



AGENDA

RETIREMENT BOARD MEETING

REGULAR MEETING

May 25, 2022, 9:00 a.m.

The Board of Retirement will hold its meeting via teleconferencing as permitted by Government Code Section 54953(e). The meeting is accessible telephonically at 669-900-6833, Webinar ID: 841 2039 5180, Passcode: 390098, or via the web at:

<https://us06web.zoom.us/j/84120395180?pwd=Y3pLdGZEBmITdlhucG5iTHNNaHBUZz09>

Passcode: 390098

Persons who wish to address the Board of Retirement during public comment may call in during the meeting by dialing the phone number and passcode above. Access via Zoom is also available at the weblink above. To indicate you wish to speak during public comment, please select *9 on your phone or “raise your hand” in the Zoom app.

Public comments are limited to any item that is within the subject matter jurisdiction of the Board of Retirement. Comments will be received in real time via telephone or Zoom, subject to a three-minute time limit per speaker.

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

1. Pledge of Allegiance.
2. Roll Call.
3. Accept comments from the public.
4. Recognition of Glenis Castelino for 15 years of service and Tim Price for 10 years of service.
5. Approve minutes from the April 13, 2022 and April 27, 2022 meetings.
6. Approve the following routine items:
 - a. Certifications of membership.
 - b. Service and disability allowances.
 - c. Death benefits.
 - d. Investment liquidity report.

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

7. Accept the following routine items:
 - a. Disability applications and authorize subpoenas as required.
 - b. Travel report.
 - c. Investment asset allocation report.
8. Consider and take possible action to adopt the contribution rates for the period July 1, 2022 – June 30, 2023 for the Contra Costa County Fire Protection District.
9. Review of total portfolio performance for period ending March 31, 2022.
 - a. Presentation from Verus
 - b. Presentation from staff
10. Notice of planned termination of Jackson Square Partners large cap growth portfolio.
11. Presentation from staff on sizing of Liquidity Sub-portfolio.
12. Presentation from Verus on capital market assumptions.
13. Update on real estate commitments.
14. Information regarding in-person meetings in the boardroom.
15. Consider and take possible action to authorize the Board to conduct teleconference meetings under Government Code section 54953 (e) and to make related findings.
16. Consider and take possible action to authorize the CEO to renew a maintenance and support agreement with CPAS.
17. Report from Audit Committee Chair on May 4, 2022 Audit Committee meeting.
18. Consider authorizing the attendance of Board:
 - a. SACRS Public Pension Investment Management Program 2022, UC Berkeley Haas School of Business Executive Education, July 17-20, 2022, Berkeley, CA.
19. Miscellaneous
 - a. Staff Report
 - b. Outside Professionals' Report
 - c. Trustees' comments

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



Meeting Date
05/25/2022
Agenda Item
#5

RETIREMENT BOARD MEETING MINUTES

REGULAR MEETING
April 13, 2022
9:00 a.m.

The Board of Retirement meeting was accessible telephonically at (669) 900-6833, Webinar ID 811 9772 0927 Passcode 879812, as permitted by Government Code Section 54953(e).

1. Pledge of Allegiance

The Board and staff joined in the *Pledge of Allegiance*.

2. Roll Call

Present: Candace Andersen, Dennis Chebotarev, Donald Finley, Scott Gordon, Jerry Holcombe, Louie Kroll, Jay Kwon, David MacDonald, John Phillips, Mike Sloan and Russell Watts.

Absent: None

Staff: Gail Strohl, Chief Executive Officer; Christina Dunn, Deputy Chief Executive Officer; Karen Levy, General Counsel; Tim Price, Chief Investment Officer and Tim Hoppe, Retirement Services Manager.

Outside Professional Support:

Paul Angelo
Andy Young
Harvey Leiderman
Jennifer Meza
Angela Tang
Andrew Brown

Representing:

Segal Consulting
Segal Consulting
Reed Smith LLP
PARS
PARS
High Mark Capital Management

3. Accept comments from the public

No member of the public offered comment.

4. Approval of Minutes

It was **M/S/C** to approve the minutes from the March 9, 2022 meeting. (Yes: Andersen, Chebotarev, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips and Watts)

5. Approval of Routine Items

It was **M/S/C** to approve the routine items of the April 13, 2022 Board meeting. (Yes: Andersen, Chebotarev, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips and Watts)

6. Acceptance of Routine Items

It was **M/S/C** to accept the routine items of the April 13, 2022 Board meeting. (Yes: Andersen, Chebotarev, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips and Watts)

CLOSED SESSION

The Board moved into Closed Session pursuant to Govt. Code Sections 54957, 54956.9 (d) (1) and 54956.9(d)(2).

The Board moved into open session.

7. It was **M/S/C** to return the matter back to staff and the medical advisor for further information regarding the applicant's injury condition and the work-related causation. (Yes: Andersen, Chebotarev, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips and Watts).

a. William Fiore – Service Connected

8. There was no reportable action related to Govt. Code Section 54956.9(d)(1).

9. There was no reportable action related to Govt. Code Section 54956.9(d)(2).

10. There was no reportable action related to Govt. Code Section 54957.

11. The Appointment of ad hoc advisory committee to review the Chief Executive Officer compensation package

Gordon appointed an ad hoc advisory committee for the limited purpose of reviewing the CEO compensation package, and appointed Gordon as committee chairperson, MacDonald as vice chairperson and Holcombe as committee member.

It was the consensus of the Board to move to item 13.

13. Presentation from Segal Consulting: Review of Actuarial Assumptions

Paul Angelo presented the Actuarial Experience Study which included analysis of the Actuarial Experience during the period of January 1, 2018 through December 31, 2020.

Sean Stalbaum, Local 21 Representative made a public comment regarding the Actuarial Assumptions.

14. Consider and take possible action to adopt the actuarial assumptions to be utilized in the December 31, 2021 actuarial valuation report

It was **M/S** to adopt the recommended actuarial assumptions to be utilized in the December 31, 2021 actuarial valuation report with the exception of the recommended change in the inflation rate. (Yes: Chebotarev, Holcombe, Kroll and MacDonald; No: Andersen, Finley, Gordon, Phillips, and Watts) **motion failed.**

It was **M/S/C** to adopt the recommended actuarial assumptions to be utilized in the December 31, 2021 actuarial valuation report. (Yes: Andersen, Finley, Gordon, Phillips, and Watts; No: Chebotarev, Holcombe, Kroll, MacDonald)

Andersen was no longer present for subsequent discussion and voting.

It was the consensus of the Board to move to Item 12.

12. Presentation from PARS (Public Agency Retirement Services) regarding the I.R.C. Section 115 Trust for Other Post-Employment Benefits for CCCERA Employees

Jennifer Meza, PARS reviewed CCCERA's OPEB Plan for the period of January 1 to December 31, 2021 and actuarial report as of December 31, 2021.

Andrew Brown, High Mark Capital Management, reviewed CCCERA's OPEB performance and asset allocation for the period ending December 31, 2021.

15. Consider and take possible action to cause an election to be held to fill the vacancy in the alternate seventh safety member seat

It was **M/S/C** to cause an election to be held at the earliest possible date to fill the vacancy in the seventh alternate safety seat of the Board of Retirement, in accordance with Government Code Section 31523. (Yes: Chebotarev, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips, Watts and Kwon)

Kroll was no longer present for subsequent discussion and voting.

16. Consider and take possible action to authorize the Board to conduct teleconference meetings under Government Code Section 54953 (e) and make related findings

Levy presented the open meetings law regarding holding teleconference board meetings during a state-proclaimed state of emergency.

It was **M/S/C** to authorize the Board and its committee(s) to continue to conduct teleconference meetings for the next 30 days under Government Code Section 54953 (e) and make the following findings:

1. The Board has reconsidered the circumstance of the statewide state of emergency proclaimed by the Governor on March 4, 2020 and the countywide local emergency proclaimed by the Governor on March 10, 2020.
2. The following circumstances currently exist:
 - a. The statewide state of emergency and the countywide local emergency continue to directly impact the ability of the Board and its committee(s) to meet safely in person at meeting that are open to the general public because of the COVID-19 pandemic.
 - b. The County Health Officer's recommendations for safely holding public meetings, which recommend virtual meeting and other measures to promote social distancing, are still in

effect. (Yes: Chebotarev, Finley, Gordon, Holcombe, MacDonald, Phillips, Watts, Kwon and Sloan)

17. Consider and take possible action on SACS voting proxy form

It was **M/S/C** to appoint Sloan as the Voting Delegate at the upcoming SACRS Conference. (Yes: Chebotarev, Finley, Gordon, Holcombe, MacDonald, Phillips, Watts, Kwon and Sloan)

18. Consider and take possible action on SACRS Board of Directors Election

It was **M/S/C** to accept the nominating committee ballot and direct our voting member to vote as such. (Yes: Chebotarev, Finley, Gordon, Holcombe, MacDonald, Phillips, Watts, Kwon and Sloan)

19. Consider authorizing the attendance of Board:

- a. It was **M/S/C** to authorize the attendance of 1 Board Member at the Adams Street 2022 US Investor Conference, June 7, 2022, Chicago, IL. (Yes: Chebotarev, Finley, Gordon, Holcombe, MacDonald, Phillips, Watts, Kwon and Sloan)

20. Miscellaneous

- a. Staff Report – Strohl noted that CCCERA’s lobby doors were reopened to the public on April 11. Strohl reported that Segal Consulting who serves as a consultant with the new pension administration system project recently notified us that the project manager assigned to CCCERA will be retiring. Segal has provided a proposed replacement as well as a transition plan for the next few months.
- b. Outside Professionals - None
- c. Trustee’ comments – Sloan reported out that he attended the CALAPRS Advanced Principles of Pension Governance for Trustee Conference.

It was **M/S/C** to adjourn the meeting in Memory and Honor of Maryly Phillips who passed away on April 3, 2022. (Yes: Chebotarev, Finley, Gordon, Holcombe, MacDonald, Phillips, Watts, Kwon and Sloan)

Scott Gordon, Chairman

Jerry R. Holcombe, Secretary



RETIREMENT BOARD MEETING MINUTES

REGULAR MEETING
April 27, 2022
9:00 a.m.

The Board of Retirement meeting was accessible telephonically at (669) 900-6833, Webinar ID 811 9772 0927 Passcode 879812, as permitted by Government Code Section 54953(e).

1. Pledge of Allegiance

The Board and staff joined in the *Pledge of Allegiance*.

2. Roll Call

Present: Candace Andersen, Dennis Chebotarev, Donald Finley, Scott Gordon, Jerry Holcombe, Louie Kroll, Jay Kwon, David MacDonald, John Phillips, Mike Sloan and Russell Watts.

Absent: None

Staff: Gail Strohl, Chief Executive Officer; Christina Dunn, Deputy Chief Executive Officer; Karen Levy, General Counsel and Tim Price, Chief Investment Officer

Outside Professional Support:	Representing:
Scott Whalen	Verus
Ian Toner	Verus
Bryce Doty	Sit Investment Associates

3. Accept comments from the public

No member of the public offered comment.

4. Approval of Minutes

It was **M/S/C** to approve the minutes from the March 23, 2022 meeting. (Yes: Andersen, Chebotarev, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips and Watts)

5. Review of report on liquidity sub-portfolio

a. Presentation from staff

Price and Taylor provided a brief background on the liquidity program.

b. Presentation from Sit Investment Associates

Bryce Doty gave a brief overview of the firm and reviewed the short duration portfolio and the economic outlook.

Kwon was present for subsequent discussion and voting.

6. Educational presentation from Verus on investing in a rising rate environment

Scott Whalen and Ian Toner presented an educational session on investing in a rising rate environment and different perspectives on interest rates and inflation.

7. Consider and take possible action to authorize the Board to conduct teleconference meetings under Government Code Section 54953 (e) and make related findings

Levy presented the open meetings law regarding holding teleconference board meetings during a state-proclaimed state of emergency.

It was **M/S/C** to authorize the Board and its committee(s) to continue to conduct teleconference meetings for the next 30 days under Government Code Section 54953 (e) and make the following findings:

1. The Board has reconsidered the circumstance of the statewide state of emergency proclaimed by the Governor on March 4, 2020 and the countywide local emergency proclaimed by the Governor on March 10, 2020.
2. The following circumstances currently exist:
 - a. The statewide state of emergency and the countywide local emergency continue to directly impact the ability of the Board and its committee(s) to meet safely in person at meeting that are open to the general public because of the COVID-19 pandemic.
 - b. The County Health Officer's recommendations for safely holding public meetings, which recommend virtual meeting and other measures to promote social distancing, are still in effect. (Yes: Andersen, Chebotarev, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips and Watts)

It was the consensus of the Board to move to item 9.

9. Consider and take possible action to cancel the Board meeting of May 4, 2022

It was **M/S/C** to cancel the May 4, 2022 Board Meeting (Yes: Andersen, Chebotarev, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips and Watts)

8. Consider and take possible action to authorize the CCCERA delegate to vote on the SACRS 2020-2021 Annual Audit Report

It was **M/S/C** to direct the CCCERA Board voting delegate to vote to approve the SACRS 2020-2021 Annual Audit Report. (Yes: Andersen, Chebotarev, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips and Watts)

10. Miscellaneous

- a. Staff Report – Strohl noted that there were over 200 plus March retirement applications received, which is a significant amount more than previous years.
- b. Outside Professionals – None
- c. Trustee' comments – Kwon reported he attended The Pension Bridge Annual Conference

Gordon directed staff to research the cost to retrofit the Board Conference Room to be able to conduct hybrid in-person and remote meetings.

It was **M/S/C** to adjourn the meeting. (Yes: Andersen, Chebotarev, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips and Watts)

Scott Gordon, Chairman

Jerry R. Holcombe, Secretary

CERTIFICATION OF MEMBERSHIPS

Name	Employee Number	Tier	Membership Date	Employer
Abdul-Rahman, Farzana	91549	P5.2	03/01/22	Contra Costa County
Alhark, Janasha	91614	P5.2	03/01/22	Contra Costa County
Alvarez, Yemila	91618	P5.2	03/01/22	Contra Costa County
Belardo, Nona	90668	P5.2	03/01/22	Contra Costa County
Benitez, Karlisa	91679	P5.2	03/01/22	Contra Costa County
Bidou, Sommer	88810	P5.2	03/01/22	Contra Costa County
Bluitt, Jalilah	77771	III	03/01/22	Contra Costa County
Bonifacio, Janelle	83635	P5.2	03/01/22	Contra Costa County
Bouzon Cisneros, Gabrielle	91611	P5.2	03/01/22	Contra Costa County
Briseno, Cynthia	91648	P5.2	03/01/22	Contra Costa County
Calvit, Easter	91600	P5.2	03/01/22	Contra Costa County
Canders, Lara	91676	P5.2	03/01/22	Contra Costa County
Chellew, Ashley	91689	P5.2	03/01/22	Contra Costa County
Christensen, Courtney	91628	P5.2	03/01/22	Contra Costa County
Coble, John	91683	P5.2	03/01/22	Contra Costa County
Contreras, Alma	85198	P5.2	03/01/22	Contra Costa County
Diego, Jennifer	90139	P5.2	03/01/22	Contra Costa County
Dorigatti, Phillip	91623	P5.2	03/01/22	Contra Costa County
Farmer, Anhthu	91691	P5.2	03/01/22	Contra Costa County
Farmer, Philip	91514	P5.2	03/01/22	Contra Costa County
Ferrell, Sam	91584	P5.2	03/01/22	Contra Costa County
Flores Montoya, Carmen	91591	P5.2	03/01/22	Contra Costa County
Foster, Karalyn	91713	P5.2	03/01/22	Contra Costa County
Freeman, Synetta	91589	P5.2	03/01/22	Contra Costa County
Garcia, Erika	91597	P5.2	03/01/22	Contra Costa County
George Jr., Reginald	91612	P5.2	03/01/22	Contra Costa County
Govan, Stacey	91700	P5.2	03/01/22	Contra Costa County
Guzman, Erica	90700	P5.2	03/01/22	Contra Costa County
Hamilton, Jason	91625	P5.2	03/01/22	Contra Costa County
Hanlon, Jessica	91619	P5.2	03/01/22	Contra Costa County
Havea, Amy	D9500	P5.3	03/01/22	Contra Costa County Superior Courts
Havenar-Daughton, Brendan	91664	P5.2	03/01/22	Contra Costa County
Hii, Noh	88152	P5.2	03/01/22	Contra Costa County
Hornsby-Edwards, Jasmine	91624	P5.2	03/01/22	Contra Costa County
Hughes, Keith	D7830	S/D	03/01/22	San Ramon Valley Fire Protection District
Hynes, Martin	91707	S/E	03/01/22	Contra Costa County
Ibarra, Brittany	91677	P5.2	03/01/22	Contra Costa County
Jadrich, Kristina	91693	P5.2	03/01/22	Contra Costa County
Johnson, Izenique	91587	P5.2	03/01/22	Contra Costa County
Johnson, Kis'sarria	91598	P5.2	03/01/22	Contra Costa County

Key:

I = Tier I	P4.2 = PEPR Tier 4 (2% COLA)	S/A = Safety Tier A
II = Tier II	P4.3 = PEPR Tier 4 (3% COLA)	S/C = Safety Tier C
III = Tier III	P5.2 = PEPR Tier 5 (2% COLA)	S/D = Safety Tier D
	P5.3 = PEPR Tier 5 (3% COLA)	S/E = Safety Tier E

CERTIFICATION OF MEMBERSHIPS

Name	Employee Number	Tier	Membership Date	Employer
Joya, Michelle	91532	P5.2	03/01/22	Contra Costa County
Juarez, Andrea	91632	P5.2	03/01/22	Contra Costa County
Kattengell, Karla	91672	P5.2	03/01/22	Contra Costa County
Kierstead, Glenda	91651	S/E	03/01/22	Contra Costa County
Klenow, Emily	91655	P5.2	03/01/22	Contra Costa County
Lapointe, Nicole	61710	P5.2	03/01/22	Contra Costa County
Lauborough, Stacy	91613	P5.2	03/01/22	Contra Costa County
Lazo-Lideros, Carol	91343	P5.2	03/01/22	Contra Costa County
Lee, Cheryl	91674	P5.2	03/01/22	Contra Costa County
Lolinco, Antony	91678	P5.2	03/01/22	Contra Costa County
Lopez, Stephanie	91637	P5.2	03/01/22	Contra Costa County
Loreto, Jennifer	91695	P5.2	03/01/22	Contra Costa County
Malmberg, Karen	74903	P5.2	03/01/22	Contra Costa County
Mayes, Victoria	88773	P5.2	03/01/22	Contra Costa County
Mc Manus, Veronica	91699	P5.2	03/01/22	Contra Costa County
Menge, Nicklaus	91649	S/E	03/01/22	Contra Costa County
Merchant, Rebecca	81355	P5.2	03/01/22	Contra Costa County
Morris, Brianna	91594	P5.2	03/01/22	Contra Costa County
Moss, Tamekia	91638	P5.2	03/01/22	Contra Costa County
Naldoza, Lord	91463	P5.2	03/01/22	Contra Costa County
Nguyen, Luat	91522	P5.2	03/01/22	Contra Costa County
Nguyen, Tienthang	91640	P5.2	03/01/22	Contra Costa County
Ordonez-Smith, Darien	91588	P5.2	03/01/22	Contra Costa County
Ortega, Lorraine	91631	P5.2	03/01/22	Contra Costa County
Parbie, Eric	83149	P5.2	03/01/22	Contra Costa County
Pittman, Arice	91622	P5.2	03/01/22	Contra Costa County
Poe, Rochelle	91658	P5.2	03/01/22	Contra Costa County
Poh-Danh, Sethavy	91592	P5.2	03/01/22	Contra Costa County
Povlsen, Christi	91040	P5.2	03/01/22	Contra Costa County
Ramirez, Michelle	91011	P5.2	03/01/22	Contra Costa County
Reyes, Alicia	91704	P5.2	03/01/22	Contra Costa County
Riggs, Michael	91720	P4.2	03/01/22	Contra Costa County Fire Protection District
Rivers, Fredrick	D9500	P5.3	03/01/22	Contra Costa County Superior Courts
Robles, Graciela	91629	P5.2	03/01/22	Contra Costa County
Rodriguez, Diana	91621	P5.2	03/01/22	Contra Costa County
Ruane, Edward	91650	S/E	03/01/22	Contra Costa County
Schneider, Jocelyn	89720	P5.2	03/01/22	Contra Costa County
Session, Rajni	91582	P5.2	03/01/22	Contra Costa County
Shanks, Mark	91694	S/E	03/01/22	Contra Costa County
Shimizu, Nicole	91665	P5.2	03/01/22	Contra Costa County

Key:

I = Tier I	P4.2 = PEPR Tier 4 (2% COLA)	S/A = Safety Tier A
II = Tier II	P4.3 = PEPR Tier 4 (3% COLA)	S/C = Safety Tier C
III = Tier III	P5.2 = PEPR Tier 5 (2% COLA)	S/D = Safety Tier D
	P5.3 = PEPR Tier 5 (3% COLA)	S/E = Safety Tier E

CERTIFICATION OF MEMBERSHIPS

<i>Name</i>	<i>Employee Number</i>	<i>Tier</i>	<i>Membership Date</i>	<i>Employer</i>
Smith, Stacey	81019	P5.2	03/01/22	Contra Costa County
Stafford, Nerissa	91684	P5.2	03/01/22	Contra Costa County
Stanley, Sequoia	91698	P5.2	03/01/22	Contra Costa County
Taylor, Jerome	91653	P5.2	03/01/22	Contra Costa County
Thind, Priya	91266	P5.2	03/01/22	Contra Costa County
Tholmer, Dominic	90942	S/E	03/01/22	Contra Costa County
Thomas, Jeanine	91595	P5.2	03/01/22	Contra Costa County
Thorp, Margaret	91607	P5.2	03/01/22	Contra Costa County
Torres, Mitzy	91620	P5.2	03/01/22	Contra Costa County
Vargas, Nubia	91639	P5.2	03/01/22	Contra Costa County
Villatoro, Clara	72724	III	03/01/22	Contra Costa County
Vongsing, Anna	91604	P5.2	03/01/22	Contra Costa County
Walker, Amanda	91659	P5.2	03/01/22	Contra Costa County
Welch, Keonia	91630	P5.2	03/01/22	Contra Costa County
Wessels, William	91681	P5.2	03/01/22	Contra Costa County
Williams, Alicia	90133	P5.2	03/01/22	Contra Costa County
Woodley, Michael	69686	P5.2	03/01/22	Contra Costa County

Key:

I = Tier I	P4.2 = PEPR A Tier 4 (2% COLA)	S/A = Safety Tier A
II = Tier II	P4.3 = PEPR A Tier 4 (3% COLA)	S/C = Safety Tier C
III = Tier III	P5.2 = PEPR A Tier 5 (2% COLA)	S/D = Safety Tier D
	P5.3 = PEPR A Tier 5 (3% COLA)	S/E = Safety Tier E

TIER CHANGES

<i>Name</i>	<i>Employee Number</i>	<i>Old Tier</i>	<i>New Tier</i>	<i>Effective Date</i>	<i>Employer</i>	<i>Reason for Change</i>
Amaral, Kevin	90910	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff
Aranda, Kassey	91024	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff
Austria, Silver Ian	86835	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff
DeGruy, Sean	90918	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff
Earls, Isaiah	91021	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff
Gonzalez Castellanos, Rebecca	90949	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff
Hix, Matthew	90928	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff
Huether, Garrick	90909	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff
Jimenez, Jorge	90917	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff
Kim-Duggan, Dohun	90916	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff
Moore, Ashton	89310	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff
Pham, Alexandra	88207	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff
Quam, Alexandria	D9500	P5.3	III	2/1/2022	Contra Costa County Superior Courts	Reciprocity Established
Raatz, Courtney	90907	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff
Radosevich, Jesse	90348	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff
Robery, Spencer	90911	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff
White, Remy	90986	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff
Yegorov, German	90906	P5.2	S/E	03/01/22	Contra Costa County	Promotion to Deputy Sheriff

Key:

I = Tier I	P4.2 = PEPR A Tier 4 (2% COLA)	S/A = Safety Tier A
II = Tier II	P4.3 = PEPR A Tier 4 (3% COLA)	S/C = Safety Tier C
III = Tier III	P5.2 = PEPR A Tier 5 (2% COLA)	S/D = Safety Tier D
	P5.3 = PEPR A Tier 5 (3% COLA)	S/E = Safety Tier E

CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

BOARD OF RETIREMENT

Meeting Date
05/25/2022
Agenda Item
#6b.

Service and Disability Retirement Allowances:

<u>Name</u>	<u>Number</u>	<u>Effective Date</u>	<u>Option Type</u>	<u>Tier</u>	<u>Selected</u>
Aris, Bradley	47214 A/P	07/06/10	SR	II	Option 2
Bancroft, Kate	D9500	12/09/21	SR	III	Unmodified
Brophy, Kevin	70508	01/01/22	SR	III	Unmodified
Chase, Laura	70172	12/11/21	SR	III	Unmodified
Garcia, Shawn	62210	01/01/22	SR	I	Unmodified
Garret-Hefley, Joyce	76766	01/01/22	SR	III	Unmodified
Gusenkov, Olga	69612	12/31/21	SR	III	Unmodified
Hartman, David	60627	12/31/21	SR	Safety A	Unmodified
Haydu, Suzanne	46187	12/31/21	SR	II	Unmodified
Hickman, Tod	67817	01/01/22	SR	Safety A	Unmodified
Jackson, Theodora	69350	01/01/22	SR	III	Unmodified
Jones, Vernoy	42140	01/04/22	SR	II and III	Unmodified
Knight, Suzette	77428	12/14/21	SR	PEPRA 5.3	Unmodified
Kohl, Virginia	78116	12/08/21	SR	PEPRA 5.2	Unmodified
Lipetzky, Robin	47686	12/29/21	SR	II and III	Unmodified
Mariscal, Tinamarie	66661	12/23/21	SR	III	Unmodified
Mayhew, Russell	76580	12/01/21	SR	III	Unmodified
Mehl, Karen	65875	12/26/21	SR	II and III	Unmodified
Morioka, Steven	49264	12/08/21	SR	Safety A	Unmodified
Myers, Catherine	45413	12/30/21	SR	II and III	Unmodified
Phelan, Kristine	76460	12/01/21	SR	III	Unmodified
Pollock, Edward	46578	12/25/21	SR	II	Option 2
Price, Theresa	75636	12/01/21	SR	III	Unmodified
Ransom, Robert	65334	12/31/21	SR	Safety A	Option 2
Ringue, Diane	45289	12/31/21	SR	II and III	Unmodified
Self, Melinda	65059	01/01/22	SR	II and III	Unmodified
Sison, Marian	75523	01/01/22	SR	III	Unmodified
Stehr, Debbie	64473	01/01/22	SR	III	Unmodified
Tilton, Dave	61175	12/31/21	SR	III	Unmodified
Wells, D'Andre	67854	12/30/21	SR	III	Unmodified
Whitfield, Constance	71990	12/30/21	SR	I and III	Unmodified
Withrow, Billie	80065	12/02/21	SR	PEPRA 5.3	Unmodified
Zamolo, Craig	65829	01/01/22	SR	Safety C	Unmodified

Option Type

NSP = Non-Specified
 SCD = Service Connected Disability
 SR = Service Retirement
 NSCD = Non-Service Connected Disability
 * = County Advance Selected w/option

I = Tier I
 II = Tier II
 III = Tier III
 S/A = Safety Tier A
 S/C = safety Tier C

Tier

Pepra 4.2 = Pepra Tier 4 (2% COLA)
 Pepra 4.3 = Pepra Tier 4 (3% COLA)
 Pepra 5.2 = Pepra Tier 5 (2% COLA)
 Pepra 5.3 = Pepra Tier 5 (3% COLA)
 S/D = Pepra Safety Tier D
 S/E = Pepra Safety Tier E

CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

BOARD OF RETIREMENT

Meeting Date
05/25/2022
Agenda Item
#6c.

Deaths:

<u>Name</u>	<u>Date of Death</u>	<u>Employer as of Date of Death</u>
Baker, Connie	02/08/22	Contra Costa County
Billings, Carolyn	04/05/22	Contra Costa County
Dean, Jean	09/13/21	Contra Costa County
Gladish, Mary	04/12/22	Contra Costa County
Grabbe, Carol	03/18/22	Superior Courts
Howes, Lorna	02/12/22	Contra Costa County
Longmuir, Barbara	04/06/22	Contra Costa County
Mc Dowell, Suzanne	03/27/22	Contra Costa County
Struth, Mark	04/04/22	Contra Costa County
Thomas, Bobbie Jean	03/26/22	Contra Costa County
Watson, Ollie	01/04/22	Contra Costa County



Meeting Date
05/25/2022
Agenda Item
#6d.

**Contra Costa County Employees' Retirement Association
Liquidity Report – March 2022**

March 2022 Performance

	Cash Flow	Coverage Ratio
Benefit Cash Flow Projected by Model	\$48,000,000	
Liquidity Sub-Portfolio Cash Flow	\$48,000,000	100%
Actual Benefits Paid	\$45,723,616	105.0%
<i>Next Month's Projected Benefit Payment</i>	<i>\$48,000,000</i>	

Monthly Manager Positioning – March 2022

	Beginning Market Value	Liquidity Program Cash Flow	Market Value Change/Other Activity	Ending Market Value
Sit	\$541,488,903	(\$8,750,000)	(\$11,552,785)	\$521,186,119
DFA	\$291,901,160	(\$4,500,000)	(\$5,779,179)	\$281,621,981
Insight	\$617,939,120	(\$34,750,000)	(\$3,646,359)	\$579,542,761
Liquidity	\$1,451,329,183	(\$48,000,000)	(\$20,978,322)	\$1,382,350,861
Cash	\$512,431,545	\$2,276,384	\$42,223,170	\$556,931,099
Liquidity + Cash	\$1,963,760,728	(\$45,723,616)	\$21,244,848	\$1,939,281,960

Functional Roles

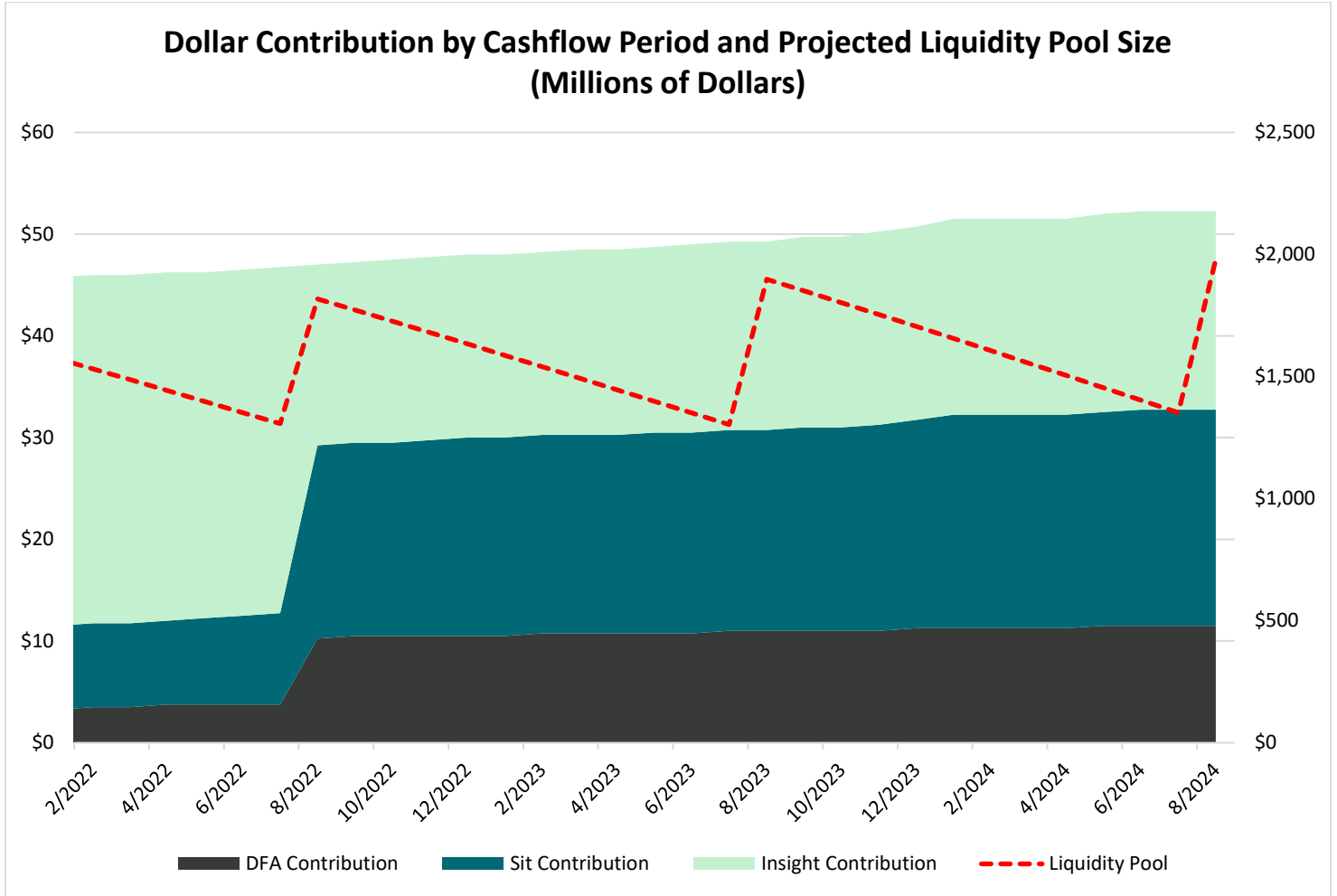
Manager	Portfolio Characteristics	Liquidity Contribution
Sit	High quality portfolio of small balance, government guaranteed mortgages with higher yields.	Pays out net income on monthly basis.
DFA	High quality, short duration portfolio of liquid, low volatility characteristics.	Pays out a pre-determined monthly amount. DFA sources liquidity from across their portfolio.
Insight	Buy and maintain (limited trading) portfolio of high quality, short duration, primarily corporates.	Completion portfolio makes a payment through net income and bond maturities that bridges the gap between other managers and projected payment.
Cash	STIF account at custodial bank.	Buffer in the event of any Liquidity shortfall/excess.

Notes

The third cash flow for 2022 from the liquidity program was completed on March 23rd. The actuarial model cash flow was higher than actual experience, producing \$2.3 million more than the actual benefits paid.

Cash Flow Structure

The chart below shows the sources of cash flow for the next three years of CCCERA’s projected benefit payments. This table will change slightly as the model is tweaked and as the portfolios receive new rounds of funding each July as part of the Annual Funding Plan.



CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

BOARD OF RETIREMENT

Meeting Date
05/25/2022
Agenda Item
#7a.

Disability Retirement Applications: *The Board's Hearing Officer is hereby authorized to issue subpoenas in the following cases involving disability applications:*

<u>Name</u>	<u>Number</u>	<u>Filed</u>	<u>Type</u>
Boswell, James	67032	04/06/22	SCD

<u>Option Type</u>	<u>Tier</u>	
NSP = Non-Specified	I = Tier I	Pepra 4.2 = Pepra Tier 4 (2% COLA)
SCD = Service Connected Disability	II = Tier II	Pepra 4.3 = Pepra Tier 4 (3% COLA)
SR = Service Retirement	III = Tier III	Pepra 5.2 = Pepra Tier 5 (2% COLA)
NSCD = Non-Service Connected Disability	S/A = Safety Tier A	Pepra 5.3 = Pepra Tier 5 (3% COLA)
* = County Advance Selected w/option	S/C = safety Tier C	S/D = Pepra Safety Tier D
		S/E = Pepra Safety Tier E

Meeting Date
05/25/2022
Agenda Item
#7b.

**CCCERA Board of Trustees
 Training & Educational Conference Expenses Paid During
 Quarter 1 - 2022 (January to March)**

Trustee:	Conference Name/Purpose:	Location:	Event Dates:	Total
Candace Andersen	NONE			
Dennis Chebotarev	NONE			
Donald Finley	SIT 40th Annual Client Workshop	Scottsdale, AZ	2/17 - 2/20/2022	\$2,207.44
Scott Gordon	NASP Day of Education in Private Equity	Los Angeles, CA	3/24/2022	645.00
Jerry Holcombe	NONE			
Louie Kroll	NONE			
Jay Kwon	CALAPRS General Assembly	San Diego, CA	3/5 - 3/8/2022	447.96
David J. MacDonald	CALAPRS General Assembly	San Diego, CA	3/5 - 3/8/2022	1,148.19
	NASP Day of Education in Private Equity	Los Angeles, CA	3/24/2022	645.00
John Phillips	NONE			
Reggie Powell	NONE			
Mike Sloan	CALAPRS General Assembly	San Diego, CA	3/5 - 3/8/2022	1,790.40
	CALAPRS Advanced Principles of Pension Governance	Los Angeles, CA	3/30 - 4/1/2022	3,100.00
Russell V. Watts	NONE			

**Contra Costa County Employees' Retirement Association
Asset Allocation as of March 31, 2022**

**Meeting Date
05/25/2022
Agenda Item
#7c.**

Liquidity	Market Value	Percentage of Total Fund	Current Target* Percentage	Current Target Over/(Under)	Long Term Target	Long Term Over/(Under)
Sit	521,186,119	4.8%	7.0%	-2.2%		
Dimensional Fund Advisors	281,621,981	2.6%	4.0%	-1.4%		
Insight	579,542,761	5.3%	7.0%	-1.7%		
Total Liquidity	1,382,350,861	12.7%	18.0%	-5.3%	17.0%	-4.3%

**Range
11-22%**

Growth	Market Value	Percentage of Total Fund	Current Target* Percentage	Current Target Over/(Under)	Long Term Target	Long Term Over/(Under)
Domestic Equity						
Boston Partners	417,910,620	3.8%	4.0%	-0.2%		
Jackson Square	291,974,099	2.7%	4.0%	-1.3%		
BlackRock Index Fund	612,596,798	5.6%	5.0%	0.6%		
Emerald Advisers	229,413,749	2.1%	1.5%	0.6%		
Ceredex	197,625,614	1.8%	1.5%	0.3%		
Total Domestic Equity	1,749,520,880	16.1%	16.0%	0.1%	13.0%	3.1%

Global & International Equity

Pyrford (BMO)	487,895,895	4.5%	4.0%	0.5%		
William Blair	479,112,229	4.4%	4.0%	0.4%		
First Eagle	526,400,117	4.8%	4.5%	0.3%		
Artisan Global Opportunities	547,750,802	5.0%	4.5%	0.5%		
PIMCO/RAE Emerging Markets	372,890,359	3.4%	4.0%	-0.6%		
TT Emerging Markets	376,885,999	3.5%	4.0%	-0.5%		
Total Global & International Equity	2,790,935,403	25.7%	25.0%	0.7%	19.0%	6.7%

Private Equity**	1,433,327,782	13.2%	11.0%	2.2%	18.0%	-4.8%
Private Credit	867,110,612	8.0%	8.0%	-0.0%	13.0%	-5.0%
Real Estate - Value Add	206,518,808	1.9%	4.0%	-2.1%	5.0%	-3.1%
Real Estate - Opportunistic & Distressed	344,666,139	3.2%	4.0%	-0.8%	5.0%	-1.8%
Real Estate - REIT (Adelante)	109,454,839	1.0%	2.0%	-1.0%	0.0%	1.0%
High Yield (Allianz)	175,881,035	1.6%	2.0%	-0.4%	0.0%	1.6%
Risk Parity			3.0%	1.4%	3.0%	1.4%
AQR GRP EL	216,916,803	2.0%				
PanAgora	258,421,100	2.4%				
Total Other Growth Assets	3,612,297,119	33.3%	34.0%	-0.7%	44.0%	-10.7%

Total Growth Assets	8,152,753,401	75.0%	75.0%	0.0%	76.0%	-1.0%
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**Range
65-85%**

Risk Diversifying	Market Value	Percentage of Total Fund	Current Target* Percentage	Current Target Over/(Under)	Long Term Target	Long Term Over/(Under)
AFL-CIO	243,910,485	2.2%	2.5%	-0.3%	2.5%	-0.3%
Acadian MAARS	248,052,861	2.3%	1.5%	0.8%	1.5%	0.8%
Sit LLCAR	279,209,030	2.6%	1.5%	1.1%	1.5%	1.1%
Wellington Real Total Return	114,127	0.0%	0.0%	0.0%	0.0%	0.0%
Total Risk Diversifying	771,286,503	7.1%	7.0%	0.1%	5.5%	1.6%

**Range
0% - 10%**

Cash and Overlay	Market Value	Percentage of Total Fund	Current Target* Percentage	Current Target Over/(Under)	Long Term Target	Long Term Over/(Under)
Overlay (Parametric)	111,350,575	1.0%		1.0%		
Cash	445,580,523	4.1%		4.1%		
Total Cash and Overlay	556,931,099	5.1%	0.0%	5.1%	0.0%	5.1%

Total Fund	10,863,321,864	100%	100%		99%	
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*Current targets and ranges reflect asset allocation targets accepted by the Board on April 28, 2021 (BOR Resolution 2021-4).

**Private Equity long-term target includes Real Assets/Infrastructure (see Asset Allocation Mix 5 adopted December 9, 2020).

**Private Market Investments
As of March 31, 2022**

REAL ESTATE - Value Add

	Inception Date	Target Termination	# of Extension	Discretion by GP/LP	New Target Termination	Funding Commitment	Market Value	% of Total Asset	Outstanding Commitment
Invesco IREF III	08/01/13	08/01/20				35,000,000	7,905	0.00%	
Invesco IREF IV	12/01/14	12/01/21				35,000,000	2,946,935	0.03%	4,453,599
Invesco IREF V	09/11/18	09/11/25				75,000,000	70,423,006	0.65%	19,389,232
Long Wharf FREG IV	08/14/13	09/30/21				25,000,000	1,534,775	0.01%	
Long Wharf FREG V	10/31/16	09/30/24				50,000,000	30,137,047	0.28%	
Long Wharf LREP VI	02/05/20	02/05/28				50,000,000	25,523,294	0.23%	18,989,177
LaSalle Income & Growth Fund VI	01/31/12	01/31/19				75,000,000	20,071,144	0.18%	3,946,000
LaSalle Income & Growth Fund VII	10/31/16	09/30/24				75,000,000	55,874,702	0.51%	8,502,404
						630,000,000	206,518,808	1.90%	55,280,412
Outstanding Commitments							55,280,412		
Total							261,799,220		

REAL ESTATE -Opportunistic & Distressed

	Inception Date	Target Termination	# of Extension	Discretion by GP/LP	New Target Termination	Funding Commitment	Market Value	% of Total Asset	Outstanding Commitment
DLJ Real Estate Capital Partners, L.P. III	06/30/05	06/30/14	in full liq.			75,000,000	14,991,850	0.14%	4,031,338
DLJ Real Estate Capital Partners, L.P. IV	12/31/07	09/30/18				100,000,000	47,925,187	0.44%	1,876,084
DLJ Real Estate Capital Partners, L.P. V	07/31/13	12/31/22				75,000,000	28,975,117	0.27%	5,092,727
DLJ Real Estate Capital Partners, L.P. VI	02/28/19	01/31/29				50,000,000	23,225,689	0.21%	21,346,526
Oaktree Real Estate Opportunities Fund V	02/01/11	02/01/21				50,000,000	1,219,147	0.01%	25,750,000
Oaktree Real Estate Opportunities Fund VI	09/30/13	09/30/20				80,000,000	26,271,187	0.24%	18,400,000
Oaktree Real Estate Opportunities Fund VII	02/28/15	02/28/23				65,000,000	48,997,153	0.45%	16,120,000
Siguler Guff Distressed Real Estate Opp. Fund	07/30/11	07/30/22				75,000,000	21,658,383	0.20%	5,625,000
Siguler Guff Distressed Real Estate Opp. Fund II	08/31/13	08/31/25				70,000,000	41,890,216	0.39%	8,015,000
Siguler Guff Distressed Real Estate Opp. II Co-Inv	01/31/16	10/31/25				25,000,000	15,595,215	0.14%	4,462,138
Paulson Real Estate Fund II	11/10/13	11/10/20				20,000,000	16,531,343	0.15%	654,377
Angelo Gordon Realty Fund VIII	12/31/11	12/31/18				80,000,000	16,031,595	0.15%	12,334,302
Angelo Gordon Realty Fund IX	10/10/14	10/10/22				65,000,000	41,354,057	0.38%	7,572,500
						830,000,000	344,666,139	3.17%	131,279,992
Outstanding Commitments							131,279,992		
Total							475,946,131		

PRIVATE CREDIT

	Inception Date	Target Termination	# of Extension	Discretion by GP/LP	New Target Termination	Funding Commitment	Market Value	% of Total Asset	Outstanding Commitment
Torchlight Debt Opportunity Fund III	09/30/08	06/30/16	2nd 1 YR	LP	06/30/18	75,000,000	0	0.00%	0
Torchlight Debt Opportunity Fund IV	08/01/12	08/30/20				60,000,000	9,064,530	0.08%	0
Torchlight Debt Opportunity Fund V	12/31/14	09/17/22				75,000,000	9,277,517	0.09%	15,000,000
Angelo Gordon Energy Credit Opportunities	09/10/15	09/10/20				16,500,000	3,546,515	0.03%	2,319,783
CCCERA StepStone	12/01/17	11/30/27				1,170,000,000	845,222,050	7.78%	435,149,509
						1,524,500,000	867,110,612	7.98%	452,469,292
Outstanding Commitments							452,469,292		
Total							1,319,579,904		

**Private Market Investments
As of March 31, 2022**

PRIVATE EQUITY	Inception Date	Target Termination	# of Extension	Discretion by GP/LP	New Target Termination	Funding Commitment	Market Value	% of Total Asset	Outstanding Commitment
Adams Street Partners	12/22/95	12/22/25				269,565,614	177,094,300	1.63%	20,267,580
Adams Street Secondary II	12/31/08	12/31/20				30,000,000	3,778,775	0.03%	1,635,000
Adams Street Secondary V	10/31/12	10/31/22				40,000,000	14,716,238	0.14%	9,154,125
Adams Street Venture Innovation Fund	03/09/16	03/09/28				75,000,000	211,850,261	1.95%	8,962,500
AE Industrial Partners Fund II	05/18/18	05/18/28				35,000,000	42,632,691	0.39%	11,223,193
Bay Area Equity Fund	06/14/04	12/31/14	2nd 2 YR	LP	12/31/2017	10,000,000	1,241,100	0.01%	0
Bay Area Equity Fund II	2/29/09	12/31/19				10,000,000	18,516,533	0.17%	0
Carpenter Community BancFund	10/31/09	10/31/19				30,000,000	0	0.00%	0
EIF USPF II	06/15/05	06/15/15	3rd 1 YR	LP	06/15/18	50,000,000	3,584,649	0.03%	0
EIF USPF III	02/28/07	02/28/17	1st 1 YR	LP	02/28/18	65,000,000	10,579,825	0.10%	0
EIF USPF IV	06/28/10	06/28/20				50,000,000	27,276,860	0.25%	4
Ares EIF V	09/09/15	11/19/25				50,000,000	32,332,493	0.30%	6,194,129
Genstar Capital Partners IX	02/18/19	02/18/29				50,000,000	62,554,203	0.58%	6,353,006
Genstar Capital Partners X	04/01/21	04/01/31				42,500,000	5,480,401	0.05%	37,271,270
GTCR VIII	10/27/20	12/31/36				50,000,000	10,582,123	0.10%	40,820,000
Hellman & Friedman Capital Partners	05/10/21	05/10/31				75,000,000	38,721,519	0.36%	34,117,819
Leonard Green - Green Equity Investors IX	03/01/22	02/28/32				60,000,000	0	0.00%	0
Leonard Green - Jade Equity Investors II	03/01/22	02/28/32				15,000,000	0	0.00%	0
Oaktree Private Investment Fund 2009	02/28/10	12/15/19				40,000,000	477,280	0.00%	6,308,961
Ocean Avenue Fund II	05/07/14	05/07/24				30,000,000	30,039,218	0.28%	3,000,000
Ocean Avenue Fund III	12/09/15	12/09/25				50,000,000	47,737,032	0.44%	6,000,000
Paladin III	08/15/08	08/15/18				25,000,000	23,922,380	0.22%	419,157
Pathway	11/09/98	05/31/21				125,000,000	4,850,787	0.04%	10,557,887
Pathway 2008	12/26/08	12/26/23				30,000,000	21,274,710	0.20%	2,814,932
Pathway 6	05/24/11	05/24/26				40,000,000	45,780,297	0.42%	3,690,651
Pathway 7	02/07/13	02/07/23				70,000,000	89,732,272	0.83%	5,497,420
Pathway 8	11/23/15	11/23/25				50,000,000	79,873,243	0.74%	5,385,535
Siguler Guff CCCERA Opportunities	06/03/14	05/31/25				200,000,000	148,961,586	1.37%	29,597,500
Siguler Guff Secondary Opportunities	12/31/16	12/31/26				50,000,000	0	0.00%	0
Siris Partners IV	05/18/18	05/18/28				35,000,000	31,081,399	0.29%	14,895,014
TA XIV	05/27/21	05/27/31				50,000,000	13,500,000	0.12%	36,500,000
TPG Healthcare Partners, L.P.	06/27/19	06/27/29				24,000,000	16,653,502	0.15%	12,030,771
Trident VIII, L.P.	05/24/19	05/24/29				40,000,000	48,307,304	0.44%	3,785,168
Trident IX, L.P.	09/17/21	09/17/31				50,000,000	0	0.00%	50,000,000
Real Assets									
Aether III & III Surplus	11/30/13	11/30/20				75,000,000	61,135,440	0.56%	3,443,723
Aether IV	01/01/16	01/01/28				50,000,000	55,377,863	0.51%	4,103,494
Commonfund Capital Natural Resources IX	06/30/13	06/30/20				50,000,000	37,492,843	0.35%	3,225,007
Wastewater Opportunity Fund	12/31/15	11/30/22				25,000,000	16,188,655	0.15%	1,204,775
						2,111,065,614	1,433,327,782	14.82%	328,458,620
Outstanding Commitments							328,458,620		
Total							1,761,786,402		

Market value equals the most recent reported net asset value, plus capital calls after net asset value date, less distributions after net asset value date.
The Target Termination column is the beginning of liquidation of the fund, however, some funds may be extended for an additional two or three years.



Meeting Date
05/25/2022
Agenda Item
#8

MEMORANDUM

Date: May 25, 2022
To: CCCERA Board of Retirement
From: Gail Strohl, Chief Executive Officer
Subject: Consider and take possible action to adopt the contribution rates for the period July 1, 2022-June 30, 2023 for the Contra Costa County Fire Protection District.

Background

Effective July 1, 2022, East Contra Costa County Fire Protection District will be annexed into Contra Costa County Fire Protection District. July 1, 2022 contribution rates are based on the December 31, 2020 actuarial valuation which presented both districts separately. Segal Consulting has provided employer and member contribution rates to be used by Contra Costa Fire Protection District for the period from July 1, 2022 to June 30, 2023 taking into account this change.

Recommendation

Consider and take possible action to adopt the employer and member contribution rates for the period July 1, 2022-June 30, 2023 for the Contra Costa County Fire Protection District.

Via Email

May 10, 2022

Gail Strohl
Chief Executive Officer
Contra Costa County Employees' Retirement Association
1200 Concord Avenue, Suite 300
Concord, CA 94520

**Re: Contra Costa County Employees' Retirement Association (CCCERA)
Revised 2022/2023 Employer and Member Contribution Rates for Contra Costa
County Fire Protection District in Cost Groups #5 and #8 After Annexation with
East Contra Costa Fire Protection District**

Dear Gail:

We have been requested by CCCERA to recalculate the 2022/2023 Fiscal Year employer and member contribution rates, based on the December 31, 2020 valuation, for the Contra Costa County Fire Protection District (Con Fire) in Cost Groups #5 and #8 after the annexation with East Contra Costa Fire Protection District (East Fire). In addition, we have also been requested to determine the asset and liability information for members of East Fire that are included in the original Cost Groups #1 and #13 using the December 31, 2020 valuation results.

A discussion of the methodology we have used in preparing the calculation is provided in this letter. The recalculated 2022/2023 Fiscal Year employer and member contribution rates for Cost Groups #5 and #8 are provided in the attached Exhibits.

Background

On March 9, 2022, Local Agency Formation Commissions (LAFCO) approved the annexation of East Fire into Con Fire effective on July 1, 2022. As a result, we understand employees of East Fire will become employees of Con Fire effective July 1, 2022. We further understand the assets and liabilities associated with East Fire will become those of Con Fire on the annexation date.

Prior to the annexation, Safety Con Fire and Safety East Fire are in Cost Group #8 and Cost Group #13, respectively, where they are the sole employers of the members in the two Cost Groups.¹ However, while General Con Fire is the sole employer of the members in Cost

¹ Prior to the December 31, 2019 valuation, Safety members from East Fire were pooled with Safety members from Con Fire in Cost Group #8. Effective with the December 31, 2019 valuation, the Board took action upon a request made by East Fire to depool Safety members of East Fire from Cost Group #8 and to move those members into a new Cost Group #13.

Group #5, General East Fire members are a part of Cost Group #1 pooled with members from other employers in that Cost Group.²

The Cost Group assignments for East Fire and Con Fire members before and after the annexation are summarized in the table below.

Cost Group Assignments Before and After Annexation

	Before Annexation		After Annexation
	East Fire	Con Fire	
General Members	Cost Group #1	Cost Group #5	Cost Group #5
Safety Members	Cost Group #13	Cost Group #8	Cost Group #8

Calculations

Because the annexation effective date is July 1, 2022, the transfer of assets and liabilities associated with the combination of East Fire with Con Fire will not be reflected until the December 31, 2021 valuation, which sets the contribution rates for the 2023/2024 Fiscal Year after the annexation occurs. The employer and member contribution rates as calculated in the December 31, 2020 valuation (for the 2022/2023 Fiscal Year) were determined when East Fire and Con Fire members were in separate Cost Groups. In order to develop the contribution rates for the two employers combined for the 2022/2023 Fiscal Year, we have calculated the employer and member contribution rates using the method described below.

The pooling methods used in the ongoing December 31, 2020 valuation that we have also applied in preparing this letter implicitly assume that there is no difference in membership demographic for the members employed by the different employers in the same cost group. Besides assuming that the employer and member normal cost rates for General East Fire are the same as those determined in the December 31, 2020 valuation for Cost Group #1,³ we have allocated the Cost Group #1 Unfunded Actuarial Accrued Liability (UAAL) to General East Fire based on the East Fire’s active member payroll in proportion to the total active payroll for all members in Cost Groups #1 and #2. Under this method, there will be no impact on the employer and member contribution rates previously determined and approved by the Board in the December 31, 2020 valuation for the other 11 employers with members enrolled in Cost Group #1 and Cost Group #2.

We are providing the following contribution rate exhibits in this letter as attachments. They are determined as of the December 31, 2020 for the 2022/2023 Fiscal Year.

² The Normal Cost for General East Fire members are pooled with other employers in Cost Group #1. The Unfunded Actuarial Accrued Liability (UAAL) contribution rates for General East Fire members are pooled with other employers in Cost Group #1 and Cost Group #2.

³ Any actual change in the normal cost rates that arises from difference in membership demographic between members from General East Fire and members from other employers in Cost Group #1 will be reflected in the December 31, 2021 valuation when the General East Fire’s members depool from Cost Group #1.

Exhibit 1: Cost Group #5 Employer Contribution Rates after Annexation

This exhibit provides the employer contribution rates for Cost Group #5 by tier after the annexation. We calculated a weighted average employer rate for each tier (i.e., General Tier 1, General PEPRA Tier 4 – 3% COLA and General PEPRA Tier 4 – 2% COLA) by prorating the General East Fire employer rates in Cost Group #1 and General Con Fire employer rates in Cost Group #5 as determined in the December 31, 2020 valuation in proportion to the General East Fire and General Con Fire's projected payroll in each corresponding tier.

Exhibit 2: Cost Group #5 Legacy Member Contribution Rates after Annexation

This exhibit provides the member contribution rates for Cost Group #5 Legacy members after the annexation. The method used in determining the entry-age based Basic rates are governed by the same section of CERL for both General East Fire and General Con Fire Legacy members. Therefore, the Basic rates are substantially the same for the two Groups.⁴ The Cost-of-Living rates have been recalculated using a new Cost-of-Living loading factor which combines the valuation results for General East Fire Legacy members in Cost Group #1 and General Con Fire Legacy members in Cost Group #5.

Exhibit 3: Cost Group #5 PEPRA Member Contribution Rates after Annexation

This exhibit provides the member contribution rates for Cost Group #5 PEPRA members after annexation. We calculated a weighted average member rate for each PEPRA tier (i.e., General PEPRA Tier 4 – 3% COLA and General PEPRA Tier 4 – 2% COLA) by prorating the General East Fire PEPRA member rates in Cost Group #1 and General Con Fire PEPRA member rates in Cost Group #5 as determined in the December 31, 2020 valuation in proportion to the General East Fire and General Con Fire's projected payroll in each corresponding PEPRA tier.

It is our understanding that East Fire's members will be governed by the Con Fire's employment rules after the annexation and some members in the PEPRA 3% COLA tier may be changed to the PEPRA 2% COLA tier based on their membership dates. However, as the contribution rates determined in this letter are developed based on the December 31, 2020 valuation and specific information on which member will be enrolled in the PEPRA 2% COLA tier after the annexation is not available at the time of this letter, we have kept the PEPRA 3% COLA tier member of East Fire in the PEPRA 3% COLA tier for the member (and the employer) contribution rate calculations in this letter. Segal will reflect the actual PEPRA tier assignments for the General East Fire PEPRA members once the actual tier assignments are provided to us.⁵

Exhibit 4: Cost Group #8 Employer Contribution Rates after Annexation

This exhibit provides the employer contribution rates for Cost Group #8 by tier after the annexation. We calculated a weighted average employer rate for each tier (i.e., Safety Tier A, Safety PEPRA Tier D and Safety PEPRA Tier E) by prorating the Safety East Fire employer rates in Cost Group #13 and Safety Con Fire employer rates in Cost Group #8 as

⁴ The only difference in the calculation of the General Legacy Basic member rate is the application of different leave cashout assumptions for Con Fire members (1.25%) and East Fire members (1.00%). However, as there was only 1 General Legacy East Fire member in the December 31, 2020 valuation, we have applied the 1.25% leave cashout assumption for the combined group in this calculation.

⁵ We understand that such information will be provided in the census data for the December 31, 2022 valuation.

determined in the December 31, 2020 valuation in proportion to the Safety East Fire and Safety Con Fire's projected payroll in each corresponding tier.

Exhibit 5: Cost Group #8 Legacy Member Contribution Rates after Annexation

This exhibit provides the member contribution rates for Cost Group #8 Legacy members after the annexation. For Safety Legacy Tier A members, the method used in determining the Basic rates are the same for both Safety East Fire and Safety Con Fire Legacy members as they are governed by the same section of CERL and they have been calculated using the same actuarial assumptions, including the 0.50% leave cashout assumption in the December 31, 2020 valuation. The Cost-of-Living rates have been recalculated using a new Cost-of-Living loading factor which combines the valuation results for Safety East Fire Legacy members in Cost Group #13 and Safety Con Fire Legacy members in Cost Group #8.

Exhibit 6: Cost Group #8 PEPRA Member Contribution Rates after Annexation

This exhibit provides the member contribution rates for Cost Group #8 PEPRA members after the annexation. We calculated a weighted average member rate for each PEPRA tier (i.e., Safety PEPRA Tier D and Safety PEPRA Tier E) by prorating the Safety East Fire PEPRA member rates in Cost Group #13 and Safety Con Fire PEPRA member rates in Cost Group #8 as determined in the December 31, 2020 valuation in proportion to the Safety East Fire and Safety Con Fire's projected payroll in each corresponding PEPRA tier.

Information on Liabilities and Unfunded Actuarial Accrued Liabilities

As mentioned above, the transfer of assets and liabilities associated with East Fire to Con Fire will not be reflected until the December 31, 2021 valuation. Again, since General East Fire members are a part of Cost Group #1 and the UAAL contribution rate is pooled with other employers of Cost Group #1 and Cost Group #2, we have allocated General East Fire's UAAL based on their active member projected payroll in proportion to the total active projected payroll of all members in Cost Groups #1 and #2. The valuation value of assets (VVA) allocated to General East Fire under this method is \$1,075,551. This amount when added to the \$51,889,630 determined and tracked separately for Safety East Fire (i.e., Cost Group 13) in the December 31, 2020 valuation resulted in total VVA assets of \$52,965,181 as of that date. (We note that if instead of allocating based on payroll, we were to use the method which was used in 2020 when East Fire requested to have their Safety members be depooled from Con Fire (i.e., allocate UAAL based on Actuarial Accrued Liability (AAL)⁶ rather than on payroll), it would increase the General East Fire asset transfer amount by about \$214,000.)

Exhibit 7 provides East Fire's assets, liabilities, UAAL, and demographic information in Cost Group #1 and Cost Group #13 based on the December 31, 2020 actuarial valuation.

⁶ This method had been approved by the Board to depool Safety Cost Group in the past.

Actuarial Assumptions

These calculations are based on the December 31, 2020 actuarial valuation results including the participant data, actuarial assumptions, methods, and models on which that valuation was based, with the exception of any changes discussed herein. That valuation and these calculations were completed under the supervision of Andy Yeung, ASA, MAAA, FCA and Enrolled Actuary.

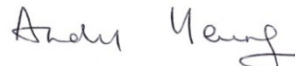
The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

Please let us know if you have any questions, and we look forward to discussing this with you and your Board.

Sincerely,



Paul Angelo, FSA, MAAA, FCA, EA
Senior Vice President & Actuary



Andy Yeung, ASA, MAAA, FCA, EA
Vice President & Actuary

AW/hy

cc: Christina Dunn

Employer Contribution Rates for General Cost Group #5 After Annexation

December 31, 2020 Actuarial Valuation⁷
Recommended Rates for FY 2022-23

General Cost Group #5	Basic	COLA	Total	Estimated Annual Dollar Amount
CCCYPD General Tier 1				
Normal Cost	14.61%	3.90%	18.51%	\$740,647
UAAL	<u>11.51%</u>	<u>8.54%</u>	<u>20.05%</u>	<u>802,171</u>
Total Contribution	26.12%	12.44%	38.56%	\$1,542,818
CCCYPD General Tier 4 (3% COLA)				
Normal Cost	9.85%	3.30%	13.15%	\$90,523
UAAL	<u>11.51%</u>	<u>8.54%</u>	<u>20.05%</u>	<u>137,989</u>
Total Contribution	21.36%	11.84%	33.20%	\$228,512
CCCYPD General Tier 4 (2% COLA)				
Normal Cost	10.25%	2.29%	12.54%	\$358,791
UAAL	<u>11.51%</u>	<u>8.54%</u>	<u>20.05%</u>	<u>573,598</u>
Total Contribution	21.76%	10.83%	32.59%	\$932,389

The projected compensations for General East Fire and General Con Fire as of December 31, 2020 are as follows:

	Projected Compensation
East Fire General Tier 1	\$71,739
Con Fire General Tier 1	\$3,929,580
East Fire General Tier 4 (3% COLA)	\$421,810
Con Fire General Tier 4 (3% COLA)	\$266,496
East Fire General Tier 4 (2% COLA)	\$0
Con Fire General Tier 4 (2% COLA)	\$2,861,175
Total	\$7,550,800

⁷ The Basic Normal Cost and UAAL rates shown include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

Legacy Member Contribution Rates for General Cost Group #5
After Annexation (as a % of Monthly Payroll)

Cost Group #5 – Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	5.33%	2.84%	8.17%
16	5.42%	2.89%	8.31%
17	5.52%	2.95%	8.47%
18	5.62%	3.01%	8.63%
19	5.72%	3.07%	8.79%
20	5.82%	3.13%	8.95%
21	5.92%	3.18%	9.10%
22	6.03%	3.25%	9.28%
23	6.13%	3.31%	9.44%
24	6.24%	3.37%	9.61%
25	6.35%	3.44%	9.79%
26	6.47%	3.51%	9.98%
27	6.58%	3.57%	10.15%
28	6.70%	3.64%	10.34%
29	6.82%	3.71%	10.53%
30	6.94%	3.78%	10.72%
31	7.06%	3.85%	10.91%
32	7.19%	3.93%	11.12%
33	7.32%	4.01%	11.33%
34	7.45%	4.08%	11.53%
35	7.59%	4.16%	11.75%
36	7.72%	4.24%	11.96%
37	7.87%	4.33%	12.20%
38	8.01%	4.41%	12.42%
39	8.16%	4.50%	12.66%
40	8.31%	4.59%	12.90%
41	8.47%	4.68%	13.15%
42	8.62%	4.77%	13.39%
43	8.77%	4.86%	13.63%
44	8.92%	4.94%	13.86%
45	9.08%	5.04%	14.12%
46	9.24%	5.13%	14.37%
47	9.40%	5.22%	14.62%
48	9.55%	5.31%	14.86%
49	9.71%	5.41%	15.12%
50	9.87%	5.50%	15.37%

**Legacy Member Contribution Rates for General Cost Group #5
After Annexation (as a % of Monthly Payroll)**

**Cost Group #5 – Members with Membership Dates before January 1, 2013
(continued)**

Entry Age	Basic	COLA	Total
51	10.03%	5.59%	15.62%
52	10.18%	5.68%	15.86%
53	10.35%	5.78%	16.13%
54	10.51%	5.88%	16.39%
55	10.62%	5.94%	16.56%
56	10.69%	5.98%	16.67%
57	10.75%	6.02%	16.77%
58	10.63%	5.95%	16.58%
59 & Over	10.31%	5.76%	16.07%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I* of the December 31, 2020 Actuarial Valuation
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I* of the December 31, 2020 Actuarial Valuation)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 1.25%
COLA Loading Factor: 58.64%, applied to Basic rates prior to adjustment for administrative expenses.

PEPRA Member Contribution Rates for General Cost Group #5
After Annexation
(as a % of Monthly Payroll)

Cost Group #5 – Members with Membership Dates On or After January 1, 2013

	Basic	COLA	Total
PEPRA Tier 4 (3% COLA)	9.85%	3.30%	13.15%
PEPRA Tier 4 (2% COLA)	10.25%	2.29%	12.54%

The PEPRA member contribution rates are 50% of the Normal Cost rate. The Basic rates shown above also include an administrative expense load of 0.49% of payroll.

Note: It is our understanding that in the determination of pension benefits under the PEPRA formulas, for an employer that is enrolled in Social Security the maximum compensation that can be taken into account for 2021 is equal to \$128,059. For an employer that is not enrolled in Social Security, the maximum amount is \$153,671. (§7522.10) These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2021. (§7522.10(d))

Employer Contribution Rates for Safety Cost Group #8 After Annexation

December 31, 2020 Actuarial Valuation⁸
Recommended Rates for FY 2022-23

Safety Cost Group #8	Basic	COLA	Total	Estimated Annual Dollar Amount
Safety Tier A				
Normal Cost	22.86%	7.37%	30.23%	\$10,526,051
UAAL	<u>11.03%</u>	<u>26.68%</u>	<u>37.71%</u>	<u>13,128,399</u>
Total Contribution	33.89%	34.05%	67.94%	\$23,654,450
Safety Tier D				
Normal Cost	12.28%	5.06%	17.34%	\$458,151
UAAL	<u>11.03%</u>	<u>26.68%</u>	<u>37.71%</u>	<u>996,628</u>
Total Contribution	23.31%	31.74%	55.05%	\$1,454,779
Safety Tier E				
Normal Cost	12.01%	3.30%	15.31%	\$1,716,983
UAAL	<u>11.03%</u>	<u>26.68%</u>	<u>37.71%</u>	<u>4,228,635</u>
Total Contribution	23.04%	29.98%	53.02%	\$5,945,618

The projected compensations for Safety East Fire and Safety Con Fire as of December 31, 2020 are as follows:

	Projected Compensation
East Fire Safety Tier A	\$3,412,105
Con Fire Safety Tier A	\$31,405,776
East Fire Safety Tier D	\$663,783
Con Fire Safety Tier D	\$1,979,379
East Fire Safety Tier E	\$0
Con Fire Safety Tier E	\$11,214,780
Total	\$48,675,823

⁸ The Basic Normal Cost and UAAL rates shown include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

Legacy Member Contribution Rates for Safety Cost Group #8
After Annexation
(as a % of Monthly Payroll)

Cost Group #8 – Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	9.46%	6.41%	15.87%
16	9.46%	6.41%	15.87%
17	9.46%	6.41%	15.87%
18	9.46%	6.41%	15.87%
19	9.46%	6.41%	15.87%
20	9.46%	6.41%	15.87%
21	9.46%	6.41%	15.87%
22	9.60%	6.51%	16.11%
23	9.74%	6.61%	16.35%
24	9.89%	6.71%	16.60%
25	10.04%	6.82%	16.86%
26	10.19%	6.93%	17.12%
27	10.34%	7.04%	17.38%
28	10.50%	7.15%	17.65%
29	10.66%	7.26%	17.92%
30	10.82%	7.38%	18.20%
31	10.99%	7.50%	18.49%
32	11.17%	7.63%	18.80%
33	11.34%	7.75%	19.09%
34	11.53%	7.89%	19.42%
35	11.72%	8.02%	19.74%
36	11.90%	8.15%	20.05%
37	12.10%	8.29%	20.39%
38	12.29%	8.43%	20.72%
39	12.49%	8.57%	21.06%

Legacy Member Contribution Rates for Safety Cost Group #8
After Annexation
(as a % of Monthly Payroll)

**Cost Group #8 – Members with Membership Dates before January 1, 2013
(continued)**

Entry Age	Basic	COLA	Total
40	12.71%	8.73%	21.44%
41	12.93%	8.89%	21.82%
42	13.16%	9.05%	22.21%
43	13.39%	9.21%	22.60%
44	13.64%	9.39%	23.03%
45	13.85%	9.54%	23.39%
46	13.92%	9.59%	23.51%
47	13.86%	9.55%	23.41%
48	13.77%	9.49%	23.26%
49 & Over	13.26%	9.12%	22.38%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I* of the December 31, 2020 Actuarial Valuation
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I* of the December 31, 2020 Actuarial Valuation)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 0.50%
COLA Loading Factor: 71.43%, applied to Basic rates prior to adjustment for administrative expenses.

PEPRA Member Contribution Rates for Safety Cost Group #8
After Annexation
(as a % of Monthly Payroll)

Cost Group #8 – Members with Membership Dates On or After January 1, 2013

	Basic	COLA	Total
PEPRA Tier D	12.28%	5.06%	17.34%
PEPRA Tier E	12.01%	3.30%	15.31%

The PEPRA member contribution rates are 50% of the Normal Cost rate. The Basic rates shown above also include an administrative expense load of 0.49% of payroll.

Note: It is our understanding that in the determination of pension benefits under the PEPRA formulas, for an employer that is enrolled in Social Security the maximum compensation that can be taken into account for 2021 is equal to \$128,059. For an employer that is not enrolled in Social Security, the maximum amount is \$153,671. (§7522.10) These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2021. (§7522.10(d))

East Fire's Assets and Liabilities Determined as of December 31, 2020

	General Cost Group #1	Safety Cost Group #13	Total
Valuation Value of Assets (VVA)	\$1,075,551	\$51,889,630	\$52,965,181
Actuarial Accrued Liabilities (AAL)	1,412,302	57,151,635	58,563,937
Unfunded Actuarial Accrued Liabilities (UAAL)	336,751	5,262,005	5,598,756
Active Member Count	6	38	44
Inactive Vested Member Count	0	28	28
Retired Member Count	1	25	26
Beneficiary in Pay Status Count	1	4	5

Note: The allocation of General Cost Group #1 UAAL (and hence VVA) for East Fire is based on active member payroll as of December 31, 2020.

Meeting Date
05/25/2022
Agenda Item
#9a.

Verus 



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



PERIOD ENDING: MARCH 31, 2022

Investment Performance Review for

Contra Costa County Employees' Retirement Association

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Investment Landscape

TAB I

Investment Performance
Review

TAB II



**PERSPECTIVES
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2ND QUARTER 2022
Investment Landscape

Recent Verus research

Visit: <https://www.verusinvestments.com/insights/>

Sound thinking

2022: BACK TOWARDS NORMAL?

As we do every year, during January we sit down to think about what might matter for the coming year – and that process always begins with us assessing how we did the previous year. The goal of this is to help boards prioritize their work, whether it is actually allocating money or simply setting the agenda of topics they should be thinking about. In the latest Sound Thinking, our CIO, Ian Toner, CFA will review topics from the previous year and outline the following topics that an investor might want to add to their agenda for the coming year.

Annual research

2022 ACTIVE MANAGEMENT ENVIRONMENT

Active manager dispersion has been very wide recently, as the pandemic-induced global recession and subsequent fast-paced recovery resulted in considerable economic divergence. These dynamics have created interesting opportunities for active managers to show differentiated performance and deliver alpha to clients. We hope that the insights from this unique mathematical approach provide a deeper understanding of active manager behavior and assists investors in their selection process.

Verus business update

Since our last Investment Landscape webinar:

- Verus has hired three employees. **Tim McEnery**, Managing Director | Senior Consultant; **Samantha Grant**, Senior Consultant; and **Kyle Jangard**, Public Markets Research Analyst.
 - Tim and Samantha will establish a Verus office in Chicago. Expanding our Midwest presence has been a long-term strategic goal to grow our nationwide services.
- We've had success over the last three months in retaining several new clients. Our national client footprint expanded to 25 states, with our recent additions of clients in Hawaii and North Dakota.
- The IIDC grew to 25 consulting firms with over \$42 trillion in assets under advisement. Verus founded the Institutional Investing Diversity Cooperative in December 2020, leading a call to action in the consulting industry for disclosure of asset manager diversity data at the investment team level.



TIM MCENERY, CFA
Managing Director | Senior Consultant



SAMANTHA GRANT, CFA, CAIA
Senior Consultant



KYLE JANGARD
Public Markets Research Analyst

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1st quarter summary

THE ECONOMIC CLIMATE

- Real GDP grew at a 5.5% rate year-over-year in Q4 (+6.9% quarterly annualized rate). Strong expenditures into new inventory boosted growth, as many businesses have struggled to replenish inventory levels in the face of global supply chain issues. Business investment and rising exports also contributed to the strong pace of growth. **p. 8**
- The rate of unemployment in the U.S. has continued to fall, improving from 3.9% to 3.6% during the quarter. The labor force participation rate has gradually increased, rising from 61.6% to 62.4%. A historic shortage of workers may remain a sticky issue, as 11.3 million job openings are posted, but only 6.0 million Americans are seeking work. **p. 11**

PORTFOLIO IMPACTS

- High yield credit spreads expanded from 2.8% to 3.3%, although default activity is expected to remain historically low. It appears spread movement has been more of an effect of broader risk-off market moves, rather than a specific reflection of changing credit conditions. **p. 24**
- U.S. core CPI, excluding food & energy, rose by 6.5% year-over-year in March. Headline inflation, which is being closely watched at the moment as this includes energy & food prices, reached 8.5%. Prices in some other areas have stabilized. Many investors believe inflation peaked in March, though there remains much uncertainty around the path from here. **p. 9**

THE INVESTMENT CLIMATE

- In late February, Russian forces invaded Ukraine—a move which was anticipated by major Western intelligence communities. Ukraine has put together a remarkable defense thus far, as many citizens have taken up arms to defend their country. **p. 18**
- Multi-year underinvestment in energy, and now the Russia/Ukraine war, has created a shock to energy markets and crisis-level prices in many European countries. Government officials have been hesitant to vocally support increased local energy production, primarily due to climate concerns. In the U.S., many shale firms have opted to increase production on existing land, but have been slow to pursue new projects—partly due to supply chain issues (shortages in labor, truck drivers, and frack sand) and also due to prioritization of profits over growth. **p. 38**

ASSET ALLOCATION ISSUES

- Nearly every asset class delivered negative performance in Q1. Equity markets pulled back, credit spreads widened, and interest rates headed higher. Certain real assets including commodities were the exception. **p. 49**
- Value stocks outperformed Growth stocks by a substantial margin during Q1, as the Energy sector outpaced the index by 43.6% (Energy 39.0%, S&P 500 -4.6%). Large capitalization stocks outperformed small capitalization stocks (Russell 1000 +9.8%, Russell 2000 +2.1%). **p. 30**

Nearly every asset class delivered losses during Q1, as risk assets sold off, credit spreads widened, and interest rates moved higher

What drove the market in Q1?

“U.S. Inflation Accelerated to 8.5% in March, Hitting Four-Decade High”

HEADLINE CONSUMER PRICE INFLATION (YEAR-OVER-YEAR)

Oct	Nov	Dec	Jan	Feb	Mar
6.2%	6.8%	7.0%	7.5%	7.9%	8.5%

Article Source: Wall Street Journal, April 12th, 2022

“Russian Stocks’ 33% Crash Is Fifth-Worst in Market History”

MOEX RUSSIA EQUITY INDEX PRICE LEVEL

Oct	Nov	Dec	Jan	Feb	Mar
4150	3891	3787	3530	2470	2704

Article Source: Bloomberg, February 24th, 2022

“Commodity prices surge after Russia’s Ukraine invasion”

BLOOMBERG COMMODITY SPOT INDEX

Oct	Nov	Dec	Jan	Feb	Mar
525.1	487.3	502.2	546.8	577.7	625.3

Article Source: Axios, March 1st, 2022

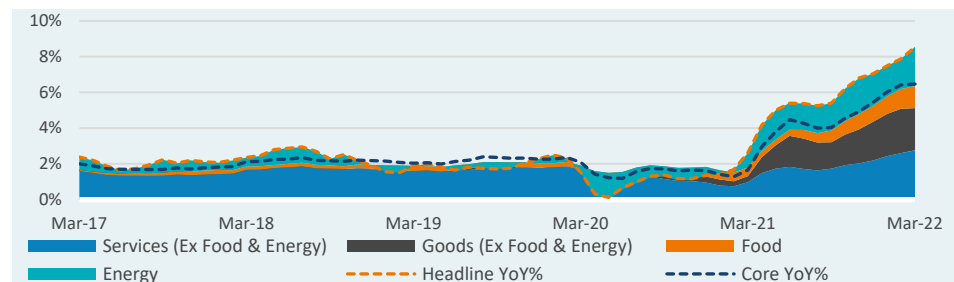
“Global Bond Rout Deepens on Fear Rate Hikes Will Stoke Recession”

BLOOMBERG GLOBAL AGGREGATE TREASURIES TOTAL RETURN

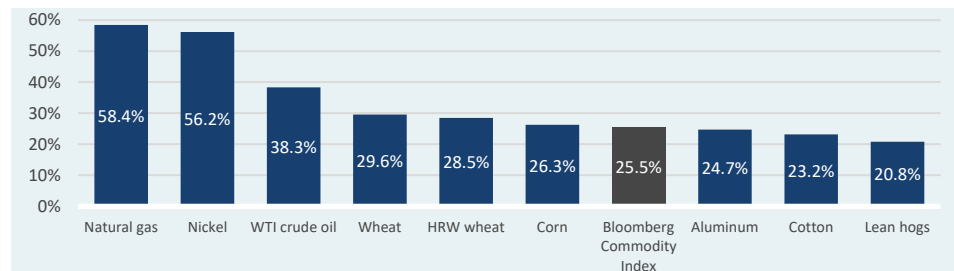
Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022
3.2%	(5.5%)	0.9%	(1.1%)	(1.0%)	(6.2%)

Article Source: Bloomberg, March 27th, 2022

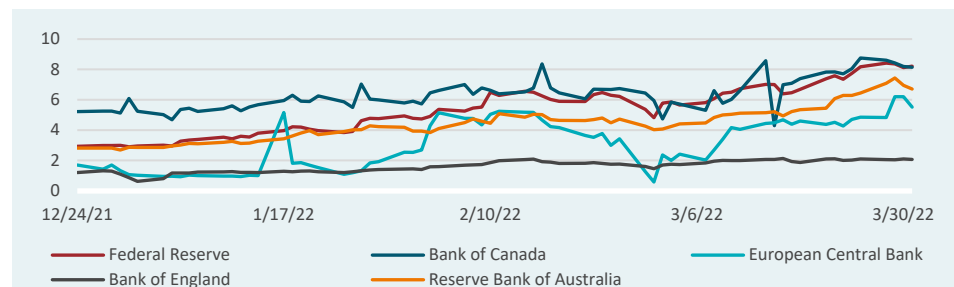
CONTRIBUTION TO HEADLINE CONSUMER PRICE INFLATION



COMMODITY Q1 PERFORMANCE



EXPECTED NUMBER OF RATE HIKES BY DECEMBER 2022



Economic environment

U.S. economics summary

- Real GDP grew at a 5.5% rate year-over-year in the fourth quarter (+6.9% quarterly annualized rate). Strong expenditures into new inventory boosted the economy during the quarter, as many businesses had struggled to replenish inventory levels in the face of global supply chain issues. Business investment and rising exports also contributed to the strong Q4 pace of growth.
- In economic terms, the effects of COVID-19 seem to be in the rearview mirror. Travel volumes have risen closer to prior levels, credit card transactions are extremely strong, and Americans are once again dining out and spending on entertainment.
- U.S. core CPI, which excludes food & energy prices, rose by 6.5% year-over-year in March. Headline inflation, which is being closely watched at the moment as this includes many of the goods that exhibited the largest price gains (energy & food), reached 8.5%. Price rises have become more broad-based in recent months, with many goods and services experiencing increases.
- U.S. unemployment continued to fall, improving from 3.9% to 3.6%. The labor force participation rate has gradually increased, rising from 61.6% to 62.4%. The historic shortage of workers may remain a sticky issue, as 11.3 million job openings are currently posted, but only 6.0 million Americans are seeking work.
- The fast rise of 30-year fixed mortgage rates to near 5.0%, along with skyrocketing home prices, has made homeownership a nearly impossible goal for some Americans, and is squeezing the budgets of many (though at the same time generating much wealth for homeowners). This effect is captured in the Housing Affordability Index, which further deteriorated during Q1.

	Most Recent	12 Months Prior
Real GDP (YoY)	5.5% 12/31/21	(2.3%) 12/31/21
Inflation (CPI YoY, Core)	6.5% 3/31/22	1.6% 3/31/21
Expected Inflation (5yr-5yr forward)	2.4% 3/31/22	2.3% 3/31/21
Fed Funds Target Range	0.25% – 0.50% 3/31/22	0.00% – 0.25% 3/31/21
10-Year Rate	2.34% 3/31/22	1.74% 3/31/21
U-3 Unemployment	3.6% 3/31/22	6.0% 3/31/21
U-6 Unemployment	6.9% 3/31/22	10.7% 3/31/21

GDP growth

Real GDP grew at a 5.5% rate year-over-year in the fourth quarter (+6.9% quarterly annualized rate). Strong expenditures into new inventory boosted growth, as many businesses had struggled to replenish inventory levels in the face of global supply chain issues. Business investment and rising exports also contributed to strong fourth quarter GDP.

During Q1 2022, concerns rose around the possibility of slowing economic growth or even a recession in the near-term, though the chances of recession appear low. The Atlanta Fed GDPNow real-time forecast for first quarter growth was 1.1%, as of April 11th (seasonally adjusted QoQ annualized rate).

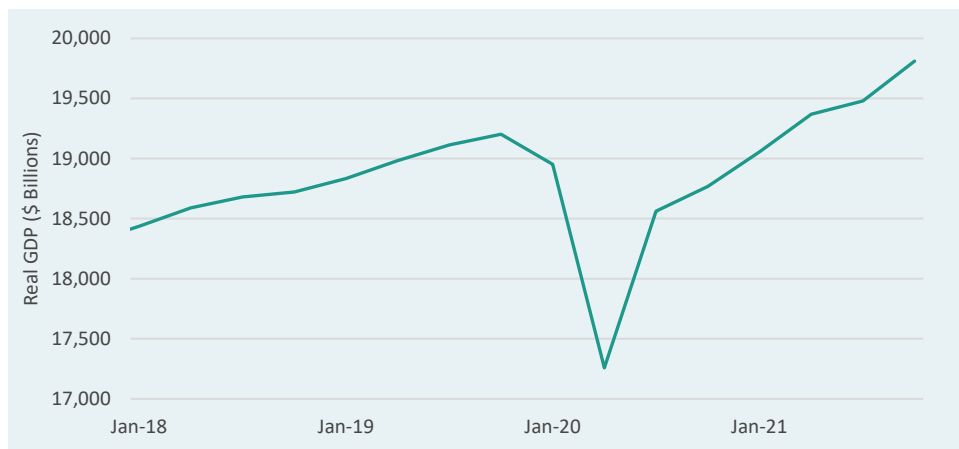
However, it is broadly expected that economic growth picks back up to around 3% throughout the remainder of 2022.

As we mentioned last quarter, U.S. GDP growth is quoted in *inflation-adjusted* terms. This will mean that inflation trends could have large impacts on upcoming U.S. GDP growth numbers. Higher inflation would depress the rate of GDP growth, and falling inflation would likely boost GDP figures, all else equal. Multiple past U.S. recessions were caused at least partially by rising inflation rather than solely by slowing growth (see 1970s, 1980s).

Q4 GDP growth was very strong

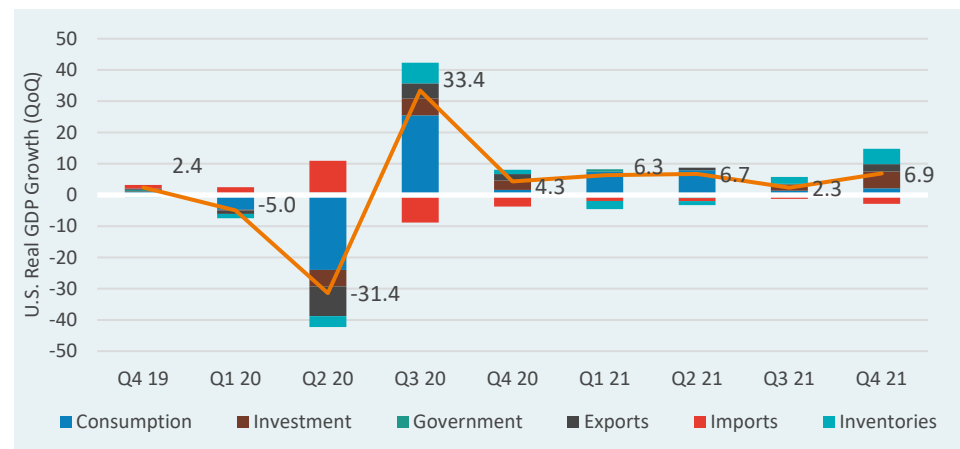
Economists expect weak growth in Q1, followed by a mild economic reacceleration

U.S. REAL GROSS DOMESTIC PRODUCT



Source: FRED, as of 12/31/21

U.S. REAL GDP COMPONENTS (QOQ)



Source: FRED, as of 12/31/21

Inflation

U.S. core CPI, which excludes food & energy prices, rose by 6.5% year-over-year in March. Headline inflation, which is being closely watched at the moment as this includes many goods that have exhibited the most notable price gains (energy & food), reached 8.5%. While price rises in energy and food have been large in recent months, prices in some other areas have stabilized. Many investors believe inflation peaked in March, though much uncertainty exists regarding the path from here.

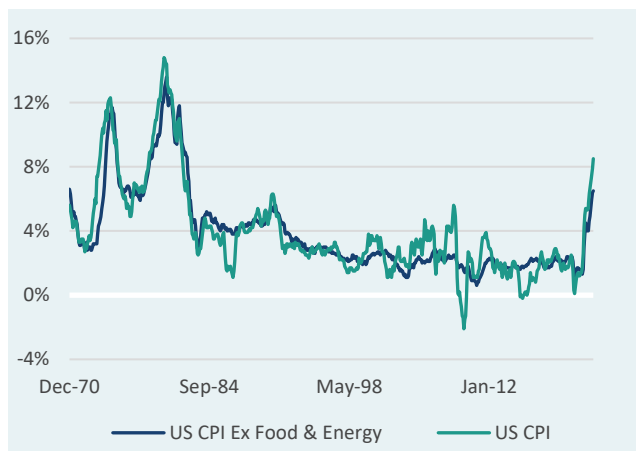
There are both inflationary and deflationary forces at play in the current environment. On the inflationary side, Russia's invasion of Ukraine has led to substantial disruptions to energy and agricultural markets, which flowed through to price spikes in many commodity markets. These moves can be seen in the March

inflation report. Geopolitical crises tend to result in *upward* commodity price movement, which suggests continued war or wider conflict could have inflationary effects. On the *deflationary* side, large single-month inflation numbers are beginning to *fall out* of the 12-month CPI calculation window. This will naturally have a depressing effect on future CPI figures. Furthermore, many pandemic-specific issues are beginning to be resolved, such as clogged supply chains, unusually high demand for physical goods, and abnormally strong spending patterns. On the next slide we visualize some of these *inflationary* and *deflationary* effects.

Overall, we believe that inflation will most likely begin falling later in 2022, though this could be a slower process than originally believed.

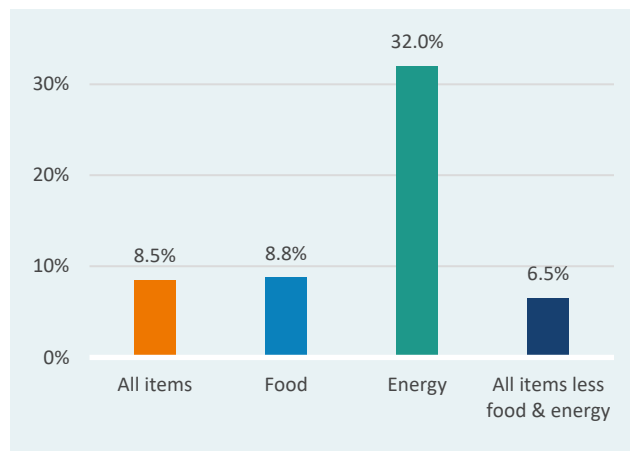
Inflation has proven more sticky (less transitory) than previously expected

U.S. CPI (YOY)



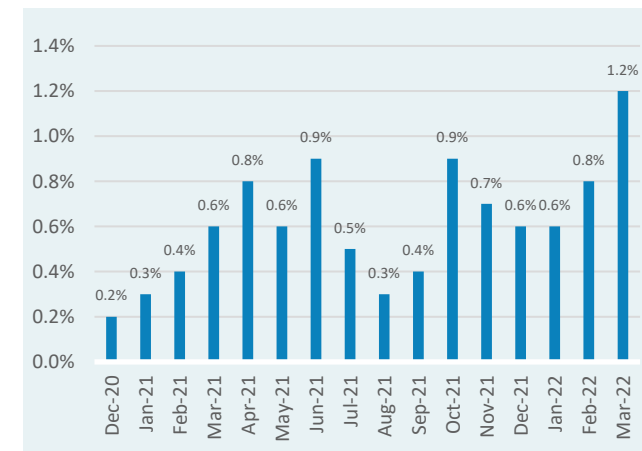
Source: BLS, as of 3/31/22

U.S. CPI (YOY)



Source: BLS, as of 3/31/22

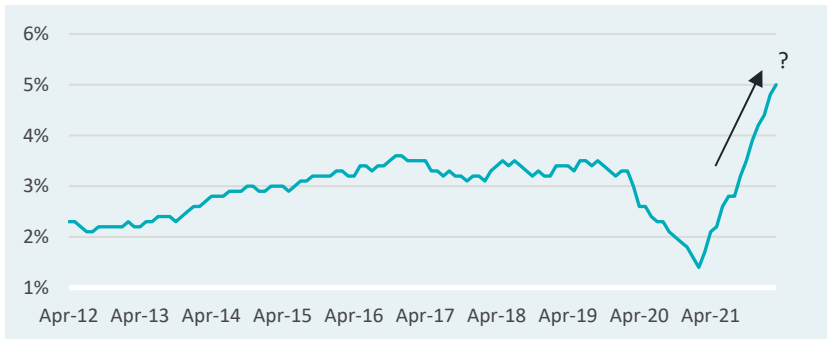
MONTHLY PRICE MOVEMENT



Source: BLS, as of 3/31/22

Inflationary & deflationary forces

CPI SHELTER COSTS (YEAR-OVER-YEAR)



Shelter costs, which account for ~40% of the core CPI gauge, have continued to track rent prices higher. The continuation of this trend could mute the impact of a potential rollover in prices for consumer durables like used cars, and result in a higher floor for inflation near-term.

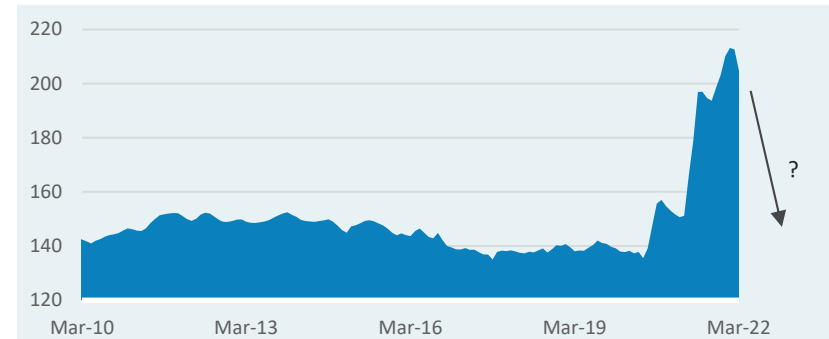
U.S. CORNBELT AMMONIUM NITRATE (FERTILIZER) PRICES



Russia, the world's largest fertilizer exporter, imposed a two-month ban on ammonium nitrate exports, which will threaten the reduction of fertilizer supplies. The export ban is likely to result in higher prices for U.S. farmers.

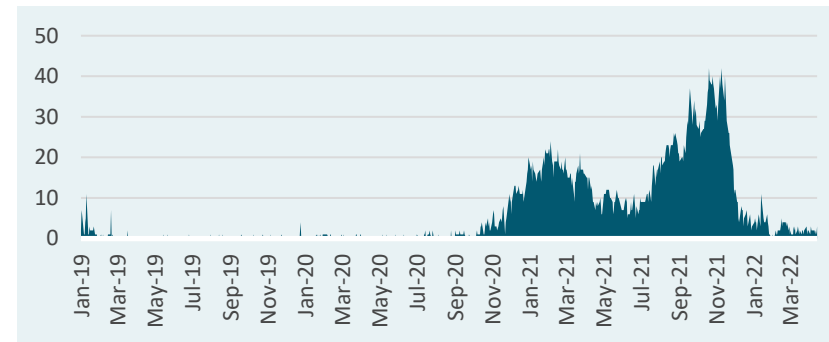
Source: FRED, as of 3/31/22 (upper), Bloomberg, as of 3/31/22 (lower)

USED CAR & TRUCK PRICES



If certain pandemic-related price rises were to reverse as conditions ease, this could bring inflation down materially

SHIPS AT ANCHOR – PORT OF L.A.



Pandemic-related supply and demand complexities contributed to many supply shortages and price spikes. As these issues are resolved, we would expect prices of some goods to stabilize and perhaps even move closer to prior levels.

Source: FRED, as of 3/31/22 (upper), Port of Los Angeles, as of 4/15/22 (lower)

Inflation dynamics are complex. On this slide we take a look at a few potentially *inflationary* forces (left side) and *deflationary* forces (right side)

Labor market

The rate of unemployment in the U.S. has continued to fall, improving from 3.9% to 3.6% during the quarter. The labor force participation rate has gradually increased, rising from 61.6% to 62.4%. The historic shortage of workers may remain a sticky issue, as 11.3 million job openings are posted, but only 6.0 million Americans seeking work.

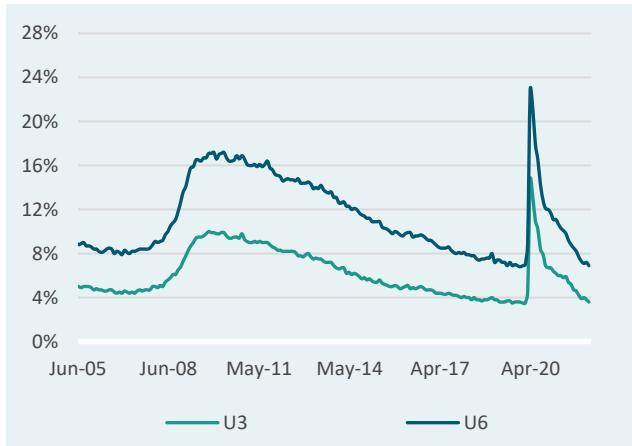
Throughout the latter part of the pandemic, our belief has been that abnormally early retirements have shrunk the overall labor force, and that the U.S. labor participation rate will not likely fully rebound to prior levels. This forecast has proven accurate, as much of the 55+ U.S. worker age cohort remains out of the workforce and not seeking employment. This compares to

younger age cohorts which have made greater progress toward rejoining the labor pool.

The shortage of workers is likely having a dampening effect on the U.S. economy, as fewer workers means less productive activity, which translates to fewer paychecks and total household income. At the onset of the labor supply shortage, some held the view that fewer workers might mean greater overall wage income if this gave workers more negotiating power with employers. Unfortunately, the results have not met those expectations, as wages have failed to keep up with inflation.

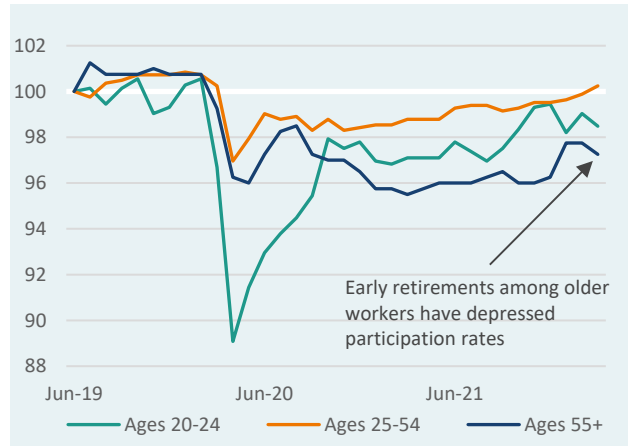
U.S. labor participation continues to see gradual improvement

U.S. UNEMPLOYMENT



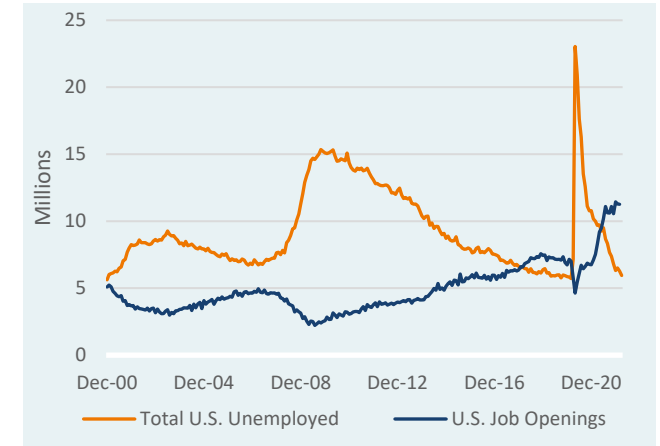
Source: FRED, as of 3/31/22

LABOR PARTICIPATION RATE



Source: FRED, as of 3/31/22

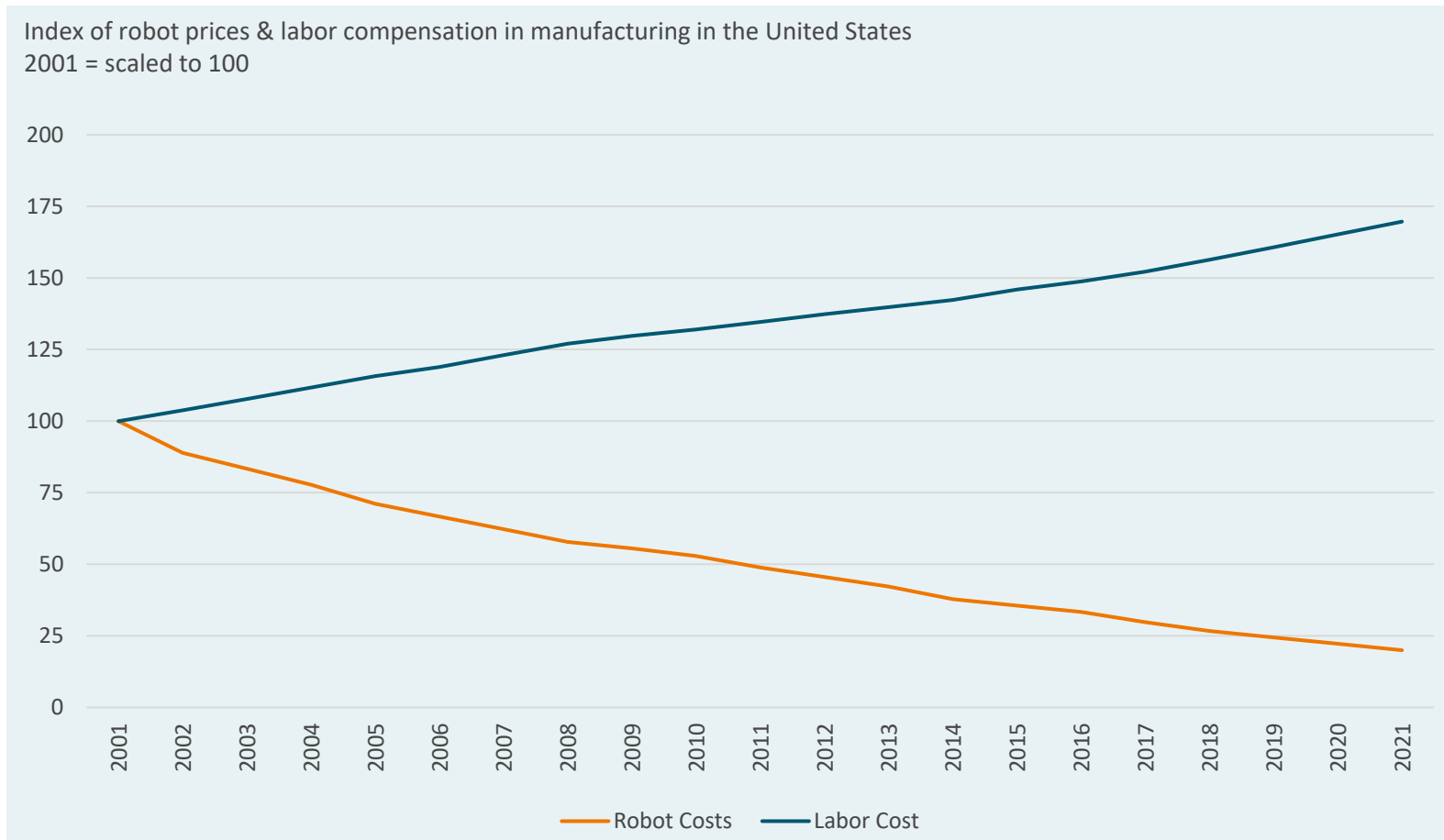
UNEMPLOYED VS # JOBS AVAILABLE



Source: FRED, as of 2/28/22 or most recent data

Labor costs alternatives

COSTS OF AUTOMATION



With widespread labor shortages, companies are increasingly adopting robotics and automation to stay competitive

Spending on robotics was approximately \$2 billion in 2021 (a 14% increase over the previous high in 2017)

Source: U.S. Bureau of Labor Statistics; ARK Investment Management ark-investment.com; United Nations Economic Commission; BCG

The consumer

U.S. personal consumption expenditures (PCE) represents consumer spending across a broad basket of goods. Spending boomed during the COVID-19 recovery, with a surprisingly large shift towards purchases of goods and away from services. This substantial shift was believed to be a major contributor to demand/supply imbalances and price inflation of goods during the pandemic. After adjusting for inflation, consumption has risen 1.6% per year since February of 2020.

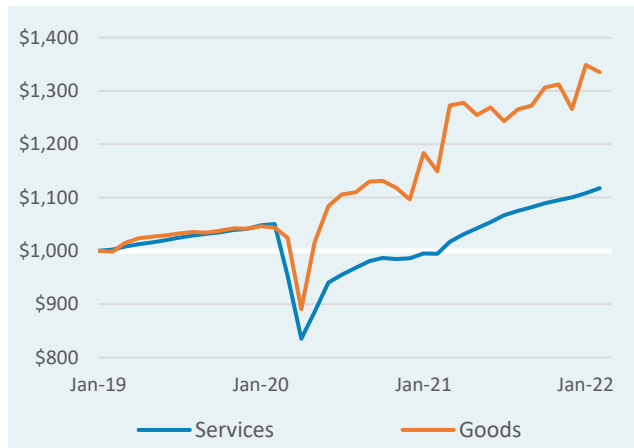
Auto sales remain depressed relative to pre-pandemic volumes and are at the lowest level since 2011. Sales have likely been hindered by supply chain and therefore inventory issues surrounding new vehicles as well as affordability issues for used

vehicles due to the unprecedented rise in prices.

While economic growth and spending appears to be slowing, it is worth noting how significant the increase in U.S. household wealth has been. Asset prices broadly headed higher during the COVID-19 recovery, which included skyrocketing home prices. While these moves certainly create difficulties for new investors (dollars invested today are expected to generate relatively lower long-term returns) and also for future homebuyers (home affordability has been very negatively affected), rising markets have created great profits for many Americans, as indicated by surging total household wealth.

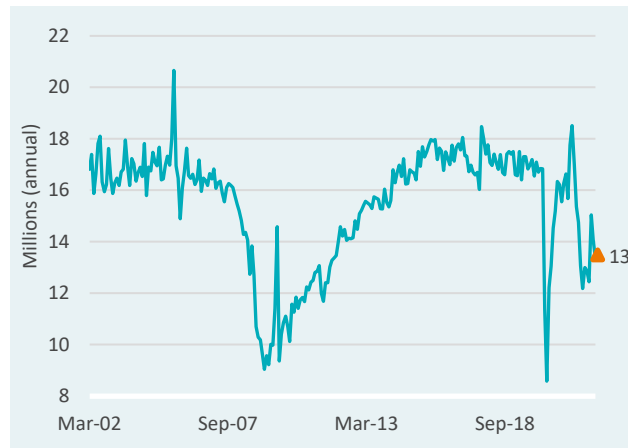
Despite vastly increased American wealth and strong job prospects, sentiment is very depressed as living costs rocket higher

PERSONAL CONSUMPTION EXPENDITURES



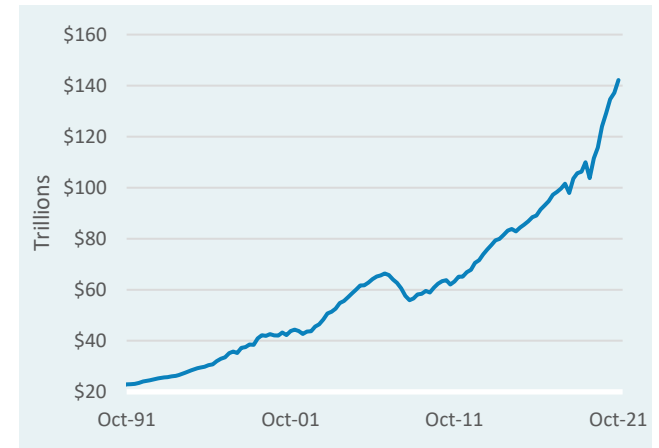
Source: FRED, as of 2/28/22

AUTO SALES



Source: Federal Reserve, as of 2/28/22

U.S. HOUSEHOLD WEALTH



Source: FRED, as of 12/31/21

Sentiment

Consumer sentiment has collapsed to levels not seen since the depths of the 2008-2009 Global Financial Crisis. The University of Michigan survey fell from 70.6 to 59.4 during the quarter, as survey respondents indicated deteriorating living conditions due to high inflation and expectations that household financial conditions will worsen throughout the year. On a more positive note, Americans are reportedly optimistic about job prospects and the strong labor market.

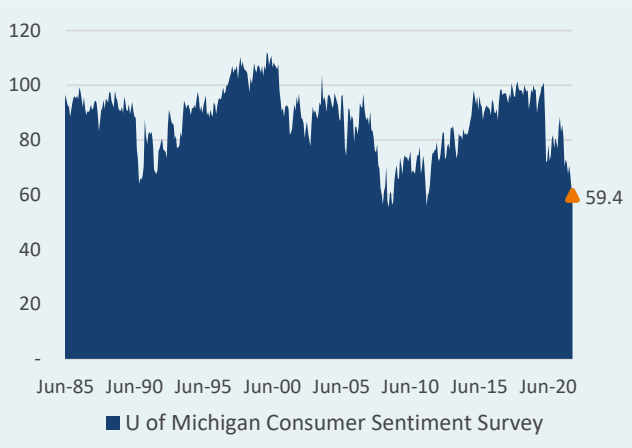
There remain 11.3 million open jobs but only 6.0 million unemployed people in the labor force, indicating significant

labor market tightness. Per the Conference Board, the percentage of Americans who believe it is difficult to land a job right now is at the lowest level since year 2000. A competitive market has led to strong nominal wage gains, but real (adjusted for inflation) average hourly earnings failed to keep up with inflation, and have actually contracted -2.7% over the last year.

The NFIB Small Business Optimism index weakened further. As detailed in the survey, 31% of small businesses see inflation as the largest problem they face. Labor shortages and supply chain issues continue to weigh on business activity.

Sentiment, by some measures, has reached lows not seen since the 2008-2009 Global Financial Crisis

CONSUMER SENTIMENT



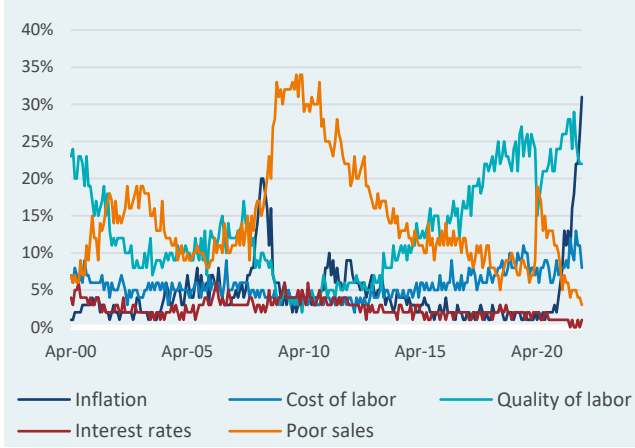
Source: University of Michigan, as of 3/31/22

CONSUMER VIEWS ON THE LABOR MARKET



Source: Conference Board, as of 3/31/22

BIGGEST ISSUES FOR SMALL BUSINESSES



Source: NFIB, as of 3/31/22

Housing

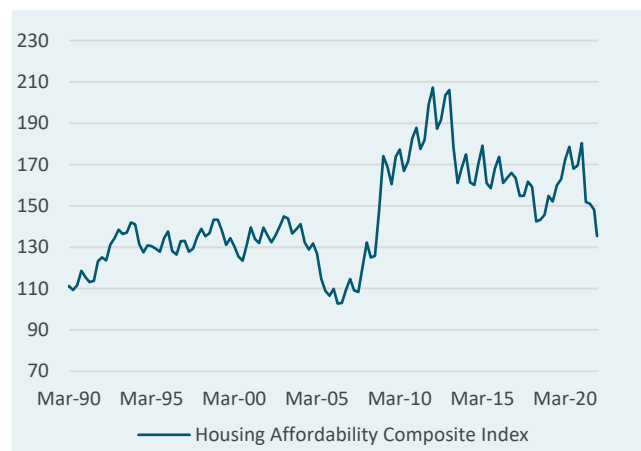
U.S. home prices continued higher, up +19% over the past year ending January, and up a whopping 32% since pre-pandemic. Price appreciation may be set to cool off as the 30-year fixed mortgage rate has risen to 5%, inventories have risen, and sales activity has slowed considerably.

The fast rise of 30-year fixed mortgage rates to near 5%, along with skyrocketing home prices, has made homeownership a nearly impossible goal for some Americans, and is squeezing the budgets of many (though at the same time generating much wealth for homeowners). This effect is captured in the

Housing Affordability Index, which deteriorated during Q1.

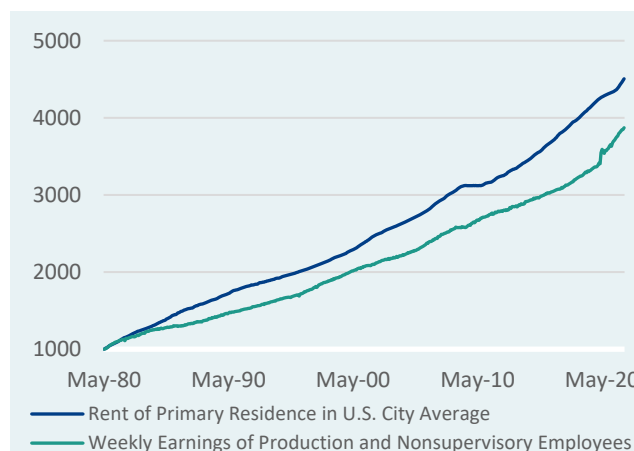
The cost of housing has outpaced wage gains for decades, although only mildly so (not as dramatically as some might assume). Lower and lower interest rates had largely counteracted higher home prices in terms of total ownership costs. This rough equilibrium seems to have swung in the other direction over the past year. Lack of affordability may mean a continued slowdown in home sales activity, and perhaps a plateauing or even decline in property values in some areas.

HOUSING AFFORDABILITY INDEX



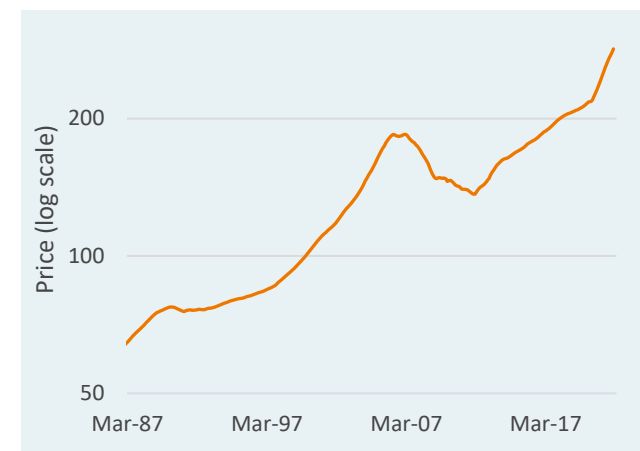
Source: NFIB, as of 2/28/22

WAGES VS RENTING COSTS



Source: FRED, as of 2/28/22

CASE-SHILLER HOME PRICE INDEX



Source: FRED, as of 1/31/22

International economics summary

- The pace of economic growth has moved further back toward average levels in most economies. In January, the International Monetary Fund cut their 2021 advanced economy growth projections from 5.2% to 4.3%. Growth in 2022 is expected to slow to 3.1%.
- Unemployment continued to fall to, or below, pre-pandemic levels. However, in countries such as the United States these data do not tell the whole story, since the total size of the labor pool has shrunk substantially.
- Inflation trends have been surprisingly bifurcated by region. While the United States and Europe are generally contending with a spike in prices and inflation not seen in decades, Japan and China are experiencing very low inflation and muted price pressures.
- In late February, Russian forces invaded Ukraine—a move which was anticipated by major Western intelligence communities. Ukraine has put together a remarkable defense thus far, as many citizens have taken up arms to defend their country.
- Russia’s invasion of Ukraine led to substantial spikes in energy and agricultural prices as concerns grew of a potential supply shock. Eurozone producer prices grew 31.4% over the 12 months ending February, reflecting the impact of surging natural gas prices (+58.4%).
- COVID-19 case growth rose to record levels in China, which led CCP officials to reinstate lockdowns in some of the largest provinces in the country. Continued commitment to the “zero-Covid” policy in China could weigh on the outlook for global growth, as well as elongate the process of supply chain normalization, particularly within the freight shipping industry.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	5.5% 12/31/21	8.5% 3/31/22	3.6% 3/31/22
Eurozone	4.6% 12/31/21	7.5% 3/31/22	6.8% 2/28/22
Japan	0.4% 12/31/21	1.3% 3/31/22	2.6% 2/28/22
BRICS Nations	4.0% 12/31/21	3.2% 3/31/22	5.2% 12/31/21
Brazil	1.6% 12/31/21	10.5% 2/28/22	11.2% 2/28/22
Russia	5.0% 12/31/21	9.2% 2/28/22	4.1% 2/28/22
India	5.4% 12/31/21	6.1% 2/28/22	7.6% 3/31/22
China	4.8% 3/31/22	0.9% 2/28/22	5.8% 3/31/22

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

International economics

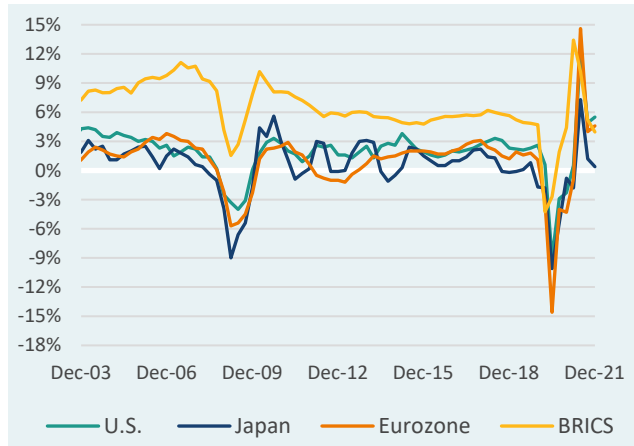
The pace of economic growth has moved further back towards average levels in most economies. This is reflected in quarter-over-quarter GDP growth figures, as these provide a better gauge of *short-term* growth trends. The International Monetary Fund estimates a 4.3% growth rate for calendar year 2021, and then a slowing to 3.1% in 2022. The IMF reports that recovery strength will likely vary considerably by location, due to access to medical care, types of government policy support, and regional cross-country spillovers.

Inflation trends continue to be disparate from country-to-country, as spiking inflation is a problem for a certain subset

of economies. While the United States and Europe are generally contending with a jump in prices and inflation not seen in decades, Japan and China are experiencing very low inflation and muted price pressure.

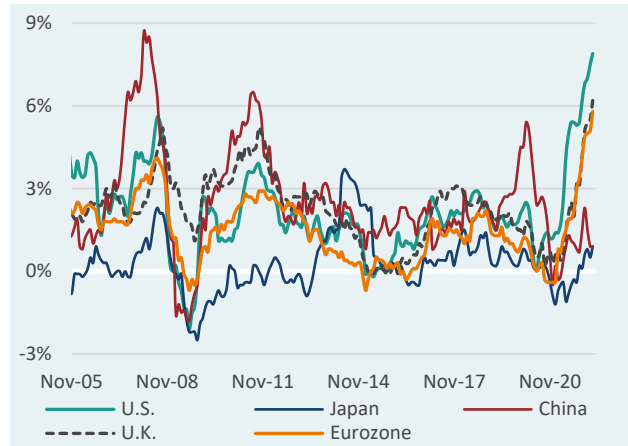
Unemployment has further improved to, or below, pre-pandemic levels. Investors should also note the change in labor market *size*. For example, disenfranchised workers falling out of the workforce or early retirements may not be captured in popular unemployment metrics but can have just as deleterious effects on economic activity as traditional job loss.

REAL GDP GROWTH (YOY)



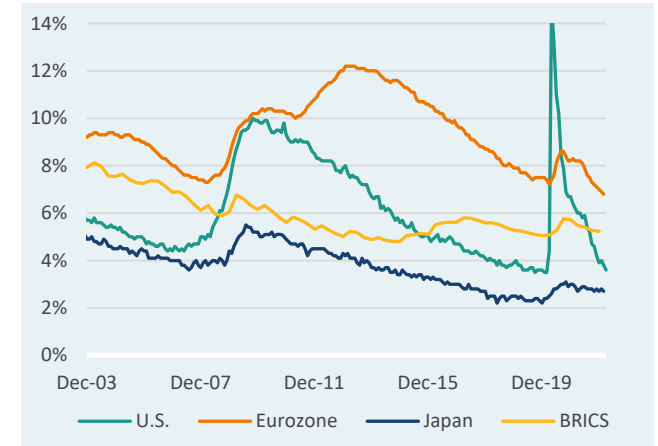
Source: Bloomberg, as of 12/31/21

INFLATION (CPI YOY)



Source: Bloomberg, as of 3/31/22 – or most recent release

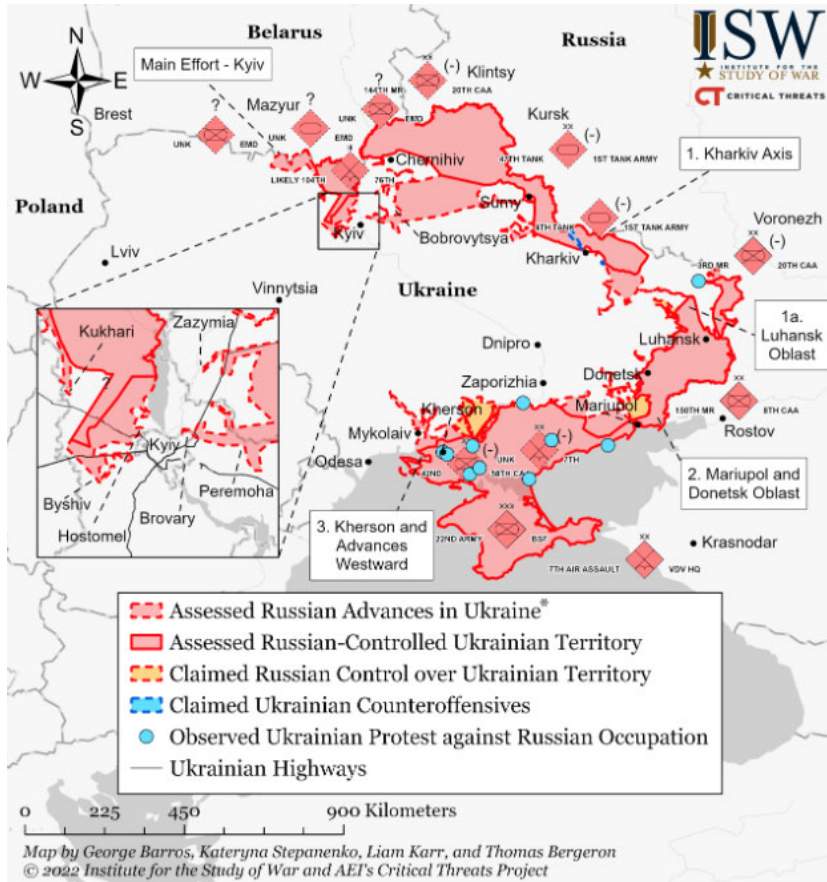
UNEMPLOYMENT



Source: Bloomberg, as of 3/31/22 – or most recent release

Assessed control of terrain in Ukraine

3/15/2022 – 12:00PM PST



4/13/2022 – 12:00PM PST



Russian forces have been repelled from Kyiv, and have shifted their focus to consolidating control over area around the separatist-controlled Donetsk and Luhansk Oblasts in Eastern Ukraine

Source: Institute for the Study of War, as of 4/13/22, 12:00 PM PST

Conflict summary and key themes

Russian forces were unsuccessful in their attempt to take Kyiv, and have since withdrawn to refocus efforts on taking the territory around the Donetsk and Luhansk Oblasts in Eastern Ukraine. What have been the drivers of Ukrainian success thus far?

Ukrainian Tactics

- Effective withdrawal into major population centers which have proven easier to defend
- Efficient utilization of anti-aircraft (Stinger) and anti-armor (Javelin) technology
- Judicious use of airpower to disrupt Russian supply lines

Russian Military Incompetence

- Issues transporting adequate oil and fuel supplies to the front lines to support the advance
- Lack of experienced troops (many conscripts have 1-2 years experience and were not expecting to actually be sent into combat)
- Low morale (many troops have surrendered to Ukrainian forces, or have sabotaged their vehicles to slow the advance)
- Poor battlefield intelligence (many Russian troops are wandering into Ukrainian cities with little awareness of those cities, which has left them in an incredibly vulnerable positions and made it easier for Ukrainians to use their anti-armor weaponry)
- NATO estimated that between 7-15K Russian troops have been killed, and another 15-30K have been injured

Western Sanctions

- The Federal Reserve and the European Central Bank officially sanctioned the Central Bank of Russia, an unprecedented strategy for containing a G20 economy
- Key Russian banks have been excluded from SWIFT, disconnecting them from sources of foreign capital and preventing them from sending or receiving money from other financial institutions around the world. This is often considered the “nuclear option” relative to the menu of economic sanctions
- Entire industries have instituted export controls, banning the shipment of key technology input goods such as semiconductors, aircraft, aircraft parts, and oil equipment to Russia

Source: Verus, as of 4/13/22

Fixed income rates & credit

Fixed income environment

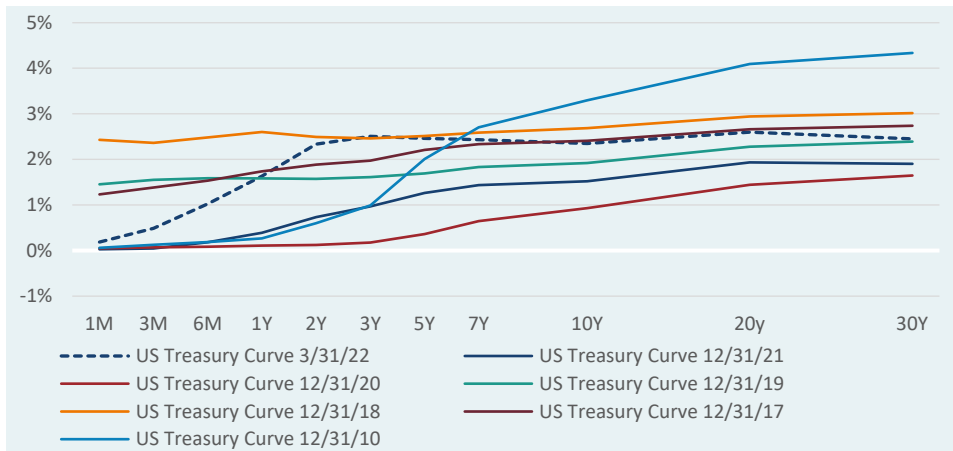
- The 10-year U.S. Treasury yield jumped during Q1, from 1.51% to 2.34%, as the Federal Reserve signaled that more aggressive tightening is ahead.
- Fixed income broadly delivered losses during the first quarter, as interest rates headed higher and credit spreads expanded. Higher duration exposures (Bloomberg U.S. Aggregate -5.9%) underperformed lower duration exposures (Bloomberg U.S. Corporate High Yield -4.8%). This theme was also visible over the past year.
- The U.S. yield curve has flattened, or even inverted, depending on the measure. The 10-year minus 2-year yield spread ended the quarter at exactly +0.00%. Yield curve inversion is generally believed to be a sign of nearing recession, as in most cases recession occurs within 1 to 2 years following the initial inversion.
- History suggests that interest rate rises have been more of an effect of Federal Reserve action rather than solely due to spiking inflation. This likely means that the Fed's plans for moderate tightening will translate to only moderate rate rises. This statement is of course not intended to minimize the pain of interest rate rises on bond portfolios, which has been notable.
- Credit spreads expanded during the quarter, with U.S. high yield spreads moving from 2.8% to 3.3% and U.S. investment grade spreads heading from 0.9% to 1.2%. Spread movement often occurs alongside broader market risk-off environments, which implies that investors should not necessarily assume that these moves were specific to the credit outlook.
- Write-downs of Russian (-100%) and Ukrainian (-51.4%) bonds weighed heavily on hard-currency emerging market debt (JPM EMBI Global Diversified -10.0%).

	QTD Total Return	1 Year Total Return
Core Fixed Income (Bloomberg U.S. Aggregate)	(5.9%)	(4.2%)
Core Plus Fixed Income (Bloomberg U.S. Universal)	(6.1%)	(4.2%)
U.S. Treasuries (Bloomberg U.S. Treasury)	(5.6%)	(3.7%)
U.S. High Yield (Bloomberg U.S. Corporate HY)	(4.8%)	(0.7%)
Bank Loans (S&P/LSTA Leveraged Loan)	(0.1%)	3.3%
Emerging Market Debt Local (JPM GBI-EM Global Diversified)	(6.5%)	(8.5%)
Emerging Market Debt Hard (JPM EMBI Global Diversified)	(10.0%)	(7.4%)
Mortgage-Backed Securities (Bloomberg MBS)	(5.0%)	(4.9%)

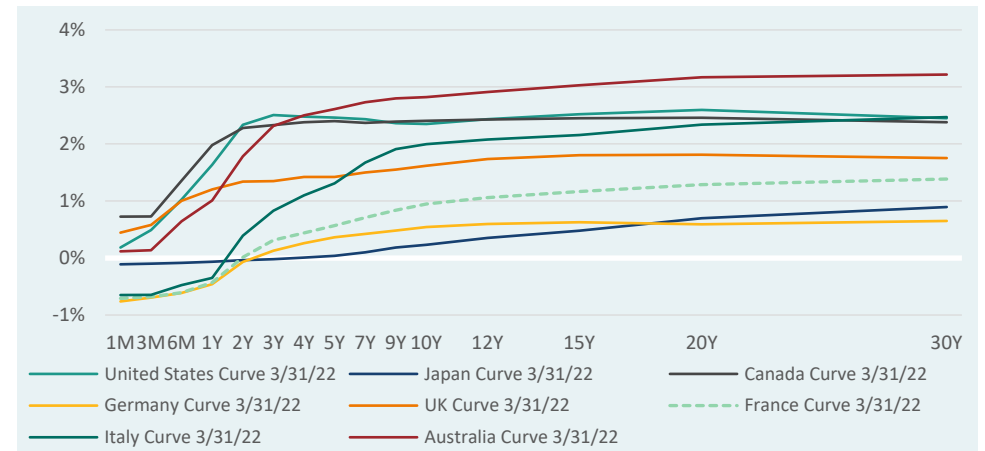
Source: Bloomberg, as of 3/31/22

Yield environment

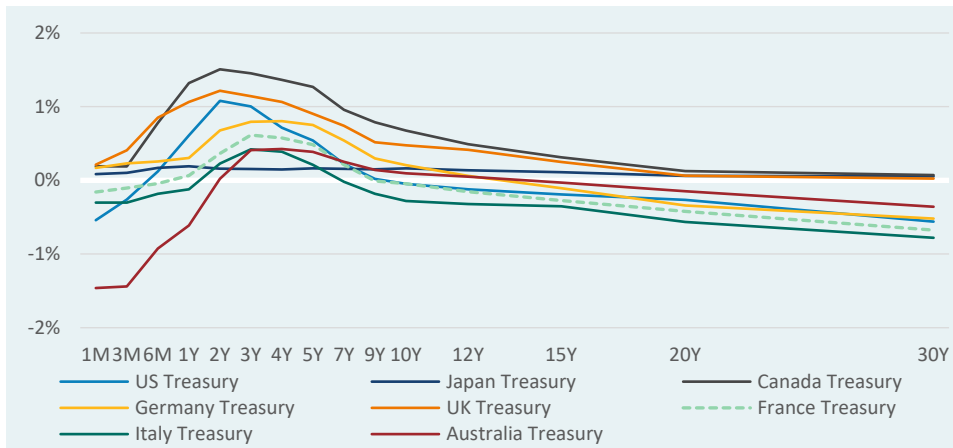
U.S. YIELD CURVE



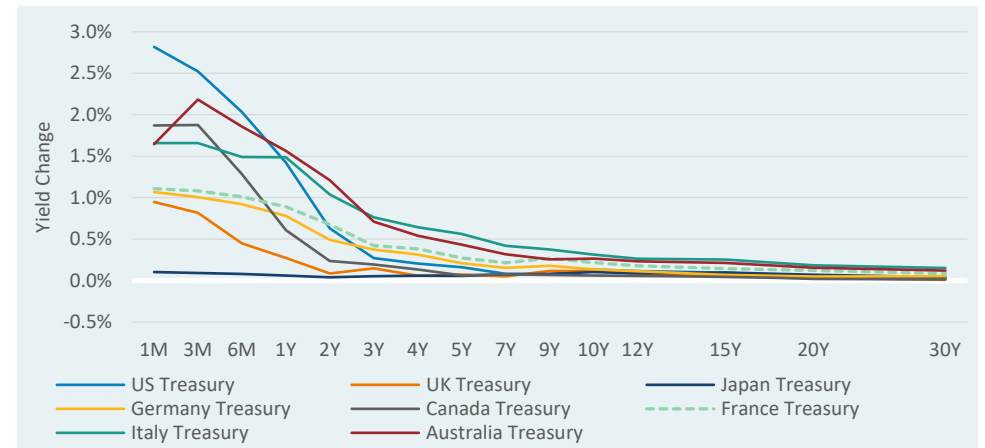
GLOBAL GOVERNMENT YIELD CURVES



YIELD CURVE CHANGES OVER LAST FIVE YEARS



IMPLIED CHANGES OVER NEXT YEAR

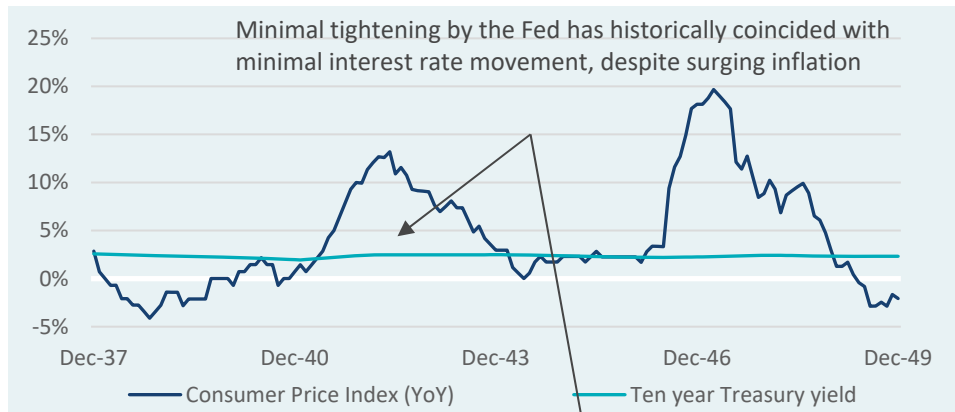


Source: Bloomberg, as of 3/31/22

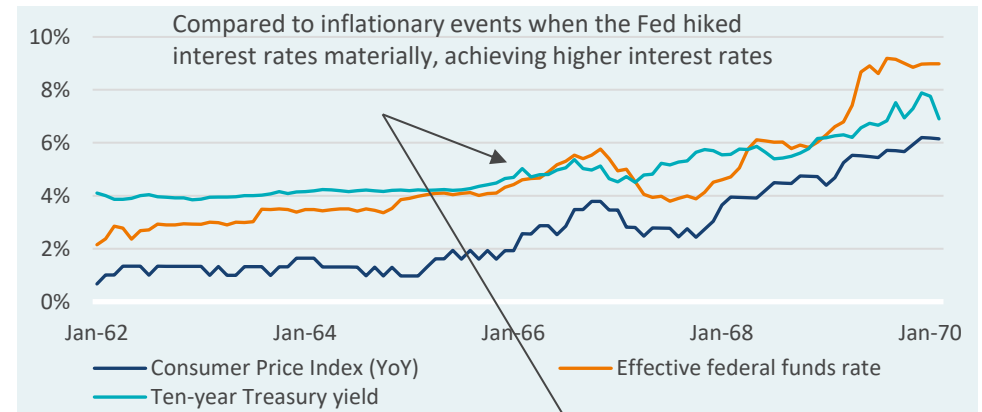
What history tells us about *rising rates*

During historical periods where inflation was rising but the Fed was not hiking rates, interest rate moves were minimal. This may mean that the Federal Reserve's currently moderate interest rate policy suggests only moderate interest rate rises from here.

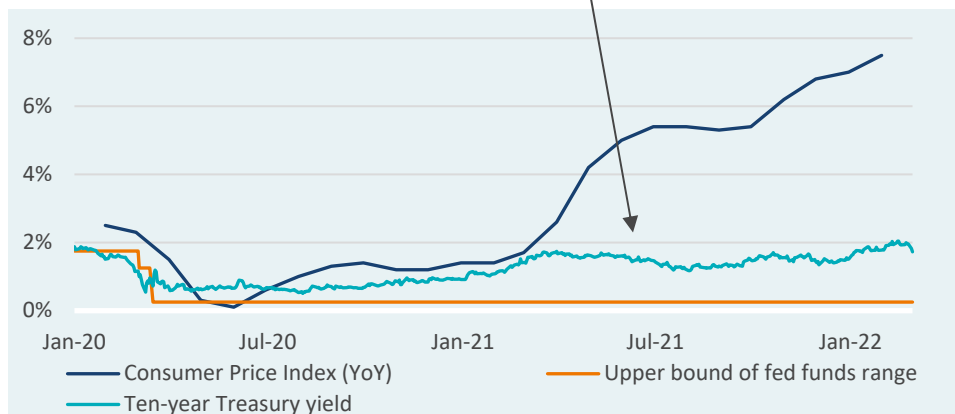
WORLD WAR II



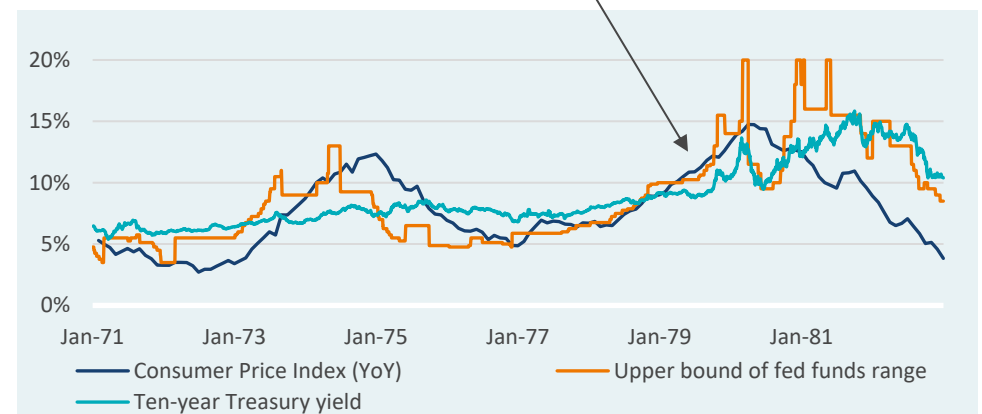
LATE 1960S



COVID-19



1970S OIL SHOCKS



Source: BLS, Federal Reserve, Bloomberg, as of 3/1/22

NOTE: These conclusions were reached via a broader historical inflation and interest rate analysis. For further information about these findings, please reach out to your Verus consultant.

Credit environment

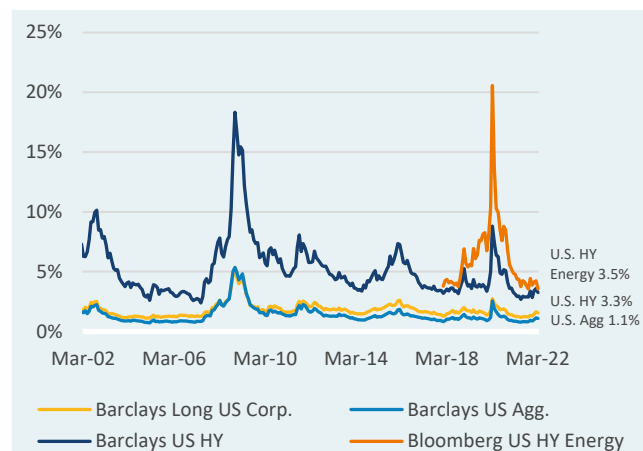
Fixed income broadly delivered losses during the first quarter, as interest rates headed higher and credit spreads expanded. Higher duration exposures such as core fixed income (Bloomberg U.S. Aggregate -5.9%) underperformed lower duration exposures such as U.S. high yield (Bloomberg U.S. Corporate High Yield -4.8%). This effect was also visible over the past year.

Credit spreads expanded moderately during the quarter, with U.S. high yield spreads moving from 2.8% to 3.3% and U.S. investment grade spreads heading upward from 0.9% to 1.2%. Spread movement of this nature often occurs alongside broader market risk-off environments,

which implies investors should not necessarily assume that these moves are specific to a worsening credit outlook.

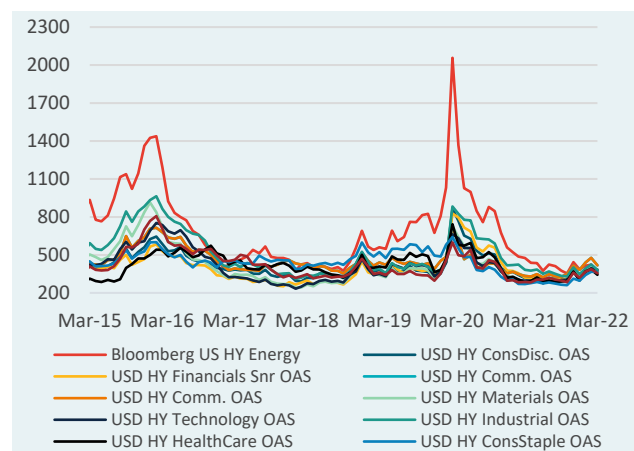
The low yield environment has pushed many investors to search for greater yield, such as through the pursuit of increased private markets exposure and/or taking on riskier holdings. The mild move higher in the yield curve likely helps ease this market environment issue, although high inflation has created new problems for investors. Looking further into the future, following the Fed's planned hiking cycle, markets are expecting interest rates to fall back down, presumably as economic conditions worsen and the Fed begins easing.

SPREADS



Source: Barclays, Bloomberg, as of 3/31/22

HIGH YIELD SECTOR SPREADS (BPS)



Source: Bloomberg, as of 3/31/22

Market	Credit Spread (OAS)	
	3/31/22	3/31/21
Long U.S. Corp	1.6%	1.3%
U.S. Inv Grade Corp	1.2%	0.9%
U.S. High Yield	3.3%	3.1%
U.S. Bank Loans*	4.3%	4.3%

Source: Barclays, Credit Suisse, Bloomberg, as of 3/31/22

*Discount margin (4-year life)

Default & issuance

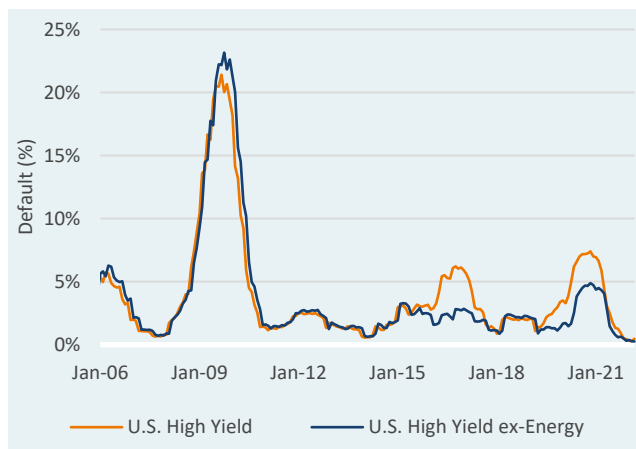
Despite a general increase in volatility and a sell-off across high-yield and leveraged loan markets, default activity remained negligible. Over the first quarter only \$1.6 billion in defaults occurred, marking the third-lowest quarterly total since Q4 2013. Realized recovery rates for high yield bonds over the past 12 months have lingered around 48%, significantly elevated above the 25-year average (39.9%). Loan recovery rates have come in slightly lower than the historical average (58.6% vs. 64.4%).

High-yield and loan default rates ended the quarter at 0.50% and 0.86%, respectively, and are expected to rise slightly through the rest of the year. J.P. Morgan forecasts default rates of 0.75% for high yield bonds and loans in 2022, with those rates picking up to 1.25% in 2023. For context, the long-

term average historical default rates for bonds and loans have been around 3.6% and 3.1%, respectively.

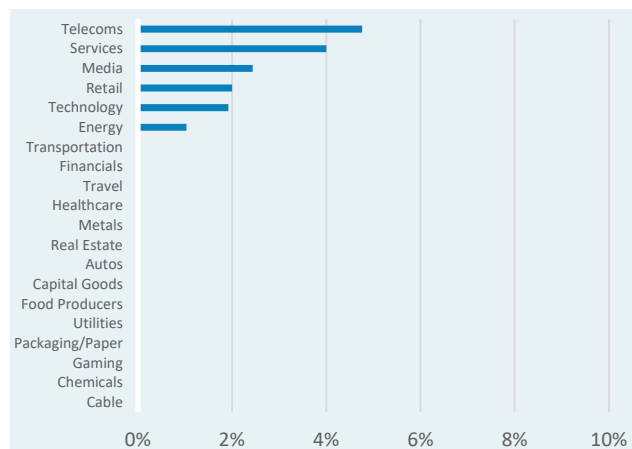
High yield issuance hit its lowest level since March 2020 in February, and then fell further in March, as issuers contended with a sharp increase in global bond yields. High-yield issuance totaled just \$46.5 billion so far this year, down from \$158.8 billion (-71%) over the same period a year ago. Year-to-date loan issuance is also down approximately 60% relative to Q1 2021. Extensive capital raises that occurred in 2021, as well as broadly higher interest rates, have likely contributed to very low financing activity so far this year.

HY DEFAULT RATE (ROLLING 1-YEAR)



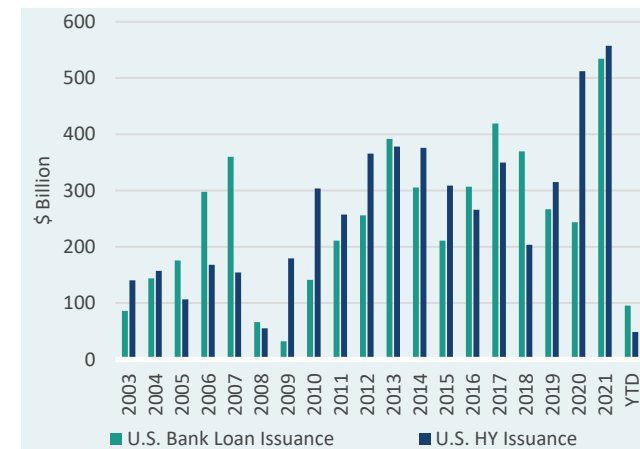
Source: BofA Merrill Lynch, as of 3/31/22

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



Source: BofA Merrill Lynch, as of 3/31/22 – par weighted

U.S. ISSUANCE (\$ BILLIONS)



Source: BofA Merrill Lynch, as of 3/31/22

Alternative credit

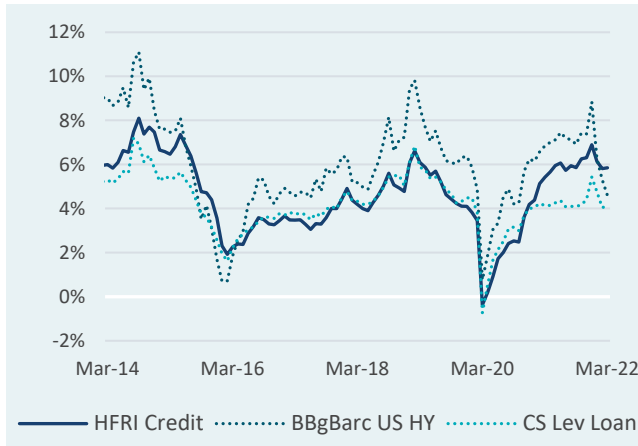
Credit hedge fund strategies were a bright spot in Q1 relative to fixed income markets. The HFRI Credit Index, which typically tracks between high yield and leveraged loan indices, gained 0.2% during the quarter despite widening credit spreads and rising rates which detracted from the performance of traditional credit.

Looking more closely at hedge fund credit, distressed/restructuring strategies, as well as asset-backed, were strong performers during the quarter

and have outperformed credit markets over the past year.

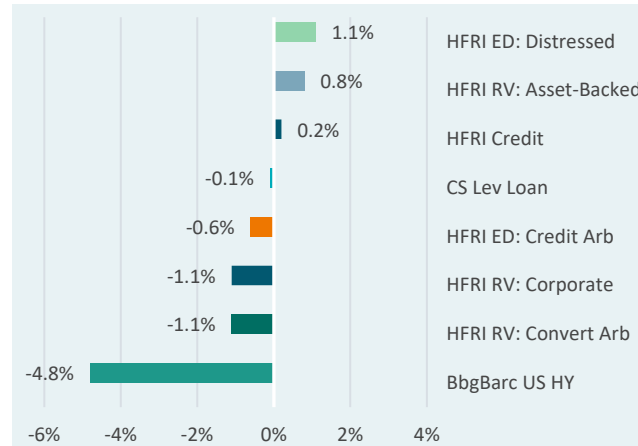
Distressed investors have benefitted from out-of-favor, deep value assets rebounding over the prior 18 months. Asset-backed strategies have been able to limit duration exposure while finding new ways to maintain access to higher yielding securitized instruments, such as by expanding into origination/securitization or moving further out on the liquidity spectrum.

3 YEAR ROLLING RETURN



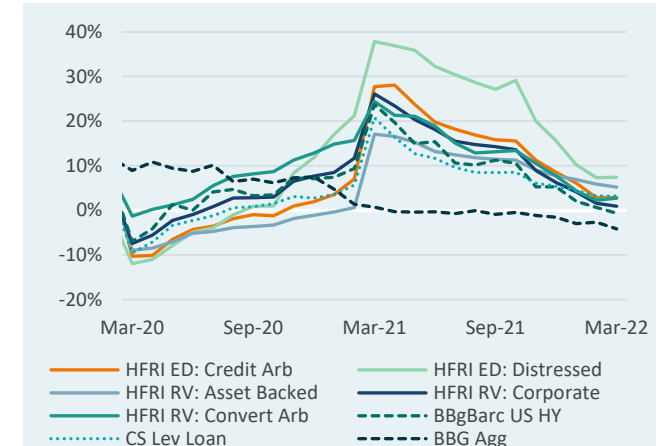
Source: HFRI, as of 3/31/22

1Q 2022 QUARTERLY RETURN



Source: HFRI, as of 3/31/22

1 YEAR ROLLING RETURN



Source: HFRI, as of 3/31/22

Equity

Equity environment

- U.S. equities held up marginally better during the first quarter (S&P 500 -4.6%), followed by international developed equities (MSCI EAFE -5.9%) and emerging market equities (MSCI Emerging Markets -7.0%), on an unhedged currency basis.
- Currency movement during the quarter detracted from the performance of investors who do not hedge foreign currency exposure. Currency movements in international developed markets generated losses of -2.4% (MSCI EAFE).
- Value stocks outperformed Growth stocks by a substantial margin during Q1 (Russell 1000 Value -0.7% vs Russell 1000 Growth -9.0%) as Growth stocks fell sharply, reversing the gains delivered in the second half of 2021. Large capitalization stocks beat small capitalization stocks by a narrower margin (Russell 1000 -5.1%, Russell 2000 -7.5%).
- The Cboe VIX Index spiked mid-quarter during Russia's invasion of Ukraine, as fears of potential broader global conflict, food shortages, and higher inflation roiled markets. The index fell to 20 to end the quarter, moderately above the longer-term average. Realized volatility over the past year was more muted as the pandemic has moved into the rearview mirror.
- Emerging market equities appear attractively priced, as EM equities are in the 8th percentile of cheapness relative to U.S. equities, looking back to 2003. Much of this valuation difference is due to Chinese markets, which have sold off massively over concerns around possible sanctions due to relations with Russia, regulatory crackdowns on the real estate and internet sectors, and major city lockdowns due to COVID-19.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
U.S. Large Cap (S&P 500)	(4.6%)		15.6%	
U.S. Small Cap (Russell 2000)	(7.5%)		(5.8%)	
U.S. Equity (Russell 3000)	(5.3%)		11.9%	
U.S. Large Value (Russell 1000 Value)	(0.7%)		11.7%	
US Large Growth (Russell 1000 Growth)	(9.0%)		15.0%	
Global Equity (MSCI ACWI)	(5.4%)	(4.8%)	7.3%	8.8%
International Large (MSCI EAFE)	(5.9%)	(3.5%)	1.2%	7.1%
Eurozone (Euro Stoxx 50)	(10.9%)	(8.7%)	(3.9%)	2.7%
U.K. (FTSE 100)	0.0%	2.8%	10.7%	16.4%
Japan (NIKKEI 225)	(7.8%)	(2.6%)	(11.9%)	(2.9%)
Emerging Markets (MSCI Emerging Markets)	(7.0%)	(7.0%)	(11.4%)	(11.5%)

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 3/31/22

Domestic equity

U.S. equities fell during the first quarter (S&P 500 -4.6%), though less so than other global markets (MSCI ACWI ex-USA -5.4%). Within the U.S. market, sector dispersion was very wide, with large-cap energy companies advancing 39.0% on spiking energy prices, and large-cap technology stocks (-8.4%) and consumer discretionary (-9.0%) selling off on concerns that higher inflation (influenced by spiking energy prices) might result in a much more hawkish outlook for Fed policy and interest rates. Energy sector earnings are expected to bolster overall index level earnings on a year-on-year basis in Q1, primarily due to the average price of oil rising from \$58.14 to \$95.01. If the energy sector were excluded, Q1 year-over-year earnings growth would be expected at -0.6%, instead of +5.1%.

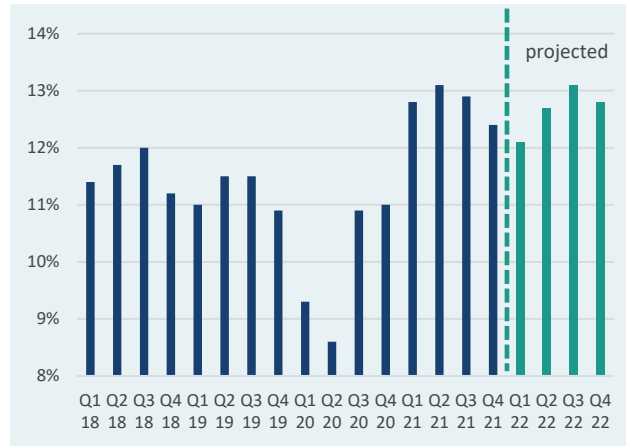
Companies continue to contend with headwinds from supply chain disruptions, surging commodity prices which were given a leg higher by the conflict in Ukraine, ongoing labor shortages and higher prices in general. In Q4 of 2021, 365 S&P 500 companies mentioned “inflation” on earnings calls, which was the highest number in at least 10 years, per FactSet. Under this backdrop, companies are raising their prices to help offset higher costs, and the S&P 500 Index is expected to report a fifth consecutive quarter of revenue growth north of 10% in Q1. Interestingly, analysts expect net profit margins will be higher through the rest of the year than they are expected to be in Q1 (+12.1%).

S&P 500 PRICE INDEX



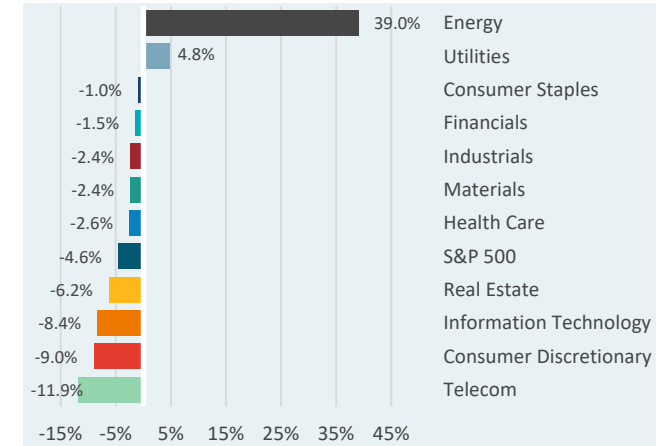
Source: Standard & Poor's, as of 3/31/22

NET PROFIT MARGIN – S&P 500 INDEX



Source: FactSet, as of 4/14/22

Q1 SECTOR PERFORMANCE



Source: Standard & Poor's, as of 3/31/22

Domestic equity size & style

Value stocks outperformed Growth stocks by a substantial margin during the first quarter (Russell 1000 Value -0.7% vs Russell 1000 Growth -9.0%) as Growth stocks fell sharply, reversing the gains delivered in the second half of 2021. Large capitalization stocks outperformed small capitalization stocks by a narrower margin (Russell 1000 -5.1%, Russell 2000 -7.5%).

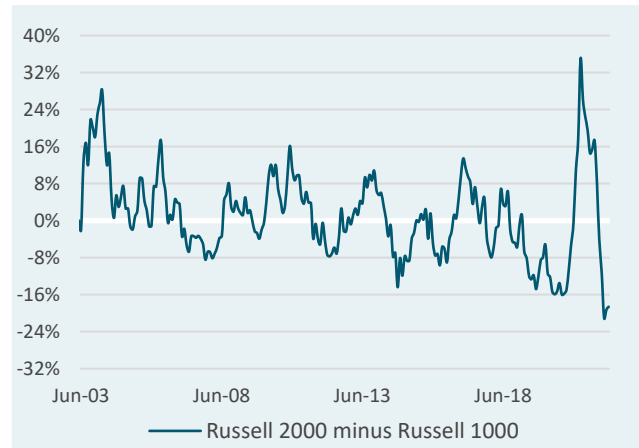
Energy stocks dramatically outperformed during Q1, as global demand has outpaced energy production for quite some time, pushing prices higher. Additionally, Russia's invasion of Ukraine led to widespread fears of an energy supply crunch, which temporarily sent oil to \$123/bbl—the highest level since 2008. Attractive conditions for energy producers coincided with outperformance of

Utilities, Financials, Industrials, and Materials sectors, which tend to have a Value tilt. During Q1, the Information Technology sector, which is tilted towards Growth, underperformed the index.

Further tightening of Fed policy and interest rate hikes will likely impact Value and Growth stock behavior, though these relationships are complex. For example, rate rises that result in a flattening of the yield curve may not be as boosting to financial sector performance, since banks profit from interest curve steepening (banks lend at the long end of the curve and borrow at the short end). The nature of the environment in which interest rates rise will contribute to future style factor behavior.

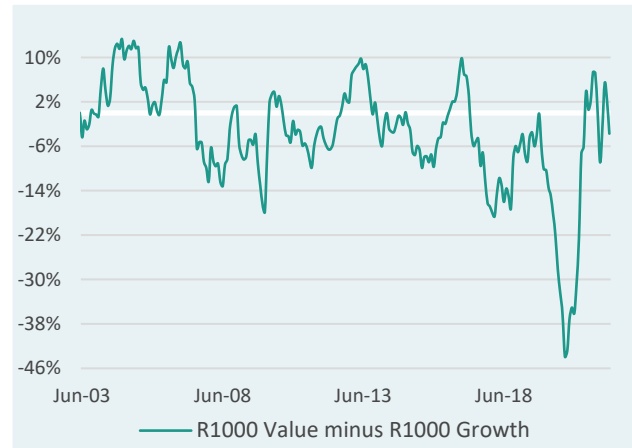
Value strongly outperformed during Q1

SMALL CAP VS LARGE CAP (YOY)



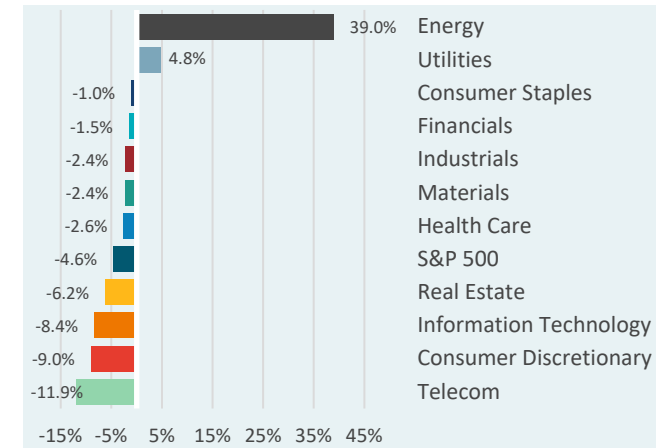
Source: FTSE, as of 3/31/22

VALUE VS GROWTH (YOY)



Source: FTSE, as of 3/31/22

Q1 SECTOR PERFORMANCE



Source: Standard & Poor's, as of 3/31/22

International developed equity

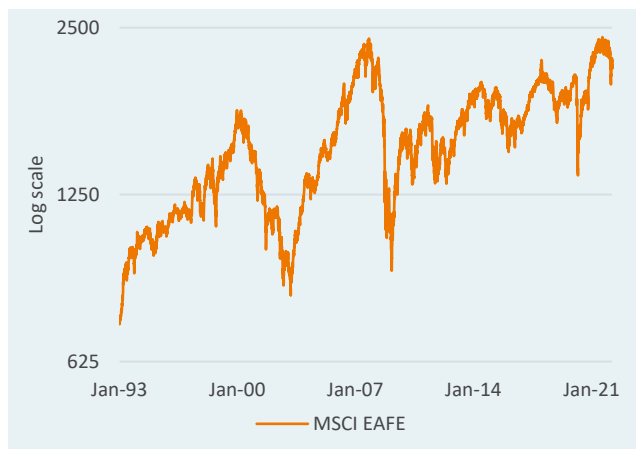
International developed equities fell -5.9% during the quarter, while U.S. equities performed slightly better (S&P 500 -4.6%) and emerging market equities trailed (MSCI Emerging Markets -7.0%), on an unhedged currency basis. Currency movement during the quarter detracted from the performance of investors who do not hedge foreign currency exposure. Currency movements in international developed markets generated losses of -2.4% (MSCI EAFE).

Eurozone and Japanese equities were among the worst performers during the quarter (Euro Stoxx 50 -10.9%, Nikkei 225 -7.8%), though much of these losses were driven by currency market movement. U.K. equities were among the top

performers at 1.8% (MSCI UK). Investors with a currency hedging program would have outperformed unhedged investors by roughly +2.2% in Eurozone equities, +5.2% in Japanese equities, and +2.8% in U.K. equities.

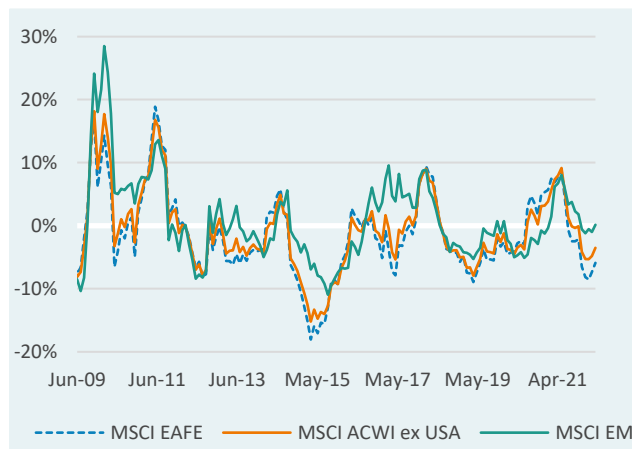
German equities (MSCI Germany -13.1%) detracted significantly from international developed equity returns, as investors expressed concern over the country's large exposure to Russian energy imports. Producer prices in Germany rose 25.9% year-over-year in February, partly due to surging gas prices. It is not yet known the degree to which businesses will be able to pass through higher prices to customers. Inflation in Germany rose to 7.3%—the highest level in decades.

INTERNATIONAL DEVELOPED EQUITY



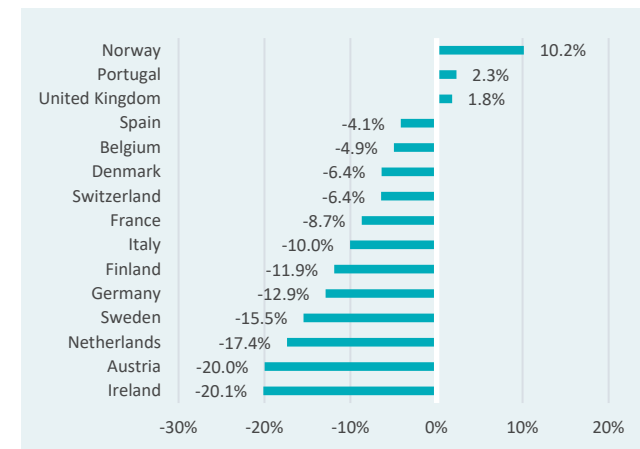
Source: MSCI, as of 3/31/22

EFFECT OF CURRENCY (1-YEAR ROLLING)



Source: MSCI, as of 3/31/22

EUROPEAN EQUITY PERFORMANCE – Q1 2022



Source: MSCI, Bloomberg, as of 3/31/22. Returns in USD terms.

Emerging market equity

Emerging market equities delivered losses (MSCI EM -7.0%) on an unhedged currency basis, lagging developed markets during the quarter. Latin American markets substantially outperformed Asian markets (MSCI EM Latin America +27.3%, MSCI EM Asia -8.7%).

Chinese equities have seen large losses over the last year. The Nasdaq Golden Dragon China Index recently drew down further than its maximum loss during the Global Financial Crisis. Concerns over imposed sanctions due to relations with Russia, regulatory crackdowns on the real estate and internet sectors, and rising COVID-19 cases resulting in major city lockdowns

have provided the backdrop to the massive sell-off in Chinese equities. More supportive government policies appear to be coming down the pike, which may contribute to a turnaround.

Emerging market equities are attractively priced relative to developed markets. The valuation divide is now extremely large. On a price-to-earnings basis, emerging market equities are in the 8th percentile cheap relative to U.S. equities going back to 2003, meaning they have been cheaper just 7% of the time since 2003. Emerging market equities have also recently fallen back to more average valuations relative to international developed markets.

EMERGING MARKET EQUITY



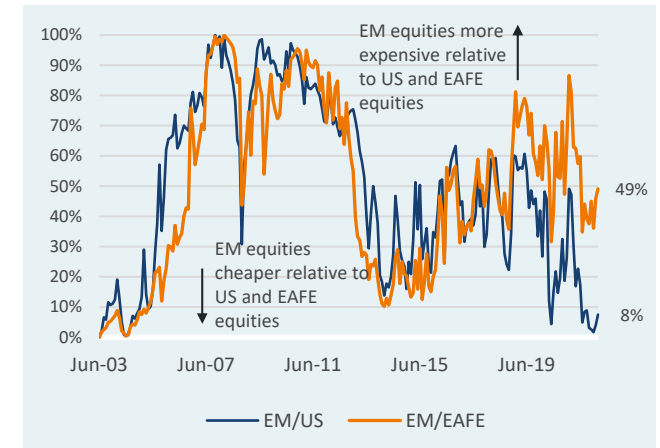
Source: MSCI, as of 12/31/21

CHINESE EQUITY DRAWDOWNS



Source: MSCI, Nasdaq, as of 3/22/22

VALUATION PERCENTILES



Source: MSCI, forward 12m price multiples, as of 2/28/22

Equity valuations

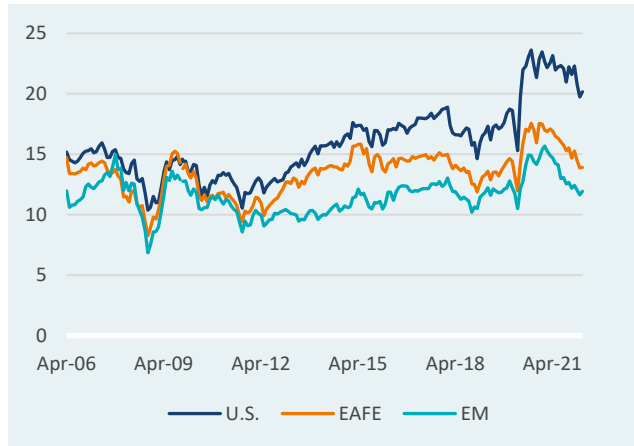
Valuations drifted lower over the first quarter as earnings expectations remained relatively steady and prices moderated. The forward 12-month P/E ratio for the S&P 500 closed the quarter at 19.0—slightly above the five-year average. Forward multiples have fallen back to pre-pandemic levels for most international developed and emerging equity markets.

In the domestic market, analysts appear optimistic about the outlook. If earnings over the next 12 months meet expectations and valuations hold at current levels, the S&P 500 Price Index is forecast to rise 18.5% to around an index level of 5250.

U.S. equity forward P/E valuations remain at historically stretched levels relative to international developed and emerging market equities. U.S. forward price multiples closed the quarter in the 99th percentile relative to EAFE, and in the 92nd percentile relative to EM, using monthly data going back to 2003. The strength of U.S. institutions, the resilience of the U.S. consumer, the United States’ energy independence, as well its distance from ongoing conflict in Ukraine may help to tilt international investor flows toward U.S. equities, likely supporting a healthy U.S. equity valuation premium.

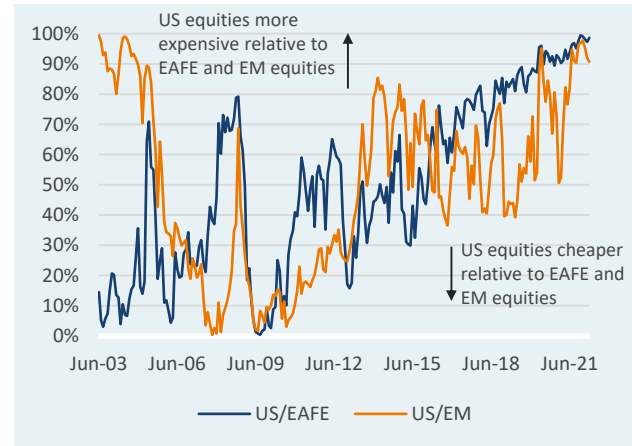
Most equity valuations have moved back towards normal levels, though U.S. prices remain rich

FORWARD P/E RATIOS



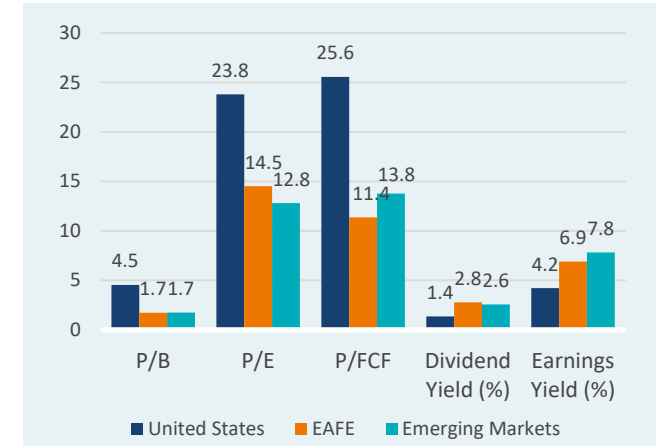
Source: MSCI, 12m forward P/E, as of 3/31/22

RELATIVE FORWARD PRICE MULTIPLES – VALUATION PERCENTILE ANALYSIS



Source: Bloomberg, MSCI, as of 3/31/22

VALUATION METRICS (3-MONTH AVERAGE)



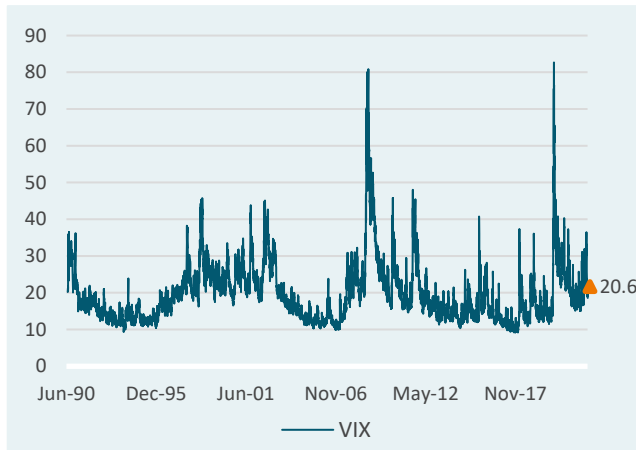
Source: Bloomberg, MSCI as of 3/31/22 - trailing P/E

Equity volatility

The Cboe VIX Index spiked mid-quarter during Russia's invasion of Ukraine, as fears of potential global conflict, food shortages, and higher inflation roiled markets. The index fell to 20 to end the quarter—moderately above the longer-term average. Realized volatility over the past year was muted as the pandemic and its associated pain has moved into the rearview mirror. U.S. markets were the most volatile among developed and emerging markets, which has been rare historically. Implied volatility for close-to-the-money put and call options on U.S. large-cap stocks appears to be reflecting fairly-neutral risk positioning. In short, the price of downside protection relative to upside participation is around average.

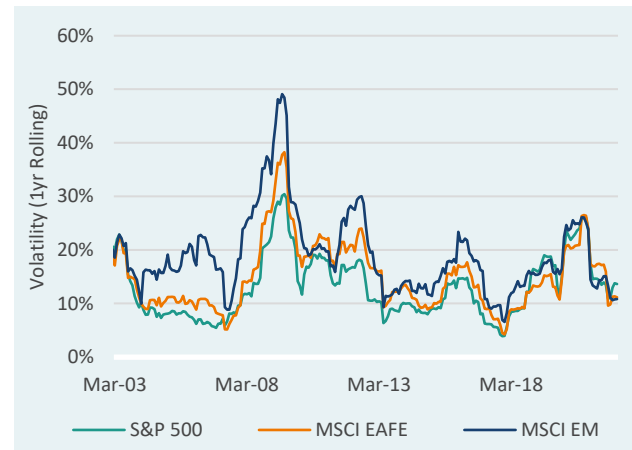
While realized volatility in emerging market equities was fairly low relative to history in Q1, weakness in tech shares and concerns over potential sanctions resulted in material selloffs in highly-tech-weighted regional markets. In U.S. dollar terms, the MSCI China Index closed the quarter -44% below previous records, and Russian stocks were marked down -100%. Moving forward, the exclusion of Russian equities from MSCI's Emerging Market benchmark will result in an even higher weighting for the Asian segment of the EM complex, which tends to be more growth-tilted and more volatile.

U.S. IMPLIED VOLATILITY (VIX)



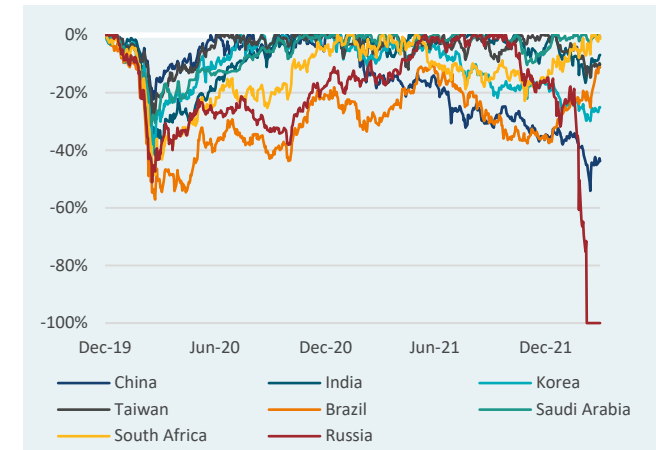
Source: Cboe, as of 3/31/22

REALIZED VOLATILITY



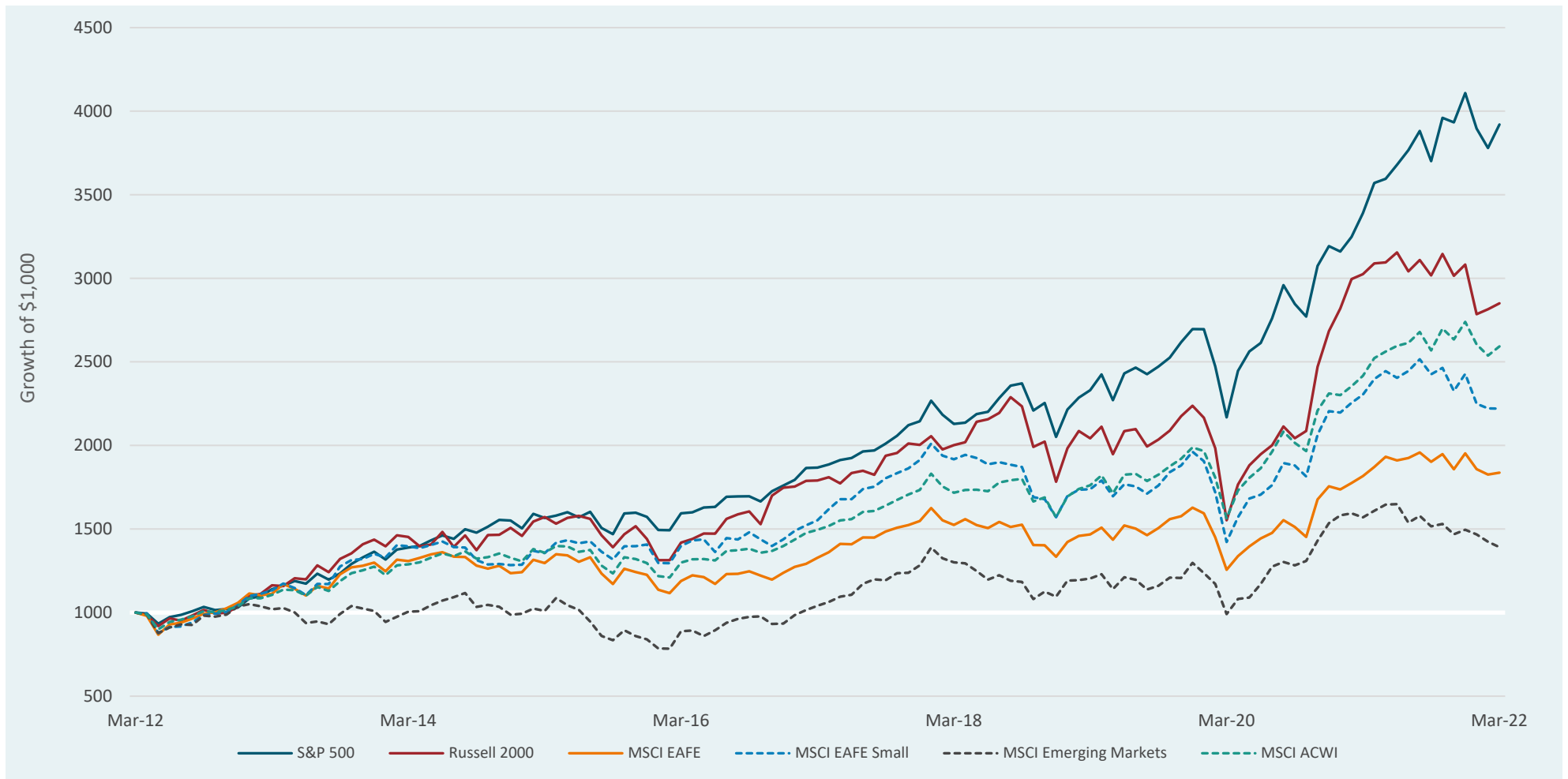
Source: Standard & Poor's, MSCI, as of 3/31/22

EM EQUITY – MAX DRAWDOWNS FROM PEAKS



Source: MSCI, Bloomberg, as of 3/31/22, returns in USD

Long-term equity performance



Source: Morningstar, as of 3/31/22

Other assets

Commodities

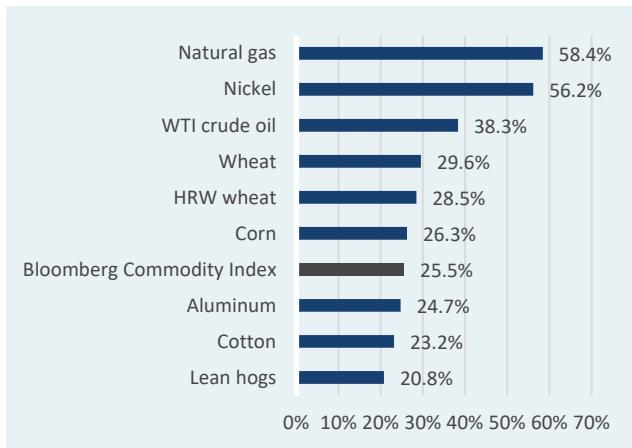
Commodities were by far the best-performing major asset class in Q1 2022 (Bloomberg Commodity Index +25.5%), with every major sector contributing positively to overall index returns. The Energy (+47.9%) and Grains (+24.9%) sectors drove the advance, as investors speculated on what war in the Ukraine and the economic ostracization of Russia might mean for energy access and wheat and corn production.

Industrial metals (+22.7%) also rallied substantially, influenced by clean energy transition efforts that have ramped up in recent months. A short squeeze in nickel (+56.2%) was

additive to performance.

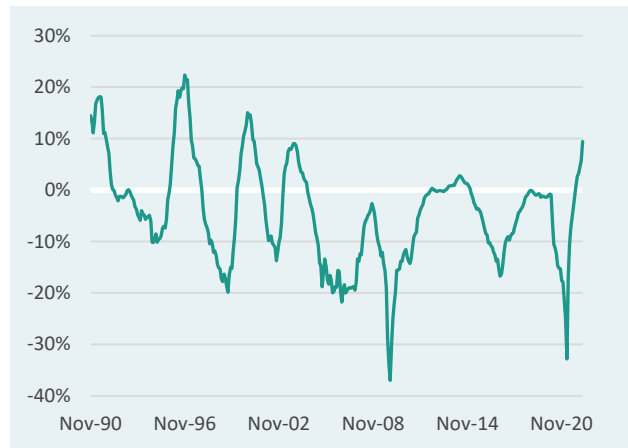
Improving roll yield has been a huge component of the outsized total return offered by commodities, adding +9.4% to performance over the last twelve months. Massive increases in spot prices relative to further-dated contracts pushed many commodity futures curves into relatively steep backwardation over the near-term, allowing investors to roll their contracts for a profit. In order for this roll yield to be sustainable, spot prices will need to stay elevated relative to futures pricing.

BLOOMBERG COMMODITY INDEX – Q1 2022



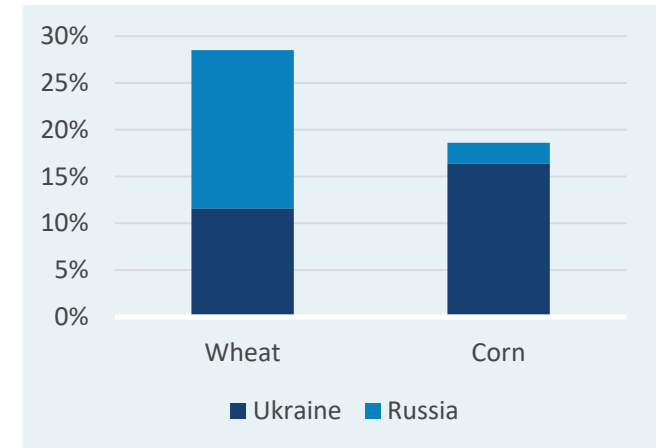
Source: Bloomberg, as of 3/31/22

S&P GSCI INDEX ROLL YIELD (LAST 12 MONTHS)



Source: Standard & Poor's, Bloomberg, as of 3/31/22

SHARE OF GLOBAL GRAIN EXPORTS



Source: Food and Agriculture Organization of the United Nations

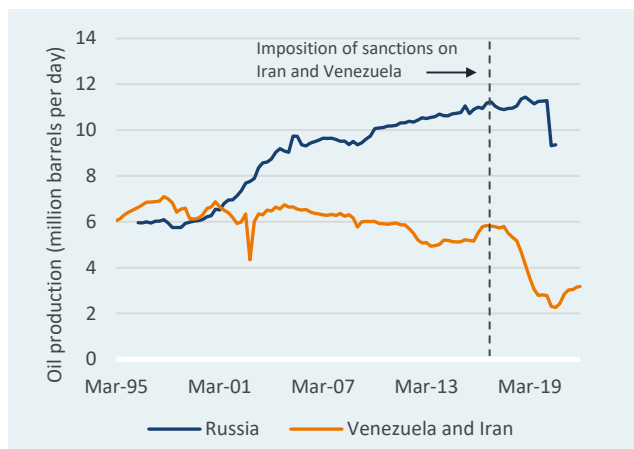
How can the Russian oil gap be filled?

Russia produced approximately 11 million barrels of oil per day prior the onset of Covid-19 and the recent economic sanctions. Since then, many countries have imposed embargoes on Russian oil, and higher prices have incentivized policymakers to reopen discussions with other producers, including Venezuela and Iran.

Prior to the imposition of sanctions on Venezuelan and Iranian oil in January 2019 and June 2019, respectively, the two countries were producing around 5.8 million barrels per day. Today, they are producing around 3.2 million barrels per day. Even if the two countries were able to ramp up production back to pre-sanction levels, which would be an impressive feat both diplomatically and physically, that would only replace roughly a quarter of Russian output.

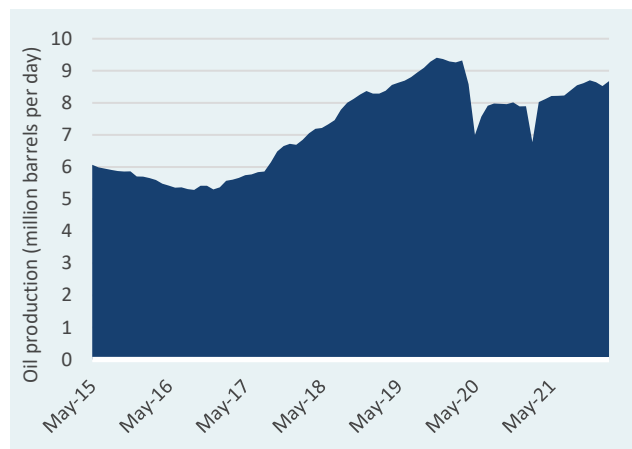
Increased energy production is needed to alleviate high prices, but this conflicts with the West's climate priorities. U.S. government officials have given mixed signals to oil producers. For example, the administration announced in April that it will resume its sale of leases for drilling on federal land, though 80% less land will be leased relative to the footprint that had been originally evaluated. Furthermore, required royalties for energy extraction were raised from 12.5% to 18.75%. In the U.S., many shale firms have opted to increase production on existing land, but have been slow to pursue new projects—partly due to supply chain issues (shortages in labor, truck drivers, and frack sand) and also due to prioritization of profits over growth. This newfound conservatism is reflected by recent comments from Scott Sheffield, CEO of Pioneer Natural Resources Co., who said his company, the largest oil producer in the Permian Basin, is not currently considering raising its long-term goal of increasing oil production by 0-5% per year. As shown on the bottom right, Pioneer's goal this year is to return 80% of cash flow to investors.

WHAT ABOUT VENEZUELA AND IRAN?



Source: Bloomberg News, as of 2/28/22

TOTAL U.S. SHALE PRODUCTION



Source: Rystad Energy, as of 4/30/22

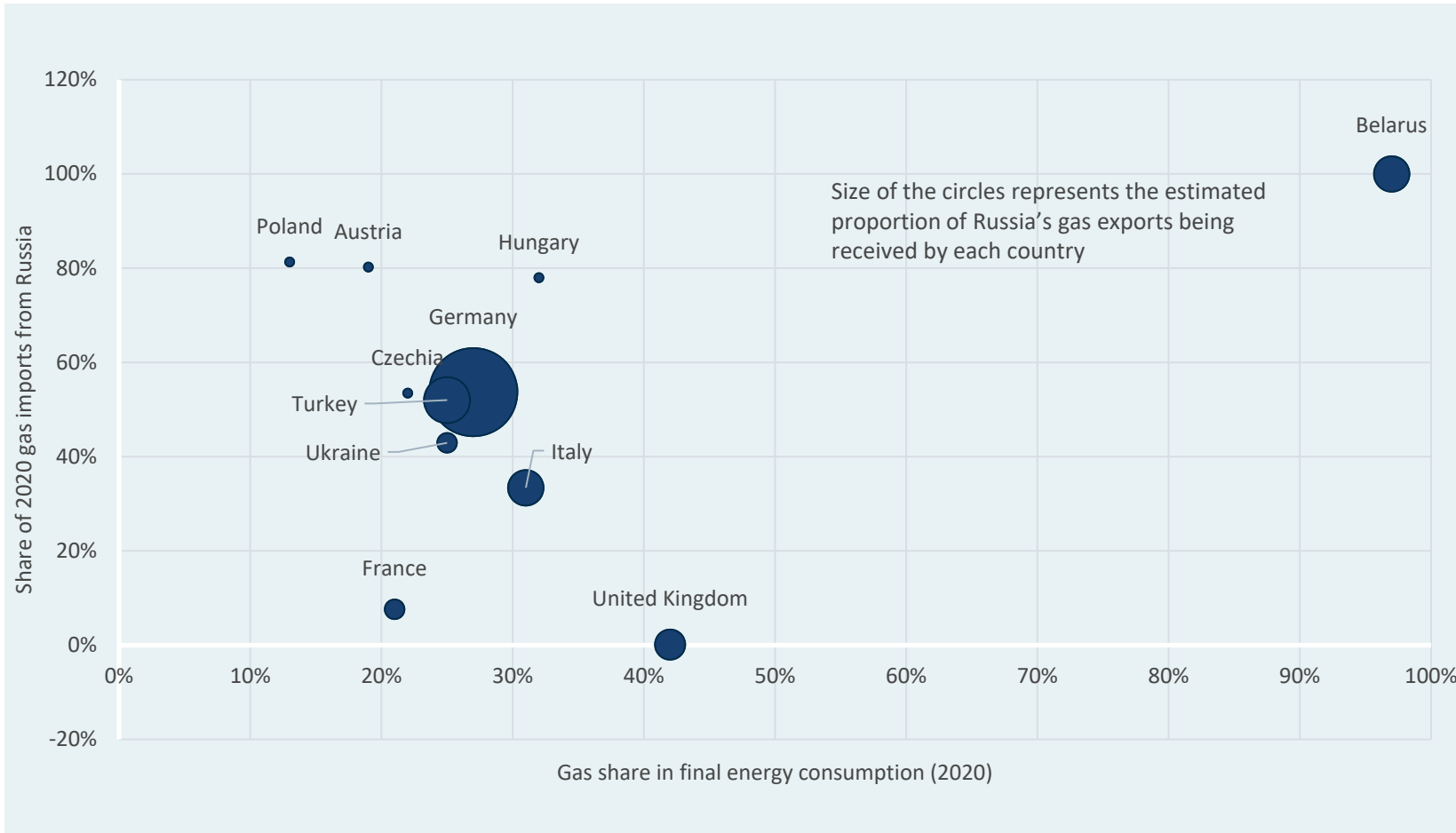
SHALE PRODUCERS' FOCUS ON DIVIDENDS



Source: Pioneer Natural Resources, Q4 2021 Earnings Presentation

Russian energy embargoes

RUSSIAN GAS EXPOSURE VS. GAS DEPENDENCE



Most countries which have banned Russian oil and gas do not rely heavily on Russia for their energy resources

Source: Bruegel, as of 2/28/22

Grain supply outlook

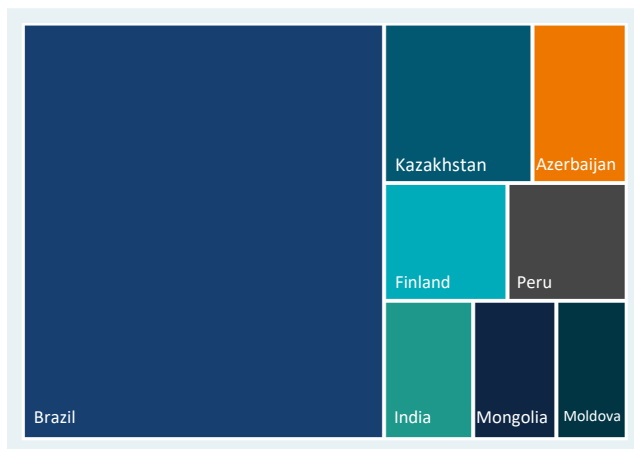
Russia, the world's largest fertilizer exporter, imposed a two-month ban on ammonium nitrate exports, which threatens the availability of fertilizer supplies, especially to South America, as the region enters a critical point in the growing season. Although the United States is not a direct buyer of Russian ammonium nitrate, the export ban is likely to result in higher prices for U.S. farmers.

The outlook for South America's soybean crops has deteriorated as a second year of drought, brought on by La Nina, drags down yield and production forecasts. *Gro*

Intelligence's yield forecast model indicates a production decline which would take soybean stocks to the tightest levels since 2015/2016. The outlook for corn is less dire, as planted acreage is up approximately 5% in Brazil this year, though falling crop yields could offset greater acreage.

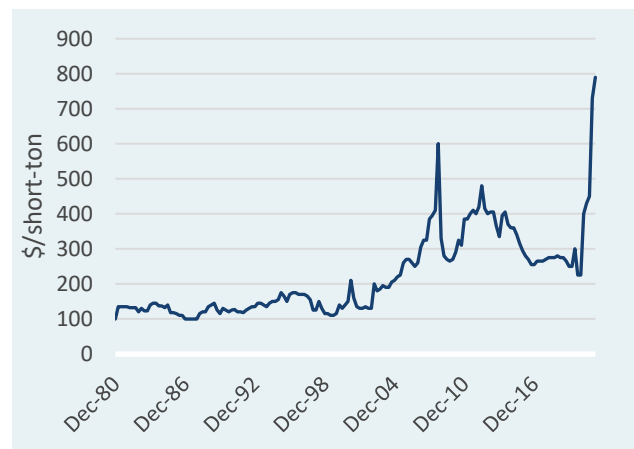
China, the world's largest grain consumer is also facing significant food shortages. Recently, the country's agriculture minister stated that the condition of the winter wheat crop was the "worst in history", and that yields are expected to fall around 20%.

MAJOR DESTINATIONS FOR RUSSIAN AMMONIUM NITRATE EXPORTS (VOLUME)



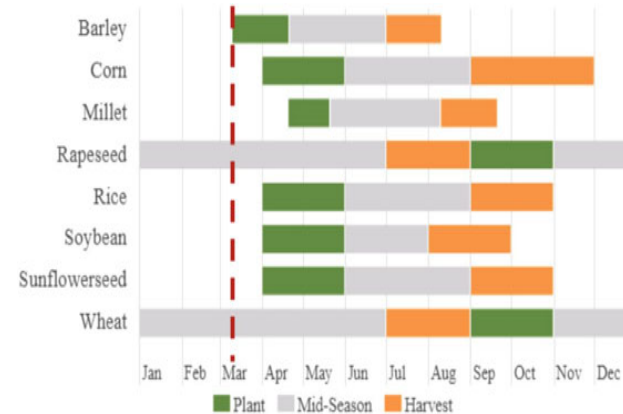
Source: COMTRADE, *Gro Intelligence*, as of 12/31/20

U.S. CORNBELT AMMONIUM NITRATE PRICES



Source: Bloomberg, as of 3/23/22

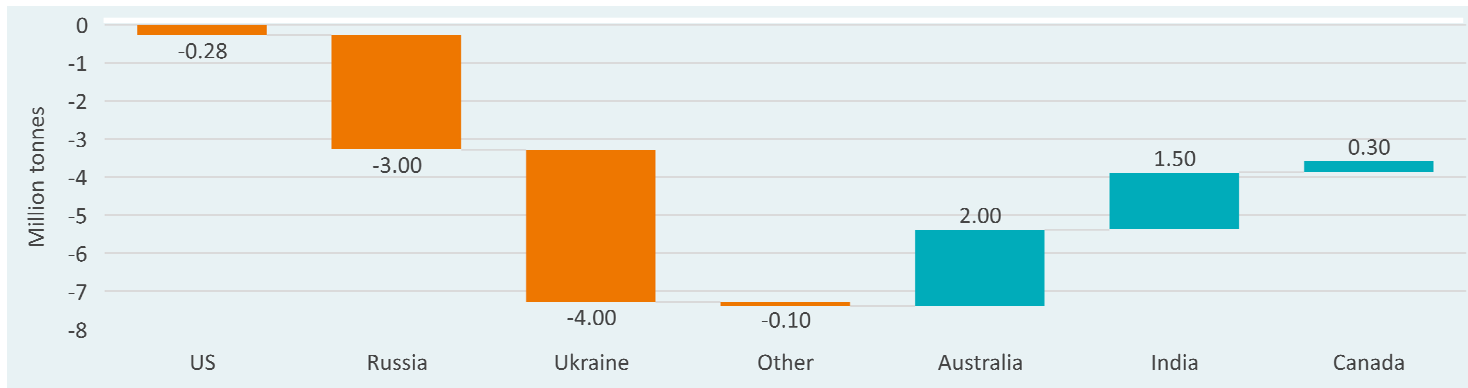
UKRAINE – CROP CALENDAR



Source: USDA, Ukraine Ministry of Agriculture

Where will incremental supply come from?

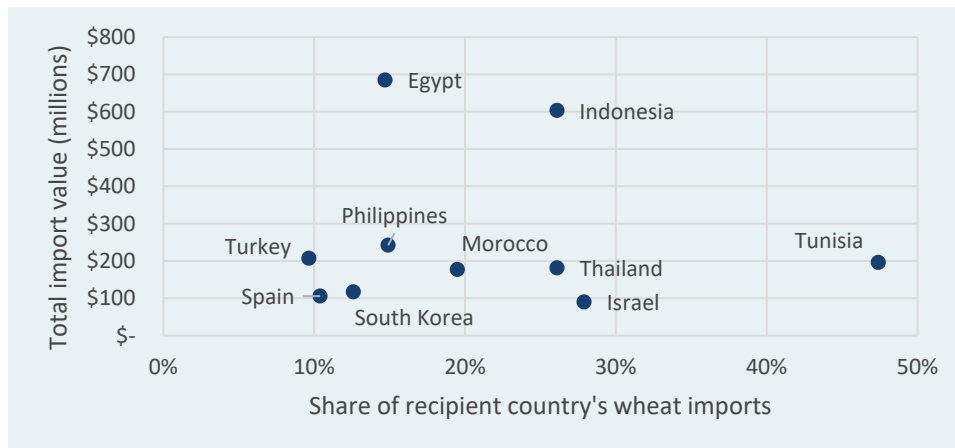
FEBRUARY TO MARCH CHANGE IN 2022 GLOBAL WHEAT EXPORTS



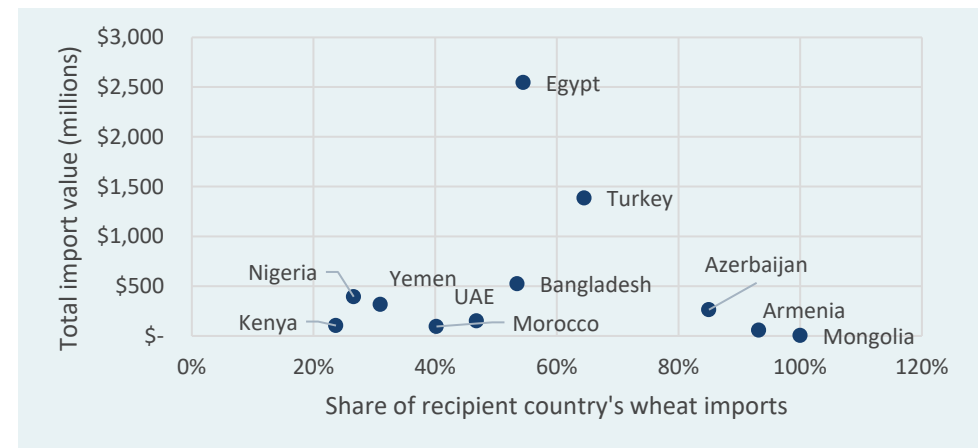
Global production is expected to drop 3.5 million metric tons in 2022, as substitution from farmers in Australia, India, and Canada is not expected to be able to fully offset production declines in the Black Sea region

Source: USDA March 2022 World Agricultural Supply and Demand Estimates. Export change based on revised projections from the USDA World Agricultural Supply and Demand Estimates

UKRAINIAN GLOBAL WHEAT EXPORTS



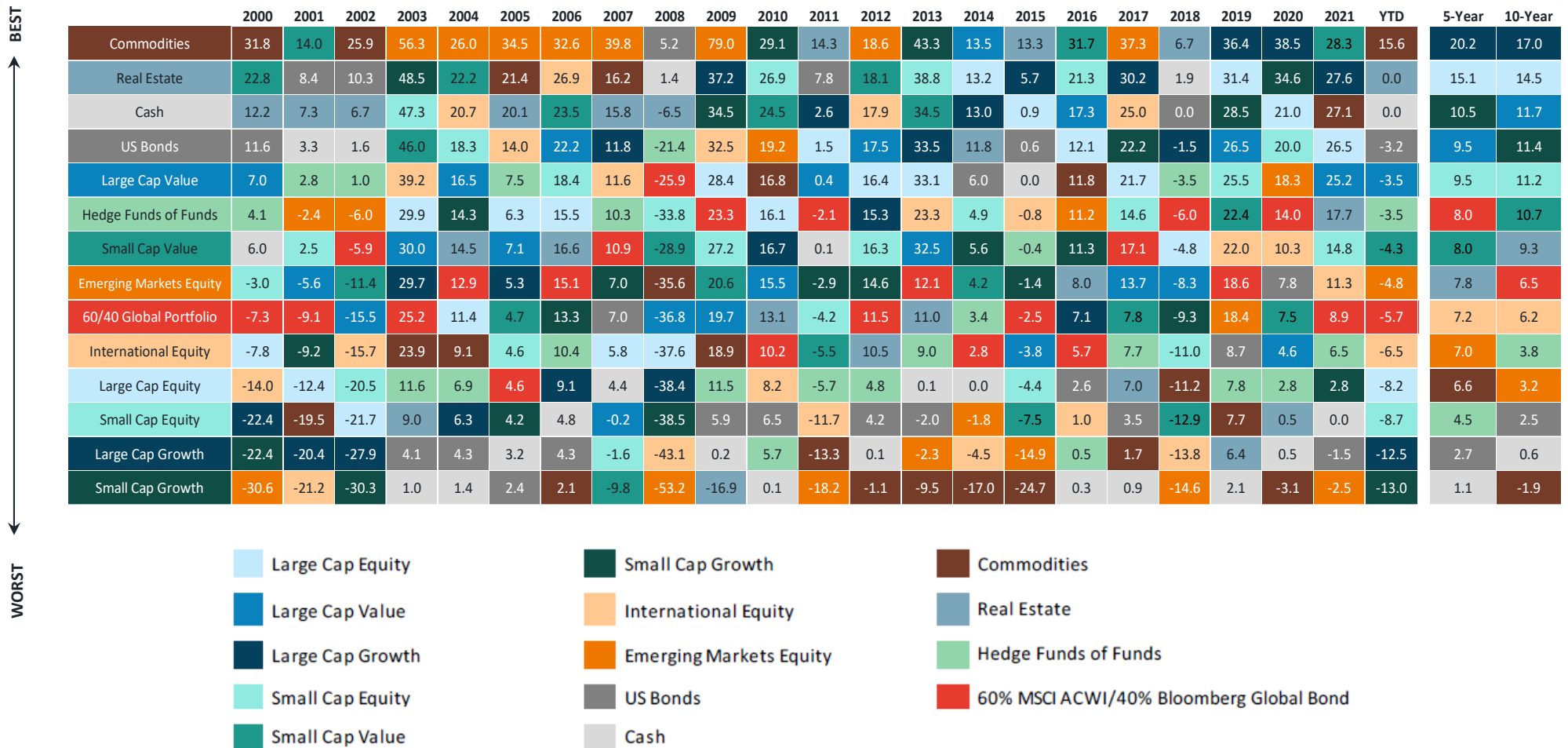
RUSSIAN GLOBAL WHEAT EXPORTS



Source: OEC, BACI

Appendix

Periodic table of returns



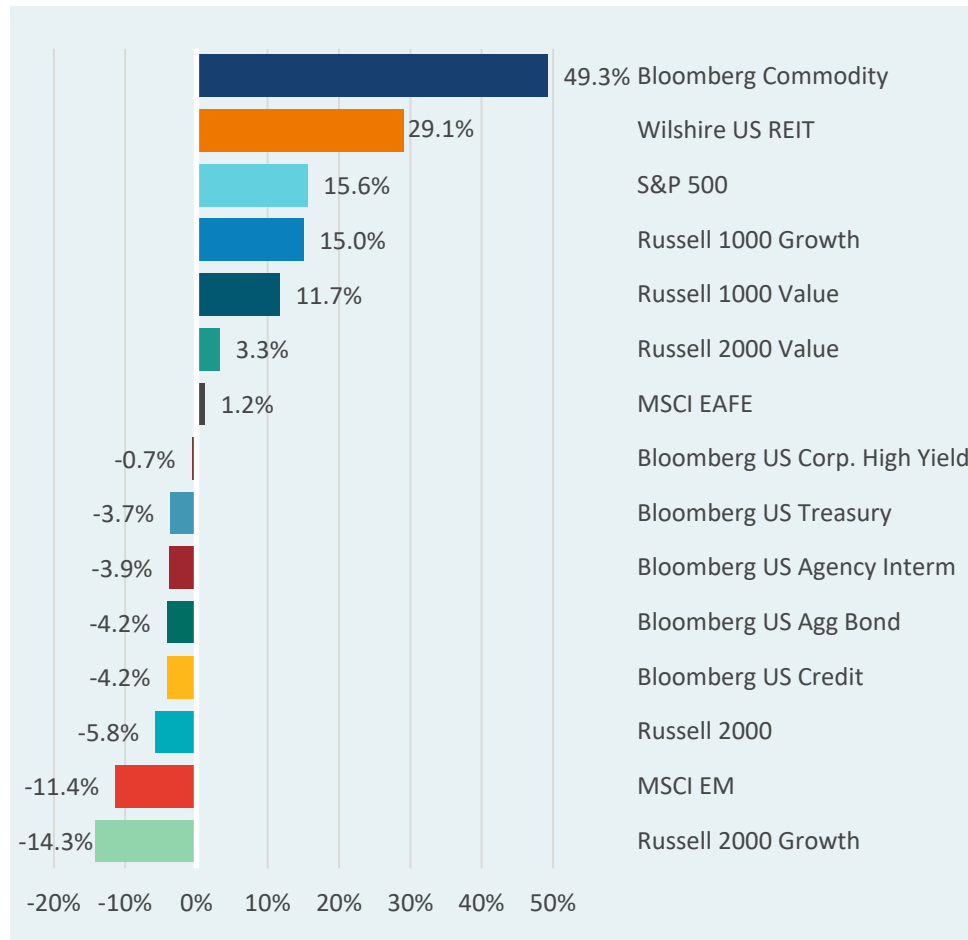
BEST
↑
↓
WORST



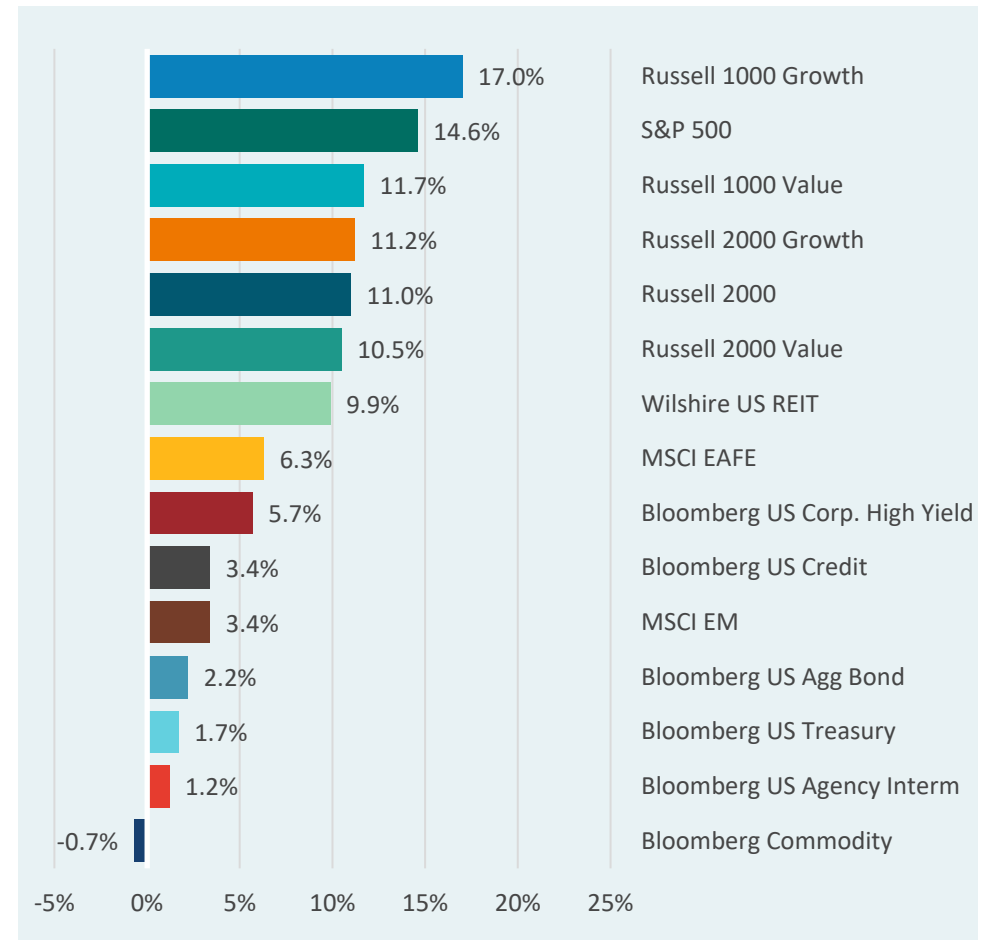
Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, Bloomberg US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, Bloomberg Global Bond. NCREIF Property Index performance data as of 12/31/21.

Major asset class returns

ONE YEAR ENDING MARCH



TEN YEARS ENDING MARCH



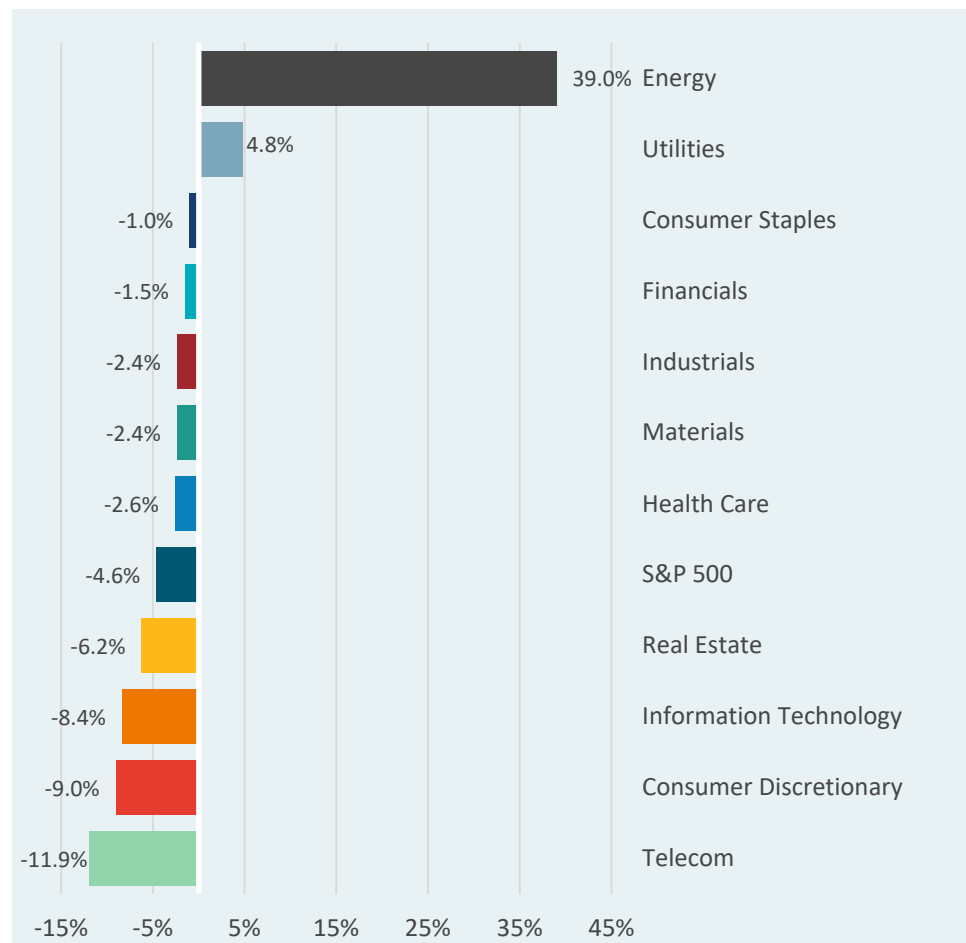
*Only publicly traded asset performance is shown here. Performance of private assets is typically released with a 3- to 6-month delay.

Source: Morningstar, as of 3/31/22

Source: Morningstar, as of 3/31/22

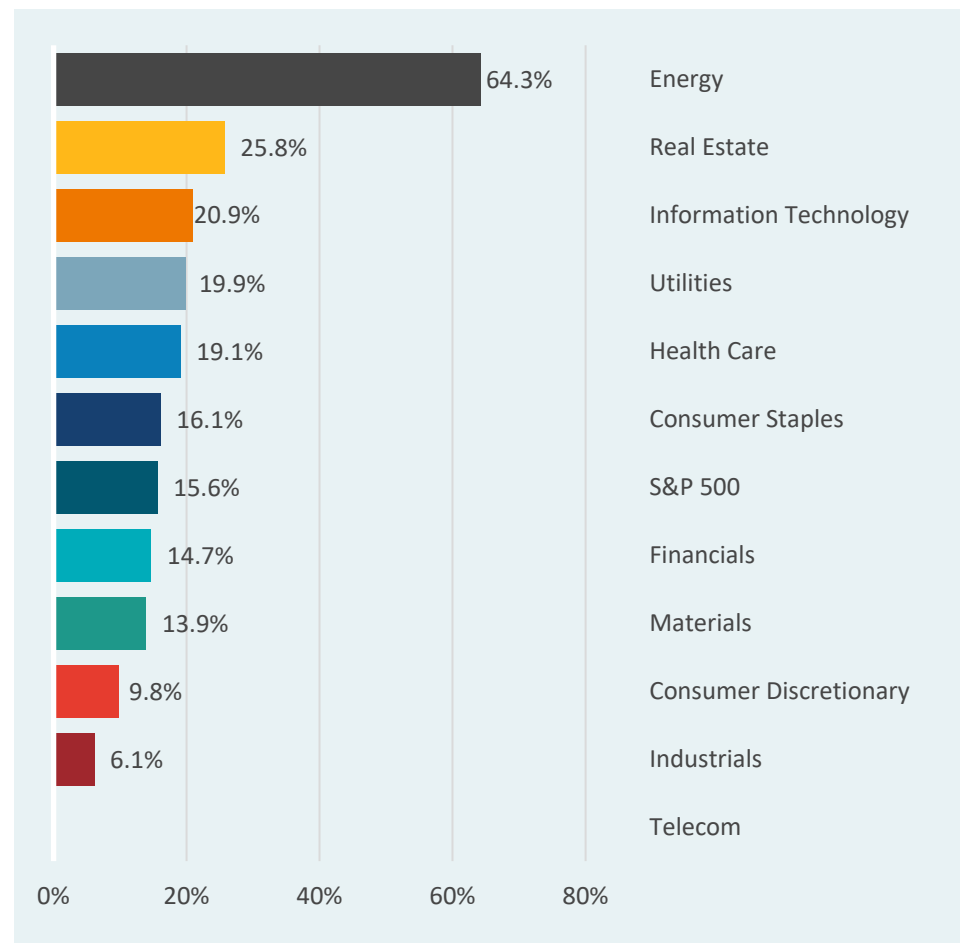
S&P 500 sector returns

Q1 2022



Source: Morningstar, as of 3/31/22

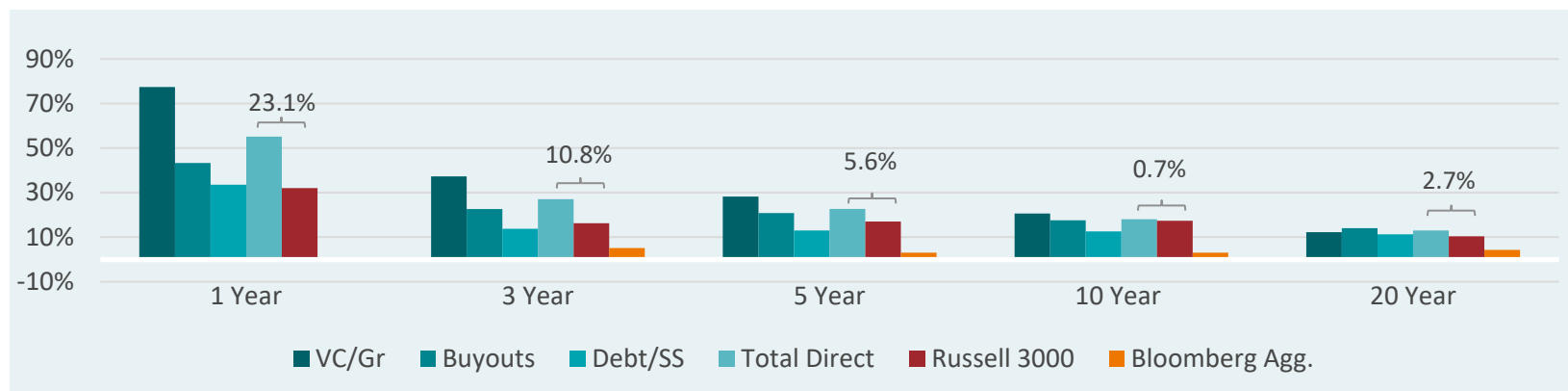
ONE YEAR ENDING MARCH



Source: Morningstar, as of 3/31/22

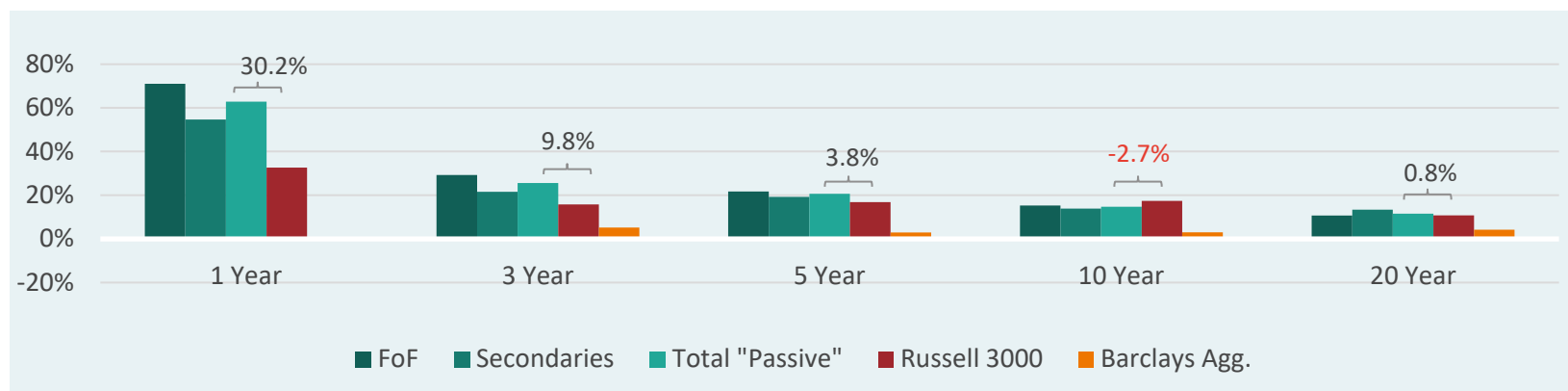
Private equity vs. traditional assets performance

DIRECT PRIVATE EQUITY FUND INVESTMENTS



Direct P.E Fund Investments outperformed comparable public equities across all time periods.

“PASSIVE” STRATEGIES

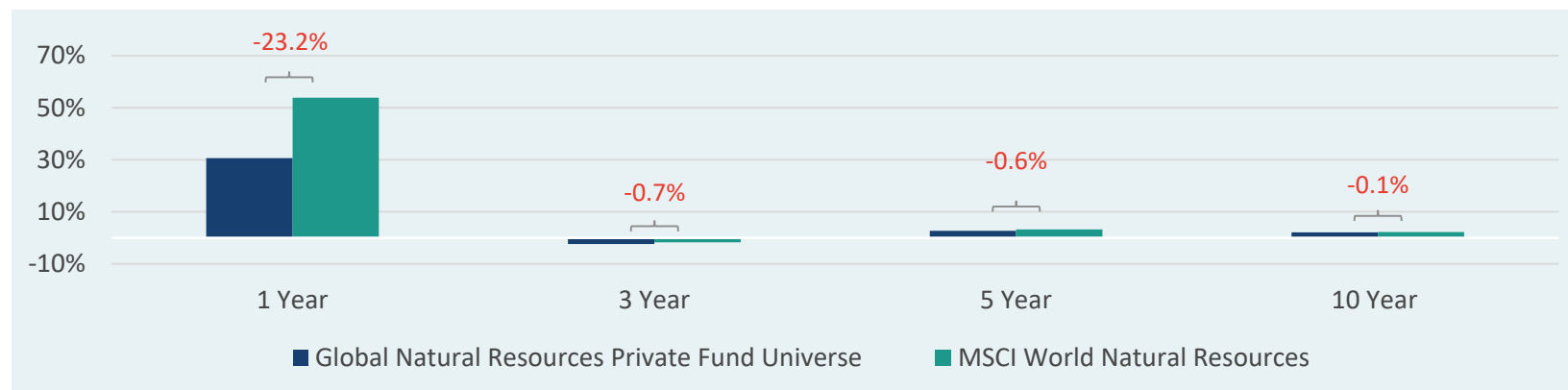


“Passive” strategies outperformed comparable public equities across all time periods, aside from the 10-year basis.

Sources: CJA PME: U.S. Private Equity Funds sub asset classes as of September 30, 2021. Public Market Equivalent returns resulted from “Total Passive” and Total Direct’s identical cash flows invested into and distributed from respective traditional asset comparable.

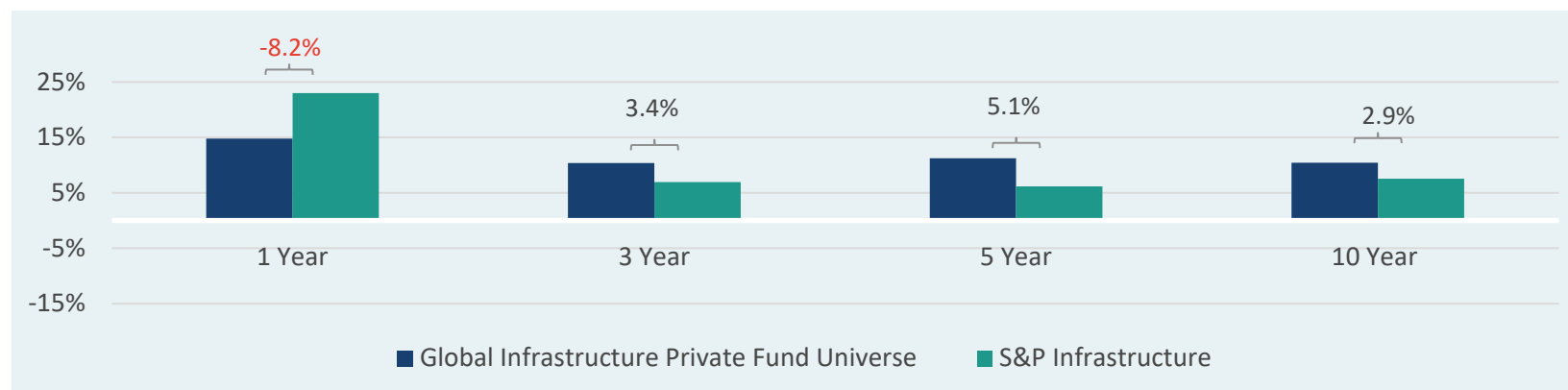
Private vs. liquid real assets performance

GLOBAL NATURAL RESOURCES FUNDS



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

GLOBAL INFRASTRUCTURE FUNDS

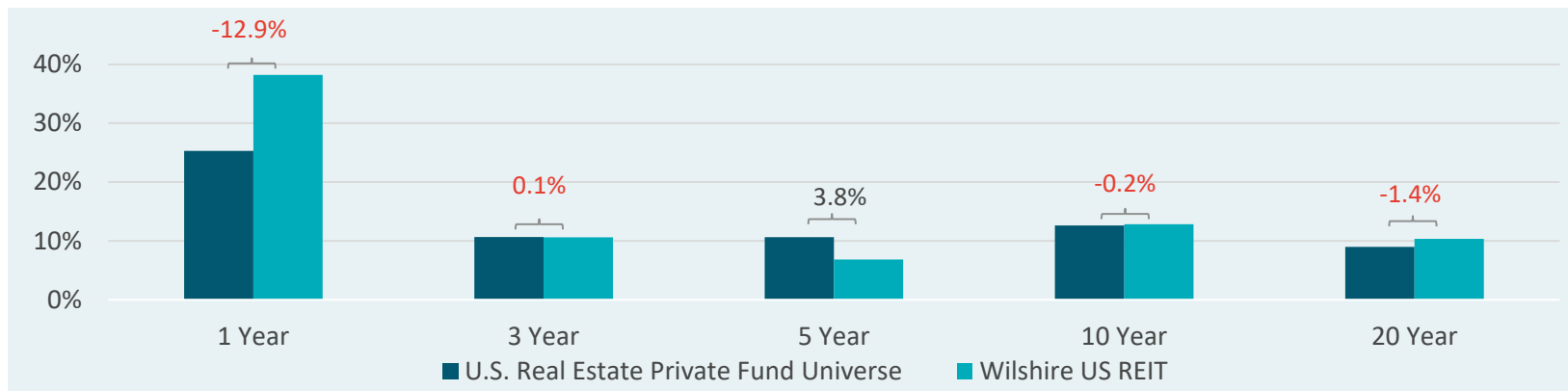


Infra. funds outperformed the S&P Infra. across all periods, aside from the 1-year basis.

Sources: CJA PME: Global Natural Resources (vintage 1999 and later, inception of MSCI World Natural Resources benchmark) and Global Infrastructure (vintage 2002 and later, inception of S&P Infrastructure benchmark) universes as of September 30, 2021. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real assets universes.

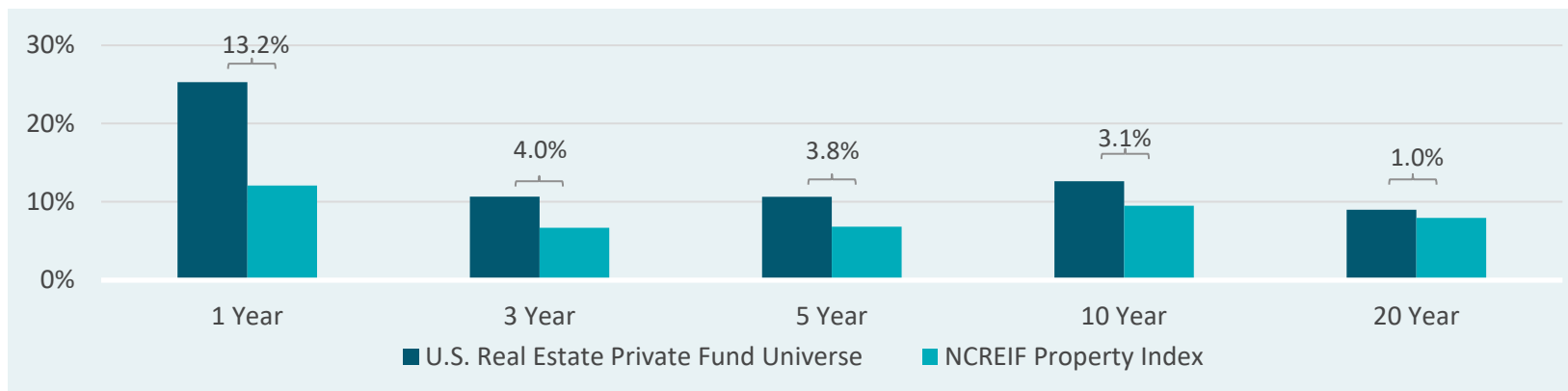
Private vs. liquid and core real estate performance

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



U.S. Private R.E. funds underperformed the Wilshire U.S. REIT Index across all time periods, aside on a 5-year basis.

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



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

Sources: CJA PME: U.S. Real Estate universes as of September 30, 2021. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real estate universes.

Detailed index returns

DOMESTIC EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Core Index							
S&P 500	3.7	(4.6)	(4.6)	15.6	18.9	16.0	14.6
S&P 500 Equal Weighted	2.6	(2.7)	(2.7)	13.1	17.0	13.9	14.0
DJ Industrial Average	2.5	(4.1)	(4.1)	7.1	12.6	13.4	12.8
Russell Top 200	3.7	(4.9)	(4.9)	15.7	20.1	17.0	15.2
Russell 1000	3.4	(5.1)	(5.1)	13.3	18.7	15.8	14.5
Russell 2000	1.2	(7.5)	(7.5)	(5.8)	11.7	9.7	11.0
Russell 3000	3.2	(5.3)	(5.3)	11.9	18.2	15.4	14.3
Russell Mid Cap	2.6	(5.7)	(5.7)	6.9	14.9	12.6	12.9
Style Index							
Russell 1000 Growth	3.9	(9.0)	(9.0)	15.0	23.6	20.9	17.0
Russell 1000 Value	2.8	(0.7)	(0.7)	11.7	13.0	10.3	11.7
Russell 2000 Growth	0.5	(12.6)	(12.6)	(14.3)	9.9	10.3	11.2
Russell 2000 Value	2.0	(2.4)	(2.4)	3.3	12.7	8.6	10.5

INTERNATIONAL EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
MSCI ACWI	2.2	(5.4)	(5.4)	7.3	13.8	11.6	10.0
MSCI ACWI ex US	0.2	(5.4)	(5.4)	(1.5)	7.5	6.8	5.6
MSCI EAFE	0.6	(5.9)	(5.9)	1.2	7.8	6.7	6.3
MSCI EM	(2.3)	(7.0)	(7.0)	(11.4)	4.9	6.0	3.4
MSCI EAFE Small Cap	(0.0)	(8.5)	(8.5)	(3.6)	8.5	7.4	8.3
Style Index							
MSCI EAFE Growth	0.6	(11.9)	(11.9)	(1.5)	9.8	8.9	7.5
MSCI EAFE Value	0.7	0.3	0.3	3.6	5.2	4.2	4.9
Regional Index							
MSCI UK	0.1	1.8	1.8	13.6	5.3	5.5	4.5
MSCI Japan	(0.5)	(6.6)	(6.6)	(6.5)	6.8	6.1	6.5
MSCI Euro	(1.7)	(11.1)	(11.1)	(3.4)	6.8	5.5	5.9
MSCI EM Asia	(3.1)	(8.7)	(8.7)	(15.2)	6.1	7.2	5.8
MSCI EM Latin American	13.1	27.3	27.3	23.5	3.2	4.1	(1.1)

FIXED INCOME

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
Bloomberg US TIPS	(1.9)	(3.0)	(3.0)	4.3	6.2	4.4	2.7
Bloomberg US Treasury Bills	(0.0)	(0.0)	(0.0)	(0.0)	0.8	1.1	0.6
Bloomberg US Agg Bond	(2.8)	(5.9)	(5.9)	(4.2)	1.7	2.1	2.2
Bloomberg US Universal	(2.7)	(6.1)	(6.1)	(4.2)	1.9	2.3	2.6
Duration							
Bloomberg US Treasury 1-3 Yr	(1.4)	(2.5)	(2.5)	(3.0)	0.8	1.0	0.8
Bloomberg US Treasury Long	(5.3)	(10.6)	(10.6)	(1.4)	3.3	3.9	4.0
Bloomberg US Treasury	(3.1)	(5.6)	(5.6)	(3.7)	1.4	1.8	1.7
Issuer							
Bloomberg US MBS	(2.6)	(5.0)	(5.0)	(4.9)	0.6	1.4	1.7
Bloomberg US Corp. High Yield	(1.1)	(4.8)	(4.8)	(0.7)	4.6	4.7	5.7
Bloomberg US Agency Interim	(2.1)	(3.7)	(3.7)	(3.9)	0.7	1.1	1.2
Bloomberg US Credit	(2.5)	(7.4)	(7.4)	(4.2)	2.8	3.2	3.4

OTHER

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Index							
Bloomberg Commodity	8.6	25.5	25.5	49.3	16.1	9.0	(0.7)
Wilshire US REIT	6.9	(3.9)	(3.9)	29.1	11.9	10.0	9.9
CS Leveraged Loans	0.0	(0.1)	(0.1)	3.2	4.1	4.1	4.5
S&P Global Infrastructure	5.9	7.5	7.5	16.7	8.0	7.7	7.8
Alerian MLP	2.0	18.9	18.9	37.5	1.4	(1.1)	1.2
Regional Index							
JPM EMBI Global Div	(0.9)	(10.0)	(10.0)	(7.4)	0.0	1.7	3.7
JPM GBI-EM Global Div	(1.5)	(6.5)	(6.5)	(8.5)	(1.1)	0.2	(0.7)
Hedge Funds							
HFRI Composite	(0.1)	(1.6)	(1.6)	2.6	8.3	6.2	5.1
HFRI FOF Composite	0.6	(2.7)	(2.7)	1.3	5.9	4.6	3.9
Currency (Spot)							
Euro	(0.9)	(2.2)	(2.2)	(5.3)	(0.3)	0.8	(1.8)
Pound Sterling	(1.9)	(2.8)	(2.8)	(4.6)	0.3	1.0	(1.9)
Yen	(5.1)	(5.1)	(5.1)	(9.0)	(3.0)	(1.7)	(3.8)

Source: Morningstar, HFRI, as of 3/31/22.

Definitions

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

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

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

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

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Contra Costa County Employees' Retirement Association

Investment Performance Review

Period Ending: March 31, 2022



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

SEATTLE 206-622-3700

LOS ANGELES 310-297-1777

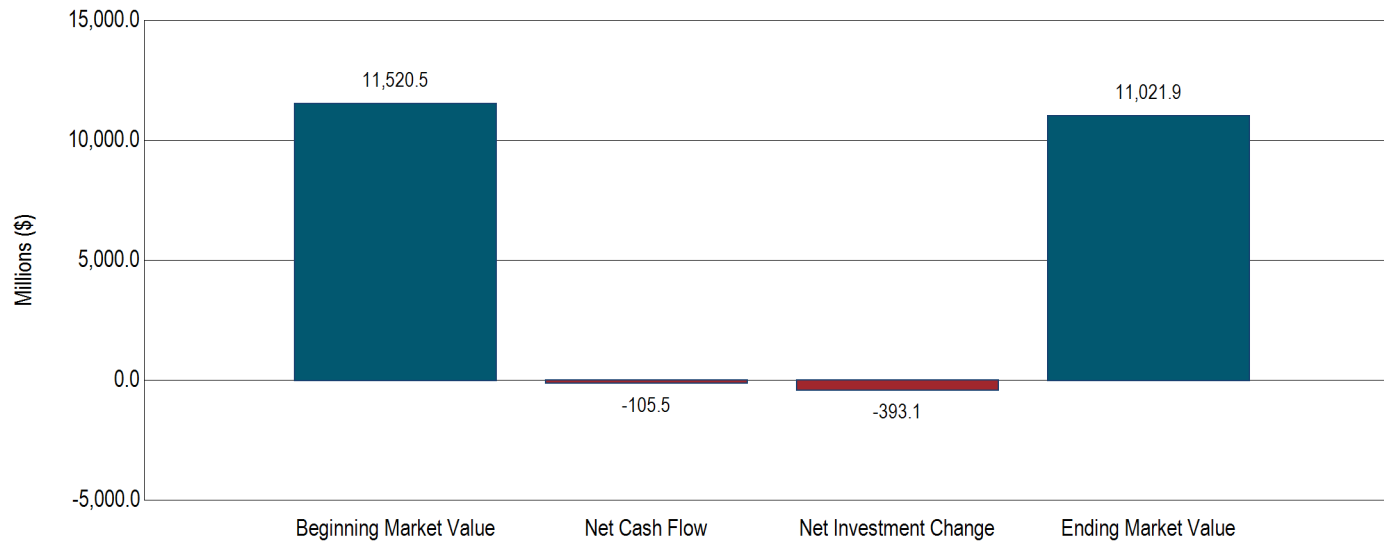
SAN FRANCISCO 415-362-3484

PITTSBURGH 412-784-6678

Portfolio Reconciliation

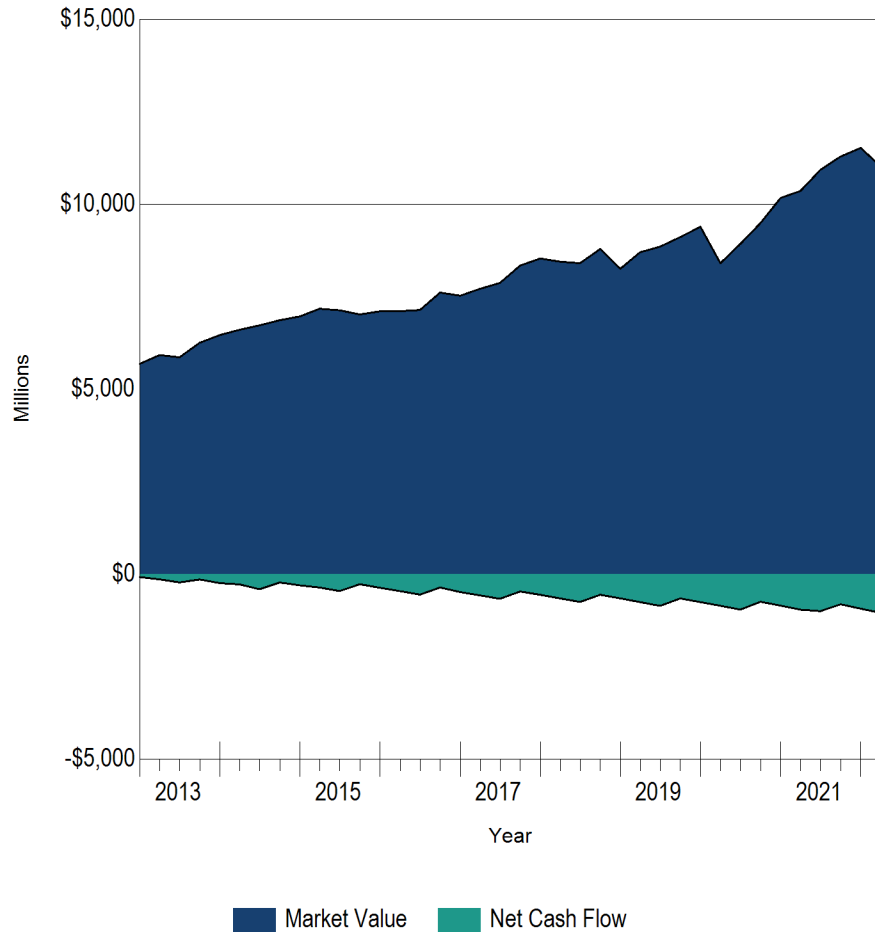
	Last Three Months	Year-To-Date
Beginning Market Value	\$11,520,465,270	\$11,520,465,270
Net Cash Flow	-\$105,510,215	-\$105,510,215
Net Investment Change	-\$393,082,960	-\$393,082,960
Ending Market Value	\$11,021,872,095	\$11,021,872,095

Change in Market Value
Last Three Months

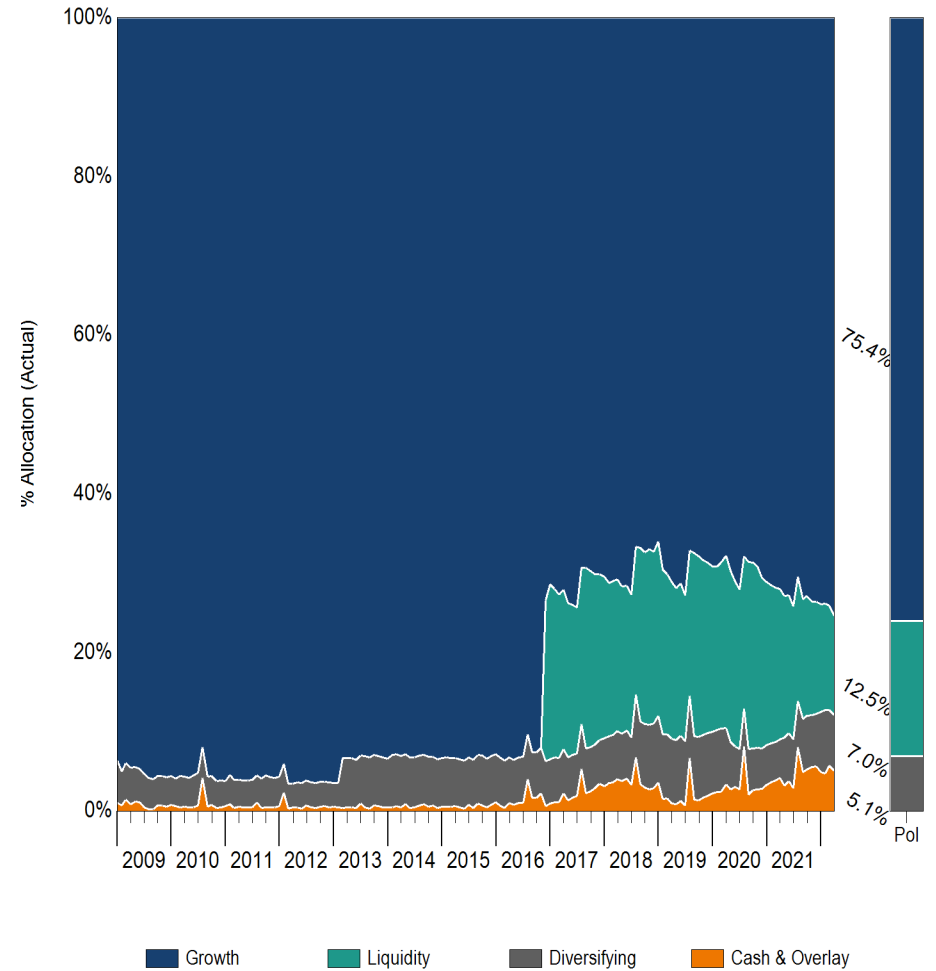


Contributions and withdrawals may include intra-account transfers between managers/funds.

Market Value History
Cumulative Cash Flows



Asset Allocation History

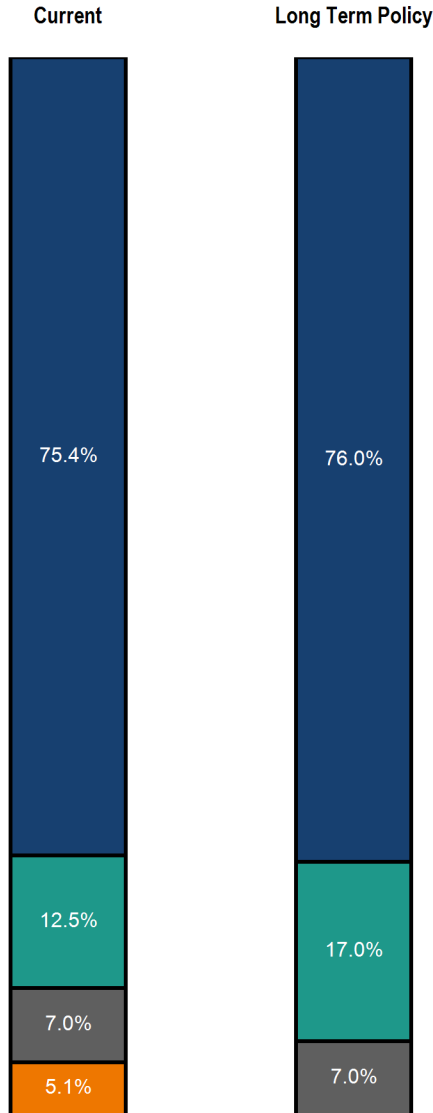


Policy reflects FFP 4-Yr allocations approved in June 2021.

Total Fund

Asset Allocation vs. Long Term Target Policy

Period Ending: March 31, 2022



Allocation vs. Long Term Target

	Current Balance	Current Allocation	Long Term Target	Difference
Growth	\$8,310,707,236	75.4%	76.0%	-\$65,915,556
Liquidity	\$1,382,350,861	12.5%	17.0%	-\$491,367,395
Diversifying	\$771,283,389	7.0%	7.0%	-\$247,657
Cash & Overlay	\$557,530,609	5.1%	--	\$557,530,609
Total	\$11,021,872,095	100.0%	100.0%	

Allocation vs. Current Targets

	Current Balance	Current Allocation	Current Target	Difference
Growth	\$8,310,707,236	75.4%	75.0%	\$44,303,165
Liquidity	\$1,382,350,861	12.5%	18.0%	-\$601,586,116
Diversifying	\$771,283,389	7.0%	7.0%	-\$247,657
Cash & Overlay	\$557,530,609	5.1%	--	\$557,530,609
Total	\$11,021,872,095	100.0%	100.0%	

Long Term Targets reflect FFP 4-Yr allocations approved in June 2021.
 Current Targets reflect targets approved in June 2021.

Total Fund Executive Summary (Net of Fees)

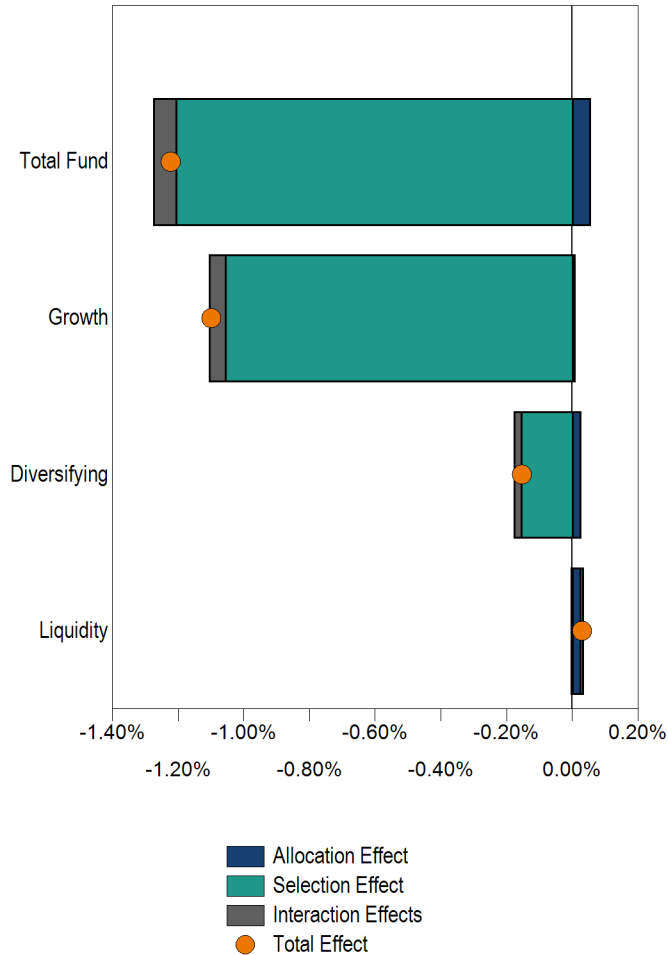
Period Ending: March 31, 2022

	% of Portfolio	QTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2021	2020	2019	2018	2017
Total Fund	100.0	-3.4	7.0	9.0	8.1	8.1	13.9	9.2	14.6	-2.7	13.9
<i>Policy Index</i>		-2.0	9.5	11.0	9.2	9.0	15.3	10.8	14.6	-0.9	13.7
Growth	75.4	-3.5	10.6	12.1	10.7	9.8	19.2	12.0	18.3	-3.9	18.7
<i>Custom Growth Benchmark</i>		-2.1	13.7	15.0	12.4	10.8	21.6	13.8	19.3	-2.1	19.3
Diversifying	7.0	-2.8	-0.7	0.4	0.7	0.7	1.7	-1.7	6.8	-2.3	2.6
<i>Custom Diversifying Benchmark</i>		-2.9	-0.4	2.3	2.8	3.0	1.6	4.7	6.1	1.4	4.7
Liquidity	12.5	-2.5	-2.6	1.2	1.6	--	-0.3	3.4	4.8	1.7	1.4
<i>Bloomberg US Govt/Credit 1-3 Yr. TR</i>		-2.5	-2.9	1.0	1.3	--	-0.5	3.3	4.0	1.6	0.8

*Correlation between the Growth and Diversifying composites is .30, .63 and .55 over the previous 1, 3 and 5 year periods respectively.

Policy Index (7/1/2021-Present): 16% Russell 3000, 16% MSCI ACWI ex-US (Gross), 9% MSCI ACWI (Net), 2% Wilshire REIT, 8% Private Real Estate composite returns, 3% CPI +4%, 11% Private Equity composite returns, 3% CPI +4%, 11% Private Equity composite returns, 8% Private Credit composite returns, 2% ICE BofAML High Yield Master II, 18% Bloomberg 1-3 Yr Gov/Credit, 2.5% Bloomberg US Aggregate, 3% 60% MSCI ACWI Net/40% Bloomberg Global Aggregate, 1.5% HFRI EH Equity Market Neutral.

Attribution Effects
 3 Months Ending March 31, 2022



Performance Attribution

	Quarter
Wtd. Actual Return	-3.26%
Wtd. Index Return *	-2.04%
Excess Return	-1.22%
Selection Effect	-1.21%
Allocation Effect	0.05%
Interaction Effect	-0.07%

*Calculated from benchmark returns and weightings of each component.

Attribution Summary
 Last Three Months

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Growth	-3.5%	-2.1%	-1.4%	-1.1%	0.0%	0.0%	-1.1%
Diversifying	-2.8%	-0.5%	-2.2%	-0.2%	0.0%	0.0%	-0.2%
Liquidity	-2.5%	-2.5%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	-3.3%	-2.0%	-1.2%	-1.2%	0.1%	-0.1%	-1.2%

Total Fund

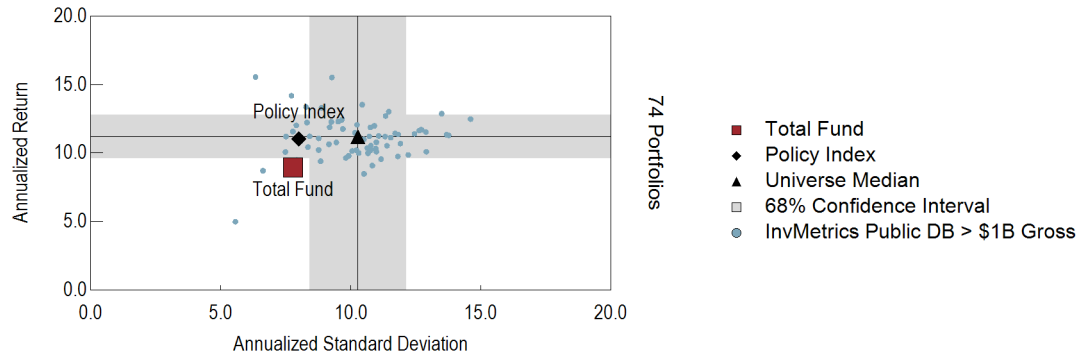
Executive Summary (Net of Fees)

Period Ending: March 31, 2022

3 Years

	Anlzd Return	Ann Excess BM Return	Anlzd Standard Deviation	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Information Ratio	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Total Fund	8.95%	-2.08%	7.78%	-1.37%	0.94	2.21%	0.92	1.07	-0.94	89.90%	107.62%

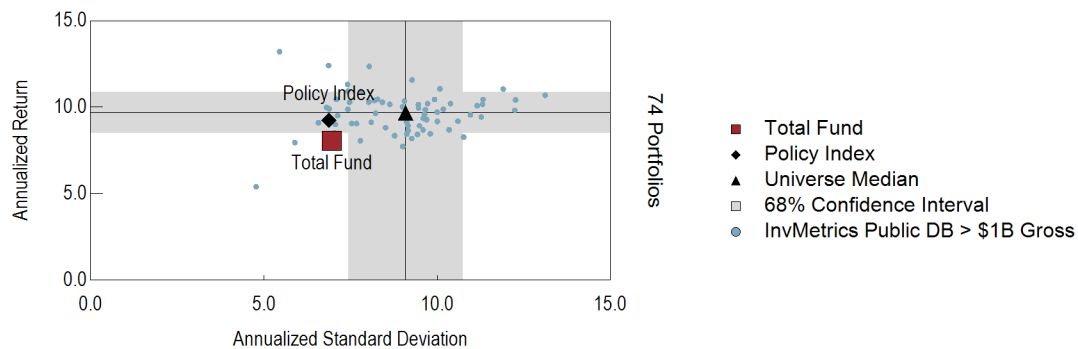
Risk vs. Return



5 Years

	Anlzd Return	Ann Excess BM Return	Anlzd Standard Deviation	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Information Ratio	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Total Fund	8.06%	-1.17%	6.96%	-0.92%	0.97	1.97%	0.92	1.01	-0.59	95.14%	109.24%

Risk vs. Return



Total Fund
Performance Summary (Gross of Fees)

Period Ending: March 31, 2022

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2021	2020	2019	2018	2017	Inception	Inception Date
Total Fund	11,021,872,095	100.0	-3.4	7.2	9.2	8.3	8.6	14.2	9.5	14.9	-2.5	14.2		
Policy Index			-2.0	9.5	11.0	9.2	9.0	15.3	10.8	14.6	-0.9	13.7		
InvMetrics Public DB > \$1B Gross Rank			38	54	93	89	69	62	78	83	25	83		
Total Fund ex Overlay & Cash	10,464,341,486	94.9	-3.2	7.7	9.5	8.5	8.7	14.6	9.7	14.7	-2.1	14.1		
Policy Index			-2.0	9.5	11.0	9.2	9.0	15.3	10.8	14.6	-0.9	13.7		
InvMetrics Public DB > \$1B Gross Rank			36	47	91	84	64	55	72	85	20	84		
Growth	8,310,707,236	75.4	-3.4	11.0	12.4	11.0	10.3	19.6	12.4	18.7	-3.6	19.1		
Custom Growth Benchmark			-2.1	13.7	15.0	12.4	10.8	21.6	13.8	19.3	-2.1	19.3		
Total Domestic Equity	1,749,520,872	15.9	-6.2	6.0	15.6	13.8	13.5	20.6	22.2	26.7	-7.2	23.9		
Russell 3000			-5.3	11.9	18.2	15.4	14.3	25.7	20.9	31.0	-5.2	21.1		
InvMetrics Public DB US Eq Gross Rank			91	97	89	78	61	97	10	87	78	6		
BlackRock Russell 1000 Index	612,596,790	5.6	-5.1	13.3	18.7	--	--	26.5	21.0	31.4	-4.8	--	15.9	Apr-17
Russell 1000			-5.1	13.3	18.7	--	--	26.5	21.0	31.4	-4.8	--	15.9	Apr-17
eV US Large Cap Equity Gross Rank			55	50	38	--	--	55	36	39	47	--		
Jackson Square Partners	291,974,099	2.6	-13.6	-3.6	15.8	15.4	13.2	8.8	44.8	27.9	-2.0	29.3	11.1	May-05
Russell 1000 Growth			-9.0	15.0	23.6	20.9	17.0	27.6	38.5	36.4	-1.5	30.2	12.8	May-05
eV US Large Cap Growth Equity Gross Rank			88	96	93	92	95	97	20	93	59	47		
Boston Partners	417,910,620	3.8	0.7	15.0	15.6	12.3	12.8	31.3	3.0	24.3	-8.7	20.1	11.1	Jun-95
Russell 1000 Value			-0.7	11.7	13.0	10.3	11.7	25.2	2.8	26.5	-8.3	13.7	9.7	Jun-95
eV US Large Cap Value Equity Gross Rank			32	34	41	44	37	17	61	77	55	23		
Emerald Advisers	229,413,749	2.1	-10.5	-7.9	12.1	13.5	13.6	5.5	39.0	30.3	-10.1	28.8	13.5	Apr-03
Russell 2000 Growth			-12.6	-14.3	9.9	10.3	11.2	2.8	34.6	28.5	-9.3	22.2	11.2	Apr-03
eV US Small Cap Growth Equity Gross Rank			23	49	81	74	65	76	57	45	85	26		
Ceredex	197,625,614	1.8	-6.3	5.0	9.4	7.2	10.3	28.4	2.3	18.4	-11.3	11.4	11.0	Nov-11
Russell 2000 Value			-2.4	3.3	12.7	8.6	10.5	28.3	4.6	22.4	-12.9	7.8	11.4	Nov-11
eV US Small Cap Value Equity Gross Rank			84	57	95	92	86	60	69	87	25	48		

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

Total Fund
Performance Summary (Gross of Fees)

Period Ending: March 31, 2022

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2021	2020	2019	2018	2017	Inception	Inception Date
Total International Equity	1,716,795,723	15.6	-8.4	-4.7	8.6	7.5	6.8	8.3	15.8	23.7	-14.3	25.5		
MSCI ACWI ex USA Gross			-5.3	-1.0	8.0	7.3	6.0	8.3	11.1	22.1	-13.8	27.8		
MSCI EAFE Gross			-5.8	1.6	8.3	7.2	6.8	11.8	8.3	22.7	-13.4	25.6		
InvMetrics Public DB ex-US Eq Gross Rank			80	79	37	39	35	45	23	28	44	90		
International Equity	967,008,125	8.8	-8.7	-1.0	10.4	8.7	7.5	9.0	19.0	27.0	-13.6	25.3		
MSCI ACWI ex USA Gross			-5.3	-1.0	8.0	7.3	6.0	8.3	11.1	22.1	-13.8	27.8		
InvMetrics Public DB ex-US Eq Gross Rank			86	19	3	9	6	32	13	7	21	93		
Pyrford	487,895,895	4.4	-1.7	3.3	7.3	6.4	--	7.6	4.7	22.1	-10.1	19.8	4.5	May-14
MSCI ACWI ex USA Value			0.1	3.3	5.4	4.7	--	10.5	-0.8	15.7	-14.0	22.7	2.5	May-14
eV ACWI ex-US Value Equity Gross Rank			31	25	51	35	--	84	33	35	5	84		
William Blair	479,112,230	4.3	-14.9	-5.1	13.2	10.9	8.7	10.5	33.3	32.0	-16.8	30.9	7.9	Oct-10
MSCI ACWI ex USA Growth			-10.8	-6.2	9.1	8.6	6.7	5.1	22.2	27.3	-14.4	32.0	5.9	Oct-10
eV ACWI ex-US Growth Equity Gross Rank			69	47	35	50	46	44	30	39	69	81		
Emerging Markets Equity	749,787,598	6.8	-8.1	-9.2	6.2	5.6	--	7.6	11.4	19.4	-15.3	--		
MSCI Emerging Markets			-7.0	-11.4	4.9	6.0	--	-2.5	18.3	18.4	-14.6	--		
InvMetrics Public DB Emg Mkt Eq Gross Rank			--	--	--	--	--	2	81	31	51	--		
PIMCO RAE Emerging Markets	372,890,359	3.4	-3.6	1.1	7.5	6.1	--	17.1	2.1	14.6	-12.3	--	6.1	Feb-17
MSCI Emerging Markets Value NR			-3.4	-3.5	3.2	4.2	--	4.0	5.5	12.0	-10.7	--	4.5	Feb-17
eV Emg Mkts All Cap Value Equity Gross Rank			45	27	29	61	--	6	85	72	44	--		
TT Emerging Markets	376,897,240	3.4	-12.1	-17.7	5.0	--	--	-0.2	20.8	24.8	-18.4	--	4.2	Jul-17
MSCI Emerging Markets			-7.0	-11.4	4.9	--	--	-2.5	18.3	18.4	-14.6	--	3.7	Jul-17
eV Emg Mkts Equity Gross Rank			80	83	72	--	--	58	39	24	83	--		
Total Global Equity	1,074,275,240	9.7	-6.8	5.1	14.8	12.6	11.1	14.1	25.3	28.9	-7.8	23.7		
MSCI ACWI			-5.4	7.3	13.8	11.6	10.0	18.5	16.3	26.6	-9.4	24.0		
InvMetrics Public DB Glbl Eq Gross Rank			88	92	3	5	62	88	2	3	60	79		
Artisan Partners	547,750,803	5.0	-13.1	1.5	18.5	16.5	--	15.0	41.7	37.0	-7.9	32.9	14.5	Oct-12
MSCI ACWI Growth NR USD			-9.7	5.4	17.9	15.5	--	17.1	33.6	32.7	-8.1	30.0	12.7	Oct-12
eV All Global Equity Gross Rank			89	78	13	13	--	80	9	7	40	11		
First Eagle	526,400,117	4.8	0.8	8.9	10.8	8.5	8.6	13.0	8.5	21.0	-7.6	15.1	8.6	Jan-11
MSCI ACWI Value NR USD			-1.0	8.8	9.0	7.5	7.6	19.6	-0.3	20.6	-10.8	18.3	7.0	Jan-11
eV All Global Equity Gross Rank			8	38	78	86	83	85	70	82	38	89		

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

Total Fund
Performance Summary (Gross of Fees)

Period Ending: March 31, 2022

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2021	2020	2019	2018	2017	Inception	Inception Date
Private Credit	892,762,869	8.1	2.7	13.0	8.3	7.8	10.9	10.0	4.0	7.7	8.3	10.4		
Total High Yield Yield	175,881,035	1.6	-4.4	-0.2	4.3	4.3	5.2	5.3	5.2	15.3	-3.2	6.5		
<i>ICE BofAML High Yield Master II</i>			-4.5	-0.3	4.4	4.6	5.7	5.4	6.2	14.4	-2.3	7.5		
<i>eV US High Yield Fixed Inc Gross Rank</i>			74	75	74	82	81	51	74	31	88	74		
Allianz Global Investors	175,881,035	1.6	-4.4	-0.2	4.3	4.3	5.2	5.3	5.2	15.3	-3.2	6.5	6.6	Apr-00
<i>ICE BofAML High Yield Master II</i>			-4.5	-0.3	4.4	4.6	5.7	5.4	6.2	14.4	-2.3	7.5	6.8	Apr-00
<i>eV US High Yield Fixed Inc Gross Rank</i>			74	75	74	82	81	51	74	31	88	74		
Total Real Estate	783,534,694	7.1	4.0	19.0	6.5	8.0	10.2	19.2	-5.9	8.1	7.4	11.1		
<i>Real Estate Benchmark</i>			3.2	18.3	9.0	8.4	9.3	19.3	0.6	7.5	6.8	7.1		
<i>NCREIF-ODCE</i>			7.4	28.5	11.3	9.9	10.9	22.2	1.2	5.3	8.3	7.6		
<i>NCREIF Property Index</i>			5.3	21.9	9.6	8.5	9.6	17.7	1.6	6.4	6.7	7.0		
Total Core RE	214,113,144	1.9	-3.8	30.9	14.1	12.1	11.1	48.3	-4.6	28.2	-5.0	7.8		
Adelante	109,454,839	1.0	-3.5	31.2	14.2	12.2	11.1	48.3	-4.6	28.2	-5.0	7.8	11.2	Sep-01
<i>Wilshire REIT</i>			-3.9	29.1	11.9	10.0	9.9	46.2	-7.9	25.8	-4.8	4.2	10.6	Sep-01
Invesco US Fundamental Beta	104,658,304	0.9	--	--	--	--	--	--	--	--	--	--	6.3	Mar-22
<i>Wilshire REIT</i>			--	--	--	--	--	--	--	--	--	--	6.9	Mar-22
Total Private Real Estate	569,421,550	5.2	4.9	16.8	5.4	7.4	10.3	15.3	-6.1	6.2	8.8	11.4		
Private Equity	1,442,598,899	13.1	3.1	49.4	24.3	19.2	15.7	60.4	8.7	8.4	12.1	11.9		
Risk Parity	475,337,904	4.3	-4.9	5.8	8.2	--	--	9.7	10.0	--	--	--		
<i>60% MSCI ACWI Net/40% Bloomberg Global Aggregate</i>			-5.6	1.7	8.7	--	--	8.8	14.0	--	--	--	10.6	Jan-19
AQR Global Risk Premium-EL	216,916,803	2.0	-3.9	7.3	7.9	--	--	10.7	6.2	--	--	--	9.5	Jan-19
<i>HFR Risk Parity Vol 10 Index</i>			-4.9	3.1	4.5	--	--	6.8	3.6	--	--	--	7.0	Jan-19
PanAgora Risk Parity Multi Asset	258,421,101	2.3	-5.8	4.6	8.6	--	--	8.7	14.0	--	--	--	9.6	Feb-19
<i>HFR Risk Parity Vol 10 Index</i>			-4.9	3.1	4.5	--	--	6.8	3.6	--	--	--	5.3	Feb-19

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

Total Fund

Performance Summary (Gross of Fees)

Period Ending: March 31, 2022

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2021	2020	2019	2018	2017	Inception	Inception Date
Diversifying	771,283,389	7.0	-2.7	-0.4	0.8	1.0	1.1	2.0	-1.3	7.1	-2.0	2.8		
<i>Custom Diversifying Benchmark</i>			-2.9	-0.4	2.3	2.8	3.0	1.6	4.7	6.1	1.4	4.7		
Diversifying Fixed Income	244,021,498	2.2	-5.9	-4.5	0.0	0.7	1.7	-0.7	1.6	8.6	-1.7	2.8	3.5	Dec-03
<i>eV US Core Fixed Inc Gross Rank</i>			57	95	99	99	99	30	99	80	99	96	98	Dec-03
AFL-CIO	243,935,990	2.2	-5.9	-4.5	1.6	2.2	2.5	-0.7	6.6	8.2	0.6	3.6	5.7	Jun-91
<i>Bloomberg US Aggregate TR</i>			-5.9	-4.2	1.7	2.1	2.2	-1.5	7.5	8.7	0.0	3.5	5.3	Jun-91
<i>eV US Core Fixed Inc Gross Rank</i>			58	95	95	93	86	30	95	88	16	76		
Diversifying Multi-Asset	527,261,891	4.8	-1.5	1.3	--	--	--	2.8	--	--	--	--		
<i>Custom Diversifying Multi-Asset Benchmark</i>			-2.3	0.5	--	--	--	4.1	--	--	--	--		
Acadian Multi-Asset Absolute Return Fund	248,052,861	2.3	-2.5	-0.9	--	--	--	1.7	--	--	--	--	0.5	Aug-20
<i>FTSE 3-Month T-bill +5%</i>			1.3	5.1	--	--	--	5.0	--	--	--	--	5.1	Aug-20
Sit LLCAR	279,209,030	2.5	-0.5	3.9	--	--	--	--	--	--	--	--	3.9	Apr-21
<i>Bloomberg US Aggregate Index + 100 bps</i>			-5.7	-3.2	--	--	--	--	--	--	--	--	-3.2	Apr-21
Liquidity	1,382,350,861	12.5	-2.4	-2.5	1.3	1.7	--	-0.2	3.5	4.9	1.8	1.5		
<i>Bloomberg US Govt/Credit 1-3 Yr. TR</i>			-2.5	-2.9	1.0	1.3	--	-0.5	3.3	4.0	1.6	0.8		
<i>eV US Short Duration Fixed Inc Gross Rank</i>			50	52	63	49	--	40	77	34	24	50		
DFA Short Credit	281,621,981	2.6	-3.8	-4.0	0.6	1.2	--	-0.4	2.9	5.2	1.2	1.9	1.3	Nov-16
<i>ICE BofA 1-5 Yrs US Corp & Govt TR</i>			-3.5	-3.8	1.2	1.4	--	-0.9	4.6	5.1	1.4	1.3	1.5	Nov-16
<i>eV US Short Duration Fixed Inc Gross Rank</i>			99	99	99	95	--	64	90	21	93	26		
Insight Short Duration	579,542,761	5.3	-1.2	-1.1	1.7	1.9	--	0.1	3.2	4.7	1.7	1.5	1.9	Nov-16
<i>Bloomberg US Govt/Credit 1-3 Yr. TR</i>			-2.5	-2.9	1.0	1.3	--	-0.5	3.3	4.0	1.6	0.8	1.3	Nov-16
<i>eV US Short Duration Fixed Inc Gross Rank</i>			4	7	22	31	--	25	86	45	38	50		
Sit Short Duration	521,186,119	4.7	-3.1	-3.5	1.3	1.8	--	-0.3	4.6	4.9	2.5	1.3	1.8	Nov-16
<i>Bloomberg US Govt 1-3 Yr TR</i>			-2.5	-3.0	0.8	1.1	--	-0.6	3.1	3.6	1.6	0.4	1.0	Nov-16
<i>eV US Short Duration Fixed Inc Gross Rank</i>			83	91	60	33	--	55	26	35	1	68		
Total Cash	446,180,033	4.0	0.2	0.5	1.5	1.5	2.4	0.4	1.3	3.3	1.7	0.9		
<i>91 Day T-Bills</i>			0.0	0.1	0.7	1.1	0.6	0.0	0.5	2.1	1.9	0.9		
Cash	445,580,523	4.0	0.1	0.3	1.5	1.5	2.4	0.4	1.3	3.4	1.7	0.9		
Northern Trust Transition	599,510	0.0	2,930.9	2,889.0	290.9	--	--	-6.1	104.1	--	--	--		

Individual closed end funds are not shown in performance summary table. Effective 3/1/2019 the custodian of record switched from State Street to Northern Trust. Wellington Real Total Return was liquidated 4/30/2020. \$126,992.88 in residual value is reflected in the Diversifying Fixed Income composite. State Street Cash/Tax Reclaims balance of \$-28,918 in cash and \$223,127 in potential tax reclaims at State Street after assets were transferred to Northern Trust.

Total Fund Performance Summary (Net of Fees)

Period Ending: March 31, 2022

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2021	2020	2019	2018	2017	Inception	Inception Date
Total Fund	11,021,872,095	100.0	-3.4	7.0	9.0	8.1	8.1	13.9	9.2	14.6	-2.7	13.9		
<i>Policy Index</i>			-2.0	9.5	11.0	9.2	9.0	15.3	10.8	14.6	-0.9	13.7		
Total Fund ex Overlay & Cash	10,464,341,486	94.9	-3.3	7.4	9.2	8.2	8.2	14.3	9.4	14.3	-2.4	13.8		
<i>Policy Index</i>			-2.0	9.5	11.0	9.2	9.0	15.3	10.8	14.6	-0.9	13.7		
Growth	8,310,707,236	75.4	-3.5	10.6	12.1	10.7	9.8	19.2	12.0	18.3	-3.9	18.7		
<i>Custom Growth Benchmark</i>			-2.1	13.7	15.0	12.4	10.8	21.6	13.8	19.3	-2.1	19.3		
Total Domestic Equity	1,749,520,872	15.9	-6.3	5.7	15.2	13.4	13.0	20.3	21.8	26.1	-7.6	23.5		
<i>Russell 3000</i>			-5.3	11.9	18.2	15.4	14.3	25.7	20.9	31.0	-5.2	21.1		
BlackRock Russell 1000 Index	612,596,790	5.6	-5.1	13.3	18.7	--	--	26.5	20.9	31.4	-4.8	--	15.8	Apr-17
<i>Russell 1000</i>			-5.1	13.3	18.7	--	--	26.5	21.0	31.4	-4.8	--	15.9	Apr-17
Jackson Square Partners	291,974,099	2.6	-13.7	-4.0	15.4	14.9	12.8	8.3	44.1	27.3	-2.4	28.7	10.7	May-05
<i>Russell 1000 Growth</i>			-9.0	15.0	23.6	20.9	17.0	27.6	38.5	36.4	-1.5	30.2	12.8	May-05
Boston Partners	417,910,620	3.8	0.7	14.7	15.2	11.9	12.5	31.0	2.6	23.8	-8.9	19.7	10.7	Jun-95
<i>Russell 1000 Value</i>			-0.7	11.7	13.0	10.3	11.7	25.2	2.8	26.5	-8.3	13.7	9.7	Jun-95
Emerald Advisers	229,413,749	2.1	-10.7	-8.4	11.4	12.8	12.9	4.9	38.2	29.4	-10.7	28.0	12.9	Apr-03
<i>Russell 2000 Growth</i>			-12.6	-14.3	9.9	10.3	11.2	2.8	34.6	28.5	-9.3	22.2	11.2	Apr-03
Ceredex	197,625,614	1.8	-6.4	4.4	8.7	6.6	9.7	27.7	1.7	17.7	-11.8	10.7	10.4	Nov-11
<i>Russell 2000 Value</i>			-2.4	3.3	12.7	8.6	10.5	28.3	4.6	22.4	-12.9	7.8	11.4	Nov-11
Total International Equity	1,716,795,723	15.6	-8.5	-5.1	8.1	7.0	6.3	7.8	15.2	23.2	-14.7	25.0		
<i>MSCI ACWI ex USA Gross</i>			-5.3	-1.0	8.0	7.3	6.0	8.3	11.1	22.1	-13.8	27.8		
<i>MSCI EAFE Gross</i>			-5.8	1.6	8.3	7.2	6.8	11.8	8.3	22.7	-13.4	25.6		
International Equity	967,008,125	8.8	-8.7	-1.2	10.0	8.3	7.1	8.7	18.5	26.5	-13.9	24.8		
<i>MSCI ACWI ex USA Gross</i>			-5.3	-1.0	8.0	7.3	6.0	8.3	11.1	22.1	-13.8	27.8		
Pyrford	487,895,895	4.4	-1.7	3.1	6.9	6.0	--	7.3	4.2	21.6	-10.5	19.3	4.1	May-14
<i>MSCI ACWI ex USA Value</i>			0.1	3.3	5.4	4.7	--	10.5	-0.8	15.7	-14.0	22.7	2.5	May-14
William Blair	479,112,230	4.3	-14.9	-5.3	12.9	10.5	8.3	10.2	32.8	31.5	-17.1	30.4	7.4	Oct-10
<i>MSCI ACWI ex USA Growth</i>			-10.8	-6.2	9.1	8.6	6.7	5.1	22.2	27.3	-14.4	32.0	5.9	Oct-10
Emerging Markets Equity	749,787,598	6.8	-8.2	-9.7	5.5	5.0	--	7.0	10.7	18.7	-15.7	--		
<i>MSCI Emerging Markets</i>			-7.0	-11.4	4.9	6.0	--	-2.5	18.3	18.4	-14.6	--		
PIMCO RAE Emerging Markets	372,890,359	3.4	-3.8	0.5	6.9	5.6	--	16.5	1.6	14.0	-12.6	--	5.6	Feb-17
<i>MSCI Emerging Markets Value NR</i>			-3.4	-3.5	3.2	4.2	--	4.0	5.5	12.0	-10.7	--	4.5	Feb-17
TT Emerging Markets	376,897,240	3.4	-12.2	-18.2	4.4	--	--	-0.9	20.0	24.0	-18.9	--	3.5	Jul-17
<i>MSCI Emerging Markets</i>			-7.0	-11.4	4.9	--	--	-2.5	18.3	18.4	-14.6	--	3.7	Jul-17

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

Total Fund
Performance Summary (Net of Fees)

Period Ending: March 31, 2022

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2021	2020	2019	2018	2017	Inception	Inception Date
Total Global Equity	1,074,275,240	9.7	-7.0	4.3	14.0	11.8	10.4	13.2	24.4	27.9	-8.5	22.8		
<i>MSCI ACWI</i>			-5.4	7.3	13.8	11.6	10.0	18.5	16.3	26.6	-9.4	24.0		
Artisan Partners	547,750,803	5.0	-13.3	0.7	17.6	15.6	--	14.1	40.6	36.0	-8.6	31.9	13.7	Oct-12
<i>MSCI ACWI Growth NR USD</i>			-9.7	5.4	17.9	15.5	--	17.1	33.6	32.7	-8.1	30.0	12.7	Oct-12
First Eagle	526,400,117	4.8	0.6	8.1	9.9	7.7	7.8	12.1	7.7	20.1	-8.3	14.3	7.9	Jan-11
<i>MSCI ACWI Value NR USD</i>			-1.0	8.8	9.0	7.5	7.6	19.6	-0.3	20.6	-10.8	18.3	7.0	Jan-11
Private Credit	892,762,869	8.1	2.7	13.0	8.3	7.8	10.1	10.0	4.0	7.7	8.3	10.4		
Total High Yield	175,881,035	1.6	-4.5	-0.6	3.8	3.8	4.8	4.9	4.7	14.7	-3.6	6.1		
<i>ICE BofAML High Yield Master II</i>			-4.5	-0.3	4.4	4.6	5.7	5.4	6.2	14.4	-2.3	7.5		
Allianz Global Investors	175,881,035	1.6	-4.5	-0.6	3.8	3.8	4.8	4.9	4.7	14.7	-3.6	6.1	6.2	Apr-00
<i>ICE BofAML High Yield Master II</i>			-4.5	-0.3	4.4	4.6	5.7	5.4	6.2	14.4	-2.3	7.5	6.8	Apr-00
Total Real Estate	783,534,694	7.1	3.9	18.9	6.4	7.9	9.6	19.2	-6.0	8.1	7.4	11.0		
<i>Real Estate Benchmark</i>			3.2	18.3	9.0	8.4	9.3	19.3	0.6	7.5	6.8	7.1		
<i>NCREIF-ODCE</i>			7.4	28.5	11.3	9.9	10.9	22.2	1.2	5.3	8.3	7.6		
<i>NCREIF Property Index</i>			5.3	21.9	9.6	8.5	9.6	17.7	1.6	6.4	6.7	7.0		
Total Core RE	214,113,144	1.9	-3.9	30.2	13.5	11.5	10.5	47.5	-5.2	27.5	-5.5	7.2		
Adelante	109,454,839	1.0	-3.7	30.5	13.5	11.6	10.6	47.5	-5.2	27.5	-5.5	7.2	10.6	Sep-01
<i>Wilshire REIT</i>			-3.9	29.1	11.9	10.0	9.9	46.2	-7.9	25.8	-4.8	4.2	10.6	Sep-01
Invesco US Fundamental Beta	104,658,304	0.9	--	--	--	--	--	--	--	--	--	--	6.3	Mar-22
<i>Wilshire REIT</i>			--	--	--	--	--	--	--	--	--	--	6.9	Mar-22
Total Private Real Estate	569,421,550	5.2	4.9	16.8	5.4	7.4	9.6	15.3	-6.1	6.2	8.8	11.4		
Private Equity	1,442,598,899	13.1	3.1	49.4	24.3	19.2	14.8	60.4	8.7	8.4	12.1	11.9		
Risk Parity	475,337,904	4.3	-5.0	5.4	7.8	--	--	9.3	9.6	--	--	--		
<i>60% MSCI ACWI Net/40% Bloomberg Global Aggregate</i>			-5.6	1.7	8.7	--	--	8.8	14.0	--	--	--	10.6	Jan-19
AQR Global Risk Premium-EL	216,916,803	2.0	-4.0	6.9	7.5	--	--	10.3	5.8	--	--	--	9.0	Jan-19
<i>HFR Risk Parity Vol 10 Index</i>			-4.9	3.1	4.5	--	--	6.8	3.6	--	--	--	7.0	Jan-19
PanAgora Risk Parity Multi Asset	258,421,101	2.3	-5.9	4.2	8.3	--	--	8.3	13.6	--	--	--	9.2	Feb-19
<i>HFR Risk Parity Vol 10 Index</i>			-4.9	3.1	4.5	--	--	6.8	3.6	--	--	--	5.3	Feb-19

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

Total Fund
Performance Summary (Net of Fees)

Period Ending: March 31, 2022

	Market Value	% of Portfolio	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	2021	2020	2019	2018	2017	Inception	Inception Date
Diversifying	771,283,389	7.0	-2.8	-0.7	0.4	0.7	0.7	1.7	-1.7	6.8	-2.3	2.6		
<i>Custom Diversifying Benchmark</i>			-2.9	-0.4	2.3	2.8	3.0	1.6	4.7	6.1	1.4	4.7		
Diversifying Fixed Income	244,021,498	2.2	-5.9	-4.8	-0.3	0.4	1.4	-1.0	1.2	8.3	-2.0	2.6		
AFL-CIO	243,935,990	2.2	-5.9	-4.8	1.2	1.8	2.0	-1.0	6.2	7.8	0.2	3.2	5.3	Jun-91
<i>Bloomberg US Aggregate TR</i>			-5.9	-4.2	1.7	2.1	2.2	-1.5	7.5	8.7	0.0	3.5	5.3	Jun-91
Diversifying Multi-Asset	527,261,891	4.8	-1.6	0.9	--	--	--	2.4	--	--	--	--		
<i>Custom Diversifying Multi-Asset Benchmark</i>			-2.3	0.5	--	--	--	4.1	--	--	--	--		
Acadian Multi-Asset Absolute Return Fund	248,052,861	2.3	-2.6	-1.4	--	--	--	1.1	--	--	--	--	0.0	Aug-20
<i>FTSE 3-Month T-bill +5%</i>			1.3	5.1	--	--	--	5.0	--	--	--	--	5.1	Aug-20
Sit LLCAR	279,209,030	2.5	-0.6	3.6	--	--	--	--	--	--	--	--	3.6	Apr-21
<i>Bloomberg US Aggregate Index + 100 bps</i>			-5.7	-3.2	--	--	--	--	--	--	--	--	-3.2	Apr-21
Liquidity	1,382,350,861	12.5	-2.5	-2.6	1.2	1.6	--	-0.3	3.4	4.8	1.7	1.4		
<i>Bloomberg US Govt/Credit 1-3 Yr. TR</i>			-2.5	-2.9	1.0	1.3	--	-0.5	3.3	4.0	1.6	0.8		
DFA Short Credit	281,621,981	2.6	-3.8	-4.1	0.5	1.1	--	-0.5	2.8	5.2	1.1	1.8	1.2	Nov-16
<i>ICE BofA 1-5 Yrs US Corp & Govt TR</i>			-3.5	-3.8	1.2	1.4	--	-0.9	4.6	5.1	1.4	1.3	1.5	Nov-16
Insight Short Duration	579,542,761	5.3	-1.2	-1.1	1.7	1.8	--	0.0	3.1	4.6	1.7	1.5	1.8	Nov-16
<i>Bloomberg US Govt/Credit 1-3 Yr. TR</i>			-2.5	-2.9	1.0	1.3	--	-0.5	3.3	4.0	1.6	0.8	1.3	Nov-16
Sit Short Duration	521,186,119	4.7	-3.1	-3.6	1.1	1.7	--	-0.5	4.4	4.7	2.3	1.1	1.6	Nov-16
<i>Bloomberg US Govt 1-3 Yr TR</i>			-2.5	-3.0	0.8	1.1	--	-0.6	3.1	3.6	1.6	0.4	1.0	Nov-16
Total Cash	446,180,033	4.0	0.2	0.5	1.5	1.5	2.4	0.4	1.3	3.3	1.7	0.9		
<i>91 Day T-Bills</i>			0.0	0.1	0.7	1.1	0.6	0.0	0.5	2.1	1.9	0.9		
Cash	445,580,523	4.0	0.1	0.3	1.5	1.5	2.4	0.4	1.3	3.4	1.7	0.9		
Northern Trust Transition	599,510	0.0	2,930.9	2,889.0	290.9	--	--	-6.1	104.1	--	--	--		

Individual closed end funds are not shown in performance summary table. Effective 3/1/2019 the custodian of record switched from State Street to Northern Trust. Wellington Real Total Return was liquidated 4/30/2020. \$126,992.88 in residual value is reflected in the Diversifying Fixed Income composite.

Total Fund
Closed End Funds - Investment Summary

Period Ending: March 31, 2022

StepStone Group Analysis (*)												
Closing Date	Manager Name/Fund Name	Estimated Market Value as of 3/31/2022 ¹	Total Commitment	% Called	Contributed Capital	Current Qtr. Change in Contributed Capital	Current Qtr. Change in Distributed Capital	Total Distributions	Remaining Commitment	Distrib./ Paid-In (DPI) ²	Tot. Value/ Paid-In (TVPI) ³	Latest Valuation
Private Credit												
8/31/2015	Angelo Gordon Energy Credit Opp. ⁴	\$3,546,515	\$16,500,000	0%	\$18,750,000	\$0	\$0	\$18,829,566	\$2,319,783	1.00	1.19	12/31/2021
12/18/2017	Stepstone CC Opportunities Fund	\$871,230,249	\$1,170,000,000	3%	\$807,174,947	\$40,818,750	\$0	\$89,848,226	\$424,524,509	0.11	1.19	9/30/2021
7/1/2006	Torchlight II	\$0	\$128,000,000	0%	\$218,263,562	\$0	\$0	\$208,623,727	\$0	0.96	0.96	12/31/2020
12/12/2008	Torchlight III	\$0	\$75,000,000	0%	\$83,825,058	\$0	\$0	\$124,848,870	\$0	1.49	1.49	12/23/2020
8/1/2012	Torchlight IV	\$9,122,501	\$60,000,000	0%	\$84,866,971	\$0	\$0	\$106,146,627	\$0	1.25	1.36	3/31/2021
3/12/2015	Torchlight V	\$8,863,604	\$75,000,000	0%	\$60,000,000	\$0	\$5,725,223	\$70,135,692	\$15,000,000	1.17	1.32	12/31/2021
Total Private Credit		\$892,762,869										
% of Portfolio (Market Value)		8.1%										

*All Data provided by StepStone Group

¹Latest valuation + capital calls - distributions

²(DPI) is equal to (capital returned / capital called)

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

⁴Capital has been fully called and fund is in redemption.

Total Fund
Closed End Funds - Investment Summary

Period Ending: March 31, 2022

Verus Internal Analysis												
Inception Date	Manager Name/Fund Name	Estimated Market Value as of 3/31/2022 ¹	Total Commitment	Total % Called	Capital Called	Current Qtr. Capital Called	Current Qtr. Distributions	Total Distributions ⁸	Remaining Commitment	Distrib./Paid-In (DPI) ²	Tot. Value/Paid-In (TVPI) ³	Latest Valuation
Real Estate												
1/23/2012	Angelo Gordon Realty Fund VIII ⁴	\$15,334,276	\$80,000,000	94%	\$75,401,855	\$0	\$0	\$101,711,550	\$12,334,302	1.35	1.55	12/31/2021
12/8/2014	Angelo Gordon Realty Fund IX	\$43,664,926	\$65,000,000	93%	\$60,125,000	\$0	\$2,762,500	\$45,012,501	\$7,572,500	0.75	1.47	12/31/2021
6/23/2005	DLJ RECP III	\$15,902,346	\$75,000,000	134%	\$100,709,313 ⁴	\$0	\$0	\$69,364,915	\$4,031,338	0.69	0.85	12/31/2021
2/11/2008	DLJ RECP IV	\$55,846,590	\$100,000,000	130%	\$129,892,605 ⁵	\$0	\$0	\$97,530,461	\$1,876,084	0.75	1.18	12/31/2021
7/1/2014	DLJ RECP V	\$30,213,011	\$75,000,000	132%	\$98,684,517 ⁶	\$0	\$18,647,101	\$97,880,214	\$13,299,923	0.99	1.30	12/31/2021
3/19/2019	DLJ RECP VI	\$22,087,283	\$50,000,000	60%	\$30,103,770	\$0	\$11,369,099	\$11,589,841	\$20,855,532	0.38	1.12	12/31/2021
6/30/2013	Invesco Real Estate III ⁴	\$0	\$35,000,000	93%	\$32,386,423	\$0	\$153,777	\$47,576,839	\$2,613,577	1.47	1.47	3/31/2022
6/30/2014	Invesco Real Estate IV ⁴	\$2,964,661	\$35,000,000	87%	\$30,546,401	\$0	\$2,788,561	\$38,913,181	\$4,453,599	1.27	1.37	3/31/2022
2/20/2019	Invesco Real Estate V	\$72,739,445	\$75,000,000	79%	\$59,352,270	\$0	\$0	\$7,217,922	\$20,347,630 ⁹	0.12	1.35	3/31/2022
	Invesco Real Estate VI	\$0	\$100,000,000	0%	\$0	\$0	\$0	\$0	\$100,000,000	#DIV/0!	#DIV/0!	N/A
7/16/2013	LaSalle Income & Growth VI ⁴	\$20,071,145	\$75,000,000	95%	\$71,428,571	\$0	\$11,948	\$84,535,301	\$3,571,429	1.18	1.46	12/31/2021
2/28/2017	LaSalle Income & Growth VII	\$55,902,524	\$75,000,000	103%	\$77,293,582	\$0	\$8,681,743	\$52,979,429	\$8,502,405	0.69	1.41	12/31/2021
7/3/2013	Long Wharf Fund IV ⁴	\$1,532,213	\$25,000,000	100%	\$25,000,000	\$0	\$0	\$34,824,789	\$0	1.39	1.45	3/31/2022
9/30/2016	Long Wharf Fund V ⁴	\$31,639,861	\$50,000,000	100%	\$50,000,000	\$0	\$685,479	\$36,101,908	\$0	0.72	1.35	3/31/2022
6/27/2019	Long Wharf Fund VI	\$28,674,828	\$50,000,000	64%	\$31,982,159	\$5,738,355	\$2,775,024	\$12,487,610	\$18,017,841	0.39	1.29	3/31/2022
12/31/2011	Oaktree REOF VI ⁴	\$1,213,282	\$50,000,000	101%	\$50,315,673	\$0	\$268,000	\$85,975,916	\$5,000,000 ⁹	1.71	1.73	3/31/2022
9/30/2013	Oaktree REOF VI ⁴	\$25,861,783	\$80,000,000	100%	\$80,000,000	\$0	\$0	\$84,010,175	\$18,400,000 ⁹	1.05	1.37	3/31/2022
4/1/2015	Oaktree REOF VII	\$49,913,265	\$65,000,000	100%	\$65,000,000	\$0	\$0	\$42,829,688	\$18,915,000 ⁹	0.66	1.43	3/31/2022
11/10/2013	Paulson Real Estate Fund II ⁴	\$19,793,693	\$20,000,000	97%	\$19,345,623	\$0	\$0	\$20,947,018	\$654,377	1.08	2.11	9/30/2021
1/25/2012	Siguler Guff DREOF	\$23,570,061	\$75,000,000	93%	\$69,375,000	\$0	\$762,124	\$96,380,022	\$5,625,000	1.39	1.73	9/30/2021
8/31/2013	Siguler Guff DREOF II	\$39,240,689	\$70,000,000	89%	\$61,985,000	\$0	\$5,259,759	\$49,237,698	\$8,015,000	0.79	1.43	9/30/2021
1/27/2016	Siguler Guff DREOF II Co-Inv	\$12,988,186	\$25,000,000	82%	\$20,537,862	\$0	\$0	\$13,584,170	\$4,462,138	0.66	1.29	9/30/2021
Total Closed End Real Estate		\$569,154,067	\$1,375,000,000	92%	\$1,259,404,089	\$5,738,355	\$54,165,115	\$1,158,168,418	\$278,547,673	0.92	1.37	
% of Portfolio (Market Value)		4.9%										

¹Latest valuation + capital calls - distributions

²(DPI) is equal to (capital returned / capital called)

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

⁴Capital has been fully called and fund is in redemption.

⁵Total distributions may include recallable distributions

⁶Remianing commitment includes recallable distributions

Total Fund
Closed End Funds - Investment Summary

Period Ending: March 31, 2022

StepStone Group Analysis (*)												
Closing Date	Manager Name/Fund Name	Estimated Market Value as of 3/31/2022 ¹	Total Commitment	Total % Called	Contributed Capital	Current Qtr. Change in Contributed Capital	Current Qtr. Change in Distributed Capital	Total Distributions	Remaining Commitment	Distrib./Paid-In (DPI) ²	Tot. Value/Paid-In (TVPI) ³	Latest Valuation
Private Equity & Venture Capital												
2/11/2004	Adams Street Partners	\$180,594,279	\$210,000,000	0%	\$191,780,625	\$0	\$8,355,731	\$245,131,838	\$18,219,375	1.28	2.22	12/31/2021
1/15/2009	Adams Street Partners II	\$3,778,775	\$30,000,000	0%	\$28,365,000	\$0	\$898,842	\$45,123,354	\$1,635,000	1.59	1.72	12/31/2021
9/21/2012	Adams Street Partners - Fund 5	\$14,526,409	\$40,000,000	0%	\$30,845,875	\$0	\$1,622,332	\$28,013,923	\$9,154,125	0.91	1.38	12/31/2021
1/18/1996	Adams Street Partners - BPF	\$1,652,197	\$59,565,614	0%	\$57,517,409	\$0	\$0	\$102,731,103	\$2,048,205	1.79	1.81	9/30/2021
3/31/2016	Adams Street Venture Innovation	\$211,850,261	\$75,000,000	0%	\$66,037,500	\$0	\$3,518,386	\$30,786,690	\$8,962,500	0.47	3.67	12/31/2021
5/18/2018	AE Industrial Partners Fund II, LP	\$42,632,691	\$35,000,000	10%	\$27,336,259	\$3,379,940	\$0	\$3,559,451	\$11,223,193	0.13	1.69	12/31/2021
11/27/2013	Aether Real Assets III	\$19,308,452	\$25,000,000	2%	\$25,431,612	\$408,777	\$141,549	\$5,206,510	\$1,798,247	0.20	0.96	9/30/2021
11/30/2013	Aether Real Assets III Surplus	\$41,826,987	\$50,000,000	0%	\$51,968,989	\$180,057	\$81,150	\$11,713,685	\$1,645,476	0.23	1.03	9/30/2021
1/30/2016	Aether Real Assets IV	\$55,377,863	\$50,000,000	2%	\$48,730,643	\$868,638	\$89,794	\$3,674,722	\$4,103,494	0.08	1.21	9/30/2021
4/30/2004	Bay Area Equity Fund I ⁴	\$1,241,100	\$10,000,000	0%	\$10,000,000	\$0	\$0	\$37,018,019	\$0	3.70	3.83	12/31/2021
6/29/2009	Bay Area Equity Fund II ⁴	\$18,516,533	\$10,000,000	0%	\$10,000,000	\$0	\$0	\$3,684,910	\$0	0.37	2.22	12/31/2021
6/30/2013	Commonfund	\$37,492,843	\$50,000,000	1%	\$46,774,993	\$250,000	\$2,242,245	\$18,581,395	\$3,225,007	0.40	1.20	9/30/2021
7/15/2005	EIF US Power Fund II ⁴	\$3,584,649	\$50,000,000	0%	\$65,029,556	\$0	\$1,252,091	\$75,253,462	\$0	1.16	1.21	9/30/2021
5/31/2007	EIF US Power Fund III ⁴	\$10,579,825	\$65,000,000	0%	\$71,409,097	\$0	\$0	\$85,938,521	\$0	1.20	1.35	12/31/2021
11/28/2011	EIF US Power Fund IV	\$27,276,860	\$50,000,000	0%	\$64,917,547	\$0	\$0	\$41,055,366	\$4	0.63	1.05	9/30/2021
11/28/2016	EIF US Power Fund V	\$33,526,687	\$50,000,000	12%	\$69,328,438	\$6,244,817	\$0	\$52,513,417	\$6,194,129	0.76	1.24	12/31/2021
2/21/2019	Genstar Capital Partners IX, L.P.	\$62,554,203	\$50,000,000	-3%	\$46,503,313	-\$1,680,440	\$37,211	\$6,295,337	\$6,353,006	0.14	1.48	12/31/2021
4/1/2021	Genstar Capital Partners X, L.P.	\$5,480,401	\$42,500,000	1%	\$5,228,730	\$495,866	\$0	\$0	\$37,271,270	0.00	1.05	12/31/2021
10/27/2020	GTCR Fund XIII, L.P.	\$10,582,123	\$50,000,000	8%	\$9,180,000	\$3,805,000	\$0	\$1,809,154	\$40,820,000	0.20	1.35	12/31/2021
5/10/2021	Hellman & Friedman Capital Partners X, L.P.	\$38,721,519	\$75,000,000	42%	\$40,882,181	\$31,747,109	\$0	\$0	\$34,117,819	0.00	0.95	12/31/2021
11/18/2009	Oaktree PIF 2009	\$477,280	\$40,000,000	0%	\$34,812,560	\$0	\$0	\$47,032,470	\$6,308,961	1.35	1.36	12/31/2021
5/2/2013	Ocean Avenue Fund II	\$30,039,218	\$30,000,000	0%	\$27,000,000	\$0	\$1,318,125	\$38,050,470	\$3,000,000	1.41	2.52	12/31/2021
4/15/2016	Ocean Avenue Fund III	\$49,737,032	\$50,000,000	4%	\$46,000,000	\$2,000,000	\$0	\$48,000,000	\$4,000,000	1.04	2.12	12/31/2021
11/30/2007	Paladin III	\$23,922,380	\$25,000,000	0%	\$34,736,206	\$0	\$0	\$67,416,571	\$419,157	1.94	2.63	12/31/2021
8/22/2011	Pathway 6	\$45,780,297	\$40,000,000	0%	\$39,234,460	\$63,000	\$3,501,050	\$46,277,401	\$3,749,454	1.18	2.35	9/30/2021
7/10/2013	Pathway 7	\$89,732,272	\$70,000,000	0%	\$68,899,586	\$132,475	\$5,747,650	\$72,356,225	\$5,488,302	1.05	2.35	9/30/2021
11/23/2015	Pathway 8	\$80,209,243	\$50,000,000	1%	\$46,737,663	\$608,485	\$3,522,254	\$26,832,150	\$5,114,739	0.57	2.29	9/30/2021
1/19/1999	Pathway	\$4,850,787	\$125,000,000	0%	\$125,909,794	\$61,940	\$1,277,726	\$187,309,007	\$10,614,246	1.49	1.53	9/30/2021
7/31/2009	Pathway 2008	\$21,018,879	\$30,000,000	0%	\$29,925,866	\$42,147	\$1,008,841	\$48,107,803	\$2,842,743	1.61	2.31	9/30/2021
6/3/2014	Siguler Guff CCCERA Opportunities	\$151,068,966	\$200,000,000	0%	\$174,083,208	\$0	\$23,928,327	\$189,200,018	\$29,597,500	1.09	1.95	12/31/2021
5/18/2018	Siris Partners IV, L.P.	\$31,081,399	\$35,000,000	0%	\$22,527,930	\$0	\$0	\$4,030,441	\$14,895,014	0.18	1.56	12/31/2021
5/27/2021	TA XIV-A, L.P.	\$13,500,000	\$50,000,000	0%	\$13,500,000	\$0	\$0	\$0	\$36,500,000	0.00	1.00	12/31/2021
6/28/2019	TPG Healthcare Partners, L.P.	\$16,653,502	\$24,000,000	11%	\$13,588,959	\$2,722,784	\$0	\$1,956,092	\$12,030,771	0.14	1.37	12/31/2021
9/17/2021	Trident IX, L.P.	\$0	\$50,000,000	0%	\$0	\$0	\$0	\$0	\$50,000,000	-	-	-
5/24/2019	Trident VIII, L.P.	\$48,307,304	\$40,000,000	0%	\$37,182,999	\$0	\$0	\$974,669	\$3,785,168	0.03	1.33	12/31/2021
12/8/2015	Wastewater Opportunity Fund	\$16,188,655	\$25,000,000	0%	\$29,242,585	\$0	\$0	\$12,893,182	\$1,204,775	0.44	0.99	9/30/2021
Total Private Equity and Venture Capital		\$1,443,671,872	\$1,961,065,614	87%	\$1,710,649,583	\$51,330,596	\$58,543,306	\$1,588,527,358	\$376,321,680	0.93	1.77	
% of Portfolio (Market Value)		13.1%										

* All Data provided by StepStone Group

¹Latest valuation + capital calls - distributions

²(DPI) is equal to (capital returned / capital called)

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

⁴Capital has been fully called and fund is in redemption.

Total Fund
Closed End Funds - IRR Summary

Period Ending: March 31, 2022

Private Credit	Inception	Fund Level (G) ²	CCCERA (G)	Fund Level (N) ^{2,3}	CCCERA (N) ³	IRR Date
Angelo Gordon Energy Cred Opp. ⁴	9/24/2015	-	-	-	7.4%	12/31/2021
Stepstone CC Opportunities Fund	2/2/2018	-	10.1%	-	14.0%	9/30/2021
Torchlight IV	8/1/2012	12.0%	12.5%	9.7%	10.4%	3/31/2022
Torchlight V	3/12/2015	15.4%	15.5%	10.8%	10.7%	12/31/2021

Real Estate	Inception	Fund Level (G) ²	CCCERA (G)	Fund Level (N) ^{2,3}	CCCERA (N) ³	IRR Date
Angelo Gordon VIII ⁴	1/23/2012	-	-	-	13.3%	12/31/2021
Angelo Gordon IX	12/8/2014	-	-	-	9.5%	12/31/2021
DLJ RECP III	6/23/2005	-1.0%	-1.0%	-3.0%	-2.0%	12/31/2021
DLJ RECP IV	2/11/2008	5.0%	5.0%	2.0%	2.0%	12/31/2021
DLJ RECP V	7/1/2014	18.0%	18.0%	10.0%	10.0%	12/31/2021
DLJ RECP VI ¹	3/19/2019	11.0%	11.0%	4.0%	4.0%	12/31/2021
Hearthstone II ⁴	6/17/1998	-	30.3%	-	30.3%	3/31/2020
Invesco Fund III ⁴	6/30/2013	16.6%	-	13.6%	-	12/31/2020
Invesco Fund IV ⁴	6/30/2014	15.6%	-	12.0%	-	12/31/2021
Invesco Fund V	2/20/2019	27.9%	-	19.8%	-	12/31/2021
LaSalle Income & Growth VI ⁴	7/16/2013	12.7%	12.7%	10.5%	10.5%	3/31/2022
LaSalle Income & Growth VII	2/28/2017	14.7%	14.8%	12.3%	12.3%	3/31/2022
Long Wharf IV ⁴	7/3/2013	16.5%	15.9%	11.9%	11.9%	12/31/2021
Long Wharf V ⁴	9/30/2016	11.8%	12.4%	9.0%	9.4%	12/31/2021
Long Wharf VI	6/27/2019	52.3%	65.3%	30.9%	37.4%	12/31/2021
Oaktree REOF V ⁴	12/31/2011	16.7%	-	12.3%	-	3/31/2022
Oaktree REOF VI ⁴	9/30/2013	11.5%	-	7.8%	-	3/31/2022
Oaktree REOF VII	4/1/2015	26.2%	-	17.5%	-	3/31/2022
Paulson ⁴	11/10/2013	18.0%	-	12.0%	-	12/31/2021
Siguler Guff I	1/25/2012	13.1%	15.8%	11.6%	12.7%	12/31/2021
Siguler Guff II	8/31/2013	11.2%	11.2%	99.0%	9.1%	12/31/2021
Siguler Guff DREOF II Co-Inv	1/27/2016	7.5%	7.8%	6.5%	6.3%	12/31/2021

¹Manager has yet to report IRR figure.

²Fund level data includes CCCERA and all other fund investors.

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

⁴Capital has been fully called and fund is in redemption.

Total Fund
Closed End Funds - IRR Summary

Period Ending: March 31, 2022

Private Equity & Venture Capital	Closing Date	Fund Level (G) ²	CCCERA (G)	Fund Level (N) ^{2,3}	CCCERA (N) ³	IRR Date
Adams Street Partners	2/11/2004	-	15.3%	-	13.3%	12/31/2021
Adams Street Partners II	12/31/2008	-	17.8%	-	14.1%	12/31/2021
Adams Street Partners - Fund 5	12/31/2008	-	10.4%	-	7.3%	12/31/2021
Adams Street Partners Venture	1/18/1996	-	63.8%	-	60.8%	12/31/2021
Adams Street Partners - BPF	3/31/2016	-	14.2%	-	11.6%	12/31/2021
AE Industrial Partners Fund II, LP	5/18/2018	47.5%	-	48.8%	-	12/31/2021
Aether Real Assets III	11/27/2013	2.1%	2.1%	-0.8%	-0.8%	9/30/2021
Aether Real Assets III Surplus	11/30/2013	2.4%	2.4%	0.7%	0.7%	9/30/2021
Aether Real Assets IV	1/30/2016	10.8%	10.8%	7.2%	7.2%	9/30/2021
Bay Area Equity Fund I ⁹	11/26/2003	31.3%	31.3%	23.0%	23.0%	12/31/2021
Bay Area Equity Fund II ⁹	11/26/2003	14.5%	14.5%	0.7%	9.7%	12/31/2021
CommonFund	6/30/2013	-	-	-	5.6%	9/30/2021
Energy Investor Fund II ⁹	7/15/2005	5.6%	5.2%	2.8%	2.5%	12/31/2021
Energy Investor Fund III ⁹	5/31/2007	7.0%	7.0%	4.6%	4.6%	12/31/2021
Energy Investor Fund IV	8/31/2010	5.2%	5.2%	2.0%	1.9%	12/31/2021
Energy Investor Fund V	11/28/2016	17.9%	14.2%	15.2%	11.6%	12/31/2021
Genstar Capital Partners IX, L.P. ¹	2/21/2019	40.0%	-	-	-	12/31/2021
Oaktree PIF 2009	2/28/2010	6.8%	-	6.6%	-	3/31/2022
Ocean Avenue II	8/15/2013	-	-	19.3%	-	6/30/2021
Ocean Avenue III	4/15/2016	-	-	22.6%	-	12/31/2020
Paladin III	11/30/2007	21.8%	-	-	-	12/31/2021
Pathway 6	8/22/2011	20.5%	20.5%	18.3%	18.3%	9/30/2021
Benchmark ⁴		16.6%	-	-	-	9/30/2021
Pathway 7	7/10/2013	23.3%	23.3%	21.2%	21.2%	9/30/2021
Benchmark ⁵		18.1%	-	-	-	9/30/2021
Pathway 8	11/23/2015	28.9%	29.0%	27.5%	27.7%	9/30/2021
Benchmark ⁶		23.7%	-	-	-	9/30/2021
Pathway Private Equity Fund	1/19/1999	10.3%	10.3%	8.4%	8.4%	9/30/2021
Benchmark ⁷		10.6%	-	-	-	9/30/2021
Pathway Private Equity Fund 2008	7/31/2009	18.4%	18.4%	16.2%	16.2%	9/30/2021
Benchmark ⁸		14.5%	-	-	-	9/30/2021
Siguler Guff CCCERA Opportunities	6/3/2014	21.0%	21.8%	20.5%	19.1%	12/31/2021
Siguler Guff Secondary Opportunities ⁹	8/31/2013	55.3%	118.4%	49.5%	69.0%	9/30/2020
Siris Partners IV, L.P.	5/18/2018	30.1%	30.1%	25.0%	25.0%	12/31/2021
TPG Healthcare Partners, L.P.	6/28/2019	45.0%	-	-	28.0%	3/31/2022
Trident VIII, L.P. ¹	5/24/2019	-	-	-	-	-
Wastewater Opportunity Fund	12/8/2015	8.8%	-	5.5%	-	12/31/2021

¹Manager has yet to report IRR figure.

²Fund level data includes CCCERA and all other fund investors.

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

⁴Private IQ global all private equity median pooled return for vintage years 2011-2014, as of September 30, 2021.

⁵Private IQ global all private equity median pooled return for vintage years 2012-2016, as of September 30, 2021.

⁶Private IQ global all private equity median pooled return for vintage years 2015-2018, as of September 30, 2021.

⁷Private IQ global all private equity median pooled return for vintage years 1999-2011, as of September 30, 2021.

⁸Private IQ global all private equity median pooled return for vintage years 2008-2014, as of September 30, 2021.

⁹Capital has been fully called and fund is in redemption.

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

Period Ending: March 31, 2022

	3 Years											
	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio	
BlackRock Russell 1000 Index	18.69%	-0.02%	18.28%	-0.01%	1.00	0.01%	1.00	0.99	-1.23	99.92%	100.00%	
Jackson Square Partners	15.35%	-8.25%	20.45%	-7.58%	0.97	7.76%	0.86	0.72	-1.06	70.06%	96.47%	
Boston Partners	15.24%	2.22%	20.14%	1.68%	1.04	3.07%	0.98	0.72	0.72	106.58%	97.56%	
Emerald Advisers	11.39%	1.51%	23.08%	2.18%	0.93	5.78%	0.94	0.46	0.26	102.49%	97.88%	
Ceredex	8.75%	-3.98%	23.05%	-2.52%	0.89	7.19%	0.92	0.35	-0.55	74.28%	92.58%	
Pyrford	6.90%	1.45%	14.59%	3.06%	0.70	7.59%	0.88	0.43	0.19	74.83%	77.16%	
William Blair	12.86%	3.74%	18.33%	2.62%	1.12	4.72%	0.95	0.67	0.79	125.32%	103.97%	
PIMCO RAE Emerging Markets	6.93%	3.70%	21.88%	3.31%	1.12	5.72%	0.94	0.29	0.65	124.67%	101.87%	
TT Emerging Markets	4.38%	-0.56%	22.93%	-1.66%	1.22	6.54%	0.95	0.16	-0.09	131.24%	117.11%	
Artisan Partners	17.57%	-0.29%	17.09%	1.02%	0.93	4.97%	0.92	0.99	-0.06	90.55%	91.55%	
First Eagle	9.93%	0.91%	13.59%	3.52%	0.71	6.31%	0.94	0.68	0.15	73.91%	74.67%	
JP Morgan Global Opportunities	0.91%	-12.84%	6.90%	-0.92%	0.13	16.28%	0.11	0.04	-0.79	9.07%	23.21%	
Allianz Global Investors	3.82%	-0.58%	8.07%	0.04%	0.86	1.95%	0.97	0.39	-0.30	87.26%	91.15%	
Adelante	13.54%	1.60%	18.31%	2.22%	0.95	1.60%	1.00	0.70	1.00	100.56%	94.55%	
AQR Global Risk Premium-EL	7.45%	--	8.97%	--	--	--	--	0.76	--	--	--	
PanAgora Risk Parity Multi Asset	8.27%	--	10.25%	--	--	--	--	0.74	--	--	--	
AFL-CIO	1.25%	-0.44%	3.72%	-0.25%	0.89	1.10%	0.93	0.16	-0.40	81.48%	86.87%	
DFA Short Credit	0.48%	-0.68%	2.27%	-0.60%	0.93	1.31%	0.67	-0.08	-0.52	70.32%	90.31%	
Insight Short Duration	1.66%	0.64%	2.07%	0.92%	0.72	1.85%	0.24	0.48	0.35	94.89%	37.28%	
Sit Short Duration	1.14%	0.30%	2.25%	0.06%	1.29	1.10%	0.80	0.21	0.27	148.33%	151.69%	

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

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

Period Ending: March 31, 2022

	5 Years										
	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
Jackson Square Partners	14.95%	-5.94%	17.92%	-5.05%	0.96	6.58%	0.87	0.78	-0.90	69.34%	96.65%
Boston Partners	11.91%	1.63%	17.54%	1.17%	1.04	2.97%	0.97	0.62	0.55	107.62%	98.46%
Emerald Advisers	12.82%	2.49%	21.50%	2.89%	0.96	5.41%	0.94	0.55	0.46	104.88%	96.29%
Ceredex	6.61%	-1.96%	20.39%	-1.03%	0.89	6.32%	0.92	0.27	-0.31	76.93%	94.77%
Pyrford	5.96%	1.30%	12.72%	2.65%	0.71	6.64%	0.87	0.39	0.20	69.19%	77.70%
William Blair	10.52%	1.92%	16.39%	0.97%	1.11	4.06%	0.95	0.58	0.47	119.74%	103.46%
PIMCO RAE Emerging Markets	5.57%	1.33%	19.35%	0.87%	1.11	4.94%	0.94	0.23	0.27	115.68%	102.34%
Total Global Equity	11.78%	0.14%	13.18%	1.95%	0.84	3.95%	0.94	0.81	0.03	83.97%	87.59%
Artisan Partners	15.61%	0.14%	15.63%	0.91%	0.95	4.24%	0.93	0.93	0.03	92.89%	94.14%
First Eagle	7.70%	0.24%	11.73%	2.37%	0.71	5.44%	0.93	0.57	0.04	66.37%	75.48%
JP Morgan Global Opportunities	2.36%	-9.28%	6.55%	1.11%	0.11	14.93%	0.06	0.20	-0.62	8.54%	16.13%
Allianz Global Investors	3.84%	-0.72%	6.86%	-0.19%	0.88	1.54%	0.97	0.41	-0.47	88.14%	95.76%
Adelante	11.59%	1.55%	16.48%	2.08%	0.95	1.70%	0.99	0.64	0.91	98.28%	93.41%
AFL-CIO	1.78%	-0.37%	3.30%	-0.14%	0.89	0.93%	0.93	0.22	-0.39	83.14%	87.29%
DFA Short Credit	1.11%	-0.34%	1.96%	-0.27%	0.95	1.03%	0.72	0.03	-0.33	84.01%	93.12%
Insight Short Duration	1.82%	0.56%	1.66%	0.91%	0.72	1.44%	0.28	0.46	0.39	96.56%	30.51%
Sit Short Duration	1.69%	0.64%	2.03%	0.25%	1.38	1.02%	0.81	0.31	0.63	165.03%	156.96%

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

Total Fund Investment Fund Fee Analysis

Period Ending: March 31, 2022

Name	Asset Class	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
BlackRock Russell 1000 Index	Growth	0.03% of Assets	\$612,596,790	\$183,779	0.03%
Jackson Square Partners	Growth	0.40% of First 400.0 Mil, 0.35% Thereafter	\$291,974,099	\$1,167,896	0.40%
Boston Partners	Growth	0.50% of First 25.0 Mil, 0.30% Thereafter	\$417,910,620	\$1,303,732	0.31%
Emerald Advisers	Growth	0.75% of First 10.0 Mil, 0.60% Thereafter	\$229,413,749	\$1,391,482	0.61%
Ceredex	Growth	0.85% of First 10.0 Mil, 0.68% of Next 40.0 Mil, 0.51% Thereafter	\$197,625,614	\$1,109,891	0.56%
Pyrford	Growth	0.70% of First 50.0 Mil, 0.50% of Next 50.0 Mil, 0.35% Thereafter	\$487,895,895	\$1,957,636	0.40%
William Blair	Growth	0.80% of First 20.0 Mil, 0.60% of Next 30.0 Mil, 0.50% of Next 50.0 Mil, 0.45% of Next 50.0 Mil, 0.40% of Next 50.0 Mil, 0.30% Thereafter	\$479,112,230	\$1,852,337	0.39%
PIMCO RAE Emerging Markets	Growth	0.75% of First 50.0 Mil, 0.68% of Next 50.0 Mil, 0.50% of Next 100.0 Mil, 0.45% Thereafter	\$372,890,359	\$1,990,507	0.53%
TT Emerging Markets	Growth	0.70% of First 100.0 Mil, 0.65% of Next 100.0 Mil, 0.60% Thereafter	\$376,897,240	\$2,411,383	0.64%
Artisan Partners	Growth	0.75% of Assets	\$547,750,803	\$4,108,131	0.75%
First Eagle	Growth	0.75% of Assets	\$526,400,117	\$3,948,001	0.75%
Allianz Global Investors	Growth	0.50% of First 50.0 Mil, 0.40% of Next 50.0 Mil, 0.35% Thereafter	\$175,881,035	\$715,584	0.41%
Invesco US Fundamental Beta	Growth		\$104,658,304		
AQR Global Risk Premium-EL	Growth	0.38% of Assets	\$216,916,803	\$824,284	0.38%

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

Total Fund Investment Fund Fee Analysis

Period Ending: March 31, 2022

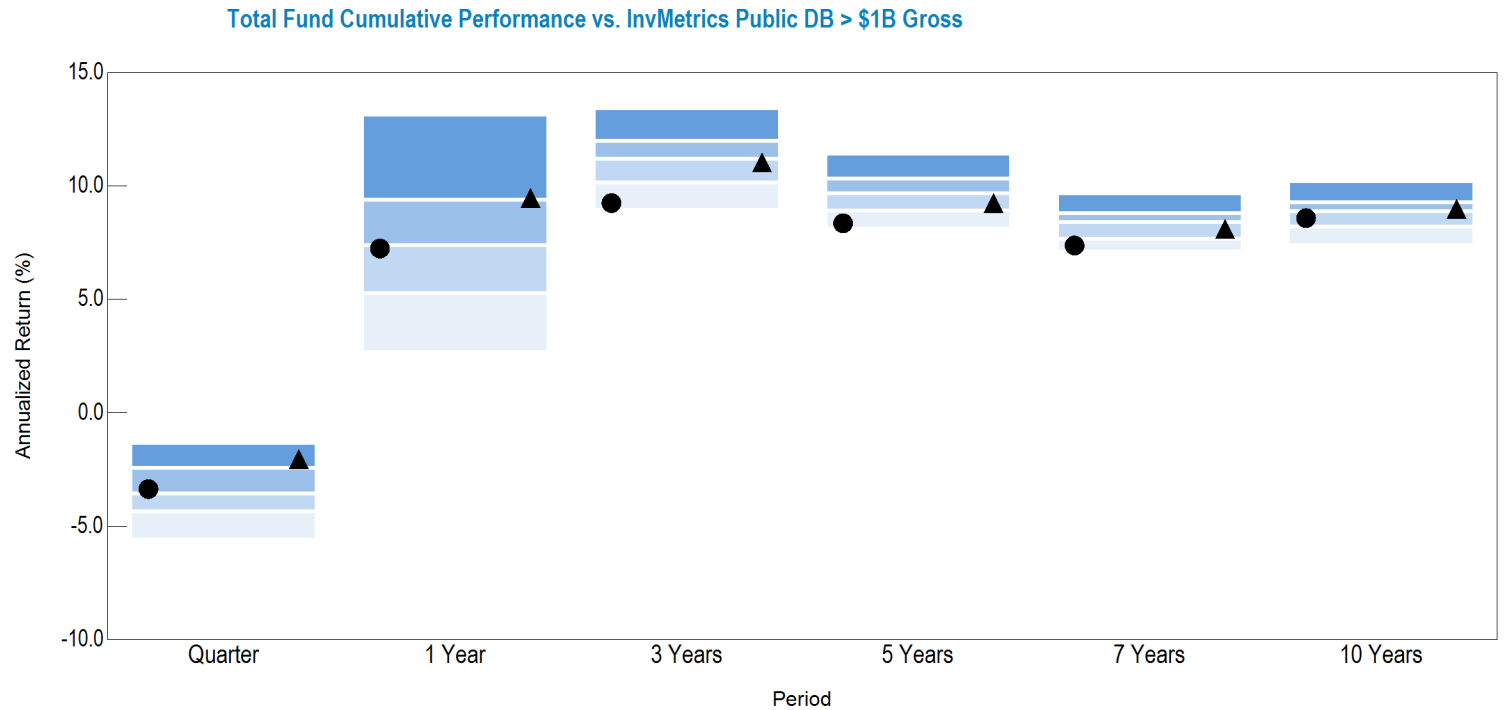
Name	Asset Class	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
PanAgora Risk Parity Multi Asset	Growth	0.35% of Assets	\$258,421,101	\$904,474	0.35%
AFL-CIO	Diversifying	0.32% of Assets	\$243,935,990	\$780,595	0.32%
Parametric Defensive Equity	Diversifying	0.42% of First 200.0 Mil, 0.39% Thereafter	\$0	\$0	0.36%
Acadian Multi-Asset Absolute Return Fund	Diversifying	0.50% of Assets	\$248,052,861	\$1,240,264	0.50%
Sit LLCAR	Diversifying	0.39% of First 200.0 Mil, 0.35% Thereafter	\$279,209,030	\$1,057,232	0.38%
DFA Short Credit	Liquidity	0.20% of First 25.0 Mil, 0.10% Thereafter	\$281,621,981	\$306,622	0.11%

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

Total Fund

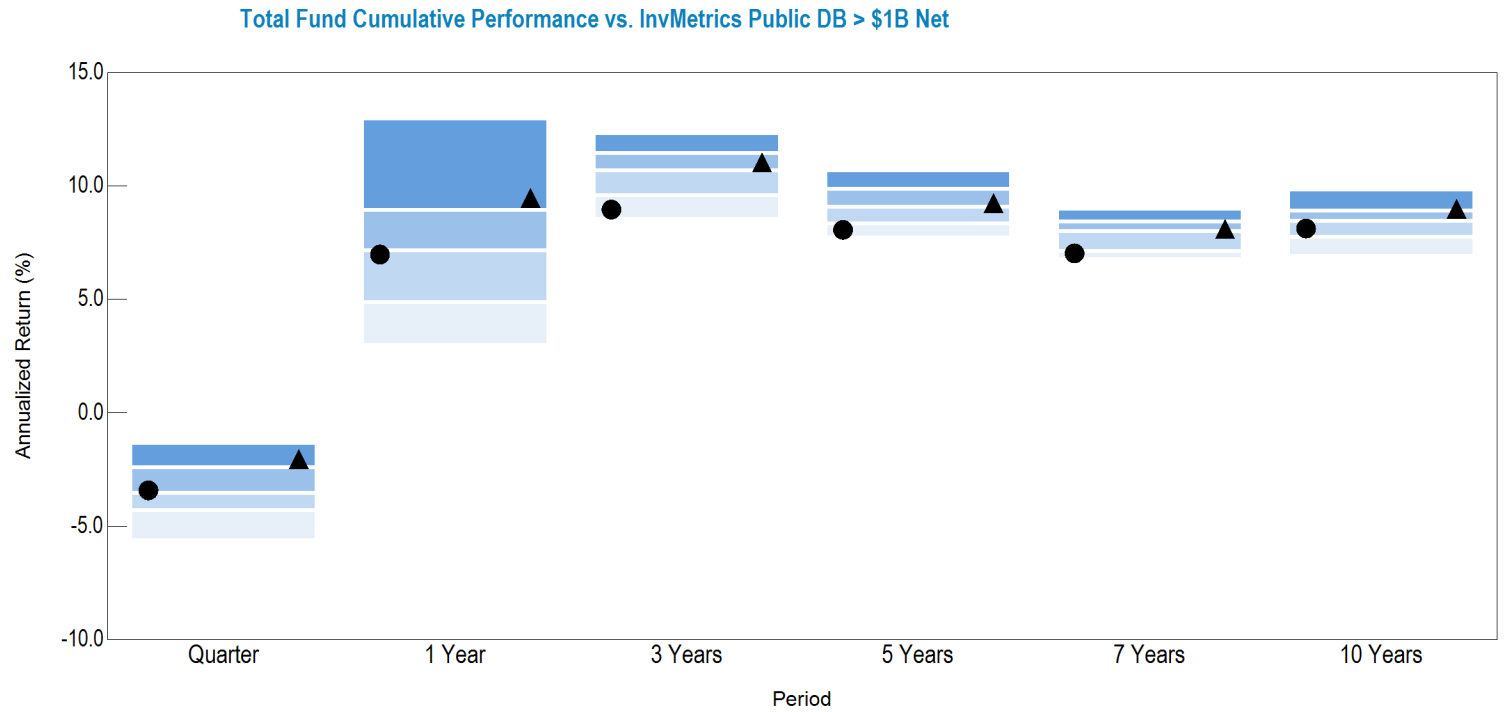
Peer Universe Comparison: Cumulative Performance (Gross of Fees)

Period Ending: March 31, 2022



	Quarter		1 Year		3 Years		5 Years		7 Years		10 Years	
5th Percentile	-1.3		13.1		13.4		11.4		9.7		10.2	
25th Percentile	-2.4		9.4		12.0		10.3		8.8		9.3	
Median	-3.5		7.4		11.2		9.7		8.4		8.9	
75th Percentile	-4.3		5.3		10.2		8.9		7.7		8.2	
95th Percentile	-5.6		2.7		8.9		8.1		7.1		7.4	
# of Portfolios	75		74		74		74		73		71	
● Total Fund	-3.4	(38)	7.2	(54)	9.2	(93)	8.3	(89)	7.4	(91)	8.6	(69)
▲ Policy Index	-2.0	(16)	9.5	(25)	11.0	(55)	9.2	(64)	8.1	(64)	9.0	(45)

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

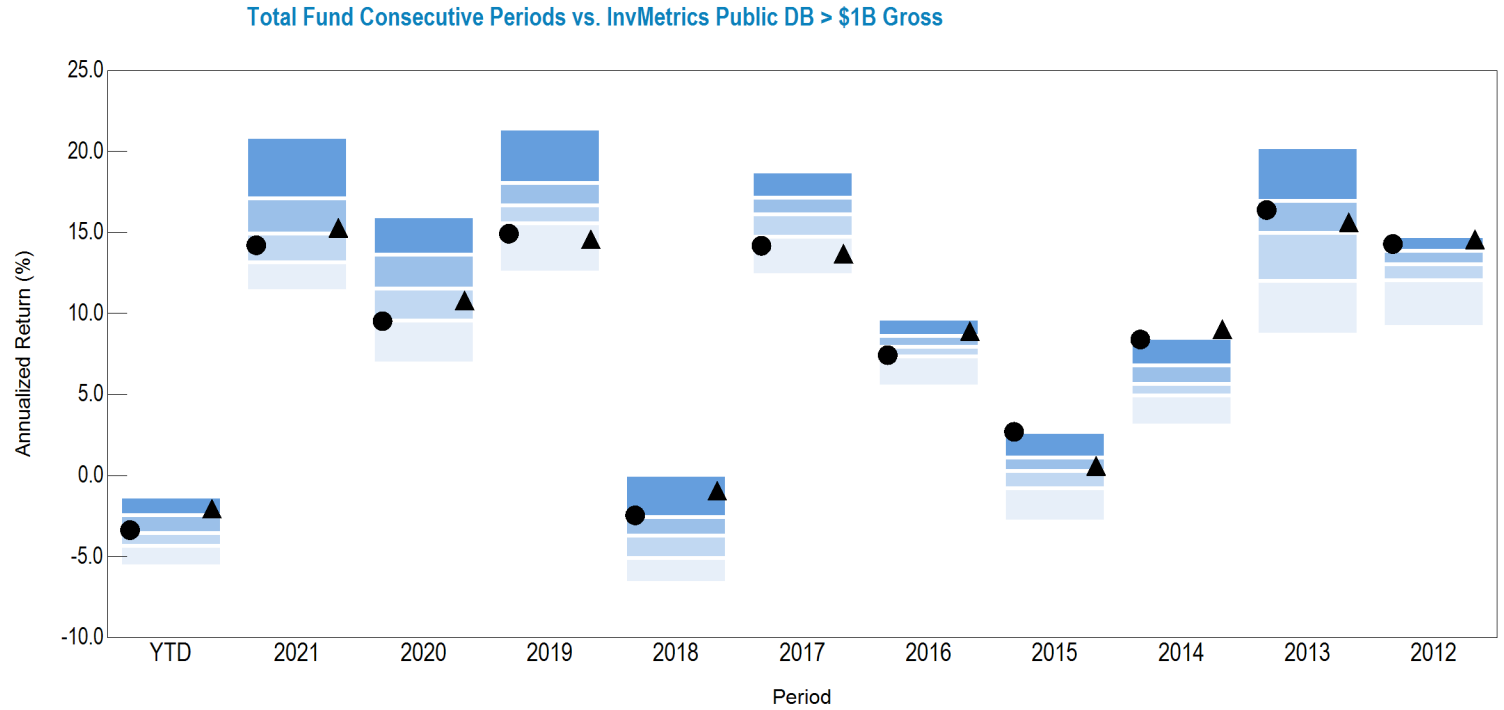


	Quarter		1 Year		3 Years		5 Years		7 Years		10 Years	
5th Percentile	-1.3		12.9		12.3		10.7		9.0		9.8	
25th Percentile	-2.4		8.9		11.5		9.9		8.4		8.9	
Median	-3.5		7.2		10.7		9.1		8.0		8.5	
75th Percentile	-4.3		4.9		9.6		8.4		7.2		7.8	
95th Percentile	-5.6		3.0		8.6		7.7		6.8		6.9	
# of Portfolios	62		61		61		61		60		56	
● Total Fund	-3.4	(44)	7.0	(53)	9.0	(92)	8.1	(85)	7.0	(90)	8.1	(62)
▲ Policy Index	-2.0	(18)	9.5	(20)	11.0	(39)	9.2	(48)	8.1	(43)	9.0	(23)

Total Fund

Peer Universe Comparison: Consecutive Periods (Gross of Fees)

Period Ending: March 31, 2022



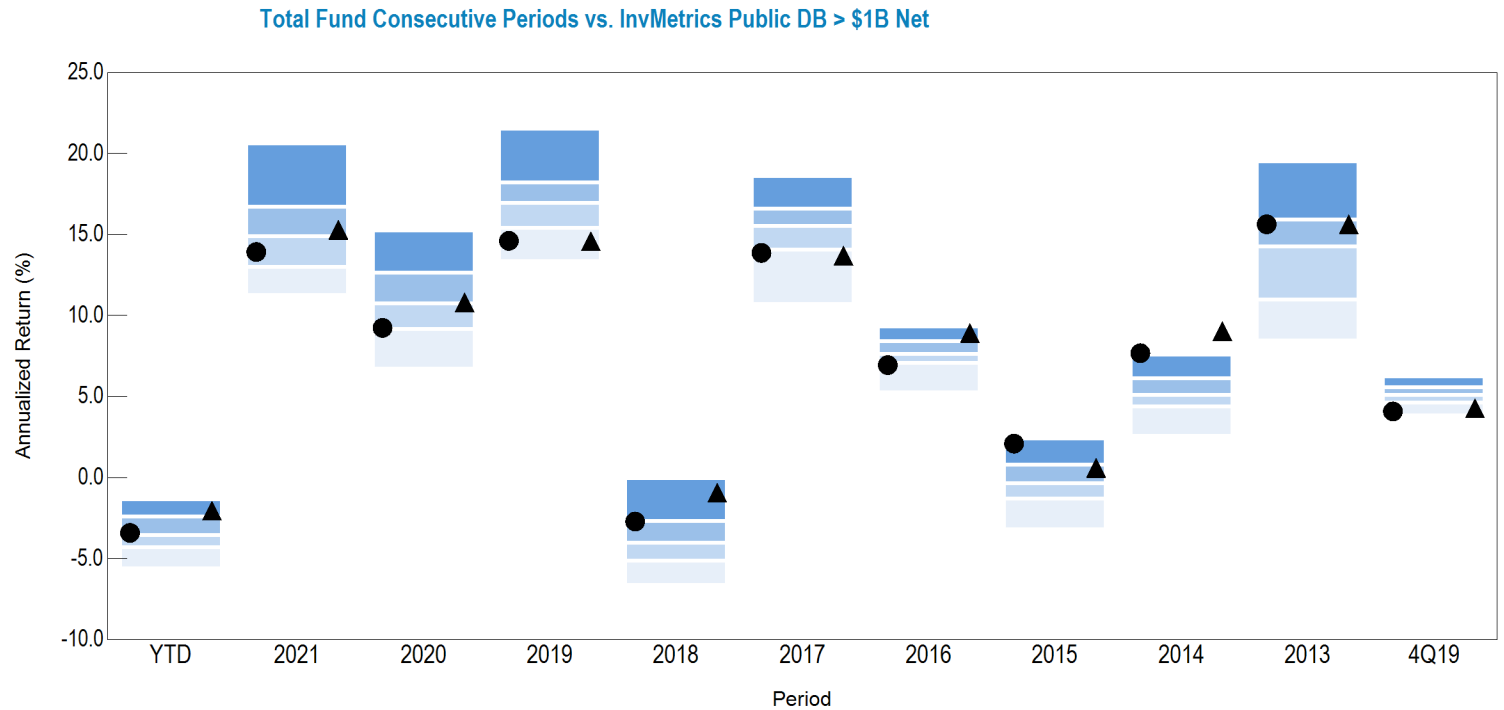
	YTD	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Return (Rank)											
5th Percentile	-1.3	20.9	16.0	21.4	0.0	18.8	9.7	2.7	8.5	20.2	14.7
25th Percentile	-2.4	17.1	13.6	18.1	-2.6	17.2	8.6	1.1	6.8	17.0	13.9
Median	-3.5	14.9	11.5	16.7	-3.7	16.2	8.0	0.3	5.7	15.0	13.0
75th Percentile	-4.3	13.2	9.6	15.6	-5.1	14.8	7.4	-0.7	4.9	12.0	12.1
95th Percentile	-5.6	11.4	6.9	12.5	-6.6	12.4	5.5	-2.8	3.1	8.7	9.2
# of Portfolios	75	84	94	81	71	98	92	98	79	67	74
● Total Fund	-3.4 (38)	14.2 (62)	9.5 (78)	14.9 (83)	-2.5 (25)	14.2 (83)	7.4 (74)	2.7 (5)	8.4 (6)	16.4 (33)	14.3 (13)
▲ Policy Index	-2.0 (16)	15.3 (47)	10.8 (60)	14.6 (87)	-0.9 (8)	13.7 (89)	8.9 (15)	0.6 (40)	9.0 (2)	15.6 (43)	14.6 (8)

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

Total Fund

Peer Universe Comparison: Consecutive Periods (Net of Fees)

Period Ending: March 31, 2022



	YTD	2021	2020	2019	2018	2017	2016	2015	2014	2013	4Q19
5th Percentile	-1.3	20.6	15.2	21.5	-0.1	18.6	9.3	2.4	7.6	19.5	6.2
25th Percentile	-2.4	16.7	12.7	18.2	-2.7	16.6	8.4	0.8	6.1	16.0	5.6
Median	-3.5	14.9	10.8	17.0	-4.0	15.6	7.7	-0.4	5.1	14.3	5.1
75th Percentile	-4.3	13.0	9.2	15.4	-5.1	14.1	7.1	-1.3	4.4	11.0	4.6
95th Percentile	-5.6	11.3	6.8	13.4	-6.6	10.7	5.3	-3.2	2.6	8.5	3.9
# of Portfolios	62	74	80	69	63	61	62	57	55	48	69
● Total Fund	-3.4 (44)	13.9 (61)	9.2 (73)	14.6 (92)	-2.7 (27)	13.9 (81)	6.9 (78)	2.1 (12)	7.7 (5)	15.6 (33)	4.1 (89)
▲ Policy Index	-2.0 (18)	15.3 (45)	10.8 (49)	14.6 (92)	-0.9 (8)	13.7 (85)	8.9 (13)	0.6 (29)	9.0 (2)	15.6 (33)	4.3 (84)

Domestic Equity Managers

Jackson Square Partners Manager Portfolio Overview

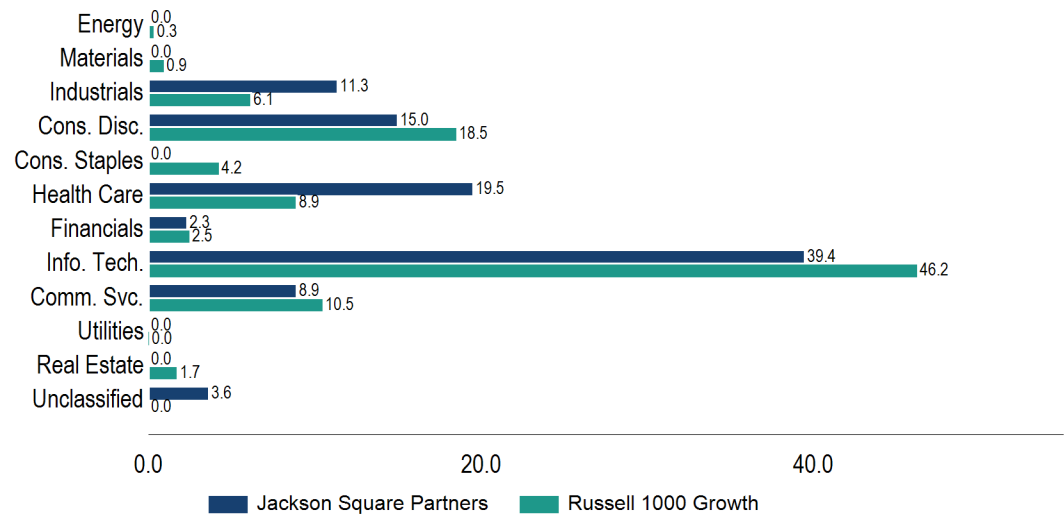
Period Ending: March 31, 2022

Domestic equity large cap growth portfolio concentrated in companies with sustainable long-term growth characteristics. Primary personnel include Jeffrey Van Harte, Christopher Ericksen, Billy Montana, and Daniel Prislun. Daniel Prislun will be retiring at the end of 2021.

Characteristics

	Portfolio	Russell 1000 Growth
Number of Holdings	29	499
Weighted Avg. Market Cap. (\$B)	517.46	983.05
Median Market Cap. (\$B)	74.94	18.31
Price To Earnings	37.21	30.97
Price To Book	8.67	11.84
Price To Sales	6.81	5.12
Return on Equity (%)	23.58	42.15
Yield (%)	0.31	0.78
Beta	1.01	1.00

Sector Allocation (%) vs Russell 1000 Growth



Largest Holdings

	End Weight	Return
AMAZON.COM INC	9.50	-2.23
MICROSOFT CORP	9.32	-8.14
MASTERCARD INC	6.38	-0.41
VISA INC	6.03	2.50
UBER TECHNOLOGIES INC	4.86	-14.91
EDWARDS LIFESCIENCES CORP	4.73	-9.13
CHARTER COMMUNICATIONS INC	3.86	-16.33
CATALENT INC	3.85	-13.38
SERVICENOW INC	3.73	-14.21
NIKE INC	3.45	-19.08

Top Contributors

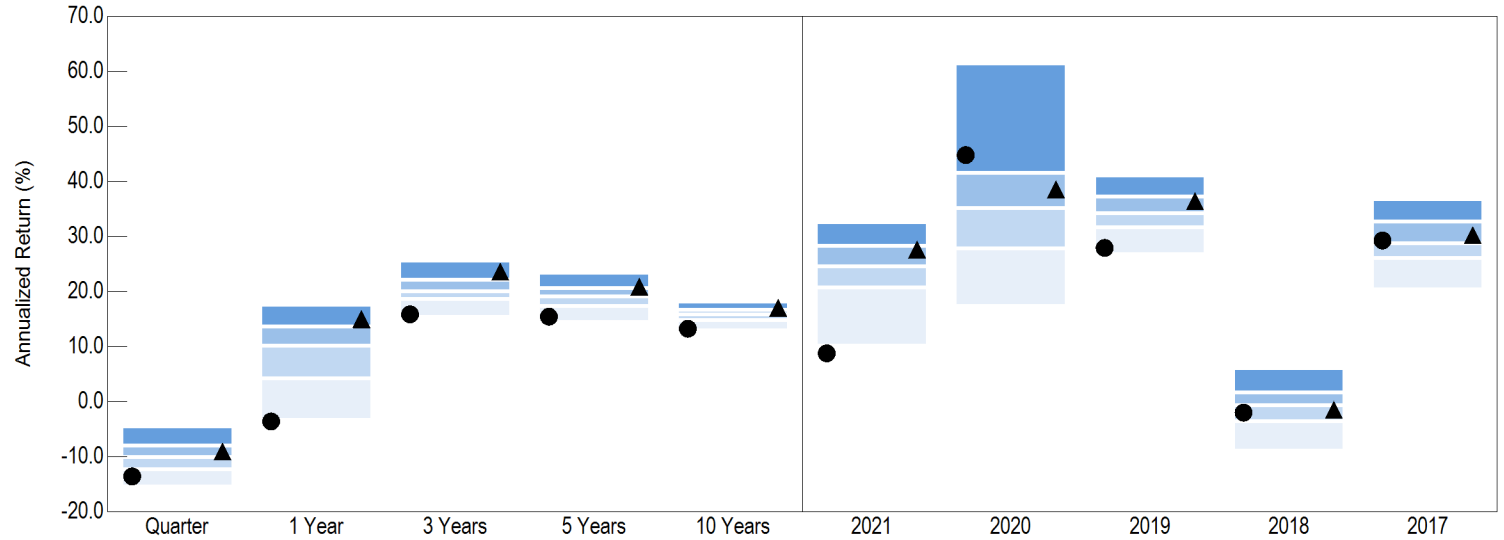
	Avg Wgt	Return	Contribution
CANADIAN PACIFIC RAILWAY LTD	0.87	14.95	0.13
VISA INC	1.73	2.50	0.04
MASTERCARD INC	1.88	-0.41	-0.01
WASTE MANAGEMENT INC.	0.95	-4.63	-0.04
AMAZON.COM INC	2.85	-2.23	-0.06
ADOBE INC	0.66	-19.65	-0.13
EDWARDS LIFESCIENCES CORP	1.53	-9.13	-0.14
CATALENT INC	1.31	-13.38	-0.17
VEEVA SYSTEMS INC	1.04	-16.84	-0.18
INTUITIVE SURGICAL INC	1.12	-16.04	-0.18

Bottom Contributors

	Avg Wgt	Return	Contribution
TWILIO INC	1.17	-37.42	-0.44
NETFLIX INC	0.91	-37.82	-0.35
ALIGN TECHNOLOGY INC	1.02	-33.66	-0.34
10X GENOMICS INC	0.69	-48.93	-0.34
MICROSOFT CORP	3.22	-8.14	-0.26
COUPA SOFTWARE INC	0.73	-35.70	-0.26
UBER TECHNOLOGIES INC	1.68	-14.91	-0.25
NIKE INC	1.25	-19.08	-0.24
CHARTER COMMUNICATIONS INC	1.35	-16.33	-0.22
WIX.COM LTD	0.63	-33.80	-0.21

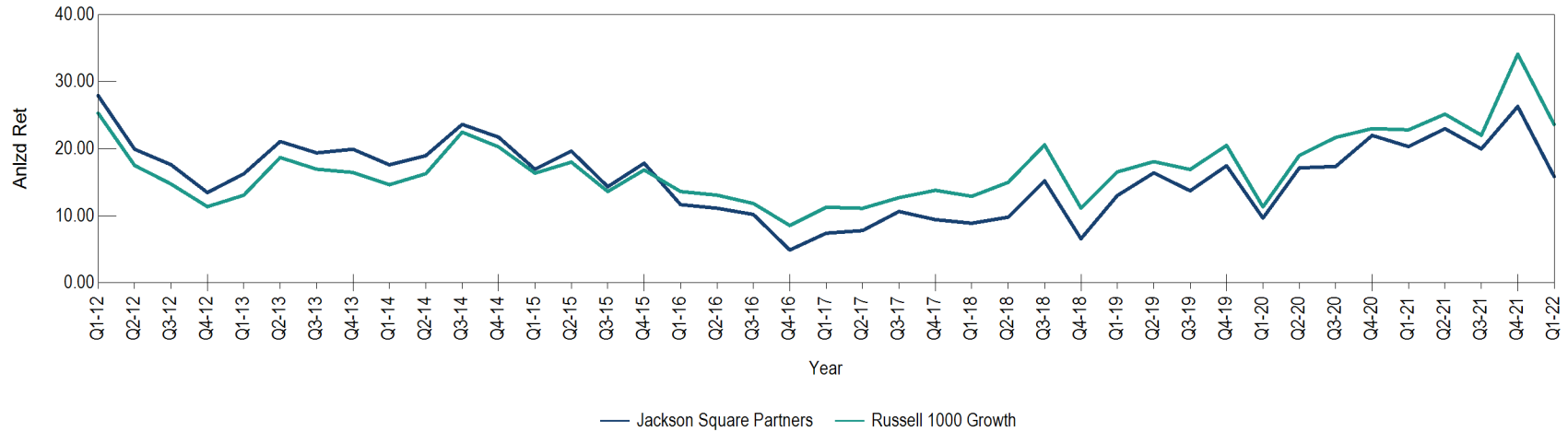
Unclassified sector allocation includes cash allocations.

Jackson Square Partners vs. eV US Large Cap Growth Equity Gross Universe

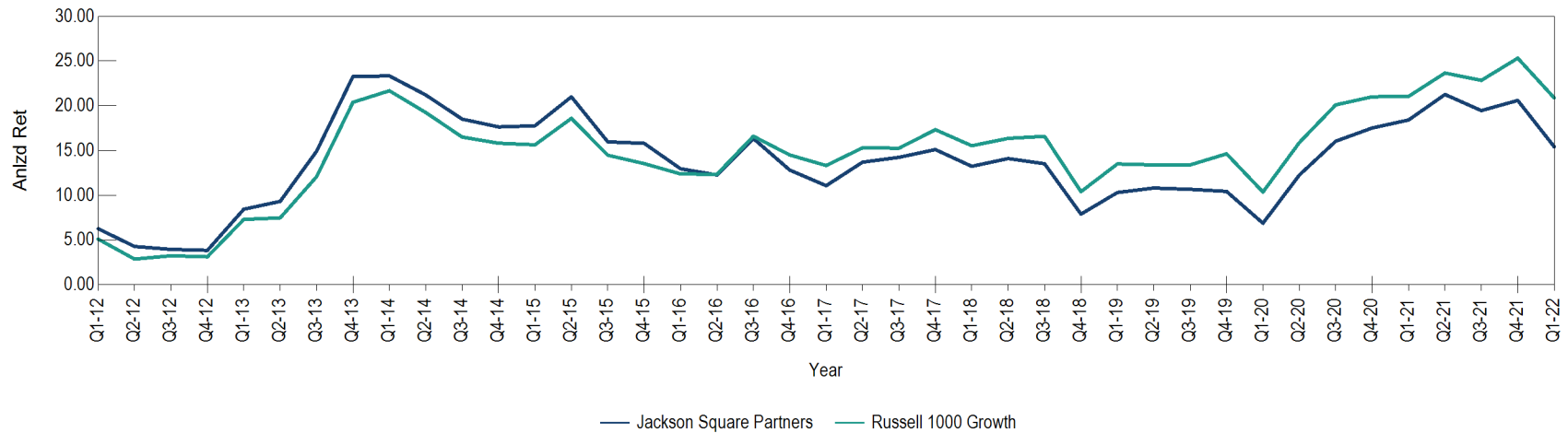


	Return (Rank)									
5th Percentile	-4.6	17.5	25.5	23.4	18.1	32.5	61.4	41.0	6.1	36.7
25th Percentile	-7.9	13.7	22.2	20.7	16.8	28.3	41.6	37.3	1.7	32.7
Median	-10.0	10.2	20.1	19.2	15.9	24.6	35.2	34.2	-0.6	28.8
75th Percentile	-12.2	4.3	18.7	17.5	14.9	20.8	27.9	31.7	-3.5	26.2
95th Percentile	-15.3	-3.2	15.4	14.5	13.0	10.2	17.4	26.9	-8.8	20.5
# of Portfolios	259	259	254	238	209	258	263	253	255	265
● Jackson Square Partners	-13.6 (88)	-3.6 (96)	15.8 (93)	15.4 (92)	13.2 (95)	8.8 (97)	44.8 (20)	27.9 (93)	-2.0 (59)	29.3 (47)
▲ Russell 1000 Growth	-9.0 (38)	15.0 (18)	23.6 (14)	20.9 (21)	17.0 (18)	27.6 (29)	38.5 (34)	36.4 (32)	-1.5 (57)	30.2 (42)

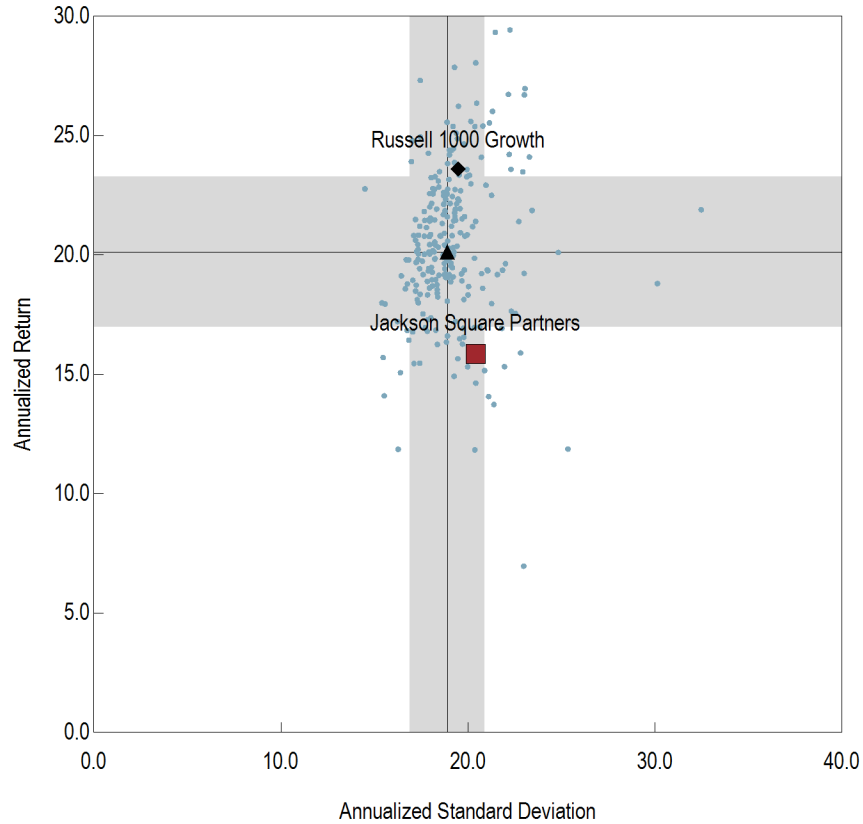
Rolling 3 Year Annualized Return (%)



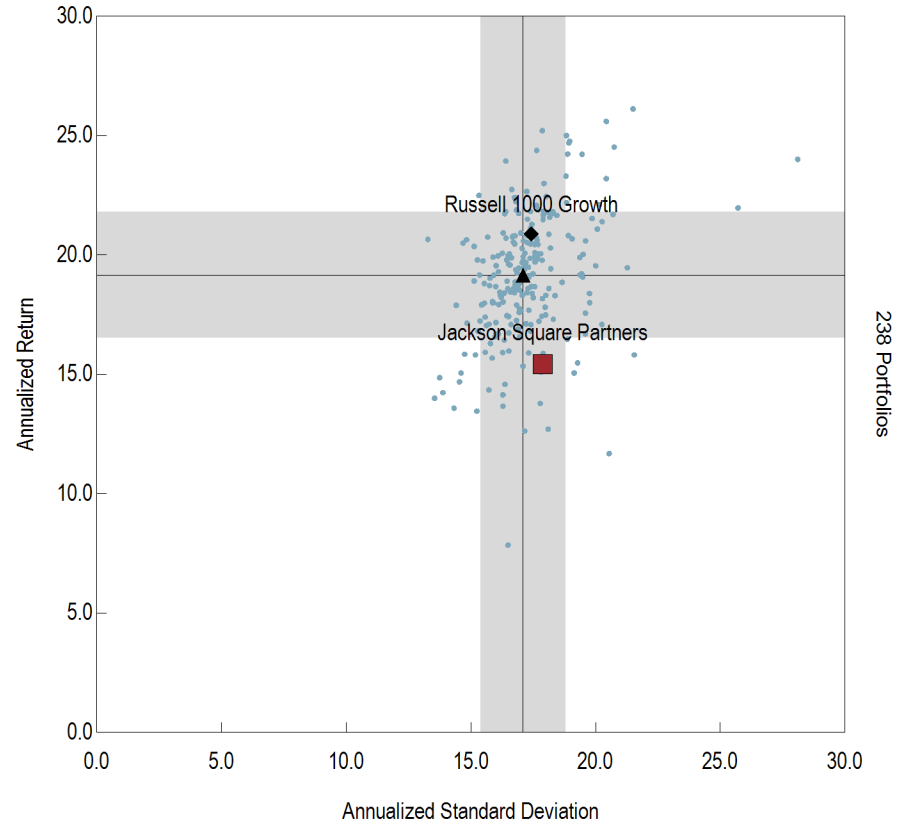
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Jackson Square Partners	15.8%	20.4%	0.7
Russell 1000 Growth	23.6%	19.5%	1.2
eV US Large Cap Growth Equity Gross Median	20.1%	18.9%	1.1

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Jackson Square Partners	15.4%	17.9%	0.8
Russell 1000 Growth	20.9%	17.4%	1.1
eV US Large Cap Growth Equity Gross Median	19.2%	17.1%	1.1

Boston Partners Manager Portfolio Overview

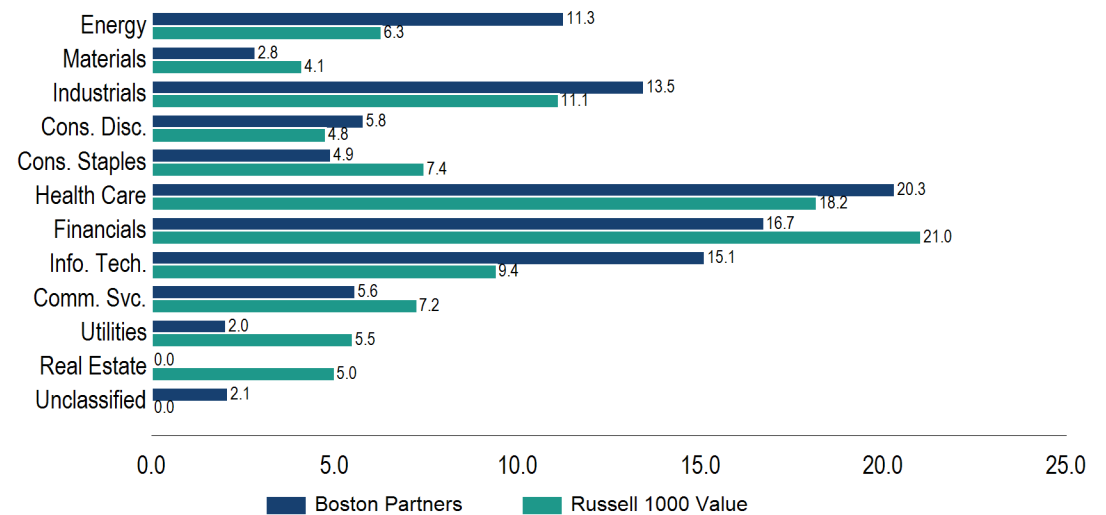
Period Ending: March 31, 2022

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

Characteristics

	Portfolio	Russell 1000 Value
Number of Holdings	83	848
Weighted Avg. Market Cap. (\$B)	199.23	169.56
Median Market Cap. (\$B)	57.56	14.67
Price To Earnings	17.98	17.09
Price To Book	2.66	2.68
Price To Sales	1.76	2.07
Return on Equity (%)	21.49	17.40
Yield (%)	1.60	1.98
Beta	1.11	1.00

Sector Allocation (%) vs Russell 1000 Value



Largest Holdings

	End Weight	Return
JOHNSON & JOHNSON	3.65	4.27
BERKSHIRE HATHAWAY INC	3.34	18.03
CONOCOPHILLIPS	3.29	39.22
ALPHABET INC	2.77	-3.99
JPMORGAN CHASE & CO	2.55	-13.39
UNITEDHEALTH GROUP INC	2.42	1.86
AUTOZONE INC	2.40	-2.47
CISCO SYSTEMS INC	2.13	-11.48
WELLS FARGO & CO	2.13	1.46
CIGNA CORP	1.81	4.86

Top Contributors

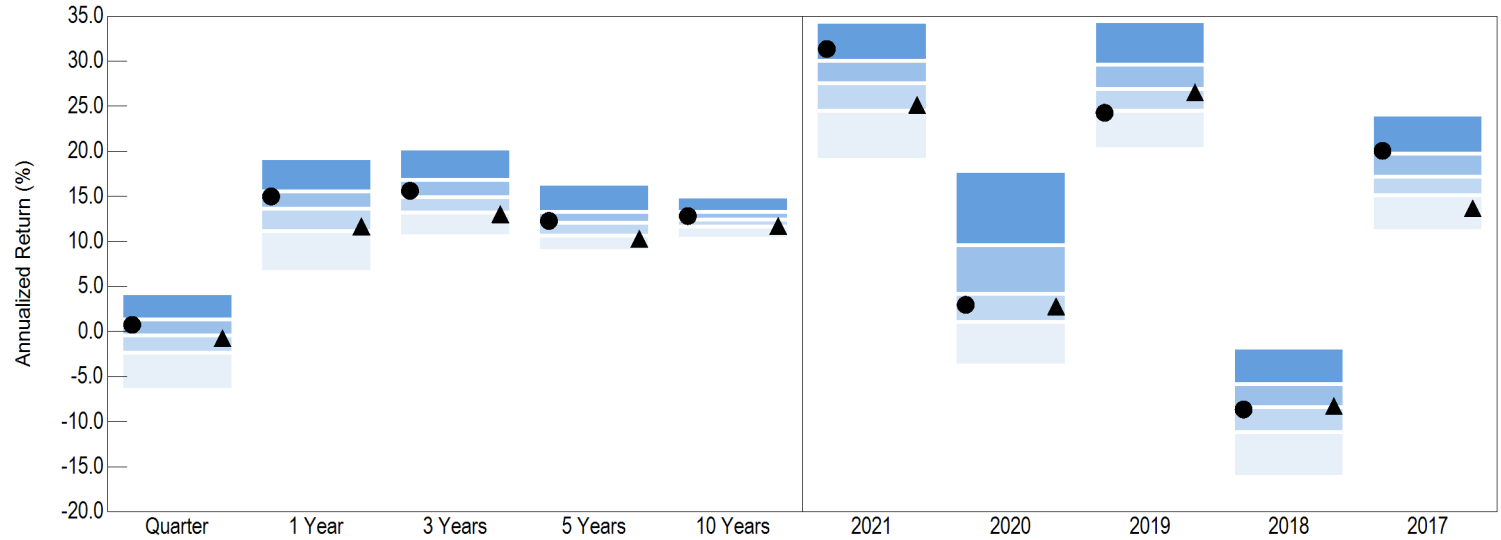
	Avg Wgt	Return	Contribution
CONOCOPHILLIPS	0.79	39.22	0.31
BERKSHIRE HATHAWAY INC	0.95	18.03	0.17
MARATHON PETROLEUM CORP	0.49	34.60	0.17
PIONEER NATURAL RESOURCES CO	0.41	39.74	0.16
CANADIAN NATURAL RESOURCES LTD	0.32	48.12	0.15
SCHLUMBERGER LTD	0.29	38.37	0.11
EOG RESOURCES INC.	0.30	36.38	0.11
DEERE & COMPANY	0.41	21.47	0.09
ABBVIE INC	0.40	20.99	0.08
GENERAL DYNAMICS CORP	0.49	16.34	0.08

Bottom Contributors

	Avg Wgt	Return	Contribution
META PLATFORMS INC	0.43	-33.89	-0.15
JPMORGAN CHASE & CO	0.96	-13.39	-0.13
QUALCOMM INC.	0.64	-16.10	-0.10
MICRON TECHNOLOGY INC.	0.60	-16.38	-0.10
CISCO SYSTEMS INC	0.82	-11.48	-0.09
MOHAWK INDUSTRIES INC.	0.29	-31.83	-0.09
AVANTOR INC	0.41	-19.74	-0.08
AXALTA COATING SYSTEMS LTD	0.31	-25.79	-0.08
SONY GROUP CORPORATION	0.41	-18.74	-0.08
VERTIV HOLDINGS CO	0.17	-43.93	-0.08

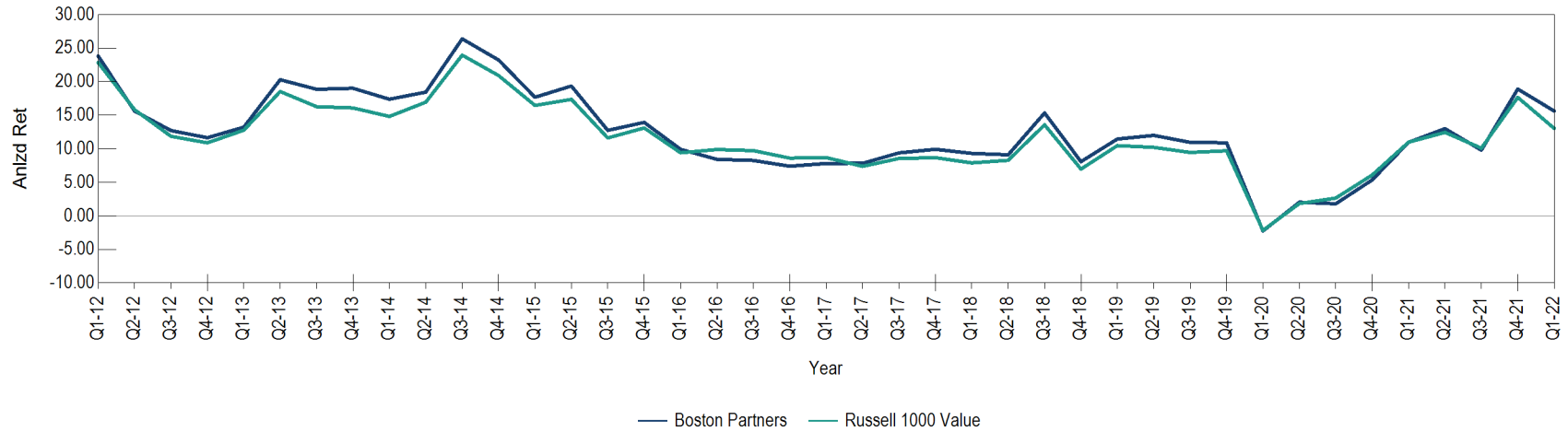
Unclassified sector allocation includes cash allocations.

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

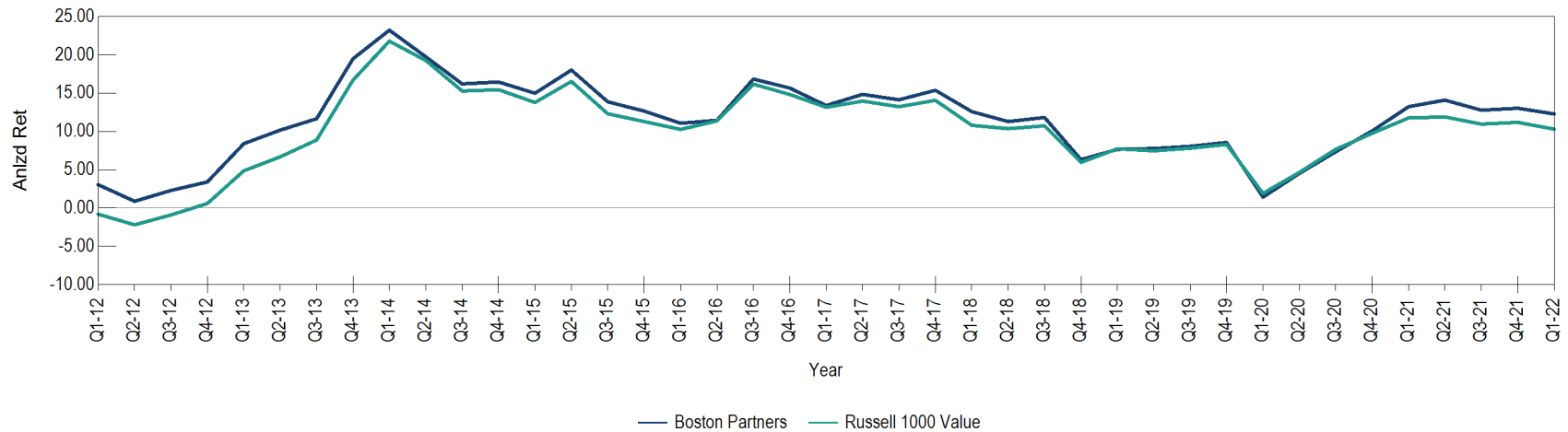


	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2021	2020	2019	2018	2017
5th Percentile	4.2	19.2	20.2	16.3	14.9	34.4	17.8	34.4	-1.8	24.0
25th Percentile	1.4	15.6	16.8	13.3	13.3	30.0	9.6	29.6	-5.8	19.8
Median	-0.4	13.7	15.0	12.1	12.5	27.6	4.2	26.9	-8.3	17.2
75th Percentile	-2.3	11.2	13.2	10.7	11.7	24.5	1.1	24.5	-11.1	15.1
95th Percentile	-6.5	6.6	10.6	9.0	10.3	19.1	-3.8	20.3	-16.1	11.2
# of Portfolios	339	339	327	315	279	337	326	331	336	342
● Boston Partners	0.7 (32)	15.0 (34)	15.6 (41)	12.3 (44)	12.8 (37)	31.3 (17)	3.0 (61)	24.3 (77)	-8.7 (55)	20.1 (23)
▲ Russell 1000 Value	-0.7 (56)	11.7 (72)	13.0 (80)	10.3 (84)	11.7 (75)	25.2 (72)	2.8 (62)	26.5 (54)	-8.3 (50)	13.7 (87)

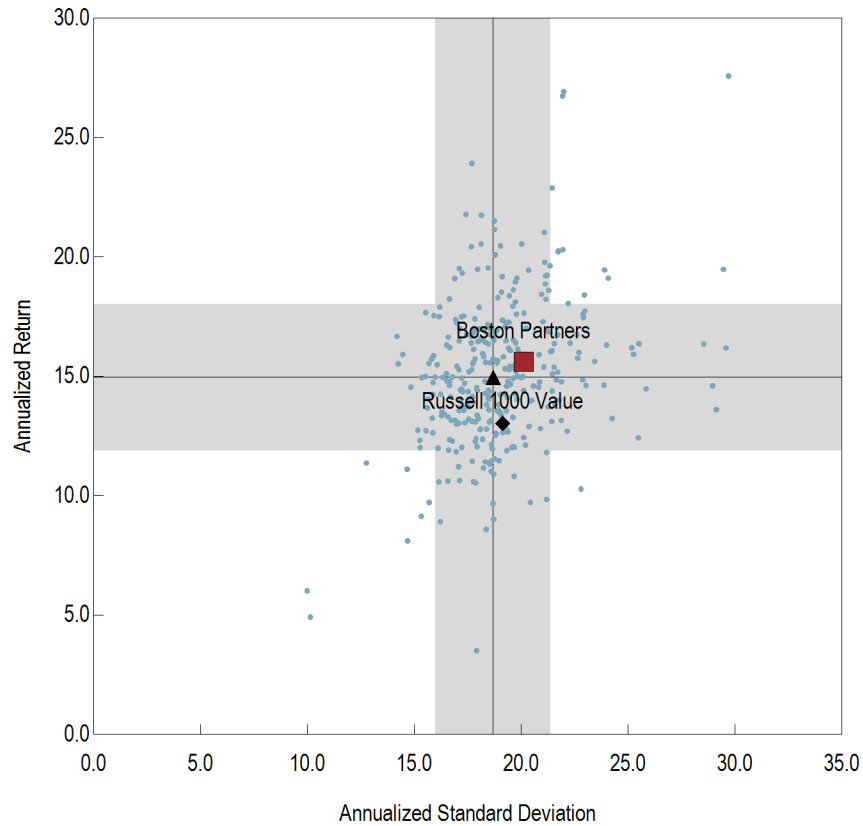
Rolling 3 Year Annualized Return (%)



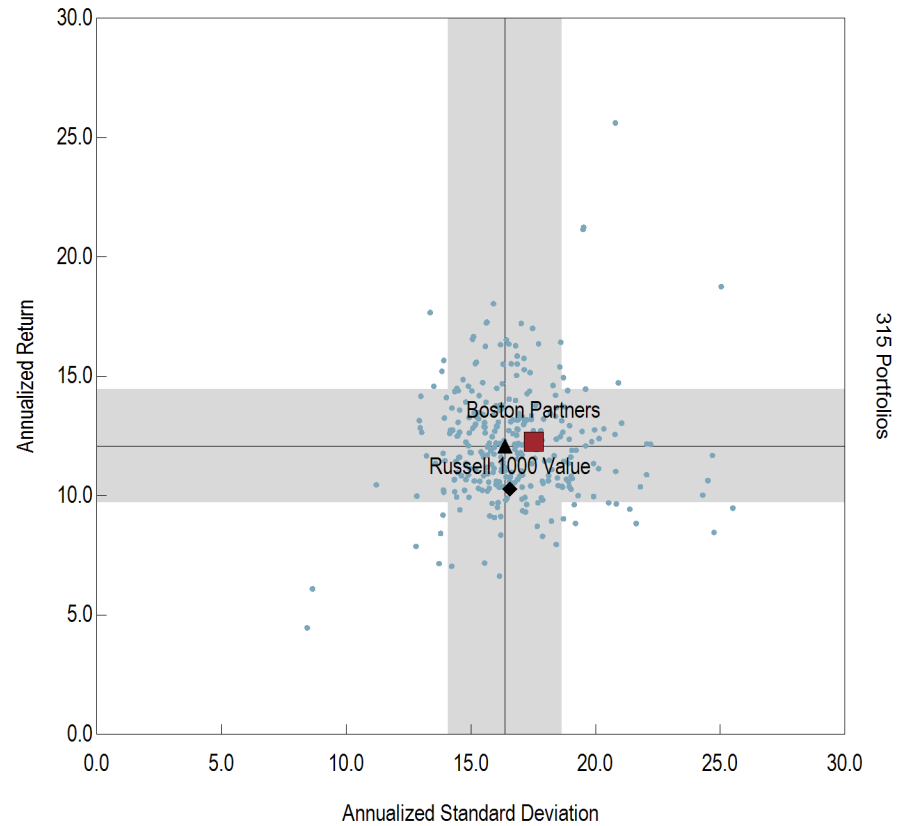
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Boston Partners	15.6%	20.1%	0.7
Russell 1000 Value	13.0%	19.1%	0.6
eV US Large Cap Value Equity Gross Median	15.0%	18.7%	0.8

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Boston Partners	12.3%	17.5%	0.6
Russell 1000 Value	10.3%	16.6%	0.6
eV US Large Cap Value Equity Gross Median	12.1%	16.4%	0.7

Emerald Advisers Manager Portfolio Overview

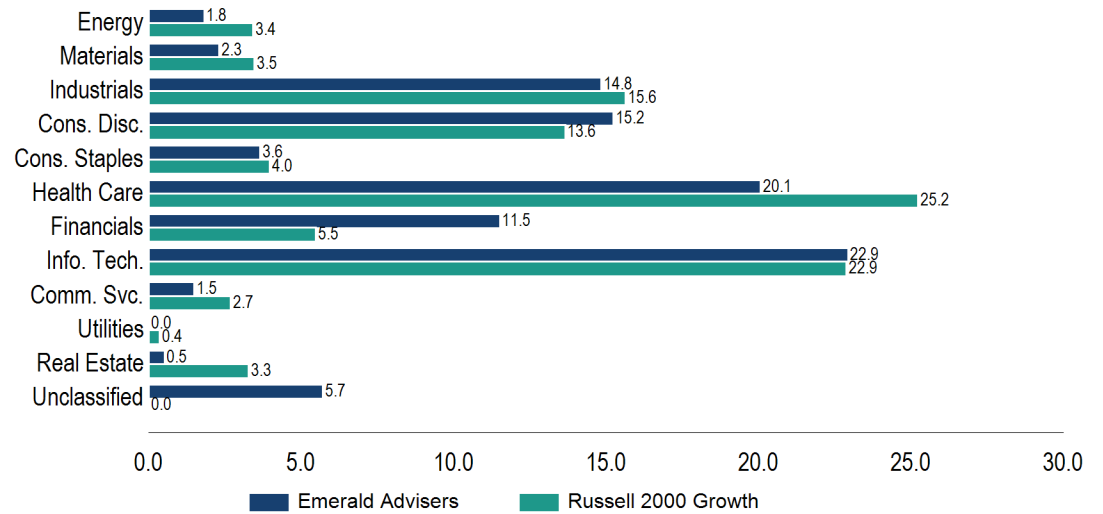
Period Ending: March 31, 2022

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

Characteristics

	Portfolio	Russell 2000 Growth
Number of Holdings	118	1,243
Weighted Avg. Market Cap. (\$B)	3.89	3.68
Median Market Cap. (\$B)	3.23	1.31
Price To Earnings	25.63	20.60
Price To Book	3.71	4.22
Price To Sales	3.20	2.01
Return on Equity (%)	5.58	1.39
Yield (%)	0.40	0.55
Beta	0.95	1.00

Sector Allocation (%) vs Russell 2000 Growth



Largest Holdings

	End Weight	Return
CHART INDUSTRIES INC	2.46	7.70
RAPID7 INC	2.44	-5.48
MACOM TECHNOLOGY SOLUTIONS HOLDINGS INC	2.19	-23.54
SIMPLY GOOD FOODS CO (THE)	1.91	-8.71
CHURCHILL DOWNS INC	1.86	-7.94
SEAWORLD ENTERTAINMENT INC	1.86	14.77
PERFICIENT INC	1.77	-14.85
VARONIS SYSTEMS INC	1.74	-2.54
FRESHPET INC	1.61	7.74
TRINET GROUP INC	1.61	3.25

Top Contributors

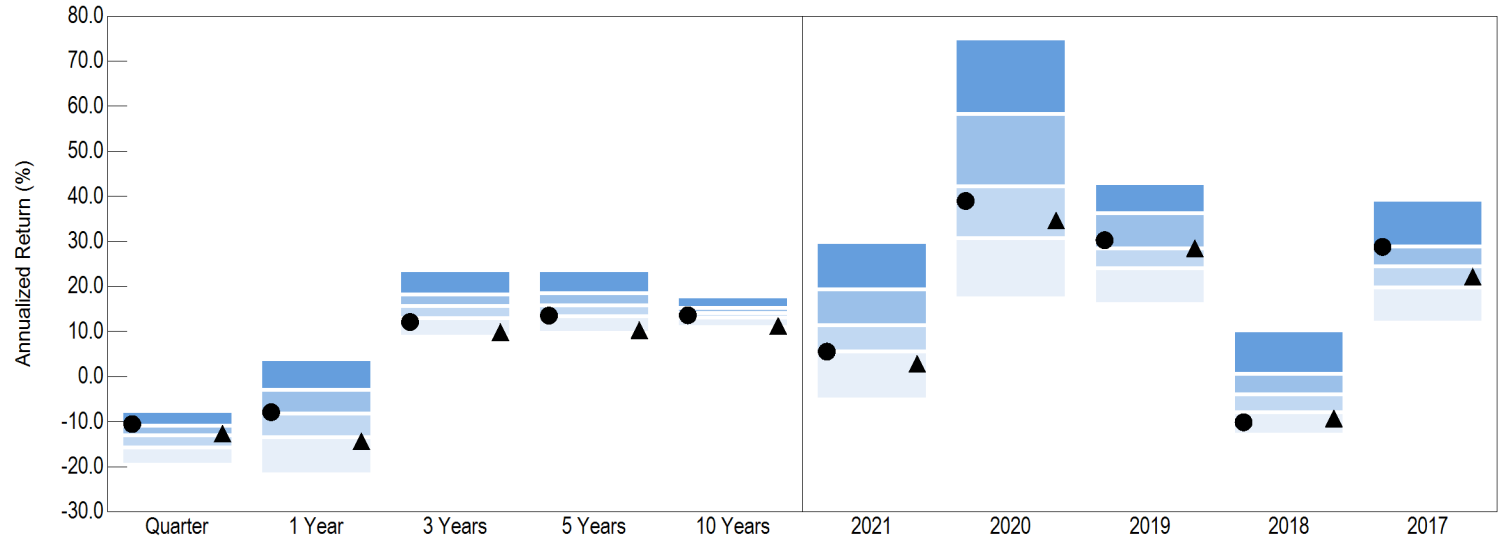
	Avg Wgt	Return	Contribution
CACTUS INC	0.17	49.14	0.08
SEAWORLD ENTERTAINMENT INC	0.49	14.77	0.07
CHART INDUSTRIES INC	0.66	7.70	0.05
ARIS WATER SOLUTION INC	0.10	42.09	0.04
PING IDENTITY HOLDING CORP	0.21	19.89	0.04
ALKERMES PLC	0.30	13.11	0.04
EASTERN BANKSHARES INC	0.51	7.29	0.04
FRESHPET INC	0.46	7.74	0.04
JACK IN THE BOX INC.	0.42	7.36	0.03
MERIT MEDICAL SYSTEMS INC	0.41	6.77	0.03

Bottom Contributors

	Avg Wgt	Return	Contribution
NEOGENOMICS INC	0.41	-64.39	-0.27
MACOM TECHNOLOGY SOLUTIONS HOLDINGS INC	0.87	-23.54	-0.21
LIVE OAK BANCSHARES INC	0.49	-41.67	-0.21
MOELIS & CO	0.61	-23.97	-0.15
BRP GROUP INC	0.53	-25.70	-0.14
TREX CO INC	0.26	-51.62	-0.13
REPLIMUNE GROUP INC	0.35	-37.34	-0.13
MONTROSE ENVIRONMENTAL GROUP INC	0.48	-24.93	-0.12

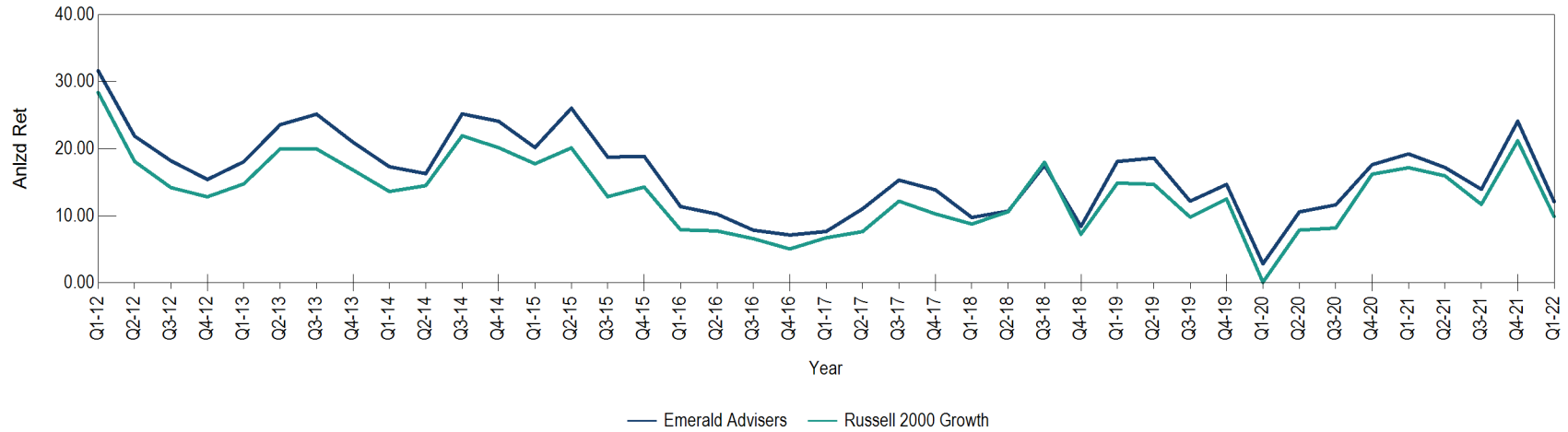
Unclassified sector allocation includes cash allocations.

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

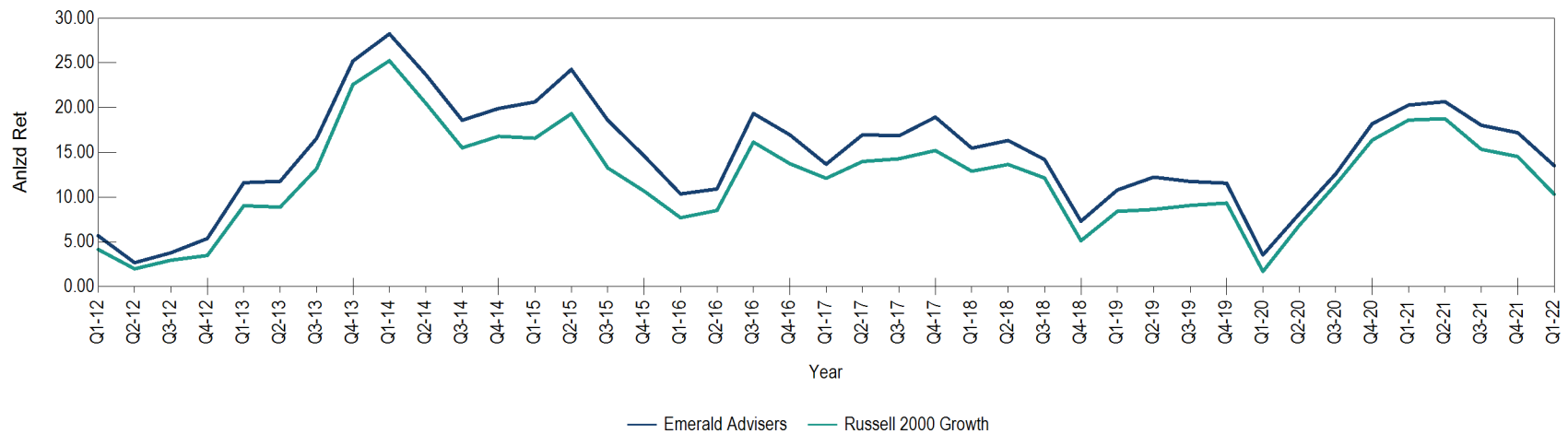


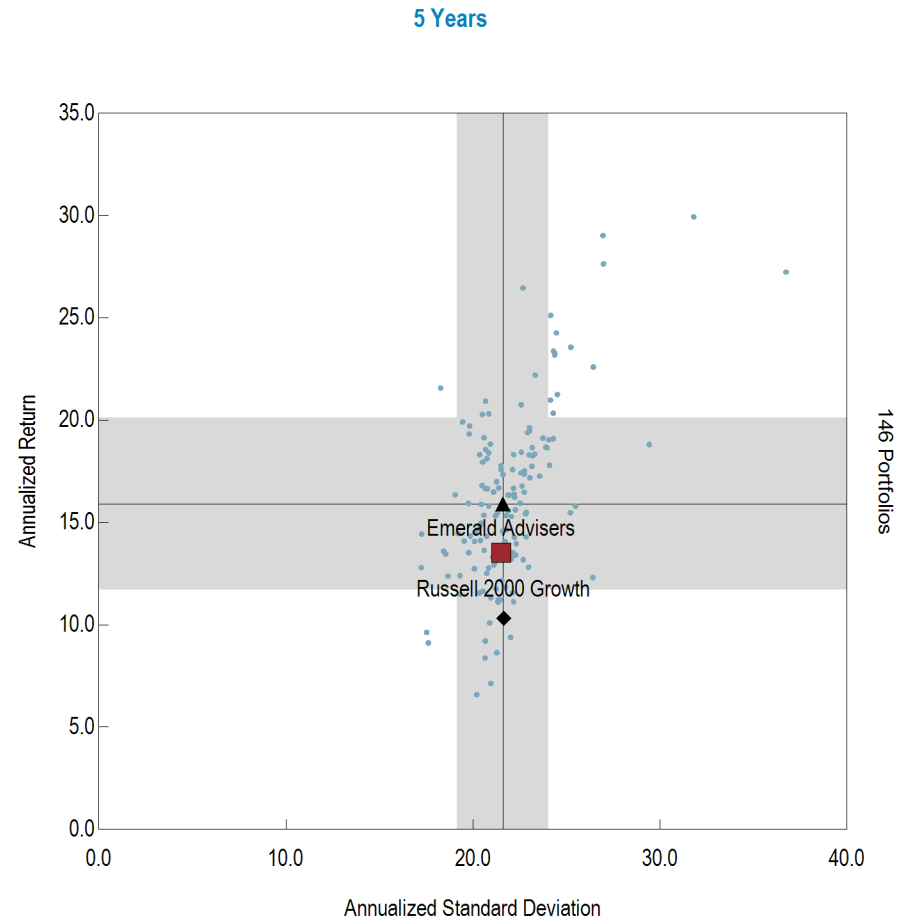
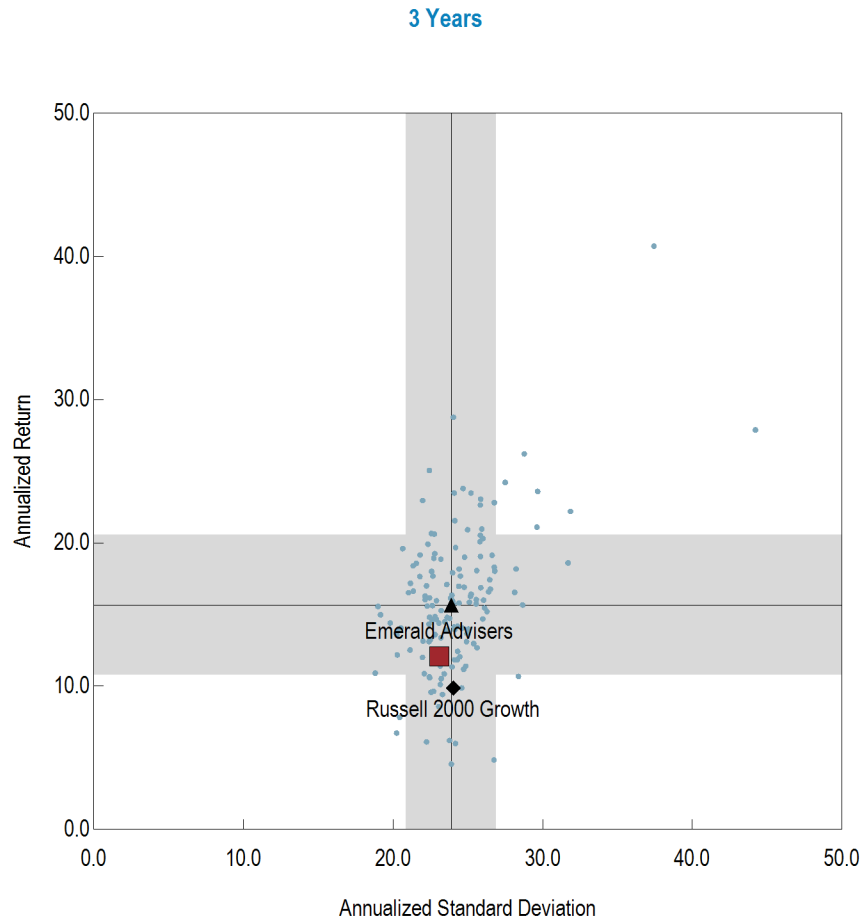
	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2021	2020	2019	2018	2017
5th Percentile	-7.6	3.7	23.6	23.5	17.7	29.8	75.0	42.8	10.2	39.2
25th Percentile	-10.8	-2.9	18.3	18.5	15.3	19.5	58.3	36.4	0.7	28.9
Median	-12.9	-8.2	15.7	15.9	14.2	11.5	42.2	28.5	-3.9	24.6
75th Percentile	-15.6	-13.3	13.1	13.4	13.2	5.7	30.8	24.2	-7.9	19.8
95th Percentile	-19.5	-21.6	8.9	9.7	11.0	-5.1	17.4	16.2	-12.8	12.1
# of Portfolios	151	151	149	146	126	158	161	157	164	174
● Emerald Advisers	-10.5 (23)	-7.9 (49)	12.1 (81)	13.5 (74)	13.6 (65)	5.5 (76)	39.0 (57)	30.3 (45)	-10.1 (85)	28.8 (26)
▲ Russell 2000 Growth	-12.6 (48)	-14.3 (79)	9.9 (93)	10.3 (95)	11.2 (95)	2.8 (84)	34.6 (66)	28.5 (51)	-9.3 (80)	22.2 (62)

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)





	3 Years		
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Emerald Advisers	12.1%	23.1%	0.5
Russell 2000 Growth	9.9%	24.0%	0.4
eV US Small Cap Growth Equity Gross Median	15.7%	23.9%	0.6

	5 Years		
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Emerald Advisers	13.5%	21.5%	0.6
Russell 2000 Growth	10.3%	21.7%	0.4
eV US Small Cap Growth Equity Gross Median	15.9%	21.6%	0.7

Ceredex Manager Portfolio Overview

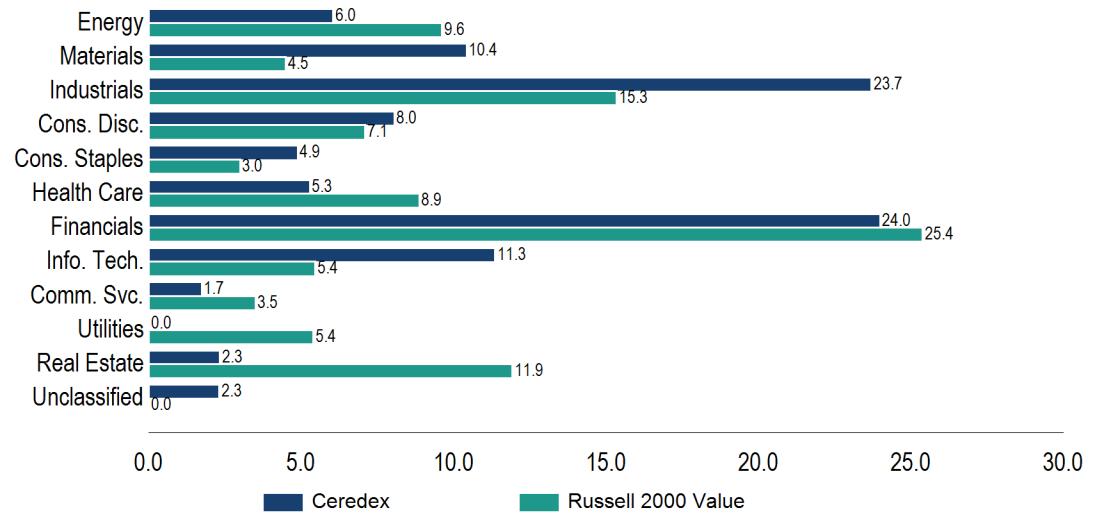
Period Ending: March 31, 2022

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

Characteristics

	Portfolio	Russell 2000 Value
Number of Holdings	71	1,435
Weighted Avg. Market Cap. (\$B)	5.86	3.16
Median Market Cap. (\$B)	3.95	1.12
Price To Earnings	15.74	13.12
Price To Book	2.54	1.78
Price To Sales	1.34	1.29
Return on Equity (%)	17.21	6.74
Yield (%)	1.96	1.84
Beta	0.86	1.00

Sector Allocation (%) vs Russell 2000 Value



Largest Holdings

	End Weight	Return
POWER INTEGRATIONS INC	4.16	-0.03
OVINTIV INC	3.95	61.18
SLM CORP	3.59	-6.11
FIRST CITIZENS BANCSHARES INC	3.40	-19.74
APTARGROUP INC.	3.29	-4.07
RPM INTERNATIONAL INC	3.26	-19.01
KEMPER CORP	3.10	-3.24
STANTEC INC	2.98	-10.61
LENNOX INTERNATIONAL INC.	2.77	-20.23
EMCOR GROUP INC.	2.62	-11.50

Top Contributors

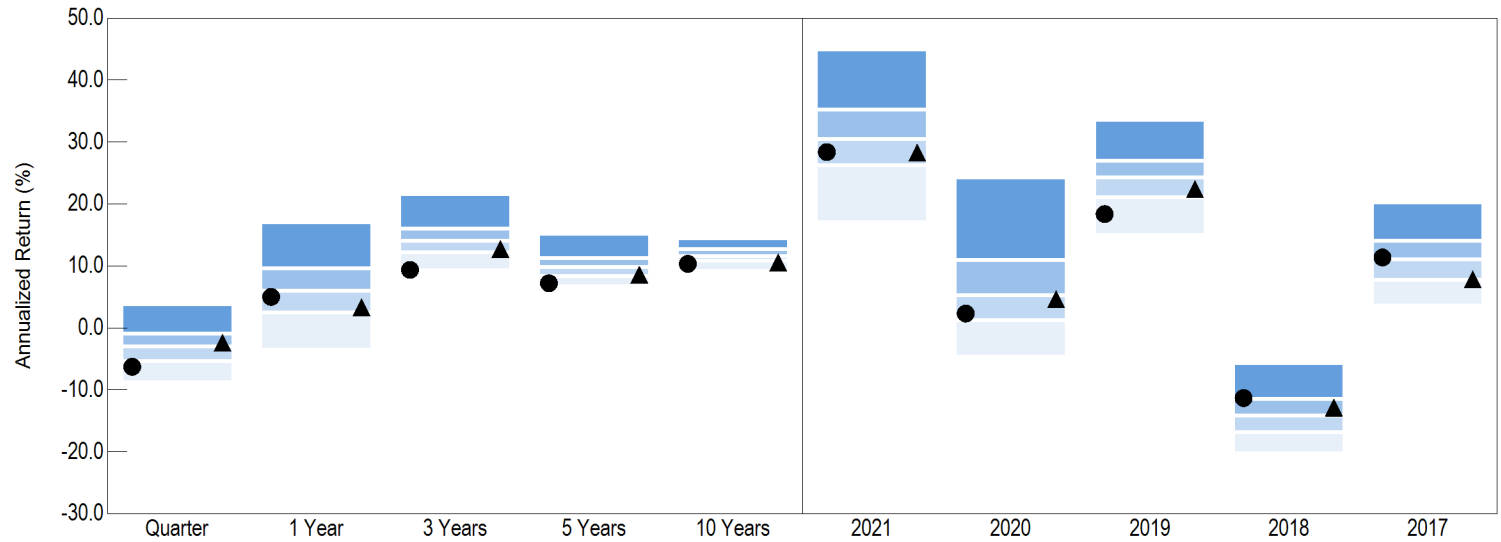
	Avg Wgt	Return	Contribution
OVINTIV INC	1.23	61.80	0.76
PATTERSON COS INC	0.68	11.32	0.08
KBR INC	0.48	15.19	0.07
HORACE MANN EDUCATORS CORP	0.30	8.94	0.03
AMERICAN FINANCIAL GROUP INC	0.33	8.04	0.03
CATHAY GENERAL BANCORP	0.40	4.87	0.02
FIRST HAWAIIAN INC	0.46	2.97	0.01
OWENS & MINOR INC.	1.08	1.20	0.01
PRICESMART INC	0.13	8.45	0.01
ZIONS BANCORPORATION	0.26	4.33	0.01

Bottom Contributors

	Avg Wgt	Return	Contribution
FIRST CITIZENS BANCSHARES INC	1.18	-19.74	-0.23
AZENTA INC	0.98	-19.62	-0.19
RPM INTERNATIONAL INC	0.99	-19.01	-0.19
EVERCORE INC	0.87	-17.61	-0.15
ENERGIZER HOLDINGS INC	0.58	-22.62	-0.13
TEMPUR SEALY INTERNATIONAL INC	0.30	-40.43	-0.12
JEFFERIES FINANCIAL GROUP INC	0.82	-14.66	-0.12
LITTELFUSE INC	0.58	-20.57	-0.12
STANTEC INC	1.06	-10.31	-0.11
EMCOR GROUP INC.	0.88	-11.50	-0.10

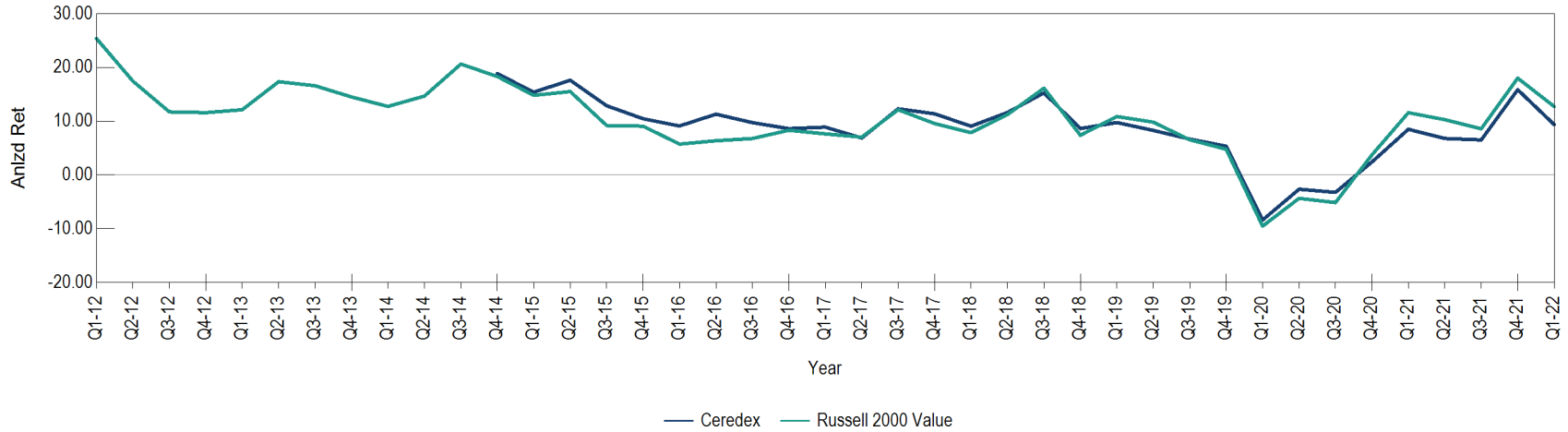
Unclassified sector allocation includes cash allocations.

Ceredex vs. eV US Small Cap Value Equity Gross Universe

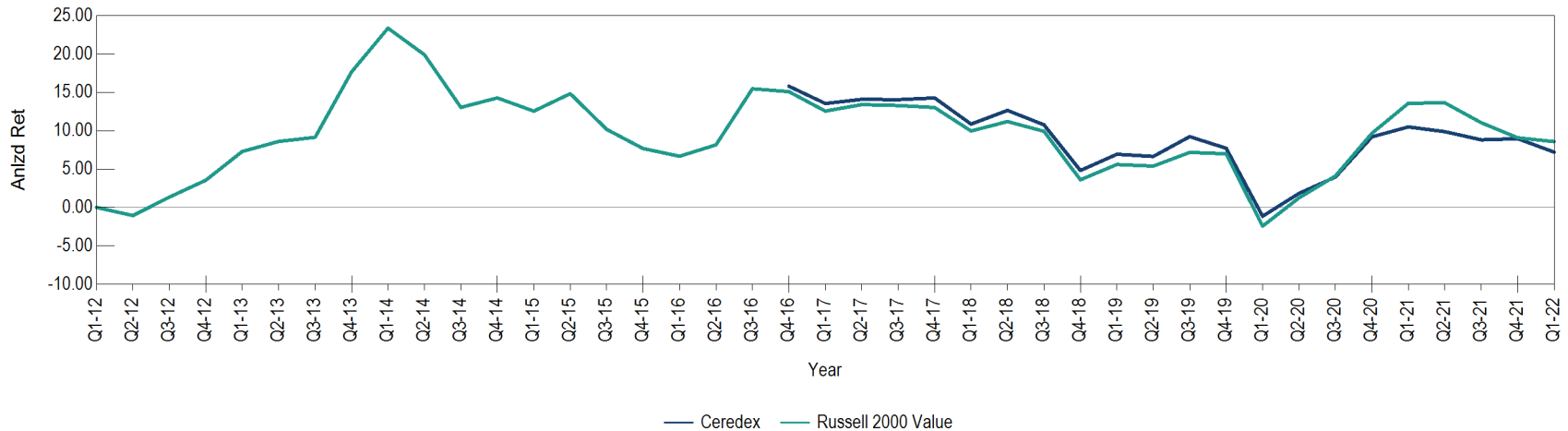


	Quarter	1 Year	3 Years	5 Years	10 Years	2021	2020	2019	2018	2017
5th Percentile	3.7	17.0	21.6	15.2	14.4	44.9	24.2	33.6	-5.7	20.2
25th Percentile	-0.9	9.6	16.1	11.3	12.8	35.3	11.1	27.0	-11.4	14.1
Median	-2.9	6.1	14.2	9.9	11.7	30.5	5.3	24.4	-14.0	11.1
75th Percentile	-5.3	2.6	12.2	8.4	10.9	26.3	1.3	21.2	-16.7	7.8
95th Percentile	-8.8	-3.4	9.4	6.8	9.3	17.1	-4.6	15.0	-20.2	3.7
# of Portfolios	210	210	207	195	173	210	219	217	220	224
● Ceredex	-6.3 (84)	5.0 (57)	9.4 (95)	7.2 (92)	10.3 (86)	28.4 (60)	2.3 (69)	18.4 (87)	-11.3 (25)	11.4 (48)
▲ Russell 2000 Value	-2.4 (40)	3.3 (69)	12.7 (67)	8.6 (74)	10.5 (81)	28.3 (60)	4.6 (53)	22.4 (69)	-12.9 (39)	7.8 (75)

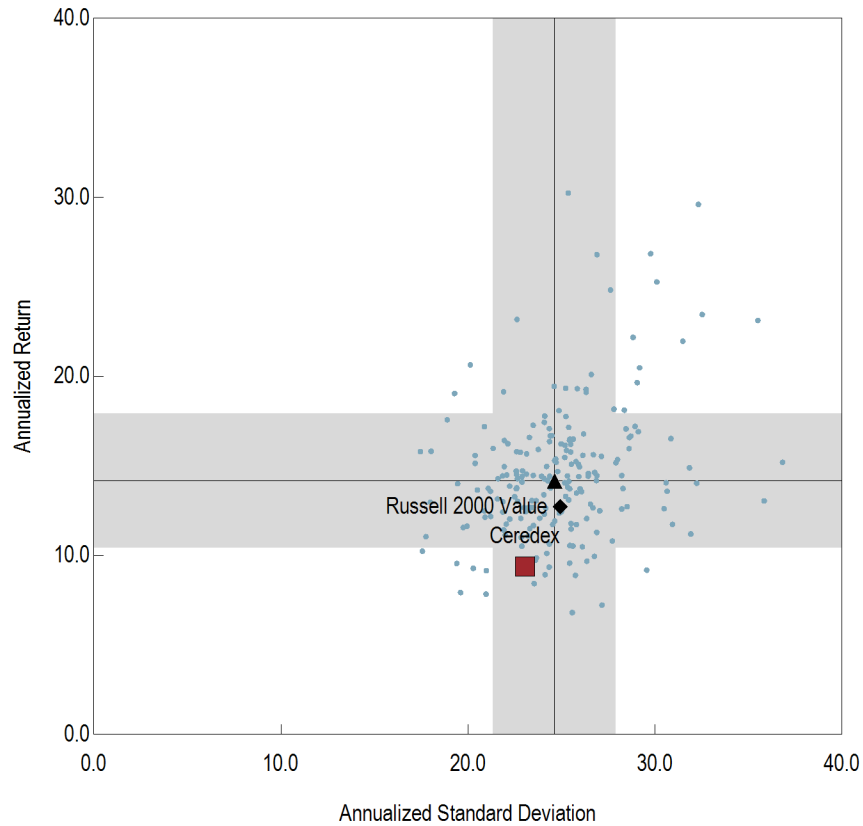
Rolling 3 Year Annualized Return (%)



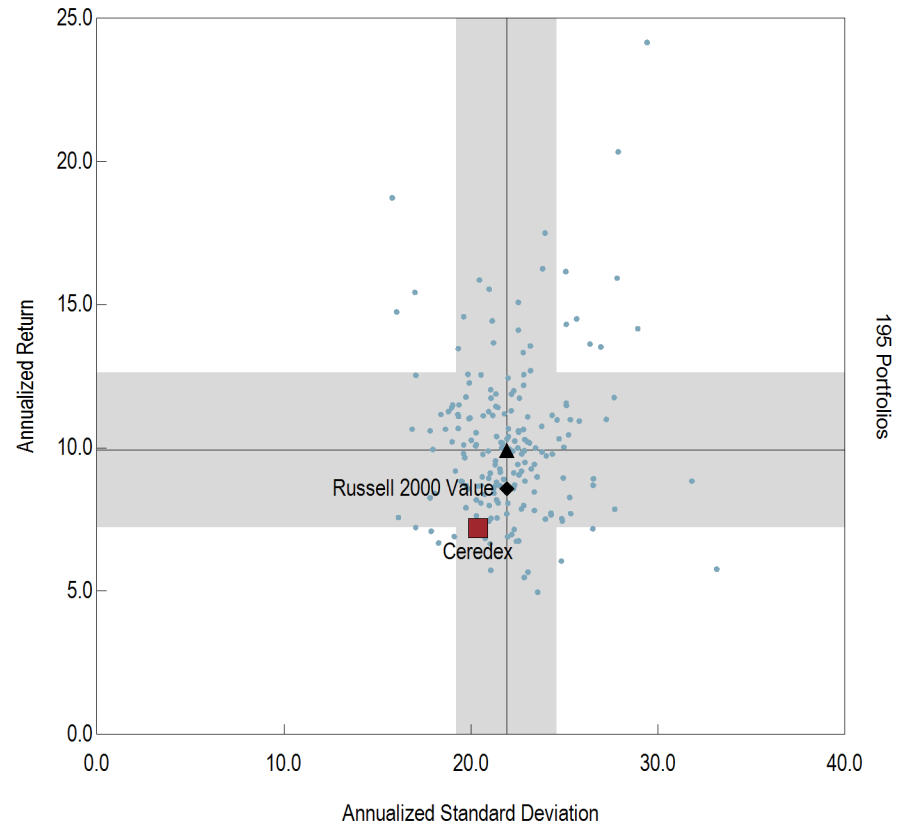
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Ceredex	9.4%	23.1%	0.4
Russell 2000 Value	12.7%	24.9%	0.5
eV US Small Cap Value Equity Gross Median	14.2%	24.6%	0.5

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Ceredex	7.2%	20.4%	0.3
Russell 2000 Value	8.6%	21.9%	0.3
eV US Small Cap Value Equity Gross Median	9.9%	21.9%	0.4

International Equity Managers

Pyrford Manager Portfolio Overview

Period Ending: March 31, 2022

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

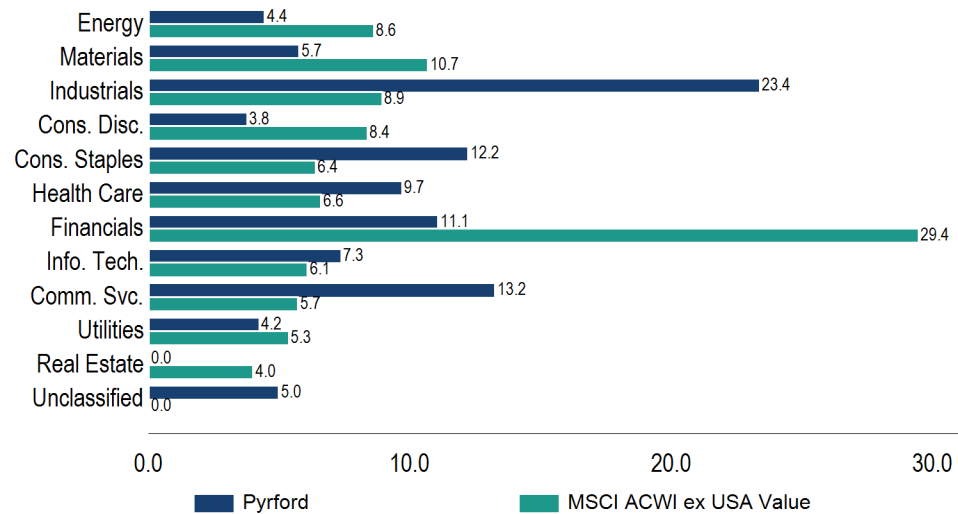
Characteristics

	MSCI ACWI Portfolio	MSCI ACWI ex USA Value
Number of Holdings	67	1,433
Weighted Avg. Market Cap. (\$B)	71.18	71.48
Median Market Cap. (\$B)	25.66	9.52
Price To Earnings	16.48	10.71
Price To Book	2.37	1.82
Price To Sales	1.70	0.94
Return on Equity (%)	15.17	12.19
Yield (%)	3.69	4.05
Beta	0.68	1.00

Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	86.7%	72.4%
Emerging*	8.7%	27.6%
Top 10 Largest Countries		
Japan	14.0%	14.3%
Switzerland	12.1%	5.3%
United Kingdom	10.5%	12.3%
Australia	10.0%	5.5%
Germany	9.8%	6.8%
France	8.1%	6.4%
Singapore	6.4%	0.9%
Hong Kong	5.0%	1.7%
Cash	4.6%	0.0%
Netherlands	4.4%	1.1%
Total-Top 10 Largest Countries	84.8%	54.4%

Sector Allocation (%) vs MSCI ACWI ex USA Value



Top Contributors

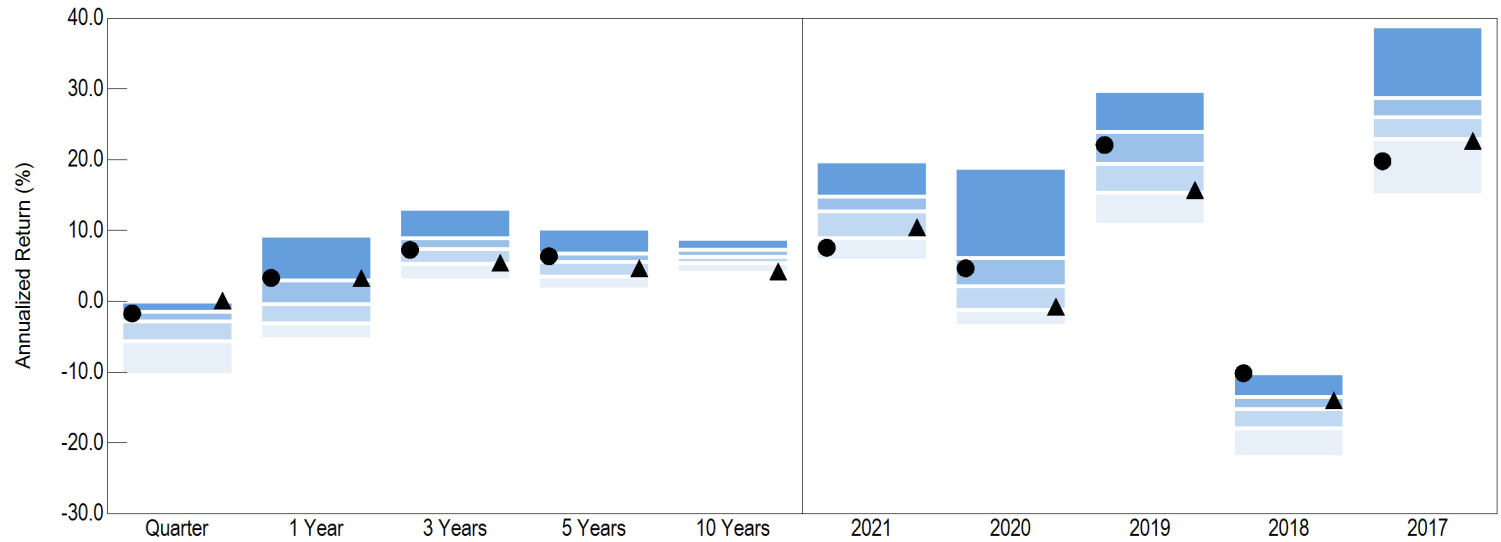
	Avg Wgt	Return	Contribution
WOODSIDE PETROLEUM LTD	1.87	58.92	1.10
COMPUTERSHARE LTD CPU	1.80	28.76	0.52
UNITED OVERSEAS BANK LTD	1.94	18.53	0.36
RIO TINTO GROUP	1.10	30.11	0.33
KDDI CORP	2.07	14.79	0.31
BRITISH AMERICAN TOBACCO PLC	1.87	15.34	0.29
SINGAPORE TELECOMMUNICATIONS LTD	1.92	13.31	0.26
MALAYAN BANKING BHD MAYBANK	2.08	10.13	0.21

Bottom Contributors

	Avg Wgt	Return	Contribution
JAPAN TOBACCO INC	3.10	-14.78	-0.46
DEUTSCHE POST AG	1.78	-24.77	-0.44
SAP SE	2.02	-20.92	-0.42
FUCHS PETROLUB SE	1.77	-19.80	-0.35
UNILEVER PLC COMMON STOCK GBP.0311	1.99	-14.17	-0.28
LEGAL & GENERAL GROUP PLC	2.19	-11.25	-0.25
LEGRAND	1.32	-18.01	-0.24
KONE OYJ	1.02	-23.12	-0.24
FIELMANN AG, HAMBURG	1.26	-18.43	-0.23
NESTLE SA, CHAM UND VEVEY	3.19	-6.63	-0.21

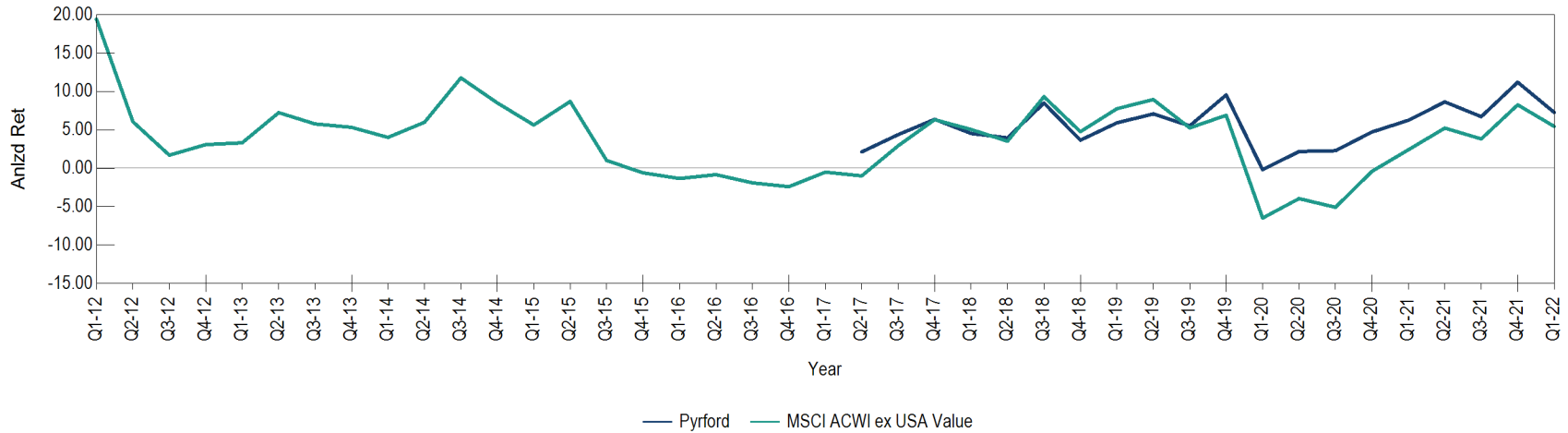
Unclassified sector allocation includes cash allocations.

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

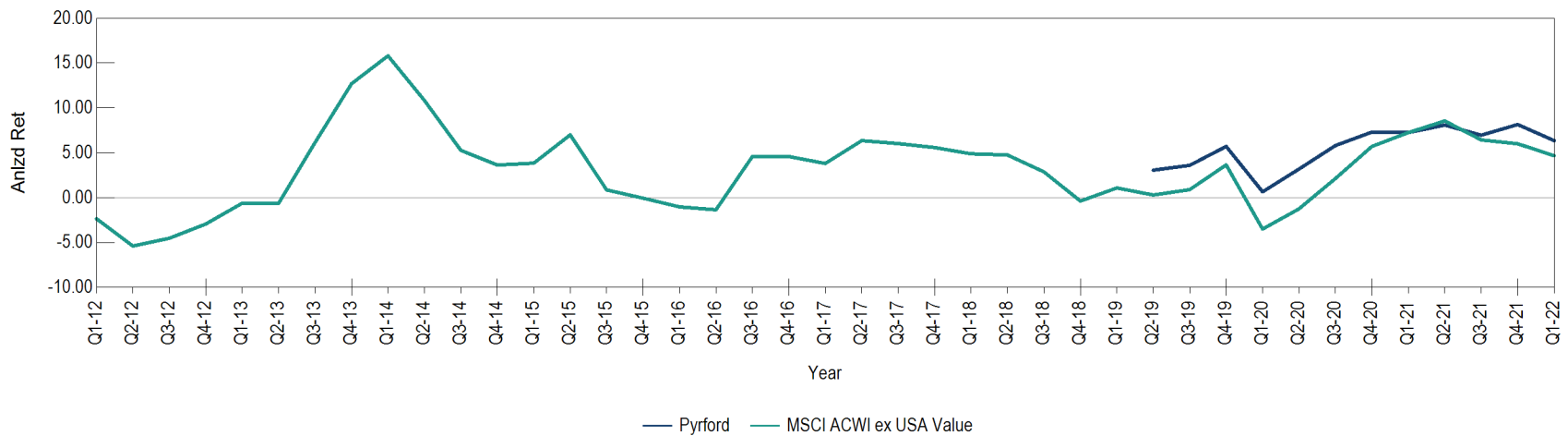


	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2021	2020	2019	2018	2017
5th Percentile	-0.1	9.2	13.0	10.2	8.8	19.7	18.8	29.6	-10.2	38.8
25th Percentile	-1.5	3.0	9.0	6.8	7.3	14.8	6.2	24.0	-13.4	28.8
Median	-2.8	-0.3	7.4	5.6	6.4	12.8	2.1	19.5	-15.2	26.0
75th Percentile	-5.6	-3.0	5.3	3.5	5.4	8.9	-1.2	15.4	-17.9	23.0
95th Percentile	-10.4	-5.4	3.0	1.8	4.1	5.8	-3.5	10.8	-21.9	15.0
# of Portfolios	46	46	45	43	33	46	49	52	54	56
● Pyrford	-1.7 (31)	3.3 (25)	7.3 (51)	6.4 (35)	-- (--)	7.6 (84)	4.7 (33)	22.1 (35)	-10.1 (5)	19.8 (84)
▲ MSCI ACWI ex USA Value	0.1 (5)	3.3 (25)	5.4 (74)	4.7 (64)	4.2 (94)	10.5 (69)	-0.8 (73)	15.7 (74)	-14.0 (32)	22.7 (77)

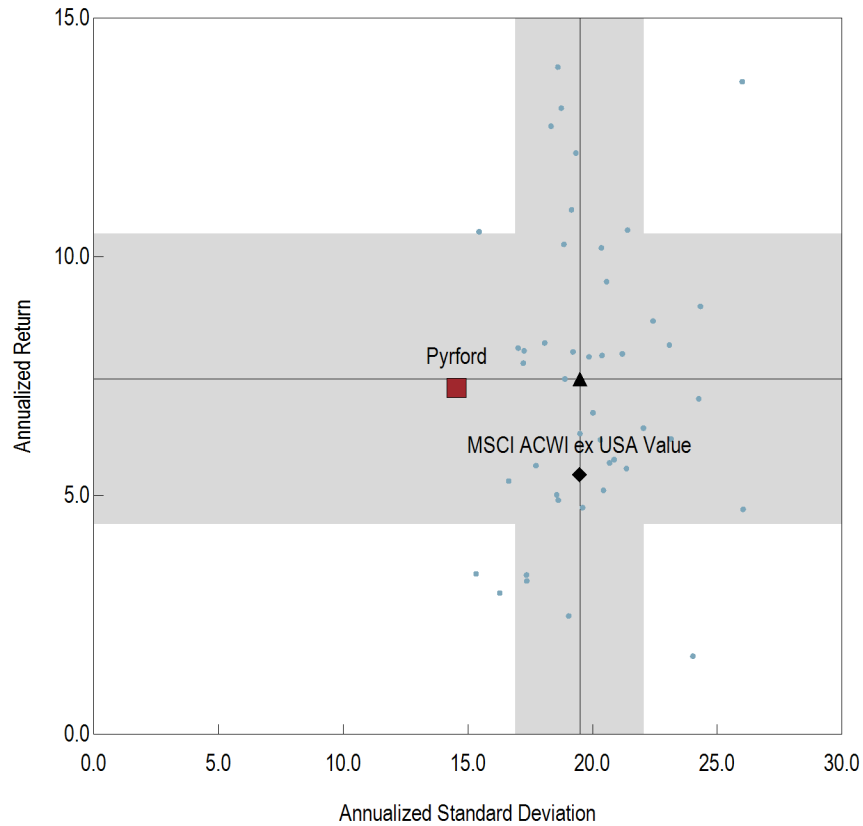
Rolling 3 Year Annualized Return (%)



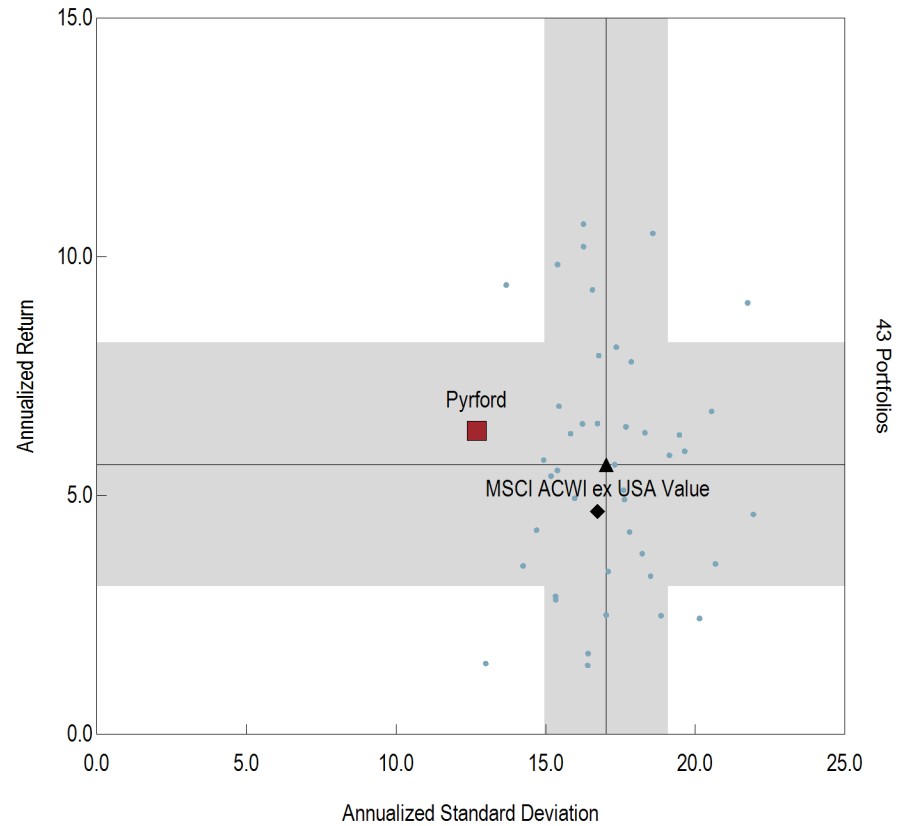
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Pyrford	7.3%	14.5%	0.5
MSCI ACWI ex USA Value	5.4%	19.5%	0.2
eV ACWI ex-US Value Equity Gross Median	7.4%	19.5%	0.3

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Pyrford	6.4%	12.7%	0.4
MSCI ACWI ex USA Value	4.7%	16.7%	0.2
eV ACWI ex-US Value Equity Gross Median	5.6%	17.0%	0.3

William Blair Manager Portfolio Overview

Period Ending: March 31, 2022

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

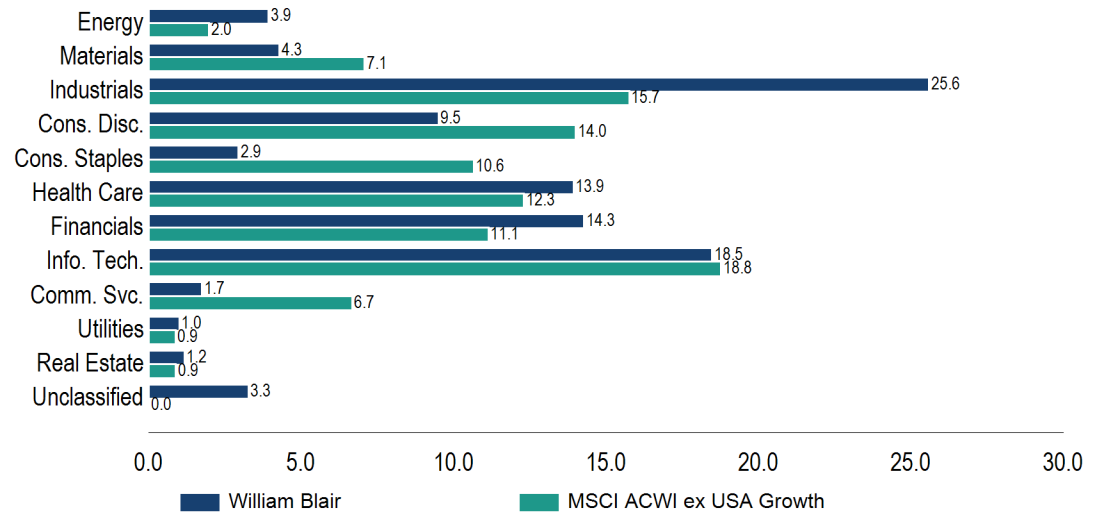
Characteristics

	MSCI ACWI Portfolio	MSCI ACWI ex USA Growth
Number of Holdings	171	1,184
Weighted Avg. Market Cap. (\$B)	73.85	118.17
Median Market Cap. (\$B)	12.93	10.23
Price To Earnings	29.32	22.15
Price To Book	4.53	3.65
Price To Sales	4.58	2.83
Return on Equity (%)	18.07	18.72
Yield (%)	1.17	1.53
Beta	1.18	1.00

Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	79.5%	70.4%
Emerging*	17.4%	29.6%
Top 10 Largest Countries		
United Kingdom	12.7%	6.8%
France	9.4%	8.0%
Japan	7.6%	13.8%
India*	6.8%	4.0%
Switzerland	6.6%	7.9%
Canada	6.4%	8.0%
Netherlands	5.7%	4.5%
Sweden	5.6%	3.2%
Denmark	5.0%	3.0%
Germany	4.8%	3.5%
Total-Top 10 Largest Countries	70.5%	62.8%

Sector Allocation (%) vs MSCI ACWI ex USA Growth



Top Contributors

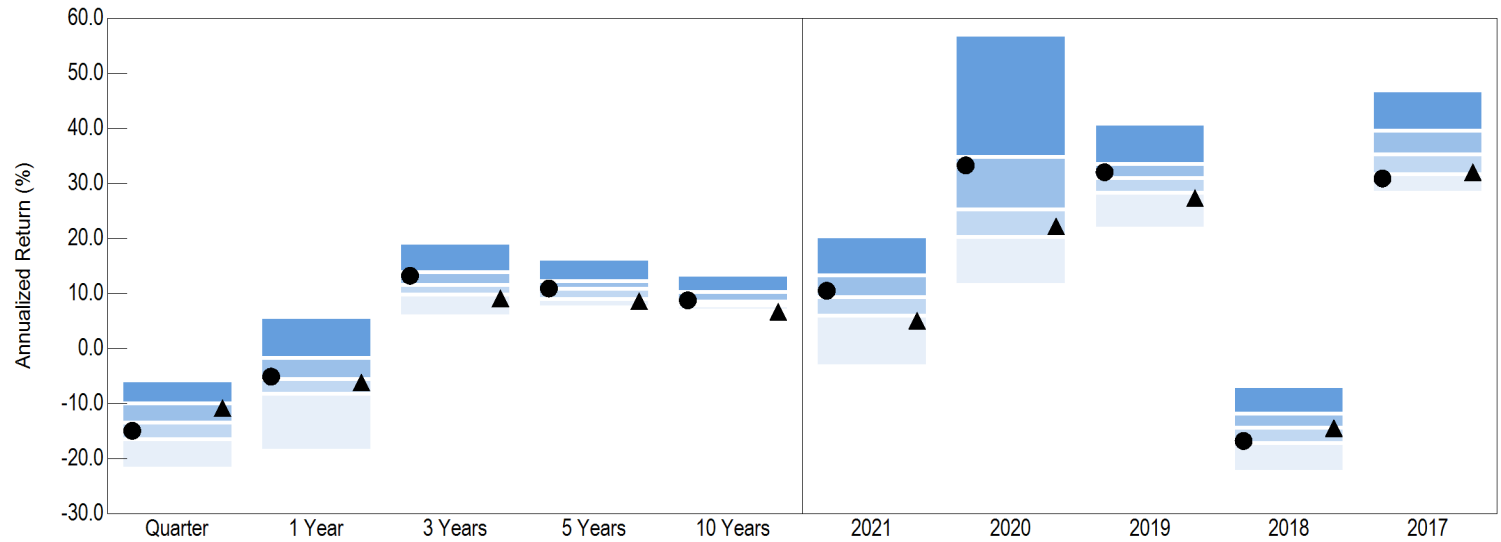
	Avg Wgt	Return	Contribution
CANADIAN NATIONAL RAILWAY CO	1.70	9.90	0.17
MTU AERO ENGINES AG	1.07	14.72	0.16
RELIANCE INDUSTRIES LTD	1.61	9.23	0.15
B3 S.A.-BRASIL BOLSA BALCAO	0.20	68.11	0.13
PT BANK CENTRAL ASIA TBK	1.25	10.09	0.13
TENARIS SA, LUXEMBOURG	0.22	45.88	0.10
LONDON STOCK EXCHANGE GROUP PLC	0.78	11.59	0.09
AIA GROUP LTD	1.40	4.44	0.06
MONSIEUR	0.05	00.17	0.05

Bottom Contributors

	Avg Wgt	Return	Contribution
ATLAS COPCO AB	1.88	-23.93	-0.45
ASHTREAD GROUP PLC	1.91	-20.92	-0.40
SIKA AG, BAAR	1.87	-19.96	-0.37
ASML HOLDING NV	2.28	-15.69	-0.36
MEDIATEK INCORPORATION	1.34	-26.43	-0.36
SEA LTD	0.70	-46.45	-0.32
PARTNERS GROUP AG	1.29	-24.50	-0.32
KEYENCE CORP	1.27	-24.77	-0.31
DSV A/S	1.78	-16.60	-0.30
YANDEX NV	0.42	-68.69	-0.29

Unclassified sector allocation includes cash allocations.

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

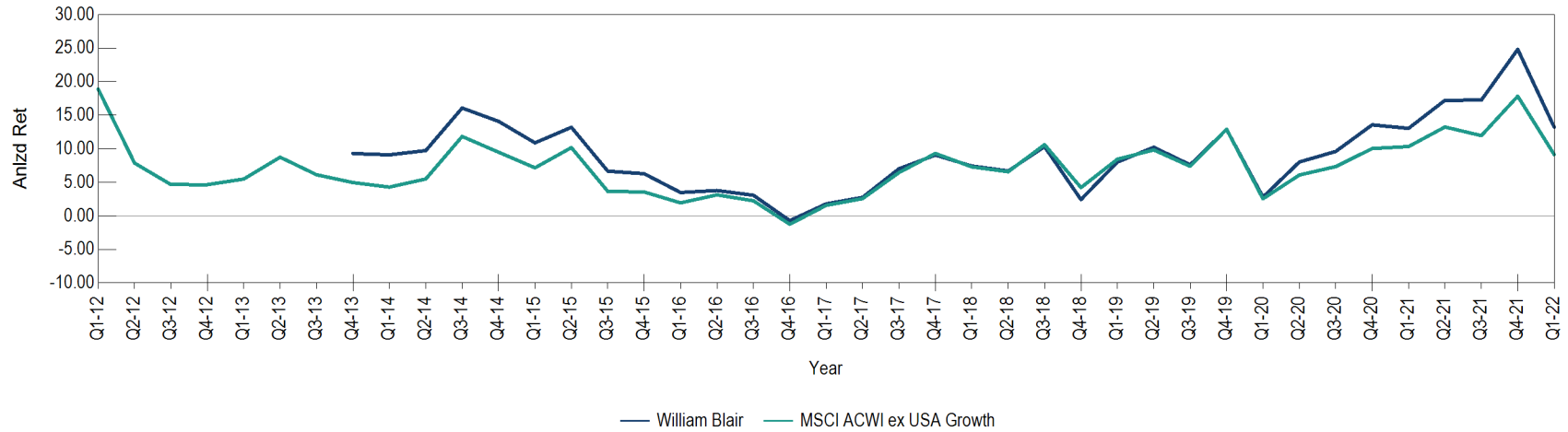


	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2021	2020	2019	2018	2017
5th Percentile	-5.8	5.7	19.1	16.2	13.3	20.3	57.0	40.8	-6.8	46.8
25th Percentile	-9.8	-1.7	13.9	12.3	10.3	13.4	34.8	33.6	-11.7	39.6
Median	-13.4	-5.5	11.6	10.9	8.6	9.3	25.4	31.0	-14.3	35.3
75th Percentile	-16.4	-8.1	9.8	9.1	7.9	6.1	20.3	28.3	-17.2	31.8
95th Percentile	-21.7	-18.5	5.9	7.6	7.0	-3.1	11.6	21.8	-22.3	28.3
# of Portfolios	103	103	95	87	60	102	95	93	82	94
● William Blair	-14.9 (69)	-5.1 (47)	13.2 (35)	10.9 (50)	8.7 (46)	10.5 (44)	33.3 (30)	32.0 (39)	-16.8 (69)	30.9 (81)
▲ MSCI ACWI ex USA Growth	-10.8 (35)	-6.2 (56)	9.1 (78)	8.6 (82)	6.7 (98)	5.1 (78)	22.2 (64)	27.3 (80)	-14.4 (51)	32.0 (75)

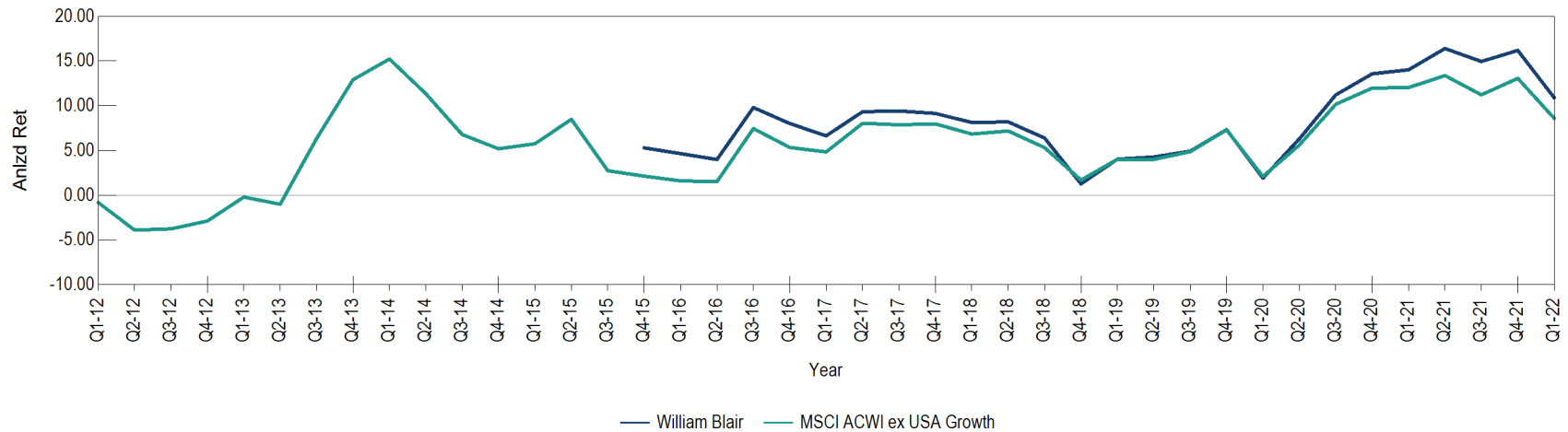
William Blair
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees)

Period Ending: March 31, 2022

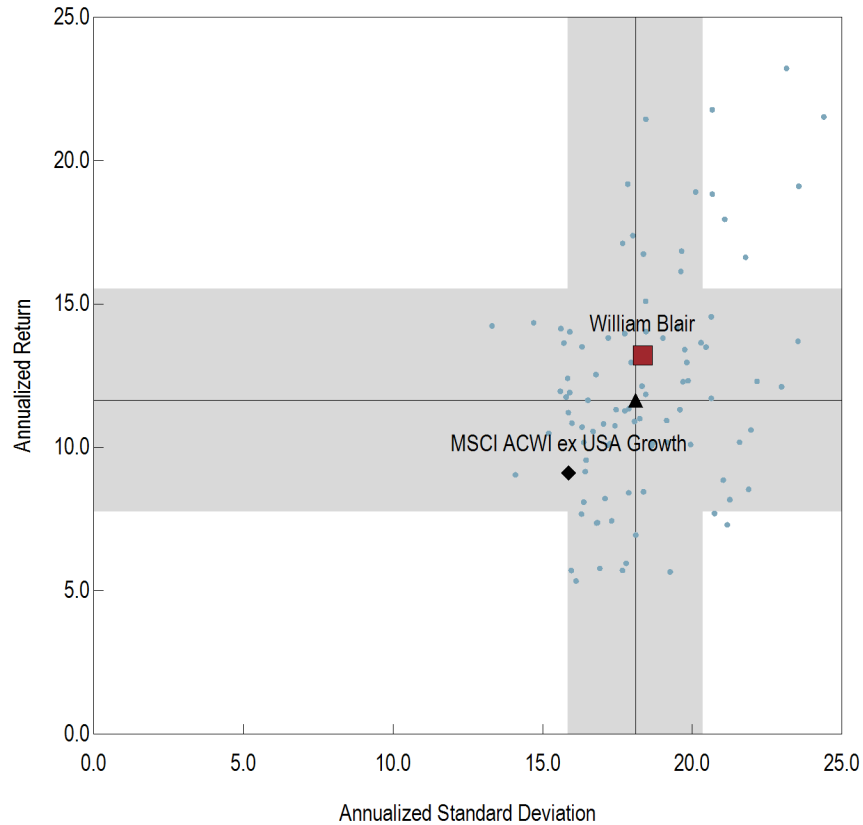
Rolling 3 Year Annualized Return (%)



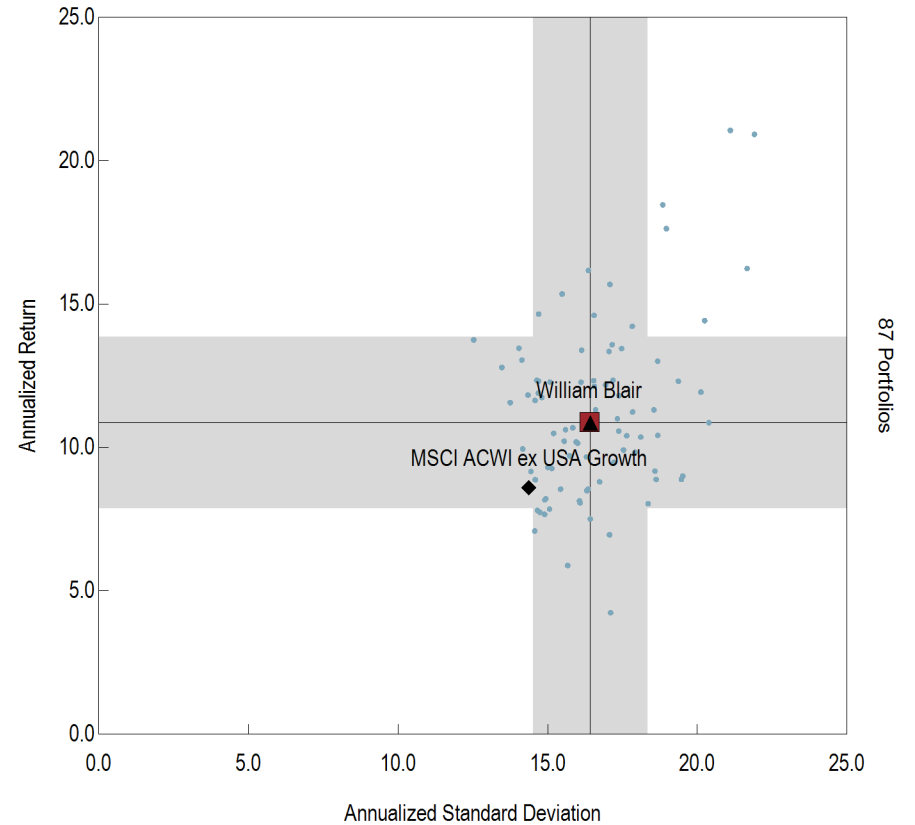
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
William Blair	13.2%	18.3%	0.7
MSCI ACWI ex USA Growth	9.1%	15.9%	0.5
eV ACWI ex-US Growth Equity Gross Median	11.6%	18.1%	0.6

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
William Blair	10.9%	16.4%	0.6
MSCI ACWI ex USA Growth	8.6%	14.4%	0.5
eV ACWI ex-US Growth Equity Gross Median	10.9%	16.4%	0.6

PIMCO RAE Emerging Markets Manager Portfolio Overview

Period Ending: March 31, 2022

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

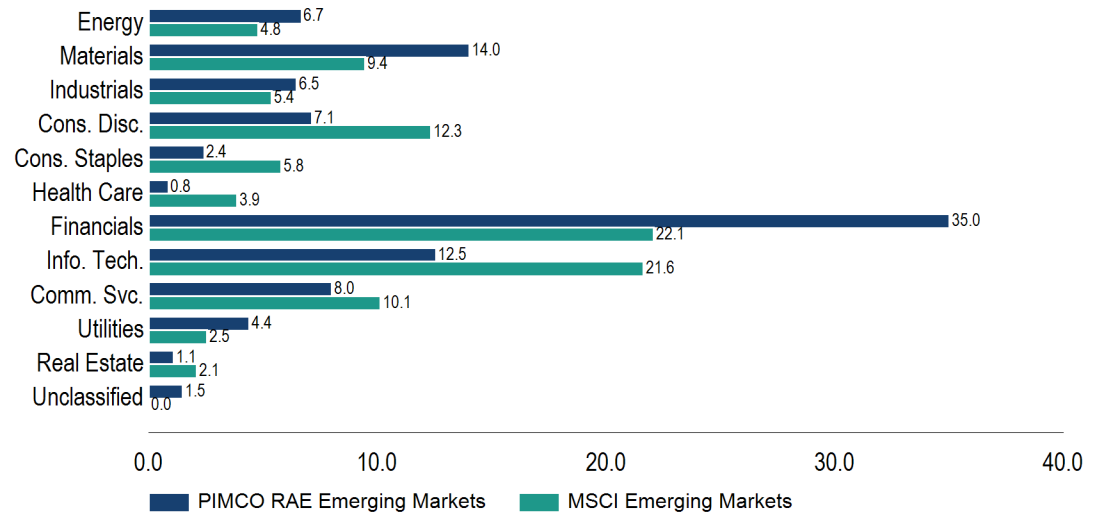
Characteristics

	Portfolio	MSCI Emerging Markets
Number of Holdings	352	1,391
Weighted Avg. Market Cap. (\$B)	21.61	126.89
Median Market Cap. (\$B)	4.38	7.06
Price To Earnings	6.71	12.56
Price To Book	1.76	2.61
Price To Sales	0.40	1.25
Return on Equity (%)	12.77	14.87
Yield (%)	4.96	2.64
Beta	1.14	1.00

Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	6.2%	0.0%
Emerging*	93.1%	100.0%
Top 10 Largest Countries		
Brazil*	17.8%	5.8%
India*	12.0%	13.1%
Korea*	11.2%	12.6%
China*	10.9%	30.0%
South Africa*	8.8%	4.1%
Taiwan*	8.8%	16.2%
Thailand*	8.4%	1.9%
Mexico*	6.1%	2.3%
Hong Kong	5.7%	0.0%
Turkey*	3.3%	0.3%
Total-Top 10 Largest Countries	93.1%	86.2%

Sector Allocation (%) vs MSCI Emerging Markets



Top Contributors

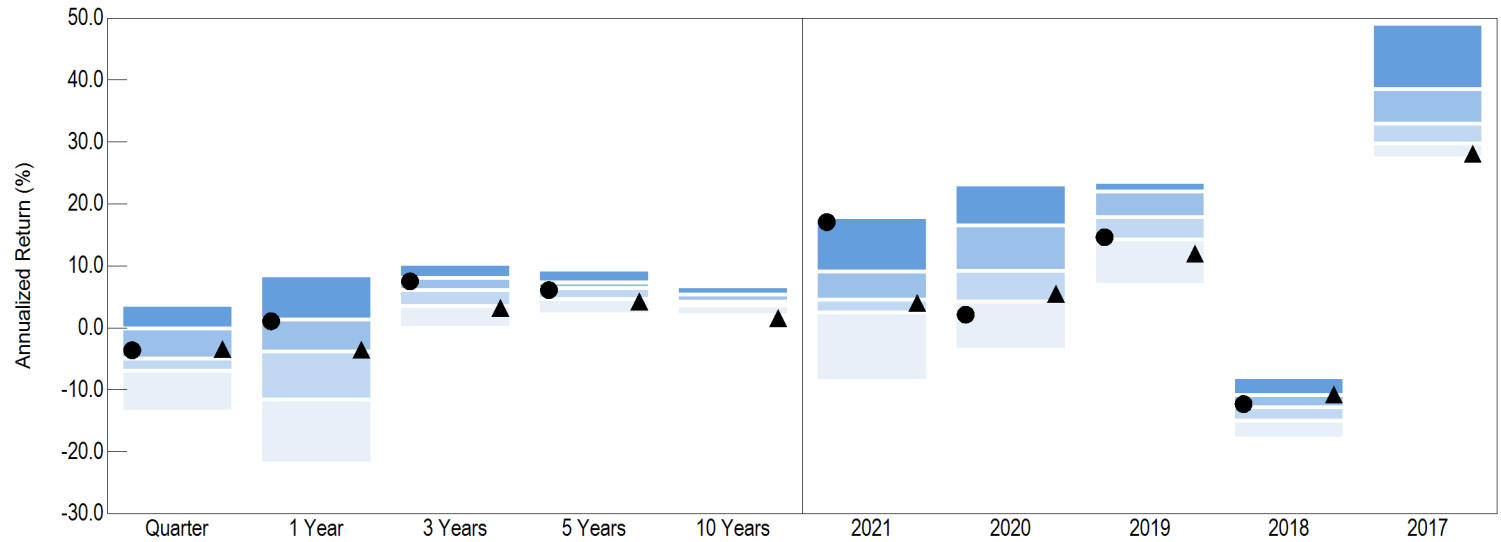
	End Weight	Return	Contribution
BANCO DO BRASIL ON	3.87	45.25	1.75
ITAU UNIBANCO HOLDING PN	3.06	54.19	1.66
BANCO BRADESCO SA BRAD	2.54	35.97	0.92
SASOL LTD	1.66	49.51	0.82
VEDANTA LTD	2.85	20.12	0.57
CIELO SA	0.88	59.90	0.53
KASIKORNBANK PUBLIC CO LTD	2.80	14.24	0.40
MTN GROUP LTD	1.43	23.30	0.33
NEDBANK GROUP LTD	0.65	45.26	0.29
STANDARD BANK GROUP LTD	0.70	41.90	0.29

Bottom Contributors

	End Weight	Return	Contribution
CHINA RESOURCES POWER HOLDINGS CO LTD	1.05	-43.77	-0.46
CEMEX SAB DE CV	1.48	-21.39	-0.32
EMBRAER SA	1.07	-29.34	-0.31
SIAM COMMERCIAL BANK PUBLIC CO LTD	2.37	-9.41	-0.22
INDIABULLS HOUSING FINANCE LTD	0.73	-28.94	-0.21
INNOLUX CORP	1.13	-17.08	-0.19
KIA CORPORATION	1.54	-11.73	-0.18
LG ELECTRONICS INC	1.12	-14.38	-0.16
CEMEX SAB DE CV	0.65	-21.98	-0.14
LG DISPLAY CO LTD	0.70	-17.69	-0.12

Unclassified sector allocation includes cash allocations.

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



	Return (Rank)										
5th Percentile	3.7	8.4	10.3	9.3	6.7	17.8	23.1	23.5	-7.9	49.0	
25th Percentile	0.0	1.4	8.1	7.4	5.5	9.1	16.6	22.1	-10.8	38.6	
Median	-4.9	-3.8	6.2	6.5	4.3	4.6	9.2	18.0	-12.7	33.0	
75th Percentile	-6.9	-11.5	3.6	4.7	3.7	2.5	4.3	14.4	-14.9	29.8	
95th Percentile	-13.4	-21.8	0.1	2.2	2.1	-8.5	-3.4	7.0	-17.8	27.4	
# of Portfolios	37	37	35	28	18	35	37	33	36	37	
● PIMCO RAE Emerging Markets	-3.6 (45)	1.1 (27)	7.5 (29)	6.1 (61)	-- (--)	17.1 (6)	2.1 (85)	14.6 (72)	-12.3 (44)	-- (--)	
▲ MSCI Emerging Markets Value NR	-3.4 (44)	-3.5 (48)	3.2 (78)	4.2 (80)	1.6 (99)	4.0 (61)	5.5 (73)	12.0 (86)	-10.7 (25)	28.1 (90)	

TT Emerging Markets Manager Portfolio Overview

Period Ending: March 31, 2022

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

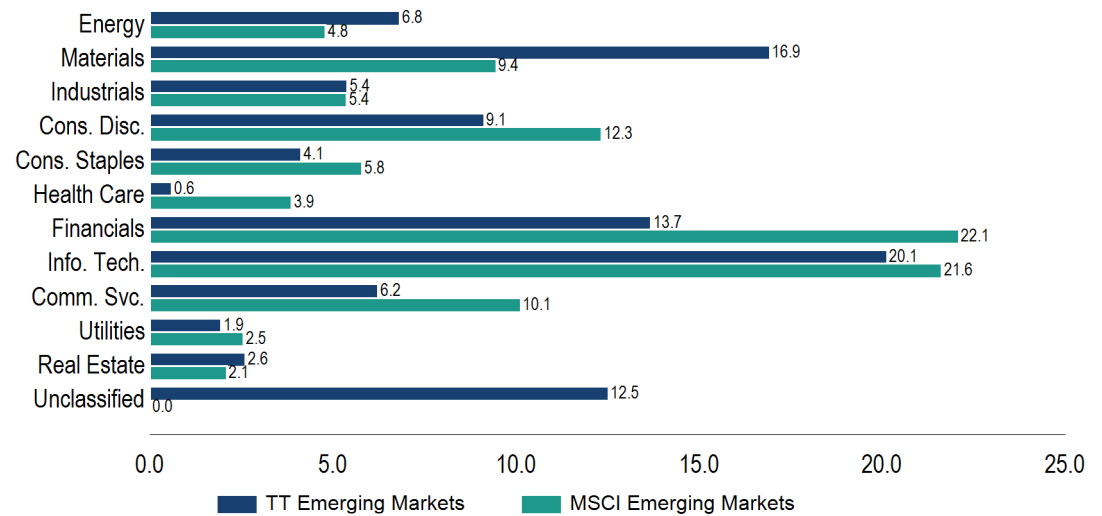
Characteristics

	Portfolio	MSCI Emerging Markets
Number of Holdings	76	1,391
Weighted Avg. Market Cap. (\$B)	162.48	126.89
Median Market Cap. (\$B)	21.03	7.06
Price To Earnings	12.20	12.56
Price To Book	2.91	2.61
Price To Sales	1.36	1.25
Return on Equity (%)	16.22	14.87
Yield (%)	2.25	2.64
Beta	1.21	1.00

Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	23.5%	0.0%
Emerging*	67.9%	100.0%
Frontier**	0.9%	0.0%
Top 10 Largest Countries		
China*	21.2%	30.0%
Taiwan*	13.4%	16.2%
India*	9.8%	13.1%
Korea*	9.3%	12.6%
Cash	7.7%	0.0%
Brazil*	6.3%	5.8%
United States	6.3%	0.0%
Hong Kong	5.8%	0.0%
Netherlands	2.9%	0.0%
Canada	2.0%	0.0%
Total-Top 10 Largest Countries	84.9%	77.7%

Sector Allocation (%) vs MSCI Emerging Markets



Top Contributors

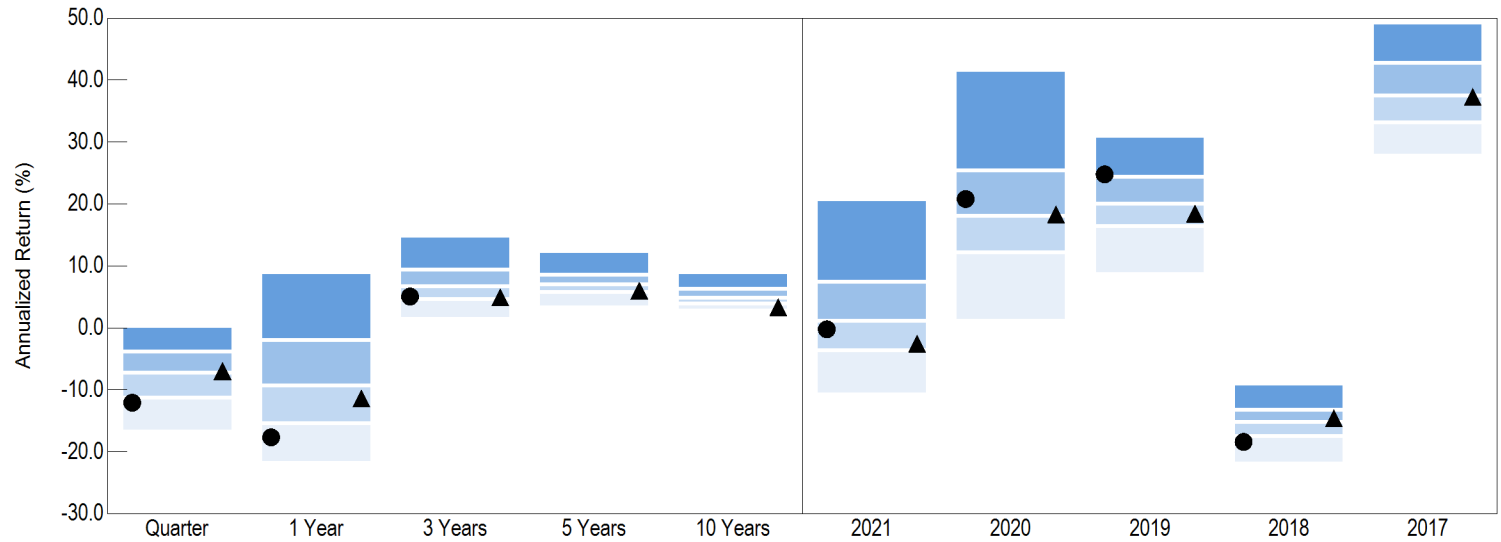
	End Weight	Return	Contribution
OCI NV	1.79	36.12	0.64
BARRICK GOLD CORP	2.05	29.68	0.61
GLENCORE PLC	1.78	29.45	0.52
COSAN SA	1.38	27.82	0.38
EMAAR PROPERTIES	1.50	22.70	0.34
YUNNAN ALUMINIUM CO LTD	1.36	22.71	0.31
QATAR NATIONAL BANK	1.73	17.24	0.30
ZIJIN MINING GROUP CO LTD	1.01	29.38	0.30
PETROLEO BRASILEIRO S.A.- PETROBRAS	0.75	34.56	0.26
OIL & NATURAL GAS CORP LTD	1.69	14.21	0.24

Bottom Contributors

	End Weight	Return	Contribution
TENCENT HOLDINGS LTD	4.36	-16.10	-0.70
360 DIGITECH INC	1.64	-32.88	-0.54
TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	9.49	-5.63	-0.53
EVE ENERGY CO LTD	1.56	-31.60	-0.49
SEA LTD	0.99	-46.45	-0.46
WULIANGYE ORD A	1.46	-30.22	-0.44
CEMEX SAB DE CV	1.96	-21.39	-0.42
SAMSUNG ELECTRONICS CO LTD	2.87	-12.74	-0.37
KRANESHARES CSI CHINA INTERNET ETF	1.61	-21.87	-0.35
VNET GROUP INC	0.94	-35.44	-0.33

Unclassified sector allocation includes cash allocations.

TT Emerging Markets vs. eV Emg Mkts Equity Gross Universe



	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2021	2020	2019	2018	2017
5th Percentile	0.3	9.0	14.9	12.3	8.9	20.7	41.6	30.9	-9.0	49.2
25th Percentile	-3.7	-1.9	9.5	8.6	6.3	7.5	25.5	24.4	-13.2	42.8
Median	-7.2	-9.3	6.8	7.1	4.9	1.2	18.2	20.1	-15.2	37.6
75th Percentile	-11.2	-15.4	4.7	5.8	3.9	-3.5	12.2	16.5	-17.4	33.2
95th Percentile	-16.6	-21.7	1.5	3.3	2.8	-10.7	1.2	8.8	-21.8	27.8
# of Portfolios	395	395	361	324	215	391	391	386	355	343
● TT Emerging Markets	-12.1 (80)	-17.7 (83)	5.0 (72)	-- (--)	-- (--)	-0.2 (58)	20.8 (39)	24.8 (24)	-18.4 (83)	-- (--)
▲ MSCI Emerging Markets	-7.0 (49)	-11.4 (58)	4.9 (73)	6.0 (72)	3.4 (87)	-2.5 (71)	18.3 (49)	18.4 (63)	-14.6 (43)	37.3 (53)

Global Equity Managers

Artisan Partners Manager Portfolio Overview

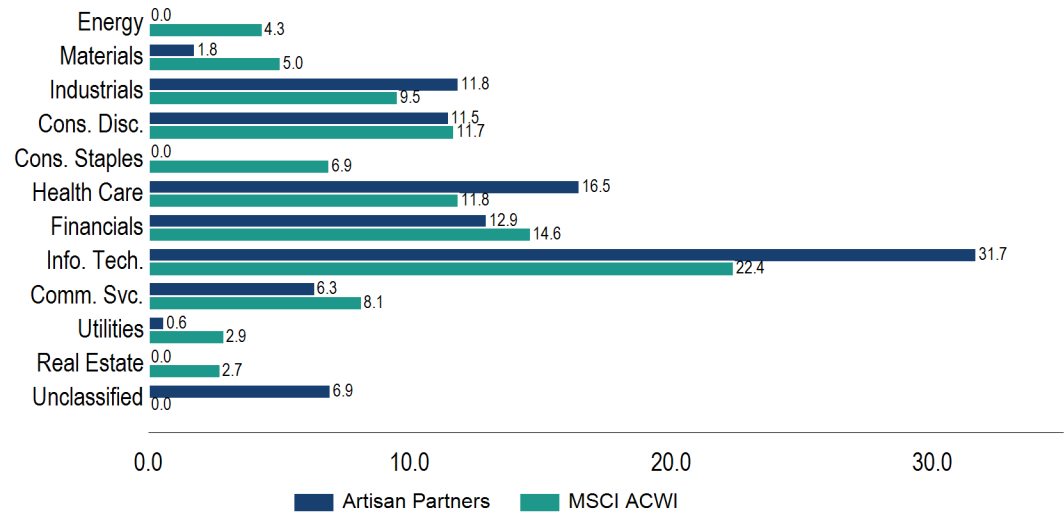
Period Ending: March 31, 2022

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

Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	46	2,929
Weighted Avg. Market Cap. (\$B)	239.37	415.12
Median Market Cap. (\$B)	47.57	13.16
Price To Earnings	29.53	18.43
Price To Book	4.31	3.54
Price To Sales	4.12	2.14
Return on Equity (%)	14.76	22.06
Yield (%)	0.67	1.93
Beta	0.96	1.00

Sector Allocation (%) vs MSCI ACWI



Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	93.2%	89.0%
Emerging*	1.5%	11.0%
Top 10 Largest Countries		
United States	46.7%	61.4%
United Kingdom	11.1%	3.7%
Canada	7.2%	3.2%
Switzerland	6.1%	2.5%
Cash	5.3%	0.0%
Sweden	5.0%	0.9%
Japan	3.1%	5.4%
Denmark	3.1%	0.7%
Australia	2.7%	2.0%
Luxembourg	2.4%	0.0%
Total-Top 10 Largest Countries	92.8%	79.8%

Top Contributors

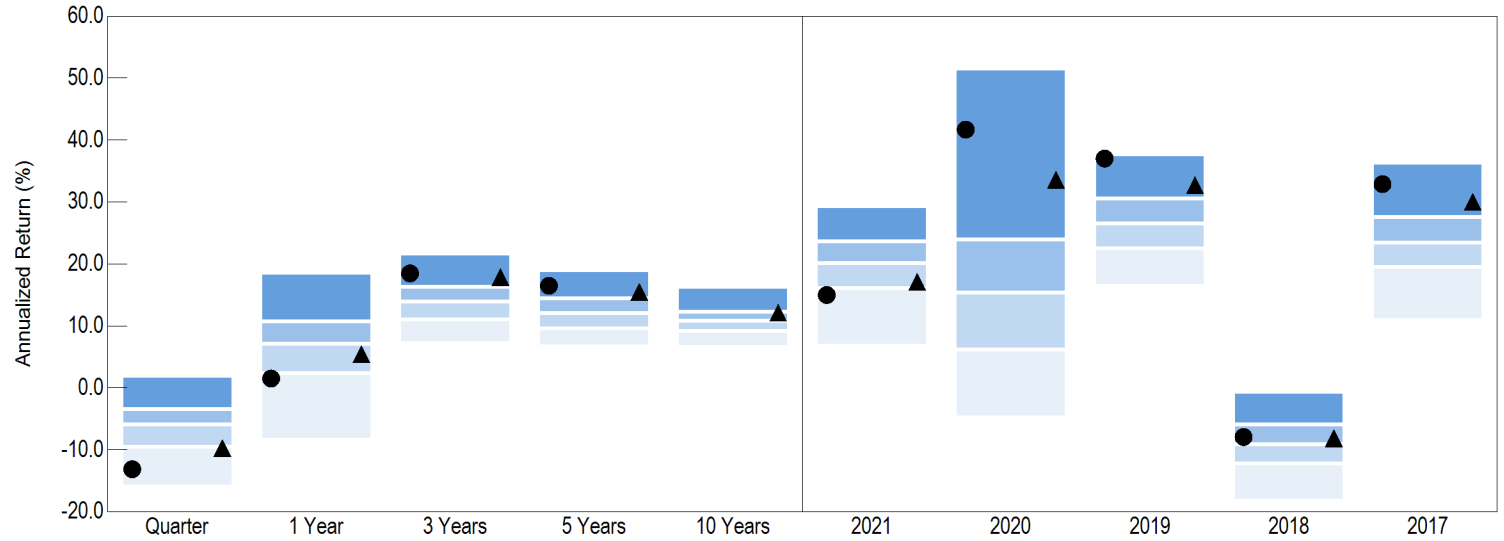
	Avg Wgt	Return	Contribution
UBS GROUP AG	2.93	9.39	0.28
ASTRAZENECA PLC	1.69	15.26	0.26
LONDON STOCK EXCHANGE GROUP PLC	1.28	11.59	0.15
BOSTON SCIENTIFIC CORP	3.08	4.26	0.13
AIA GROUP LTD	1.38	4.44	0.06
MAGAZINE LUIZA S/A	0.48	10.73	0.05
AIRBNB INC	1.57	3.16	0.05
SCHWAB (CHARLES) CORP	2.15	0.47	0.01
VESTAS WIND SYSTEMS A/S	0.93	-2.56	-0.02
DEXCOM INC	0.95	-4.72	-0.04

Bottom Contributors

	Avg Wgt	Return	Contribution
ADVANCED MICRO DEVICES INC	5.75	-24.02	-1.38
SHOPIFY INC	2.30	-50.92	-1.17
TECHTRONIC INDUSTRIES CO LTD	5.37	-18.60	-1.00
APTIV PLC	2.98	-27.43	-0.82
NETFLIX INC	2.04	-37.82	-0.77
ATLASSIAN CORP PLC	2.76	-22.94	-0.63
VEEVA SYSTEMS INC	3.60	-16.84	-0.61
LOWE'S COS INC	2.59	-21.51	-0.56
BURLINGTON STORES INC	1.46	-37.51	-0.55
IHS MARKIT LTD	2.76	-18.29	-0.50

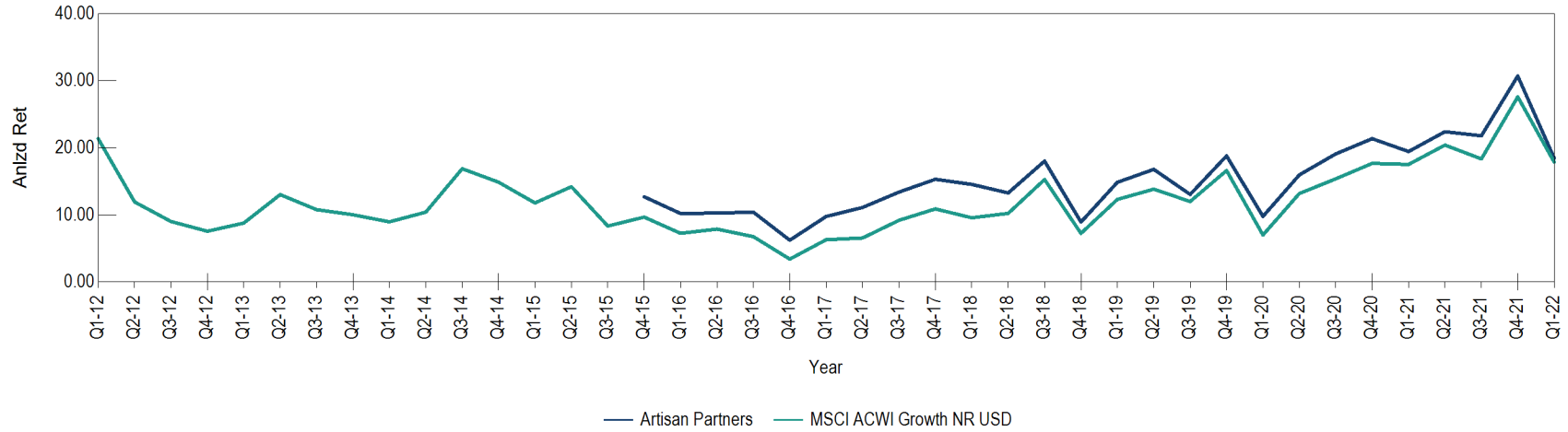
Unclassified sector allocation includes cash allocations.

Artisan Partners vs. eV All Global Equity Gross Universe

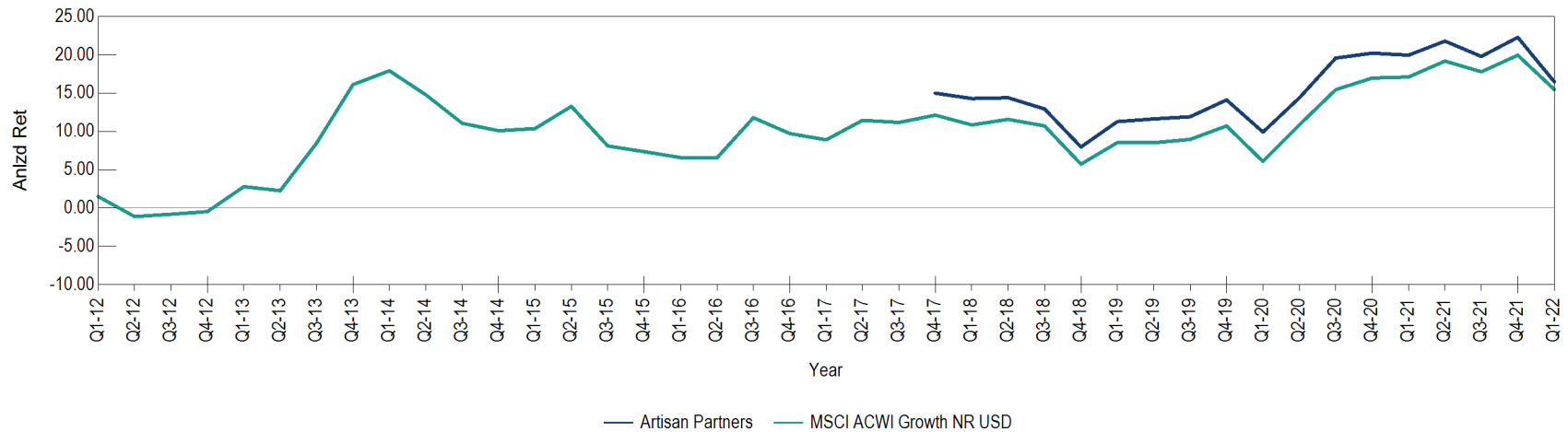


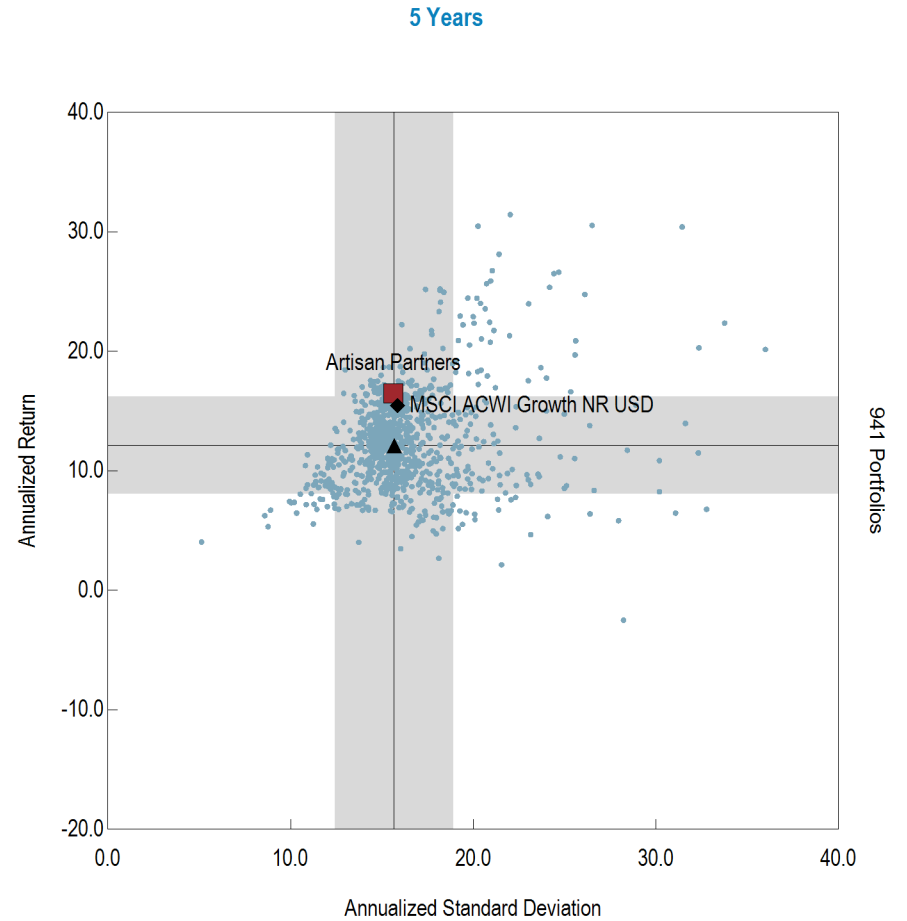
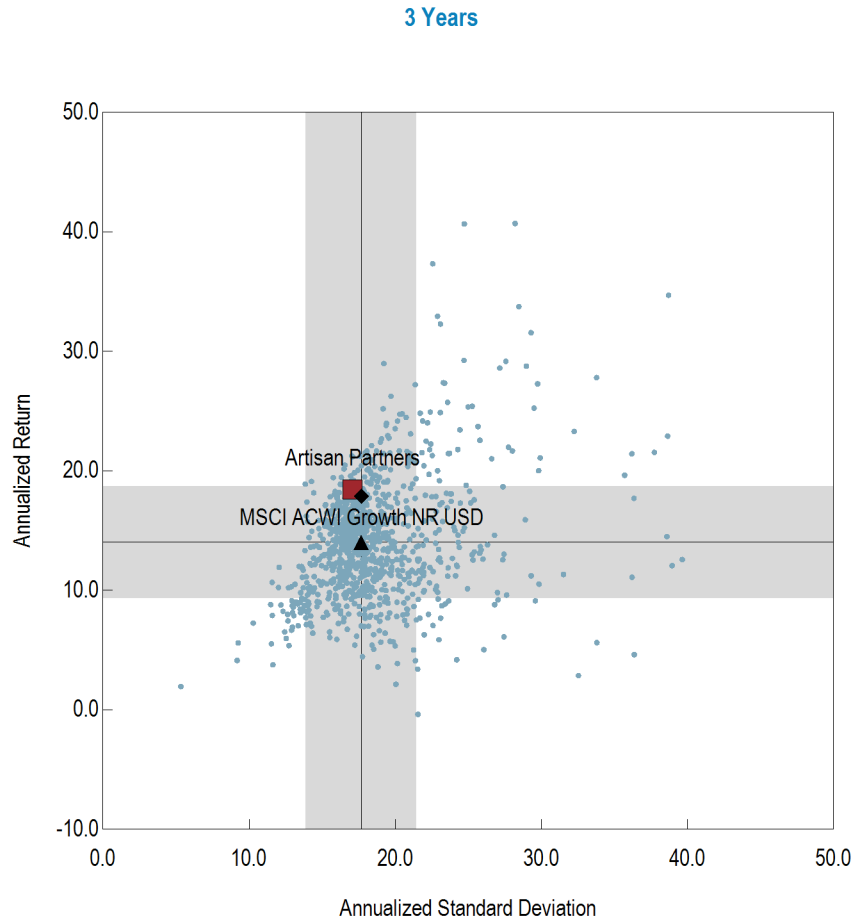
	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2021	2020	2019	2018	2017
5th Percentile	1.9	18.5	21.7	19.0	16.3	29.2	51.5	37.6	-0.7	36.3
25th Percentile	-3.3	10.8	16.4	14.5	12.3	23.7	24.0	30.7	-5.8	27.6
Median	-5.8	7.1	14.0	12.1	10.9	20.2	15.4	26.6	-9.1	23.5
75th Percentile	-9.5	2.5	11.1	9.6	9.3	16.2	6.3	22.6	-12.2	19.6
95th Percentile	-15.9	-8.3	7.2	6.8	6.6	6.9	-4.7	16.5	-18.1	11.0
# of Portfolios	1,154	1,153	1,057	941	618	1,141	1,093	989	920	880
● Artisan Partners	-13.1 (89)	1.5 (78)	18.5 (13)	16.5 (13)	-- (--)	15.0 (80)	41.7 (9)	37.0 (7)	-7.9 (40)	32.9 (11)
▲ MSCI ACWI Growth NR USD	-9.7 (77)	5.4 (62)	17.9 (16)	15.5 (19)	12.1 (27)	17.1 (71)	33.6 (14)	32.7 (17)	-8.1 (42)	30.0 (17)

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)





	3 Years		
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Artisan Partners	18.5%	17.1%	1.0
MSCI ACWI Growth NR USD	17.9%	17.7%	1.0
eV All Global Equity Gross Median	14.0%	17.7%	0.7

	5 Years		
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Artisan Partners	16.5%	15.6%	1.0
MSCI ACWI Growth NR USD	15.5%	15.9%	0.9
eV All Global Equity Gross Median	12.1%	15.7%	0.7

First Eagle Manager Portfolio Overview

Period Ending: March 31, 2022

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

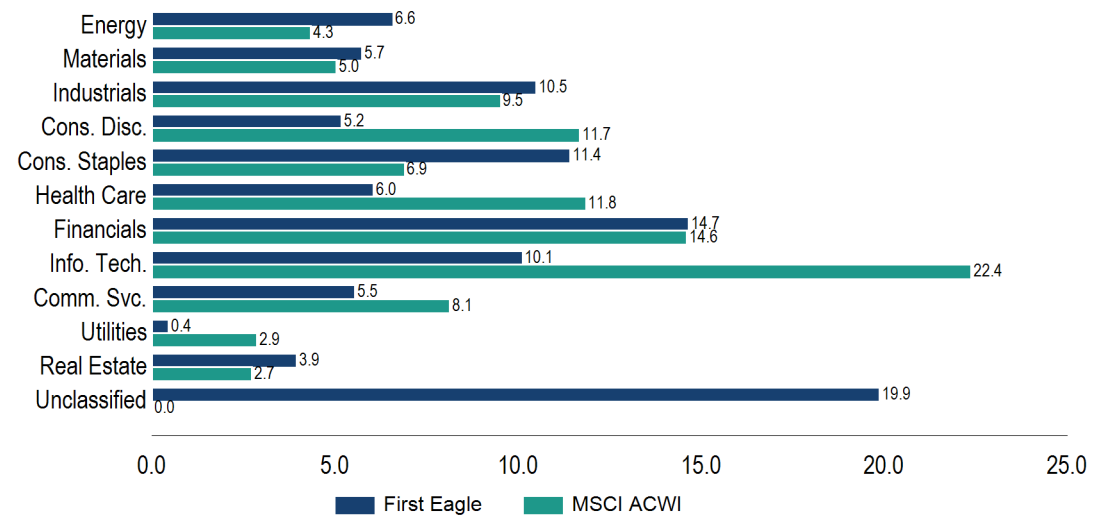
Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	138	2,929
Weighted Avg. Market Cap. (\$B)	160.94	415.12
Median Market Cap. (\$B)	29.52	13.16
Price To Earnings	17.15	18.43
Price To Book	2.41	3.54
Price To Sales	1.82	2.14
Return on Equity (%)	16.44	22.06
Yield (%)	2.03	1.93
Beta	0.74	1.00

Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	93.3%	89.0%
Emerging*	6.7%	11.0%
Top 10 Largest Countries		
United States	61.5%	61.4%
Japan	7.7%	5.4%
United Kingdom	7.1%	3.7%
Canada	4.5%	3.2%
France	3.6%	2.8%
Switzerland	2.6%	2.5%
Korea*	1.6%	1.4%
Belgium	1.4%	0.2%
Brazil*	1.3%	0.6%
Mexico*	1.0%	0.3%
Total-Top 10 Largest Countries	93.3%	81.6%

Sector Allocation (%) vs MSCI ACWI



Top Contributors

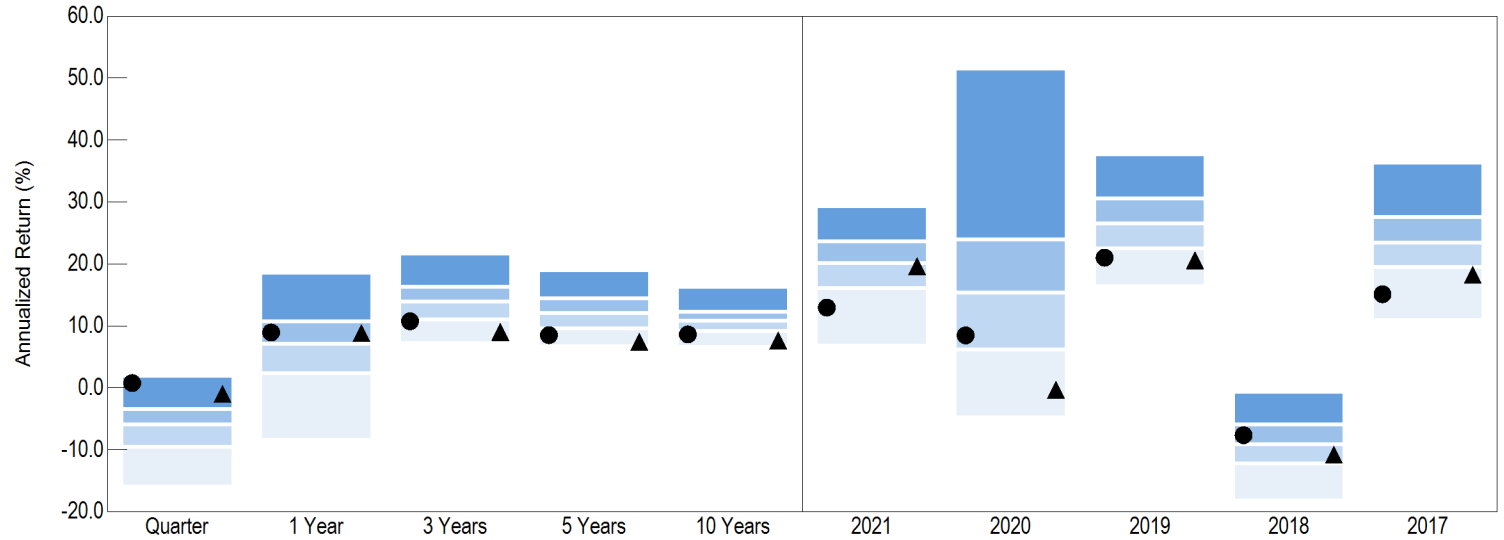
	End Weight	Return	Contribution
EXXON MOBIL CORP	2.84	36.48	1.04
SCHLUMBERGER LTD	1.67	38.37	0.64
SPDR GOLD TRUST	9.47	5.67	0.54
NOV INC	0.96	45.05	0.43
NEWMONT CORPORATION	1.38	29.03	0.40
IMPERIAL OIL LTD	1.11	35.21	0.39
NUTRIEN LTD	0.86	38.93	0.34
BRITISH AMERICAN TOBACCO PLC	1.68	15.34	0.26
ITAUSA INVESTIMENTOS ITAU PN	0.47	44.58	0.21
BARRICK GOLD CORP	0.56	29.68	0.17

Bottom Contributors

	End Weight	Return	Contribution
META PLATFORMS INC	1.63	-33.89	-0.55
PROSUS ORD	0.58	-35.47	-0.21
CIE FINANCIERE RICHEMONT AG, ZUG	1.35	-14.70	-0.20
IPG PHOTONICS CORP	0.52	-36.24	-0.19
BANK OF NEW YORK MELLON CORP (THE)	1.13	-14.05	-0.16
ORACLE CORP	3.25	-4.79	-0.16
UNILEVER PLC COMMON STOCK GBP.0311	1.05	-14.17	-0.15
FANUC CORP	0.91	-15.82	-0.14
COMCAST CORP	2.05	-6.51	-0.13
BERKELEY GROUP HOLDINGS PLC	0.56	-23.97	-0.13

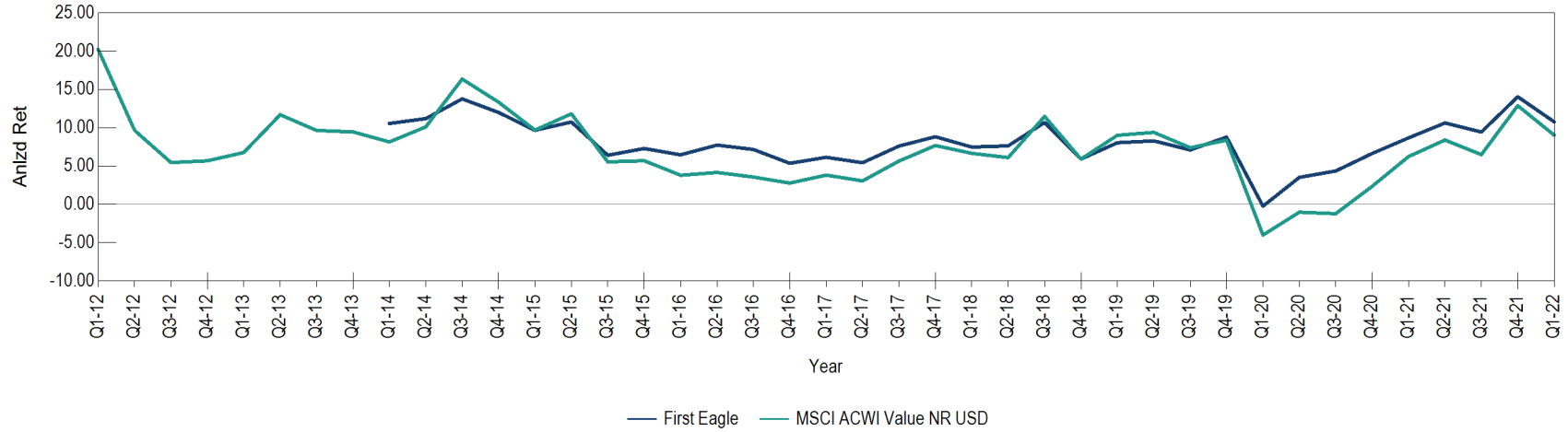
Unclassified sector allocation includes cash allocations and Gold allocations (8.55% as of 6/30/2021).

First Eagle vs. eV All Global Equity Gross Universe

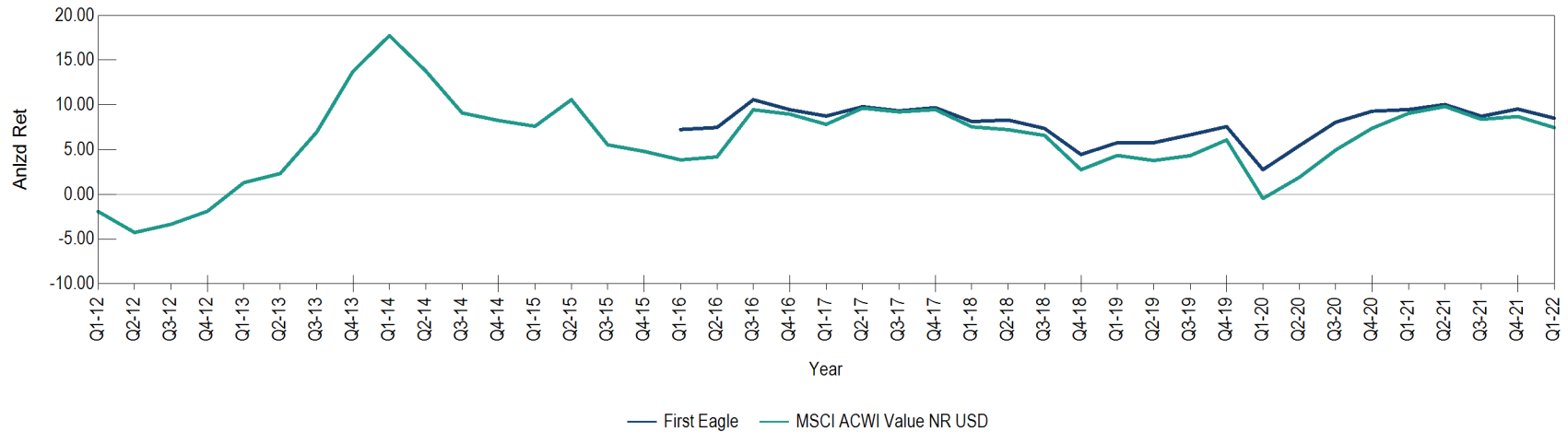


	Quarter	1 Year	3 Years	5 Years	10 Years	2021	2020	2019	2018	2017
5th Percentile	1.9	18.5	21.7	19.0	16.3	29.2	51.5	37.6	-0.7	36.3
25th Percentile	-3.3	10.8	16.4	14.5	12.3	23.7	24.0	30.7	-5.8	27.6
Median	-5.8	7.1	14.0	12.1	10.9	20.2	15.4	26.6	-9.1	23.5
75th Percentile	-9.5	2.5	11.1	9.6	9.3	16.2	6.3	22.6	-12.2	19.6
95th Percentile	-15.9	-8.3	7.2	6.8	6.6	6.9	-4.7	16.5	-18.1	11.0
# of Portfolios	1,154	1,153	1,057	941	618	1,141	1,093	989	920	880
● First Eagle	0.8 (8)	8.9 (38)	10.8 (78)	8.5 (86)	8.6 (83)	13.0 (85)	8.5 (70)	21.0 (82)	-7.6 (38)	15.1 (89)
▲ MSCI ACWI Value NR USD	-1.0 (12)	8.8 (39)	9.0 (88)	7.5 (92)	7.6 (92)	19.6 (55)	-0.3 (89)	20.6 (83)	-10.8 (65)	18.3 (81)

Rolling 3 Year Annualized Return (%)



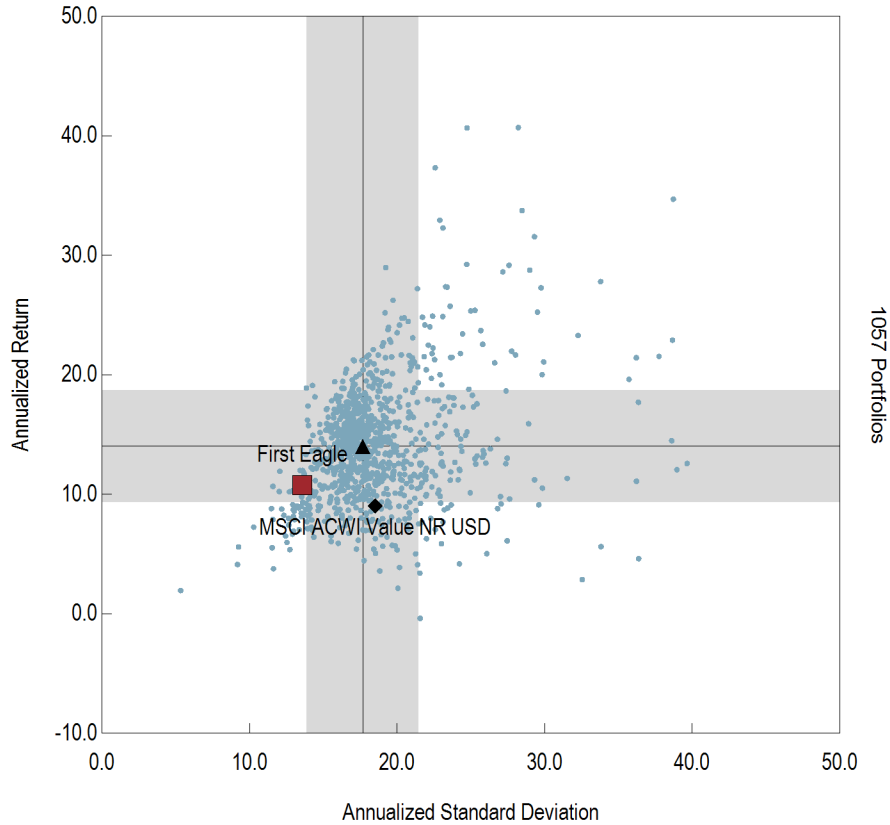
Rolling 5 Year Annualized Return (%)



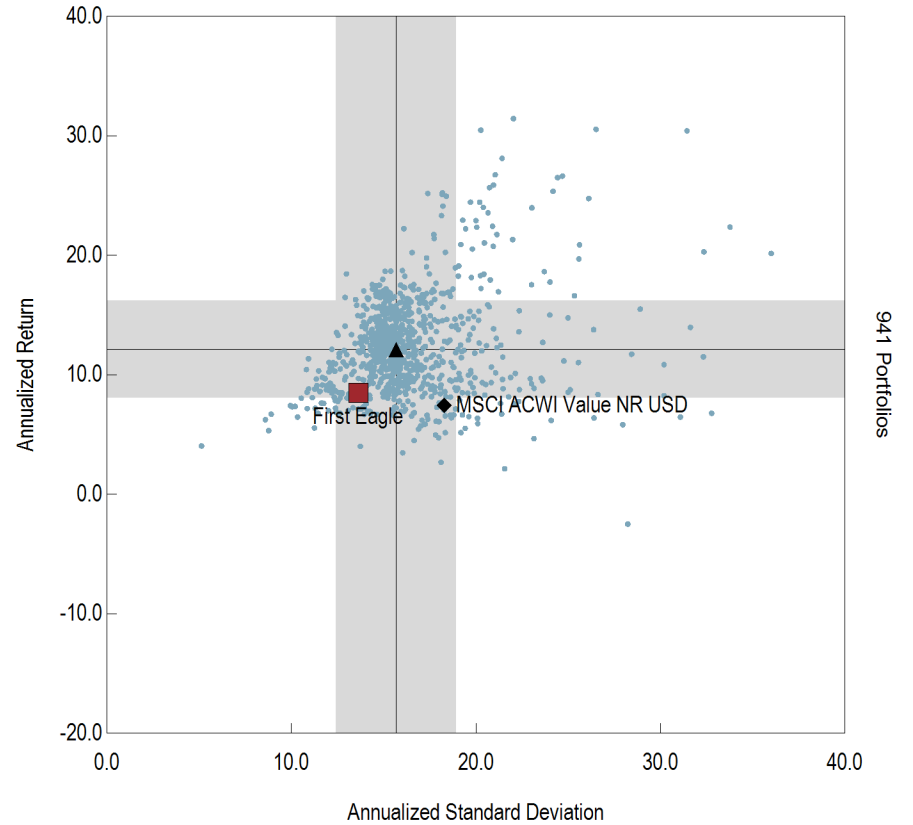
First Eagle
Risk vs. Return 3 & 5 Year (Gross of Fees)

Period Ending: March 31, 2022

3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
First Eagle	10.8%	13.6%	0.7
MSCI ACWI Value NR USD	9.0%	18.5%	0.5
eV All Global Equity Gross Median	14.0%	17.7%	0.7

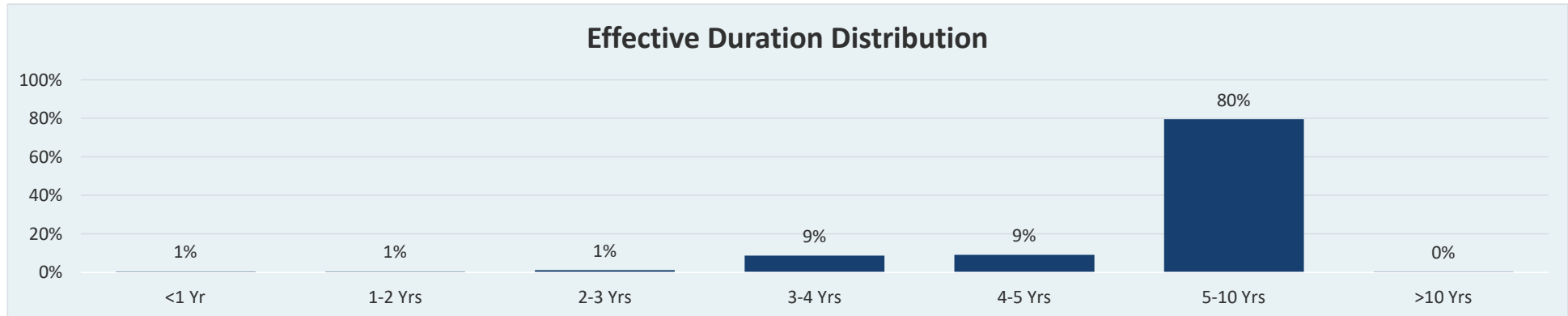
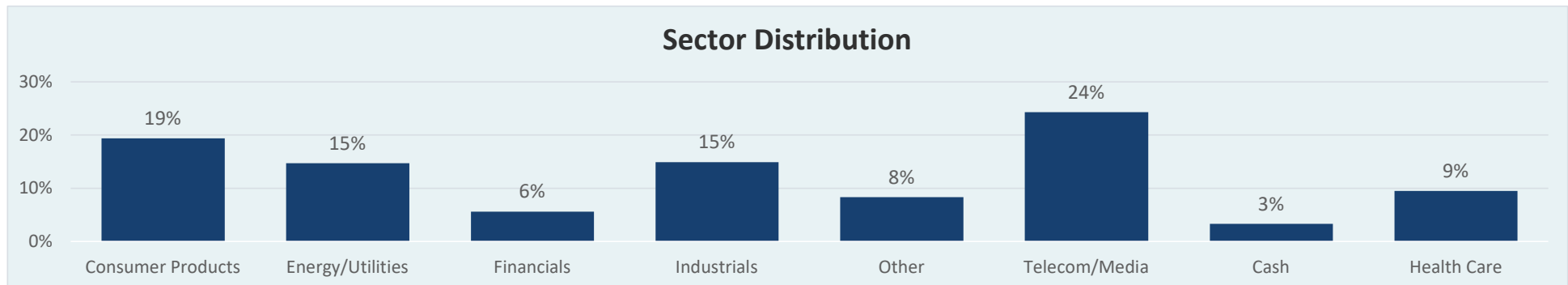
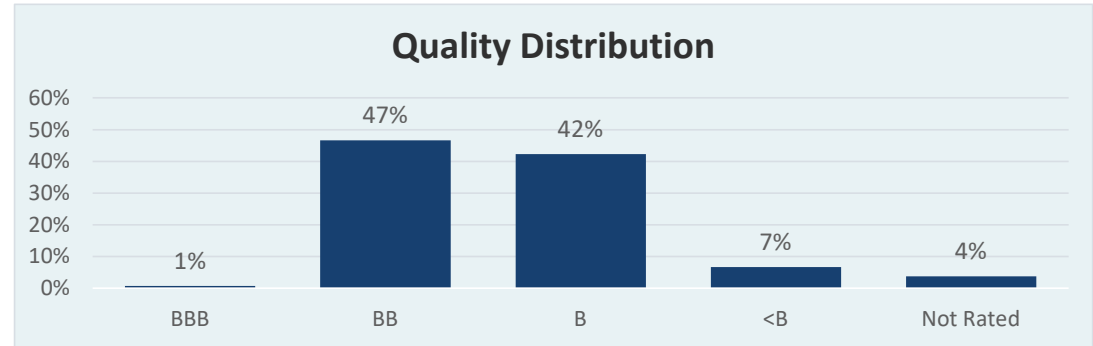
5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
First Eagle	8.5%	11.7%	0.6
MSCI ACWI Value NR USD	7.5%	15.9%	0.4
eV All Global Equity Gross Median	12.1%	15.7%	0.7

High Yield Managers

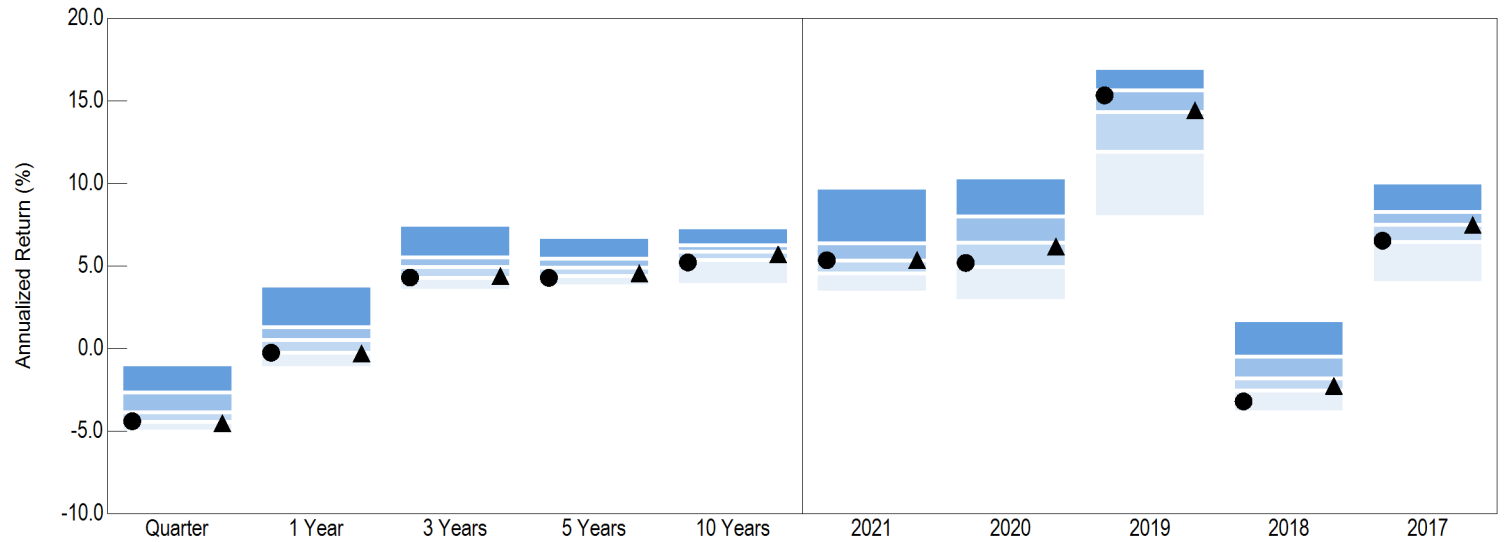
Domestic high yield fixed income portfolio with a focus on security selection. Primary personnel include Douglas Forsyth, Justin Kass, William Stickney, and Michael Yee.

	Allianz	ICE BofAML HY Master II
Effective Duration	4.20	4.20
Yield to Maturity	5.90	6.20
Average Quality	B1	B1
Average Coupon	6.1%	5.7%



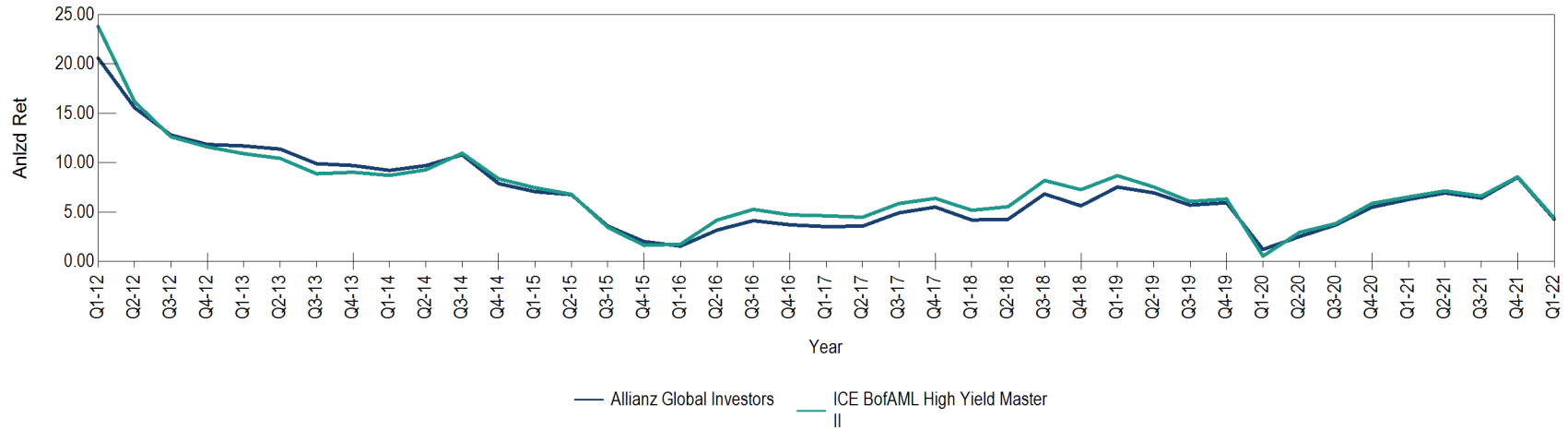
Quality distribution excludes cash.

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

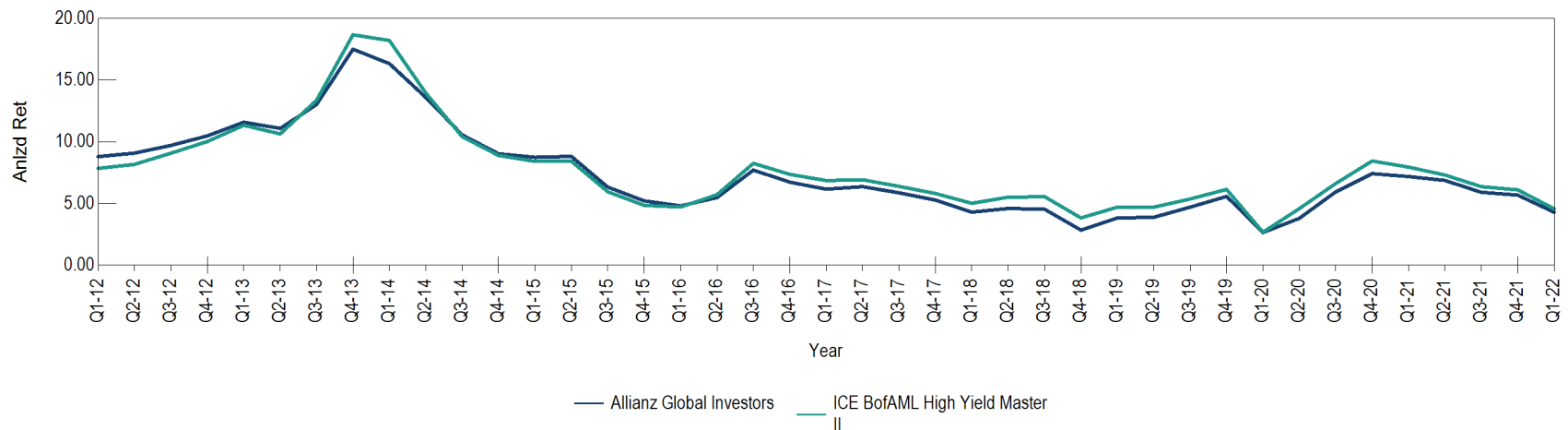


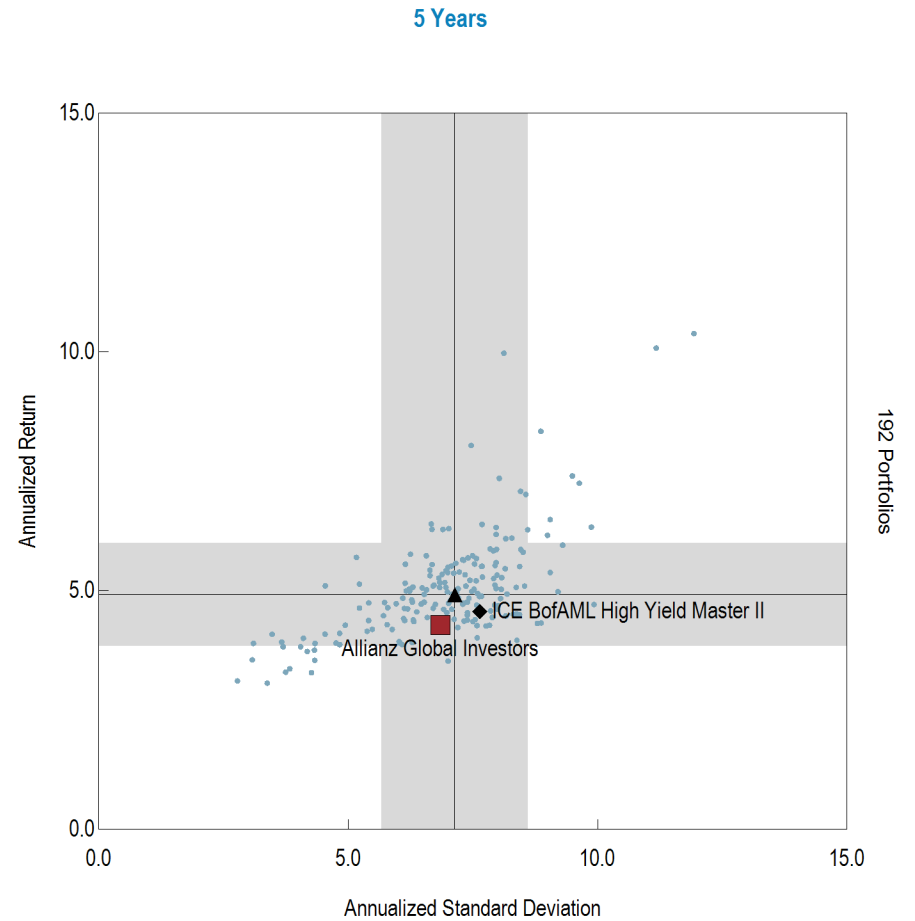
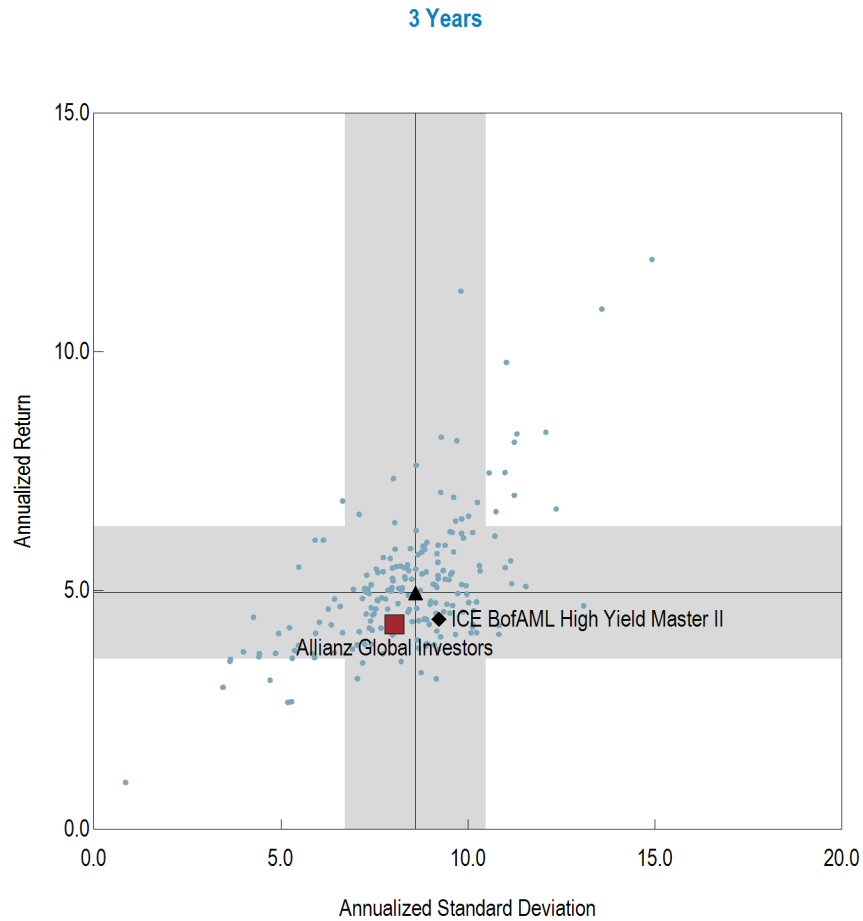
	Return (Rank)										
	Quarter	1 Year	3 Years	5 Years	10 Years	2021	2020	2019	2018	2017	
5th Percentile	-1.0	3.8	7.5	6.7	7.3	9.7	10.3	16.9	1.7	10.0	
25th Percentile	-2.6	1.3	5.5	5.5	6.3	6.4	8.0	15.6	-0.5	8.3	
Median	-3.8	0.5	5.0	4.9	5.9	5.4	6.4	14.3	-1.8	7.5	
75th Percentile	-4.4	-0.3	4.3	4.4	5.4	4.6	5.0	11.9	-2.5	6.5	
95th Percentile	-5.0	-1.2	3.5	3.8	3.9	3.4	2.9	8.0	-3.8	4.0	
# of Portfolios	204	204	203	192	148	211	217	226	210	198	
● Allianz Global Investors	-4.4 (74)	-0.2 (75)	4.3 (74)	4.3 (82)	5.2 (81)	5.3 (51)	5.2 (74)	15.3 (31)	-3.2 (88)	6.5 (74)	
▲ ICE BofAML High Yield Master II	-4.5 (82)	-0.3 (78)	4.4 (71)	4.6 (69)	5.7 (58)	5.4 (50)	6.2 (55)	14.4 (49)	-2.3 (69)	7.5 (53)	

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)





3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Allianz Global Investors	4.3%	8.0%	0.5
ICE BofAML High Yield Master II	4.4%	9.2%	0.4
eV US High Yield Fixed Inc Gross Median	5.0%	8.6%	0.5

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Allianz Global Investors	4.3%	6.8%	0.5
ICE BofAML High Yield Master II	4.6%	7.6%	0.5
eV US High Yield Fixed Inc Gross Median	4.9%	7.1%	0.6

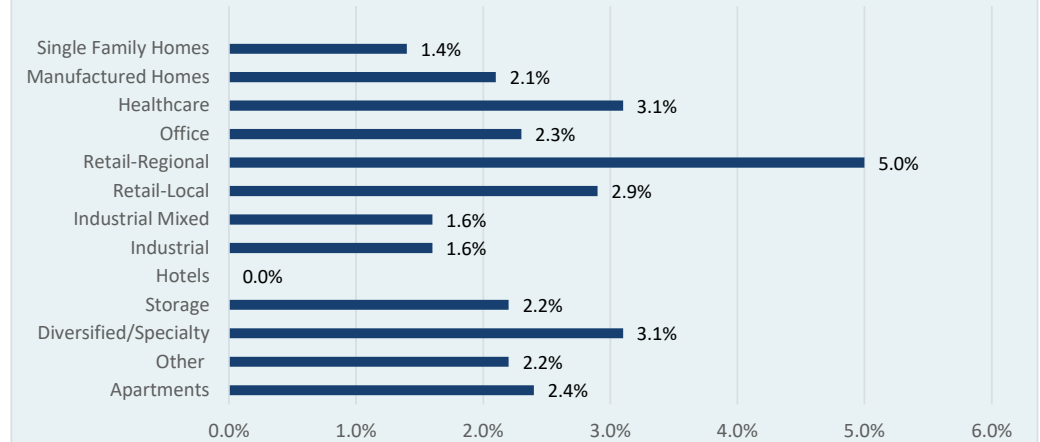
Real Estate Managers

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

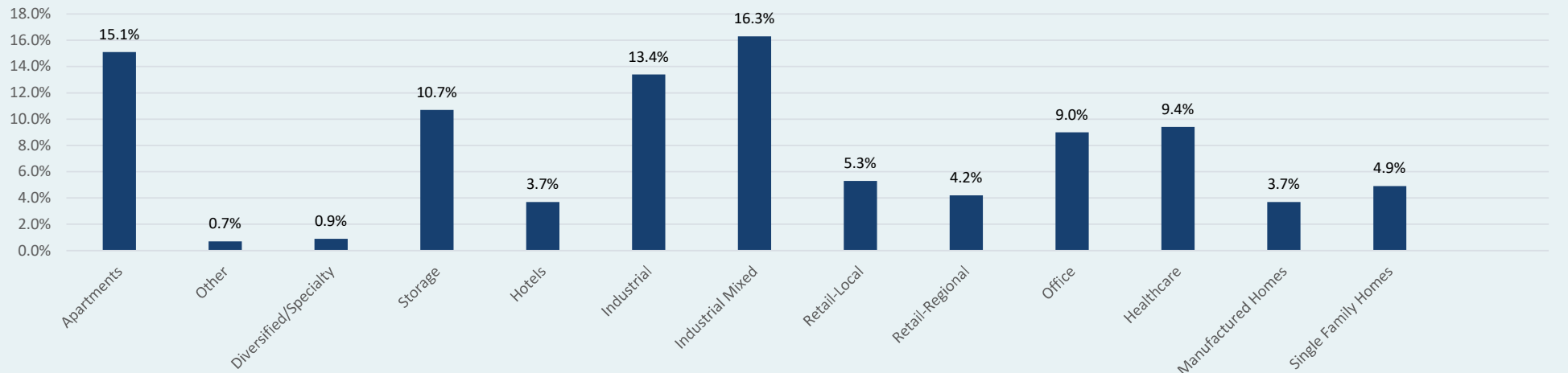
Top Five Holdings

Company	Property Type	Allocation
ProLogis Inc.	Industrial	12.3%
Equinix Inc	Industrial Mixed	8.1%
Public Storage	Storage	6.1%
Equity Residential	Apartments	5.5%
Welltower, Inc.	Healthcare	5.1%

Dividend Yield by Property Type



Property Type Allocation

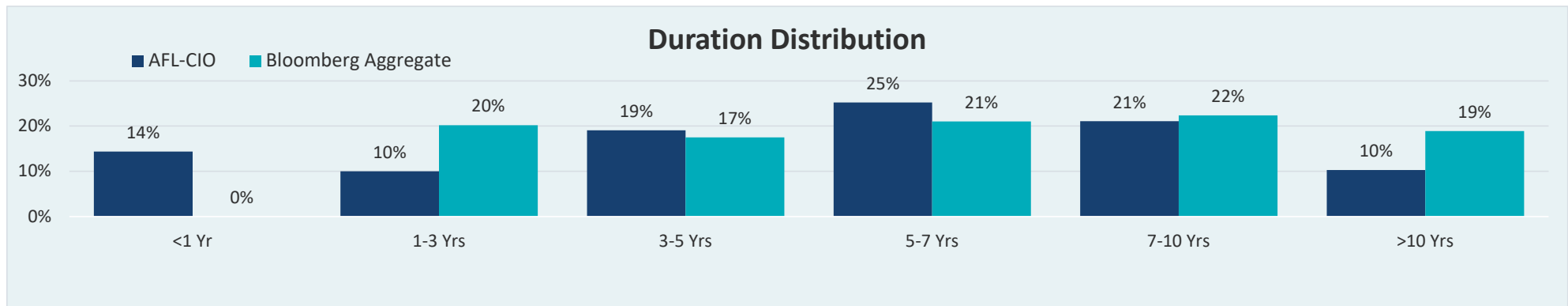
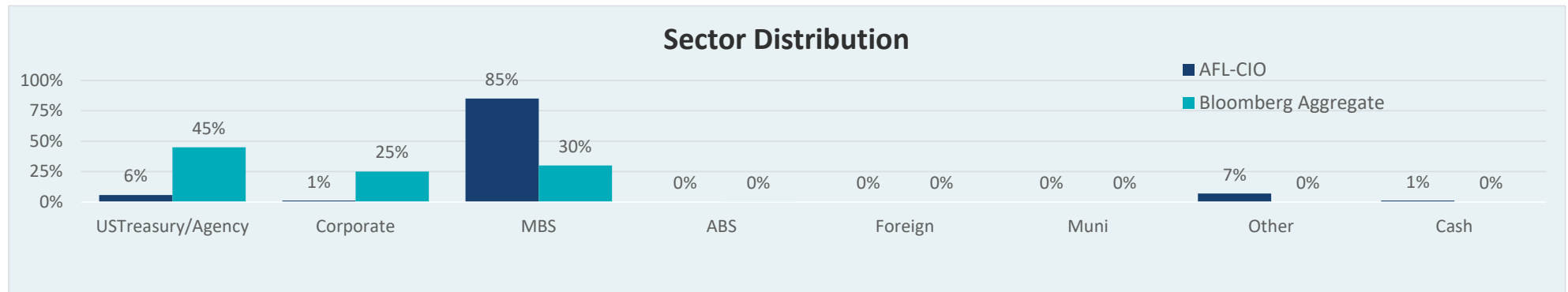
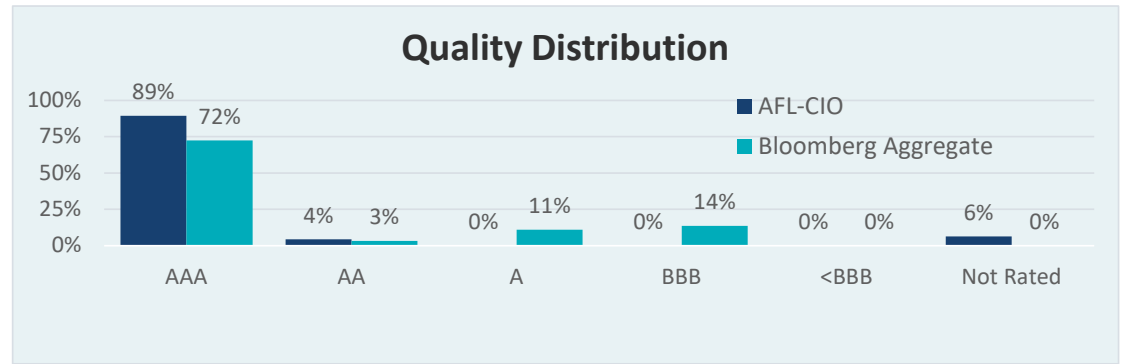


2.7% is allocated to Cash and Cash Equivalents.

Diversifying Fixed Income Managers

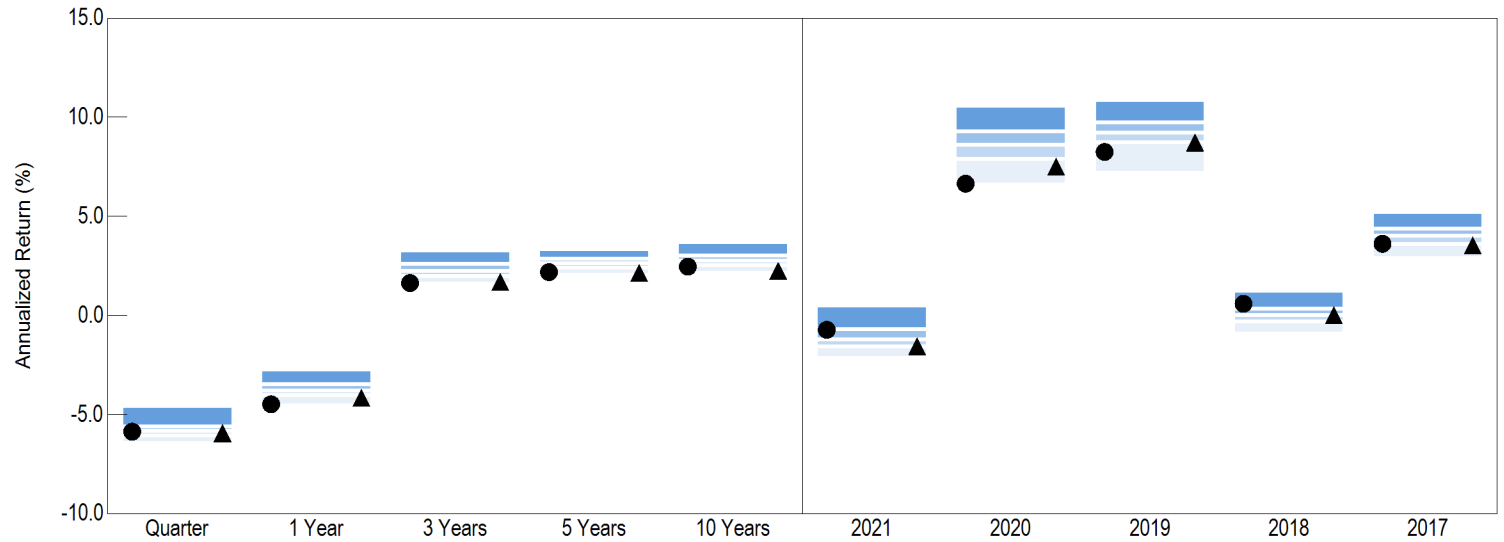
Domestic core fixed income portfolio with an exclusive focus on mortgage-related securities. Primary personnel include Stephen Coyle and Chang Su.

	AFL-CIO	Bloomberg Aggregate
Effective Duration	6.21	6.50
Yield to Maturity	2.63	2.92
Average Quality	AAA	AA/AA+
Average Coupon	2.6%	2.4%



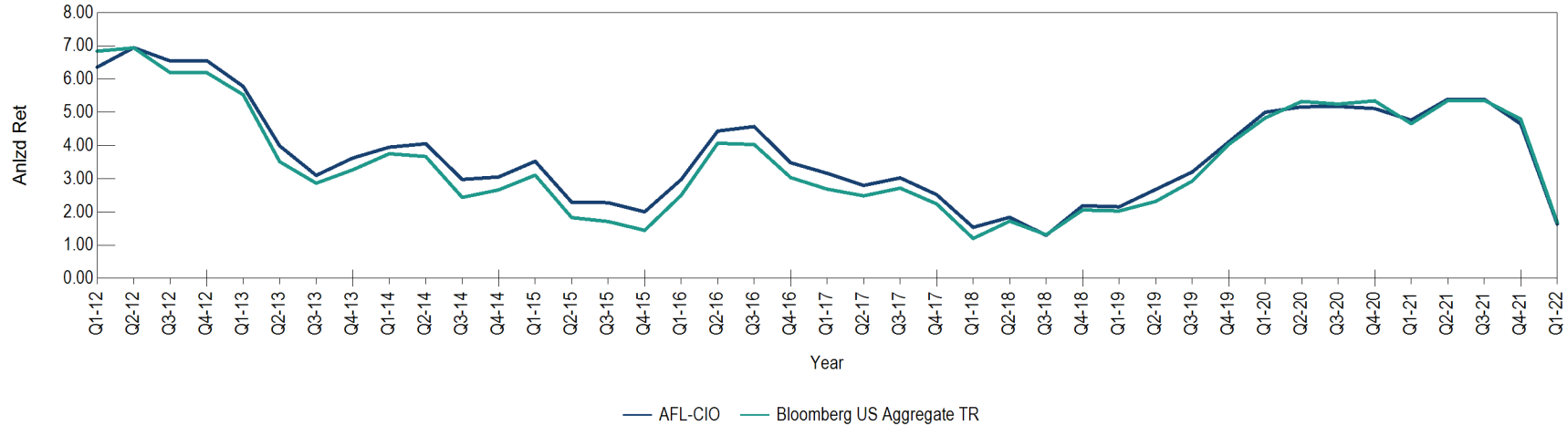
Duration and Quality distributions exclude cash.

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

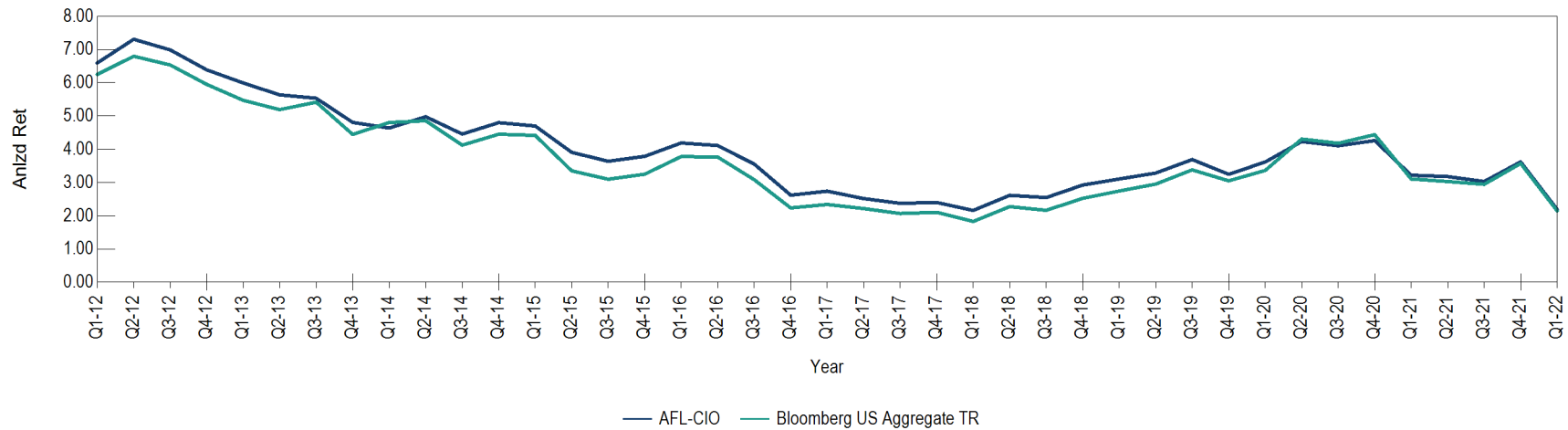


	Return (Rank)										
	Quarter	1 Year	3 Years	5 Years	10 Years	2021	2020	2019	2018	2017	
5th Percentile	-4.6	-2.7	3.3	3.3	3.7	0.5	10.6	10.9	1.2	5.2	
25th Percentile	-5.6	-3.4	2.6	2.9	3.1	-0.7	9.3	9.8	0.4	4.4	
Median	-5.8	-3.8	2.3	2.6	2.8	-1.2	8.6	9.3	0.0	4.0	
75th Percentile	-6.0	-4.0	2.0	2.4	2.6	-1.5	7.9	8.7	-0.3	3.6	
95th Percentile	-6.4	-4.5	1.6	2.1	2.2	-2.1	6.6	7.2	-0.9	2.9	
# of Portfolios	210	210	207	204	196	217	225	228	240	233	
● AFL-CIO	-5.9 (58)	-4.5 (95)	1.6 (95)	2.2 (93)	2.5 (86)	-0.7 (30)	6.6 (95)	8.2 (88)	0.6 (16)	3.6 (76)	
▲ Bloomberg US Aggregate TR	-5.9 (66)	-4.2 (82)	1.7 (94)	2.1 (95)	2.2 (95)	-1.5 (76)	7.5 (85)	8.7 (77)	0.0 (54)	3.5 (79)	

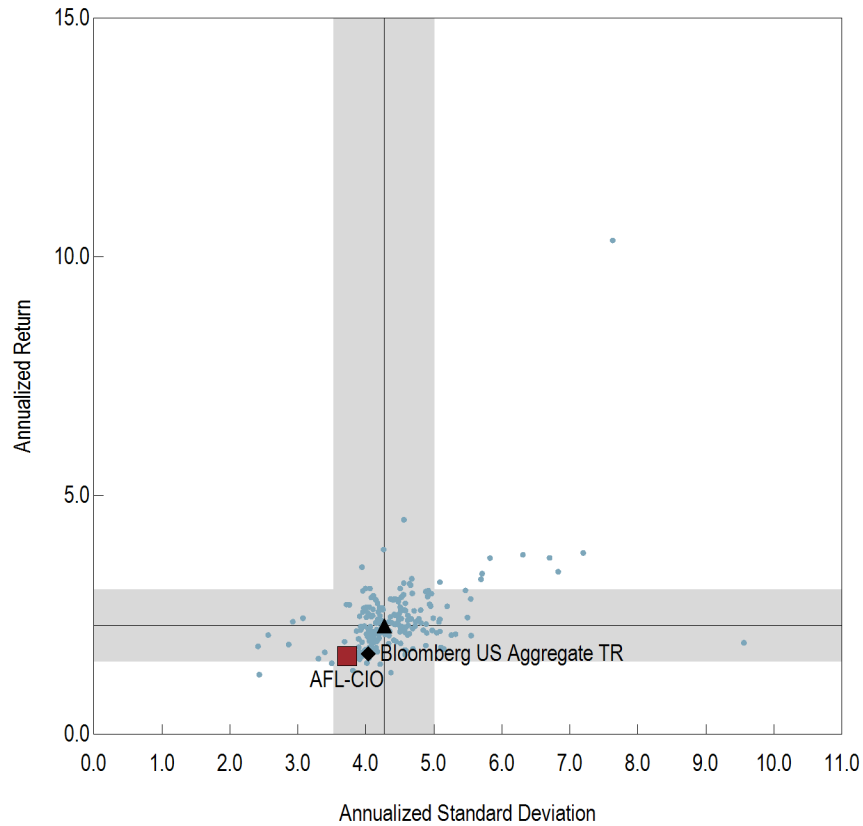
Rolling 3 Year Annualized Return (%)



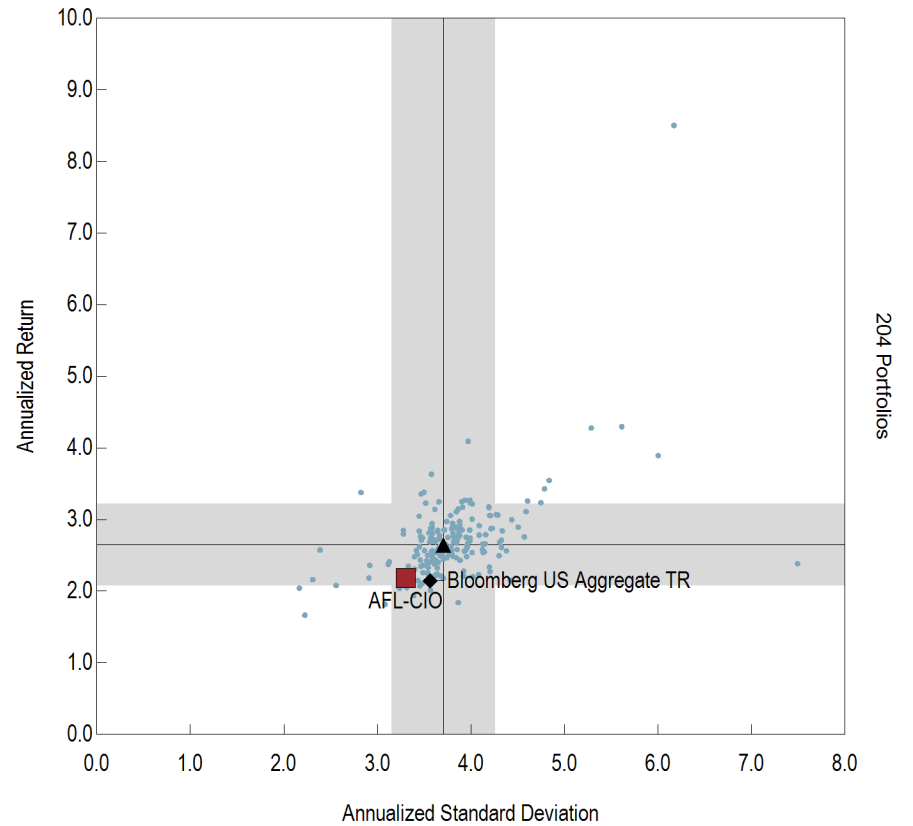
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
AFL-CIO	1.6%	3.7%	0.3
Bloomberg US Aggregate TR	1.7%	4.0%	0.3
eV US Core Fixed Inc Gross Median	2.3%	4.3%	0.4

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
AFL-CIO	2.2%	3.3%	0.3
Bloomberg US Aggregate TR	2.1%	3.6%	0.3
eV US Core Fixed Inc Gross Median	2.6%	3.7%	0.4

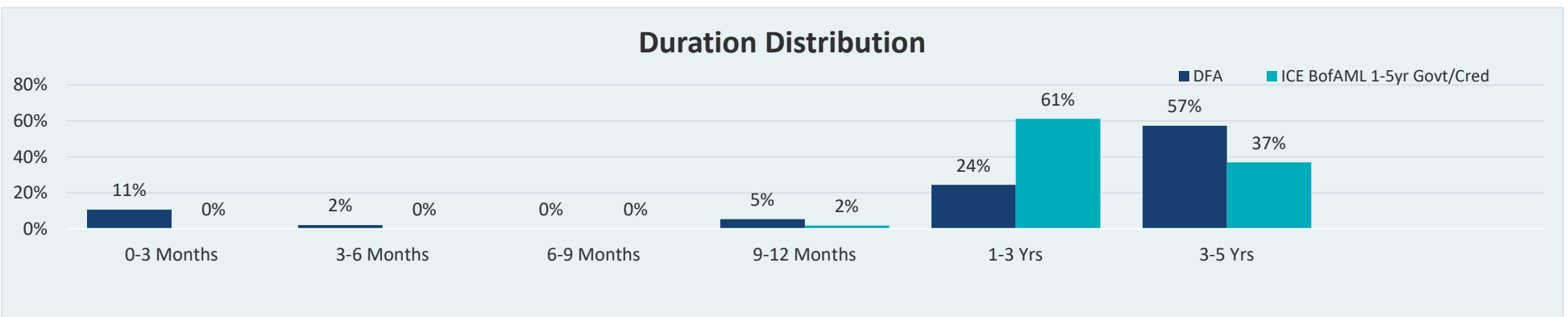
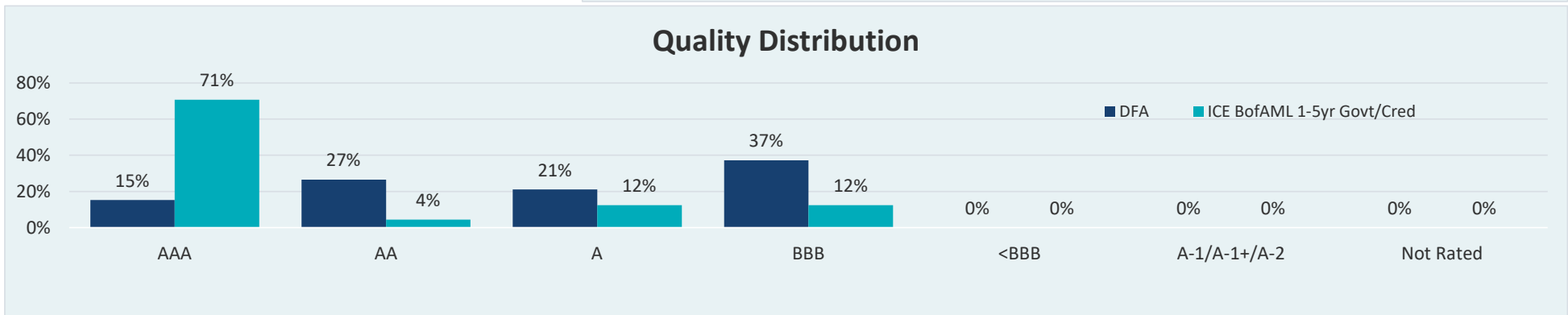
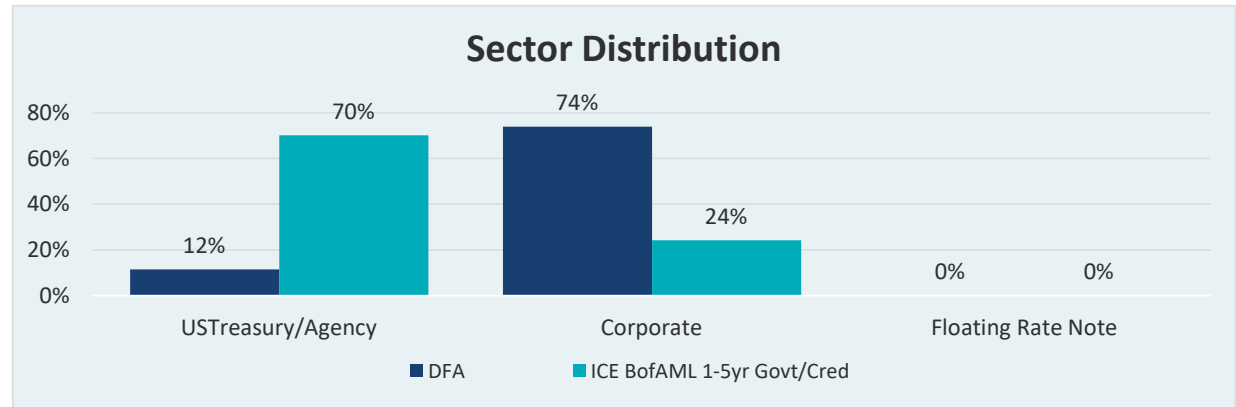
Liquidity Managers

DFA Short Credit Manager Portfolio Overview

Period Ending: March 31, 2022

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

	DFA	ICE BofAML 1-5yr Govt/Cred
Effective Duration	2.81	2.66
Yield to Maturity	2.95	2.55
Average Quality	A	AA+
Average Coupon	2.08%	1.86%

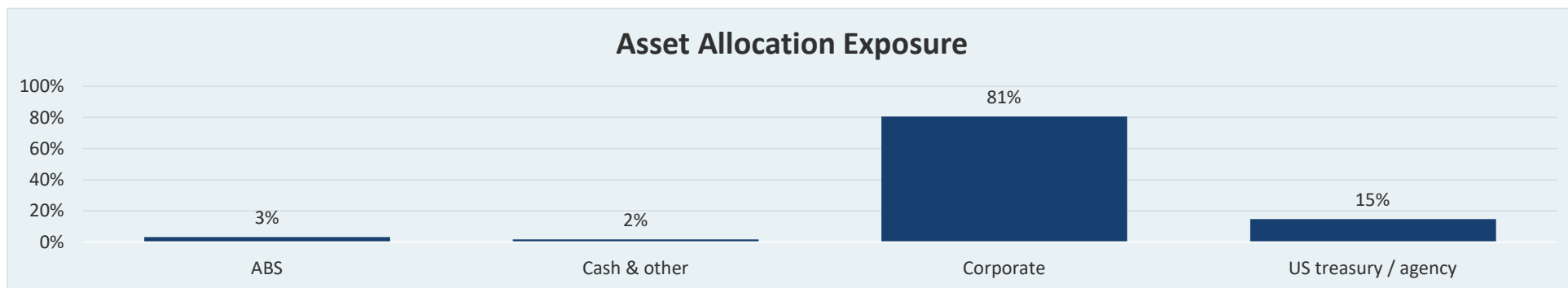
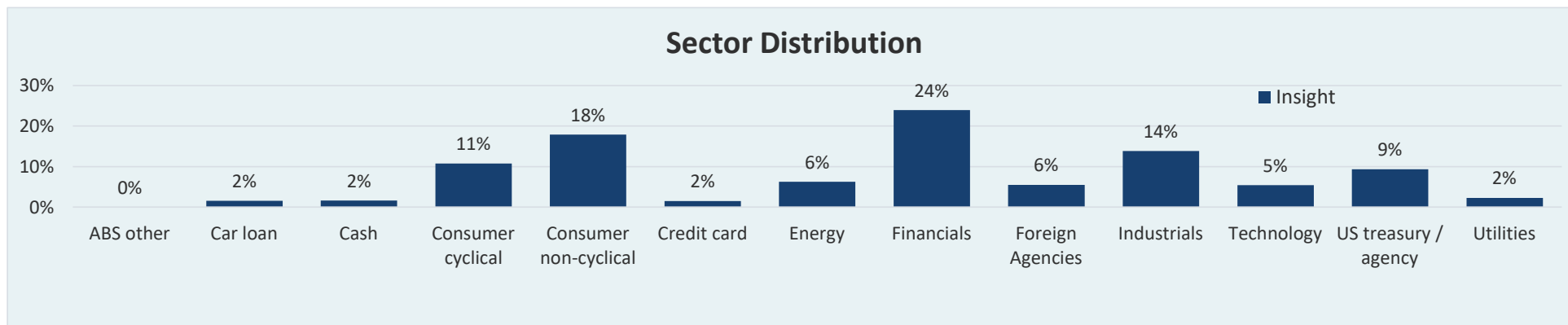
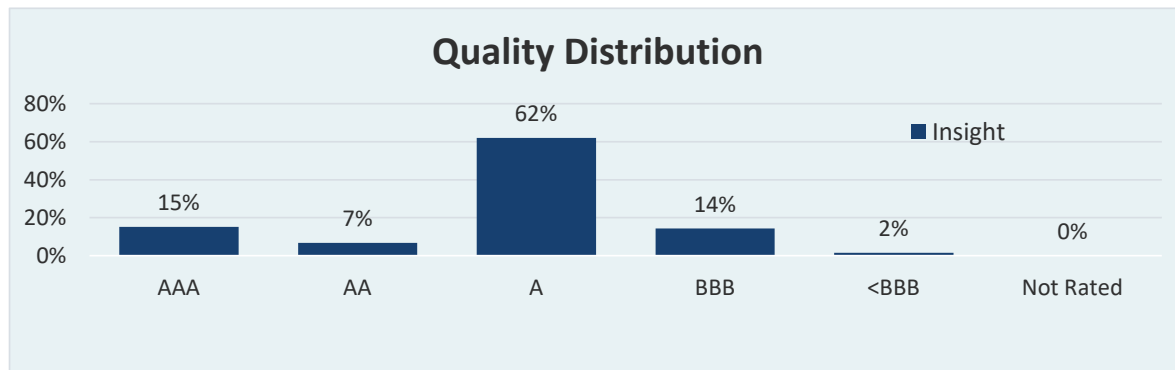


Insight Short Duration Manager Portfolio Overview

Period Ending: March 31, 2022

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

	Insight	BBgBarc 1-3yr Govt
Effective Duration	0.99	1.90
Yield to Maturity	2.29	2.23
Average Quality	A	AAA
Average Coupon	2.77%	1.28%

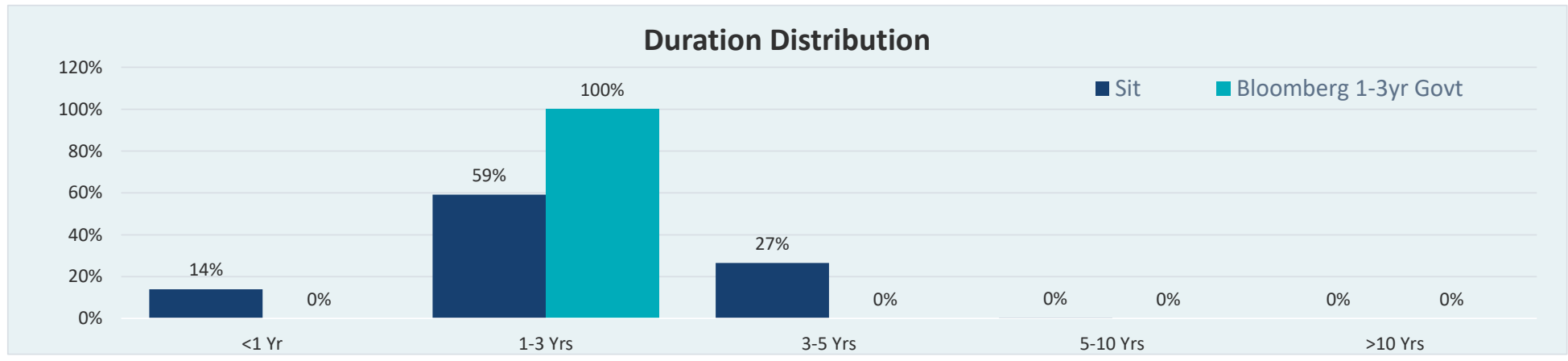
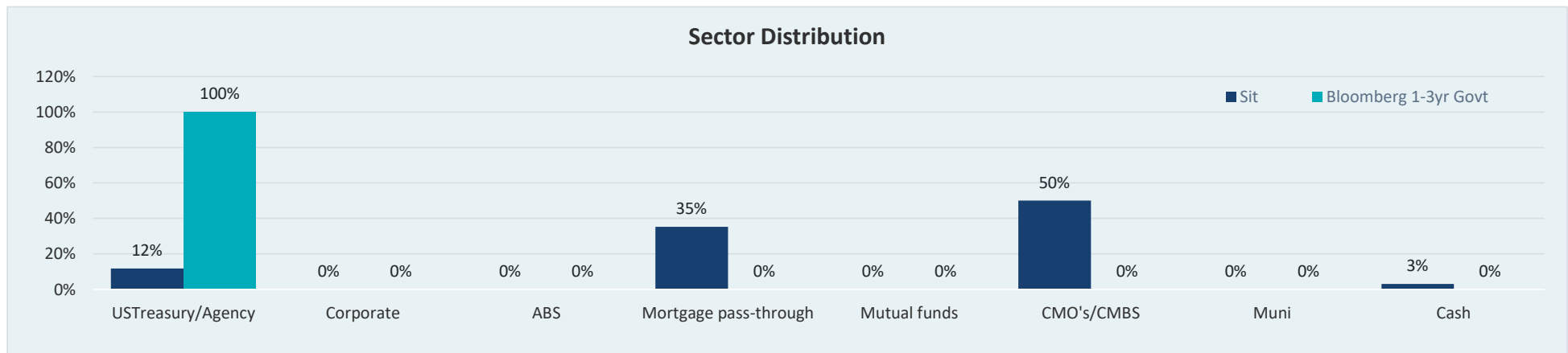
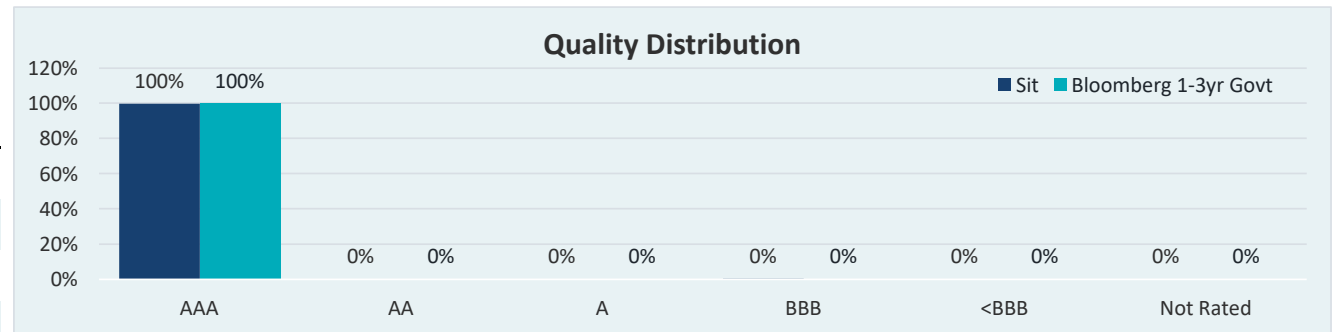


Sit Short Duration Manager Portfolio Overview

Period Ending: March 31, 2022

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

	Sit	BBgBarc 1-3yr Govt
Modified Duration	2.40	1.90
Yield to Maturity	4.80	2.23
Average Quality	AAA	AAA
Average Coupon	5.20%	1.28%



Performance Return Calculations

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

Data Source

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

Illiquid Alternatives

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

Policy & Custom Index Composition

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

Policy & Custom Index Composition (continued)

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

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

Other Disclosures

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

Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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Meeting Date
05/25/2022
Agenda Item
#9b.

MEMORANDUM

Date: May 25, 2022

To: CCCERA Board of Retirement Trustees

From: Timothy Price, Chief Investment Officer

Subject: Investment Staff Report – Q1 2022

Overview

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

Summary

CCCERA's Total Fund is performing as expected, exhibiting returns above expectations for the amount of risk taken. This is measured by the Sharpe Ratio (risk-adjusted return), and a comparison to the Simple Target Index. The Simple Target Index is the most basic index which could replicate CCCERA's Total Fund, and is made up of 75% MSCI ACWI, 18% Bloomberg 1-3 Year Gov/Credit, and 7% 3-Month Treasury Bills (please see the Total Fund pages in the appendix for additional details). CCCERA's portfolio is much more complex, especially as it relates to allocations to private equity, private credit, and real estate.

CCCERA has been rewarded for implementing a more complex portfolio and has outperformed the Simple Target Index over the trailing ten years, while experiencing less risk (volatility). While the trailing year performance has been strong, the trailing three and five-year periods show a lower return and lower risk level than the Simple Target Index, but superior Sharpe ratios. Details on performance relative to this index are included in the appendix. It is worth noting that CCCERA's Total Fund return is an aggregate of the performance of the Liquidity, Growth, and Risk Diversifying sub-portfolios.

1) Liquidity

The purpose of the liquidity program is to match three years of benefit payments with high credit quality, low duration assets. The liquidity sub-portfolio is made up of three fixed income managers, all of whom pursue a high quality, low duration investment approach. In the first quarter of 2022, all managers held high quality (as measured by credit ratings), low duration portfolios. The average credit quality for the entire liquidity program is AA- (AAA is the highest rating), and the duration is 1.9 years, which is considered short.

2) Growth

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

For the trailing five-year period ending March 31, 2022, the Growth portfolio returned 10.7% relative to the index return of 11.6%, for a relative underperformance of 1.0%. Over this period, the Growth program produced a superior Sharpe ratio of 0.9 relative to the index's 0.6. During the first quarter of 2022, the MSCI ACWI Index returned -5.4% relative to CCCERA's Growth sub-portfolio return of -3.5%.

3) Risk Diversifying

The Risk Diversifying mandate holds assets that are expected to diversify the growth portfolio's volatility while offering moderate growth. The mandate as a whole seeks to be highly liquid, have a low beta to the growth market, and produce positive real returns. In the first quarter, the Risk Diversifying mandate fulfilled two of these goals. The entire mandate can be liquidated within 90 days, meeting the requirement of high liquidity. The correlation of the mandate to growth markets is 0.8, similar to that of December 2021. The trailing real (net of inflation) return over the past five years is -2.8%, remaining below expectations. We continue to actively underwrite a number of strategies to further build out this allocation.

The Liquidity and Growth sub-portfolios are largely functioning well and within expectations. We continue to underwrite additional strategies to diversify the program away from its fixed income bias.

By and large, the product teams and asset managers across all managers are stable, and we have no significant organizational concerns with our investment managers. CCCERA's Total Fund in aggregate is performing in line with expectations, having a similar or higher risk-adjusted return but a lower level of volatility compared to the Simple Target Index. Enclosed are additional details on CCCERA's Total Fund, sub-portfolios, and individual investment strategies.

CCCERA Portfolio Report Card

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

Liquidity

Objective	Measurement	Current Period Data	Status
High Quality	Credit Quality	AA-	Meeting Expectations
Low Risk	Duration	1.9 years	Meeting Expectations
Appropriately Sized	Months of Benefit Payments Invested	28 Months	Meeting Expectations

Growth

Objective	Measurement	Current Period Data	Status
Growth of Plan Assets	Absolute Returns	Trailing 5 yr return: 10.7%	Meeting Expectations
	Benchmark Relative Returns	-1.0% relative to ACWI over trailing 5 years	Below Expectations
Efficient Capital Deployment	Sharpe Ratio	CCCERA: 0.9 MSCI ACWI: 0.6 (over trailing 5 years)	Meeting Expectations

Risk Diversifying

Objective	Measurement	Current Period Data	Status
Offset Volatility in Growth Portfolio	Correlation	0.8 over trailing 5 years	Below Expectations
Positive Real Returns	Returns	Trailing 5 yr real return of -2.8%	Below Expectations
High Liquidity	% of Portfolio that can be liquidated within 90 days	100%	Meeting Expectations

Total Fund

Objective	Component/Measurement	Status
Store 4 Years of Benefit Payments	Liquidity Sub-portfolio	Meeting Expectations
Participate in Growth Opportunities	Growth Sub-portfolio	Meeting Expectations
Provide an offset to Growth volatility	Risk Diversifying Sub-portfolio	Below Expectations
Produce superior risk adjusted returns	Total Fund Sharpe Ratio	Meeting Expectations

Appendix – Liquidity Sub-Portfolio

Manager Reviews

Organizational Stability

	Portfolio Management Assessment	1 Year Product Asset Growth	1 Year Firm Asset Growth	Regulatory Action in Last Year?
Insight	Good	124%	17%	N
Sit	Good	-3%	7%	N
DFA	Good	7%	3%	N

Performance

	Portfolio Average Credit Quality	Portfolio Average Duration	Portfolio Average Yield	1 Year Total Return
Insight	A	1.0	2.3	-2.7%
Sit	AAA	2.4	4.8	-3.0%
DFA	A	2.8	3.0	-3.8%

Manager Notes:

Fixed income securities have traded off as rates have risen across all fixed income durations. The shorter duration of CCCERA's mandates have provided relative protection, as has the buy and maintain bias of the portfolio.

Manager Theses:

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

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

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

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

Appendix – Growth Sub-Portfolio

Manager Reviews

Organizational Stability

	Portfolio Management Assessment	1 Year Product Asset Growth	1 Year Firm Asset Growth	Regulatory Action in Last Year?
Boston Partners	Good	6%	9%	N
Jackson Square	Good	-53%	-40%	N
BlackRock Index Fund	Good	0%	6%	N
Emerald Advisors	Good	-15%	-15%	N
Ceredex	Good	-9%	-3%	N
Pyrford (BMO)	Good	-5%	-8%	N
William Blair	Good	-18%	1%	N
First Eagle	Good	3%	0%	N
Artisan Global	Good	-8%	-2%	N
PIMCO/RAE EM	Good	-15%	-5%	N
TT EM	Good	-21%	-18%	N
Adelante	Good	24%	26%	N
Invesco REIT	Good	N/A	N/A	N
Allianz	Good	25%	1%	N
AQR	Good	-20%	-17%	N
PanAgora	Good	26%	5%	N
Private Equity	Good	--	--	N
Private Credit	Good	--	--	N
Real Estate	Good	--	--	N

Performance

	Trailing 1-Yr Return	Trailing 5-yr Return	Trailing 10-yr Return	Performance in Line with Expectations?	Inception Date
MSCI ACWI-ND	7%	12%	10%		
Boston Partners	15%	12%	12%	Y	04/30/1995
Jackson Square	-4%	15%	13%	N	01/31/2005
BlackRock Index Fund	13%	16%	15%	Y	03/31/2017
Emerald Advisors	-8%	13%	13%	Y	03/31/2003
Ceredex	4%	7%	10%	Y	09/30/2011
Total Domestic Equity	6%	13%	13%	Y	
Pyrford (BMO)	3%	6%	6%	Y	03/31/2014
William Blair	-5%	11%	8%	Y	09/30/2010
PIMCO/RAE EM	0%	6%	4%	Y	01/31/2017
TT EM	-18%	6%	6%	Y	06/30/2017
Total International Equity	-5%	7%	6%	Y	
First Eagle	8%	8%	8%	Y	12/31/2010
Artisan Global	1%	15%	13%	Y	11/30/2012
Total Global Equity	4%	12%	10%	Y	
Adelante	30%	12%	11%	Y	07/31/2001
Invesco REIT	N/A	N/A	N/A	Y	02/28/2022
Allianz	5%	4%	5%	Y	04/30/2000
AQR	7%	7%	5%	Y	12/31/2018
PanAgora	4%	7%	8%	Y	02/28/2019
Private Equity	49%	19%	15%	Y	
Private Credit	13%	8%	10%	Y	
Real Estate	19%	8%	10%	Y	

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

Manager Notes:

The first quarter of 2022 saw several headwinds impact risk assets significantly, particularly those assets that had been trading at high valuations over the past two years. Growth equities traded off sharply on fears of rising rates, rising inflation and supply chain disruptions. These fears were compounded with geopolitical risks after the Russian invasion of Ukraine.

We funded the INVESCO Fundamental Beta REIT strategy during the quarter. This mandate will complement Adelante as a public market proxy for assets intended to be invested in private real estate strategies over the next several years.

Manager Theses:

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

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

Jackson Square: Domestic equity large cap growth portfolio concentrated in companies with sustainable long-term growth characteristics. This portfolio should outperform in rapidly rising markets.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Appendix – Risk Diversifying Sub-Portfolio

Organizational Stability

	Portfolio Management Assessment	1 Year Product Asset Growth	1 Year Firm Asset Growth	Regulatory Action in Last Year?
AFL-CIO	Good	-2%	-2%	N
Acadian	Good	32%	-1%	N
Sit	Good	---	---	N

Performance

	Trailing 1 Year Correlation to Growth	Trailing 3 Year Correlation to Growth	1 Year Return	5 Year Return	% of Portfolio Liquid in 90 Days
AFL-CIO	0.8	0.0	-5%	2%	100%
Acadian	0.5	-0.3	-1%	N/A	100%
Sit	0.5	N/A	3%	N/A	100%

Manager Notes:

The Sit LLCAR was funded in the second quarter of 2021. As it is a custom strategy, we will not be able to show one year of data until mid 2022.

Manager Theses:

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

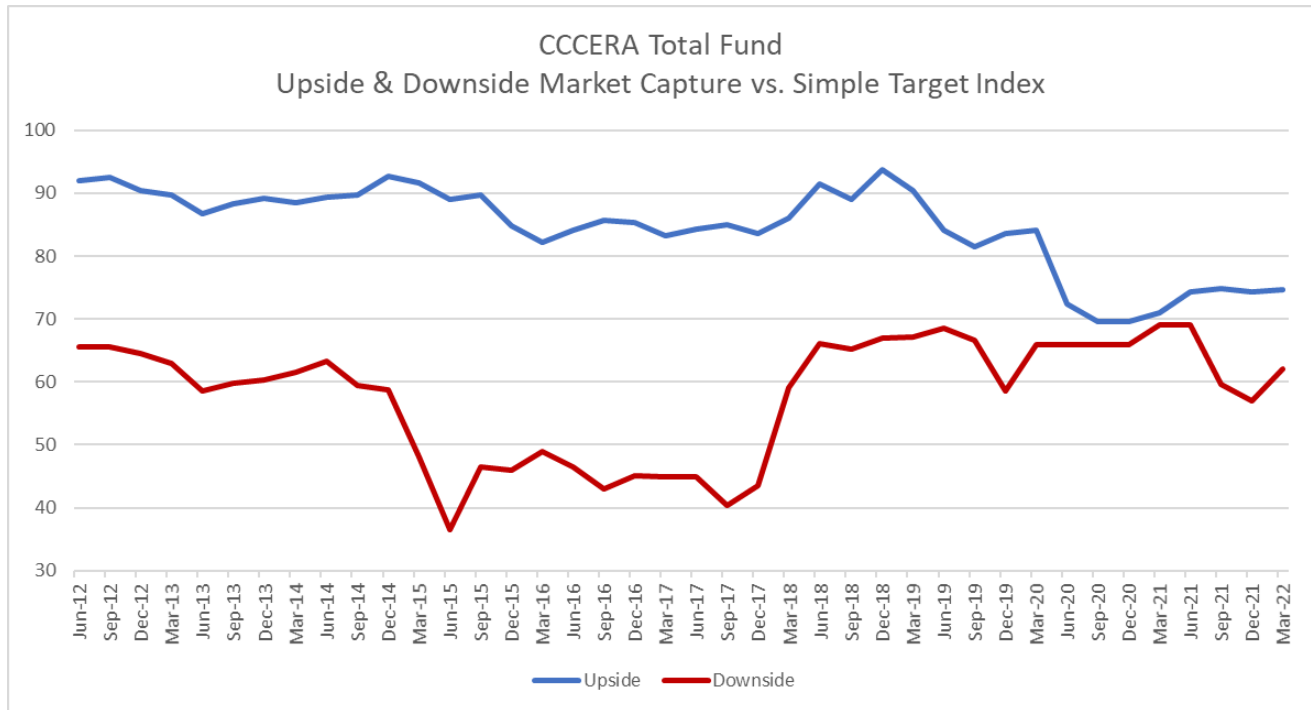
AFL-CIO: Portfolio of domestic, high quality fixed income securities which are backed by commercial and residential mortgages.

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

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

Appendix Data – Total Fund

Rolling 3-Year Total Fund Upside/Downside Market Capture



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

Total Fund Quarterly Attribution

	CCCERA Total Fund			Simple Target Index			Analysis		
	Allocation	Return	Return Contribution	Allocation	Return	Return Contribution	Allocation Difference	Return Difference	Total Effect
Liquidity	18.5%	-2.5%	-0.5%	18.0%	-2.5%	-0.4%	0.5%	0.0%	0.0%
Growth	73.9%	-3.5%	-2.6%	75.0%	-5.4%	-4.0%	-1.1%	1.9%	1.4%
Risk Diversifying	7.6%	-2.8%	-0.2%	7.0%	0.0%	0.0%	0.6%	-2.8%	-0.2%
Total Fund	100%		-3.2%	100%		-4.5%	-0.1%		1.2%

CCCERA Total Fund Performance vs. Simple Target Index

	One Year		Three Years		Five Years		Ten Years	
	CCCERA	STI	CCCERA	STI	CCCERA	STI	CCCERA	STI
Return	7.0	4.3	9.0	10.1	8.1	8.4	8.1	7.2
Volatility	7.8	8.9	9.6	14.1	8.4	12.3	6.8	9.7
Sharpe	0.9	0.5	0.9	0.7	0.8	0.6	1.1	0.7

The Simple Target Index is made up of 75% MSCI ACWI, 18% Bloomberg 1-3 Year Gov/Credit, and 7% 3-Month Treasury Bill. This purpose of this index is to examine whether CCCERA is being rewarded for pursuing a more nuanced portfolio versus a very simple representative portfolio.

CCCERA's Total Fund has produced strong risk adjusted and absolute returns over the trailing one and ten-year periods. Additionally, the CCCERA Portfolio has exceeded the STI over the trailing ten-year period, though it has lagged over the three- and five-year periods. This would indicate that CCCERA has been rewarded over time for engaging in more complex investments which target outperformance versus investing passively in the publicly traded market even though these more complex structures.

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



Meeting Date
05/25/2022
Agenda Item
#10

MEMORANDUM

Date: May 25, 2022

To: CCCERA Board of Retirement

From: Timothy Price, Chief Investment Officer

Subject: Notice of Planned Termination of Jackson Square Partners

Overview

After thorough review, we have determined that the Jackson Square Partners Domestic Equity Large Capitalization Growth strategy no longer fits the needs of the Plan's Growth Sub-Portfolio, and we plan to terminate the strategy in the coming weeks. Per the Investment Policy Statement, the Board has delegated the termination decision to the CIO. This memo outlines our rationale for terminating the strategy, and how we intend to redistribute the assets. The Board does not need to explicitly approve the termination, but may veto this action if it is determined that the planned termination is not in the best interests of the Plan.

Proceeds from terminating the Jackson Square strategy will be reallocated on an interim basis to a domestic large cap equity index and subsequently to a more focused, domestic large cap growth strategy.

Rationale

We recommend exiting our position for the following reasons: 1) Returns, both absolute and risk-adjusted, are below expectations and the benchmark 2) Fund's risk profile exceeds that of the benchmark despite a more conservative stated approach and 3) Acceleration of underperformance over the past 15 months.

Background

JSP's large cap domestic strategy is long-term with a 3-5-year average hold focused on business fundamentals including return on invested capital and growth of revenue and free cash flow at reasonable valuations. The portfolio is concentrated consisting of 25-35 securities and employs a fundamental, bottom-up approach agnostic of sector weightings. JSP divides and allocates its holdings into company classifications as follows:

- 1) 30-40% “Disruptors”, young businesses with the ability to disrupt large addressable markets and drive scale e.g., Twilio & Datadog
- 2) 50% “Compounders”, dominant businesses with strong growth & profitability at reasonable valuations e.g., Microsoft & Amazon
- 3) 10-20% “Non-traditional”, more mature businesses e.g., Nike & Canadian Pacific

The Disruptors generate the most growth, while the Compounders and Non-Traditional provide a more “all-weather”, less volatile portfolio but have little or no exposure to the growth factor as a return source.

Growth Sub-Portfolio Goals

We measure a Growth Sub-Portfolio strategy’s success based on the following: 1) Absolute, net returns in excess of benchmark 2) Risk-adjusted, net returns in excess of benchmark and 3) Minimal impairment of capital. Simply put, growth assets must provide net investment returns above the benchmark and minimize risk and the loss of capital. When reviewing any strategy for inclusion in Plan portfolios, we seek investment strategies with proven track records of outperformance featuring return drivers rooted in accepted financial and economic principles. Ideally research should confirm identified return drivers as statistically significant contributors to performance. The Growth Sub-Portfolio comprises many different strategies, and as the Plan evolves and grows, allocations and strategies included in the Plan portfolio may change.

Performance Relative to Growth Goals

The Fund’s approach to the growth factor is conservative, concentrated and based on fundamental bottom-up research. The inclusion of “Compounders” and “Non-traditional” companies should provide an all-weather portfolio generating outperformance on a risk-adjusted basis. This approach is less focused on the growth factor’s return contribution, and as a result, we expect below index performance in up markets and above index performance in down markets. Additionally, we expect JSP to assume less risk versus the index given its reliance on less growthy and less risky assets; however, this has not been the case in recent periods. Over trailing periods through the end of 2021, the Fund posted higher volatility of returns relative to the index (see SD, or standard deviation of returns in Table 1 below). On an absolute return basis, and over the last 10 years ended 12-31-2021, the Fund underperformed the index by 3.7% returning 16.1% versus the index return of 19.8%. In the most recent quarter ended 3-31-2022, the Fund underperformed the index by 4.3% (see Table 2 below). We acknowledge that there was considerable volatility in the first quarter of 2022 but given the Fund’s more conservative approach, we expected upside return relative to the benchmark.

Table 1. Jackson Square: Returns and Risk Statistics

Risk Return Statistics FY2021 Jackson Square Partners					
	1 Yr.	3 Yrs.	5 Yrs.	10 Yrs.	ITD
<i>Period ended 12-31-2021, net of fees</i>					
ROR Portfolio	8.28	25.44	19.92	16.08	11.66
ROR Benchmark*	27.60	34.08	25.32	19.79	13.22
SD Portfolio	15.34	18.81	16.71	14.57	15.71
SD Benchmark*	13.16	18.17	16.43	13.98	15.24
Sharpe Portfolio	0.54	1.30	1.13	1.06	0.67
Sharpe Benchmark*	2.09	1.82	1.47	1.37	0.79
M^2 Portfolio	7.11	24.61	19.61	15.46	11.35
TE Portfolio	9.69	7.37	6.29	5.66	5.41
IR Portfolio	(1.99)	(1.17)	(0.86)	(0.65)	(0.29)

*Russell 1000 Growth

Source: Northern Trust

Table 2. Jackson Square: Returns by Quarter

Jackson Square Partners Returns by Quarter, Net of Fees			
	JSP	Benchmark*	Delta
1Q2020	-12.55%	-14.10%	1.55%
2Q2020	29.87%	27.84%	2.03%
3Q2020	8.55%	13.22%	-4.67%
4Q2020	15.93%	11.39%	4.54%
FY2020	42.93%	38.49%	4.44%
1Q2021	-2.61%	0.94%	-3.55%
2Q2021	11.18%	11.93%	-0.75%
3Q2021	-0.48%	1.16%	-1.64%
4Q2021	0.49%	11.64%	-11.15%
FY2021	8.28%	27.60%	-19.32%
1Q2022	-13.68%	-9.40%	-4.28%

*Russell 1000 Growth

Source: Northern Trust



MEMORANDUM

Date: May 25, 2022
To: CCCERA Board of Retirement
From: Timothy Price, Chief Investment Officer
Subject: Liquidity Sub-portfolio Projected Sizing

Overview

Every year CCCERA Investment Staff and Verus review capital market assumptions and seek to incrementally adjust CCCERA's asset allocation to capture the most promising opportunities in the prevailing market. As part of this annual exercise, CCCERA Investment Staff and Verus review the size and allocation of each of CCCERA's functional sub-portfolios; liquidity, growth, and risk diversifying. The first step of this annual exercise is to adjust the size of the liquidity sub-portfolio to add a new third year of expected benefit payments to our liquidity model and fund that third year during the Annual Funding Plan in July. Assets not allocated to the liquidity portfolio are available for the growth and risk diversifying portfolios.

This memo outlines this annual asset allocation process, with specific detail on the sizing of the liquidity program.

Liquidity Sub-portfolio Sizing

CCCERA's liquidity sub-portfolio has the mandate of storing and disbursing three years' worth of benefit payments on a rolling basis. The liquidity portfolio is fully funded every July through the Annual Funding Plan, which incorporates the receipt of the employer pre-payments. Over the subsequent year the liquidity portfolio disburses benefit payments until the program is replenished again the following July.

The size of the liquidity program is measured in dollars; CCCERA knows the dollar value of expected benefit payments, as projected by CCCERA's actuaries, for the next three years. This is the dollar value targeted every year during the annual review of the asset allocation and capital market assumptions. This dollar value is then converted into a percentage of CCCERA's Total Fund. The current present value of the liquidity program is approximately \$1.32bn, and this will fund benefits through July of 2024.

The next tranche of benefit payments (the new "year three," to be funded this upcoming July) has a present value of \$600 mm. In order to determine the impact on this year's asset allocation, we discount this tranche at the liquidity sub-portfolio's current yield of 3.4% (by discounting the value of future benefit payments CCCERA harvests the growth of the assets). This gives us an indication of the dollars that we will

need to add to the liquidity sub-portfolio in July 2022. The discounted sum of the projected benefit payments totals \$1.74 bn for the next three years (July 2022 through June 2025).

Details of the calculation for the size of the liquidity program is shown below:

April 2022 Liquidity Program Size (\$)	\$1.32 bn
Less May – July 2022 Benefit Payments	\$186 mm
Plus Discounted Year 3	\$600 mm
Expected Liquidity Program Size	\$1.74 bn

Estimating the Total Fund balance by taking the current value and adjusting for future cash flows, we project an expected allocation of 16% for the liquidity sub-portfolio, down slightly from a 18% allocation last year. Details of the calculation for the percentage of total fund assets required to fund the liquidity program is shown below:

Aprils 2022 Total Fund Market Value	\$10.61 bn
Less May – July 2022 Benefit Payments	\$186 mm
Plus Estimated Employer Pre-Payments	\$310 mm
Projected Total Fund Market Value as of July 2022	\$10.73 bn
Expected Liquidity Program Size as of July 2022	\$1.74 bn
Liquidity Program as a % of Total Fund Assets	16.2%

This expected percentage allocation was used for the asset allocation exercise that will be presented by Verus. Please note that we will fine tune these allocations in the Annual Funding Plan, to be presented in advance of the mid-year rebalancing.

Expected Allocations

The incremental 2% of assets will be allocated to the growth and diversifying sub-portfolios. CCCERA Investment Staff and Verus are recommending a slight increase to the global equities and hedging strategies.

Summary

This memo is meant to outline the process for the annual asset allocation and capital market review undertaken by CCCERA Investment Staff and Verus. The liquidity program is sized in dollars because the liability is known and stable, while the growth and risk diversifying portfolios are sized in percentages of Total Fund assets. The conversion of the dollar size of the liquidity portfolio to a percentage of total fund assets may at times give the optics of shrinking or expanding the liquidity portfolio, however the percentage is simply adjusted to match the dollar liability.

This memo is for information purposes only, and no action is required.



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



MAY 2022

Strategic Asset Allocation Review

Contra Costa County Employees' Retirement Association

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Past performance is no guarantee of future results. This document is provided for informational purposes only and is directed to institutional clients and eligible institutional counterparties only and is not intended for retail investors. Nothing herein constitutes investment, legal, accounting or tax advice, or a recommendation to buy, sell or hold a security or pursue a particular investment vehicle or any trading strategy. This document may include or imply estimates, outlooks, projections and other “forward-looking statements.” No assurance can be given that future results described or implied by any forward looking information will be achieved. Investing entails risks, including possible loss of principal. Additional information about Verus Advisory, Inc. is available on the SEC’s website at www.adviserinfo.sec.gov. Verus – also known as Verus Advisory™.

Executive Summary

Objective

- Assess CCCERA’s investment strategy to identify potential improvement opportunities

Observations / Comments

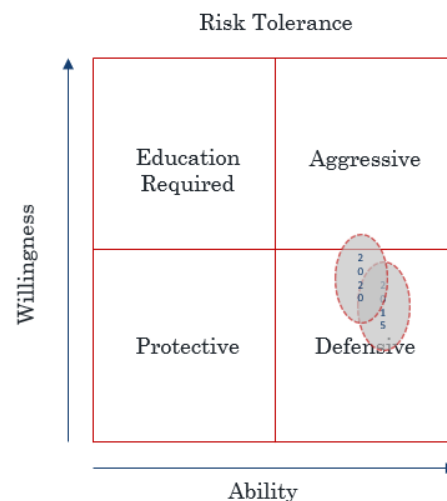
- Given the recent investment market drawdown, expected returns have risen meaningfully
- CCCERA’s functionally-focused portfolio approach has performed as expected, providing strong downside protection through times of heightened volatility
- In 2021, the Board took action to reduce the liquidity pool from four years of benefit payment coverage to three years in favor of higher long-term growth prospects, which marked the first significant strategy shift since the FFP was first approved in 2015
- Today, a larger fund allows for a reduction in the share of assets committed to the liquidity pool to maintain the three-year benefit reserve

Recommendation

- Shift 2% of the portfolio from the liquidity pool to the growth and diversifying pools.

Background

- In late 2020, Verus presented an asset/liability study with analysis demonstrating the Plan could reasonably reduce its cash reserve in favor of additional growth assets
- The Board specifically requested analysis assessing the impact on the Plan’s liquidity profile
- Following much discussion and consideration, the Board approved an asset allocation mix maintaining a liquidity reserve covering three years of “gross benefits”



COMPARISON OF MIXES AND LIQUIDITY POOL LOCK-IN AMOUNTS

Mix	Expected 10 Year Return	% in CDI Like Assets	% in Illiquid Assets	Max CDI Lock-in (Years, Gross)	Max CDI Lock-in (Years, Net)
Policy	6.3%	23.0%	36.0%	4	>10
Mix 1	6.6%	11.0%	40.0%	2	7
Mix 2	7.1%	11.0%	42.0%	2	7
Mix 3	6.3%	17.0%	39.0%	3	9
Mix 4	6.9%	17.0%	42.0%	3	9
Mix 5	6.1%	23.0%	39.0%	4	>10
Mix 6	6.6%	23.0%	41.0%	4	>10

Excerpts from Verus' 2022 Capital Market Assumptions

10-year return & risk assumptions

Asset Class	Index Proxy	Ten Year Return Forecast		Standard Deviation Forecast	Sharpe Ratio Forecast (g)	Sharpe Ratio Forecast (a)	10-Year Historical Sharpe Ratio (g)	10-Year Historical Sharpe Ratio (a)
		Geometric	Arithmetic					
Equities								
U.S. Large	S&P 500	5.3%	6.4%	15.7%	0.31	0.39	1.21	1.19
U.S. Small	Russell 2000	5.3%	7.4%	21.6%	0.23	0.32	0.77	0.81
International Developed	MSCI EAFE	6.1%	7.6%	17.9%	0.32	0.40	0.52	0.57
International Small	MSCI EAFE Small Cap	4.7%	6.9%	22.2%	0.19	0.29	0.66	0.71
Emerging Markets	MSCI EM	6.1%	8.9%	25.3%	0.23	0.34	0.32	0.40
Global Equity	MSCI ACWI	5.7%	7.1%	17.3%	0.31	0.39	0.84	0.86
Private Equity	Cambridge U.S. Private Equity	9.5%	12.4%	26.0%	0.35	0.46	-	-
Private Equity (Direct)	Cambridge U.S. Private Equity	10.5%	13.4%	26.0%	0.39	0.50	-	-
Private Equity (Fund of Funds)	Cambridge U.S. Private Equity	8.5%	11.4%	26.0%	0.31	0.42	-	-
Fixed Income								
Cash	30 Day T-Bills	0.4%	0.4%	1.2%	-	-	-	-
U.S. TIPS	Bloomberg U.S. TIPS 5-10	1.7%	1.8%	5.3%	0.25	0.27	0.59	0.60
U.S. Treasury	Bloomberg Treasury 7-10 Year	1.5%	1.7%	6.8%	0.16	0.20	0.43	0.45
Global Sovereign ex U.S.	Bloomberg Global Treasury ex U.S.	0.5%	1.0%	9.5%	0.01	0.06	-0.01	0.02
Global Aggregate	Bloomberg Global Aggregate	1.4%	1.6%	6.1%	0.16	0.20	0.28	0.30
Core Fixed Income	Bloomberg U.S. Aggregate Bond	2.2%	2.3%	4.1%	0.44	0.46	0.80	0.80
Core Plus Fixed Income	Bloomberg U.S. Universal	2.4%	2.5%	4.0%	0.50	0.51	0.82	0.83
Short-Term Gov't/Credit	Bloomberg U.S. Gov't/Credit 1-3 Year	1.5%	1.6%	3.6%	0.31	0.33	1.07	1.06
Short-Term Credit	Bloomberg Credit 1-3 Year	1.6%	1.7%	3.6%	0.34	0.35	1.25	1.24
Long-Term Credit	Bloomberg Long U.S. Corporate	2.4%	2.8%	9.4%	0.21	0.26	0.67	0.70
High Yield Corp. Credit	Bloomberg U.S. Corporate High Yield	3.1%	3.7%	11.2%	0.24	0.30	1.01	1.00
Bank Loans	S&P/LSTA Leveraged Loan Index	2.3%	2.7%	9.3%	0.20	0.25	0.82	0.83
Global Credit	Bloomberg Global Credit	1.5%	1.8%	7.3%	0.15	0.19	0.67	0.68
Emerging Markets Debt (Hard)	JPM EMBI Global Diversified	5.2%	5.9%	12.6%	0.38	0.44	0.66	0.68
Emerging Markets Debt (Local)	JPM GBI-EM Global Diversified	4.2%	4.9%	12.2%	0.31	0.37	0.04	0.09
Private Credit	S&P LSTA Leveraged Loan Index	6.8%	7.8%	14.6%	0.44	0.51	-	-
Private Credit (Direct Lending - Unlevered)	S&P LSTA Leveraged Loan Index	5.0%	5.5%	10.5%	0.44	0.49	-	-
Private Credit (Direct Lending - Levered)	S&P LSTA Leveraged Loan Index	8.0%	9.4%	17.4%	0.44	0.51	-	-
Private Credit (Credit Opportunities)	S&P LSTA Leveraged Loan Index	7.0%	8.0%	15.0%	0.44	0.51	-	-
Private Credit (Junior Capital / Mezzanine)	S&P LSTA Leveraged Loan Index	8.8%	10.4%	19.0%	0.44	0.53	-	-
Private Credit (Distressed)	S&P LSTA Leveraged Loan Index	9.0%	12.6%	29.1%	0.30	0.42	-	-

Investors wishing to produce expected geometric return forecasts for their portfolios should use the arithmetic return forecasts provided here as inputs into that calculation, rather than the single-asset-class geometric return forecasts. This is the industry standard approach but requires a complex explanation only a heavy quant could love, so we have chosen not to provide further details in this document – we will happily provide those details to any readers of this who are interested.

10-year return & risk assumptions

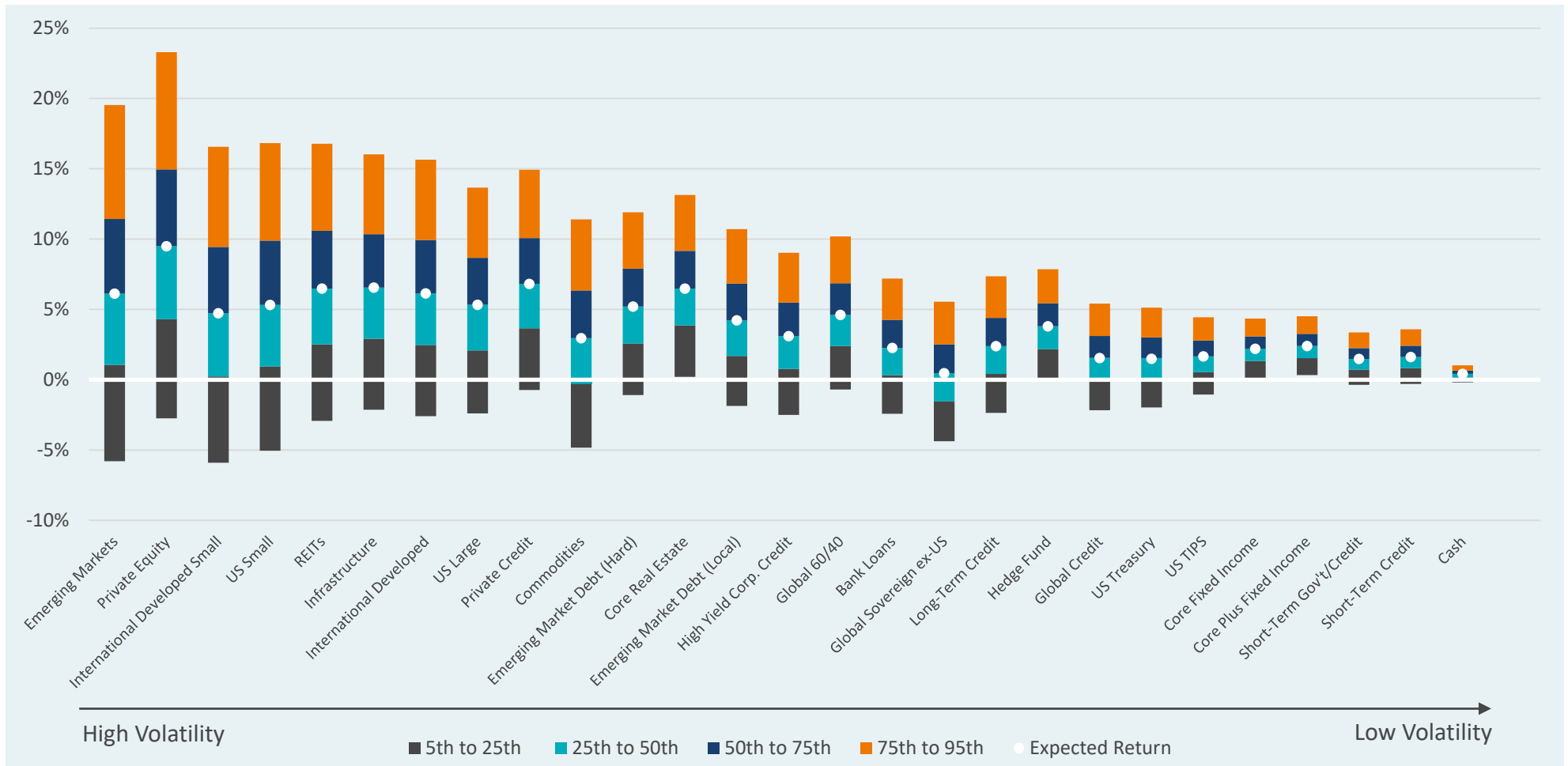
Asset Class	Index Proxy	Ten Year Return Forecast		Standard Deviation Forecast	Sharpe Ratio Forecast (g)	Sharpe Ratio Forecast (a)	10-Year Historical Sharpe Ratio (g)	10-Year Historical Sharpe Ratio (a)
		Geometric	Arithmetic					
Other								
Commodities	Bloomberg Commodity	3.0%	4.2%	15.9%	0.16	0.24	-0.25	-0.18
Hedge Funds	HFRI Fund Weighted Composite	3.8%	4.1%	7.7%	0.44	0.48	0.88	0.49
Hedge Funds (Fund of Funds)	HFRI Fund of Funds Composite	2.8%	3.1%	7.7%	0.31	0.35	-	-
Hedge Funds (Equity Style)	Custom HFRI Benchmark Mix*	4.5%	5.6%	15.0%	0.27	0.34	-	-
Hedge Funds (Credit Style)	Custom HFRI Benchmark Mix*	3.6%	4.1%	10.1%	0.32	0.37	-	-
Hedge Funds (Asymmetric Style)	Custom HFRI Benchmark Mix*	2.3%	2.4%	4.9%	0.39	0.41	-	-
Real Estate Debt	Bloomberg CMBS IG	2.1%	2.4%	7.4%	0.23	0.27	1.12	1.11
Core Real Estate	NCREIF Property	6.5%	7.2%	12.5%	0.49	0.54	2.08	2.02
Value-Add Real Estate	NCREIF Property + 200bps	8.5%	9.8%	16.7%	0.49	0.56	-	-
Opportunistic Real Estate	NCREIF Property + 300bps	9.5%	11.1%	18.7%	0.49	0.57	-	-
REITs	Wilshire REIT	6.5%	8.2%	19.3%	0.32	0.40	0.67	0.72
Global Infrastructure	S&P Global Infrastructure	6.6%	8.0%	17.6%	0.35	0.43	0.45	0.51
Risk Parity	S&P Risk Parity 10% Vol Index	5.4%	5.9%	10.0%	0.50	0.55	-	-
Currency Beta	MSCI Currency Factor Index	0.8%	0.9%	3.4%	0.12	0.13	0.24	0.25
Inflation		2.5%	-	-	-	-	-	-

Investors wishing to produce expected geometric return forecasts for their portfolios should use the arithmetic return forecasts provided here as inputs into that calculation, rather than the single-asset-class geometric return forecasts. This is the industry standard approach, but requires a complex explanation only a heavy quant could love, so we have chosen not to provide further details in this document – we will happily provide those details to any readers of this who are interested.

*To represent hedge fund styles, we use a combination of HFRI benchmarks: Equity Style = 33% HFRI Fundamental Growth, 33% HFRI Fundamental Value, 33% HFRI Activist. Credit Style = 20% HFRI Distressed/Restructuring, 20% HFRI Credit Arbitrage, 20% HFRI Fixed Income-Corporate, 20% HFRI Fixed Income-Convertible Arbitrage, 20% HFRI Fixed Income-Asset Backed. Asymmetric Style = 50% HFRI Relative Value, 50% HFRI Macro

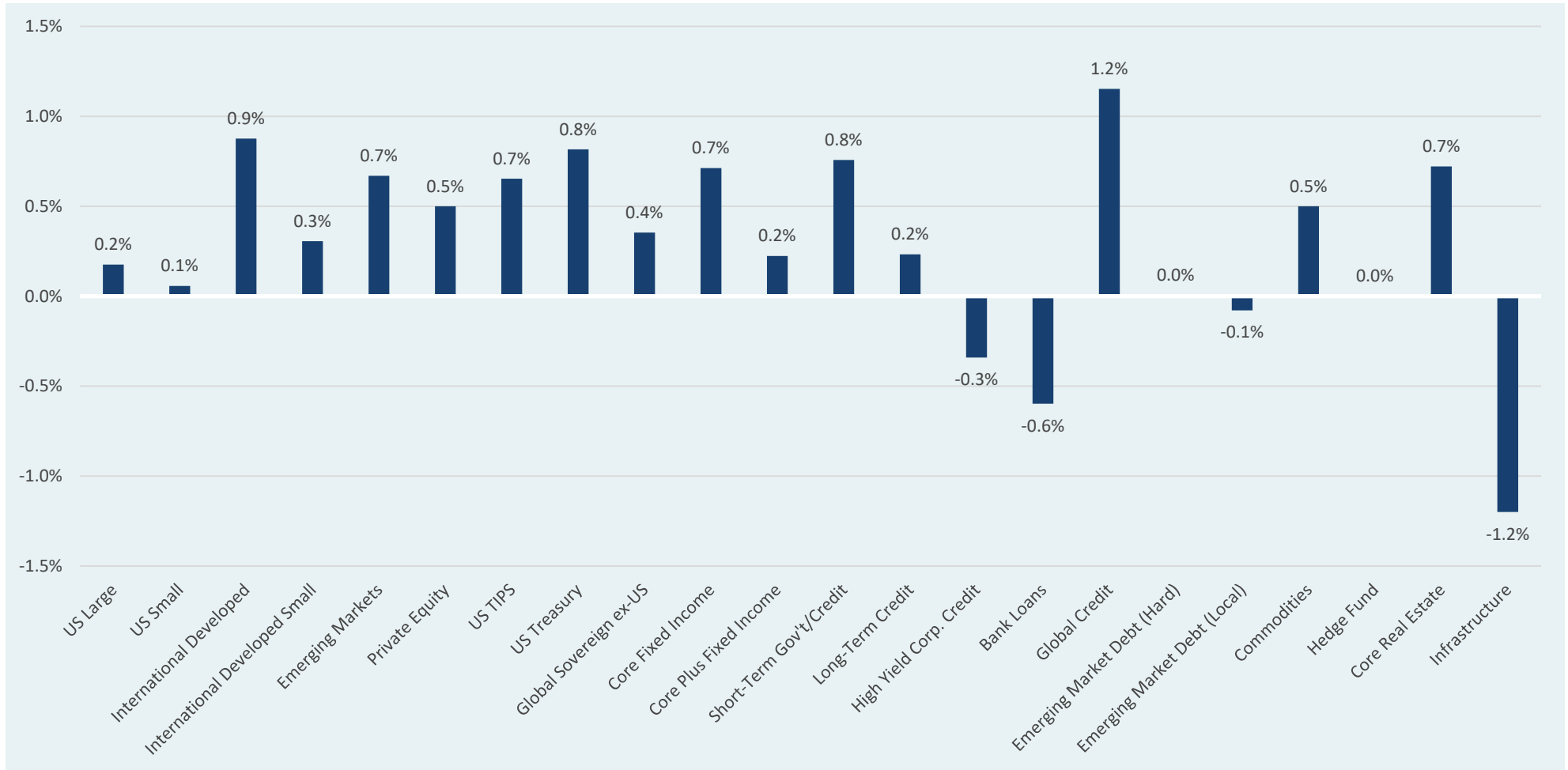
Range of likely 10-year outcomes

10-YEAR RETURN 90% CONFIDENCE INTERVAL



Source: Verus, MPI

2022 vs. 2021 return forecast



Source: Verus, as of 9/30/21

Asset allocation review

Mean variance analysis

	Current Policy	Policy 2022				Verus 2022 CMA's (10 Yr)			
			80/20	70/30	60/40	Return (g)	Return (a)	Standard Deviation	Sharpe Ratio (a)
US Large	13.0	13.0	0.0	0.0	0.0	5.3	6.4	15.7	0.39
US Small	3.0	3.0	0.0	0.0	0.0	5.3	7.4	21.6	0.32
International Developed	8.0	8.0	0.0	0.0	0.0	6.1	7.6	17.9	0.39
Emerging Markets	8.0	8.0	0.0	0.0	0.0	6.1	8.9	25.3	0.34
Global Equity	9.0	10.5	80.0	70.0	60.0	5.7	7.1	17.3	0.39
Private Equity (Direct)	11.0	11.0	0.0	0.0	0.0	10.5	13.4	26.0	0.50
Private Credit (DL - Levered)	8.0	8.0	0.0	0.0	0.0	8.0	9.4	17.4	0.51
REITs	2.0	2.0	0.0	0.0	0.0	6.5	8.2	19.3	0.40
Private Real Estate	8.0	8.0	0.0	0.0	0.0	9.0	10.5	17.7	0.57
High Yield Corp. Credit	2.0	2.0	0.0	0.0	0.0	3.1	3.7	11.2	0.30
Risk Parity	3.0	3.0	0.0	0.0	0.0	5.4	5.9	10.0	0.55
Total Growth	75	77	80	70	60				
Short-Term Gov't/Credit	18.0	16.0	0.0	0.0	0.0	1.5	1.6	3.6	0.33
Total Liquidity	18	16	0	0	0				
Core Fixed Income	2.5	2.5	20.0	30.0	40.0	2.2	2.3	4.1	0.46
Hedge Fund	4.5	5.0	0.0	0.0	0.0	3.8	4.1	7.7	0.48
Total Diversifying	7	8	20	30	40				
Total Allocation	100	100	100	100	100				

	Current Policy	Policy 2022	80/20	70/30	60/40
Mean Variance Analysis					
Forecast 10 Year Return	6.3	6.4	5.2	4.9	4.6
Standard Deviation	12.1	12.4	13.9	12.2	10.5
Return/Std. Deviation	0.5	0.5	0.4	0.4	0.4
1st percentile ret. 1 year	-18.3	-18.7	-22.3	-19.7	-17.1
Sharpe Ratio	0.53	0.53	0.40	0.42	0.44

MPI & Verus

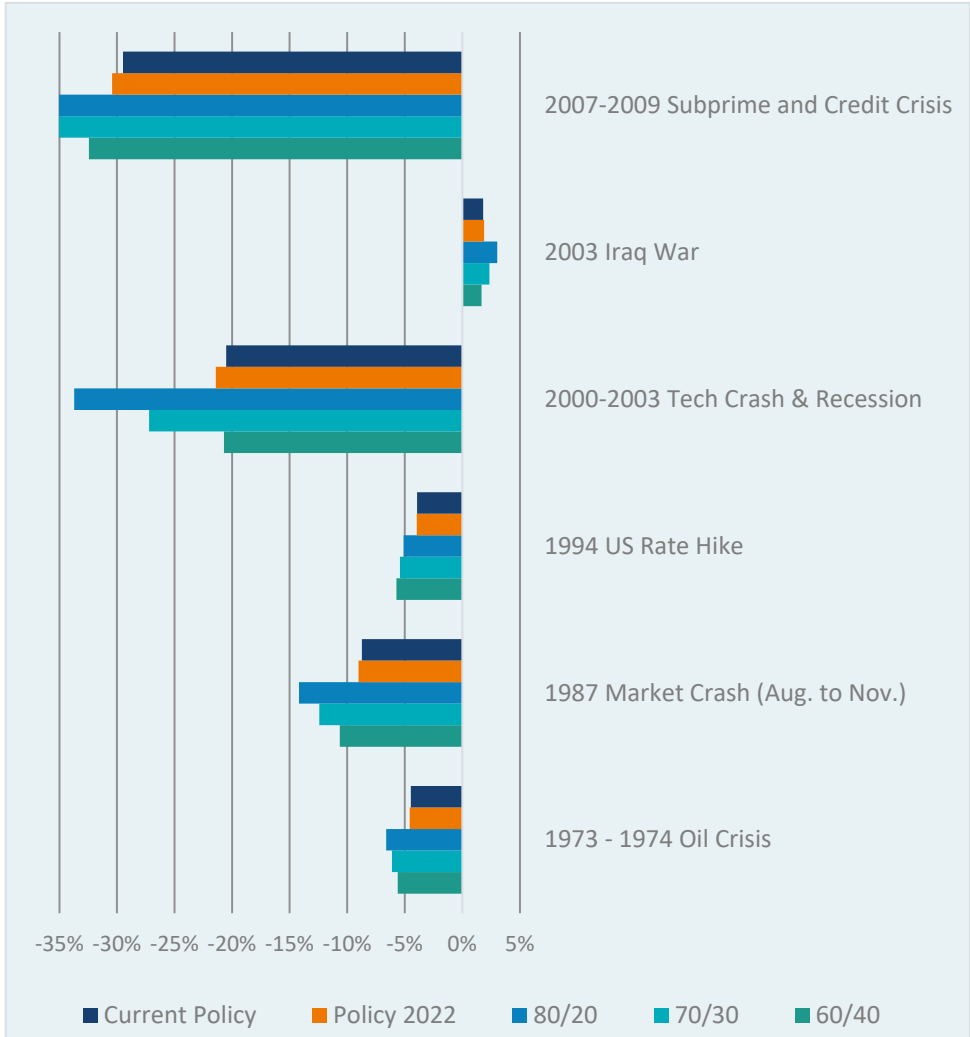
Risk contribution



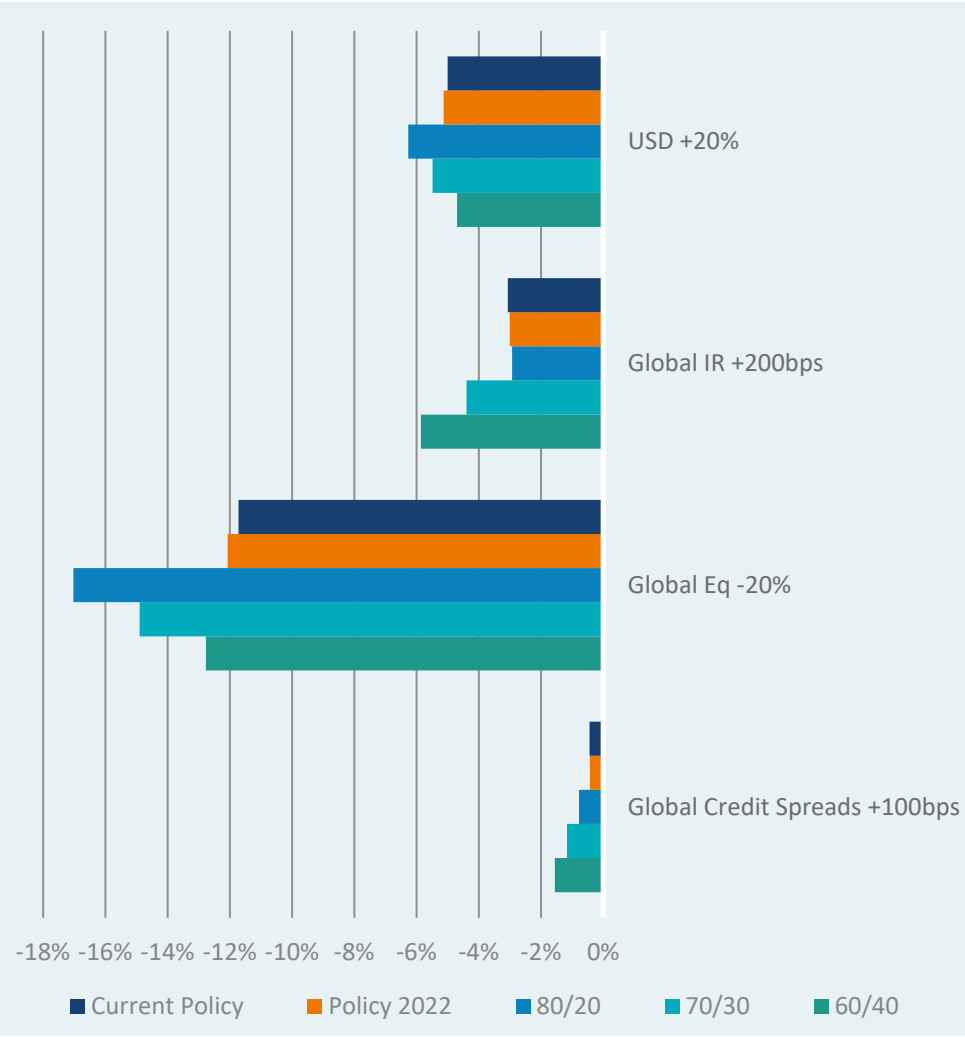
Barra; as of 3/31/22

Scenario analysis

HISTORICAL MARKET ENVIRONMENTS



HYPOTHETICAL STRESS TESTS



Barra; as of 3/31/22

Next steps

Next Steps

- Codify in Asset Allocation Resolution to be adopted by the Board
- Develop detailed implementation plan
- Implement and monitor

Appendix

Analysis with updated CMAs (3/31/21)

	Current Policy	Proposed Policy	Verus						
			2022 CMA's (10 Yr) March update			Return (g)	Return (a)	Standard Deviation	Sharpe Ratio (a)
			80/20	70/30	60/40				
US Large	13.0	13.0	0.0	0.0	0.0	5.9	7.0	15.7	0.40
US Small	3.0	3.0	0.0	0.0	0.0	5.4	7.5	21.6	0.31
International Developed	8.0	8.0	0.0	0.0	0.0	7.0	8.4	17.9	0.43
Emerging Markets	8.0	8.0	0.0	0.0	0.0	7.0	9.8	25.3	0.35
Global Equity	9.0	10.5	80.0	70.0	60.0	6.3	7.7	17.3	0.40
Private Equity (Direct)	11.0	11.0	0.0	0.0	0.0	11.2	14.0	26.0	0.51
Private Credit (DL - Unlevered)	8.0	8.0	0.0	0.0	0.0	6.8	7.8	14.6	0.48
REITs	2.0	2.0	0.0	0.0	0.0	6.5	8.2	19.3	0.38
Private Real Estate	8.0	8.0	0.0	0.0	0.0	9.0	10.4	17.7	0.54
High Yield Corp. Credit	2.0	2.0	0.0	0.0	0.0	4.5	5.1	11.2	0.38
Risk Parity	3.0	3.0	0.0	0.0	0.0	5.4	5.9	10.0	0.55
Total Growth	75	77	80	70	60				
Short-Term Gov't/Credit	18.0	16.0	0.0	0.0	0.0	2.4	2.5	3.6	0.47
Total Liquidity	18	16	0	0	0				
Core Fixed Income	2.5	2.5	20.0	30.0	40.0	2.9	3.0	4.1	0.54
Hedge Fund	4.5	5.0	0.0	0.0	0.0	4.1	4.4	7.7	0.47
Total Diversifying	7	8	20	30	40				
Total Allocation	100	100	100	100	100				

	Current Policy	Policy 2022	80/20	70/30	60/40
Mean Variance Analysis					
Forecast 10 Year Return - BASE Case	6.9	7.0	5.9	5.6	5.3
Standard Deviation	12.0	12.3	14.0	12.3	10.6
Return/Std. Deviation	0.6	0.6	0.4	0.5	0.5
1st percentile ret. 1 year	-18.0	-18.7	-21.6	-18.3	-15.7
Sharpe Ratio	0.54	0.54	0.42	0.44	0.46

MPI and Verus



MEMORANDUM

Date: May 25, 2022
To: CCCERA Board of Retirement
From: Timothy Price, Chief Investment Officer
Subject: Update on Real Estate Allocations

Overview

CCCERA recently made a commitment to PCCP Equity IX, an opportunistic real estate strategy using the delegated authority granted in the Investment Policy Statement. This memo is for informational purposes only and no action is required from the Board at this time.

Investment Policy Statement

The CCCERA Investment Policy Statement adopted by the Board on September 28, 2016 (amended on April 24, 2019 and May 26, 2021) outlines the hiring process for new investment mandates. Commitments up to a \$150 million per strategy may be approved via a staff review process, while mandates above this threshold require approval by the Board.

PCCP Equity IX

PCCP IX is a closed end opportunistic real estate fund focused on North America. CCCERA currently has 5% allocation to this segment of real estate. The fund will invest primarily in the four main property types (office, industrial, multifamily and retail/mixed use). The fund expects to invest in 40-50 investments with an average deal size of \$25-30 million in equity commitments. Leverage will be capped at 65% at the portfolio level and development will be capped at 30%. PCCP expects property type allocations to be approximately 30% each to industrial/multifamily/office and 10% to other (retail and/or hotel). CCCERA committed \$75 mm to PCCP IX. This is a new relationship for CCCERA.



MEMORANDUM

Date: May 25, 2022
To: CCCERA Board of Retirement
From: Gail Strohl, Chief Executive Officer
Subject: Information regarding in-person meetings in the boardroom

Background

Recently, the Board requested additional information on boardroom modifications to prepare for in-person Board meetings which would take into consideration any possible precautions due to COVID-19 and information on any necessary adjustments to possibly conduct a hybrid Board meeting.

Plexiglass

For an in-person Board meeting, specific information on possible plexiglass panels in-between those sitting at the Board table was requested. Plexiglass panels were found with their own legs for easy removal when not needed later and would not attach to/damage the table. As requested, they would not extend past the table edge. The total cost would be approximately \$900 for freestanding plexiglass panels.

Audio/visual adjustments

For a fully in-person Board meeting, the existing equipment would be utilized with no further modifications. Presentations would be displayed on the monitor in front of trustees as well as on the two screens behind the trustee table. Trustee voting would occur through the usual touchscreen on the microphone stand. As before, the existing equipment allows for trustees to attend via teleconference. However, it does not contain functionality to allow a full hybrid meeting.

In order to possibly conduct a hybrid Board meeting, modifications and additions would need to be made to the existing boardroom audio/visual equipment. A quote has been received for approximately \$68K, with an additional \$6.5K if two monitors are installed behind the chairs for visitors. The lead time is at least eight weeks. A second quote is being pursued from a different vendor for comparison.

During a possible hybrid meeting, the electronic voting functionality that was installed in the boardroom would not be used. Voting would continue as it does currently. The call button on the microphones could still be utilized. The agenda would be shown on the small mic screen with the virtual meeting shown on the monitors in front of the trustees. The virtual meeting would be displayed on the two monitors behind the trustee table. In addition, during hybrid meetings, a dedicated IT staff person would be needed to switch between cameras.

The option of each trustee utilizing a laptop or tablet at each board table seat was researched and determined it would cause too much sound interference in the virtual setting.

Recommendation

Informational only. No action is necessary.



Meeting Date
05/25/2022
Agenda Item
#15

MEMORANDUM

Date: May 25, 2022
To: CCCERA Board of Retirement
From: Karen Levy, General Counsel
Subject: Continuing teleconference meetings under Government Code section 54953 (e)

Background

All meetings of the Board of Retirement are open to the general public, as required by the Ralph M. Brown Act, California Government Code sections 54950 *et seq.* Section 54953 (e) of the Brown Act authorizes conducting public meetings via teleconferencing during a state of emergency. The Board has approved conducting its meetings via teleconferencing under Section 54953 (e), finding that in-person meetings of the Board are open to the general public and would risk the health or safety of the public, staff, outside consultants and trustees attending public meetings, in light of the COVID-19 pandemic and related state of emergency. Under the law, if the Board wishes to continue using these special teleconferencing rules it must reconsider the circumstances of the state of emergency and make certain findings.

Proclaimed State of Emergency and Health and Safety Guidance

Currently, the COVID-19 state of emergency proclaimed by the Governor is in effect. On May 16, 2022, the Contra Costa County Health Officer again issued recommendations for safely holding public meetings that included recommended measures to promote social distancing. (See Attachment A, Health Officer's Recommendations). The Health Officer has recommended as follows:

Online meetings (i.e. teleconferencing meetings) are encouraged, where practical, as these meetings present the lowest risk of transmission of SARS CoV-2, the virus that causes COVID 19. This is particularly important when community prevalence rates are high. Our current trends as of May 16, 2022 in Covid-19 case rate, test positivity, and Covid-19 hospitalizations are increasing at this time. In addition to this, the predominant variant of Covid-19 being identified continues to be the Omicron variant and it's subvariants the impact of which on the spread of Covid-19 has shown to dramatically increase COVID-19 transmission.

Recommendation

Consider and take possible action to authorize the Board and its committee(s) to continue to conduct teleconference meetings for the next 30 days under Government Code section 54953 (e) and make the following findings:

1. The Board has reconsidered the circumstances of the statewide state of emergency proclaimed by the Governor on March 4, 2020 and the countywide local emergency proclaimed by the Governor on March 10, 2020.
2. The following circumstances currently exist:
 - a. The statewide state of emergency and the countywide local emergency continue to directly impact the ability of the Board and its committee(s) to meet safely in person at meetings that are open to the general public because of the COVID-19 pandemic.
 - b. The County Health Officer's recommendations for safely holding public meetings, which encourage virtual meetings and other measures to promote social distancing, are still in effect.

Attachment

A

Recommendations for safely holding public meetings

Each local government agency is authorized to determine whether to hold public meetings in person, on-line (teleconferencing only), or via a combination of methods. The following are recommendations from the Contra Costa County Health Officer to minimize the risk of COVID 19 transmission during a public meeting.

1. Online meetings (i.e. teleconferencing meetings) are encouraged, where practical, as these meetings present the lowest risk of transmission of SARS CoV-2, the virus that causes COVID 19. This is particularly important when community prevalence rates are high. Our current trends as of May 16, 2022 in Covid-19 case rate, test positivity, and Covid-19 hospitalizations are increasing at this time. In addition to this, the predominant variant of Covid-19 being identified continues to be the Omicron variant and it's subvariants the impact of which on the spread of Covid-19 has shown to dramatically increase COVID-19 transmission.
2. If a local agency determines to hold in-person meetings, offering the public the opportunity to attend via a call-in option or an internet-based service option is recommended, when possible, to give those at higher risk of and/or higher concern about COVID-19 an alternative to participating in person.
3. A written safety protocol should be developed and followed. It is recommended that the protocol require social distancing, where feasible – i.e. six feet of separation between attendees; and consider requiring or strongly encouraging face masking of all attendees and encouraging attendees to be up-to-date on their COVID-19 vaccine.
4. Seating arrangements should allow for staff and members of the public to easily maintain at least six-foot distance from one another at all practicable times.
5. Consider holding public meetings outdoors. Increasing scientific consensus is that outdoor airflow reduces the risk of COVID-19 transmission compared to indoor spaces. Hosting events outdoors also may make it easier to space staff and members of the public at least 6 feet apart.
6. Current evidence is unclear as to the added benefit of temperature checks in addition to symptom checks. We encourage focus on symptom checks as they may screen out individuals with other Covid-19 symptoms besides fever and help reinforce the message to not go out in public if you are not feeling well.
7. Consider a voluntary attendance sheet with names and contact information to assist in contact tracing of any cases linked to a public meeting.

Revised 5-16-2022

Sefanit Mekuria

Sefanit Mekuria, MD, MPH
Deputy Health Officer, Contra Costa County





MEMORANDUM

Date: May 25, 2022
To: CCCERA Board of Retirement
From: Gail Strohl, Chief Executive Officer
Subject: Consider and take possible action to authorize the CEO to renew a maintenance and support agreement with CPAS Systems, Inc.

Background

Since 2009, CCCERA has had a maintenance and system software support services agreement with CPAS Systems, Inc. for its pension administration system. It is typically renewed on an annual basis. These services include legislative compliance updates, maintenance updates, and overall system support services. The maintenance and support is necessary for continued operation of the system. The annual renewal amounts are \$37,503.30 for maintenance and \$98,400 for system support services.

Recommendation

Consider and take possible action to authorize the CEO to renew a maintenance and support agreement with CPAS Systems, Inc.

MODERN INVESTMENT THEORY & PRACTICE

for Retirement Systems

SACRS PUBLIC PENSION INVESTMENT MANAGEMENT PROGRAM 2022

July 17-20, 2022 | UC Berkeley Haas School of Business Executive Education

Presented on the beautiful and storied campus of UC Berkeley by world-renowned Finance faculty from UC Berkeley's Haas School of Business, this amazing four-day program explores current investment theory and practice for the successful investment manager. The agenda includes several one-hour sessions, networking time, and evening receptions.

Meeting Date
05/25/2022
Agenda Item
#18a.

PRELIMINARY AGENDA

SUNDAY, JULY 17 Investing Fundamentals for New Trustees	MONDAY, JULY 18 Asset Allocation	TUESDAY, JULY 19 Managing Investment Managers	WEDNESDAY, JULY 20 Governance & Decision Making
Registration and Breakfast Claremont Hotel ► Skyline A 7:00am – 8:00am	Breakfast Claremont Hotel ► Maritage 7:00am – 8:00am	Breakfast Claremont Hotel ► Maritage 7:00am – 8:00am	Breakfast Claremont Hotel ► Maritage 7:00am – 8:00am
8:00am Session Held Onsite at Claremont Hotel ► Skyline A	8:00am Depart Hotel to UC Berkeley Bus leaves at 8:15am	8:00am Depart Hotel to UC Berkeley Bus leaves at 8:15am	8:00am Depart Hotel to UC Berkeley Bus leaves at 8:15am
Pension Fund and Investment Basics Thomas Gilbert, University of Washington	Introduction: Program Overview Greg LaBlanc, Berkeley Haas	Alternative Investment Strategies: Private Equity How PE Works Peter Goodson, Berkeley Haas	Governance Basics: Fiduciary Duty How to Balance Objectives Industry Panel – Harvey Reiterman, Gene Rogers
Return, Risk and Diversification Thomas Gilbert, University of Washington	Active vs. Passive Revisiting the Debate Thomas Gilbert, University of Washington	Alternative Investment Strategies: Venture Capital Venture Capital, Finding the Right Managers Winter Mead, Coolwater Capital	ESG Discussion Doing Good or Doing Well? TBD
Practical Mean-Variance Analysis Thomas Gilbert, University of Washington	Pension Fund Dynamics and Review of Investing Fundamentals Accounting vs. Reality Greg LaBlanc, Berkeley Haas	Alternative Investment Strategies: Hedge Funds Designing a Hedge Fund Strategy Dave Francl, Absolute Return	Behavioral Finance: Impact on Decision Making Why Smart People Do Dumb Things Kristin Bermen Irrational Labs
CAPM and Luck vs. Skill Thomas Gilbert, University of Washington	Actuarial Considerations Why You Need an Actuary Thomas Gilbert & Graham Schmidt, Cheiron Inc.	Alternative Investment Strategies: Real Assets and Infrastructure The Upside of Illiquidity TBD	Behavioral Finance: Impact on Markets Human Impact on Performance TBD
Reception Claremont Hotel ► Lanai 5:30pm – 6:30pm	The Role of Forecasting Why the Future Matters Thomas Gilbert, UofW & Graham Schmidt, Cheiron Inc.	Alternative Assets: Is Crypto an Asset Class? Ready for Primetime? Greg LaBlanc, Berkeley Haas	Building Trust and Teamwork Using Trust to Drive Team Performance Maura O'Neill, Berkeley Haas
	Asset Allocation and Performance Measurement How Well Are You Doing? Thomas Gilbert, University of Washington	Managing Inflation Risk 1970s Redux? Kevin Coldiron, Berkeley Haas	Creating a Culture of Integrity Building on Trust and Aligning It With Ethics in the Workplace TBD
	Machine Learning in Investment Management Humans vs. Robots TBD	Reception Claremont Hotel ► Lanai 5:30pm – 6:30pm	
	Investing in a Global Marketplace Managing Risk at Scale TBD		
	Reception Claremont Hotel ► Lanai 5:30pm – 6:30pm		