San Joaquin County Employees
Retirement Association

A G E N D A

BOARD MEETING
SAN JOAQUIN COUNTY EMPLOYEES RETIREMENT ASSOCIATION
BOARD OF RETIREMENT
FRIDAY, SEPTEMBER 9, 2022
AT 9:00 AM

Location: SJCERA Board Room, 6 S. El Dorado Street, Suite 400, Stockton, California.

In accordance with current State mandates, appropriate face coverings are strongly recommended for all attendees.

The public may also attend the Board meeting live via Zoom by (1) clicking here https://us02web.zoom.us/j/89647375803 and following the prompts to enter your name and email, or (2) calling (669) 219-2599 or (669) 900-9128 and entering Meeting ID 89647375803#.

Persons who require disability-related accommodations should contact SJCERA at (209) 468 -9950 or ElainaP@sjcera.org at least forty-eight (48) hours prior to the scheduled meeting time.

1.0 ROLL CALL

2.0 PLEDGE OF ALLEGIANCE

3.0 APPROVAL OF MINUTES

3.01 Minutes for the Board Meeting of August 12, 2022 4

3.02 Board to consider and take possible action on minutes

4.0 PUBLIC COMMENT

4.01 The public is welcome to address the Board during this time on matters within the Board's jurisdiction, following the steps listed below. Speakers are limited to three minutes, and are expected to be civil and courteous. Public comment on items listed on the agenda may be heard at this time, or when the item is called, at the discretion of the Chair.

If joining via Zoom, Public Comment can be made in the following ways:

PC or Mac: select "Participants" in the toolbar at the bottom of your screen, then select the option to raise or lower your hand.

Mobile Device: select the "More" option in the toolbar at the bottom of your screen, then select the option to raise or lower your hand.

Tablet: select the icon labeled "Participants," typically located at the top right of your screen, then select the hand icon next to your device in the Participants column.

If dialing in from a phone for audio only, dial *9 to "raise your hand."

If attending in person, members of the public are encouraged to complete a Public Comment form, which can be found near the entry to the Board Room.

Except as otherwise permitted by the Ralph M. Brown Act (California Government Code Sections 54950 et seq.), no deliberation, discussion or action may be taken by the Board on items not listed on the agenda. Members of the Board may, but are not required to: (1) briefly respond to statements made or questions posed by persons addressing the Board; (2) ask a brief question for clarification; or (3) refer the matter to staff for further information.

5.0 CONSENT ITEMS

5.01 Service Retirement (15) 8

5.02 Board to consider and take possible action on consent items

6.0 ACTUARIAL VALUATION REPORT AND 2023 RETIREMENT CONTRIBUTION RATES 10

6.01 Presented by Graham Schmidt of Cheiron

01 Annual Actuarial Valuation Report as of January 1, 2022 13

6.02 Board to receive and file report

6.03 Resolution 2022-09-01 titled “2023 Retirement Contribution Rates” 117

6.04 Board to consider and take possible action on approval of retirement contribution rates for 2023 and adoption of Resolution 2022-09-01

7.0 IMPLEMENTATION OF LOW-DEFAULT-RISK OBLIGATION MEASURE

7.01 Presentation by Graham Schmidt of Cheiron

01 Cheiron Advisory: LDROM for Public Plans https://cheiron.us/cheironHome/viewArtAction.do?artID=379 123

7.02 Board to receive and file report, discuss and give direction to staff and consultants as appropriate

8.0 INVESTMENT CONSULTANT REPORTS

8.01 Presentation by David Sancewich of Meketa Investment Group

01 Quarterly Reports from Investment Consultant for Period Ended June 30, 2022

a Investment Performance Report 129

b Manager Certification Report 233

c Manager Review Schedule 260

02 Monthly Investment Performance Updates

a Manger Performance Flash Report - July 2022 261

b Economic and Market Update - Data as of July 31, 2022 266

8.02 Board to receive and file reports

9.0 STAFF REPORTS

9.01 Trustee and Executive Staff Travel

01 Conferences and Events Schedule for 2022 286

02 Summary of Pending Trustee and Executive Staff Travel 287

03 Summary of Completed Trustee and Executive Staff Travel 288

9.02 Board to consider and take possible action on any new travel request

9.03 Legislative Summary Report 289

9.04 CEO Report 294

9.05 Board to receive and file reports

10.0 CORRESPONDENCE

10.01 Letters Received (0)

10.02 Letters Sent (0)

10.03 Market Commentary/Newsletters/Articles

01 Fin News 298
Despite Global Turmoil, Here's Why Investors Shouldn't
Write Off Emerging Markets: Meketa
July 18, 2022

02 Fundfire 301
Low Inflation Won't Return Pimco Economist Says
August 23, 2022

03 Fundfire 303
Pension Funds Cut Stakes in Office
Buildings in Favor of Warehouses, Labs
August 26, 2022

04 Meketa Investment Group 305
Whitepaper
Non-Core Real Estate
August 2022

05 NCPERS Monitor 321
August 2022

06 Institutional Investor 331
Evidence that Private Equity Managers Inflate Fund Values When Raising Money
August 30, 2022

11.0 COMMENTS

11.01 Comments from the Board of Retirement

12.0 CLOSED SESSION

12.01 Personnel Matters
California Government Code Section 54957
Employee Disability Retirement Application(s) (2)

13.0 CALENDAR

13.01 Board Meeting October 5, 2022, at 9:00 AM

13.02 Investment Round Table October 6, 2022, at 8:00 AM

13.03 Board Meeting November 4, 2022, at 9:00 AM

14.0 ADJOURNMENT

M I N U T E S

BOARD MEETING
SAN JOAQUIN COUNTY EMPLOYEES RETIREMENT ASSOCIATION
BOARD OF RETIREMENT
FRIDAY, AUGUST 12, 2022
AT 9:00 AM

Location: SJCERA Board Room, 6 S. El Dorado Street, Suite 400, Stockton, California.
Alternate Teleconference Location: 1485 Cerro Verde, Tracy, CA 95376

1.0 ROLL CALL

1.01 **MEMBERS PRESENT:** Phonxay Keokham, Emily Nicholas, Jennifer Goodman, Robert Rickman, Chanda Basset, JC Weydert, Steve Moore, Raymond McCray (Via Zoom, in at 9:03 AM, out at 10:00 AM) and Michael Restuccia, presiding.
MEMBERS ABSENT: Michael Duffy
STAFF PRESENT: Chief Executive Officer Johanna Shick, Assistant Chief Executive Brian McKelvey, Management Analyst III Greg Frank, Information Systems Specialist II Jordan Regevig, Information Systems Analyst II Lolo Garza, Administrative Secretary Elaina Petersen
OTHERS PRESENT: Deputy County Counsel Jason Morrish, Graham Schmidt and Anne Harper of Cheiron, Erik White (Via Zoom) of Meketa Investment Group

2.0 PLEDGE OF ALLEGIANCE

2.01 Led by Michael Restuccia

3.0 APPROVAL OF MINUTES

3.01 Minutes for the Board Meeting of July 8, 2022

3.02 The Board voted (7-0) to approve the Minutes of the Board Meeting of July 8, 2022 (Motion: Weydert; Second: Keokham)

4.0 PUBLIC COMMENT

4.01 There was no public comment.

5.0 CONSENT ITEMS

5.01 Service Retirement (18)

5.02 The Board voted unanimously (8-0) to approve the Consent Calendar Items. (Motion: Keokham; Second: Goodman)

6.0 ACTUARIAL ASSUMPTIONS DISCUSSION

6.01 Presentation by Graham Schmidt and Anne Harper of Cheiron

01 Actuarial Assumptions Review

02 Actuarial Experience Study Report - January 1, 2019 through December 31, 2021

6.02 The Board received and filed reports

6.03 The Board voted unanimously (8-0) to reduce the Assumed Rate of Return from 7 percent to 6.75 percent (Motion: Weydert; Second: Keokham).

7.0 INVESTMENT CONSULTANT REPORTS

7.01 Presentation by Eric White of Meketa Investment Group

01 Monthly Investment Performance Updates

a Manager Performance Flash Report - June 2022

b Economic and Market Update - June 2022

02 Total Portfolio Fee Review

03 Annual Investment Roundtable Update and Preliminary Agenda Review

7.02 The Board received and filed reports after suggesting changes to the Roundtable agenda including moving the break to 3:00 P.M., decreasing the time allotted to open discussion, and requesting the deli buffet for lunch.

8.0 STAFF REPORTS

8.01 Trustee and Executive Staff Travel

01 Conferences and Events Schedule for 2022

02 Summary of Pending Trustee and Executive Staff Travel

03 Summary of Completed Trustee and Executive Staff Travel

a NCPERS 2022 Chief Officers Summit

8.02 The Board received and filed reports

8.03 Legislative Summary Report

8.04 CEO Report

In addition to the written report, CEO Shick reported: (1) SJCERA executed a contract with IGI regarding the transfer of ownership of our legacy Pension Administration System on August 5, 2022. (2) Distribution of annual Member Statements to Active and Deferred members began in August, the earliest they have been mailed in five years. (3) On August 9, 2022 the San Joaquin County Board of Supervisors adopted Government Code section 31760.3 related to spousal notification; staff and counsel are working on implementation, including updating member communications and forms, documenting procedures, and training staff. (4) She expressed appreciation of the collaborative, positive working relationship between SJCERA and the County Administrator's Office.

8.05 The Board received and filed reports

9.0 CORRESPONDENCE

9.01 Letters Received (0)

9.02 Letters Sent (0)

9.03 Market Commentary/Newsletters/Articles

01 NCPERS
Monitor
July 2022

02 Fundfire
San Diego Pension Overhauls
EM Debt Portfolio
July, 6, 2022

03 Fundfire
Endowments Face Limited Options
amid Coming Private Markets Write-Downs
July 11, 2022

04 Fundfire
Investors Shift Equity Allocations
amid Market Fears
July 21, 2022

05 Fundfire
Pensions Return Expectations Fall
Below 7% for First Time
July 25, 2022

06 NCPERS
Monitor
August 2022

10.0 CLOSED SESSION

THE CHAIR CONVENED CLOSED SESSION AT 10:00 A.M. AND ADJOURNED CLOSED SESSION AND RECONVENED OPEN SESSION AT 10:37 A.M.

10.01 Personnel Matters
California Government Code Section 54957
Employee Disability Retirement Application(s) (2)

01 Consent items

a Megan Garcia
Juvenile Detention Unit Supervisor
Service-Connected Disability

The Board voted unanimously (7-0) to accept the findings and recommendation of the Administrative Law Judge and deny the application for service-connected disability retirement. (Motion: Keokham; Second: Goodman)

b Nadeya Lavandero
Eligibility Worker II
Serivce-Connected Disability

The Board voted unanimously (7-0) to accept the findings and recommendation of the Administrative Law Judge and deny the application for service-connected disability retirement. (Motion: Keokham; Second: Bassett)

11.0 BOARD OF RETIREMENT COMMITTEE ASSIGNMENTS

11.01 Chair to review committee assignments and announce changes as appropriate

01 Trustee committee assignments as of June 30, 2022

12.0 CALENDAR

12.01 Board Meeting September 9, 2022

13.0 ADJOURNMENT

13.01 There being no further business the meeting was adjourned at 10:40 a.m.

Respectfully Submitted:

____

Michael Restuccia, Chair

Attest:

____

Raymond McCray, Secretary

San Joaquin County Employees Retirement Association

September 2022

5.01 Service Retirement — Consent

01 NANCY L BAKER — Deferred Member, N/A

Member Type: General
Years of Service: 13y 02m 03d
Retirement Date: 7/5/2022
Comments: Deferred from SJCERA since September 2001. Outgoing reciprocity and concurrent retirement with CalPERS.

02 TAMARA L CLARK — Legal Process Clerk III, Court-Family Law

Member Type: General
Years of Service: 23y 01m 13d
Retirement Date: 7/18/2022

03 FELISA GALINDO — Eligibility Worker II, HSA - Eligibility Staff

Member Type: General
Years of Service: 23y 11m 11d
Retirement Date: 7/31/2022

04 KATHRIN J GARDEA — Deferred Member, N/A

Member Type: General
Years of Service: 06y 10m 02d
Retirement Date: 7/12/2022
Comments: Deferred from SJCERA since July 2016.

05 KIMBERLY D HAMLETT — Child Welfare Division Chief, HSA - Admin Support

Member Type: General
Years of Service: 16y 11m 23d
Retirement Date: 7/11/2022

06 IMAD T KAFILMOUT — Physician, Hosp Labor-Del-Rcvry-Post Part

Member Type: General
Years of Service: 07y 03m 28d
Retirement Date: 7/9/2022
Comments: Tier 2 member - eligible to retire with 5 years of service.

07 TERRY S KITAGUCHI — Deferred Member, N/A

Member Type: General
Years of Service: 11y 07m 04d
Retirement Date: 7/25/2022
Comments: Deferred from SJCERA since December 2021. Incoming reciprocity and concurrent retirement with VCERA.

08 STEVEN J LANTSBERGER — EEDD Economic Development Dir, Employment - Economic Developm

Member Type: General
Years of Service: 06y 07m 26d
Retirement Date: 6/29/2022
Comments: Tier 2 member - eligible to retire with 5 years of service.

09 SO KUEN L LI — Accountant III, Children - Families Program

Member Type: General
Years of Service: 05y 07m 14d
Retirement Date: 7/12/2022
Comments: Tier 2 member - eligible to retire with 5 years of service.

10 **GARY MCCORD** Solid Waste Recovery Worker
Lovelace Transfer District

Member Type: General
Years of Service: 15y 01m 26d
Retirement Date: 7/11/2022

11 **JESSE J MUNOZ** Phys Therapist Assistant
Hosp Physical Therapy

Member Type: General
Years of Service: 05y 06m 24d
Retirement Date: 6/25/2022
Comments: Tier 2 member - eligible to retire with 5 years of service.

12 **BERNARD M NOLETTE** Park Worker
Parks - Recreation

Member Type: General
Years of Service: 10y 01m 04d
Retirement Date: 7/31/2022

13 **EVELYN M OLIVEIRA** Personnel Analyst II
Human Resources

Member Type: General
Years of Service: 15y 05m 07d
Retirement Date: 7/30/2022

14 **JIN R SOOFI** Deferred Member
N/A

Member Type: General
Years of Service: 05y 03m 06d
Retirement Date: 7/8/2022
Comments: Deferred from SJCERA since June 2020. Outgoing reciprocity and concurrent retirement with MCERA. Tier 2 member - eligible to retire with 5 years of service.

15 **ALICIA STEVENS** Elections Technician Supv
Registrar of Voters

Member Type: General
Years of Service: 14y 06m 24d
Retirement Date: 7/30/2022

Board of Retirement Meeting
San Joaquin County Employees' Retirement Association

Agenda Item 6.0

September 9, 2022

SUBJECT: Actuarial Report and 2023 Retirement Contribution Rates

SUBMITTED FOR: __ CONSENT _X_ ACTION ___ INFORMATION

RECOMMENDATION

Staff recommends that the Board of Retirement:

1. Accept and file the final Annual Actuarial Valuation Report as of January 1, 2022, as prepared by Cheiron, and approve the employer and member contribution rates for calendar year 2023 presented therein.
2. Approve Resolution 2022-09-01 titled "2023 Retirement Contribution Rates," which implements these recommendations.

PURPOSE

The primary purpose of the actuarial valuation is to measure, describe, and identify the following:

- SJCERA's financial condition
- Past and expected trends in SJCERA's financial progress
- Assessment and disclosure of key risks
- Employer and employee contribution rates for the Plan Year 2023

DISCUSSION

The January 1, 2022 valuation is calculated using the assumptions identified in Appendix B, including a 6.75 percent discount rate assumption.

Financial Condition

The funded ratio based on the Market Value of Assets (MVA) increased from 68.1 percent last year to 78.0 percent this year. The funded ratio based on the Actuarial Value of Assets (AVA) increased from 67.0 percent to 72.4 percent.

The Unfunded Actuarial Liability (UAL) is the excess of actuarial liability over the AVA. The UAL decreased $248.7 M (14.46 percent) from $1,720,244,780 last year to $1,471,522,356 this year.

Cheiron reports the December 31, 2021 market value return on plan assets was 15.96 percent compared to the 7.0 percent assumption, resulting in a market value gain on investments of $321,267,256. However, after applying the five-year smoothing of asset gains and losses, the return was 8.0 percent on the smoothed value of assets, an actuarial asset gain of $33,976,903.

Cash Flows

SJCERA's net cash flow (contributions less benefit payments and administrative expenses) was negative from 2012 to 2016, but has been positive the past five years due to the increase in the contribution rates and the additional contributions being made by the County and other employers.

Assets and Liabilities

The AVA (smoothed) funded ratio has increased from 63.4 percent in 2013 to 72.4 percent in 2022. In the last two years the funded ratio has increased by 8 percent to 72.4 percent, even with a decrease to 6.75 percent in the expected return assumption in 2022. The increase is primarily due to better than assumed actuarial returns on investments as well as additional contributions being made by the County and other employers.

Employer and Employee Contribution Rates

The employer contribution composite rate will decrease in 2023. The two primary drivers are (1) the assumption changes and demographic experience resulting from the 2019-2021 Experience Study and (2) asset gains greater than the assumed rate. As a result, the employer contribution rate decreased by 1.18 percent of pay. Rates are shown below.

CONTRIBUTION TYPE		2023				2022			
		Contribution rates as a percentage of Active Member Payroll							
		TIER 1			TIER 2	TIER 1			TIER 2
		Members Pay Basic Rate Only	Members Pay Basic w/ COLA Cost Share	Members Pay Basic w /COLA Cost Share Plus[1]		Members Pay Basic Rate Only	Members Pay Basic w/COLA Cost Share	Members Pay Basic w/COLA Cost Share Plus[1]	
Employer	General	48.53%	45.67%	45.09%	39.70%	50.42%	47.53%	46.97%	40.59%
	Safety	98.27%	92.98%	91.28%	80.98%	96.50%	91.42%	89.80%	79.15%
	Composite	**58.38%**	**55.04%**	**54.23%**	**44.54%**	**59.33%**	**56.01%**	**55.24%**	**44.89%**
Member[2]	General	3.14%-5.46%	5.23%-9.35%	5.67%-10.12%	10.35%	2.95%-5.37%	5.01%-9.45%	5.43%-10.20%	9.99%
	Safety	4.71%-6.93%	9.59%-13.67%	11.14%-15.97%	15.84%	4.45%-6.78%	9.13%-13.37%	10.60%-15.61%	15.42%

1. *"Plus" refers to additional contributions members have agreed to pay (up to 14% of the Basic General Member Contribution Rate, and 33% of the Basic Safety Member Contribution Rate).*
2. *Tier 1 member contribution rates vary by entry age; Table presents the range.*

Upon the Board's adoption of proposed Resolution 2022-09-01, staff will transmit the Retirement Contribution Rates for 2023 to each of our participating employers at least 45 days before the effective date of the new rates for formal adoption by their respective Boards.

ATTACHMENTS

Actuarial Valuation Report as of January 1, 2022
Resolution 2022-09-01, entitled "2023 Retirement Contribution Rates"

JOHANNA SHICK
Chief Executive Officer

GREG FRANK
Management Analyst III

Celebrating 20 years

San Joaquin County Employees' Retirement Association

Actuarial Valuation Report as of January 1, 2022

Produced by Cheiron

August 2022

TABLE OF CONTENTS

August 31, 2022

Retirement Board of San Joaquin
County Employees' Retirement Association
6 South El Dorado Street, Suite 400
Stockton, CA 95202

Dear Members of the Board:

At your request, we have conducted an actuarial valuation of the San Joaquin County Employees' Retirement Association (SJCERA, the System, the Fund, the Plan) as of January 1, 2022. This report contains information on the System's assets and liabilities and discloses employer and employee contribution levels. It also contains schedules for inclusion in the Actuarial Section of the Annual Financial Report. Your attention is called to the Foreword in which we refer to the general approach employed in the preparation of this report.

The purpose of this report is to present the results of the annual actuarial valuation of SJCERA. This report is for the use of the Retirement Board of SJCERA and its auditors in preparing financial reports in accordance with applicable law and accounting requirements.

Cheiron's report was prepared solely for the Retirement Board of SJCERA for the purposes described herein, except that the plan auditor may rely on this report solely for the purpose of completing an audit related to the matters herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

Sincerely,
Cheiron

Graham A. Schmidt, ASA, FCA, MAAA, EA
Consulting Actuary

Anne D. Harper, FSA, MAAA, EA
Principal Consulting Actuary

SECTION I – EXECUTIVE SUMMARY

Cheiron has performed the actuarial valuation of the San Joaquin County Employees' Retirement Association as of January 1, 2022. The valuation is organized as follows:

- In Section I, the **Executive Summary,** we describe the purpose of an actuarial valuation, summarize the key results found in this valuation and disclose important trends.

- The **Main Body** of the report presents details on the System's
  - Section II – Identification and Assessment of Risks
  - Section III – Assets
  - Section IV – Liabilities
  - Section V – Contributions
  - Section VI – Additional Financial Report Schedules

- In the **Appendices,** we conclude our report with detailed information describing plan membership (Appendix A), actuarial assumptions and methods employed in the valuation (Appendix B), a summary of pertinent plan provisions (Appendix C), a 401(h) repayment schedule (Appendix D), a glossary of key actuarial terms (Appendix E), a summary of General and Safety Employer contribution rates (Appendix F), and tables containing member contribution rates (Appendix G).

Future results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the assumptions; changes in assumptions; and changes in plan provisions or applicable law.

Cheiron utilizes ProVal actuarial valuation software leased from Winklevoss Technologies (WinTech) to calculate liabilities and project benefit payments. We have relied on WinTech as the developer of ProVal. We have a basic understanding of ProVal and have used ProVal in accordance with its original intended purpose. We have not identified any material inconsistencies in assumptions or output of ProVal that would affect this valuation.

Deterministic and stochastic projections in this valuation report were developed using R-scan, a proprietary tool used to illustrate the impact of changes in assumptions, methods, plan provisions, or actual experience (particularly investment experience) on the future financial status of the Plan. R-scan uses standard roll-forward techniques that implicitly assume a stable active population. Because R-scan does not automatically capture how changes in one variable affect all other variables, some scenarios may not be consistent.

In preparing our report, we relied on information (some oral and some written) supplied by the SJCERA staff. This information includes, but is not limited to, plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

SECTION I – EXECUTIVE SUMMARY

The primary purpose of the actuarial valuation and this report is to measure, describe, and identify the following as of the valuation date:

- The financial condition of the System,
- Past and expected trends in the financial progress of the System,
- Employer and employee contribution rates for Plan Year 2023, and
- An assessment and disclosure of key risks.

The information required under GASB standards Nos. 67 and 68 is included in a separate report, with the report for the Plan's Fiscal Year Ending December 31, 2021 provided to SJCERA in May 2022.

In the balance of this Executive Summary, we present (A) the basis upon which this year's valuation was completed, (B) the key findings of this valuation including a summary of key financial results, (C) an examination of the historical trends, and (D) the projected financial outlook for the System.

A. Valuation Basis

This valuation determines the employer contributions for the Plan Year 2023. The System's funding policy is to contribute an amount equal to the sum of:

- The normal cost under the Entry Age Normal Cost Method,
- Amortization of the Unfunded Actuarial Liability (UAL), and
- A portion of the Fund's expected administrative expenses.

The UAL that existed as of 2014 is being amortized over a closed period as a level percentage of payroll, with 11 years remaining as of the current valuation, with the exception of a fixed amount associated with the extraordinary investment loss from 2008, which is amortized as a separate layer with 17 years remaining as of the current valuation. All new unexpected changes in the UAL emerging after 2014 are amortized over 15-year periods, with new amortization layers added each year. The single equivalent amortization period for the aggregate stream of UAL payments is 12 years. Tables V-4 and V-5 show a detailed summary of each amortization layer for General and Safety, respectively.

An Actuarial Experience Study was performed since the last valuation, covering experience from January 1, 2019 through December 31, 2021, leading to changes in demographic assumptions and a lowering of the discount rate from 7.00% to 6.75%. The updated assumptions are located in Appendix B. Details of all assumption changes can be found in the Actuarial Experience Study Report for the period covering January 1, 2019 to December 31, 2021.

This valuation was prepared based on the plan provisions shown in Appendix C. There have been no changes in plan provisions since the prior valuation reflected in the valuation. Subsequent to the January 1, 2021 valuation date, the Board approved the creation of Tier 2B for new members hired after January 1, 2022, but the creation of this Tier does not have any impact on the current valuation results.

B. Key Findings of this Valuation

The key results of the January 1, 2022 actuarial valuation are as follows:

- The actuarially determined employer contribution rate decreased from 50.51% to 49.33%.
- The System's funded ratio, the ratio of assets over Actuarial Liability, increased from 67.0% last year to 72.4% as of January 1, 2022 on an Actuarial Value of Assets (AVA) basis. It increased from 68.1% to 78.0% on a Market Value of Assets (MVA) basis.
- The Unfunded Actuarial Liability (UAL) is the excess of the System's Actuarial Liability over the Actuarial Value of Assets. The System experienced a decrease in the UAL from $ 1,720,244,780 to $ 1,471,522,356 as of January 1, 2022.
- During the year ending December 31, 2021, the return on Plan assets was 15.96% on a market value basis, as compared to the 7.00% assumption. This resulted in a market value gain on investments of $321,267,256. The Actuarial Value of Assets recognizes 20% of the difference between the expected Actuarial Value of Assets and the Market Value of Assets. This method of smoothing the asset gains and losses returned 8.00% on the smoothed value of assets, an actuarial asset gain of $33,976,903 for the year.
- The Actuarial Value of Assets is currently 93% of the market value. Since actuarial assets are below market assets, there are unrecognized investment gains (approximately $303 million) that will be reflected in the smoothed value in future years.
- Contributions to the System (excluding the additional voluntary contributions described below) were less than the actuarial cost for the year, due to the 12-month-delay in the implementation of the contribution rates and lower than expected payroll. This shortfall increased the UAL by $14,649,284.
- The System experienced a gain on the Actuarial Liability of $30,568,656 primarily due to more terminations and more deaths than expected, as well as decreases in benefits for some retirees due to the Alameda decision. The updated assumptions from the experience study further decreased the Actuarial Liability by $58,741,183.
- During 2021, the County, the Mosquito and Vector Control District (MVCD), the Superior Court of California, and the County of San Joaquin made additional voluntary contributions (above the actuarially determined amount) of $73,526,045. The total market value of the additional contributions, including prior year amounts and accumulated with interest at the Plan's actual rate of return, was $184,202,449 as of December 31, 2021. These assets are included in the calculation of the UAL and funded ratio, but under the funding policy requested by the contributors and approved by the Board, these assets are excluded in the calculation of the employer contribution rates.

SECTION I – EXECUTIVE SUMMARY

Table I-1 below summarizes all the key results of the valuation with respect to membership, assets and liabilities, and contributions. The results are presented and compared for both the current and prior plan year.

TABLE I-1
Summary of Principal Plan Results

	January 1, 2021	January 1, 2022	% Change
Participant Counts			
Active Participants	6,350	6,329	-0.33%
Participants Receiving a Benefit	6,361	6,542	2.85%
Terminated Vested Participants	1,223	1,114	-8.91%
Terminated Non-Vested Participants	942	1,385	47.03%
Total	**14,876**	**15,370**	**3.32%**
Annual Pay of Active Members	$ 489,490,258	$ 502,156,998	2.59%
Calendar Year Projected Pay	$ 496,778,356	$ 502,156,998	1.08%
Assets and Liabilities			
Actuarial Liability (AL)	$ 5,207,669,301	$ 5,323,788,814	2.23%
Actuarial Value of Assets (AVA)[1]	3,487,424,521	3,852,266,458	10.46%
Unfunded Actuarial Liability (UAL)	$ 1,720,244,780	$ 1,471,522,356	-14.46%
Funded Ratio (AVA)	67.0%	72.4%	5.4%
Funded Ratio (MVA)[2]	68.1%	78.0%	9.9%
Inactive Funded Ratio	67.4%	68.2%	0.8%
Contributions as a Percentage of Payroll			
Normal Cost Rate	14.58%	14.18%	-0.40%
Unfunded Actuarial Liability Rate[3]	35.07%	34.29%	-0.78%
Administrative Expense	0.86%	0.86%	0.00%
Total Contribution Rate	50.51%	49.33%	-1.18%

[1] Includes additional County, MVCD, and Superior Court Contribution Reserves.

[2] The Market Value of Assets includes additional County, MVCD, and Superior Court Contribution Reserves.

[3] Based on Actuarial Value of Assets that does not include additional County, MVCD, and Superior Court Contribution Reserves.

The Inactive Funded Ratio shown in Table I-1 represents the percentage of the Actuarial Liability attributable to members who are not active employees. A funded ratio of 68.2% or more, for example, would result in a level of assets anticipated to be sufficient to fund the liabilities of the System's inactive members for their expected lifetimes: those currently retired, disabled, terminated with vested benefits, and their beneficiaries.

SECTION I – EXECUTIVE SUMMARY

Changes in Cost

Table I-2 below summarizes the impact of actuarial experience on Plan cost, for the Plan as a whole and for the General and Safety classes.

TABLE I-2
Summary of Changes in Plan Cost from Prior Review

	General Employer Cost	General Employer Contribution Rate (% Payroll)	Safety Employer Cost	Safety Employer Contribution Rate (% Payroll)	Total Employer Cost	Employer Contribution Rate (% Payroll)
January 1, 2021	**$ 180,438,580**	**43.90%**	**$ 65,256,065**	**86.75%**	**$ 245,694,645**	**50.51%**
Change in Cost Due to:						
Expected Change	8,489,232	0.78%	3,202,281	1.66%	11,691,513	0.92%
Asset Experience	(1,933,774)	(0.45%)	(1,084,387)	(1.38%)	(3,018,161)	(0.59%)
Contribution (Gain)/Loss	1,029,570	0.24%	333,802	0.42%	1,363,372	0.27%
Demographic Experience	(1,054,463)	(0.29%)	(900,037)	(1.24%)	(1,982,187)	(0.41%)
Salary Experience	(1,123,308)	(0.08%)	60,862	(0.16%)	(1,062,446)	(0.09%)
Payroll Amortization	0	0.18%	0	(0.37%)	0	0.14%
PEPRA Transition	(1,104,232)	(0.28%)	(404,870)	(0.54%)	(1,509,102)	(0.32%)
Assumption Changes	(8,767,241)	(1.69%)	907,139	2.16%	(7,832,414)	(1.10%)
Total Cost as of January 1, 2022	**$ 175,974,365**	**42.31%**	**$ 67,370,855**	**87.30%**	**$ 243,345,220**	**49.33%**

SECTION I – EXECUTIVE SUMMARY

An analysis of the contribution rate changes from the prior valuation reveals the following:

- Contributions were expected to increase, both in dollars and as a percentage of payroll.

  Prior to accounting for the asset and liability gains this year and the changes in assumptions, contributions had been expected to increase as a result of payroll growth, both from increases in the Normal Cost and since the UAL is amortized as a level percentage of payroll. The contribution rates (and resulting dollar amounts) were also expected to grow this year as a result of the three-year phase-in of the UAL payment for the change in assumptions (specifically, the reduction in the discount rate from 7.25% to 7.00%) enacted by the Board in 2020.

- Asset experience produced an investment gain on a market basis and on a smoothed basis.

  The assets of the Plan returned 15.96% on a market basis, higher than the assumed rate of 7.00%, resulting in a gain for 2021. Under the actuarial asset smoothing policy, 20% of this gain is recognized in the current year, in addition to 20% of the gains and losses from each of the prior three years. The overall return on the smoothed assets was 8.00%; higher than the assumed return of 7.00%, so the overall contribution rate decreased by 0.59% of payroll. The contribution rate decreased more for Safety members (by 1.38% of payroll) than for General members (0.45% of payroll) as a result of the asset gain; this is due to the fact that the Safety members have a higher ratio of assets to payroll than the General members.

- Contributions less than the actuarial cost (excluding additional contributions made by the employers) increased the employer contribution rate by 0.27% of pay, largely due to the 12-month delay in implementation of the contribution rates and a shortfall in actual versus projected payroll.

- The demographic experience of the Plan – rates of retirement, death, disability, and termination – was close to that predicted by the actuarial assumptions in aggregate, reducing the overall employer rate by 0.41% of pay.

  There were more deaths than expected among those in pay status among General retirees and their surviving spouses, decreases in benefits for some retirees due to the Alameda decision which decreased their liabilities, and increases in some Safety members' contribution rates due to cost-sharing arrangements. The net impact of these and other demographic changes was a reduction of 0.29% of payroll for the General members and a reduction of 1.24% of payroll for Safety.

- Overall pay increases for returning General and Safety members were below expectations.

SECTION I – EXECUTIVE SUMMARY

Salaries for continuing active members increased less than expected, decreasing the employer contribution rate for General members by 0.08% of payroll, Safety members by 0.16% of payroll, and 0.09% of overall payroll.

- The unfunded liability is being amortized over a smaller-than-expected payroll base for the General members and a higher-than-expected payroll base for Safety members.

  The payroll used to amortize the unfunded liability for General members was lower than expected due to lower than expected payroll growth (2.40%, versus the 3.00% assumption), which increased the General employer contribution rate by an additional 0.18% of pay, since the UAL payments are spread out over a lower payroll base than expected. The higher-than-expected Safety projected payroll (reflecting a 3.61% increase) resulted in a decrease in the contribution rate of about 0.37% of pay.

  The aggregate impact from the change in total projected payroll was an increase in the contribution rate of 0.14% of pay. Note that the change in the payroll base used to amortize the unfunded liability does not change the dollar amount of the contribution – only the contribution rate calculated as a percentage of payroll.

- New members entered the Plan as PEPRA members, with 880 newly hired or rehired members entered the Plan to replace departing members during 2021.

  New Tier 2 hires have a smaller Plan normal cost as a percentage of payroll when compared to the legacy (Tier 1) members. Due to the shift in both populations towards more Tier 2 members, the employer contribution rate decreased by 0.28% of payroll for General members, 0.54% of payroll for Safety members, and the overall contribution rate dropped by 0.32% of payroll.

  In addition, different bargaining groups continue to negotiate modifications to the cost sharing arrangements for their Legacy members. The valuation results reflect the arrangements in place as of the valuation date that apply to the 2023 Plan Year. Changes to the cost sharing arrangements occurring after the valuation date will affect the aggregate employer costs in future valuations.

- New assumptions from the experience study increased cost for Safety and decreased cost for General.

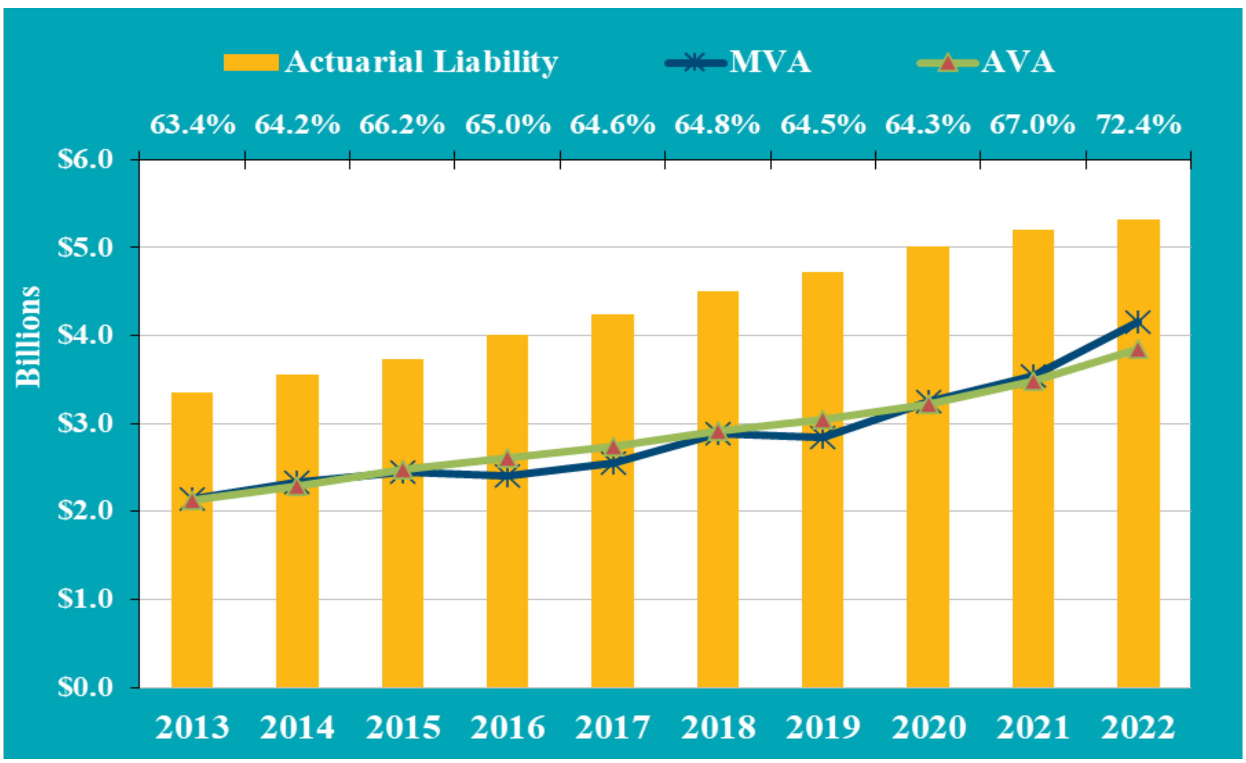
  The assumption changes, including lowering the assumed rate of return from 7.00% to 6.75%, decreased the employer contribution rate by 1.10% overall and by $7.8 million. There was a decrease in the employer rate of 1.69% of pay for General members and an increase of 2.16% of pay for Safety members. The primary drivers of the overall cost decrease were changes to the mortality and salary timing assumptions. More details on the impact of the individual assumption changes can be found in the Actuarial Experience Study report dated August 2022.

C. Historical Trends

Despite the fact that for most retirement plans the greatest attention is given to the current valuation results and in particular, the size of the current Unfunded Actuarial Liability and the employer contribution, it is important to remember that each valuation is merely a snapshot in the long-term progress of a pension fund. It is more important to judge a current year's valuation result relative to historical trends, as well as trends expected into the future.

Assets and Liabilities

The chart on this page compares the Market Value of Assets (MVA) and Actuarial Value of Assets (AVA) to the Actuarial Liabilities. The percentage shown at the top of each bar is the ratio of the Actuarial Value of Assets to the Actuarial Liability (the funded ratio).

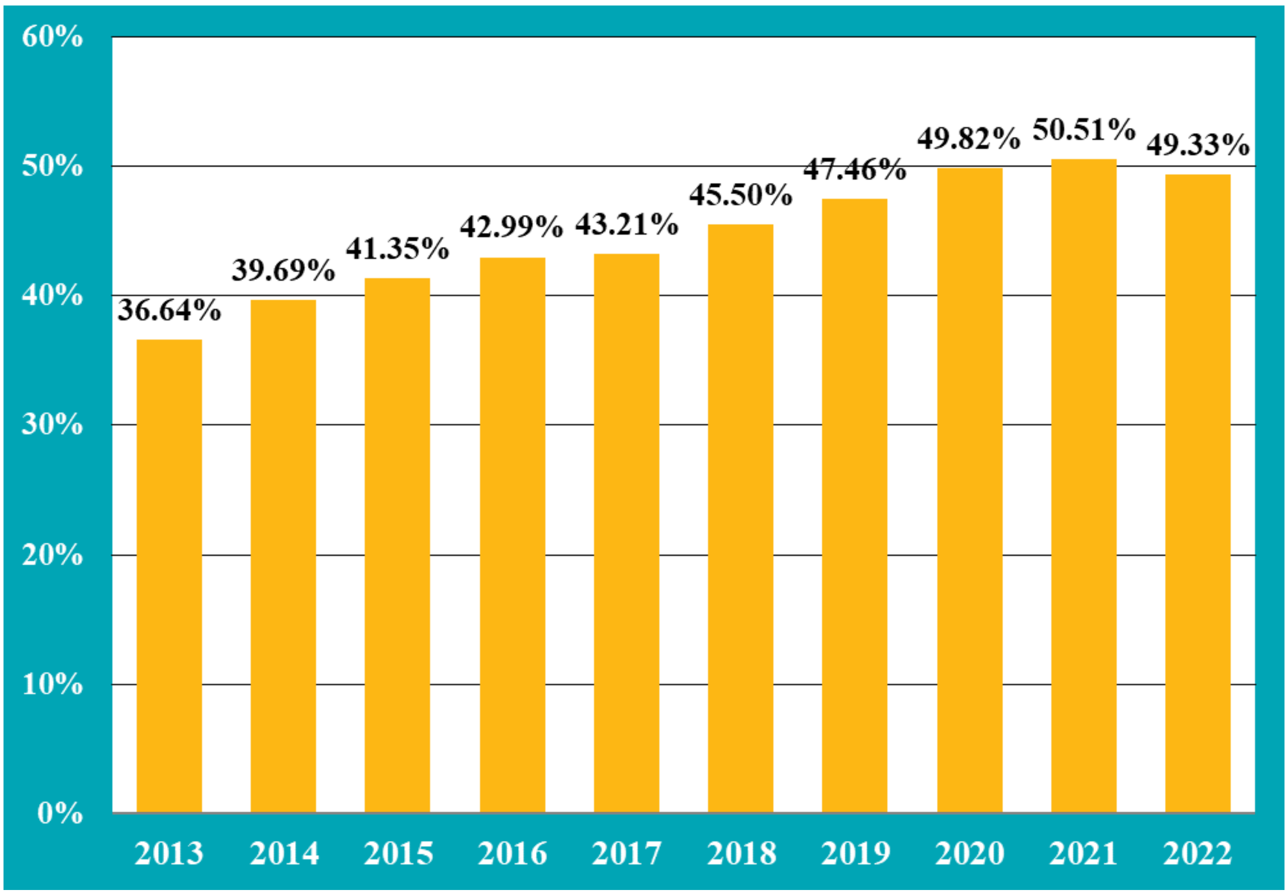


The funded ratio has increased from 63.4% in 2013 to 72.4% in 2022. In the last two years the funded ratio has increased by 8% to 72.4%, even with a decrease to 6.75% in the expected return assumption in 2022. The increase is primarily due to better than assumed actuarial returns on investments as well as additional contributions above the actuarially determined amounts made by some employers. However, there was a lack of funding progress between 2016 and 2020 due to assumption changes (lower assumed rates of return and improved mortality) and investment returns being lower than expected during this time.

SECTION I – EXECUTIVE SUMMARY

Employer Contribution Rates

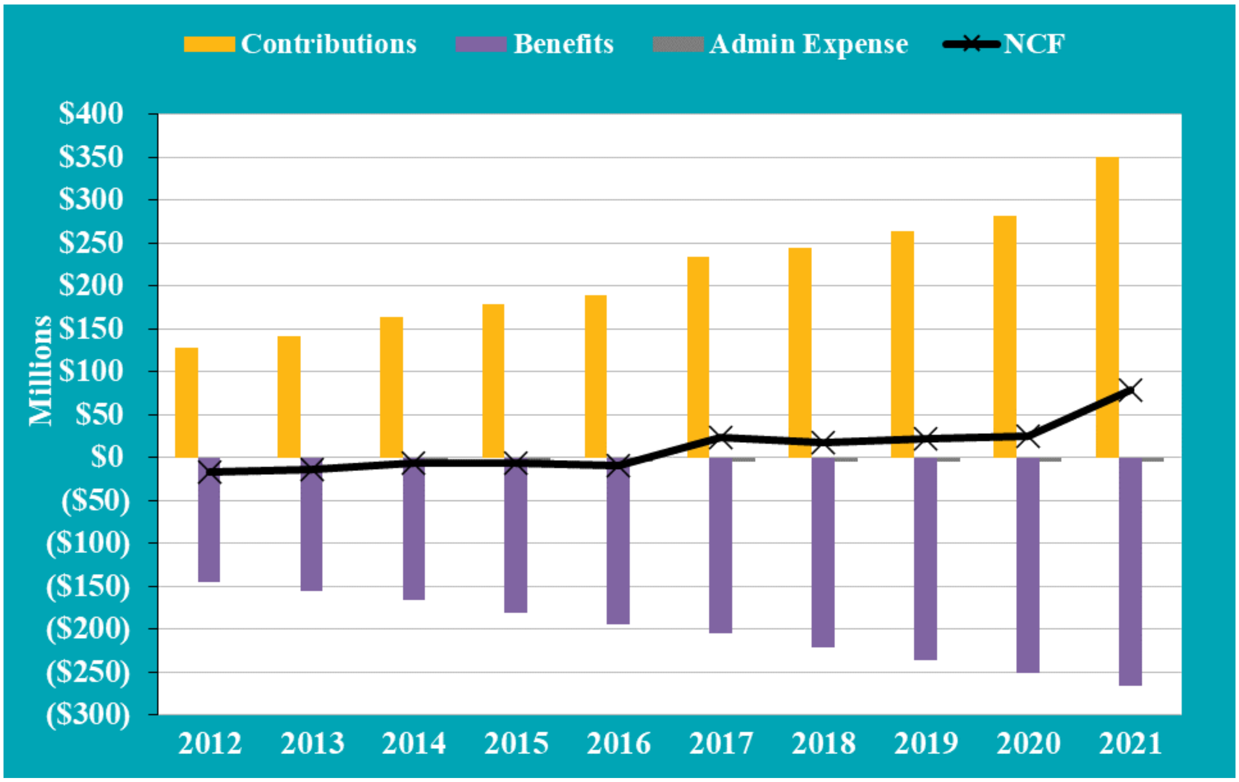
The chart on this page shows the employer contribution rate for each of the last 10 valuation cycles. The same factors that contributed to the decline and subsequent lack of progress in funded status – i.e., lower returns and assumptions that are more conservative – have resulted in increases in contribution rates. Rates have also increased due to growth in payroll lagging behind the actuarial assumptions, which spreads the UAL dollar payment over a smaller payroll base. However, the new demographic assumptions and strong asset returns in 2021 have led to a decrease in the contribution rate in the current valuation.



SECTION I – EXECUTIVE SUMMARY

Cash Flows

The chart below shows the Plan's net cash flow (NCF) (contributions less benefit payments and administrative expenses). This is an important measure, as it reflects the ability to have funds available to meet benefit payments without having to make difficult investment decisions, especially during volatile markets.



The NCF – shown as the black line in the chart – was slightly negative for the first five years shown in this period but has been positive the past five years due to the increase in the contribution rates and the additional contributions being made by the County and other employers. The additional contributions made during 2021 were over $73 million while the previous four years the contributions were about $20 - $22 million per year.

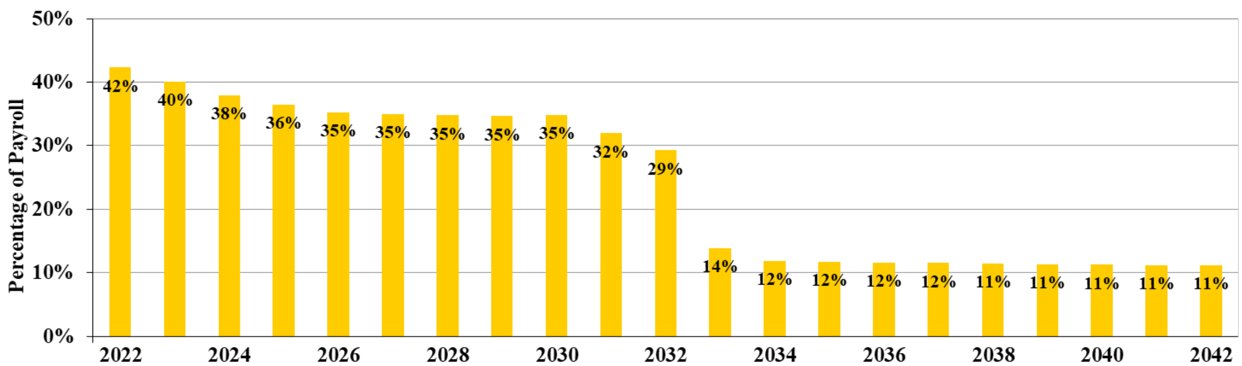
The implications of a plan with negative net cash flow are that the impact of market fluctuations can be more severe: as assets are being depleted to pay benefits in down markets, there is less principal available to be reinvested during favorable return periods. If there were a shift to future negative net cash flow, it could magnify the losses during a market decline, hindering the Plan in its ability to absorb market fluctuations.

D. Future Expected Financial Trends

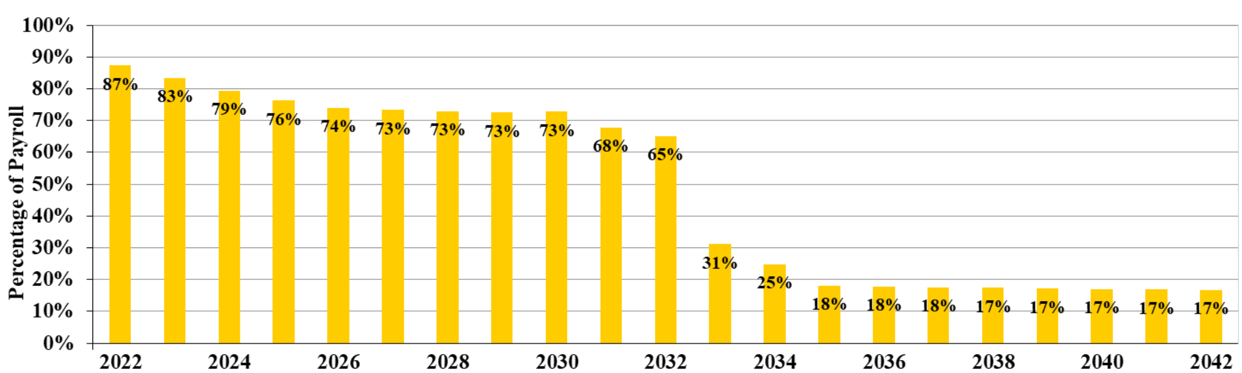
The analysis of projected financial trends is perhaps the most important component of this valuation. In this section, we present our assessment of the implications of the January 1, 2022 valuation results in terms of cost and benefit security (assets over liabilities). All the projections in this section are based on the interest rate assumption of 6.75%. We have assumed a level active workforce population and future payroll growth of 3.00% per year.

The following graphs show the expected employer contribution rates for General and Safety members, and for the Plan in aggregate, based on actually achieving the 6.75% assumption each year for the next 20 years, and if the employers contribute at the actuarially determined rates.

Projection of General Employer Contributions, 6.75% return each year

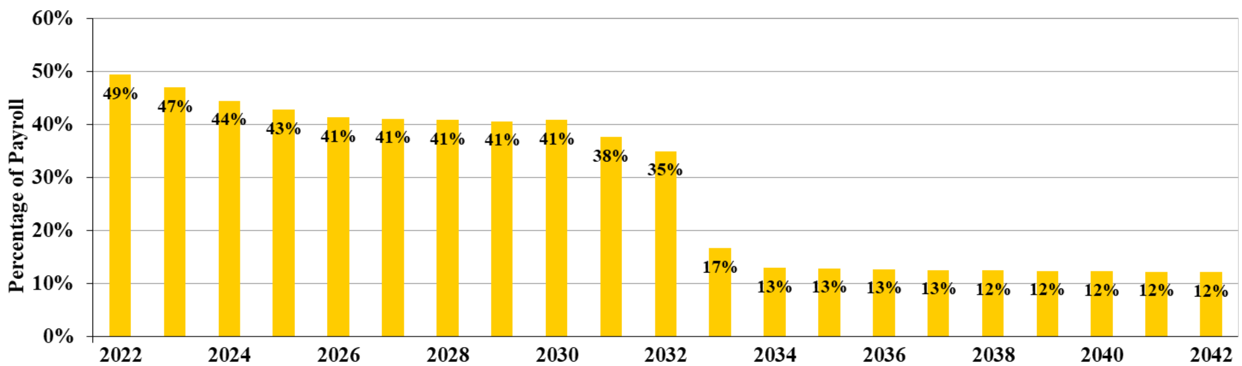


Projection of Safety Employer Contributions, 6.75% return each year



SECTION I – EXECUTIVE SUMMARY

Projection of Total Employer Contributions, 6.75% return each year



The projections show that General, Safety and Total County contributions are expected to decrease next year, as asset gains continue to be recognized in the smoothed Actuarial Value of Assets. The dollar contribution will be approximately $186 million for General and $67 million for Safety in 2022 then decline gradually as a percentage of payroll until 2033, when the 2014 UAL is paid off. The decline in contribution rates from 2023-2032 is attributable to the recognition of net deferred asset gains, Tier 2 new hires that are expected to replace existing Tier 1 membership, as well as the expiration of other UAL amortization layers.

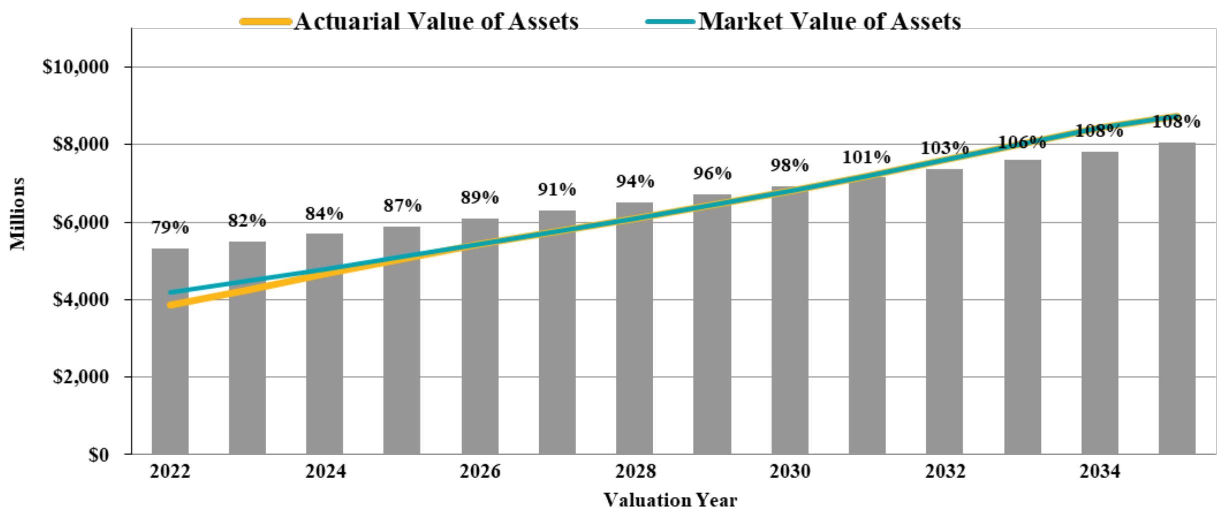
Note that the contribution projections do not forecast any actuarial gains or losses (except for net deferred gains on the Market Value of Assets). The graphs also do not include the impact of the additional contributions currently being made by the County, the Mosquito and Vector Control District, and the Superior Court; those additional contributions would eventually be expected to be available to reduce the employer contributions in future years.

SECTION I – EXECUTIVE SUMMARY

Asset and Liability Projections:

The graph below shows the projection of SJCERA's assets and liabilities assuming that assets will earn the 6.75% assumption each year during the projection period and the employers contribute at the actuarially determined rates.

Projection of Assets and Liabilities, 6.75% return each year



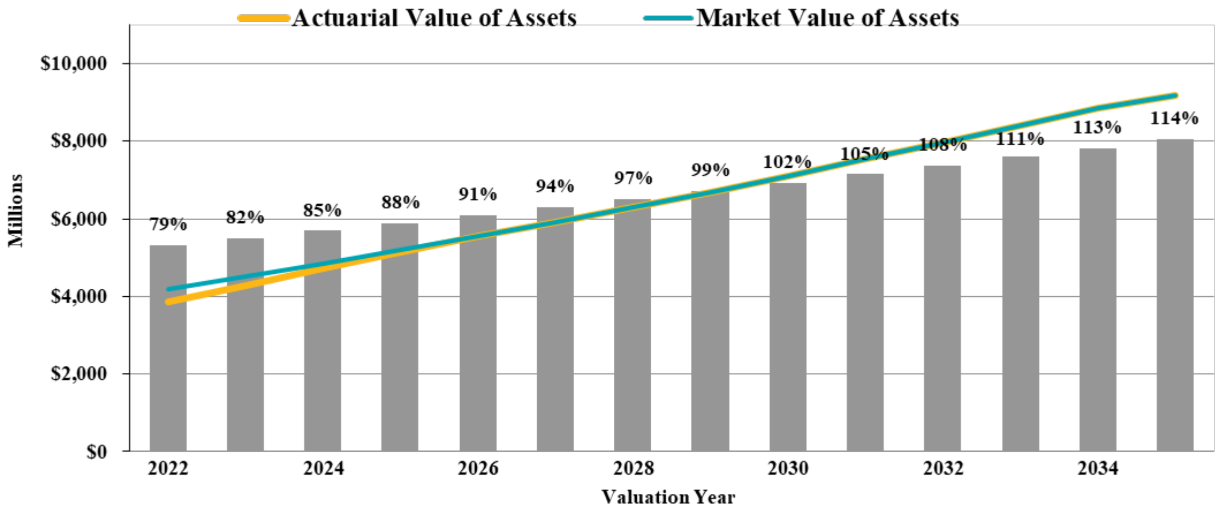
The graph shows that the projected funded status on a market value basis increases over the next 20 years to 108%, assuming the actuarial rate of return assumption is achieved. However, as noted above, it is the actual return on System assets that will determine the future funding status and contribution rates to the Fund.

We note that the funded ratio is expected to gradually climb above 100%; this is because under the PEPRA legislation, the employer contribution is not allowed to fall below the level of the Normal Cost unless the Plan reaches at least 120% funded (and other conditions are met).

The assets in the graph above also include the additional contributions that the County (2017-2021), the Mosquito and Vector Control District (2018-2021), and Superior Court (2019-2021) made to the fund. No further additional contributions are assumed. However, the additional contribution reserves continue to grow at the 6.75% assumed rate of return and are not used in the calculation of the actuarially determined contribution rates, which additionally increases the projected funded status above 100%.

The graph on the next page shows the same information as the previous graph and assumes that additional contributions of 5% of SJCERA payroll are made until the System's funded ratio reaches 100%. Although the Mosquito and Vector Control District and the Superior Courts have been making additional contributions at different rates, and other employers are not currently making additional contributions, we note that the County has been making additional contributions of approximately 5% per year and makes up the vast majority of overall payroll and these additional contributions are for illustrative purposes only. No change in the contribution rate is assumed due to the additional contributions; these assets continue to be excluded from the actuarial cost calculation, as noted earlier.

Projection of Assets and Liabilities, 6.75% return each year, Ongoing County Additional 5% Contributions



As can be seen in the projection above, with the additional expected 5% of pay contributions from the Plan would be expected to return to full funding in 2030, one year earlier than expected in the projections without the additional future contributions.

SECTION II – DISCLOSURES RELATED TO RISK

Actuarial valuations are based on a set of assumptions about future economic and demographic experience. These assumptions represent a reasonable estimate of future experience, but actual future experience will undoubtedly be different and may vary significantly. This section of the report is intended to identify the primary risks to the Plan, provide some background information about those risks, and provide an assessment of those risks.

Identification of Risks

A fundamental risk to a pension plan is that the contributions needed to pay the benefits become unaffordable. While we believe it is unlikely that the Plan by itself would become unaffordable, the contributions needed to support the Plan may differ significantly from expectations. While there are a number of factors that could lead to contribution amounts deviating from expectations, we believe the primary risks are:

- Investment risk,
- Assumption change risk, and
- Contribution and payroll risk.

Other risks that we have not identified may also turn out to be important.

Investment Risk is the potential for investment returns to be different than expected. Lower investment returns than anticipated will increase the unfunded actuarial liability necessitating higher contributions in the future unless there are other gains that offset these investment losses. The potential volatility of future investment returns is determined by the Plan's asset allocation and the affordability of the investment risk is determined by the amount of assets invested relative to the size of the plan sponsors or other contribution base.

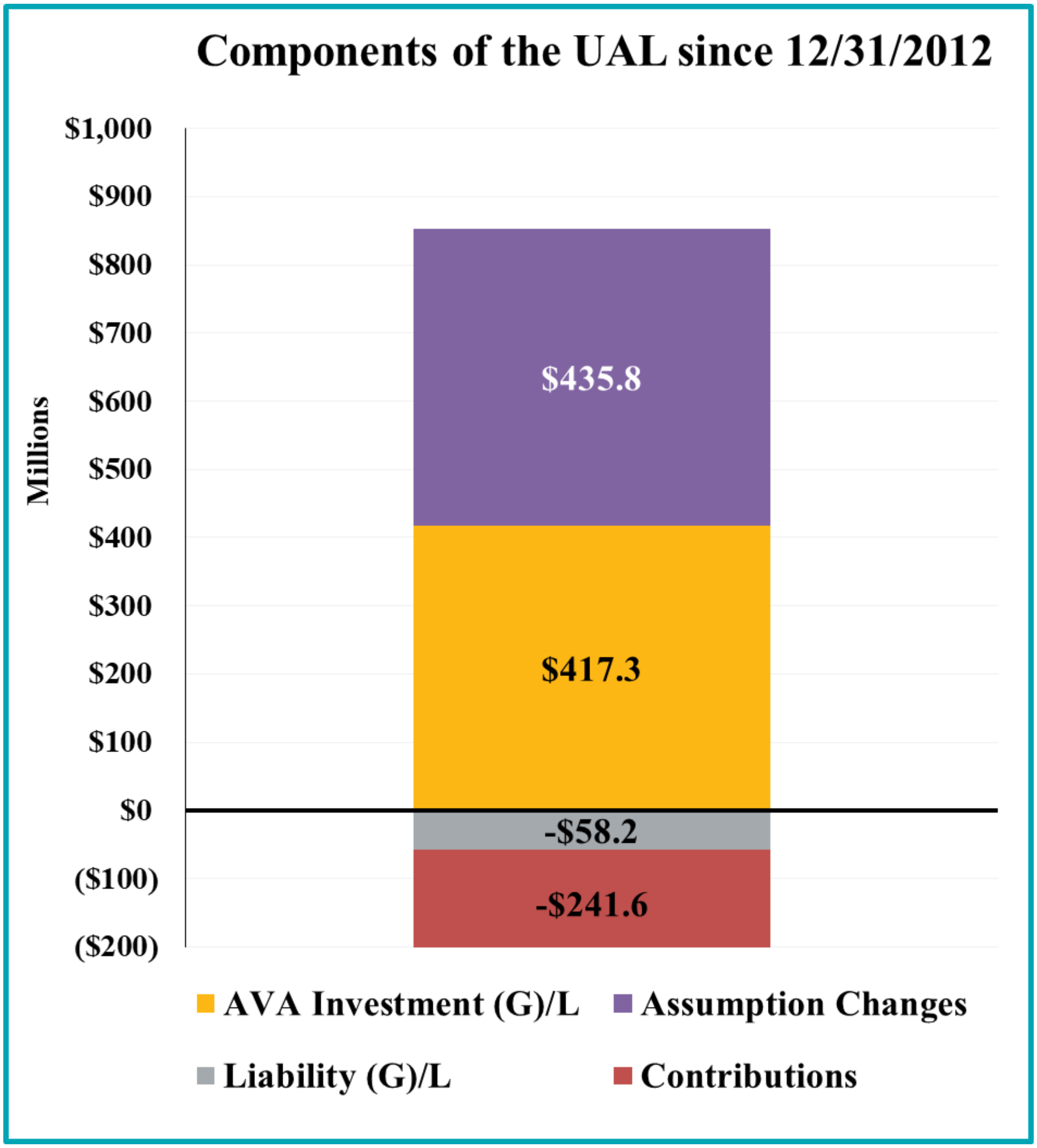
Assumption change risk is the potential for the environment to change such that future valuation assumptions are different than the current assumptions. For example, declines in interest rates over the last three decades resulted in higher investment returns for fixed income investments, but lower expected future returns necessitating either a change in investment policy, a reduction in discount rate, or some combination of the two. Assumption change risk is an extension of the other risks identified, but rather than capturing the risk as it is experienced, it captures the cost of recognizing a change in environment when the current assumption is no longer reasonable.

Contribution risk is the potential for actual future contributions to deviate from expected future contributions. There are different sources of contribution risk such as the sponsor choosing to not make contributions in accordance with the funding policy or if the contribution requirement becomes such a financial strain on the sponsor as a result of material changes in the contribution base (e.g., covered employees, covered payroll) that affect the amount of contributions the Plan can collect.

SECTION II – DISCLOSURES RELATED TO RISK

The chart below shows the components contributing to the Unfunded Actuarial Liability (UAL) from January 1, 2012 through December 31, 2021. Over the last 10 years, the UAL has increased by approximately $553.1 million. The investment losses (gold bar) of $417.3 million on the Actuarial Value of Assets (AVA) and assumptions changes (purple bar) resulting in a total UAL increase of $435.8 million are the primary sources in the UAL growth. The net liability gains (gray bar) of $58.2 million and contributions in excess of the "tread water" level (red bar) of $241.6 million have decreased the UAL since December 31, 2012.

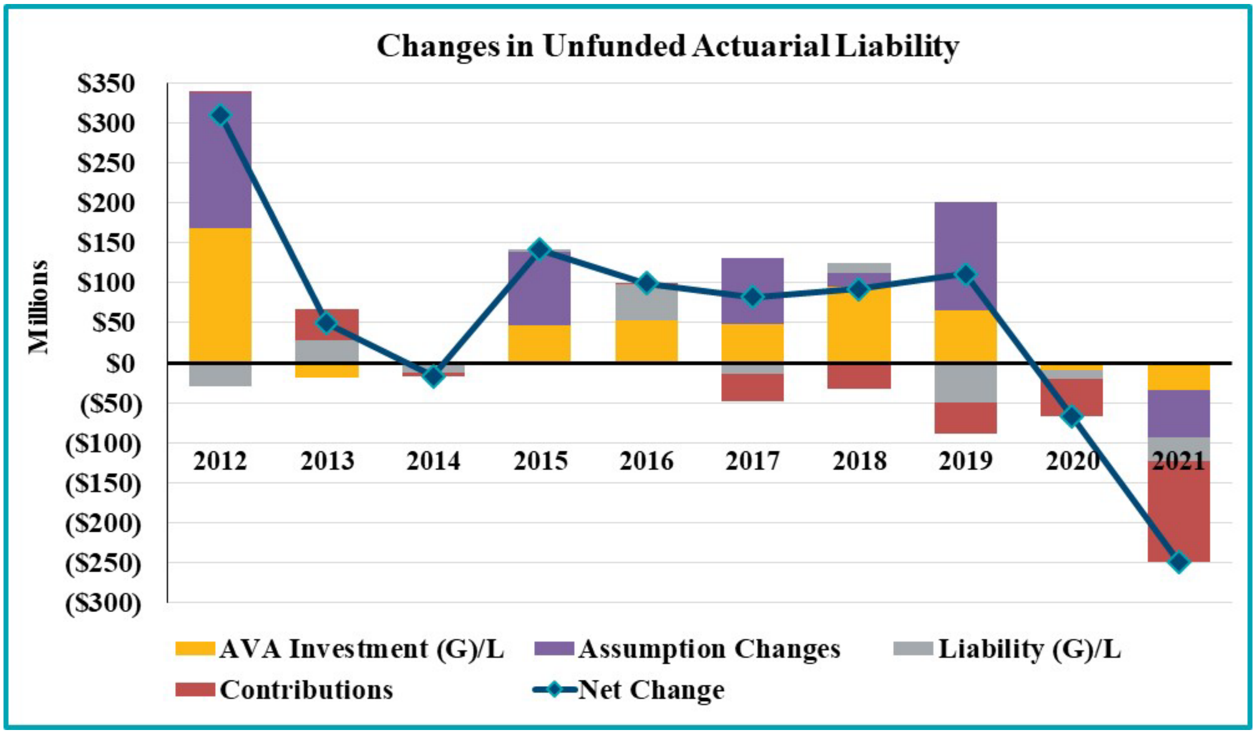
Chart II-1



SECTION II – DISCLOSURES RELATED TO RISK

Chart II-2 below details the annual sources of the UAL change (colored bars) for the plan years ending December 31. The net UAL change for each year is represented by the blue diamonds.

Chart II-2



On a market value basis, the average annual geometric return over the 10-year period is 7.6%. This has resulted in investment losses on the AVA most years, increasing the UAL, except for the 2013, 2020, and 2021 plan years.

Over the same time period, the assumed rate of return decreased from 7.75% to 6.75%. It is important to note that these changes simply reflect a downward revision to the estimate of future investment earnings and ultimately costs will be determined by actual investment earnings. Based on Meketa's current 10-year capital market assumptions (including their inflation assumption of 2.60%) and the Plan's asset allocation, the expected average annual return is 6.01%, compared to the Plan's updated assumption of 6.75% in 2022. Future expectations of investment returns may continue to decline necessitating further reductions in the discount rate.

The impact of all assumption changes is represented by the purple bars and also includes decreases in mortality rates projected in the future which had a significant impact on the measurement of the UAL. The assumption changes effective with the January 1, 2019 valuation were only demographic changes with no change to the expected rate of return of 7.25%. The January 1, 2020 valuation decreased the expected rate of return to 7.00%. The January 1, 2022 valuation decreases the discount rate assumption to 6.75% while also adopting new demographic assumptions that lowered the UAL.

SECTION II – DISCLOSURES RELATED TO RISK

Each year the UAL is expected to increase for benefits earned in the current year (the normal cost), administrative expenses, and interest on the UAL. This expected increase is referred to as the tread water level. If contributions are greater than the tread water level, the UAL is expected to decrease. Conversely, if contributions are less than the tread water level, the UAL is expected to increase. The amortization policy (as well as the contribution-timing lag) can impact whether or not the contributions exceed the tread water level. For example, the Board changed the amortization policy in 2009 to amortize 50% of the extraordinary asset loss over a 30-year period and the remaining UAL over a 20-year period. Initially, the relatively long amortization period resulted in contributions being below the tread water level.

However, the single equivalent amortization period for the last several years has been much lower (around 14-16 years, and down to 12 years in this valuation), with the UAL payment going towards principal as well as interest on the UAL. In addition, the County and at least two other employers have made discretionary contributions above the actuarially determined contribution rate, in the County's case equal to 5% of their pensionable payroll, or approximately $20 million per year since the 2017 plan year and an even larger $72 million this year. These contributions went directly toward paying down the principal on the UAL as seen below in Table II-1, which numerically summarizes the changes in the UAL for each year by source over the last 10 years.

Table II-1

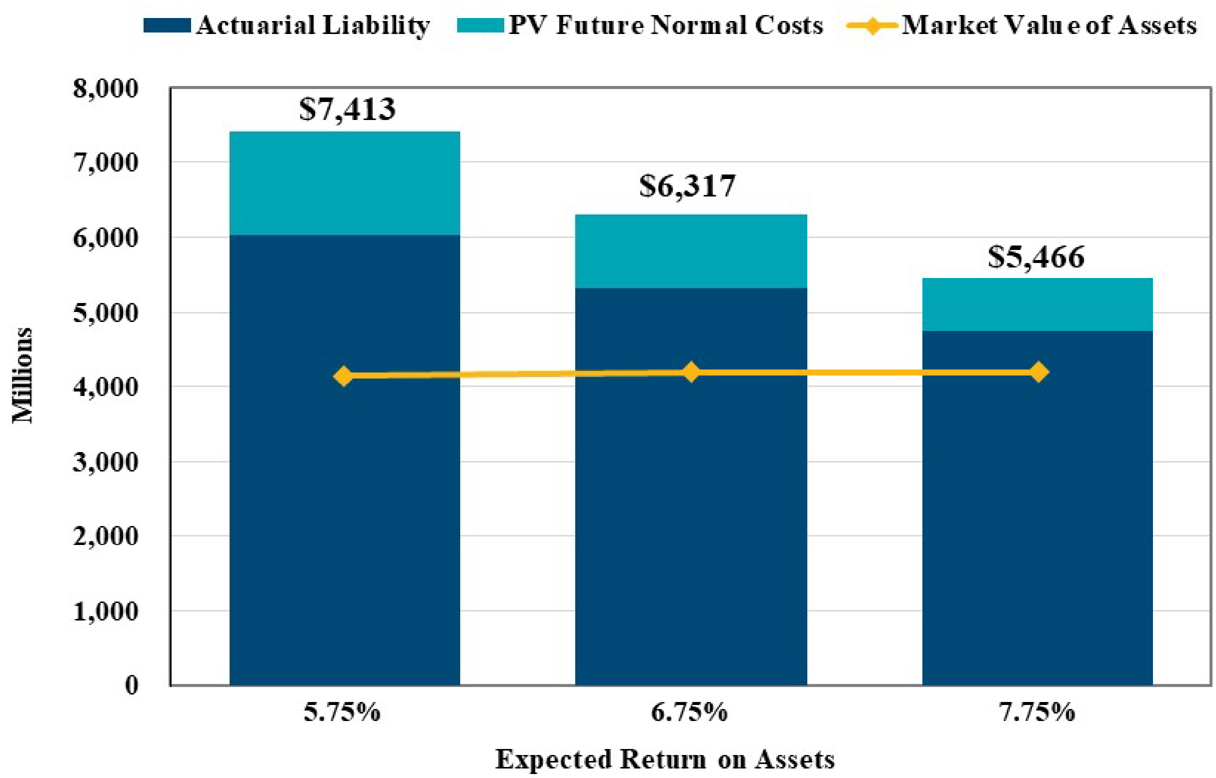
Unfunded Actuarial Liability (UAL) Change by Source					
December 31,	**Investment Experience**	**Liability Experience**	**Assumption Changes**	**Contributions**	**Total UAL Change**
2012	$168,334,000	($29,597,000)	$169,755,000	$833,000	$309,325,000
2013	(18,030,000)	28,061,000	0	39,067,000	49,098,000
2014	653,000	(11,929,000)	0	(5,073,000)	(16,349,000)
2015	46,200,000	3,691,000	91,855,000	(172,000)	141,574,000
2016	53,461,000	45,033,000	0	831,000	99,325,000
2017	48,426,000	(14,693,000)	81,855,000	(33,016,000)	82,572,000
2018	95,800,000	12,745,000	16,017,000	(31,986,000)	92,576,000
2019	65,252,000	(49,917,000)	135,011,000	(39,203,000)	111,143,000
2020	(8,800,000)	(11,061,000)	0	(47,428,000)	(67,289,000)
2021	(33,977,000)	(30,569,000)	(58,741,000)	(125,436,000)	(248,723,000)
Total	**$417,319,000**	**($58,236,000)**	**$435,752,000**	**($241,583,000)**	**$553,252,000**

Assessing Costs and Risks

Sensitivity to Investment Returns

The chart below compares assets to the present value of all projected future benefits discounted at the current expected rate of return and at discount rates 100 basis points above and below the expected rate of return. The present value of future benefits is shown as a bar with the portion attributable to past service in dark blue (Actuarial Liability) and the portion attributable to future service in teal (present value of future normal costs). The Market Value of Assets is shown by the gold line.

Present Value of Future Benefits versus Assets



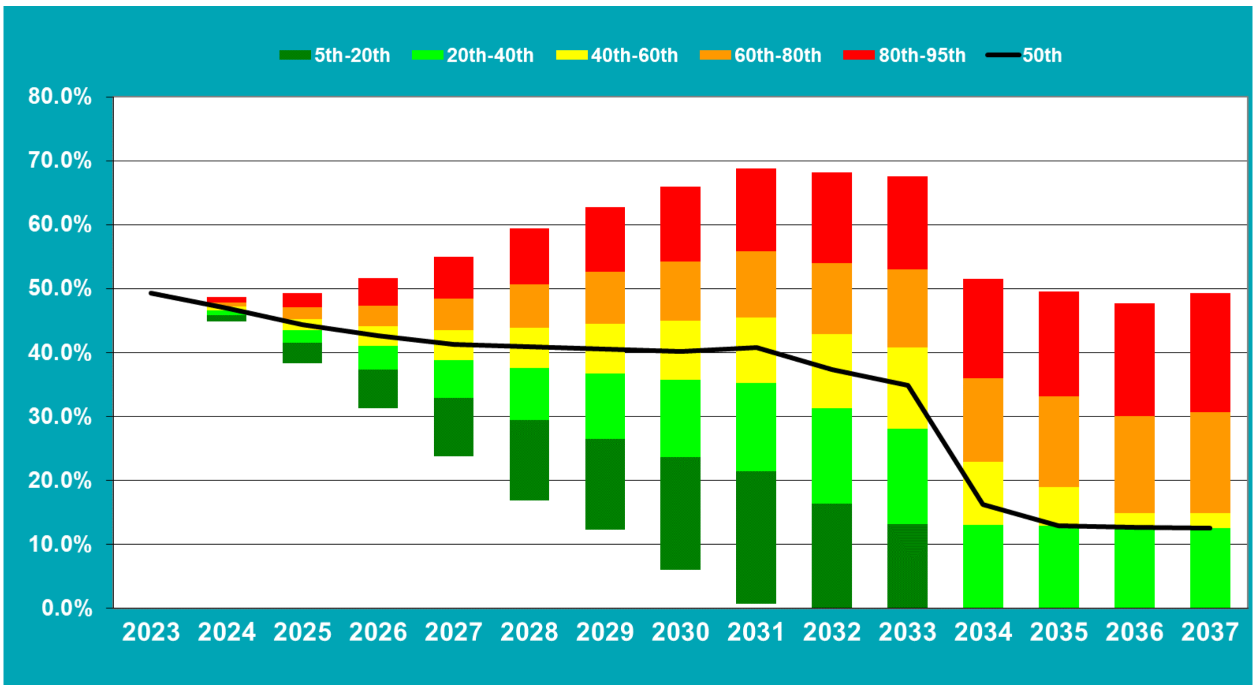
If investments return 6.75% annually, the Plan will need approximately $6.3 billion in assets today to pay all projected benefits compared to current assets of $4.2 billion. If investment returns are only 5.75%, the Plan would need approximately $7.4 billion in assets today, and if investment returns are 7.75%, the Plan would need approximately $5.5 billion in assets today.

SECTION II – DISCLOSURES RELATED TO RISK

Sensitivity to Investment Returns - Stochastic Projections

Stochastic projections serve to show the range of probable outcomes of various measurements. The graphs below and on the following page show the projected range of the employer contribution rate and of the funded ratio on an Actuarial Value of Assets basis. The range in both scenarios is driven by the volatility of investment returns (assumed to be based on a 10.5% standard deviation of annual returns, as indicated in Meketa's current capital market assumptions). The stochastic projections of investment returns are based on an assumption that each future year's investment return is independent from all other years and is identically distributed according to a lognormal distribution. This assumption may result in an unrealistically wide range of compound investment returns over longer periods.

Stochastic Projection of Employer Contributions as a Percentage of Payroll

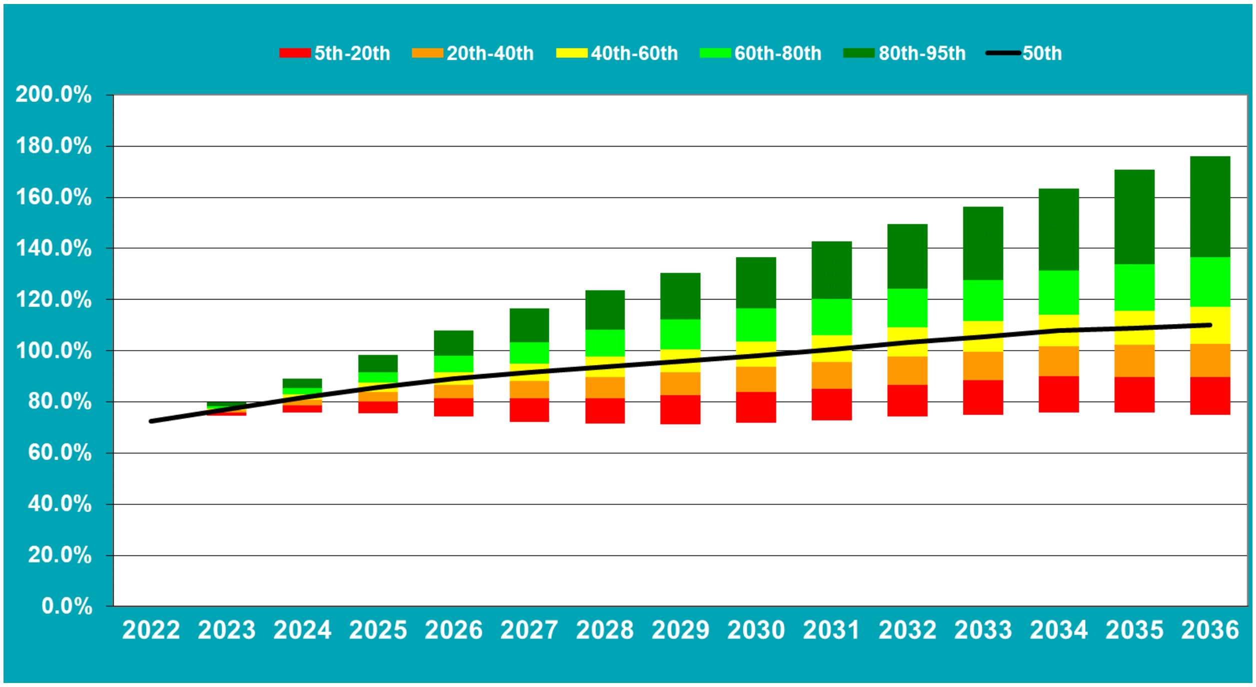


The stochastic projection of employer contributions as a percentage of payroll shows the probable range of future contribution rates. The baseline contribution rate (black line), which is based on the median of the simulations using an average return of 6.75%, aligns closely with the projections discussed in subsection D. of the Executive Summary of this report. In the most pessimistic scenario shown, the 95th percentile, the projected employer contribution rate approaches 70% of pay in 2031. Conversely, the most optimistic scenario shown, the 5th percentile, the projected employer contribution rate declines to 0% in 2031.

We note that these projections allow the employers' contribution to drop below their share of the normal cost only if the Plan becomes extremely overfunded (i.e. a funded ratio above 100%), as required by the PEPRA legislation. The projections above do not include the additional contribution reserve or any future contributions above the actuarially determined contributions.

SECTION II – DISCLOSURES RELATED TO RISK

Stochastic Projection of Funded Ratio on an Actuarial Value of Assets Basis



The graph above shows the projection of the funded ratio based on the actuarial value of assets. The projections do not assume future additional contributions from the County or other employers. While the baseline-funded ratio (black line) is projected to be approximately 110% at the end of the 15-year period shown here, there is a wide range of potential outcomes. Good investment returns have the likelihood of bringing the funded ratio well over 100%. Due to the current funding policy of the Plan, even in scenarios with unfavorable investment returns, the Plan is projected to remain over 70% funded on an Actuarial Value of Assets basis in all but the most unfavorable of scenarios, as long as the actuarially determined contributions continue to be made.

Contribution Risk

The Safety contribution rate is very large at just over 87% of payroll and as a result, future salary increases, and the hiring of new members are potentially at risk. When member payroll growth stagnates or even declines, the dollar level of contributions made to the Plan also stagnate or decline since contributions are based on payroll levels.

There is also a risk of the contribution rate increasing even higher when payroll decreases since the Plan's funding policy amortizes the UAL as a level percentage of payroll. This means that the UAL payments increase at the assumed payroll growth rate of 3.00%, so that the payment is expected to remain constant as a percentage of payroll. If payroll growth is less than the expected 3.00% or there is a decline in payroll, the UAL payments are spread over a smaller payroll base and the contribution rate as a percentage of payroll increases, making the Plan less affordable for the Safety and potentially other plan sponsors.

SECTION II – DISCLOSURES RELATED TO RISK

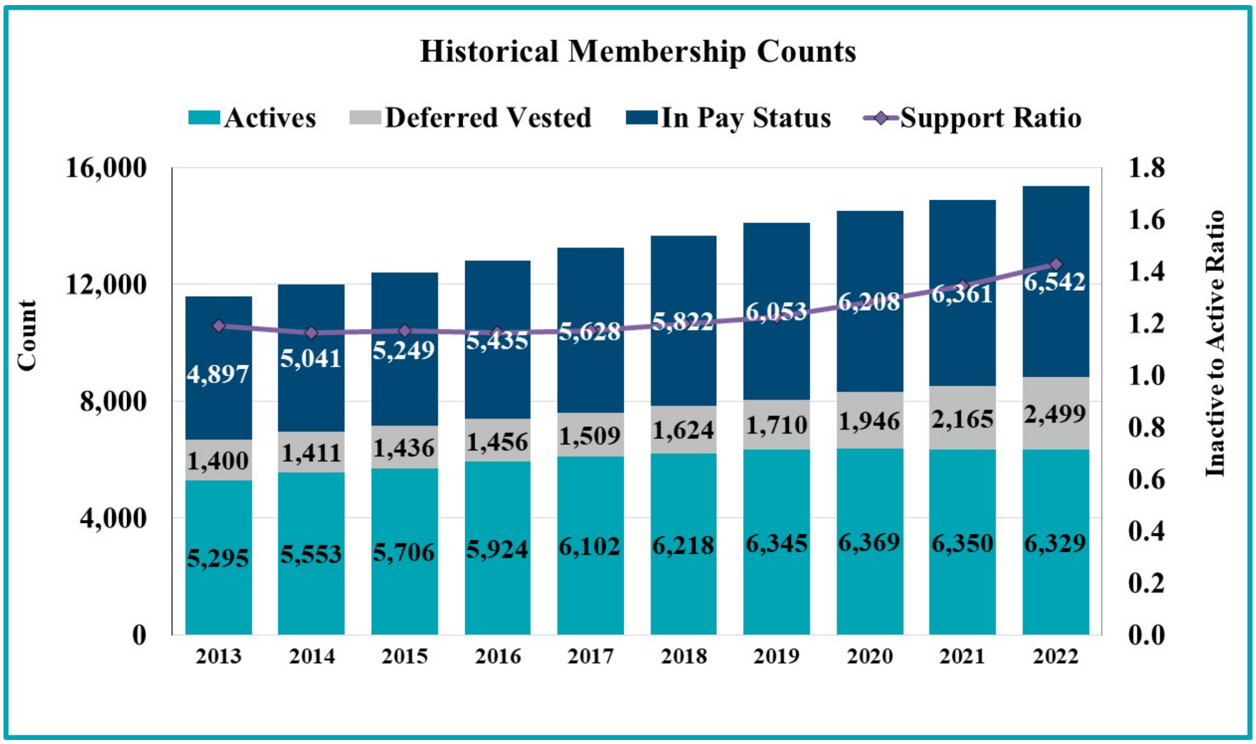
Plan Maturity Measures

The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. Before assessing each of these risks, it is important to understand the maturity of the Plan and how the maturity has changed over time.

Plan maturity can be measured in a variety of ways, but they all get at one basic dynamic – the larger the plan is compared to the contribution or revenue base that supports it; the more sensitive the plan will be to risk. The measures below have been selected as the most important in understanding the primary risks identified for the Plan.

Inactives per Active (Support Ratio)

One simple measure of plan maturity is the ratio of the number of inactive members (those receiving benefits or inactives – those entitled to a deferred benefit) to the number of active members. The Support Ratio is expected to increase gradually as a plan matures. The Support Ratio slightly declined from 2014 to 2017 since the active population increased an average of about 3.6% per year. The last five years, the active population increased at a slower pace than the inactive population, resulting in an uptick in the Support Ratio.

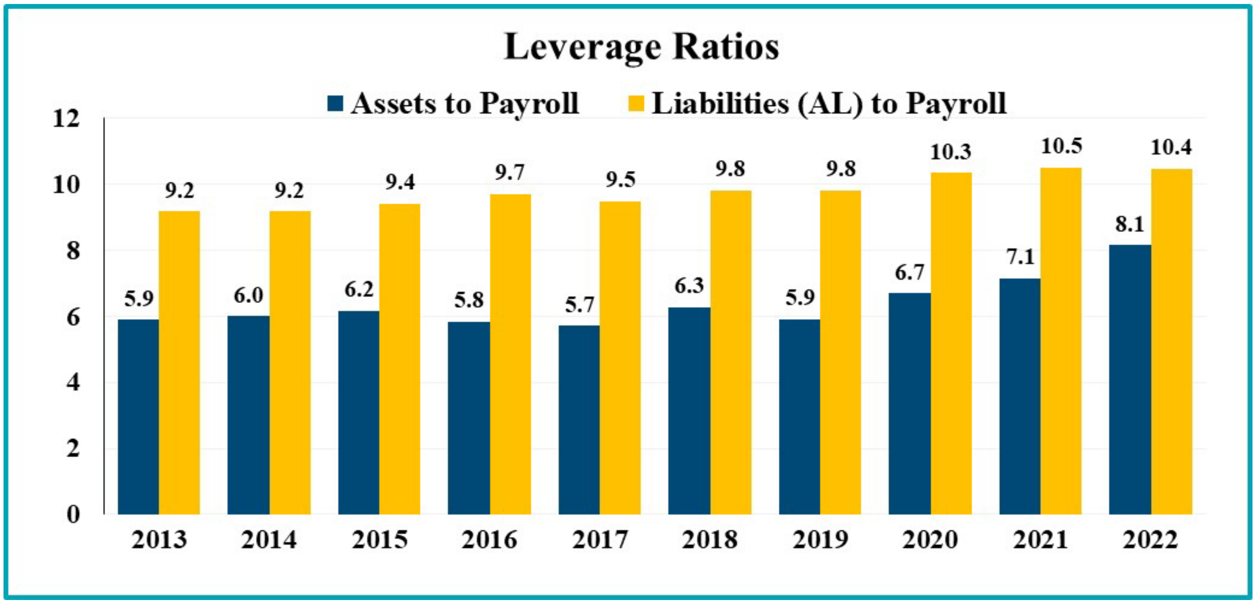


SECTION II – DISCLOSURES RELATED TO RISK

Leverage Ratios

Leverage or volatility ratios measure the size of the plan compared to its revenue base more directly. The asset leverage ratio is simply the market value of assets to active member payroll and indicates the sensitivity of the Plan to investment returns. The liability leverage ratio is the plan's actuarial liability to active member payroll and indicates the sensitivity of the Plan to assumption changes or demographic experience.

The chart below shows the historical leverage ratios of the Plan. Both leverage ratios have increased since 2013, but the asset to payroll ratio had remained relatively stable around 6.0 - assets are six times member payroll – from 2013 to 2019. From 2020 to 2022, the ratio increased from 6.7 to 8.1 times member payroll, due to the favorable asset returns and additional contributions. The liability to payroll ratio has increased in most years, driven by the continued maturation of the Plan and assumption changes.

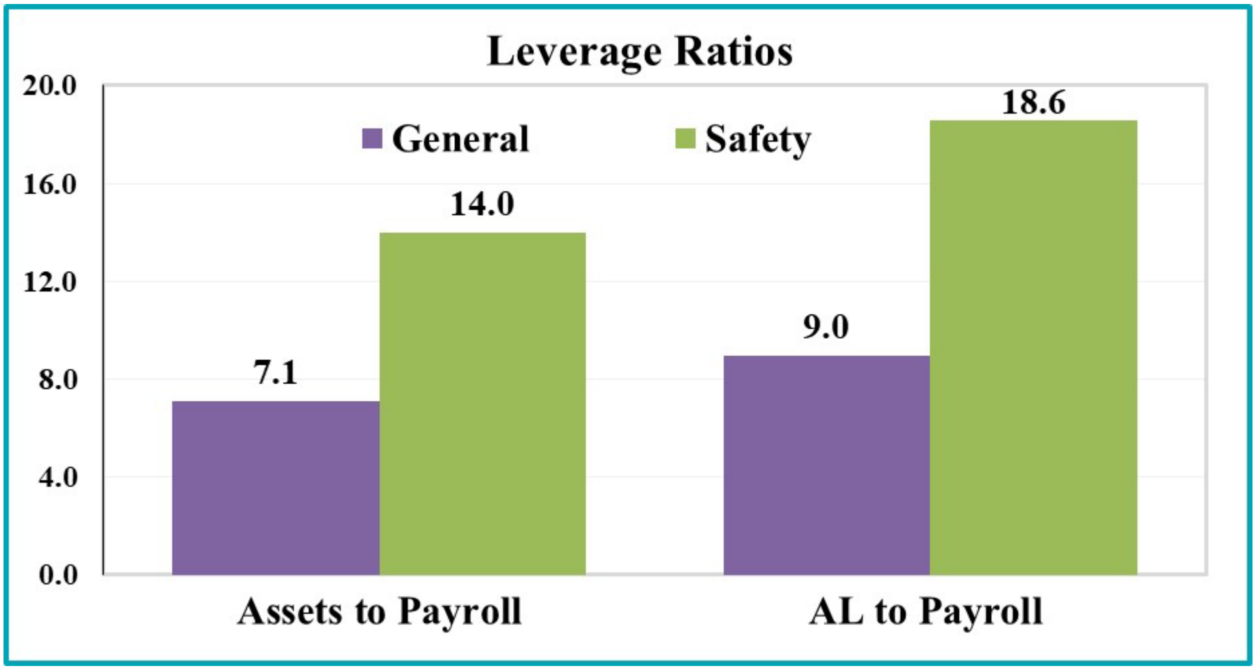


To appreciate the impact of the ratio of assets to payroll on plan cost, consider the situation for a new plan with almost no assets. Even if the assets suffer a bad year of investment returns, the impact on the plan cost is nil, because the asset level is so small.

As the Plan becomes better funded, the asset leverage ratio will increase, and if it were 100% funded, the asset leverage ratio would be over 10 times payroll, or the liability leverage ratio.

We note that the ratio of both assets and liabilities to payroll, and therefore the sensitivity to investment returns, is higher for the Safety members compared to the General members, because of the higher benefit amounts and the earlier average retirement ages for Safety.

SECTION II – DISCLOSURES RELATED TO RISK



The General asset leverage ratio of 7.1 means that if the Plan's assets lose 10% of their value, which is a 16.75% actuarial loss compared to the expected return of 6.75%, the loss would be equivalent to 119% of payroll (16.75% times 7.1). Based on the current amortization policy and economic assumptions, the General contribution rate would ultimately increase by almost 13% of payroll, after deferred asset losses are fully recognized. The same investment loss for the Safety group with an asset ratio of 14.0 would be equivalent to 235% of payroll, or an approximate contribution rate increase of almost 25%. Therefore, the contribution rates for the Safety members will generally be much more volatile than those of the General members.

More Detailed Assessment

While a more detailed assessment is always valuable to enhance the understanding of the risks identified above, we believe the scenarios illustrated above cover the primary risks facing the Plan at this time. We would be happy to provide the Board with a more in-depth analysis at their request.

SECTION III – ASSETS

Pension Plan assets play a key role in the financial operation of the System and in the decisions the Board may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely impact benefit levels, employer contributions, and the ultimate security of participants' benefits.

In this section, we present detailed information on System assets including:

- **Disclosure** of System assets as of December 31, 2020 and December 31, 2021,
- Statement of the **changes** in market values during the year,
- Development of the **Actuarial Value of Assets**,
- An assessment of **investment performance**, and
- Determination of **reserve balances** as of January 1, 2022.

Disclosure

There are two types of asset values disclosed in the valuation, the Market Value of Assets, and the Actuarial Value of Assets. The market value represents the fair value of assets that provide the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace. As a result, market values are usually not as suitable for long-range planning as are the Actuarial Value of Assets, which reflect smoothing of annual investment returns.

Table III-1 on the next page discloses and compares the market values as of December 31, 2020 and December 31, 2021.

SECTION III – ASSETS

TABLE III-1
Statement of Assets at Market Value
December 31,

Assets:		**2020**		**2021**
Cash and Cash Equivalents	$	146,456,177	$	323,434,089
Cash Collateral-Securities Lending		83,589,197		84,977,773
Total Cash and Cash Equivalents		230,045,374		408,411,862
Receivables:				
Investment Income Receivables		3,400,405		3,563,318
Contributions Receivable		10,074,285		11,131,624
Securities Sold, Not Received - Domestic		1,065,084		46,579,831
Other Investment Income Receivable		0		0
Miscellaneous Receivables		40,873		45,565
Total Receivables		14,580,647		61,320,338
Investments, at Market Value:				
Stable Fixed Income		322,514,912		330,858,456
Credit		479,100,892		498,464,537
Global Public Equity		1,258,623,730		1,542,821,008
Private Appreciation		456,340,240		571,896,533
Risk Parity		409,233,403		449,916,750
Crisis Risk Offset		463,660,827		499,732,946
Total Investments		3,389,474,004		3,893,690,230
Other Assets:				
Prepaid Expenses		140,655		99,975
Equipment and Fixtures, Net		136,246		154,044
Other Assets		276,901		254,019
Total Assets		3,634,376,926		4,363,676,449
Liabilities:				
Securities Lending-Cash Collateral		83,589,197		78,775,961
Securities Purchased, Not Paid		2,986,539		84,977,773
Accrued Expenses and Other Payables		1,076,401		1,127,029
Security Lending Interest and Other Expense		12,540		7,682
Total Liabilities		87,664,677		164,888,445
Market Value of Assets	**$**	**3,546,712,249**	**$**	**4,198,788,004**

SECTION III – ASSETS

Changes in Market Value

The components of asset change are:

- Contributions (employer and employee)
- Benefit payments
- Expenses (investment and administrative)
- Investment income (realized and unrealized)

Table III-2 below shows the components of change in the Market Value of Assets during 2020 and 2021.

TABLE III-2
Changes in Market Values

Additions	2020	2021
Contributions		
Employer's Contribution	240,700,988	306,662,635
Members' Contributions	40,568,995	43,455,640
Total Contributions	281,269,983	350,118,275
Net Investment Income		
Net Appreciation/(Depreciation) in		
Fair Value of Investments	256,770,057	554,256,496
Interest	20,997,097	22,966,328
Dividends	5,563,699	10,179,197
Real Estate Income, net	11,223,598	9,333,819
Investment Expenses	(18,016,050)	(25,722,039)
Miscellaneous Investment Income	2,390	39
Net Investment Income,		
Before Securities Lending Income	276,540,791	571,013,840
Securities Lending Income		
Earnings	581,476	388,378
Rebates	(165,250)	519
Fees	(103,839)	(97,171)
Net Securities Lending Income	312,387	291,726
Net Investment Income	276,853,178	571,305,566
Miscellaneous Income	143,352	986,382
Total Additions	558,266,513	922,410,223

SECTION III – ASSETS

TABLE III-2
Changes in Market Values (Continued)

Deductions	2020	2021
Benefit payments	247,254,985	261,371,770
Death Benefits	808,150	608,396
Refunds of Members' Contributions	3,488,542	3,985,433
Total Benefit Payments	251,551,677	265,965,599
Administrative & Other Expenses		
General Administrative Expenses	3,936,825	3,828,700
Actuary Fees	123,800	206,203
Fund Legal Fees	475,830	604,536
Total Administrative & Other Expenses	4,536,455	4,639,439
Transfer Between Plans	(172,041)	(270,570)
Total Deductions	255,916,091	270,334,468
Net increase (Decrease)	302,350,422	652,075,755
Net Assets Held in Trust for Pension Benefits:		
Beginning of Year	3,244,361,827	3,546,712,249
End of Year	3,546,712,249	4,198,788,004
Approximate Return	8.50%	15.96%

SECTION III – ASSETS

Actuarial Value of Assets (AVA)

The Actuarial Value of Assets represents a "smoothed" value developed by the actuary to reduce contribution volatility, which could develop due to short-term fluctuations in the Market Value of Assets. For this System, the Actuarial Value of Assets is calculated by recognizing the deviation of actual investment returns compared to the expected return over a five-year period.

The dollar amount of the expected return on the Market Value of Assets is determined using the actual contributions, administrative expense, and benefit payments during the year. Any difference between this amount and the actual investment earnings is considered a gain or loss. However, in no event will the Actuarial Value of Assets be less than 80% or more than 120% of market value on the valuation date. The following table shows the development of the actuarial asset value.

TABLE III-3
Development of Actuarial Value of Assets
as of January 1, 2022

Year	(a) Contributions	(b) Benefits	(c) Administrative Expense	(d) Healthcare Fund Transfer	(e) Expected Return	(f) Actual Return	(g) = (f) – (e) Additional Earnings	(h) Not Recognized	(i) = (g) x (h) Unrecognized Earnings
2018	244,135,523	221,443,667	4,865,082	324,269	209,406,849	(56,397,598)	(265,804,447)	20%	(53,160,889)
2019	263,627,444	236,350,072	4,931,163	299,014	206,793,106	380,674,528	173,881,422	40%	69,552,569
2020	281,269,983	251,551,677	4,536,455	172,041	227,983,829	276,996,530	49,012,701	60%	29,407,621
2021	350,118,275	265,965,599	4,639,439	270,570	251,024,692	572,291,948	321,267,256	80%	257,013,805

1. Total Unrecognized Dollars	302,813,106
2. Market Value of Assets as of December 31, 2021	4,198,788,004
3. Preliminary Actuarial Value of Assets as of December 31, 2021: [(2) - (1)]	3,895,974,898
4. Corridor Limits	
a. 80% of Net Market Value	3,359,030,403
b. 120% of Net Market Value	5,038,545,605
5. Actuarial Value of Assets after Corridor	3,895,974,898
6. Ratio of Actuarial Value to Market Value [(5) ÷ (2)]	92.79%
7. Market Stabilization Designation [(2) – (5)]	302,813,106
8. Special (Non Valuation) Reserves:	
Class Action Settlement – Post 4/1/1982	75,271
Contingency	43,633,169
Total Special Reserves	43,708,440
9. Actuarial Value of Assets for the Funding Ratio: [(5) - (8)]	**$3,852,266,458**
10. Additional Contribution Reserves	$184,202,449
11. Actuarial Value of Assets Used for Calculating the Employer Contribution Rates: [(9) - (10)]	**$3,668,064,009**

SECTION III – ASSETS

Investment Performance

The following table calculates the investment related gain/loss for the plan year on both a market value and an actuarial value basis. The market value gain/loss is a useful measure for comparing the actual asset performance to the previous valuation assumption.

The employer contributions include the additional contributions of $73,526,045 made by the County, the MVCD, and the Superior Court in the gain/loss development for the market value of assets but are excluded in the analysis for the valuation assets.

TABLE III-4
Asset Gain/(Loss)

	Market Value	Valuation Assets
January 1, 2021 value	**$ 3,546,712,249**	**$ 3,390,284,482**
Employer Contributions	306,662,635	233,136,591
Employee Contributions	43,455,640	43,455,640
Healthcare Transfer	270,570	270,570
Benefit Payments	(265,965,599)	(265,965,599)
Administrative Expenses	(4,639,439)	(4,639,439)
Expected Investment Earnings (7.00%)	251,024,692	237,544,861
Expected Value December 31, 2021	**$ 3,877,520,748**	**$ 3,634,087,106**
Investment Gain / (Loss)	321,267,256	33,976,903
January 1, 2022 value	**$ 4,198,788,004**	**$ 3,668,064,009**
Return	15.96%	8.00%

Note that the return on market value shown above is not the dollar-weighted return on assets required for purposes of GASB Statements 67 and 68.

SECTION III – ASSETS

The following table shows the historical annual asset returns on a market value and actuarial value basis, as well in the increase in the Consumer Price Index (CPI) since 1999.

TABLE III-5
Historical Asset Returns

Year Ended December 31	Return on Market Value	Return on Actuarial Value	Increase in CPI[1]
1999	13.7%	15.1%	2.7%
2000	3.2%	11.5%	3.4%
2001	(0.1%)	8.8%	1.6%
2002	(5.5%)	4.7%	2.4%
2003	25.5%	6.8%	1.9%
2004	11.8%	6.6%	3.3%
2005	6.9%	7.2%	3.4%
2006	12.7%	9.6%	2.5%
2007	6.9%	11.2%	4.1%
2008	(30.1%)	(14.3%)	(0.5%)
2009	11.4%	7.4%	2.5%
2010	12.4%	6.4%	1.5%
2011	1.3%	(1.8%)	3.0%
2012	11.7%	(0.2%)	1.7%
2013	9.2%	8.5%	1.5%
2014	4.7%	7.5%	0.8%
2015	(1.9%)	5.6%	0.7%
2016	6.3%	5.3%	2.1%
2017	11.7%	5.6%	2.1%
2018	(2.0%)	3.9%	1.9%
2019	13.3%	5.1%	2.3%
2020	8.5%	7.3%	1.4%
2021	16.0%	8.0%	7.0%
Compounded 15- Year Average	4.6%	4.2%	2.1%
Compounded 10- Year Average	7.6%	5.6%	2.1%
Compounded 5- Year Average	9.3%	6.0%	2.9%

[1] Based on All Urban Consumers - U.S. City Average, December Indices.

Reserve Balances

The following table shows historical balances of the Post-1982 Settlement Reserve.

TABLE III-6
Post-1982 Settlement Reserve

Valuation Date January 1	Number Eligible	Benefits Payable	Reserve	Estimated Years of Payments
2008	1,896	3,683,939	25,872,222	13
2009	1,856	3,602,904	22,015,055	10
2010	1,800	3,484,762	20,090,654	9
2011	1,738	3,370,636	18,108,660	6
2012	1,679	3,243,068	14,556,866	5
2013	1,709	3,244,009	11,063,855	4
2014	1,662	3,197,416	8,765,004	3
2015	1,617	3,046,233	6,338,007	2
2016	1,560	2,939,133	3,644,507	1
2017	1,501	2,821,575	915,393	<1
2018	1,441	2,705,007	485,100	<1
2019	1,376	2,594,058	62,951	<1
2020	1,313	2,479,710	65,877	<1
2021	1,255	2,372,539	70,425	<1
2022	1,196	2,260,212	75,271	<1

As of January 1, 2022, the total projected liability associated with paying the Post-82 Settlement allowances for the remaining lifetime of the eligible members and beneficiaries is approximately $15.8 million. Payments from the Post-82 Settlement reserve have been suspended, with the last benefits payable in August of 2018.

SECTION IV – LIABILITIES

In this section, we present detailed information on System liabilities including:

- **Disclosure** of System liabilities at January 1, 2021 and January 1, 2022
- Statement of **changes** in these liabilities during the year

Disclosure

Several types of liabilities are calculated and presented in this report. We note that the liabilities described below are not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, in the case of a plan termination or other similar action.

- **Present Value of Future Benefits:** Used for measuring all future System obligations, represents the amount of money needed today to fully fund all benefits of the System both earned as of the valuation date and those to be earned in the future by current plan participants, under the current System provisions.
- **Actuarial Liability:** Used for funding calculations, this liability is calculated taking the Present Value of Future Benefits and subtracting the present value of future Member Contributions and future Employer Normal Costs under an acceptable actuarial funding method. The method used for this System is called the **Entry Age Normal** (EAN) funding method.
- **Unfunded Actuarial Liability:** The excess of the Actuarial Liability over the Actuarial Value of Assets.

Table IV-1 discloses each of these liabilities for the current and prior valuations and shows the allocation of the valuation assets between SJCERA's valuation subgroups, General and Safety. With respect to each disclosure, a subtraction of the appropriate value of Plan assets yields, for each respective type, a **net surplus,** or an **Unfunded Actuarial Liability**.

SECTION IV – LIABILITIES

Table IV-1
Allocation of Assets by Subgroup and Liabilities/Net (Surplus)/Unfunded

		January 1, 2021 Total	January 1, 2022 Total	(a) General	(b) Safety	(c) Unallocated
1.	Member Reserves	$ 432,960,501	$ 451,026,190	$ 363,070,654	$ 87,955,536	$ 0
2.	Employer Advance Reserves w/o Add'l Contribs	1,735,539,236	1,988,767,415	1,424,495,911	564,271,504	0
3.	Retired Member Reserves	1,214,247,124	1,175,560,436	862,803,735	308,581,731	4,174,970
4.	Total Valuation Reserves (1 + 2 + 3)	$ 3,382,746,862	$ 3,615,354,042	$ 2,650,370,300	$ 960,808,771	$ 4,174,970
5.	Additional Contribs to Employer Advance Reserve	97,140,039	184,202,449	155,815,442	28,387,007	0
6.	AVA Gain/Loss, less Stabilization Reserve	7,537,621	52,709,968	0	0	52,709,968
7.	Total Reserves (4 + 5 + 6)	$ 3,487,424,521	$ 3,852,266,458	$ 2,806,185,743	$ 989,195,778	$ 56,884,938
8.	Proportion Reserves of Line 4, by Plan			73.39%	26.61%	
9.	Valuation Assets for Funding Ratio (7 + [8 * 7c])	$ 3,487,424,521	$ 3,852,266,458	$ 2,847,935,583	$ 1,004,330,875	
10.	Valuation Assets for Developing Contribution Rate (4 + [8 * 7c])	$ 3,390,284,482	$ 3,668,064,010	$ 2,692,120,141	$ 975,943,869	
	Present Value of Future Benefits					
	Actives	$ 2,660,484,116	$ 2,685,521,686	$ 2,020,526,387	$ 664,995,299	
	Terminated Vested	179,201,791	194,818,997	161,568,270	33,250,727	
	Retirees	2,814,228,539	2,898,737,248	2,144,067,749	754,669,499	
	Disabled	313,863,478	318,801,464	131,786,671	187,014,793	
	Beneficiaries	200,215,069	219,273,306	136,981,257	82,292,049	
11.	**Present Value of Future Benefits (PVB)**	**$ 6,167,992,993**	**$ 6,317,152,701**	**$ 4,594,930,334**	**$ 1,722,222,367**	
12.	Present Value of Future Normal Costs (PVFNC)	960,323,692	993,363,887	740,782,299	252,581,588	
13.	**Actuarial Liability (11 - 12)**	**$ 5,207,669,301**	**$ 5,323,788,814**	**$ 3,854,148,035**	**$ 1,469,640,779**	
14.	**Funded Ratio (9 / 13)**	**67.0%**	**72.4%**	**73.9%**	**68.3%**	
15.	**Net (Surplus)/Unfunded (13 - 10)**	**$ 1,817,384,819**	**$ 1,655,724,804**	**$ 1,162,027,894**	**$ 493,696,910**	

SECTION IV – LIABILITIES

Changes in Liabilities

Each of the liabilities disclosed in the prior table are expected to change at each valuation. The components of that change, depending upon which liability is analyzed, can include:

- New hires since the last valuation
- Benefits accrued since the last valuation
- Plan amendments
- Passage of time which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Participants retiring, terminating, or dying at rates different than expected
- A change in actuarial or investment assumptions
- A change in the actuarial funding method

Unfunded liabilities will change because of all of the above, and due to changes in System assets resulting from:

- Employer contributions different than expected
- Investment earnings different than expected
- A change in the method used to measure plan assets

TABLE IV-2
Changes in Actuarial Liability

Actuarial Liability at January 1, 2021	$	5,207,669,301
Actuarial Liability at January 1, 2022	$	5,323,788,814
Liability Increase (Decrease)		116,119,513
Change due to:		
Accrual of Benefits	$	108,420,052
Actual Benefit Payments		(265,965,599)
Interest		362,974,899
Assumption Changes		(58,741,183)
Actuarial Liability (Gain) / Loss		(30,568,656)

SECTION IV – LIABILITIES

TABLE IV-3
Development of Actuarial (Gain) / Loss

	General	Safety	Total
1. Unfunded Actuarial Liability at Start of Year (not less than zero)	$ 1,309,482,987	$ 507,901,832	$ 1,817,384,819
2. Middle of year unfunded actuarial liability payment	(126,051,048)	(48,193,047)	(174,244,095)
3. Interest to end of year on 1. and 2.	87,326,639	33,894,900	121,221,539
4. Change in Actuarial Liability due to assumption change	(75,251,608)	16,510,425	(58,741,183)
5. Expected UAL at the end of year (1+2+3+4)	1,195,506,970	510,114,110	1,705,621,080
6. Actual Unfunded Liability at end of year[1]	1,162,027,894	493,696,910	1,655,724,804
7. Net (Gain)/Loss: (6 - 5)	(33,479,076)	(16,417,200)	(49,896,276)
8. Actuarial Liability (Gain) / Loss	$ (22,208,230)	$ (8,360,426)	$ (30,568,656)
9. Actuarial Asset (Gain) / Loss	$ (21,769,434)	$ (12,207,470)	$ (33,976,903)
10. Contribution (Gain) / Loss	$ 10,498,588	$ 4,150,696	$ 14,649,284

[1] Assets exclude the additional County, MVCD, and Superior Court Contribution Reserves.

SECTION V – CONTRIBUTIONS

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of the System. The actuarial process utilizes funding techniques with a goal of producing a pattern of contributions that are both stable and predictable.

For this System, the actuarial funding method used to determine the normal cost and the Unfunded Actuarial Liability is the **Entry Age Normal (EAN)** cost method. There are three primary components to the total contribution: the **normal cost rate** (employee and employer), the **Unfunded Actuarial Liability rate** (UAL rate), and the **administrative expense** contribution.

The normal cost rate is determined in the following steps. First, an individual normal cost rate is determined by taking the value, as of entry age into the System, of each member's projected future benefits. This value is then divided by the value, also at entry age, of the member's expected future salary producing a normal cost rate that should remain relatively constant over a member's career. The total normal cost is adjusted with interest to the middle of the year, to reflect the fact that the normal cost contributions are paid throughout the year as member payroll payments are made. Finally, the total normal cost rate is reduced by the member contribution rate to produce the employer normal cost rate.

The member contribution rates used in this valuation reflect the broad cost sharing arrangements in place as of the valuation date that apply to the 2023 Plan Year (i.e. whether the bargaining unit is making the full COLA cost-sharing member contribution and/or the additional 14%/33% Basic member rate). However, the valuation does not include additional fixed rate contributions payable by some bargaining units (of 3%, 4% or 5% of payroll). Those additional contributions are applied outside of the valuation, and reductions to the employer rates to reflect those additional contributions are provided directly to the individual bargaining groups.

The Unfunded Actuarial Liability is the difference between the EAN Actuarial Liability and the Actuarial Value of Assets. At the July 24, 2015 board meeting, the SJCERA Board of Retirement chose to make a change to their funding policy, opting to amortize any unexpected changes in the UAL over a period of 15 years as a level percentage of payroll, with new amortization layers each year. The result was a set of three amortization bases as of January 1, 2015: the 2008 loss being amortized over 24 years, the remaining UAL as of December 31, 2014 being amortized over 18 years, and new additions to the UAL on and after January 1, 2015 amortized over 15 years. At the February 14, 2020 board meeting, the SJCERA Board of Retirement chose to phase-in the impact of the January 1, 2020 economic assumption changes to the UAL over a period of three years, followed by 12 years of payments as a level percentage of payroll. The single equivalent amortization period for all streams of UAL payments is 12 years as of January 1, 2022. The amortization period for each Unfunded Actuarial Liability layer will decrease each year. The assumption changes in this valuation will be amortized over 15 years.

The total administrative expenses are assumed to be $5,173,647 in 2022, increasing with the CPI assumption each valuation. The administrative expenses are split between employees and employers based on their share of the overall contributions.

SECTION V – CONTRIBUTIONS

The tables on the following pages present the employer contributions for the System for this valuation.

TABLE V-1
Development of Employer Contribution Amount

		January 1, 2022	% of pay
1.	Normal Cost at Middle of Year	$66,828,095	14.18%
2.	Amortization of Unfunded Liability		
	a. Actuarial Liability	$ 5,323,788,814	
	b. Actuarial Value of Assets[1]	$3,668,064,009	
	c. Unfunded Liability (a) – (b)	$ 1,655,724,805	
	d. Amortization of Unfunded Liability	$172,188,459	34.29%
3.	Administrative Expenses *(Employer allocation only)*	4,328,666	0.86%
4.	Actuarially Determined Contribution (1) + (2d) + (3)	$ 243,345,220	49.33%

[1] Assets exclude additional County, MVCD, and Superior Court Contribution Reserves.

SECTION V – CONTRIBUTIONS

TABLE V-2
Employer Contribution Rate

	January 1, 2021	January 1, 2022
Contributions as a Percentage of Payroll[1]		
Gross Entry Age Normal Cost Rate	23.53%	23.64%
Employee Contribution Rate	8.95%	9.46%
Employer Entry Age Normal Cost Rate	14.58%	14.18%
Employer Normal Cost Rate	14.58%	14.18%
Administrative Expense	0.86%	0.86%
Amortization Payment	35.07%	34.29%
Employer Contribution Rate	50.51%	49.33%
Actuarially Determined Contribution (Employer)	$ 245,694,645	$ 243,345,220

[1] Normal cost and employee contribution rates do not include administrative expenses.

SECTION V – CONTRIBUTIONS

TABLE V-3
Employer Contribution Rate

	General Tier 1 January 1, 2022	General Tier 2 January 1, 2022	Safety Tier 1 January 1, 2022	Safety Tier 2 January 1, 2022
Contributions as a Percentage of Payroll[1]				
Gross Entry Age Normal Cost Rate	22.91%	20.22%	37.88%	31.20%
Employee Contribution Rate	7.10%	10.11%	11.80%	15.60%
Employer Entry Age Normal Cost Rate	15.81%	10.11%	26.08%	15.60%
Employer Normal Cost Rate	15.81%	10.11%	26.08%	15.60%
Administrative Expense	0.86%	0.86%	0.86%	0.86%
Amortization Payment	28.73%	28.73%	64.52%	64.52%
Employer Contribution Rate	45.40%	39.70%	91.46%	80.98%
Actuarially Determined Contribution (Employer)	$ 85,579,726	$ 90,394,638	$ 42,728,597	$ 24,642,258

[1] Normal cost and employee contribution rates do not include administrative expenses.

SECTION V – CONTRIBUTIONS

TABLE V-4
Development of General Amortization Payment
For Fiscal Year 2022

Type of Base	Date Established	Initial Amount	Initial Amortization Years	1/1/2022 Outstanding Balance	Remaining Amortization Years	Amortization Amount
Charges/(Credits)						
1. 2008 Extraordinary Actuarial Loss	1/1/2009	$ 298,074,372	30	$ 324,452,396	17	$ 25,851,581
2. Remaining 1/1/2014 UAL	1/1/2014	584,940,566	19	499,856,741	11	55,784,915
3. 1/1/2015 Gain	1/1/2015	(11,658,862)	15	(8,756,680)	8	(1,277,420)
4. 1/1/2016 Loss	1/1/2016	34,636,894	15	27,812,822	9	3,668,254
5. 1/1/2016 Assumption Changes	1/1/2016	75,853,467	15	60,909,010	9	8,033,336
6. 1/1/2017 Loss	1/1/2017	94,894,097	15	80,546,320	10	9,723,645
7. 1/1/2018 Loss	1/1/2018	23,943,774	15	21,271,256	11	2,373,911
8. 1/1/2018 Assumption Changes	1/1/2018	59,045,648	15	52,455,187	11	5,854,094
9. 1/1/2019 Loss	1/1/2019	95,504,066	15	88,127,757	12	9,167,058
10. 1/1/2019 Assumption Changes	1/1/2019	17,462,987	15	16,114,224	12	1,676,203
11. 1/1/2020 Loss	1/1/2020	8,429,406	15	8,024,279	13	783,339
12. 1/1/2020 Assumption Changes	1/1/2020	96,315,094	15	100,182,010	13	9,779,882 [1]
13. 1/1/2021 Gain	1/1/2021	(242,042)	15	(236,744)	14	(21,816)
14. 1/1/2022 Gain	1/1/2022	(33,479,076)	15	(33,479,076)	15	(2,926,911)
15. 1/1/2022 Assumption Changes	1/1/2022	(75,251,608)	15	(75,251,608)	15	(6,578,879)
				$ 1,162,027,894	12 [2]	$ 121,891,192

[1] This payment reflects the third year of a three-year phase-in of the recognition of the increase in UAL due to the new economic assumptions.

[2] The single equivalent amortization period - i.e. the length of time required to amortize the overall UAL as a level percentage of payroll based on the total current amortization payment is approximately 12 years.

SECTION V – CONTRIBUTIONS

TABLE V-5
Development of Safety Amortization Payment
For Fiscal Year 2022

Type of Base	Date Established	Initial Amount	Initial Amortization Years	1/1/2022 Outstanding Balance	Remaining Amortization Years	Amortization Amount
Charges/(Credits)						
1. 2008 Extraordinary Actuarial Loss	1/1/2009	$ 126,189,527	30	$ 130,658,990	17	$ 10,410,592
2. Remaining 1/1/2014 UAL	1/1/2014	235,559,190	19	201,295,406	11	22,464,931
3. 1/1/2015 Gain	1/1/2015	(4,780,021)	15	(3,590,155)	8	(523,730)
4. 1/1/2016 Loss	1/1/2016	17,788,933	15	14,284,204	9	1,883,955
5. 1/1/2016 Assumption Changes	1/1/2016	16,001,780	15	12,849,150	9	1,694,684
6. 1/1/2017 Loss	1/1/2017	14,516,825	15	12,321,914	10	1,487,516
7. 1/1/2018 Loss	1/1/2018	13,716,051	15	12,185,115	11	1,359,881
8. 1/1/2018 Assumption Changes	1/1/2018	22,809,013	15	20,263,154	11	2,261,405
9. 1/1/2019 Loss	1/1/2019	26,232,387	15	24,206,314	12	2,517,943
10. 1/1/2019 Assumption Changes	1/1/2019	(1,446,461)	15	(1,334,743)	12	(138,840)
11. 1/1/2020 Loss	1/1/2020	30,198,055	15	28,746,703	13	2,806,286
12. 1/1/2020 Assumption Changes	1/1/2020	38,696,213	15	40,249,812	13	3,929,232 [1]
13. 1/1/2021 Loss	1/1/2021	1,500,664	15	1,467,820	14	135,262
14. 1/1/2022 Gain	1/1/2022	(16,417,200)	15	(16,417,200)	15	(1,435,275)
15. 1/1/2022 Assumption Changes	1/1/2022	16,510,425	15	16,510,425	15	1,443,425
				$ 493,696,910	12 [2]	$ 50,297,267

[1] This payment reflects the third year of a three-year phase-in of the recognition of the increase in UAL due to the new economic assumptions.

[2] The single equivalent amortization period - i.e. the length of time required to amortize the overall UAL as a level percentage of payroll based on the total current amortization payment is approximately 12 years.

SECTION VI – ADDITIONAL ANNUAL FINANCIAL REPORT SCHEDULES

This section of the report provides a schedule for the Actuarial Section of the annual financial report for SJCERA that is not provided in the GASB 67 and 68 reports.

We have prepared the following schedule:

Schedule of Funded Liabilities by Type

The schedule of funded liabilities by type (formerly known as the solvency test) shows the portion of Actuarial Liabilities for active member contributions, inactive members, and the employer financed portion of the active members that are covered by the Actuarial Value of Assets.

The Actuarial Liability is determined assuming that the System is ongoing, and participants continue to terminate employment, retire, etc., in accordance with the actuarial assumptions. Liabilities for 2013 through 2015 were discounted at an assumed interest rate of 7.50%, whereas liabilities for 2016 and 2017 were discounted at the assumed rate of 7.40%, and the liabilities for 2018 and 2019 were discounted at the assumed rate of 7.25%. The liabilities for 2020 and 2021 were discounted at the assumed rate of 7.00%. The liabilities for 2022 are discounted at the assumed rate of 6.75%.

Table VI-1
Schedule of Funded Liabilities by Type
Aggregate Actuarial Liabilities for

Valuation Date January 1,	Active Member Contributions (1)	Retirees & Beneficiaries (2)	Active Members[1] (3)	Actuarial Value of Assets	Portion of Actuarial Liabilities Covered by Reported Assets (1)	(2)	(3)
2022	$ 457,136,377	$ 3,436,812,018	$ 1,429,840,419	$ 3,852,266,458	100%	99%	0%
2021	426,570,416	3,328,307,086	1,452,791,799	3,487,424,521	100%	92%	0%
2020	396,549,386	3,162,982,551	1,454,100,529	3,226,099,142	100%	89%	0%
2019	368,549,547	2,899,425,320	1,437,296,083	3,044,897,691	100%	92%	0%
2018	344,503,811	2,706,791,152	1,445,680,634	2,913,161,286	100%	95%	0%
2017	318,020,652	2,513,640,349	1,403,432,945	2,733,851,661	100%	96%	0%
2016	297,179,041	2,347,908,211	1,361,302,798	2,604,472,784	100%	98%	0%
2015	276,818,405	2,117,009,658	1,337,806,309	2,471,291,047	100%	100%	6%
2014	258,198,240	1,956,930,619	1,346,730,197	2,285,165,972	100%	100%	5%
2013	209,987,230	1,810,775,897	1,332,531,085	2,125,700,227	100%	100%	8%
2012	202,924,928	1,627,338,404	1,218,058,024	2,130,052,649	100%	100%	25%
2011	193,612,757	1,495,665,075	1,228,410,127	2,120,384,183	100%	100%	35%
2010	187,986,706	1,373,256,766	1,208,368,072	1,949,011,498	100%	100%	32%
2009	176,235,961	1,231,647,623	1,103,041,755	1,821,357,079	100%	100%	37%
2008	166,804,000	1,119,690,000	1,048,027,000	2,029,949,000	100%	100%	71%
2007	159,100,000	1,023,296,000	967,542,000	1,869,717,000	100%	100%	71%
2006	147,953,000	904,208,000	883,657,000	1,727,033,000	100%	100%	76%

[1] Includes terminated vested members.

APPENDIX A – MEMBERSHIP INFORMATION

The data for this valuation was provided by the San Joaquin County staff as of January 1, 2022.

Summary of Participant Data as of January 1, 2022	General	Safety	Total
Tier 1 Active Participants			
Number	2,211	456	2,667
Average Age	51.81	45.28	50.69
Average Benefit Service	18.01	17.00	17.84
Average Vesting Service	18.24	17.18	18.06
Average Pay	$87,000	$103,865	$89,884
Tier 2 Active Participants			
Number	3,281	381	3,662
Average Age	41.12	33.27	40.30
Average Benefit Service	3.67	4.09	3.72
Average Vesting Service	3.73	4.11	3.77
Average Pay	$70,661	$80,307	$71,665
All Active Participants			
Number	5,492	837	6,329
Average Age	45.42	39.81	44.68
Average Benefit Service	9.45	11.12	9.67
Average Vesting Service	9.57	11.23	9.79
Average Pay	$77,239	$93,142	$79,342

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data as of January 1, 2022	General	Safety	Total
Service Retired			
Number	4,289	695	4,984
Average Age	71.26	66.33	70.57
Average Annual Base Benefit	$13,117	$27,650	$15,144
Average Annual Total Benefit	$38,962	$72,264	$43,605
Beneficiaries			
Number	695	229	924
Average Age	73.33	70.81	72.70
Average Annual Base Benefit	$5,550	$10,574	$6,795
Average Annual Total Benefit	$21,625	$39,896	$26,154
Duty Disabled			
Number	264	212	476
Average Age	65.82	62.70	64.43
Average Annual Base Benefit	$11,768	$27,554	$18,798
Average Annual Total Benefit	$27,464	$57,793	$40,972
Non-Duty Disabled			
Number	147	11	158
Average Age	66.10	67.45	66.19
Average Annual Base Benefit	$8,805	$14,295	$9,187
Average Annual Total Benefit	$18,603	$35,170	$19,756
Total Receiving Benefits			
Number	5,395	1,147	6,542
Average Age	71.12	66.56	70.32
Average Annual Base Benefit	$11,959	$24,095	$14,087
Average Annual Total Benefit	$35,611	$62,771	$40,373

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data as of January 1, 2022	General	Safety	Total
Deferred Vested			
Number	600	54	654
Average Age	48.29	43.26	47.88
Average Service	9.10	9.58	9.14
Transfers and DROs			
Number	364	96	460
Average Age	50.12	45.84	49.22
Average Service	5.21	4.63	5.09
Funds on Account			
Number	1314	71	1385
Average Age	43.45	37.15	43.13
Average Service	1.32	1.59	1.33
Total Inactive			
Number	2,278	221	2,499
Average Age	45.79	42.42	45.49
Average Service	3.99	4.86	4.07

APPENDIX A – MEMBERSHIP INFORMATION

Changes in Plan Membership: General

	Actives	Transfers/ DROS	Non-Vested Terminations	Vested Terminations	Non-Duty Disabled	Duty Disabled	Retired	Beneficiaries	Total
January 1, 2021	**5,518**	**608**	**895**	**450**	**152**	**263**	**4,171**	**664**	**12,721**
New Entrants	792	0	0	0	0	0	0	0	792
Rehires	27	(8)	(10)	(6)	0	0	(3)	0	0
Duty Disabilities	(2)	0	0	(1)	0	4	0	0	1
Non-Duty Disabilities	(1)	(1)	0	0	2	0	0	0	0
Retirements	(193)	(22)	0	(16)	0	0	230	1	0
Vested Terminations	(125)	0	0	125	0	0	0	0	0
Retirements from Safety with General Service	0	0	0	1	0	1	9	0	11
Died, With Beneficiaries' Benefit Payable	(3)	0	0	(1)	(2)	0	(39)	45	0
Died, Without Beneficiary, and Other Terminations	(342)	(1)	339	0	(5)	(4)	(79)	0	(92)
Transfers	(17)	3	0	0	0	0	0	0	(14)
Redeposits – AB 2766	0	0	0	0	0	0	0	0	0
Withdrawals Paid	(162)	(39)	(32)	(4)	0	0	0	0	(237)
Beneficiary Deaths	0	0	0	0	0	0	0	(27)	(27)
Domestic Relations Orders	0	0	0	0	0	0	0	6	6
Data Corrections	0	(176)	122	52	0	0	0	6	4
January 1, 2022	**5,492**	**364**	**1,314**	**600**	**147**	**264**	**4,289**	**695**	**13,165**

APPENDIX A – MEMBERSHIP INFORMATION

Changes in Plan Membership: Safety

	Actives	Transfers/ DROS	Non-Vested Terminations	Vested Terminations	Non-Duty Disabled	Duty Disabled	Retired	Beneficiaries	Total
January 1, 2021	**832**	**122**	**47**	**43**	**12**	**213**	**674**	**212**	**2,155**
New Entrants	60	0	0	0	0	0	0	0	60
Rehires	1	0	0	(1)	0	0	(1)	0	(1)
Duty Disabilities	0	0	0	0	0	0	0	0	0
Non-Duty Disabilities	(1)	0	0	(1)	0	2	0	0	0
Retirements	(36)	(8)	0	(1)	0	0	44	1	0
Vested Terminations	(9)	0	0	9	0	0	0	0	0
Retirements from Safety with General Service	0	0	0	0	0	1	1	0	2
Died, With Beneficiaries' Benefit Payable	0	(1)	0	(1)	0	(4)	(14)	20	0
Died, Without Beneficiary, and Other Terminations	(16)	0	15	0	(1)	(1)	(8)	0	(11)
Transfers	14	0	0	0	0	0	0	0	14
Redeposits – AB 2766	0	0	0	0	0	0	0	0	0
Withdrawals Paid	(8)	(2)	(2)	0	0	0	0	0	(12)
Beneficiary Deaths	0	0	0	0	0	0	0	(7)	(7)
Domestic Relations Orders	0	0	0	0	0	0	0	2	2
Data Corrections	0	(15)	11	6	0	1	(1)	1	3
January 1, 2022	**837**	**96**	**71**	**54**	**11**	**212**	**695**	**229**	**2,205**

APPENDIX A – MEMBERSHIP INFORMATION

Changes in Plan Membership: All Groups

	Actives	Transfers/ DROS	Non-Vested Terminations	Vested Terminations	Non-Duty Disabled	Duty Disabled	Retired	Beneficiaries	Total
January 1, 2021	**6,350**	**730**	**942**	**493**	**164**	**476**	**4,845**	**876**	**14,876**
New Entrants	852	0	0	0	0	0	0	0	852
Rehires	28	(8)	(10)	(7)	0	0	(4)	0	(1)
Duty Disabilities	(2)	0	0	(1)	0	4	0	0	1
Non-Duty Disabilities	(2)	(1)	0	(1)	2	2	0	0	0
Retirements	(229)	(30)	0	(17)	0	0	274	2	0
Vested Terminations	(134)	0	0	134	0	0	0	0	0
Retirements from Safety with General Service	0	0	0	1	0	2	10	0	13
Died, With Beneficiaries' Benefit Payable	(3)	(1)	0	(2)	(2)	(4)	(53)	65	0
Died, Without Beneficiary, and Other Terminations	(358)	(1)	354	0	(6)	(5)	(87)	0	(103)
Transfers	(3)	3	0	0	0	0	0	0	0
Redeposits – AB 2766	0	0	0	0	0	0	0	0	0
Withdrawals Paid	(170)	(41)	(34)	(4)	0	0	0	0	(249)
Beneficiary Deaths	0	0	0	0	0	0	0	(34)	(34)
Domestic Relations Orders	0	0	0	0	0	0	0	8	8
Data Corrections	0	(191)	133	58	0	1	(1)	7	7
January 1, 2022	**6,329**	**460**	**1,385**	**654**	**158**	**476**	**4,984**	**924**	**15,370**

APPENDIX A – MEMBERSHIP INFORMATION

Active Member Data by Plan

Valuation at Year End	Plan Type	Member Count	Annual Payroll	Average Annual Salary	Average Salary Increase
2007	General	5,353	$308,773,122	$57,682	4.76%
	Safety	871	$62,988,014	$72,317	5.34%
	Total	**6,224**	**$371,761,136**	**$59,730**	**4.97%**
2008	General	5,180	$315,202,954	$60,850	5.49%
	Safety	900	$67,127,759	$74,586	3.14%
	Total	**6,080**	**$382,330,713**	**$62,883**	**5.28%**
2009	General	4,990	$320,526,792	$64,234	5.56%
	Safety	925	$70,801,157	$76,542	2.62%
	Total	**5,915**	**$391,327,949**	**$66,159**	**5.21%**
2010	General	4,643	$308,183,424	$66,376	3.33%
	Safety	830	$64,817,396	$78,093	2.03%
	Total	**5,473**	**$373,000,820**	**$68,153**	**3.01%**
2011	General	4,441	$298,308,687	$67,172	1.20%
	Safety	813	$64,041,814	$78,772	0.87%
	Total	**5,254**	**$362,350,501**	**$68,967**	**1.19%**
2012	General	4,492	$301,505,122	$67,120	-0.08%
	Safety	803	$64,386,900	$80,183	1.79%
	Total	**5,295**	**$365,892,023**	**$69,101**	**0.19%**
2013	General	4,748	$316,885,044	$66,741	-0.57%
	Safety	805	$65,640,055	$81,540	1.69%
	Total	**5,553**	**$382,525,098**	**$68,886**	**-0.31%**
2014	General	4,879	$322,836,680	$66,169	-0.86%
	Safety	827	$68,491,483	$82,819	1.57%
	Total	**5,706**	**$391,328,162**	**$68,582**	**-0.44%**
2015	General	5,131	$340,731,847	$66,407	0.36%
	Safety	793	$66,456,278	$83,804	1.19%
	Total	**5,924**	**$407,188,125**	**$68,735**	**0.22%**
2016	General	5,291	$373,202,798	$70,535	6.22%
	Safety	811	$67,593,920	$83,346	-0.55%
	Total	**6,102**	**$440,796,718**	**$72,238**	**5.10%**
2017	General	5,370	$381,151,442	$70,978	0.63%
	Safety	848	$70,776,611	$83,463	0.14%
	Total	**6,218**	**$451,928,053**	**$72,681**	**0.61%**
2018	General	5,485	$401,820,940	$73,258	3.86%
	Safety	860	$72,680,957	$84,513	1.40%
	Total	**6,345**	**$474,501,897**	**$74,784**	**3.52%**
2019	General	5,526	$404,710,743	$73,238	-0.03%
	Safety	843	$73,747,564	$87,482	3.51%
	Total	**6,369**	**$478,458,307**	**$75,123**	**0.45%**
2020	General	5,518	$414,244,475	$75,071	2.50%
	Safety	832	$75,245,783	$90,440	3.38%
	Total	**6,350**	**$489,490,258**	**$77,085**	**2.61%**
2021	General	5,492	$424,197,359	$77,239	2.89%
	Safety	837	$77,959,639	$93,142	2.99%
	Total	**6,329**	**$502,156,998**	**$79,342**	**2.93%**

Payroll figures represent active member's annualized pay rates on December 31.

APPENDIX A – MEMBERSHIP INFORMATION

Schedule of Retirees and Beneficiaries Valuation Data

Valuation at Year End	Plan Type	Member Retirements	Beneficiary Continuance	Members and Beneficiaries Removed	Total Retirees on Payroll	Annual Retirement Payroll	Average Annual Allowance	Average Allowance Increase
2007	General	199	31	99	3,238	65,213,731	20,140	6.72%
	Safety	38	6	8	668	27,396,329	41,012	3.67%
	Total	**237**	**37**	**107**	**3,906**	**92,610,060**	**23,710**	**5.99%**
2008	General	203	30	83	3,388	71,488,335	21,100	4.77%
	Safety	50	10	18	710	30,575,540	43,064	5.00%
	Total	**253**	**40**	**101**	**4,098**	**102,063,875**	**24,906**	**5.04%**
2009	General	207	31	104	3,522	78,988,070	22,427	6.29%
	Safety	24	7	11	730	32,575,964	44,625	3.62%
	Total	**231**	**38**	**115**	**4,252**	**111,564,034**	**26,238**	**5.35%**
2010	General	242	35	102	3,697	85,931,078	23,243	3.64%
	Safety	65	5	8	792	36,354,738	45,902	2.86%
	Total	**307**	**40**	**110**	**4,489**	**122,285,816**	**27,241**	**3.82%**
2011	General	240	42	108	3,871	92,938,361	24,009	3.30%
	Safety	32	4	14	814	38,098,866	46,805	1.97%
	Total	**272**	**46**	**122**	**4,685**	**131,037,227**	**27,970**	**2.68%**
2012	General	278	27	135	4,041	102,025,575	25,248	5.16%
	Safety	52	12	20	856	42,008,598	49,075	4.85%
	Total	**330**	**39**	**155**	**4,897**	**144,034,172**	**29,413**	**5.16%**
2013	General	213	52	134	4,172	109,869,721	26,335	4.31%
	Safety	22	11	20	869	43,548,028	50,113	2.11%
	Total	**235**	**63**	**154**	**5,041**	**153,411,632**	**30,433**	**3.47%**
2014	General	247	51	112	4,358	120,722,240	27,701	5.19%
	Safety	29	14	21	891	45,889,472	51,503	2.77%
	Total	**276**	**65**	**133**	**5,249**	**166,611,711**	**31,742**	**4.30%**
2015	General	227	45	136	4,494	129,928,957	28,912	4.37%
	Safety	54	15	19	941	50,813,875	54,000	4.85%
	Total	**281**	**60**	**155**	**5,435**	**180,742,832**	**33,255**	**4.77%**
2016	General	251	40	128	4,657	139,511,334	29,957	3.62%
	Safety	40	12	22	971	54,508,607	56,137	3.96%
	Total	**291**	**52**	**150**	**5,628**	**194,019,941**	**34,474**	**3.66%**
2017	General	249	49	149	4,806	149,183,295	31,041	3.62%
	Safety	46	12	13	1,016	57,837,517	56,927	1.41%
	Total	**295**	**61**	**162**	**5,822**	**207,020,812**	**35,558**	**3.15%**
2018	General	290	47	133	5,010	161,602,326	32,256	3.91%
	Safety	39	8	20	1,043	61,364,472	58,835	3.35%
	Total	**329**	**55**	**153**	**6,053**	**222,966,797**	**36,836**	**3.59%**
2019	General	237	57	179	5,125	171,791,597	33,520	3.92%
	Safety	49	13	22	1,083	65,822,764	60,778	3.30%
	Total	**286**	**70**	**201**	**6,208**	**237,614,311**	**38,276**	**3.91%**
2020	General	237	47	159	5,250	182,786,202	34,816	3.87%
	Safety	37	10	19	1,111	69,214,609	62,299	2.50%
	Total	**274**	**57**	**178**	**6,361**	**252,000,811**	**39,617**	**3.50%**
2021	General	246	58	159	5,395	192,121,249	35,611	2.28%
	Safety	48	24	36	1,147	71,998,606	62,771	0.76%
	Total	**294**	**82**	**195**	**6,542**	**264,119,855**	**40,373**	**1.91%**

Payroll figures represent year end monthly retirement benefits annualized and exclude Post-Employment Healthcare benefits.

APPENDIX A – MEMBERSHIP INFORMATION

Retirees and Beneficiaries Added to and Removed from Retiree Payroll

Fiscal Year	Beginning of Year	Added During Year	Allowances Added (in 000s)[1]	Removed During Year	Allowances Removed	End of Year	Annual Retirement Payroll (in 000s)	Average Allowance Percentage Increase	Average Annual Allowance
2010	4,252	353	12,918	116	2,196	4,489	122,286	3.82%	27,241
2011	4,489	318	11,544	122	2,793	4,685	131,037	2.67%	27,969
2012	4,685	361	16,400	149	3,403	4,897	144,034	5.16%	29,413
2013	4,897	297	12,908	153	3,530	5,041	153,412	3.47%	30,433
2014	5,041	340	16,230	132	3,030	5,249	166,612	4.30%	31,742
2015	5,249	341	17,776	155	3,651	5,435	180,737	4.77%	33,255
2016	5,435	343	17,151	150	3,868	5,628	194,020	3.66%	34,474
2017	5,628	355	17,288	161	4,287	5,822	207,021	3.15%	35,558
2018	5,822	382	19,839	151	3,893	6,053	222,967	3.59%	36,836
2019	6,053	355	20,574	200	5,927	6,208	237,614	3.91%	38,276
2020	6,208	333	19,967	180	5,580	6,361	252,001	3.50%	39,617
2021	6,361	376	19,519	195	7,400	6,542	264,120	1.91%	40,373

[1] Includes COLA amounts not included in previous year's Annual Allowance totals.

APPENDIX A – MEMBERSHIP INFORMATION

Schedule of Average Monthly Benefit Payments

	Number of Years of Service Credit						
Retirement Effective Date	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30 & Over**
1/2/11 to 1/1/12							
Retirees							
General Members							
Average Benefits	$470	$1,205	$1,464	$2,615	$3,302	$3,968	$4,670
Average Final Compensation	$5,518	$5,903	$4,928	$6,463	$6,110	$5,541	$5,570
Count	12	26	56	27	41	16	39
Safety Members							
Average Benefits	$922	$1,112	$2,551	$3,970	$7,499	$7,790	$10,586
Average Final Compensation	$9,746	$4,483	$5,290	$7,767	$10,430	$9,162	$10,797
Count	2	6	3	3	4	5	3
Survivors/DROs							
General Members							
Average Benefits	$622	$890	$773	$1,367	$1,838	$2,039	$3,281
Average Final Compensation	$9,807	$4,816	$3,578	$4,371	$4,108	$3,364	$5,366
Count	5	9	11	10	5	5	5
Safety Members							
Average Benefits	$825	$859	$1,591	$3,334	$0	$0	$3,829
Average Final Compensation	$9,779	$4,960	$2,795	$9,010	$0	$0	$5,257
Count	1	1	2	1	0	0	1
1/2/12 to 1/1/13							
Retirees							
General Members							
Average Benefits	$517	$1,077	$1,481	$2,129	$2,729	$4,198	$6,317
Average Final Compensation	$7,532	$5,925	$5,233	$4,900	$5,338	$6,449	$7,295
Count	19	31	56	36	42	30	44
Safety Members							
Average Benefits	$429	$2,194	$3,026	$4,186	$5,302	$9,183	$13,206
Average Final Compensation	$6,793	$5,812	$6,636	$8,124	$7,306	$13,360	$13,606
Count	4	5	7	3	14	11	5
Survivors/DROs							
General Members							
Average Benefits	$331	$1,189	$1,017	$1,525	$1,274	$3,105	$2,783
Average Final Compensation	$4,482	$3,558	$2,664	$2,604	$3,639	$4,794	$3,940
Count	4	4	8	3	1	2	4
Safety Members							
Average Benefits	$0	$1,039	$2,423	$3,450	$3,573	$3,206	$4,887
Average Final Compensation	$0	$6,972	$7,561	$1,358	$1,776	$3,836	$6,169
Count	0	2	2	2	1	3	2

APPENDIX A – MEMBERSHIP INFORMATION

Schedule of Average Monthly Benefit Payments

	Number of Years of Service Credit						
Retirement Effective Date	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30 & Over**
1/2/13 to 1/1/14							
Retirees							
General Members							
Average Benefits	$433	$1,410	$1,589	$2,556	$3,149	$4,241	$5,837
Average Final Compensation	$7,695	$7,279	$5,787	$6,125	$6,132	$6,467	$6,718
Count	10	25	40	35	35	26	29
Safety Members							
Average Benefits	$1,165	$1,435	$2,621	$3,501	$4,260	$11,134	$9,279
Average Final Compensation	$9,478	$7,434	$6,316	$7,044	$5,599	$13,945	$9,670
Count	3	2	7	4	1	2	2
Survivors/DROs							
General Members							
Average Benefits	$687	$1,000	$883	$1,182	$2,063	$1,572	$2,985
Average Final Compensation	$3,804	$4,531	$3,953	$3,163	$3,722	$1,821	$3,681
Count	6	9	15	7	5	2	5
Safety Members							
Average Benefits	$650	$3,101	$1,385	$2,012	$1,918	$3,745	$4,936
Average Final Compensation	$4,955	$10,868	$2,506	$3,966	$2,525	$6,184	$5,381
Count	3	1	2	1	2	1	1
1/2/14 to 1/1/15							
Retirees							
General Members							
Average Benefits	$618	$1,120	$1,601	$2,635	$4,409	$4,672	$6,283
Average Final Compensation	$9,300	$6,612	$5,529	$6,454	$8,122	$6,944	$7,635
Count	9	25	49	46	23	45	41
Safety Members							
Average Benefits	$380	$1,190	$3,433	$4,546	$3,993	$7,412	$11,302
Average Final Compensation	$8,910	$6,591	$7,642	$8,863	$6,031	$9,013	$11,761
Count	1	1	3	5	4	6	1
Survivors/DROs							
General Members							
Average Benefits	$475	$654	$1,087	$814	$2,160	$1,680	$2,941
Average Final Compensation	$5,928	$4,152	$2,879	$2,457	$4,998	$3,887	$8,068
Count	11	6	11	6	5	3	5
Safety Members							
Average Benefits	$2,030	$2,464	$2,890	$3,326	$2,002	$3,569	$3,499
Average Final Compensation	$9,251	$8,581	$5,515	$4,817	$4,850	$5,955	$2,018
Count	2	3	4	1	1	1	2

APPENDIX A – MEMBERSHIP INFORMATION

Schedule of Average Monthly Benefit Payments

	Number of Years of Service Credit						
Retirement Effective Date	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30 & Over**
1/2/15 to 1/1/16							
Retirees							
General Members							
Average Benefits	$330	$988	$1,661	$2,449	$3,277	$4,342	$5,770
Average Final Compensation	$5,778	$5,953	$5,826	$5,723	$5,918	$6,501	$6,781
Count	12	27	36	43	26	29	37
Safety Members							
Average Benefits	$585	$1,352	$2,452	$3,959	$5,597	$8,061	$10,770
Average Final Compensation	$7,403	$5,334	$6,269	$6,943	$8,120	$9,621	$11,481
Count	2	2	4	3	10	21	6
Survivors/DROs							
General Members							
Average Benefits	$376	$987	$999	$1,612	$3,184	$2,709	$5,276
Average Final Compensation	$3,328	$5,939	$3,359	$4,532	$8,017	$5,312	$5,850
Count	4	10	9	4	4	3	5
Safety Members							
Average Benefits	$530	$2,019	$2,184	$1,970	$2,902	$4,784	$5,026
Average Final Compensation	$6,052	$11,395	$9,909	$3,887	$4,783	$6,788	$5,405
Count	2	1	2	1	2	4	3
1/2/16 to 1/1/17							
Retirees							
General Members							
Average Benefits	$310	$1,100	$1,823	$2,487	$3,779	$3,911	$5,931
Average Final Compensation	$6,616	$5,885	$6,368	$5,950	$6,805	$5,756	$7,132
Count	21	24	54	48	24	31	42
Safety Members							
Average Benefits	$3,817	$1,759	$2,546	$6,290	$5,510	$9,513	$12,671
Average Final Compensation	$7,634	$5,985	$6,353	$11,452	$8,566	$11,959	$13,175
Count	1	6	6	3	7	12	4
Survivors/DROs							
General Members							
Average Benefits	$313	$858	$1,065	$1,596	$3,214	$1,720	$2,769
Average Final Compensation	$5,726	$4,674	$4,527	$4,648	$6,051	$3,809	$3,313
Count	5	7	11	6	2	5	1
Safety Members							
Average Benefits	$495	$2,235	$1,253	$1,661	$4,086	$5,943	$4,712
Average Final Compensation	$7,339	$9,642	$3,842	$2,755	$5,646	$8,003	$4,803
Count	2	4	1	1	1	1	2

APPENDIX A – MEMBERSHIP INFORMATION

Schedule of Average Monthly Benefit Payments

	Number of Years of Service Credit						
Retirement Effective Date	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30 & Over**
1/2/17 to 1/1/18							
Retirees							
General Members							
Average Benefits	$377	$1,188	$2,070	$2,390	$3,665	$4,847	$6,187
Average Final Compensation	$9,793	$6,524	$6,533	$5,839	$6,699	$7,055	$7,391
Count	23	35	42	48	20	34	33
Safety Members							
Average Benefits	$787	$1,223	$2,212	$3,441	$5,973	$7,370	$9,169
Average Final Compensation	$9,858	$5,688	$5,842	$6,681	$9,020	$9,264	$9,050
Count	5	4	6	9	6	8	1
Survivors/DROs							
General Members							
Average Benefits	$701	$992	$1,442	$1,078	$1,941	$1,746	$4,828
Average Final Compensation	$5,325	$4,183	$4,550	$3,587	$5,038	$2,502	$5,368
Count	11	10	8	7	3	4	4
Safety Members							
Average Benefits	$667	$2,413	$1,292	$0	$0	$3,363	$5,834
Average Final Compensation	$5,605	$6,310	$3,454	$0	$0	$4,597	$3,354
Count	2	3	2	0	0	1	3
1/2/18 to 1/1/19							
Retirees							
General Members							
Average Benefits	$596	$1,166	$1,759	$2,671	$3,522	$5,202	$6,036
Average Final Compensation	$9,601	$6,704	$5,920	$6,603	$6,555	$7,633	$6,975
Count	21	45	47	55	25	33	39
Safety Members							
Average Benefits	$2,721	$2,622	$2,166	$3,313	$3,997	$7,453	$10,935
Average Final Compensation	$5,485	$8,987	$6,168	$6,135	$6,442	$9,615	$11,725
Count	1	3	5	5	8	7	4
Survivors/DROs							
General Members							
Average Benefits	$224	$659	$1,201	$1,204	$2,150	$2,590	$2,759
Average Final Compensation	$4,220	$3,482	$5,324	$4,292	$3,513	$3,538	$4,382
Count	3	5	10	10	1	5	9
Safety Members							
Average Benefits	$0	$1,724	$3,203	$0	$1,201	$0	$6,213
Average Final Compensation	$0	$6,376	$4,065	$0	$3,140	$0	$4,768
Count	0	3	1	0	1	0	3

APPENDIX A – MEMBERSHIP INFORMATION

Schedule of Average Monthly Benefit Payments

	Number of Years of Service Credit						
Retirement Effective Date	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30 & Over**
1/2/19 to 1/1/20							
Retirees							
General Members							
Average Benefits	$345	$1,131	$1,780	$3,030	$3,669	$4,796	$7,232
Average Final Compensation	$8,121	$7,276	$6,189	$6,988	$7,070	$7,062	$8,554
Count	20	35	40	36	29	30	37
Safety Members							
Average Benefits	$596	$2,060	$3,057	$3,965	$4,173	$9,630	$17,094
Average Final Compensation	$9,587	$6,917	$6,658	$7,484	$7,087	$11,287	$17,300
Count	6	5	5	6	11	10	5
Survivors/DROs							
General Members							
Average Benefits	$235	$927	$994	$1,599	$2,453	$2,930	$4,532
Average Final Compensation	$6,898	$5,691	$3,777	$5,652	$4,288	$4,213	$5,778
Count	6	8	12	7	8	6	10
Safety Members							
Average Benefits	$712	$1,280	$1,831	$0	$3,258	$4,435	$6,246
Average Final Compensation	$7,533	$7,809	$5,374	$0	$4,504	$4,987	$6,460
Count	2	2	3	0	3	2	1
1/2/20 to 1/1/21							
Retirees							
General Members							
Average Benefits	$344	$1,373	$1,926	$3,086	$3,108	$4,527	$6,734
Average Final Compensation	$7,961	$9,038	$6,637	$6,948	$5,859	$6,790	$8,250
Count	21	32	36	35	33	26	50
Safety Members							
Average Benefits	$430	$1,750	$2,749	$3,265	$4,763	$7,209	$13,386
Average Final Compensation	$9,072	$6,259	$6,672	$6,689	$7,515	$9,083	$13,811
Count	3	2	4	4	12	11	3
Survivors/DROs							
General Members							
Average Benefits	$505	$735	$990	$1,096	$1,547	$1,904	$3,690
Average Final Compensation	$5,989	$6,865	$3,653	$3,254	$3,428	$3,781	$4,974
Count	4	4	8	5	5	6	8
Safety Members							
Average Benefits	$1,246	$0	$1,622	$4,494	$0	$5,142	$6,753
Average Final Compensation	$6,483	$0	$2,296	$9,747	$0	$5,684	$7,710
Count	2	0	2	2	0	1	2

APPENDIX A – MEMBERSHIP INFORMATION

Schedule of Average Monthly Benefit Payments

	Number of Years of Service Credit						
Retirement Effective Date	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30 & Over**
1/2/21 to 1/1/22							
Retirees							
General Members							
Average Benefits	$215	$1,150	$2,109	$2,548	$3,599	$4,735	$5,977
Average Final Compensation	$8,113	$6,452	$7,236	$6,571	$6,677	$7,645	$7,427
Count	21	30	37	38	43	28	45
Safety Members							
Average Benefits	$857	$2,288	$2,916	$3,799	$5,049	$6,749	$7,937
Average Final Compensation	$9,706	$11,850	$7,852	$6,954	$7,814	$9,398	$8,663
Count	5	6	2	9	20	4	1
Survivors/DROs							
General Members							
Average Benefits	$995	$505	$1,203	$1,561	$1,902	$3,872	$2,573
Average Final Compensation	$3,852	$3,789	$5,463	$4,495	$3,647	$6,175	$4,831
Count	7	8	6	9	6	9	6
Safety Members							
Average Benefits	$1,312	$1,366	$2,295	$3,103	$0	$5,702	$6,523
Average Final Compensation	$9,117	$5,396	$4,830	$4,585	$0	$7,451	$6,523
Count	3	1	3	3	0	3	8

APPENDIX A – MEMBERSHIP INFORMATION

DISTRIBUTION OF GENERAL ACTIVE MEMBERS BY AGE AND SERVICE AS OF JANUARY 1, 2022

	Service										
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 25	32	29	0	0	0	0	0	0	0	0	**61**
25 to 29	112	239	25	0	0	0	0	0	0	0	**376**
30 to 34	74	352	197	5	0	0	0	0	0	0	**628**
35 to 39	68	287	269	70	25	1	0	0	0	0	**720**
40 to 44	46	232	267	105	137	44	0	0	0	0	**831**
45 to 49	30	183	215	101	135	136	15	1	0	0	**816**
50 to 54	31	137	168	76	139	138	51	25	1	0	**766**
55 to 59	10	115	125	65	83	108	47	62	13	0	**628**
60 to 64	8	75	89	54	75	87	45	41	11	2	**487**
65 to 69	3	16	37	15	15	32	11	5	3	1	**138**
70 & up	0	4	10	6	5	7	2	1	3	3	**41**
Total	**414**	**1,669**	**1,402**	**497**	**614**	**553**	**171**	**135**	**31**	**6**	**5,492**

Average Age = 45.42 Average Service = 9.45

PAYROLL DISTRIBUTION OF GENERAL ACTIVE PARTICIPANTS BY AGE AND SERVICE AS OF JANUARY 1, 2022

	Service										
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 25	52,949	51,536	0	0	0	0	0	0	0	0	**52,277**
25 to 29	58,544	62,949	72,040	0	0	0	0	0	0	0	**62,241**
30 to 34	64,094	67,628	78,798	70,129	0	0	0	0	0	0	**70,735**
35 to 39	67,257	73,049	76,648	75,526	79,486	46,747	0	0	0	0	**74,275**
40 to 44	60,894	72,841	79,571	87,511	81,795	78,430	0	0	0	0	**77,968**
45 to 49	60,586	75,763	73,453	94,996	91,742	80,341	89,620	61,688	0	0	**80,621**
50 to 54	51,744	76,706	73,999	99,637	91,468	87,441	84,282	78,521	44,955	0	**82,512**
55 to 59	50,517	76,605	77,676	89,509	80,406	79,940	81,915	95,205	72,475	0	**80,963**
60 to 64	62,118	77,391	83,504	82,888	84,791	73,545	78,576	91,403	70,223	104,872	**80,559**
65 to 69	70,384	94,967	69,961	111,464	95,412	71,212	97,023	100,271	59,494	75,613	**83,506**
70 & up	0	104,539	120,846	121,179	82,584	77,065	55,831	53,551	134,549	149,528	**105,451**
Total	**60,396**	**71,380**	**77,283**	**89,912**	**86,595**	**80,183**	**83,085**	**90,591**	**75,539**	**122,323**	**77,239**

Average Salary = $77,239

APPENDIX A – MEMBERSHIP INFORMATION

DISTRIBUTION OF SAFETY ACTIVE MEMBERS
BY AGE AND SERVICE AS OF JANUARY 1, 2022

	Service										
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 25	3	29	0	0	0	0	0	0	0	0	32
25 to 29	2	80	18	0	0	0	0	0	0	0	100
30 to 34	5	58	60	5	0	0	0	0	0	0	128
35 to 39	2	21	61	50	27	1	0	0	0	0	162
40 to 44	1	14	24	31	53	26	0	0	0	0	149
45 to 49	0	4	11	16	36	53	8	0	0	0	128
50 to 54	3	7	3	10	19	31	10	3	0	0	86
55 to 59	0	4	7	4	5	9	4	3	0	0	36
60 to 64	0	1	1	2	1	4	2	2	0	0	13
65 to 69	0	0	1	1	1	0	0	0	0	0	3
70 & up	0	0	0	0	0	0	0	0	0	0	0
Total	16	218	186	119	142	124	24	8	0	0	837

Average Age = 39.81 Average Service = 11.12

PAYROLL DISTRIBUTION OF SAFETY ACTIVE PARTICIPANTS
BY AGE AND SERVICE AS OF JANUARY 1, 2022

	Service										
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 25	49,820	70,525	0	0	0	0	0	0	0	0	68,584
25 to 29	61,875	71,741	91,336	0	0	0	0	0	0	0	75,071
30 to 34	47,737	74,277	87,579	104,210	0	0	0	0	0	0	80,645
35 to 39	90,393	77,443	89,711	107,722	105,485	101,531	0	0	0	0	96,390
40 to 44	64,970	77,913	92,440	103,401	92,693	122,325	0	0	0	0	98,476
45 to 49	0	123,226	91,345	101,403	97,338	115,384	109,207	0	0	0	106,354
50 to 54	98,009	106,035	97,523	79,554	96,672	100,313	99,972	112,234	0	0	97,759
55 to 59	0	102,786	119,841	76,425	114,213	118,939	105,437	136,610	0	0	111,912
60 to 64	0	112,319	119,011	102,196	99,676	78,993	76,543	133,967	0	0	97,876
65 to 69	0	0	119,011	121,307	85,117	0	0	0	0	0	108,479
70 & up	0	0	0	0	0	0	0	0	0	0	0
Total	65,730	76,001	91,204	102,201	97,589	112,044	102,009	126,809	0	0	93,142

Average Salary = $93,142

APPENDIX A – MEMBERSHIP INFORMATION

Service Retired Benefits

Current Age	General		Safety		Total	
	Number	Annual Average Benefit	Number	Annual Average Benefit	Number	Annual Average Benefit
0-24	0	$0	0	$0	0	$0
25-29	0	$0	0	$0	0	$0
30-34	0	$0	0	$0	0	$0
35-39	0	$0	0	$0	0	$0
40-44	0	$0	3	$34,449	3	$34,449
45-49	0	$0	13	$35,166	13	$35,166
50-54	83	$17,832	55	$64,308	138	$36,355
55-59	256	$28,169	102	$70,676	358	$40,280
60-64	585	$36,991	139	$80,026	724	$45,253
65-69	981	$44,198	123	$75,560	1,104	$47,692
70-74	969	$43,845	120	$79,381	1,089	$47,760
75-79	717	$40,011	85	$71,554	802	$43,354
80-84	355	$34,031	35	$50,704	390	$35,528
85-89	210	$30,510	12	$33,794	222	$30,687
90-94	100	$29,426	7	$84,746	107	$33,045
95+	33	$24,645	1	$118,260	34	$27,398
All Ages	4,289	$38,962	695	$72,264	4,984	$43,605

Non-Duty Disabled Benefits

Current Age	General		Safety		Total	
	Number	Annual Average Benefit	Number	Annual Average Benefit	Number	Annual Average Benefit
0-24	0	$0	0	$0	0	$0
25-29	0	$0	0	$0	0	$0
30-34	0	$0	0	$0	0	$0
35-39	1	$18,567	0	$0	1	$18,567
40-44	2	$7,347	0	$0	2	$7,347
45-49	7	$19,352	0	$0	7	$19,352
50-54	10	$17,968	2	$15,969	12	$17,634
55-59	19	$20,987	0	$0	19	$20,987
60-64	23	$20,213	2	$50,519	25	$22,637
65-69	25	$20,539	2	$27,672	27	$21,067
70-74	30	$16,480	2	$28,648	32	$17,240
75-79	17	$16,495	2	$59,243	19	$20,995
80-84	8	$17,955	1	$22,773	9	$18,491
85-89	3	$23,972	0	$0	3	$23,972
90-94	1	$10,096	0	$0	1	$10,096
95+	1	$8,608	0	$0	1	$8,608
All Ages	147	$18,603	11	$35,170	158	$19,756

APPENDIX A – MEMBERSHIP INFORMATION

Duty Disabled Benefits

Current Age	General		Safety		Total	
	Number	Annual Average Benefit	Number	Annual Average Benefit	Number	Annual Average Benefit
0-24	0	$0	0	$0	0	$0
25-29	0	$0	0	$0	0	$0
30-34	0	$0	0	$0	0	$0
35-39	3	$158	4	$41,955	7	$24,042
40-44	6	$24,887	6	$38,761	12	$31,824
45-49	11	$8,691	16	$37,788	27	$25,934
50-54	20	$20,348	21	$43,599	41	$32,257
55-59	19	$21,429	35	$50,260	54	$40,116
60-64	40	$25,370	37	$67,154	77	$45,448
65-69	60	$32,824	31	$68,143	91	$44,856
70-74	65	$31,451	33	$67,322	98	$43,530
75-79	25	$28,868	20	$55,183	45	$40,564
80-84	10	$29,626	6	$73,392	16	$46,038
85-89	5	$28,910	2	$40,039	7	$32,090
90-94	0	$0	1	$129,628	1	$129,628
95+	0	$0	0	$0	0	$0
All Ages	264	$27,464	212	$57,793	476	$40,972

Surviving Beneficiary Benefits (all benefit types)

Current Age	General		Safety		Total	
	Number	Annual Average Benefit	Number	Annual Average Benefit	Number	Annual Average Benefit
0-24	5	$21,867	2	$15,917	7	$20,167
25-29	3	$15,832	0	$0	3	$15,832
30-34	4	$16,879	0	$0	4	$16,879
35-39	1	$10,536	0	$0	1	$10,536
40-44	2	$10,962	0	$0	2	$10,962
45-49	6	$10,132	3	$42,880	9	$21,048
50-54	21	$14,951	11	$45,907	32	$25,592
55-59	36	$14,970	25	$22,449	61	$18,035
60-64	62	$18,544	27	$30,948	89	$22,307
65-69	99	$18,279	29	$45,372	128	$24,417
70-74	118	$24,954	44	$39,094	162	$28,794
75-79	126	$24,259	30	$47,206	156	$28,672
80-84	89	$20,346	32	$46,685	121	$27,312
85-89	70	$22,420	16	$43,138	86	$26,275
90-94	35	$23,672	6	$50,610	41	$27,615
95+	18	$38,323	4	$33,525	22	$37,451
All Ages	695	$21,625	229	$39,896	924	$26,154

APPENDIX A – MEMBERSHIP INFORMATION

Assumed Probabilities of Separation from Active Membership

Age	Non-Duty Death	Ordinary Disability	Service Retirement[1]	Duty Death	Duty Disability
General Members – Male					
20	0.0004	0.000	0.000	0.000	0.001
25	0.0004	0.000	0.000	0.000	0.001
30	0.0005	0.000	0.000	0.000	0.001
35	0.0007	0.000	0.000	0.000	0.001
40	0.0009	0.001	0.000	0.000	0.004
45	0.0010	0.001	0.000	0.000	0.004
50	0.0013	0.001	0.030	0.000	0.003
55	0.0019	0.001	0.065	0.000	0.004
60	0.0029	0.001	0.090	0.000	0.004
65	0.0041	0.001	0.250	0.000	0.005
General Members – Female					
20	0.0001	0.000	0.000	0.000	0.000
25	0.0001	0.000	0.000	0.000	0.000
30	0.0002	0.000	0.000	0.000	0.000
35	0.0003	0.000	0.000	0.000	0.000
40	0.0004	0.001	0.000	0.000	0.000
45	0.0005	0.002	0.000	0.000	0.001
50	0.0008	0.002	0.035	0.000	0.001
55	0.0012	0.002	0.035	0.000	0.001
60	0.0018	0.001	0.125	0.000	0.000
65	0.0025	0.002	0.300	0.000	0.001

[1] Lower rates assumed for members with less than 10 years of service, and higher rates assumed for members with at least 30 years of service.

The probabilities for each cause of separation represent the likelihood that a given member will separate at a particular age for the indicated reason. As an example, if the probability of separation of a male general member at age 20 is 0.036, that indicates that 3.6% of active general members are expected to separate from service during the year. Rates of Duty and Non-Duty Death are for active members who reach the given age during 2022.

APPENDIX A – MEMBERSHIP INFORMATION

Assumed Probabilities of Separation from Active Membership

Age	Non-Duty Death	Ordinary Disability	Service Retirement[1]	Duty Death	Duty Disability
Safety Members – Male					
20	0.0004	0.000	0.050	0.0004	0.000
25	0.0004	0.000	0.050	0.0004	0.001
30	0.0005	0.000	0.050	0.0005	0.001
35	0.0006	0.000	0.050	0.0006	0.002
40	0.0007	0.000	0.050	0.0007	0.004
45	0.0008	0.000	0.050	0.0008	0.008
50	0.0010	0.001	0.175	0.0010	0.014
55	0.0015	0.001	0.175	0.0015	0.014
Safety Members – Female					
20	0.0002	0.000	0.050	0.0002	0.000
25	0.0002	0.000	0.050	0.0002	0.001
30	0.0003	0.000	0.050	0.0003	0.001
35	0.0004	0.000	0.050	0.0004	0.002
40	0.0005	0.000	0.050	0.0005	0.004
45	0.0006	0.000	0.050	0.0006	0.009
50	0.0008	0.001	0.175	0.0008	0.014
55	0.0012	0.001	0.175	0.0012	0.014

[1] Lower rates assumed for members with less than 20 years of service.

APPENDIX A – MEMBERSHIP INFORMATION

Salary Increase, Termination and Withdrawal Assumptions

Years of Service	Salary Increase: General	Salary Increase: Safety	Withdrawal: General	Withdrawal: Safety	Termination: General[1]	Termination: Safety[2]
0	0.1124	0.1330	0.100	0.060	0.100	0.060
1	0.1021	0.1330	0.065	0.035	0.065	0.035
2	0.0712	0.0815	0.050	0.025	0.050	0.025
3	0.0712	0.0815	0.039	0.025	0.039	0.025
4	0.0506	0.0815	0.039	0.025	0.039	0.025
5	0.0506	0.0532	0.019	0.010	0.058	0.040
6	0.0506	0.0429	0.019	0.006	0.058	0.024
7	0.0506	0.0429	0.011	0.004	0.034	0.016
8	0.0429	0.0429	0.011	0.004	0.034	0.016
9	0.0429	0.0429	0.009	0.004	0.028	0.016
10	0.0403	0.0429	0.009	0.004	0.028	0.016
11	0.0403	0.0429	0.007	0.004	0.021	0.016
12	0.0403	0.0429	0.007	0.004	0.021	0.016
13	0.0403	0.0429	0.006	0.004	0.019	0.016
14	0.0403	0.0429	0.006	0.004	0.019	0.016
15	0.0352	0.0429	0.003	0.002	0.023	0.011
16	0.0352	0.0429	0.003	0.002	0.023	0.011
17	0.0352	0.0429	0.003	0.002	0.023	0.011
18	0.0352	0.0429	0.003	0.002	0.023	0.011
19	0.0352	0.0429	0.003	0.002	0.023	0.011
20	0.0352	0.0429	0.001	0.000	0.009	0.000
21	0.0352	0.0429	0.001	0.000	0.009	0.000
22	0.0352	0.0429	0.001	0.000	0.009	0.000
23	0.0352	0.0429	0.001	0.000	0.009	0.000
24	0.0352	0.0429	0.001	0.000	0.009	0.000
25	0.0352	0.0429	0.001	0.000	0.009	0.000
26	0.0352	0.0429	0.001	0.000	0.009	0.000
27	0.0352	0.0429	0.001	0.000	0.009	0.000
28	0.0352	0.0429	0.001	0.000	0.009	0.000
29	0.0352	0.0429	0.001	0.000	0.009	0.000
30+	0.0352	0.0429	0.000	0.000	0.000	0.000

[1] 75% of vested terminated General Members with less than five years of service, 25% of those with five to 14 years of service, and 40% of those with more than 15 years of service, are assumed to be reciprocal.

[2] 67% of vested terminated Safety Members with less than five years of service, and 50% of those with more than five years of service, are assumed to be reciprocal.

APPENDIX B – STATEMENT OF CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

The assumptions and methods used in the actuarial valuation as of January 1, 2022 are:

Actuarial Methods

1. **Actuarial Cost Method**

   The actuarial valuation is prepared using the entry age actuarial cost method (CERL 31453.5). Under the principles of this method, the actuarial present value of the projected benefits of each individual included in the valuation is allocated as a level percentage of the individual's projected compensation between entry age and assumed exit (until maximum retirement age). For members who transferred from outside of SJCERA, entry age (for the actuarial cost calculation only) is based on entry into the system. The normal cost for the Plan is based on the sum of the individual normal costs for each member (Individual Entry Age Method).

   The UAL (or Surplus Funding) is amortized as a percentage of the projected salaries of present and future members of SJCERA. Effective with the January 1, 2015 valuation, the UAL as of January 1, 2014 is amortized over a closed 19-year period (11 years remaining as of January 1, 2022), except for the additional UAL attributable to the extraordinary loss from 2008, which is being amortized over a separate closed period (17 years as of January 1, 2022).

   Any subsequent unexpected change in the Unfunded Actuarial Liability after January 1, 2014 is amortized over 15 years. The UAL payment for the 2020 assumption change is being phased in over a three-year period.

2. **Valuation of Assets**

   The assets are valued using a five-year smoothed method based on the difference between the expected market value and the actual market value of the assets as of the valuation date. The expected market value is the prior year's market value increased with the net increase in the cash flow of funds, all increased with interest during the past fiscal year at the expected investment return rate assumption.

   An asset corridor limit is applied such that the smoothed Market Value of Assets stays within 20% of the Market Value of Assets.

   The additional employer contribution reserve and special non-valuation reserves are not included in the valuation assets for the January 1, 2022 valuation. It is at each of the employers', who are making additional contributions, discretion as to when these reserves will be included in the valuation assets that determine contributions.

APPENDIX B – STATEMENT OF CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

Actuarial Assumptions

The recommended assumptions were reviewed with the Board at their July 7, 2022 meeting. The demographic assumptions are based on an experience study covering the period from January 1, 2019 through December 31, 2021.

1. **Rate of Return**

   Assets are assumed to earn 6.75% net of investment expenses.

2. **Administrative Expenses**

   Administrative expenses are assumed to be $5,173,647 for the next year, to be split between employees and employers based on their share of the overall contributions. Expenses are expected to grow with the cost-of-living (by 2.75% per year.)

3. **Cost-of-Living**

   The cost-of-living as measured by the Consumer Price Index (CPI) will increase at the rate of 2.75% per year. This assumption is also used to project increases in the PEPRA wage cap.

4. **Post Retirement COLA**

   Benefits are assumed to increase after retirement at the rate of 2.6% per year.

5. **Increases in Pay**

   Assumed pay increases for active Members consist of increases due to base salary adjustments plus service-based increase due to longevity and promotion, as shown below:

Pay Increases											
	Years of Service										
	0	1	2	3	4	5	6	7	8-9	10-14	15+
Base Increase	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Longevity & Promotion											
General	8.00%	7.00%	4.00%	4.00%	2.00%	2.00%	2.00%	2.00%	1.25%	1.00%	0.50%
Safety	10.00%	10.00%	5.00%	5.00%	5.00%	2.25%	1.25%	1.25%	1.25%	1.25%	1.25%
Total (Compound)											
General	11.24%	10.21%	7.12%	7.12%	5.06%	5.06%	5.06%	5.06%	4.29%	4.03%	3.52%
Safety	13.30%	13.30%	8.15%	8.15%	8.15%	5.32%	4.29%	4.29%	4.29%	4.29%	4.29%

APPENDIX B – STATEMENT OF CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

6. Family Composition

Percentage married for all active members who retire, become disabled, or die during active service is shown in the following table. Male members are assumed to be three years older than their spouses, and female members are assumed to be two years younger than their spouses. It is assumed that 90% of participants with eligible beneficiaries who do not have a service-related disability elect the 60% Joint and Survivor allowance.

Percentage Married	
Gender	Percentage
Males	75%
Females	55%

7. Rates of Termination

Sample rates of termination are shown in the following table. Termination rates do not apply once a member is eligible for retirement.

Rates of Termination*		
Years of Service	General	Safety
0	20.00%	12.00%
1	13.00%	7.00%
2	10.00%	5.00%
3	7.75%	5.00%
4	7.75%	5.00%
5	7.75%	5.00%
6	7.75%	3.00%
7	4.50%	2.00%
8	4.50%	2.00%
9	3.75%	2.00%
10	3.75%	2.00%
11-12	2.75%	2.00%
13	2.50%	2.00%
14-19	2.50%	1.25%
20-29	1.00%	0.00%
30+	0.00%	0.00%

*Termination rates do not apply once a member is eligible for retirement.

APPENDIX B – STATEMENT OF CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

8. Withdrawal

Rates of withdrawal apply to active Members who terminate their employment and withdraw their member contributions, forfeiting entitlement to future Plan benefits.

50% of all General Member terminations with less than five years of service, 25% of those with five to 14 years of service, and 10% of those with 15 or more years of service, are assumed to take a refund of contributions.

50% of all Safety Member terminations with less than five years of service, 20% of those with five to 14 years of service, and 15% of those with 15 or more years of service, are assumed to take a refund of contributions.

9. Vested Termination and Reciprocal Transfers

Rates of vested termination apply to active Members who terminate their employment and leave their member contributions on deposit with the Plan.

50% of all General Member terminations with less than five years of service, 75% of those with five to 14 years of service, and 90% of those with 15 or more years of service, are assumed to leave their contributions on deposit.

50% of all Safety Member terminations with less than five years of service, 80% of those with five to 14 years of service, and 85% of those with 15 or more years of service, are assumed to leave their contributions on deposit.

Vested terminated General Members are assumed to begin receiving benefits at age 58; vested terminated Safety Members are assumed to begin receiving benefits at age 50, unless they have outgoing reciprocity, in which case they are assumed to begin receiving benefits at age 53.

75% of vested terminated General Members with less than five years of service, 25% of those with five to 14 years of service, and 40% of those with 15 or more years of service, are assumed to be reciprocal.

67% of vested terminated Safety Members with less than five years of service, and 50% of those with five or more years of service, are assumed to be reciprocal.

Final average pay for General Members who terminate with reciprocity is assumed to increase by 3.52% per year until their assumed retirement date. Final average pay for Safety Members who terminate with reciprocity is assumed to increase by 4.29% per year until their assumed retirement date

APPENDIX B – STATEMENT OF CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

10. Rates of Service-Connected Disability

Sample service-connected disability rates of active participants are provided in the table below.

Rates of Svc Disability				
Age	General Male	General Female	Safety Male	Safety Female
22	0.094%	0.006%	0.048%	0.048%
27	0.107%	0.006%	0.086%	0.089%
32	0.122%	0.010%	0.161%	0.166%
37	0.139%	0.018%	0.296%	0.305%
42	0.414%	0.037%	0.565%	0.592%
47	0.446%	0.067%	1.023%	1.101%
52	0.361%	0.072%	1.425%	1.425%
57	0.410%	0.045%	1.425%	1.425%
62	0.470%	0.050%	1.425%	1.425%

11. Rates of Nonservice-Connected Disability

Sample nonservice-connected disability rates of active participants are provided in the table below.

Rates of Non-Svc Disability				
Age	General Male	General Female	Safety Male	Safety Female
22	0.023%	0.017%	0.003%	0.003%
27	0.027%	0.019%	0.005%	0.005%
32	0.030%	0.031%	0.008%	0.009%
37	0.035%	0.055%	0.016%	0.016%
42	0.104%	0.112%	0.030%	0.031%
47	0.112%	0.200%	0.054%	0.058%
52	0.090%	0.217%	0.075%	0.075%
57	0.102%	0.136%	0.075%	0.075%
62	0.118%	0.150%	0.075%	0.075%

APPENDIX B – STATEMENT OF CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

12. Rates of Mortality for Healthy Lives

Mortality rates for General active members are based on the sex distinct 2021 CalPERS Pre-Retirement Non-Industrial Mortality Table, with generational mortality improvements projected from 2017 using 80% of Projection Scale MP-2020.

Mortality rates for Safety active members are based on the sum of the rates from the 2021 CalPERS Industrial and Non-Industrial Mortality tables, with generational mortality improvements projected from 2017 using 80% of Projection Scale MP-2020. 10% of Safety member active deaths are assumed to occur in the line of duty.

Mortality rates for healthy General annuitants are based on the sex distinct 2021 CalPERS Healthy Annuitant Mortality Table, with generational mortality improvements projected from 2017 using 80% of Projection Scale MP-2020, and a partial credibility adjustment of 1.05 for males and no adjustment for females.

Mortality rates for Safety annuitants are based on the sex distinct 2021 CalPERS Healthy Annuitant Mortality Table, with generational mortality improvements projected from 2017 using 80% of Projection Scale MP-2020, and a partial credibility adjustment of 1.05 for males and no adjustment for females.

13. Rates of Mortality for Disabled Retirees

Mortality rates for General disabled annuitants are based on status. Rates for General disabled annuitants with a service-related disability are based on the sex distinct 2021 CalPERS Industrially Disabled Annuitant Mortality Table, with generational mortality improvements projected from 2017 using 80% of Projection Scale MP-2020. Rates for General disabled annuitants with a non-service-related disability are based on the sex distinct 2021 CalPERS Non-Industrially Disabled Annuitant Mortality Table, with generational mortality improvements projected from 2017 using 80% of Projection Scale MP-2020.

Mortality rates for Safety disabled annuitants are based on the sex distinct 2021 CalPERS Industrially Disabled Mortality Table, with generational mortality improvements projected from 2017 using Projection 80% of Scale MP-2020.

14. Mortality Improvement

The mortality assumptions employ a fully generational mortality improvement projection from the base year of the CalPERS mortality tables (2017) using 80% of Scale MP-2020.

APPENDIX B – STATEMENT OF CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

15. Adjustment for Service Purchases

SJCERA provides Cheiron with the amount of service that active employees are eligible to purchase. We include this service when calculating the employees' benefit eligibility. Half of eligible service purchases, which have not been purchased by the members, are included in the employees' Credited Service, as employees will pay approximately half of the normal cost for these benefits when purchasing this service.

16. Assumptions for Employee Contribution Rates

Mortality rates are the base mortality tables described above, projected using 80% of Scale MP-2020 from 2017 to 2044 for General Members and to 2045 for Safety Members. The projection periods are based on the duration of active liabilities for the respective groups, and the period during which the associated contribution rates will be in use. The employee contribution rates are also blended using a male/female weighting of 29%/71% for General Members and 75%/25% for Safety members.

APPENDIX B – STATEMENT OF CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

17. Rates of Retirement

Rates of retirement are based on age and service according to the following table.

Rates of Retirement								
	General Male Years of Service			General Female Years of Service			Safety Years of Service	
Age	5-9	10-29	30+	5-9	10-29	30+	5-19	20+
45	0.00%	0.00%	5.00%	0.00%	0.00%	4.50%	0.00%	5.00%
46	0.00%	0.00%	5.00%	0.00%	0.00%	4.50%	0.00%	5.00%
47	0.00%	0.00%	5.00%	0.00%	0.00%	4.50%	0.00%	5.00%
48	0.00%	0.00%	5.00%	0.00%	0.00%	4.50%	0.00%	5.00%
49	0.00%	0.00%	5.00%	0.00%	0.00%	4.50%	0.00%	5.00%
50	1.00%	3.00%	5.00%	1.00%	3.50%	4.50%	7.50%	17.50%
51	1.00%	3.00%	5.00%	1.00%	3.50%	4.50%	5.00%	17.50%
52	1.00%	3.00%	5.00%	1.00%	3.50%	4.50%	5.00%	17.50%
53	1.00%	3.00%	5.00%	1.00%	3.50%	4.50%	5.00%	17.50%
54	1.00%	3.00%	10.00%	5.75%	3.50%	4.50%	5.00%	17.50%
55	2.50%	6.50%	10.00%	2.50%	3.50%	4.50%	5.00%	17.50%
56	2.50%	4.00%	10.00%	1.50%	7.00%	15.00%	15.00%	17.50%
57	2.50%	4.00%	10.00%	1.50%	7.00%	15.00%	15.00%	20.00%
58	2.50%	4.00%	10.00%	1.50%	7.00%	15.00%	15.00%	20.00%
59	2.50%	9.00%	27.50%	2.00%	7.00%	15.00%	10.00%	30.00%
60	5.00%	9.00%	27.50%	6.25%	12.50%	25.00%	10.00%	30.00%
61	5.00%	15.00%	27.50%	6.25%	12.50%	30.00%	10.00%	30.00%
62	5.00%	30.00%	40.00%	18.50%	25.00%	35.00%	20.00%	30.00%
63	5.00%	25.00%	40.00%	5.00%	25.00%	35.00%	20.00%	30.00%
64	5.00%	25.00%	40.00%	9.00%	25.00%	35.00%	20.00%	50.00%
65	15.00%	25.00%	40.00%	12.50%	30.00%	35.00%	100.00%	100.00%
66	15.00%	35.00%	50.00%	25.00%	30.00%	30.00%	100.00%	100.00%
67	15.00%	30.00%	40.00%	25.00%	30.00%	30.00%	100.00%	100.00%
68	15.00%	30.00%	30.00%	25.00%	30.00%	30.00%	100.00%	100.00%
69	15.00%	40.00%	30.00%	25.00%	30.00%	30.00%	100.00%	100.00%
70	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	100.00%	100.00%
71	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	100.00%	100.00%
72	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	100.00%	100.00%
73	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	100.00%	100.00%
74	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	100.00%	100.00%
75	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

APPENDIX B – STATEMENT OF CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

18. Changes in Assumptions

Details of all assumption changes can be found in the Actuarial Experience Study Report for the period covering January 1, 2019 to December 31, 2021.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

A. Definitions

Compensation: Compensation means the cash remuneration for services paid by the employer. It includes base pay and certain differential, incentive, and special pay allowances defined by the Board of Retirement. Overtime is excluded, with the exception of overtime paid under the Fair Labor Standards Act that is regular and recurring.

For members joining the Plan on and after January 1, 2013 (Tier 2 Members), only pensionable compensation up to the PEPRA compensation limit ($134,974 for 2022) will count for computing Plan benefits and employee contributions and employer contributions for those participating in Social Security. For those not participating in Social Security, the compensation cap is 120% of the PEPRA compensation limit ($161,969 for 2022) In addition, it is possible that some sources of compensation, such as any payments deemed to be terminal or special pays, may be excluded from benefit and contribution computations for Tier 2 Members.

Credited Service: In general, Credited Service is earned for the period during which Member Contributions are paid.

Temporary service for which the Member was not credited, or service for which the Member withdrew his or her Member Contributions, may be purchased by paying or repaying the Member Contributions with interest. Credit for up to 12 months of a medical leave of absence and all military leaves of absence may also be purchased.

Public Service (see below) is part of Credited Service for the computation of benefits only, not for eligibility for benefits or for vesting.

Final Compensation: For Tier 1 Members, Final Compensation means the highest average Compensation earned during any 12 consecutive months of the Member's employment.

For Tier 2 Members, highest average Compensation will be based on the highest 36 consecutive months, rather than 12 months.

General Member: Any Member who is not a Safety Member is a General Member.

Public Service: The Member may elect to purchase Public Service for time spent while employed in another recognized public agency. The public agency must have a reciprocal agreement with the Plan or be one of several specified municipalities, counties, special districts, or State or Federal agencies.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Public Service cannot be purchased if it is used for eligibility for another pension.

The cost to purchase Public Service is twice the Member Contributions and interest applicable for the period of time purchased. Public Service is used to compute benefits but does not count toward eligibility for benefits or vesting.

Safety Member: Any sworn Member engaged in law enforcement, probation, or fire suppression is a Safety Member.

B. Membership

Eligibility: All full-time, permanent employees of San Joaquin County and other participating special districts become Members on their date of appointment. Membership is mandatory; only elected officials and members who are age 60 or older at the time of employment in a position requiring membership in SJCERA may choose not to participate.

A Tier 2 Member is any Member joining the Plan for the first time on or after January 1, 2013. Employees who transfer from and are eligible for reciprocity with another public employer will not be Tier 2 Members if their service in the reciprocal system was under a previous tier. Employees who were Members of SJCERA prior to January 1, 2013 and experienced a break in service of more than six months and then were reemployed by a *different* SJCERA-participating employer on or after January 1, 2013 will be considered Tier 2 Members for all subsequent service.

Member Contributions: Each Member contributes a percentage of Compensation to the Plan through payroll deduction. For Tier 1 members, the percentage contributed depends on the Member's age upon joining the Plan. Representative rates are shown in Table 1 on the next page.

Tier 1 members covered by Social Security have their contributions reduced by one-third on the first $161.54 of biweekly Compensation. General Members who joined the Plan prior to March 7, 1973 and who have earned 30 years of Credited Service do not contribute; Safety Members do not contribute after earning 30 years of Credited Service.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Table 1: Tier 1 Member Contribution Rates (Basic Rates)

	General Member Rate		Safety Member Rate	
Entry Age	1st $350/month	Over $350	1st $350/month	Over $350
20	2.09%	3.14%	3.14%	4.71%
25	2.30%	3.45%	3.36%	5.04%
30	2.53%	3.79%	3.61%	5.41%
35	2.78%	4.17%	3.88%	5.82%
40	3.07%	4.60%	4.22%	6.33%
45	3.35%	5.02%	4.59%	6.89%
50	3.61%	5.41%	4.36%	6.54%

Rates include the employee share of the administrative expenses.

Some Tier 1 members also contribute half of the normal cost associated with the post-retirement COLA benefits, also based on entry age. Many bargaining groups have also agreed to have their Tier 1 members pay additional basic rate contributions (14% of the current basic rates for General members, 33% for Safety). The complete rate tables for all groups are in the Appendix G.

Tier 2 Members contribute half of the normal cost of the Plan. Contributions for these Members are based on the Normal Cost associated with their benefits; General and Safety members pay different rates.

Tier 2 Members pay a single contribution rate, not a rate based on entry age. All Tier 2 Members continue contributing after earning 30 years of service. These rates are updated annually, to reflect changes in the Tier 2 demographics, as well as any changes in assumptions (such as the discount rate change).

Table 2: Tier 2 Member Contribution Rates

General Member Rate	Safety Member Rate
10.35%	15.84%

Rates include the employee share of the administrative expenses.

Interest is credited semiannually to each Member's accumulated contributions, based on the previous year's expected rate of return on assets. The crediting rate for 2022 is 3.4408%, for an effective annual rate of 7.00%.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

C. Service Retirement

Eligibility: Tier 1 General Members are eligible to retire at age 50 if they have earned five years of Credited Service and have passed the tenth anniversary of their membership in the Plan. Alternatively, General Members are eligible to retire at any age after having earned 30 years of Credited Service, or upon reaching age 70 with no service requirement.

Tier 1 Safety Members are eligible to retire at age 50 if they have earned five years of Credited Service and have passed the tenth anniversary of their membership in the Plan. Alternatively, Safety Members are eligible to retire at any age after having earned 20 years of Credited Service.

Tier 2 General Members are eligible to retire upon attaining age 52 and completing five or more years of service. Tier 2 Safety Members are eligible to retire upon attaining age 50 and completing five or more years of service. Tier 2 Members are eligible to retire, regardless of service, after attaining age 70.

Benefit Amount: The Service Retirement Benefit payable to Tier 1 General Members is equal to the percentage in Table 3 on the next page multiplied by the Member's Final Compensation. The Service Retirement Benefit payable to Tier 1 Safety Members is equal to the percentage in the upcoming Table 4 multiplied by the Member's Final Compensation. The percentage of Final Compensation may not exceed 100%. For those Tier 1 members integrated with Social Security, Retirement Benefits based on the first $350 of monthly Final Average Compensation are reduced by one-third.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Table 3: Tier 1 General Members (CERL Section 31676.14)

Service	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
10					14.75	15.67	16.67	17.41	18.41	19.48	20.61	21.82	22.68	23.54	24.40	25.26	26.11	26.11	26.11	26.11
11					16.23	17.23	18.33	19.15	20.25	21.42	22.67	24.00	24.95	25.89	26.84	27.78	28.72	28.72	28.72	28.72
12					17.70	18.80	20.00	20.89	22.10	23.37	24.73	26.19	27.22	28.25	29.28	30.31	31.34	31.34	31.34	31.34
13					19.18	20.36	21.67	22.64	23.94	25.32	26.79	28.37	29.48	30.60	31.72	32.83	33.95	33.95	33.95	33.95
14					20.65	21.93	23.33	24.38	25.78	27.27	28.85	30.55	31.75	32.95	34.16	35.36	36.56	36.56	36.56	36.56
15					22.13	23.50	25.00	26.12	27.62	29.22	30.91	32.73	34.02	35.31	36.60	37.88	39.17	39.17	39.17	39.17
16					23.60	25.06	26.67	27.86	29.46	31.16	32.97	34.92	36.29	37.66	39.04	40.41	41.78	41.78	41.78	41.78
17					25.08	26.63	28.33	29.60	31.30	33.11	35.03	37.10	38.56	40.01	41.47	42.93	44.39	44.39	44.39	44.39
18					26.55	28.20	30.00	31.34	33.14	35.06	37.09	39.28	40.82	42.37	43.91	45.46	47.00	47.00	47.00	47.00
19					28.03	29.76	31.67	33.08	34.98	37.01	39.16	41.46	43.09	44.72	46.35	47.98	49.61	49.61	49.61	49.61
20					29.50	31.33	33.33	34.82	36.83	38.95	41.22	43.64	45.36	47.08	48.79	50.51	52.23	52.23	52.23	52.23
21					30.98	32.90	35.00	36.57	38.67	40.90	43.28	45.83	47.63	49.43	51.23	53.04	54.84	54.84	54.84	54.84
22					32.45	34.46	36.67	38.31	40.51	42.85	45.34	48.01	49.90	51.78	53.67	55.56	57.45	57.45	57.45	57.45
23					33.93	36.03	38.33	40.05	42.35	44.80	47.40	50.19	52.16	54.14	56.11	58.09	60.06	60.06	60.06	60.06
24					35.40	37.60	40.00	41.79	44.19	46.74	49.46	52.37	54.43	56.49	58.55	60.61	62.67	62.67	62.67	62.67
25					36.88	39.16	41.67	43.53	46.03	48.69	51.52	54.56	56.70	58.85	60.99	63.14	65.28	65.28	65.28	65.28
26					38.35	40.73	43.33	45.27	47.87	50.64	53.58	56.74	58.97	61.20	63.43	65.66	67.89	67.89	67.89	67.89
27					39.83	42.30	45.00	47.01	49.72	52.59	55.64	58.92	61.24	63.55	65.87	68.19	70.51	70.51	70.51	70.51
28					41.30	43.86	46.67	48.75	51.56	54.54	57.70	61.10	63.50	65.91	68.31	70.71	73.12	73.12	73.12	73.12
29					42.78	45.43	48.33	50.49	53.40	56.48	59.76	63.28	65.77	68.26	70.75	73.24	75.73	75.73	75.73	75.73
30	35.28	37.27	39.41	41.73	44.25	47.00	50.00	52.24	55.24	58.43	61.82	65.47	68.04	70.61	73.19	75.77	78.34	78.34	78.34	78.34
31		38.51	40.72	43.12	45.73	48.56	51.67	53.98	57.08	60.38	63.88	67.65	70.31	72.97	75.63	78.29	80.95	80.95	80.95	80.95
32			42.04	44.51	47.20	50.13	53.33	55.72	58.92	62.33	65.95	69.83	72.58	75.32	78.07	80.82	83.56	83.56	83.56	83.56
33				45.90	48.68	51.69	55.00	57.46	60.76	64.27	68.01	72.01	74.84	77.68	80.51	83.34	86.17	86.17	86.17	86.17
34					50.15	53.26	56.67	59.20	62.60	66.22	70.07	74.19	77.11	80.03	82.95	85.87	88.78	88.78	88.78	88.78
35						54.83	58.33	60.94	64.45	68.17	72.13	76.38	79.38	82.38	85.39	88.39	91.40	91.40	91.40	91.40
36							60.00	62.68	66.29	70.12	74.19	78.56	81.65	84.74	87.83	90.92	94.01	94.01	94.01	94.01
37								64.42	68.13	72.06	76.25	80.74	83.92	87.09	90.27	93.44	96.62	96.62	96.62	96.62
38									69.97	74.01	78.31	82.92	86.18	89.44	92.71	95.97	99.23	99.23	99.23	99.23
39										75.96	80.37	85.11	88.45	91.80	95.15	98.49	100	100	100	100
40											82.43	87.29	90.72	94.15	97.59	100				
41												89.47	92.99	96.51	100					
42													95.26	98.86						
43														100						

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Table 4: Tier 1 Safety Members (CERL Section 31664.1)

Service	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
10										30.00	30.00	30.00	30.00	30.00	30.00
11										33.00	33.00	33.00	33.00	33.00	33.00
12										36.00	36.00	36.00	36.00	36.00	36.00
13										39.00	39.00	39.00	39.00	39.00	39.00
14										42.00	42.00	42.00	42.00	42.00	42.00
15										45.00	45.00	45.00	45.00	45.00	45.00
16										48.00	48.00	48.00	48.00	48.00	48.00
17										51.00	51.00	51.00	51.00	51.00	51.00
18										54.00	54.00	54.00	54.00	54.00	54.00
19										57.00	57.00	57.00	57.00	57.00	57.00
20	37.55	39.75	42.02	44.38	46.83	49.36	52.07	54.51	57.13	60.00	60.00	60.00	60.00	60.00	60.00
21		41.74	44.13	46.6	49.17	51.82	54.67	57.24	59.99	63.00	63.00	63.00	63.00	63.00	63.00
22			46.23	48.82	51.51	54.29	57.27	59.96	62.85	66.00	66.00	66.00	66.00	66.00	66.00
23				51.04	53.85	56.76	59.88	62.69	65.7	69.00	69.00	69.00	69.00	69.00	69.00
24					56.2	59.23	62.48	65.41	68.56	72.00	72.00	72.00	72.00	72.00	72.00
25						61.7	65.09	68.14	71.42	75.00	75.00	75.00	75.00	75.00	75.00
26							67.69	70.86	74.27	78.00	78.00	78.00	78.00	78.00	78.00
27								73.59	77.13	81.00	81.00	81.00	81.00	81.00	81.00
28									79.98	84.00	84.00	84.00	84.00	84.00	84.00
29										87.00	87.00	87.00	87.00	87.00	87.00
30										90.00	90.00	90.00	90.00	90.00	90.00
31										93.00	93.00	93.00	93.00	93.00	93.00
32										96.00	96.00	96.00	96.00	96.00	96.00
33										99.00	99.00	99.00	99.00	99.00	99.00
34										100.00	100.00	100.00	100.00	100.00	100.00
35											100.00	100.00	100.00	100.00	100.00
36												100.00	100.00	100.00	100.00
37													100.00	100.00	100.00
38														100.00	100.00
39															100.00

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Table 5: Tier I Social Security Adjustment

Age at Retirement	General Member Reduction	Safety Member Reduction
46	$1.372	$2.879
47	$1.449	$3.037
48	$1.533	$3.180
49	$1.623	$3.333
50	$1.721	$3.500
51	$1.828	$3.500
52	$1.944	$3.500
53	$2.031	$3.500
54	$2.148	$3.500
55	$2.272	$3.500
56	$2.404	$3.500
57	$2.546	$3.500
58	$2.646	$3.500
59	$2.746	$3.500
60	$2.846	$3.500
61	$2.946	$3.500
62	$3.046	$3.500
63	$3.046	$3.500
64	$3.046	$3.500
65	$3.046	$3.500

For Tier 2 General Members, the benefit multiplier is 1% at age 52, increasing by 0.1% for each year of age to 2.5% at 67. For Tier 2 Safety Members, the benefit multiplier is 2% at age 50, increasing by 0.1% for each year of age to 2.7% at age 57. In between exact ages, the multiplier increases by 0.025% for each quarter year increase in age.

Form of Benefit: The Service Retirement Benefit will be paid monthly beginning at retirement and for the life of the Member. If the member selects the unmodified benefit form, in the event of the Member's death, 60% of the benefit will continue for the life of the Member's spouse, or to the age of majority of dependent minor children if there is no spouse. In the event there is no surviving spouse or minor children, any unpaid remainder of the Member's accumulated contributions will be paid to the Member's designated beneficiary.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Actuarially equivalent optional benefit forms are also available.

Annually on April 1, benefits are adjusted to reflect changes in the CPI for the San Francisco Bay Area. Annual adjustments may not exceed 3%, but changes in CPI in excess of 3% are "banked" and used for future adjustments when changes in CPI are less than 3%.

In addition, ad hoc cost-of-living adjustments have been granted in the past and may be granted in the future.

A lump sum benefit of $5,000 will be payable upon the death of a retired member.

D. Service-Connected Disability

Eligibility: Members are eligible for Service-Connected Disability Retirement benefits at any age if they are permanently disabled as a result of injuries or illness sustained in the line of duty.

Benefit Amount: The Service-Connected Disability Retirement Benefit payable to Members is equal to the greater of 50% of their Final Compensation or – if the Member is eligible at disability for a Service Retirement Benefit – the Service Retirement Benefit accrued on the date of disability.

Members who return to work at a different position with lower pay may receive a Supplemental Disability Allowance that, when added to their new pay, may bring the Member's total income up to the current pay for his or her position at the time of disability. The Supplemental Disability Allowance may not exceed the Service-Connected Disability Retirement benefit.

Form of Benefit: The Service-Connected Disability Retirement Benefit will be paid monthly beginning at the effective date of disability retirement and for the life of the Member; in the event of the Member's death, 100% of the benefit will continue for the life of the Member's spouse, or to the age of majority of dependent minor children if there is no spouse. In the event there is no surviving spouse or minor children, any unpaid remainder of the Member's accumulated contributions will be paid to the Member's designated beneficiary.

Actuarially equivalent optional benefit forms are also available.

Annually on April 1, benefits are adjusted to reflect changes in the CPI for the San Francisco Bay Area. Annual adjustments may not exceed 3%, but

APPENDIX C – SUMMARY OF PLAN PROVISIONS

changes in CPI in excess of 3% are "banked" and used for future adjustments when changes in CPI are less than 3%.

In addition, ad hoc cost-of-living adjustments have been granted in the past and may be granted in the future.

A lump sum benefit of $5,000 will be payable upon the death of a retired member.

E. Nonservice-Connected Disability

Eligibility: Members are eligible for Nonservice-Connected Disability Retirement benefits if they are permanently disabled at any age after earning five years of Credited Service or after becoming eligible for a deferred vested benefit.

Benefit Amount: The Nonservice-Connected Disability Retirement Benefit payable to General Members is equal to the greatest of:

- 1.5% of Final Compensation at disability multiplied by years of Credited Service at disability;
- 1.5% of Final Compensation at disability multiplied by years of Credited Service projected to age 65, but not to exceed one-third of Final Compensation; or
- If the Member is eligible at disability for a Service Retirement Benefit, the Service Retirement Benefit accrued on the date of disability.

The Nonservice-Connected Disability Retirement Benefit payable to Safety Members is equal to the greatest of:

- 1.8% of Final Compensation at disability multiplied by years of Credited Service at disability;
- 1.8% of Final Compensation at disability multiplied by years of Credited Service projected to age 55, but not to exceed one-third of Final Compensation; or
- If the Member is eligible at disability for a Service Retirement Benefit, the Service Retirement Benefit accrued on the date of disability.

Members who return to work at a different position with lower pay may receive a Supplemental Disability Allowance that, when added to their new pay, may bring the Member's total income up to the current pay for his or her position at the time of disability. The Supplemental Disability

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Allowance may not exceed the Nonservice-Connected Disability Retirement benefit.

Form of Benefit: The Nonservice-Connected Disability Retirement Benefit will be paid monthly beginning at the effective date of disability retirement, and for the life of the Member; in the event of the Member's death, 60% of the benefit will continue for the life of the Member's spouse or to the age of majority of dependent minor children if there is no spouse. In the event there is no surviving spouse or minor children, any unpaid remainder of the Member's accumulated contributions will be paid to the Member's designated beneficiary.

Actuarially equivalent optional benefit forms are also available.

Annually on April 1, benefits are adjusted to reflect changes in the CPI for the San Francisco Bay Area. Annual adjustments may not exceed 3%, but changes in CPI in excess of 3% are "banked" and used for future adjustments when changes in CPI are less than 3%.

In addition, ad hoc cost-of-living adjustments have been granted in the past and may be granted in the future.

A lump sum benefit of $5,000 will be payable upon the death of a retired member.

F. Service-Connected Death

Eligibility: A Member's survivors are eligible to receive Service-Connected Death benefits if the Member's death resulted from injury or illness sustained in connection with the Member's duties.

Benefit Amount: The Service-Connected Death benefit payable to a surviving spouse or minor children will be 50% of the Member's Final Compensation.

In the event the Member's death was caused by external violence or physical force, an additional benefit of 25% of the above basic benefit will be paid for the first minor child, 15% for the second, and 10% for the third.

Furthermore, for Safety Members only, there will be an additional lump sum benefit of 12 months of pay at the time of death.

Form of Benefit: The Service-Connected Death Benefit will be paid monthly beginning at the Member's death and for the life of the surviving spouse or to the age of majority of dependent minor children if there is no spouse.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Annually on April 1, benefits are adjusted to reflect changes in the CPI for the San Francisco Bay Area. Annual adjustments may not exceed 3%, but changes in CPI in excess of 3% are "banked" and used for future adjustments when changes in CPI are less than 3%.

In addition, ad hoc cost-of-living adjustments have been granted in the past and may be granted in the future.

G. Nonservice-Connected Death

Eligibility: A Member's survivors are eligible to receive Nonservice-Connected Death benefits if the Member's death arose from causes unrelated to the Member's duties.

Benefit Amount: In the event the Member had earned fewer than five years of Credited Service and has no or insufficient reciprocity service from another system, the Nonservice-Connected Death benefit will be a refund of the Member's accumulated contributions with interest plus a payment of one month of Final Compensation for each year of Credited Service, not to exceed six months.

In the event the Member had earned five or more years of Credited Service, the Nonservice-Connected Death benefit payable to a surviving spouse or minor children will be 60% of the amount the Member would have received as a Nonservice-Connected Disability Retirement Benefit on the date of death.

Form of Benefit: For Members who had earned fewer than five years of Credited Service at death, the benefit will be paid as a lump sum.

For Members with five or more years of Credited Service, the Nonservice-Connected Death Benefit will be paid monthly beginning at the Member's death and for the life of the surviving spouse or to the age of majority of dependent minor children if there is no spouse.

Annually on April 1, benefits are adjusted to reflect changes in the CPI for the San Francisco Bay Area. Annual adjustments may not exceed 3%, but changes in CPI in excess of 3% are "banked" and used for future adjustments when changes in CPI are less than 3%.

In addition, ad hoc cost-of-living adjustments have been granted in the past and may be granted in the future.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

H. Withdrawal Benefit

Eligibility: A Member is eligible for a Withdrawal Benefit upon termination of employment.

Benefit Amount: The Withdrawal Benefit is a refund of the Member's accumulated contributions with interest. Upon receipt of the Withdrawal Benefit, the Member forfeits all Credited Service.

Form of Benefit: The Withdrawal Benefit is paid in a lump sum upon election by the Member.

I. Deferred Vested Benefit

Eligibility: A Member is eligible for a Deferred Vested Benefit upon termination of employment after earning five years of Credited Service, including reciprocity service from another system. The Member must leave his or her Member Contributions with interest on deposit with the Plan.

Benefit Amount: The Deferred Vested Benefit is computed in the same manner as the Service Retirement Benefit, but it is based on Credited Service and Final Compensation on the date of termination.

For Tier 1 Members, Tables 2 and 3 are extended for service under 10 years using benefit multipliers of one-sixtieth per year of Credited Service at age 52 (General) or 3% per year of Credited Service at age 50 (Safety), with adjustments for earlier or later retirement under Sections 31676.14 and 31664.1, respectively, of the County Employees Retirement Law of 1937.

Form of Benefit: The Deferred Vested Benefit will be paid monthly beginning at retirement and for the life of the Member; in the event of the Member's death, 60% of the benefit will continue for the life of the Member's spouse or to the age of majority of dependent minor children if there is no spouse. In the event there is no surviving spouse or minor children, any unpaid remainder of the Member's accumulated contributions will be paid to the Member's designated beneficiary.

Actuarially equivalent optional benefit forms are also available.

Annually on April 1, benefits are adjusted to reflect changes in the CPI for the San Francisco Bay Area. Annual adjustments may not exceed 3%, but changes in CPI in excess of 3% are "banked" and used for future adjustments when changes in CPI are less than 3%.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

In addition, ad hoc cost-of-living adjustments have been granted in the past and may be granted in the future.

A lump sum benefit of $5,000 will be payable upon the death of a retired member.

J. Reciprocal Benefit

Eligibility: A Member is eligible for a Reciprocal Benefit upon termination of employment and entry, within a specified period of time, into another retirement system recognized as a reciprocal system by the Plan. In addition, the Member must leave his or her Member Contributions with interest on deposit with the Plan.

Benefit Amount: The Reciprocal Benefit is computed in the same manner as the Service Retirement Benefit, but it is based on Credited Service on the date of termination and Final Compensation on the date of retirement; Final Compensation is based on the highest of the Compensation earned under this Plan or the reciprocal plan.

Form of Benefit: The Reciprocal Benefit will be paid monthly beginning at retirement and for the life of the Member; in the event of the Member's death, 60% of the benefit will continue for the life of the Member's spouse or to the age of majority of dependent minor children if there is no spouse. In the event there is no surviving spouse or minor children, any unpaid remainder of the Member's accumulated contributions will be paid to the Member's designated beneficiary.

Actuarially equivalent optional benefit forms are also available.

Annually on April 1, benefits are adjusted to reflect changes in the CPI for the San Francisco Bay Area. Annual adjustments may not exceed 3%, but changes in CPI in excess of 3% are "banked" and used for future adjustments when changes in CPI are less than 3%.

A lump sum benefit may be payable upon the death of a retired Member by the last system under which the Member's service was covered.

Subsequent to the January 1, 2021 valuation, the Board approved the creation of Tier 2B for new members hired after January 1, 2022, but the implementation of this Tier does not have any impact on the current valuation results. The only difference for this Tier is in the definition of pensionable compensation, which only includes base pay. There have been no changes in plan provisions since the prior valuation.

APPENDIX D – 401(H) REPAYMENT SCHEDULE

As of January 1, 2014, a separate amortization layer was established for the repayment of funds originally transferred to a retiree health reserve. This schedule was prepared in compliance with an approved Voluntary Correction Program that SJCERA submitted to the IRS. The original balance of the amortization layer ($48.0 million) is being amortized using the same methodology and assumptions as the UAL – as a level percentage of payroll over a 19-year period – after an initial payment of $19.8 million.

Date	Outstanding Balance	Years Remaining	End of Year Payment
1/1/2017	$27,547,546	16	$2,460,275
1/1/2018	$27,125,789	15	$2,512,141
1/1/2019	$26,580,267	14	$2,591,274
1/1/2020	$25,916,063	13	$2,653,902
1/1/2021	$25,076,285	12	$2,733,519
1/1/2022	$24,098,107	11	$2,778,677
1/1/2023	$22,946,052	10	$2,862,037
1/1/2024	$21,632,873	9	$2,947,899
1/1/2025	$20,145,193	8	$3,036,335
1/1/2026	$18,468,658	7	$3,127,426
1/1/2027	$16,587,867	6	$3,221,248
1/1/2028	$14,486,300	5	$3,317,886
1/1/2029	$12,146,239	4	$3,417,422
1/1/2030	$9,548,688	3	$3,519,945
1/1/2031	$6,673,279	2	$3,625,543
1/1/2032	$3,498,182	1	$3,734,310
1/1/2033	$0	0	$0

APPENDIX E – GLOSSARY

1. **Actuarial Assumptions**

   Assumptions as to the occurrence of future events affecting pension costs such as mortality, withdrawal, disability, retirement, changes in compensation, and rates of investment return.

2. **Actuarial Cost Method**

   A procedure for determining the actuarial present value of pension plan benefits and expenses and for developing an allocation of such value to each year of service, usually in the form of a normal cost and an Actuarial Liability.

3. **Actuarial Gain (Loss)**

   The difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

4. **Actuarial Liability**

   The portion of the actuarial present value of projected benefits that will not be paid by future normal costs. It represents the value of the past normal costs with interest to the valuation date.

5. **Actuarial Present Value (Present Value)**

   The value as of a given date of a future amount or series of payments. The actuarial present value discounts the payments to the given date at the assumed investment return and includes the probability of the payment being made.

6. **Actuarial Valuation**

   The determination, as of a specified date, of the normal cost, Actuarial Liability, Actuarial Value of Assets, and related actuarial present values for a pension plan.

7. **Actuarial Value of Assets**

   The value of cash, investments, and other property belonging to a pension plan as used by the actuary for the purpose of an actuarial valuation. The purpose of an Actuarial Value of Assets is to smooth out fluctuations in market values.

8. **Actuarially Equivalent**

   Of equal actuarial present value, determined as of a given date, with each value based on the same set of actuarial assumptions.

APPENDIX E – GLOSSARY

9. Amortization Payment

The portion of the pension plan contribution that is designed to pay interest and principal on the Unfunded Actuarial Liability in order to pay for that liability in a given number of years.

10. Entry Age Normal Actuarial Cost Method

A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages.

11. Funded Ratio

The ratio of the Actuarial Value of Assets to the Actuarial Liabilities. The funded ratio shown in this report is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, in the case of a plan termination or other similar action. However, it is an appropriate measure for assessing the need for or the amount of future contributions.

12. Inactive Funded Ratio

The ratio of the Inactive Actuarial Liabilities to the total Actuarial Liabilities. The inactive funded ratio is a measure that shows the minimum funded status needed to pay benefits for all inactive members.

13. Normal Cost

That portion of the actuarial present value of pension plan benefits and expenses, which is allocated to a valuation year by the actuarial cost method.

14. Projected Benefits

Those pension plan benefit amounts which are expected to be paid in the future under a particular set of actuarial assumptions, taking into account such items as increases in future compensation and service credits.

15. Unfunded Actuarial Liability

The excess of the Actuarial Liability over the Actuarial Value of Assets.

APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Tier 1: Contribution Rates for General and Safety (no COLA Cost-Sharing)

Separate rates for General and Safety members are shown below. These rates are applicable for employment groups that have not implemented equal sharing of the contributions required for post-retirement cost-of-living adjustments (COLA) in accordance with Government Code Section 31873.

As of January 1, 2021				As of January 1, 2022			
	General	Safety	Total		General	Safety	Total
Employer Normal Cost				**Employer Normal Cost**			
Basic	13.82%	22.23%	15.46%	Basic	13.39%	22.36%	15.18%
COL	6.00%	10.54%	6.89%	COL	5.79%	10.77%	6.78%
Total	19.82%	32.77%	22.35%	Total	19.18%	33.13%	21.96%
UAL Amortization Cost				**UAL Amortization Cost**			
Basic	20.94%	45.40%	25.65%	Basic	19.11%	45.32%	24.29%
COL	9.66%	18.33%	11.33%	COL	10.24%	19.82%	12.13%
Total	30.60%	63.73%	36.98%	Total	29.35%	65.14%	36.42%
Total Cost				**Total Cost**			
Basic	34.76%	67.63%	41.11%	Basic	32.50%	67.68%	39.47%
COL	15.66%	28.87%	18.22%	COL	16.03%	30.59%	18.91%
Total	50.42%	96.50%	59.33%	Total	48.53%	98.27%	58.38%

Rates include the employer share of the administrative expenses.

APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Tier 1: Contribution Rates for General and Safety (Employer Cost with additional 14% / 33% Normal Rates by members without COLA Cost-sharing)

Separate rates for General and Safety members contributing an additional 14% / 33% of Normal Rates are shown below.

	As of January 1, 2021				As of January 1, 2022		
	General	Safety	Total		General	Safety	Total
Employer Normal Cost				**Employer Normal Cost**			
Basic	13.26%	20.61%	14.70%	Basic	12.81%	20.66%	14.37%
COL	6.00%	10.54%	6.88%	COL	5.79%	10.77%	6.79%
Total	19.26%	31.15%	21.58%	Total	18.60%	31.43%	21.16%
UAL Amortization Cost				**UAL Amortization Cost**			
Basic	20.94%	45.40%	25.65%	Basic	19.11%	45.32%	24.29%
COL	9.66%	18.33%	11.33%	COL	10.24%	19.82%	12.13%
Total	30.60%	63.73%	36.98%	Total	29.35%	65.14%	36.42%
Total Cost				**Total Cost**			
Basic	34.20%	66.01%	40.35%	Basic	31.92%	65.98%	38.66%
COL	15.66%	28.87%	18.21%	COL	16.03%	30.59%	18.92%
Total	49.86%	94.88%	58.56%	Total	47.95%	96.57%	57.58%

Rates include the employer share of the administrative expenses.

APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Tier 1: Contribution Rates for General and Safety (with COLA Cost-sharing)

Separate rates for General and Safety members contributing Normal Rates plus COLA Cost-sharing are shown below.

As of January 1, 2021				As of January 1, 2022			
	General	Safety	Total		General	Safety	Total
Employer Normal Cost				**Employer Normal Cost**			
Basic	13.82%	22.23%	15.46%	Basic	13.39%	22.36%	15.18%
COL	3.11%	5.46%	3.57%	COL	2.93%	5.48%	3.44%
Total	16.93%	27.69%	19.03%	Total	16.32%	27.84%	18.62%
UAL Amortization Cost				**UAL Amortization Cost**			
Basic	20.94%	45.40%	25.65%	Basic	19.11%	45.32%	24.29%
COL	9.66%	18.33%	11.33%	COL	10.24%	19.82%	12.13%
Total	30.60%	63.73%	36.98%	Total	29.35%	65.14%	36.42%
Total Cost				**Total Cost**			
Basic	34.76%	67.63%	41.11%	Basic	32.50%	67.68%	39.47%
COL	12.77%	23.79%	14.90%	COL	13.17%	25.30%	15.57%
Total	47.53%	91.42%	56.01%	Total	45.67%	92.98%	55.04%

Rates include the employer share of the administrative expenses.

APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Tier 1: Contribution Rates for General and Safety (Employer Cost with additional 14% / 33% Normal Rates by members and COLA Cost-sharing)

Separate rates for General and Safety members contributing an additional 14% / 33% of Normal Rates and COLA Cost-sharing are shown below.

	As of January 1, 2021				As of January 1, 2022		
	General	Safety	Total		General	Safety	Total
Employer Normal Cost				**Employer Normal Cost**			
Basic	13.26%	20.61%	14.70%	Basic	12.81%	20.66%	14.37%
COL	3.11%	5.46%	3.56%	COL	2.93%	5.48%	3.44%
Total	16.37%	26.07%	18.26%	Total	15.74%	26.14%	17.81%
UAL Amortization Cost				**UAL Amortization Cost**			
Basic	20.94%	45.40%	25.65%	Basic	19.11%	45.32%	24.29%
COL	9.66%	18.33%	11.33%	COL	10.24%	19.82%	12.13%
Total	30.60%	63.73%	36.98%	Total	29.35%	65.14%	36.42%
Total Cost				**Total Cost**			
Basic	34.20%	66.01%	40.35%	Basic	31.92%	65.98%	38.66%
COL	12.77%	23.79%	14.89%	COL	13.17%	25.30%	15.57%
Total	46.97%	89.80%	55.24%	Total	45.09%	91.28%	54.23%

Rates include the employer share of the administrative expenses.

APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Tier 2: Contribution Rates for General and Safety (PEPRA Members)

Separate rates for General and Safety members are shown below. These rates are applicable for employment groups that are subject to Government Code Section 7522.30.

As of January 1, 2021				As of January 1, 2022			
	General	Safety	Total		General	Safety	Total
Employer Normal Cost				**Employer Normal Cost**			
Basic	7.53%	10.98%	7.92%	Basic	7.85%	11.26%	8.26%
COL	2.46%	4.44%	2.69%	COL	2.50%	4.58%	2.76%
Total	9.99%	15.42%	10.61%	Total	10.35%	15.84%	11.02%
UAL Amortization Cost				**UAL Amortization Cost**			
Basic	20.94%	45.40%	23.66%	Basic	19.11%	45.32%	22.17%
COL	9.66%	18.33%	10.62%	COL	10.24%	19.82%	11.35%
Total	30.60%	63.73%	34.28%	Total	29.35%	65.14%	33.52%
Total Cost				**Total Cost**			
Basic	28.47%	56.38%	31.58%	Basic	26.96%	56.58%	30.43%
COL	12.12%	22.77%	13.31%	COL	12.74%	24.40%	14.11%
Total	40.59%	79.15%	44.89%	Total	39.70%	80.98%	44.54%

Rates include the employer share of the administrative expenses.

APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Total Normal Cost Rates for General and Safety

	As of January 1, 2021				As of January 1, 2022		
	General	Safety	Total		General	Safety	Total
Total Normal Cost				**Total Normal Cost**			
Tier 1	23.77%	37.71%	26.49%	Tier 1	23.29%	38.34%	26.29%
Tier 2	19.98%	30.84%	21.22%	Tier 2	20.70%	31.68%	22.04%

The Total Normal Costs shown include the employee and employer share of the assumed administrative expenses.

APPENDIX G – MEMBER CONTRIBUTION RATES

General Member Contribution Rates
Basic Half Rate (Government Code Section 31621.3)

	Basic Rate		COLA Cost-Sharing Rate[1]	
Entry Age	1st $350/month	Over $350	1st $350/month	Over $350
16	2.09%	3.14%	1.39%	2.09%
17	2.09%	3.14%	1.39%	2.09%
18	2.09%	3.14%	1.39%	2.09%
19	2.09%	3.14%	1.39%	2.09%
20	2.09%	3.14%	1.39%	2.09%
21	2.13%	3.20%	1.43%	2.15%
22	2.17%	3.26%	1.47%	2.21%
23	2.21%	3.32%	1.51%	2.27%
24	2.25%	3.38%	1.56%	2.34%
25	2.30%	3.45%	1.59%	2.39%
26	2.34%	3.51%	1.63%	2.45%
27	2.39%	3.58%	1.67%	2.50%
28	2.43%	3.65%	1.70%	2.55%
29	2.48%	3.72%	1.73%	2.60%
30	2.53%	3.79%	1.77%	2.65%
31	2.57%	3.86%	1.79%	2.69%
32	2.63%	3.94%	1.83%	2.74%
33	2.67%	4.01%	1.86%	2.79%
34	2.73%	4.09%	1.90%	2.85%
35	2.78%	4.17%	1.94%	2.91%
36	2.84%	4.26%	1.99%	2.98%
37	2.89%	4.34%	2.04%	3.06%
38	2.95%	4.43%	2.09%	3.14%
39	3.02%	4.53%	2.15%	3.23%
40	3.07%	4.60%	2.21%	3.32%
41	3.12%	4.68%	2.27%	3.40%
42	3.17%	4.76%	2.31%	3.47%
43	3.23%	4.84%	2.37%	3.55%
44	3.29%	4.93%	2.43%	3.64%
45	3.35%	5.02%	2.49%	3.73%
46	3.41%	5.11%	2.55%	3.82%
47	3.45%	5.17%	2.57%	3.85%
48	3.49%	5.24%	2.58%	3.87%
49	3.55%	5.32%	2.59%	3.89%
50	3.61%	5.41%	2.59%	3.89%
51	3.62%	5.43%	2.60%	3.90%
52	3.64%	5.46%	2.59%	3.89%
53	3.59%	5.38%	2.57%	3.85%
54+	3.52%	5.28%	2.51%	3.77%

[1] Some members and employers share equally the contributions required for post-retirement cost-of-living adjustments (COLA) in accordance with Government Code Section 31873. For other members, the employers pay all of the contributions required for post-retirement COLA.

Rates include the employee share of the administrative expenses.

APPENDIX G – MEMBER CONTRIBUTION RATES

General Member Contribution Rates

Basic Half Rate (Government Code Section 31621.3) + 14%, not greater than 1/2 Normal Cost

	Basic Rate		COLA Cost-Sharing Rate[1]	
Entry Age	1st $350/month	Over $350	1st $350/month	Over $350
16	2.39%	3.58%	1.39%	2.09%
17	2.39%	3.58%	1.39%	2.09%
18	2.39%	3.58%	1.39%	2.09%
19	2.39%	3.58%	1.39%	2.09%
20	2.39%	3.58%	1.39%	2.09%
21	2.43%	3.65%	1.43%	2.15%
22	2.48%	3.72%	1.47%	2.21%
23	2.52%	3.78%	1.52%	2.28%
24	2.57%	3.85%	1.56%	2.34%
25	2.62%	3.93%	1.60%	2.40%
26	2.67%	4.00%	1.64%	2.46%
27	2.72%	4.08%	1.67%	2.51%
28	2.77%	4.16%	1.70%	2.55%
29	2.83%	4.24%	1.74%	2.61%
30	2.88%	4.32%	1.77%	2.65%
31	2.93%	4.40%	1.80%	2.70%
32	2.99%	4.49%	1.83%	2.74%
33	3.05%	4.57%	1.86%	2.79%
34	3.11%	4.66%	1.90%	2.85%
35	3.17%	4.75%	1.94%	2.91%
36	3.24%	4.86%	1.99%	2.99%
37	3.30%	4.95%	2.04%	3.06%
38	3.37%	5.05%	2.09%	3.14%
39	3.44%	5.16%	2.15%	3.23%
40	3.49%	5.24%	2.21%	3.32%
41	3.56%	5.34%	2.27%	3.40%
42	3.62%	5.43%	2.31%	3.47%
43	3.68%	5.52%	2.37%	3.56%
44	3.75%	5.62%	2.43%	3.64%
45	3.81%	5.72%	2.49%	3.74%
46	3.89%	5.83%	2.55%	3.83%
47	3.93%	5.89%	2.57%	3.85%
48	3.98%	5.97%	2.58%	3.87%
49	4.04%	6.06%	2.59%	3.89%
50	4.11%	6.17%	2.59%	3.89%
51	4.13%	6.19%	2.60%	3.90%
52	4.15%	6.22%	2.60%	3.90%
53	4.09%	6.13%	2.57%	3.85%
54+	4.01%	6.02%	2.52%	3.78%

[1] Some members and employers share equally the contributions required for post-retirement cost-of-living adjustments (COLA) in accordance with Government Code Section 31873. For other members, the employers pay all of the contributions required for post-retirement COLA.

Rates include the employee share of the administrative expenses.

APPENDIX G – MEMBER CONTRIBUTION RATES

Safety Member Contribution Rates
Basic Half Rate (Government Code Section 31639.5)

	Basic Rate		COLA Cost-Sharing Rate[1]	
Entry Age	1st $350/month	Over $350	1st $350/month	Over $350
16	3.14%	4.71%	3.25%	4.88%
17	3.14%	4.71%	3.25%	4.88%
18	3.14%	4.71%	3.25%	4.88%
19	3.14%	4.71%	3.25%	4.88%
20	3.14%	4.71%	3.25%	4.88%
21	3.18%	4.77%	3.35%	5.03%
22	3.23%	4.84%	3.40%	5.10%
23	3.27%	4.91%	3.45%	5.18%
24	3.31%	4.97%	3.50%	5.25%
25	3.36%	5.04%	3.55%	5.32%
26	3.41%	5.11%	3.59%	5.39%
27	3.46%	5.19%	3.64%	5.46%
28	3.51%	5.26%	3.68%	5.52%
29	3.55%	5.33%	3.72%	5.58%
30	3.61%	5.41%	3.76%	5.64%
31	3.66%	5.49%	3.77%	5.65%
32	3.71%	5.57%	3.78%	5.67%
33	3.77%	5.65%	3.79%	5.69%
34	3.82%	5.73%	3.81%	5.71%
35	3.88%	5.82%	3.83%	5.74%
36	3.94%	5.91%	3.86%	5.79%
37	4.01%	6.01%	3.94%	5.91%
38	4.07%	6.11%	4.01%	6.01%
39	4.15%	6.22%	4.09%	6.13%
40	4.22%	6.33%	4.13%	6.19%
41	4.31%	6.46%	4.18%	6.27%
42	4.40%	6.60%	4.23%	6.35%
43	4.51%	6.77%	4.31%	6.46%
44	4.60%	6.90%	4.38%	6.57%
45	4.59%	6.89%	4.44%	6.66%
46	4.59%	6.89%	4.47%	6.70%
47	4.62%	6.93%	4.49%	6.74%
48	4.49%	6.73%	4.53%	6.79%
49+	4.36%	6.54%	4.55%	6.82%

[1] Some members and employers share equally the contributions required for post-retirement cost-of-living adjustments (COLA) in accordance with Government Code Section 31873. For other members, the employers pay all of the contributions required for post-retirement COLA.

Rates include the employee share of the administrative expenses.

APPENDIX G – MEMBER CONTRIBUTION RATES

Safety Member Contribution Rates

Basic Half Rate (Government Code Section 31639.5) + 33% , not greater than 1/2 Normal Cost

	Basic Rate		COLA Cost-Sharing Rate[1]	
Entry Age	1st $350/month	Over $350	1st $350/month	Over $350
16	4.17%	6.26%	3.25%	4.88%
17	4.17%	6.26%	3.25%	4.88%
18	4.17%	6.26%	3.25%	4.88%
19	4.17%	6.26%	3.25%	4.88%
20	4.17%	6.26%	3.25%	4.88%
21	4.23%	6.34%	3.35%	5.03%
22	4.29%	6.44%	3.40%	5.10%
23	4.35%	6.53%	3.45%	5.18%
24	4.41%	6.61%	3.51%	5.26%
25	4.47%	6.70%	3.55%	5.32%
26	4.53%	6.80%	3.59%	5.39%
27	4.60%	6.90%	3.64%	5.46%
28	4.67%	7.00%	3.68%	5.52%
29	4.73%	7.09%	3.72%	5.58%
30	4.80%	7.20%	3.76%	5.64%
31	4.87%	7.30%	3.77%	5.65%
32	4.94%	7.41%	3.78%	5.67%
33	5.01%	7.51%	3.79%	5.69%
34	5.08%	7.62%	3.81%	5.71%
35	5.16%	7.74%	3.83%	5.75%
36	5.24%	7.86%	3.87%	5.80%
37	5.33%	7.99%	3.94%	5.91%
38	5.42%	8.13%	4.01%	6.01%
39	5.51%	8.27%	4.09%	6.13%
40	5.61%	8.42%	4.13%	6.20%
41	5.73%	8.59%	4.19%	6.28%
42	5.85%	8.78%	4.24%	6.36%
43	6.00%	9.00%	4.31%	6.47%
44	6.12%	9.18%	4.38%	6.57%
45	6.11%	9.16%	4.44%	6.66%
46	6.11%	9.16%	4.47%	6.70%
47	6.15%	9.22%	4.50%	6.75%
48	5.97%	8.95%	4.53%	6.79%
49+	5.80%	8.70%	4.55%	6.83%

[1] Some members and employers share equally the contributions required for post-retirement cost-of-living adjustments (COLA) in accordance with Government Code Section 31873. For other members, the employers pay all of the contributions required for post-retirement COLA.

Rates include the employee share of the administrative expenses.

Classic Values, Innovative Advice

RESOLUTION TITLE: **2023 Retirement Contribution Rates**

RESOLUTION NO. **2022-09-01**

WHEREAS, in compliance with Government Code Section 31453, the Board of Retirement requested its consulting actuary, Cheiron, to conduct an actuarial valuation as of January 1, 2022; and

WHEREAS, the assumed rate of return was lowered from 7.0 percent to 6.75 percent; and

WHEREAS, the actuary has determined the recommended employer and member contribution rates for calendar year 2023 for Tiers 1 and 2.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Retirement approves the recommended retirement contribution rates for 2023 expressed as a percentage of active member payroll to be effective the first payday after January 1, 2023 as shown in the following attachments, which are hereby incorporated into and made a part of this Resolution:

Attachment 1 SJCERA Employer and Tier 2 Member Contribution Rates
Attachment 2 Table 1A – General Member Contribution Rates, Basic Half Rate (Tier 1)
Attachment 3 Table 1B – General Member Contribution Rates, Basic Half Rate Plus 14 Percent (Tier 1)
Attachment 4 Table 2A – Safety Member Contribution Rates, Basic Half Rate (Tier 1)
Attachment 5 Table 2B – Safety Member Contribution Rates, Basic Half Rate Plus 33 Percent (Tier 1)

PASSED AND APPROVED by the Board of Retirement of the San Joaquin County Employees' Retirement Association on the 9th day of September 2022.

AYES:

NOES:

ABSTAIN:

ABSENT:

MICHAEL RESTUCCIA, Chair

Attest:

RAYMOND McCRAY, Secretary

Resolution 2022-09-01
Attachment 1

SJCERA EMPLOYER AND TIER 2 MEMBER CONTRIBUTION RATES - 2023

As determined by annual actuarial valuation as of January 1, 2022
Expressed as a Percentage of Active Member Payroll

	TIER 1			TIER 1 w/COLA Cost Sharing			TIER 1 w/COLA Cost Sharing Plus			TIER 2		
EMPLOYER CONTRIBUTIONS:	GENERAL	SAFETY	COMPOSITE TOTAL	GENERAL	SAFETY	COMPOSITE TOTAL	GENERAL	SAFETY	COMPOSITE TOTAL	GENERAL	SAFETY	COMPOSITE TOTAL
Normal Cost												
Basic	13.39%	22.36%	15.18%	13.39%	22.36%	15.18%	12.81%	20.66%	14.37%	7.85%	11.26%	8.26%
Post-retirement COLA	5.79%	10.77%	6.78%	2.93%	5.48%	3.44%	2.93%	5.48%	3.44%	2.50%	4.58%	2.76%
Total	19.18%	33.13%	21.96%	16.32%	27.84%	18.62%	15.74%	26.14%	17.81%	10.35%	15.84%	11.02%
UAL Amortization Cost												
Basic	19.11%	45.32%	24.29%	19.11%	45.32%	24.29%	19.11%	45.32%	24.29%	19.11%	45.32%	22.17%
Post-retirement COLA	10.24%	19.82%	12.13%	10.24%	19.82%	12.13%	10.24%	19.82%	12.13%	10.24%	19.82%	11.35%
Total	29.35%	65.14%	36.42%	29.35%	65.14%	36.42%	29.35%	65.14%	36.42%	29.35%	65.14%	33.52%
Total Plan Cost												
Basic	32.50%	67.68%	39.47%	32.50%	67.68%	39.47%	31.92%	65.98%	38.66%	26.96%	56.58%	30.43%
Post-Retirement COLA	16.03%	30.59%	18.91%	13.17%	25.30%	15.57%	13.17%	25.30%	15.57%	12.74%	24.40%	14.11%
Total	**48.53%**	**98.27%**	**58.38%**	**45.67%**	**92.98%**	**55.04%**	**45.09%**	**91.28%**	**54.23%**	**39.70%**	**80.98%**	**44.54%**
Total Plan Normal Cost	23.29%	38.34%	26.29%	23.29%	38.34%	26.29%	23.29%	38.34%	26.29%	20.70%	31.68%	22.04%
MEMBER CONTRIBUTIONS:	Table 1A "Basic Rate" from 1/1/22 Valuation Report	Table 2A "Basic Rate" from 1/1/22 Valuation Report		Table 1A "Basic Rate" + "COLA Cost Share Rate" from 1/1/22 Valuation Report	Table 2A "Basic Rate" + "COLA Cost Share Rate" from 1/1/22 Valuation Report		Table 1B "114% of Basic Rate" + "COLA Cost Share Rate" from 1/1/22 Valuation Report	Table 2B "133% of Basic Rate" + "COLA Cost Share Rate" from 1/1/22 Valuation Report		**10.35%**	**15.84%**	

Printed 8/31/22 3:46 PM

APPENDIX G – MEMBER CONTRIBUTION RATES

Table 1A

General Member Contribution Rates
Basic Half Rate (Government Code Section 31621.3)

	Basic Rate		COLA Cost-Sharing Rate[1]	
Entry Age	**1st $350/month**	**Over $350**	**1st $350/month**	**Over $350**
16	2.09%	3.14%	1.39%	2.09%
17	2.09%	3.14%	1.39%	2.09%
18	2.09%	3.14%	1.39%	2.09%
19	2.09%	3.14%	1.39%	2.09%
20	2.09%	3.14%	1.39%	2.09%
21	2.13%	3.20%	1.43%	2.15%
22	2.17%	3.26%	1.47%	2.21%
23	2.21%	3.32%	1.51%	2.27%
24	2.25%	3.38%	1.56%	2.34%
25	2.30%	3.45%	1.59%	2.39%
26	2.34%	3.51%	1.63%	2.45%
27	2.39%	3.58%	1.67%	2.50%
28	2.43%	3.65%	1.70%	2.55%
29	2.48%	3.72%	1.73%	2.60%
30	2.53%	3.79%	1.77%	2.65%
31	2.57%	3.86%	1.79%	2.69%
32	2.63%	3.94%	1.83%	2.74%
33	2.67%	4.01%	1.86%	2.79%
34	2.73%	4.09%	1.90%	2.85%
35	2.78%	4.17%	1.94%	2.91%
36	2.84%	4.26%	1.99%	2.98%
37	2.89%	4.34%	2.04%	3.06%
38	2.95%	4.43%	2.09%	3.14%
39	3.02%	4.53%	2.15%	3.23%
40	3.07%	4.60%	2.21%	3.32%
41	3.12%	4.68%	2.27%	3.40%
42	3.17%	4.76%	2.31%	3.47%
43	3.23%	4.84%	2.37%	3.55%
44	3.29%	4.93%	2.43%	3.64%
45	3.35%	5.02%	2.49%	3.73%
46	3.41%	5.11%	2.55%	3.82%
47	3.45%	5.17%	2.57%	3.85%
48	3.49%	5.24%	2.58%	3.87%
49	3.55%	5.32%	2.59%	3.89%
50	3.61%	5.41%	2.59%	3.89%
51	3.62%	5.43%	2.60%	3.90%
52	3.64%	5.46%	2.59%	3.89%
53	3.59%	5.38%	2.57%	3.85%
54+	3.52%	5.28%	2.51%	3.77%

[1] Some members and employers share equally the contributions required for post-retirement cost-of-living adjustments (COLA) in accordance with Government Code Section 31873. For other members, the employers pay all of the contributions required for post-retirement COLA.

Rates include the employee share of the administrative expenses.

Resolution 2022-09-01
Attachment 3

APPENDIX G – MEMBER CONTRIBUTION RATES

Table 1B

General Member Contribution Rates

Basic Half Rate (Government Code Section 31621.3) + 14%, not greater than 1/2 Normal Cost

	Basic Rate		COLA Cost-Sharing Rate[1]	
Entry Age	1st $350/month	Over $350	1st $350/month	Over $350
16	2.39%	3.58%	1.39%	2.09%
17	2.39%	3.58%	1.39%	2.09%
18	2.39%	3.58%	1.39%	2.09%
19	2.39%	3.58%	1.39%	2.09%
20	2.39%	3.58%	1.39%	2.09%
21	2.43%	3.65%	1.43%	2.15%
22	2.48%	3.72%	1.47%	2.21%
23	2.52%	3.78%	1.52%	2.28%
24	2.57%	3.85%	1.56%	2.34%
25	2.62%	3.93%	1.60%	2.40%
26	2.67%	4.00%	1.64%	2.46%
27	2.72%	4.08%	1.67%	2.51%
28	2.77%	4.16%	1.70%	2.55%
29	2.83%	4.24%	1.74%	2.61%
30	2.88%	4.32%	1.77%	2.65%
31	2.93%	4.40%	1.80%	2.70%
32	2.99%	4.49%	1.83%	2.74%
33	3.05%	4.57%	1.86%	2.79%
34	3.11%	4.66%	1.90%	2.85%
35	3.17%	4.75%	1.94%	2.91%
36	3.24%	4.86%	1.99%	2.99%
37	3.30%	4.95%	2.04%	3.06%
38	3.37%	5.05%	2.09%	3.14%
39	3.44%	5.16%	2.15%	3.23%
40	3.49%	5.24%	2.21%	3.32%
41	3.56%	5.34%	2.27%	3.40%
42	3.62%	5.43%	2.31%	3.47%
43	3.68%	5.52%	2.37%	3.56%
44	3.75%	5.62%	2.43%	3.64%
45	3.81%	5.72%	2.49%	3.74%
46	3.89%	5.83%	2.55%	3.83%
47	3.93%	5.89%	2.57%	3.85%
48	3.98%	5.97%	2.58%	3.87%
49	4.04%	6.06%	2.59%	3.89%
50	4.11%	6.17%	2.59%	3.89%
51	4.13%	6.19%	2.60%	3.90%
52	4.15%	6.22%	2.60%	3.90%
53	4.09%	6.13%	2.57%	3.85%
54+	4.01%	6.02%	2.52%	3.78%

[1] Some members and employers share equally the contributions required for post-retirement cost-of-living adjustments (COLA) in accordance with Government Code Section 31873. For other members, the employers pay all of the contributions required for post-retirement COLA.

Rates include the employee share of the administrative expenses.

Resolution 2022-09-01
Attachment 4

APPENDIX G – MEMBER CONTRIBUTION RATES

Table 2A

Safety Member Contribution Rates
Basic Half Rate (Government Code Section 31639.5)

	Basic Rate		COLA Cost-Sharing Rate[1]	
Entry Age	1st $350/month	Over $350	1st $350/month	Over $350
16	3.14%	4.71%	3.25%	4.88%
17	3.14%	4.71%	3.25%	4.88%
18	3.14%	4.71%	3.25%	4.88%
19	3.14%	4.71%	3.25%	4.88%
20	3.14%	4.71%	3.25%	4.88%
21	3.18%	4.77%	3.35%	5.03%
22	3.23%	4.84%	3.40%	5.10%
23	3.27%	4.91%	3.45%	5.18%
24	3.31%	4.97%	3.50%	5.25%
25	3.36%	5.04%	3.55%	5.32%
26	3.41%	5.11%	3.59%	5.39%
27	3.46%	5.19%	3.64%	5.46%
28	3.51%	5.26%	3.68%	5.52%
29	3.55%	5.33%	3.72%	5.58%
30	3.61%	5.41%	3.76%	5.64%
31	3.66%	5.49%	3.77%	5.65%
32	3.71%	5.57%	3.78%	5.67%
33	3.77%	5.65%	3.79%	5.69%
34	3.82%	5.73%	3.81%	5.71%
35	3.88%	5.82%	3.83%	5.74%
36	3.94%	5.91%	3.86%	5.79%
37	4.01%	6.01%	3.94%	5.91%
38	4.07%	6.11%	4.01%	6.01%
39	4.15%	6.22%	4.09%	6.13%
40	4.22%	6.33%	4.13%	6.19%
41	4.31%	6.46%	4.18%	6.27%
42	4.40%	6.60%	4.23%	6.35%
43	4.51%	6.77%	4.31%	6.46%
44	4.60%	6.90%	4.38%	6.57%
45	4.59%	6.89%	4.44%	6.66%
46	4.59%	6.89%	4.47%	6.70%
47	4.62%	6.93%	4.49%	6.74%
48	4.49%	6.73%	4.53%	6.79%
49+	4.36%	6.54%	4.55%	6.82%

[1] Some members and employers share equally the contributions required for post-retirement cost-of-living adjustments (COLA) in accordance with Government Code Section 31873. For other members, the employers pay all of the contributions required for post-retirement COLA.

Rates include the employee share of the administrative expenses.

APPENDIX G – MEMBER CONTRIBUTION RATES

Table 2b

Safety Member Contribution Rates

Basic Half Rate (Government Code Section 31639.5) + 33% , not greater than 1/2 Normal Cost

	Basic Rate		COLA Cost-Sharing Rate[1]	
Entry Age	1st $350/month	Over $350	1st $350/month	Over $350
16	4.17%	6.26%	3.25%	4.88%
17	4.17%	6.26%	3.25%	4.88%
18	4.17%	6.26%	3.25%	4.88%
19	4.17%	6.26%	3.25%	4.88%
20	4.17%	6.26%	3.25%	4.88%
21	4.23%	6.34%	3.35%	5.03%
22	4.29%	6.44%	3.40%	5.10%
23	4.35%	6.53%	3.45%	5.18%
24	4.41%	6.61%	3.51%	5.26%
25	4.47%	6.70%	3.55%	5.32%
26	4.53%	6.80%	3.59%	5.39%
27	4.60%	6.90%	3.64%	5.46%
28	4.67%	7.00%	3.68%	5.52%
29	4.73%	7.09%	3.72%	5.58%
30	4.80%	7.20%	3.76%	5.64%
31	4.87%	7.30%	3.77%	5.65%
32	4.94%	7.41%	3.78%	5.67%
33	5.01%	7.51%	3.79%	5.69%
34	5.08%	7.62%	3.81%	5.71%
35	5.16%	7.74%	3.83%	5.75%
36	5.24%	7.86%	3.87%	5.80%
37	5.33%	7.99%	3.94%	5.91%
38	5.42%	8.13%	4.01%	6.01%
39	5.51%	8.27%	4.09%	6.13%
40	5.61%	8.42%	4.13%	6.20%
41	5.73%	8.59%	4.19%	6.28%
42	5.85%	8.78%	4.24%	6.36%
43	6.00%	9.00%	4.31%	6.47%
44	6.12%	9.18%	4.38%	6.57%
45	6.11%	9.16%	4.44%	6.66%
46	6.11%	9.16%	4.47%	6.70%
47	6.15%	9.22%	4.50%	6.75%
48	5.97%	8.95%	4.53%	6.79%
49+	5.80%	8.70%	4.55%	6.83%

[1] Some members and employers share equally the contributions required for post-retirement cost-of-living adjustments (COLA) in accordance with Government Code Section 31873. For other members, the employers pay all of the contributions required for post-retirement COLA.

Rates include the employee share of the administrative expenses.

Cheiron Advisory: LDROM for Public Plans

The Actuarial Standards Board (ASB) recently issued a final revision to Actuarial Standard of Practice No. 4 (ASOP 4) entitled “Measuring Pension Obligations and Determining Pension Plan Costs or Contributions.” Cheiron issued a brief Alert on the revision in February. This Advisory explores the calculation options and communication challenges public pension plans face related to the newly required Low-Default-Risk Obligation Measure (LDROM) for all pension funding valuation reports with a valuation date on or after February 15, 2023.

History of LDROM

The original impetus to require the disclosure of LDROM came from financial economists promoting the use of a measure known as the market value of liabilities (MVL). However, details and options available under ASOP No. 4 for the calculation of an LDROM differ in two key respects from an MVL measurement.

First, while an MVL specifically refers to the benefits based on the current salary and service of plan members, the LDROM may be based on a range of actuarial cost methods, including Entry Age. Second, ASOP No. 4 provides a range of examples of fixed income securities that meet the definition of “low-default-risk” while an MVL would require the use of securities reflecting the financial health of the plan sponsor. The choices made among these options will produce measures with somewhat different meanings, and ASOP No. 4 provides only limited guidance as to the intended purpose of the measure. The standard gives discretion to the actuary to interpret the purpose of the LDROM and to disclose the corresponding rationale for the methods and assumptions.

Because the options selected to calculate the LDROM may vary depending on the plan and its situation, we do not believe a one-size-fits-all approach is appropriate for most public pension plans. For many public pension plans with a traditional defined benefit structure, one possible approach will be to calculate what the plan's funding target would be if plan assets were invested in a high quality corporate bond portfolio with cash flows that reasonably match the projected benefit payments.

Communication Challenges

In most cases, the LDROM will be significantly larger than the Actuarial Liability used in the funding valuation and the sponsor’s annual comprehensive financial report. This difference may cause some confusion. Critics of public pension plans may seize on this difference to accuse the plan of hiding the “true” liability. There are multiple correct measures of a pension liability, and the appropriate measure depends on the purpose of the measurement. It will therefore be important for plans to establish a framework to easily communicate what these two measures represent and the meaning of the difference between the two measures.

The specific framework of this explanation will depend on the options used in calculating the LDROM, but ASOP No. 4 requires it to include the rationale for the discount rate selected and commentary explaining the significance of the LDROM regarding ***funded status, contributions, and security of benefits***.

One possible approach for public pension plans will be to calculate LDROM using the actuarial cost method from the funding valuation and a discount rate derived from the yields on high quality corporate bonds. The Actuarial Liability used in the funding valuation represents a funding target based on an assumption that assets are invested in the plan's diversified portfolio while, under this possible approach, the LDROM would represent the analogous funding target if plan assets were invested entirely in corporate bonds. **The difference between the funding Actuarial Liability and the LDROM using this approach would represent the expected savings due to investing in a diversified portfolio compared to a corporate bond portfolio.** Note that these savings are not guaranteed; they are only expected savings and future contributions will need to vary based on the actual returns from the diversified portfolio.

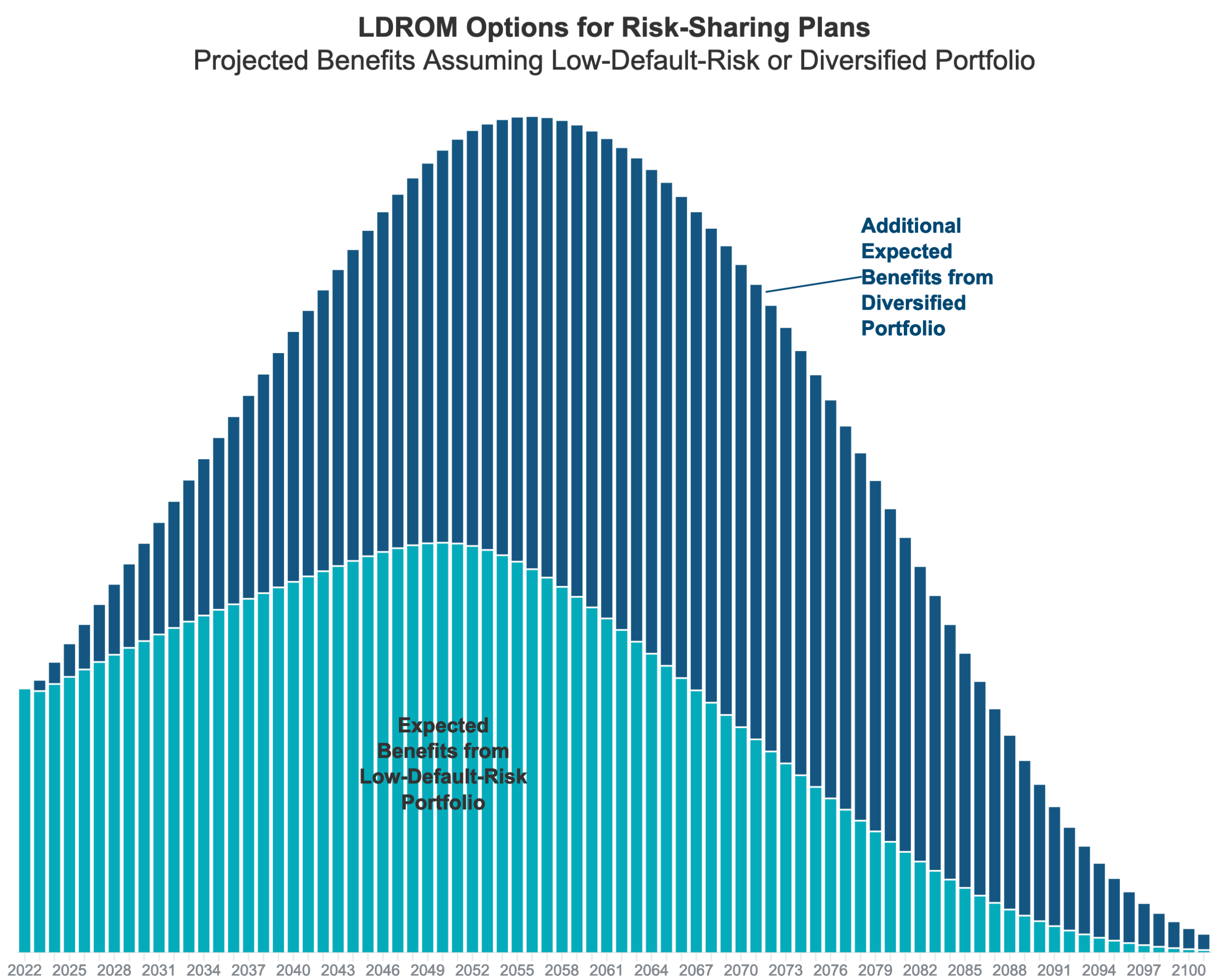
Conversely, using this approach, **the difference between these measures also represents the cost of reducing investment risk from the levels of the plan's diversified portfolio to the levels of a low-default-risk fixed income portfolio.** While it is extremely unlikely that a public pension plan would invest all of its assets in a low-default-risk portfolio, as plans become better funded and if interest rates increase, decisions about reducing some investment risk may become more relevant to plan trustees. An LDROM based on corporate bond yields can be used to estimate the expected cost impact of reducing investment risk by increasing investments in corporate bonds.

Here is an illustration of this framework.

This formulation of the LDROM could be included within the risk assessment section of a public pension plan's valuation report. Risk assessments consider the potential consequences of the key risks to the plan, including investment risks. The LDROM can be used to supplement this information with the expected taxpayer savings due to taking investment risk or the cost of reducing or eliminating investment risk.

Complications for Risk-Sharing Features

A growing number of public pension plans include some form of risk-sharing that adjusts future benefits under certain conditions, often based on investment returns. If plan assets are invested in a low-default-risk portfolio instead of a diversified portfolio, the expected risk-sharing benefits will be reduced. When calculating LDROM, ASOP No. 4 permits the use of either the projected benefits based on the diversified portfolio or the projected benefits based on the low-default-risk portfolio. For traditional defined benefit plans, there is no difference. But for risk-sharing plans, the difference can be significant, and the approaches serve different purposes, both of which may be complex to explain.



When calculating LDROM for a risk-sharing plan, expected benefits can be projected either assuming plan assets are invested (1) in low-default-risk investments or (2) in the plan's diversified portfolio.

LDROM Options for Risk-Sharing Plans

Conclusion

The recent revisions to ASOP No. 4 require actuaries to calculate an LDROM and to provide commentary explaining its significance with respect to the plan's funded status, contributions, and security of benefits. Cheiron pension consultants are ready to assist you with the implementation of these new requirements.

For more information, the LDROM requirements are described in Section 3.11 of ASOP No. 4.

MEKETA

INVESTMENT GROUP

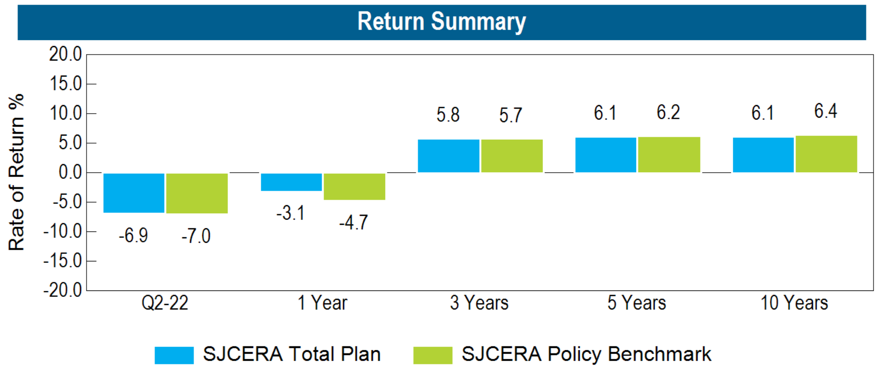
San Joaquin County Employees' Retirement Association (SJCERA)

Q2 2022

Quarterly Report

Table of Contents

Introduction



Summary of Cash Flows	Second Quarter	One Year
Beginning Market Value	$4,032,449,191	$3,809,830,770
Net Cash Flow	$12,970,796	$77,829,179
Net Investment Change	-$277,131,556	-$119,371,517
Ending Market Value	$3,768,288,432	$3,768,288,432

	QTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	15 Yrs	20 Yrs	25 Yrs
SJCERA Total Plan - Net	**-6.9**	**-3.1**	**5.8**	**6.1**	**6.1**	**3.6**	**5.6**	**5.8**
SJCERA Total Plan - Gross	**-6.7**	**-2.6**	**6.4**	**6.8**	**6.9**	**4.4**	**6.2**	**6.3**
SJCERA Policy Benchmark[2]	*-7.0*	*-4.7*	*5.7*	*6.2*	*6.4*	*4.6*	*6.2*	*6.0*
Over/Under (vs. Net)	0.1	1.6	0.1	-0.1	-0.3	-1.0	-0.6	-0.2
InvMetrics Public DB > $1B Net Median[1]	*-8.6*	*-7.4*	*6.3*	*6.6*	*7.6*	*5.5*	*6.8*	*6.6*

[1]Investment Metrics Total Fund Public Universe >$1 Billion, net of fees.
[2]Policy Benchmark composition is listed in the Appendix.

Introduction

The SJCERA Total Portfolio had an aggregate value of $3.8 billion as of June 30, 2022. During the latest quarter, the Total Portfolio decreased in value by $264.2 million, and over the one-year period, the Total Portfolio decreased by $41.5 million. The movements over the quarter and one-year periods were primarily driven by investment returns. The IMF is forecasting Global growth in 2022 of 3.2%, significantly down again from prior 2022 estimates with U.S. GDP growth of 2.5%. The IMF also forecasts 2022 and 2023 global inflation of 7.4% and 4.8%, respectively.

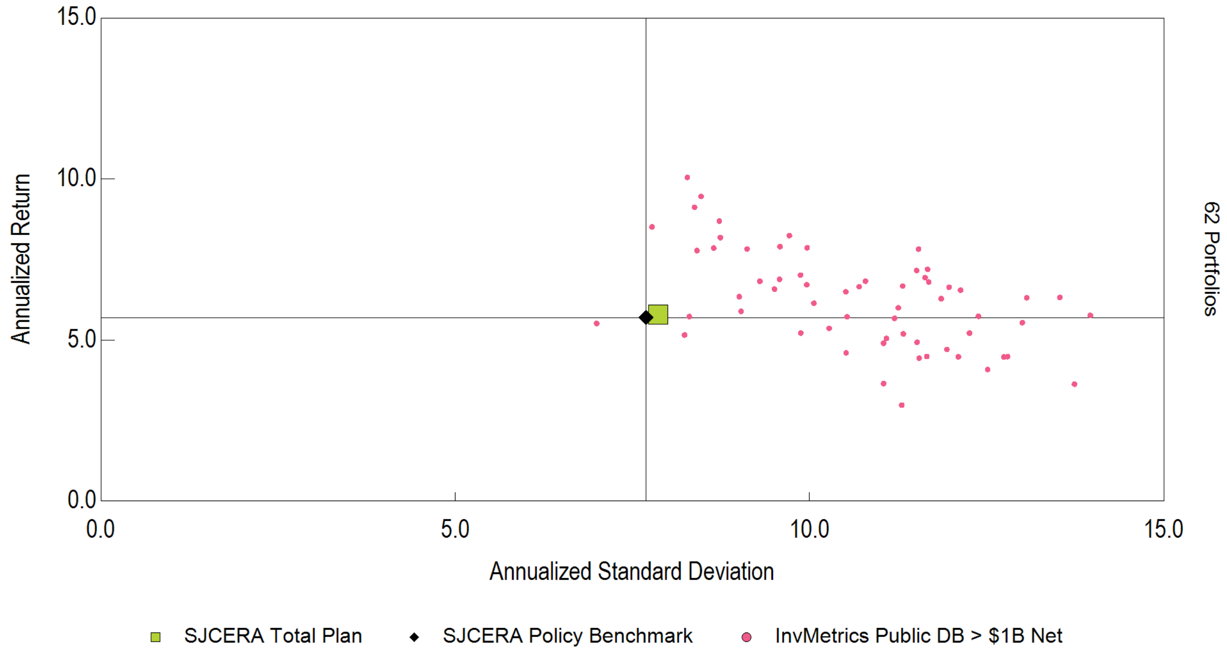
Returns for US stocks, as measured by the Russell 1000, and US Treasuries, as measured by the Bloomberg Long US Government bond index, for the second quarter of 2022 were -16.7% and -11.9%, respectively. Commodities were down -5.7% for the quarter, as measured by the Bloomberg Commodity Index and global equity returns, as measured by the MSCI ACWI IMI, were down -15.8% for the quarter ended June 30, 2022.

Recent Investment Performance

The Total Portfolio outperformed the policy benchmark for the quarter, 1- and 3-year periods by 0.1%. 1.6% and 0.1%, respectively, and the Median Public Fund for the quarter and 1-year periods by 1.7% and 4.3%, respectively. Over the 5-, 10-, 15-, 20- and 25-year periods, the portfolio trailed its benchmark by (0.1%), (0.3%), (1.0%), (0.6%) and (0.2%), respectively, and trailed the Median Public Fund by for the 3-, 5-, 10-, 15, 20-, and 25-year periods by (0.5%), (0.5%), (1.5%), (1.9%), (1.2%), and (0.8%), respectively. However, the portfolio earned higher risk adjusted returns, as measured by the Sharpe Ratio, than the Median Public Fund over all time periods measured.

Risk-Adjusted Return vs Peers				
	1 Yr	3 Yrs	5 Yrs	10 Yrs
SJCERA Total Plan - Net	**-3.1**	**5.8**	**6.1**	**6.1**
Risk Adjusted Median	-6.9	4.5	4.7	5.6
Excess Return	3.7	1.3	1.4	0.5

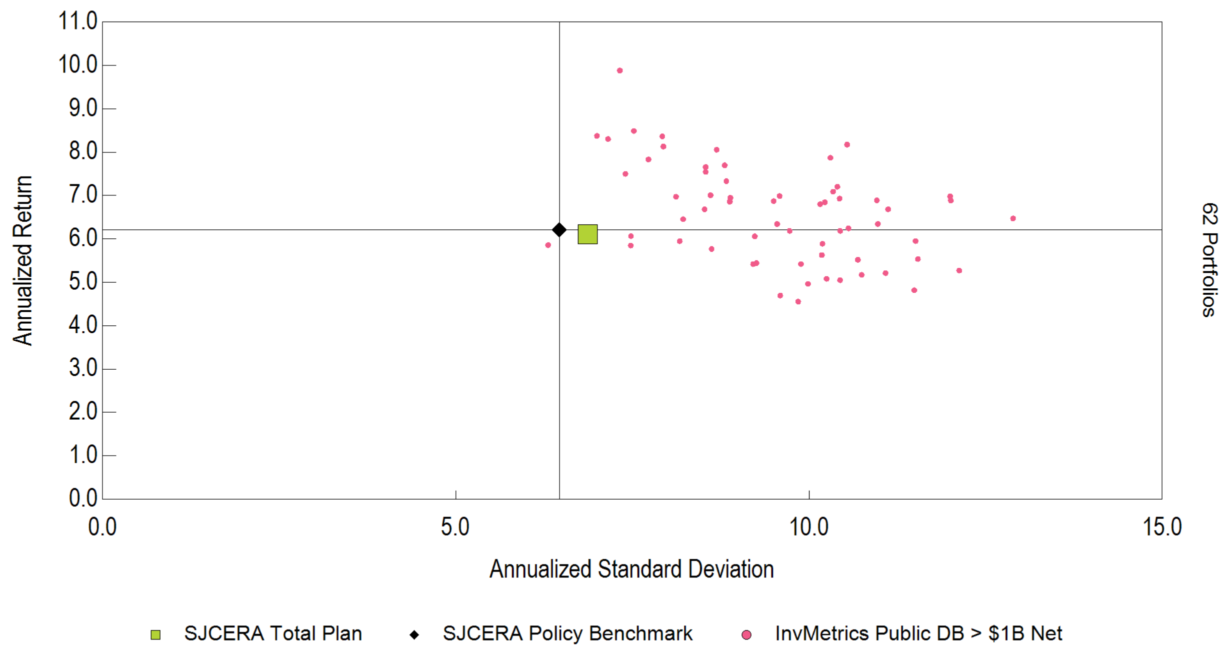
Total Fund Risk/Return Analysis
Latest 3 Years



	Anlzd Return[1]	Anlzd Standard Deviation	Sharpe Ratio[2]
SJCERA Total Plan	5.79%	7.86%	0.67
SJCERA Policy Benchmark	5.70%	7.69%	0.68
InvMetrics Public DB > $1B Net Median[3]	6.30%	10.92%	0.55

[1]Returns are net of fees.
[2]Computed as annualized return less the risk free rate, divided by the annualized standard deviation.
[3]Investment Metrics Total Fund Public Universe >$1 Billion, net of fees.

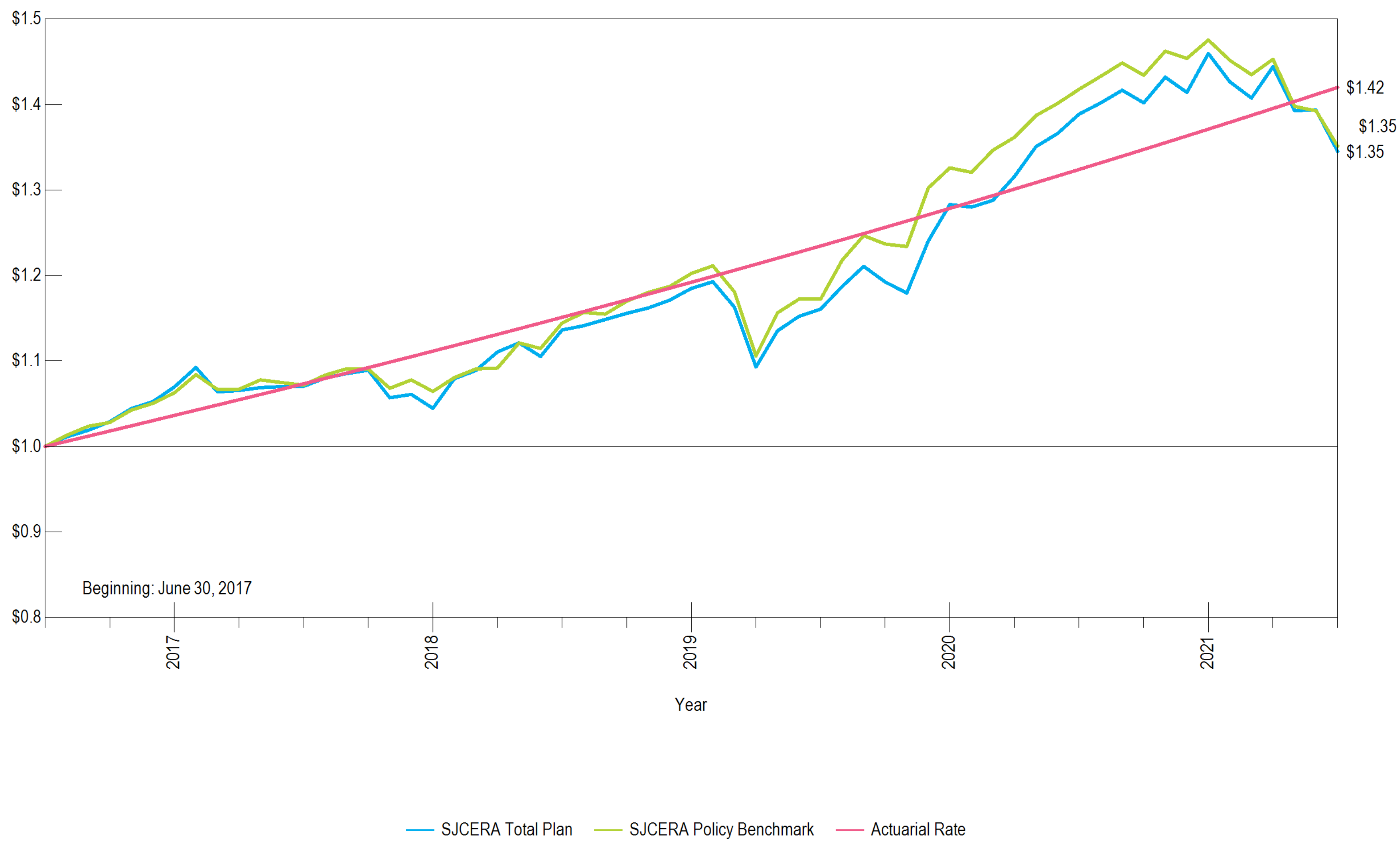
Total Fund Risk/Return Analysis
Latest 5 Years



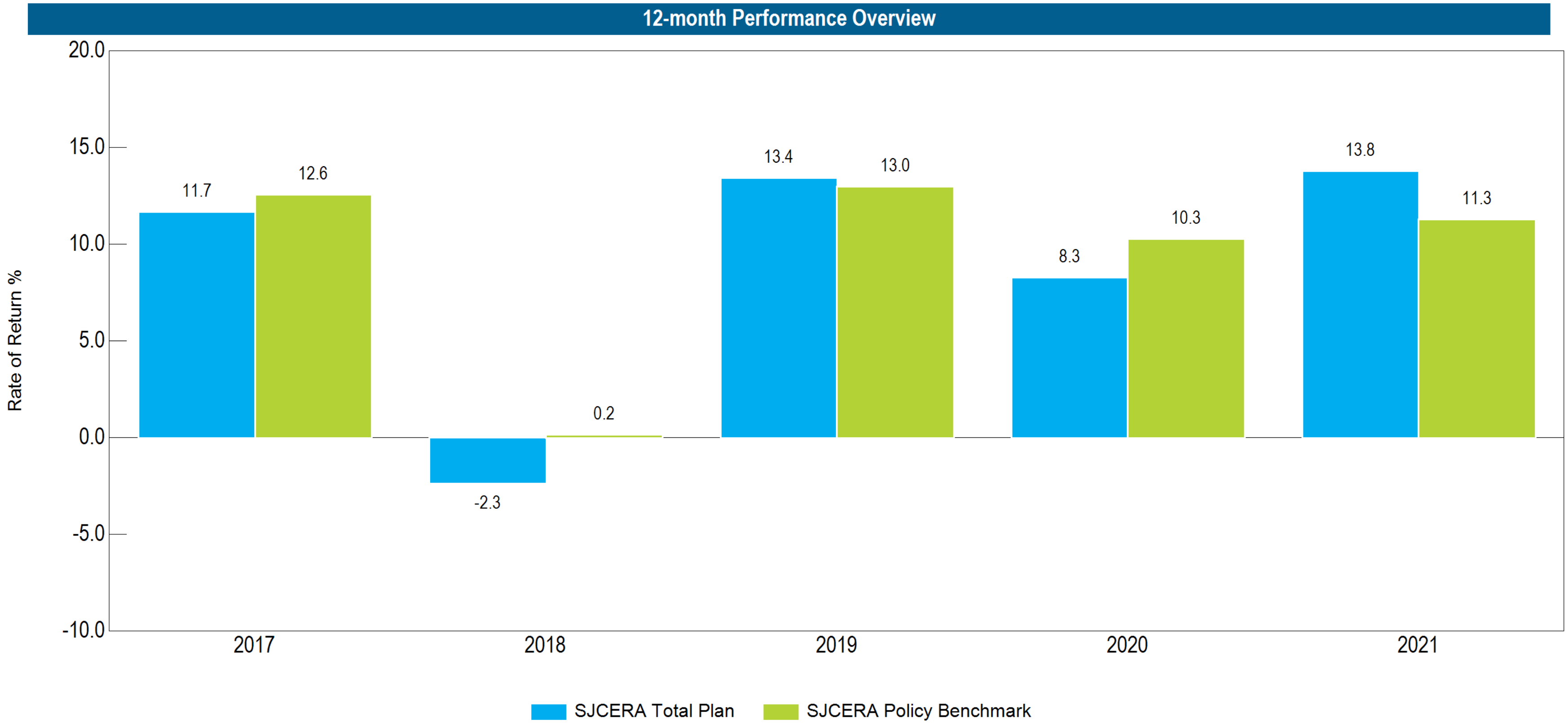
	Anlzd Return[1]	Anlzd Standard Deviation	Sharpe Ratio[2]
SJCERA Total Plan	6.11%	6.87%	0.74
SJCERA Policy Benchmark	6.21%	6.47%	0.80
InvMetrics Public DB > $1B Net Median[3]	6.58%	9.59%	0.57

[1]Returns are net of fees.
[2]Computed as annualized return less the risk free rate, divided by the annualized standard deviation.
[3]Investment Metrics Total Fund Public Universe >$1 Billion, net of fees.

Growth of a Dollar - Latest 5 Years



[1] 7.0% Actuarial Rate from 1/1/2020 to present. 7.25% Actuarial Rate from 1/1/2018 to 12/31/2019. 7.4% Actuarial Rate from 8/1/2016-12/31/2017. 7.5% Actuarial Rate from 1/1/2012-7/31/2016; previously 8.0%



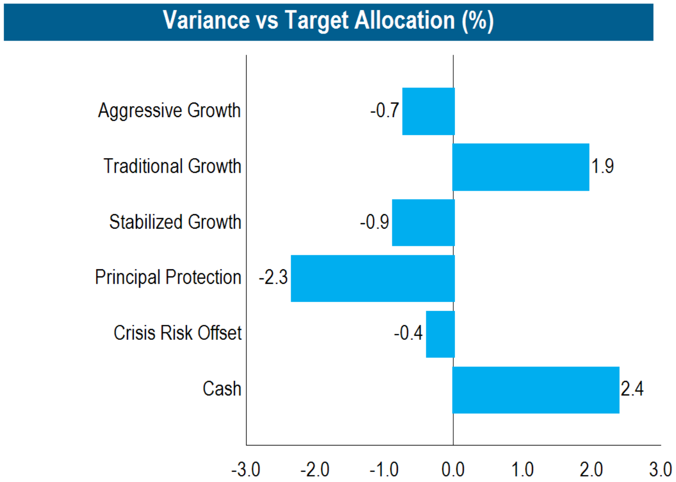
12-month absolute results have been positive over four of the last five calendar year periods, net of fees. The SJCERA Total Portfolio outperformed the policy target benchmark during one of these five periods, net of fees.

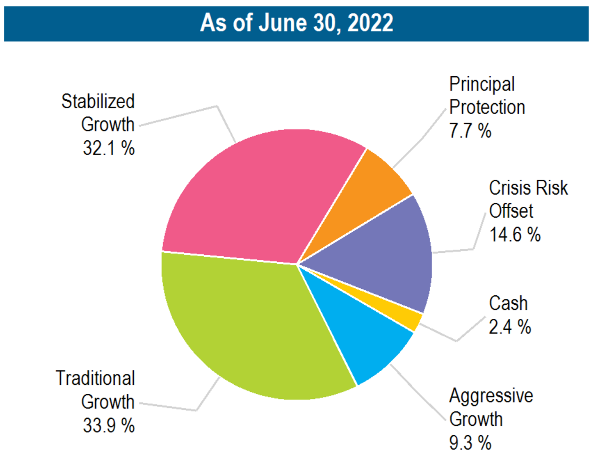
Portfolio Review

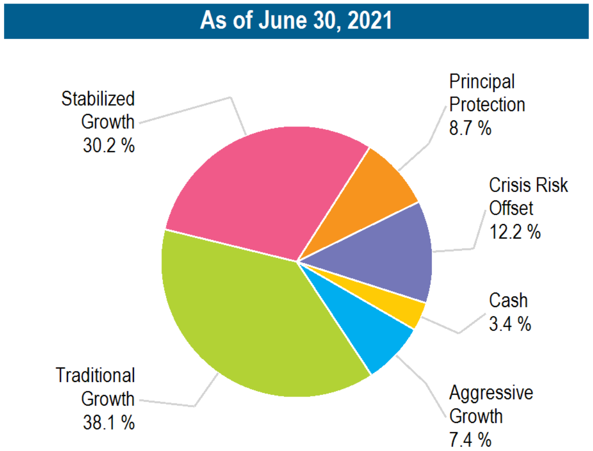
Asset Allocation vs. Target

	Current	Current	Policy	Difference*
Broad Growth	**$2,839,174,421**	**75.3%**	**75.0%**	**0.3%**
Aggressive Growth	$349,458,190	9.3%	10.0%	-0.7%
Traditional Growth	$1,279,055,877	33.9%	32.0%	1.9%
Stabilized Growth	$1,210,660,354	32.1%	33.0%	-0.9%
Diversified Growth	**$839,607,553**	**22.3%**	**25.0%**	**-2.7%**
Principal Protection	$288,814,356	7.7%	10.0%	-2.3%
Crisis Risk Offset	$550,793,197	14.6%	15.0%	-0.4%
Cash[2]	**$89,506,457**	**2.4%**	**0.0%**	**2.4%**
Cash	$89,506,457	2.4%	0.0%	2.4%
Total[1]	**$3,768,288,432**	**100.0%**	**100.0%**	

*Difference between Policy and Current Allocation







[1]Market values may not add up due to rounding.
[2]Cash asset allocation includes Parametric Overlay.

Asset Class Performance Net-of-Fees | As of June 30, 2022

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
SJCERA Total Plan	**3,768,288,432**	**100.0**	**-6.9**	**-3.1**	**5.8**	**6.1**	**6.1**
SJCERA Policy Benchmark[2]			*-7.0*	*-4.7*	*5.7*	*6.2*	*6.4*
Broad Growth	**2,839,174,421**	**75.3**	**-8.9**	**-4.1**	**6.6**	**7.1**	**7.2**
Aggressive Growth Lag	**349,458,190**	**9.3**	**4.3**	**35.8**	**20.4**	**17.6**	**13.4**
Aggressive Growth Blend			*1.2*	*19.2*	*16.7*	*12.4*	*10.7*
Traditional Growth	**1,279,055,877**	**33.9**	**-15.4**	**-15.2**	**4.3**	**5.7**	**8.2**
MSCI ACWI IMI Net			*-15.8*	*-16.5*	*6.6*	*7.5*	*9.3*
Stabilized Growth	**1,210,660,354**	**32.1**	**-4.6**	**0.7**	**5.8**	**6.0**	**4.1**
SJCERA Stabilized Growth Benchmark[4]			*-2.1*	*1.7*	*4.2*	*4.7*	*5.6*
Diversifying Strategies	**839,607,553**	**22.3**	**1.3**	**2.8**	**3.2**	**3.5**	**3.9**
Principal Protection	**288,814,356**	**7.7**	**-3.9**	**-8.4**	**-1.0**	**1.1**	**2.8**
Bloomberg US Aggregate TR			*-4.7*	*-10.3*	*-0.9*	*0.9*	*1.5*
Crisis Risk Offset Asset Class	**550,793,197**	**14.6**	**5.2**	**11.9**	**6.2**	**5.2**	**5.8**
CRO Benchmark[3]			*-1.5*	*1.5*	*4.5*	*4.5*	*4.0*
Cash and Misc Asset Class	**65,479,400**	**1.7**	**0.1**	**0.1**	**0.5**	**0.8**	**0.5**
ICE BofA 91 Days T-Bills TR			*0.1*	*0.2*	*0.6*	*1.1*	*0.6*

[1]Market values may not add up due to rounding.
[2]Policy Benchmark composition is listed in the Appendix.
[3]30% ICE BofAML 3 month US T-Bill + 4%, 52% 50% BB High Yield/50% S&P Leverage Loans, 18% NCREIF ODCE + 1% Lag.
[4](1/3) BB Long Duration Treasuries, (1/3) BTOP50 Index, (1/3) 5% Annual.

Asset Class Performance Net-of-Fees | As of June 30, 2022

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Aggressive Growth Lag[2]	**349,458,190**	**100.0**	**4.3**	**35.8**	**20.4**	**17.6**	**13.4**
Aggressive Growth Blend			*1.2*	*19.2*	*16.7*	*12.4*	*10.7*
Blackrock Global Energy and Power Lag[2]	26,595,930	7.6	2.3	10.6	--	--	--
MSCI ACWI +2% Blend			*-4.8*	*9.9*	--	--	--
Lightspeed Venture Partners Select V	4,191,123	1.2	--	--	--	--	--
Morgan Creek III Lag[2]	5,108,214	1.5	-3.4	-27.0	-17.8	-5.7	--
MSCI ACWI +2% Blend			*-4.8*	*9.9*	*16.6*	*12.3*	--
Morgan Creek V Lag[2]	8,830,853	2.5	-0.2	19.7	14.4	13.8	--
MSCI ACWI +2% Blend			*-4.8*	*9.9*	*16.6*	*12.3*	--
Morgan Creek VI Lag[2]	29,655,200	8.5	-0.7	41.1	24.7	22.0	--
MSCI ACWI +2% Blend			*-4.8*	*9.9*	*16.6*	*12.3*	--
Ocean Avenue II Lag[2]	41,562,241	11.9	3.7	48.4	37.7	33.8	--
MSCI ACWI +2% Blend			*-4.8*	*9.9*	*16.6*	*12.3*	--
Ocean Avenue III Lag[2]	54,261,818	15.5	9.1	53.9	29.2	35.8	--
MSCI ACWI +2% Blend			*-4.8*	*9.9*	*16.6*	*12.3*	--
Ocean Avenue IV Lag[2]	52,263,369	15.0	5.3	39.5	--	--	--
MSCI ACWI +2% Lag[2]			*-4.8*	*9.9*	--	--	--
Non-Core Real Assets Lag[2,3]	111,860,713	32.0	3.8	36.3	15.6	10.7	10.2
NCREIF ODCE +1% lag (blend)[2]			*7.4*	*28.5*	*11.4*	*10.0*	*11.0*
Stellex Capital Partners II Lag[2]	15,128,729	4.3	11.4	--	--	--	--
MSCI ACWI +2% Lag[2]			*-4.8*	--	--	--	--

[1]Market values may not add up due to rounding.
[2]Lagged 1 quarter.
[3]Trailing Non-Core real estate performance includes returns provided by prior real estate consultant from inception through Q419.

Private Appreciation										
Investment Activity Statement for Since Inception by Fund										
Investment	Vintage Year	Original Inv. Commitment	Gross Contributions	Management Fees	Return of Capital	Distributions	Net Income	Unrealized Appreciation	Realized Gain	Ending Market Value
Blackrock Global Energy & Power III	2019	50,000,000	27,993,631	2,506,568	1,425,739	3,622,007	1,188,545	1,677,952	783,548	26,595,930
Lightspeed Venture Partners Select V	2021	40,000,000	4,400,000	200,000	-	-	(208,877)	-	-	4,191,123
Morgan Creek III	2015	10,000,000	9,900,000	447,947	2,325,492	717,761	(1,242,905)	(691,379)	185,751	5,108,214
Morgan Creek V	2013	12,000,000	11,520,000	765,291	5,102,450	7,391,741	(1,643,226)	4,106,110	7,342,160	8,830,853
Morgan Creek VI	2015	20,000,000	18,200,000	3,686,536	6,864,868	3,768,335	(1,092,221)	18,750,369	4,430,255	29,655,200
Ocean Avenue II*	2013	40,000,000	36,000,000	5,605,868	5,875,189	44,860,969	23,314,806	16,836,115	16,147,478	41,562,241
Ocean Avenue III	2016	50,000,000	46,000,000	6,595,863	25,500,000	22,500,000	12,321,981	23,004,380	20,935,457	54,261,818
Ocean Avenue IV	2019	50,000,000	38,500,000	3,966,882	3,250,000	3,250,000	2,207,104	17,926,035	130,231	52,263,369
Stellex II	2020	50,000,000	14,658,007	922,080	-	-	(1,218,277)	1,688,999	-	15,128,729
Total			**207,171,638**	**24,697,034**	**50,343,738**	**86,110,813**	**33,626,930**	**83,298,581**	**49,954,880**	**237,597,478**

* Ocean II commitment started at $30 Mil in Q213 and increased to $40 Mil in Q114.

Aggressive Growth

During the latest three-month period ending June 30, 2022, all eight of SJCERA's aggressive growth portfolios with returns outperformed their MSCI ACWI +2% Blended benchmark. Non-core real assets also outperformed. Please note that returns data for this asset class is lagged one quarter and the benchmark returned -4.8% for the trailing quarter.

BlackRock Global Energy and Power, a recently added fund with a focus on infrastructure, outperformed its target benchmark over the quarter and 1-year periods by 7.1% and 0.7%, respectively.

Morgan Creek III outperformed its benchmark by 1.4% for quarter. The manager lagged its benchmark over the 1-, 3- and 5-year periods by (36.9%), (34.4%) and (18.0%), respectively.

Morgan Creek V outperformed its benchmark over the quarter, 1- and 5-year periods by 4.6%, 9.8% and 1.5%, respectively, but lagged for the trailing 3-year period by (2.2%).

Morgan Creek VI produced a quarterly return of negative (0.7%), outperforming its benchmark by 4.1%. It also led for the 1-, 3- and 5-year periods by 31.2%, 8.1% and 21.5%, respectively.

Ocean Avenue II, a Private Equity Buyout fund-of-funds manager, outperformed its benchmark for the quarter, 1-, 3- and 5-year periods by 8.5%, 37.5%, 21.1% and 21.5%, respectively.

Ocean Avenue III, a Private Equity Buyout fund-of-funds manager, led its benchmark for the quarter, 1-, 3- and 5-year periods by 13.9%, 44.0%, 12.6% and 23.5%, respectively.

Ocean Avenue IV outperformed its benchmark for the quarter and 1-year periods by 10.1% and 29.6%, respectively.

Non-Core Private Real Assets underperformed its NCREIF ODCE +1% benchmark over the quarter and 10-year periods by (3.6%) and (0.8%), respectively. However, the sub-asset class outperformed its benchmark over the 1-, 3- and 5-year time periods by 7.8%, 4.2% and 0.7%, respectively.

Stellex II, the newest manager in the asset class, outperformed its benchmark during the quarter by 16.2%.

Asset Class Performance Net-of-Fees | As of June 30, 2022

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Traditional Growth	**1,279,055,877**	**100.0**	**-15.4**	**-15.2**	**4.3**	**5.7**	**8.2**
MSCI ACWI IMI Net			*-15.8*	*-16.5*	*6.6*	*7.5*	*9.3*
SJCERA Transition	2,999	0.0					
Northern Trust MSCI World	1,104,861,534	86.4	-15.9	-14.9	--	--	--
MSCI World IMI Net USD			*-16.3*	*-15.3*	*--*	*--*	*--*
PIMCO RAE Emerging Markets	70,717,316	5.5	-13.1	-19.3	1.1	2.6	3.6
MSCI Emerging Markets Gross			*-11.3*	*-25.0*	*0.9*	*2.5*	*3.4*
GQG Active Emerging Markets	57,908,646	4.5	-11.2	-22.6	--	--	--
MSCI Emerging Markets			*-11.4*	*-25.3*	*--*	*--*	*--*
Invesco REIT	45,565,381	3.6	-12.6	-4.2	4.0	6.0	7.6
FTSE NAREIT Equity REIT			*-17.0*	*-6.3*	*4.0*	*5.3*	*7.4*

[1] Market values may not add up due to rounding.

Traditional Growth

During the latest three-month period ending June 30, 2022, the traditional growth asset class outperformed its MSCI ACWI IMI benchmark by 0.2% and with three of the four managers outperforming their benchmarks.

Northern Trust MSCI World, the Plan's new Passive Global Equity manager, outperformed its benchmark over the past quarter by 0.4% but underperformed over the 1-year period by (0.4%).

PIMCO RAE Fundamental - Emerging, one of SJCERA's Active Emerging Markets Equity manager, underperformed its MSCI Emerging Markets Index benchmark for the quarter by (1.8%) but outperformed over the trailing 1-, 3-, 5- and 10-year time periods by 5.7%, 0.2%, 0.1% and 0.2%, respectively.

GQG, the Plan's new Active Emerging Markets Equity manager was opened during the third quarter of 2020 and outperformed its MSCI Emerging Markets benchmark by 0.2% for the quarter and 2.7% for the 1-year period.

Invesco, the Plan's Core US REIT manager, outperformed the FTSE NAREIT Equity REIT Index for the quarter, 1-, 5- and 10-year periods by 4.4%, 2.1%, 0.7% and 0.2%, respectively, and matched its benchmark's performance for the trailing 3-year period.

Asset Class Performance Net-of-Fees | As of June 30, 2022

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Stabilized Growth	**1,210,660,354**	**100.0**	**-4.6**	**0.7**	**5.8**	**6.0**	**4.1**
SJCERA Stabilized Growth Benchmark[2]			*-2.1*	*1.7*	*4.2*	*4.7*	*5.6*
Risk Parity Asset Class	**380,259,428**	**31.4**	**-15.3**	**-16.2**	**0.9**	**3.5**	**1.3**
ICE BofAML 3mo US TBill+4%			*1.1*	*4.2*	*4.7*	*5.2*	*4.7*
Bridgewater All Weather	190,102,200	15.7	-15.3	-14.1	1.3	3.5	3.4
Bridgewater All Weather (blend)			*1.1*	*4.2*	*4.7*	*5.2*	*5.4*
PanAgora Diversified Risk Multi Asset	190,157,228	15.7	-15.4	-18.2	0.6	3.5	--
ICE BofAML 3mo US TBill+4%			*1.1*	*4.2*	*4.7*	*5.2*	--
Liquid Credit	**215,337,871**	**17.8**	**-6.4**	**-9.2**	**-0.3**	**1.4**	**2.4**
50% BB US HY/50% S&P LSTA Lev Loan			*-7.1*	*-7.9*	*1.2*	*2.5*	*4.1*
Neuberger Berman	93,050,922	7.7	-8.2	-12.6	-0.9	--	--
33% ICEBofAMLUSHY /33%JPMEMBI Global Div /33% S&P LSTALevLoan			*-8.5*	*-12.3*	*-1.0*	--	--
Stone Harbor Absolute Return	122,286,949	10.1	-5.1	-6.4	0.3	1.5	2.4
ICE BofA-ML LIBOR			*0.1*	*0.1*	*0.8*	*1.3*	*0.9*
Private Credit Lag	**375,926,495**	**31.1**	**1.6**	**9.1**	**4.8**	**3.9**	**5.0**
Custom Credit Benchmark			*-2.5*	*1.3*	*4.4*	*4.4*	*5.0*
Blackrock Direct Lending Lag	79,782,155	6.6	0.9	6.2	--	--	--
CPI + 6% BLK Blend			*0.6*	*10.6*	--	--	--
Crestline Opportunity II Lag	17,738,175	1.5	-1.2	6.9	2.1	2.7	--
Credit Blend S&P/LSTA Lev Loan +3%			*0.6*	*10.6*	*9.0*	*8.8*	--
Davidson Kempner Long-Term Distressed Opportunities Fund V, L.P. Lag	49,020,155	4.0	2.9	14.3	--	--	--
Credit Blend S&P/LSTA Lev Loan +3%			*0.6*	*10.6*	--	--	--

[1]Market values may not add up due to rounding.
[2]30% ICE BofAML 3 month US T-Bill + 4%, 52% 50% BB High Yield/50% S&P Leverage Loans, 18% NCREIF ODCE +1% Lag.

Asset Class Performance Net-of-Fees | As of June 30, 2022

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
HPS European Asset Value II, LP Lag	32,790,932	2.7	3.2	7.8	--	--	--
Credit Blend S&P/LSTA Lev Loan +3%			*0.6*	*10.6*	*--*	*--*	*--*
Medley Opportunity II Lag	4,378,784	0.4	0.0	-12.7	-11.4	-10.1	--
Credit Blend S&P/LSTA Lev Loan +3%			*0.6*	*10.6*	*9.0*	*8.8*	*--*
Mesa West IV Lag	25,277,225	2.1	0.7	8.1	7.8	8.2	--
Credit Blend S&P/LSTA Lev Loan +3%			*0.6*	*10.6*	*9.0*	*8.8*	*--*
Oaktree Middle-Market Direct Lending Lag	31,237,534	2.6	3.7	16.9	18.3	--	--
CPI + 6% Oaktree Blend			*0.6*	*10.6*	*11.2*	*--*	*--*
Raven Opportunity II Lag	5,440,481	0.4	-1.6	208.2	37.2	25.5	--
Credit Blend S&P/LSTA Lev Loan +3%			*0.6*	*10.6*	*9.0*	*8.8*	*--*
Raven Opportunity III Lag	54,263,543	4.5	1.8	14.8	8.1	8.8	--
Credit Blend S&P/LSTA Lev Loan +3%			*0.6*	*10.6*	*9.0*	*8.8*	*--*
White Oak Summit Peer Lag	31,761,398	2.6	0.2	-0.9	3.4	5.1	--
Credit Blend S&P/LSTA Lev Loan +3%			*0.6*	*10.6*	*9.0*	*8.8*	*--*
White Oak Yield Spectrum Master V Lag	44,236,114	3.7	1.5	3.2	--	--	--
Credit Blend S&P/LSTA Lev Loan +3%			*0.6*	*10.6*	*--*	*--*	*--*
Private Core Real Assets Lag	239,136,560	19.8	9.2	42.8	19.1	15.9	15.4
NCREIF ODCE +1% lag (blend)[2]			*7.4*	*28.5*	*11.4*	*10.0*	*11.0*

[1]Market values may not add up due to rounding.
[2]NCREIF ODCE Net + 1% 10/1/2012-present. NCREIF Property Index previously.

Stabilized Growth

During the latest three-month period ending June 30, 2022, nine of SJCERA's sixteen Stabilized Growth managers outperformed their benchmarks while the other seven underperformed. Several managers in this asset class are in the process of investing capital and may underperform as assets are invested (typically known as the J-curve effect). Also, private core real assets outperformed its benchmark for the quarter.

Bridgewater All Weather, one of the Plan's Risk Parity managers, underperformed its benchmark over all time periods shown. For the quarter, 1-, 3-, 5- and 10-year periods it lagged by (16.4%), (16.3%), (3.4%), (1.7%) and (2.0%), respectively.

PanAgora DRMA, one of the Plan's Risk Parity managers, underperformed its T-Bill +4% benchmark over the quarter, 1-, 3- and 5-year time periods by (16.5%), (22.4%), (4.1%) and (1.7%), respectively.

Neuberger Berman, one of the Plan's Liquid Credit managers, outperformed its benchmark for the quarter and 3-year time periods by 0.3% and 0.1%, respectively, but underperformed for the trailing 1-year period by (0.3%).

Stone Harbor, the Plan's Absolute Return Fixed Income manager, underperformed its ICE BofAML LIBOR index over the quarter, 1- and 3-year periods by (5.2%), (6.5%) and (0.5%), respectively, but outperformed over the 5- and 10-year periods by 0.2% and 1.5%, respectively.

BlackRock Direct Lending, one of the Plan's newer Private Credit managers, outperformed its CPI +6% benchmark for the quarter by 0.3% but trailed over the 1-year period by (4.4%).

Crestline Opportunity II, the Plan's Credit, Niche Alternatives and Hedge Fund Secondaries manager, trailed its benchmark over the quarter, 1-, 3- and 5-year periods by (1.8%), (2.7%), (6.9%) and (6.1%), respectively.

Davidson Kempner, the Plan's newest Private Credit manager, was opened during the fourth quarter of 2020 and outperformed its CPI +6% benchmark by 2.3% and 3.7% for the trailing quarter and 1-year periods, respectively.

Stabilized Growth (Continued)

HPS EU, one of the Plan's newer Direct Lending managers, was opened during the third quarter of 2020 and outperformed its CPI +6% benchmark for the quarter by 2.6% but trailed for the 1-year period by (2.8%).

Medley Opportunity II, one of the Plan's Direct Lending managers, produced a flat estimated quarterly return, underperforming its CPI +6% annual return benchmark by (0.6%). It also lagged its benchmark over the 1-, 3- and 5-year time periods by (23.3%), (20.4%) and (18.9%), respectively.

Mesa West RE Income IV, one of the Plan's Commercial Mortgage managers, outperformed its CPI +6% benchmark by 0.1% for the quarter but lagged by (2.5%), (1.2%) and (0.6%) over the quarter, 1- and 3-year periods, respectively.

Oaktree, a Middle-Market Direct Lending manager, outperformed its MSCI ACWI +2% Blended benchmark for the quarter, 1- and 3-year trailing time periods by 2.1%, 6.3% and 7.1%, respectively.

Raven Capital II, one of the Plan's Direct Lending managers, lagged its benchmark for the quarter by (1.0%) but outperformed over the 1-, 3- and 5-year time periods by 197.6%, 28.2% and 16.7%, respectively.

Raven Capital III outperformed its CPI +6% annual target for the quarter and 1-year periods by 1.2% and 4.2%, respectively, but underperformed over the 3-year trailing period by (0.9%) and matched benchmark performance over the trailing 5-year period.

White Oak Summit Peer, one of the Plan's Direct Lending managers, underperformed its CPI +6% index over the trailing quarter, 1-, 3- and 5-year time periods by (0.4%), (11.5%), (5.6%) and (3.7%), respectively.

White Oak Yield Spectrum Master V led its CPI +6% benchmark over the quarter by 0.9% but underperformed for the 1-year period by (7.4%).

Private Core Private Real Estate, investing in Core Real Assets, outperformed its NCREIF ODCE +1% benchmark over the trailing quarter, 1-, 3-, 5- and 10-year time periods by 1.8%, 14.3%, 7.7%, 5.9% and 4.4%, respectively.

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Principal Protection	**288,814,356**	**100.0**	**-3.9**	**-8.4**	**-1.0**	**1.1**	**2.8**
Bloomberg US Aggregate TR			*-4.7*	*-10.3*	*-0.9*	*0.9*	*1.5*
Dodge & Cox Fixed Income	195,834,615	67.8	-4.7	-10.0	0.3	1.9	2.8
Bloomberg US Aggregate TR			*-4.7*	*-10.3*	*-0.9*	*0.9*	*1.5*
DoubleLine	25,209	0.0	0.1	-2.2	1.5	2.5	4.1
Bloomberg US Aggregate TR			*-4.7*	*-10.3*	*-0.9*	*0.9*	*1.5*
Loomis Sayles	92,954,532	32.2	-4.4	--	--	--	--
Bloomberg US Aggregate TR			*-4.7*	--	--	--	--

[1]Market values may not add up due to rounding.

Principal Protection

During the latest three-month period ending June 30, 2022, two of SJCERA's Principal Protection managers outperformed the Bloomberg US Aggregate Index benchmark and the third matched the Bloomberg US Agg for the quarter.

Dodge & Cox, the Plan's Core Fixed Income manager, earned a negative quarterly return of (4.7%), matching the US Agg. It led its benchmark by 0.3%, 1.2%, 1.0% and 1.3% for the trailing 1-, 3-, 5- and 10-year periods, respectively.

DoubleLine, the Plan's Mortgage-Backed Securities manager, provided a quarterly return of 0.1%, outperforming its benchmark by 4.8%. The manager also outperformed its benchmark over the trailing 1-, 3-, 5- and 10-year time periods by 8.1%, 2.4%, 1.6% and 2.6%, respectively.

Loomis Sayles, the Plan's newest Principal Protection manager, was funded in Q1 2022 and outperformed the US Agg during Q2 by 0.3%.

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Crisis Risk Offset Asset Class	**550,793,197**	**100.0**	**5.2**	**11.9**	**6.2**	**5.2**	**5.8**
CRO Benchmark[2]			*-1.5*	*1.5*	*4.5*	*4.5*	*4.0*
Long Duration	**123,910,812**	**22.5**	**-11.4**	**-18.2**	**-3.0**	**0.3**	**--**
Bloomberg US Treasury Long TR			*-11.9*	*-18.5*	*-2.9*	*0.5*	*--*
Dodge & Cox Long Duration	123,910,812	22.5	-11.4	-18.2	-3.0	0.3	--
Bloomberg US Treasury Long TR			*-11.9*	*-18.5*	*-2.9*	*0.5*	*--*
Systematic Trend Following	**249,113,064**	**45.2**	**10.0**	**30.2**	**16.5**	**9.2**	**8.6**
BTOP 50 (blend)			*6.7*	*20.8*	*10.9*	*7.4*	*4.8*
Graham Tactical Trend	122,231,102	22.2	11.2	32.5	15.1	9.5	--
SG Trend			*9.6*	*31.0*	*15.0*	*10.5*	*--*
Mount Lucas	126,881,962	23.0	8.8	28.0	17.7	8.8	7.7
BTOP 50 (blend)			*6.7*	*20.8*	*10.9*	*7.4*	*4.8*
Alternative Risk Premium	**177,769,322**	**32.3**	**14.4**	**19.8**	**0.9**	**2.7**	**3.2**
5% Annual (blend)			*1.2*	*5.0*	*5.0*	*5.0*	*7.4*
AQR Style Premia	52,906,269	9.6	12.4	31.9	3.3	-0.6	--
5% Annual			*1.2*	*5.0*	*5.0*	*5.0*	*--*
Lombard Odier	58,085,676	10.5	3.7	-3.1	-4.7	--	--
5% Annual			*1.2*	*5.0*	*5.0*	*--*	*--*
P/E Diversified Global Macro	66,777,377	12.1	31.1	49.6	3.0	4.2	--
5% Annual			*1.2*	*5.0*	*5.0*	*5.0*	*--*

[1]Market values may not add up due to rounding.
[2](1/3) BB Long Duration Treasuries, (1/3) BTOP50 Index, (1/3) 5% Annual.

Crisis Risk Offset

During the latest three-month period ending June 30, 2022, all six of SJCERA's Crisis Risk Offset managers outperformed their respective benchmarks.

Dodge & Cox Long Duration produced a negative quarterly return of (11.4%), outperforming the Bloomberg US Long Duration Treasuries by 0.5%. The manager also outperformed its benchmark over the 1-year period by 0.3% It lagged its benchmark for the 3- and 5-year periods by (0.1%) and (0.2%), respectively.

Graham, one of the Plan's Systematic Trend Following managers, outperformed the SG Trend Index for the quarter, 1- and 3-year periods by 1.6%, 1.5% and 0.1%, respectively, but underperformed for the trailing 5-year period by (1.0%).

Mount Lucas, one of the Plan's Systematic Trend Following managers, outperformed the Barclays BTOP 50 Index for the quarter, 1-, 3-, 5- and 10-year periods by 2.1%, 7.2%, 6.8%, 1.4% and 3.9%, respectively.

AQR, one of the Plan's Alternative Risk Premium managers, posted positive returns and outperformed its 5% Annual target for the quarter and 1-year periods by 11.2% and 26.9%, respectively. It underperformed its benchmark for the trailing 3- and 5-year periods by (1.7%) and (5.6%), respectively.

Lombard Odier, an Alternative Risk Premium manager, outperformed its 5% Annual target for the quarter by 2.5% but earned negative 1- and 3-year returns and underperformed its benchmark by (8.1%) and (9.7%), respectively.

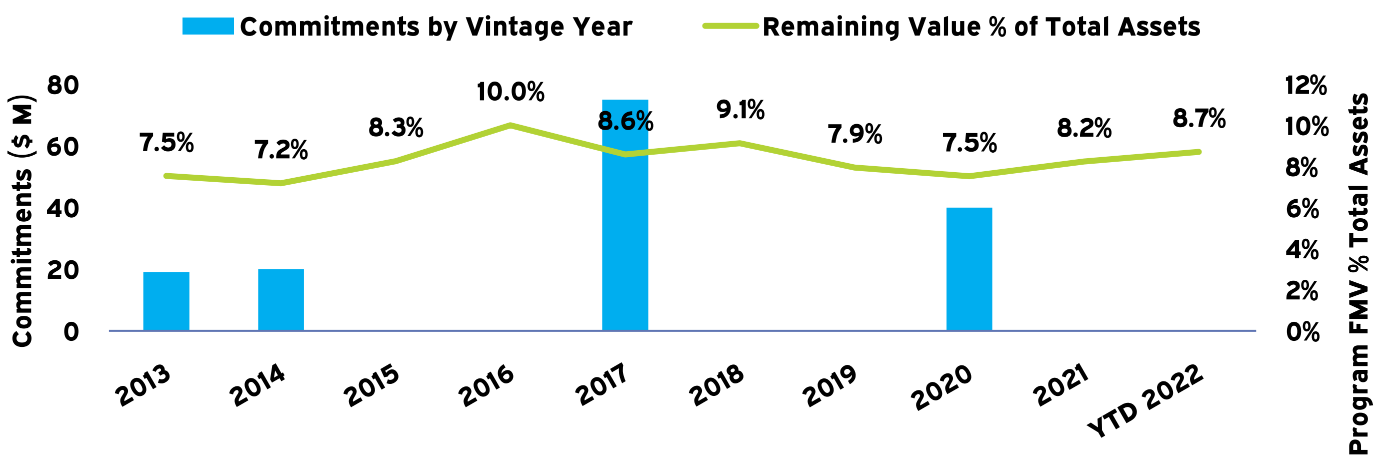
P/E Diversified, one of the Plan's Alternative Risk Premium managers, outperformed its 5% Annual target for the quarter and 1-year periods by 30.9% and 44.6% but underperformed for the trailing 3- and 5-year periods by (2.0%) and (0.8%), respectively.

Real Estate Program

June 30, 2022

Introduction

The Retirement Association's target allocation towards real estate assets is 10-12%. As of March 31, 2022, the Retirement Association had invested with eighteen real estate managers (three private open-end and fifteen private closed-end). The aggregate reported value of the Retirement Association's real estate investments was $351.2 million at quarter-end.



Program Status

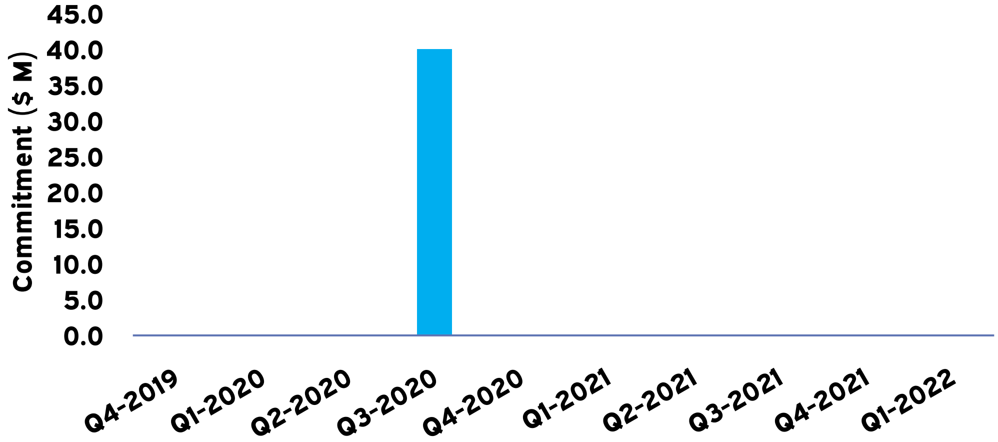
No. of Investments	18
Committed ($ M)	501.6
Contributed ($ M)	446.5
Distributed ($ M)	363.8
Remaining Value ($ M)	351.2

Performance Since Inception

	Program
DPI	0.81x
TVPI	1.60x
IRR	8.2%

Commitments

Recent Quarterly Commitments

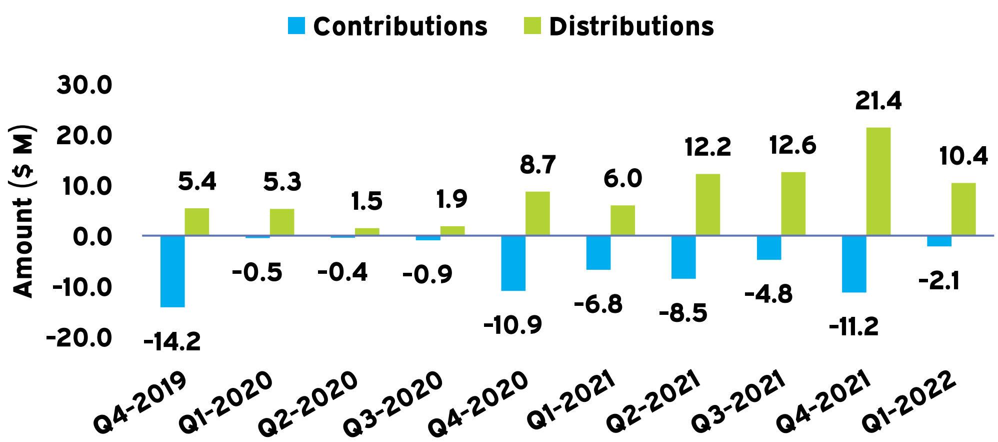


Commitments This Quarter

Fund	Strategy	Region	Amount (M)
None to report.			

Cash Flows

Recent Quarterly Cash Flows



Largest Contributions This Quarter

Fund	Vintage	Strategy	Region	Amount ($M)
Berkeley V	2020	Value-Added	North America	1.50
Prologis Logistics	1970	Core	North America	0.62

Largest Distributions This Quarter

Fund	Vintage	Strategy	Region	Amount ($M)
Greenfield VII	2013	Opportunistic	North America	3.96
Stockbridge RE III	2017	Value-Added	North America	3.84
Miller Global VI	2007	Opportunistic	North America	0.86

Significant Events

- During the first quarter of 2022, Berkeley Partners Value Industrial Fund V completed three acquisitions, including a 77,040 square foot class B building in Carrollton, Texas, a 372,000 square foot class A industrial warehouse development in Lunenburg, Massachusetts, and a development site in San Antonio, Texas, resulting in the capital call of $1.5 million for the Retirement Association. Fund V also disposed of 24 Wilson Way on February 17, 2022 for $17.5 million, resulting in a 2.1x gross multiple at the property level.
- Greenfield Acquisition Partners VII sold the Inn of Sedona, a hospitality asset, in the first quarter, generating a 2.4x gross multiple and 24.9% gross IRR. Distributions during the quarter included gains from this sale, in addition to those related to dispositions from prior quarters.
- On February 1, 2022, Stockbridge Value Fund III sold TOP Kearny, a 214,436 square foot property in Santa Clarita, California, for a gross purchase price of $58.5 million which produced a 2.0x gross multiple to the fund. In addition to sale proceeds from this transaction, distributions in the quarter also comprised operating cash flows.
- During the first quarter, Prologis Targeted US Logistics Fund's net asset value per unit increased to $3,326.1, representing an increase of 12.7% from the prior quarter. The valuation increase was largely driven by unrealized gains on the portfolio's real estate investments resulting from the continued demand, low vacancy rates, and growing rents in the industrial market. USLF also completed one acquisition in the first quarter of an infill site in the New Jersey/New York market for $15.0 million.
- In January 2022, AG Core Plus Realty Fund IV closed on the sale of Wells Portfolio, a collection of three Class-A office buildings in Newton, MA, generating $18 million of profit on a $23 million equity investment.

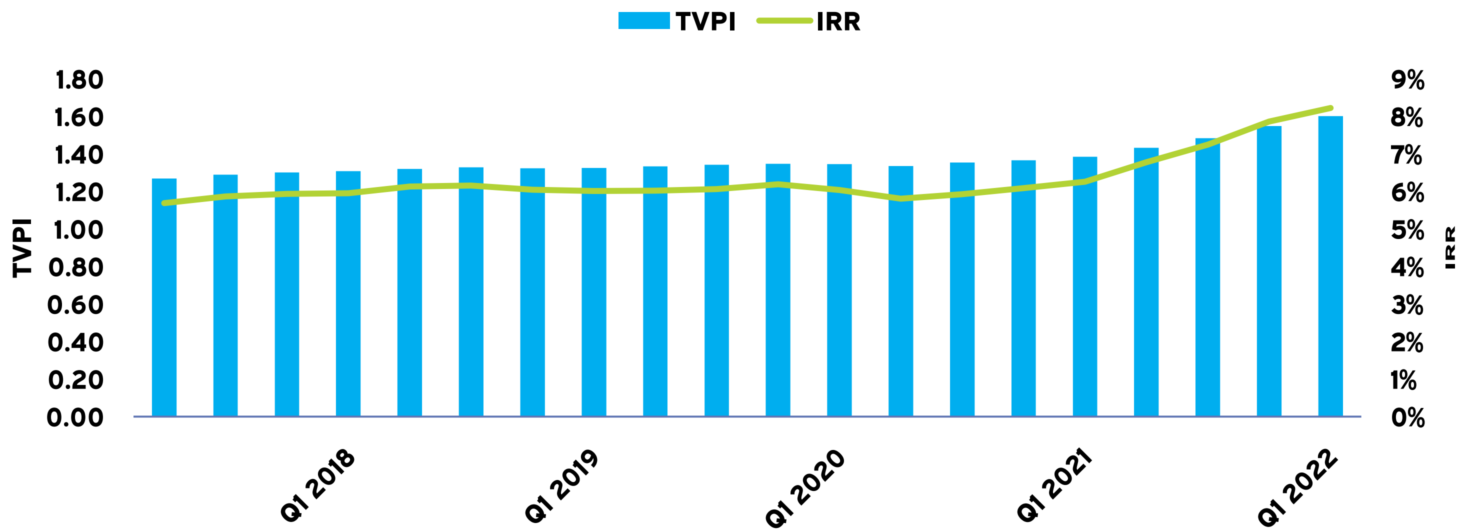
By Strategy

Group	Number	Committed ($ M)	Contributed ($ M)	Unfunded ($ M)	Distributed ($ M)	Remaining Value ($ M)	Exposure ($ M)	DPI (X)	TVPI (X)	IRR (%)
Core	3	120.5	125.3	0.0	29.9	239.1	239.1	0.24	2.15	9.6
Opportunistic	9	204.1	180.3	25.3	214.3	32.8	58.1	1.19	1.37	5.9
Value-Added	6	177.0	141.0	38.2	119.6	79.2	117.4	0.85	1.41	10.5
Total	**18**	**501.6**	**446.5**	**63.5**	**363.8**	**351.2**	**414.7**	**0.81**	**1.60**	**8.2**

By Vintage

Group	Number	Committed ($ M)	Contributed ($ M)	Unfunded ($ M)	Distributed ($ M)	Remaining Value ($ M)	Exposure ($ M)	DPI (X)	TVPI (X)	IRR (%)
Open-end	3	120.5	125.3	0.0	29.9	239.1	239.1	0.24	2.15	9.6
2005	1	15.0	14.5	0.5	17.6	0.0	0.5	1.21	1.21	3.4
2006	1	30.0	30.0	0.0	20.3	1.5	1.5	0.68	0.73	-3.5
2007	4	96.0	84.0	12.0	115.8	6.1	18.1	1.38	1.45	7.4
2011	2	50.0	38.3	11.7	47.2	4.3	16.0	1.23	1.34	9.6
2012	2	36.0	33.9	2.9	48.8	0.2	3.1	1.44	1.45	12.5
2013	1	19.1	18.3	0.8	26.4	5.4	6.2	1.44	1.74	13.6
2014	1	20.0	19.0	1.8	12.8	13.9	15.6	0.67	1.40	8.9
2017	2	75.0	61.3	15.1	44.5	52.8	67.9	0.73	1.59	22.3
2020	1	40.0	22.0	18.7	0.6	27.9	46.5	0.03	1.29	NM
Total	**18**	**501.6**	**446.5**	**63.5**	**363.8**	**351.2**	**414.7**	**0.81**	**1.60**	**8.2**

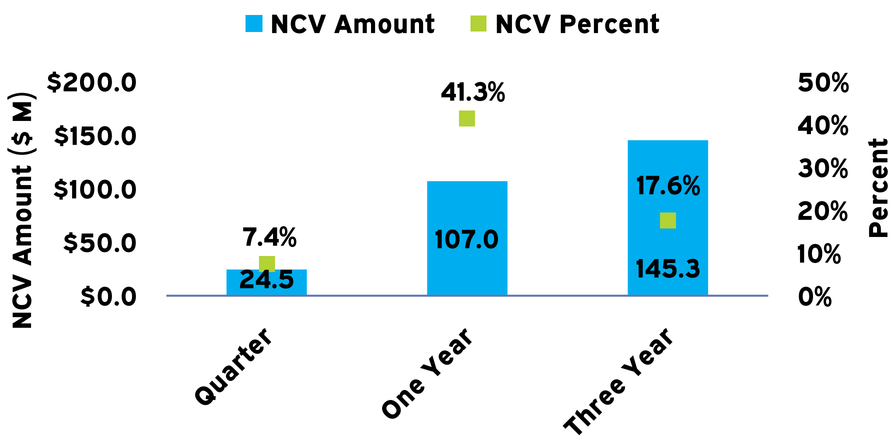
Since Inception Performance Over Time



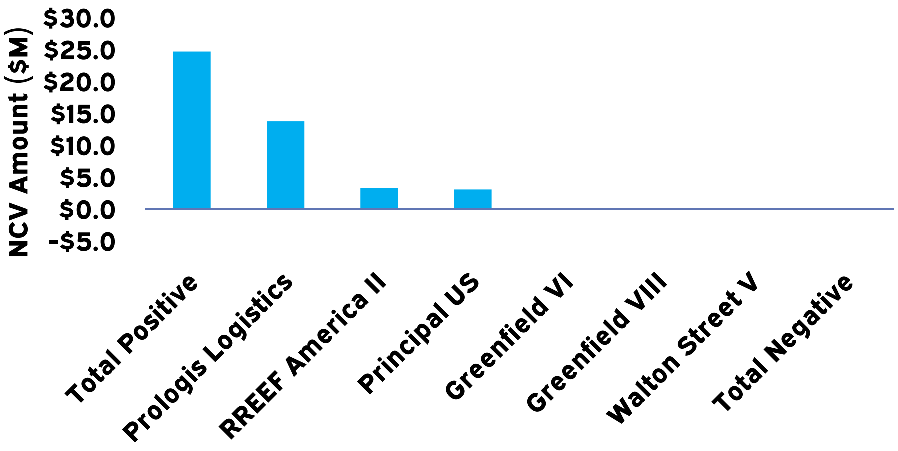
Horizon IRRs

	1 Year (%)	3 Year (%)	5 Year (%)	10 Year (%)	Since Inception (%)
Aggregate Portfolio	40.7	17.5	13.3	12.5	8.2
Public Market Equivalent	32.2	11.2	10.0	9.5	9.4

Periodic NCV



1 Quarter Drivers Of NCV



Time Weighted Performance | As of March 31, 2022

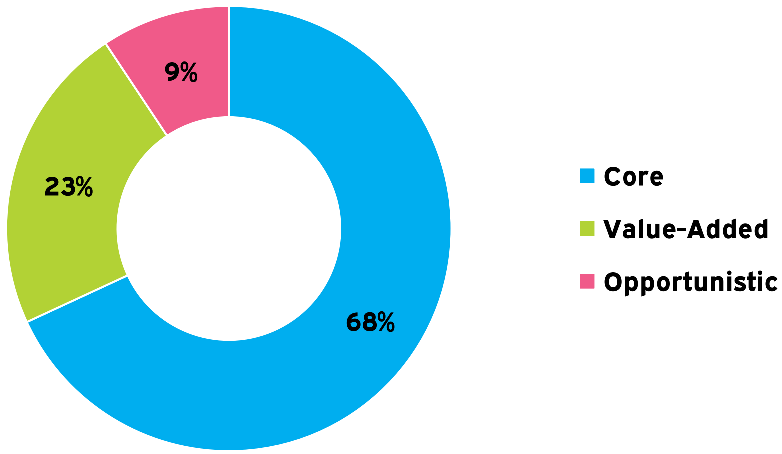
	1Q22 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)	Since Inception (%)	Inception Date
Private Real Estate	9.2	42.8	19.1	16.0	14.9	6.7	9/30/2007
RREEF America REIT II	5.4	28.1	11.6	9.8	NA	9.4	4/01/2016
Principal US Property	7.3	28.4	11.3	10.0	NA	9.8	10/09/2015
Prologis Targeted U.S.	11.8	57.9	27.6	23.5	19.2	9.5	9/30/2007

Fund Performance: Sorted By Vintage And Strategy

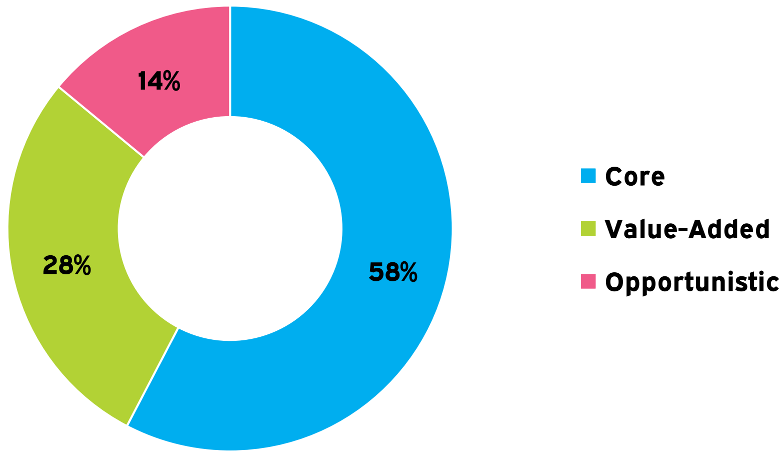
By Investment	Vintage	Strategy	Committed ($ M)	Contributed ($ M)	Unfunded ($ M)	Distributed ($ M)	Remaining Value ($ M)	TVPI (X)	IRR (%)
Principal US	Open-end	Core	25.0	25.0	0.0	0.0	45.2	1.81	9.8
Prologis Logistics	Open-end	Core	50.5	55.3	0.0	20.8	130.6	2.74	9.7
RREEF America II	Open-end	Core	45.0	45.0	0.0	9.2	63.4	1.61	9.2
Miller GLobal Fund V	2005	Opportunistic	15.0	14.5	0.5	17.6	0.0	1.21	3.4
Walton Street V	2006	Opportunistic	30.0	30.0	0.0	20.3	1.5	0.73	-3.5
Greenfield V	2007	Opportunistic	30.0	29.6	0.4	40.4	0.2	1.37	8.3
Miller Global VI	2007	Opportunistic	30.0	21.1	8.9	33.3	0.1	1.58	7.8
Walton Street VI	2007	Opportunistic	15.0	13.3	1.7	15.2	5.7	1.58	8.2
Colony Realty III	2007	Value-Added	21.0	20.0	1.0	26.9	0.0	1.35	5.3
Greenfield VI	2011	Opportunistic	20.0	19.2	0.8	26.2	0.0	1.37	9.6
Almanac Realty VI	2011	Value-Added	30.0	19.1	10.9	21.0	4.2	1.32	9.6
Miller Global VII	2012	Opportunistic	15.0	12.1	2.9	15.9	0.2	1.33	14.4
Colony Realty IV	2012	Value-Added	21.0	21.7	0.0	32.9	0.0	1.51	11.9
Greenfield VII	2013	Opportunistic	19.1	18.3	0.8	26.4	5.4	1.74	13.6
AG Core Plus IV	2014	Value-Added	20.0	19.0	1.8	12.8	13.9	1.40	8.9
Greenfield VIII	2017	Opportunistic	30.0	22.2	9.2	19.1	19.6	1.74	27.8
Stockbridge RE III	2017	Value-Added	45.0	39.1	5.9	25.4	33.2	1.50	19.0
Berkeley V	2020	Value-Added	40.0	22.0	18.7	0.6	27.9	1.29	NM
Total			**501.6**	**446.5**	**63.5**	**363.8**	**351.2**	**1.60**	**8.2**

By Strategy

Percent of FMV

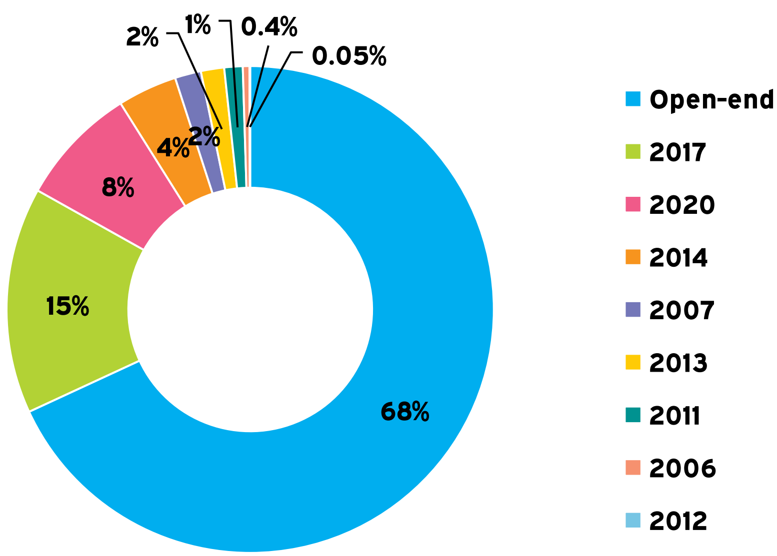


Percent of Exposure

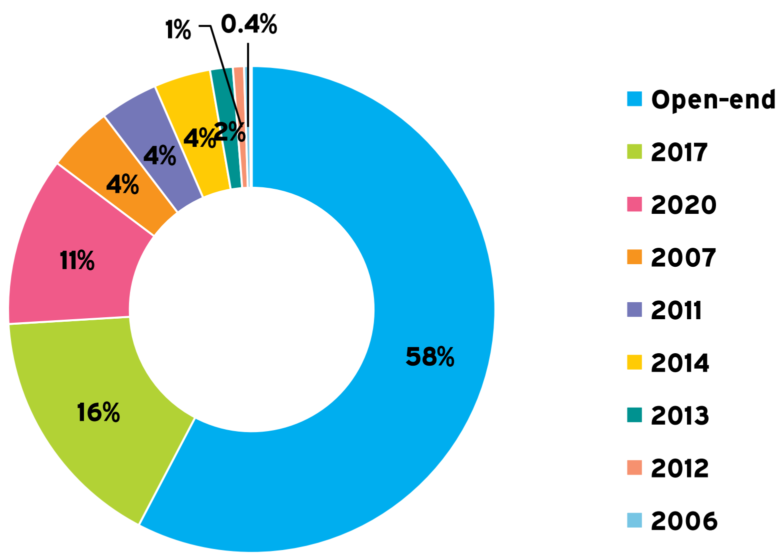


By Vintage

Percent of FMV

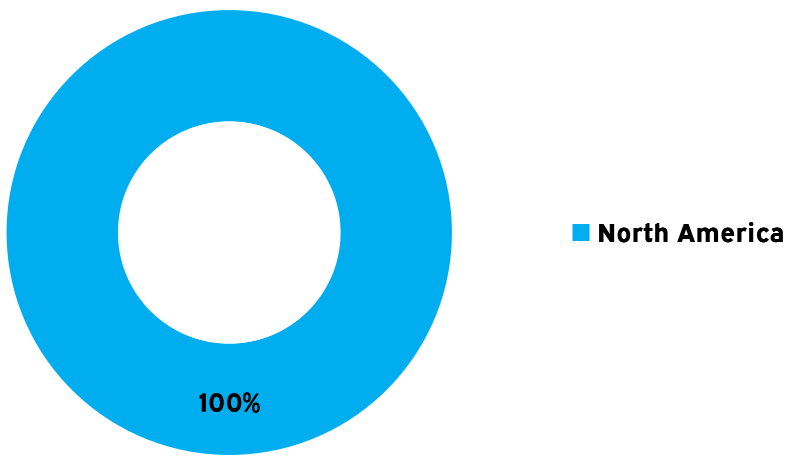


Percent of Exposure

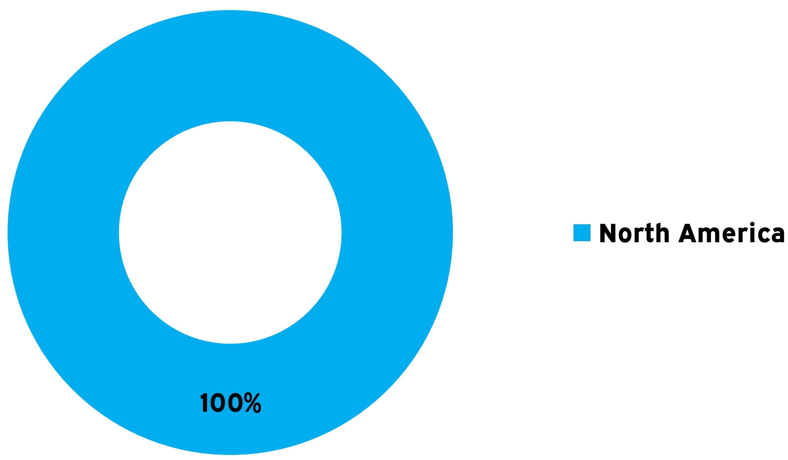


By Geographic Focus

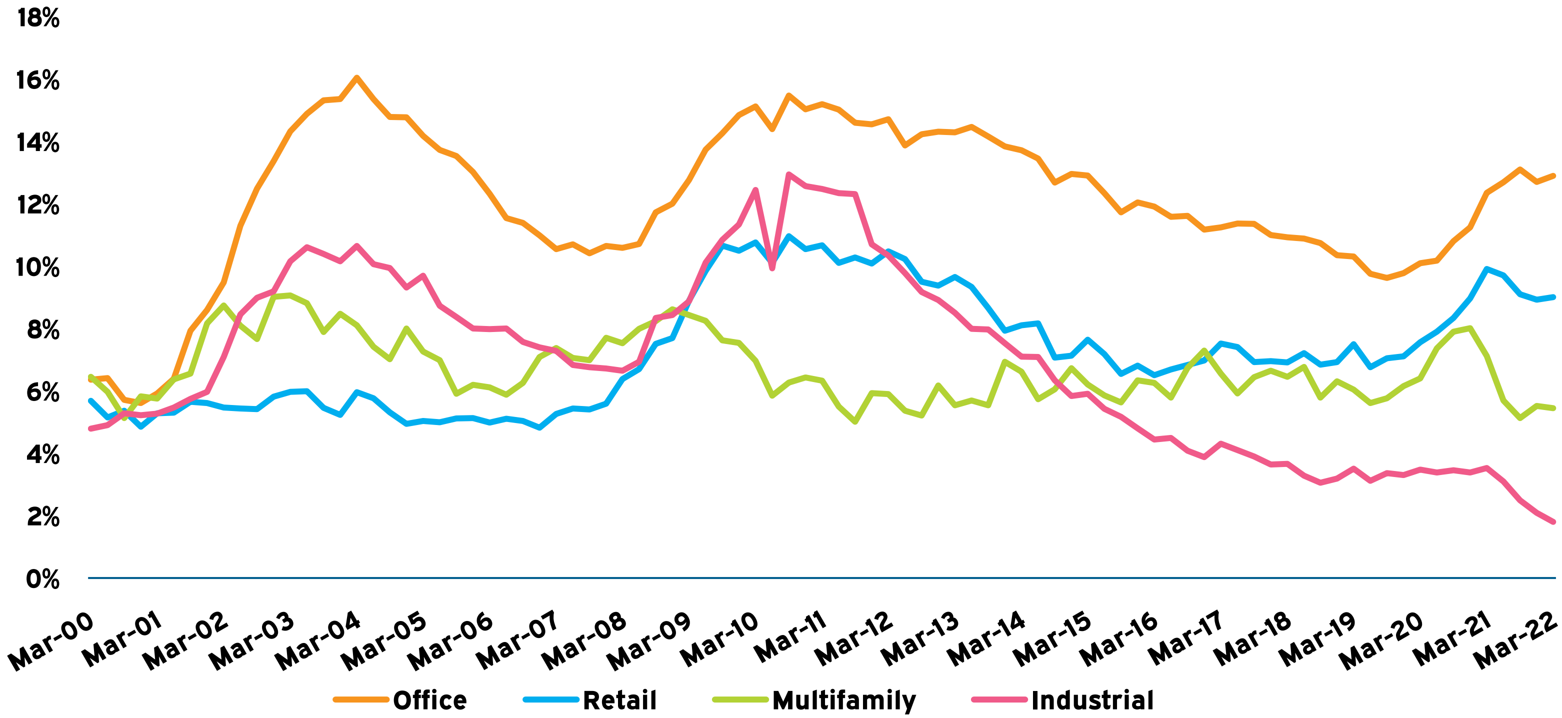
Percent of FMV



Percent of Exposure



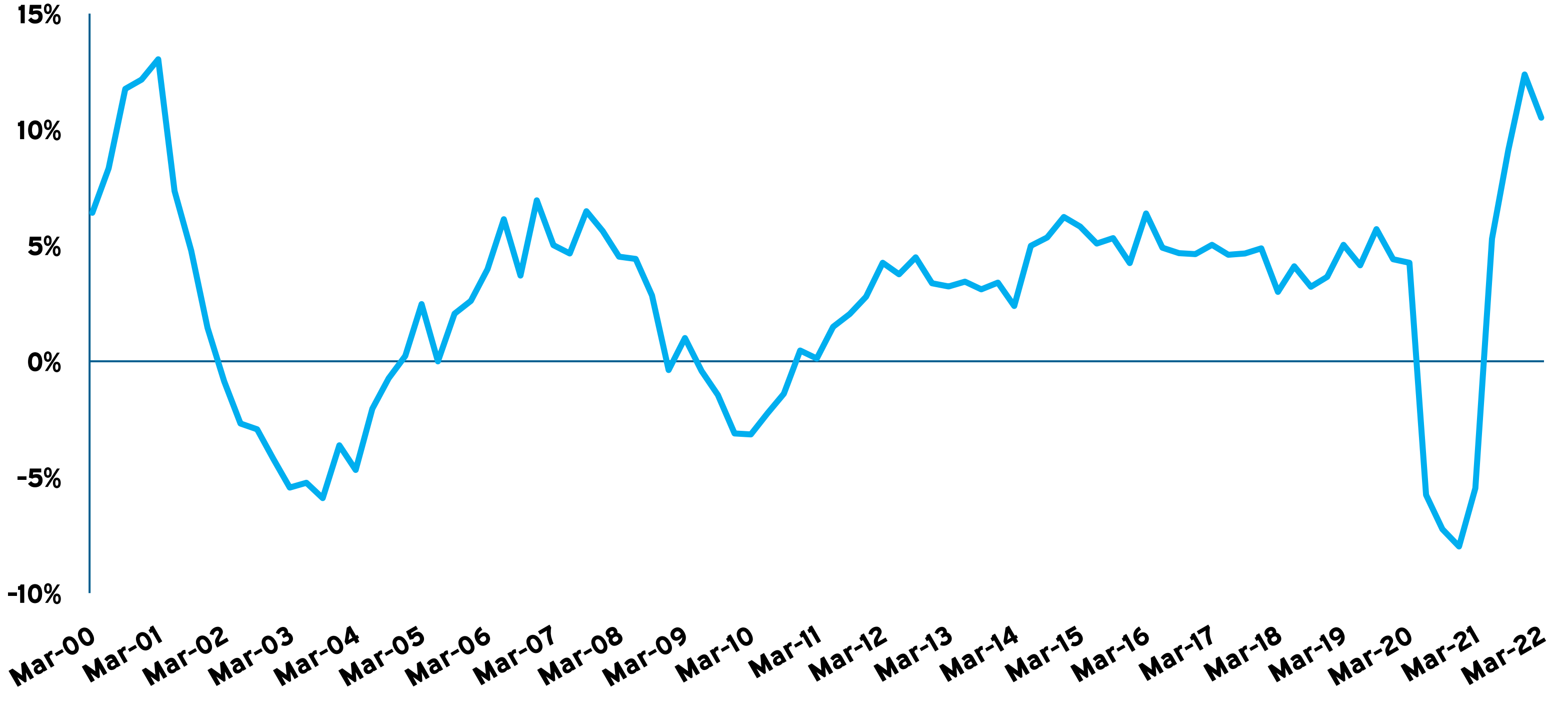
Real Estate Fundamentals
Vacancy by Property Type[1]



In the first quarter of 2022, vacancy rates increased for office and retail, while vacancy rates for multifamily and industrial decreased. Multifamily vacancies decreased slightly by 7 basis points in Q1 2022. Industrial vacancies set a new all-time low at 1.8%. Retail vacancies increased slightly by 9 basis points in Q1 2022. Office vacancies increased in Q1 2022 to 12.9%. Compared to one year ago, vacancy rates in multifamily decreased 167 basis points, industrial decreased 173 basis points, retail decreased 90 basis points., and office increased 54 basis points. Overall, the vacancy rate across all property types decreased 153 basis point from Q1 2021.

[1] Source: NCREIF

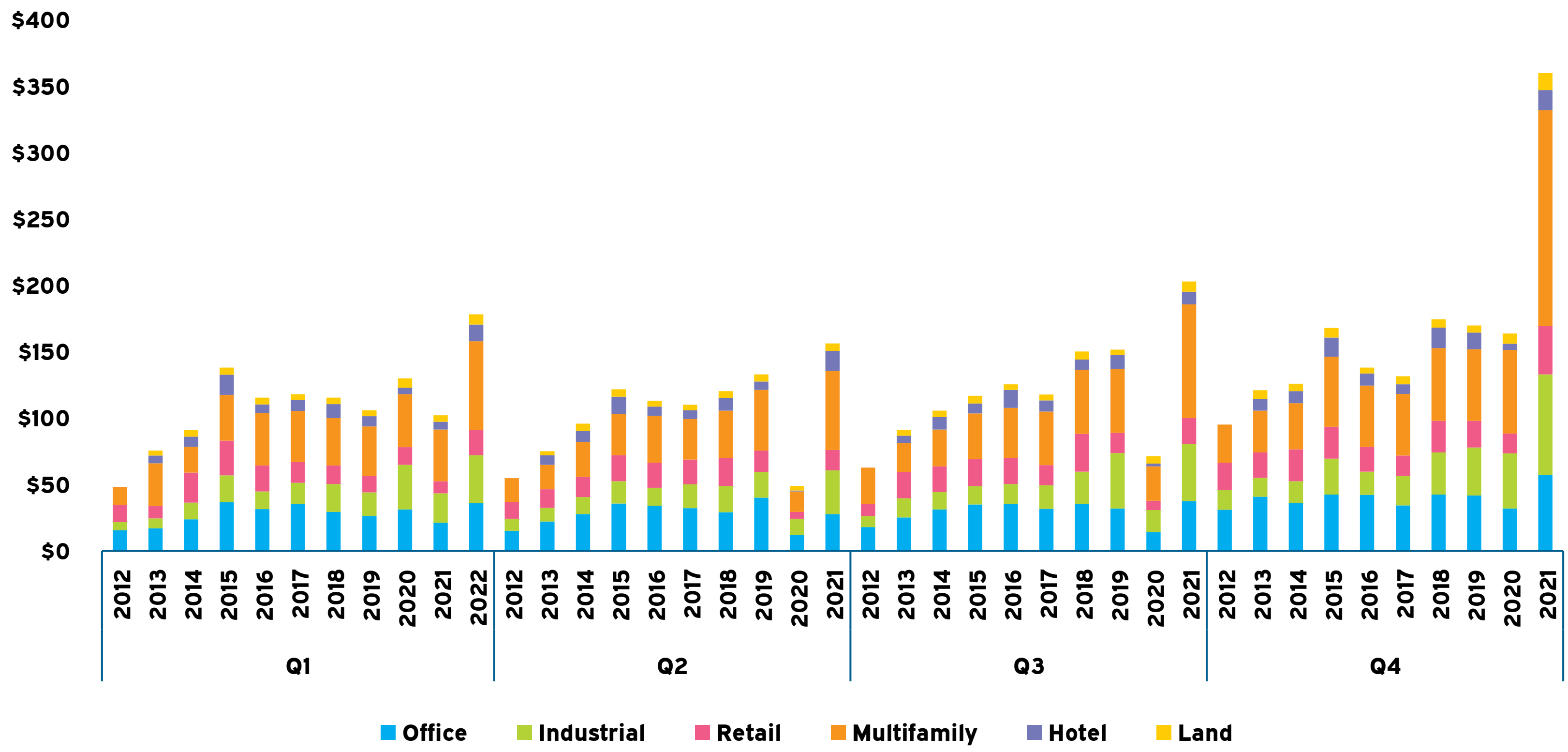
NOI Growth[1]



The trailing twelve-month rate of NOI growth decreased slightly in Q1 2022 to 10.5%. This growth rate continues to be supported by improved rent collections and the expiry of pandemic-related delinquencies/deferrals. Industrial NOI growth is trending above 11.0% for the trailing year ending Q1 2022. Office NOI growth has gone negative to -1.2% year-over-year, and Apartment NOI (a sector with "gross" rents, compared to "net" rents in other property types) experienced positive NOI growth at 23.5% year-over-year as occupancy levels and rental rate growth improved. Retail NOI growth has improved significantly from the previous four quarters, now at 15.6% year-over-year.

[1] Source: NCREIF

Transaction Volume ($bn)[1]



Private real estate transaction volume for properties valued over $2.5 million for Q1 2022 was up significantly from Q1 2021 to $178 billion, representing the highest transaction volume in the first quarter of a year since the Global Financial Crisis. Compared to a year ago, all property types saw major increases in transaction volume: office (+69%), industrial (+64%), retail (+111%), multifamily (+71%), hotel (+110%) and land (+57%). Multifamily and industrial properties made up the largest percentages of total transaction volume during the quarter, at 38% and 20%, respectively.

[1] Source: PREA

Real Estate Capital Markets
Cap Rates vs. 10-Year Treasury[1]

The NPI Value Weighted Cap Rate decreased 12 basis points in Q1 2022 to 3.7%. The 10-year Treasury yield increased by 80 basis points in Q1 2022 to 2.3%. The spread between cap rates and treasury yields (139 basis points) is now well below the long-term average spread of 251 basis points.

[1] Source: NCREIF and US Department of the Treasury

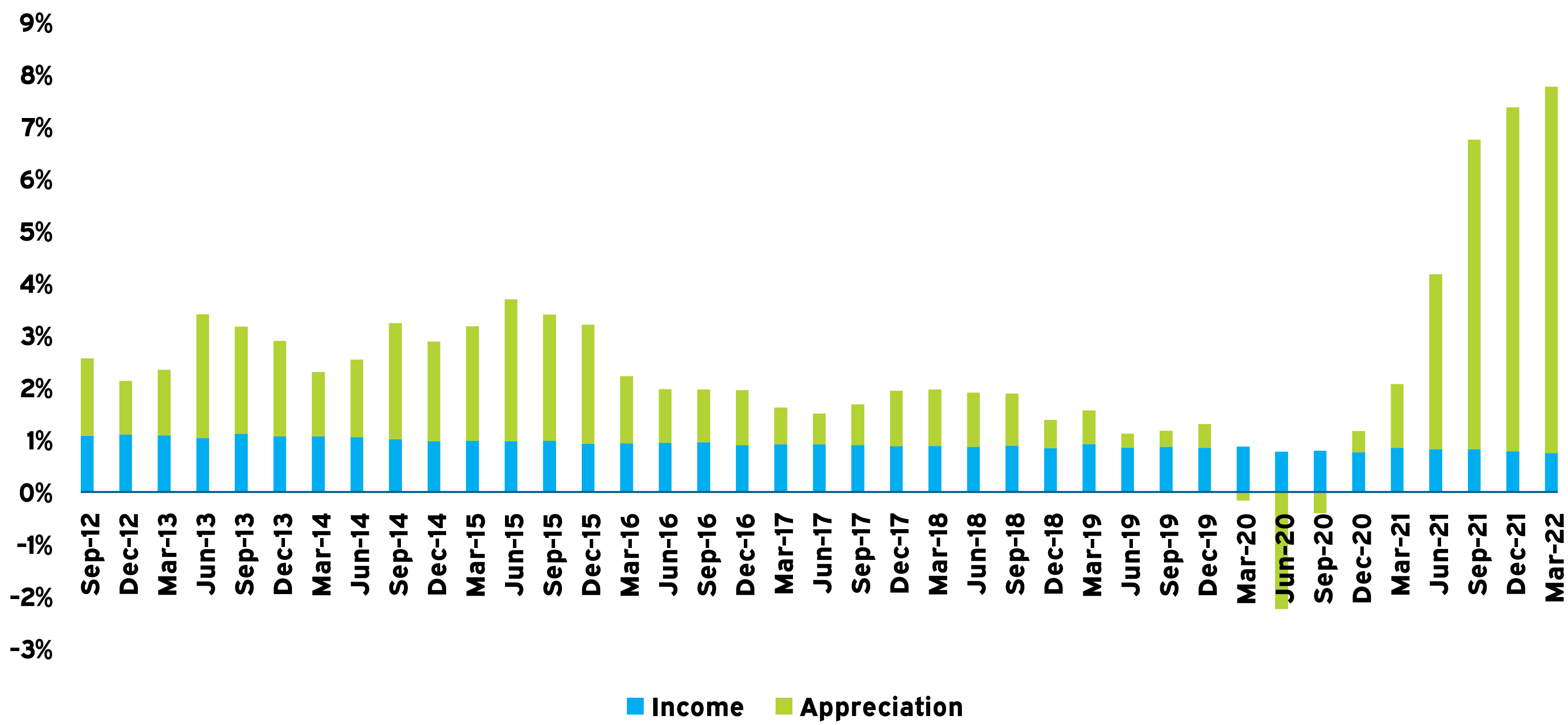
Trailing Period Returns[1]

As of March 31, 2022	1 Year	3 Years	5 Years	10 Years
NFI-ODCE (EW, net)	28.7%	11.1%	9.5%	10.2%
NFI-ODCE (VW, net)	27.3	10.3	8.9	9.9
NCREIF Property Index	21.9	9.6	8.5	9.6
NAREIT Equity REIT Index	23.6	11.7	10.6	10.5

Private real estate indices were positive in Q1 2022 and continue to be positive over the 1-year, 3-year, 5-year, and 10-year time horizons. The NFI-ODCE Equal Weight Index posted another strong quarter in Q1 2022 and private core real estate outperformed the public index over the trailing one-year period. Public real estate performance in 2020 and into 2021 has been volatile, returning -5.3% in Q1 2022, after posting a 16.2% return in the prior quarter.

[1] Source: NCREIF

ODCE Return Components [1]
(Equal Weight, Net)



The NFI-ODCE Equal Weight return for Q1 2022 was strong at 7.8%, beating the prior quarter's return and posting the highest quarterly return in the history of the index. The income component of the quarterly return has been fairly consistent around 0.7%, while the appreciation for the quarter was very high at 7.0%.

[1] Source: NCREIF

Below are details on specific terminology and calculation methodologies used throughout this report:

Committed	The original commitment amount made to a given fund. Some funds may be denominated in non-USD currencies, and such commitment amounts represent the sum of fund contributions translated to USD at their daily conversion rates plus the unfunded balance translated at the rate as of the date of this report.
Contributed	The amount of capital called by a fund manager against the commitment amount. Contributions may be used for new or follow-on investments, fees, and expenses, as outlined in each fund's limited partnership agreement. Some capital distributions from funds may reduce contributed capital balances. Some funds may be denominated in non-USD currencies, and such aggregate contributions represent the sum of each fund contribution translated to USD at its daily conversion rate.
Distributed	The amount of capital returned from a fund manager for returns of invested capital, profits, interest, and other investment related income. Some distributions may be subject to re-investment, as outlined in each fund's limited partnership agreement. Some funds may be denominated in non-USD currencies, and such aggregate distributions represent the sum of each fund distribution translated to USD at its daily conversion rate.
DPI	Acronym for "Distributed-to-Paid-In", which is a performance measurement for Private Market investments. The performance calculation equals Distributed divided by Contributed. DPIs for funds and groupings of funds are net of all fund fees and expenses as reported to by fund managers to Meketa.
Exposure	Represents the sum of the investor's Unfunded and Remaining Value.
IRR	Acronym for "Internal Rate of Return", which is a performance measurement for Private Market investments. IRRs are calculated by Meketa based on daily cash flows and Remaining Values as of the date of this report. IRRs for funds and groupings of funds are net of all fund fees and expenses as reported by fund managers to Meketa.
NCV	Acronym for "Net Change in Value", which is a performance measurement for Private Market investments. The performance calculation equals the appreciation or depreciation over a time period neutralized for the impact of cash flows that occurred during the time period.
NM	Acronym for "Not Meaningful", which indicates that a performance calculation is based on data over too short a timeframe to yet be meaningful or not yet possible due to inadequate data. Meketa begins reporting IRR calculations for investments once they have reached more than two years since first capital call. NM is also used within this report in uncommon cases where the manager has reported a negative Remaining Value for an investment.

Public Market Equivalent (“PME”)	A calculation methodology that seeks to compare the performance of a portfolio of private market investments with public market indices. The figures presented in this report are based on the PME+ framework, which represents a net IRR value based on the actual timing and size of the private market program’s daily cash flows and the daily appreciation or depreciation of an equivalent public market index. Meketa utilizes the following indices for private market program PME+ calculations: Infrastructure: Dow Jones Brookfield Global Infrastructure Index Natural Resources: S&P Global Natural Resources Index Private Debt: Barclays Capital U.S. Corporate High Yield Bond Index Private Equity: MSCI ACWI Investable Market Index Real Assets (excluding Real Estate): Equal blend of Dow Jones Brookfield Global Infrastructure Index and S&P Global Natural Resources Index Real Assets (including Real Estate): Equal blend of Dow Jones Brookfield Global Infrastructure Index, S&P Global Natural Resources Index, and Dow Jones U.S. Select Real Estate Securities Index Real Estate: Dow Jones U.S. Select Real Estate Securities Index
Remaining Value	The investor’s value as reported by a fund manager on the investor’s capital account statement. All investor values in this report are as of the date of this report, unless otherwise noted. Some funds may be denominated in non-USD currencies, and such remaining values represent the fund’s local currency value translated to USD at the rate as of the date of this report.
TVPI	Acronym for “Total Value-to-Paid-In”, which is a performance measurement for Private Market investments. The performance calculations represents Distributed plus Remaining Value, then divided by Contributed. TVPIs for funds and groupings of funds are net of all fund fees and expenses as reported to by fund managers to Meketa.
Unfunded	The remaining balance of capital that a fund manager has yet to call against a commitment amount. Meketa updates unfunded balances for funds to reflect all information provided by fund managers provided in their cash flow notices. Some funds may be denominated in non-USD currencies, and such unfunded balances represent the fund’s local currency unfunded balance translated to USD at the rate as of the date of this report.

Capital Markets Outlook & Risk Metrics

As of June 30, 2022

Capital Markets Outlook

Markets

→ June capped off the worst first half performance for US equity markets since the 1970s, as markets reassessed future growth expectations in response to the Fed's 75 bp rate hike in June.

→ In the US, small and mid-cap companies lagged large and mega cap stocks in the month of June and value lagged growth stocks.

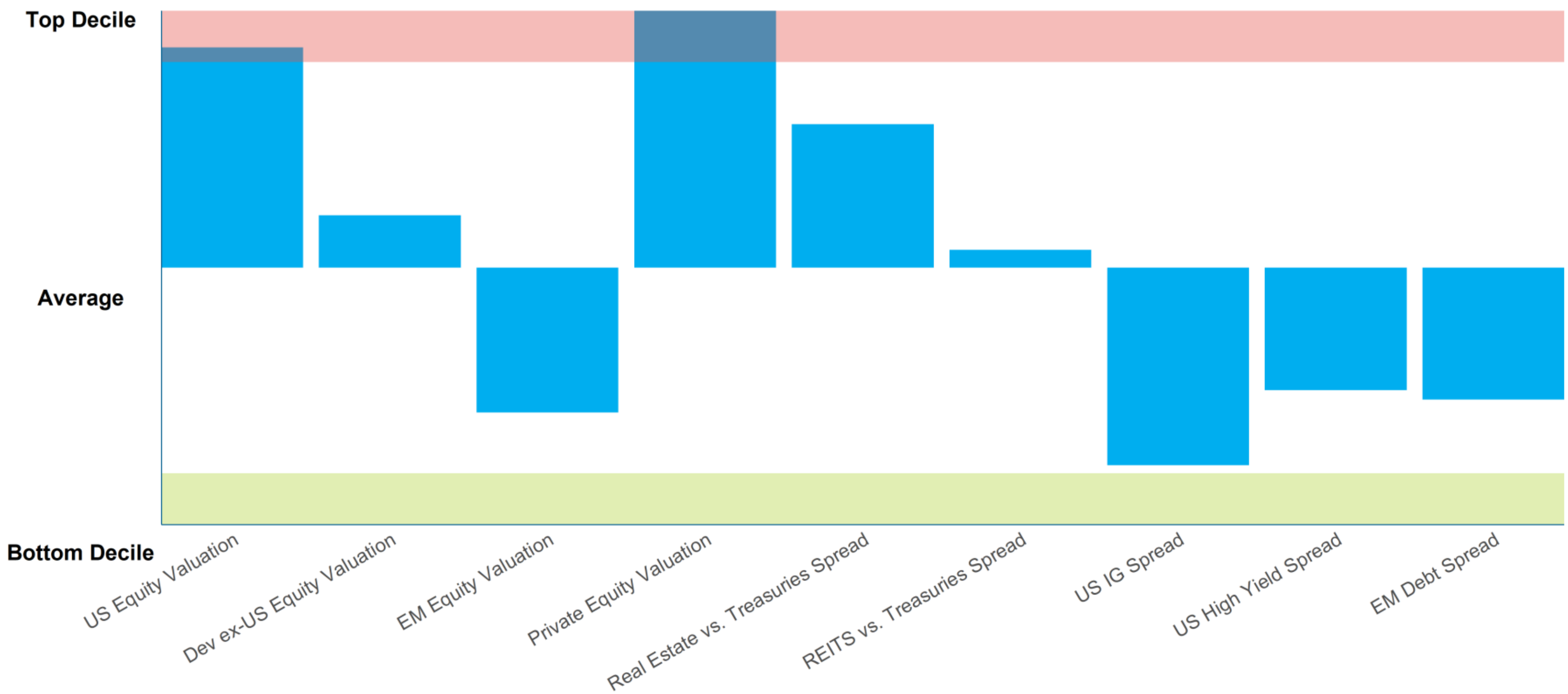
→ While all major equity indices suffered negative returns, emerging markets and China proved to be slightly more resilient than US and non-US developed markets.

→ After a strong performance in early 2022, commodities, infrastructure, and public natural resources also suffered negative returns in June.

→ Inflation re-accelerated in the US and Europe to new highs in June, reigniting concerns that policy officials may prioritize inflation fighting at the expense of economic growth. Markets repriced inflation expectations higher, and bonds suffered losses across all categories.

→ While China continues to ease COVID lockdowns and engage in fiscal and monetary stimulus, concerns persist that China's 2022 GDP will be substantially lower than 2021.

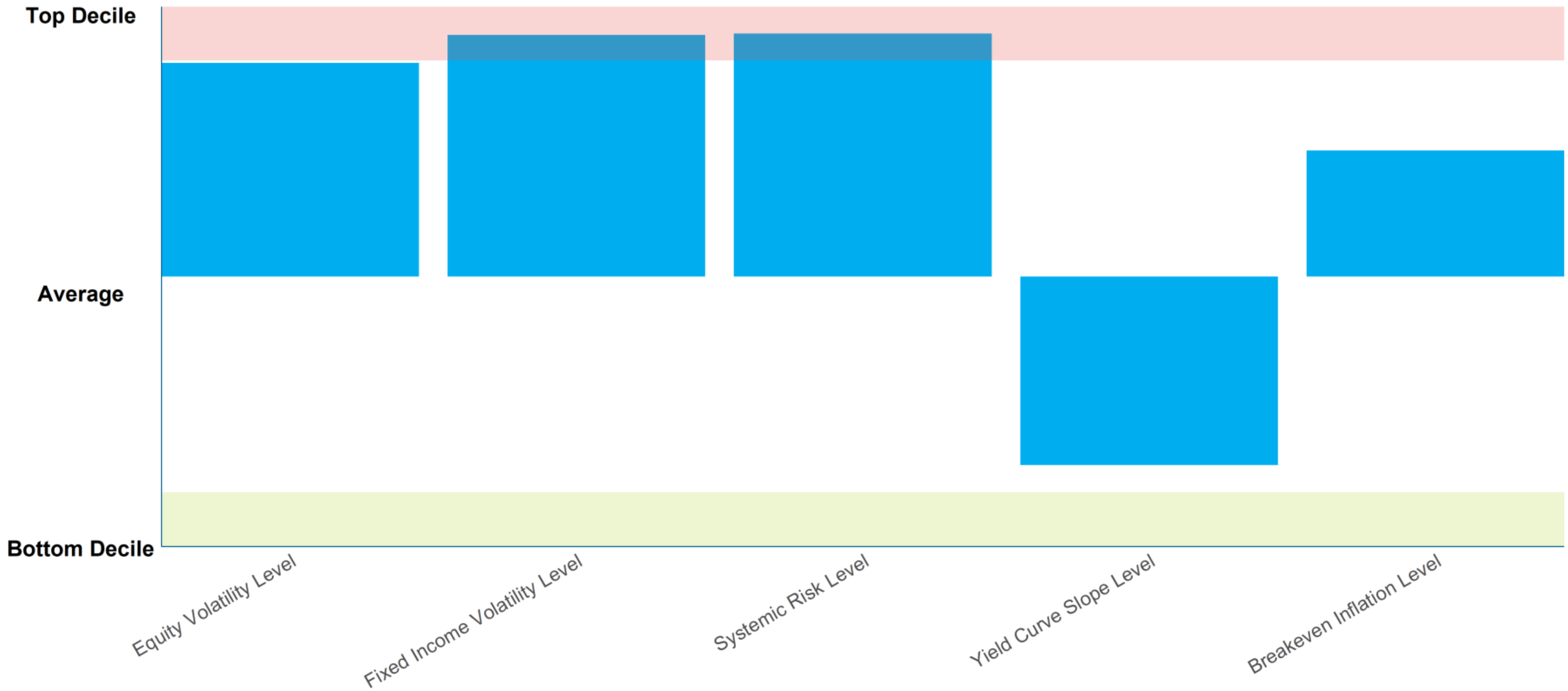
Risk Overview/Dashboard (1)
(As of June 30, 2022)[1]



→ Dashboard (1) summarizes the current state of the different valuation metrics per asset class relative to their own history.

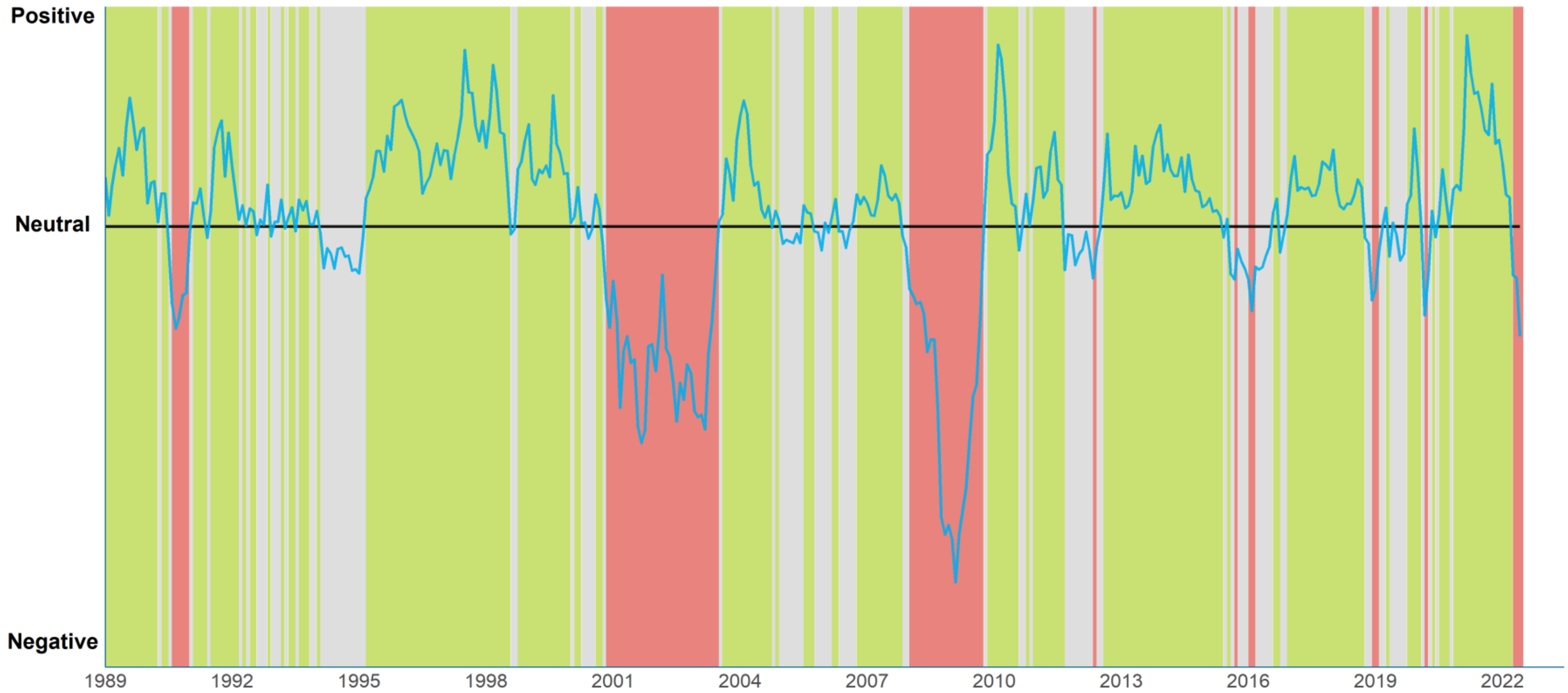
[1] With the exception of Private Equity Valuation, that is YTD as of December 31, 2021.

Risk Overview/Dashboard (2)
(As of June 30, 2022)

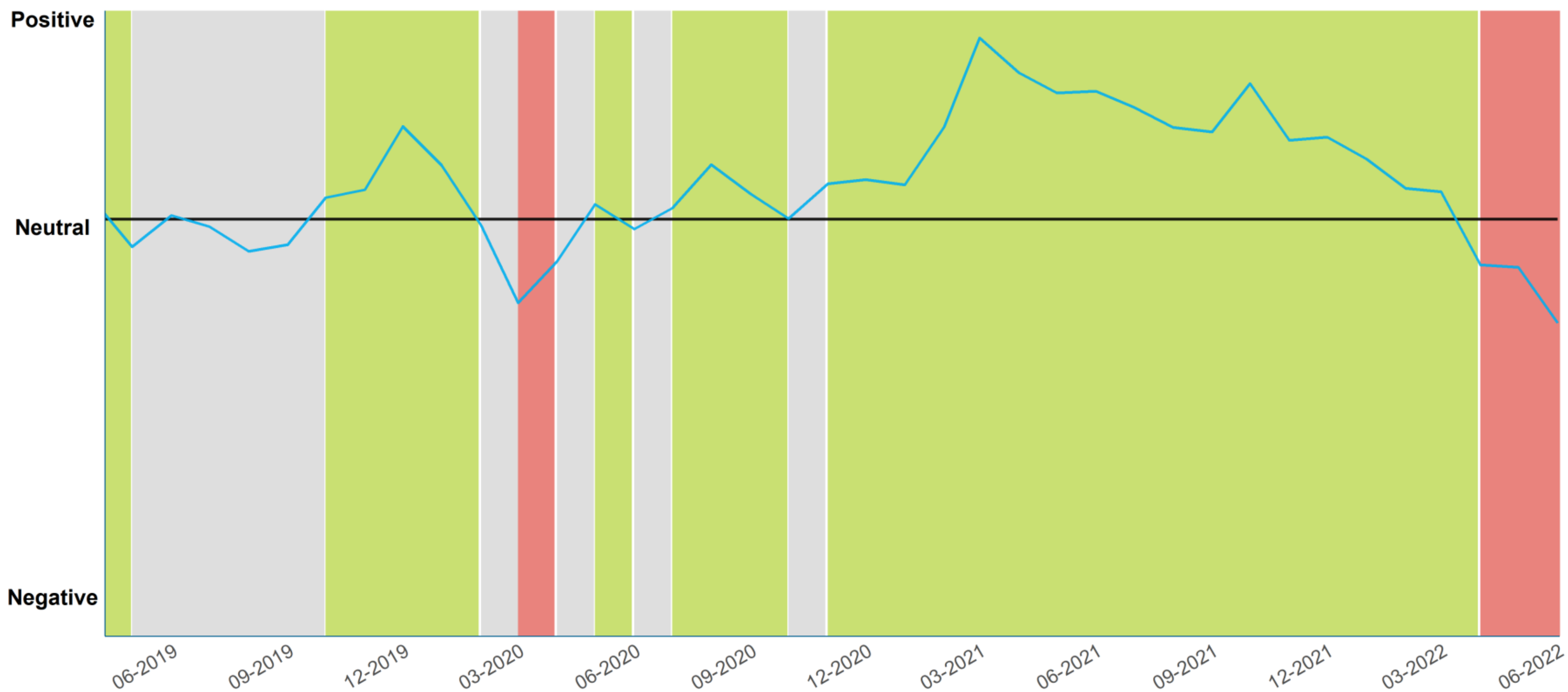


→ Dashboard (2) shows how the current level of each indicator compares to its respective history.

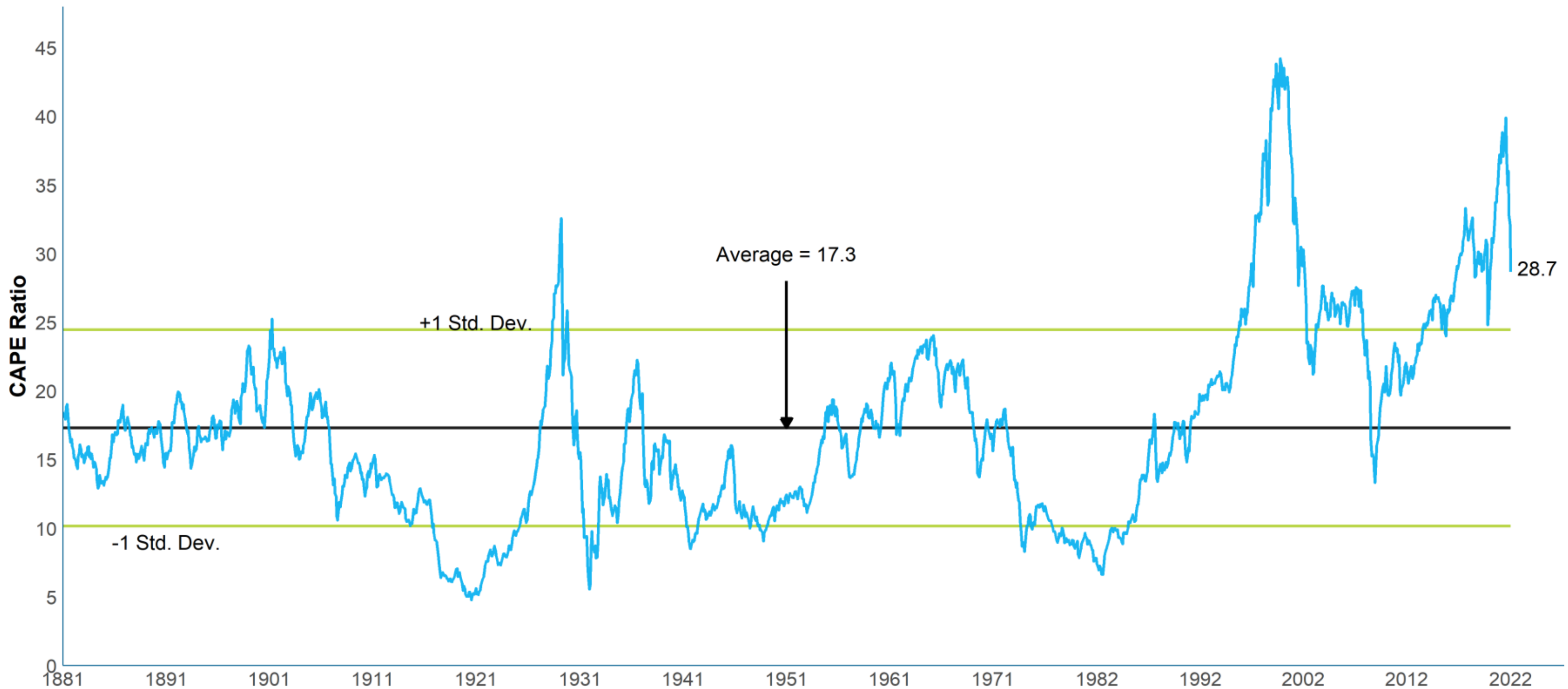
Market Sentiment Indicator (All History)
(As of June 30, 2022)



Market Sentiment Indicator (Last Three Years)
(As of June 30, 2022)



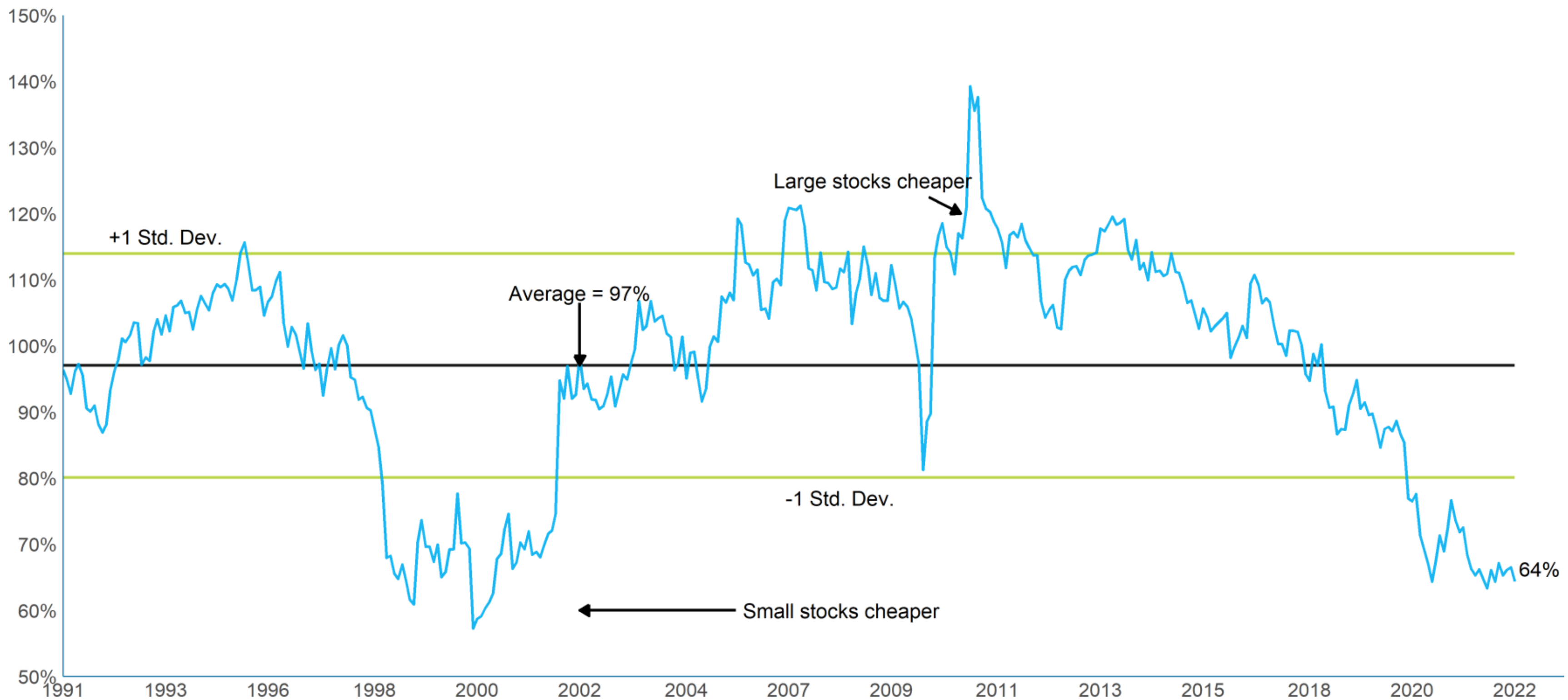
US Equity Cyclically Adjusted P/E[1]
(As of June 30, 2022)



→ This chart details one valuation metric for US equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

[1] US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group.

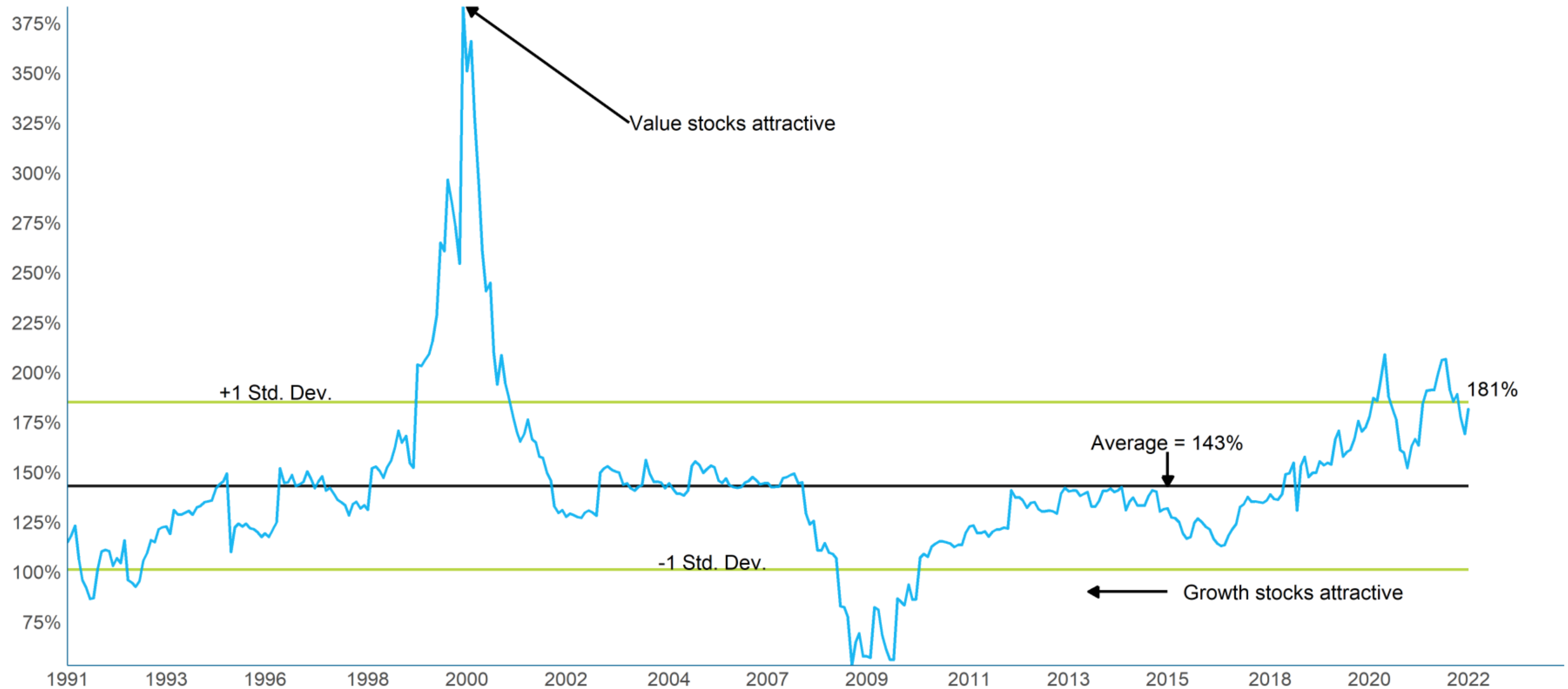
Small Cap P/E vs. Large Cap P/E[1]
(As of June 30, 2022)



→ This chart compares the relative attractiveness of small cap US equities vs. large cap US equities on a valuation basis. A higher (lower) figure indicates that large cap (small cap) is more attractive.

[1] Small Cap P/E (Russell 2000 Index) vs. Large Cap P/E (Russell 1000 Index) - Source: Russell Investments. Earnings figures represent 12-month "as reported" earnings.

Growth P/E vs. Value P/E[1]
(As of June 30, 2022)



→ This chart compares the relative attractiveness of US growth equities vs. US value equities on a valuation basis. A higher (lower) figure indicates that value (growth) is more attractive.

[1] Growth P/E (Russell 3000 Growth Index) vs. Value (Russell 3000 Value Index) P/E - Source: Bloomberg, MSCI, and Meketa Investment Group. Earnings figures represent 12-month "as reported" earnings.

Developed International Equity Cyclically Adjusted P/E[1]

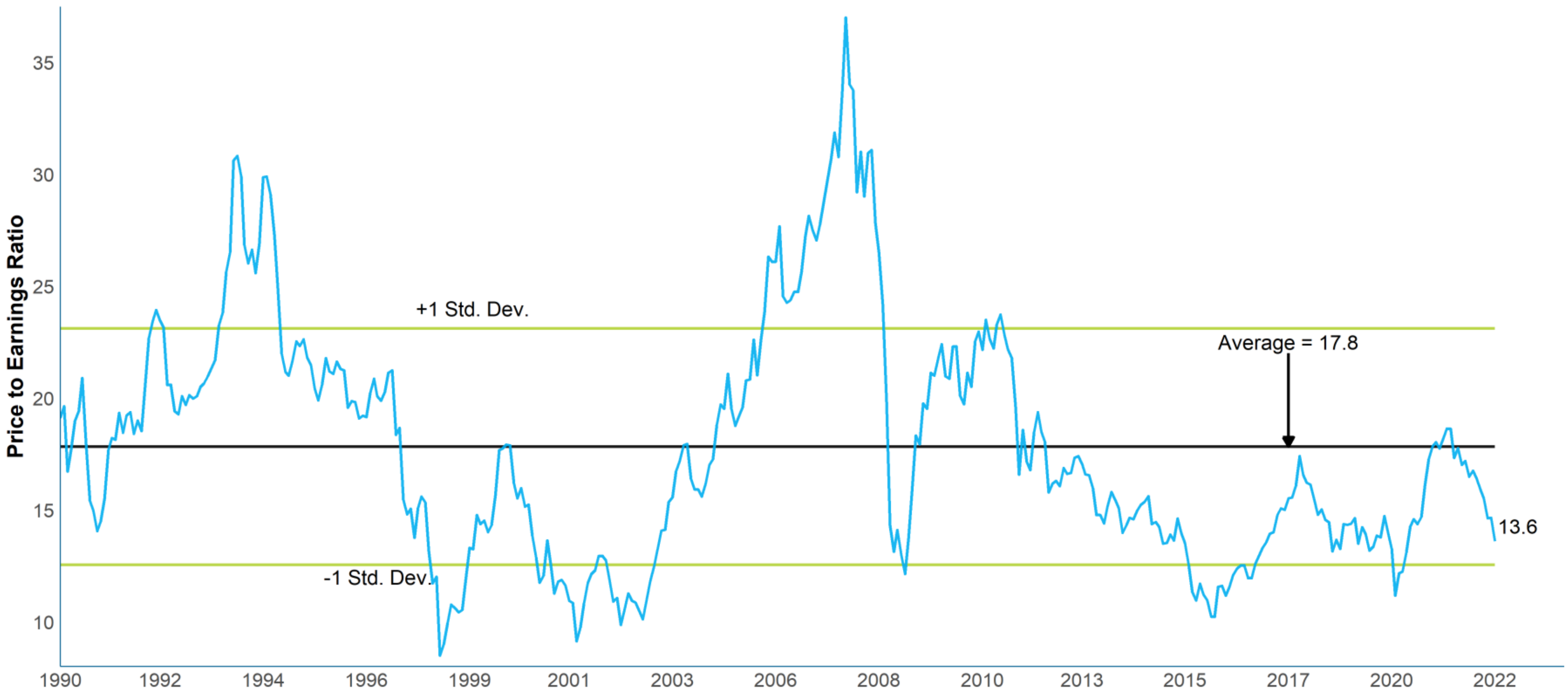
(As of June 30, 2022)

→ This chart details one valuation metric for developed international equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

[1] Developed International Equity (MSCI EAFE Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly "as reported" earnings over the previous ten years.

Emerging Market Equity Cyclically Adjusted P/E[1]

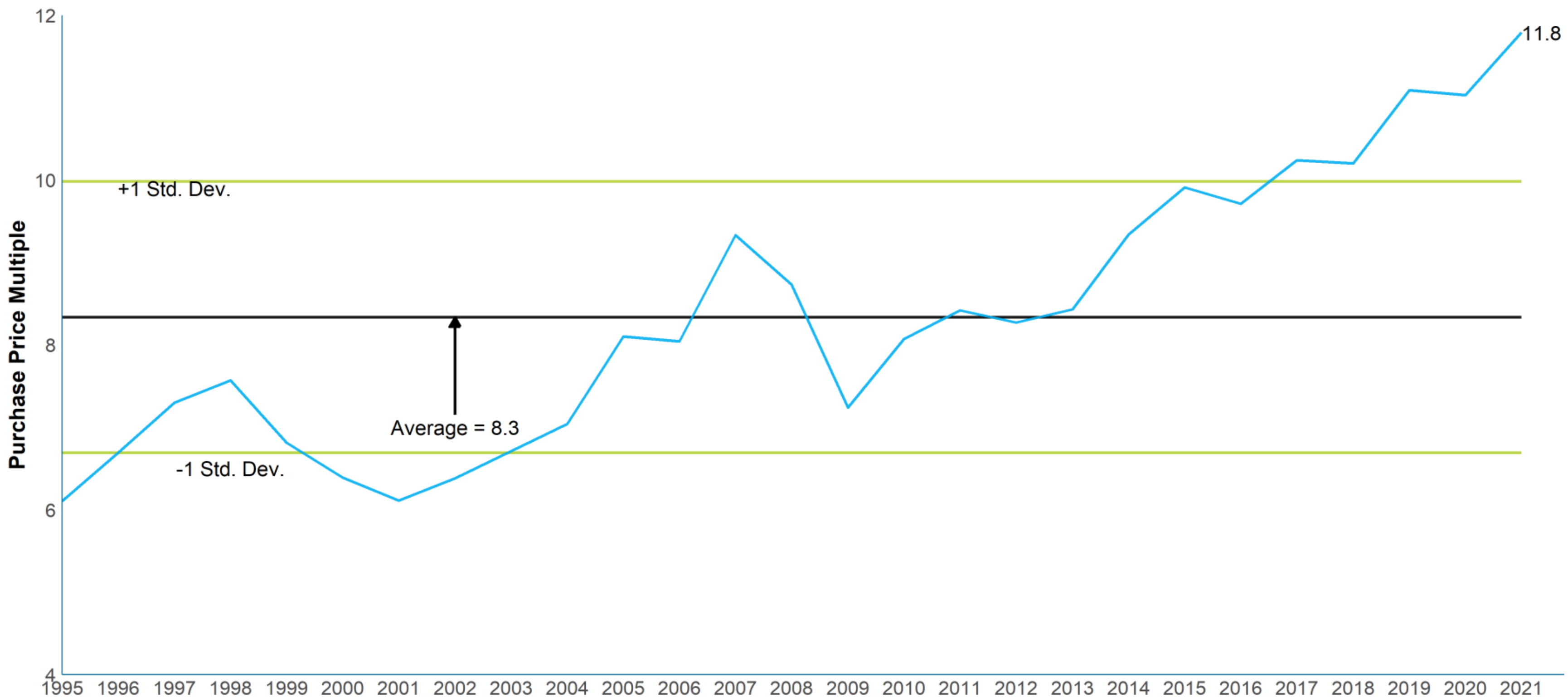
(As of June 30, 2022)



→ This chart details one valuation metric for emerging markets equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

[1] Emerging Market Equity (MSCI Emerging Markets Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly "as reported" earnings over the previous ten years.

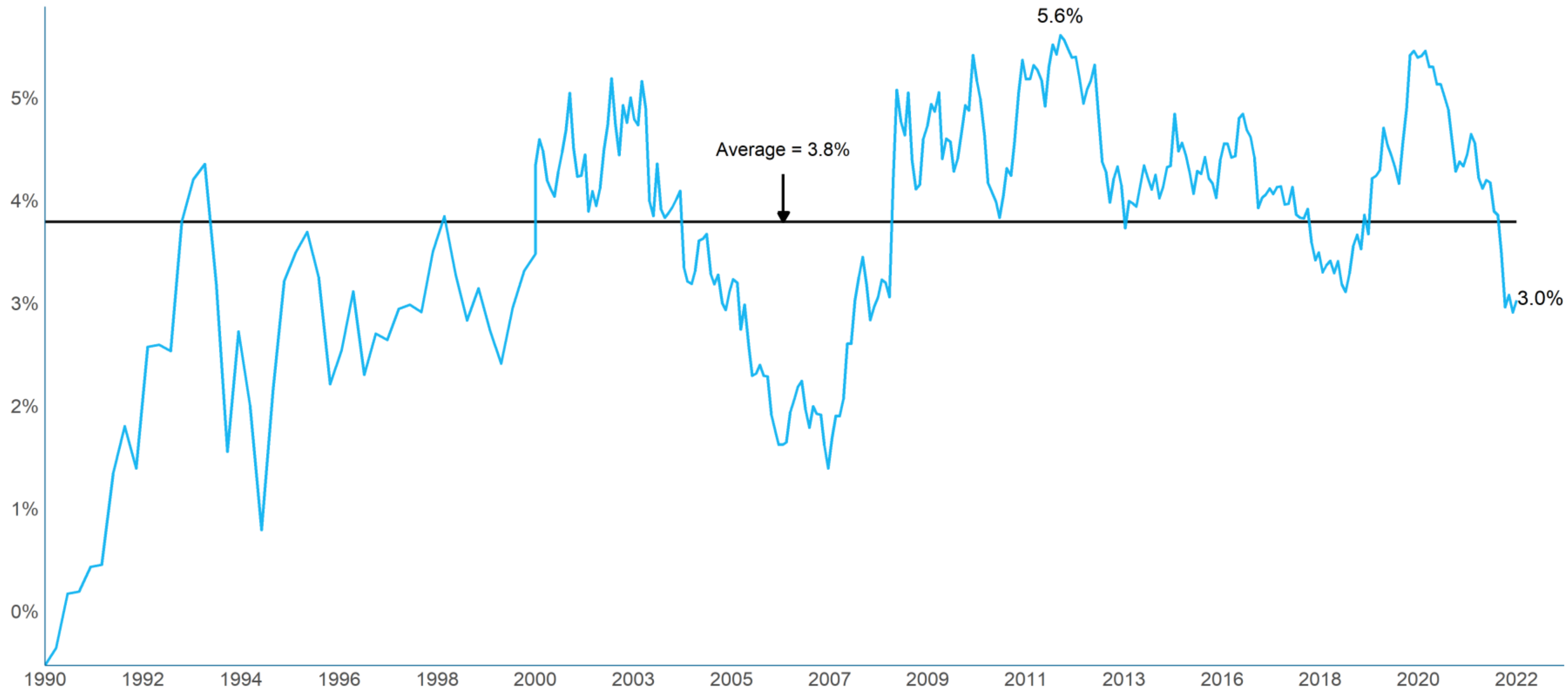
Private Equity Multiples[1]
(As of June 30, 2022)[2]



→ This chart details one valuation metric for the private equity market. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

[1] Private Equity Multiples – Source: S&P LCD Average EBITDA Multiples Paid in All LBOs.
[2] Annual Data, as of December 31, 2021

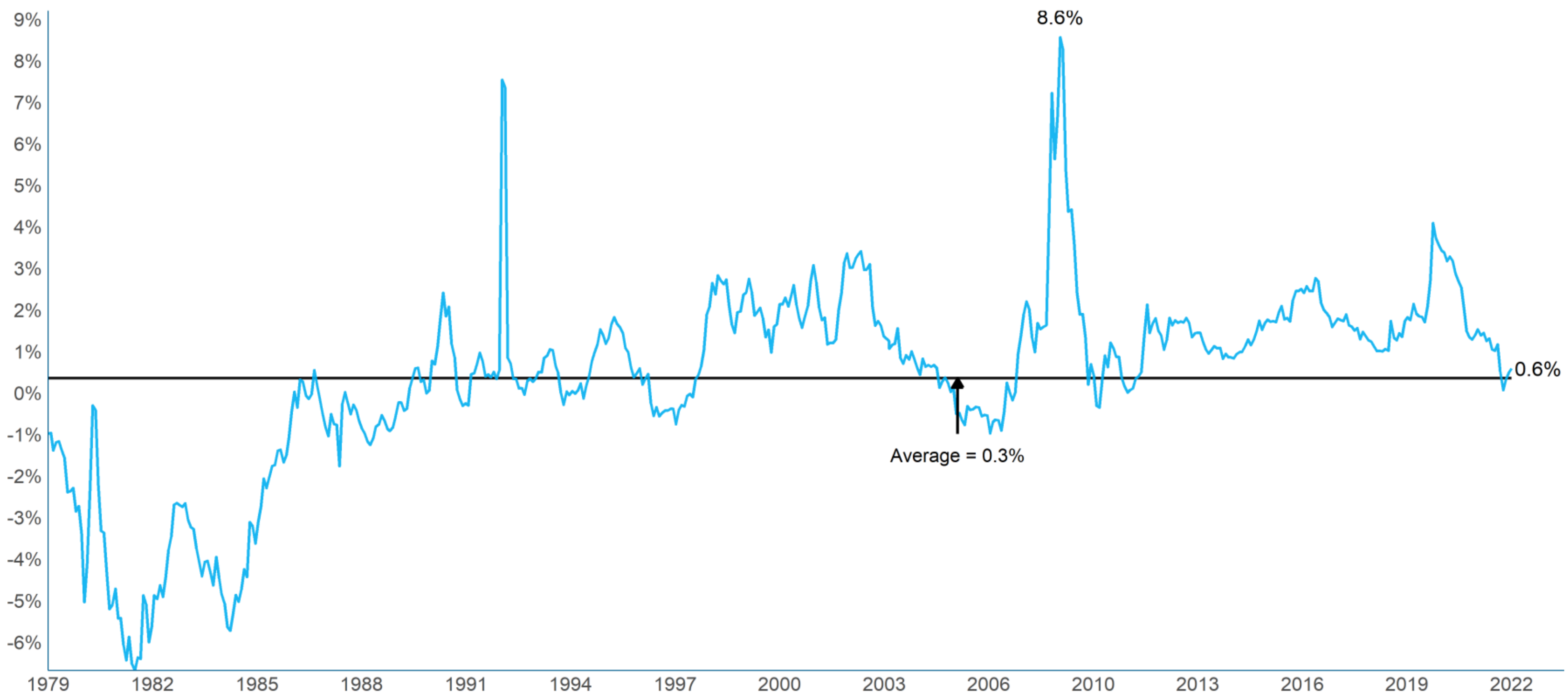
Core Real Estate Spread vs. Ten-Year Treasury[1]
(As of June 30, 2022)



→ This chart details one valuation metric for the private core real estate market. A higher (lower) figure indicates cheaper (more expensive) valuation.

[1] Core Real Estate Spread vs. Ten-Year Treasury – Source: Real Capital Analytics, US Treasury, Bloomberg, and Meketa Investment Group. Core Real Estate is proxied by weighted sector transaction-based indices from Real Capital Analytics and Meketa Investment Group.

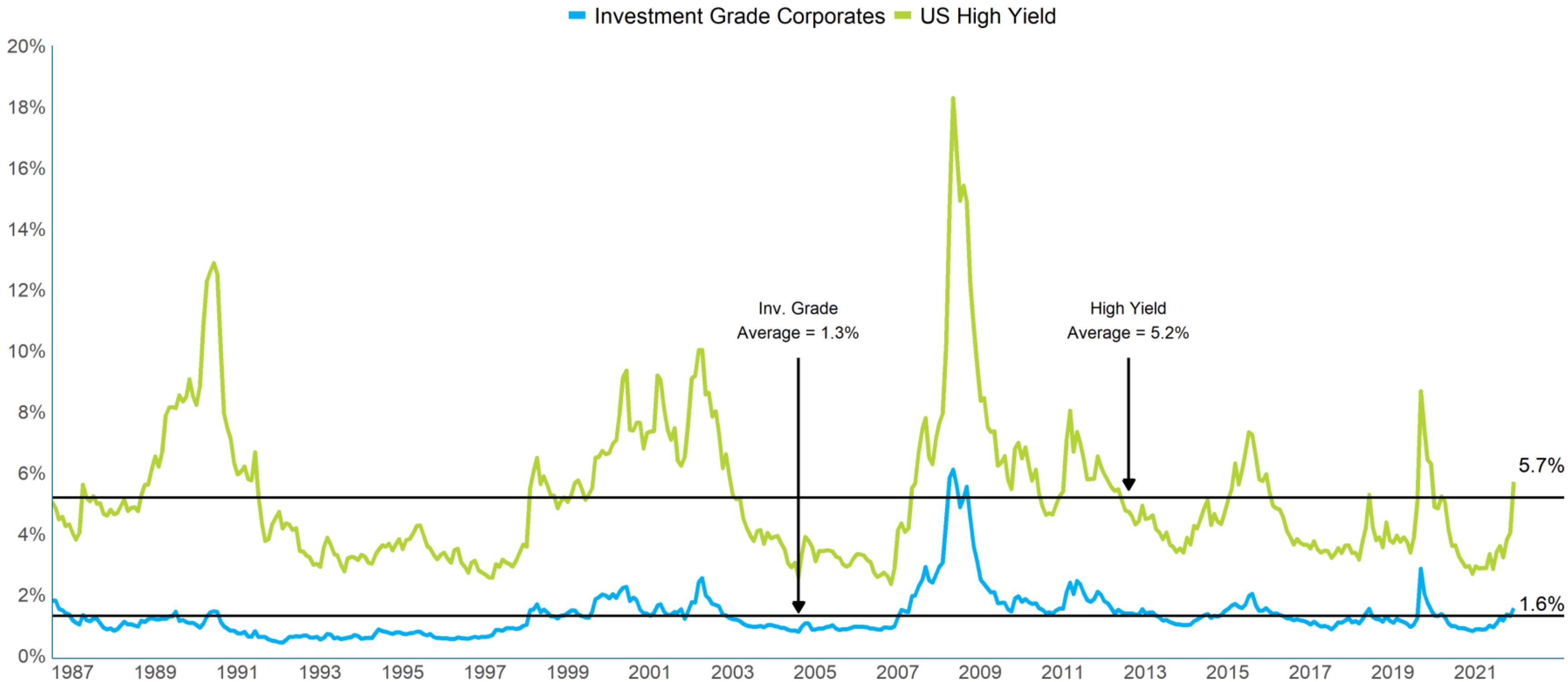
REITs Dividend Yield Spread vs. Ten-Year Treasury[1]
(As of June 30, 2022)



→ This chart details one valuation metric for the public REITs market. A higher (lower) figure indicates cheaper (more expensive) valuation.

[1] REITs Dividend Yield Spread vs. Ten-Year Treasury – Source: NAREIT, US Treasury. REITs are proxied by the yield for the NAREIT Equity Index.

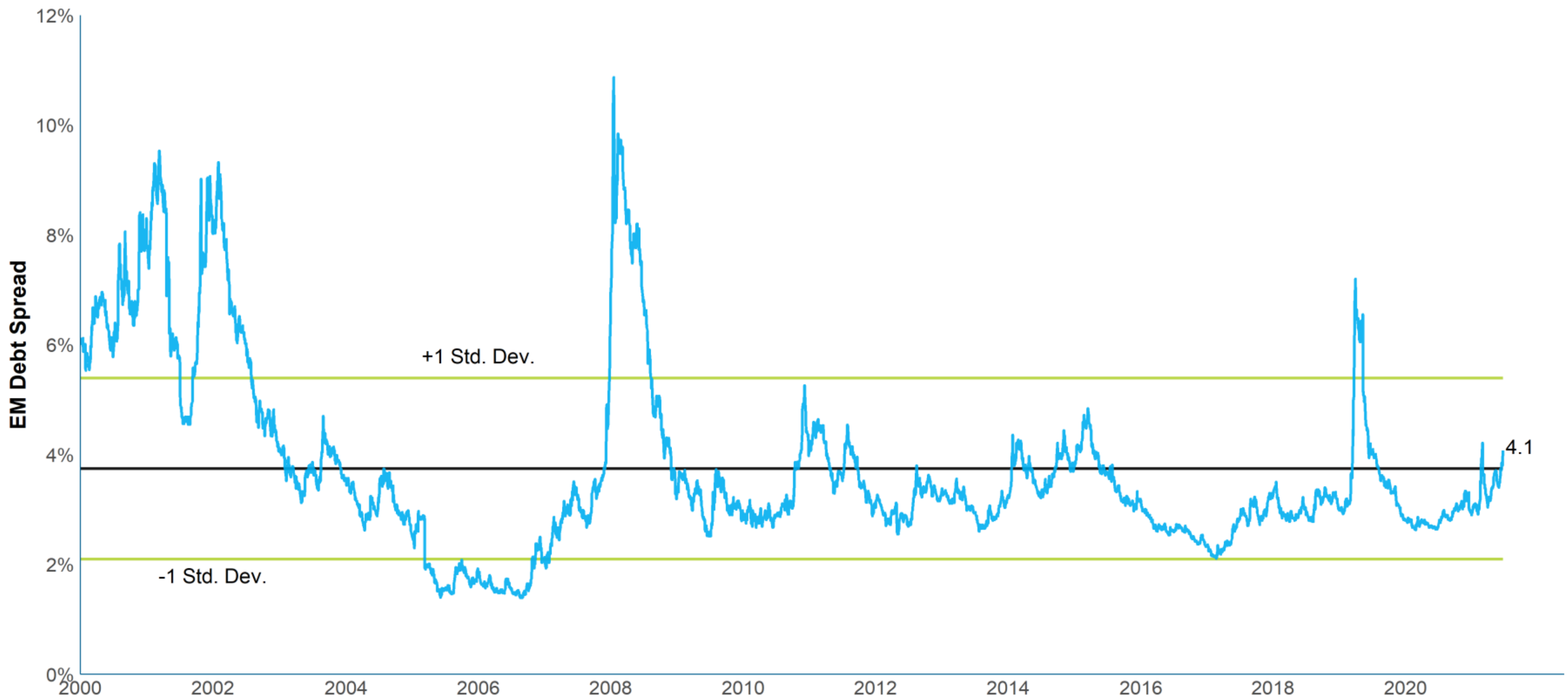
Credit Spreads[1]
(As of June 30, 2022)



→ This chart details one valuation metric for the US credit markets. A higher (lower) figure indicates cheaper (more expensive) valuation relative to history.

[1] Credit Spreads – Source: Bloomberg. High Yield is proxied by the Bloomberg High Yield Index and Investment Grade Corporates are proxied by the Bloomberg US Corporate Investment Grade Index. Spread is calculated as the difference between the Yield to Worst of the respective index and the 10-Year US Treasury yield.

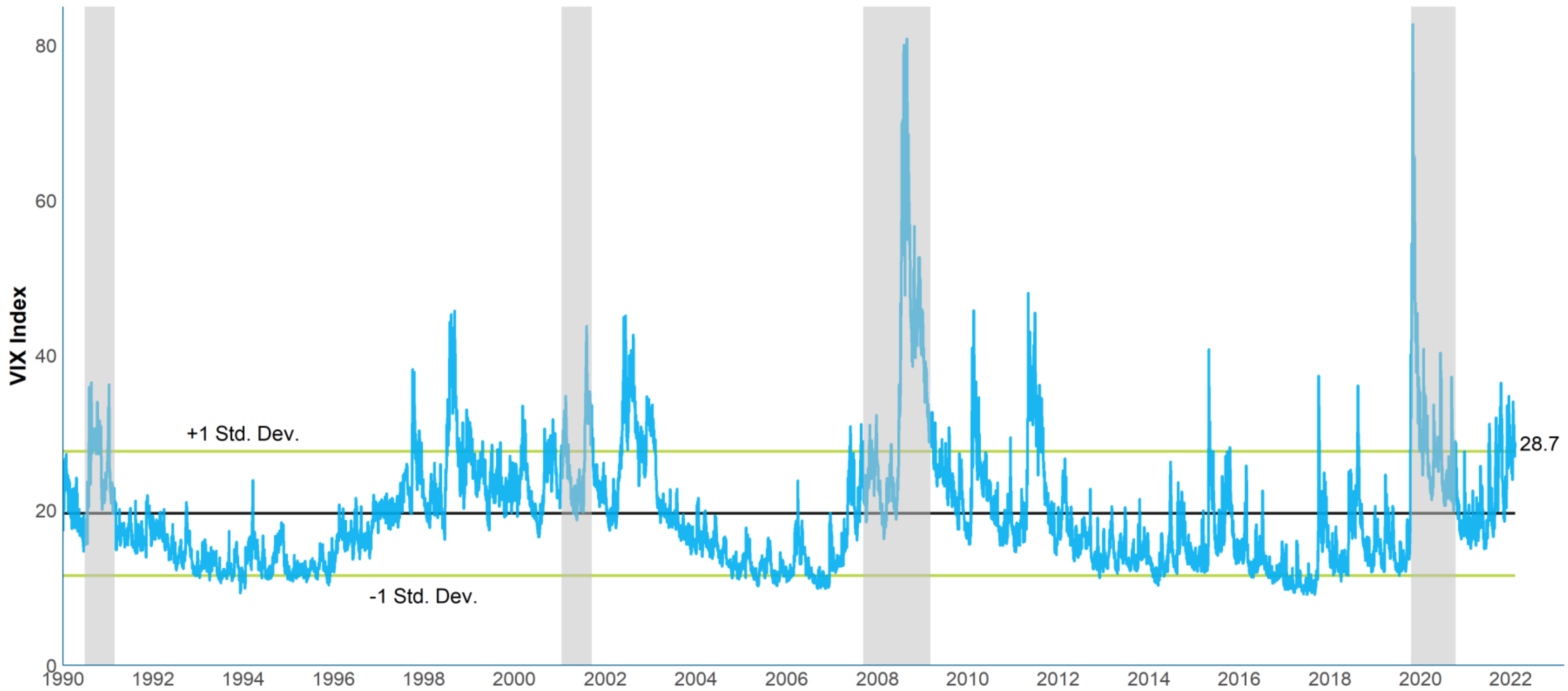
Emerging Market Debt Spreads[1]
(As of June 30, 2022)



→ This chart details one valuation metric for the EM debt markets. A higher (lower) figure indicates cheaper (more expensive) valuation relative to history.

[1] EM Spreads – Source: Bloomberg. Option Adjusted Spread (OAS) for the Bloomberg EM USD Aggregate Index.

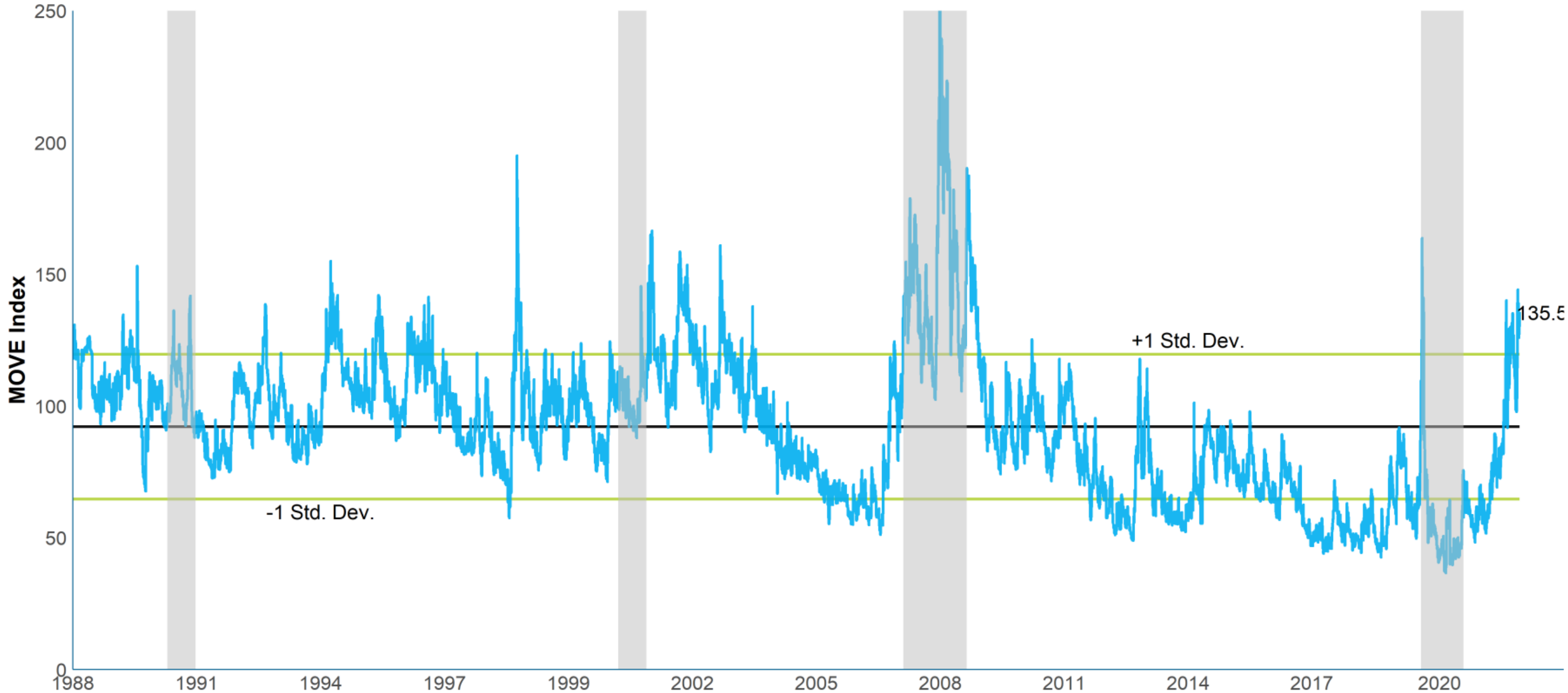
Equity Volatility[1]
(As of June 30, 2022)



→ This chart details historical implied equity market volatility. This metric tends to increase during times of stress/fear and while declining during more benign periods.

[1] Equity Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by VIX Index, a Measure of implied option volatility for US equity markets.

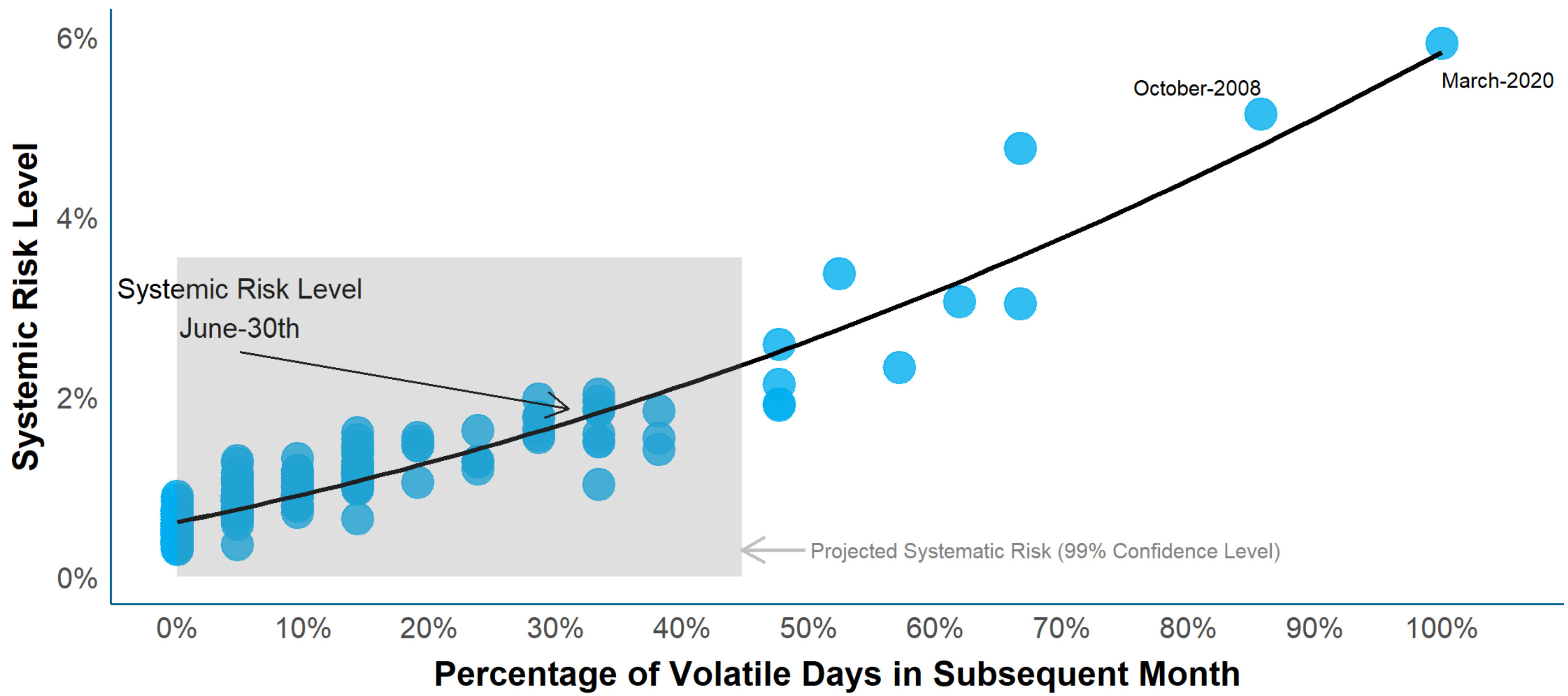
Fixed Income Volatility[1]
(As of June 30, 2022)



→ This chart details historical implied fixed income market volatility. This metric tends to increase during times of stress/fear and while declining during more benign periods.

[1] Fixed Income Volatility – Source: Bloomberg, and Meketa Investment Group. Fixed Income Volatility proxied by MOVE Index, a Measure of implied option volatility for US Treasury markets.

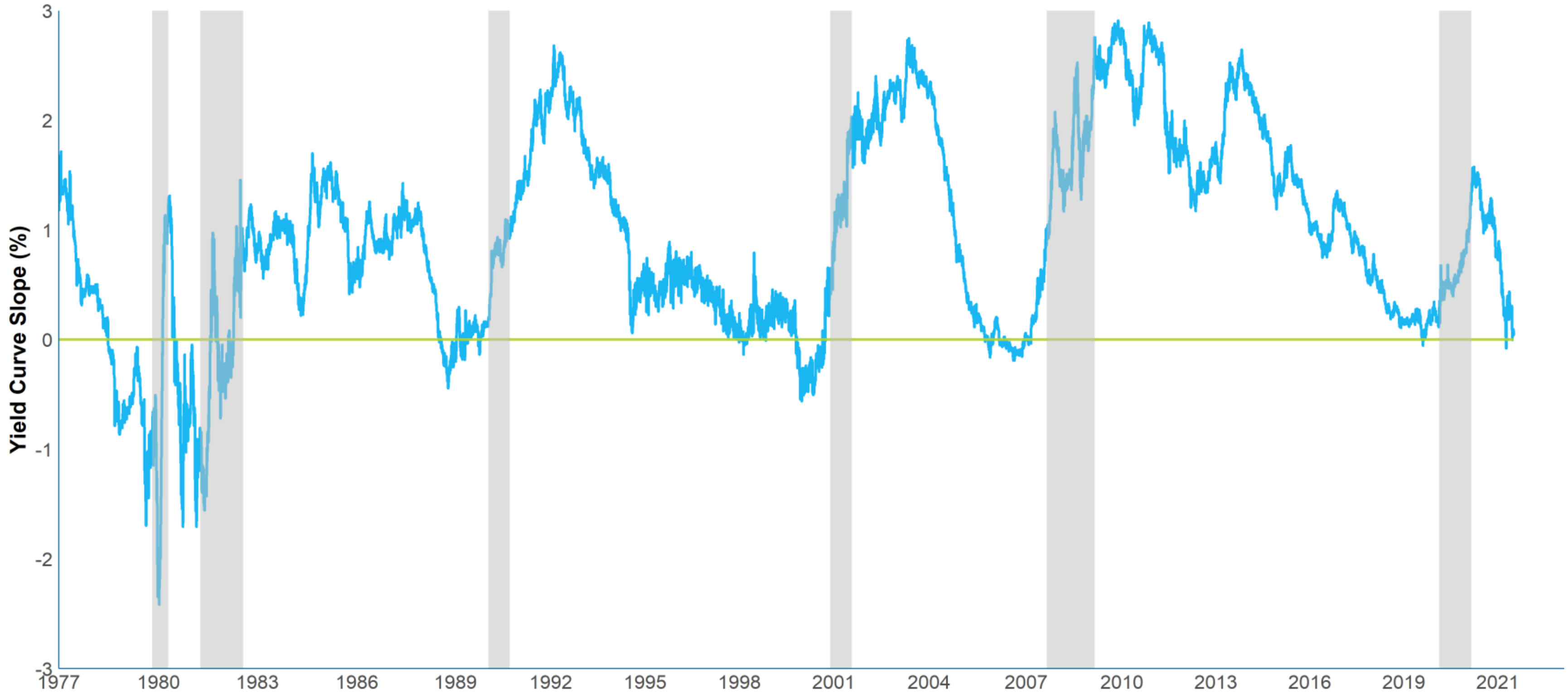
Systemic Risk and Volatile Market Days[1]
(As of June 30, 2022)



→ Systemic Risk is a measure of 'System-wide' risk, which indicates herding type behavior.

[1] Source: Meketa Investment Group. Volatile days are defined as the top 10 percent of realized turbulence, which is a multivariate distance between asset returns.

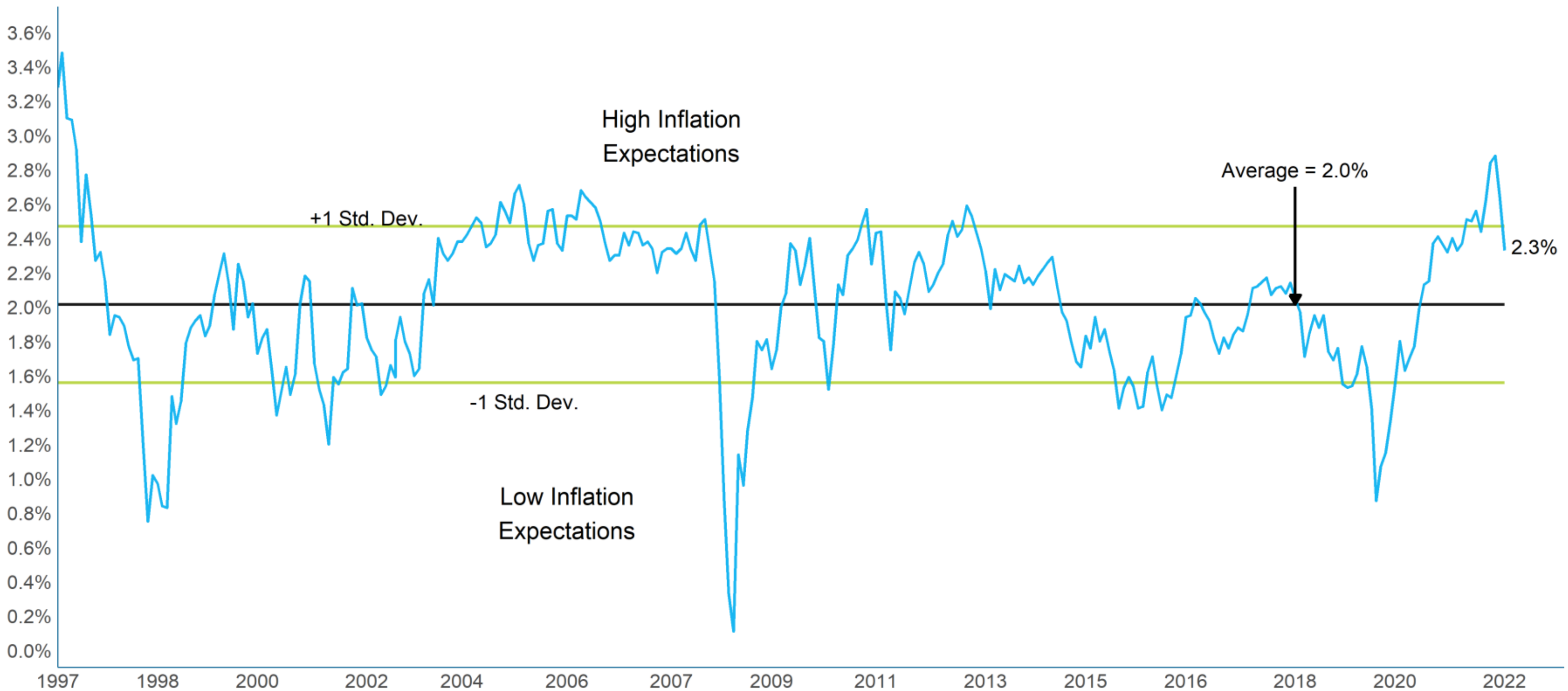
Yield Curve Slope (Ten Minus Two)[1]
(As of June 30, 2022)



→ This chart details the historical difference in yields between ten-year and two-year US Treasury bonds/notes. A higher (lower) figure indicates a steeper (flatter) yield curve slope.

[1] Yield Curve Slope (Ten Minus Two) – Source: Bloomberg, and Meketa Investment Group. Yield curve slope is calculated as the difference between the 10-Year US Treasury Yield and 2-Year US Treasury Yield.

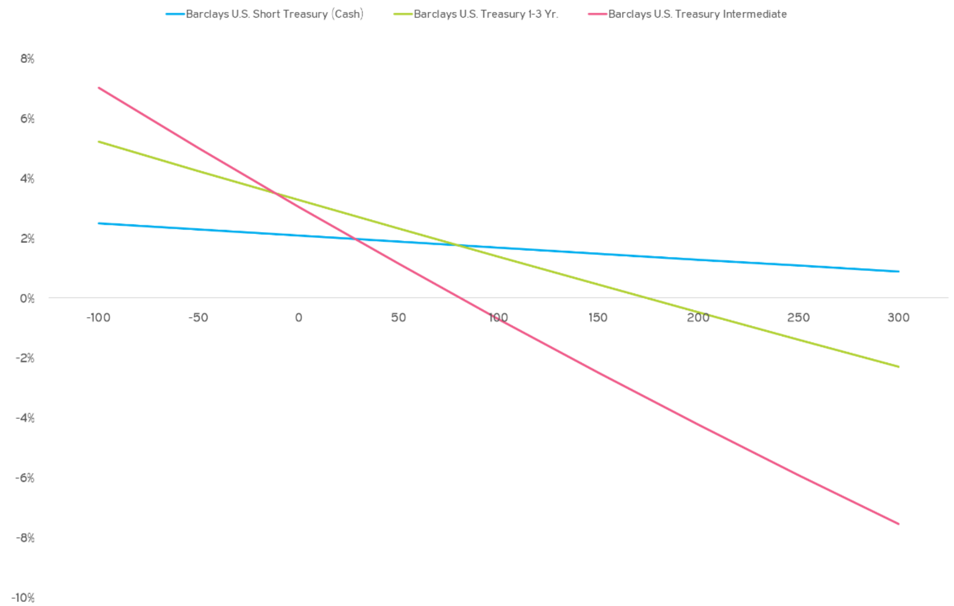
Ten-Year Breakeven Inflation[1]
(As of June 30, 2022)



→ This chart details the difference between nominal and inflation-adjusted US Treasury bonds. A higher (lower) figure indicates higher (lower) inflation expectations.

[1] Ten-Year Breakeven Inflation – Source: US Treasury and Federal Reserve. Inflation is measured by the Consumer Price Index (CPI-U NSA).

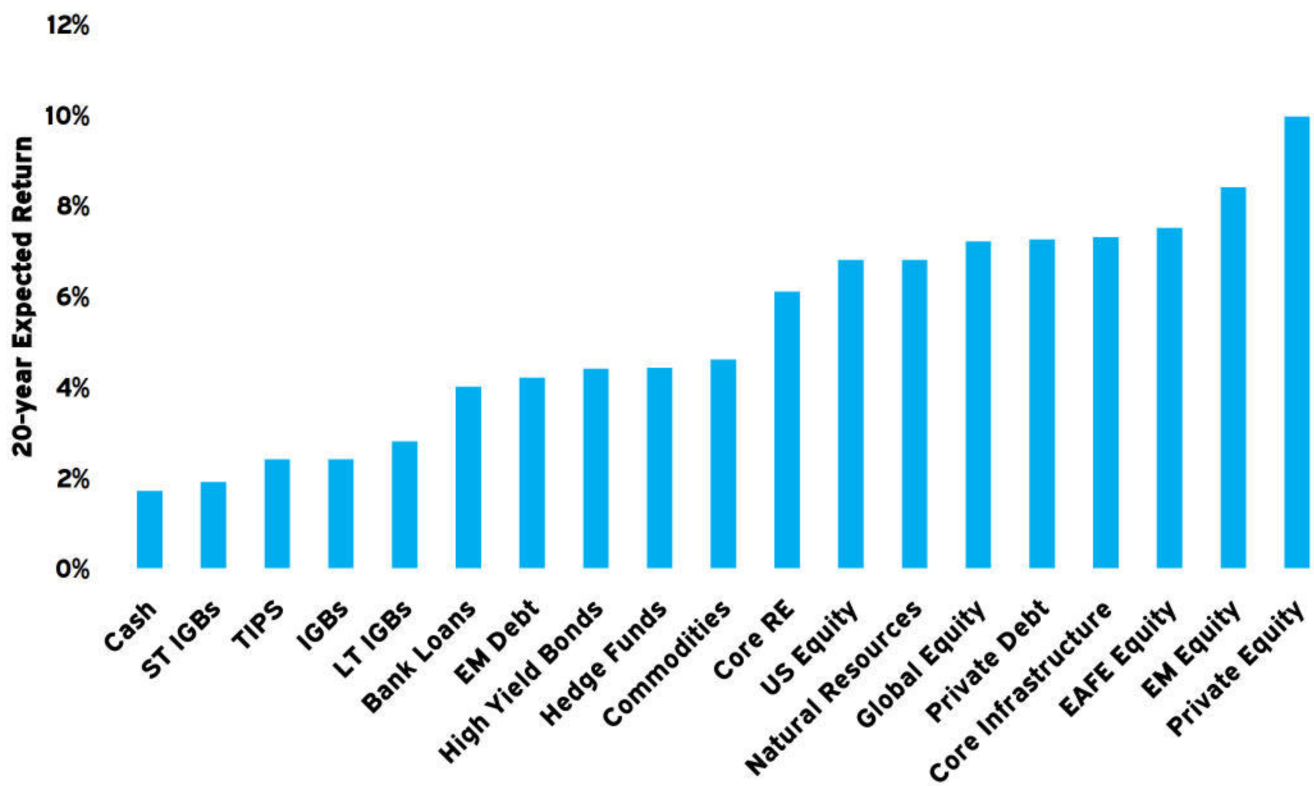
Total Return Given Changes in Interest Rates (bps)[1]
(As of June 30, 2022)



	Total Return for Given Changes in Interest Rates (bps)									Statistics	
	-100	-50	0	50	100	150	200	250	300	Duration	YTW
Barclays US Short Treasury (Cash)	2.5%	2.3%	2.1%	1.9%	1.7%	1.5%	1.3%	1.1%	0.9%	0.41	2.08%
Barclays US Treasury 1-3 Yr.	5.2%	4.2%	3.3%	2.3%	1.4%	0.4%	-0.5%	-1.4%	-2.3%	1.92	3.27%
Barclays US Treasury Intermediate	7.0%	5.0%	3.0%	1.1%	-0.7%	-2.5%	-4.2%	-5.9%	-7.6%	3.86	3.04%
Barclays US Treasury Long	22.4%	12.4%	3.3%	-4.8%	-12.0%	-18.2%	-23.5%	-27.9%	-31.3%	17.17	3.33%

[1] Data represents the expected total return from a given change in interest rates (shown in basis points) over a 12-month period assuming a parallel shift in rates. Source: Bloomberg, and Meketa Investment Group.

Long-Term Outlook – 20-Year Annualized Expected Returns[1]



→ This chart details Meketa's long-term forward-looking expectations for total returns across asset classes.

[1] Source: Meketa Investment Group's 2022 Annual Asset Study.

Appendix

Data Sources and Explanations[1]

→ US Equity Cyclically Adjusted P/E on S&P 500 Index – Source: Robert Shiller and Yale University.

→ Small Cap P/E (Russell 2000 Index) vs. Large Cap P/E (Russell 1000 Index) - Source: Russell Investments. Earnings figures represent 12-month "as reported" earnings.

→ Growth P/E (Russell 3000 Growth Index) vs. Value (Russell 3000 Value Index) P/E - Source: Bloomberg, MSCI, and Meketa Investment Group. Earnings figures represent 12-month "as reported" earnings.

→ Developed International Equity (MSCI EAFE) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly "as reported" earnings over the previous ten years.

→ Emerging Market Equity (MSCI Emerging Markets Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly "as reported" earnings over the previous ten years.

→ Private Equity Multiples – Source: S&P LCD Average EBITDA Multiples Paid in All LBOs.

→ Core Real Estate Spread vs. Ten-Year Treasury – Source: Real Capital Analytics, US Treasury, Bloomberg, and Meketa Investment Group. Core Real Estate is proxied by weighted sector transaction-based indices from Real Capital Analytics and Meketa Investment Group.

[1] All Data as of June 30, 2022, unless otherwise noted.

Appendix

Data Sources and Explanations[1]

→ REITs Dividend Yield Spread vs. Ten-Year Treasury – Source: NAREIT, US Treasury. REITs are proxied by the yield for the NAREIT Equity Index.

→ Credit Spreads – Source: Bloomberg High Yield is proxied by the Bloomberg High Yield Index and Investment Grade Corporates are proxied by the Bloomberg US Corporate Investment Grade Index.

- Spread is calculated as the difference between the Yield to Worst of the respective index and the 10-Year Treasury Yield.

→ EM Debt Spreads – Source: Bloomberg, and Meketa Investment Group. Option Adjusted Spread (OAS) for the Bloomberg EM USD Aggregate Index.

→ Equity Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by VIX Index, a Measure of implied option volatility for US equity markets.

→ Fixed Income Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by MOVE Index, a Measure of implied option volatility for US Treasury markets.

→ Systemic Risk and Volatile Market Days – Source: Meketa Investment Group. Volatile days are defined as the top 10 percent of realized turbulence, which is a multivariate distance between asset returns.

→ Systemic Risk, which measures risk across markets, is important because the more contagion of risk that exists between assets, the more likely it is that markets will experience volatile periods.

[1] All Data as of June 30, 2022, unless otherwise noted.

Appendix

Data Sources and Explanations[1]

→ Yield Curve Slope (Ten Minus Two) – Source: Bloomberg, and Meketa Investment Group. Yield curve slope is calculated as the difference between the 10-Year US Treasury Yield and 2-Year US Treasury Yield.

→ Ten-Year Breakeven Inflation – Source: US Treasury and Federal Reserve. Inflation is measured by the Consumer Price Index (CPI-U NSA).

[1] All Data as of June 30, 2022, unless otherwise noted.

Meketa Market Sentiment Indicator

Explanation, Construction and Q&A

Meketa has created the MIG Market Sentiment Indicator (MIG-MSI) to complement our valuation-focused Risk Metrics. This measure of sentiment is meant to capture significant and persistent shifts in long-lived market trends of economic growth risk, either towards a risk-seeking trend or a risk-aversion trend.

This appendix explores:

→ What is the Meketa Market Sentiment Indicator?

→ How do I read the indicator graph?

→ How is the Meketa Market Sentiment Indicator constructed?

→ What do changes in the indicator mean?

Meketa has created a market sentiment indicator for monthly publication (the MIG-MSI – see below) to complement Meketa's Risk Metrics.

→ Meketa's Risk Metrics, which rely significantly on standard market measures of relative valuation, often provide valid early signals of increasing long-term risk levels in the global investment markets. However, as is the case with numerous valuation measures, the Risk Metrics may convey such risk concerns long before a market correction take place. The MIG-MSI helps to address this early-warning bias by measuring whether the markets are beginning to acknowledge key Risk Metrics trends, and / or indicating non-valuation-based concerns. Once the MIG-MSI indicates that the market sentiment has shifted, it is our belief that investors should consider significant action, particularly if confirmed by the Risk Metrics. Importantly, Meketa believes the Risk Metrics and MIG-MSI should always be used in conjunction with one another and never in isolation. The questions and answers below highlight and discuss the basic underpinnings of the Meketa MIG-MSI:

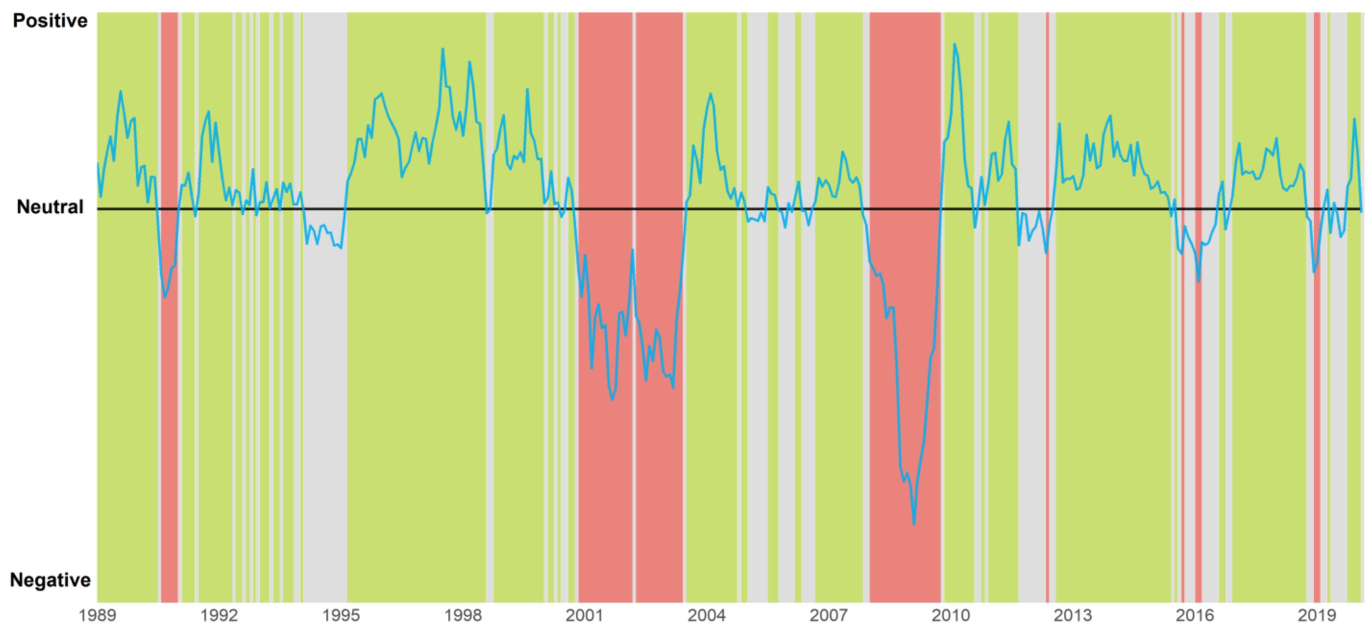
What is the Meketa Market Sentiment Indicator (MIG-MSI)?

→ The MIG-MSI is a measure meant to gauge the market's sentiment regarding economic growth risk. Growth risk cuts across most financial assets and is the largest risk exposure that most portfolios bear. The MIG-MSI takes into account the momentum (trend over time, positive or negative) of the economic growth risk exposure of publicly traded stocks and bonds, as a signal of the future direction of growth risk returns; either positive (risk seeking market sentiment), or negative (risk averse market sentiment).

How do I read the Meketa Market Sentiment Indicator graph?

→ Simply put, the MIG-MSI is a color-coded indicator that signals the market's sentiment regarding economic growth risk. It is read left to right chronologically. A green indicator on the MIG-MSI indicates that the market's sentiment towards growth risk is positive. A gray indicator indicates that the market's sentiment towards growth risk is neutral or inconclusive. A red indicator indicates that the market's sentiment towards growth risk is negative. The black line on the graph is the level of the MIG-MSI. The degree of the signal above or below the neutral reading is an indication the signal's current strength.

→ Momentum as we are defining it is the use of the past behavior of a series as a predictor of its future behavior.



How is the Meketa Market Sentiment Indicator (MIG-MSI) Constructed?

→ The MIG-MSI is constructed from two sub-elements representing investor sentiment in stocks and bonds:

- Stock return momentum: Return momentum for the S&P 500 Equity Index (trailing 12-months).
- Bond yield spread momentum: Momentum of bond yield spreads (excess of the measured bond yield over the identical duration US Treasury bond yield) for corporate bonds (trailing 12-months) for both investment grade bonds (75% weight) and high yield bonds (25% weight).
- Both measures are converted to Z-scores and then combined to get an "apples to apples" comparison without the need of re-scaling.

→ The black line reading on the graph is calculated as the average of the stock return momentum measure and the bonds spread momentum measure[1]. The color reading on the graph is determined as follows:

- If both stock return momentum and bond spread momentum are positive = GREEN (positive).
- If one of the momentum indicators is positive, and the other negative = GRAY (inconclusive).
- If both stock return momentum and bond spread momentum are negative = RED (negative).

[1] Momentum as we are defining it is the use of the past behavior of a series as a predictor of its future behavior.
"Time Series Momentum" Moskowitz, Ooi, Pedersen, August 2010. *http://pages.stern.nyu.edu/~lpederse/papers/TimeSeriesMomentum.pdf*

What does the Meketa Market Sentiment Indicator (MIG-MSI) mean? Why might it be useful?

→ There is strong evidence that time series momentum is significant and persistent. Across an extensive array of asset classes, the sign of the trailing 12-month return (positive or negative) is indicative of future returns (positive or negative) over the next 12-month period. The MIG-MSI is constructed to measure this momentum in stocks and corporate bond spreads. A reading of green or red is agreement of both the equity and bond measures, indicating that it is likely that this trend (positive or negative) will continue over the next 12 months. When the measures disagree, the indicator turns gray. A gray reading does not necessarily mean a new trend is occurring, as the indicator may move back to green, or into the red from there. The level of the reading (black line) and the number of months at the red or green reading, gives the user additional information on which to form an opinion, and potentially take action.

Economic and Market Update

Data as of June 30, 2022

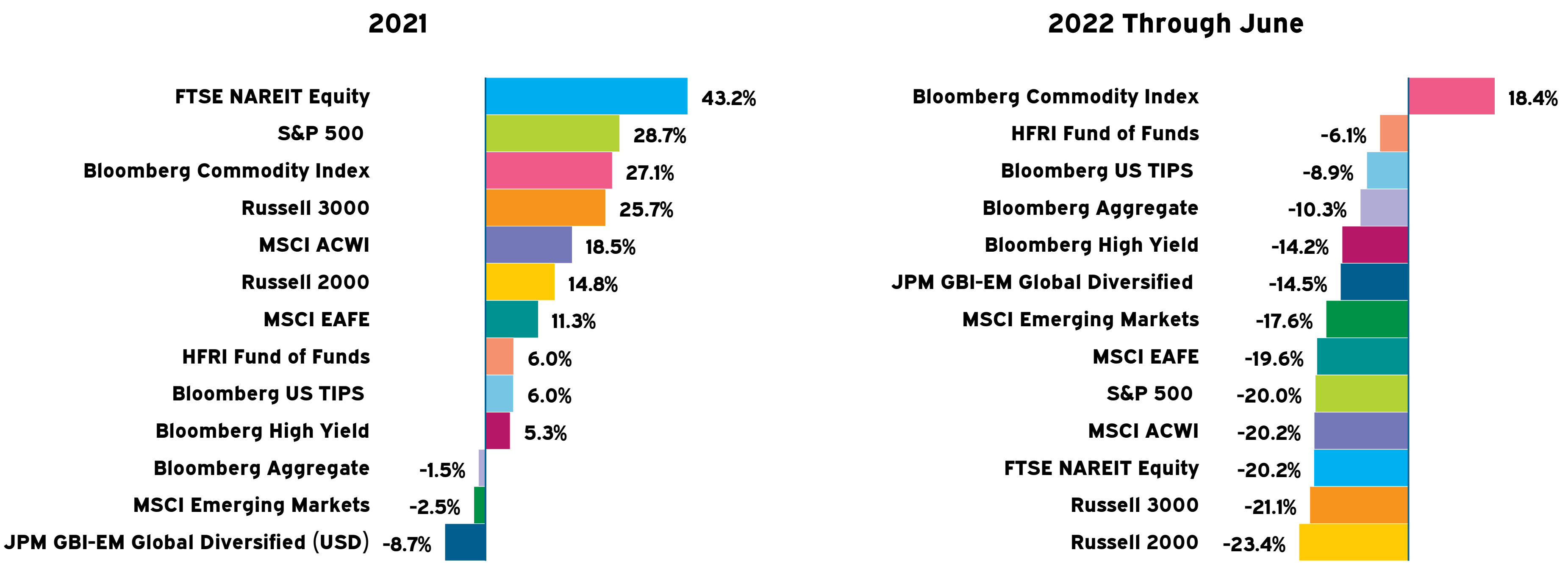
Commentary

→ Global markets resumed their sell-off in June as inflation surged in the US and Europe.

- In response, the US Federal Reserve increased interest rates 75 basis points (above prior expectations). Markets also repriced the growth outlook downward.
- All major equity indices suffered steep declines in June. Emerging markets proved slightly more resilient than developed markets on a partial re-opening in China from pandemic related lockdowns.
- In a reversal of the prior trend growth stocks outperformed value stocks in June.
- The global bond selloff resumed, as inflation fears, and policy expectations weighed on all major bond markets.

→ Persistently high inflation and the expected policy response, the war in Ukraine, lingering COVID-19 issues, and lockdowns in China will all have considerable economic and financial consequences for the global economy.

Index Returns[1]



→ Outside of emerging markets and the broad US investment grade bond market (Bloomberg Aggregate), most asset classes appreciated in 2021.

→ In June all major asset classes posted negative returns on renewed inflation and economic growth fears, with equities experiencing the largest declines.

[1] Source: Bloomberg and FactSet. Data is as of June 30, 2022.

Domestic Equity Returns[1]

Domestic Equity	June (%)	Q2 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
S&P 500	-8.3	-16.1	-20.0	-10.6	10.6	11.3	12.9
Russell 3000	-8.4	-16.7	-21.1	-13.9	9.8	10.6	12.6
Russell 1000	-8.4	-16.7	-20.9	-13.0	10.2	11.0	12.8
Russell 1000 Growth	-7.9	-20.9	-28.1	-18.8	12.6	14.3	14.8
Russell 1000 Value	-8.7	-12.2	-12.9	-6.8	6.9	7.2	10.5
Russell MidCap	-10.0	-16.8	-21.6	-17.3	6.6	8.0	11.3
Russell MidCap Growth	-7.5	-21.1	-31.0	-29.6	4.3	8.9	11.5
Russell MidCap Value	-11.0	-14.7	-16.2	-10.0	6.7	6.3	10.6
Russell 2000	-8.2	-17.2	-23.4	-25.2	4.2	5.2	9.4
Russell 2000 Growth	-6.2	-19.3	-29.5	-33.4	1.4	4.8	9.3
Russell 2000 Value	-9.9	-15.3	-17.3	-16.3	6.2	4.9	9.0

US Equities: Russell 3000 Index declined 8.3%, and growth indices outperformed value in June.

→ US stocks experienced steep losses for the month, led by the energy and materials sectors.

→ Growth indices outperformed their value counterparts for the month but remain well behind for the year-to-date period.

→ Small company stocks slightly outperformed large company stocks in June but remain behind their larger peers year-to-date.

[1] Source: Bloomberg. Data is as of June 30, 2022.

Foreign Equity Returns[1]

Foreign Equity	June (%)	Q2 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
MSCI ACWI ex. US	-8.6	-13.7	-18.4	-19.4	1.3	2.5	4.8
MSCI EAFE	-9.3	-14.5	-19.6	-17.8	1.1	2.2	5.4
MSCI EAFE (Local Currency)	-6.3	-7.8	-11.3	-6.6	4.4	4.3	8.3
MSCI EAFE Small Cap	-11.0	-17.7	-24.7	-24.0	1.1	1.7	7.2
MSCI Emerging Markets	-6.6	-11.5	-17.6	-25.3	0.6	2.2	3.1
MSCI Emerging Markets (Local Currency)	-4.6	-8.1	-13.7	-20.2	3.3	4.4	6.0
MSCI China	6.6	3.4	-11.3	-31.8	-0.6	2.1	5.5

International Equities (MSCI EAFE) declined 9.3% and Emerging Markets (MSCI EM) declined 6.6% in June.

→ Non-US developed market stocks slightly trailed the US for the month, while emerging markets stocks had better results due to China gaining 6.6%. Both remain notably negative for the year-to-date period, but ahead of the US.

→ The war in Ukraine, high inflation and the likely monetary policy response, and slowing growth continue to weigh on sentiment.

→ As in the US, growth stocks outperformed value stocks across developed and emerging markets.

[1] Source: Bloomberg. Data is as of June 30, 2022.

Fixed Income Returns[1]

Fixed Income	June (%)	Q2 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)	Current Yield (%)	Duration (Years)
Bloomberg Universal	-2.0	-5.1	-10.9	-10.9	-0.9	0.9	1.8	4.2	6.4
Bloomberg Aggregate	-1.6	-4.7	-10.3	-10.3	-0.9	0.9	1.5	3.7	6.6
Bloomberg US TIPS	-3.2	-6.1	-8.9	-5.1	3.0	3.2	1.7	3.4	7.0
Bloomberg High Yield	-6.7	-9.8	-14.2	-12.8	0.2	2.1	4.5	8.9	4.8
JPM GBI-EM Global Diversified (USD)	-4.5	-8.6	-14.5	-19.3	-5.8	-2.3	-1.5	7.4	4.9

Fixed Income: The Bloomberg Universal declined 2.0% in June.

→ The above expectations CPI print led to renewed inflation fears driving interest rates higher and weighing on the broad US investment grade bond market (Bloomberg Aggregate).

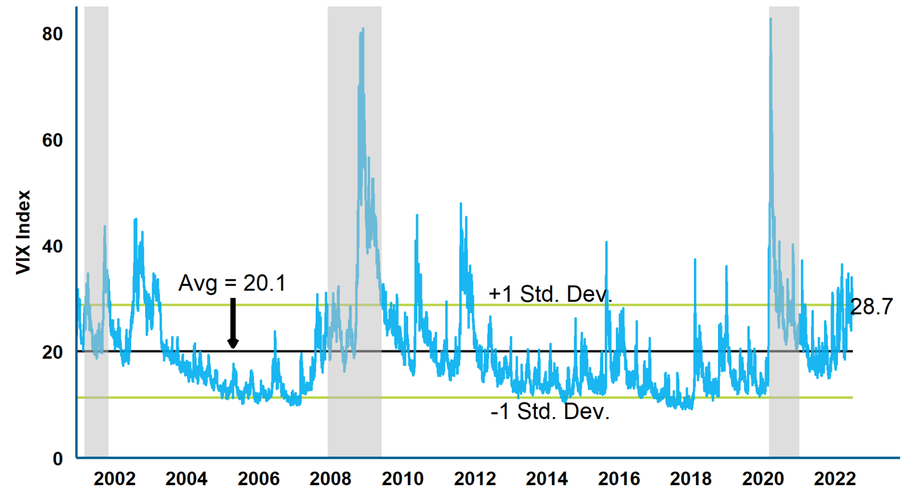
→ Despite the above expectation CPI prints, breakeven inflation rates have continued to move down driven by the decline in nominal rates. The nominal 10-year Treasury yield peaked at 3.47% before declining to 3.01% by month-end, while the 2-year Treasury yield declined from 3.43% to 2.95%.

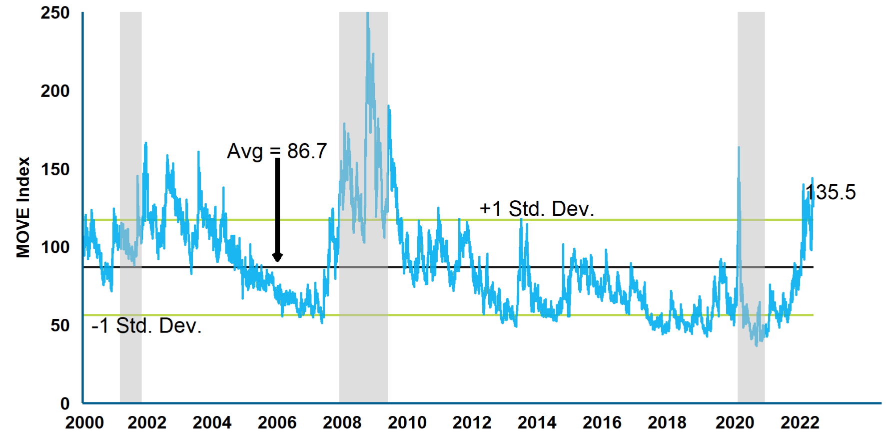
→ US credit spreads widened, particularly for high yield debt, leading to it having the worst results among bonds for the month.

→ Emerging market debt also declined for the month.

[1] Source: Bloomberg. JPM GBI-EM is from InvestorForce. Data is as of June 30, 2022.

Equity and Fixed Income Volatility[1]

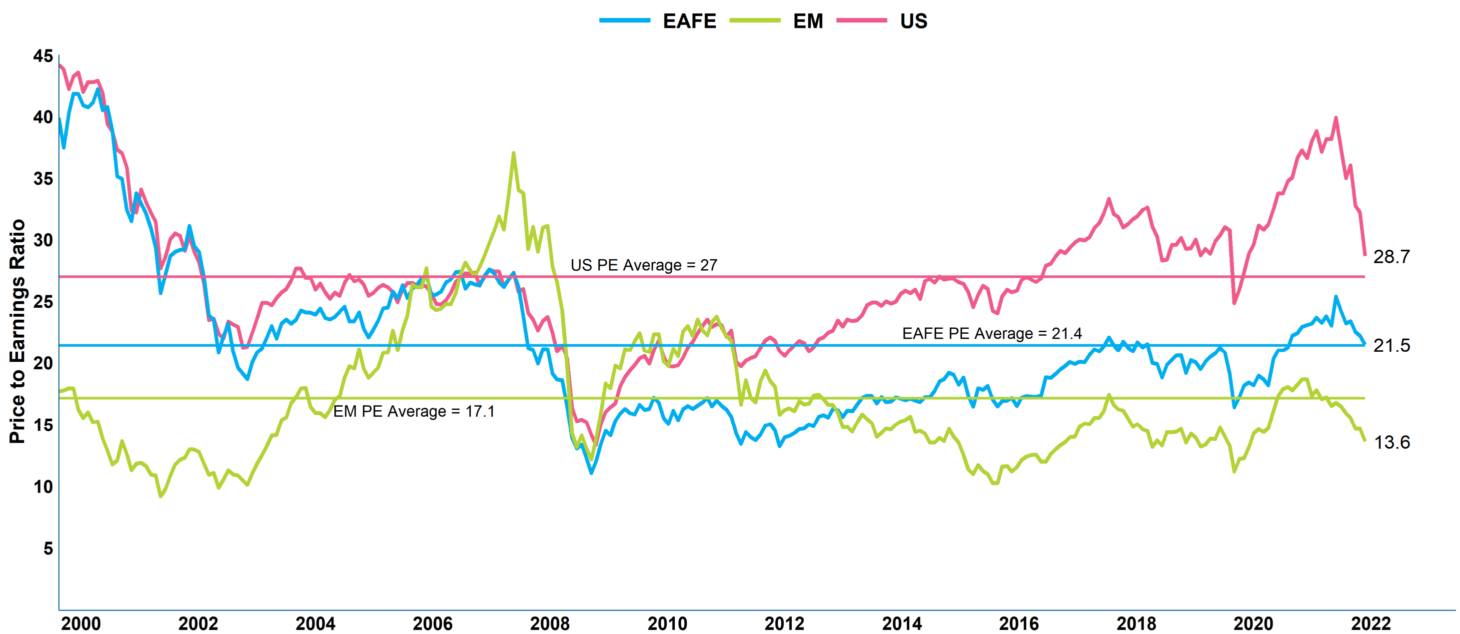




- → Volatility in equities (VIX) and fixed income (MOVE) rose in June on renewed inflation fears and on building signs of weakness in economic growth.
- → Fixed income volatility remains particularly high due to the uncertain path of short-term interest rates.

[1] Equity and Fixed Income Volatility – Source: Bloomberg. Implied volatility as measured using VIX Index for equity markets and the MOVE Index to measure interest rate volatility for fixed income markets. Data is as of June 2022. The average line indicated is the average of the VIX and MOVE values between January 2000 and the recent month-end respectively.

Equity Cyclically Adjusted P/E Ratios[1]

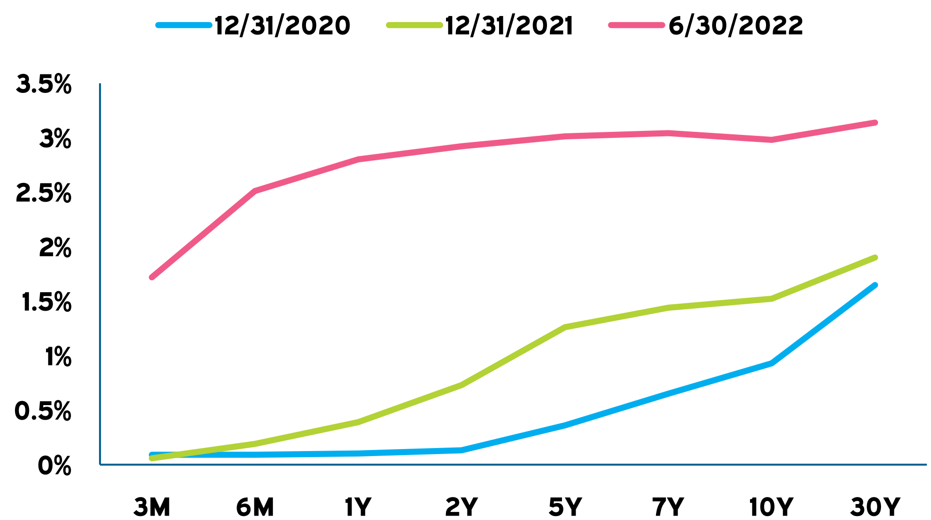


→ The steep decline in June in US equities pushed valuations lower, approaching the level of the long-term (post-2000) average.

→ International developed market valuations remain below the US and are slightly above their own long-term average, with those for emerging markets the lowest and under the long-term average.

[1] US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group. Developed and Emerging Market Equity (MSCI EAFE and EM Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly "as reported" earnings over the previous ten years. Data is as of June 30, 2022. The average line is the long-term average of the US, EM, and EAFE PE values from December 1999 to the recent month-end respectively.

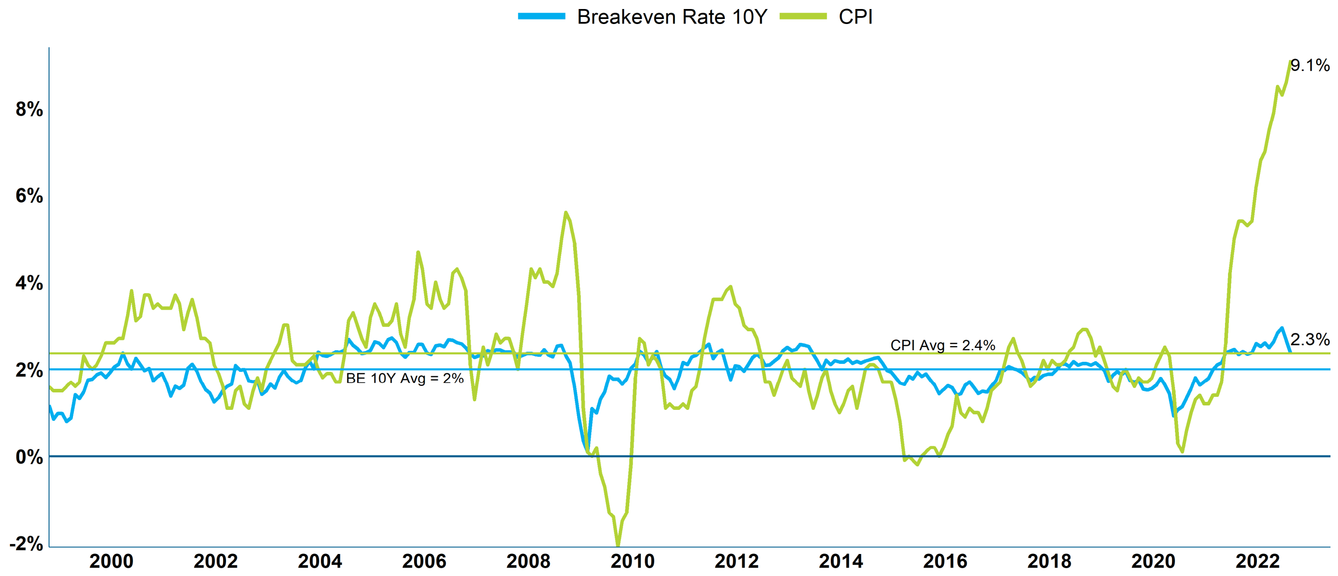
US Yield Curve[1]



- → Rates across the yield curve remain much higher than at the start of the year.
- → In June, rates rose across maturities (particularly short-dated), as markets continue to reflect elevated inflation and rate expectations.
- → The curve continued to flatten in June with the spread between two-year and ten-year Treasuries falling from 30 basis points at the end of May to just 5 basis points by the end of June.
- → Since month-end, the spread between two-year and ten-year Treasuries became negative which historically has often signaled a coming recession.

[1] Source: Bloomberg. Data is as of June 30, 2022.

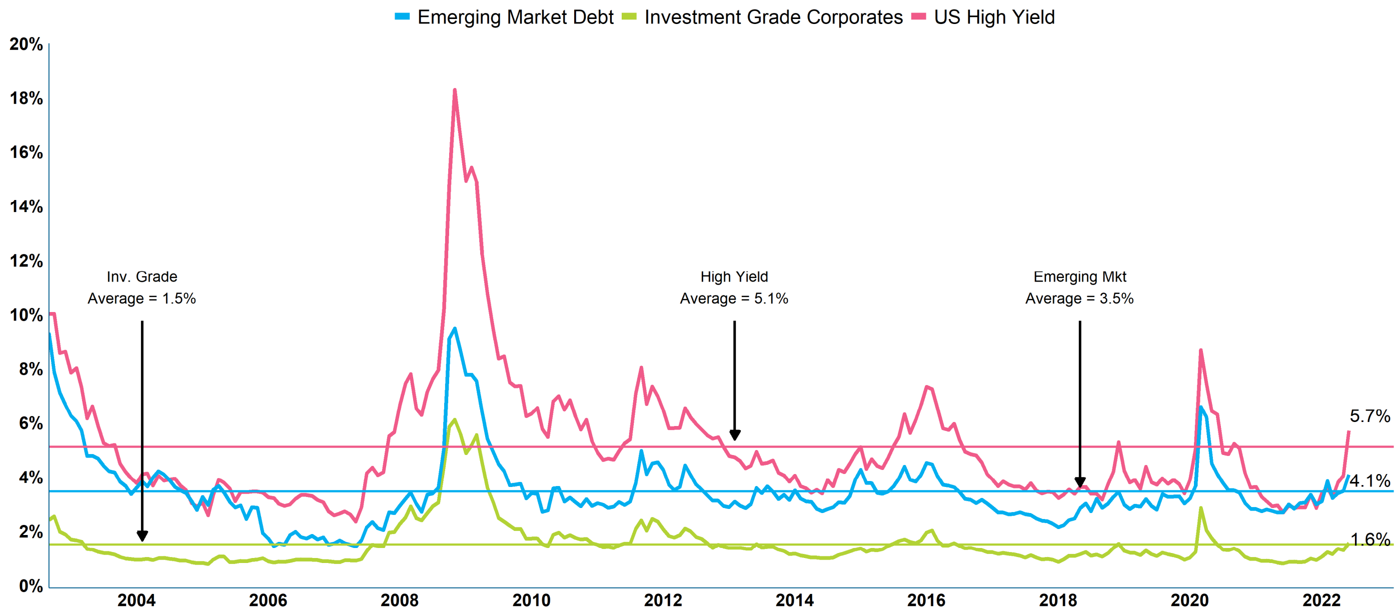
Ten-Year Breakeven Inflation and CPI[1]



- → Inflation expectations (breakevens) fell further in June on declining growth expectations and anticipated tighter monetary policy.
- → Trailing twelve-month CPI rose in June (9.1% versus 8.6%) and notably came in above expectations. Inflation levels in the US remain well above the long-term average of 2.4%.
- → Rising prices for energy (particularly oil), food, housing, and for new and used cars, remain key drivers of higher inflation.

[1] Source: Bloomberg. Data is as of June 30, 2022. The CPI and 10 Year Breakeven average lines denote the average values from August 1998 to the present month-end respectively. Breakeven values represent month-end values for comparative purposes.

Credit Spreads vs. US Treasury Bonds[1]



- → Credit spreads (the spread above a comparable maturity Treasury) rose in June with high yield and investment grade corporate bonds breaking above their long-run averages.
- → In the US, spreads for high yield significantly increased from 4.0% to 5.7% in the risk-off environment, while investment grade spreads experienced a more modest increase (1.3% to 1.6%). Emerging market spreads also rose (3.5% to 4.1% during the month) but finished much lower than US high yield spreads.

[1] Sources: Bloomberg. Data is as of June 30, 2022. Average lines denote the average of the investment grade, high yield, and emerging market spread values from August 2000 to the recent month-end respectively.

Global Economic Outlook

The IMF significantly lowered global growth forecasts in their latest projections, driven by the economic impacts of the war in Ukraine.

→ The IMF forecasts final global GDP growth to come in at 6.1% in 2021 and 3.6% in 2022 (0.8% below the prior 2022 estimate), both still above the past ten-year 3.0% average.

→ In advanced economies, GDP is projected to increase 3.3% in 2022 and 2.4% in 2023. The US has limited economic ties with Russia but saw another downgrade in the 2022 growth forecast (3.7% versus 4.0%) largely due to policy tightening happening faster than previously expected. The euro area saw a significant downgrade in expected growth (2.8% versus 3.9%) in 2022 as rising energy prices particularly weigh on the region that is a net importer of energy. The Japanese economy is expected to grow 2.4% this year.

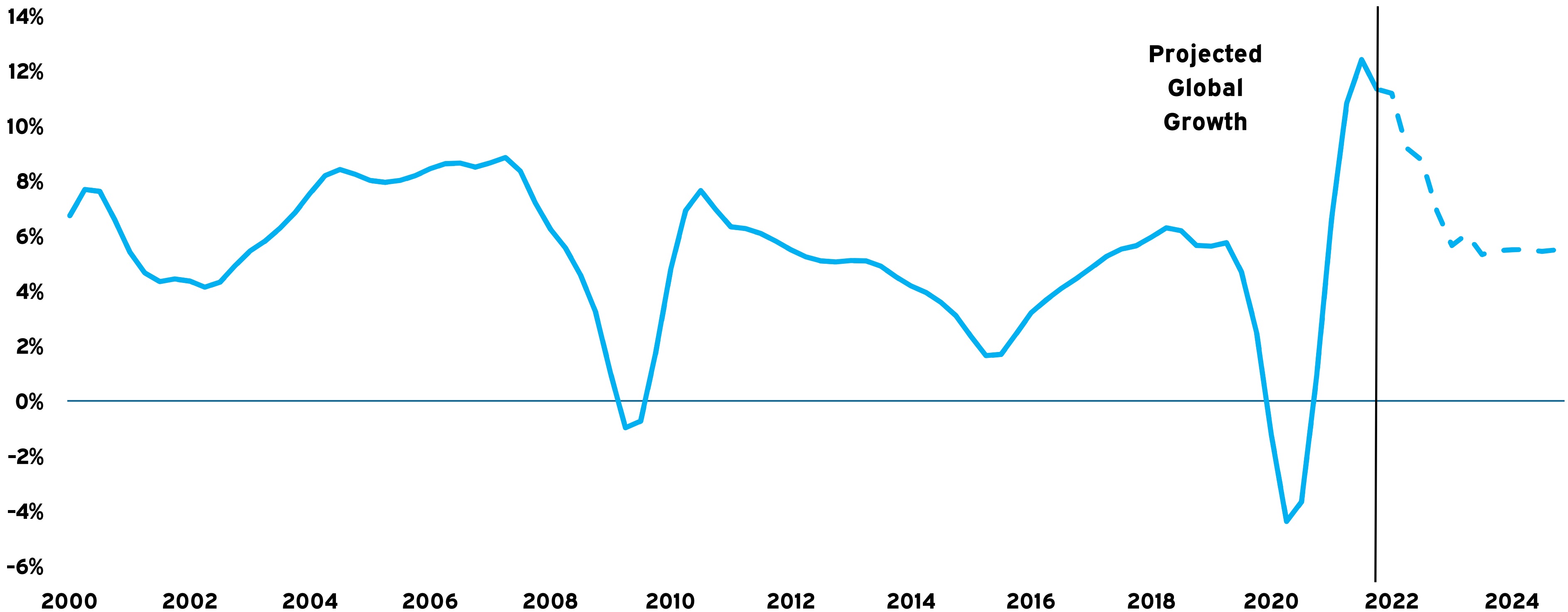
→ Growth projections for emerging markets are higher than developed markets, at 3.8% in 2022 and 4.4% in 2023. China's growth was downgraded (4.4% versus 4.8%) for 2022 given tight COVID-19 restrictions and continued property sector problems.

→ The global inflation forecast was significantly increased for 2022 (7.4% versus 3.8%).

	Real GDP (%)[1]			Inflation (%)[1]		
	IMF 2022 Forecast	IMF 2023 Forecast	Actual 10 Year Average	IMF 2022 Forecast	IMF 2023 Forecast	Actual 10 Year Average
World	3.6	3.6	3.0	7.4	4.8	3.5
Advanced Economies	3.3	2.4	1.6	5.7	2.5	1.5
US	3.7	2.3	2.1	7.7	2.9	1.9
Euro Area	2.8	2.3	0.9	5.3	2.3	1.2
Japan	2.4	2.3	0.5	1.0	0.8	0.5
Emerging Economies	3.8	4.4	4.2	8.7	6.5	5.1
China	4.4	5.1	6.7	2.1	1.8	2.1

[1] Source: IMF World Economic Outlook. Real GDP forecasts from April WEO Update. Inflation forecasts are as of the April 2022 Update." Actual 10 Year Average" represents data from 2012 to 2021.

Global Nominal Gross Domestic Product (GDP) Growth[1]

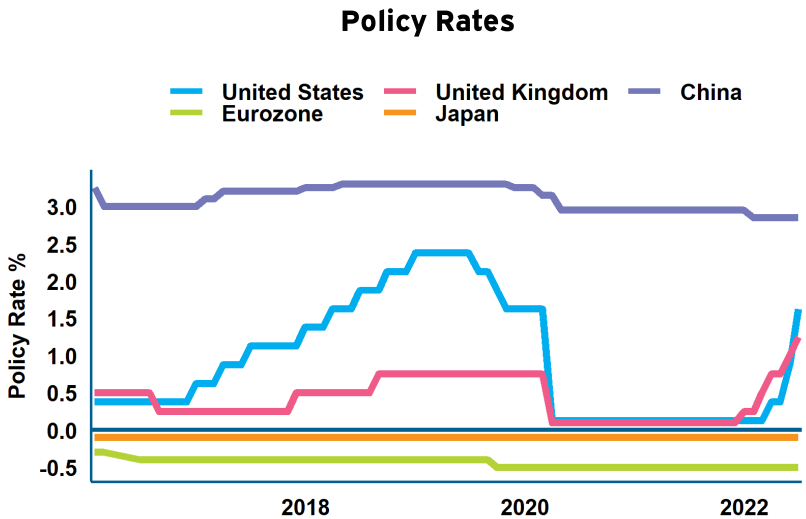


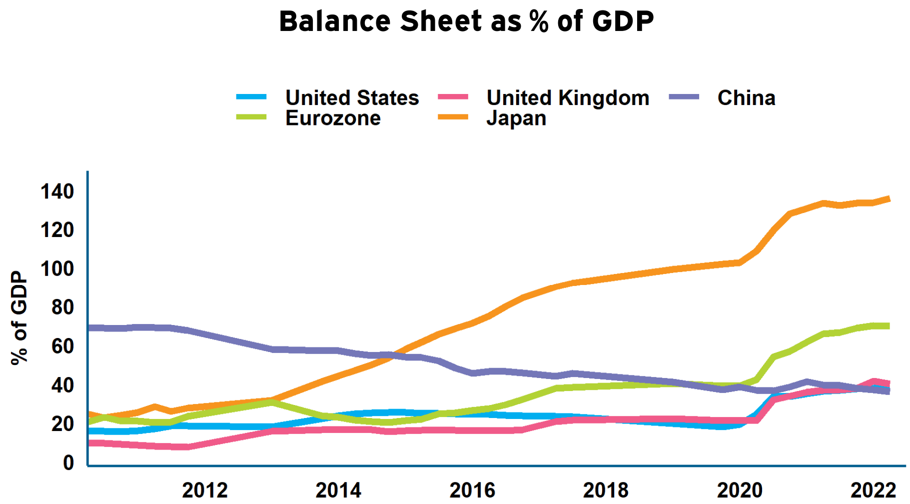
→ Global economies are expected to slow in 2022 compared to 2021 with fears of potential recessions in areas increasing recently given persistently high inflation and related tighter monetary policy.

→ Looking forward, the delicate balancing act of central banks trying to reduce inflation without dramatically impacting growth will remain key.

[1] Source: Oxford Economics (World GDP, US$ prices & PPP exchange rate, nominal, % change YoY). Updated June 2022.

Central Bank Response[1]





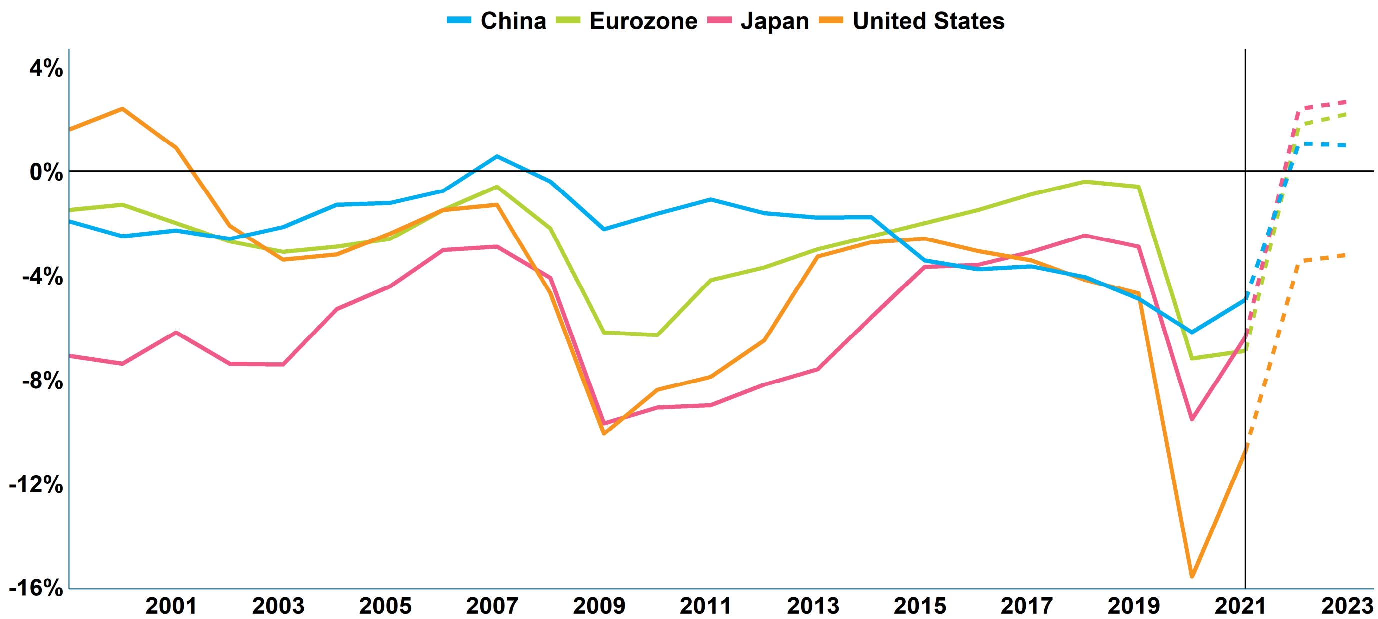
→ After global central banks took extraordinary action to support economies during the pandemic, including policy rate cuts and emergency stimulus through quantitative easing (QE), many are reducing or considering reducing support, in the face of high inflation.

→ The pace of withdrawing support will likely vary across central banks with the US expected to take a more aggressive approach. The risk remains for a policy error, particularly overtightening, as record inflation, the war in Ukraine, and a tough COVID-19 policy in China could suppress global growth.

→ The one notable central bank outlier is China, where the central bank recently lowered rates and reserve requirements in response to slowing growth.

[1] Source: Bloomberg. Policy rate data is as of June 30, 2022. China policy rate is defined as the medium-term lending facility 1 year interest rate. Balance sheet as % of GDP is based on quarterly data and is as of June 30, 2022.

Budget Surplus / Deficit as a Percentage of GDP[1]

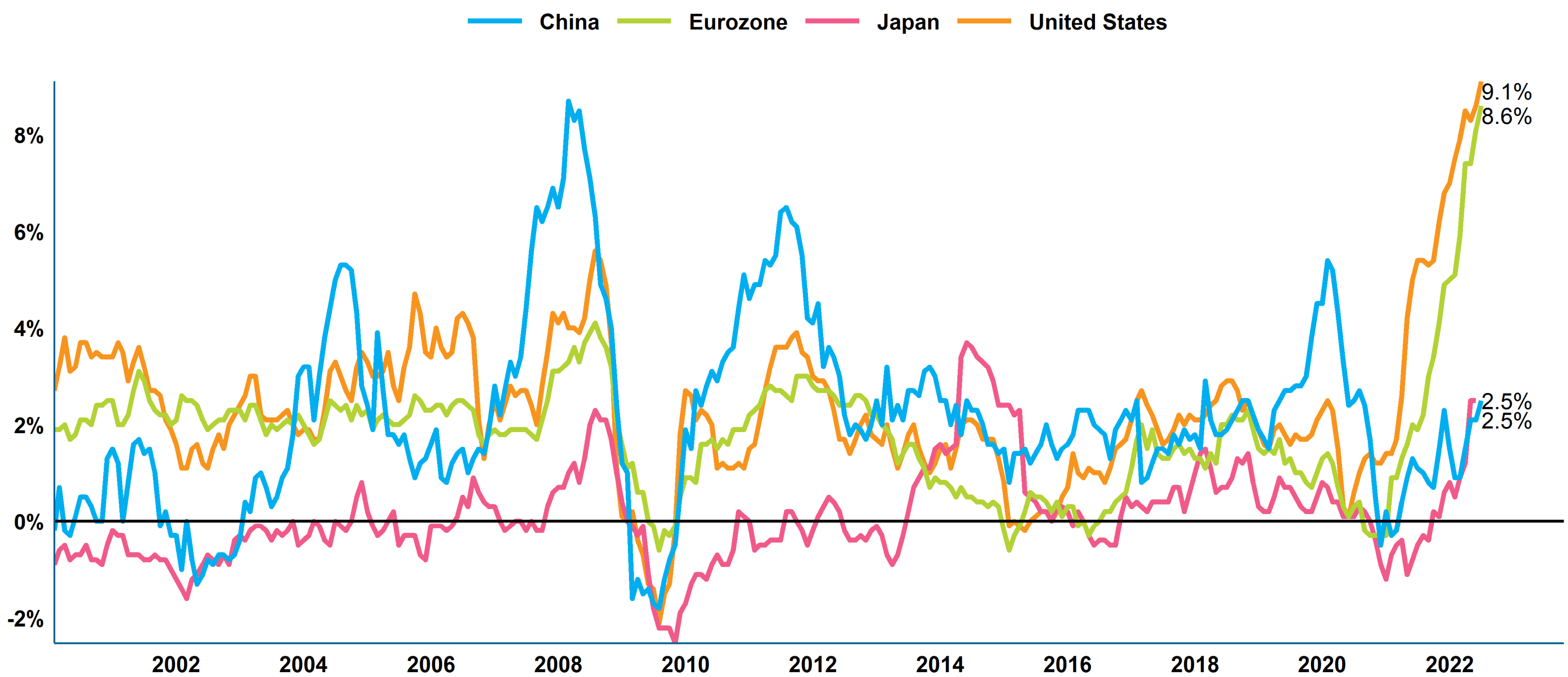


→ Budget deficits as a percentage of GDP drastically increased for major world economies, particularly the US, due to massive fiscal support and the severe economic contraction's effect on tax revenue in 2020 and 2021.

→ As fiscal stimulus programs end, and economic recoveries continue, deficits should improve in the coming years.

[1] Source: Bloomberg. Data is as of June 30, 2022. Projections via IMF Forecasts from April 2022 Report. Dotted lines represent 2022 and 2023 forecasts.

Inflation (CPI Trailing Twelve Months)[1]

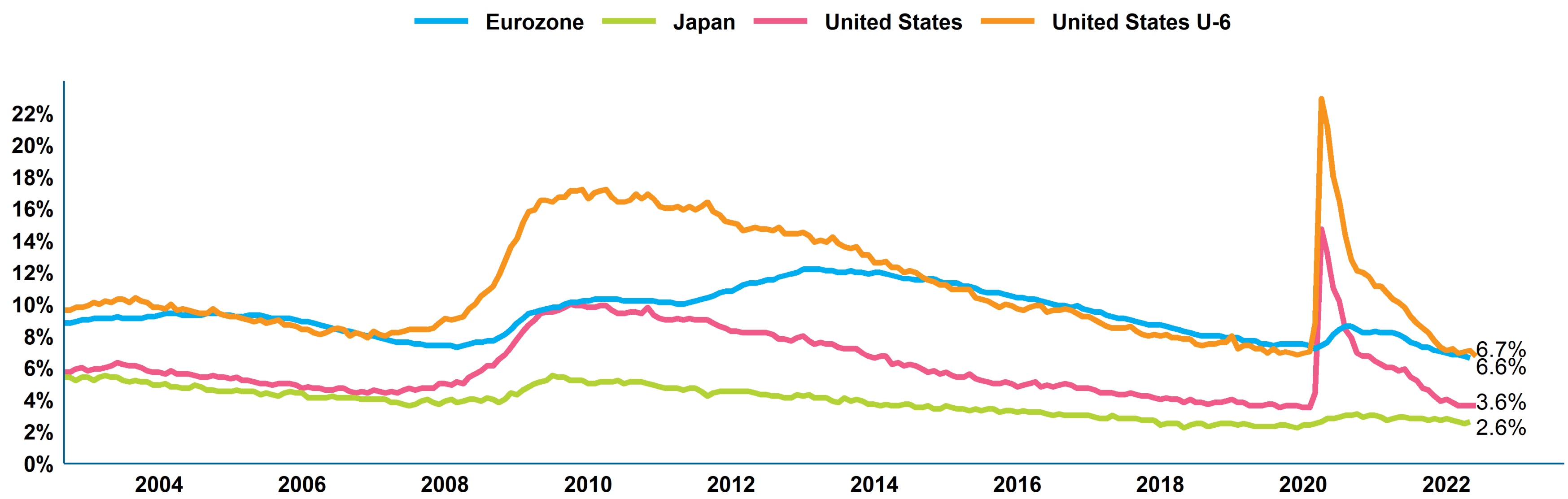


- → Inflation increased dramatically from the lows of the pandemic, particularly in the US and Eurozone where it has reached levels not seen in many decades.
- → Supply issues related to the pandemic, record monetary and fiscal stimulus, strict COVID-19 restrictions in China, and higher prices in many commodities driven by the war in Ukraine have been key drivers of inflation globally.

---

[1] Source: Bloomberg. Data is as of June 2022, except for Japan, where the most recent data available is as of May 31, 2022.

Unemployment[1]

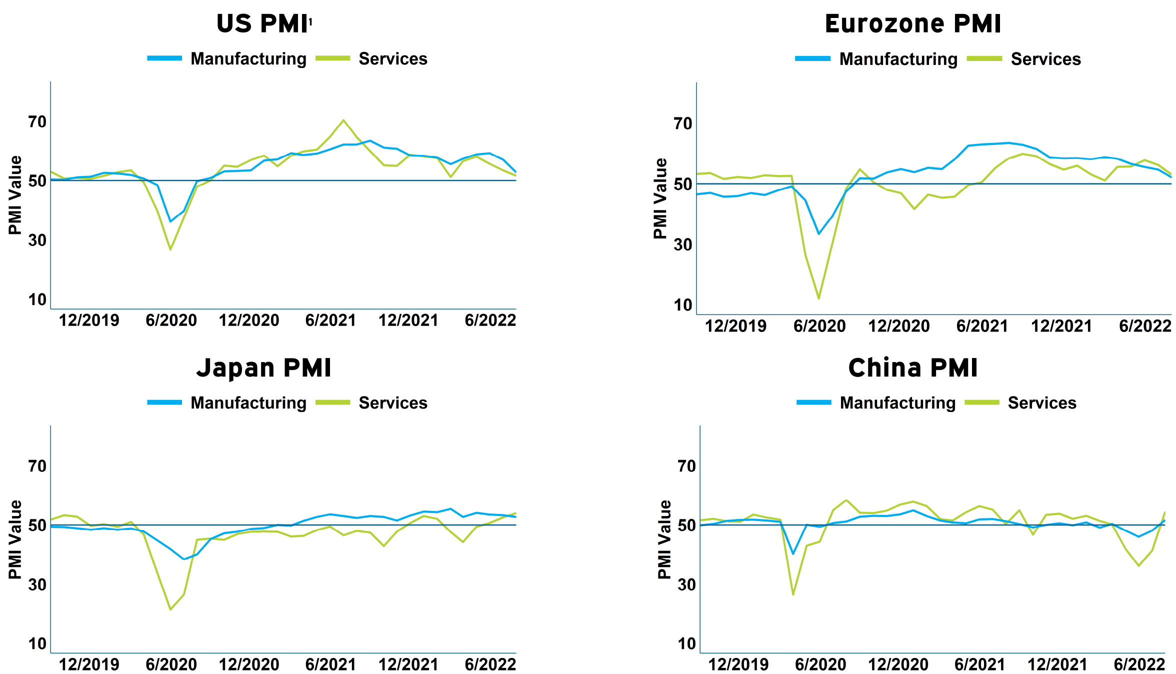


→ As economies have largely reopened, helped by vaccines for the virus, improvements have been seen in the labor market.

→ US unemployment, which experienced the steepest rise from the pandemic, declined back to pre-pandemic levels. The broader measure (U-6) that includes discouraged and underemployed workers declined but is much higher at 6.7%.

[1] Source: Bloomberg. Data is as of June 2022, for the US. The most recent data for Eurozone and Japanese unemployment is as of May 31, 2022.

Global PMIs



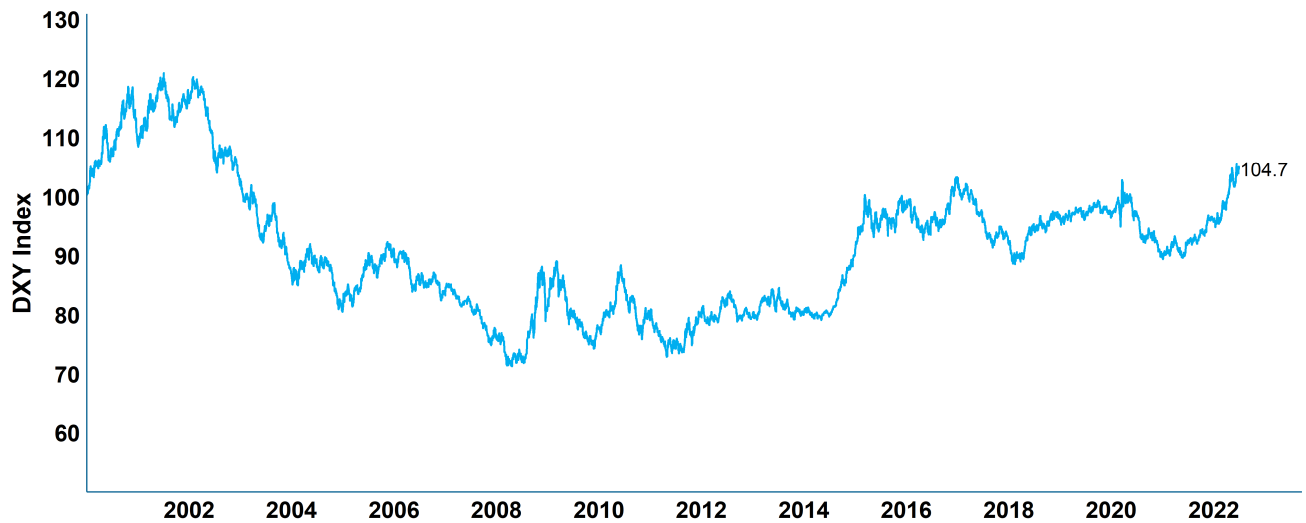
→ After improvements from the lows of the pandemic, Purchasing Managers Indices (PMI), based on surveys of private sector companies, have experienced some pressures recently.

→ Service sector PMIs in the US and Europe have recently declined due to higher prices and supply issues, while they continue to improve in Japan as pandemic restrictions ease. In China the services PMI surged to expansion territory on an easing in lockdown measures.

→ Manufacturing PMIs are in expansion territory as pandemic-related production issues ease and orders increase. China also moved to expansion levels here on partial reopening.

[1] Source: Bloomberg. US Markit Services and Manufacturing PMI, Caixin Services and Manufacturing PMI, Eurozone Markit Services and Manufacturing PMI, Jibun Bank Services and Manufacturing PMI. Data is as of June 2022. Readings below 50 represent economic contractions.

US Dollar versus Broad Currencies[1]



→ The US dollar continued higher in June on safe-haven flows, relatively strong growth, and higher interest rates.

→ The euro, yen, and yuan have all experienced significant declines versus the dollar, adding to inflation and slowing growth concerns.

[1] Source: Bloomberg. Data as of June 30, 2022.

Summary

Key Trends in 2022:

→ The impacts of record high inflation will remain key going forward, with volatility likely to remain high.

→ The war in Ukraine has created significant uncertainty, with a wide range of potential outcomes.

→ Expect growth to slow globally in 2022 to the long-term trend or below. Inflation, monetary policy, and the war will all be key.

→ The end of many fiscal programs is expected to put the burden of continued growth on consumers. Higher energy and food prices will depress consumers' spending in other areas.

→ Monetary policy will likely tighten globally but will remain relatively accommodative. The risk of overtightening policy remains.

→ Valuations have significantly declined in the US, approaching long-term averages.

→ Outside the US, equity valuations remain lower in both emerging and developed markets, but risks remain, including continued strength in the US dollar, higher inflation particularly weighing on Europe, and China maintaining its restrictive COVID-19 policies.

Disclaimer, Glossary, and Notes

WE HAVE PREPARED THIS REPORT (THIS “REPORT”) FOR THE SOLE BENEFIT OF THE INTENDED RECIPIENT (THE “RECIPIENT”).

SIGNIFICANT EVENTS MAY OCCUR (OR HAVE OCCURRED) AFTER THE DATE OF THIS REPORT AND THAT IT IS NOT OUR FUNCTION OR RESPONSIBILITY TO UPDATE THIS REPORT. ANY OPINIONS OR RECOMMENDATIONS PRESENTED HEREIN REPRESENT OUR GOOD FAITH VIEWS AS OF THE DATE OF THIS REPORT AND ARE SUBJECT TO CHANGE AT ANY TIME. ALL INVESTMENTS INVOLVE RISK. THERE CAN BE NO GUARANTEE THAT THE STRATEGIES, TACTICS, AND METHODS DISCUSSED HERE WILL BE SUCCESSFUL.

INFORMATION USED TO PREPARE THIS REPORT WAS OBTAINED FROM INVESTMENT MANAGERS, CUSTODIANS, AND OTHER EXTERNAL SOURCES. WHILE WE HAVE EXERCISED REASONABLE CARE IN PREPARING THIS REPORT, WE CANNOT GUARANTEE THE ACCURACY OF ALL SOURCE INFORMATION CONTAINED HEREIN.

CERTAIN INFORMATION CONTAINED IN THIS REPORT MAY CONSTITUTE “FORWARD - LOOKING STATEMENTS,” WHICH CAN BE IDENTIFIED BY THE USE OF TERMINOLOGY SUCH AS “MAY,” “WILL,” “SHOULD,” “EXPECT,” “AIM”, “ANTICIPATE,” “TARGET,” “PROJECT,” “ESTIMATE,” “INTEND,” “CONTINUE” OR “BELIEVE,” OR THE NEGATIVES THEREOF OR OTHER VARIATIONS THEREON OR COMPARABLE TERMINOLOGY. ANY FORWARD-LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION ARE BASED UPON CURRENT ASSUMPTIONS. CHANGES TO ANY ASSUMPTIONS MAY HAVE A MATERIAL IMPACT ON FORWARD - LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS. ACTUAL RESULTS MAY THEREFORE BE MATERIALLY DIFFERENT FROM ANY FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION.

PERFORMANCE DATA CONTAINED HEREIN REPRESENT PAST PERFORMANCE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.

Credit Risk: Refers to the risk that the issuer of a fixed income security may default (i.e., the issuer will be unable to make timely principal and/or interest payments on the security).

Duration: Measure of the sensitivity of the price of a bond to a change in its yield to maturity. Duration summarizes, in a single number, the characteristics that cause bond prices to change in response to a change in interest rates. For example, the price of a bond with a duration of three years will rise by approximately 3% for each 1% decrease in its yield to maturity. Conversely, the price will decrease 3% for each 1% increase in the bond's yield. Price changes for two different bonds can be compared using duration. A bond with a duration of six years will exhibit twice the percentage price change of a bond with a three-year duration. The actual calculation of a bond's duration is somewhat complicated, but the idea behind the calculation is straightforward. The first step is to measure the time interval until receipt for each cash flow (coupon and principal payments) from a bond. The second step is to compute a weighted average of these time intervals. Each time interval is measured by the present value of that cash flow. This weighted average is the duration of the bond measured in years.

Information Ratio: This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return), and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

Jensen's Alpha: A measure of the average return of a portfolio or investment in excess of what is predicted by its beta or "market" risk. Portfolio Return- [Risk Free Rate+Beta*(market return-Risk Free Rate)].

Market Capitalization: For a firm, market capitalization is the total market value of outstanding common stock. For a portfolio, market capitalization is the sum of the capitalization of each company weighted by the ratio of holdings in that company to total portfolio holdings; thus it is a weighted-average capitalization. Meketa Investment Group considers the largest 65% of the broad domestic equity market as large capitalization, the next 25% of the market as medium capitalization, and the smallest 10% of stocks as small capitalization.

Market Weighted: Stocks in many indices are weighted based on the total market capitalization of the issue. Thus, the individual returns of higher market-capitalization issues will more heavily influence an index's return than the returns of the smaller market-capitalization issues in the index.

Maturity: The date on which a loan, bond, mortgage, or other debt/security becomes due and is to be paid off.

Prepayment Risk: The risk that prepayments will increase (homeowners will prepay all or part of their mortgage) when mortgage interest rates decline; hence, investors' monies will be returned to them in a lower interest rate environment. Also, the risk that prepayments will slow down when mortgage interest rates rise; hence, investors will not have as much money as previously anticipated in a higher interest rate environment. A prepayment is any payment in excess of the scheduled mortgage payment.

Price-Book Value (P/B) Ratio: The current market price of a stock divided by its book value per share. Meketa Investment Group calculates P/B as the current price divided by Compustat's quarterly common equity. Common equity includes common stock, capital surplus, retained earnings, and treasury stock adjusted for both common and nonredeemable preferred stock. Similar to high P/E stocks, stocks with high P/B's tend to be riskier investments.

Price-Earnings (P/E) Ratio: A stock's market price divided by its current or estimated future earnings. Lower P/E ratios often characterize stocks in low growth or mature industries, stocks in groups that have fallen out of favor, or stocks of established blue chip companies with long records of stable earnings and regular dividends. Sometimes a company that has good fundamentals may be viewed unfavorably by the market if it is an industry that is temporarily out of favor. Or a business may have experienced financial problems causing investors to be skeptical about is future. Either of these situations would result in lower relative P/E ratios. Some stocks exhibit above-average sales and earnings growth or expectations for above average growth. Consequently, investors are willing to pay more for these companies' earnings, which results in elevated P/E ratios. In other words, investors will pay more for shares of companies whose profits, in their opinion, are expected to increase faster than average. Because future events are in no way assured, high P/E stocks tend to be riskier and more volatile investments. Meketa Investment Group calculates P/E as the current price divided by the I/B/E/S consensus of twelve-month forecast earnings per share.

Quality Rating: The rank assigned a security by such rating services as Fitch, Moody's, and Standard & Poor's. The rating may be determined by such factors as (1) the likelihood of fulfillment of dividend, income, and principal payment of obligations; (2) the nature and provisions of the issue; and (3) the security's relative position in the event of liquidation of the company. Bonds assigned the top four grades (AAA, AA, A, BBB) are considered investment grade because they are eligible bank investments as determined by the controller of the currency.

Sharpe Ratio: A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

STIF Account: Short-term investment fund at a custodian bank that invests in cash-equivalent instruments. It is generally used to safely invest the excess cash held by portfolio managers.

Standard Deviation: A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

Style: The description of the type of approach and strategy utilized by an investment manager to manage funds. For example, the style for equities is determined by portfolio characteristics such as price-to-book value, price-to-earnings ratio, and dividend yield. Equity styles include growth, value, and core.

Tracking Error: A divergence between the price behavior of a position or a portfolio and the price behavior of a benchmark, as defined by the difference in standard deviation.

Yield to Maturity: The yield, or return, provided by a bond to its maturity date; determined by a mathematical process, usually requiring the use of a "basis book." For example, a 5% bond pays $5 a year interest on each $100 par value. To figure its current yield, divide $5 by $95—the market price of the bond—and you get 5.26%. Assume that the same bond is due to mature in five years. On the maturity date, the issuer is pledged to pay $100 for the bond that can be bought now for $95. In other words, the bond is selling at a discount of 5% below par value. To figure yield to maturity, a simple and approximate method is to divide 5% by the five years to maturity, which equals 1% pro rata yearly. Add that 1% to the 5.26% current yield, and the yield to maturity is roughly 6.26%.

$$\frac{5\%\ \text{(discount)}}{5\ \text{(yrs. to maturity)}} = \begin{matrix}1\%\ \text{pro rata, plus} \\ 5.26\%\ \text{(current yield)}\end{matrix} = 6.26\%\ \text{(yield to maturity)}$$

Yield to Worst: The lowest potential yield that can be received on a bond without the issuer actually defaulting. The yield to worst is calculated by making worst-case scenario assumptions on the issue by calculating the returns that would be received if provisions, including prepayment, call, or sinking fund, are used by the issuer.

NCREIF Property Index (NPI): Measures unleveraged investment performance of a very large pool of individual commercial real estate properties acquired in the private market by tax-exempt institutional investors for investment purposes only. The NPI index is capitalization-weighted for a quarterly time series composite total rate of return.

NCREIF Fund Index - Open End Diversified Core Equity (NFI-ODCE): Measures the investment performance of 28 open-end commingled funds pursuing a core investment strategy that reflects funds' leverage and cash positions. The NFI-ODCE index is equal-weighted and is reported gross and net of fees for a quarterly time series composite total rate of return.

Sources: Investment Terminology, International Foundation of Employee Benefit Plans, 1999.
The Handbook of Fixed Income Securities, Fabozzi, Frank J., 1991

Throughout this report, numbers may not sum due to rounding.

Returns for periods greater than one year are annualized throughout this report.

Values shown are in millions of dollars, unless noted otherwise.

MEKETA
INVESTMENT GROUP

411 NW Park Avenue
Suite 401
Portland, OR 97209

503.226.1050
Meketa.com

MEMORANDUM

TO: SJCERA Board of Retirement
FROM: Meketa Investment Group
DATE: September 9, 2022
RE: SJCERA Manager Certification Update: 2Q 2022 Overview and Responses

Summary of Responses

Meketa reviewed the SJCERA Quarterly Manager Certification Updates for the quarter ending June 30, 2022, from all funded managers. ***In Meketa's opinion, the manager information reported for the quarter presents no significant concerns to the SJCERA portfolio***. Meketa's opinion is based on the written responses and on Meketa's conversations with managers that reported senior investment personnel or management departures.

The managers' responses indicate that[1]:

- All funded managers reported:
  - Registered Investment Advisor in Good Standing, or are exempt,
  - Compliance with Plan Investment Policy,
  - Compliance with SJCERA's Manager Guidelines, or N/A,
  - Reconciliation against the custodian, or N/A,
  - Compliance with own internal risk management policies and procedures, and
  - Delivered current ADV, SSAE-16 or equivalent Annual Financial Audits, as available.
- Eight managers reported litigation or regulatory investigation information: Almanac, Angelo Gordon, AQR, BlackRock, HPS, Loomis Sayles, PIMCO and White Oak.
- Ten managers reported investment team changes:

  Angelo Gordon, BlackRock, Crestline, Dodge & Cox, GQG, Invesco, Miller, Parametric, Prologis and Stellex.
- Eight managers reported material management changes:

  Angelo Gordon, BlackRock, Invesco, Miller, Northern Trust, Parametric, PIMCO and White Oak.
- Two managers reported material business changes:

  Mount Lucas and Parametric.
- Bridgewater and Graham chose not to provide responses to the SJCERA compliance questionnaire and directed Meketa to a standard quarterly business or compliance updates.

[1] Managers' responses to footnoted ("*") questions begin on page 6.

SJCERA Overview of Investment Mgr. Compliance Report

Manager	Sub-Segment	Q1 RIA in Good Standing	Q2 Complied with Plan IPS	Q3 Complied w/ Mgr. Guidelines	Q4 Reconciled With Custodian	Q5 Litigation	Q6 Investment Personnel Changes	Q7 Mgmt. Changes	Q8 Material Business Changes	Q9 Complied Internal Risk Mgmt.	Q10 Sent Fncl Stmnts
Aggressive Growth											
BlackRock	Global Infrastructure	Yes	Yes	Yes	Yes	Yes*	Yes*	Yes*	No	Yes	Yes
Ocean Avenue	PE Buyout FOF	Yes	Yes	Yes	Yes	No	No*	No	No	Yes	Yes
Morgan Creek	Multi-Strat FOF	Yes	Yes	Yes	N/A*	No	No	No	No	Yes	Yes
Stellex Capital II	PE – Special Situations	Yes	Yes	Yes	Yes	No	Yes*	No	No	Yes	Yes
AG Core Plus	Pvt. Non-core RE	Yes	Yes	Yes	N/A*	Yes*	Yes*	Yes*	No	Yes	Yes
Almanac Realty	Pvt. Non-core RE	Yes	Yes	Yes	N/A*	Yes*	No	No	No	Yes	Yes
Berkeley Partners	Value Add RE	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
Greenfield	Pvt. Non-core RE	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
Miller Global	Pvt. Non-core RE	Yes	Yes	Yes	Yes	No	Yes*	Yes*	No	Yes	Yes
Stockbridge	Pvt. Non-core RE	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
Walton Street	Pvt. Non-core RE	Yes	Yes	Yes	N/A*	No	No	No	No	Yes	Yes
Traditional Growth											
Northern Trust	All Cap Global	Yes	Yes	Yes	Yes	No*	No	Yes*	No	Yes	Yes
GQG	Emerging Mkts.	Yes	Yes	Yes	Yes	No	Yes*	No*	No	Yes	Yes
PIMCO	Emerging Mkts.	Yes	Yes	Yes	Yes	Yes*	No*	Yes*	No	Yes	Yes
Invesco	REITS	Yes	Yes	Yes	Yes	No*	Yes*	Yes*	No	Yes	Yes
Stabilized Growth											
Bridgewater[1]	Risk Parity	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PanAgora	Risk Parity	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
Neuberger Berman	Opp. Credit	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
Stone Harbor	Abs. Return	Yes	Yes	Yes	Yes	No	No	No	No*	Yes	Yes
Stone Harbor	Bank Loans	Yes	Yes	Yes	Yes	No	No	No	No*	Yes	Yes
BlackRock	Direct Lending	Yes	Yes	Yes	Yes	Yes*	Yes*	Yes*	No	Yes	Yes
Crestline	Opportunistic	Yes	Yes	Yes	N/A*	No	Yes*	No	No	Yes	Yes
Davidson Kempner[2]	Opportunistic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Medley[2]	Direct Lending	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mesa West	Comm. Mortgage	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
Oaktree	Leveraged Direct	Yes	Yes	Yes	N/A*	No*	No	No	No*	Yes	Yes
HPS	Direct Lending	Yes	Yes	Yes	Yes	Yes*	No*	No	No	Yes	Yes
Raven Capital	Direct Lending	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
White Oak	Direct Lending	Yes	Yes	Yes	Yes	Yes*	No	Yes*	No	Yes	Yes
Principal	Pvt. Core RE	Yes	Yes	Yes	N/A*	No*	No	No*	No	Yes	Yes
Prologis Targeted U.S.	Pvt. Core RE	N/A*	Yes	Yes	N/A*	No*	Yes*	No*	No	Yes	Yes
DWS / RREEF	Pvt. Core RE	Yes	Yes	Yes	N/A*	No	No	No*	No	Yes	Yes

SJCERA Overview of Investment Mgr. Compliance Report (continued)

Manager	Sub-Segment	Q1 RIA in Good Standing	Q2 Complied with Plan IPS	Q3 Complied w/ Mgr. Guidelines	Q4 Reconciled With Custodian	Q5 Litigation	Q6 Investment Personnel Changes	Q7 Mgmt. Changes	Q8 Material Business Changes	Q9 Complied Internal Risk Mgmt.	Q10 Sent Fncl Stmnts
Principal Protection											
Dodge & Cox	Core Fixed Income	Yes	Yes	Yes	Yes	No	Yes*	No	No*	Yes	Yes
Loomis Sayles	Core Fixed Income	Yes	Yes	Yes	Yes	Yes*	No	No	No*	Yes	Yes
Crisis Risk Offset℠											
Dodge & Cox	Long Duration	Yes	Yes	Yes	Yes	No	Yes*	No	No*	Yes	Yes
Mount Lucas	Syst. Trend Following	Yes	Yes	Yes	Yes	No	No	No	Yes*	Yes	Yes
Graham[1]	Syst. Trend Following	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
AQR	Alt. Risk Premia	Yes	Yes	Yes	Yes	Yes*	No	No*	No	Yes	Yes
PE Investments	Alt. Risk Premia	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
Lombard Odier	Alt. Risk Premia	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
Overlay											
Parametric	PIOS Overlay Prgm	Yes	Yes	Yes	Yes	No*	Yes*	Yes*	Yes*	Yes	Yes
Consultant											
Meketa	Consultant	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes

* Detailed written response provided below.

1) Bridgewater and Graham chose not to provide responses to the SJCERA compliance questionnaire and instead directed Meketa to a standard quarterly business update.

2) Manager declined to provide *written* responses.

Manager	Sub-Segment	Inception Date	Status	Benchmark	Ann. Excess (bps) 3 Yrs	Ann. Excess (bps) 5 Yrs	Peer Ranking 3 Yrs	Peer Ranking 5 Yrs
Performance Information through June 30, 2022								
Aggressive Growth								
BlackRock	Global Infrastructure	7/2019	Good Standing	MSCI ACWI +2%	n/a	n/a	n/a	n/a
Ocean Avenue II[1]	PE Buyout FOF	5/2013	Good Standing	MSCI ACWI +2%	2,110	2,147	n/a	n/a
Ocean Avenue III[1]	PE Buyout FOF	4/2016	Good Standing	MSCI ACWI +2%	1,262	2,355	n/a	n/a
Ocean Avenue IV	PE Buyout FOF	12/2019	Good Standing	MSCI ACWI +2%	n/a	n/a	n/a	n/a
Morgan Creek III[1]	Multi-Strat FOF	2/2015	Good Standing	MSCI ACWI +2%	-3,434	-1,800	n/a	n/a
Morgan Creek V[1]	Multi-Strat FOF	6/2013	Good Standing	MSCI ACWI +2%	-219	150	n/a	n/a
Morgan Creek VI[1]	Multi-Strat FOF	2/2015	Good Standing	MSCI ACWI +2%	811	969	n/a	n/a
Stellex Capital II	PE – Special Situations	7/2021	Good Standing	MSCI ACWI +2%	n/a	n/a	n/a	n/a
AG Core Plus IV[3]	Pvt. Non-core RE	2014	Good Standing	Private RE Benchmark	-160	50	n/a	n/a
Almanac Realty VI[3]	Pvt. Non-core RE	2011	Good Standing	Private RE Benchmark	-1,860	-1,510	n/a	n/a
Berkeley Partners V[3]	Pvt. Non-core RE	2020	Good Standing	Private RE Benchmark	n/a	n/a	n/a	n/a
Greenfield V[3]	Pvt. Non-core RE	2007	Good Standing	Private RE Benchmark	-1,930	-1,570	n/a	n/a
Greenfield VI[3]	Pvt. Non-core RE	2011	Good Standing	Private RE Benchmark	-5,180	-4,150	n/a	n/a
Greenfield VII[3]	Pvt. Non-core RE	2013	Good Standing	Private RE Benchmark	580	540	n/a	n/a
Grandview[3]	Pvt. Non-core RE	2018	Good Standing	Private RE Benchmark	1,910	n/a	n/a	n/a
Miller Global VI[3]	Pvt. Non-core RE	2007	Good Standing	Private RE Benchmark	-1,750	-890	n/a	n/a
Miller Global VII[3]	Pvt. Non-core RE	2012	Good Standing	Private RE Benchmark	-6,260	-4,600	n/a	n/a
Stockbridge III[3]	Pvt. Non-core RE	2017	Good Standing	Private RE Benchmark	1,040	n/a	n/a	n/a
Walton Street V[3]	Pvt. Non-core RE	2005	Good Standing	Private RE Benchmark	-2,650	-2,210	n/a	n/a
Walton Street VI[3]	Pvt. Non-core RE	2007	Good Standing	Private RE Benchmark	-870	-620	n/a	n/a
Traditional Growth								
Northern Trust	All Cap Global	10/2020	Good Standing	MSCI ACWI IMI	n/a	n/a	n/a	n/a
GQG	Emerging Mkts.	8/2020	Good Standing	MSCI Emerging Markets	n/a	n/a	n/a	n/a
PIMCO	Emerging Mkts.	4/2007	Good Standing	MSCI Emerging Markets	16	9	55	61
Invesco	REITS	8/2004	Good Standing	FTSE EPRA/NAREIT ex-US Equity	1	65	87	84
Stabilized Growth								
Bridgewater[2]	Risk Parity	3/2012	Good Standing	Bridgewater All Weather Blend	-340	-163	n/a	n/a
PanAgora	Risk Parity	4/2016	Good Standing	T-Bill +4%	-403	-163	n/a	n/a
Neuberger Berman[1]	Opp. Credit	2/2019	Good Standing	33% HY Const./33% S&P LSTA LL/ 33% JPMEMBI Glbl Div.	13	n/a	n/a	n/a
Stone Harbor[1]	Abs. Return	4/2008	Good Standing	3-Month Libor	-51	17	n/a	n/a
BlackRock	Direct Lending	05/2020	Good Standing	Custom Credit Benchmark	n/a	n/a	n/a	n/a

[1] Data is lagged 1 quarter.

[2] Bridgewater and Graham chose not to provide responses to the SJCERA compliance questionnaire and instead directed Meketa to a standard quarterly business update.

[3] Annual Excess returns for Private Non-Core Real Estate are as of 06/30/2022, lagged 1 quarter.

Performance Information through June 30, 2022								
		Inception			Ann. Excess (bps)		Peer Ranking	
Manager	Sub-Segment	Date	Status	Benchmark	3 Yrs	5 Yrs	3 Yrs	5 Yrs
Stabilized Growth (continued)								
Crestline[1]	Opportunistic	11/2013	Good Standing	CPI +6%	-689	-605	n/a	n/a
Davidson Kempner[1]	Opportunistic	10/2020	Good Standing	CPI +6%	n/a	n/a	n/a	n/a
Medley[1]	Direct Lending	7/2012	Good Standing	CPI +6%	-2,037	-1,893	n/a	n/a
Mesa West IV[1]	Comm. Mortgage	3/2017	Good Standing	CPI +6%	-123	-59	n/a	n/a
Oaktree[1]	Leveraged Direct	3/2018	Good Standing	MSCI ACWI +2%	701	n/a	n/a	n/a
HPS	Direct Lending	8/2020	Good Standing	CPI +6%	n/a	n/a	n/a	n/a
Raven Capital II[1]	Direct Lending	8/2014	Good Standing	CPI +6%	2,820	1,676	n/a	n/a
Raven Capital III[1]	Direct Lending	8/2015	Good Standing	CPI +6%	-87	5	n/a	n/a
White Oak[1]	Direct Lending	3/2016	Good Standing	CPI +6%	-559	-367	n/a	n/a
White Oak[1]	Direct Lending	3/2020	Good Standing	CPI +6%	n/a	n/a	n/a	n/a
Principal[3]	Pvt. Core RE	10/2015	Good Standing	Private RE Benchmark	-10	0	n/a	n/a
Prologis Targeted US[3]	Pvt. Core RE	9/2007	Good Standing	Private RE Benchmark	1,620	1,350	n/a	n/a
DWS / RREEF[3]	Pvt. Core RE	4/2016	Good Standing	Private RE Benchmark	10	-20	n/a	n/a
Principal Protection								
Dodge & Cox	Core Fixed Income	10/1990	Good Standing	BB Aggregate Bond	123	98	9	8
Loomis Sayles	Core Fixed Income	4/2022	Good Standing	BB Aggregate Bond	n/a	n/a	n/a	n/a
Crisis Risk Offset[1]								
Dodge & Cox	Long Duration	2/2016	Good Standing	BB US Long Duration Treasury	-9	-19	n/a	n/a
Mount Lucas	Sys. Trend Following	1/2005	Good Standing	BTOP50 Index	683	135	n/a	n/a
Graham[2]	Sys. Trend Following	4/2016	Good Standing	SG Trend	15	-103	n/a	n/a
AQR	Alt. Risk Premia	5/2016	Good Standing	5% Annual	-165	-560	n/a	n/a
P/E Investments	Alt. Risk Premia	7/2016	Good Standing	5% Annual	-205	-76	n/a	n/a
Lombard Odier	Alt. Risk Premia	1/2019	Good Standing	5% Annual	-972	n/a	n/a	n/a
Other								
Northern Trust	Govt. Short Term	1/1995	Good Standing	US T-Bills	-11	-28	n/a	n/a
Parametric	Long Duration	1/2020	Good Standing	n/a	n/a	n/a	n/a	n/a

[1] Data is lagged 1 quarter.

[2] Bridgewater and Graham chose not to provide responses to the SJCERA compliance questionnaire and instead directed Meketa to a standard quarterly business update.

Manager Responses to Highlighted Questions

This section includes the verbatim text of the manager's response to any highlighted questions to provide more detail to the table above.

Almanac Custodian Reconciliation

No. The Fund relies on the audit exception to the Custody Rule by providing audited financials within 120 days.

Almanac Litigation

From time to time, Neuberger Berman and its employees are the subject of, or parties to examinations, inquiries and investigations conducted by US federal and state regulatory and other law enforcement authorities, non-US regulatory and other law enforcement authorities and self-regulatory organizations, including, but not limited to, the Securities and Exchange Commission ("SEC"), Financial Industry Regulatory Authority ("FINRA"), the National Futures Association ("NFA"), and the Municipal Securities Rulemaking Board (the "MSRB"). Neuberger Berman routinely cooperates freely with such examinations, inquiries and investigations. Neuberger Berman is also involved, from time to time, in civil legal proceedings and arbitration proceedings concerning matters arising in connection with the conduct of its business. Neuberger Berman believes that none of these matters either individually or taken together, will have a material adverse impact on the firm's business. All material proceedings in which there has been a final determination against any of Neuberger Berman's US registered investment advisers or its broker-dealer are disclosed in such affiliate's Form ADV Part 1 (if a registered investment adviser), Form BD (if a registered broker-dealer) or NFA Basic (if a CFTC registrant), each of which is publicly available through the SEC at http://www.adviserinfo.sec.gov, FINRA at http://www.finra.org, or the NFA at www.nfa.futures.org, respectively.

With regard to current litigation related specifically to Almanac Realty Investors, on September 14, 2020, an action was filed in Wisconsin state court (the "Wisconsin Action") related to Vanta Commercial Properties, LLC, formerly T. Wall Properties L.L.C. ("Vanta"), a former portfolio investment (exited in November 2017) of Almanac Realty Securities V, L.P. ("ARS V"), a private fund managed by NBAA, the successor in interest to Almanac Realty Investors, LLC ("ARI"). The plaintiffs in that action (the "Wisconsin Plaintiffs") allege nine "Counts"—all of which arise out of or relate to operating agreement of Vanta – and name ARS V, ARI and other entities and individuals associated with Almanac as defendants. The principal allegations are that the defendants engaged in a "Scheme," involving Vanta's officers and directors, to liquidate Vanta's real estate holdings without the approval of the board of directors required under the operating agreement. Defendants believe the lawsuit is without merit and are vigorously defending the action, including by bringing suit in Delaware Court of Chancery (the "Delaware Action") to enjoin the Wisconsin Plaintiffs from pursuing the Wisconsin Action. The Wisconsin Plaintiffs agreed to a voluntary stay of the Wisconsin Action pending the resolution of the Delaware Action, which the Wisconsin court entered on December 2, 2020.

ARS V (among others) filed the Delaware Action on October 30, 2020, seeking to enjoin the Wisconsin Plaintiffs from pursuing the Wisconsin Action in its entirety in view of an exclusive and mandatory forum-selection provision contained in the Vanta operating agreement. On April 22, 2021 via letter opinion, the Court of Chancery granted the motion of ARS V (and the other Delaware plaintiffs) to permanently enjoin the Wisconsin Plaintiffs from pursuing eight of the nine Counts in the Wisconsin Action; the Court

Manager Responses to Highlighted Questions (continued)

later denied the motion as to the one remaining Count via letter opinion on May 19, 2021, and entered a final order as to both letter opinions on May 26, 2021 (the "Final Order"). Following the issuance of the Final Order, the defendants in the Delaware Action (i.e., Wisconsin Plaintiffs) appealed the Final Order to the Delaware Supreme Court. On December 15, 2021, the Delaware Supreme Court affirmed the Final Order in a summary order.

On December 30, 2021, the Wisconsin Plaintiffs filed a motion seeking to lift the stay of the Wisconsin Action and to file an amended complaint that purports to assert the one non-enjoined Count following affirmance of the Final Order in the Delaware Action. On February 11, 2022, the Wisconsin Plaintiffs filed a First Amended Complaint. Also, on February 11, 2022 and following a scheduling conference, the Wisconsin Court entered an order directing Almanac to file a motion to dismiss on or before March 3, 2022, and setting a further scheduling conference for April 5, 2022. On March 3, 2022, Almanac moved to dismiss VAT's remaining claim in the Wisconsin Litigation. Almanac's motion to dismiss remains pending.

Angelo Gordon Custodian Reconciliation

N/A – this Fund does not have a custodian.

Angelo Gordon Litigation

Please see attached summary of current litigation. We do not believe that any of the litigation is material to the management of our business.

Summary of Angelo, Gordon Related Litigation

As of July 11, 2022

Angelo, Gordon & Co., L.P. (the "firm"), its affiliates, or funds or entities managed by the firm are named parties in the following pending proceedings:

Culligan Soft Water Company v. Clayton Dubilier & Rice, LLC, et al.

In 2012, the firm and a firm affiliate were named as defendants in a New York lawsuit regarding the 2004 acquisition of Culligan Soft Water Company ("Culligan") by the private equity firm Clayton Dubilier & Rice LLC ("CDR"). The firm and its affiliate were named as defendants in connection with their 2010 purchase of portions of Culligan's debt. This is a derivative action by Culligan's minority shareholders to recover the funds which they allege CDR removed from the Company through the issuance of illegal dividends and payments in management and consulting fees, director fees and other compensation to itself and its affiliates which were paid for in part by the refinancing of Culligan's debt.

The Bankruptcy Court granted the Liquidators' Chapter 15 Petition in July 2021 which resulted in an automatic stay of all proceedings against Culligan. In response to the Bankruptcy Court Order, the New York trial court stayed the action and denied each of defendants' motions to dismiss without prejudice to renew once the Bankruptcy Court's automatic stay is lifted or the Bermuda bankruptcy proceeding is resolved. Similarly, the Appellate Division ordered that defendants' appeals are held in abeyance pending the lifting of the Bankruptcy Court stay.

In September 2021, Plaintiffs filed an application before the Bankruptcy Court to lift the stay of proceedings. Plaintiffs argued that the automatic stay is not necessary because the derivative litigation

Manager Responses to Highlighted Questions (continued)

does not impact Culligan's liquidation negatively and the Chapter 15 proceeding was brought in bad faith by the Liquidators. The Liquidators opposed on the grounds that the application was an inappropriate attempt to relitigate the Chapter 15 proceeding, the derivative litigation is impacting the liquidation negatively, Plaintiffs have not shown there is any merit to the derivative litigation, and the Chapter 15 proceeding was filed in good faith. The Bankruptcy Court heard oral argument on Plaintiff's application in January 2022 and the parties await the Court's ruling.

Employment Litigation

On May 13, 2019, a former employee ("Plaintiff") of the firm filed a Confidential Charge of Discrimination with the United States Equal Employment Opportunity Commission ("EEOC") alleging discrimination, sexual harassment, hostile work environment, and retaliation. Plaintiff subsequently filed a civil action on November 27, 2019 in the Circuit Court of Cook County, Illinois (the "Lawsuit"), asserting breach of contract and negligent supervision claims against an affiliate of the firm (the "Company") and asserting separate tort claims against another former employee of the firm. The lawsuit is a matter of public record.

On December 11, 2019, the Company filed a motion in the Lawsuit to compel arbitration pursuant to the terms of Plaintiff's employment contract or, in the alternative, to dismiss the action in its entirety. On December 21, 2021, the Court entered an order granting the Company's motion and dismissing the Lawsuit with prejudice. On January 6, 2022, the Court vacated its December 21, 2021 Order and requested the parties re-submit their briefing on the Company's December 2019 motion to dismiss. That motion is now pending before the Court. On February 7, 2022, the EEOC issued a "Dismissal and Notice of Rights" declining to take further action on Plaintiff's May 2019 complaint and providing Plaintiff with notice of her right to initiate legal proceedings in federal or state court within ninety days.

Consumer Financial Protection Bureau v. The National Collegiate Master Student Loan Trust, et al.

On September 22, 2017, certain of the firm's affiliated funds, along with other noteholders and deal parties, filed a motion to intervene in Delaware federal court (the "CFPB Action") for the purpose of objecting to a proposed consent judgment dated September 18, 2017 (the "PCJ") between the Consumer Financial Protection Bureau and the purported equity owner ("VCG") of fifteen National Collegiate Student Loan Trusts ("NCSLTs") that would have subjected the trusts to various fines, penalties and oversight, and permitted VCG to control the assets and cashflow of the trusts. Certain of the firm's affiliated funds and other similarly situated noteholders (together, the "Noteholder Group") were granted permission to intervene and participated in discovery in the CFPB Action. Due in large part to the Noteholder Group's efforts, the Delaware Court rejected and vacated the PCJ on May 31, 2020. The CFPB Action against the NCSLTs is ongoing, but the Noteholder Group is not participating directly. The case is currently stayed pending appeal of certain legal issues concerning the CFPB's statutory authority to bring legal action against the trusts.

Also, contemporaneous with the CFPB Action, the Noteholder Group has participated in a suite of related litigation in the Delaware Court of Chancery concerning the administration of the NCSLTs. Initially, the Noteholder Group succeeded in having a Special Master appointed to oversee administration of the trusts, with that Special Master subsequently issuing a series of rulings favorable for noteholders. On November 13, 2018, the Noteholder Group and U.S. Bank (as trustee) commenced a lawsuit against VCG

Manager Responses to Highlighted Questions (continued)

(the "Noteholder Action") alleging breach of contract and fiduciary duty by VCG, both directly (on behalf of the Noteholder Group) and derivatively (on behalf of the NCSLTs). On January 21, 2020, the Noteholder Action was consolidated for discovery purposes with several other NCSLT-related actions pending in Delaware Chancery Court, and the Court set a schedule to litigate issues common to all cases (the "Common Issues Action") before allowing any individual case to proceed. On August 19, 2020, the Noteholder Group secured, for the benefit of all noteholders, an order from Third Circuit Court of Appeals invalidating an attempt by VCG to install a VCG affiliate to service trust loans. On August 27, 2020, the Delaware Chancery Court issued a 154-page opinion adjudicating various common issues and holding that VCG owed fiduciary duties to the Noteholder Group (and other NCSLT noteholders) in connection with any exercise of control over trust collateral. In late 2021, the Common Issues Action was stayed to allow the parties to discuss settlement. Those settlement discussions are ongoing.

Cheney v. AG-JCM Wells Avenue Property Owner, LLC, et al.

In 2020, certain AG entities were named as defendants in a Massachusetts personal injury lawsuit relating to an incident at a real estate portfolio property in Newton, Massachusetts. Defendants currently await receipt of plaintiff's medical records with respect to the alleged injury as they prepare to take depositions.

Wells Fargo Bank, National Association v. Margate Funding I, Ltd., et al.

On September 21, 2021, Angelo Gordon Management LLC ("AGM") and certain other noteholders (or their investment advisors) were named as defendants in an interpleader action, brought by the trustee for Margate Funding I, Ltd. (the "CDO"), for the purpose of adjudicating the parties' respective rights in proceeds from the sale of CDO collateral (the "Disputed Funds"). At issue is the March 2021 sale by the CDO's collateral manager Macquarie Investment Managements Advisers (the "Manager") of nine Collateral Debt Securities ("Disputed Securities") under the terms of the governing Indenture.

AGM and certain other holders of junior notes (the "Holder Group") have taken the position, in response to the trustee's complaint, that the Disputed Securities should not have been sold in March 2021 because they did not qualify as "Defaulted Securities" under the CDO Indenture and/or because the Manager failed to exercise the requisite discretion before selling them. In particular, the Holder Group objects to the sale of four Disputed Securities that the Manager admitted to AGM were not properly classified as "Defaulted" and should not have been sold. Because the Holder Group's junior notes would have benefitted from continued interest payments had the Disputed Securities not been sold, the Holder Group has asked the Court to fashion a remedy that places the Holder Group in the same position had the Disputed Securities not been sold wrongfully from the Trust.

Pacific Investment Management Company, LLC ("PIMCO"), advisor to the CDO's senior noteholders, contends that the Disputed Securities were properly sold as "Defaulted," and that regardless of any error by the Manager, the Disputed Securities could have been sold under the Indenture on other grounds. PIMCO has asked the Court to order the Trustee to distribute the Disputed Funds according to the unambiguous terms of the Indenture.

All parties, including AGM and the Holder Group, are completing their production of documents in May 2022. Depositions and other fact discovery are scheduled to conclude on June 16, 2022.

Manager Responses to Highlighted Questions (continued)

Genesis Real Estate Asset Management S.p.A. v. Angelo Gordon Realty Acquisitions Cooperatieve U.A., et al.

In April, 2022, Angelo Gordon Realty Acquisitions Cooperatieve U.A. and certain of its affiliates (collectively, "AG") were named as defendants in a lawsuit brought by Genesis Real Estate Asset management S.p.A. ("Genesis") before the Tribunal of Milan, Italy. The lawsuit asserts claims relating to alleged breaches of obligations set out under multiple 2018 agreements, as well as claims against individual directors of certain AG entities relating to those breaches and relating to alleged damage to Genesis' reputation. The first hearing is set for November 16, 2022.

Angelo Gordon Investment Personnel Change

In May 2022, an analyst joined the US Real Estate team in New York office.

Angelo Gordon Management Level Changes

Alan Isenberg joined the Firm on April 1, 2022 as Head of Client Partnership Group (previously known as Investor Relations). To ensure that the leadership transition of the function is seamless for our clients, and for the IR team who have a huge year ahead of them, Garrett will stay on as a Senior Advisor for the balance of 2022.

Scott Soussa joined the Firm as Chief Strategy Officer on April 1, 2022. David Roberts, currently AG Head of Strategy, will ultimately be stepping down from this role to become a Senior Advisor.

In May 2022, Richa Gulati joined Angelo Gordon as Chief Compliance Officer and Associate General Counsel. Richa was most recently the Chief Compliance Officer at Willett Advisors, LLC, and previously held various legal and compliance roles at Oaktree Capital Management and D.E. Shaw. She replaces Adam Freedman who under mutual agreement with Angelo Gordon departs the firm to pursue other endeavors. Adam remains with the firm for a number of months to support the transition.

AQR Litigation

Yes.

The State of Connecticut - Department of Banking ("State of CT") conducted an onsite exam of AQR Investments, LLC ("AQR Investments") in late May 2019. AQR Investments is an affiliated broker-dealer of AQR Capital Management, LLC ("AQR"). AQR Investments' activities are limited to marketing of the AQR mutual funds and certain private funds. The exam was largely focused on AQR Investments' supervisory policies and procedures. In May 2022, the State of CT issued a Letter of Caution related to purported deficiencies of securities notice of exemption filings for certain of AQR's sponsored private funds under Section 36b-16 of the Connecticut Uniform Securities Act (the "Act"). While the Firm respectfully disagreed with the State of CT's interpretation of the requirements under the Act, AQR voluntarily made the necessary filings to the State of CT in accordance with their request and the matter is closed.

Except as noted above, to the best of our knowledge, neither AQR nor any of AQR's Principals or employees is or has been the subject of a legal proceeding, a government inquiry, or any regulatory actions during the quarter ending June 30, 2022, that would materially impact AQR's financial condition, its management of client assets or its provision of investment advisory services. AQR routinely engages

Manager Responses to Highlighted Questions (continued)

in correspondence with, and from time to time receives document requests and inquiries from, the U.S. Securities and Exchange Commission, the U.S. Commodity Futures Trading Commission, the U.S. Department of Labor and other regulatory and law enforcement agencies from various U.S. and non-U.S. jurisdictions. At this time, we are not aware of any inquiries or investigations that would have a material adverse effect on AQR's ability to conduct its business. Please note the historical matters set forth in Item 11 of AQR's Part 1 of Form ADV.

AQR Management Level Changes

While not material in nature, please note the below changes to ownership for the quarter ending 6/30/2022:
Departures

- Ian Roche (Principal, Research and Portfolio Management)
- Jeremy Getson (Principal, Business Development – Client Service)

BlackRock Litigation

Yes. As a global investment manager, BlackRock, Inc., and its various subsidiaries including BlackRock Financial Management, Inc. ("BFM") may be subject to regulatory oversight in numerous jurisdictions including examinations and various requests for information. BFM's regulators routinely provide it with comment letters at the conclusion of these examinations in which they request that BFM correct or modify certain of its practices. In all such instances, BFM has addressed, or is working to address, these requests to ensure that it continues to operate in compliance with applicable laws, statutes and regulations.

BFM also receives subpoenas or requests for information in connection with regulatory inquiries and/or investigations by its various regulators, some of which are ongoing. None of these matters has had or is expected to have any adverse impact on BFM's ability to manage its clients' assets. Please refer to BlackRock's Form ADV and SEC disclosures for additional information on regulatory matters concerning BFM or BlackRock as a whole.

BlackRock, Inc. and its various subsidiaries, including BFM, also have been subject to certain business litigation that has arisen in the normal course of their business. Our litigation has included a variety of claims, some of which are investment-related. None of BlackRock's prior litigation has had, and none of its pending litigation currently is expected to have, an adverse impact on BlackRock's ability to manage client accounts.

BlackRock Investment Personnel Changes

Regarding SJCERA's Direct Lending Fund IX mandate, During the second quarter, BlackRock's US Private Credit team has the following senior-level departures: Kenneth Saffold, Managing Director; Brad Pritchard, Managing Director; and Daniel Levan, Director. Mr. Saffold was primarily focused on our transaction origination efforts, and his responsibilities have been effectively absorbed by other members of the investment team who focus primarily on origination. Mr. Pritchard was involved in our efforts in technology and venture lending, and was a negotiated departure. His responsibilities have been taken

Manager Responses to Highlighted Questions (continued)

over by other senior members of the team with expertise in technology and venture lending. Mr. Levan worked across a variety of industry groups, primarily the Energy sector, and was also a negotiated departure. His responsibilities have been absorbed by other members of the team. BlackRock's approach to direct lending relies on a large and experienced team. We do not believe that any of these departures materially negatively impact SJCERA's investment in the strategy.

Regarding SJCERA;s Global Energy & Power Infrastructure Fund mandate, there are no changes to report.

BlackRock Management Level Changes

In 2010, BlackRock created the Global Executive Committee ("GEC") to provide oversight of operations and business performance, strategy and planning, talent development and retention, risk management, and external affairs.

Ed Fishwick replaced Ben Golub as Chief Risk Officer and took over his GEC role in March 2022, due to Ben moving to a role as a senior advisor.

Please refer to the link below for biographies of the firm's current GEC members.

http://www.blackrock.com/corporate/en-us/about-us/leadership

Crestline Custodian Reconciliation

The investment is not held at a custodian. SJCERA's investment is administered and reconciled by the Fund's independent administrator: SEI Global Services, Inc.

Crestline Investment Personnel Changes

Departures

- Gabriel Schuch, Senior Associate responsible for underwriting and asset management departed the team on 4/29/2022.
- Austin Allison, Analyst responsible for underwriting and asset management departed the team on 4/29/2022. His responsibilities were assumed by Eekeen Wong, Associate.

Additions

- Josh Witczak was hired on 4/1/2022 as an Associate for the investment team and responsible for underwriting and asset management .
- Tyler Barke was hired on 4/4/2022 as a Senior Analyst and responsible for underwriting and asset management.
- Jan de Wolff was hired on 5/3/2022 as a Vice President for the investment team and responsible for sourcing, underwriting, and asset management.
- Mark Murillo was hired on 5/30/2022 as an Analyst for the investment team and responsible for underwriting and asset management.
- Albert Hicks was hired on 5/31/2022 as a Vice President for the investment team and is responsible for sourcing, underwriting, and asset management.

Manager Responses to Highlighted Questions (continued)

- Brian Dean was hired on 6/13/2022 as a Senior Analyst for the investment team and responsible for underwriting and asset management.
- Deep Randhawa was hired on 6/13/2022 as a Senior Associate for the investment team and responsible for underwriting and asset management.

Dodge & Cox Investment Personnel Changes

Turnover

Dodge & Cox has experienced an extremely low level of personnel turnover throughout our history. Michael Mollemans, Quantitative Equity Trader/Market Structure Analyst, joined Dodge & Cox in 2Q22. On June 30, 2022, Charles Pohl, former Chairman and CIO, retired after 38 years at the firm.

Please see *Exhibit A* – Experienced, Integrated, and Stable Investment Team and *Exhibit B* – Employee Update – Investment Professionals for more information.

Dodge & Cox Material Business Changes

There have been no material changes during the quarter.

In mid-March 2020, Dodge & Cox begun operating in a work-from-home model – in the U.S. and in London. We made this decision in order to follow the guidance of the Governor of California, San Francisco's Mayor, and public health officials in the U.S. and UK, and to do our part to help slow the spread of COVID-19.

Since that time, our Return-to-Office Steering Committee, comprised of senior leaders from our Investment, Client Service, Communications, Legal, Human Capital and Operations teams, has met regularly to consider the factors that would enable us to begin transitioning our teams back into the office. As part of its work, the Committee continues to monitor developments related to virus mutations and the rollout, availability, and effectiveness of COVID-19 vaccines. We have returned to the office on March 28, 2022.

Our policy of curtailing business travel remains in effect.
We remain focused on three primary goals:

- Protecting the health and well-being of our colleagues and their families,
- Actively managing portfolios in the pursuit of long-term returns, and
- Serving our clients by staying in close touch and remaining focused on their long-term goals.

We continue to conduct research, make investment decisions, execute trades, and run our operations to meet our clients' needs. All of our teams are now meeting and collaborating in-person as well as virtually, using videoconference, conference calls, and other technology tools.

Our teams are also in continuous contact with our third-party providers that support our operations to ensure they have taken the necessary steps to continue to provide services to our firm; we continue to receive outstanding support. We regularly review our vendors' business continuity plans and risk mitigation practices.

Manager Responses to Highlighted Questions (continued)

DWS / RREEF Custodian Reconciliation

N/A. The Fund does not provide custodial services. Shares of the fund are uncertificated.

DWS / RREEF Management Level Changes

There have been no significant changes to the management team for our real estate business during the quarter. On June 1, 2022, DWS announced that its CEO, Dr. Asoka Woehrmann, decided to resign in agreement with the company. Asoka has been succeeded by Stefan Hoops, previously Head of Corporate Bank at Deutsche Bank. Stefan, a proven capital markets expert, brings along a deep understanding of institutional investors and will work with our clients to build on our successes to date and continue the strategic transformation of DWS.

GQG Investment Personnel Changes

Yes. In Q2 2022, GQG added one investment analyst to the team. Additionally, one investment analyst left the firm.

Effective July 1, 2022, three of our senior investment analysts designated as Deputy Portfolio Managers were elevated to the position of Portfolio Manager for all strategies, alongside the Chief Investment Officer and current Portfolio Manager, Rajiv Jain. The identification and analysis of securities remains a collective, collaborative effort across the entire Investment Team. Investment decisions, however, are typically made collaboratively by the Portfolio Managers, although Rajiv Jain as Chief Investment Officer retains the ability to act unilaterally on any portfolio decision.

None of the changes describe above are anticipated to have a material impact to the portfolio(s) or to the investment management services provided by GQG.

2Q 2022 Departures:

Date	Title	Responsibilities	Years @ Firm	Reason	Replaced by
5/31/22	Analyst	Analyst	1.7	*	Responsibilities assumed by Investment Team

**As a matter of policy, we do not comment on the reason for an individual employee's departure. As a growing firm, we are extremely thoughtful in our hiring process and spend considerable time on building our team with a focus on character and culture. We feel we have been quite successful in this effort, with very few exceptions. When an employment relationship with GQG transitions, we are supportive of former employees in finding other opportunities.*

2Q 2022 Additions:

Name / Distinction	Title	Responsibilities	Total Years Exp.	Years Industry / Firm Exp.	Joined Team
Renato Denieletto	Investment Analyst	Analyst	3	3 / 0.2	4/4/22

Manager Responses to Highlighted Questions (continued)

GQG Management Level Changes

No. In Q2 2022, there were no changes to GQG's Executive Team.

Effective July 1, 2022, GQG's Chief of Staff retired. The Chief of Staff's responsibilities were assumed by other firm personnel.

HPS Litigation

Yes, however, to our knowledge, there is not any litigation or governmental regulatory proceedings involving the Firm that HPS believes will have a material adverse effect upon the Firm.

HPS Investment Personnel Changes

There have been no hires on the dedicated Asset Value1 team during the second quarter of 20222. There has been one departure of a Vice President from the dedicated Asset Value team during the second quarter of 2022.
1 Formerly known as European Asset Value.
2 Per most recent headcount data as of March 31, 2022.

Invesco Litigation

From time to time, Invesco Advisers, Inc., which has and maintains robust compliance programs and practices designed to comply with Rule 206(4)-7 under the Investment Advisers Act of 1940 and Rule 38a-1 under the Investment Company Act of 1940, may receive formal or informal requests from governmental or regulatory bodies about its activities. No requests currently pending are expected to result in any matter that could have a material adverse impact on its business or operations.

Invesco Investment Personnel Changes

There were two analyst departures, Ada Chen and Xiaoying (Catherine) Li.

Invesco Management Level Changes

After 15 years with Invesco, Colin Meadows left the firm in May 2022 to begin a new venture, o15, a mission-driven alternatives investment firm providing capital to support women and minority entrepreneurs. Prior to co-founding o15, Colin was a Senior Managing Director with Invesco where he held a variety of business and functional leadership roles including Head of Invesco Private Markets, Head of Invesco Global Institutional, Head of Invesco Digital Ventures, and Chief Administrative Officer.

Miller Investment Personnel Changes

Yes. There have been personnel changes to the investment team during the quarter. Paul Hogan, Chief Portfolio Manager, left the Firm during the second quarter of 2022. Rachel Miller together with a third-party consultant have taken over the asset management responsibilities of Paul Hogan.

Manager Responses to Highlighted Questions (continued)

Miller Management Level Changes

Yes. There have been personnel changes at the management level of the Firm during the quarter. Paul Hogan, Chief Portfolio Manager, and member of the Investment Committee of the Firm left the Firm during the second quarter of 2022. There will not be a replacement for his position on the Investment Committee.

Morgan Creek Custodian Reconciliation

N/A

Mount Lucas Material Organizational Changes

In order to recognize the contribution and efforts and broaden equity ownership of Mount Lucas, the firm recently added several long-term employees as partners. At the same time, to simplify the ownership structure the firm's predecessor entity, Mount Lucas Management Corp. a Sub S Corp., was closed. On a look-through basis, the ownership of Mount Lucas did not change by more than 25% and all previous beneficial equity owners remain.

Loomis Sayles Litigation

LITIGATION & REGULATORY MATTERS UPDATE – Q2 2022
While neither Loomis, Sayles & Company, L.P. ("Loomis Sayles" or the "Firm"), nor to the best of its knowledge, any of its affiliates, is a party to any litigation, administrative action or regulatory matters that would have a material impact on its ability to conduct Loomis Sayles' investment management business, Loomis Sayles is a party to the following, unless otherwise noted, none of which are deemed to be material:

Litigation Matter involving Loomis Sayles
Loomis Sayles is defendant in a civil complaint initially filed in April 2014. The complaint alleges that Loomis Sayles misclassified a software engineer as an independent contractor, when he should have been an employee of Loomis Sayles under applicable Massachusetts statute. The complaint purports to represent a class of unnamed technology contractors the plaintiff claims were misclassified as contractors. In its answer, Loomis Sayles denied all the allegations. Loomis Sayles believes the plaintiff's case has no merit, and intends to vigorously defend its position in this matter. The plaintiff represented and certified that he was an employee in fact of a sub vendor, and his employer represented and certified to Loomis Sayles that it complied with all state and federal tax and employment laws applicable to the employment of this individual. Depositions began in January 2015. Discovery ended in late May 2015 and dispositive motions, including a motion for class certification by the plaintiff and a motion for summary judgment by Loomis Sayles, were filed at the end of June 2015. A hearing on various motions was held in September 2016. The judge denied plaintiff's motion for class certification and Loomis Sayles' motion for summary judgment. In April 2018, the trial judge issued a directed verdict in Loomis Sayles' favor, and the plaintiff appealed the verdict in May 2018. The Massachusetts Court of Appeals heard oral arguments in the case in September 2019 and in January 2020 reversed the directed verdict, remanding the case for retrial. In February 2020, Loomis Sayles appealed this decision to the Massachusetts Supreme Judicial Court. The appeal was denied, and preparations are underway for a retrial. The retrial is scheduled to begin in September 2022.

Manager Responses to Highlighted Questions (continued)

Litigation Matters involving Loomis Sayles' Affiliates

Loomis Sayles' parent company, Natixis Investment Managers, LLC ("Natixis LLC"), holds a number of investment management companies that are operationally independent of Loomis Sayles, and Loomis Sayles has little or no knowledge with respect to litigation or regulatory matters involving affiliates controlling or under common control with Loomis Sayles. The below matter are those of which Loomis Sayles does have knowledge:

On February 18, 2021, Loomis Sayles' parent company, Natixis LLC, was the subject of a class action complaint filed in the U.S. District Court in the District of Massachusetts. The complaint alleges a breach of fiduciary duty under ERISA, claiming principally favoritism toward NIM's use of affiliated funds, including funds managed by Loomis Sayles, in the Natixis LLC 401(k) plan. The law firm representing the plaintiffs has filed similar lawsuits against industry peers. Natixis LLC believes the lawsuit is entirely without merit, and it intends to vigorously defend itself against the claims. The complaint does not involve Loomis Sayles or Loomis Sayles' 401(k) plan.

On June 24, 2021, Natixis ("Natixis"), the French bank that owns our parent company, was found guilty by a French criminal court of communication of misleading information, based on language regarding Natixis' exposure to the sub-prime crisis in a 2007 press release. The French court has ordered Natixis to pay a 7.5 million euros fine. No officers, directors or employees of Natixis were charged in connection with the proceeding. Natixis was first referred for trial in France in June 2019 in connection with the press release issued by Natixis in November 2007 at the start of the financial crisis. Only a short paragraph of the press release was questioned, relating to Natixis' exposure to the subprime crisis. Neither the previous nor the subsequent communication of the bank was criticized. The press release in question did not relate to any of Natixis' subsidiary businesses engaged in advisory or broker-dealer activities. The referral resulted from an investigation launched in 2009 by the Paris public prosecutor's office into a complaint filed by certain minority shareholders of Natixis coordinated by the Association to Defend Minority Shareholder Rights (Association De Défense Des Actionnaires Minoritaires – Adam). Natixis remains convinced that that the financial information it disseminated, in all sincerity, was appropriate to the situation. The press release in question was issued at the beginning of the subprime crisis when no one at the time (neither the banks, nor regulators, nor rating agencies), had any idea of the extent and consequences of the crisis. . Natixis has decided to appeal this judgment. Pursuant to the appeal, the case would be entirely reexamined by a new judge, on matters of both fact and law. Under French law, there are no legal consequences to Natixis or its affiliates for a guilty verdict in this case. Loomis Sayles updated the disclosure in its Form ADV, Part 1. This matter does not involve any activities of Loomis Sayles and will not have any impact on our business activities.

Regulatory Contact involving Loomis Sayles

In December 2021, Loomis Sayles received a subpoena from the Securities and Exchange Commission ("SEC") concerning certain trades in a fixed income security that occurred on a specific day in 2017, and Loomis Sayles submitted the materials requested in the subpoena to the SEC. The subpoena stated that it related to a non-public fact finding inquiry and that it was not an indication that any violation of law had occurred. In May 2022, Loomis Sayles received a letter from the SEC stating that the SEC had concluded its investigation and does not intend to recommend an enforcement action in this matter.

Manager Responses to Highlighted Questions (continued)

Northern Trust Litigation

As one of the world's largest asset managers, NTI is occasionally named as a defendant in asset management-related litigation. NTI is not currently party to any litigation that has had (or will have) a material effect on its ability to perform services for its clients. At this time, there are no significant pending cases.

Furthermore, NTI occasionally receives requests for information from government and regulatory agencies. NTI frequently does not know if such requests are related to a formal government or regulatory investigations or, assuming an investigation is underway, whether NTI is a target of such investigation or simply thought to be in possession of information pertinent to such investigation. NTI is not currently involved in any government or regulatory investigation or proceeding that would have a material impact on its ability to provide advisory services to its clients.

Northern Trust Management Level Changes

SENIOR MANAGEMENT CHANGES

As a result of the constantly changing landscape of asset management, we believe the occasional organizational changes are a natural progression and necessary in order to adapt to new market and regulatory environments. The most recent changes to senior personnel are the following:

2022

- June; Shundrawn Thomas, Northern Trust Asset Management President, left the company on June 1st to co-found a new, diverse-owned and led business that will provide debt and equity solutions to privately held U.S. companies. A replacement search is in progress.
- June; Melinda Mecca retired as Northern Trust Asset Management's head of investment solutions on June 1st.
- May; Jennifer Childe has joined Northern Trust as Director of Investor Relations. She succeeds Mark Bette, who will serve as Chief Financial Officer for Shared Services. In her role, Childe will be responsible for Northern Trust's Investor Relations strategy and focus on continuing and building relationships with investors, analysts, rating agencies and regulators and other key stakeholders.

Oaktree Custodian Reconciliation

Not applicable.

Oaktree Litigation

As a leading global investment manager, Oaktree and its affiliates, investment professionals, and portfolio companies are routinely involved in litigation in the ordinary course of their business and investing activities. In some cases, Oaktree or its officers are simply named as additional defendants in litigation arising out of the business activities of portfolio companies, such as landlord/tenant disputes and personal injury claims brought against entities owned by Oaktree's real estate funds. Other claims involve Oaktree and its professionals more directly, such as bankruptcy or restructuring disputes arising out of the investment activities of Oaktree's distressed debt and control investing funds. In addition, Oaktree is subject to the authority of a number of U.S.

Manager Responses to Highlighted Questions (continued)

and non-U.S. regulators, including the U.S. Securities and Exchange Commission ("SEC") and the Financial Industry Regulatory Authority ("FINRA"), and those authorities regularly conduct examinations of Oaktree and make other inquiries. No litigation or regulatory action to date has had a material adverse financial impact upon Oaktree or any of the funds it manages and Oaktree is not aware of any pending litigation or regulatory enforcement action that might reasonably be expected to have such an effect.

On November 11, 2021, the SEC initiated a routine examination of Oaktree Capital Management L.P. and Oaktree Fund Advisors, LLC. The exam is ongoing.

Oaktree Material Organizational Changes

No.
Subsequent to 2Q 2022, in July 2022, Oaktree and 17Capital announced the completion of Oaktree's acquisition of a majority interest in 17Capital. 17Capital specializes in providing non-dilutive capital to high-quality private equity management companies, funds and institutional investors that are seeking to finance value creation and portfolio management initiatives. Oaktree is a leader among global investment managers specializing in alternative investments, including credit, private equity, real assets and listed equities. This strategic partnership will give 17Capital access to Oaktree's deep global network and add to Oaktree's extensive suite of private capital solutions. 17Capital, which is headquartered in London, will continue to operate as an independent business, with its own product offerings and investment, marketing, and support teams.

Ocean Avenue Investment Personnel Changes

No—Note that we had Lina Aluzri, a first year analyst, leave us for a position at a direct buyout fund in April. We are in the process of replacing Lina. Lina's involvement with the portfolio was very minimal given that she was the most junior member of our team.

Parametric Litigation

Parametric is part of Morgan Stanley Investment Management, the asset management division of Morgan Stanley. The distinct investment brands of Eaton Vance Management, Parametric, Atlanta Capital and Calvert, have from time to time, been plaintiffs or defendants in various lawsuits and arbitrations that are incidental to their businesses and are or were handled in the ordinary course of business. From time to time, Parametric and its affiliates are subject to periodic audits, regulatory and governmental examinations, information-gathering requests, investigations, and proceedings both formal and informal which have the potential to result in findings, conclusions, recommendations or various forms of sanction. Parametric believes that these actions have not and will not have a material adverse effect on its consolidated financial condition, liquidity, results of operations or the ability to manage client assets.

Manager Responses to Highlighted Questions (continued)

Parametric Investment Personnel Changes

Justin Henne, Managing Director, Investment Management and Strategy, departed Parametric effective May 27, 2022. Justin made this personal decision as he looks to transition his career to a different path.

Effective May 1, 2022, Clint Talmo, Director, Investment Strategy, and Ricky Fong, Director, Investment Strategy, both report to Tom Lee, Chief Investment Officer. Clint will continue to lead the team that manages client-directed Overlay accounts. Ricky, who previously led the Overlay team that manages primarily ERISA based policy-driven accounts, now oversees all the teams that manage policy-driven Overlay accounts.

Sylvia Horstmann joined Parametric effective June 6, 2022 as a Senior Portfolio Manager on the Overlay team, reporting to Ricky Fong.

Parametric Management Level Changes

On June 30, 2022, Jim Evans began his transition to retirement as he stepped down from the role as Co-Head of Parametric's Fixed Income. Jon Rocafort became the sole Head of Fixed Income Solutions and replaced Jim on Parametric's Executive Committee. Jim reports to Jon and continues to remain involved with the firm's Fixed Income Solutions team supporting the new leadership, consulting with clients, working on product development and mentoring early-career employees. Jim expects to retire sometime in 2023.

Parametric Material Business Changes

As announced in March, over the course of 2022, Parametric will recalibrate its approach to the Australian market to bring it in line with the sales/service approach similar to what it has in the EMEA region. This will include increasing leverage of its MSIM (Morgan Stanley Investment Management) support teams and a reconfiguration of the Parametric direct resourcing model. The firm remains committed to its clients and prospects in the Australian market.

On June 30, 2022, Jim Evans began his transition to retirement as he stepped down from the role as Co-Head of Parametric's Fixed Income. Jon Rocafort became the sole Head of Fixed Income Solutions and replaced Jim on Parametric's Executive Committee. Jim reports to Jon and continues to remain involved with the firm's Fixed Income Solutions team supporting the new leadership, consulting with clients, working on product development and mentoring early-career employees. Jim expects to retire sometime in 2023.

Parametric, in coordination with Morgan Stanley, continues to navigate the COVID-19 pandemic successfully – with a focus on the health and safety of its employees, maintaining high levels of investment performance and client service, and the continuity of the business operations as the highest priorities. Parametric has made significant investments in technologies that allow employees to collaborate effectively across locations and in a hybrid work format, which will support its teams as the firm transitions out of the pandemic period.

Manager Responses to Highlighted Questions (continued)

PIMCO Litigation

During the period, PIMCO has not been the subject of any lawsuit or regulatory proceeding that could reasonably be expected to have had a material adverse effect on PIMCO's ability to provide investment management services.

Notwithstanding the foregoing, PIMCO notes the following litigation matters:

- On April 18, 2018, PIMCO and PIMCO Investments LLC were named in a complaint filed in the US Virgin Islands. In addition to PIMCO and PI, the complaint names certain BlackRock entities as defendants (together, the "Defendants"). The complaint alleges, among other things, that the Defendants engaged in a coordinated effort designed to damage the business operations of Ocwen, the mortgage servicing company, which had certain business relationships with Altisource Asset Management Corporation, both companies in which the plaintiffs hold equity interests. On August 8, 2018, the plaintiffs filed an amended complaint. The substance of the allegations in the amended complaint are the same as the original complaint. PIMCO believes the claims are without merit and intends to vigorously defend the matter.
- On September 24, 2019, a lawsuit was filed against PIMCO, PIMCO Investments LLC and two PIMCO employees in Orange County Superior Court by a former PIMCO employee. The lawsuit alleges, among other things, discrimination and unequal pay based on gender, race, and disability status. The complaint also alleges fraud in connection with a flexible work request and other employment opportunities. The allegations in the complaint are not accurate and PIMCO will demonstrate that the employee was treated and compensated fairly.
- On December 17, 2019, PIMCO was named as a defendant in a lawsuit filed in Louisiana state court. The lawsuit was filed by creditors to a Midwest-based agriculture company, the majority equity holders of which are two PIMCO-managed private funds. We believe that the claims asserted are without merit and expect the case to be defended vigorously.
- On August 3, 2020, three PIMCO employees, who served as directors of a Florida-headquartered company, were named in a complaint filed in Florida state court by the company's prior controlling equity owner. The complaint was amended on August 31, 2020 to also name PIMCO as a defendant. The complaint alleges claims for tortious interference of contract, aiding and abetting breach of fiduciary duty, and defamation, related to a Stockholders Agreement, to which the Plaintiff and a subsidiary of a PIMCO-managed private fund are parties. PIMCO is not a party to the Stockholders Agreement and believes the claims are without merit and intends to defend the case vigorously.
- On November 18, 2020, a lawsuit was filed against PIMCO and several PIMCO employees in Orange County Superior Court by two former PIMCO employees. The lawsuit alleges, among other things, discrimination and unequal pay based on gender and disability status, and retaliation. On February 18, 2021, an amended complaint was filed, adding three former PIMCO employees as additional plaintiffs, and a second amended complaint was subsequently filed

Manager Responses to Highlighted Questions (continued)

on August 12, 2021. The allegations in the complaint are not accurate and PIMCO will demonstrate that the employees were treated and compensated fairly

- On September 22, 2021, PIMCO was named as a defendant in an amended complaint filed in the Southern District of New York. Wells Fargo, as trustee, filed the action related to the sale of defaulted securities by a CDO. Certain PIMCO-managed funds own the CDO's senior notes and, as such, PIMCO – in its capacity as investment manager – has been named as a defendant in the interpleader action to represent the interests of the senior noteholders. The complaint contains no allegations of wrongdoing by PIMCO or any PIMCO-managed investment vehicle.
- On May 13, 2022, a lawsuit was filed against PIMCO, PIMCO Investments, and several PIMCO employees in Orange County Superior Court by a former PIMCO employee and a former independent contractor ("Plaintiffs"). The lawsuit alleges, among other things, discrimination and unequal pay based on race and disability status, and retaliation. The allegations in the complaint are not accurate and PIMCO will demonstrate that the Plaintiffs were treated and compensated fairly.

With respect to regulatory matters, as a registered investment adviser, PIMCO is in frequent contact with its regulators. Please note however, that as a general practice, PIMCO does not comment on pending regulatory matters.

PIMCO Investment Personnel Changes

There have been no changes to the investment team, though we note that Feifei Li, a contributor to PIMCO's RAE strategy, decided to step away from Research Affiliates (RA) and take some time off before identifying her next professional endeavor. Ms. Li spent 17 years at RA and was named CIO of Equity Strategies in June 2021. She played an integral role in helping RA become the firm that it is today.

Rob Arnott and Chris Brightman remain portfolio managers on all PIMCO RAE Funds and accounts and there is no change to PM assignments or RAE's systematic investment process. Ms. Li was not a named PM on any PIMCO Fund or account.

RA's Que Nguyen, previously Head of Product Management, has assumed the role of CIO of Equity Strategies, where she oversees the full range of the firm's equity strategies, including PIMCO's RAE. Ms. Nguyen has over 30 years of investment experience. She joined RA as the Head of Product Management in 2021 after spending seven years at Willett Advisors, the single-family office that manages the philanthropic assets of Michael R. Bloomberg. Previously, she served as Managing Director at the University of Chicago's Office of Investments. During her career, Ms. Nguyen held positions in research and portfolio management at BARRA, State Street Global Advisors, Morgan Stanley Investment Management, and Numeric Investors.

Manager Responses to Highlighted Questions (continued)

PIMCO Management Level Changes

Gained - PIMCO Investment Professionals

Date	Name	Title	Department	Office
Apr-22	Jennifer Yuen	Executive Vice President	Account Management	New York

Lost - PIMCO Investment Professionals

Date	Name	Title	Department	Years at PIMCO	Reason	Office
Jun-22	Dan Kaminski	Executive Vice President	Account Management – Client Service	9	Other*	New York
Jun-22	Ravi Mattu	Managing Director	Analysts	11	Other*	New York
May-22	Shinji Inoue	Executive Vice President	Account Management – Business Development	11	Other*	Tokyo
Apr-22	Sebastian Zilles	Executive Vice President	Portfolio Management	8	Other*	New York

**PIMCO deems any reason for departure outside of a transfer to a PIMCO affiliate as confidential information.*

Principal Custodian Reconciliation

Not applicable. The Principal US Property Account is a commingled account. Attached is the June 30th monthly statement. We do not receive reports from their custodian to reconcile.

Principal Litigation

Given the size and scope of our operations we are occasionally involved in litigation, both as a defendant and as a plaintiff. However, management does not believe that any pending litigation will have a material adverse effect on our business, financial position or net income. Please see our public filings for details. Also, regulatory bodies, such as the SEC, the Financial Industry Regulatory Authority, the Department of Labor and other regulatory bodies regularly make routine inquiries and conduct examinations or investigations concerning our compliance with, among other things, securities laws, ERISA and laws governing the activities of investment advisors. While the outcome of any regulatory matter cannot be predicted, management does not believe that any regulatory matter will have a material adverse effect on our business, financial position or our ability to fully perform our duties to clients.

Principal Management Level Changes

Principal Real Estate Investors has experienced limited turnover of its senior management and staff.

Prologis Registered Investment Advisor Status

No. Investment advisors are required to register with the SEC as a Registered Investment Advisor ("RIA") if they are in the business of providing advice or issuing reports or analyses regarding securities. The SEC has stated that direct interests in real estate are not securities. Prologis' vehicles invest in real estate directly. For example, USLF does not invest in the stock of other real estate companies or in other public or private funds that own real estate – USLF invests in real estate directly. Because USLF

Manager Responses to Highlighted Questions (continued)

invests in real estate directly and because the SEC has stated that direct real estate investments are not securities, we have with the advice of external legal counsel determined that Prologis is not required to register as an RIA.

The ultimate parent company of Prologis is Prologis, Inc. which is a publicly traded company on the NYSE. As a publicly traded company, Prologis is subject to SEC reporting and the corporate governance and legal requirements applicable to other US public companies. In addition, the general partner of USLF is Prologis, L.P., which is the operating subsidiary through which Prologis Inc. carries out the vast majority of its operations. Prologis, L.P. is large and well-capitalized.

Prologis Custodian Reconciliation

Not applicable.

Prologis Litigation

Prologis, Inc. is a publicly traded company with global operations. In the normal course of business, from time to time, Prologis may be involved in legal actions and environmental matters relating to the ownership and operations of its properties. Management does not expect that the liabilities, if any, that may ultimately result from such legal actions would have a material adverse effect on the financial position, results of operations or cash flows of Prologis. Except as has been previously disclosed in public filings, as of March 21, 2022, there were no material pending legal proceedings to which Prologis is a party or of which any of its properties is the subject, the determination of which Prologis anticipates would have a material adverse effect upon its financial condition and results of operations.

Prologis Investment Personnel Changes

Tom Tagliaferro, manager, fund management, left Prologis in July 2022 to attend graduate school. Alison Quigley joined the USLF team as manager, fund management. Ms. Quigley re-joined Prologis in 2019 as a global fund associate on the Strategic Capital team. Ms. Quigley received her MBA from the University of Colorado, Boulder and holds a Bachelor of Science in Management from Tulane University.

Prologis Management Level Changes

There have not been any significant personal changes during the past quarter. Please note, in April 2022, Tim Arndt became the company's new chief financial officer, replacing Tom Olinger who has retired. Mr. Arndt has been with Prologis since 2004 and served as Treasurer prior to this position.

Stellex Investment Personnel Changes

Michael Ma was hired as a Vice President to the investment team.

Stone Harbor Material Organizational Changes

There have not been any material changes to Stone Harbor's business during the quarter, however it is important to note that effective July 1, 2022, pursuant to a restructuring among Virtus fixed income affiliates, Stone Harbor began operating as a division of Virtus Fixed Income Advisers, LLC ("VFIA"), an

Manager Responses to Highlighted Questions (continued)

SEC registered investment adviser. As a division of VFIA, Stone Harbor maintains its distinct investment process and philosophy, portfolio management teams, investment culture and brand.

Walton Street Custodian Reconciliation

SJCERA is invested in commingled funds and not a separate account. As the Funds are invested solely in real estate and real estate related investments, reconciliation to a custodian is not applicable.

White Oak Litigation

Yes. Other than as noted below, there is no present or pending regulatory action or litigation brought by or against the firm or any of its principals or investment professionals, other than routine regulatory examinations and legal proceedings in connection with the normal course of originating and managing a portfolio of direct loans.

We had reported previously that White Oak was involved in an arbitration proceeding with an institutional client. White Oak terminated the relationship with that client in 2018 and had been attempting to make a distribution of the client's assets to the client in accordance with the termination provisions of the client's Investment Management Agreement ("IMA") since that time. Among other things, the client questioned in the arbitration whether White Oak had observed its "Most Favored Nation" (MFN) covenant in the IMA. On August 4, 2021, the arbitrator found in White Oak's favor on the MFN issue, but found, among other things, that White Oak had violated ERISA with respect to other conduct, such as by including a never-invoked indemnification clause in certain fund agreements.

The client claimant subsequently filed an action in the Southern District of New York to confirm the arbitrator's award, and White Oak petitioned to vacate the arbitrator's award in part. On March 17, 2022, the Court denied White Oak's petition to vacate and granted the client's petition to confirm the arbitration award. The Court decision and the arbitration award both recognize that White Oak had unsuccessfully attempted to return the client's assets after White Oak terminated the IMA, and that White Oak should not be penalized for the client's failure to notify White Oak where to send those assets. The Court explained that the client is entitled to receive the net asset value of its investments with White Oak as of August 4, 2021, which was the date of the final arbitration award, and explained that White Oak may return assets to the client, instead of cash. Those assets were distributed to the client on September 3, 2021 in accordance with the Arbitrator's award. However, the Court has questioned whether White Oak retained control over the assets that were distributed to the client. The client was also seeking in the arbitration and court proceeding a refund of the management fees it had paid to White Oak under the IMA. However, the Court made clear in its decision that White Oak is entitled to retain the management fees it earned under the IMA, except for a "Day One" management fee White Oak earned. The Court confirmed the Arbitrator's findings that White Oak had violated ERISA, and confirmed the Arbitrator's award of attorneys' fees and prejudgment interest.

On April 11, 2022, the client moved to correct the judgment to include five different categories of relief in the judgment, which motion White Oak opposed. On July 14, 2022, the Court granted the client's motion and the Clerk entered a corrected judgment identifying the specific amounts of attorneys' fees,

Manager Responses to Highlighted Questions (continued)

Day One management fee and prejudgment interest on that Day One fee owed. The amended judgment also orders (a) White Oak to pay 9% prejudgment interest on the August 4, 2021 net asset value of the client's investment starting in September 2018, (b) the disgorgement of unidentified profits and (c) the removal of White Oak as fiduciary and investment manager, which already occurred when White Oak returned the client's assets on September 3, 2021. White Oak intends to seek reconsideration of the Court's order confirming (a) 9% prejudgment interest on the August 4, 2021 net asset value of the client's investments, and (b) disgorgement of profits.

On March 31, 2022 – after the Court's March 17, 2022 judgment was entered – the U.S. Supreme Court held that a federal court does not have federal question jurisdiction to confirm or vacate an arbitration award simply because the underlying arbitration proceeding involved a federal question, such as alleged violations of ERISA law, which was the basis upon which the client alleged federal court jurisdiction to confirm the arbitration award. As a result, on April 13, 2022, White Oak filed a motion to vacate the judgment, arguing that the Court lacked jurisdiction as a result of the U.S. Supreme Court decision. The client filed its response on May 6, 2022 arguing that there are independent grounds for federal question jurisdiction. On June 21, 2022, the Court issued a decision finding that the Court had two independent bases for federal question jurisdiction, and therefore denied White Oak's motion to vacate for lack of jurisdiction. White Oak intends to file a notice of appeal (as White Oak had originally planned to do before the Supreme Court decision was issued). On appeal, White Oak will challenge both the corrected judgment itself, which confirmed the arbitration award, and the Court's decision finding that the Court had jurisdiction.

White Oak Management Level Changes

Yes. During Q2 2022, the following occurred at the Managing Director level and above at White Oak Global Advisors (this does not include changes at White Oak's financing affiliates or affiliated entities).

Leaver: Managing Director (Marketing and Investor Relations)

DISCLOSURES:

This document is provided for informational purposes only. It does not constitute an offer of securities of any of the issuers that may be described herein. Information contained herein may have been provided by third parties, including investment firms providing information on returns and assets under management, and may not have been independently verified. The past performance information contained in this report is not necessarily indicative of future results and there is no assurance that the investment in question will achieve comparable results or that the Firm will be able to implement its investment strategy or achieve its investment objectives. The actual realized value of currently unrealized investments (if any) will depend on a variety of factors, including future operating results, the value of the assets and market conditions at the time of disposition, any related transaction costs and the timing and manner of sale, all of which may differ from the assumptions and circumstances on which any current unrealized valuations are based.

Neither MEKETA nor MEKETA's officers, employees or agents, make any representation or warranty, express or implied, in relation to the accuracy or completeness of the information contained in this document or any oral information provided in connection herewith, or any data subsequently generated here from, and accept no responsibility, obligation or liability (whether direct or indirect, in contract, tort or otherwise) in relation to any of such information. MEKETA and MEKETA's officers, employees and agents expressly disclaim any and all liability that may be based on this document and any errors therein or omissions therefrom. Neither MEKETA nor any of MEKETA's officers, employees or agents, make any representation of warranty, express or implied, that any transaction has been or may be effected on the terms or in the manner stated in this document, or as to the achievement or reasonableness of future projections, management targets, estimates, prospects or returns, if any. Any views or terms contained herein are preliminary only, and are based on financial, economic, market and other conditions prevailing as of the date of this document and are therefore subject to change.

The information contained in this report may include forward-looking statements. Forward-looking statements include a number of risks, uncertainties and other factors beyond the control of the Firm, which may result in material differences in actual results, performance or other expectations. The opinions, estimates and analyses reflect MEKETA's current judgment, which may change in the future.

Any tables, graphs or charts relating to past performance included in this report are intended only to illustrate investment performance for the historical periods shown. Such tables, graphs and charts are not intended to predict future performance and should not be used as the basis for an investment decision.

All trademarks or product names mentioned herein are the property of their respective owners. Indices are unmanaged and one cannot invest directly in an index. The index data provided is on an "as is" basis. In no event shall the index providers or its affiliates have any liability of any kind in connection with the index data or the portfolio described herein. Copying or redistributing the index data is strictly prohibited.

The Russell indices are either registered trademarks or tradenames of Frank Russell Company in the US and/or other countries.

The MSCI indices are trademarks and service marks of MSCI or its subsidiaries.

Standard and Poor's (S&P) is a division of The McGraw-Hill Companies, Inc. S&P indices, including the S&P 500, are a registered trademark of The McGraw-Hill Companies, Inc.

CBOE, not S&P, calculates and disseminates the BXM Index. The CBOE has a business relationship with Standard & Poor's on the BXM. CBOE and Chicago Board Options Exchange are registered trademarks of the CBOE, and SPX, and CBOE S&P 500 BuyWrite Index BXM are servicemarks of the CBOE. The methodology of the CBOE S&P 500 BuyWrite Index is owned by CBOE and may be covered by one or more patents or pending patent applications.

The Barclays Capital indices (formerly known as the Lehman indices) are trademarks of Barclays Capital, Inc.

The Citigroup indices are trademarks of Citicorp or its affiliates.

The Merrill Lynch indices are trademarks of Merrill Lynch & Co. or its affiliates.

FTSE is a trademark of the London Stock Exchange Group companies and is used by FTSE under license. All rights in the FTSE indices and/or FTSE ratings vest in FTSE and/or its licensors. No further distribution of FTSE data is permitted with FTSE's express written consent.

SJCERA Quarterly Manager Review Schedule

Manager	Strategic Class	Sub-Segment	Under Review	Last Rvw	Next Rvw	Most Recent Visit to Meketa/SJCERA	Mgr. Meeting with SJCERA	Mgr. Location
Angelo Gordon	Aggressive Growth	Value Added Real Estate			Oct-22			New York, NY
Almanac Reality VI	Aggressive Growth	Value Added Real Estate		May-21				New York, NY
AQR	Diversifying Strategies	Alternative Risk Premia		Jul-19	Oct-22	4/21/2020		Stamford, CT
BlackRock	Stabilized Growth, PC	Direct Lending				3/18/2019*		San Francisco, CA
BlackRock	Aggressive Growth	Infrastructure			Oct-22	3/18/2019*	8/22/2019	New York, NY
Berkeley Partners	Aggressive Growth	Private Real Estate				10/16/2020	8/14/2020	San Francisco, CA
Bridgewater (AW)	Stabilized Growth, RP	Risk Parity				7/29/2020	10/6/2017	Westport, CT
Crestline	Stabilized Growth, PC	Opportunistic				7/22/2020	6/7/2019	Fort Worth, TX
Davidson Kempner	Stabilized Growth, PC	Opportunistic		Oct-21		8/11/2020		New York, NY
Dodge & Cox	Diversifying Strategies, PP	Core Fixed Income		Oct-21	Oct-22	6/3/2020		San Francisco, CA
Dodge & Cox	Diversifying Strategies, CRO	Long Duration				6/3/2020		San Francisco, CA
GQG	Traditional Growth	Emerging Markets				10/16/2020		San Francisco, CA
Graham	Diversifying Strategies, CRO	Systematic Trend Following			Oct-22	7/23/2020		Rowayton, CT
Greenfield/Grandview V, VI, VII	Aggressive Growth	Opportunistic Real Estate		Oct-21	Oct-22			Greenwich, CT
HPS EU	Stabilized Growth, PC	Direct Lending		Mar-20		8/3/2017*		New York, NY
Invesco	Traditional Growth	REITs, Core US		Oct-21	Oct-22	5/6/2020*		Atlanta, GA
Lombard	Diversifying Strategies	Alternative Risk Premia	May-22			10/19/2020		New York, NY
Loomis Sayles	Principal Protection	Core Fixed Income			Oct-22			Kansas City, MO
Lightspeed	Aggressive Growth	Private Equity			Oct-22			Menlo Park, CA
Medley	Stabilized Growth, PC	Direct Lending		Aug-22		3/12/2015		San Francisco/New York
Mesa West III & IV	Stabilized Growth, PC	Comm. Mortgage		Oct-21	Oct-22	8/22/2019	8/22/2019	Los Angeles, CA
Miller Global VI, VII	Aggressive Growth	Opportunistic Real Estate		Mar-20				Denver, CO
Morgan Creek III, V, & VI	Aggressive Growth	Multi-Strat FOF		Oct-21		8/22/2019	8/22/2019	Chapel Hill, NC
Mount Lucas	Diversifying Strategies, CRO	Systematic Trend Following		May-18	Oct-22	3/17/2020	2/12/2021	Newton, PA
Northern Trust	Traditional Growth	MSCI World IMI			Oct-22			Chicago, IL
Northern Trust	Cash	Collective Govt. Short Term			Oct-22			Chicago, IL
Neuberger Berman	Stabilized Growth, LC	Global Credit		Oct-21	Oct-22	10/20/2020		Chicago, IL
Oaktree	Stabilized Growth, PC	Leveraged Direct Lending			Oct-22	11/6/2020		New York, NY
Ocean Avenue	Aggressive Growth	PE Buyout FOF		Oct-21	Oct-22			Santa Monica, CA
P/E Diversified	Diversifying Strategies	Alternative Risk Premia		Oct-21	Oct-22	2/17/2020		Boston, MA
PanAgora	Stabilized Growth, RP	Risk Parity		Mar-18	Oct-22	4/7/2020*		Boston, MA
Parametric	Cash	Cash Overlay				10/27/2020*		Minneapolis, MN
PIMCO (RAE)	Traditional Growth	Emerging Markets			Oct-22	7/23/2020*	8/22/2019	Newport Beach, CA
Principal US	Stabilized Growth, RE	Core Real Estate			Oct-22			Des Moines, IA
Prologis	Stabilized Growth, RE	Core Real Estate			Oct-22			San Francisco, CA
Raven II & III	Stabilized Growth, PC	Direct Lending		Apr-18			2/23/2018	New York, NY
Ridgemont	Aggressive Growth	Private Equity			Oct-22			Charlotte, NC
RREEF America II	Stabilized Growth, RE	Core Real Estate		Mar-20				Kansas City, MO
Stellex Capital	Aggressive Growth	Private Equity		Oct-21			5/8/2020	New York, NY
Stockbridge RE III	Aggressive Growth	Value Added Real Estate		Jul-22				San Francisco, CA
Stone Harbor	Stabilized Growth, LC	Absolute Return		Oct-21	Oct-22	9/29/2020*	2/3/2021	New York, NY
Walton Street	Aggressive Growth	Opportunistic Real Estate		Mar-20				Chicago, IL
White Oak Summit Peer	Stabilized Growth, PC	Direct Lending				7/24/2020		San Francisco, CA
White Oak Yield Spectrum	Stabilized Growth, PC	Direct Lending		Feb-19		7/24/2020	6/7/2019	San Francisco, CA

General Meketa Review LC = Liquid Credit; PC = Private Credit; PP = Principal Protection; CRO = Crisis Risk Offset; RP = Risk Parity;

Managers Approved - Waiting to be funded

Terminated Managers

			Date Terminated	
KBI	Global Equity	Global Equity -Terminated	2016	Dublin, Ireland
Bridgewater	Risk Parity	Real Assets - Terminated	2016	Westport, CT
Parametric	Risk Parity	Risk Parity - Terminated	2016	Minneapolis, MN
Legato	Global Equity	Small Cap Growth -Terminated	2017	San Francisco, CA
Marinus	Credit	Credit HF - Terminated	2018	Westport, CT
Bridgewater	Crisis Risk Offset	Pure Alpha - Terminated	2019	Westport, CT
Stone Harbor	Credit	Bank Loans - Temrinated	2019	New York, NY
Prima	Principal Protection	Commercial MBS - Terminated	2020	Scarsdale, NY
BlackRock x4	Global Equity	US Equity x2; Non-US Developed; Non-US REIT -Terminated	2020	San Francisco, CA
Capital Prospects	Global Equity	Global Equity -Terminated	2020	Stamford, CT
PIMCO (RAFI)	Global Equity	Global Equity -Terminated	2019	Newport Beach, CA
DoubleLine	Principal Protection	Principal Protection -Terminated	2022	Los Angeles, CA

San Joaquin County Employees' Retirement Association (SJCERA)

Preliminary Monthly Flash Report (Net)[1] — July 2022

	Commitment ($000)	Sub-Segment	Market Value	Physical % of Total	Policy Target %	1-Mo	3-Mos	YTD	1-Yr	3-Yrs	5-Yrs	SI Return	SI Date
TOTAL PLAN[1]			$ 3,899,652,551	100.0%	100.0%	3.5	-0.1	-4.6	-0.7	6.8	6.6	7.7	Apr-90
Policy Benchmark[4]						*2.5*	*-0.9*	*-6.1*	*-3.4*	*6.2*	*6.5*	*7.5*	
Difference:						1.0	0.8	1.5	2.7	0.6	0.1	0.2	
75/25 Portfolio[5]						*5.8*	*-1.5*	*-13.7*	*-11.1*	*7.2*	*6.6*	*7.2*	
Difference:			.			-2.3	1.4	9.1	10.4	-0.4	0.0	0.5	
Broad Growth			$ 2,960,300,258	75.9%	75.0%	4.6	0.1	-6.0	-0.7	8.1	7.8	8.3	Jan-95
Aggressive Growth Lag[2]			$ 348,041,245	8.9%	10.0%	4.4	4.4	16.2	36.0	20.4	17.6	-2.2	Feb-05
MSCI ACWI +2%Lag						*4.8*	*1.2*	*8.9*	*19.2*	*16.7*	*12.4*	*0.0*	
Difference:						-0.4	3.2	7.3	16.8	3.7	5.2	-2.2	
BlackRock Global Energy&Power Lag[3]	*$50,000*	*Global Infrastructure*	$ 27,148,199	0.7%		2.3	2.3	5.3	10.6	10.1	--	10.1	Jul-19
MSCI ACWI +2% Lag						*2.4*	*-4.8*	*2.2*	*9.9*	*16.6*	*--*	*16.6*	
Difference:						-0.1	7.1	3.1	0.7	-6.5	--	-6.5	
Ocean Avenue II Lag[3]	*$40,000*	*PE Buyout FOF*	$ 39,897,241	1.0%		3.7	3.7	21.3	48.4	37.7	33.8	18.9	May-13
MSCI ACWI +2% Lag						*2.4*	*-4.8*	*2.2*	*9.9*	*16.6*	*12.3*	*10.8*	
Difference:						1.3	8.5	19.1	38.5	21.1	21.5	8.1	
Lightspeed Venture Ptr Select V Lag[3]	*$40,000*	*Growth-Stage VC*	$ 6,591,123	0.2%		--	--	--	--	--	--	--	Jun-22
MSCI ACWI +2% Lag						*--*	*--*	*--*	*--*	*--*	*--*	*--*	
Difference:						--	--	--	--	--	--	--	
Ocean Avenue III Lag[3]	*$50,000*	*PE Buyout FOF*	$ 54,261,818	1.4%		9.1	9.1	23.6	53.9	29.2	35.8	27.4	Apr-16
MSCI ACWI +2% Lag						*2.4*	*-4.8*	*2.2*	*9.9*	*16.6*	*12.3*	*11.7*	
Difference:						6.7	13.9	21.4	44.0	12.6	23.6	15.7	
Ocean Avenue IV Lag[3]	*$50,000*	*PE Buyout*	$ 52,263,369	1.3%		5.3	5.3	23.8	39.5	--	--	36.7	Dec-19
MSCI ACWI +2% Lag						*2.4*	*-4.8*	*2.2*	*9.9*	*--*	*--*	*18.3*	
Difference:						2.9	10.1	21.6	29.6	--	--	18.4	
Morgan Creek III Lag[3]	*$10,000*	*Multi-Strat FOF*	$ 5,108,214	0.1%		-3.4	-3.4	-14.9	-27.0	-17.8	-5.7	-5.2	Feb-15
MSCI ACWI +2% Lag						*2.4*	*-4.8*	*2.2*	*9.9*	*16.6*	*12.3*	*11.3*	
Difference:						-2.4	4.8	-14.1	-34.3	-33.4	-17.4	-16.0	
Morgan Creek V Lag[3]	*$12,000*	*Multi-Strat FOF*	$ 7,870,853	0.2%		-0.2	-0.2	6.4	19.7	14.4	13.8	14.1	Jun-13
MSCI ACWI +2% Lag						*2.4*	*-4.8*	*2.2*	*9.9*	*16.6*	*12.3*	*10.8*	
Difference:						-2.4	4.8	4.3	10.0	-2.2	1.5	3.3	
Morgan Creek VI Lag[3]	*$20,000*	*Multi-Strat FOF*	$ 28,055,200	0.7%		-0.7	-0.7	15.7	41.1	24.7	22.0	12.7	Feb-15
MSCI ACWI +2% Lag						*2.4*	*-4.8*	*2.2*	*9.9*	*16.6*	*12.3*	*11.3*	
Difference:						-2.4	4.8	14.3	32.2	8.4	9.8	1.5	
Stellex Capital Partners II Lag[3]	*$50,000*	*Special Situations PE*	$ 15,128,729	0.4%		11.4	11.4	8.7	-7.9	--	--	-7.9	Jul-21
MSCI ACWI +2% Lag						*2.4*	*-4.8*	*2.2*	*9.9*	*--*	*--*	*5.1*	
Difference:						9.0	16.2	6.6	-17.8	--	--	-13.0	
Non-Core Private Real Assets Lag[3]	*$341,100*	*Private Real Estate*	$ 111,716,499	2.9%		3.8	3.8	13.8	36.3	15.6	10.7	-1.8	Nov-04
MSCI ACWI +2% Lag						*7.2*	*7.4*	*15.9*	*28.5*	*11.4*	*10.0*	*9.2*	
Difference:						-3.4	-3.6	-2.1	7.8	4.2	0.7	-11.0	
Opportunistic Private Real Estate			$ 32,747,632	0.6%									
Greenfield V[3]	*$30,000*	*Opportunistic Pvt. RE*	$ 222,600	0.0%		-0.1	-0.1	-1.3	-2.0	-7.9	-5.7	-3.1	Jul-08
NCREIF ODCE + 1% Lag Blend						*7.2*	*7.4*	*15.9*	*28.5*	*11.4*	*10.0*	*9.8*	
Difference:						-7.3	-7.5	-17.2	-30.5	-19.3	-15.7	-12.9	
Greenfield VI[3]	*$20,000*	*Opportunistic Pvt. RE*	$ 34,815	0.0%		-1.4	-1.4	0.0	-38.1	-40.4	-31.5	-13.0	Apr-12
NCREIF ODCE + 1% Lag Blend						*7.2*	*7.4*	*15.9*	*28.5*	*11.4*	*10.0*	*14.3*	
Difference:						-8.6	-8.8	-15.9	-66.6	-51.8	-41.5	-27.3	
Greenfield VII[3]	*$19,100*	*Opportunistic Pvt. RE*	$ 5,422,943	0.1%		0.9	0.9	12.9	26.7	17.2	15.4	13.9	Oct-14
NCREIF ODCE + 1% Lag Blend						*7.2*	*7.4*	*15.9*	*28.5*	*11.4*	*10.0*	*13.9*	
Difference:						-6.3	-6.5	-3.0	-1.8	5.8	5.4	0.0	

[1] Returns are preliminary and are finalized during each quarterly reporting cycle. Monthly returns since previous quarter are provided by the managers. Market values are provided by Northern Trust.

[2] Total class returns are as of 6/30/22, and lagged 1 quarter.

[3] Manager returns are as of 6/30/22, and lagged 1 quarter. Since Inception date reflects one quarter lag.

[4] 4/1/20 to present benchmark is **32%** MSCI ACWI IMI, **10%** BB Aggregate Bond Index, **17%** *50%* BB High Yield/*50%* S&P Leveraged Loans, 6% NCREIF ODCE +1% lag; **10%** T-Bill +4%, **10%** MSCI ACWI +2%, **15%** CRO Custom Benchmark. Prior to 4/1/20 benchmark is legacy policy benchmark.

[5] 4/1/20 to present **75%** MSCI ACWI, **25%** BB Global Aggregate. Prior to 4/1/20 60% MSCI ACWI, 40% BB Global Aggregate.

San Joaquin County Employees' Retirement Association (SJCERA)

Preliminary Monthly Flash Report (Net)[1] — July 2022

	Commitment ($000)	Sub-Segment	Market Value	Physical % of Total	Policy Target %	1-Mo	3-Mos	YTD	1-Yr	3-Yrs	5-Yrs	SI Return	SI Date
Opportunistic Private Real Estate (continued)													
Grandview[3]	*$30,000*	*Opportunistic Pvt. RE*	$ 19,658,666	0.5%		-0.4	-0.4	25.3	41.8	30.5	--	25.7	Apr-18
NCREIF ODCE + 1% Lag Blend						*7.2*	*7.4*	*15.9*	*28.5*	*11.4*	*10.0*	*13.5*	
Difference:						-7.6	-7.8	9.4	13.3	19.1	--	12.2	
Miller Global Fund VI[3]	*$30,000*	*Opportunistic Pvt. RE*	$ 86,092	0.0%		0.0	0.0	81.0	115.4	-6.1	1.1	0.7	May-08
NCREIF ODCE + 1% Lag Blend						*7.2*	*7.4*	*15.9*	*28.5*	*11.4*	*10.0*	*9.8*	
Difference:						-7.2	-7.4	65.1	86.9	-17.5	-8.9	-9.1	
Miller Global Fund VII[3]	*$15,000*	*Opportunistic Pvt. RE*	$ 45,087	0.0%		0.0	0.0	-85.5	-88.3	-51.2	-36.0	-6.1	Dec-12
NCREIF ODCE + 1% Lag Blend						*7.2*	*7.4*	*15.9*	*28.5*	*11.4*	*10.0*	*14.0*	
Difference:						-7.2	-7.4	-101.4	-116.8	-62.6	-46.0	-20.1	
Walton Street V[3]	*$30,000*	*Opportunistic Pvt. RE*	$ 1,544,898	0.0%		-7.0	-7.0	-17.4	-17.5	-15.1	-12.1	-5.1	Nov-06
NCREIF ODCE + 1% Lag Blend						*7.2*	*7.4*	*15.9*	*28.5*	*11.4*	*10.0*	*10.7*	
Difference:						-14.2	-14.4	-33.3	-46.0	-26.5	-22.1	-15.8	
Walton Street VI[3]	*$15,000*	*Opportunistic Pvt. RE*	$ 5,732,531	0.1%		2.4	2.4	14.6	16.5	2.7	3.8	7.8	Jul-09
NCREIF ODCE + 1% Lag Blend						*7.2*	*7.4*	*15.9*	*28.5*	*11.4*	*10.0*	*12.6*	
Difference:						-4.8	-5.0	-1.3	-12.0	-8.7	-6.2	-4.8	
Value-Added Private Real Estate			$ 79,183,076	2.0%									
AG Core Plus IV[3]	*$20,000*	*Value-Added Pvt. RE*	$ 13,858,156	0.4%		1.7	1.7	9.6	14.1	9.8	10.5	6.1	Sep-15
NCREIF ODCE + 1% Lag Blend						*7.2*	*7.4*	*15.9*	*28.5*	*11.4*	*10.0*	*13.5*	
Difference:						-5.5	-5.7	-6.3	-14.4	-1.6	0.5	-7.4	
Almanac Realty VI[3]	*$30,000*	*Value-Added Pvt. RE*	$ 4,249,408	0.1%		2.6	2.6	8.2	17.7	-7.2	-5.1	21.6	Feb-13
NCREIF ODCE + 1% Lag Blend						*7.2*	*7.4*	*15.9*	*28.5*	*11.4*	*10.0*	*14.3*	
Difference:						-4.6	-4.8	-7.7	-10.8	-18.6	-15.1	7.3	
Berkeley Partners Fund V, LP	*$40,000*	*Value-Added Pvt. RE*	$ 27,886,236	0.7%		9.7	9.7	36.0	45.1	--	--	38.0	Aug-20
NCREIF ODCE + 1% Lag Blend						*7.2*	*7.4*	*15.9*	*28.5*	*--*	*--*	*24.4*	
Difference:						2.5	2.3	20.1	16.6	--	--	13.6	
Stockbridge RE III[3]	*$45,000*	*Value-Added Pvt. RE*	$ 33,189,276	0.9%		4.4	4.4	32.9	52.8	21.8	--	14.5	Jul-18
NCREIF ODCE + 1% Lag Blend						*7.2*	*7.4*	*15.9*	*28.5*	*11.4*	*10.0*	*13.7*	
Difference:						-2.8	-3.0	17.0	24.3	10.4	--	0.8	
Traditional Growth[2]			$ 1,374,801,916	35.3%	32.0%	7.5	-1.4	-14.1	-9.8	6.8	6.7	8.9	Jan-95
MSCI ACWI IMI Net						*7.1*	*-2.0*	*-14.8*	*-11.0*	*9.0*	*8.4*	*7.7*	
Difference:						0.4	0.6	0.7	1.2	-2.2	-1.7	1.2	
Global Equity			$ 1,325,407,089	34.0%									
Northern Trust MSCI World IMI		*All Cap Global*	$ 1,195,436,595	30.7%		8.2	-0.8	-14.0	-9.3	--	--	8.3	Sep-20
MSCI World IMI Net						*8.1*	*-1.4*	*-14.4*	*-9.8*	*--*	*--*	*7.7*	
Difference:						0.1	0.6	0.4	0.5	--	--	0.6	
SJCERA Transition		*All Cap Global*	$ 2,925	0.0%		NM	NM	NM	NM	--	--	NM	Jul-20
Emerging Markets			$ 129,967,569										
GQG Active Emerging Markets		*Emerging Markets*	$ 58,229,404	1.5%		0.6	-5.0	-17.7	-18.2	--	--	-2.0	Aug-20
MSCI Emerging Markets Index Net						*-0.2*	*-6.5*	*-17.8*	*-20.1*	*--*	*--*	*-1.8*	
Difference:						0.8	1.5	0.1	1.9	--	--	-0.2	
PIMCO RAE Fundamental Emerging Markets		*Emerging Markets*	$ 71,738,165	1.8%		1.4	-6.7	-15.1	-16.2	2.7	1.6	4.1	Apr-07
MSCI Emerging Markets Index						*-0.2*	*-6.3*	*-17.6*	*-19.8*	*1.3*	*1.3*	*3.2*	
Difference:						1.6	-0.4	2.5	3.6	1.4	0.3	0.9	
REITS			$ 49,394,827	1.3%									
Invesco All Equity REIT		*Core US REIT*	$ 49,394,827	1.3%		8.4	-3.1	-10.9	-0.4	6.4	7.4	9.0	Aug-04
FTSE NAREIT Equity Index						*9.1*	*-5.3*	*-13.0*	*-2.5*	*6.6*	*6.9*	*8.7*	
Difference:						-0.7	2.2	2.1	2.1	-0.2	0.5	0.3	

[1] Returns are preliminary and are finalized during each quarterly reporting cycle. Monthly returns since previous quarter are provided by the managers. Market values are provided by Northern Trust.

[2] MSCI ACWI IMI Net as of 4/1/2020, MSCI ACWI Gross prior.

[3] Manager returns are as of 6/30/22, and lagged 1 quarter. Since Inception date reflects one quarter lag.

NM = Returns not meaningful

San Joaquin County Employees' Retirement Association (SJCERA)

Preliminary Monthly Flash Report (Net)[1] — July 2022

	Commitment ($000)	Sub-Segment	Market Value	Physical % of Total	Policy Target %	1-Mo	3-Mos	YTD	1-Yr	3-Yrs	5-Yrs	SI Return	SI Date
Stabilized Growth			$ 1,237,457,097	31.7%	33.0%	2.9	0.6	-1.2	2.4	6.6	6.5	4.1	Jan-05
Risk Parity			$ 409,766,771	10.5%		7.8	-3.2	-13.2	-12.7	3.2	4.8	4.1	
T-Bill +4%						*0.4*	*1.1*	*2.5*	*4.2*	*4.6*	*5.1*	*4.5*	
Difference:						7.4	-4.3	-15.7	-16.9	-1.4	-0.3	-0.4	
Bridgewater All Weather		*Risk Parity*	$ 205,429,933	5.3%		8.1	-2.6	-12.0	-10.6	3.5	4.8	4.4	Mar-12
T-Bill +4%						*0.4*	*1.1*	*2.5*	*4.2*	*4.6*	*5.1*	*5.4*	
Difference:						7.7	-3.7	-14.5	-14.8	-1.1	-0.3	-1.0	
PanAgora Diversified Risk Multi-Asset		*Risk Parity*	$ 204,336,838	5.2%		7.5	-3.9	-14.4	-14.7	2.8	4.7	5.6	Apr-16
T-Bill +4%						*0.4*	*1.1*	*2.5*	*4.2*	*4.6*	*5.1*	*5.0*	
Difference:						7.1	-5.0	-16.9	-18.9	-1.8	-0.4	0.6	
Liquid Credit			$ 220,869,974	5.7%		2.6	-1.9	-7.1	-6.8	0.3	1.7	1.7	
50% BB High Yield, 50% S&P/LSTA Leveraged Loans						*4.0*	*-1.8*	*-5.8*	*-4.3*	*2.3*	*3.2*	*5.3*	
Difference:						-1.4	-0.1	-1.3	-2.5	-2.0	-1.5	-3.6	
Neuberger Berman		*Global Credit*	$ 96,015,734	2.5%		3.2	-2.3	-10.1	-10.0	-0.1	--	1.3	Feb-19
33% ICE BofA HY Constrained, 33% S&P/LSTA LL, 33% JPM EMBI Glbl Div.						*3.6*	*-2.3*	*-9.8*	*-9.3*	*-0.1*	*--*	*1.5*	
Difference:						-0.4	0.0	-0.3	-0.7	0.0	--	-0.2	
Stone Harbor Absolute Return		*Absolute Return*	$ 124,854,240	3.2%		2.1	-1.5	-4.6	-4.1	0.7	1.7	2.5	Oct-06
3-Month Libor Total Return						*0.1*	*0.2*	*0.1*	*0.1*	*0.8*	*1.3*	*1.3*	
Difference:						2.0	-1.7	-4.7	-4.2	-0.1	0.4	1.2	
Private Credit Lag[2]			$ 368,115,598	9.4%		1.6	1.6	5.7	9.1	4.8	3.9	3.8	
50% BB High Yield, 50% S&P/LSTA Leveraged Loans						*-0.5*	*-2.5*	*-1.8*	*1.3*	*4.4*	*4.4*	*5.7*	
Difference:						2.1	4.1	7.5	7.8	0.4	-0.5	-1.9	
BlackRock Direct Lending Lag[3]	*$100,000*	*Direct Lending*	$ 78,977,871	2.0%		0.9	0.9	0.9	6.2	--	--	8.7	May-20
S&P/LSTA Leveraged Loans +3% Blend[5]						*0.3*	*0.6*	*0.6*	*10.6*	*--*	*--*	*14.4*	
Difference:						0.6	0.3	0.3	-4.4	--	--	-5.7	
Mesa West RE Income IV Lag[3]	*$75,000*	*Comm. Mortgage*	$ 21,943,892	0.6%		0.7	0.7	3.4	8.1	7.8	8.2	7.5	Mar-17
S&P/LSTA Leveraged Loans +3% Blend[4]						*0.3*	*0.6*	*3.8*	*10.6*	*9.0*	*8.8*	*8.8*	
Difference:						0.4	0.1	-0.4	-2.5	-1.2	-0.6	-1.3	
Crestline Opportunity II Lag[7]	*$45,000*	*Opportunistic*	$ 17,738,175	0.5%		-1.2	-1.2	1.3	6.9	2.1	2.7	5.0	Nov-13
S&P/LSTA Leveraged Loans +3% Blend[4]						*0.3*	*0.6*	*3.8*	*10.6*	*9.0*	*8.8*	*8.9*	
Difference:						-1.5	-1.8	-2.5	-3.7	-6.9	-6.1	-3.9	
Davidson Kempner Distr Opp V Lag[3]	*$50,000*	*Opportunistic*	$ 49,020,155	0.0%		2.9	2.9	6.7	14.3	--	--	31.8	Oct-20
S&P/LSTA Leveraged Loans +3% Blend[4]						*0.3*	*0.6*	*3.8*	*10.6*	*--*	*--*	*10.3*	
Difference:						2.6	2.3	2.9	3.7	--	--	21.5	
Oaktree Lag	*$50,000*	*Leveraged Direct*	$ 32,387,534	0.8%		3.7	3.7	9.8	16.9	18.3	--	12.0	Mar-18
S&P/LSTA Leveraged Loans +3% Blend[4]						*0.3*	*0.6*	*3.8*	*10.6*	*11.2*	*--*	*9.0*	
Difference:						3.4	3.1	6.0	6.3	7.0	--	3.0	
HPS EU Asset Value II Lag[3]	*$50,000*	*Direct Lending*	$ 32,790,932	0.8%		3.2	3.2	4.5	7.8	--	--	2.7	Aug-20
S&P/LSTA Leveraged Loans +3% Blend[4]						*0.3*	*0.6*	*3.8*	*10.6*	*--*	*--*	*10.2*	
Difference:						2.9	2.6	0.7	-2.8	--	--	-7.5	
Raven Opportunity III Lag[3]	*$50,000*	*Direct Lending*	$ 54,263,543	1.4%		1.8	1.8	8.1	14.8	8.1	8.8	4.2	Nov-15
S&P/LSTA Leveraged Loans +3% Blend[4]						*0.3*	*0.6*	*3.8*	*10.6*	*9.0*	*8.8*	*8.8*	
Difference:						1.5	1.2	4.3	4.2	-0.9	0.0	-4.6	

[1] Returns are preliminary and are finalized during each quarterly reporting cycle. Monthly returns since previous quarter are provided by the managers. Market values are provided by Northern Trust.

[2] Total class returns are as of 6/30/22, and lagged 1 quarter.

[3] Manager returns are as of 6/30/22, and lagged 1 quarter. Since Inception date reflects one quarter lag.

[4] 9% Annual until 6/30/2018; CPI +6% Annual 7/1/2018 - 3/31/2022; S&P/LSTA Leveraged Loans +3% thereafter.

[5] 50% Bloomberg High Yield/50% S&P Leveraged Loan until 12/31/20 then CPI +6% Annual thereafter. Benchmark lagged one quarter.

[6] MSCI ACWI + 2% until 12/31/20 then CPI +6% Annual thereafter. Benchmark lagged one quarter

San Joaquin County Employees' Retirement Association (SJCERA)

Preliminary Monthly Flash Report (Net)[1] July 2022

	Commitment ($000)	Sub-Segment	Market Value	Physical % of Total	Policy Target %	1-Mo	3-Mos	YTD	1-Yr	3-Yrs	5-Yrs	SI Return	SI Date
Private Credit Lag (continued)													
Medley Opportunity II Lag[3]	*$50,000*	*Direct Lending*	$ 4,378,784	0.1%		0.0	0.0	-9.9	-12.7	-11.4	-10.1	-2.3	Jul-12
S&P/LSTA Leveraged Loans +3% Blend [4]						*0.3*	*0.6*	*3.8*	*10.6*	*9.0*	*8.8*	*8.9*	
Difference:						-0.3	-0.6	-13.7	-23.3	-20.4	-18.9	-11.2	
White Oak Summit Peer Fund Lag[3]	*$50,000*	*Direct Lending*	$ 31,584,204	0.8%		0.2	0.2	3.0	-0.9	3.4	5.1	5.7	Mar-16
S&P/LSTA Leveraged Loans +3% Blend [4]						*0.3*	*0.6*	*3.8*	*10.6*	*9.0*	*8.8*	*8.8*	
Difference:						-0.1	-0.4	-0.8	-11.5	-5.6	-3.7	-3.1	
White Oak Yield Spectrum Master V Lag[3]	*$50,000*	*Direct Lending*	$ 45,030,508	1.2%		1.5	1.5	2.3	3.2	--	--	0.9	Mar-20
S&P/LSTA Leveraged Loans +3% Blend [4]						*0.3*	*0.6*	*3.8*	*10.6*	*--*	*--*	*9.3*	
Difference:						1.2	0.9	-1.5	-7.4	--	--	-8.4	
Core Private Real Estate Lag			$ 238,704,754	6.1%									
Principal US[3]	*$25,000*	*Core Pvt. RE*	$ 45,152,344	1.2%		7.3	7.3	23.9	28.4	11.3	10.0	10.2	Jan-16
NCREIF ODCE + 1% Lag Blend						*7.2*	*7.4*	*15.9*	*28.5*	*11.4*	*10.0*	*13.1*	
Difference:						0.1	-0.1	8.0	-0.1	-0.1	0.0	-2.9	
Prologis Logistics[3]	*$35,000*	*Core Pvt. RE*	$ 130,605,773	3.3%		11.8	11.8	41.2	57.9	27.6	23.5	9.7	Dec-07
NCREIF ODCE + 1% Lag Blend						*7.2*	*7.4*	*15.9*	*28.5*	*11.4*	*10.0*	*10.0*	
Difference:						4.6	4.4	25.3	29.4	16.2	13.5	-0.3	
RREEF America II[3]	*$45,000*	*Core Pvt. RE*	$ 63,378,443	1.6%		5.4	5.4	23.5	28.0	11.5	9.8	9.9	Jul-16
NCREIF ODCE + 1% Lag Blend						*7.2*	*7.4*	*15.9*	*28.5*	*11.4*	*10.0*	*13.0*	
Difference:						-1.8	-2.0	7.6	-0.5	0.1	-0.2	-3.1	
Diversifying Strategies			$ 835,077,566	21.4%	25.0%	-0.5	-0.6	2.7	1.7	2.7	3.4	6.3	Oct-90
Principal Protection			$ 296,636,837	7.6%	10.0%	2.7	1.4	-6.0	-6.7	-0.1	1.5	6.0	Oct-90
BB Aggregate Bond Index						*2.4*	*1.5*	*-8.2*	*-9.1*	*-0.2*	*1.3*	*5.6*	
Difference:						0.3	-0.1	2.2	2.4	0.1	0.2	0.4	
Dodge & Cox		*Core Fixed Income*	$ 201,303,583	5.2%		2.8	1.3	-7.2	-8.3	1.1	2.3	6.7	Oct-90
BB Aggregate Bond Index						*2.4*	*1.5*	*-8.2*	*-9.1*	*-0.2*	*1.3*	*5.6*	
Difference:						0.4	-0.2	1.0	0.8	1.3	1.0	1.1	
Loomis Sayles		*Core Fixed Income*	$ 95,333,254	2.4%		2.6	1.4	-4.4	--	--	--	-4.8	Mar-22
BB Aggregate Bond Index						*2.4*	*1.5*	*-4.7*	*--*	*--*	*--*	*-5.1*	
Difference:						0.2	-0.1	0.3	--	--	--	0.3	
DoubleLine Capital		*MBS*	$ 69,965	0.0%		NM	NM	NM	NM	NM	NM	NM	Feb-12

[1] Returns are preliminary and are finalized during each quarterly reporting cycle. Monthly returns since previous quarter are provided by the managers. Market values are provided by Northern Trust.

[2] Total class returns are as of 6/30/22, and lagged 1 quarter.

[3] Manager returns are as of 6/30/22, and lagged 1 quarter. Since Inception date reflects one quarter lag.

[4] 9% Annual until 6/30/2018; CPI +6% Annual 7/1/2018 - 3/31/2022; S&P/LSTA Leveraged Loans +3% thereafter.

San Joaquin County Employees' Retirement Association (SJCERA)

Preliminary Monthly Flash Report (Net)[1] July 2022

	Commitment ($000)	Sub-Segment	Market Value	Physical % of Total	Policy Target %	1-Mo	3-Mos	YTD	1-Yr	3-Yrs	5-Yrs	SI Return	SI Date
Crisis Risk Offset			$ 538,440,729	13.8%	15.0%	-2.2	-1.7	10.2	9.0	4.9	4.8	6.7	Jan-05
CRO Custom Benchmark [2]						*0.0*	*-0.4*	*-1.8*	*-0.3*	*4.0*	*4.5*	*5.1*	
Difference:						-2.2	-1.3	12.0	9.3	0.9	0.3	1.6	
Long Duration			$ 127,601,352	3.3%		3.0	-0.3	-18.0	-18.6	-2.2	1.0	0.4	
BB US Long Duration Treasuries						*2.7*	*-0.8*	*-19.2*	*-19.2*	*-2.1*	*1.2*	*1.1*	
Difference:						0.3	0.5	1.2	0.6	-0.1	-0.2	-0.7	
Dodge & Cox Long Duration		*Long Duration*	$ 127,601,352	3.3%		3.0	-0.3	-18.0	-18.6	-2.2	1.0	0.4	Feb-16
BB US Long Duration Treasuries						*2.7*	*-0.8*	*-19.2*	*-19.2*	*-2.1*	*1.2*	*1.1*	
Difference:						0.3	0.5	1.2	0.6	-0.1	-0.2	-0.7	
Systematic Trend Following			$ 239,724,451	6.1%		-3.8	-3.0	30.8	28.4	14.0	8.5	9.4	
BTOP50 Index						*-3.1*	*-1.8*	*12.8*	*15.5*	*8.6*	*6.6*	*5.2*	
Difference:						-0.7	-1.2	18.0	12.9	5.4	1.9	4.2	
Mt. Lucas Managed Futures - Cash		*Systematic Trend Following*	$ 123,092,792	3.2%		-3.0	-4.5	30.4	28.1	15.9	8.3	8.9	Jan-05
BTOP50 Index						*-3.1*	*-1.8*	*12.8*	*15.5*	*8.6*	*6.6*	*5.2*	
Difference:						0.1	-2.7	17.6	12.6	7.3	1.7	3.7	
Graham Tactical Trend		*Systematic Trend Following*	$ 116,631,659	3.0%		-4.6	-1.4	31.1	28.7	12.0	8.5	4.8	Apr-16
SG Trend Index						*-4.4*	*-2.1*	*23.3*	*24.5*	*11.5*	*9.2*	*4.8*	
Difference:						-0.2	0.7	7.8	4.2	0.5	-0.7	0.0	
Alternative Risk Premia			$ 171,114,926	4.4%		-3.7	-0.8	14.7	14.5	-1.0	2.0	7.5	
5% Annual						*0.4*	*1.2*	*2.9*	*5.0*	*5.0*	*5.0*	*6.3*	
Difference:						-4.1	-2.0	11.8	9.5	-6.0	-3.0	1.2	
AQR Style Premia		*Alternative Risk Premia*	$ 50,168,942	1.3%		-5.2	-4.8	18.7	22.0	1.6	-2.3	-0.9	May-16
5% Annual						*0.4*	*1.2*	*2.9*	*5.0*	*5.0*	*5.0*	*5.0*	
Difference:						-5.6	-6.0	15.8	17.0	-3.4	-7.3	-5.9	
PE Diversified Global Macro		*Alternative Risk Premia*	$ 63,081,339	1.6%		-5.5	1.8	42.9	42.8	-1.0	3.7	2.4	Jun-16
5% Annual						*0.4*	*1.2*	*2.9*	*5.0*	*5.0*	*5.0*	*5.0*	
Difference:						-5.9	0.6	40.0	37.8	-6.0	-1.3	-2.6	
Lombard Odier		*Alternative Risk Premia*	$ 57,864,645	1.5%		-0.4	0.1	-2.6	-4.2	-4.7	--	-3.6	Jan-19
5% Annual						*0.4*	*1.2*	*2.9*	*5.0*	*5.0*	--	*5.0*	
Difference:						-0.8	-1.1	-5.5	-9.2	-9.7	--	-8.6	
Cash[3]			$ 74,889,026	1.9%	0.0%	0.1	0.2	0.3	0.3	0.5	0.8	2.3	Sep-94
US T-Bills						*0.1*	*0.1*	*0.2*	*0.2*	*0.6*	*1.1*	*2.3*	
Difference:						0.0	0.1	0.1	0.1	-0.1	-0.3	0.0	
Northern Trust STIF		*Collective Govt. Short Term*	$ 91,469,480	2.3%		0.1	0.2	0.3	0.3	0.5	0.8	2.5	Jan-95
US T-Bills						0.1	0.1	0.2	0.2	0.6	1.1	*2.3*	
Difference:						0.0	0.1	0.1	0.1	-0.1	-0.3	0.2	
Parametric Overlay[4]		*Cash Overlay*	$ 29,385,701	0.8%		0.0	0.0	0.0	0.0	--	--	0.0	Jan-20

[1] Returns are preliminary and are finalized during each quarterly reporting cycle. Monthly returns since previous quarter are provided by the managers. Market values are provided by Northern Trust.

[2] Benchmark is (1/3) BB Long Duration Treasuries, (1/3) BTOP50 Index, (1/3) 5% Annual.

[3] Includes lagged cash.

[4] Given daily cash movement returns may vary from those shown above.

Economic and Market Update

Data as of July 31, 2022

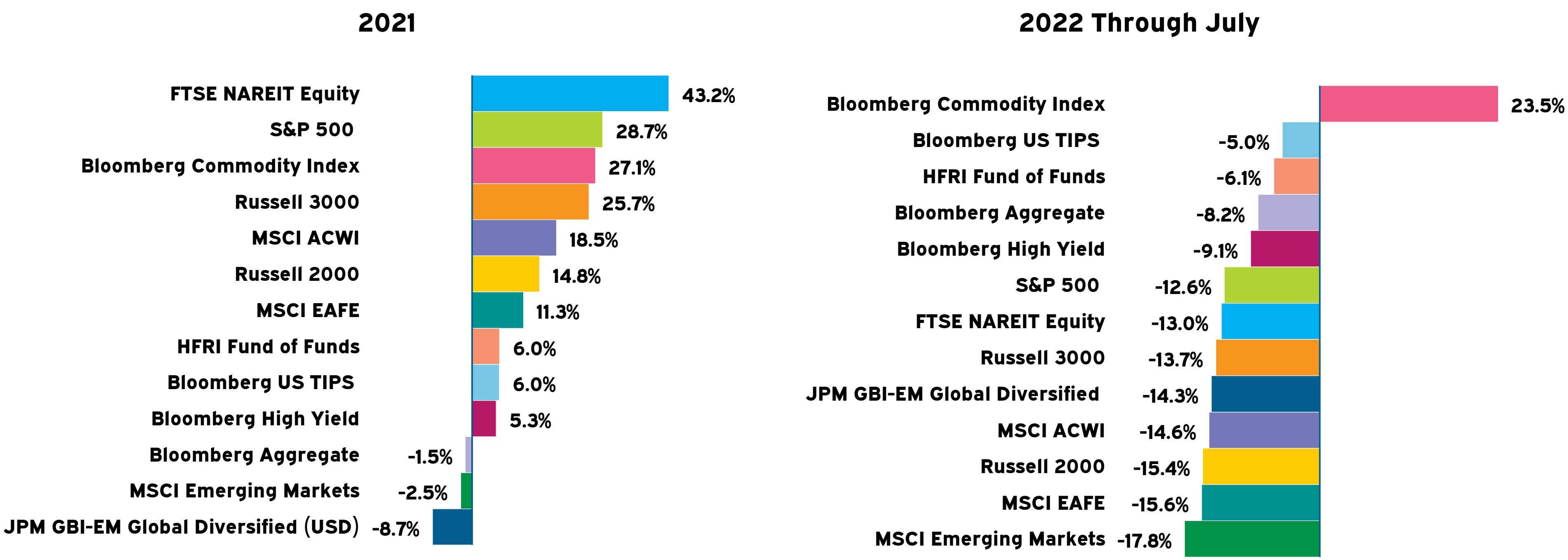
Commentary

→ Global markets posted strong results in July on expectations that policy tightening in the US could end early next year due to slowing growth.

- As expected, the Federal Reserve increased interest rates by another 75 basis points. Notably, much focus was placed on chair Jerome Powell's comments that the pace of policy tightening could slow.
- Developed market equity indices increased for the month, led by US equities where earnings reports were not as weak as feared. Emerging markets fell for the month driven by China instituting renewed COVID-19 lockdowns and lingering property market issues.
- Growth stocks again outperformed value stocks in July, but trail significantly year to date.
- Rates declined for the month as growth slowed and expectations for the pace of policy tightening moderated.

→ Persistently high inflation and the expected policy response, the war in Ukraine, lingering COVID-19 issues, and lockdowns in China will all have considerable economic and financial consequences for the global economy.

Index Returns[1]



→ Outside of emerging markets and the broad US investment grade bond market (Bloomberg Aggregate), most asset classes appreciated in 2021.

→ While year-to-date returns remain negative, in July most asset classes posted positive returns reflecting an improvement in sentiment related to cooling inflationary pressures and the expected path of policy.

[1] Source: Bloomberg and FactSet. Data is as of July 31, 2022.

Domestic Equity Returns[1]

Domestic Equity	July (%)	Q2 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
S&P 500	9.2	-16.1	-12.6	-4.6	13.4	12.8	13.8
Russell 3000	9.4	-16.7	-13.7	-7.4	12.6	12.2	13.5
Russell 1000	9.3	-16.7	-13.6	-6.9	12.9	12.5	13.7
Russell 1000 Growth	12.0	-20.9	-19.4	-11.9	16.1	16.3	16.0
Russell 1000 Value	6.6	-12.2	-7.1	-1.4	8.9	8.3	11.1
Russell MidCap	9.9	-16.8	-13.8	-9.8	9.5	9.7	12.3
Russell MidCap Growth	12.2	-21.1	-22.6	-21.8	7.5	11.0	12.8
Russell MidCap Value	8.6	-14.7	-9.0	-2.9	9.4	7.7	11.5
Russell 2000	10.4	-17.2	-15.4	-14.3	7.5	7.1	10.6
Russell 2000 Growth	11.2	-19.3	-21.6	-23.2	4.7	6.9	10.7
Russell 2000 Value	9.7	-15.3	-9.3	-4.8	9.5	6.7	10.2

US Equities: Russell 3000 Index rose 9.4%, and growth indices continued to outperform value in July.

→ US stocks rose sharply during the month, led by the technology and consumer discretionary sectors.

→ Growth indices outperformed their value counterparts for the month but remain well behind for the year-to-date period.

→ Small company stocks outperformed large company stocks in July by over 100 basis points but remain behind year-to-date.

[1] Source: Bloomberg. Data is as of July 31, 2022.

Foreign Equity Returns[1]

Foreign Equity	July (%)	Q2 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
MSCI ACWI ex. US	3.4	-13.7	-15.6	-15.3	2.9	2.4	5.0
MSCI EAFE	5.0	-14.5	-15.6	-14.3	3.2	2.6	5.8
MSCI EAFE (Local Currency)	5.2	-7.8	-6.7	-2.1	5.9	5.2	8.7
MSCI EAFE Small Cap	6.6	-17.7	-19.7	-20.3	3.6	2.3	7.8
MSCI Emerging Markets	-0.2	-11.5	-17.8	-20.1	0.9	1.0	2.8
MSCI Emerging Markets (Local Currency)	0.1	-8.1	-13.6	-14.9	3.6	3.4	5.8
MSCI China	-9.5	3.4	-19.7	-28.3	-3.6	-1.6	4.3

International equities (MSCI EAFE) gained 5.0%, while emerging markets (MSCI EM) fell 0.2% in July.

→ Non-US developed market stocks trailed the US for the month, and emerging markets stocks posted negative returns due to China's drawdown of 9.5%. Both remain notably negative for the year-to-date period (EAFE -15.6%, EM -17.8%), lagging US equities.

→ The war in Ukraine, high inflation and the likely monetary policy response, and slowing growth continue to weigh on sentiment.

→ Growth stocks had a strong month in July, outperforming value stocks across developed and emerging markets, similar to the US.

[1] Source: Bloomberg. Data is as of July 31, 2022.

Fixed Income Returns[1]

Fixed Income	July (%)	Q2 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)	Current Yield (%)	Duration (Years)
Bloomberg Universal	2.5	-5.1	-8.7	-9.6	-0.2	1.3	1.9	3.9	6.4
Bloomberg Aggregate	2.4	-4.7	-8.2	-9.1	-0.2	1.3	1.6	3.4	6.6
Bloomberg US TIPS	4.4	-6.1	-5.0	-3.6	4.4	4.0	2.0	3.0	7.4
Bloomberg High Yield	5.9	-9.8	-9.1	-8.0	2.0	3.1	4.9	7.7	4.7
JPM GBI-EM Global Diversified (USD)	0.3	-8.6	-14.3	-18.7	-6.0	-2.7	-1.7	7.3	5.0

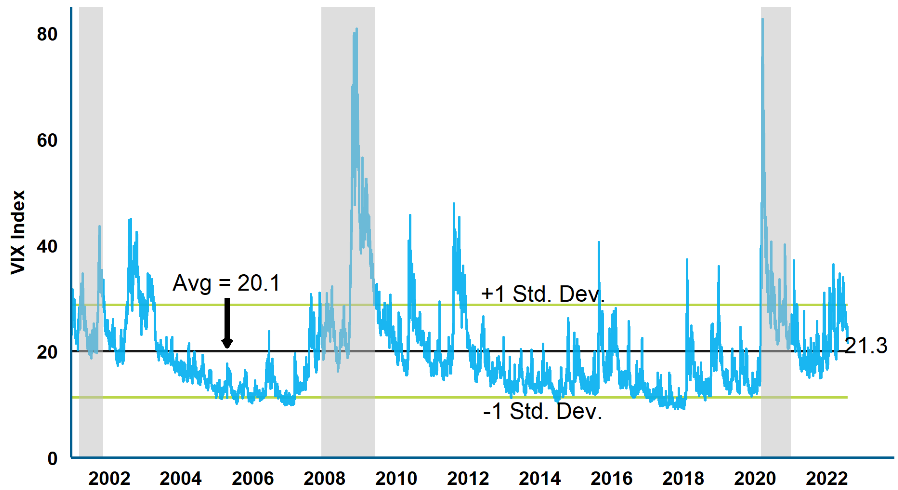
Fixed Income: The Bloomberg Universal gained 2.5% in July.

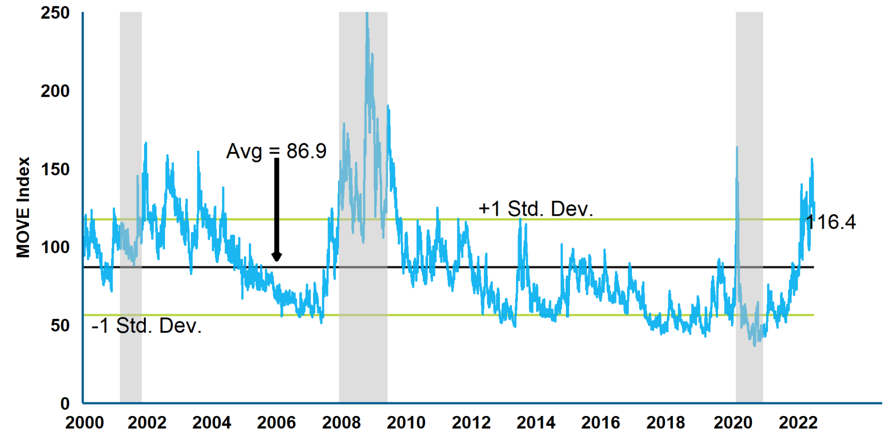
→ Fixed income indices broadly benefited from yields declining across the curve. During July, the US 10-year Treasury note yield fell 36 basis points, from 3.01% on June 30th to 2.65% on July 31.

→ The high yield index was one of the best performers in July as yields declined along with tightening spreads supported by a historic drop in high yield issuance to the lowest July issuance since 2006.

[1] Source: Bloomberg. JPM GBI-EM is from InvestorForce. Data is as of July 31, 2022.

Equity and Fixed Income Volatility[1]



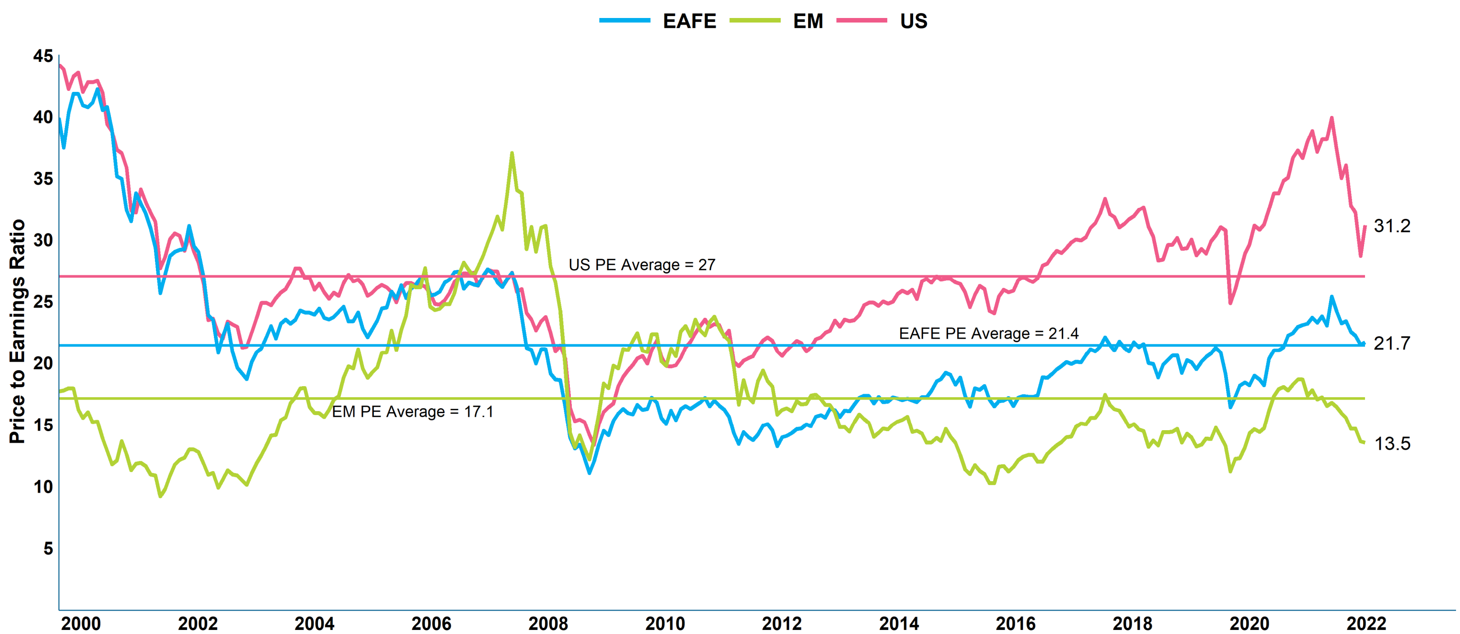


→ Volatility in equities (VIX) and fixed income (MOVE) declined in July based on potentially peaking monetary policy and possible rate cuts in 2023.

→ Despite the July decline, fixed income volatility remains high due to the uncertain path of short-term interest rates.

[1] Equity and Fixed Income Volatility – Source: Bloomberg. Implied volatility as measured using VIX Index for equity markets and the MOVE Index to measure interest rate volatility for fixed income markets. Data is as of July 2022. The average line indicated is the average of the VIX and MOVE values between January 2000 and the recent month-end respectively.

Equity Cyclically Adjusted P/E Ratios[1]

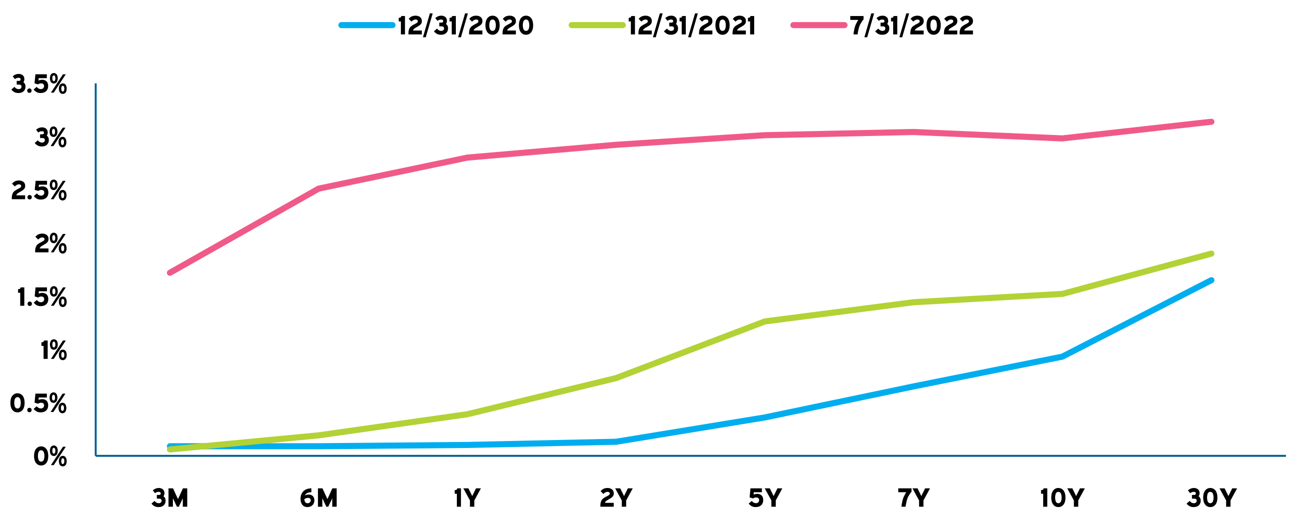


→ Strong positive results in July for US equities reversed the recent trend of valuation declines, but they remain well off the peak.

→ International developed market valuations remain below the US and are slightly above their own long-term average, with those for emerging markets the lowest and under the long-term average.

[1] US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group. Developed and Emerging Market Equity (MSCI EAFE and EM Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly "as reported" earnings over the previous ten years. Data is as of July 31, 2022. The average line is the long-term average of the US, EM, and EAFE PE values from December 1999 to the recent month-end respectively.

US Yield Curve[1]



→ Rates across the yield curve remain much higher than at the start of the year.

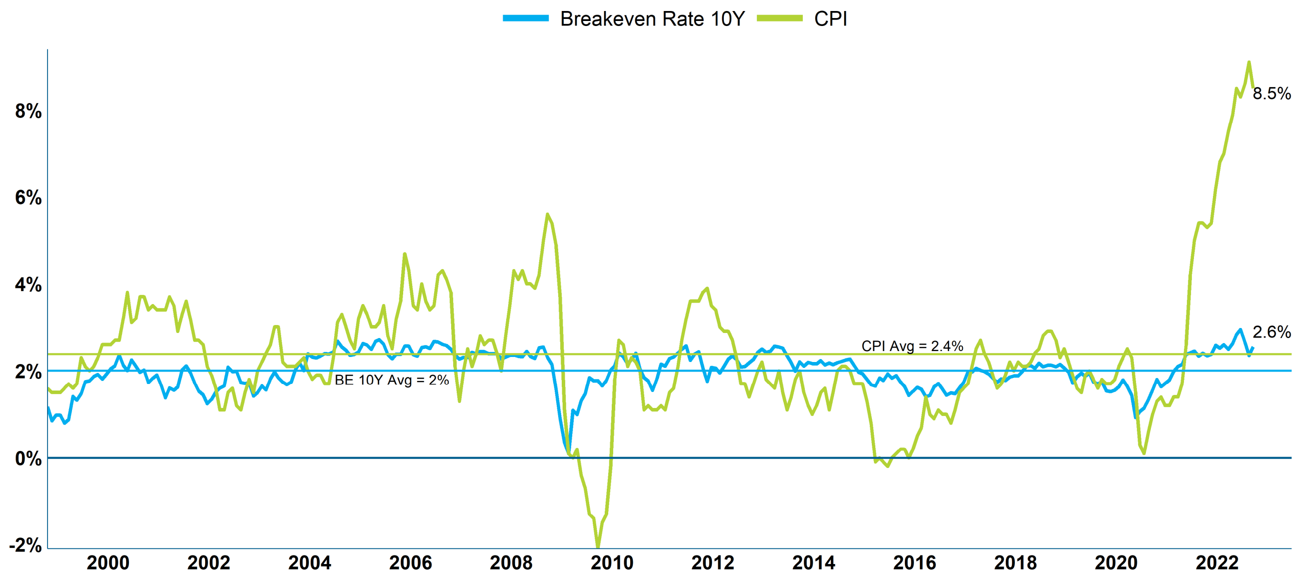
→ In July, longer-dated yields declined as investors reconsidered economic growth prospects and the likelihood that yields have reached their peak for this economic cycle. Shorted dated yields rose on near-term policy actions and messaging that policy officials intend to remain aggressive in fighting inflation pressures into early 2023.

→ The yield spread between two-year and ten-year Treasuries became negative, finishing July at -0.23%. Inversions in the yield curve have historically often signaled building recessionary pressures.

[1] Source: Bloomberg. Data is as of July 31, 2022.

MEKETA

Ten-Year Breakeven Inflation and CPI[1]



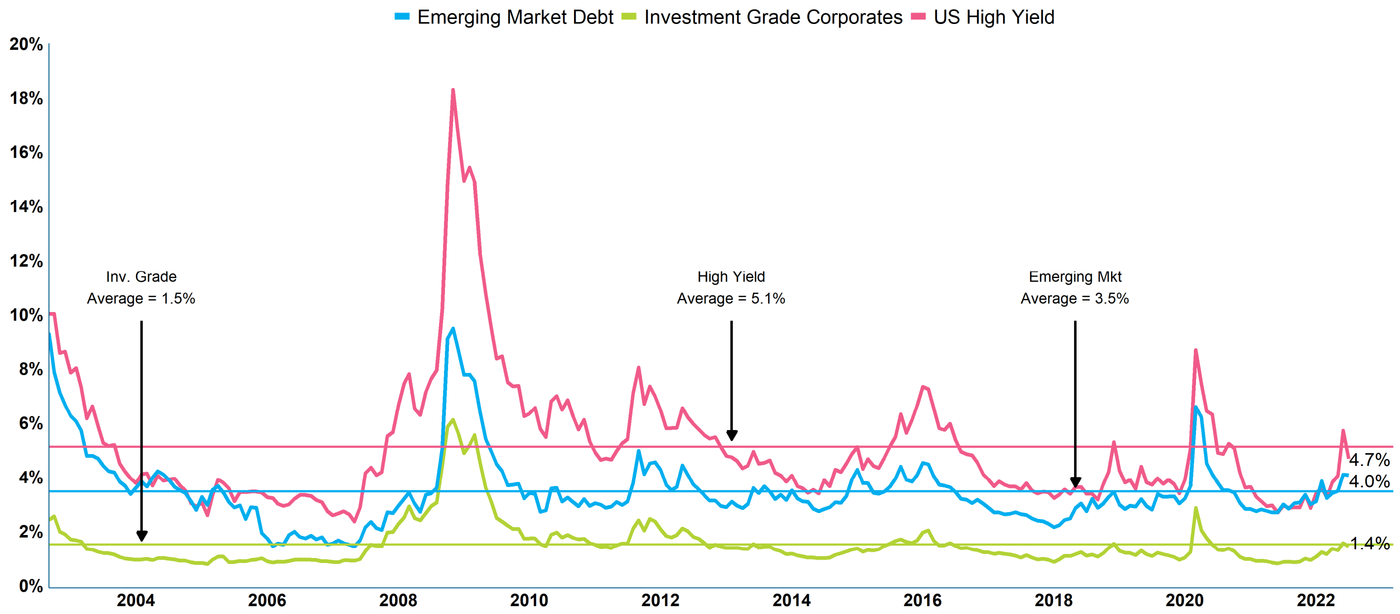
→ In July, inflation expectations (breakevens) rose on the prospects of easing monetary policy next year.

→ Trailing twelve-month CPI declined in July (8.5% versus 9.1%) and came in below expectations. Inflation levels in the US remain well above the long-term average of 2.4%.

→ Rising prices for energy (particularly oil), food, housing, and for new and used cars, remain key drivers of higher inflation.

[1] Source: Bloomberg. Data is as of July 31, 2022. The CPI and 10 Year Breakeven average lines denote the average values from August 1998 to the present month-end respectively. Breakeven values represent month-end values for comparative purposes.

Credit Spreads vs. US Treasury Bonds[1]



→ Credit spreads (the spread above a comparable maturity Treasury) declined in July, particularly for high yield, as risk appetite returned.

→ In the US, spreads for high yield reversed course, declining from 5.7% to 4.7%, while investment grade (1.6% to 1.4%) and emerging market (4.1% to 4.0%) spreads experienced more modest declines.

[1] Sources: Bloomberg. Data is as of July 31, 2022. Average lines denote the average of the investment grade, high yield, and emerging market spread values from August 2000 to the recent month-end respectively.

Global Economic Outlook

The IMF significantly lowered global growth forecasts again in their latest projections, driven by the economic impacts of persistent inflation in energy and food prices.

→ The IMF forecasts global GDP growth to come in at 3.2% in 2022 (0.4% below the prior estimate) and 2.9% in 2023 (0.7% below the prior estimate).

→ In advanced economies, GDP is projected to increase 2.5% in 2022 and 1.4% in 2023. The US saw another downgrade in the 2022 (2.3% versus 3.7%) and 2023 (1.0% versus 2.3%) growth forecasts largely due to policy tightening happening faster than previously expected given persistently high inflation. The euro area saw a downgrade too in expected growth (2.6% versus 2.8%) in 2022 and in 2023 (1.2% versus 2.3%) as rising energy prices particularly weigh on the region that is a net importer of energy. The Japanese economy is expected to grow 1.7% this year and next.

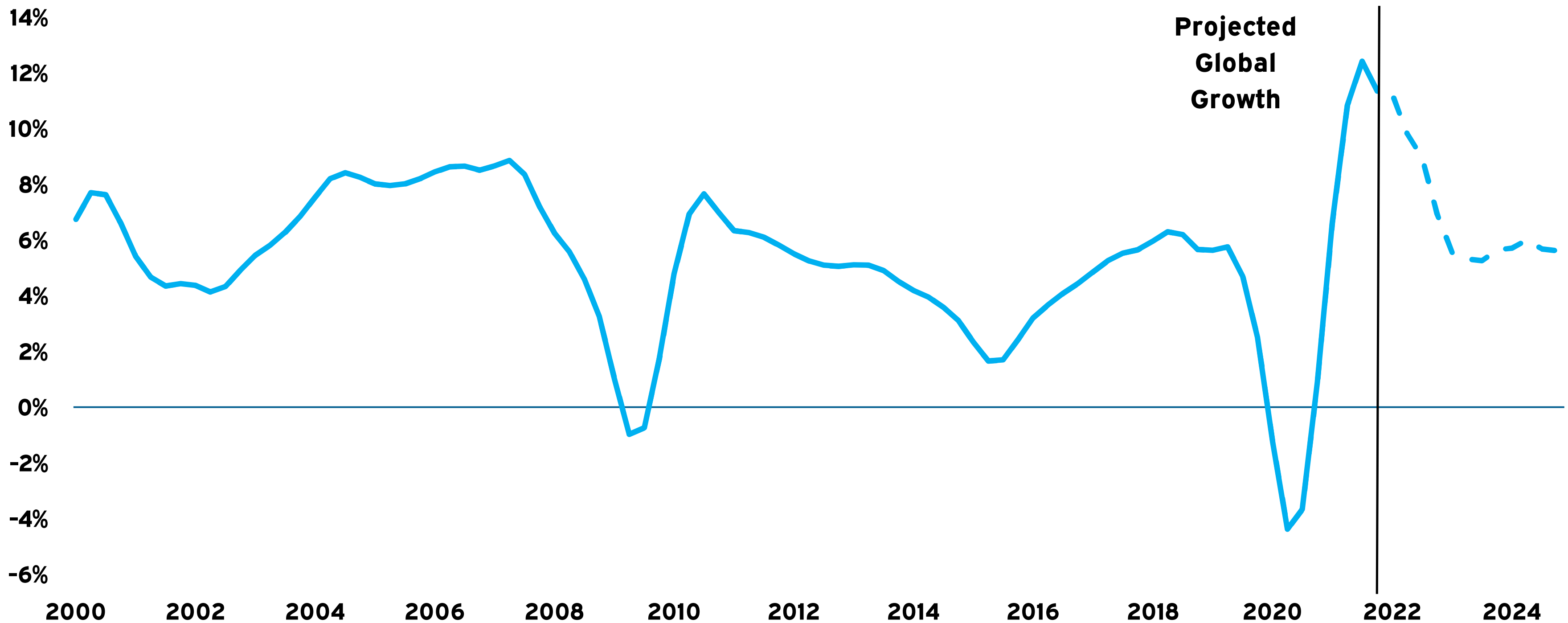
→ Growth projections for emerging markets are higher than developed markets, at 3.6% in 2022 and 3.9% in 2023. China's growth was downgraded for 2022 (3.3% versus 4.4%) and 2023 (4.9% versus 5.1%) given tight COVID-19 restrictions and continued property sector problems.

→ The global inflation forecast was significantly increased for 2022 (7.4% versus 3.8%).

	Real GDP (%)[1]			Inflation (%)[1]		
	IMF 2022 Forecast	IMF 2023 Forecast	Actual 10 Year Average	IMF 2022 Forecast	IMF 2023 Forecast	Actual 10 Year Average
World	3.2	2.9	3.0	7.4	4.8	3.5
Advanced Economies	2.5	1.4	1.6	5.7	2.5	1.5
US	2.3	1.0	2.1	7.7	2.9	1.9
Euro Area	2.6	1.2	0.9	5.3	2.3	1.2
Japan	1.7	1.7	0.5	1.0	0.8	0.5
Emerging Economies	3.6	3.9	4.2	8.7	6.5	5.1
China	3.3	4.9	6.7	2.1	1.8	2.1

[1] Source: IMF World Economic Outlook. Real GDP forecasts from July 2022 Update. Inflation forecasts are as of the April 2022 Update." Actual 10 Year Average" represents data from 2012 to 2021.

Global Nominal Gross Domestic Product (GDP) Growth[1]

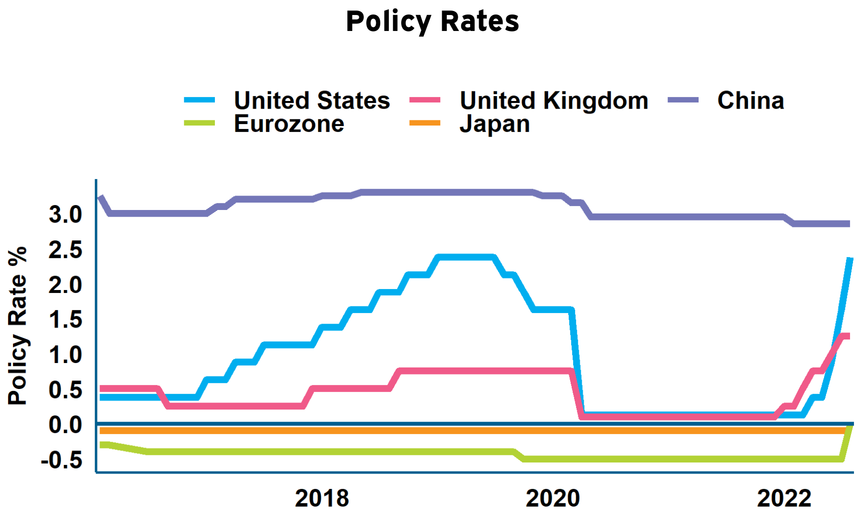


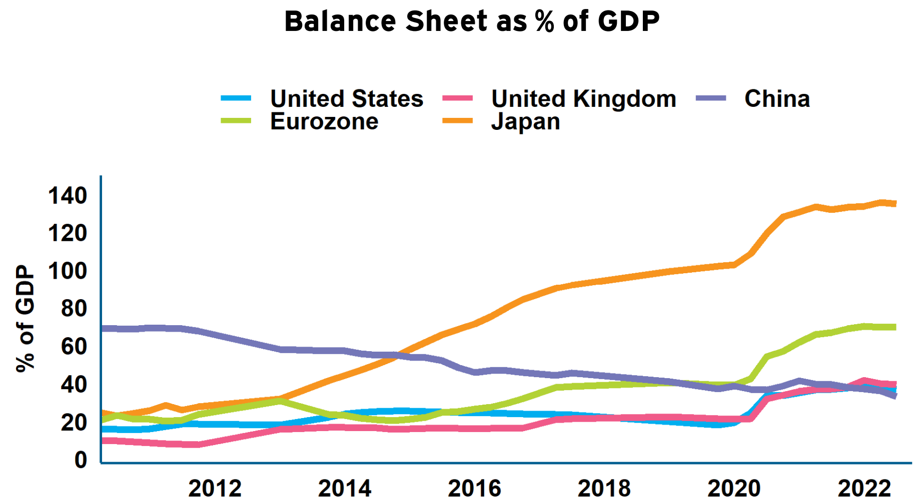
→ Global economies are expected to slow in 2022 compared to 2021 with risks of recession increasing given persistently high inflation and related tighter monetary policy.

→ Looking forward, the delicate balancing act of central banks trying to reduce inflation without dramatically impacting growth will remain key.

[1] Source: Oxford Economics (World GDP, US$ prices & PPP exchange rate, nominal, % change YoY). Updated July 2022.

Central Bank Response[1]





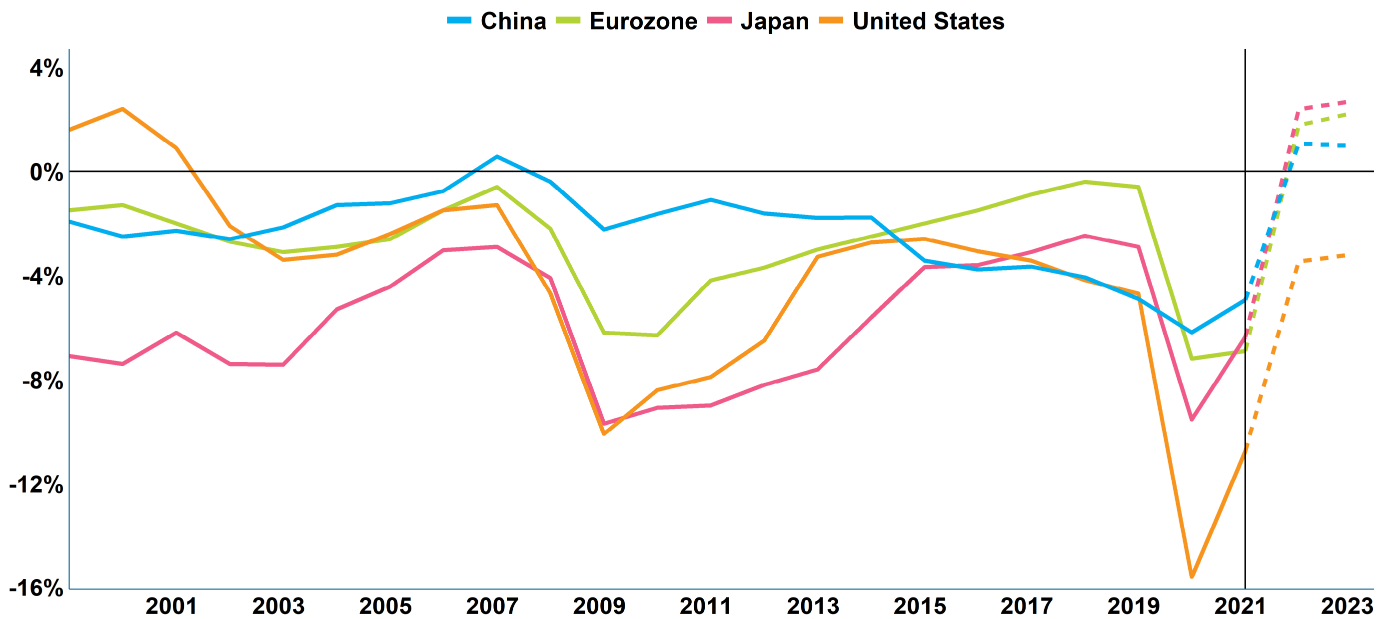
→ After global central banks took extraordinary action to support economies during the pandemic, including policy rate cuts and emergency stimulus through quantitative easing (QE), many are now aggressively reducing support in the face of high inflation.

→ The pace of withdrawing support varies across central banks with the US taking a more aggressive approach. The risk remains for a policy error, particularly overtightening, as record inflation, the war in Ukraine, and a tough COVID-19 policy in China could suppress global growth.

→ The one notable central bank outlier is China, where the central bank recently lowered rates and reserve requirements in response to slowing growth.

[1] Source: Bloomberg. Policy rate data is as of July 31, 2022. China policy rate is defined as the medium-term lending facility 1 year interest rate. Balance sheet as % of GDP is based on quarterly data and is as of June 30, 2022.

Budget Surplus / Deficit as a Percentage of GDP[1]

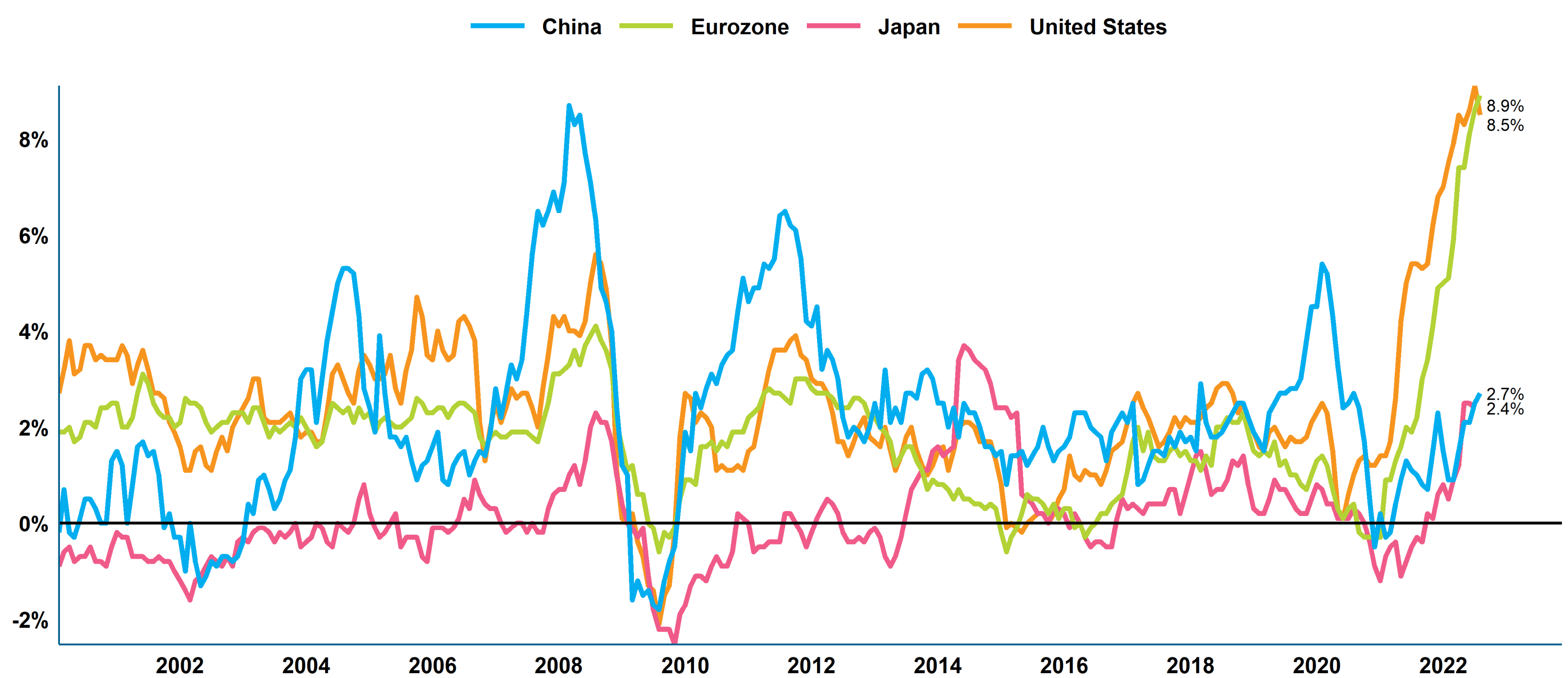


→ Budget deficits as a percentage of GDP drastically increased for major world economies, particularly the US, due to massive fiscal support and the severe economic contraction's effect on tax revenue in 2020 and 2021.

→ As fiscal stimulus programs end, and economic recoveries continue, deficits should improve in the coming years.

[1] Source: Bloomberg. Data is as of July 31, 2022. Projections via IMF Forecasts from April 2022 Report. Dotted lines represent 2022 and 2023 forecasts.

Inflation (CPI Trailing Twelve Months)[1]

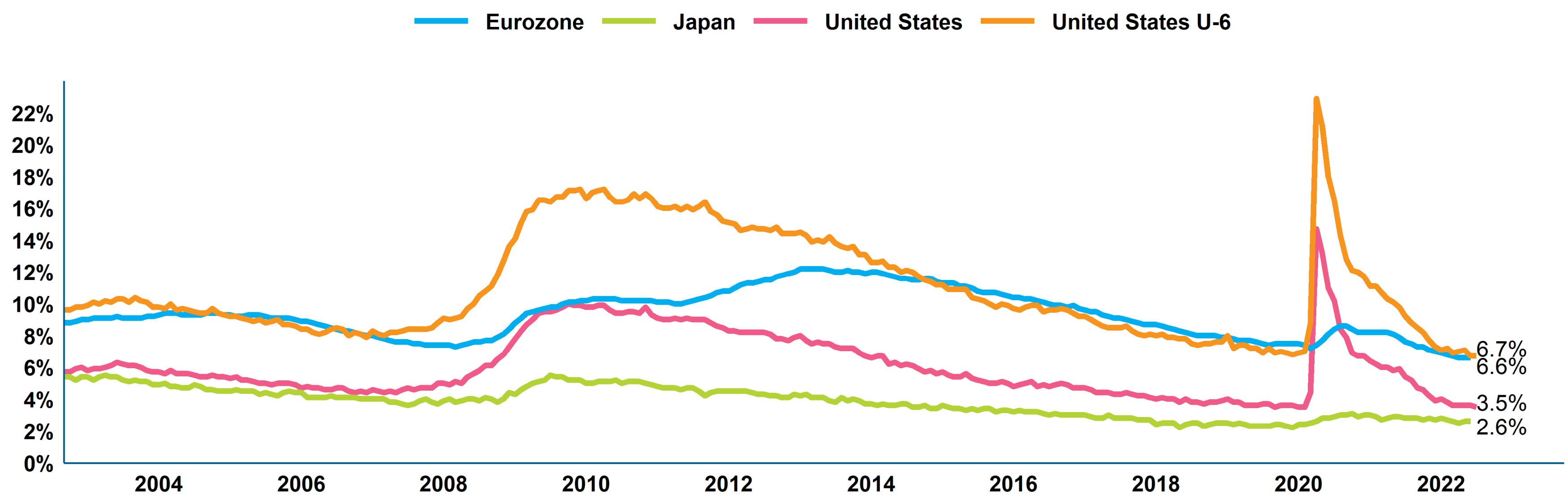


→ Inflation increased dramatically from the lows of the pandemic, particularly in the US and Eurozone where it has reached levels not seen in many decades.

→ Supply issues related to the pandemic, record monetary and fiscal stimulus, strict COVID-19 restrictions in China, and higher prices in many commodities driven by the war in Ukraine have been key global drivers of inflation.

[1] Source: Bloomberg. Data is as of July 2022. The most recent data for Japan is as of June 30, 2022.

Unemployment[1]

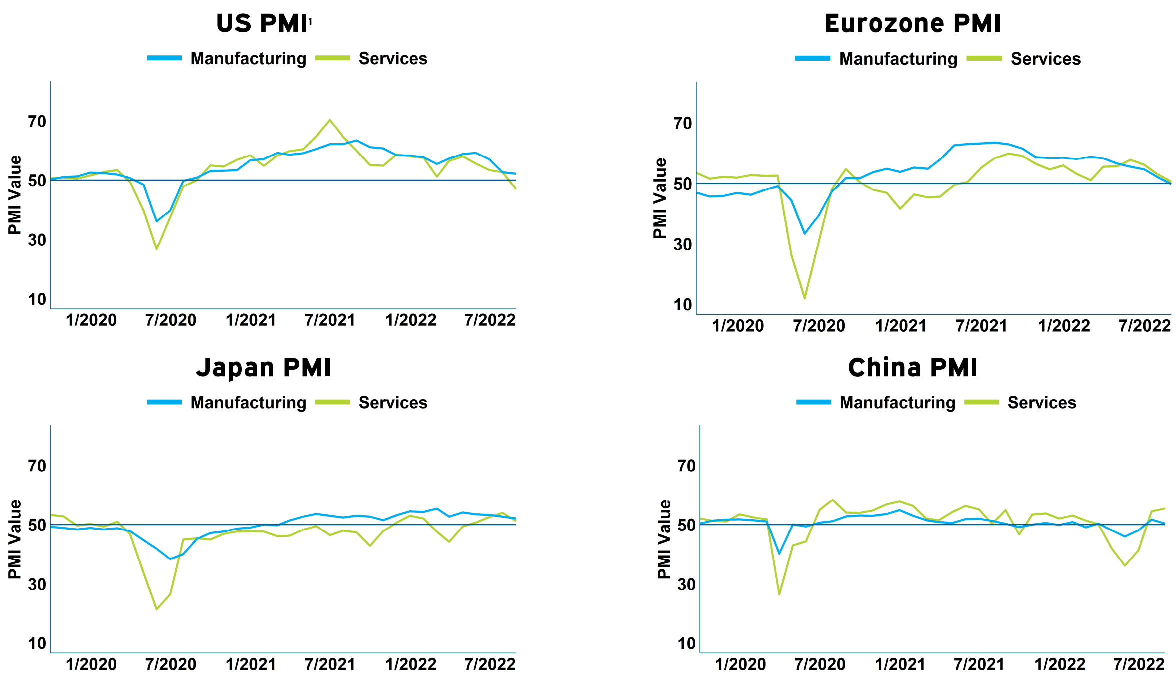


→ As economies have largely reopened, helped by vaccines for the virus, improvements have been seen in the labor market.

→ US unemployment, which experienced the steepest rise from the pandemic, declined back to pre-pandemic levels. The broader measure (U-6) that includes discouraged and underemployed workers declined but is much higher at 6.7%.

[1] Source: Bloomberg. Data is as of July 2022, for the US. The most recent data for Eurozone and Japanese unemployment is as of June 30, 2022.

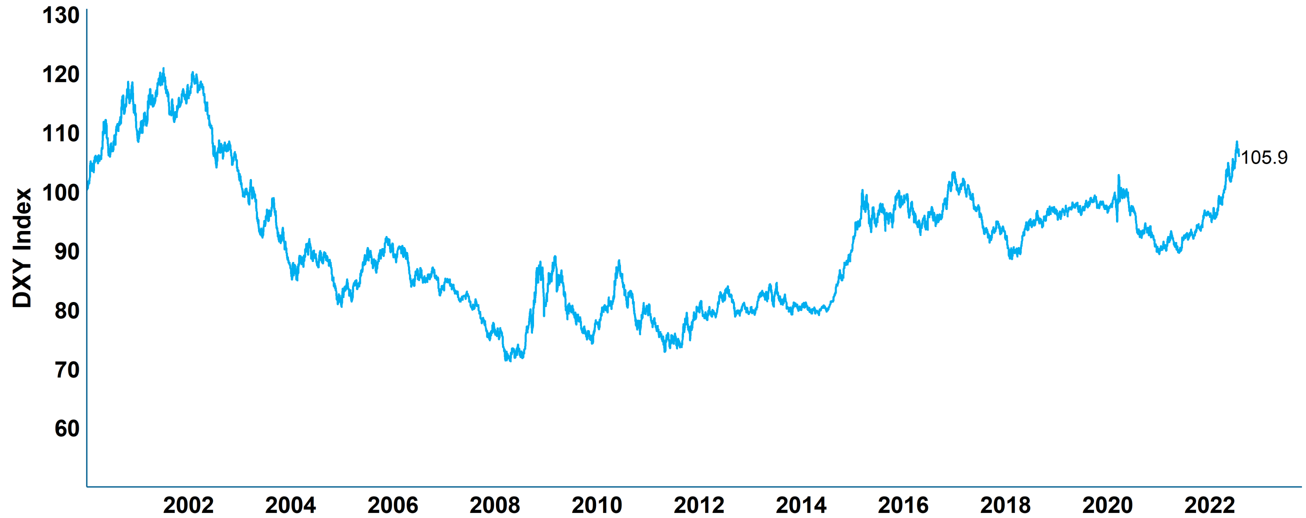
Global PMIs



- → After improvements from the lows of the pandemic, Purchasing Managers Indices (PMI), based on surveys of private sector companies, have largely experienced some pressures recently.
- → Service sector PMIs in the US and Europe have recently declined, with the US slipping into contraction territory, while Japan experienced a decline for the month on rising COVID-19 cases in parts of the country. In China the services PMI remained in positive territory.
- → Manufacturing PMIs dropped recently across China and developed markets given declines in demand and inflationary pressures.

[1] Source: Bloomberg. US Markit Services and Manufacturing PMI, Caixin Services and Manufacturing PMI, Eurozone Markit Services and Manufacturing PMI, Jibun Bank Services and Manufacturing PMI. Data is as of July 2022. Readings below 50 represent economic contractions.

US Dollar versus Broad Currencies[1]



→ In July, the US dollar overall continued its path higher but finished the month off its peak as expectations on the pace of policy tightening by the Fed fell and safe-haven flows declined.

→ The euro, yen, and yuan have all experienced significant declines versus the dollar this year, adding to inflation and slowing growth concerns.

[1] Source: Bloomberg. Data as of July 31, 2022.

Summary

Key Trends in 2022:

- → The impacts of record high inflation will remain key going forward, with volatility likely to remain high.
- → The war in Ukraine has created significant uncertainty, with a wide range of potential outcomes.
- → Expect growth to slow globally in 2022 to the long-term trend or below. Inflation, monetary policy, and the war will all be key.
- → The end of many fiscal programs is expected to put the burden of continued growth on consumers. Higher energy and food prices will depress consumers' spending in other areas.
- → Monetary policy will likely tighten globally but will remain relatively accommodative. The risk of overtightening policy remains.
- → Valuations have significantly declined in the US, approaching long-term averages.
- → Outside the US, equity valuations remain lower in both emerging and developed markets, but risks remain, including continued strength in the US dollar, higher inflation particularly weighing on Europe, and China maintaining its restrictive COVID-19 policies.

2022 CONFERENCES AND EVENTS SCHEDULE 2022

EVENT DATES 2022 BEGIN	END	EVENT TITLE	EVENT SPONSOR	LOCATION	REG. FEE	WEBLINK FOR MORE INFO	EST. BOARD EDUCATION HOURS
Sep 21	Sep 21	Set Direction, then Prudently Delegate	Funston Advisory Svcs	Webinar	$0	Elaina for forword	1 hr
Sep 23	Sep 23	Attorneys Round Table	CALAPRS	Webinar	$50	calaprs.org	4 hrs*
Sep 28	Sep 29	ILPA Institute: Private Equity for the Trustee San Francisco	ILPA	San Francisco, CA	$1499	ilpa.org	12 hrs*
Sep 28	Sep 30	Administrators' Institutue 2022	CALAPRS	Long Beach, CA	$1500	calaprs.org	14.4 hrs*
Oct 17	Oct 18	Nossaman's 2022 Public Pensions & Investments Fiduciaries' Forum	Nossaman's	Los Angeles, CA	$750	nossaman.com	5.66 hrs
Oct 22	Oct 23	NCPERS University-Accredited Fiduciary Program	NCPERS	Nashville, TN	$855	ncpers.org	14 hrs*
Oct 28	Oct 28	Trustees Round Table	CALAPRS	Webinar	$50	calaprs.org	4 hours*
Nov 8	Nov 11	SACRS Fall Conference	SACRS	Long Beach, CA	$120	sacrs.org	11 hrs*

** Estimates based on prior agendas*

SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

SUMMARY OF PENDING TRUSTEE AND EXECUTIVE STAFF TRAVEL

2022 Event Dates	Sponsor / Event Description	Location	Traveler(s)	Estimated Cost	BOR Approval Date
Sep 6-8	IREI Fall Advisory Board Meeting	Pasadena, CA	Mike Restuccia	$1,000	6/3/22
Sep 8	Investments Round Table	Webinar	Emily Nicholas	$50	N/A
Sep 23	Attorneys Round Table	Webinar	Jason Morrish	$50	N/A
Sep 28-30	CALAPRS Administrators' Institute 2022	Long Beach, CA	Johanna Shick	$1,800	N/A
Oct 28	CALAPRS Trustees Round Table	Webinar	Mike Restuccia, Jennifer Goodman	$100	N/A
Nov 8-11	SACRS Fall Conference	Long Beach	JC Weydert, Ray McCray, Chanda Bassett	$240	N/A

Printed 8/31/22 8:40 AM

SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

SUMMARY OF COMPLETED TRUSTEE AND EXECUTIVE STAFF TRAVEL

Event Dates 2022	Sponsor / Event Description	Location	Traveler(s)	Estimated Cost	Actual Cost	Event Report Filed
Feb 11	CALAPRS Administrators' Roundtable	Webinar	McKelvey, Shick	$100	$100	N/A
Feb 18	CALAPRS Attorneys' Roundtable	Webinar	Morrish	$50	$50	N/A
Mar 5 - 8	CALAPRS General Assembly	San Diego, CA	McKelvey, Shick	$4,000	$1,798.50	N/A
Apr 29	Special Virtual Trustee Round Table	Virtual Conference	Moore, Bassett, Weydert, McKelvey	$200	$200	N/A
May 10 - 13	SACRS Spring Conference	Rancho Mirage, CA	Weydert, Keokham, McKelvey, Morrish	$6,800	$5,979	N/A
May 27	CALAPRS Attorneys' Roundtable	Webinar	Morrish	$50	$50	N/A
Jun 24	CALAPRS Administrators' Round Table	Webinar	Johanna Shick, Brian McKelvey	$100	$100	N/A
Jun 27-29	NCPERS - 2022 Chief Officers Summit	San Francisco	Brian McKelvey	$1,750	$1,552.00	8/12/22
Jul 17-20	SACRS UC Berkeley Program	Berkeley, CA	JC Weydert	$4,500	$4,160.65	N/A
Aug 29 - Sep 1	Principles of Pension Governance for Trustees	Tiburon, CA	Moore	$3,200	TBD	N/A

2022 LEGISLATION

Last Updated: 9/2/2022

BILL NO.	AUTHOR	DESCRIPTION	LAST ACTION DATE	LOC	SPONSOR
Legislation Impacting SJCERA:					
AB 551	Rodriguez	Current law, until January 1, 2023, establishes a disability retirement presumption that is applicable to the members of various public employee retirement systems who are employed in certain firefighter, public safety officer, and health care job classifications, among others, who test positive for COVID-19, as specified. The law requires, if the member retires for disability on the basis, in whole or in part, of a COVID-19-related illness, that it be presumed that the disability arose out of, or in the course of, the member's employment, unless rebutted. This bill would extend the operation of the provisions described above until January 1, 2024.	08/31/22	Enrolled	
AB 1824	Cooper	This bill represents the annual omnibus bill to propose technical "housekeeping" amendments to the CERL and PERL. This bill would 1) allow members to designate a corporation, trust, or estate to receive their last check upon death, 2) modify existing law's requirement that the retirement date not be earlier than the date the application is filed or 60 days after the filing, by allowing the Board to adopt an alternative number of days, 3) require any computation for absence related to death benefit calculation be based on the compensation held by member at beginning of absence, and 4) make other non-substantive changes to the CERL.	08/28/22	Enrolled; Presented to Governor	SACRS
AB 1944	Lee/Garcia	This bill would amend the Brown Act to 1) require the agenda identify any member of the legislative body that would participate remotely, 2)require an updated agenda reflecting all of the members participating remotely, if a member elects to participate remotely after the agenda is published, 3) authorize, upon determination of majority vote by legislative body, a member to be exempt from identifying the address of the member's teleconference location or having the location accessible to the public, beginning January 1, 2024, if from a location that is not a public place, provided a quorum participates at the physical location, and 4) require legislative body that elects to use teleconferencing to provide a video stream accessible to members of the public and an option for members to address the body remotely during the public comment period. This bill would repeal these provisions on January 1, 2030.	06/22/22	Senate Hearing postponed by Committee	

BILL NO.	AUTHOR	DESCRIPTION	LAST ACTION DATE	LOC	SPONSOR
AB 1971	Cooper	This bill would: 1) allow a member to purchase service credit for an uncompensated leave of absence due to the serious illness of a family member, 2) authorize the board to grant members subject to a temporary mandatory furlough the same service credit and FAC calculation as they would have received if there had been no furlough; 3) authorize a member retired for service to serve on a part-time governmental board or commission without reinstatement to membership, provided compensation does not exceed $60,000 annually, 4) authorize a member retired for service who is subsequently granted a disability retirement to change the type of optional or unmodified allowance that they elected at the time the service retirement was granted, 5) a member retired for service who subsequently files an application for disability retirement and, if eligible for disability, would require adjustments to be made in the retirement allowance retroactive to the disability retirement, and 6) require reclassifying a disability retiree's benefit to a service retirement in the same amount if they are subsequently determined not to be incapacitated and the employer will not reinstate them.	08/29/22	Enrolled; Presented to Governor	SACRS
AB 2449	Rubio	Existing law, until January 1, 2024, authorizes a local agency to use teleconferencing without complying with specified teleconferencing requirements when a declared state of emergency is in effect. This bill would authorize, until January 1, 2026, a local agency to use teleconferencing without complying with those specified teleconferencing requirements if at least a quorum of the members of the legislative body participates in person from a singular location clearly identified on the agenda that is open to the public and situated within the local agency's jurisdiction. The state of emergency circumstances for remote participation would be contingent upon an action by the legislative body. This bill would further allow the legislative body to take action on member's request to participate in a meeting remotely due to emergency circumstances if there was insufficient time to place the proposed action on the posted agenda.	08/29/22	Enrolled	

BILL NO.	AUTHOR	DESCRIPTION	LAST ACTION DATE	LOC	SPONSOR
AB 2493	Chen	This bill would authorize a county retirement system to adjust retirement payments based on disallowed compensation for peace officers and firefighters of that system. The bill would provide that if the retirement system determines that the compensation reported for a peace officer or firefighter is disallowed compensation, the system would require the employer to discontinue reporting the disallowed compensation. This bill would apply to determinations made on or after July 30, 2020. This bill would authorize a retirement system that has initiated a process prior to July 1, 2022 to permanently adjust the benefit of affected members to reflect the exclusion of disallowed compensation in lieu of specified provisions that this bill would enact. This bill would authorize an employer to submit to a retirement system to review if proposed compensation in a MOU is pensionable. This bill is not intended to alter existing laws including the *Alameda* decision. CERL defines "compensation earnable" by a member, for purposes of calculating benefits, to mean the average compensation for the period under consideration upon the basis of the average number of days ordinarily worked by persons in the same grade or class, and the same rate of pay. This bill would authorize a retirement system, to the extent it has not defined "grade", to mean a number of employees considered together because they share the same similarities in job duties, schedules, unit recruitment requirements, collective bargaining units, or other work-related grouping. **Note - While this bill, as amended, does not directly affect SJCERA, the bill is still seen as problematic because it incorporates CalPERS' regulatory definition of "compensation earnable" into CERL, which is anticipated to increase litigation risk regarding what should be (and should not be) included in retirement allowance calculations. This point has been raised with legislators by several systems.*	08/31/22	Assembly Concurrence in Senate Amendments Pending	
AB 2647	Levine	This bill would require a local agency to make agendas and other writings distributed to the members of the governing board available for public inspection at a public office or location that the agency designates or post the writings on the local agency's internet website in a position and manner that makes it clear that the writing relates to an agenda item for an upcoming meeting.	08/29/22	Enrolled	
SB 1100	Cortese	This bill would authorize the presiding member of the legislative body conducting a meeting to remove an individual for willfully interrupting the meeting. The bill would require removal to be preceded by a warning by the presiding member, that the individual is disrupting the proceedings, a request that the individual failure to cease their behavior may result in removal, and a reasonable opportunity to cease the disruptive behavior.	08/22/22	**Chaptered**	
SB 1328	McGuire, Cortese	This bill would prohibit boards of specified state and local public retirement systems from making additional or new investments in prohibited companies, as defined, domiciled in Russia or Belarus, as defined, companies that the United States government has designated as complicit in the aggressor countries', as defined, war in Ukraine, or companies that supply military equipment to the aggressor countries, and to liquidate the investments of the board in those companies.	06/21/22	Assembly PE & R and APPR. Comm. Hearing postponed by Committee	
Other Bills of Interest:					

BILL NO.	AUTHOR	DESCRIPTION	LAST ACTION DATE	LOC	SPONSOR
AB 1722	Cooper	PERL, until January 1, 2023, provides state safety members who retire for industrial disability a retirement benefit equal to the greatest amount resulting from three possible calculations. This bill would delete the January 1, 2023 termination date which would make the provision operative in perpetuity.	08/30/22	Enrolled	
AB 1795	Fong	This bill would require state bodies to provide all persons the ability to participate both in-person and remotely in any meeting and to address the body remotely.	2/18/22	Assembly G.O. Comm.	
SB 850	Laird	This bill, for purpose of the additional percentage of the special death benefit for service-connected deaths provided under PERL, would require that payment be made to the person having custody of the member's child or children, if the member does not have a surviving spouse or if the surviving spouse dies before each child marries or reaches ate 22. Provisions of this bill would be retroactive to January 1, 2013.	08/29/22	Chaptered	
SB 1114	Newman	This bill would make nonsubstantive changes to the PERL (spot bill).	02/23/22	Senate RLS Comm.	
SB 1168	Cortese	This bill would require PERS, beginning on July 1, 2023, to increase the $500 lump sum death benefit to $2,000.	08/26/22	**Chaptered**	
SB 1173	Gonzalez/ Wiener	This bill would prohibit the boards of PERS & STRS from making new investments or reinvestments of funds in fossil fuel companies and require liquidation of fossil fuel investments by July 1, 2027.	06/20/22	Assembly PE & R and JUD Comm. Hearing postponed by Committee	
SB 1420	Dahle	This bill would require a PERS agency that increases the compensation of a member who was previously employed by a different agency to bear all the actuarial liability for the action, if it results in an increase beyond what would have been reasonably expected for the member.	04/27/22	Senate L, PE & R Comm. (Failed, reconsideration granted)	
Federal Legislation:					
HR 2954	Neal	Called the "Securing a Strong Retirement Act of 2022", this bill would (1) increase RMD age to 75 from 72 over the next decade, (2) provide greater latitude to decide to recoup inadvertent overpayments, (3) permit first responders to exclude service-connected disability pension payments from gross income after reaching retirement age, and (4) expand the Employee Plans Compliance Resolution System (EPCRS) to allow more types of errors to be corrected through self-correction.	03/30/22	Senate Finance Comm.	
HR 3684	DeFazio	Called the "Infrastructure Investment and Jobs Act", better known as the $1 trillion infrastructure bill, includes a crypto tax-reporting provision requiring digital asset brokers to report their users' annual transactions to the IRS effective year-end 2022.	11/15/21	Became Public Law No. 117-58	
HR 4728	Takano	To amend the Fair Labor Standards Act to reduce the standard workweek from 40 hours per week to 32 hours per week.	07/27/21	House Comm. on Education and Labor	

BILL NO.	AUTHOR	DESCRIPTION	LAST ACTION DATE	LOC	SPONSOR
2022 TENTATIVE State Legislative Calendar					
Feb 18	Last day for new bills to be introduced				
Apr 7	Spring Recess begins upon adjournment				
May 27	Last day for bills to be passed out of the house of origin				
Jun 15	Budget Bill must be passed by midnight				
Jul 1 - Aug 1	Summer Recess upon adjournment provided budget bill passed				
Aug 25	Last day to amend bills on the floor				
Aug 31	Last day for each house to pass bills; Final Study Recess begins upon adjournment				
Sept 30	**Last day for Governor to sign or veto bills.**				

San Joaquin County Employees' Retirement Association

August 31, 2022

TO: Board of Retirement

FROM: Johanna Shick
Chief Executive Officer

SUBJECT: Chief Executive Officer Report

Strengthen the long-term financial health of the Retirement Plan

Evaluate the appropriateness of actuarial assumptions

- *Conduct Actuarial Experience Study to assess the appropriateness of, and impact of COVID-19 on key actuarial assumptions.*
  Actuarial assumption changes become effective January 1, 2023 and affect numerous processes including contribution rates, interest posting, interest charged on service purchases and over-payments, benefit option calculations, and reserve calculations. Assistant CEO, Brian McKelvey, is pulling together the team responsible for implementing the changes required to the pension administration system, procedures, and communications.

Review and confirm or refresh asset allocation

I am working with Meketa to plan for and initiate implementation of the revised asset allocation. Activities in 2022 include asset class reviews and pacing studies of private markets. The 2023 Action Plan will include additional activities such as benchmark reviews, review of the Crisis Risk Offset and Global Equity asset classes, and education/documentation of SJCERA's views on managing cash liquidity needs, Environmental Social and Governance (ESG) matters, and proxy voting.

- *Optimize Strategic Asset Allocation policy in light of studies and market projections.*
  - *Review fixed income and other asset classes*
    The Fixed Income asset class review was completed with the hiring of Loomis in February 2022. The Credit asset class review is scheduled to be presented to the Board in October.
  - *Conduct a pacing study of private market assets*
    Pacing studies for Private Equity, Real Estate and Credit are scheduled to be presented to the Board in October.

Optimize the investment manager lineup

- *Conduct a review of current managers and mandates to better align with our Strategic Asset Allocation policy*
  - The review of current managers and mandates will occur as part of the asset class review. As noted above, the Credit class will be presented in October. In addition, asset class reviews for Global Equity and Crisis Risk Offset are planned in 2023.

Explore alternative approaches to addressing risk through plan design

On August 19, ACEO Brian McKelvey and I met with the Lathrop Manteca Fire District (LMFD) leadership and discussed, among other things, options their Board could explore to reduce risk. Although retirement contributions represent 25 percent of their budget, they are mindful of the effect any plan design changes might have on recruiting and retaining qualified staff.

6 South El Dorado Street, Suite 400 • Stockton, CA 95202
(209) 468-2163 • ContactUs@sjcera.org • www.sjcera.org

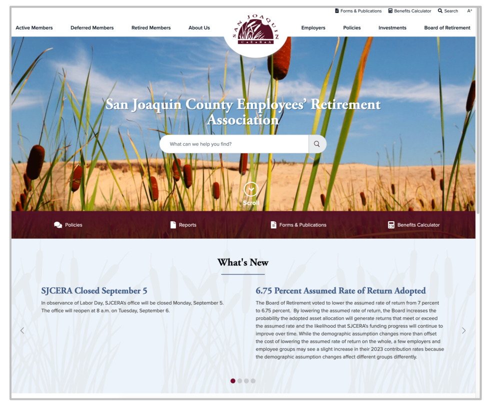
Modernize the operations infrastructure

Implement Pension Administration System (PAS)

- *Contract with Pension Administration System (PAS) vendor*
  PAS Vendor contract process has started and given similar experience with related IT contracts, we expect the contracting process to take about four (4) to six (6) weeks. The PAS project is scheduled to begin in February 2023.

- *Maintain functionality of legacy PAS until* new PAS is implemented and stabilized
  With our new CORE-37 support agreement in place, SJCERA is in a solid position to continue maintaining existing CORE-37 functionality until the new PAS has been implemented and stabilized. In addition to maintaining existing functionality, there are some legislative requirements needed, including implementing the new IRS tax withholding methodology and the revised W4P form, which become effective January 1, 2023. In addition to legislative requirements, staff is also analyzing functionality that may be cost beneficial to implement now and rather than waiting for the new PAS implementation in a few years. If the costs for changes cannot be absorbed within SJCERA's existing budget, staff will consult the Board of Retirement before moving forward.

Enhance the member experience



- *Complete improvements to website architecture and functionality*
  The new website went live August 31, after incorporating staff feedback and completing testing. Going forward, Rolling Orange will provide technical administration and security management of the website. The new site allows Communications Officer Kendra Fenner to use a content management system to independently update the website, freeing up IT staff time to work on more technical business needs. Additionally, the site's new search bar will make it easier for users to find information they seek. Kendra will continue to update content and organization following the go-live date to continuously improve the site's navigation, content and usability. Outstanding work by IT Systems Specialist II Jordan Regevig and Communications Officer Kendra Fenner in managing the project and completing this goal!

Improve technology for business operations

- *Begin Windows Server infrastructure implementation*
  Storage level data encryption and industry best practices are being applied and the overall migration of existing servers, data, applications and users has started. IT Systems Analyst II Lolo Garza and IT Manager Adnan Khan have done an outstanding job getting our new Windows Server infrastructure implemented with strict deadlines and on-going technology supply chain constraints. Once the infrastructure has been fully implemented, new tools like Microsoft 365 and other software updates can be considered, budgeted, and implemented next year.

Align resources and organizational capabilities

- *Implement strategies designed to support staff and maintain morale during PAS project*
  During the week of August 29 – September 2, SJCERA held "Jeans Week" for all staff to help build morale, strengthen the team, and reward all staff for their continued commitment and work in supporting our membership and each other. Additionally, on Wednesday, August 31, staff enjoyed root beer floats to help them "keep their cool" despite the summer heat. As SJCERA has kicked off one of two multi-year organization-wide projects, our goal is to recognize, support and value all staff to help maintain good morale as temporary workloads will increase.

  Employee(s) of the Month: Congratulations IT Systems Specialist II Jordan Regevig, Communications Officer Kendra Fenner, and ACEO Brian McKelvey for being named Employees of the Month! Jordan and Kendra were recognized for their leadership and efficient coordination of the Annual Member Statement project. As a result, SJCERA mailed statements earlier than it has in at least five years!

Although I normally exclude executive staff from consideration for Employee of the Month, I made an exception this month to recognize Brian for his leadership and persistence in successfully negotiating complex support and transfer of ownership agreements with IGI. It was no easy task, but one that is worthwhile for SJCERA. Exceptional work by each of the employees of the month!

Maintain Business Operations

Employer Relations

Annual Meetings with Employers.

I have contacted each employer offering to meet with them to solicit their input on 2023 Action Plan Goals, address SJCERA-related questions and discuss pension matters more generally. The following employers have requested meetings: San Joaquin County, Law Library, Waterloo-Morada Fire District and Lathrop-Manteca Fire District. Meetings are scheduled from August 19 to September 26.

- *Lathrop-Manteca Fire District (LMFD).* On August 19, Assistant CEO Brian McKelvey and I met with the new Fire Chief Dave Bramell and Battalion Chief Larry Madowski to discuss a variety of pension related topics including options for managing pension costs, the Board's recent decision to lower the assumed rate of return, and SJCERA's pension administration system project.

Annual Payroll Disaster Recovery Testing

In August, SJCERA and Northern Trust successfully completed the annual disaster recovery testing for our monthly retiree payroll process. This process helps ensure continuity of retiree payments in the event SJCERA systems were unable to process monthly retiree payroll. IT Systems Specialist Jordan Regevig and ACEO Brian McKelvey were integral in completing this year's testing.

Death Audit

SJCERA routinely uses a service to check for member deaths to ensure timely suspension of ongoing monthly benefit payments or initiation of survivor benefits. ACEO Brian McKelvey researched various death audit services and upgraded the services we receive. PBI Research Services, a leader in these services, is also used by CalPERS, the Pension Benefit Guaranty Corporation (PBGC), San Diego CERA, and many other pension systems across the nation. The upgraded services allow SJCERA to test our payee and deferred population every month (instead of every quarter), which will reduce the risk of potential overpayments to members or beneficiaries. Additionally, PBI now conducts additional research to reduce the risk of false positive identifications.

Legislative Monitoring

While Assembly Bill (AB) 2493, as amended, does not directly affect SJCERA, by incorporating CalPERS' definition of "compensation earnable" into the County Employees Retirement Law (CERL), it increases the risk of litigation of what should (and should not) be included in retirement allowance calculations. Several systems have raised this concern; however, it did not result in the legislature amending the bill by the deadline. The bill passed out of the Senate by the August 31 deadline; however, before it was brought up for a final vote in the Assembly, the author pulled the bill from consideration based on opposition from retirement systems/counties and discussions with the Governor's office.

Manage Emerging Organizational Needs

FCCU - Valley Strong Merger Update

As previously reported, SJCERA and Valley Strong Credit Union have been working together to update member account numbers automatically to eliminate the need for retired members to complete new direct deposit forms and the associated staff workload. I am pleased to report the automated update was successfully completed effective with the August 2022 retiree payroll (which is paid on September 1). Before August, Valley Strong had implemented a non-permanent mapping solution of previous FCCU account numbers to the new Valley Strong accounts. Now, all account numbers have been updated in SJCERA's legacy pension administration system, providing proper payment instructions to Valley Strong. A big thank you to IT Manager Adnan Khan, Accounting Technician II Marissa Smith, IT Systems Specialist II Jordan Regevig, Retirement Services Officer Melinda DeOliveira, and Financial Officer

Carmen Murillo who worked weekly with Valley Strong's Processing and Research Manager Carrie Aguilar to successfully implement this solution to the benefit of our membership. Impressive work!

Conclusion

SJCERA staff keeps their "cool" no matter the "heat"! Whether it's a heat wave or managing projects in addition to normal workload, staff continues to show they'll find a way to handle it and look for ways of doing business better! The examples of improved processes implemented this month are prime examples of how their efforts are evolving SJCERA into a better, stronger, more efficient organization. I am proud to work with such a "can-do" team.

fin|news

INTERNATIONAL / GLOBAL / EMERGING MARKETS 07.18.22

Despite Global Turmoil, Here's Why Investors Shouldn't Write Off Emerging Markets: Meketa

By EDITORIAL

By: Alison Adams, Hayley Tran and Larry Witt, Meketa Investment Group

The blunt shock of Russia's invasion of Ukraine has made the risk of emerging markets (EM) more starkly obvious, roiling markets and compelling asset owners to reassess EM exposures across their portfolios. Add to the list of concerns of a global recession, rising tensions between China and Taiwan and increasing chatter of collaboration between China and Russia (potentially accelerating Moscow's so-called "pivot to Asia"), and observers have begun to question if EM might carry more risk than institutions can tolerate.

Moreover, since the global financial crisis of 2008-2009, emerging markets equities have generally lagged U.S. equities fueling EM fatigue, disappointing institutional investors who have historically expected more attractive relative returns.

As the alternating risk-on/risk-off behavior of investors tends to be amplified amid political and economic stress, recent market swings are accentuating the perceived vulnerability of developing economies. At the same time, emerging markets equity valuations look attractive as multiples trade at levels well below their own history — a PE multiple of 15.4 in early 2022 compared to an average of 17.1 since 2000 — and those of the U.S. and developed markets. Since the inception of the asset class in the 1980s, emerging markets equities have weathered wars, energy crises, defaults and financial crises where the overall price rise over time reflects the resiliency of the asset class.

To be sure, the core of the investment thesis remains largely intact. On the macro level, EM economies are expected to grow faster for the next 10 years than their developed-market counterparts, according to the Conference Board. Moreover, emerging markets continue to be underrepresented from a market capitalization and GDP-weighted standpoint. Through much of the 1990s, legacy quasi-state-owned companies in the energy and financial services sectors dominated the EM story. But today, EM is a dynamic asset class where technology, communications and consumer services are gaining market share and successful investing may require nimble strategies to adapt and capture the same growth that underpinned EM prior to the global financial crisis.

The urbanization and rapid technological advancement of the general population in developing economies adds another catalyst that could accelerate growth. The relatively younger populations of EM countries, perhaps not surprisingly, are also faster adopters of new technology. Looking at the broader Asia-Pacific region, for instance, 60% of consumers use digital wallets, and in China, 72% of payments are conducted through leading digital platforms, according to the Payment Almanac published by PPRO.

This is not to say there aren't question marks. As it relates to the traditional role of EM exposures within a portfolio, for instance, some are uncertain it will offer the same level of diversification. Globalization has provided a tailwind to asset growth over the past two decades but has also led to increased correlation between EM equities and developed markets. Some might argue that deglobalization is now underway given current geopolitical landscape. Furthermore, emerging markets companies have become much less export dependent and much more domestic demand-driven than in the past. Both bode well for increasing diversification benefits going forward.

It's against this backdrop a few strategic considerations are surfacing. China, for instance, continues to provide a source of growth to EM investors, but rising concentration is a material risk. From an index perspective, much of the emerging markets growth will be generated from Asia. China, Taiwan, Korea and India together represent 73% of the **MSCI** EM index while Asia accounts for 77% of the index, as of March 2022. The MSCI EM index, some might argue, essentially serves as an Asia ex-Japan proxy.

This, in turn, is influencing where and how institutions build out EM exposures. At the top-down level, some asset owners are outsourcing EM weighting decisions to nimble glc or international equity managers who are more able to tactically dial up or dial down their

EM exposures against the MSCI ACWI and ACWI-ex US benchmarks. For context, emerging market stocks comprise roughly 11% of the ACWI index and 29% of the ACWI-ex U.S as of March 31.

Those with a strategic asset allocation to emerging markets equity could look to reconstruct the building blocks to fine tune their exposures within EM. Some, for instance, opt for all-cap strategies benchmarking against MSCI EM IMI or add dedicated small cap-exposures to balance large cap top-heavy MSCI EM allocations. Alternatively, some deconstruct the benchmark into dedicated China and EM ex-China exposures to better control their concentration risk and give the institutions more say in tactical bets. And others will have a core-satellite approach with the use of a passive index or a low tracking error (or low vol) mandate as core, preferring to deploy their risk budgets on regional or niche approaches more broadly.

Both active and passive management can be appropriate portfolio construction options. Given the complexity and expertise required in this space — and the wide divergence between the top and bottom quartiles of active managers, manager selection can take on heightened importance.

If there's one universal truth in emerging markets investing, it's that there is no single "right way" to access the asset class.

FUNDfire

Low Inflation Won't Return, Pimco Economist Says

Investors expect flurries of inflation to continue over the next three to five years.

August 23, 2022

Inflation is likely to settle well north of the roughly 2% targeted by major central banks despite the policy makers' best efforts to rein in runaway costs, according to investors and strategists at firms such as **Pimco** and **Capital Group**, Bloomberg reports.

Interest-rate increases have succeeded in pulling back inflation from its peak but price stability is unlikely given high energy costs, strained supply chains and tight labor markets.

As a defense, money managers have been loading up on inflation-protected bonds, ramping up exposure to commodities and growing their cash holdings instead of investing directly into bonds, Bloomberg reports.

The past two decades "of the great moderation" is now "fully behind us," said Pimco North American Economist **Tiffany Wilding**. She forecasts a spell of explosive inflation as the world comes to terms with "higher input costs in general that should result in a multi-year price level adjustment."

Global policy makers and markets initially thought high inflation was a temporary side effect of the pandemic – and they still expect it to subside. But investors expect flurries of inflation like those experienced during the geopolitical instability of the 1970s to continue over the next three to five years, Bloomberg reports.

Meanwhile, there is a risk that the **Federal Reserve** could bring an early end to rate hikes only to be forced to reinstate them when inflation flares, said **Michael Herzum**, head of macro and strategy at Germany's **Union Investment**.

Related Content

August 19, 2022
Institutions Turned to Commodities to Hedge Inflation, but Demand May Not Last

August 17, 2022
Brookfield: Inflation Reduction Act a 'Positive' for Energy Investing

"Looking at growth and not just inflation is a very risky game," said Herzum, citing the "turning" of the "disinflationary trend" that has been in place since the mid-1980s.

However, "inflation is by no means a solved puzzle and the Fed will continue to be vigilant," **Capital Group** Investment Director **Flavio Carpenzano** told Bloomberg.

At California-based **Mischler Financial**, Managing Director **Glen Capelo** said it will "take years to rebuild the trade networks and supply chains"

June 28, 2022
With Inflation Top of Mind, Managers Compete for Investor Attention

roiled by Russia's invasion of Ukraine and the pandemic.

"Deglobalization is here to stay. This will all be inflationary," Capelo warned. "And this structural inflation is something the Fed can't fight with higher rates," he told Bloomberg.

By Kathleen Laverty

- To read the Bloomberg article cited in this story, go to https://www.bloomberg.com/news/articles/2022-08-22/pimco-capital-group-say-era-of-low-inflation-is-gone-for-good?sref=4PWVH3Ii

FUNDfire

Pension Funds Cut Stakes in Office Buildings in Favor of Warehouses, Labs

"No one can quite figure out the office market because office usage is just all over the map and down," California State Teachers' Retirement System Chief Investment Officer Christopher Ailman said recently.

August 26, 2022

The ongoing impacts of the Covid-19 pandemic have caused leading pension systems to rethink their property investments, The Wall Street Journal reports.

Top pension plans in both the U.S. and Canada have reduced their investments in office buildings, betting that hybrid work arrangements mean there will be less demand for office space. The funds are still scooping up real estate, but the focus has shifted to warehouses, housing, lab space and infrastructure such as airports.

Shopping centers, too, have fallen out of favor.

Public pensions in North American had allocated an average of 8.7% to real estate as ofAug. 19, data from **Preqin** shows.

S&P Global Market Intelligence examined recent meeting minutes of the 40 largest U.S. public pension funds and found that increasing real estate holdings was the most commonly discussed change to investment strategies. But the difference in returns between the highest- and lowest-performing real estate sectors is at a 20-year high: Office space returned about 0.7% in the second quarter, while industrial properties returned just over 6%, according to the **National Council of Real Estate Investment Fiduciaries.**

Still, "no one can quite figure out the office market because office usage is just all over the map and down," **California State Teachers' Retirement System** Chief Investment Officer **Christopher Ailman** told a board meeting last month.

Calstrs has been selling office buildings but is also increasing its target allocation to real estate by picking up investments in industrial and residential properties, the Journal reports.

Meanwhile, the **Teacher Retirement System of Texas** is invested in soundstages and studio space, while the **Healthcare of Ontario Pension Plan** has stakes in cold storage and student housing.

Michael Turner, president of **Oxford Properties**, the **Ontario Municipal Employees Retirement System**'s real estate arm, expects the $90 billion pension system to cut its allocation to office space to about 20% of its property portfolio over the next decade. Office space currently makes up about 25% of the portfolio – down from around 44% six years ago, Turner told the Journal.

In the past year, Oxford offloaded its stake in a $2.1 billion building in Manhattan, a Toronto office tower worth $850 million and an $825 million building in Boston. It has picked up warehouses and biomedical-science research facilities, Turner said.

By Kathleen Laverty

- To read the Wall Street Journal article cited in this story, go to https://www.wsj.com/articles/pension-funds-are-selling-their-office-buildings-11661381460

MEKETA
INVESTMENT GROUP

Non-Core Real Estate

WHITEPAPER
AUGUST 2022

This paper examines the characteristics of non-core (value-added and opportunistic) real estate strategies and the impact of including them in an investor's portfolio. It concludes with a recommendation that investors should consider allocating part of their real estate allocation to non-core strategies.

CONTRIBUTORS
Christy Fields
Derek Proctor
Frank Benham, CFA, CAIA
Zed Truong

Introduction

The characteristics of non-core properties are quite different from those of core properties. The latter consists of high-quality assets that have high occupancy rates and provide steady cash flow. The investment profile of a core investment is like that of a bond, with reliable income streams and low volatility. These properties do not require significant enhancement, renovation, or development. In contrast, non-core strategies encompass greater risk through increased use of financial and operational leverage, greater reliance on renovation or development, a focus on secondary markets, and a number of other factors. In return for taking on greater risk, investors in non-core real estate strategies expect to be compensated via higher returns.

	Core	Core Plus	Value-Added	Opportunistic
Property Types Included	4 Majors*	4 Majors	4 + Limited Specialty	4 + Moderate Specialty
Occupancy at Acquisition	≥ 85%	≥ 85%	< 85%	< 85%
Target Markets	Primary	Primary	Primary/Secondary/ Tertiary	Primary/Secondary/ Tertiary
Asset Physical Needs	Minor	Light Upgrades	Renovation	Rehabilitation/ Development
Holding Period (years)	7 - 10	7 - 10	3 - 7	1 - 5
Income (as % of total return)	≥ 70%	≥ 70%	30% - 70%	< 30%
Leverage	0% - 40%	40% - 60%	60% - 75%	60% - 80%
Net Return Expectations	4% - 8%	5% - 10%	8% - 12%	10% +

FIGURE 1
Typical Core and Non-Core Real Estate Characteristics
Source: Meketa Investment Group.
Note: *As described in the appendix, these include office, retail, multifamily, and industrial properties. Specialty properties include hotel, storage, student housing and other smaller segments of the investable universe.

A comparison of core and non-core real estate characteristics is presented in Figure 1. These characteristics include the expected portfolio composition, occupancy, target markets, physical needs, holding periods, income expectations, leverage, and expected return.[1] Portfolio composition refers to the prospective types of properties. Occupancy at acquisition refers to the proportion of square footage occupied at purchase. Target markets refer to property location, such as primary (e.g., centralbusiness district) or secondary (e.g., suburban). Physical needs refer to the degree of repair required, ranging from repositioning (i.e., refurbishment and operational improvements) to development (i.e., ground up property construction).

[1] For some funds/strategies, the classification is not as discrete as presented in this table.

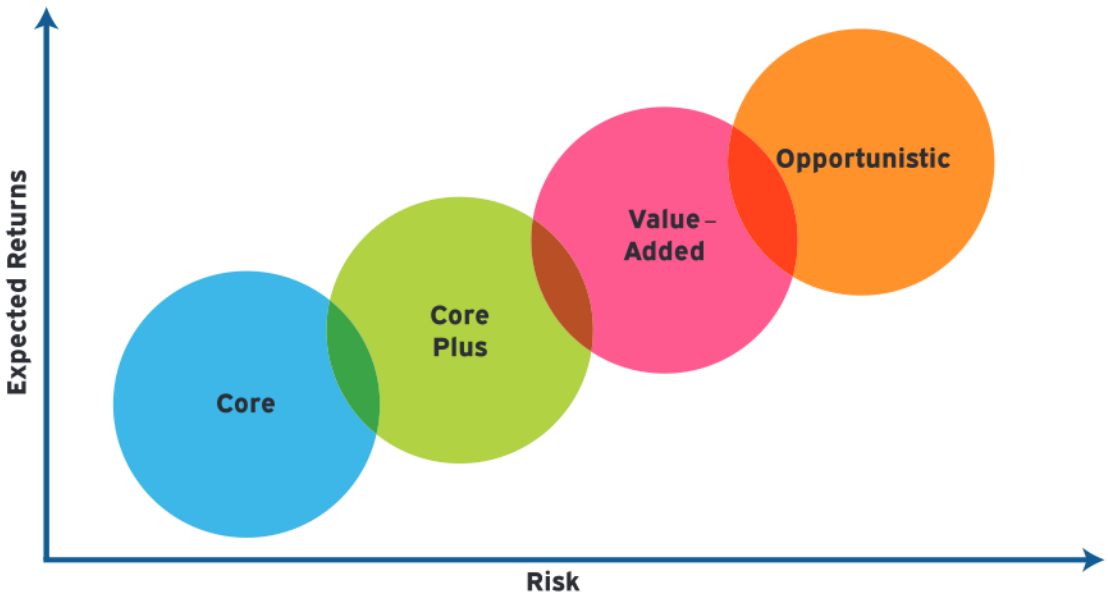


FIGURE 2
Risk/Return Expectations
Source: Meketa Investment Group.

Strategies

Non-core real estate strategies are usually put into one of two categories: value-added or opportunistic. Each offers unique characteristics, though there can be overlap between them.

Value-added

Value-added real estate offers a risk-return profile that is greater than that of core real estate, but less than that of opportunistic, as indicated in Figure 2. Compared to core, this strategy focuses more on capital appreciation through physical property enhancement processes: repositioning, renovation, lease-up and/or re-tenanting, and redevelopment. Repositioning generally involves refurbishment and enhanced property management, which allow for a potential "re-grade" of property quality and for increased revenue. Renovation can include property enlargement, completion of major capital improvements to upgrade quality (e.g., a new roof or lobby), or structural repair and refinishing. Redevelopment can include a major overhaul and conversion of a property for a different use (e.g., a warehouse converted to multifamily apartments).

Value-added funds will likely include a moderate income return component as opposed to opportunistic funds, which rely primarily on appreciation. Assets commonly include the four main property types (i.e., office, retail, multifamily, and industrial) along with investments in hotels and other specialty property types. Some value-added strategies may invest in markets outside of the United States, which adds the risks of currency fluctuation and differing legal frameworks. Leverage is typically limited to 65% loan-to-value, a higher level than core strategies but lower than opportunistic strategies. Most value-added fund vehicles are closed-ended, which means they can tie up investor capital for periods of 10 years or longer, though individual properties may be held for much shorter periods.

Opportunistic

Opportunistic strategies offer the highest level of expected return and risk potential within real estate, as is shown in Figure 1. Most of the expected return depends on future appreciation, resulting from physical property enhancements or ground up development. Ground up development introduces distinct and significant risks, specifically, the uncertainty of permitting, on-time and on-budget construction, changing market conditions, and leasing. These risks influence the profitability of a development project and affect the developer's ability to purchase land, construct buildings, lease space to tenants, and to repay debt. However, some risk can be mitigated through various methods, such as pre-sales, purchasing land that is already entitled, and securing cost overrun guarantees from the developer.

Opportunistic asset types include the four main types along with hotels and other specialty property types. These specialty property types may include self-storage facilities, entertainment facilities, medical offices, life science facilities, senior housing, student housing, data storage, and more. Opportunistic fund leverage is typically moderate to high, with most fund-level limitations in the range of 60% to 80% loan-to-value. Fund vehicle types are almost exclusively closed-end since the investments are typically illiquid, difficult to price, and represent projects that can take years to execute.

Non-core performance

Figure 3 shows performance for both core and non-core real estate funds based on information provided directly by real estate managers. The data confirms that risk and return profiles of non-core funds vary significantly from those of core funds. The data also indicates that the dispersion of returns, as measured by the spread between top and bottom quartile funds (i.e., the inter-quartile spread), was modest for core funds but wide for value-add and opportunistic strategies. This is to be expected given the more concentrated approach, multiple risks, and the increasing difficulty to manage all the risks that are inherent in most value-add and opportunistic funds. This level of dispersion highlights that an investor's skill at selecting managers will have a big impact on the investor's experience in non-core real estate investing.

	Core (%)	Value-Added (%)	Opportunistic (%)
20-Year Annualized Return	7.2	8.2	7.7
20-Year Annualized Standard Deviation	6.7	10.3	10.1
5-Year Inter Quartile Spread	2.1	9.0	12.8

FIGURE 3

Real Estate Returns by Strategy

Returns are net of fees and on a time weighted basis. The source for core fund data is NCREIF NFI-ODCE Equal Weighted Index. Value-added and opportunistic fund data is provided by Preqin and may be biased due to survivorship and self-selection issues. Data is as of December 31, 2021.

The 20-year period shown in Figure 3 included several market cycles for commercial real estate. Non-core strategies have outperformed core, on average, but this oversimplifies the experience for many investors. Negative performance during and around the Global Financial Crisis ("GFC") cast a pall on non-core real estate strategies that still lingers in the minds of investors despite post-GFC outperformance. We expect non-core real estate will continue to be riskier in the future and expect investors to be compensated, on average for investing in riskier real estate assets while noting that much will depend on fund selection.

Property type considerations

Risk-reward characteristics vary by property type with the effects of these characteristics magnified by the strategy type pursued. For example, non-core real estate entails increased levels of leverage and property enhancement, both of which magnify volatility. This is especially true for higher risk, opportunistic development projects, which can involve significant leverage amounts, construction lead times and lease-up lead times.

Property Type	Lease Duration	Historical Cyclicality	Construction Period (Months)	Other Characteristics
Multifamily	Annual or 6 months	Low	12 to 36	Government agencies are a reliable lender for residential properties; consistent demand; best historical risk-adjusted returns.
Retail	5 to 10 years	Moderate	12 to 48	Public REITs hold a large percentage of mall properties.
Industrial	5 to 10 years	Moderate	9 to 12+	Construction time is shortest of the main property types.
Office	5 to 10 years	High	18 to 48	Above average volatility; tenancy significantly impacted by economic downturns.
Hotel	Daily	High	12 to 24	Most volatile historical return series due to daily repricing of rental rates.

FIGURE 4
Typical Property Type Characteristics
Source: Meketa Investment Group.

Lease agreements vary significantly for each property type (as indicated in Figure 4). Multifamily leases typically terminate annually or in periods of six months, while office, industrial and retail lease terms usually terminate after five to ten years. Annual leases are advantageous during upward-cycles, allowing higher rental rates to be charged sooner. Long-term leases, by contrast, can be beneficial if they extend an above-market rate through a downward cycle.

In addition to the base rent, long-term leases may include built-in adjustments such as step-ups after a certain period of time, inflation-related increases, and even percentages of a retail tenant's gross sales. These rent adjustments help long-term leases compensate for an inability to renew to market rents annually.

As indicated in Figure 4, construction periods can vary drastically from as short as nine months for certain industrial projects to as long as four years for complex office For numerous reasons, investor risk increases as construction periods increase. Principally, these risks are the possibility of increasing costs (e.g., financing, materials, labor) and greater uncertainty about the possible economic environment when construction is completed (i.e., can the property be leased at a rate sufficient to cover its costs?).

Geography

The geographic placement of real estate can have a significant impact on its performance. An example of this is the historical trend of properties in primary markets outperforming those in secondary and tertiary markets. Primary markets typically include major metropolitan districts, such as New York City, Boston, Washington D.C., San Francisco, and Los Angeles. These markets have substantial employment sectors that create tenant demand that typically matches or exceeds available supply of real estate space (i.e., land). This limited supply of land, when matched with high demand, has led to higher market rental rates and occupancy rates historically.

Secondary and tertiary markets are typically suburban markets with fewer constraints on new supply and inconsistent demand for real estate space. Historically, in an economic down market, tenants tended to move toward primary markets (city centers) to take advantage of unusually attractive lease rates on prime property. This effect reduced the downside risk for primary markets. However, due to the COVID pandemic, the opposite scenario has happened, with people moving out of primary and secondary markets to tertiary ones. It is important to take this phenomenon into account and adjust to future trends as needed.

There are many other factors that affect local real estate markets, including: market demand influences such as job growth, the quality of job creation (indicated by salaries and wages), resident ages, sizes of households, availability of high-quality education and transportation networks, tax regimes, municipal health, and other related demographic information.

Global

Real estate funds with a global mandate tend to be focused on the developed economies of the United States, Western Europe, and Asia. The United States and Western Europe, along with certain Asian markets, represent mature regions for core, value-added, and opportunistic strategies. The emerging markets have generally less stable and less mature real estate markets that attract opportunistic strategies. Differing legal and political systems permeate these regions, so local expertise is paramount for any investment outside the US.

Supply and demand

Developers must carefully consider job growth, salaries and wages, ages and size of households, and financing costs when determining the economic benefits of undertaking a project. The supply of space available in a market tends to stay fixed in the short term and requires significant lead time to adjust to increases in demand. Thus, under-development or over-development can have a prolonged effect on market fundamentals (i.e., rent, occupancy, and absorption rates). Additionally, developers must consider market values in relation to replacement cost, which is the total cost to build or replace a property. If the property replacement cost is greater than the expected market value, it is not sensible for a developer to undertake the project.

Supply and demand information will help a manager determine which markets are most likely to benefit from economic growth. The positive supply and demand characteristics of densely populated primary markets had given them a structural advantage in producing returns historically. Importantly, we expect significantly less volatility in real estate supply and demand than historically because there is much better data available to developers and investors (even though the markets are still inefficient, relatively speaking).

Real estate fundamentals

The "fundamentals" of real estate have a significant effect on performance. Real estate fundamentals include rental rate, occupancy rate, absorption rate, and capitalization rate. Rental rate refers to the amount tenants are willing to pay for space (price per square foot). This is affected by property size and quality, lease duration, and most importantly, market conditions. Occupancy rate refers to the amount of space, as a percentage of the property, that is currently occupied. Absorption rate refers to the rate at which real estate vacancies are either leased or sold to users in the marketplace, usually expressed as square footage per year.

Perhaps the most important (and most transparent) metric for the real estate market is the capitalization rate. The capitalization rate could be viewed as the inverse of a price-earnings ratio as it is calculated by dividing the annual net operating income by the property purchase price. A higher capitalization rate indicates a higher expected (or required) return on investment. Capitalization rates are significantly affected by general market conditions (e.g., they tend to increase as prospects for property fundamentals deteriorate). These rates vary by property type and by market, indicating differences in risk/reward ratios. For example, the more volatile office and retail sectors generally trade at above-average capitalization rates, as do properties in tertiary markets.

Historically, real estate returns have been linked to capitalization rates. As with any investment, the price paid for future cash flow has a meaningful effect on returns. Figure 5 portrays how higher (or downward trending) capitalization rates have preceded stronger returns and vice versa. However, shorter-term returns can be affected by events such as the GFC and COVID pandemic.

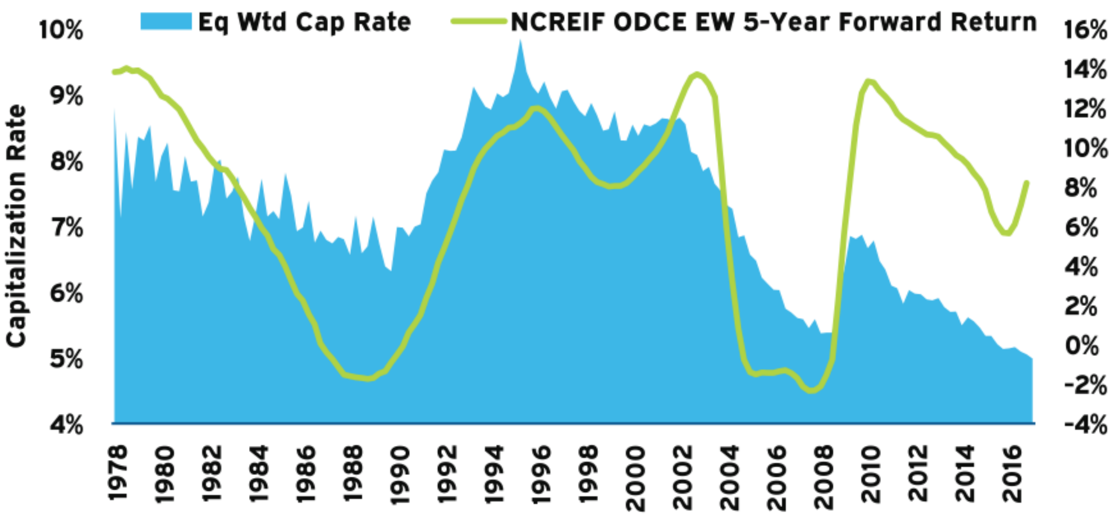


FIGURE 5
Impact of ODCE Cap Rates on Future Returns
Source: NCREIF.

Financing and leverage

Real estate is a capital-intensive asset class. Debt allows a real estate manager to gain greater real estate investment exposure with the same amount of equity capital. The effect of this is an amplified positive or negative return on equity. Positive leverage occurs when the property's unlevered return is greater than the interest rate on the debt. Otherwise, negative leverage will occur, causing a magnified loss of equity. Thus, leverage has a "swing" effect on performance.

The amount of debt, as a percentage of property value, is termed loan-to-value (LTV). Higher LTVs, such as 80% or higher, increase the risk of foreclosure, as the equity cushion between debt and the property value is smaller. Loans at higher LTVs are generally at higher interest rates and are more difficult to obtain, depending on the market environment. An important alternate measure of leverage is the debt service coverage ratio (DSCR), which describes how many times cash flow from an asset can cover current debt obligations. Core properties typically have a DSCR of at least 2.0 times. Unlike LTV, the DSCR is not influenced by volatility in the asset's value, which can be significant during times of market dislocation.

Role in portfolio

The primary reasons for investing in non-core real estate are to increase diversification and to enhance potential returns. Similar to private equity investments, non-core investments may offer a higher expected return, along with higher risks, and manager selection and skill are paramount.

Non-core real estate strategies often incorporate specialty property types and additional geographies, which allow for enhanced diversification. Further, historically they have exhibited low-to-moderate *observed* correlations with the public equity and debt markets and, at the same time, low *observed* volatility.[2] Still, these strategies should be considered at least as risky as public equities. However, we expect that an allocation to non-core real estate, if funded from equities, should *decrease* the expected risk of the overall portfolio, as shown in Figure 6.

[2] This observed volatility and correlations are artificially lowered by the historical accounting and pricing methods used by private real estate firms (i.e., they are marked to market on a quarterly or annual basis, and they use transaction-based appraisals).

	Without Non-Core	With Non-Core
Core Real Estate	5%	5%
Non Core Real Estate	0	5
Global Equities	60	55
High Quality Bonds	35	35
Expected Return	*5.8*	*5.9*
Expected Standard Deviation	*11.2*	*11.0*

FIGURE 6

Impact of Adding Non-Core Real Estate on a Multi-Asset Class Portfolio

Source: Meketa's 2022 20-Year Capital Markets Expectations

Other considerations

When constructing a portfolio of real estate investments, an investor should seek to diversify the portfolio broadly, both in core and non-core assets. This includes diversification by strategy, geography, property type, employment base, manager, vehicle, individual investment, and vintage year.

An investor in non -core real estate should also consider vehicle types, the J-curve effect, governance, alignment of interests, valuation methods, market cycles, labor concerns, use of third-party property management, financing, supply and demand factors, and liquidity. The materiality of each of these risks varies. However, non-core investing involves the layering on of multiple of these risks, resulting in a multiplicative (versus additive) increase in risk, for which the investor must believe they are being compensated.

Vehicle type, J-curve effect, and valuation

Non-core funds are generally available only in closed-end vehicles. A closed-end fund does not offer capital withdrawal during its fund term, which may extend beyond 10 years.

In the first three to five years, a phenomenon known as the "J-curve" effect occurs whereby returns will likely be negative or low. This is because fees are charged and capital is spent on property enhancement or development, but the property does not necessarily produce income immediately and increases in value occur later in the fund life. An example of this is a development project that is substantially complete, and the property is expected to be worth much more as a finished product. A meaningful realization of appreciation is often captured at a later stage when the project is fully complete and stabilized (i.e., leased). Thus, during the J-curve period, the total return may appear negative even though a significant amount of capital has been deployed, and the appraised value may not accurately reflect the project's true worth.

Commitments and pacing

Most non-core real estate funds require an advance commitment of capital. The commitment is drawn down, or "called," by the general partner typically over a period of two to five years. During this period, other partnerships owned by an investor may be in their distribution phase, effectively reducing the investor's allocation to real estate. Therefore, to maintain a fixed level of actual investment in real estate, it is generally necessary to commit more than the target allocation (i.e., over-commit).

The year in which a partnership makes its first investment is known as its "vintage year." Depending upon macroeconomic events and available opportunities, some vintage years have better performance than others. Therefore, it is often beneficial to structure investments to provide for diversification across multiple vintage years.

The universe of funds

The construction of a real estate portfolio will be partly determined by the available set of investment opportunities. Because there is no universal database to which all non-core funds report, it is impossible to know the precise size of the universe of funds. An estimate of the size and scale of the universe or real estate funds is shown in Figure 7.

	Value-Added	Opportunistic
Funds	327	245
Gross AUM	$14 bn	$20 bn

FIGURE 7

Real Estate Fund Universe

Source: The source for all funds is Preqin. Represents funds incepted in 2021 and 1H2022, as of July 2022.

As shown in Figure 7, from 2021 to 2022, 245 opportunistic funds have successfully raised $20 billion in capital. Over the same period, 327 value-added funds raised $14 billion in capital. Further, it can be reasonably assumed that not all funds are included in this database.

Labor

Labor policies are more relevant for non-core real estate strategies as labor relations can be very important for projects that involve construction and renovation. Some managers have defined a firm-wide Responsible Contractor Policy,[3] which states their basic philosophy when dealing with labor- and union-related issues. It is advantageous to obtain case studies and references that highlight the manager's activities relating to the policy. Having such practices in-place can help an investor determine if the manager adheres to a labor-friendly policy.

[3] A Responsible Contractors Policy (RCP) is designed to guide the selection of independent contractors and subcontractors who provide construction, repairs, maintenance, and infrastructure operating services. Among the guiding factors outlined in a policy are compliance with applicable statutes and payment of "fair" compensation and benefits to employees.

Third-party servicers

Property maintenance and other services such as leasing can be performed by either an in-house group or a third party. The choice of these providers can have a significant impact on property performance. While some value-added strategies utilize in-house property managers, most opportunistic strategies use third-party property managers. This occurs because opportunistic strategies mostly focus on property improvement followed by a sale, instead of holding property on a long-term basis.

There are certain considerations that surround in-house property management and third-party property management. For instance, in-house property management includes an internal management fee that is typically charged back to the fund. Investors should expect this fee to be charged at a fair market rate and should monitor any conflict that this secondary source of income for the manager could create. For example, in-house management could influence the manager to inappropriately retain or acquire properties that generate property management revenues. On the other hand, in-house management brings a valuable ability to directly oversee and control properties in the portfolio.

The use of third-party property management has different drawbacks such as reducing direct management oversight. However, third-party managers are often regionally specialized and local to the property, which may bring a better understanding of the market. Using third-party property managers also reduces the need to adjust the amount of personnel as properties are bought and sold. Additionally, using third-party property management allows for better managers for each specific region or micro-market to be selected.

Market cycles

The cyclical nature of the real estate industry can have a significant impact on non-core real estate performance. Purchasing non-core real estate during market downturns can be particularly profitable as non-core strategies have amplified cycles. This can allow a manager to purchase property at discounted prices and then complete physical renovations followed by selling at a higher price if market valuations revert.

Conversely, purchasing non-core real estate near a market peak can have a correspondingly bad outcome. Figure 8 portrays boom and bust periods for commercial real estate. It is worth noting that the amplitude of these cycles would likely be greater for non-core real estate, which tends to use more leverage.

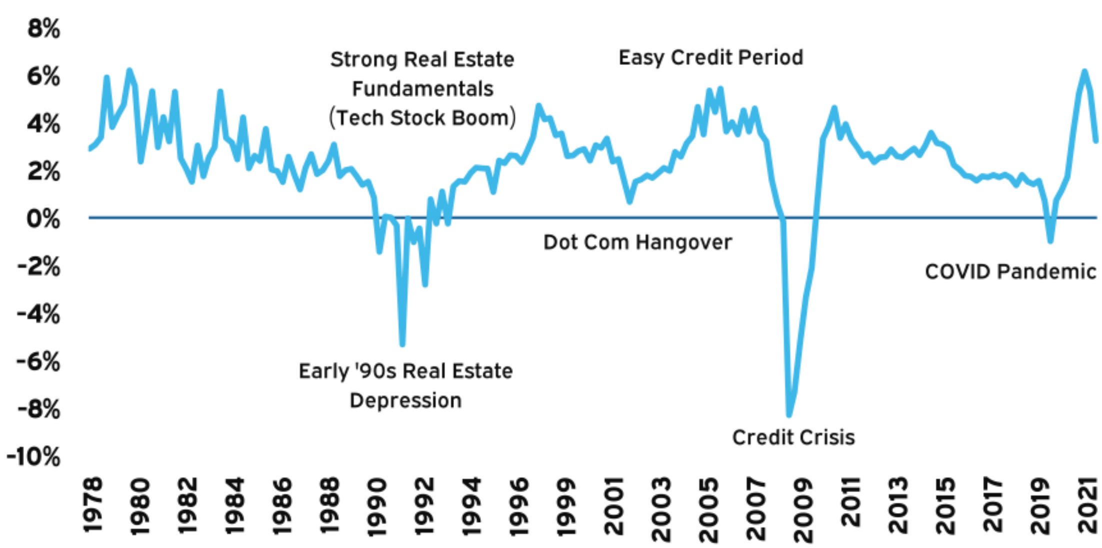


FIGURE 8

NPI Quarterly Returns - Institutional Grade Real Estate

Source: NCREIF NPI Details 2022.

There are additional downside risks involved with market cycles, including leasing risk, financing risk, and market timing risk. Leasing risk entails the difficulty of finding tenants after renovations or development have been completed. Aggressive terms (e.g., discounted rents, concessions, etc.) may be necessary to lease the property, causing a reduction of income, which, in turn, reduces property value. Financial risk can occur from tighter underwriting standards, which restrict availability of loans to purchase or re-finance real estate. In the most extreme cases – when a property is highly indebted – it can result in the inability to make debt payments and potentially foreclosure on the property. Financial risk can also occur from *looser* underwriting standards as experienced during the GFC when large loans with light or no covenants, cross collateralization and recourse provisions were extended against assets with low debt service coverage ratios that quickly became impaired. Lastly, if a downward market occurs during the life of a non-core fund, the managers may find it necessary to hold onto properties longer than originally planned.

Costs

Total expected costs and fees associated with non-core real estate investing are higher than for core real estate. There are three essential types of fees associated with non-core real estate funds. The first is a management fee, which typically ranges from 1.25% to 2.0% per year. The second is a performance fee, typically called "carried interest," which is paid as percentage of fund profits if a certain hurdle, or "preferred" rate of return, is achieved. Once the general partner has produced a minimal baseline return for the limited partners (called the "hurdle rate"), all future profits are usually divided between the general partner and the limited partner (called "carried interest"). For example, a partnership may specify a hurdle rate of 8% and a carried interest of 20%. This means that as soon as the limited partners have received a return of 8% on their initial investment, 20% of all profits are distributed to the general partner and 80% to the limited partners. Finally, a general partner may also take an acquisition fee once a property has been purchased and a disposition fee once an asset has been successfully sold, though this is increasingly rare.

Joint venture partnerships

Real estate managers often create joint venture partnerships in which two or more parties acquire or develop a real estate property. Usually, joint ventures involve a real estate fund manager (limited partner) who needs a developer or operator as a general partner. These partnerships often require that the limited partner contributes a substantial amount of capital, while the general partner is expected to assume full responsibility for the deal execution process. The general partner's performance is typically rewarded by a performance fee, that is calculated as a percentage of profit (i.e., carried interest) after a return hurdle (i.e., preferred return) has been met. For example, in a joint venture partnership, an operator or developer could receive a 20% carried interest after a 9% preferred return is achieved by the fund on the property.

While some value-added strategies use joint venture partnerships, nearly all opportunistic strategies use them. It should be noted that using joint venture partners can incur increased costs that are not explicitly charged as management fees and are not readily visible to the investor.

Benchmarking

The NCREIF ODCE index is the standard for benchmarking institutional core real estate. However, this index does not account for the risk premium one would expect to receive investing in non-core real estate. Hence it is common for institutional investors to add a premium on top of the ODCE to account for the additional risks being taken in a non-core portfolio.

Time and liquidity

An allocation to non-core real estate will often require added commitments by the investor in time and resources. Administratively, the capital calls and distributions associated with non-core real estate funds are unpredictable. Fund administrators need procedures to accommodate these cash flows reliably and efficiently. Moreover, these assets will require additional monitoring by the investor and their investment advisor.[4]

[4] For example, some investors use dedicated real estate advisors to oversee or assist with their real estate program.

Any meaningful commitment to private markets requires that an investor have a good handle on their overall liquidity. This is particularly true as the size and risk level of their non-core investments increase.

Summary and recommendation

There are potential advantages to investing in non-core real estate, principally, the opportunity for enhanced returns and diversification. Still, there are disadvantages of non-core real estate, including higher risk as well as the diminished transparency and liquidity that accompany private market investments. On balance, however, an allocation to non-core real estate should benefit most long-term portfolios. Non-core strategies comprise a large portion of the investable real estate universe and offer additional sources of return relative to public markets that stem from control of the assets. Managers can develop properties, improve properties, and at times of distress, acquire them at depressed prices.

For investors who already have core real estate investments, non-core real estate can enhance total return, albeit with a meaningful increase in risk. Meketa Investment Group recommends that most investors consider allocating between 30% and 60% of their real estate portfolio to non-core strategies. The target allocation will depend primarily upon the investor's risk tolerance and objectives for their overall portfolio. We recommend building a diversified (by asset type, life-cycle, geography, etc.) sub-portfolio of non-core funds over a period of three to six years. Finally, investors should be aware that market cyclicality will play a large role in the returns these vehicles produce.

Appendix A | Glossary of real estate terms

Absorption | The amount of inventory or units of a specific commercial property type that become occupied during a specified time period (usually a year) in a given market, typically reported as the absorption rate.

Appraisal | An estimate of a property's fair market value that is typically based on replacement cost, discounted cash flow analysis, and/or comparable sales price.

Asset management | The various disciplines involved with managing real property assets from the time of investment through the time of disposition, including acquisition, management, leasing, operational/ financial reporting, appraisals, audits, market review and asset disposition plans.

Base rent | A set amount used as a minimum rent with provisions for increasing the rent over the term of the lease.

Broker | A person who acts as an intermediary between two or more parties in connection with a transaction.

Capitalization rate | A percentage that relates the value of an income-producing property to its future income, expressed as net operating income divided by purchase price. This is also referred to as *cap rate*.

Capital structure | The structure for financing a commercial real estate property or portfolio. Commercial real estate capital structures typically include equity and senior debt, which represent capital from an investor and the first position mortgage. Mezzanine debt, construction loans, and participating debt may also be included, which are additional forms of filling in needed capital for a capital structure.

Central business district (CBD) | The downtown area of a city, usually the location of a concentration of high-rise office buildings and commercial activity.

Closed-end fund | A commingled fund that has a targeted range of investor capital and a finite life.

Concessions | Cash or cash equivalents expended by the landlord in the form of rental abatement, additional tenant finish allowance, moving expenses, or other monies expended to influence or persuade a tenant to sign a lease.

Construction loan | Interim financing provided to support the developmental phase of a property.

Development | Ground up property construction. It can generally be broken down into specific categories: *economic development, site selection, and commercial, industrial or residential* real estate projects, all of which are either directly or indirectly related to *startups, expansions or relocations*. *Real estate development* in sophisticated *locations* is guided by controls and restrictions. They are usually identified by names as residential developments and business, office, commercial, or industrial parks or buildings. A *planned community* is a type of real estate development.

Improvements | In the context of leasing, the term typically refers to the improvements made to or inside a building but may include any permanent structure or other development such as a street, sidewalk, utilities, etc.

Internal rate of return (IRR) | The percentage rate earned on each dollar that remains in an investment each year. The IRR of an investment is the discount rate at which the sum of the present value of future cash flows equals the initial capital investment.

Joint venture | The joining of two or more individuals or entities in a specific business enterprise such as the development of a project or the acquisition of an investment.

Lease | An agreement whereby the owner of real property gives the right of possession to another for a specified period of time and for a specified consideration.

Lease rate | The period rental payment to a lessor for the use of assets. It may also be considered as the implicit interest rate in minimum lease payments.

Leverage | The use of credit to finance a portion of the costs of purchasing or developing a real estate investment. Positive leverage occurs when the interest rate is lower than the capitalization rate or projected internal rate of return. Negative leverage occurs when the current return on equity is diminished by the employment of debt.

Lifecycle | The various developmental stages of a property: pre-development, development, leasing, operating and redevelopment (or rehab).

Mezzanine debt | Somewhere between equity and debt. Mezzanine capital is that piece of the capital structure that has senior debt (or a first mortgage) above it (up to about 50 or 60 percent of value) and equity below it (about 15 to 30 percent). Usually, it has an LTV ratio of 70 to 85 percent. There is both equity and debt mezzanine financing, and it can be done at the asset level, entity, or company level or it could be unrated tranches of commercial mortgage-backed securities (CMBS). Returns are generally in the mid- to high-teens. Cycle considerations are very key (if values drop, the mezzanine position can be wiped out) as is real estate due diligence.

Net operating income (NOI) | The potential rental income plus other income, less vacancy, credit losses, and operating expenses.

Open-end fund | A commingled fund that does not have a finite life. It continually accepts new investor capital and makes new property investments.

Opportunistic | A phrase generally used by advisers and managers to describe investments in underperforming, undermanaged or new (construction) assets that hold the expectation of near-term increases in cash flow and value. Opportunistic investments typically involve a high degree of risk and hence seek higher returns.

Property management | The day-to-day management, often on-site, of the operations of a property including rent collection, tenant services, care of the physical plant, security, and adherence to regulatory requirements. Some property management arrangements also include lease renewal negotiations and even the leasing and marketing of the property to outside prospects.

Real estate investment trust (REIT) | An investment vehicle in which investors purchase certificates of ownership in the trust, which in turn invests the money in real property and then distributes any profits to the investors. The trust is not subject to corporate income tax as long as it complies with the tax requirements for a REIT.

Rehabilitation | Extensive renovation intended to cure obsolescence of a building or project.

Renovation | The state of being restored to its former good condition; "the inn was a renovation of a Colonial house."

Self-selection bias | Refers to the fact that fund managers have the choice to report their returns to an index. Most managers will report only if they feel their performance numbers are above average.

Submarket | A segment or portion of a larger geographic market defined and identified on the basis of one or more attributes that distinguish it from other submarkets or locations.

Survivorship bias | Refers to the fact that only managers that stop reporting performance data are removed from an index. The most common reason for not reporting is poor performance.

Vacancy | The number of units or space (of a specific commercial type) that are vacant and available for occupancy at a particular point in time within a given market (usually expressed as a vacancy rate).

Vacancy rate | The percentage of the total supply of units or space of a specific commercial type that is vacant and available for occupancy at a particular point in time within a given market.

Value-added | A phrase generally used by advisers and managers to describe investments in underperforming and/or undermanaged assets, but that excludes ground-up development.

Property type descriptions

Real estate varies significantly, not only among property types *but within* property type sectors. An example of this is high-rise compared to low-rise office buildings, both of which entail considerably different characteristics. As such, it is important to monitor real estate portfolio exposures at a fairly granular level. Below are descriptions for the main asset types, each of which contains numerous subsets.

Multifamily | Usually differentiated by location (urban or suburban) and size of structure (high-rise, low-rise, or garden apartments). High-rises are normally found near or in central business districts of cities as land costs are greater than in suburban areas.

Industrial | Often used for "last mile" e-commerce fulfillment, manufacturing as well as for warehouse space. The category also includes special purpose buildings such as those used by wholesale distributers and combinations of warehouse, showroom, and office facilities.

Retail | Varies from large regional shopping centers to strip centers. It is also common to find retail space on the first floor of office buildings in major cities.

Office | A commercial property type used to maintain or occupy professional or business offices. Properties vary from large multi-tenant buildings in major cities to single tenant buildings in suburbs.

Hotel | Hospitality real estate driven by both leisure and business travel. Investments are generally categorized by the level of service and amenities at the property and depends highly on property management execution.

Other specialty | Self-storage facilities, medical offices, senior housing, student housing, casinos, land, and other niche real estate.

Disclaimers

This document is for general information and educational purposes only, and must not be considered investment advice or a recommendation that the reader is to engage in, or refrain from taking, a particular investment-related course of action. Any such advice or recommendation must be tailored to your situation and objectives. You should consult all available information, investment, legal, tax and accounting professionals, before making or executing any investment strategy. You must exercise your own independent judgment when making any investment decision.

All information contained in this document is provided "as is," without any representations or warranties of any kind. We disclaim all express and implied warranties including those with respect to accuracy, completeness, timeliness, or fitness for a particular purpose. We assume no responsibility for any losses, whether direct, indirect, special or consequential, which arise out of the use of this presentation.

All investments involve risk. There can be no guarantee that the strategies, tactics, and methods discussed in this document will be successful.

Data contained in this document may be obtained from a variety of sources and may be subject to change. We disclaim any and all liability for such data, including without limitation, any express or implied representations or warranties for information or errors contained in, or omissions from, the information. We shall not be liable for any loss or liability suffered by you resulting from the provision to you of such data or your use or reliance in any way thereon.

Nothing in this document should be interpreted to state or imply that past results are an indication of future performance. Investing involves substantial risk. It is highly unlikely that the past will repeat itself. Selecting an advisor, fund, or strategy based solely on past returns is a poor investment strategy. Past performance does not guarantee future results.

THE NCPERS
MONITOR
The Latest in Legislative News

August 2022

In This Issue

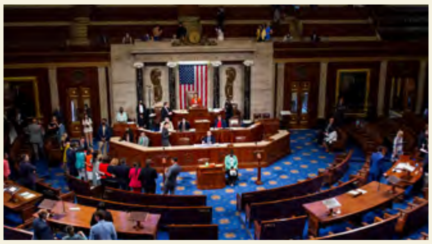
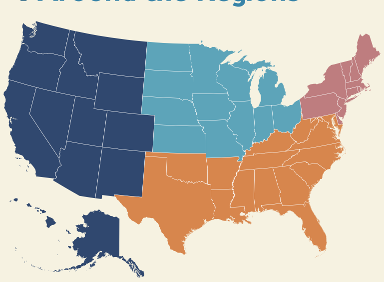


Photo Illustration © 2022, alamy.com

Throughout the Congressional process on the SECURE Act 2.0, NCPERS and many of its members have collaborated on an effort to improve the Healthcare Enhancement for Local Public Safety Act, known as HELPS.

Photo Illustration © 2022, istock.com

A year-long crusade to undermine confidence in Pennsylvania's teachers pension system came to a screeching halt on August 2 with a brief, 24-word admission.



This month, we will highlight Delaware, Virginia, Ohio, Louisiana and Hawaii.

NCPERS Offers a Shortcut as Surge in Smartphone Usage Sparks Need for Mobile Platforms

Photo Illustration © 2022, istock.com

You only need to look around to know that people are constantly on their mobile devices nowadays. And they're not just texting friends or accessing their favorite social media platform. Increasingly consumers are tracking and managing their financial lives on the go, and they overwhelmingly choose smartphones for utility, ease of use, and efficiency.

It's not just young people who are shifting to smartphones. A staggering 97 percent of Americans owned some type of mobile phone in 2021 – and that includes 85 percent who owned a smartphone, up from 35 percent a decade earlier, according to a fact sheet by the Pew Research Center. The data showed that smartphone users are now in the majority across all age ranges: 18 to 29 (96 percent), 30 to 49 (95 percent), 50 to 64 (83 percent) and over 65 (61 percent.)

Pew also examined 15 demographic groupings other than age – broadly, sex, race, education, income, and geography – and not a single one had less than 75 percent smartphone usage.

CONTINUED ON PAGE 5

House-Senate Negotiations on HELPS

By Tony Roda

Photo illustration © 2022, alamy.com

Major retirement tax legislation working its way through Congress is commonly known as the SECURE Act 2.0. The original SECURE Act was enacted at the end of 2019. Now that versions of the SECURE Act 2.0 have been approved by the full House (H.R. 2954) and both committees of jurisdiction in the Senate – the Finance Committee and the Committee on Health, Education, Labor, and Pensions (HELP) – negotiations have begun in earnest on reconciling the differences between the various legislation. The goal is to move quickly through this process and have a final, agreed-upon text ready to be voted on in the fall.

Throughout the Congressional process on the SECURE Act 2.0, NCPERS and many of its members have collaborated on an effort to improve the Healthcare Enhancement for Local Public Safety Act, known as HELPS. This part of the existing tax law, which is found at Internal Revenue Code Section 402(l), allows eligible retired public safety officers to exclude from gross income up to $3,000 in annual distributions from a governmental retirement plan to pay qualified health care insurance or long-term care premiums, provided the payment of premiums is made directly by the retirement plan to the provider of the health or long-term care plan. HELPS was enacted as part of the Pension Protection Act of 2006.

The direct payment requirement has created many administrative difficulties for state and local retirement systems. In addition, due to this burden, some retirement systems have made the decision to not implement HELPS, thereby resulting in retired public safety officers covered by these pension plans being ineligible for the tax benefit.

Senators Sherrod Brown (D-OH), John Thune (R-SD), Mark Warner (D-VA), and Chuck Grassley (R-IA), all of whom serve on the Finance Committee, previously introduced S. 4312, which would change the direct payment requirement under HELPS from mandatory to optional and create an alternative to the current method, namely allowing the retirement system to make the distribution to the retired public safety officer. The retiree could then make the premium payment to the provider and remain eligible for the tax exclusion.

This provision is included in the version of the SECURE Act 2.0 approved by the Finance Committee. Leading up to consideration of the bill in the Senate, NCPERS met with the lead pension counsels of the Finance, HELP, and Aging Committees. Now, because the House-Senate negotiations are in full swing, NCPERS

CONTINUED ON PAGE 6

Pennsylvania Teachers Pension Investigation Comes to a Halt with No Charges Forthcoming

Photo Illustration © 2022, istock.com

A year-long crusade to undermine confidence in Pennsylvania's teachers pension system came to a screeching halt on August 2 with a brief, 24-word admission:

> "The Public School Employees' Retirement System (PSERS) has been informed by the U.S. Department of Justice that it has closed its investigation of PSERS."

No charges, civil or criminal, are forthcoming, despite endless speculation driven by one single reporter at the *Philadelphia Inquirer* and fueled by unscrupulous leakers inside PSERS who fed him their spin.

This development comes six months after an internal investigation ordered by PSERS and conducted by the law firm Womble Bond Dickinson was closed because it also found no evidence of wrongdoing.

Seldom has so much ink been spilled by one newspaper for so little reason.

It all began with a shared risk calculation error that occurred in late 2020. The board of PSERS in March 2021 uncovered and corrected a calculation error on an investment return for a single month (April 2015). The tweak resulted in a decline in the nine-year average return from the previously reported 6.38 percent to 6.34 percent, versus a benchmark of 6.36 percent.

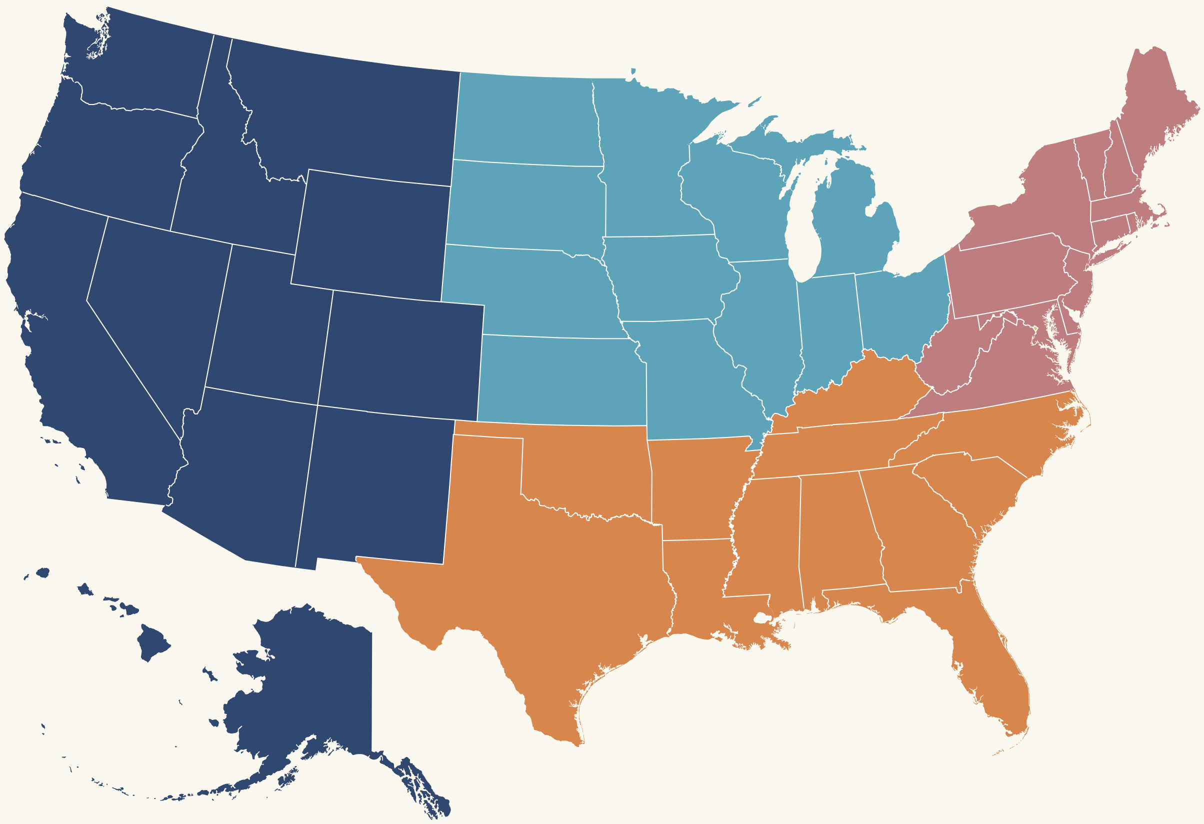
Seldom has so much ink been spilled by one newspaper for so little reason.

An error is no laughing matter, especially when measured against what was at the time a $64 billion fund. (Outstanding investment performance subsequently helped to lift assets to $75 billion at the end of 2021.) But miscalculations can and do occur, and that

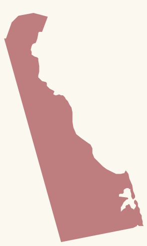
CONTINUED ON PAGE 7

NCPERS Around the Regions

This month, we will highlight Delaware, Virginia, Ohio, Louisiana and Hawaii.



NORTHEAST: Delaware



The push by states to make workplace retirement savings plans universally available took a major step forward in Delaware.

The state Senate on June 21 voted unanimously to approve legislation to create Delaware EARNS, an auto-IRA program for private-sector workers. As of early August, the legislation was awaiting the signature of Governor John Carney, a Democrat.

"I am thankful that members of the General Assembly joined me in wanting to make sure every Delawarean has a reliable way to save for retirement," said State Treasurer Colleen Davis, who advocated the initiative. "More than half of the state's workforce lacks an easy way to save through a retirement program at work," she said.

"Not only will Delaware EARNS help those employees save for the future, it also benefits small businesses that may not be able to offer retirement plans to employees due to the cost and administrative burden, allowing them to attract and keep good employees by offering a crucial benefit like retirement savings," Davis said.

In all, 54 percent Delaware's workplaces do not offer a retirement plan, leaving 145,000 workers vulnerable to poverty in retirement, according to the legislation, House Bill 205. That equates to 38 percent of the workforce, and that figure is tilted disproportionately toward lower- to moderate-income women and minority workers.

Delaware EARNS requires businesses with more than five employees that don't currently offer a retirement plan to participate through a payroll deduction process. The State Treasurer's Office, with the oversight of the Plans Management Board, will handle all duties and functions of the plan once initial design and implementation are complete.

CONTINUED ON PAGE 8

NEED FOR MOBILE PLATFORMS CONTINUED FROM PAGE 1

The unstoppable trend toward mobility and self-service is why NCPERS has teamed up with the premier digital platform for public pensions. Members have said they need a streamlined way to cross the digital divide, and a new strategic alliance with Digital Deployment delivers it. The partnership between NCPERS and Digital Deployment makes the company's PensionX™ digital platform available to NCPERS members at a 10 percent discount.

The alliance culminates a multiyear search that led NCPERS to engage and review numerous mobile apps developers. PensionX™ stood out because it integrates seamlessly with pension administration systems. It also includes a robust suite of tools that plans can leverage to create a compelling user experience, including website and member portal development and secure file upload capability.

NCPERS Executive Director and Counsel Hank Kim says the need is urgent. "Americans clearly have a growing preference for managing their finances via digital and mobile platforms rather than the web. Yet public pension plans have been slow to offer mobile access." He noted that as of December 2021, 71 percent of public pension systems provided account information to members via a website, but only 7 percent were offering access through a mobile app, according to the 2021 NCPERS Public Retirement Systems Study.

"Public pensions are conspicuous by our absence on the mobile platform," Kim added. "Other financial institutions have had mobile apps for at least the past 10 years. In our fast-paced, technologically driven world, pension plans have no time to lose. The longer we take to adapt to the mobile marketplace, the more we validate our critics who say pensions are dinosaurs and irrelevant."

PensionX™ was designed to meet the needs of public pension systems that want to deliver better member self-service without going through the time, expense, and ordeal of a major pension administration system overhaul, said Sandeep Mehta, CTO at Digital Deployment. "Our complete, front-end pension platform provides all the necessary tools, enabling pension systems to transform their growing array of portals, apps, and websites into a convenient format."

NCPERS members interested in learning more about Digital Deployment, Pension X™ and leveraging the exclusive member discount can visit https://www.pensionx.com/products. NCPERS will be hosting a webinar on the digital platform September 12. Look for the webinar details in the coming weeks. ◆

NEGOTIATIONS ON HELPS CONTINUED FROM PAGE 2

is meeting with the lead pension counsels of the House committees of jurisdiction – the Ways and Means Committee and the Education and Labor Committee – as well as with Speaker Nancy Pelosi's (D-CA) staff. We are encouraging the House to retain the Senate provision in the final negotiated bill.

For NCPERS members who are interested and supportive of the pending change to the HELPS direct payment requirement, we encourage you to contact your House Representative in Congress. If you are not sure which Member of the House represents you, the easiest way to find out is through House.gov. In the upper right corner, there is a "Find Your Representative" section where you enter your zip code. It will match the zip code with your Member of Congress and provide a link to their website with contact information.

> If you would like to send an email to the office, you can paraphrase the following:
>
> *I am writing today to bring to your attention a provision contained in the Senate Finance Committee's SECURE Act 2.0 legislation (also known as the EARN Act).*
>
> *The provision, Section 3(4) of the EARN Act, would improve the Healthcare Enhancement for Local Public Safety Act (HELPS), which allows eligible retired public safety officers to exclude from gross income up to $3,000 in annual distributions from a governmental retirement plan to pay qualified health care insurance or long-term care premiums, provided the payment of premiums is made directly by the retirement plan to the provider of the health or long-term care plan.*
>
> *The direct payment requirement has created many administrative difficulties for state and local retirement systems. In addition, due to the administrative burden, some retirement systems have made the decision to not implement HELPS, thereby resulting in retired public safety officers covered by these pension plans being ineligible for the tax benefit.*
>
> *The EARN Act would change the direct payment requirement under HELPS from mandatory to optional and create an alternative to the current method, namely allowing the retirement system to make the distribution to the retired public safety officer. The retiree could then make the premium payment to the provider and remain eligible for the tax exclusion.*
>
> *I would appreciate any help you could provide in ensuring that this provision is retained in the final SECURE Act 2.0 legislation negotiated by the House and Senate.* ◆

Tony Roda is a partner at the Washington, D.C. law and lobbying firm Williams & Jensen, where he specializes in federal legislative, regulatory, and fiduciary matters affecting state and local governmental pension plans. He represents NCPERS and statewide, county, and municipal pension plans in California, Colorado, Georgia, Kentucky, Ohio, Tennessee, and Texas. He has an undergraduate degree in government and politics from the University of Maryland, J.D. from the Catholic University of America, and LL.M (tax law) from the Georgetown University Law Center.

EXECUTIVE DIRECTORS CORNER CONTINUED FROM PAGE 3

doesn't mean that anything nefarious is going on. Competent organizations and their service providers can make mistakes. When they discover them, they do precisely what PSERS did: They correct their errors, publicly and plainly. And they investigate.

The internal investigation conducted independently by Womble Bond also included a review of certain Harrisburg real estate purchases by PSERS that were brought under the *Philadelphia Inquirer*'s microscope. The firm found nothing of concern there either.

The media coverage of this non-story has consistently generated far more heat than light. It has ended the careers of at least two pension executives, for what turns out to be no good reason.

It's hard to imagine what was going through the minds of the irresponsible fiduciaries who provided anonymous tips and documents to their buddy at the *Inquirer*. We may never know whether they were pursuing personal ambitions or prosecuting a vendetta. But the entire public pension community now knows that plan fiduciaries committed a serious breach of duty while hiding behind the cloak of anonymity. This behavior was shameful.

In its wake, every public pension board in the country should be conducting its own plan governance training. One way to do this is by registering the board and staff for the NCPERS Accredited Fiduciary program, which provides a thorough training on plan governance including the three duties of a fiduciary: the duty of care, duty of loyalty, and the duty of obedience.

The *Philadelphia Inquirer* hasn't quite let go of the matter, however. Its article on the Justice Department's decision to close the investigation dwelled at length on the fact that a third investigation, conducted by the Securities and Exchange Commission, remains open.

We eagerly await the outcome. ◆

AROUND THE REGIONS CONTINUED FROM PAGE 4

MIDWEST: Ohio

A federal judge in California on July 28 appointed the Ohio Public Employees Retirement System to serve as the lead plaintiff in a class action lawsuit against Facebook. As a result, Ohio Attorney General Dave Yost will lead the class action on behalf of Ohio and any other affected investors.

The decision by Judge Jon S. Tigar in U.S. District Court of Northern California wrote that Ohio and PFA Pension of Denmark would serve as co-lead plaintiffs because they have the largest financial interest in the outcome.

Ohio's complaint against the company, now called Meta, contends that, from April 21 through October 21 of last year, Facebook and its senior executives violated federal securities laws by purposely misleading the public about the negative effects its products have on the health and well-being of children and the steps the company has taken to protect the public. OPERS has reported that it purchased 139,000 shares between May and September 2021.

Revelations about the alleged scheme subsequently caused Facebook's stock to plummet, causing around $3 million in losses to OPERS. OPERS manages $125 billion on behalf of 1.1 million Ohioans.

"This case is about lies and losses – Facebook's lies, and the losses incurred by our pension systems and others," Yost said. "Ohio is happy and determined to lead in enforcing accountability against Facebook."

SOUTH: Louisiana

Two pro-public pension measures became law in Louisiana. The state legislature authorized a one-time supplemental benefit payment for eligible retirees and beneficiaries of the Louisiana State Employees' Retirement System (LASERS) and expanded eligibility for the system's Hazardous Duty Services Plan.

Governor John Bel Edwards, a Democrat, signed the supplemental benefit bill into law on June 18, after it passed unanimously in both the House and the Senate. The amount to be paid is the lesser of the retiree or beneficiary's current monthly benefit, or $2,000. LASERS retirees have not received a cost-of-living adjustment since 2016. The law stipulates that the payment is to be made no later than September 15.

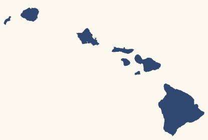
The one-time benefit goes to retirees, other than disability retirees, who were at least age 60 and had received a benefit for at least a year as of June 30, 2022; to nonretired beneficiaries, if benefits have been paid to the retiree who was not a disability retiree or the beneficiary or both combined for at least one year and if the decedent would have been at least 60 on June 30; and any disability retiree or beneficiary who receives benefits based on the death of a disability retiree, if benefits have been paid to the retiree or the beneficiary or both combined for at least one year on June 30.

In addition, the legislature approved expanded the LASERS Hazardous Duty Services Plan to include employees of the Office of the State Fire Marshall who are Firefighter I certified emergency workers, or who conduct fire and emergency training. This measure, which passed unanimously in both chambers, was signed into law by Governor Edwards on June 30.

CONTINUED ON PAGE 9

AROUND THE REGIONS CONTINUED FROM PAGE 8

WEST: Hawaii



Hawaii Governor's, Democrat David Ige, on July 12 signed legislation to create a state-run program to extend retirement savings opportunities via payroll deduction to private-sector workers who lack such benefits at work. But in a twist, the Hawaii Retirement Savings Program won't include an auto-enrollment.

The creation of an opt-in program runs counter to a trend among states to help more private-sector workers prepare for retirement. As of June 30, 11 states had created auto-IRA programs, according to the Georgetown University Center for Retirement Initiatives.

The Center described the program as "a first-of-its-kind variation of a pure auto-IRA program because employers are only required to participate in the program if their workers opt into the state program."

In another unusual feature, Hawaii would match up to $500 for each of the first 50,000 covered employees who participate in the program and stick with it for 12 consecutive months after initial enrollment. The law sets a default contribution amount of 5 percent to be deducted from payroll of participating employees.

The plan creates a nine-member retirement savings board within the state Department of Labor and Industrial Relations to implement and administer the program. The law provides that the program would utilize Roth IRAs, which enable workers pay taxes on contributions now and get tax-free withdrawals later, but provides that the board may add the option of a traditional IRA, which enable workers to defer taxation until funds are withdrawn. ◆

Photo Illustration © 2022, shutterstock.com

Calendar of Events 2022

August

Public Pension Funding Forum
August 21 – 23
Los Angeles, CA

October

NCPERS Accredited Fiduciary (NAF) Program
October 22 – 23
Nashville, TN

Public Safety Conference
October 23 – 26
Nashville, TN

The Voice for Public Pensions

The Monitor is published by the National Conference on Public Employee Retirement Systems.
Website: www.NCPERS.org • E-mail: info@ncpers.org

Institutional Investor

CORNER OFFICE

Jessica Hamlin

Here's More Evidence That Private Equity Managers 'Inflate' Fund Values When Raising Money

Low-reputation managers wouldn't be able to attract investors without manipulating their multiples and earnings, according to research from Harvard.

August 30, 2022

II, Inkdrop/Bigstock

To keep up with high-performing fund managers, private equity firms with lesser reputations inflate their funds' value during fundraising periods.

Previous research has found abnormally high private equity fund valuations during fundraising periods, leading researchers to debate whether or not firms manipulate these figures or raise money during the best performing periods. In a paper titled "Private Equity Fund Valuation Management During Fundraising," Brian Baik, an assistant professor at Harvard Business School, looks for evidence of manipulation by studying the extent to which firms inflate net asset values by managing the assumptions behind valuation, including the multiples used, or influencing earnings and sales of underlying companies in their portfolios.

He found that private equity fund managers with less-than-stellar reputations overstate the values of their funds during fundraising. Baik adds insight on a firm’s reputation to the body of research on private equity.

“I examine the components of the NAVs and provide evidence that funds managed by low reputation GPs show inflated valuation multiples and inflated financial performance of their investments during fundraising, which is consistent with the manipulation hypothesis,” according to the paper.

Baik looked at the NAVs of funds, and how they were calculated, during fundraising periods. Net asset values are simply the sum of the value of each portfolio company held in the fund, but the calculations rely on complex assumptions.

Because most of these investments are private companies that don’t have publicly available market prices, private equity firms can use different valuation techniques to determine the value of the fund. According to the paper, private equity firms most often apply multiples to their portfolio firm earnings, usually in the form of EBITDA [earnings before interest, taxes, depreciation, and amortization] or sales.

Private equity firms can then apply higher multiples or “manage the earnings of their investments” to appear more valuable than they really are to investors during fundraising periods. To manage the earnings of their investments, firms use a legal accounting concept called earnings management, which means managers can accelerate the recognition of revenue or delay some expenses so they can report higher earnings.

Baik predicted that firms use either high multiples or inflated portfolio company earnings — or both — to inflate their NAVs during fundraising periods. To test his hypothesis, Baik separated his sample set into low-reputation and high-reputation managers. Generally, Baik defined a low-reputation fund manager as one with a history of poorer performance, fewer funds, and a smaller asset base.

For all of the firms in the sample, Baik first tested if multiples increased during fundraising. Then he investigated whether portfolio company earnings shot up during the same periods.

According to the report, funds with low reputation managers showed an increase in valuation multiples right before fundraising periods closed. These same multiples exhibited “sharp reversals” in the post-fundraising period, the report said. Baik also found that low-reputation firms increase their portfolio company earnings during fundraising periods.

Baik said managers that didn't have great reputations have come to rely on these manipulation tactics for investor support. Without them, investors wouldn't allocate their capital to these managers.

"Without any manipulation, their valuations are going to be so low that when a potential LP comes in to examine these funds...the LPs wouldn't think about investing in this fund at all," Baik told *Institutional Investor*.

If low-reputation private equity firms are able to manage or manipulate these multiples or valuations up to a point that is competitive with high-reputation managers, they might have a chance of raising a successful subsequent fund, Baik said.

"Because the base probability of raising another fund for these low-reputation GPs is so low, they're almost forced to manipulate these valuations," he added.

Baik's findings add a new layer to a growing line of similar research, including a 2019 paper from professors at Carnegie Mellon's Tepper School of Business, which found that taking out a loan instead of taking money from investors boosts a PE fund's IRR by 6.1 percent. However, the authors argued that this performance bump is, in fact, a distortion, *II* previously reported.

Similar studies have found that private equity firms inflate NAVs during fundraising and hide bad news from investors when fundraising is slow. Last year, one paper from scholars at the University of Sussex, University of Reading, and the University of Birmingham found that private equity firms under pressure to fundraise manipulated their numbers to show strong performance regardless of the reputation of the manager. Here, the misrepresentation is a result of the managers feeling mounting pressure to relay strong valuation figures to investors, *II* previously reported.

This issue isn't specific to just private equity. Venture capital firms also feel the heat to fundraise, and, as a result, tend to misrepresent deal values to inflate their interim returns.

For investors hoping to avoid these low-reputation firms, Baik said it's important to examine the underlying components of valuations and to look at the individual financial statements of portfolio firms. In short, conduct due diligence at every level.

Filed Under: Corner Office

Related Content

PORTFOLIO

Private Equity Shops That Want More.

Amy Whyte March 30, 2018

PORTFOLIO

Private Equity Firms 'Try to Manipulate Their Performance'

When Raising Money

Alicia McElhaney February 09, 2021

CULTURE

Alicia McElhaney

New Research Shows that Younger Siblings Take More Risks — And Underperform — When They Invest

Due diligence managers take note: Birth order might matter.

August 30, 2022

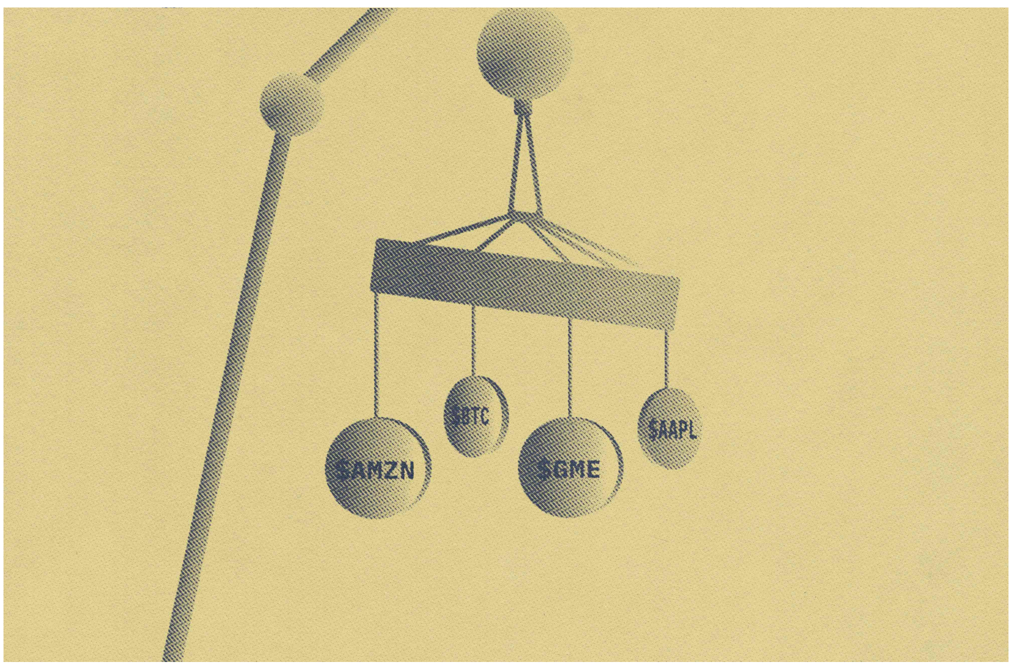


Illustration by II

Want the best risk-adjusted returns? Invest with the oldest sibling.

New research shows that mutual fund investors who are younger in the family pecking order tend to take on more risk — and often perform poorly while they do it.

Published on August 10, a paper from Vikas Agarwal at Georgia State University and Alexander Cochardt and Vitaly Orlov from the University of St. Gallen attempts to unravel the effect that birth order has on investment behavior.

The researchers say that it's part of a growing body of research on parental attention and sibling behavior. It also happens to follow a number of academic studies that have analyzed the effects of everything from Ferrari ownership to childhood poverty on investment performance.

The researchers' primary findings showed that funds run by "later-born" managers take 0.84 percentage points more total risk and 1.13 percentage points more active risk than their first-born peers. The researchers called this increase in risk "economically meaningful."

These differences persisted after researchers controlled for family size, socioeconomic status, parental work status, and a number of firm- and manager-specific qualities. The researchers also controlled for bereavement, marital status, the gender breakdown of siblings, relative age, education, and experience with market depressions.

The researchers used the CRSP Survivor-Bias-Free U.S. Mutual Fund Database and the Morningstar Direct Mutual Fund Database to compile manager and fund characteristics of solo-managed, domestic equity-only U.S. mutual funds that have operated for at least one full year and that have total net assets over $1 million. The sample set initially included 2,015 managers operating between 1962 and 2017.

To determine the family characteristics of those managers, the researchers used obituaries memorializing family members. They then cross-checked that information using databases like LexisNexis, Ancestry.com, SEC filings, and a number of other resources.

The complete refined sample included 1,905 managers running 2,122 funds. Of that sample, 40 percent of the managers were first-born, 34 percent were second-born, 15 percent were third-born, and the remainder were fourth- or later-born. Twelve percent of managers in the sample grew up as only children.

Using a bevy of risk-adjusted return metrics, including Sharpe ratios, information ratios, value-added, four-factor alphas, and peer-adjusted alphas, the researchers found that not only did those born later take on more risk, they weren't rewarded for doing so. For example, a unit increase in the birth-order rank reduces the average annual Sharpe ratio by 0.06, and the average annual information ratio by 0.07.

The effects of birth order extend beyond risk and performance, however. Later-born siblings were found by researchers to engage more in portfolio churning and to choose "lottery stocks" — those with "low-price, high idiosyncratic volatility, and high idiosyncratic skewness."

What's perhaps more concerning is that these later-born managers are also more likely to have violations and customer disputes on their FINRA BrokerCheck records, which results in more fines to pay.

But these findings don't uniformly apply to all younger siblings. Instead, among siblings with wider age gaps between them, the effect of birth order is less significant, according to the paper. The researchers theorize that this could be due to less competition among those wide-age-gap siblings for parental resources, although that has not been confirmed.

"Taken together, our findings suggest that birth order-induced, sensation-seeking tendencies originate from sibling rivalry for limited parental resources during childhood, shape trading behavior, and extend beyond portfolio management," the researchers wrote.

Filed Under: Culture

Related Content

CORNER OFFICE

Broken Homes Produce More Cautious Fund Managers

Amy Whyte May 20, 2019

Risk gets riskier

September 30, 2002