A G E N D A

BOARD MEETING
SAN JOAQUIN COUNTY EMPLOYEES RETIREMENT ASSOCIATION
BOARD OF RETIREMENT
FRIDAY, SEPTEMBER 10, 2021
AT 9:00 AM
Location: Via Zoom

In accordance with current state and local emergency proclamations and orders, this Board Meeting will be held virtually via Zoom Client.

The public may only attend the meeting by (1) clicking here https://us02web.zoom.us/j/88918958128 and following the prompts to enter your name and email, or (2) calling (669) 219-2599 or (669) 900-9128 and entering Meeting ID 88918958128#

Persons who require disability-related accommodations should contact SJCERA at (209) 468-9950 or KendraF@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 Approval of the minutes for the Board Meeting of August 13, 2021 4

3.02 Board to approve minutes

4.0 PUBLIC COMMENT

4.01 Follow the steps below to address the Board of Retirement. Speakers are limited to three minutes, and are expected to be civil and courteous.

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.”

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 (21) 8

6.0 ACTUARIAL AUDIT REPORT

6.01 Nick Collier, Principal and Consulting Actuary, and Daniel Wade, Principal and Consulting Actuary, both of Milliman, will present the results of their actuarial valuation audit and review of assumptions. 11

6.02 Actuarial Audit of January 1, 2021 Valuation 19

6.03 Board to discuss, give direction as appropriate and accept reports from Milliman

7.0 CONSULTANT REPORTS PRESENTED BY DAVID SANCEWICH OF MEKETA INVESTMENT GROUP

7.01 Quarterly Reports from Investment Consultant for Period Ended June 30, 2021

01 Quarterly Report 51

02 Manager Certification Report 146

03 Manager Review Schedule 172

7.02 Monthly Investment Performance Updates

01 Manager Performance Flash Report - July 2021 173

02 Capital Markets Outlook and Risk Metrics - August 2021 178

7.03 Board to receive and file reports

8.0 AMENDMENT TO INVESTMENT MANAGER OPERATING AGREEMENT

8.01 David Sancewich of Meketa Investment Group will present request from Alternative Risk Premia manager Almond Global Fund, LLC, to amend the Fund's investment guidelines 212

8.02 Board to consider and take possible action on request

9.0 SACRS VOTING PROXY

9.01 Proposed amendment to SACRS voting proxy 213

9.02 Board to consider and take possible action on proposed amendment

10.0 STAFF REPORTS

10.01 Legislative Summary Report 215

10.02 Trustee and Executive Staff Travel

01 Conferences and Events Schedule for 2021-2022 218

02 Summary of Pending Trustee and Executive Staff Travel 219

03 Summary of Completed Trustee and Executive Staff Travel (2) 220

a Moody's Real Estate Training 221

b Pension Bridge Private Equity Conference 223

10.03 CEO Report 227

10.04 Board to receive and file reports, and approve new travel requests as necessary

11.0 CORRESPONDENCE

11.01 Letters Received

11.02 Letters Sent

11.03 Market Commentary/Newsletters/Articles

12.0 COMMENTS

12.01 Comments from the Board of Retirement

13.0 CLOSED SESSION

13.01 Purchase or Sale of Pension Fund Investments
California Government Code Section 54956.81

13.02 Personnel Matters
California Government Code Section 54957
Employee Disability Retirement Application(s) (1)

13.03 Conference with Legal Counsel - Anticipated Litigation
California Government Code Section 54956.9(d)(4)
Initiation of Litigation - 1 Case

14.0 CALENDAR

14.01 Board Meeting October 6, 2021, at 9:00 AM

14.02 Investment Round Table October 7, 2021, at 8:00 AM

14.03 Strategic Planning Session November 4, 2021, at 10:00 AM

14.04 Board Meeting November 5, 2021, at 9:00 AM

15.0 ADJOURNMENT

M I N U T E S

BOARD MEETING
SAN JOAQUIN COUNTY EMPLOYEES RETIREMENT ASSOCIATION
BOARD OF RETIREMENT
FRIDAY, AUGUST 13, 2021
AT 9:00 AM
Location: Via Zoom

1.0 ROLL CALL

1.01 **MEMBERS PRESENT**: Phonxay Keokham, Emily Nicholas, Jennifer Goodman, Katherine Miller, Chanda Bassett, JC Weydert , Stephan Moore, Raymond McCray, and Michael Restuccia presiding

MEMBERS ABSENT: Michael Duffy

STAFF PRESENT: Chief Executive Officer Johanna Shick, Assistant Chief Executive Officer Kathy Herman, Retirement Investment Officer Paris Ba, Financial Officer Carmen Murillo, Investment Accountant Eve Cavender, Management Analyst III Greg Frank, Department Information Systems Analyst II Lolo Garza, Information Systems Analyst II Jordan Regevig, and Administrative Secretary Kendra Fenner

OTHERS PRESENT: Deputy County Counsel Jason Morrish, David Sancewich, Mark McKeown and Ricky Pamensky of Meketa Investment Group, and Graham Schmidt and Anne Harper of Cheiron

2.0 PLEDGE OF ALLEGIANCE

2.01 Led by Michael Restuccia

3.0 APPROVAL OF MINUTES

3.01 Approval of the minutes for the Board Meeting of July 9, 2021

3.02 **The Board voted unanimously (8-0) to approve the Minutes of the Board Meeting of July 9, 2021. (Motion: Bassett; Second: McCray)**

4.0 PUBLIC COMMENT

4.01 There was no public comment

5.0 CONSENT ITEMS

5.01 Service Retirement (17)

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

6.0 ACTUARIAL REPORT AND 2022 RETIREMENT CONTRIBUTION RATES

6.01 Annual Actuarial Valuation Report as of January 1, 2021 prepared by Cheiron

6.02 Resolution 2021-08-01 titled “Actuarial Report and 2022 Retirement Contribution Rates”

6.03 **The Board voted unanimously (8-0) to accept the actuarial report, approve the retirement contribution rates for 2022 and adopt Resolution 2021-08-01. (Motion: Keokham; Second: McCray)**

7.0 CONSULTANT REPORTS PRESENTED BY DAVID SANCEWICH OF MEKETA INVESTMENT GROUP

7.01 Monthly Investment Performance Updates

01 Manager Performance Flash Report - June 2021

02 Economic and Market Update - June 2021

03 Board to receive and file reports

7.02 Fixed Income Finalists Update

01 The Board elected not to move forward with the Fixed Income manager search at this time. Instead, the Board directed investment consultant and staff to assess the role the Fixed Income segment plays within the SJCERA portfolio, as well as respective managers within the segment. David Sancewich of Meketa will report back in next month's Board meeting.

7.03 Roundtable Agenda Review

8.0 STAFF REPORTS

8.01 Update on Return to In-Person Board Meetings

01 Staff agreed to poll Trustees to determine how many plan to attend future meetings in person versus remotely, and use that information in equipment and facility planning to accommodate hybrid Board meetings. CEO Shick advised the Governor Executive Order expires September 30, 2021 and all provisions of the Brown Act will again be in effect October 1, 2021 unless Executive Order is extended.

8.02 Strategic Plan Impact on 2022 Action Plan

01 Memo to Board

8.03 Legislative Summary Report

8.04 Trustee and Executive Staff Travel

01 Conferences and Events Schedule for 2021

a 2021 NCPERS Public Pension Funding Forum

b NCPERS Fall Conference Schedule

02 Summary of Pending Trustee and Executive Staff Travel

03 Summary of Completed Trustee and Executive Staff Travel

8.05 CEO Report

In addition to the written report, CEO Shick made the following comments: 1) The Cyber-security audit is underway and results will be presented soon in closed session; 2) Special Board meeting on Thursday, November 4 from 10am to 2pm at the Agricultural Center is a Strategic Planning Session; 3) CEO Shick spoke to each Employer and has appointments with two of them to discuss how SJCERA can better service our Employers; 4) SJCERA posted its first online video on how to use the online benefit calculator; 5) Staff contracted with Rolling Orange to improve the functionality and architecture of SJCERA's existing website

8.06 Board received and filed reports, and voted unanimously (8-0) to approve CEO Shick's travel request to attend the NCPERS Fall Conference, September 28-30, 2021. (Motion: Weydert; Second: McCray)

9.0 CORRESPONDENCE

9.01 Letters Received

9.02 Letters Sent

9.03 Market Commentary/Newsletters/Articles

01 NCPERS The Monitor July 2021

02 Los Angeles Time Pandemic caused many boomers to retire July 2021

03 Market Watch He runs the worst-funded public pension in the country July 2021

04 Germany Allows Crypto Investments with Institutional Funds July 2021

05 Institutional Investors Institutional Investors Move Further Into Digital Assets July 2021

10.0 COMMENTS

10.01 Trustee Moore stated the new trustee training was good. He appreciates Trustee Weydert being in the front seat.

10.02 Trustee McCray welcomed Trusted Moore.

10.03 Trustee McCray requested Meketa consider decreasing the Principle Protection allocation when the Asset Allocation is scheduled for its next review in February 2022.

10.04 Trustee Weydert and Trustee McCray requested to be registered for the Fall SACRS conference in November.

11.0 CLOSED SESSION

11.01 CONFERENCE WITH LEGAL COUNSEL - ANTICIPATED LITIGATION CALIFORNIA GOVERNMENT CODE SECTION 54956.9(d)(4) Initiation of Litigation - 1 Case

01 No closed session on this matter was held.

12.0 BOARD OF RETIREMENT COMMITTEE ASSIGNMENTS

12.01 Chair Restuccia made the following committee assignments: Administrative Committee: Trustee Goodman (Chair), Trustee Bassett, Trustee Keokham and Trustee McCray; Audit Committee: Trustee Duffy (Chair), Trustee Keokham, Trustee McCray and Trustee Restuccia; CEO Performance Review Committee: Trustee Bassett (Chair), Trustee Nicholas, Trustee Restuccia and Trustee Weydert

13.0 CALENDAR

13.01 Board Meeting September 10, 2021, at 9:00 AM

14.0 ADJOURNMENT

14.01 There being no further business the meeting was adjourned at 11:41 AM. The Board took a break from 10:53 AM until 11:00 AM.

Respectfully Submitted:

_____
Michael Restuccia, Chair

Attest:

_____
Raymond McCray, Secretary

San Joaquin County Employees Retirement Association

September 2021

5.01 Service Retirement — Consent

01 PATRICIA M BOYLE

Mental Health Outreach Worker
Mental Health-Adult Outpatient

Member Type: General
Years of Service: 09y 07m 15d
Retirement Date: 7/18/2021

02 LUCINAJOANNA V CUERPO

Sr Public Hlth Microbiologist
Public Health-Public Hlth Lab

Member Type: General
Years of Service: 27y 06m 03d
Retirement Date: 7/15/2021

03 ELOISA DELGADO

Employment Training Spec II
Employment - Economic Developm

Member Type: General
Years of Service: 22y 08m 12d
Retirement Date: 7/9/2021

04 LYNETTE M ESTEP

Social Worker Supervisor II
HSA - Services Staff

Member Type: General
Years of Service: 30y 04m 15d
Retirement Date: 7/13/2021

05 JEFFREY A GRIMM

NuclearMedicineSpecialist III
Hosp Nuclear Medicine

Member Type: General
Years of Service: 06y 07m 08d
Retirement Date: 7/15/2021

06 PAMELA S HARPER

Senior Office Assistant
HSA - Clerical Support

Member Type: General
Years of Service: 15y 08m 20d
Retirement Date: 7/31/2021

07 SHERYL A HARPER

Accountant II
Environmental Health

Member Type: General
Years of Service: 19y 04m 14d
Retirement Date: 7/7/2021

08 ENRIQUE F HERNANDEZ

Sr Solid Waste Recovery Worker
Lovelace Transfer District

Member Type: General
Years of Service: 25y 01m 11d
Retirement Date: 7/30/2021

09 RICHARD HERNANDEZ

Housekeeping Service Worker
Hosp Environmental Services

Member Type: General
Years of Service: 23y 01m 22d
Retirement Date: 7/17/2021

San Joaquin County Employees Retirement Association

September 2021

10 BRENDA C HUBBARD

Mental Health Specialist II
Mental Health-Older Adult Srvs

Member Type: General
Years of Service: 21y 03m 16d
Retirement Date: 7/17/2021

11 WILLIAM P JESPERSEN

DA Investigator II
District Attorney

Member Type: Safety
Years of Service: 01y 03m 20d
Retirement Date: 7/12/2021

12 BECKY L MASTORAS

Senior Office Assistant
Sheriff-Custody-Regular Staff

Member Type: General
Years of Service: 20y 10m 05d
Retirement Date: 7/14/2021

13 CHERYL L MEAD

Administrative Assistant II
Hosp Orthopedic Clinic

Member Type: General
Years of Service: 22y 09m 02d
Retirement Date: 7/19/2021

14 DAVID MENDOZA

Engineering Services Manager
Public Works - Engnr Field

Member Type: General
Years of Service: 16y 09m 25d
Retirement Date: 7/31/2021

15 VIOLET M MONTES

Administrative Assistant I
Sheriff-Admin-Support Services

Member Type: General
Years of Service: 08y 01m 04d
Retirement Date: 8/2/2021

16 MYRON A PALMORE

Child Support Officer II
Child Support Svs

Member Type: General
Years of Service: 05y 02m 19d
Retirement Date: 8/1/2021

17 GERALD K SMITH

Correctional Officer Trainee
Sheriff-Custody-Regular Staff

Member Type: General
Years of Service: 00y 04m 24d
Retirement Date: 7/12/2021

18 GERALD K SMITH

Correctional Officer Trainee
Sheriff-Custody-Regular Staff

Member Type: Safety
Years of Service: 05y 00m 24d
Retirement Date: 7/12/2021

San Joaquin County Employees Retirement Association

September 2021

19 JAMES A STONE

Deputy Director-Public Works_
Public Works - Administration

Member Type: General
Years of Service: 08y 04m 03d
Retirement Date: 7/17/2021

20 PILAR D WEE

Staff Nurse IV - Inpatient
Hosp Labor-Del-Rcvry-Post Part

Member Type: General
Years of Service: 09y 10m 01d
Retirement Date: 7/10/2021

21 SANDRA L ZIEMANN

Senior Office Assistant
Assessor

Member Type: General
Years of Service: 05y 03m 07d
Retirement Date: 8/3/2021

Milliman

SJCERA Actuarial Valuation Audit Results

Presented by Nick Collier (ASA, EA, MAAA) and Daniel Wade (FSA, EA, MAAA)

September 10, 2021

Overview of Audit

- Purpose: Validate the results of the January 1, 2021 actuarial valuation and confirm the valuation is based on reasonable assumptions and methods
- Scope: Independent replication of valuation results and review of assumptions and methods
- Bottom Line: **Favorable audit review; no changes needed to 2021 valuation**
  - Assumptions and methods are reasonable
  - Matched valuation assets and accrued liabilities closely
  - Matched calculated member and employer contribution rates closely
  - A few items for consideration in next valuation or actuarial experience study
    - All items discussed with Cheiron and they will consider our comments in their future analysis

Good Stuff

Data

- Edited valuation data consistent with data provided by SJCERA

	Cheiron	Milliman
Active Members		
Projected Avg Comp	$77,085	$ 77,198
Retirees and Survivors		
Avg Monthly Pension	$ 3,301	$ 3,311

Valuation Assets

- Milliman matches calculation of valuation assets at 100.00% level and confirms General/Safety split is reasonable

Member Rates

- Milliman matches within about a 1% or less relative difference

	Member Rate [1]	
Group	Cheiron	Milliman
General		
Tier 1 - Entry 35	4.02%	3.99%
Tier 2	9.99%	9.97%
Safety		
Tier 1 - Entry 25	4.80%	4.83%
Tier 2	15.42%	15.43%

1. Tier 1 rates shown are basic half rates for monthly pay greater than $350

Demographic Assumptions

- Reasonable and consistent with techniques that we recommend

Close Match in Total

	Cheiron	Milliman
Aggregate Employer Contribution Rate	50.51%	50.27%
Funded Ratio	67.0%	67.2%

Economic Assumptions

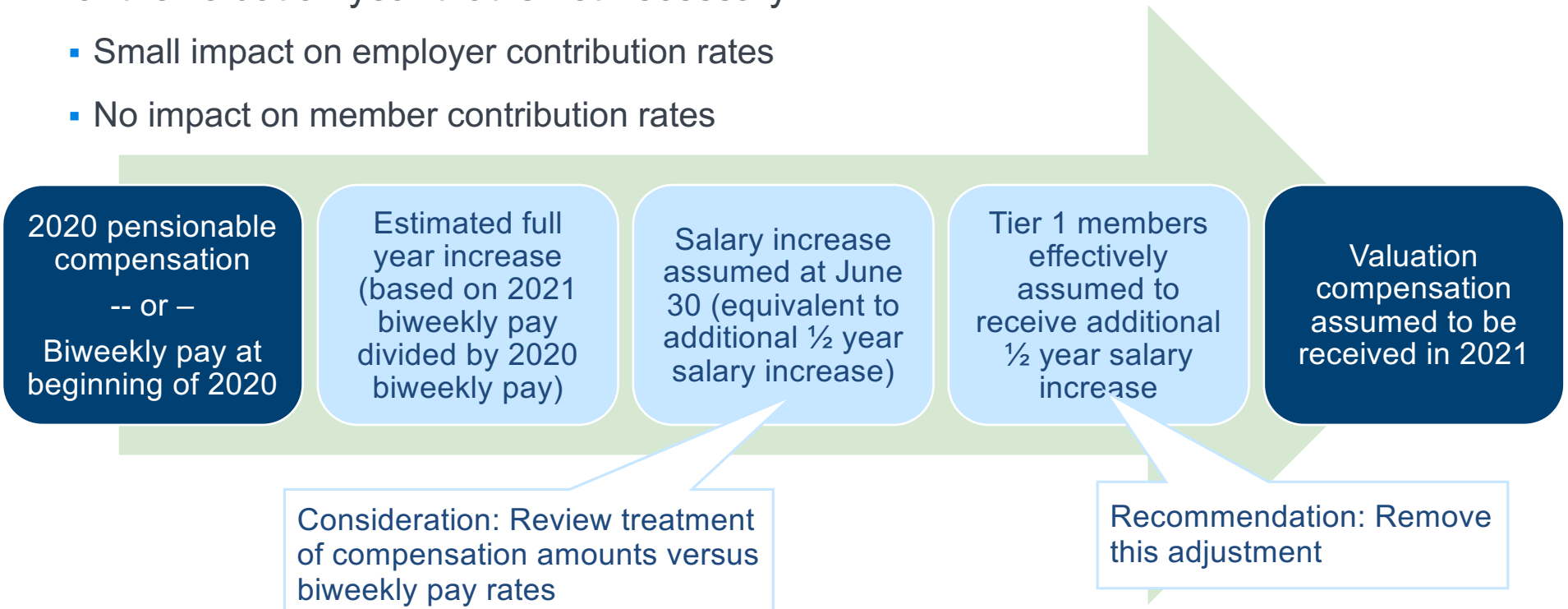
- Reasonable. 7.0% return assumption is median among statewide systems and California systems

Funding

- Amortization in SJCERA Funding Policy is "Model Practice" under actuarial guidance

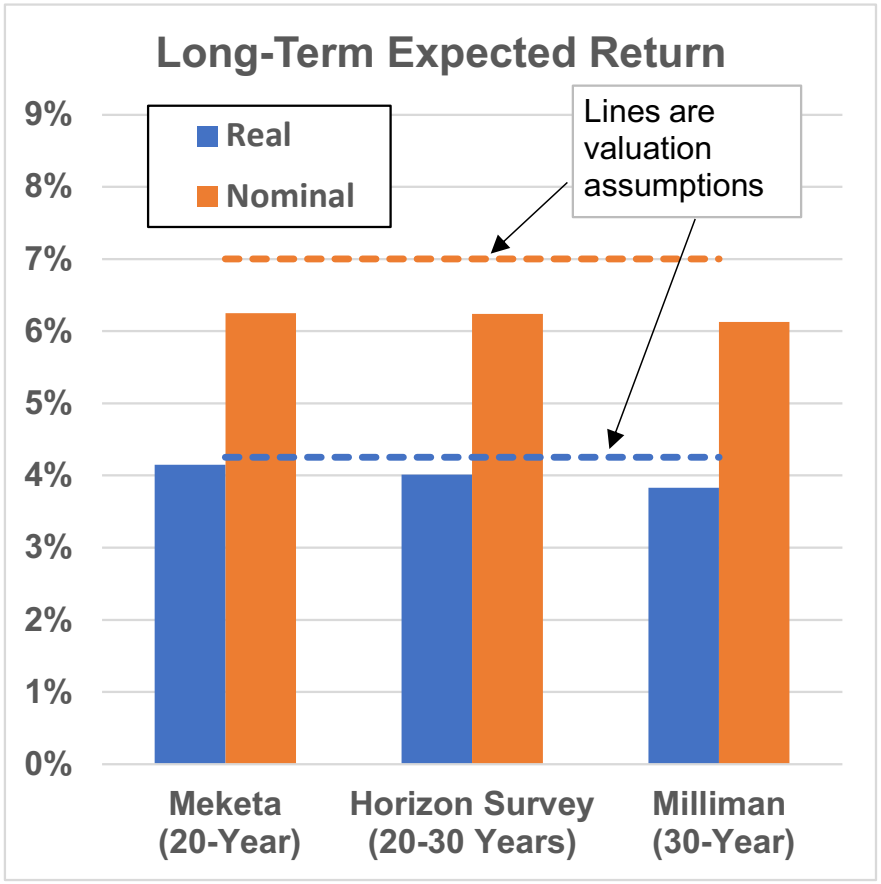
Compensation in Valuation Year

- In our opinion, there is some additional conservatism in the calculated compensation for the valuation year that is not necessary
  - Small impact on employer contribution rates
  - No impact on member contribution rates



Investment Return Assumption

- 7.0% return assumption adopted with 2020 valuation
  - Capital market assumptions have declined since 2020
    - Long-term expected rate of return for SJCERA portfolio has declined by approximately 0.50% based on Horizon Survey (2021 vs. 2020)
- Current real return assumption (total expected return minus inflation) is relatively close to the expected real return indicated by our analysis
  - Bigger difference found when looking at nominal returns
- Changes in economic environment continue
- Economic assumptions to be reviewed next year



Recommendations and Considerations

- No recommended changes to 2021 valuation
- One recommended change for 2022 valuation
  - Remove averaging of beginning and end-of-year compensation in calculation of future benefits (effectively additional half-year salary increase) applied to Tier 1 active members
- Other considerations for future valuations and actuarial experience studies
  - Review half-year salary increase applied to members whose projected compensation is based on prior year compensation
  - Review investment return assumption in light of recent changes in economic environment
    - Real (net of inflation) investment return assumption is a driver for funded status
    - Lower assumed inflation affects actives through payroll increases and retirees with COLAs
  - Consider alternate service retirement assumptions for Tier 2 members that are lower at ages prior to the maximum age factor
  - Consider adding a description of how the reserves are allocated between General and Safety

Milliman

Thank you

Caveats and Disclaimers

The findings presented in these materials detail our actuarial audit of the January 1, 2021 actuarial valuation performed by Cheiron Inc for the San Joaquin Employees' Retirement Association ("SJCERA").

All calculations and determinations are based on SJCERA's actuarial valuation assumptions and methods as approved for use by the SJCERA Board and benefit provisions as specified by SJCERA. The plan provisions, assumptions and methods used in this presentation are the same as those disclosed in Cheiron's January 1, 2021 valuation report.

In preparing this presentation, we relied, without audit, on information (some oral and some in writing) supplied by SJCERA staff. This information includes, but is not limited to, benefit provisions, employee data, and financial information. In our examination of the data provided by SJCERA, we found it to be reasonably consistent and comparable with data used for January 1, 2021 actuarial valuation as provided to us by Cheiron. Since these audit results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete or missing. It should be noted that if any data or other information is inaccurate or incomplete, our results may need to be revised.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, our findings are complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Code of Professional Conduct, amplifying Opinions, and supporting Recommendations of the American Academy of Actuaries.

Milliman's work product was prepared exclusively for SJCERA for a specific and limited purpose. It is a complex, technical analysis that assumes a high level of knowledge concerning SJCERA operations, and uses SJCERA data, which Milliman has not audited. It is not for the use or benefit of any third party for any purpose. Any third party recipient of Milliman's work product who desires professional guidance should not rely upon Milliman's work product but should engage qualified professionals for advice appropriate to its own specific needs.

The consultants who worked on this assignment are retirement actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel. The actuaries who prepared this presentation are independent of SJCERA, and we are not aware of any relationship that would impair the objectivity of our work.

We are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

San Joaquin County Employees' Retirement Association

Actuarial Audit of January 1, 2021 Valuation

Prepared by:

Nick J. Collier, ASA, EA, MAAA
Consulting Actuary

Daniel R. Wade, FSA, EA, MAAA
Consulting Actuary

Milliman, Inc.
1301 Fifth Avenue, Suite 3800
Seattle, WA 98101-2605
Tel +1 206 624 7940
milliman.com

Issued August 25, 2021

1301 Fifth Avenue
Suite 3800
Seattle, WA 98101-2605
USA

Tel +1 206 624 7940

milliman.com

August 25, 2021

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

Re: Actuarial Audit of January 1, 2021 Valuation

Dear Board Members:

This report presents the findings from our review of the January 1, 2021 actuarial valuation and the 2018 actuarial experience study performed by Cheiron for the San Joaquin County Employees' Retirement Association (SJCERA). An overview of our major findings is included in the Executive Summary section of the report. More detailed commentary on our review process is included in the latter sections.

All calculations are based on SJCERA's plan provisions and the actuarial assumptions adopted by the Retirement Board. The plan provisions, assumptions and methods used are the same as those disclosed in Cheiron's January 1, 2021 valuation report. As discussed in our report, we believe the package of actuarial assumptions and methods is reasonable (taking into account the experience of SJCERA and reasonable expectations). Nevertheless, the emerging costs will vary from those presented in this report to the extent that actual experience differs from that projected by the actuarial assumptions.

A valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. Future actuarial measurements may differ significantly from the current measurements presented in this analysis due to actual system experience deviating from the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as potential additional contribution requirements due to changes in the System's funded status), and changes in plan provisions, actuarial assumptions, and applicable law. An assessment of the potential range and cost effect of such differences is beyond the scope of this analysis.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by SJCERA's staff. This information includes, but is not limited to, statutory provisions, employee data, and financial information. In our examination of these data, we have found them to be reasonably consistent and comparable with data used for other purposes. Since the audit results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete or missing. It should be noted that if any data or other information is inaccurate or incomplete, our calculations may need to be revised. The audit results were developed using models intended for actuarial valuations that use standard actuarial techniques.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the principles prescribed by the Actuarial Standards Board and

the *Code of Professional Conduct and Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States*, published by the American Academy of Actuaries. .

Milliman's work product was prepared exclusively for SJCERA for a specific and limited purpose. It is a complex, technical analysis that assumes a high level of knowledge concerning SJCERA's operations, and uses SJCERA's data, which Milliman has not audited. It is not for the use or benefit of any third party for any purpose. Any third party recipient of Milliman's work product who desires professional guidance should not rely upon Milliman's work product, but should engage qualified professionals for advice appropriate to its own specific needs.

The consultants who worked on this assignment are retirement actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the retirement system and the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

We would like to express our appreciation to both the Cheiron and SJCERA staff for their assistance in supplying the data and information on which this report is based.

We are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

We respectfully submit the following report, and we look forward to discussing it with you.

Sincerely,

Nick J. Collier, ASA, EA, MAAA
Consulting Actuary

Daniel R. Wade, FSA, EA, MAAA
Consulting Actuary

Table of Contents

1. Summary of the Findings

Purpose and Scope of the Actuarial Audit

In this actuarial audit, we independently calculate the key results from the January 1, 2021 actuarial valuation and review the actuarial assumptions used in the valuation. The purpose of this audit is to provide an opinion regarding the reasonableness and accuracy of the actuarial assumptions, actuarial cost methods, valuation results and contribution rates. The following tasks were performed in this audit:

- Evaluation of the data used in the valuation
- Review of actuarial assumptions and methods for reasonableness
- Full independent replication of the key valuation results, including funded ratio and member and employer contribution rates
- Analysis of valuation results and reconciliation of differences.

Audit Conclusion

Our overall assessment as a result of our review of the January 1, 2021 SJCERA actuarial valuation and the 2018 triennial investigation of experience is that all major actuarial functions are being appropriately addressed. The results of the valuation and the assumptions that it was based on are reasonable, and the actuarial work satisfies the relevant actuarial standards of practice.

The following table shows that our independent calculations are close to those determined by Cheiron based on the methods and assumptions used in the valuation. Given the myriad of calculations, we would not expect to match Cheiron's calculations exactly; however, the overall results indicate a high level of consistency.

	Cheiron	Milliman
Aggregate Employer Contribution Rate	50.51%	50.26%
Funded Ratio	67.0%	67.2%

Statement of Key Findings

Membership Data

We performed tests on both the raw data supplied by SJCERA staff and the processed data used by Cheiron in the valuation. Based on this review, we feel the individual member data used is appropriate and complete. A summary is shown in the table below:

	Cheiron	Milliman	Ratio Cheiron/Milliman
Active Members			
Total Number	6,350	6,362	99.8%
Average Service	9.8	9.8	100.0%
Average Compensation	$ 77,085	$ 77,198	99.9%
Retirees and Survivors			
Average Monthly Pension	$ 3,301	$ 3,311	99.7%

Actuarial Value of Assets

We have reviewed the calculation of the actuarial value of assets used in the January 1, 2021 valuation. We found the calculations to be reasonable and the methodology to be appropriate and in compliance with actuarial standards of practice.

Actuarial Liabilities and Normal Cost

We independently calculated the normal cost and liabilities of SJCERA. We found that all significant benefit provisions were accounted for in an accurate manner, the actuarial assumptions are being applied reasonably, and that our total liabilities matched those calculated by Cheiron closely.

A summary of the Actuarial Accrued Liability (AAL) and employer normal cost is shown in the table below.

	Cheiron	Milliman	Ratio Cheiron/Milliman
Actuarial Accrued Liability	$ 5,207.7	$ 5,190.9	100.3%
Employer Normal Cost	14.58%	14.33%	101.8%

Member Contribution Rates

We reviewed the current member contribution rates and found them to be accurate. Member contribution rates for General age 35 and Safety age 25 are shown in the following exhibit based on the January 1, 2021 valuation.

	Member Contribution Rate [1][2]		
Group	Cheiron	Milliman	Cheiron / Milliman
General - Entry Age 35			
Tier 1 - Basic Half Rate	4.02%	3.99%	100.6%
Tier 1 - 14% Normal Rate & COLA Share	7.52%	7.62%	98.8%
Tier 2 (All Ages)	9.99%	9.97%	100.2%
Safety - Entry Age 25			
Tier 1 - Basic Half Rate	4.80%	4.83%	99.5%
Tier 1 - 33% Normal Rate & COLA Share	11.51%	11.52%	100.0%
Tier 2 (All Ages)	15.42%	15.43%	99.9%

1. Rates shown for Tier 1 are for monthly pay greater than $350.

2. Rates include member's share of administrative expenses.

Funding

We reviewed the application of the funding method and found it is reasonable and that it meets generally accepted actuarial standards. The funding policy is consistent with actuarial guidance. Based on the system's funding methods and assumptions, we believe the employer contribution rates are appropriately calculated. A comparison of the employer contribution rate and the funded ratio calculated by Cheiron and Milliman is shown in the table below. Both match within a reasonable tolerance.

	Cheiron	Milliman
Aggregate Employer Contribution Rate	50.51%	50.26%
Funded Ratio	67.0%	67.2%

Actuarial Assumptions (Economic)

We reviewed the economic assumptions used in the January 1, 2021 valuation and found them to be reasonable. The economic assumptions used were adopted based on Cheiron's Actuarial Experience Study completed in August 2019. Additional changes in the economic assumptions were adopted for use in the January 1, 2020 actuarial valuation at the February 14, 2020 SJCERA Board meeting.

We have the following comments regarding the economic assumptions used in the January 1, 2021 actuarial valuation:

- Our analysis supports the Board's February 14, 2020 decision to decrease long-term expected rate of return on assets (discount rate) from 7.25% to 7.00%, given SJCERA's assumptions for inflation and the capital market assumptions used in Cheiron's analysis.
- Our analysis also supports the decision to decrease the inflation assumption from 2.90% to 2.75%.
- The recommendation to maintain the real wage growth assumption of 0.25% is reasonable.
- The overall package of economic assumptions is reasonable, although we note that analysis of long-term expected returns at the beginning of 2021 has shown a decline since the 7.00% return assumption was adopted, so this assumption should be reviewed closely in next year's experience analysis.

Actuarial Assumptions (Demographic)

We completed a high-level review of the demographic assumptions that are being used in the January 1, 2021 valuation. Based on this review, we believe the demographic assumptions used in the valuation are reasonable.

Reports

Cheiron's reports meet the applicable actuarial standards of practice. We feel that the amount of disclosure included in the report is commensurate with the complexity of SJCERA.

Recommendations and Other Observations to Consider in the Future

Recommended Changes to 2021 Valuation

We identified no changes that need to be made to the January 1, 2021 valuation.

Changes Recommended to be Reflected in 2022 Valuation

We have one change we recommend be included in future valuations:

- The valuation includes an extra half-year of increase in the compensation projected for the valuation year for active Tier 1 members that is not necessary. We recommend the additional half-year increase be removed in the next valuation. If reflected, the impact of this change would be a small decrease (less than 1%) in the total actuarial accrued liability. See Section 4 for more detail.

Other Considerations for Future Valuations and Experience Studies

We have a few observations where, although we are not recommending a change, we believe these should be reviewed for future valuations or experience studies:

- In addition to the recommended change to the projected compensation previously discussed, there are two technical applications that could be considered conservative. Additional discussion of these methods is provided in Section 4 (second and third bullet points of Comments Section). While the methodology used is reasonable, the application results in slightly higher employer contribution rates than our standard approach and is more likely to result in actuarial gains than losses in the future. Our understanding is that Cheiron will be reviewing these methods with the next triennial investigation of experience.
- Although we believe the 7.0% investment return assumption is reasonable, we note that analysis of long-term expected returns at the beginning of 2021 has shown a decline since the 7.00% return assumption was adopted, so this assumption should be reviewed closely in next year's experience analysis. The return assumption is discussed in Section 7.
- The assumed rates of service retirement for Tier 2 are equal to the assumption for the corresponding class in Tier 1. Given that benefit levels are lower for Tier 2, particularly at younger retirement eligible ages, we suggest consideration be given to reduced rates of retirement for Tier 2 members at younger ages. It should be noted that there is not a credible amount of retirement experience for Tier 2, so if a change was made to this assumption, it would need to be based on actuarial judgment. Given the way the Tier 2 age factors are structured, we would not expect this change to have a material impact on the valuation, but it would have some impact on projected benefit payments if the valuation were used to project future cash flow. Tier 2 retirement rates are discussed in Section 8.
- We suggest adding a description of how the reserves are allocated between General and Safety. Report disclosures are discussed in Section 9.

2. Membership Data

Audit Conclusion

We performed tests on both the raw data supplied by SJCERA staff and the processed data used by Cheiron in the valuation. Based on this review, we feel the individual member data used in the valuation is appropriate and complete.

Comments

Overall, the data process appears to be thorough and accurate. We would add the following comments:

- Raw Data: We were provided with the same data that was given by SJCERA staff to Cheiron for use in the actuarial valuation.

  Completeness**:** The data contained all the necessary fields to perform the actuarial valuation.

  Quality**:** Although we did not audit the data at the source, we performed some independent checks to confirm the overall reasonableness of the data. We compared the total retiree and survivor benefit amounts on the SJCERA data with the actual benefit payments made, as reported in SJCERA's financial statements. We also compared the total active member compensation on the SJCERA data with the estimated active payroll for the prior year. The estimated payroll was based on the actual employer contribution amounts divided by the applicable employer contribution rates for the prior year. Based on this analysis, we found the data to be reasonable.

- Parallel Data Processing: We performed independent edits on the raw data and then compared our results with the valuation data used by Cheiron. We found our results to be very consistent.

  Our results did not match exactly; however, this is understandable since Cheiron, as the retained actuary, has more extensive data editing procedures. Overall, each key data component matched within an acceptable level, and we believe the individual member data used by Cheiron was appropriate for valuation purposes.

  A summary of the data in aggregate is shown in Exhibit 2-1. The "Milliman" column reflects the SJCERA data after adjustments by Milliman. The "Cheiron" column reflects the actual data used in Cheiron's valuation. In our opinion, there was a very close match between the data provided by SJCERA and the valuation data used by Cheiron.

Exhibit 2-1
Member Statistics as of January 1, 2021

	Cheiron	Milliman	Ratio Cheiron/Milliman
Active Members			
Total Number	6,350	6,362	99.8%
Average Age	44.9	44.9	100.0%
Average Service	9.8	9.8	100.0%
Projected Total Compensation	$ 489,490,258	$ 491,132,517	99.7%
Projected Average Compensation	$ 77,085	$ 77,198	99.9%
Retirees and Survivors			
Number in Pay Status	6,361	6,358	100.0%
Average Age	70.1	70.1	100.0%
Average Monthly Pension	$ 3,301	$ 3,311	99.7%
Terminated Members			
Total Number	2,165	2,162	100.1%
Average Age	46.2	46.3	99.8%

3. Actuarial Value of Assets

Audit Conclusion

We have reviewed the calculation of the actuarial value of assets used in the January 1, 2021 valuation. We found the calculations to be accurate and the methodology to be appropriate and in compliance with actuarial standards of practice.

Comments

The method used to determine the gross actuarial value of assets smooths investment gains and losses by reflecting 20% of the difference between the market value and the expected market value over the most recent five years. As of this valuation, the actuarial value of assets is lower than the market value of assets which means there are unrecognized gains that will be recognized over the next few years.

We matched the calculation of the actuarial value of assets and found it to be a reasonable methodology.

As discussed above, SJCERA uses an asset smoothing method to reduce volatility. The five-year smoothing method is the most commonly used among large public retirement systems. We believe the use of an asset smoothing method is appropriate, and we generally recommend this to our clients, particularly in systems like SJCERA where contribution rates change annually. We also believe a five-year period is reasonable.

When a smoothing method is applied, the actuarial value of assets will deviate from the market value of assets. Like many public retirement systems, the SJCERA asset valuation method applies a corridor; that is, the actuarial value of assets is not allowed to deviate from the market value by more than a certain percentage. For SJCERA, this percentage is 20%. The purpose of a corridor is to keep the actuarial value of assets within a reasonable range of the market value. We believe the use of a corridor is reasonable.

The California Actuary Advisory Panel (CAAP) has a paper on model actuarial funding policies which include guidance for asset smoothing and other actuarial methods. SJCERA's method of five-year smoothing with a corridor falls in the "Model Practices" category (the highest level) under this guidance.

Note that the Conference of Consulting Actuaries Public Plans Community (CCA PPC) has also published a paper on model actuarial funding policies which is consistent with the CAAP paper on the key provisions, so actuarial methods that are model practice under the CAAP are also model practice under the CCA guidance.

To calculate the employer contribution rates, the asset reserves are allocated between General and Safety and then used to determine the respective Unfunded Actuarial Accrued Liabilities (UALs, note that our use of the term "UAAL" is analogous to Cheiron's use of "UAL"). Cheiron does separate calculations to do this allocation. Although we did not review the historical allocation, we did confirm that December 31, 2020 General and Safety reserves were reasonable, based on the prior year reserve values and the cash flow and earnings for 2020. Cheiron then allocates the actuarial value of assets between General and Safety in proportion to the reserves.

Employers can make additional contributions above the actuarially calculated employer contribution rate. These additional contributions, accumulated with interest at the investment return assumption, are included in the calculation of the funded ratio. However, under the funding policy, the accumulated value of these additional contributions is not included in the calculation of the employer contribution rates. We believe this is a reasonable approach and promotes stronger funding among those employers.

4. Actuarial Liabilities

Audit Conclusion

We independently calculated the normal cost rate and actuarial liabilities of SJCERA. We found that all significant benefit provisions were accounted for in an accurate manner, the actuarial assumptions and methods are being applied reasonably, and that our total liabilities matched those calculated by Cheiron closely.

Results

We independently calculated the liabilities for all members based on the following:

Data: We used the same data used by Cheiron in its valuation. As discussed in Section 2, we confirmed that this data was consistent with the data provided by SJCERA staff.

Assumptions: We used the assumptions disclosed in the January 1, 2021 actuarial valuation report. This information was provided to us by Cheiron. We confirmed the assumptions were consistent with those adopted based on the recent experience study report and the February 14, 2020 update to the economic assumptions.

Methods: We used the actuarial methods disclosed in the January 1, 2021 actuarial valuation report. This was supplemented by discussions between Cheiron and Milliman on the technical application of these methods.

Benefits: We obtained this information from the SJCERA website and the relevant law.

We then performed a full replication of Cheiron's valuation as of January 1, 2021. Based on this valuation, we completed a detailed comparison of the actuarial accrued liability (AAL) computed in our independent valuation and the amounts reported by Cheiron.

Exhibit 4-1 shows a summary of this analysis for each member type. The results for each group were reasonable, and our calculated AAL values match closely with those reported in the valuation. The one item we would note is that Cheiron's active AAL is larger than Milliman's. Based on discussions with Cheiron, we identified this difference was due to the way Cheiron was projecting the salary in the valuation year, and this difference caused our calculation of the AAL for active Tier 1 members to be approximately 2% less than reported the valuation. This is discussed further later in this section.

Exhibit 4-1
Actuarial Accrued Liability by Member Type

(Dollar Amounts in Millions)

Benefit Type	Cheiron	Milliman	Ratio Cheiron/Milliman
Retirees & Beneficiaries	$ 3,328.3	$ 3,332.0	99.9%
Inactive Members	179.2	184.4	97.2%
Active Members	1,700.2	1,674.5	101.5%
Total AAL	**5,207.7**	**5,190.9**	**100.3%**

We completed further analysis on the active members by type of benefit. Similar to the AAL, our calculated present value of benefits (PVB) was close to Cheiron's in total. Due to the difference in the way we projected salary, as previously discussed, our PVB for future service retirement benefits is about 2% less than that calculated in the valuation. A summary of the total present value of benefits for active members is shown in the following table:

Exhibit 4-2
Active Present Value of Benefits by Benefit Type

(Dollar Amounts in Millions)

Benefit Type	Cheiron	Milliman	Ratio Cheiron/Milliman
Service Retirement	$ 2,352.4	$ 2,316.1	101.6%
Withdrawal	93.2	98.2	94.9%
Disability	195.6	194.2	100.7%
Death from Active Status	19.3	19.0	101.6%
Total Active PVB	**2,660.5**	**2,627.5**	**101.3%**

Note that there will always be some differences in the calculated liabilities for a complex valuation; however, the results should not deviate significantly.

Our audit provides a high level of assurance that the results of the valuation reasonably reflect the aggregate liabilities of SJCERA based on the assumptions and methods.

We also looked at the normal cost rate (the allocated cost of benefits earned during the year). In the many audits we have performed, this is usually the area where we see the greatest differences. Although there were some differences, primarily due to the previously discussed issue with the projected salary, the overall match was close, and the deviation by tier fell within an acceptable level.

Based on these results, we feel that Cheiron's calculated employer normal cost rates are reasonable. Note the employer normal cost rate is the total value of benefits earned during the year (the gross normal cost rate) less the portion funded by the members (the member contribution rate).

Exhibit 4-3
Comparison of Employer Normal Cost Rate

(Expressed as a Percentage of Payroll)

Employer Normal Cost Rate[1]	Cheiron	Milliman	Cheiron/Milliman
General Tier 1	16.43%	16.09%	102.1%
General Tier 2	9.75%	9.73%	100.2%
Safety Tier 1	26.89%	25.74%	104.5%
Safety Tier 2	15.18%	15.19%	99.9%
All Groups - Combined	14.58%	14.32%	101.8%

Comments

As noted in this report, we find the valuation calculations to be reasonable. We did observe some conservatism in the calculation of the liabilities that we did not feel was necessary. That is, the methods used result in a slightly larger AAL than our standard approach and are more likely to result in actuarial gains than losses in the future. Although we believe the calculations in the current valuation are reasonable, we suggest each of these items should be reviewed with the upcoming triennial investigation of experience.

- Projected Compensation Adjustment: The valuation assumption is that compensation increases will occur in the middle of the year. Cheiron's valuation set-up reflects a full year's increase in the middle of the year consistent with the assumption; however, an additional half-year increase is applied to Tier 1 members. We recommend the additional half-year increase be removed in the next valuation. We discussed this issue with Cheiron, and Cheiron agrees the half-year adjustment should be reviewed.
- Valuation Compensation Adjustment: As discussed in Section 2 of this report, adjustments to the data supplied by SJCERA are performed by Cheiron to determine the valuation compensation. One of the by-products of these adjustments is that the valuation compensation for most members is their actual compensation for the prior year projected to the valuation year with a full year of actual pay increase. This is the compensation amount the member is expected to receive in the valuation year; however, an additional half-year of compensation increase is applied in the valuation (note that this is unrelated to the additional half year discussed in the previous bullet point). We discussed this issue with Cheiron, and they will be reviewing how the valuation compensation is determined prior to the next valuation.
- Benefit Payment Timing: There is a technical issue with the timing of the benefit payments. In a valuation, the actuary first projects the future benefit payments for the retirees based on the data and assumptions. The actuary then places a value on each future benefit expected to be paid based on the investment return assumption. A dollar paid in the future is less than a dollar paid today due to the time value of money. In Cheiron's calculations, Cheiron is effectively treating the benefit payments as being paid on the first of the month. Our understanding is that SJCERA's benefit payments are made at the end of the month (technically the first day following the end of the month). We adjusted our valuation to be consistent with Cheiron's approach so this did not cause any differences. If we had not made this adjustment, our liabilities would have been slightly lower (about ½%). Although we think that using our method (payments at the end of the month) is more technically precise, we believe Cheiron's method is reasonable and is commonly used by other public sector actuaries.

5. Member Contribution Rates

Audit Conclusion

We reviewed the current member contribution rates and found them to be accurate for both Tier 1 members and the Tier 2 members covered by the California Public Employees' Pension Reform Act (PEPRA).

Comments

The basic member contribution rates for Tier 1, referred to as the basic half rate, are defined in the County Employees Retirement Law with a specified percentage factor and assumed retirement age.

Tier	Code Section	Member Contribution Provides Average Annuity of	FAS Period
General Tier 1	31621.3	1/240th of FAS[(1)] at age 55	1 year
Safety Tier 1	31639.5	1/200th of FAS[(1)] at age 50	1 year

1. FAS is Final Average Salary. FAS Period is length of time for the average.

Tier 1 member contribution rates are determined using the Entry Age Actuarial Cost Method and the following actuarial assumptions:

- Investment return assumption
- Individual compensation increase assumption (general wage growth and merit)
- Mortality for members after service retirement based on simplified version of valuation assumption
- The assumed cost-of-living adjustment (COLA) is not included for the basic member rate calculation
- Pre-retirement decrements are excluded (i.e., there is a 100% probability of the member reaching the assumed retirement age)

Depending on the bargaining group, General members may also contribute an additional 14% of the basic half rate, and Safety members may contribute 33% of the basic half rate. Some bargaining units make further additional fixed rate contributions of 3%, 4%, or 5% of payroll; however, those additional contributions are applied outside of the valuation and are not reflected in the valuation.

Some members also contribute toward the value of the COLA benefit. For those members, the determination of the COLA contribution rates is based on Section 31873 of the County Employees Retirement Law. This section requires that the cost of this benefit be shared equally between members and the employer.

All members contribute towards administrative expenses. The administrative expenses are split between employees and employers based on their share of the overall contributions. It should be noted that this method of allocating administrative expenses will result in a noticeable increase in member contribution rates when the UAAL is fully paid off and the employers' contribution rates significantly decline (and the member's proportion consequently increases significantly).

PEPRA member contribution rates are equal to one-half the total normal cost rate (including COLA) as calculated in the valuation plus a share of administrative expenses.

We found our independent calculation of the member contributions rates to be consistent with Cheiron's. Member contribution rates for sample ages are shown in the following exhibit.

Exhibit 5-1
Sample Member Contribution Rates

Entry Age	Member Contribution Rate[1][2]		
	Cheiron	Milliman	Cheiron / Milliman
General Tier 1 - Basic Half Rate			
25	3.27%	3.26%	100.5%
30	3.62%	3.60%	100.4%
35	4.02%	3.99%	100.6%
40	4.46%	4.44%	100.5%
General Tier 1 - 14% Normal Rate & COLA Share			
25	6.10%	6.16%	99.0%
30	6.78%	6.86%	98.8%
35	7.52%	7.62%	98.8%
40	8.45%	8.45%	100.0%
General Tier 2			
All Ages	9.99%	9.97%	100.2%
Safety Tier 1			
25	4.80%	4.83%	99.5%
30	5.18%	5.22%	99.3%
35	5.61%	5.65%	99.3%
40	6.14%	6.19%	99.2%
Safety Tier 1 - 33% Normal Rate & COLA Share			
25	11.51%	11.52%	100.0%
30	12.32%	12.41%	99.3%
35	13.07%	13.25%	98.7%
40	14.14%	14.25%	99.2%
Safety Tier 2			
All Ages	15.42%	15.43%	99.9%

1. Rates shown for Tier 1 are for monthly pay greater than $350.

2. Rates include member's share of administrative expenses.

6. Funding

Audit Conclusion

We reviewed the application of the funding method and found it is reasonable. The funding policy is consistent with actuarial guidance. Based on the system's funding methods and assumptions, we believe the employer contribution rates are appropriately calculated.

Comments

Based on our replication valuation, we independently calculated the employer contribution rates for each tier and member contribution rate arrangement. We found that all rates were reasonable and matched closely to the valuation calculations. A summary comparison of our results is shown on the following page.

Total Employer Contribution Rates

Exhibit 6-1
Comparison of Combined Employer Contribution Rate

(as a Percentage of Payroll)

	Cheiron	Milliman	Cheiron/Milliman
General Tier 1[1]			
Gross NC Rate	23.40%	22.99%	101.8%
Employee Rate	6.97%	6.90%	101.0%
Employer NC Rate	16.43%	16.09%	102.1%
Administrative Expenses	0.86%	0.86%	100.0%
UAAL Rate	29.98%	30.00%	99.9%
Total Employer Rate	47.27%	46.95%	100.7%
General Tier 2			
Gross NC Rate	19.50%	19.47%	100.2%
Employee Rate	9.75%	9.74%	100.1%
Employer NC Rate	9.75%	9.73%	100.2%
Administrative Expenses	0.86%	0.86%	100.0%
UAAL Rate	29.98%	30.00%	99.9%
Total Employer Rate	40.59%	40.59%	100.0%
Safety Tier 1[1]			
Gross NC Rate	37.28%	36.48%	102.2%
Employee Rate	10.39%	10.74%	96.7%
Employer NC Rate	26.89%	25.74%	104.5%
Administrative Expenses	0.86%	0.86%	100.0%
UAAL Rate	63.11%	62.95%	100.2%
Total Employer Rate	90.86%	89.55%	101.5%
Safety Tier 2			
Gross NC Rate	30.36%	30.38%	99.9%
Employee Rate	15.18%	15.19%	99.9%
Employer NC Rate	15.18%	15.19%	99.9%
Administrative Expenses	0.86%	0.86%	100.0%
UAAL Rate	63.11%	62.95%	100.2%
Total Employer Rate	79.15%	79.00%	100.2%
Grand Total			
Gross NC Rate	23.53%	23.27%	101.1%
Employee Rate	8.95%	8.95%	100.0%
Employer NC Rate	14.58%	14.32%	101.8%
Administrative Expenses	0.86%	0.86%	100.0%
UAAL Rate	35.07%	35.08%	100.0%
Total Employer Rate	50.51%	50.26%	100.5%

1. Employer contribution rates vary based on the employee contribution rate arrangement. The rates shown are weighted averages.

Contribution Adequacy

The Actuarial Funding Policies and Practices for Public Pension Plans paper issued by the California Actuarial Advisory Panel provides guidance for pension funding. SJCERA's method of funding new UAAL layers due to assumptions and experience gains and losses over closed 15-year periods (layers) falls in the "Model Practice" category. There will always be a competition between providing strong funding to the plan and having reasonable contribution rates for the employer. We believe that SJCERA's funding policy strikes a reasonable balance between the two. Relative to most other systems, the funding policy provides strong future funding.

The UAAL payment for the 2020 economic assumption changes is being phased in over a three-year period. We believe a phase-in approach for assumption changes is reasonable if it is over are a relatively short period. In our opinion, the three-year phase-in period is reasonable.

Actuarial Cost Method

SJCERA uses the Entry Age Actuarial Cost Method. We agree that it is appropriate for valuing the costs and liabilities of SJCERA and is the cost method that we usually recommend.

Purpose of a Cost Method: The purpose of any cost method is to allocate the cost of future benefits to specific time periods. Most public plans follow one of a group of generally accepted funding methods, which allocate the cost over the members' working years. In this way, benefits are financed during the time in which services are provided.

Most Common Public Plan Cost Method (Entry Age): The most common cost method used by public plans is the Entry Age Actuarial Cost Method. The focus of the Entry Age Cost Method is the level allocation of costs over the member's working lifetime. For a public plan, this means current taxpayers pay their fair share of the pensions of the public employees who are currently providing services. Current taxpayers are not expected to pay for services received by a past generation, nor are they expected to pay for the services that will be received by a future generation. The cost method does not anticipate increases or decreases in allocated costs.

The 2020 Public Fund Survey shows that about 70% of the retirement systems surveyed are using the Entry Age Cost Method. We believe that the use of this cost method satisfies the requirements of CERL 31453.5.

For GASB Statements No. 67 and No. 68, the Entry Age Actuarial Cost Method is the only permissible cost method for financial reporting purposes.

The Entry Age Actuarial Cost Method with separate normal cost rates calculated for each plan falls in the "Model Practice" category under the CAAP paper.

7. Actuarial Assumptions (Economic)

Audit Conclusion

Comments

We reviewed the economic assumptions used in the valuation and found them to be reasonable. The economic assumptions used were adopted based on Cheiron's Actuarial Experience Study completed in August 2019. Additional changes in the economic assumptions were adopted for use in the January 1, 2020 actuarial valuation at the February 14, 2020 SJCERA Board meeting.

We have the following comments regarding the economic assumptions used in the January 1, 2021 actuarial valuation:

- Our analysis supports the Board's February 14, 2020 decision to decrease long-term expected rate of return on assets (discount rate) from 7.25% to 7.00%, given SJCERA's assumptions for inflation and the capital market assumptions used in Cheiron's analysis.
- Our analysis also supports the decision to decrease the inflation assumption from 2.90% to 2.75%.
- The recommendation to maintain the real wage growth assumption of 0.25% is reasonable.
- The overall package of economic assumptions is reasonable, although we note that analysis of long-term expected returns at the beginning of 2021 has shown a decline since the 7.00% return assumption was adopted, so this assumption should be reviewed closely in next year's experience analysis.

The purpose of the actuarial valuation is to analyze the resources needed to meet the current and future obligations of the System. To provide the best estimate of the long-term funded status of the System, the actuarial valuation should be predicated on methods and assumptions that will estimate the future obligations of the System in a reasonable manner.

An actuarial valuation uses various methods and two different types of assumptions: economic and demographic. Economic assumptions are related to the general economy and its long-term impact on the System, or to the operation of the System itself. Demographic assumptions are based on the emergence of the specific experience of the System's members. This section of the report will focus on the economic assumptions. The following section will address the demographic assumptions.

Actuarial Standard of Practice No. 27: Selection of Economic Assumptions

The Actuarial Standards Board has adopted Actuarial Standard of Practice (ASOP) No. 27, Selection of Economic Assumptions for Measuring Pension Obligations. This standard provides guidance to actuaries giving advice on selecting economic assumptions for measuring obligations under defined benefit plans, such as SJCERA.

As the future is unknown, the best an actuary can do is to use professional judgment to estimate possible future economic outcomes. These estimates are based on a mixture of past experience, future expectations, and professional judgment. The actuary should consider a number of factors, including the purpose and nature of the measurement, and appropriate recent and long-term historical economic data. ASOP 27 explicitly advises the actuary not to give undue weight to recent experience.

Each economic assumption should individually satisfy this standard. Furthermore, with respect to any particular valuation, each economic assumption should be consistent with every other economic assumption over the measurement period.

After completing the selection process, the actuary should review the set of economic assumptions for consistency. This may entail the actuary using the same inflation component in each of the economic assumptions selected.

An actuary's estimate with respect to a particular measurement of pension obligations may change from time to time due to changing conditions or emerging plan experiences. Even if assumptions are not changed, we believe that the actuary should be satisfied that each of the economic assumptions selected for a particular measurement complies with Actuarial Standard of Practice No. 27, unless that assumption has been prescribed by someone with the authority to do so.

Economic Assumptions

Based on the information and economic environment present as of the Board's February 14, 2020 decision to lower the investment rate of return and inflation assumptions, we believe the economic assumptions used by Cheiron in the January 1, 2021 actuarial valuation are reasonable.

Assumption	January 1, 2021 Valuation Rate
Price Inflation	2.75%
Real Investment Return	4.25%
Total Investment Return	7.00%
Price Inflation	2.75%
Real Wage Growth	0.25%
Total Wage Growth	3.00%
Payroll Growth	3.00%

The Board should be aware that the measured liabilities, the normal cost rate, and member contribution rates are directly impacted by these important assumptions. The most critical assumption in determining the present value of benefits is the total investment return assumption.

In our opinion, the package of economic assumptions used in the January 1, 2021 actuarial valuation is reasonable. The following portion of this report discusses three of the key economic assumptions (inflation, wage growth, and investment rate of return).

Inflation

Use in the Valuation: Inflation, as referred to here, means price inflation. The inflation assumption has an indirect impact on the results of the actuarial valuation through the development of the assumptions for investment return, general wage increases, payroll increase, and the cost-of-living adjustments for current and future retirees and survivors.

There is expected to be a long-term relationship between inflation and the investment return assumption. The basic principle is that the investors demand a "real return" – the excess of actual investment returns over inflation. If inflation rates are expected to be high, investors will demand expected investment returns that are also expected to be high enough to exceed inflation, while lower inflation rates will result in lower demanded expected investment returns, at least in the long run.

Historical Perspective: The data for inflation shown below is based on the national Consumer Price Index, US City Average, All Urban Consumers (CPI-U) as published by the Bureau of Labor Statistics.

Geometric Average Increase in National Average CPI for Previous Period of Years

Period Ending	10 years	20 years	50 years	94 years
2020	1.7%	2.0%	3.8%	2.9%
2010	2.3%	2.5%	4.1%	
2000	2.7%	3.6%	4.0%	
1990	4.5%	6.3%	4.6%	
1980	8.1%	5.5%	3.4%	
1970	2.9%	2.3%		
1960	1.8%	3.8%		

There are numerous ways to review historical data, with significantly differing results. In its 2016 – 2018 Experience Study, Cheiron used the 10, 30, and 50 year periods ending 2018 as a historical reference for historical inflation. The current assumption of 2.75% is reasonable.

Forecasts of Inflation: As Cheiron discussed in their report, since the U.S. Treasury started issuing inflation indexed bonds (TIPS), it is possible to determine the approximate rate of inflation anticipated by the financial markets by comparing the yields on inflation indexed bonds with traditional fixed government bonds. As of December 2018, market prices suggested investors expected inflation to be about 1.97% over the next 20 years. Note that as of August 2021, that figure has increased to 2.39%

Although most investment consultants and economists forecast lower inflation, they are generally looking at a shorter time horizon than is appropriate for a pension valuation. To consider a longer time frame with a horizon suitable for a pension valuation, we looked at the expected increase in the CPI by the Office of the Chief Actuary for the Social Security Administration. In the 2020 Trustees Report, the projected ultimate average annual increase in the CPI under the intermediate cost assumptions was 2.40%.

Peer System Comparison: Although assumptions should not be set based on what other systems are doing, it is informative to see how SJCERA compares.

According to the National Association of State Retirement Administrators (NASRA) Public Fund Survey (a survey of approximately 200 large municipal and statewide systems), the average inflation assumption for statewide systems has been steadily declining. For 2020 actuarial valuations, the median assumption was 2.50%, and has decreased steadily in recent years.

Conclusion: We believe that a 2.75% assumption is reasonable for an actuarial valuation of a retirement system. As noted, long-term forecasts are for a somewhat lower level of inflation, so we feel that the recent decision to change from 2.90% to 2.75% was an appropriate change. Consideration should be given to decreasing the assumption further. Meketa's 20-year forecast for inflation is 2.10%.

General Wage Growth

Use in the Valuation: Estimates of future salaries are based on two types of assumptions. Rates of increase in the general wage level of the membership are directly related to inflation, while individual salary increases due to promotion and longevity (referred to as the merit scale) occur even in the absence of inflation. This section will

address the general wage growth assumption (price inflation plus productivity increases). The merit scale is discussed in Section 8 of this report (demographic assumptions).

The current wage growth assumption is 0.25% above the price inflation rate. This meant an assumption of 3.00% for the January 1, 2021 actuarial valuation. Note that the growth includes increases in wages due to productivity as discussed below.

Historical Perspective: As with inflation, historical measures for general wage growth vary widely depending upon the data source, consideration of mean vs. median, and how far back it is measured. We have used statistics from the Social Security Administration on the National Average Wage. Using this data implies real wage growth of about 0.7% over the past 50 years.

Forecasts for Future Wage Growth: Wage inflation has been projected by the Office of the Chief Actuary of the Social Security Administration. In the 2020 Trustees Report, the long-term ultimate annual increase in the National Average Wage was estimated to be 1.14% higher than the Social Security intermediate ultimate inflation assumption of 2.4% per year.

Conclusion: We believe that the current estimate of 0.25% is a reasonable estimate of future real wage growth, although it is lower than most measures of historical real wage growth and lower than the forecasts from the Social Security Administration.

Payroll Increase Assumption

The UAAL is amortized as a level percentage of payroll in determining contribution rates as a percentage of pay. The current payroll increase assumption is equal to the general wage growth assumption. It is our general recommendation to set these two assumptions equal, unless there is a specific circumstance that would call for an alternative assumption. Therefore, we agree with this assumption.

Cost-of-Living Adjustments (COLAs)

Every April, retirees and survivors receive cost-of-living adjustments (COLAs) equal to the CPI increases but capped at 3%. Since the cap is more restrictive on the upside than the downside, it is reasonably expected that the average COLA received will be less than CPI, even when factoring in the “COLA Bank.” For example, with a 3% COLA, the maximum the COLA can exceed 2.75% CPI is 0.25%, but it could potentially be less by 2.75%, or more in some circumstances.

Cheiron recommended a COLA growth assumption of 2.6%. Those recommendations were based on simulations Cheiron performed, which reflected the cap, COLA Bank, inflation expectations, and volatility in inflation.

We believe the COLA assumption is reasonable.

Investment Return (Discount Rate)

The net investment return assumption of 7.00% per year used in the 2021 actuarial valuation includes two components: (1) inflation of 2.75% and (2) a net real rate of return equal to 4.25%. This approach of splitting the net return into separate pieces is called the “building block” method.

Long-term Expected Investment Return: In the 2016 - 2018 actuarial experience study, Cheiron uses the average assumed real rate of return from survey data and a sample of two investment consultants, including the Plan’s investment consultant. That is a reasonable approach and similar to what we often use in our analyses.

The median real returns in the analysis are generally supportive of the 4.25% real return at that point in time. We note that analysis of long-term expected returns at the beginning of 2021 has shown a decline since the 7.00%

return assumption was adopted, so this assumption should be reviewed closely in next year's experience analysis. As of 2021, Meketa's 20-year median return forecast is 6.25% with a 2.10% assumption for inflation for a 4.15% real return assumption.

Peer System Comparison: Although assumptions should not be set based on what other systems are doing, it is informative to see how SJCERA compares.

According to the NASRA Public Fund Survey, the investment return assumption for statewide systems has been steadily declining, and the median assumption is now 7.0%. This is consistent with California where the median assumption is also 7.0%.

Conclusion: We find the 7.00% expected return assumption is reasonable for funding and financial reporting purposes.

8. Actuarial Assumptions (Demographic)

Audit Conclusion

We completed a high-level review of the demographic assumptions that are being used in the January 1, 2021 valuation. Based on this review, we believe the demographic assumptions used in the valuation are reasonable.

Comments

Studies of demographic experience involve a detailed comparison of actual and expected experience. If the actual experience differs significantly from the overall expected results, or if the actual pattern does not follow the expected pattern, new assumptions are considered. Recommended revisions normally are not an exact representation of the experience during the observation period. Judgment is required to predict future experience from past trends and current evidence, including a determination of the amount of weight to assign to the most recent experience.

We did not independently perform the detailed calculations of the actual and expected rates that Cheiron did, but we reviewed the assumptions based on our experience with similar systems, including a comparison of SJCERA with peer systems for three key assumptions.

Actuarial Standard of Practice No. 35: Selection of Demographic Assumptions

Actuarial Standard of Practice No. 35 (ASOP 35) governs the selection of demographic and other noneconomic assumptions for measuring pension obligations. ASOP 35 states that the actuary should use professional judgment to estimate possible future outcomes based on past experience and future expectations, and select assumptions based upon application of that professional judgment. The actuary should select reasonable demographic assumptions in light of the particular characteristics of the defined benefit plan that is the subject of the measurement. A reasonable assumption is one that is expected to appropriately model the contingency being measured and has no significant bias (i.e., it is not significantly optimistic or pessimistic).

Actual-to-Expected Ratio

In performing an experience study, an actuary will compare the actual results of the study with those the assumptions would have predicted. This comparison is called the Actual-to-Expected (A/E) ratio. If, for example, the A/E ratio for service retirement is 120%, this would indicate that the actual number of service retirements exceeded the number expected by the assumptions by 20%.

As noted, we did not independently calculate the A/E ratios, but we do comment on some of these ratios determined by Cheiron.

Post-Retirement Mortality

We reviewed Cheiron results for the probability of death for healthy (service retirements) and disabled retired members and found them to be reasonable.

We have the following additional comments:

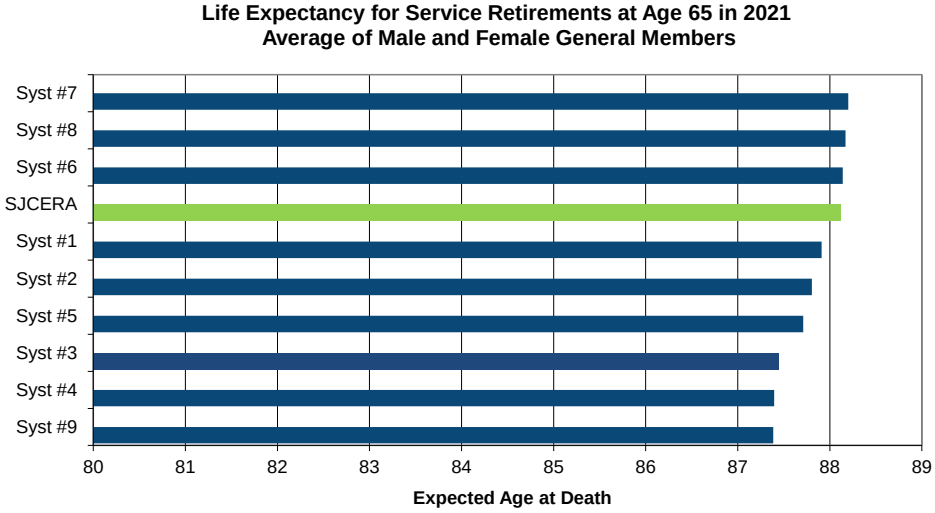
- **Assumed Rates vs Observed Experience:** We note that the new mortality tables adopted in 2019 result in an A/E ratio of 105% for all groups in aggregate. This indicates that the assumed life expectancies are less than projected by the mortality observed over the six-year period that mortality was studied. However, as Cheiron notes, due to the size of the observed data, the results were only partially creditable from a statistical

perspective, so having an A/E ratio that differs from 100% may be reasonable. If the A/E ratio continues to be 105% or more in the future, the mortality assumptions could be adjusted to reflect lower life expectancies.

- **Pub-2010 Mortality Tables:** "Pub-2010" family of static base mortality tables is used with adjustments specific to SJCERA. Note that the 2010 in the title refers to the central year of collected study data, and the tables were actually released in 2019. These are the first standard tables based solely on public sector experience, and we agree they are appropriate for use as SJCERA's base mortality tables.
- **Generational Mortality:** A generational mortality approach is used in the valuation, which provides an explicit method to project future mortality improvement. We strongly agree with this approach. We believe the MP-2018 projection scale is a reasonable estimate of expected future improvements in mortality. It should be noted that there is a more recent mortality projection scale (MP-2020); however, we agree with approach of changing the projection scale no more often than the period between experience studies (i.e., three years) unless there is a compelling reason to make the change, which we do not believe there currently is.
- **Weighting by Benefit Amount:** Cheiron's mortality analysis weights the results by benefit amounts. We agree with this approach.
- **Mortality Tables for Member Contribution Rates:** The new mortality tables to be used for member contribution rates do not use generational mortality due to the administrative complexity that would be required. Instead, as recommended by Cheiron, future improvements are projected to 2040. Using this projection provides a reasonable estimate of the average future mortality expected for Tier 1 contributory members. We agree this approach is reasonable.

Post-Retirement Mortality – Life Expectancy Comparison

We also compared SJCERA's mortality rates with those from other California retirement systems and found them to be reasonably consistent with the assumptions used in those other systems. The graph shows the expected lifetime (represented by average projected age at death) for an average SJCERA General member (green bars) along with several other California retirement systems.



The graph shows that the SJCERA assumptions used for projecting life expectancies are very similar to the assumptions for its peer groups. Life expectancies are tightly bunched with the total range for all systems varying by just less than one year.

For reference, the other systems we included in this analysis were:

- System 1 - Contra Costa County Employees' Retirement Association
- System 2 - Los Angeles County Employees Retirement Association
- System 3 - Marin County Employees' Retirement Association
- System 4 - Orange County Employees' Retirement System
- System 5 - San Diego County Employees' Retirement Association
- System 6 - San Francisco City & County Employees' Retirement System
- System 7 - San Mateo County Employees' Retirement Association
- System 8 - Santa Barbara County Employees' Retirement System
- System 9 - Sonoma County Employees' Retirement Association

Longevity and Promotion Salary Increases

We reviewed the individual salary increase assumptions due to merit (longevity and promotion). These increases are in addition to the assumed increases due to general wage inflation. For SJCERA, the general wage growth is assumed to equal CPI plus 0.25%.

We looked at the magnitude of the assumed increases. The valuation assumes 0.50% merit increases (in addition to general wage inflation) for all General members with 15 or more years of service, and higher increases for those with less than 15 years of service. For Safety members, the ultimate increase is assumed to be 1.25%. Our observation among '37 Act systems has been that Safety members tend to have a higher ultimate increase than General members.

In total, we believe that the assumptions for merit salary increases are reasonable and consistent with the results of the experience study.

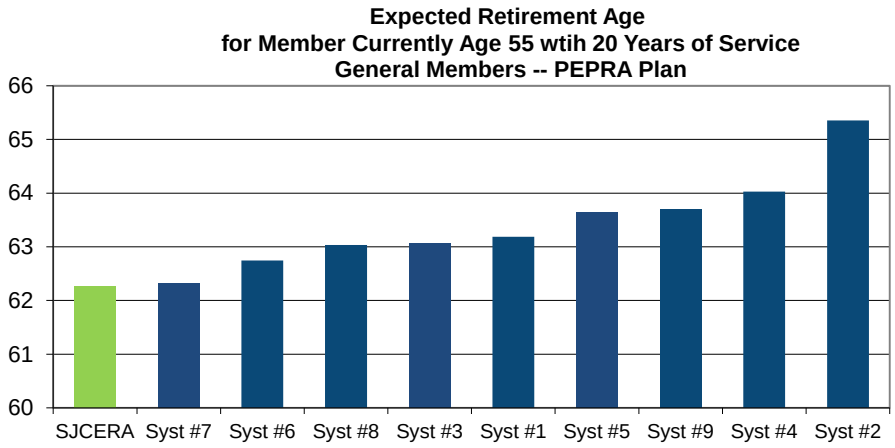
Rates of Service Retirement

We reviewed the rates of service retirement. The current assumptions vary by membership class (General vs. Safety), service level and age. There are also separate rates for General males and females. Higher retirement rates for longer service are consistent with what we have observed in other retirement systems. We agree that these factors are significant in projecting retirement rates.

Retirement rates are hard to predict for new plans since there is generally no relevant experience on which to base the assumptions. For General and Safety PEPRA formulas, the benefit level is generally lower than the legacy Tier 1 plans, so retirements could occur later on average. Cheiron does not recommend separate retirement rates for PEPRA members. Our recommendation to our clients has to been to have lower expected retirement rates at the younger retirement-eligible ages to reflect the lower age factors for PEPRA plans, although given the lack of credible experience, we believe Cheiron's approach is reasonable.

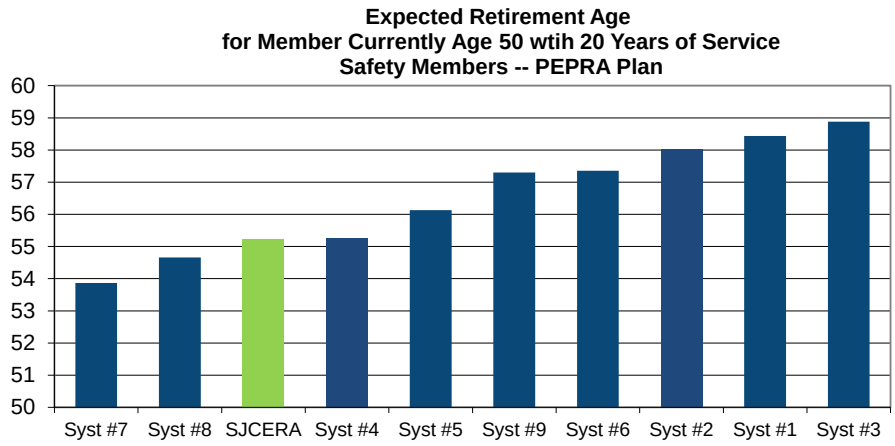
We also compared SJCERA's service retirement rates for the Safety and General PEPRA plans with those from other California retirement systems by analyzing the average expected retirement age. Note that the average expected retirement age for SJCERA General males and females are very similar.

We found SJCERA's expected retirement age for General members to be lower than comparable systems. The following graph shows SJCERA's expected retirement age (green bar) for General members along with several other California retirement systems.



We also compared SJCERA's service retirement rates for the Safety PEPRA plans with those from other California retirement systems by analyzing the average expected retirement age.

We found SJCERA's expected retirement age to be relatively consistent with the assumptions used in those other systems. In particular, we note that the expected SJCERA retirement age is a little lower than most systems. Once again, we believe this is because the Tier 2 retirement rates are set equal to Tier 1. The following graph show SJCERA's expected retirement age (green bar) for Safety members along with several other California retirement systems.



The retirement assumptions appear reasonable. Cheiron does not use lower retirement assumptions for PEPRA members to reflect the expectation of later retirements, and we believe that is the reason that the average expected retirement age tends to be lower. As previously discussed, we generally recommend lower retirement rates (and therefore a higher expected age at retirement) for PEPRA plans if they have lower benefit levels than the legacy plans. The PEPRA retirement rates should be monitored going forward as General and Safety PEPRA plan members start to retire.

Rates of Disability Retirement

We reviewed the rates of disability retirement. The current assumptions vary by membership class (General and Safety) and generally increase with age. Service connected and non-service connected disability assumptions are studied separately. We believe this methodology is sound.

The sample size is small for this assumption, but based on Cheiron's analysis, the disability assumptions appear reasonable.

Rates of Termination (Withdrawal, Vested Termination, and Reciprocal Transfer)

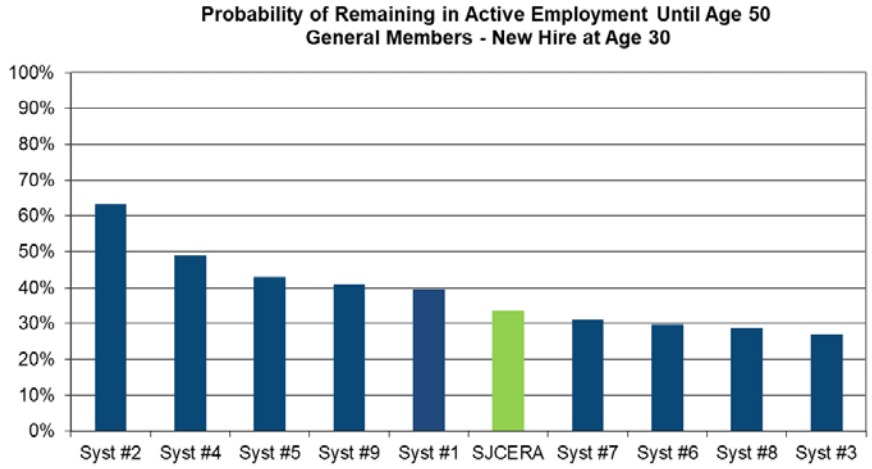
We reviewed the rates of termination. The current assumption varies by membership class and length of service. We agree that these factors are generally the most significant in projecting termination rates.

Cheiron uses an assumption that no terminations take place after 30 years of service (20 years for Safety) or after eligibility for service retirement. We agree that such terminations are rare and that this is a reasonable assumption.

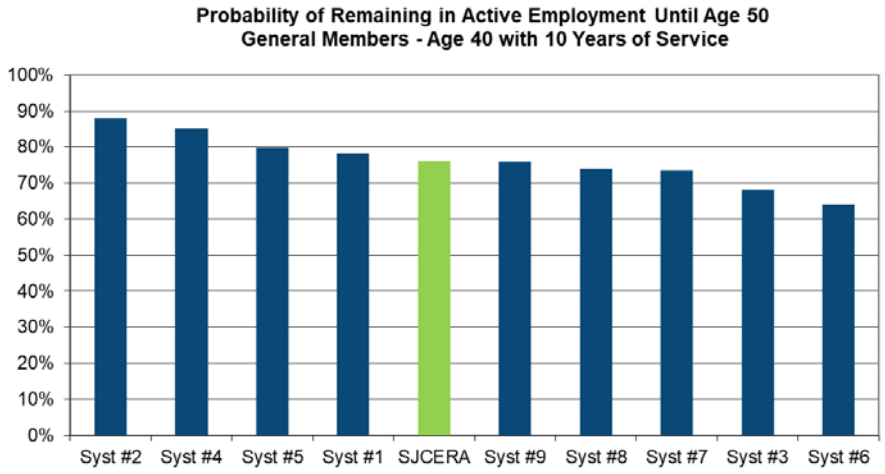
Based on Cheiron's analysis, the termination rates are aligned with actual experience, and the assumptions appear reasonable.

Additionally, we compared SJCERA's termination rates for General members with those from other California retirement systems and found them to be relatively consistent. Because some systems base this assumption on service only and some by a combination of age and service, comparing among systems can pose some issues. To best compare, we used two sample members, both hired at age 30. For one of the sample members, we assumed no current service, and for the other we assumed 10 years of current service. For both, we compared the probability of remaining employed to age 50 (first eligibility for service retirement for Tier 1).

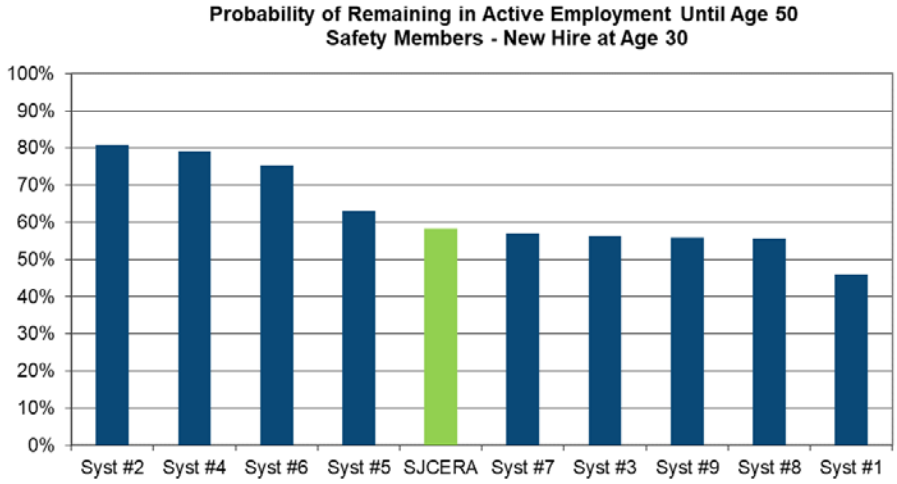
The results for General member new hires are as follows:



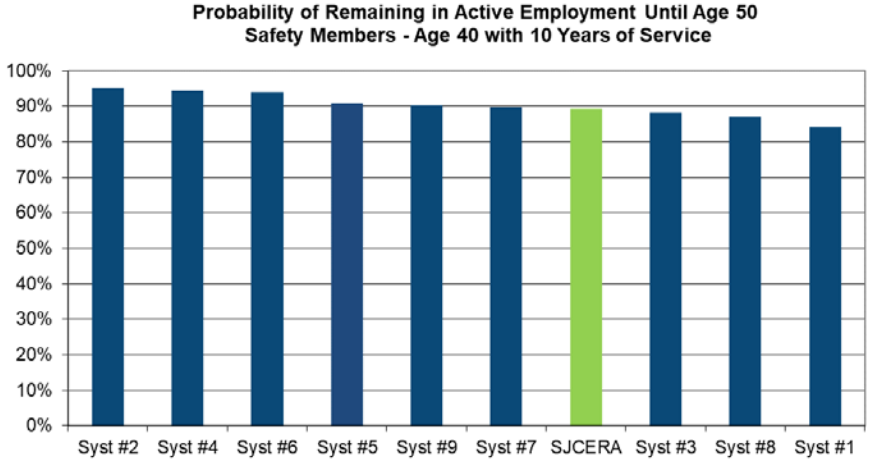
The results for General members with 10 years of service are as follows:



The results for Safety member new hires are as follows:



The results for Safety members with 10 years of service are as follows:



Family Composition

The valuation uses an assumption for the members who have a beneficiary eligible for the unmodified benefit option with 60% continuance at the time of retirement. This is a significant assumption due to the increased value of the unmodified benefit for those with eligible survivors. 75% of male members and 55% of female members are assumed to be married at retirement. Additionally, Cheiron assumes that male retirees are three years older than their eligible survivor, and females are two years younger.

These assumptions are similar to what we have found for other California retirement systems. We believe that these are reasonable assumptions.

9. Cheiron Reports

Audit Conclusion

Cheiron's reports meet the applicable actuarial standards of practice. We feel that the amount of disclosure included in the report is commensurate with the complexity of SJCERA.

Of particular note, Cheiron provides extensive disclosures related to risk, consistent with Actuarial Standard of Practice #51 *(Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions).*

Comments

The following discussion mentions items that we suggest Cheiron consider disclosing in future valuations. These are possible changes in disclosure and would not impact the results of the valuation.

Comments for Consideration Regarding Additional Disclosure

- It would be informative to describe (and possibly show) how the reserves are split between the General and Safety groups shown in Table IV-1 in the valuation report, as this split is the basis for the employer contribution rates.
- The CAAP has produced a paper titled *Model Disclosure Elements for Actuarial Valuation Reports on Public Retirement Systems in California* that provides guidance for the contents of actuarial valuation reports. Note that these are not requirements. The January 1, 2021 valuation report includes all the basic disclosures described in the CAAP paper except it does not disclose the UAAL based on the market value of assets.

MEKETA
INVESTMENT GROUP

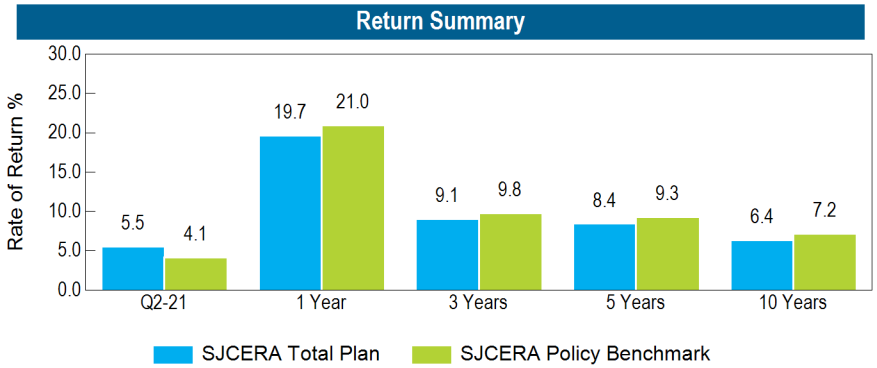
San Joaquin County Employees' Retirement Association (SJCERA)

Q2 2021

Quarterly Report

Table of Contents

Introduction



Summary of Cash Flows	Second Quarter	One Year
Beginning Market Value	$3,598,016,006	$3,158,471,912
Net Cash Flow	$11,237,000	$22,637,806
Net Investment Change	$200,577,764	$628,721,053
Ending Market Value	$3,809,830,770	$3,809,830,770

Introduction

The SJCERA Total Portfolio had an aggregate value of $3.8 billion as of June 30, 2021. During the latest quarter, the Total Portfolio increased in value by $211.8 million, and over the one-year period, the Total Portfolio increased by $651.4 million. The increase over the quarter and one-year periods was primarily due to positive investment returns. The IMF is forecasting U.S. growth in 2021 of 7.0% vs. a quarter-over-quarter (annualized) increase of 6.4% in the first quarter of 2021. Full year The IMF also forecasts global GDP to increase by 6.0% for 2021. Over the last year, global risk assets produced significant returns, largely driven by record fiscal and monetary policy stimulus and positive developments with the COVID-19 vaccine. In June 2021, declining inflation concerns drove the recovery in longer-dated Treasuries. Shorter-dated rates have been largely unmoved given Fed policy, while longer-dated rates recently declined from their peak as investors consider whether inflationary pressures have topped. Equity markets had mixed results in June with the US leading the way. A strong US dollar and continued vaccine rollout struggles weighed on international equity markets.

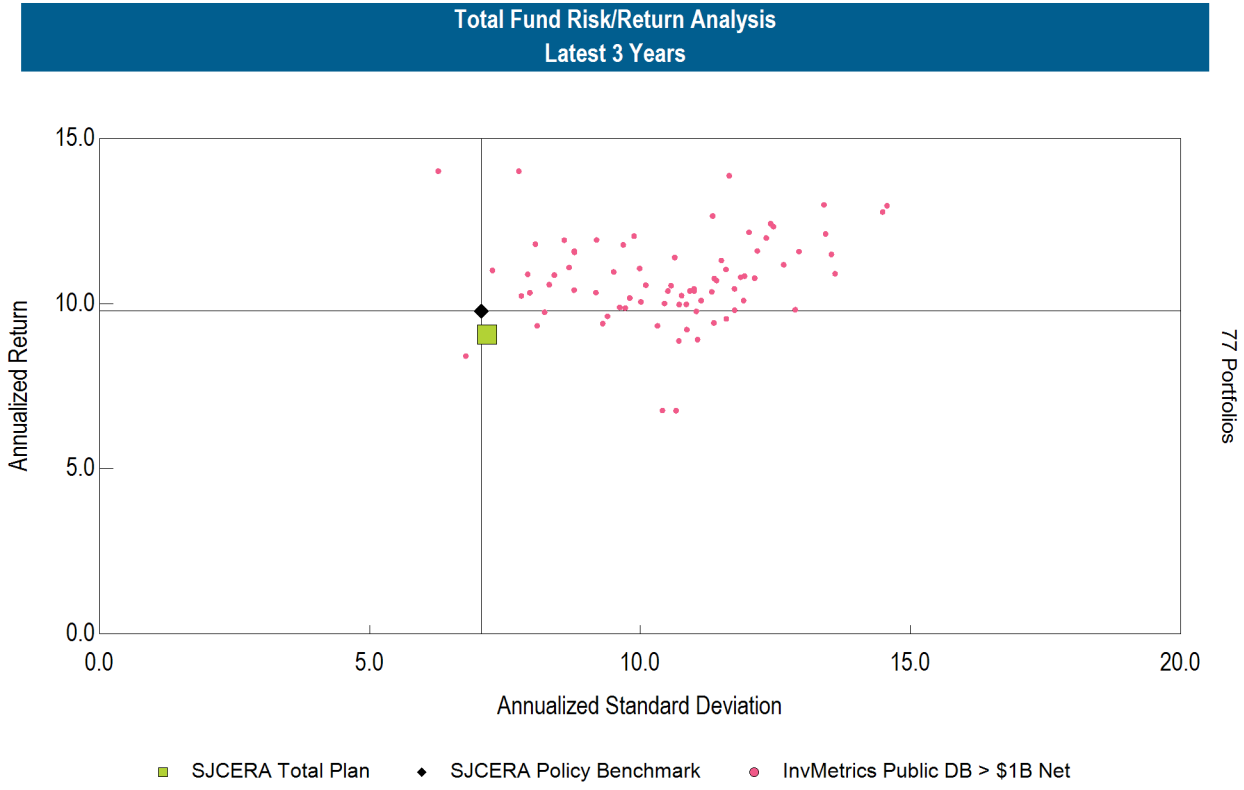
Returns for US stocks, as measured by the Russell 1000, and US Treasuries, as measured by the Barclays Long US Government bond index, for the second quarter of 2021 were 8.5% and 6.4%, respectively. Commodities were up 13.3% for the quarter, as measured by the Bloomberg Commodity Index and global equity returns, as measured by the MSCI ACWI IMI, were up 7.2% for the quarter ended June 30, 2021.

Recent Investment Performance

The Total Portfolio outperformed the policy benchmark and Median Public Fund for the quarter by 1.4% and 0.2%, respectively. Over the 1-, 3-, 5-, 10-, 15-, 20-, and 25-year periods, the portfolio has trailed its benchmark by (1.3%), (0.7%), (0.9%), (0.8%), (1.1%), (0.4%), and (0.2%), respectively, and trailed the Median Public Fund by (7.3%), (1.5%), (2.1%), (1.8%), (2.0%), (1.0%), and (0.6%), respectively. However, the portfolio earned higher risk adjusted returns, as measured by the Sharpe Ratio, than the Median Public Fund over the 3- and 5-year time periods.

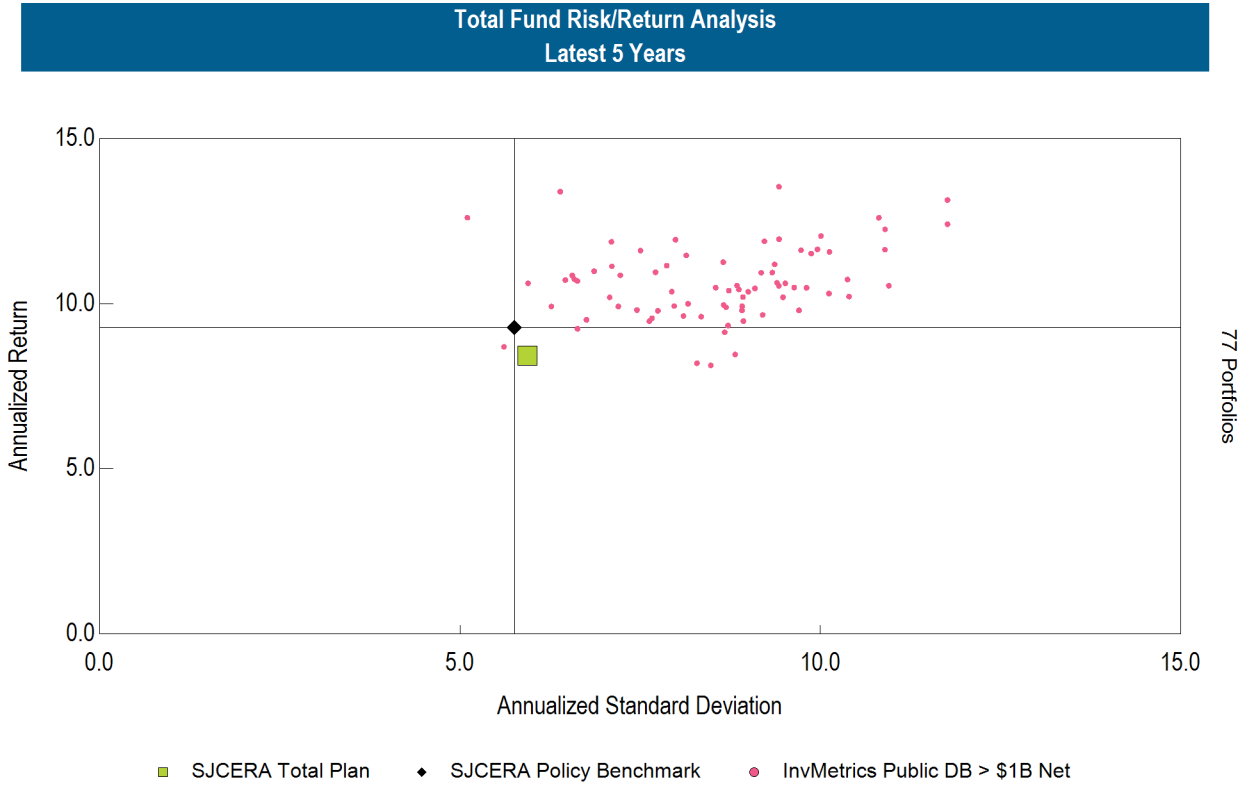
	QTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	15 Yrs	20 Yrs	25 Yrs
SJCERA Total Plan - Net	**5.5**	**19.7**	**9.1**	**8.4**	**6.4**	**4.9**	**5.8**	**6.8**
SJCERA Total Plan - Gross	**5.7**	**20.3**	**9.7**	**9.2**	**7.2**	**5.7**	**6.4**	**7.3**
SJCERA Policy Benchmark	*4.1*	*21.0*	*9.8*	*9.3*	*7.2*	*6.0*	*6.2*	*7.0*
Over/Under (vs. Net)	1.4	-1.3	-0.7	-0.9	-0.8	-1.1	-0.4	-0.2
InvMetrics Public DB > $1B Net Median	*5.3*	*27.0*	*10.6*	*10.5*	*8.2*	*6.9*	*6.8*	*7.4*

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



	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
SJCERA Total Plan	9.07%	7.18%	1.10
SJCERA Policy Benchmark	9.78%	7.07%	1.21
InvMetrics Public DB > $1B Net Median	10.58%	10.72%	0.88

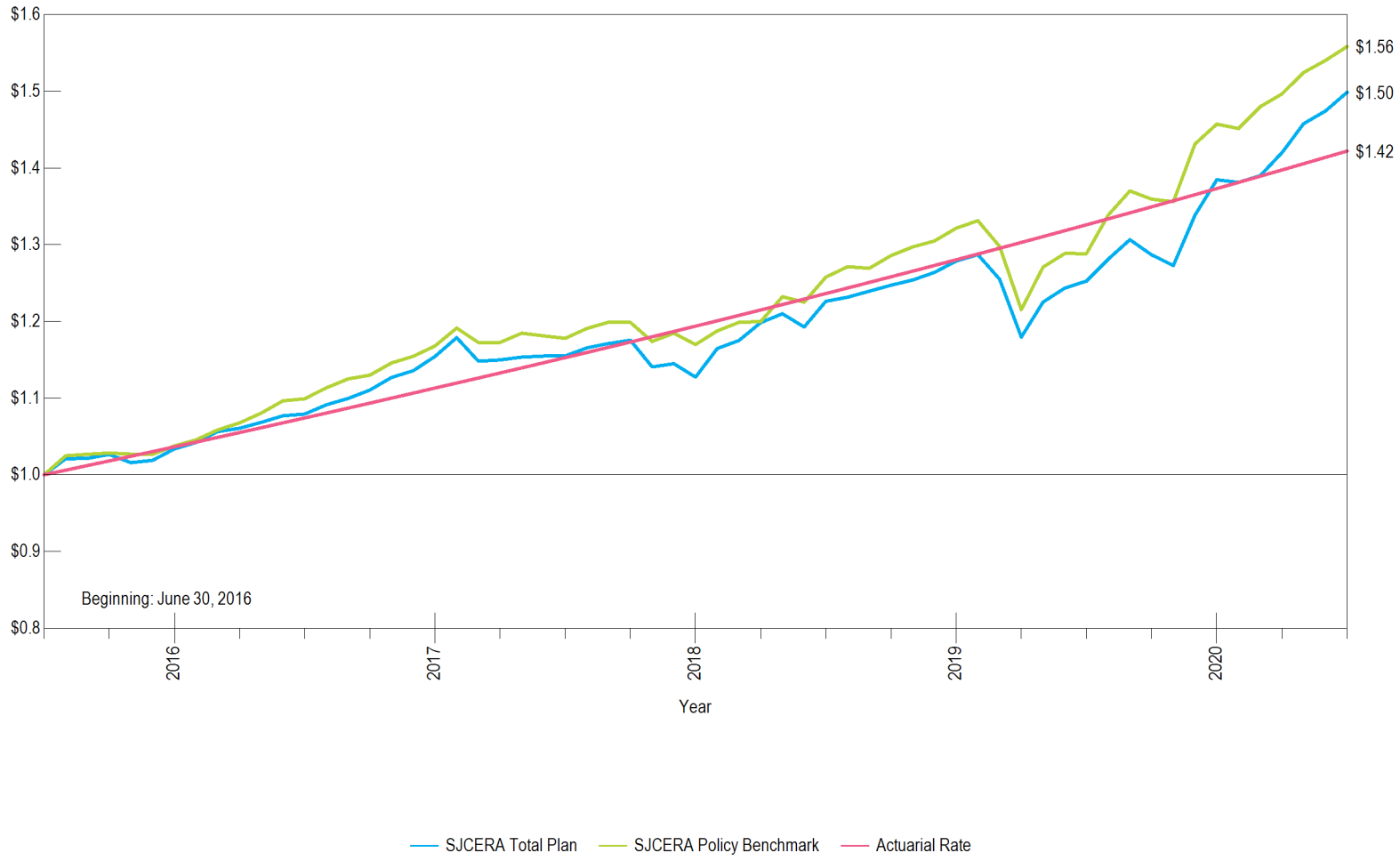
Returns are net of fees.
Computed as annualized return less the risk free rate, divided by the annualized standard deviation.
Investment Metrics Total Fund Public Universe >$1 Billion, net of fees.



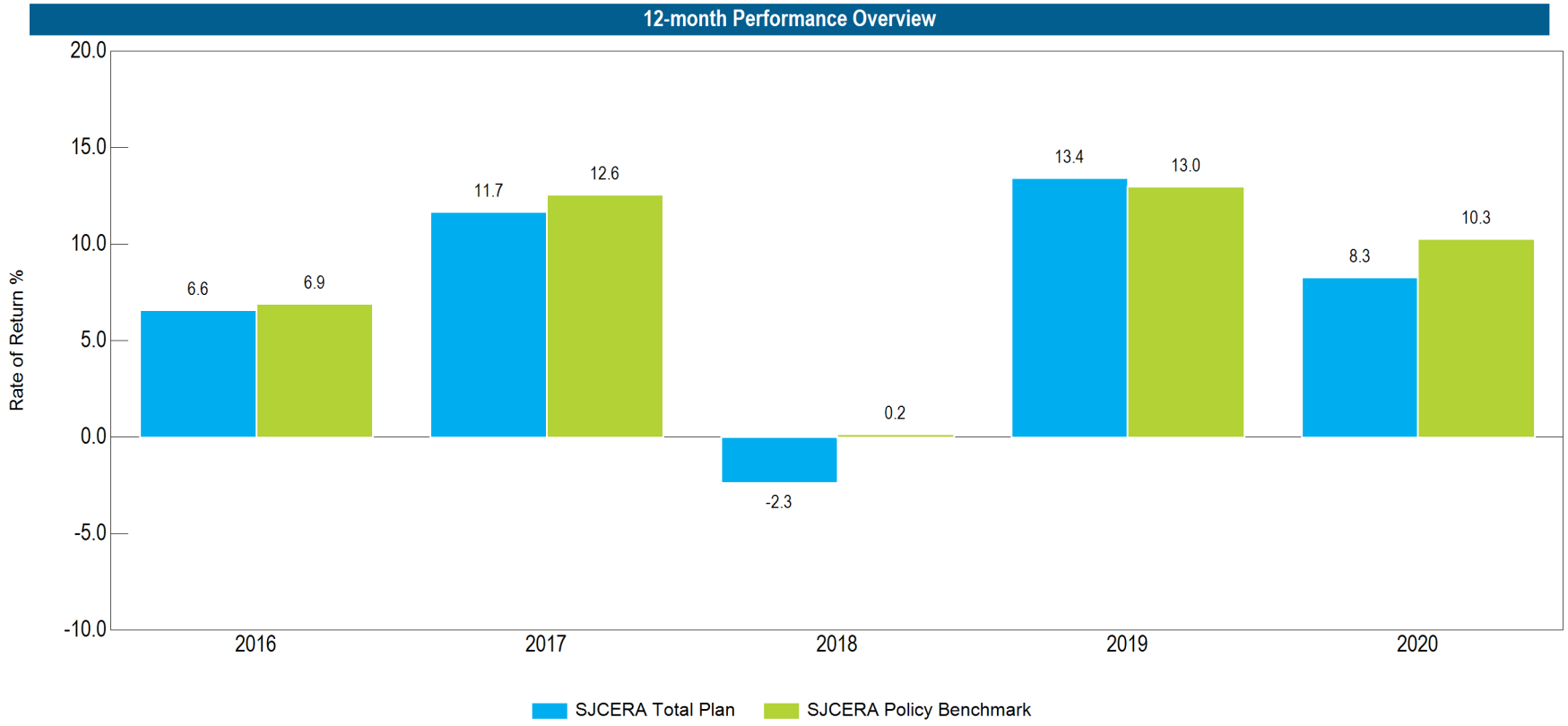
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
SJCERA Total Plan	8.43%	5.93%	1.23
SJCERA Policy Benchmark	9.28%	5.76%	1.42
InvMetrics Public DB > $1B Net Median	10.54%	8.72%	1.07

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

Growth of a Dollar - Latest 5 Years



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%



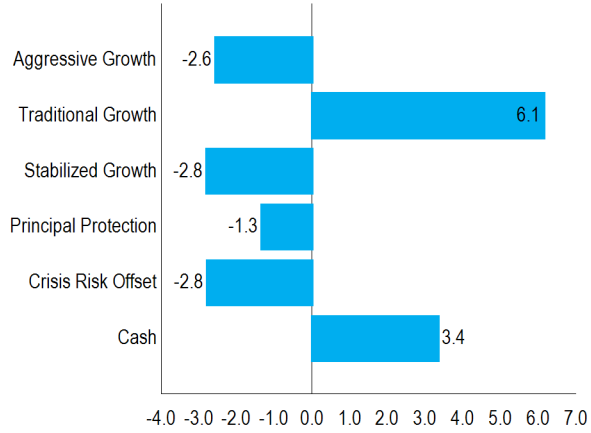
12-month absolute results have been positive over four of the last five calendar year periods, net of fees. The SJCERA Total Portfolio outperformed the policy target benchmark during one of these five periods, net of fees.

Portfolio Review

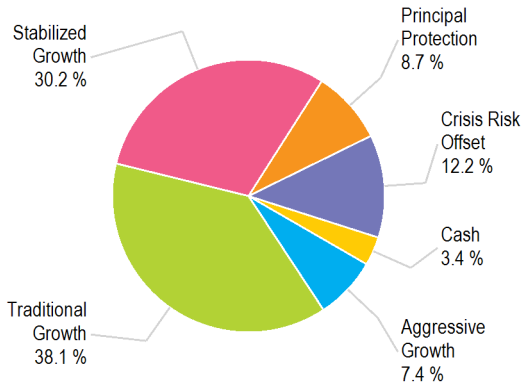
Asset Allocation vs. Target	Current	Current	Policy	Difference*
Broad Growth	**$2,886,798,696**	**75.8%**	**75.0%**	**0.8%**
Aggressive Growth	$283,294,418	7.4%	10.0%	-2.6%
Traditional Growth	$1,453,244,088	38.1%	32.0%	6.1%
Stabilized Growth	$1,150,260,190	30.2%	33.0%	-2.8%
Diversified Growth	**$795,188,442**	**20.9%**	**25.0%**	**-4.1%**
Principal Protection	$329,953,201	8.7%	10.0%	-1.3%
Crisis Risk Offset	$465,235,241	12.2%	15.0%	-2.8%
Cash	**$127,843,633**	**3.4%**	**0.0%**	**3.4%**
Cash	$127,843,633	3.4%	0.0%	3.4%
Total	**$3,809,830,770**	**100.0%**	**100.0%**	

*Difference between Policy and Current Allocation

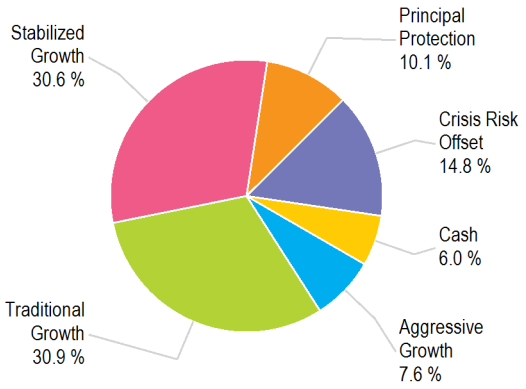
Variance vs Target Allocation (%)



As of June 30, 2021



As of June 30, 2020



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

Asset Class Performance Net-of-Fees | As of June 30, 2021

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
SJCERA Total Plan	**3,809,830,770**	**100.0**	**5.5**	**19.7**	**9.1**	**8.4**	**6.4**
SJCERA Policy Benchmark			*4.1*	*21.0*	*9.8*	*9.3*	*7.2*
Broad Growth	**2,886,798,696**	**75.8**	**6.4**	**25.3**	**10.4**	**10.5**	**7.3**
Aggressive Growth Lag	**283,294,418**	**7.4**	**7.0**	**23.0**	**12.6**	**11.7**	**11.4**
Aggressive Growth Blend			*3.7*	*46.5*	*11.3*	*10.4*	*9.7*
Traditional Growth	**1,453,244,088**	**38.1**	**7.6**	**38.1**	**11.9**	**13.3**	**8.9**
MSCI ACWI IMI Net			*7.2*	*40.9*	*15.6*	*15.5*	*10.6*
Stabilized Growth	**1,150,260,190**	**30.2**	**4.8**	**12.3**	**7.9**	**7.1**	**4.3**
SJCERA Stabilized Growth Benchmark			*0.6*	*2.8*	*1.9*	*2.0*	*2.0*
Diversifying Strategies	**795,188,442**	**20.9**	**2.8**	**1.5**	**4.3**	**2.5**	**4.4**
Principal Protection	**329,953,201**	**8.7**	**1.8**	**4.0**	**4.1**	**3.6**	**4.5**
Bloomberg US Aggregate TR			*1.8*	*-0.3*	*5.3*	*3.0*	*3.4*
Crisis Risk Offset Asset Class	**465,235,241**	**12.2**	**3.6**	**-0.2**	**4.3**	**1.7**	**5.7**
CRO Benchmark			*3.7*	*2.7*	*6.4*	*3.4*	*5.2*
Cash and Misc Asset Class	**77,976,761**	**2.0**	**0.0**	**0.1**	**0.9**	**0.9**	**0.5**
ICE BofA 91 Days T-Bills TR			*0.0*	*0.1*	*1.3*	*1.2*	*0.6*

Market values may not add up due to rounding.
Policy Benchmark composition is listed in the Appendix.
50% BC High Yield, 50% S&P Leveraged Loans
(1/3) BC Long Duration Treasuries, (1/3) BTOP50 Index, (1/3) 5% Annual.

Asset Class Performance Net-of-Fees | As of June 30, 2021

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Aggressive Growth Lag	**283,294,418**	**100.0**	**7.0**	**23.0**	**12.6**	**11.7**	**11.4**
Aggressive Growth Blend			*3.7*	*46.5*	*11.3*	*10.4*	*9.7*
Blackrock Global Energy and Power Lag	18,135,143	6.4	1.5	6.6	--	--	--
MSCI ACWI +2% Blend			*5.2*	*58.3*	--	--	--
Morgan Creek III Lag	8,158,028	2.9	3.3	15.2	-4.6	2.5	--
MSCI ACWI +2% Blend			*5.2*	*58.3*	*14.2*	*12.1*	--
Morgan Creek V Lag	9,470,123	3.3	-0.3	14.7	12.3	11.8	--
MSCI ACWI +2% Blend			*5.2*	*58.3*	*14.2*	*12.1*	--
Morgan Creek VI Lag	23,785,303	8.4	1.1	30.7	18.4	15.0	--
MSCI ACWI +2% Blend			*5.2*	*58.3*	*14.2*	*12.1*	--
Ocean Avenue II Lag	35,066,163	12.4	20.7	59.4	26.8	26.3	--
MSCI ACWI +2% Blend			*5.2*	*58.3*	*14.2*	*12.1*	--
Ocean Avenue III Lag	55,271,738	19.5	12.2	22.8	24.4	--	--
MSCI ACWI +2% Blend			*5.2*	*58.3*	*14.2*	--	--
Ocean Avenue IV Lag	28,272,300	10.0	4.3	37.5	--	--	--
MSCI ACWI +2% Lag			*5.2*	*58.3*	--	--	--
Non-Core Real Assets Lag	105,135,620	37.1	4.2	12.2	4.7	4.9	8.2
NCREIF ODCE +1% lag (blend)			*2.1*	*2.5*	*5.0*	*6.3*	*9.6*

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

Aggressive Growth

During the latest three-month period ending June 30, 2021, only the two largest allocations in SJCERA's aggressive growth portfolio outperformed their MSCI ACWI +2% Blended benchmark. Non-core real assets also outperformed. Please note that returns data for this asset class are lagged one quarter and the MSCI ACWI +2% Blend benchmark returned 58.3% for the trailing 1-year period.

BlackRock Global Energy and Power, a recently added fund with a focus on infrastructure, underperformed its target benchmark over the quarter and 1-year periods by (3.7%) and (51.7%), respectively.

Morgan Creek III produced a quarterly return of 3.3%, underperforming its target benchmark by (1.9%). The manager also underperformed its benchmark over the 1-, 3- and 5-year periods by (43.1%), (17.6%) and (9.6%) respectively.

Morgan Creek V underperformed its benchmark over the quarter, 1-, 3-, and 5-year periods by (5.5%), (43.6%), (1.9%), and (0.3%), respectively.

Morgan Creek VI underperformed its benchmark over the quarter and 1-year periods by (4.1%) and (17.6%), respectively, and outperformed for the 3- and 5-year periods by 4.2% and 2.9%, 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 15.5%, 1.1%, 12.6%, and 14.2%, respectively.

Ocean Avenue III, a Private Equity Buyout fund-of-funds manager, trailed its benchmark for the 1-year period by (35.5%) and outperformed its benchmark over the quarter and 3-year periods by 7.0% and 10.2%, respectively.

Ocean Avenue IV underperformed its benchmark over the quarter and 1-year time periods by (0.9%) and (20.8%), respectively.

Non-Core Private Real Assets underperformed its NCREIF ODCE +1% benchmark over the 3-, 5- and 10-year periods by (0.3%), (1.4%) and (1.4%) respectively. The sub-asset class outperformed its benchmark over the quarter and 1-year periods by 2.1% and 9.7%, respectively.

Asset Class Performance Net-of-Fees | As of June 30, 2021

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Traditional Growth	**1,453,244,088**	**100.0**	**7.6**	**38.1**	**11.9**	**13.3**	**8.9**
MSCI ACWI IMI Net			*7.2*	*40.9*	*15.6*	*15.5*	*10.6*
SJCERA Transition	3,402	0.0					
Northern Trust MSCI World	1,255,022,635	86.4	7.5	--	--	--	--
MSCI World IMI Net USD			*7.4*	--	--	--	--
PIMCO RAE Emerging Markets	81,958,758	5.6	8.3	57.2	9.5	12.5	3.8
MSCI Emerging Markets Gross			*5.1*	*41.4*	*11.7*	*13.4*	*4.7*
GQG Active Emerging Markets	68,790,339	4.7	5.4	--	--	--	--
MSCI Emerging Markets			*5.0*	--	--	--	--
Invesco REIT	47,468,954	3.3	12.2	27.3	9.8	7.0	9.3
FTSE NAREIT Equity REIT			*12.0*	*38.0*	*10.1*	*6.3*	*9.4*

Market values may not add up due to rounding.
Returns not meaningful.

Traditional Growth

During the latest three-month period ending June 30, 2021, the traditional growth asset class outperformed its MSCI ACWI IMI benchmark by 0.4%. All four managers outperformed their benchmarks over the last quarter.

Northern Trust MSCI World, the Plan's new Passive Global Equity manager, outperformed its benchmark by 0.1% over the past quarter.

PIMCO RAE Fundamental - Emerging, one of SJCERA's Active Emerging Markets Equity manager, outperformed its MSCI Emerging Markets Index benchmark over the quarter and 1-year time periods by 3.2% and 15.2%, respectively, and underperformed its benchmark over the 3-, 5- and 10-year periods by (2.2%), (0.9%) and (0.9%) respectively.

GQG, the Plan's new Active Emerging Markets Equity manager, was opened during the third quarter of 2020. It outperformed its MSCI Emerging Markets benchmark by 0.4% in the second quarter of 2021.

Invesco, the Plan's Core US REIT manager, underperformed the FTSE NAREIT Equity REIT Index for the 1-, 3- and 10-year periods by (10.7%), (0.3%) and (0.1%) respectively, and outperformed its benchmark over the quarter and 5-year time period by 0.2% and 0.7%, respectively.

Asset Class Performance Net-of-Fees | As of June 30, 2021

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Stabilized Growth	**1,150,260,190**	**100.0**	**4.8**	**12.3**	**7.9**	**7.1**	**4.3**
SJCERA Stabilized Growth Benchmark			*0.6*	*2.8*	*1.9*	*2.0*	*2.0*
Risk Parity Asset Class	**432,362,434**	**37.6**	**8.4**	**20.3**	**10.0**	**8.1**	**3.3**
ICE BofAML 3mo US TBill+4%			*1.0*	*4.1*	*5.4*	*5.2*	*4.7*
Bridgewater All Weather	210,874,915	18.3	9.0	19.3	8.8	7.8	--
Bridgewater All Weather (blend)			*1.0*	*4.1*	*5.4*	*5.2*	--
PanAgora Diversified Risk Multi Asset	221,487,519	19.3	7.8	21.2	11.2	8.3	--
ICE BofAML 3mo US TBill+4%			*1.0*	*4.1*	*5.4*	*5.2*	--
Liquid Credit	**236,460,537**	**20.6**	**1.9**	**10.4**	**4.6**	**4.6**	**3.5**
50% BBgBC US HY/50% S&P LSTA Lev Loan			*2.1*	*13.5*	*5.9*	*6.2*	*5.5*
Neuberger Berman	106,127,352	9.2	2.4	11.9	--	--	--
33% ICEBofAMLUSHY /33%JPMEMBI Global Div /33% S&P LSTALevLoan			*2.7*	*11.5*	--	--	--
Stone Harbor Absolute Return	130,333,185	11.3	1.4	9.4	4.1	4.1	3.2
ICE BofA-ML LIBOR			*0.1*	*0.3*	*1.6*	*1.5*	*0.9*
Private Credit Lag	**312,481,869**	**27.2**	**2.8**	**5.9**	**3.2**	**3.2**	**4.4**
Custom Credit Benchmark			*1.3*	*22.2*	*5.5*	*6.7*	*5.4*
Blackrock Direct Lending Lag	28,964,813	2.5	2.6	18.3	--	--	--
CPI + 6% BLK Blend			*3.2*	*15.0*	--	--	--
Crestline Opportunity II Lag	21,371,840	1.9	7.5	9.2	-0.2	3.6	--
Credit Blend CPI +6%			*3.2*	*8.8*	*8.1*	*8.5*	--
Davidson Kempner Long-Term Distressed Opportunities Fund V, L.P. Lag	15,788,095	1.4	8.2	--	--	--	--
Credit Blend CPI +6%			*3.2*	--	--	--	--

Market values may not add up due to rounding.
NCREIF ODCE Net + 1% 10/1/2012-present. NCREIF Property Index previously.
50% BBgBC High Yield, 50% S&P Leveraged Loans.

Asset Class Performance Net-of-Fees | As of June 30, 2021

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
HPS European Asset Value II, LP Lag	5,676,507	0.5	1.9	--	--	--	--
Credit Blend CPI +6%			*3.2*	--	--	--	--
Medley Opportunity II Lag	10,216,331	0.9	7.3	-2.1	-10.9	-6.3	--
Credit Blend CPI +6%			*3.2*	*8.8*	*8.1*	*8.5*	--
Mesa West III Lag	1,647,839	0.1	-0.1	-13.1	-1.0	3.1	--
Credit Blend CPI +6%			*3.2*	*8.8*	*8.1*	*8.5*	--
Mesa West IV Lag	44,370,217	3.9	2.1	6.2	7.8	--	--
Credit Blend CPI +6%			*3.2*	*8.8*	*8.1*	--	--
Oaktree Middle-Market Direct Lending Lag	28,553,995	2.5	4.8	22.1	11.4	--	--
CPI + 6% Oaktree Blend			*3.2*	*36.7*	*9.4*	--	--
Raven Opportunity II Lag	11,908,063	1.0	1.4	-12.2	-3.3	-3.1	--
Credit Blend CPI +6%			*3.2*	*8.8*	*8.1*	*8.5*	--
Raven Opportunity III Lag	48,837,036	4.2	1.7	1.9	7.0	3.6	--
Credit Blend CPI +6%			*3.2*	*8.8*	*8.1*	*8.5*	--
White Oak Summit Peer Lag	46,281,870	4.0	1.7	7.4	6.2	7.0	--
Credit Blend CPI +6%			*3.2*	*8.8*	*8.1*	*8.5*	--
White Oak Yield Spectrum Master V Lag	48,865,263	4.2	0.8	6.6	--	--	--
Credit Blend CPI +6%			*3.2*	*8.8*	--	--	--
Private Core Real Assets Lag	168,955,350	14.7	3.7	7.5	9.4	10.2	13.9
NCREIF ODCE +1% lag (blend)			*2.1*	*2.5*	*5.0*	*6.3*	*9.6*

Market values may not add up due to rounding.
NCREIF ODCE Net + 1% 10/1/2012-present. NCREIF Property Index previously.
50% BBgBC High Yield, 50% S&P Leveraged Loans.

Stabilized Growth

During the latest three-month period ending June 30, 2021, seven of SJCERA's sixteen Stabilized Growth managers outperformed their benchmarks while the other nine managers 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, the private core real assets sub-asset class outperformed its benchmark for the quarter.

Bridgewater All Weather, one of the Plan's Risk Parity managers, outperformed its benchmark over the quarter, 1-, 3-, and 5-year periods by 8.0%, 15.2%, 3.4%, and 2.6%, respectively.

PanAgora DRMA, one of the Plan's Risk Parity managers, outperformed its T-Bill +4% benchmark over the quarter, 1-, 3-, and 5-year periods by 6.8%, 17.1%, 5.8%, and 3.1%, respectively.

Neuberger Berman, one of the Plan's Liquid Credit managers, underperformed its benchmark for the quarter by (0.3%) and outperformed for the 1-year period by 0.4%.

Stone Harbor, the Plan's Absolute Return Fixed Income manager, outperformed the ICE BofAML LIBOR index over the quarter, 1-, 3-, 5-, and 10-year periods by 1.3%, 9.1%, 2.5%, 2.6%, and 2.3%, respectively.

BlackRock Direct Lending, one of the Plan's newer Private Credit manager, underperformed its CPI+6% benchmark by (0.6%) for the quarter but outperformed over the trailing 1-year period by 3.3%.

Crestline Opportunity II, the Plan's Credit, Niche Alternatives, and Hedge Fund Secondaries manager, trailed its benchmark over the 3- and 5-year periods by (8.3%) and (4.9%), respectively, and outperformed for the quarter and 1-year periods by 4.3% and 0.4%, respectively.

Davidson Kempner, the Plan's newest Private Credit manager, was opened during the fourth quarter of 2020 and outperformed its CPI +6% annual benchmark by 5.0% over the past quarter.

HPS EU, one of the Plan's newer Direct Lending manager, was opened during the third quarter of 2020 and underperformed its CPI +6% benchmark for the second quarter of 2021 by (1.3%).

Stabilized Growth (Continued)

Medley Opportunity II, one of the Plan's Direct Lending managers, produced a positive quarterly return of 7.3%, outperforming its CPI +6% annual return target by 4.1%. The fund has trailed its benchmark over the 1-, 3- and 5-year time periods by (10.9%), (18.9%) and (14.8%) respectively.

Mesa West RE Income III, one of the Plan's Commercial Mortgage managers, produced a negative quarterly return of (0.1%), underperforming its CPI +6% annual benchmark by (3.3%). It also underperformed its benchmark over the 1-, 3- and 5-year periods by (21.9%), (9.1%), and (5.4%) respectively.

Mesa West RE Income IV, one of the Plan's Commercial Mortgage managers, produced a quarterly return of 2.1%, underperforming its CPI +6% annual benchmark by (1.1%). Over the 1- and 3-year periods, the fund underperformed its benchmark by (2.6%) and (0.3%) respectively.

Oaktree, a Middle-Market Direct Lending manager, outperformed its MSCI ACWI +2% Blended benchmark over the quarter and 3-year time periods by 1.6% and 2.0%, respectively and underperformed for the 1-year period by (14.6%).

Raven Capital II, one of the Plan's Direct Lending managers, produced a quarterly return of 1.4% and trailed its target over the quarter, 1-, 3-, and 5-year periods by (1.8%), (21.0%), (11.4%), and (11.6%), respectively.

Raven Capital III underperformed its CPI +6% annual target over the quarter, 1-, 3-, and 5-year periods by (1.5%), (6.9%), (1.1%), and (4.9%), respectively.

White Oak Summit Peer, one of the Plan's Direct Lending managers, underperformed its CPI +6% index over the quarter, 1-, 3-, and 5-year periods by (1.5%), (1.4%), (1.9%), and (1.5%), respectively.

White Oak Yield Spectrum Master V trailed its CPI +6% benchmark over both the quarter and 1-year period by (2.4%).

Private Core Private Real Estate, investing in Core Real Assets, outperformed its NCREIF ODCE +1% benchmark for the quarter, 1-, 3-, 5-, and 10-year periods by 1.6%, 5.0% 4.4%, 3.9%, and 4.3%, respectively.

Asset Class Performance Net-of-Fees | As of June 30, 2021

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Principal Protection	**329,953,201**	**100.0**	**1.8**	**4.0**	**4.1**	**3.6**	**4.5**
Bloomberg US Aggregate TR			*1.8*	*-0.3*	*5.3*	*3.0*	*3.4*
Dodge & Cox Fixed Income	167,519,774	50.8	2.1	3.5	6.6	4.7	4.7
Bloomberg US Aggregate TR			*1.8*	*-0.3*	*5.3*	*3.0*	*3.4*
DoubleLine	113,072,959	34.3	1.3	4.4	4.5	3.8	--
Bloomberg US Aggregate TR			*1.8*	*-0.3*	*5.3*	*3.0*	--
SJ Principal Protection	49,360,468	15.0	1.9	--	--	--	--
Bloomberg US Aggregate TR			*1.8*	--	--	--	--

Market values may not add up due to rounding.

Principal Protection

During the latest three-month period ending June 30, 2021, two of SJCERA's three Principal Protection managers outperformed the Blmbg. Barc. US Aggregate Index. PRIMA Mortgage was closed at the beginning of the first quarter and SJ Principal Protection, a passive fixed income manager, was opened.

Dodge & Cox, the Plan's Core Fixed Income manager, earned a quarterly return of 2.1%, outperforming its benchmark by 0.3%. The portfolio also outperformed its benchmark over the 1-, 3-, 5-, and 10-year periods by 3.8%, 1.3%, 1.7%, and 1.3%, respectively.

DoubleLine, the Plan's Mortgage Backed Securities manager, provided a quarterly return of 1.3%, underperforming its benchmark by (0.5%). The manager outperformed its benchmark over the 1-, and 5-year time periods by 4.7% and 0.8%, respectively, while underperforming its benchmark over the 3-year time period by (0.8%).

SJ Principal Protection, the Plan's passive Fixed Income manager opened in January 2021, returned 1.9% for the quarter and outperformed the benchmark by 0.1%.

Asset Class Performance Net-of-Fees | As of June 30, 2021

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Crisis Risk Offset Asset Class	**465,235,241**	**100.0**	**3.6**	**-0.2**	**4.3**	**1.7**	**5.7**
CRO Benchmark			*3.7*	*2.7*	*6.4*	*3.4*	*5.2*
Long Duration	**151,372,783**	**32.5**	**6.3**	**-9.5**	**7.7**	**3.0**	**--**
Bloomberg US Treasury Long TR			*6.5*	*-10.6*	*8.0*	*3.1*	*--*
Dodge & Cox Long Duration	151,372,783	32.5	6.3	-9.5	7.7	3.0	--
Bloomberg US Treasury Long TR			*6.5*	*-10.6*	*8.0*	*3.1*	*--*
Systematic Trend Following	**191,370,469**	**41.1**	**4.8**	**25.8**	**6.1**	**-0.3**	**6.5**
BTOP 50 (blend)			*3.3*	*14.6*	*5.6*	*1.4*	*3.4*
Graham Tactical Trend	92,227,006	19.8	1.7	19.2	6.1	0.5	--
SG Trend			*3.3*	*15.1*	*6.9*	*1.8*	*--*
Mount Lucas	99,143,463	21.3	7.9	32.7	5.9	-1.7	5.7
BTOP 50 (blend)			*3.3*	*14.6*	*5.6*	*1.4*	*3.4*
Alternative Risk Premium	**122,491,989**	**26.3**	**-1.3**	**-16.6**	**-2.9**	**0.4**	**2.5**
5% Annual (blend)			*1.2*	*5.0*	*5.0*	*5.0*	*7.5*
AQR Style Premia	28,694,807	6.2	-3.2	12.7	-10.3	-5.7	--
5% Annual			*1.2*	*5.0*	*5.0*	*5.0*	*--*
Lombard Odier	59,958,843	12.9	4.0	-12.9	--	--	--
5% Annual			*1.2*	*5.0*	*--*	*--*	*--*
P/E Diversified Global Macro	33,838,339	7.3	-8.0	-35.5	-6.0	-3.9	--
5% Annual			*1.2*	*5.0*	*5.0*	*5.0*	*--*

Market values may not add up due to rounding.
50% BC High Yield, 50% S&P Leveraged Loans
(1/3) BC Long Duration Treasuries, (1/3) BTOP50 Index, (1/3) 5% Annual.

Crisis Risk Offset

During the latest three-month period ending June 30, 2021, two of SJCERA's six Crisis Risk Offset managers outperformed their respective benchmarks.

Dodge & Cox Long Duration produced a quarterly return of 6.3%, underperforming the Blmbg. Barc. US Long Duration Treasuries by (0.2%). The manager outperformed the benchmark over the 1-year time period by 1.1% and underperformed its benchmark over the 3- and 5-year periods by (0.3%) and (0.1%), respectively.

Graham, one of the Plan's Systematic Trend Following managers, had a quarterly return of 1.7%, underperforming the SG Trend Index by (1.6%). The fund outperformed its benchmark over the 1-year period by 4.1% and underperformed over the 3- and 5-year periods by (0.8%) and (1.3%), respectively.

Mount Lucas, one of the Plan's Systematic Trend Following managers, produced a quarterly return of 7.9%, outperforming the Barclays BTOP 50 Index by 4.6%. The fund also outperformed its benchmark over the 1-, 3- and 10-year periods by 18.1%, 0.3%, and 2.3% respectively. It underperformed for 5-year period by (3.1%).

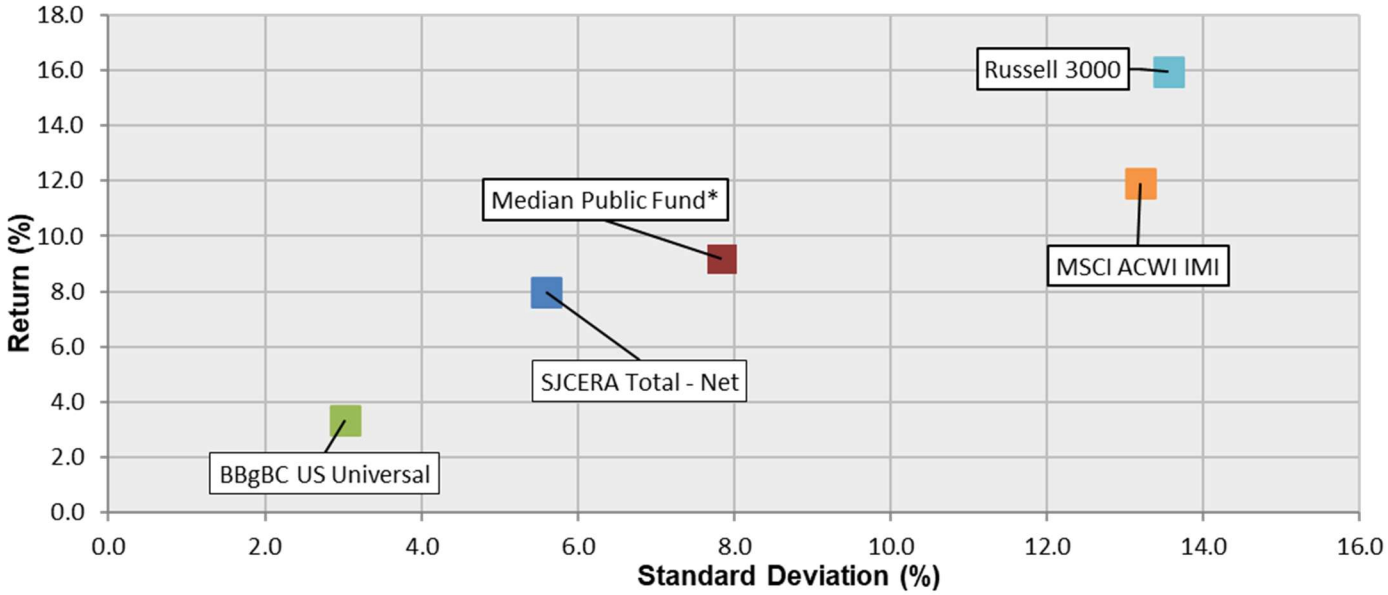
AQR, one of the Plan's Alternative Risk Premium managers, posted negative returns and underperformed its 5% Annual target for the quarter, 3- and 5-year periods by (4.4%), (15.3%) and (10.7%) respectively. It posted a 12.7% return for the trailing 1-year period.

Lombard Odier, an Alternative Risk Premium manager, earned a quarterly return of 4.0%, outperforming its 5% Annual target 2.8%. The manager underperformed its benchmark for the 1-year period by (17.9%).

P/E Diversified, one of the Plan's Alternative Risk Premium managers, underperformed its 5% Annual target for the quarter, 1-, 3-, and 5-year time periods by (9.2%), (40.5%), (11.0%), and (8.9%), respectively.

5-Year Net of Fees Comparison

SJCERA Total Fund
5-Year Annualized Risk/Return (Net of Fees)



	Anlzd Return	Anlzd Std. Dev.	Sharpe Ratio
SJCERA Total - Net	8.00	5.60	1.31
Median Public Fund*	9.18	7.84	1.11
Bloomberg US Universal	3.35	3.03	0.89
Russell 3000	15.97	13.56	1.13
MSCI ACWI IMI	11.94	13.20	0.86

* InvMetrics Public DB > $1B Net

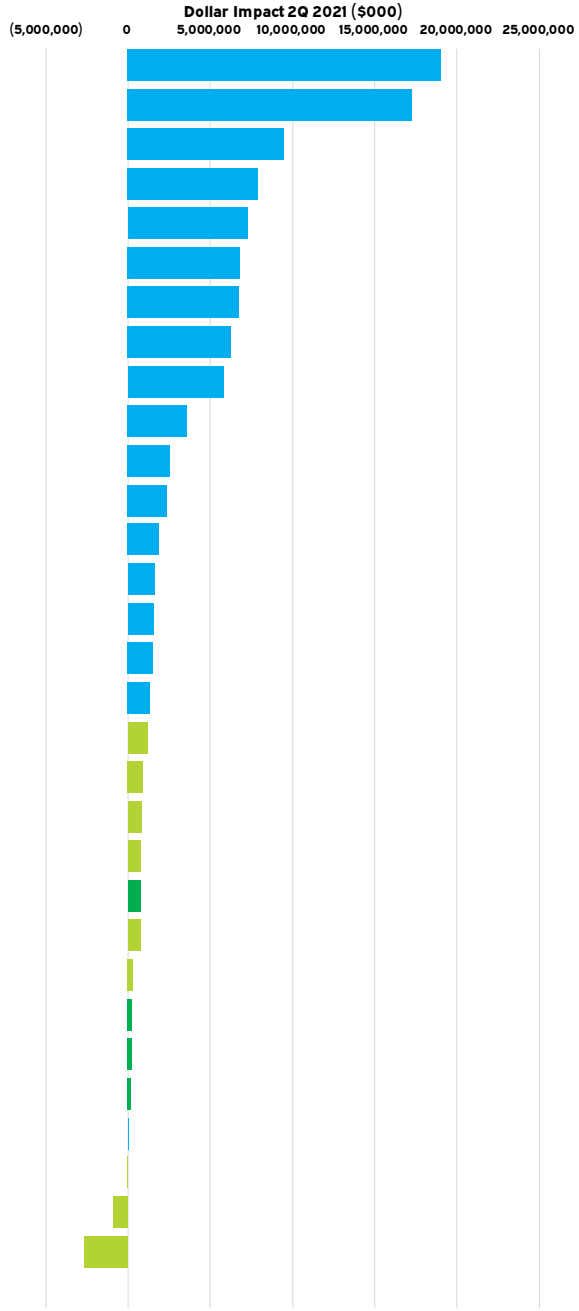
MEKETA

San Joaquin County Employees' Retirement Association: Manager Value-Added (Dollar-Impact)
As of June 30, 2021

SJCERA Total Plan

As of June 30, 2021

Manager/Mandate	Manager Return	Benchmark Return	Dollar Impact	Benchmark Added Value	Manager BNAV
6/30/2021			2,133,344,809		2,133,344,809
SJCERA Total Policy Benchmark	**2.5%**	**2.7%**			
Bridgewater All Weather T-bill + 4%	9.0%	1.0%	19,010,374		210,874,915
PanAgora Diversified Risk Multi Asset T-bill + 4%	7.8%	1.0%	17,256,093		221,487,519
Dodge & Cox Long Duration BB US Long Duration Treasuries	6.3%	1.8%	9,475,936		151,372,783
Mount Lucas BTOP 50	7.9%	3.3%	7,871,991		99,143,463
Ocean Avenue II MSCI ACWI +2% Blend	20.7%	5.2%	7,264,657		35,066,163
PIMCO RAE Emerging Markets MSCI Emerging Markets	8.3%	5.1%	6,796,020		81,958,758
Ocean Avenue III MSCI ACWI +2% Blend	12.2%	5.2%	6,729,887		55,271,738
Private Core Real Estate Private Real Estate Benchmark	3.7%	2.1%	6,259,796		168,955,350
Invesco REIT FTSE NAREIT Index	12.2%	12.0%	5,806,402		47,468,954
Dodge & Cox Fixed Income BB Aggregate	2.1%	1.8%	3,571,522		167,519,774
Neuberger Berman Global Credit Hybrid	2.4%	2.7%	2,574,650		106,127,352
Lombard Odier 5% Annual	4.0%	1.2%	2,371,372		59,958,843
Stone Harbor Absolute Return 3-Month Libor TR USD	1.4%	0.1%	1,867,675		130,333,185
Crestline Opportunity II CPI + 6% Annual	7.5%	3.2%	1,604,811		21,371,840
Graham Tactical Trend SG Trend Index	1.7%	3.3%	1,545,725		92,227,006
DoubleLine BB Aggregate	1.3%	1.8%	1,489,171		113,072,959
Oaktree MSCI ACWI +2% Blend	4.8%	5.2%	1,357,742		28,553,995
Ocean Avenue IV MSCI ACWI +2% Blend	4.3%	5.2%	1,207,793		28,272,300
Mesa West IV CPI + 6% Annual	2.1%	5.2%	938,874		44,370,217
Raven III CPI + 6% Annual	1.7%	3.2%	837,555		48,837,036
White Oak Summit Peer CPI + 6% Annual	1.7%	3.2%	764,576		46,281,870
BlackRock Direct Lending CPI + 6% Annual	2.6%	3.2%	753,375		28,964,813
Medley Opportunity II CPI + 6% Annual	7.3%	3.2%	747,835		10,216,331
BlackRock Global Energy & Power MSCI ACWI +2% Blend	1.5%	5.2%	272,934		18,135,143
Morgan Creek III MSCI ACWI +2% Blend	3.3%	5.2%	266,849		8,158,028
Morgan Creek VI MSCI ACWI +2% Blend	1.1%	5.2%	255,930		23,785,303
Raven II CPI + 6% Annual	1.4%	3.2%	166,356		11,908,063
Morgan Creek V MSCI ACWI +2% Blend	0.0%	5.2%	947		9,470,123
Mesa West III CPI + 6% Annual	-0.1%	3.2%	(1,763)		1,647,839
AQR 5% Annual	-3.2%	1.2%	(917,947)		28,694,807
P/E Diversified Global Macro 5% Annual	-8.0%	1.2%	(2,718,234)		33,838,339
Total Portfolio MV as of 6/30/2021			**3,809,830,770**		



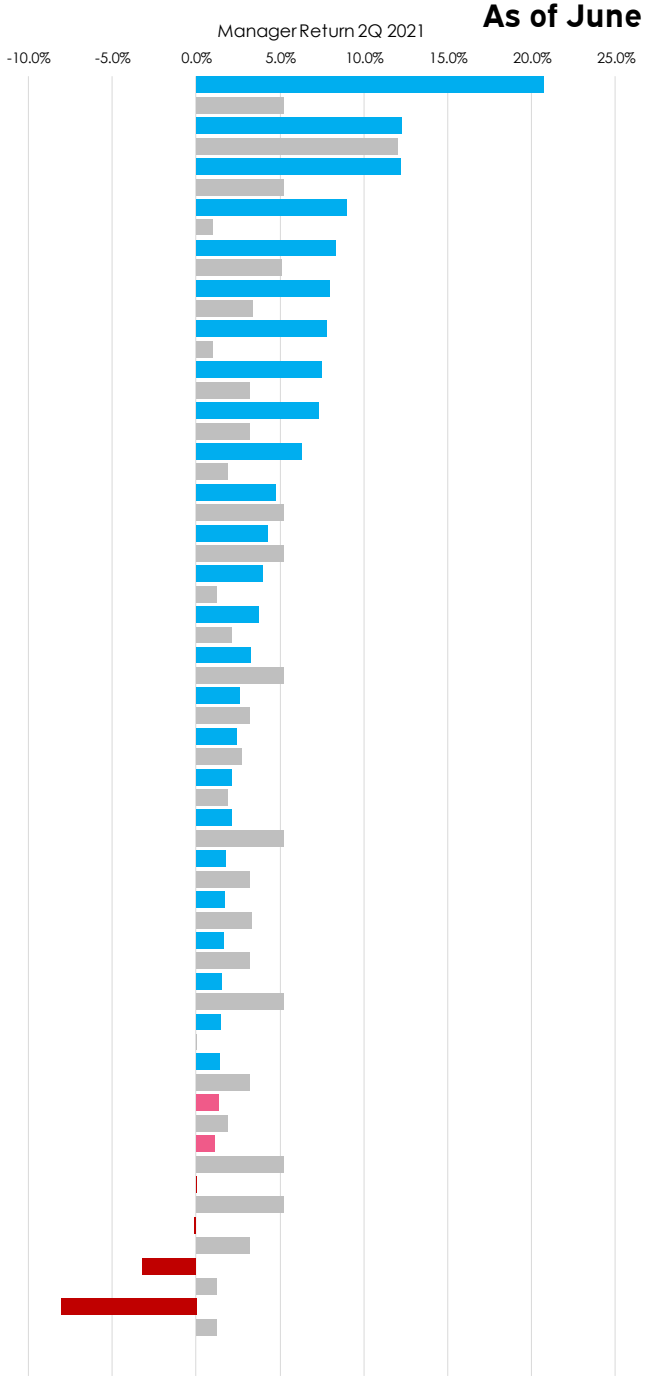
MEKETA

SJCERA Total Plan

As of June 30, 2021

San Joaquin County Employees' Reitrement Association: Manager Value-Added (Return)
As of June 30, 2021

Manager/Mandate	Manager Return	Benchmark Return	Dollar Impact	Benchmark Added Value	Manager BNAV
6/30/2021			**2,133,344,809**		**2,133,344,809**
SJCERA Total	**2.5%**	**2.7%**			
Policy Benchmark					
Ocean Avenue II	20.7%	5.2%	7,264,657		35,066,163
MSCI ACWI +2% Blend					
Invesco REIT	12.2%	12.0%	5,806,402		47,468,954
FTSE NAREIT Index					
Ocean Avenue III	12.2%	5.2%	6,729,887		55,271,738
MSCI ACWI +2% Blend					
Bridgewater All Weather	9.0%	1.0%	19,010,374		210,874,915
T-bill + 4%					
PIMCO RAE Emerging Markets	8.3%	5.1%	6,796,020		81,958,758
MSCI Emerging Markets					
Mount Lucas	7.9%	3.3%	7,871,991		99,143,463
BTOP 50					
PanAgora Diversified Risk Multi Asset	7.8%	1.0%	17,256,093		221,487,519
T-bill + 4%					
Crestline Opportunity II	7.5%	3.2%	1,604,811		21,371,840
CPI + 6% Annual					
Medley Opportunity II	7.3%	3.2%	747,835		10,216,331
CPI + 6% Annual					
Dodge & Cox Long Duration	6.3%	1.8%	9,475,936		151,372,783
BB US Long Duration Treasuries					
Oaktree	4.8%	5.2%	1,357,742		28,553,995
MSCI ACWI +2% Blend					
Ocean Avenue IV	4.3%	5.2%	1,207,793		28,272,300
MSCI ACWI +2% Blend					
Lombard Odier	4.0%	1.2%	2,371,372		59,958,843
5% Annual					
Private Core Real Estate	3.7%	2.1%	6,259,796		168,955,350
Private Real Estate Benchmark					
Morgan Creek III	3.3%	5.2%	266,849		8,158,028
MSCI ACWI +2% Blend					
BlackRock Direct Lending	2.6%	3.2%	753,375		28,964,813
CPI + 6% Annual					
Neuberger Berman	2.4%	2.7%	2,574,650		106,127,352
Global Credit Hybrid					
Dodge & Cox Fixed Income	2.1%	1.8%	3,571,522		167,519,774
BB Aggregate					
Mesa West IV	2.1%	5.2%	938,874		44,370,217
CPI + 6% Annual					
Raven III	1.7%	3.2%	837,555		48,837,036
CPI + 6% Annual					
Graham Tactical Trend	1.7%	3.3%	1,545,725		92,227,006
SG Trend Index					
White Oak Summit Peer	1.7%	3.2%	764,576		46,281,870
CPI + 6% Annual					
BlackRock Global Energy & Power	1.5%	5.2%	272,934		18,135,143
MSCI ACWI +2% Blend					
Stone Harbor Absolute Return	1.4%	0.1%	1,867,675		130,333,185
3-Month Libor TR USD					
Raven II	1.4%	3.2%	166,356		11,908,063
CPI + 6% Annual					
DoubleLine	1.3%	1.8%	1,489,171		113,072,959
BB Aggregate					
Morgan Creek VI	1.1%	5.2%	255,930		23,785,303
MSCI ACWI +2% Blend					
Morgan Creek V	0.0%	5.2%	947		9,470,123
MSCI ACWI +2% Blend					
Mesa West III	-0.1%	3.2%	(1,763)		1,647,839
CPI + 6% Annual					
AQR	-3.2%	1.2%	(917,947)		28,694,807
5% Annual					
P/E Diversified Global Macro	-8.0%	1.2%	(2,718,234)		33,838,339
5% Annual					
Total Portfolio MV as of 6/30/2021			**3,809,830,770**		



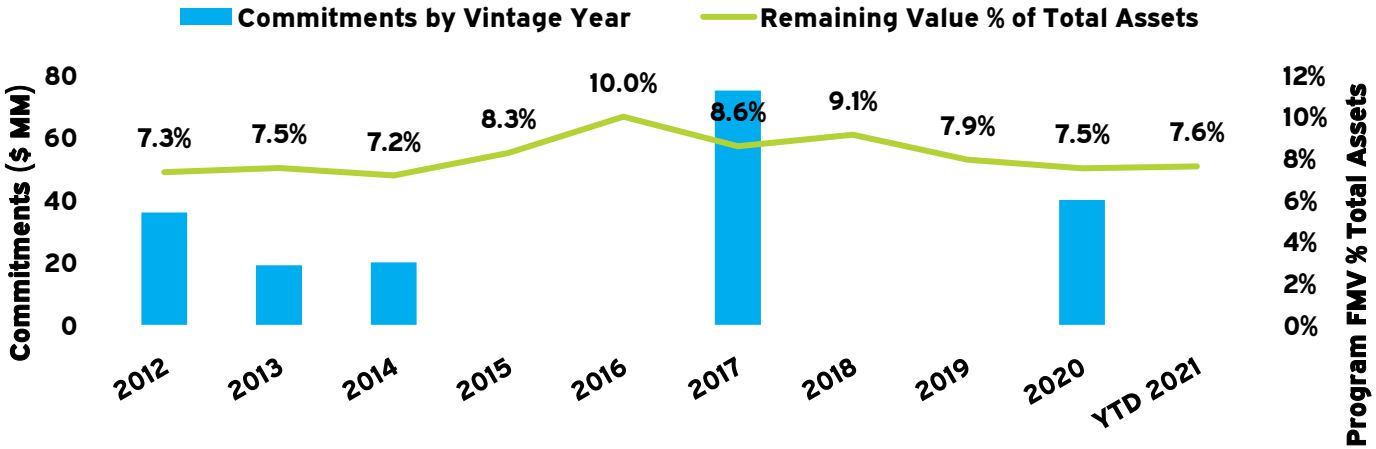
Real Estate Program

March 31, 2021

Table of Contents | As of March 31, 2021

Introduction

The Retirement Association's target allocation towards real estate assets is 10-12%. As of March 31, 2021, 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 $274.1 million.



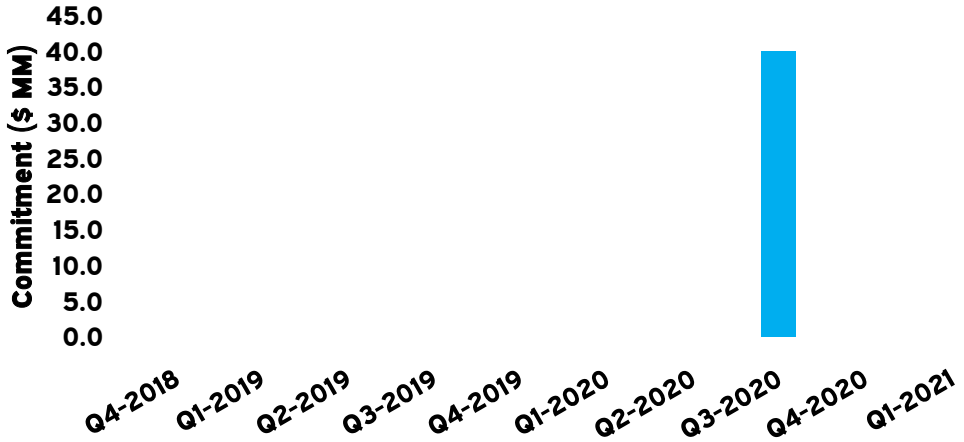
Program Status

No. of Investments	18
Committed ($ MM)	501.6
Contributed ($ MM)	421.4
Distributed ($ MM)	307.2
Remaining Value ($ MM)	274.1

Performance Since Inception

	Program	Peer Universe
DPI	0.73x	0.87x
TVPI	1.38x	1.28x
IRR	6.2%	6.0%

Commitments



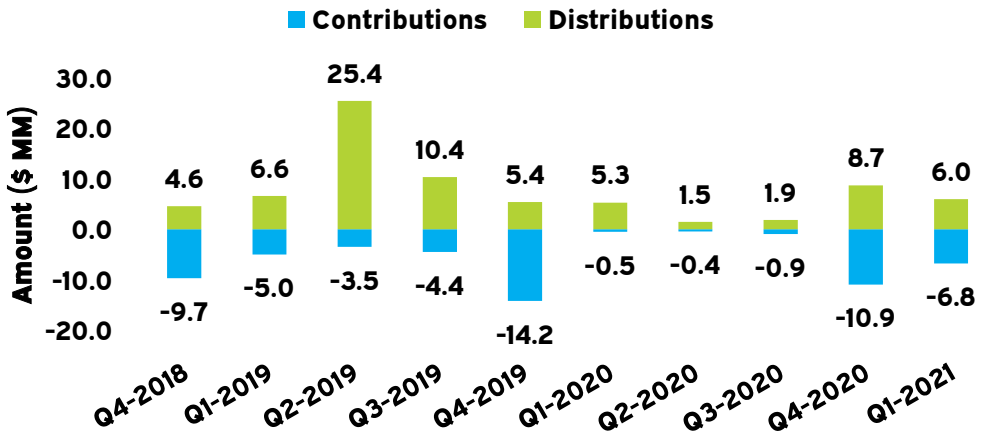
Commitments This Quarter

Fund	Strategy	Region	Amount (MM)

None to report.

Cash Flows

Recent Quarterly Cash Flows



Largest Contributions This Quarter

Fund	Vintage	Strategy	Region	Amount ($MM)
Berkeley V	2020	Value-Added	North America	6.06
Prologis Logistics	1970	Core	North America	0.71

Largest Distributions This Quarter

Fund	Vintage	Strategy	Region	Amount ($MM)
Stockbridge RE III	2017	Value-Added	North America	2.24
AG Core Plus IV	2014	Value-Added	North America	1.75
Prologis Logistics	1970	Core	North America	0.71

Significant Events

- During the first quarter, Berkeley Partners Value Industrial Fund V invested $109.2 million across nine acquisitions, including five within the Boston market, two in Colorado, one in Georgia and one in New Jersey/Pennsylvania. Both Colorado investments constitute the Longmont, CO acquisition, which represents the largest investment of the quarter. The acquisition comprises nine industrial and flex industrial buildings and totals approximately $43.2 million of invested capital.
- In February 2021, Stockbridge Value Fund III closed on the disposition of Josey Lane Distribution Center, an industrial property in Carrollton, Texas, for a gross sales price of $18.9 million, resulting in a realized IRR of 18.6% and an equity multiple of 1.4x to the Fund.
- During the first quarter, Prologis US Logistics Fund acquired four buildings and two covered land parcels for a combined price of $164.5 million. The Fund did not dispose of any assets during the first quarter. Additionally, the Fund's NAV per unit increased 5.2% to $2,028.56 during the quarter due to the unrealized gains on real estate investments.

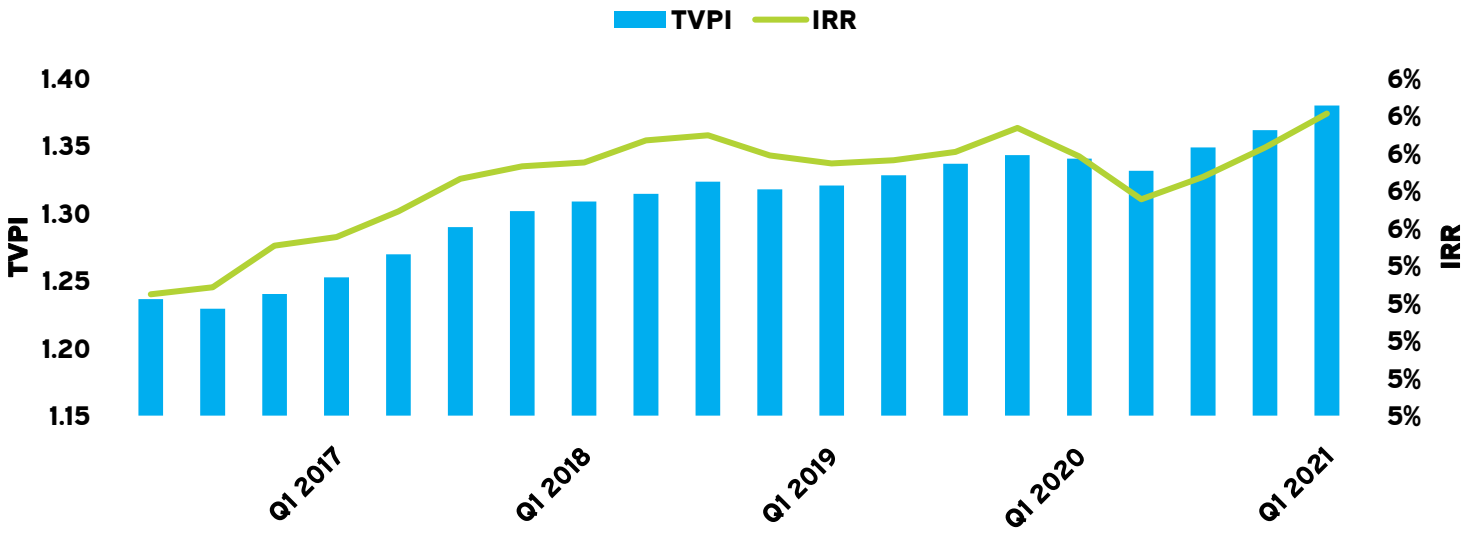
By Strategy

Group	Number	Committed ($ MM)	Contributed ($ MM)	Unfunded ($ MM)	Distributed ($ MM)	Remaining Value ($ MM)	Exposure ($ MM)	DPI (X)	TVPI (X)	IRR (%)
Core	3	120.5	122.8	0.0	25.7	169.0	169.0	0.21	1.59	6.6
Opportunistic	9	204.1	173.8	31.3	190.9	37.8	69.0	1.10	1.32	5.3
Value-Added	6	177.0	124.8	53.8	90.7	67.4	121.2	0.73	1.27	7.9
Total	**18**	**501.6**	**421.4**	**85.1**	**307.2**	**274.1**	**359.2**	**0.73**	**1.38**	**6.2**

By Vintage

Group	Number	Committed ($ MM)	Contributed ($ MM)	Unfunded ($ MM)	Distributed ($ MM)	Remaining Value ($ MM)	Exposure ($ MM)	DPI (X)	TVPI (X)	IRR (%)
Open-end	3	120.5	122.8	0.0	25.7	169.0	169.0	0.21	1.59	6.6
2005	2	45.0	44.5	0.0	37.6	2.1	2.1	0.85	0.89	-1.5
2007	4	96.0	84.0	12.0	114.9	5.6	17.6	1.37	1.43	7.3
2011	2	50.0	38.3	11.7	47.1	3.8	15.5	1.23	1.33	9.5
2012	2	36.0	33.8	3.0	48.8	0.3	3.3	1.45	1.45	12.6
2013	1	19.1	18.3	0.8	20.3	9.3	10.1	1.11	1.62	12.8
2014	1	20.0	19.0	1.8	5.1	19.3	21.0	0.27	1.28	7.9
2017	2	75.0	51.8	24.6	7.7	55.5	80.1	0.15	1.22	11.1
2020	1	40.0	9.0	31.2	0.1	9.3	40.5	0.01	1.04	NM
Total	**18**	**501.6**	**421.4**	**85.1**	**307.2**	**274.1**	**359.2**	**0.73**	**1.38**	**6.2**

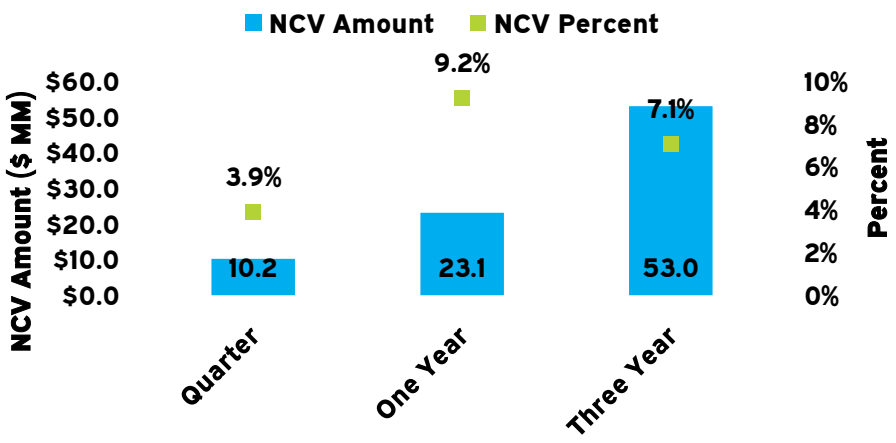
Since Inception Performance Over Time



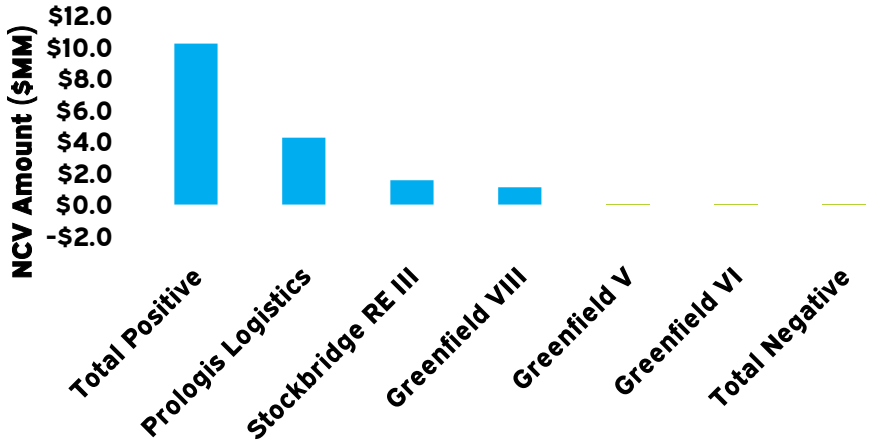
Horizon IRRs

	1 Year (%)	3 Year (%)	5 Year (%)	10 Year (%)	Since Inception (%)
Aggregate Portfolio	9.2	7.1	7.7	10.3	6.2
Public Market Equivalent	32.2	8.6	4.1	7.9	8.0

Periodic NCV



1 Quarter Drivers Of NCV

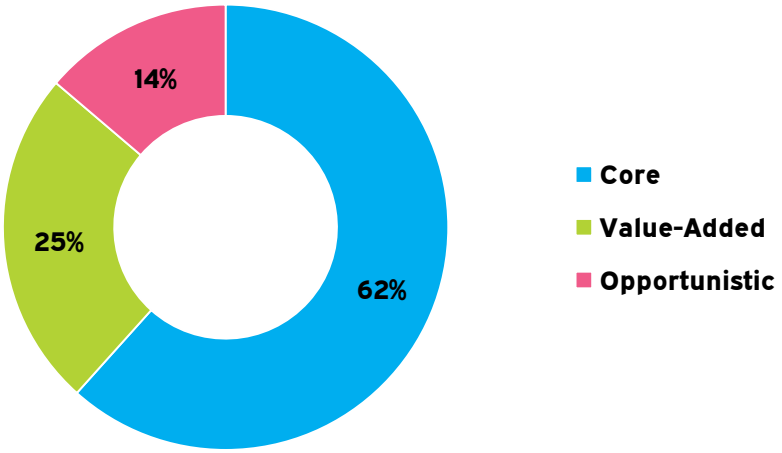


Fund Performance: Sorted By Vintage And Strategy

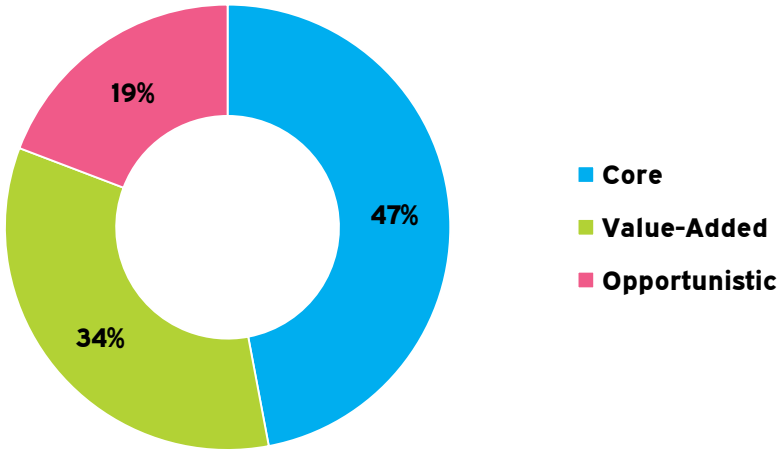
By Investment	Vintage	Strategy	Committed ($ MM)	Contributed ($ MM)	Unfunded ($ MM)	Distributed ($ MM)	Remaining Value ($ MM)	TVPI (X)	Peer TVPI (X)	IRR (%)	Peer IRR (%)
Principal US	Open-end	Core	25.0	25.0	0.0	0.0	35.2	1.41	NM	6.6	NM
Prologis Logistics	Open-end	Core	50.5	52.8	0.0	18.3	82.7	1.91	NM	6.7	NM
RREEF America II	Open-end	Core	45.0	45.0	0.0	7.4	51.1	1.30	NM	6.0	NM
Miller GLobal Fund V	2005	Opportunistic	15.0	14.5	0.0	17.6	0.0	1.21	1.02	3.3	0.4
Walton Street V	2005	Opportunistic	30.0	30.0	0.0	20.1	2.1	0.74	1.02	-3.3	0.4
Greenfield V	2007	Opportunistic	30.0	29.6	0.4	40.4	0.2	1.37	1.18	8.3	3.2
Miller Global VI	2007	Opportunistic	30.0	21.1	8.9	32.3	0.5	1.55	1.18	7.6	3.2
Walton Street VI	2007	Opportunistic	15.0	13.3	1.7	15.2	4.9	1.51	1.18	7.9	3.2
Colony Realty III	2007	Value-Added	21.0	20.0	1.0	26.9	0.0	1.35	1.18	5.3	3.2
Greenfield VI	2011	Opportunistic	20.0	19.2	0.8	26.1	0.2	1.37	1.47	9.7	11.9
Almanac Realty VI	2011	Value-Added	30.0	19.1	10.9	21.0	3.6	1.29	1.47	9.3	11.9
Miller Global VII	2012	Opportunistic	15.0	12.0	3.0	15.9	0.3	1.35	1.45	14.8	10.8
Colony Realty IV	2012	Value-Added	21.0	21.7	0.0	32.9	0.0	1.51	1.45	11.9	10.8
Greenfield VII	2013	Opportunistic	19.1	18.3	0.8	20.3	9.3	1.62	1.33	12.8	9.4
AG Core Plus IV	2014	Value-Added	20.0	19.0	1.8	5.1	19.3	1.28	1.34	7.9	9.6
Greenfield VIII	2017	Opportunistic	30.0	15.8	15.6	3.0	20.3	1.47	1.20	18.1	10.1
Stockbridge RE III	2017	Value-Added	45.0	36.0	9.0	4.7	35.2	1.11	1.20	6.3	10.1
Berkeley V	2020	Value-Added	40.0	9.0	31.2	0.1	9.3	1.04	0.97	NM	NM
Total			**501.6**	**421.4**	**85.1**	**307.2**	**274.1**	**1.38**	**1.28**	**6.2**	**6.0**

By Strategy

Percent of FMV

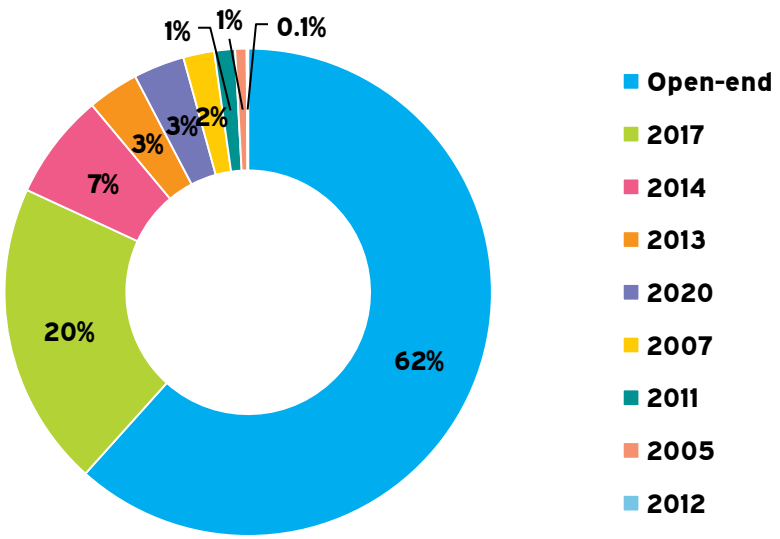


Percent of Exposure

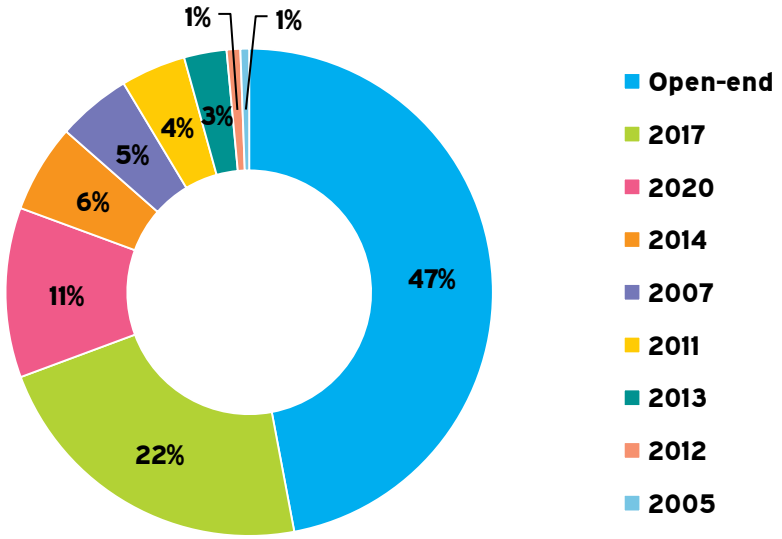


By Vintage

Percent of FMV

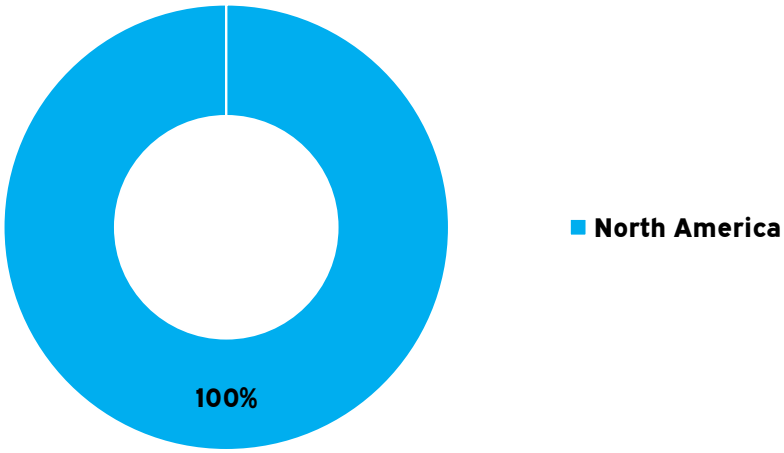


Percent of Exposure

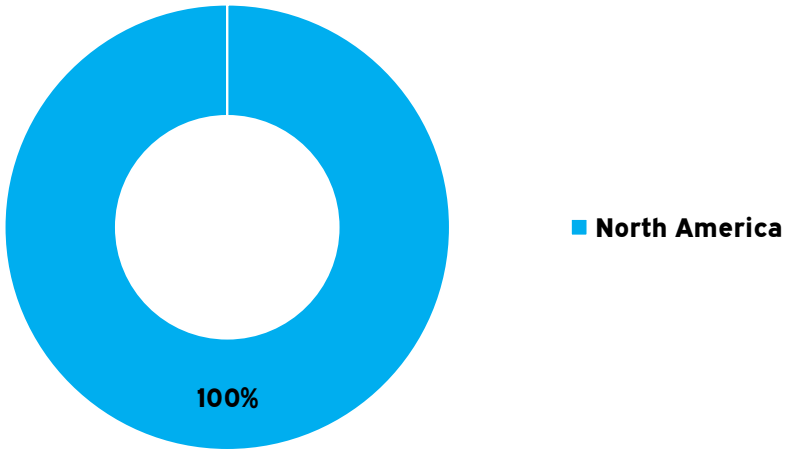


By Geographic Focus

Percent of FMV



Percent of Exposure



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.

Peer Universe	The performance for a set of comparable private market funds. The peer returns used in this report are provided by Thomson ONE, based on data from Cambridge Associates as of the date of this report. Program-level peer universe performance represents the pooled return for a set of funds of corresponding vintages and strategies across all regions globally. Fund-level peer performance represents the median return for a set of funds of the same vintage and the program's set of corresponding strategies across all regions globally. Data sets that include less than five funds display performance as "NM". Meketa utilizes the following Thomson ONE strategies for peer universes: Infrastructure: Infrastructure Natural Resources: Private Equity Energy, Upstream Energy & Royalties, and Timber Private Debt: Subordinated Capital, Credit Opportunities, Senior Debt, and Control-Oriented Distressed Private Equity (including Private Debt): Venture Capital, Growth Equity, Buyout, Subordinated Capital, Credit Opportunities, Senior Debt, and Control-Oriented Distressed Private Equity (excluding Private Debt): Venture Capital, Growth Equity, and Buyout Real Assets (excluding Real Estate): Infrastructure, Private Equity Energy, Upstream Energy & Royalties, and Timber Real Assets (including Real Estate): Infrastructure, Private Equity Energy, Upstream Energy & Royalties, Timber, and Real Estate Real Estate: Real Estate
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

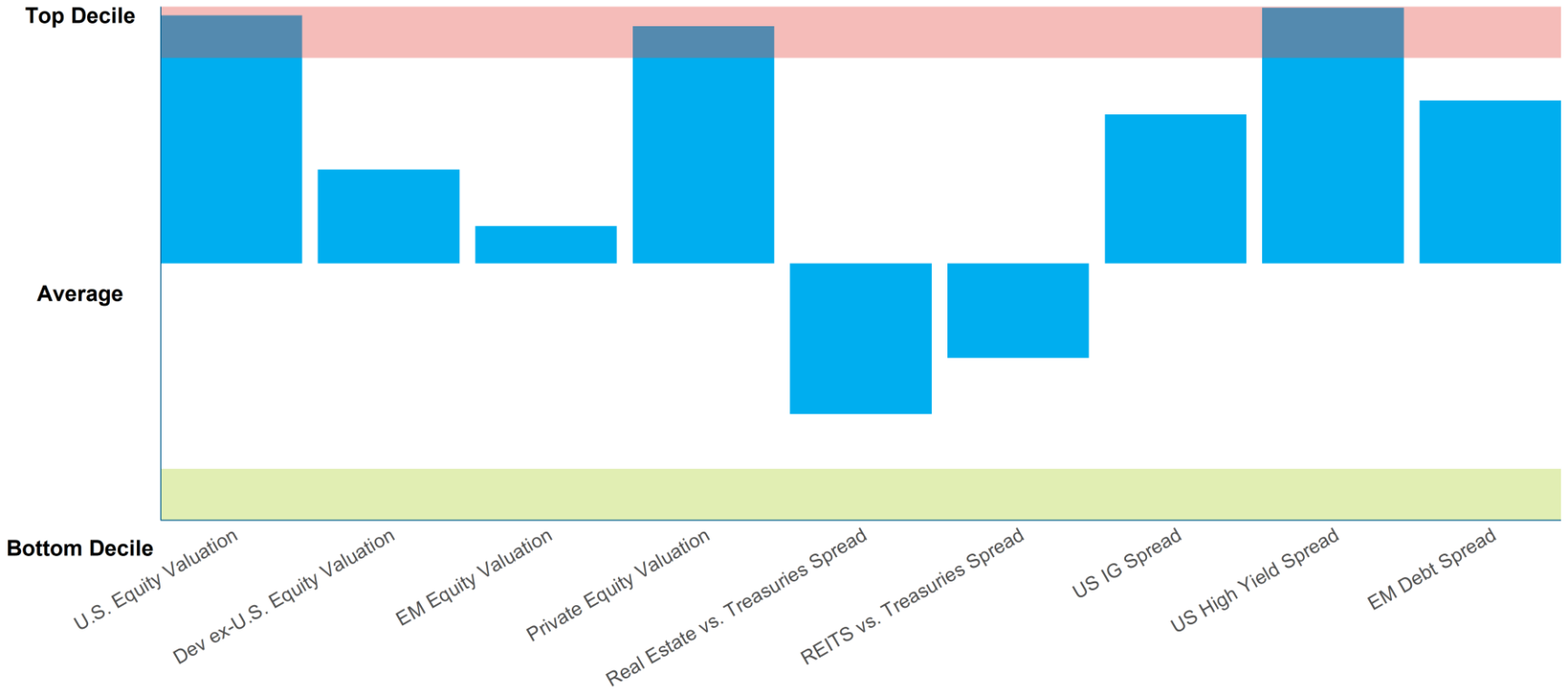
As of June 30, 2021

Capital Markets Outlook

Takeaways

- The rotation to value and cyclical stocks took a pause in June, as growth stocks outperformed value stocks.
- Outside the US, emerging market equities outperformed developed market equities, and like the US, growth outperformed value.
- Fixed income markets posted modest positive returns, with the Barclays TIPS index returning 0.6% and the Barclays Aggregate index gaining 0.7%.
- The Bloomberg Commodities index returned 1.9% in June, but commodity-related stocks retraced some of their gains, with the S&P Global Natural Resources index returning -2.2%.
- Global infrastructure stocks posted mixed returns in June, while REITs saw small gains.
- The US vaccination efforts combined with the re-opening of major parts of the US economy have lifted 2021 GDP forecasts for the US to 6.5%.
- COVID-related setbacks have eased in Europe, likewise lifting growth expectations there for 2021.
- According to the World Health Organization, global COVID cases have been falling since January. While the efficacy of many of the vaccines is promising, governments are closely monitoring new COVID variants.
- Questions around the Biden administration's policy agenda and its ability to implements it are paramount on investors' minds, especially on questions related to growth and inflation.
- Investors are likewise keeping an eye on monetary policy, specifically the timing and pace of which the Fed may start to dial back some of its stimulus.

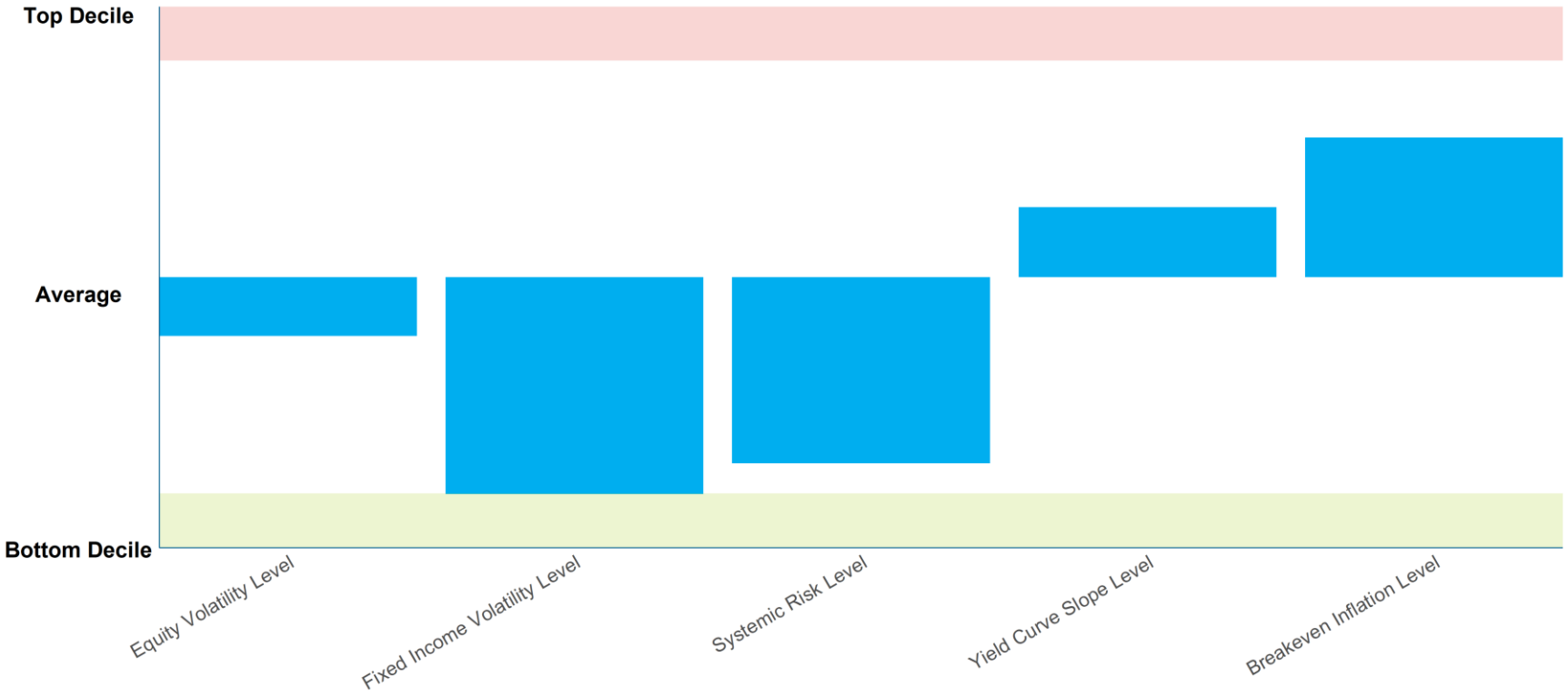
Risk Overview/Dashboard (1)
(As of June 30, 2021)[1]



- 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, 2020.

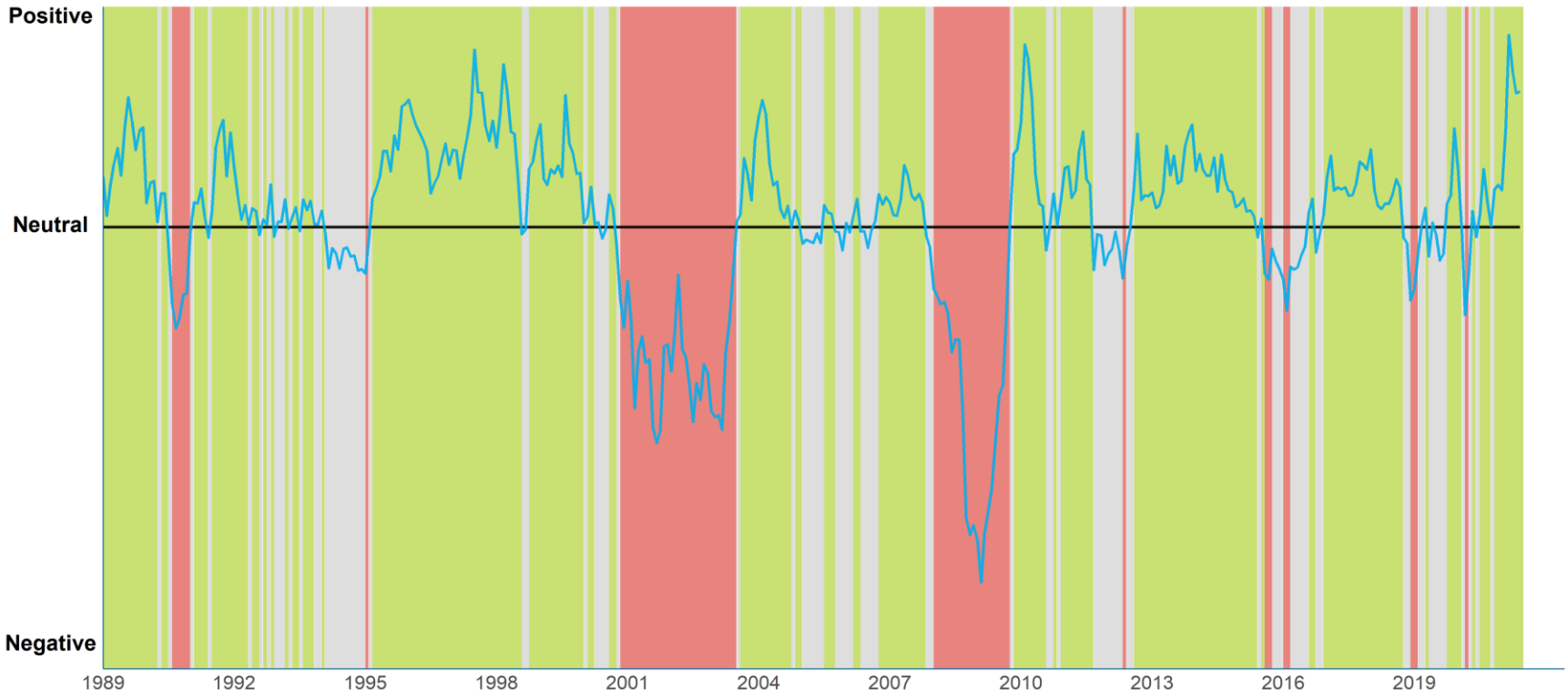
Risk Overview/Dashboard (2)
(As of June 30, 2021)



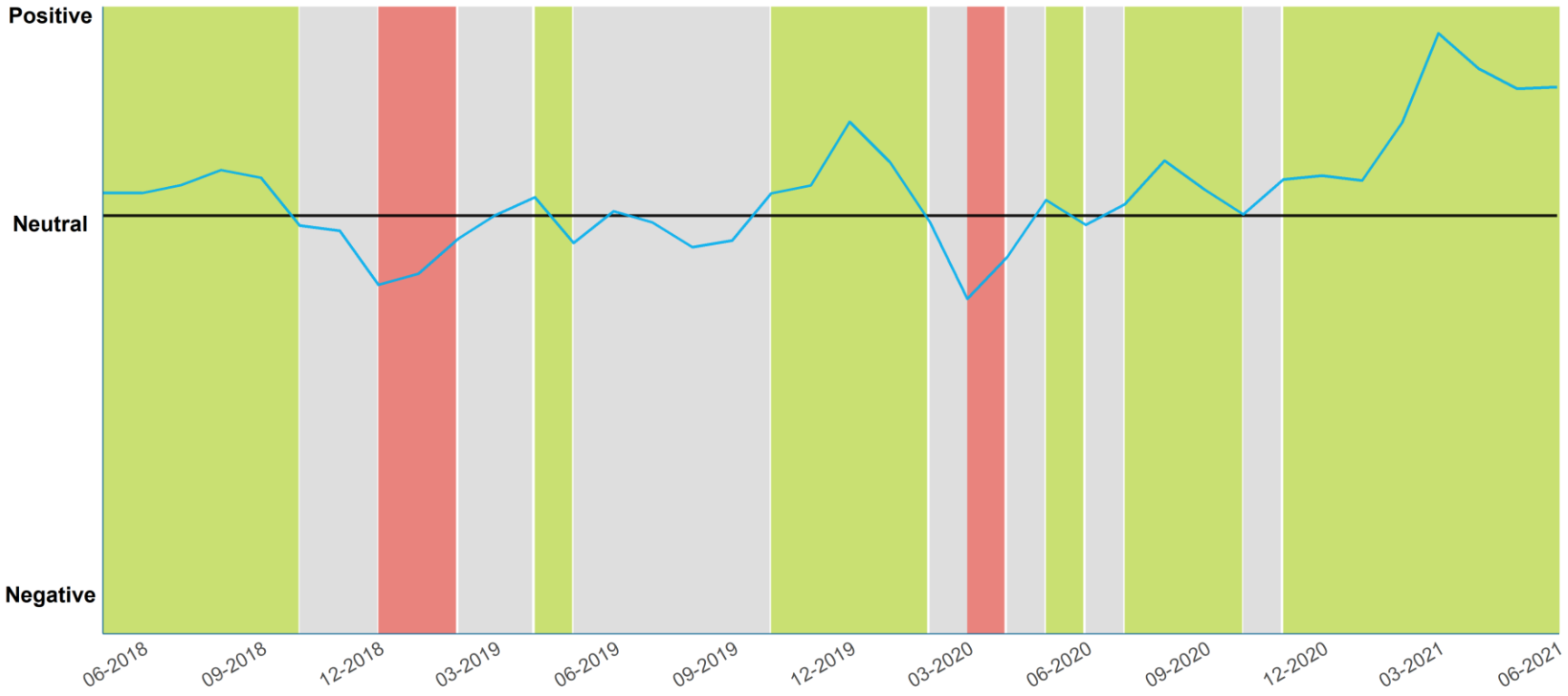
- Dashboard (2) shows how the current level of each indicator compares to its respective history.

Market Sentiment Indicator (All History)

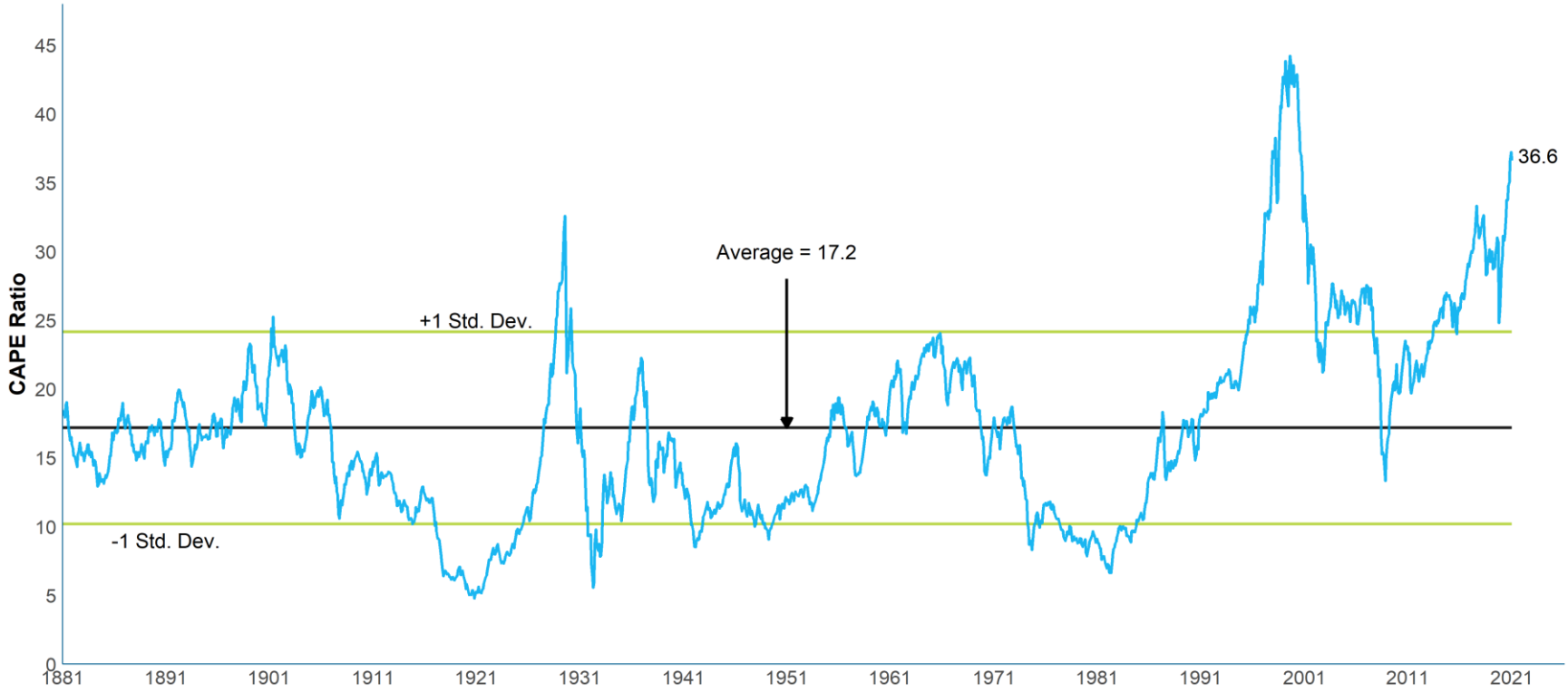
(As of June 30, 2021)



Market Sentiment Indicator (Last Three Years)
(As of June 30, 2021)



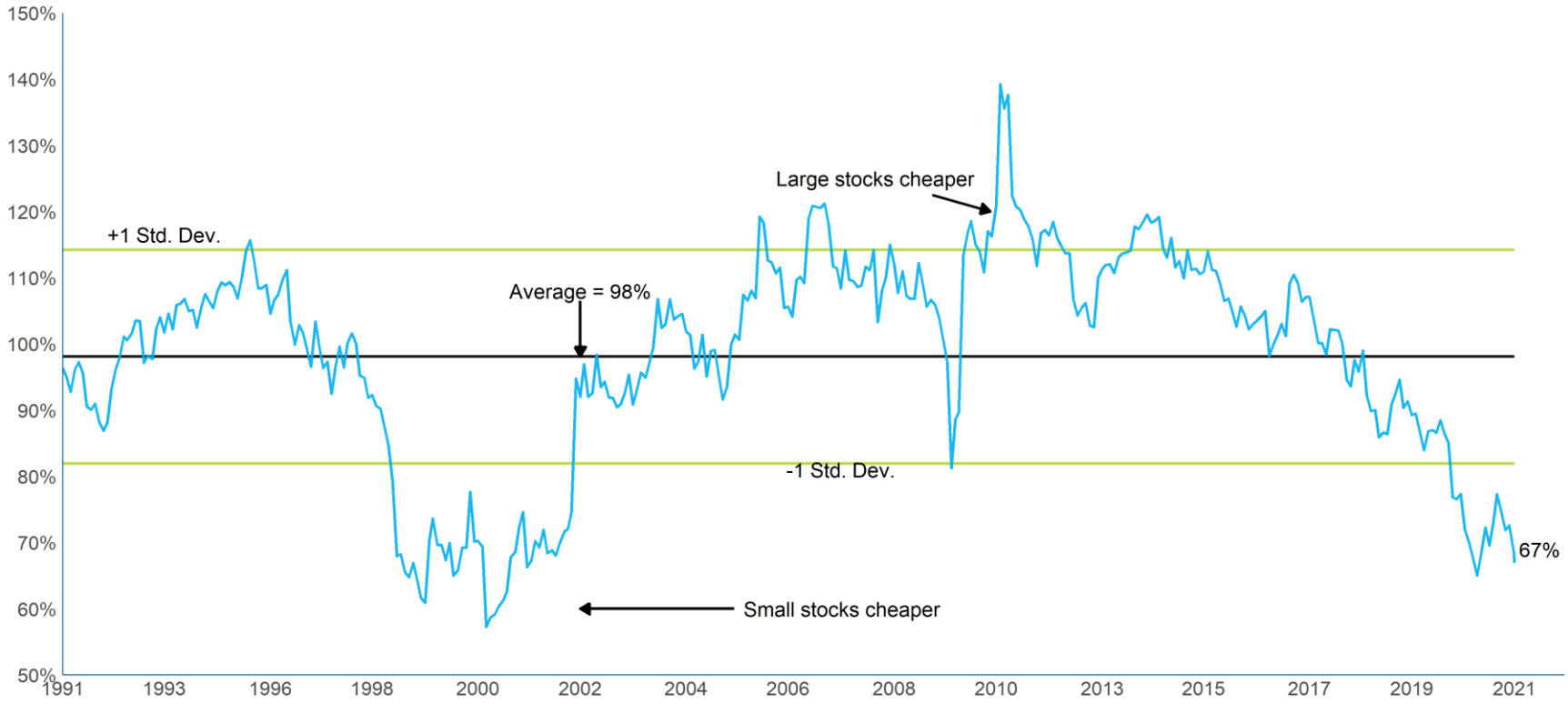
US Equity Cyclically Adjusted P/E[1]
(As of June 30, 2021)



- 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, 2021)



- 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, 2021)

- 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.

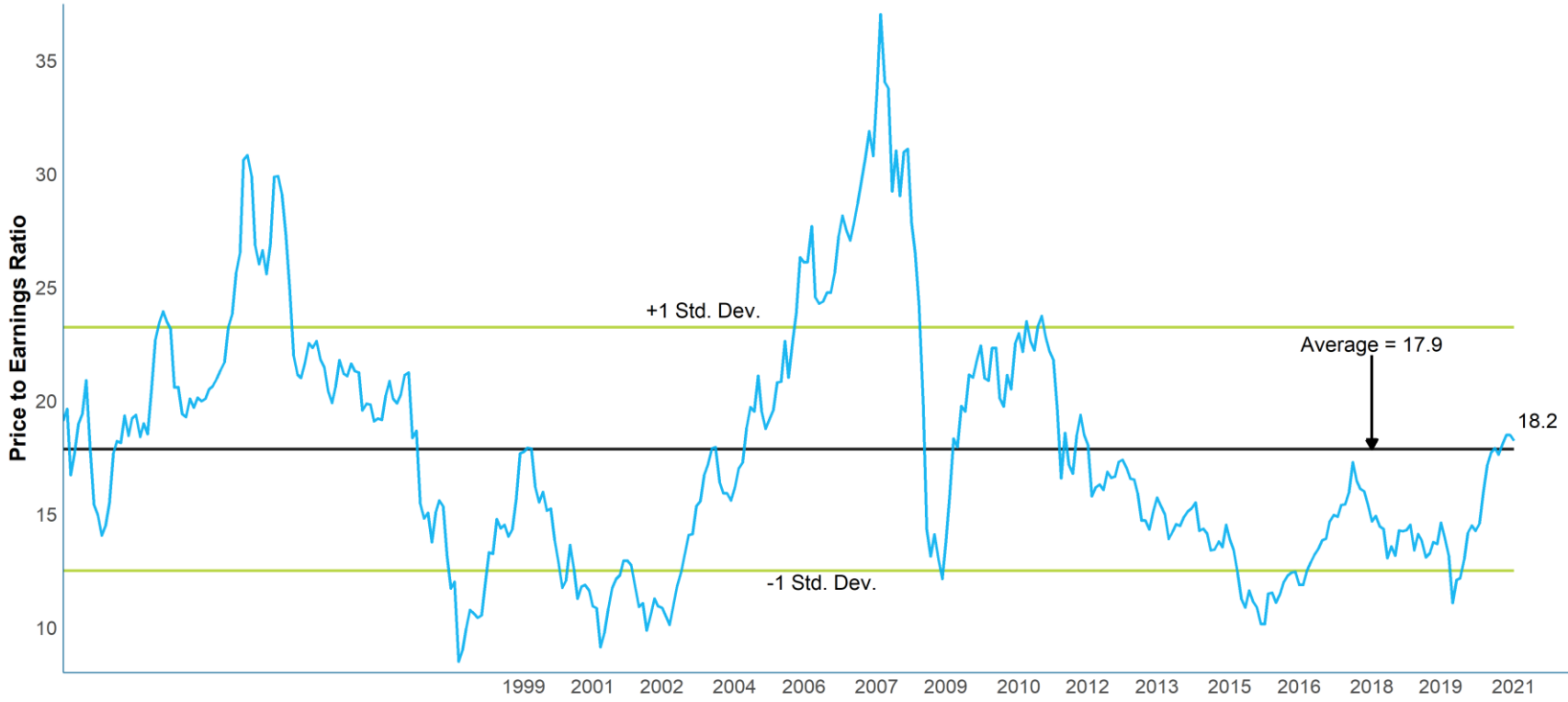
[1] Growth P/E (Russell 3000 Growth Index) vs. Value (Russell 3000 Value Index) P/E - Source: Bloomberg, MSCI, and Meketa Investment Group. Earnings figures represent 12-month "as reported" earnings.

Developed International Equity Cyclically Adjusted P/E[1]
(As of June 30, 2021)

- 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.

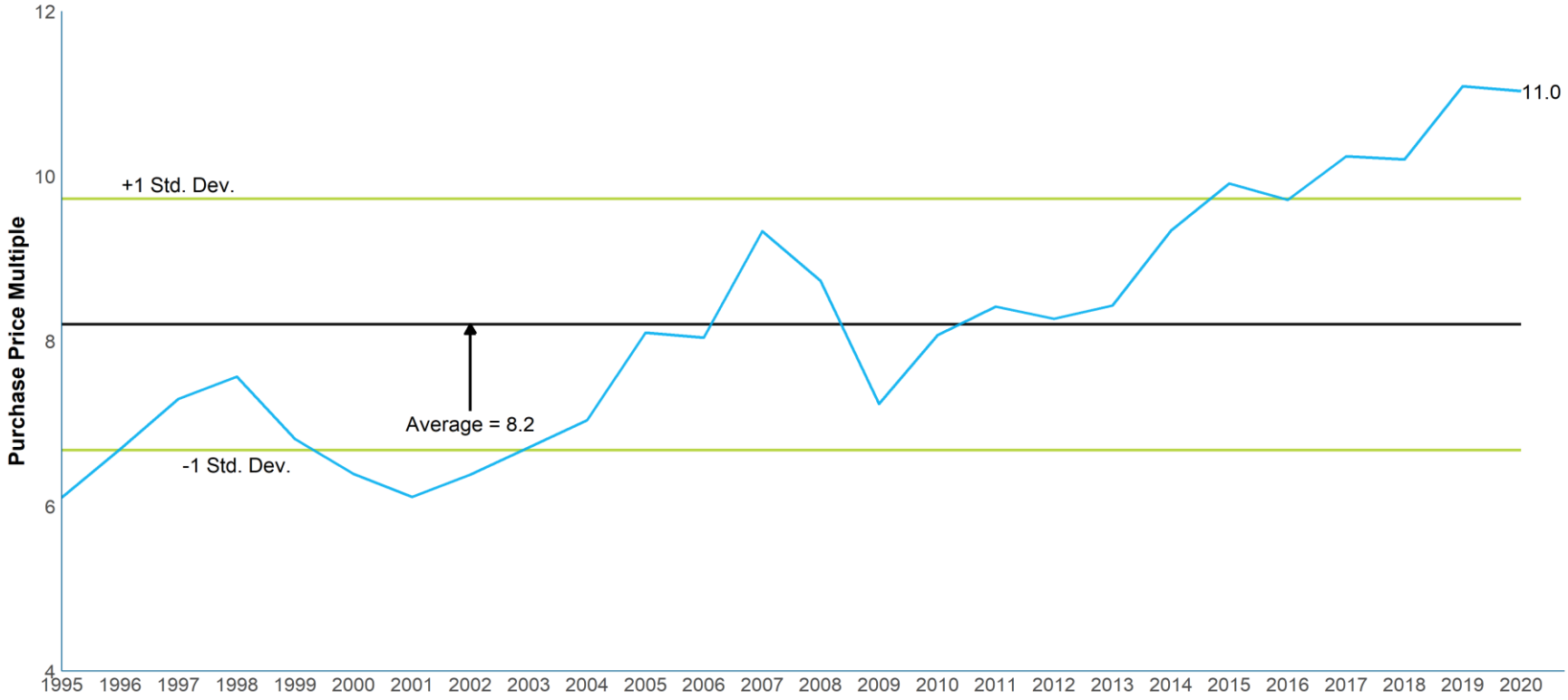
Emerging Market Equity Cyclically Adjusted P/E[1]
(As of June 30, 2021)



- 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 February 28, 2021)[2]

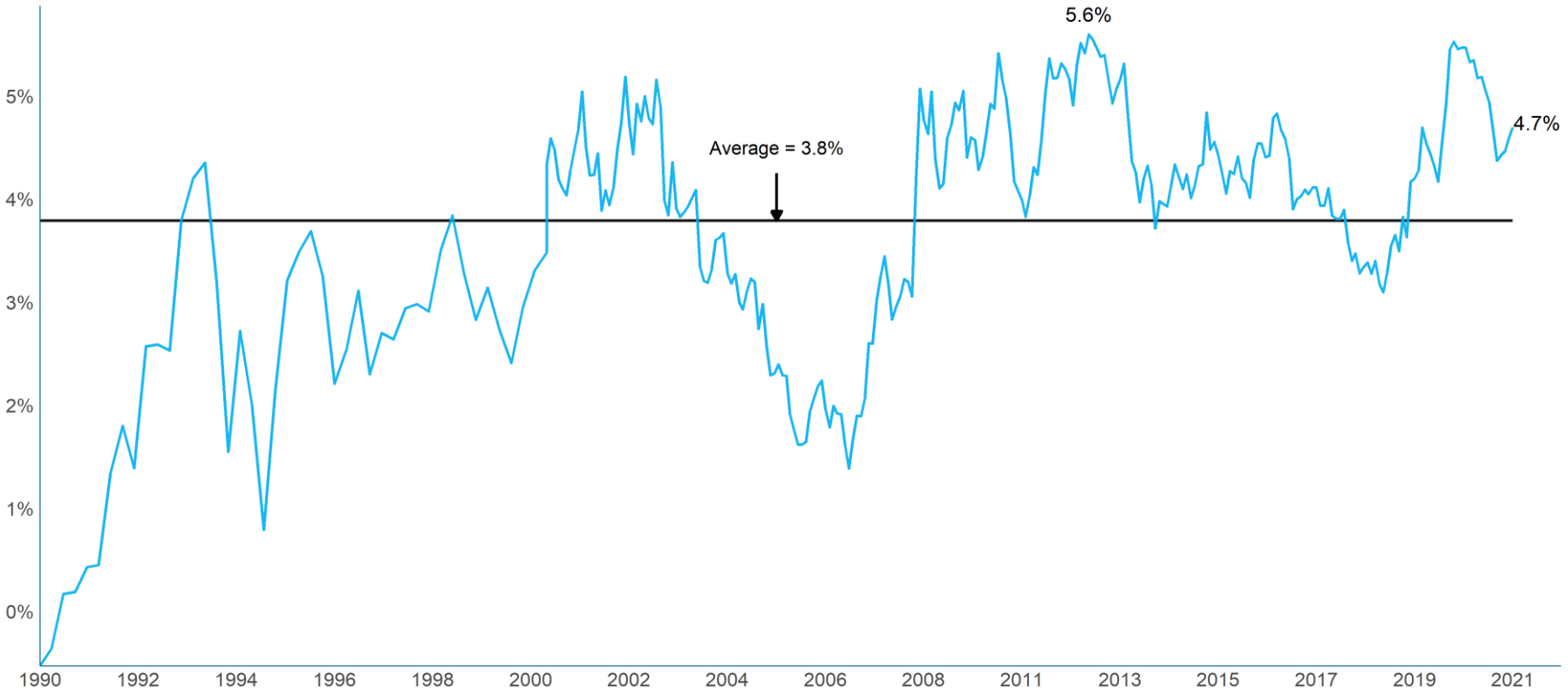


- This chart details one valuation metric for the private equity market. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

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

[2] Annual Data, as of December 31, 2020

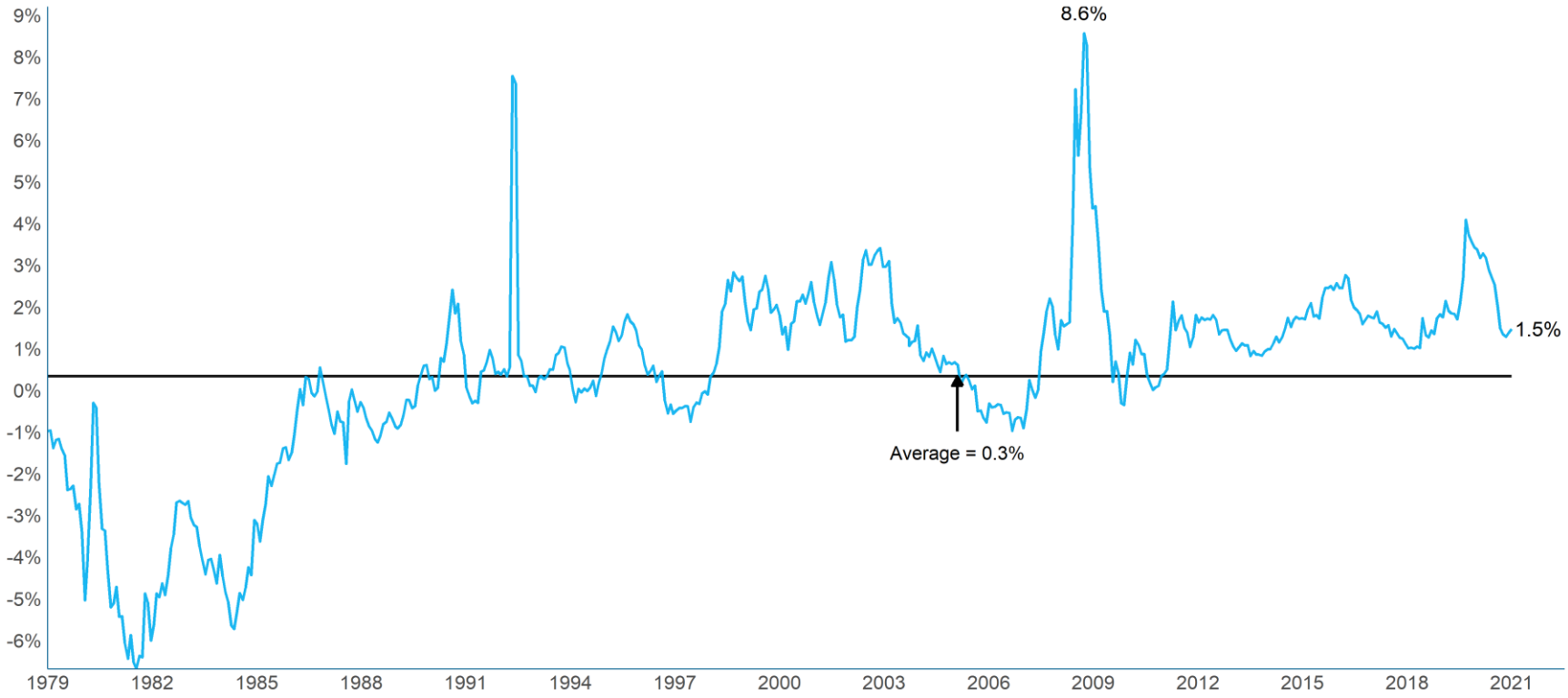
Core Real Estate Spread vs. Ten-Year Treasury[1]
(As of June 30, 2021)



- 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.

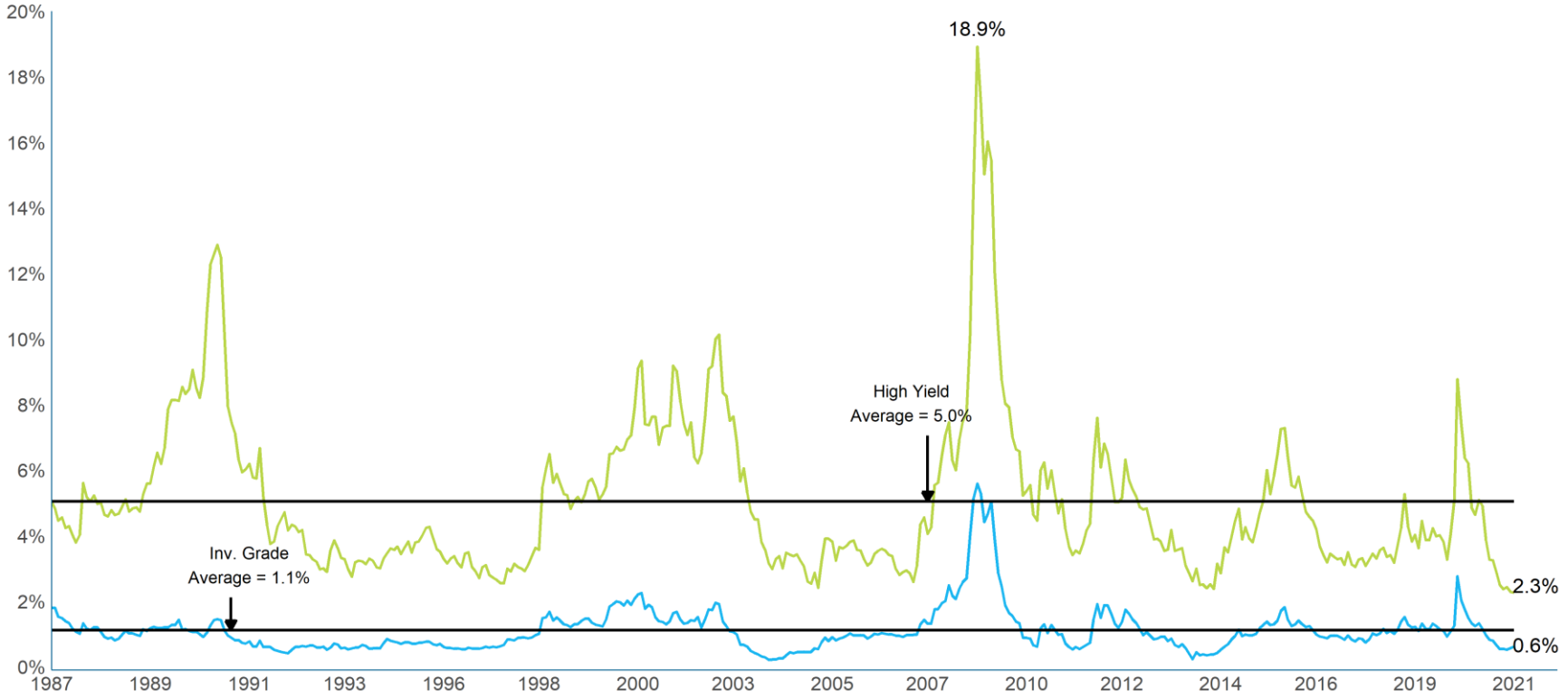
REITs Dividend Yield Spread vs. Ten-Year Treasury[1]
(As of June 30, 2021)



- 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, 2021)



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

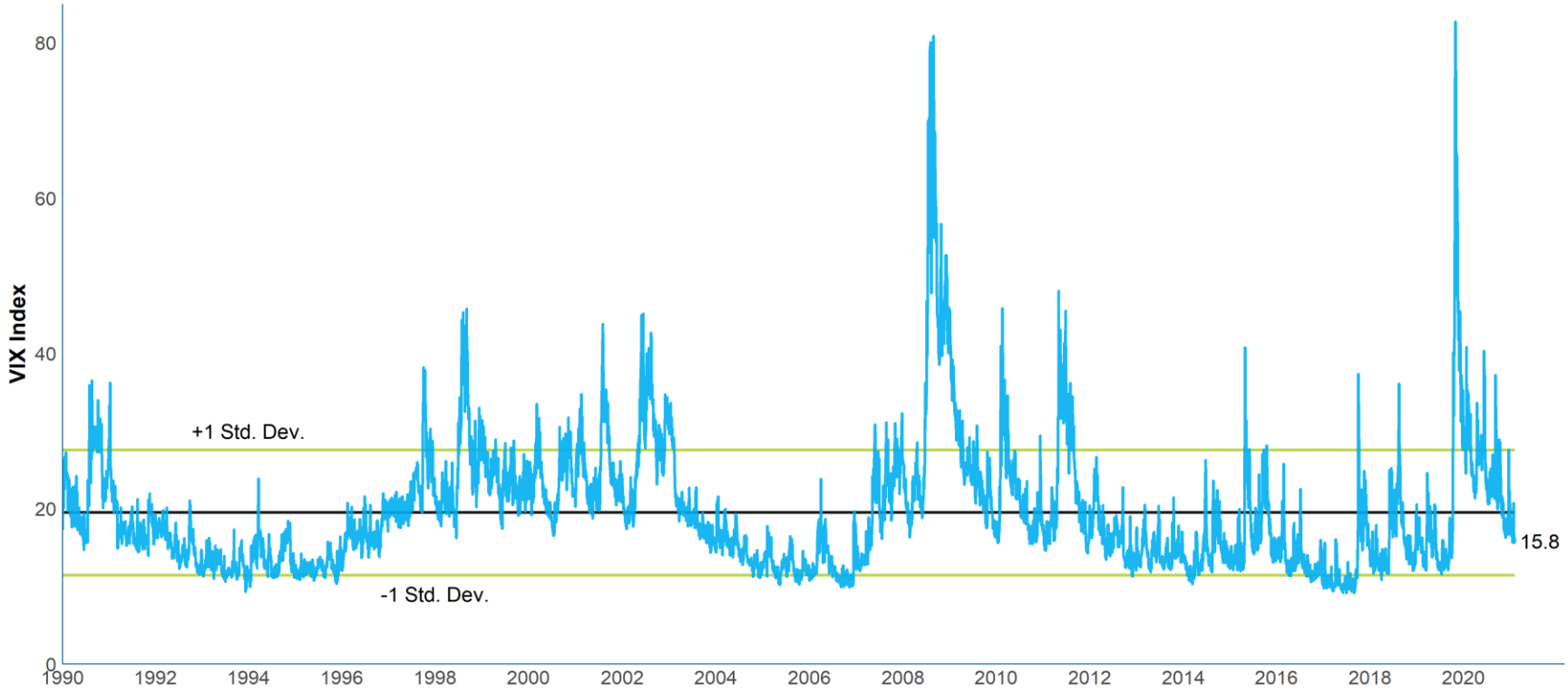
[1] Credit Spreads – Source: Barclays Capital. High Yield is proxied by the Barclays High Yield Index and Investment Grade Corporates are proxied by the Barclays US Corporate Investment Grade Index. Spread is calculated as the difference between the Yield to Worst of the respective index and the 10-Year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

Emerging Market Debt Spreads[1]
(As of June 30, 2021)

- 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 Barclays EM USD Aggregate Index.

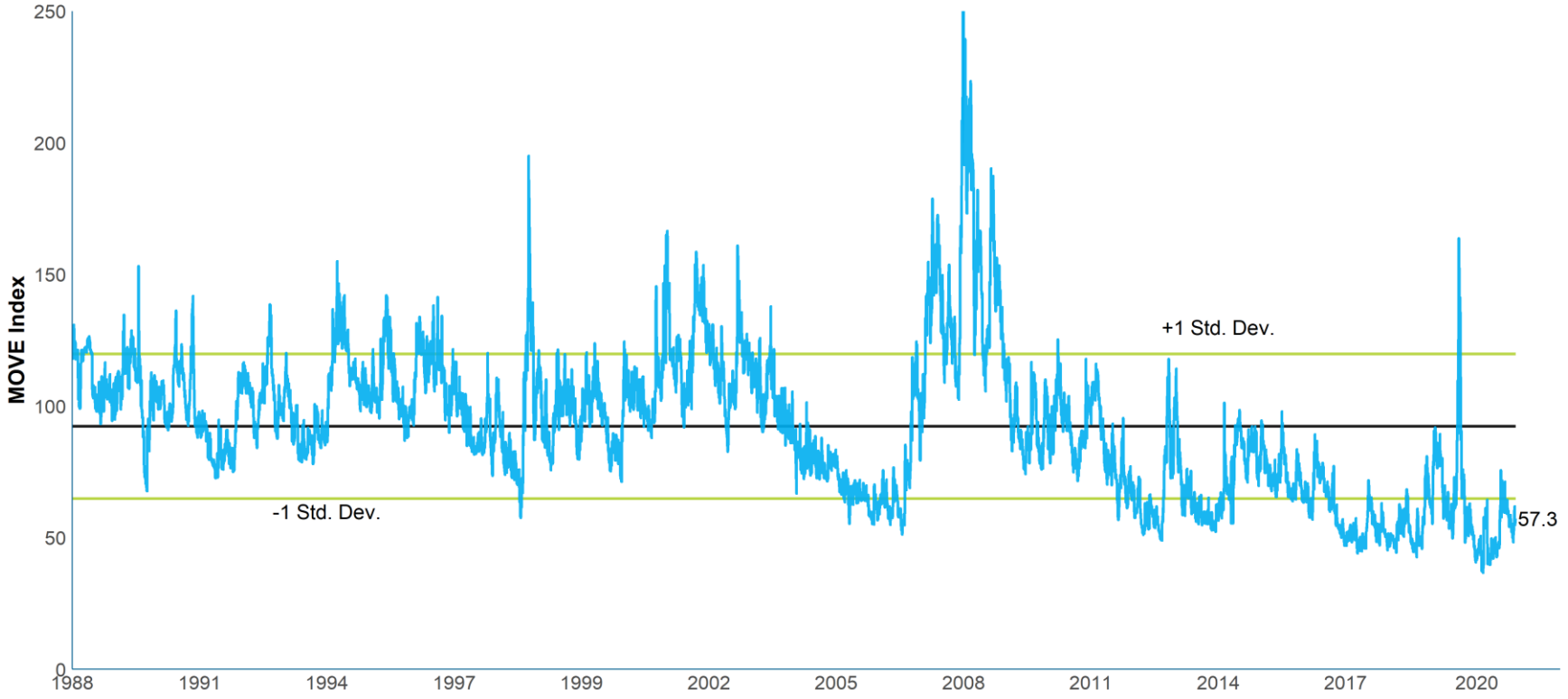
Equity Volatility[1]
(As of June 30, 2021)



- 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.

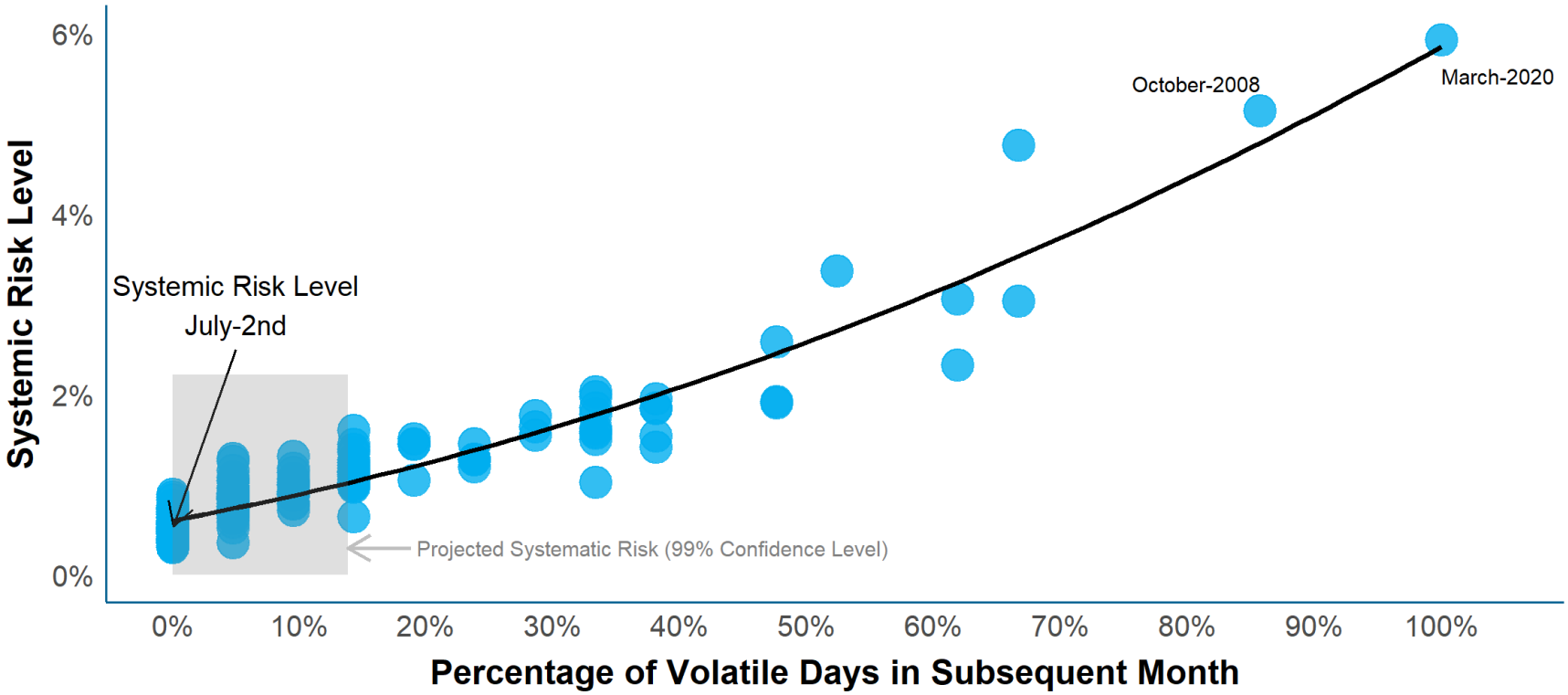
Fixed Income Volatility[1]
(As of June 30, 2021)



- 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.

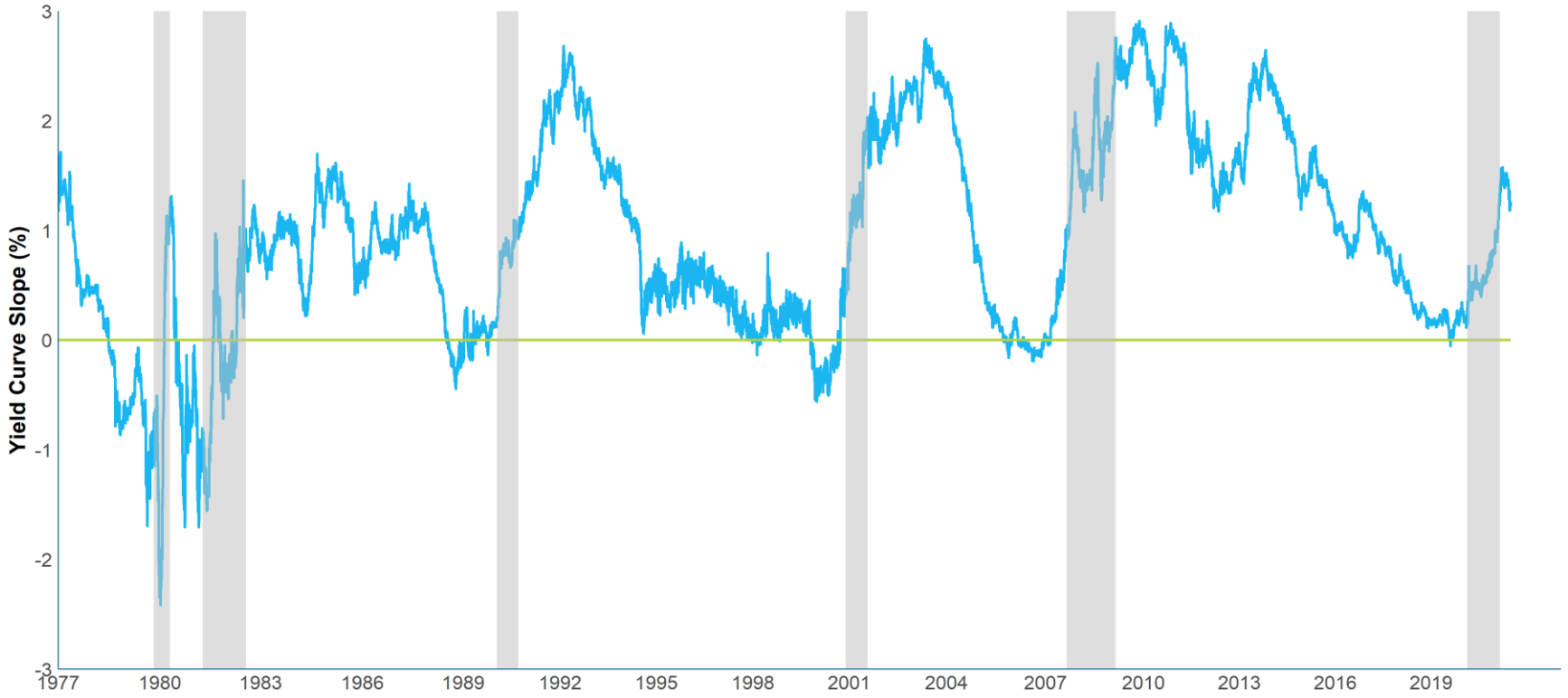
Systemic Risk and Volatile Market Days[1]
(As of June 30, 2021)



- 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.

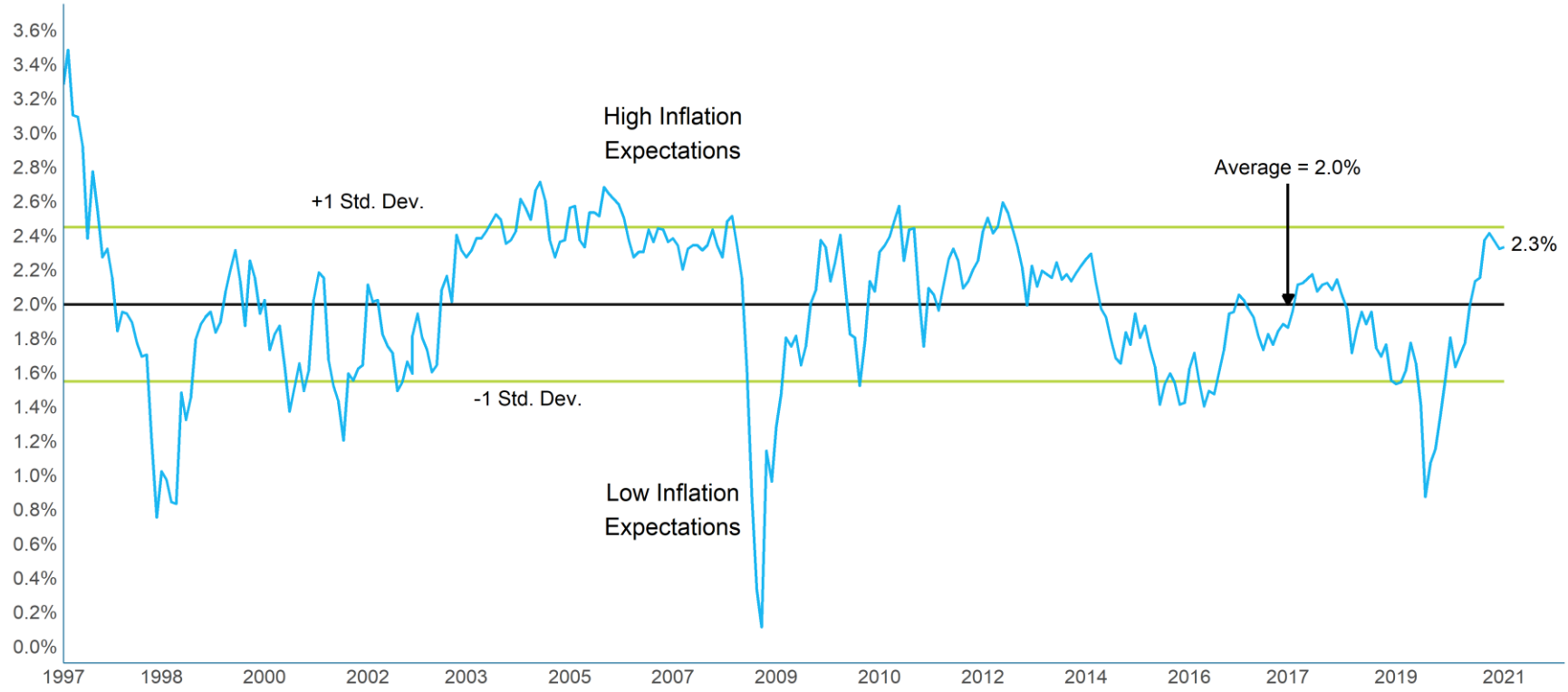
Yield Curve Slope (Ten Minus Two)[1]
(As of June 30, 2021)



- 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.

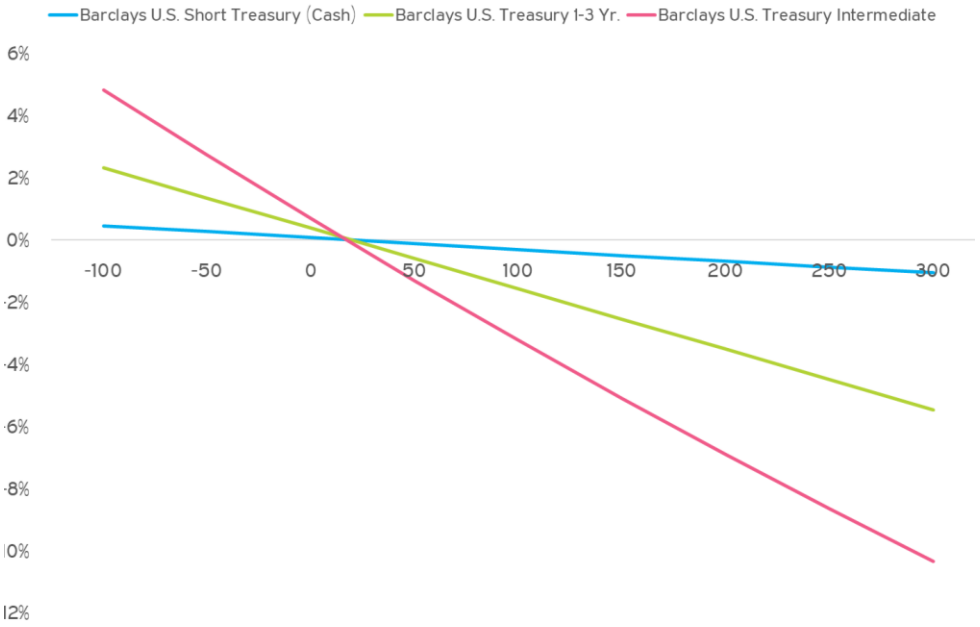
Ten-Year Breakeven Inflation[1]
(As of June 30, 2021)



- 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).

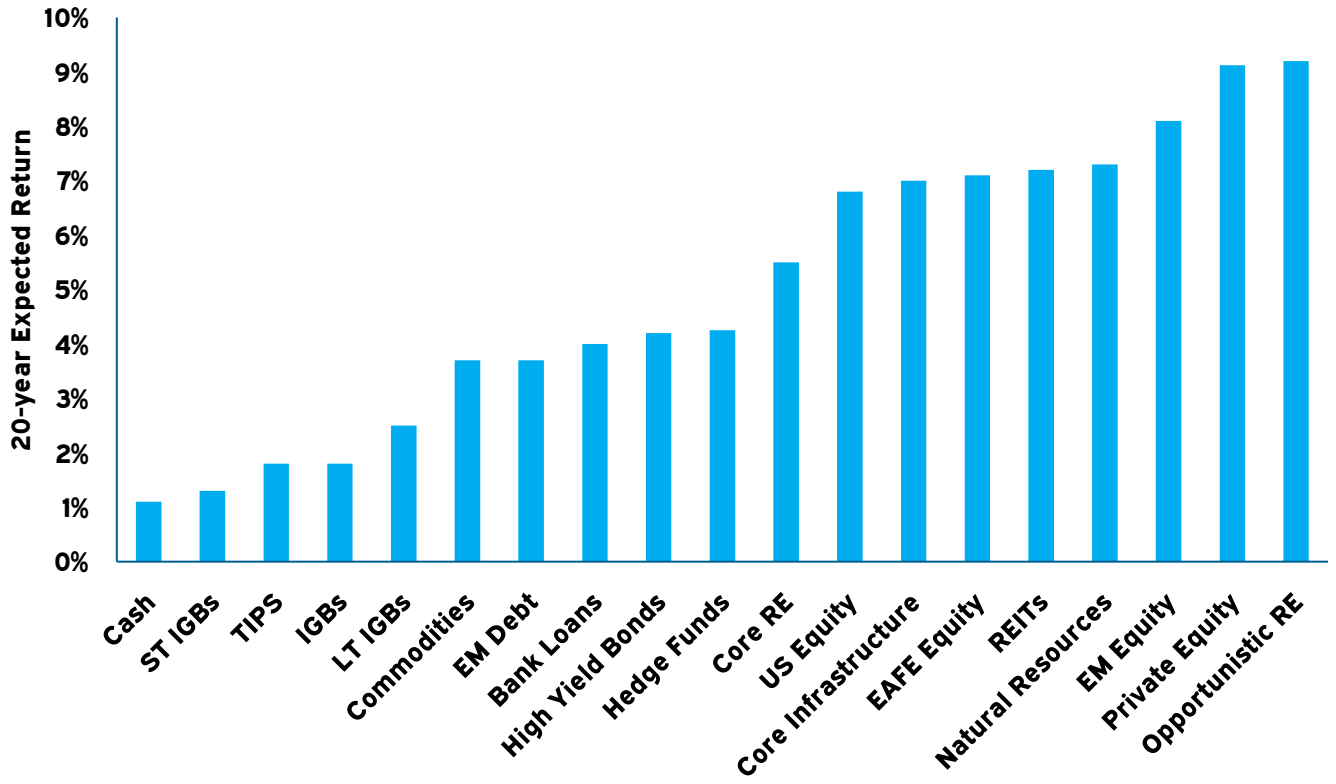
Total Return Given Changes in Interest Rates (bps)[1]
(As of June 30, 2021)



	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)	0.4%	0.3%	0.1%	-0.1%	-0.3%	-0.5%	-0.7%	-0.9%	-1.1%	0.38	0.06%
Barclays US Treasury 1-3 Yr.	2.3%	1.3%	0.4%	-0.6%	-1.6%	-2.6%	-3.5%	-4.5%	-5.5%	1.94	0.36%
Barclays US Treasury Intermediate	4.8%	2.7%	0.7%	-1.3%	-3.2%	-5.1%	-6.9%	-8.7%	-10.4%	4.03	0.67%
Barclays US Treasury Long	23.0%	12.0%	2.0%	-6.8%	-14.6%	-21.2%	-26.8%	-31.3%	-34.7%	18.76	2.03%

[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 2021 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, 2021 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: Barclays Capital. High Yield is proxied by the Barclays High Yield Index and Investment Grade Corporates are proxied by the Barclays 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 Barclays 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, 2021 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, 2021 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.

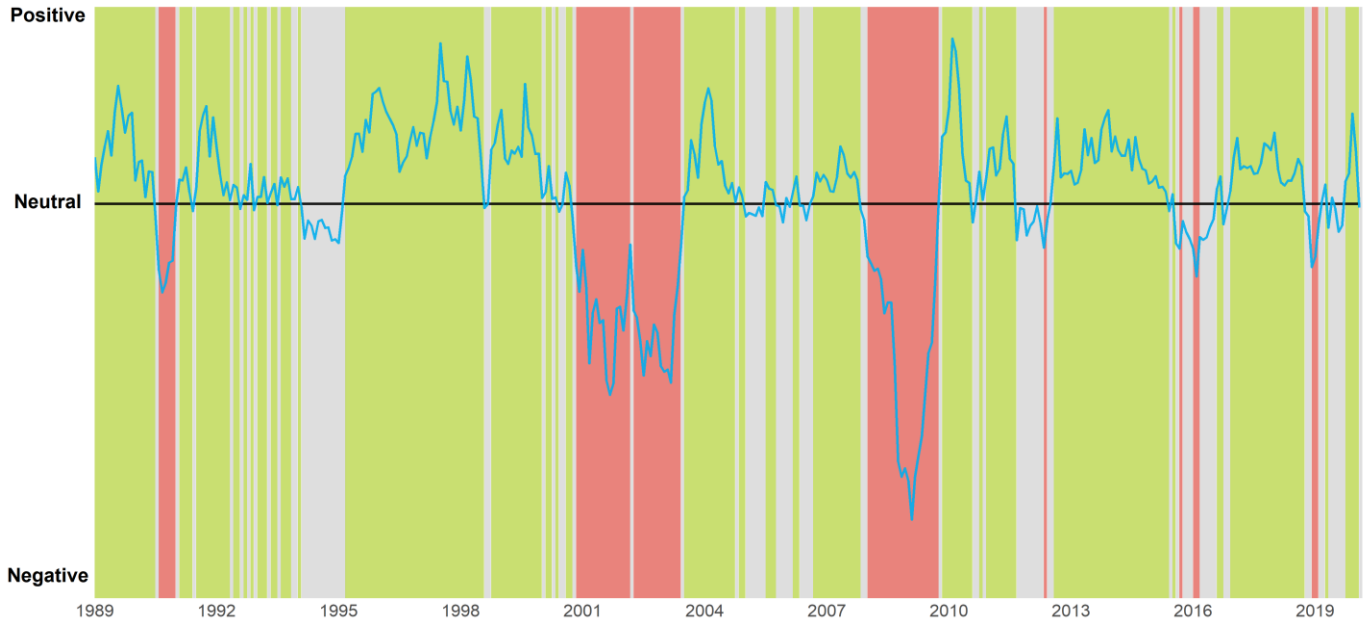
- Meketa's Risk Metrics, which rely significantly on standard market measures of relative valuation, often provide valid early signals of increasing long-term risk levels in the global investment markets. However, as is the case with numerous valuation measures, the Risk Metrics may convey such risk concerns long before a market corrections 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?

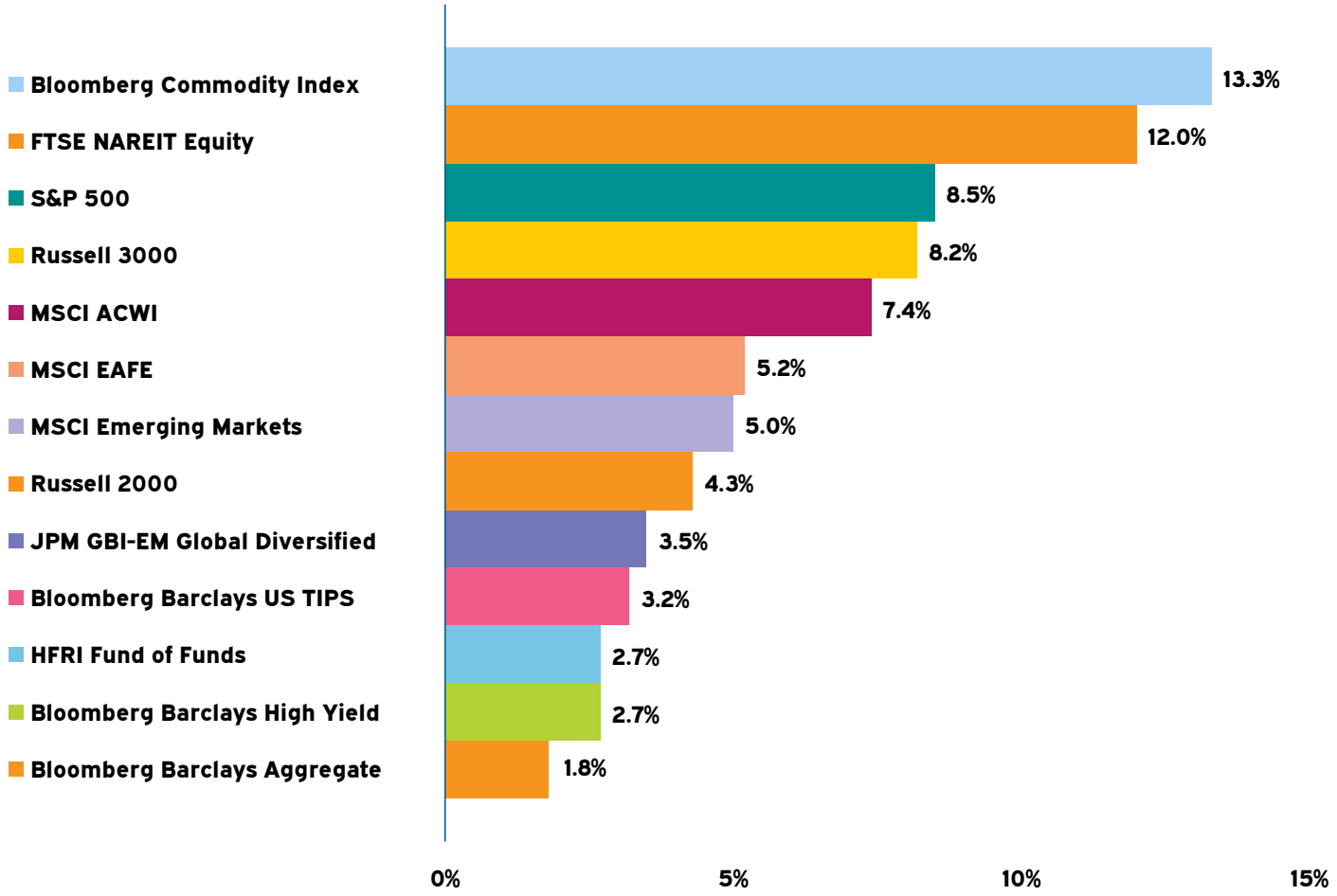
- There is strong evidence that time series momentum is significant and persistent. In particular, across an extensive array of asset classes, the sign of the trailing 12-month return (positive or negative) is indicative of future returns (positive or negative) over the next 12-month period. The MIG-MSI 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.

Disclaimer Information

This material is provided by Meketa Investment Group, Inc. ("Meketa") for informational purposes only and may contain information that is not suitable for all clients. No portion of this commentary is to be construed as a solicitation or recommendations to buy or sell a security, or the provision of personalized investment advice, tax or legal advice. Past performance may not be indicative of future results and may have been impacted by market events and economic conditions that will not prevail in the future. There can be no assurance that any particular investment or strategy will prove profitable and the views, opinions, and projects expressed herein may not come to pass. Any direct or indirect reference to a market index is included for illustrative purposes only, as an index is not a security in which an investment can be made. Indices are benchmarks that serve as market or sector indicators and do not account for the deduction of management fees, transaction costs and other expenses associated with investable products. Meketa does not make any representation as to the accuracy, timeliness, suitability, completeness or relevance of any information prepared by any unaffiliated third party and takes no responsibility, therefore. Any data provided regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of futures results. Investing involves risk, including the potential loss of principal and clients should be guided accordingly.

The World Markets
Second Quarter of 2021

The World Markets[1] Second Quarter of 2021



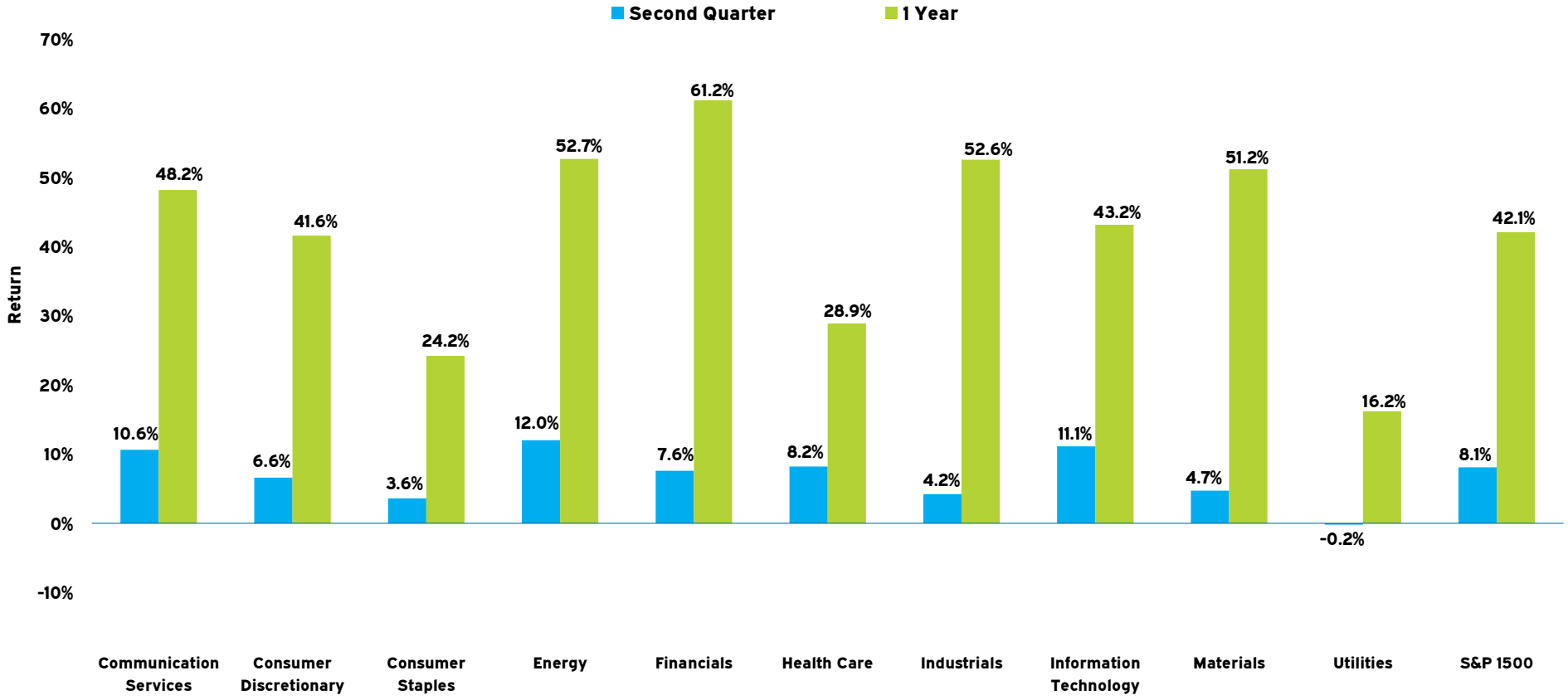
[1] Source: InvestorForce.

Index Returns[1]

	2Q21 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
Domestic Equity						
S&P 500	8.5	15.3	40.8	18.7	17.6	14.8
Russell 3000	8.2	15.1	44.2	18.7	17.9	14.7
Russell 1000	8.5	15.0	43.1	19.2	18.0	14.9
Russell 1000 Growth	11.9	13.0	42.5	25.1	23.7	17.9
Russell 1000 Value	5.2	17.0	43.7	12.4	11.9	11.6
Russell MidCap	7.5	16.2	49.8	16.4	15.6	13.2
Russell MidCap Growth	11.1	10.4	43.8	22.4	20.5	15.1
Russell MidCap Value	5.7	19.5	53.1	11.9	11.8	11.7
Russell 2000	4.3	17.5	62.0	13.5	16.5	12.3
Russell 2000 Growth	3.9	9.0	51.4	15.9	18.8	13.5
Russell 2000 Value	4.6	26.7	73.3	10.3	13.6	10.8
Foreign Equity						
MSCI ACWI (ex. US)	5.6	9.3	35.9	9.4	11.1	5.5
MSCI EAFE	5.2	8.8	32.3	8.3	10.3	5.9
MSCI EAFE (Local Currency)	4.8	12.7	27.1	7.5	10.0	8.1
MSCI EAFE Small Cap	4.4	9.1	41.1	8.4	12.0	8.4
MSCI Emerging Markets	5.0	7.4	40.9	11.3	13.0	4.3
MSCI Emerging Markets (Local Currency)	3.8	7.9	36.1	12.0	13.6	7.6
Fixed Income						
Bloomberg Barclays Universal	2.0	-1.1	1.1	5.6	3.5	3.7
Bloomberg Barclays Aggregate	1.8	-1.6	-0.3	5.3	3.0	3.4
Bloomberg Barclays US TIPS	3.2	1.7	6.5	6.5	4.2	3.4
Bloomberg Barclays High Yield	2.7	3.6	15.4	7.4	7.5	6.7
JPM GBI-EM Global Diversified	3.5	-3.4	6.6	4.1	3.2	0.5
Other						
FTSE NAREIT Equity	12.0	21.3	32.8	11.8	8.0	10.2
Bloomberg Commodity Index	13.3	21.2	45.6	3.9	2.4	-4.4
HFRI Fund of Funds	2.7	4.8	18.1	6.3	6.1	3.8

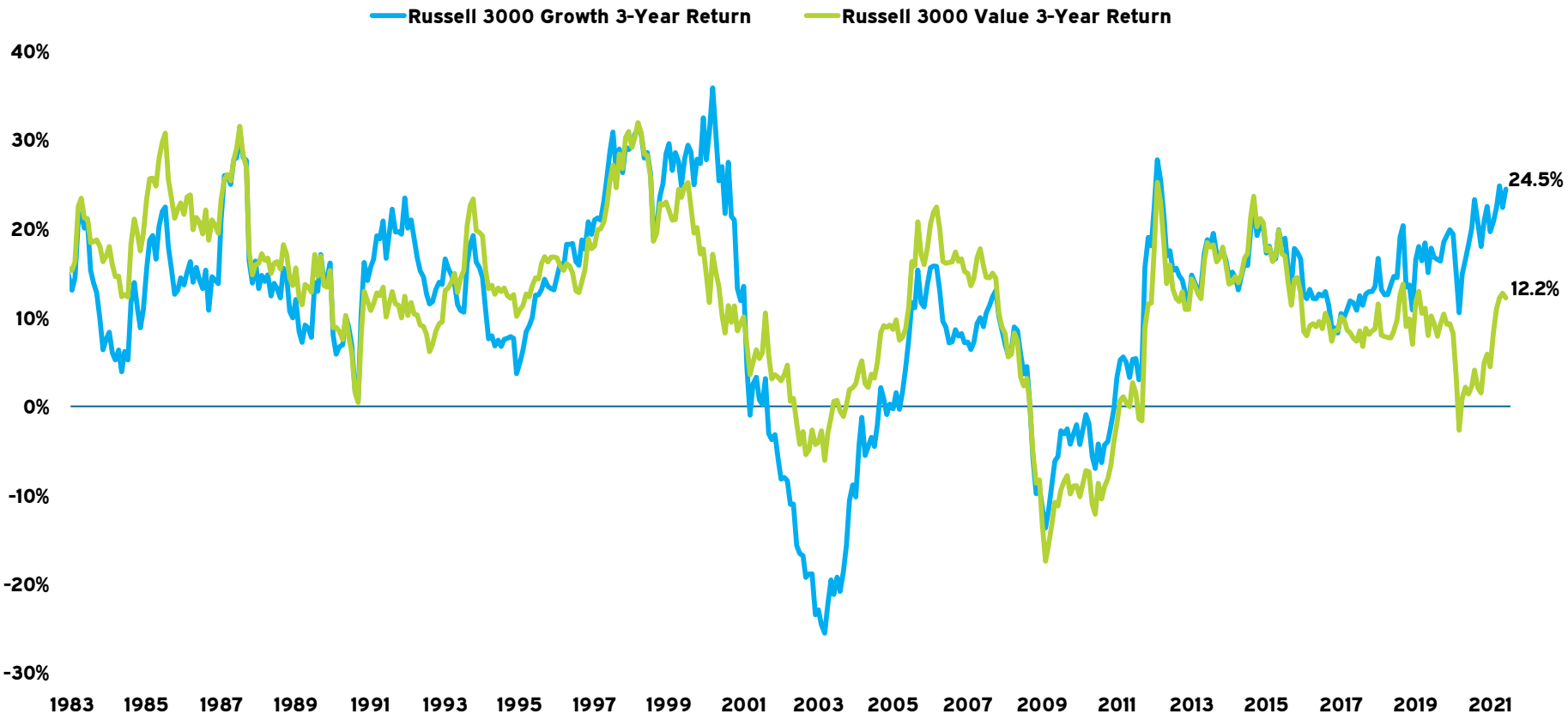
[1] Source: InvestorForce.

S&P Sector Returns[1]



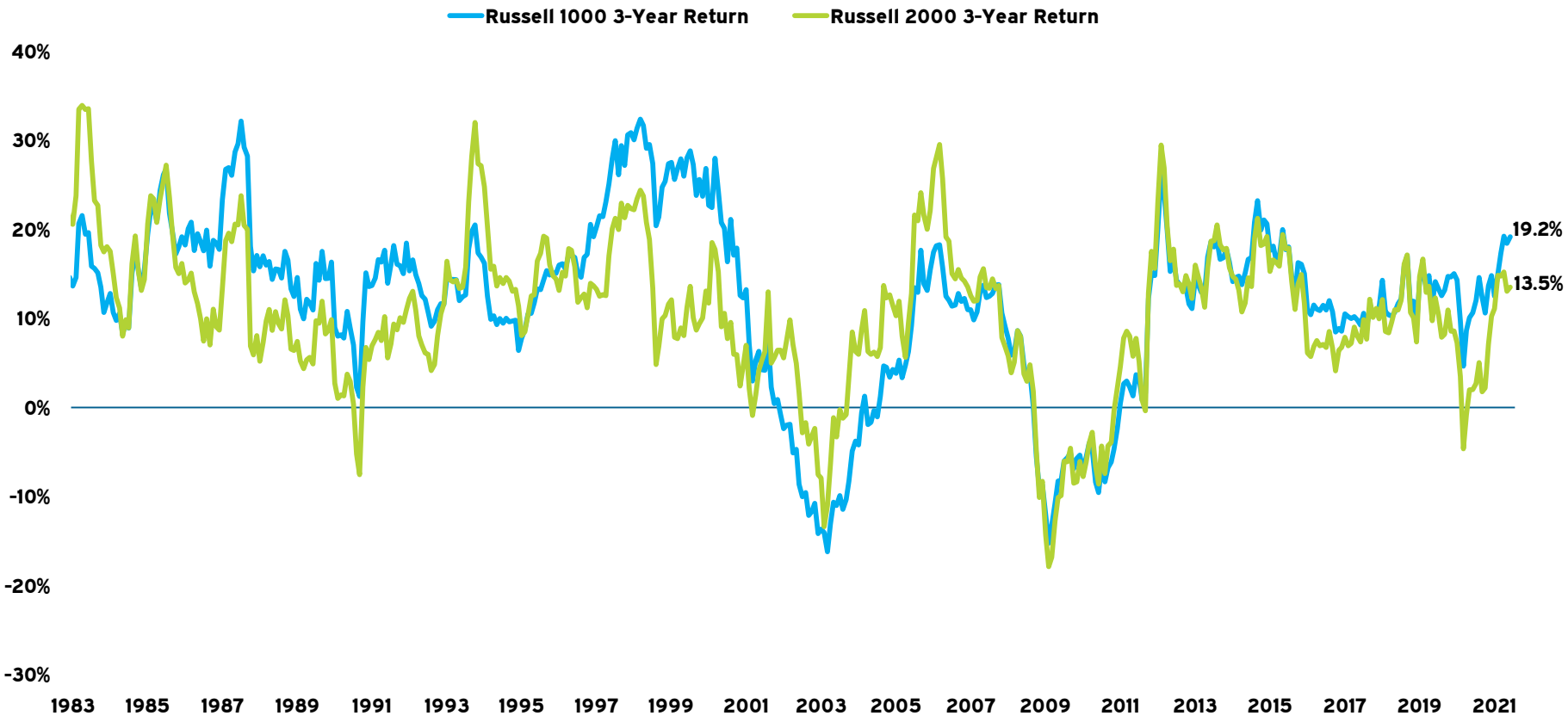
[1] Source: InvestorForce. Represents S&P 1500 (All Cap) data.

Growth and Value Rolling Three Year Returns[1]



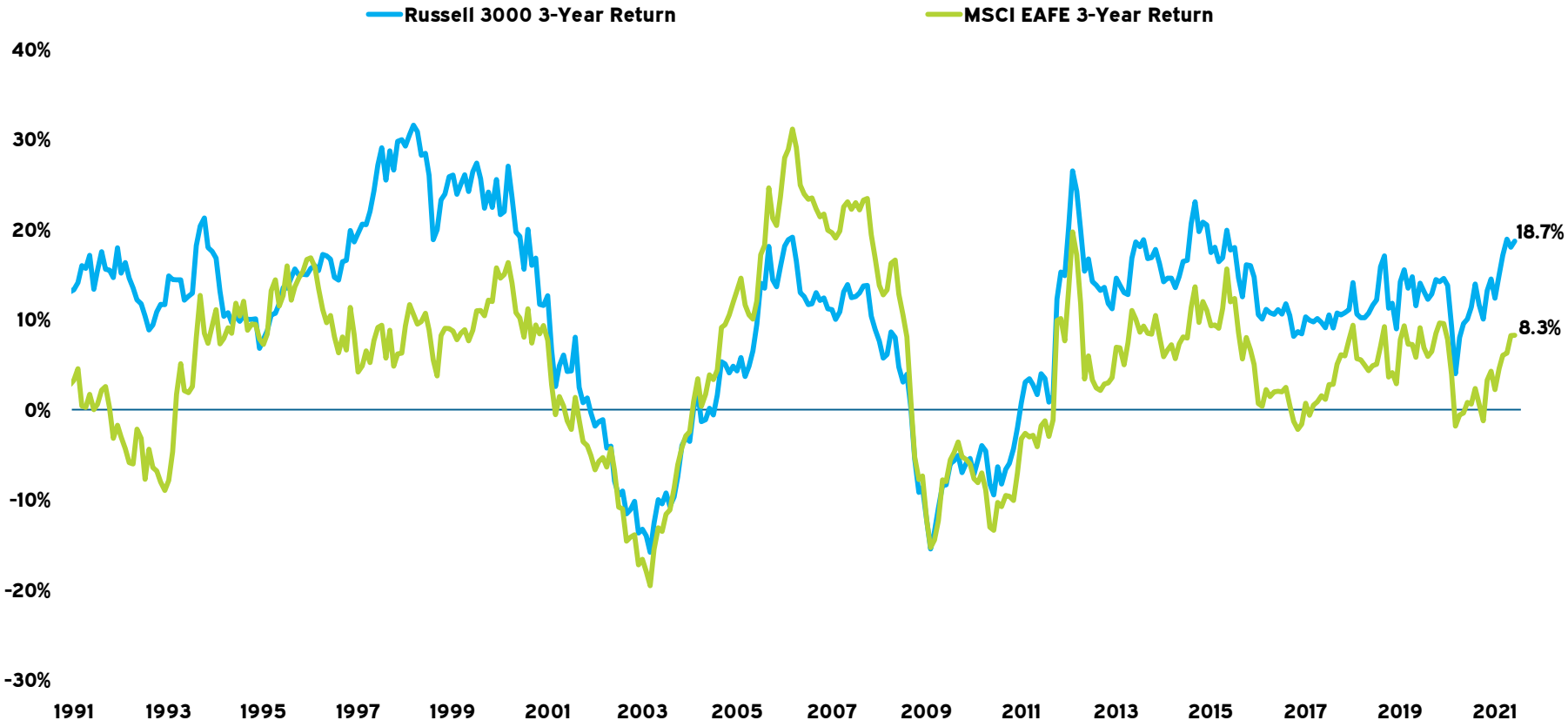
[1] Source: InvestorForce.

Large Cap (Russell 1000) and Small Cap (Russell 2000) Rolling Three Year Returns[1]



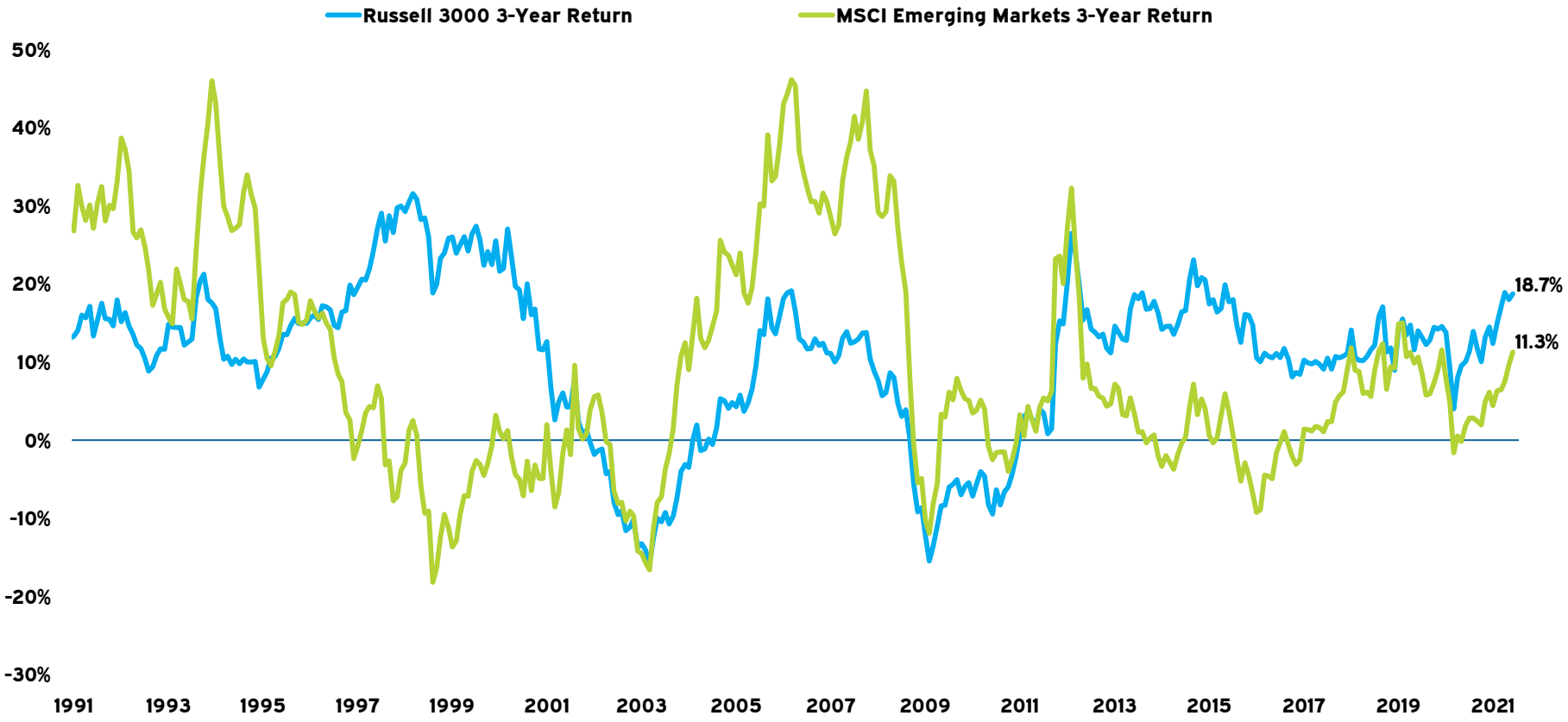
[1] Source: InvestorForce.

US and Developed Market Foreign Equity Rolling Three-Year Returns[1]



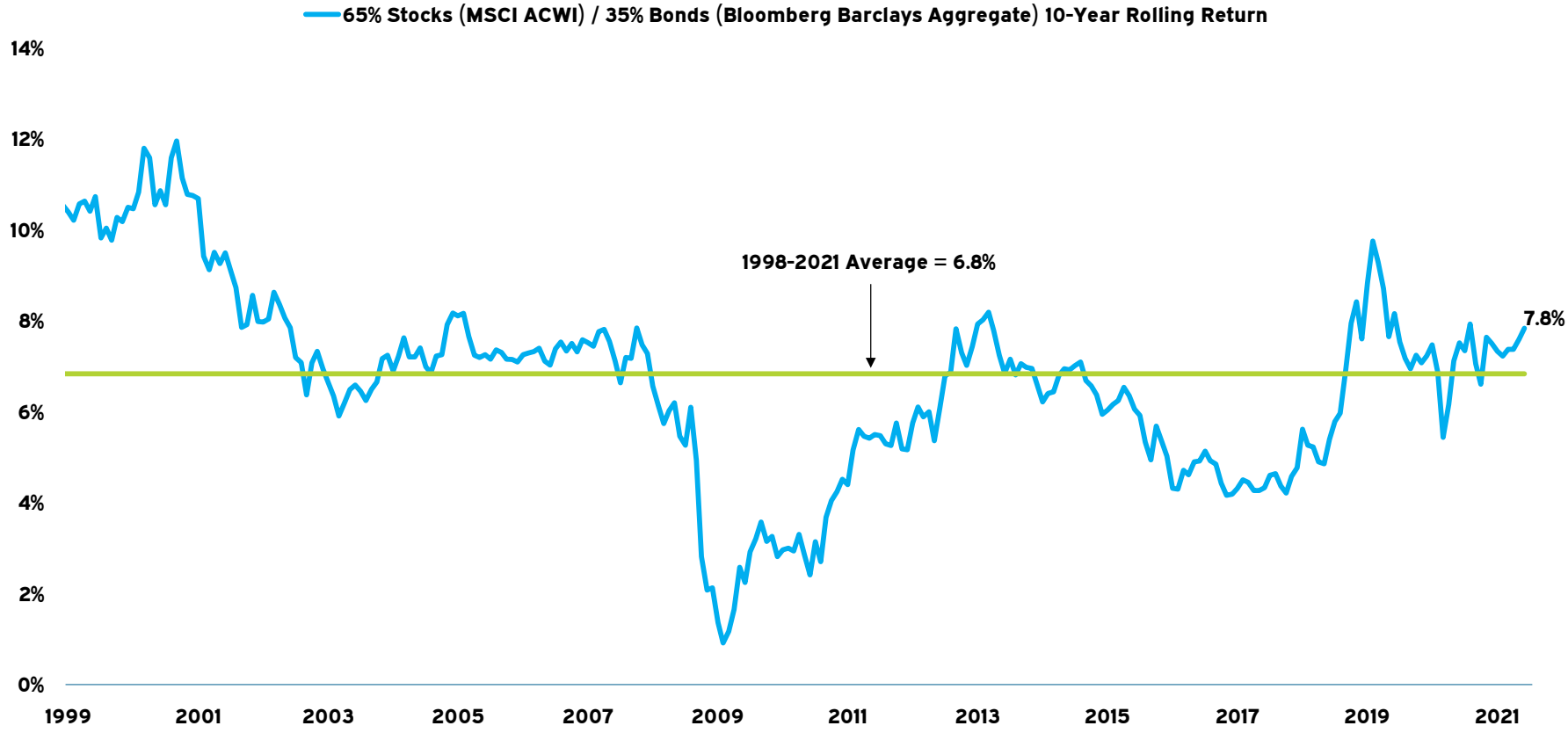
[1] Source: InvestorForce.

US and Emerging Market Equity Rolling Three-Year Returns[1]



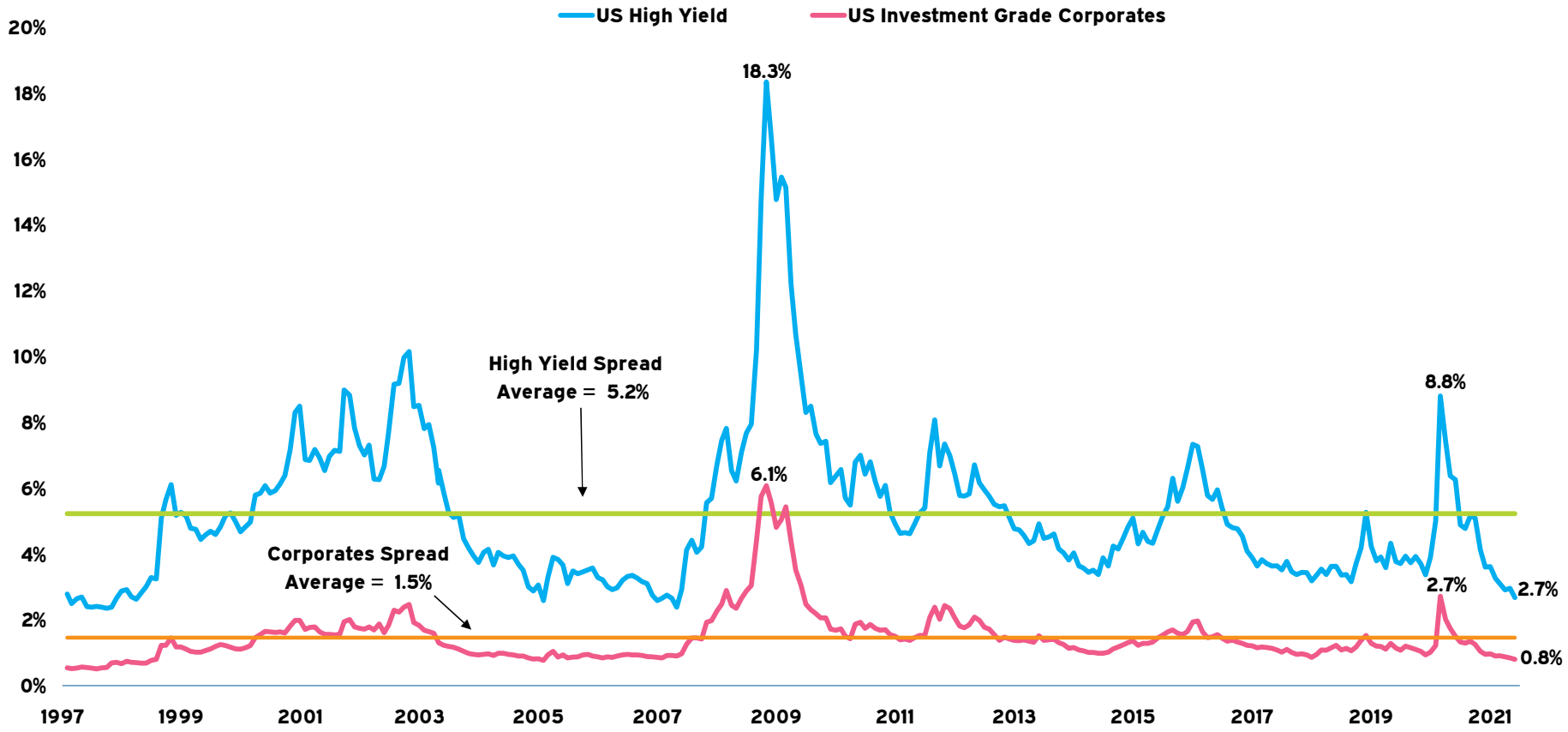
[1] Source: InvestorForce.

Rolling Ten-Year Returns: 65% Stocks and 35% Bonds[1]



[1] Source: InvestorForce.

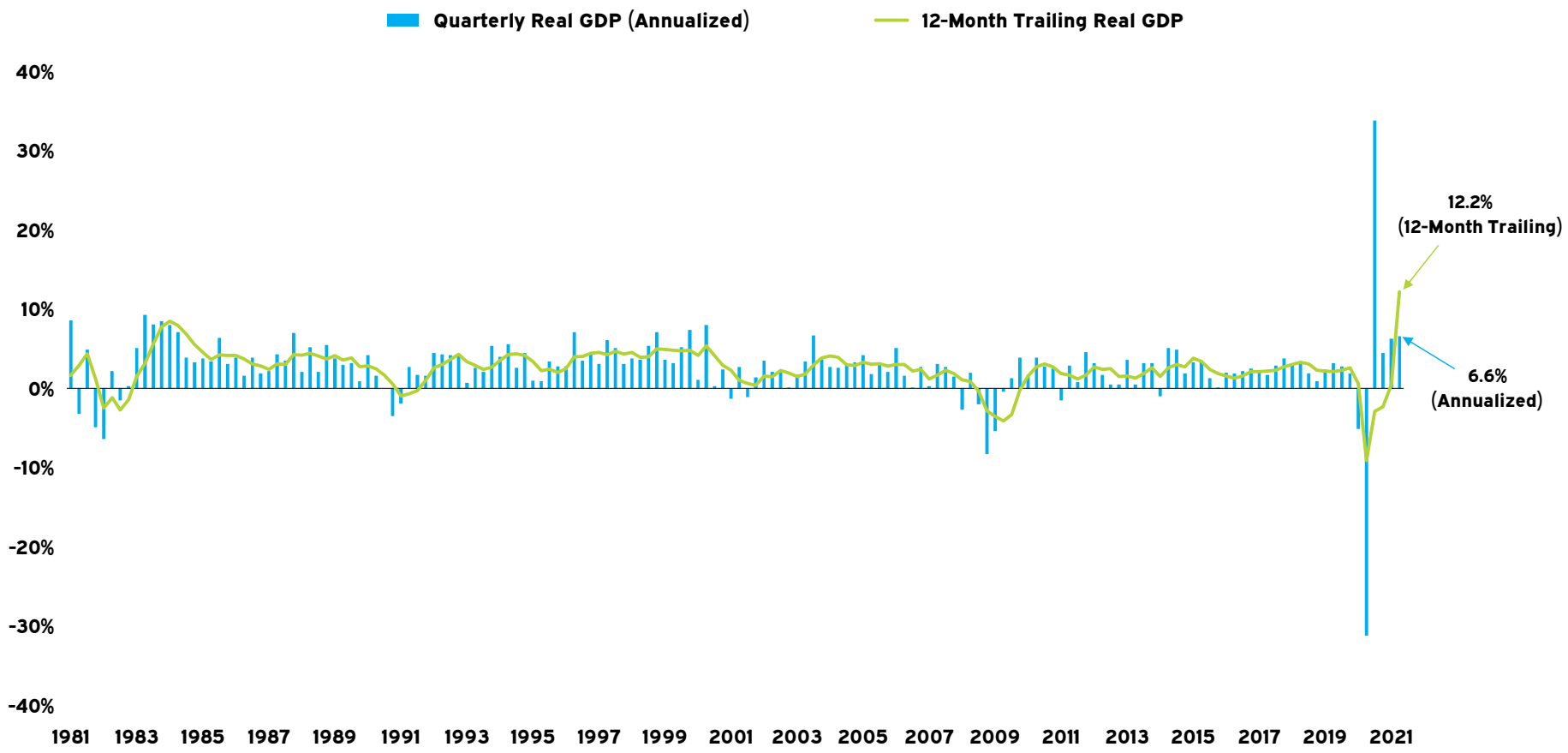
Credit Spreads vs. US Treasury Bonds[1,2]



1 Source: Barclays Live. Data represents the OAS.

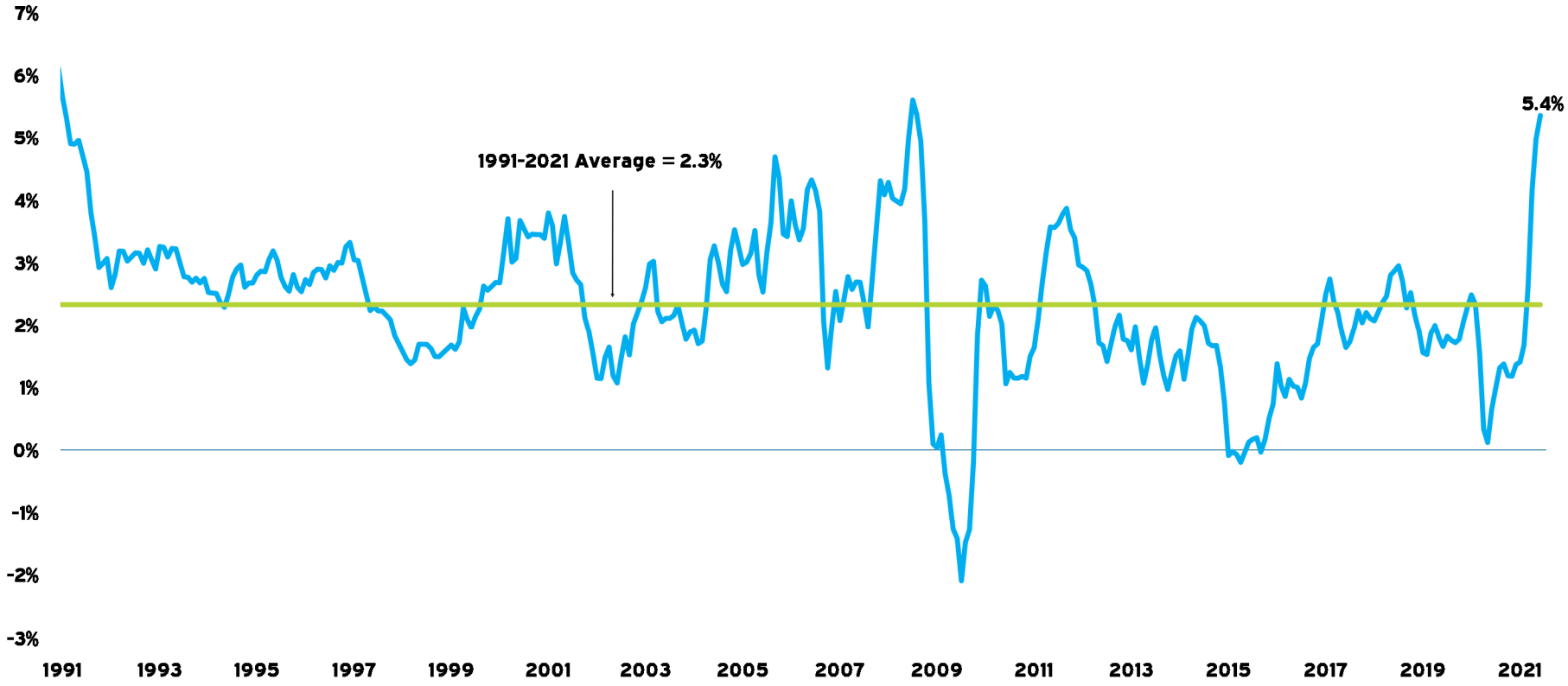
2 The median high yield spread was 4.7% from 1997-2021.

US Real Gross Domestic Product (GDP) Growth[1]



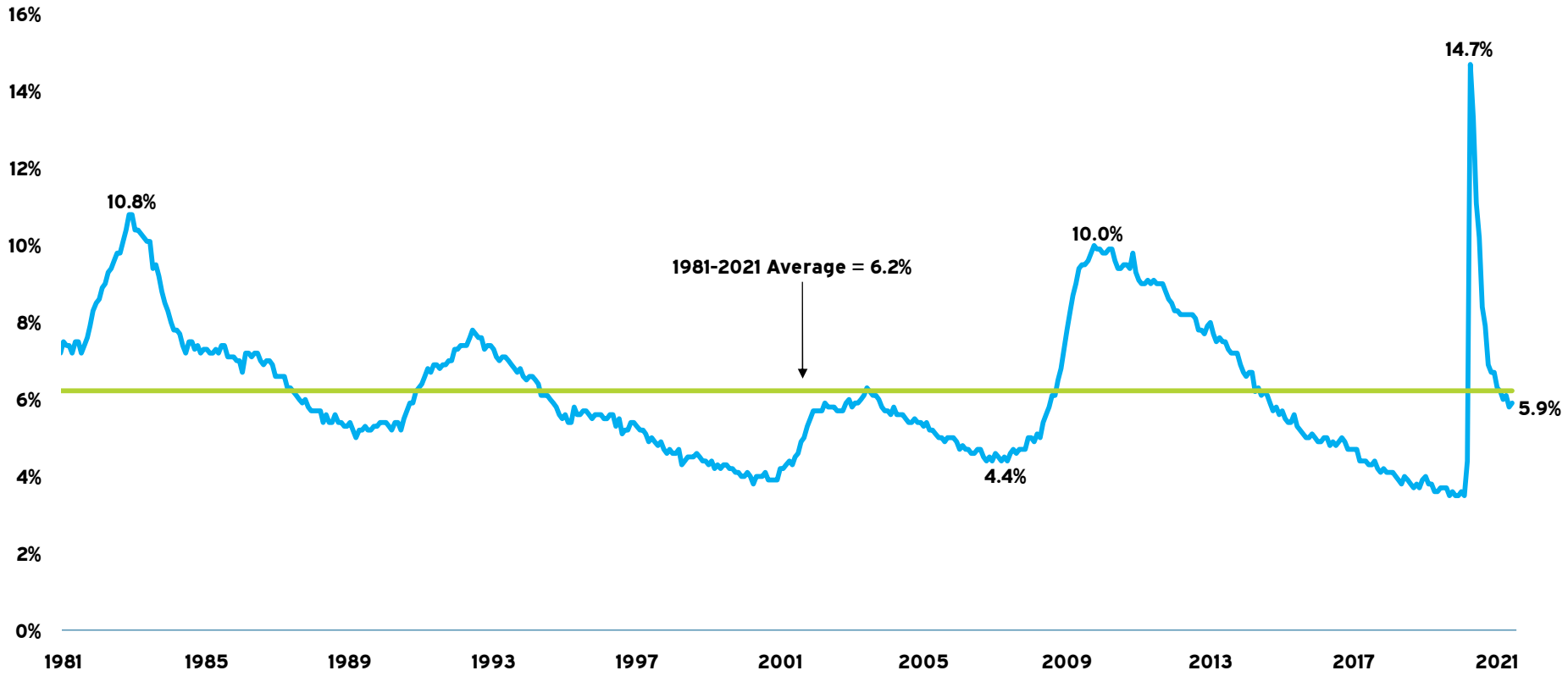
[1] Source: Bureau of Economic Analysis. Data is as of Q2 2021 and represents the second estimate.

US Inflation (CPI)
Trailing Twelve Months[1]



[1] Source: Bureau of Labor Statistics. Data is non-seasonally adjusted CPI, which may be volatile in the short-term. Data is as of June 30, 2021.

US Unemployment[1]



[1] Source: Bureau of Labor Statistics. Data is as of June 30, 2021.

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%.

$$\frac{5\%\ (\text{discount})}{5\ (\text{yrs. to maturity})} = 1\%\ \text{pro rata, plus } 5.26\%\ (\text{current yield}) = 6.26\%\ (\text{yield to maturity})$$

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 10, 2021
RE: SJCERA Manager Certification Update: 2Q 2021 Overview and Responses

Summary of Responses

Meketa reviewed the SJCERA Quarterly Manager Certification Updates for the quarter ending June 30, 2021, 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.
- Seven managers reported litigation or regulatory investigation information: Almanac, Angelo Gordon, BlackRock, HPS, Medley, PIMCO, and Principal.
- Eleven managers reported investment team changes: Almanac, Angelo Gordon, Dodge & Cox, GQG, Medley, Mesa West, Northern Trust, Oaktree, Stockbridge, Stone Harbor, and Walton Street.
- Nine managers reported material management changes: Almanac, BlackRock, GQG, Medley, Miller Global, Northern Trust, PIMCO, Walton Street, and White Oak.
- Three managers reported material business changes: GQG, Medley, and Stone Harbor.
- Bridgewater and Graham chose not to provide responses to the SJCERA compliance questionnaire and directed Meketa to a standard quarterly business or compliance updates.
- Davidson Kempner declined to provide *written* responses.

[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	N/A	Yes*	No	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
AG Core Plus	Pvt. Non-core RE	Yes	Yes	Yes	N/A*	Yes*	Yes*	No	No	Yes	Yes
Almanac Realty	Pvt. Non-core RE	Yes	Yes	Yes	N/A*	Yes*	Yes*	Yes*	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	No	Yes*	No	Yes	Yes
Stockbridge	Pvt. Non-core RE	Yes	Yes	Yes	Yes	No	Yes*	No	No	Yes	Yes
Walton Street	Pvt. Non-core RE	Yes	Yes	Yes	N/A*	No	Yes*	Yes*	No	Yes	Yes
Traditional Growth											
Northern Trust	All Cap Global	Yes	Yes	Yes	Yes	No	Yes*	Yes*	No	Yes	Yes
GQG	Emerging Mkts.	Yes	Yes	Yes	Yes	No	Yes*	Yes*	Yes*	No	No
PIMCO	Emerging Mkts.	Yes	Yes	Yes	Yes	Yes*	No	Yes*	No	Yes	Yes
Invesco	REITS	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes
Stabilized Growth											
Bridgewater**	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	Yes*	No	Yes*	Yes	Yes
Stone Harbor	Bank Loans	Yes	Yes	Yes	Yes	No	Yes*	No	Yes*	Yes	Yes
BlackRock	Direct Lending	Yes	Yes	Yes	N/A	Yes*	No	Yes*	No	Yes	Yes
Crestline	Opportunistic	Yes	Yes	Yes	N/A*	No	No	No	No	No	No
Davidson Kempner***	Opportunistic	--	--	--	--	--	--	--	--	--	--
Medley	Direct Lending	Yes	Yes	Yes	Yes	Yes*	Yes*	Yes*	Yes*	Yes	Yes
Mesa West	Comm. Mortgage	Yes	Yes	Yes	Yes	No	Yes*	No	No	Yes	Yes
Oaktree	Leveraged Direct	Yes	Yes	Yes	Yes	No*	No	No	No	Yes	Yes
HPS	Direct Lending	Yes	Yes	Yes	Yes	Yes*	Yes*	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	No*	No	Yes*	No	Yes	Yes
Berkeley Partners	Value Add RE	Yes	Yes	Yes	N/A*	No	No	No	No	Yes	Yes
Principal	Pvt. Core RE	Yes	Yes	Yes	N/A*	Yes*	No*	No	No	Yes	Yes
Prologis Targeted U.S.	Pvt. Core RE	N/A*	Yes	Yes	N/A*	No	No	No	No	Yes	Yes
RREEF / DWS	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
DoubleLine	MBS	Yes	Yes	N/A*	Yes	No	No	No	No	N/A*	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	No	Yes	Yes
Graham**	Syst. Trend Following	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
AQR	Alt. Risk Premia	Yes	Yes	Yes	Yes	No	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	No	No	No	Yes	Yes
Consultant											
Meketa	Consultant	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes

* Detailed written response provided below.
** Bridgewater and Graham chose not to provide responses to the SJCERA compliance questionnaire and instead directed Meketa to a standard quarterly business update.
*** Manager declined to provide *written* responses.

Performance Information through June 30, 2021								
					Ann. Excess (bps)		Peer Ranking	
Manager	Sub-Segment	Inception Date	Status	Benchmark	3 Yrs	5 Yrs	3 Yrs	5 Yrs
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%	1,257	1,425	n/a	n/a
Ocean Avenue III[1]	PE Buyout FOF	4/2016	Good Standing	MSCI ACWI +2%	1,021	n/a	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%	-1,882	-964	n/a	n/a
Morgan Creek V[1]	Multi-Strat FOF	6/2013	Good Standing	MSCI ACWI +2%	-189	-32	n/a	n/a
Morgan Creek VI[1]	Multi-Strat FOF	2/2015	Good Standing	MSCI ACWI +2%	418	287	n/a	n/a
AG Core Plus IV[3]	Pvt. Non-core RE	2014	Good Standing	Private RE Benchmark	150	-140	n/a	n/a
Almanac Realty VI[3]	Pvt. Non-core RE	2011	Good Standing	Private RE Benchmark	-2,120	-1,520	n/a	n/a
Greenfield V[3]	Pvt. Non-core RE	2007	Good Standing	Private RE Benchmark	-2,040	-1,430	n/a	n/a
Greenfield VI[3]	Pvt. Non-core RE	2011	Good Standing	Private RE Benchmark	-4,440	-3,390	n/a	n/a
Greenfield VII[3]	Pvt. Non-core RE	2013	Good Standing	Private RE Benchmark	290	n/a	n/a	n/a
Grandview[3]	Pvt. Non-core RE	2018	Good Standing	Private RE Benchmark	810	950	n/a	n/a
Miller Global VI[3]	Pvt. Non-core RE	2007	Good Standing	Private RE Benchmark	-3,290	-2,160	n/a	n/a
Miller Global VII[3]	Pvt. Non-core RE	2012	Good Standing	Private RE Benchmark	-1,360	-1,000	n/a	n/a
Stockbridge III[3]	Pvt. Non-core RE	2017	Good Standing	Private RE Benchmark	-400	n/a	n/a	n/a
Walton Street V[3]	Pvt. Non-core RE	2005	Good Standing	Private RE Benchmark	-2,190	-1,830	n/a	n/a
Walton Street VI[3]	Pvt. Non-core RE	2007	Good Standing	Private RE Benchmark	-980	-960	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	-216	-92	85	72
Invesco	REITS	8/2004	Good Standing	FTSE EPRA/NAREIT ex-US Equity	-32	71	90	83
Stabilized Growth								
Bridgewater[2]	Risk Parity	3/2012	Good Standing	Bridgewater All Weather Blend	340	261	n/a	n/a
PanAgora	Risk Parity	4/2016	Good Standing	T-Bill +4%	576	308	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.	n/a	n/a	n/a	n/a
Stone Harbor[1]	Abs. Return	4/2008	Good Standing	3-Month Libor	249	266	n/a	n/a
BlackRock	Direct Lending	05/2020	Good Standing	Custom Credit Benchmark	n/a	n/a	n/a	n/a
Crestline[1]	Opportunistic	11/2013	Good Standing	CPI +6%	-833	-486	n/a	n/a
Davidson Kempner[1]	Opportunistic	10/2020	Good Standing	CPI +6%	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 6/30/2021, lagged 1 quarter.

Performance Information through June 30, 2021								
					Ann. Excess (bps)		Peer Ranking	
Manager	Sub-Segment	Inception Date	Status	Benchmark	3 Yrs	5 Yrs	3 Yrs	5 Yrs
Stabilized Growth (continued)								
Medley[1]	Direct Lending	7/2012	Good Standing	CPI +6%	-1,900	-1,480	n/a	n/a
Mesa West III[1]	Comm. Mortgage	9/2013	Good Standing	CPI +6%	-912	-541	n/a	n/a
Mesa West IV[1]	Comm. Mortgage	3/2017	Good Standing	CPI +6%	-32	n/a	n/a	n/a
Oaktree[1]	Leveraged Direct	3/2018	Good Standing	MSCI ACWI +2%	199	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%	-1,143	-1,160	n/a	n/a
Raven Capital III[1]	Direct Lending	8/2015	Good Standing	CPI +6%	-110	-489	n/a	n/a
White Oak[1]	Direct Lending	3/2016	Good Standing	CPI +6%	-189	-145	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	-310	-310	n/a	n/a
Prologis Targeted US[3]	Pvt. Core RE	9/2007	Good Standing	Private RE Benchmark	690	670	n/a	n/a
RREEF / DWS[3]	Pvt. Core RE	4/2016	Good Standing	Private RE Benchmark	-310	n/a	n/a	n/a
Principal Protection								
Dodge & Cox	Core Fixed Income	10/1990	Good Standing	BB Aggregate Bond	123	164	18	6
DoubleLine	MBS	2/2012	Good Standing	BB Aggregate Bond	-83	77	66	1
Crisis Risk Offset[1]								
Dodge & Cox	Long Duration	2/2016	Good Standing	BB US Long Duration Treasury	-28	-13	n/a	n/a
Mount Lucas	Sys. Trend Following	1/2005	Good Standing	BTOP50 Index	33	-314	n/a	n/a
Graham[2]	Sys. Trend Following	4/2016	Good Standing	SG Trend	-86	-126	n/a	n/a
AQR	Alt. Risk Premia	5/2016	Good Standing	5% Annual	-1,533	-1,066	n/a	n/a
P/E Investments	Alt. Risk Premia	7/2016	Good Standing	5% Annual	-1,101	-891	n/a	n/a
Lombard Odier	Alt. Risk Premia	1/2019	Good Standing	5% Annual	n/a	n/a	n/a	n/a
Other								
Northern Trust	Govt. Short Term	1/1995	Good Standing	US T-Bills	-35	-24	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.

Manager Responses to Highlighted Questions (continued)

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 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"). On June 22, 2021, the defendants in the Delaware Action (i.e., the Wisconsin Plaintiffs) filed a notice of appeal from the Final Order to the extent it enjoined them from pursuing eight Counts in the Wisconsin Action. The appeal of the Delaware Action remains pending. The Wisconsin Action remains stayed.

Almanac Investment Personnel Changes

In April 2021, Kenny Moon, Managing Director on the Almanac investment team, departed the firm. Mr. Moon was responsible for investment origination, analysis, underwriting, structuring, transaction execution, and ongoing management of the investments of ARS Funds. While there has not been someone specifically hired to take over Mr. Moon's responsibilities, the investment team has added new members over the past year and has had promotions to senior levels.

Almanac Management Level Changes

Specifically, for the Almanac Realty Investors ("Almanac") business unit of NBAA, there have been two departures at the Almanac management level. Kenny Moon, former Managing Director departed April of 2021. Please refer to the response to question 6. Additionally, Jennifer Cattier, former Almanac General Counsel has departed in June of 2021. Almanac currently has a secondee dedicated to the Almanac business and has identified a permanent replacement starting August of 2021.

With respect to NBAA, on May 19, 2021, the strategic combination between Dyal Capital Partners and Owl Rock Capital Group became effective, and Dyal Capital Partners is now part of Blue Owl Capital Inc. ("Blue Owl"), a company that trades on the NYSE as "OWL." Following the transaction, an entity owned by certain current and former NBG employees owned approximately 35% of the interests in Blue Owl's operating entities. This change has no material adverse effect on the Fund.

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 the attached lawsuits present material liability for the Firm of any of its funds or accounts.

Summary of Angelo, Gordon Related Litigation

Manager Responses to Highlighted Questions (continued)

As of June 10, 2021

As of the date above, Angelo, Gordon & Co., L.P. (the "firm") is a named party in the following pending proceedings:

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.

In 2019, a former employee of AG filed suit against the firm in Illinois state court alleging negligent supervision and breach of contract. In 2020, the court dismissed the case for want of prosecution; however, the court subsequently reinstated the case.

As of the date above, funds or entities managed by the firm are named parties the following pending litigation:

In 2017, certain of the firm's affiliated funds, along with other noteholders and deal parties, filed a motion to intervene in a Delaware matter in which plaintiff and the purported owner of the trusts entered into a consent judgment that would subject the trusts to various fines, penalties and oversight and permit the purported owners to obtain more control over the assets and cashflow of the trusts.

In 2020, an AG entity filed a suit against the defendants seeking the return of deposits in connection with the defendants' default on several purchase and sale agreements.

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.

In 2011, certain of the firm's affiliated funds, along with other third-party holders, were named in litigation relating to the return of interest payments on bonds.

In 2021, an AG entity was named as a defendant in a New York lawsuit seeking reimbursement of certain due diligence costs and management fees.

In 2021, an AG entity was named as defendant in an interpleader action brought by the Trustee of a CDO. Trustee initiated the interpleader action for the purpose of adjudicating the rights of the interpleader defendants, which include certain of the firm's funds.

The above lawsuits do not present material liability for the firm or any of its funds or accounts.

Manager Responses to Highlighted Questions (continued)

Angelo Gordon Investment Personnel Change

In June 2021, a Vice President on the US Real Estate Team, left the firm to pursue other opportunities.

In April 2021, a Director joined the US Real Estate Team in the LA office.

During the quarter two Associates were hired on the US Real Estate Team.

Berkeley Custodian Reconciliation

N/A, not through a separate account. Yes, the accounts was successfully reconciled internally, but the Firm does not use a third-party custodian.

BlackRock Litigation

As a global investment manager, BlackRock, Inc., and its various subsidiaries including BTC may be subject to regulatory oversight in numerous jurisdictions including examinations and various requests for information. BTC's regulators routinely provide it with comment letters at the conclusion of these examinations in which they request that BTC correct or modify certain of its practices. In all such instances, BTC 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. The recent fines related to BlackRock, Inc. or BFM's investment advisory responsibilities are set forth below. These matters do not include fines paid to non-US regulators relating to the late filing of issuer-specific holdings reports.

On 8 March 2012, BlackRock Institutional Trust Company, N.A. ("BTC") entered into an Offer of Settlement (the "Agreement") with the CFTC and consented to the entry of an Order, which makes findings and imposes remedial sanctions against BTC. Without admitting or denying wrongdoing, BTC agreed to the imposition of a $250,000 penalty and the entry of the Order to resolve allegations by the CFTC that two trades by BTC violated Section 4c(a)(1) of the Commodity Exchange Act and CFTC Regulation 1.38(a). BTC also agreed to refrain from any further violations of the above-mentioned statutory provisions. The CFTC did not allege that any clients of BTC, BlackRock or any related affiliate were harmed in any way in the execution of these two trades.

On 11 September 2012, the UK Financial Services Authority ("FSA") issued a Final Notice against BlackRock Investment Management (UK) Limited ("BIMUK"), following a settlement agreement reached between the FSA and BIMUK. The FSA found that BIMUK had breached certain provisions of the FSA's Client Money Rules and Principles, during the period 1 October 2006 to 31 March 2010, by not having trust letters in place for client money placed on money market deposit and not having adequate systems and

controls for the identification and protection of client money in this respect. BIMUK agreed to a settlement payment of GBP 9,533,100 for the breach, which it had self-reported to the FSA in April 2010. The FSA final order acknowledged that no client of BIMUK (or BlackRock or any related affiliate) suffered any harm and that BIMUK had remedied the situation and put in place robust systems and controls relating to client money protection.

On 3 October 2012, BlackRock Financial Management Inc. ("BFM") reached an agreement with the U.S. Department of Labor ("DOL") to reimburse clients $2,661,513 in connection with certain trades the DOL alleged violated Title I of the Employee Retirement Income Security Act ("ERISA"). BFM also agreed to pay to the DOL a $266,151 penalty.

Manager Responses to Highlighted Questions (continued)

On 8 January 2014, BlackRock, Inc. reached a settlement with the New York Attorney General's office ("AG") pursuant to which the AG found BlackRock's use of analyst surveys violated New York's Martin Act and Executive Law. The settlement did not involve the payment of any fine or other penalty although BlackRock paid $400,000 to cover the AG's costs of investigation. BlackRock neither admitted nor denied the allegations, but agreed to stop using analyst surveys.

On 8 May 2014, the primary Italian securities regulator ("CONSOB") fined BlackRock Investment Management (UK) Limited ("BIMUK") 150,000 EURO (approximately $205,826 USD) for negligent market manipulation. The fine was based on BIMUK's filing, on behalf of the BlackRock group of companies, a large shareholder report regarding its holdings in Unicredit S.p.A. to CONSOB in December 2011, which turned out to be incorrect.

On 16 September 2014, BlackRock Institutional Trust Company, N.A. entered into an agreement with the SEC to resolve allegations relating to three alleged violations of an SEC regulation prohibiting short sales of an equity security during the restricted period preceding a public offering. The three trades at issue occurred in 2010 and 2011. As part of the approximately $1.7 million settlement, BTC agreed to disgorge profits from each of the violations and to pay interest and a civil penalty. BTC also agreed to cease and desist from any future violations of the rule in question.

On 20 April 2015, BlackRock Advisors, LLC ("BAL") reached a settlement with the Securities and Exchange Commission ("SEC") regarding BlackRock's handling of a former portfolio manager's personal investments and involvement in a family business, Rice Energy LP and related entities. As part of the settlement, BAL agreed to pay a $12 million penalty and retained an independent compliance consultant to review BlackRock's policies and procedures regarding the outside activities of BlackRock's employees. There was neither an allegation by the SEC of any loss to any BlackRock investors, nor did this settlement have any adverse impact on BlackRock's ability to manage its clients' funds.

On 17 January 2017, BlackRock, Inc. reached an agreement with the SEC resolving a matter regarding a provision in an old version of BlackRock's form employee separation agreement that the SEC believed violated Dodd Frank's whistleblower provisions. The settlement with the SEC included a $340,000 payment and BlackRock agreed it would not include the provision in future agreements.

Manager Responses to Highlighted Questions (continued)

In addition, BlackRock agreed to notify by letter, certain former employees who signed the agreement between October 2011 and March 2016.

On 25 April 2017, BlackRock Fund Advisors ("BFA") reached an agreement with the SEC resolving a matter regarding whether one BFA-managed ETF (the iShares MSCI Russia Capped ETF) was covered by certain exemptive relief the SEC previously granted BFA and other iShares funds. BFA, which did not admit or deny any of the SEC's findings, agreed to resolve the matter for a civil monetary penalty of $1.5 million.

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.

In past years, BlackRock has acquired organizations that provide investment-related services, including, but not limited to, State Street Research & Management Company, Merrill Lynch Investment Managers, the fund of funds business of Quellos Group, LLC, and Barclays Global Investors. This response does not address any regulatory or litigation matters that arose out of conduct within the acquired organizations prior to their acquisition by BlackRock. It also does not address regulatory or litigation matters unrelated to BlackRock or BTC's investment management responsibilities.

BlackRock Management Level Changes

In 2010, BlackRock created the Global Executive Committee to provide oversight of operations and business performance, strategy and planning, talent development and retention, risk management, and external affairs. The following chart shows turnover within the GEC as of 30 June 2021.

Year	Previous Member	Previous Role	Reason for Change	Replacement
2021	Barbara Novick	Vice Chairman	Role changed to Senior Advisor pending retirement	Responsibilities assumed by existing BLK personnel
2021	Geraldine Buckingham	Head of Asia Pacific	Role changed to Senior Advisor pending retirement	Responsibilities assumed by existing GEC personnel

Consistent with the goals of fully leveraging the firm's talent and expanding our senior leadership team to ensure a broader, more diverse representation of views, we added the following members to the GEC:

On 1 April 2021, Stephen Cohen was appointed to the GEC from his role as Head of EMEA Indexing and Wealth.

On 7 June 2021, Dalia Blass joined BlackRock and the GEC as Global Head of External Affairs.

Please note that the above does not include role changes of GEC members who remained on the committee.

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

Manager Responses to Highlighted Questions (continued)

Crestline Reconciliation with Custodian

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.

Dodge & Cox Investment Personnel Changes

Turnover

Dodge & Cox has experienced an extremely low level of personnel turnover throughout our history. There was no turnover to the investment team responsible for SJCERA's portfolio during the quarter.

Please see Exhibit A – Experienced, Integrated, and Stable Investment Team and Exhibit B – Employee Update – Investment Professionals for more information.

Hired		
2020		
Nicholas J. Hart(a)	Fixed Income Analyst/Trader	3Q
Daniel Zhu	Global Industry Analyst	3Q
2019		
Luis Silva Behrens	Fixed Income Trader	4Q
Deepak Begari	Equity Trader	3Q
Charis N. Ji	Global Industry Analyst	3Q
Dennis E. Shiraev	Global Industry Analyst	3Q
Jessica W. Corr(a)	Fixed Income Trader	1Q
Raja Patnaik	Research Analyst (Portfolio Strategy)	1Q
2018		
Nate Liao	Global Industry Analyst	3Q

Retired		Years with Firm	
2020			
Wendell W. Birkhofer	Equity Portfolio Manager	33	4Q
Richard T. Callister	Global Industry Analyst	18	4Q
Larissa K. Roesch	Fixed Income Portfolio Manager	23	4Q
2019			
Elizabeth M. Holt	Equity Trader	16	3Q
James T. Borden	Client Portfolio Manager	17	2Q

Resigned			
2019			
Linda K. Chong	Fixed Income Analyst/Trader	14	4Q
2018			
Thinh V. Le	Fixed Income Analyst/Trader	17	3Q
Joel-Patrick Millsap	Global Industry Analyst	12	2Q

Manager Responses to Highlighted Questions (continued)

Dodge & Cox Management Level Changes

There have been no significant management level personnel changes at Dodge & Cox in the last quarter, however, on June 15, 2021, we announced that Roger Kuo will become President of Dodge & Cox when Charles Pohl retires June 30, 2022. Roger will succeed Dana Emery who will become Chairman and retain the role of CEO. Please see Exhibit C – Leadership Update for more details.

Dodge & Cox Leadership Update

At Dodge & Cox, we take a deliberate approach to our firm leadership appointments, planning for succession well in advance of retirements. Our paramount goal is to preserve the continuity of the firm's value-oriented investment philosophy, global research process, and collaborative culture.

Today we are pleased to share with you that Roger Kuo (49) will become President of Dodge & Cox when Charles Pohl (63) retires on June 30, 2022. As we announced in January, Charles will continue to transition his responsibilities gradually over the balance of this year and the first half of next year. Roger joined Dodge & Cox in 1998 and was elected a Director of the Dodge & Cox Inc. Board in January 2016. He is currently a Senior Vice President, Global Industry Analyst, and Investment Committee member.

As President, Roger will succeed Dana Emery (59) who will become Chairman and retain the role of CEO. Roger will work closely with Dana on managing the firm, in partnership with the Board of Directors and in keeping with Dodge & Cox's tradition of operating as an investment-led organization. He will also guide a number of firm-wide strategic initiatives in collaboration with teams across the firm. Over the next six months, Roger will be transitioning his company research responsibilities to other analysts on the Global Research team. He will remain a member of the International Equity and Global Equity Investment Committees and the firm's Research Policy Council (RPC), which is comprised of senior leaders and focused on further enhancing Dodge & Cox's investment research and decision-making excellence. Roger joined the RPC last year.

Roger is well prepared to take on additional firm management responsibilities in his new role. He has made important contributions to Dodge & Cox's Global Research effort over the course of his career. In recent years, he has taken on increasing firm leadership responsibility as a member of the Business Strategy and Risk Management Committees.

Thank you for you continued confidence in our firm, and best wishes for a happy and healthy summer.

Dodge & Cox Material Business Changes

There have been no material changes. Since mid-March of last year, Dodge & Cox has operated 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.

Manager Responses to Highlighted Questions (continued)

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 remain optimistic that all the efforts in the U.S. and U.K. to accelerate vaccine production and rollouts will help to curtail the pandemic and support herd immunity in the coming months. However, we believe it is highly unlikely that a vaccine would be made available on a widespread basis until later in 2021. Out of an abundance of caution and taking into account the firm's ability to operate effectively, we have extended our work-from-home model through at least Labor Day in the U.S. (September 6).

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 meeting and collaborating 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.

Moreover, Dodge & Cox remains financially strong. We have increased our investment in our business capabilities, reassured our employees and clients that we will not be making any changes to our workforce, and continued to hire new talent. We have also increased our support of organizations that provide aid to those in need in San Francisco and the Bay Area.

In addition, we are in regular contact with our Funds Board, regulators, and industry peers.

DoubleLine Compliance with Manager Guidelines

DoubleLine does not have its own guidelines for the account, but DoubleLine does impose broader portfolio compliance restrictions on all of its accounts based on situations such as information wall restricted lists or conflicts of interest that can arise or apply.

Manager Responses to Highlighted Questions (continued)

DoubleLine Compliance with Internal Risk Procedures

DoubleLine does not maintain internal 'risk management' policies and procedures. DoubleLine does maintain a number of policies and procedures as it relates to its' business as an investment company and a registered investment advisor. To that extent, DoubleLine monitors adherence to these policies and procedures at various intervals throughout the year on an as needed basis. Any exceptions to these policies and procedures are addressed, remediated and mitigated as soon as practicable. To that extent DoubleLine does not believe there are any exceptions to note as an ongoing concern.

GQG Investment Personnel Changes

Yes.

In Q2 2021 GQG added Investment Analysts Janet Hong and Shawn Li to the Investment team.

In 2Q 2021, Investment Analyst Ling Zang departed the firm. Her responsibilities were assumed by the broader 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.

GQG Management Level Changes

Yes.

In 2Q 2021, Jeri Andrews, Managing Director of Global Marketing, departed the firm.

*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.

GQG Material Business Changes

Yes.

In Q2 2021, GQG Partners launched 3 new Quality Dividend Income strategies that focus on the same quality companies, but prioritize yield in portfolio construction:

- GQG Partners Global Quality Dividend Income
- GQG Partners International Quality Dividend Income
- GQG Partners US Quality Dividend Income

Manager Responses to Highlighted Questions (continued)

The firm also introduced a Co-Portfolio Manager structure with the launch of these strategies, in which the Deputy Portfolio Managers of the Quality Growth strategies will serve as the Co-Portfolio Managers for the Quality Dividend Income strategies.

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

Yes. There was one hire of a Vice President on the dedicated European Asset Value team during the second quarter of 2021. There have been no departures on the dedicated European Asset Value team during the second quarter of 2021.

Medley Litigation

Yes.

As previously reported, on March 7, 2021 (the "Petition Date"), Medley LLC ("Medley LLC") commenced a voluntary case (the "Chapter 11 Case") under chapter 11 of title 11 of the United States Code (the "Bankruptcy Code") in the United States Bankruptcy Court for the District of Delaware (the "Bankruptcy Court"). In connection with the commencement of the Chapter 11 Case, Medley LLC disclosed in its pleadings filed with the Bankruptcy Court certain matters related to Medley Management Inc.'s ("MDLY") and Medley LLC's business, including the regulatory matter described below:

On September 17, 2019 the staff of the Securities and Exchange Commission's Division of Enforcement (the "Staff") informed MDLY that it was conducting an informal inquiry and requested the production and preservation of certain documents and records. MDLY fully cooperated with the Staff's informal inquiry and began voluntarily providing the Staff with any requested documents.

By letter dated December 18, 2019, the Staff advised MDLY that a formal order of private investigation (the "Order") had been issued and that the informal inquiry was now a formal investigation. The Order indicated that the investigation relates to Section 17(a) of the Securities Act of 1933, Section 10(b) of the Exchange Act of 1934 (the "Exchange Act") and Rule 10b-5 thereunder, and Sections 206(1), 206(2), and 206(4) of the Investment Advisers Act of 1940, Rule 206(4)-8, Sections 13(a) and 14(a) of the Exchange Act and Rules 12b-20, 13a-1, 13a-11, 13a-13, and 14a-9 thereunder. MDLY continued to cooperate fully with the investigation.

Manager Responses to Highlighted Questions (continued)

On May 7, 2021, each of MDLY, Medley LLC, and six pre-IPO owners of Medley, each of whom is a current or former officer (the "Individuals") received a "Wells Notice" from the Staff relating to MDLY's previously-disclosed SEC investigation. The Wells Notices provided that the proposed action would allege violations of Section 10(b) of the Securities Exchange Act of 1934 ("Exchange Act") and

Rule 10b-5 thereunder (including as a control person pursuant to Section 20(e) of the Exchange Act); Section 17(a) of the Securities Act of 1933; Sections 206(1) and/or (2) of the Investment Advisers Act of 1940; Section 14(a) of the Exchange Act and Rules 14a-3 and 14a-9 thereunder; Section 13(a) of the Exchange Act and Rules 12b-11, 12b-20, 13a-1, 13a-11, 13a-13, and 13a-15(a) thereunder; and Regulation S-T. The Wells Notices also provided that the Staff's recommendation may involve a civil injunctive action, public administrative proceeding, and/or cease-and-desist proceeding, and may seek remedies that include an injunction, a cease-and-desist order, disgorgement, pre-judgment interest, civil money penalties, censure, and limitations on activities or bars from association.

A Wells Notice is neither a formal charge of wrongdoing nor a final determination that the recipient has violated any law. The Wells Notices informed MDLY, Medley LLC and the Individuals that the Staff has made a preliminary determination to recommend that the SEC file an enforcement action against MDLY, Medley LLC and each of the Individuals that would allege certain violations of the federal securities laws.

The Wells Notices relate to, among other matters: MDLY's and Medley LLC's disclosures relating to MDLY's assets under management ("AUM"), its fee-earning assets under management ("FEAUM"), trends and risks related to AUM and FEAUM, and specifically, violations of the federal securities laws relating to such disclosures in MDLY's registration statement relating to its initial public offering, Medley LLC's registration statements relating to its bond offerings, and MDLY and Medley LLC's periodic reports under the Exchange Act; MDLY's and Medley LLC's disclosure controls and procedures designed to ensure that the information required in reports filed under the Exchange Act; and MDLY's financial projections included in a joint proxy statement/prospectus, including any amendments thereto, in connection with a proposed (but ultimately terminated) merger among MDLY, Sierra Income Corporation and Medley Capital Corporation.

MDLY, Medley LLC and the Individuals currently intend to pursue the Wells Notice process, which will include the opportunity to respond to the Staff's position.

Source:

https://www.sec.gov/Archives/edgar/data/1536577/000121390021026135/ea140835-8k_medleyllc.htm

Medley Investment Personnel Changes

During Q2, one managing director from the investment team departed from Medley. He was part of the portfolio management team. David Richards (Chief Credit Officer and Chief Operating Officer) and Joshua Coleman (Principal) have taken over his responsibilities.

Medley Management Level Changes

As reported last quarter, on April 16, 2021, the following promotions were announced: Howard Liao to Chief Executive Officer, Dean Crowe to President and David Richards to Chief Operating Officer effective May 3, 2021.

Manager Responses to Highlighted Questions (continued)

Medley Material Business Changes

As previously discussed with Meketa/SJCERA on the phone during the quarter and in our last quarter's response, we would reference the Medley LLC Chapter 11 bankruptcy filing. The disclosure statement was approved as of August 16 with a confirmation hearing scheduled for October 5. Please reference the bankruptcy docket (http://www.kccllc.net/medley) for more details.

Mesa West Investment Personnel Changes

Ryan Krauch – Principal, Investor Relations – departed the firm in May 2021. His role responsibilities are being covered by a long-standing member of the Investor Relations team. Typical turnover has occurred at the analyst and administrative levels.

Miller Management Level Changes

Yes. Bill Lawrence, the Chief Operating Officer, left the Firm during the second quarter of 2021. There will not be a replacement for his position.

Morgan Creek Custodian Reconciliation

N/A this is not a separate account.

Neuberger Berman Investment Personnel Changes

There were no personnel changes to the investment team responsible for SJCERA's portfolio during the quarter. After a 39-year career in investment management, including 17 years at Neuberger Berman, Tom Sontag, one of the portfolio managers for our structured product strategies, announced his decision to retire at the end of the year. Tom has indirect responsibilities for this portfolio.

Northern Trust Investment Team Changes

Yes. There were four additions to the Global Index Equity Team. Shivani Shah (PM), Hamung Patel (PM), Simona Muresan (Assoc. PM), and Sophie Piempreecha (PM) joined the firm during the past quarter.

All Northern Trust Asset Management's passive mandates are managed using an integrated team-based approach whereby investment decisions are made in a systematic manner and are not dependent on a specific individual.

Northern Trust Management Level Changes

Yes. 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.

Manager Responses to Highlighted Questions (continued)

The most recent changes to senior personnel are the following:

- June 2021, Rich Vigsnes, retired as Global Head of Equity Trading on June 1st. Curt Nass, previously the Head of Equity Trading in North America, succeeded Rich and has assumed leadership of the Global Equity Trading Desk.
- May 2021, Bob Browne, retired as Chief Investment Officer on May 31st. An external search firm has been retained to fill the Chief Investment Officer role. During this period of transition, our team of senior leaders and investment management professionals will manage portfolios with the same discipline and employ the same investment process.
- May 2021, Julie Moret accepted the newly created role of Global Head of Sustainable Investing and Stewardship reporting directly to Sheri Hawkins, Head of Strategic Product Management. In this role, Julie oversees the firm's sustainable investing and global engagement policies, fosters research and product development agendas, and advances portfolio integration across asset classes.

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. 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.

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:

Manager Responses to Highlighted Questions (continued)

- 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 current 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 she 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 current 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 additional plaintiffs, including one current employee and two former employees. The allegations in the complaint are not accurate and PIMCO will demonstrate that the employees 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.

Manager Responses to Highlighted Questions (continued)

PIMCO Management Level Changes

Lost - PIMCO Investment Professionals

Date	Name	Title	Department	Years at PIMCO	Reason	Office
Jun-21	Rick Fulford	Executive Vice President	Account Management – Client Service	20	Other*	Newport Beach
Jun-21	Natalie Karpov	Senior Vice President	Account Management – Client Service	16	Other*	New York
Jun-21	Haining Yin	Executive Vice President	Account Management – Client Service	12	Other*	Hong Kong
Jun-21	Rahul Devgon	Senior Vice President	Portfolio Management	7	Other*	Newport Beach
Jun-21	Lars Luecking	Senior Vice President	Portfolio Management	<1	Other*	London
Jun-21	Daniel Ballen	Executive Vice President	Portfolio Management	6	Other*	New York
Jun-21	Wolfgang Dressler	Senior Vice President	Product Strategy Group	5	Other*	London
May-21	Alexandre Sabet	Senior Vice President	Account Management – Client Service	7	Other*	London
May-21	Chris Tarui	Executive Vice President	Account Management – Client Service	15	Other*	Newport Beach
May-21	Jan Faller	Executive Vice President	Analysts	6	Other*	Newport Beach
Apr-21	Edward Sasinowski	Senior Vice President	Account Management – Client Service	9	Other*	New York
Apr-21	Adrian Stewart	Executive Vice President	Account Management – Client Service	6	Other*	Sydney
Apr-21	Chantal Manseau	Executive Vice President	Account Management – Client Service	18	Other*	Newport Beach
Apr-21	Dominique Dorlipo	Executive Vice President	Account Management – Client Service	2	Other*	London

**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 September 30th monthly statement. We do not receive reports from their custodian to reconcile.

Manager Responses to Highlighted Questions (continued)

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 Investment Personnel Changes

There were no departures from the Principal U.S. Property Account portfolio management team during the second quarter, however, Ellen Bennett joined the team as a portfolio analyst in June 2021. Ellen is responsible for portfolio statistics and analysis, annual business plans, and quarterly reporting and has prior experience in acquisitions/dispositions and private credit.

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 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.

Manager Responses to Highlighted Questions (continued)

RREEF Custodian Reconciliation

N/A. The Fund does not provide custodial services. Shares of the fund are uncertificated.

Stockbridge Investment Personnel Changes

Yes, Kennedy Shields, Portfolio Associate, left the firm to attend a MBA program in June 2021. Ms. Shields had been with the firm and the Value Fund Series since July 2017. To backfill Ms. Shields position, Brent Grubbs and Wes Frank were added to the Value Fund Series portfolio team as a Portfolio Associate and Portfolio Analyst, respectively. Mr. Grubbs has been with the firm for over seven years where he was a Portfolio Associate working on the firm's separate accounts. Mr. Frank is a new hire for the firm.

Stone Harbor Investment Personnel Changes

Yes. In April 2021, John Pace, Global Industry Credit Analyst left the firm to pursue other opportunities. Other members of the team absorbed John's responsibilities.

Stone Harbor Material Business Changes

Yes. On 28 June 2021, Stone Harbor Investment Partners LP announced that it has entered into a definitive agreement to become an affiliate investment boutique of Virtus Investment Partners (NASDAQ: VRTS), a publicly traded multi-boutique investment management company. We expect this agreement to close by the end of 2021.

Virtus (NASDAQ: VRTS | https://corporate.virtus.com/) operates a partnership of boutique investment managers that currently manage more than USD 175 billion in a variety of equity, fixed income and alternative investment strategies for individual and institutional investors. Their affiliate structure preserves the autonomy and cultures of the different investment organizations that have partnered with Virtus over time and provides an optimal environment for those affiliates to generate predictable sustainable results.

We view this as an incredibly positive event for all our clients, business partners, and personnel. Stone Harbor's affiliation with Virtus ensures our long-term stability, allowing for a multigenerational continuation of our culture. It also preserves the successful investment processes that has driven so many strong client outcomes since our inception in 2006 and with our predecessor companies. Stone Harbor's leadership will remain in place; there will be no changes to the investment process, or investment and client service teams.

Manager Responses to Highlighted Questions (continued)

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.

Walton Street Investment Personnel Changes

Yes, Walton Street had two departures (Principal and above) in the Chicago office during the quarter. Please see details in the table below.

Title	Department	Start Date	Leave Date	Tenure	Industry Experience
Senior Principal, Investment Committee, Managing Director	Acquisitions	8/3/1992	4/30/2021	26	29
Principal	Acquisitions	7/5/2006	4/30/2021	15	15

Walton Street Management Level Changes

Yes, Robert Bloom and Rich Ratke were promoted to Managing Principals and joined the Management Committee during the quarter. Please see details in the table below.

Name	Department	Department	Start Date	Tenure	Industry Experience	Previous Position
Robert Bloom	Asset Management	Acquisitions	3/27/2006	15	25	Senior Principal
Richard Ratke	Debt Platform	Acquisitions	1/26/2007	14	22	Senior Principal

White Oak Litigation

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. Routine proceedings against borrowers, including the Financing Affiliates (as such term is defined in Part 2A of Form ADV), occur from time to time in the normal course.

One client made an arbitration demand based upon a fee issue and that demand was filed July 31, 2018. The arbitrator issued an interim partial decision on November 30, 2020. After both parties sought clarification and modification of the partial award, the arbitrator merely reaffirmed the partial decision without further clarification by email dated February 25, 2021. A further hearing on damages was held on June 17, 2021. White Oak continues to believe that the client's claims are without merit and will vigorously pursue all available remedies.

Manager Responses to Highlighted Questions (continued)

White Oak Management Level Changes

Yes. Senior professional departures are listed below (MD and above), and do not include personnel changes of our affiliates.

1. Leavers:
    a. Thomas Affolter, Managing Director, Originations
    b. Gregory Barrett, Managing Director, Marketing

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
AQR	Diversifying Strategies	Alternative Risk Premia	Apr-19	Jul-19		4/21/2020		Stamford, CT
BlackRock	Stabilized Growth, PC	Direct Lending				3/18/2019*		San Francisco, CA
BlackRock	Aggressive Growth	Infrastructure				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				8/11/2020		New York, NY
Dodge & Cox	Diversifying Strategies, PP	Core Fixed Income		Dec-20		6/3/2020		San Francisco, CA
Dodge & Cox	Diversifying Strategies, CRO	Long Duration				6/3/2020		San Francisco, CA
DoubleLine	Diversifying Strategies, PP	MBS		Mar-21		11/29/2018*		Los Angeles, CA
GQG	Traditional Growth	Emerging Markets				10/16/2020		San Francisco, CA
Graham	Diversifying Strategies, CRO	Systematic Trend Following				7/23/2020		Rowayton, CT
HPS EU	Stabilized Growth, PC	Direct Lending		Mar-20		8/3/2017*		New York, NY
Invesco	Traditional Growth	REITs, Core US				5/6/2020*		Atlanta, GA
Lombard	Diversifying Strategies	Alternative Risk Premia				10/19/2020		New York, NY
Medley	Stabilized Growth, PC	Direct Lending		Jul-21		3/12/2015		San Francisco/New York
Mesa West III & IV	Stabilized Growth, PC	Comm. Mortgage				8/22/2019	8/22/2019	Los Angeles, CA
Morgan Creek III, V, & VI	Aggressive Growth	Multi-Strat FOF		May-18		8/22/2019	8/22/2019	Chapel Hill, NC
Mount Lucas	Diversifying Strategies, CRO	Systematic Trend Following		May-18		3/17/2020	2/12/2021	Newton, PA
Northern Trust	Traditional Growth	MSCI World IMI						Chicago, IL
Northern Trust	Cash	Collective Govt. Short Term						Chicago, IL
Neuberger Berman	Stabilized Growth, LC	Global Credit		May-19		10/20/2020		Chicago, IL
Oaktree	Stabilized Growth, PC	Leveraged Direct Lending				11/6/2020		New York, NY
Ocean Avenue	Aggressive Growth	PE Buyout FOF		Jan-19				Santa Monica, CA
P/E Diversified	Diversifying Strategies	Alternative Risk Premia		May-21		2/17/2020		Boston, MA
PanAgora	Stabilized Growth, RP	Risk Parity		Mar-18		4/7/2020*		Boston, MA
Parametric	Cash	Cash Overlay				10/27/2020*		Minneapolis, MN
PIMCO (RAE)	Traditional Growth	Emerging Markets				7/23/2020*	8/22/2019	Newport Beach, CA
Raven II & III	Stabilized Growth, PC	Direct Lending		Apr-18			2/23/2018	New York, NY
Stone Harbor	Stabilized Growth, LC	Absolute Return		Feb-20		9/29/2020*	2/3/2021	New York, NY
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

Stellex Capital Management		Private Equity	5/8/2020

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	2020	Newport Beach, CA

San Joaquin County Employees Retirement Association (SJCERA)

Preliminary Monthly Flash Report (Net)[1] — July 2021

	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]			$ 3,846,841,180	100.0%	100.0%	0.9	3.8	9.3	18.1	9.1	8.2	8.0	Apr-90
Policy Benchmark[4]						*1.1*	*3.3*	*8.1*	*17.7*	*9.8*	*9.0*	*7.8*	
Difference:						-0.2	0.5	1.2	0.4	-0.7	-0.8	0.2	
75/25 Portfolio[5]						*0.9*	*3.1*	*9.4*	*24.9*	*13.2*	*11.2*	*7.8*	
Difference:			.			0.0	0.7	-0.1	-6.8	-4.1	-3.0	0.2	
Broad Growth			$ 2,925,277,891	76.0%	75.0%	1.0	4.5	11.7	23.5	10.3	10.1	8.7	Jan-95
Aggressive Growth Lag[2]			$ 286,117,627	7.4%	10.0%	7.0	7.0	19.0	23.0	12.6	11.7	-4.2	Feb-05
MSCI ACWI +2%Lag						*2.4*	*3.7*	*12.3*	*46.5*	*11.3*	*10.4*	*0.0*	
Difference:						4.6	3.3	6.7	-23.5	1.3	1.3	-4.2	
BlackRock Global Energy&Power Lag[3]	*$50,000*	*Global Infrastructure*	$ 18,135,143	0.5%		1.5	1.5	2.8	6.6	--	--	9.8	Jul-19
MSCI ACWI +2%Lag						*2.9*	*5.2*	*21.3*	*58.3*	--	--	*20.1*	
Difference:						-1.4	-3.7	-18.5	-51.7	--	--	-10.3	
Ocean Avenue II Lag[3]	*$40,000*	*PE Buyout FOF*	$ 34,266,163	0.9%		20.7	20.7	50.9	59.4	26.8	26.3	15.6	May-13
MSCI ACWI +2% Lag						*2.9*	*5.2*	*21.3*	*58.3*	*14.2*	*12.1*	*10.9*	
Difference:						17.8	15.5	29.6	1.1	12.6	14.2	4.7	
Ocean Avenue III Lag[3]	*$50,000*	*PE Buyout FOF*	$ 55,271,738	1.4%		12.2	12.2	25.3	22.8	24.4	--	22.7	Apr-16
MSCI ACWI +2% Lag						*2.9*	*5.2*	*21.3*	*58.3*	*14.2*	--	*12.1*	
Difference:						9.3	7.0	4.0	-35.5	10.2	--	10.6	
Ocean Avenue IV Lag[3]	*$50,000*	*PE Buyout*	$ 28,272,300	0.7%		4.3	4.3	26.1	37.5	--	--	34.9	Dec-19
MSCI ACWI +2% Lag						*2.9*	*5.2*	*21.3*	*58.3*	--	--	*24.0*	
Difference:						1.4	-0.9	4.8	-20.8	--	--	10.9	
Morgan Creek III Lag[3]	*$10,000*	*Multi-Strat FOF*	$ 8,158,028	0.2%		3.3	3.3	11.8	15.2	-4.6	2.5	-1.1	Feb-15
MSCI ACWI +2% Lag						*2.9*	*5.2*	*21.3*	*58.3*	*14.2*	*12.1*	*11.5*	
Difference:						0.4	-1.9	-9.5	-43.1	-18.8	-9.6	-12.6	
Morgan Creek V Lag[3]	*$12,000*	*Multi-Strat FOF*	$ 9,110,123	0.2%		-0.3	-0.3	12.6	14.7	12.3	11.8	13.4	Jun-13
MSCI ACWI +2% Lag						*2.9*	*5.2*	*21.3*	*58.3*	*14.2*	*12.1*	*11.0*	
Difference:						-3.2	-5.5	-8.7	-43.6	-1.9	-0.3	2.4	
Morgan Creek VI Lag[3]	*$20,000*	*Multi-Strat FOF*	$ 23,785,303	0.6%		1.1	1.1	19.0	30.7	18.4	15.0	8.6	Feb-15
MSCI ACWI +2% Lag						*2.9*	*5.2*	*21.3*	*58.3*	*14.2*	*12.1*	*11.5*	
Difference:						-1.8	-4.1	-2.3	-27.6	4.2	2.9	-2.9	
Stellex Capital Partners II Lag[3]	*$50,000*	*Multi-Strat FOF*	$ 5,534,230	0.1%		1.1	--	--	--	--	--	--	Jul-20
MSCI ACWI +2% Lag						*2.9*	--	--	--	--	--	--	
Difference:						-1.8	--	--	--	--	--	--	
Opportunistic Private Real Estate													
Greenfield V[3]	*$30,000*	*Opportunistic Pvt. RE*	$ 227,258	0.0%		-0.1	-0.1	-2.1	-25.4	-12.3	-4.8	-3.1	Jul-08
NCREIF ODCE + 1% Lag Blend						*2.9*	*2.9*	*5.0*	*5.6*	*8.1*	*9.5*	*6.4*	
Difference:						-3.0	-3.0	-7.1	-31.0	-20.4	-14.3	-9.5	
Greenfield VI[3]	*$20,000*	*Opportunistic Pvt. RE*	$ 171,705	0.0%		-0.5	-0.5	-25.3	-29.7	-36.3	-24.4	-9.7	Apr-12
NCREIF ODCE + 1% Lag Blend						*2.9*	*2.9*	*5.0*	*5.6*	*8.1*	*9.5*	*9.2*	
Difference:						-3.4	-3.4	-30.3	-35.3	-44.4	-33.9	-18.9	
Greenfield VII[3]	*$19,100*	*Opportunistic Pvt. RE*	$ 9,301,411	0.2%		5.6	5.6	10.4	27.4	11.0	--	8.0	Oct-14
NCREIF ODCE + 1% Lag Blend						*2.9*	*2.9*	*5.0*	*5.6*	*8.1*	*9.5*	*8.2*	
Difference:						2.7	2.7	5.4	21.8	2.9	--	-0.2	
Grandview[3]	*$30,000*	*Opportunistic Pvt. RE*	$ 20,316,979	0.5%		0.3	0.3	11.5	14.0	11.7	12.5	12.1	Apr-18
NCREIF ODCE + 1% Lag Blend						*2.9*	*2.9*	*5.0*	*5.6*	*8.1*	*9.5*	*5.3*	
Difference:						-2.6	-2.6	6.5	8.4	--	--	6.8	
Miller Global Fund V[3]	*$15,000*	*Opportunistic Pvt. RE*	$ -	0.0%		0.0	0.0	0.0	-52.7	-3.4	-11.8	-7.3	Oct-05
NCREIF ODCE + 1% Lag Blend						*2.1*	*2.1*	*2.1*	*4.4*	*8.2*	*9.5*	*9.9*	
Difference:						-2.1	-2.1	-2.1	-57.1	-11.6	-21.3	-17.2	
Miller Global Fund VI[3]	*$30,000*	*Opportunistic Pvt. RE*	$ 481,237	0.0%		22.6	22.6	34.1	-31.4	-24.8	-12.1	-4.9	May-08
NCREIF ODCE + 1% Lag Blend						*2.9*	*2.9*	*5.0*	*5.6*	*8.1*	*9.5*	*6.4*	
Difference:						19.7	19.7	29.1	-37.0	-32.9	-21.6	-11.3	
Miller Global Fund VII[3]	*$15,000*	*Opportunistic Pvt. RE*	$ 273,467	0.0%		0.0	0.0	16.1	53.4	-5.5	-0.5	23.9	Dec-12
NCREIF ODCE + 1% Lag Blend						*2.9*	*2.9*	*5.0*	*5.6*	*8.1*	*9.5*	*9.1*	
Difference:						-2.9	-2.9	11.1	47.8	-13.6	-10.0	14.8	

[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 6/30/21, and lagged 1 quarter.

[3] Manager returns are as of 6/30/21, 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 2021

	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)													
Walton Street V[3]	*$30,000*	*Opportunistic Pvt. RE*	$ 2,071,307	0.1%		0.5	0.5	1.4	-3.2	-13.8	-8.8	-4.2	Nov-06
NCREIF ODCE + 1% Lag Blend						*2.9*	*2.9*	*5.0*	*5.6*	*8.1*	*9.5*	*7.3*	
Difference:						-2.4	-2.4	-3.6	-8.8	-21.9	-18.3	-11.5	
Walton Street VI[3]	*$15,000*	*Opportunistic Pvt. RE*	$ 4,919,114	0.1%		4.8	4.8	4.0	4.6	-1.7	-0.1	7.0	Jul-09
NCREIF ODCE + 1% Lag Blend						*2.9*	*2.9*	*5.0*	*5.6*	*8.1*	*9.5*	*8.4*	
Difference:						1.9	1.9	-1.0	-1.0	-9.8	-9.6	-1.4	
Value-Added Private Real Estate													
AG Core Plus IV[3]	*$20,000*	*Value-Added Pvt. RE*	$ 19,298,414	0.5%		2.2	2.2	6.1	7.1	9.6	8.1	4.8	Sep-15
NCREIF ODCE + 1% Lag Blend						*2.9*	*2.9*	*5.0*	*5.6*	*8.1*	*9.5*	*7.3*	
Difference:						-0.7	-0.7	1.1	1.5	1.5	-1.4	-2.5	
Almanac Realty VI[3]	*$30,000*	*Value-Added Pvt. RE*	$ 3,609,976	0.1%		1.0	1.0	-5.6	-4.5	-13.1	-5.7	22.0	Feb-13
NCREIF ODCE + 1% Lag Blend						*2.9*	*2.9*	*5.0*	*5.6*	*8.1*	*9.5*	*9.1*	
Difference:						-1.9	-1.9	-10.6	-10.1	-21.2	-15.2	12.9	
Berkeley Partners Fund V, LP	*$40,000*	*Value-Added Pvt. RE*	$ 9,285,074	0.2%		4.7	4.7	11.7	--	--	--	0.0	Aug-20
NCREIF ODCE + 1% Lag Blend						*2.9*	*2.9*	*5.0*	--	--	--	*2.4*	
Difference:						1.8	1.8	6.7	--	--	--	-2.4	
Colony Realty III[3]	*$21,000*	*Value-Added Pvt. RE*	$ -	0.0%		0.0	0.0	0.0	4.4	-8.7	-4.2	4.7	Dec-09
NCREIF ODCE + 1% Lag Blend						*2.1*	*2.1*	*2.1*	*4.4*	*8.2*	*9.5*	*13.2*	
Difference:						-2.1	-2.1	-2.1	0.0	-16.9	-13.7	-8.5	
Colony Realty IV[3]	*$21,000*	*Value-Added Pvt. RE*	$ -	0.0%		0.0	0.0	0.0	-12.2	-1.6	3.3	9.3	Mar-13
NCREIF ODCE + 1% Lag Blend						*2.1*	*2.1*	*2.1*	*4.4*	*8.2*	*9.5*	*12.3*	
Difference:						-2.1	-2.1	-2.1	-16.6	-9.8	-6.2	-3.0	
Stockbridge RE III[3]	*$45,000*	*Value-Added Pvt. RE*	$ 35,179,678	0.9%		4.4	4.4	9.0	11.9	4.1	--	4.1	Jul-18
NCREIF ODCE + 1% Lag Blend						*2.9*	*2.9*	*5.0*	*5.6*	*8.1*	--	*5.0*	
Difference:						1.5	1.5	4.0	6.3	-4.0	--	-0.9	
Traditional Growth[2]			**$ 1,468,828,948**	**38.2%**	**32.0%**	**1.1**	**4.0**	**14.9**	**35.2**	**11.2**	**12.5**	**9.7**	**Jan-95**
MSCI ACWI IMI Net						*0.5*	*3.2*	*13.2*	*34.7*	*14.6*	*14.6*	*8.4*	
Difference:						0.6	0.8	1.7	0.5	-3.4	-2.1	1.3	
Global Equity			$ 1,419,338,453	36.9%									
Northern Trust MSCI World IMI		*All Cap Global*	$ 1,273,863,891	33.1%		1.5	4.3	15.2	--	--	--	28.4	Sep-20
MSCI World IMI Net						*1.5*	*4.2*	*14.9*	--	--	--	*27.9*	
Difference:						0.0	0.1	0.3	--	--	--	0.5	
SJCERA Transition		*All Cap Global*	$ 3,401	0.0%		NM	NM	NM	--	--	--	NM	Jul-20
Emerging Markets			$ 145,471,161										
GQG Active Emerging Markets		*Emerging Markets*	$ 65,416,535	1.7%		-4.9	-1.1	-0.9	--	--	--	17.5	Aug-20
MSCI Emerging Markets Index Net						*-6.7*	*-4.4*	*0.2*	--	--	--	*20.6*	
Difference:						1.8	3.3	-1.1	--	--	--	-3.1	
PIMCO RAE Fundamental Emerging Markets		*Emerging Markets*	$ 80,054,626	2.1%		-2.3	0.9	17.9	47.0	7.4	10.3	5.7	Apr-07
MSCI Emerging Markets Index						*-6.7*	*-4.3*	*0.4*	*21.0*	*8.3*	*10.8*	*5.1*	
Difference:						4.4	5.2	17.5	26.0	-0.9	-0.5	0.6	
REITS			$ 49,490,495	1.3%									
Invesco All Equity REIT		*Core US REIT*	$ 49,490,495	1.3%		4.3	8.3	27.1	27.8	11.2	7.0	9.6	Aug-04
FTSE NAREIT Equity Index						*4.8*	*8.7*	*27.8*	*39.0*	*11.5*	*6.4*	*9.4*	
Difference:						-0.5	-0.4	-0.7	-11.2	-0.3	0.6	0.2	

[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 6/30/21, 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 2021

	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			$ 1,170,331,316	30.4%	33.0%	1.3	4.4	6.1	11.2	8.4	7.0	4.2	Jan-05
Risk Parity			$ 447,091,719	11.6%		3.4	7.9	9.3	19.0	11.4	8.2	5.6	
T-Bill +4%						*0.3*	*1.0*	*2.3*	*4.1*	*5.3*	*5.2*	*4.6*	
Difference:						3.1	6.9	7.0	14.9	6.1	3.0	1.0	
Bridgewater All Weather		*Risk Parity*	$ 218,914,826	5.7%		3.8	8.4	9.9	18.5	10.2	8.1	6.2	Mar-12
T-Bill +4%						*0.3*	*1.0*	*2.3*	*4.1*	*5.3*	*5.2*	*5.5*	
Difference:						3.5	7.4	7.6	14.4	4.9	2.9	0.7	
PanAgora Diversified Risk Multi-Asset		*Risk Parity*	$ 228,176,893	5.9%		3.0	7.4	8.6	19.5	12.5	8.4	9.8	Apr-16
T-Bill +4%						*0.3*	*1.0*	*2.3*	*4.1*	*5.3*	*5.2*	*5.1*	
Difference:						2.7	6.4	6.3	15.4	7.2	3.2	4.7	
Liquid Credit			$ 236,338,031	6.1%		-0.1	0.9	2.2	7.2	4.3	4.3	2.3	Oct-06
50% BB High Yield, 50% S&P/LSTA Leveraged Loans						*0.2*	*1.5*	*3.6*	*10.1*	*5.7*	*5.8*	*6.0*	
Difference:						-0.3	-0.6	-1.4	-2.9	-1.4	-1.5	-3.7	
Neuberger Berman		*Global Credit*	$ 106,394,760	2.8%		0.3	1.5	2.3	8.2	--	--	6.2	Feb-19
33% ICE BofA HY Constrained, 33% S&P/LSTA LL, 33% JPM EMBI Glbl Div.						*0.3*	*1.7*	*2.3*	*8.0*	--	--	*6.2*	
Difference:						0.0	-0.2	0.0	0.2	--	--	0.0	
Stone Harbor Absolute Return		*Absolute Return*	$ 129,943,271	3.4%		-0.3	0.5	2.0	6.5	3.6	3.8	3.0	Oct-06
3-Month Libor Total Return						*0.0*	*0.1*	*0.1*	*0.2*	*1.6*	*1.5*	*1.4*	
Difference:						-0.3	0.4	1.9	6.3	2.0	2.3	1.6	
Private Credit Lag[2]			$ 318,394,443	8.3%		2.8	2.8	4.6	5.9	3.2	3.2	3.4	
50% BB High Yield, 50% S&P/LSTA Leveraged Loans						*0.1*	*1.3*	*6.5*	*22.2*	*5.5*	*6.7*	*6.0*	
Difference:						2.7	1.5	-1.9	-16.3	-2.3	-3.5	-2.6	
BlackRock Direct Lending Lag[3]	*$100,000*	*Direct Lending*	$ 28,964,813	0.8%		2.6	2.6	2.6	18.3	---	---	10.9	May-20
CPI +6% Annual Blend [5]						*1.2*	*3.2*	*3.2*	*15.0*	---	---	*17.7*	
Difference:						1.4	-0.6	-0.6	3.3	---	---	-6.8	
Mesa West RE Income III Lag[3]	*$45,000*	*Comm. Mortgage*	$ 1,647,839	0.0%		-0.1	-0.1	-11.1	-13.1	-1.0	3.1	3.0	Sep-13
CPI +6% Annual Blend [4]						*1.2*	*3.2*	*4.8*	*8.8*	*8.1*	*8.5*	*9.0*	
Difference:						-1.3	-3.3	-15.9	-21.9	-9.1	-5.4	-6.0	
Mesa West RE Income IV Lag[3]	*$75,000*	*Comm. Mortgage*	$ 44,370,217	1.2%		2.1	2.1	3.2	6.2	7.8	--	7.4	Mar-17
CPI +6% Annual Blend [4]						*1.2*	*3.2*	*4.8*	*8.8*	*8.1*	--	*8.7*	
Difference:						0.9	-1.1	-1.6	-2.6	-0.3	--	-1.3	
Crestline Opportunity II Lag[3]	*$45,000*	*Opportunistic*	$ 21,371,840	0.6%		7.5	7.5	8.1	9.2	-0.2	3.6	4.8	Nov-13
CPI +6% Annual Blend [4]						*1.2*	*3.2*	*4.8*	*8.8*	*8.1*	*8.5*	*8.6*	
Difference:						6.3	4.3	3.3	0.4	-8.3	-4.9	-3.8	
Davidson Kempner Distr Opp V Lag[3]	*$50,000*	*Opportunistic*	$ 19,167,407	0.0%		8.2	8.2	17.1	--	--	--	41.8	Oct-20
CPI +6% Annual Blend [4]						*1.2*	*3.2*	*4.8*	--	--	--	*7.3*	
Difference:						7.0	5.0	12.3	--	--	--	34.5	
Oaktree Lag	*$50,000*	*Leveraged Direct*	$ 32,053,995	0.8%		4.8	4.8	8.7	22.1	--	--	10.4	Mar-18
CPI +6% Annual Blend [6]						*1.2*	*3.2*	*4.8*	*36.7*	--	--	*8.5*	
Difference:						3.6	1.6	3.9	-14.6	--	--	1.9	
HPS EU Asset Value II Lag[3]	*$50,000*	*Direct Lending*	$ 5,676,507	0.1%		1.9	1.9	4.9	--	--	--	-2.3	Aug-20
CPI +6% Annual Blend [4]						*1.2*	*3.2*	*4.8*	--	--	--	*9.0*	
Difference:						0.7	-1.3	0.1	--	--	--	-11.3	
Raven Opportunity II Lag[3]	*$45,000*	*Direct Lending*	$ 11,908,063	0.3%		1.4	1.4	1.0	-12.2	-3.3	-3.1	-4.3	Aug-14
CPI +6% Annual Blend [4]						*1.2*	*3.2*	*4.8*	*8.8*	*8.1*	*8.5*	*8.6*	
Difference:						0.2	-1.8	-3.8	-21.0	-11.4	-11.6	-12.9	
Raven Opportunity III Lag[3]	*$50,000*	*Direct Lending*	$ 48,837,036	1.3%		1.7	1.7	4.6	1.9	7.0	--	2.4	Nov-15
CPI +6% Annual Blend [4]						*1.2*	*3.2*	*4.8*	*8.8*	*8.1*	--	*8.5*	
Difference:						0.5	-1.5	-0.2	-6.9	-1.1	--	-6.1	

[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 6/30/21, and lagged 1 quarter.

[3] Manager returns are as of 6/30/21, and lagged 1 quarter. Since Inception date reflects one quarter lag.

[4] 9% Annual until 7/1/2018 then CPI +6% Annual thereafter.

[5] 50% BBgBC 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 2021

	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*	$ 10,216,331	0.3%		7.3	7.3	11.7	-2.1	-10.9	-6.3	-1.0	Jul-12
CPI +6% Annual Blend[4]						*1.2*	*3.2*	*4.8*	*8.8*	*8.1*	*8.5*	*8.7*	
Difference:						6.1	4.1	6.9	-10.9	-19.0	-14.8	-9.7	
White Oak Summit Peer Fund Lag[3]	*$50,000*	*Direct Lending*	$ 45,315,132	1.2%		1.7	1.7	3.5	7.4	6.2	--	7.1	Mar-16
CPI +6% Annual Blend[4]						*1.2*	*3.2*	*4.8*	*8.8*	*8.1*	--	*8.5*	
Difference:						0.5	-1.5	-1.3	-1.4	-1.9	--	-1.4	
White Oak Yield Spectrum Master V Lag[3]	*$50,000*	*Direct Lending*	$ 48,865,263	1.3%		0.8	0.8	0.8	6.6	---	--	-0.8	Mar-20
CPI +6% Annual Blend[4]						*1.2*	*3.2*	*4.8*	*8.8*	---	--	*8.4*	
Difference:						-0.4	-2.4	-1.3	-1.4	---	--	-9.2	
Principal US[3]	*$25,000*	*Core Pvt. RE*	$ 35,153,936	0.9%		2.4	2.4	4.1	2.6	5.0	6.4	7.2	Jan-16
NCREIF ODCE + 1% Lag Blend						*2.9*	*2.9*	*5.0*	*5.6*	*8.1*	*9.5*	*6.8*	
Difference:						-0.5	-0.5	-0.9	-3.0	-3.1	-3.1	0.4	
Prologis Logistics[3]	*$35,000*	*Core Pvt. RE*	$ 82,714,166	2.2%		5.4	5.4	11.6	13.0	15.0	16.2	6.9	Dec-07
NCREIF ODCE + 1% Lag Blend						*2.9*	*2.9*	*5.0*	*5.6*	*8.1*	*9.5*	*6.6*	
Difference:						2.5	2.5	6.6	7.4	6.9	6.7	0.3	
RREEF America II[3]	*$45,000*	*Core Pvt. RE*	$ 51,087,248	1.3%		1.9	1.9	2.7	2.7	5.0	6.6	6.6	Jul-16
NCREIF ODCE + 1% Lag Blend						*2.9*	*2.9*	*5.0*	*5.6*	*8.1*	*9.5*	*6.3*	
Difference:						-1.0	-1.0	-2.3	-2.9	-3.1	--	0.3	
Diversifying Strategies			$ 799,457,968	20.8%	25.0%	0.5	1.6	1.6	0.5	4.7	2.5	6.4	Oct-90
Principal Protection			$ 332,818,092	8.7%	10.0%	0.9	1.8	0.9	3.8	4.3	3.7	6.4	Oct-90
BB Aggregate Bond Index						*1.1*	*2.2*	*-0.5*	*-0.7*	*5.7*	*3.1*	*6.0*	
Difference:						-0.2	-0.4	1.4	4.5	-1.4	0.6	0.4	
Dodge & Cox		*Core Fixed Income*	$ 169,067,803	4.4%		0.9	2.0	0.4	2.3	6.7	4.7	7.2	Oct-90
BB Aggregate Bond Index						*1.1*	*2.2*	*-0.5*	*-0.7*	*5.7*	*3.1*	*6.0*	
Difference:						-0.2	-0.2	0.9	3.0	1.0	1.6	1.2	
DoubleLine Capital		*MBS*	$ 113,813,662	3.0%		0.7	1.2	2.1	4.1	4.7	3.8	5.1	Feb-12
BB Aggregate Bond Index						*1.1*	*2.2*	*-0.5*	*-0.7*	*5.7*	*3.1*	*3.1*	
Difference:						-0.4	-1.0	2.6	4.8	-1.0	0.7	2.0	
SJ Principal Protection		*Int Core Bond ETF*	$ 49,936,627	1.3%		1.2	2.2	---	---	---	---	---	Jan-21
BB Aggregate Bond Index						*1.1*	*2.2*	---	---	---	---	---	
Difference:						0.1	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 6/30/21, and lagged 1 quarter.

[3] Manager returns are as of 6/30/21, and lagged 1 quarter. Since Inception date reflects one quarter lag.

[4] 9% Annual until 7/1/2018 then CPI +6% Annual thereafter.

San Joaquin County Employees Retirement Association (SJCERA)

Preliminary Monthly Flash Report (Net)[1] — July 2021

	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			$ 466,639,876	12.1%	15.0%	0.3	1.5	2.1	-1.7	4.7	1.7	6.6	Jan-05
CRO Custom Benchmark [2]						*1.8*	*3.8*	*2.0*	*1.9*	*7.2*	*3.4*	*5.5*	
Difference:						-1.5	-2.3	0.1	-3.6	-2.5	-1.7	1.1	
Long Duration			$ 156,613,418	4.1%		3.5	7.5	-3.9	-9.6	9.4	--	4.4	
BB US Long Duration Treasuries						*3.6*	*7.8*	*-4.6*	*-11.1*	*9.8*	--	*5.3*	
Difference:						-0.1	-0.3	0.7	1.5	-0.4	--	-0.9	
Dodge & Cox Long Duration		*Long Duration*	$ 156,613,418	4.1%		3.5	7.5	-3.9	-9.6	9.4	--	4.4	Feb-16
BB US Long Duration Treasuries						*3.6*	*7.8*	*-4.6*	*-11.1*	*9.8*	--	*5.3*	
Difference:						-0.1	-0.3	0.7	1.5	-0.4	--	-0.9	
Systematic Trend Following			$ 186,739,009	4.9%		-2.4	-3.0	9.3	18.5	5.4	-0.8	8.3	
BTOP50 Index						*1.2*	*2.2*	*7.5*	*12.7*	*6.2*	*1.4*	*4.6*	
Difference:						-3.6	-5.2	1.8	5.8	-0.8	-2.2	3.7	
Mt. Lucas Managed Futures - Cash		*Systematic Trend Following*	$ 96,125,995	2.5%		-3.0	-2.8	14.1	26.9	5.2	-2.5	7.8	Jan-05
BTOP50 Index						*1.2*	*2.2*	*7.5*	*12.7*	*6.2*	*1.4*	*4.6*	
Difference:						-4.2	-5.0	6.6	14.2	-1.0	-3.9	3.2	
Graham Tactical Trend		*Systematic Trend Following*	$ 90,613,014	2.4%		-1.8	-3.1	4.7	10.6	5.4	--	0.9	Apr-16
SG Trend Index						*0.6*	*1.0*	*8.0*	*12.3*	*7.4*	--	*1.5*	
Difference:						-2.4	-4.1	-3.3	-1.7	-2.0	--	-0.6	
Alternative Risk Premia			$ 123,287,449	3.2%		0.6	1.6	0.2	-14.3	-2.3	0.7	7.0	
5% Annual						*0.4*	*1.2*	*2.9*	*5.0*	*5.0*	*5.0*	*6.3*	
Difference:						0.2	0.4	-2.7	-19.3	-7.3	-4.3	0.7	
AQR Style Premia		*Alternative Risk Premia*	$ 29,414,209	0.8%		2.5	1.0	20.7	17.6	-9.6	--	-4.7	May-16
5% Annual						*0.4*	*1.2*	*2.9*	*5.0*	*5.0*	--	*5.0*	
Difference:						2.1	-0.2	17.8	12.6	-14.6	--	-9.7	
PE Diversified Global Macro		*Alternative Risk Premia*	$ 33,473,734	0.9%		-1.1	-1.4	-10.2	-33.3	-5.9	--	-4.1	Jun-16
5% Annual						*0.4*	*1.2*	*2.9*	*5.0*	*5.0*	--	*5.0*	
Difference:						-1.5	-2.6	-13.1	-38.3	-10.9	--	-9.1	
Lombard Odier		*Alternative Risk Premia*	$ 60,399,506	1.6%		0.7	3.6	-1.7	-12.0	--	--	-3.4	Jan-19
5% Annual						*0.4*	*1.2*	*2.9*	*5.0*	--	--	*5.0*	
Difference:						0.3	2.4	-4.6	-17.0	--	--	-8.4	
Cash[3]			$ 70,319,140	1.8%	0.0%	-0.1	0.0	0.0	0.1	0.9	0.9	2.4	Sep-94
US T-Bills						*0.0*	*0.0*	*0.0*	*0.1*	*1.3*	*1.2*	*2.4*	
Difference:						-0.1	0.0	0.0	0.0	-0.4	-0.3	0.0	
Northern Trust STIF		*Collective Govt. Short Term*	$ 69,726,791	1.8%		-0.1	0.0	0.1	0.1	0.9	0.9	2.6	Jan-95
US T-Bills						0.0	0.0	0.0	0.1	1.3	1.2	*2.4*	
Difference:						-0.1	0.0	0.1	0.0	-0.4	-0.3	0.2	
Parametric Overlay[4]		*Cash Overlay*	$ 51,786,181	1.3%		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.

[5] 60% MSCI ACWI, 40% BB Universal

[4] Given daily cash movement returns may vary from those shown above.

Capital Markets Outlook & Risk Metrics

As of July 31, 2021

Capital Markets Outlook

Takeaways

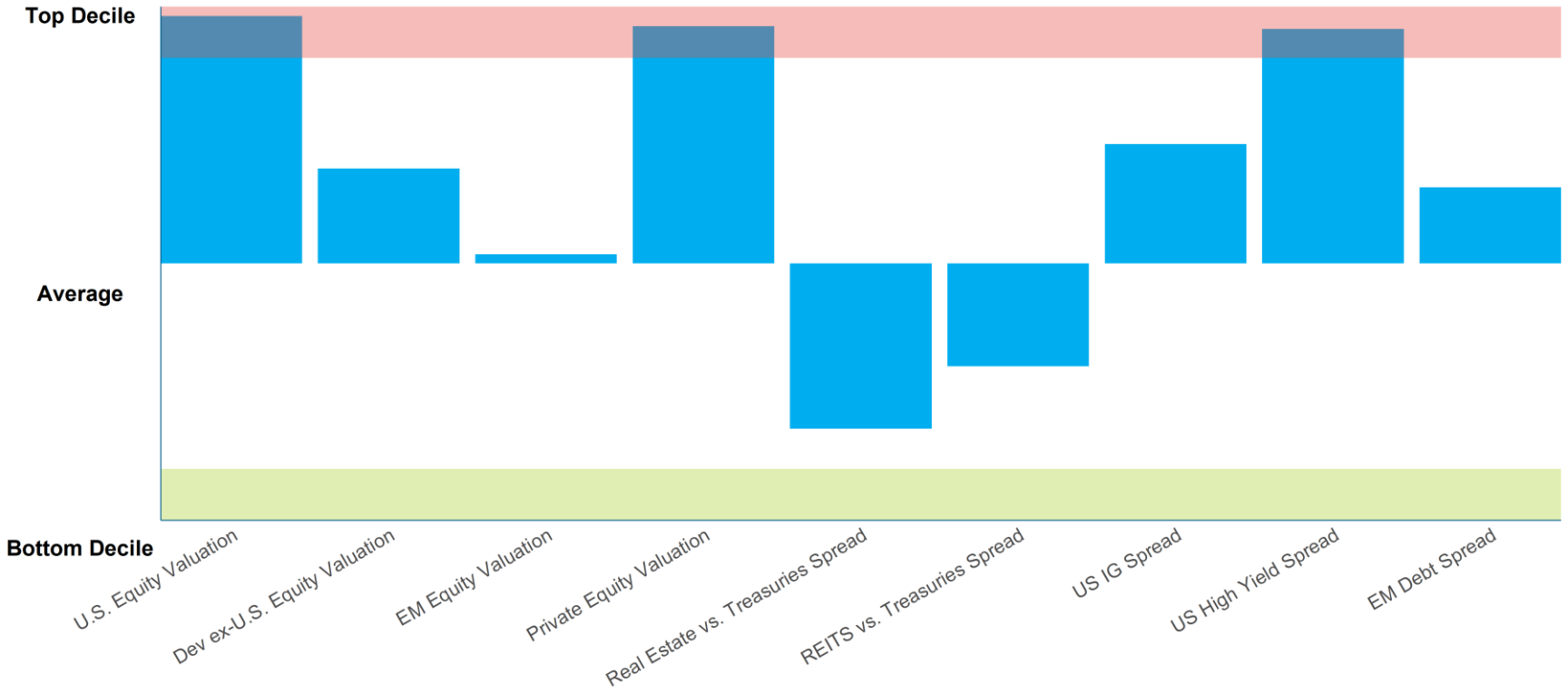
- In July, large cap US equity indices posted strong, positive returns whereas performance degraded further down the market capitalization spectrum. Broad US small cap and micro-cap equity indices all produced negative returns over the month.
- US growth stocks continued to outperformed value stocks, although this outperformance narrowed or disappeared with smaller capitalization equities (depending on the index/provider).
- Outside of the US, only developed markets posted a positive return, outperforming emerging markets and China; and unlike most of the rest of the global equity markets, emerging markets value stocks outperformed growth stocks.
- Across the credit and duration spectrum, US fixed income markets posted positive returns during July. TIPS outperformed government and high yield bond indices and long-duration bonds outperformed short-term bonds, retracing some recent yield curve steepening.
- The Bloomberg Commodities Index and public real estate (REITs) posted positive returns for the month. Both segments are currently two of the strongest performers year-to-date.
- The US vaccination efforts combined with the American Recovery Act have lifted 2021 GDP forecasts for the US to 6.5%. Relatedly, COVID-related setbacks have eased in Europe, lifting growth expectations there for 2021.

Capital Markets Outlook

Takeaways

- According to the World Health Organization, global COVID cases have been falling since January. While the efficacy of many of the vaccines is promising, governments are closely monitoring new COVID variants as these may prove less susceptible to currently available vaccines.
- While the markets appear as though they are looking past COVID, a full recovery to pre-COVID levels of economic activity is not expected to occur until mid-2021 at the earliest.
- As the new administration in the US implements its policy agenda, investors will continue to examine its actions as it relates to monetary and fiscal policy, with a particular focus on economic stimulus, taxation, regulation, and broad infrastructure spending.

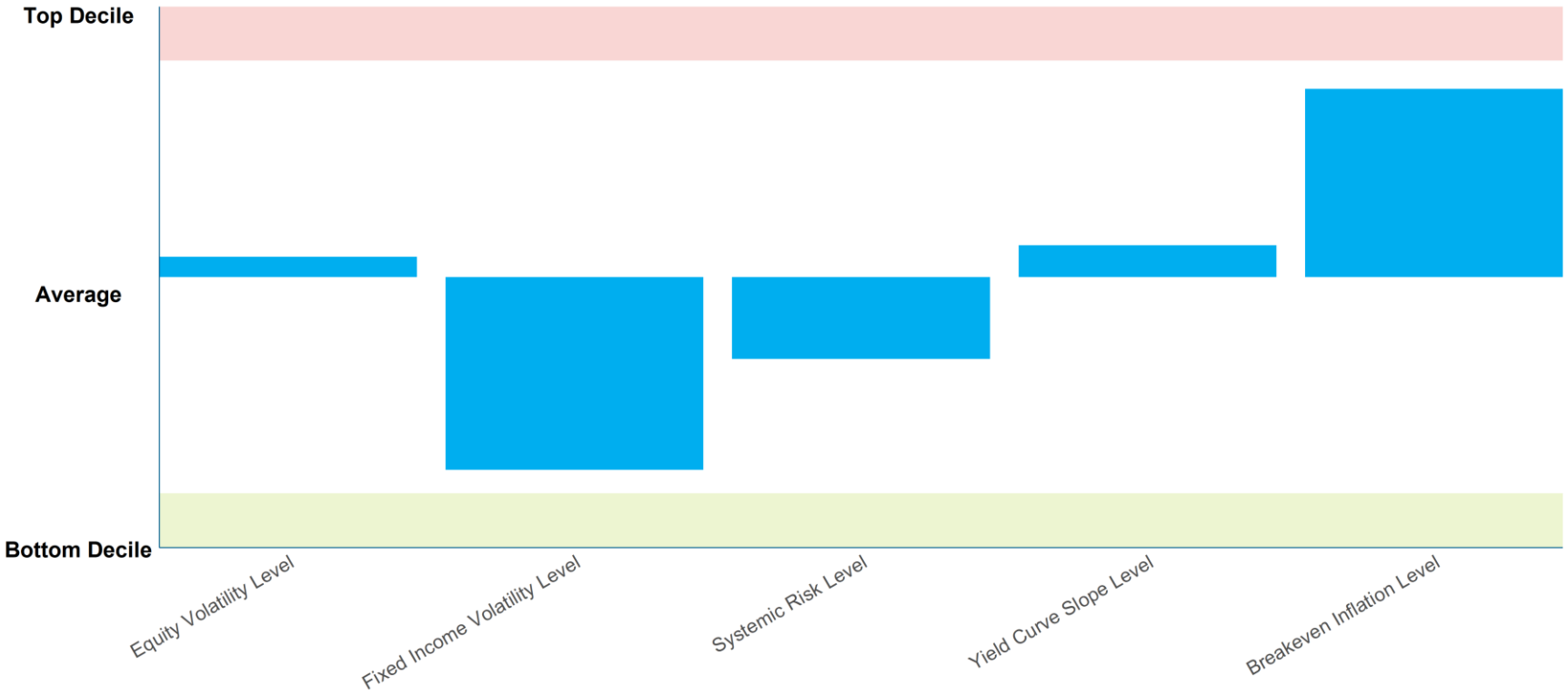
Risk Overview/Dashboard (1)
(As of July 31, 2021)[1]



- 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, 2020.

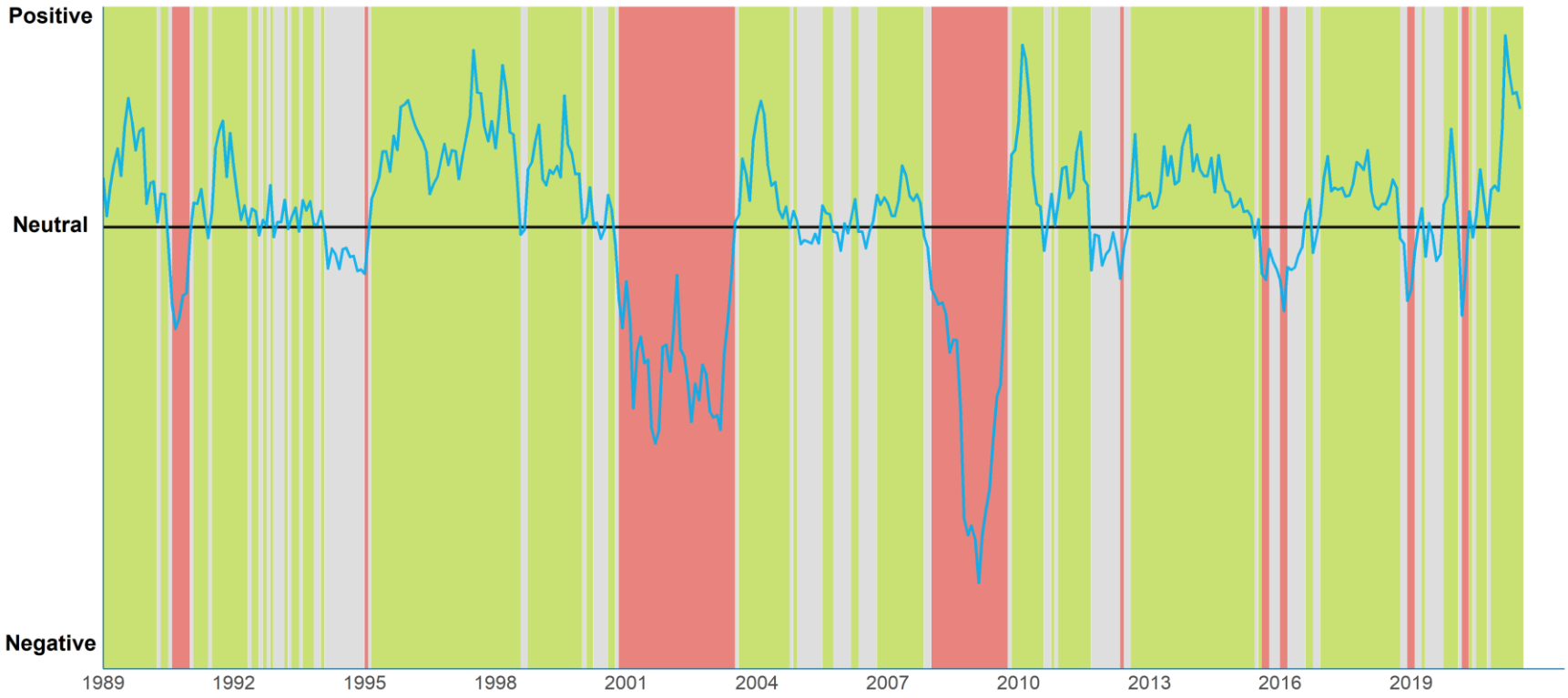
Risk Overview/Dashboard (2)
(As of July 31, 2021)



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

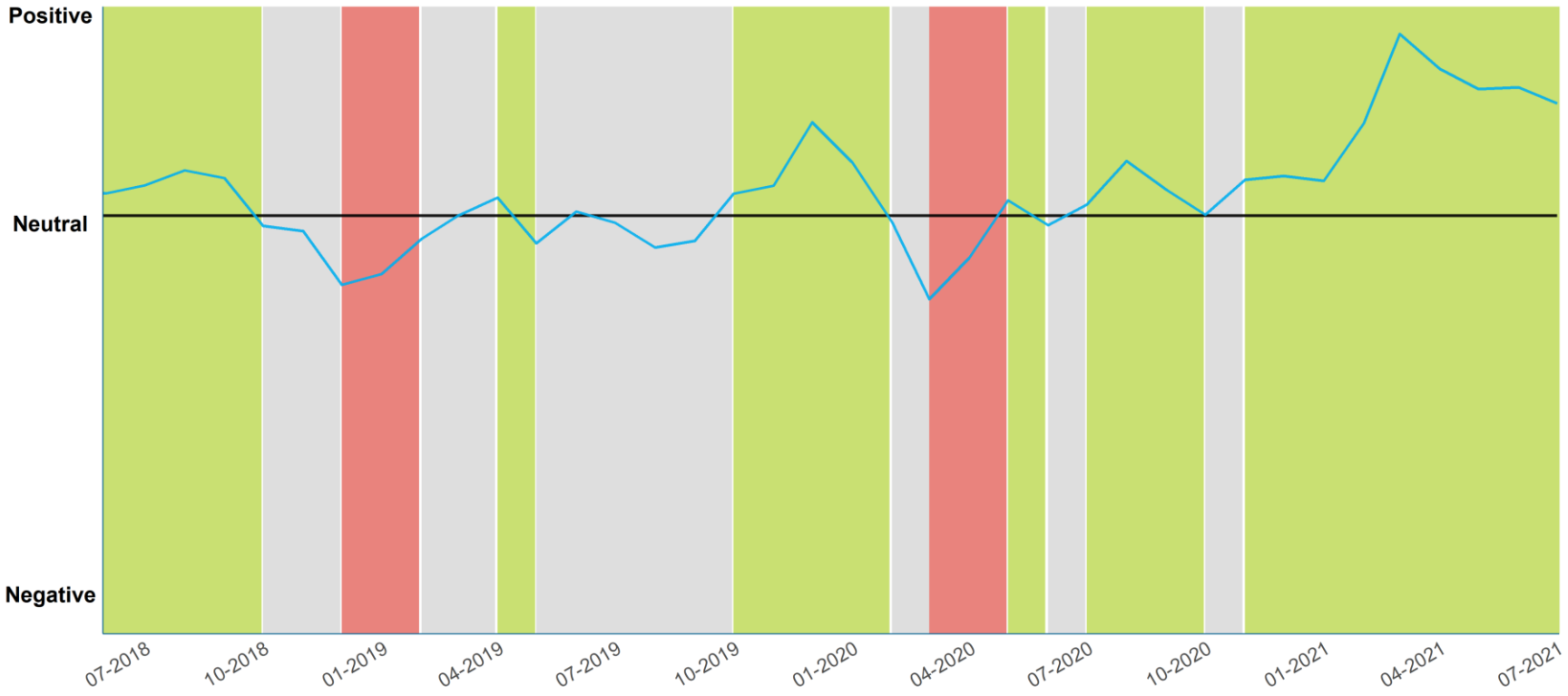
Market Sentiment Indicator (All History)

(As of July 31, 2021)

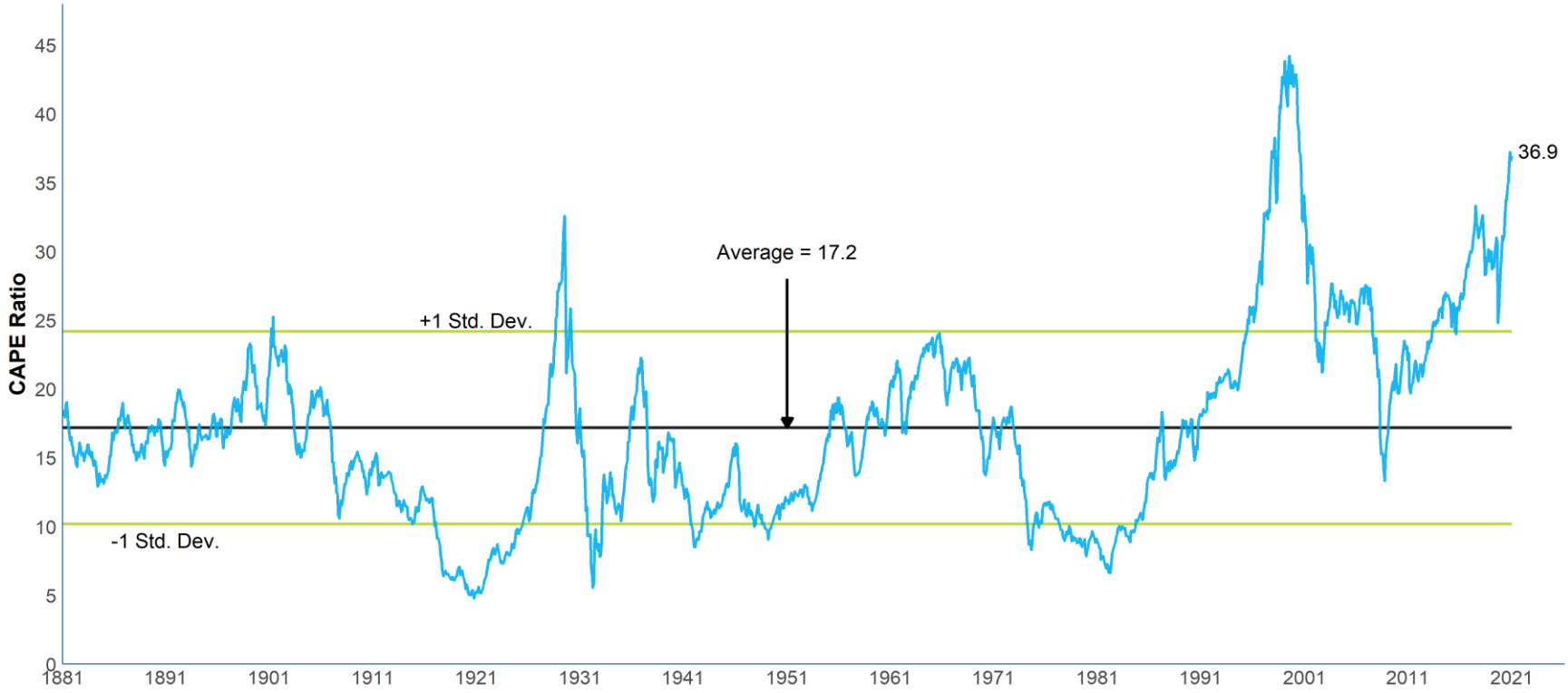


Market Sentiment Indicator (Last Three Years)

(As of July 31, 2021)



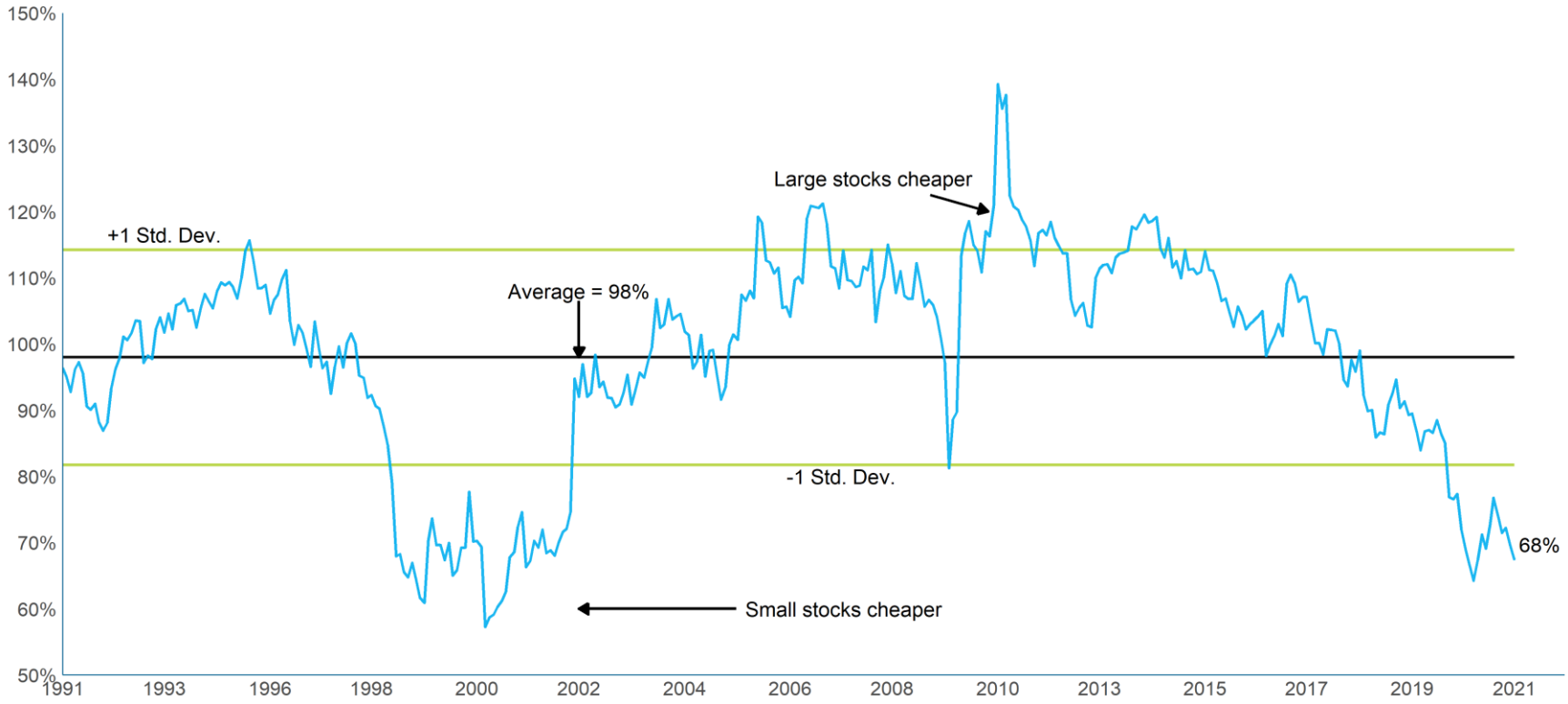
US Equity Cyclically Adjusted P/E[1]
(As of July 31, 2021)



- 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 July 31, 2021)



- 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.

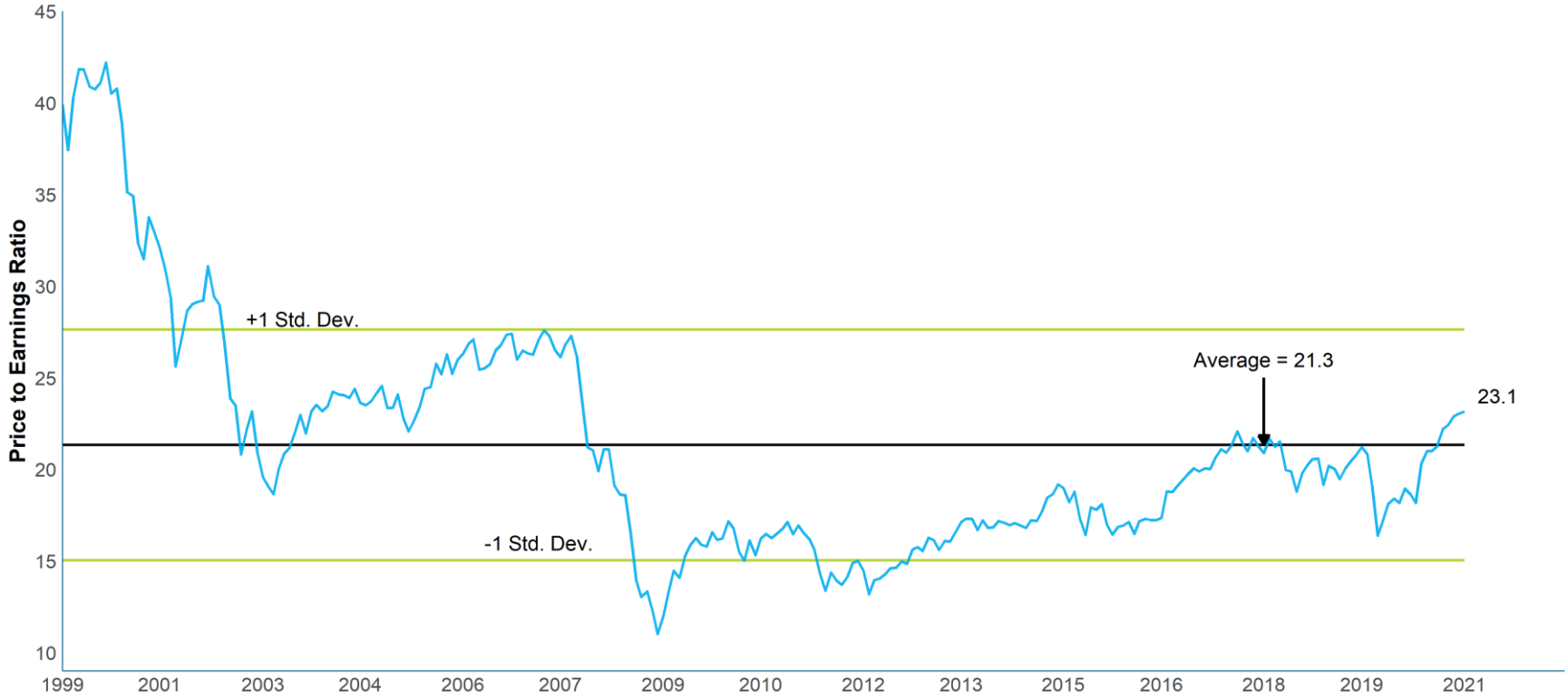
Growth P/E vs. Value P/E[1]
(As of July 31, 2021)

- 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 July 31, 2021)

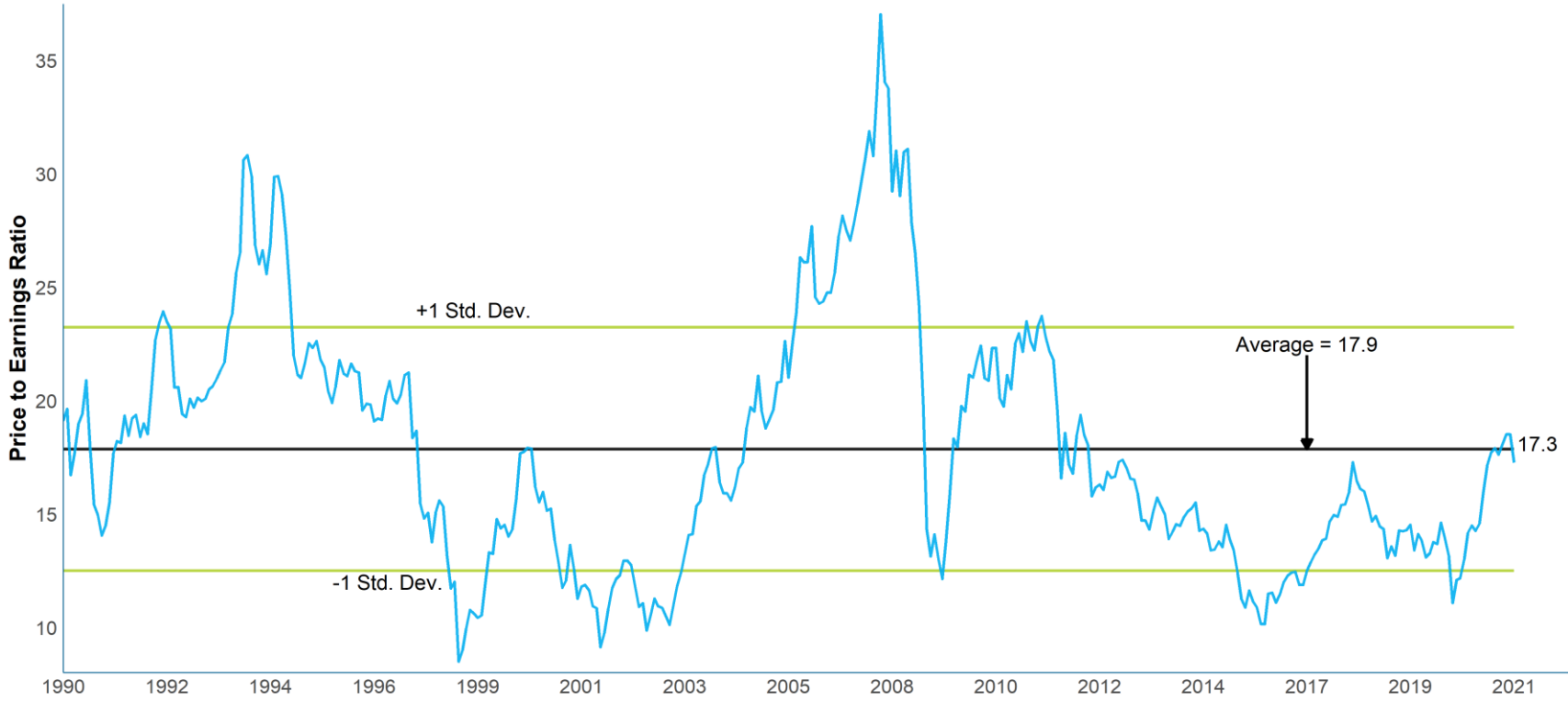


- This chart details one valuation metric for developed international equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

[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]

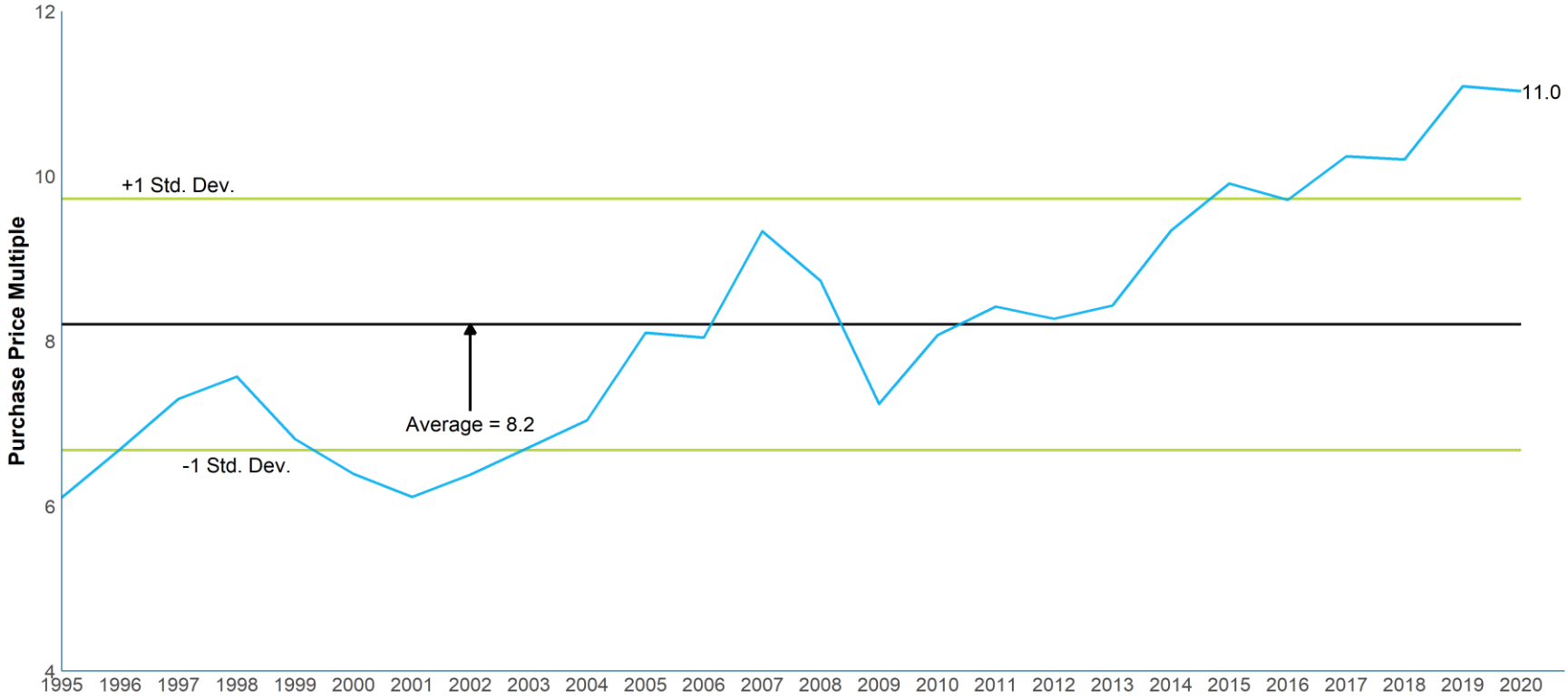
(As of July 31, 2021)



- 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 February 28, 2021)[2]

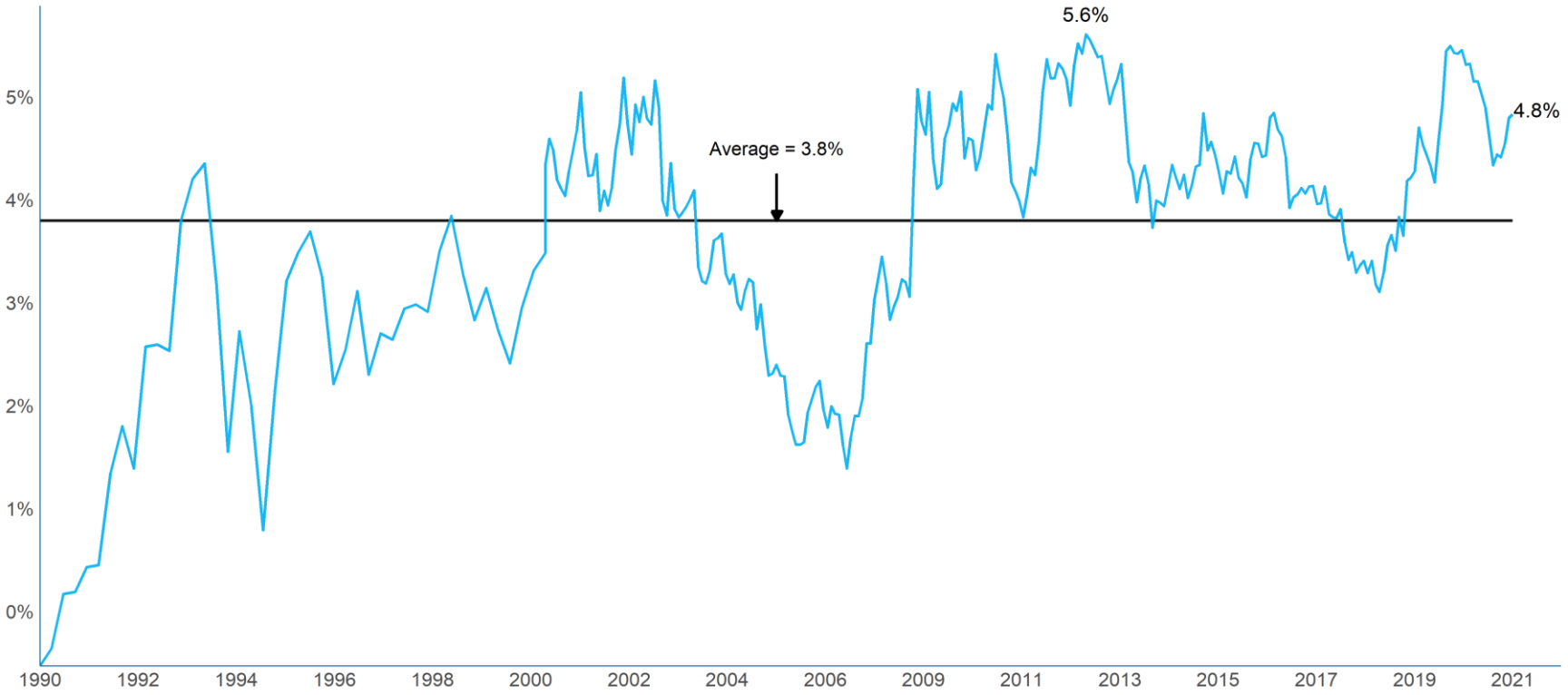


- This chart details one valuation metric for the private equity market. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

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

[2] Annual Data, as of December 31, 2020

Core Real Estate Spread vs. Ten-Year Treasury[1]
(As of July 31, 2021)

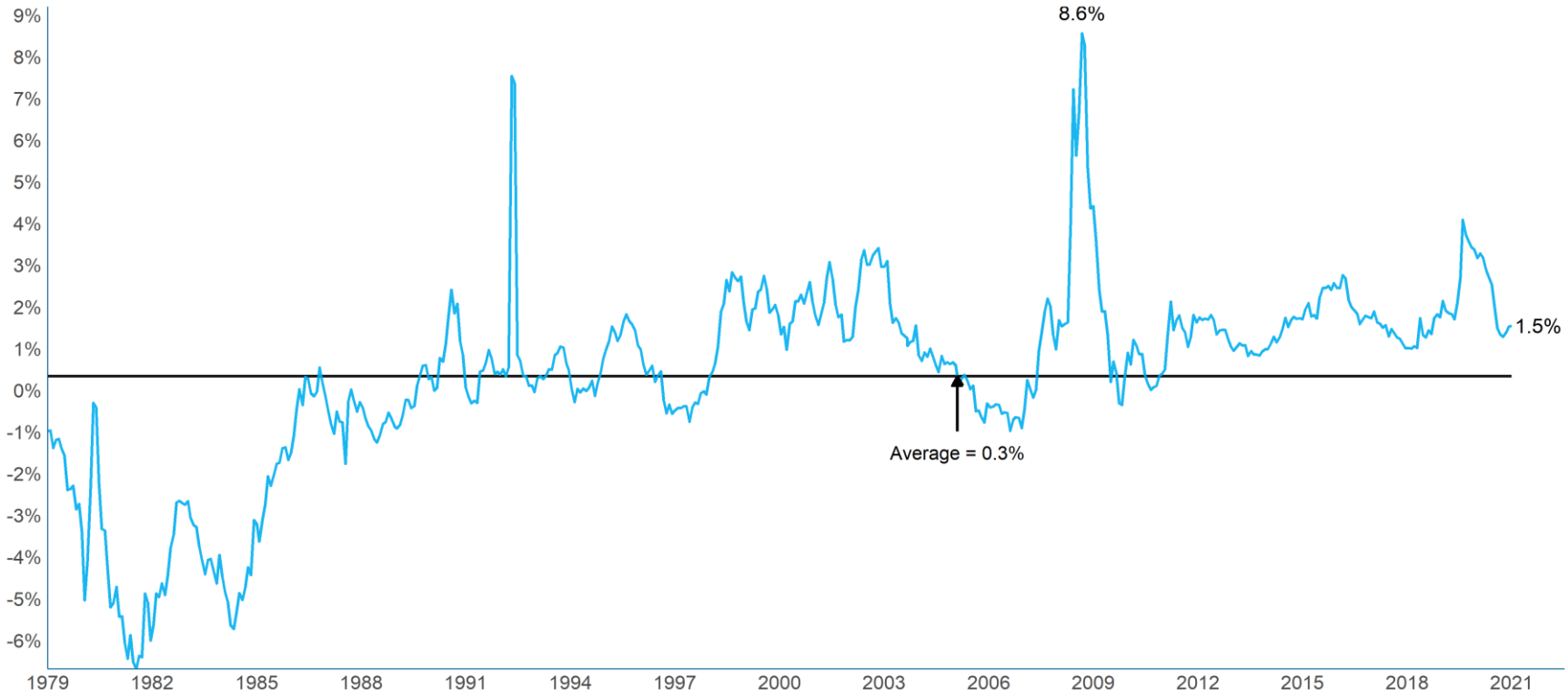


- This chart details one valuation metric for the private core real estate market. A higher (lower) figure indicates cheaper (more expensive) valuation.

[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]

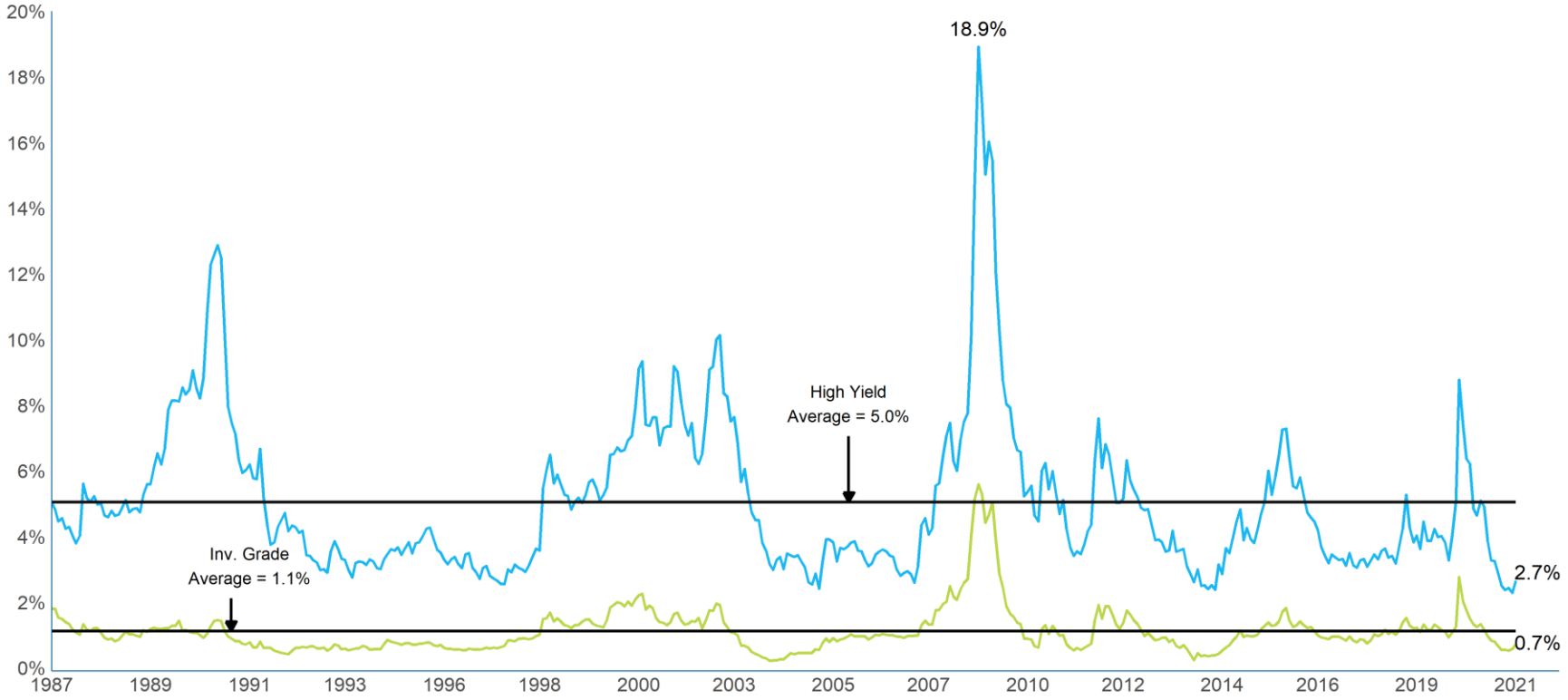
(As of July 31, 2021)



- 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 July 31, 2021)



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

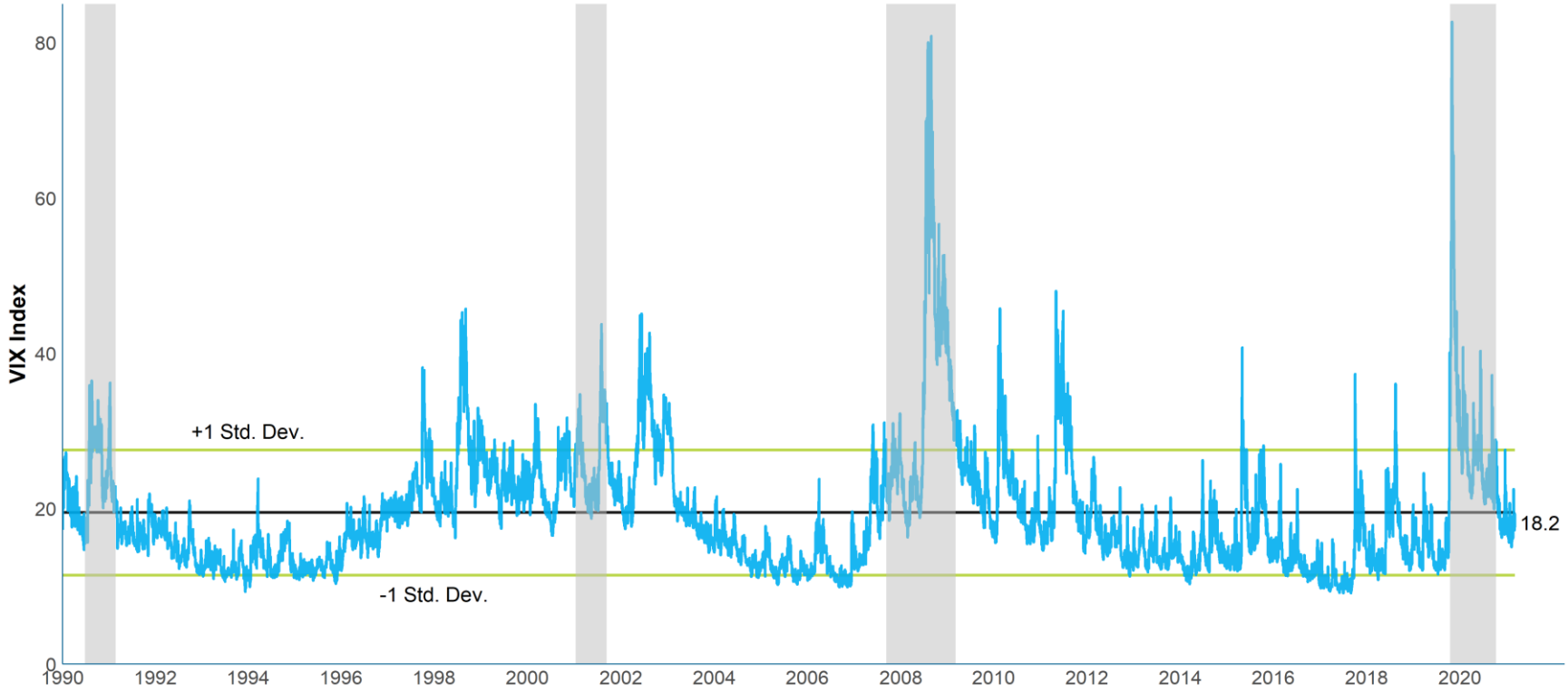
[1] Credit Spreads – Source: Barclays Capital. High Yield is proxied by the Barclays High Yield Index and Investment Grade Corporates are proxied by the Barclays US Corporate Investment Grade Index. Spread is calculated as the difference between the Yield to Worst of the respective index and the 10-Year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

Emerging Market Debt Spreads[1]
(As of July 31, 2021)

- 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 Barclays EM USD Aggregate Index.

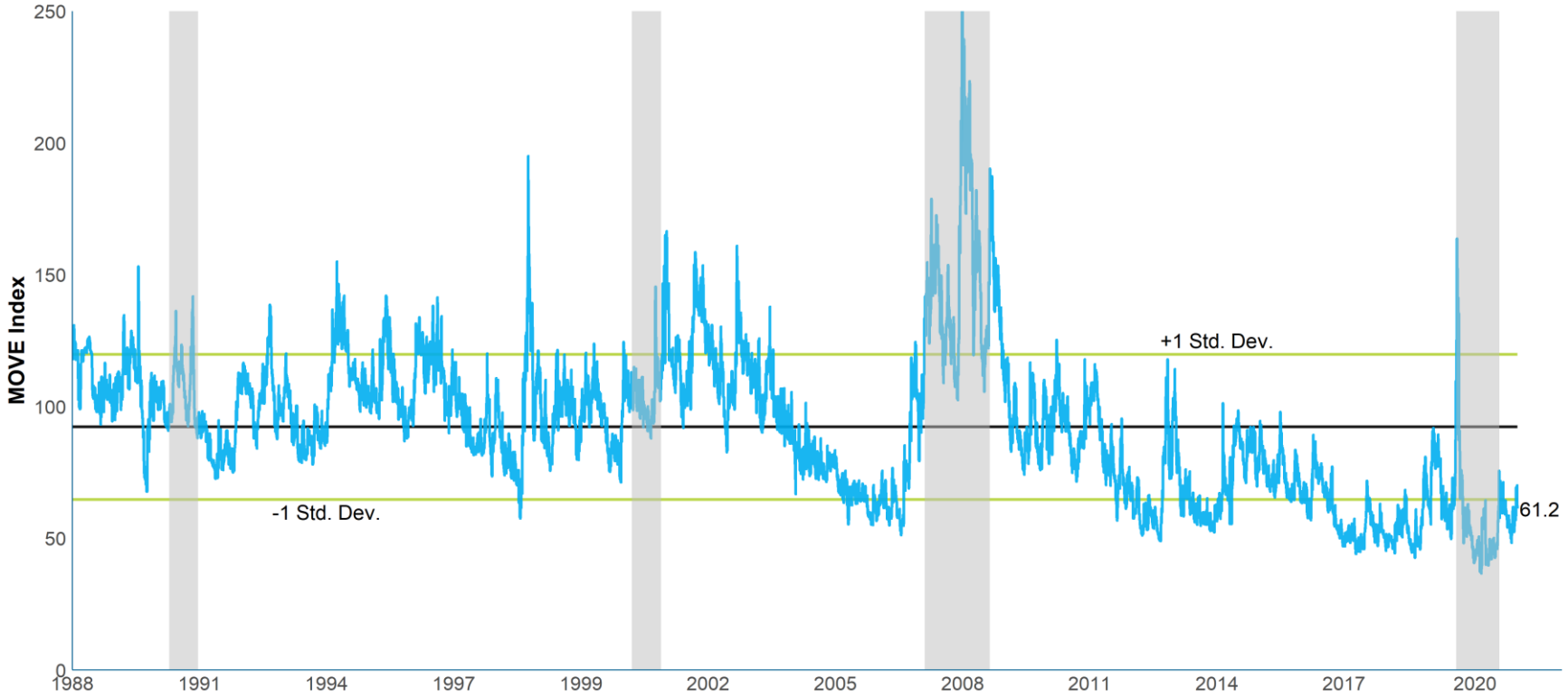
Equity Volatility[1]
(As of July 31, 2021)



- 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.

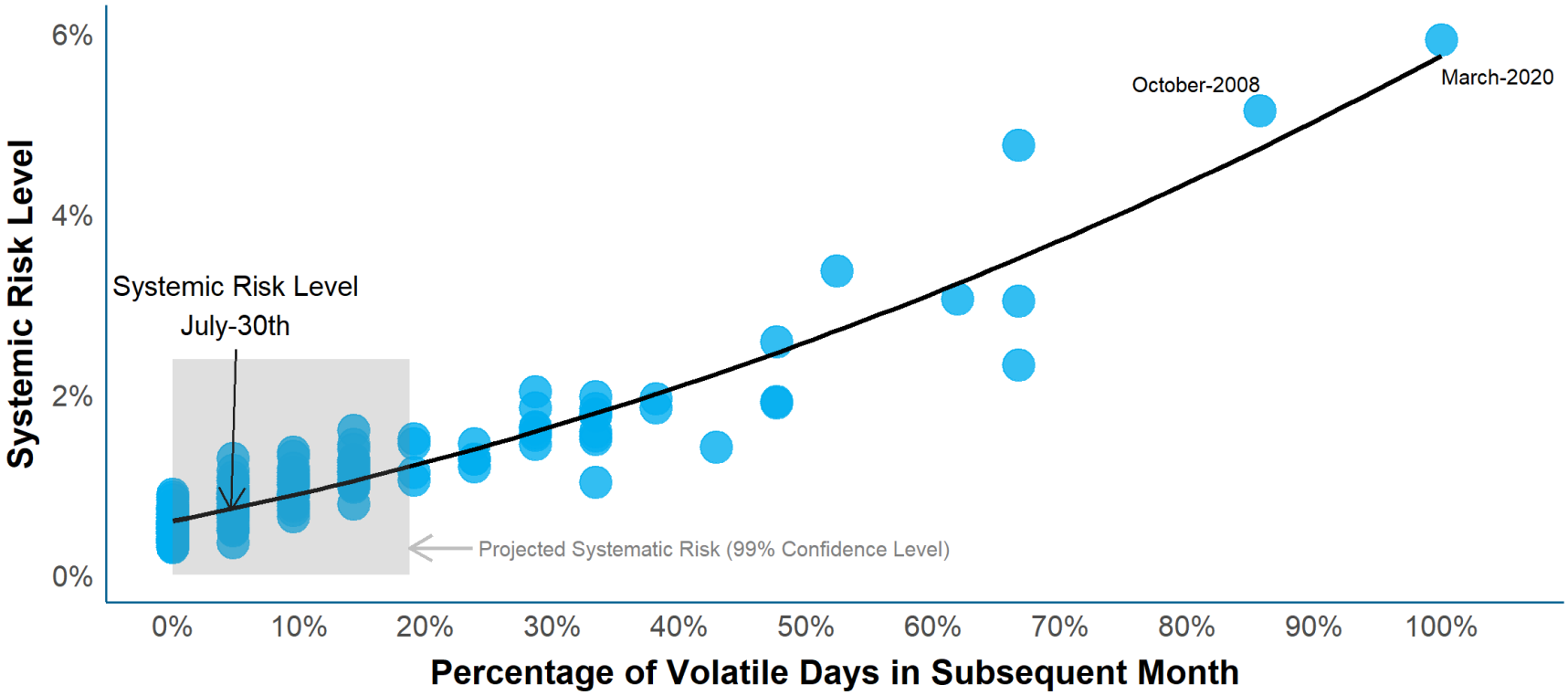
Fixed Income Volatility[1]
(As of July 31, 2021)



- 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.

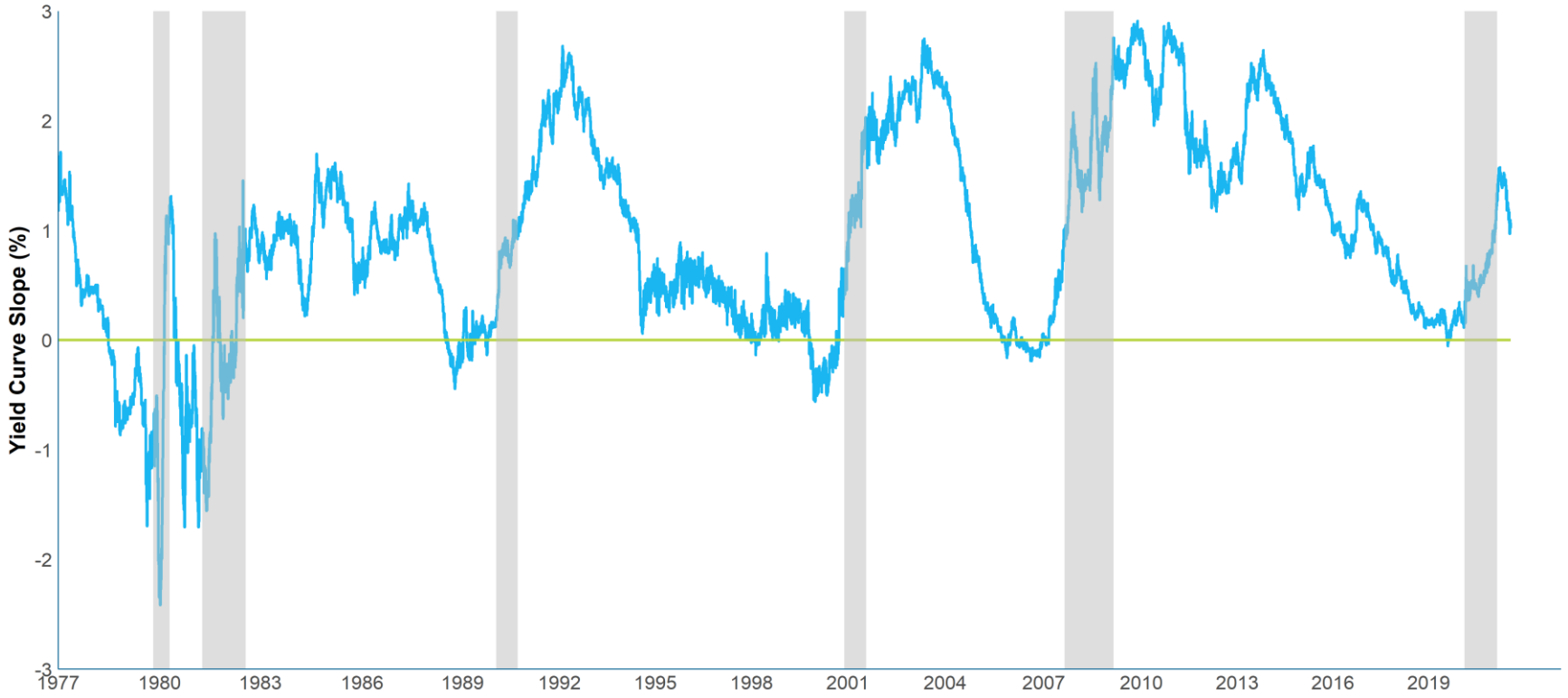
Systemic Risk and Volatile Market Days[1]
(As of July 31, 2021)



- 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.

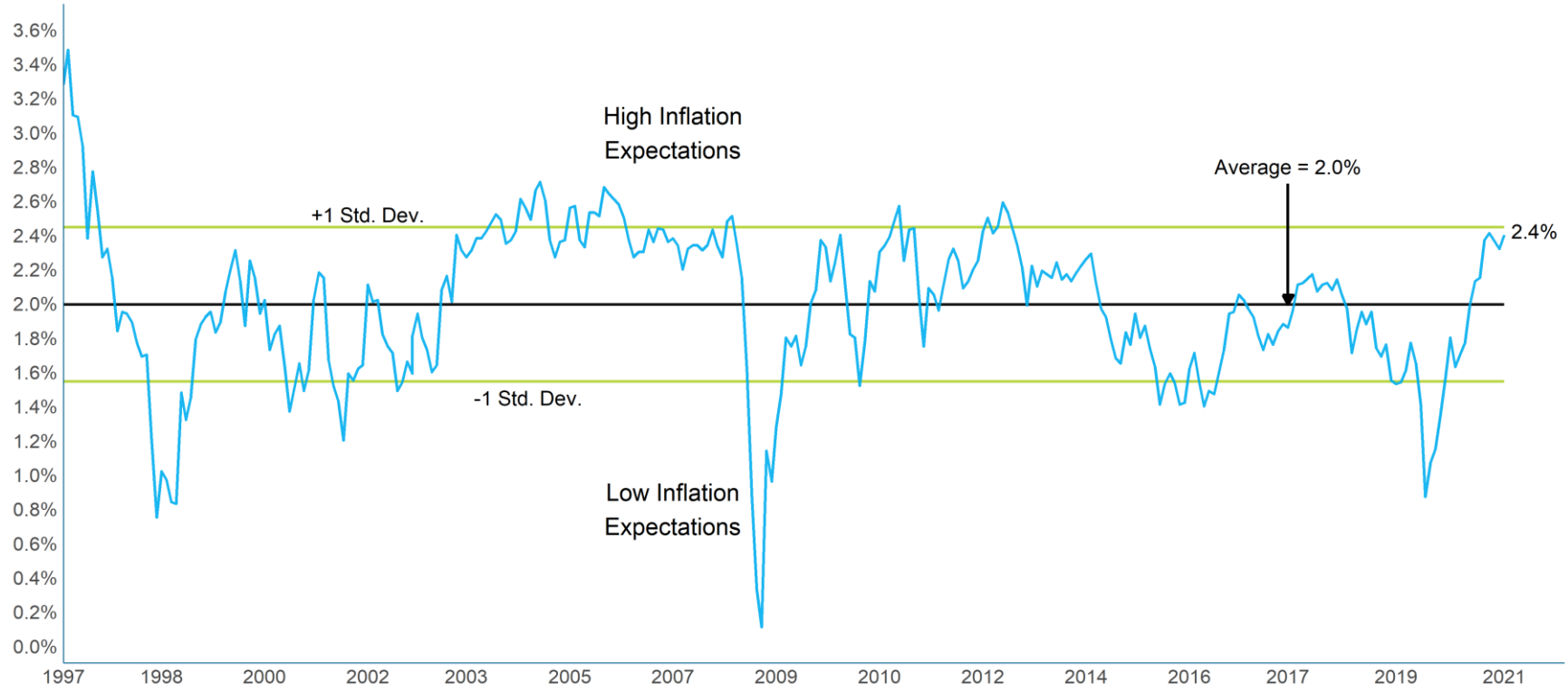
Yield Curve Slope (Ten Minus Two)[1]
(As of July 31, 2021)



- 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.

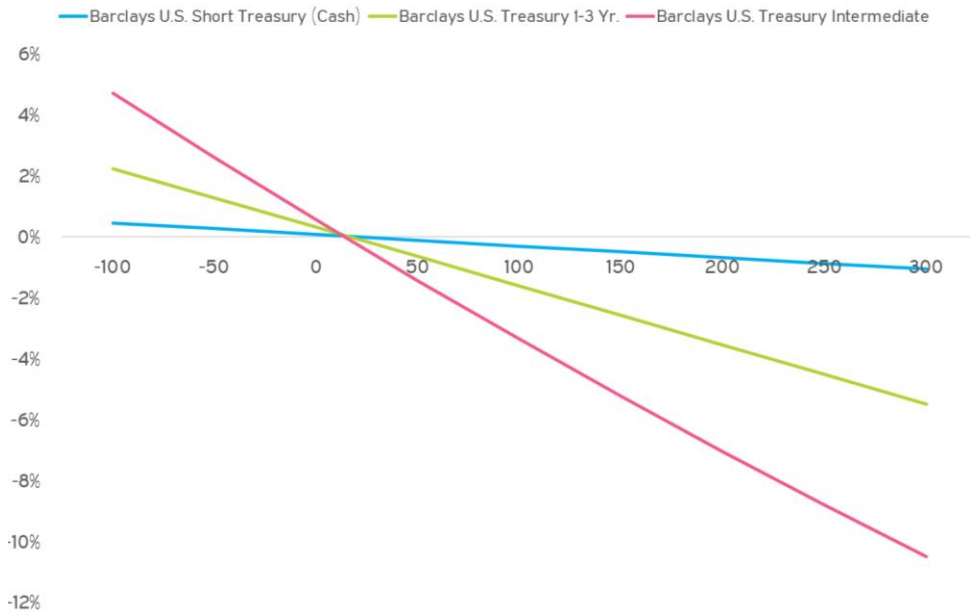
Ten-Year Breakeven Inflation[1]
(As of July 31, 2021)



- 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).

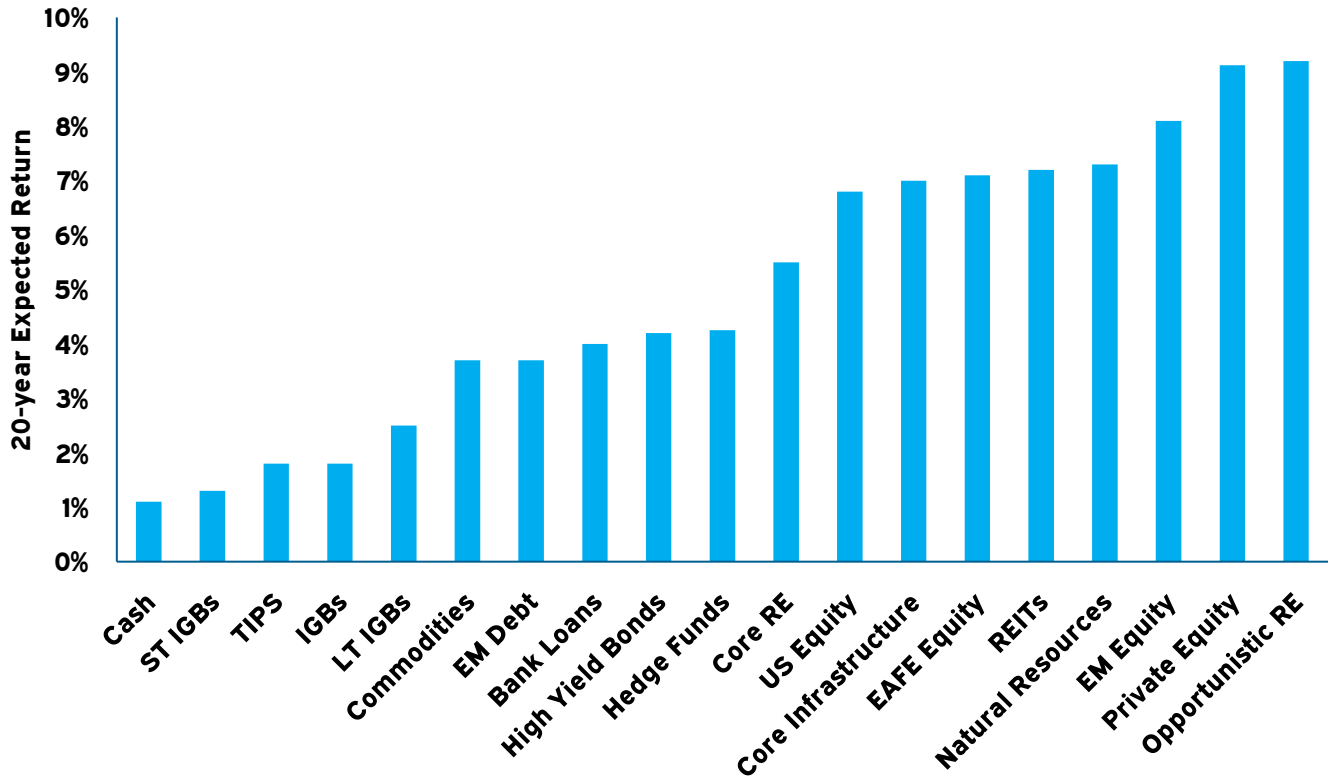
Total Return Given Changes in Interest Rates (bps)[1]
(As of July 31, 2021)



	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)	0.4%	0.3%	0.1%	-0.1%	-0.3%	-0.5%	-0.7%	-0.9%	-1.1%	0.38	0.06%
Barclays US Treasury 1-3 Yr.	2.2%	1.3%	0.3%	-0.7%	-1.6%	-2.6%	-3.6%	-4.5%	-5.5%	1.92	0.30%
Barclays US Treasury Intermediate	4.7%	2.6%	0.5%	-1.5%	-3.4%	-5.3%	-7.1%	-8.8%	-10.5%	4.04	0.54%
Barclays US Treasury Long	22.9%	11.8%	1.8%	-7.0%	-14.8%	-21.5%	-27.1%	-31.6%	-35.1%	18.87	1.84%

[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 2021 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 July 31, 2021 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: Barclays Capital. High Yield is proxied by the Barclays High Yield Index and Investment Grade Corporates are proxied by the Barclays 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 Barclays 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 July 31 2021 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 July 31, 2021 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.

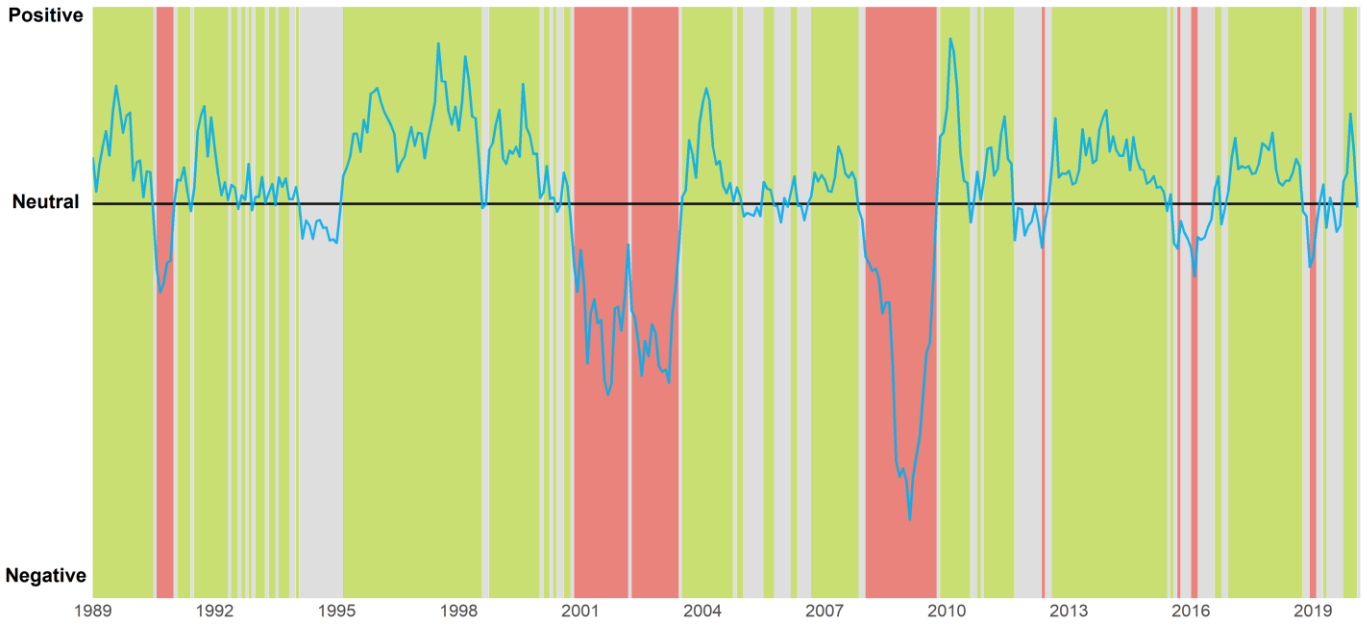
- Meketa's Risk Metrics, which rely significantly on standard market measures of relative valuation, often provide valid early signals of increasing long-term risk levels in the global investment markets. However, as is the case with numerous valuation measures, the Risk Metrics may convey such risk concerns long before a market corrections 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. In particular, 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.

Disclaimer Information

This material is provided by Meketa Investment Group, Inc. ("Meketa") for informational purposes only and may contain information that is not suitable for all clients. No portion of this commentary is to be construed as a solicitation or recommendations to buy or sell a security, or the provision of personalized investment advice, tax or legal advice. Past performance may not be indicative of future results and may have been impacted by market events and economic conditions that will not prevail in the future. There can be no assurance that any particular investment or strategy will prove profitable and the views, opinions, and projects expressed herein may not come to pass. Any direct or indirect reference to a market index is included for illustrative purposes only, as an index is not a security in which an investment can be made. Indices are benchmarks that serve as market or sector indicators and do not account for the deduction of management fees, transaction costs and other expenses associated with investable products. Meketa does not make any representation as to the accuracy, timeliness, suitability, completeness or relevance of any information prepared by any unaffiliated third party and takes no responsibility, therefore. Any data provided regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of futures results. Investing involves risk, including the potential loss of principal and clients should be guided accordingly.

MEKETA
INVESTMENT GROUP

2175 NW Raleigh Street
Suite 300A
Portland, OR 97210

503.226.1050
Meketa.com

MEMORANDUM

TO: SJCERA Board of Retirement
FROM: Meketa Investment Group
DATE: September 10, 2021
RE: P/E Investments: Investment Guideline change

On August 20th, 2021 P/E Investments sent a request to SJCERA and Meketa asking for approval to add a commodity sleeve to the Diversified Global Macro strategy (DGM) in which SJCERA is invested. The commodity sleeve has been managed internally since June of 2018 with the long-term goal of adding it to the DGM portfolio. As the team has continued to gain more confidence in the commodity sleeve, they are now proposing adding it to the DGM portfolio effective September 2021. This allocation would complement the existing fixed income, equity, and currency sleeves which are already a part of DGM. The inclusion of the commodity sleeve is expected to improve the diversification of and be additive to the DGM portfolio. The commodity sleeve would be expected to have an initial allocation of approximately 6% with the possibility to grow over time.

Following discussion with P/E investments and SJCERA staff, Meketa is recommending SJCERA approve the request made by P/E Investments to add commodities to the DGM portfolio.

As of July 31, 2021 P/E investments managed roughly $33 million on behalf of SJCERA within the CRO portfolio which was originally funded in June 2016.

Board of Retirement Meeting

San Joaquin County Employees' Retirement Association

Agenda Item 9.01

September 10, 2021

SUBJECT: SACRS Voting Proxy Form

SUBMITTED FOR: ____ CONSENT __X__ ACTION ___ INFORMATION

RECOMMENDATION

Staff recommends the Board approve the attached amendments to SJCERA's current list of SACRS Voting Delegates.

PURPOSE

To provide SACRS with the list of voting delegates who are authorized to vote on behalf of SJCERA.

DISCUSSION

The SACRS Administrator is requesting all retirement systems to submit their voting proxy by October 15, 2021.

SJCERA's current list of voting delegates, as reflected on the attached voting proxy form, will remain in effect unless changed by the Board. Based on currently known attendance and availability, additional proxy voter names are required in order to ensure at least one voting delegate or alternate voting delegate is able to attend the Friday, November 12 SACRS Business Meeting. Trustee Keokham's name has been added to the list as he has indicated his availability. If there are other trustees who plan to attend the conference and are available to serve as back-up to Trustee Keokham, their names may be added when this item comes before the Board for consideration.

Alternatively, if the Board wishes, the Board may select a new slate of voting delegates, which staff will submit to SACRS by the October 15 deadline.

ATTACHMENTS

SACRS Voting Proxy Form

JOHANNA SHICK
Chief Executive Office

SACRS VOTING PROXY FORM

The following are authorized by the San Joaquin County Retirement Board to vote on behalf of the County Retirement System at the upcoming SACRS Conference

(if you have more than one alternate, please attach the list of alternates in priority order):

Chair – Michael Restuccia	Voting Delegate
Vice Chair – Michael Duffy	Alternate Voting Delegate
Secretary – Raymond McCray	Second Alternate Voting Delegate
CEO – Johanna Shick	Third Alternate Voting Delegate
Ex-Officio – Phonxay Keokham	Fourth Alternate Voting Delegate

These delegates were approved by the Retirement Board on 09/10/2021.

This Voting Proxy supersedes that approved by the Retirement Board on 07/10/2020 and is to remain in effect until superseded or revoked.

The person authorized to fill out this form on behalf of the Retirement Board:

Signature: _____

Print Name: Johanna Shick

Position: Clerk of the Board

Date: September 10, 2021

Please send your system's voting proxy by October 15, 2021 to Sulema H. Peterson, SACRS Administrator at Sulema@sacrs.org.

2021 LEGISLATION

Last Updated: 08/26/2021

BILL NO.	AUTHOR	DESCRIPTION	LAST ACTION DATE	LOC	SPONSOR
Legislation Impacting SJCERA:					
AB 361	Rivas	This bill, until January 1, 2024, would authorize local agencies to use teleconferencing to hold meetings, without complying to Brown Act requirements for purpose of declaring or ratifying a local emergency, during a declared state or local emergency and other specified circumstances. The abbreviated procedures still require providing notice, posting the agenda, and allowing the public to access the meeting and address the legislative body. The intent is to improve public access to local agency meetings during COVID-19 and future emergencies.	07/15/21	**Senate** Third reading	
AB 703	Rubio	Executive Order N-29-20 suspended the Brown Act requirements for teleconferencing during the COVID-19 pandemic, provided that notice requirements are met and the ability of the public to observe and provide comments. This bill would remove the requirements of the Act particular to teleconferencing and allow for teleconferencing subject to existing provisions regarding the posting of notice of an agenda and the ability of the public to observe the meeting and provide public comment. This bill would declare Legislature's intent, consistent with the Executive Order, to improve and enhance public access to meetings into the future, and considering the digital age, by allowing broader access through teleconferencing options.	05/03/21	Assembly L. Gov Comm	
AB 826	Irwin	This bill would prescribe, for CERL, a definition of compensation earnable that would include any form of remuneration, whether paid in cash or as in-kind benefits, if specified requirements are met. This bill would state these provisions are declarative of existing law.	07/14/21	**Senate** Third reading	Ventura County/SEIU
AB 845	Rodriguez	This bill, until 1/1/2023, would create a presumption, applicable to the retirement systems that PEPRA regulates, that would be applied to disability retirements on the basis of a COVID-19-related illness. The presumption would apply to specified firefighter, public safety officer, and health care job classifications, or their functional equivalents, and to members in other job classes who test positive during a COVID-19 outbreak at their place of employment.	07/23/21	**Chaptered**	
SB 274	Wieckowski	This bill would require a local agency to email a copy of, or website link to, the agenda or a copy of the agenda packet if the person requests that the items be delivered by email. If it is technologically infeasible, the bill would require materials to be sent by mail.	8/27/21	**Engrossing and Enrolling**	
SB 634	L, PE & R Comm.	This bill would authorize county health officer's duly authorized representative to also advise retirement boards with advice on medical matters; correct an obsolete CERL cross-reference to a provision in the Education Code; authorize the Board to contract with a private practice physician for medical advice necessary to carry out disability retirement related provisions of CERL. **This bill would also make changes to PERS and STRS that would not impact SJCERA.**	8/17/21	**Engrossing and Enrolling**	

BILL NO.	AUTHOR	DESCRIPTION	LAST ACTION DATE	LOC	SPONSOR
Other Bills of Interest:					
AB 339	Lee	This bill would, until December 31, 2023, require all public meetings of a city council or county board of supervisors that governs a jurisdiction of at least 250,000 people to include an opportunity for members of the public to attend via a telephonic option or internet-based option. This bill would also incorporate additional changes proposed by AB 361 if it passes as well.	08/25/21	**Senate** Second reading	
AB 386	Cooper	This bill would exempt from disclosure under CPRA regarding an internally managed private loan made directly by the PERS fund.	07/13/21	**Senate** Failed passage. Reconsideration granted.	
AB 473	Chau	Technical, non-substantive changes to CPRA. **This bill would incorporate additional changes proposed by AB 386, AB 562 and AB 823 if they pass as well**.	08/17/21	**Senate** Third reading	
AB 761	Chen	This bill would allow the OCERS Board to appoint CEO, ACEO, CIO and provide that personnel appointed pursuant to these provisions would not be county employees, and instead be employees of the retirement system.	06/28/21	**Chaptered**	OCERS
AB 885	Quirk	This bill would require State bodies that conduct meetings by teleconferencing to make the open session both audibly and visually observable, and to post the agenda at the designated primary physical meeting location where members of the public may physically attend the meeting and participate.	03/25/21	Assembly Re-referred to G.O. Comm.	
AB 890	Cervantes	This bill would require the Boards of CalPERS and CalSTRS to report annually to the Legislature on the status of achieving objectives and initiatives regarding the participation of emerging or diverse managers responsible for asset management within the pension fund's portfolio. The bill requires the Boards to define "emerging manager" and "diverse manager" for the purposes of these reports.	8/26/21	**Engrossing and Enrolling**	
AB 1133	Chen	This bill would state the intent of the Legislature to enact legislation that would create a hybrid retirement benefit, consisting of a DB plan and DC plan.	2/19/21	Assembly From printer	
AB 1354	Grayson	Technical, non-substantive changes to PEPRA.	02/22/21	Assembly First Reading	
AJR 9	Cooper	This measure would request the Congress of the U.S. to enact, and the President to sign, legislation that would repeal the Government Pension Offset and the Windfall Elimination Provision from the Social Security Act.	07/15/21	**Chaptered**	
SB 278	Leyva	This bill would establish new procedures under PERL for cases in which PERS determines that benefits of a member or annuitant are based on disallowed compensation that conflicts with PEPRA or other laws under PERL. For retirees, the bill would require adjustment of benefits and for actives it would require crediting of contributions paid on disallowed earnings against future required contributions.	07/07/21	**Assembly** Placed on suspense file.	
SB 294	Leyva	This bill would remove the 12-year limitation for service credit earned on an employer-approved compensated leave for PERS and STRS.	08/26/21	**Engrossing and Enrolling**	

BILL NO.	AUTHOR	DESCRIPTION	LAST ACTION DATE	LOC	SPONSOR
SB 411	Cortese	PEPRA prescribed various limitations on public employees, employers, and retirement systems concerning, among other things, work after retirement. PERL generally prohibits retired PERS members from working for an agency participating in the system without reinstatement in the system, unless that employment is otherwise specifically authorized. This bill would eliminate the above-described requirement that a person employed without reinstatement in a manner other than authorized by PERL be reinstated, instead providing that reinstatement is permissive. The bill would limit the circumstances pursuant to which retired members and employers are obligated to pay employee and employer contributions, which would have otherwise been paid, plus interest, to apply only to specified reinstatements. The bill would make conforming changes and make specific reference to the duties of employees and employers regarding reinstatement after retirement in violation of PEPRA.	07/23/21	**Chaptered**	
Federal Legislation:					
HR 1319	Yarmuth	Called the "American Rescue Plan Act", HR 1319 was signed into law. Included in the $1.9 trillion aid package is pandemic-related aid to state and local governments. The final legislation makes clear that funds have to be used for COVID costs and economic recovery and cannot be deposited into a public pension plan, or used for lowering taxes, or paying down legacy obligations.	03/11/21	Public Law No: 117-2	
HR 2954	Neal	Called the "Securing a Strong Retirement Act of 2021", this bill would among other things increase RMD age to 75 from 72 over the next decade.	05/05/21	Ways and Means Committee	
2021 TENTATIVE State Legislative Calendar (Last Revised 12-21-2020)					
Feb 19	Last day for new bills to be introduced				
Mar 25	Spring Recess begins upon adjournment				
Jun 4	**Last day for bills to be passed out of the house of origin**				
Jun 15	Budget Bill must be passed by midnight				
Jul 16 - Aug 15	Summer Recess upon adjournment provided budget bill passed				
Sep 3	Last day to amend bills on the floor				
Sep 10	Last day for each house to pass bills; Final Study Recess begins upon adjournment				
Oct 10	Last day for Governor to sign or veto bills.				

2021 CONFERENCES AND EVENTS SCHEDULE 2022

EVENT DATES 2021-22		EVENT TITLE	EVENT SPONSOR	LOCATION	REG.	WEBLINK	EST. BOARD EDUCATION HOURS
BEGIN	END				FEE	FOR MORE INFO	
Sep 17	Sep 17	Attorneys Round Table	CALAPRS	Webinar	$50	calaprs.org	4 hrs*
Sep 26	Sep 28	NCPERS Fall Conference	NCPERS	Scottsdale, AZ	$695	ncpers.org	10.5 hrs*
Sep 28	Sep 30	Virtual Principles of Pension Governance for Trustees	CALAPRS	Virtual Conference	$500	calaprs.org	9 hrs*
Oct 29	Oct 29	Virtual Trustees Round Table	CALAPRS	Webinar	$50	calaprs.org	4 hrs*
Nov 9	Nov 12	SACRS Fall Conference	SACRS	Hollywood, CA	$120	sacrs.org	11 hrs*
Nov 15	Nov 17	2021 iREOC Annual Membership Meeting	Institutional Real Estate Inc.	San Diego, CA	N/A	irei.com	
Mar 5	Mar 8	General Assembly 2022	CALAPRS	TBD	$150	calaprs.org	10.5*
Mar 30	Apr 1	Advanced Principles of Pension Governance for Trustees	CALAPRS	Los Angeles, CA	$500	calaprs.org	9 hrs*

** Estimates based on prior agendas*

SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

SUMMARY OF PENDING TRUSTEE AND EXECUTIVE STAFF TRAVEL

2021 Event Dates	Sponsor / Event Description	Location	Traveler(s)	Estimated Cost	BOR Approval Date
Sep 17	Attorneys Round Table	Webinar	Morrish	$50	N/A
Sep 26 - 28	2021 NCPERS Fall Conference	Scottsdale, AZ	Shick	$2,340	8/13/21
Sep 28 - 30	Virtual Principles of Pension Governance for Trustees	Virtual Conference	Goodman	$500	N/A
Nov 9 - 12	SACRS Fall Conference	Hollywood, CA	Bassett, Keokham, Goodman, McCray, Nicholas, Weydert	$9,000	N/A
Nov 15 - 17	2021 iREOC Annual Membership Meeting	San Diego, CA	Restuccia	1000	N/A

SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

SUMMARY OF COMPLETED TRUSTEE AND EXECUTIVE STAFF TRAVEL

Event Dates 2021	Sponsor / Event Description	Location	Traveler(s)	Estimated Cost	Actual Cost	Event Report Filed
Jan 27	Meketa Fourth Quarter 2020 Market Review	Webinar	Nicholas, Praus	N/A	N/A	N/A
Feb 2 - 3	NCPERS FALL Conference	Webinar	Shick, Herman, Ba	$900	$900	N/A
Feb 11	CALAPRS Administrators' Roundtable	Webinar	Shick	$50	$50	N/A
Feb 19	CALAPRS Attorneys' Roundtable	Webinar	Morrish	$50	$50	N/A
Feb 23 - 25	2021 Pension Bridge ESG Summit Virtual Conference	Virtual Conference	Keokham	N/A	N/A	N/A
Mar 8 - 9	CALAPRS General Assembly	Webinar	Shick, Bassett, Nicholas	$850	$850	N/A
May 11 - 14	SACRS Spring Conference	Virtual Conference	Keokham, Morrish, McCray, Restuccia, Shick	$120	N/A	N/A
May 28	CALAPRS Attorneys' Roundtable	Webinar	Morrish	$50	$50	N/A
Jun 22 - 23	Moody's Commercial Real Estate Analysis Foundations	Virtual Conference	Ba	$1,946	$1,946	9/10/21
Jun 25	CALAPRS Administrators' Roundtable	Webinar	Shick	$50	$50	N/A
Jul 27 - 29	Private Equity Exclusive 2021	Virtual Conference	Ba	N/A	N/A	9/10/21
Aug 22 - 26	NCPERS Public Pension Funding Forum	New York, NY	Shick	$2,500	pending	pending

San Joaquin County Employees' Retirement Association

September 10, 2021

TO: Board of Retirement

FROM: Paris Ba
Retirement Investment Officer

SUBJECT: Moody's Real Estate Training

Thank you for the opportunity to participate in the virtual Moody's Real Estate Training on June 22-23, 2021. The topics covered are summarized below.

Credit Analysis Framework and Credit Risk

- Liquidity and Solvency Tests and analytical decision making using both tests
- Five crucial areas of risk management (Credit Policy, Financial Risk, Management Risk, Market Risk, and Facility Risk)
- Financial risk analysis and factors that mitigate those risks
- General categories and types of commercial real estate (CRE) credit risk
- 5 C's of Credit (Character, Capacity, Capital, Collateral, and Conditions).

Property Specific Risks

- Borrower/sponsor analysis
- Tenants: sources of cash flow
- Types of leases
- Property management and building maintenance/deferred maintenance
- Property Condition assessment (Engineering, Environmental, Seismic and Property Inspections)
- Property Inspections, including inspections for construction loans

Cash Flow Analysis

- Cash flow projections and drivers
- Liquidity and pro forma cash flow overview
- Sample of pro forma cash flow
- Capitalization rates
- Cash flow and property valuation

Coverage Analysis and Financial Ratios

- Defining financial ratios: Debt Service Coverage Ratio (DSCR), Loan-to-Value (LTV) and Debt Yield (DY)
- Interaction between pro forma cash flow and financial ratios
- Determining the CRE loan amount (how to "size the loan") based on cash flow and financial ratios
- Income quality, sensitivity analysis and "stressing" the loan

Real Estate Valuation Approaches

- Cost Approach
- Sales Comparison Approach
- Income Approach

Capital Structure Overview

- Senior loan – typically first mortgage lien
- Junior/mezzanine loan – typically second mortgage lien
- Preferred Equity – typically unsecured with fixed coupon
- Common Stock – almost always unsecured

San Joaquin County Employees' Retirement Association

September 10, 2021

TO: Board of Retirement

FROM: Paris Ba
Retirement Investment Officer

SUBJECT: Pension Bridge Private Equity Conference

Thank you for the opportunity to attend the virtual Pension Bridge Private Equity Conference on July 27-29, 2021. The topics covered are summarized below.

LP/GP Transparency

Limited Partners (LP) are demanding greater and greater levels of transparency from General Partners (GP) in this day and age. LPs are not the only ones pushing for transparency, the Institutional Limited Partners Association (ILPA) is also seeking standardization of LP reporting. One of the presenters, from the Securities Exchange Commission (SEC), indicated the SEC is increasingly performing routine exams and taking punitive actions against investment firms for failures to appropriately report and disclose information.

Global Private Equity Barometer

LPs from various locations and from various organizations are indicating that they remain positive on alternative investments overall, especially Private Equity. They are looking past the pandemic, and are focusing on future trends such as ESG initiatives. Top investment trends are: Healthcare, Climate Change, Demographics, Biotech, Transportation, Sustainability, Robotics, and Artificial Intelligence (AI).

Current State of Private Equity Industry

Participants expressed concerns about the valuation of current Private Equity market, as well as concerns over the speed of recovery of the economy. Vice Chairman of Aksia went as far as stating that he is worried that we are in the mid/late cycle of the economy already, and that he

thinks investors should start thinking about downside protection. Sector expertise and specialization are going to be even more important going forward.

Diversity & Inclusion and Emerging Manager Programs

Diversity & Inclusion has become an ever more important topic in the investment industry. Many pension funds, endowments, and money managers have pledged to promote D&I within their portfolios and institutions. Diverse companies with inclusive cultures tend to attract and retain a wider pool of talent, and LPs are starting to develop standardized measurement and evaluation tools to keep track of the diversity of their managers.

Environmental, Social and Governance (ESG)

There is increasing focus on the ESG initiatives in the investment universe, especially as the new administration's priority on fighting climate change. Studies have shown that ESG strategies grew to over $17 trillion in 2020, an increase of 42% from just two years ago. Investment managers state that ESG integration actually has a positive impact on returns, despite some initial cost of implementation. The SEC has also launched a climate and ESG enforcement special task force, and investors are likely to hear about the new rules sometime early next year.

Co-Investments

Deal activities are up year over year, so are co-investments among LPs. The advantage of co-investments are lower fees, and more control over the investments that you make. In this fast-moving market, the ability to deploy capital with a faster speed sometimes distinguishes a mediocre manager versus a great manager. Co-investments allow the LPs to not only bring capital to the table, but also their investment expertise.

Emerging Market (EM)

Given the lower yield in the US, investors are looking elsewhere for return opportunities. Panelists see EM now much better positioned than during the last taper tantrum (2013). Several key factors were responsible for poor EM performance during the last taper tantrum: large current account deficits, reliance on sustained capital inflow, and appreciated currencies. These factors have fundamentally changed since then: EM on average are running a current account surplus with little reliance on net capital inflow. However, EMs are very differentiated across the board – Africa is a completely different market than China – thus investors need to be nimble when picking which EM to invest in.

Private Credit

US direct lending deal flows have been somewhat muted – activities were not as robust as many experts anticipated in second quarter 2021, but it was still higher than first quarter. Participants are seeing fast growing life sciences and software companies may seek to access capital through the direct lending market. Significant lending opportunities could develop in these industries, driven by technological advancement and sizable research & development requirements.

Mezzanine Debt

Mezzanine Debt investors are still looking for good cash flow opportunities. Junior credit's returns expectations are between 10-12%, while equity co-investments' returns are expected to be in the high-teens. A portfolio manager from Morgan Stanley stated that the best opportunity he sees in the market is going down on the capital structure of good companies, so that you are protected on the downside, but would be able to capture the yield differential.

Distressed Investing

Distressed investments are made by managers who can take advantage of the cycle, or weather through a down cycle. On the public market front, there were only two to three weeks of windows within the Investment Grade and High Yield bond market during the last COVID drawdown, and investors have to act fast in times of stress. On the private side, instead of looking for a specific trading strategy, panelists are looking for managers who can take distressed assets, take them to bankruptcy if necessary, restructure the assets, and come out of the other side.

Secondaries

Volumes in the secondary markets are estimated to be $48 billion in the first half of 2021, up from $18 billion year-over-year. The available dry powder is expected to be around $100 billion at the end of 2020, the highest level that is ever seen in the secondary space.

Buyout

As the economy is recovering from COVID, it is recovering from a fairly unstable ground. Panelists are watchful for a slowdown/downturn in the next 18 to 36 months. Key areas that investors are looking at are digitization, ESG trends, and healthcare. Valuations are different across different sectors – technology and healthcare are getting expensive, but overall the market seems fairly valued.

Healthcare

The panelists discussed the three most attractive areas within healthcare: Pharmaceutical and life sciences, mental health, and digital health. Given the aging population in the US, the market size of healthcare is expected to grow three-fold in the next five years.

Venture Capital

Venture Capital is expected to have one of the highest returns going forward. Consistency is very important in venture investing – as typically a private firm will not go public (IPO) until 10+ years after it was founded. Investors have to be very forward looking, need to invest for the next 8 to 10 years down the road. One panelist also pointed out that Venture Capital is a space that has done tremendously well over the past decade, that many successful GPs have accumulated significant wealth and are looking to retire, so GP turnover is an important factor to watch going forward.

Infrastructure

The pandemic has transformed many market segments, and this is especially true for the infrastructure asset class. The new Biden infrastructure bill represents an opportunity to significantly expand the investment universe. There are also opportunities in the current administration's push for green and renewable energy (for example, the carbon-neutral pledge by 2050 made by majority of the developed market countries). Panelists see opportunities in Wind, Solar, Hydro, Natural Gas-fired and Battery Storage space.

One-On-One Meetings

In addition to the scheduled sessions, I also had three one-on-one meetings with Pathway Capital, Adams Street Capital and Baillie Gifford, respectively. Pathway Capital and Adams Street are Fund of Funds (FoF) investors, but Baillie Gifford has an interesting disruptive technology focus. They start the investment when the companies are private, and work with the companies in order to take them public (IPO); however, they are not obligated to exit the investment if they still believe in the companies post-IPO. That is one factor that distinguishes Baillie Gifford from a lot of Private Equity managers, where a typical Private Equity manager would exit their positions upon successful IPOs. Key investments Baille Gifford has made over the years include: Tesla, Dropbox, AirBnB, Alibaba, Lyft, SpaceX, Peloton and ByteDance (TikTok parent company). I plan to introduce Baillie Gifford to Meketa, for additional research and due diligence.

San Joaquin County Employees' Retirement Association

September 3, 2021

TO: Board of Retirement

FROM: Johanna Shick
Chief Executive Officer

SUBJECT: Chief Executive Officer Report

Strengthen Fund Stability

Assets Under Management (AUM) Reach New Heights (Again). The Flash Report, which provides investment return details as of July 31, 2021, confirms SJCERA's assets grew 9.3 percent net year-to-date, bringing our AUM to a new all-time high of $3.85 billion.

Securities Litigation Update. As part of our custodial bank contract, Northern Trusts monitors securities litigation and files for SJCERA to join applicable class action law suits. During the second quarter 2021, Northern Trust filed on SJCERA's behalf to join the following class actions: Array Biopharma Inc., YRC Worldwide Inc., CenturyLink Inc., and Newlink Genetics Corporation.

Board Education. The Board's decisions on asset allocation and actuarial matters can significantly affect SJCERA's progress in funding. Two articles included in this month's materials may provide food for thought or prompt questions you want to ask of our actuarial or investment consultants: 10.03-04: *What Should You Ask Your Actuary?* and 10.03-05: *How Investors Can Reach Their 7% Return Target*. Both of these came to my attention as a result of attending the Pension Funding Conference last week.

Leverage Technology to Improve Accuracy and Efficiency

Implement Year 1 of Five-Year Technology Plan.

Develop and Issue RFP for new PAS vendor. We're on our way—the project has started! An all staff kick-off meeting was held on August 19 to introduce the consultants and staff to each other and provide an overview of the project. The initial project roles have been defined, the initial project schedule has been delivered, and on September 1, the Steering Committee met to review the Project Charter. Everyone at SJCERA will be involved in this project at some point and many will have multiple roles. As Executive Sponsor, I will make major decisions on budget and scope, as Business Sponsor ACEO Kathy Herman will make business-related decisions, and the Steering Committee (including both Kathy and myself as well as others as needed) will provide oversight. There will be Project Leads and Process Owners as well, and Ron Banez, Retirement Services Associate, has agreed to be the SJCERA Project Manager. The SJCERA Project Manager will be a steering committee member, and work alongside Linea and the PAS Vendor to ensure communications between the SJCERA groups, and provide design input.

Manage Risk

Conduct Cyber-Security Audit. Information Systems Manager Adnan Khan and IT Systems Analyst II Lolo Garza along with Linea Secure continue to make progress on the Audit. Phase I of the Cyber Security Assessment project has been completed and Phase II of the project is well under way. Preliminary reports of the Phase I testing and the SJCERA IT team and County Information Security Officer are currently reviewing the preliminary reports. Phase III of the Cyber Security Assessment project is expected to be completed by the end of September. The Phase IV Schedule and Rules of Engagement are pending. A full report will be provided to the Board in closed session upon completion of all phases

of the audit.

Conduct Actuarial Audit. Milliman issued a favorable audit review of SJCERA's January 1, 2021 actuarial valuation and confirmed Cheiron used reasonable assumptions and methods. Milliman will present the full report at the September Board meeting.

Implement *Alameda* Decision. In implementing the *Alameda* decision (which requires SJCERA to exclude certain earnings from retirement calculations), our first priority was to correct retirees' benefits. I'm pleased to report we are now working on returning overpaid contributions to Active members, which will be processed in groups. On August 27, 2021, the first group of 743 affected employees were notified that their overpaid contributions and interest will be included in their October 1, 2021 paycheck. Subsequent groups require additional review and calculation prior to processing because of data complexities such as divorce settlements, payroll adjustments, and the interplay with state or federal compensation limits. Once Active members are completed, then the focus will shift to calculating the contributions and interest owed to members who retired after July 30, 2020 and those who are deferred.

Research Enterprise-Wide Risk Management (EWRM) Methodologies. The 90-minute video training session for the leadership team has been scheduled for September 15 to familiarize staff with the concepts of Enterprise-Wide Risk Management. Following completion of the training, the team will determine next steps for applying these concepts to SJCERA.

Improve Operational Efficiency

Improve Website Architecture and Functionality. Management Analyst III, Greg Frank, spearheaded the contract negotiation process with website vendor Rolling Orange. On September 2, 2021 the website project team (Communications Officer Freda King, IT Systems Specialist II Jordan Regevig and Administrative Secretary Kendra Fenner) held a kick-off meeting with the vendor. Weekly meetings have been scheduled beginning September 6, and a project plan will soon be submitted to management for approval.

Deliver Excellent Service and Support to Stakeholders

Provide Stakeholder Communication and Education.

Active Member Emails. In the month of August, SJCERA sent all active members two email blasts: (1) *SJCERA Strengthens Your Retirement Security*, which summarized and provided links to our financial reports and (2) *Should You Retire Now or Later…Watch This Video to Help You Find Answers!,* which promoted SJCERA's *Retirement Benefit Calculator Tutorial* video. Copies of both emails are attached.

Member Education. Ron Banez and Melinda DeOliveira continue to draw a crowd: more than 160 participants attended the August 5 Understanding Your Retirement virtual seminar. SJCERA's virtual events continue to be well received, and offer employees more opportunities to learn about their benefits.

Deliver Operations Timely and Accurately.

Member Statements. SJCERA provides active and deferred members a personalized member statement, which includes benefit related information such as their named beneficiaries, total member contributions and service credit. IT Systems Specialist II, Jordan Regevig, spearheaded the member statement project this year. The data was thoroughly reviewed by Cheiron and Information Systems Manager, Adnan Khan. Statements were delivered to the printer on August 23, 2021, after having passed the quality control check performed by Member Services staff, including Marta Gonzalez, Andrea Bonilla, Ron Banez, Bethany Vavzincak and Melinda DeOliveira. Deferred members' statements were mailed on Friday, August 27, 2021, along with the Popular Annual Financial Report. Active members' statements will be distributed via inter-office mail to the departments this month.

Popular Annual Financial Report (PAFR). As noted elsewhere in this report the PAFR has been distributed to active and deferred members. It was scheduled to be mailed to retired members with their

September 1 Earnings Statement. Unfortunately, the vendor neglected to insert the PAFR; however, they are immediately mailing it to retirees at no additional cost to SJCERA.

Maintain a High-Performing Workforce

Staff Training. SJCERA has partnered with University of the Pacific to offer a course in Managing Real World Projects. All staff will have the opportunity to participate in the six-hour virtual course October 11-13, which will be presented in three, two-hour blocks. The course content focuses on key principles of project management in the real world, offering tools and techniques for achieving project success.

Implement Approved Changes to Physical Layout of Office. While originally conceived as a goal to assess the layout of cubicles and offices for safety, workflow and efficiency, ergonomics emerged as a higher priority for the overall safety, health and productivity of staff. SJCERA contracted with County Risk Management for a thorough ergonomic assessment. The evaluator, assessed the chairs, desk height, monitor position, mouse and keyboard positions and posture and recommended a new chair after it was determined our current desk chairs do not meet the following criteria:

- Independent seat and backrest adjustment, adjustable armrests (width & height)
- Adjustable seat depth (seat slider)
- Pneumatic seat height adjustment
- Seat pan tilt adjustment
- Backrest (lumbar support) height adjustment
- Adjustable seat back tilt mechanism that will help limit static exertion of the lower back

Almost all of the current desk chairs are more than 12 years old, well past their life expectancy of seven years. The costs of new office chairs will exceed the 2021 Equipment and Furniture budget, so the Office Layout budget will be used for this purpose. Replacing the chairs is a prudent move to mitigate the risk of occupational injuries and to support the safety and health or our most valuable resource—our staff!

Managing Emerging Organizational Needs

Identify and Begin Implementing a 2022 Strategic Planning Process.

On August 31, our strategic planning vendor, Mosaic, conducted the first of three meetings to solicit strategic plan input from SJCERA's Leadership Team (myself, Kathy Herman, Jason Morrish, Greg Frank, Paris Ba, Adnan Khan, Carmen Murillo, and Marta Gonzalez). The purpose of these meetings is to conduct a visioning exercise, discuss core values, review survey results/input, conduct analysis of strengths, weaknesses, opportunities and threats (SWOT analysis), and identify critical issues to address this strategic planning cycle.

Tier 2b Implementation. County Payroll and County Human Resources are preparing a Tier 2b payroll test file, which will be used in SJCERA's test environment to determine any programing changes needed in our current pension administration system in order to successfully load and integrate Tier 2b data when it arrives in January.

Conclusion

I am excited by the potential of the Strategic Planning and Pension Administration System projects to meaningfully shape the future of SJCERA. Both projects will require significant, sustained focus and effort. (Kendra pointed out to me today, that my calendar is completely booked for the month of September!) However, the attention to long-term strategy and direction will help SJCERA make smart decisions that will enable us to achieve that long-term vision of success. In five years, when we look back, we'll be amazed at the progress we've made!

Subject: [EXT] SJCERA Strengthens Your Retirement Security
Date: Monday, August 2, 2021 at 10:36:35 AM Pacific Daylight Time
From: ISD Service Desk [ISD]
To: ISD Service Desk [ISD]
Attachments: image001.png

Sent on behalf of Johanna Shick, Chief Executive Officer, SJCERA:

(Sent to all County Employees)

SJCERA provides retirement benefits to more than 14,000 current and former full-time, permanent employees of our participating employers.

In 2020, and throughout our 75-year history, SJCERA has built retirement security for people, just like you, who invest their lifework in public service. Highlights from 2020 include:

• Pension fund assets reached an all-time high:	$3.5 billion as of December 31, 2020, an increase of $281.5 million
• Investment returns exceeded our 7.0% target:	8.3% net-of-fee 1-year return
• Employers and Members paid contributions:	$281.3 million
• SJCERA paid retirement and death benefits, and refunds:	$251.6 million

SJCERA Fun Facts:

- 102 — The age of SJCERA's oldest retiree in 2020
- 39 — The number of years the oldest retiree has been retired as of 2020
- $3,301 — The average monthly benefit paid to retirees in 2020

Read more in the 2020 Popular Annual Financial Report or the more detailed 2020 Comprehensive Annual Financial Report.

Thank you,

ISD Service Desk
Information Systems Division
San Joaquin County
209-953-HELP (4357)

From: **ISD Service Desk [ISD]** isdservicedesk@sjgov.org
Subject: [EXT] Should You Retire Now or Later…Watch This Video to Help You Find Answers!
Date: August 11, 2021 at 3:38 PM
To: ISD Service Desk [ISD] isdservicedesk@sjgov.org

ID

Sent on behalf of Johanna Shick, Chief Executive Officer, SJCERA:
(Sent to all County Employees)

SJCERA's video, *Retirement Benefit Calculator Tutorial*, gives step-by-step instructions on how to use the online calculator to estimate your monthly retirement benefit. Are you uncertain if you should retire now or wait until next year? Or, maybe you received a big promotion and want to know how it will affect your retirement benefit. Answer these perplexing retirement dilemmas by watching this short video and using SJCERA's online calculator!

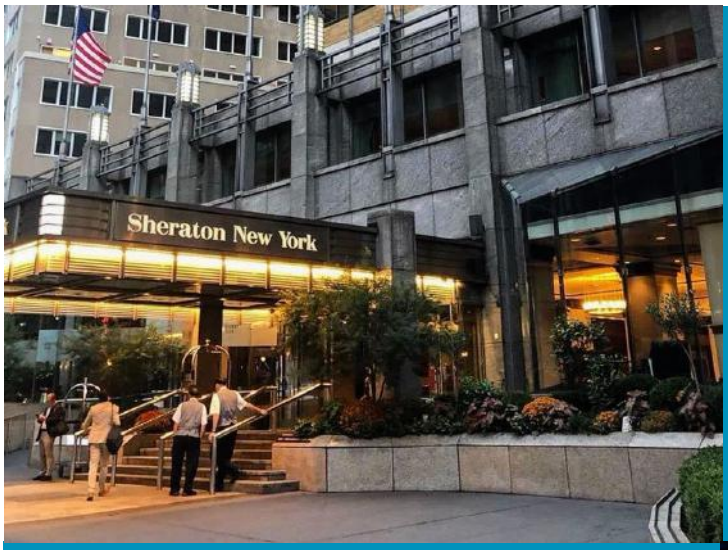
Thank you,

ISD Service Desk
Information Systems Division
San Joaquin County
209-953-HELP (4357)

THE MONITOR

AUGUST 2021 NCPERS NO. 8

The Latest in Legislative News



Making Sense of the Legislative Agenda

Currently, all eyes are on the bipartisan group of 22 Senators (11 from each party) who are negotiating a compromise on the traditional infrastructure bill.

Live in New York, Public Pension Funding Forum Shines Light on Sustainability

For many NCPERS members, the Public Pension Funding Forum in New York August 22-24 will mark their first time attending a business conference since the COVID-19 pandemic began.

Also in this issue: Continuing Education Provides Path to Being an Effective Trustee; Around the Regions features California, Illinois, New Jersey, and Virginia this month.

Continuing Education Provides Path to Being an Effective Trustee

Being a public pension trustee is not for the faint of heart, because governance is serious business. The word "trustee," of course, is no accident—it signifies a legal obligation on the part of board members to act solely in the interest of plan participants. When you've been entrusted with other people's money, you have a sacred responsibility to act in ways that help ensure it will be there for the long haul.

Integrity, honesty, and trustworthiness are vital in fulfilling the fiduciary responsibilities of a trustee. So is inquisitiveness and the willingness and ability to ask questions. No board is improved by the addition of a bobble-head who never speaks up and simply goes along with the pack.

Being a lay person is not an obstacle to board service – in fact, it has always been a valued perspective. Consider NCPERS President Kathy Harrell, who served for years on the board of the Ohio Police & Fire Pension Fund. As she said in a recent interview, "I didn't have an investment background, but I knew pension benefits were critically important to our members." So, she educated herself, asked questions and attended training programs. These steps, along with an independent mindset, made her an effective board member.

Most public pension boards include participant representatives, who are usually working employees and members of the retirement system. Many boards also assign seats to retiree representatives and a number of ex-officio members. These tend to be state treasurers, budget officers, superintendents of public education, etc., or designees of such officials.

One key way that trustees cultivate the qualities they need for successful board service is through continuing professional education. For participants and retiree representatives, NCPERS is a critical resource for this ongoing training. Kathy Harrell has cited NCPERS programs as vital to her effectiveness as a member of the OP&F pension fund board.

Education can also insulate participant and retiree representatives to the drumbeat of criticism they have faced in recent years, most of it highly political in nature. It isn't fair, but public employees, retirees, and especially their union representatives are under constant pressure to demonstrate that they understand their roles in detail and are acting in the long-term interest of the fund.

Learning the ropes can help trustees understand where they fit into the pension fund ecosystem—and teach them how to interact with professionals. It's important to respect the expertise of money managers, consultants, staffers, and attorneys, but not be intimated, because it's the job of the board to ask questions and insist on clear answers.

It's also important to learn about the range of matters than can come before the board. The exact mandate varies from pension system to pension system, of course, because 50 state legislatures and hundreds of municipal governments have created their own systems. Duties can thus vary widely, but good training is principles-based and focuses on the framework for making decisions, not the details of an individual pension system.

Education is a critical mission at NCPERS—one of the "big three," along with advocacy and research. NCPERS offers extensive educational programming, including three specialized programs for trustees:

The Trustee Educational Seminar (TEDS), the Program for Advanced Trustee Studies (PATS), and the NCPERS Accredited Fiduciary Program (NAF).

- TEDS is a foundational program where first-time and novice trustees can improve and brush up on their understanding of roles and responsibilities. The program is currently available on demand by visiting the NCPERS website.
- PATS is an intensive, in-depth learning seminar for experienced trustees, focusing on two current topics in an immersive way. We are excited to announce that PATS will be live again in Washington, D.C., in May 2022.
- NAF is the path to a prestigious and renewable credential—a certification program culminating in an examination that demonstrates your mastery of core topics and that provides a framework for maintaining an ongoing commitment to professional education. Hundreds of trustees have already taken the NAF program, and the next opportunity to do so will come September 25-26 in conjunction with the FALL Conference in Scottsdale, Arizona.

Serving as public pension trustee is an honor and challenge. NCPERS is here to help trustees navigate turbulent waters with top-quality professional education.

Executive Director's Corner

Live in New York, Public Pension Funding Forum Shines Light on Sustainability

For many NCPERS members, the Public Pension Funding Forum in New York August 22-24 will mark their first time attending a business conference since the COVID-19 pandemic began. We are excited to bring you a rich and dynamic agenda while continuing to heed all the appropriate health and safety precautions.

It will be gratifying to be together again, because let's face it – a lot of things happen when we are face-to-face that don't happen when we meet virtually. Facial expressions communicate responses and help speakers understand whether they're hitting the mark or need to adjust. A handshake or a light touch on the back conveys warmth and connection. And it's easier to pay attention when we are away from all the distractions of the workplace. While virtual events have played an important role over the past 18 months and will continue to do so, meeting together in person periodically strengthens the public pension community.

It is fitting that we are starting our "live" meetings with the Funding Forum, because few topics are more heated than the question of whether public pension revenues and reserves are adequate to meet current and future needs. Our aim is to dial down the heat and turn up the light as we illuminate the latest thinking about how to ensure that public pensions can remain a healthy, thriving part of a secure retirement.

The theme running through the conference is sustainability—specifically, the concept of stabilizing unfunded liabilities to keep them at fiscally sustainable levels. NCPERS Research Director Michael Kahn will provide an overview of the latest research behind the forum agenda, which shows that a relatively small down payment of 4% of the total unfunded liabilities would be sufficient to stabilize public pensions now, and minor fiscal adjustments going forward would keep them sustainable over the long haul.

As always, the conference brings together the brightest minds in public pension research and analysis, blending practical and theoretical developments.

Our closing keynote will be delivered by David Altig, executive vice president and director of research at the Federal Reserve Bank of Atlanta.

We will hear from Louise Sheiner of the Brookings Institution as she examines potential sustainability measures. Eric Atwater, a partner at Aon, and Tom Sgouros of the Brown University faculty, will discuss how to assess sustainability.

Maureen Toal, senior vice president of Public Agency Retirement Services, and Brian Binkley, senior investment consultant at Vanguard, will offer practical insights into how stabilization funds and trusts can be utilized.

In addition, we will hear about strategies to maintain mature plans with negative cashflows from Michael Buchenholz, head of U.S. pension strategy at JP Morgan Asset Management, and Sterling Gunn, managing investment director of CalPERS. Sharon Hendricks, vice chair of CalSTRS, will describe the fund's track record in standing up to big-oil interests.

Elsewhere in the program, Kristina Hooper, chief global market strategist for Invesco, will discuss the proposed unconventional monetary policy known as "helicopter money."

Gene Kalwarski, president and CEO of Cheiron, and Sandy Matheson, executive director of the Maine Public Employees Retirement System, will offer an actuarial perspective on strategies to stabilize pension plan funding. And David Wilson, who oversees global fixed income and multi-asset client portfolio management at Nuveen, will come at the same topic from an investment perspective.

As you can tell from this impressive parade of speakers and topics, the Funding Forum provides a unique, high-level focus on the research under way to ensure the long-term sustainability of public pensions. The program examines the implications of reform initiatives for ALL stakeholders—not just public employees, but also taxpayers and employers, as well as the often-overlooked spillover effects on local businesses and economies.

Public pensions have been the whipping boy of ardent free marketers for years. There is no disputing that some public pension plans have been underfunded because certain state and local governments failed to stabilize funding when times were good. But applying careful analysis demonstrates that pensions are sustainable and affordable. The Funding Forum is the must-attend conference for anyone who wants to stay abreast of this critical issue.

Making Sense of the Legislative Agenda

As this article is being written, there are numerous unanswered questions about the near-term, federal legislative agenda and how ultimately the policy priorities of the Democratic-controlled 117th Congress and the Biden Administration will be advanced.

Currently, all eyes are on the bipartisan group of 22 Senators (11 from each party) who are negotiating a compromise on the traditional infrastructure bill. This legislation will provide funding for basic infrastructure projects, including roads, bridges, waterways, rail networks, airports, and seaports.

In a recent statement, the 22 Senators said they "are optimistic that we will finalize, and be prepared to advance this historic bipartisan proposal to strengthen America's infrastructure and create good-paying jobs in the coming days."

If the Senate can muster the 60 votes needed to overcome an anticipated filibuster threat, then House Speaker Pelosi must decide whether to scuttle the House-passed infrastructure bill and whip her Members to pass the Senate version. Speaker Pelosi has said recently that she will not take this path unless the Senate is also able to approve a human infrastructure bill, which is discussed below.

Regardless of the immediate outcome of the physical infrastructure bill, the Senate and House must pivot quickly to pass a budget resolution. This measure will clear the way for a major budget reconciliation bill. This bill is being targeted to carry the human infrastructure components of the Democrats' agenda, including such as items as drug pricing reforms, Medicare benefit enhancements (dental and vision coverage), a lower age for Medicare eligibility, and funding for items such as home health care, schools, hospitals, and job training.

Lowering the Medicare eligibility age has been a priority for progressives in Congress for many years. Also be aware that Senator Sherrod Brown (D-OH) and Congressman Tom Malinowski (D-NJ) recently reintroduced the Expanding Health Care Options for Early Retirees Act, S. 2236 and H.R. 4148, respectively. This bill would allow qualified retired first responders to opt into Medicare coverage at age 50. Coverage would be identical to that provided under the existing Medicare program. Retirees would be eligible for tax credits, subsidies, and tax-advantaged contributions from their former employer or pension plan. Further, this bill specifically requires implementation in such a way that it will not negatively impact the existing Medicare program, beneficiaries, or trust fund. The legislation is a recognition that our nation's first responders generally retire well before the current Medicare eligibility age of 65.

While discussions are underway on this targeted approach and, of course, on the universal lower age proposal, it is unclear whether either proposal will be included in the reconciliation bill. It is also unclear whether the reconciliation bill, which could have a price tag of up to $3.5 trillion and is being derided by Republicans as a "Progressive Wish List," can secure the necessary votes to be approved by the House and Senate.

Medicare changes are likely to be contained in broad legislation, such as the budget reconciliation bill. However, legislation that would make numerous changes to the tax rules affecting defined benefit and defined contribution plans is expected to be considered separately. Observers believe this legislation has an excellent chance of becoming law in this Congress.

The retirement legislation that is the farthest along is H.R. 2954 (SECURE Act 2.0), which has been approved unanimously by the House Ways and Means Committee. It includes the provisions listed below that will affect either defined benefit or defined contribution plans of state and local governments.

The key provisions would:

- Allow 403(b) plans to invest in collective investment trusts;
- Increase the age trigger for Required Minimum Distributions incrementally to age 75 by 2032;
- Increase the annual limits on catch-up contributions to $10,000 for those age 62-64 and index annual catch-up contribution limits for 457(b), 403(b), and 401(k) plans;
- Allow 403(b) plans to join multiple employer plans;
- Allow employer matching contributions on account of student loan payments for 457(b), 403(b), and 401(k) plans;
- Eliminate the first-day-of-the-month rule for 457(b) plans to provide more flexibility to participants to make changes in elective deferral amounts;
- Exclude from tax certain disability payments for first responders;
- Establish hardship withdrawal rules for 403(b) plans;
- Require the Roth method, i.e. contributions must be made with after-tax dollars, for catch-up contributions to 401(a), 403(b), and 457(b) plans; and
- Provide discretion for plan fiduciaries on recovering retirement plan overpayments.

In addition, efforts are being made to attach to the SECURE Act 2.0 legislation to modify the Healthcare for Enhancement for Local Public Servants Act, commonly known as HELPS. This provision, Section 402(l) of the federal tax code, allows retired public safety officers to exclude from gross income up to $3,000 per year from governmental retirement plan distributions, provided the monies are paid directly from the retirement plan to a health care or long-term care provider. The proposed changes would increase the annual exclusion amount, index the exclusion amount in subsequent years, and repeal the direct payment requirement.

NCPERS will monitor these issues closely and will keep its members informed of any significant developments.

Tony Roda is a partner at the Washington, D.C. law and lobbying firm Williams & Jensen, where he specializes in federal legislative and regulatory issues 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 Catholic University of America, and LL.M (tax law) from Georgetown University.

Around the Regions

This month, we will highlight California, Illinois, New Jersey, and Virginia.

Northeast: New Jersey

Sending a strong signal that it is serious about strengthening public pensions, New Jersey made a lump-sum payment of $5.8 billion into the state pension system on July 1, the first day of the 2022 fiscal year. The Garden State has generally made installment payments at the end of each fiscal quarter.

In addition to the lump sum, New Jersey's $90 billion-asset pension fund is also slated to receive monthly infusions of revenue from the New Jersey Lotto throughout the year, estimated at $1.1 billion.

Governor Phil Murphy, a Democrat, has prioritized properly funding the state pension system, and the payment is a sharp rebuke to years of chronic short-funding and skipped payments. The action marks the first time in 25 years that the state has fulfilled its

It is also the first time in years that the state has made a lump-sum payment rather than quarterly payments.

"After years of kicking the pension can down the road, a practice which has cost the state billions and billions of dollars, today we are officially turning the corner," New Jersey Treasurer Elizabeth Maher Muoio said in a news release. Making one up-front payment rather than spreading the costs over four quarters is also more cost effective. Quarterly payments would save the state $1.5 billion over 30 years versus a pay-as-you-go approach. The lump sum would save $2.2 billion, the treasurer's office noted.

"Today is a remarkable day for the state of New Jersey," Murphy said. "When we started this journey more than three years ago, I made a promise to the hardworking public employees and retirees of our State. Today is not only the day we officially make good on that promise, it is the day we start filling in the hole that has been dug over the last 25 years."

Midwest: Illinois

Illinois Secure Choice was closing in on 100,000 accounts at midyear, according to data it published as of June 30. At that point, Secure Choice had 99,943 "payroll contributing accounts," of which 90,403 were funded. The gap represents the startup time between enrollment and the first contribution.

Program assets reach $67 million at midyear. The average monthly contribution rate was $114.90, and the average account balance was $741.93. About one-third of eligible workers at enrolled employers had opted out of contributing.

As of midyear, 6,060 employers had registered for the program, 4,033 had uploaded employee data, and 2,837 had begun submitting payroll deductions.

Treasurer Michael Frerichs, speaking about the state's current financial position in a recent television interview, pledged to continue promoting the benefits of Secure Choice. He said the program was one of his top priorities during the last session, promoting his office retirement program and college savings program.

“The Secure Choice Retirement Savings Program allows up to 900,000 people to save money for retirement. Allows more Illinois to retire with dignity and enjoy their golden age. “I will do it,” said Frerichs.

At present, Secure Choice only applies employers with 25 or more workers that do not offer workplace benefits, versus a current threshold of five workers in Oregon and California, which have also created auto-IRA programs. In an interview in February, Frerichs said that now the state has experience with the program, “we want to lower that threshold to allow all our small businesses and workers to have access.” (Oregon has targeted requiring companies with four or fewer employees to enroll beginning in 2022.)

Frerichs pointed out that Illinois was the first state to pass legislation to create an auto-IRA program. As a result, “it's not surprising that our threshold would be higher than other states. Now that we know how well the program works, it just makes sense to give access to everyone.”

South: Virginia

Making a dramatic rebound, the Virginia Retirement System Trust Fund's assets topped $100 billion for the fiscal year that ended June 30, the Richmond Times-Dispatch reported.

The return on investment for the full fiscal year is still being finalized, but the preliminary $18 billion increase in the trust fund's assets represents a 22% rise from a year ago, the newspaper reported. As a result, contribution rates for state and local government employers should remain stable when Gov. Ralph Northam unveils a two-year budget in December.

"The health of the trust fund is strong," O'Kelly McWilliams, an employment attorney who serves as chairman of the VRS board of trustees, told the newspaper. The trustees set pension contribution rates for state employees, teachers and other state and local government workers in the fall.

"It's going to be one of the strongest fiscal years we've ever had," Chief Investment Officer Ron Schmitz told the Joint Legislative Audit and Review Commission in July, adding that preliminary results in May and June "look a little better."

Investment income generates about two-thirds of the money necessary to fund current and future benefits for more than 772,000 public employees, retirees and others who have contributed to the VRS, the 18th-largest public retirement system in the country. The return on VRS investments for the first 10 months of the fiscal year — through April 30 — was 22.3%.

The Richmond Times-Dispatch said the strong market performance could offset a potential $39 million increase in projected employer contribution rates — paid by state and local governments to cover the long-term retirement obligations to their employees — because of a new assumption that employees will live longer after retirement, requiring more money to pay long-term pension benefits.

West: California

CalPERS said a strong stock market powered it to a 21.3% return on investments in the fiscal year that ended June 30, blowing away its 7% annual target.

Based on the preliminary results, CalPERS' portfolio value reached $469 billion, an $80 billion increase for the year, CalPERS announced.

However, the stellar return triggered CalPERS' 2015 risk mitigation policy for the first time. The way the policy works is that if investment returns outstrip the assumed annual rate of return, or discount rate, by at least two percentage points, a change in asset allocation is triggered. CalPERS exceeded the discount rate by more than 14 percentage points.

The purpose of the risk mitigation policy is to lessen the impact of possible future market downturns and add stability to the fund. When it is triggered, two things happen: The discount rate is automatically lowered, and costs rise to cover the adjustment in the return. According to a presentation distributed by CalPERS in June, "classic" member contribution rates are expected to remain unchanged, but local government employees hired after 2013 would have to contribute more toward their pensions.

The Sacramento Bee reported that the CalPERS Board of Administration will continue to review the discount rate during the rest of the calendar year.

"Our investment team has done an outstanding job of capturing strong returns in this very dynamic investment environment," said Theresa Taylor, chair of the CalPERS Investment Committee, told the Sacramento Bee. "These results prove that we have the right investment strategy in place to take full advantage of what the markets have to offer."

"But as pleased as we are with these great returns, let me emphasize that we don't count on this kind of investing environment every year. We know markets go up and down. As a long-term investor, our job is to make sure we have a carefully considered plan to strengthen our fund no matter the economic climate so that we can pay the benefits our members have earned," Taylor told the newspaper.

Calendar of Events 2021

August

August 22- 24
Public Pension Funding Forum
New York, New York

September

September 26-28
FALL Conference
Scottsdale, Arizona

October

October 20-22
Chief Officers Summit
San Francisco, California

The Monitor is published by
the National Conference on Public Employee Retirement Systems.
Website: www.NCPERS.org | E-mail: amanda@ncpers.org

research affiliates

ARTICLE

Predicting Equity Returns with Inflation

August 2021

AUTHORS

Jim Masturzo, CFA
Partner, CIO, Multi-Asset Strategies

Michele Mazzoleni, PhD*
Partner, Multi-Asset Strategies

**Corresponding author*

Conversations in the investment industry have been dominated by predictions about the path of the inflation rate and its implications for capital markets. In this article, we aim to turn these conversations upside-down. We propose two new investment signals, which we call inflation cycles and inflation surprises. We find that negative cycles and surprises predict higher equity returns in excess of the risk-free rate, and we use this predictability to design a new market-timing strategy that buys equities when inflation cycles and surprises are negative, and sells them otherwise. We also show that the predictability of these signals varies across equity sectors and exploit these differences to design a novel sector-rotating strategy.

Key Points

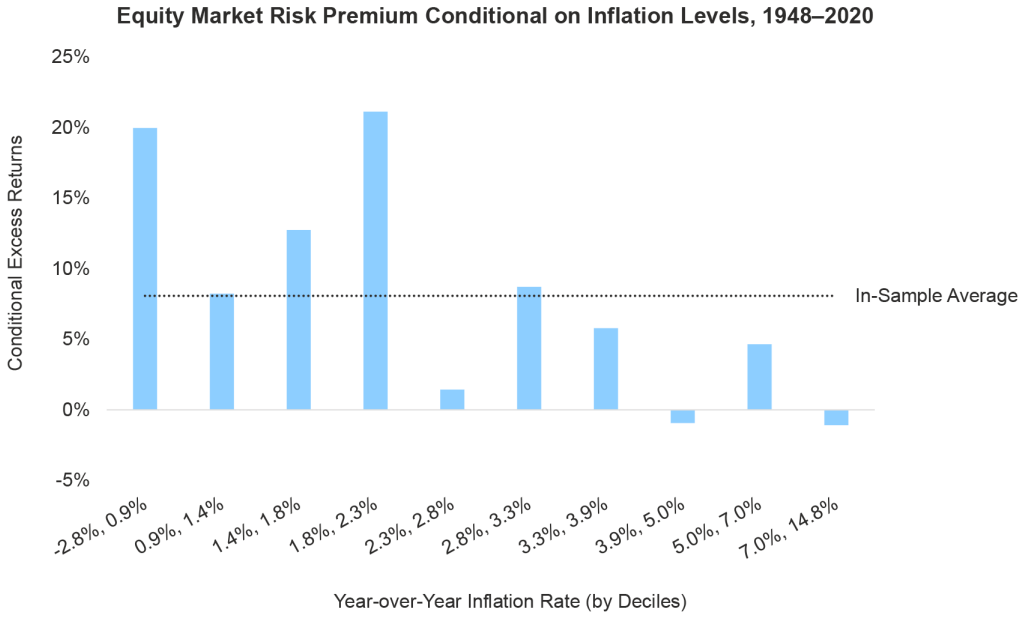
- Rather than predicting what will happen to inflation in the *future*—a particularly arduous and humbling task—we ask a simple question: What can *past* inflation dynamics tell us about the equity market's future returns?
- We propose two new investment signals, which we label inflation *cycles* and *surprises*, and document that negative cycles and surprises predict higher equity returns in excess of the risk-free rate. We employ this predictability to design a new market-timing strategy: buy equities when inflation cycles and surprises are negative, and sell them otherwise.
- We show that the predictability of cycles and surprises varies across equity sectors. We exploit these differences in predictability to design a novel sector-rotating strategy.
- We highlight how inflation signals have worked consistently well across decades in addition to inflation and market regimes. Unlike commodities, tactical strategies based on inflation signals appear to perform well during *both* positive and negative market environments.

Why Inflation Dynamics Should Predict Risk Premia

Multiple articles document that equity markets tend to underperform when inflation is relatively high.[1] To appreciate this relationship, we examine the average excess returns of the US stock market conditional on the contemporaneous year-over-year (YoY) inflation level for the period January 1948–December 2020. We find that when inflation is relatively high, the equity risk premium is relatively low, and is a statistically significant relationship. Unsurprisingly, today's renewed inflation fears are dominating conversations in the investment industry. The determination of governments and central banks to provide support to their economies is leaving investors wondering whether prices may spiral as they did in the 1970s when inflation reached double digits.

The negative relationship between inflation rates and the equity risk premium may be unexpected to some because equities are a claim on real assets and, therefore, should provide a hedge against inflation. Fama (1981) offers an explanation for this evidence, noting that inflation may be a proxy for the business cycle and that periods of high inflation can coincide with periods of subdued real activity (i.e., stagflation). Related to this argument, Bekaert and Wang (2010) note that the discount rate channel likely plays a major role because risk premia increase during recessions (i.e., investors become more risk averse). We build and expand on these arguments by leveraging the Phillips Curve, a key concept in economics that classically relates inflation to unemployment.

When inflation is relatively high, the equity risk premium is relatively low.



Note: The x-axis reports the YoY inflation rates by deciles (i.e., groups that represent 10% of the total observed rates). The y-axis reports the average equity returns in excess of the one-month Treasury bill conditional on the inflation deciles. For instance, when inflation was between −2.8% and 0.9%, the average equity risk premium was about 20%. The dashed line reports the in-sample average of the equity risk premium. Source: Research Affiliates, LLC, using data from Bureau of Labor Statistics database for All Items CPI (seasonally unadjusted series) and Kenneth French Data Library for equity returns in excess of one-month Treasury bill yields.

In its modern version, the Phillips Curve is a reduced-form equation that connects the current inflation rate to inflation expectations and the business cycle. By approximating inflation expectations with an average of past inflation rates, we can generalize the Phillips Curve as follows:

Current Inflation Rate ≅ Average of Past Inflation Rates + Output Gap

The Phillips Curve makes a simple point: Firms will react to changing expected costs of production. When costs are on the rise—for instance, when an economy is overheating—they trigger inflationary pressures as firms adjust their prices upward. The opposite should be true when aggregate production is relatively low. Accordingly, inflation dynamics should reflect a cyclical component related to the business cycle. More generally, the Phillips Curve is viewed as a key concept in guiding monetary policy. As explained by Federal Reserve Bank of New York President John Williams (2019): "The Phillips curve is the connective tissue between the Federal Reserve's dual mandate goals of maximum employment and price stability."

We leverage these insights from the economics literature and exploit them for a very different purpose—to predict asset prices. Our key analytical innovation is to interpret the difference between current and past inflation rates as a proxy for the state of the economy and employ it as a predictor of equities' excess returns:

Investment Signal = Current Inflation Rate – Average of Past Inflation Rates ≅ Output Gap

Underpinning our approach is the belief that the business cycle is related to investors' risk appetite. Consistent with our view, Cooper and Priestley (2009) document that the output gap is a significant predictor of the equity market's excess returns. If inflation dynamics are associated with real economic growth, they could also be a predictor of equities' excess returns. In addition, metrics such as the potential level of output or employment are difficult to estimate and subject to a large degree of uncertainty. Therefore, inflation can provide an easily computable proxy of the business cycle.

From the Phillips Curve to Inflation Signals

To switch from an economic concept to an actionable investment strategy, we first need to "calibrate" the Phillips Curve and specify the *Average of Past Inflation Rates* term. For instance, should the average be computed with a long look-back window (i.e., a long "memory" series) or a short window (i.e., short memory)? We consider two solutions that effectively span the spectrum of options and result in the following two signals: 1) an inflation cycle and 2) an inflation surprise.

Let the inflation rate be defined as the year-over-year change in All Items CPI (seasonally unadjusted). We obtain an inflation cycle by subtracting from the current inflation rate an exponentially weighted moving average (EWMA) of past inflation rates, which resembles a "smooth" 10-year moving average. Hence,

Inflation Cycle = Current Inflation Rate – EWMA of Past Inflation Rates

We derive an inflation surprise as the difference between the current inflation rate and the previous month's inflation rate:

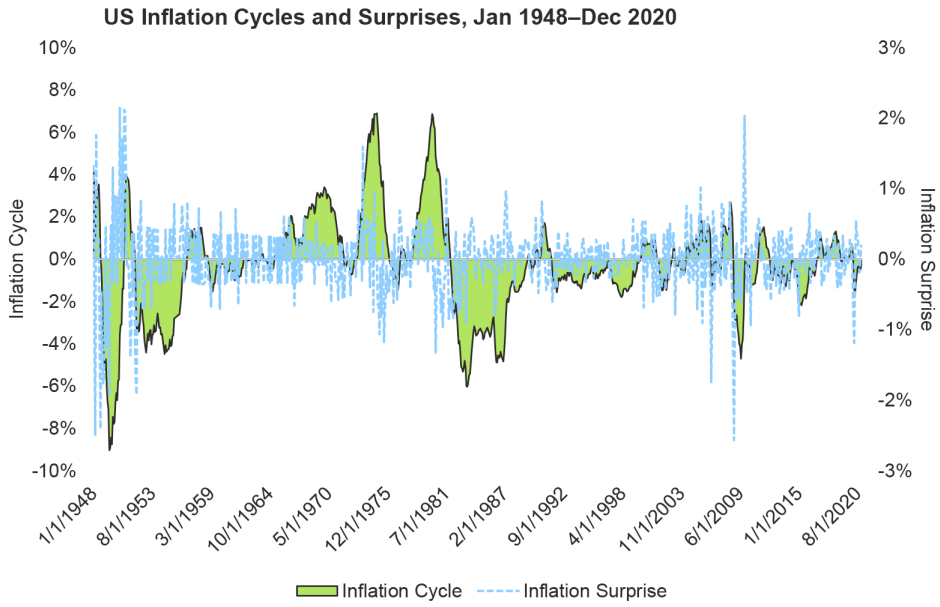
Inflation Surprise = Current Inflation Rate – Previous Month Inflation Rate

Intuitively, an inflation cycle is indicative of longer-term trends in the growth rate of inflation—the long-memory series—whereas an inflation surprise reflects "news" about inflation dynamics.[2] We provide formal definitions of these signals in Appendix A.

We choose to focus on both cycle and surprise metrics based on the well-documented fall in inflation persistence over the last few decades.[3] As noted by Williams (2019), this result implies that inflation surprises should no longer play a major role in driving inflation expectations and their effect should be of a transitory nature. Economists explain this phenomenon by arguing that inflation expectations have become "anchored" around the Federal Reserve's target. In particular, the anchoring of inflation expectations suggests that in recent years moving averages with a relatively long memory should coincide with a more accurate approximation of these expectations, whereas in the earlier part of our sample, averages with a shorter memory should associate with greater accuracy.

Plotting the cycle and surprise series from January 1948 through December 2020, we find the correlation between the two series is 0.09, which suggests they capture different aspects of inflation dynamics. The average of the two series is indistinguishable from zero, which implies that the persistent component of inflation has been "purged" from the time series.[4] We also note that inflation cycles are highly correlated with the original year-over-year inflation rate (correlation of 0.72). Indeed, periods of rising inflation tend to coincide with periods of relatively high inflation (on average 5.4%), and times of falling inflation tend to coincide with times of relatively low inflation (on average 2.1%).

The correlation between the US inflation cycles and inflation surprises is 0.09, suggesting they capture different aspects of inflation dynamics.



Note: The definitions of inflation cycles and surprises are reported in the text.
Source: Research Affiliates, LLC, based on data from the Bureau of Labor Statistics database for All Items CPI (seasonally unadjusted series).

Cooper and Priestly (2009) document that positive output gaps associate with future lower equity excess returns. Consistent with their work, we expect that positive inflation signals should also associate with lower risk premia. In addition, because of the changing nature of inflation dynamics, we expect inflation surprises to display stronger predictive power in the earlier part of our sample, whereas inflation cycles should perform better over the last three decades.

Timing the US Equity Market with Inflation Signals

We convert inflation cycles and surprises to investment signals by taking their sign: +1 if the cycle or surprise is positive (rising inflation), and –1 if it's negative (falling inflation). We call these s_t^c and s_t^s for cycles and surprises, respectively. Equipped with these two signals we simulate the returns of two self-financed portfolios that trade the US equity market. If a signal was negative during the previous month (falling inflation), our strategy buys equities and finances the position with the one-month Treasury bill.[5] If the signal was positive (rising inflation), the strategy sells the market and invests in the risk-free rate. The goal of the strategy is to profit by going long equities when inflation has been falling and by shorting them otherwise. The equity data start in January 1948 and are from the Kenneth French Data Library, while the inflation data are from the Bureau of Labor Statistics. We employ seasonally unadjusted All Item CPI, which is an unrevised series, and we lag it by a full calendar month to avoid look-ahead biases (we provide more details in Appendix B).

To test the strategy, we create portfolios based on the inflation-cycle and inflation-surprise signals, which we label Cycles Portfolio and Surprises Portfolio, and also create a portfolio that is their average (Average Portfolio). As points of reference, we compare the returns of these portfolios with the excess returns of a long position in the equity market as well as a time-series momentum portfolio (TSMOM), which goes long, neutral, or short based on the sign of trailing 1- and 12-month excess returns.6 The alpha of the

portfolios are calculated with respect to a simple long position in the equity market, and we report their statistical significance (*t*-Statistic). We summarize our evidence in the following table:

Timing the US Equity Market, Jan 1948–Dec 2020

	Cycles Portfolio	Surprises Portfolio	Average Portfolio	Stock Market	Time-Series Momentum
Mean Excess Return (Anlzd.)	7.2%	6.1%	7.0%	8.1%	5.5%
Risk (Annualized)	15.0%	14.6%	11.3%	14.9%	11.2%
Sharpe Ratio	0.48	0.42	0.62	0.54	0.49
Skew	-0.16	-0.06	0.14	-0.52	-0.12
Worst Month	-23.2%	-17.2%	-16.1%	-23.2%	-16.1%
Maximum Drawdown	-57.6%	-47.8%	-31.5%	-55.7%	-34.4%
Correlation to Market	0.05	0.11	0.12	1.00	0.02
Correlation to TSMOM	0.19	0.04	0.09	0.02	1.00
Alpha (Annualized)	6.8%	5.2%	6.3%	—	5.4%
Alpha *t*-Statistic	3.85	3.03	4.73	—	4.04

Note: We employ signals based on inflation cycles and surprises to time the US equity market (against the one-month Treasury bill). The construction of the portfolios is detailed in the text. We also report the performance of a time-series momentum portfolio, which employs the sign of trailing 1- and 12-month excess returns as a signal (as in Garg et al., 2021). For the market portfolio, the high excess return of the equity market coincided with rising valuation multiples, which may not persist in the future, adding an additional risk to the buy-and-hold alternative.
Source: Research Affiliates, LLC, based on data from the Robert Shiller database for All Items CPI (seasonally unadjusted series) and the Kenneth French Data Library for equity returns and one-month Treasury bills.

Our evidence suggests that inflation signals are indeed significant predictors of equities' excess returns. Both signals translate into statistically and economically meaningful alpha; the cycles signal delivered the strongest outperformance. In particular, the premium harvested from combining the inflation signals is comparable to the one earned by the well-documented time-series momentum portfolio, while the two strategies themselves are not highly correlated (0.09).

"Inflation signals are indeed significant predictors of equities' excess returns. Both signals (cycles and surprises) translate into statistically and economically meaningful alpha."

We highlight how the inflation signals capture different dynamics of the equity market. The correlation between the two tactical portfolios stands at only 0.02, so the Average Portfolio delivers higher risk-adjusted excess returns. In addition, the "lives" of the cycle and surprise signals are quite different. By construction, inflation cycles tend to persist over time, so the decay of the signal is relatively slow. In contrast, the decay of inflation surprises is much faster, because the signal displays little persistence, even over a monthly horizon.

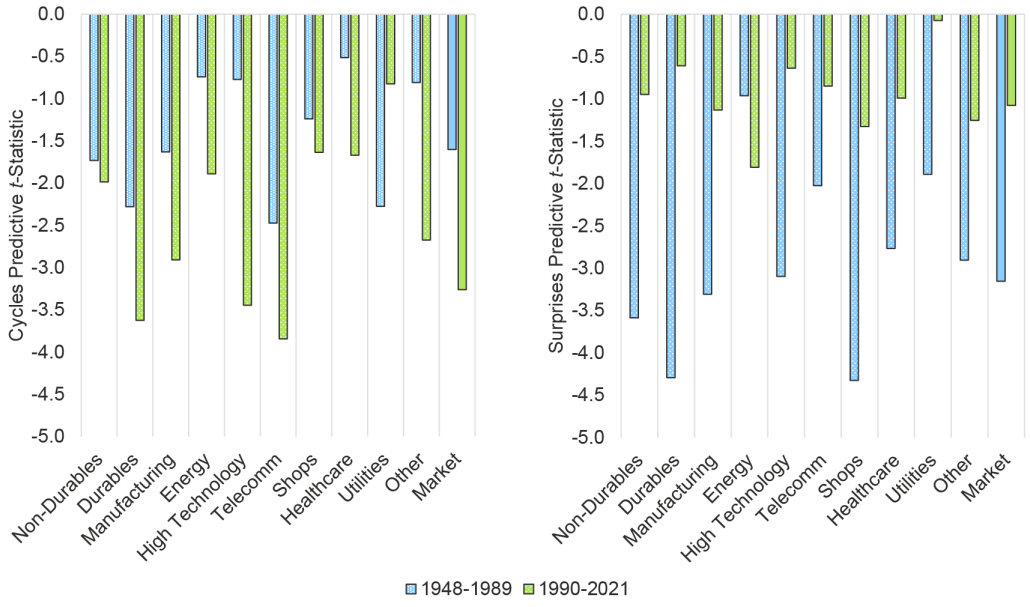
Timing US Equity Sectors with Inflation Signals

Inspired by our market-level results, we move to a finer level of analysis by investing in individual equity sectors. Our prior is that different sectors should display different sensitivities (betas) to inflation signals and that these differences should translate into different performances across inflation regimes. Whereas all sectors may struggle following rising inflation rates, as Neville et al. (2021) document, some sectors may struggle more than others. The evidence shows exactly that.

We summarize the forecasting power of the cycle and surprise metrics across 10 sectors as well as the aggregate market and across two periods (before and after 1990).[7] For each sector *j* and the market, we run individual regressions of excess returns R^j_{t+1} on the signals of cycles (s^c_t) or surprises (s^s_t). We then report the *t*-statistic associated with these predictive relationships. As expected, both inflation signals are negatively associated with future excess returns across all sectors, meaning rising inflation corresponds to falling returns.

Rising inflation corresponds to falling returns across sectors and subperiods.

Forecasting with Inflation Signals across Sectors and Periods, 1948–1989 and 1990–May 2021



Notes: For each sector *j* and the aggregate market, we estimate the following models: $R^j_{t+1} = \gamma^j_0 + \gamma^j_1 s^c_t + \varepsilon^j_{t+1}$ and $R^j_{t+1} = \delta^j_0 + \delta^j_1 s^s_t + \mu^j_{t+1}$. We then report the *t*-statistics associated with the parameters γ^j_1 and δ^j_1.

Source: Research Affiliates, LLC, based on data from the Bureau of Labor Statistics database for All Items CPI (seasonally unadjusted series) and the Kenneth French Data Library for market and sector excess returns (constructed by subtracting the one-month Treasury bill return).

As hypothesized in the previous section, the predictability of cycles and surprises does indeed vary across decades. In recent years, inflation cycles have become a stronger predictor, whereas surprises have lost the lion's share of their predictive power. These patterns are present across the majority of the sectors. We infer that, for the most recent decades, inflation expectations can be better approximated by employing moving averages with longer look-back windows; the opposite is true for the period of the 1970s and 1980s.

We also highlight some intuitive differences across sectors: the predictive power tends to be the strongest for durables, which includes the automobile sector, and least successful for the energy-related sectors: energy and utilities. In general, these patterns can be explained via a *complementarity channel*. Inflation measures the changing price of different goods and services produced by different industries. Some of them are complementary goods, such as gasoline and cars, for which a price increase in one good leads to a decrease in the demand of the other good (an effect known as negative cross-elasticity of demand). We argue that the most predictable industries display the highest degree of complementarity to energy goods and services, and therefore struggle the most

during periods of rising inflation. Yet, exceptions may occur, as in the case of tech firms, for which the *duration channel* is the most likely driver of sensitivity to inflation.

This dispersion of predictability across sectors motivates us to test a novel sector-rotation strategy. To do so, we focus on the average of the cycles and surprises signals ($\bar{s}_t$), which can have values of –1 (both are falling), 1 (both or rising), or 0 (mixed). Our goal is to assess whether an investor could learn and exploit the dispersion in predictability in order to maximize the information contained by inflation-based signals. Hence, the design of our portfolio exercise is as follows:

Step 1. Every month using data from the previous 20 years, and for each sector, we estimate the predictive beta β^j, where $R^j_{t+1} = \alpha^j + \beta^j \bar{s}_t + \mu^j_t$.

Step 2. We rank the betas for all sectors and generate 10 corresponding buckets: bucket #1 includes the sector with the highest (least negative) β^j each period, whereas bucket #10 includes the sector with the lowest (most negative) beta.

Step 3. For each bucket, we implement the following strategy: if $\bar{s}_t > 0$, sell the bucket and invest the proceeds in the one-month Treasury bill; if $\bar{s}_t < 0$, the strategy does the opposite; and if $\bar{s}_t = 0$, the strategy is "out" of the market (it simply earns the risk-free rate).

In the following table, we report the premia earned by the average signal, $\bar{s}_t$, across buckets sorted by their trailing predictive beta. In the last column, we also report the L-H portfolio, which stands for low-beta minus high-beta portfolio. The portfolio is computed by taking the average of the three tactical portfolios with the most negative predictive betas—#8, #9, and #10—and subtracting the average of the three tactical portfolios with the least negative predictive betas (#1, #2, and #3). In brief, we do notice a monotonic relationship between the beta ranks and the performance of the timing strategies. The skewness, worst month, and maximum drawdown statistics, which capture the tail properties of the strategies, also tend to improve with lower-ranked buckets. Hence, investors can successfully guess in advance for which sectors the timing strategy is expected to deliver the best returns.

Timing US Equity Sectors, Jan 1948–Dec 2020

	Buckets Ranked by Predictive Betas										
	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	L-H
Mean Excess Return (Anlzd.)	4.7%	5.1%	6.3%	6.4%	6.4%	7.0%	7.2%	8.4%	8.2%	10.4%	3.6%
Risk (Annualized)	11.7%	11.4%	12.5%	12.3%	13.1%	12.9%	13.6%	14.9%	14.8%	15.0%	8.9%
Sharpe Ratio	0.40	0.45	0.50	0.52	0.49	0.54	0.53	0.56	0.55	0.69	0.41
Skew	0.07	0.42	-0.32	0.08	0.25	-0.21	0.39	1.79	0.49	0.97	1.35
Worst Month	-24%	-13%	-29%	-20%	-17%	-22%	-18%	-25%	-23%	-21%	-11%
Maximum Drawdown	-64%	-43%	-41%	-39%	-34%	-40%	-41%	-41%	-36%	-30%	-26%
Correlation to Market	-0.05	0.00	-0.06	0.00	-0.04	0.01	-0.02	-0.07	0.02	-0.06	-0.02
Alpha (Annualized)	5.0%	5.1%	6.7%	6.4%	6.7%	6.9%	7.3%	8.9%	8.0%	10.9%	3.7%
Alpha *t*-Statistic	3.62	3.75	4.51	4.39	4.31	4.53	4.55	5.07	4.59	6.15	3.53

Note: We employ $\bar{s}_t$ to time the allocation to 10 equity sectors. The construction of the portfolios and the buckets is detailed in the text. We also report the performance of the L-H portfolio, which is constructed by taking the average of portfolios #8, #9, and #10 and subtracting the average of portfolios #1, #2, and #3.
Source: Research Affiliates, LLC, based on data from the Robert Shiller database for All Items CPI (seasonally unadjusted series) and the Kenneth French Data Library for equity returns and one-month Treasury bills.

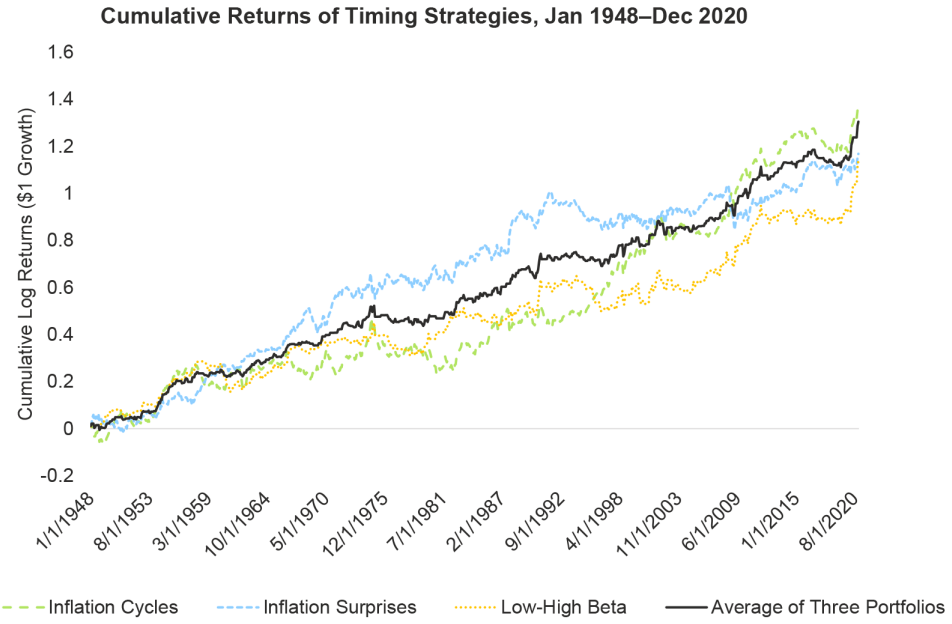
The L-H portfolio shows that these insights can be translated into a meaningful sector-rotation strategy. When inflation is trending downward, the L-H portfolio buys sectors with the lowest predictive betas and sells sectors with the highest betas, and it does the opposite when inflation is on the rise. This strategy is cross-sectional in nature—no use of the one-month Treasury bill—and delivers a statistically meaningful alpha with respect to the market.

Hedging Properties of Inflation Signals

In this last section, we document that inflation signals tend to provide protection against the worst economic times, regardless of whether they are driven by inflationary or deflationary pressures.

We plot the cumulative excess returns of three tactical portfolios—the Cycles and Surprises portfolios and the L-H portfolio we describe in our sector-rotation strategy—and their weighted average. In a nutshell, their performance has been consistent across seven decades. The correlations of the three portfolios are about or below 0.30, indicating that the diversified average portfolio delivers a particularly solid performance.

Performance of the three timing strategies we test has been consistent across seven decades.

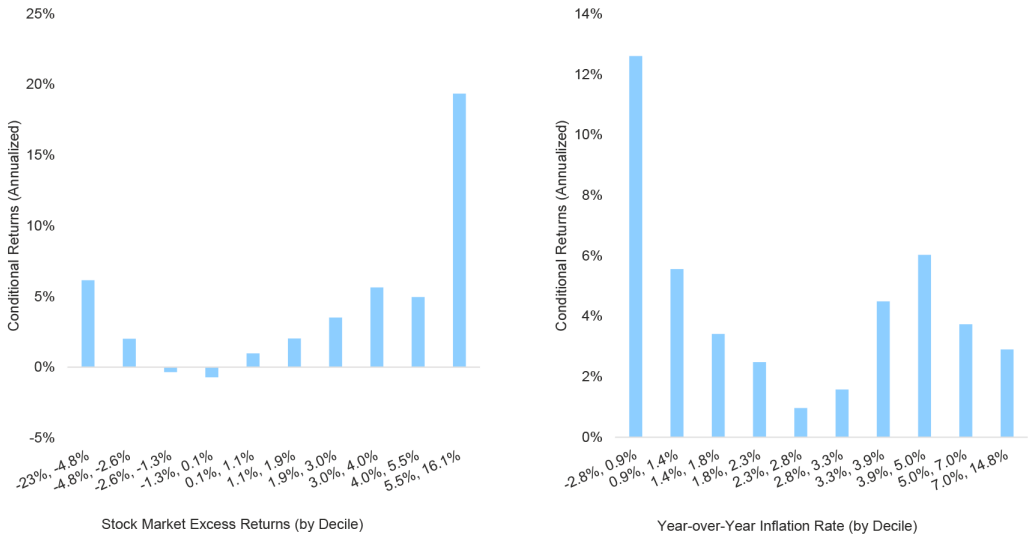


Note: We report the cumulative log returns from investing $1 in the Cycles and Surprises portfolios and the L-H portfolio. The average portfolio is constructed by taking a weighted-average, in which each portfolio is first scaled to 10% in-sample volatility.
Source: Research Affiliates, LLC, based on data from the Robert Shiller database for All Items CPI (seasonally unadjusted series) and the Kenneth French Data Library for equity returns and one-month Treasury bills.

Next, we calculate the excess returns of the average of the three portfolios, conditional on the stock market's contemporaneous performance and the year-over-year inflation rate. The signals provide remarkable protection against market tail events—short when the market tanks, and long when it rallies—as well as offering consistent performance across inflation regimes.[8] Similar to trend-following strategies, portfolios based on inflation signals display a payoff profile akin to that of an option straddle on the market. More generally, inflation signals tend to pay off during the most volatile economic times.

Inflation signals tend to pay off during the most volatile economic times.

Strategy Returns Conditional on Market and Inflation Regimes, Jan 1948–Dec 2020



Note: The conditional returns are those of the Average Portfolio. For the chart on the left, the x-axis reports stock market excess returns by deciles (i.e., groups that represent 10% of the total observed rates). The y-axis reports the average returns of the average portfolio conditional on the stock market deciles. For instance, when the stock market lost between 23% and 4.8%, the average strategy earned more than a 5% return in excess of cash. For the chart on the right, the YoY inflation rate is used to determine the deciles.
Source: Research Affiliates, LLC, based on data from the Robert Shiller database for All Items CPI (seasonally unadjusted series) and the Kenneth French Data Library for equity returns and one-month Treasury bills.

We interpret the hedging properties of inflation signals by leveraging their underlying economic motivation—the Phillips Curve. Our research shows that positive values of the average of the cycle and surprise signals tends to predict economic contractions over the subsequent year, whereas negative values tend to predict economic expansions. Hence, the average signal should deliver long positions when a new bull market is established, whereas it should recommend short positions during bear markets.

Conclusion

In this article, we document that two derived US inflation variables—inflation cycles and inflation surprises—have been robust predictors of US equity returns. We demonstrate that this predictability translates into new sources of alpha that investors can seek to harvest. In particular, we highlight the signals' ability to perform during the worst times in the stock market without missing upside opportunities.

The tail-hedging properties derived from inflation signals are particularly desirable. Hedging positive inflation shocks can be costly when inflation is low.[9] For example, strategic allocations to alternative assets, such as commodities, or absolute return strategies as a way to protect against inflation have not all fared well in recent years, with commodity indices down more than 30% versus their 2011 levels. As a result, many asset owners may not be able to stay the course if inflation fails to materialize in the medium term. We find that inflation signals can provide a new tool for investors who wish to hedge their portfolios against inflationary and deflationary risks.

"The tail-hedging properties derived from inflation signals are particularly desirable."

Appendix A: Extracting Signals from the Phillips Curve

The Phillips Curve is a reduced-form equation that connects the current inflation rate to inflation expectations and the business cycle. To empirically fit the Phillips Curve, economists found success by assuming that inflation expectations are approximated by a weighted-average of past inflation rates (the so-called accelerationist version of the curve). This approach follows the steps of the constant-gain learning literature and is consistent with the modeling approaches of the inflation- and bond-forecasting literature (e.g., Faust and Wright, 2013, and Cieslak and Povala, 2015).

Hence, let π_t^i denote the year-over-year inflation rate of index *i* measured on month *t;* define y_t as a generic term representing the state of the economy (such as the output or unemployment gap); and define a weighted-average of past inflation rates, $\bar{\pi}_t$, as

$$\bar{\pi}_t = (1 - v) \sum_{n=0}^{t-1} v^n \pi_{t-n}$$

We can rewrite the Phillips Curve as follows:

$$\pi_t - \bar{\pi}_{t-1} = \delta + \rho y_t$$

where δ and ρ are parameters that further model the relationship. Our insight is that the difference, $\pi - \bar{\pi}_{t-1}$, can be interpreted as a proxy for the state of the economy (y_t in our equation) and can be employed as a predictor of equities' excess returns.

To translate an economic concept into an actionable investment strategy, we need to choose the starting month of the sample as well as the parameter *v* of the weighted-moving average, $\bar{\pi}_t$. We solve the question of the starting sample by simply truncating the sum at 120 months, so we effectively compute a weighted average of past inflation rates over a 10-year rolling window.

Pertaining to the calibration of the *v* parameter, we consider two solutions that span the spectrum of options between 0 and 1. First, we set $\bar{\pi}_{t-1} = \pi_{t-1}$, from which it trivially follows that $\pi_t - \bar{\pi}_{t-1} = \pi_t - \pi_{t-1}$. In this case, the inflation differential amounts to what we call an *inflation surprise*, the monthly change in year-over-year inflation rates. This signal is almost indistinguishable from a calibration of *v* that approaches zero. Second, we set *v* = 0.99, for which the term $\bar{\pi}_t$ resembles a smoother 10-year moving average. Given its slow-moving nature, we label this definition of $\pi_t - \bar{\pi}_{t-1}$ an *inflation cycle*. When setting *v* = 0.99, we ensure that the sum of the weights of the moving average adds up to 1.

Appendix B: Details on Inflation Data

With respect to the other macro variables, the headline inflation index (CPI-U) has the key advantage of not being subject to revisions. As Croushore and Stark (1999) explain, the CPI is "revised only through changes in seasonal adjustment factors or changes in the base year." As they point out, the seasonally unadjusted CPI series can be employed for forecasting purposes without concern regarding revisions.

Over the last 20 years, inflation has been typically released during or at the end of the second week of a month. Earlier in the sample, inflation data were released with a slightly greater delay of about three or four weeks. For instance, the year 1953 is the first year for which we have a historical record available.[10] During that year, inflation statistics were released between the 22nd and 27th of the subsequent month. Hence, lagging inflation data by a full calendar month should alleviate concerns of look-ahead biases.

Throughout our research, we utilize only (seasonally) unadjusted CPI data obtained from the Bureau of Labor Statistics website. The series for headline inflation starts in January 1913. In our portfolio tests, we lag the inflation series by a full calendar month in order to generate our signals.

Endnotes

1. The literature that has documented this empirical regularity includes Fama and Schwert (1977), Fama (1981), Lin (2009), Bekaert and Wang (2010), Bekaert and Engstrom (2010), and Neville et al. (2021). The selected index in these studies is the All Items Consumer Price Index (CPI), which offers the longest series of data (in contrast to breakeven inflation rates, whose history is relatively short). In this article, we follow the literature and exclusively focus on All Items CPI (seasonally unadjusted series).

2. To compute cycles and surprises, we could employ surveys to approximate investors' inflation expectations. On the one hand, surveys have the benefit of being forward looking in nature and unrelated to a particular model. On the other hand, they tend to display a relatively short history and may be released at lower frequencies. In general, our research finds that computing cycles and surprises with moving averages or surveys leads to very similar signals. Hence, given the longer history and higher frequency of metrics based on trailing data, we opt for computing cycles and surprises by employing moving averages. Market-based expectation signals, such as breakeven inflation and inflation swaps, also suffer from short histories as well as embedded risk premia.

3. For instance, the autocorrelation of the quarter-over-quarter rate of inflation was 0.63 over the period January 1948–December 1989. It fell to −0.11 over the period January 1990–May 2021 (computed using quarterly frequency data).

4. Related to this point, we note that the evidence we present that the equity market has underperformed when inflation was relatively high is not obviously translatable to an investment strategy. Indeed, the mean of the inflation rate has varied across decades as has the notion of "high" and "low" inflation. A sustained rate of 5% inflation is arguably high in today's world, but was not out of the ordinary just 30 years ago. Inflation cycles and surprises are related to the *direction* of the inflation rate, rather than to its *level*.

5. Regarding the inflation-surprise signal, we observe a number of instances earlier in the sample when the signal takes the value of zero (i.e., no change in the YoY inflation rate from one month to the other). In these cases, our strategy simply stays out of the market and remains invested in the one-month Treasury bill, so excess returns for the month are simply 0%. The construction of the time-series momentum portfolio follows the signal-averaging approach outlined by Garg et al. (2021). Therefore, the portfolio takes a position when the fast and slow momentum signals are in agreement and stays out of the market when they are in disagreement.

6. Time-series momentum (or trend-following) is a well-documented phenomenon across financial markets and is at the core of the CTA/Managed Futures industry (e.g., Moskowitz et al., 2012). In its simplest form, the strategy goes long an asset and short cash if the trailing excess returns of the asset are positive, and it does the opposite otherwise. In this article, we employ trailing 12-month excess returns to determine portfolio positions, which constitutes a common benchmark in the literature.

7. The choice of 10 sectors is motivated by the desire to approximate the financial industry's own definition of sectors (see, for instance, the Global Industry Classification System by MSCI). We note, however, that our results are robust to choosing a larger universe of sectors.

8. The Average Portfolio's positions are inversely related to inflation (positive when inflation is relatively low, and negative otherwise). Thus, the positive excess returns earned by the Average Portfolio when inflation is in the top four deciles (above 3.3%) are obtained by being, on average, net short the equity market.

9. Similar to an insurance premium, the investor pays a premium in "normal" times to protect their portfolio against an adverse event.

10. Historical release data are available at https://www.bls.gov/bls/histreleasedates.pdf.

References

Bekaert, Geert, and Eric Engstrom. 2010. "Inflation and the Stock Market: Understanding the 'Fed Model'." *Journal of Monetary Economics*, vol. 57, no. 3 (April):278–294.

Bekaert, Geert, and Xiaozheng Wang. 2010. "Inflation Risk and the Inflation Risk Premium." *Economic Policy,* vol. 25, no 64 (October):755–806.

Cieslak, Anna, and Pavol Povala. 2015. "Expected Returns in Treasury Bonds." *Review of Financial Studies*, vol. 28, no. 10 (October):2859–2901.

Cooper, Ilan, and Richard Priestley. 2009. "Time-Varying Risk Premiums and the Output Gap." *Review of Financial Studies*, vol. 22, no. 7 (July):2801–2833.

Croushore, Dean, and Tom Stark. 1999. "A Real-Time Data Set for Macroeconomists." Working paper 99-4, Federal Reserve Bank of Philadelphia (June).

Fama, Eugene. 1981. "Stock Returns, Real Activity, Inflation, and Money." *American Economic Review,* vol. 71, no. 4 (September):545–565.

Fama, Eugene, and G. William Schwert. 1977. "Asset Returns and Inflation." *Journal of Financial Economics*, vol. 5, no. 2 (November):115–146.

Faust, Jon, and Jonathan Wright. 2013. "Forecasting Inflation." In *Handbook of Economic Forecasting*, edited by Graham Elliott and Allan Timmermann, vol. 2A, 2–56. ScienceDirect.

Garg, Ashish, Christian Goulding, Campbell Harvey, and Michele Mazzoleni. 2021. "Momentum Turning Points." Working paper (January 23). Available on SSRN.

Lin, Shu-Chin. 2009. "Inflation and Real Stock Returns Revisited." *Economic Inquiry*, vol. 47, no. 4 (October):783–795.

Moskowitz, Tobias, Yao Hua Ooi, and Lasse Pedersen. 2012. "Time Series Momentum." *Journal of Financial Economics*, vol. 104, no. 2 (May):228–250.

Neville Henry, Teun Draaisma, Ben Funnell, Campbell Harvey, and Otto Van Hemert. 2021. "The Best Strategies for Inflationary Times." Working paper (May 25). Available on SSRN.

Williams, John. 2019. "Discussion of 'Prospects for Inflation in a High Pressure Economy: Is the Phillips Curve Dead or Is It Just Hibernating?'" by Peter Hooper, Frederic S. Mishkin, and Amir Sufi." Remarks at the US Monetary Policy Forum, New York City (February 22).

The material contained in this document is for general information purposes only. It is not intended as an offer or a solicitation for the purchase and/or sale of any security, derivative, commodity, or financial instrument, nor is it advice or a recommendation to enter into any transaction. Research results relate only to a hypothetical model of past performance (i.e., a simulation) and not to actual results or historical data of any asset management product. Hypothetical investor accounts depicted are not representative of actual client accounts. No allowance has been made for trading costs or management fees, which would reduce investment performance. Actual investment results will differ. Simulated data may have under-or-over compensated for the impact, if any, of certain market factors. Simulated returns may not reflect the impact that material economic and market factors might have had on the advisor's decision-making if the advisor were actually managing clients' money. Simulated data is subject to the fact that it is designed with the benefit of hindsight. Simulated returns carry the risk that actual performance is not as depicted due to inaccurate predictive modeling. Simulated returns cannot predict how an investment strategy will perform in the future. Simulated returns should not be considered indicative of the skill of the advisor. Investors may experience loss of all or some of their investment. Index returns represent backtested performance based on rules used in the creation of the index, are not a guarantee of future performance, and are not indicative of any specific investment. Indexes are not managed investment products and cannot be invested in directly. This material is based on information that is considered to be reliable, but Research Affiliates, LLC and its related entities (collectively "Research Affiliates") make this information available on an "as is" basis without a duty to update, make warranties, express or implied, regarding the accuracy of the information contained herein. Research Affiliates is not responsible for any errors or omissions or for results obtained from the use of this information. Nothing contained in this material is intended to constitute legal, tax, securities, financial or investment advice, nor an opinion regarding the appropriateness of any investment. The information contained in this material should not be acted upon without obtaining advice from a licensed professional. Research Affiliates, LLC, is an investment adviser registered under the Investment Advisors Act of 1940 with the U.S. Securities and Exchange Commission (SEC). Our registration as an investment adviser does not imply a certain level of skill or training.

Investors should be aware of the risks associated with data sources and quantitative processes used to create the content contained herein or the investment management process. Errors may exist in data acquired from third party vendors, the construction or coding of indices or model portfolios, and the construction of the spreadsheets, results or information provided. Research Affiliates takes reasonable steps to eliminate or mitigate errors and to identify data and process errors, so as to minimize the potential impact of such errors; however, Research Affiliates cannot guarantee that such errors will not occur. Use of this material is conditioned upon, and evidence of, the user's full release of Research Affiliates from any liability or responsibility for any damages that may result from any errors herein.

The trademarks Fundamental Index™, RAFI™, Research Affiliates Equity™, RAE™, and the Research Affiliates™ trademark and corporate name and all related logos are the exclusive intellectual property of Research Affiliates, LLC and in some cases are registered trademarks in the U.S. and other countries. Various features of the Fundamental Index™ methodology, including an accounting data-based non-capitalization data processing system and method for creating and weighting an index of securities, are protected by various patents, and patent-pending intellectual property of Research Affiliates, LLC. (See all applicable US Patents, Patent Publications, Patent Pending intellectual property and protected trademarks located at http://www.researchaffiliates.com/Pages/legal.aspx, which are fully incorporated herein.) Any use of these trademarks, logos, patented or patent pending methodologies without the prior written permission of Research Affiliates, LLC, is expressly prohibited. Research Affiliates, LLC, reserves the right to take any and all necessary action to preserve all of its rights, title, and interest in and to these marks, patents or pending patents.

The views and opinions expressed are those of the author and not necessarily those of Research Affiliates, LLC. The opinions are subject to change without notice.

AMERICAS

Research Affiliates, LLC
620 Newport Center Drive, Suite 900
Newport Beach, California 92660
USA

+1.949.325.8700
info@researchaffiliates.com

EUROPE

Research Affiliates Global Advisors (Europe) Ltd
16 Berkeley Street
London W1J 8DZ
United Kingdom

+44 (0) 203 929 9880
uk@researchaffiliates.com

AUSTRALASIA

+61.2.9160.2290
australia@researchaffiliates.com

FUNDfire

Pensions Weigh Risks and Opportunities of Chinese Investments

By Bridget Hickey August 31, 2021

U.S. pensions are grappling with the potential risks and rewards of Chinese investments, as some seek out targeted opportunities, and others allow their managers to include exposure in broader emerging markets or bond mandates. But at some funds, trustees are raising objections.

“The default position for most [U.S. pension funds] is what's in the indexes," says **Jay Love**, partner and U.S. investments leader at **Mercer**. "A few pensions have probably significantly restricted what their managers can do. On the other side, some see an opportunity and want to increase investments.”

Trustees for the $5.9 billion **Fresno County Employees’ Retirement Association**, known as FCERA, provide one example of pension fiduciaries considering limits on their fund’s exposure to China. The board is weighing a request by the pension’s global sovereign bond manager, **Brandywine**, to invest FCERA’s account in Chinese government bonds. The manager’s strategy is benchmarked against the FTSE World Government Bond Index, which will include Chinese government bonds starting in October.

Brandywine is seeking permission to allocate up to 25% of the global sovereign bond mandate it manages for FCERA in Chinese bonds and up to 25% in Chinese currency. The pension had roughly $270 million managed by Brandywine, as of March 31. “What makes China bonds interesting to us is the behavior of Chinese yields relative to other bond markets,” Brandywine wrote to FCERA. “While developed market yields have collapsed to historic lows since the Great Financial Crisis, Chinese yields have remained rangebound at more attractive levels.”

But at a meeting on Aug. 4, several TCERA board members raised concerns about the Chinese government’s approach to free markets and currency manipulation. One questioned whether a 25% allocation was too high, while others supported making such an investment.

"If we restrict our managers, we're going to tell them to go out and cage fight with one hand tied behind their back,” said trustee **Steven Jolly**. “And then we're gonna judge

them and say, well, you're underperforming."

The board's decision was ultimately tabled for further discussion. The pension's CIO, **Douglas Kidd**, did not respond to a request for comment.

Interest from global pensions in Chinese government debt appears to be picking up, driven by low yields elsewhere. A recent report from State Street found that 27% of survey respondents are prioritizing the development of a dedicated fixed income exposure for China over the next three years. The report surveyed 358 global institutional investors in May, including pension funds, wealth managers, asset managers and sovereign wealth funds. However, interest from U.S. pensions in China-specific bond mandates may be muted.

"We really haven't seen any client ask us to have a dedicated China-only bond mandate," said **Amy Hsiang**, managing principal and director of public markets manager research at **Meketa**. **"**We've had some pensions that are very worried about it, they'd rather just strip out that portion, knowing that China's going to take up a bigger portion of the index."

Trustees for the $7.1 **Ventura County Employees' Retirement System**, known as VCERA, have also expressed qualms about investing in China.

At a meeting on July 26, trustees committed $25 million to **Bain Capital Credit**'s Special Situations Asia Fund II, but not before several board members raised concerns about the fund's consideration of Chinese investments.

"It saddens me to hear Bain Capital urge us to invest money in a country owned by the communist Chinese party in exchange for promised higher returns," said trustee **Steven Hintz**. "If Bain wants to keep offering this kind of investment, I'll never vote to have them come back and present to us."

Allan Martin, a partner at the pension's consultant **NEPC**, responded by saying that given the size of the Chinese economy and its growth, VCERA would forgo return potential "if the board chooses to ignore half the opportunities in the world."

A second board member, **Arthur Goulet**, also raised concerns about whether the Chinese government could nationalize VCERA's investments.

Jeff Robinson, a managing director at Bain Capital Credit, responded that there has been significant foreign investment in China over the last 20 to 30 years, facilitated by a robust court system.

Related Content

August 12, 2021
Investors Bet on Emerging Markets Debt

February 22, 2021
US Pensions Stick with China, Despite Being Bitten by Ant

May 26, 2020
Fla. Republicans Push Pension to Scrutinize Chinese Holdings

"I can't argue with some of the uncertainty that you point out," he told Goulet, but emphasized that Bain's investment decisions aim to mitigate risk through portfolio construction, the nature of the security, and the duration of the investment, which is usually three to five years.

"For those risks, we're getting paid a significant premium for the quality of the assets versus in almost any other jurisdiction," he said. "We can get high teens or low 20s senior secured rate of return for an asset that in the U.S. or Europe would be charging 3% or 4%."

VCERA's Bain Capital commitment and trustee concerns were first reported by MandateWire.

Other pensions have been drawn to China's private markets, attracted by the potential for big returns. The $38.11 billion **Texas County & District Retirement System**, for example, has made four investments targeting Chinese private equity this year.

The pension committed $60 million to tech-focused manager **Gaocheng Capital**'s Gaocheng Fund II on June 30 and $50 million across to funds by venture capital firm **Sky9 Capital** on July 23, according to a list of recent investments on the pension's website. Earlier this year, the fund committed $40 million to two **Source Code Capital** funds and $30 million to a joint fund managed by **IDG Capital** and **Breyer Capital**.

MandateWire first reported the pension's Chinese private equity commitments. The pension's CIO, **Casey Wolf,** did not respond to a request for comment.

Pensions are right to weigh up the risks and rewards, says Love.

"We're seeing a lot of great potential for strong results from China," he says. "Mercer's view is that there are significant rewards here and the risks can be managed, but the risks are definitely present and need to be considered."

"It's just a matter of balancing the two sides," he adds.

*Contact the reporter on this story at **bhickey@fundfire.com** or 212-542-1248.*

USA: What should you ask your actuary?

As trustees or staff members of a pension plan, you probably interact with actuaries several times a year.

The actuaries rely on the information you provide to analyze the financial health of your plans and identify the biggest financial risks to your system. As an insider, you are privy to the workings of your system better than outsiders, so the more detailed information you share with the actuaries, the more meaningful their analysis will be.

In order to prepare an annual valuation of your plan, the actuaries rely on you to share information about the demographics of your covered members, your benefits structure and workforce trends, such as anticipated hiring surges or hiring freezes, and contribution levels. On top of that, they overlay other information such as the expected rate of inflation, trends in interest rates and investment returns to build assumptions about the trajectory of your plans.

To ensure that your interactions with actuaries help you make the best decisions about managing the plans, we believe that it's important that you not only share information with your actuaries, but also ask questions. We've developed a list of questions to get you started. We hope that our list along with some ideas of areas to consider will prompt you to think of other questions.

For example, if you know that there is a hiring freeze, ask how that will impact your pension

indirectly affect the plan.

You might find it easiest to start by asking the actuaries about the key assumptions they have built into their models and how they arrived at them. Ask about the degree that each assumption is based on the experience and characteristics of *your* system. For example, the extent to which your mortality assumptions are set on your population varies significantly by system, ranging from being based solely on a plan's experience to being based entirely on the general population without reflecting your plan's demographics and experience.

To get more value out of the work your actuary does, we also suggest you ask about the recent experience of the plan. How has your plan's recent experience compared with the assumptions? And how has this affected your liabilities and contribution requirements?

Also inquire about the actuarial projections for your plan. What is the expected trajectory of your plan's funding status and contribution requirements assuming your plan meets all the assumptions? A good follow-up question is how could these change if the experience deviates from these assumptions?

You may also find it helpful to ask the actuaries to separately discuss the legacy obligations of the system and the ongoing risks to better understand the trajectory of the system.

Don't hesitate to interrupt your actuary's presentations to ask him or her to explain actuarial terms that you don't understand. Not only will this help you understand the actuary, but it will also help your actuary understand what information is useful to you as the fiduciaries and stewards of the system.

Some sample questions:

- To what degree are each of the assumptions used in the valuation set by the experience of our system?
- What has been the recent experience compared to the assumptions and how have these affected our funded status and contribution requirements? Which assumptions are the most significant?
- What is the projected status of the system in the long term? What are the biggest risks that could result in these projections changing?

- What actuarial practices, such as audits or experience studies should we consider that we aren't already doing?
- What are the advantages and disadvantages of lowering the expected rate of return on investments while keeping the existing asset allocation intact?
- Are there any ways that we can preserve the benefits while lowering costs or reducing risk?
- How should we think about the existing or legacy liabilities of the plan and the ongoing risks of the plan?

Asking questions will strengthen your relationship with the actuary and help both of you deepen your understanding of your plan.

By Elizabeth Wiley

FSA, FCA, MAAA, EA
Consulting Actuary, Cheiron

Read more

More news

UK: Healthcare investment: more than just big pharma!

Historically, when investors thought of healthcare in the investment world,...

READ MORE

Mexico: Outsourcing is banned and companies must comply with new regulations fast to avoid hefty fines

In April 2021, a modification to the Federal Labor Law...

READ MORE

USA: From Longevity Leader to Longevity Laggard

According to preliminary CDC data, COVID-19 reduced U.S. life expectancy...

READ MORE

PORTFOLIO INSIGHTS

How investors can reach their 7% return target

July 2021

IN BRIEF

- Traditional investment approaches are unlikely to meet investors' long-term goals in the coming years. Simply taking on more market risk will not suffice.
- There's no single silver bullet here. Yet investors can reach a 7% return target by moving beyond pure market beta and drawing on multiple building blocks for generating additional returns. Among them: active currency overlay, global tactical asset allocation, active security/manager selection, real assets and private market assets.
- Investors can benefit from diversification of return sources when these building blocks are used in combination. Further, a more cycle-aware approach to investing can identify those economic environments that will favor particular building blocks across time.
- Finally, investors may want to take a hard look at their guidelines and constraints and identify areas of potential additional flexibility in their asset allocation. In particular, the ability to deploy prudent leverage at the plan level and to increase allocations to private markets may present an additional path to reaching a higher return efficiently.

AUTHORS

John Bilton
Head of Global Multi-Asset Strategy

Jared Gross
Head of Institutional Portfolio Strategy

Zachary Page
Head of U.S. Institutional Multi-Asset Solutions Investment Specialists

Tim Lintern
Global Strategist, Multi-Asset Solutions

FOR INSTITUTIONAL INVESTORS, THE PURPOSE OF SETTING A SPECIFIC NUMERICAL RETURN TARGET CAN BE CURIOUSLY HARD TO PIN DOWN. On the one hand, it can serve as a lodestar for the asset allocation process—a clear goal amid the relative uncertainty of future returns, volatilities and correlations. Yet on the other hand, a numerical target can seem arbitrary and unconnected from current market conditions, possibly leading to excessive (or insufficient) risk-taking. For many investors, however, the target is more than an abstraction. To reach funding targets and make good on obligations as they come due, asset returns are needed along with external contributions. Failing to hit return targets can directly increase the financial burden on the sponsor and other stakeholders.

It is therefore critical that return targets are plausible relative to current market conditions and the available investment opportunity set. The challenge today is clear: Traditional investment strategies are unlikely to deliver returns high enough to meet these goals. Those with an extremely long investment horizon may be tempted to brush aside current low expectations on the grounds that returns will ultimately revert to their longer-term trend. For that reason, they see little benefit in deviating from their strategic benchmark. ***This is risk-taking masquerading as prudence.*** Both history and common sense tell us that current yields and valuation multiples are strong indicators of future performance over the longer term, and an extended period of below-trend asset returns can do a great deal of damage before it concludes.

J.P.Morgan
Asset Management

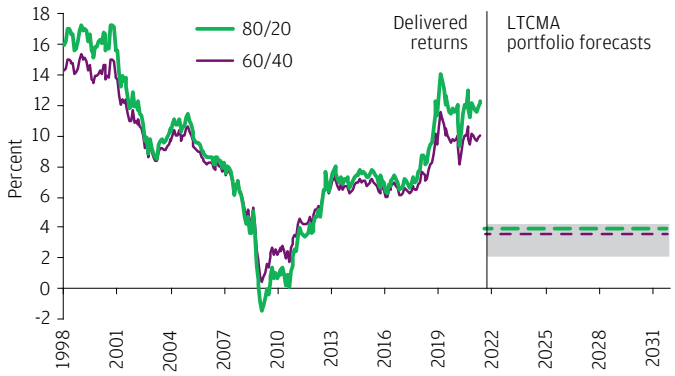
A low return environment does make it challenging to reach return targets using traditional means alone, but investors cannot simply accept this outcome. In this paper, we outline a variety of investment techniques that can improve the prospects of reaching targets and achieving fundamental investment objectives. Our analysis explores different building blocks for generating additional returns across both liquid and illiquid markets, and the trade-offs that must be evaluated when they are used in combination. As we consider which economic environment is more or less favorable for each building block, we identify the potential benefit of taking a more cycle-aware approach to investing. Finally, we suggest that plan sponsors may want to take a hard look at their guidelines and constraints, and identify areas of potential additional flexibility in their asset allocation.

WHAT'S BEHIND THE 7% RETURN TARGET?

We use 7% as a proxy for the targets of total return-focused investors who are looking to achieve the broad objectives of portfolio efficiency and purchasing power protection. It's not an arbitrary target, we believe, but a reasonable goal—albeit one that requires investors to consider new approaches and strategies in what is plainly a more challenging investing environment. The encouraging takeaway from our analysis: Achieving 7% can be done in a number of ways, even if the prevailing interest rate and valuation environment dictates that it will be more difficult in the future than it has been in the past.

Return forecasts for U.S. large cap equities present a binding constraint

EXHIBIT 1: 10-YEAR ROLLING RETURNS FOR 60/40, 80/20 PORTFOLIOS, 1998–2031 (PROJECTED)



Source: Bloomberg, J.P. Morgan Asset Management Multi-Asset Solutions; data as of June 2021. Forecasts refer to our 2021 LTCMA projections.

EXHIBIT 2: RETURNS FOR U.S. 60/40 AND 80/20 PORTFOLIOS

	Historical (1988-Today)		Forward-Looking (LTCMA, 2021)	
Portfolio	**60/40**	**80/20**	**60/40**	**80/20**
Return	9.4%	10.3%	3.6%	3.9%
Volatility	9.0%	11.7%	9.0%	11.9%
Sharpe Ratio	0.63	0.57	0.27	0.23

Source: Bloomberg, J.P. Morgan Asset Management Multi-Asset Solutions; data as of June 2021. Forecasts refer to our 2021 LTCMA projections. Portfolio consists of U.S. Large Cap and U.S. Aggregate Bonds.

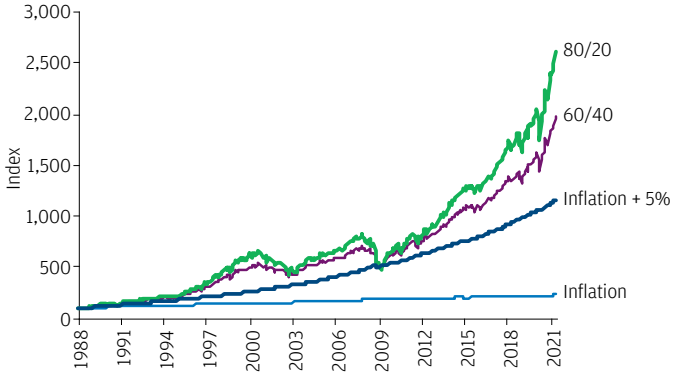
THE BLUNT INSTRUMENT OF MARKET RISK

Having established what our 7% target represents, we turn our attention to the design of our portfolio. For USD-based investors, the 60/40 stock-bond portfolio has come to represent the benchmark for a moderately risk-tolerant balanced portfolio. Historically, the 60/40 portfolio delivered adequate returns, with its bond component providing sufficient protection to manage drawdowns during periods of stock market weakness. However, given low bond yields and high starting valuations for stocks, our forecast returns for a simple domestic 60/40 U.S. equity/U.S. aggregate bond portfolio get us barely halfway to a 7% annualized return target.

One way to boost returns is simply to take on more market risk by increasing the equity weight in the portfolio. For a long-term investor with some tolerance for market volatility, this could be attractive—especially since the real return available from U.S. aggregate bonds is barely above zero. But even allowing for a higher risk tolerance, return forecasts for U.S. large cap equities present a binding constraint. Elevated

In the past, 60/40 returns have comfortably outperformed inflation targets, but the next decade looks very different

EXHIBIT 3: U.S. ASSET PORTFOLIOS VS. INFLATION, 1988–2021



Source: Bloomberg, J.P. Morgan Asset Management Multi-Asset Solutions; data as of June 2021. Forecasts refer to our 2021 LTCMA projections.

starting valuations limit our 10- to 15-year return forecast to just 4.10%, meaning that moving from a 60/40 allocation to an 80/20 allocation boosts expected returns by just 30 basis points (bps) (**EXHIBIT 1**).

The returns and Sharpe ratios we project over the next decade or so from traditional balanced stock-bond portfolios may appear rather paltry, especially when we consider that the S&P 500 returned 16% in 2020 and 12% so far this year (**EXHIBIT 2**). However, equity returns this year reflect not only a much shorter time horizon—which would require active trading to capture—but ignore the drawdowns that can and will occur over a longer horizon. We concede that there may be upside risks to equity returns. But absenting a wholesale reset of what investors accept as reasonable valuation ranges, we believe that average equity returns over the full cycle will be lower than in the recent past.

The other major driver of today's low returns: 40% of the 60/40 portfolio—the bond component—offers close to a zero real return. There could be a state of the world where "lower for longer" policy holds rates artificially low for some time, in turn subduing volatility and supporting Sharpe ratios but doing nothing to boost returns. In short, the economic and policy environment alone might enhance Sharpe ratios, but we will still have to actively work to generate higher returns.

Some investors may prefer to think about their return targets in real terms. Over history, 60/40 and 80/20 returns have comfortably outperformed a target of CPI+5% (**EXHIBIT 3**). However, our forward-looking portfolio returns do not come close, at 3.6% for a U.S. 60/40 vs. an inflation rate of 2% annualized over the next 10-15 years.

Ultimately, whether we strive for an absolute return target or some CPI+ target, the message remains that market returns in liquid assets alone are unlikely to allow us to clear our return hurdle over the long term. True, we may enjoy years in which above-trend economic growth creates a benign return environment. But over the long haul, we have to balance this with drawdowns and the risk that as rates eventually normalize, returns from the bond part of the portfolio may be a drag on performance. In the next section, we explore how to boost returns over and above those available from a simple U.S. domestic 60/40 portfolio, closer to the target ranges most investors have in mind.

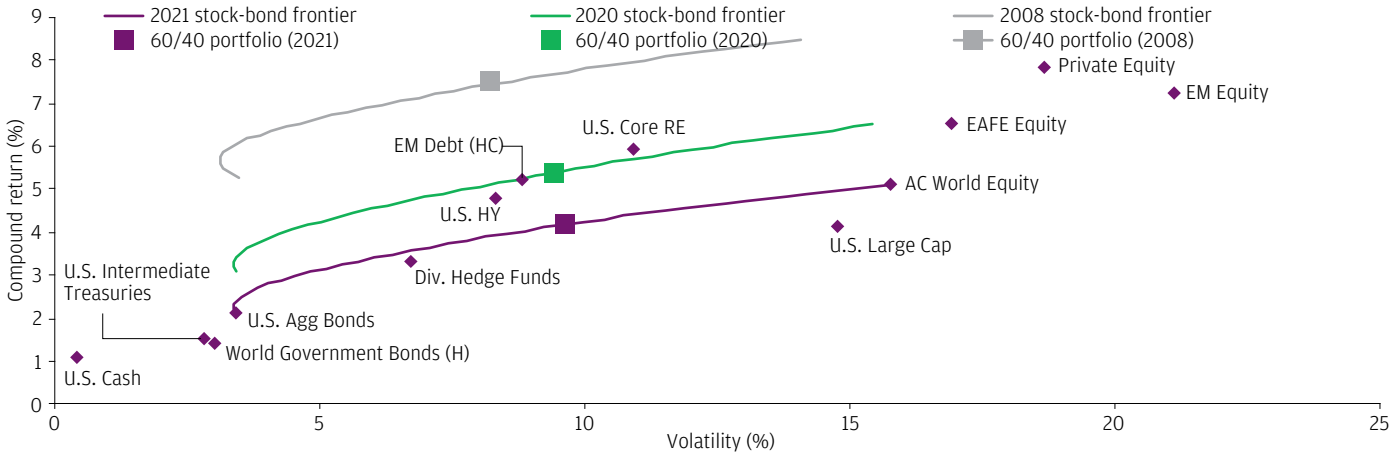
BUILDING BLOCKS TO REACH A 7% RETURN

While the returns available to investors from a simple U.S. domestic 60/40 portfolio get barely halfway to our 7% target, it is important to recognize what the 60/40 represents. Our 3.6% return forecast for a U.S. domestic 60/40 portfolio assumes pure market beta returns from a buy, hold and rebalance portfolio. Such a portfolio assumes no international exposure, no currency risk, no exposure to illiquid assets, no use of active asset or security selection and no leverage. In other words, it represents the baseline return that forms a solid—if unexciting—foundation for constructing a portfolio that might access a range of incremental return streams (**EXHIBIT 4**).

Here we examine the building blocks for generating additional returns and provide estimates of what additional returns may be achievable, based on investing experience and our own Long-Term Capital Market Assumptions (LTCMAs). We view the

Moving beyond pure market beta can add meaningful incremental return

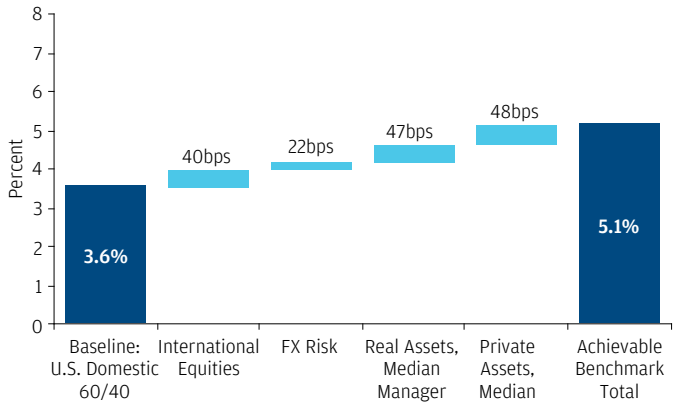
EXHIBIT 4: LONG-TERM CAPITAL MARKET ASSUMPTIONS FORECASTS AND PROJECTED RETURNS



Source: J.P. Morgan Asset Management; estimates as of September 2020. U.S. portfolios consist of U.S. Large Cap and U.S. Aggregate Bonds. Diversified portfolios consists of international equities, real estate, infrastructure, private equity, direct lending and U.S. aggregate bonds. Performance as of December 31, 2020.

Adding passive return building blocks expands the opportunity set, but it does not clear the 7% hurdle

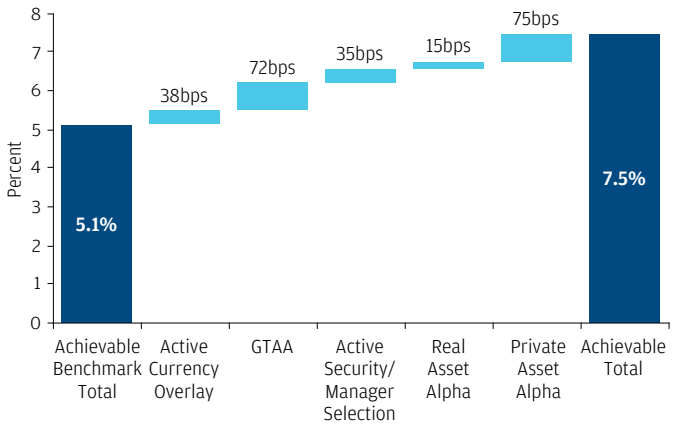
EXHIBIT 5: PASSIVE RETURN PORTFOLIO BUILDING BLOCKS



Source: Bloomberg, J.P. Morgan Asset Management Multi-Asset Solutions; data as of June 2021. Forecasts refer to our 2021 LTCMA projections. Real Assets include Real Estate and Infrastructure. Private Assets include Private Equity and Direct Lending.

Additional levels of active decision-making can help reach the 7% return target

EXHIBIT 6: PORTFOLIO BUILDING BLOCKS WITH ACTIVE ALPHA



Source: Bloomberg, J.P. Morgan Asset Management Multi-Asset Solutions; data as of June 2021. Forecasts refer to our 2021 LTCMA projections. Real Assets include Real Estate and Infrastructure. Private Assets include Private Equity and Direct Lending.

building blocks not simply by asset type but from the perspective of investment approaches and the nature of the risk premium that they aim to monetize.

This framework considers a range of independent sources of incremental return, including: international exposure, active currency overlay, global tactical asset allocation (GTAA), active security/manager selection, real assets and private market assets. Later, we also touch briefly on leverage as a means of further enhancing portfolio returns. We begin with a passive perspective (**EXHIBIT 5**) and then expand the analysis to include value add from security selection (e.g. from factor exposures or manager alpha) where it is available (**EXHIBIT 6**). Adding passive return building blocks expands the opportunity set and monetizes a number of additional risk premia beyond the market risk implicitly captured in the 60/40. Importantly, though, widening the opportunity set alone does not reach the 7% hurdle when operating within reasonable asset allocation constraints.

To clear the 7% hurdle, additional levels of active decision-making need to be applied across the widened opportunity set. This does not require a wholesale leap into bottom-up active stock-picking but, rather, looks to a plan's investment staff to consider where they have demonstrable or achievable skill in manager or strategy selection. The ability to consistently select upper-quartile managers in private assets, real assets, GTAA and so forth can boost returns meaningfully, which in turn suggests that developing such expertise within an investment team is a central consideration in hitting a 7% target.

NO SINGLE SILVER BULLET

There is no single silver bullet that will allow investors to get all the way to 7% quickly. Some high returning alternative assets offer a lot of promise for boosting returns through monetizing the illiquidity risk premium, but capturing their full potential would require skilled manager selection and a patient approach to funding new strategies. In public markets, where active alpha is available from a range of sources, manager selection skill, factors exposures, and fee impact require careful consideration.

In our view, there are two distinct components to reaching the 7% target, and they need to be used in combination: widening the opportunity set to monetize the fullest possible range of market risk premia, and identifying and deploying deep investing skill to capture active alpha in specific parts of the opportunity set. **EXHIBIT 7** summarizes each of the building blocks, the potential return uplift (including reasonable ranges) and some of the trade-offs that investors should consider when incorporating these assets into their portfolios.

The numbers in the table represent a reasonably conservative view of potential return uplift based on our LTCMAs and our experience in designing and running multi-asset portfolios. Estimates for elements of active investing in particular do have an upside skew, and the numbers captured in the table represent a median long-term experience in a multi-asset portfolio context. Of course, in some markets the potential gains from active security

EXHIBIT 7: RETURN DRIVERS, POTENTIAL RETURN UPLIFT AND PORTFOLIO CONSTRUCTION TRADE-OFFS

Return driver		Description	Calculation	Baseline uplift	Tradeoffs and considerations
Baseline: U.S. Domestic 60/40		Domestic liquid public market returns	Return derived from our LTCMAs, for a 60-40 portfolio of U.S. Large Cap and U.S. Aggregate Bonds	356bps	• Baseline domestic U.S. portfolio of U.S. Large Cap and U.S. Aggregate Bonds
International Equities	International Premium	Hedged international assets	Replacing U.S. stocks with MSCI ACWI (Hedged).	40bps	• Global equities are cheaper than those in the U.S. and so have a valuation tailwind • Some restrictions on country-specific allocations may exist • Moving away from a domestic bias may require some messaging to plan participants • International equities have tailwinds from ESG
	FX Risk	Unhedged international assets	Replacing U.S. stocks with MSCI ACWI (Unhedged).	22bps	• We forecast the U.S. dollar to depreciate, supporting unhedged international equity returns • Unhedged FX introduces porfolio-level volatility, which may be related to geopolitical risk
Active Currency Overlay		Active FX as an alpha source	Based on long-term average of 5yr rolling IR from an unconstrained FX overlay, assuming 1% risk allocation	38bps	• Active FX management can be thought of as an uncorrelated source of return • This diversified return stream is scalable, given the depth of the FX market, but risk factors must be managed • This strategy requires in-house macro skill or selecting an effective manager
GTAA		Liquid market asset allocation	Based on long-term GTAA estimate from a 100 bps tracking error representative account.	72bps	• This is implemented through an overlay framework or funded allocation • The CIO function may focus on tactical macro investing • Ongoing scrutiny of strategic and tactical positioning is necessary
Active Security/ Manager Selection		Active security/manager selection in stocks and bonds	Based on long-term active manager selection estimate from a representative account.	35bps	• Moving from passive to active funds or factor strategies means that manager selection skills are important • Fee differentials have narrowed, and the environment for active managers has become more favorable • Upside to active management estimates in some markets, especially international equities and non-core real assets
Real Assets (15% allocation)	Allocation	Return uplift from median manager	Incorporating a 15% weight spread equally across Global Core Real Estate and Global Infrastructure. Our LTCMAs forecast median manager returns.	47bps	• Begins to monetize the illiquidity risk premium, adding a return stream with low correlation to core assets • The pandemic has raised questions about real estate, but we see an attractive environment for real assets • Illiquidity is the real concern, and may be a constraint for some funds • The income return stream may offset the loss of income from bonds
	Alpha	Return uplift from top-quartile manager	Incorporates a higher return for real assets accounting for a top-quartile manager's performance.	15bps	• Manager selection is perhaps the most important skill required for successful investments in real and private assets • Outsourcing is possible, with the appropriate governance processes developed • Estimate based on core real asset markets only
Private Assets (15% allocation)	Allocation	Return uplift from median manager	Incorporating a 15% weight spread equallty across Private Equity and Direct Lending. Our LTCMAs forecast median manager returns.	48bps	• Investing in private assets offers the largest potential return uplift per unit of risk • Illiquidity is the key risk to manage • The perception, possible among plan members and trustees, that private assets are extremely risky, is a concern • Outsourcing is possible, with the appropriate governance processes developed
	Alpha	Return uplift from top-quartile manager	Incorporates a higher return for private assets accounting for a top-quartile manager's performance.	75bps	• Manager selection is perhaps the most important skill for successful investments in real and private assets • Outsourcing is possible, with the appropriate governance processes developed

Source: Bloomberg, J.P. Morgan Asset Management Multi-Asset Solutions; data as of June 2021. Forecasts refer to our 2021 LTCMA projections. Real Assets include Real Estate and Infrastructure. Private Assets include Private Equity and Direct Lending. Note that GTAA and FX overlay assume a 100% of portfolio overlay; international equities assumes a market-cap weight optimized allocation; and real assets/PE are capped at a 15% allocation – hence the numbers are not directly comparable one lever to another, but instead build up from the baseline return following these parameters.

or manager selection can be higher: In real assets, the gap between a top-quartile and a median manager in extended real estate is 10 times larger than it is for core real estate; and within some international equities markets, a top-quartile manager can add as much as 300bps above a median manager. Our estimates in the table therefore represent only a modest assessment of the potential impact of active manager and security selection.

APPLYING LEVERAGE, WEIGHING TRADE-OFFS

A final consideration that can be applied either at the overall portfolio level or within individual components is leverage. This can be achieved directly or via various derivative and overlay strategies. In our view, applying leverage to address the shortfall from negative real yielding assets in the fixed income allocation could be prudent, especially earlier in the cycle, when liquidity is abundant. The potential uplift from leverage, of course, depends not only on the degree of leverage adopted but also on the extent it is deployed across the portfolio and the implied cost of funding—all of which will vary greatly from one plan to another. Nevertheless, leverage potentially offers another angle to boost returns toward the 7% threshold for some portfolios.

Overall, investors would need to consider several of these building blocks to realistically approach a 7% return target. Common trade-offs include the need to build deep manager selection capabilities, a re-evaluation of the benefits of active management across a range of overlays, and monetizing illiquidity premia. Building manager selection skills is essentially a decision about staffing and organizational design that may well be within a manager's broad remit. The decisions to consider active investing styles and to monetize illiquidity premia—as well as decisions around currency and international exposures—may be subject to the views of plan sponsors, plan members, trustees and regulators. Nevertheless, we believe that the merits of these building blocks for achieving a 7% return target provide a valid premise for exploring and questioning prevailing investment constraints.

THE ROLE OF BUILDING BLOCKS IN DIFFERENT PHASES OF THE ECONOMIC CYCLE

As with different asset classes, the different investment approaches that we have described likely lend themselves to some economic environments more than to others. Today, we think of the economic cycle in four phases: early cycle, mid cycle, late cycle and recession. Our framework defines these phases by the level of output gap in the economy and uses a range of indicators to identify which phase the economy is in.

Early cycle often delivers the strongest equity returns as confidence and activity rebound from a trough amid easy financial conditions. An economy in mid cycle is roughly in equilibrium, showing few signs of supply constraint or exuberance. Late cycle is typically characterized by tightening financial conditions, some investor exuberance and, in some instances, corporate overreach (excessive capex, unrealistic leverage or deal making, etc.). Imbalances that grew over the cycle are forced to correct—often violently—during recession. The recession phase often starts with a slump in equity markets, but it is worth noting that markets generally start to rebound up to two quarters before an economy exits recession.

EXHIBIT 8 lays out the phases that may favor particular building blocks. We're not suggesting that plan sponsors become macro soothsayers, attempting to predict the direction of the economy. Instead, we think that understanding the alignment between economic environments and alpha engines may allow for some tactical flexibility to emphasize and deemphasize strategies across time and business cycles.

On balance, we believe that the adoption of active investing—GTAA or active security selection—and sound manager selection skills are generally evergreen. Similarly, active FX overlay is less governed by the cycle phase. It can be useful throughout the economic cycle as investors move from defensive to high carry currencies and back. By contrast, leverage is probably best deployed in early and mid cycle phases, when capital is cheap and plentiful, and the opportunity to boost both cyclical and secular returns is higher.

For private market investments, the early and mid cycles may offer the strongest returns upside, while tightening liquidity in late cycle could present a headwind. However, during recessions private market assets can have a dampening effect on portfolio volatility due to the lower frequency of price reporting. Provided the liquidity needs of the overall portfolio do not force the liquidation of private assets, during stock market sell-offs such exposures may be less troubling to portfolio-level information ratios than public equities would be.

EXHIBIT 8: PORTFOLIO BUILDING BLOCKS AND ECONOMIC CYCLE CONSIDERATIONS

Building block	Early cycle	Mid cycle	Late cycle	Recession
International equities	Extends opportunity set beyond domestic U.S. equity; economic rebounds can favor more cyclical markets outside U.S.	Extends opportunity set beyond U.S.	Extends opportunity set beyond U.S.	Bid for USD in times of weakness may weigh on unhedged international exposures
Active FX overlay	Scope to capture exposure to cyclical and higher carry currencies	Potentially uncorrelated return source, though returns will likely be lower if volatility is muted		FX valuation strategies tend to perform in recession, as imbalances correct; Scope to capture safe haven bid for USD, CHF, JPY
GTAA	Relevant in all cycle phases			
Active security selection	Active equity alpha may be strongest in early and middle phases of cycle, where emphasis on earnings recovery is strongest; later-phase active management can be used well to play rates cycle			Higher correlations associated with recessions a possible headwind for active alpha
Real assets	Relevant in all cycle phases – note that income stream from real assets can remain strong in recessions and the drawdowns (ex-global financial crisis) are manageable within the income streams to keep returns broadly positive			
Private assets	Relevant in all cycle phases provided illiquidity is planned for; in recession phase, lower "accounting vol" can have dampening effect on portfolio volatility compared with public market equivalents			
Leverage	Credit spread may be costly but rates low, becoming favorable for leverage – especially as real yields in bonds may be very poor	Rates typically low, high liquidity/low volatility environment, favorable for leverage	Rates may be rising, and financial conditions starting to tighten; reduces benefit of leverage	Avoid leverage, as recessions/ bear markets often start with a liquidity crunch

Source: Bloomberg, J.P. Morgan Asset Management Multi-Asset Solutions; data as of June 2021. Forecasts refer to our 2021 LTCMA projections. Real Assets include Real Estate and Infrastructure. Private Assets include Private Equity and Direct Lending. Note that GTAA and FX Overlay assume a 100% of portfolio overlay; international equities assumes a market-cap weight optimized allocation; and real assets/PE are capped at a 15% allocation. As a result, the accompanying return uplift is not directly comparable from one discrete return driver to another. In this analysis we have focused on returns. Each return driver has a different risk profile which may have a positive or negative impact on portfolio level risk, and as such should be managed prudently. Each return driver aims to monetize a type of risk (e.g. liquidity) other than simple market risk.

ADDING VALUE BY THOUGHTFULLY RELAXING INVESTMENT CONSTRAINTS

As our analysis has shown, investors seeking to reach their return objectives will benefit from a global opportunity set, active management, tactical flexibility and the use of illiquid investments. In many cases, however, there are operational limitations on the extent to which these tools can be deployed. This raises an important question: Are these constraints the result of sound risk management or some less justifiable rationale, such as habit? In some cases, it seems clear that habit is the critical factor. Thoughtfully reconsidering these investment constraints may allow further gains in portfolio performance and efficiency.

In the following section, we examine how investors can use the building blocks we have discussed—international equities, FX overlay, GTAA and so on—to realize those further gains.

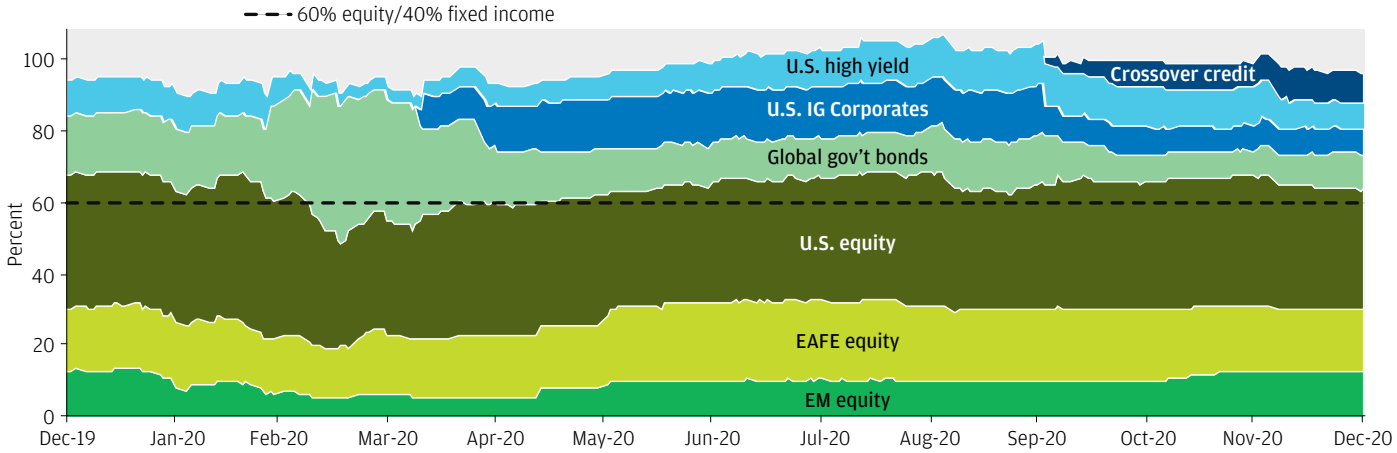
Going global the right way

Home country bias is a widely observed phenomenon in asset allocation. For many U.S.-based investors, this seems like a benign phenomenon insofar as U.S. markets offer a breadth of investment opportunities sufficient to meet return and diversification needs. While portfolios often include certain non-U.S. sectors, such as global equity and emerging market (EM) equity and fixed income, these allocations tend to be small and frequently tactical in nature. This approach limits the benefits that a more "full-spectrum" global allocation can provide. We highlight three key areas for improving non-U.S. investment allocations:

- **Don't let currency risk be a barrier to global investing.** Currency volatility is manageable at the manager level or via a strategic overlay across the full allocation. Non-U.S. investors have been using the latter model for many years, and it can have powerful benefits with respect to separating bottom-up investment opportunities from top-down macro volatility. We explore passive hedging of international assets further in "To hedge or not to hedge, that is the question".
- **Cap-weighted fixed income benchmarks are a bad idea.** Cap-weighted passive indices have an obvious flaw, overweighting the most indebted countries/issuers. Active management, with its flexibility to move across global markets, is a superior approach and can be combined with

Investors can preserve a portfolio's overall risk posture while allowing more flexible exposures

EXHIBIT 9: DYNAMIC ASSET ALLOCATION VS. 60/40 BENCHMARK



Source: J.P. Morgan Asset Management. Allocation data ranges from 12/31/2019 to 12/31/20; Total Equity Includes Alternatives. The Fund is an actively managed portfolio, holdings, sector weights, allocations and leverage, as applicable are subject to change at the discretion of the Investment Manager without notice. Past performance is not an indication of current and future performance.

currency hedging to ensure that FX volatility does not overwhelm the fixed income returns themselves.

- **A structural underweight to China is probably not a good idea.** Common global and EM benchmarks underweight China's domestic equity and fixed income market shares relative to both economic activity and market capitalization. An unconstrained global or emerging market strategy that has the capacity to scale up China exposure closer to its true economic weight (or beyond) offers one practical means of fixing this problem. Alternatively, a dedicated exposure to onshore assets (such as the China A-share market) offers a more targeted approach.

Active management and tactical flexibility are not the same thing

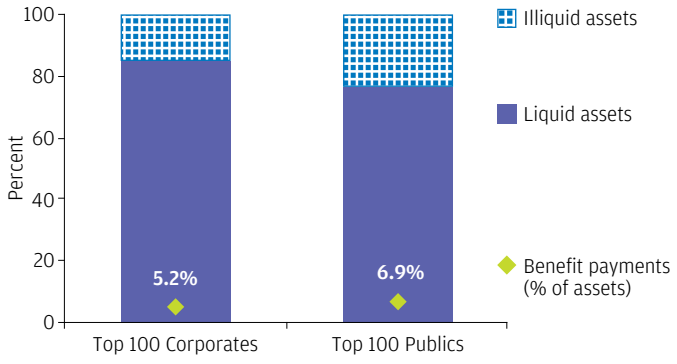
The benefits of active management are widely understood, although investors hold varying views about how durable manager-level alpha can be within different market sectors. Regardless, the scope for realizing the benefits of an active manager's investment skill is typically limited to a single market sector and a single market benchmark.

However, investors often overlook the value of real-time investment flexibility across market sectors. This may well be a legacy of a strategic asset allocation process built around long-term capital market assumptions, as well as operational and skill constraints that prevent short-term responses to asset price volatility. On this point, we are clear: Failing to take advantage of tactical flexibility is absolutely a missed opportunity.

- Multi-asset strategies can be managed against a strategic benchmark, preserving the overall risk posture of the asset allocation while allowing more flexible exposures across markets.
- A tactical asset allocation strategy can deliver higher potential returns and preserve portfolio-level liquidity.

Most institutions can take on larger allocations of illiquid assets

EXHIBIT 10 : BENEFIT PAYMENTS RELATIVE TO LIQUID ASSETS FOR THE TOP 100 CORPORATE AND PUBLIC PENSION PLANS



Source: J.P. Morgan Asset Management. Data reflects 100 largest publicly sponsored corporate pension plans and 100 largest public pension plans by assets. Corporate plan data is sourced from 10-K filings and public plan data is sourced from the Public Plans Database (PPD). All data as of 12/31/2000.

- Using liquid market exposures and avoiding portfolio-level leverage allow tactical/dynamic asset allocation strategies to scale up far beyond the level that would be prudent for a global macro hedge fund or similarly dynamic strategy elsewhere in the allocation.

In **EXHIBIT 9**, we illustrate the benefits of dynamic asset allocation relative to a 60/40 benchmark.

Right-sizing the illiquid asset pool

Illiquid alternatives—such as private equity, private credit, real estate and infrastructure—offer some clear benefits: the potential for higher returns than public markets, along with diversification from a broader mix of underlying investments. Their risks are more difficult to characterize. Historical volatilities are muted by the stickiness of asset prices, which can make these investments appear less risky than they truly are. Tail risks and manager dispersion are both idiosyncratic and hard to generalize. Nonetheless, investors have gotten comfortable with the broad risk and return characteristics of illiquid alternatives, which over many years have increased as a component of portfolios.

The attractiveness of the sector and its growing use in institutional portfolios make the sizing of the allocation a key concern for investors. Illiquid investments pose a risk to operational flexibility and specifically present the risk that an investor might be unable to raise liquidity when needed, or be forced to do so at a high cost. Fear of this outcome has constrained illiquid allocations to a relatively modest size, though there is good reason to think that investors have far more flexibility to move in this direction—particularly if they embrace the full spectrum of less liquid alternatives (**EXHIBIT 10**). Consider:

- Most institutions pay out 5%–7% of their assets annually, though this number can be smaller when netted against contributions and portfolio income. Illiquid allocations are rarely larger than 20%–25% of assets. Simple math suggests that there is room for larger allocations to these categories.
- Legacy exposures to private equity and real estate represent some of the least liquid sectors within alternatives. Private credit and core real assets frequently offer shorter average lives, better liquidity terms and greater income generation.

Capital efficiency and the role of leverage

The ability to replicate market exposures synthetically using futures contracts or total return swaps allows investors to become more capital efficient. By replacing passive exposures to equity or Treasuries with functionally equivalent derivatives, investors can free up capital to be redeployed elsewhere to increase returns. Among the potential approaches:

- An investor can redeploy the capital across the strategic asset allocation and thus increase the level of market exposure at the plan level. This is effectively leveraging the strategic allocation, allowing for higher long-term returns with essentially similar risk profiles.
- Further, if an attractive alpha engine with low correlations to the market beta can be identified, the combination of alpha and market beta can provide a return tailwind to what was formerly passive exposure.

We recognize the possibility that some investors might be unable to make use of the full toolkit we have described and therefore could still face a structural shortfall to the long-term 7% return target. The ability to deploy leverage at the plan level, or to add alpha to what was previously passive beta exposure, presents additional avenues to reaching a higher return.

CONCLUSION

In this paper, we have had two goals: first, to offer a justification for investors sticking with long-term return targets despite challenging markets; and second, to demonstrate that a variety of investment techniques can be added to a traditional market risk portfolio to increase the likelihood of success. On the first point, recall that while a market portfolio has comfortably met return targets in recent decades, a significant decline in bond yields has been a key cause—and a scenario that is unlikely to be repeated. The stark reality of low forward returns necessitates a more diversified approach to return generation. To that end, we have isolated specific, actionable steps that can be taken to incrementally diversify and increase investment performance. As investors consider which approaches may be best suited to their particular circumstances, it will be critical to evaluate the constraints—on global investments, currency risk, liquidity and leverage—that prevent the adoption of a more efficient and effective allocation.

FOR MORE INFORMATION

If you're interested in any of these services or other discussions and analysis, please contact your J.P. Morgan Asset Management Client Advisor directly or you can reach the authors of the paper by email at john.bilton@jpmorgan.com, jared.b.gross@jpmorgan.com, zachary.page@jpmorgan.com or timothy.lintern@jpmorgan.com.

PJCT-0521-AM-528100-PI-NAI-WP | 09h7212306191858

J.P.Morgan
Asset Management