



## **AGENDA**

### **RETIREMENT BOARD MEETING**

REGULAR MEETING  
February 28, 2024  
9:00 a.m.

Board Conference Room  
1200 Concord Avenue, Suite 350  
Concord, California

THE RETIREMENT BOARD MAY DISCUSS AND TAKE ACTION ON THE FOLLOWING:

1. Pledge of Allegiance.
2. Public Comment (3 minutes/speaker).

#### ***CONSENT ITEMS***

- 3.A All Consent Items are to be approved by one action unless a Board Member requests separate action on a specific item. (Action Item)
  - I. Receive the Contra Costa Department of Child Support Services employer audit report as presented to the Audit Committee at the February 14, 2024 meeting.
  - II. Receive the Contra Costa County Counsel employer audit report as presented to the Audit Committee at the February 14, 2024 meeting.
- 3.B Consider and take possible action on Consent Items previously removed, if any. (Action Item)

#### ***CLOSED SESSION***

4. PUBLIC EMPLOYMENT (Government Code § 54957(b))  
Title: Chief Executive Officer

#### ***OPEN SESSION***

5. Review of total portfolio performance for period ending December 31, 2023. (Presentation Item)
  - a. Presentation from Verus
  - b. Presentation from staff

The Retirement Board will provide reasonable accommodations for persons with disabilities planning to attend Board meetings who contact the Retirement Office at least 24 hours before a meeting.

6. Report from AC Chair on February 14, 2024 meeting. (Presentation Item)
7. Consider authorizing the attendance of Board: (Action Item)
  - a. Siguler Guff & Company's 2024 Annual Conference, May 1-2, 2024, New York, NY. (Note: Conflict with Board Meeting)
  - b. SACRS Spring Conference, May 7-10, 2024, Santa Barbara, CA.
8. Miscellaneous
  - a. Staff Report
  - b. Outside Professionals' Report
  - c. Trustees' comments

The Retirement Board will provide reasonable accommodations for persons with disabilities planning to attend Board meetings who contact the Retirement Office at least 24 hours before a meeting.

Meeting Date  
**02/28/2024**  
Agenda Item  
**#3.A-1**



**EMPLOYER AUDIT REPORT**

January 4, 2024

**EMPLOYER AUDIT**

**Contra Costa County**

**Department of Child Support Services**

## TABLE OF CONTENTS

|  |           |
|--|-----------|
| <b>AUDIT TRANSMITTAL LETTER.....</b>   | <b>1</b>  |
| <b>BACKGROUND.....</b>   | <b>3</b>  |
| <b>SCOPE .....</b>   | <b>5</b>  |
| <b>OBSERVATIONS AND FINDINGS .....</b>   | <b>6</b>  |
| ACCURACY OF PAYROLL INFORMATION PROVIDED TO CCCERA.....                        | 6         |
| PAYROLL AND REPORTING PROCESS AND RECEIVABLES REVIEW .....                     | 6         |
| INPUT FILE REVIEW .....  | 6         |
| COMPENSATION LIMITS.....   | 7         |
| PAYROLL REPORTING – PENSIONABLE COMPENSATION AND CONTRIBUTION REVIEW .....     | 7         |
| <b>SALARIES IN ACCORDANCE WITH PUBLICLY AVAILABLE PAY SCHEDULE .....</b>       | <b>10</b> |
| <b>ENROLLMENT OF ELIGIBLE EMPLOYEES.....</b>                                   | <b>11</b> |
| <b>PENSION BENEFIT REVIEW .....</b>  | <b>13</b> |
| REVIEW OF PENSION BENEFIT CALCULATIONS.....                                    | 13        |
| RETIREE RETURN TO WORK MONITORING.....   | 13        |
| FORFEITURE OF BENEFITS EARNED OR ACCRUED FROM THE COMMISSION OF A FELONY ..... | 13        |
| INTERNAL REVENUE CODE SECTION 415 COMPLIANCE .....                             | 13        |
| <b>FOLLOW-UP ITEMS .....</b>   | <b>14</b> |
| <b>EMPLOYER REPLY .....</b>  | <b>15</b> |



January 4, 2024

Lori Cruz, Director  
Contra Costa County Department of Child Support Services  
50 Douglas Dr., Suite 100  
Martinez, CA 94553

RE: CCCERA Employer Audit Report – Contra Costa County Department of Child Support Services

Dear Ms. Cruz,

Enclosed is the employer audit report of Contra Costa County Department of Child Support Services (DCSS), conducted pursuant to Government Code Section 31543. I want to thank you and all DCSS staff for their assistance in gathering all the records and documents and making them readily available during this audit. This cooperation was greatly appreciated and allowed for the audit to be completed in an efficient manner.

The *Employer Audit Report* is enclosed for your review. There were no “Follow-Up Items” noted for DCSS to address. However, the audit noted gaps in the area of enrollment packets. CCCERA is in receipt of a written response from DCSS dated December 19, 2023. This response will be included in the “*Final Report*” which will be submitted to CCCERA’s Audit Committee for its review.

This report will be placed on the agenda and will be presented to the CCCERA Board of Retirement Audit Committee at its February 14, 2024 meeting.

In addition, I would like to extend my gratitude to DCSS fiscal and administrative staff and the courtesy that they extended to CCCERA during the review. Should you wish to discuss or have any questions regarding the items reviewed and the observations contained within this report, please contact me at 925-521-3960.



Best regards,



Cherry Chang  
Internal Auditor

CC: Jessica Shepard, Administrative Services Officer, DCSS  
Hannah Britton, Administrative Services Assistant III, DCSS  
Monica Nino, Contra Costa County Administrator  
Robert Campbell, Contra Costa County Auditor-Controller  
Christina Dunn, Acting Chief Executive Officer, CCCERA  
Wrally Dutkiewicz, Compliance Officer, CCCERA

## BACKGROUND

The Contra Costa County Employees' Retirement Association (CCCERA) is a public employee retirement system that was established by Contra Costa County on July 1, 1945, and is administered by the Board of Retirement (Board) to provide service retirement, disability, death, and survivor benefits for Contra Costa County (County) employees and 15 other participating agencies under the California State Government Code, Section 31450, *et. seq.* (County Employees Retirement Law of 1937 or CERL) and the California Public Employees' Pension Reform Act of 2013 (PEPRA).

CCCERA administers the retirement benefits for the employees of Contra Costa County and participating District employers. Participating employers within the CCCERA retirement system transmit payroll information and contributions to fund the benefits for their employees. CCCERA sets up retirees' accounts, processes applications, calculates retirement allowances, prepares monthly retirement benefit payment rolls, and makes adjustments to retirement benefits when needed.

Retirement allowances are computed in accordance with statute using three factors: years of service, age at retirement, and final compensation. For Legacy (pre-PEPRA) members, final compensation is defined as the highest average annual compensation earnable (as defined in G.C. Section 31461) by a member during one or three consecutive years of employment depending on the member's Tier. For PEPRA members, final compensation is defined as the highest average annual pensionable compensation (as defined in G.C. Section 7522.34) earned by the member during a period of 36 consecutive months.

The employer's knowledge of the rules relating to membership and payroll reporting facilitates the employer in providing CCCERA with appropriate employee information. Correct enrollment of eligible employees and correct reporting of payroll information are necessary for the accurate computation of a member's retirement allowance.

Contra Costa County Department of Child Support Services (DCSS) was created by the Governor in 2000 to provide child support services and enforcement in the county on behalf of the state of California. Its funding source is allocated by the California Department of Child Support Services.

DCSS is responsible for establishing, collecting and distributing child and medical support for minors. Some of the key functions include establishing child support orders, enforcing court-ordered child support payments, locating parents, modifying court orders when appropriate, and engaging in outreach and education programs to parents. In FY 2021-22, DCSS collected an average of \$4,460 per child support case for the year, ranking in the top six in the state for this metric.

Per CCCERA records, DCSS had 130 active members as of 6/30/23. For these members, the County reported pensionable compensation of approximately \$9.7 and \$9.6 million in 2021 and 2022, respectively. The table below summarizes membership counts, pensionable compensation, pension contribution, retiree counts and pension benefit payment for calendar years 2021, 2022 and 2023.

## Contra Costa County Department of Child Support Services

|                          | CY2021      | CY2022      | CY2023*     |
|--------------------------|-------------|-------------|-------------|
| Active Members           | 134         | 134         | 130         |
| Pensionable Compensation | \$9,721,339 | \$9,617,418 | \$4,832,871 |
| Employer Contribution    | \$2,606,821 | \$2,652,305 | \$1,290,701 |
| Member Contribution      | \$1,016,160 | \$1,043,111 | \$513,455   |
| Retirees & Beneficiaries | 127         | 131         | 134         |
| Pension Benefit Payment  | \$4,296,955 | \$4,515,185 | \$3,597,696 |

\* through 6/30/23 for active members and 9/1/23 for retirees



## SCOPE

The 2013 pension reform legislation granted CCCERA the authority under Government Code Section 31543 to conduct audits of employers to ensure that employee and payroll information used in the calculation of retiree pension benefits is correct and verifiable. The scope of these reviews includes:

- Correctness of retirement benefits;
- Reportable compensation;
- Enrollment in, and reinstatement to the system (GC 31554);
- Pensionable compensation (GC 31461 and GC 7522.34);
- Review MOUs with respect to compensation and salary regulations (i.e. Vacation Sales, etc.);
- Determine if compensation is paid to enhance a member's retirement benefit (GC 31461(b)(1) and GC 7522.34(c)(1));
- Evaluate employer's compliance with restrictions on retirees returning to work (GC 7522.56, I.R.S. bona fide separation and normal retirement age rules); and
- Determine if employees convicted of certain felonies have forfeited benefits earned or accrued from the commission of the felony (GC 7522.72(g) and GC 7522.74(g)).

The CCCERA audit of the Contra Costa County Department of Child Support Services was conducted virtually between November and December 2023. The review period encompassed active employee records and retiree records from January 2021 through June 2023.

## OBSERVATIONS AND FINDINGS

### ACCURACY OF PAYROLL INFORMATION PROVIDED TO CCCERA

➤ *Scope Item 1: Exceptions were observed in this section.*

### PAYROLL AND REPORTING PROCESS AND RECEIVABLES REVIEW

Pursuant to Board of Retirement Regulations Section IV: Employer pensionable payroll and corresponding pension contributions are to be reported to the retirement system timely and accurately. (*Contributions And Reporting, 2. Due Dates, 4. Employer Certification*).

Due Dates:

Each employer shall report to the Association in a manner and frequency as determined by the Board sufficient for the Board to credit contributions and service to each member's record.

Unless otherwise specified, reports shall be due no later than the tenth of each month for the previous month's payroll and shall be accompanied by member and employer contributions. If the tenth of the month falls on a weekend or holiday, the due date shall be the last working day before the tenth. Reports, which are unreadable or incorrect, shall not be accepted and shall be returned to the employer. (Emphasis added.)

Reports and contributions received after the due date shall be considered late and subject to a late reporting penalty equal to the prime rate in effect on the due date computed on a daily, non-compounding basis and applied to the contributions due.

The County represents that due to its large payroll size and complex reconciliation process, it requires an additional 30 days beyond the deadline set forth in CCCERA's Regulations for reporting. The County will provide CCCERA with contribution report no later than the tenth day of the second month following the payroll month that is the subject of the report.

➤ *Observation 1: Any observations in this area have been communicated to the County Auditor-Controller's Office.*

### INPUT FILE REVIEW

#### Employer Certification

Each payroll and pension contribution report shall include or be accompanied by a certification, under penalty of perjury, as to its accuracy. The certification shall be made by a duly authorized representative of the employer. (Board of Retirement Regulations *Section IV, 4. Employer Certification*.)

➤ *Observation 2: Any observations in this area have been communicated to the County Auditor-Controller's Office and CCCERA Management.*

## COMPENSATION LIMITS

Federal and state laws place annual limits on the compensation that can be used to determine contributions and benefits for CCCERA plan members.

Legacy Members:

- The Internal Revenue Code Section 415(b) provides for dollar limitations on benefits and contributions under qualified retirement plans which are adjusted annually for cost-of-living increases.
- Members who commenced participation in CCCERA on or after January 1, 1996 are subject to the annual federal Internal Revenue Code Section 401(a)(17) compensation limit.
- For CERL benefit formulas (General Tiers 1, 3, Safety Tiers A & C), the 2022 calendar year compensation limit was increased by the I.R.S. from \$290,000 to \$305,000 for calendar year 2021.
- Members who commenced participation in CCCERA prior to January 1, 1996 are not subject to the Internal Revenue Code annual compensation limit.

PEPRA Members:

- For new employees who commenced participation in CCCERA on or after January 1, 2013 under PEPRA benefit formulas (General Tiers 4,5, Safety Tiers D & E), the compensation which exceeds that annual pensionable compensation limit under California Government Code Section 7522.10(c) and (d) is not included in determining benefits or contributions.
- The 2022 calendar year PEPRA compensation limits are as follows:
  - For employees enrolled in Social Security – increased to \$134,974.
  - For employees not enrolled in Social Security – increased to \$161,969.
- The 2021 calendar year PEPRA compensation limits are as follows:
  - For employees enrolled in Social Security the limit was \$128,059.
  - For employees not enrolled in Social Security the limit was \$153,671.

➤ *Observation 3: None*

## PAYROLL REPORTING – PENSIONABLE COMPENSATION AND CONTRIBUTION REVIEW

### Compensation Earnable Applicable Law for Legacy Members

"Compensation earnable" by a member means the average compensation as determined by the board, for the period under consideration upon the basis of the average number of days ordinarily worked by persons in the same grade or class of positions during the period, and at the same rate of pay. The computation for any absence shall be based on the compensation of the position held by the member at

the beginning of the absence. Compensation, as defined in Section 31460, that has been deferred shall be deemed "compensation earnable" when earned, rather than when paid. (Gov. Code Section 31461(a).)

CCCERA's Compensation Earnable Policy sets forth the definition of Compensation Earnable as well as exclusions from Compensation Earnable.

Pursuant to CCCERA's "Compensation Earnable Policy"<sup>1</sup>, Section III.D. "Compensation Earnable" excludes payments for additional services rendered outside of normal working hours.

CCCERA Policies and Practices. Pay received for services rendered outside normal working hours is not included in "compensation earnable." To be included, the time for which compensation is received:

- (1) must be the normal working hours set forth in the applicable regulation, resolution or employment agreement;
- (2) must be required by the employer to be worked by the employee (as distinguished from voluntarily worked) as set forth in the applicable regulation, resolution or employment agreement; and
- (3) must be ordinarily worked by all others in the same grade or classification at the same rate of pay.

Pay that will be reviewed under these conditions is often described as "standby" and "on-call." Employers should utilize two separate pay codes: one for pensionable pay that meets the above three-point test; and the other for non-pensionable pay that does not meet the test; and must report to CCCERA as pensionable only that pay that meets the test set forth above. Employer contributions should only be taken against the pensionable pay code.

### **Pensionable Compensation Applicable Law for PEPRA members**

PEPRA defines "pensionable compensation" as follows:

"Pensionable compensation" of a new member of any public retirement system means the normal monthly rate of pay or base pay of the member paid in cash to similarly situated members of the same group or class of employment for services rendered on a full-time basis during normal working hours, pursuant to publicly available pay schedules.

Compensation that has been deferred shall be deemed pensionable compensation when earned rather than when paid. (Gov. Code Section 7522.34(a) and (b).)

PEPRA excludes from "pensionable compensation" the following:

---

<sup>1</sup> [https://www.cccera.org/sites/main/files/file-attachments/post\\_ab\\_197\\_compensation\\_earnable\\_policy\\_final.pdf?1620253572](https://www.cccera.org/sites/main/files/file-attachments/post_ab_197_compensation_earnable_policy_final.pdf?1620253572)

- (1) Any compensation determined by the board to have been paid to increase a member's retirement benefit under that system.
- (2) Compensation that had previously been provided in kind to the member by the employer or paid directly by the employer to a third party other than the retirement system for the benefit of the member and which was converted to and received by the member in the form of a cash payment.
- (3) Any one-time or ad hoc payments made to a member.
- (4) Severance or any other payment that is granted or awarded to a member in connection with or in anticipation of a separation from employment, but is received by the member while employed.
- (5) Payments for unused vacation, annual leave, personal leave, sick leave, or compensatory time off, however denominated, whether paid in a lump sum or otherwise, regardless of when reported or paid.
- (6) Payments for additional services rendered outside of normal working hours, whether paid in a lump sum or otherwise.
- (7) Any employer-provided allowance, reimbursement, or payment, including, but not limited to, one made for housing, vehicle, or uniforms.
- (8) Compensation for overtime work, other than as defined in Section 207(k) of Title 29 of the United States Code [FLSA].
- (9) Employer contributions to deferred compensation or defined contribution plans.
- (10) Any bonus paid in addition to the compensation described in subdivision (a) [of G.C. § 7522.34].
- (11) Any other form of compensation a public retirement board determines is inconsistent with the requirements of subdivision (a) [of G.C. § 7522.34].
- (12) Any other form of compensation a public retirement board determines should not be pensionable compensation. (Gov. Code Section 7522.34(a) and (b).)

Pursuant to CCCERA's "Pensionable Compensation Policy", Section III:

The CCCERA Board has determined that "Pensionable Compensation" includes "base pay." Pensionable compensation does not include any pay other than base pay, in accordance with Govt. Code Sections 7522.34(c)(11) and (12).

Pensionable compensation (GC 31461 and 7522.34) is to be reported to the retirement system and the corresponding contributions are to be reported to the retirement system.

➤ *Observation 4: None*

## SALARIES IN ACCORDANCE WITH PUBLICLY AVAILABLE PAY SCHEDULE

➤ *Scope Item 2: No exceptions were observed in this section.*

Pursuant to CCCERA's Policy On Determining "Pensionable Compensation" Under PEPRA For Purposes Of Calculating Retirement Benefits, a "publicly available pay schedule" must meet all of the following requirements:

1. Has been duly approved and adopted by the employer's governing body in accordance with requirements of applicable public meetings laws;
2. Identifies the position title for every employee position;
3. Shows the pay rate for each identified position, which may be stated as a single amount or as multiple amounts within a range;
4. Indicates the time base, including, but not limited to, whether the time base is hourly daily, bi-weekly, monthly, bi-monthly, or annually;
5. Is posted at the office of the employer or immediately accessible and available for public review from the employer during normal business hours or posted on the employer's internet website;
6. Indicates an effective date and date of any revisions;
7. Is retained by the employer and available for public inspection for not less than five years; and
8. Does not reference another document in lieu of disclosing the pay rate.

➤ *Observation 5: No exceptions were observed in this section.*

## ENROLLMENT OF ELIGIBLE EMPLOYEES

➤ *Scope Item 3: Missing/incomplete Enrollment Packets were noted during the review.*

### 1. Exclusion from Membership – By Type of Employment

- A. All officers and employees of the County or districts shall be members of the association as provided in Article 4 under Sections 31550-31567 of the County Employees' Retirement Law of 1937 (Gov. Code Secs. 31450, et seq. "CERL"), unless excluded from membership by this Section.
- B. The following employees shall be excluded from membership:
  - i. Temporary, seasonal or independent contract employees who are employed or re-employed for temporary service or at certain specified periods each year.
  - ii. Intermittent or permanent-intermittent employees who are appointed to serve less than 80% of the full number of working hours required of regular employees or who actually serve less than 80% of such full number of working hours in one year as certified by their appointing authority.
  - iii. Part-time employees whose service for the County or district is less than fifty (50) percent of the full number or working hours required of fulltime employees at that employer.
  - iv. Project employees, unless the appointing authority certifies that the project is expected to be of one year or more in duration on a greater than part-time basis.
  - v. Provisional employees, unless they otherwise meet the requirements for reciprocal benefits with other retirement systems under Article 15 of CERL.
- C. In making its determination regarding an employee's inclusion in or exclusion from membership, the Board will not rely solely upon the term given to the type of employment. Rather, the Board will rely upon such additional facts such as the nature of the employment, its expected or actual duration, and its relationship to what is considered full-time, permanent employment.

### 2. Exclusion from Membership – by Compensation

Except as otherwise herein provided, all employees of the County or district who receive compensation amounting to less than one-hundred (\$100) dollars per month, and in the case of employees paid on other than a monthly basis an average of one-hundred (\$100) dollars per month for the preceding year, including maintenance valued according to the schedule adopted by the governing body, are hereby excluded and exempted from membership in the Retirement Association. Any member of the Retirement Association whose salary is reduced to an amount less than one-hundred (\$100) dollars per

month shall have the option of continuing or discontinuing his/her active membership in the Association.

**2.1 Exclusion from Membership – by Waiver**

Newly hired employees aged 60 and older may waive membership as authorized by Gov. Code Section 31552. Any such waiver of membership shall be effective only if it is submitted to the CCCERA Retirement Chief Executive Officer within 90 days of the employee’s date of hire; provided, however, that the Retirement Chief Executive Officer may, in his/her sole and reasonable discretion, waive the time limitation if the newly hired employee establishes good cause for such a waiver.

**3. Certifications**

Every employee of the County or district within the county whose employees are members of the Association shall, upon entry into the Association, complete a sworn statement as provided for in Gov. Code Section 31526(b). A certified copy of the member’s birth certificate or other evidence of birth may be required by the Board.

It shall be the employer’s responsibility to ensure compliance with this section. The Board shall assess the employer five hundred (\$500) dollars per employee for every month or fraction thereof that the required certification is not submitted. The Board shall notify the employer in writing of the imposition of assessment at least thirty days before the assessment.

➤ *Observation 6: Enrollment forms were missing or incomplete for nine (9) members.*

*CCCERA reviewed a sample of 44 members hired during 2019-2023 for testing. The audit found 9 members with missing or incomplete enrollment forms on file as summarized in Table 1 below. In most cases, CCCERA Member Services sent letters to the members directly requesting the missing information but did not receive a response. CCCERA notified Contra Costa County Department of Child Support Services (DCSS) during the audit of the missing forms and DCSS has facilitated in securing the enrollment forms from the seven (7) members still employed with DCSS. CCCERA Member Services has contacted the remaining two (2) members to obtain the missing/incomplete enrollment forms.*

Table 1: Summary of Missing Enrollment Forms by Member Employment Status

| Member Status             | Member Count | Action Item  |
|---------------------------|--------------|--|
| Employed with DCSS        | 7            | DCSS to obtain missing enrollment forms from members                 |
| Separated from the County | 2            | CCCERA Member Services to contact members to obtain enrollment forms |
| <b>Total of 9 members</b> |              |  |



## PENSION BENEFIT REVIEW

➤ *Scope Item 4: No exceptions were observed in this section.*

### REVIEW OF PENSION BENEFIT CALCULATIONS

1. Compensation Policies
  - i. *Compensation Earnable Policy* – Adopted: 9/10/2014, Amended: 5/5/2021; GC 31461;
  - ii. *Policy On Determining “Pensionable Compensation” Under PEPR A For Purposes Of Calculating Retirement Benefits* - Adopted: 9/10/2014; GC 7522.34;
  - iii. *Policy Regarding Assessment and Determination Of Compensation Enhancements* – Adopted 11/1/2012, Amended: 3/8/2017, Last Reviewed: 4/12/2023; GC 31461(b)(1) and 7522.34(c)(1)

➤ *Observation 7: None*

### RETIREE RETURN TO WORK MONITORING

2. Retiree Return to Work Monitoring
  - i. GC 7522.56 Retired Persons; Service and Employment Restrictions

➤ *Observation 8: None*

### FORFEITURE OF BENEFITS EARNED OR ACCRUED FROM THE COMMISSION OF A FELONY

3. Felony Forfeiture Monitoring and Notification – GC 7522.72(g) and GC 7522.74(g)

➤ *Observation 9: None*

### INTERNAL REVENUE CODE SECTION 415 COMPLIANCE

As adopted on December 8, 2010 and amended on January 9, 2013, July 11, 2018, September 8, 2021 and August 9, 2023

➤ *Observation 10: None*

## FOLLOW-UP ITEMS

The following item was noted during the review and requires follow-up by Contra Costa County Department of Child Support Services and CCCERA:

Contra Costa County Department of Child Support Services has no outstanding follow-up items resulting from the audit.

## EMPLOYER REPLY

CCCERA received the following reply from Contra Costa County Department of Child Support Services:



### Contra Costa County Department of Child Support Services

Lori A Cruz, Director  
Matthew A Brega, Assistant Director

50 Douglas Drive, Suite 100  
Martinez, California 94553-8507  
[www.cccdcss.us](http://www.cccdcss.us)

December 19, 2023

Cherry Chang, Internal Auditor  
Contra Costa County Employees' Retirement Association  
1200 Concord Ave #300  
Concord, CA 94520

RE: Response to CCCERA Employer Audit Report – Contra Costa County Department of Child Support Services

Dear Ms. Chang,

Contra Costa County Department of Child Support Services acknowledges the observation documented in the CCCERA Employer Audit Report. The department implemented an updated checklist to ensure both mandatory forms 101 and 102 are completed and returned by all new employees. In addition, the department will utilize USPS to mail completed packets to ensure packets are received by CCCERA. The department has previously sent enrollment packets via interoffice mail but was notified by the Internal Auditor that most departments use traditional mailing services.

The department would like to thank CCCERA for the ease and efficiency of the audit. The observation has led to better departmental procedures.

Best Regards,

  
Lori A. Cruz  
Director of Child Support Services



Contra Costa County Employees'  
Retirement Association

## **EMPLOYER AUDIT REPORT**

January 18, 2024

# **EMPLOYER AUDIT**

**Contra Costa County Counsel**

## TABLE OF CONTENTS

|  |           |
|--|-----------|
| <b>AUDIT TRANSMITTAL LETTER</b> .....  | <b>1</b>  |
| <b>BACKGROUND</b> .....  | <b>3</b>  |
| <b>SCOPE</b> .....   | <b>5</b>  |
| <b>OBSERVATIONS AND FINDINGS</b> .....   | <b>6</b>  |
| ACCURACY OF PAYROLL INFORMATION PROVIDED TO CCCERA.....                        | 6         |
| PAYROLL AND REPORTING PROCESS AND RECEIVABLES REVIEW .....                     | 6         |
| INPUT FILE REVIEW .....  | 6         |
| COMPENSATION LIMITS.....   | 7         |
| PAYROLL REPORTING – PENSIONABLE COMPENSATION AND CONTRIBUTION REVIEW .....     | 7         |
| <b>SALARIES IN ACCORDANCE WITH PUBLICLY AVAILABLE PAY SCHEDULE</b> .....       | <b>10</b> |
| <b>ENROLLMENT OF ELIGIBLE EMPLOYEES</b> .....                                  | <b>11</b> |
| <b>PENSION BENEFIT REVIEW</b> .....  | <b>13</b> |
| REVIEW OF PENSION BENEFIT CALCULATIONS.....                                    | 13        |
| RETIREE RETURN TO WORK MONITORING.....   | 13        |
| FORFEITURE OF BENEFITS EARNED OR ACCRUED FROM THE COMMISSION OF A FELONY ..... | 13        |
| INTERNAL REVENUE CODE SECTION 415 COMPLIANCE .....                             | 13        |
| <b>FOLLOW-UP ITEMS</b> .....   | <b>14</b> |
| <b>EMPLOYER REPLY</b> .....  | <b>15</b> |



January 18, 2024

Thomas L. Geiger  
Contra Costa County Counsel  
1025 Escobar Street, 3rd Floor  
Martinez, CA 94553

RE: CCCERA Employer Audit Report – Contra Costa County Counsel

Dear Mr. Geiger,

Enclosed is the employer audit report of Contra Costa County Counsel, conducted pursuant to Government Code Section 31543. I want to thank you and all County Counsel staff for their assistance in gathering all the records and documents and making them readily available during this audit. This cooperation was greatly appreciated and allowed for the audit to be completed in an efficient manner.

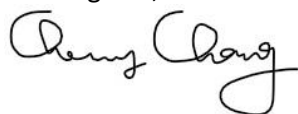
The *Employer Audit Report* is enclosed for your review. There were no “Follow-Up Items” noted for the County Counsel to address. However, the audit noted gaps in the areas of payroll reporting and enrollment packets. CCCERA is in receipt of a written response from the County Counsel dated January 8, 2024. This response is included in the “*Final Report*” which will be submitted to CCCERA’s Audit Committee for its review.

This report will be placed on the agenda and will be presented to the CCCERA Board of Retirement Audit Committee at its February 14, 2024 meeting.

In addition, I would like to extend my gratitude to County Counsel’s fiscal and administrative staff and the courtesy that they extended to CCCERA during the review. Should you wish to discuss or have any questions regarding the items reviewed and the observations contained within this report, please contact me at 925-521-3960.



Best regards,



Cherry Chang  
Internal Auditor

CC: Rebecca Hooley, Assistant County Counsel, County Counsel's Office  
Wanda McAdoo, Administrative Services Manager, County Counsel's Office  
Monica Nino, Contra Costa County Administrator  
Robert Campbell, Contra Costa County Auditor-Controller  
Christina Dunn, Acting Chief Executive Officer, CCCERA  
Wrally Dutkiewicz, Compliance Officer, CCCERA

## BACKGROUND

The Contra Costa County Employees' Retirement Association (CCCERA) is a public employee retirement system that was established by Contra Costa County on July 1, 1945, and is administered by the Board of Retirement (Board) to provide service retirement, disability, death, and survivor benefits for Contra Costa County (County) employees and 15 other participating agencies under the California State Government Code, Section 31450, *et. seq.* (County Employees Retirement Law of 1937 or CERL) and the California Public Employees' Pension Reform Act of 2013 (PEPRA).

CCCERA administers the retirement benefits for the employees of Contra Costa County and participating District employers. Participating employers within the CCCERA retirement system transmit payroll information and contributions to fund the benefits for their employees. CCCERA sets up retirees' accounts, processes applications, calculates retirement allowances, prepares monthly retirement benefit payment rolls, and makes adjustments to retirement benefits when needed.

Retirement allowances are computed in accordance with statute using three factors: years of service, age at retirement, and final compensation. For Legacy (pre-PEPRA) members, final compensation is defined as the highest average annual compensation earnable (as defined in G.C. Section 31461) by a member during one or three consecutive years of employment depending on the member's Tier. For PEPRA members, final compensation is defined as the highest average annual pensionable compensation (as defined in G.C. Section 7522.34) earned by the member during a period of 36 consecutive months.

The employer's knowledge of the rules relating to membership and payroll reporting facilitates the employer in providing CCCERA with appropriate employee information. Correct enrollment of eligible employees and correct reporting of payroll information are necessary for the accurate computation of a member's retirement allowance.

Created in August 1969, Contra Costa County Counsel serves as the civil legal advisor to the Board of Supervisors, the County Administrator, County elected officials, County departments, boards and commissions, and various other public agencies in Contra Costa County. By fee contract, the County Counsel's Office also provides legal services to the County Superintendent of Schools, the County Board of Education, and other agencies in the County.

The County Counsel's Office is comprised of 3 divisions listed below and approximately 50 employees.

- General Law Division
- Tort and Civil Rights Litigation Division
- Juvenile Dependency Division

Per CCCERA records, the County Counsel's Office had 53 active members as of 6/30/23. For the County Counsel's Office, the County reported pensionable compensation of approximately \$6.8 and \$7.8 million in 2021 and 2022, respectively. The table below summarizes membership counts, pensionable



compensation, pension contribution, retiree counts and pension benefit payment for calendar years 2021, 2022 and 2023.

|                          | CY2021      | CY2022      | CY2023*     |
|--------------------------|-------------|-------------|-------------|
| Active Members           | 51          | 56          | 53          |
| Pensionable Compensation | \$6,806,206 | \$7,842,041 | \$4,188,778 |
| Employer Contribution    | \$1,963,566 | \$2,157,095 | \$1,143,446 |
| Member Contribution      | \$847,976   | \$868,916   | \$466,323   |
| Retirees & Beneficiaries | 37          | 38          | 41          |
| Pension Benefit Payment  | \$3,324,542 | \$3,451,576 | \$2,933,970 |

\* through 6/30/23 for active members and 9/1/23 for retirees



## SCOPE

The 2013 pension reform legislation granted CCCERA the authority under Government Code Section 31543 to conduct audits of employers to ensure that employee and payroll information used in the calculation of retiree pension benefits is correct and verifiable. The scope of these reviews includes:

- Correctness of retirement benefits;
- Reportable compensation;
- Enrollment in, and reinstatement to the system (GC 31554);
- Pensionable compensation (GC 31461 and GC 7522.34);
- Review MOUs with respect to compensation and salary regulations (i.e. Vacation Sales, etc.);
- Determine if compensation is paid to enhance a member's retirement benefit (GC 31461(b)(1) and GC 7522.34(c)(1));
- Evaluate employer's compliance with restrictions on retirees returning to work (GC 7522.56, I.R.S. bona fide separation and normal retirement age rules); and
- Determine if employees convicted of certain felonies have forfeited benefits earned or accrued from the commission of the felony (GC 7522.72(g) and GC 7522.74(g)).

The CCCERA audit of the Contra Costa County Counsel was conducted virtually between September and December 2023. The review period encompassed active employee records and retiree records from January 2021 through June 2023.

## OBSERVATIONS AND FINDINGS

### ACCURACY OF PAYROLL INFORMATION PROVIDED TO CCCERA

➤ *Scope Item 1: Exceptions were observed in this section.*

### PAYROLL AND REPORTING PROCESS AND RECEIVABLES REVIEW

Pursuant to Board of Retirement Regulations Section IV: Employer pensionable payroll and corresponding pension contributions are to be reported to the retirement system timely and accurately. (Contributions And Reporting, 2. Due Dates, 4. Employer Certification).

Due Dates:

Each employer shall report to the Association in a manner and frequency as determined by the Board sufficient for the Board to credit contributions and service to each member’s record.

Unless otherwise specified, reports shall be due no later than the tenth of each month for the previous month’s payroll and shall be accompanied by member and employer contributions. If the tenth of the month falls on a weekend or holiday, the due date shall be the last working day before the tenth. Reports, which are unreadable or incorrect, shall not be accepted and shall be returned to the employer. (Emphasis added.)

Reports and contributions received after the due date shall be considered late and subject to a late reporting penalty equal to the prime rate in effect on the due date computed on a daily, non-compounding basis and applied to the contributions due.

The County represents that due to its large payroll size and complex reconciliation process, it requires an additional 30 days beyond the deadline set forth in CCCERA’s Regulations for reporting. The County will provide CCCERA with contribution reports no later than the tenth day of the second month following the payroll month that is the subject of the report, with the exception of the month of December contribution reporting.

➤ *Observation 1: Any observations in this area have been communicated to the County Auditor-Controller’s Office.*

### INPUT FILE REVIEW

#### Employer Certification

Each payroll and pension contribution report shall include or be accompanied by a certification, under penalty of perjury, as to its accuracy. The certification shall be made by a duly authorized representative of the employer. (Board of Retirement Regulations *Section IV, 4. Employer Certification.*)

➤ *Observation 2: Any observations in this area have been communicated to the County Auditor-Controller’s Office and CCCERA Management.*

**COMPENSATION LIMITS**

Federal and state laws place annual limits on the compensation that can be used to determine contributions and benefits for CCCERA plan members.

Legacy Members:

- The Internal Revenue Code Section 415(b) provides for dollar limitations on benefits and contributions under qualified retirement plans which are adjusted annually for cost-of-living increases.
- Members who commenced participation in CCCERA on or after January 1, 1996 are subject to the annual federal Internal Revenue Code Section 401(a)(17) compensation limit.
- For CERL benefit formulas (General Tiers 1, 3, Safety Tiers A & C), the 2022 calendar year compensation limit was increased by the I.R.S. from \$290,000 to \$305,000 for calendar year 2021.
- Members who commenced participation in CCCERA prior to January 1, 1996 are not subject to the Internal Revenue Code annual compensation limit.

PEPRA Members:

- For new employees who commenced participation in CCCERA on or after January 1, 2013 under PEPRA benefit formulas (General Tiers 4,5, Safety Tiers D & E), the compensation which exceeds that annual pensionable compensation limit under California Government Code Section 7522.10(c) and (d) is not included in determining benefits or contributions.
- The 2022 calendar year PEPRA compensation limits are as follows:
  - For employees enrolled in Social Security – increased to \$134,974.
  - For employees not enrolled in Social Security – increased to \$161,969.
- The 2021 calendar year PEPRA compensation limits are as follows:
  - For employees enrolled in Social Security the limit was \$128,059.
  - For employees not enrolled in Social Security the limit was \$153,671.

➤ *Observation 3: None*

**PAYROLL REPORTING – PENSIONABLE COMPENSATION AND CONTRIBUTION REVIEW**

**Compensation Earnable Applicable Law for Legacy Members**

"Compensation earnable" by a member means the average compensation as determined by the board, for the period under consideration upon the basis of the average number of days ordinarily worked by persons in the same grade or class of positions during the period, and at the same rate of pay. The



computation for any absence shall be based on the compensation of the position held by the member at the beginning of the absence. Compensation, as defined in Section 31460, that has been deferred shall be deemed "compensation earnable" when earned, rather than when paid. (Gov. Code Section 31461(a).)

CCCERA's Compensation Earnable Policy sets forth the definition of Compensation Earnable as well as exclusions from Compensation Earnable.

Pursuant to CCCERA's "Compensation Earnable Policy"<sup>1</sup>, Section III.D. "Compensation Earnable" excludes payments for additional services rendered outside of normal working hours.

CCCERA Policies and Practices. Pay received for services rendered outside normal working hours is not included in "compensation earnable." To be included, the time for which compensation is received:

- (1) must be the normal working hours set forth in the applicable regulation, resolution or employment agreement;
- (2) must be required by the employer to be worked by the employee (as distinguished from voluntarily worked) as set forth in the applicable regulation, resolution or employment agreement; and
- (3) must be ordinarily worked by all others in the same grade or classification at the same rate of pay.

Pay that will be reviewed under these conditions is often described as "standby" and "on-call." Employers should utilize two separate pay codes: one for pensionable pay that meets the above three-point test; and the other for non-pensionable pay that does not meet the test; and must report to CCCERA as pensionable only that pay that meets the test set forth above. Employer contributions should only be taken against the pensionable pay code.

### **Pensionable Compensation Applicable Law for PEPRA members**

PEPRA defines "pensionable compensation" as follows:

"Pensionable compensation" of a new member of any public retirement system means the normal monthly rate of pay or base pay of the member paid in cash to similarly situated members of the same group or class of employment for services rendered on a full-time basis during normal working hours, pursuant to publicly available pay schedules.

Compensation that has been deferred shall be deemed pensionable compensation when earned rather than when paid. (Gov. Code Section 7522.34(a) and (b).)

PEPRA excludes from "pensionable compensation" the following:

---

<sup>1</sup> [https://www.cccera.org/sites/main/files/file-attachments/post\\_ab\\_197\\_compensation\\_earnable\\_policy\\_final.pdf?1620253572](https://www.cccera.org/sites/main/files/file-attachments/post_ab_197_compensation_earnable_policy_final.pdf?1620253572)

- (1) Any compensation determined by the board to have been paid to increase a member's retirement benefit under that system.
- (2) Compensation that had previously been provided in kind to the member by the employer or paid directly by the employer to a third party other than the retirement system for the benefit of the member and which was converted to and received by the member in the form of a cash payment.
- (3) Any one-time or ad hoc payments made to a member.
- (4) Severance or any other payment that is granted or awarded to a member in connection with or in anticipation of a separation from employment, but is received by the member while employed.
- (5) Payments for unused vacation, annual leave, personal leave, sick leave, or compensatory time off, however denominated, whether paid in a lump sum or otherwise, regardless of when reported or paid.
- (6) Payments for additional services rendered outside of normal working hours, whether paid in a lump sum or otherwise.
- (7) Any employer-provided allowance, reimbursement, or payment, including, but not limited to, one made for housing, vehicle, or uniforms.
- (8) Compensation for overtime work, other than as defined in Section 207(k) of Title 29 of the United States Code [FLSA].
- (9) Employer contributions to deferred compensation or defined contribution plans.
- (10) Any bonus paid in addition to the compensation described in subdivision (a) [of G.C. § 7522.34].
- (11) Any other form of compensation a public retirement board determines is inconsistent with the requirements of subdivision (a) [of G.C. § 7522.34].
- (12) Any other form of compensation a public retirement board determines should not be pensionable compensation. (Gov. Code Section 7522.34(a) and (b).)

Pursuant to CCCERA’s “Pensionable Compensation Policy”, Section III:

The CCCERA Board has determined that "Pensionable Compensation" includes "base pay." Pensionable compensation does not include any pay other than base pay, in accordance with Govt. Code Sections 7522.34(c)(11) and (12).

Pensionable compensation (GC 31461 and 7522.34) is to be reported to the retirement system and the corresponding contributions are to be reported to the retirement system.

➤ *Observation 4: Payroll adjustments were inadvertently included as base pay for eight (8) members.*

*The audit identified eight (8) members whose payroll adjustments were inadvertently included as base pay in the County’s payroll reports submitted to CCCERA. The error occurred in the months of December 2020, December 2021 and December 2022 with payroll adjustments of approximately \$3,000, \$12,500 and \$7,700 respectively. These payroll adjustments represented members’ retroactive pay in prior periods. By including these adjustments in the member’s base pay, the member’s compensation in December was overstated, and could potentially overstate the member’s final average compensation. CCCERA has informed the County Auditor-Controller’s Office of the error and will review this issue again in the 2024 employer audit of the Auditor-Controller’s Office.*

## SALARIES IN ACCORDANCE WITH PUBLICLY AVAILABLE PAY SCHEDULE

➤ *Scope Item 2: No exceptions were observed in this section.*

Pursuant to CCCERA’s Policy On Determining “Pensionable Compensation” Under PEPRA For Purposes Of Calculating Retirement Benefits, a "publicly available pay schedule" must meet all of the following requirements:

1. Has been duly approved and adopted by the employer's governing body in accordance with requirements of applicable public meetings laws;
2. Identifies the position title for every employee position;
3. Shows the pay rate for each identified position, which may be stated as a single amount or as multiple amounts within a range;
4. Indicates the time base, including, but not limited to, whether the time base is hourly daily, bi-weekly, monthly, bi-monthly, or annually;
5. Is posted at the office of the employer or immediately accessible and available for public review from the employer during normal business hours or posted on the employer's internet website;
6. Indicates an effective date and date of any revisions;
7. Is retained by the employer and available for public inspection for not less than five years; and
8. Does not reference another document in lieu of disclosing the pay rate.

➤ *Observation 5: No exceptions were observed in this section.*

## ENROLLMENT OF ELIGIBLE EMPLOYEES

➤ *Scope Item 3: Missing/incomplete Enrollment Packets were noted during the review.*

### 1. Exclusion from Membership – By Type of Employment

- A. All officers and employees of the County or districts shall be members of the association as provided in Article 4 under Sections 31550-31567 of the County Employees’ Retirement Law of 1937 (Gov. Code Secs. 31450, et seq. “CERL”), unless excluded from membership by this Section.
- B. The following employees shall be excluded from membership:
  - i. Temporary, seasonal or independent contract employees who are employed or re-employed for temporary service or at certain specified periods each year.
  - ii. Intermittent or permanent-intermittent employees who are appointed to serve less than 80% of the full number of working hours required of regular employees or who actually serve less than 80% of such full number of working hours in one year as certified by their appointing authority.
  - iii. Part-time employees whose service for the County or district is less than fifty (50) percent of the full number or working hours required of fulltime employees at that employer.
  - iv. Project employees, unless the appointing authority certifies that the project is expected to be of one year or more in duration on a greater than part-time basis.
  - v. Provisional employees, unless they otherwise meet the requirements for reciprocal benefits with other retirement systems under Article 15 of CERL.
- C. In making its determination regarding an employee’s inclusion in or exclusion from membership, the Board will not rely solely upon the term given to the type of employment. Rather, the Board will rely upon such additional facts such as the nature of the employment, its expected or actual duration, and its relationship to what is considered full-time, permanent employment.

### 2. Exclusion from Membership – by Compensation

Except as otherwise herein provided, all employees of the County or district who receive compensation amounting to less than one-hundred (\$100) dollars per month, and in the case of employees paid on other than a monthly basis an average of one-hundred (\$100) dollars per month for the preceding year, including maintenance valued according to the schedule adopted by the governing body, are hereby excluded and exempted from membership in the Retirement Association. Any member of the Retirement Association whose salary is reduced to an amount less than one-hundred (\$100) dollars per





month shall have the option of continuing or discontinuing his/her active membership in the Association.

### 2.1 Exclusion from Membership – by Waiver

Newly hired employees aged 60 and older may waive membership as authorized by Gov. Code Section 31552. Any such waiver of membership shall be effective only if it is submitted to the CCCERA Chief Executive Officer within 90 days of the employee’s date of hire; provided, however, that the Chief Executive Officer may, in his/her sole and reasonable discretion, waive the time limitation if the newly hired employee establishes good cause for such a waiver.

### 3. Certifications

Every employee of the County or district within the county whose employees are members of the Association shall, upon entry into the Association, complete a sworn statement as provided for in Gov. Code Section 31526(b). A certified copy of the member’s birth certificate or other evidence of birth may be required by the Board.

It shall be the employer’s responsibility to ensure compliance with this section. The Board shall assess the employer five hundred (\$500) dollars per employee for every month or fraction thereof that the required certification is not submitted. The Board shall notify the employer in writing of the imposition of assessment at least thirty days before the assessment.

➤ *Observation 6: Enrollment forms were incomplete for one (1) member.*

*CCCERA reviewed a sample of 15 members for testing, of which 13 were hired during 2019-2023. The audit found one (1) member with incomplete enrollment forms on file. CCCERA notified County Counsel’s Office during the audit of the missing forms and the County Counsel’s Office has facilitated in securing the enrollment forms from the member.*

## PENSION BENEFIT REVIEW

➤ *Scope Item 4: No exceptions were observed in this section.*

### REVIEW OF PENSION BENEFIT CALCULATIONS

- 1. Compensation Policies
  - i. *Compensation Earnable Policy* – Adopted: 9/10/2014, Amended: 5/5/2021; GC 31461;
  - ii. *Policy On Determining “Pensionable Compensation” Under PEPRA For Purposes Of Calculating Retirement Benefits* - Adopted: 9/10/2014; GC 7522.34;
  - iii. *Policy Regarding Assessment and Determination Of Compensation Enhancements* – Adopted 11/1/2012, Amended: 3/8/2017, Last Reviewed: 4/12/2023; GC 31461(b)(1) and 7522.34(c)(1)

➤ *Observation 7: None*

### RETIREE RETURN TO WORK MONITORING

- 2. Retiree Return to Work Monitoring
  - i. GC 7522.56 Retired Persons; Service and Employment Restrictions

➤ *Observation 8: None*

### FORFEITURE OF BENEFITS EARNED OR ACCRUED FROM THE COMMISSION OF A FELONY

- 3. Felony Forfeiture Monitoring and Notification – GC 7522.72(g) and GC 7522.74(g)

➤ *Observation 9: None*

### INTERNAL REVENUE CODE SECTION 415 COMPLIANCE

As adopted on December 8, 2010 and amended on January 9, 2013, July 11, 2018, September 8, 2021 and August 9, 2023

➤ *Observation 10: None*



## FOLLOW-UP ITEMS

The following item was noted during the review and requires follow-up by Contra Costa County Counsel and CCCERA:

Contra Costa County Counsel has no outstanding follow-up items resulting from the audit.

**EMPLOYER REPLY**

CCCERA received the following reply from Contra Costa County Counsel:



**Office of the County Counsel  
Contra Costa County**

**Thomas L. Geiger  
County Counsel**

**Monika L. Cooper  
Rebecca J. Hooley  
Steven P. Rettig  
Cynthia A. Schwerin  
Stephen M. Siptroth  
Assistants**

January 8, 2024

**VIA MAIL**  
Cherry Chang  
Internal Auditor  
Contra Costa County Employees'  
Retirement Association  
1200 Concord Avenue  
Concord, CA 94520

Re: CCCERA Employer Audit Report – Contra Costa County Counsel

Dear Cherry Chang:

Thank you for providing the results of the CCCERA Employer Audit Report to this office. We concur with the report's observations and findings.

Very truly yours,

Thomas L. Geiger  
County Counsel

TLG/wrm

*Meeting Date*  
**02/28/2024**  
*Agenda Item*  
**#5a.**



**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**



**PERIOD ENDING: December 31, 2023**

Investment Performance Review for

**Contra Costa County Employees' Retirement Association**

# Table of Contents



---

[VERUSINVESTMENTS.COM](https://verusinvestments.com)

**SEATTLE** 206.622.3700

**CHICAGO** 312.815.5228

**PITTSBURGH** 412.784.6678

**LOS ANGELES** 310.297.1777

**SAN FRANCISCO** 415.362.3484

---

Investment Landscape

TAB I

---

Investment Performance  
Review

TAB II



A decorative geometric pattern of overlapping triangles in shades of blue and green is overlaid on the left side of the image. A prominent white triangle with a blue border is positioned to the left of the main title text.

**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**

**1<sup>ST</sup> QUARTER 2024  
Investment Landscape**



# Verus business update

## Since our last Investment Landscape webinar:

- Verus hired Adam Babson, *Director of Portfolio Management* (Seattle)
- JC Faubion, CFA, *Senior Consulting Associate*, obtained the CAIA charter
- James Wadner, *Performance Analyst*, recently passed his CFA level I exam
- We celebrated our 38th anniversary. Wurts Johnson & Company (founding name) was established in January 1986.
- Recent research, found at [verusinvestments.com/research](https://verusinvestments.com/research):
  - *Is now the time to de-risk?*
  - *Liquidity needs during market drawdowns*
  - *2024 Annual Capital Market Assumptions*



# Table of contents



---

[VERUSINVESTMENTS.COM](http://VERUSINVESTMENTS.COM)

**SEATTLE** 206.622.3700

**CHICAGO** 312.815.5228

**PITTSBURGH** 412.784.6678

**LOS ANGELES** 310.297.1777

**SAN FRANCISCO** 415.362.3484

---

Economic environment 9

---

Fixed income rates & credit 21

---

Equity 26

---

Other assets 35

---

Appendix 38

# Recent Verus research

Visit: [verusinvestments.com/research](https://verusinvestments.com/research)

## Topics of interest

### LIQUIDITY NEEDS DURING MARKET DRAWDOWNS

*What is the fundamental reason why investors should care about liquidity?* In short, investors want to avoid being forced to sell high-returning assets that have fallen in value in order to pay for benefits, philanthropic spending, expenses, and cover capital calls for their private asset programs. We first touch on the different definitions of liquidity and illustrate how these relate to institutional portfolios. Second, we examine those liquidity characteristics in times of market stress, the way in which illiquid assets often behave, and how that impacts investors. Lastly, we outline a tool that we have created and discuss how this can be used to assist clients with gauging the appropriate level of liquidity in their own portfolios. Overall, we believe investors should put much thought and care into portfolio liquidity decisions.

### IS NOW THE TIME TO DE-RISK?

*Is now a good time to engage in de-risking strategies?* The combination of rising interest rates and relatively strong risk asset performance since 2020 seem to suggest so. We aim to give plan sponsors a better appreciation of the potential benefits of de-risking strategies and examine when it would be most prudent to adopt these strategies. ERISA plan sponsors that have frozen benefits or report actuarial obligations with a market-based interest rate will find this paper most applicable to them.

## Annual research

### 2024 CAPITAL MARKET ASSUMPTIONS

Capital Market Assumptions guide our advice and recommendations. They reflect the best judgments of our research and investment teams regarding the expected long-term behavior of capital markets.

**Investment Landscape**

1st Quarter 2024

# 4<sup>th</sup> quarter summary

## THE ECONOMIC CLIMATE

- Real GDP increased at a 2.9% pace from a year ago in Q3 (4.9% quarter-over-quarter annualized rate). The economy has remained relatively strong while inflation now appears likely to fall closer to the Fed's 2% target in 2024. These expectations contributed to a dovish pivot from the Fed, a sharp drop in interest rates, and a notable market rally as the possibility of a soft landing has risen.
- Unemployment fell slightly from 3.8% to 3.7%, though the labor participation rate dropped sharply towards the end of the year. The labor market remains surprisingly resilient after roughly a full year of higher interest rates.

## PORTFOLIO IMPACTS

- Consumer sentiment has been incredibly poor, and one of the greatest concerns for Americans is inflation. Although inflation has fallen considerably, prices of goods and services remain high, placing strain on budgets. Because inflation measures the rate of change of prices, rather than the level of prices, lower inflation has failed to ease the financial pressure that many households face.
- The Cboe VIX implied volatility index moved even lower during Q4, from 17.5 to 12.5. At the same time, bond market volatility was very high, as indicated by the "MOVE" Index. Uncertainty around inflation, the Federal Reserve's possible interest rate path and the extent of rate cuts, potential recession, and fears around the U.S. fiscal situation are likely contributing to market shakiness.

## THE INVESTMENT CLIMATE

- An abrupt change in Federal Reserve communication regarding interest rate cuts during the quarter coincided with sharply lower bond yields, higher equity valuations, and further tightening of credit spreads.
- U.S. headline inflation fell during the quarter, from 3.7% to 3.3% year-over-year. Core CPI (ex-food & energy) declined from 4.1% to 3.9%. Low inflation numbers in October and November (0.0% and 0.1% month-over-month) were counterbalanced by a surprisingly high inflation number in December (0.3% month-over-month).

## ASSET ALLOCATION ISSUES

- U.S. equities (S&P 500 +11.7%) led international developed equities (MSCI EAFE +10.4%) and emerging market equities (MSCI EM +7.9%) during the quarter. Domestic equities also led non-U.S. equities over the full year while emerging markets lagged. Wide sector performance differences contributed to U.S. leadership given a much heavier tech focus of the domestic market.
- Style factor performance was mixed during Q4. Small cap outperformed large cap by +2.0%. Value underperformed Growth by -3.2%. Over the full year, small caps underperformed large caps by -9.6% while value stocks underperformed growth by a whopping -31.2%. Besides an extreme period of value underperformance during 2020, calendar year 2023 was the worst 1-year rolling period in more than two decades.

Risk assets rallied in Q4 following a dovish pivot from the Federal Reserve and recent economic data suggesting a greater chance of a soft landing

# What drove the market in Q4?

## “A Soft Landing is in View as Inflation Drops”

### HEADLINE CPI MONTH-OVER-MONTH CHANGES

| July | Aug  | Sept | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|
| 0.2% | 0.6% | 0.4% | 0.0% | 0.1% | 0.3% |

Article Source: WSJ, November 14<sup>th</sup>, 2023

## “U.S. Labor Market Resilience Keeps Economy Afloat as Year Ends”

### U-3 UNEMPLOYMENT RATE

| July | Aug  | Sept | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|
| 3.5% | 3.8% | 3.8% | 3.8% | 3.7% | 3.7% |

Article Source: Reuters, December 21<sup>st</sup>, 2023

## “U.S. Consumer Spending, Inflation Slow in Sign of Cooling Economy”

### U.S. NOMINAL RETAIL SALES (YEAR-OVER-YEAR)

| July | Aug  | Sept | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|
| 2.8% | 2.8% | 4.0% | 2.2% | 4.0% | 5.6% |

Article Source: Bloomberg, November 30<sup>th</sup>, 2023

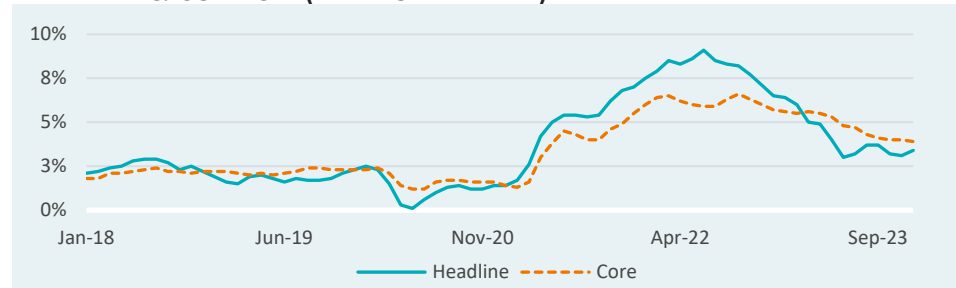
## “Fed Holds Rates Steady, Indicating Three Cuts Coming in 2024”

### FOMC PROJECTED END OF 2023 FED FUNDS RATE

| Sep 22 SEP | Dec 22 SEP | Mar 23 SEP | June 23 SEP | Sept 23 SEP | Dec 23 SEP |
|------------|------------|------------|-------------|-------------|------------|
| 4.60%      | 5.10%      | 5.10%      | 5.60%       | 5.60%       | 5.40%      |

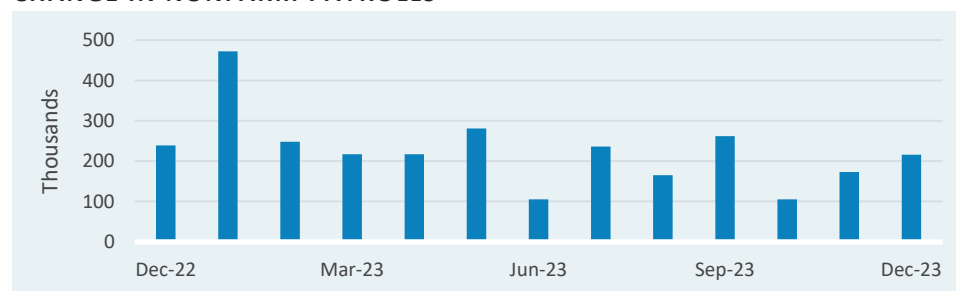
Article Source: CNBC, December 13<sup>th</sup>, 2023

### HEADLINE & CORE CPI (YEAR-OVER-YEAR)



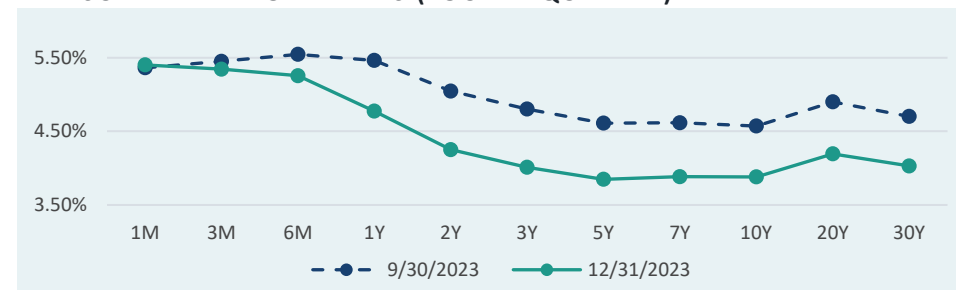
Source: BLS, as of 12/31/23

### CHANGE IN NONFARM PAYROLLS



Source: BLS, as of 12/31/23

### TREASURY YIELD MOVEMENTS (FOURTH QUARTER)



Source: Bloomberg, as of 12/31/23

# Economic environment

# U.S. economics summary

- Real GDP increased at a 2.9% pace year-over-year in Q3 (4.9% quarter-over-quarter annualized rate). The economy has remained relatively strong while inflation appears more likely to fall closer to the Fed’s target in 2024. These expectations contributed to a dovish pivot from the Federal Reserve in December, a sharp drop in interest rates, and a notable market rally as the possibility of a soft landing has risen.
- U.S. headline inflation fell during the quarter, from 3.7% to 3.3% year-over-year. Core CPI (ex-food & energy) declined further from 4.1% to 3.9%. Low inflation numbers in October and November (0.0% and 0.1% month-over-month) were counterbalanced by a surprisingly high inflation number in December (0.3% month-over-month).
- Consumer spending has been stable, with real personal consumption expenditures up +2.7% year-over-year in November, the strongest growth figure since early 2022. However, strong spending appears to be at the expense

of a low household savings rate (4.1% in November) and may be partly driven by necessity (higher prices of goods & services) rather than by a positive financial or economic outlook.

- The job market has shown mixed signals, increasing in total size during 2023 but arguably with some weakness around the edges. Unemployment rose during the year but fell slightly in Q4 from 3.8% to 3.7%. This historic mismatch between jobs available and workers available has been slowly closing.

- Consumer sentiment improved slightly but remains incredibly poor. Inflation is a central concern for Americans. Although inflation has fallen considerably, prices of goods and services remain high, placing strain on budgets. Because inflation measures the rate of change of prices, rather than the level of prices, lower inflation has failed to ease the financial pressure that many households face.

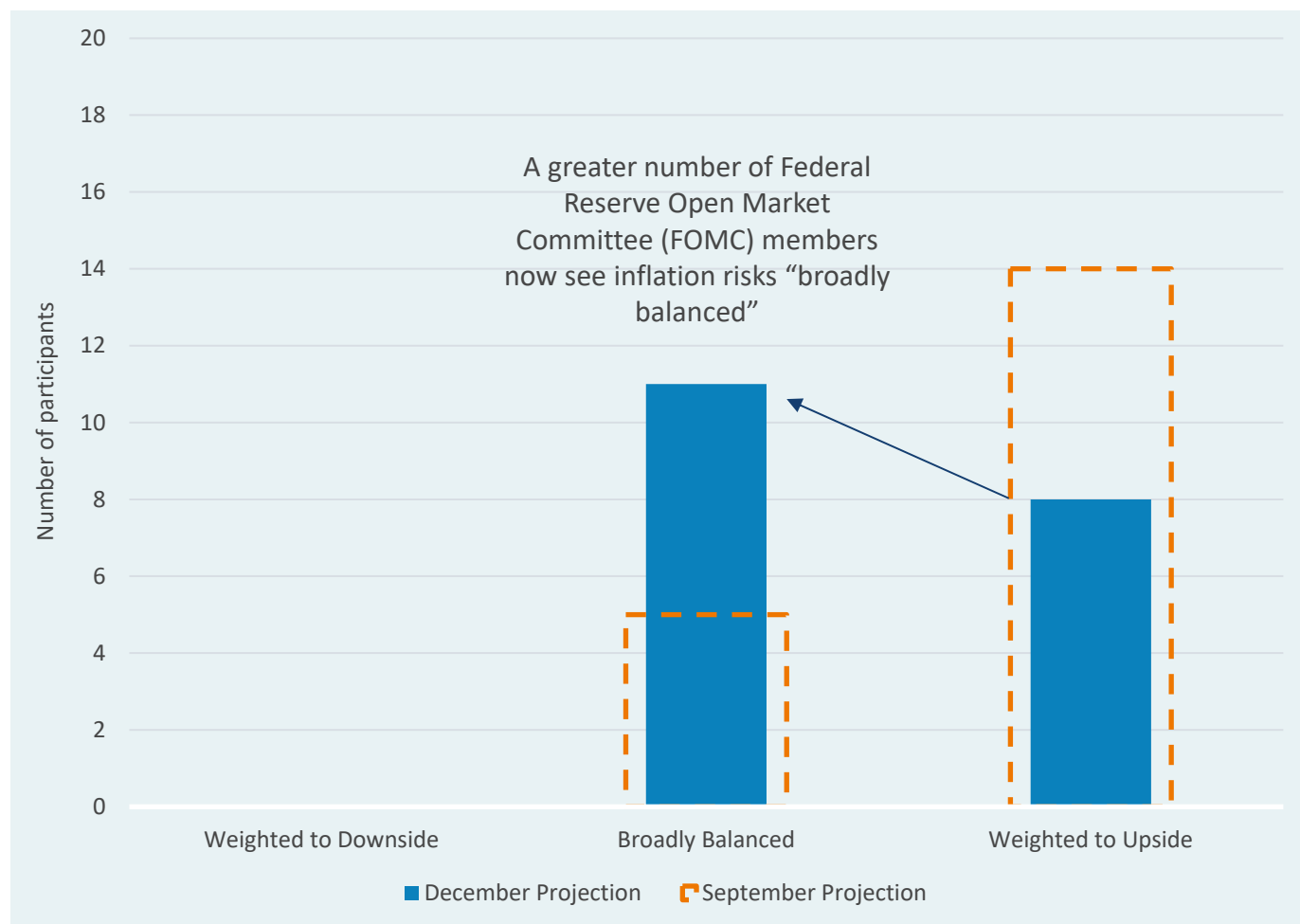
|                                      | Most Recent            | 12 Months Prior        |
|--------------------------------------|------------------------|------------------------|
| Real GDP (YoY)                       | 2.9%<br>9/30/23        | 1.7%<br>9/30/22        |
| Inflation (CPI YoY, Core)            | 3.9%<br>12/31/23       | 6.4%<br>12/31/22       |
| Expected Inflation (5yr-5yr forward) | 2.2%<br>12/31/23       | 2.3%<br>12/31/22       |
| Fed Funds Target Range               | 5.25–5.50%<br>12/31/23 | 4.25–4.50%<br>12/31/22 |
| 10-Year Rate                         | 3.88%<br>12/31/23      | 3.88%<br>12/31/22      |
| U-3 Unemployment                     | 3.7%<br>12/31/23       | 3.5%<br>12/31/22       |
| U-6 Unemployment                     | 7.1%<br>12/31/23       | 6.5%<br>12/31/22       |

# Shifting signaling from the Federal Reserve

## December 2023 risks to core inflation: FOMC participants

On December 13<sup>th</sup>, the Fed's tone shifted. Powell spoke to a much rosier inflation picture and described a greater focus on both sides of its dual mandate—price stability and full employment.

Although optimistic, Powell's comments emphasized a cautious view of the restrictive policy's impact, *"Our actions have moved our policy rate well into restrictive territory, meaning that tight policy is putting downward pressure on economic activity and inflation, and the full effects of our tightening likely have not yet been felt... Given how far we have come, along with the uncertainties and risks that we face, the Committee is proceeding carefully."*



Source: Federal Reserve December 2023 Summary of Economic Projections

# Inflation

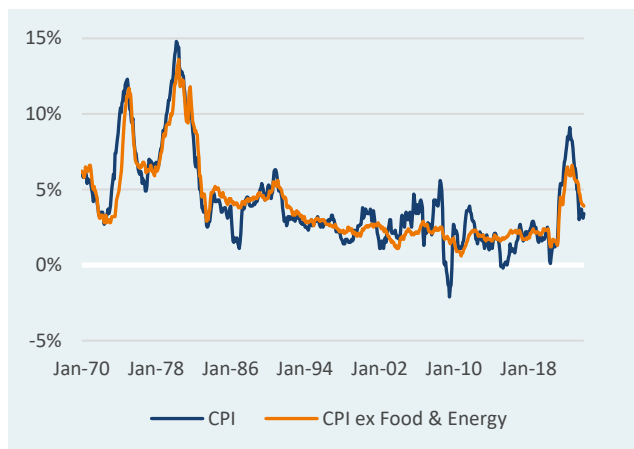
U.S. headline inflation fell during the quarter, from 3.7% to 3.3% year-over-year in December. Core CPI (ex-food & energy) declined further from 4.1% to 3.9%. It is not yet clear how long it will take for inflation to return to the Federal Reserve's 2% target, or how bumpy that ride might be. Low inflation numbers in October and November (0.0% and 0.1% month-over-month) were counterbalanced by a surprisingly high inflation release in December (0.3% month-over-month).

Most of the largest initial drivers of U.S. inflation, such as food, energy, and used autos, are now moderating in price and helping to bring inflation down towards the Fed's 2% target.

Additionally, the largest component of the inflation "basket" of goods and services is shelter prices (the cost of rents or renter's equivalent). The calculation of shelter for official government data purposes tends to reflect market rent movements with a lag. Market-based rent indexes reflect much lower rent inflation. For example, the series published by Zillow indicates 3.3% year-over-year inflation as of December. This suggests that as government shelter data catches up with true market rent prices, the greatest support to current inflation levels (shelter costs) will drop materially, potentially bringing inflation officially back to around a 2% level.

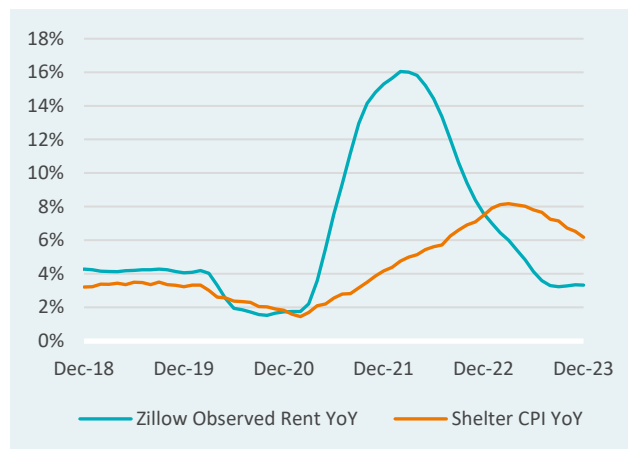
**Inflation & other economic data released in Q4 suggests a path for inflation to fall towards 2% in 2024**

**U.S. CPI (YOY)**



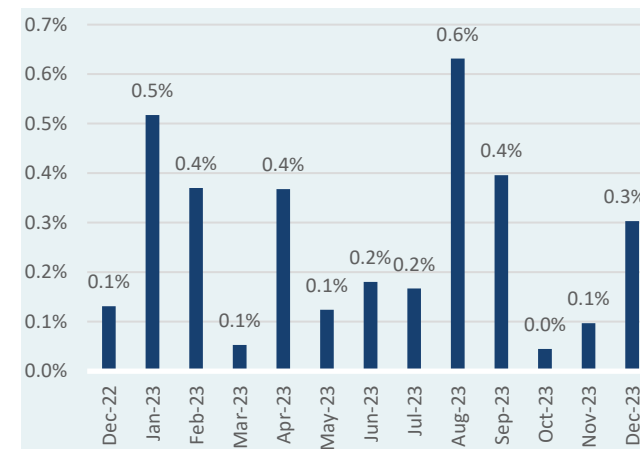
Source: BLS, as of 12/31/23

**ZILLOW OBSERVED RENT VS. SHELTER CPI (YOY)**



Source: Zillow Observed Rent Index, as of 12/31/23

**MONTHLY PRICE MOVEMENT (CPI)**



Source: BLS, as of 12/31/23



# GDP growth

Real GDP increased at a 2.9% pace from a year ago in the third quarter (4.9% quarter-over-quarter annualized rate). The large uptick was driven by consumption, which continues to show resiliency. While many investors have expected high inflation and weaker wage growth to impact spending, a combination of pandemic related excess savings and a strong decade of household wealth expansion is likely providing a cushion against an economic slowdown. Outside of consumption, all major categories, besides net exports, positively contributed to GDP growth.

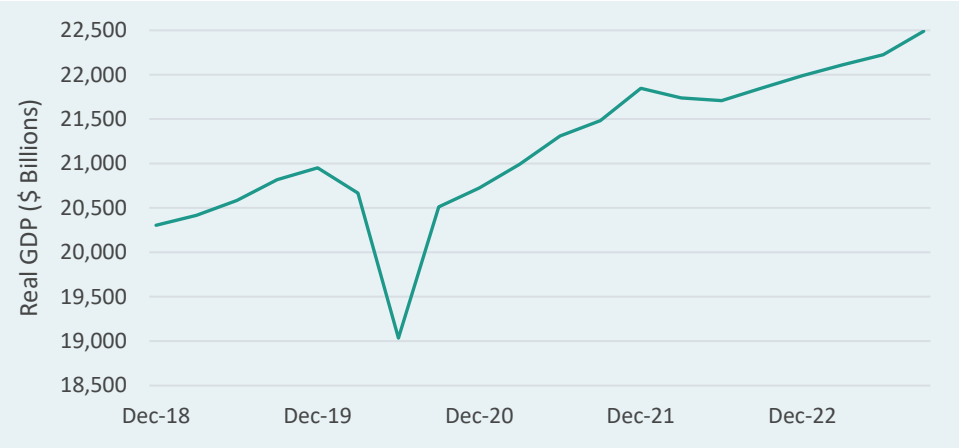
The economy has remained relatively strong while inflation

now appears likely to fall closer to the Fed target in 2024. These expectations contributed to a sharp drop in interest rates towards the end of 2023, and a notable market rally, as the possibility of a soft landing has risen.

A string of positive economic news occurred throughout the fourth quarter. The economic outlook has improved along with this new information, though we continue to believe economic bumpiness is on the horizon—perhaps in mid-2024. However, U.S. markets appear to be fully pricing in the soft-landing narrative, which likely limits the upside if that were to come to fruition.

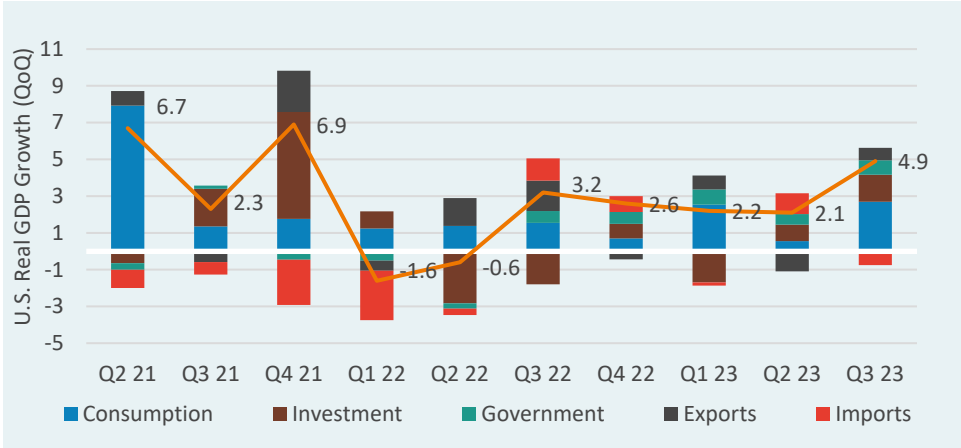
The U.S. economy continues to show resilience despite aggressive monetary tightening & low consumer confidence

U.S. REAL GROSS DOMESTIC PRODUCT



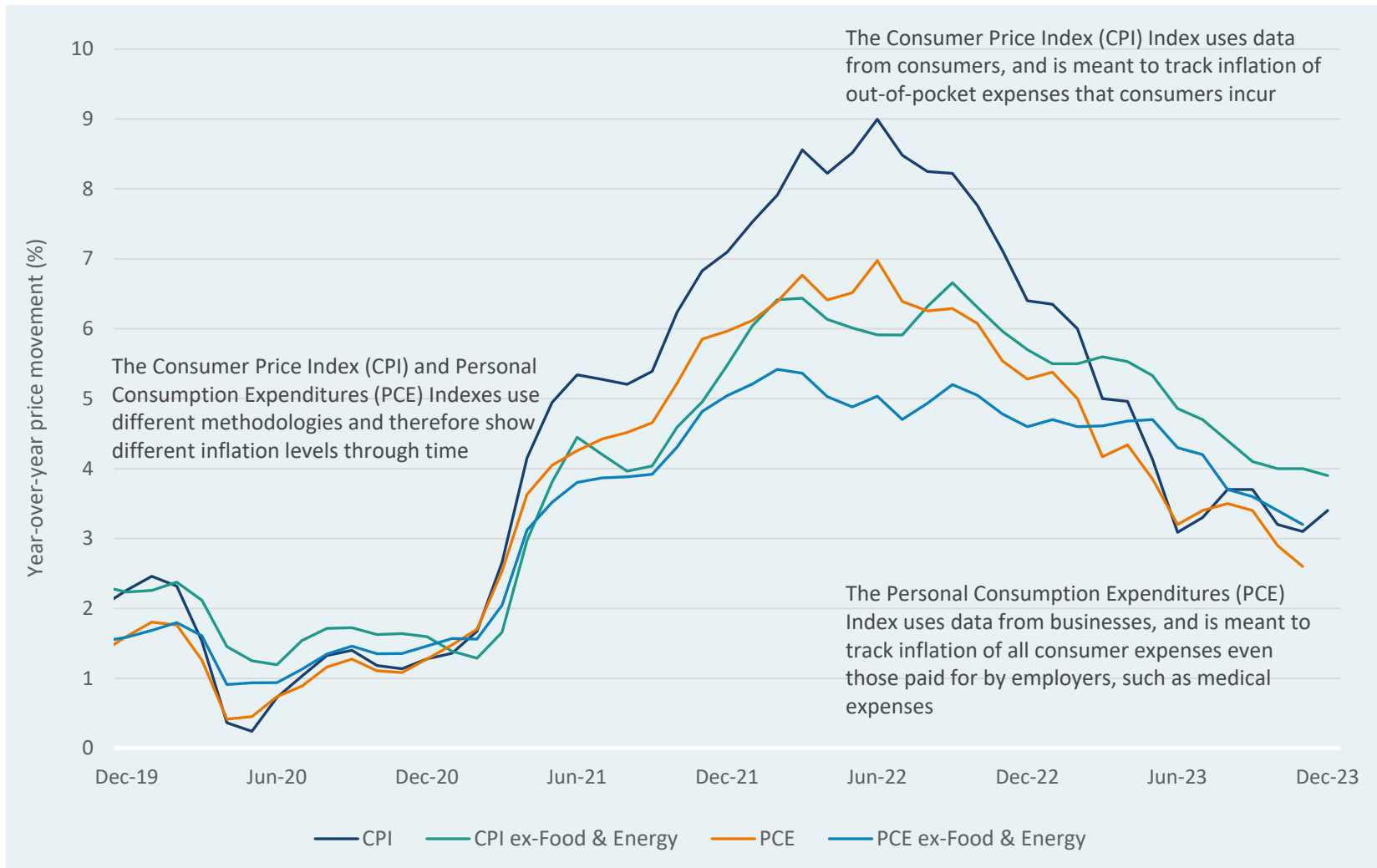
Source: FRED, as of 9/30/23

U.S. REAL GDP COMPONENTS (QOQ)



Source: FRED, as of 9/30/23

# How are inflation conditions evolving?



Recent price trends suggest inflation may move closer to the Fed's 2% target in 2024

A moderation of shelter prices, which tend to be lagged in official statistics, could be the most notable driver of lower inflation in future quarters

Source: FRED, Verus, PCE data as of 11/30/23, CPI data as of 12/31/23

# Labor market

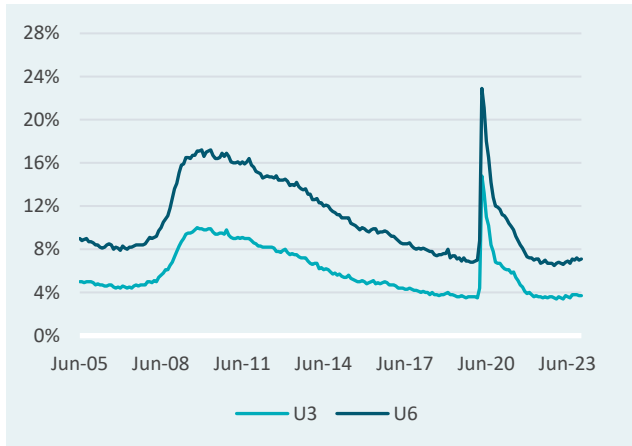
Unemployment fell slightly in Q4 from 3.8% to 3.7%, though the labor participation rate dropped sharply towards the end of the year from 62.8% to 62.5%. According to most available metrics, the labor market remains surprisingly resilient. While throughout history higher interest rates, and yield curve inversion in particular, have typically been followed by recession, the economy has been strong in the face of higher interest rates for roughly a full year. These dynamics have fueled hope that the economy may achieve a soft landing.

Some mixed signals have appeared in recent months. The labor participation rate has fallen for both younger and older

workers, potentially a sign of stalling of strong post-pandemic job growth. Rebalancing within the labor market continued, as the mismatch between the number of *workers available* and the number of *available jobs* closes. This gap was 5.5 million at the beginning of the year and fell to 2.5 million in November. This rebalancing appears to be due to positive factors (a growing workforce) rather than negative factors (fewer jobs available), as more Americans are seeking employment and finding jobs that had previously gone unfilled.

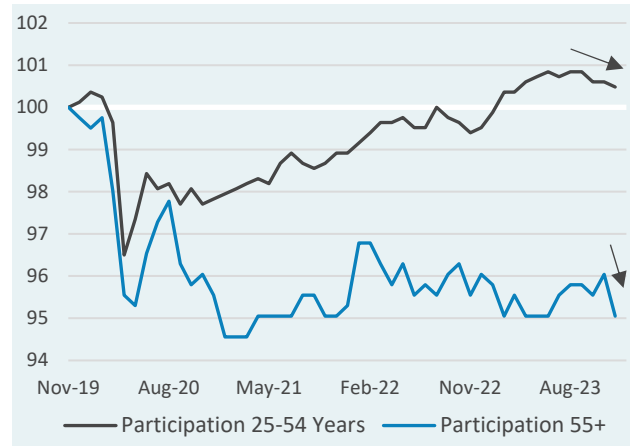
The gap between *available jobs* and *available workers* was cut in half during 2023, as the labor market moves into balance

## U.S. UNEMPLOYMENT



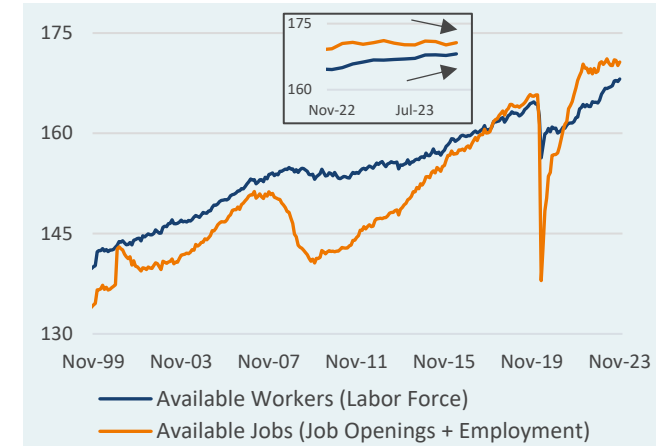
Source: FRED, as of 12/31/23

## LABOR FORCE PARTICIPATION RATE BY AGE



Source: FRED, as of 12/31/23

## WORKERS AVAILABLE VS. AVAILABLE JOBS



Source: BLS, Verus, as of 11/30/23

# The consumer

We believe there are two important sides to the U.S. consumer picture. First, spending has been stable, as real (inflation-adjusted) personal consumption expenditures continued at a moderate pace, at 2.7% year-over-year in November—the strongest growth figure since early 2022. But second, strong spending appears to be coming at the expense of household savings (very low at 4.1% in November) and may be partly driven by necessity (higher prices of goods and services) rather than driven by a positive financial or economic outlook. This latter point is supported by incredibly poor consumer sentiment.

As discussed in last quarter’s report, wealth for the majority of

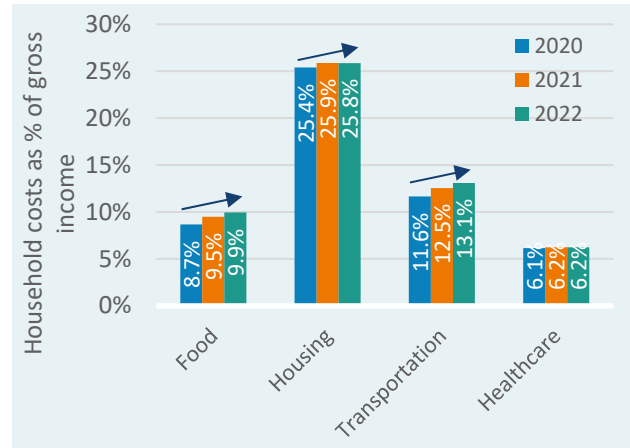
Americans has greatly expanded over the past decade, fueled by higher home prices, a bull market for stocks, and broad economic strength. However, this stands in stark contrast to reports of widespread financial difficulties of Americans. For example, a Lending Club survey conducted in November 2023 indicated that 62% of consumers are living paycheck to paycheck. In this unique environment, it is difficult to gauge the extent to which greater wealth, though often illiquid, might help extend strong spending into future quarters, or whether spending is set to slow as households reset their spending to lower levels to try and return to more conservative budgets with an appropriate savings rate.

## REAL PERSONAL SPENDING



Source: FRED, as of 11/30/23

## HIGHER COSTS EATING INTO BUDGETS



Source: BLS, Verus, as of 9/8/23 – household costs as % of gross income

## PERSONAL SAVINGS RATE



Source: FRED, as of 11/30/23

# Sentiment

Sentiment readings were up slightly during Q4 but remain pessimistic. The University of Michigan Consumer Sentiment survey improved from 67.9 to 69.7 on reports that households believe inflation is on a better trajectory.

A confusing aspect of the consumer picture is the large disconnect between economic data (good in many respects) and sentiment readings (very poor overall). For example, inflation has mostly normalized but many Americans continue to express deep concerns about high inflation and difficulties in making ends meet. A major driver of this disconnect is what we might call the “lower inflation conundrum”. As displayed below, prices surged substantially in recent years, meaning inflation was high, but then prices plateaued, which led inflation to come down. *Why hasn't*

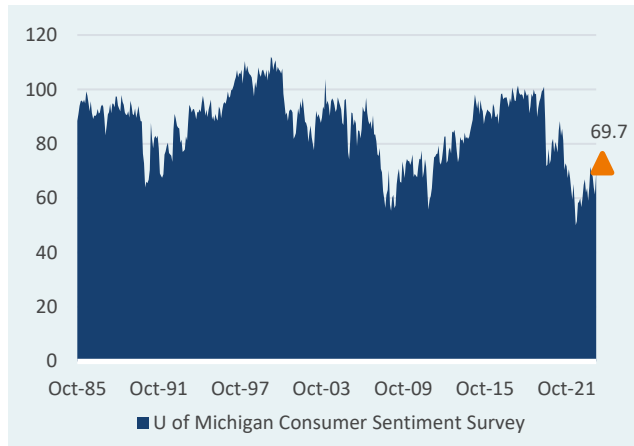
*lower inflation led Americans to feel better about the economy?* This is because inflation measures the *rate of change* in the price of goods and services, not the overall level. Prices are currently very high while the rate of inflation is fairly low.

The NFIB Small Business Optimism index improved slightly during Q4, with the gains occurring in December. The index has now been below the 50-year average level for two years. According to the report, 23% of business owners reported inflation as the most important issue for business operations—now a greater concern than the labor shortage. Small businesses remain very pessimistic about conditions and do not expect these conditions to improve in 2024.

Sentiment improved slightly during the quarter

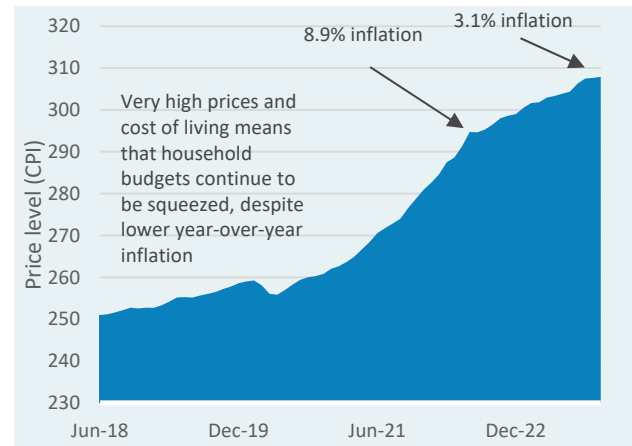
Inflation remains very poor

## CONSUMER SENTIMENT



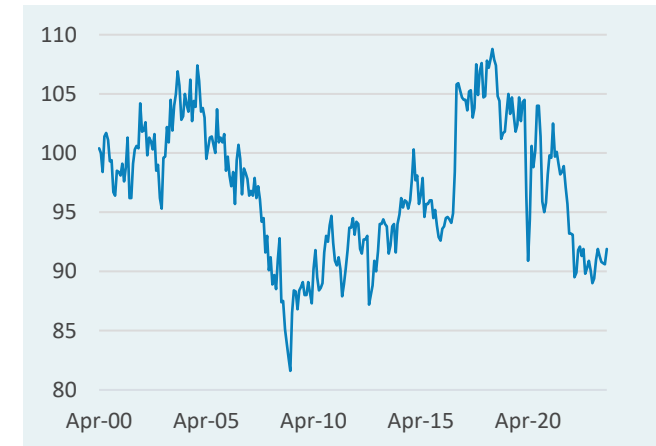
Source: University of Michigan, as of 12/31/23

## THE “LOWER INFLATION” CONUNDRUM



Source: FRED, as of 11/30/23

## NFIB SMALL BUSINESS SENTIMENT



Source: NFIB, as of 12/31/23

# Housing

Home prices increased 3.0% in the third quarter, with ongoing support from very low housing inventory levels. It is possible that low inventories, high costs of new construction, a lack of forced sales (home sales due to financial stress), and an unwillingness of current homeowners to sell and sacrifice their existing low mortgage rate, could act as an ongoing support to high home prices despite extreme unaffordability.

On a brighter note, housing affordability on the margin may be moving in a better direction. Despite mild gains in home prices, the 30-year average fixed mortgage rate has fallen from a 23-year high of 7.3% to 6.6% at the

end of December. A moderation in mortgage rates, with expectations for a handful of Federal Reserve rate cuts in 2023, could help affordability and provide a support to home demand in the near-term.

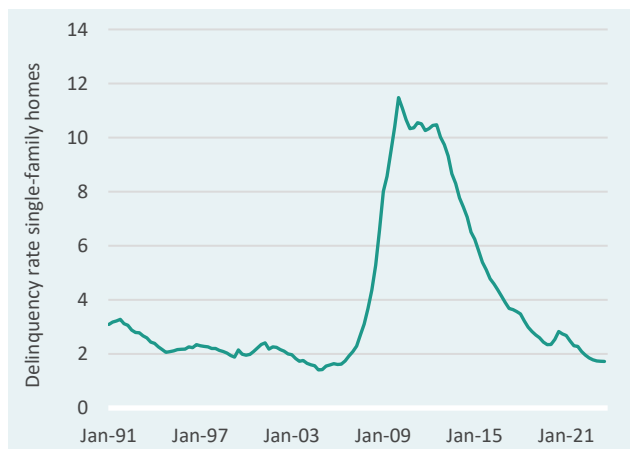
Mortgage delinquency levels of single-family homeowners continue to be muted, at 1.7% as of Q3. Surprisingly, mortgage delinquency rates have consistently declined since the pandemic. This may be a reflection of significant home equity built up for the average homeowner, the ability of homeowners to draw on that equity to help make financial ends meet, and a hesitance to default on a loan if the loan is not underwater.

**30-YEAR MORTGAGE RATE (%)**



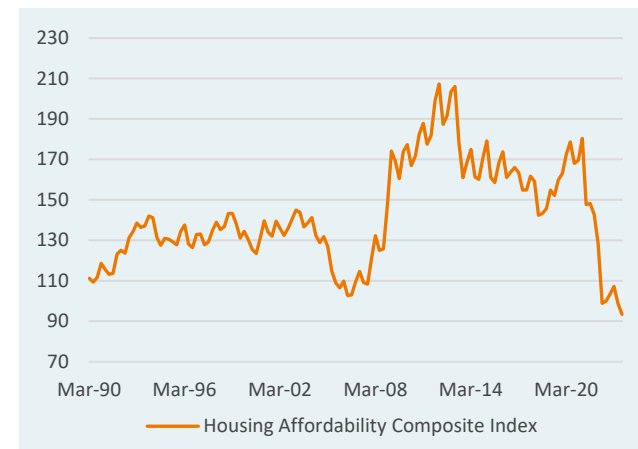
Source: FRED, as of 12/31/23

**SINGLE-FAMILY HOME DELINQUENCY RATE (%)**



Source: FRED, as of 9/30/23

**HOUSING AFFORDABILITY**



Source: FRED, as of 9/30/23 – Housing affordability is calculated as the cost of a median priced single-family home at the current mortgage rate, as a percentage of the median family income

# International economics summary

- The ongoing threat of inflation, and central banks' tightrope act of working to battle that inflation without tipping economies into recession, was expected to be a key risk of 2024. However, in the fourth quarter inflation has fallen more quickly than expected, while economic growth has generally been more resilient. The global growth picture seems to have improved, all else equal, although growth is still expected to slow materially in the coming quarters.
- Conflicts within the Middle East have led to heightened geopolitical tensions, and broader escalation is a notable risk. While military action has been relatively confined, further conflict could have a material impact on global supply chains and energy markets. The war in Ukraine, which played a large part in initially driving inflation across developed economies, is still fresh in many investors' minds.
- Inflation fell significantly in the Eurozone and U.K., helping to take

some pressure off the ECB and BOE (headline inflation receded to 3.4% and 4.0% across the Eurozone and U.K., respectively). Despite the easing of price pressures, interest rates sit at multi-decade highs at both central banks which does little to change expectations for stagnant and potentially even negative economic growth.

- China reported GDP growth of 5.2% in 2023, exceeding the 5% growth target set by the CCP. While the reported figure is slightly above the CCP's target, growth has disappointed investors and economists alike, especially following a nearly three-year COVID-19 lockdown. The country continues to face a variety of challenges including incredibly dire demographic trends, geopolitical tension with the U.S., slowing growth, financial distress amongst the property sector and local government financing vehicles, a heavy national debt burden, and deflation.

| Area          | GDP<br>(Real, YoY) | Inflation<br>(CPI, YoY) | Unemployment     |
|---------------|--------------------|-------------------------|------------------|
| United States | 2.9%<br>9/30/23    | 3.4%<br>12/31/23        | 3.7%<br>12/31/23 |
| Eurozone      | 0.0%<br>9/30/23    | 2.9%<br>12/31/23        | 6.4%<br>11/30/23 |
| Japan         | 1.5%<br>9/30/23    | 2.4%<br>12/31/23        | 2.4%<br>11/30/23 |
| BRICS Nations | 5.0%<br>9/30/23    | 1.5%<br>12/31/23        | 4.8%<br>12/31/22 |
| Brazil        | 2.0%<br>9/30/23    | 4.6%<br>12/31/23        | 7.5%<br>11/30/23 |
| Russia        | 5.5%<br>9/30/23    | 7.4%<br>12/31/23        | 2.9%<br>11/30/23 |
| India         | 7.6%<br>9/30/23    | 5.7%<br>12/31/23        | 8.7%<br>12/31/23 |
| China         | 5.2%<br>12/31/23   | -0.3%<br>12/31/23       | 5.1%<br>12/31/23 |

*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.*

# International economics

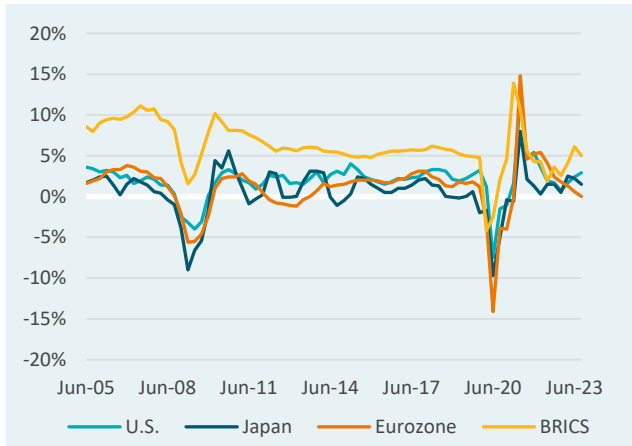
The ongoing threat of inflation, and central banks' tightrope act of working to battle that inflation without tipping economies into recession, was expected to be a key risk of 2024. However, in the fourth quarter inflation has fallen more quickly than expected, while economic growth has generally been more resilient. The global growth picture seems to have improved, all else equal, although growth is still expected to slow materially in the coming quarters.

Although broad macroeconomic conditions improved, additional risks surfaced throughout the quarter, as conflicts within the Middle East escalated. Tensions remain high and concerns around global supply chains

and energy markets have been at the forefront—though impacts across commodity markets have been muted so far.

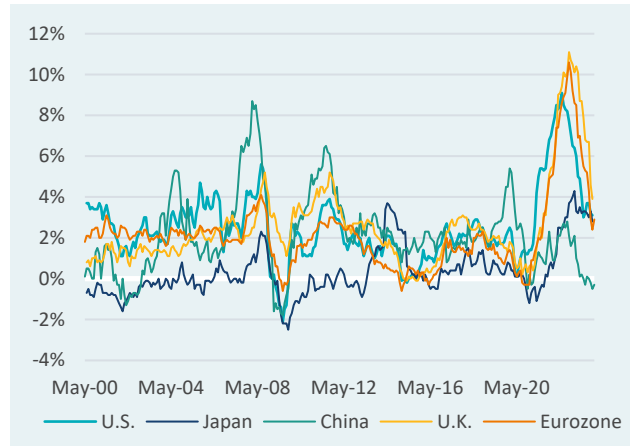
The outlook remains uncertain. Geopolitical tension is still high, especially as the U.S. and China compete for dominance in the technology sector. Developed economies in the Eurozone and Japan are projected by the World Bank to grow less than 1% in 2024, far below historical long-term averages. On the flip side, emerging and developing economies still boast strong growth targets. India is a highlight, as growth expectations for both 2024 and 2025 sit above six-percent.

**REAL GDP GROWTH (YEAR-OVER-YEAR)**



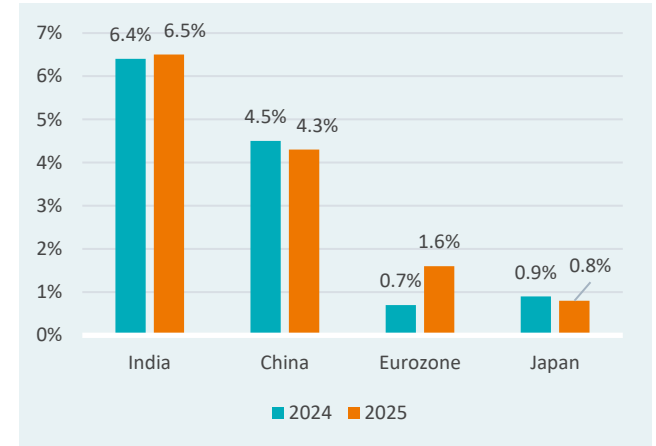
Source: Bloomberg, as of 9/30/23

**INFLATION (CPI YEAR-OVER-YEAR)**



Source: Bloomberg, as of 12/31/23 – or most recent release

**WORLD BANK REAL GDP FORECASTS**



Source: World Bank Global Economic Prospects, as of 1/9/24



# Fixed income rates & credit

# Fixed income environment

- The 10-year U.S. Treasury yield reversed its gains from the prior quarter, falling from 4.58% to 3.88% in Q4, as the market reassessed inflation conditions and the Federal Reserve’s likely path. Further signs that inflation is moderating toward target, along with surprisingly upbeat economic news, likely contributed to the Federal Reserve’s “dovish pivot” as it has been referred to. The 10-year yield ended 2023 unchanged.
- During Q4, credit markets delivered strong results, led by lower-quality bonds such as high yield and bank loans. High yield gained +7.2% (Bbg U.S. Corporate High Yield), while bank loans rose +2.8% (S&P/LSTA Leveraged Loan). Longer duration investment grade corporate bonds (Bloomberg U.S. Long Corporate Credit) rose 14.0% during the quarter as both falling interest rates and narrower credit spreads acted as a tailwind.
- The U.S. yield curve has remained inverted for 1.5 years, which is

among the most extended periods in modern history. This is indicated by the 10-year minus 2-year Treasury yield—ending the year at -35bps, up from -44bps in Q3. Unique attributes of the current economic environment suggest that this curve inversion may not coincide with a near-term recession.

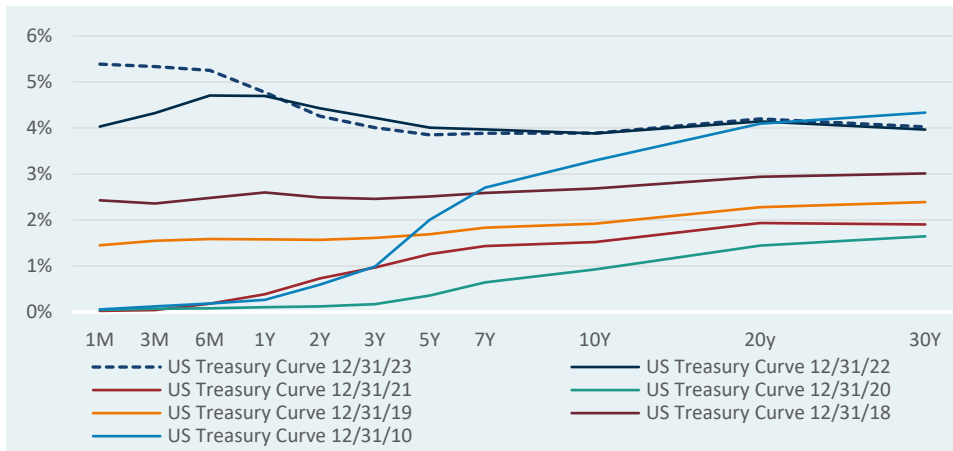
- US interest rates remained steady during the quarter as inflation continued to moderate towards the Federal Reserve Bank's 2.0% target. Importantly, expectations for future rate cuts increased following the statement made by Chairman Powell that future rate hikes may not be required.
- With inflation and economic growth continuing to moderate during the quarter, market expectations for future rate cuts by the Federal Reserve increased. As a result, interest rates across the US Treasury curve declined meaningfully, with shorter-term rates declining more than longer-term rates.

|   | QTD<br>Total Return | 1 Year<br>Total Return |
|---|---------------------|------------------------|
| Core Fixed Income<br>(Bloomberg U.S. Aggregate)               | 6.8%                | 5.5%                   |
| Core Plus Fixed Income<br>(Bloomberg U.S. Universal)          | 6.8%                | 6.2%                   |
| U.S. Treasuries<br>(Bloomberg U.S. Treasury)                  | 5.7%                | 4.1%                   |
| U.S. Treasuries: Long<br>(Bloomberg U.S. Treasury 20+)        | 13.4%               | 2.7%                   |
| U.S. High Yield<br>(Bloomberg U.S. Corporate HY)              | 7.2%                | 13.4%                  |
| Bank Loans<br>(S&P/LSTA Leveraged Loan)                       | 2.8%                | 13.3%                  |
| Emerging Market Debt Local<br>(JPM GBI-EM Global Diversified) | 8.1%                | 12.7%                  |
| Emerging Market Debt Hard<br>(JPM EMBI Global Diversified)    | 9.2%                | 11.1%                  |
| Mortgage-Backed Securities<br>(Bloomberg MBS)                 | 7.5%                | 5.0%                   |

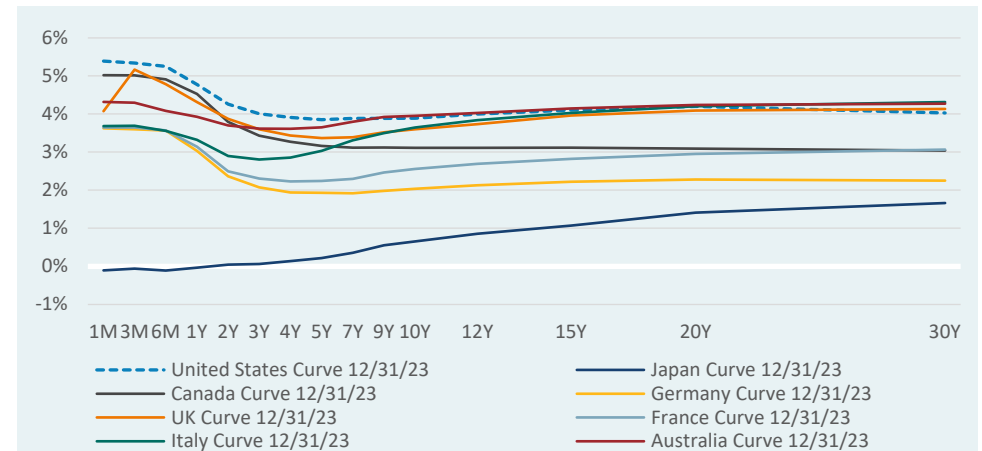
Source: Bloomberg, as of 12/31/23

# Yield environment

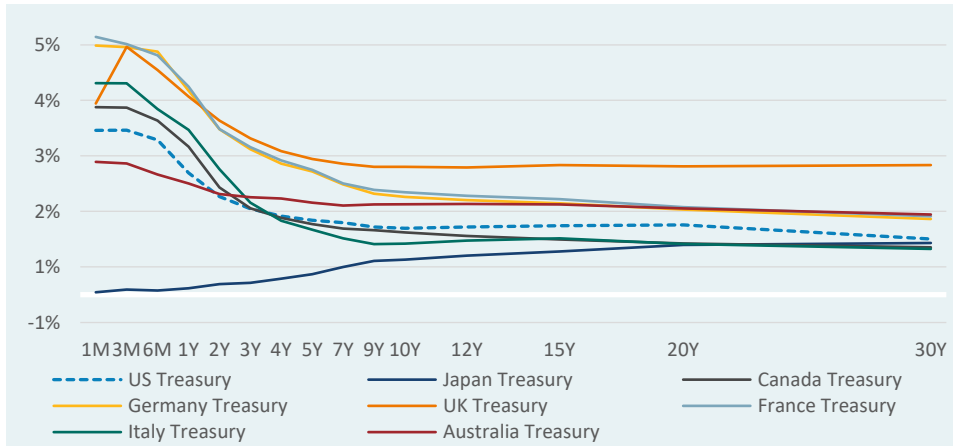
## U.S. YIELD CURVE



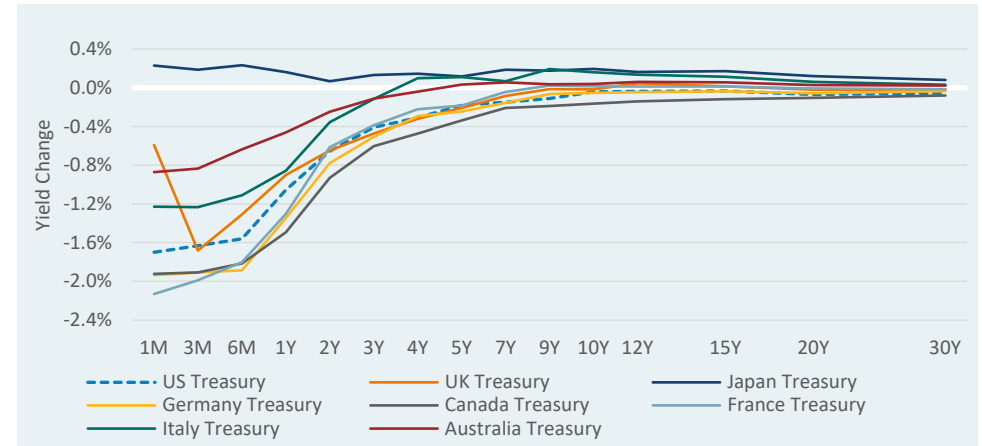
## GLOBAL GOVERNMENT YIELD CURVES



## YIELD CURVE CHANGES OVER LAST FIVE YEARS



## IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 12/31/23

# Credit environment

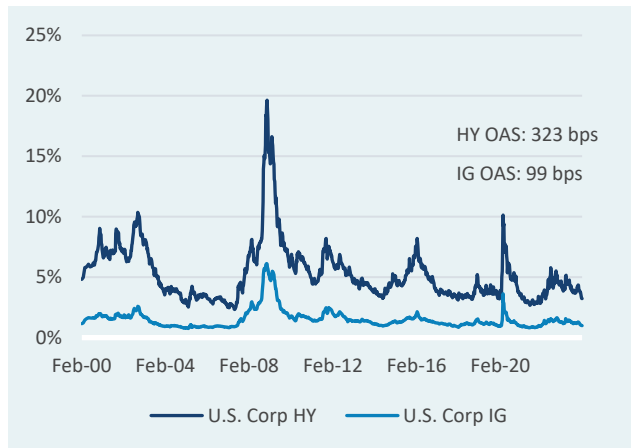
During the fourth quarter, credit markets delivered strong positive results, led by lower-quality credits such as high yield bonds and bank loans. High yield bonds delivered strong results gaining 7.2% (Bbg U.S. Corporate High Yield), while bank loans rose 2.8% (CS Leveraged Loans). Longer duration investment grade corporate bonds (Bloomberg U.S. Long Corporate Credit) rose 14.0% during the quarter as both falling interest rates and narrower credit spreads acted as a tailwind.

Higher-quality BB-rated bonds outperformed lower quality credits during the period returning 7.3% compared to 6.8% and 6.6% for B-rated and CCC-rated bonds, respectively. While absolute returns were positive, bank loans delivered a less-than-impressive 2.8%, primarily due to the

combination of falling interest rates and expectations that the Federal Reserve Bank would begin cutting rates in the future.

Credit spreads narrowed during the quarter despite concerns related to an economic slowdown, weakening corporate fundamentals, and rising geopolitical tensions. Lower-quality, high yield bond spreads fell by 0.6% to roughly 3.2%, while investment grade spreads decreased by roughly 0.2% to 1.0%. Broadly, spreads remain below their long-term historical averages, which suggests that investors remain confident about the ability of those companies to service their debt. That said, slower U.S. economic growth could lead to wider credit spreads as investors seek safety in higher quality assets.

## SPREADS



Source: Barclays, Bloomberg, as of 12/31/23

## HIGH YIELD BONDS MONTHLY INCOME RETURN



Source: Bloomberg, as of 12/31/23

## CREDIT SPREAD (OAS)

| Market              | 12/31/23 | 12/31/22 |
|---------------------|----------|----------|
| Long U.S. Corp      | 1.2%     | 1.6%     |
| U.S. Inv Grade Corp | 1.0%     | 1.3%     |
| U.S. High Yield     | 3.2%     | 4.7%     |
| U.S. Bank Loans*    | 5.0%     | 5.9%     |

Source: Barclays, Credit Suisse, Bloomberg, as of 12/31/23

\*Discount margin (4-year life)

# Default & issuance

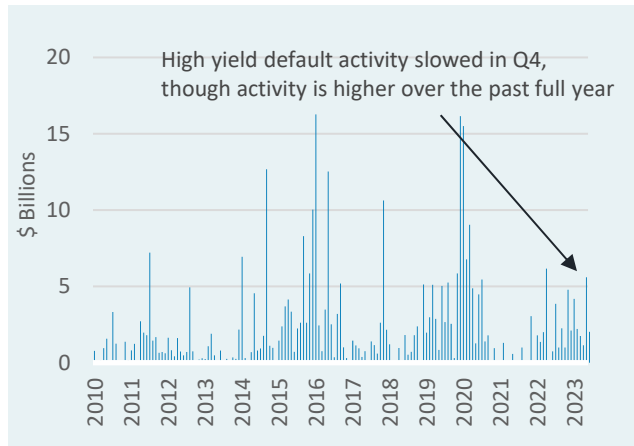
Default activity increased during Q4 as increased borrowing costs acted as a headwind. Eighteen companies defaulted, which were concentrated in the retail, telecommunications, and financial sectors. A total of \$15.8 billion of bank loan and high yield bonds were affected by default or distressed exchanges, up from \$11.5 billion in the prior quarter. Notable company defaults included Rite Aid (Retail), Ligado Networks (Telecommunications), and WeWork (Financial).

For 2023, both the number of defaults and volume increased meaningfully year-over-year. During the period, 88 companies defaulted on \$83.7 billion in high-yield bonds and bank loans compared to 35 companies and \$47.8 billion in 2022. High yield bond default rates have

increased to roughly 2.8%, up from 1.7% a year earlier, but are still below the long-term annual average of roughly 3.2%. High-yield default recovery rates ended the year at 32.8%, down sharply from 55.3% a year ago at the same time.

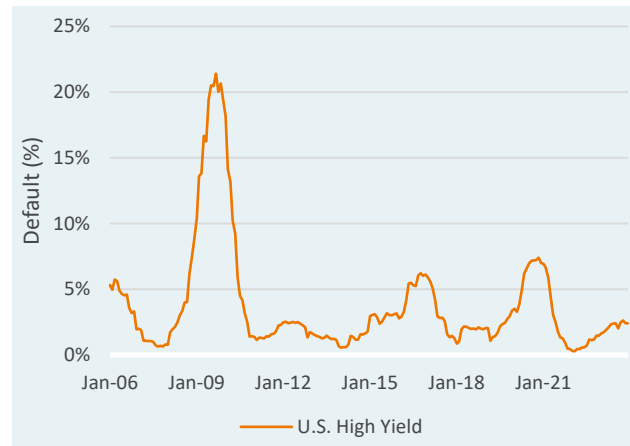
The issuance of investment grade credit slowed from the prior quarter, down to \$204 billion from \$275 billion. With borrowing costs falling as interest rates declined, high-yield bond issuance climbed slightly to \$42 billion, up from \$40 billion in Q3. On a year-over-year basis, the volume of both investment-grade and high yield issuance increased, up \$69.1 billion and \$5.3 billion, respectively.

**U.S. HY MONTHLY DEFAULTS (PAR WEIGHTED)**



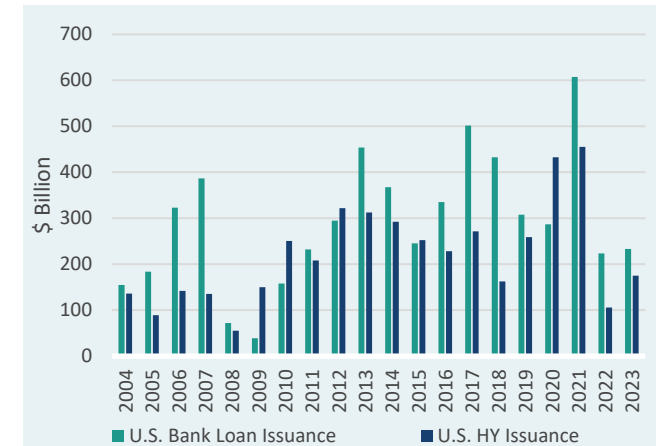
Source: BofA Merrill Lynch, as of 12/31/23

**U.S. HY SECTOR DEFAULTS (LAST 12 MONTHS)**



Source: BofA Merrill Lynch, as of 12/31/23 – par weighted

**DEVELOPED MARKET ISSUANCE (\$ BILLIONS)**



Source: BofA Merrill Lynch, all developed markets, as of 12/31/23

# Equity

# Equity environment

- Domestic equities delivered a strong rally to finish Q4, driven by a combination of better-than-expected Q3 earnings and signals of easing from the Federal Reserve. The S&P 500 Index gained +26.3% during 2023.
- U.S. equities (S&P 500 +11.7%) led international developed equities (MSCI EAFE +10.4%) and emerging market equities (MSCI EM +7.9%) during the quarter. Domestic equities also led non-U.S. equities over the full year, while emerging markets were laggards. Wide sector performance differences contributed to U.S. leadership, given the much heavier tech focus of the domestic market.
- The U.S. dollar fell sharply, as investors reassessed Federal Reserve policy and interest rates retraced lower. This move created a tailwind for investors with unhedged exposure to foreign currencies. On a trade-weighted basis, the value of the U.S. dollar fell -4.3%. However, over the full calendar year investors with unhedged currency exposure saw moderate losses, due to wide fluctuations of the dollar.
- Style factor investing delivered mixed performance for investors in Q4. Over the full year, style investing suffered substantially. Small cap underperformed by -9.6% while value stocks underperformed growth by a whopping -31.2%. Besides an extreme period during 2020, calendar year 2023 was the worst 1-year rolling period in more than two decades.
- The Cboe VIX implied volatility index moved even lower during the fourth quarter, from 17.5 to 12.5 in December. Priced volatility is incredibly low—at a level that has historically tended to coincide with very strong economic and market conditions.

|  | QTD TOTAL RETURN |          | 1 YEAR TOTAL RETURN |          |
|--|------------------|----------|---------------------|----------|
|  | (unhedged)       | (hedged) | (unhedged)          | (hedged) |
| U.S. Large Cap (S&P 500)                 | 11.7%            |          | 26.3%               |          |
| U.S. Small Cap (Russell 2000)            | 14.0%            |          | 16.9%               |          |
| U.S. Equity (Russell 3000)               | 12.1%            |          | 26.0%               |          |
| U.S. Large Value (Russell 1000 Value)    | 9.5%             |          | 11.5%               |          |
| US Large Growth (Russell 1000 Growth)    | 14.2%            |          | 42.7%               |          |
| Global Equity (MSCI ACWI)                | 11.0%            | 9.7%     | 22.2%               | 22.7%    |
| International Large (MSCI EAFE)          | 10.4%            | 6.0%     | 18.2%               | 19.9%    |
| Eurozone (EURO STOXX 50)                 | 13.3%            | 9.3%     | 26.5%               | 25.6%    |
| U.K. (FTSE 100)                          | 6.9%             | 2.5%     | 14.3%               | 8.8%     |
| Japan (TOPIX)                            | 8.2%             | 3.6%     | 19.3%               | 35.7%    |
| Emerging Markets (MSCI Emerging Markets) | 7.9%             | 5.7%     | 9.8%                | 10.1%    |

Source: Russell Investments, MSCI, STOXX, FTSE, JPX, as of 12/31/23

# Domestic equity

Domestic equities finished the fourth quarter with a strong rally, driven by a combination of better-than-expected Q3 earnings and signals of easing from the Federal Reserve. The S&P 500 Index delivered a gain of +26.3% over 2023, boosted by a +11.7% rise over the final quarter of the year. Shares in the U.S. outperformed international developed and emerging markets over the calendar year.

Third-quarter earnings surprised to the upside, driven by large earnings beats in the communication services and consumer discretionary sectors. Per FactSet, in Q3 earnings grew by 4.9% year-over-year, in contrast to initial expectations of a -0.3% decline at the beginning of the quarter.

From a sector perspective gains were broad, outside of energy. Real estate and information technology outperformed—driven by easing rates on the long-end of the curve and strong demand within the accelerated computing and artificial intelligence space.

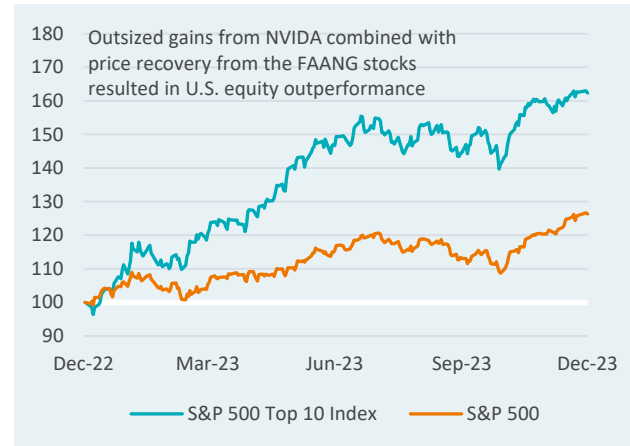
Going forward, domestic equities likely face a challenging environment to build off of the large gains seen in 2023. Valuations remain elevated as the S&P 500 Index approaches a new all-time high. At the same time, earnings growth has been modest, with Q4 earnings expected to come in at +1.3% per FactSet. Although the outlook remains challenged, growth catalysts such as stable inflation, monetary easing, and greater chance of a soft-landing present investors with upside opportunity.

## S&P 500 PRICE INDEX



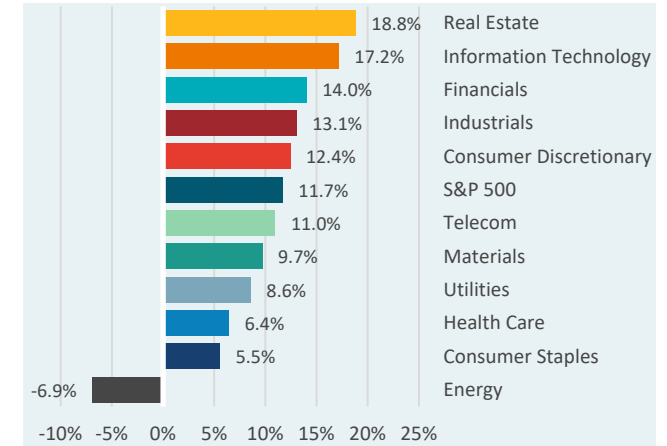
Source: Bloomberg, as of 12/31/23

## 2023 PERFORMANCE (INDEX 100)



Source: Bloomberg, S&P, as of 12/31/23

## Q4 2023 SECTOR PERFORMANCE



Source: Morningstar, as of 12/31/23



# Domestic equity size & style

Style factor investing delivered mixed performance for investors in the fourth quarter. Small cap outperformed large cap by +2.0% during Q4 (Russell 2000 vs. Russell 1000). Value underperformed Growth by -3.2% (Russell 1000 Value vs. Russell 1000 Growth). Over the full year, style investing suffered substantially. Small cap underperformed by -9.6% while value stocks underperformed growth by a whopping -31.2%. Besides an extreme period during 2020, calendar year 2023 was the worst 1-year rolling period in more than two decades.

The wide variability of style investing continues to be fueled by extreme sector volatility. For example, the information technology sector, which tends to be more concentrated in growth stocks, performed +57.8% in

2023. Meanwhile, utilities and energy sectors, which tend to be more concentrated in value stocks, performed -7.1% and -1.3%, respectively. Mega cap growth stocks have propelled the U.S. market higher in 2023—a reversal from significant losses in 2022. Many market-leading stocks are concentrated in technology and telecom sectors, which have outperformed the overall index (+57.8% and +55.8%, respectively).

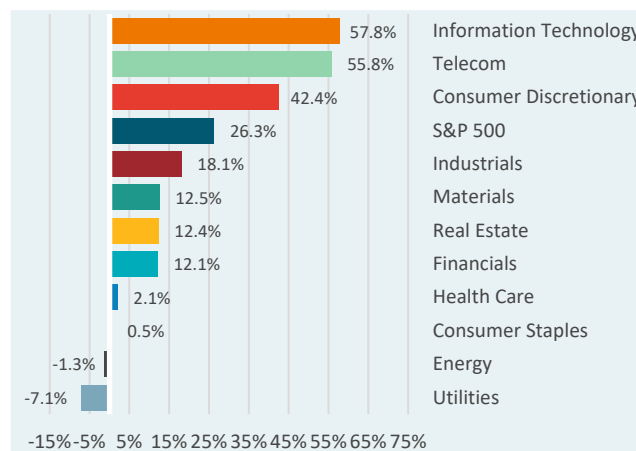
We believe sector variability and the way this has contributed to style factor volatility is further evidence that style investing should be a long-term decision. Short-term factor timing decisions should typically be pursued only in the rare occasion of obvious market mispricing and a foreseen catalyst for price correction.

## VALUE VS. GROWTH 1-YR ROLLING



Source: FTSE, as of 12/31/23

## VALUE VS GROWTH (YOY)



Source: Morningstar, as of 12/31/23

## 1-YEAR SIZE & STYLE PERFORMANCE

|           | Value | Core  | Growth |
|-----------|-------|-------|--------|
| Large Cap | 11.5% | 26.5% | 42.7%  |
| Mid Cap   | 12.7% | 17.2% | 25.9%  |
| Small Cap | 14.6% | 16.9% | 18.7%  |

Source: FTSE, as of 12/31/23

# International developed equity

International developed equities also benefited from shifting expectations around Federal Reserve policy in the fourth quarter, with the MSCI EAFE Index delivering a +10.4% gain in unhedged currency terms. Fading dollar strength provided a large boost, as expectations for potential easing from the Federal Reserve contrasted against shifting policy from the ECB and BOE.

In terms of relative performance, international developed shares trailed the U.S., but outperformed emerging market equities. Sector weightings played the largest role, as gains from mega-cap technology names drove domestic

performance, contrasting against the heavier financials and industrial sector composition of the MSCI EAFE index.

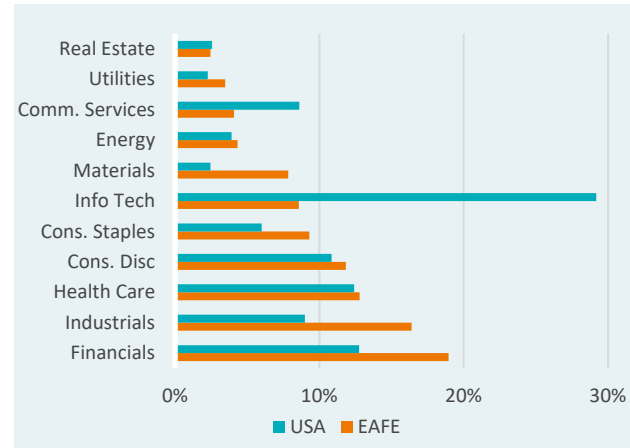
Despite macroeconomic challenges, international developed equities saw strong performance in 2023, up +18.2% in unhedged dollar terms. Japanese shares continued to benefit from zero-interest rate policy and shifting investment away from China and into Japan. European shares were lifted by better-than-expected global growth and the ability for companies to pass off higher prices – resulting in strong earnings.

## INTERNATIONAL DEVELOPED EQUITY



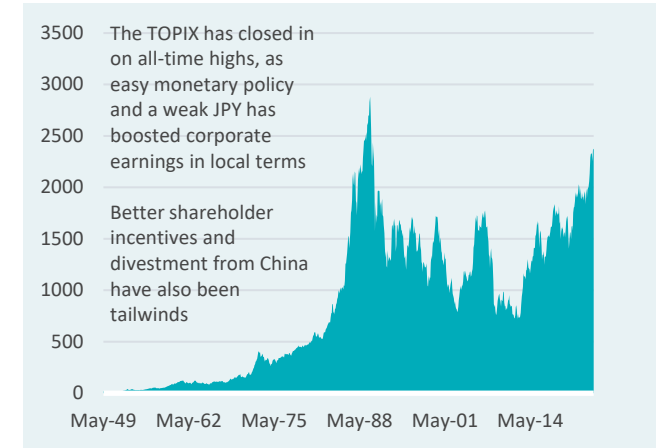
Source: MSCI, as of 12/31/23

## MSCI EAFE VS. USA SECTOR WEIGHTING



Source: MSCI, as of 12/31/23

## JAPAN TOPIX PRICE INDEX



Source: Tokyo Stock Exchange, as of 12/31/23

# Emerging market equity

Emerging markets saw a positive end to 2023, rising +7.9% in the fourth quarter – helping to notch a +9.8% gain for the index over the 2023 calendar year. While rebounding from losses seen last year (-20.1% decline in 2022), emerging market equities underperformed both domestic and international developed equities for the second straight year.

Most countries within the index saw positive returns in the last quarter of the year, fueled by the broader rally in risk assets as U.S. monetary policy expectations eased. China was the outlier, declining -4.2%.

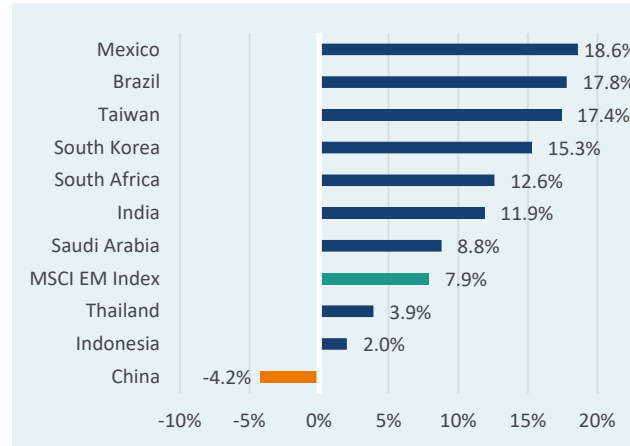
Chinese shares remain the elephant in the room within emerging markets. The MSCI EM ex China Index outperformed the flagship index by more than 10% in 2023, which highlights the large drag that China has caused, given its nearly 30% country weight in the index. The country continues to face a variety of challenges including incredibly dire demographic trends, geopolitical tension with the U.S., slowing growth, financial distress amongst the property sector and local government financing vehicles, a heavy national debt burden, and deflation. Combined with further consolidation of power within the CCP, the cheap pricing of Chinese equities may be justified.

**EMERGING MARKET EQUITY**



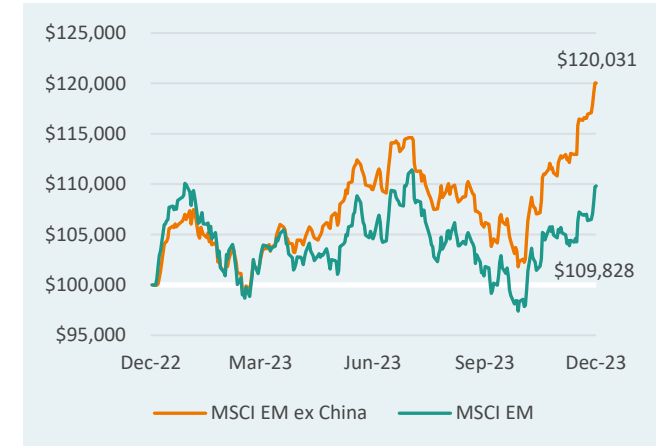
Source: MSCI, as of 12/31/23

**Q4 2023 MSCI EM COUNTRY RETURNS (USD)**



Source: Bloomberg, MSCI, as of 12/31/23

**MSCI EM VS. EM EX CHINA (GROWTH \$100K)**



Source: Bloomberg, MSCI, as of 12/31/23

# Equity valuations

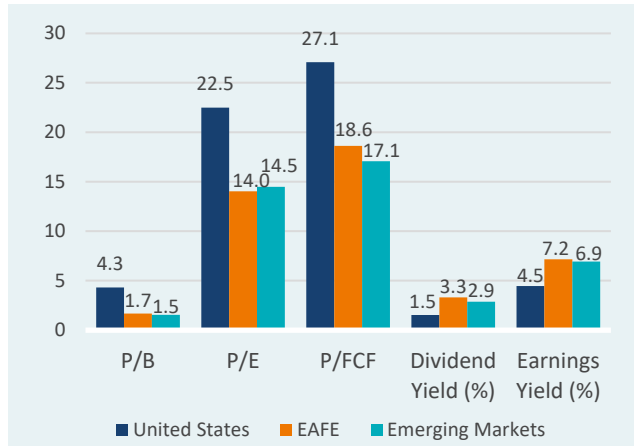
U.S. equity valuation drifted further above those of non-U.S. equities during the quarter. The domestic market is priced at a historic 71% premium over emerging market equities, up from a 59% premium in the third quarter. A portion of the U.S. pricing premium is due to a larger U.S. technology sector, which tends to demand higher valuations, though the valuation gap remains wide even after adjusting for sector composition.

The lower valuations of international developed equities may be at least partly justified due to weaker growth potential and unique challenges in those markets, though rising valuations create a high bar for future profit growth. In order for U.S. equities to justify high valuations over the

longer-term, business will need to generate supernormal earnings growth, and/or stock multiples will need to move upward even further.

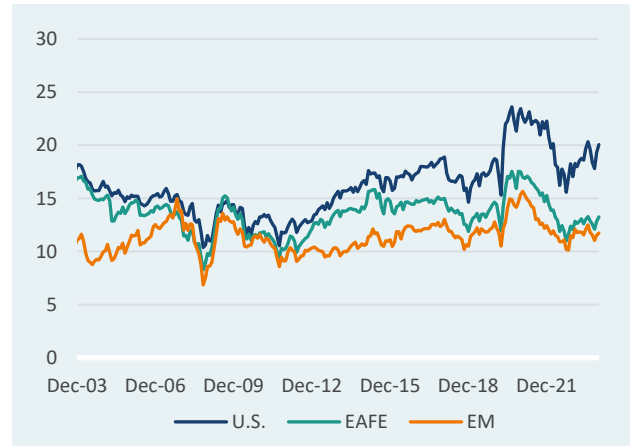
U.S. equity market valuations seem to have defied rising interest rates. Theoretically (and historically) speaking, equities should be fairly sensitive to sharply higher interest rates—the present value of stocks is less when rates are high due to the discounting effect, higher interest rates damage profits as financing is more expensive, and the overall economy tends to slow as borrowing costs rise which bodes poorly for profits. At least for now, the U.S. market remains richly valued and median bank forecasts are for a healthy 2024 S&P 500 return.

**MSCI VALUATION METRICS (3-MONTH AVG)**



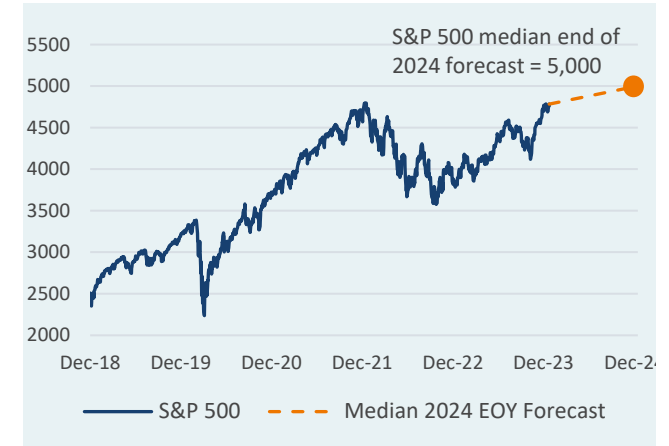
Source: Bloomberg, as of 12/31/23

**FORWARD PRICE/EARNINGS RATIO**



Source: MSCI, Bloomberg, as of 12/31/23

**2024 S&P 500 MEDIAN FORECAST**



Source: Bloomberg, as of 1/10/24. Banks included in forecast include J.P. Morgan, Goldman Sachs, Bank of America, Citibank, Morgan Stanley, Deutsche Bank, and UBS.

# Market volatility

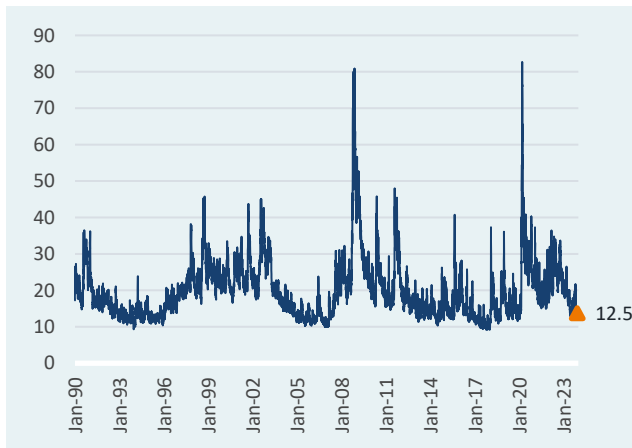
The Cboe VIX implied volatility index moved even lower during the fourth quarter, from 17.5 to 12.5 in December. Priced volatility is incredibly low—at a level that has historically tended to coincide with very strong economic and market conditions.

Realized volatility of global equity markets over the past year has also moderated. The relative volatility of markets has moved back in line with historical behavior—U.S. equities showing the lowest volatility, followed closely by international developed equities, and with emerging market

equities delivering greater risk. This behavior is a reversal of recent years when emerging market volatility was lower than that of developed markets—an uncommon occurrence historically speaking.

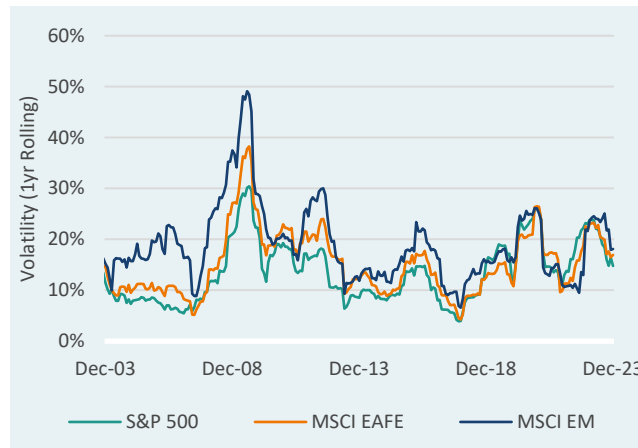
Bond markets remain shaky, as indicated by the “MOVE” Index—which calculates the implied volatility of U.S. Treasury securities. Uncertainty around inflation, the Federal Reserve’s interest rate path and the extent of rate cuts, potential recession, and fears around the U.S. fiscal situation, are likely to act as an ongoing support to volatility.

**U.S. IMPLIED VOLATILITY (VIX)**



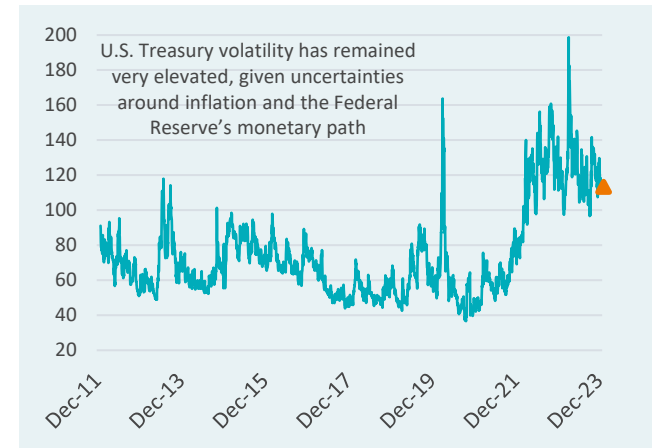
Source: Cboe, as of 12/31/23

**REALIZED VOLATILITY**



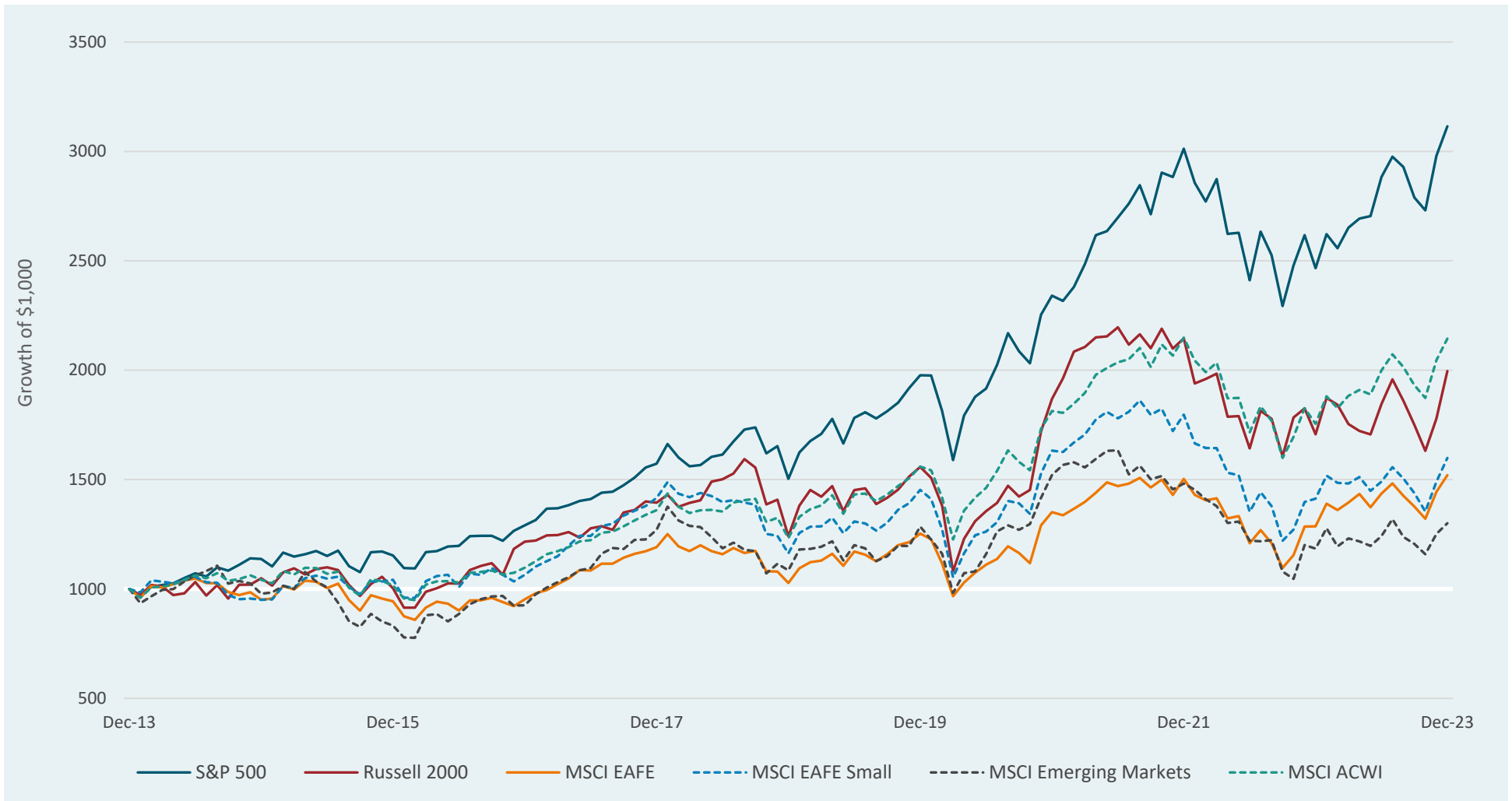
Source: S&P, MSCI, as of 12/31/23

**U.S. TREASURY IMPLIED VOL (“MOVE” INDEX)**



Source: Bloomberg, as of 12/31/23

# Long-term equity performance



Source: MPI, as of 12/31/23

# Other assets

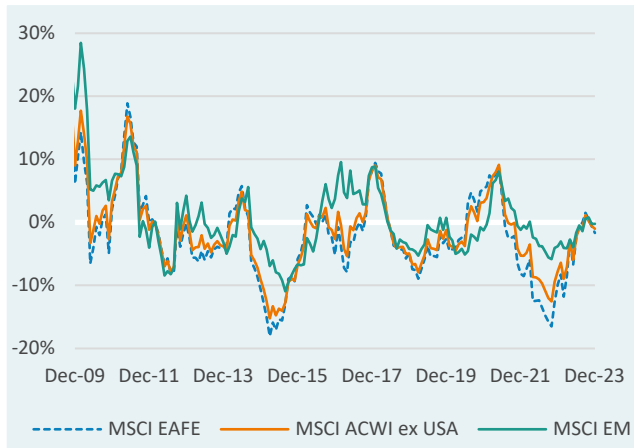
# Currency

The U.S. dollar fell sharply in the fourth quarter, as investors reassessed Federal Reserve policy and interest rates retraced lower. This move created a tailwind for investors with unhedged exposure to foreign currencies. On a trade-weighted basis, the value of the U.S. dollar fell -4.3%. However, following wide fluctuations of the dollar during 2023, and the performance volatility that resulted, investors with unhedged foreign currency exposure saw moderate losses. For investors with unhedged international developed equity exposure, this delivered a loss of -1.7%. Unhedged exposure to emerging market currencies resulted in a loss of -0.2%.

As investors evaluate market movements and performance of 2023, it may be worth reflecting on the benefits which a more thoughtful

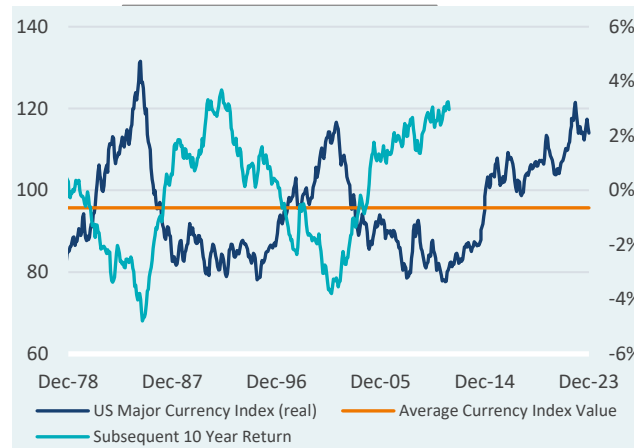
currency approach might deliver. A better approach may reduce the uncompensated risk of unhedged foreign currency exposure. Additionally, the MSCI Currency Factor Mix Index—a representation of a passive investment in the currency market, by investing in currencies with higher interest rates, currencies that are undervalued, and currencies that are showing positive price momentum—has shown a positive one-year rolling return over most periods with low volatility. This is what was delivered in 2023. During the year, an unhedged exposure to currency markets (assuming MSCI EAFE equity implementation) resulted in a loss of -1.7% and volatility of 7.5%. Meanwhile, an implementation to Currency Factor Mix delivered a gain of +1.4% and volatility of 2.5%.

**EFFECT OF CURRENCY (1-YEAR ROLLING)**



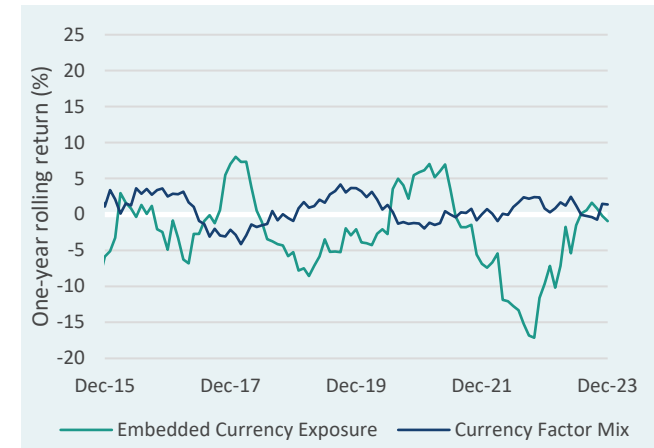
Source: MSCI, as of 12/31/23

**U.S. DOLLAR MAJOR CURRENCY INDEX**



Source: Bloomberg, as of 12/31/23

**EMBEDDED CURRENCY VS CURRENCY FACTORS**



Source: Bloomberg, MSCI, as of 12/31/23



# Event strategies lead in equity, credit

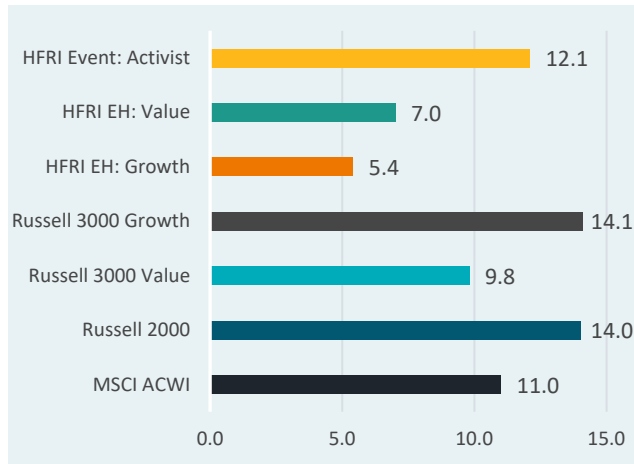
Stock and credit markets rallied in the fourth quarter, and directionally biased strategies within those markets outperformed non-directional peers. Within the equity focused strategy group:

- Activist strategies, which benefited from their smaller cap exposure, continued their run of strong performance with favorable up capture relative to L/S peers.
- Interestingly, value managers outperformed growth counterparts despite growth indexes outperforming value, likely due to a smaller cap bias.

Within the fixed income / credit focused strategy group:

- Event Driven credit strategies such as Distressed and Credit Arbitrage outperformed Relative Value credit strategies such as Structured Credit and Long/Short Credit, as market directionality paid off and economic optimism benefited special situation, catalyst-oriented positioning.
- Event Driven strategies have outperformed both stocks and high yield over the last few years after struggling to keep up in the decade following the Global Financial Crisis.

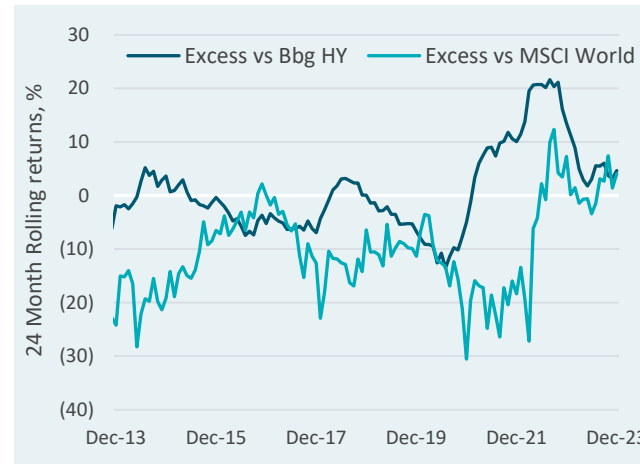
## 4Q RETURNS (%) FOR EQUITY STRATEGIES



Source: HFR, MPI. Data as of 12/31/23

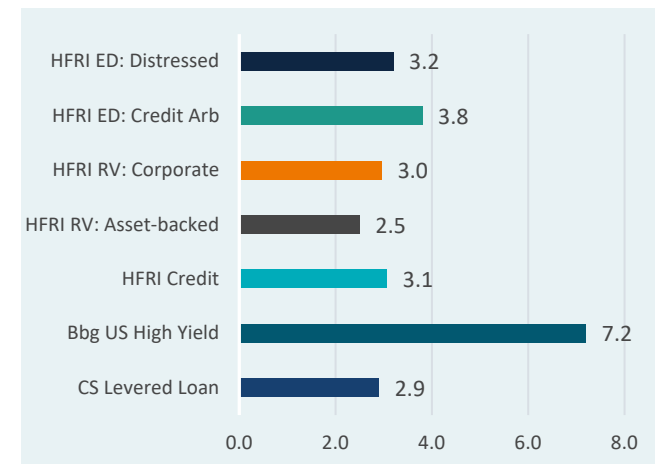
EH = Equity Hedge ED = Event Driven

## HFRI EVENT DRIVEN RETURNS VS STOCKS/HY



Source: HFR, MPI. Data as of 12/31/23 HFRI Event Driven (Total) vs Bloomberg US Corp HY & MSCI World Index

## 4Q RETURNS (%) FOR CREDIT STRATEGIES



Source: HFR, MPI. Data as of 12/31/23

ED = Event Driven RV = Relative Value

# Appendix

# Periodic table of returns

|                         | 2003 | 2004 | 2005 | 2006 | 2007 | 2008  | 2009  | 2010 | 2011  | 2012 | 2013 | 2014  | 2015  | 2016 | 2017 | 2018  | 2019 | 2020 | 2021 | 2022  | YTD  | 5-Year | 10-Year |
|-------------------------|------|------|------|------|------|-------|-------|------|-------|------|------|-------|-------|------|------|-------|------|------|------|-------|------|--------|---------|
| Large Cap Growth        | 56.3 | 26.0 | 34.5 | 32.6 | 39.8 | 5.2   | 79.0  | 29.1 | 14.3  | 18.6 | 43.3 | 13.5  | 13.3  | 31.7 | 37.3 | 6.7   | 36.4 | 38.5 | 28.3 | 16.1  | 42.7 | 19.5   | 14.9    |
| Large Cap Equity        | 48.5 | 22.2 | 21.4 | 26.9 | 16.2 | 1.4   | 37.2  | 26.9 | 7.8   | 18.1 | 38.8 | 13.2  | 5.7   | 21.3 | 30.2 | 1.9   | 31.4 | 34.6 | 27.6 | 9.4   | 26.5 | 15.5   | 11.8    |
| Small Cap Growth        | 47.3 | 20.7 | 20.1 | 23.5 | 15.8 | -6.5  | 34.5  | 24.5 | 2.6   | 17.9 | 34.5 | 13.0  | 0.9   | 17.3 | 25.0 | 0.0   | 28.5 | 21.0 | 27.1 | 1.5   | 18.7 | 10.9   | 8.4     |
| International Equity    | 46.0 | 18.3 | 14.0 | 22.2 | 11.8 | -21.4 | 32.5  | 19.2 | 1.5   | 17.5 | 33.5 | 11.8  | 0.6   | 12.1 | 22.2 | -1.5  | 26.5 | 20.0 | 26.5 | -4.7  | 18.2 | 10.0   | 7.4     |
| Small Cap Equity        | 39.2 | 16.5 | 7.5  | 18.4 | 11.6 | -25.9 | 28.4  | 16.8 | 0.4   | 16.4 | 33.1 | 6.0   | 0.0   | 11.8 | 21.7 | -3.5  | 25.5 | 18.3 | 25.2 | -7.5  | 16.9 | 10.0   | 7.2     |
| 60/40 Global Portfolio  | 30.0 | 14.5 | 7.1  | 16.6 | 10.9 | -28.9 | 27.2  | 16.7 | 0.1   | 16.3 | 32.5 | 5.6   | -0.4  | 11.3 | 17.1 | -4.8  | 22.4 | 14.0 | 17.7 | -13.0 | 15.4 | 9.2    | 7.2     |
| Small Cap Value         | 29.9 | 14.3 | 6.3  | 15.5 | 10.3 | -33.8 | 23.3  | 16.1 | -2.1  | 15.3 | 23.3 | 4.9   | -0.8  | 11.2 | 14.6 | -6.0  | 22.0 | 10.3 | 14.8 | -14.5 | 14.6 | 8.2    | 6.8     |
| Large Cap Value         | 29.7 | 12.9 | 5.3  | 15.1 | 7.0  | -35.6 | 20.6  | 15.5 | -2.9  | 14.6 | 12.1 | 4.2   | -1.4  | 8.0  | 13.7 | -8.3  | 18.6 | 7.8  | 11.3 | -14.5 | 11.5 | 7.2    | 5.1     |
| Emerging Markets Equity | 25.2 | 11.4 | 4.7  | 13.3 | 7.0  | -36.8 | 19.7  | 13.1 | -4.2  | 11.5 | 11.0 | 3.4   | -2.5  | 7.1  | 7.8  | -9.3  | 18.4 | 7.5  | 8.9  | -17.3 | 9.8  | 7.0    | 4.3     |
| Hedge Funds of Funds    | 23.9 | 9.1  | 4.6  | 10.4 | 5.8  | -37.6 | 18.9  | 10.2 | -5.5  | 10.5 | 9.0  | 2.8   | -3.8  | 5.7  | 7.7  | -11.0 | 8.7  | 4.6  | 6.5  | -19.1 | 6.3  | 5.3    | 3.3     |
| US Bonds                | 11.6 | 6.9  | 4.6  | 9.1  | 4.4  | -38.4 | 11.5  | 8.2  | -5.7  | 4.8  | 0.1  | 0.0   | -4.4  | 2.6  | 7.0  | -11.2 | 7.8  | 2.8  | 2.8  | -20.1 | 5.5  | 5.1    | 2.7     |
| Cash                    | 9.0  | 6.3  | 4.2  | 4.8  | -0.2 | -38.5 | 5.9   | 6.5  | -11.7 | 4.2  | -2.0 | -1.8  | -7.5  | 1.0  | 3.5  | -12.9 | 7.7  | 0.5  | 0.0  | -20.4 | 5.0  | 3.7    | 1.8     |
| Real Estate             | 4.1  | 4.3  | 3.2  | 4.3  | -1.6 | -43.1 | 0.2   | 5.7  | -13.3 | 0.1  | -2.3 | -4.5  | -14.9 | 0.5  | 1.7  | -13.8 | 6.4  | 0.5  | -1.5 | -26.4 | -5.1 | 1.8    | 1.2     |
| Commodities             | 1.0  | 1.4  | 2.4  | 2.1  | -9.8 | -53.2 | -16.9 | 0.1  | -18.2 | -1.1 | -9.5 | -17.0 | -24.7 | 0.3  | 0.9  | -14.6 | 2.1  | -3.1 | -2.5 | -29.1 | -7.9 | 1.1    | -1.1    |

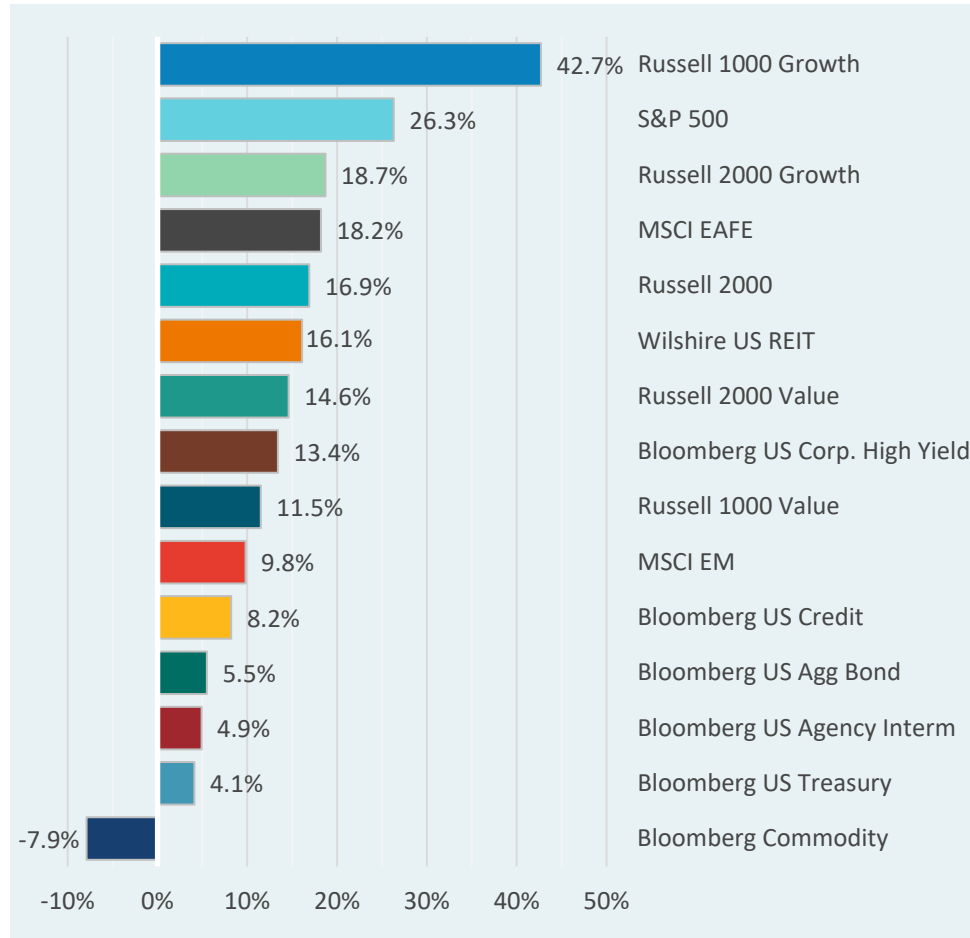
BEST  
↑  
↓  
WORST

|  |   |   |
|--|---|---|
|  Large Cap Equity |  Small Cap Growth        |  Commodities                             |
|  Large Cap Value  |  International Equity    |  Real Estate                             |
|  Large Cap Growth |  Emerging Markets Equity |  Hedge Funds of Funds                    |
|  Small Cap Equity |  US Bonds                |  60% MSCI ACWI/40% Bloomberg Global Bond |
|  Small Cap Value  |  Cash                    |   |

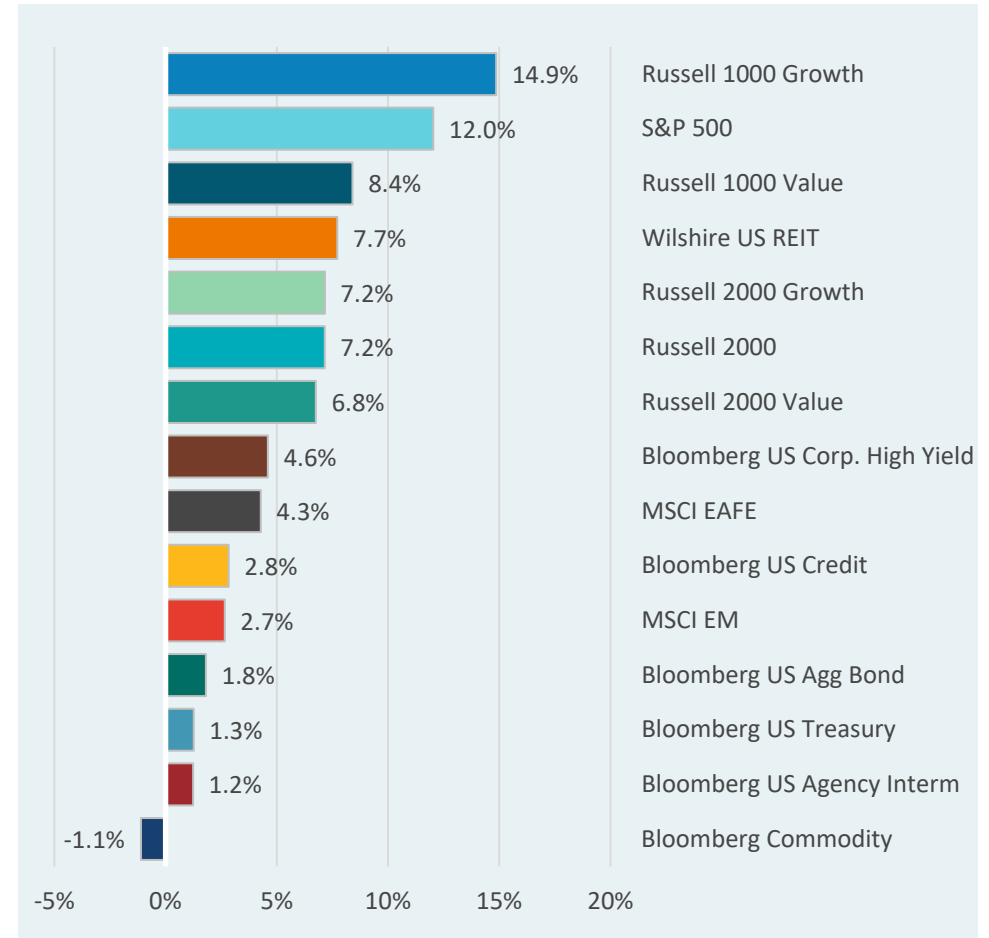
Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, Bloomberg US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, Bloomberg Global Bond. NCREIF Property Index performance data as of 9/30/23.

# Major asset class returns

ONE YEAR ENDING DECEMBER



TEN YEARS ENDING DECEMBER



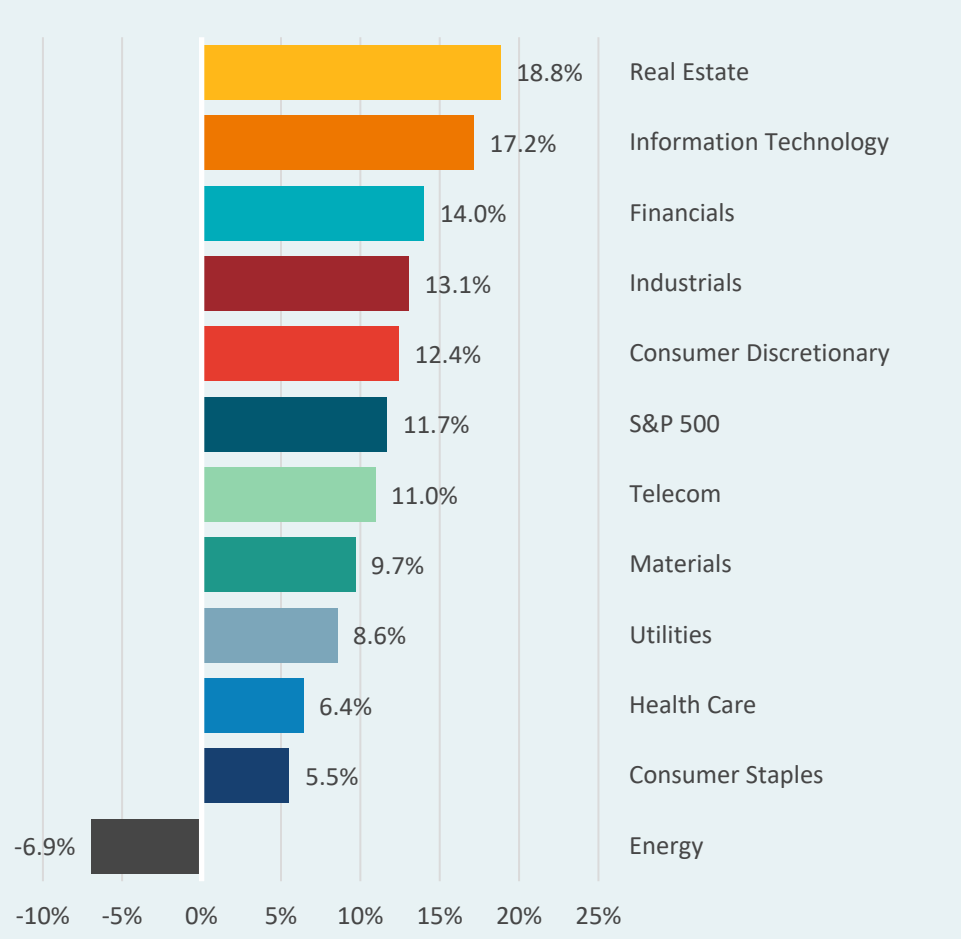
\*Only publicly traded asset performance is shown here. Performance of private assets is typically released with a 3- to 6-month delay.

Source: Morningstar, as of 12/31/23

Source: Morningstar, as of 12/31/23

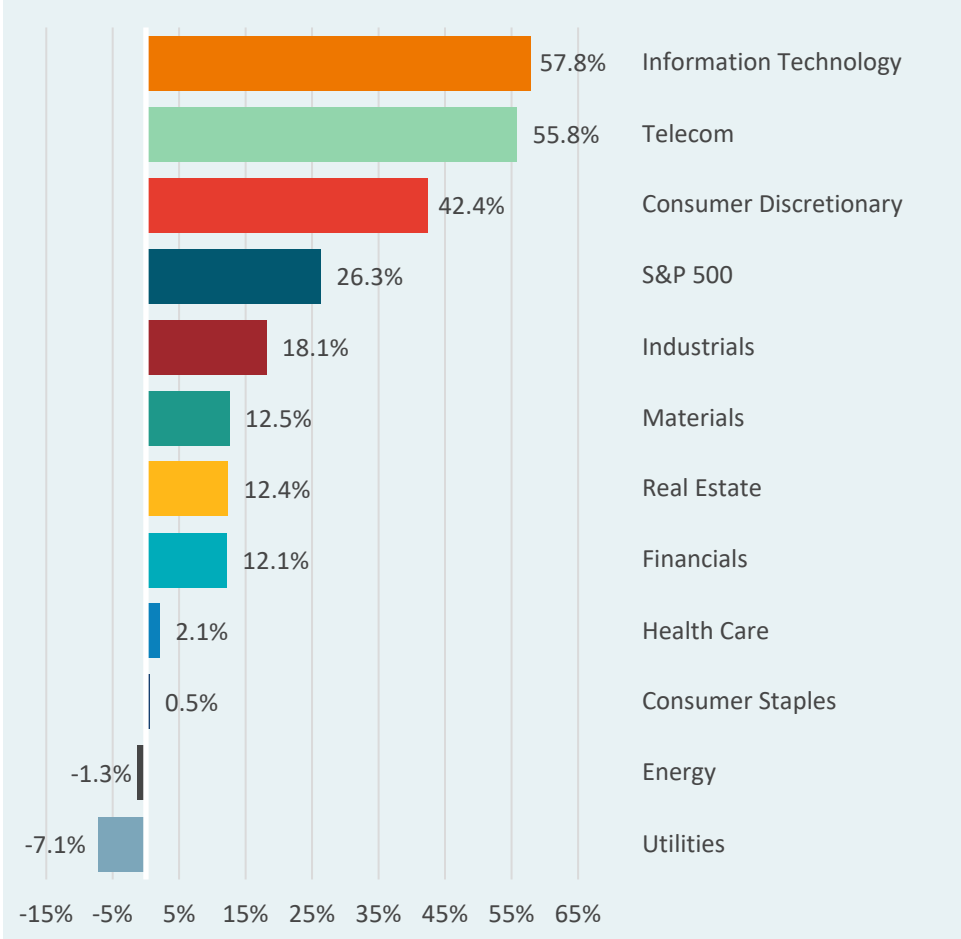
# S&P 500 sector returns

QTD



Source: Morningstar, as of 12/31/23

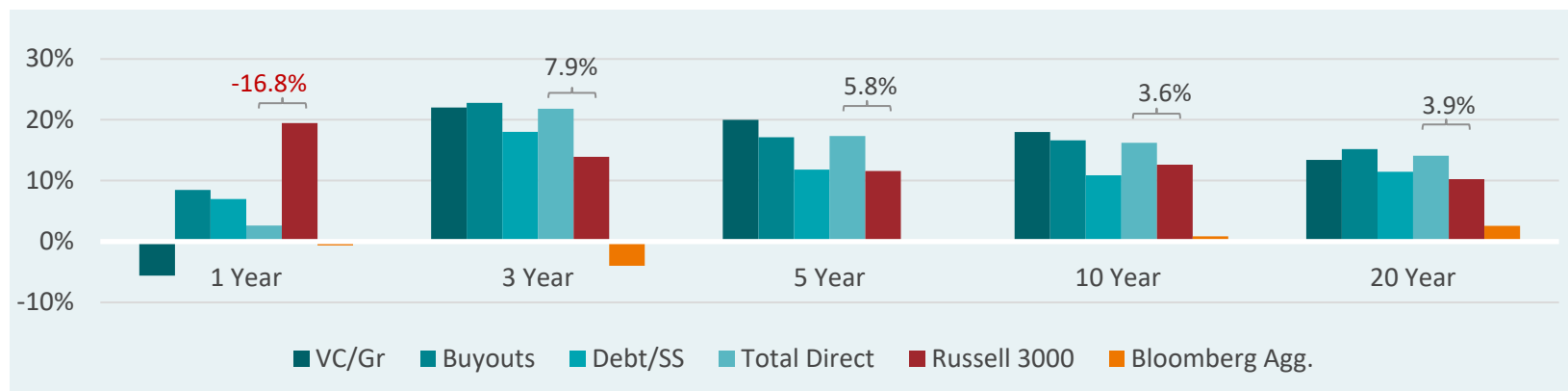
ONE YEAR ENDING DECEMBER



Source: Morningstar, as of 12/31/23

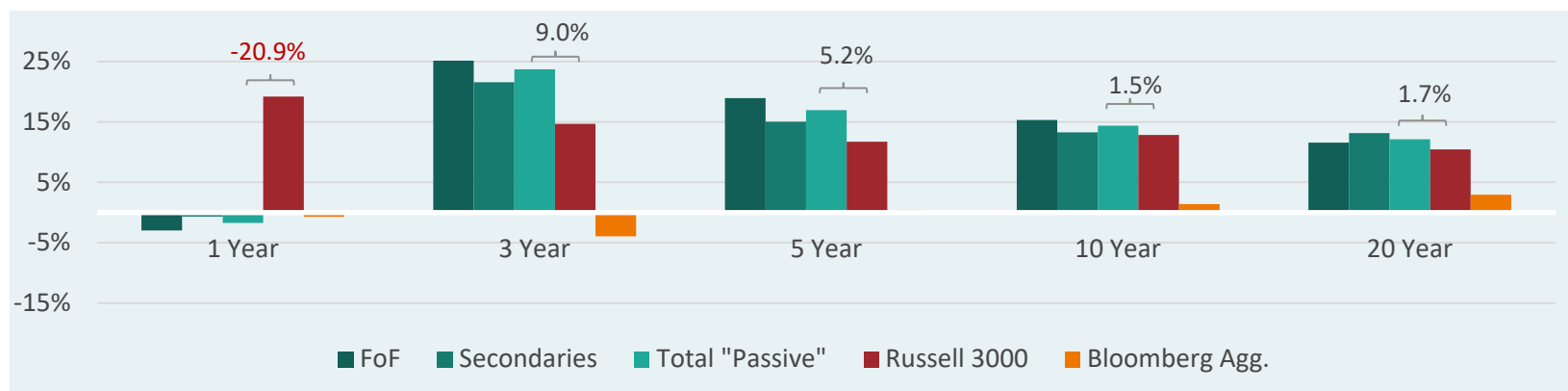
# Private equity vs. traditional assets performance

## DIRECT PRIVATE EQUITY FUND INVESTMENTS



Direct P.E Fund Investments outperformed comparable public equities across all time periods, aside from the 1-year.

## "PASSIVE" STRATEGIES

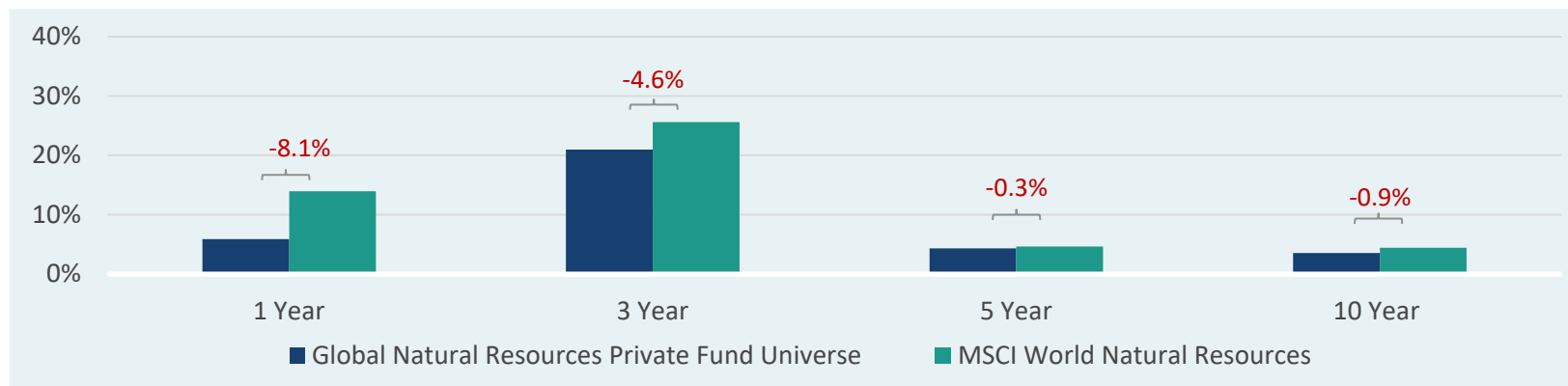


"Passive" strategies outperformed comparable public equities across all time periods, aside from the 1-year.

Sources: Refinitiv PME: U.S. Private Equity Funds sub asset classes as of June 30, 2023. Public Market Equivalent returns resulted from "Total Passive" and Total Direct's identical cash flows invested into and distributed from respective traditional asset comparable.

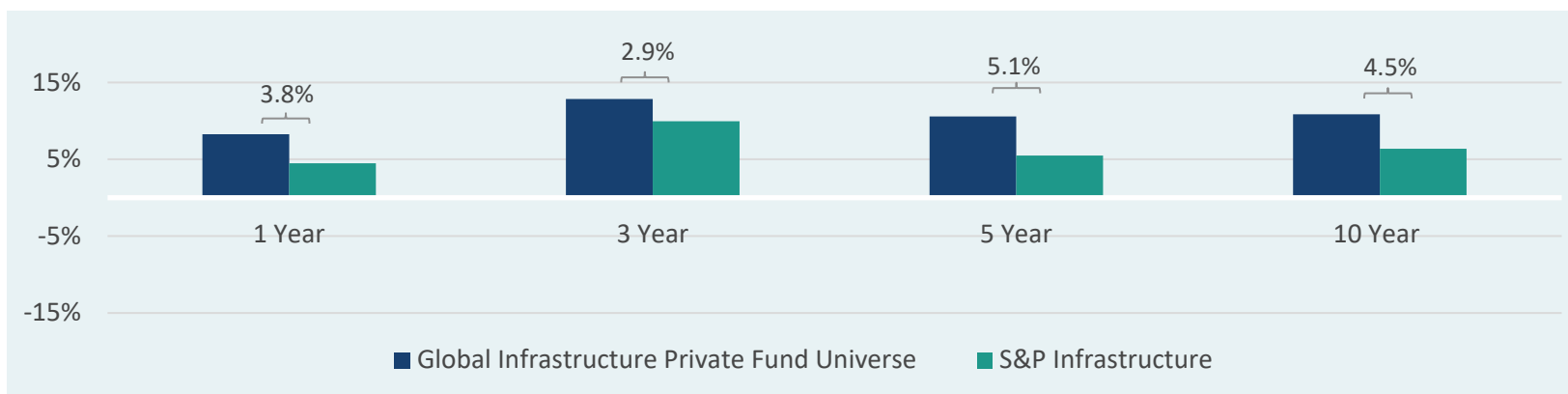
# Private vs. liquid real assets performance

## GLOBAL NATURAL RESOURCES FUNDS



N.R. funds underperformed the MSCI World Natural Resources benchmark across all periods.

## GLOBAL INFRASTRUCTURE FUNDS

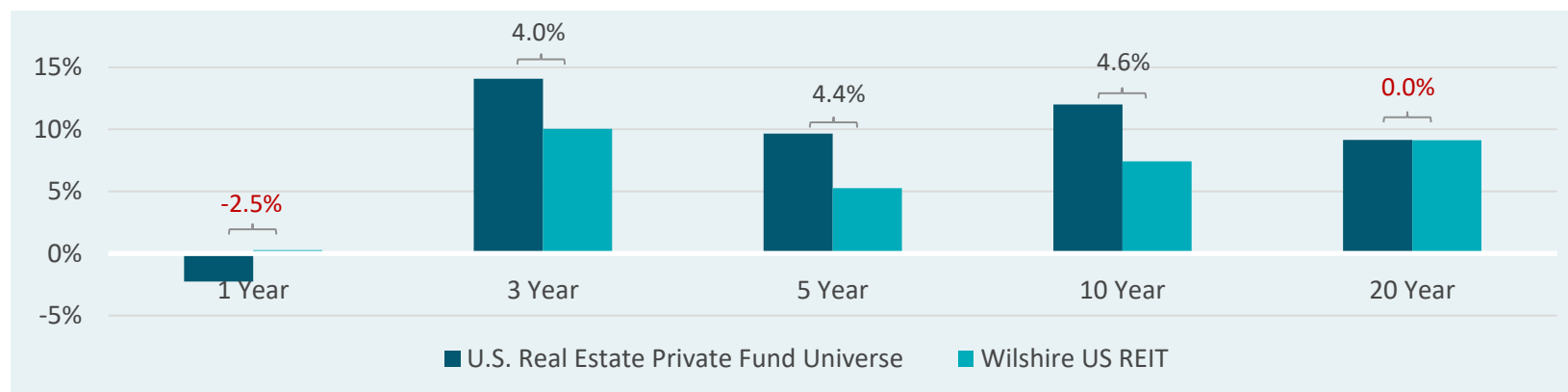


Infra. funds outperformed the S&P Infra. across all periods.

Sources: Refinitiv PME: Global Natural Resources (vintage 1999 and later, inception of MSCI World Natural Resources benchmark) and Global Infrastructure (vintage 2002 and later, inception of S&P Infrastructure benchmark) universes as of June 30, 2023. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real assets universes.

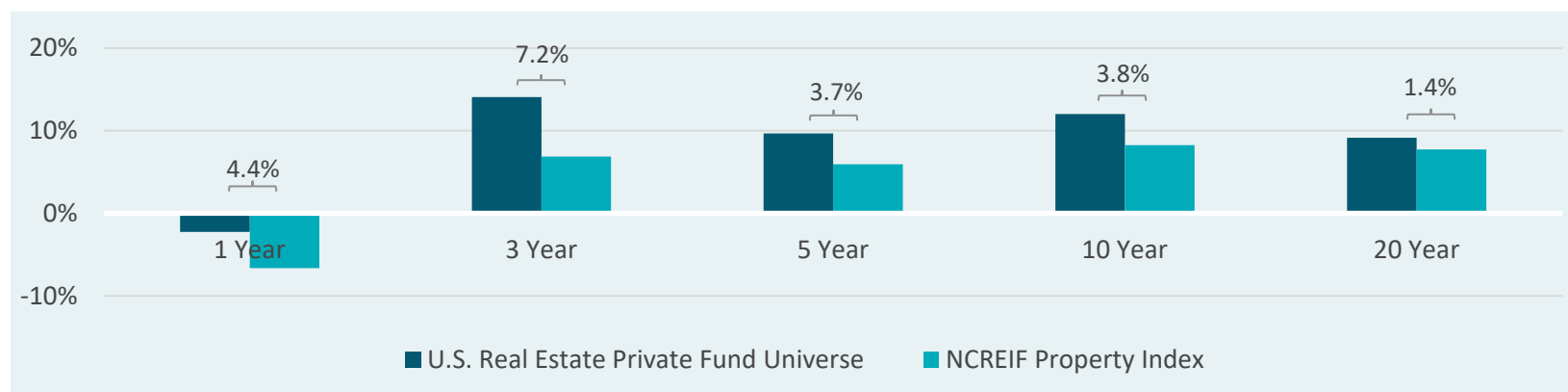
# Private vs. liquid and core real estate performance

## U.S. PRIVATE REAL ESTATE FUNDS VS. LIQUID UNIVERSE



U.S. Private R.E. fund performance relative to the Wilshire U.S. REIT Index has been mixed.

## U.S. PRIVATE REAL ESTATE FUNDS VS. CORE FUNDS



U.S. Private R.E. Funds outperformed the NCREIF Property Index across all time periods.

Sources: Refinitiv PME: U.S. Real Estate universes as of June 30, 2023. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real estate universes.



# Detailed index returns

## DOMESTIC EQUITY

|                        | Month | QTD  | YTD  | 1 Year | 3 Year | 5 Year | 10 Year |
|------------------------|-------|------|------|--------|--------|--------|---------|
| <b>Core Index</b>      |       |      |      |        |        |        |         |
| S&P 500                | 4.5   | 11.7 | 26.3 | 26.3   | 10.0   | 15.7   | 12.0    |
| S&P 500 Equal Weighted | 6.9   | 11.9 | 13.9 | 13.9   | 9.3    | 13.8   | 10.4    |
| DJ Industrial Average  | 4.9   | 13.1 | 16.2 | 16.2   | 9.4    | 12.5   | 11.1    |
| Russell Top 200        | 4.1   | 11.7 | 29.9 | 29.9   | 10.0   | 16.5   | 12.7    |
| Russell 1000           | 4.9   | 12.0 | 26.5 | 26.5   | 9.0    | 15.5   | 11.8    |
| Russell 2000           | 12.2  | 14.0 | 16.9 | 16.9   | 2.2    | 10.0   | 7.2     |
| Russell 3000           | 5.3   | 12.1 | 26.0 | 26.0   | 8.5    | 15.2   | 11.5    |
| Russell Mid Cap        | 7.7   | 12.8 | 17.2 | 17.2   | 5.9    | 12.7   | 9.4     |
| <b>Style Index</b>     |       |      |      |        |        |        |         |
| Russell 1000 Growth    | 4.4   | 14.2 | 42.7 | 42.7   | 8.9    | 19.5   | 14.9    |
| Russell 1000 Value     | 5.5   | 9.5  | 11.5 | 11.5   | 8.9    | 10.9   | 8.4     |
| Russell 2000 Growth    | 12.0  | 12.7 | 18.7 | 18.7   | (3.5)  | 9.2    | 7.2     |
| Russell 2000 Value     | 12.4  | 15.3 | 14.6 | 14.6   | 7.9    | 10.0   | 6.8     |

## INTERNATIONAL EQUITY

|                        | Month | QTD  | YTD  | 1 Year | 3 Year | 5 Year | 10 Year |
|------------------------|-------|------|------|--------|--------|--------|---------|
| <b>Broad Index</b>     |       |      |      |        |        |        |         |
| MSCI ACWI              | 4.8   | 11.0 | 22.2 | 22.2   | 5.7    | 11.7   | 7.9     |
| MSCI ACWI ex US        | 5.0   | 9.8  | 15.6 | 15.6   | 1.5    | 7.1    | 3.8     |
| MSCI EAFE              | 5.3   | 10.4 | 18.2 | 18.2   | 4.0    | 8.2    | 4.3     |
| MSCI EM                | 3.9   | 7.9  | 9.8  | 9.8    | (5.1)  | 3.7    | 2.7     |
| MSCI EAFE Small Cap    | 7.3   | 11.1 | 13.2 | 13.2   | (0.7)  | 6.6    | 4.8     |
| <b>Style Index</b>     |       |      |      |        |        |        |         |
| MSCI EAFE Growth       | 5.7   | 12.7 | 17.6 | 17.6   | 0.3    | 8.8    | 5.1     |
| MSCI EAFE Value        | 4.9   | 8.2  | 19.0 | 19.0   | 7.6    | 7.1    | 3.2     |
| <b>Regional Index</b>  |       |      |      |        |        |        |         |
| MSCI UK                | 4.5   | 6.9  | 14.1 | 14.1   | 8.8    | 6.9    | 2.5     |
| MSCI Japan             | 4.4   | 8.2  | 20.3 | 20.3   | 0.7    | 6.9    | 5.0     |
| MSCI Euro              | 4.4   | 12.9 | 25.2 | 25.2   | 6.0    | 9.3    | 4.1     |
| MSCI EM Asia           | 3.3   | 6.7  | 7.8  | 7.8    | (6.9)  | 4.3    | 4.1     |
| MSCI EM Latin American | 8.3   | 17.6 | 32.7 | 32.7   | 9.9    | 6.1    | 2.1     |

## FIXED INCOME

|                               | Month | QTD  | YTD  | 1 Year | 3 Year | 5 Year | 10 Year |
|-------------------------------|-------|------|------|--------|--------|--------|---------|
| <b>Broad Index</b>            |       |      |      |        |        |        |         |
| Bloomberg US TIPS             | 2.7   | 4.7  | 3.9  | 3.9    | (1.0)  | 3.2    | 2.4     |
| Bloomberg US Treasury Bills   | 0.5   | 1.4  | 5.1  | 5.1    | 2.1    | 1.9    | 1.3     |
| Bloomberg US Agg Bond         | 3.8   | 6.8  | 5.5  | 5.5    | (3.3)  | 1.1    | 1.8     |
| Bloomberg US Universal        | 3.8   | 6.8  | 6.2  | 6.2    | (3.0)  | 1.4    | 2.1     |
| <b>Duration</b>               |       |      |      |        |        |        |         |
| Bloomberg US Treasury 1-3 Yr  | 1.2   | 2.6  | 4.3  | 4.3    | (0.1)  | 1.3    | 1.0     |
| Bloomberg US Treasury Long    | 8.6   | 12.7 | 3.1  | 3.1    | (11.4) | (1.2)  | 2.3     |
| Bloomberg US Treasury         | 3.4   | 5.7  | 4.1  | 4.1    | (3.8)  | 0.5    | 1.3     |
| <b>Issuer</b>                 |       |      |      |        |        |        |         |
| Bloomberg US MBS              | 4.3   | 7.5  | 5.0  | 5.0    | (2.9)  | 0.3    | 1.4     |
| Bloomberg US Corp. High Yield | 3.7   | 7.2  | 13.4 | 13.4   | 2.0    | 5.4    | 4.6     |
| Bloomberg US Agency Interm    | 1.6   | 3.2  | 4.9  | 4.9    | (1.1)  | 1.1    | 1.2     |
| Bloomberg US Credit           | 4.2   | 8.2  | 8.2  | 8.2    | (3.2)  | 2.4    | 2.8     |

## OTHER

|                           | Month | QTD   | YTD   | 1 Year | 3 Year | 5 Year | 10 Year |
|---------------------------|-------|-------|-------|--------|--------|--------|---------|
| <b>Index</b>              |       |       |       |        |        |        |         |
| Bloomberg Commodity       | (2.7) | (4.6) | (7.9) | (7.9)  | 10.8   | 7.2    | (1.1)   |
| Wilshire US REIT          | 10.2  | 16.3  | 16.1  | 16.1   | 7.5    | 7.6    | 7.7     |
| CS Leveraged Loans        | 1.6   | 2.9   | 13.0  | 13.0   | 5.6    | 5.6    | 4.4     |
| S&P Global Infrastructure | 4.2   | 10.9  | 6.8   | 6.8    | 6.0    | 7.4    | 5.7     |
| Alerian MLP               | (3.4) | 3.0   | 23.8  | 23.8   | 31.8   | 10.9   | 1.6     |
| <b>Regional Index</b>     |       |       |       |        |        |        |         |
| JPM EMBI Global Div       | 4.7   | 9.2   | 11.1  | 11.1   | (3.6)  | 1.7    | 3.2     |
| JPM GBI-EM Global Div     | 3.2   | 8.1   | 12.7  | 12.7   | (3.2)  | 1.1    | 0.1     |
| <b>Hedge Funds</b>        |       |       |       |        |        |        |         |
| HFRI Composite            | 2.6   | 3.6   | 7.5   | 7.5    | 4.3    | 7.0    | 4.5     |
| HFRI FOF Composite        | 2.3   | 3.4   | 6.3   | 6.3    | 2.3    | 5.1    | 3.3     |
| <b>Currency (Spot)</b>    |       |       |       |        |        |        |         |
| Euro                      | 1.2   | 4.3   | 3.5   | 3.5    | (3.4)  | (0.7)  | (2.2)   |
| Pound Sterling            | 0.7   | 4.4   | 6.0   | 6.0    | (2.3)  | 0.0    | (2.6)   |
| Yen                       | 4.9   | 5.9   | (6.4) | (6.4)  | (9.9)  | (4.9)  | (2.9)   |

Source: Morningstar, HFRI, as of 12/31/23

# Definitions

**Bloomberg US Weekly Consumer Comfort Index** - tracks the public's economic attitudes each week, providing a high-frequency read on consumer sentiment. The index, based on cell and landline telephone interviews with a random, representative national sample of U.S. adults, tracks Americans' ratings of the national economy, their personal finances and the buying climate on a weekly basis, with views of the economy's direction measured separately each month. ([www.lanqerresearch.com](http://www.lanqerresearch.com))

**University of Michigan Consumer Sentiment Index** - A survey of consumer attitudes concerning both the present situation as well as expectations regarding economic conditions conducted by the University of Michigan. For the preliminary release approximately three hundred consumers are surveyed while five hundred are interviewed for the final figure. The level of consumer sentiment is related to the strength of consumer spending. ([www.Bloomberg.com](http://www.Bloomberg.com))

**NFIB Small Business Outlook** - Small Business Economic Trends (SBET) is a monthly assessment of the U.S. small-business economy and its near-term prospects. Its data are collected through mail surveys to random samples of the National Federal of Independent Business (NFIB) membership. The survey contains three broad question types: recent performance, near-term forecasts, and demographics. The topics addressed include: outlook, sales, earnings, employment, employee compensation, investment, inventories, credit conditions, and single most important problem. (<http://www.nfib-sbet.org/about/>)

**NAHB Housing Market Index** - the housing market index is a weighted average of separate diffusion indices for three key single-family indices: market conditions for the sale of new homes at the present time, market conditions for the sale of new homes in the next six months, and the traffic of prospective buyers of new homes. The first two series are rated on a scale of Good, Fair, and Poor and the last is rated on a scale of High/Very High, Average, and Low/Very Low. A diffusion index is calculated for each series by applying the formula  $(\text{Good-Poor} + 100)/2$  to the present and future sales series and  $(\text{High/Very High-Low/Very Low} + 100)/2$  to the traffic series. Each resulting index is then seasonally adjusted and weighted to produce the HMI. Based on this calculation, the HMI can range between 0 and 100.

# 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. Verus Advisory Inc. expressly disclaim any and all implied warranties or originality, accuracy, completeness, non-infringement, merchantability and fitness for a particular purpose. This report or presentation cannot be used by the recipient for advertising or sales promotion purposes.

The material may include estimates, outlooks, projections and other "forward-looking statements." Such statements can be identified by the use of terminology such as "believes," "expects," "may," "will," "should," "anticipates," or the negative of any of the foregoing or comparable terminology, or by discussion of strategy, or assumptions such as economic conditions underlying other statements. No assurance can be given that future results described or implied by any forward looking information will be achieved. Actual events may differ significantly from those presented. Investing entails risks, including possible loss of principal. Risk controls and models do not promise any level of performance or guarantee against loss of principal.

"VERUS ADVISORY" and any associated designs are the respective trademarks of Verus Advisory, Inc. Additional information is available upon request.

Verus<sup>777</sup> is a registered trademark of Verus Advisory, Inc.

# Contra Costa County Employees Retirement Association

Investment Performance Review  
Period Ending: December 31, 2023



---

[VERUSINVESTMENTS.COM](https://www.verusinvestments.com)

SEATTLE 206.622.3700

CHICAGO 312.815.5228

PITTSBURGH 412.784.6678

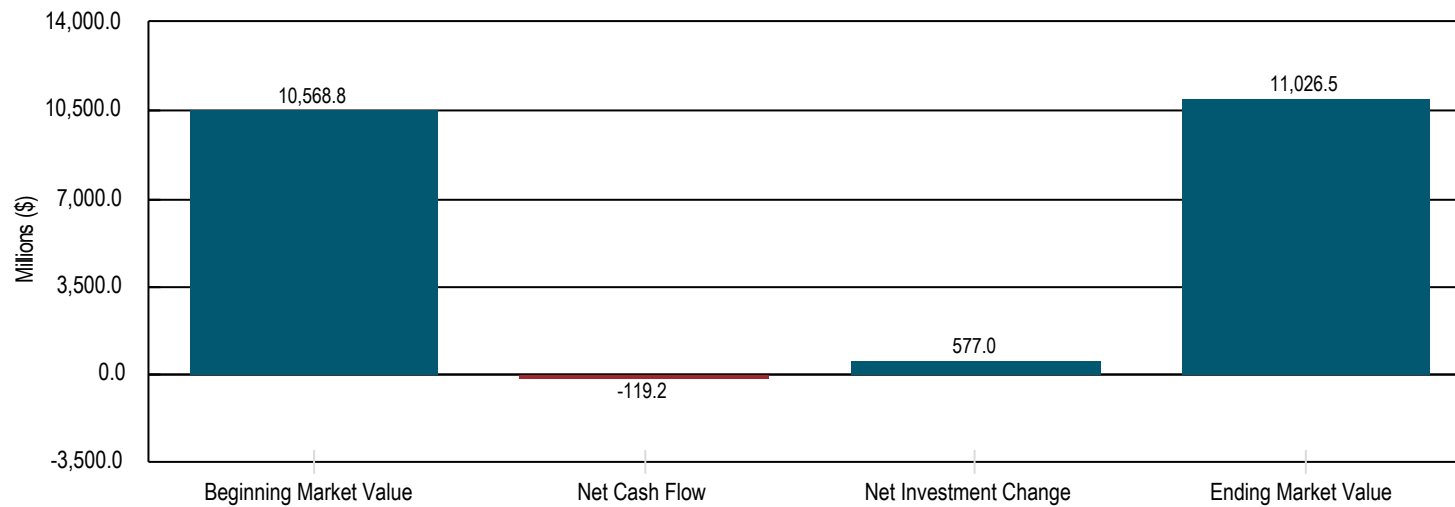
LOS ANGELES 310.297.1777

SAN FRANCISCO 415.362.3484

Portfolio Reconciliation

|                            | Last Three Months       | YTD                     |
|----------------------------|-------------------------|-------------------------|
| Beginning Market Value     | \$10,568,787,999        | \$10,223,348,190        |
| Net Cash Flow              | -\$119,234,904          | -\$106,941,901          |
| Net Investment Change      | \$576,951,762           | \$910,098,567           |
| <b>Ending Market Value</b> | <b>\$11,026,504,856</b> | <b>\$11,026,504,856</b> |

Change in Market Value  
Last Three Months

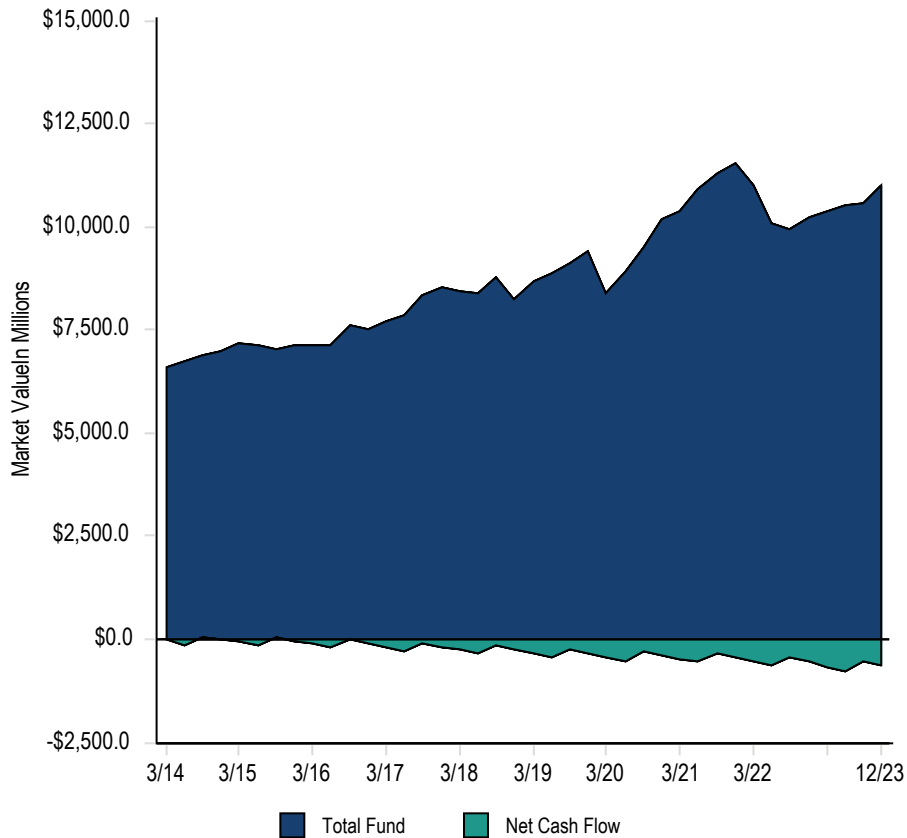


Contributions and withdrawals may include intra-account transfers between managers/funds.

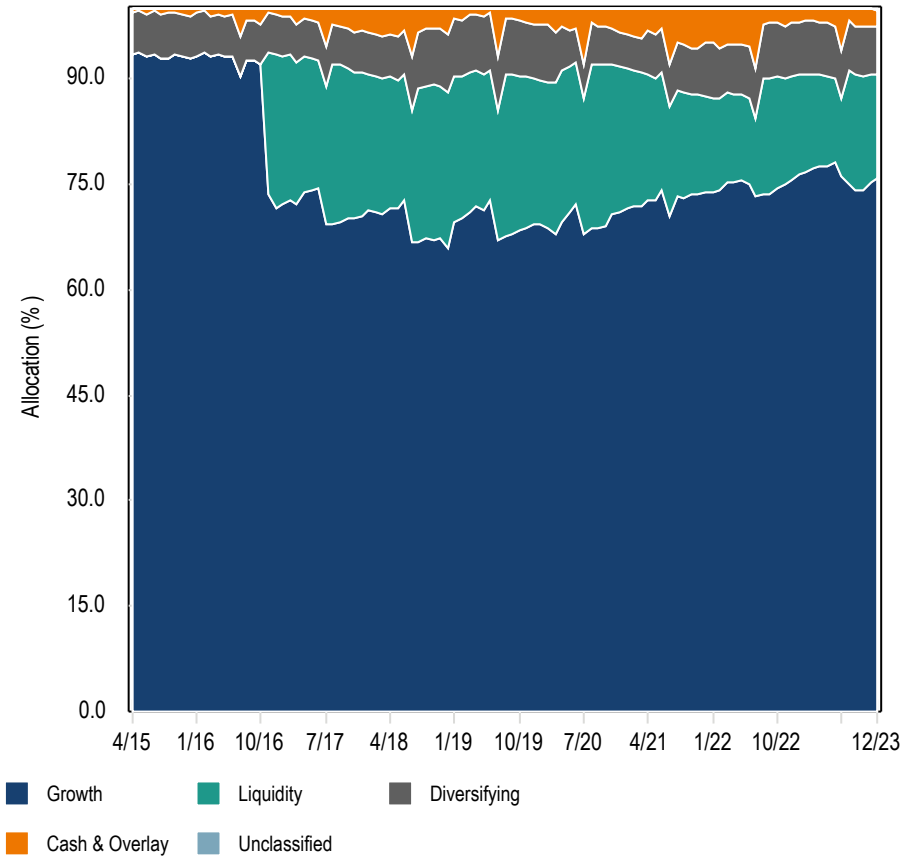
Total Fund  
Asset Allocation History

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

Market Value History  
Cumulative Cash Flows

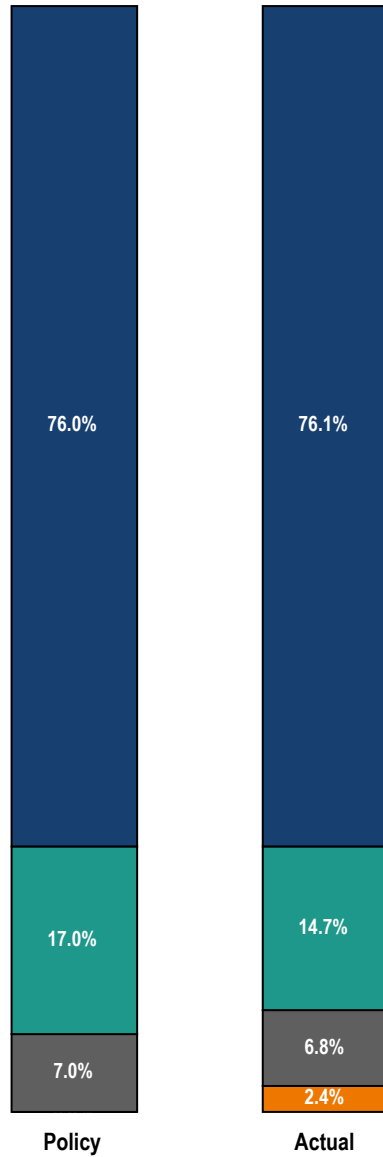


Asset Allocation History



Total Fund  
Asset Allocation vs. Policy Target

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023



|                | Current Balance         | Current Allocation | Policy Target | Difference     |
|----------------|-------------------------|--------------------|---------------|----------------|
| Growth         | \$8,385,757,491         | 76.1               | 76.0          | \$5,613,801    |
| Liquidity      | \$1,623,979,726         | 14.7               | 17.0          | -\$250,526,099 |
| Diversifying   | \$750,193,285           | 6.8                | 7.0           | -\$21,662,055  |
| Cash & Overlay | \$266,574,353           | 2.4                | 0.0           | \$266,574,353  |
| <b>Total</b>   | <b>\$11,026,504,856</b> | <b>100.0</b>       | <b>100.0</b>  |                |

Policy Targets approved July 2023.

Total Fund  
Executive Summary (Net of Fees)

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

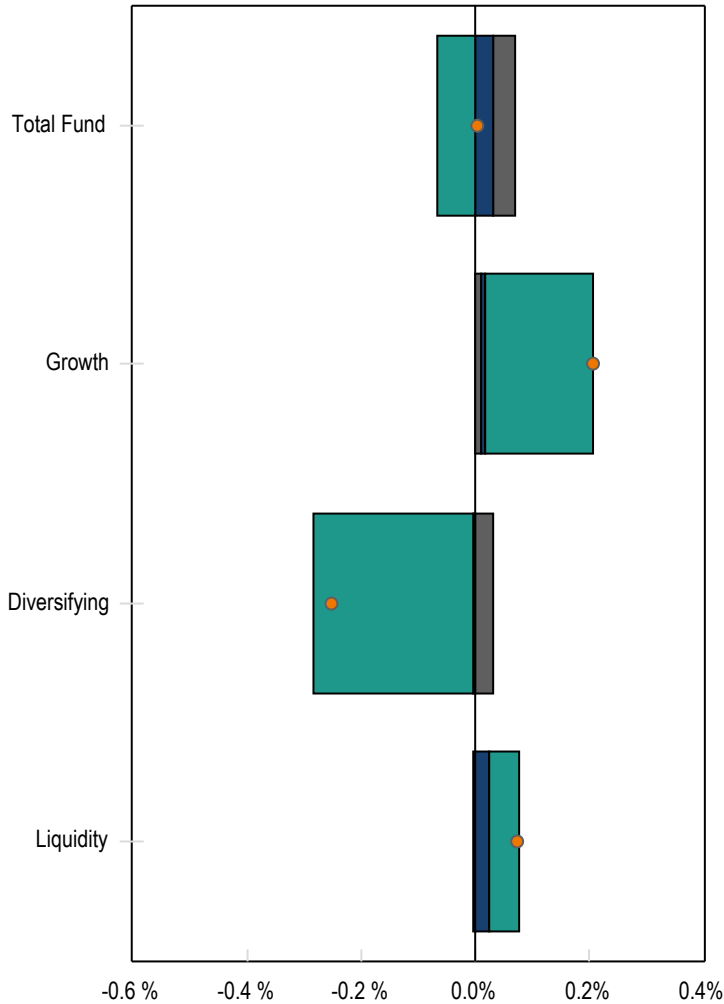
|                                  | % of Portfolio | QTD        | 1 Yr        | 3 Yrs       | 5 Yrs      | 10 Yrs     | 2022         | 2021        | 2020        | 2019        | 2018        |
|----------------------------------|----------------|------------|-------------|-------------|------------|------------|--------------|-------------|-------------|-------------|-------------|
| <b>Total Fund</b>                | <b>100.0</b>   | <b>5.5</b> | <b>9.0</b>  | <b>3.5</b>  | <b>6.8</b> | <b>6.1</b> | <b>-10.6</b> | <b>13.9</b> | <b>9.2</b>  | <b>14.6</b> | <b>-2.7</b> |
| Policy Index                     |                | 5.5        | 9.9         | 5.1         | 8.1        | 7.1        | -8.4         | 15.3        | 10.8        | 14.6        | -0.9        |
| Policy Index (Adjusted)          |                | 5.5        | 9.9         | 5.1         | 7.5        | 6.7        | -8.4         | 15.3        | 8.5         | 14.1        | -1.5        |
| <b>Growth</b>                    | <b>76.1</b>    | <b>6.4</b> | <b>10.1</b> | <b>5.1</b>  | <b>9.0</b> | <b>7.6</b> | <b>-11.7</b> | <b>19.2</b> | <b>12.0</b> | <b>18.3</b> | <b>-3.9</b> |
| Custom Growth Benchmark          |                | 6.1        | 11.3        | 6.7         | 10.5       | 8.7        | -10.3        | 21.6        | 13.8        | 19.3        | -2.1        |
| <b>Diversifying</b>              | <b>6.8</b>     | <b>2.3</b> | <b>2.2</b>  | <b>-0.7</b> | <b>0.6</b> | <b>0.4</b> | <b>-5.7</b>  | <b>1.7</b>  | <b>-1.7</b> | <b>6.8</b>  | <b>-2.3</b> |
| Custom Diversifying Benchmark    |                | 5.7        | 7.4         | 1.0         | 2.7        | 3.2        | -5.7         | 1.6         | 4.7         | 6.1         | 1.4         |
| <b>Liquidity</b>                 | <b>14.7</b>    | <b>3.0</b> | <b>5.4</b>  | <b>0.5</b>  | <b>1.9</b> | <b>-</b>   | <b>-3.5</b>  | <b>-0.3</b> | <b>3.4</b>  | <b>4.8</b>  | <b>1.7</b>  |
| Blmbg. 1-3 Year Gov/Credit Index |                | 2.7        | 4.6         | 0.1         | 1.5        | -          | -3.7         | -0.5        | 3.3         | 4.0         | 1.6         |

\*Correlation between the Growth and Diversifying composites is .81, .57, and .63 over the previous 1, 3, and 5 year periods respectively.

Total Fund  
 Attribution Analysis - Asset Class Level (Net of Fees)

Contra Costa County Employees' Retirement Association  
 Period Ending: December 31, 2023

Attribution Effects  
 3 Months Ending December 31, 2023



Selection Effect Allocation Effect  
 Interaction Effect Total Effects

Performance Attribution

|                      | 3 Mo        |
|----------------------|-------------|
| Wtd. Actual Return   | 5.51        |
| Wtd. Index Return    | 5.51        |
| <b>Excess Return</b> | <b>0.00</b> |
| Selection Effect     | -0.07       |
| Allocation Effect    | 0.03        |
| Interaction Effect   | 0.04        |

Attribution Summary  
 Last 3 Months

|                   | Wtd. Actual Return | Wtd. Index Return | Excess Return | Selection Effect | Allocation Effect | Interaction Effects | Total Effects |
|-------------------|--------------------|-------------------|---------------|------------------|-------------------|---------------------|---------------|
| Growth            | 6.4                | 6.1               | 0.3           | 0.2              | 0.0               | 0.0                 | 0.2           |
| Diversifying      | 2.3                | 5.7               | -3.5          | -0.3             | 0.0               | 0.0                 | -0.3          |
| Liquidity         | 3.0                | 2.7               | 0.3           | 0.0              | 0.0               | 0.0                 | 0.1           |
| <b>Total Fund</b> | <b>5.5</b>         | <b>5.5</b>        | <b>0.0</b>    | <b>-0.1</b>      | <b>0.0</b>        | <b>0.0</b>          | <b>0.0</b>    |

Performance attribution calculated from benchmark returns and weightings of each component.



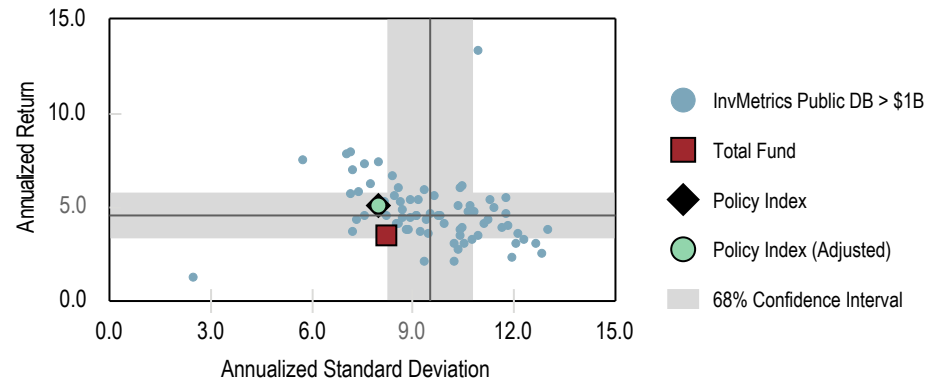
Total Fund  
Executive Summary (Net of Fees)

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

3 Years

|            | Anlzd Return | Ann Excess Performance | Anlzd Standard Deviation | Anlzd Alpha | Beta | Tracking Error | R-Squared | Sharpe Ratio | Information Ratio | Up Capture | Down Capture |
|------------|--------------|------------------------|--------------------------|-------------|------|----------------|-----------|--------------|-------------------|------------|--------------|
| Total Fund | 3.54         | -1.55                  | 8.21                     | -1.60       | 1.03 | 0.88           | 0.99      | 0.21         | -1.68             | 96.45      | 110.07       |

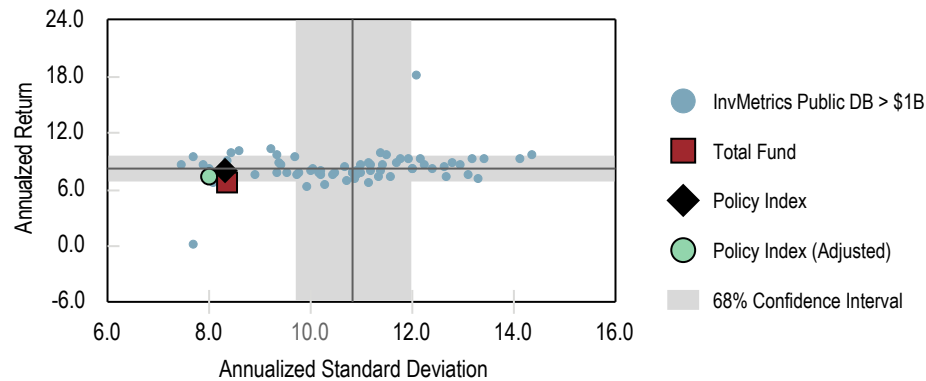
Risk vs. Return



5 Years

|            | Anlzd Return | Ann Excess Performance | Standard Deviation | Anlzd Alpha | Beta | Tracking Error | R-Squared | Sharpe Ratio | Information Ratio | Up Capture | Down Capture |
|------------|--------------|------------------------|--------------------|-------------|------|----------------|-----------|--------------|-------------------|------------|--------------|
| Total Fund | 6.80         | -1.26                  | 8.34               | -0.98       | 0.98 | 1.86           | 0.95      | 0.61         | -0.64             | 96.11      | 106.58       |

Risk vs. Return



Total Fund  
Performance Summary (Gross of Fees)

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

|   | Market Value          | % of Portfolio | 3 Mo        | 1 Yr        | 3 Yrs      | 5 Yrs       | 10 Yrs      | 2022         | 2021        | 2020        | 2019        | 2018        | Inception | Inception Date |
|---|-----------------------|----------------|-------------|-------------|------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-----------|----------------|
| <b>Total Fund</b>                       | <b>11,026,504,856</b> | <b>100.0</b>   | <b>5.6</b>  | <b>9.2</b>  | <b>3.8</b> | <b>7.1</b>  | <b>6.5</b>  | <b>-10.4</b> | <b>14.2</b> | <b>9.5</b>  | <b>14.9</b> | <b>-2.5</b> |           | <b>Oct-92</b>  |
| Policy Index                            |                       |                | 5.5         | 9.9         | 5.1        | 8.1         | 7.1         | -8.4         | 15.3        | 10.8        | 14.6        | -0.9        |           |                |
| Policy Index (Adjusted)                 |                       |                | 5.5         | 9.9         | 5.1        | 7.5         | 6.7         | -8.4         | 15.3        | 8.5         | 14.1        | -1.5        |           |                |
| InvMetrics Public DB > \$1B Rank        |                       |                | 80          | 88          | 73         | 89          | 54          | 48           | 66          | 79          | 89          | 32          |           |                |
| <b>Total Fund ex Overlay &amp; Cash</b> | <b>10,759,930,503</b> | <b>97.6</b>    | <b>5.6</b>  | <b>9.2</b>  | <b>4.1</b> | <b>7.3</b>  | <b>6.6</b>  | <b>-9.9</b>  | <b>14.6</b> | <b>9.7</b>  | <b>14.7</b> | <b>-2.1</b> |           | <b>Dec-03</b>  |
| Policy Index                            |                       |                | 5.5         | 9.9         | 5.1        | 8.1         | 7.1         | -8.4         | 15.3        | 10.8        | 14.6        | -0.9        |           |                |
| Policy Index (Adjusted)                 |                       |                | 5.5         | 9.9         | 5.1        | 7.5         | 6.7         | -8.4         | 15.3        | 8.5         | 14.1        | -1.5        |           |                |
| InvMetrics Public DB > \$1B Rank        |                       |                | 79          | 88          | 67         | 87          | 48          | 40           | 60          | 74          | 90          | 26          |           |                |
| <b>Growth</b>                           | <b>8,385,757,491</b>  | <b>76.1</b>    | <b>6.4</b>  | <b>10.4</b> | <b>5.3</b> | <b>9.3</b>  | <b>8.0</b>  | <b>-11.4</b> | <b>19.6</b> | <b>12.4</b> | <b>18.7</b> | <b>-3.6</b> |           | <b>Jan-03</b>  |
| Custom Growth Benchmark                 |                       |                | 6.1         | 11.3        | 6.7        | 10.5        | 8.7         | -10.3        | 21.6        | 13.8        | 19.3        | -2.1        |           |                |
| <b>Total Domestic Equity</b>            | <b>2,070,423,172</b>  | <b>18.8</b>    | <b>11.5</b> | <b>21.6</b> | <b>6.2</b> | <b>13.2</b> | <b>10.4</b> | <b>-18.3</b> | <b>20.6</b> | <b>22.2</b> | <b>26.7</b> | <b>-7.2</b> |           | <b>Sep-82</b>  |
| Russell 3000 Index                      |                       |                | 12.1        | 26.0        | 8.5        | 15.2        | 11.5        | -19.2        | 25.7        | 20.9        | 31.0        | -5.2        |           |                |
| InvMetrics Public DB US Equity Rank     |                       |                | 77          | 71          | 91         | 90          | 76          | 51           | 99          | 15          | 100         | 77          |           |                |
| BlackRock Russell 1000 Index            | 1,209,333,414         | 11.0           | 12.0        | 26.6        | 9.0        | 15.5        | -           | -19.1        | 26.5        | 21.0        | 31.4        | -4.8        | 12.7      | May-17         |
| Russell 1000 Index                      |                       |                | 12.0        | 26.5        | 9.0        | 15.5        | -           | -19.1        | 26.5        | 21.0        | 31.4        | -4.8        | 12.7      |                |
| eV US Large Cap Equity Rank             |                       |                | 42          | 34          | 59         | 40          | -           | 69           | 55          | 35          | 40          | 51          |           |                |
| Boston Partners                         | 404,182,450           | 3.7            | 9.0         | 14.7        | 13.1       | 13.1        | 9.7         | -3.8         | 31.3        | 3.0         | 24.3        | -8.7        | 10.7      | Jun-95         |
| Russell 1000 Value Index                |                       |                | 9.5         | 11.5        | 8.9        | 10.9        | 8.4         | -7.5         | 25.2        | 2.8         | 26.5        | -8.3        | 9.2       |                |
| eV US Large Cap Value Equity Rank       |                       |                | 74          | 39          | 15         | 41          | 45          | 36           | 18          | 63          | 79          | 59          |           |                |
| Emerald Advisers                        | 232,966,434           | 2.1            | 14.8        | 19.2        | -1.4       | 11.7        | 9.5         | -23.8        | 5.5         | 39.0        | 30.3        | -10.1       | 12.4      | Apr-03         |
| Russell 2000 Growth Index               |                       |                | 12.7        | 18.7        | -3.5       | 9.2         | 7.2         | -26.4        | 2.8         | 34.6        | 28.5        | -9.3        | 10.2      |                |
| eV US Small Cap Growth Equity Rank      |                       |                | 10          | 41          | 50         | 62          | 54          | 27           | 77          | 57          | 48          | 86          |           |                |
| Ceredex                                 | 223,940,873           | 2.0            | 10.5        | 16.0        | 10.9       | 10.5        | 7.6         | -8.5         | 28.4        | 2.3         | 18.4        | -11.3       | 10.4      | Nov-11         |
| Russell 2000 Value Index                |                       |                | 15.3        | 14.6        | 7.9        | 10.0        | 6.8         | -14.5        | 28.3        | 4.6         | 22.4        | -12.9       | 9.7       |                |
| eV US Small Cap Value Equity Rank       |                       |                | 82          | 61          | 49         | 83          | 71          | 28           | 60          | 70          | 88          | 29          |           |                |

Individual closed end funds are not shown in performance summary table.

Total Fund  
Performance Summary (Gross of Fees)

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

|   | Market Value         | % of Portfolio | 3 Mo        | 1 Yr        | 3 Yrs      | 5 Yrs       | 10 Yrs     | 2022         | 2021        | 2020        | 2019        | 2018         | Inception  | Inception Date |
|---|----------------------|----------------|-------------|-------------|------------|-------------|------------|--------------|-------------|-------------|-------------|--------------|------------|----------------|
| <b>Total International Equity</b>                 | <b>1,455,185,342</b> | <b>13.2</b>    | <b>10.3</b> | <b>15.4</b> | <b>0.7</b> | <b>7.9</b>  | <b>4.7</b> | <b>-18.2</b> | <b>8.3</b>  | <b>15.8</b> | <b>23.7</b> | <b>-14.3</b> |            | <b>Sep-88</b>  |
| MSCI AC World ex USA Index                        |                      |                | 9.8         | 16.2        | 2.0        | 7.6         | 4.3        | -15.6        | 8.3         | 11.1        | 22.1        | -13.8        |            |                |
| MSCI EAFE Index                                   |                      |                | 10.5        | 18.9        | 4.5        | 8.7         | 4.8        | -14.0        | 11.8        | 8.3         | 22.7        | -13.4        |            |                |
| InvMetrics Public DB Global ex-US Equity Rank     |                      |                | 35          | 82          | 71         | 50          | 57         | 68           | 51          | 26          | 42          | 67           |            |                |
| <b>International Equity</b>                       | <b>975,149,419</b>   | <b>8.8</b>     | <b>11.1</b> | <b>15.6</b> | <b>1.1</b> | <b>9.3</b>  | <b>5.4</b> | <b>-18.1</b> | <b>9.0</b>  | <b>19.0</b> | <b>27.0</b> | <b>-13.6</b> | <b>6.2</b> | <b>Oct-10</b>  |
| MSCI AC World ex USA Index                        |                      |                | 9.8         | 16.2        | 2.0        | 7.6         | 4.3        | -15.6        | 8.3         | 11.1        | 22.1        | -13.8        | 4.8        |                |
| InvMetrics Public DB Global ex-US Equity Rank     |                      |                | 15          | 81          | 58         | 23          | 22         | 65           | 35          | 7           | 15          | 42           |            |                |
| Pyrford   | 502,490,844          | 4.6            | 8.6         | 15.2        | 4.8        | 8.0         | -          | -7.0         | 7.6         | 4.7         | 22.1        | -10.1        | 4.6        | May-14         |
| MSCI AC World ex USA Value                        |                      |                | 8.4         | 17.3        | 5.8        | 6.3         | -          | -8.6         | 10.5        | -0.8        | 15.7        | -14.0        | 2.7        |                |
| eV ACWI ex-US Value Equity Rank                   |                      |                | 73          | 84          | 76         | 64          | -          | 20           | 84          | 46          | 37          | 6            |            |                |
| William Blair                                     | 472,658,576          | 4.3            | 14.0        | 16.2        | -2.5       | 10.3        | 5.7        | -27.7        | 10.5        | 33.3        | 32.0        | -16.8        | 6.7        | Nov-10         |
| MSCI AC World ex USA Growth                       |                      |                | 11.1        | 14.0        | -2.7       | 7.5         | 4.5        | -23.1        | 5.1         | 22.2        | 27.3        | -14.4        | 4.9        |                |
| eV ACWI ex-US Growth Equity Rank                  |                      |                | 32          | 59          | 56         | 41          | 65         | 59           | 43          | 36          | 37          | 73           |            |                |
| <b>Emerging Markets Equity</b>                    | <b>480,035,922</b>   | <b>4.4</b>     | <b>8.7</b>  | <b>14.4</b> | <b>0.1</b> | <b>5.9</b>  | <b>-</b>   | <b>-18.4</b> | <b>7.6</b>  | <b>11.4</b> | <b>19.4</b> | <b>-15.3</b> | <b>4.4</b> | <b>Feb-17</b>  |
| MSCI Emerging Markets                             |                      |                | 7.9         | 9.8         | -5.1       | 3.7         | -          | -20.1        | -2.5        | 18.3        | 18.4        | -14.6        | 3.8        |                |
| InvMetrics Public DB Emerging Markets Equity Rank |                      |                | 56          | 58          | 22         | 8           | -          | 29           | 28          | 68          | 27          | 67           |            |                |
| PIMCO RAE Emerging Markets                        | 248,383,507          | 2.3            | 8.9         | 23.1        | 9.2        | 8.8         | -          | -9.7         | 17.1        | 2.1         | 14.6        | -12.3        | 6.7        | Mar-17         |
| MSCI Emerging Markets Value                       |                      |                | 8.1         | 14.2        | 0.0        | 3.4         | -          | -15.8        | 4.0         | 5.5         | 12.0        | -10.7        | 3.3        |                |
| eV Emg Mkts All Cap Value Equity Rank             |                      |                | 41          | 12          | 7          | 17          | -          | 32           | 8           | 85          | 77          | 48           |            |                |
| TT Emerging Markets                               | 231,652,415          | 2.1            | 8.6         | 5.8         | -8.1       | 3.2         | -          | -26.4        | -0.2        | 20.8        | 24.8        | -18.4        | 1.1        | Aug-17         |
| MSCI Emerging Markets                             |                      |                | 7.9         | 9.8         | -5.1       | 3.7         | -          | -20.1        | -2.5        | 18.3        | 18.4        | -14.6        | 1.8        |                |
| eV Emg Mkts Equity Rank                           |                      |                | 39          | 91          | 88         | 90          | -          | 90           | 59          | 39          | 24          | 82           |            |                |
| <b>Total Global Equity</b>                        | <b>1,161,600,644</b> | <b>10.5</b>    | <b>10.3</b> | <b>19.0</b> | <b>3.3</b> | <b>12.2</b> | <b>8.9</b> | <b>-18.8</b> | <b>14.1</b> | <b>25.3</b> | <b>28.9</b> | <b>-7.8</b>  |            | <b>Dec-03</b>  |
| MSCI AC World Index                               |                      |                | 11.0        | 22.2        | 5.7        | 11.7        | 7.9        | -18.4        | 18.5        | 16.3        | 26.6        | -9.4         |            |                |
| InvMetrics Public DB Global Equity Rank           |                      |                | 72          | 68          | 83         | 33          | 1          | 84           | 61          | 1           | 17          | 20           |            |                |
| Artisan Partners                                  | 600,553,612          | 5.4            | 13.2        | 24.5        | 0.3        | 14.4        | 11.1       | -29.6        | 15.0        | 41.7        | 37.0        | -7.9         | 12.2       | Oct-12         |
| MSCI ACWI Growth NR USD                           |                      |                | 12.7        | 33.2        | 3.7        | 14.6        | 10.1       | -28.6        | 17.1        | 33.6        | 32.7        | -8.1         | 11.1       |                |
| eV Global Growth Equity Rank                      |                      |                | 42          | 37          | 54         | 22          | 16         | 60           | 56          | 33          | 12          | 60           |            |                |
| First Eagle                                       | 560,922,713          | 5.1            | 7.4         | 13.7        | 6.6        | 9.7         | 7.1        | -5.6         | 13.0        | 8.5         | 21.0        | -7.6         | 8.0        | Jan-11         |
| MSCI ACWI Value NR USD                            |                      |                | 9.2         | 11.8        | 7.3        | 8.2         | 5.5        | -7.5         | 19.6        | -0.3        | 20.6        | -10.8        | 6.4        |                |
| eV Global Value Equity Rank                       |                      |                | 85          | 67          | 61         | 54          | 29         | 21           | 86          | 33          | 64          | 18           |            |                |

Individual closed end funds are not shown in performance summary table.

Total Fund  
Performance Summary (Gross of Fees)

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

|   | Market Value         | % of Portfolio | 3 Mo        | 1 Yr         | 3 Yrs       | 5 Yrs       | 10 Yrs      | 2022         | 2021        | 2020        | 2019        | 2018        | Inception | Inception Date |
|---|----------------------|----------------|-------------|--------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-----------|----------------|
| <b>Private Credit</b>                         | <b>1,104,706,437</b> | <b>10.0</b>    | <b>1.7</b>  | <b>9.1</b>   | <b>9.9</b>  | <b>8.2</b>  | <b>9.6</b>  | <b>10.5</b>  | <b>10.0</b> | <b>4.0</b>  | <b>7.7</b>  | <b>8.3</b>  |           | <b>Sep-06</b>  |
| <b>Total High Yield</b>                       | <b>157,281,692</b>   | <b>1.4</b>     | <b>6.7</b>  | <b>12.4</b>  | <b>1.9</b>  | <b>5.1</b>  | <b>4.0</b>  | <b>-10.6</b> | <b>5.3</b>  | <b>5.2</b>  | <b>15.3</b> | <b>-3.2</b> |           | <b>Dec-03</b>  |
| ICE BofA U.S. High Yield Index                |                      |                | 7.1         | 13.5         | 2.0         | 5.2         | 4.5         | -11.2        | 5.4         | 6.2         | 14.4        | -2.3        |           |                |
| eV US High Yield Fixed Inc Rank               |                      |                | 50          | 64           | 81          | 73          | 89          | 74           | 54          | 73          | 36          | 89          |           |                |
| Voya Global Investors                         | 157,281,692          | 1.4            | 6.7         | 12.4         | 1.9         | 5.1         | 4.0         | -10.6        | 5.3         | 5.2         | 15.3        | -3.2        | 6.3       | May-00         |
| ICE BofA U.S. High Yield Index                |                      |                | 7.1         | 13.5         | 2.0         | 5.2         | 4.5         | -11.2        | 5.4         | 6.2         | 14.4        | -2.3        | 6.5       |                |
| eV US High Yield Fixed Inc Rank               |                      |                | 50          | 64           | 81          | 73          | 89          | 74           | 54          | 73          | 36          | 89          |           |                |
| <b>Total Real Estate</b>                      | <b>775,070,499</b>   | <b>7.0</b>     | <b>-1.3</b> | <b>-10.1</b> | <b>0.5</b>  | <b>0.6</b>  | <b>5.9</b>  | <b>-5.2</b>  | <b>19.2</b> | <b>-5.9</b> | <b>8.1</b>  | <b>7.4</b>  |           | <b>Sep-92</b>  |
| Real Estate Benchmark                         |                      |                | -2.4        | -11.0        | 0.5         | 1.9         | 5.6         | -4.5         | 19.3        | 0.6         | 7.5         | 6.8         |           |                |
| NCREIF-ODCE                                   |                      |                | -4.8        | -12.0        | 4.9         | 4.2         | 7.3         | 7.5          | 22.2        | 1.2         | 5.3         | 8.3         |           |                |
| NCREIF Property Index                         |                      |                | -3.0        | -7.9         | 4.6         | 4.3         | 6.8         | 5.5          | 17.7        | 1.6         | 6.4         | 6.7         |           |                |
| <b>Total Core Real Estate</b>                 | <b>214,043,952</b>   | <b>1.9</b>     | <b>16.3</b> | <b>12.8</b>  | <b>7.9</b>  | <b>9.0</b>  | <b>8.6</b>  | <b>-24.8</b> | <b>48.3</b> | <b>-4.6</b> | <b>28.2</b> | <b>-5.0</b> |           | <b>Jan-01</b>  |
| Adelante                                      | 97,412,587           | 0.9            | 15.4        | 17.2         | 8.4         | 9.3         | 8.8         | -26.7        | 48.3        | -4.6        | 28.2        | -5.0        | 9.7       | Oct-01         |
| Wilshire U.S. REIT Index                      |                      |                | 16.3        | 16.1         | 7.5         | 7.6         | 7.7         | -26.8        | 46.2        | -7.9        | 25.8        | -4.8        | 9.1       |                |
| Invesco US Fundamental Beta                   | 116,631,364          | 1.1            | 17.0        | 9.4          | -           | -           | -           | -            | -           | -           | -           | -           | -3.8      | Mar-22         |
| Wilshire U.S. REIT Index                      |                      |                | 16.3        | 16.1         | -           | -           | -           | -            | -           | -           | -           | -           | -3.0      |                |
| <b>Total Private Real Estate</b>              | <b>561,026,548</b>   | <b>5.1</b>     | <b>-6.9</b> | <b>-17.2</b> | <b>-1.1</b> | <b>-0.7</b> | <b>5.3</b>  | <b>1.3</b>   | <b>15.3</b> | <b>-6.1</b> | <b>6.2</b>  | <b>8.8</b>  |           | <b>Sep-92</b>  |
| <b>Private Equity</b>                         | <b>1,321,616,546</b> | <b>12.0</b>    | <b>0.5</b>  | <b>-1.0</b>  | <b>16.5</b> | <b>13.3</b> | <b>12.8</b> | <b>-0.5</b>  | <b>60.4</b> | <b>8.7</b>  | <b>8.4</b>  | <b>12.0</b> |           | <b>Dec-03</b>  |
| <b>Risk Parity</b>                            | <b>339,873,160</b>   | <b>3.1</b>     | <b>6.6</b>  | <b>4.9</b>   | <b>-3.3</b> | <b>3.2</b>  | <b>-</b>    | <b>-21.5</b> | <b>9.7</b>  | <b>10.0</b> | <b>18.1</b> | <b>-</b>    |           | <b>Jan-19</b>  |
| 60% MSCI ACWI Net/40% Blmbg. Global Aggregate |                      |                | 9.9         | 15.4         | 1.2         | 7.0         | -           | -17.3        | 8.8         | 14.0        | 18.6        | -           |           |                |
| AQR Global Risk Premium-EL                    | 176,809,243          | 1.6            | 6.6         | 7.0          | -0.3        | 4.6         | -           | -16.3        | 10.7        | 6.2         | 18.7        | -           | 4.6       | Jan-19         |
| HFR Risk Parity Vol 10 Index                  |                      |                | 9.4         | 10.5         | -1.2        | 3.4         | -           | -18.3        | 6.8         | 3.6         | 18.4        | -           | 3.4       |                |
| PanAgora Risk Parity Multi Asset              | 163,063,917          | 1.5            | 6.7         | 2.8          | -6.2        | -           | -           | -26.1        | 8.7         | 14.0        | -           | -           | 1.4       | Mar-19         |
| HFR Risk Parity Vol 10 Index                  |                      |                | 9.4         | 10.5         | -1.2        | -           | -           | -18.3        | 6.8         | 3.6         | -           | -           | 2.3       |                |

Individual closed end funds are not shown in performance summary table.

Total Fund  
Performance Summary (Gross of Fees)

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

|  | Market Value         | % of Portfolio | 3 Mo       | 1 Yr       | 3 Yrs       | 5 Yrs      | 10 Yrs     | 2022         | 2021        | 2020        | 2019       | 2018        | Inception | Inception Date |
|--|----------------------|----------------|------------|------------|-------------|------------|------------|--------------|-------------|-------------|------------|-------------|-----------|----------------|
| <b>Diversifying</b>                              | <b>750,193,285</b>   | <b>6.8</b>     | <b>2.4</b> | <b>2.6</b> | <b>-0.3</b> | <b>0.9</b> | <b>0.7</b> | <b>-5.4</b>  | <b>2.0</b>  | <b>-1.3</b> | <b>7.1</b> | <b>-2.0</b> |           | <b>Dec-03</b>  |
| <i>Custom Diversifying Benchmark</i>             |                      |                | 5.7        | 7.4        | 1.0         | 2.7        | 3.2        | -5.7         | 1.6         | 4.7         | 6.1        | 1.4         |           |                |
| <b>Diversifying Fixed Income</b>                 | <b>223,296,696</b>   | <b>2.0</b>     | <b>6.9</b> | <b>5.5</b> | <b>-3.1</b> | <b>0.1</b> | <b>1.2</b> | <b>-13.3</b> | <b>-0.7</b> | <b>1.6</b>  | <b>8.6</b> | <b>-1.7</b> |           | <b>Dec-03</b>  |
| <i>Blmbg. U.S. Aggregate Index</i>               |                      |                | 6.8        | 5.5        | -3.3        | 1.1        | 1.8        | -13.0        | -1.5        | 7.5         | 8.7        | 0.0         |           |                |
| <i>eV US Core Fixed Inc Rank</i>                 |                      |                | 47         | 85         | 79          | 100        | 100        | 76           | 32          | 100         | 79         | 100         |           |                |
| AFL-CIO  | 223,235,851          | 2.0            | 6.9        | 5.5        | -3.2        | 1.0        | 1.9        | -13.3        | -0.7        | 6.6         | 8.2        | 0.6         | 5.2       | Jul-91         |
| <i>Blmbg. U.S. Aggregate Index</i>               |                      |                | 6.8        | 5.5        | -3.3        | 1.1        | 1.8        | -13.0        | -1.5        | 7.5         | 8.7        | 0.0         | 4.9       |                |
| <i>eV US Core Fixed Inc Rank</i>                 |                      |                | 46         | 86         | 80          | 98         | 92         | 77           | 32          | 95          | 86         | 14          |           |                |
| <b>Diversifying Multi-Asset</b>                  | <b>526,896,589</b>   | <b>4.8</b>     | <b>0.6</b> | <b>1.4</b> | <b>0.7</b>  | <b>-</b>   | <b>-</b>   | <b>-1.9</b>  | <b>2.8</b>  | <b>-</b>    | <b>-</b>   | <b>-</b>    |           | <b>Aug-20</b>  |
| <i>Custom Diversifying Multi-Asset Benchmark</i> |                      |                | 4.9        | 8.7        | 3.1         | -          | -          | -3.1         | 4.1         | -           | -          | -           |           |                |
| Acadian Multi-Asset Absolute Return Fund         | 211,000,534          | 1.9            | -5.2       | -5.4       | -1.3        | -          | -          | -0.1         | 1.7         | -           | -          | -           | -0.7      | Aug-20         |
| <i>FTSE 3-Month T-bill +5%</i>                   |                      |                | 2.6        | 10.5       | 7.4         | -          | -          | 6.6          | 5.0         | -           | -          | -           | 7.1       |                |
| Sit LLCAR  | 315,896,054          | 2.9            | 4.8        | 6.9        | -           | -          | -          | -3.3         | -           | -           | -          | -           | 2.8       | Apr-21         |
| <i>Blmbg. U.S. Aggregate Index +1%</i>           |                      |                | 7.1        | 6.6        | -           | -          | -          | -12.1        | -           | -           | -          | -           | -1.4      |                |
| <b>Liquidity</b>                                 | <b>1,623,979,726</b> | <b>14.7</b>    | <b>3.0</b> | <b>5.5</b> | <b>0.6</b>  | <b>2.0</b> | <b>-</b>   | <b>-3.4</b>  | <b>-0.2</b> | <b>3.5</b>  | <b>4.9</b> | <b>1.8</b>  |           | <b>Nov-16</b>  |
| <i>Blmbg. 1-3 Year Gov/Credit Index</i>          |                      |                | 2.7        | 4.6        | 0.1         | 1.5        | -          | -3.7         | -0.5        | 3.3         | 4.0        | 1.6         |           |                |
| <i>eV US Short Duration Fixed Inc Rank</i>       |                      |                | 48         | 43         | 49          | 50         | -          | 50           | 46          | 75          | 39         | 25          |           |                |
| DFA Short Credit                                 | 365,687,785          | 3.3            | 1.8        | 5.4        | -0.2        | 1.5        | -          | -5.3         | -0.4        | 2.9         | 5.2        | 1.2         | 1.5       | Dec-16         |
| <i>ICE BofA 1-5 Year U.S. Corp/Govt Index</i>    |                      |                | 3.3        | 4.9        | -0.6        | 1.6        | -          | -5.5         | -0.9        | 4.6         | 5.1        | 1.4         | 1.5       |                |
| <i>eV US Short Duration Fixed Inc Rank</i>       |                      |                | 98         | 46         | 86          | 89         | -          | 91           | 67          | 89          | 26         | 89          |           |                |
| Insight Short Duration                           | 601,555,000          | 5.5            | 2.4        | 5.7        | 1.5         | 2.5        | -          | -1.1         | 0.1         | 3.2         | 4.7        | 1.7         | 2.2       | Dec-16         |
| <i>Blmbg. 1-3 Year Gov/Credit Index</i>          |                      |                | 2.7        | 4.6        | 0.1         | 1.5        | -          | -3.7         | -0.5        | 3.3         | 4.0        | 1.6         | 1.4       |                |
| <i>eV US Short Duration Fixed Inc Rank</i>       |                      |                | 90         | 31         | 12          | 20         | -          | 6            | 32          | 85          | 48         | 38          |           |                |
| Sit Short Duration                               | 656,736,941          | 6.0            | 4.3        | 5.4        | 0.0         | 1.8        | -          | -4.8         | -0.3        | 4.6         | 4.9        | 2.5         | 1.8       | Dec-16         |
| <i>Blmbg. 1-3 Year Govt Index</i>                |                      |                | 2.6        | 4.3        | -0.1        | 1.3        | -          | -3.8         | -0.6        | 3.1         | 3.6        | 1.6         | 1.2       |                |
| <i>eV US Short Duration Fixed Inc Rank</i>       |                      |                | 2          | 50         | 80          | 63         | -          | 80           | 58          | 29          | 40         | 3           |           |                |
| <b>Total Cash</b>                                | <b>144,877,481</b>   | <b>1.3</b>     | <b>1.4</b> | <b>2.5</b> | <b>1.7</b>  | <b>1.9</b> | <b>1.0</b> | <b>2.4</b>   | <b>0.4</b>  | <b>1.3</b>  | <b>3.3</b> | <b>1.7</b>  |           | <b>Dec-03</b>  |
| <i>90 Day U.S. Treasury Bill</i>                 |                      |                | 1.4        | 5.0        | 2.2         | 1.9        | 1.2        | 1.5          | 0.0         | 0.7         | 2.3        | 1.9         |           |                |
| Cash   | 144,873,116          | 1.3            | 1.4        | 6.1        | 2.9         | 2.7        | 1.8        | 2.2          | 0.4         | 1.3         | 3.4        | 1.7         | 17.5      | Apr-98         |
| Northern Trust Transition                        | 4,365                | 0.0            | 1.4        | -99.2      | -81.1       | -          | -          | -4.8         | -6.1        | 104.1       | -          | -           |           | Feb-19         |

Individual closed end funds are not shown in performance summary table. Effective 3/1/2019 the custodian of record switched from State Street to Northern Trust. Wellington Real Total Return was liquidated 4/30/2020. \$60,845.58 in residual value is reflected in the Diversifying Fixed Income composite.

Total Fund  
Performance Summary (Net of Fees)

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

|   | Market Value          | % of Portfolio | 3 Mo        | 1 Yr        | 3 Yrs       | 5 Yrs       | 10 Yrs      | 2022         | 2021        | 2020        | 2019        | 2018         | Inception | Inception Date |
|---|-----------------------|----------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|--------------|-----------|----------------|
| <b>Total Fund</b>                       | <b>11,026,504,856</b> | <b>100.0</b>   | <b>5.5</b>  | <b>9.0</b>  | <b>3.5</b>  | <b>6.8</b>  | <b>6.1</b>  | <b>-10.6</b> | <b>13.9</b> | <b>9.2</b>  | <b>14.6</b> | <b>-2.7</b>  |           | <b>Oct-92</b>  |
| Policy Index                            |                       |                | 5.5         | 9.9         | 5.1         | 8.1         | 7.1         | -8.4         | 15.3        | 10.8        | 14.6        | -0.9         |           |                |
| Policy Index (Adjusted)                 |                       |                | 5.5         | 9.9         | 5.1         | 7.5         | 6.7         | -8.4         | 15.3        | 8.5         | 14.1        | -1.5         |           |                |
| <b>Total Fund ex Overlay &amp; Cash</b> | <b>10,759,930,503</b> | <b>97.6</b>    | <b>5.5</b>  | <b>9.0</b>  | <b>3.8</b>  | <b>7.0</b>  | <b>6.2</b>  | <b>-10.1</b> | <b>14.3</b> | <b>9.4</b>  | <b>14.3</b> | <b>-2.4</b>  |           | <b>Dec-03</b>  |
| Policy Index                            |                       |                | 5.5         | 9.9         | 5.1         | 8.1         | 7.1         | -8.4         | 15.3        | 10.8        | 14.6        | -0.9         |           |                |
| Policy Index (Adjusted)                 |                       |                | 5.5         | 9.9         | 5.1         | 7.5         | 6.7         | -8.4         | 15.3        | 8.5         | 14.1        | -1.5         |           |                |
| <b>Growth</b>                           | <b>8,385,757,491</b>  | <b>76.1</b>    | <b>6.4</b>  | <b>10.1</b> | <b>5.1</b>  | <b>9.0</b>  | <b>7.6</b>  | <b>-11.7</b> | <b>19.2</b> | <b>12.0</b> | <b>18.3</b> | <b>-3.9</b>  |           | <b>Jan-03</b>  |
| Custom Growth Benchmark                 |                       |                | 6.1         | 11.3        | 6.7         | 10.5        | 8.7         | -10.3        | 21.6        | 13.8        | 19.3        | -2.1         |           |                |
| <b>Total Domestic Equity</b>            | <b>2,070,423,172</b>  | <b>18.8</b>    | <b>11.5</b> | <b>21.4</b> | <b>6.0</b>  | <b>12.8</b> | <b>10.0</b> | <b>-18.5</b> | <b>20.2</b> | <b>21.8</b> | <b>26.1</b> | <b>-7.6</b>  |           | <b>Sep-82</b>  |
| Russell 3000 Index                      |                       |                | 12.1        | 26.0        | 8.5         | 15.2        | 11.5        | -19.2        | 25.7        | 20.9        | 31.0        | -5.2         | 11.7      |                |
| BlackRock Russell 1000 Index            | 1,209,333,414         | 11.0           | 12.0        | 26.6        | 9.0         | 15.5        | -           | -19.1        | 26.5        | 20.9        | 31.4        | -4.8         | 12.7      | May-17         |
| Russell 1000 Index                      |                       |                | 12.0        | 26.5        | 9.0         | 15.5        | -           | -19.1        | 26.5        | 21.0        | 31.4        | -4.8         | 12.7      |                |
| Boston Partners                         | 404,182,450           | 3.7            | 8.9         | 14.3        | 12.8        | 12.8        | 9.3         | -4.1         | 31.0        | 2.6         | 23.8        | -8.9         | 10.6      | Jun-95         |
| Russell 1000 Value Index                |                       |                | 9.5         | 11.5        | 8.9         | 10.9        | 8.4         | -7.5         | 25.2        | 2.8         | 26.5        | -8.3         | 9.2       |                |
| Emerald Advisers                        | 232,966,434           | 2.1            | 14.7        | 18.6        | -1.9        | 11.0        | 8.8         | -24.2        | 4.9         | 38.2        | 29.4        | -10.7        | 12.0      | Apr-03         |
| Russell 2000 Growth Index               |                       |                | 12.7        | 18.7        | -3.5        | 9.2         | 7.2         | -26.4        | 2.8         | 34.6        | 28.5        | -9.3         | 10.1      |                |
| Ceredex                                 | 223,940,873           | 2.0            | 10.4        | 15.5        | 10.3        | 10.0        | 7.1         | -9.0         | 27.7        | 1.7         | 17.7        | -11.8        | 9.9       | Nov-11         |
| Russell 2000 Value Index                |                       |                | 15.3        | 14.6        | 7.9         | 10.0        | 6.8         | -14.5        | 28.3        | 4.6         | 22.4        | -12.9        | 9.7       |                |
| <b>Total International Equity</b>       | <b>1,455,185,342</b>  | <b>13.2</b>    | <b>10.2</b> | <b>15.1</b> | <b>0.3</b>  | <b>7.5</b>  | <b>4.2</b>  | <b>-18.6</b> | <b>7.8</b>  | <b>15.2</b> | <b>23.2</b> | <b>-14.7</b> |           | <b>Sep-88</b>  |
| MSCI AC World ex USA Index              |                       |                | 9.8         | 16.2        | 2.0         | 7.6         | 4.3         | -15.6        | 8.3         | 11.1        | 22.1        | -13.8        |           |                |
| MSCI EAFE Index                         |                       |                | 10.5        | 18.9        | 4.5         | 8.7         | 4.8         | -14.0        | 11.8        | 8.3         | 22.7        | -13.4        |           |                |
| <b>International Equity</b>             | <b>975,149,419</b>    | <b>8.8</b>     | <b>11.0</b> | <b>15.2</b> | <b>0.7</b>  | <b>8.9</b>  | <b>5.0</b>  | <b>-18.4</b> | <b>8.6</b>  | <b>18.5</b> | <b>26.5</b> | <b>-13.9</b> |           | <b>Oct-10</b>  |
| MSCI AC World ex USA Index              |                       |                | 9.8         | 16.2        | 2.0         | 7.6         | 4.3         | -15.6        | 8.3         | 11.1        | 22.1        | -13.8        |           |                |
| Pyrford                                 | 502,490,844           | 4.6            | 8.5         | 14.7        | 4.4         | 7.6         | -           | -7.4         | 7.1         | 4.2         | 21.6        | -10.5        | 4.2       | May-14         |
| MSCI AC World ex USA Value              |                       |                | 8.4         | 17.3        | 5.8         | 6.3         | -           | -8.6         | 10.5        | -0.8        | 15.7        | -14.0        | 2.7       |                |
| William Blair                           | 472,658,576           | 4.3            | 13.9        | 15.8        | -2.8        | 9.9         | 5.3         | -28.0        | 10.1        | 32.8        | 31.5        | -17.1        | 6.3       | Nov-10         |
| MSCI AC World ex USA Growth             |                       |                | 11.1        | 14.0        | -2.7        | 7.5         | 4.5         | -23.1        | 5.1         | 22.2        | 27.3        | -14.4        | 4.9       |                |
| <b>Emerging Markets Equity</b>          | <b>480,035,922</b>    | <b>4.4</b>     | <b>8.7</b>  | <b>14.4</b> | <b>-0.3</b> | <b>5.4</b>  | <b>-</b>    | <b>-18.9</b> | <b>7.0</b>  | <b>10.7</b> | <b>18.7</b> | <b>-15.7</b> |           | <b>Feb-17</b>  |
| MSCI Emerging Markets                   |                       |                | 7.9         | 9.8         | -5.1        | 3.7         | -           | -20.1        | -2.5        | 18.3        | 18.4        | -14.6        |           |                |
| PIMCO RAE Emerging Markets              | 248,383,507           | 2.3            | 8.9         | 23.0        | 8.8         | 8.3         | -           | -10.1        | 16.5        | 1.6         | 14.0        | -12.6        | 6.3       | Mar-17         |
| MSCI Emerging Markets Value             |                       |                | 8.1         | 14.2        | 0.0         | 3.4         | -           | -15.8        | 4.0         | 5.5         | 12.0        | -10.7        | 3.3       |                |
| TT Emerging Markets                     | 231,652,415           | 2.1            | 8.6         | 5.8         | -8.4        | 2.7         | -           | -26.8        | -0.9        | 20.0        | 24.0        | -18.9        | 0.6       | Aug-17         |
| MSCI Emerging Markets                   |                       |                | 7.9         | 9.8         | -5.1        | 3.7         | -           | -20.1        | -2.5        | 18.3        | 18.4        | -14.6        | 1.8       |                |

Individual closed end funds are not shown in performance summary table.

Total Fund  
Performance Summary (Net of Fees)

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

|   | Market Value         | % of Portfolio | 3 Mo        | 1 Yr         | 3 Yrs       | 5 Yrs       | 10 Yrs      | 2022         | 2021        | 2020        | 2019        | 2018        | Inception | Inception Date |
|---|----------------------|----------------|-------------|--------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-----------|----------------|
| <b>Total Global Equity</b>                    | <b>1,161,600,644</b> | <b>10.5</b>    | <b>10.1</b> | <b>18.2</b>  | <b>2.5</b>  | <b>11.4</b> | <b>8.1</b>  | <b>-19.4</b> | <b>13.2</b> | <b>24.4</b> | <b>27.9</b> | <b>-8.5</b> |           | <b>Dec-03</b>  |
| MSCI AC World Index                           |                      |                | 11.0        | 22.2         | 5.7         | 11.7        | 7.9         | -18.4        | 18.5        | 16.3        | 26.6        | -9.4        |           |                |
| Artisan Partners                              | 600,553,612          | 5.4            | 13.0        | 23.6         | -0.5        | 13.5        | 10.3        | -30.1        | 14.1        | 40.6        | 36.0        | -8.6        | 11.4      | Oct-12         |
| MSCI ACWI Growth NR USD                       |                      |                | 12.7        | 33.2         | 3.7         | 14.6        | 10.1        | -28.6        | 17.1        | 33.6        | 32.7        | -8.1        | 11.1      |                |
| First Eagle                                   | 560,922,713          | 5.1            | 7.2         | 12.9         | 5.9         | 8.9         | 6.3         | -6.3         | 12.1        | 7.7         | 20.1        | -8.3        | 7.2       | Jan-11         |
| MSCI ACWI Value NR USD                        |                      |                | 9.2         | 11.8         | 7.3         | 8.2         | 5.5         | -7.5         | 19.6        | -0.3        | 20.6        | -10.8       | 6.4       |                |
| <b>Private Credit</b>                         | <b>1,104,706,437</b> | <b>10.0</b>    | <b>1.7</b>  | <b>9.1</b>   | <b>9.9</b>  | <b>8.2</b>  | <b>9.1</b>  | <b>10.5</b>  | <b>10.0</b> | <b>4.0</b>  | <b>7.7</b>  | <b>8.3</b>  |           | <b>Sep-06</b>  |
| <b>Total High Yield</b>                       | <b>157,281,692</b>   | <b>1.4</b>     | <b>6.6</b>  | <b>12.0</b>  | <b>1.5</b>  | <b>4.7</b>  | <b>3.6</b>  | <b>-10.9</b> | <b>4.9</b>  | <b>4.7</b>  | <b>14.7</b> | <b>-3.6</b> |           | <b>Dec-03</b>  |
| ICE BofA US High Yield Master II              |                      |                | 7.1         | 13.5         | 2.0         | 5.2         | 4.5         | -11.2        | 5.3         | 6.1         | 14.4        | -2.3        |           |                |
| Voya Global Investors                         | 157,281,692          | 1.4            | 6.6         | 11.8         | 1.5         | 4.7         | 3.5         | -10.9        | 4.9         | 4.7         | 14.7        | -3.6        | 6.1       | May-00         |
| ICE BofA US High Yield Master II              |                      |                | 7.1         | 13.5         | 2.0         | 5.2         | 4.5         | -11.2        | 5.3         | 6.1         | 14.4        | -2.3        | 6.6       |                |
| <b>Total Real Estate</b>                      | <b>775,070,499</b>   | <b>7.0</b>     | <b>-1.4</b> | <b>-10.2</b> | <b>0.4</b>  | <b>0.6</b>  | <b>5.6</b>  | <b>-5.3</b>  | <b>19.2</b> | <b>-6.0</b> | <b>8.1</b>  | <b>7.4</b>  |           | <b>Sep-92</b>  |
| Real Estate Benchmark                         |                      |                | -2.4        | -11.0        | 0.5         | 1.9         | 5.6         | -4.5         | 19.3        | 0.6         | 7.5         | 6.8         |           |                |
| NCREIF-ODCE                                   |                      |                | -4.8        | -12.0        | 4.9         | 4.2         | 7.3         | 7.5          | 22.2        | 1.2         | 5.3         | 8.3         |           |                |
| NCREIF Property Index                         |                      |                | -3.0        | -7.9         | 4.6         | 4.3         | 6.8         | 5.5          | 17.7        | 1.6         | 6.4         | 6.7         |           |                |
| <b>Total Core Real Estate</b>                 | <b>214,043,952</b>   | <b>1.9</b>     | <b>16.1</b> | <b>12.4</b>  | <b>7.5</b>  | <b>8.5</b>  | <b>8.1</b>  | <b>-25.1</b> | <b>47.5</b> | <b>-5.2</b> | <b>27.5</b> | <b>-5.5</b> |           | <b>Jan-01</b>  |
| Adelante                                      | 97,412,587           | 0.9            | 15.2        | 16.5         | 7.8         | 8.6         | 8.2         | -27.2        | 47.5        | -5.2        | 27.5        | -5.5        | 9.4       | Oct-01         |
| Wilshire U.S. REIT Index                      |                      |                | 16.3        | 16.1         | 7.5         | 7.6         | 7.7         | -26.8        | 46.2        | -7.9        | 25.8        | -4.8        | 9.1       |                |
| Invesco US Fundamental Beta                   | 116,631,364          | 1.1            | 16.9        | 9.2          | -           | -           | -           | -            | -           | -           | -           | -           | -4.0      | Mar-22         |
| Wilshire U.S. REIT Index                      |                      |                | 16.3        | 16.1         | -           | -           | -           | -            | -           | -           | -           | -           | -3.0      |                |
| <b>Total Private Real Estate</b>              | <b>561,026,548</b>   | <b>5.1</b>     | <b>-6.9</b> | <b>-17.2</b> | <b>-1.1</b> | <b>-0.7</b> | <b>4.9</b>  | <b>1.3</b>   | <b>15.3</b> | <b>-6.1</b> | <b>6.2</b>  | <b>8.8</b>  |           | <b>Sep-92</b>  |
| <b>Private Equity</b>                         | <b>1,321,616,546</b> | <b>12.0</b>    | <b>0.5</b>  | <b>-1.0</b>  | <b>16.5</b> | <b>13.3</b> | <b>12.4</b> | <b>-0.5</b>  | <b>60.4</b> | <b>8.7</b>  | <b>8.4</b>  | <b>12.0</b> |           | <b>Dec-03</b>  |
| <b>Risk Parity</b>                            | <b>339,873,160</b>   | <b>3.1</b>     | <b>6.6</b>  | <b>4.7</b>   | <b>-3.6</b> | <b>2.9</b>  | <b>-</b>    | <b>-21.8</b> | <b>9.3</b>  | <b>9.6</b>  | <b>17.7</b> | <b>-</b>    |           | <b>Jan-19</b>  |
| 60% MSCI ACWI Net/40% Blmbg. Global Aggregate |                      |                | 9.9         | 15.4         | 1.2         | 7.0         | -           | -17.3        | 8.8         | 14.0        | 18.6        | -           |           |                |
| AQR Global Risk Premium-EL                    | 176,809,243          | 1.6            | 6.6         | 6.8          | -0.6        | 4.2         | -           | -16.6        | 10.3        | 5.8         | 18.3        | -           | 4.2       | Jan-19         |
| HFR Risk Parity Vol 10 Index                  |                      |                | 9.4         | 10.5         | -1.2        | 3.4         | -           | -18.3        | 6.8         | 3.6         | 18.4        | -           | 3.4       |                |
| PanAgora Risk Parity Multi Asset              | 163,063,917          | 1.5            | 6.6         | 2.4          | -6.5        | -           | -           | -26.3        | 8.3         | 13.6        | -           | -           | 1.0       | Mar-19         |
| HFR Risk Parity Vol 10 Index                  |                      |                | 9.4         | 10.5         | -1.2        | -           | -           | -18.3        | 6.8         | 3.6         | -           | -           | 2.3       |                |

Individual closed end funds are not shown in performance summary table.

Total Fund  
Performance Summary (Net of Fees)

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

|  | Market Value         | % of Portfolio | 3 Mo       | 1 Yr       | 3 Yrs       | 5 Yrs       | 10 Yrs     | 2022         | 2021        | 2020        | 2019       | 2018        | Inception | Inception Date |
|--|----------------------|----------------|------------|------------|-------------|-------------|------------|--------------|-------------|-------------|------------|-------------|-----------|----------------|
| <b>Diversifying</b>                              | <b>750,193,285</b>   | <b>6.8</b>     | <b>2.3</b> | <b>2.2</b> | <b>-0.7</b> | <b>0.6</b>  | <b>0.4</b> | <b>-5.7</b>  | <b>1.7</b>  | <b>-1.7</b> | <b>6.8</b> | <b>-2.3</b> |           | <b>Dec-03</b>  |
| <i>Custom Diversifying Benchmark</i>             |                      |                | 5.7        | 7.4        | 1.0         | 2.7         | 3.2        | -5.7         | 1.6         | 4.7         | 6.1        | 1.4         |           |                |
| <b>Diversifying Fixed Income</b>                 | <b>223,296,696</b>   | <b>2.0</b>     | <b>6.8</b> | <b>5.2</b> | <b>-3.5</b> | <b>-0.3</b> | <b>0.9</b> | <b>-13.5</b> | <b>-1.0</b> | <b>1.2</b>  | <b>8.3</b> | <b>-2.0</b> |           | <b>Dec-03</b>  |
| <i>Blmbg. U.S. Aggregate Index</i>               |                      |                | 6.8        | 5.5        | -3.3        | 1.1         | 1.8        | -13.0        | -1.5        | 7.5         | 8.7        | 0.0         |           |                |
| AFL-CIO  | 223,235,851          | 2.0            | 6.8        | 5.2        | -3.5        | 0.6         | 1.5        | -13.6        | -1.0        | 6.2         | 7.8        | 0.2         | 4.9       | Jul-91         |
| <i>Blmbg. U.S. Aggregate Index</i>               |                      |                | 6.8        | 5.5        | -3.3        | 1.1         | 1.8        | -13.0        | -1.5        | 7.5         | 8.7        | 0.0         | 4.9       |                |
| <b>Diversifying Multi-Asset</b>                  | <b>526,896,589</b>   | <b>4.8</b>     | <b>0.5</b> | <b>0.9</b> | <b>0.3</b>  | <b>-</b>    | <b>-</b>   | <b>-2.3</b>  | <b>2.4</b>  | <b>-</b>    | <b>-</b>   | <b>-</b>    |           | <b>Aug-20</b>  |
| <i>Custom Diversifying Multi-Asset Benchmark</i> |                      |                | 4.9        | 8.7        | 3.1         | -           | -          | -3.1         | 4.1         | -           | -          | -           |           |                |
| Acadian Multi-Asset Absolute Return Fund         | 211,000,534          | 1.9            | -5.4       | -5.9       | -1.8        | -           | -          | -0.6         | 1.1         | -           | -          | -           | -1.2      | Aug-20         |
| <i>FTSE 3-Month T-bill +5%</i>                   |                      |                | 2.6        | 10.5       | 7.4         | -           | -          | 6.6          | 5.0         | -           | -          | -           | 7.1       |                |
| Sit LLCAR  | 315,896,054          | 2.9            | 4.7        | 6.5        | -           | -           | -          | -3.7         | -           | -           | -          | -           | 2.5       | Apr-21         |
| <i>Blmbg. U.S. Aggregate +1%</i>                 |                      |                | 7.1        | 6.6        | -           | -           | -          | -12.1        | -           | -           | -          | -           | -1.4      |                |
| <b>Liquidity</b>                                 | <b>1,623,979,726</b> | <b>14.7</b>    | <b>3.0</b> | <b>5.4</b> | <b>0.5</b>  | <b>1.9</b>  | <b>-</b>   | <b>-3.5</b>  | <b>-0.3</b> | <b>3.4</b>  | <b>4.8</b> | <b>1.7</b>  |           | <b>Nov-16</b>  |
| <i>Blmbg. 1-3 Year Gov/Credit Index</i>          |                      |                | 2.7        | 4.6        | 0.1         | 1.5         | -          | -3.7         | -0.5        | 3.3         | 4.0        | 1.6         |           |                |
| DFA Short Credit                                 | 365,687,785          | 3.3            | 1.8        | 5.3        | -0.3        | 1.4         | -          | -5.4         | -0.5        | 2.8         | 5.2        | 1.1         | 1.4       | Dec-16         |
| <i>ICE BofA 1-5 Year U.S. Corp/Govt</i>          |                      |                | 3.3        | 4.9        | -0.6        | 1.6         | -          | -5.5         | -0.9        | 4.6         | 5.1        | 1.4         | 1.5       |                |
| Insight Short Duration                           | 601,555,000          | 5.5            | 2.4        | 5.7        | 1.5         | 2.4         | -          | -1.2         | 0.0         | 3.1         | 4.6        | 1.7         | 2.2       | Dec-16         |
| <i>Blmbg. 1-3 Year Gov/Credit Index</i>          |                      |                | 2.7        | 4.6        | 0.1         | 1.5         | -          | -3.7         | -0.5        | 3.3         | 4.0        | 1.6         | 1.4       |                |
| Sit Short Duration                               | 656,736,941          | 6.0            | 4.3        | 5.2        | -0.2        | 1.7         | -          | -5.0         | -0.5        | 4.4         | 4.7        | 2.3         | 1.7       | Dec-16         |
| <i>Blmbg. 1-3 Year Govt Index</i>                |                      |                | 2.6        | 4.3        | -0.1        | 1.3         | -          | -3.8         | -0.6        | 3.1         | 3.6        | 1.6         | 1.2       |                |
| <b>Total Cash</b>                                | <b>144,877,481</b>   | <b>1.3</b>     | <b>1.4</b> | <b>2.5</b> | <b>1.7</b>  | <b>1.9</b>  | <b>1.0</b> | <b>2.4</b>   | <b>0.4</b>  | <b>1.3</b>  | <b>3.3</b> | <b>1.7</b>  |           | <b>Dec-03</b>  |
| <i>90 Day U.S. Treasury Bill</i>                 |                      |                | 1.4        | 5.0        | 2.2         | 1.9         | 1.2        | 1.5          | 0.0         | 0.7         | 2.3        | 1.9         |           |                |
| Cash   | 144,873,116          | 1.3            | 1.4        | 6.1        | 2.9         | 2.7         | 1.8        | 2.2          | 0.4         | 1.3         | 3.4        | 1.7         |           | Apr-98         |
| Northern Trust Transition                        | 4,365                | 0.0            | 1.4        | -99.2      | -81.1       | -           | -          | -4.8         | -6.1        | 104.1       | -          | -           |           | Feb-19         |

Individual closed end funds are not shown in performance summary table. Effective 3/1/2019 the custodian of record switched from State Street to Northern Trust. Wellington Real Total Return was liquidated 4/30/2020. \$60,845.58 in residual value is reflected in the Diversified Fixed Income composite.



Total Fund  
Closed End Funds - Investment Summary

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

| StepStone Group Analysis (*)                    |   |  |                        |                |                        |  |  |                        |                      |                                     |  |                  |
|---|---|--|------------------------|----------------|------------------------|--|--|------------------------|----------------------|-------------------------------------|--|------------------|
| Closing Date                                    | Manager Name/Fund Name                      | Estimated Market Value as of 12/31/2023 <sup>1</sup> | Total Commitment       | Total % Called | Contributed Capital    | Current Qtr. Change in Contributed Capital | Current Qtr. Change in Distributed Capital | Total Distributions    | Remaining Commitment | Distrib./Paid-In (DPI) <sup>2</sup> | Tot. Value/Paid-In (TVPI) <sup>3</sup> | Latest Valuation |
| <b>Private Equity &amp; Venture Capital</b>     |   |  |                        |                |                        |  |  |                        |                      |                                     |  |                  |
| 2/11/2004                                       | Adams Street Partners                       | \$114,729,087  | \$210,000,000          | 93%            | \$195,823,407          | \$116,206                                  | \$3,550,613                                | \$279,686,092          | \$14,176,593         | 1.43                                | 2.01                                   | 9/30/2023        |
| 1/15/2009                                       | Adams Street Partners II                    | \$3,314,895  | \$30,000,000           | 95%            | \$28,365,000           | \$0  | \$276,027                                  | \$45,661,555           | \$1,635,000          | 1.61                                | 1.73                                   | 9/30/2023        |
| 9/21/2012                                       | Adams Street Partners - Fund 5              | \$9,641,758  | \$40,000,000           | 77%            | \$30,845,875           | \$0  | \$1,184,819                                | \$32,286,795           | \$9,154,125          | 1.05                                | 1.36                                   | 9/30/2023        |
| 1/18/1996                                       | Adams Street Partners - BPF                 | \$465,245  | \$59,565,614           | 97%            | \$57,517,409           | \$0  | \$0  | \$103,896,144          | \$2,024,035          | 1.81                                | 1.81                                   | 9/30/2023        |
| 3/31/2016                                       | Adams Street Venture Innovation             | \$158,652,832  | \$75,000,000           | 92%            | \$69,280,251           | \$0  | \$0  | \$35,897,266           | \$5,719,749          | 0.52                                | 2.81                                   | 9/30/2023        |
| 5/18/2018                                       | AE Industrial Partners Fund II, LP          | \$39,326,541   | \$35,000,000           | 103%           | \$36,067,717           | \$1,711,569                                | \$848,599                                  | \$15,671,952           | \$8,055,256          | 0.43                                | 1.52                                   | 9/30/2023        |
| 11/27/2013                                      | Aether Real Assets III                      | \$16,560,831   | \$25,000,000           | 106%           | \$26,404,849           | \$279,819                                  | \$574,823                                  | \$7,785,428            | \$944,954            | 0.29                                | 0.92                                   | 9/30/2023        |
| 11/30/2013                                      | Aether Real Assets III Surplus              | \$39,121,194   | \$50,000,000           | 106%           | \$53,006,965           | \$29,309                                   | \$930,315                                  | \$15,115,662           | \$738,443            | 0.29                                | 1.02                                   | 9/30/2023        |
| 1/30/2016                                       | Aether Real Assets IV                       | \$54,679,275   | \$50,000,000           | 102%           | \$50,892,773           | \$0  | \$0  | \$8,306,803            | \$3,832,805          | 0.16                                | 1.24                                   | 9/30/2023        |
| 4/30/2004                                       | Bay Area Equity Fund I <sup>4</sup>         | \$0  | \$10,000,000           | 100%           | \$10,000,000           | \$0  | \$0  | \$37,018,019           | \$0                  | 3.70                                | 3.70                                   | 9/30/2023        |
| 6/29/2009                                       | Bay Area Equity Fund II <sup>4</sup>        | \$11,792,685   | \$10,000,000           | 100%           | \$10,000,000           | \$0  | \$0  | \$3,684,910            | \$0                  | 0.37                                | 1.55                                   | 9/30/2023        |
| 6/30/2013                                       | Commonfund                                  | \$34,992,847   | \$50,000,000           | 95%            | \$47,649,993           | \$0  | \$1,232,791                                | \$33,883,799           | \$2,350,007          | 0.71                                | 1.45                                   | 9/30/2023        |
| 7/15/2005                                       | EIF US Power Fund II <sup>4</sup>           | \$10,602   | \$50,000,000           | 130%           | \$65,029,556           | \$0  | \$0  | \$76,092,655           | \$0                  | 1.17                                | 1.17                                   | 9/30/2023        |
| 5/31/2007                                       | EIF US Power Fund III <sup>4</sup>          | \$2,167,726  | \$65,000,000           | 110%           | \$71,409,097           | \$0  | \$48,021                                   | \$93,077,887           | \$0                  | 1.30                                | 1.33                                   | 9/30/2023        |
| 11/28/2011                                      | EIF US Power Fund IV                        | \$18,909,056   | \$50,000,000           | 130%           | \$64,917,547           | \$0  | \$263,816                                  | \$50,464,797           | \$4                  | 0.78                                | 1.07                                   | 9/30/2023        |
| 11/28/2016                                      | EIF US Power Fund V                         | \$31,479,634   | \$50,000,000           | 143%           | \$71,633,870           | \$0  | \$437,137                                  | \$65,340,271           | \$3,888,697          | 0.91                                | 1.35                                   | 9/30/2023        |
| 3/31/2023                                       | EGT X, L.P.                                 | \$11,041,191   | \$100,000,000          | 17%            | \$17,450,752           | \$3,826,463                                | -\$98,900                                  | \$2,669,844            | \$85,177,156         | 0.15                                | 0.79                                   | 6/30/2023        |
| 2/21/2019                                       | Genstar Capital Partners IX, L.P.           | \$67,162,974   | \$50,000,000           | 96%            | \$48,083,549           | \$147,332                                  | \$936,288                                  | \$27,299,645           | \$7,699,107          | 0.57                                | 1.96                                   | 9/30/2023        |
| 4/1/2021  | Genstar Capital Partners X, L.P.            | \$40,502,750   | \$42,500,000           | 93%            | \$39,406,048           | \$9,362,023                                | \$56,226                                   | \$181,283              | \$3,275,234          | 0.00                                | 1.03                                   | 9/30/2023        |
| 6/30/2023                                       | Genstar Capital Partners XI, L.P.           | \$0  | \$75,000,000           | 0%             | \$298,210              | \$298,210                                  | \$0  | \$0                    | \$74,701,790         | N/A                                 | N/A                                    | N/A              |
| 6/30/2023                                       | Green Equity Investors IX                   | \$910,039  | \$60,000,000           | 1%             | \$576,976              | \$0  | \$0  | \$0                    | \$59,423,024         | N/A                                 | N/A                                    | 9/30/2023        |
| 10/27/2020                                      | GTCR Fund XIII, L.P.                        | \$26,167,299   | \$50,000,000           | 53%            | \$26,392,753           | \$415,000                                  | \$109,350                                  | \$5,556,257            | \$23,607,247         | 0.21                                | 1.20                                   | 9/30/2023        |
| 6/30/2023                                       | GTCR Fund XIV                               | \$0  | \$100,000,000          | 0%             | \$0                    | \$0  | \$0  | \$0                    | \$100,000,000        | N/A                                 | N/A                                    | N/A              |
| 5/10/2021                                       | Hellman & Friedman Capital Partners X, L.P. | \$59,661,030   | \$75,000,000           | 72%            | \$54,243,885           | \$271,661                                  | \$140,005                                  | \$140,005              | \$20,768,284         | 0.00                                | 1.10                                   | 9/30/2023        |
| 3/31/2023                                       | Jade Equity Investors II, LP                | -\$28,479  | \$15,000,000           | 0%             | \$0                    | \$0  | \$0  | \$0                    | \$15,000,000         | N/A                                 | N/A                                    | 6/30/2023        |
| 11/18/2009                                      | Oaktree PIF 2009                            | \$344,120  | \$40,000,000           | 87%            | \$34,812,560           | \$0  | \$0  | \$47,032,470           | \$6,308,961          | 1.35                                | 1.36                                   | 9/30/2023        |
| 5/2/2013  | Ocean Avenue Fund II                        | \$24,203,276   | \$30,000,000           | 90%            | \$27,000,000           | \$0  | \$0  | \$44,294,244           | \$3,000,000          | 1.64                                | 2.54                                   | 9/30/2023        |
| 4/15/2016                                       | Ocean Avenue Fund III                       | \$53,687,919   | \$50,000,000           | 93%            | \$46,500,000           | \$0  | \$2,750,000                                | \$57,709,752           | \$3,500,000          | 1.24                                | 2.40                                   | 9/30/2023        |
| 11/30/2007                                      | Paladin III                                 | \$7,809,812  | \$25,000,000           | 140%           | \$34,954,262           | \$0  | \$0  | \$71,324,279           | \$387,482            | 2.04                                | 2.26                                   | 9/30/2023        |
| 8/22/2011                                       | Pathway 6                                   | \$10,756,050   | \$30,000,000           | 101%           | \$30,263,207           | \$23,527                                   | \$290,072                                  | \$52,742,837           | \$2,656,111          | 1.74                                | 2.10                                   | 9/30/2023        |
| 7/10/2013                                       | Pathway 7                                   | \$27,678,698   | \$40,000,000           | 99%            | \$39,620,012           | \$45,000                                   | \$1,350,374                                | \$54,605,384           | \$3,671,887          | 1.38                                | 2.08                                   | 6/30/2023        |
| 11/23/2015                                      | Pathway 8                                   | \$61,350,153   | \$70,000,000           | 100%           | \$69,725,061           | \$110,250                                  | \$3,464,738                                | \$89,159,064           | \$5,228,078          | 1.28                                | 2.16                                   | 6/30/2023        |
| 1/19/1999                                       | Pathway                                     | \$63,323,589   | \$50,000,000           | 99%            | \$49,255,120           | \$88,749                                   | \$2,752,537                                | \$43,254,641           | \$3,089,504          | 0.88                                | 2.16                                   | 6/30/2023        |
| 7/31/2009                                       | Pathway 2008                                | \$2,079,920  | \$125,000,000          | 101%           | \$126,517,050          | \$130,709                                  | \$478,607                                  | \$190,444,516          | \$10,513,800         | 1.51                                | 1.52                                   | 6/30/2023        |
| 6/3/2014  | Siguler Guff CCCERA Opportunities           | \$121,416,096  | \$200,000,000          | 88%            | \$175,083,208          | \$0  | \$8,408,946                                | \$223,690,941          | \$28,597,500         | 1.28                                | 1.97                                   | 9/30/2023        |
| 5/18/2018                                       | Siris Partners IV, L.P.                     | \$42,289,735   | \$35,000,000           | 94%            | \$32,963,940           | \$549,293                                  | \$1,464,041                                | \$5,820,012            | \$6,130,376          | 0.18                                | 1.46                                   | 9/30/2023        |
| 6/30/2023                                       | Symphony Technology Group VII               | \$0  | \$50,000,000           | 0%             | \$0                    | \$0  | \$0  | \$0                    | \$50,000,000         | N/A                                 | N/A                                    | N/A              |
| 5/27/2021                                       | TA XIV-A, L.P.                              | \$35,587,859   | \$50,000,000           | 76%            | \$38,000,000           | \$3,500,000                                | \$0  | \$1,500,000            | \$13,500,000         | 0.04                                | 0.98                                   | N/A              |
| 6/30/2023                                       | TA XV-A, L.P.                               | \$0  | \$90,000,000           | 0%             | \$0                    | \$0  | \$0  | \$0                    | \$90,000,000         | N/A                                 | N/A                                    | N/A              |
| 6/28/2019                                       | TPG Healthcare Partners, L.P.               | \$8,334,643  | \$35,000,000           | 21%            | \$7,501,200            | \$4,310,956                                | \$0  | \$0                    | \$27,490,124         | 0.00                                | 1.11                                   | 9/30/2023        |
| 3/31/2023                                       | TPG Healthcare Partners II                  | \$23,785,276   | \$35,000,000           | 67%            | \$23,534,961           | \$0  | \$41,514                                   | \$6,263,131            | \$11,465,039         | N/A                                 | N/A                                    | 9/30/2023        |
| 3/31/2023                                       | TPG Partners IX                             | \$16,291,241   | \$65,000,000           | 25%            | \$16,324,989           | \$14,271,942                               | \$4,332                                    | \$4,332                | \$48,675,011         | N/A                                 | N/A                                    | 9/30/2023        |
| 9/17/2021                                       | Trident IX, L.P.                            | \$24,380,956   | \$50,000,000           | 46%            | \$23,201,490           | \$0  | \$0  | \$0                    | \$26,798,510         | N/A                                 | N/A                                    | N/A              |
| 5/24/2019                                       | Trident VIII, L.P.                          | \$48,661,010   | \$40,000,000           | 96%            | \$38,314,293           | \$253,059                                  | \$657,166                                  | \$3,792,372            | \$4,992,136          | 0.10                                | 1.37                                   | 9/30/2023        |
| 12/8/2015                                       | Wastewater Opportunity Fund                 | \$8,375,182  | \$25,000,000           | 126%           | \$31,512,759           | \$0  | \$0  | \$27,076,172           | \$521,541            | 0.86                                | 1.12                                   | 9/30/2023        |
| <b>Total Private Equity and Venture Capital</b> |   | <b>\$1,321,616,546</b>                               | <b>\$2,562,065,614</b> | <b>75%</b>     | <b>\$1,920,380,595</b> | <b>\$39,741,078</b>                        | <b>\$32,152,257</b>                        | <b>\$1,858,431,215</b> | <b>\$788,697,569</b> | <b>0.97</b>                         | <b>1.66</b>                            |                  |
| <b>% of Portfolio (Market Value)</b>            |   | <b>12.0%</b>   |                        |                |                        |  |  |                        |                      |                                     |  |                  |

\* All Data provided by StepStone Group  
<sup>1</sup>Latest valuation + capital calls - distributions  
<sup>2</sup>(DPI) is equal to (capital returned / capital called)  
<sup>3</sup>(TVPI) is equal to (market value + capital returned) / capital called  
<sup>4</sup>Capital has been fully called and fund is in redemption.

Total Fund  
Closed End Funds - IRR Summary

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

| Private Equity & Venture Capital                  | Closing Date | Fund Level (G) <sup>2</sup> | CCCERA (G) | Fund Level (N) <sup>2,3</sup> | CCCERA (N) <sup>3</sup> | IRR Date   |
|---|--------------|-----------------------------|------------|-------------------------------|-------------------------|------------|
| Adams Street Partners                             | 2/11/2004    | 14.7%                       | 14.7%      | -                             | 12.6%                   | 9/30/2023  |
| Adams Street Partners II                          | 12/31/2008   | 13.9%                       | 13.2%      | -                             | 10.5%                   | 9/30/2023  |
| Adams Street Partners - Fund 5                    | 12/31/2008   | 9.3%                        | 8.1%       | -                             | 6.4%                    | 9/30/2023  |
| Adams Street Partners Venture                     | 1/18/1996    | 32.6%                       | 32.7%      | -                             | 30.6%                   | 9/30/2023  |
| Adams Street Partners - BPF                       | 3/31/2016    | 14.2%                       | 14.2%      | -                             | 11.6%                   | 9/30/2023  |
| AE Industrial Partners Fund II, LP                | 5/18/2018    | 24.3%                       | -          | 21.4%                         | -                       | 9/30/2023  |
| Aether Real Assets III <sup>1</sup>               | 11/27/2013   | 0.1%                        | -          | -1.4%                         | -                       | 9/30/2023  |
| Aether Real Assets III Surplus <sup>1</sup>       | 11/30/2013   | 1.5%                        | -          | 0.4%                          | -                       | 9/30/2023  |
| Aether Real Assets IV <sup>1</sup>                | 1/30/2016    | 6.5%                        | -          | 4.9%                          | -                       | 9/30/2023  |
| Bay Area Equity Fund I <sup>9</sup>               | 11/26/2003   | 31.3%                       | 31.3%      | 22.9%                         | 22.9%                   | 9/30/2023  |
| Bay Area Equity Fund II <sup>9</sup>              | 11/26/2003   | 8.4%                        | 8.4%       | 4.7%                          | 4.7%                    | 9/30/2023  |
| CommonFund <sup>1</sup>                           | 6/30/2013    | -                           | -          | -                             | 8.2%                    | 12/31/2022 |
| Energy Investor Fund II <sup>9</sup>              | 7/15/2005    | 5.6%                        | 5.3%       | 2.9%                          | 2.6%                    | 9/30/2023  |
| Energy Investor Fund V                            | 11/28/2016   | 18.8%                       | 16.4%      | 14.7%                         | 12.5%                   | 9/30/2023  |
| Genstar Capital Partners IX, L.P.                 | 2/21/2019    | 44.9%                       | -          | 34.7%                         | -                       | 9/30/2023  |
| Oaktree PIF 2009                                  | 2/28/2010    | 6.8%                        | -          | 6.5%                          | -                       | 12/31/2023 |
| Ocean Avenue II                                   | 8/15/2013    | -                           | -          | 18.9%                         | -                       | 9/30/2023  |
| Ocean Avenue III                                  | 4/15/2016    | -                           | -          | 25.6%                         | -                       | 9/30/2023  |
| Paladin III                                       | 11/30/2007   | 20.2%                       | -          | -                             | -                       | 6/30/2023  |
| Pathway 6   | 8/22/2011    | 16.9%                       | 16.9%      | 14.0%                         | 14.0%                   | 9/30/2023  |
| Benchmark <sup>4</sup>                            |              | 14.6%                       | -          | -                             | -                       | 9/30/2023  |
| Pathway 7   | 7/10/2013    | 18.7%                       | 18.7%      | 16.0%                         | 16.0%                   | 9/30/2023  |
| Benchmark <sup>5</sup>                            |              | 15.1%                       | -          | -                             | -                       | 9/30/2023  |
| Pathway 8   | 11/23/2015   | 20.7%                       | 20.7%      | 18.7%                         | 18.7%                   | 9/30/2023  |
| Benchmark <sup>6</sup>                            |              | 16.4%                       | -          | -                             | -                       | 9/30/2023  |
| Pathway Private Equity Fund                       | 1/19/1999    | 13.4%                       | 13.4%      | 8.3%                          | 8.3%                    | 9/30/2023  |
| Benchmark <sup>7</sup>                            |              | 10.4%                       | -          | -                             | -                       | 9/30/2023  |
| Pathway Private Equity Fund 2008                  | 7/31/2009    | 17.1%                       | 17.1%      | 14.0%                         | 14.0%                   | 9/30/2023  |
| Benchmark <sup>8</sup>                            |              | 13.3%                       | -          | -                             | -                       | 9/30/2023  |
| Siguler Guff CCCERA Opportunities                 | 6/3/2014     | 18.2%                       | 19.0%      | 17.7%                         | 16.5%                   | 9/30/2023  |
| Siguler Guff Secondary Opportunities <sup>9</sup> | 8/31/2013    | 55.3%                       | 118.4%     | 49.5%                         | 69.0%                   | 9/30/2020  |
| Siris Partners IV, L.P. <sup>1</sup>              | 5/18/2018    | 22.4%                       | -          | 17.9%                         | -                       | 3/31/2023  |
| TPG Healthcare Partners, L.P.                     | 6/28/2019    | 24.0%                       | 33.0%      | -                             | 19.0%                   | 9/30/2023  |
| Trident VIII, L.P.                                | 5/24/2019    | 14.1%                       | -          | 8.1%                          | -                       | 9/30/2023  |
| Wastewater Opportunity Fund <sup>1</sup>          | 12/8/2015    | 8.5%                        | -          | 4.5%                          | -                       | 3/31/2023  |

<sup>1</sup>Manager has yet to report IRR figure.

<sup>2</sup>Fund level data includes CCCERA and all other fund investors.

<sup>3</sup>Net IRR calculated after deductions of management fees and carried interest to the General Partner.

<sup>4</sup>Private iQ global all private equity median pooled return for vintage years 2011-2014, as of September 30, 2022.

<sup>5</sup>Private iQ global all private equity median pooled return for vintage years 2012-2016, as of September 30, 2022.

<sup>6</sup>Private iQ global all private equity median pooled return for vintage years 2015-2018, as of September 30, 2022.

<sup>7</sup>Private iQ global all private equity median pooled return for vintage years 1999-2011, as of September 30, 2022.

<sup>8</sup>Private iQ global all private equity median pooled return for vintage years 2008-2014, as of September 30, 2022.

<sup>9</sup>Capital has been fully called and fund is in redemption.

Total Fund  
Closed End Funds - Investment Summary

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

StepStone Group Analysis (\*)

| Closing Date          | Manager Name/Fund Name                        | Estimated Market Value as of 12/31/2023 <sup>1</sup> | Total Commitment | % Called | Contributed Capital | Current Qtr. Change in Contributed Capital | Current Qtr. Change in Distributed Capital | Total Distributions | Remaining Commitment | Distrib./Paid-In (DPI) <sup>2</sup> | Tot. Value/Paid-In (TVPI) <sup>3</sup> | Latest Valuation |
|-----------------------|---|--|------------------|----------|---------------------|--|--|---------------------|----------------------|-------------------------------------|--|------------------|
| <b>Private Credit</b> |   |  |                  |          |                     |  |  |                     |                      |                                     |  |                  |
| 8/31/2015             | Angelo Gordon Energy Credit Opp. <sup>4</sup> | \$2,059,323  | \$16,500,000     | 114%     | \$18,750,000        | \$0  | \$0  | \$20,410,032        | \$2,319,783          | 1.09                                | 1.20                                   | 9/30/2023        |
| 12/18/2017            | Stepstone CC Opportunities Fund               | \$1,092,414,600                                      | \$1,170,000,000  | 87%      | \$1,017,250,587     | \$8,682,190                                | \$16,069,933                               | \$245,401,919       | \$262,325,551        | 0.24                                | 1.32                                   | 9/30/2023        |
| 8/1/2012              | Torchlight IV                                 | \$2,972,174  | \$60,000,000     | 141%     | \$84,866,971        | \$0  | \$0  | \$109,589,365       | \$0                  | 1.29                                | 1.33                                   | 9/30/2023        |
| 3/12/2015             | Torchlight V                                  | \$7,260,340  | \$75,000,000     | 80%      | \$60,000,000        | \$0  | \$0  | \$71,460,214        | \$15,000,000         | 1.19                                | 1.31                                   | 9/30/2023        |
|                       | <b>Total Private Credit</b>                   | <b>\$1,104,706,437</b>                               |                  |          |                     |  |  |                     |                      |                                     |  |                  |
|                       | <b>% of Portfolio (Market Value)</b>          | <b>10.0%</b>   |                  |          |                     |  |  |                     |                      |                                     |  |                  |

\*All Data provided by StepStone Group

<sup>1</sup>Latest valuation + capital calls - distributions

<sup>2</sup>(DPI) is equal to (capital returned / capital called)

<sup>3</sup>(TVPI) is equal to (market value + capital returned) / capital called

<sup>4</sup>Capital has been fully called and fund is in redemption.

Total Fund  
Closed End Funds - Investment Summary

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

Verus Internal Analysis

| Inception Date                       | Manager Name/Fund Name                         | Estimated Market Value as of 12/31/2023 <sup>1</sup> | Total Commitment       | Total % Called | Capital Called         | Current Qtr. Capital Called | Current Qtr. Distributions | Total Distributions <sup>8</sup> | Remaining Commitment | Distrib./Paid-In (DPI) <sup>2</sup> | Tot. Value/Paid-In (TVPI) <sup>3</sup> | Latest Valuation |
|--------------------------------------|--|--|------------------------|----------------|------------------------|-----------------------------|----------------------------|----------------------------------|----------------------|-------------------------------------|--|------------------|
| <b>Real Estate</b>                   |  |  |                        |                |                        |                             |                            |                                  |                      |                                     |  |                  |
| 1/23/2012                            | Angelo Gordon Realty Fund VIII <sup>4</sup>    | \$10,202,531   | \$80,000,000           | 94%            | \$75,401,855           | \$0                         | \$0                        | \$101,711,550                    | \$12,334,302         | 1.35                                | 1.48                                   | 9/30/2023        |
| 12/8/2014                            | Angelo Gordon Realty Fund IX                   | \$18,478,010   | \$65,000,000           | 93%            | \$60,125,000           | \$0                         | \$0                        | \$58,012,501                     | \$7,572,500          | 0.96                                | 1.27                                   | 9/30/2023        |
| 3/24/2023                            | BlackStone Strategic Partners Real Estate VIII | \$4,877,981  | \$80,000,000           | 5%             | \$4,135,831            | \$4,135,831                 | \$0                        | \$0                              | \$75,864,169         | N/A                                 | N/A                                    | N/A              |
| 3/24/2023                            | Blackstone Real Estate Partners X              | \$4,534,419  | \$100,000,000          | 5%             | \$5,468,649            | \$828,423                   | \$0                        | \$0                              | \$94,531,351         | 0.00                                | 0.83                                   | 9/30/2023        |
| 12/14/2023                           | Cross Lake RE IV                               | \$1,880,326  | \$60,000,000           | 3%             | \$1,880,326            | \$1,880,326                 | \$0                        | \$0                              | \$58,119,674         | N/A                                 | N/A                                    | N/A              |
| 6/23/2005                            | DLJ RECP III                                   | \$10,290,642   | \$75,000,000           | 95%            | \$70,968,662           | \$0                         | \$1,128,351                | \$77,985,055                     | \$4,031,338          | 1.10                                | 1.24                                   | 9/30/2023        |
| 2/11/2008                            | DLJ RECP IV                                    | \$43,051,205   | \$100,000,000          | 119%           | \$118,794,333          | \$0                         | \$0                        | \$99,841,735                     | \$1,876,084          | 0.84                                | 1.20                                   | 9/30/2023        |
| 7/1/2014                             | DLJ RECP V                                     | \$25,133,676   | \$75,000,000           | 146%           | \$109,393,496          | \$1,300,200                 | \$0                        | \$100,933,448                    | \$1,766,747          | 0.92                                | 1.15                                   | 9/30/2023        |
| 3/19/2019                            | DLJ RECP VI                                    | \$30,487,418   | \$50,000,000           | 77%            | \$38,496,759           | \$0                         | \$0                        | \$11,369,099                     | \$15,396,028         | 0.30                                | 1.09                                   | 9/30/2023        |
| 12/14/2023                           | EQT Exeter Industrial Value Fund VI            | \$5,122,069  | \$60,000,000           | 10%            | \$6,000,000            | \$6,000,000                 | \$0                        | \$0                              | \$54,000,000         | N/A                                 | N/A                                    | N/A              |
| N/A                                  | EQT Industrial Value VI                        | \$0  | \$60,000,000           | 0%             | \$0                    | \$0                         | \$0                        | \$0                              | \$60,000,000         | N/A                                 | N/A                                    | N/A              |
| N/A                                  | EQT Multifamily Value II                       | \$0  | \$40,000,000           | 0%             | \$0                    | \$0                         | \$0                        | \$0                              | \$40,000,000         | N/A                                 | N/A                                    | N/A              |
| 6/30/2014                            | Invesco Real Estate IV <sup>4</sup>            | \$454,733  | \$35,000,000           | 87%            | \$30,546,401           | \$0                         | \$0                        | \$39,777,325                     | \$4,453,599          | 1.30                                | 1.32                                   | 9/30/2023        |
| 2/20/2019                            | Invesco Real Estate V                          | \$58,669,764   | \$75,000,000           | 87%            | \$65,318,898           | \$0                         | \$0                        | \$9,319,462                      | \$9,681,102          | 0.14                                | 1.04                                   | 12/31/2023       |
| 9/27/2022                            | Invesco Real Estate VI                         | \$49,475,393   | \$100,000,000          | 54%            | \$53,778,909           | \$8,147,656                 | \$0                        | \$2,230,131                      | \$66,873,408         | 0.04                                | 0.96                                   | 9/30/2023        |
| 11/10/2023                           | KSL Capital Partners VI, L.P.                  | \$11,766,813   | \$50,000,000           | 24%            | \$11,766,813           | \$11,766,813                | \$0                        | \$0                              | \$38,233,187         | N/A                                 | N/A                                    | N/A              |
| 7/16/2013                            | LaSalle Income & Growth VI <sup>4</sup>        | \$13,658,492   | \$75,000,000           | 95%            | \$71,428,571           | \$0                         | \$0                        | \$84,541,423                     | \$0                  | 1.18                                | 1.37                                   | 9/30/2023        |
| 2/28/2017                            | LaSalle Income & Growth VII                    | \$26,910,963   | \$75,000,000           | 96%            | \$72,154,315           | \$2,845,685                 | \$0                        | \$50,904,014                     | \$2,845,685          | 0.71                                | 1.08                                   | 9/30/2023        |
| 7/3/2013                             | Long Wharf Fund IV <sup>4</sup>                | \$292,888  | \$25,000,000           | 100%           | \$25,000,000           | \$0                         | \$0                        | \$34,948,087                     | \$0                  | 1.40                                | 1.41                                   | 12/31/2023       |
| 9/30/2016                            | Long Wharf Fund V <sup>4</sup>                 | \$28,758,306   | \$50,000,000           | 100%           | \$50,000,000           | \$0                         | \$0                        | \$37,244,373                     | \$0                  | 0.74                                | 1.32                                   | 12/31/2023       |
| 6/27/2019                            | Long Wharf Fund VI                             | \$34,319,023   | \$50,000,000           | 100%           | \$49,999,998           | \$0                         | \$0                        | \$27,056,490                     | \$2                  | 0.54                                | 1.23                                   | 12/31/2023       |
| 5/30/2023                            | Long Wharf Fund VII                            | \$6,651,081  | \$50,000,000           | 18%            | \$9,108,500            | \$3,177,405                 | \$0                        | \$0                              | \$40,891,500         | 0.00                                | 0.73                                   | 12/31/2023       |
| 12/31/2011                           | Oaktree REOF V <sup>4</sup>                    | \$379,871  | \$50,000,000           | 101%           | \$50,315,673           | \$0                         | \$0                        | \$78,780,733                     | \$5,000,000          | 1.57                                | 1.57                                   | 12/31/2023       |
| 9/30/2013                            | Oaktree REOF VI <sup>4</sup>                   | \$17,840,801   | \$80,000,000           | 100%           | \$80,000,000           | \$0                         | \$0                        | \$84,810,175                     | \$18,400,000         | 1.06                                | 1.28                                   | 12/31/2023       |
| 4/1/2015                             | Oaktree REOF VII                               | \$37,548,420   | \$65,000,000           | 139%           | \$90,350,000           | \$0                         | \$0                        | \$26,277,174                     | \$18,915,000         | 0.29                                | 0.71                                   | 12/31/2023       |
| 11/10/2013                           | Paulson Real Estate Fund II <sup>4</sup>       | \$11,684,659   | \$20,000,000           | 97%            | \$19,345,623           | \$0                         | \$1,025,006                | \$25,449,660                     | \$654,377            | 1.32                                | 1.92                                   | 9/30/2023        |
| 4/28/2022                            | PCCP IX  | \$56,893,930   | \$75,000,000           | 76%            | \$56,801,564           | \$2,625,000                 | \$0                        | \$0                              | \$18,198,436         | 0.00                                | 1.00                                   | 9/30/2023        |
| 1/25/2012                            | Siguler Guff DREOF                             | \$12,297,761   | \$75,000,000           | 93%            | \$69,375,000           | \$0                         | \$345,259                  | \$104,116,370                    | \$5,625,000          | 1.50                                | 1.68                                   | 9/30/2023        |
| 8/31/2013                            | Siguler Guff DREOF II                          | \$27,117,102   | \$70,000,000           | 89%            | \$61,985,000           | \$0                         | \$13,107                   | \$55,704,893                     | \$8,015,000          | 0.90                                | 1.34                                   | 9/30/2023        |
| 1/27/2016                            | Siguler Guff DREOF II Co-Inv                   | \$12,248,272   | \$25,000,000           | 85%            | \$21,277,862           | \$0                         | \$0                        | \$13,871,261                     | \$3,722,138          | 0.65                                | 1.23                                   | 9/30/2023        |
| <b>Total Closed End Real Estate</b>  |  | <b>\$561,026,548</b>                                 | <b>\$1,730,000,000</b> | <b>79%</b>     | <b>\$1,373,218,040</b> | <b>\$36,707,339</b>         | <b>\$2,511,724</b>         | <b>\$1,124,884,960</b>           | <b>\$513,000,626</b> | <b>0.82</b>                         | <b>1.23</b>                            |                  |
| <b>% of Portfolio (Market Value)</b> |  | <b>5.1%</b>  |                        |                |                        |                             |                            |                                  |                      |                                     |  |                  |

<sup>1</sup>Latest valuation + capital calls - distributions

<sup>2</sup>(DPI) is equal to (capital returned / capital called)

<sup>3</sup>(TVPI) is equal to (market value + capital returned) / capital called

<sup>4</sup>Capital has been fully called and fund is in redemption.

<sup>5</sup>Total distributions may include recallable distributions

<sup>6</sup>Remianing commitment includes recallable distributions

Total Fund  
Closed End Funds - IRR Summary

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

| Private Credit  | Inception  | Fund Level (G) <sup>2</sup> | CCCERA (G) | Fund Level (N) <sup>2,3</sup> | CCCERA (N) <sup>3</sup> | IRR Date   |
|---|------------|-----------------------------|------------|-------------------------------|-------------------------|------------|
| Angelo Gordon Energy Cred Opp. <sup>4</sup>                 | 9/24/2015  | -                           | -          | -                             | 7.0%                    | 9/30/2023  |
| Stepstone CC Opportunities Fund <sup>1</sup>                | 2/2/2018   | -                           | 9.9%       | -                             | 9.2%                    | 12/31/2022 |
| Torchlight IV   | 8/1/2012   | 11.2%                       | 11.7%      | 9.0%                          | 9.7%                    | 9/30/2023  |
| Torchlight V  | 3/12/2015  | 14.1%                       | 14.1%      | 10.1%                         | 10.1%                   | 9/30/2023  |
| Real Estate   | Inception  | Fund Level (G) <sup>2</sup> | CCCERA (G) | Fund Level (N) <sup>2,3</sup> | CCCERA (N) <sup>3</sup> | IRR Date   |
| Angelo Gordon VIII <sup>4</sup>                             | 1/23/2012  | -                           | -          | -                             | 12.1%                   | 9/30/2023  |
| Angelo Gordon IX  | 12/8/2014  | -                           | -          | -                             | 5.6%                    | 9/30/2023  |
| Blackstone Real Estate Partners X <sup>1</sup>              | 3/24/2023  | -                           | -          | -                             | -                       | N/A        |
| BlackStone Strategic Partners Real Estate VIII <sup>1</sup> | 3/25/2022  | -                           | -          | -                             | -                       | N/A        |
| Cross Lake RE IV <sup>1</sup>                               | N/A        | -                           | -          | -                             | -                       | N/A        |
| DLJ RECP III  | 6/23/2005  | -1.0%                       | -1.0%      | -3.0%                         | -3.0%                   | 9/30/2023  |
| DLJ RECP IV   | 2/11/2008  | 4.0%                        | 4.0%       | 1.0%                          | 2.0%                    | 9/30/2023  |
| DLJ RECP V  | 7/1/2014   | 11.0%                       | 11.0%      | 5.0%                          | 5.0%                    | 9/30/2023  |
| DLJ RECP VI   | 3/19/2019  | 11.0%                       | 11.0%      | 2.0%                          | 3.0%                    | 9/30/2023  |
| EQT Exeter Industrial Value Fund VI <sup>1</sup>            | 12/14/2023 | -                           | -          | -                             | -                       | N/A        |
| EQT Industrial Value VI <sup>1</sup>                        | N/A        | -                           | -          | -                             | -                       | N/A        |
| EQT Multifamily Value II <sup>1</sup>                       | N/A        | -                           | -          | -                             | -                       | N/A        |
| Invesco Fund IV <sup>4</sup>                                | 6/30/2014  | 13.0%                       | -          | 10.3%                         | -                       | 9/30/2023  |
| Invesco Fund V  | 2/20/2019  | 9.8%                        | -          | 7.1%                          | -                       | 9/30/2023  |
| Invesco Fund VI   | 9/27/2022  | -                           | -          | -                             | -                       | N/A        |
| KSL Capital Partners VI <sup>1</sup>                        | 11/10/2023 | -                           | -          | -                             | -                       | N/A        |
| LaSalle Income & Growth VI <sup>4</sup>                     | 7/16/2013  | 10.5%                       | 10.5%      | 8.5%                          | 8.6%                    | 12/31/2023 |
| LaSalle Income & Growth VII                                 | 2/28/2017  | 1.7%                        | -1.6%      | -0.3%                         | -0.5%                   | 12/31/2023 |
| Long Wharf IV <sup>4</sup>                                  | 7/3/2013   | 14.7%                       | 14.5%      | 11.1%                         | 11.0%                   | 12/31/2023 |
| Long Wharf V <sup>4</sup>                                   | 9/30/2016  | 9.7%                        | 10.1%      | 7.1%                          | 7.4%                    | 12/31/2023 |
| Long Wharf VI   | 6/27/2019  | 26.6%                       | 28.3%      | 16.4%                         | 17.3%                   | 12/31/2023 |
| Long Wharf VII  | 5/1/2023   | -7.1%                       | -5.6%      | -30.5%                        | -24.5%                  | 12/31/2023 |
| Oaktree REOF V <sup>4</sup>                                 | 12/31/2011 | 16.6%                       | -          | 12.2%                         | -                       | 12/31/2023 |
| Oaktree REOF VI <sup>4</sup>                                | 9/30/2013  | 10.4%                       | -          | 6.6%                          | -                       | 12/31/2023 |
| Oaktree REOF VII  | 4/1/2015   | 16.2%                       | -          | 10.1%                         | -                       | 12/31/2023 |
| Paulson <sup>4</sup>  | 11/10/2013 | -                           | -          | 12.2%                         | -                       | 12/31/2022 |
| PCCP IX   | 5/27/2021  | 5.5%                        | -          | 1.1%                          | -                       | 9/30/2023  |
| Siguler Guff I  | 1/25/2012  | 12.3%                       | 15.0%      | 10.7%                         | 11.9%                   | 9/30/2023  |
| Siguler Guff II   | 8/31/2013  | 8.9%                        | 9.0%       | 7.6%                          | 7.4%                    | 9/30/2023  |
| Siguler Guff DREOF II Co-Inv                                | 1/27/2016  | 5.6%                        | 5.8%       | 4.6%                          | 4.4%                    | 9/30/2023  |

<sup>1</sup>Manager has yet to report IRR figure.

<sup>2</sup>Fund level data includes CCCERA and all other fund investors.

<sup>3</sup>Net IRR calculated after deductions of management fees and carried interest to the General Partner.

<sup>4</sup>Capital has been fully called and fund is in redemption.

Total Fund  
Risk Analysis - 3 Years (Net of Fees)

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

3 Years

|                                  | Anlzd Return | Anlzd Excess Performance | Anlzd Standard Deviation | Anlzd Alpha | Beta | Tracking Error | R-Squared | Sharpe Ratio | Information Ratio | Up Capture | Down Capture |
|----------------------------------|--------------|--------------------------|--------------------------|-------------|------|----------------|-----------|--------------|-------------------|------------|--------------|
| BlackRock Russell 1000 Index     | 8.98         | 0.00                     | 17.42                    | 0.00        | 1.00 | 0.02           | 1.00      | 0.46         | 0.28              | 100.01     | 99.99        |
| Boston Partners                  | 12.81        | 3.95                     | 16.43                    | 3.88        | 0.98 | 3.27           | 0.96      | 0.69         | 1.10              | 102.77     | 86.41        |
| Emerald Advisers                 | -1.94        | 1.56                     | 21.47                    | 1.50        | 0.96 | 4.86           | 0.95      | -0.08        | 0.32              | 102.83     | 97.76        |
| Ceredex                          | 10.32        | 2.38                     | 19.28                    | 3.40        | 0.83 | 7.41           | 0.89      | 0.50         | 0.23              | 89.81      | 79.99        |
| Pyrford                          | 4.42         | -1.38                    | 13.67                    | -0.38       | 0.82 | 5.54           | 0.88      | 0.23         | -0.29             | 84.89      | 88.00        |
| William Blair                    | -2.84        | -0.17                    | 18.99                    | 0.11        | 1.02 | 5.83           | 0.91      | -0.17        | 0.01              | 106.57     | 105.92       |
| PIMCO RAE Emerging Markets       | 8.79         | 8.79                     | 17.19                    | 9.05        | 1.01 | 6.46           | 0.86      | 0.46         | 1.35              | 128.85     | 87.34        |
| TT Emerging Markets              | -8.45        | -3.37                    | 19.65                    | -2.75       | 1.09 | 6.13           | 0.91      | -0.46        | -0.51             | 116.57     | 126.75       |
| Artisan Partners                 | -0.47        | -4.13                    | 19.38                    | -3.83       | 0.97 | 4.70           | 0.94      | -0.04        | -0.86             | 86.81      | 100.33       |
| First Eagle                      | 5.86         | -1.47                    | 12.94                    | -0.22       | 0.82 | 4.39           | 0.93      | 0.34         | -0.39             | 80.46      | 80.98        |
| Voya Global Investors            | 1.47         | -0.53                    | 8.39                     | -0.51       | 1.00 | 1.08           | 0.98      | -0.04        | -0.48             | 96.60      | 101.28       |
| Adelante                         | 7.77         | 0.25                     | 20.41                    | 0.47        | 0.96 | 1.60           | 1.00      | 0.36         | 0.03              | 96.78      | 95.47        |
| AQR Global Risk Premium-EL       | -0.57        | 0.63                     | 10.41                    | 0.47        | 0.90 | 2.44           | 0.96      | -0.21        | 0.22              | 91.89      | 89.03        |
| PanAgora Risk Parity Multi Asset | -6.52        | -5.32                    | 14.83                    | -4.79       | 1.27 | 4.57           | 0.95      | -0.52        | -1.11             | 108.63     | 138.16       |
| AFL-CIO                          | -3.46        | -0.15                    | 6.83                     | -0.34       | 0.95 | 1.03           | 0.98      | -0.81        | -0.17             | 92.33      | 95.97        |
| DFA Short Credit                 | -0.31        | 0.29                     | 2.71                     | 0.17        | 0.80 | 1.33           | 0.81      | -0.97        | 0.21              | 88.52      | 83.47        |
| Insight Short Duration           | 1.46         | 1.37                     | 1.76                     | 1.41        | 0.55 | 1.61           | 0.46      | -0.43        | 0.84              | 72.54      | 22.22        |
| Sit Short Duration               | -0.17        | -0.08                    | 3.47                     | -0.02       | 1.47 | 1.82           | 0.81      | -0.67        | -0.02             | 151.76     | 152.23       |

Performance Analysis excludes closed end funds and those funds without 3 years of performance.

Total Fund  
Risk Analysis - 5 Years (Net of Fees)

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

5 Years

|                              | Anlzd Return | Anlzd Excess Performance | Standard Deviation | Alpha | Beta | Tracking Error | R-Squared | Sharpe Ratio | Information Ratio | Up Capture | Down Capture |
|------------------------------|--------------|--------------------------|--------------------|-------|------|----------------|-----------|--------------|-------------------|------------|--------------|
| BlackRock Russell 1000 Index | 15.51        | -0.01                    | 18.79              | -0.01 | 1.00 | 0.02           | 1.00      | 0.77         | -0.51             | 99.97      | 100.00       |
| Boston Partners              | 12.78        | 1.87                     | 19.25              | 1.65  | 1.01 | 3.09           | 0.97      | 0.63         | 0.58              | 101.38     | 93.58        |
| Emerald Advisers             | 11.00        | 1.78                     | 23.75              | 2.04  | 0.96 | 5.26           | 0.95      | 0.48         | 0.29              | 102.27     | 97.66        |
| Ceredex                      | 9.96         | -0.04                    | 22.77              | 1.06  | 0.87 | 7.11           | 0.92      | 0.45         | -0.08             | 88.57      | 85.40        |
| Pyrford                      | 7.60         | 1.26                     | 14.93              | 2.53  | 0.75 | 6.81           | 0.89      | 0.44         | 0.07              | 85.44      | 77.56        |
| William Blair                | 9.87         | 2.38                     | 19.21              | 2.12  | 1.04 | 5.06           | 0.93      | 0.49         | 0.49              | 111.04     | 103.76       |
| PIMCO RAE Emerging Markets   | 8.31         | 4.93                     | 20.80              | 4.89  | 1.07 | 5.88           | 0.92      | 0.40         | 0.88              | 115.79     | 95.83        |
| TT Emerging Markets          | 2.69         | -1.00                    | 22.49              | -1.04 | 1.15 | 6.00           | 0.95      | 0.15         | -0.04             | 116.39     | 121.24       |
| Artisan Partners             | 13.52        | -1.06                    | 19.01              | -0.19 | 0.95 | 4.85           | 0.94      | 0.67         | -0.21             | 93.36      | 93.27        |
| First Eagle                  | 8.93         | 0.69                     | 14.09              | 2.33  | 0.76 | 5.61           | 0.93      | 0.55         | 0.00              | 82.33      | 73.96        |
| Voya Global Investors        | 4.65         | -0.56                    | 8.98               | -0.18 | 0.92 | 1.70           | 0.97      | 0.34         | -0.35             | 93.55      | 96.27        |
| Adelante                     | 8.65         | 1.09                     | 19.99              | 1.28  | 0.95 | 1.72           | 1.00      | 0.42         | 0.46              | 98.33      | 94.33        |
| AFL-CIO                      | 0.59         | -0.51                    | 5.80               | -0.45 | 0.94 | 1.05           | 0.97      | -0.19        | -0.50             | 88.95      | 94.23        |
| DFA Short Credit             | 1.39         | -0.16                    | 2.50               | 0.14  | 0.81 | 1.43           | 0.71      | -0.19        | -0.11             | 82.62      | 78.42        |
| Insight Short Duration       | 2.42         | 0.91                     | 2.04               | 1.50  | 0.61 | 1.86           | 0.30      | 0.27         | 0.48              | 84.74      | 17.44        |
| Sit Short Duration           | 1.70         | 0.41                     | 3.02               | -0.11 | 1.43 | 1.60           | 0.79      | -0.05        | 0.27              | 148.13     | 159.00       |

Performance Analysis excludes closed end funds and those funds without 5 years of performance.

Total Fund  
Investment Fund Fee Analysis

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

| Name                         | Asset Class | Fee Schedule  | Market Value    | Estimated Fee Value | Expense Fee (%) |
|------------------------------|-------------|---|-----------------|---------------------|-----------------|
| BlackRock Russell 1000 Index | Growth      | 0.03 % of Assets  | \$1,209,333,414 | \$362,800           | 0.03            |
| Boston Partners              | Growth      | 0.50 % of First \$25 M<br>0.30 % Thereafter   | \$404,182,450   | \$1,262,547         | 0.31            |
| Emerald Advisers             | Growth      | 0.75 % of First \$10 M<br>0.60 % Thereafter   | \$232,966,434   | \$1,412,799         | 0.61            |
| Ceredex                      | Growth      | 0.85 % of First \$10 M<br>0.68 % of Next \$40 M<br>0.51 % Thereafter  | \$223,940,873   | \$1,244,098         | 0.56            |
| Pyrford                      | Growth      | 0.70 % of First \$50 M<br>0.50 % of Next \$50 M<br>0.35 % Thereafter  | \$502,490,844   | \$2,008,718         | 0.40            |
| William Blair                | Growth      | 0.80 % of First \$20 M<br>0.60 % of Next \$30 M<br>0.50 % of Next \$50 M<br>0.45 % of Next \$50 M<br>0.40 % of Next \$50 M<br>0.30 % Thereafter | \$472,658,576   | \$1,832,976         | 0.39            |
| PIMCO RAE Emerging Markets   | Growth      | 0.75 % of First \$50 M<br>0.68 % of Next \$50 M<br>0.50 % of Next \$100 M<br>0.45 % Thereafter  | \$248,383,507   | \$1,430,226         | 0.58            |
| TT Emerging Markets          | Growth      | 0.70 % of First \$100 M<br>0.65 % of Next \$100 M<br>0.60 % Thereafter  | \$231,652,415   | \$1,539,914         | 0.66            |
| Artisan Partners             | Growth      | 0.75 % of Assets  | \$600,553,612   | \$4,504,152         | 0.75            |
| First Eagle                  | Growth      | 0.75 % of Assets  | \$560,922,713   | \$4,206,920         | 0.75            |
| Voya Global Investors        | Growth      | 0.50 % of First \$50 M<br>0.40 % of Next \$50 M<br>0.35 % Thereafter  | \$157,281,692   | \$650,486           | 0.41            |
| Invesco US Fundamental Beta  | Growth      | 0.15 % of Assets  | \$116,631,364   | \$174,947           | 0.15            |
| AQR Global Risk Premium-EL   | Growth      | 0.38 % of Assets  | \$176,809,243   | \$671,875           | 0.38            |

Mutual fund fees shown are sourced from Morningstar and are as of the most current prospectus.



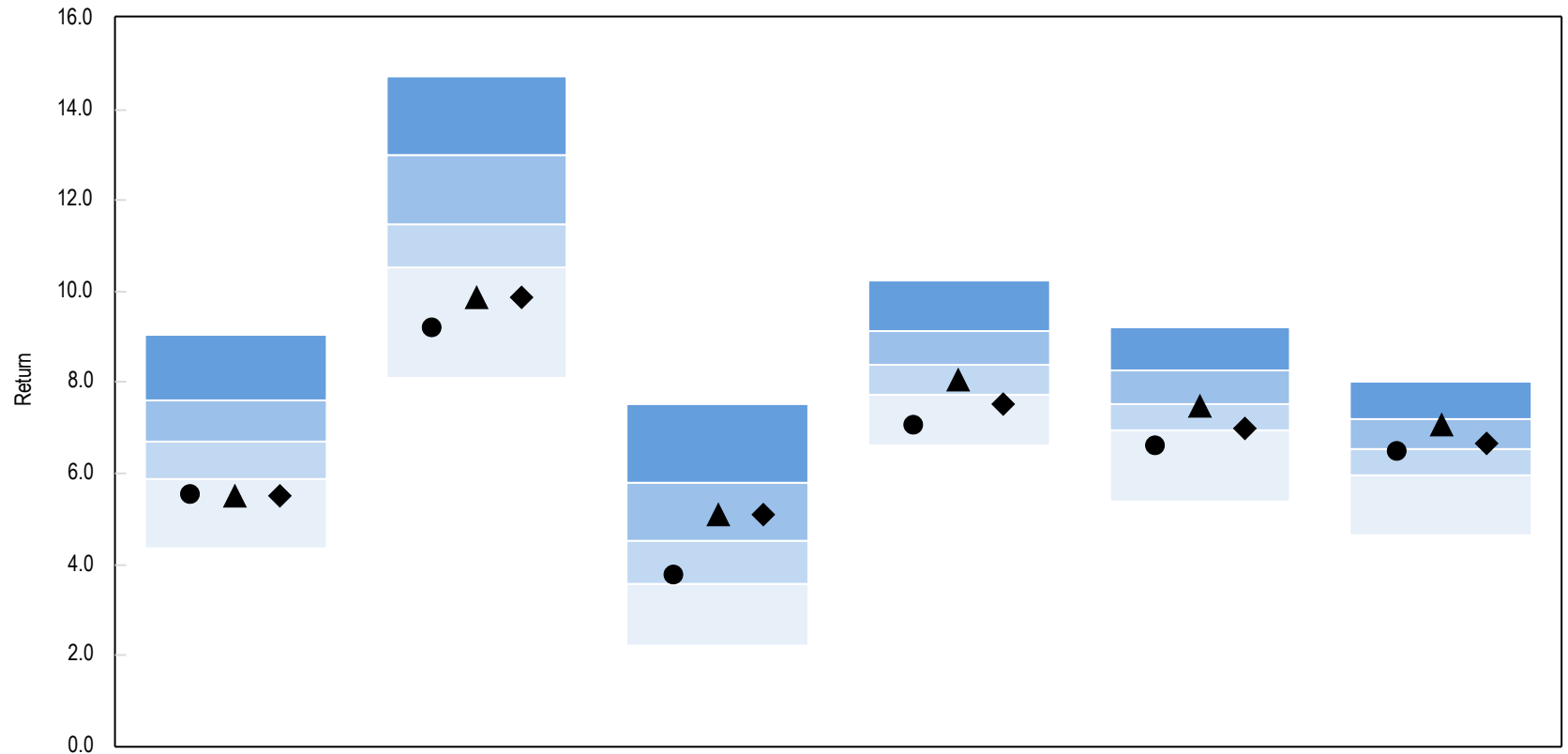
Total Fund  
Investment Fund Fee Analysis

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

| Name                                     | Asset Class  | Fee Schedule   | Market Value  | Estimated Fee Value | Expense Fee (%) |
|--|--------------|--|---------------|---------------------|-----------------|
| PanAgora Risk Parity Multi Asset         | Growth       | 0.35 % of Assets   | \$163,063,917 | \$570,724           | 0.35            |
| AFL-CIO                                  | Diversifying | 0.32 % of Assets   | \$223,235,851 | \$714,355           | 0.32            |
| Acadian Multi-Asset Absolute Return Fund | Diversifying | 0.50 % of Assets   | \$211,000,534 | \$1,055,003         | 0.50            |
| Sit LLCAR                                | Diversifying | 0.39 % of First \$200 M<br>0.35 % Thereafter                           | \$315,896,054 | \$1,200,405         | 0.38            |
| DFA Short Credit                         | Liquidity    | 0.20 % of First \$25 M<br>0.10 % Thereafter                            | \$365,687,785 | \$390,688           | 0.11            |
| Insight Short Duration                   | Liquidity    | 0.06 % of First \$500 M<br>0.05 % of Next \$500 M<br>0.04 % Thereafter | \$601,555,000 | \$350,778           | 0.06            |
| Sit Short Duration                       | Liquidity    | 0.15 % of Assets   | \$656,736,941 | \$985,105           | 0.15            |

Mutual fund fees shown are sourced from Morningstar and are as of the most current prospectus.

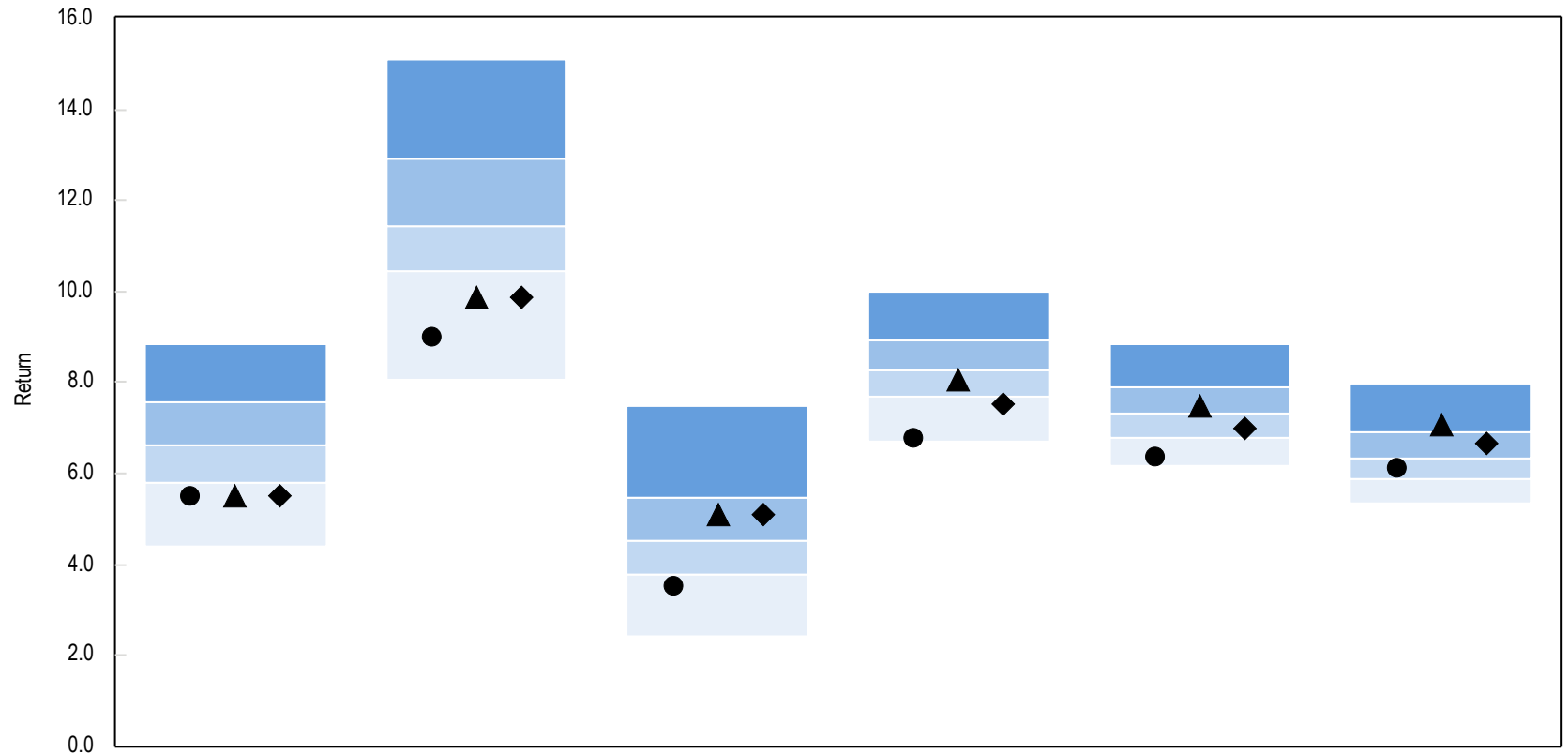
Total Fund Cumulative Performance vs. InvMetrics Public DB >\$1B Gross



|                           | 3 Mo      | 1 Yr      | 3 Yrs     | 5 Yrs     | 7 Yrs     | 10 Yrs    |
|---------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| ● Total Fund              | 5.56 (80) | 9.23 (88) | 3.78 (73) | 7.07 (89) | 6.63 (81) | 6.48 (54) |
| ▲ Policy Index            | 5.51 (81) | 9.89 (85) | 5.09 (36) | 8.06 (63) | 7.51 (51) | 7.08 (29) |
| ◆ Policy Index (Adjusted) | 5.51 (81) | 9.89 (85) | 5.09 (36) | 7.51 (84) | 7.00 (73) | 6.66 (46) |
| 5th Percentile            | 9.05      | 14.71     | 7.53      | 10.22     | 9.20      | 8.00      |
| 1st Quartile              | 7.60      | 12.99     | 5.81      | 9.15      | 8.26      | 7.20      |
| Median                    | 6.72      | 11.48     | 4.53      | 8.39      | 7.54      | 6.55      |
| 3rd Quartile              | 5.89      | 10.55     | 3.57      | 7.72      | 6.93      | 5.97      |
| 95th Percentile           | 4.36      | 8.11      | 2.21      | 6.61      | 5.37      | 4.63      |
| Population                | 105       | 96        | 83        | 80        | 80        | 75        |

Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation.

Total Fund Cumulative Performance vs. InvMetrics Public DB >\$1B Net

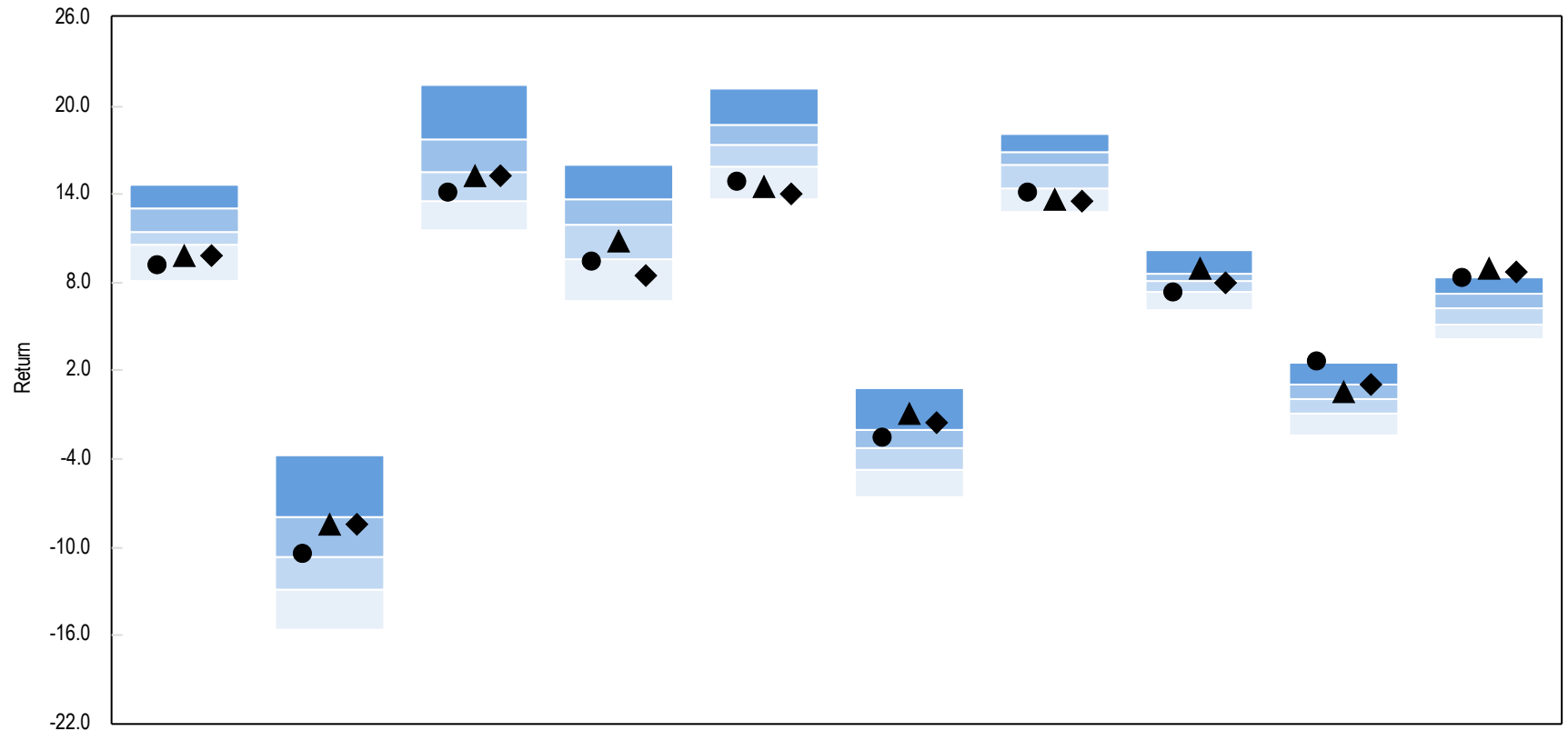


|                           | 3 Mo      | 1 Yr      | 3 Yrs     | 5 Yrs     | 7 Yrs     | 10 Yrs    |
|---------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| ● Total Fund              | 5.51 (80) | 9.02 (89) | 3.54 (80) | 6.80 (94) | 6.36 (92) | 6.11 (58) |
| ▲ Policy Index            | 5.51 (80) | 9.89 (83) | 5.09 (33) | 8.06 (59) | 7.51 (42) | 7.08 (23) |
| ◆ Policy Index (Adjusted) | 5.51 (80) | 9.89 (83) | 5.09 (33) | 7.51 (83) | 7.00 (65) | 6.66 (37) |
| 5th Percentile            | 8.85      | 15.09     | 7.49      | 10.00     | 8.85      | 7.98      |
| 1st Quartile              | 7.56      | 12.92     | 5.45      | 8.94      | 7.91      | 6.89      |
| Median                    | 6.61      | 11.42     | 4.53      | 8.28      | 7.33      | 6.34      |
| 3rd Quartile              | 5.81      | 10.46     | 3.77      | 7.70      | 6.77      | 5.86      |
| 95th Percentile           | 4.41      | 8.07      | 2.42      | 6.69      | 6.15      | 5.36      |
| Population                | 94        | 85        | 72        | 69        | 68        | 63        |

Total Fund  
Peer Universe Comparison: Consecutive Periods (Gross of Fees)

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

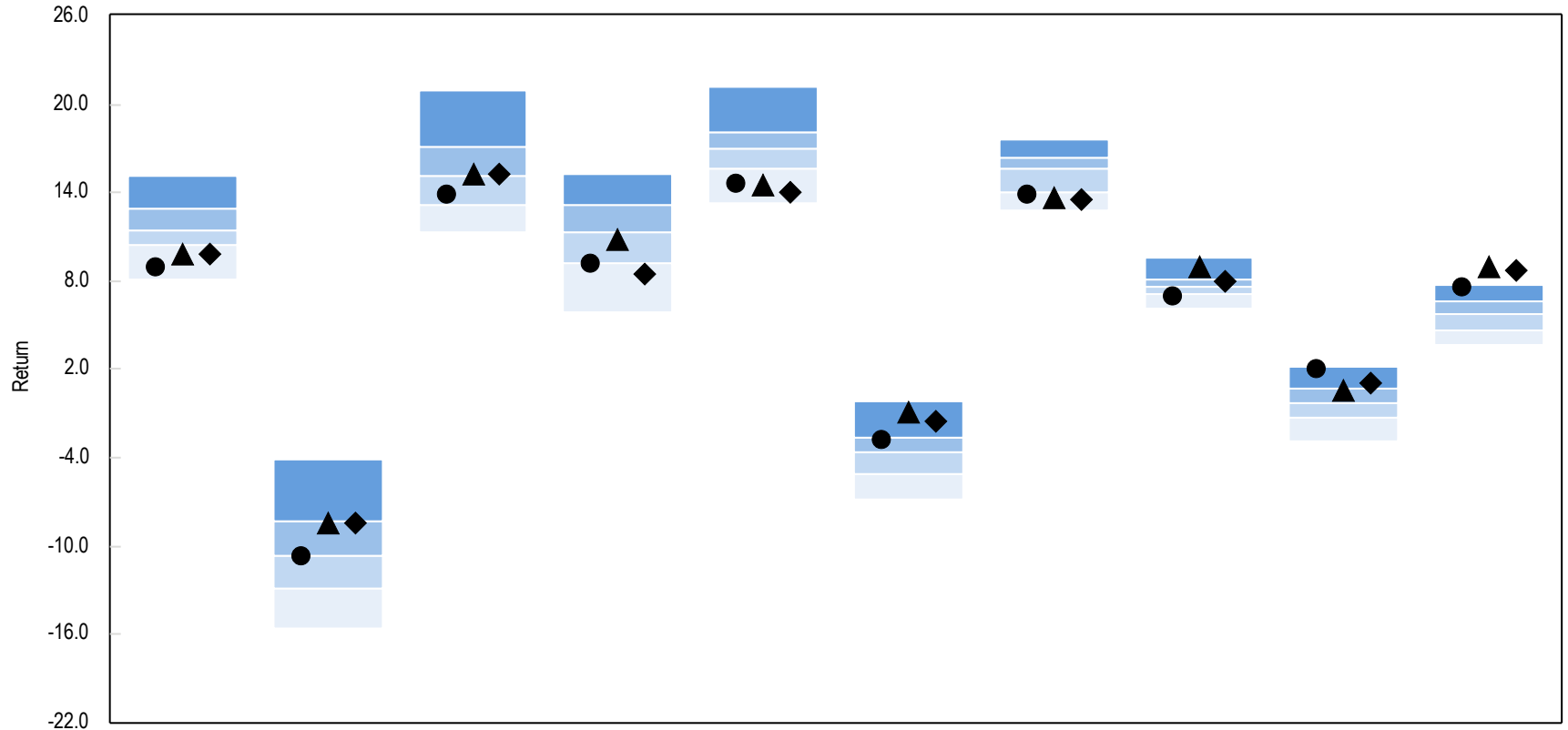
Total Fund Consecutive Periods vs. InvMetrics Public DB >\$1B Gross



|                           | 2023      | 2022        | 2021       | 2020       | 2019       | 2018       | 2017       | 2016      | 2015      | 2014     |
|---------------------------|-----------|-------------|------------|------------|------------|------------|------------|-----------|-----------|----------|
| ● Total Fund              | 9.23 (88) | -10.39 (48) | 14.21 (66) | 9.52 (79)  | 14.92 (89) | -2.46 (32) | 14.18 (79) | 7.43 (74) | 2.70 (3)  | 8.40 (6) |
| ▲ Policy Index            | 9.89 (85) | -8.38 (27)  | 15.29 (53) | 10.81 (63) | 14.58 (90) | -0.94 (12) | 13.69 (90) | 8.93 (18) | 0.58 (35) | 9.03 (2) |
| ◆ Policy Index (Adjusted) | 9.89 (85) | -8.38 (27)  | 15.29 (53) | 8.49 (91)  | 14.06 (93) | -1.52 (17) | 13.51 (92) | 8.03 (54) | 1.06 (25) | 8.67 (3) |
| 5th Percentile            | 14.71     | -3.72       | 21.43      | 16.04      | 21.22      | 0.77       | 18.11      | 10.15     | 2.60      | 8.40     |
| 1st Quartile              | 12.99     | -7.91       | 17.69      | 13.70      | 18.69      | -2.07      | 16.81      | 8.61      | 1.05      | 7.26     |
| Median                    | 11.48     | -10.68      | 15.54      | 11.93      | 17.30      | -3.27      | 16.02      | 8.08      | 0.11      | 6.23     |
| 3rd Quartile              | 10.55     | -12.82      | 13.49      | 9.65       | 15.90      | -4.71      | 14.36      | 7.38      | -0.86     | 5.18     |
| 95th Percentile           | 8.11      | -15.60      | 11.54      | 6.74       | 13.63      | -6.57      | 12.78      | 6.10      | -2.39     | 4.21     |
| Population                | 96        | 122         | 158        | 170        | 133        | 113        | 123        | 127       | 123       | 120      |

Effective 1/01/2017, only traditional asset class (public equity, fixed income, REITs) investment management fees will be included in the gross of fee return calculation.

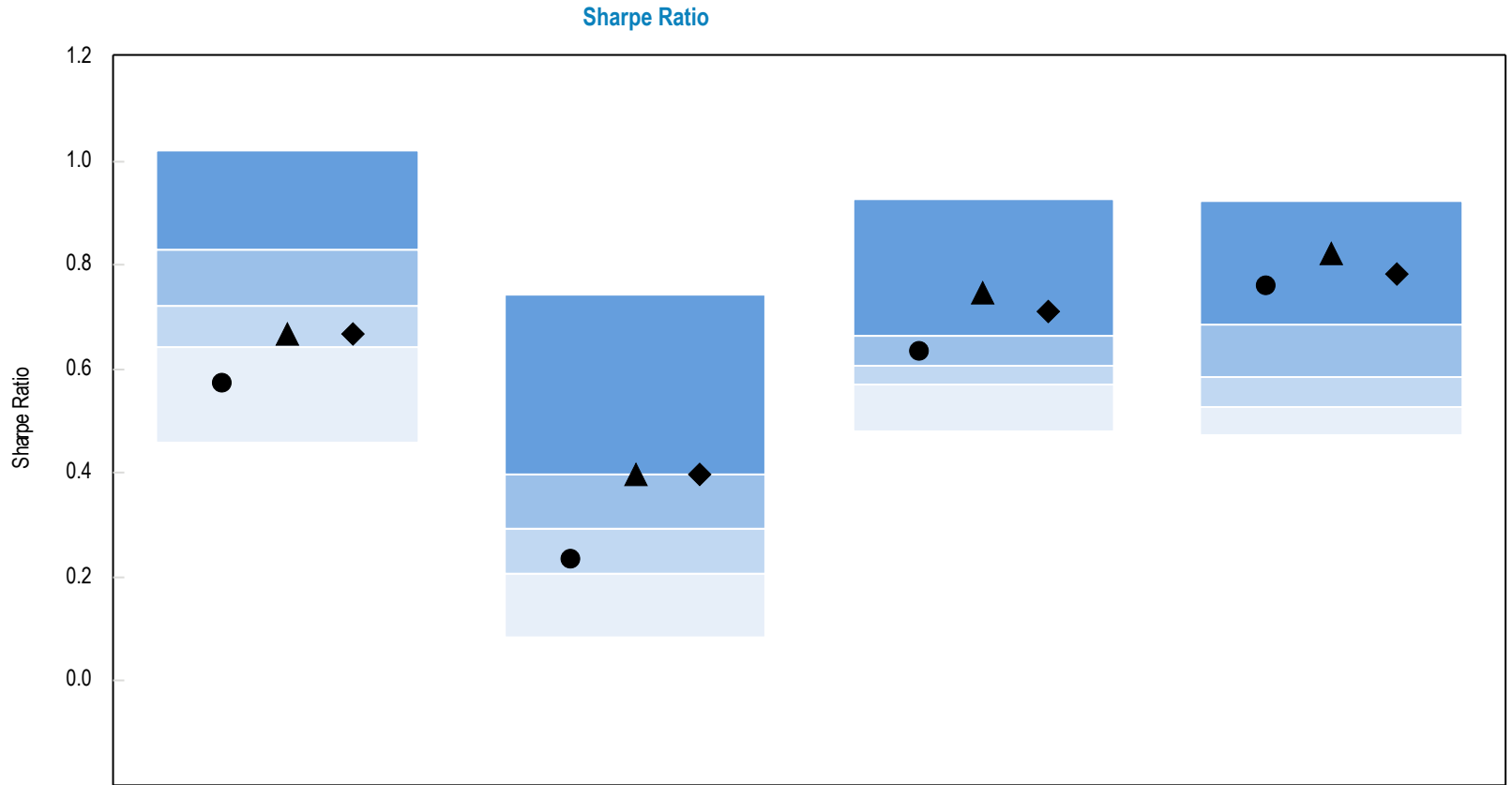
Total Fund Consecutive Periods vs. InvMetrics Public DB >\$1B Net



|                           | 2023      | 2022        | 2021       | 2020       | 2019       | 2018       | 2017       | 2016      | 2015      | 2014     |
|---------------------------|-----------|-------------|------------|------------|------------|------------|------------|-----------|-----------|----------|
| ● Total Fund              | 9.02 (89) | -10.61 (51) | 13.90 (65) | 9.23 (76)  | 14.61 (92) | -2.72 (29) | 13.86 (80) | 6.94 (79) | 2.09 (9)  | 7.67 (7) |
| ▲ Policy Index            | 9.89 (83) | -8.38 (27)  | 15.29 (50) | 10.81 (60) | 14.58 (92) | -0.94 (7)  | 13.69 (85) | 8.93 (14) | 0.58 (26) | 9.03 (2) |
| ◆ Policy Index (Adjusted) | 9.89 (83) | -8.38 (27)  | 15.29 (50) | 8.49 (89)  | 14.06 (93) | -1.52 (10) | 13.51 (87) | 8.03 (33) | 1.06 (22) | 8.67 (2) |
| 5th Percentile            | 15.09     | -4.07       | 20.99      | 15.24      | 21.22      | -0.12      | 17.64      | 9.59      | 2.21      | 7.79     |
| 1st Quartile              | 12.92     | -8.33       | 17.17      | 13.13      | 18.15      | -2.65      | 16.42      | 8.12      | 0.75      | 6.59     |
| Median                    | 11.42     | -10.61      | 15.19      | 11.37      | 17.00      | -3.66      | 15.65      | 7.61      | -0.32     | 5.74     |
| 3rd Quartile              | 10.46     | -12.83      | 13.20      | 9.25       | 15.64      | -5.12      | 14.02      | 7.12      | -1.28     | 4.67     |
| 95th Percentile           | 8.07      | -15.60      | 11.31      | 5.83       | 13.27      | -6.79      | 12.79      | 6.17      | -2.82     | 3.69     |
| Population                | 85        | 100         | 133        | 146        | 124        | 104        | 115        | 113       | 110       | 106      |

Total Fund  
Sharpe Ratio Ranking (Gross of Fees)

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

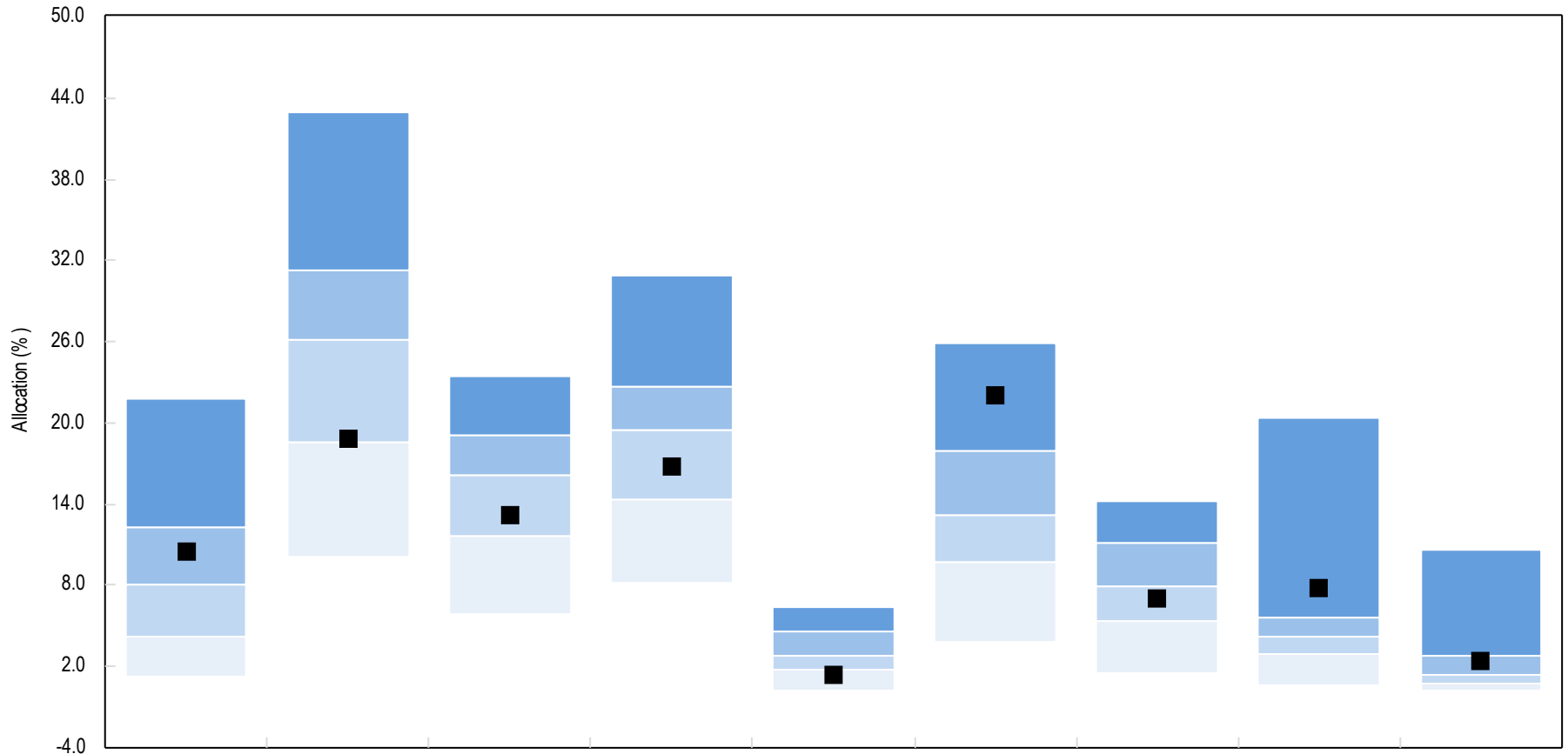


|                           | 1 Yr      | 3 Yrs     | 5 Yrs     | 10 Yrs    |
|---------------------------|-----------|-----------|-----------|-----------|
| ● Total Fund              | 0.57 (86) | 0.23 (65) | 0.63 (39) | 0.76 (17) |
| ▲ Policy Index            | 0.67 (66) | 0.40 (26) | 0.75 (19) | 0.82 (9)  |
| ◆ Policy Index (Adjusted) | 0.67 (66) | 0.40 (26) | 0.71 (22) | 0.78 (15) |
| 5th Percentile            | 1.02      | 0.74      | 0.93      | 0.92      |
| 1st Quartile              | 0.83      | 0.40      | 0.66      | 0.68      |
| Median                    | 0.72      | 0.29      | 0.61      | 0.59      |
| 3rd Quartile              | 0.64      | 0.21      | 0.57      | 0.53      |
| 95th Percentile           | 0.46      | 0.08      | 0.48      | 0.47      |
| Population                | 85        | 72        | 69        | 63        |

Total Fund  
Peer Universe Comparison: Asset Allocation

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

Total Fund vs. InvMetrics Public DB > \$1B



|                 | Global Equity | US Equity | Global ex-US Equity | US Fixed  | Global ex-US Fixed | Private Equity | Total Real Estate | Multi-Asset | Cash & Equivalents |
|-----------------|---------------|-----------|---------------------|-----------|--------------------|----------------|-------------------|-------------|--------------------|
| ■ Total Fund    | 10.5 (34)     | 18.8 (74) | 13.2 (71)           | 16.8 (66) | 1.4 (80)           | 22.0 (10)      | 7.0 (62)          | 7.9 (15)    | 2.4 (29)           |
| 5th Percentile  | 21.8          | 42.9      | 23.5                | 30.9      | 6.3                | 25.9           | 14.2              | 20.4        | 10.6               |
| 1st Quartile    | 12.3          | 31.2      | 19.1                | 22.7      | 4.5                | 17.9           | 11.2              | 5.6         | 2.8                |
| Median          | 8.1           | 26.2      | 16.2                | 19.5      | 2.8                | 13.2           | 7.9               | 4.2         | 1.4                |
| 3rd Quartile    | 4.2           | 18.5      | 11.7                | 14.4      | 1.7                | 9.8            | 5.4               | 2.9         | 0.7                |
| 95th Percentile | 1.3           | 10.1      | 5.9                 | 8.2       | 0.3                | 3.9            | 1.5               | 0.6         | 0.2                |
| Population      | 32            | 92        | 91                  | 89        | 33                 | 71             | 75                | 28          | 79                 |

# Domestic Equity Managers

---



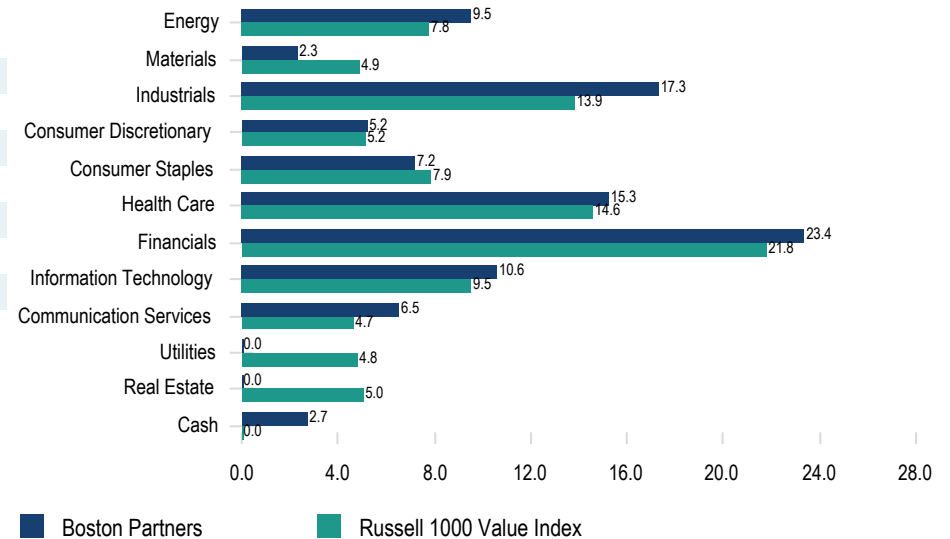
Boston Partners  
 Manager Portfolio Overview

Contra Costa County Employees' Retirement Association  
 Period Ending: December 31, 2023

Characteristics

|                         | Portfolio  | Benchmark  |
|-------------------------|------------|------------|
| Number of Stocks        | 90         | 849        |
| Wtd. Avg. Mkt. Cap \$M  | 181,831.45 | 139,507.59 |
| Median Mkt. Cap \$M     | 46,592.56  | 12,547.49  |
| Price/Earnings ratio    | 16.18      | 16.75      |
| Price/Book ratio        | 2.66       | 2.45       |
| Return on Equity (%)    | -3.97      | -23.27     |
| Current Yield (%)       | 1.74       | 2.33       |
| Beta (5 Years, Monthly) | 1.01       | 1.00       |

Sector Allocation (%) vs. Russell 1000 Value Index



Largest Holdings

|                                 | End Weight (%) | Quarterly Return (%) |
|---------------------------------|----------------|----------------------|
| JPMorgan Chase & Co             | 4.24           | 18.16                |
| Berkshire Hathaway Inc          | 3.45           | 1.82                 |
| Alphabet Inc                    | 3.09           | 6.75                 |
| Morgan Stanley                  | 2.35           | 15.55                |
| Bristol-Myers Squibb Co         | 1.89           | -10.70               |
| Philip Morris International Inc | 1.82           | 3.06                 |
| Sanofi                          | 1.82           | -7.29                |
| Discover Financial Services     | 1.79           | 30.80                |
| Wells Fargo & Co                | 1.75           | 21.50                |
| UnitedHealth Group Incorporated | 1.71           | 4.78                 |

Top Contributors

|                             | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|-----------------------------|----------------------|----------------------|----------------------------|
| JPMorgan Chase & Co         | 3.68                 | 18.16                | 0.67                       |
| Advanced Micro Devices Inc  | 1.10                 | 43.37                | 0.48                       |
| United Rentals Inc.         | 1.36                 | 29.42                | 0.40                       |
| Wells Fargo & Co            | 1.77                 | 21.50                | 0.38                       |
| Discover Financial Services | 1.20                 | 30.80                | 0.37                       |
| CRH PLC                     | 1.06                 | 28.98                | 0.31                       |
| Micron Technology Inc.      | 1.15                 | 25.82                | 0.30                       |
| General Dynamics Corp       | 1.49                 | 18.23                | 0.27                       |
| Morgan Stanley              | 1.74                 | 15.55                | 0.27                       |
| QUALCOMM Inc.               | 0.82                 | 31.04                | 0.25                       |

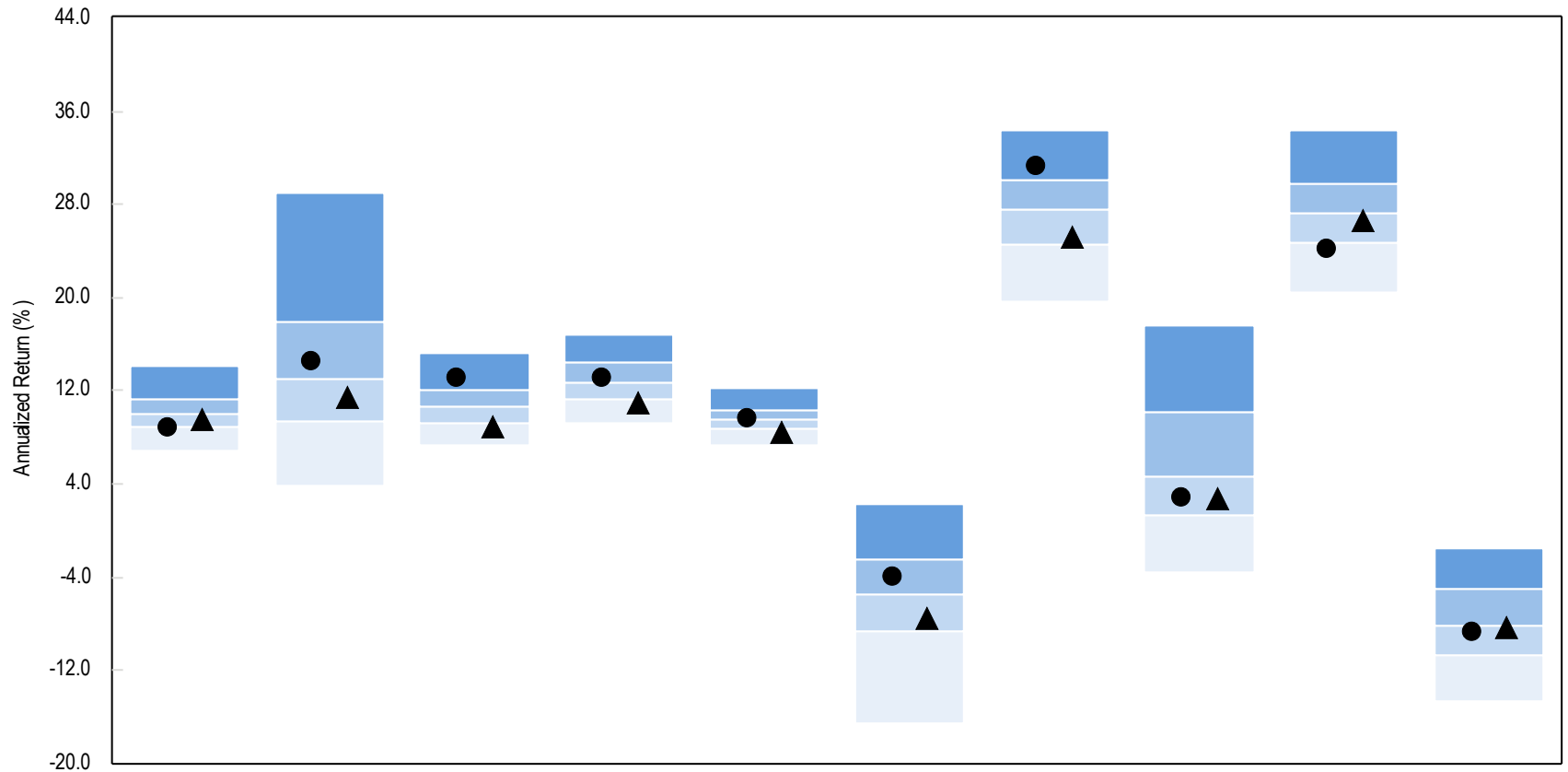
Top Detractors

|                         | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|-------------------------|----------------------|----------------------|----------------------------|
| Cenovus Energy Inc      | 1.61                 | -19.53               | -0.31                      |
| Bristol-Myers Squibb Co | 2.55                 | -10.70               | -0.27                      |
| Schlumberger Ltd        | 1.52                 | -10.30               | -0.16                      |
| Sanofi                  | 1.87                 | -7.29                | -0.14                      |
| Cisco Systems Inc       | 2.37                 | -5.34                | -0.13                      |
| Halliburton Co          | 1.02                 | -10.33               | -0.10                      |
| BP plc                  | 1.10                 | -7.42                | -0.08                      |
| BorgWarner Inc          | 0.61                 | -10.91               | -0.07                      |
| Aon plc                 | 0.56                 | -10.06               | -0.06                      |
| Conocophillips          | 1.44                 | -2.63                | -0.04                      |

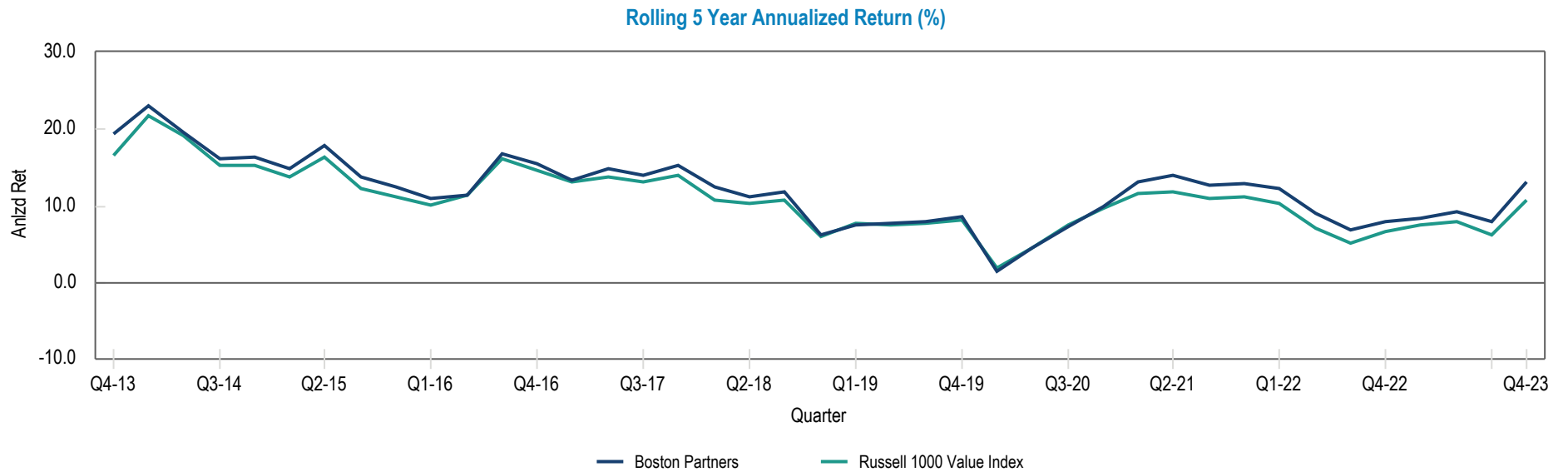
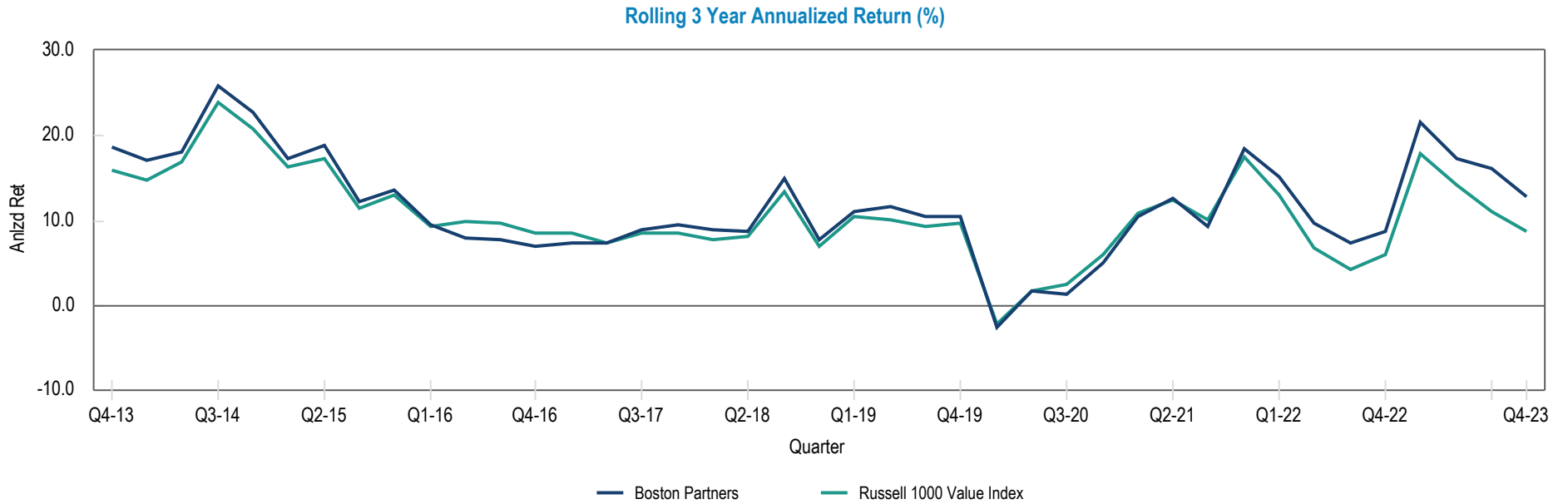
% of Portfolio 15.37 3.70 % of Portfolio 14.65 -1.35

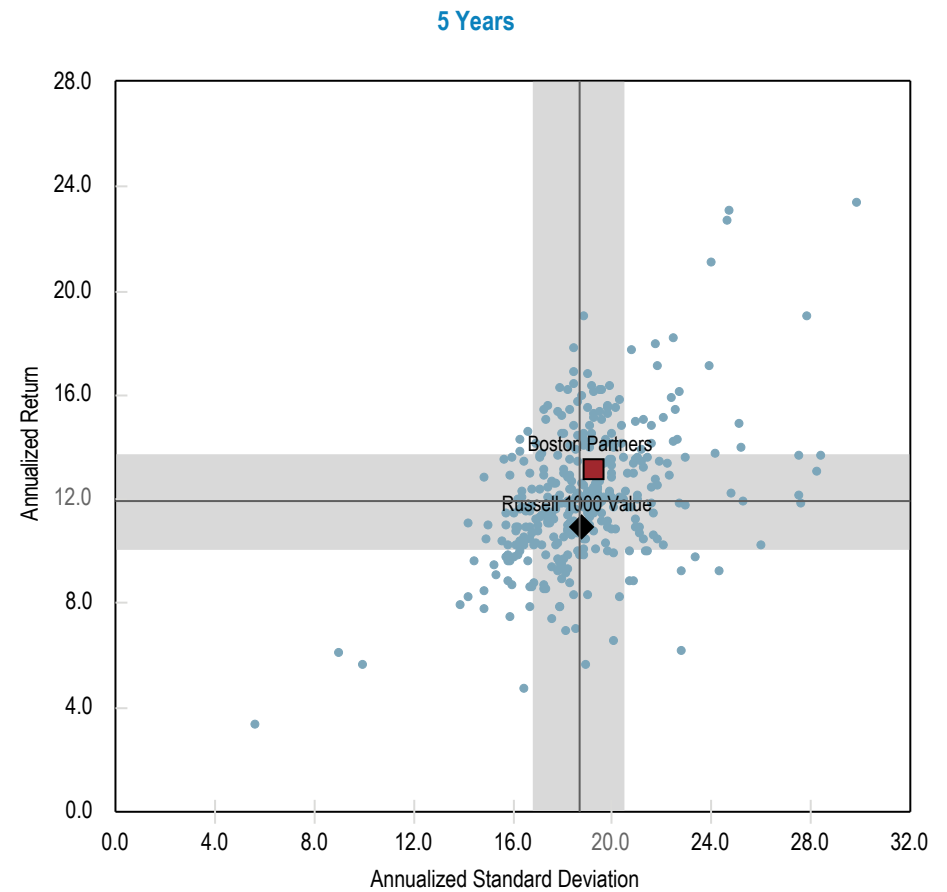
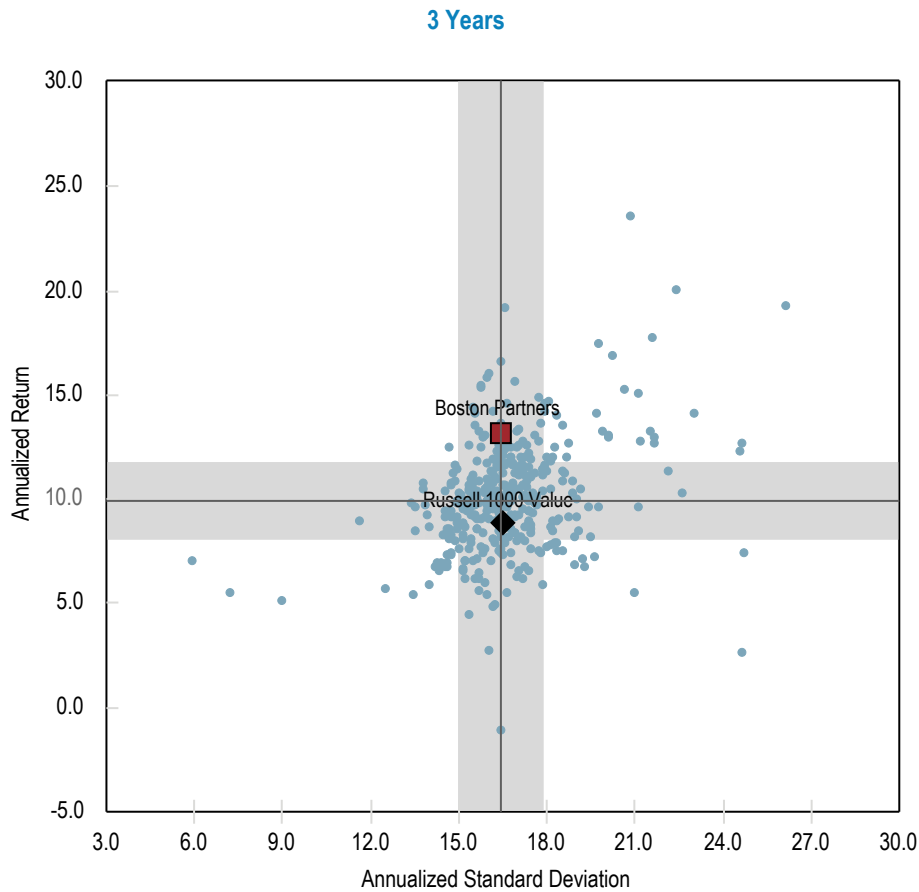
Domestic equity large cap value portfolio exhibiting low turnover in companies with low valuations relative to intrinsic value. Primary personnel include Mark Donovan and David Pyle.

Boston Partners vs. eV US Large Cap Value Equity Gross Universe



|                            | Quarter   | 1 Year     | 3 Years    | 5 Years    | 10 Years  | 2022       | 2021       | 2020      | 2019       | 2018       |
|----------------------------|-----------|------------|------------|------------|-----------|------------|------------|-----------|------------|------------|
| ● Boston Partners          | 8.97 (74) | 14.67 (39) | 13.15 (15) | 13.13 (41) | 9.67 (45) | -3.82 (36) | 31.34 (18) | 2.96 (63) | 24.26 (79) | -8.65 (59) |
| ▲ Russell 1000 Value Index | 9.50 (61) | 11.46 (62) | 8.86 (80)  | 10.91 (81) | 8.40 (85) | -7.54 (68) | 25.16 (72) | 2.80 (64) | 26.54 (57) | -8.27 (54) |
| 5th Percentile             | 14.06     | 28.93      | 15.27      | 16.84      | 12.16     | 2.29       | 34.34      | 17.56     | 34.33      | -1.47      |
| 1st Quartile               | 11.36     | 17.90      | 12.16      | 14.42      | 10.41     | -2.48      | 30.16      | 10.11     | 29.85      | -5.02      |
| Median                     | 10.05     | 13.05      | 10.69      | 12.66      | 9.49      | -5.43      | 27.59      | 4.65      | 27.19      | -8.10      |
| 3rd Quartile               | 8.89      | 9.38       | 9.26       | 11.24      | 8.72      | -8.66      | 24.57      | 1.30      | 24.74      | -10.66     |
| 95th Percentile            | 6.85      | 3.82       | 7.30       | 9.26       | 7.41      | -16.45     | 19.69      | -3.52     | 20.39      | -14.67     |
| Population                 | 389       | 389        | 383        | 367        | 331       | 414        | 424        | 430       | 458        | 480        |





|                                     | <b>3 Years</b>   |                              |              |
|-------------------------------------|------------------|------------------------------|--------------|
|                                     | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| Boston Partners                     | 13.1             | 16.4                         | 0.7          |
| Russell 1000 Value Index            | 8.9              | 16.5                         | 0.5          |
| eV US Large Cap Value Equity Median | 10.7             | 16.4                         | 0.6          |
| Population                          | 383              | 383                          | 383          |

|                                     | <b>5 Years</b>   |                              |              |
|-------------------------------------|------------------|------------------------------|--------------|
|                                     | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| Boston Partners                     | 13.1             | 19.2                         | 0.6          |
| Russell 1000 Value Index            | 10.9             | 18.8                         | 0.5          |
| eV US Large Cap Value Equity Median | 12.7             | 18.6                         | 0.6          |
| Population                          | 367              | 367                          | 367          |

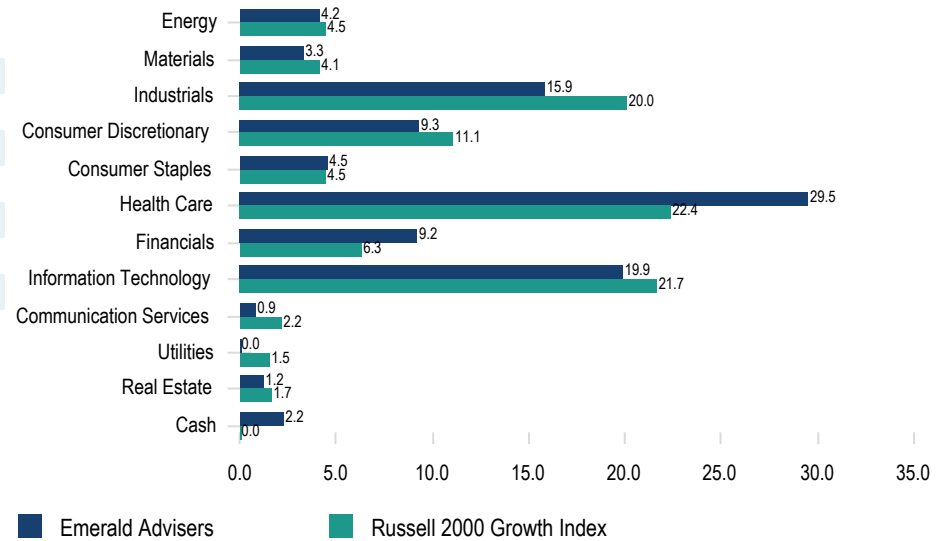
Emerald Advisers  
 Manager Portfolio Overview

Contra Costa County Employees' Retirement Association  
 Period Ending: December 31, 2023

Characteristics

|                         | Portfolio | Benchmark |
|-------------------------|-----------|-----------|
| Number of Stocks        | 114       | 1,074     |
| Wtd. Avg. Mkt. Cap \$M  | 3,917.13  | 3,741.63  |
| Median Mkt. Cap \$M     | 2,788.67  | 1,220.03  |
| Price/Earnings ratio    | 24.28     | 22.53     |
| Price/Book ratio        | 4.16      | 4.00      |
| Return on Equity (%)    | 5.58      | -15.50    |
| Current Yield (%)       | 0.49      | 0.63      |
| Beta (5 Years, Monthly) | 0.96      | 1.00      |

Sector Allocation (%) vs. Russell 2000 Growth Index



Largest Holdings

|                            | End Weight (%) | Quarterly Return (%) |
|----------------------------|----------------|----------------------|
| ImmunoGen Inc              | 2.39           | 86.83                |
| Acadia Pharmaceuticals Inc | 2.18           | 50.24                |
| Freshpet Inc               | 2.11           | 31.69                |
| Carpenter Technology Corp  | 2.11           | 5.69                 |
| Super Micro Computer Inc   | 1.96           | 3.66                 |
| Blueprint Medicines Corp   | 1.94           | 83.67                |
| Varonis Systems Inc        | 1.92           | 48.27                |
| Churchill Downs Inc        | 1.86           | 16.66                |
| Transmedics Group Inc      | 1.81           | 44.16                |
| FTAI Aviation Ltd          | 1.79           | 31.48                |

Top Contributors

|                                     | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|-------------------------------------|----------------------|----------------------|----------------------------|
| Blueprint Medicines Corp            | 1.44                 | 83.67                | 1.20                       |
| ImmunoGen Inc                       | 1.36                 | 86.83                | 1.18                       |
| Acadia Pharmaceuticals Inc          | 1.54                 | 50.24                | 0.78                       |
| Varonis Systems Inc                 | 1.38                 | 48.27                | 0.66                       |
| Freshpet Inc                        | 1.54                 | 31.69                | 0.49                       |
| Transmedics Group Inc               | 1.10                 | 44.16                | 0.48                       |
| BridgeBio Pharma Inc                | 0.87                 | 53.09                | 0.46                       |
| FTAI Aviation Ltd                   | 1.46                 | 31.48                | 0.46                       |
| Kratos Defense & Security Solutions | 1.25                 | 35.09                | 0.44                       |
| Shift4 Payments Inc                 | 1.25                 | 34.26                | 0.43                       |

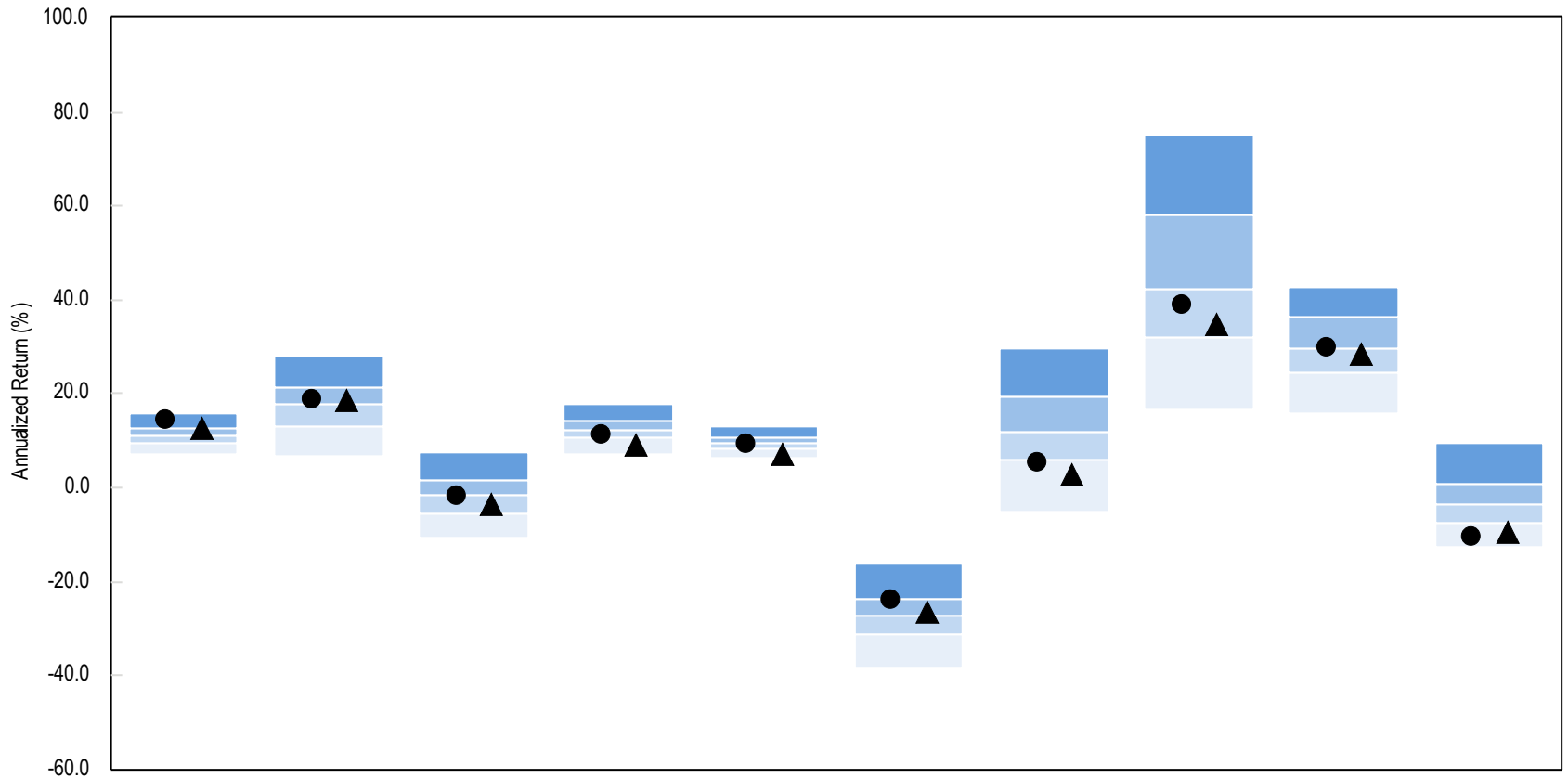
Top Detractors

|                                  | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|----------------------------------|----------------------|----------------------|----------------------------|
| Replimune Group Inc              | 0.85                 | -50.73               | -0.43                      |
| Chart Industries Inc             | 1.94                 | -19.39               | -0.38                      |
| TETRA Technologies Inc           | 0.91                 | -29.15               | -0.26                      |
| Babcock & Wilcox Enterprises Inc | 0.40                 | -65.32               | -0.26                      |
| AtriCure Inc                     | 1.02                 | -18.52               | -0.19                      |
| Championx Corp                   | 0.84                 | -17.78               | -0.15                      |
| Amylyx Pharmaceuticals Inc       | 0.70                 | -19.61               | -0.14                      |
| Lantheus Holdings Inc            | 1.07                 | -10.77               | -0.12                      |
| Ameresco Inc                     | 0.64                 | -17.87               | -0.11                      |
| Cactus Inc                       | 1.19                 | -9.32                | -0.11                      |

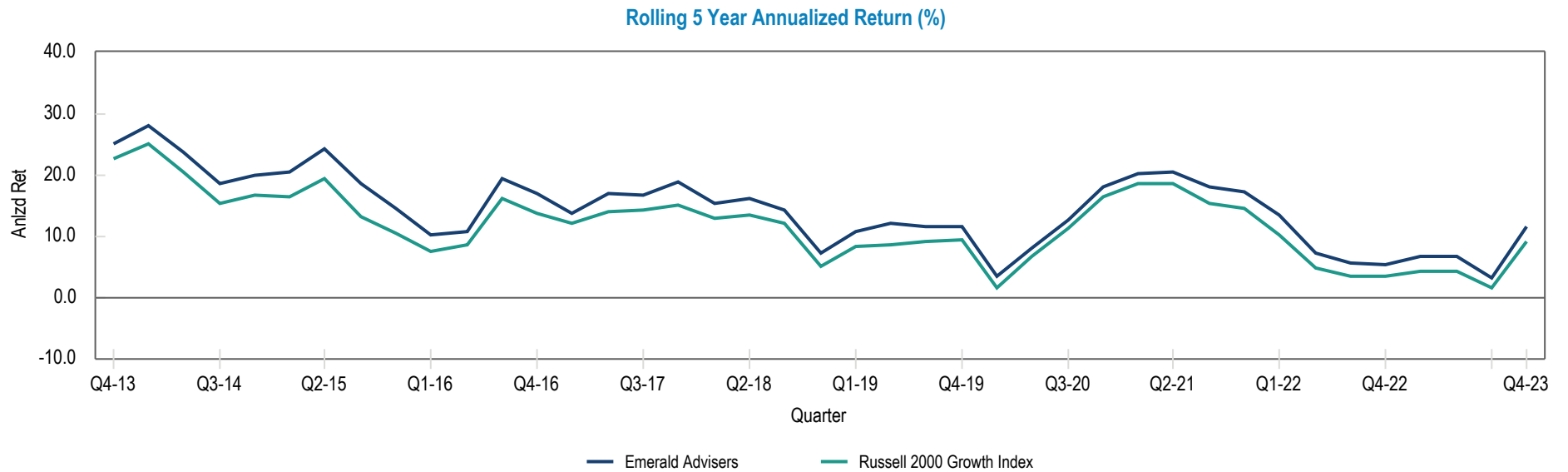
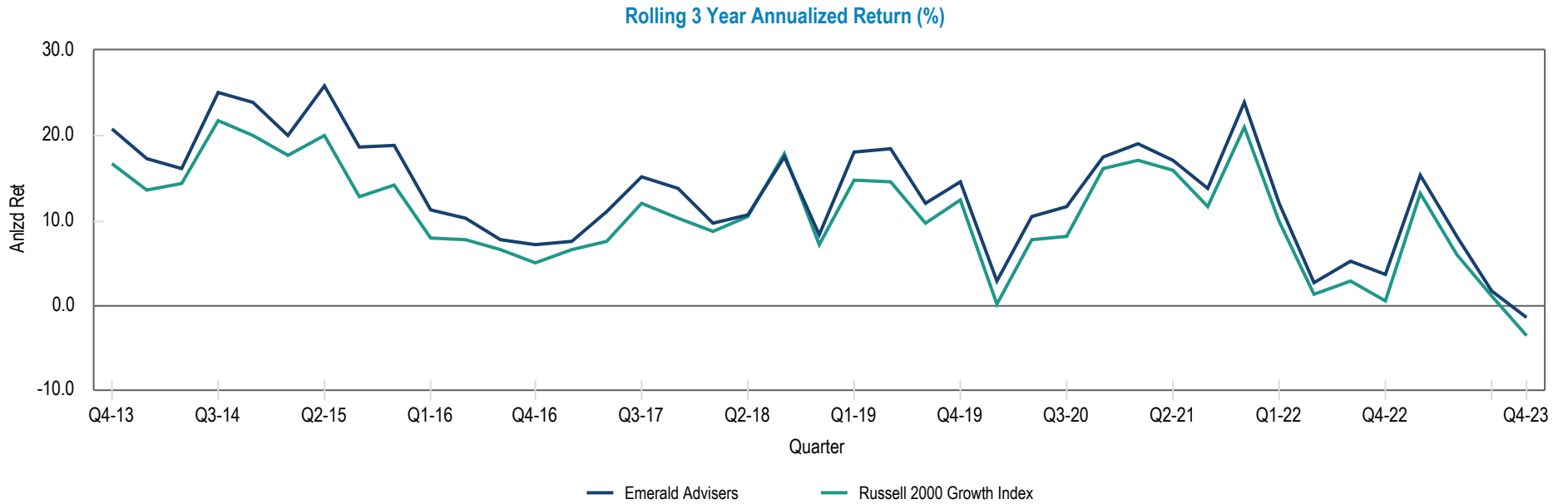
% of Portfolio 13.19 6.58 % of Portfolio 9.56 -2.15

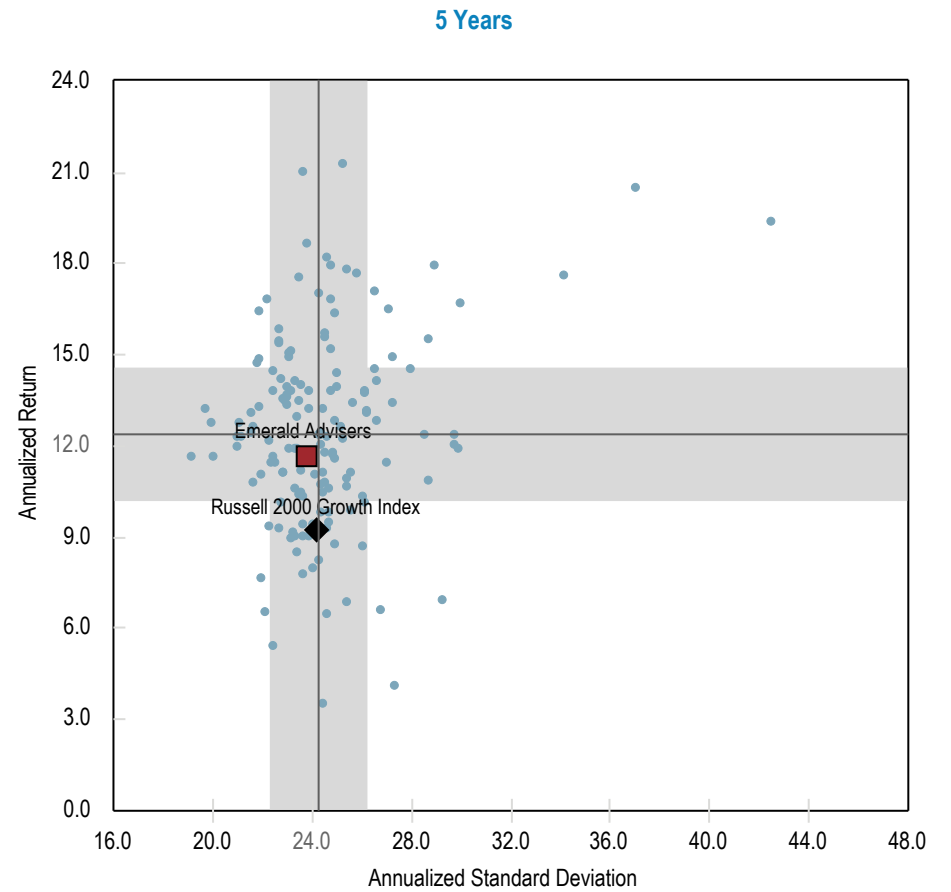
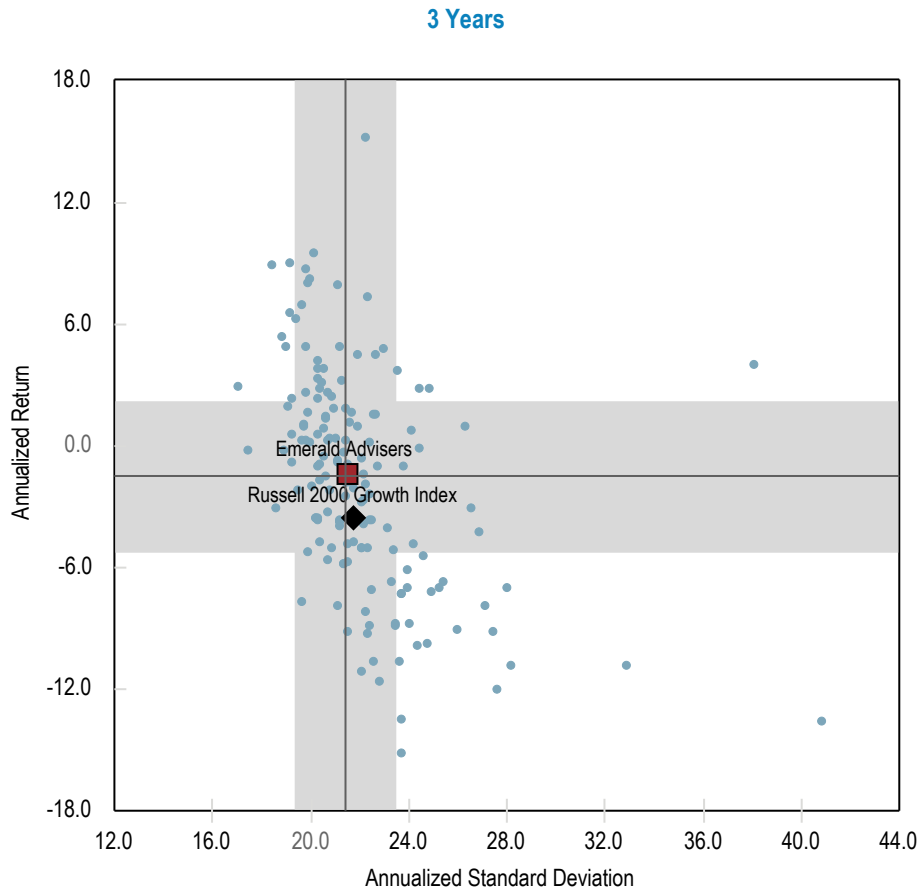
Domestic equity small cap growth portfolio of companies with significantly high growth rates. Primary personnel include Kenneth Mertz, Joseph Garner, and Stacey Sears.

Emerald Advisers vs. eV US Small Cap Growth Equity Gross Universe



|                             | Quarter    | 1 Year     | 3 Years    | 5 Years    | 10 Years  | 2022        | 2021      | 2020       | 2019       | 2018        |
|-----------------------------|------------|------------|------------|------------|-----------|-------------|-----------|------------|------------|-------------|
| ● Emerald Advisers          | 14.84 (10) | 19.15 (41) | -1.39 (50) | 11.66 (62) | 9.46 (54) | -23.75 (27) | 5.53 (77) | 38.96 (57) | 30.26 (48) | -10.14 (86) |
| ▲ Russell 2000 Growth Index | 12.75 (30) | 18.66 (45) | -3.50 (62) | 9.22 (88)  | 7.16 (95) | -26.36 (44) | 2.83 (85) | 34.63 (67) | 28.48 (53) | -9.31 (82)  |
| 5th Percentile              | 16.04      | 27.94      | 7.55       | 17.89      | 12.96     | -16.20      | 29.85     | 74.95      | 42.60      | 9.65        |
| 1st Quartile                | 12.88      | 21.33      | 1.76       | 14.20      | 10.60     | -23.57      | 19.36     | 58.30      | 36.52      | 0.66        |
| Median                      | 11.18      | 17.72      | -1.50      | 12.40      | 9.54      | -27.20      | 11.86     | 42.23      | 29.57      | -3.70       |
| 3rd Quartile                | 9.61       | 13.27      | -5.32      | 10.64      | 8.31      | -31.12      | 5.92      | 31.96      | 24.74      | -7.47       |
| 95th Percentile             | 7.27       | 6.68       | -10.71     | 7.31       | 6.41      | -38.40      | -4.98     | 16.49      | 15.94      | -12.52      |
| Population                  | 156        | 156        | 155        | 151        | 135       | 171         | 182       | 183        | 190        | 194         |





|                                      | 3 Years          |                              |              |
|--------------------------------------|------------------|------------------------------|--------------|
|                                      | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| Emerald Advisers                     | -1.4             | 21.5                         | -0.1         |
| Russell 2000 Growth Index            | -3.5             | 21.8                         | -0.2         |
| eV US Small Cap Growth Equity Median | -1.5             | 21.4                         | -0.1         |
| Population                           | 155              | 155                          | 155          |

|                                      | 5 Years          |                              |              |
|--------------------------------------|------------------|------------------------------|--------------|
|                                      | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| Emerald Advisers                     | 11.7             | 23.8                         | 0.5          |
| Russell 2000 Growth Index            | 9.2              | 24.2                         | 0.4          |
| eV US Small Cap Growth Equity Median | 12.4             | 24.2                         | 0.5          |
| Population                           | 151              | 151                          | 151          |



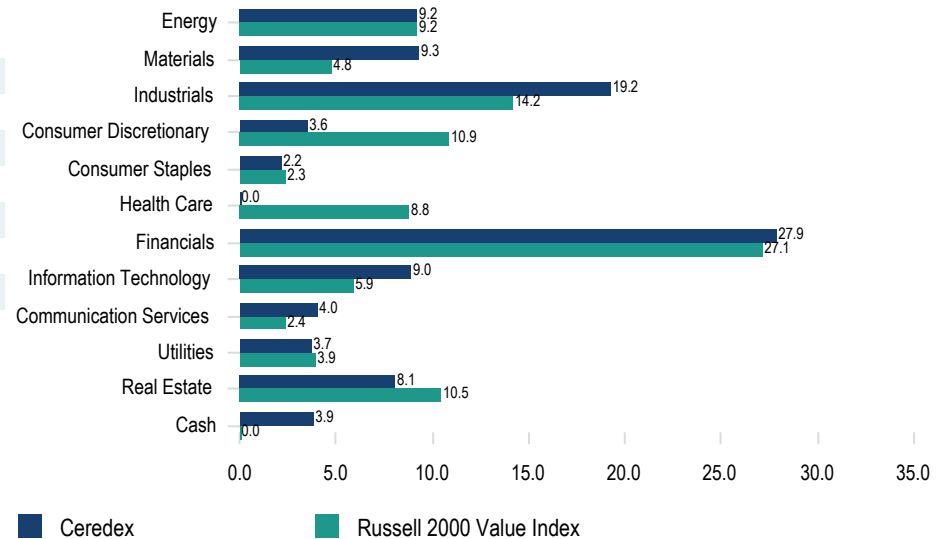
Ceredex  
Manager Portfolio Overview

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

Characteristics

|                         | Portfolio | Benchmark |
|-------------------------|-----------|-----------|
| Number of Stocks        | 70        | 1,431     |
| Wtd. Avg. Mkt. Cap \$M  | 5,299.70  | 2,724.68  |
| Median Mkt. Cap \$M     | 5,654.66  | 823.90    |
| Price/Earnings ratio    | 16.96     | 11.45     |
| Price/Book ratio        | 2.10      | 1.63      |
| Return on Equity (%)    | 2.06      | 1.65      |
| Current Yield (%)       | 2.35      | 2.25      |
| Beta (5 Years, Monthly) | 0.87      | 1.00      |

Sector Allocation (%) vs. Russell 2000 Value Index



Largest Holdings

|                                 | End Weight (%) | Quarterly Return (%) |
|---------------------------------|----------------|----------------------|
| Ashland Inc                     | 2.22           | 3.72                 |
| Bank of Hawaii Corp             | 2.05           | 47.59                |
| Agree Realty Corp               | 2.04           | 15.40                |
| KBR Inc                         | 2.01           | -5.75                |
| Schneider National Inc          | 1.96           | -7.74                |
| RB Global Inc                   | 1.91           | 7.48                 |
| IDACORP Inc.                    | 1.86           | 5.91                 |
| Pinnacle Financial Partners Inc | 1.86           | 30.53                |
| OGE Energy Corp                 | 1.85           | 6.14                 |
| Atlantic Union Bankshares Corp  | 1.83           | 28.33                |

Top Contributors

|                                  | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|----------------------------------|----------------------|----------------------|----------------------------|
| Bank of Hawaii Corp              | 1.60                 | 47.59                | 0.76                       |
| Signet Jewelers Ltd              | 1.51                 | 49.87                | 0.75                       |
| Columbia Banking System Inc      | 1.69                 | 33.59                | 0.57                       |
| Steven Madden Ltd                | 1.68                 | 32.86                | 0.55                       |
| Pinnacle Financial Partners Inc  | 1.80                 | 30.53                | 0.55                       |
| Armstrong World Industries Inc   | 1.45                 | 37.05                | 0.54                       |
| Seacoast Banking Corp of Florida | 1.52                 | 30.40                | 0.46                       |
| SouthState Corporation           | 1.69                 | 26.32                | 0.44                       |
| F.N.B. Corp                      | 1.42                 | 28.83                | 0.41                       |
| Colliers International Group Inc | 1.16                 | 32.99                | 0.38                       |

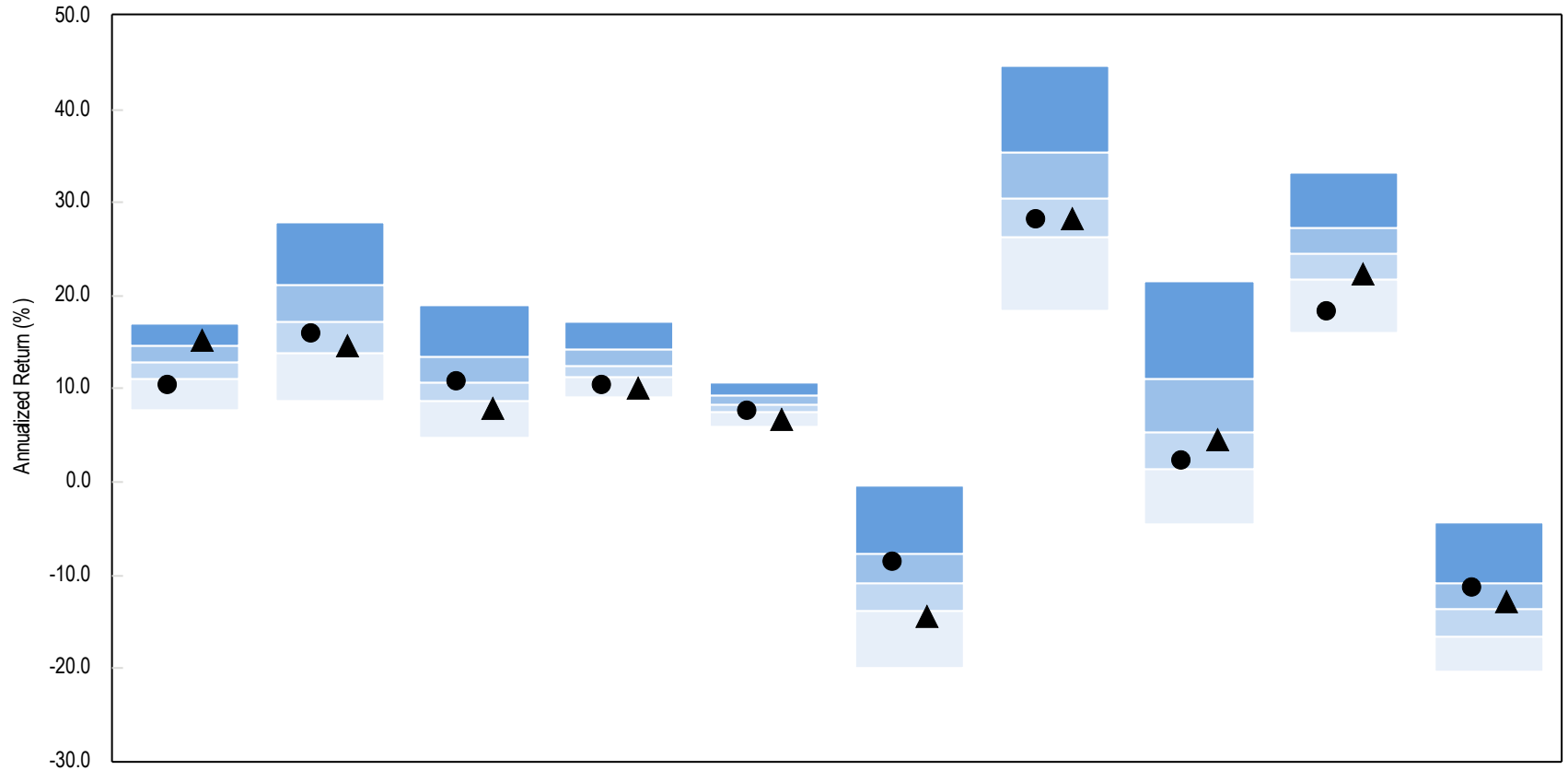
Top Detractors

|                            | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|----------------------------|----------------------|----------------------|----------------------------|
| Belden Inc                 | 1.74                 | -19.94               | -0.35                      |
| Championx Corp             | 1.81                 | -17.78               | -0.32                      |
| Helios Technologies Inc    | 1.41                 | -18.12               | -0.26                      |
| Cactus Inc                 | 1.82                 | -9.32                | -0.17                      |
| Schneider National Inc     | 1.53                 | -7.74                | -0.12                      |
| Forward Air Corp           | 1.42                 | -8.20                | -0.12                      |
| KBR Inc                    | 1.88                 | -5.75                | -0.11                      |
| Range Resources Corp.      | 1.72                 | -5.83                | -0.10                      |
| Iridium Communications Inc | 0.98                 | -9.23                | -0.09                      |
| Matador Resources Co       | 1.82                 | -4.06                | -0.07                      |

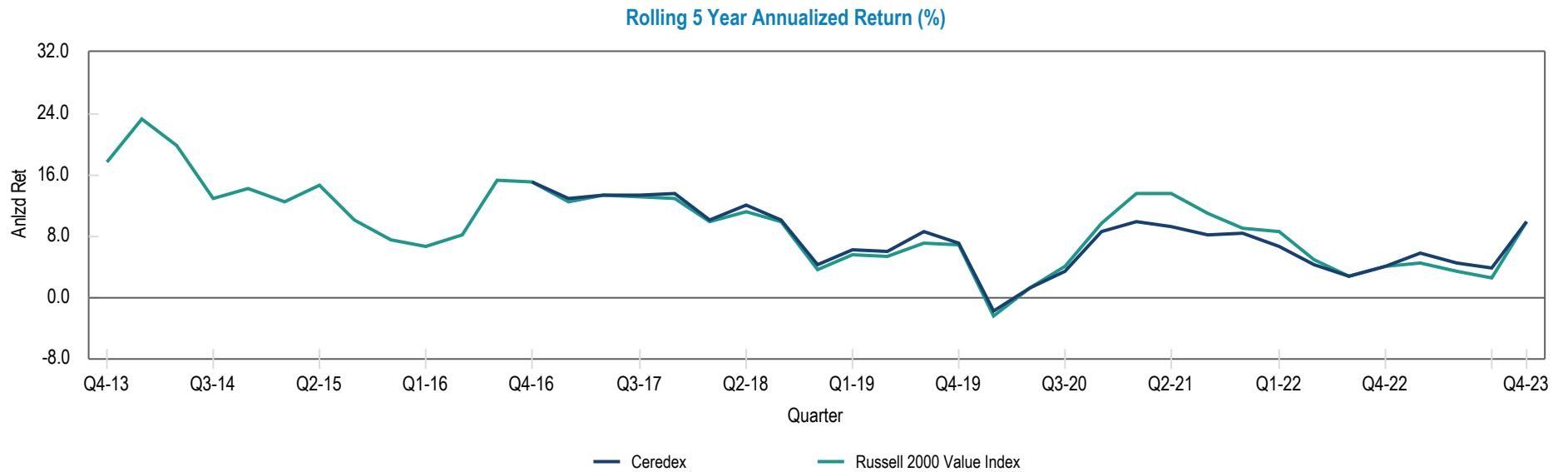
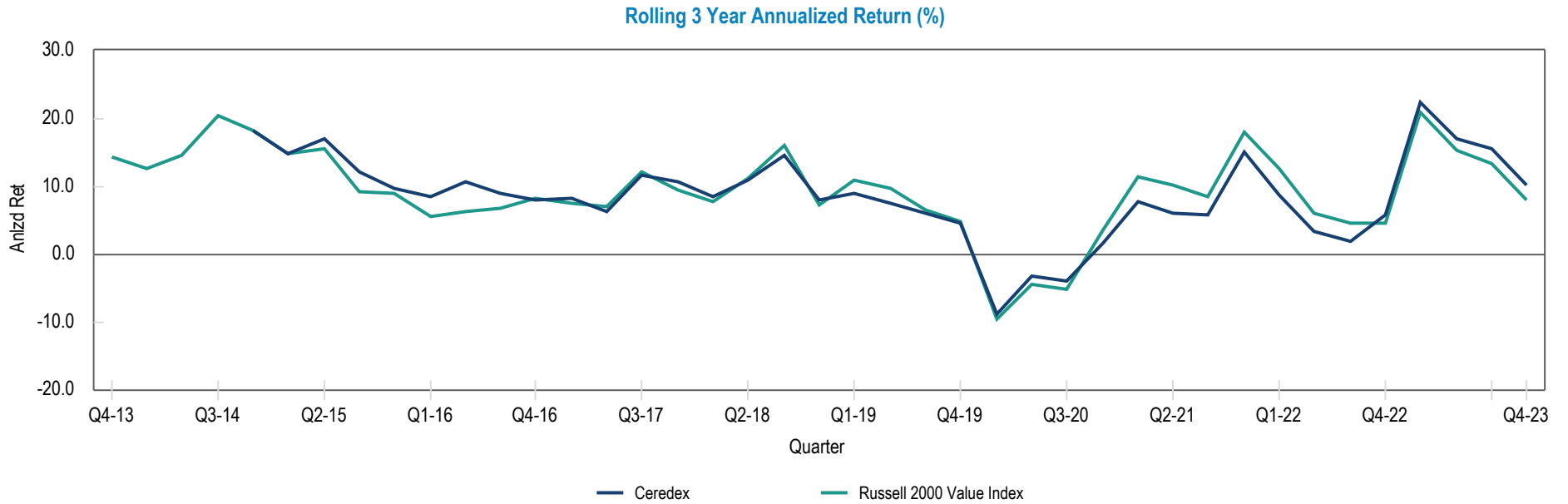
% of Portfolio 15.52 5.42 % of Portfolio 16.13 -1.70

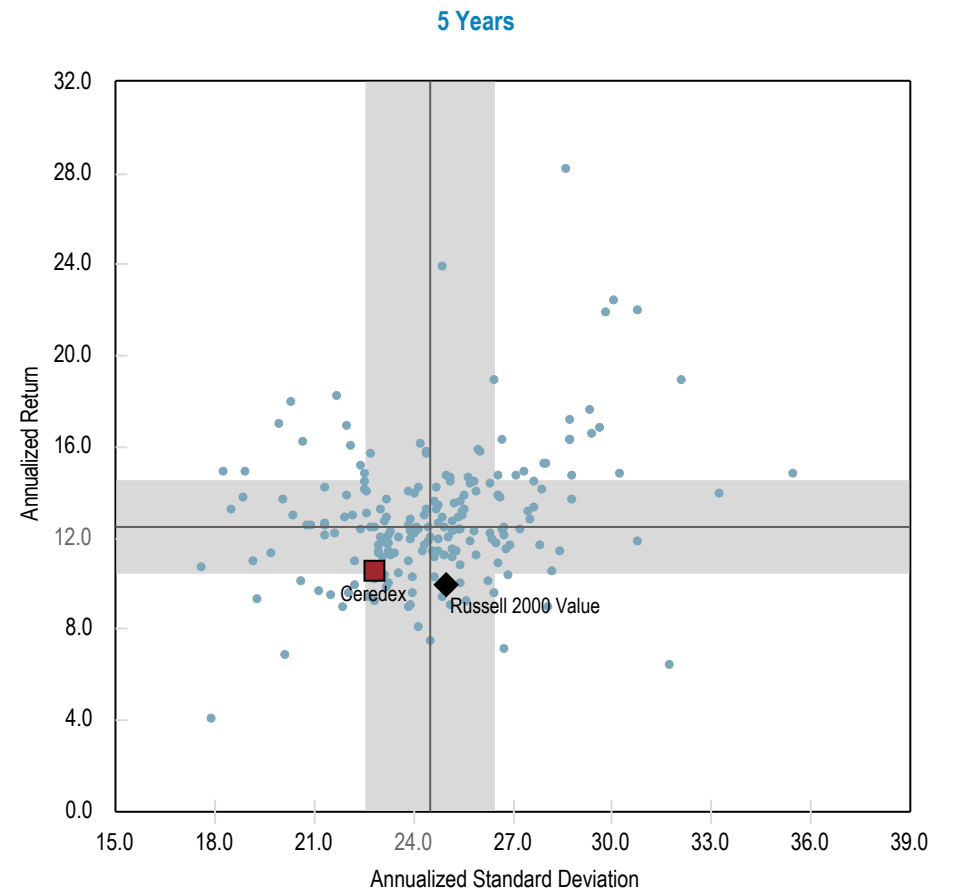
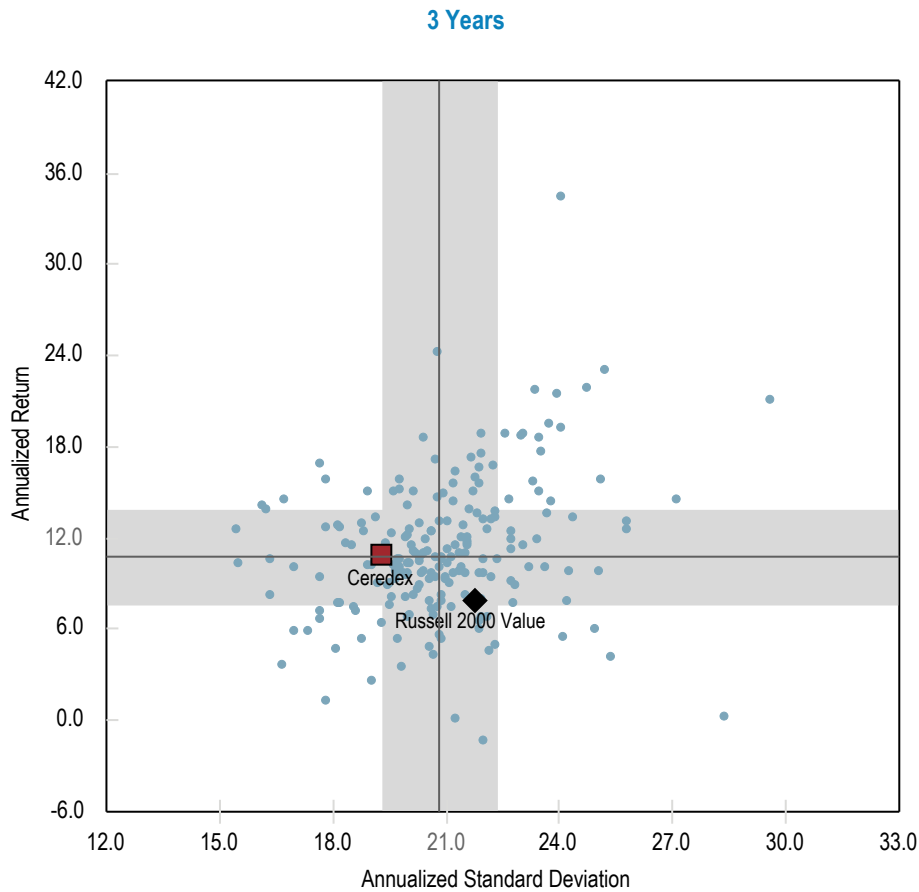
Domestic equity small cap value portfolio of companies with dividend yields and low valuations. Primary personnel include Brett Barner and David Maynard.

Ceredex vs. eV US Small Cap Value Equity Gross Universe



|                            | Quarter    | 1 Year     | 3 Years    | 5 Years    | 10 Years  | 2022        | 2021       | 2020      | 2019       | 2018        |
|----------------------------|------------|------------|------------|------------|-----------|-------------|------------|-----------|------------|-------------|
| ● Ceredex                  | 10.53 (82) | 16.02 (61) | 10.89 (49) | 10.55 (83) | 7.64 (71) | -8.46 (28)  | 28.37 (60) | 2.32 (70) | 18.36 (88) | -11.32 (29) |
| ▲ Russell 2000 Value Index | 15.26 (16) | 14.65 (71) | 7.94 (80)  | 10.00 (88) | 6.76 (89) | -14.48 (79) | 28.27 (60) | 4.63 (54) | 22.39 (71) | -12.86 (42) |
| 5th Percentile             | 16.92      | 27.83      | 18.89      | 17.29      | 10.67     | -0.38       | 44.60      | 21.48     | 33.29      | -4.34       |
| 1st Quartile               | 14.66      | 21.12      | 13.43      | 14.26      | 9.36      | -7.70       | 35.31      | 11.06     | 27.36      | -10.80      |
| Median                     | 12.94      | 17.24      | 10.78      | 12.51      | 8.30      | -10.91      | 30.49      | 5.33      | 24.47      | -13.63      |
| 3rd Quartile               | 11.10      | 13.93      | 8.70       | 11.32      | 7.48      | -13.87      | 26.25      | 1.35      | 21.69      | -16.58      |
| 95th Percentile            | 7.72       | 8.80       | 4.77       | 9.10       | 6.01      | -19.91      | 18.35      | -4.58     | 15.95      | -20.38      |
| Population                 | 207        | 207        | 205        | 197        | 175       | 219         | 231        | 245       | 253        | 264         |





|                                     | 3 Years          |                              |              |
|-------------------------------------|------------------|------------------------------|--------------|
|                                     | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| Ceredex                             | 10.9             | 19.3                         | 0.5          |
| Russell 2000 Value Index            | 7.9              | 21.8                         | 0.4          |
| eV US Small Cap Value Equity Median | 10.8             | 20.8                         | 0.5          |
| Population                          | 205              | 205                          | 205          |

|                                     | 5 Years          |                              |              |
|-------------------------------------|------------------|------------------------------|--------------|
|                                     | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| Ceredex                             | 10.5             | 22.8                         | 0.5          |
| Russell 2000 Value Index            | 10.0             | 25.0                         | 0.4          |
| eV US Small Cap Value Equity Median | 12.5             | 24.5                         | 0.5          |
| Population                          | 197              | 197                          | 197          |

# International Equity Managers

---

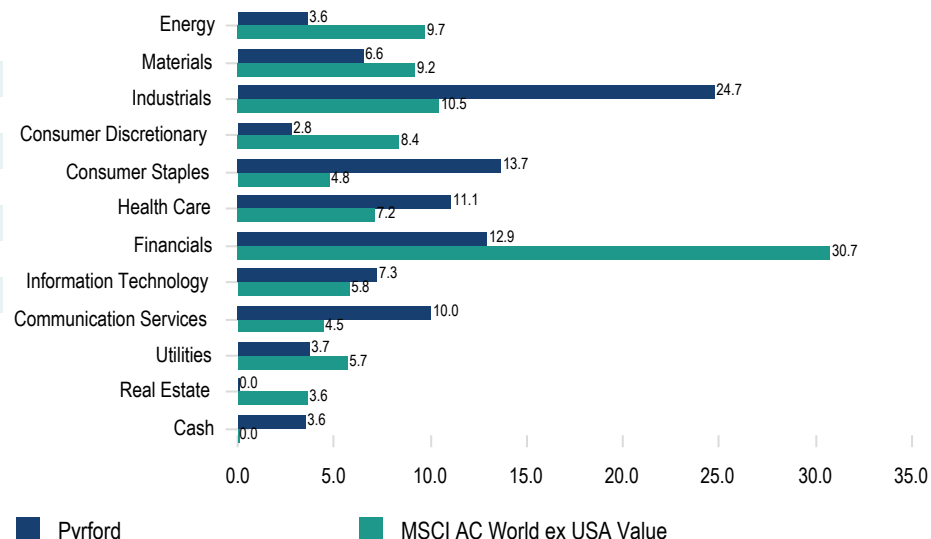
# Pyrford Manager Portfolio Overview

# Contra Costa County Employees' Retirement Association Period Ending: December 31, 2023

## Characteristics

|                         | Portfolio | Benchmark |
|-------------------------|-----------|-----------|
| Number of Stocks        | 79        | 1,370     |
| Wtd. Avg. Mkt. Cap \$M  | 56,877.02 | 66,881.53 |
| Median Mkt. Cap \$M     | 21,947.46 | 9,218.19  |
| Price/Earnings ratio    | 15.35     | 9.87      |
| Price/Book ratio        | 2.33      | 1.74      |
| Return on Equity (%)    | 5.08      | 3.43      |
| Current Yield (%)       | 4.14      | 4.51      |
| Beta (5 Years, Monthly) | 0.75      | 1.00      |

## Sector Allocation (%) vs. MSCI AC World ex USA Value



## Largest Holdings

|                           | End Weight (%) | Quarterly Return (%) |
|---------------------------|----------------|----------------------|
| Japan Tobacco Inc         | 2.52           | 15.07                |
| United Overseas Bank Ltd  | 2.39           | 3.29                 |
| Nestle SA, Cham Und Vevey | 2.37           | 2.16                 |
| Roche Holding AG          | 2.35           | 6.11                 |
| Kddi Corp                 | 2.21           | 3.75                 |
| Mitsubishi Electric Corp  | 2.16           | 14.44                |
| L'Air Liquide SA          | 2.08           | 14.96                |
| Novartis AG               | 2.07           | 3.66                 |
| Telenor ASA               | 2.05           | 4.39                 |
| Brambles Ltd              | 1.98           | 0.41                 |

## Top Contributors

|                           | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|---------------------------|----------------------|----------------------|----------------------------|
| Nihon Kohden Corp         | 1.63                 | 27.95                | 0.46                       |
| Japan Tobacco Inc         | 2.74                 | 15.07                | 0.41                       |
| Deutsche Post AG          | 1.63                 | 21.45                | 0.35                       |
| Mitsubishi Electric Corp  | 2.24                 | 14.44                | 0.32                       |
| Nemetschek SE             | 0.74                 | 41.47                | 0.31                       |
| Brenntag SE               | 1.69                 | 18.16                | 0.31                       |
| SAP SE                    | 1.65                 | 18.49                | 0.31                       |
| L'Air Liquide SA          | 1.96                 | 14.96                | 0.29                       |
| Legal & General Group PLC | 1.60                 | 17.87                | 0.29                       |
| Rio Tinto Group           | 1.03                 | 26.31                | 0.27                       |

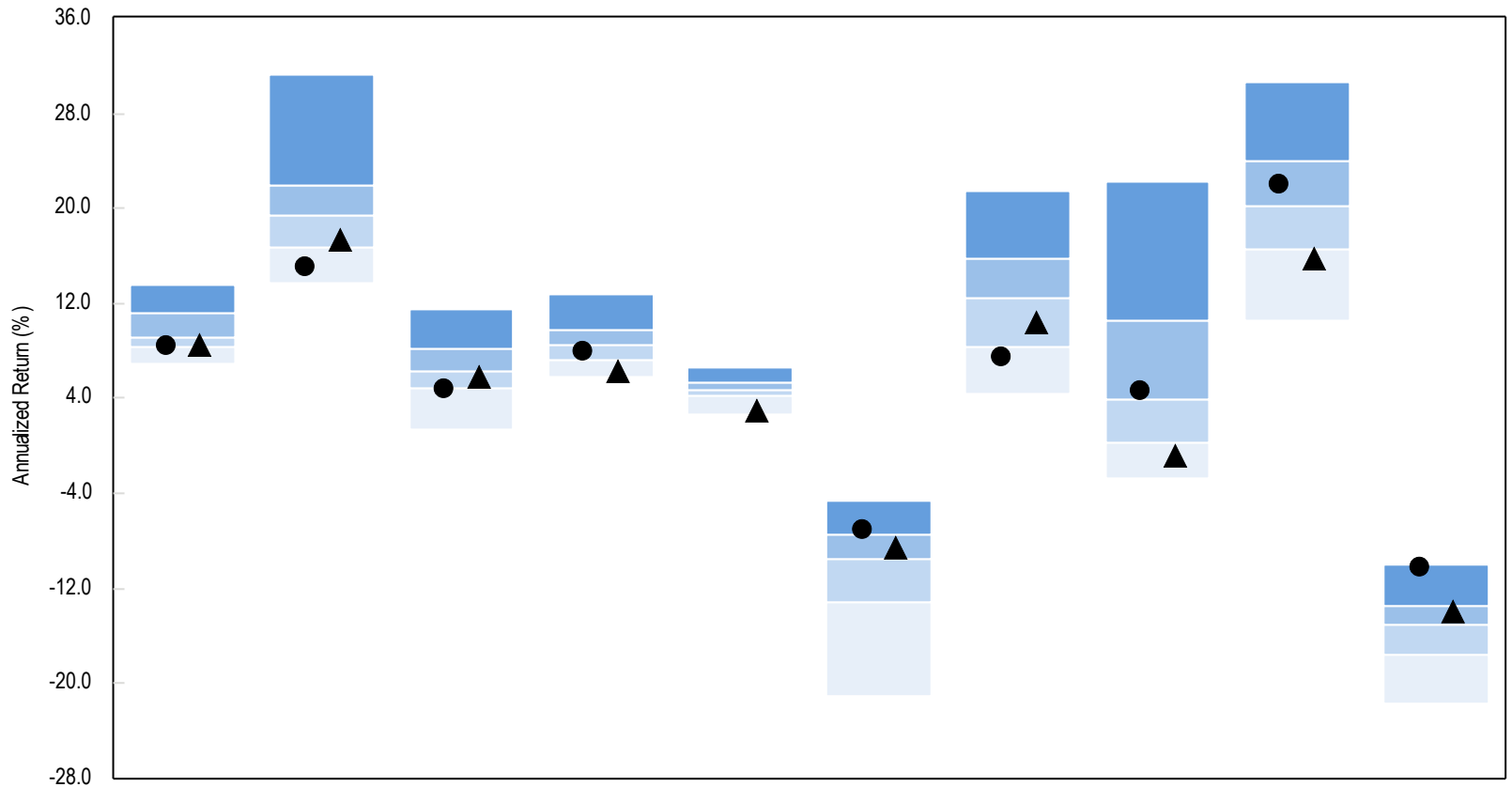
## Top Detractors

|                             | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|-----------------------------|----------------------|----------------------|----------------------------|
| Woodside Energy Group Ltd   | 1.45                 | -10.01               | -0.14                      |
| Sanofi                      | 1.87                 | -7.71                | -0.14                      |
| British American Tobacco    | 1.63                 | -4.61                | -0.08                      |
| BP plc                      | 0.94                 | -7.24                | -0.07                      |
| Merck KGaA                  | 0.92                 | -4.93                | -0.05                      |
| Nissan Chemical Corp        | 0.54                 | -8.35                | -0.05                      |
| Abc-Mart Inc                | 1.35                 | -2.93                | -0.04                      |
| Reckitt Benckiser Group PLC | 1.30                 | -2.30                | -0.03                      |
| Unilever PLC                | 1.87                 | -1.46                | -0.03                      |
| Vodafone Group Public       | 1.40                 | -1.63                | -0.02                      |

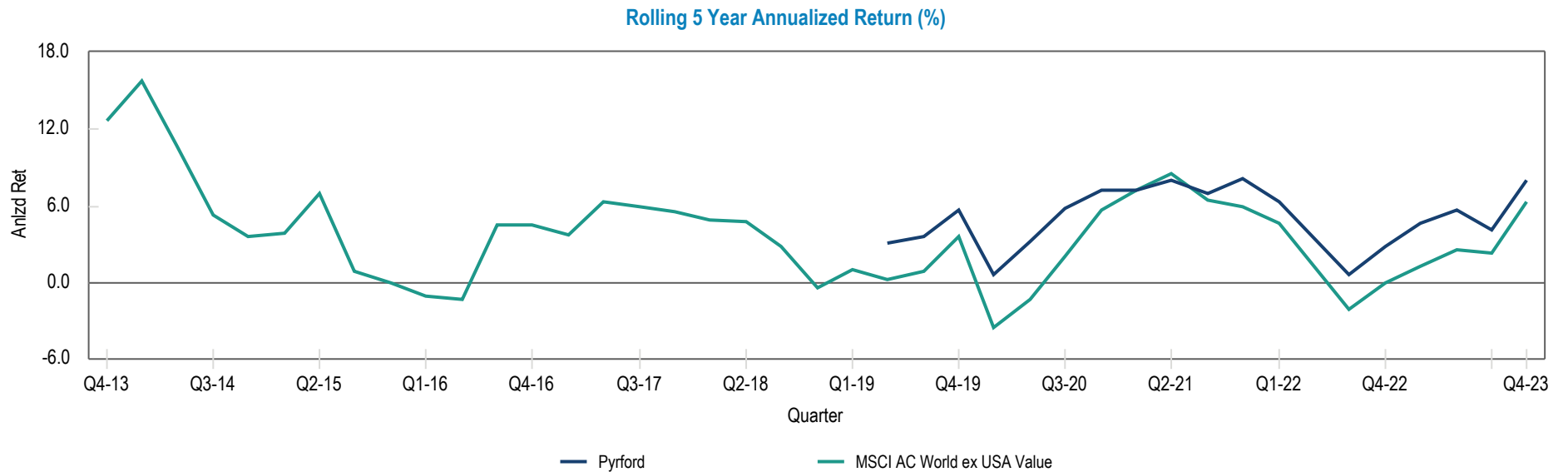
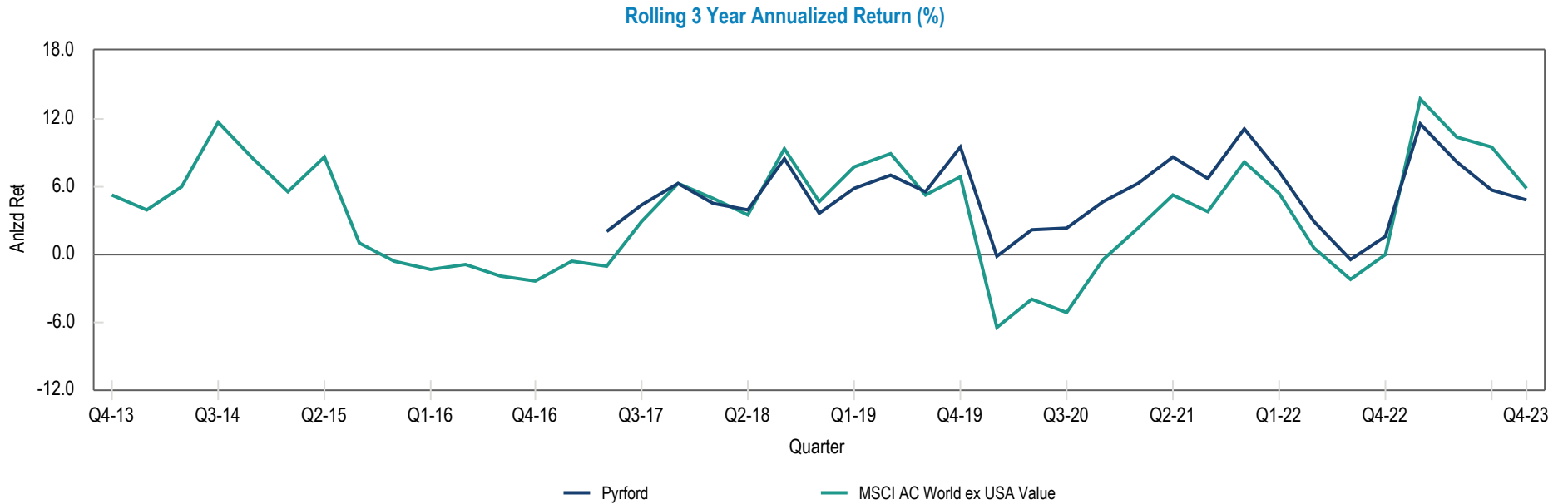
% of Portfolio 16.91 3.31 % of Portfolio 13.27 -0.64

International equity value portfolio of non-US companies with low valuations at the country and stock level. Primary personnel include Tony Cousins, Daniel McDonagh, and Paul Simons.

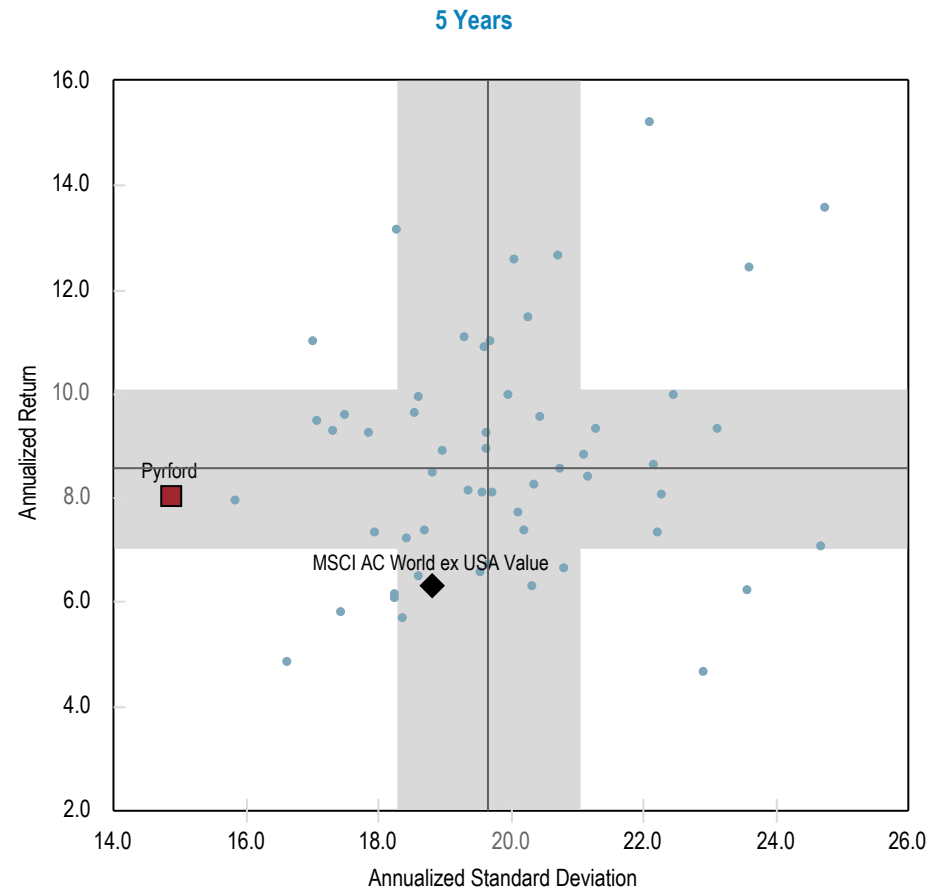
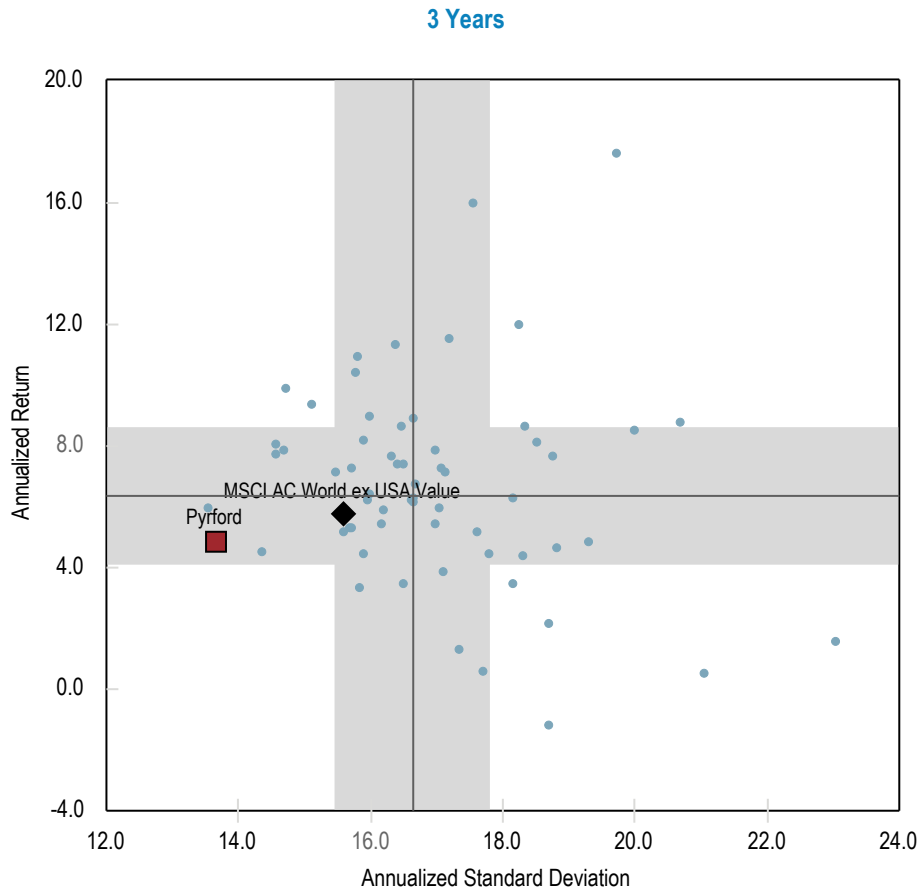
Pyrford vs. eV ACWI ex-US Value Equity Gross Universe



|                                    | Quarter   | 1 Year     | 3 Years   | 5 Years   | 10 Years  | 2022       | 2021       | 2020       | 2019       | 2018        |
|------------------------------------|-----------|------------|-----------|-----------|-----------|------------|------------|------------|------------|-------------|
| ● Pyrford                          | 8.58 (73) | 15.17 (84) | 4.85 (76) | 8.05 (64) | -         | -6.97 (20) | 7.57 (84)  | 4.66 (46)  | 22.07 (37) | -10.15 (6)  |
| ▲ MSCI AC World ex USA Value (Net) | 8.43 (74) | 17.30 (69) | 5.80 (64) | 6.34 (87) | 2.92 (88) | -8.59 (40) | 10.46 (66) | -0.77 (80) | 15.72 (78) | -13.97 (31) |
| 5th Percentile                     | 13.63     | 31.25      | 11.51     | 12.84     | 6.62      | -4.61      | 21.44      | 22.27      | 30.57      | -10.04      |
| 1st Quartile                       | 11.16     | 21.98      | 8.16      | 9.80      | 5.34      | -7.53      | 15.82      | 10.53      | 24.00      | -13.41      |
| Median                             | 9.16      | 19.46      | 6.37      | 8.57      | 4.70      | -9.50      | 12.53      | 3.91       | 20.24      | -15.08      |
| 3rd Quartile                       | 8.36      | 16.78      | 4.94      | 7.30      | 4.17      | -13.18     | 8.35       | 0.30       | 16.62      | -17.58      |
| 95th Percentile                    | 6.91      | 13.68      | 1.31      | 5.80      | 2.63      | -21.01     | 4.34       | -2.66      | 10.49      | -21.69      |
| Population                         | 63        | 63         | 62        | 55        | 36        | 66         | 69         | 70         | 68         | 67          |







|                                   | 3 Years          |                              |              |
|-----------------------------------|------------------|------------------------------|--------------|
|                                   | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| Pyrford                           | 4.8              | 13.6                         | 0.3          |
| MSCI AC World ex USA Value (Net)  | 5.8              | 15.6                         | 0.3          |
| eV ACWI ex-US Value Equity Median | 6.4              | 16.6                         | 0.3          |
| Population                        | 62               | 62                           | 62           |

|                                   | 5 Years          |                              |              |
|-----------------------------------|------------------|------------------------------|--------------|
|                                   | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| Pyrford                           | 8.0              | 14.9                         | 0.5          |
| MSCI AC World ex USA Value (Net)  | 6.3              | 18.8                         | 0.3          |
| eV ACWI ex-US Value Equity Median | 8.6              | 19.7                         | 0.4          |
| Population                        | 55               | 55                           | 55           |

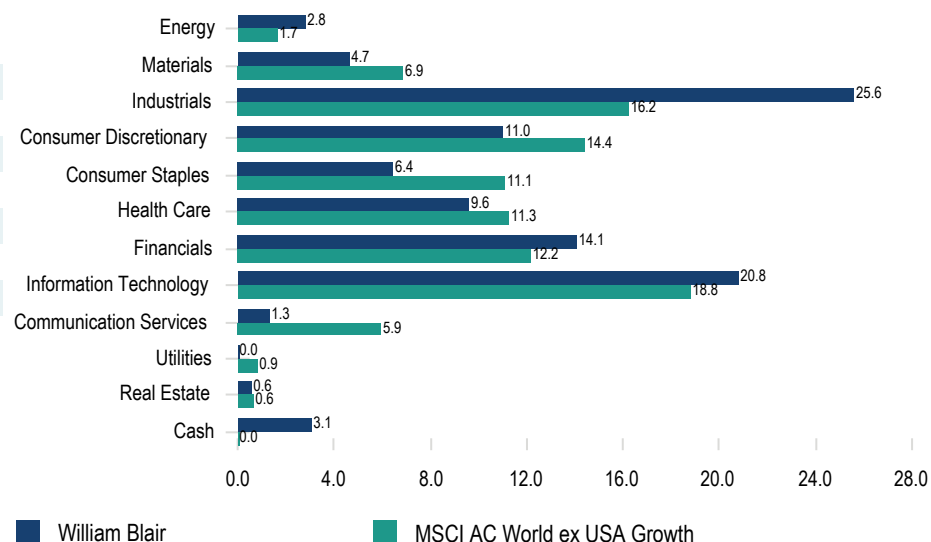
William Blair  
Manager Portfolio Overview

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

Characteristics

|                         | Portfolio | Benchmark  |
|-------------------------|-----------|------------|
| Number of Stocks        | 175       | 1,293      |
| Wtd. Avg. Mkt. Cap \$M  | 84,463.17 | 112,513.78 |
| Median Mkt. Cap \$M     | 15,609.28 | 10,149.04  |
| Price/Earnings ratio    | 24.97     | 20.88      |
| Price/Book ratio        | 3.91      | 3.48       |
| Return on Equity (%)    | 6.51      | 7.84       |
| Current Yield (%)       | 1.68      | 1.75       |
| Beta (5 Years, Monthly) | 1.04      | 1.00       |

Sector Allocation (%) vs. MSCI AC World ex USA Growth



Largest Holdings

|                             | End Weight (%) | Quarterly Return (%) |
|-----------------------------|----------------|----------------------|
| Taiwan Semiconductor Man.   | 2.27           | 20.23                |
| Novo Nordisk A/S            | 1.99           | 13.16                |
| ASML Holding NV             | 1.95           | 27.54                |
| Samsung Electronics Co Ltd  | 1.58           | 20.25                |
| London Stock Exchange Group | 1.49           | 17.64                |
| Keyence Corp                | 1.42           | 18.47                |
| Airbus SE                   | 1.41           | 14.85                |
| Astrazeneca PLC             | 1.40           | -0.28                |
| Dassault Systemes SA        | 1.40           | 30.76                |
| Reliance Industries Ltd     | 1.30           | 10.00                |

Top Contributors

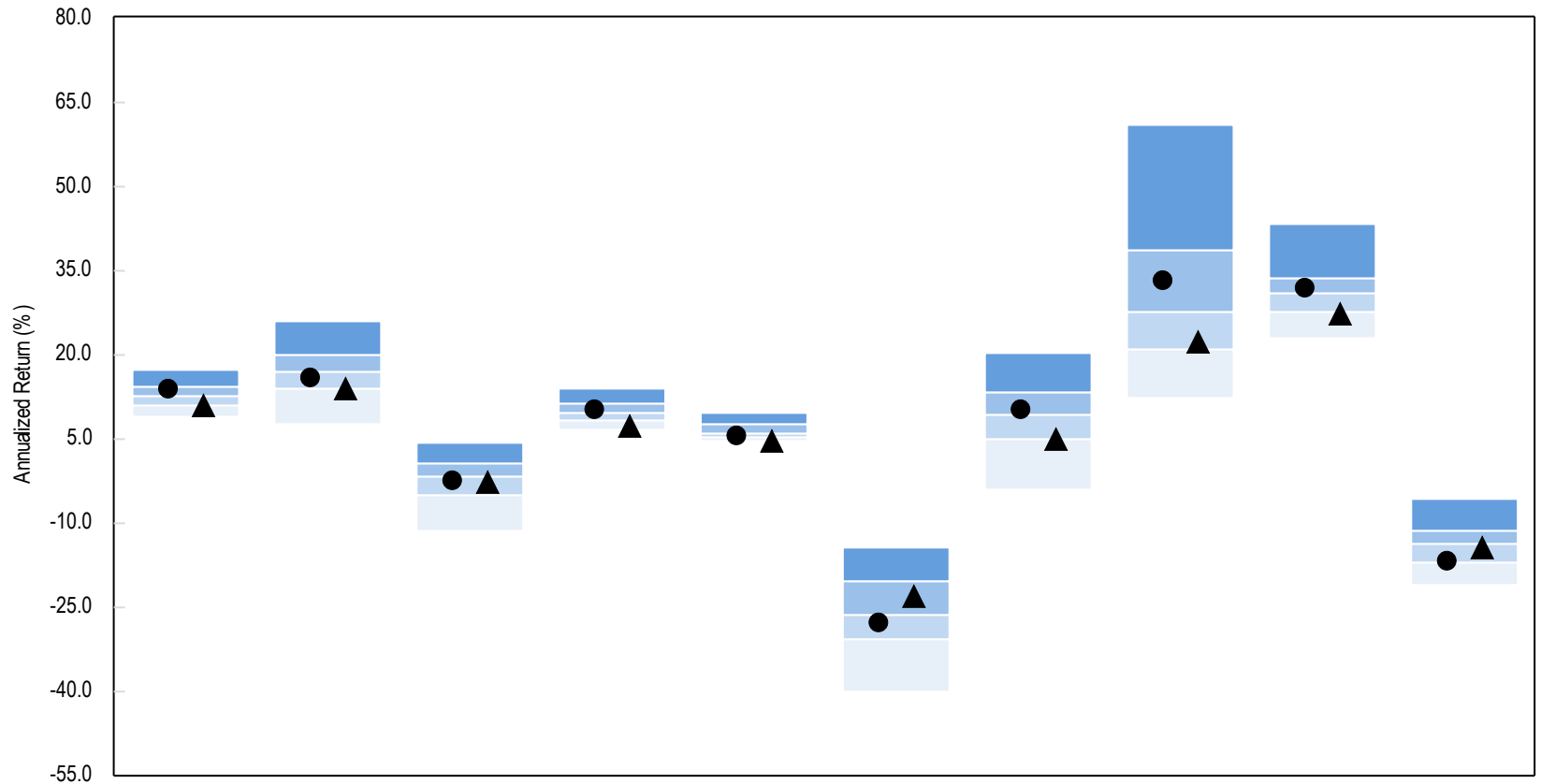
|                             | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|-----------------------------|----------------------|----------------------|----------------------------|
| Shin-Etsu Chemical Co Ltd   | 1.10                 | 44.21                | 0.49                       |
| ASML Holding NV             | 1.75                 | 27.54                | 0.48                       |
| Dassault Systemes SA        | 1.22                 | 30.76                | 0.38                       |
| Taiwan Semiconductor Man.   | 1.80                 | 20.23                | 0.36                       |
| Novo Nordisk A/S            | 2.14                 | 13.16                | 0.28                       |
| Sika AG, Baar               | 1.00                 | 27.62                | 0.27                       |
| Lululemon Athletica Inc     | 0.84                 | 32.59                | 0.27                       |
| Mediatek Incorporation      | 0.60                 | 45.25                | 0.27                       |
| Ryanair Holdings PLC        | 0.72                 | 37.19                | 0.27                       |
| London Stock Exchange Group | 1.44                 | 17.64                | 0.25                       |
| % of Portfolio              | 12.61                |                      | 3.33                       |

Top Detractors

|  | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|--|----------------------|----------------------|----------------------------|
| Rentokil Initial PLC                   | 1.16                 | -24.55               | -0.29                      |
| DSV A/S                                | 1.53                 | -6.20                | -0.09                      |
| Genmab A/S                             | 0.76                 | -10.32               | -0.08                      |
| INMODE LTD                             | 0.22                 | -26.99               | -0.06                      |
| LONZA GROUP AG                         | 0.60                 | -9.67                | -0.06                      |
| Contemporary Amperex Technology Co Ltd | 0.23                 | -17.19               | -0.04                      |
| SIG Group AG                           | 0.49                 | -7.10                | -0.03                      |
| Tencent Holdings LTD                   | 0.91                 | -3.83                | -0.03                      |
| Diageo PLC                             | 0.98                 | -1.68                | -0.02                      |
| Stevanato Group S p A                  | 0.15                 | -8.18                | -0.01                      |
| % of Portfolio                         | 7.03                 |                      | -0.71                      |

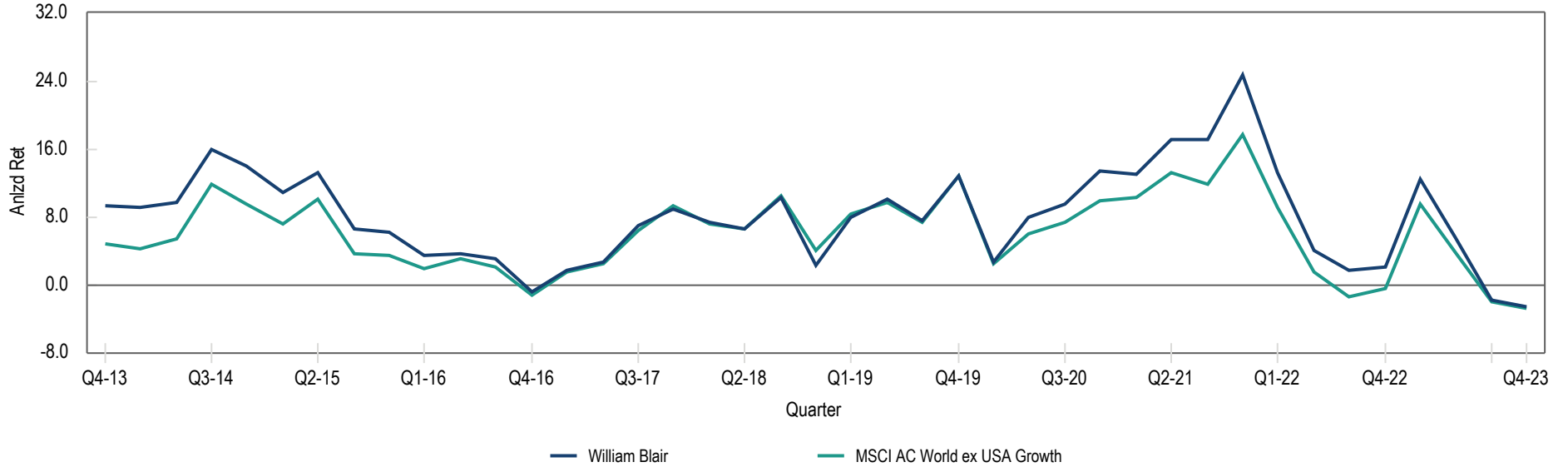
International equity growth portfolio of non-US companies with high growth rates constructed from the security level. Primary personnel include Simon Fennell and Kenneth McAtamney.

William Blair vs. eV ACWI ex-US Growth Equity Gross Universe

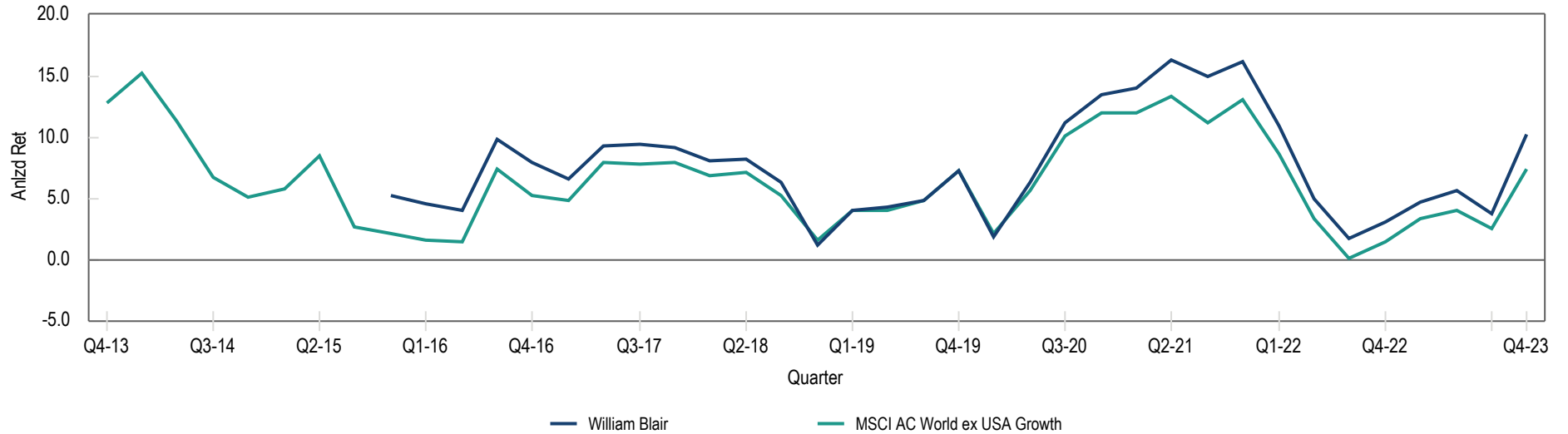


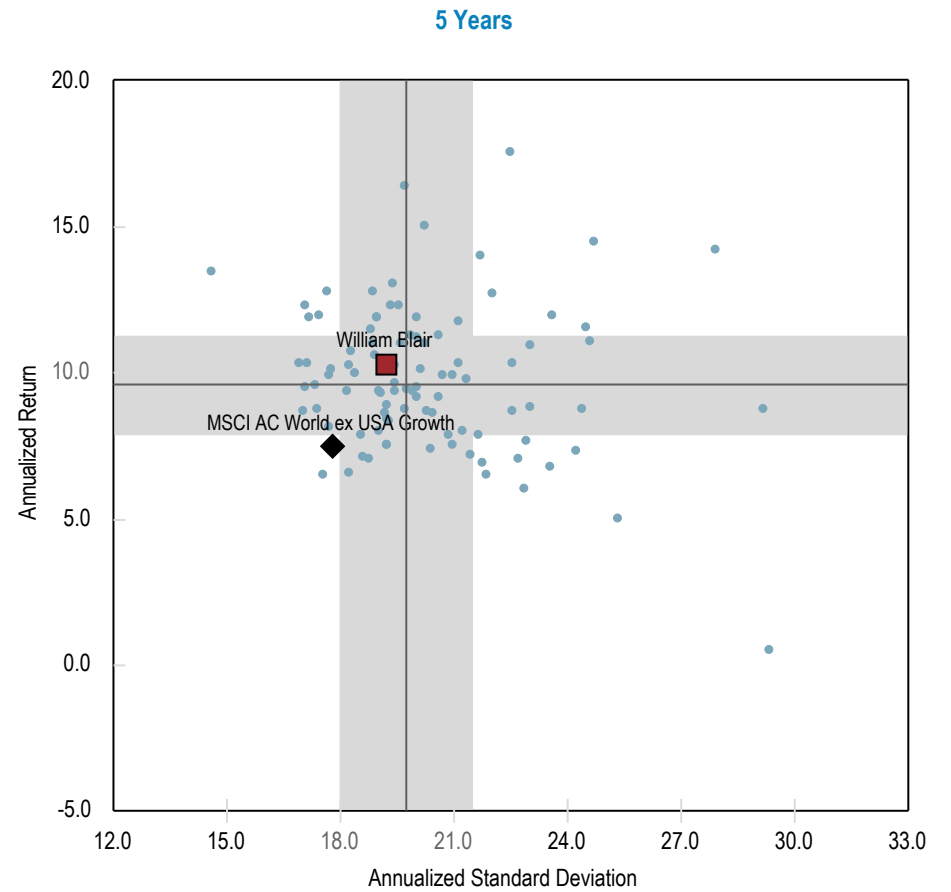
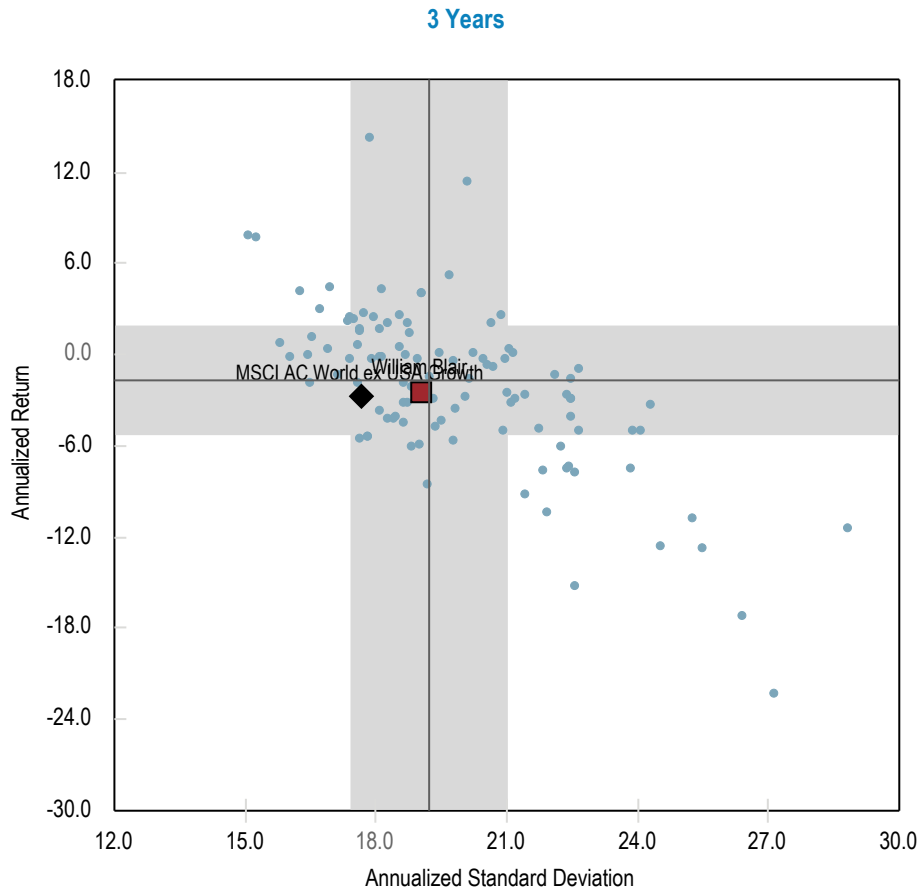
|                               | Quarter    | 1 Year     | 3 Years    | 5 Years    | 10 Years  | 2022        | 2021       | 2020       | 2019       | 2018        |
|-------------------------------|------------|------------|------------|------------|-----------|-------------|------------|------------|------------|-------------|
| ● William Blair               | 13.98 (32) | 16.15 (59) | -2.49 (56) | 10.28 (41) | 5.68 (65) | -27.75 (59) | 10.48 (43) | 33.25 (36) | 32.01 (37) | -16.78 (73) |
| ▲ MSCI AC World ex USA Growth | 11.12 (74) | 14.03 (76) | -2.67 (58) | 7.49 (86)  | 4.55 (98) | -23.05 (34) | 5.09 (75)  | 22.20 (72) | 27.34 (78) | -14.43 (55) |
| 5th Percentile                | 17.30      | 26.07      | 4.43       | 14.12      | 9.51      | -14.20      | 20.37      | 60.94      | 43.36      | -5.65       |
| 1st Quartile                  | 14.46      | 20.11      | 0.76       | 11.34      | 7.73      | -20.37      | 13.39      | 38.51      | 33.62      | -11.37      |
| Median                        | 12.53      | 17.03      | -1.67      | 9.59       | 6.16      | -26.35      | 9.35       | 27.77      | 30.93      | -13.53      |
| 3rd Quartile                  | 11.11      | 14.08      | -4.84      | 8.32       | 5.42      | -30.74      | 4.97       | 21.11      | 27.77      | -16.85      |
| 95th Percentile               | 8.90       | 7.76       | -11.23     | 6.59       | 4.67      | -39.95      | -4.05      | 12.25      | 22.92      | -20.99      |
| Population                    | 108        | 108        | 106        | 96         | 70        | 112         | 114        | 110        | 108        | 102         |

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)





|                                    | 3 Years          |                              |              |
|------------------------------------|------------------|------------------------------|--------------|
|                                    | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| William Blair                      | -2.5             | 19.0                         | -0.1         |
| MSCI AC World ex USA Growth (Net)  | -2.7             | 17.6                         | -0.2         |
| eV ACWI ex-US Growth Equity Median | -1.7             | 19.2                         | -0.1         |
| Population                         | 106              | 106                          | 106          |

|                                    | 5 Years          |                              |              |
|------------------------------------|------------------|------------------------------|--------------|
|                                    | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| William Blair                      | 10.3             | 19.2                         | 0.5          |
| MSCI AC World ex USA Growth (Net)  | 7.5              | 17.8                         | 0.4          |
| eV ACWI ex-US Growth Equity Median | 9.6              | 19.7                         | 0.5          |
| Population                         | 96               | 96                           | 96           |

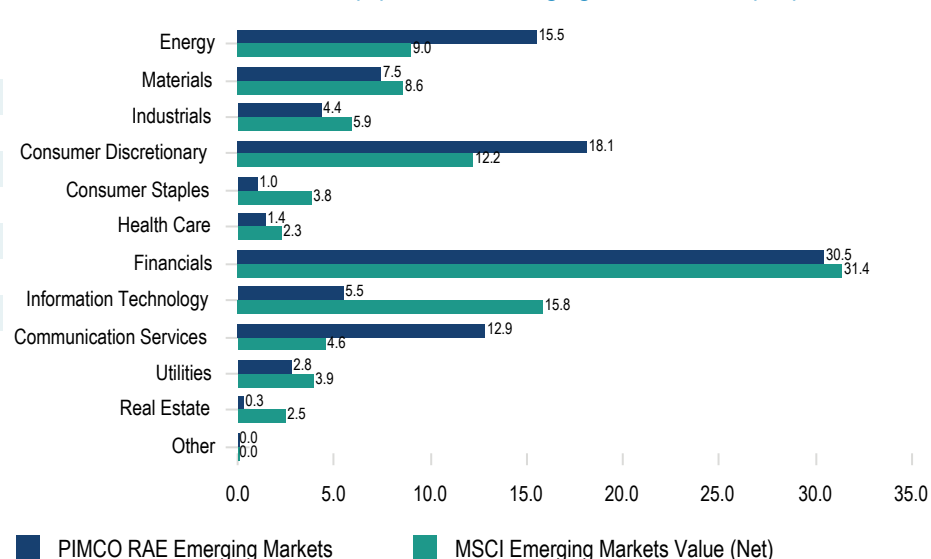
# PIMCO RAE Emerging Markets Manager Portfolio Overview

# Contra Costa County Employees' Retirement Association Period Ending: December 31, 2023

## Characteristics

|                         | Portfolio | Benchmark |
|-------------------------|-----------|-----------|
| Number of Stocks        | 346       | 843       |
| Wtd. Avg. Mkt. Cap \$M  | 26,398.17 | 65,473.50 |
| Median Mkt. Cap \$M     | 4,323.42  | 6,355.67  |
| Price/Earnings ratio    | 7.06      | 9.65      |
| Price/Book ratio        | 2.03      | 1.87      |
| Return on Equity (%)    | 3.94      | 3.42      |
| Current Yield (%)       | 4.81      | 4.13      |
| Beta (5 Years, Monthly) | 1.07      | 1.00      |

## Sector Allocation (%) vs. MSCI Emerging Markets Value (Net)



## Largest Holdings

|                                     | End Weight (%) | Quarterly Return (%) |
|-------------------------------------|----------------|----------------------|
| Vipshop Holdings Limited            | 15.96          | 10.93                |
| Petroleo Brasileiro S.A.- Petrobras | 6.43           | 15.01                |
| Netease Inc                         | 5.83           | -6.58                |
| Cemex SAB de CV                     | 5.30           | 19.23                |
| China Construction Bank Corp        | 4.57           | 5.52                 |
| Tencent Music Entertainment Group   | 3.97           | 41.22                |
| Bank of China Ltd                   | 3.08           | 9.08                 |
| China Petroleum & Chemical          | 2.98           | -4.15                |
| Petrochina Co Ltd                   | 2.77           | -12.28               |
| Industrial & Comm. Bank of China    | 2.57           | 1.63                 |

## Top Contributors

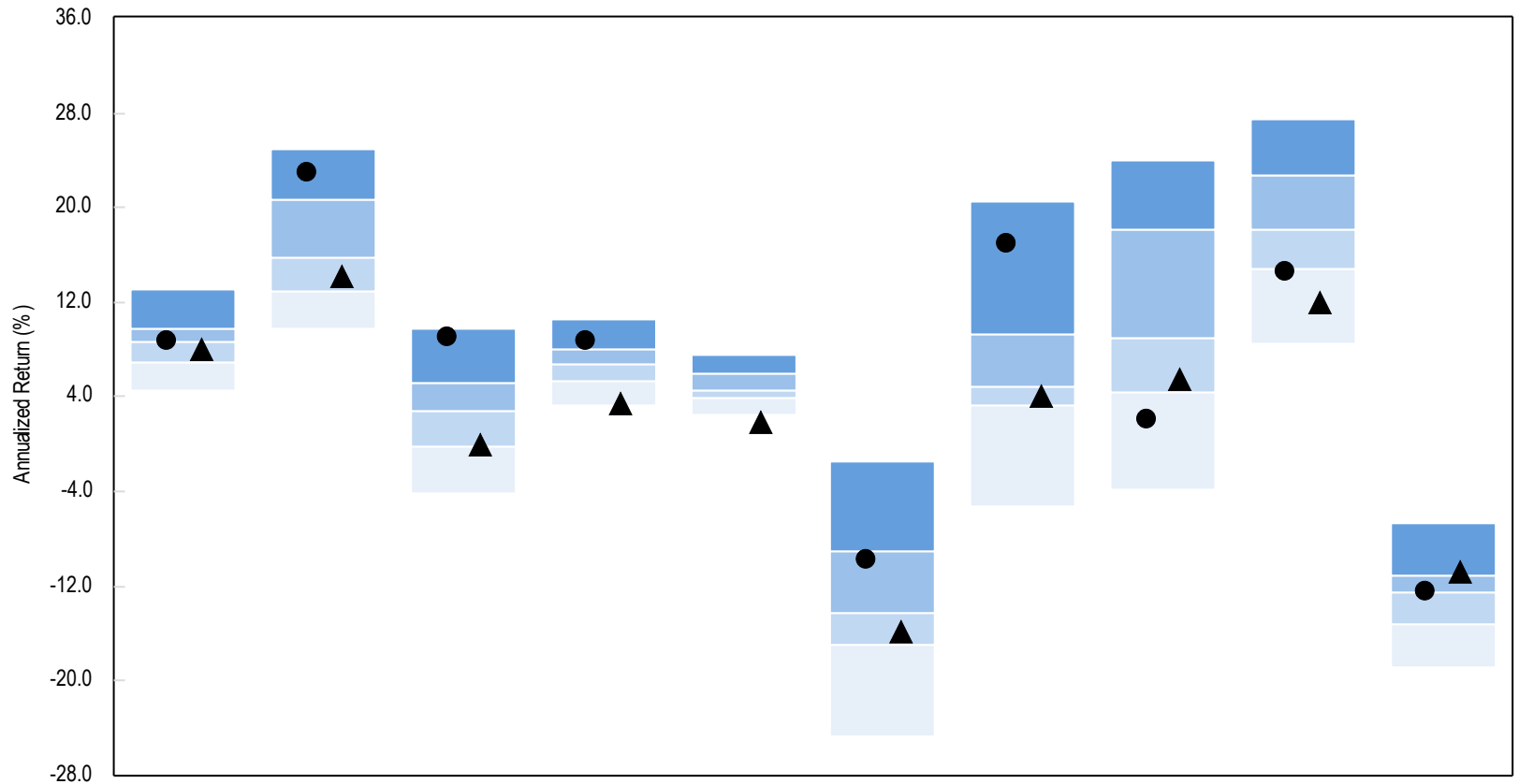
|                              | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|------------------------------|----------------------|----------------------|----------------------------|
| Lenovo Group Ltd             | 1.17                 | 36.83                | 0.43                       |
| Power Finance Corp Ltd       | 0.80                 | 53.74                | 0.43                       |
| Indian Oil Corp Ltd          | 0.79                 | 49.74                | 0.39                       |
| Cielo SA                     | 0.94                 | 40.26                | 0.38                       |
| REC Ltd                      | 0.69                 | 44.86                | 0.31                       |
| Compal Electronics Inc       | 0.83                 | 36.53                | 0.30                       |
| Bharat Heavy Electricals Ltd | 0.62                 | 47.44                | 0.29                       |
| Cemex SAB de CV              | 1.53                 | 18.44                | 0.28                       |
| Vedanta Ltd                  | 1.20                 | 20.99                | 0.25                       |
| National Aluminium Co Ltd    | 0.66                 | 36.95                | 0.24                       |
| % of Portfolio               | 9.23                 |                      | 3.32                       |

## Top Detractors

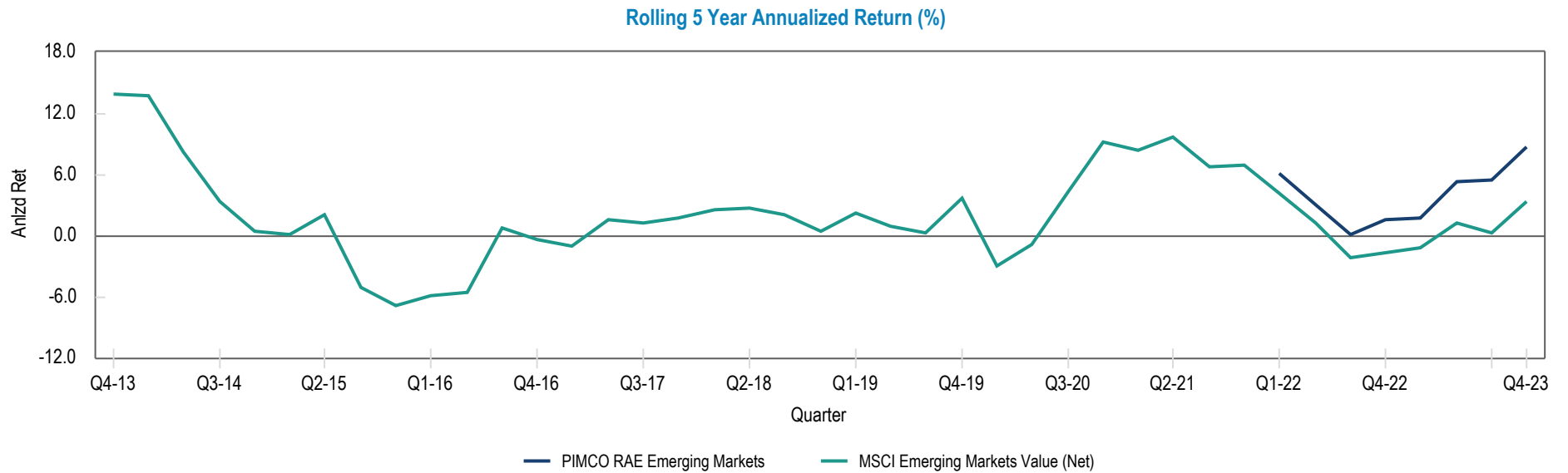
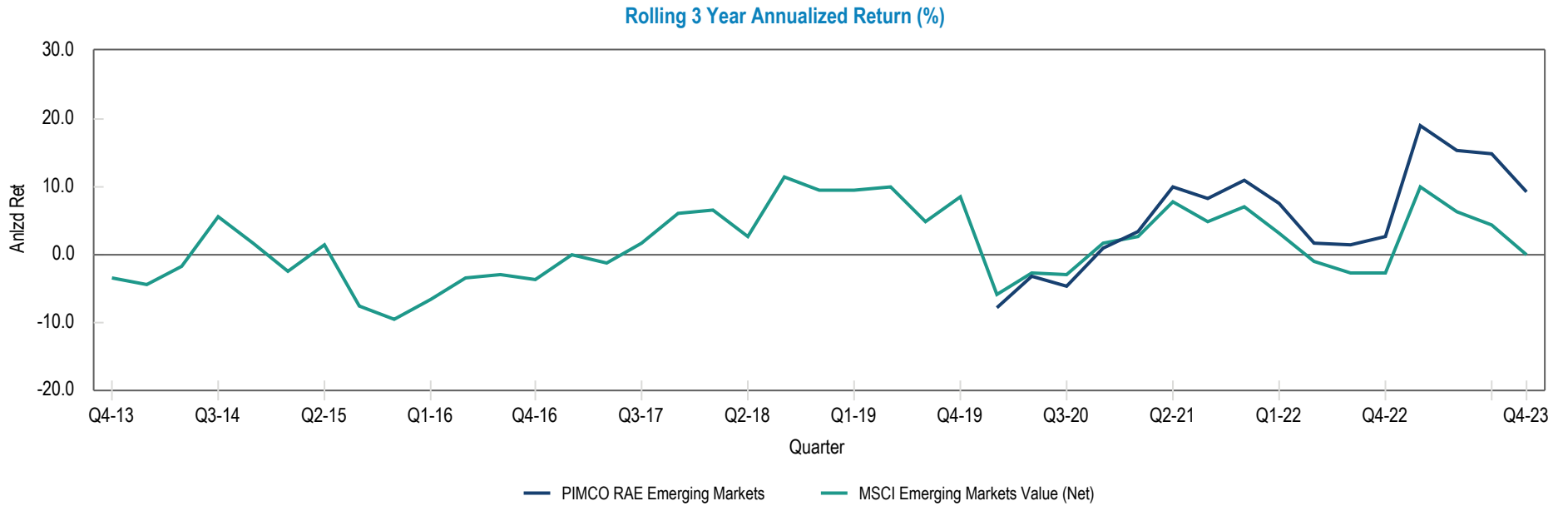
|                                 | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|---------------------------------|----------------------|----------------------|----------------------------|
| Ping An Insurance Group         | 1.71                 | -20.95               | -0.36                      |
| Petrochina Co Ltd               | 2.42                 | -12.28               | -0.30                      |
| IS Yatirim Menkul Degerler A.S. | 0.69                 | -26.91               | -0.18                      |
| Turkiye Is Bankasi AS           | 1.02                 | -15.76               | -0.16                      |
| China Petroleum & Chemical      | 2.92                 | -4.15                | -0.12                      |
| POSCO Holdings Inc              | 3.05                 | -2.18                | -0.07                      |
| Sinopharm Group Co              | 0.63                 | -9.64                | -0.06                      |
| PT Adaro Energy Indonesia Tbk   | 0.35                 | -16.18               | -0.06                      |
| Posco International Corp        | 0.67                 | -8.43                | -0.06                      |
| Haci Omer Sabanci               | 0.92                 | -6.01                | -0.06                      |
| % of Portfolio                  | 14.38                |                      | -1.42                      |

The PIMCO RAE Emerging Markets seeks to invest 80% of its assets in investments that are economically tied to emerging market countries. The portfolio is sub-advised by Research Affiliates, LLC.

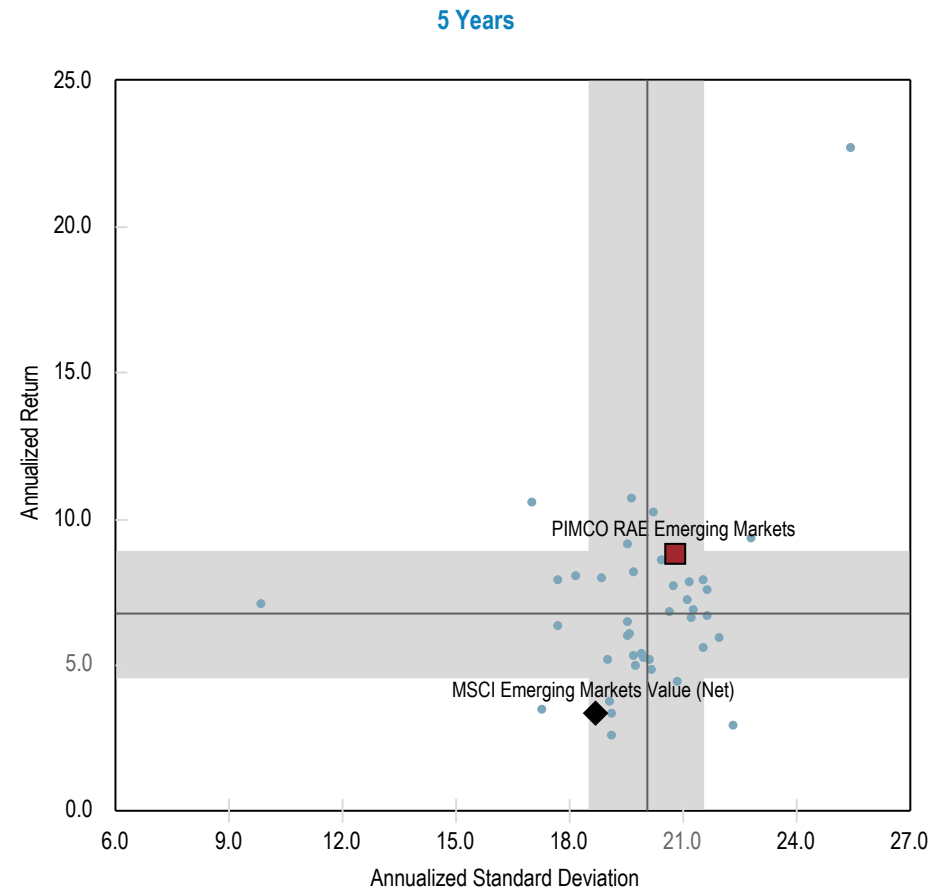
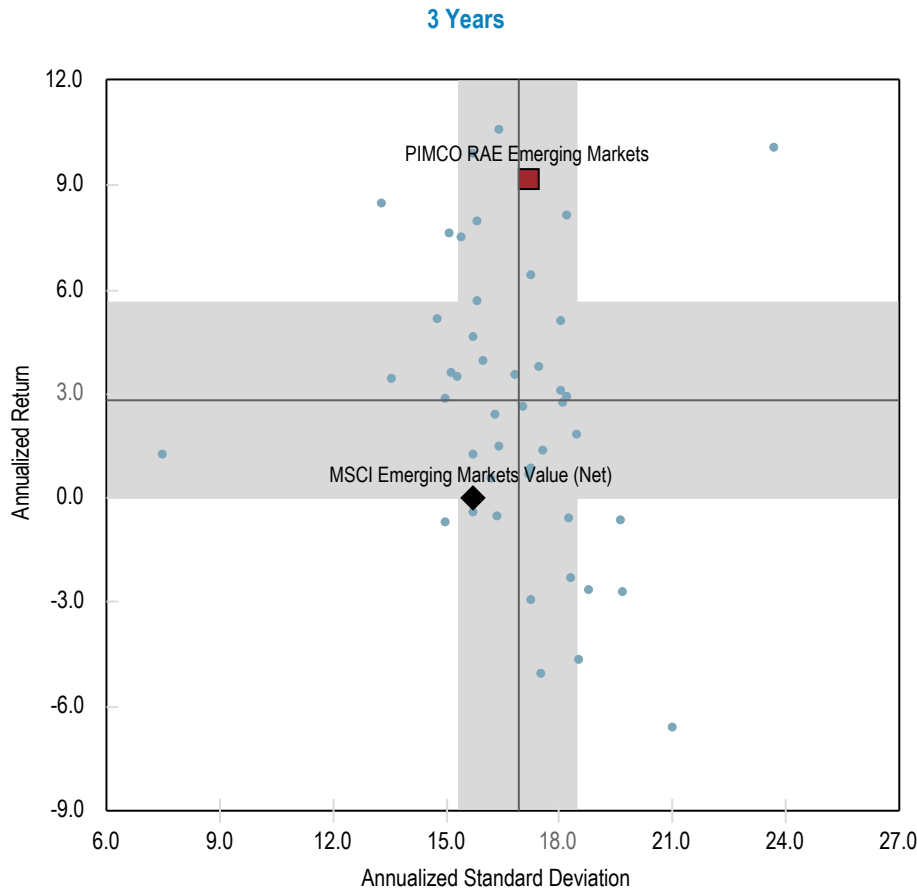
PIMCO RAE Emerging Markets vs. eV Emg Mkts All Cap Value Equity Gross Universe



|                                  | Quarter   | 1 Year     | 3 Years    | 5 Years   | 10 Years   | 2022        | 2021      | 2020      | 2019       | 2018        |
|----------------------------------|-----------|------------|------------|-----------|------------|-------------|-----------|-----------|------------|-------------|
| ● PIMCO RAE Emerging Markets     | 8.87 (41) | 23.09 (12) | 9.19 (7)   | 8.79 (17) | -          | -9.66 (32)  | 17.08 (8) | 2.13 (85) | 14.63 (77) | -12.30 (48) |
| ▲ MSCI Emerging Markets Value NR | 8.05 (60) | 14.21 (67) | -0.01 (75) | 3.38 (95) | 1.94 (100) | -15.83 (61) | 4.00 (66) | 5.48 (71) | 11.96 (93) | -10.74 (23) |
| 5th Percentile                   | 13.04     | 24.89      | 9.76       | 10.59     | 7.54       | -1.41       | 20.57     | 23.96     | 27.43      | -6.62       |
| 1st Quartile                     | 9.82      | 20.67      | 5.16       | 8.03      | 5.91       | -9.00       | 9.32      | 18.22     | 22.73      | -11.12      |
| Median                           | 8.59      | 15.83      | 2.81       | 6.74      | 4.59       | -14.31      | 4.83      | 8.93      | 18.21      | -12.58      |
| 3rd Quartile                     | 6.94      | 12.96      | -0.13      | 5.29      | 4.00       | -17.01      | 3.23      | 4.43      | 14.85      | -15.24      |
| 95th Percentile                  | 4.52      | 9.78       | -4.19      | 3.34      | 2.57       | -24.65      | -5.31     | -3.79     | 8.53       | -18.81      |
| Population                       | 49        | 49         | 46         | 42        | 29         | 55          | 54        | 57        | 58         | 56          |







**3 Years**

|   | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
|---|------------------|------------------------------|--------------|
| PIMCO RAE Emerging Markets              | 9.2              | 17.2                         | 0.5          |
| MSCI Emerging Markets Value (Net)       | 0.0              | 15.7                         | -0.1         |
| eV Emg Mkts All Cap Value Equity Median | 2.8              | 16.9                         | 0.1          |
| Population                              | 46               | 46                           | 46           |

**5 Years**

|   | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
|---|------------------|------------------------------|--------------|
| PIMCO RAE Emerging Markets              | 8.8              | 20.8                         | 0.4          |
| MSCI Emerging Markets Value (Net)       | 3.4              | 18.7                         | 0.2          |
| eV Emg Mkts All Cap Value Equity Median | 6.7              | 20.0                         | 0.3          |
| Population                              | 42               | 42                           | 42           |

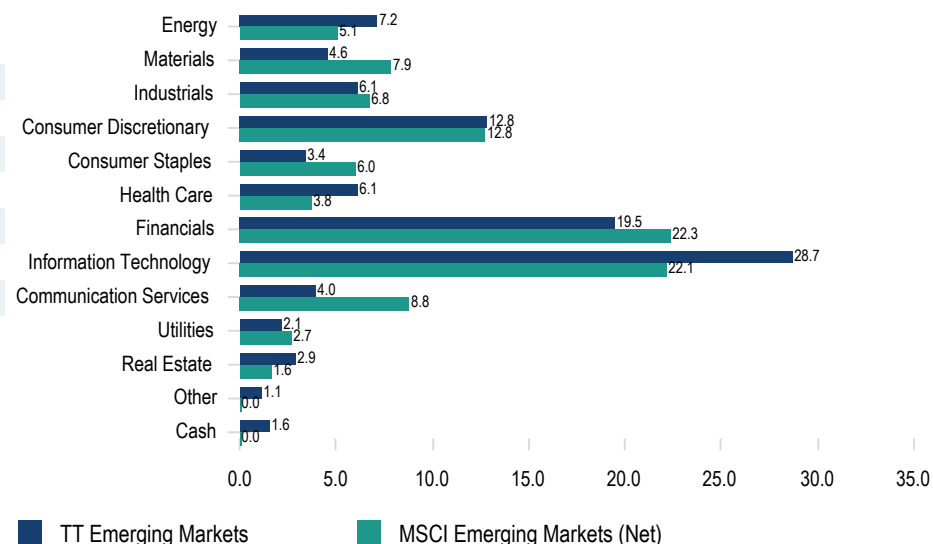
# TT Emerging Markets Manager Portfolio Overview

# Contra Costa County Employees' Retirement Association Period Ending: December 31, 2023

## Characteristics

|                         | Portfolio  | Benchmark  |
|-------------------------|------------|------------|
| Number of Stocks        | 61         | 1,441      |
| Wtd. Avg. Mkt. Cap \$M  | 115,523.42 | 103,753.63 |
| Median Mkt. Cap \$M     | 16,138.05  | 6,968.21   |
| Price/Earnings ratio    | 13.61      | 12.92      |
| Price/Book ratio        | 2.51       | 2.50       |
| Return on Equity (%)    | 4.36       | 4.16       |
| Current Yield (%)       | 1.94       | 2.79       |
| Beta (5 Years, Monthly) | 1.15       | 1.00       |

## Sector Allocation (%) vs. MSCI Emerging Markets (Net)



## Largest Holdings

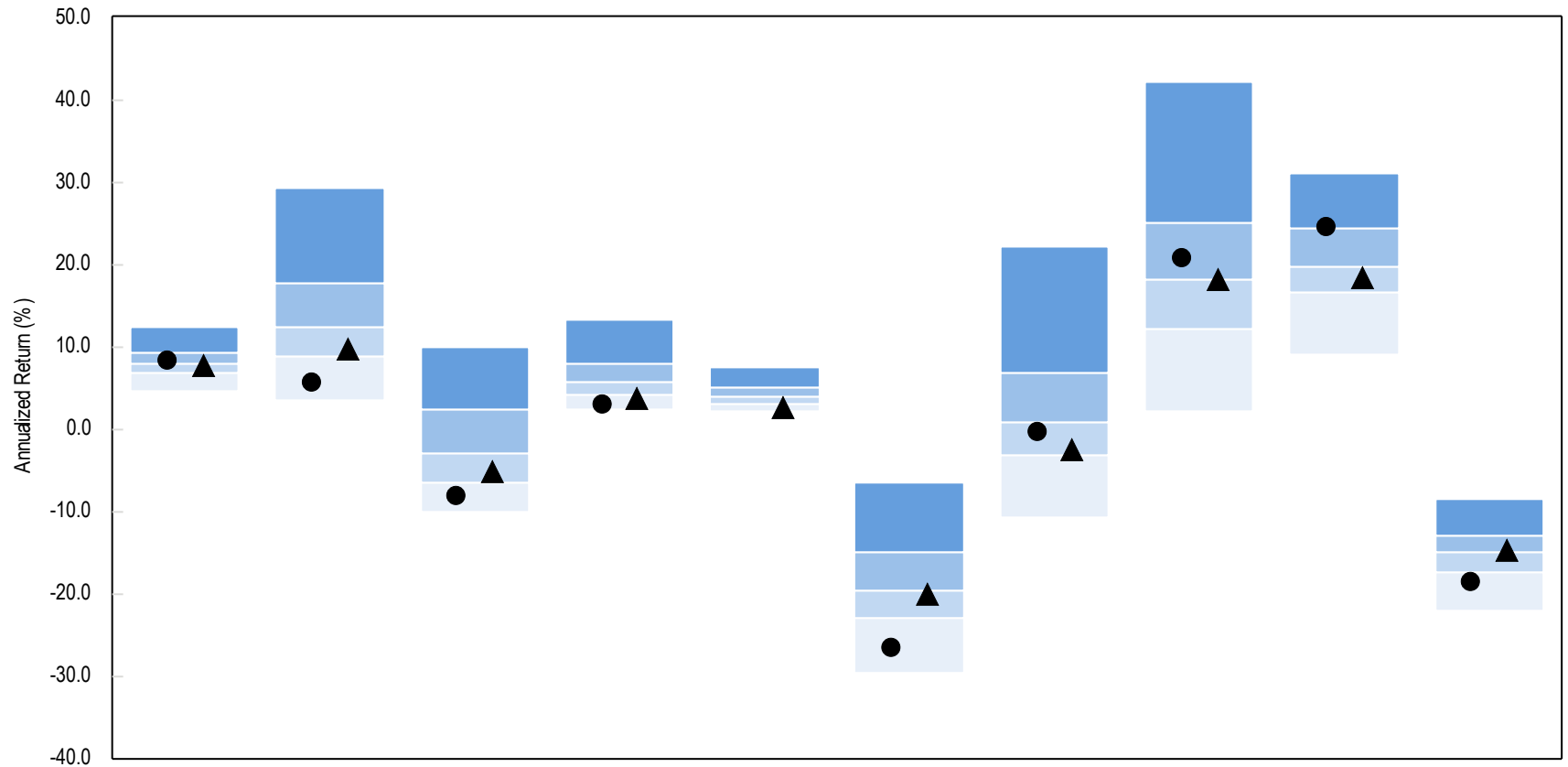
## Top Contributors

## Top Detractors

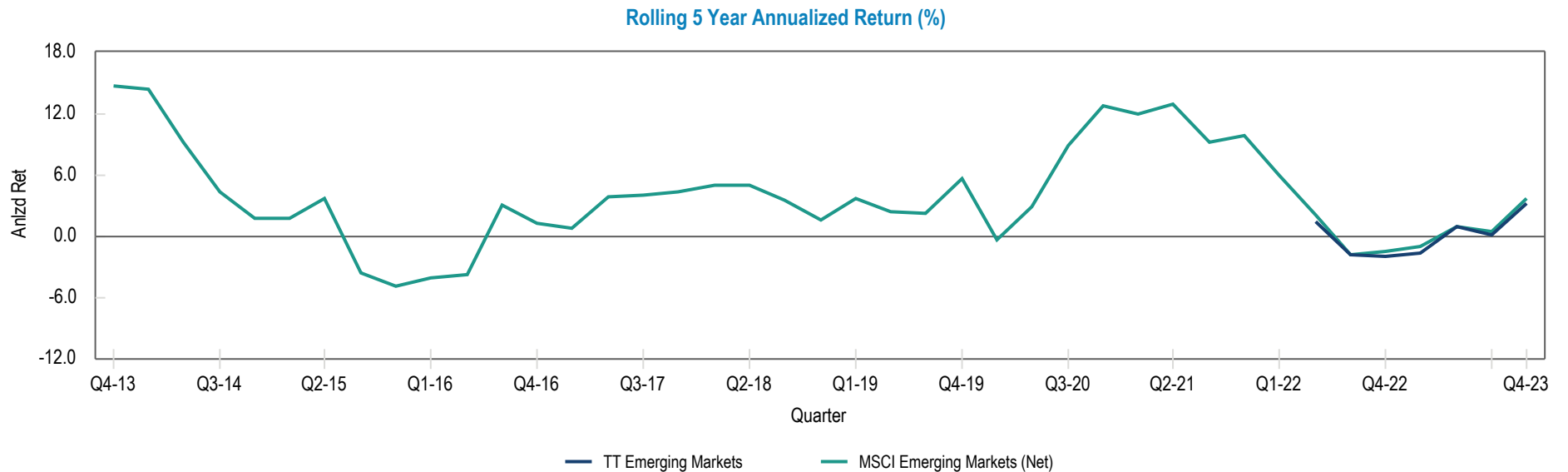
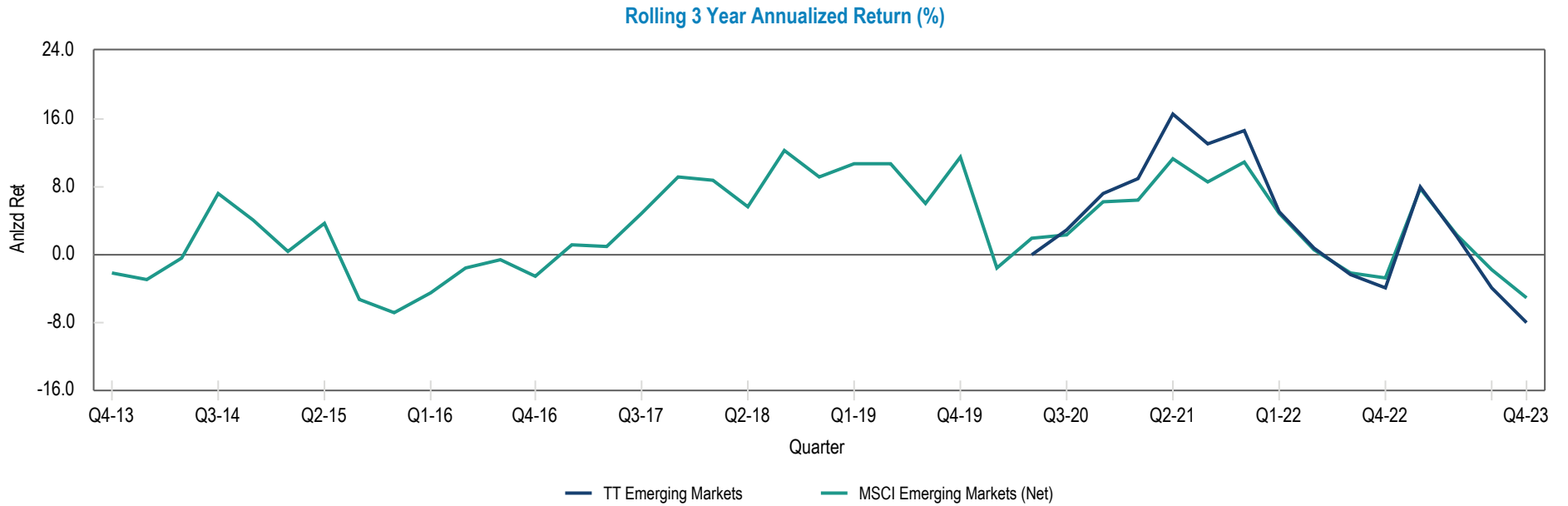
|                            | End Weight (%) | Quarterly Return (%) |                            | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |                                       | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|----------------------------|----------------|----------------------|----------------------------|----------------------|----------------------|----------------------------|---------------------------------------|----------------------|----------------------|----------------------------|
| Taiwan Semiconductor Man.  | 9.44           | 19.87                | Taiwan Semiconductor Man.  | 8.41                 | 19.87                | 1.67                       | Ypf Sociedad Anonima                  | 3.24                 | -27.91               | -0.90                      |
| Axis Bank Ltd              | 4.28           | 6.11                 | Grupo Financiero Banorte   | 4.50                 | 27.54                | 1.24                       | Alibaba Group Holding Ltd             | 3.24                 | -10.23               | -0.33                      |
| Samsung Electronics Co Ltd | 4.05           | 19.77                | Nova Ljubljanska Banka d.d | 3.67                 | 23.79                | 0.87                       | ANJOY FOODS GROUP CO LTD              | 1.61                 | -12.57               | -0.20                      |
| Samsung Electronics Co Ltd | 3.75           | 20.25                | Samsung Electronics Co Ltd | 3.16                 | 19.77                | 0.63                       | Byd Company Ltd                       | 1.32                 | -11.14               | -0.15                      |
| Grupo Financiero Banorte   | 3.63           | 27.54                | Atacadao SA                | 1.33                 | 44.14                | 0.59                       | Allkem Limited                        | 1.16                 | -11.63               | -0.13                      |
| Icici Bank Ltd             | 2.92           | 4.48                 | MercadoLibre Inc           | 2.10                 | 23.95                | 0.50                       | Baidu Inc                             | 1.00                 | -12.71               | -0.13                      |
| Emaar Properties           | 2.87           | -1.48                | Kia Corporation            | 1.73                 | 28.72                | 0.50                       | Contemporary Ampere Technology Co Ltd | 0.66                 | -17.19               | -0.11                      |
| MercadoLibre Inc           | 2.79           | 23.95                | Banco Bradesco Sa Brad     | 1.60                 | 28.54                | 0.46                       | Ping An Insurance Group               | 0.48                 | -20.95               | -0.10                      |
| Nova Ljubljanska Banka d.d | 2.70           | 23.79                | Samsung Electronics Co Ltd | 2.00                 | 20.25                | 0.41                       | Delhivery Limited                     | 1.65                 | -5.88                | -0.10                      |
| Tencent Holdings LTD       | 2.57           | -3.83                | Varun Beverages Ltd        | 1.27                 | 30.52                | 0.39                       | Koc Holding AS                        | 0.72                 | -10.27               | -0.07                      |
|                            |                |                      | % of Portfolio             | 29.77                |                      | 7.24                       | % of Portfolio                        | 15.08                |                      | -2.23                      |

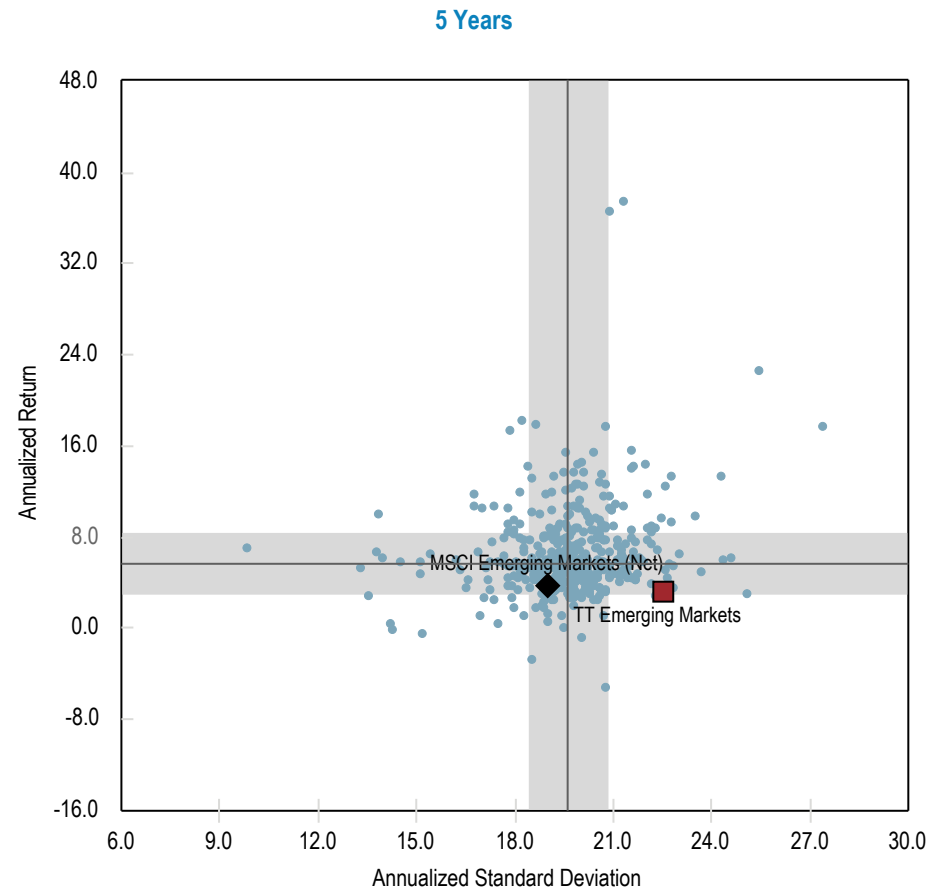
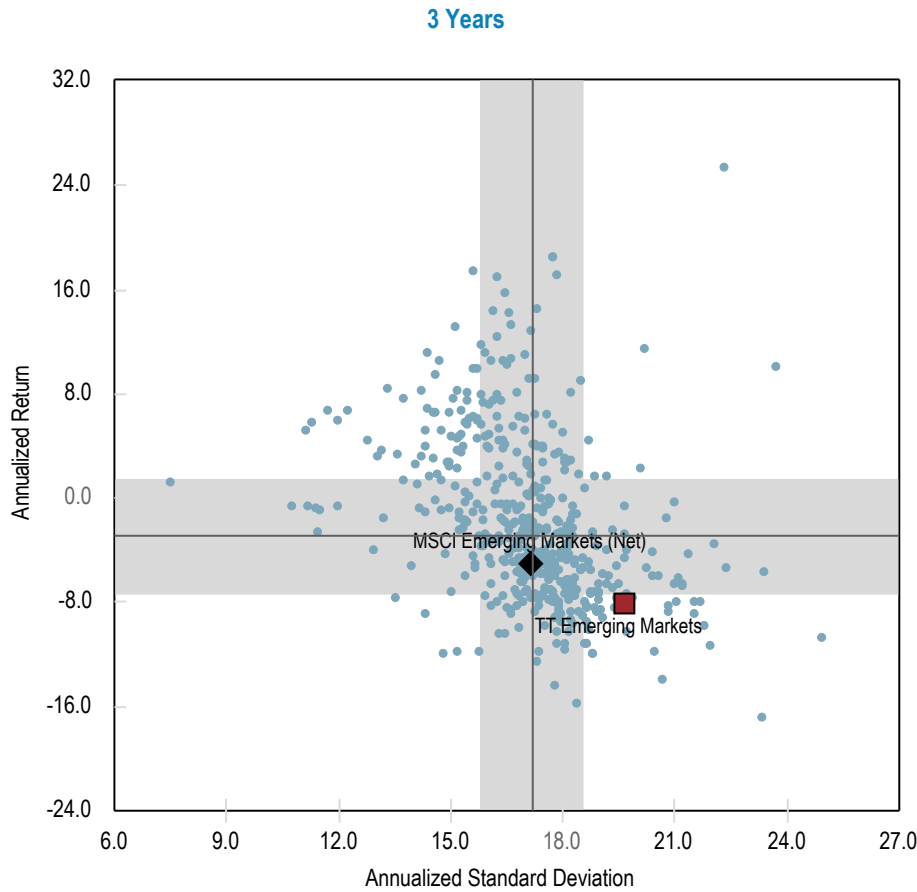
The Emerging Markets Unconstrained strategy aims to outperform its benchmark, MSCI Emerging Markets Index by 5% per annum over a three-year rolling period. It targets high returns and long term capital growth by investing in a focused portfolio of primarily equity and equity-related securities traded in the Emerging Markets.

TT Emerging Markets vs. eV Emg Mkts Equity Gross Universe



|                         | Quarter   | 1 Year    | 3 Years    | 5 Years   | 10 Years  | 2022        | 2021       | 2020       | 2019       | 2018        |
|-------------------------|-----------|-----------|------------|-----------|-----------|-------------|------------|------------|------------|-------------|
| ● TT Emerging Markets   | 8.55 (39) | 5.80 (91) | -8.05 (88) | 3.22 (90) | -         | -26.36 (90) | -0.23 (59) | 20.79 (39) | 24.77 (24) | -18.39 (82) |
| ▲ MSCI Emerging Markets | 7.86 (53) | 9.83 (66) | -5.08 (65) | 3.68 (83) | 2.66 (88) | -20.09 (56) | -2.54 (72) | 18.31 (51) | 18.42 (63) | -14.57 (45) |
| 5th Percentile          | 12.50     | 29.28     | 10.11      | 13.33     | 7.61      | -6.36       | 22.26      | 42.28      | 31.16      | -8.51       |
| 1st Quartile            | 9.30      | 17.72     | 2.39       | 7.93      | 5.12      | -14.91      | 6.80       | 25.14      | 24.36      | -12.79      |
| Median                  | 7.93      | 12.48     | -2.94      | 5.67      | 4.09      | -19.51      | 1.00       | 18.33      | 19.73      | -14.89      |
| 3rd Quartile            | 6.96      | 8.85      | -6.35      | 4.29      | 3.20      | -22.96      | -3.03      | 12.30      | 16.61      | -17.34      |
| 95th Percentile         | 4.73      | 3.64      | -10.09     | 2.55      | 2.13      | -29.65      | -10.71     | 2.12       | 9.14       | -22.00      |
| Population              | 517       | 517       | 482        | 437       | 311       | 567         | 580        | 579        | 601        | 589         |





|                             | 3 Years          |                              |              |
|-----------------------------|------------------|------------------------------|--------------|
|                             | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| TT Emerging Markets         | -8.1             | 19.6                         | -0.4         |
| MSCI Emerging Markets (Net) | -5.1             | 17.1                         | -0.3         |
| eV Emg Mkts Equity Median   | -2.9             | 17.2                         | -0.2         |
| Population                  | 482              | 482                          | 482          |

|                             | 5 Years          |                              |              |
|-----------------------------|------------------|------------------------------|--------------|
|                             | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| TT Emerging Markets         | 3.2              | 22.5                         | 0.2          |
| MSCI Emerging Markets (Net) | 3.7              | 19.0                         | 0.2          |
| eV Emg Mkts Equity Median   | 5.7              | 19.6                         | 0.3          |
| Population                  | 437              | 437                          | 437          |

# Global Equity Managers

---

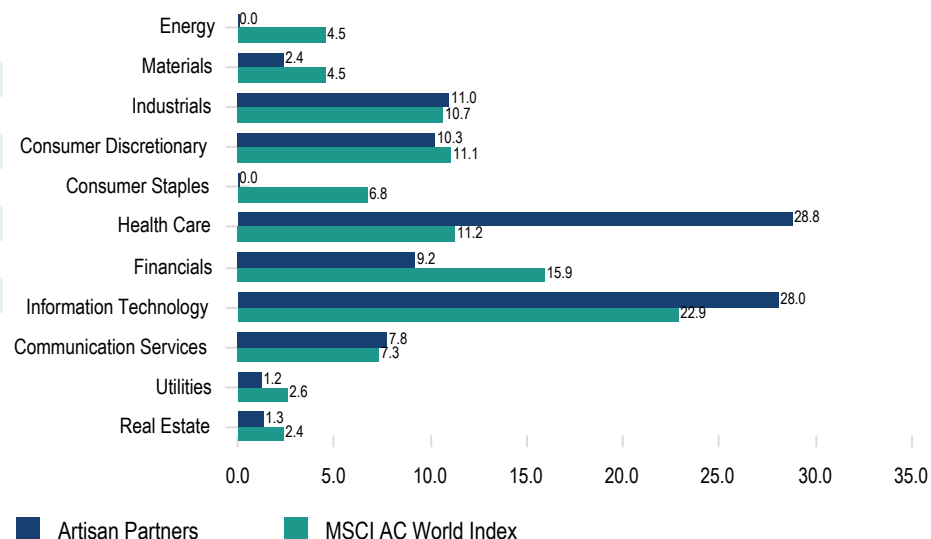
# Artisan Partners Manager Portfolio Overview

# Contra Costa County Employees' Retirement Association Period Ending: December 31, 2023

## Characteristics

|                         | Portfolio  | Benchmark  |
|-------------------------|------------|------------|
| Number of Stocks        | 43         | 2,921      |
| Wtd. Avg. Mkt. Cap \$M  | 273,514.40 | 462,723.22 |
| Median Mkt. Cap \$M     | 73,932.31  | 12,992.44  |
| Price/Earnings ratio    | 32.09      | 18.93      |
| Price/Book ratio        | 5.36       | 3.55       |
| Return on Equity (%)    | 5.73       | 0.63       |
| Current Yield (%)       | 0.58       | 2.08       |
| Beta (5 Years, Monthly) | 0.99       | 1.00       |

## Sector Allocation (%) vs. MSCI AC World Index



## Largest Holdings

|                              | End Weight (%) | Quarterly Return (%) |
|------------------------------|----------------|----------------------|
| Advanced Micro Devices Inc   | 6.52           | 43.37                |
| Novo Nordisk A/S             | 5.30           | 13.16                |
| Boston Scientific Corp       | 4.79           | 9.49                 |
| Atlassian Corp               | 4.34           | 18.04                |
| Techtronic Industries Co Ltd | 3.95           | 22.80                |
| Intuit Inc.                  | 3.94           | 22.54                |
| Veeva Systems Inc            | 3.79           | -5.37                |
| Netflix Inc                  | 3.48           | 28.94                |
| London Stock Exchange Group  | 3.26           | 17.64                |
| Chipotle Mexican Grill Inc   | 3.13           | 24.85                |

## Top Contributors

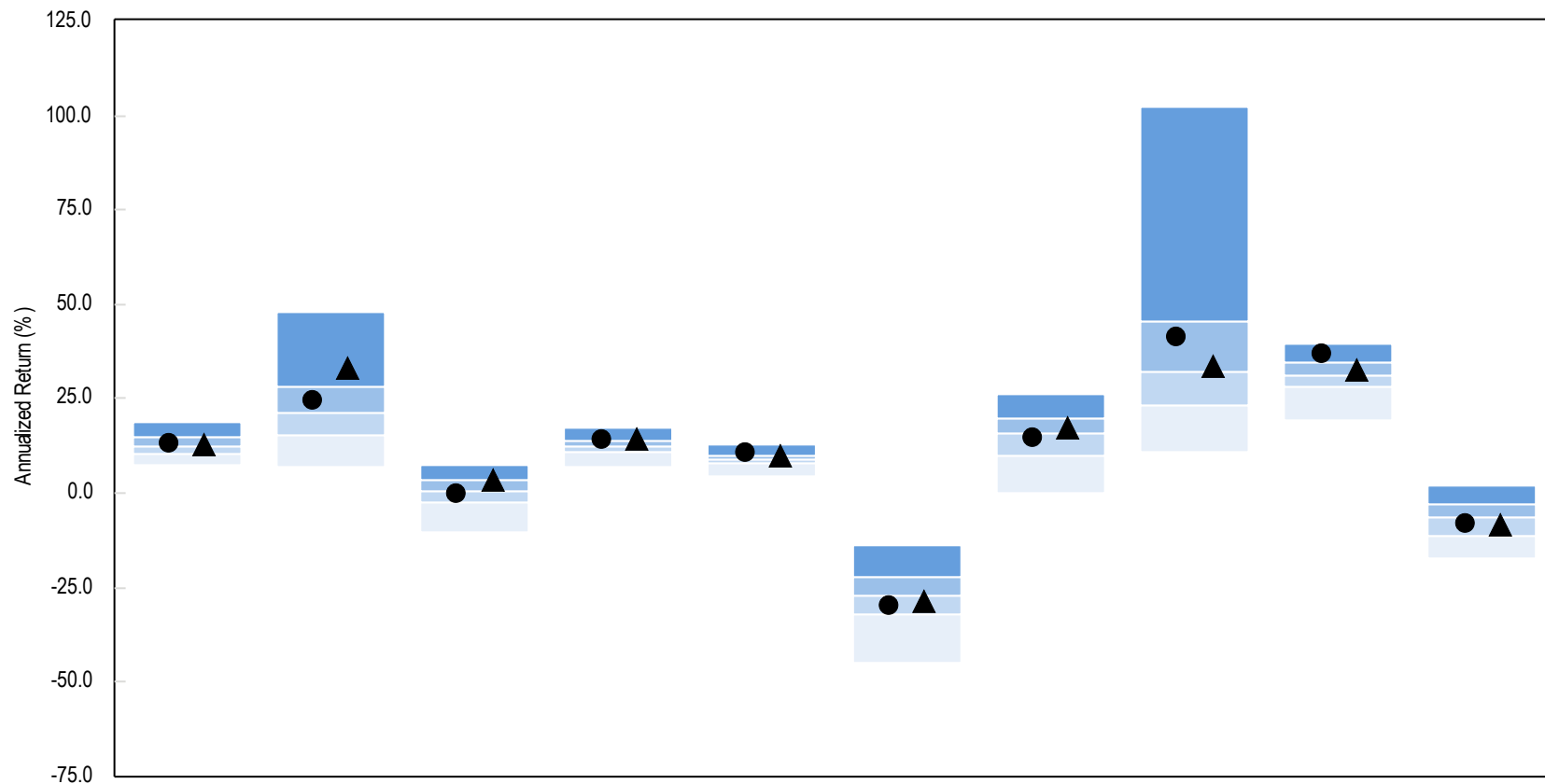
|                              | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|------------------------------|----------------------|----------------------|----------------------------|
| Advanced Micro Devices Inc   | 4.80                 | 43.37                | 2.08                       |
| Netflix Inc                  | 2.86                 | 28.94                | 0.83                       |
| Techtronic Industries Co Ltd | 3.52                 | 22.80                | 0.80                       |
| Intuit Inc.                  | 3.53                 | 22.54                | 0.80                       |
| Atlassian Corp               | 4.02                 | 18.04                | 0.73                       |
| Novo Nordisk A/S             | 5.13                 | 13.16                | 0.67                       |
| Vestas Wind Systems A/S      | 1.40                 | 47.57                | 0.67                       |
| Chipotle Mexican Grill Inc   | 2.65                 | 24.85                | 0.66                       |
| Hexagon AB                   | 1.61                 | 39.63                | 0.64                       |
| Lululemon Athletica Inc      | 1.82                 | 32.59                | 0.59                       |
| <b>% of Portfolio</b>        | <b>31.34</b>         |                      | <b>8.46</b>                |

## Top Detractors

|                                   | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|-----------------------------------|----------------------|----------------------|----------------------------|
| arGEN-X SE                        | 2.51                 | -22.62               | -0.57                      |
| ON Semiconductor Corp             | 3.67                 | -10.13               | -0.37                      |
| Veeva Systems Inc                 | 6.84                 | -5.37                | -0.37                      |
| LONZA GROUP AG                    | 3.32                 | -9.67                | -0.32                      |
| West Pharmaceutical Services Inc. | 0.98                 | -6.10                | -0.06                      |
| Tencent Holdings LTD              | 1.33                 | -3.83                | -0.05                      |
| Airbnb Inc                        | 1.82                 | -0.78                | -0.01                      |
| Astrazeneca PLC                   | 3.30                 | -0.28                | -0.01                      |
| CNH Industrial N.V.               | 1.19                 | 0.18                 | 0.00                       |
| Eaton Corporation plc             | 0.37                 | 13.36                | 0.05                       |
| <b>% of Portfolio</b>             | <b>25.33</b>         |                      | <b>-1.71</b>               |

Global equity portfolio of companies that is benchmark agnostic with accelerating profit cycles and a focus on capital allocation. Primary personnel include James Hamel, Craigh Cepukenas, and Matthew Kamm.

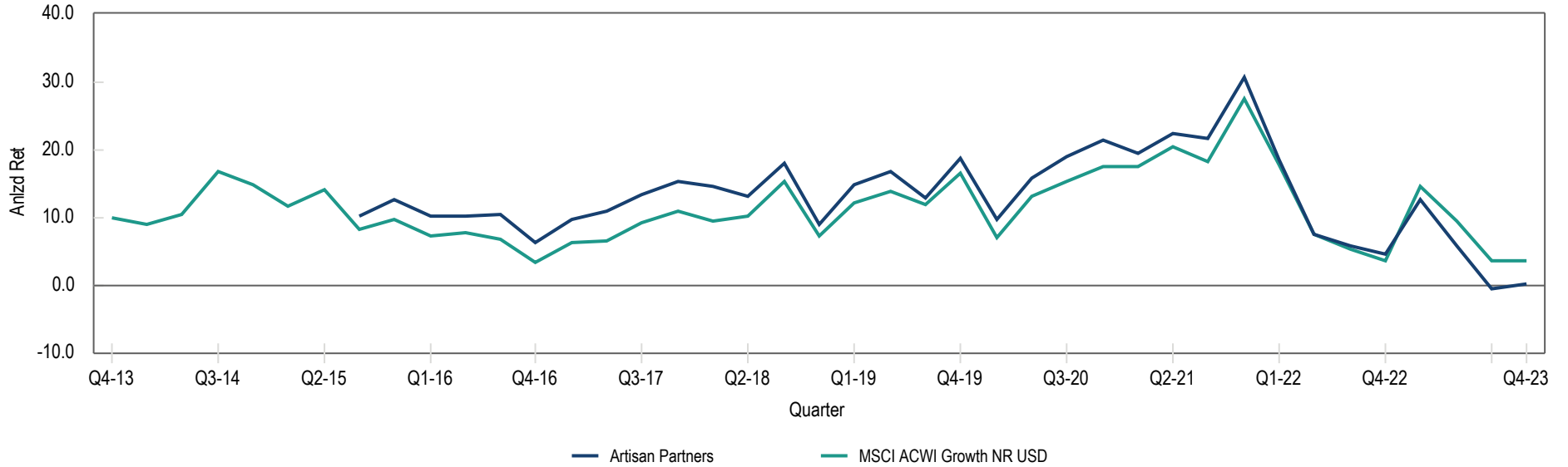
Artisan Partners vs. eV Global Growth Equity Gross Universe



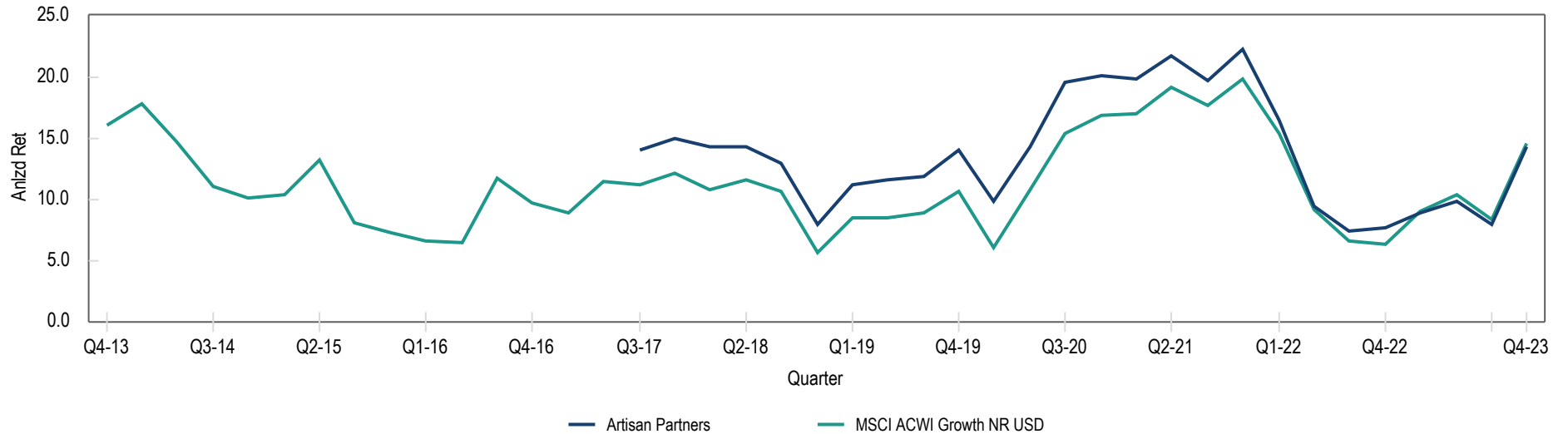
|                           | Quarter    | 1 Year     | 3 Years   | 5 Years    | 10 Years   | 2022        | 2021       | 2020       | 2019       | 2018       |
|---------------------------|------------|------------|-----------|------------|------------|-------------|------------|------------|------------|------------|
| ● Artisan Partners        | 13.23 (42) | 24.54 (37) | 0.27 (54) | 14.37 (22) | 11.12 (16) | -29.59 (60) | 14.99 (56) | 41.66 (33) | 37.00 (12) | -7.94 (60) |
| ▲ MSCI ACWI Growth NR USD | 12.74 (49) | 33.22 (17) | 3.66 (25) | 14.58 (20) | 10.06 (28) | -28.61 (56) | 17.10 (43) | 33.60 (49) | 32.72 (36) | -8.13 (61) |
| 5th Percentile            | 18.71      | 48.06      | 7.23      | 17.12      | 12.96      | -13.59      | 26.02      | 102.09     | 39.64      | 2.06       |
| 1st Quartile              | 14.67      | 28.39      | 3.55      | 14.11      | 10.14      | -22.02      | 19.73      | 45.25      | 34.66      | -2.90      |
| Median                    | 12.61      | 21.45      | 0.68      | 12.46      | 9.18       | -27.16      | 15.63      | 32.09      | 31.25      | -6.54      |
| 3rd Quartile              | 10.67      | 15.31      | -2.56     | 10.92      | 8.04       | -31.83      | 9.94       | 23.14      | 28.35      | -11.18     |
| 95th Percentile           | 7.23       | 6.84       | -10.27    | 7.00       | 4.64       | -44.96      | -0.04      | 11.16      | 19.49      | -17.07     |
| Population                | 268        | 265        | 244       | 208        | 121        | 283         | 271        | 258        | 240        | 219        |

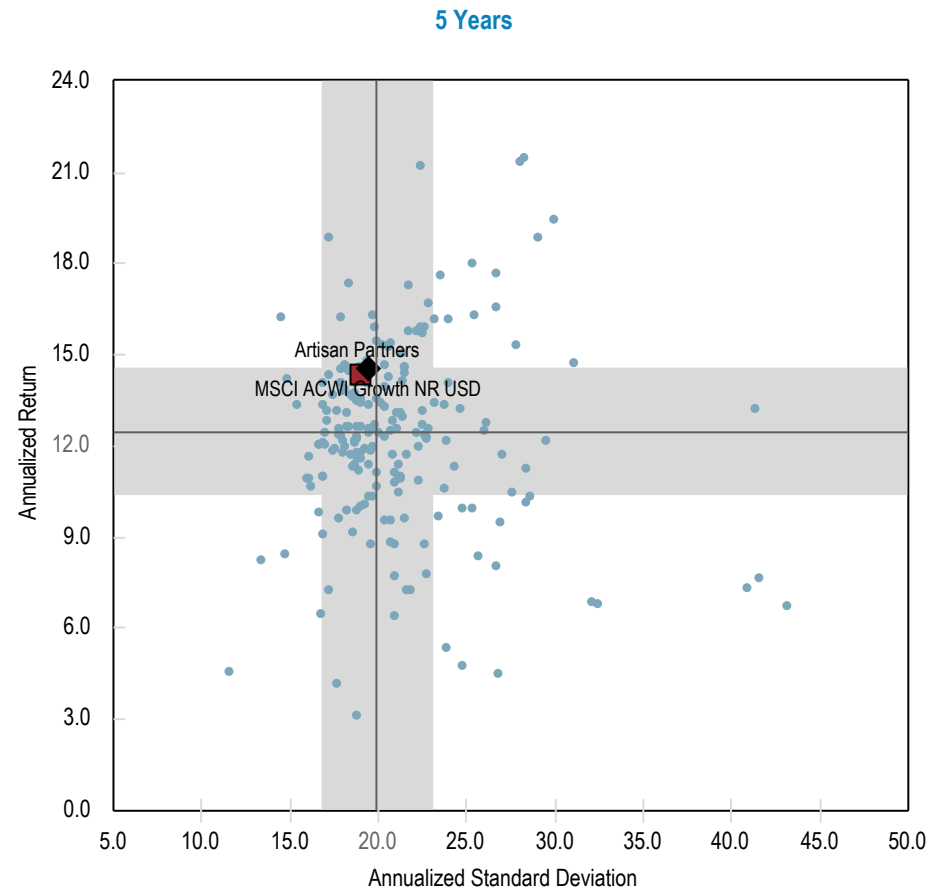
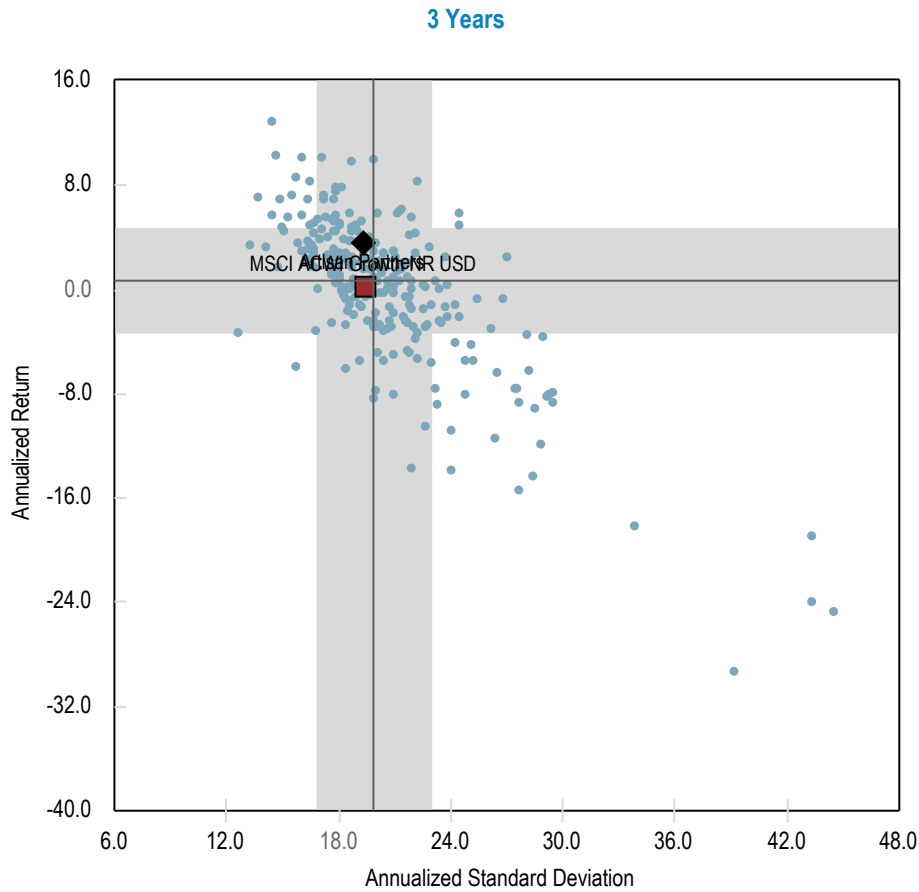


Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)





|                                | 3 Years          |                              |              |
|--------------------------------|------------------|------------------------------|--------------|
|                                | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| Artisan Partners               | 0.3              | 19.4                         | 0.0          |
| MSCI ACWI Growth NR USD        | 3.7              | 19.3                         | 0.2          |
| eV Global Growth Equity Median | 0.7              | 19.9                         | 0.0          |
| Population                     | 244              | 244                          | 244          |

|                                | 5 Years          |                              |              |
|--------------------------------|------------------|------------------------------|--------------|
|                                | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| Artisan Partners               | 14.4             | 19.0                         | 0.7          |
| MSCI ACWI Growth NR USD        | 14.6             | 19.4                         | 0.7          |
| eV Global Growth Equity Median | 12.5             | 19.9                         | 0.6          |
| Population                     | 208              | 208                          | 208          |

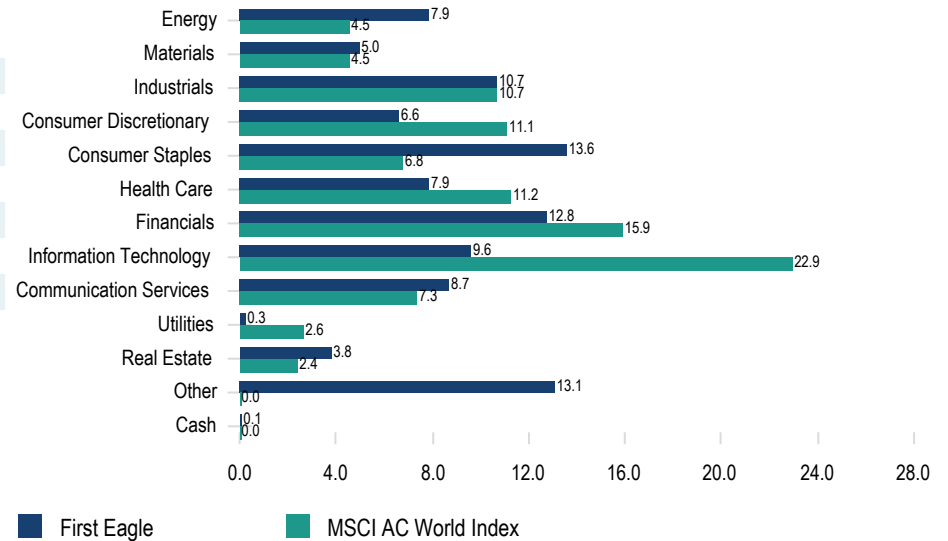
First Eagle  
Manager Portfolio Overview

Contra Costa County Employees' Retirement Association  
Period Ending: December 31, 2023

Characteristics

|                         | Portfolio  | Benchmark  |
|-------------------------|------------|------------|
| Number of Stocks        | 126        | 2,921      |
| Wtd. Avg. Mkt. Cap \$M  | 160,215.58 | 462,723.22 |
| Median Mkt. Cap \$M     | 27,651.62  | 12,992.44  |
| Price/Earnings ratio    | 17.86      | 18.93      |
| Price/Book ratio        | 2.34       | 3.55       |
| Return on Equity (%)    | -129.37    | 0.63       |
| Current Yield (%)       | 2.08       | 2.08       |
| Beta (5 Years, Monthly) | 0.76       | 1.00       |

Sector Allocation (%) vs. MSCI AC World Index



Largest Holdings

|                          | End Weight (%) | Quarterly Return (%) |
|--------------------------|----------------|----------------------|
| SPDR Gold Trust          | 13.07          | 11.50                |
| Oracle Corp              | 3.22           | -0.10                |
| Meta Platforms Inc       | 3.21           | 17.90                |
| Schlumberger Ltd         | 2.41           | -10.30               |
| Exxon Mobil Corp         | 2.22           | -14.19               |
| Comcast Corp             | 2.19           | -0.44                |
| HCA Healthcare Inc       | 1.84           | 10.29                |
| Alphabet Inc             | 1.82           | 6.89                 |
| Willis Towers Watson plc | 1.58           | 15.83                |
| Danone SA                | 1.52           | 17.15                |

Top Contributors

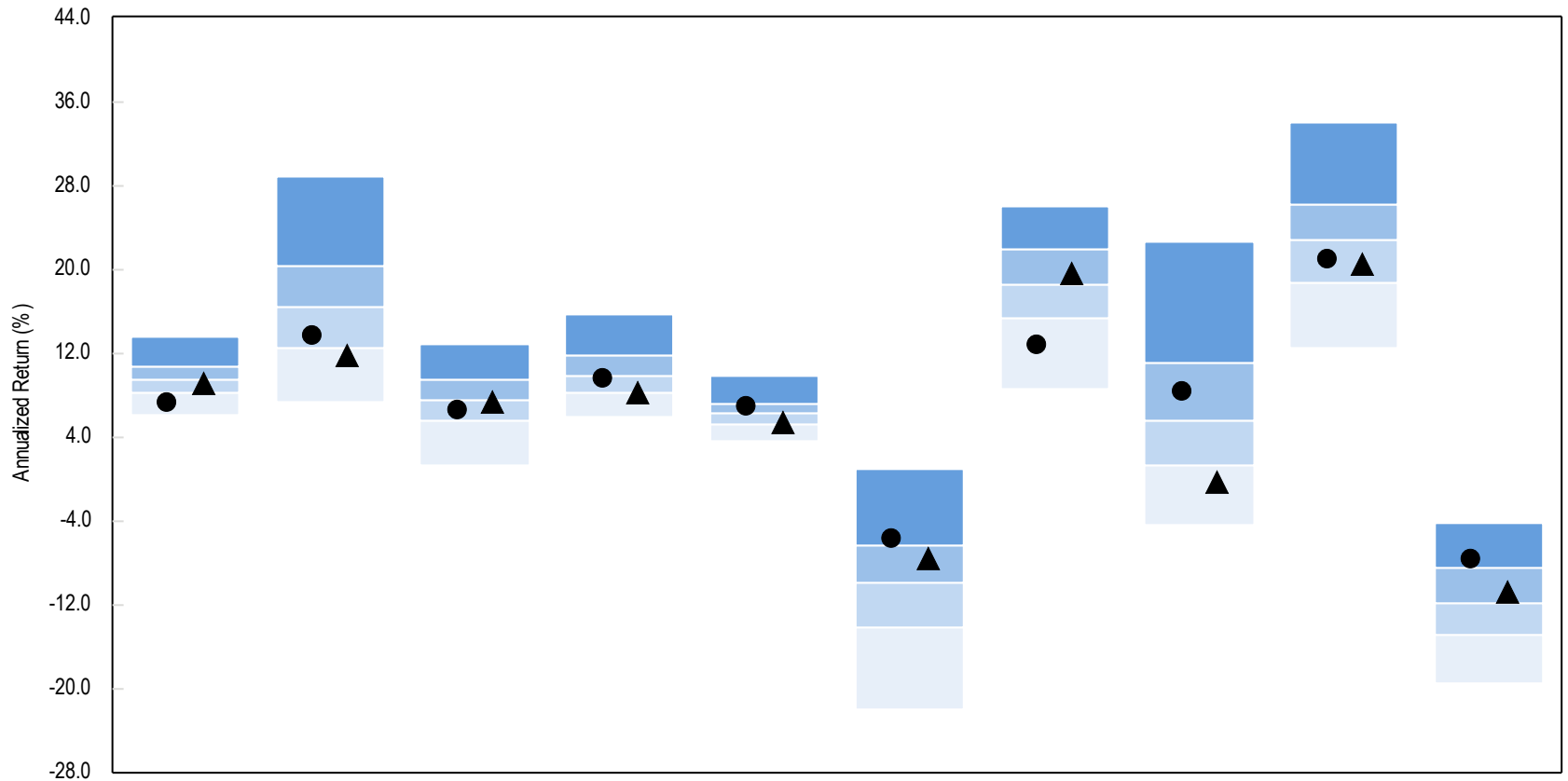
|                                    | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|------------------------------------|----------------------|----------------------|----------------------------|
| SPDR Gold Trust                    | 11.20                | 11.50                | 1.29                       |
| Meta Platforms Inc                 | 2.60                 | 17.90                | 0.47                       |
| Fomento Economico Mexican          | 1.24                 | 20.45                | 0.25                       |
| Bank of New York Mellon Corp (The) | 1.02                 | 23.26                | 0.24                       |
| Danone SA                          | 1.24                 | 17.15                | 0.21                       |
| Willis Towers Watson plc           | 1.28                 | 15.83                | 0.20                       |
| Universal Health Services          | 0.89                 | 21.42                | 0.19                       |
| Schindler Holding AG, Hergiswil    | 0.76                 | 24.91                | 0.19                       |
| Taiwan Semiconductor Man.          | 0.88                 | 20.23                | 0.18                       |
| SALESFORCE INC                     | 0.59                 | 29.77                | 0.18                       |
| % of Portfolio                     | 21.70                |                      | 3.39                       |

Top Detractors

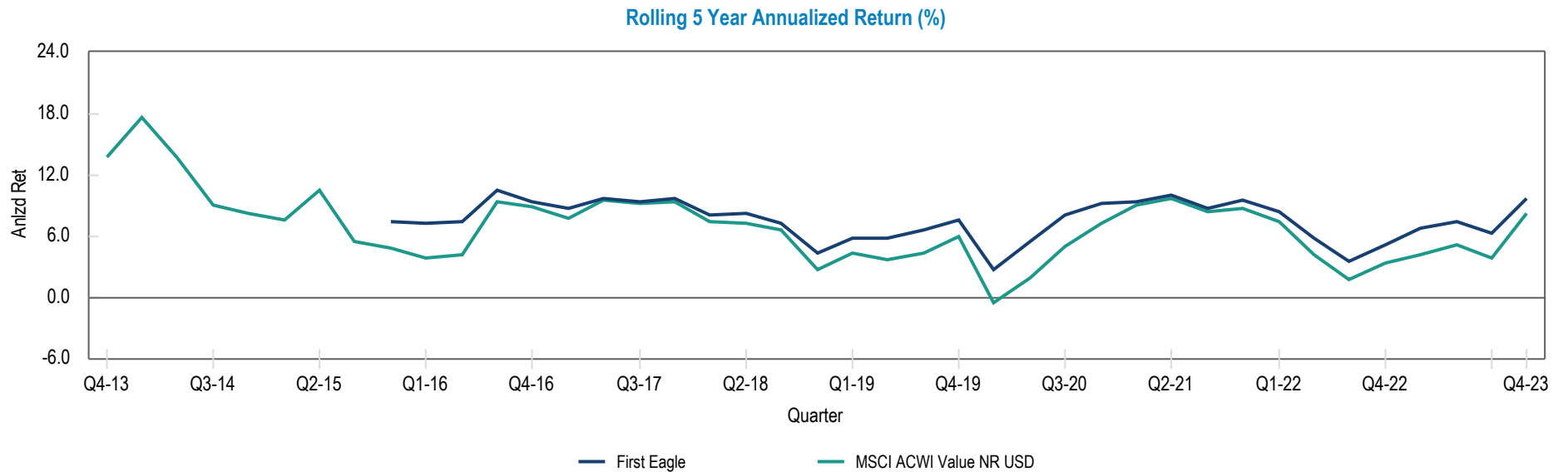
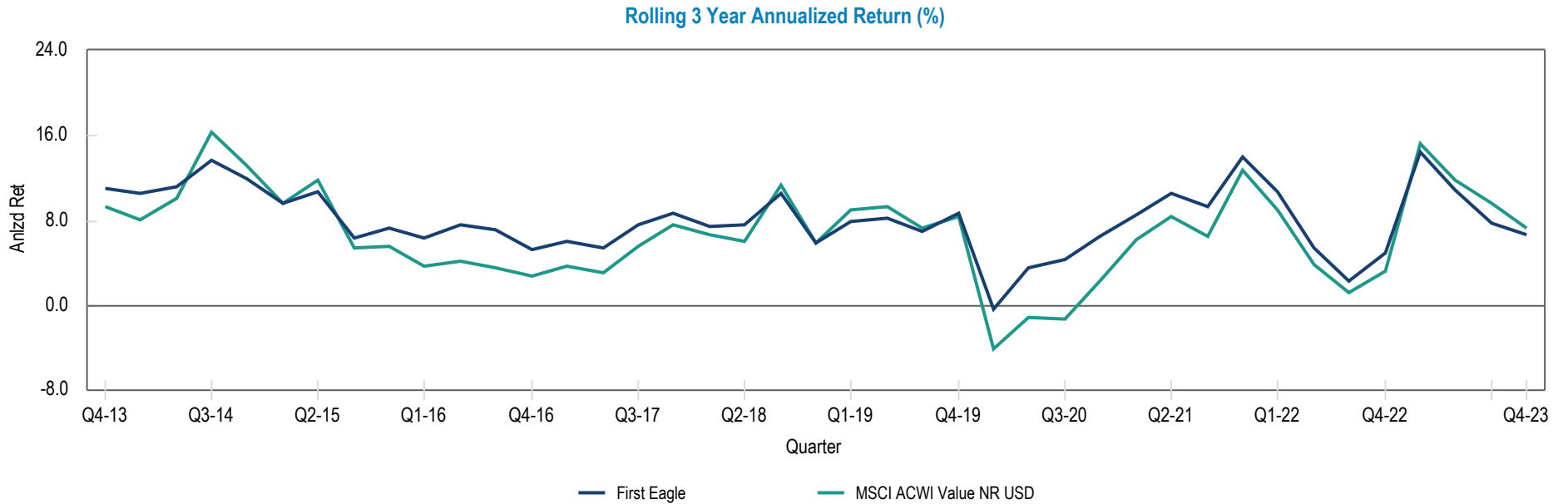
|                               | Portfolio Weight (%) | Quarterly Return (%) | Contribution to Return (%) |
|-------------------------------|----------------------|----------------------|----------------------------|
| Exxon Mobil Corp              | 2.44                 | -14.19               | -0.35                      |
| Schlumberger Ltd              | 2.46                 | -10.30               | -0.25                      |
| Imperial Oil Ltd              | 1.48                 | -6.89                | -0.10                      |
| Alibaba Group Holding Ltd     | 0.79                 | -10.23               | -0.08                      |
| Jardine Matheson Holdings Ltd | 0.67                 | -11.22               | -0.08                      |
| Sanofi                        | 0.96                 | -7.71                | -0.07                      |
| Nutrien Ltd                   | 0.57                 | -7.94                | -0.05                      |
| Franco-Nevada Corp            | 0.20                 | -16.74               | -0.03                      |
| NOV Inc                       | 1.25                 | -2.70                | -0.03                      |
| Becton Dickinson and Co       | 0.60                 | -5.30                | -0.03                      |
| % of Portfolio                | 11.42                |                      | -1.08                      |

Global equity portfolio that is benchmark agnostic comprised of companies with low valuations. Primary personnel include Matt McLennan and Kimball Brooker.

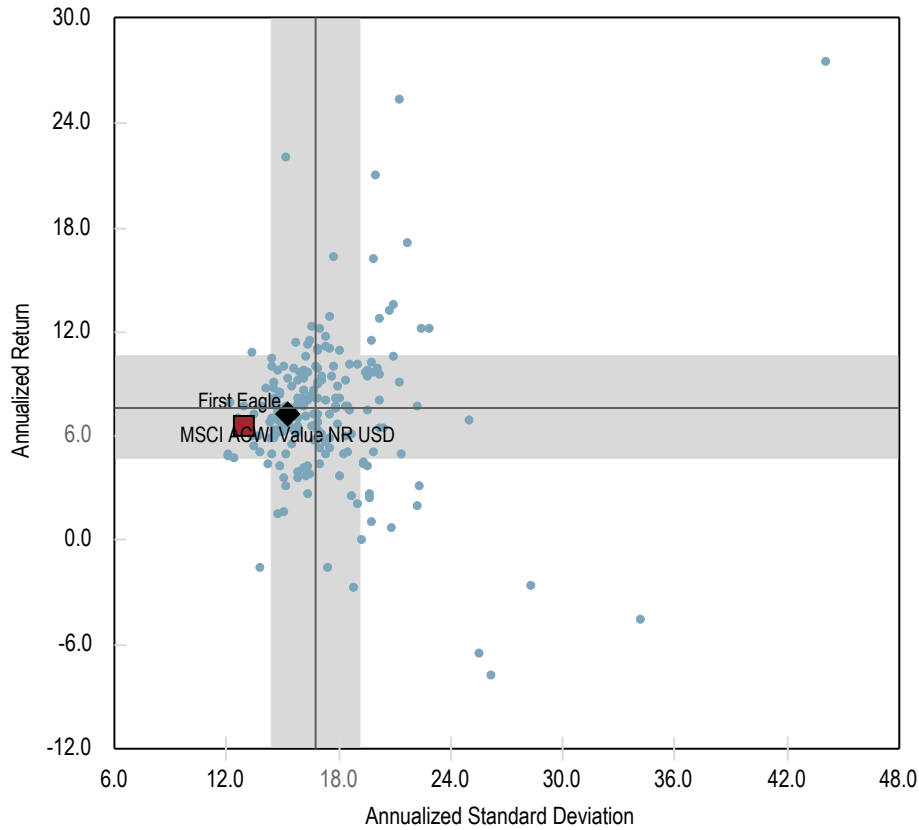
First Eagle vs. eV Global Value Equity Gross Universe



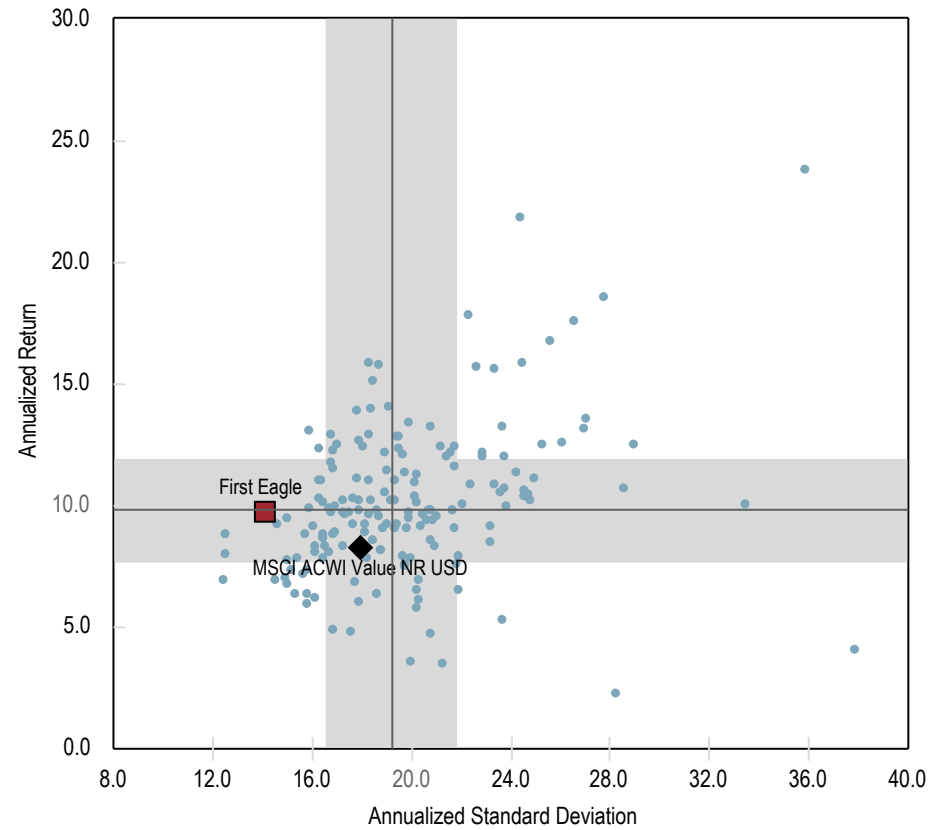
|                          | Quarter   | 1 Year     | 3 Years   | 5 Years   | 10 Years  | 2022       | 2021       | 2020       | 2019       | 2018        |
|--------------------------|-----------|------------|-----------|-----------|-----------|------------|------------|------------|------------|-------------|
| ● First Eagle            | 7.42 (85) | 13.75 (67) | 6.64 (61) | 9.74 (54) | 7.06 (29) | -5.61 (21) | 12.95 (86) | 8.47 (33)  | 21.01 (64) | -7.64 (18)  |
| ▲ MSCI ACWI Value NR USD | 9.17 (60) | 11.81 (81) | 7.33 (54) | 8.24 (77) | 5.46 (73) | -7.55 (35) | 19.62 (41) | -0.33 (81) | 20.59 (66) | -10.79 (45) |
| 5th Percentile           | 13.63     | 28.82      | 12.84     | 15.78     | 9.94      | 1.03       | 26.10      | 22.62      | 34.09      | -4.24       |
| 1st Quartile             | 10.83     | 20.42      | 9.44      | 11.77     | 7.28      | -6.26      | 21.92      | 11.06      | 26.20      | -8.37       |
| Median                   | 9.51      | 16.37      | 7.64      | 9.83      | 6.26      | -9.89      | 18.60      | 5.66       | 22.80      | -11.75      |
| 3rd Quartile             | 8.28      | 12.57      | 5.67      | 8.35      | 5.30      | -14.15     | 15.33      | 1.28       | 18.82      | -14.92      |
| 95th Percentile          | 6.09      | 7.42       | 1.41      | 5.92      | 3.65      | -21.93     | 8.64       | -4.44      | 12.47      | -19.51      |
| Population               | 217       | 216        | 196       | 174       | 130       | 220        | 225        | 233        | 229        | 233         |



3 Years



5 Years



3 Years

|                               | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
|-------------------------------|------------------|------------------------------|--------------|
| First Eagle                   | 6.6              | 12.9                         | 0.4          |
| MSCI ACWI Value NR USD        | 7.3              | 15.2                         | 0.4          |
| eV Global Value Equity Median | 7.6              | 16.8                         | 0.4          |
| Population                    | 196              | 196                          | 196          |

5 Years

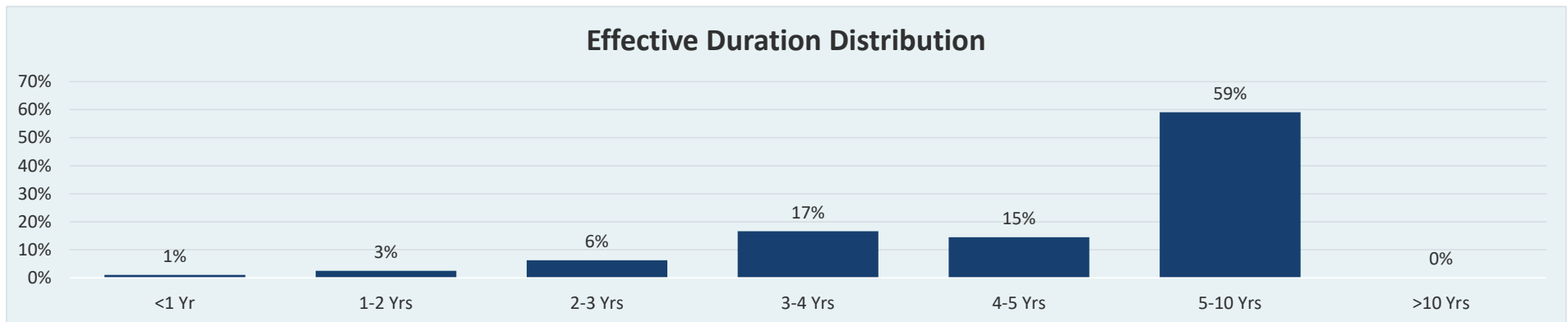
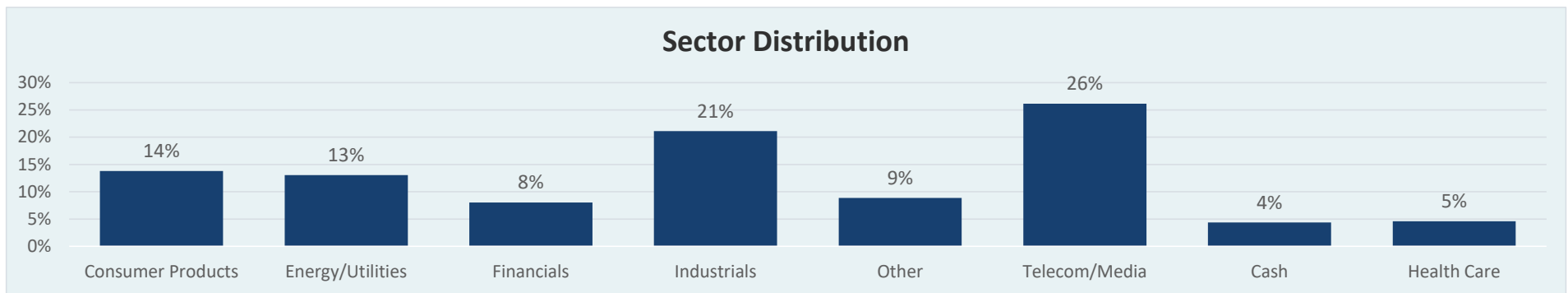
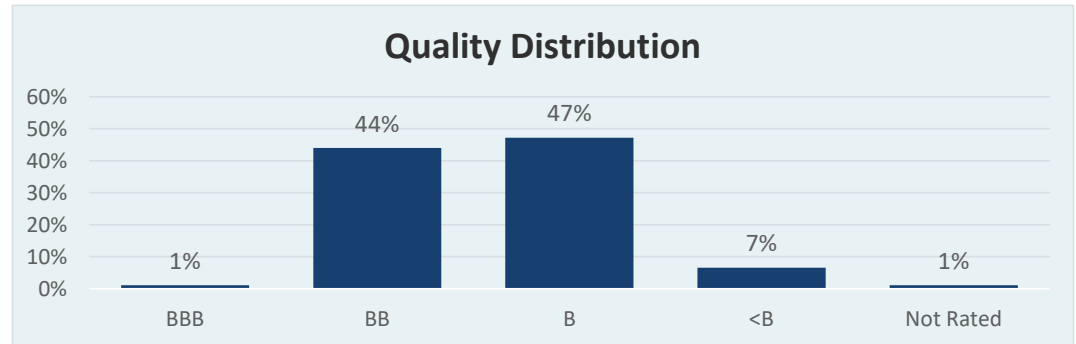
|                               | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
|-------------------------------|------------------|------------------------------|--------------|
| First Eagle                   | 9.7              | 14.1                         | 0.6          |
| MSCI ACWI Value NR USD        | 8.2              | 17.9                         | 0.4          |
| eV Global Value Equity Median | 9.8              | 19.2                         | 0.5          |
| Population                    | 174              | 174                          | 174          |

# High Yield Managers

---

Domestic high yield fixed income portfolio with a focus on security selection. Primary personnel include Douglas Forsyth, Justin Kass, William Stickney, and Michael Yee.

|                    | Allianz | ICE BofAML HY Master II |
|--------------------|---------|-------------------------|
| Effective Duration | 3.10    | 3.30                    |
| Yield to Maturity  | 6.90    | 7.80                    |
| Average Quality    | B1      | B1                      |
| Average Coupon     | 6.8%    | 6.1%                    |

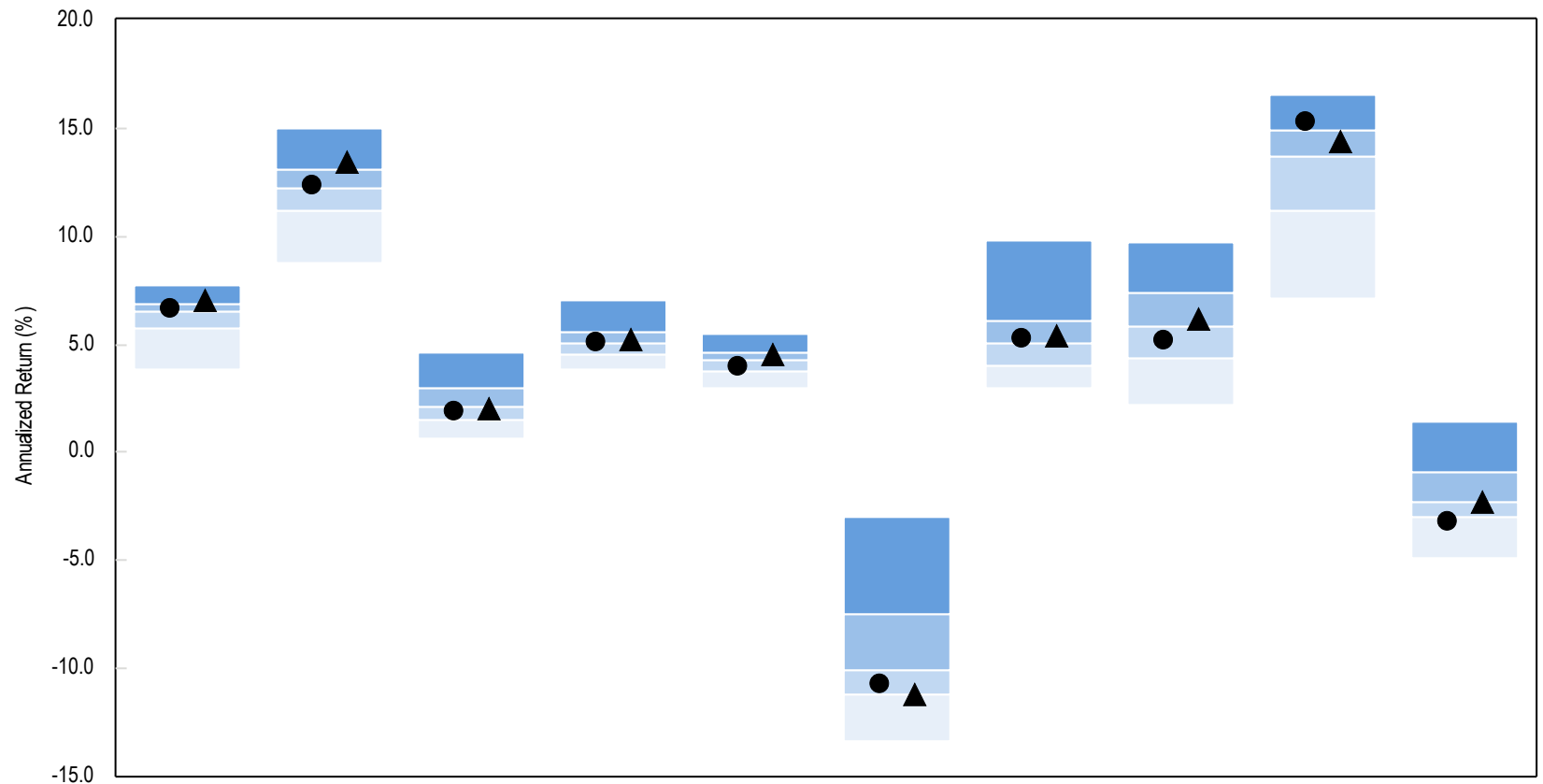


Quality distributions exclude cash.

Voya Financial acquired Allianz Global Investors in 2022.

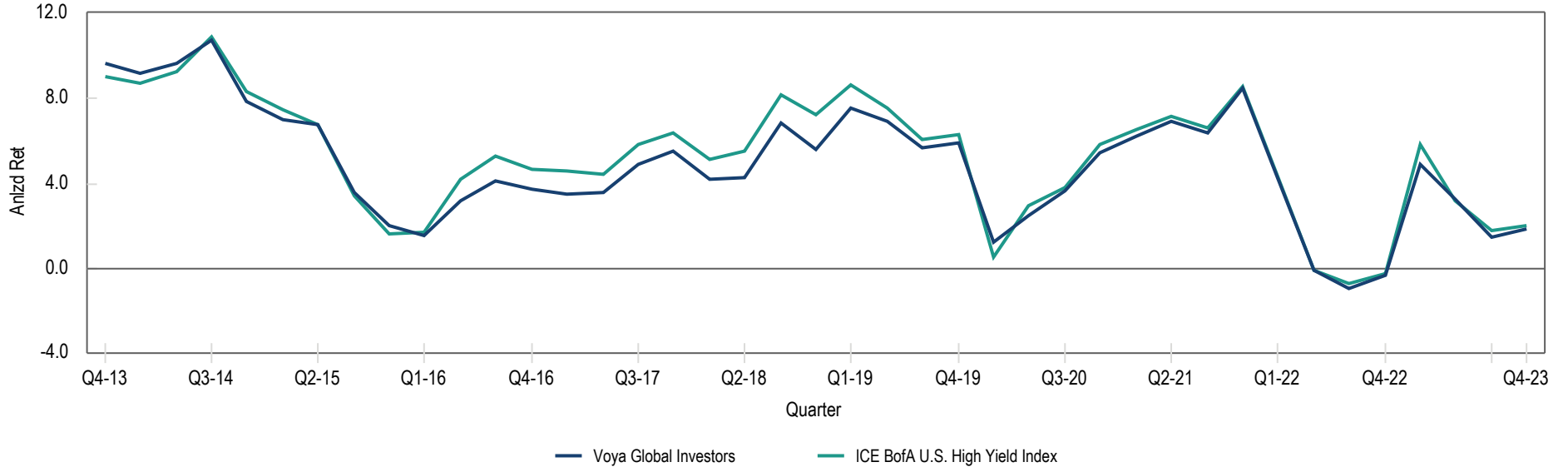


Voya Global Investors vs. eV US High Yield Fixed Inc Gross Universe

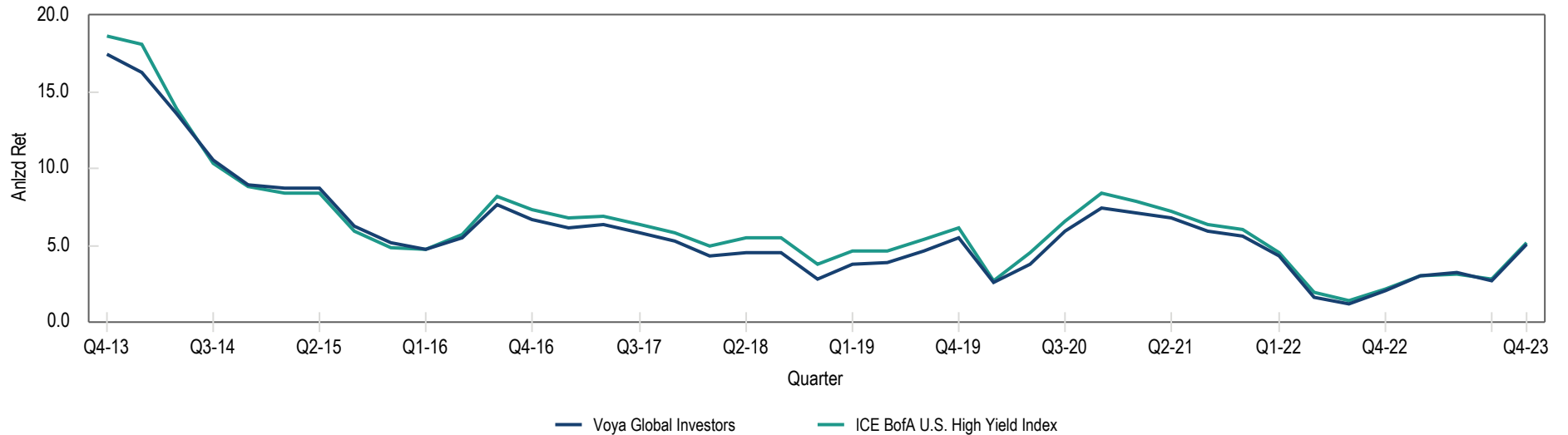


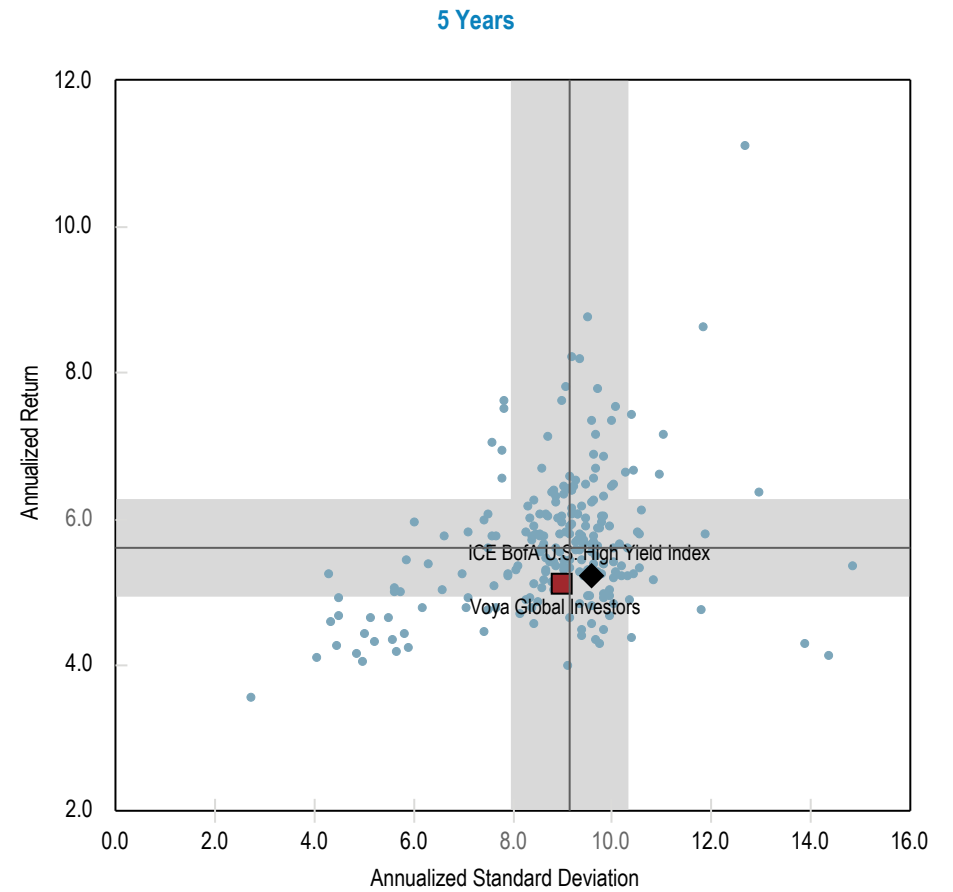
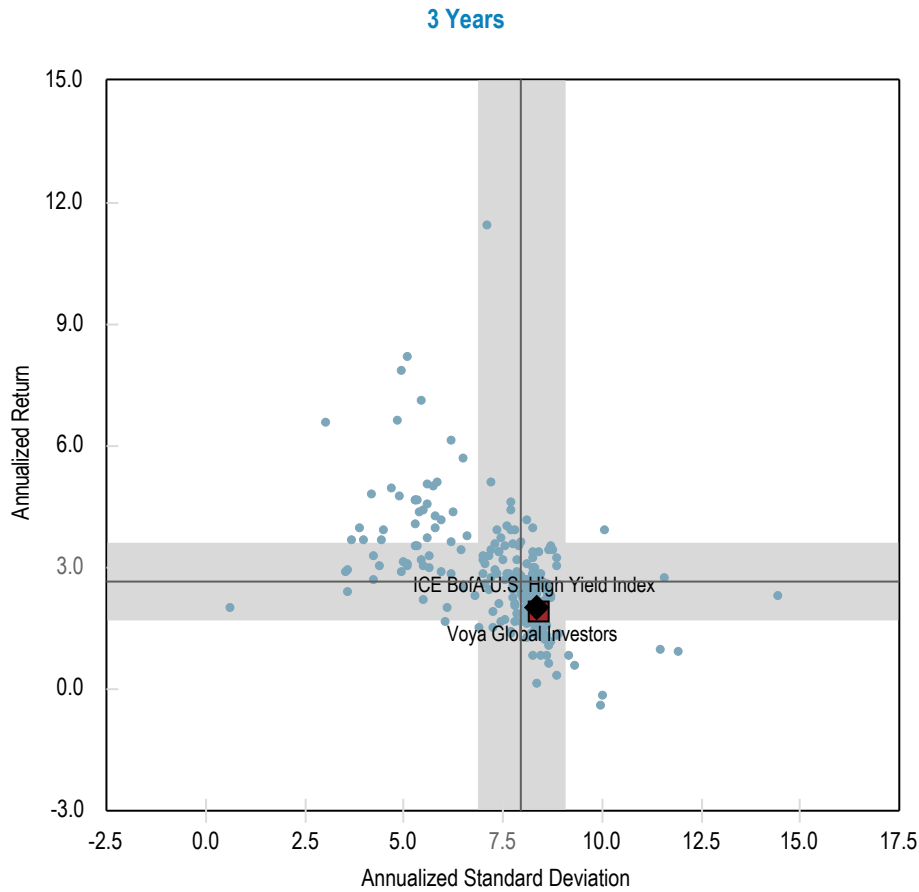
|                                  | Quarter   | 1 Year     | 3 Years   | 5 Years   | 10 Years  | 2022        | 2021      | 2020      | 2019       | 2018       |
|----------------------------------|-----------|------------|-----------|-----------|-----------|-------------|-----------|-----------|------------|------------|
| ● Voya Global Investors          | 6.73 (38) | 12.39 (47) | 1.90 (60) | 5.11 (49) | 3.97 (65) | -10.64 (64) | 5.34 (42) | 5.18 (66) | 15.32 (19) | -3.20 (78) |
| ▲ ICE BofA U.S. High Yield Index | 7.06 (19) | 13.46 (18) | 2.00 (54) | 5.21 (44) | 4.51 (32) | -11.22 (76) | 5.36 (41) | 6.17 (42) | 14.41 (36) | -2.27 (50) |
| 5th Percentile                   | 7.74      | 14.97      | 4.65      | 7.01      | 5.48      | -2.97       | 9.81      | 9.70      | 16.52      | 1.43       |
| 1st Quartile                     | 6.89      | 13.10      | 3.01      | 5.55      | 4.62      | -7.50       | 6.10      | 7.39      | 14.94      | -0.92      |
| Median                           | 6.49      | 12.25      | 2.09      | 5.06      | 4.24      | -10.05      | 5.02      | 5.85      | 13.72      | -2.28      |
| 3rd Quartile                     | 5.75      | 11.15      | 1.51      | 4.52      | 3.75      | -11.21      | 4.05      | 4.38      | 11.19      | -3.01      |
| 95th Percentile                  | 3.85      | 8.75       | 0.65      | 3.83      | 2.95      | -13.32      | 2.93      | 2.24      | 7.13       | -4.92      |
| Population                       | 226       | 225        | 217       | 209       | 171       | 250         | 248       | 254       | 260        | 260        |

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)





|                                   | 3 Years          |                              |              |
|-----------------------------------|------------------|------------------------------|--------------|
|                                   | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| Voya Global Investors             | 1.9              | 8.4                          | 0.0          |
| ICE BofA U.S. High Yield Index    | 2.0              | 8.3                          | 0.0          |
| eV US High Yield Fixed Inc Median | 2.6              | 8.0                          | 0.1          |
| Population                        | 228              | 228                          | 228          |

|                                   | 5 Years          |                              |              |
|-----------------------------------|------------------|------------------------------|--------------|
|                                   | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| Voya Global Investors             | 5.1              | 9.0                          | 0.4          |
| ICE BofA U.S. High Yield Index    | 5.2              | 9.6                          | 0.4          |
| eV US High Yield Fixed Inc Median | 5.6              | 9.2                          | 0.5          |
| Population                        | 220              | 220                          | 220          |

# Real Estate Managers

---

# Adelante Manager Portfolio Overview

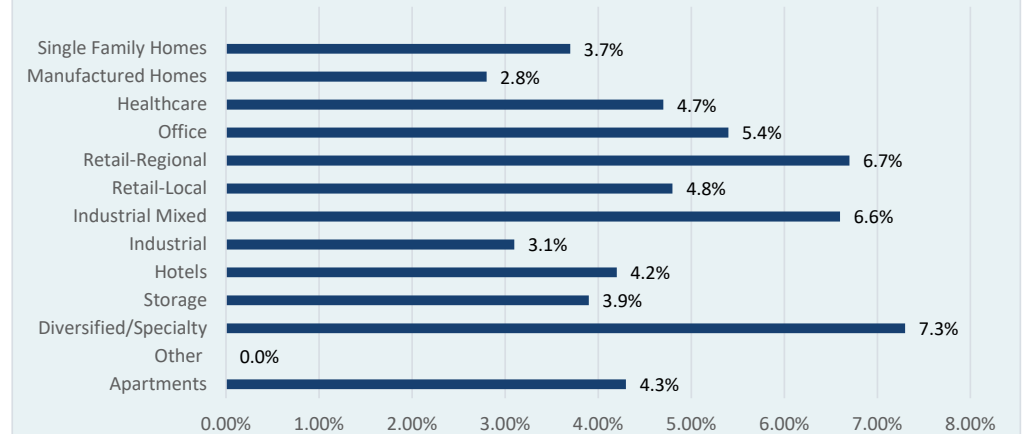
# Contra Costa County Employees' Retirement Association Period Ending: December 31, 2023

Diversified portfolio of U.S. REITs with a focus on the underlying real estate assets

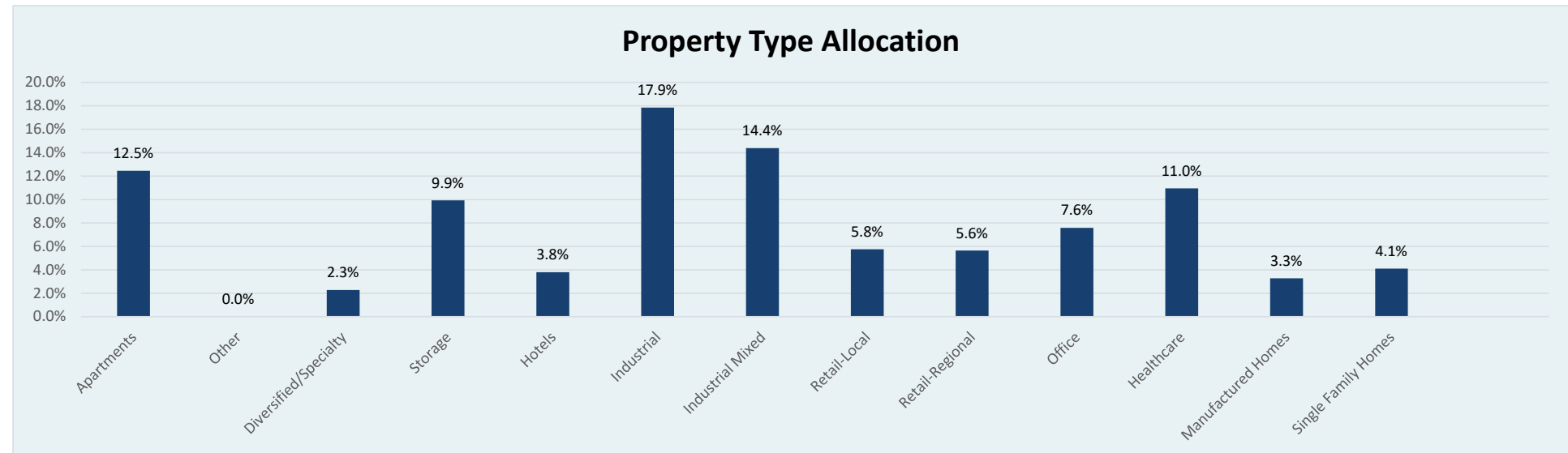
### Top Five Holdings

| Company                    | Property Type    | Allocation |
|----------------------------|------------------|------------|
| ProLogis Inc.              | Industrial       | 13.4%      |
| Equinix Inc                | Industrial Mixed | 8.7%       |
| Welltower, Inc.            | Healthcare       | 7.7%       |
| Public Storage             | Storage          | 6.6%       |
| Simon Property Group, Inc. | Retail-Regional  | 5.6%       |

### Dividend Yield by Property Type



### Property Type Allocation



0.0224% is allocated to Cash and Cash Equivalents.

# Diversifying Fixed Income Managers

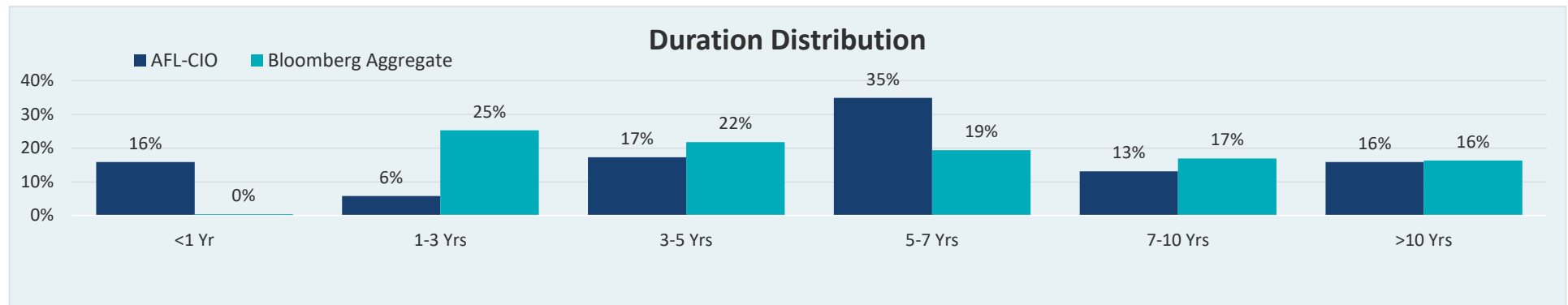
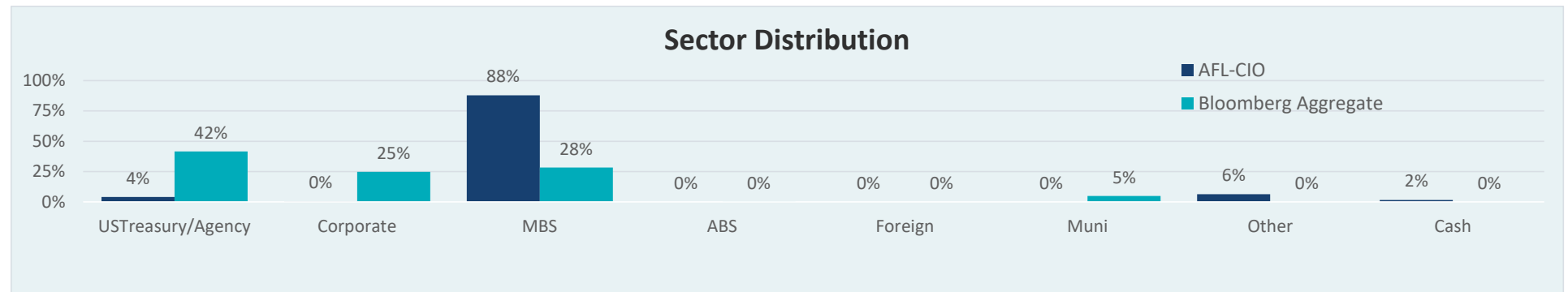
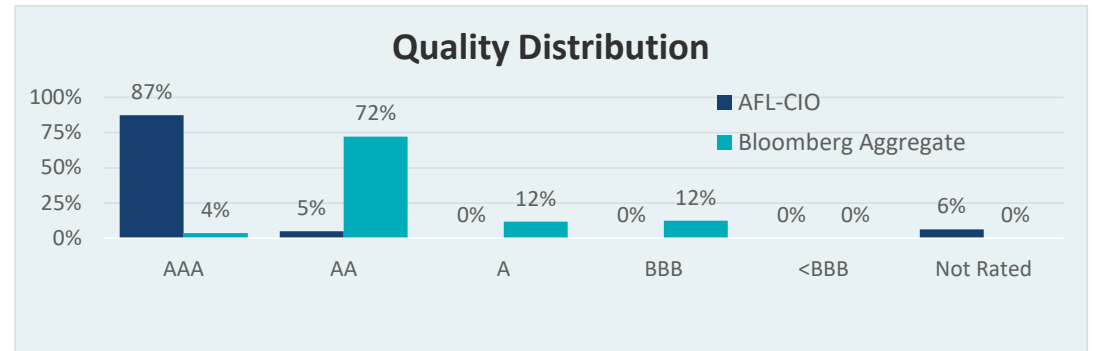
---

# AFL-CIO Manager Portfolio Overview

# Contra Costa County Employees' Retirement Association Period Ending: December 31, 2023

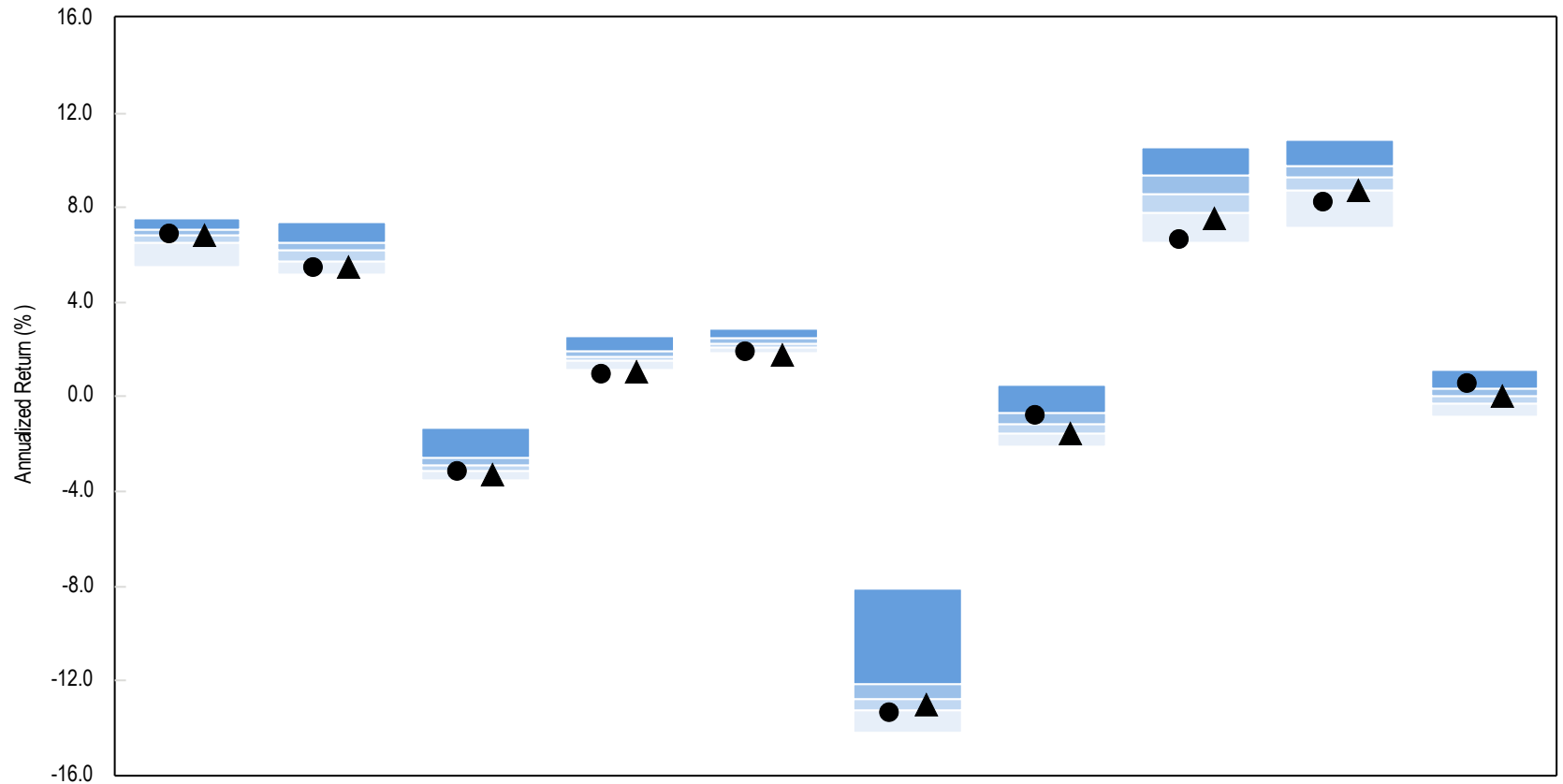
Domestic core fixed income portfolio with an exclusive focus on mortgage-related securities. Primary personnel include Stephen Coyle and Chang Su.

|                    | AFL-CIO | Bloomberg Aggregate |
|--------------------|---------|---------------------|
| Effective Duration | 6.01    | 6.12                |
| Yield to Maturity  | 3.93    | 3.38                |
| Average Quality    | AAA     | AA/A                |
| Average Coupon     | 3.6%    | 3.1%                |



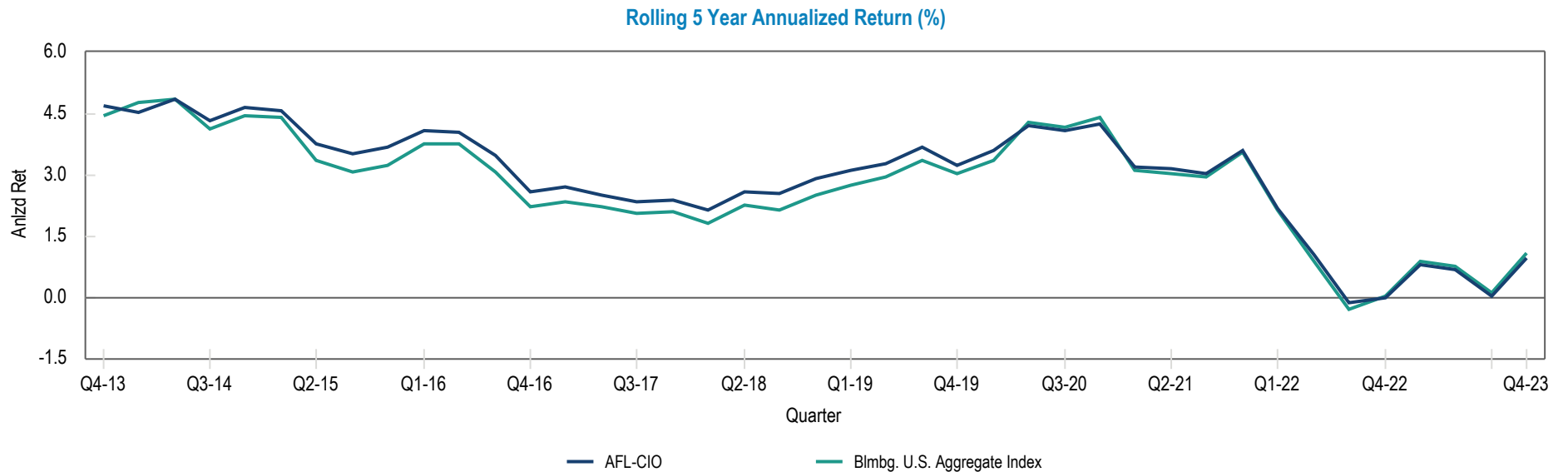
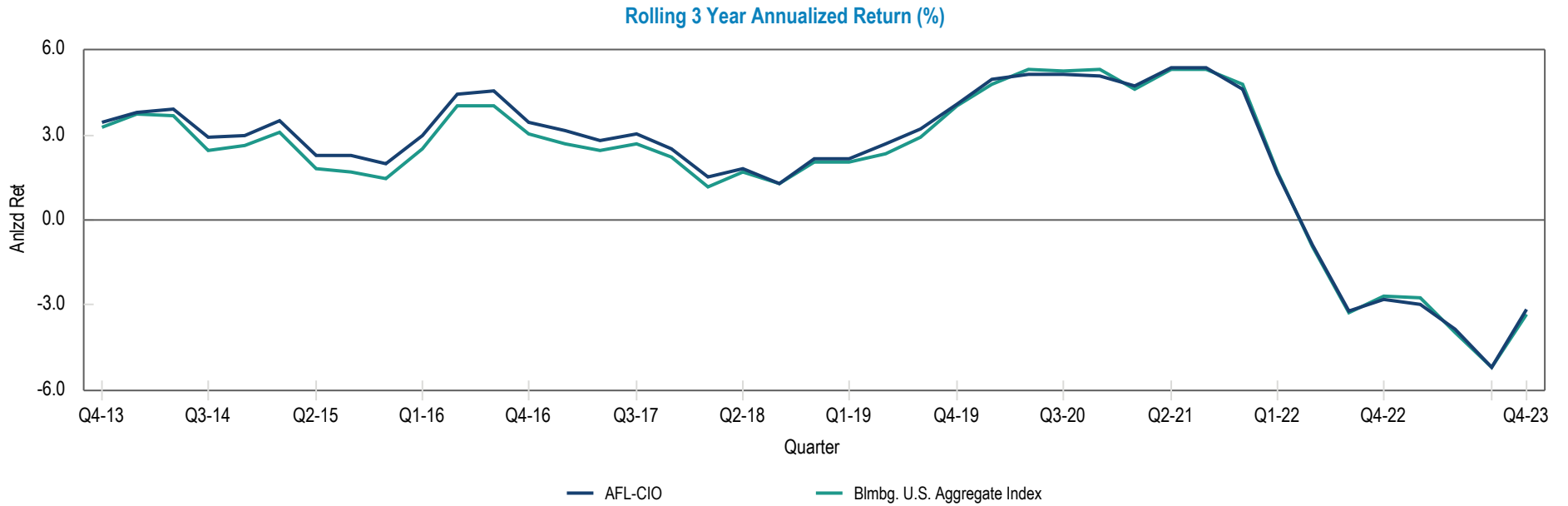
Duration and Quality distributions exclude cash.

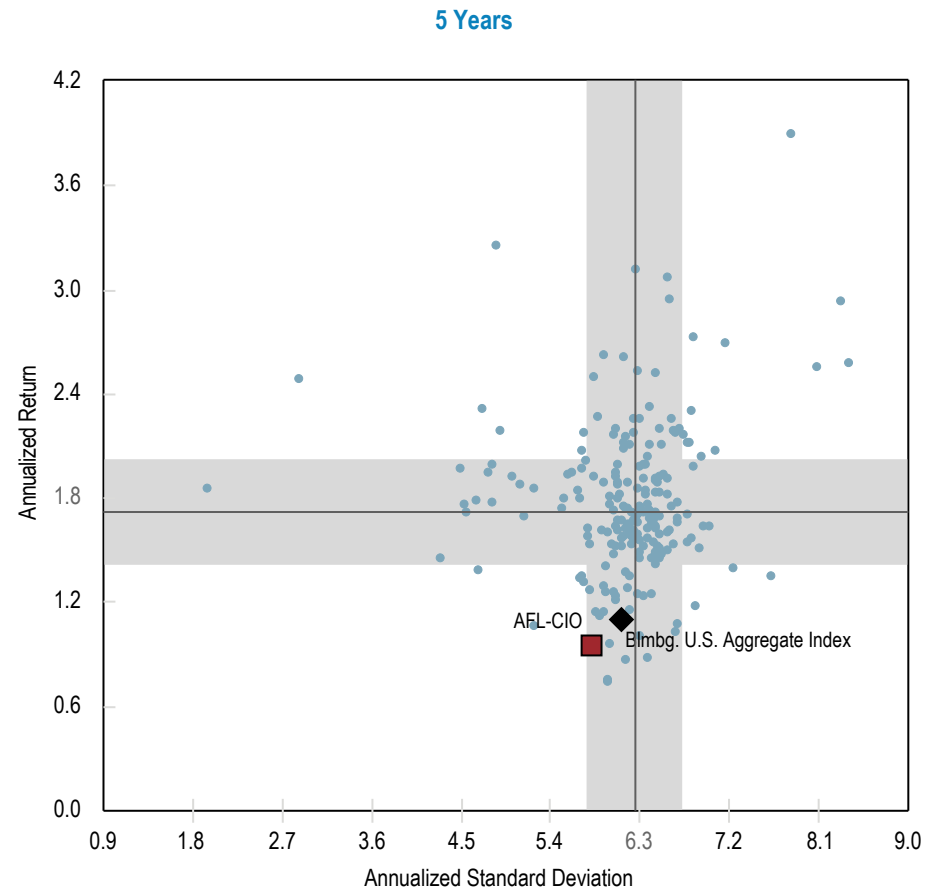
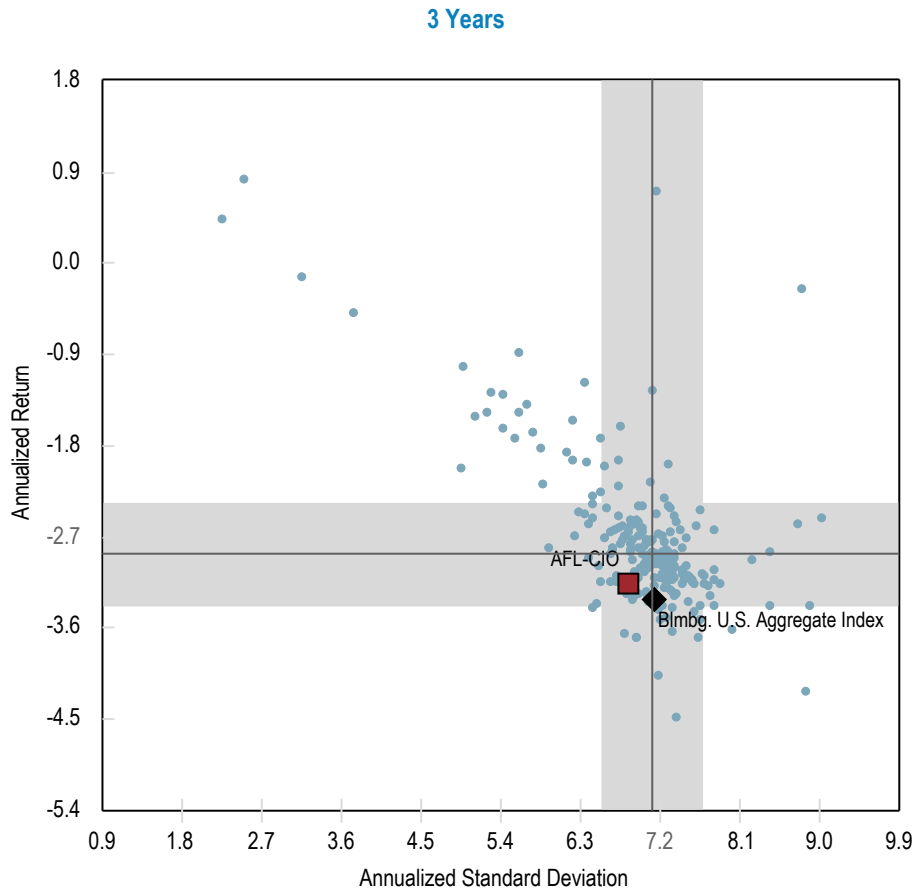
AFL-CIO vs. eV US Core Fixed Inc Gross Universe



|                               | Quarter   | 1 Year    | 3 Years    | 5 Years   | 10 Years  | 2022        | 2021       | 2020      | 2019      | 2018      |
|-------------------------------|-----------|-----------|------------|-----------|-----------|-------------|------------|-----------|-----------|-----------|
| ● AFL-CIO                     | 6.90 (46) | 5.51 (86) | -3.15 (80) | 0.95 (98) | 1.93 (92) | -13.27 (77) | -0.73 (32) | 6.65 (95) | 8.25 (86) | 0.59 (14) |
| ▲ Blmbg. U.S. Aggregate Index | 6.82 (56) | 5.53 (85) | -3.31 (89) | 1.10 (96) | 1.81 (97) | -13.01 (65) | -1.55 (77) | 7.51 (84) | 8.72 (77) | 0.01 (54) |
| 5th Percentile                | 7.51      | 7.42      | -1.30      | 2.57      | 2.88      | -8.12       | 0.49       | 10.57     | 10.85     | 1.14      |
| 1st Quartile                  | 7.10      | 6.55      | -2.56      | 1.97      | 2.49      | -12.16      | -0.64      | 9.35      | 9.75      | 0.35      |
| Median                        | 6.86      | 6.17      | -2.87      | 1.72      | 2.29      | -12.80      | -1.12      | 8.56      | 9.29      | 0.03      |
| 3rd Quartile                  | 6.50      | 5.76      | -3.12      | 1.54      | 2.12      | -13.26      | -1.52      | 7.77      | 8.75      | -0.27     |
| 95th Percentile               | 5.50      | 5.20      | -3.50      | 1.14      | 1.84      | -14.18      | -2.11      | 6.53      | 7.14      | -0.87     |
| Population                    | 226       | 226       | 220        | 211       | 194       | 255         | 263        | 266       | 272       | 278       |







|                             | 3 Years          |                              |              |
|-----------------------------|------------------|------------------------------|--------------|
|                             | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| AFL-CIO                     | -3.2             | 6.8                          | -0.8         |
| Blmbg. U.S. Aggregate Index | -3.3             | 7.1                          | -0.7         |
| eV US Core Fixed Inc Median | -2.9             | 7.1                          | -0.7         |
| Population                  | 220              | 220                          | 220          |

|                             | 5 Years          |                              |              |
|-----------------------------|------------------|------------------------------|--------------|
|                             | Anlzd Return (%) | Anlzd Standard Deviation (%) | Sharpe Ratio |
| AFL-CIO                     | 1.0              | 5.8                          | -0.1         |
| Blmbg. U.S. Aggregate Index | 1.1              | 6.1                          | -0.1         |
| eV US Core Fixed Inc Median | 1.7              | 6.2                          | 0.0          |
| Population                  | 211              | 211                          | 211          |

# Liquidity Managers

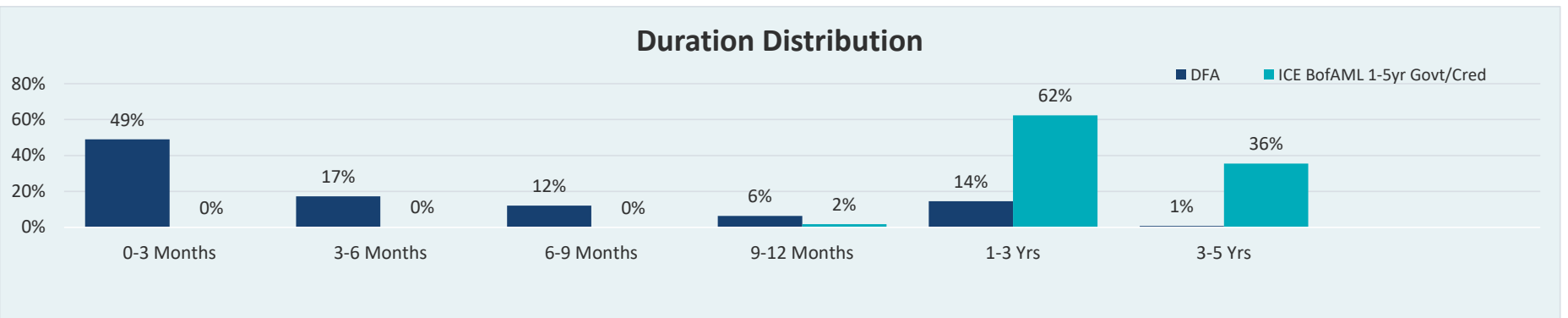
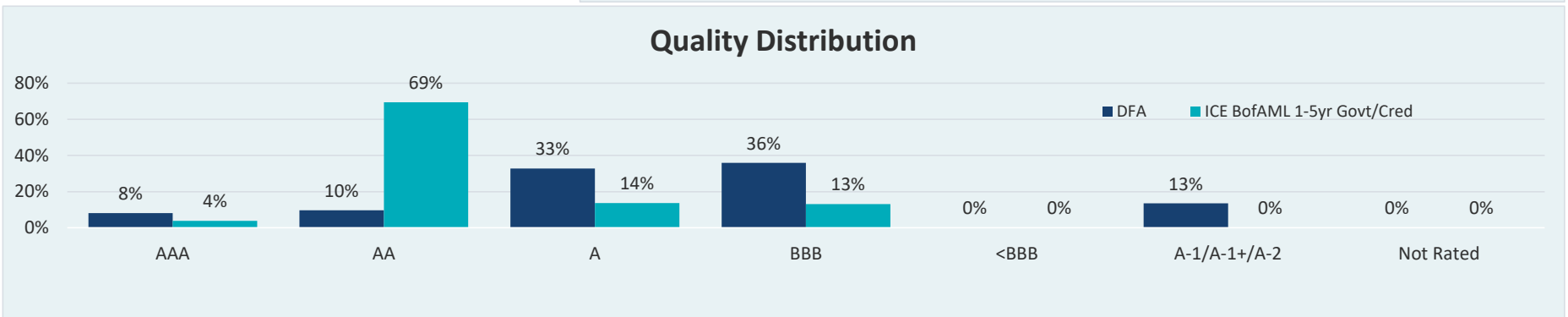
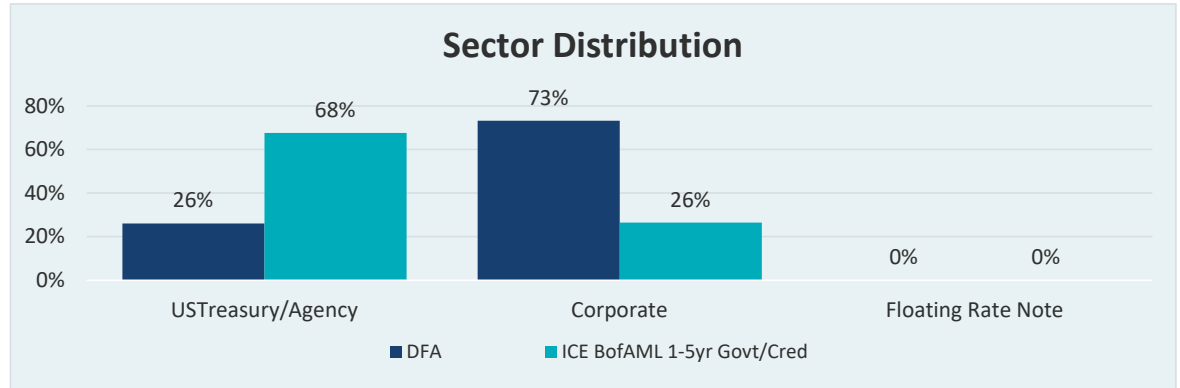
---

DFA Short Credit  
 Manager Portfolio Overview

Contra Costa County Employees' Retirement Association  
 Period Ending: December 31, 2023

Domestic short term US credit fixed income portfolio that maximizes total return through income and capital appreciation. Primary personnel include Dave Plecha and Joseph Kolerich.

|                    | DFA   | ICE BofAML 1-5yr Govt/Cred |
|--------------------|-------|----------------------------|
| Effective Duration | 0.47  | 2.56                       |
| Yield to Maturity  | 5.62  | 4.47                       |
| Average Quality    | A     | Aa2                        |
| Average Coupon     | 3.21% | 3.08%                      |

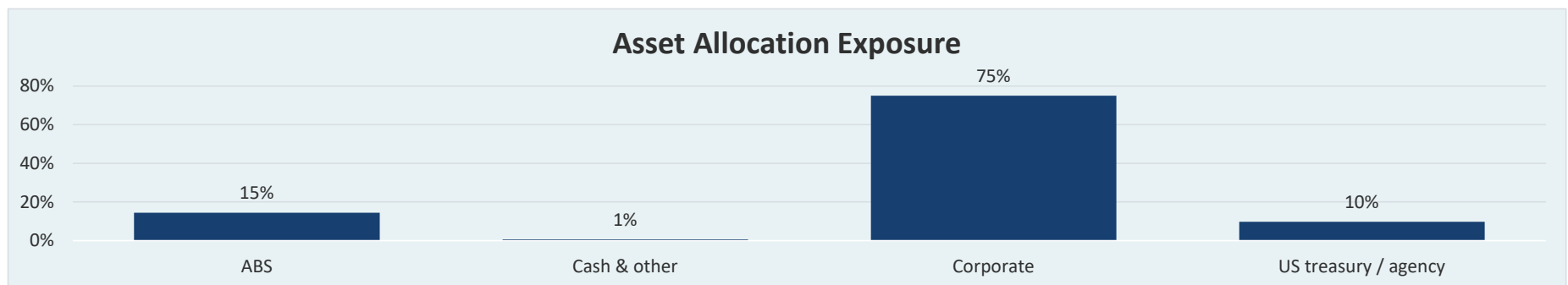
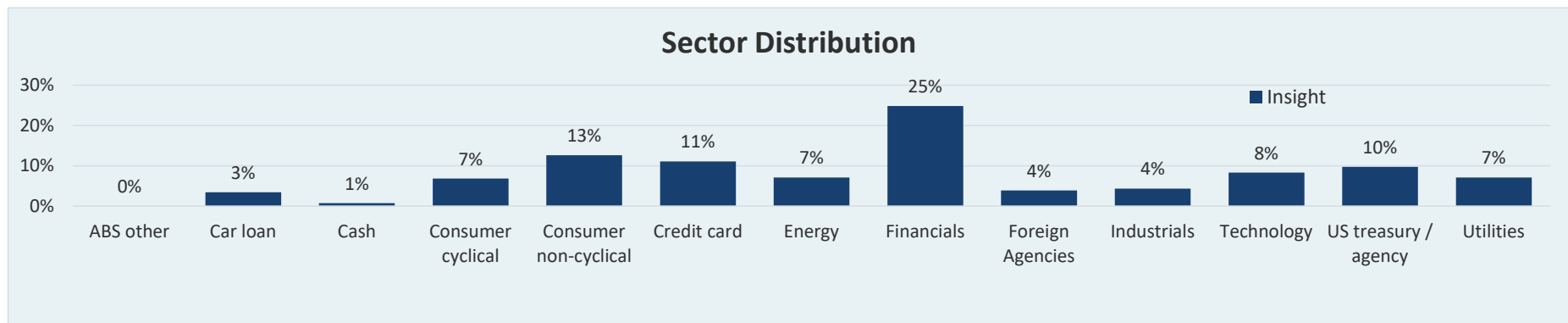
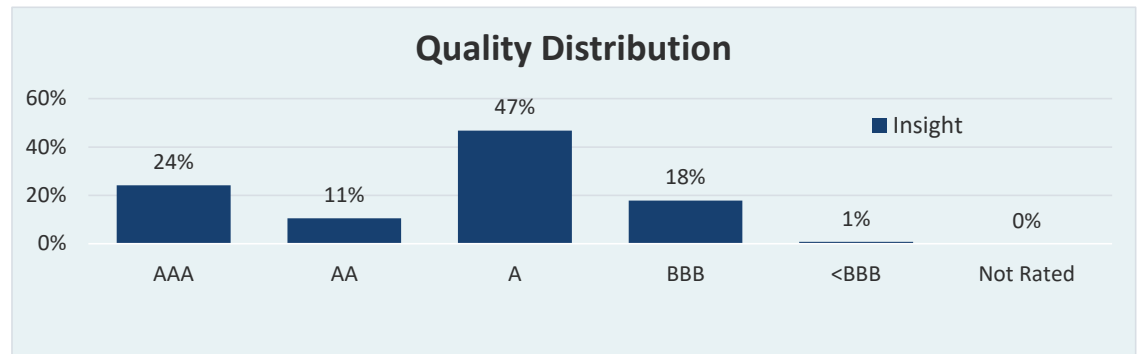


# Insight Short Duration Manager Portfolio Overview

# Contra Costa County Employees' Retirement Association Period Ending: December 31, 2023

High quality, short duration multi-sector fixed income portfolio comprised of Treasuries, Agencies, investment grade corporates, and ABS designed specifically to meet CCCERA's liabilities. Key personnel include Gerard Berrigan and Jesse Fogarty.

|                    | Insight | BBgBarc 1-3yr Govt |
|--------------------|---------|--------------------|
| Effective Duration | 1.20    | 1.90               |
| Yield to Maturity  | 0.05    | N/A                |
| Average Quality    | A+      | AAA                |
| Average Coupon     | 3.43%   | 1.20%              |

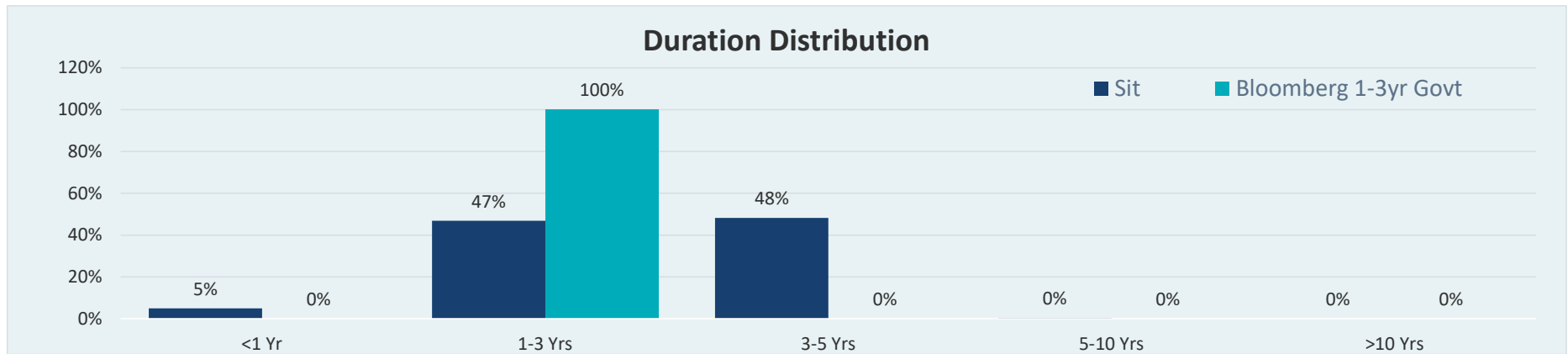
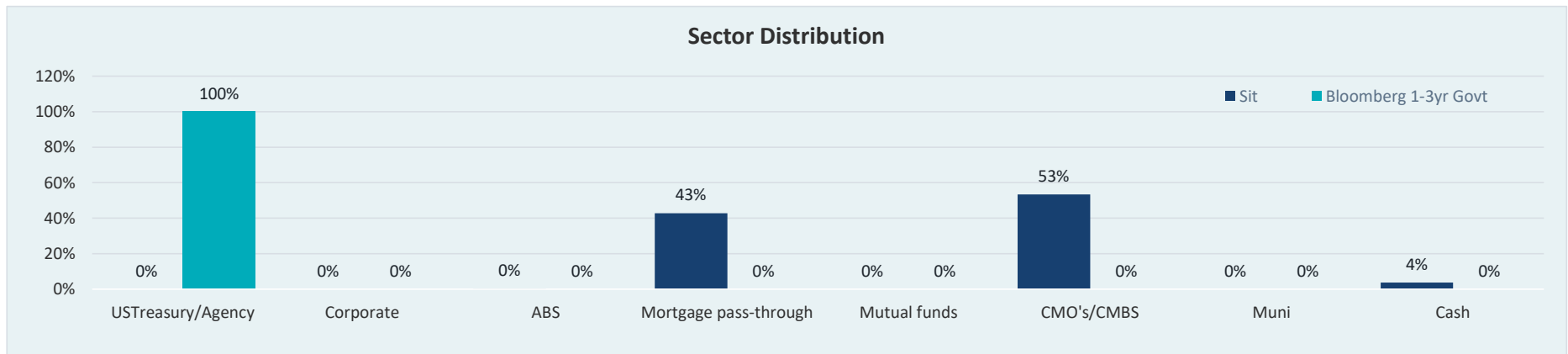
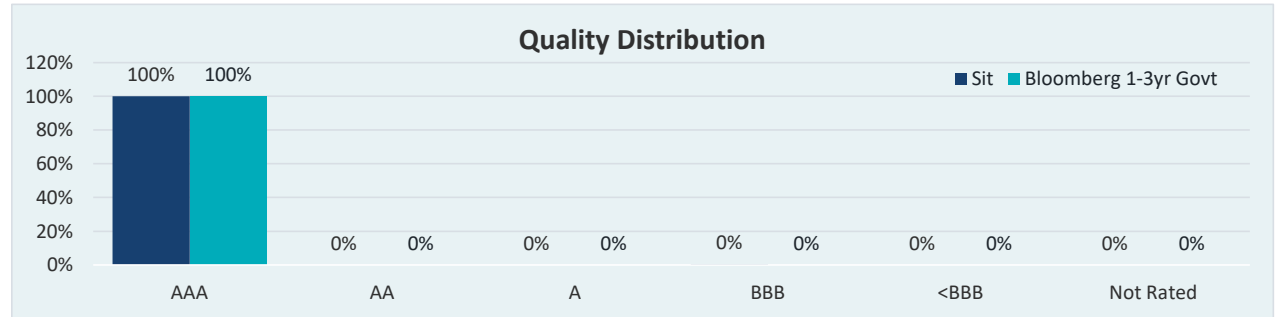


# Sit Short Duration Manager Portfolio Overview

# Contra Costa County Employees' Retirement Association Period Ending: December 31, 2023

Short duration fixed income portfolio with a focus on earning high levels of interest income. Primary personnel include Bryce Doty, Paul Jungquist and Michael Brilley.

|                          | Sit          | BBgBarc<br>1-3yr Govt |
|--------------------------|--------------|-----------------------|
| <b>Modified Duration</b> | <b>2.90</b>  | <b>1.90</b>           |
| <b>Yield to Maturity</b> | <b>5.70</b>  | <b>N/A</b>            |
| <b>Average Quality</b>   | <b>AAA</b>   | <b>AAA</b>            |
| <b>Average Coupon</b>    | <b>5.60%</b> | <b>1.20%</b>          |



Data Sources and Methodology

**Performance Return Calculations**

Performance is calculated using Modified Dietz and for time periods with large cash flow (generally greater than 10% of portfolio value), Time Weighted Rates of Return (TWRR) methodologies. Monthly returns are geometrically linked and annualized for periods longer than one year.

**Data Source**

Verus is an independent third party consulting firm and calculates returns from best source book of record data. Returns calculated by Verus may deviate from those shown by the manager in part, but not limited to, differences in prices and market values reported by the custodian and manager, as well as significant cash flows into or out of an account. It is the responsibility of the manager and custodian to provide insight into the pricing methodologies and any difference in valuation.

**Illiquid Alternatives**

Due to the inability to receive final valuation prior to report production, closed end funds (including but are not limited to Real Estate, Hedge Funds, Private Equity, and Private Credit) performance is typically reported at a one-quarter lag. Valuation is reported at a one-quarter lag, adjusted for current quarter flow (cash flows are captured real time). Closed end fund performance is calculated using a time-weighted return methodology consistent with all portfolio and total fund performance calculations. For Private Markets, performance reports also include Verus-calculated multiples based on flows and valuations (e.g. DPI and TVPI) and manager-provided IRRs.

**Policy & Custom Index Composition**

|                                      |  |
|--------------------------------------|--|
| Policy Index (8/1/2023 - present)    | 16% Russell 3000, 12% MSCI ACWI ex-US (Gross), 10% MSCI ACWI (Net), 2% Wilshire REIT, 8% Private Real Estate composite returns, 2% FTSE 3-month T-bill +5%, 13% Private Equity composite returns, 10% Private Credit composite returns, 2% ICE BofAML High Yield Master II, 17% Bloomberg 1-3 Yr Gov/Credit, 2.5% Bloomberg US Aggregate, 3% 60% MSCI ACWI Net/40% Bloomberg Global Aggregate, 2.5% Bloomberg US Aggregate TR +1%.   |
| Policy Index (7/1/2022 - present)    | 16% Russell 3000, 15% MSCI ACWI ex-US (Gross), 9% MSCI ACWI (Net), 2% Wilshire REIT, 8% Private Real Estate composite returns, 2.5% FTSE 3-month T-bill +5%, 13% Private Equity composite returns, 8% Private Credit composite returns, 1.5% ICE BofAML High Yield Master II, 17% Bloomberg 1-3 Yr Gov/Credit, 2.5% Bloomberg US Aggregate, 3% 60% MSCI ACWI Net/40% Bloomberg Global Aggregate, 2.5% Bloomberg US Aggregate TR +1%. |
| Policy Index (7/1/2021 - 6/30/2022)  | 16% Russell 3000, 16% MSCI ACWI ex-US (Gross), 9% MSCI ACWI (Net), 2% Wilshire REIT, 8% Private Real Estate composite returns, 3% CPI + 4%, 11% Private Equity composite returns, 8% Private Credit composite returns, 2% ICE BofAML High Yield Master II, 18% Bloomberg 1-3 Yr Gov/Credit, 2.5% Bloomberg US Aggregate, 3% 60% MSCI ACWI Net/40% Bloomberg Global Aggregate, 1.5% HFRI EH Equity Market Neutral.                    |
| Policy Index (1/1/2021 - 6/30/2021)  | 9% Russell 3000, 18% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 1% Wilshire REIT, 8% Private Real Estate composite returns, 1.5% CPI + 4%, 11% Private Equity composite returns, 7% Private Credit composite returns, 1.5% ICE BofAML High Yield Master II, 25% Bloomberg 1-3 Yr Gov/Credit, 3% Bloomberg US Aggregate, 2% Bloomberg Global Aggregate, 2% HFRI EH Equity Market Neutral.  |
| Policy Index (7/1/2020 - 12/31/2020) | 9% Russell 3000, 18% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 1% Wilshire REIT, 1.6% NCREIF Property Index, 6.4% NCREIF ODCE Index, 1.5% CPI + 4%, 11% S&P 500 +4% (Lagged), 7% ICE BofAML High Yield Master II +2%, 1.5% ICE BofAML High Yield Master II, 25% Bloomberg 1-3 Yr Gov/Credit, 3% Bloomberg US Aggregate, 2% Bloomberg Global Aggregate, 2% HFRI EH Equity Market Neutral.   |
| Policy Index (7/1/2019 - 6/30/2020)  | 10% Russell 3000, 18% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 1% Wilshire REIT, 1.6% NCREIF Property Index, 6.4% NCREIF ODCE Index, 2% CPI + 4%, 11% S&P 500 +4% (Lagged), 5% ICE BofAML High Yield Master II +2%, 2% ICE BofAML High Yield Master II, 24% Bloomberg 1-3 Yr Gov/Credit, 3.5% Bloomberg US Aggregate, 2% Bloomberg Global Aggregate, 2.5% HFRI EH Equity Market Neutral.  |
| Policy Index (7/1/2018 - 6/30/2019)  | 11% Russell 3000, 19% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 1% Wilshire REIT, 1.8% NCREIF Property Index, 7.2% NCREIF ODCE Index, 2% CPI + 4%, 10% S&P 500 +4% (Lagged), 4% ICE BofAML High Yield Master II +2%, 2% ICE BofAML High Yield Master II, 23% Bloomberg 1-3 Yr Gov/Credit, 3.5% Bloomberg US Aggregate, 2% Bloomberg Global Aggregate, 2.5% HFRI EH Equity Market Neutral.  |
| Policy Index (10/1/2017 - 6/30/2018) | 16.3% Russell 3000, 18.8% MSCI ACWI ex-US (Gross), 8.6% MSCI ACWI (Net), 1% Wilshire REIT, 1.6% NCREIF Property Index, 6.4% NCREIF ODCE Index, 2.5% CPI + 4%, 10.1% S&P 500 +4% (Lagged), 1.9% ICE BofAML High Yield Master II +2%, 4.3% ICE BofAML High Yield Master II, 25% Bloomberg 1-3 Yr Gov/Credit, 3.5% Bloomberg US Aggregate.  |
| Policy Index (1/1/2017 - 9/30/2017)  | 22.9% Russell 3000, 11% MSCI ACWI ex-US (Gross), 10.9% MSCI ACWI (Net), 1% Wilshire REIT, 1.7% NCREIF Property Index, 6.8% NCREIF ODCE Index, 3.6% CPI + 4%, 8.1% S&P 500 +4% (Lagged), 1.7% ICE BofAML High Yield Master II +2%, 5.1% ICE BofAML High Yield Master II, 22.4% Bloomberg 1-3 Yr Gov/Credit, 3.2% Bloomberg US Aggregate, 1.6% 91-Day T-Bills.   |
| Policy Index (4/1/2012-12/31/2016)   | 27.7% Russell 3000, 10.6% MSCI ACWI ex-US (Gross), 12.3% MSCI ACWI (Net), 19.6% Bloomberg U.S. Aggregate, 5% ICE BofAML High Yield Master II, 4% Bloomberg Global Aggregate, 13.5% Real Estate Benchmark, 6.8% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.  |

# Contra Costa County Employees' Retirement Association

Period Ending: December 31, 2023

## Data Sources and Methodology

### Policy & Custom Index Composition (continued)

|   |   |
|---|---|
| Policy Index (4/1/2011-3/31/2012)                     | 31% Russell 3000, 10.4% MSCI EAFE (Gross), 9.6% MSCI ACWI (Net), 25% Bloomberg U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% Bloomberg Global Aggregate, 8.4% DJ Wilshire REIT, 3.1% NCREIF, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.   |
| Policy Index (4/1/2010-3/31/2011)                     | 35.6% Russell 3000, 10.4% MSCI EAFE (Gross), 5% MSCI ACWI (Net), 25% Bloomberg U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% Bloomberg Global Aggregate, 8.4% DJ Wilshire REIT, 3.1% NCREIF, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.   |
| Policy Index (7/1/2009-3/31/2010)                     | 40.6% Russell 3000, 10.4% MSCI EAFE (Gross), 25% Bloomberg U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% Bloomberg Global Aggregate, 8.4% DJ Wilshire REIT, 3.1% NCREIF, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.   |
| Custom Growth Benchmark (7/1/2022 - present)          | 21.2% Russell 3000, 19.9% MSCI ACWI ex-US (Gross), 11.9% MSCI ACWI (Net), 2.6% Wilshire REIT, 10.6% Private Real Estate composite returns, 17.2% Private Equity composite returns, 10.6% Private Credit composite returns, 2.0% ICE BofAML High Yield Master II, 4% 60% MSCI ACWI Net/40% Bloomberg Global Aggregate      |
| Custom Growth Benchmark (7/1/2021 - 6/30/2022)        | 21.33% Russell 3000, 21.33% MSCI ACWI ex-US (Gross), 12% MSCI ACWI (Net), 2.67% Wilshire REIT, 10.67% Private Real Estate composite returns, 14.67% Private Equity composite returns, 10.67% Private Credit composite returns, 2.67% ICE BofAML High Yield Master II, 4% 60% MSCI ACWI Net/40% Bloomberg Global Aggregate |
| Custom Growth Benchmark (1/1/2021 - 6/30/2021)        | 13.14% Russell 3000, 26.28% MSCI ACWI ex-US (Gross), 16.06% MSCI ACWI (Net), 1.46% Wilshire REIT, 11.68% Private Real Estate composite returns, 16.06% Private Equity composite returns, 10.22% Private Credit composite returns, 2.19% ICE BofAML High Yield Master II, 2.92% Bloomberg Global Bond                      |
| Custom Growth Benchmark (7/1/2020 - 12/31/2020)       | 13.14% Russell 3000, 26.28% MSCI ACWI ex-US (Gross), 16.06% MSCI ACWI (Net), 1.46% Wilshire REIT, 2.34% NCREIF Property Index, 9.33% NCREIF ODCE Index, 16.06% S&P 500 +4% (Lagged), 10.22% ICE BofAML High Yield Master II +2%, 2.19% ICE BofAML High Yield Master II, 2.92% Bloomberg Global Bond                       |
| Custom Growth Benchmark (7/1/2019 - 6/30/20)          | 14.7% Russell 3000, 26.4% MSCI ACWI ex-US (Gross), 16.2% MSCI ACWI (Net), 1.5% Wilshire REIT, 2.4% NCREIF Property Index, 9.4% NCREIF ODCE Index, 16.2% S&P 500 +4% (Lagged), 7.4% ICE BofAML High Yield Master II +2%, 2.9% ICE BofAML High Yield Master II, 2.9% Bloomberg Global Bond                                  |
| Custom Growth Benchmark (7/1/2018 - 6/30/2019)        | 16.0% Russell 3000, 27.5% MSCI ACWI ex-US (Gross), 15.9% MSCI ACWI (Net), 1.5% Wilshire REIT, 2.6% NCREIF Property Index, 10.4% NCREIF ODCE Index, 14.5% S&P 500 +4% (Lagged), 5.8% ICE BofAML High Yield Master II +2%, 2.9% ICE BofAML High Yield Master II, 2.9% Bloomberg Global Bond                                 |
| Custom Growth Benchmark (9/30/2017- 6/30/2018)        | 23.6% Russell 3000, 27.2% MSCI ACWI ex-US (Gross), 12.5% MSCI ACWI (Net), 1.5% Wilshire REIT, 2.3% NCREIF Property Index, 9.3% NCREIF ODCE Index, 14.6% S&P 500 +4% (Lagged), 2.8% ICE BofAML High Yield Master II +2%, 6.2% ICE BofAML High Yield Master II  |
| Custom Growth Benchmark (1/1/2017-9/30/2017)          | 32.6% Russell 3000, 15.7% MSCI ACWI ex-US (Gross), 15.5% MSCI ACWI (Net), 1.4% Wilshire REIT, 2.4% NCREIF Property Index, 9.6% NCREIF ODCE Index, 1.6% CPI +4%, 11.5% S&P 500 +4% (Lagged), 2.4% ICE BofAML High Yield Master II +2%, 7.3% ICE BofAML High Yield Master II  |
| Custom Growth Benchmark (Prior to 1/1/2017)           | Weighted-average of the benchmarks of the sub-composites that make up the composite.  |
| Custom Diversifying Benchmark (7/1/2021-present)      | 35.71% Bloomberg US Aggregate, 21.43% FTSE 3-Month T-bill +4%, 21.43 FTSE 3-Month T-bill +5%, 21.43% Bloomberg Barclays US Aggregate +1%  |
| Custom Diversifying Benchmark (8/1/2020 - 6/30/2021)  | 46.15% Bloomberg US Aggregate, 30.77 FTSE 3-Month T-bill +4%, 23.08 FTSE 3-Month T-bill +5%.  |
| Custom Diversifying Benchmark (7/1/2018 - 7/31/2020)  | 43.75% Bloomberg US Aggregate, 25% CPI + 4%, 31.25% HFRI EH Equity Market Neutral.  |
| Custom Diversifying Benchmark (10/1/2017 - 6/30/2018) | 58.33% Bloomberg US Aggregate, 41.67% CPI + 4%.   |
| Custom Diversifying Benchmark (1/1/2017 - 9/30/2017)  | 56.1% Bloomberg US Aggregate, 43.9% CPI + 4%.   |
| Custom Diversifying Benchmark (Prior to 1/1/2017)     | Weighted-average of the benchmarks of the sub-composites that make up the composite.  |
| Custom Diversifying Multi-Asset Benchmark (current)   | 50% FTSE 3-Month T-bill +5%, 50% Bloomberg Barclays US Aggregate +1%  |
| Real Estate Benchmark (current)                       | 20% Wilshire REIT, 80% Private Real Estate composite returns.   |
| Real Estate Benchmark (4/1/2012-11/30/2016)           | 40% Wilshire REIT, 50% NCREIF Property Index, 10% FTSE/EPRA NAREIT Developed ex-US.   |



| Manager Line Up                               |                |                 |                                   |                |                 |
|---|----------------|-----------------|-----------------------------------|----------------|-----------------|
| Manager                                       | Inception Date | Data Source     | Manager                           | Inception Date | Data Source     |
| BlackRock Russell 1000 Index                  | 4/20/2017      | BlackRock       | Invesco Real Estate V             | 9/27/2022      | Invesco         |
| Boston Partners                               | 6/1/1995       | Northern Trust  | Oaktree REOF V                    | 12/31/2011     | Oaktree         |
| Emerald Advisors                              | 4/7/2003       | Northern Trust  | Oaktree REOF VI                   | 9/30/2013      | Oaktree         |
| Ceredex                                       | 11/6/2011      | Northern Trust  | Oaktree REOF VII                  | 4/1/2015       | Oaktree         |
| Pyrford                                       | 4/25/2014      | State Street    | PCCI IX                           | 4/28/2022      | PCCP            |
| William Blair                                 | 10/29/2010     | William Blair   | Siguler Guff DREOF                | 1/25/2012      | Siguler Guff    |
| PIMCO RAE Emerging Markets                    | 2/28/2017      | State Street    | Siguler Guff DREOF II             | 8/31/2013      | Siguler Guff    |
| TT Emerging Markets                           | 7/27/2017      | TT              | Siguler Guff DREOF II Co-Inv      | 1/27/2016      | Siguler Guff    |
| Artisan Partners                              | 10/1/2012      | SEI Trust       | Paulson Real Estate Fund II       | 11/10/2013     | Paulson         |
| First Eagle                                   | 1/18/2011      | Northern Trust  | AE Industrial Partners Fund II    | 4/8/2019       | StepStone Group |
| Allianz Global Investors                      | 4/25/2000      | Northern Trust  | Adams Street Partners             | 3/18/1996      | StepStone Group |
| Adelante                                      | 9/30/2001      | Northern Trust  | Adams Street Partners II          | 1/16/2009      | StepStone Group |
| AQR Global Risk Premium - EL                  | 1/18/2019      | AQR             | Adams Street Partners Venture     | 4/28/2017      | StepStone Group |
| Panagora Risk Parity Multi Asset              | 3/15/2019      | Panagora        | Adams Street Partners - BFP       | 1/18/1996      | StepStone Group |
| AFL-CIO                                       | 6/30/1991      | AFL-CIO         | Adams Street Partners - Fund 5    | 9/21/2012      | StepStone Group |
| Wellington Real Total Return (in Liquidation) | 2/26/2013      | Wellington      | Aether Real Assets IV             | 3/16/2016      | StepStone Group |
| Acadian Multi-Asset Absolute Return Fund      | 8/4/2020       | SS&C            | Aether Real Assets III            | 11/27/2013     | StepStone Group |
| Sit LLCAR                                     | 4/15/2021      | Northern Trust  | Aether Real Assets III Surplus    | 11/30/2013     | StepStone Group |
| Sit Short Duration                            | 11/2/2016      | Northern Trust  | Bay Area Equity Fund              | 6/14/2004      | StepStone Group |
| DFA Short Credit                              | 11/21/2016     | Northern Trust  | Bay Area Equity Fund II           | 12/7/2009      | StepStone Group |
| Insight Short Duration                        | 11/18/2016     | Northern Trust  | Commonfund                        | 6/28/2013      | StepStone Group |
| Parametric Overlay                            | 3/29/2017      | Northern Trust  | EIF US Power Fund II              | 8/16/2005      | StepStone Group |
| Cash  | -              | Northern Trust  | EIF US Power Fund III             | 5/30/2007      | StepStone Group |
| Angelo Gordon Energy Credit Opp               | 9/24/2015      | StepStone Group | EIF US Power Fund IV              | 11/28/2011     | StepStone Group |
| StepStone CC Opportunities Fund               | 2/1/2018       | StepStone Group | EIF US Power Fund V               | 11/28/2016     | StepStone Group |
| Torchlight II                                 | 9/30/2006      | StepStone Group | Genstar Capital Partners IX, L.P. | 2/21/2019      | StepStone Group |
| Torchlight IV                                 | 7/1/2012       | StepStone Group | Oaktree PIF 2009                  | 2/28/2010      | StepStone Group |
| Torchlight V                                  | 7/1/2012       | StepStone Group | Paladin III                       | 11/30/2007     | StepStone Group |
| Angelo Gordon Realty Fund VIII                | 1/23/2012      | Angelo Gordon   | Ocean Avenue Fund II              | 6/11/2014      | StepStone Group |
| Angelo Gordon Realty Fund IX                  | 12/8/2014      | Angelo Gordon   | Ocean Avenue Fund III             | 4/15/2016      | StepStone Group |
| Blackstone Real Estate Partners VIII          | 3/24/2023      | Blackstone      | Pathway 6                         | 5/24/2011      | StepStone Group |
| DLJ RECP III                                  | 6/23/2005      | DLJ             | Pathway 7                         | 2/7/2013       | StepStone Group |
| DLJ RECP IV                                   | 2/11/2008      | DLJ             | Pathway 8                         | 11/23/2015     | StepStone Group |
| DLJ RECP V                                    | 7/1/2014       | DLJ             | Pathway                           | 11/9/1998      | StepStone Group |
| DLJ RECP VI                                   | 3/19/2019      | DLJ             | Pathway 2008                      | 12/26/2008     | StepStone Group |
| LaSalle Income & Growth VI                    | 7/16/2013      | LaSalle         | Siguler Guff CCCERA Opps          | 6/3/2014       | StepStone Group |
| LaSalle Income & Growth VII                   | 2/28/2017      | LaSalle         | Siguler Guff Secondary Opps       | 11/30/2016     | StepStone Group |
| Hearthstone II                                | 6/17/1998      | Hearthstone     | Siris Partners IV                 | 3/15/2019      | StepStone Group |
| Long Wharf Fund IV                            | 7/3/2013       | Long Wharf      | TPG Healthcare Partners, L.P.     | 6/28/2019      | StepStone Group |
| Long Wharf Fund V                             | 9/30/2016      | Long Wharf      | Trident VIII, L.P.                | 5/24/2019      | StepStone Group |
| Long Wharf Fund VI                            | 2/5/2020       | Long Wharf      | Wastewater Opp. Fund              | 12/8/2015      | StepStone Group |
| Long Wharf Fund VII                           | 5/30/2023      | Long Wharf      | Cross Lake RE IV                  | 12/14/2023     | Cross Lake      |
| Invesco Real Estate IV                        | 6/30/2014      | Invesco         | KSL Capital Partners VI, L.P.     | 11/10/2023     | KSL             |
| Invesco Real Estate V                         | 2/20/2019      | Invesco         |                                   |                |                 |

**Other Disclosures**

All data prior to 12/31/2014 was provided by previous consultant.  
 As of 7/1/2018 all Private Equity and Private Credit data is provided by StepStone Group.

# Glossary

---

**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.

## Disclaimer

---

This report contains confidential and proprietary information and is subject to the terms and conditions of the Consulting Agreement. It is being provided for use solely by the customer. The report may not be sold or otherwise provided, in whole or in part, to any other person or entity without written permission from Verus Advisory, Inc., (hereinafter Verus) or as required by law or any regulatory authority. The information presented does not constitute a recommendation by Verus and cannot be used for advertising or sales promotion purposes. This does not constitute an offer or a solicitation of an offer to buy or sell securities, commodities or any other financial instruments or products.

The information presented has been prepared using data from third party sources that Verus believes to be reliable. While Verus exercised reasonable professional care in preparing the report, it cannot guarantee the accuracy of the information provided by third party sources. Therefore, Verus makes no representations or warranties as to the accuracy of the information presented. Verus takes no responsibility or liability (including damages) for any error, omission, or inaccuracy in the data supplied by any third party. Nothing contained herein is, or should be relied on as a promise, representation, or guarantee as to future performance or a particular outcome. Even with portfolio diversification, asset allocation, and a long-term approach, investing involves risk of loss that the investor should be prepared to bear.

The information presented may be deemed to contain forward-looking information. Examples of forward looking information include, but are not limited to, (a) projections of or statements regarding return on investment, future earnings, interest income, other income, growth prospects, capital structure and other financial terms, (b) statements of plans or objectives of management, (c) statements of future economic performance, and (d) statements of assumptions, such as economic conditions underlying other statements. Such forward-looking information can be identified by the use of forward looking terminology such as believes, expects, may, will, should, anticipates, or the negative of any of the foregoing or other variations thereon comparable terminology, or by discussion of strategy. No assurance can be given that the future results described by the forward-looking information will be achieved. Such statements are subject to risks, uncertainties, and other factors which could cause the actual results to differ materially from future results expressed or implied by such forward looking information. The findings, rankings, and opinions expressed herein are the intellectual property of Verus and are subject to change without notice. The information presented does not claim to be all-inclusive, nor does it contain all information that clients may desire for their purposes. The information presented should be read in conjunction with any other material provided by Verus, investment managers, and custodians.

Verus will make every reasonable effort to obtain and include accurate market values. However, if managers or custodians are unable to provide the reporting period's market values prior to the report issuance, Verus may use the last reported market value or make estimates based on the manager's stated or estimated returns and other information available at the time. These estimates may differ materially from the actual value. Hedge fund market values presented in this report are provided by the fund manager or custodian. Market values presented for private equity investments reflect the last reported NAV by the custodian or manager net of capital calls and distributions as of the end of the reporting period. These values are estimates and may differ materially from the investments actual value. Private equity managers report performance using an internal rate of return (IRR), which differs from the time-weighted rate of return (TWRR) calculation done by Verus. It is inappropriate to compare IRR and TWRR to each other. IRR figures reported in the illiquid alternative pages are provided by the respective managers, and Verus has not made any attempts to verify these returns. Until a partnership is liquidated (typically over 10-12 years), the IRR is only an interim estimated return. The actual IRR performance of any LP is not known until the final liquidation.

Verus receives universe data from InvMetrics, eVestment Alliance, and Morningstar. We believe this data to be robust and appropriate for peer comparison. Nevertheless, these universes may not be comprehensive of all peer investors/managers but rather of the investors/managers that comprise that database. The resulting universe composition is not static and will change over time. Returns are annualized when they cover more than one year. Investment managers may revise their data after report distribution. Verus will make the appropriate correction to the client account but may or may not disclose the change to the client based on the materiality of the change.



Meeting Date  
**02/28/2024**  
Agenda Item  
**#5b.**

## **Memorandum**

Date: February 28, 2024

To: CCCERA Board of Retirement Trustees

From: Timothy Price, Chief Investment Officer

Subject: Investment Staff Report – Q4 2023

---

### **Overview**

On a quarterly basis CCCERA's Board receives a report which details critical elements of CCCERA's Functionally Focused Portfolio's sub-portfolios. The purpose of the report is to highlight elements of the sub-portfolios which are good indicators to the Board of the program's efficient and effective operation.

### **Summary**

CCCERA's Total Fund is largely performing as expected, exhibiting returns above expectations for the amount of risk taken over the long term. This is measured by the Sharpe Ratio (risk-adjusted return), and a comparison to the Simple Target Index. The Simple Target Index is the most basic index which could replicate CCCERA's Total Fund, and is made up of 76% MSCI ACWI, 17% Bloomberg 1-3 Year Gov/Credit, and 7% 3-Month Treasury Bills (please see the Total Fund pages in the appendix for additional details). CCCERA's portfolio is much more complex, especially as it relates to allocations to private equity, private credit, and real estate.

Over shorter periods, there are aspects of the implementation that have fallen short of expectations, which are discussed in the Growth and Risk Diversifying sub-portfolio reviews.

CCCERA has been rewarded for implementing a more complex portfolio and has outperformed the Simple Target Index over the trailing ten-year period, but has lagged the STI over shorter periods, while experiencing less risk (volatility). Details on performance relative to this index are included in the appendix. It is worth noting that CCCERA's Total Fund return is an aggregate of the performance of the Liquidity, Growth, and Risk Diversifying sub-portfolios.

### **1) Liquidity**

The purpose of the liquidity program is to match three years of benefit payments with high credit quality, low duration assets. The liquidity sub-portfolio is made up of three fixed income managers, all of whom pursue a high quality, low duration investment approach. In the fourth quarter of 2023, all managers held high quality (as measured by credit ratings), low duration portfolios. The average credit quality for the entire liquidity program is AA- (AAA is the highest rating), and the duration is 1.7 years, which is considered short.

### **2) Growth**

The Growth portfolio is designed to take advantage of capital appreciation and income opportunities globally. To achieve this, the Growth portfolio includes a variety of assets, from stocks and growth-oriented bonds to private equity, real estate, and private credit.

For the trailing five-year period ending December 31, 2023, the Growth portfolio returned 9.0% relative to the index return of 11.7%, for a relative underperformance of -2.7%. Over this period, the Growth program produced a superior Sharpe ratio of 0.6 relative to the index's 0.5. During the fourth quarter of 2023, CCCERA's Growth sub-portfolio returned 6.4% relative to MSCI ACWI Index return of 11.0%. We expect underperformance relative to the public equity markets during sharp rallies such as we experienced in 2023 due to the private market investments where valuations lag.

### **3) Risk Diversifying**

The Risk Diversifying mandate holds assets that are expected to diversify the growth portfolio's volatility while offering moderate growth. The mandate as a whole seeks to be highly liquid, have a low beta to the growth market, and produce positive real returns. In the fourth quarter, the Risk Diversifying mandate fulfilled two of these goals. The entire mandate can be liquidated within 90 days, meeting the requirement of high liquidity. The correlation of the mandate to growth markets is 0.7, the same as in September 2023. The trailing real (net of inflation) return over the past five years is -3.5%, improving in the last quarter from -4.1%, but remaining below expectations. Recent changes to diversify this portion of the portfolio away from fixed income have been beneficial over the past year.

By and large, the product teams and asset managers across all managers are stable. There have been two personnel changes announced at TT and Acadian. We have conducted on-site reviews with both firms. CCCERA's Total Fund in aggregate is performing in line with expectations, having a similar or higher risk-adjusted return but a lower level of volatility compared to the Simple Target Index. Enclosed are additional details on CCCERA's Total Fund, sub-portfolios, and individual investment strategies.

### CCCERA Portfolio Report Card

Below we have itemized those elements of each of CCCERA’s sub-portfolios and Total Fund which we believe the Board should pay particular attention to. Additional details on each of the sub-portfolios are available in the appendix. All CCCERA performance is stated on a net of fees basis.

#### Liquidity

| Objective           | Measurement                         | Current Period Data | Status               |
|---------------------|-------------------------------------|---------------------|----------------------|
| High Quality        | Credit Quality                      | AA-                 | Meeting Expectations |
| Low Risk            | Duration                            | 1.7 years           | Meeting Expectations |
| Appropriately Sized | Months of Benefit Payments Invested | 31 Months           | Meeting Expectations |

#### Growth

| Objective                    | Measurement                | Current Period Data                                 | Status               |
|------------------------------|----------------------------|---|----------------------|
| Growth of Plan Assets        | Absolute Returns           | Trailing 5 yr return: 9.0%                          | Meeting Expectations |
|                              | Benchmark Relative Returns | -2.7% relative to ACWI over trailing 5 years        | Below Expectations   |
| Efficient Capital Deployment | Sharpe Ratio               | CCCERA: 0.6<br>MSCI ACWI: 0.5 over trailing 5 years | Meeting Expectations |

#### Risk Diversifying

| Objective                             | Measurement  | Current Period Data                                  | Status               |
|---------------------------------------|--|--|----------------------|
| Offset Volatility in Growth Portfolio | Correlation  | 0.7 over trailing 5 years                            | Below Expectations   |
| Positive Real Returns                 | Returns  | 5 yr real return: -3.5%<br>5 yr nominal return: 0.6% | Below Expectations   |
| High Liquidity                        | % of Portfolio that can be liquidated within 90 days | 100%   | Meeting Expectations |

#### Total Fund

| Objective                              | Component/Measurement           | Status               |
|--|---------------------------------|----------------------|
| Store 3 Years of Benefit Payments      | Liquidity Sub-portfolio         | Meeting Expectations |
| Participate in Growth Opportunities    | Growth Sub-portfolio            | Meeting Expectations |
| Provide an offset to Growth volatility | Risk Diversifying Sub-portfolio | Below Expectations   |
| Produce superior risk adjusted returns | Total Fund Sharpe Ratio         | Meeting Expectations |

**Appendix – Liquidity Sub-Portfolio**

**Manager Reviews**

**Organizational Stability**

|         | Portfolio Management Assessment | 1 Year Product Asset Growth | 1 Year Firm Asset Growth | Regulatory Action in Last Year? |
|---------|---------------------------------|-----------------------------|--------------------------|---------------------------------|
| Insight | Good                            | -5%                         | 5%                       | N                               |
| Sit     | Good                            | -12%                        | 3%                       | N                               |
| DFA     | Good                            | 14%                         | 16%                      | N                               |

**Performance**

|         | Portfolio Average Credit Quality | Portfolio Average Duration | Portfolio Average Yield | 1 Year Total Return |
|---------|----------------------------------|----------------------------|-------------------------|---------------------|
| Insight | A+                               | 1.2                        | 5.1                     | 5.6%                |
| Sit     | AAA                              | 2.9                        | 5.7                     | 5.0%                |
| DFA     | A                                | 0.5                        | 5.6                     | 5.3%                |

**Manager Notes:**

Fixed income yields have moderated on the growing consensus that the Federal Reserve is done raising rates for this cycle. The shorter duration of CCCERA’s mandates have provided relative protection during these rate hikes, as has the buy and maintain bias of the portfolio.

**Manager Theses:**

The Liquidity Portfolio is a combination of three managers which work together to match three years of CCCERA’s liabilities. The portfolio is refreshed every year during the annual funding plan.

Insight: Insight plays a completion role in the liquidity program, matching out liabilities with short duration government and corporate fixed income securities.

DFA: Dimensional Fund Advisors runs a strategy that focuses on obtaining fixed income exposures via the most liquid securities available. DFA contributes to the Liquidity Program by selling securities at regular intervals to pay a portion of CCCERA’s monthly benefit payment.

Sit: Sit invests in high yielding government backed mortgages. The cash flow from these securities is harvested monthly to make up a portion of CCCERA’s monthly benefit payment.

## Appendix – Growth Sub-Portfolio

### Manager Reviews

#### Organizational Stability

|                      | Portfolio Management Assessment | 1 Year Product Asset Growth | 1 Year Firm Asset Growth | Regulatory Action in Last Year? |
|----------------------|---------------------------------|-----------------------------|--------------------------|---------------------------------|
| Boston Partners      | Good                            | 5%                          | 7%                       | N                               |
| BlackRock Index Fund | Good                            | 12%                         | 16%                      | N                               |
| Emerald Advisors     | Good                            | 15%                         | 14%                      | N                               |
| Ceredex              | Good                            | -22%                        | -11%                     | N                               |
| Pyrford              | Good                            | 7%                          | 0%                       | N                               |
| William Blair        | Good                            | 9%                          | 20%                      | N                               |
| First Eagle          | Good                            | 9%                          | 8%                       | N                               |
| Artisan Global       | Good                            | 14%                         | 17%                      | N                               |
| PIMCO/RAE EM         | Good                            | 24%                         | 7%                       | N                               |
| TT EM                | Good                            | -40%                        | -26%                     | N                               |
| Adelante             | Good                            | 7%                          | 5%                       | N                               |
| Invesco REIT         | Good                            | 20%                         | 12%                      | N                               |
| Voya                 | Good                            | 14%                         | 1%                       | N                               |
| AQR                  | Good                            | -2%                         | 4%                       | N                               |
| PanAgora             | Good                            | -25%                        | 2%                       | N                               |
| Private Equity       | Good                            | --                          | --                       | N                               |
| Private Credit       | Good                            | --                          | --                       | N                               |
| Real Estate          | Good                            | --                          | --                       | N                               |



### Performance

|                                   | Trailing 1-Yr Return | Trailing 5-yr Return | Trailing 10-yr Return | Performance in Line with Expectations? | Inception Date |
|-----------------------------------|----------------------|----------------------|-----------------------|--|----------------|
| MSCI ACWI-ND                      | 22%                  | 12%                  | 8%                    |  |                |
| Boston Partners                   | 14%                  | 13%                  | 9%                    | Y                                      | 04/30/1995     |
| BlackRock Index Fund              | 27%                  | 16%                  | 12%                   | Y                                      | 03/31/2017     |
| Emerald Advisors                  | 18%                  | 11%                  | 9%                    | Y                                      | 03/31/2003     |
| Ceredex                           | 15%                  | 10%                  | 7%                    | Y                                      | 09/30/2011     |
| <b>Total Domestic Equity</b>      | <b>21%</b>           | <b>13%</b>           | <b>10%</b>            | <b>Y</b>                               |                |
| Pyrford                           | 15%                  | 8%                   | 4%                    | Y                                      | 03/31/2014     |
| William Blair                     | 16%                  | 10%                  | 5%                    | Y                                      | 09/30/2010     |
| PIMCO/RAE EM                      | 23%                  | 8%                   | 5%                    | Y                                      | 01/31/2017     |
| TT EM                             | 6%                   | 3%                   | 4%                    | N                                      | 06/30/2017     |
| <b>Total International Equity</b> | <b>15%</b>           | <b>7%</b>            | <b>4%</b>             | <b>Y</b>                               |                |
| First Eagle                       | 13%                  | 9%                   | 6%                    | Y                                      | 12/31/2010     |
| Artisan Global                    | 24%                  | 13%                  | 10%                   | Y                                      | 11/30/2012     |
| <b>Total Global Equity</b>        | <b>18%</b>           | <b>11%</b>           | <b>8%</b>             | <b>Y</b>                               |                |
| Adelante                          | 17%                  | 9%                   | 8%                    | Y                                      | 07/31/2001     |
| Invesco REIT                      | 9%                   | N/A                  | N/A                   | Y                                      | 02/28/2022     |
| Voya                              | 12%                  | 5%                   | 4%                    | N                                      | 04/30/2000     |
| AQR                               | 7%                   | 4%                   | 4%                    | N                                      | 12/31/2018     |
| PanAgora                          | 2%                   | 3%                   | 4%                    | N                                      | 02/28/2019     |
| Private Equity                    | -1%                  | 13%                  | 12%                   | Y                                      |                |
| Private Credit                    | 9%                   | 8%                   | 9%                    | Y                                      |                |
| Real Estate                       | -10%                 | 1%                   | 6%                    | N                                      |                |

For periods longer than inception date within CCCERA's Total Fund, the return is from a representative composite account.

## **Manager Notes:**

On May 15, 2023, TPG announced a deal to acquire Angelo Gordon for \$2.7 billion. That deal closed on November 2, 2023. CCCERA is a current investor in three TPG private equity funds and three funds from Angelo Gordon spanning both credit and real estate strategies.

Niall Paul, lead portfolio and architect of the TT International Global Emerging Market strategy, has announced that he intends to retire as of March 31, 2024. Rob James, who had been a co-PM on the strategy, will continue along with Diego Mauro, who joined the firm in 2020. We have conducted an on-site review with James and Mauro to vet the team's capacity.

## **Manager Theses:**

The growth portfolio includes all managers in public and private equity, real estate, and private credit. These managers grow CCCERA's assets for future benefit payments (beyond the three years already covered by the Liquidity program).

**Boston Partners:** Large cap domestic equity which follows a value discipline. Boston Partners will buy out of favor companies and sell them when their intrinsic values are reflected in the market. Expected to outperform in flat to falling markets.

**BlackRock Index Fund:** Large cap domestic equity portfolio which should follow the Russell 1000 Index.

**Emerald Advisors:** Small cap growth equity seeking companies with high growth rates. Expected to produce strong returns in rising markets, and weak returns in falling markets.

**Ceredex:** Domestic equity small cap value portfolio of companies with dividend yields and low valuations. This portfolio should outperform flat markets.

**Pyrford (Columbia):** International equity value portfolio of non-US companies with low valuations at the country and stock level. This portfolio should outperform in flat markets.

**William Blair:** International equity growth portfolio of non-US companies with high growth rates constructed from the security level. This portfolio should outperform in rapidly rising markets.

**First Eagle:** Global equity portfolio that is benchmark agnostic comprised of companies with low valuations.

**Artisan Global Opportunities:** Global equity portfolio of companies that is benchmark agnostic with accelerating profit cycles and a focus on capital allocation.

**PIMCO/RAE Emerging Markets:** Quantitative equity with a value orientation. This portfolio follows the fundamental indexing approach (ranking companies by metrics other than market capitalization), resulting in a diversified, low turnover portfolio. This portfolio underperforms in momentum driven markets.

**TT International Emerging Markets:** Concentrated, growth-oriented manager which invests in small and mid-cap emerging market companies. TT employs both a top-down and a bottom-up research approach and seeks to outperform by identifying companies that have a catalyst to drive future growth.

**Adelante:** Diversified portfolio of U.S. REITs with a focus on the underlying real estate assets. Adelante is a public market proxy of the core real estate market.

**INVESCO Fundamental Beta REIT:** Invesco invests in US REITs following a sector neutral strategy that allocates to the securities that INVESCO believes have the strongest financial conditions.

**Voya High Yield Fixed Income:** Domestic high yield fixed income portfolio with a focus on security selection. Voya will focus on the higher quality segment of the high yield universe. Voya should provide a steady income stream and provide downside protection in falling markets.

**Private Equity:** CCCERA invests in private equity to generate returns above those available in the public equity markets.

**Private Credit:** CCCERA invests in private credit to generate cash flow streams above those available in the public debt markets.

**Real Estate:** CCCERA invests in value-add, distressed, and opportunistic real estate to generate returns from the capital appreciation and cash flow associated with commercial real estate investment.

**Risk Parity:** Multi-asset approach that strives for balanced contributions to total portfolio risk from multiple asset classes.

## Appendix – Risk Diversifying Sub-Portfolio

### Organizational Stability

|         | Portfolio Management Assessment | 1 Year Product Asset Growth | 1 Year Firm Asset Growth | Regulatory Action in Last Year? |
|---------|---------------------------------|-----------------------------|--------------------------|---------------------------------|
| AFL-CIO | Good                            | 9%                          | 9%                       | N                               |
| Acadian | Under Review                    | 14%                         | 11%                      | N                               |
| Sit     | Good                            | 7%                          | 3%                       | N                               |

### Performance

|         | Trailing 1 Year Correlation to Growth | Trailing 3 Year Correlation to Growth | 1 Year Return | 5 Year Return | % of Portfolio Liquid in 90 Days |
|---------|---------------------------------------|---------------------------------------|---------------|---------------|----------------------------------|
| AFL-CIO | 0.9                                   | 0.8                                   | 5%            | 1%            | 100%                             |
| Acadian | -0.9                                  | -0.7                                  | -6%           | 1%            | 100%                             |
| Sit     | 0.9                                   | N/A                                   | 7%            | N/A           | 100%                             |

### Manager Notes:

Acadian announced on October 2, 2023 that they had parted ways Ilya Figelman as well as four junior members of the systematic team that manages our account. Mr. Figelman had been the founder and lead portfolio manager of the MAARS strategy in which CCCERA is invested. In the interim, the team will be lead by Senior Portfolio Manager Thomas Dobler. We have conducted an on-site review and we are monitoring performance closely.

We are completing our final reviews of two trend following strategies for potential inclusion in the program in early 2024.

### Manager Theses:

Managers in the risk diversifying allocation seek to have a low correlation with the growth portfolio, positive returns in flat and falling equity markets, and a high degree of liquidity. These managers work together to offset some of the risks in the growth portfolio.

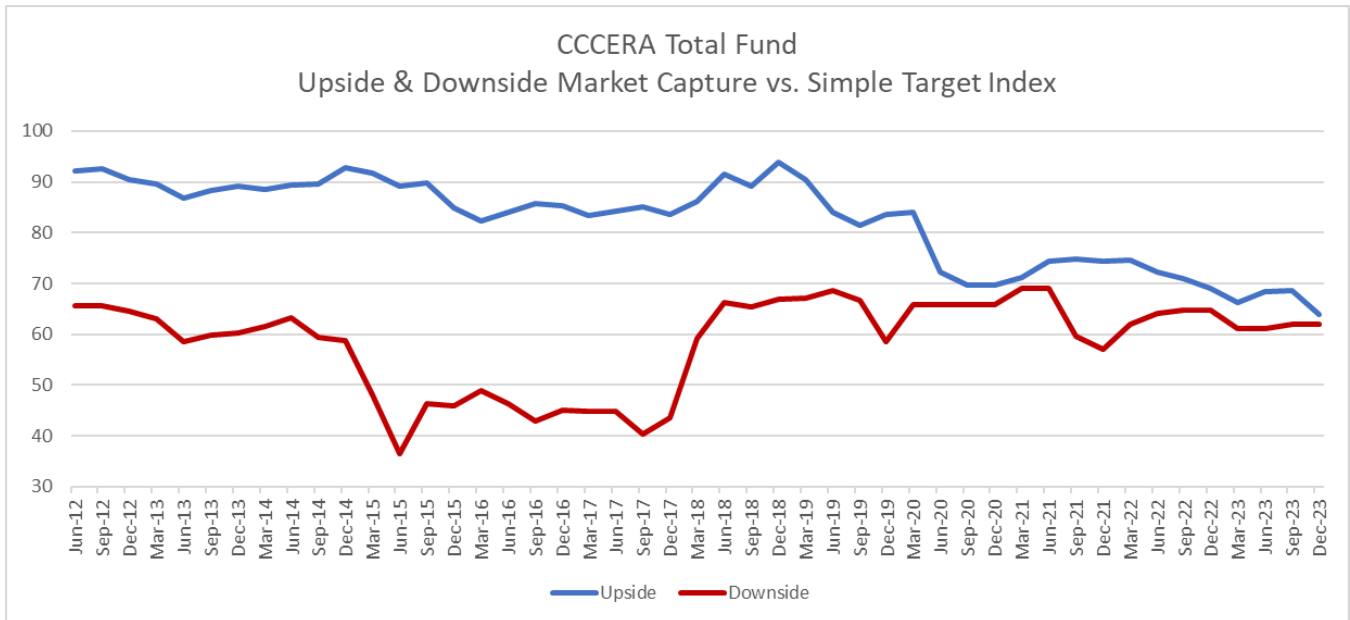
**AFL-CIO:** Portfolio of domestic, high quality fixed income securities which are backed by commercial and residential mortgages.

**Acadian:** Quantitatively managed multi-asset absolute return strategy that uses various models to capture pricing dislocations.

**Sit LLCAR:** Multiple fixed income strategies (closed end funds, mortgages, Treasuries) actively managed to target a modest positive return in most market environments.

## Appendix Data – Total Fund

### Rolling 3-Year Total Fund Upside/Downside Market Capture



\*The composition of the Simple Target Index has mirrored changes in CCCERA's asset allocation over time: from 2008 to 2012 the benchmark was 73% MSCI ACWI, 23% Bloomberg 1-3 Year Gov/Credit, and 4% 3-Month Treasury Bills. From 2012 to 2016 the composition was 74% MSCI ACWI, 18% Bloomberg 1-3 Year Gov/Credit, and 9% 3-Month Treasury Bills. From 2016 to 2017 the composition was 63% MSCI ACWI, 25% Bloomberg 1-3 Year Gov/Credit, and 12% 3-Month Treasury Bills, from 2017 to June 2018 the composition was 61% MSCI ACWI, 27% Bloomberg 1-3 Year Gov/Credit, and 12% 3-Month Treasury Bills, from July 2018 to June 2019 the composition is 69% MSCI ACWI, 23% Bloomberg 1-3 Year Gov/Credit, and 8% 3-Month Treasury Bills, from July 2019 to June 2020 the composition is 68% MSCI ACWI, 24% Bloomberg 1-3 Year Gov/Credit, and 8% 3-Month Treasury Bills, from July 2020 to June 2021 the composition is 68.5% MSCI ACWI, 25% Bloomberg 1-3 Year Gov/Credit, and 6.5% 3-Month Treasury Bills; from July 2021 to June 2022 the composition is 75% MSCI ACWI, 18% Bloomberg 1-3 Year Gov/Credit, and 7% 3-Month Treasury Bills; from July 2022 to present the composition is 75.5% MSCI ACWI, 17% Bloomberg 1-3 Year Gov/Credit, and 7.5% 3-Month Treasury Bills; from July 2023 to present the composition is 76% MSCI ACWI, 17% Bloomberg 1-3 Year Gov/Credit, and 7% 3-Month Treasury Bills.

## Total Fund Quarterly Attribution

|                   | CCCERA Total Fund |        |                     | Simple Target Index |        |                     | Analysis              |                   |              |
|-------------------|-------------------|--------|---------------------|---------------------|--------|---------------------|-----------------------|-------------------|--------------|
|                   | Allocation        | Return | Return Contribution | Allocation          | Return | Return Contribution | Allocation Difference | Return Difference | Total Effect |
| Liquidity         | 17.7%             | 3.0%   | 0.5%                | 17.0%               | 2.7%   | 0.5%                | 0.7%                  | 0.3%              | 0.1%         |
| Growth            | 74.2%             | 6.4%   | 4.7%                | 76.0%               | 11.0%  | 8.4%                | -1.8%                 | -4.7%             | -3.7%        |
| Risk Diversifying | 7.0%              | 2.3%   | 0.2%                | 7.0%                | 1.4%   | 0.1%                | 0.0%                  | 0.9%              | 0.1%         |
| Overlay           | 1.1%              | 8.8%   | 0.1%                | 0%                  | 0%     | 0%                  | 1.1%                  | 8.8%              | 0.1%         |
| Total Fund        | 100%              |        | 5.5%                | 100%                |        | 8.9%                | -0.1%                 |                   | -3.4%        |

## CCCERA Total Fund Performance vs. Simple Target Index

|            | One Year   |            | Three Years |            | Five Years |            | Ten Years  |            |
|------------|------------|------------|-------------|------------|------------|------------|------------|------------|
|            | CCCERA     | STI        | CCCERA      | STI        | CCCERA     | STI        | CCCERA     | STI        |
| Return     | 9.0        | 17.9       | 3.5         | 4.5        | 6.8        | 9.0        | 6.1        | 5.9        |
| Volatility | 6.0        | 9.6        | 8.3         | 12.5       | 9.5        | 14.3       | 7.5        | 11.1       |
| Sharpe     | <b>0.6</b> | <b>1.3</b> | <b>0.2</b>  | <b>0.2</b> | <b>0.5</b> | <b>0.5</b> | <b>0.6</b> | <b>0.4</b> |

The Simple Target Index is made up of 76% MSCI ACWI, 17% Bloomberg 1-3 Year Gov/Credit, and 7% 3-Month Treasury Bill. The purpose of this index is to examine whether CCCERA is being rewarded for pursuing a more nuanced portfolio versus a very simple representative portfolio.

CCCERA's Total Fund has produced good risk adjusted returns over all trailing time periods. The Total Fund has lagged the STI over the trailing one, three and five-year periods. This primarily reflects challenges within the publicly traded equity investments (most notably in emerging markets) as well as the sharp recovery in global equities relative to private asset classes. The long-term track record indicates that CCCERA has been rewarded over time for engaging in more complex investments which target outperformance versus investing passively in the publicly traded market even though these more complex structures.

The Sharpe ratio is a measure of risk adjusted returns which shows the amount of return a portfolio earns above the risk-free rate per unit of volatility. The Total Fund has exceeded the Sharpe ratio relative to the Simple Target Index over all trailing time periods longer than one year, indicating that CCCERA is being favorably rewarded for the level of risk taken in the portfolio.

Meeting Date  
**02/28/2024**  
Agenda Item  
**#7a.**

# SIGULER GUFF

## SAVE THE DATE

Siguler Guff & Company's  
2024 Annual Conference

**The Rainbow Room**  
**30 Rockefeller Plaza**  
**New York, NY 10112**

### Wednesday, May 1, 2024

Advisory Board Meetings  
*details will be shared shortly with Advisory Board Members*

Cocktail Reception  
Dinner with Keynote Speaker  
*all Limited Partners and their Advisors are invited to join*

### Thursday, May 2, 2024

Breakfast Buffet  
Morning Portfolio Reviews  
Lunch  
Afternoon Portfolio Reviews  
*all Limited Partners and their Advisors are invited to join*

**Siguler Guff is pleased to offer a virtual presentation for those who cannot attend the Portfolio Reviews in person. The event details will be included with the forthcoming invitation.**



### **Hilton Santa Barbara Beachfront Resortt**

633 E. Cabrillo Blvd

Santa Barbara, CA 93103

(805) 654-4333

### **70th ANNIVERSARY CELEBRATION**

In 2024, SACRS commemorates 70 years and still going strong in our unwavering support of educating those that provide retirement security to California's public employees. This is an incredible milestone, and we hope your organization will consider supporting us at this special time in our history. SACRS planning teams have been hard at work on ways to mark our Platinum Jubilee. With these plans come opportunities for your organization to share the spotlight. There will be more opportunities than ever before, including an additional online presence, for your organization to be seen as leaders and influencers. With a host of options at a variety of price points there is sure to be a sponsorship that aligns with your marketing goals.

### **70th Celebration Recognition Program**

### **SPEAKER SOLICITATION**

If you would like to submit a suggestion to be considered for a presentation, topic or speaker during a session at the conference, please complete the **speaker solicitation form**. The suggestions must be educational, non-marketing and relevant to SACRS attendees.