Ending December 31, 2022 – Private Credit</p> <p>4. Semiannual Performance Review for the Period Ending December 31, 2022 – Real Assets</p> <p>5. <i>Quarterly report of ACERA’s investment manager, consultant, and custodian fees for the first quarter of 2023</i></p> <p>6. <i>Quarterly report on ACERA’s rebalancing activities for the first quarter of 2023</i></p> <p>7. <i>Quarterly report on ACERA’s securities lending activities for the first quarter of 2023</i></p> <p>8. <i>Quarterly report on ACERA’s Directed Brokerage (DB) Program for the first quarter of 2023</i></p>

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3. Educational sessions may be added to the Agenda from time-to-time e.g., Portable Alpha, Market and Currency Overlay, Equity Overlay, and Emerging Managers in Private Equity investments. Recommendations and reports on ACERA’s Real Estate, Private Equity, Absolute Return, Private Credit, and Real Assets investments will be added to the Agenda from time-to-time.
4. The schedule of the Action/Information Items pertaining to the GIC RFP Search may be subject to change.



## Investment Committee Workplan for 2023

June 14, 2023

	<b>Action Items</b>	<b>Information Items</b>
		<p>9. <i>Quarterly report on Investment Products and Services Introduction (IPSI) for the first quarter of 2023</i></p> <p>10. <i>Updated Investment Committee Work Plan 2023</i></p>
July 12	<ol style="list-style-type: none"> <li>1. Discussion of and Possible Motion to Recommend to the Board to Approve an up to \$XX million Investment in XX as part of ACERA’s Real Assets Portfolio – Infrastructure, Pending Completion of Legal and Investment Due Diligence and Successful Contract Negotiations (Placeholder)</li> <li>2. Discussion of and Possible Motion to Recommend to the Board to Approve an up to \$XX million Investment in XX as part of ACERA’s Private Equity Portfolio – XXXX, Pending Completion of Legal and Investment Due Diligence and Successful Contract Negotiations (Placeholder)</li> </ol>	
August 9	<ol style="list-style-type: none"> <li>1. Interview of ACERA’s General Investment Consultant (GIC) Finalists and Possible Motion by the Investment Committee to Recommend one Finalist to the Board (Tentative)</li> </ol>	<ol style="list-style-type: none"> <li>1. Education Session: Private Equity Fund-of-Funds</li> </ol>

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## Investment Committee Workplan for 2023

June 14, 2023

	<b>Action Items</b>	<b>Information Items</b>
September 13	<ol style="list-style-type: none"> <li>1. Discussion of and Possible Motion to Recommend to the Board to Approve an up to \$XX million Investment in XX as part of ACERA’s Private Equity Portfolio – XXXX, Pending Completion of Legal and Investment Due Diligence and Successful Contract Negotiations (Placeholder)</li> <li>2. Discussion of and Possible Motion to Recommend to the Board to Approve an up to \$XX million Investment in XX as part of ACERA’s Private Credit Portfolio, Pending Completion of Legal and Investment Due Diligence and Successful Contract Negotiations (Placeholder)</li> </ol>	<ol style="list-style-type: none"> <li>1. <i>Quarterly report of ACERA’s investment manager, consultant, and custodian bank fees for the second quarter of 2023</i></li> <li>2. <i>Quarterly report on ACERA’s rebalancing activities for the second quarter of 2023</i></li> <li>3. <i>Quarterly report on ACERA’s securities lending activities for the second quarter of 2023</i></li> <li>4. <i>Quarterly report on ACERA’s Directed Brokerage (DB) Program for the second quarter of 2023</i></li> <li>5. <i>Quarterly report on Investment Products and Services Introduction (IPSI) for the second quarter of 2023</i></li> <li>6. <i>Updated Investment Committee Work Plan for 2023</i></li> </ol>
October 11	<ol style="list-style-type: none"> <li>1. Discussion of and Possible Motion to Recommend that the Board Approve the Qualified List of Candidates for ACERA’s Emerging Markets Equity Manager Search – International Equities (Placeholder)</li> <li>2. Discussion of and Possible motion to Recommend that the Board Adopt the Amended ACERA Placement Agent Disclosure Policy (Placeholder)</li> <li>3. Discussion of and Possible Motion to Recommend to the Board to Approve an up to \$XX million Investment in XX as part of ACERA’s Real Estate Portfolio – XXXX, Pending Completion of Legal and Investment Due Diligence and Successful Contract Negotiations (Placeholder)</li> </ol>	

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## Investment Committee Workplan for 2023

June 14, 2023

	<b>Action Items</b>	<b>Information Items</b>
	<ol style="list-style-type: none"> <li>4. Discussion of and Possible Motion to Recommend to the Board to Approve an up to \$XX million Investment in XX as part of ACERA’s Real Assets Portfolio – XXXX, Pending Completion of Legal and Investment Due Diligence and Successful Contract Negotiations (Placeholder)</li> </ol>	
November TBD (regular meeting will be moved to SACRS Conference)	<ol style="list-style-type: none"> <li>1. Discussion of and Possible Motion to Recommend that the Board Adopt Amendments to ACERA’s Directed Brokerage (DB) Policy (Placeholder)</li> <li>2. Discussion of and Possible Motion to Recommend to the Board to Approve an up to \$XX million Investment in XX as part of ACERA’s Private Equity Portfolio – XXXX, Pending Completion of Legal and Investment Due Diligence and Successful Contract Negotiations (Placeholder)</li> <li>3. Discussion of and Possible Motion to Recommend to The Board to Approve Updated Private Equity Policy</li> <li>4. Discussion of and Possible Motion to Adopt Search Criteria for Private Equity Fund-of-Funds</li> </ol>	
December 13	<ol style="list-style-type: none"> <li>1. Interview of the Finalists for ACERA’s Emerging Markets Equity Manager Search – International Equities and Possible Motion by the Investment Committee to Recommend Finalist(s) to the Board (Placeholder)</li> <li>2. Discussion of and Possible Motion to Recommend to the Board to Approve an up to \$XX million Investment in XX as part of ACERA’s Private Equity Portfolio – XXXX, Pending Completion of Legal and Investment Due Diligence and Successful Contract Negotiations (Placeholder)</li> </ol>	<ol style="list-style-type: none"> <li>1. Semiannual Performance Review for the Period Ending September 30, 2023 – Total Fund and Public Markets including Absolute Return</li> <li>2. Semiannual Performance Review for the Period Ending June 30, 2023 – Private Equity</li> <li>3. Semiannual Performance Review for the Period Ending June 30, 2023 – Real Assets</li> <li>4. Semiannual Performance Review for the Period Ending June 30, 2023 – Private Credit</li> </ol>

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## Investment Committee Workplan for 2023

June 14, 2023

### Action Items

### Information Items

<p>3. Discussion of and Possible Motion to Recommend to the Board to Approve an up to \$XX million Investment in XX as part of ACERA’s Private Credit Portfolio, Pending Completion of Legal and Investment Due Diligence and Successful Contract Negotiations (Placeholder)</p>	<p>5. Semiannual Performance Review for the Period Ending June 30, 2023 – Real Estate</p> <p>6. CA Gov. Code § 7514.7 Information Report</p> <p>7. Annual Update – ESG Implementation Plan</p> <p>8. <i>Quarterly report of ACERA’s investment manager, consultant, and custodian bank fees for the third quarter of 2023</i></p> <p>9. <i>Quarterly report on ACERA’s rebalancing activities for the third quarter 2023</i></p> <p>10. <i>Quarterly report on ACERA’s securities lending activities for the third quarter of 2023</i></p> <p>11. <i>Quarterly report on ACERA’s Directed Brokerage (DB) Program for the third quarter of 2023</i></p> <p>12. <i>Quarterly report on Investment Products and Services Introductions (IPSI) for the third quarter of 2023</i></p> <p>13. <i>Updated Investment Committee Work Plan 2023</i></p>
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