



# Notice of Public Meeting

## The Board of Retirement

of the San Mateo County Employees' Retirement Association will meet on

**Tuesday, May 24, 2022, at 10:00 A.M.**

In accordance with Government Code § 54953 and § 54954, the Members of the Board will be participating via Zoom video conference and teleconference. Pursuant to Government Code § 54953 and § 54954.3, members of the public, to the extent required by law, will have the opportunity to directly address the Board concerning matters within the jurisdiction of the Board. The public can participate and provide comment using the instructions below:

### To Join the Meeting

- To join the meeting via video conference, click here: <https://us06web.zoom.us/j/82772340600>
- To join the meeting via telephone, dial: (669) 900-9128, and enter Meeting ID: 827 7234 0600

### Public Comment During the Meeting

Persons wishing to address the Board should follow the steps below:

- If joining via video conference, please use the “raise your hand” feature in Zoom during the Oral Communications from the Public period.
- If joining via teleconference dial in, please dial \*9 to “raise your hand” during the Oral Communications from the Public period.

You will be called on at the appropriate time. At the beginning of your comment, please state your name.

### Public Comment Prior to the Meeting

Persons who wish to address the Board may submit written comments via email to [samcera@samcera.org](mailto:samcera@samcera.org) at least 30 minutes before the start of the Board meeting. Please include your name, agenda item, and your comment. The Board will have the email read into the record and attached to the minutes.

For help joining a Zoom meeting, see: <https://support.zoom.us/hc/enus/articles/201362193>

**PUBLIC SESSION** – The Board will meet in Public Session at 10:00 a.m.

#### 1. Call to Order, Roll Call and Miscellaneous Business

- 1.1 Appointment by Chair of Ad Hoc Nominating Committee for Board Officers

#### 2. Oral Communications

- 2.1 Oral Communications from the Board
- 2.2 Oral Communications from the Public

#### 3. Approval of the Minutes

- 3.1 Approval of Special Board Meeting Minutes from April 26, 2022
- 3.2 Approval of Board Meeting Minutes from April 26, 2022
- 3.3 Approval of Special Board Meeting Minutes from April 28, 2022

#### 4. Approval of the Consent Agenda\*

# Notice of Public Meeting

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- 4.1 Disability Retirements (none)
- 4.2 Survivor Death Benefits (1)
  - Roger Hernandez
- 4.3 Service Retirements
- 4.4 Continuances
- 4.5 Deferred Retirements
- 4.6 Member Account Refunds
- 4.7 Member Account Rollovers
- 4.8 Member Account Redeposits
- 4.9 Acceptance of Trustees' Reports of Educational Activities

### 5. Benefit & Actuarial Services

- 5.1 Consideration of Agenda Items, if any, Removed from the Consent Agenda
- 5.2 Review of Liability Dashboard
- 5.3 Approval of Economic Assumptions to be used in the June 30, 2022 Actuarial Valuation
- 5.4 Educational Presentation on the Actuarial Funding Controls

### 6. Investment Services

- 6.1 Report on Preliminary Monthly Portfolio Performance for the Period Ended April 30, 2022
- 6.2 Report on Quarterly Investment Performance for the Period Ended March 31, 2022
- 6.3 Report on the Core Equity and Passive Manager Annual Reviews
- 6.4 Approval of Proposed Alternative Investment (to be heard in closed session, Confidential Under Gov. Code §54956.81 and §6254.26, see item C2)

### 7. Board & Management Support

### 8. Management Reports

- 8.1 Chief Executive Officer's Report
- 8.2 Assistant Executive Officer's Reports
- 8.3 Chief Investment Officer's Report
- 8.4 Chief Legal Counsel's Report

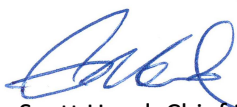
**CLOSED SESSION** – The Board may meet in closed session prior to adjournment

- C1 Consideration of Disability Items, if any, removed from the Consent Agenda
- C2 Approval of Proposed Alternative Investment (to be heard in Closed Session, Confidential Under Gov. Code § 54956.81 and §6254.26, see item 6.4)

### 9. Report on Actions Taken in Closed Session

### 10. Adjournment in Memory of the Following Deceased Members:

Woo, Ronald	March 30, 2022	Probation
Hoover, Rosalie	April 6, 2022	Library
Edmonds, John	April 8, 2022	Sheriff's
Streng, Myra	April 12, 2022	Hospital
Gunn, Linda	April 22, 2022	Behavioral Health
Levy, Judith	April 14, 2022	Library
Kay, Kathleen	April 20, 2022	Hospital
Prosser, Diane	April 23, 2022	Medical Center
Tavolacci, Denise	April 24, 2022	Communication Services
Cadigan, Charles	April 27, 2022	Probation



Scott Hood, Chief Executive Officer

Posted: May 18, 2022



# Notice of Public Meeting

(\* ALL ITEMS ON THE CONSENT AGENDA ARE APPROVED BY ONE ROLL CALL MOTION UNLESS A REQUEST IS MADE BY A BOARD MEMBER THAT AN ITEM BE WITHDRAWN OR TRANSFERRED TO THE REGULAR AGENDA. ANY ITEM ON THE REGULAR AGENDA MAY BE TRANSFERRED TO THE CONSENT AGENDA. ANY 4.1 ITEMS REMOVED FROM THE CONSENT AGENDA WILL BE TAKEN UP UNDER CLOSED SESSION; ALL OTHER ITEMS REMOVED FROM THE CONSENT AGENDA WILL BE TAKEN UP UNDER ITEM 5.1.)

**THE BOARD MEETS AT 100 MARINE PARKWAY, SUITE 160**, WHICH IS LOCATED ON THE SE CORNER OF TWIN DOLPHIN & MARINE PARKWAY IN REDWOOD CITY. Detailed directions are available on the "Contact Us" page of the website [www.samcera.org](http://www.samcera.org). *Free Parking is available in all lots in the vicinity of the building. A copy of the Board of Retirement's open session agenda packet is available for review at the SamCERA offices and on our website unless the writings are privileged or otherwise exempt from disclosure under the provisions of the California Public Records Act. Office hours are Monday through Thursday 7 a.m. – 6 p.m.*


IN COMPLIANCE WITH THE CALIFORNIA GOVERNMENT CODE AND THE AMERICANS WITH DISABILITIES ACT: *SamCERA's* facilities and board and committee meetings are accessible to individuals with disabilities. Contact *SamCERA* at (650) 599-1234 at least three business days prior to the meeting if (1) you need special assistance or a disability-related modification or accommodation, including auxiliary aids or services, in order to participate in this meeting; or (2) you have a disability and wish to receive the agenda, meeting notice, agenda packet or other writings that may be distributed at the meeting in an alternative format. Notification in advance of the meeting will enable *SamCERA* to make reasonable arrangements to ensure full accessibility to this meeting and the materials related to it.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
**Board of Retirement**

May 24, 2022

Agenda Item 1.1

**TO:** Board of Retirement

**FROM:** Scott Hood, Chief Executive Officer 

**SUBJECT:** Appointment by Chair of Ad Hoc Nominating Committee for Board Officers

**Recommendation**

Accept the Chair's report on the appointment of an Ad Hoc Committee to nominate Board officers for the 2021-2022 fiscal year to be presented for election at the July meeting.

**Background**

In general, at or around the May meeting, the Chair appoints an Ad Hoc Committee to nominate Board officers for the next fiscal year. The election of Board officers takes place at the first meeting in July. Article 1 of the *Regulations of the Board of Retirement* provides for the election of three Board officers: Chair, Vice Chair and Secretary, as follows:

**1.1. Election of Chair:** At the first regular meeting in July, the Board of Retirement shall elect one of its members chair for a term of one year or until his or her successor is duly elected and qualified. The Chair shall preside at all meetings of the Board, shall appoint all committees and shall perform all duties incidental to that office.

**1.2. Election of Vice Chair:** At the first regular meeting in July, the Board of Retirement shall elect one of its members vice chair for a term of one year or until his or her successor is duly elected and qualified. In the Chair's absence or inability to act, the Vice Chair shall take the place and perform the duties of that office.

**1.3. Election of Secretary:** At the first regular meeting in July, the Board of Retirement shall elect one of its members secretary for a term of one year or until his or her successor is duly elected and qualified. The Secretary shall attest to Resolutions and other such documents for the Board. In the Chair's and Vice Chair's absence or inability to act, the Secretary shall take the place and perform the duties of the Chair.

Board officers traditionally serve one-year terms. Also, by tradition, the Board attempts to alternate between appointed and elected trustees in each officer position. In general, the officers tend to move up "through the steps" to eventually become Chair. Exceptions have occurred when a trustee does not serve a full term or does not continue on the Board for an additional term. (See the table below.)

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
**Board of Retirement**

**SamCERA Board Officer History**

	<u><b>Chair</b></u>	<u><b>Vice-Chair</b></u>	<u><b>Secretary</b></u>
2001-02	Bill Cottle	Tom Bryan	Bette Stuart
2002-03	Tom Bryan	Donna Colson	Alma Salas
2003-04	Donna Colson	Alma Salas	Bette Stuart
2004-05	Alma Salas	Ken Lewis	Tom Bryan
2005-06	Ken Lewis	Tom Bryan	Emily Tashman
2006-07	Tom Bryan	Emily Tashman	Bette Stuart
2007-08	Tom Bryan	Emily Tashman	Jim Hooley
2008-09	Emily Tashman	David Wozniak	Sandie Arnott
2009-10	Margaret Jadallah	Al David	Sandie Arnott
2010-11*	Al David	Sandie Arnott	Natalie Kwan Lloyd
2011-12	Al David	Sandie Arnott	Natalie Kwan Lloyd
2012-13	Sandie Arnott	Natalie Kwan Lloyd	Lauryn Agnew
2013-14	Natalie Kwan Lloyd	Lauryn Agnew	Paul Hackleman
2014-15	Lauryn Agnew	Paul Hackleman	Michal Settles
2015-16	Paul Hackleman	Michael Settles	Natalie Kwan Lloyd
2016-17	Paul Hackleman	Mark Battey	Shirley Tourel
2017-18	Mark Battey	Shirley Tourel	David Spinello
2018-19	Sandie Arnott	Kurt Hoefler	Al David
2019-20	Kurt Hoefler	Al David	Robert Raw
2020-21	Al David	Robert Raw	Katherine O'Malley
2021-22	Robert Raw	Katherine O'Malley	Mark Battey

\*beginning October 2010

**SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**  
**APRIL 26, 2022 – SPECIAL BOARD MEETING MINUTES**

**2204SP.1 Call to Order, Roll Call and Miscellaneous Business**

**Call to Order:** Mr. Raw, Chair, called the Special Meeting of the Board of Retirement to order at 9:55 a.m. via Zoom.

**Roll Call:**

Present: Sandie Arnott, Mark Battey, Al David, Paul Hackleman, Kurt Hoefer, and Robert Raw.

Absent: Ben Bowler, Susan Lee, Katherine O'Malley, and Elaine Orr.

Alternates: Alma Salas.

Staff: Michael Coultrip, Lili Dames, Scott Hood, Elizabeth LeNguyen, Doris Ng, Paul Okada, Gladys Smith, and Anne Trujillo.

Consultants and speakers: Joe Abdou, Garrett Dinsmore, and Margaret Jadallah (Verus).

**2204SP.2 Oral Communications from the Public:** Mr. Raw asked if there was any public comment concerning items on the agenda from those individuals participating on the telephone or via Zoom. There were no public comments. Ms. Trujillo reported there were no written comments received ahead of the meeting.

**2204SP.3 Approval of Resolution Authorizing the Use of Teleconferencing for the Board and Committee Meetings Pursuant to Government Code Section 54953(e):** Mr. Hood informed the Board that based on the County's findings along with state and federal health information, staff recommends that the Board of Retirement authorize the continued use of teleconference meetings pursuant to AB 361.

**Action:** Mr. Hoefer moved to approve the resolution authorizing the use of teleconferencing for Board and Committee meetings pursuant to Government Code Section 54953(e). The motion was seconded by Mr. Hackleman and carried with a vote of 6-0, with trustees Arnott, Battey, David, Hackleman, Hoefer, and Raw, all in favor; none opposed.

**2204SP.4 Adjournment:** Mr. Raw adjourned the Special Meeting at 9:58 a.m.

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Robert Raw  
Board Chair

**SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**  
**APRIL 26, 2022 – REGULAR BOARD MEETING MINUTES**

**2204.1 Call to Order, Roll Call and Miscellaneous Business**

**Call to Order:** Mr. Raw, Chair, called the Regular Meeting of the Board of Retirement to order at 10:00 a.m.

**Roll Call:**

Present: Sandie Arnott, Mark Battey, Al David, Paul Hackleman, Kurt Hoefer, Elaine Orr, and Robert Raw.

Absent: Ben Bowler, Susan Lee, and Katherine O'Malley.

Alternates: Alma Salas.

Staff: Michael Coultrip, Lili Dames, Elizabeth LeNguyen, Scott Hood, Doris Ng, Paul Okada, Gladys Smith, and Anne Trujillo.

Consultants and speakers: Joe Abdou, Margaret Jadallah, Garrett Dinsmore, John Nicolini, and Faraz Shooshani (Verus).

**2204.2.1 Oral Communications from the Board:** None.

**2204.2.2 Oral Communications from the Public:** Mr. Raw asked if there was any public comment from those individuals participating on the telephone or via Zoom. Ms. Smith introduced Lizbeth Valdez, SamCERA's new Retirement Support Specialist, to the Board. Ms. Trujillo reported there were no written comments received ahead of the meeting.

**2204.3.2 Approval of Regular Board Meeting Minutes from March 22, 2022:** Mr. Raw asked if there were any changes or corrections, or objections, to the meeting minutes from the regular Board meeting held on March 22, 2022. There were no changes, corrections, or objections presented.

**Action:** Mr. Hackleman moved to approve the minutes from the regular Board meeting on March 22, 2022. The motion was seconded by Ms. Arnott and carried with a vote of 7-0, with trustees Arnott, Battey, David, Hackleman, Hoefer, Orr, and Raw, all in favor; none opposed.

**2204.4.0 Approval of the Consent Agenda:** Mr. Raw asked if there were any items to be removed for discussion from the Consent Agenda. No items were removed.

**Action:** Mr. David moved to approve the items on the Consent Agenda. The motion was seconded by Ms. Arnott and carried with a vote of 7-0, with trustees Arnott, Battey, David, Hackleman, Hoefer, Orr, and Raw, all in favor; none opposed.

**2204.4.1 Disability Retirements:** None.

**2204.4.2 Survivor Death Benefits:** None.

2204.4.3 **Service Retirements:**

<b>Name</b>	<b>Effective Retirement Date</b>	<b>Department</b>
Balatbat, Alejandra	March 1, 2022	San Mateo County Health
Barillas, Ines	February 4, 2022	San Mateo County Health
Bratcher, Rodney	February 14, 2022	Deferred - Behavioral Health
Chatterjee, Cynthia	February 26, 2022	Behavioral Health
Council, Justin	February 27, 2022	Sheriff's Office
Cross, Carrie	February 4, 2022	Probation
Crutison, Aaron	February 4, 2022	Deferred - Health & Social Services
Dogan, Ayse	February 5, 2022	Human Services
Doherty, Geraldine	February 19, 2022	Aging & Adult Services
Drach, Paul	February 27, 2022	Sheriff's Office
Georgakas, Brad	February 19, 2022	Assessor's Office
Guidos, Oristela	February 9, 2022	Public Works
Gustavson, Andy	January 4, 2022	Deferred - Planning
Hosfeldt, Julie	February 26, 2022	Family Health
Jones, Christopher L	February 26, 2022	Public Health
Kelley, Janine	February 2, 2022	Deferred - Probation
Lucy, Patrick	February 22, 2022	Sheriff's Office
Mangrum, Selma	February 26, 2022	Behavioral Health
Mapa, Selu	February 26, 2022	Human Services Agency
Pardella, Gregory	December 30, 2021	Deferred - Sheriff's Office
Parks, Shawn	March 1, 2022	Sheriff's Office
Pilgrim, Steven	February 8, 2022	San Mateo County Health
Valera-Gomez, Bernardita	February 19, 2022	Aging & Adult Services

2204.4.4 **Continuances:**

<b>Survivor's Name:</b>	<b>Beneficiary of:</b>
Buttram, John	Buttram, Mary
Duma, Reynaldo	Duma, Nida
Lazaro, Suzanne	Lazaro, Lee
Pulvers, Martin	Alamar Pulvers, Joy
Turner, Rachel	Turner, Cleveland

2204.4.5 **Deferred Retirements:**

<b>Name</b>	<b>Retirement Plan Type</b>
Chan, Allan	G4, Vested - Reciprocity
Chavez, Regina	G4, Vested
Espinoza, Sylvia	G4, Vested
Le-Christensen, Jenny	G5, Vested - Reciprocity
Lee, Danielle	G4, Vested - Reciprocity
Marlowe, Mia	G4, Vested
Pacino, Katy	G7, Non-Vested - Reciprocity
Pickney, Jay	G7, Non-Vested – Reciprocity
Reyna, Renee	G4, Vested - Reciprocity
Sekhon, Amrinder	G4, Vested
Wredberg, Nicole	G7, Non-Vested - Reciprocity



#### 2204.4.6 **Member Account Refunds:**

The Board ratified the actions as listed below for the following members regarding refunds:

<b>Name</b>	<b>Retirement Plan Type</b>
Aguilar, Joaquin	G7, Non-vested
Aaron, Marshall	G7, Non-vested
Arango, Erica	G4, Vested
Garcia, Delia	G7, Non-vested
Ikegayi, Maeri	G7, Non-vested
Jones, David G	G7, Non-vested
Lam, Elenalani	G5, Non-vested
Lopez Plancarte, Manuel (FBO: Lopez, Oscar)	S7, Non-vested
Martin, Vernon	G7, Non-vested
Nash, Paul (FBO: Nash, Cathy)	G2, Vested
Padua, Jessica	G4, Vested
Sloan, Ivan	G7, Non-vested
Sosa Rios, Enissa	G7, Non-vested
Wilson, Matt	G7, Non-vested

#### 2204.4.7 **Member Account Rollovers:**

The Board ratified the actions as listed below for the following members regarding rollovers:

<b>Name</b>	<b>Retirement Plan Type</b>
Chavez, Roseanne	G7, Non-vested
Collins, Natasha	G7, Vested
Velleman, David	G7, Non-vested
Wemple, Jesse (FBO: Martin, Carolyn)	G4, Vested
Zabarte, Joie	G7, Non-vested

2204.4.8 **Member Account Redeposits:** None.

2204.4.9 **Acceptance of Trustees' Reports of Educational Activities:** The Board accepted the submitted report for educational activity attended by Mr. Hoefer.

2204.4.10 **Approval of a Resolution Authorizing the Chief Executive Officer to Execute an Agreement for Tax Counsel Services:** The Board approved a resolution authorizing the Chief Executive Officer to execute an agreement with Wellington Gregory LLP, for tax counsel services.

2204.4.11 **Approval of Resolutions that Define Compensation Earnable and Pensionable Compensation:** The Board approved amendments to (1) the resolution defining Compensation Earnable, pursuant to Government Code §31461 for members who are not subject to Government Code §7522.34 and (2) the Resolution defining Pensionable Compensation for members who are subject to Government Code §7522.34.

2204.5.1 **Consideration of Agenda Items, if any, Removed from the Consent Agenda:** None.

2204.6.1 **Report on Preliminary Monthly Portfolio Performance Report for the Period Ended March 31, 2022:** Mr. Coultrip reported that SamCERA's net preliminary return for March was 1.0% bringing the preliminary trailing twelve month return ending March 2022 to 6.9% net, which is below SamCERA's

Plan Benchmark return of 7.1% but above SamCERA's Actuarial Assumed Earnings Rate of 6.25%. This item was informational and for discussion only, no action was taken.

- 2204.6.2 **Report on Cash Overlay (Parametric) Annual Review:** Ms. Ng reviewed the meeting notes of the annual review of SamCERA's overlay manager, Parametric. The meeting took place on March 3<sup>rd</sup> and included a firm/organizational update, investment process review, and performance review and attribution. Ms. Ng shared that the overlay program results were in line with long-term expectations and there were no major concerns identified during the review. This item was informational and for discussion only, no action was taken.
- 2204.6.3 **Report on Global Custodian (Northern Trust) Annual Review:** Ms. Ng reviewed the meeting notes of the annual review of SamCERA's Global Custodian, Northern Trust. The meeting was held virtually on March 3<sup>rd</sup> and consisted of a firm/organizational update, global custody overview, securities lending review, and a service performance review. Northern Trust continues to provide consistent and reliable levels of service to staff. There were no major concerns identified during the review. This item was informational and for discussion only, no action was taken.
- 2204.6.4 **Approval of Cash Flow-Matched Manager Recommendation:** This item was taken out of order and heard after agenda item 6.1. Mr. Abdou provided the Board with an overview of the manager search process and shared the three final candidates. Ms. Ng presented the cashflow matching mandate manager search recommendation in further detail to the Board.

**Action:** Ms. Arnott moved to approve an initial investment of 1.5% of plan assets (or approximately \$90 million) to a cashflow matching investment mandate with Insight Investment to be placed in the Diversifying risk category (Fixed Income/Liquidity asset class composite). The motion was seconded by Mr. Hoefer and carried by a vote of 7-0 with trustees Arnott, Battey, David, Hackleman, Hoefer, Orr, and Raw, all in favor; none opposed.

- 2204.6.5 **Approval of Proposed Purchase and Sale of Alternative Investments (to be heard in closed session, Confidential Under Gov. Code §54956.81 and §6254.26, see item C2):** This item was taken out of order and heard in Closed Session at 10:32 a.m. after agenda item 6.4. The Board reconvened in Open Session at 11:04 a.m. See Closed Session report under C2. Ms. Orr left the meeting at 11:05 a.m.

- 2204.7.1 **Approval of SamCERA Fiscal Year 2022-23 Budget:** Ms. Chow presented SamCERA's proposed budget for fiscal year 2022-23, totaling \$45.7 million, which is 4% higher than the current year's adopted budget. Ms. Chow discussed the professional services, administrative, and informational technology budgets in further detail with the Board.

**Action:** Mr. David moved to approve SamCERA's proposed budget for fiscal year 2022-23 totaling \$45.7 million. The motion was seconded by Ms. Arnott and carried by a vote of 6-0, with trustees Arnott, Battey, David, Hackleman, Hoefer, and Raw, all in favor; none opposed.

- 2204.7.2 **Selection of and Direction for Voting by SamCERA Delegates at the SACRS Spring Business Meeting:** Mr. Hood discussed the upcoming SACRS Spring Conference and shared that there were no Board members planning to attend the conference, therefore the CEO should be selected as the SamCERA Voting Delegate.

**Action:** Mr. Battey moved to approve staff's recommendation to designate Scott Hood, CEO as the Voting Delegate to cast SamCERA's votes at the SACRS Spring 2022 Conference. The motion was seconded by Mr. Hoefer and carried by a vote of 6-0, with trustees Arnott, Battey, David, Hackleman, Hoefer, and Raw, all in favor; none opposed.

- 2204.8.1 **Chief Executive Officer's Report:** Mr. Hood informed the Board that the May meeting will take place virtually. He shared that the Board of Supervisors plan to transition into a hybrid style meeting next week and would like to survey the Board to obtain their meeting preference for future Board of Retirement meetings until the Governor's Orders expire. He also informed the Board that a Special Meeting will take place next week and a survey will be sent out to determine the date and time. He previewed a few items on the May agenda which include the formation of the Ad Hoc Nominating Committee and a presentation from Milliman, Inc. regarding the assumptions for the upcoming valuation, funding mechanisms, and funding liability status.
- 2204.8.2 **Assistant Executive Officer's Report:** Ms. Smith informed the Board that SamCERA has entered into an agreement with Managed Medical Review Organization, Inc. (MMRO) to conduct the medical reviews of disability applications received by SamCERA. She also provided an update on the Request for Proposal (RFP) for a financial education provider and shared that staff has decided to continue its relationship with Financial Knowledge Network to provide these services. Ms. Trujillo shared upcoming educational opportunities with the Board. In recognition of Administrative Professionals Day, on behalf of staff and the Board, Ms. Smith thanked Ms. Trujillo for her hard work.
- 2204.8.3 **Chief Investment Officer's Report:** Mr. Coultrip reported that staff and Verus will hold annual manager reviews on Thursday, April 28<sup>th</sup> with real estate managers, Invesco at 8:00 a.m. and Stockbridge at 10:00 a.m.; Thursday, May 5<sup>th</sup> with equity managers, Blackrock at 8:00 a.m. and QMA at 9:30 a.m.; and Thursday, May 19<sup>th</sup> with domestic equity managers, D.E. Shaw at 8:00 a.m., Panagora at 9:30 a.m., and Acadian at 11:00 a.m.
- 2204.8.4 **Chief Legal Counsel's Report:** Mr. Okada provided the Board with an update on the legislative bills proposing revisions to the Brown Act. He also informed the Board that he plans to hold the Ethics training during the summer due to the possible addition of new Board members.

C1 **Consideration of Disability Items, if any, removed from the Consent Agenda:** None.

C2 **Approval of Proposed Purchase and Sale of Alternative Investments (to be heard in Closed Session, Confidential Under Gov. Code §54956.81 and §6254.26, see item C2):** The Board met in Closed Session regarding the approval of proposed alternative investments:

Regarding the commitment of \$60 million to KKR Diversified Core Infrastructure Fund, LP, as part of SamCERA's Infrastructure portfolio within Private Real Assets, a motion was made by Hackleman, seconded by David, and approved by a vote of 7-0-0.

Ayes: Arnott, Battey, David, Hackleman, Hoefer, Orr, and Raw (Chair)

Nos: None

Abstain: None

Absent: Bowler, O'Malley, and Lee (alt.)

No other reportable action was taken.

2204.10 **Adjournment:** Mr. Raw adjourned the meeting at 11:25 a.m. in memory of the deceased members listed below.

Lopez Plancarte, Manuel	December 27, 2021	Sheriff's
Carter, Michael	March 8, 2022	Probation
Pugliese, Michael	March 9, 2022	Sheriff's
Hernandez, Roger	March 24, 2022	Probation
Ludy, Treva	March 25, 2022	Hospital
Howard, Edna	March 25, 2022	Library
Kruger, Suzanne	March 28, 2022	Health Services
Laurence, Annette	April 1, 2022	Health & Welfare
Pestano, Judith	April 1, 2022	Social Services
Vers, Joseph	April 5, 2022	Sheriff's
Alvarez, Juan	April 10, 2022	Courts
Lund, Ruth	April 15, 2022	County Clerk

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Robert Raw  
Board Chair

**SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**  
**APRIL 28, 2022 – SPECIAL BOARD MEETING MINUTES**

**2204-2SP.1 Call to Order, Roll Call and Miscellaneous Business**

**Call to Order:** Mr. Raw, Chair, called the Special Meeting of the Board of Retirement to order at 11:30 a.m. via Zoom.

**Roll Call:**

Present: Sandie Arnott, Mark Battey, Ben Bowler, Kurt Hoefler, Robert Raw, and Alma Salas (for Paul Hackleman).

Absent: Al David, Paul Hackleman, Katherine O'Malley and Susan Lee.

Alternates: None.

Staff: Michael Coultrip, Lili Dames, Scott Hood, Doris Ng, Paul Okada, and Gladys Smith.

Consultants and speakers: Joe Abdou and Faraz Shooshani (Verus).

**2204-2SP.2 Oral Communications from the Public:** Mr. Raw asked if there was any public comment concerning items on the agenda from those individuals participating on the telephone or via Zoom. There were no public comments. Ms. Smith reported there were no written comments received ahead of the meeting.

**2204-2SP.3 Approval of Sale of Alternative Investments (Confidential Under Gov. Codes §54956.81 and §6254.26, to be heard in Closed Session, C2):** The Board met in Closed Session at 11:32 a.m. regarding the approval of sale of alternative investments and reconvened in Open Session at 12:09 p.m.

No reportable action was taken.

**2204-2SP.4 Adjournment:** Mr. Raw adjourned the Special Meeting at 12:11 p.m.

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Robert Raw  
Board Chair

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
**Board of Retirement**

May 24, 2022

Agenda Items 4.1- 4.9

**TO:** Board of Retirement

**FROM:** Elizabeth LeNguyen, Retirement Benefits Manager



**SUBJECT:** Approval of Consent Agenda Items 4.1 – 4.9

**4.1 Disability Retirements**

None.

**4.2 Survivor Death Benefits**

- a) Based on the review of the application and the death certificate, the Board finds that: (1) the heart presumption contained in Government Code section 31720.5 applies; (2) finds that there is not sufficient evidence to rebut the presumption; (3) finds that **Roger Hernandez's** condition arose out of and in the course of his employment; and (4) grant the application for a service-connected death benefits to his surviving spouse, Ediltrudis Suero.

**4.3 Service Retirements**

The Board ratifies the service retirement for the individuals listed below as follows:

<b>Name</b>	<b>Effective Retirement Date</b>	<b>Department</b>
Alioto-Perez, Louise	April 1, 2022	Public Health
Alvarado, James	April 1, 2022	Public Works
Amaya, Francisco	April 1, 2022	Human Services Agency
Ang, Teddy	March 31, 2022	Information Services
Araniva, Rolando	April 1, 2022	Sheriff's
Bayless, Roy	March 31, 2022	Information Services
Beasley, Gary	March 18, 2022	Human Services Agency
Bedolla, Vincent	March 14, 2022	Sheriff's Office
Beiers, John	April 1, 2022	County Counsel
Belville, Daniel	March 31, 2022	Emergency Management
Besson, Tamar	March 20, 2022	San Mateo County Health
Blake, Omar	March 25, 2022	Deferred - Mental Health
Brennan, John	March 31, 2022	Planning & Building

Burbridge, Michael	March 8, 2022	San Mateo County Health
Byczkowski, Hedwiga	March 31, 2022	Behavioral Health
Cabezas, Mariaelena	April 1, 2022	San Mateo County Health
Cameron, Marlise	April 1, 2022	Sheriff's Office
Carignan, Michael	March 19, 2022	Human Resources
Carpentier, Christine	April 1, 2022	Probation
Carrasco, Joseph	April 1, 2022	Superior Court
Castillo, Eduardo	April 1, 2022	Controller's
Cerelli, Robert	March 22, 2022	Assessor Clerk Recorder Elections
Chen, Maria	April 1, 2022	San Mateo County Health
Chicks, Michelle	March 31, 2022	Human Services Agency
Chow, Patti	April 1, 2022	Assessor Clerk Recorder Elections
Chu, Hwai-Ming	March 31, 2022	San Mateo County Health
Consani, Robert	April 1, 2022	Public Safety Communications
Cooney, Robert	March 31, 2022	Def'd - Assessor Clerk Recorder Elections
Cruz, Maria Luisa	April 1, 2022	San Mateo County Health
De Silva, Raymundo	March 31, 2022	San Mateo County Health
Di Gualco, Regina	March 19, 2022	Controller's
Dorian Kern, Ilana	April 1, 2022	Behavioral Health
Dudum-Herrera, Hilda	March 3, 2022	San Mateo County Health
Evangelista, Violeta	March 20, 2022	San Mateo County Health
Finato, Todd	March 20, 2022	Sheriff's Office
Freeman-Jackson, Eileen	March 31, 2022	Probation
Gallardo, Victor	April 1, 2022	Public Works
Giguere, Gregory	March 31, 2022	District Attorney's
Goulart, James	March 19, 2022	Sheriff's Office
Grady, Donald	April 1, 2022	County Manager's Office
Gulli, Anthony	March 22, 2022	Public Works
Herbert, John	March 31, 2022	Behavioral Health
Holmes, Irene	March 5, 2022	Def'd - District Attorney's Office
Howard, Katherine	March 31, 2022	Aging & Adult Services

Hunter, Eula	April 1, 2022	Sheriff's Office
Hynson, Ramon	March 31, 2022	San Mateo County Health
Ilano-Manuel, Alma	April 1, 2022	San Mateo County Health
Irvine, Kathleen	April 1, 2022	Sheriff's Office
Jackson, Emmett	April 1, 2022	Public Works
Janif, Mohammed	April 1, 2022	San Mateo County Health
Jimenez, Maribel	March 18, 2022	Probation
Kusaba, John	April 1, 2022	Human Services Agency
Lawrence,Jr, Robert	March 8, 2022	Sheriff's Office
Lee, Adriane	April 1, 2022	Probation
Lin, Jessie	March 20, 2022	Human Services Agency
Linhares, Lisa	March 19, 2022	San Mateo County Health
Lomax, Yolanda	April 1, 2022	San Mateo County Health
Macleod, Paul	April 1, 2022	Probation
Mak, Po	April 1, 2022	Child Support Services
McDevitt, Kyle	March 12, 2022	Sheriff's Office
McMaster, Jean	March 12, 2022	Behavioral Health
Mean, Joicy	April 1, 2022	Behavioral Health
Mejia, Maria Victoria	March 31, 2022	Planning & Building
Miramontes, Jose	April 1, 2022	Public Works
Mosely, Mark	February 16, 2022	Behavioral Health
Orth, Carol	March 31, 2022	Controller's
Owen, Kenneth	March 31, 2022	Sheriff's Office
Ponce, Fernando	March 5, 2022	Public Works
Porter, Paul	April 1, 2022	Public Works
Romero, Jesus	April 1, 2022	Probation
Romero, Roy	April 1, 2022	Probation
Ruybal, Shannon	March 9, 2022	QDRO
Sanchez, John	March 31, 2022	Deferred
Sato, Kathy	March 27, 2022	Deferred - San Mateo Co Health
Schirle, Gregory	April 1, 2022	Environmental Health
Selvy, Vernon	March 26, 2022	Deferred - Parks



Shwan, Tracy	April 1, 2022	Probation
Skorinis, Dimitre	April 1, 2022	Sheriff's Office
Smalley, Nicole	March 31, 2022	Superior Court
Smith, Victoria	March 5, 2022	Human Services Agency
Solis, Eloy	April 1, 2022	Sheriff's Office
Spicer, Joan	April 1, 2022	San Mateo County Health
Steaveson, James	March 16, 2022	Sheriff's Office
Stillman, Ronald	April 1, 2022	Public Works
Talley, Leslie	March 5, 2022	Sheriff's Office
Tam, Eliza	April 1, 2022	Public Works
Tingin, Anabel	April 1, 2022	Public Health
Tolentino, Diosdado	April 1, 2022	San Mateo County Health
Ugarte-Ortiz, Martha	April 1, 2022	Behavioral Health
Utumoengalu, Keasi	April 1, 2022	Public Works
Vermilion, Daniel	April 1, 2022	Mental Health
Villegas, Jose	March 26, 2022	Probation
Wang, Mark	March 30, 2022	Behavioral Health
Warmoth, Theresa	April 1, 2022	Human Services Agency
Zorfas, Lauren	March 5, 2022	Superior Court

#### 4.4 Continuances

The Board ratifies the granting of a continuance to the following individuals:

<b>Survivor's Name</b>	<b>Beneficiary of:</b>
Carter, Nancy Okada	Carter, Michael J
Gatzert, Patricia	Gatzert, Norman
Harris, Eloise	Harris, George
Rapley, Bonnie	Rapley, Jack

#### 4.5 Deferred Retirements

The Board ratifies the deferred retirements as listed below for the following individuals:

<b>Name</b>	<b>Retirement Plan Type</b>
Arzola, Eliza	G7, Vested – Auto Defer – Code 31700

Barcelo, Alexandra	G7, Vested – Auto Defer – Code 31700
Calafato, Kathryn	G7, Vested – Auto Defer – Code 31700
Chung, Jimmy	S7, Vested – Auto Defer – Code 31700
Cunningham, Erika	G7, Vested – Auto Defer – Code 31700
Kong, Frances	G7, Vested – Auto Defer – Code 31700
Kwan, David	G7, Vested – Auto Defer – Code 31700
Kwon, Joy	G7, Vested – Auto Defer – Code 31700
Lujan, William	G4, Vested – Auto Defer – Code 31700
Marcelo Huerta, Ana	G7, Vested – Auto Defer – Code 31700
McKeon, Michael	G7, Vested - Reciprocity
Ormonde, Jessica	G7, Vested – Auto Defer – Code 31700
Panglao, Ruemel	G7, Vested
Quezada-Torres, Yahosca	G7, Vested – Auto Defer – Code 31700
Trabanino, Bryan	S5, Vested – Auto Defer – Code 31700
Vivero, Emma	G4, Vested
Xu, Susan	G7, Vested
Zaidi, Farah	G7, Vested - Reciprocity

#### 4.6 Member Account Refunds

The Board ratifies the refunds as listed below for the following individuals:

Name	Retirement Plan Type
Johnson, Alexis	G7, Non-vested
Stoja, Denise	G7, Non-vested
Sweetnam, Mariko	G7, Vested

#### 4.7 Member Account Rollovers

The Board ratifies the rollovers as listed below for the following individuals:

Name	Retirement Plan Type
Hagberg, Sharon	G4, Vested
Jimenez, Lorayne	G4, Non-vested
Jones, Alexandra	G7, Non-vested
Meyer, Michael	G7, Non-vested

Schuman, Carolyn	G4, Non-vested
Sweetnam, Mariko	G7, Vested

**4.8 Member Account Redeposits**

None

**4.9 Acceptance of Trustees' Reports of Educational Activities**

See attached

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
**Board of Retirement**

May 24, 2022

Agenda Item 4.9

**TO:** Board of Retirement

**FROM:** Anne Trujillo, Retirement Executive Secretary



**SUBJECT:** Trustee's Reports of Educational Activities

**Recommendation**

Accept the following reports from Board of Retirement trustees who have recently attended educational events.

**Background**

SamCERA's Education Policy Section 1D states "Prior to the next regularly scheduled meeting of the Board following the Board member's participation in an educational activity, the Board member shall submit for inclusion on the Consent Agenda, a summary written report on the content of educational activities. The report shall substantially reflect the information contained in the attached sample report."

**Discussion**

SamCERA Trustees attended the following educational events, and their reports are attached:

Pension Bridge Annual Conference, April 18-20, 2022

- Elaine Orr

**Attachments**

Trustee's Education Proof of Participation Certificates and Summaries

# SamCERA Board of Retirement Trustee Education Proof of Participation Certificate and Summary



<b>Trustee Name</b> Elaine Orr	<b>Date(s) of Event</b> 4/18-4/20/22
<b>Education Event Name</b> Annual Conference	
<b>Event Provider</b> Pension Bridge	
<b>Type of Participation:</b> Attended Event <input checked="" type="checkbox"/> Listened to Audio/Watched Video <input type="checkbox"/>	<b>Eligible Credit:</b> Total hours for sessions you participated in: <u>20</u> <i>(Staff may adjust hours if the provider issues an education certificate that reflects different hours.)</i>

This event satisfies the following requirements of the Board of Retirement's Education Policy and Government Code section 31522.8:

**Topic:** (Check all that apply)

- |  |   |
|--|---|
| <input type="checkbox"/> Fiduciary responsibilities  | <input type="checkbox"/> Disability evaluation              |
| <input type="checkbox"/> Ethics  | <input type="checkbox"/> Fair hearings                      |
| <input type="checkbox"/> Benefits administration   | <input checked="" type="checkbox"/> Pension fund governance |
| <input type="checkbox"/> Actuarial matters   | <input type="checkbox"/> New board member orientation       |
| <input checked="" type="checkbox"/> Pension funding  | <input type="checkbox"/> Other: _____                       |
| <input checked="" type="checkbox"/> Pension fund investments and investment program management |   |

**Summary Report**

What concepts or information did you learn about?

macroeconomic risks & opportunities in a post pandemic  
 Volatility risk - Inflation - Credit Strategies  
 CIO perspectives on political risk & cryptocurrencies  
 + crypto VC'S

Would you recommend this event to other trustees?

- Yes       No       Maybe

You may provide additional comments to SamCERA's CEO.

By signing below, I certify that I participated in the activities described above and am entitled to claim the indicated amount of education credit hour(s).

<b>Trustee Signature (print this form and sign)</b> 	<b>Date</b> April 25, 2022
---	-------------------------------


**NOTE:** Please return this completed form to SamCERA's Executive Secretary prior to the mailing of the Board packet, so it can be included in that month's Consent Agenda.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
**Board of Retirement**

May 25, 2022

Agenda Item 5.2

**TO:** Board of Retirement

**FROM:** Scott Hood, Chief Executive Officer 

**SUBJECT:** Presentation of the Quarterly Actuarial Liability Report

**Recommendation**

Accept the Quarterly Actuarial Liability Report dated March 31, 2022. Milliman, Inc. will present and discuss the Actuarial Liability Report.

**Background**

Nick Collier and Craig Glyde, of Milliman, Inc., presented a draft 'Liability Dashboard' at the Board's March retreat. The dashboard combines current assumptions with current quarterly data to make estimates as to where SamCERA's liabilities and employer contribution rates will be at the coming end of the fiscal year.

**Discussion**

This is the first look at the liability dashboard and is intended for informational purposes and discussion. The report provides a general trend of how the fund's liabilities and employer contribution rates are trending for the current year.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
**Board of Retirement**

May 24, 2022

Agenda Item 5.3

**TO:** Board of Retirement

**FROM:** Scott Hood, Chief Executive Officer



**SUBJECT:** Consideration and Direction to Milliman Inc. Regarding Assumptions to be Used in the June 30, 2022, Actuarial Valuation

**Recommendation**

Provide direction to Milliman, Inc as to the economic actuarial assumptions to be used in the June 30, 2022 actuarial valuation. Staff concurs with Milliman's recommendations that no changes be made to the assumptions used for last year's valuation and the following assumptions be used:

- The economic assumptions be set at: investment return at 6.25%, inflation at 2.50%, wage at 3.00%, and payroll growth at 3.00%.
- The COLA assumption for Plans 1 and 2 be set in accordance with the inflation assumption.
- Employer contribution rates continue to be phased in for the second year of the three-year phase-in period.

**Discussion**

The Board will be asked to provide guidance to Milliman, Inc. regarding the economic assumptions to be used in its June 30, 2022, annual actuarial valuation of the system. Nick Collier, lead actuary, will provide a presentation on investment return, inflation, wage and payroll growth assumptions and how indicators have moved over the past year. Last year, the Board adopted a 6.25% assumed earnings rate and phased the employer rates in over a three-year period, which minimizes the short-term impact to employer contribution rate expenses.

For this coming valuation, Milliman is not recommending any assumption changes and staff concurs with the recommendation.

**Attachment**

Milliman's May 2022 Presentation on Economic Assumptions for the 2022 Valuation

# 2022 Assumption Review

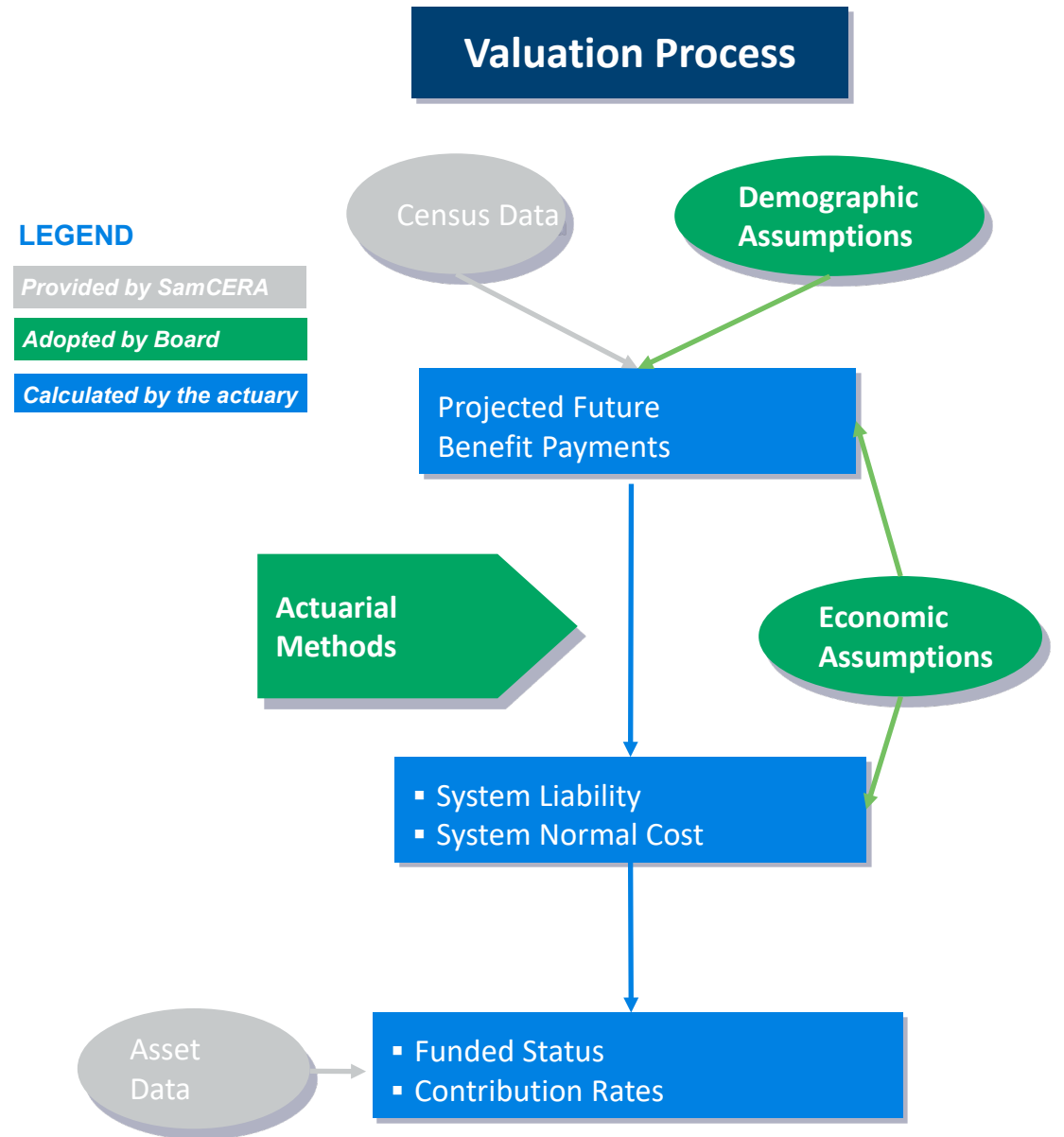
Nick Collier  
Craig Glyde

MAY 24, 2022



# Schedule

- May 2022 meeting:
  - Adopt economic and demographic assumptions for use in 2022 valuation
- September 2022 meeting
  - Valuation results
  - Adopt member and employer contribution rates for fiscal year beginning July 1, 2023
- Detailed review of assumptions in 2023 as part of triennial investigation of experience
  - Likely presented at July 2023 meeting

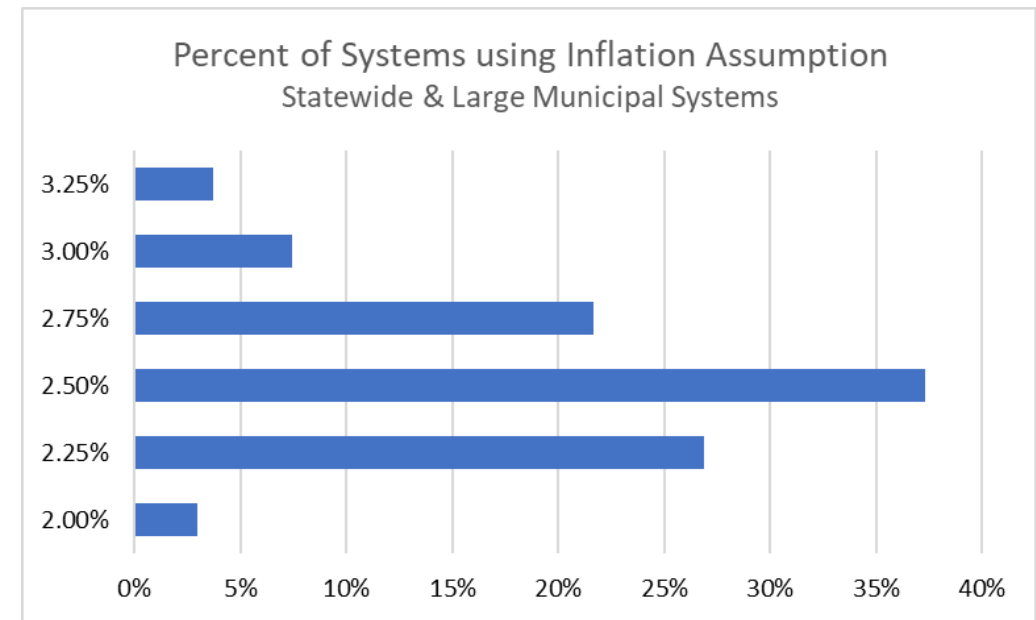


# Demographic Assumptions

- Demographic assumptions were reviewed in detail two years ago
- Pandemic appears to have had an impact on public plan experience
- At this point, we are not projecting any long-term impact of the pandemic on the assumptions
- We recommend no changes to the demographic assumptions this year

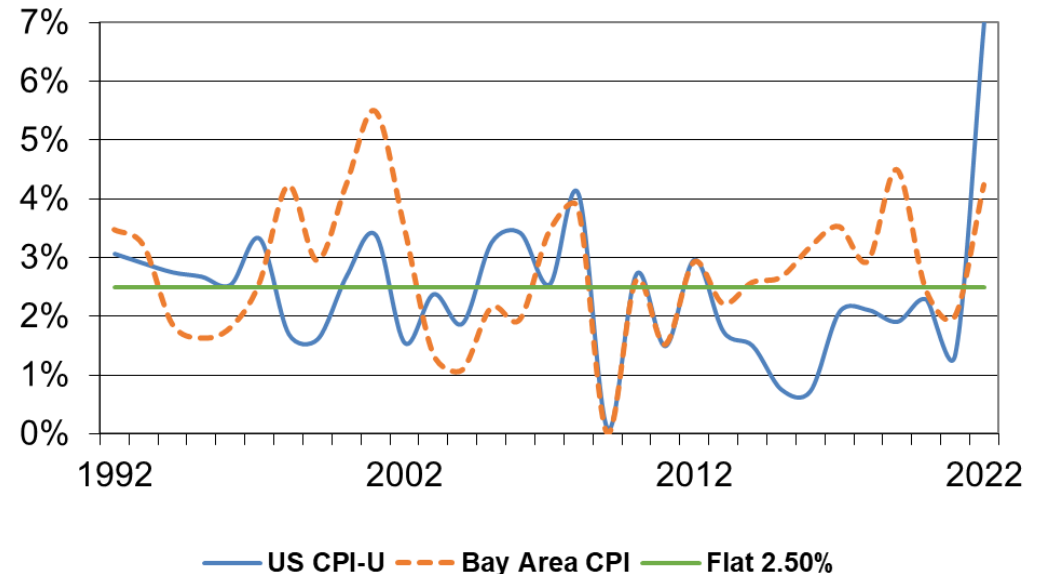
# Price Inflation

- Current CPI inflation assumption used for salary increase and COLAs is 2.50%
  - CalPERS and CalSTRS are at 2.75%
  - 2.50% is the median assumption (and most common) for large systems
- Long-range Social Security projection is 2.4% based on 2021 Trustees' report
- Long-term forecasts are increasing
  - Implied long-term inflation from TIPS is now in 2.5% - 3.0% range
- Current assumption is reasonable



From 2021 Public Fund Survey

## Historical Inflation



# Payroll Growth

- The payroll growth assumption is used in the calculation to amortize the unfunded liability
- Fairly standard among public retirement systems to have payroll growth equal to general wage growth
- Historical County payroll has increased at a greater rate than the general wage increase due to increase in number of active members, but this has levelled off over the last 10 years
- It is reasonable to keep the payroll growth assumption equal to the general wage growth assumption (currently 3.00%)

# Expected Return

- Current investment return assumption is 6.25% (net of all expenses)
- Verus' expected 30-year return for SamCERA is 5.8% as of the beginning of the year
  - Based on 2.3% assumed inflation
  - 10-year expectation is 5.5% (2.5% assumed inflation)
- Expected return based on Milliman's 2022 capital market assumptions and SamCERA's target asset allocation
  - Milliman 30-year = 6.4% / 10-year = 5.4%
  - Most recent Horizon Survey of capital market assumptions yields results close to Milliman
- Return assumption should be net of all expenses
  - Assume 0.15% to 0.20% for administrative expenses
  - Assume 0.05% to 0.10% for "fixed" investment expenses (assuming passive expenses for indexing on equities and fixed income)
  - → Need expected return of 6.50% to net 6.25%

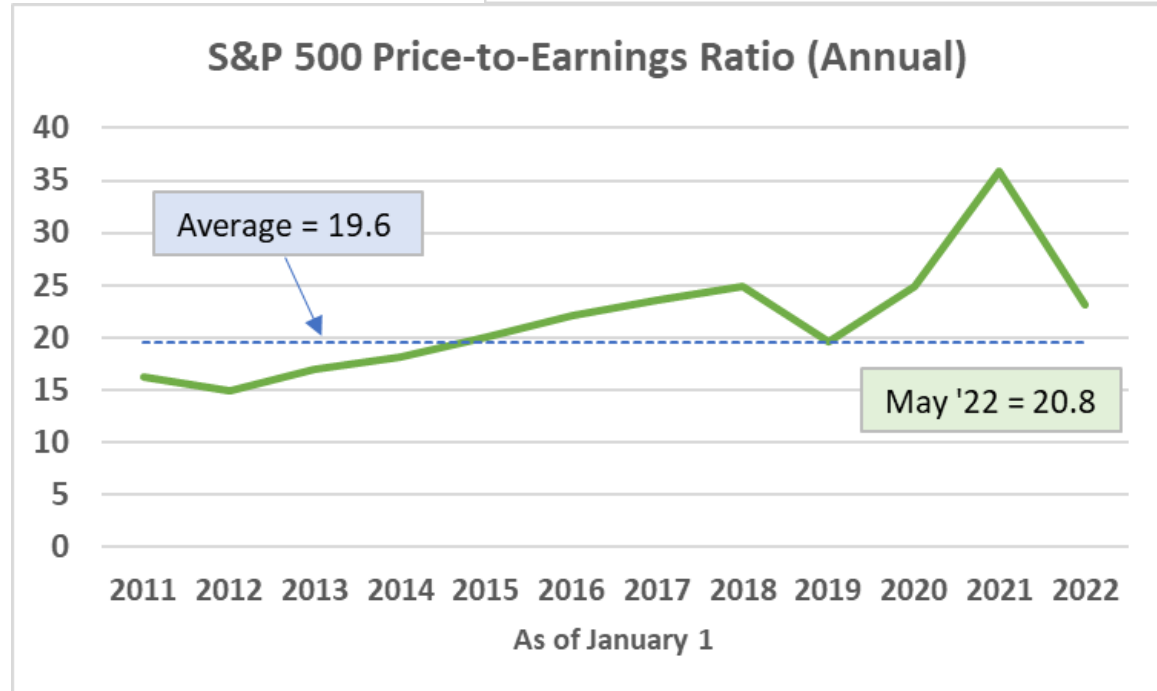
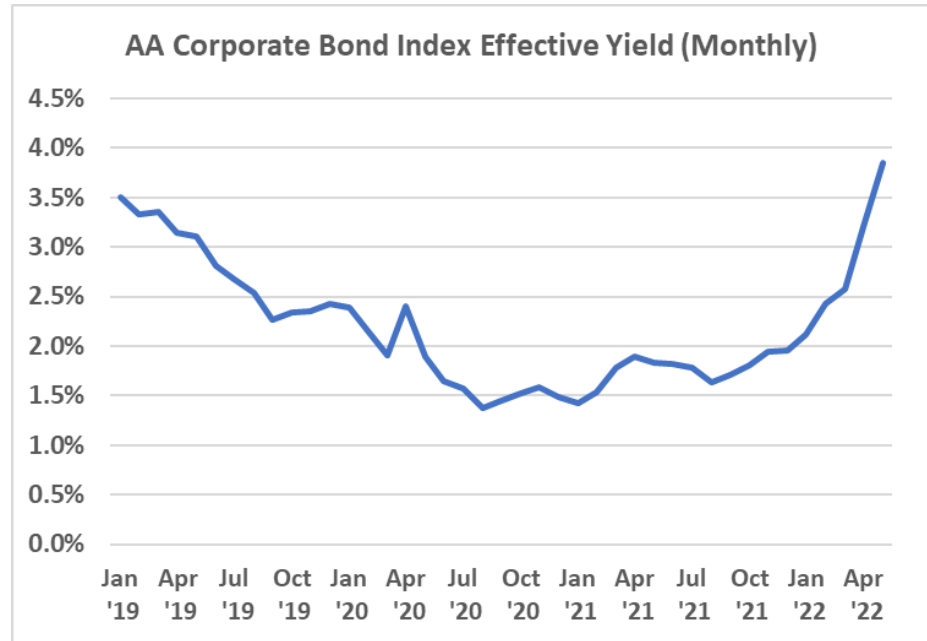
## Other Systems:

California: SamCERA's 6.25% return assumption is the lowest.

Large Statewide: SamCERA's assumption is lower than more than 90% of large systems.

# Economic Outlook – What's Changed?

- Increasing bond yields
- P/E ratios are reverting closer to historical averages
- Recent market declines have negatively impacted current fiscal year returns
- Will likely see increase in future capital market assumptions



# Conclusion

- We recommend re-adopting the assumptions used for 2021 valuation
  - Expected returns based on 2022 capital market assumptions remain low; however, changes in the market this year are not reflected in the expected returns
  - Short-term inflation has been high, but unclear if this a long-term trend
  - Demographic assumptions remain reasonable
- All assumptions will be reviewed in detail next year as part of triennial investigation

# Questions





# Caveats and Disclaimers

This presentation is based on the data, methods, assumptions and plan provisions described in our actuarial valuation report dated September 20, 2021, except where noted. The statements of reliance and limitations on the use of this material is reflected in the actuarial report and still apply to this presentation.

These statements include reliance on data provided, on actuarial certification, and the purpose of the report.


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

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION  
**Board of Retirement**

May 25, 2022

Agenda Item 5.4

**TO:** Board of Retirement

**FROM:** Scott Hood, Chief Executive Officer 

**SUBJECT:** Educational Presentation on Actuarial Funding Controls

**Recommendation**

Accept the Educational Presentation on Actuarial Funding Controls.

**Background**

As the Fund approaches the end of its initial 15-year liability amortization period that started in 2008, employer contributions will begin to drop considerably as the initial unfunded liability debt is retired. At this point, it would be prudent to review the tools available to the Board with respect to funding and with an eye to developing a formal policy that will guide funding decisions going forward.

**Discussion**

Nick Collier and Craig Glyde, of Milliman, Inc., will provide an educational presentation on actuarial funding measures that Boards may implement to effectively manage the fund. Understanding the control mechanisms and their impacts is key to developing a policy that can best serve the fund.

**SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**  
**Board of Retirement**

May 24, 2022

Agenda Item 6.1

**TO:** Board of Retirement

**FROM:** Michael Coultrip, Chief Investment Officer *Michael R. Coultrip*

**SUBJECT:** Preliminary Monthly Portfolio Performance Report for the Period Ended April 30, 2022

**Recommendation**

Accept the preliminary performance report dated April 30, 2022.

**Background**

Due to delays at Northern Trust, the monthly preliminary performance report is not ready in time for the Board mailing. The report will be added to Dropbox before the meeting date once it is available.

**Discussion**

The fund's net preliminary return for April was -2.6%, bringing the preliminary trailing twelve-month net return ending April 2022 to 1.5%. Policy benchmark returns are not yet available and will be included with the performance report.

Most assets classes outside of commodities were lower in April as hawkish actions by central banks increased global recession worries. The U.S. Federal Reserve is now expected to raise short-term interest rates in 50 basis point increments in June and July after raising rates by 50 basis points in May.

The U.S. equity market (measured by the S&P 500 Index) was down 8.7%, while small-capitalization stocks were down 9.9%. Developed international equity (as measured by MSCI EAFE) was down 6.5% while emerging markets were down 5.6%.

Real gross domestic product (GDP) contracted at a 1.4% annual rate in the first quarter, coming in below expectations of a modest positive increase. Manufacturing continued to grow (although at a slower rate) despite ongoing labor and supply chain challenges. The labor market continued its recovery with 428,000 new jobs added in April, with the headline unemployment remaining at 3.6%. Inflation (as measured by the Consumer Price Index - All Urban Consumers) increased 8.3% for the twelve months ended April, slightly below March levels.

The general U.S. fixed income market was down 3.8% in April as interest rates increased across the yield curve, as the market priced in a more aggressive 50 basis point increase in the Federal Funds rate in May. The 10-year U.S. Treasury yield was higher by 59 basis points during the month and

ended at 2.93% by month-end. High Yield returns were down 3.6% and the Bloomberg Commodity Index was up 4.1%.

**Attachment**

Verus Capital Market Update



**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**

APRIL 2022  
Capital Markets Update

# Market commentary

## U.S. ECONOMICS

- U.S. GDP contracted at an annualized rate of -1.4% in the first quarter, well short of consensus expectations (+1.0%). The print was largely pulled down by a sharp increase in the U.S. trade deficit and a decline in inventory investment. Strength from the U.S. consumers helped soften the decline in GDP with a 2.7% increase in consumer spending.
- U.S. non-farm payrolls rose by 428,000, the print exceeded expectations and marked the 12<sup>th</sup> consecutive month of increases greater than 400,000. While payrolls continued to advance, the labor force participation rate fell -0.2% – the first contraction since March 2021 as the labor force fell by 363,000.
- Average hourly earnings rose +0.3% month-over-month and brought year-over-year wage growth to +5.5% from +5.6% in the month prior. Tight labor markets and continued wage growth has caused concern for some investors that rising wages could exacerbate inflation.

## U.S. EQUITIES

- Large-cap equities fell precipitously (S&P 500 -8.7%) and brought the year-to-date return for the index to -12.9% as markets digested quarterly earnings and an increasingly hawkish tone from the Federal Reserve.
- Within the S&P 500, 87% of companies have reported earnings, of those who have reported 79% have had positive earnings surprises. Earnings surprises have generally been more moderate than in recent quarters with an average surprise of 4.9% above analyst estimates, compared to the 5-year average of 8.9% above estimates per FactSet.
- As equity markets have sold off, valuation metrics have fallen from historically high levels. The price to earnings ratio of the S&P 500 has declined 20% year-to-date to 18.2.

## U.S. FIXED INCOME

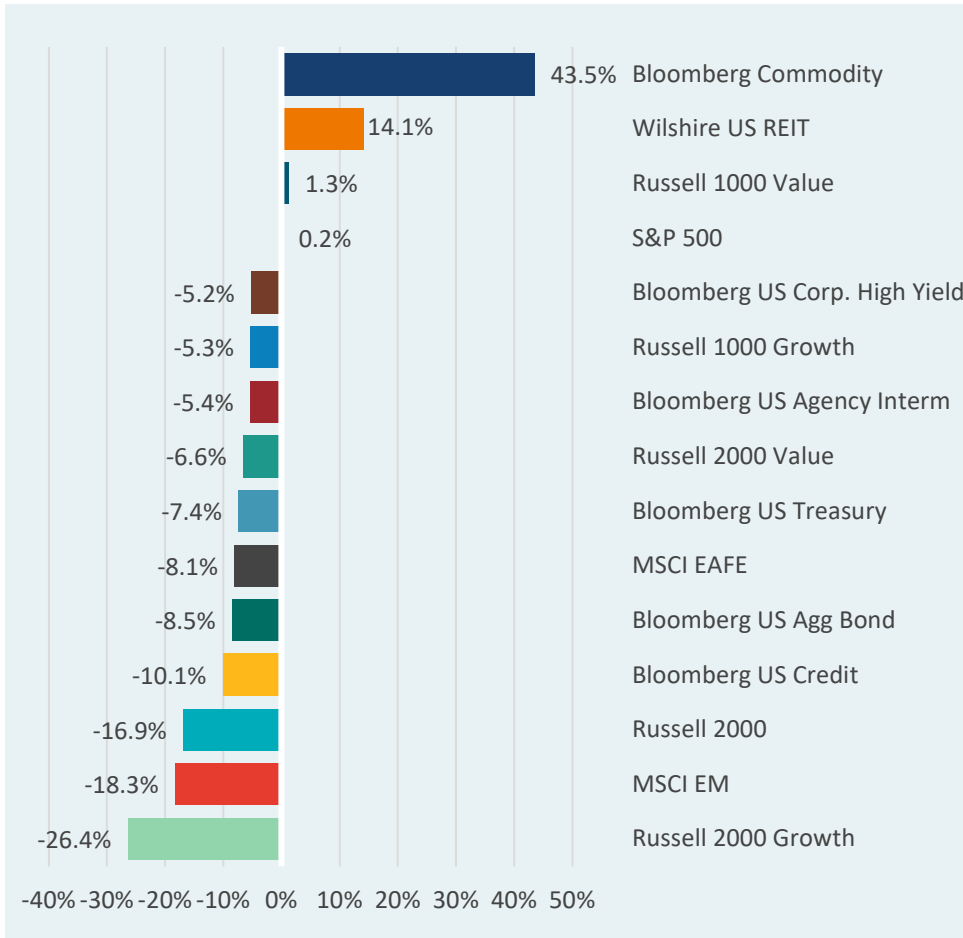
- The Fed raised rates 50 basis points in the most recent meeting. Fed officials voiced that more aggressive rate action may be necessary to combat inflation. The market now expects the Fed to tighten monetary policy to a greater extent than previously thought. Markets priced in two additional quarter-point hikes and now expect a total of 10 hikes by year end.
- U.S. Treasury yields climbed across the curve as investors priced in an increasingly hawkish fed. The 10-year yield was 57 basis points higher from the month before and ended the month at 2.89%. The 10-year yield reached its highest-level more than three years.
- The Bloomberg U.S. Aggregate Index declined -3.8% as yields climbed in the worst month for the Index in more than 40 years.

## INTERNATIONAL MARKETS

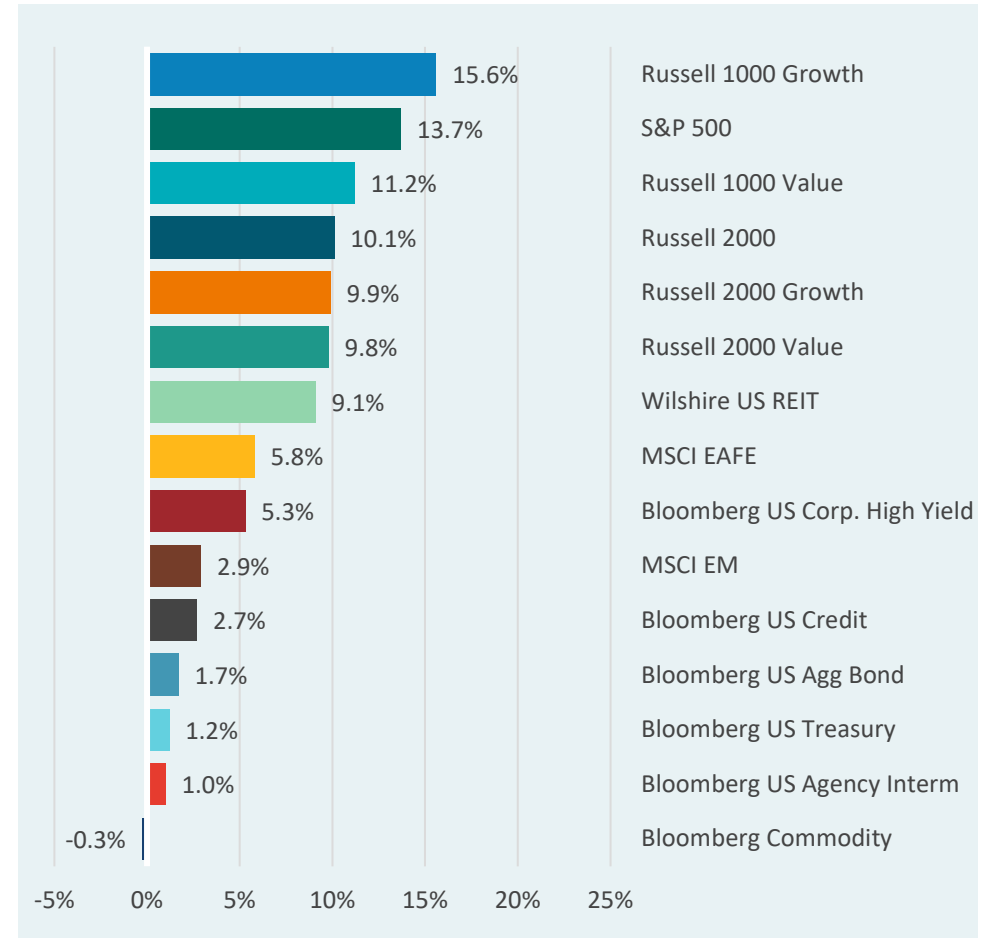
- The Russian Ruble (+16.3%) has now more than recovered from initial weakness in the wake of Russia's invasion of Ukraine and reached a two-year high against the U.S. Dollar to end the month. Russia's ability to avoid defaulting on debt, even without access to most hard dollar reserves, has helped support the currency.
- The MSCI China Index (-4.1%) fell for the sixth consecutive month and has receded -17.7% year-to-date. The index has now drawn down -46.2% from highs seen in February of 2021. Regulatory crackdowns and continued enforcement of a strict zero-covid policy has likely weighed on the index.
- The Japanese Yen (-6.3%) fell to multi-decade lows as the spread between 10-year US Treasury and Japanese yields widened by 0.6%. While U.S. and other developed sovereign bond yields have climbed, Japanese yields remain capped by central bank action.

# Major asset class returns

ONE YEAR ENDING APRIL



TEN YEARS ENDING APRIL



\*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 4/30/22

Source: Morningstar, as of 4/30/22

# U.S. large cap equities

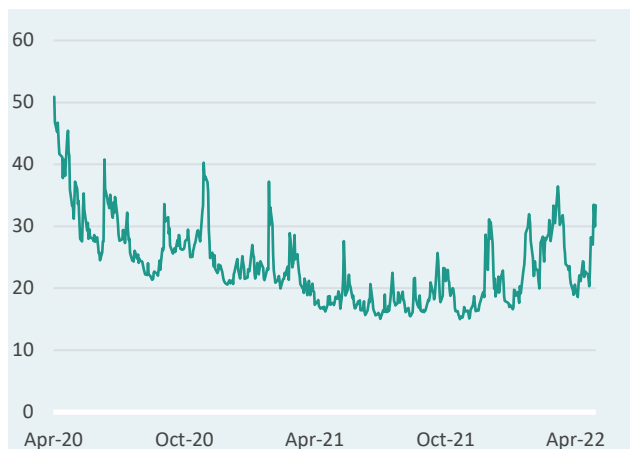
- The S&P 500 declined -8.7% and marked the worst monthly return for the index in more than two years. Declines in the S&P 500 Index were concentrated within a small number of names. Amazon (-23.8%), Apple (-9.7%) and Microsoft (-10.0%), are included in the list of only nine names which were responsible for more than half of the index's decline.
- The Cboe VIX Index of implied volatility climbed to 33.4 to end the month and remains at elevated levels relative to the 200-day moving average of 21.5. An erosion in future projections from large companies likely sent equity volatility higher.
- The Consumer Staples sector (+2.6%) was the only sector of the 11 S&P 500 (-8.7%) GICS sectors to post a positive return. The broad index was led lower by the Communications Services (-15.6%), Consumer Discretionary (-13.0%) and Information Technology (-11.3%) sectors.
- The Communication Services sector sold off -15.6% and has declined -25.7% year-to-date. Google (-18.0%) saw a repricing after quarterly results showed slowing revenue growth. Netflix (-49.2%) also sold off after results showed a substantial decline in subscribers and pointed towards poor future subscriber growth.

**S&P 500 PRICE INDEX**



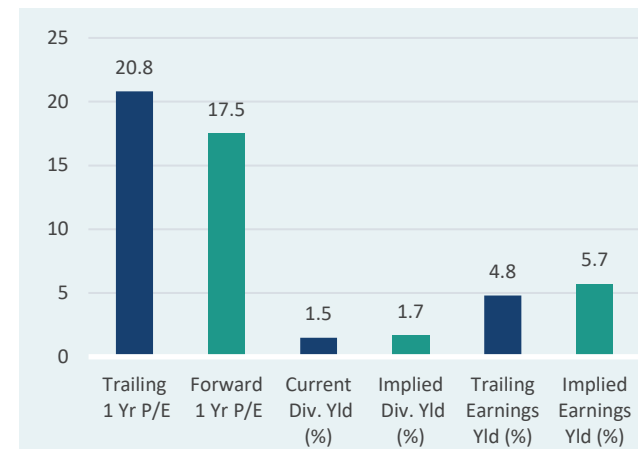
Source: Bloomberg, as of 4/30/22

**IMPLIED VOLATILITY (VIX INDEX)**



Source: Cboe, as of 4/30/22

**S&P 500 VALUATION SNAPSHOT**



Source: Bloomberg, as of 4/30/22

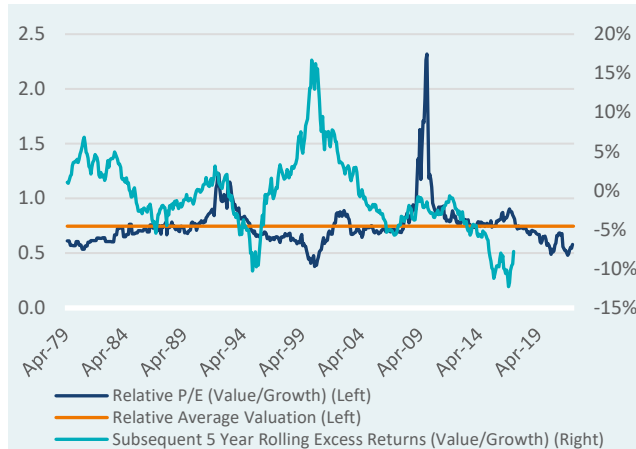


# Domestic equity size and style

- The Russell 3000 Value Index (-5.8%) was down less than the Russell 3000 Growth Index (-12.1%). Value focused sectors such as Healthcare, Consumer Staples, Industrials and Financials held up better within the value space, these sectors also hold a greater weight within the value style index.
- The MSCI USA Cyclical - Defensives Total Return Spread Index fell -8.9% over the month as defensive style stocks outperformed. Defensive style stocks tend to be less affected by economic data than cyclical stocks. Defensive stocks historically outperform the market when economic growth slows.

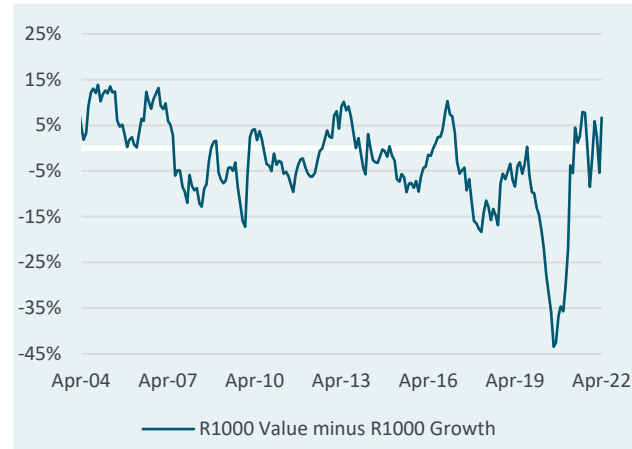
- Large-cap equities (Russell 1000 -8.9%) sold off to a lesser extent than their small-cap peers (Russell 2000 -9.9%). Within the healthcare sector the larger companies in the Russell 1000 fell by 11.8% less than small-cap counterparts in the Russell 2000. The Consumer Staples sector also helped relative large-cap performance; large-caps posted a +3.1% return and small-caps posted a -1.9% return.
- The S&P 500 High Dividend Index (-2.8%) – an equal-weighted index of 80 companies within the S&P 500 that have a high dividend yield – outperformed the broader S&P 500 Index by 5.9%.

**VALUE VS. GROWTH RELATIVE VALUATIONS**



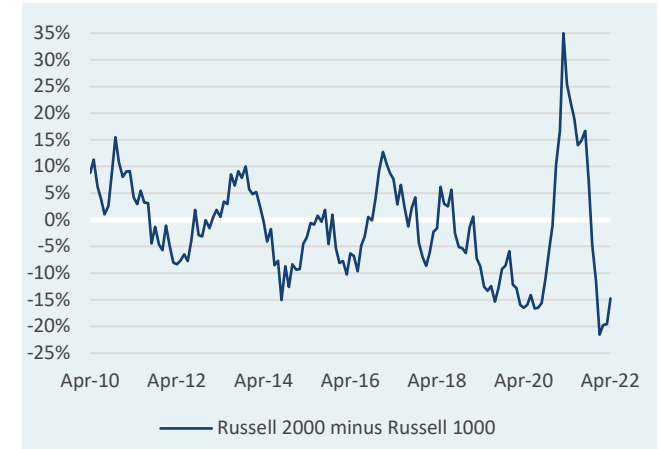
Source: FTSE, Bloomberg, as of 4/30/22

**VALUE VS. GROWTH 1-YR ROLLING RELATIVE PERFORMANCE**



Source: FTSE, Bloomberg, as of 4/30/22

**SMALL VS. LARGE 1-YR ROLLING RELATIVE PERFORMANCE**

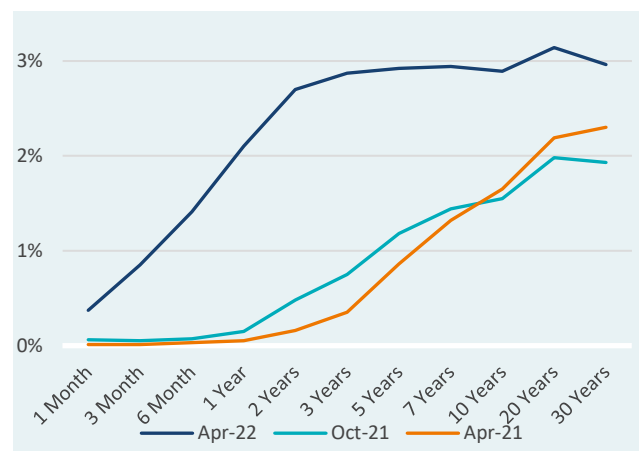


Source: FTSE, Bloomberg, as of 4/30/22

# Fixed income

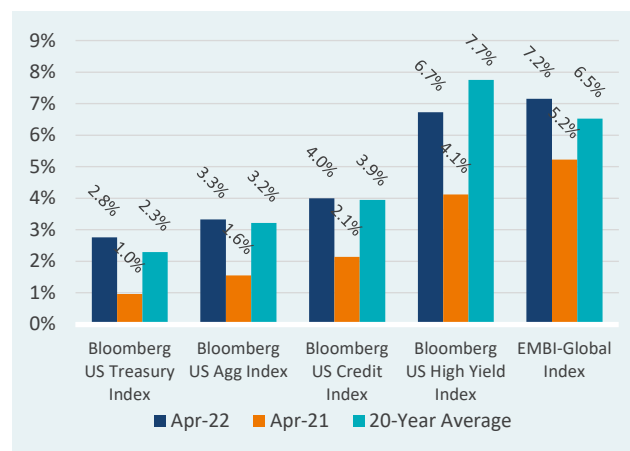
- The U.S. Dollar reached its strongest level in nearly a decade as investors fled riskier global currencies. While USD strength was broad, pain was felt by those holding USD counterparts that are tied closely to the slowing growth in China, such as the New Zealand Dollar (-6.7%) and the Australian Dollar (-5.4%).
- In April, the spread between 2- and 10-year U.S. Treasury yields widened to 19 basis points from just 4 basis points the month before. While the 2-10 spread widened in April, the spread has declined 60 basis points year-to-date as expectations built for continued Fed rate hikes.
- The S&P/LSTA Leveraged Loan Index continued to outperform and gained +0.2% in what was generally a poor month for fixed income. Leveraged loans benefited from a floating rate structure that leaves the index less exposed to rising rate environments.
- Central banks in emerging markets have tightened monetary policy more proactively than many developed market central banks. Global sovereign debt declined over the month and hard currency debt (JPM EMBI -5.6%) outpaced local currency denominated emerging market debt (JPM GBI-EM -6.0%).

**U.S. TREASURY YIELD CURVE**



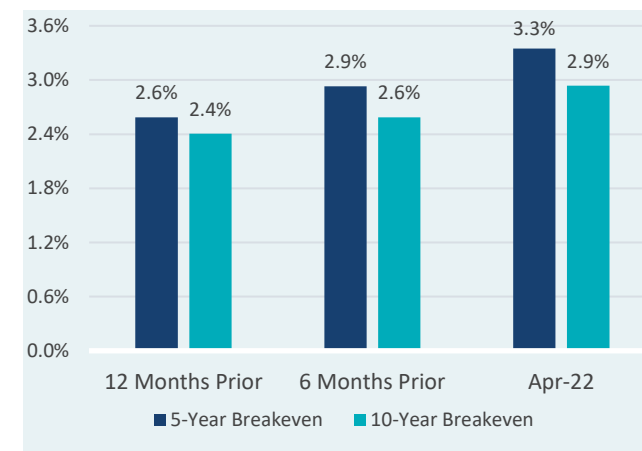
Source: Bloomberg, as of 4/30/22

**NOMINAL YIELDS**



Source: Morningstar, as of 4/30/22

**BREAKEVEN INFLATION RATES**



Source: Bloomberg, as of 4/30/22

# Global markets

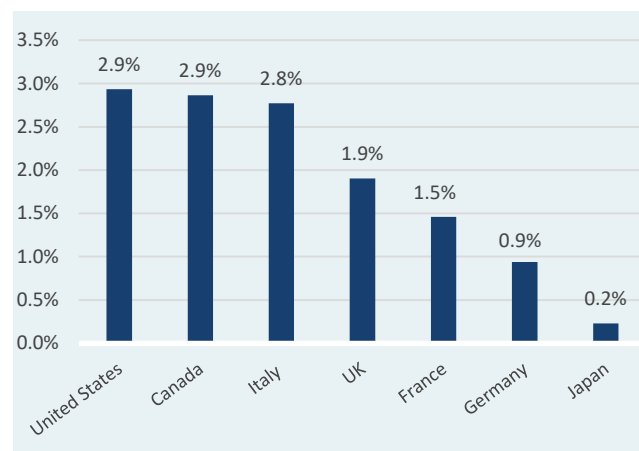
— Losses were broad across regions within the MSCI ACWI ex US Index (-6.3%). Emerging market equities (MSCI EM -5.6%) fared better than those in developed markets (MSCI EAFE -6.5%). Developed markets were led lower by European (MSCI Euro -7.3%) and Japanese equities (MSCI Japan -8.8%).

— The Bank of Japan reiterated its commitment to maintain low interest rates and signaled that it would continue with unlimited government bond purchases through May. Japan’s easy monetary policy has weighed on the Yen (-6.3%) and has materially detracted from returns in U.S. Dollar terms.

— MSCI EM Latin America (-13.0%) retraced prior month gains and weighed on the broader MSCI EM Index (-5.6%). Net exporters of industrial metals including Peru (-17.1%) and Brazil (-9.5%) were negatively impacted by declines in industrial metal prices as Chinese demand outlook weakened.

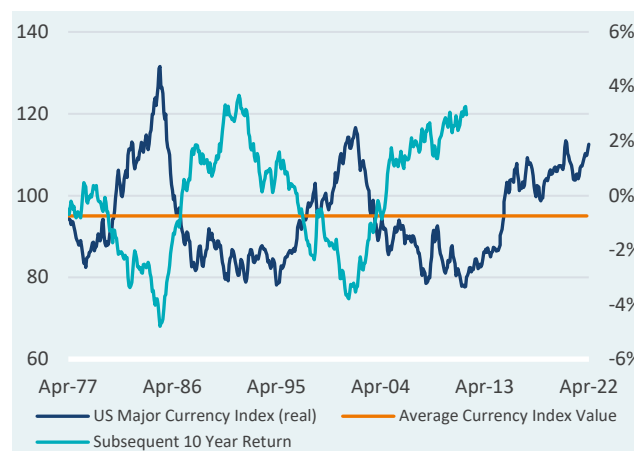
— Equities in the United Kingdom (MSCI UK -3.7%) were down less than other developed markets in USD terms. A weakening Pound (-7.3%) has weighed on U.S. Dollar returns, many UK companies have a high degree of USD denominated revenue and likely have seen positive tailwinds.

## GLOBAL SOVEREIGN 10-YEAR YIELDS



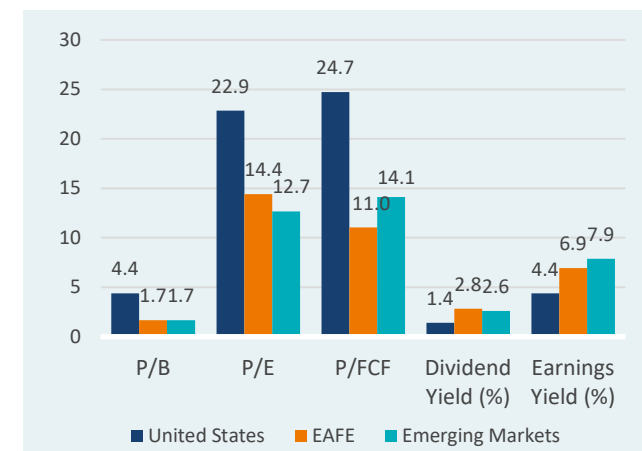
Source: Bloomberg, as of 4/30/22

## U.S. DOLLAR MAJOR CURRENCY INDEX



Source: Federal Reserve, as of 4/30/22

## MSCI VALUATION METRICS (3-MONTH AVG)



Source: Bloomberg, as of 4/30/22

# Commodities

- The Bloomberg Commodity Index climbed +4.1% in April and has now rallied +30.7% year-to-date. Continued increases in the Energy (+13.5%), Grains (+6.7%), and Agriculture (+5.7%) Sub-Indices helped to lift the overall index higher. The Industrial Metals (-6.3%) and Livestock (-6.8%) Sub-Indices reversed course over the month.
- Natural gas prices rallied +26.2% as supply disruptions related to the Russian invasion of Ukraine persisted and helped drive the Energy Sub-Index (+13.5%) higher. Concerns of increased supply disruptions were amplified as Russia halted exports to both Poland and Bulgaria due to the countries' refusal to pay for gas flows in Rubles.

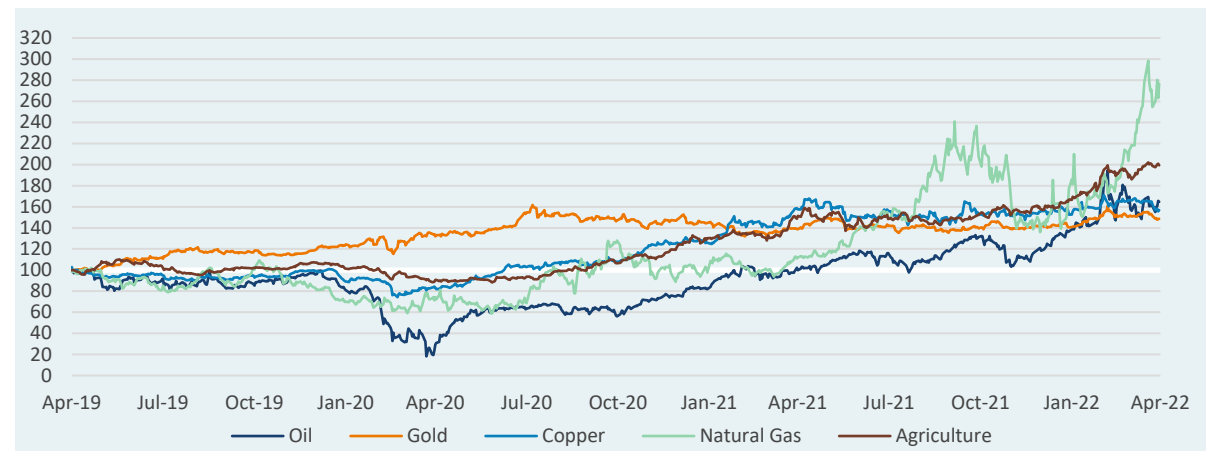
- The Bloomberg Industrial Metals Sub-Index sold off -6.3% and lagged the broader commodity basket (+4.1%). China accounts for more than half of global demand for iron ore and copper. Continued zero-covid policies in China have reduced demand for industrial metals and weighed on prices globally.
- The price of Brent Crude Oil (+2.9%) remained elevated in April, closing below \$100 per barrel only two times, and ended the month relatively flat. Supply concerns surrounding a potential EU ban on Russian oil – which currently makes up nearly a third of EU's supply – could send the price of the commodity even higher.

## INDEX AND SECTOR PERFORMANCE

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Bloomberg Commodity	4.1	4.1	30.7	43.5	17.9	10.2	(0.3)
Bloomberg Agriculture	5.7	5.7	26.7	31.8	26.7	9.5	0.2
Bloomberg Energy	13.5	13.5	67.9	103.3	10.6	9.7	(5.0)
Bloomberg Grains	6.7	6.7	33.4	28.5	28.1	10.3	(0.0)
Bloomberg Industrial Metals	(6.3)	(6.3)	15.0	28.1	19.6	13.3	2.7
Bloomberg Livestock	(6.8)	(6.8)	(1.4)	(1.5)	(9.0)	(5.6)	(3.5)
Bloomberg Petroleum	7.5	7.5	54.6	91.7	14.3	15.5	(3.5)
Bloomberg Precious Metals	(3.7)	(3.7)	3.0	2.9	12.7	6.6	(0.7)
Bloomberg Softs	0.9	0.9	8.8	41.5	19.8	3.9	(3.2)

Source: Morningstar, as of 4/30/22

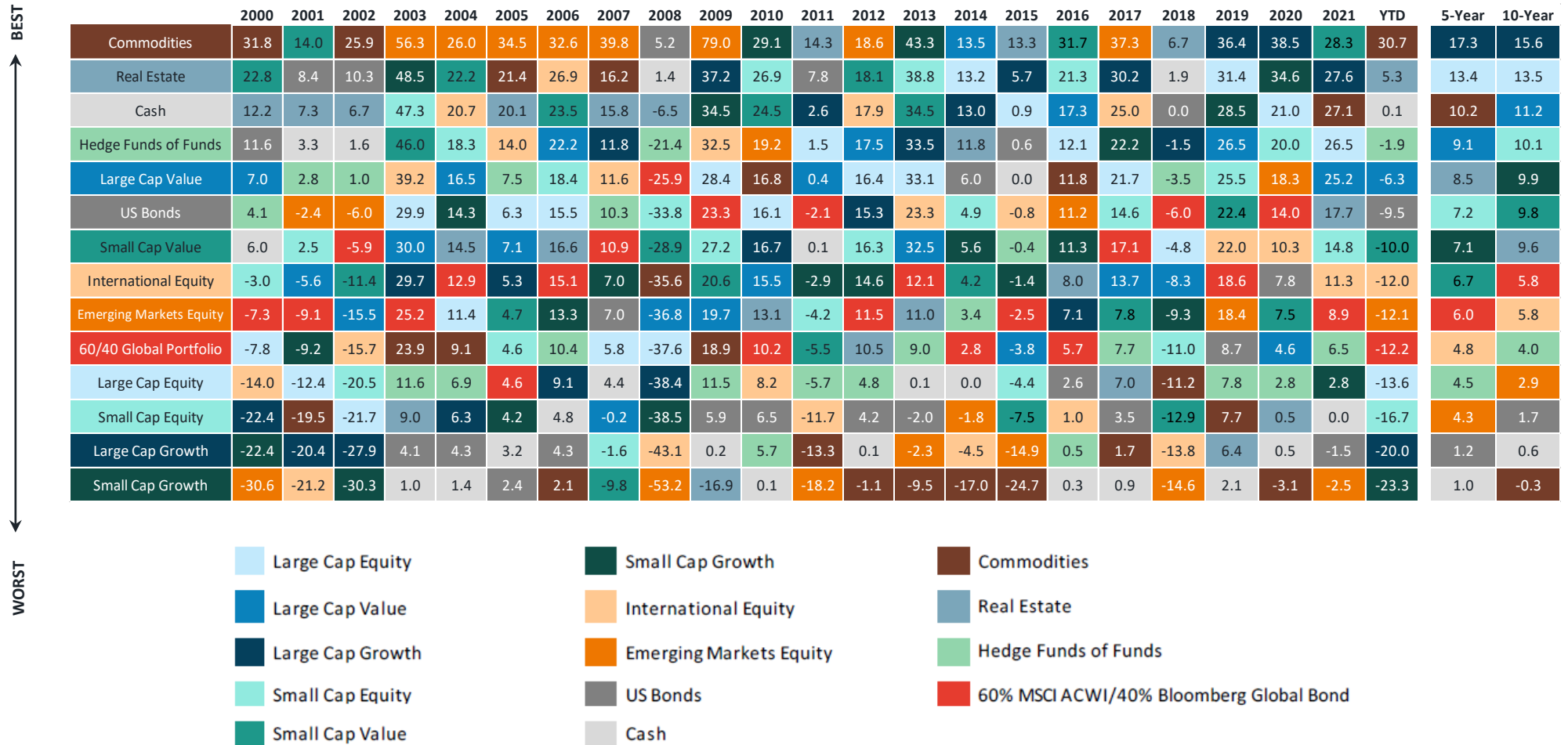
## COMMODITY PERFORMANCE



Source: Bloomberg, as of 4/30/22

# Appendix

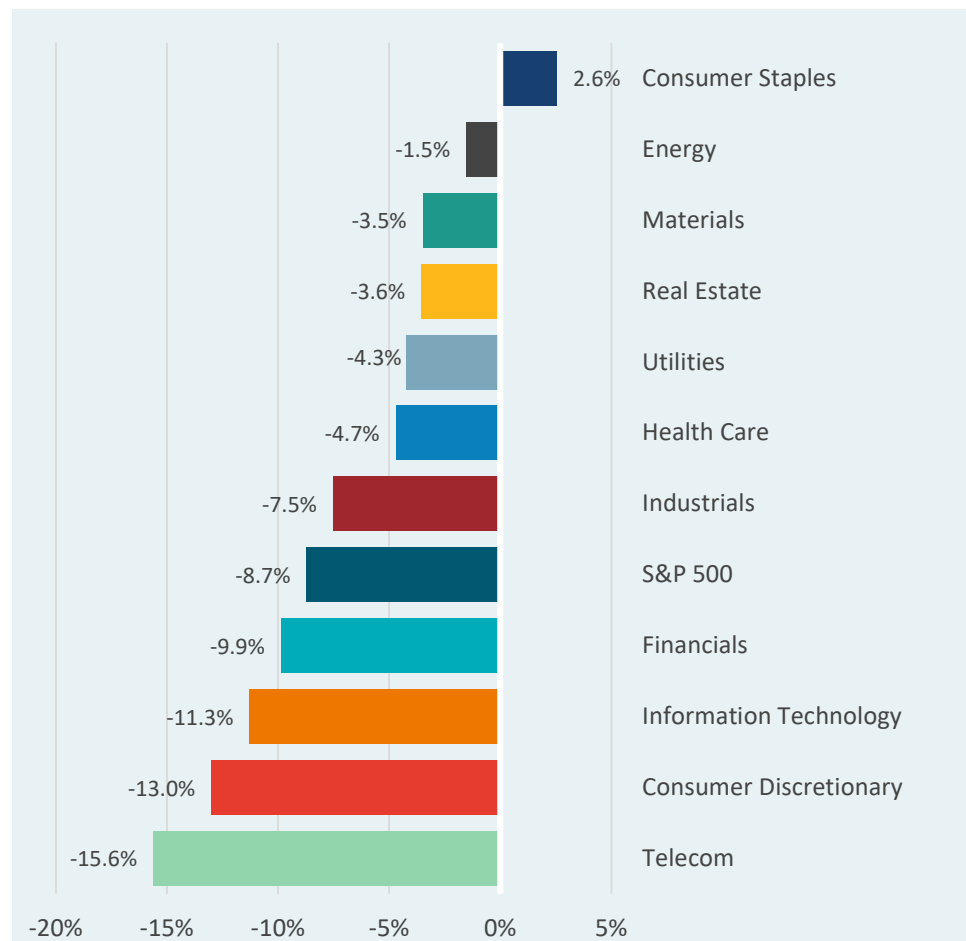
# Periodic table of returns



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 3/31/22.

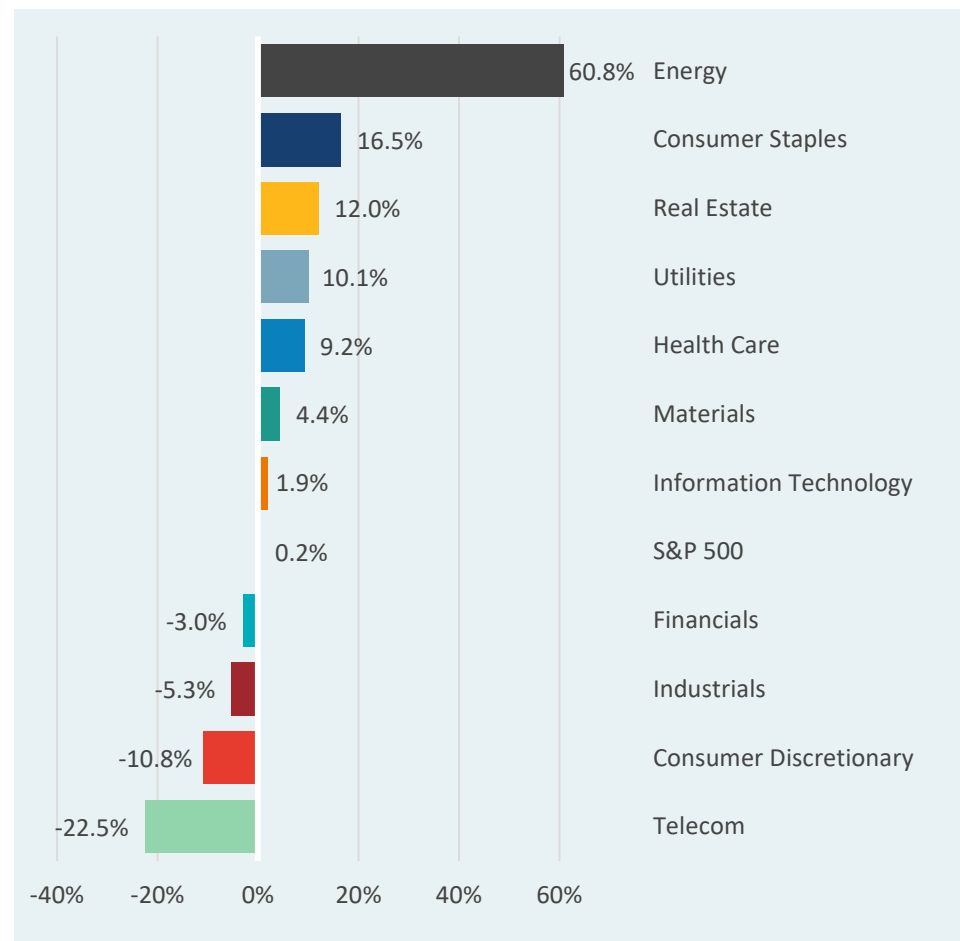
# S&P 500 sector returns

QTD



Source: Morningstar, as of 4/30/22

ONE YEAR ENDING APRIL



Source: Morningstar, as of 4/30/22

# Detailed index returns

## DOMESTIC EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
<b>Core Index</b>							
S&P 500	(8.7)	(8.7)	(12.9)	0.2	13.8	13.7	13.7
S&P 500 Equal Weighted	(6.4)	(6.4)	(8.9)	1.1	13.1	12.2	13.3
DJ Industrial Average	(4.8)	(4.8)	(8.7)	(0.8)	9.8	12.0	12.2
Russell Top 200	(9.3)	(9.3)	(13.8)	(0.6)	14.7	14.5	14.1
Russell 1000	(8.9)	(8.9)	(13.6)	(2.1)	13.6	13.4	13.5
Russell 2000	(9.9)	(9.9)	(16.7)	(16.9)	6.7	7.2	10.1
Russell 3000	(9.0)	(9.0)	(13.8)	(3.1)	13.1	13.0	13.3
Russell Mid Cap	(7.7)	(7.7)	(12.9)	(6.1)	10.5	10.7	12.0
<b>Style Index</b>							
Russell 1000 Growth	(12.1)	(12.1)	(20.0)	(5.3)	16.7	17.3	15.6
Russell 1000 Value	(5.6)	(5.6)	(6.3)	1.3	9.6	9.1	11.2
Russell 2000 Growth	(12.3)	(12.3)	(23.3)	(26.4)	4.1	7.1	9.9
Russell 2000 Value	(7.8)	(7.8)	(10.0)	(6.6)	8.4	6.7	9.8

## INTERNATIONAL EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
<b>Broad Index</b>							
MSCI ACWI	(8.0)	(8.0)	(12.9)	(5.4)	9.4	9.5	9.2
MSCI ACWI ex US	(6.3)	(6.3)	(11.4)	(10.3)	4.3	4.9	5.0
MSCI EAFE	(6.5)	(6.5)	(12.0)	(8.1)	4.4	4.8	5.8
MSCI EM	(5.6)	(5.6)	(12.1)	(18.3)	2.2	4.3	2.9
MSCI EAFE Small Cap	(6.9)	(6.9)	(14.8)	(13.7)	4.9	5.0	7.6
<b>Style Index</b>							
MSCI EAFE Growth	(8.0)	(8.0)	(19.0)	(13.0)	5.6	6.5	6.7
MSCI EAFE Value	(5.1)	(5.1)	(4.7)	(3.5)	2.6	2.7	4.7
<b>Regional Index</b>							
MSCI UK	(3.7)	(3.7)	(1.9)	4.8	3.3	4.3	4.0
MSCI Japan	(8.8)	(8.8)	(14.8)	(13.4)	3.1	3.9	5.8
MSCI Euro	(7.3)	(7.3)	(17.6)	(14.4)	2.4	3.1	5.8
MSCI EM Asia	(5.1)	(5.1)	(13.3)	(21.4)	3.6	5.6	5.2
MSCI EM Latin American	(13.0)	(13.0)	10.7	3.7	(1.6)	1.2	(2.1)

## FIXED INCOME

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
<b>Broad Index</b>							
Bloomberg US TIPS	(2.0)	(2.0)	(5.0)	0.7	5.4	3.9	2.3
Bloomberg US Treasury Bills	0.0	0.0	(0.0)	(0.0)	0.7	1.1	0.6
Bloomberg US Agg Bond	(3.8)	(3.8)	(9.5)	(8.5)	0.4	1.2	1.7
Bloomberg US Universal	(3.7)	(3.7)	(9.6)	(8.6)	0.5	1.4	2.1
<b>Duration</b>							
Bloomberg US Treasury 1-3 Yr	(0.5)	(0.5)	(3.0)	(3.5)	0.6	0.9	0.8
Bloomberg US Treasury Long	(8.9)	(8.9)	(18.5)	(12.2)	0.7	1.7	2.6
Bloomberg US Treasury	(3.1)	(3.1)	(8.5)	(7.4)	0.4	1.0	1.2
<b>Issuer</b>							
Bloomberg US MBS	(3.5)	(3.5)	(8.3)	(8.8)	(0.6)	0.5	1.3
Bloomberg US Corp. High Yield	(3.6)	(3.6)	(8.2)	(5.2)	2.8	3.7	5.3
Bloomberg US Agency Interm	(1.2)	(1.2)	(4.9)	(5.4)	0.2	0.8	1.0
Bloomberg US Credit	(5.2)	(5.2)	(12.3)	(10.1)	0.8	1.9	2.7

## OTHER

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
<b>Index</b>							
Bloomberg Commodity	4.1	4.1	30.7	43.5	17.9	10.2	(0.3)
Wilshire US REIT	(4.5)	(4.5)	(8.2)	14.1	10.3	9.0	9.1
CS Leveraged Loans	0.2	0.2	0.1	2.9	3.6	4.0	4.4
S&P Global Infrastructure	(3.3)	(3.3)	4.0	9.1	6.4	6.6	7.4
Alerian MLP	(0.1)	(0.1)	18.8	27.8	1.8	(0.8)	1.0
<b>Regional Index</b>							
JPM EMBI Global Div	(5.6)	(5.6)	(15.1)	(14.5)	(2.0)	0.2	3.0
JPM GBI-EM Global Div	(6.0)	(6.0)	(12.1)	(15.9)	(3.1)	(1.3)	(1.4)
<b>Hedge Funds</b>							
HFRI Composite	0.1	0.1	(2.6)	(0.8)	5.6	4.5	4.0
HFRI FOF Composite	(0.9)	(0.9)	(1.9)	0.0	7.7	6.0	5.1
<b>Currency (Spot)</b>							
Euro	(5.2)	(5.2)	(7.2)	(12.4)	(2.0)	(0.6)	(2.2)
Pound Sterling	(4.6)	(4.6)	(7.3)	(9.3)	(1.2)	(0.6)	(2.5)
Yen	(6.3)	(6.3)	(11.1)	(15.6)	(4.9)	(3.0)	(4.7)

Source: Morningstar, HFRI, as of 4/30/22.



# Detailed private market returns

## Comparison to public market index returns

Private Equity Pooled IRRs	1 Year	3 Year	5 Year	10 Year
Global Private Equity FoFs & Secondary Funds	58.6	23.9	19.8	14.2
Global Private Equity Direct Funds *	52.3	26.6	22.7	17.4
U.S. Private Equity Direct Funds *	58.4	29.2	24.2	18.9
Europe Private Equity Direct Funds *	52.1	26.2	23.7	15.4
Asia Private Equity Direct Funds *	31.4	19.0	17.6	15.5

Public Index Time-weighted Returns				
MSCI World	28.8	13.1	13.7	12.7
S&P 500	30.0	16.0	16.9	16.6
MSCI Europe	27.3	7.8	8.8	8.2
MSCI AC Asia Pacific	18.3	8.5	9.6	8.3

Private Real Estate Pooled IRRs	1 Year	3 Year	5 Year	10 Year
U.S. All Private Real Estate	25.3	10.7	10.6	12.6

Public Index Time-weighted Returns				
FTSE NAREIT Equity REIT	37.4	10.0	6.8	11.3

Private Credit Pooled IRRs	1 Year	3 Year	5 Year	10 Year
U.S. All Private Debt **	33.5	13.7	13.0	12.6

Public Index Time-weighted Returns				
S&P / LSTA U.S. Leveraged Loan 100 Index	6.7	3.9	4.3	4.7

Private Real Assets Pooled IRRs	1 Year	3 Year	5 Year	10 Year
Global Nature Resources ***	30.6	(2.4)	2.7	2.1
Global Infrastructure	14.8	10.4	11.2	10.4

Public Index Time-weighted Returns				
S&P Global Natural Resources	42.2	4.6	9.5	4.6
S&P Global Infrastructure	23.0	6.7	6.0	7.8

Source: Pooled IRRs are from Thompson Reuters C/A and Time-weighted Returns are from Investment Metrics, as of September 30<sup>th</sup>, 2021. All returns in U.S. dollars.

\* Includes Buyout, Growth Equity and Venture Capital.

\*\* Includes Control-Oriented Distressed, Credit Opportunities, Senior Debt and Subordinated Capital.

\*\*\* Includes Private Equity Energy, Timber and Upstream Energy & Royalties.

# Notices & disclosures

**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](http://www.adviserinfo.sec.gov).

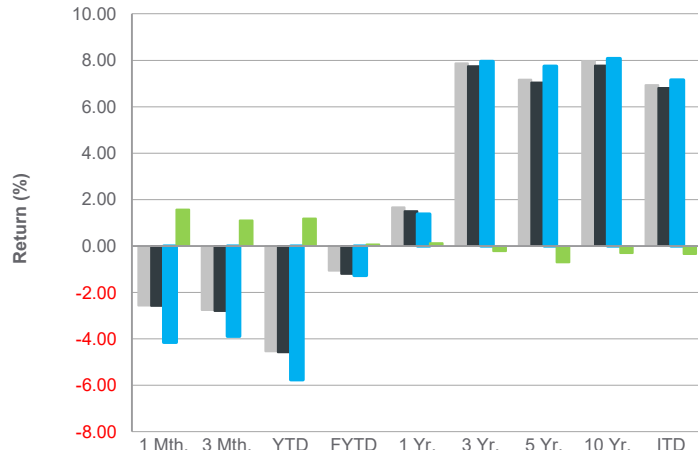
Verus – also known as Verus Advisory™.

# San Mateo County Composite Return Summary

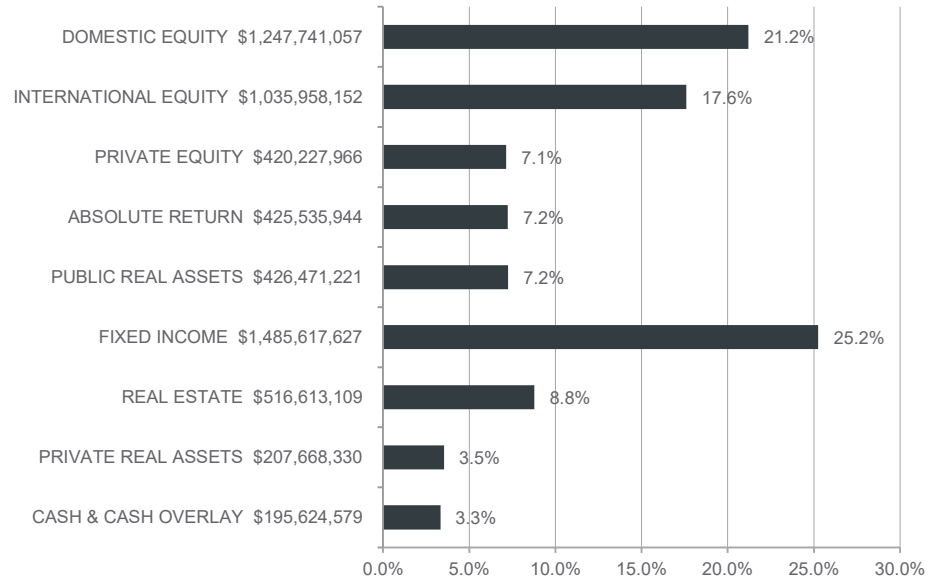
April 30, 2022



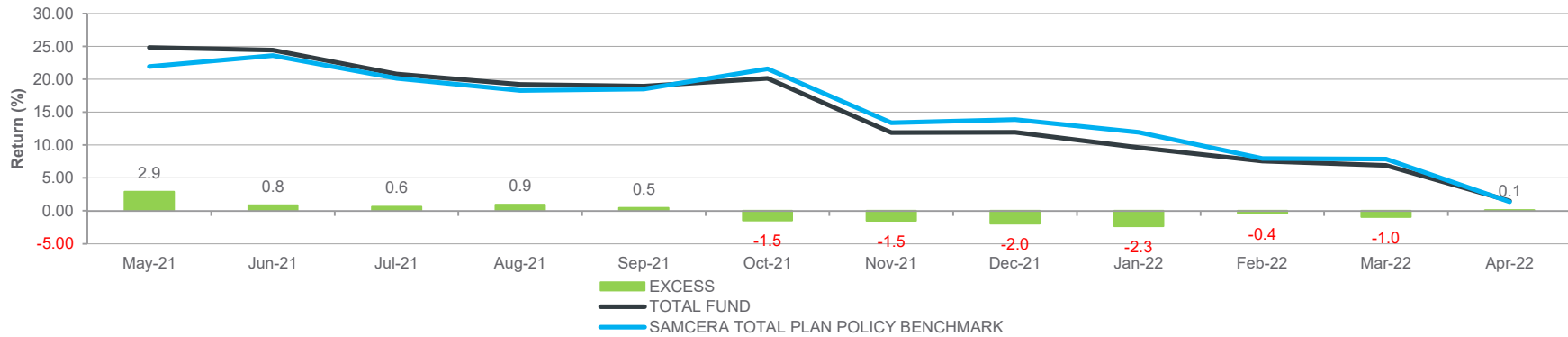
**Total Fund Performance**



**Asset Allocation**

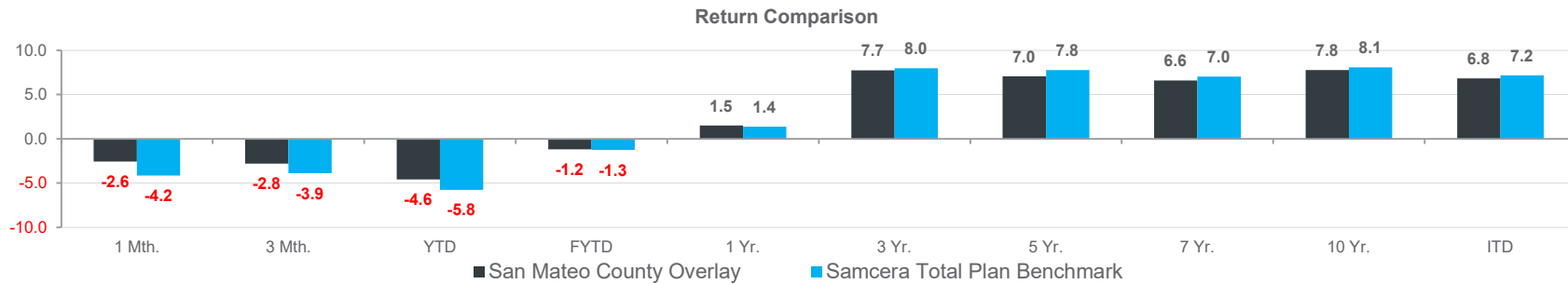


**Rolling Month End Annual Returns**



# San Mateo County Composite Return Summary

April 30, 2022



Composite Returns (Net of Manager Fees)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
San Mateo County Overlay	5,885,069,681	-2.6	-2.8	-4.6	-1.2	1.5	7.7	7.0	6.6	7.8	6.8
Samcera Total Plan Benchmark		-4.2	-3.9	-5.8	-1.3	1.4	8.0	7.8	7.0	8.1	7.2
Excess		1.6	1.1	1.2	0.1	0.1	-0.2	-0.7	-0.4	-0.3	-0.3
San Mateo Ex-Clifton Overlay	5,873,892,295	-2.5	-2.7	-4.5	-1.1	1.6	7.8	7.0	6.5	7.7	6.7
Samcera Total Plan Benchmark		-4.2	-3.9	-5.8	-1.3	1.4	8.0	7.8	7.0	8.1	7.2
Excess		1.6	1.2	1.3	0.2	0.2	-0.2	-0.8	-0.5	-0.4	-0.4
Total Equity	2,283,699,209	-6.4	-7.2	-11.7	-7.9	-5.3	8.8	8.9	8.1	9.7	7.9
Samcera Total Equity Benchmark		-6.8	-7.0	-11.5	-7.0	-4.4	9.9	9.8	9.2	10.8	8.6
Excess		0.4	-0.2	-0.1	-0.9	-1.0	-1.0	-0.9	-1.1	-1.1	-0.7
Fixed Income	1,485,617,627	-2.8	-6.0	-7.1	-6.7	-5.3	2.0	2.5	2.9	3.4	5.1
Samcera Fixed Income Benchmark		-3.6	-6.9	-9.1	-8.6	-7.5	1.1	2.0	2.2	2.2	4.5
Excess		0.8	0.9	2.0	1.9	2.2	0.9	0.5	0.7	1.3	0.6
Alternatives	845,763,910	1.6	3.5	3.4	8.4	14.4	18.9	12.4	10.6	8.9	1.2
Samcera Alternatives Benchmark		-2.4	-0.8	2.6	8.1	12.1	13.5	11.6	10.0	9.9	8.6
Excess		4.0	4.3	0.7	0.3	2.3	5.3	0.7	0.7	-1.0	-7.4
Inflation Hedge	1,150,752,659	2.6	6.7	9.8	16.7	19.8	6.8	5.8	--	--	7.0
SamCERA Inflation Hedge Index		-0.2	6.3	7.9	19.2	24.2	11.2	9.0	--	--	--
Excess		2.8	0.5	1.9	-2.5	-4.4	-4.4	-3.3	--	--	--
Cash	195,624,579	0.1	0.1	0.1	0.2	0.2	0.6	0.8	0.7	0.7	1.7
Samcera Cash Benchmark		0.0	0.1	0.1	0.1	0.1	0.7	1.1	0.9	0.6	1.7
Excess		0.1	0.1	0.1	0.2	0.2	-0.1	-0.4	-0.2	0.0	0.0



# San Mateo County Composite Return Summary

April 30, 2022



Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
Total Equity	2,283,699,209	-6.4	-7.2	-11.7	-7.9	-5.3	8.8	8.9	8.1	9.7	7.9
Samcera Total Equity Benchmark		-6.8	-7.0	-11.5	-7.0	-4.4	9.9	9.8	9.2	10.8	8.6
Excess		0.4	-0.2	-0.1	-0.9	-1.0	-1.0	-0.9	-1.1	-1.1	-0.7
Domestic Equity	1,247,741,057	-7.1	-5.9	-10.6	-2.3	0.1	12.2	12.0	11.1	12.4	9.1
Samcera Dom. Equity Benchmark		-9.0	-8.4	-13.8	-5.9	-3.1	13.1	13.0	11.7	13.2	9.6
Excess		1.9	2.5	3.2	3.6	3.2	-0.9	-1.0	-0.6	-0.8	-0.5
Large Cap Equity	1,128,342,100	-7.0	-5.9	-10.6	-1.8	0.6	12.6	12.6	11.7	13.0	9.8
Russell 1000		-8.9	-8.4	-13.6	-4.9	-2.1	13.6	13.4	12.1	13.5	10.3
Excess		1.9	2.5	3.0	3.1	2.7	-1.0	-0.8	-0.4	-0.5	-0.4
Blackrock Russell 1000	488,329,974	-8.9	-8.4	-13.5	-4.9	-2.1	13.8	13.6	--	--	14.0
Russell 1000		-8.9	-8.4	-13.6	-4.9	-2.1	13.6	13.4	--	--	13.8
Excess		0.0	0.0	0.0	0.0	-0.0	0.2	0.1	--	--	0.2
DE Shaw Commingled Fund	175,005,045	-8.2	-7.5	-10.8	-2.4	-0.3	13.8	12.9	12.1	--	12.1
Russell 1000		-8.9	-8.4	-13.6	-4.9	-2.1	13.6	13.4	12.1	--	11.9
Excess		0.7	0.9	2.8	2.6	1.8	0.3	-0.6	-0.0	--	0.2
Acadian US MGD V-SL	222,708,767	-5.5	-4.2	-10.4	-0.6	2.4	7.9	--	--	--	11.8
Russell 1000		-8.9	-8.4	-13.6	-4.9	-2.1	13.6	--	--	--	18.2
Excess		3.4	4.2	3.2	4.3	4.5	-5.6	--	--	--	-6.5
Panagora Defuseq -SL	242,298,315	-3.3	-0.9	-4.0	4.4	5.5	10.1	--	--	--	15.2
Russell 1000		-8.9	-8.4	-13.6	-4.9	-2.1	13.6	--	--	--	18.2
Excess		5.6	7.5	9.6	9.3	7.6	-3.4	--	--	--	-3.1
Domestic Equity Overlay	13,179,595	-8.6	-9.4	154.6	169.2	178.7	--	--	--	--	190.0
ICE BofAML US 3-Month Treasury Bill		0.0	0.1	0.1	0.1	0.1	--	--	--	--	0.1
Excess		-8.6	-9.5	154.5	169.1	178.6	--	--	--	--	189.9
Small Cap Equity	106,219,363	-7.6	-4.6	-11.5	-7.8	-5.7	6.8	5.7	5.6	8.2	6.3
Russell 2000		-9.9	-7.8	-16.7	-18.6	-16.9	6.7	7.2	7.7	10.1	7.8
Excess		2.3	3.2	5.2	10.9	11.1	0.1	-1.6	-2.1	-1.9	-1.4



# San Mateo County Composite Return Summary

April 30, 2022



Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
QMA US Small Cap	106,219,363	-7.6	-4.6	-11.5	-7.8	-5.7	6.8	5.7	--	--	8.1
Russell 2000		-9.9	-7.8	-16.7	-18.6	-16.9	6.7	7.2	--	--	8.9
Excess		2.3	3.2	5.2	10.9	11.1	0.1	-1.6	--	--	-0.8
International Equity	1,035,958,152	-5.5	-8.7	-12.9	-13.9	-11.1	5.1	5.4	4.3	5.7	5.4
SamCERA Custom Hedge Intl		-4.2	-5.5	-8.9	-8.5	-6.0	6.0	5.9	4.4	5.7	5.1
Excess		-1.3	-3.2	-4.0	-5.4	-5.1	-0.8	-0.5	-0.1	0.1	0.3
Baillie Gifford	303,074,691	-10.8	-17.1	-27.1	-29.2	-26.9	4.1	5.5	4.7	6.7	6.7
MSCI ACWI ex USA Growth		-7.4	-10.1	-17.3	-18.4	-16.0	5.6	6.7	5.1	--	--
Excess		-3.4	-7.0	-9.7	-10.8	-10.9	-1.5	-1.2	-0.3	--	--
Blackrock MSCI ACWI ex US IMI	343,994,736	-6.3	-7.9	-11.5	-12.3	-10.2	--	--	--	--	8.4
MS AC WidxUS IMI Nt		-6.3	-7.8	-11.5	-12.4	-10.3	--	--	--	--	8.4
Excess		-0.0	-0.1	0.0	0.1	0.1	--	--	--	--	-0.0
Mondrian Investment Partners	352,438,923	-4.8	-7.9	-7.3	-10.6	-8.2	1.8	3.0	2.3	4.4	4.7
MSCI ACWI xUSA Value		-5.1	-5.7	-4.8	-5.6	-3.6	3.5	3.9	2.7	4.6	4.9
Excess		0.3	-2.2	-2.4	-5.0	-4.6	-1.7	-0.9	-0.3	-0.2	-0.1
Currency Hedge Futures	369,481,925	-4.7	-6.1	-6.9	-9.8	-11.1	--	--	--	--	-2.5
ICE BofAML US 3-Month Treasury Bill		0.0	0.1	0.1	0.1	0.1	--	--	--	--	0.1
Excess		-4.7	-6.1	-7.0	-9.8	-11.1	--	--	--	--	-2.5
Currency Hedge Futures Offsets	369,481,925	0.0	0.0	0.0	0.0	0.0	--	--	--	--	0.0
ICE BofAML US 3-Month Treasury Bill		0.0	0.1	0.1	0.1	0.1	--	--	--	--	0.1
Excess		-0.0	-0.1	-0.1	-0.1	-0.1	--	--	--	--	-0.1
International Equity Overlay	36,449,802	-6.1	-9.1	-10.6	-10.7	-17.5	--	--	--	--	13.4
ICE BofAML US 3-Month Treasury Bill		0.0	0.1	0.1	0.1	0.1	--	--	--	--	0.1
Excess		-6.2	-9.2	-10.7	-10.8	-17.5	--	--	--	--	13.3
Fixed Income	1,485,617,627	-2.8	-6.0	-7.1	-6.7	-5.3	2.0	2.5	2.9	3.4	5.1
Samcera Fixed Income Benchmark		-3.6	-6.9	-9.1	-8.6	-7.5	1.1	2.0	2.2	2.2	4.5
Excess		0.8	0.9	2.0	1.9	2.2	0.9	0.5	0.7	1.3	0.6



# San Mateo County Composite Return Summary

April 30, 2022



Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
Core Fixed Income	934,397,018	-3.3	-7.8	-9.3	-9.5	-8.5	0.5	1.3	1.7	2.4	4.6
BBG US Aggregate		-3.8	-7.5	-9.5	-9.4	-8.5	0.4	1.2	1.4	1.7	4.2
Excess		0.5	-0.3	0.2	-0.1	0.0	0.1	0.1	0.4	0.7	0.4
FIAM B Core Bond	245,141,231	-3.9	-7.5	-9.3	-9.0	-7.9	1.6	2.0	--	--	2.5
BBG US Aggregate		-3.8	-7.5	-9.5	-9.4	-8.5	0.4	1.2	--	--	1.4
Excess		-0.1	0.0	0.2	0.4	0.6	1.2	0.8	--	--	1.1
Western Total Return	210,011,047	-2.0	-9.0	-9.7	-10.7	-9.8	0.2	1.5	--	--	2.3
BBG US Aggregate		-3.8	-7.5	-9.5	-9.4	-8.5	0.4	1.2	--	--	1.5
Excess		1.8	-1.5	-0.2	-1.3	-1.3	-0.2	0.3	--	--	0.8
DoubleLine	236,481,396	-3.3	-7.5	-8.9	-9.6	-8.4	--	--	--	--	-2.2
BBG US Aggregate		-3.8	-7.5	-9.5	-9.4	-8.5	--	--	--	--	-3.6
Excess		0.5	0.0	0.6	-0.1	0.1	--	--	--	--	1.4
NISA Core Bond	216,004,437	-3.8	-7.4	-9.3	-9.2	-8.2	--	--	--	--	-4.0
BBG US Aggregate		-3.8	-7.5	-9.5	-9.4	-8.5	--	--	--	--	-4.5
Excess		0.0	0.1	0.2	0.2	0.3	--	--	--	--	0.5
Core Fixed Income Overlay	26,758,906	-3.5	-3.7	-5.7	-2.8	-1.7	--	--	--	--	-3.2
ICE BofAML US 3-Month Treasury Bill		0.0	0.1	0.1	0.1	0.1	--	--	--	--	0.1
Excess		-3.6	-3.7	-5.8	-2.9	-1.7	--	--	--	--	-3.3
Opportunistic Credit	551,220,609	-2.0	-2.8	-3.4	-1.5	0.5	4.7	5.0	5.4	7.0	7.9
BBG BA Intermediate HY Ind		-3.4	-5.7	-8.5	-7.1	-5.7	2.9	3.5	4.0	4.9	6.2
Excess		1.3	2.9	5.1	5.6	6.3	1.8	1.4	1.4	2.0	1.7
Pimco Private Income	54,280,171	0.0	1.3	1.3	7.2	10.7	9.2	--	--	--	8.9
BBG BA Intermediate HY Ind		-3.4	-5.7	-8.5	-7.1	-5.7	2.9	--	--	--	3.1
Excess		3.4	7.1	9.8	14.2	16.4	6.3	--	--	--	5.8
AG CREDIT SOL FU LP	14,922,972	0.0	3.3	3.3	6.0	23.8	--	--	--	--	23.7
BBG BA Intermediate HY Ind		-3.4	-5.7	-8.5	-7.1	-5.7	--	--	--	--	1.1
Excess		3.4	9.1	11.8	13.0	29.5	--	--	--	--	22.5



# San Mateo County Composite Return Summary

April 30, 2022



Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
AG CSF ANX DISLOC FD	360	0.0	-39.2	-39.2	-35.7	-28.8	--	--	--	--	-6.5
BBG BA Intermediate HY Ind		-3.4	-5.7	-8.5	-7.1	-5.7	--	--	--	--	6.5
Excess		3.4	-33.5	-30.7	-28.6	-23.1	--	--	--	--	-13.0
AG CSF II	3,750,000	0.0	0.0	--	--	--	--	--	--	--	0.0
BBG BA Intermediate HY Ind		-3.4	-5.7	--	--	--	--	--	--	--	-5.7
Excess		3.4	5.7	--	--	--	--	--	--	--	5.7
AG Opportunistic Whole Loan	624,931	0.0	40.4	40.4	54.4	62.5	25.1	24.8	19.1	--	16.1
BBG BA Intermediate HY Ind		-3.4	-5.7	-8.5	-7.1	-5.7	2.9	3.5	4.0	--	4.1
Excess		3.4	46.2	48.9	61.5	68.2	22.2	21.3	15.1	--	12.0
Angelo Gordon	1	0.0	0.0	0.0	0.0	0.0	15.7	19.8	15.8	--	14.5
BBG BA Intermediate HY Ind		-3.4	-5.7	-8.5	-7.1	-5.7	2.9	3.5	4.0	--	4.5
Excess		3.4	5.7	8.5	7.1	5.7	12.8	16.3	11.8	--	10.0
Blackrock Direct Lending Feede	29,976,580	-0.3	-0.2	-0.2	3.3	4.4	--	--	--	--	2.5
BBG BA Intermediate HY Ind		-3.4	-5.7	-8.5	-7.1	-5.7	--	--	--	--	3.2
Excess		3.1	5.6	8.3	10.3	10.2	--	--	--	--	-0.7
Beach Point Select Fund	85,902,517	-2.2	-2.0	-2.1	3.3	5.6	10.7	8.4	8.3	--	8.8
BBG BA Intermediate HY Ind		-3.4	-5.7	-8.5	-7.1	-5.7	2.9	3.5	4.0	--	4.2
Excess		1.1	3.7	6.3	10.3	11.3	7.8	4.9	4.3	--	4.6
Brigade Cap Mngmt	88,347,547	-1.0	-1.6	-2.0	1.3	3.7	6.7	5.3	5.3	5.9	6.4
BBG BA Intermediate HY Ind		-3.4	-5.7	-8.5	-7.1	-5.7	2.9	3.5	4.0	4.9	5.6
Excess		2.4	4.1	6.5	8.3	9.4	3.9	1.8	1.3	1.0	0.8
White Oak YSF V	31,066,824	0.0	0.7	0.7	0.7	0.7	--	--	--	--	0.9
BBG BA Intermediate HY Ind		-3.4	-5.7	-8.5	-7.1	-5.7	--	--	--	--	-2.5
Excess		3.4	6.5	9.2	7.7	6.4	--	--	--	--	3.4
White Oak Yield Spec	32,110,313	0.0	1.9	1.9	4.2	5.9	6.1	5.4	--	--	--
BBG BA Intermediate HY Ind		-3.4	-5.7	-8.5	-7.1	-5.7	2.9	3.5	--	--	3.7
Excess		3.4	7.6	10.3	11.3	11.6	3.2	1.9	--	--	--
PIMCO Div. Income Fund	119,612,042	-4.5	-8.9	-10.9	-11.1	-9.8	0.1	--	--	--	1.6





# San Mateo County Composite Return Summary

April 30, 2022



Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
BBG BA Intermediate HY Ind		-3.4	-5.7	-8.5	-7.1	-5.7	2.9	--	--	--	3.3
Excess		-1.1	-3.1	-2.5	-4.1	-4.0	-2.8	--	--	--	-1.7
TCP Direct Lending VIII	18,162,589	-0.1	0.1	1.0	4.0	5.4	6.2	6.4	--	--	--
BBG BA Intermediate HY Ind		-3.4	-5.7	-8.5	-7.1	-5.7	2.9	3.5	--	--	4.4
Excess		3.3	5.9	9.4	11.1	11.1	3.3	2.8	--	--	--
Franklin Templeton	72,463,762	-3.8	-4.3	-4.0	-6.7	-6.9	-5.5	-3.2	-1.4	0.6	1.3
Bloomberg Multiverse Index		-5.4	-9.3	-11.2	-12.6	-12.5	-1.0	0.4	0.8	0.5	1.1
Excess		1.7	5.1	7.2	5.9	5.5	-4.5	-3.6	-2.1	0.1	0.1
Alternatives	845,763,910	1.6	3.5	3.4	8.4	14.4	18.9	12.4	10.6	8.9	1.2
Samcera Alternatives Benchmark		-2.4	-0.8	2.6	8.1	12.1	13.5	11.6	10.0	9.9	8.6
Excess		4.0	4.3	0.7	0.3	2.3	5.3	0.7	0.7	-1.0	-7.4
Private Equity	420,227,966	-1.7	0.0	-0.5	9.4	19.7	37.0	25.6	22.3	19.8	-5.5
Samcera PE Benchmark		-5.6	-3.0	3.8	13.4	21.6	23.0	18.0	16.2	17.4	17.4
Excess		3.9	3.0	-4.4	-4.0	-1.9	14.0	7.6	6.1	2.3	-22.9
Absolute Return	425,535,944	5.0	7.1	7.4	7.1	8.9	-1.0	-2.1	0.1	2.0	1.7
Samcera SOFR + 4%		0.3	1.0	1.4	3.4	4.1	4.7	5.2	5.0	4.7	4.7
Excess		4.7	6.1	6.0	3.7	4.8	-5.7	-7.3	-4.9	-2.7	-3.0
Aberdeen Std GARS	49,453,556	-1.2	-4.1	-6.2	-7.1	-6.7	0.9	0.8	--	--	0.4
Samcera SOFR + 4%		0.3	1.0	1.4	3.4	4.1	4.7	5.2	--	--	5.0
Excess		-1.5	-5.1	-7.6	-10.5	-10.8	-3.9	-4.3	--	--	-4.6
Graham Global Investment	103,593,714	7.1	18.0	21.2	15.0	16.2	--	--	--	--	9.5
Samcera SOFR +4%		0.3	1.0	1.4	3.4	4.1	--	--	--	--	4.3
Excess		6.8	17.0	19.8	11.7	12.2	--	--	--	--	5.2
PIMCO MAARS Fund L.P.	96,682,080	6.1	7.2	8.4	19.8	21.1	--	--	--	--	10.7
Samcera SOFR +4%		0.4	1.0	1.4	3.4	4.1	--	--	--	--	4.2
Excess		5.7	6.2	7.1	16.4	17.1	--	--	--	--	6.6
Acadian MAAR Fund LLC	83,161,283	3.7	2.8	1.1	1.6	5.8	--	--	--	--	2.9
Samcera SOFR +4%		0.4	1.0	1.4	3.4	4.1	--	--	--	--	4.1



# San Mateo County Composite Return Summary

April 30, 2022



Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
Excess		3.3	1.8	-0.2	-1.8	1.7	--	--	--	--	-1.1
CFM SYS Global Macro Fund	92,645,312	7.0	8.9	10.1	4.9	6.8	--	--	--	--	13.2
Samcera SOFR +4%		0.4	1.0	1.4	3.4	4.1	--	--	--	--	4.1
Excess		6.6	7.9	8.7	1.5	2.7	--	--	--	--	9.1
Inflation Hedge	1,150,752,659	2.6	6.7	9.8	16.7	19.8	6.8	5.8	--	--	7.0
SamCERA Inflation Hedge Index		-0.2	6.3	7.9	19.2	24.2	11.2	9.0	--	--	--
Excess		2.8	0.5	1.9	-2.5	-4.4	-4.4	-3.3	--	--	--
Real Estate	516,613,109	4.6	4.9	9.4	16.6	20.0	8.8	8.3	--	--	8.7
Samcera NCREIF ODCE (gross)		0.0	7.4	7.4	23.6	28.5	11.3	9.9	--	--	9.5
Excess		4.6	-2.4	2.0	-7.0	-8.5	-2.5	-1.6	--	--	-0.8
Invesco Core Real Estate	325,828,264	6.5	6.5	12.6	21.9	26.7	9.9	9.0	9.6	10.4	8.2
Samcera NCREIF ODCE (gross)		0.0	7.4	7.4	23.6	28.5	11.3	9.9	10.2	10.9	8.5
Excess		6.5	-0.9	5.2	-1.7	-1.7	-1.4	-0.9	-0.6	-0.5	-0.3
Invesco US Val IV	2,301,149	0.5	0.5	6.3	14.8	14.8	9.4	10.6	--	--	11.2
Samcera NCREIF ODCE (gross)		0.0	7.4	7.4	23.6	28.5	11.3	9.9	--	--	9.9
Excess		0.5	-6.8	-1.1	-8.8	-13.7	-1.9	0.7	--	--	1.3
PGIM Real Estate US Debt Fund	85,885,251	0.7	1.4	1.7	4.0	5.4	5.3	--	--	--	5.0
Samcera NCREIF ODCE (gross)		0.0	7.4	7.4	23.6	28.5	11.3	--	--	--	9.9
Excess		0.7	-6.0	-5.7	-19.6	-23.1	-6.0	--	--	--	-4.9
Invesco US VAL V	29,199,026	3.3	3.3	8.2	23.3	23.3	15.1	--	--	--	12.5
Samcera NCREIF ODCE (gross)		0.0	7.4	7.4	23.6	28.5	11.3	--	--	--	--
Excess		3.3	-4.1	0.8	-0.3	-5.2	3.8	--	--	--	--
Harrison Street Core Property	58,019,401	2.5	2.5	5.1	7.8	11.0	--	--	--	--	6.6
Samcera NCREIF ODCE (gross)		0.0	7.4	7.4	23.6	28.5	--	--	--	--	12.9
Excess		2.5	-4.9	-2.2	-15.8	-17.5	--	--	--	--	-6.3
Stockbridge Value IV	15,380,018	0.0	9.6	9.6	9.6	-0.7	--	--	--	--	-0.7
Samcera NCREIF ODCE (gross)		0.0	7.4	7.4	23.6	28.5	--	--	--	--	28.5



# San Mateo County Composite Return Summary

April 30, 2022



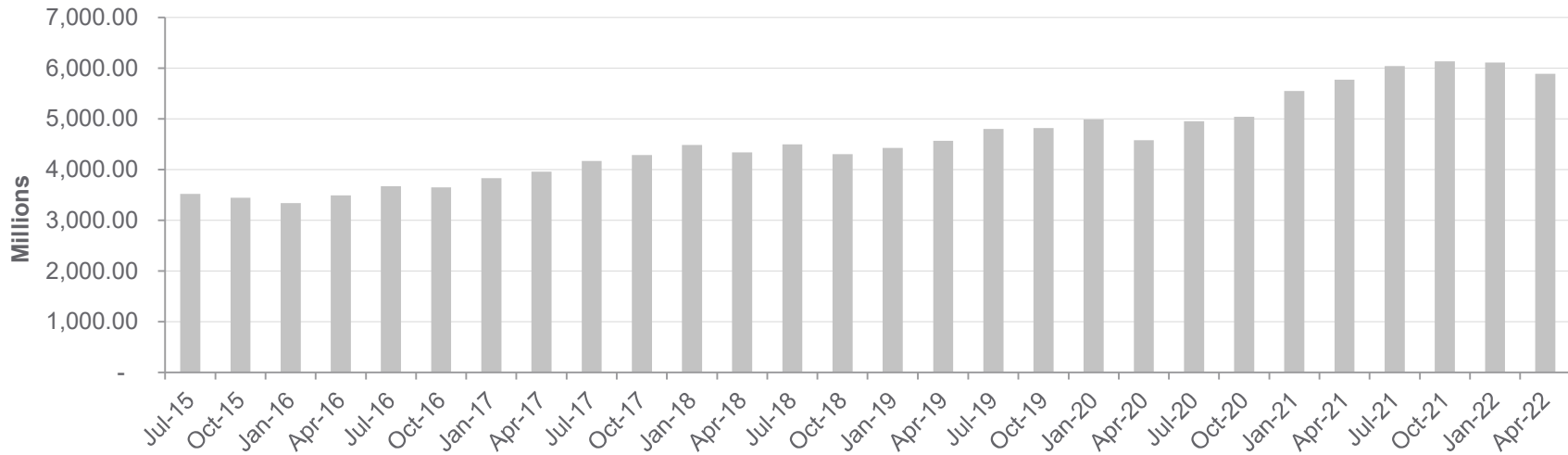
Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
Excess		0.0	2.2	2.2	-14.0	-29.1	--	--	--	--	-29.1
Public Real Assets	426,471,221	-1.4	8.2	10.8	17.0	19.2	4.1	4.0	--	--	--
SamCera Liquid Real Asset Inde		-1.5	7.8	10.4	16.7	18.9	9.1	7.2	--	--	8.4
Excess		0.1	0.5	0.5	0.3	0.4	-5.0	-3.2	--	--	--
SSGA CST REAL ASSET NL	426,471,221	-1.4	8.2	10.8	17.0	19.2	9.0	7.3	--	--	--
SamCera Liquid Real Asset Inde		-1.5	7.8	10.4	16.7	18.9	9.1	7.2	--	--	7.6
Excess		0.1	0.5	0.5	0.3	0.4	-0.1	0.1	--	--	--
Private Real Assets	207,668,330	6.2	7.3	7.3	15.4	20.2	11.2	3.5	--	--	10.5
SamCERA Private Real Asset Idx		0.5	2.1	6.4	11.2	18.8	9.3	9.0	--	--	11.7
Excess		5.7	5.2	0.9	4.2	1.4	1.9	-5.5	--	--	-1.2
Cash Overlay	11,177,386	-0.1	-0.2	-0.2	-0.6	-0.6	--	--	--	--	-0.1
ICE BofAML US 3-Month Treasury Bill		0.0	0.1	0.1	0.1	0.1	--	--	--	--	0.1
Excess		-0.1	-0.2	-0.2	-0.6	-0.6	--	--	--	--	-0.2
General Account	106,588,215	0.0	0.0	0.0	0.1	0.1	0.7	1.1	1.0	0.7	1.8
County Treasury Pool	19,934,884	0.4	0.4	0.5	1.1	1.1	1.4	1.5	1.3	1.1	2.6
Currency Hedge Cash Overlay	57,924,085	0.0	-0.0	-0.0	-0.1	-0.1	--	--	--	--	0.0
San Mateo County Overlay	5,885,069,681	-2.6	-2.8	-4.6	-1.2	1.5	7.7	7.0	6.6	7.8	6.8
Samcera Total Plan Benchmark		-4.2	-3.9	-5.8	-1.3	1.4	8.0	7.8	7.0	8.1	7.2
Excess		1.6	1.1	1.2	0.1	0.1	-0.2	-0.7	-0.4	-0.3	-0.3



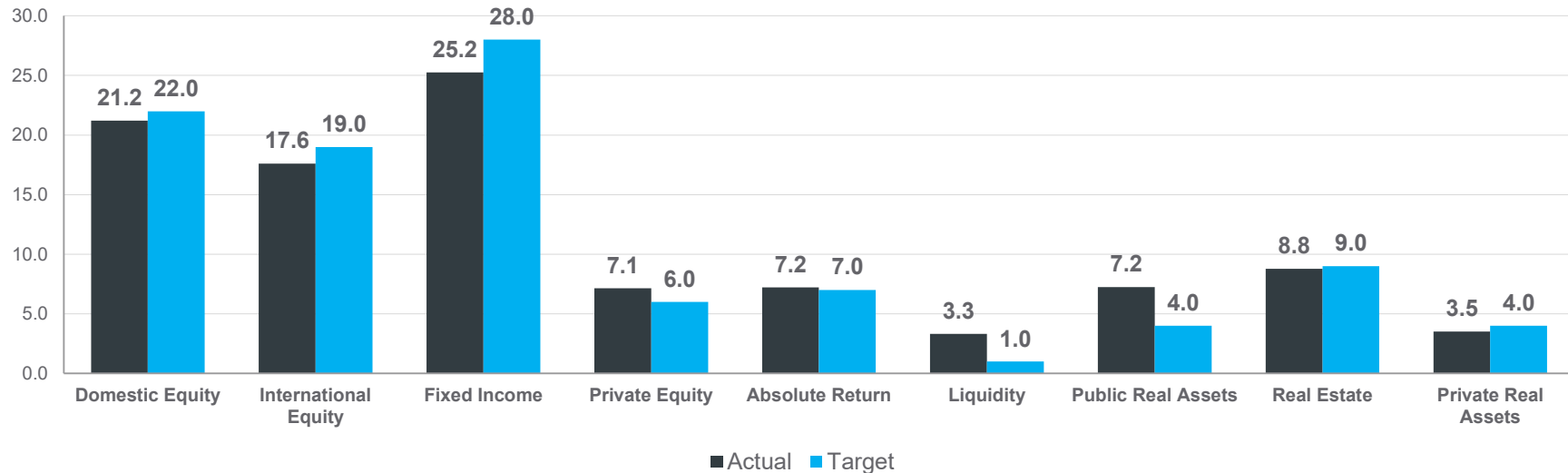
**Record of Asset Growth**

	Three Months	One Year
<b>TOTAL FUND</b>		
Beginning Market Value	6,111,441,363	5,773,282,307
Contributions	16,238,176	299,479,998
Withdrawals	-74,496,761	-281,933,022
Income Received	22,490,836	91,129,142
Gain/Loss	-190,496,399	3,745,359
Ending Market Value	5,885,069,681	5,885,069,681

**Net Asset Values Over Time (\$000)**

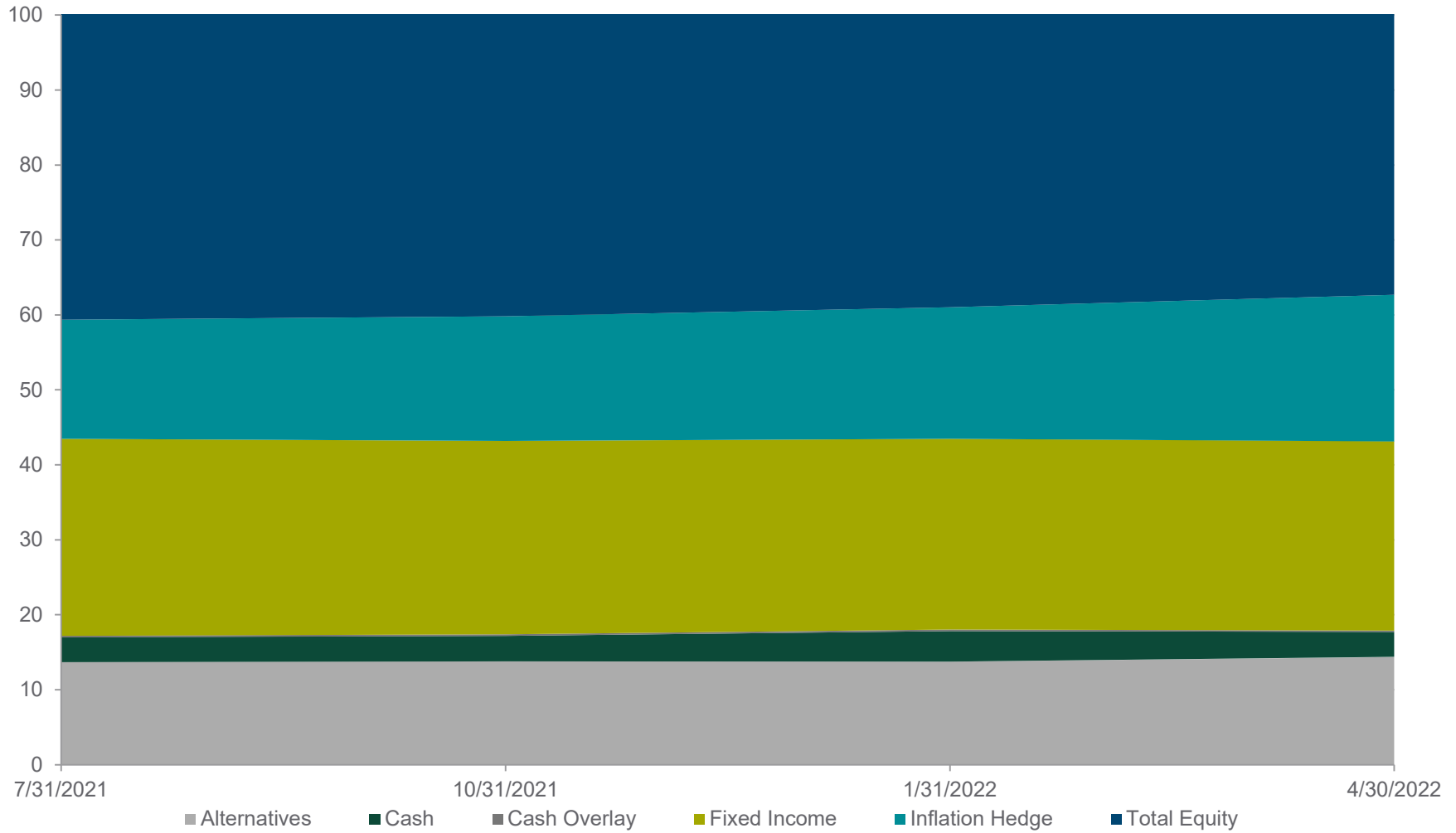


Actual vs Target Weights

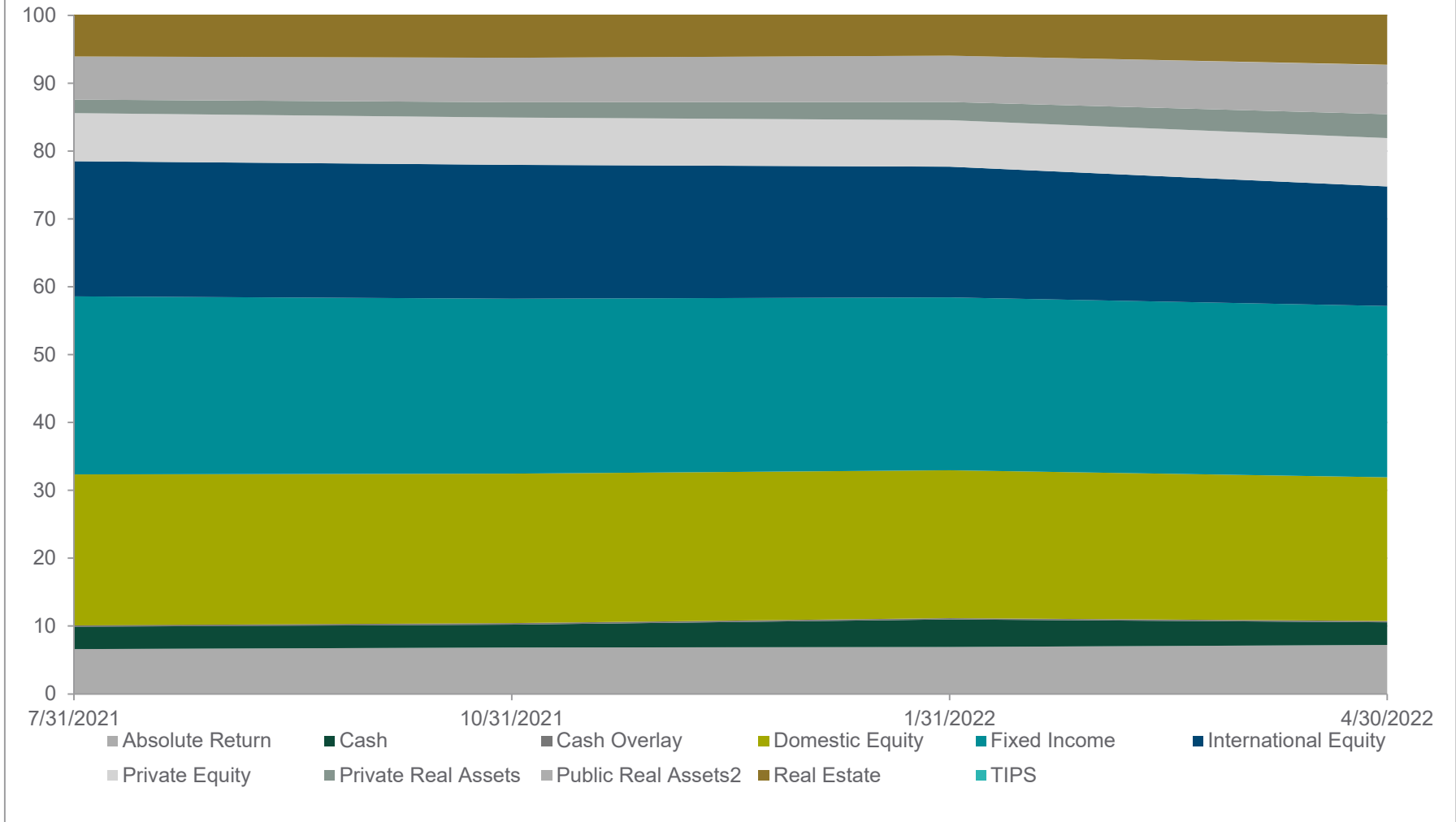


	Min	Actual	Target	Deviation	Max
Domestic Equity	20.0	21.2	22.0	-0.8	24.0
International Equity	17.0	17.6	19.0	-1.4	21.0
Fixed Income	26.0	25.2	28.0	-2.8	30.0
Private Equity	4.0	7.1	6.0	1.1	8.0
Absolute Return	5.0	7.2	7.0	0.2	9.0
Liquidity	0.0	3.3	1.0	2.3	2.0
Public Real Assets	2.0	7.2	4.0	3.2	6.0
Real Estate	7.0	8.8	9.0	-0.2	11.0
Private Real Assets	2.0	3.5	4.0	-0.5	6.0

Asset Allocation over Time



### Sub-Asset Class Allocation Over Time



**SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**  
**Board of Retirement**

May 24, 2022

Agenda Item 6.2

**TO:** Board of Retirement

**FROM:** Michael Coultrip, Chief Investment Officer



**SUBJECT:** Report on Quarterly Investment Performance Report for the Period Ended  
March 31, 2022

**Recommendation**

Accept Verus Advisory's quarterly performance report for the period ended March 31, 2022.

**Discussion**

The 1st quarter net total return for the SamCERA portfolio was -1.9%, which was 0.20% below the policy benchmark return of -1.7%. As can be seen on Page 20 and 21, international equity was the main detractor.

Margaret Jadallah and Joe Abdou will present the report to the Board and will be available for questions.

**Attachment**

Verus Quarterly Performance Report Ending 03/31/2022





**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**



**PERIOD ENDING: MARCH 31, 2022**

Investment Performance Review for

**San Mateo County Employees' Retirement Association**

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

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Market Environment

TAB I

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Alternatives

TAB VI

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Total Fund

TAB II

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Inflation Hedge

TAB VII

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US Equity

TAB III

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Appendix

TAB VIII

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International Equity

TAB IV

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Fixed Income

TAB V

# 1<sup>st</sup> 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.
- 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.

## 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.
- 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.

## 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.
- 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.

## 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.
- 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%).

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

# 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% <i>12/31/21</i>	(2.3%) <i>12/31/21</i>
Inflation (CPI YoY, Core)	6.5% <i>3/31/22</i>	1.6% <i>3/31/21</i>
Expected Inflation (5yr-5yr forward)	2.4% <i>3/31/22</i>	2.3% <i>3/31/21</i>
Fed Funds Target Range	0.25% – 0.50% <i>3/31/22</i>	0.00% – 0.25% <i>3/31/21</i>
10-Year Rate	2.34% <i>3/31/22</i>	1.74% <i>3/31/21</i>
U-3 Unemployment	3.6% <i>3/31/22</i>	6.0% <i>3/31/21</i>
U-6 Unemployment	6.9% <i>3/31/22</i>	10.7% <i>3/31/21</i>

# 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% 2/28/28	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.*

# 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%.

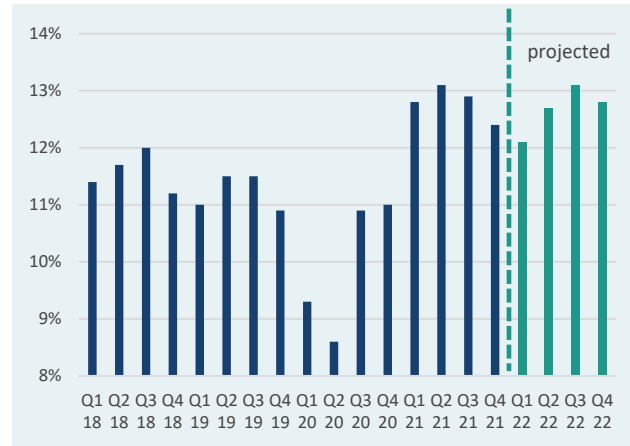
Companies continue to contend with headwinds from supply chain disruptions, surging commodity prices which were given a leg higher by the conflict in Ukraine, ongoing labor shortages and higher prices in general. In Q4 of 2021, 365 S&P 500 companies mentioned “inflation” on earnings calls, which was 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**



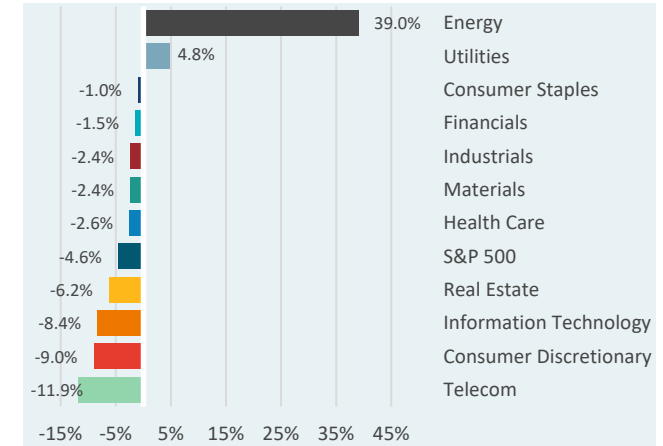
Source: Standard & Poor's, as of 3/31/22

**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%).

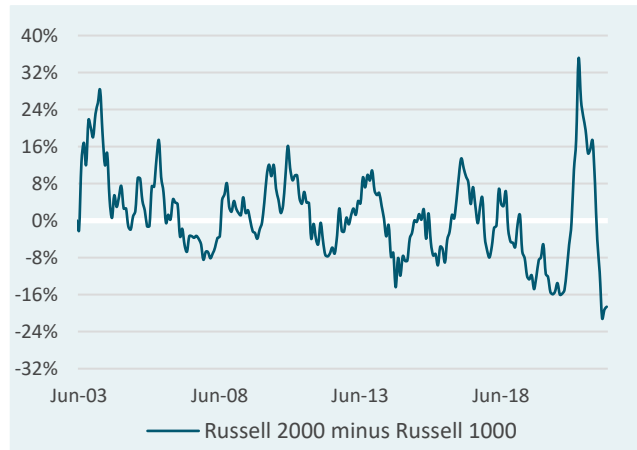
Energy stocks dramatically outperformed during Q1, as global demand has outpaced energy production for quite some time, pushing prices higher. Additionally, Russia's invasion of Ukraine led to widespread fears of an energy supply crunch, which temporarily sent oil to \$123/bbl—the highest level since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

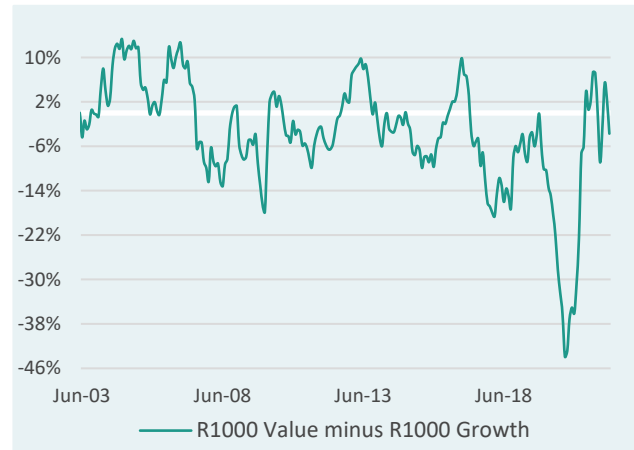
Value strongly outperformed during Q1

**SMALL CAP VS LARGE CAP (YOY)**



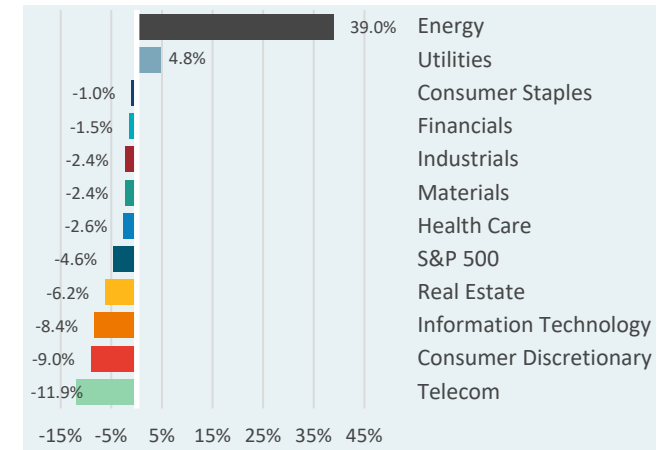
Source: FTSE, as of 3/31/22

**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

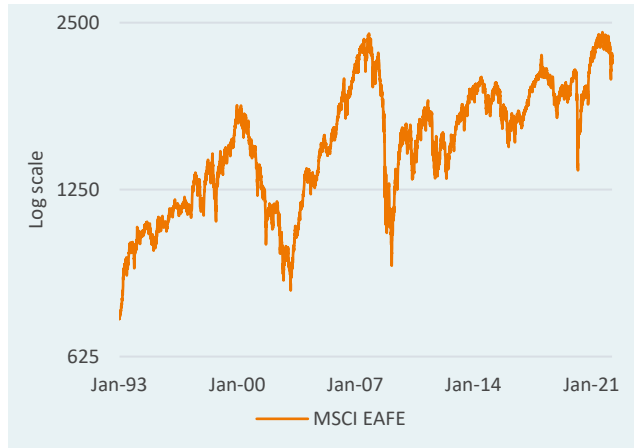
International developed equities fell -5.9% during the quarter, while U.S. equities performed slightly better (S&P 500 -4.6%) and emerging market equities trailed (MSCI Emerging Markets -7.0%), on an unhedged currency basis. Currency movement during the quarter detracted from the performance of investors 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.

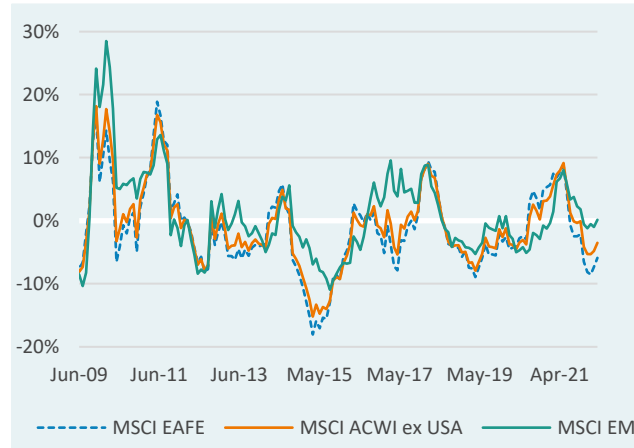
German equities (MSCI Germany -13.1%) detracted significantly from international developed equity returns, as investors expressed concern over the country's large exposure to Russian energy imports. Producer prices in Germany rose 25.9% year-over-year in February, partly due to surging gas prices. It 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



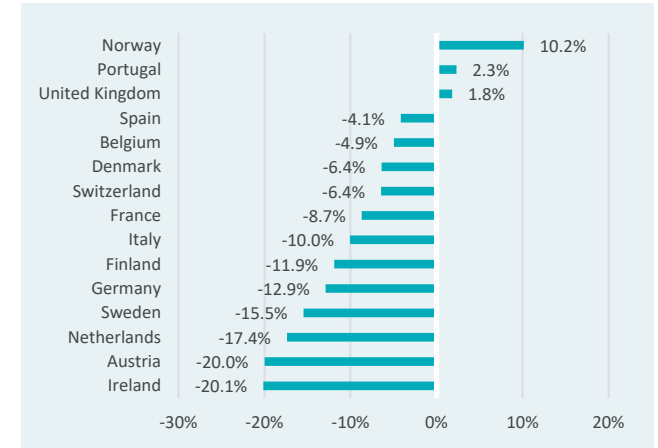
Source: MSCI, as of 3/31/22

## 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



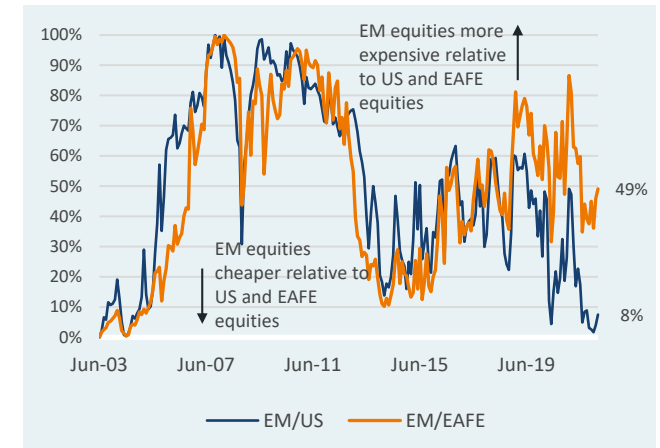
Source: MSCI, as of 12/31/21

## CHINESE EQUITY DRAWDOWNS



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

## VALUATION PERCENTILES



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

# Fixed income environment

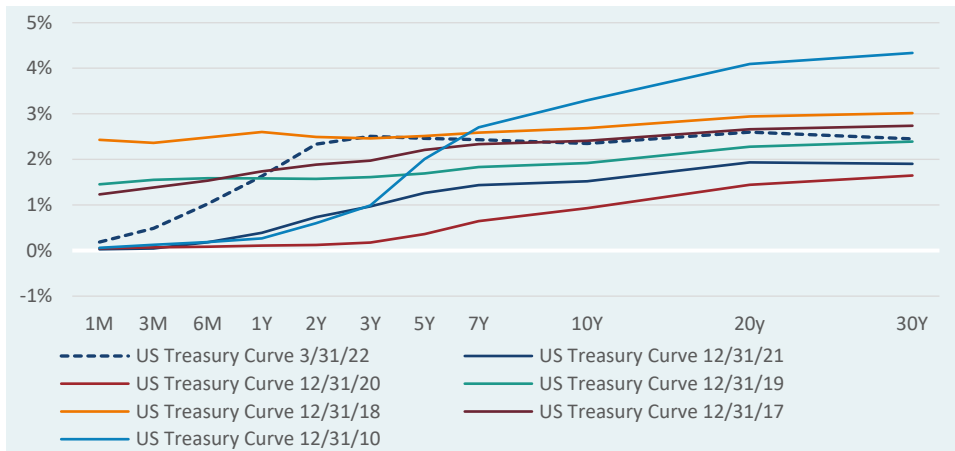
- The 10-year U.S. Treasury yield jumped during Q1, from 1.51% to 2.34%, as the Federal Reserve signaled that more aggressive tightening is ahead.
- Fixed income broadly delivered losses during the first quarter, as interest rates headed higher and credit spreads expanded. Higher duration exposures (Bloomberg 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%)

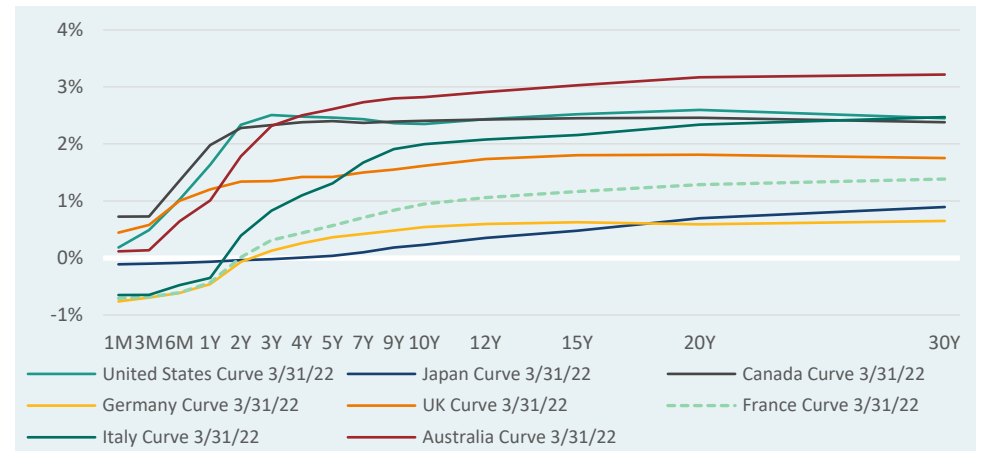
Source: Bloomberg, as of 3/31/22

# Yield environment

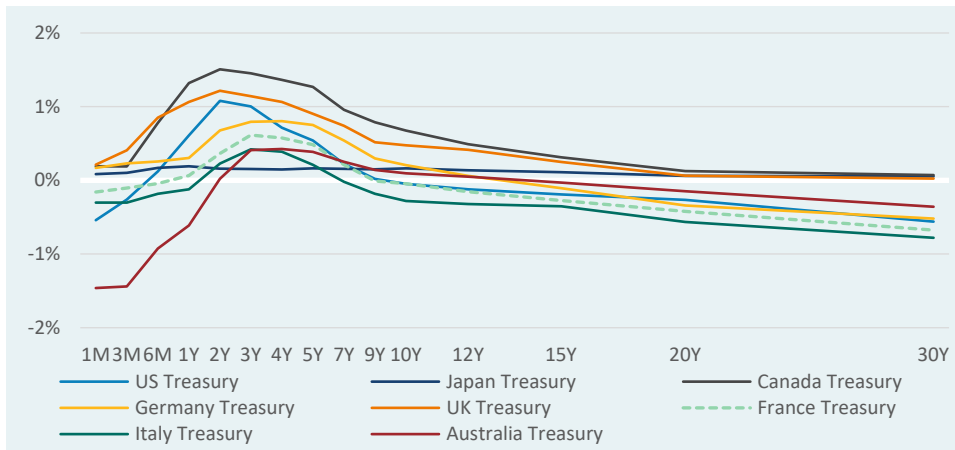
## U.S. YIELD CURVE



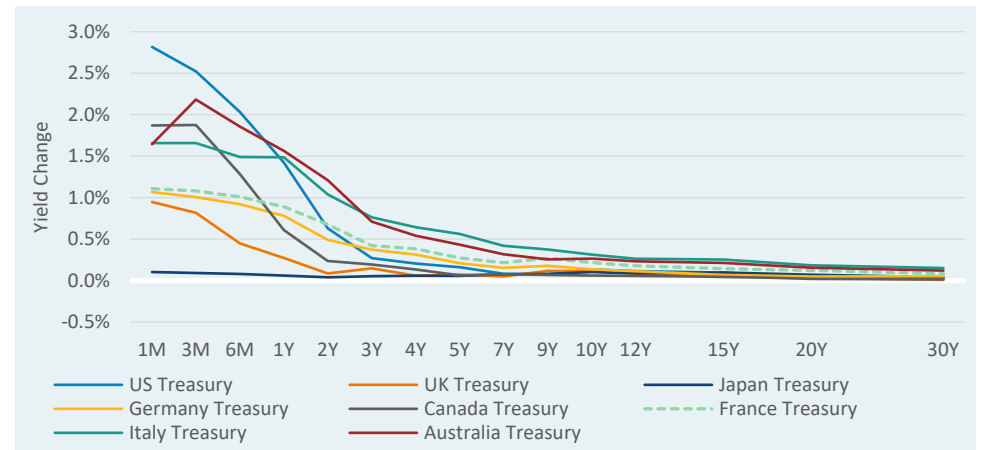
## GLOBAL GOVERNMENT YIELD CURVES



## YIELD CURVE CHANGES OVER LAST FIVE YEARS



## IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 3/31/22

# Detailed index returns

## DOMESTIC EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
<b>Core Index</b>							
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
<b>Style Index</b>							
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
<b>Broad Index</b>							
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
<b>Style Index</b>							
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
<b>Regional Index</b>							
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
<b>Broad Index</b>							
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
<b>Duration</b>							
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
<b>Issuer</b>							
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 Interm	(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
<b>Index</b>							
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
<b>Regional Index</b>							
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)
<b>Hedge Funds</b>							
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
<b>Currency (Spot)</b>							
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.

- The Total Fund, net of manager fees, returned -1.9% in the first quarter of 2022 and ranked in the 17<sup>th</sup> percentile among other public plans greater than \$1 billion (median of -3.5%). It lagged the policy index return of -1.7%. The Total Fund ex Overlay returned -1.9% for the quarter. The Total Fund one-year return of 6.9% lagged the policy index return of 7.8% and ranked in the 54<sup>th</sup> percentile of its peer universe. The three-year return of 9.2% (87<sup>th</sup> percentile) lagged the median large public plan (10.7%) and the policy index (10.3%).
  
- First quarter results were enhanced by the following factors:
  1. PanAgora Low Volatility outperformed the Russell 1000 -0.8% versus -5.1% for the index. The low vol strategy is designed to be defensive and perform well in down markets.
  2. QMA beat the Russell 2000 for second quarter in a row (-4.3% vs. -7.5%),. After a strong growth market through 2020 in which QMA lagged significantly; the recovery in value led QMA's factors to work and are providing strong relative performance to the benchmark.
  
- First quarter results were hindered by the following factors:
  1. Baillie Gifford lost -18.2% trailing the MSCI ACWI ex US Growth which lost -10.7. Performance for the quarter reflects worries about inflation, supply chain issues, and geopolitical issues within portfolio companies. Baillie Gifford continually reviews its holdings for long term growth prospects and reviewed many companies in the first quarter.
  2. Western TRU trailed Bloomberg Agg -7.8% versus -5.9%. Both duration and yield curve positioning hurt relative performance for the quarter.

Total Fund  
Performance Summary (Net of Fees)

Period Ending: March 31, 2022

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank *	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>Total Fund**</b>	<b>-1.9</b>	<b>17</b>	<b>1.8</b>	<b>37</b>	<b>6.9</b>	<b>54</b>	<b>17.2</b>	<b>89</b>	<b>9.2</b>	<b>87</b>	<b>7.9</b>	<b>94</b>	<b>8.1</b>	<b>62</b>
<i>Policy Index<sup>1</sup></i>	-1.7	12	3.0	24	7.8	39	17.2	88	10.3	59	8.9	59	8.5	47
<i>InvMetrics Public DB &gt; \$1B Net Median</i>	-3.5		1.1		7.2		19.5		10.7		9.1		8.5	
<b>Total Fund ex Overlay</b>	<b>-1.9</b>	<b>16</b>	<b>1.9</b>	<b>37</b>	<b>7.0</b>	<b>53</b>	<b>17.1</b>	<b>91</b>	<b>9.2</b>	<b>87</b>	<b>7.8</b>	<b>95</b>	<b>8.0</b>	<b>64</b>
<i>Policy Index<sup>1</sup></i>	-1.7	12	3.0	24	7.8	39	17.2	88	10.3	59	8.9	59	8.5	47
<i>InvMetrics Public DB &gt; \$1B Net Median</i>	-3.5		1.1		7.2		19.5		10.7		9.1		8.5	
<b>Public Equity</b>	<b>-5.7</b>	<b>65</b>	<b>-1.7</b>	<b>74</b>	<b>4.5</b>	<b>79</b>	<b>26.7</b>	<b>94</b>	<b>12.2</b>	<b>93</b>	<b>10.6</b>	<b>86</b>	<b>10.2</b>	<b>71</b>
<i>Blended Public Equity Index<sup>1</sup></i>	-5.1	36	-0.3	60	6.6	67	28.9	78	13.7	55	11.7	57	10.9	55
<i>InvMetrics All DB Total Eq Net Median</i>	-5.4		0.1		7.1		29.9		13.9		11.9		11.1	
<b>US Equity</b>	<b>-3.9</b>	<b>8</b>	<b>5.0</b>	<b>18</b>	<b>12.5</b>	<b>22</b>	<b>32.1</b>	<b>90</b>	<b>15.7</b>	<b>80</b>	<b>13.6</b>	<b>72</b>	<b>13.0</b>	<b>60</b>
<i>Blended US Equity Index<sup>1</sup></i>	-5.3	50	3.4	45	11.9	30	34.9	43	18.2	8	15.4	9	14.2	11
<i>Russell 3000</i>	-5.3	50	3.4	45	11.9	30	34.9	43	18.2	8	15.4	9	14.3	8
<i>InvMetrics All DB US Eq Net Median</i>	-5.3		3.1		10.9		34.8		17.0		14.3		13.3	
<b>Large Cap Equity</b>	<b>-3.9</b>	<b>44</b>	<b>5.5</b>	<b>40</b>	<b>13.3</b>	<b>38</b>	<b>31.3</b>	<b>58</b>	<b>16.0</b>	<b>57</b>	<b>14.3</b>	<b>47</b>	<b>13.7</b>	<b>39</b>
<i>Russell 1000</i>	-5.1	53	4.4	49	13.3	39	34.9	28	18.7	29	15.8	33	14.5	25
<i>eV US Large Cap Equity Net Median</i>	-4.8		4.2		12.1		32.2		16.5		14.0		13.1	
<i>Acadian US MGD V</i>	-5.2	55	5.1	45	12.2	59	23.5	94	10.7	96	--	--	--	--
<i>BlackRock Russell 1000</i>	-5.2	53	4.3	53	13.2	47	34.8	19	18.7	21	15.8	20	--	--
<i>DE Shaw</i>	-2.7	16	6.4	28	14.6	32	34.2	27	17.1	38	15.0	36	14.6	10
<i>PanAgora Defuseq</i>	-0.8	6	7.8	15	13.5	45	26.1	86	12.2	93	--	--	--	--
<i>Russell 1000</i>	-5.1	53	4.4	53	13.3	47	34.9	19	18.7	21	15.8	20	14.5	13
<i>eV US Large Cap Core Equity Net Median</i>	-5.0		4.6		13.1		31.7		16.6		14.2		13.3	

\* Total Fund and asset class aggregates are ranked in InvMetrics universes. Managers are ranked in eVest (eA) manager universes.

\*\* Includes Parametric Minneapolis manager funded in August 2013.

1. See Appendix for Benchmark History.

Total Fund  
Performance Summary (Net of Fees)

Period Ending: March 31, 2022

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>Small Cap Equity</b>	<b>-4.3</b>	<b>30</b>	<b>-0.2</b>	<b>35</b>	<b>3.9</b>	<b>33</b>	<b>40.1</b>	<b>43</b>	<b>10.5</b>	<b>84</b>	<b>7.8</b>	<b>85</b>	<b>9.3</b>	<b>89</b>
<i>Russell 2000</i>	-7.5	53	-9.7	75	-5.8	77	35.5	63	11.7	74	9.7	61	11.0	63
<i>eV US Small Cap Equity Net Median</i>	-7.2		-2.7		0.9		38.0		13.6		10.9		11.6	
<b>QMA US Small Cap</b>	<b>-4.3</b>	<b>11</b>	<b>-0.2</b>	<b>29</b>	<b>3.9</b>	<b>31</b>	<b>40.1</b>	<b>37</b>	<b>10.5</b>	<b>85</b>	<b>7.8</b>	<b>92</b>	<b>--</b>	<b>--</b>
<i>Russell 2000</i>	-7.5	57	-9.7	92	-5.8	91	35.5	69	11.7	77	9.7	68	11.0	66
<i>eV US Small Cap Core Equity Net Median</i>	-7.2		-2.5		1.6		38.1		13.8		11.0		11.6	
Domestic Equity Overlay	97.1	--	93.9	--	94.2	--	--	--	--	--	--	--	--	--
<b>International Equity</b>	<b>-7.7</b>	<b>59</b>	<b>-8.8</b>	<b>64</b>	<b>-3.9</b>	<b>67</b>	<b>20.7</b>	<b>80</b>	<b>8.3</b>	<b>34</b>	<b>7.1</b>	<b>30</b>	<b>6.2</b>	<b>41</b>
<i>Blended International Equity Index<sup>1</sup></i>	-4.9	11	-4.5	10	0.5	14	22.0	56	8.5	30	7.4	25	6.2	40
<i>MSCI EAFE Gross</i>	-5.8	20	-3.5	8	1.6	9	21.5	67	8.3	34	7.2	27	6.8	19
<i>InvMetrics All DB ex-US Eq Net Median</i>	-7.2		-7.9		-2.7		22.5		7.7		6.7		6.0	
<b>Baillie Gifford</b>	<b>-18.2</b>	<b>83</b>	<b>-20.6</b>	<b>91</b>	<b>-15.3</b>	<b>90</b>	<b>18.9</b>	<b>73</b>	<b>10.2</b>	<b>55</b>	<b>8.6</b>	<b>65</b>	<b>--</b>	<b>--</b>
<i>MSCI ACWI ex US<sup>1</sup></i>	-5.3	4	-6.3	13	-1.0	20	21.8	53	8.0	78	7.3	88	--	--
<i>MSCI ACWI ex US Growth<sup>1</sup></i>	-10.7	33	-11.8	48	-5.9	51	18.7	75	9.5	65	9.0	62	--	--
<i>eV ACWI ex-US Growth Equity Net Median</i>	-13.8		-12.2		-5.8		22.4		10.7		10.1		7.9	
<b>Mondrian</b>	<b>-2.6</b>	<b>29</b>	<b>-6.1</b>	<b>59</b>	<b>-1.8</b>	<b>55</b>	<b>19.6</b>	<b>85</b>	<b>4.4</b>	<b>82</b>	<b>4.4</b>	<b>60</b>	<b>4.6</b>	<b>91</b>
<i>MSCI ACWI ex USA Value Gross</i>	0.3	3	-0.6	8	4.0	11	24.7	52	6.1	58	5.3	47	4.8	84
<i>MSCI ACWI ex USA Gross</i>	-5.3	62	-6.3	61	-1.0	49	21.8	76	8.0	31	7.3	22	6.0	45
<i>eV ACWI ex-US Value Equity Net Median</i>	-3.3		-4.9		-1.2		24.7		6.4		5.2		5.8	
<b>BlackRock MSCI ACWI EX-US IMI</b>	<b>-5.5</b>	<b>24</b>	<b>-6.4</b>	<b>40</b>	<b>-1.1</b>	<b>41</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>MSCI ACWI ex USA IMI</i>	-5.6	25	-6.5	40	-1.3	42	22.5	59	7.9	72	6.9	69	5.8	81
<i>eV ACWI ex-US All Cap Core Eq Net Median</i>	-8.5		-7.8		-2.0		23.0		9.3		7.6		7.1	
Int'l Equity Currency Overlay														
International Equity Overlay	-4.8	--	-4.9	--	-8.8	--	--	--	--	--	--	--	--	--

1. See Appendix for Benchmark History.



Total Fund  
Performance Summary (Net of Fees)

Period Ending: March 31, 2022

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>Fixed Income</b>	<b>-4.6</b>	<b>37</b>	<b>-4.1</b>	<b>21</b>	<b>-1.9</b>	<b>15</b>	<b>3.2</b>	<b>20</b>	<b>3.0</b>	<b>23</b>	<b>3.1</b>	<b>24</b>	<b>3.8</b>	<b>13</b>
<i>Blended Fixed Income Index<sup>1</sup></i>	-5.7	70	-5.1	55	-3.2	54	1.6	42	2.5	36	2.9	29	2.7	54
<i>InvMetrics All DB Total Fix Inc Net Median</i>	-5.0		-5.0		-3.1		1.0		2.2		2.6		2.8	
<b>Core Fixed</b>	<b>-6.2</b>	<b>--</b>	<b>-6.5</b>	<b>--</b>	<b>-4.5</b>	<b>--</b>	<b>-0.5</b>	<b>--</b>	<b>1.7</b>	<b>--</b>	<b>2.1</b>	<b>--</b>	<b>2.7</b>	<b>--</b>
<i>Bloomberg US Aggregate TR</i>	-5.9	--	-5.9	--	-4.2	--	-1.8	--	1.7	--	2.1	--	2.2	--
<i>DoubleLine</i>	-5.8	98	-6.5	98	-4.3	57	-1.1	64	--	--	--	--	--	--
<i>Bloomberg US Aggregate TR</i>	-5.9	98	-5.9	93	-4.2	52	-1.8	75	1.7	33	2.1	46	2.2	58
<i>eV US Securitized Fixed Inc Net Median</i>	-4.4		-4.3		-4.1		0.5		1.2		2.1		2.6	
<i>FIAM Bond</i>	-5.6	22	-5.3	16	-3.3	11	1.0	13	3.0	4	3.0	5	3.1	9
<i>NISA Core Bond</i>	-5.7	37	-5.6	27	-3.8	35	--	--	--	--	--	--	--	--
<i>Bloomberg US Aggregate TR</i>	-5.9	61	-5.9	47	-4.2	65	-1.8	88	1.7	78	2.1	77	2.2	77
<i>eV US Core Fixed Inc Net Median</i>	-5.8		-5.9		-4.0		-0.6		2.0		2.4		2.5	
<i>Western TRU</i>	-7.8	99	-8.9	99	-7.3	99	2.7	3	0.7	99	1.7	97	--	--
<i>3-Month Libor Total Return USD</i>	0.1	1	0.2	1	0.3	1	0.3	25	0.9	99	1.3	99	0.9	99
<i>Bloomberg US Aggregate TR</i>	-5.9	61	-5.9	47	-4.2	65	-1.8	88	1.7	78	2.1	77	2.2	77
<i>eV US Core Fixed Inc Net Median</i>	-5.8		-5.9		-4.0		-0.6		2.0		2.4		2.5	
<i>Core Fixed Income Overlay</i>	-2.3	--	0.8	--	3.0	--	--	--	--	--	--	--	--	--
<b>Opportunistic Credit</b>	<b>-1.8</b>	<b>--</b>	<b>0.2</b>	<b>--</b>	<b>3.0</b>	<b>--</b>	<b>10.7</b>	<b>--</b>	<b>5.3</b>	<b>--</b>	<b>5.3</b>	<b>--</b>	<b>7.3</b>	<b>--</b>
<i>Bloomberg BA Intermediate HY</i>	-5.3	--	-3.8	--	-1.5	--	8.7	--	4.4	--	4.5	--	4.6	--
<i>AG CSF II*</i>	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<i>Bloomberg BA Intermediate HY</i>	-5.3	--	-3.8	--	-1.5	--	8.7	--	4.4	--	4.5	--	4.6	--
<i>Angelo Gordon Opportunistic*</i>	-8.5	--	7.3	--	12.1	--	22.9	--	8.3	--	11.9	--	--	--
<i>Bloomberg US Aggregate TR</i>	-5.9	--	-5.9	--	-4.2	--	-1.8	--	1.7	--	2.1	--	2.2	--

\* Funded February 2022.

\* Preliminary return as of 3/31/2022.

1. See Appendix for Benchmark History.

Total Fund  
Performance Summary (Net of Fees)

Period Ending: March 31, 2022

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Angelo Gordon Credit Solutions*	1.3	1	6.9	1	13.8	1	25.8	1	--	--	--	--	--	--
<i>Bloomberg BA Intermediate HY</i>	-5.3	95	-3.8	93	-1.5	93	8.7	78	4.4	53	4.5	40	4.6	86
<i>eV US High Yield Fixed Inc Net Median</i>	-3.9		-2.6		0.0		10.4		4.4		4.4		5.4	
Beach Point Select	0.1	2	5.8	1	9.5	1	20.8	2	11.2	1	9.0	1	--	--
<i>Bloomberg BA Intermediate HY</i>	-5.3	95	-3.8	93	-1.5	93	8.7	78	4.4	53	4.5	40	4.6	86
<i>eV US High Yield Fixed Inc Net Median</i>	-3.9		-2.6		0.0		10.4		4.4		4.4		5.4	
Brigade Capital	-1.0	6	2.3	4	6.1	4	19.9	2	7.1	4	5.6	9	5.9	20
<i>Bloomberg BA Intermediate HY</i>	-5.3	95	-3.8	93	-1.5	93	8.7	78	4.4	53	4.5	40	4.6	86
<i>50% Barclays HY/ 50% Bank Loan</i>	-2.5	26	-0.8	23	1.3	20	11.3	33	4.4	57	4.4	50	5.1	64
<i>eV US High Yield Fixed Inc Net Median</i>	-3.9		-2.6		0.0		10.4		4.4		4.4		5.4	
PIMCO Diversified	-7.1	99	-7.0	99	-4.4	99	3.5	99	1.9	99	--	--	--	--
<i>Blended PIMCO Diversified Index<sup>1</sup></i>	-6.7	99	-6.4	99	-3.8	99	4.9	99	2.4	99	3.1	98	4.3	89
<i>Bloomberg BA Intermediate HY</i>	-5.3	95	-3.8	93	-1.5	93	8.7	78	4.4	53	4.5	40	4.6	86
<i>eV US High Yield Fixed Inc Net Median</i>	-3.9		-2.6		0.0		10.4		4.4		4.4		5.4	
Franklin Templeton	-0.2	4	-3.1	22	-1.6	25	-2.2	95	-3.6	99	-2.1	99	1.3	80
<i>Bloomberg Multiverse TR</i>	-6.1	66	-7.6	69	-6.2	73	-0.6	87	0.8	82	1.8	81	1.2	80
<i>eV All Global Fixed Inc Net Median</i>	-5.3		-5.8		-4.0		4.3		2.4		2.9		3.0	
<b>Private Credit</b>	<b>0.2</b>	<b>--</b>	<b>3.0</b>	<b>--</b>	<b>5.2</b>	<b>--</b>	<b>9.3</b>	<b>--</b>	<b>6.7</b>	<b>--</b>	<b>7.0</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>Cliffwater Direct Lending Index*</i>	2.3	--	7.5	--	11.8	--	13.1	--	8.9	--	8.8	--	9.5	--
Blackrock DL Feeder IX-U*	0.9	1	4.7	1	6.6	3	11.0	40	--	--	--	--	--	--
<i>Cliffwater Direct Lending Index</i>	2.3	1	7.5	1	11.8	1	13.1	15	8.9	2	8.8	1	9.5	1
<i>eV US High Yield Fixed Inc Net Median</i>	-3.9		-2.6		0.0		10.4		4.4		4.4		5.4	
PIMCO Private Income*	0.0	2	3.5	2	7.6	3	15.4	8	--	--	--	--	--	--
<i>Bloomberg BA Intermediate HY</i>	-5.3	95	-3.8	93	-1.5	93	8.7	78	4.4	53	4.5	40	4.6	86
<i>Cliffwater Direct Lending Index</i>	2.3	1	7.5	1	11.8	1	13.1	15	8.9	2	8.8	1	9.5	1
<i>eV US High Yield Fixed Inc Net Median</i>	-3.9		-2.6		0.0		10.4		4.4		4.4		5.4	

\* Preliminary return as of 3/31/2022.

1. See Appendix for Benchmark History.

Total Fund  
Performance Summary (Net of Fees)

Period Ending: March 31, 2022

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
TCP Direct Lending VIII*	0.2	2	3.8	2	5.2	5	8.1	84	6.1	9	6.6	5	--	--
White Oak Yield White*	0.0	2	2.5	3	4.1	7	5.8	98	5.4	21	--	--	--	--
Oak YSF V*	0.0	2	1.1	7	1.6	17	--	--	--	--	--	--	--	--
<i>Cliffwater Direct Lending Index</i>	2.3	1	7.5	1	11.8	1	13.1	15	8.9	2	8.8	1	9.5	1
<i>eV US High Yield Fixed Inc Net Median</i>	-3.9		-2.6		0.0		10.4		4.4		4.4		5.4	
<b>Alternatives</b>	<b>2.2</b>	<b>--</b>	<b>7.2</b>	<b>--</b>	<b>15.1</b>	<b>--</b>	<b>25.1</b>	<b>--</b>	<b>18.4</b>	<b>--</b>	<b>12.2</b>	<b>--</b>	<b>9.5</b>	<b>--</b>
<i>Blended Alternatives Index<sup>1</sup></i>	5.2	--	10.8	--	15.0	--	14.5	--	16.1	--	12.3	--	10.0	--
<b>Private Equity** **</b>	<b>2.1</b>	<b>30</b>	<b>12.2</b>	<b>46</b>	<b>26.4</b>	<b>43</b>	<b>42.7</b>	<b>1</b>	<b>37.3</b>	<b>1</b>	<b>26.2</b>	<b>3</b>	<b>21.0</b>	<b>1</b>
<i>Blended Private Equity Index<sup>1</sup></i>	10.0	1	20.0	20	28.7	29	26.3	56	28.8	9	19.5	18	17.8	5
<i>InvMetrics All DB Private Eq Net Median</i>	0.5		10.7		22.7		28.0		19.5		15.8		11.9	
<b>Hedge Fund/Absolute Return</b>	<b>2.3</b>	<b>2</b>	<b>2.0</b>	<b>50</b>	<b>4.4</b>	<b>57</b>	<b>5.3</b>	<b>92</b>	<b>-2.0</b>	<b>93</b>	<b>-2.8</b>	<b>93</b>	<b>1.9</b>	<b>89</b>
<i>Absolute Return Custom Index<sup>1</sup></i>	1.0	6	3.1	39	4.1	59	4.2	94	4.8	80	5.2	62	4.7	61
<i>InvMetrics All DB Hedge Funds Net Median</i>	-1.8		2.0		5.0		16.8		7.7		5.5		5.3	
Aberdeen Standard GARS	-5.1	81	-6.0	83	-5.6	85	1.1	92	1.3	83	1.1	88	--	--
Acadian MAAR Fund LLC	-2.5	67	-2.1	67	-0.8	70	--	--	--	--	--	--	--	--
CFM Systematic Global Macro	2.9	24	-2.0	67	4.2	49	--	--	--	--	--	--	--	--
Graham Quant Macro	13.1	6	7.4	21	12.0	24	10.3	61	--	--	--	--	--	--
PIMCO MAARS Fund LP	2.5	25	13.0	13	12.3	24	--	--	--	--	--	--	--	--
<i>Absolute Return Custom Index</i>	1.0	35	3.1	40	4.1	50	4.2	84	4.8	66	5.2	55	4.7	56
<i>eV Alt All Multi-Strategy Median</i>	-0.4		0.2		4.0		13.2		6.7		5.4		5.3	

\* Preliminary return as of 3/31/2022..

\*\* Returns are one-quarter lag.

\*\* Excludes EnCap Energy Capital Fund and Sheridan Production Partners.

1. See Appendix for Benchmark History.

Total Fund  
Performance Summary (Net of Fees)

Period Ending: March 31, 2022

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>Inflation Hedge</b>	<b>7.5</b>	<b>--</b>	<b>16.2</b>	<b>--</b>	<b>21.7</b>	<b>--</b>	<b>16.4</b>	<b>--</b>	<b>7.0</b>	<b>--</b>	<b>5.9</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>Blended Inflation Hedge Index<sup>1</sup></i>	8.1	--	19.4	--	25.3	--	19.9	--	11.5	--	8.8	--	--	--
<b>Real Estate</b>	<b>4.7</b>	<b>58</b>	<b>15.7</b>	<b>54</b>	<b>19.9</b>	<b>59</b>	<b>9.8</b>	<b>77</b>	<b>8.8</b>	<b>67</b>	<b>8.4</b>	<b>48</b>	<b>10.0</b>	<b>22</b>
<i>NCREIF ODCE</i>	7.4	6	23.6	13	28.5	9	14.6	23	11.3	8	9.9	7	10.9	5
<i>InvMetrics All DB Real Estate Pub Net Median</i>	5.0	--	16.9	--	21.5	--	11.5	--	9.4	--	8.3	--	9.4	--
Harrison Street Core Property	2.5	--	8.0	--	11.0	--	7.2	--	--	--	--	--	--	--
Invesco	6.5	--	21.0	--	26.7	--	11.5	--	9.9	--	9.0	--	10.3	--
<i>NCREIF ODCE</i>	7.4	--	23.6	--	28.5	--	14.6	--	11.3	--	9.9	--	10.9	--
Invesco US Val IV	0.3	--	8.1	--	12.6	--	7.1	--	8.1	--	9.8	--	--	--
Invesco US Val V	3.3	--	17.9	--	23.5	--	16.4	--	15.1	--	--	--	--	--
<i>NCREIF ODCE</i>	7.4	--	23.6	--	28.5	--	14.6	--	11.3	--	9.9	--	10.9	--
<i>NCREIF ODCE + 2%</i>	7.9	--	25.4	--	31.0	--	16.9	--	13.5	--	12.1	--	13.1	--
PGIM RE US Debt Fund	1.4	--	4.0	--	5.4	--	5.1	--	5.3	--	--	--	--	--
Stockbridge Value IV*	0.0	--	11.4	--	--	--	--	--	--	--	--	--	--	--
<i>NCREIF ODCE</i>	7.4	--	23.6	--	28.5	--	14.6	--	11.3	--	9.9	--	10.9	--
<b>Private Real Asset**</b>	<b>3.8</b>	<b>--</b>	<b>12.7</b>	<b>--</b>	<b>17.9</b>	<b>--</b>	<b>15.0</b>	<b>--</b>	<b>10.3</b>	<b>--</b>	<b>2.5</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>Blended Private Real Asset Index<sup>1</sup></i>	5.8	--	10.4	--	16.8	--	7.2	--	12.2	--	6.7	--	--	--
<i>Blended Secondary CA Private RA Index<sup>1</sup></i>	7.3	--	17.8	--	23.4	--	10.0	--	7.2	--	7.6	--	--	--
<b>Public Real Assets</b>	<b>12.4</b>	<b>--</b>	<b>18.6</b>	<b>--</b>	<b>26.0</b>	<b>--</b>	<b>30.9</b>	<b>--</b>	<b>5.0</b>	<b>--</b>	<b>4.6</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>Blended Public Real Asset Index<sup>1</sup></i>	12.1	--	18.5	--	25.6	--	31.4	--	9.7	--	7.6	--	--	--
SSgA Custom Real Asset	12.4	--	18.6	--	26.0	--	30.9	--	9.7	--	7.7	--	--	--
<i>SSgA Custom Real Asset Index<sup>1</sup></i>	12.1	--	18.5	--	25.6	--	31.4	--	9.7	--	7.6	--	--	--

\* Preliminary return as of 3/31/2022.

\*\* Returns are one-quarter lag.

1. See Appendix for Benchmark History.

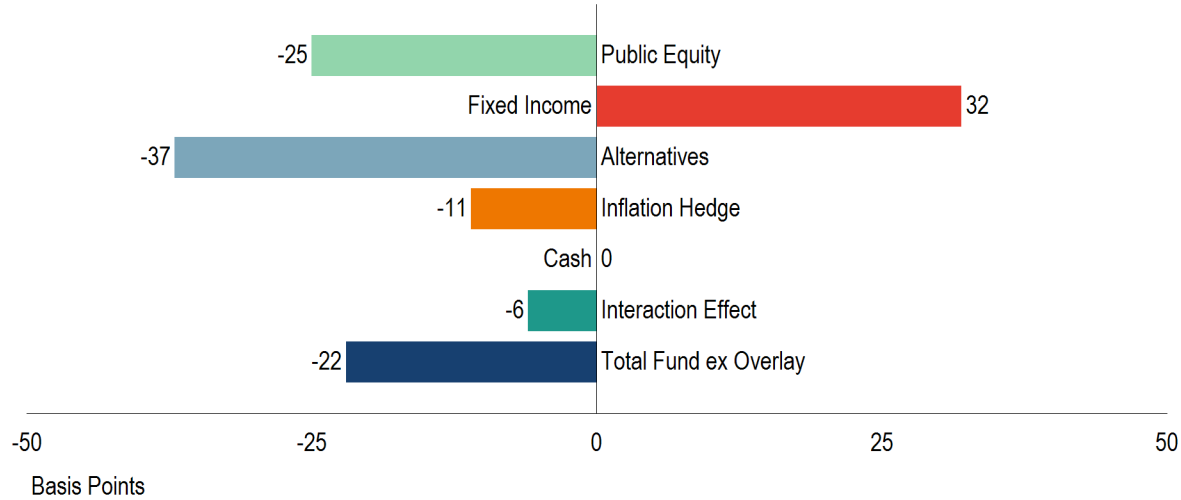
Total Fund  
Performance Summary (Net of Fees)

Period Ending: March 31, 2022

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Cash	0.1	--	0.2	--	0.2	--	0.4	--	0.6	--	0.8	--	0.8	--
91 Day T-Bills	0.0	--	0.1	--	0.1	--	0.1	--	0.7	--	1.1	--	0.6	--
General Account	0.1	--	0.3	--	0.3	--	0.6	--	1.3	--	2.2	--	1.5	--
Treasury & LAIF	0.1	--	0.7	--	1.0	--	1.3	--	1.7	--	2.3	--	1.5	--
91 Day T-Bills	0.0	--	0.1	--	0.1	--	0.1	--	0.7	--	1.1	--	0.6	--
Currency Hedge Cash Overlay	-0.1	--	-0.2	--	-0.2	--	--	--	--	--	--	--	--	--

Total Fund ex Overlay  
Performance Attribution

Period Ending: March 31, 2022

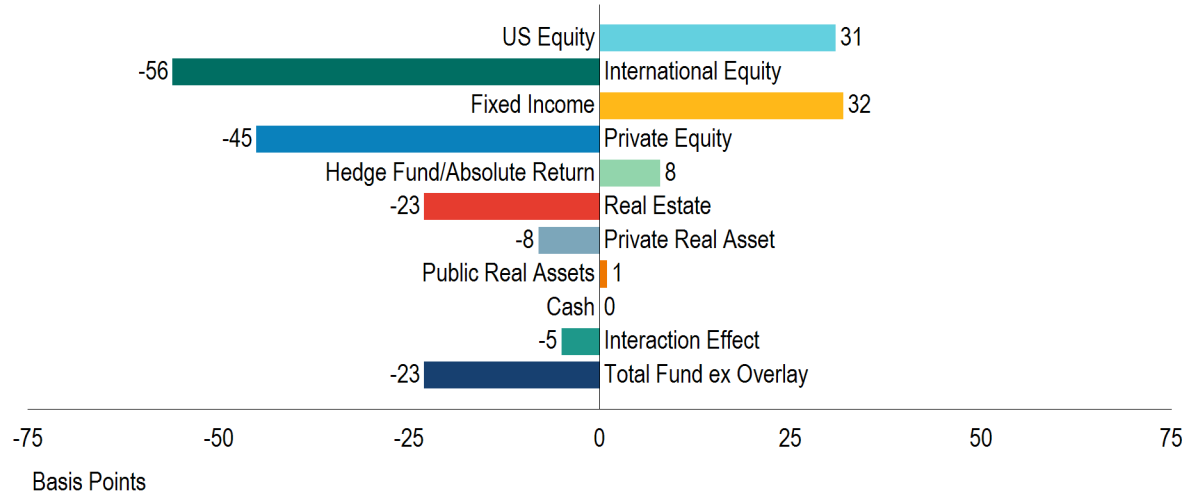


	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction *	Total Effects
Public Equity	-5.67%	-5.07%	-0.60%	-0.25%	0.01%	0.01%	-0.24%
Fixed Income	-4.58%	-5.69%	1.11%	0.32%	0.11%	-0.03%	0.40%
Alternatives	2.21%	5.16%	-2.96%	-0.37%	0.04%	-0.02%	-0.35%
Inflation Hedge	7.49%	8.14%	-0.65%	-0.11%	0.03%	-0.02%	-0.09%
Cash	0.05%	0.04%	0.01%	0.00%	0.06%	0.00%	0.06%
<b>Total</b>	<b>-1.91%</b>	<b>-1.68%</b>	<b>-0.22%</b>	<b>-0.42%</b>	<b>0.25%</b>	<b>-0.06%</b>	<b>-0.22%</b>

Attribution does not include the impact of the Parametric Minneapolis strategy.  
\* Interaction Effects include Residual Effects.

Total Fund ex Overlay  
Performance Attribution

Period Ending: March 31, 2022

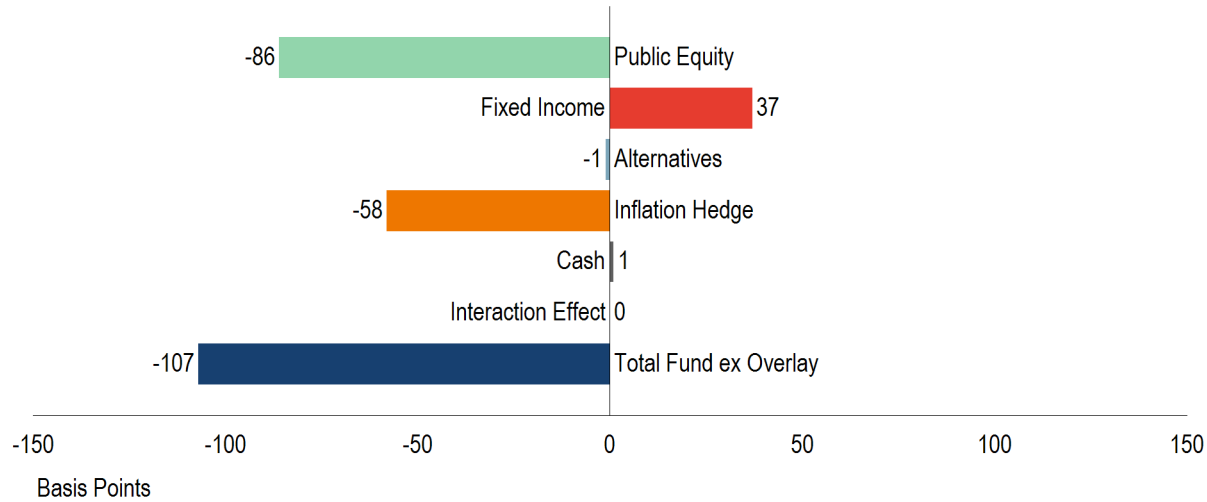


	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction * Effects	Total Effects
US Equity	-3.86%	-5.28%	1.42%	0.31%	0.01%	-0.01%	0.32%
International Equity	-7.73%	-4.87%	-2.86%	-0.56%	0.00%	0.00%	-0.55%
Fixed Income	-4.58%	-5.69%	1.11%	0.32%	0.11%	-0.03%	0.40%
Private Equity	2.10%	10.00%	-7.90%	-0.45%	0.09%	-0.07%	-0.43%
Hedge Fund/Absolute Return	2.31%	1.05%	1.27%	0.08%	-0.01%	0.00%	0.07%
Real Estate	4.73%	7.36%	-2.63%	-0.23%	-0.09%	0.03%	-0.30%
Private Real Asset	3.80%	5.77%	-1.97%	-0.08%	-0.12%	0.02%	-0.18%
Public Real Assets	12.37%	12.08%	0.29%	0.01%	0.36%	0.01%	0.38%
Cash	0.05%	0.04%	0.01%	0.00%	0.06%	0.00%	0.06%
<b>Total</b>	<b>-1.91%</b>	<b>-1.68%</b>	<b>-0.23%</b>	<b>-0.60%</b>	<b>0.42%</b>	<b>-0.05%</b>	<b>-0.23%</b>

Attribution does not include the impact of the Parametric Minneapolis strategy.  
\* Interaction Effects include Residual Effects.

Total Fund ex Overlay  
Performance Attribution (1 Year)

Period Ending: March 31, 2022



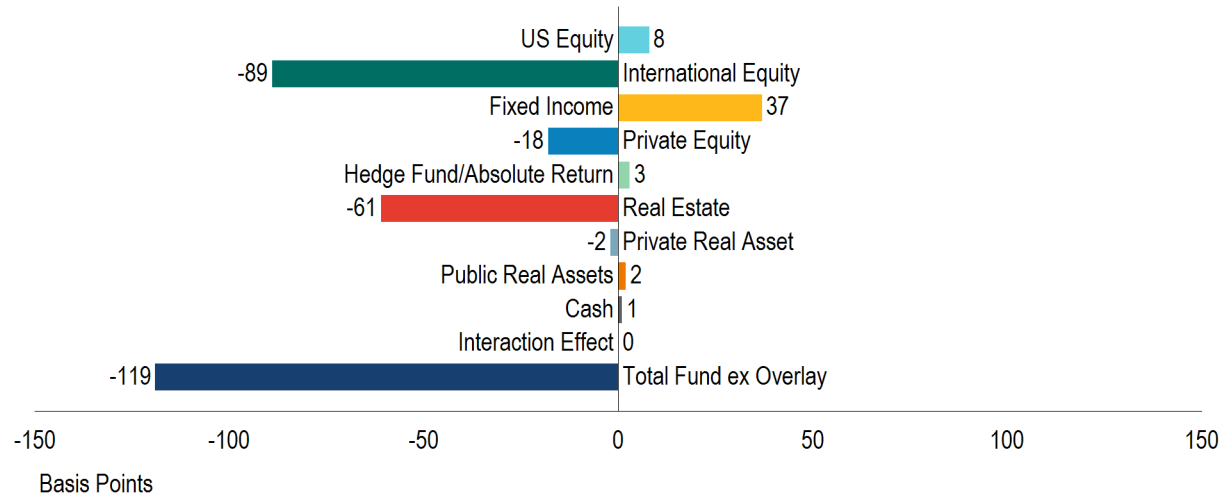
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction*	Total Effects
Public Equity	4.52%	6.58%	-2.06%	-0.86%	0.00%	0.00%	-0.86%
Fixed Income	-1.85%	-3.21%	1.36%	0.37%	0.00%	0.00%	0.37%
Alternatives	15.14%	14.96%	0.17%	-0.01%	0.00%	0.00%	-0.01%
Inflation Hedge	21.72%	25.30%	-3.58%	-0.58%	0.00%	0.00%	-0.58%
Cash	0.24%	0.06%	0.18%	0.01%	0.00%	0.00%	0.01%
<b>Total</b>	<b>6.91%</b>	<b>7.98%</b>	<b>-1.07%</b>	<b>-1.07%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>-1.07%</b>

Attribution does not include the impact of the Parametric Minneapolis strategy.  
\* Interaction Effects include Residual Effects.



Total Fund ex Overlay  
Performance Attribution (1 Year)

Period Ending: March 31, 2022



	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction *	Total Effects
US Equity	12.48%	11.92%	0.55%	0.08%	0.00%	0.00%	0.08%
International Equity	-3.86%	0.52%	-4.39%	-0.89%	0.00%	0.00%	-0.89%
Fixed Income	-1.85%	-3.21%	1.36%	0.37%	0.00%	0.00%	0.37%
Private Equity	26.35%	28.66%	-2.31%	-0.18%	0.00%	0.00%	-0.18%
Hedge Fund/Absolute Return	4.45%	4.05%	0.40%	0.03%	0.00%	0.00%	0.03%
Real Estate	19.90%	28.46%	-8.56%	-0.61%	0.00%	0.00%	-0.61%
Private Real Asset	17.89%	16.82%	1.07%	-0.02%	0.00%	0.00%	-0.02%
Public Real Assets	25.95%	25.63%	0.33%	0.02%	0.00%	0.00%	0.02%
Cash	0.24%	0.06%	0.18%	0.01%	0.00%	0.00%	0.01%
<b>Total</b>	<b>6.93%</b>	<b>8.12%</b>	<b>-1.19%</b>	<b>-1.19%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>-1.19%</b>

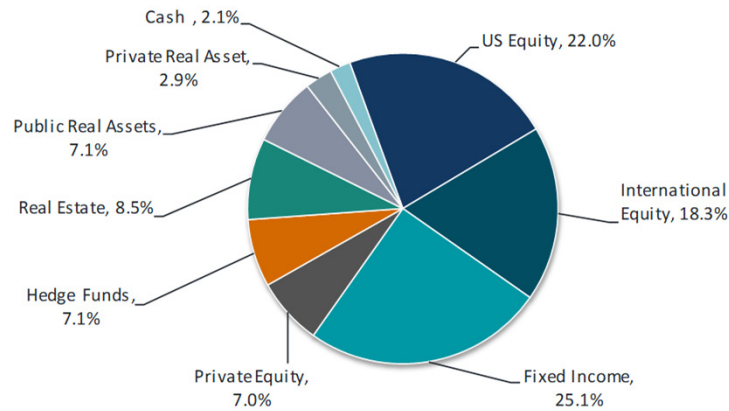
Attribution does not include the impact of the Parametric Minneapolis strategy.  
\* Interaction Effects include Residual Effects.

# Total Fund

## Asset Allocation Analysis

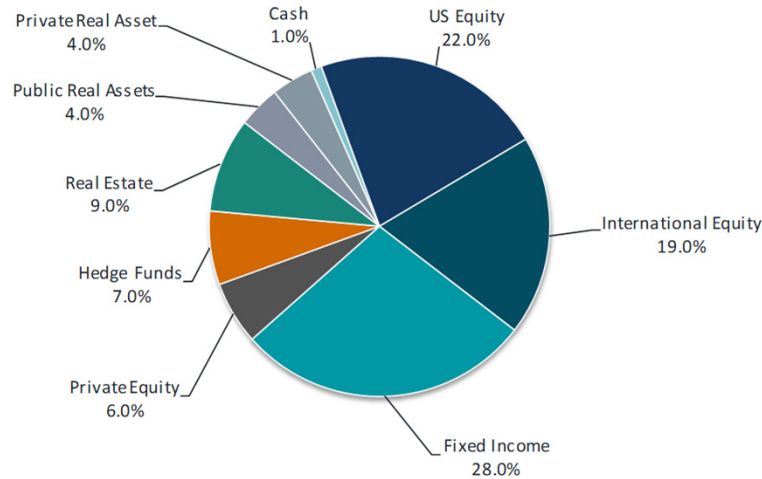
Period Ending: March 31, 2022

Current w/ Overlay



ASSET ALLOCATION	MARKET VALUE W/ OVERLAY	W/ OVERLAY	W/O OVERLAY
US Equity	1,339,109,412	22.0%	21.8%
International Equity	1,113,115,309	18.3%	17.7%
Fixed Income	1,525,719,807	25.1%	24.6%
Private Equity	427,640,222	7.0%	7.0%
Hedge Funds	429,756,200	7.1%	7.1%
Real Estate	516,201,799	8.5%	8.5%
Public Real Assets	432,462,094	7.1%	7.1%
Private Real Asset	173,978,855	2.9%	2.9%
Cash	130,890,963	2.1%	3.3%
<b>TOTAL</b>	<b>6,088,874,661</b>	<b>100.0%</b>	<b>100.0%</b>

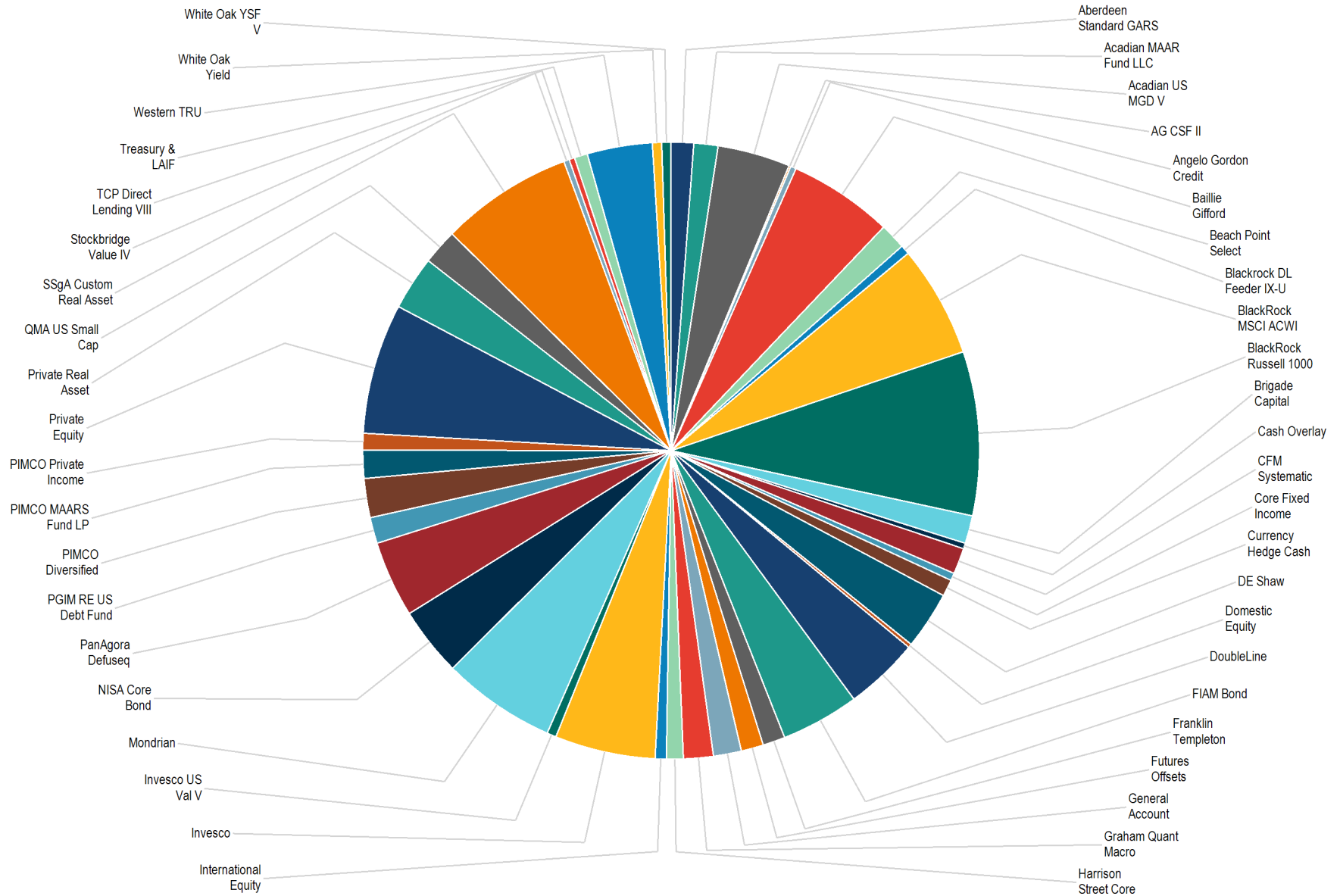
Target



ASSET ALLOCATION	W/ OVERLAY	TARGET	DIFF
US Equity	22.0%	22.0%	0.0%
International Equity	18.3%	19.0%	-0.7%
Fixed Income	25.1%	28.0%	-2.9%
Private Equity	7.0%	6.0%	1.0%
Hedge Funds	7.1%	7.0%	0.1%
Real Estate	8.5%	9.0%	-0.5%
Public Real Assets	7.1%	4.0%	3.1%
Private Real Asset	2.9%	4.0%	-1.1%
Cash	2.1%	1.0%	1.1%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

# Total Fund Manager Allocation Analysis

Period Ending: March 31, 2022



# Total Fund Manager Allocation Analysis

Period Ending: March 31, 2022

Name	Market Value	% of Portfolio
Acadian US MGD V	\$235,589,954	3.9%
BlackRock Russell 1000	\$536,115,248	8.8%
DE Shaw	\$190,699,624	3.1%
PanAgora Defuseq	\$250,659,395	4.1%
QMA US Small Cap	\$114,960,919	1.9%
Domestic Equity Overlay	\$11,084,273	0.2%
Baillie Gifford	\$339,506,917	5.6%
Mondrian	\$370,312,212	6.1%
BlackRock MSCI ACWI EX-US IMI	\$367,169,486	6.0%
International Equity Overlay	\$36,126,694	0.6%
DoubleLine	\$244,520,678	4.0%
FIAM Bond	\$254,916,902	4.2%
NISA Core Bond	\$224,476,819	3.7%
Western TRU	\$214,321,456	3.5%
Core Fixed Income Overlay	\$24,965,328	0.4%
AG CSF Annex Dislocation Fund	\$20,275	0.0%
AG CSF II	\$3,044,600	0.1%
Angelo Gordon Opportunistic	\$571,499	0.0%
Angelo Gordon Credit Solutions	\$15,295,500	0.3%
Beach Point Select	\$87,978,817	1.4%
Brigade Capital	\$89,248,962	1.5%
PIMCO Diversified	\$125,224,436	2.1%
Franklin Templeton	\$75,310,499	1.2%
Blackrock DL Feeder IX-U	\$30,760,217	0.5%
PIMCO Private Income	\$54,280,170	0.9%
TCP Direct Lending VIII	\$18,162,589	0.3%
White Oak Yield	\$32,110,313	0.5%
White Oak YSF V	\$30,510,747	0.5%
Private Equity	\$427,640,222	7.0%

# Total Fund Manager Allocation Analysis

Period Ending: March 31, 2022

Name	Market Value	% of Portfolio
Aberdeen Standard GARS	\$75,149,490	1.2%
Acadian MAAR Fund LLC	\$80,198,158	1.3%
CFM Systematic Global Macro	\$86,560,133	1.4%
Graham Quant Macro	\$96,681,912	1.6%
PIMCO MAARS Fund LP	\$91,166,507	1.5%
Harrison Street Core Property	\$57,607,607	0.9%
Invesco	\$325,828,765	5.4%
Invesco US Val IV	\$2,301,149	0.0%
Invesco US Val V	\$29,199,026	0.5%
PGIM RE US Debt Fund	\$85,885,234	1.4%
Stockbridge Value IV	\$15,380,018	0.3%
Private Real Asset	\$173,978,855	2.9%
SSgA Custom Real Asset	\$432,462,095	7.1%
General Account	\$88,947,131	1.5%
Treasury & LAIF	\$39,775,720	0.7%
Transition Account	\$9	0.0%
Currency Hedge Cash Overlay	\$54,119,371	0.9%
Cash Overlay	\$20,225,028	0.3%
Futures Offsets (SMCE02001)	-\$72,176,295	-1.2%
<b>Total</b>	<b>\$6,088,874,661</b>	<b>100.0%</b>

**Statistics Summary**

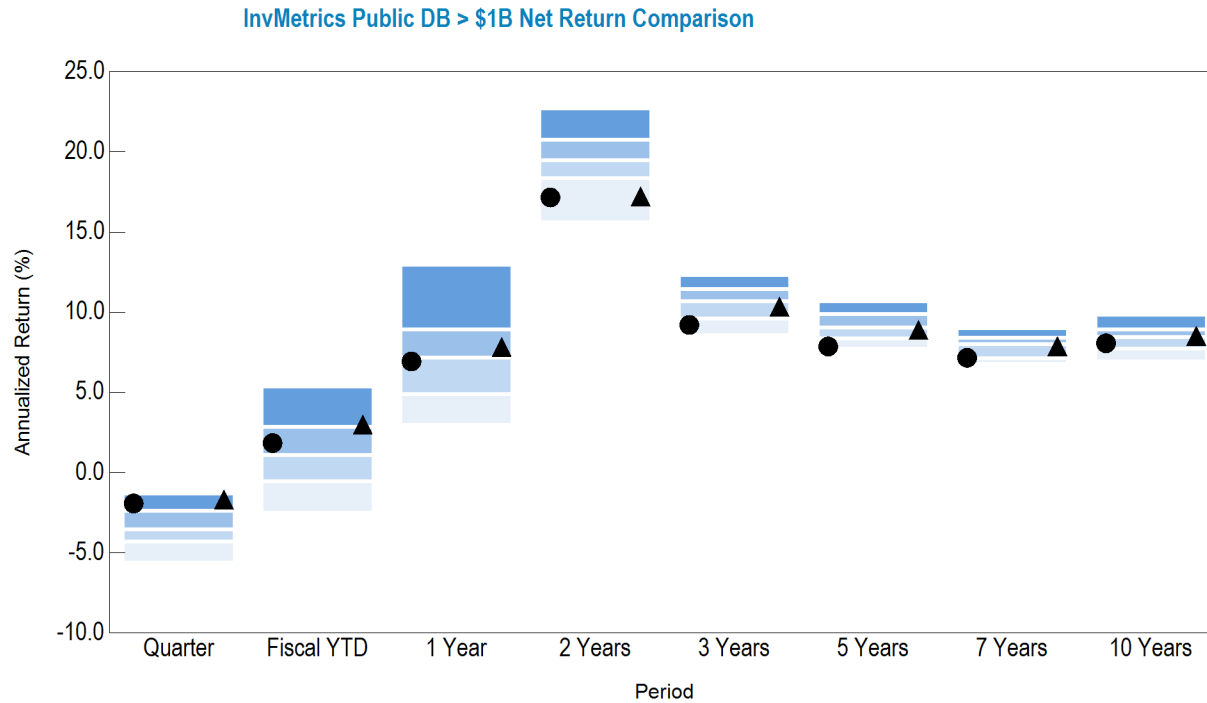
**3 Years**

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
Total Fund	9.2%	87	9.0%	31	1.0	52	-0.5	87	2.3%	57
Policy Index	10.3%	59	8.8%	27	1.1	31	--	--	0.0%	1
InvMetrics Public DB > \$1B Net Median	10.7%	--	10.2%	--	1.0	--	0.0	--	1.9%	--

**Statistics Summary**

**5 Years**

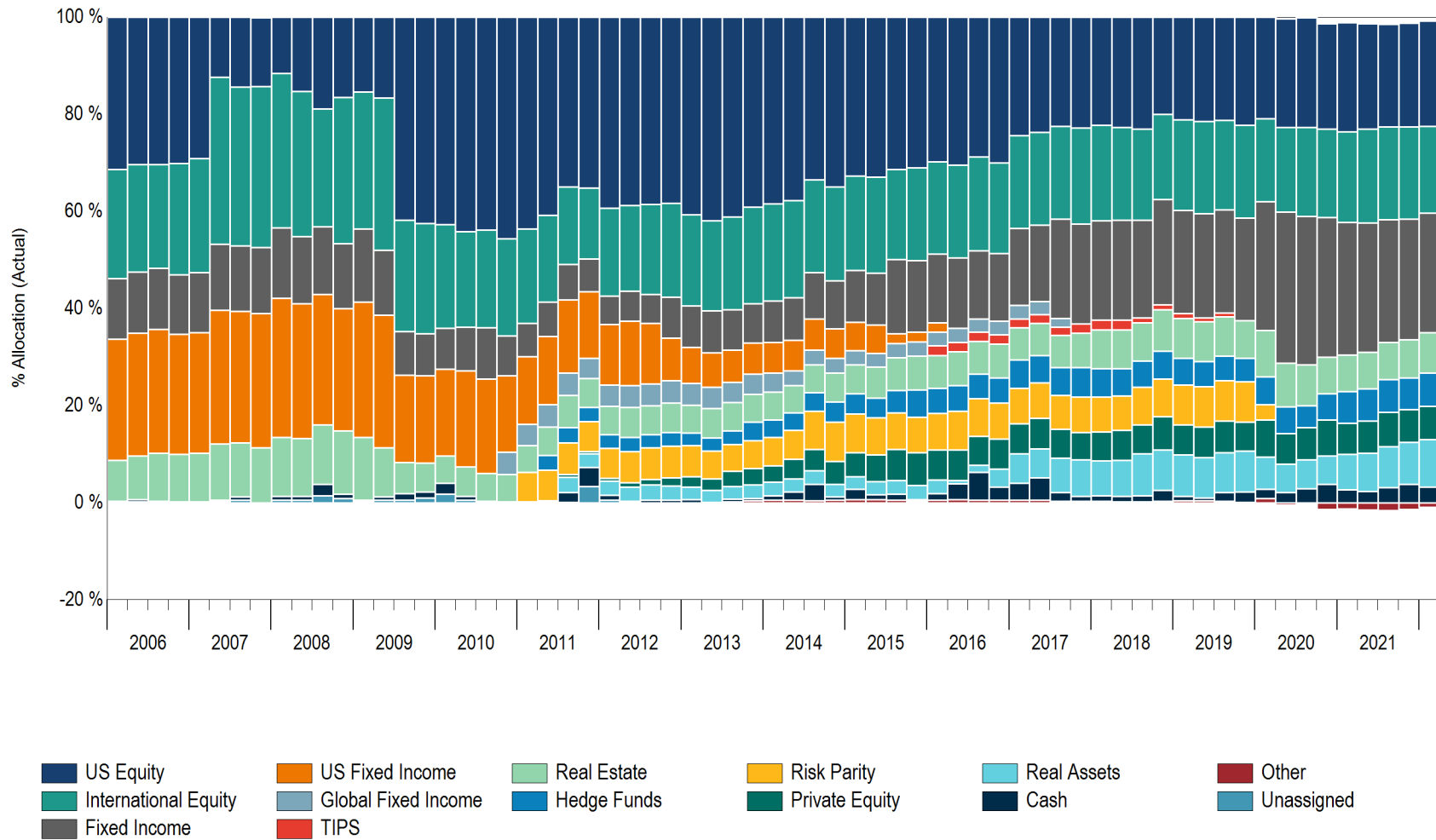
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
Total Fund	7.9%	94	7.9%	31	0.9	54	-0.6	92	1.9%	57
Policy Index	8.9%	59	7.8%	28	1.0	34	--	--	0.0%	1
InvMetrics Public DB > \$1B Net Median	9.1%	--	9.0%	--	0.9	--	0.0	--	1.7%	--



	Quarter	Fiscal YTD	1 Year	2 Years	3 Years	5 Years	7 Years	10 Years
<b>5th Percentile</b>	-1.3	5.4	12.9	22.7	12.3	10.7	9.0	9.8
<b>25th Percentile</b>	-2.4	2.9	8.9	20.8	11.5	9.9	8.4	8.9
<b>Median</b>	-3.5	1.1	7.2	19.5	10.7	9.1	8.0	8.5
<b>75th Percentile</b>	-4.3	-0.5	4.9	18.4	9.6	8.4	7.2	7.8
<b>95th Percentile</b>	-5.6	-2.5	3.0	15.6	8.6	7.7	6.8	6.9
<b># of Portfolios</b>	62	61	61	61	61	61	60	56
<b>● Total Fund</b>	-1.9 (17)	1.8 (37)	6.9 (54)	17.2 (89)	9.2 (87)	7.9 (94)	7.2 (75)	8.1 (62)
<b>▲ Policy Index</b>	-1.7 (12)	3.0 (24)	7.8 (39)	17.2 (88)	10.3 (59)	8.9 (59)	7.9 (57)	8.5 (47)

Total Fund  
Asset Allocation History

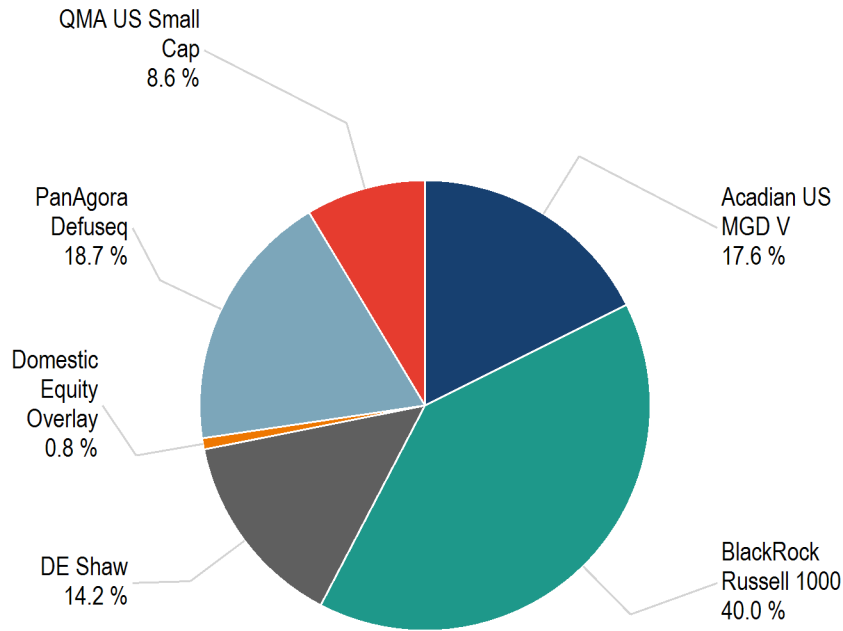
Period Ending: March 31, 2022





US Equity  
 Manager Allocation Analysis

Period Ending: March 31, 2022



	Actual \$	Actual %	Manager Contribution to Excess Return %
Acadian US MGD V	\$235,589,954	17.6%	0.0%
BlackRock Russell 1000	\$536,115,248	40.0%	0.0%
DE Shaw	\$190,699,624	14.2%	0.3%
PanAgora Defuseq	\$250,659,395	18.7%	0.8%
QMA US Small Cap	\$114,960,919	8.6%	0.2%
Domestic Equity Overlay	\$11,084,273	0.8%	0.0%
Actual vs. Policy Weight Difference			0.2%
<b>Total</b>	<b>\$1,339,109,412</b>	<b>100.0%</b>	<b>1.4%</b>

**Statistics Summary**

**3 Years**

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
US Equity	15.7%	17.8%	0.8	-1.3	2.0%
Blended US Equity Index	18.2%	18.5%	1.0	--	0.0%
Russell 3000	18.2%	18.5%	1.0	--	0.0%

Statistics Summary

3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Large Cap Equity	16.0%	17.4%	0.9	-1.3	2.0%
Russell 1000	18.7%	18.3%	1.0	--	0.0%
Acadian US MGD V	10.7%	16.5%	0.6	-1.5	5.3%
Russell 1000	18.7%	18.3%	1.0	--	0.0%
BlackRock Russell 1000	18.7%	18.3%	1.0	-0.3	0.0%
Russell 1000	18.7%	18.3%	1.0	--	0.0%
DE Shaw	17.1%	18.7%	0.9	-0.5	3.0%
Russell 1000	18.7%	18.3%	1.0	--	0.0%
PanAgora Defuseq	12.2%	16.0%	0.7	-0.9	7.0%
Russell 1000	18.7%	18.3%	1.0	--	0.0%
Small Cap Equity	10.5%	25.1%	0.4	-0.2	5.7%
Russell 2000	11.7%	23.7%	0.5	--	0.0%
QMA US Small Cap	10.5%	25.1%	0.4	-0.2	5.7%
Russell 2000	11.7%	23.7%	0.5	--	0.0%

**Statistics Summary**

**5 Years**

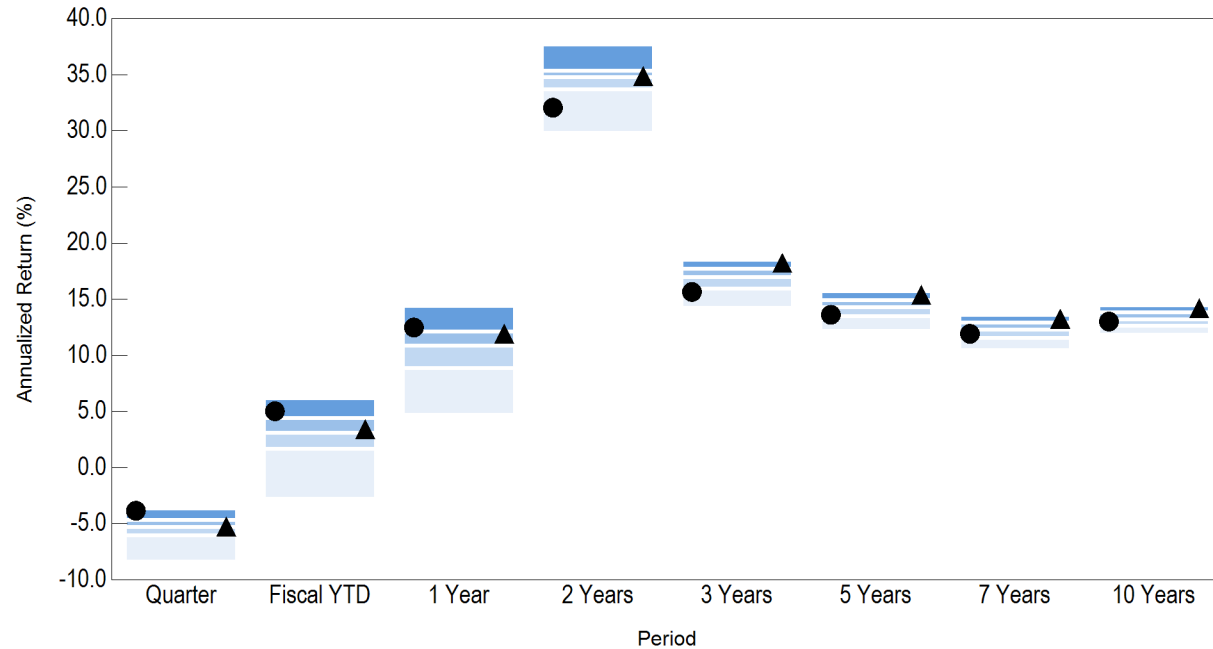
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
US Equity	13.6%	15.8%	0.8	-1.1	1.7%
Blended US Equity Index	15.4%	16.4%	0.9	--	0.0%
Russell 3000	15.4%	16.4%	0.9	--	0.0%

**Statistics Summary**

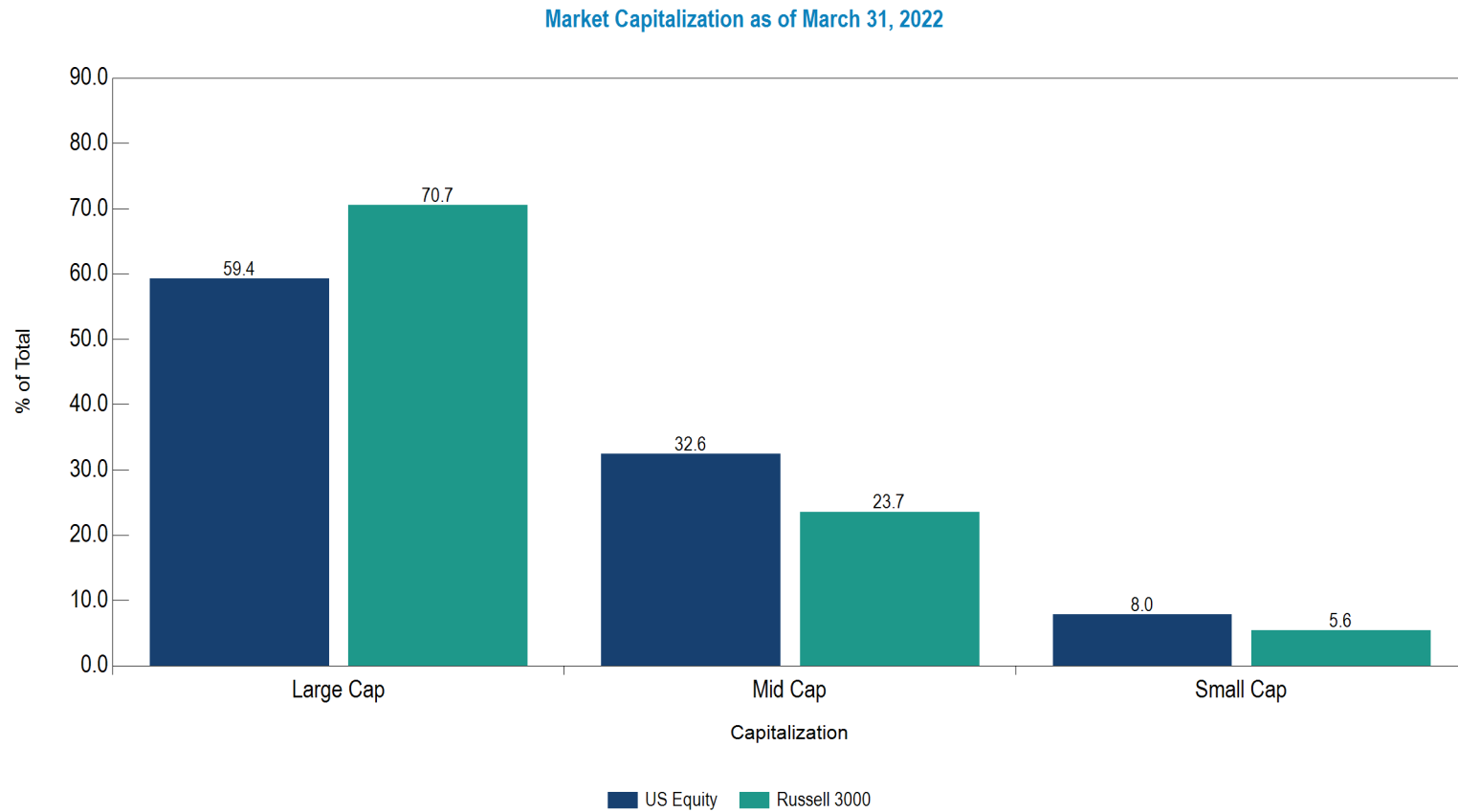
**5 Years**

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Large Cap Equity	14.3%	15.4%	0.9	-0.9	1.7%
Russell 1000	15.8%	16.2%	0.9	--	0.0%
BlackRock Russell 1000	15.8%	16.2%	0.9	0.2	0.0%
Russell 1000	15.8%	16.2%	0.9	--	0.0%
DE Shaw	15.0%	16.2%	0.9	-0.3	2.9%
Russell 1000	15.8%	16.2%	0.9	--	0.0%
Small Cap Equity	7.8%	22.0%	0.3	-0.4	4.6%
Russell 2000	9.7%	21.2%	0.4	--	0.0%
QMA US Small Cap	7.8%	22.0%	0.3	-0.4	4.6%
Russell 2000	9.7%	21.2%	0.4	--	0.0%

InvMetrics All DB US Eq Net Return Comparison



	Return (Rank)							
	Quarter	Fiscal YTD	1 Year	2 Years	3 Years	5 Years	7 Years	10 Years
5th Percentile	-3.7	6.2	14.4	37.7	18.5	15.7	13.6	14.5
25th Percentile	-4.6	4.4	12.2	35.4	17.7	15.0	12.9	13.9
Median	-5.3	3.1	10.9	34.8	17.0	14.3	12.3	13.3
75th Percentile	-6.0	1.7	8.9	33.7	16.0	13.5	11.6	12.7
95th Percentile	-8.4	-2.8	4.7	29.8	14.3	12.2	10.5	11.9
# of Portfolios	333	330	330	328	325	312	290	232
● US Equity	-3.9 (8)	5.0 (18)	12.5 (22)	32.1 (90)	15.7 (80)	13.6 (72)	11.9 (63)	13.0 (60)
▲ Blended US Equity Index	-5.3 (50)	3.4 (45)	11.9 (30)	34.9 (43)	18.2 (8)	15.4 (9)	13.3 (15)	14.2 (11)



See appendix for the market capitalization breakpoints.

Characteristics

	Portfolio	Russell 3000
Number of Holdings	3,020	3,040
Weighted Avg. Market Cap. (\$B)	406.1	550.1
Median Market Cap. (\$B)	4.7	2.6
Price To Earnings	19.9	21.6
Price To Book	3.8	4.2
Price To Sales	2.4	2.8
Return on Equity (%)	23.9	24.2
Yield (%)	1.5	1.4

Top Holdings

MICROSOFT CORP	4.1%
APPLE INC	4.1%
ALPHABET INC	2.0%
AMAZON.COM INC	2.0%
TESLA INC	1.3%
ALPHABET INC	1.0%
BERKSHIRE HATHAWAY INC	0.9%
JOHNSON & JOHNSON	0.9%
META PLATFORMS INC	0.9%
AT&T INC	0.9%

Best Performers

	Return %
NINE ENERGY SERVICE INC (NINE)	274.0%
VOYAGER THERAPEUTICS INC (VYGR)	181.2%
RESONANT INC (RESN)	162.0%
NEXTIER OILFIELD SOLUTIONS INC (NEX)	160.3%
Peabody Energy Corp (BTU)	143.6%
SEACOR MARINE HOLDINGS INC (SMHI)	137.4%
RPC INC. (RES)	135.0%
NEXTDECADE CORP (NEXT)	132.3%
ALPHA METALLURGICAL RESOURCE INC (AMR)	116.2%
EXTERRAN CORP (EXTN)	108.4%

Worst Performers

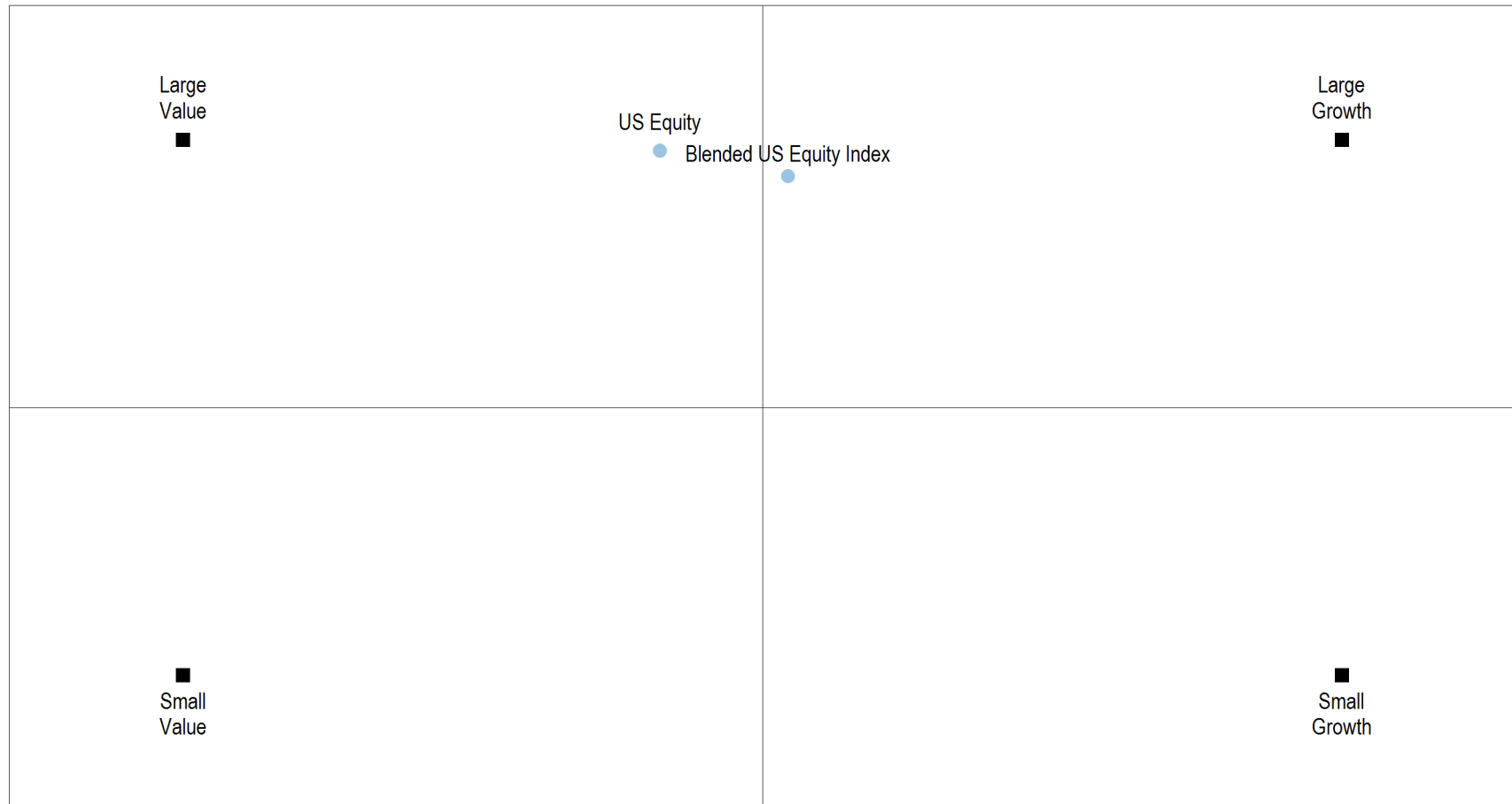
	Return %
KODIAK SCIENCES INC (KOD)	-90.9%
PROQR THERAPEUTICS NV (PRQR)	-88.7%
MEI PHARMA INC (MEIP)	-77.4%
BAUDAX BIO INC (BXRX)	-76.9%
APPLIED THERAPEUTICS INC (APLT)	-76.4%
VROOM INC (VRM)	-75.3%
ACCELERATE DIAGNOSTICS INC (AXDX)	-72.4%
89BIO INC (ETNB)	-71.2%
LOGICBIO THERAPEUTICS INC (LOGC)	-70.6%
SELECTQUOTE INC (SLQT)	-69.2%

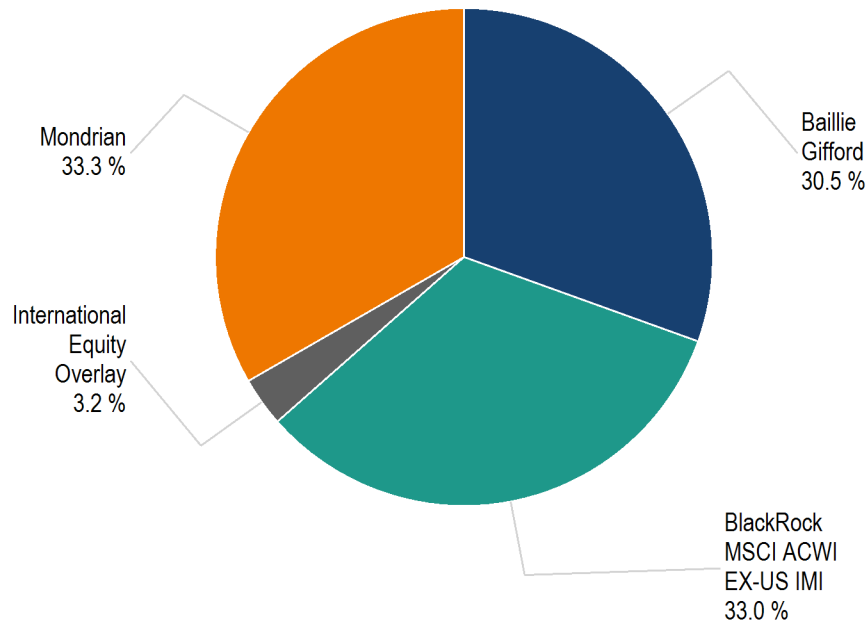


US Equity Performance Attribution vs. Russell 3000

	Attribution Effects				Returns		Sector Weights				
	Total Effects	Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	0.5%	0.0%	0.5%	0.0%	38.9%	38.8%	3.5%	2.4%			
Materials	0.1%	0.0%	0.1%	0.0%	-0.9%	0.0%	4.6%	2.5%			
Industrials	0.0%	0.0%	0.0%	0.0%	-4.4%	-4.1%	8.7%	9.0%			
Consumer Discretionary	-0.1%	-0.1%	0.0%	0.0%	-10.7%	-10.1%	12.1%	12.3%			
Consumer Staples	0.1%	0.0%	0.1%	0.0%	-0.6%	-1.2%	7.8%	5.5%			
Health Care	-0.2%	-0.2%	0.0%	0.0%	-5.5%	-4.4%	13.5%	13.5%			
Financials	0.0%	0.0%	0.0%	0.0%	-2.1%	-2.1%	9.9%	11.3%			
Information Technology	0.3%	0.2%	0.2%	0.0%	-8.6%	-9.1%	23.4%	28.4%			
Communication Services	0.3%	0.3%	0.0%	0.0%	-9.2%	-12.1%	9.3%	9.2%			
Utilities	0.2%	0.0%	0.1%	0.0%	5.4%	4.3%	3.7%	2.5%			
Real Estate	0.0%	0.0%	0.0%	0.0%	-5.7%	-6.0%	3.2%	3.6%			
Cash	0.0%	0.0%	0.0%	0.0%	0.0%	--	0.2%	0.0%			
Unclassified	0.0%	0.0%	0.0%	0.0%	-5.2%	--	0.1%	0.0%			
<b>Portfolio</b>	<b>1.2%</b>	<b>=</b>	<b>0.2%</b>	<b>+</b>	<b>1.0%</b>	<b>+</b>	<b>0.0%</b>	<b>-4.2%</b>	<b>-5.4%</b>	<b>100.0%</b>	<b>100.0%</b>

U.S. Effective Style Map





	Actual \$	Actual %	Manager Contribution to Excess Return %
Baillie Gifford	\$339,506,917	30.5%	-4.0%
Mondrian	\$370,312,212	33.3%	-0.8%
BlackRock MSCI ACWI EX-US IMI	\$367,169,486	33.0%	0.0%
International Equity Overlay	\$36,126,694	3.2%	0.0%
Actual vs. Policy Weight Difference			2.0%
<b>Total</b>	<b>\$1,113,115,309</b>	<b>100.0%</b>	<b>-2.9%</b>

**Statistics Summary**

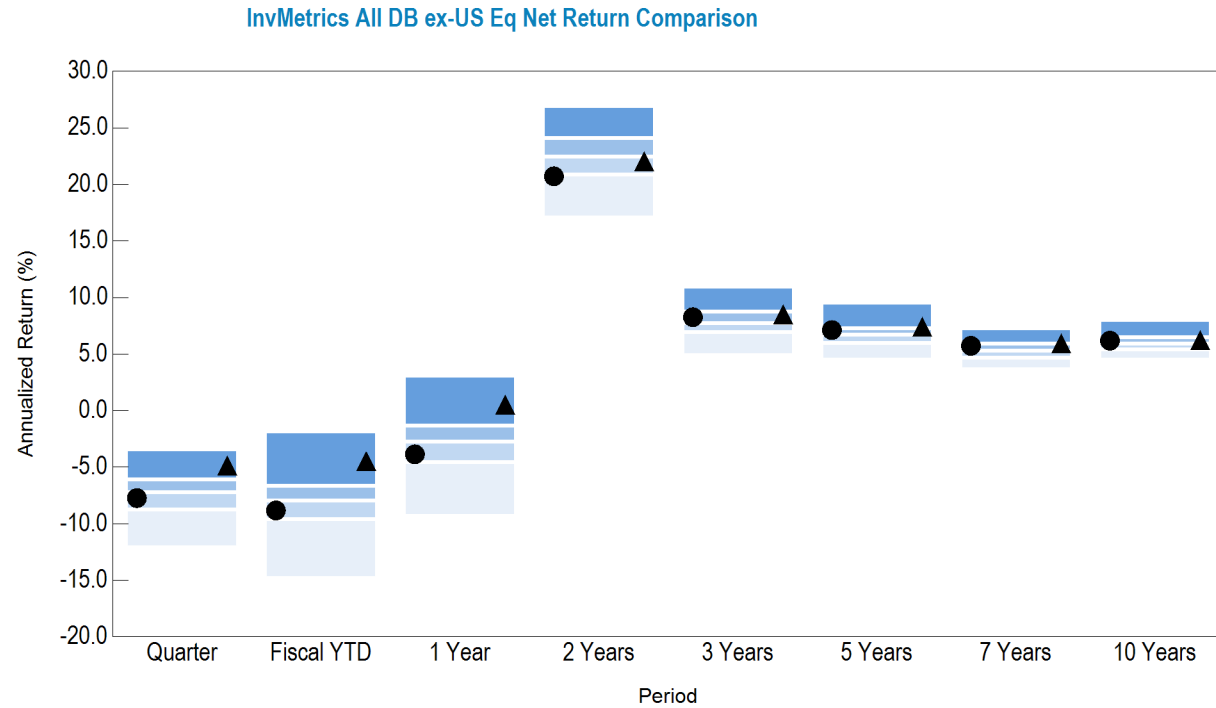
**3 Years**

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
International Equity	8.3%	16.0%	0.5	-0.1	1.9%
Blended International Equity Index	8.5%	15.7%	0.5	--	0.0%
Baillie Gifford	10.2%	18.9%	0.5	0.3	8.3%
MSCI ACWI ex US	8.0%	16.9%	0.4	--	0.0%
Mondrian	4.4%	18.6%	0.2	-0.6	2.8%
MSCI ACWI ex USA Value Gross	6.1%	19.5%	0.3	--	0.0%

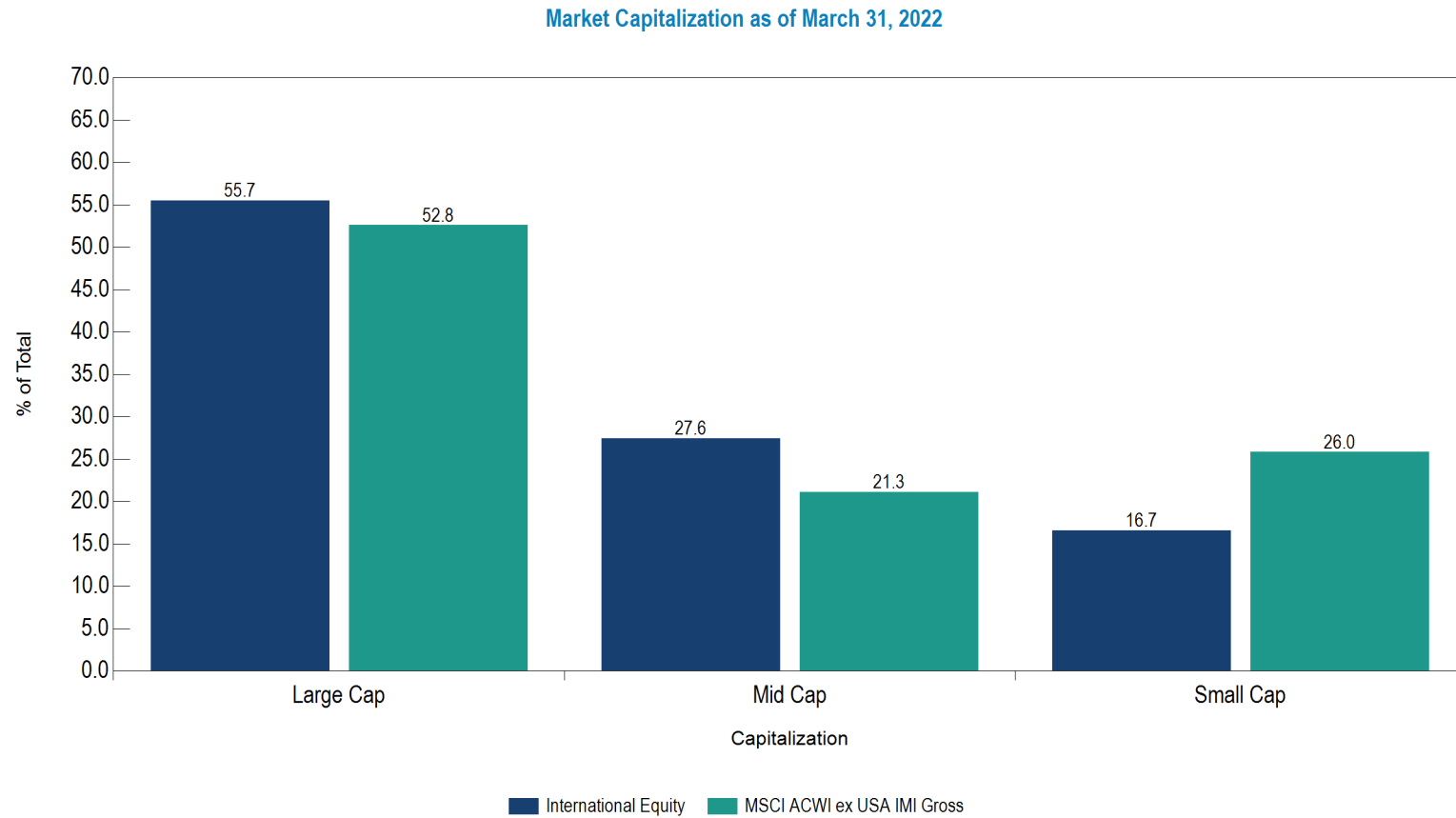
Statistics Summary

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
International Equity	7.1%	14.2%	0.4	-0.2	1.7%
Blended International Equity Index	7.4%	14.1%	0.4	--	0.0%
Baillie Gifford	8.6%	16.8%	0.5	0.2	7.1%
MSCI ACWI ex US	7.3%	14.9%	0.4	--	0.0%
Mondrian	4.4%	15.9%	0.2	-0.3	2.9%
MSCI ACWI ex USA Value Gross	5.3%	16.7%	0.3	--	0.0%



	Return (Rank)							
	Quarter	Fiscal YTD	1 Year	2 Years	3 Years	5 Years	7 Years	10 Years
5th Percentile	-3.4	-1.9	3.0	26.9	10.9	9.5	7.3	8.0
25th Percentile	-6.1	-6.6	-1.3	24.1	8.8	7.3	6.0	6.5
Median	-7.2	-7.9	-2.7	22.5	7.7	6.7	5.4	6.0
75th Percentile	-8.7	-9.6	-4.5	20.9	7.0	6.0	4.7	5.4
95th Percentile	-12.1	-14.8	-9.3	17.1	4.9	4.6	3.7	4.5
# of Portfolios	216	214	214	210	209	195	182	147
● International Equity	-7.7 (59)	-8.8 (64)	-3.9 (67)	20.7 (80)	8.3 (34)	7.1 (30)	5.7 (29)	6.2 (41)
▲ Blended International Equity Index	-4.9 (11)	-4.5 (10)	0.5 (14)	22.0 (56)	8.5 (30)	7.4 (25)	5.9 (26)	6.2 (40)



See appendix for the market capitalization breakpoints.

Characteristics

	Portfolio	MSCI ACWI ex USA IMI Gross
Number of Holdings	6,711	6,640
Weighted Avg. Market Cap. (\$B)	78.8	81.0
Median Market Cap. (\$B)	2.0	1.8
Price To Earnings	15.0	13.9
Price To Book	2.6	2.5
Price To Sales	1.4	1.4
Return on Equity (%)	15.2	14.6
Yield (%)	2.5	2.8

Top Holdings

UNITED OVERSEAS BANK LTD	1.6%
TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	1.4%
ASML HOLDING NV	1.4%
TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	1.3%
SANOFI	1.1%
HOUSING DEVELOPMENT FINANCE CORP LTD	1.1%
CK HUTCHISON HOLDINGS LTD	1.1%
NOVARTIS AG	1.0%
BANCO SANTANDER SA	0.9%
GLAXOSMITHKLINE PLC	0.9%

Best Performers

	Return %
THUNGELA RES LTD NPV	137.3%
THONBURI HEALTHCARE GROUP PUBLIC COMPANY LIMITED	126.6%
JASTRZEBSKA SPOLKA WEGLOWA SA	115.1%
HENSOLDT AG	106.7%
ERAMET SA	103.1%
SAYONA MINING LTD	90.5%
GUJARAT NARMADA VALLEY FERTILIZERS CO LTD	88.1%
TURQUOISE HILL RESOURCES LTD (TRQ.)	82.9%
ENAUTA PARTICIPACOES SA	82.7%
ADANI POWER LTD	82.3%

Worst Performers

	Return %
MAGNIT PJSC	-99.9%
PUBLIC JOINT STOCK COMPANY PHOSAGRO	-99.8%
NOVATEK JSC	-99.7%
SBERBANK OF RUSSIA OJSC	-99.7%
OIL CO LUKOIL PJSC	-99.2%
EVRAZ PLC	-86.9%
ZHENRO PPT ORD (6158)	-83.6%
PETROPAVLOVSK PLC	-79.7%
POLYMETAL INTERNATIONAL PLC	-77.3%
INTERNATIONAL GREETINGS (UKIR:IGR)	-74.6%



International Equity Performance Attribution vs. MSCI ACWI ex USA IMI Gross

	Attribution Effects				Returns		Sector Weights				
	Total Effects	Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	-0.4%	-0.3%	-0.2%	0.0%	6.5%	13.5%	3.0%	4.3%			
Materials	-0.6%	-0.6%	-0.3%	0.2%	-1.6%	5.1%	5.2%	8.3%			
Industrials	-0.4%	-0.3%	0.0%	-0.1%	-11.0%	-8.2%	14.7%	13.8%			
Consumer Discretionary	-0.9%	-0.4%	-0.3%	-0.2%	-17.5%	-14.1%	15.8%	12.2%			
Consumer Staples	0.1%	0.0%	0.0%	0.0%	-6.4%	-6.9%	7.7%	8.2%			
Health Care	0.0%	0.0%	0.0%	0.0%	-6.2%	-6.2%	10.2%	9.1%			
Financials	-0.1%	0.2%	-0.3%	-0.1%	2.4%	1.7%	13.8%	18.0%			
Information Technology	-0.5%	-0.2%	-0.2%	-0.1%	-16.2%	-14.7%	15.5%	13.5%			
Communication Services	-0.4%	-0.2%	0.0%	-0.2%	-10.2%	-5.8%	8.1%	5.9%			
Utilities	0.0%	0.0%	0.0%	0.0%	-2.9%	-1.6%	3.5%	3.1%			
Real Estate	0.0%	0.0%	0.0%	0.0%	-1.7%	-3.6%	1.5%	3.6%			
Cash	0.0%	0.0%	0.0%	0.0%	0.0%	--	1.1%	0.0%			
Unclassified	0.0%	--	--	--	--	--	0.0%	0.0%			
<b>Portfolio</b>	<b>-3.3%</b>	<b>=</b>	<b>-1.8%</b>	<b>+</b>	<b>-1.2%</b>	<b>+</b>	<b>-0.3%</b>	<b>-8.5%</b>	<b>-5.2%</b>	<b>100.0%</b>	<b>100.0%</b>

Int'l Equity Performance Attribution vs. MSCI ACWI ex USA IMI Gross

	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>Europe</b>									
Austria	-16.1%	-16.3%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Belgium	-4.2%	-4.8%	0.2%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
Czech Republic*	3.0%	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Denmark	-6.6%	-6.9%	0.8%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%
Finland	-12.7%	-13.5%	0.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
France	-6.5%	-8.8%	6.2%	6.8%	0.2%	0.0%	0.0%	0.0%	0.2%
Germany	-23.2%	-12.6%	4.5%	5.4%	-0.6%	0.1%	0.0%	0.1%	-0.4%
Greece*	0.9%	1.3%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Hungary*	-19.0%	-19.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Ireland	-18.9%	-17.6%	0.3%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Italy	-6.6%	-10.4%	2.4%	1.7%	0.1%	0.0%	0.0%	0.0%	0.0%
Luxembourg	-30.7%	-4.8%	0.5%	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%
Netherlands	-13.7%	-16.3%	3.6%	2.9%	0.1%	-0.1%	0.0%	0.0%	0.0%
Norway	4.8%	5.2%	0.2%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Poland*	-9.4%	-9.7%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Portugal	5.3%	2.8%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Russia	-62.9%	-42.2%	0.5%	0.0%	0.0%	-0.2%	0.0%	-0.1%	-0.3%
Spain	-7.8%	-3.8%	1.8%	1.4%	-0.1%	0.0%	0.0%	0.0%	-0.1%
Sweden	-17.7%	-16.1%	3.3%	2.9%	0.0%	0.0%	0.0%	0.0%	-0.1%
Switzerland	-5.6%	-6.6%	3.8%	6.3%	0.1%	0.1%	0.0%	0.0%	0.1%
United Kingdom	-9.5%	-2.3%	12.1%	9.4%	-0.7%	0.1%	0.0%	-0.2%	-0.8%

Int'l Equity Performance Attribution vs. MSCI ACWI ex USA IMI Gross

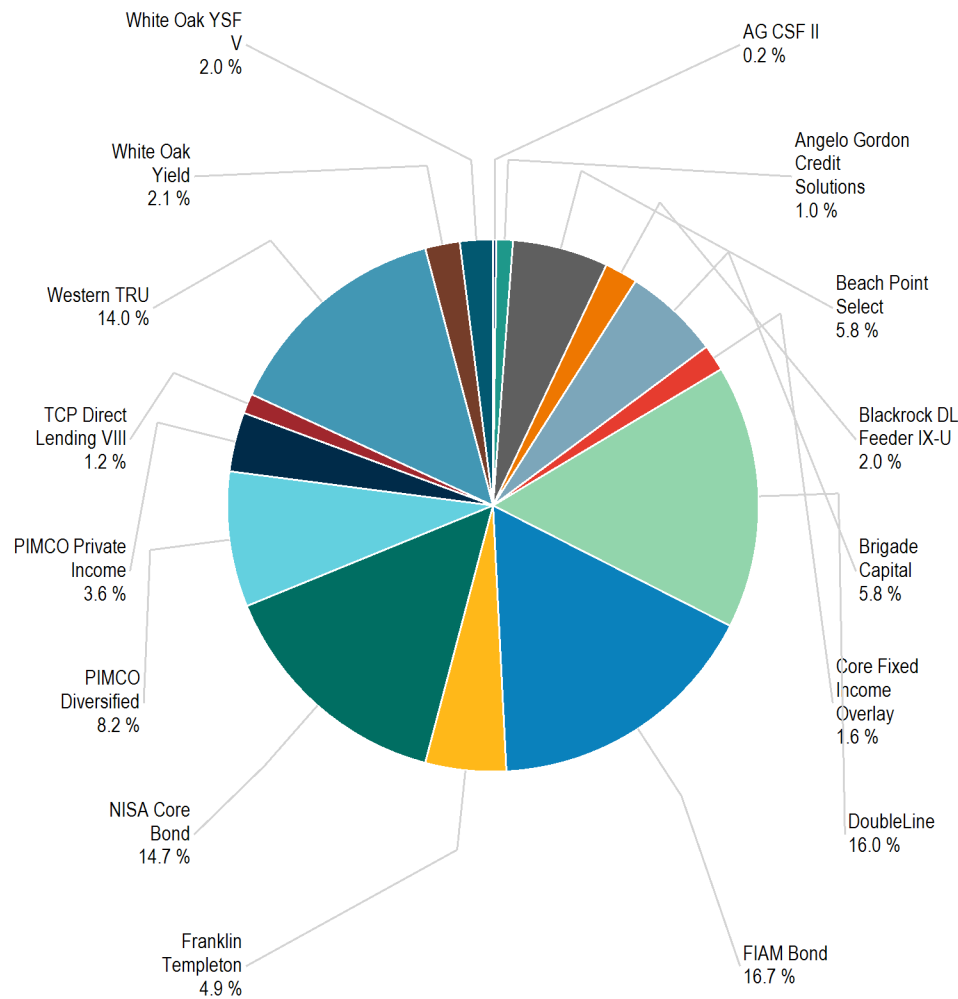
	Returns and Weights				Attribution Effects				Total Effects	
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect		
<b>AsiaPacific</b>										
Australia	6.6%	5.7%	2.1%	4.7%	0.0%	-0.2%	-0.1%	0.0%	-0.2%	
China*	-13.4%	-14.3%	8.3%	8.5%	0.1%	0.0%	0.0%	0.0%	0.1%	
Hong Kong	-2.5%	-2.3%	3.9%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	
India*	-5.3%	-2.7%	4.2%	3.9%	-0.1%	0.0%	0.0%	0.0%	-0.1%	
Indonesia*	14.1%	8.6%	0.4%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	
Japan	-10.7%	-6.7%	19.4%	15.1%	-0.6%	0.1%	-0.2%	-0.2%	-0.9%	
Korea*	-8.7%	-9.5%	2.9%	3.8%	0.0%	0.0%	0.0%	0.0%	0.1%	
Malaysia*	0.1%	0.0%	0.2%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	
New Zealand	-22.5%	-5.6%	0.6%	0.2%	0.0%	0.0%	0.0%	-0.1%	-0.1%	
Philippines*	2.6%	2.1%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
Singapore	15.2%	2.1%	1.6%	0.9%	0.1%	0.0%	0.0%	0.1%	0.2%	
Taiwan*	-7.4%	-6.4%	4.8%	4.9%	-0.1%	0.0%	0.0%	0.0%	0.0%	
Thailand*	5.6%	2.5%	0.3%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	
<b>Americas</b>										
Argentina*	-11.8%	18.8%	0.5%	0.0%	0.0%	0.1%	0.0%	-0.1%	0.0%	
Brazil*	31.9%	34.4%	1.2%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
Canada	-5.9%	5.1%	3.9%	7.4%	-0.8%	-0.3%	-0.1%	0.4%	-0.7%	
Chile*	26.1%	26.4%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
Colombia*	30.8%	30.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Mexico*	11.3%	9.2%	0.5%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	
Peru*	37.6%	34.7%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
United States	-23.2%	-5.3%	1.3%	0.0%	0.0%	0.0%	0.0%	-0.2%	-0.2%	

Int'l Equity Performance Attribution vs. MSCI ACWI ex USA IMI Gross

	Returns and Weights				Attribution Effects				Total Effects
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	
<b>Other</b>									
Egypt*	-20.7%	-21.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Israel	-4.2%	-4.4%	0.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
Kuwait*	19.2%	19.1%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Qatar*	17.7%	17.8%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Saudi Arabia*	16.6%	16.6%	0.3%	0.9%	0.0%	-0.1%	0.0%	0.0%	-0.1%
South Africa*	-5.6%	19.3%	0.7%	0.9%	-0.2%	0.0%	0.0%	0.0%	-0.2%
Turkey*	11.0%	10.8%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
United Arab Emirates*	19.6%	19.5%	0.1%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Totals</b>									
Americas	-1.5%	9.6%	7.4%	9.4%	-1.0%	-0.2%	-0.1%	0.2%	-1.1%
Europe	-11.6%	-8.3%	41.1%	41.8%	-1.4%	0.0%	0.0%	0.0%	-1.3%
Asia/Pacific	-7.8%	-6.0%	48.7%	45.3%	-0.7%	0.0%	-0.2%	-0.1%	-1.0%
Other	3.3%	12.9%	1.6%	3.4%	-0.4%	-0.3%	0.0%	0.2%	-0.4%
Cash	0.0%	--	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Total</b>	<b>-8.6%</b>	<b>-4.8%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>-3.5%</b>	<b>-0.4%</b>	<b>-0.3%</b>	<b>0.4%</b>	<b>-3.8%</b>
<b>Totals</b>									
Developed	-9.4%	-5.3%	73.4%	72.2%	-2.7%	0.0%	-0.3%	0.0%	-3.0%
Emerging*	-6.7%	-3.5%	25.5%	27.8%	-0.9%	0.0%	0.0%	0.1%	-0.8%
Cash	0.0%	--	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

# Fixed Income Manager Allocation Analysis

Period Ending: March 31, 2022



	Actual \$	Actual %	Manager Contribution to Excess Return %
AG CSF Annex Dislocation Fund	\$20,275	0.0%	0.0%
AG CSF II	\$3,044,600	0.2%	0.0%
Angelo Gordon Credit Solutions	\$15,295,500	1.0%	0.1%
Angelo Gordon Opportunistic	\$571,499	0.0%	0.0%
Beach Point Select	\$87,978,817	5.8%	0.3%
Blackrock DL Feeder IX-U	\$30,760,217	2.0%	0.0%
Brigade Capital	\$89,248,962	5.8%	0.2%
DoubleLine	\$244,520,678	16.0%	0.0%
FIAM Bond	\$254,916,902	16.7%	0.1%
Franklin Templeton	\$75,310,499	4.9%	0.3%
NISA Core Bond	\$224,476,819	14.7%	0.0%
PIMCO Diversified	\$125,224,436	8.2%	0.0%
PIMCO Private Income	\$54,280,170	3.6%	0.2%
TCP Direct Lending VIII	\$18,162,589	1.2%	0.0%
Western TRU	\$214,321,456	14.0%	-1.2%
White Oak Yield	\$32,110,313	2.1%	0.0%
White Oak YSF V	\$30,510,747	2.0%	0.0%
Core Fixed Income Overlay	\$24,965,328	1.6%	0.0%
Actual vs. Policy Weight Difference			1.3%
<b>Total</b>	<b>\$1,525,719,807</b>	<b>100.0%</b>	<b>1.1%</b>

Statistics Summary

3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Fixed Income	3.0%	3.9%	0.6	0.3	1.8%
Blended Fixed Income Index	2.5%	4.5%	0.4	--	0.0%
Core Fixed	1.7%	3.8%	0.3	0.0	1.5%
Bloomberg US Aggregate TR	1.7%	4.0%	0.3	--	0.0%
FIAM Bond	3.0%	4.5%	0.5	0.8	1.5%
Bloomberg US Aggregate TR	1.7%	4.0%	0.3	--	0.0%
Western TRU	0.7%	7.1%	0.0	0.0	7.1%
3-Month Libor Total Return USD	0.9%	0.3%	0.8	--	0.0%
Opportunistic Credit	5.3%	6.7%	0.7	0.2	4.4%
Bloomberg BA Intermediate HY	4.4%	8.0%	0.5	--	0.0%
Angelo Gordon Opportunistic	8.3%	20.1%	0.4	0.3	19.9%
Bloomberg US Aggregate TR	1.7%	4.0%	0.3	--	0.0%
Beach Point Select	11.2%	8.7%	1.2	1.3	5.3%
Bloomberg BA Intermediate HY	4.4%	8.0%	0.5	--	0.0%
Brigade Capital	7.1%	12.0%	0.5	0.4	7.1%
Bloomberg BA Intermediate HY	4.4%	8.0%	0.5	--	0.0%
PIMCO Diversified	1.9%	7.2%	0.2	-0.4	1.2%
Blended PIMCO Diversified Index	2.4%	8.0%	0.2	--	0.0%
Franklin Templeton	-3.6%	5.4%	-0.8	-0.7	6.6%
Bloomberg Multiverse TR	0.8%	5.0%	0.0	--	0.0%

**Statistics Summary**

**3 Years**

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Private Credit	6.7%	4.2%	1.4	-0.8	2.6%
Cliffwater Direct Lending Index	8.9%	5.8%	1.4	--	0.0%
TCP Direct Lending VIII	6.1%	3.0%	1.8	-0.6	4.9%
Cliffwater Direct Lending Index	8.9%	5.8%	1.4	--	0.0%
White Oak Yield	5.4%	2.9%	1.6	-0.9	3.7%
Cliffwater Direct Lending Index	8.9%	5.8%	1.4	--	0.0%

Fixed Income  
Risk vs. Return (5 Years)

Period Ending: March 31, 2022

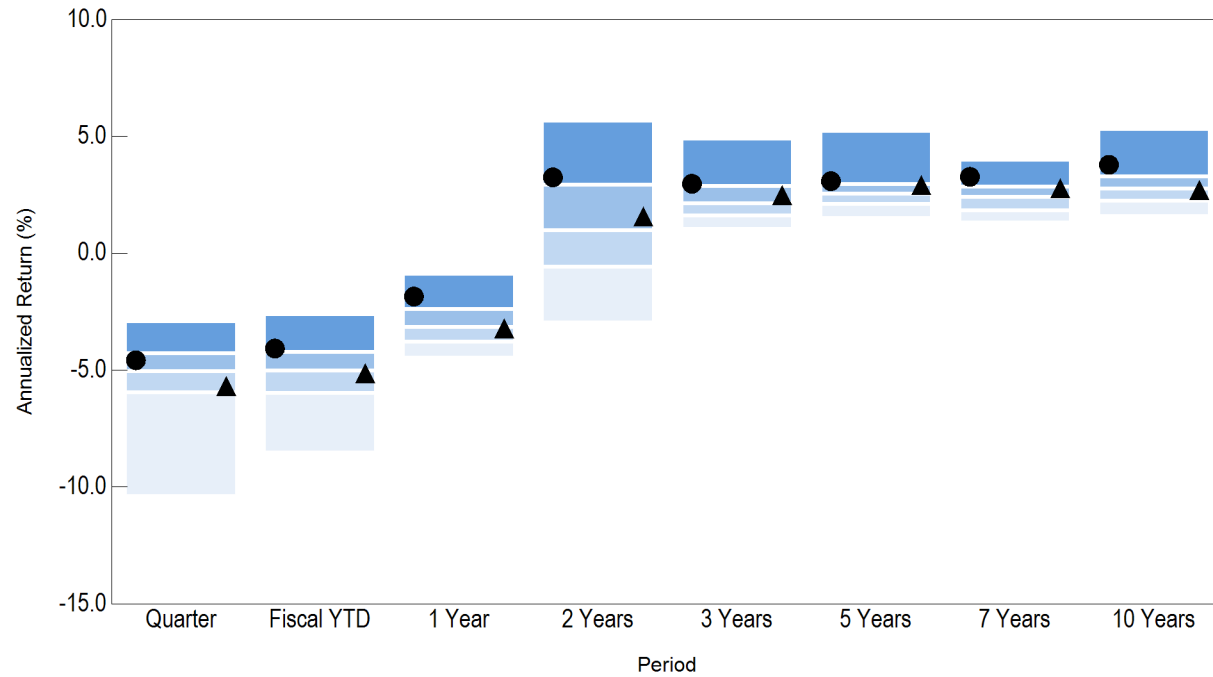
Statistics Summary

5 Years

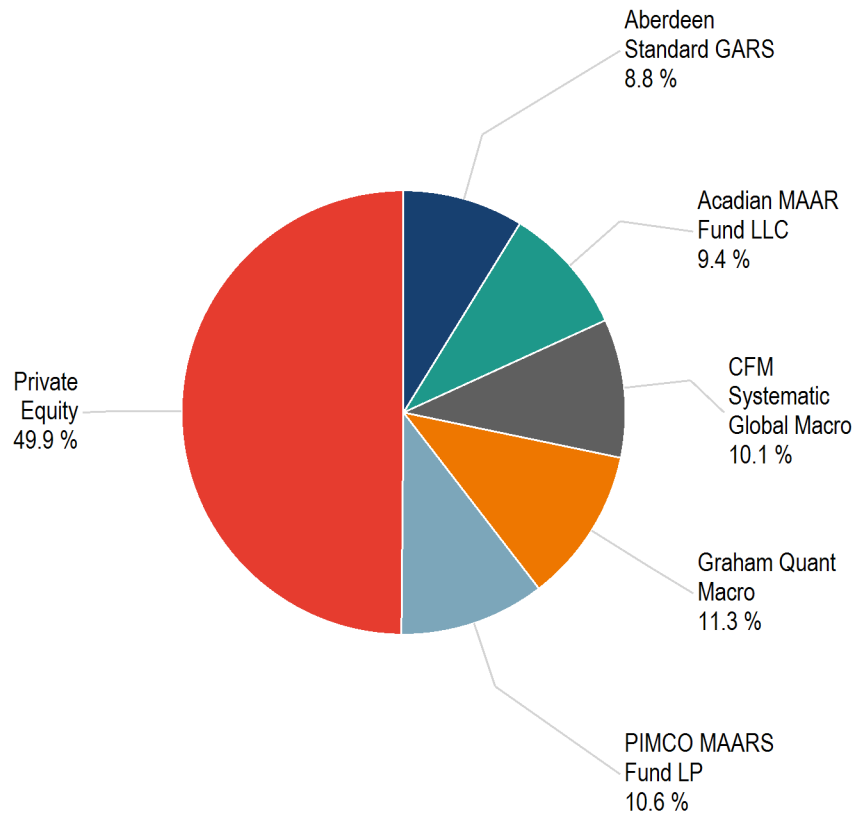
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Fixed Income	3.1%	3.2%	0.6	0.1	1.7%
Blended Fixed Income Index	2.9%	3.8%	0.5	--	0.0%
Core Fixed	2.1%	3.2%	0.3	0.0	1.3%
Bloomberg US Aggregate TR	2.1%	3.6%	0.3	--	0.0%
FIAM Bond	3.0%	3.8%	0.5	0.7	1.2%
Bloomberg US Aggregate TR	2.1%	3.6%	0.3	--	0.0%
Western TRU	1.7%	5.9%	0.1	0.1	5.9%
3-Month Libor Total Return USD	1.3%	0.3%	1.0	--	0.0%
Opportunistic Credit	5.3%	5.4%	0.8	0.2	3.7%
Bloomberg BA Intermediate HY	4.5%	6.6%	0.5	--	0.0%
Angelo Gordon Opportunistic	11.9%	16.7%	0.6	0.6	16.7%
Bloomberg US Aggregate TR	2.1%	3.6%	0.3	--	0.0%
Beach Point Select	9.0%	7.0%	1.1	1.0	4.4%
Bloomberg BA Intermediate HY	4.5%	6.6%	0.5	--	0.0%
Brigade Capital	5.6%	9.5%	0.5	0.2	5.8%
Bloomberg BA Intermediate HY	4.5%	6.6%	0.5	--	0.0%
Franklin Templeton	-2.1%	5.8%	-0.5	-0.6	6.9%
Bloomberg Multiverse TR	1.8%	4.5%	0.2	--	0.0%
Private Credit	7.0%	3.5%	1.7	-0.6	2.8%
Cliffwater Direct Lending Index	8.8%	5.0%	1.5	--	0.0%
TCP Direct Lending VIII	6.6%	2.5%	2.2	-0.5	4.6%
Cliffwater Direct Lending Index	8.8%	5.0%	1.5	--	0.0%



InvMetrics All DB Total Fix Inc Net Return Comparison



	Return (Rank)							
	Quarter	Fiscal YTD	1 Year	2 Years	3 Years	5 Years	7 Years	10 Years
5th Percentile	-2.9	-2.6	-0.9	5.7	4.9	5.2	4.0	5.3
25th Percentile	-4.3	-4.2	-2.4	2.9	2.9	3.0	2.9	3.3
Median	-5.0	-5.0	-3.1	1.0	2.2	2.6	2.4	2.8
75th Percentile	-5.9	-6.0	-3.8	-0.6	1.6	2.1	1.8	2.3
95th Percentile	-10.4	-8.5	-4.5	-2.9	1.0	1.5	1.3	1.6
# of Portfolios	183	180	180	180	179	169	155	130
● Fixed Income	-4.6 (37)	-4.1 (21)	-1.9 (15)	3.2 (20)	3.0 (23)	3.1 (24)	3.3 (13)	3.8 (13)
▲ Blended Fixed Income Index	-5.7 (70)	-5.1 (55)	-3.2 (54)	1.6 (42)	2.5 (36)	2.9 (29)	2.8 (32)	2.7 (54)



	Actual \$	Actual %	Manager Contribution to Excess Return %
Aberdeen Standard GARS	\$75,149,490	8.8%	-0.6%
Acadian MAAR Fund LLC	\$80,198,158	9.4%	-0.3%
CFM Systematic Global Macro	\$86,560,133	10.1%	0.2%
Graham Quant Macro	\$96,681,912	11.3%	1.2%
PIMCO MAARS Fund LP	\$91,166,507	10.6%	0.1%
Private Equity	\$427,640,222	49.9%	-4.0%
Actual vs. Policy Weight Difference			0.5%
<b>Total</b>	<b>\$857,396,422</b>	<b>100.0%</b>	<b>-3.0%</b>

**Statistics Summary**

**3 Years**

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Alternatives	18.4%	15.1%	1.2	0.2	14.8%
Blended Alternatives Index	16.1%	8.7%	1.8	--	0.0%
Private Equity	37.3%	25.7%	1.4	0.3	25.8%
Blended Private Equity Index	28.8%	17.6%	1.6	--	0.0%
Hedge Fund/Absolute Return	-2.0%	6.9%	-0.4	-1.0	6.9%
Absolute Return Custom Index	4.8%	0.3%	15.0	--	0.0%
Aberdeen Standard GARS	1.3%	5.0%	0.1	-0.7	5.0%
Absolute Return Custom Index	4.8%	0.3%	15.0	--	0.0%

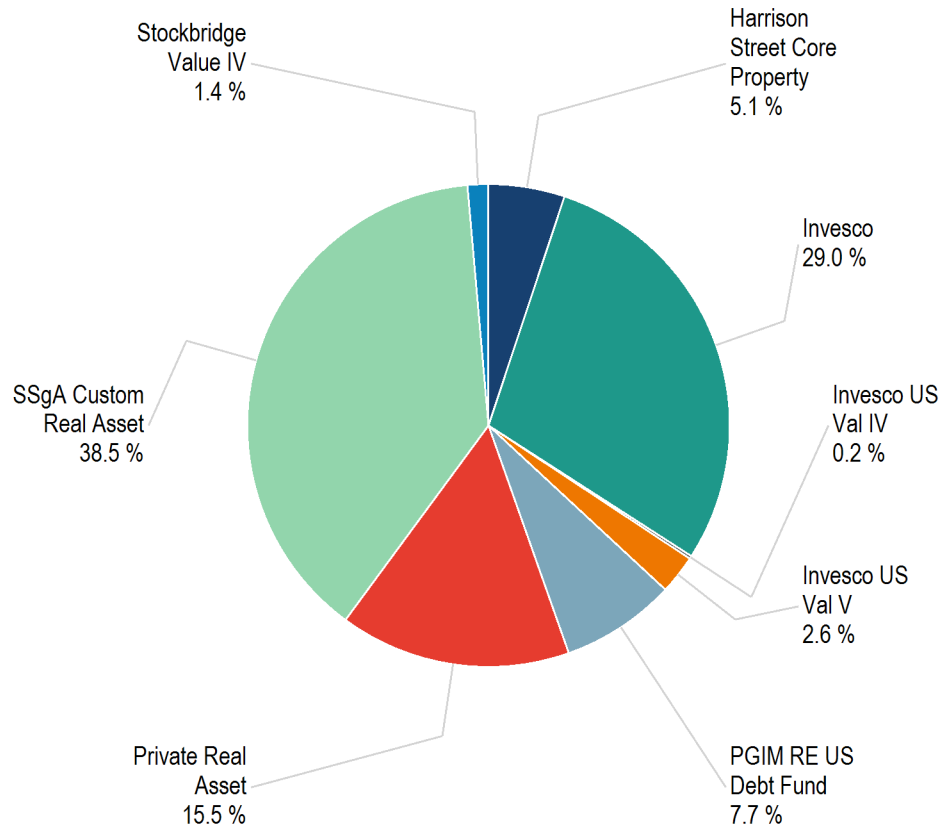
**Statistics Summary**

**5 Years**

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Alternatives	12.2%	12.1%	0.9	0.0	12.0%
Blended Alternatives Index	12.3%	7.8%	1.4	--	0.0%
Private Equity	26.2%	20.5%	1.2	0.3	21.1%
Blended Private Equity Index	19.5%	15.7%	1.2	--	0.0%
Hedge Fund/Absolute Return	-2.8%	6.1%	-0.6	-1.3	6.1%
Absolute Return Custom Index	5.2%	0.3%	15.1	--	0.0%
Aberdeen Standard GARS	1.1%	4.6%	0.0	-0.9	4.6%
Absolute Return Custom Index	5.2%	0.3%	15.1	--	0.0%

Inflation Hedge  
 Manager Allocation Analysis

Period Ending: March 31, 2022



	Actual \$	Actual %	Manager Contribution to Excess Return %
Harrison Street Core Property	\$57,607,607	5.1%	-0.3%
Invesco	\$325,828,765	29.0%	-0.3%
Invesco US Val IV	\$2,301,149	0.2%	0.0%
Invesco US Val V	\$29,199,026	2.6%	-0.1%
PGIM RE US Debt Fund	\$85,885,234	7.7%	-0.5%
Stockbridge Value IV	\$15,380,018	1.4%	-0.1%
Private Real Asset	\$173,978,855	15.5%	-0.3%
SSgA Custom Real Asset	\$432,462,095	38.5%	0.1%
Actual vs. Policy Weight Difference			0.7%
<b>Total</b>	<b>\$1,122,642,748</b>	<b>100.0%</b>	<b>-0.6%</b>

Statistics Summary

3 Years

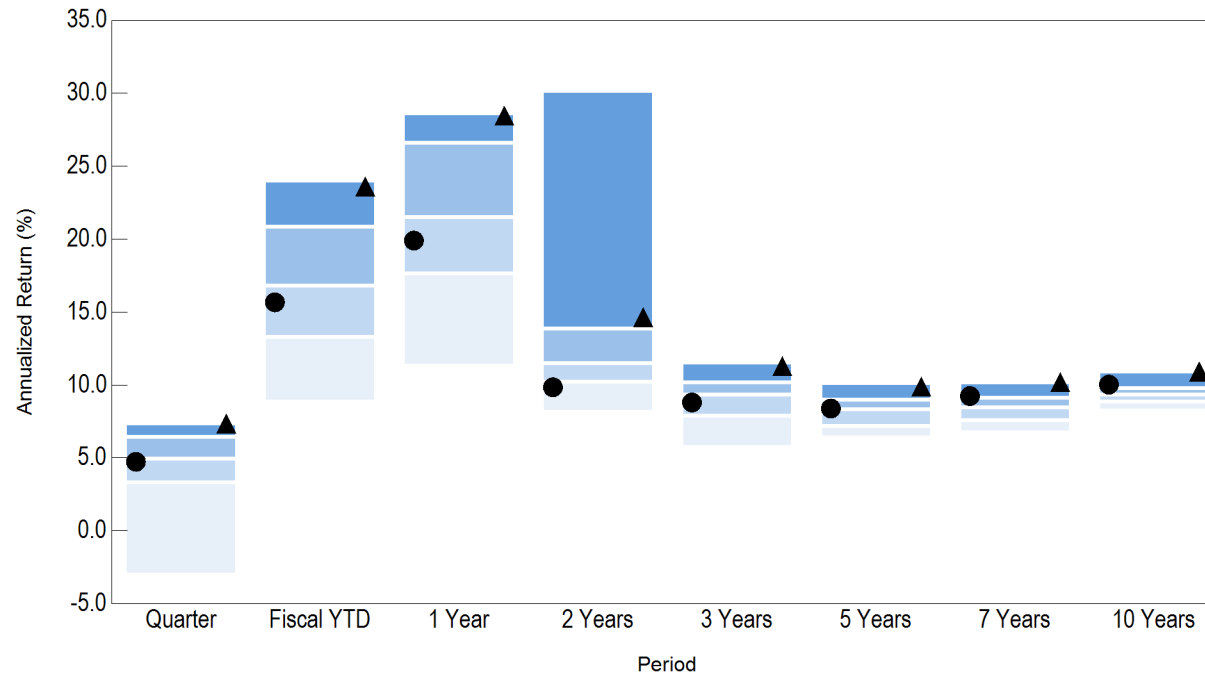
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Inflation Hedge	7.0%	7.7%	0.8	-1.2	3.9%
Blended Inflation Hedge Index	11.5%	7.8%	1.4	--	0.0%
Real Estate	8.8%	5.6%	1.5	-0.9	2.9%
NCREIF ODCE	11.3%	7.4%	1.4	--	0.0%
Invesco	9.9%	7.5%	1.2	-0.6	2.5%
NCREIF ODCE	11.3%	7.4%	1.4	--	0.0%
Invesco US Val IV	8.1%	6.6%	1.1	-0.5	6.5%
NCREIF ODCE	11.3%	7.4%	1.4	--	0.0%
Invesco US Val V	15.1%	9.7%	1.5	0.5	7.0%
NCREIF ODCE	11.3%	7.4%	1.4	--	0.0%
PGIM RE US Debt Fund	5.3%	1.7%	2.8	-0.8	7.2%
NCREIF ODCE	11.3%	7.4%	1.4	--	0.0%
Private Real Asset	10.3%	12.0%	0.8	-0.1	22.0%
Blended Private Real Asset Index	12.2%	20.3%	0.6	--	0.0%
Public Real Assets	5.0%	19.3%	0.2	-1.1	4.2%
Blended Public Real Asset Index	9.7%	16.3%	0.6	--	0.0%
SSgA Custom Real Asset	9.7%	16.0%	0.6	0.0	0.9%
SSgA Custom Real Asset Index	9.7%	16.3%	0.6	--	0.0%

Statistics Summary

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error Rank
Inflation Hedge	5.9%	6.4%	0.8	-0.9	--
Blended Inflation Hedge Index	8.8%	6.5%	1.2	--	--
Real Estate	8.4%	4.7%	1.5	-0.7	31
NCREIF ODCE	9.9%	6.1%	1.4	--	1
Invesco	9.0%	6.2%	1.3	-0.4	--
NCREIF ODCE	9.9%	6.1%	1.4	--	--
Invesco US Val IV	9.8%	6.2%	1.4	0.0	--
NCREIF ODCE	9.9%	6.1%	1.4	--	--
Private Real Asset	2.5%	11.3%	0.1	-0.2	--
Blended Private Real Asset Index	6.7%	16.8%	0.3	--	--
Public Real Assets	4.6%	16.3%	0.2	-0.9	--
Blended Public Real Asset Index	7.6%	13.9%	0.5	--	--
SSgA Custom Real Asset	7.7%	13.7%	0.5	0.2	--
SSgA Custom Real Asset Index	7.6%	13.9%	0.5	--	--

InvMetrics All DB Real Estate Pub Net Return Comparison



	Return (Rank)							
	Quarter	Fiscal YTD	1 Year	2 Years	3 Years	5 Years	7 Years	10 Years
5th Percentile	7.4	24.0	28.6	30.1	11.5	10.1	10.2	10.9
25th Percentile	6.5	20.9	26.6	13.9	10.2	9.0	9.1	9.8
Median	5.0	16.9	21.5	11.5	9.4	8.3	8.5	9.4
75th Percentile	3.3	13.3	17.7	10.3	7.9	7.2	7.6	8.9
95th Percentile	-3.0	8.9	11.3	8.2	5.7	6.4	6.8	8.3
# of Portfolios	61	60	60	60	60	56	56	48
● Real Estate	4.7 (58)	15.7 (54)	19.9 (59)	9.8 (77)	8.8 (67)	8.4 (48)	9.2 (24)	10.0 (22)
▲ NCREIF ODCE	7.4 (6)	23.6 (13)	28.5 (9)	14.6 (23)	11.3 (8)	9.9 (7)	10.2 (5)	10.9 (5)



## **Aberdeen Standard (ASI) Global Absolute Return Strategy (GARS)**

The Aberdeen Standard Global Absolute Return Strategy (GARS) was designed in 2005 to address the needs of Standard Life's own Defined Benefit pension plan, with an objective to generate absolute returns with significantly less volatility than equity investments. The GARS investment process is designed to capitalize on an array of research and investment techniques and draws together the team's three-year investment insights. The team then examines and reviews position proposals to approve a high conviction, short list of positions that should work well together. The GARS strategy is built using a broad range of return-seeking positions (i.e. multi-strategy) that incorporate multiple risk views when constructing the portfolio. The strategy will take some directional risk at times if the portfolio management team believes that it will earn positive returns over their three-year time horizon. Given the scale of the GARS portfolio, the team requires all investment positions to be both scalable and suitably liquid. In addition, the strategy's risk-based approach requires the team to be able to reliably model the risk behavior of each selected investment, so all assets used must be well-understood from a risk perspective before going into the portfolio.

## **Acadian Asset Management – Acadian U.S. Managed Volatility**

Acadian's goal is to build a portfolio focused on absolute return and risk with the aim of achieving an absolute return similar to or better than that of a domestic equity index but with lower volatility over the long term. Acadian targets absolute risk to be 25-35% less than a typical capitalization-weighted benchmark. That said, tracking error is not a major consideration and can appear relatively high due in part to Acadian's comfort with carrying large sector variations versus the benchmark. Acadian seeks to combine the values of all of the security-level factors to determine a peer-relative return forecast for each stock. Separately they make a top-down forecast for the stock's peer group, and then add that forecast to the stock's score. Acadian's managed volatility strategies utilize the same alpha forecasts as Acadian's active equity strategies but with risk being the initial consideration when constructing portfolios. Alpha forecasts play a modest role relative to the importance of risk estimates but are important to the goal of achieving a higher risk-adjusted return. Incorporation of alpha forecasts generally results in higher exposure to value, size and quality.

## **Acadian Asset Management – MAARS Fund**

Acadian Multi-Asset Absolute Return (MAARS) strategy was inceptioned in November 2017. MAARS targets a volatility of 6%-8% and a return of cash plus 5%. This is a multi-factor strategy that aims to exploit behavioral inefficiencies within and across global markets and is designed to be diversifying, dynamic and defensive. It is market neutral, implemented using long and short positions across five primary asset classes (equity, fixed income, currency, commodities, and volatility) and over 100 underlying assets with a focus on liquid instruments. Return forecasts incorporate asset-specific and macroeconomic insights and are utilized to harvest active returns from within and across asset classes through market selection and directional positioning. The strategy integrates risk and return across asset classes. Avoidance of downside events is highlighted in the approach with a greater weighting in their models allocated to down market beneficiaries, such as quality factors, and asymmetric positioning which reduces positions when risk rises. Differentiated attributes of this approach are its approach and weighting to commodities and its volatility sleeve which can incorporate long volatility.

## **Angelo, Gordon & Co. – AG Opportunistic Whole Loan Fund**

The Angelo Gordon Opportunistic Whole Loan (OWL) Fund was established to make investments primarily in a portfolio of non-performing loans (NPLs) and re-performing loans (RPLs). AG sees a lot of operational inefficiency in the market place. By acquiring these loans at a discounted price and replacing original servicers with better-focused special servicers, AG believes it can improve operational efficiency and generate attractive returns. In addition, OWL may also include investments in new residential mortgage loans and excess mortgage servicing rights. Opportunistic investments in commercial mortgage loans and other mortgage related investments may also be included in the Fund's portfolio. OWL is towards the end of its fund life and is continuing to sell down the fund's holdings and distribute proceeds to LPs.

## **Angelo, Gordon & Co. – Credit Solutions**

The Angelo Gordon (AG) Credit Solutions Fund (CSF) expects to hold concentrated positions of 5-8% of NAV (averaging 30 positions over the life of the Fund with recycling). The Fund is targeting a net 15% IRR with a 5-7% current yield. The Fund should be 70% concentrated in the U.S. with the balance in Europe. Finally, while the opportunities can be sourced from both the public markets and the private markets, AG is finding compelling sources of return at this time through structuring new privately placed secured term loans out of public investments made by the firm. CSF will address corporate credit-based opportunities created in three main areas: 1) trading-based price dislocations that reduce creation multiples (price through the debt that must be repaid before value accrues to other stakeholders) while generating high current income; 2) opportunities in issuers tied to industries directly impacted by COVID-19 where the market's perception of the impact differs from the actual impact; and 3) corporate debt issuers that will be materially impacted by the pandemic and will need to restructure, but whose creation value is materially lower than the issuer's intrinsic value.

## **Angelo, Gordon & Co. – CSF (Annex) Dislocation**

Angelo Gordon completed syndication of its AG Credit Solutions Fund ("CSF") in December of 2019. CSF was designed to capture opportunities in a late-cycle credit market and the initial stages of a market dislocation. Angelo Gordon designed and documented CSF to allow the placement of an annex fund in times of dislocation and credit deterioration. Given the price movements in the credit markets in March of 2020, driven by the lack of liquidity, financing needs of investment grade and non-investment grade borrowers, and anticipated impacts (restructurings, rescue financings, liquidations, etc.), Angelo Gordon came to market with the \$1.8 billion AG CSF Annex Dislocation Fund ("ADF"). ADF's investment aim is to target senior securities of world-class businesses with irreplaceable assets and strong cash flow profiles which, because of market stress, can be purchased at a material discount to what they believe is a company's long-term intrinsic value. ADF will address corporate credit-based opportunities created in three main areas: 1) trading-based price dislocations that reduce creation multiples (price through the debt that must be repaid before value accrues to other stakeholders) while generating high current income; 2) opportunities in issuers tied to industries directly impacted by COVID-19 where the market's perception of the impact differs from the actual impact; and 3) corporate debt issuers that will be materially impacted by the pandemic and will need to restructure, but whose creation value is materially lower than the issuer's intrinsic value.

## **Angelo, Gordon & Co. – Credit Solutions II**

Like its predecessor funds, the Angelo Gordon (AG) Credit Solutions Fund II (CSF II) is an all-weather, solutions-based strategy that targets net returns of 14+% with 5-7% current yield. The Fund will invest in single-name opportunities where price movements and credit documents afford creative financing solutions. This could include companies with upcoming debt maturities, working capital issues, or inefficient capital structures that are inflating financing costs. In these cases, AG will seek to work with management and other creditors to structure a bespoke transaction that avoids bankruptcy and solves the issue for the company in exchange for debt securities with conservative attachment points and healthy yield. While the opportunities are likely to be sourced 75% from the public markets and 25% from the private markets, the "solutions" will likely be private products. During periods of dislocation, the Fund can pivot towards trading-oriented strategies where there is not a need for additional financing, such as sourcing debt in the secondary markets at discounts to intrinsic value. CSF II expects to hold concentrated positions of 5-8% of NAV (averaging 30 positions over the life of the Fund with recycling). The fund should be 70% concentrated in the U.S. with the balance in Europe.

## **Baillie Gifford – ACWI ex US Focus Equities**

ACWI ex US Focus is a fundamental growth strategy. Research is organized primarily by regional teams, with each member of the ACWI ex US Focus Portfolio Construction Group representing a regional team. Four global sector groups also contribute research. Baillie Gifford conducts approximately 2000 company meetings annually both in Edinburgh and onsite. Companies are evaluated on their growth opportunity relative to the average company, their ability to execute on that opportunity, and the degree to which probability of future success is already valued by the market. Baillie Gifford's basic philosophy is that share prices ultimately follow earnings. They believe that the stock market has a recurring tendency to under-appreciate the value of long-term compound growth. The process seeks to add value through use of proprietary fundamental research to identify companies exhibiting some combination of sustained above average growth, and attractive financial characteristics. The portfolio generally holds 60-90 stocks, with country and sector weights +/-10% relative to the index and stock weights +/- 5% relative to the index.

## **Beach Point Capital Management, L.P. - Beach Point Select Fund**

Beach Point Select Fund is a commingled fund vehicle within the firm's Opportunistic Credit strategy. This fund focuses on off-the-run, complex, and less-liquid securities. It is a best ideas portfolio of distressed debt, special situations, private/direct loans, catalyst-driven high yield bonds and bank loans, and credit-informed equities with a North American and European focus. The Select Fund differs from other funds and accounts in the Opportunistic Credit strategy by pursuing a more concentrated portfolio and emphasizing a higher percentage of less-liquid/private investments. Beach Point invests up and down the entire capital structure and it constructs portfolios with a bottom-up, research-driven approach that also takes into account top-down macro considerations. Its investment process includes idea generation, detailed credit analysis, relative value decision making and investment selection, portfolio construction and on-going monitoring. The ultimate goal of its investment process is to produce a well-diversified investment portfolio with limited downside risk and substantial upside potential.

## **BlackRock – MSCI ACWI ex US IMI Index**

The ACWI ex US IMI Index Fund seeks to replicate the return of the MSCI ACWI ex US IMI Index. This index represents the developed equity markets outside of North America, including small cap equity. BlackRock monitors their funds daily to ensure that additions and deletions to the indexes, mergers and acquisitions, restructurings and other capitalization changes are made to the fund in such a way as to minimize tracking error and transactions costs.

## **BlackRock – Russell 1000 Index**

The Russell 1000 Index Fund tracks large U.S. companies and achieve broad diversification with low costs by fully replicating the Russell 1000 Index. BlackRock monitors their funds daily to ensure that additions and deletions to the indexes, mergers and acquisitions, restructurings and other capitalization changes are made to the fund in such a way as to minimize tracking error and transactions costs.

## **BlackRock (formerly Tennenbaum Capital Partners) - Direct Lending Funds VIII and IX**

TCP Direct Lending Fund VIII is a private investment fund managed by Tennenbaum Capital Partners ("TCP"). The Fund is designed to continue TCP's successful strategy of investing in privately-originated, performing senior secured debt primarily in North America-based companies with target enterprise values between \$100 million and \$1.5 billion. The Fund will include positions in 1st lien, 2nd lien and unitranche debt, with a preference for floating-rate debt, which TCP believes provides better flexibility to adapt to market conditions. TCP's direct lending strategy has generated attractive investment opportunities across market cycles, as evidenced by the Firm's prior direct lending track record. Fund VIII targets an unlevered annual yield of approximately 9-12%, with its return primarily driven by current income. SamCERA committed \$35 million to DLF VIII in June 2016 in its unlevered fund sleeve and \$35 million to the DLF IX in June 2019.

## **Brigade – Opportunistic Credit**

Opportunistic Credit is a fundamental, bottom-up strategy focused on high yield corporate bonds and bank loans with tactical allocations to structured securities, convertibles, and other sectors of the bond markets as they become attractive on a relative value basis. While performing credits represent the majority, Brigade will invest up to 35% of the portfolio in distressed securities and restructuring situations if these types of opportunities are attractive on a risk-adjusted basis and the timing is right with respect to the credit cycle. The portfolio is comprised of mostly North American issuers, but they are not restricted geographically and expect to have a moderate allocation to Europe over time. Although the portfolio is generally long-only, Brigade has the ability to implement a limited amount of tactical macro hedges.

## **CFM - Systematic Global Macro**

Capital Fund Management (CFM) Systematic Global Macro (SCM) is a directional strategy that takes long and short positions in liquid future and forwards across 130+ markets and across equities, bonds, currencies, and commodities. It is a new strategy that draws on model signals from existing strategies at the firm – Discus (diversified CTA), CFM ISTrends (trend following) and CFM ISTrend Equity Capped (defensive trend following) - and SamCERA is a seed investor with an attractive fee. SGM's objective is to provide absolute returns that are uncorrelated with traditional asset classes over a long time horizon with an annualized volatility target between 8% and 12%. SGM uses a diverse set of trading strategies that are based on factors (momentum, value, carry, macro and sentiment) across asset classes. These technical and fundamental factors operate at different time scales and can have varying degrees of influence on performance depending on market and economic conditions. An additional global macro defensive overlay is combined with these outputs in constructing the final portfolio. CFM uses a form of portfolio construction known as agnostic risk parity to ensure that the SGM portfolio is diversified on an out-of-sample basis. The goal of SGM is to generate consistent returns while limiting drawdowns.

## **DE Shaw – DE Shaw US Broad Market Core Alpha Extension Fund**

The D. E. Shaw group believes that there exist some market inefficiencies that may be identified through quantitative analysis, advanced technology, and the insight of practitioners. Identifying these inefficiencies involves a process of hypothesis formulation, testing, and validation. Importantly, to avoid data-mining, the hypothesis formulation precedes the analysis of the historical data. D.E. Shaw's Structured Equity strategies rely largely on quantitative and computational investment techniques developed by the D. E. Shaw over the last two decades in the course of research conducted for purposes of managing the firm's hedge funds. D.E. Shaw's investment process involves a suite of quantitative models, each designed to capitalize on a distinct and uncorrelated set of market inefficiencies. Some of these models are technical in nature and involve price and volume inputs. Other models rely on fundamental data, such as figures gleaned from corporate balance sheets or income statements. Still others, again quantitative, anticipate or react to a particular corporate event or set of events. These models typically operate with forecast horizons of a few weeks to many months. The ability to trade on shorter-term signals distinguishes D.E. Shaw from many of its long only and 130/30 peers. Portfolio construction involves the use of a proprietary optimizer which runs dynamically throughout the trading day. The portfolio is broadly diversified with several hundred long and short positions. Over- and under-weighting of sectors and industries relative to the benchmark will be quite modest, with the intention that most of the alpha be generated by security selection. The US Broad Market Core Alpha Extension Fund is a 130/30 strategy which maintains a beta that is approximately neutral to the Russell 1000 Index.

## **DoubleLine – Securitized Income**

The DoubleLine Securitized Income strategy is an actively managed, liquid, long only, intermediate-term fixed income product. The primary objective of the strategy is to seek and maximize current income and total return by utilizing a combination of Agency MBS and structured credit. The DoubleLine Structured Products team aims to offer clients investment grade exposure to both interest rate duration and credit spread to provide a more attractive total return profile compared to the benchmark. Securitized Income seeks to maximize income and total return by investing across the structured products universe, focusing on agency mortgage-backed securities (MBS) and investment grade securitized credit. DoubleLine takes a barbelled approach to investing in the securitized market, and they will separate rates from credit and will adjust the allocations to both at the based on the economic cycle and opportunities. Duration positioning is achieved through Agency MBS, Agency CMBS, and treasuries while credit exposure is attained through all areas of structured credit.

## **Fidelity (FIAM) – Broad Market Duration Commingled Pool**

Pyramis' Broad Market Duration (BMD) investment strategy seeks to achieve absolute and risk-adjusted returns in excess of the BC U.S. Aggregate Index, focusing its investments in US Treasuries, agencies, investment grade corporate bonds, mortgage-backed and asset-backed securities. The BMD commingled pool can also hold small, opportunistic positions in out-of-benchmark securities, such as inflation-linked bonds. The investable universe includes all US dollar denominated, investment grade debt securities. The BMD investment approach emphasizes issuer and sector valuation and individual security selection. Through the integration of fundamental and quantitative research and trading, the BMD strategy is implemented in a team environment. Risk management technology is utilized to explicitly quantify benchmark exposures on a daily basis, and Pyramis uses the same analytical framework to assess both index and portfolio risk. Tracking error should range between 40 and 60 basis points per annum over the benchmark, and stringent portfolio construction risk control rules are strictly adhered to.

## **Franklin Templeton Investments – Global Fixed Income**

Franklin Templeton manages the global bond mandate in an unconstrained fashion using a top-down, fundamental framework. In the short term and on a country-by-country basis there are often inefficiencies in global bond and currency markets, however, over the longer term the market will generally price to fundamentals. Thus, FT focuses on fundamental research to identify long-term opportunities and uses short-term market inefficiencies to build positions in such investments. The investment and portfolio construction process begin with the determination of the Fund's or institutional client's investment objectives, resulting in a set of risk-return parameters and exposure limits within which the portfolio is managed. Next the firm's global economic outlook for the industrialized countries is developed, with a focus on interest rate and exchange rate forecasts. The portfolio's interest rate outlook is a function of global general equilibrium macroeconomic analysis as well as country-specific research. Macroeconomic conditions in the G-3 economies are analyzed first, primarily with respect to how current and projected growth and inflation dynamics are expected to influence monetary policy. This analysis is then extended out to the rest of the industrialized countries (G-13) as well as emerging markets, which results in broad targets for cash, duration, currencies and the developed/emerging market mix. Using the firm's interest rate and exchange rate outlook, probability-weighted horizon returns for bonds of various countries are then calculated. This analysis is used to establish specific country weights and duration targets based on risk-adjusted expected total return measured in the portfolio's base currency. Analysis of emerging markets includes sovereign credit analysis along with greater emphasis on capital flows, inter-market dynamics and trends in the level of risk aversion in the market.

## **Graham – Quant Macro Fund**

Graham Quant Macro ("GQM") is a directional, long and short strategy that utilizes fundamental and price-based indicators to establish return forecasts across global interest rates, foreign exchange, stock indices and commodities. The strategy incorporates a variety of submodels that generate macro fundamental forecasts, assess yield and earnings differentials, compare current valuations relative to historic fair value, and analyze directional price trends across markets. Quantitative risk management and portfolio construction techniques are used to diversify risk across the portfolio and enhance risk-adjusted returns. Historically, the average holding period has been approximately eight to ten weeks, although the sub-models will make daily adjustments to positions. The strategy is designed to have low correlation to traditional markets and other alternative strategies and has the potential to provide significant portfolio diversification benefits.

## **Harrison Street Core Property**

Based in Chicago, Harrison Street's exclusive focus since inception in 2005 has been investing in non-core property sectors of the real estate market. The Harrison Street Core Fund is an open-end fund that invests primarily in stabilized education, healthcare, and self-storage real estate assets in the United States using modest leverage with an emphasis on generating current income. The focus on these alternative property types is intended to concentrate on areas of the real estate market that are less GDP sensitive with demand drivers that are more demographic driven such as aging populations, education growth and healthcare delivery. Each of these areas tend to be less tied to the business cycle, have fragmented ownership and more operationally intensive. The fund acts as a diversifier within real estate portfolios with sector exposures that are not a typical focus of other core ODCE funds.

## **INVESCO Realty Advisors – INVESCO Core Equity, LLC**

SamCERA is a founding member of INVESCO's open-end Core Equity real estate fund and rolled its separate account properties into the fund. INVESCO Core Equity, LLC (the "Fund") is a perpetual life, open-end vehicle which invests in a diversified portfolio of institutional quality office, retail, industrial and multifamily residential real estate assets. The Fund buys core properties that are located within the United States, typically requiring an investment of \$10 million or more. The portfolio cannot be more than 30% leveraged.

## **INVESCO Realty Advisors – INVESCO US Val IV**

Invesco has provided SamCERA with Core Real Estate exposure since 2004 through the Invesco Core Equity Fund. The Invesco real estate team manages around \$62B in assets with investments and offices around the globe. Invesco Value Fund IV looks to acquire fundamentally sound but broken "core" assets that can be repositioned into institutional-quality, income producing properties. Investments are limited to direct equity interests in office, multi-family, retail and industrial properties across the US. The Fund is expected to be geographically concentrated in U.S. gateway cities and top 25 Metropolitan Statistical Areas (MSA's). Invesco Value Fund IV provides a complement to the more conservative Invesco Core Fund and offers the potential of enhanced returns to the SamCERA Real Estate portfolio.

## **INVESCO Realty Advisors – INVESCO US Val V**

Invesco has provided SamCERA with Core Real Estate exposure since 2004 through the Invesco Core Equity Fund and through the Invesco US Value IV Fund since December 2015. The Invesco real estate team manages around \$62B in assets with investments and offices around the globe. Invesco Value Fund V will be similar to the Value Add IV and look to acquire fundamentally sound but broken “core” assets that can be repositioned into institutional-quality, income producing properties. Investments will be limited to direct equity interests in office, multi-family, retail and industrial properties across the US. The Fund is expected to be geographically concentrated in U.S. gateway cities and top 25 Metropolitan Statistical Areas (MSA's).

## **Mondrian Investment Partners – International Equity**

Mondrian is a value-oriented, defensive manager whose investment philosophy is based on the principle that investments must be evaluated for their fundamental long-term value. The firm's philosophy involves three stated investment objectives: 1) provide a rate of return meaningfully greater than the client's domestic rate of inflation, 2) structure client portfolios that preserve capital during protracted international market declines, and 3) provide portfolio performance that is less volatile than benchmark indices and other international managers. Mondrian applies typical value screening criteria to a universe of 1,500 stocks, from which 500 are selected for more detailed work. Through fundamental research, and the deliberations of the Investment Committee, the universe is further reduced to a list of 150 stocks. The investment team conducts detailed fundamental analysis on the remaining stocks, a process which includes applying the firm's dividend discount model consistently across all markets and industries. Mondrian also uses a purchasing power parity model to give an accurate currency comparison of the value of the stocks under consideration. The firm will only consider buying stocks in countries with good investor protection practices and relatively simple repatriation procedures. A computer-based optimization program is employed in the portfolio construction process. Mondrian's portfolio holds 80-125 issues.

## **NISA – Core Bond**

NISA applies a risk-controlled approach to all of its fixed income portfolios. This approach does not permit large bets or positions that generate significant tracking error versus the benchmark. Instead, NISA invests in a large number of small, diversified, active positions which seek tight tracking error to the chosen benchmark. Benchmark weight is a significant consideration when constructing and managing portfolios. The investment strategy is comprised of strategic (top-down) and tactical (bottom-up) decisions. Strategic decisions include sector selection and yield curve positioning while tactical decisions include industry and security selection and trading activity. Review of both strategic and tactical decisions is continual. The amount of portfolio risk budget devoted to one aspect versus the other will change as market conditions warrant. In general, strategic decisions change relatively infrequently, while tactical decisions, especially security selection, will change fairly often as market conditions provide opportunities. Over a typical market cycle, the bottom-up is expected to contribute to 70% of value-added while top-down is roughly 30%.

## **PanAgora Asset Management – Defensive U.S. Equity Low Volatility**

PanAgora's Defensive Equity strategy seeks to harness the 'low-volatility premium' through a systematic, factor-based investment approach focused on achieving market-like returns with less risk. This is accomplished by leveraging PanAgora's proprietary Risk Parity portfolio construction methodology, which seeks to efficiently capture the equity premium associated with low volatility, while taking minimal unintended risks. Since the firm's inception, PanAgora has been using quantitative techniques to integrate fundamental insights with large amounts of dynamic market data. They score individual securities on a factor basis and also on a diversification basis, in the context of a broadly diversified portfolio. The portfolio construction process optimizes the portfolio around the intended factor exposure (volatility) while maintaining equal risk contribution across sectors (ex., overweight utilities and consumer staples, underweight financials and technology). Shorter term volatility and longer term correlation analysis is combined in the approach. The result for the US Defensive Equity strategy is a portfolio expected to have lower volatility (beta around 0.65-0.75), and similar returns relative to the capitalization-weighted benchmark over a full market cycle. PanAgora expects the strategy to participate in approximately 75% of up markets and 55% in down markets.

## **Parametric Overlay – Cash Overlay and Currency Hedge**

Parametric's cash overlay program is an efficient way for SamCERA to maintain its target asset allocation in a systematic fashion through cash securitization at the fund and manager level, transition/reallocation support and asset class rebalancing back to target within defined bands. The cash overlay program is invested synthetically using liquid futures with cash balances reviewed daily. A combination of large and small cap futures implementation is the proxy for private equity. SamCERA's investment guidelines initially allowed only for cash overlay. Rebalancing was added to the SamCERA program in January 2014. Cash overlay and rebalancing is expected to add 10-20 bps to the portfolio over time. An additional currency overlay hedge placed on half of the notional value of developed international equities. The addition of currency hedging started in September 2018 and was fully implemented on 10/1/2019. The purpose of the currency is first and foremost to lower portfolio risk and secondarily to add incremental performance.

## **PIMCO Diversified**

PIMCO's Diversified Income (DI) Fund is a multi-sector strategy that invests across a broad spectrum of global credit market sectors, including investment grade and high yield corporate debt, as well as emerging markets. The allocation among these will vary based on PIMCO's assessment of global trends and relative valuations. This active and dynamic approach allows for increased responsiveness in asset allocation to changing economic and market conditions while remaining anchored by PIMCO's investment process and longer-term orientation. The ability to invest globally helps to improve diversification and may allow investors to benefit from differences in business cycles across regions and credit quality trends across credit sectors. PIMCO's DI investment strategy seeks to provide high yield-like returns with lower volatility against a blended index (1/3 Bloomberg Barclays Global Agg Credit ex-EM; 1/3 BofA Merrill Lynch BB-B rated Developed Markets High Yield; 1/3 JPMorgan EMBI Global). The fund allows for a duration band of 3-8 years. The team focuses its investments into these groups: credit strategies (investment grade, high yield, emerging markets and non-core credits including MBS, municipals and other govt-related sectors); duration strategies (U.S. and non-U.S. duration) and currencies (tactical non-USD exposure).



## **PIMCO – MAARS**

PIMCO MAARS is an alternative risk premia strategy that looks for risks associated with: (1) Supply and Demand Constraints, (2) Behavioral Biases, and (3) Asymmetric Risks (event risk). As reflected in the design of the MAARS strategies, PIMCO believes that alternative risk premia strategies are best implemented using a systematic approach that minimizes the discretionary inputs in day-to-day portfolio management. MAARS places a greater emphasis and weighting on global interest rates, currencies and commodities and a lesser emphasis on equities than many of its Alt Beta peers. Relative to Alt Beta peers, the strategy's rates and currency (FX) models are particularly robust, reflective of PIMCO's core competency and long history managing these asset classes using derivative instruments.

## **PIMCO Private Income Fund**

PIMCO Private Income Fund (PIF) uses an opportunistic and flexible approach to global private credit. PIF provides a total return oriented global credit exposure utilizing both top-down sector relative value and bottom up security selection. The strategy invests across private residential, commercial, corporate and specialty finance markets. PIMCO's Private Income Fund (PIF) is targeting 8-12% net returns with income providing most of the fund's returns. The Private Income Investment Committee (IC) identifies market themes and direction for their relative value framework, and sector specialists provide recommendations to the PM team within that construct. PIF has the ability to invest throughout the capitalization structure. The fund can use a moderate amount of leverage to enhance portfolio returns (1.5 times with a hard cap of 2 times).

## **PGIM RE Debt**

PGIM Real Estate US Debt Fund (PREDS) focuses on a loan origination strategy with a mix of 20% senior long duration loans on stable assets, 60% senior short/medium duration loans on stable and transitional assets, and 20% mezzanine mid/long duration debt. SamCERA was a founding investor in the PREDS strategy which invests in US commercial real estate debt in an open-ended vehicle with a return target of 7-8% (gross) coming from stable current income. The fund makes investments in first lien mortgages and mezzanine debt. First lien mortgages can be floating rate or fixed rate, but only floating rate loans will use leverage. Subordinate investments (mezzanine debt and preferred equity) will be limited by design. The fund can source and invest in secondary loans through a variety of Prudential real estate professionals, but the primary focus will be on direct origination through the real estate finance team.

## **Quantitative Management Associates – QMA Small-Cap Core**

Quantitative Management Associates (QMA) utilizes a bottom-up quantitative framework in order provide a diversified exposure to core U.S. small-cap stocks, while attempting to produce consistent outperformance versus the benchmark with moderate tracking error levels. QMA uses an adaptive, systematic investment process to exploit opportunities created by mispriced securities to consistently add value over long time periods. Bottom-up stock selection drives exposure to key sources of alpha (valuation, growth, and quality). The QMA stock selection model adapts to changes in company growth rates and market environments by putting more emphasis on valuation for slowly growing companies, and more emphasis on future growth projections for companies with higher projected growth rates.

## **State Street Global Advisors (SSgA) Custom Real Asset**

SSgA Custom Real Asset portfolio uses a portfolio of liquid real assets to proxy private real assets. The portfolio is comprised of equal weightings of the Bloomberg Roll Select Commodity Index, S&P Global Mid-Large Cap Natural Resources Index, S&P Global Infrastructure Index, and Bloomberg Barclays TIPS Index. SSgA provides beta exposure through these underlying liquid components which can be customized to changing client needs (ex., TIPS was added in May 2020 with the other three parts of the portfolio reduced pro-rata). The portfolio is used to fund upcoming private real asset mandates.

## **Stockbridge Value IV**

Stockbridge Value IV will implement a value-added strategy that will seek to own assets that are undervalued, underutilized, and/or not operating to their full potential. The manager will add value with their internal asset management team through active strategies including additional capital investment, leasing, recapitalization, renovation and/or development. The fund will target three to five year holding periods for investments, with disposition taking place after the completion of the value-add strategy. The fund will target 15 to 25 mid-sized investments, diversified by geography and property type. The strategy will target 21 markets in the United States in which the firm has boots on the ground coverage with dedicated acquisitions professionals and asset managers responsible for knowing each market extensively with a vast network of relationships.

## **Western Asset Management – Total Return Unconstrained (TRU)**

Western Asset's Total Return Unconstrained strategy (TRU) seeks to provide bond-like risk and return over the long term but does not have a benchmark. This allows for asset allocation based on value rather than using the construction of a benchmark as baseline positioning. The investment approach is active with very broad latitude on duration (-3 to +8 years) and on asset allocation across all of the eligible sectors in a core plus mandate. The portfolio must have at least 50% of its holdings in investment-grade securities. The flexibility offered by this strategy allows for defensive positioning in rising rate environments and opportunistic deployment of capital when value opportunities arise. It also allows the portfolio managers to emphasize (or deemphasize) either credit or rates when one or the other appears to offer greater (or lesser) value. um non-US exposure.

## **White Oak - White Oak Yield Spectrum Fund**

The White Oak Yield Spectrum Fund's objective is to earn substantial current income by originating, extending, and/or investing in a diversified portfolio of primarily senior secured corporate credit and debt instruments consisting of term loans, asset-based loans and equipment leases and loans issued by small to middle-market companies located primarily in the United States and Canada. It focuses on providing self-originated deals for predominantly non-sponsored, privately-held borrowers.

## **White Oak - White Oak Yield Spectrum Fund V**

The White Oak Yield Spectrum Fund's objective is to earn substantial current income by originating, extending, and/or investing in a diversified portfolio of primarily senior secured corporate credit and debt instruments consisting of term loans, asset-based loans and equipment leases and loans issued by small to middle-market companies located primarily in the United States and Canada. It focuses on providing self-originated deals for predominantly non-sponsored, privately-held borrowers.

# Policy Index and Benchmark History

Period Ending: March 31, 2022

Total Plan Policy Index	As of													
	2/1/21	1/1/21	7/1/20	4/1/20	10/1/19	7/1/19	4/1/19	1/1/19	10/1/18	4/1/18	10/1/17	2/1/17	1/1/17	
10 Year Treasury +2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
60/40 MSCI World/Bloomberg Global Aggregate (RP)	0.0%	0.0%	0.0%	4.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	
60/40 Russell 3000/Bloomberg US Aggregate (RP)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
91 Day T-Bills	1.0%	1.0%	1.0%	1.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Bloomberg Aggregate	18.0%	21.0%	21.0%	18.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	12.0%	10.0%	
Bloomberg BA Intermediate HY	10.0%	10.0%	10.0%	8.0%	8.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	6.0%	6.0%	
Bloomberg BBB	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Bloomberg Credit BAA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Bloomberg Multiverse	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	3.0%	
Bloomberg TIPS	0.0%	0.0%	0.0%	0.0%	1.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Bloomberg Commodity	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Citigroup non-US WGBI	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
CPI + 5% (RA)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Blended Public Real Asset	4.0%	4.0%	4.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	0.0%	0.0%	0.0%	
Blended Private Real Asset	4.0%	3.0%	3.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	8.0%	7.0%	5.0%	
Libor +4% (HF)	0.0%	0.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	5.0%	
SOFR +4% (HF)	7.0%	6.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
MSCI ACWI ex-US	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
MSCI ACWI ex US IMI 100% Hedged (Net)	9.5%	9.0%	9.0%	9.0%	9.0%	7.6%	5.7%	3.8%	1.9%	0.0%	0.0%	0.0%	0.0%	
MSCI ACWI ex-US IMI	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	19.0%	19.0%	
MSCI ACWI ex-US IMI (Net)	9.5%	9.0%	9.0%	9.0%	9.0%	11.4%	13.3%	15.2%	17.1%	19.0%	19.0%	0.0%	0.0%	
MSCI EAFE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
NCREIF ODCE	9.0%	10.0%	10.0%	9.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	7.0%	7.0%	
NCREIF Property	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Russell 1000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Russell 1000 Value	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Russell 2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Russell 3000	22.0%	21.0%	21.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	21.0%	21.0%	23.0%	28.0%	
Russell 3000 +3% (PE)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	7.0%	7.0%	
Russell 3000 +3% 1Q Lag (PE)	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	7.0%	0.0%	0.0%	0.0%	
S&P 500	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

# Policy Index and Benchmark History

Period Ending: March 31, 2022

Total Plan Policy Index	As of:													
	10/1/16	9/1/16	1/1/16	7/1/14	1/1/14	2/1/13	1/1/11	10/1/10	1/1/09	5/1/07	6/1/00	3/1/99	9/1/98	7/1/96
10 Year Treasury +2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.0%	10.0%	10.0%
60/40 MSCI World/Bloomberg Global Aggregate (RP)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
60/40 Russell 3000/Bloomberg US Aggregate (RP)	8.0%	8.0%	8.0%	8.0%	8.0%	6.0%	6.0%	6.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
91 Day T-Bills	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg Aggregate	10.0%	10.0%	10.0%	10.0%	9.3%	11.0%	11.0%	12.9%	27.0%	27.0%	29.0%	25.0%	21.0%	21.0%
Bloomberg BA Intermediate HY	6.0%	5.0%	5.0%	5.0%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg BBB	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg Credit BAA	0.0%	0.0%	0.0%	0.0%	0.0%	3.5%	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg Multiverse	3.0%	3.0%	3.0%	3.0%	3.8%	4.4%	4.4%	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg TIPS	2.0%	2.0%	2.0%	2.0%	2.0%	3.1%	3.3%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg Commodity	0.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Citigroup non-US WGBI	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	9.0%	9.0%
CPI + 5% (RA)	0.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Blended Public Real Asset	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Blended Private Real Asset	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Libor +4% (HF)	5.0%	5.0%	5.0%	4.0%	4.0%	3.0%	3.0%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SOFR +4% (HF)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MSCI ACWI ex-US	0.0%	0.0%	0.0%	0.0%	0.0%	18.0%	18.0%	18.0%	21.0%	21.0%	15.0%	0.0%	0.0%	0.0%
MSCI ACWI ex US IMI 100% Hedged (Net)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MSCI ACWI ex-US IMI	19.0%	20.0%	20.0%	20.0%	20.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MSCI ACWI ex-US IMI (Net)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MSCI EAFE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	20.0%	20.0%	20.0%
NCREIF ODCE	7.0%	7.0%	7.0%	6.0%	6.0%	5.0%	5.0%	5.0%	6.0%	0.0%	0.0%	0.0%	0.0%	0.0%
NCREIF Property	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.0%	6.0%	0.0%	0.0%	0.0%
Russell 1000	0.0%	0.0%	24.0%	24.0%	24.0%	28.0%	28.0%	28.0%	37.0%	37.0%	40.0%	22.0%	20.0%	20.0%
Russell 1000 Value	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	5.0%	0.0%
Russell 2000	0.0%	0.0%	4.0%	6.0%	6.0%	7.0%	7.0%	7.0%	9.0%	9.0%	10.0%	15.0%	15.0%	15.0%
Russell 3000	28.0%	28.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Russell 3000 +3% (PE)	7.0%	7.0%	7.0%	7.0%	7.0%	8.0%	8.0%	8.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Russell 3000 +3% 1Q Lag (PE)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
S&P 500	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

# Policy Index and Benchmark History

Period Ending: March 31, 2022

Public Equity Benchmark	As of:																		
	2/1/21	7/1/20	10/1/19	7/1/19	4/1/19	1/1/19	10/1/18	10/1/17	2/1/17	10/1/16	9/1/16	1/1/16	1/1/14	10/1/10	5/1/07	6/1/00	3/1/99	9/1/98	1/1/96
MSCI ACWI ex-US	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	34.0%	31.3%	23.1%	0.0%	0.0%	0.0%
MSCI ACWI ex US IMI 100% Hedged (Net)	23.2%	23.1%	22.5%	18.5%	13.9%	9.3%	4.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MSCI ACWI ex-US IMI	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	47.5%	45.2%	40.4%	41.7%	41.7%	40.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MSCI ACWI ex US IMI (Net)	23.2%	23.1%	22.5%	27.8%	32.4%	37.0%	41.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MSCI EAFE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	32.3%	33.3%	33.3%
Russell 1000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	48.0%	52.8%	55.2%	61.5%	35.5%	33.3%	33.3%
Russell 1000 Value	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.0%	8.4%	0.0%
Russell 2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.3%	12.0%	13.2%	13.5%	15.4%	24.2%	25.0%	25.0%
Russell 3000	53.7%	53.9%	55.0%	53.7%	53.7%	53.7%	53.7%	52.5%	54.8%	59.6%	58.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
S&P 500	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.4%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

US Equity Benchmark	As of:						
	9/1/16	1/1/16	6/1/00	3/1/99	9/1/98	7/1/96	1/1/95
Russell 1000	0.0%	85.7%	80.0%	52.0%	50.0%	50.0%	69.0%
Russell 1000 Value	0.0%	0.0%	0.0%	12.0%	12.5%	0.0%	0.0%
Russell 2000	0.0%	14.3%	20.0%	36.0%	37.5%	37.5%	14.0%
Russell 3000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
S & P 500	0.0%	0.0%	0.0%	0.0%	0.0%	12.5%	17.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

International Equity Benchmark	As of:								
	10/1/19	7/1/19	4/1/19	1/1/19	10/1/18	10/1/17	1/1/14	6/1/00	1/1/96
MSCI ACWI ex US	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
MSCI ACWI ex US IMI 100% Hedged (Net)	50.0%	40.0%	30.0%	20.0%	10.0%	0.0%	0.0%	100.0%	0.0%
MSCI ACWI ex US IMI	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
MSCI ACWI ex US IMI (Net)	50.0%	60.0%	70.0%	80.0%	90.0%	100.0%	0.0%	0.0%	0.0%
MSCI EAFE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Fixed Income Benchmark	As of:															
	2/1/21	7/1/20	4/1/20	10/1/19	10/1/17	2/1/17	10/1/16	4/1/16	7/1/14	1/1/14	2/1/13	1/1/11	10/1/10	6/1/00	3/1/99	7/1/96
Bloomberg Aggregate	64.3%	67.7%	69.2%	63.6%	66.7%	57.1%	52.6%	55.5%	50.0%	46.3%	50.0%	50.0%	58.6%	100.0%	83.3%	70.0%
Bloomberg BA Intermediate HY	35.7%	32.3%	30.8%	36.4%	33.3%	28.6%	31.6%	27.8%	25.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg BBB	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.3%	0.0%	0.0%	0.0%
Bloomberg Credit BAA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.0%	15.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg Multiverse	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	15.8%	16.7%	15.0%	18.8%	20.0%	20.0%	20.5%	0.0%	0.0%	0.0%
Bloomberg TIPS	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.0%	10.0%	14.0%	15.0%	13.6%	0.0%	0.0%	0.0%
Citigroup non-US WGBI	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.7%	30.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Opportunistic Credit Benchmark	As of:	
	1/1/14	12/1/09
Bloomberg BA Intermediate HY	100.0%	0.0%
Bloomberg Credit BAA	0.0%	100.0%
	100.0%	100.0%

Alternatives Benchmark	As of:								
	2/1/21	1/1/21	10/1/18	4/1/18	2/1/17	4/1/16	1/1/16	1/1/14	1/1/11
60/40 Russell 3000/Bloomberg US Aggregate (RP)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	30.0%
Bloomberg Commodity	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	17.7%	18.8%	15.0%
CPI + 5% (RA)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.8%	12.5%	0.0%
Libor +4% (HF)	0.0%	0.0%	50.0%	46.2%	46.2%	41.7%	29.4%	25.0%	15.0%
SOFR +4% (HF)	53.8%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Russell 3000 +3% (PE)	0.0%	0.0%	0.0%	0.0%	53.8%	58.3%	41.2%	43.8%	40.0%
Russell 3000 +3% 1Q Lag (PE)	46.2%	50.0%	50.0%	53.8%	0.0%	0.0%	0.0%	0.0%	0.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

# Policy Index and Benchmark History

Period Ending: March 31, 2022

## Private Equity Benchmark

As of:	
4/1/18	10/1/10
Russell 3000 +3% 1Q Lag	100.0% 0.0%
Russell 3000 +3%	0.0% 100.0%
	<b>100.0% 100.0%</b>

## Hedge Fund Benchmark

As of:	
1/1/21	10/1/10
Libor +4%	0.00% 100.00%
SOFR +4%	100.0% 0.0%
	<b>100.0% 100.0%</b>

## Inflation Hedge

As of:								
	2/1/21	7/1/20	4/1/20	10/1/19	4/1/18	2/1/17	10/1/16	4/1/16
Bloomberg TIPS	0.00%	0.00%	0.00%	5.88%	11.1%	12.5%	14.3%	14.3%
Bloomberg Commodity	0.00%	0.00%	0.00%	0.00%	0.0%	0.0%	0.0%	21.4%
CPI + 5% (RA)	0.00%	0.00%	0.00%	0.00%	0.0%	0.0%	0.0%	14.3%
Blended Public Real Asset	23.53%	23.53%	35.29%	35.29%	33.3%	0.0%	0.0%	0.0%
Blended Private Real Asset	23.53%	17.65%	11.77%	11.77%	11.1%	43.8%	35.7%	0.0%
NCREIF ODCE	52.94%	58.82%	52.94%	47.06%	44.4%	43.8%	50.0%	50.0%
	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

## Public Real Asset Benchmark

As of:			
5/1/20	10/1/16	1/1/14	
Bloomberg Roll Select Commodity	25.0%	34.0%	0.0%
S&P Global Large-MidCap Commodity and Resources	25.0%	33.0%	0.0%
S&P Global Infrastructure	25.0%	33.0%	0.0%
CPI + 5%	0.0%	0.0%	100.0%
Bloomberg TIPS	25.0%	0.0%	0.0%
	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

## Private Real Asset Benchmark

As of:				
1/1/21	4/1/18	10/1/16	1/1/14	
Bloomberg Roll Select Commodity	0.00%	0.00%	34.00%	0.0%
S&P Global Large-MidCap Commodity and Resources	0.00%	0.00%	33.00%	0.0%
S&P Global Infrastructure	0.00%	0.00%	33.00%	0.0%
50/50 S&P Global Infra & Lrg-MidCap Com & Resources +2% 1QL	0.00%	100.00%	0.00%	0.0%
75/25 S&P Global Infra & Lrg-MidCap Com & Resources +2% 1QL	100.00%	0.00%	0.00%	0.0%
CPI + 5%	0.00%	0.00%	0.00%	100.0%
	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

## Private RA Secondary Benchmark

As of:	
9/1/14	
Cambridge Associates Private Natural Resources 1 Qtr Lag	50.0%
Cambridge Associates Private Infrastructure 1 Qtr Lag	50.0%
	<b>100.0%</b>

## Real Estate Benchmark

As of:			
1/1/09	6/1/00	7/1/96	
10 Year Treasury +2%	0.0%	0.0%	100.0%
NCREIF ODCE	100.0%	0.0%	0.0%
NCREIF Property	0.0%	100.0%	0.0%
	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

# Policy Index and Benchmark History

Period Ending: March 31, 2022

Baillie Gifford Benchmark	As of:	
	1/1/14	5/1/12
MSCI ACWI ex-US	100.0%	0.0%
MSCI EAFE	0.0%	100.0%
	<b>100.0%</b>	<b>100.0%</b>

Baillie Gifford Secondary Benchmark	As of:	
	1/1/14	5/1/12
MSCI ACWI ex-US Growth	100.0%	0.0%
MSCI EAFE Growth	0.0%	100.0%
	<b>100.0%</b>	<b>100.0%</b>

Brigade Secondary Benchmark	As of:	
	8/1/10	
Bloomberg High Yield	50.0%	
Credit Suisse Leveraged Loans	50.0%	
	<b>100.0%</b>	

PIMCO Diversified	As of:	
	9/1/17	
JPMorgan EMBI Global	33.333%	
BofAMLBB-BRatedDvlpdMktsHYHdgdUSD	33.333%	
Global Agg Credit Ex EM USD hedged	33.334%	
	<b>100.0%</b>	

SSgA Custom Real Asset	As of:	
	5/1/20	11/1/16
Bloomberg Roll Select Commodity	25.00%	33.33%
S&P Global Large-MidCap Commodity and Resources	25.00%	33.33%
S&P Global Infrastructure	25.00%	33.34%
Bloomberg TIPS	25.00%	0.00%
	<b>100.0%</b>	<b>100.0%</b>

# Fee Schedule

Period Ending: March 31, 2022

## **Acadian Asset Management**

First \$50 million:	0.27% per annum
Next \$50 million:	0.225% per annum
Thereafter:	0.18% per annum

## **Baillie Gifford**

First \$25 million:	0.60% per annum
Next \$75 million:	0.50% per annum
Next \$300 million:	0.40% per annum
Thereafter:	0.30% per annum

## **BlackRock-Russell 1000 Index Fund**

On All Assets:	0.01% per annum
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## **BlackRock-MSCI ACWI ex US IMI Index Fund**

On All Assets:	0.045% per annum
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## **DoubleLine**

On All Assets:	0.30% per annum
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## **NISA**

First \$500 million:	0.15% per annum
Next \$1 billion:	0.125% per annum
Next \$1 billion:	0.105% per annum
Next \$1.5 billion:	0.085% per annum
Thereafter:	0.065% per annum

## **Franklin Templeton Investment**

First \$50 million:	0.40% per annum
Next \$50 million:	0.30% per annum
Thereafter:	0.25% per annum

## **FIAM Bond**

First \$50 million:	0.25% per annum
Next \$50 million:	0.20% per annum
Next \$100 million:	0.125% per annum
Thereafter:	0.10% per annum

## **PanAgora Asset Management**

First \$50 million:	0.25% per annum
Next \$50 million:	0.15% per annum
Thereafter:	0.10% per annum

## **Parametric Overlay**

First \$50 million:	0.12% per annum
Next \$100 million:	0.10% per annum
Thereafter:	0.05% per annum
Plus monthly reporting fee of \$1500	

## **Parametric Currency Overlay**

First \$250 million:	0.05% per annum
Thereafter:	0.03% per annum

## **PIMCO Diversified**

On All Assets:	0.75% per annum
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## **QMA**

First \$100 million:	0.55% per annum
Next \$100 million:	0.53% per annum
Thereafter:	0.49% per annum

## **Western Asset Management**

On All Assets:	0.25% per annum
Performance Fee:	20.00%

## **Mondrian Investment Partners**

First \$50 million:	1.00% per annum
Next \$150 million:	0.19% per annum
Thereafter:	0.33% per annum



# Manager Compliance (Net)

Period Ending: March 31, 2022

Name	Primary Benchmark	Rule 1	Rule 2	Rule 3
Acadian US MGD V	Russell 1000	--	--	--
DE Shaw	Russell 1000	R	✓	R
PanAgora Defuseq	Russell 1000	--	--	--
QMA US Small Cap	Russell 2000	R	R	R
Baillie Gifford	MSCI ACWI ex US	✓	R	R
Mondrian	MSCI ACWI ex USA Value Gross	R	R	R
DoubleLine	Bloomberg US Aggregate TR	--	--	--
FIAM Bond	Bloomberg US Aggregate TR	✓	✓	✓
NISA Core Bond	Bloomberg US Aggregate TR	--	--	--
Western TRU	3-Month Libor Total Return USD	✓	R	R
AG CSF II	Bloomberg BA Intermediate HY	--	--	--
Angelo Gordon Opportunistic	Bloomberg US Aggregate TR	✓	--	✓
Angelo Gordon Credit Solutions	Bloomberg BA Intermediate HY	--	--	--
Beach Point Select	Bloomberg BA Intermediate HY	✓	✓	✓
Brigade Capital	Bloomberg BA Intermediate HY	✓	✓	R
PIMCO Diversified	Blended PIMCO Diversified Index	--	--	--
Franklin Templeton	Bloomberg Multiverse TR	--	--	--
Blackrock DL Feeder IX-U	Cliffwater Direct Lending Index	--	--	--
PIMCO Private Income	Bloomberg BA Intermediate HY	--	--	--
TCP Direct Lending VIII	Cliffwater Direct Lending Index	R	✓	✓
White Oak Yield	Cliffwater Direct Lending Index	--	--	--
White Oak YSF V	Cliffwater Direct Lending Index	--	--	--
Aberdeen Standard GARS	Absolute Return Custom Index	R	R	R
Acadian MAAR Fund LLC	Absolute Return Custom Index	--	--	--
CFM Systematic Global Macro	Absolute Return Custom Index	--	--	--
Graham Quant Macro	Absolute Return Custom Index	--	--	--
PIMCO MAARS Fund LP	Absolute Return Custom Index	--	--	--

Rule 1 - Manager has underperformed the benchmark index for the five year period.

Rule 2 - Manager has underperformed the 50th percentile in the appropriate style universe for the five year period.

Rule 3 - Excess 5 Year Sharpe Ratio vs. Benchmark is positive

# Manager Compliance (Gross)

Period Ending: March 31, 2022

Name	Primary Benchmark	Rule 1	Rule 2	Rule 3
Acadian US MGD V	Russell 1000	--	--	--
DE Shaw	Russell 1000	R	✓	R
PanAgora Defuseq	Russell 1000	--	--	--
QMA US Small Cap	Russell 2000	R	R	R
Baillie Gifford	MSCI ACWI ex US	✓	R	✓
Mondrian	MSCI ACWI ex USA Value Gross	R	R	R
DoubleLine	Bloomberg US Aggregate TR	--	--	--
FIAM Bond	Bloomberg US Aggregate TR	✓	✓	✓
NISA Core Bond	Bloomberg US Aggregate TR	--	--	--
Western TRU	3-Month Libor Total Return USD	✓	R	R
AG CSF II	Bloomberg BA Intermediate HY	--	--	--
Angelo Gordon Opportunistic	Bloomberg US Aggregate TR	✓	--	✓
Angelo Gordon Credit Solutions	Bloomberg BA Intermediate HY	--	--	--
Beach Point Select	Bloomberg BA Intermediate HY	✓	✓	✓
Brigade Capital	Bloomberg BA Intermediate HY	✓	✓	R
PIMCO Diversified	Blended PIMCO Diversified Index	--	--	--
Franklin Templeton	Bloomberg Multiverse TR	--	--	--
Blackrock DL Feeder IX-U	Cliffwater Direct Lending Index	--	--	--
PIMCO Private Income	Bloomberg BA Intermediate HY	--	--	--
TCP Direct Lending VIII	Cliffwater Direct Lending Index	R	✓	✓
White Oak Yield	Cliffwater Direct Lending Index	--	--	--
White Oak YSF V	Cliffwater Direct Lending Index	--	--	--
Aberdeen Standard GARS	Absolute Return Custom Index	R	R	R
Acadian MAAR Fund LLC	Absolute Return Custom Index	--	--	--
CFM Systematic Global Macro	Absolute Return Custom Index	--	--	--
Graham Quant Macro	Absolute Return Custom Index	--	--	--
PIMCO MAARS Fund LP	Absolute Return Custom Index	--	--	--

Rule 1 - Manager has underperformed the benchmark index for the five year period.

Rule 2 - Manager has underperformed the 50th percentile in the appropriate style universe for the five year period.

Rule 3 - Excess 5 Year Sharpe Ratio vs. Benchmark is positive



**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**

2<sup>ND</sup> 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:

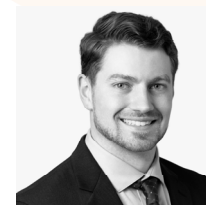
- Verus has hired three employees. **Tim McEnery**, Managing Director | Senior Consultant; **Samantha Grant**, Senior Consultant; and **Kyle Jangard**, Public Markets Research Analyst.
  - Tim and Samantha will establish a Verus office in Chicago. Expanding our Midwest presence has been a long-term strategic 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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# 1<sup>st</sup> 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 12<sup>th</sup>, 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 24<sup>th</sup>, 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 1<sup>st</sup>, 2022

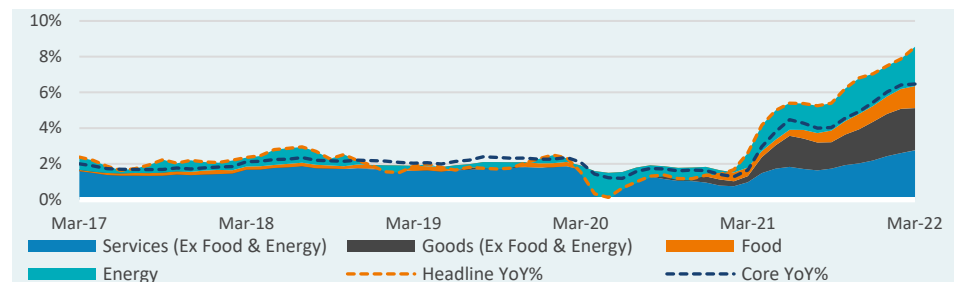
## “Global Bond Rout Deepens on Fear Rate Hikes Will Stoke Recession”

### 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%)

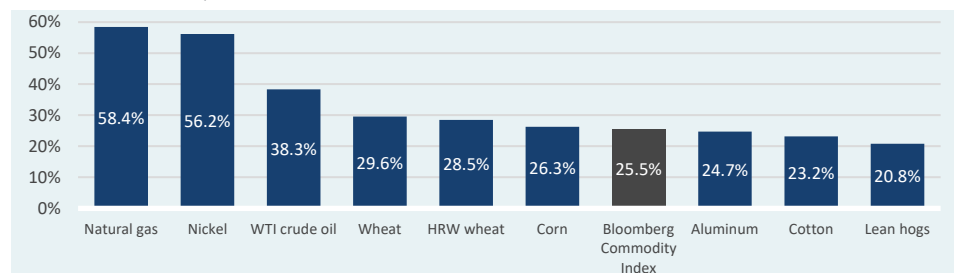
Article Source: Bloomberg, March 27<sup>th</sup>, 2022

## CONTRIBUTION TO HEADLINE CONSUMER PRICE INFLATION



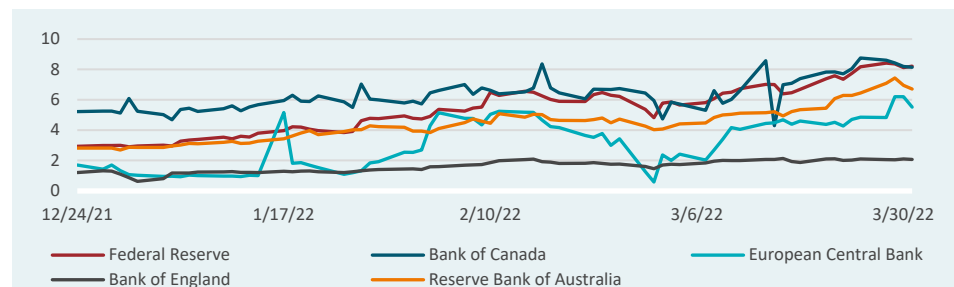
Source: Bureau of Labor Statistics, as of 3/31/22

## COMMODITY Q1 PERFORMANCE



Source: Bloomberg, as of 3/31/22

## EXPECTED NUMBER OF RATE HIKES BY DECEMBER 2022



Source: Bloomberg, as of 3/31/22



# 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 11<sup>th</sup> (seasonally adjusted QoQ annualized rate).

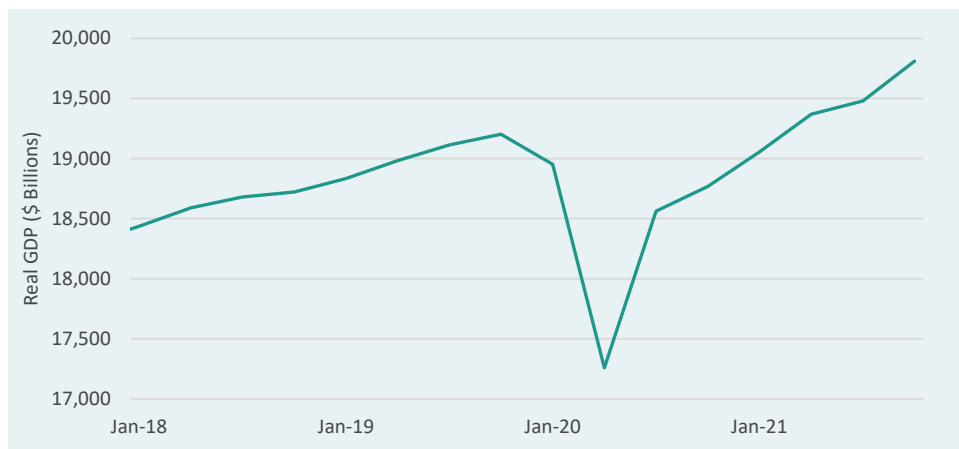
However, it is broadly expected that economic growth picks back up to around 3% throughout the remainder of 2022.

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

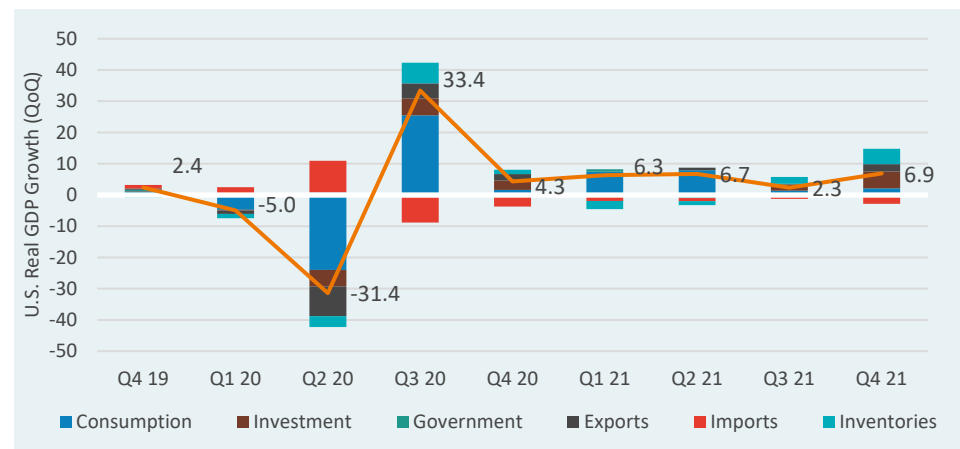
Economists expect weak growth in Q1, followed by a mild economic reacceleration

## 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.

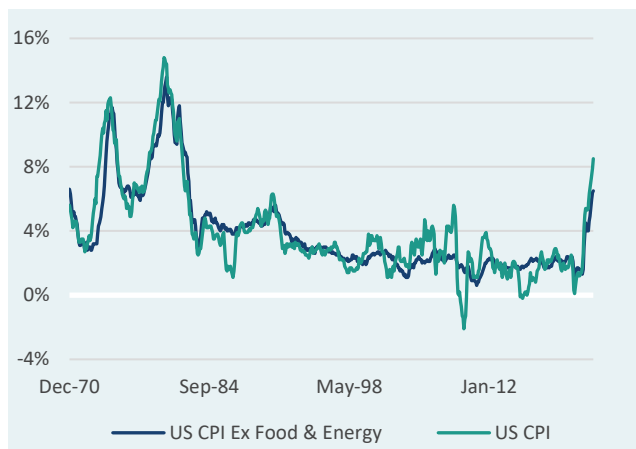
There are both inflationary and deflationary forces at play in the current environment. On the inflationary side, Russia's invasion of Ukraine has led to substantial disruptions to energy and agricultural markets, which flowed through to price spikes in many commodity markets. These moves can be seen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

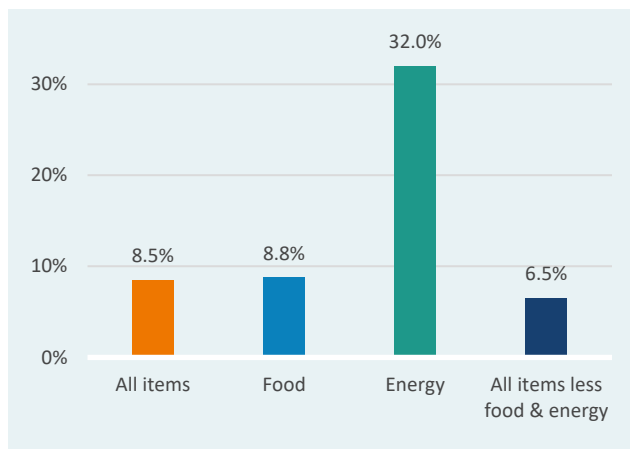
Inflation has proven more sticky (less transitory) than previously expected

U.S. CPI (YOY)



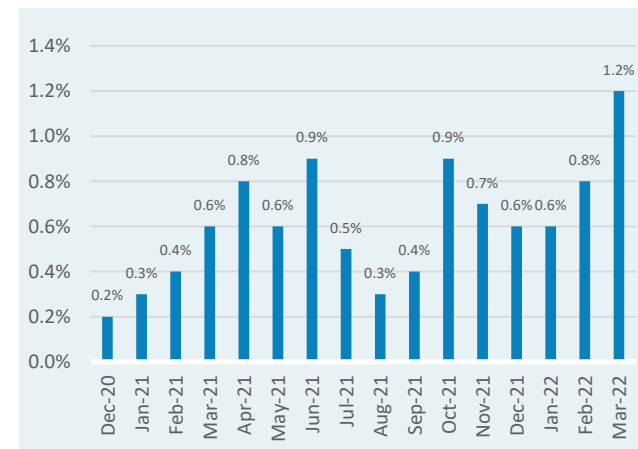
Source: BLS, as of 3/31/22

U.S. CPI (YOY)



Source: BLS, as of 3/31/22

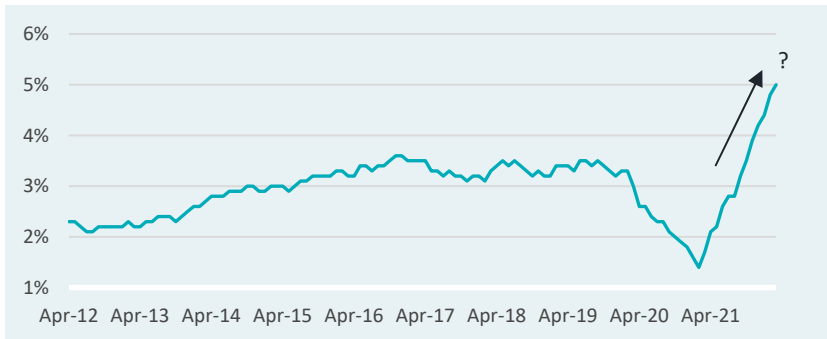
MONTHLY PRICE MOVEMENT



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.

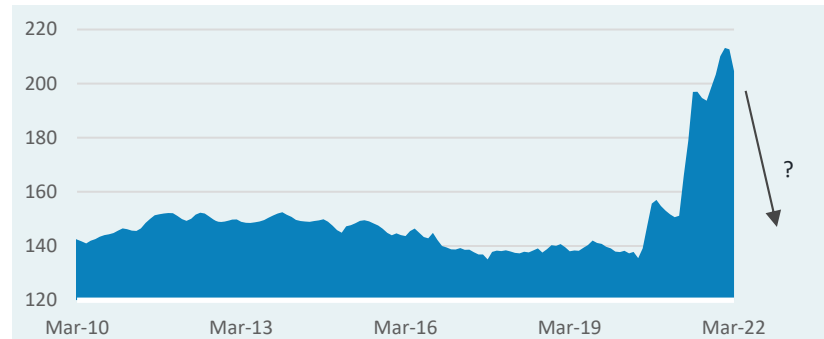
## U.S. CORNBELT AMMONIUM NITRATE (FERTILIZER) PRICES



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.

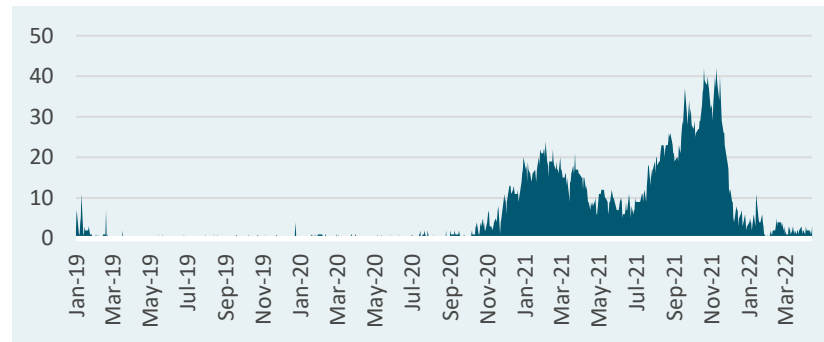
Source: FRED, as of 3/31/22 (upper), Bloomberg, as of 3/31/22 (lower)

## 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.

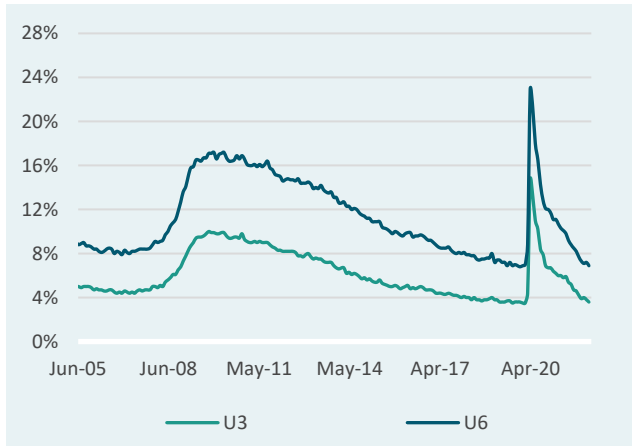
Throughout the latter part of the pandemic, our belief has been that abnormally early retirements have shrunk the overall labor force, and that the U.S. labor participation rate will not likely fully rebound to prior levels. This forecast has proven accurate, as much of the 55+ U.S. worker age cohort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

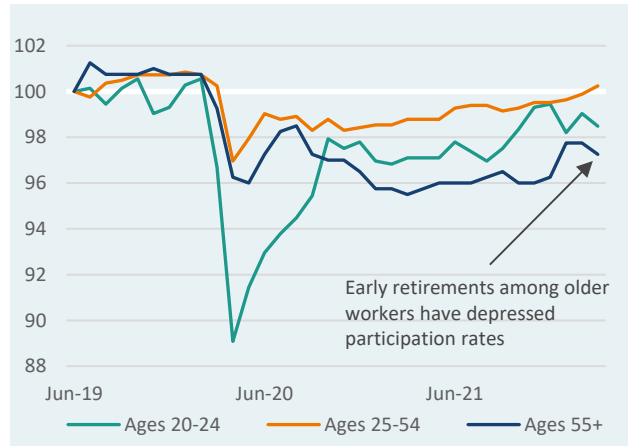
U.S. labor participation continues to see gradual improvement

## U.S. UNEMPLOYMENT



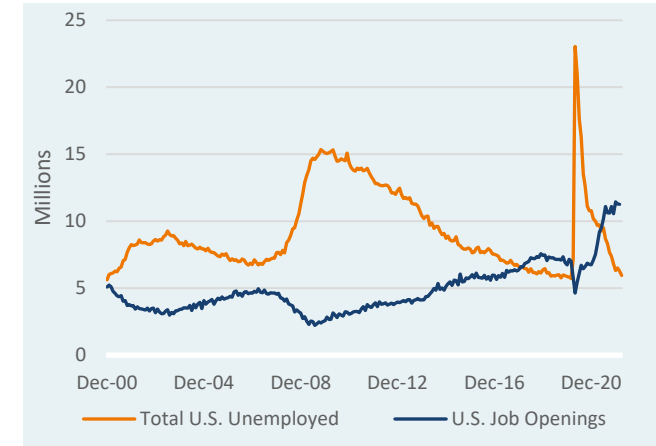
Source: FRED, as of 3/31/22

## LABOR PARTICIPATION RATE



Source: FRED, as of 3/31/22

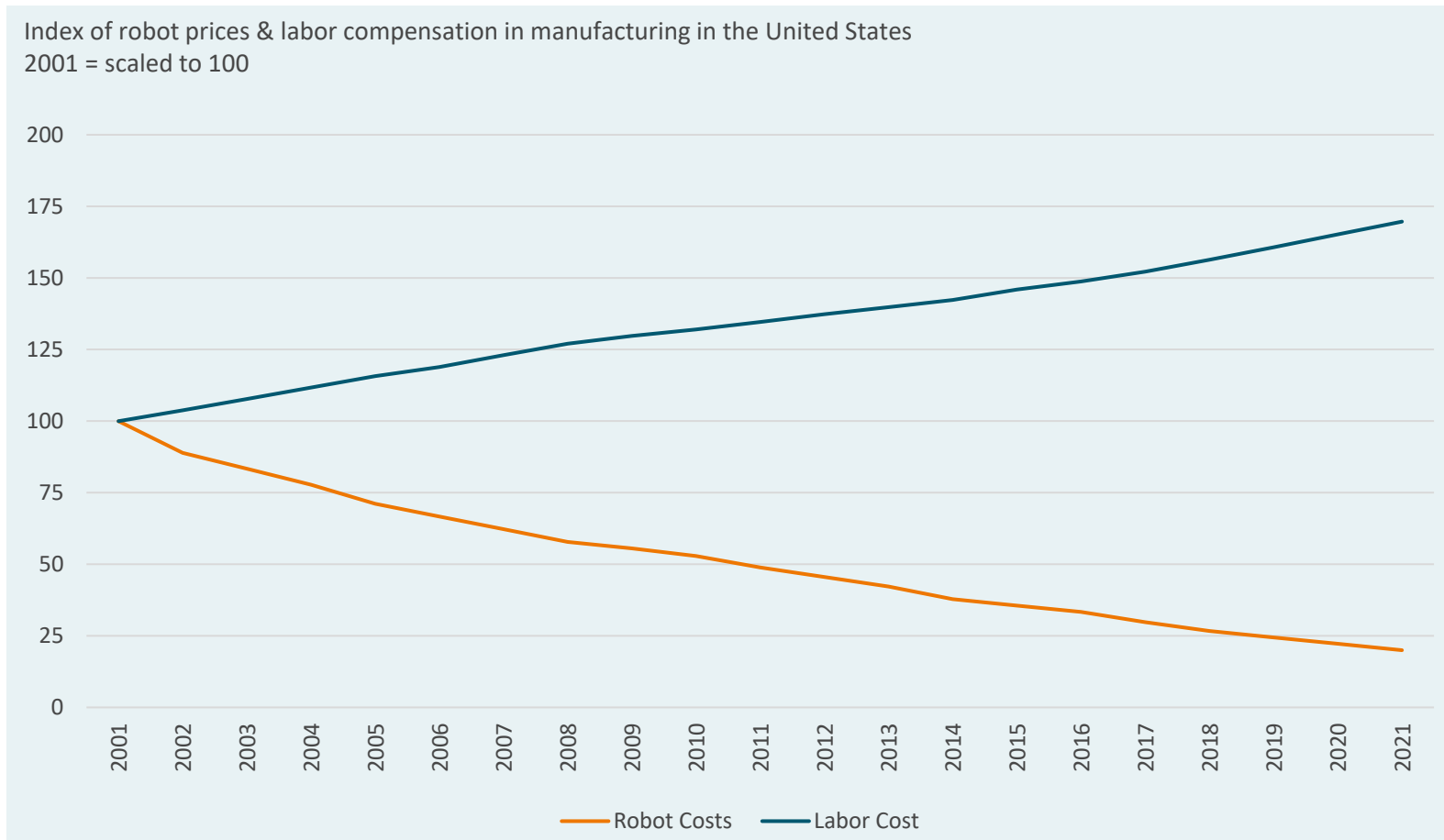
## # UNEMPLOYED VS # JOBS AVAILABLE



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](http://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.

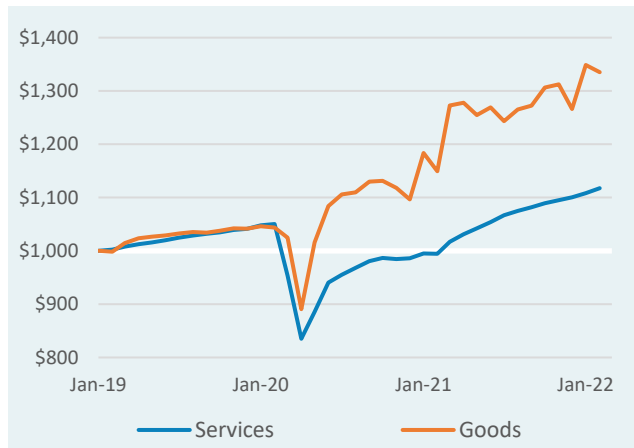
Auto sales remain depressed relative to pre-pandemic volumes and are at the lowest level since 2011. Sales have likely been hindered by supply chain and therefore inventory issues surrounding new vehicles as well as affordability issues for used

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.

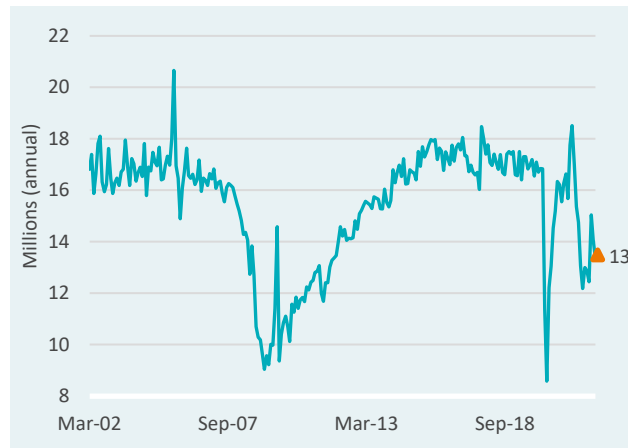
Despite vastly increased American wealth and strong job prospects, sentiment is very depressed as living costs rocket higher

## PERSONAL CONSUMPTION EXPENDITURES



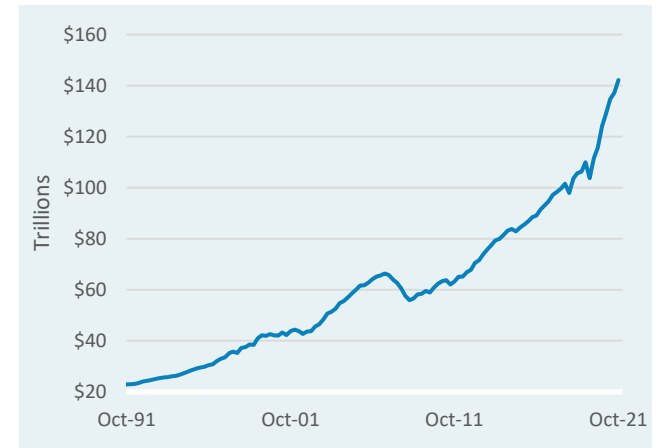
Source: FRED, as of 2/28/22

## 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.

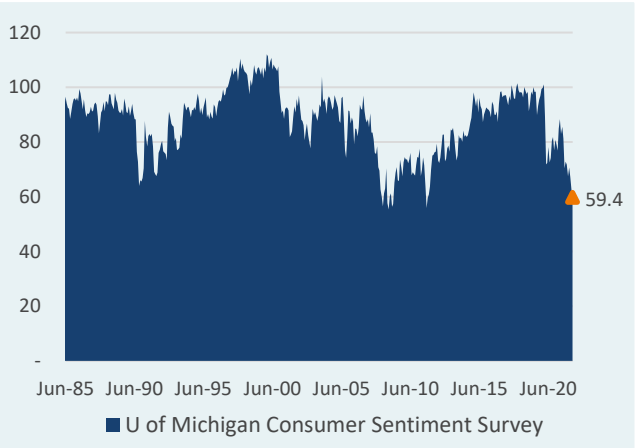
There remain 11.3 million open jobs but only 6.0 million unemployed people in the labor force, indicating significant

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



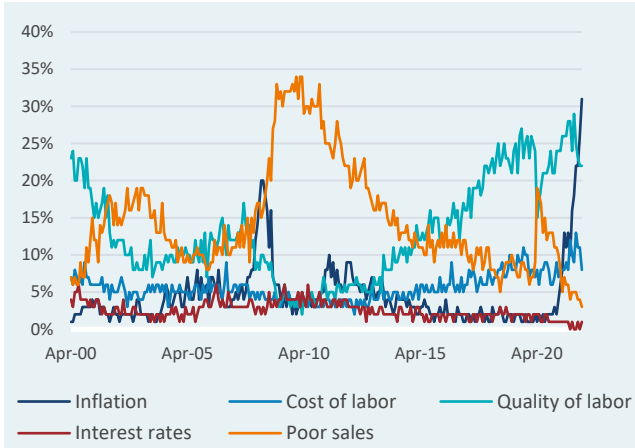
Source: University of Michigan, as of 3/31/22

### 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

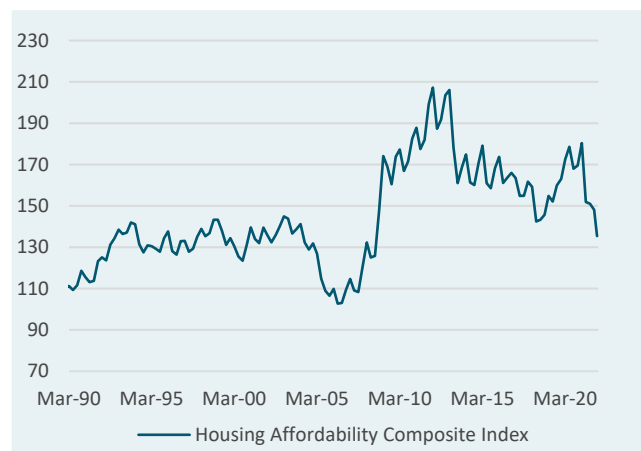
U.S. home prices continued higher, up +19% over the past year ending January, and up a whopping 32% since pre-pandemic. Price appreciation may be set to cool off as the 30-year fixed mortgage rate has risen to 5%, inventories have risen, and sales activity has slowed considerably.

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.

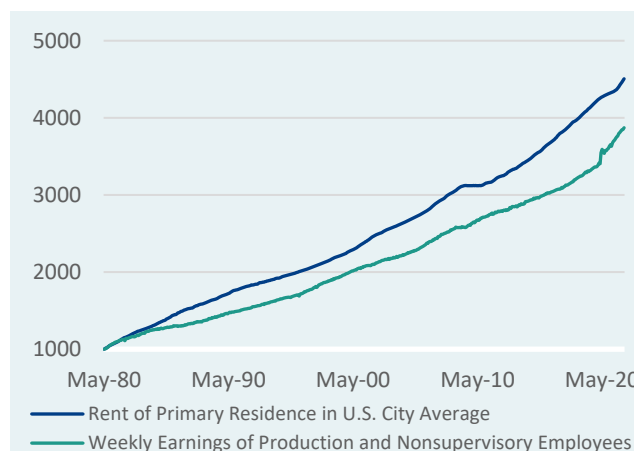
The cost of housing has outpaced wage gains for decades, although only mildly so (not as dramatically as some might assume). Lower and lower interest rates had largely counteracted higher home prices in terms of total ownership costs. This rough equilibrium seems to have swung in the other direction 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**



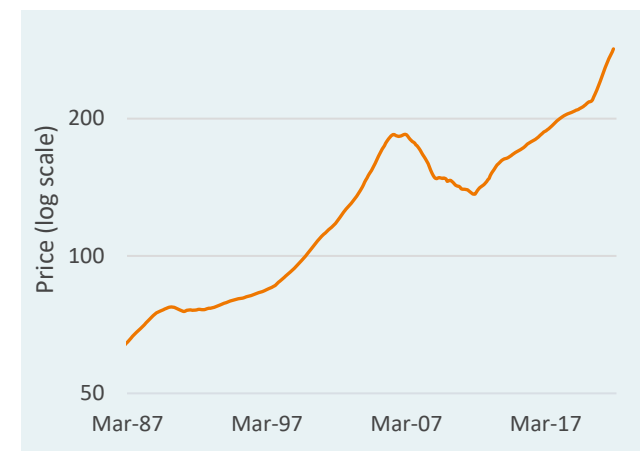
Source: NFIB, as of 2/28/22

**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

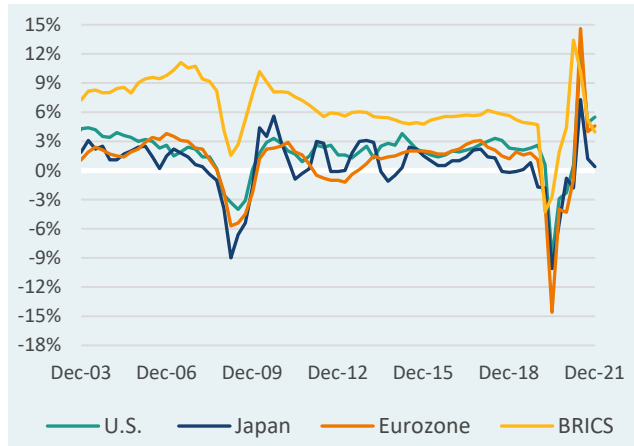
The pace of economic growth has moved further back towards average levels in most economies. This is reflected in quarter-over-quarter GDP growth figures, as these provide a better gauge of *short-term* growth trends. The International Monetary Fund estimates a 4.3% growth rate for calendar year 2021, 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.

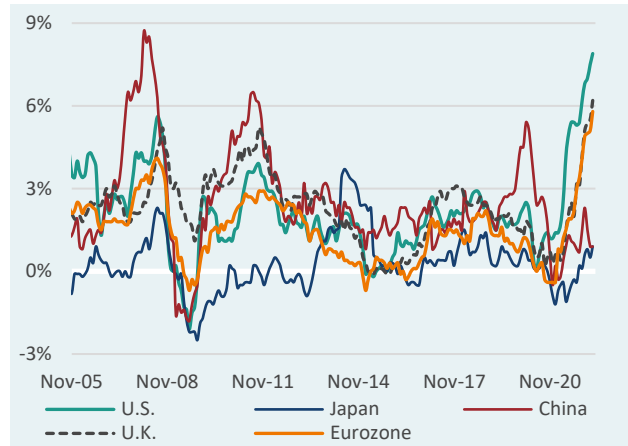
Unemployment has further improved to, or below, pre-pandemic levels. Investors should also note the change in labor market *size*. For example, disenfranchised workers falling out of the workforce or early retirements may not be captured in popular unemployment metrics but can have just as deleterious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

**REAL GDP GROWTH (YOY)**



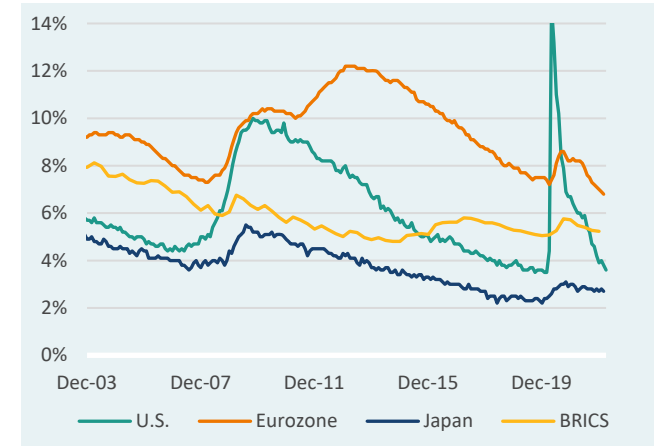
Source: Bloomberg, as of 12/31/21

**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%).

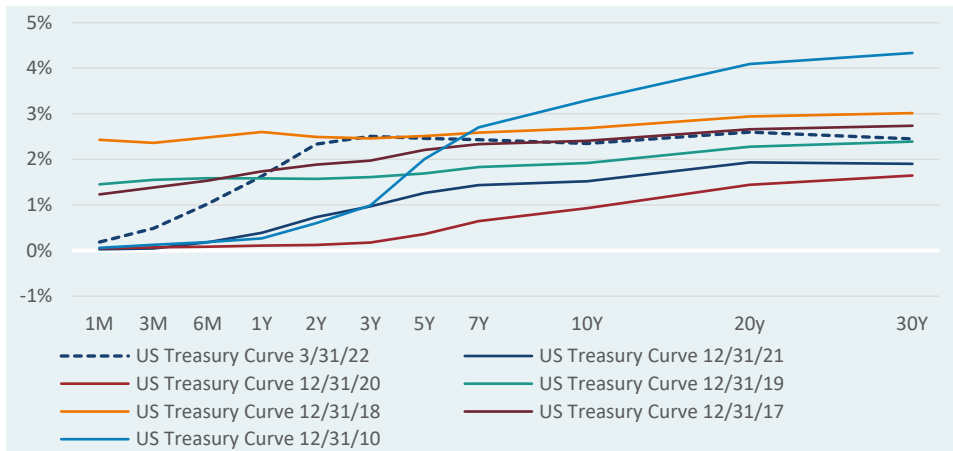
	QTD Total Return	1 Year Total Return
Core Fixed Income (Bloomberg U.S. Aggregate)	(5.9%)	(4.2%)
Core Plus Fixed Income (Bloomberg U.S. Universal)	(6.1%)	(4.2%)
U.S. Treasuries (Bloomberg U.S. Treasury)	(5.6%)	(3.7%)
U.S. High Yield (Bloomberg U.S. Corporate HY)	(4.8%)	(0.7%)
Bank Loans (S&P/LSTA Leveraged 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

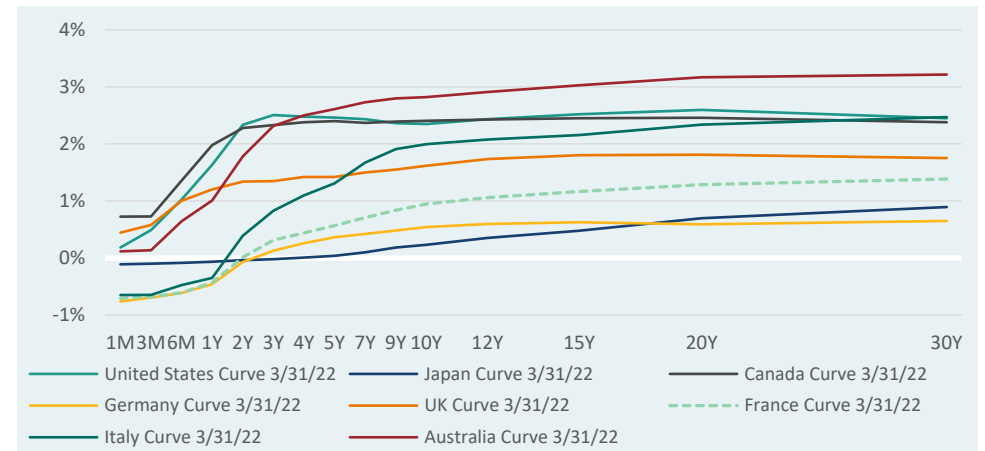


# Yield environment

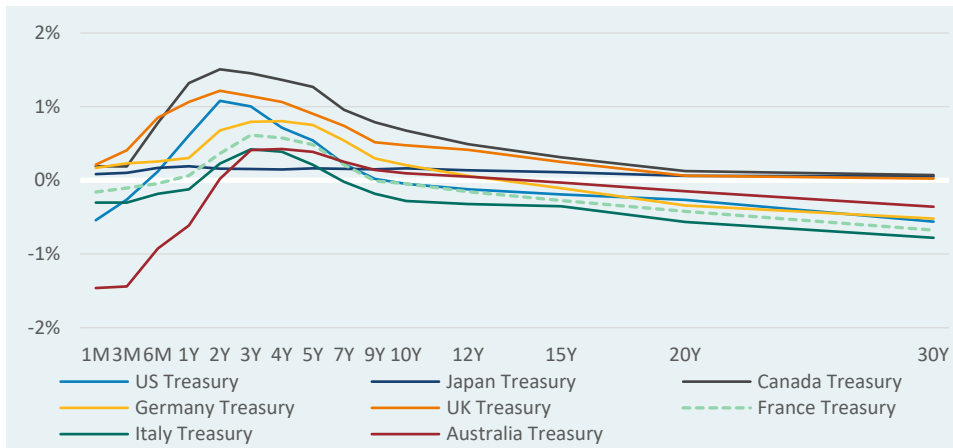
## U.S. YIELD CURVE



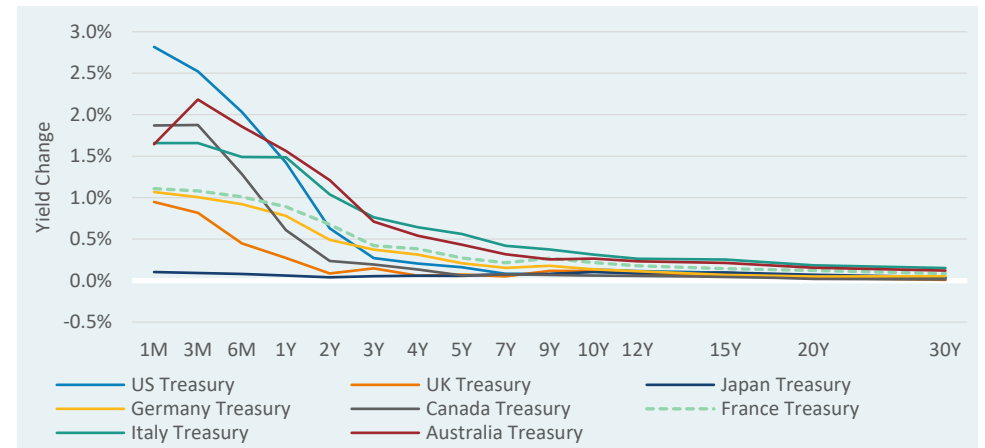
## GLOBAL GOVERNMENT YIELD CURVES



## YIELD CURVE CHANGES OVER LAST FIVE YEARS



## IMPLIED CHANGES OVER NEXT YEAR

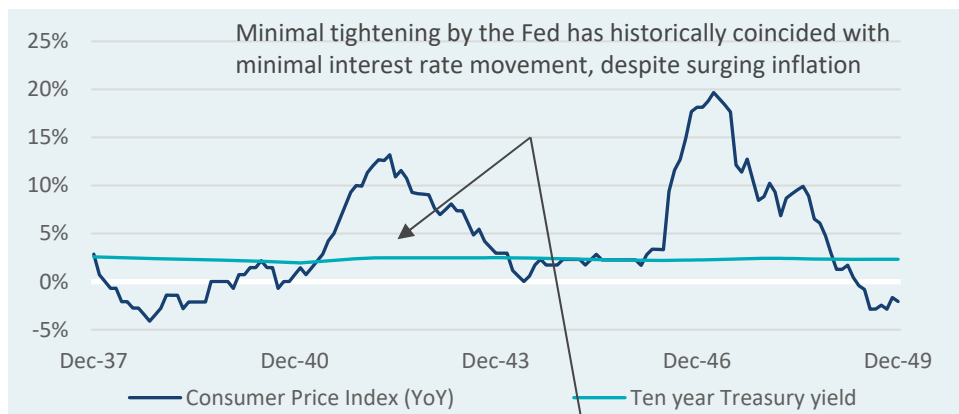


Source: Bloomberg, as of 3/31/22

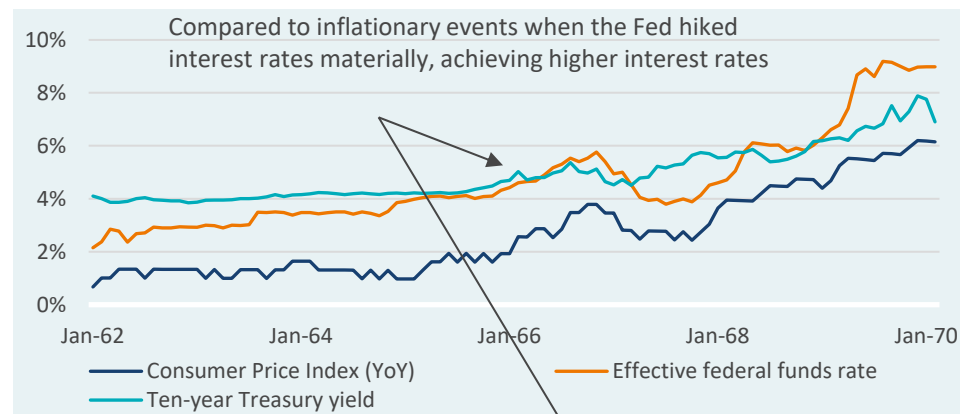
# What history tells us about *rising rates*

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.

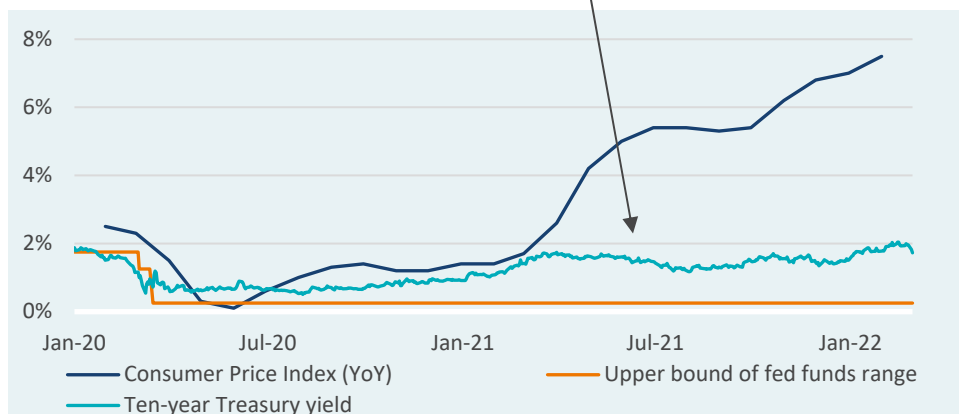
## WORLD WAR II



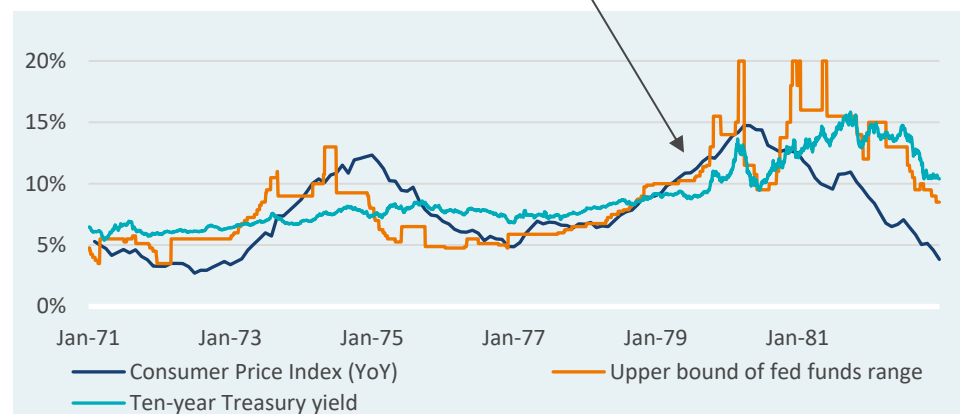
## LATE 1960S



## 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

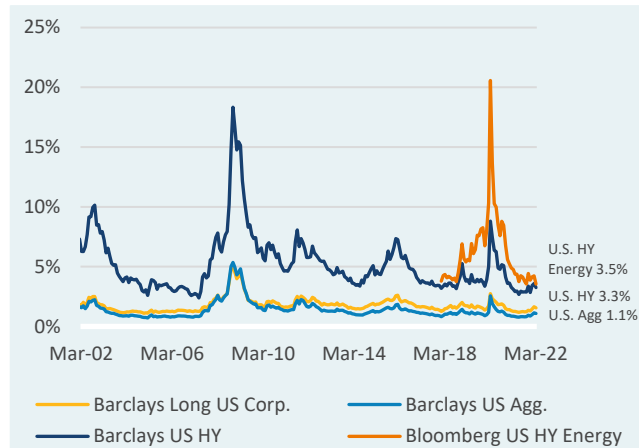
Fixed income broadly delivered losses during the first quarter, as interest rates headed higher and credit spreads expanded. Higher duration exposures such as core fixed income (Bloomberg U.S. Aggregate -5.9%) underperformed lower duration exposures such as U.S. high yield (Bloomberg U.S. Corporate High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

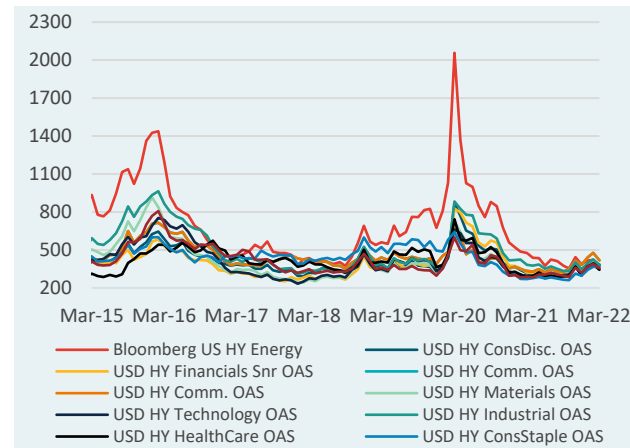
The low yield environment has pushed many investors to search for greater yield, such as through the pursuit of increased private markets exposure and/or taking on riskier holdings. The mild move higher in the yield curve likely helps ease this market environment issue, although high inflation has created 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

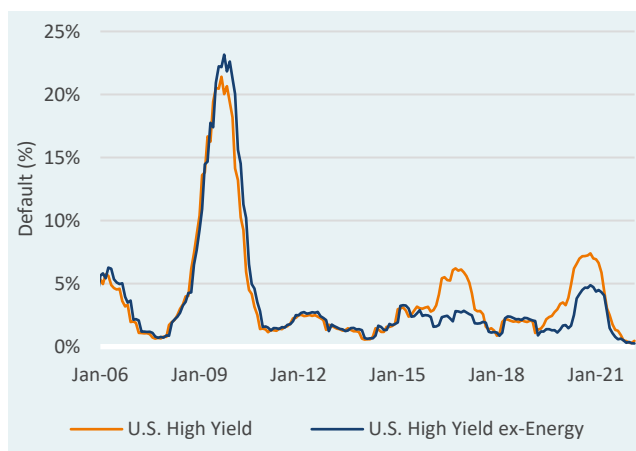
Despite a general increase in volatility and a sell-off across high-yield and leveraged loan markets, default activity remained negligible. Over the first quarter only \$1.6 billion in defaults occurred, marking the third-lowest quarterly total since Q4 2013. Realized recovery rates for high yield bonds 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.

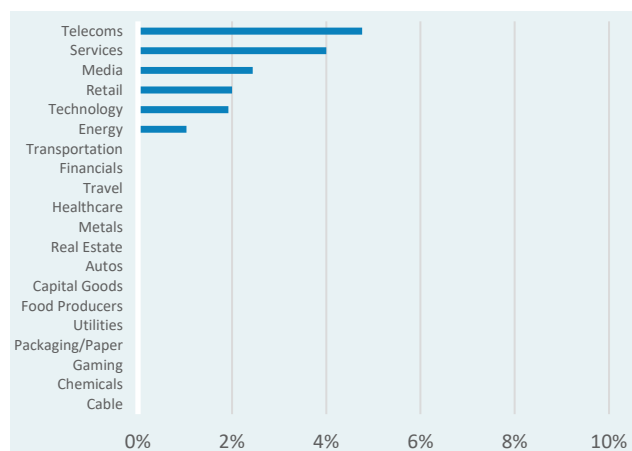
High yield issuance hit its lowest level since March 2020 in February, and then fell further in March, as issuers contended with a sharp increase in global bond yields. High-yield issuance totaled just \$46.5 billion so far this year, down from \$158.8 billion (-71%) over the same period a year ago. 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)**



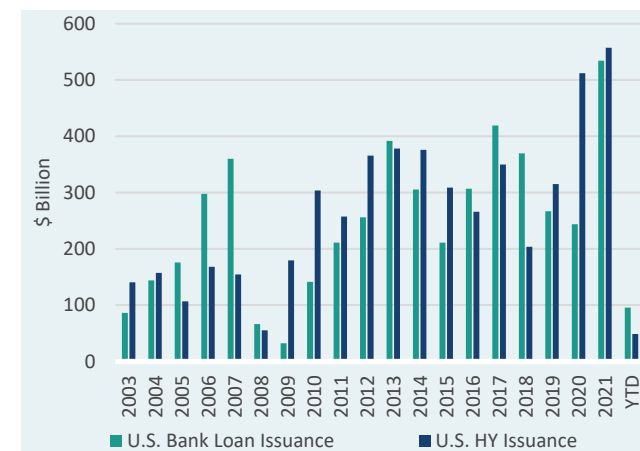
Source: BofA Merrill Lynch, as of 3/31/22

**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

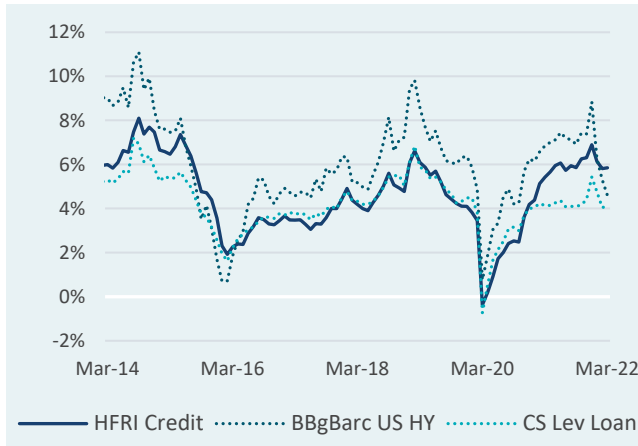
Credit hedge fund strategies were a bright spot in Q1 relative to fixed income markets. The HFRI Credit Index, which typically tracks between high yield and leveraged loan indices, gained 0.2% during the quarter despite widening credit spreads and rising rates which detracted from the performance of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

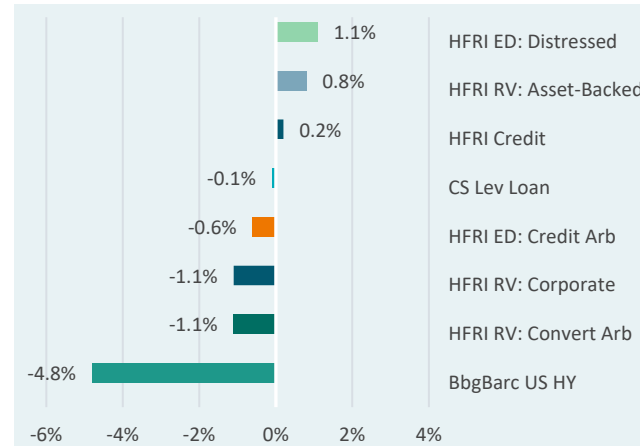
Distressed investors have benefitted from out-of-favor, deep value assets rebounding over the prior 18 months. Asset-backed strategies have been able to limit duration exposure while finding new ways to maintain access to higher yielding securitized instruments, such as by expanding into origination/securitization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

## 3 YEAR ROLLING RETURN



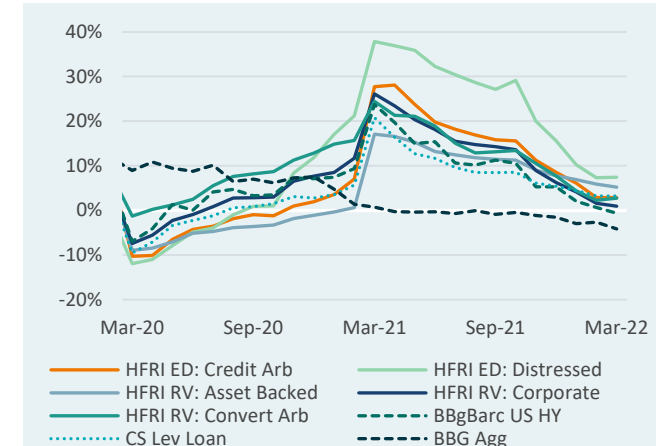
Source: HFRI, as of 3/31/22

## 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%.

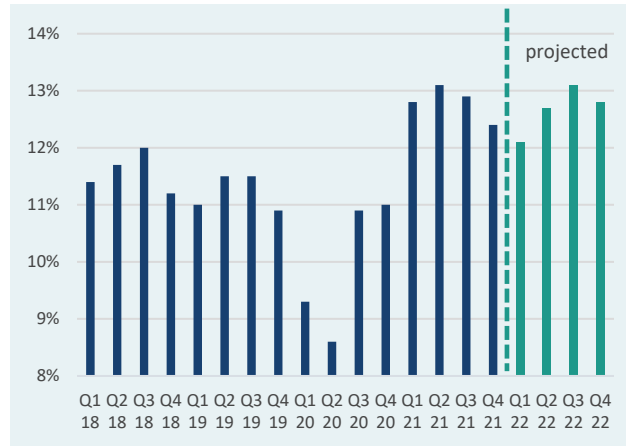
Companies continue to contend with headwinds from supply chain disruptions, surging commodity prices which were given a leg higher by the conflict in Ukraine, ongoing labor shortages and higher prices in general. In Q4 of 2021, 365 S&P 500 companies mentioned “inflation” on earnings calls, which was 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**



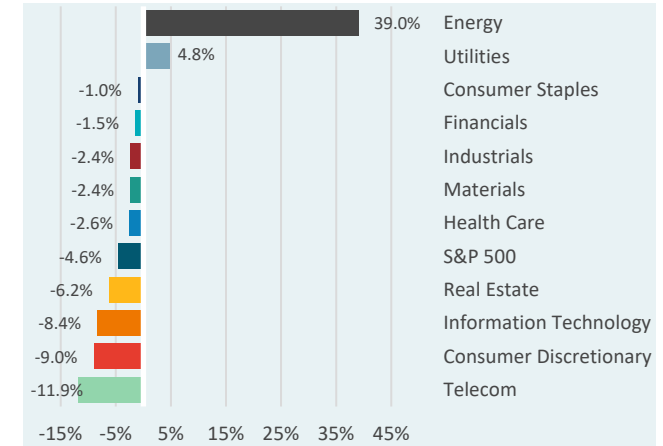
Source: Standard & Poor's, as of 3/31/22

**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%).

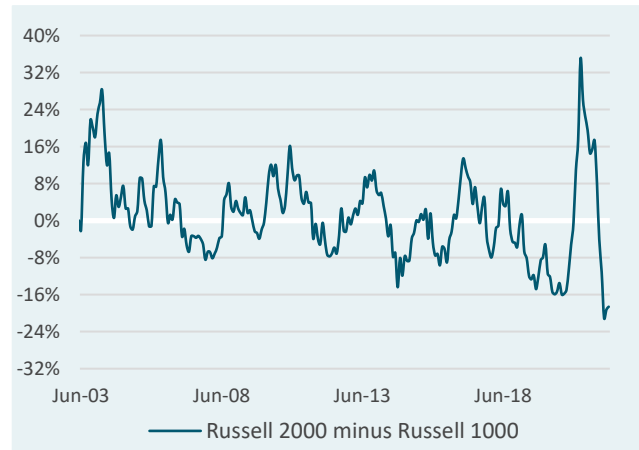
Energy stocks dramatically outperformed during Q1, as global demand has outpaced energy production for quite some time, pushing prices higher. Additionally, Russia's invasion of Ukraine led to widespread fears of an energy supply crunch, which temporarily sent oil to \$123/bbl—the highest level since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

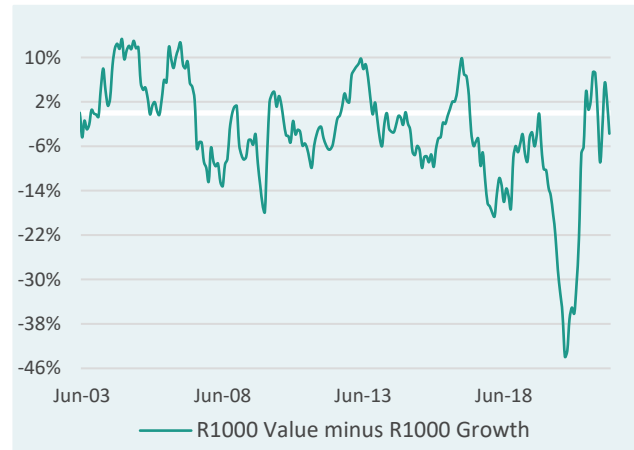
Value strongly outperformed during Q1

**SMALL CAP VS LARGE CAP (YOY)**



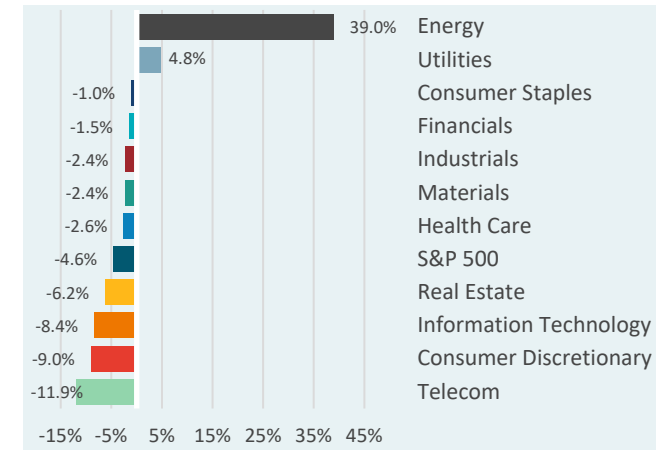
Source: FTSE, as of 3/31/22

**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

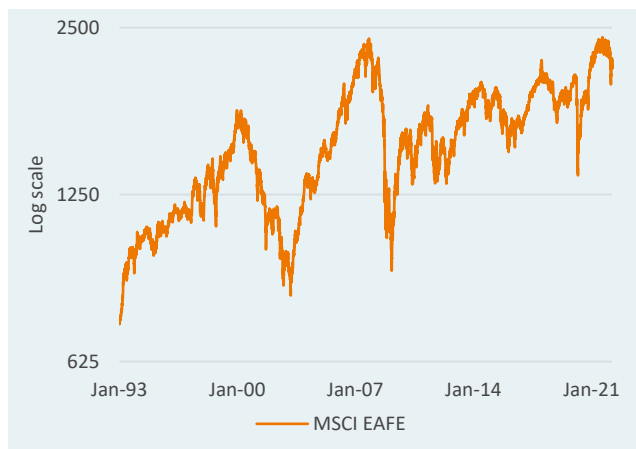
International developed equities fell -5.9% during the quarter, while U.S. equities performed slightly better (S&P 500 -4.6%) and emerging market equities trailed (MSCI Emerging Markets -7.0%), on an unhedged currency basis. Currency movement during the quarter detracted from the performance of investors 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.

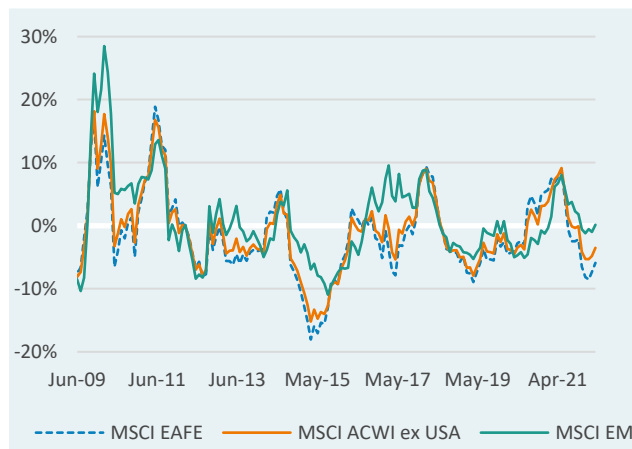
German equities (MSCI Germany -13.1%) detracted significantly from international developed equity returns, as investors expressed concern over the country's large exposure to Russian energy imports. Producer prices in Germany rose 25.9% year-over-year in February, partly due to surging gas prices. It 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



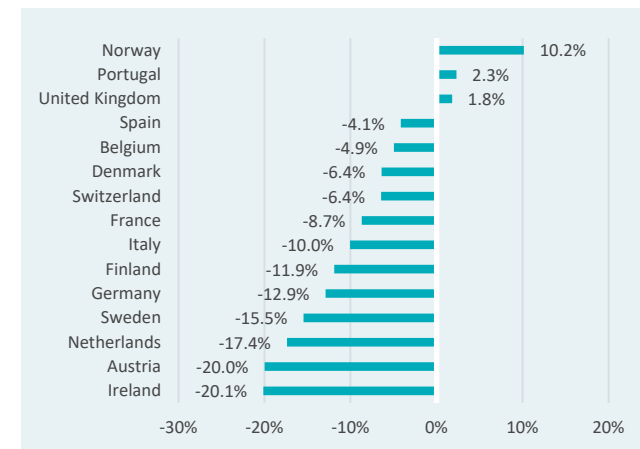
Source: MSCI, as of 3/31/22

## 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.

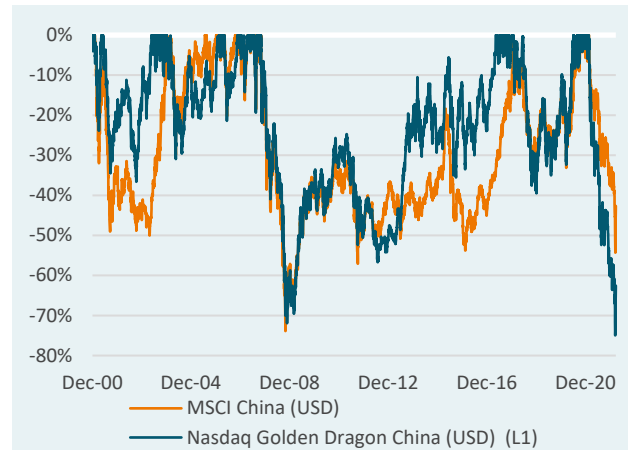
Emerging market equities are attractively priced relative to developed markets. The valuation divide is now extremely large. On a price-to-earnings basis, emerging market equities are in the 8th percentile cheap relative to U.S. equities going back to 2003, meaning they have been cheaper just 7% of the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

## EMERGING MARKET EQUITY



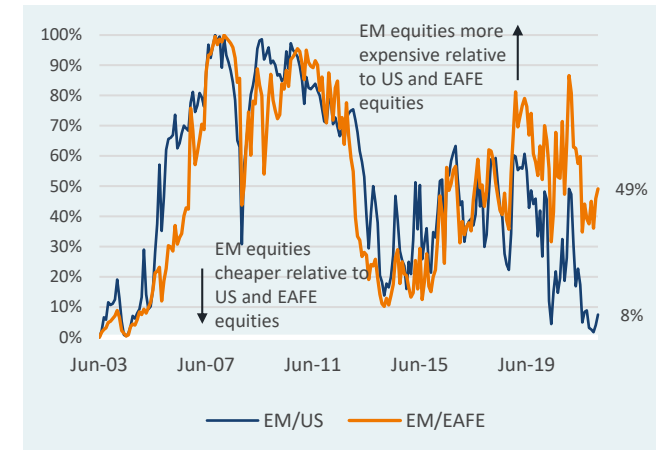
Source: MSCI, as of 12/31/21

## 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

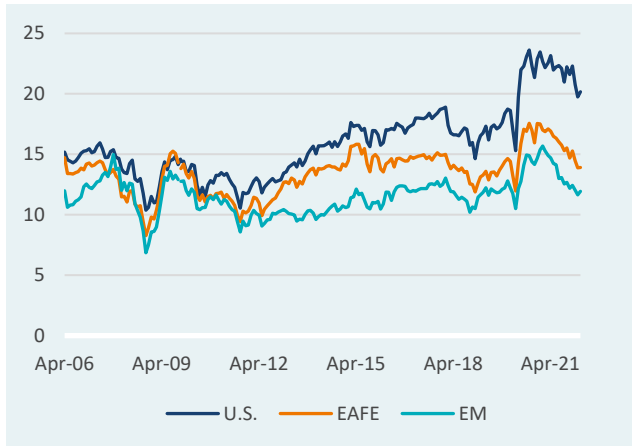
Valuations drifted lower over the first quarter as earnings expectations remained relatively steady and prices moderated. The forward 12-month P/E ratio for the S&P 500 closed the quarter at 19.0—slightly above the five-year average. Forward multiples have fallen back to pre-pandemic levels for most 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 99<sup>th</sup> percentile relative to EAFE, and in the 92<sup>nd</sup> 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.

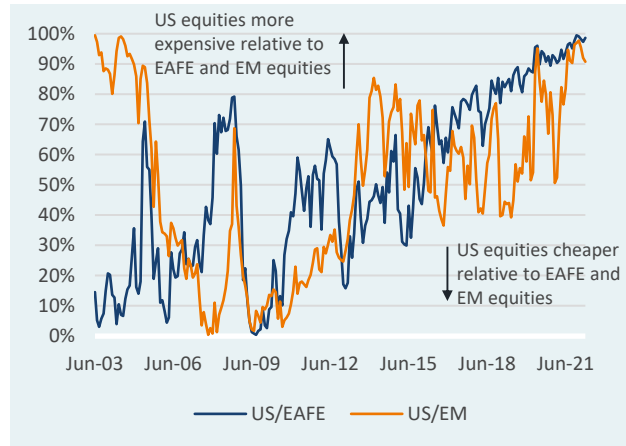
Most equity valuations have moved back towards normal levels, though U.S. prices remain rich

## FORWARD P/E RATIOS



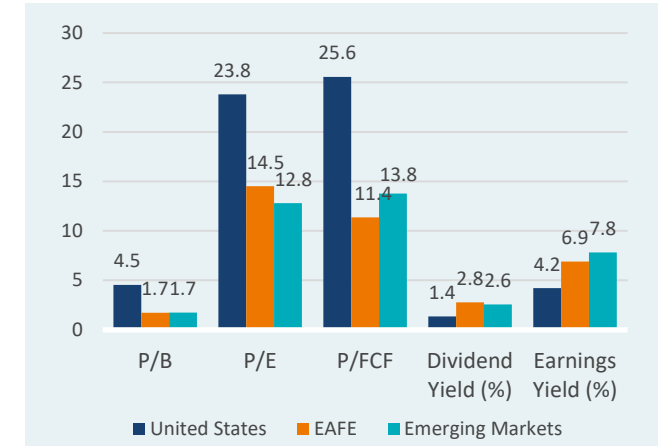
Source: MSCI, 12m forward P/E, as of 3/31/22

## RELATIVE FORWARD PRICE MULTIPLES – VALUATION PERCENTILE ANALYSIS



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

## VALUATION METRICS (3-MONTH AVERAGE)



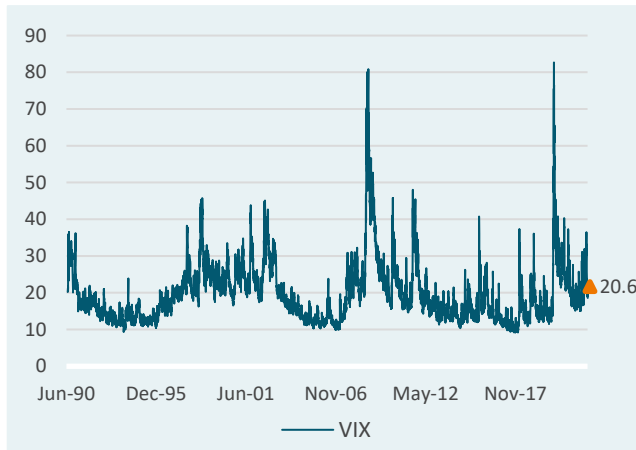
Source: Bloomberg, MSCI as of 3/31/22 - trailing P/E

# 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.

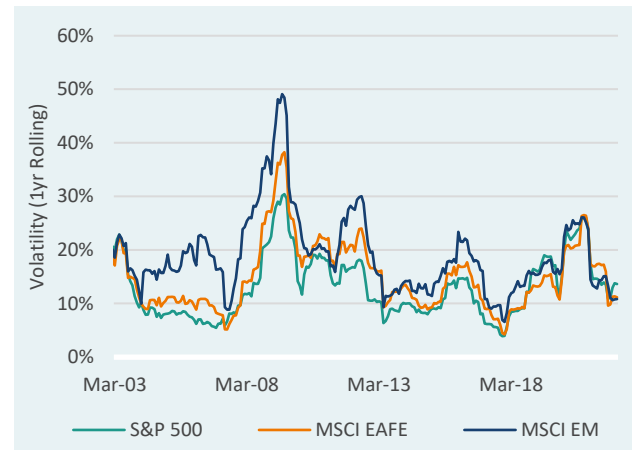
While realized volatility in emerging market equities was fairly low relative to history in Q1, weakness in tech shares and concerns over potential sanctions resulted in material selloffs in highly-tech-weighted regional markets. In U.S. dollar terms, the MSCI China Index closed the quarter -44% below 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)**



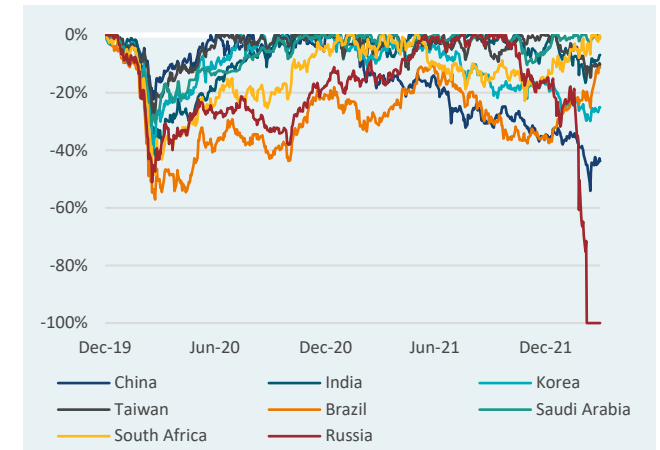
Source: Cboe, as of 3/31/22

**REALIZED VOLATILITY**



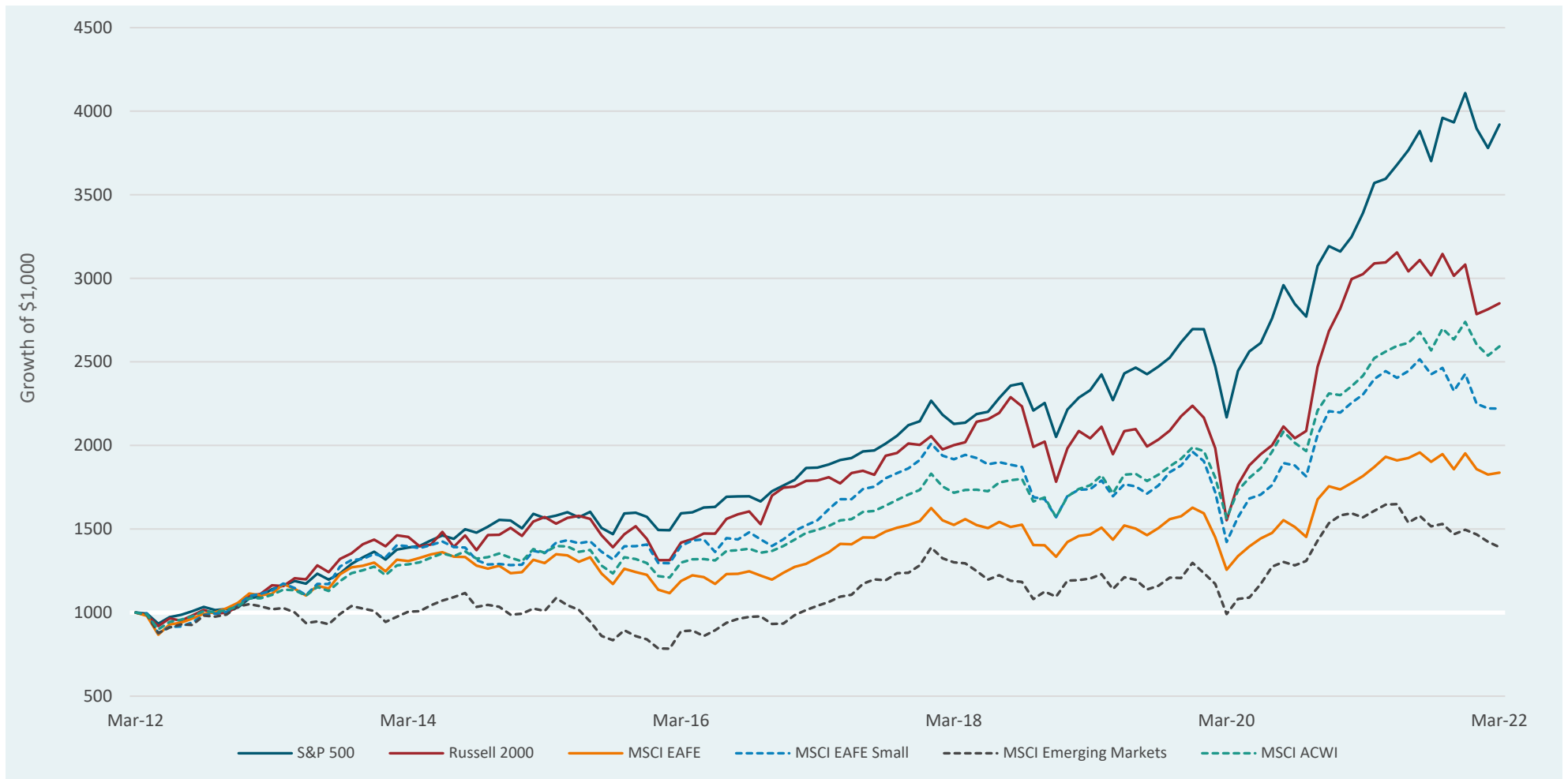
Source: Standard & Poor’s, MSCI, as of 3/31/22

**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

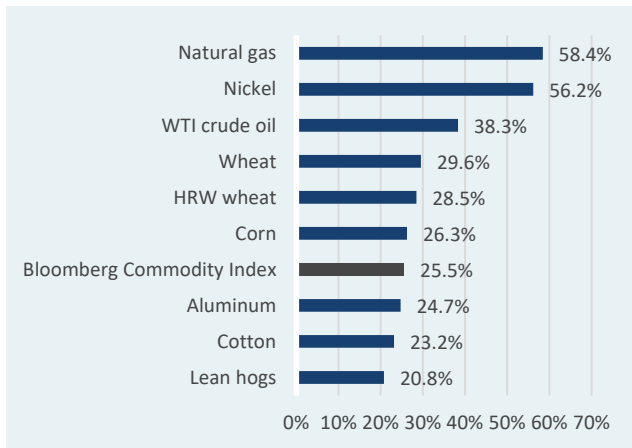
Commodities were by far the best-performing major asset class in Q1 2022 (Bloomberg Commodity Index +25.5%), with every major sector contributing positively to overall index returns. The Energy (+47.9%) and Grains (+24.9%) sectors drove the advance, as investors speculated on what war in the Ukraine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

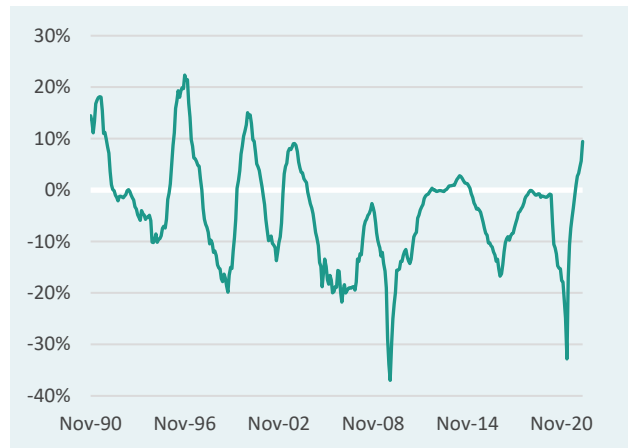
Improving roll yield has been a huge component of the outsized total return offered by commodities, adding +9.4% to performance over the last twelve months. Massive increases in spot prices relative to further-dated contracts pushed many commodity futures curves into relatively steep backwardation over 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**



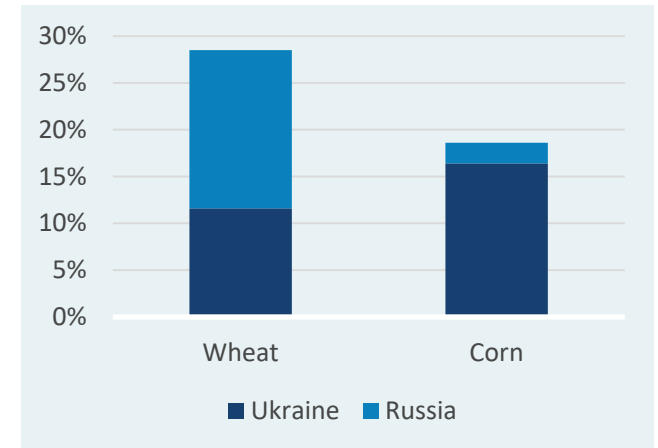
Source: Bloomberg, as of 3/31/22

**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



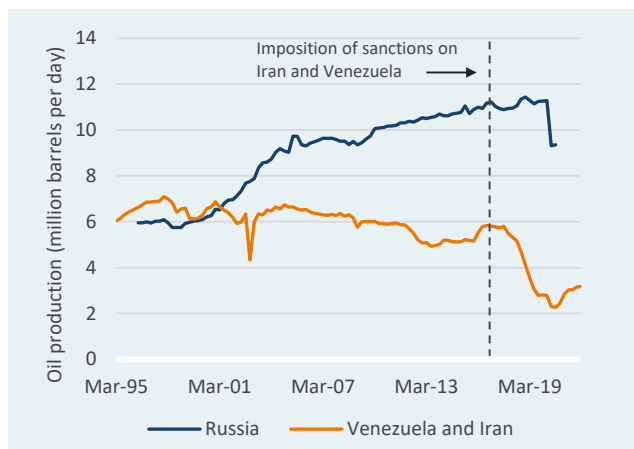
# How can the Russian oil gap be filled?

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.

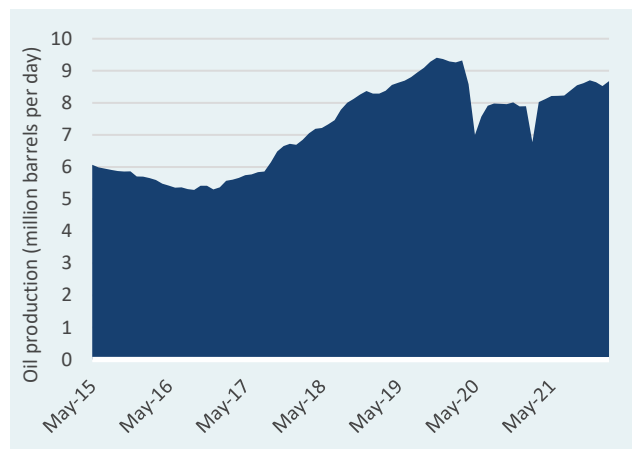
Increased energy production is needed to alleviate high prices, but this conflicts with the West's climate priorities. U.S. government officials have given mixed signals to oil producers. For example, the administration announced in April that it will resume its sale of leases for drilling on federal 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

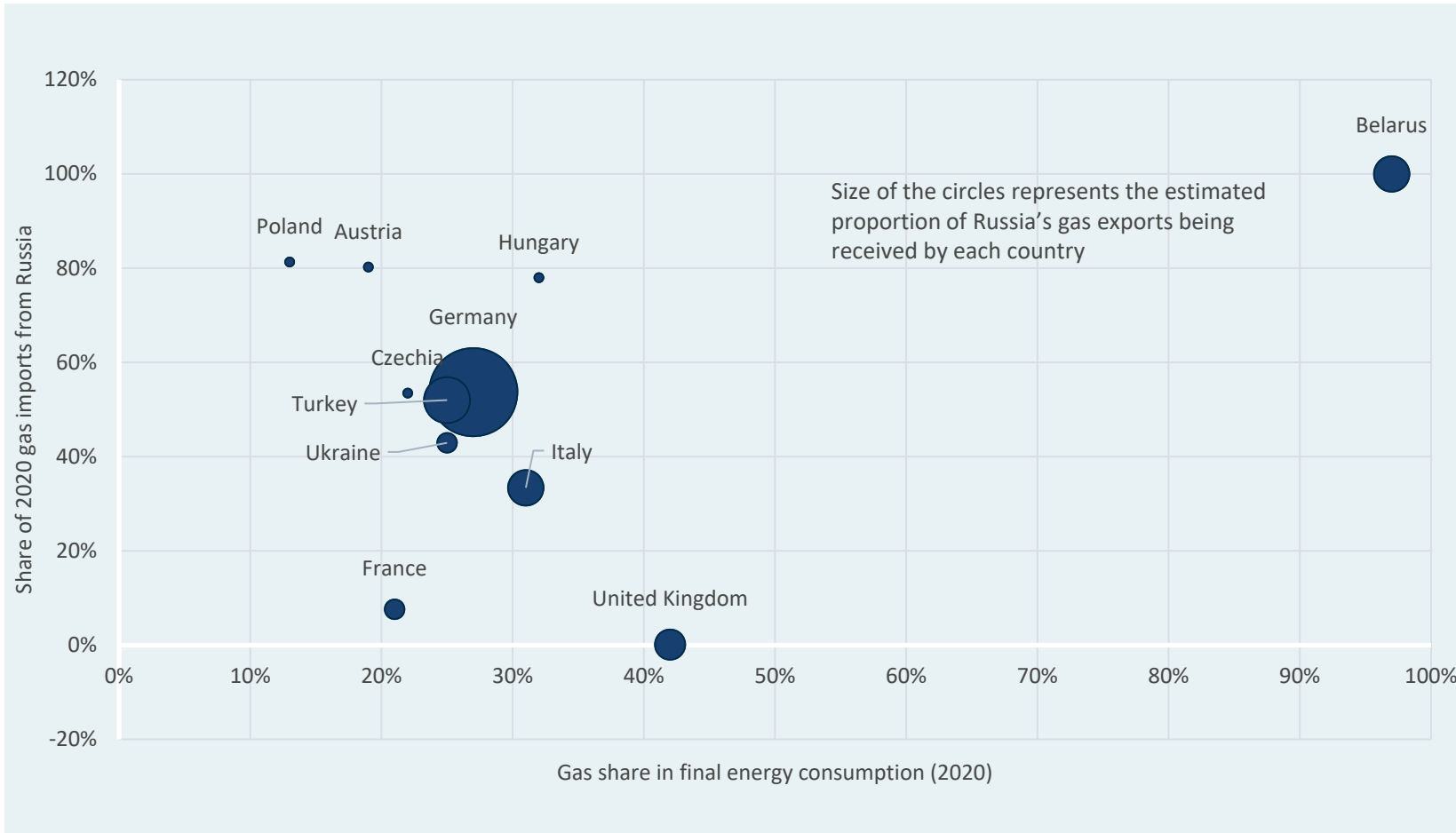
## SHALE PRODUCERS' FOCUS ON DIVIDENDS



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

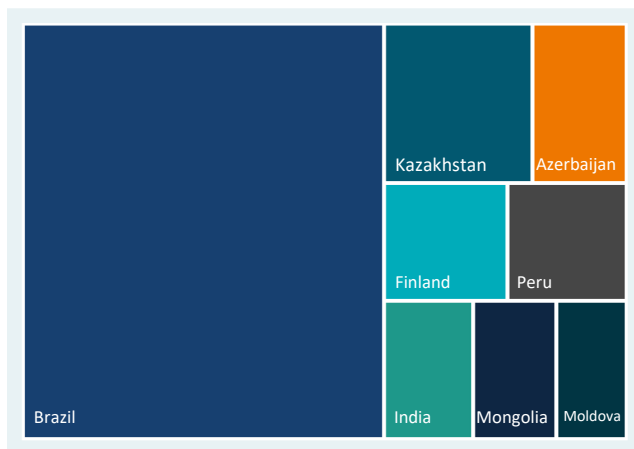
Russia, the world's largest fertilizer exporter, imposed a two-month ban on ammonium nitrate exports, which threatens the availability of fertilizer supplies, especially to South America, as the region enters a critical point in the growing season. Although the United States is not a direct buyer of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

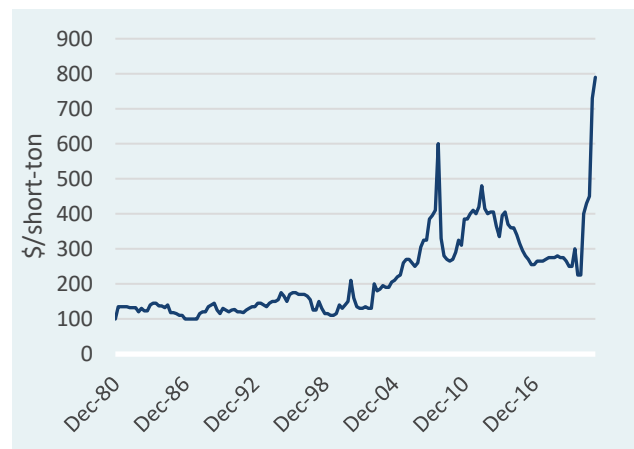
China, the world's largest grain consumer is also facing significant food shortages. Recently, the country's agriculture minister stated that the condition of the winter wheat crop was the "worst in history", and that yields are expected to fall around 20%.

## 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

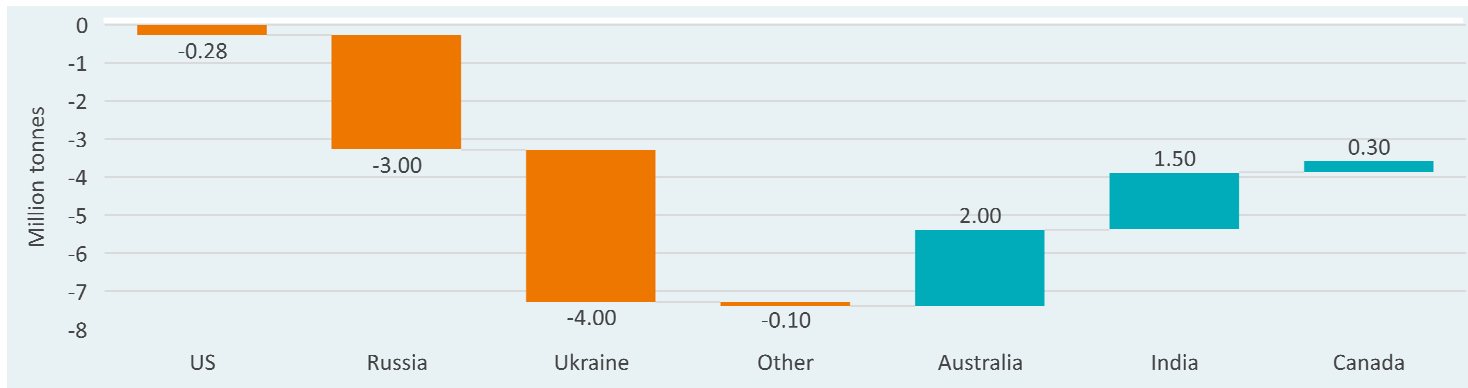
## UKRAINE – CROP CALENDAR



Source: USDA, Ukraine Ministry of Agriculture

# Where will incremental supply come from?

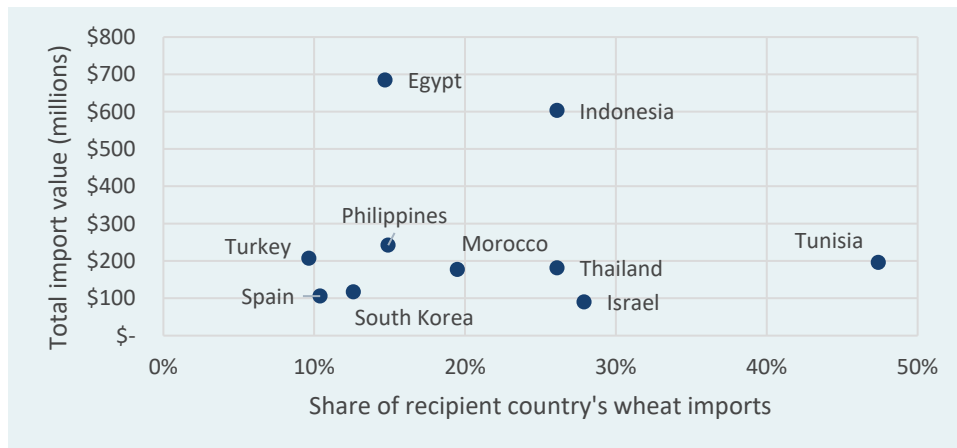
FEBRUARY TO MARCH CHANGE IN 2022 GLOBAL WHEAT EXPORTS



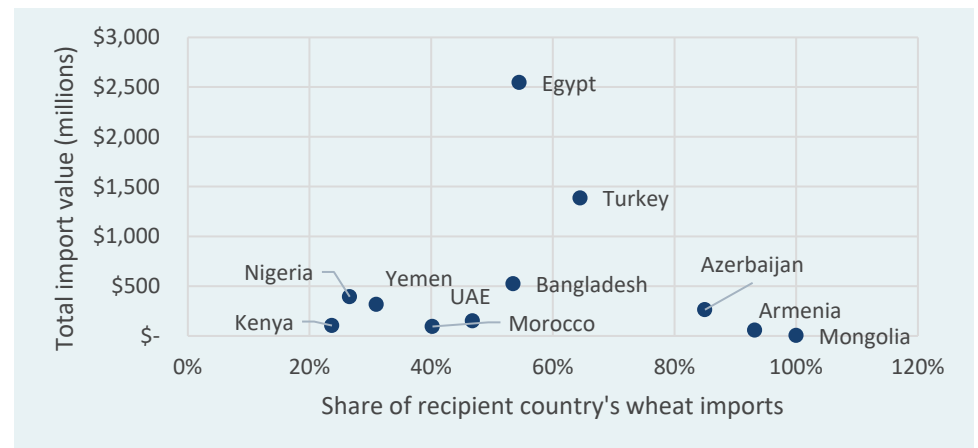
Global production is expected to drop 3.5 million metric tons in 2022, as substitution from farmers in Australia, India, and Canada is not expected to be able to fully offset production declines in the Black Sea region

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



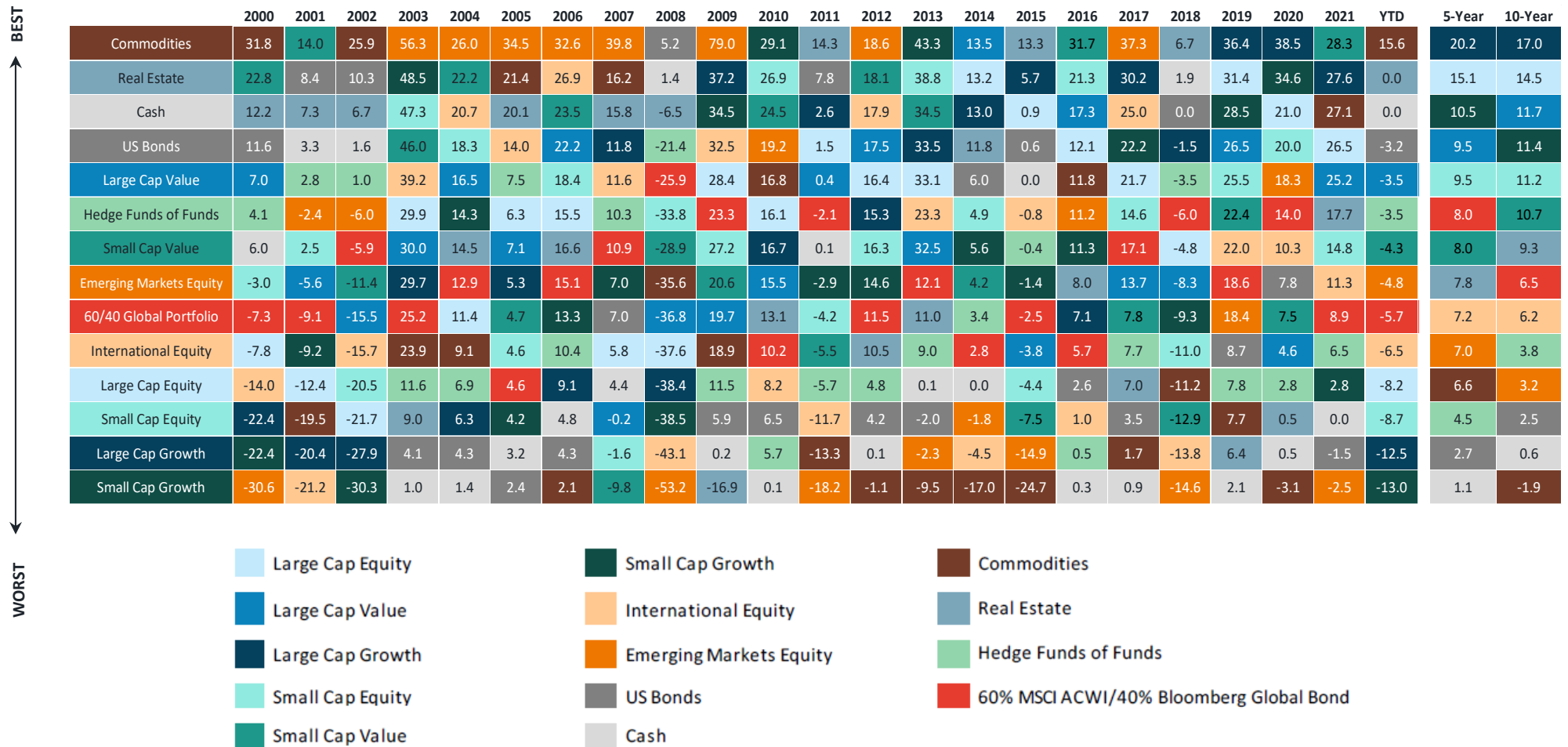
RUSSIAN GLOBAL WHEAT EXPORTS



Source: OEC, BACI

# Appendix

# Periodic table of returns



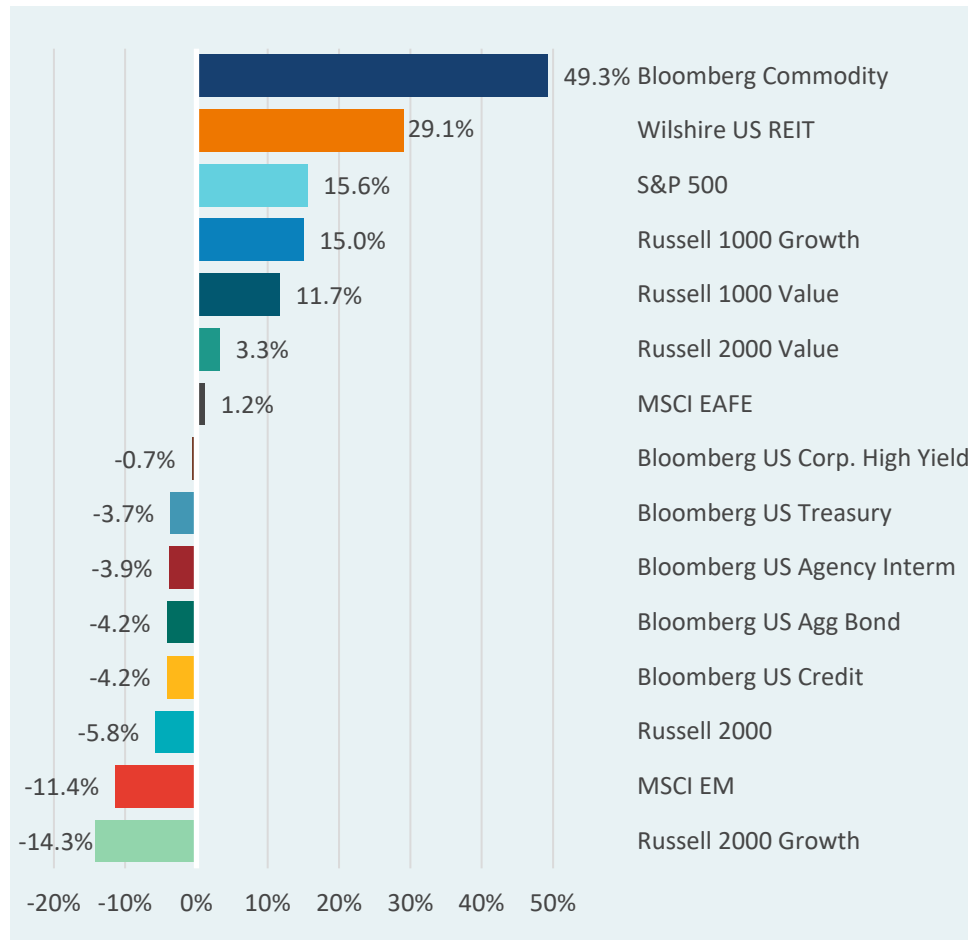
BEST  
↑  
↓  
WORST



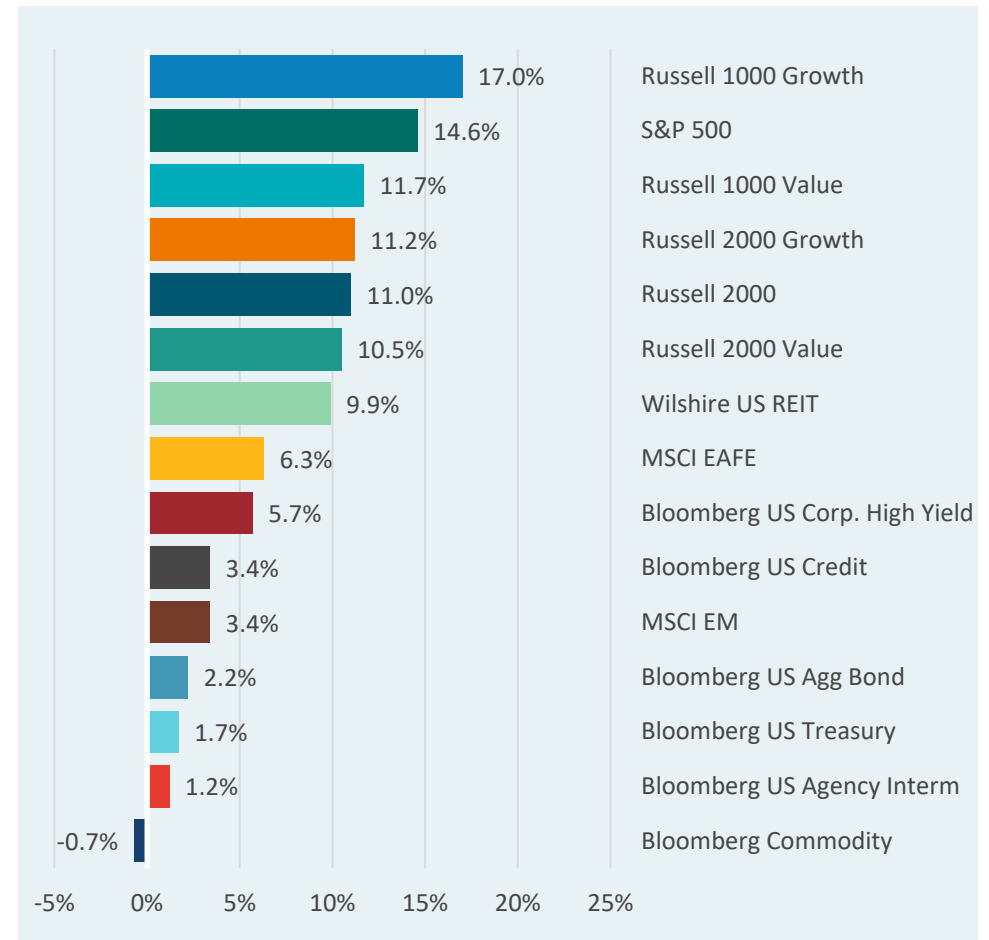
Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, Bloomberg US Aggregate, T-Bill 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



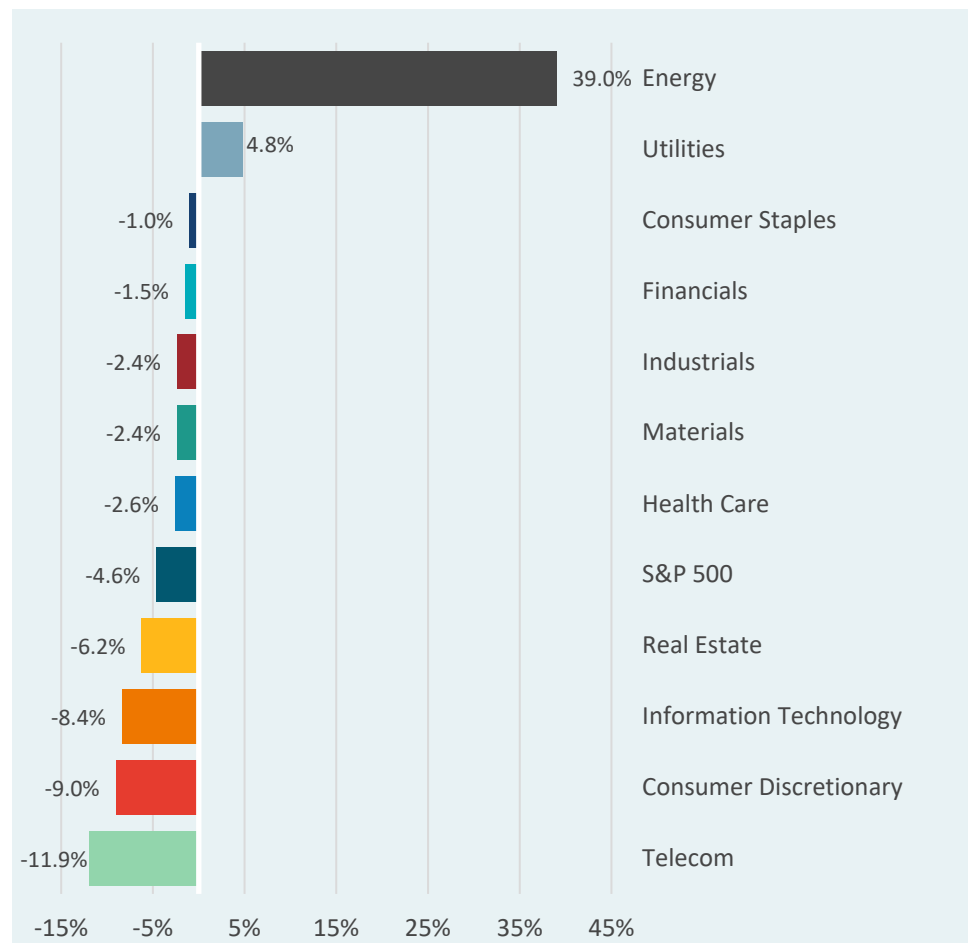
\*Only publicly traded asset performance is shown here. Performance of private assets is typically released with a 3- to 6-month delay.

Source: Morningstar, as of 3/31/22

Source: Morningstar, as of 3/31/22

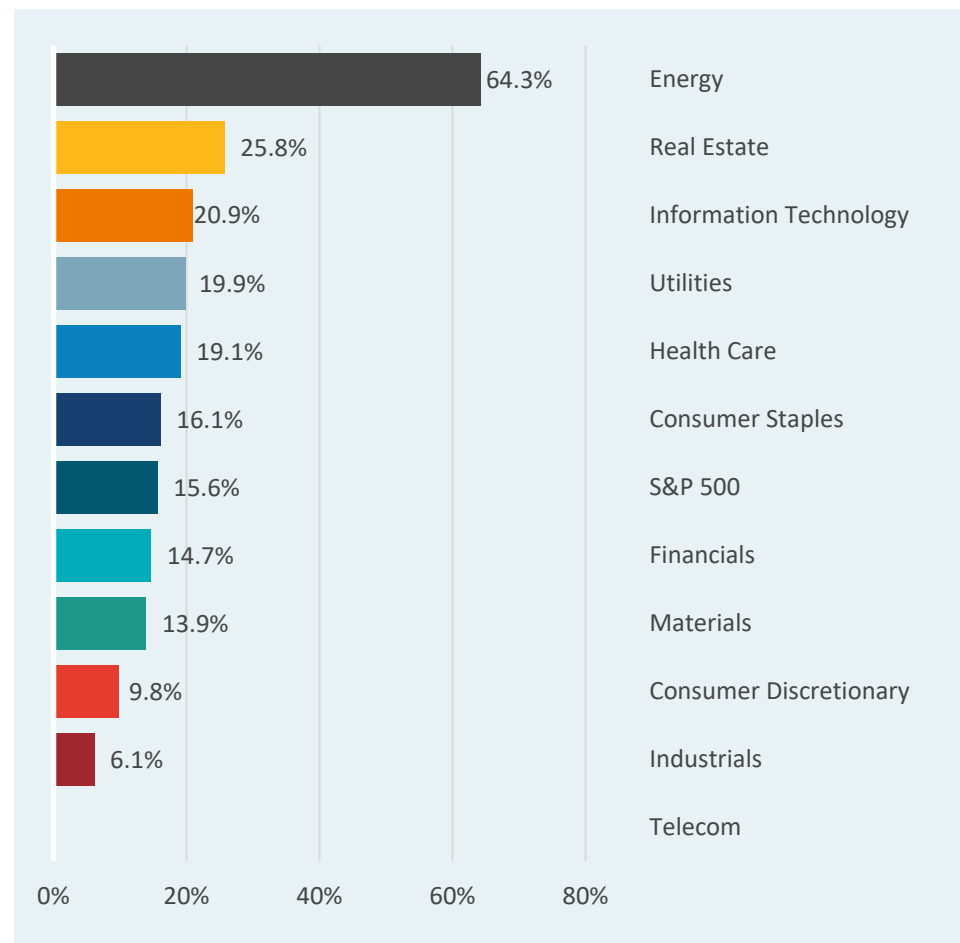
# S&P 500 sector returns

Q1 2022



Source: Morningstar, as of 3/31/22

ONE YEAR ENDING MARCH

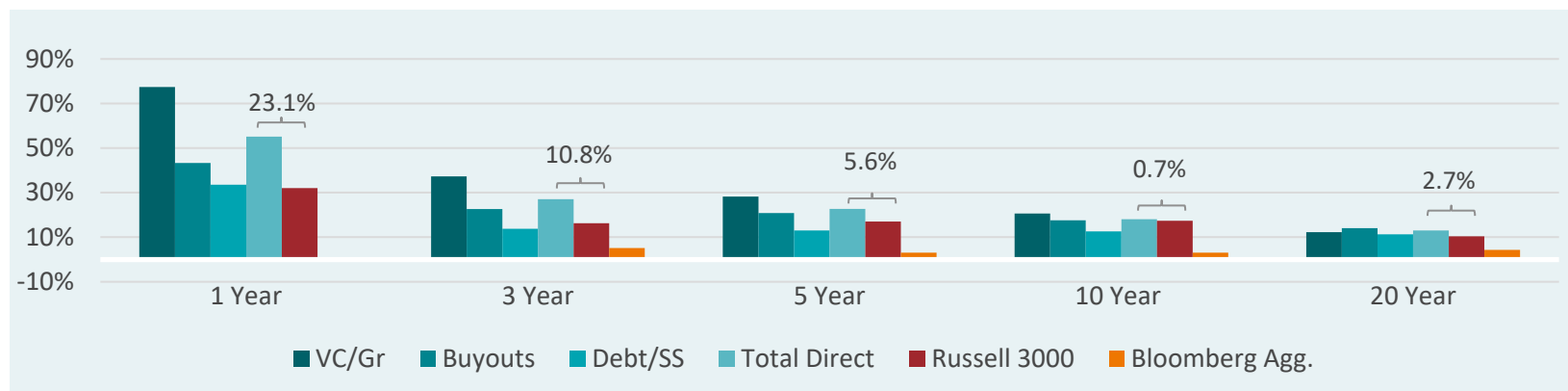


Source: Morningstar, as of 3/31/22



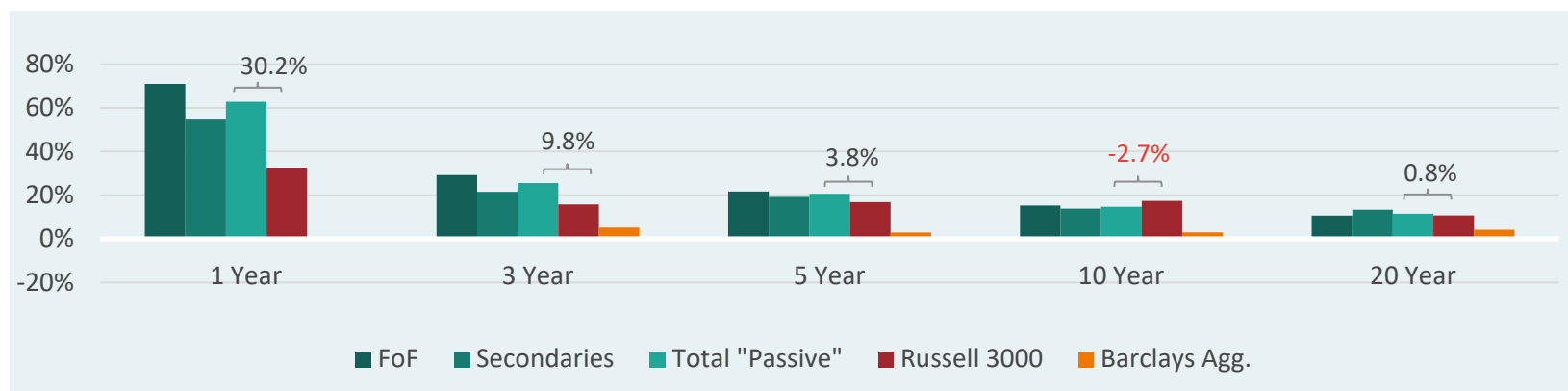
# Private equity vs. traditional assets performance

## DIRECT PRIVATE EQUITY FUND INVESTMENTS



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

## "PASSIVE" STRATEGIES

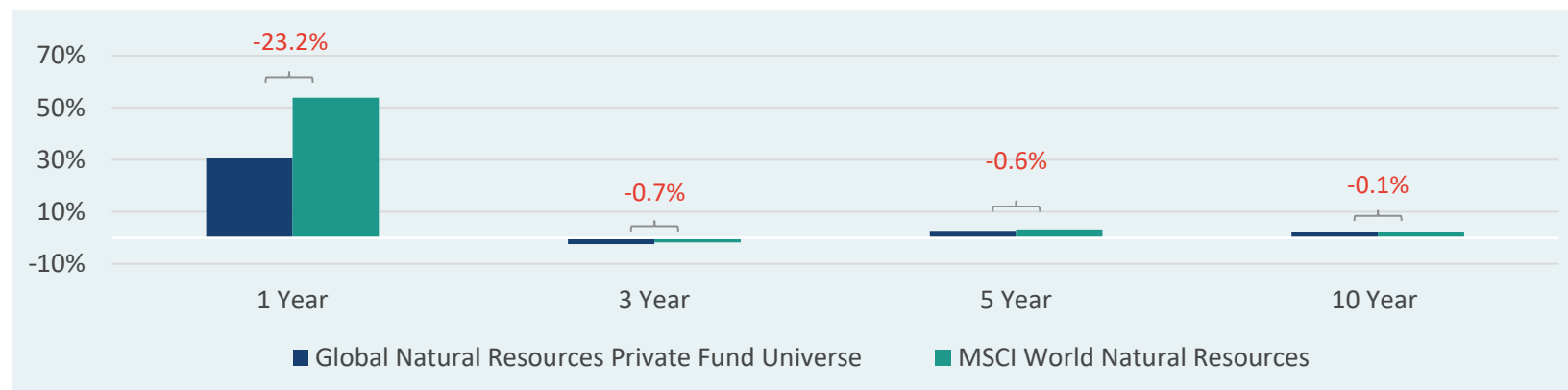


"Passive" strategies outperformed comparable public equities across all time periods, aside from the 10-year basis.

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.

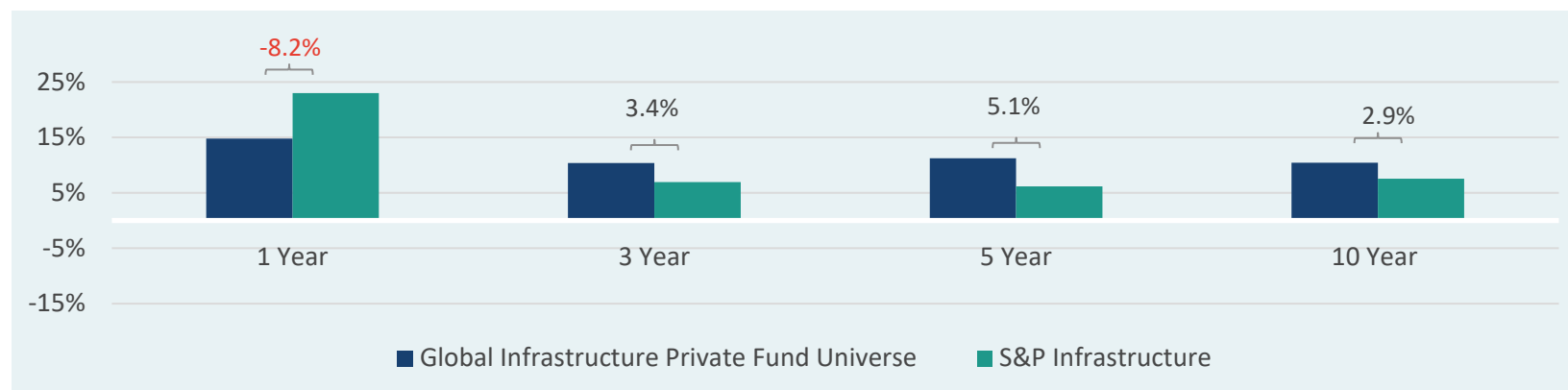
# Private vs. liquid real assets performance

## GLOBAL NATURAL RESOURCES FUNDS



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

## GLOBAL INFRASTRUCTURE FUNDS

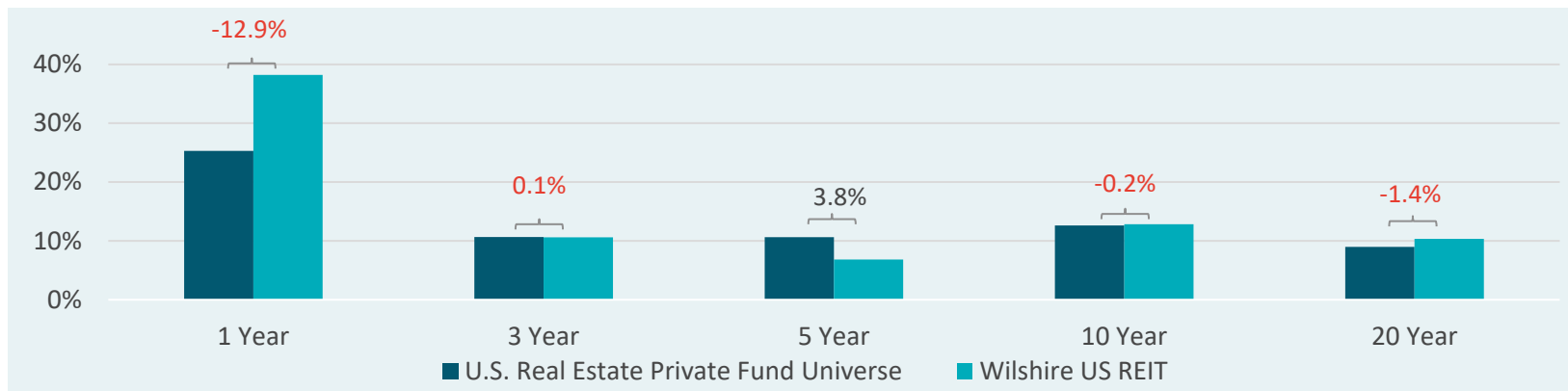


Infra. funds outperformed the S&P Infra. across all periods, aside from the 1-year basis.

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.

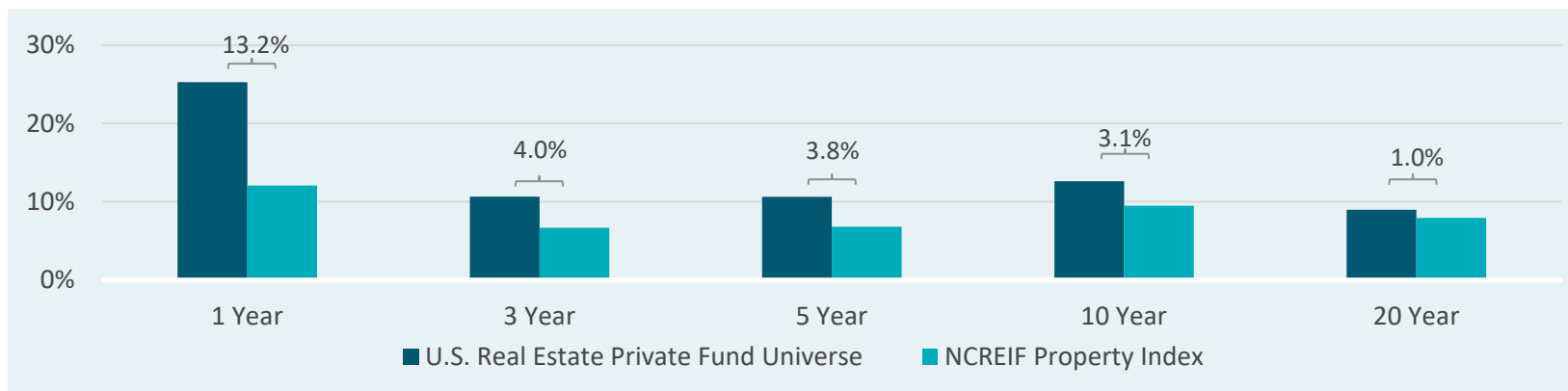
# Private vs. liquid and core real estate performance

## 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
<b>Core Index</b>							
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
<b>Style Index</b>							
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
<b>Broad Index</b>							
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
<b>Style Index</b>							
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
<b>Regional Index</b>							
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
<b>Broad Index</b>							
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
<b>Duration</b>							
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
<b>Issuer</b>							
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 Interm	(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
<b>Index</b>							
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
<b>Regional Index</b>							
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)
<b>Hedge Funds</b>							
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
<b>Currency (Spot)</b>							
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](http://www.lanqerresearch.com))

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

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

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

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# Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION**  
**Board of Retirement**

May 24, 2022

Agenda Item 6.3

**TO:** Board of Retirement

**FROM:** Doris Ng, Investment Analyst 

**SUBJECT:** Report on Core Equity and Passive Manager Annual Reviews

**Recommendation**

Accept and review the report on the annual reviews of SamCERA's Core Equity and Passive Equity strategies.

**Background**

On May 5<sup>th</sup>, SamCERA staff and consultant held annual review meetings with our passive index manager, Blackrock, and our small-cap core equity manager, PGIM Quantitative Solutions LLC. Each meeting lasted approximately 1.5 hours, and consisted of a firm/organizational update, investment process review, performance review and attribution, and current positioning/market outlook. The annual reviews for our other core equity manager, D.E. Shaw, and low volatility equity managers, PanAgora and Acadian, are expected to take place on May 19<sup>th</sup>, and will be reported at the next scheduled board meeting.

**Discussion**

The Blackrock Russell 1000 and MSCI ACWI ex US IMI Index Funds were reviewed first. Next, the PGIM Quantitative Solutions U.S. Small Cap Core Equity Fund, which is a fundamental, bottom-up, quantitative small-cap core strategy that uses an adaptive and systematic approach to stock selection, was reviewed. The firm discussed a recent change on the portfolio management team and also a few, previously reported retirements that occurred last year.

There were no major concerns identified during the reviews. Meeting notes are attached to this memo summarizing the findings from these annual reviews.

**Attachments**

BlackRock Passive Index Annual Review Meeting Notes  
PGIM Quant Solutions Annual Review Meeting Notes



*Date of meeting: 5/5/2022*

*Location: SamCERA*

Manager Representative(s)

Daphne Tai (VP, Index Strategy)  
Victoria Choi (Director, Relationship Mgr.),

Verus Representative

Joseph Abdou  
Margaret Jadallah

Account Assets (3/31/22) \$903MM

Russell 1000 \$536 million  
MSCI ACWI ex-US IMI \$367 million

Client Representative

Michael Coultrip, CIO  
Doris Ng, Analyst

## Product Description

BlackRock uses a full replication approach to passive equity investing. They hold each stock in the same proportion in which they are represented in the Russell 1000 and the MSCI ACWI ex-US IMI indexes, respectively. BlackRock monitors their funds daily to ensure that additions and deletions to the indexes, mergers and acquisitions, restructurings and other capitalization changes are made to the fund in such a way as to minimize tracking error and transactions costs.

Since the last SamCERA review, assets in the Russell 1000 Index Fund grew slightly from \$172 billion to \$175 billion. Assets under management in the MSCI ACWI ex US IMI Index Fund were unchanged at \$69 billion. BlackRock saw an overall \$100 billion inflow about half in ETFs and half in separate accounts.

## Organization

BlackRock, founded in 1988, has risen to become the largest asset manager in the world through the growth of its legacy products as well as a series of strategic acquisitions. The firm managed \$10 trillion under management as of 3/31/22.

At 3/31/22, BlackRock managed \$6.4 trillion in passive management through indexing and ETFs (iShares). iShares growth continues to be a key focus for BlackRock's growth. BlackRock also noted Aladdin (their risk focused technology), and Alternatives are also a business focus for the upcoming year.

## Investment Team

BlackRock employs a large team of portfolio managers, research professionals, strategists and traders on its EII (ETF and Index Investment) team, which includes all equity index applications. In total, the group is comprised of 68 portfolio managers, 54 researchers and 50 traders. Most of these employees are located in San Francisco with a subset in New York and outside of the U.S. 6 portfolio managers are dedicated to Russell 1000 mandates, and 7 portfolio managers cover MSCI ACWI ex-US IMI mandates.

The portfolio management team makes decisions around portfolio structure – optimization vs. full replication, cash equitization, trading around index changes, corporate action elections, and divesting based on client instruction. Researchers are responsible for both index research and trading research. The Global Equity Trading group executes trades on behalf of all portfolio management teams. The team is organized along regions, asset classes and investment

styles. BlackRock's size and scale enables competitive pricing from the broker-dealer community and allows for internal crossing opportunities. BlackRock's Risk & Quantitative Analysis (RQA) monitors risk factors across client portfolios and is independent from the EII team.

## **Investment Strategy**

BlackRock focuses on three objectives in the management of its full replication approach: minimizing tracking error, minimizing transaction costs, and minimizing investment and operational risks. BlackRock believes that superior investment outcomes can most reliably be achieved through Total Performance Management – the management of return, risk, and cost. BlackRock employs quantitative management techniques through the use of sophisticated computer-driven models to ensure all ideas are theoretically sound and empirically valid. BlackRock's passive size and scale is a differentiator, and the ability to cross trade is an important means of cost reduction.

The Russell 1000 Index Fund targets a 0 to 5 bps tracking error to its benchmark while the MSCI ACWI ex-US IMI Index fund has a target range of 0-15 bps. There are multiple, small sources of tracking to the benchmark in index management. Commissions, taxes, market impact, futures mispricing, security mis-weights and cash drag are small detractors from performance. Securities lending and a tax advantage specific to international portfolios are tailwinds.

There are daily, independent reviews of the strategies by BlackRock's RQA team as well as formal monthly performance reviews of the strategies. Deviations are reviewed and may result in portfolio changes. This is an important feedback loop into the process.

## **Performance & Positioning**

The Russell 1000 Fund has matched its benchmark over the past year and annualized periods. Tracking error of about 1 bps is within expectations. For the MSCI ACWI ex-US IMI Index Fund, the tracking error has been slightly greater than expectations at 22 bps, but the difference has resulted in outperformance over the benchmark. The positive tracking has been due primarily to a tax advantage inherent in international portfolios (which added 31 bps) as the maximum tax rate is assumed when investing overseas, but the difference can be reclaimed.

The MSCI ACWI ex-US IMI Index included Russian securities until MSCI removed them in early March. BlackRock was aware and tried to sell out of Russian holdings late February with mixed success. The remaining Russian securities were marked to \$0 and removed from the pooled investment vehicle and placed under the client line item. This was done because Russian securities may hold value in the future when the Russian markets open. BlackRock believes, new clients who invest into the index fund shouldn't have this option value, as it would be unfair to clients who realized the losses in those securities.

## **Conclusion**

BlackRock's mandates are being properly managed, and we consider BlackRock to be a top tier passive manager.

Date of meeting: 5/5/2022

Location: Zoom Call

Manager Representative(s)

Stephen Courtney (Portfolio Manager)  
Brad Zenz (Client Relations)

Verus Representative(s)

Joseph Abdou  
John Nicolini  
Margaret Jadallah

Client Representative(s)

Michael Coultrip (CIO), Doris Ng (Analyst)

### Product Description

PGIM Quantitative Solutions (PGIM) utilizes a bottom-up quantitative framework in order to provide a diversified exposure to core U.S. small-cap stocks, while attempting to produce consistent outperformance versus the benchmark with moderate tracking error levels. PGIM uses an adaptive, systematic investment process to exploit opportunities created by mispriced securities with the goal of consistently adding value over long time periods. Bottom-up stock selection drives exposure to key sources of alpha (valuation, growth, and quality). The PGIM stock selection model adapts to changes in company growth rates and market environments by putting more emphasis on valuation for slowly growing companies, and more emphasis on future growth projections for companies with higher projected growth rates.

PGIM Quant Solutions was added to the SamCERA portfolio in August 2016. PGIM Quant Solutions managed \$115 million for SamCERA as of 3/31/22.

### Meeting Notes

### Organization

Effective September 28, 2021, QMA LLC legally changed its name to PGIM Quantitative Solutions LLC (PGIM Quant Solutions)). PGIM Quant Solutions remains a wholly owned independent subsidiary of PGIM Inc.

PGIM Quant Solutions is an SEC-registered investment adviser, organized as a Limited Liability Company in the state of New Jersey. Founded in 1975, PGIM Quant Solutions manages portfolios for a worldwide institutional client base, including corporate and public pension plans, endowments and foundations, multi-employer pension plans, and sub-advisory accounts for other financial services companies. PGIM Quant Solutions began managing US equity accounts for institutional clients in January 1975. After operating for many years as a division within Prudential Financial, Inc., known today as PGIM, Inc. (formerly known as Prudential Investment Management), QMA became a wholly owned subsidiary of PGIM in 2004.

PGIM Quant Solution's primary office is located in Newark, NJ, where the team responsible for the US Small Cap Core Equity strategy is based. PGIM Quant Solution's portfolio management, research, and trading are performed in the Newark office. The firm has a secondary office in San Francisco where portfolio management and research are also performed, and more recently opened an office in London. In 2018, PGIM acquired Wadhvani Asset Management

## Investment Team

The investment team includes 27 professionals the majority of which are PhDs. Portfolio managers average 23 years of experience. All US Small Cap Core Equity portfolios are team managed, and Stacie Mintz has worked on the portfolio since its inception in 1997.

In July 2020, PGIM Quant Solutions appointed a new CIO as part of a restructuring plan for its equity business. George Patterson, previously the firm's co-head of the Quantitative Equity platform was named CIO. Peter Xu retired in October 2021 after 25 years with the firm. Stacy Mintz, who managed the strategy alongside Peter acquired his responsibilities. Andrew Dyson stepped down as CEO in October 2021 for personal reasons and was replaced by Linda Gibson who joined PGIM Quant Solutions in 2019.

PGIM Quant Solutions had negative net flows of about \$5 billion which were driven primarily by a large European joint venture which was taken over. The product lost approximately \$600 million over the year. Total product assets were \$1.55 billion as of 12/31/21.

## Investment Strategy

PGIM Quant Solution's stock selection model adapts to changes in company growth rates and market environments by putting more emphasis on valuation for slowly growing companies, and more emphasis on future growth projections for companies with higher projected growth rates. Stocks are categorized along a continuum of slow growth to fast growth with optimal adaptive factor weights to valuation, earnings expectations and quality. Stocks with the highest rankings are purchase candidates. Consistency of alphas are emphasized in their approach, and industry adjustments are utilized for multiple industries.

PGIM Quant Solutions will also tilt the portfolio based on shorter term signals and currently has had a larger than average weighting to valuation based on its assessment that valuations are cheap compared to historical ranges. PGIM Quant Solutions has incorporated some new shorter-term growth signals into its approach, including machine learning-based inputs, while maintaining longer-term fundamental earnings insights. After a 2+ year period where value-leaning, quantitative approaches underperformed significantly, the value tilt has started experiencing tailwinds again.

PGIM Quant Solutions does not use a traditional risk model, but instead uses fundamental risk limits/deviations to the Russell 2000 specific to industry and sector (+/-0.75%), size (+/-3%) and style (+/-2%). Position weights are also benchmark relative (+/-0.75%). An example of how they are different from other quant managers is that they may buy less of two stocks that rank equally as opposed to choosing only one. Initial position size is 50 bps which then can drift within portfolio construction guidelines. In March 2022, the team adjusted their approach to incorporating the value factor by adding a dynamic component versus the traditional structural value tilt.

As noted above, the investment process has been refined to focus solely on research and factors that drive portfolio alpha and de-emphasizing those that may be interesting academically but may not result in impactful portfolio alpha.

## Performance & Positioning

During the first quarter of 2021, SamCERA's US Small Cap portfolio returned -4.1% net and significantly outperformed the Russell 2000 Index (-7.5%). This strong rebound, due mainly to value and size factors, continuing a comeback after the factors lagged (since inception 8/2016 return through 3/31/22 is 10.3% net vs 11.1% for the Russell 2000). PGIM Quant Solutions is working on strengthening its research, currently they are working on discovering non-financial value factors which may enhance the model.

## Conclusion

SamCERA's performance continues to improve. PGIM Quant Solutions outperformed for the one year ending 3/31/2022 by 1024 bps, but still lags by 61 bps over the 3-year period. Verus remains comfortable with the approach and is encouraged by the turnaround in performance.