



Notice of Public Meeting

AMENDED

The Board of Retirement

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

Tuesday, June 2, 2020, at 10:00 A.M.

In accordance with the Governor's Executive Order N-29-20 (3) the Members of the Board will be participating via teleconference. Pursuant to Government Code §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 may listen to the Public Session and offer comment by calling: 1-888-278-0296 and use Participant Code: 323278.

Persons who wish to address the Board may also submit written comments via email to samcera@samcera.org at least 30 mins 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.

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 Board Meeting Minutes from April 25, 2020

4. Approval of the Consent Agenda*

4.1 Disability Retirements (none)

4.7 Member Account Rollovers

4.2 Survivor Death Benefits

4.8 Member Account Redeposits

4.3 Service Retirements

4.9 Acceptance of Trustees' Reports of Educational Activities

4.4 Continuances

4.5 Deferred Retirements

4.6 Member Account Refunds

5. Benefit & Actuarial Services

5.1 Consideration of Agenda Items, if any, Removed from the Consent Agenda

5.2 Approval of Economic Assumptions to be used in the June 30, 2020 Actuarial Valuation

6. Investment Services

6.1 Report on Preliminary Monthly Portfolio Performance for the Period Ended April 30, 2020

6.2 Report on Quarterly Investment Performance for the Period Ended March 31, 2020

6.3 Report on Real Estate Manager Annual Reviews

6.4 Report on the Core Equity and Passive Manager Annual Reviews

6.5 Presentation of Private Asset Semi-Annual Performance Reports as of December 31, 2019

6.6 Report on Status of Absolute Return Portfolio

7. Board & Management Support

7.1 Approval of SamCERA Fiscal Year 2020-21 Budget

Notice of Public Meeting

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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

9. Report on Actions Taken in Closed Session

10. Adjournment in Memory of the Following Deceased Members:

Balisteri, Rosemary	April 1, 2020	Human Services
Hoover, Dorothy	April 20, 2020	Probation
Kai, Edward	April 14, 2020	Human Services
Reilly, Julie	April 8, 2020	Behavioral Health
Parkin-Holzman, Patricia	April 6, 2020	Aging and Adult Services
Friday, Robert	April 23, 2020	General Services
Richards-Reiss, Dianne	April 25, 2020	Health & Welfare
Rojas, Donald	April 24, 2020	DPW
Boyle, Gretchen	May 9, 2020	H.S.A.
McDonough, Vera	May 12, 2020	Library
Fonseca, Evelyn	May 11, 2020	General Services



Scott Hood, Chief Executive Officer

Posted: May 27, 2020

(* 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. *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

June 2, 2020

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 2020-2021 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>Chair</u>	<u>Vice-Chair</u>	<u>Secretary</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

*beginning October 2010

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

APRIL 28, 2020 – REGULAR BOARD MEETING MINUTES

2004.1 Call to Order, Roll Call and Miscellaneous Business

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

Roll Call:

Present: Sandie Arnott, Mark Battey, Ben Bowler, Al David, Paul Hackleman, Kurt Hoefer, Katherine O'Malley, Robert Raw and Eric Tashman.

Absent: None.

Alternates present: Susan Lee and Alma Salas.

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

Consultants and speakers: Nick Collier and Craig Glyde (Milliman, Inc.); Joe Abdou, Margaret Jadallah and John Nicolini (Verus).

2004.2.1 Oral Communications from the Board: Ms. Salas requested that future Board packets be combined into one packet for easier viewing.

2004.2.2 Oral Communications from the Public: Ms. Trujillo reported that there were no public comments submitted by the public for today's meeting.

2004.3.1 Approval of Regular Board Meeting Minutes from March 24, 2020: Ms. Salas commented there was a clerical error on Item 4.5 of the March Board meeting minutes. Mr. Hoefer asked if there were any changes or corrections, or objections, to the meeting minutes from the Board meeting held on March 24, 2020 other than the correction on Item 4.5.

Action: Mr. Hackleman moved to approve the remaining minutes from the Board meeting on March 24, 2020. The motion was seconded by Mr. David and carried with a vote of 7-0, with trustees Battey, David, Hackleman, Hoefer, O'Malley, Raw and Tashman all in favor; Arnott abstained; none opposed.

2004.3.2 Approval of Special Board Meeting Minutes from April 6, 2020: Mr. Hoefer asked if there were any changes or corrections, or objections, to the meeting minutes from the Board meeting held on April 6, 2020.

Action: Mr. David moved to approve the minutes from the Special Board meeting on April 6, 2020. The motion was seconded by Mr. Hackleman and carried with a vote of 8-0 with trustees Arnott, Battey, David, Hackleman, Hoefer, O'Malley, Raw and Tashman all in favor; none opposed.

2004.4.0 Approval of the Consent Agenda: Mr. Hoefer asked if there were any items to be removed for discussion from the Consent Agenda. No items were removed.

Action: Mr. Raw moved to approve the items on the Consent Agenda, and the motion was seconded by Ms. O'Malley. The motion carried with a vote of 8-0, with trustees Arnott, Battey, David, Hackleman, Hoefer, O'Malley, Raw and Tashman all in favor; none opposed.

2004.4.1 **Disability Retirements:**

- a) The Board found that **Imelda Barlaan** (1) is permanently incapacitated from the performance of her usual and customary duties as a Charge Nurse, (2) found that her disability was not a result of an injury/illness arising out of and in the course of her employment, (3) denied her application for a service-connected disability and (4) granted her a non-service-connected disability retirement.

2004.4.2 **Survivor Death Benefits:**

- a) The Board found that **Robert Cabaj**, would have been entitled to a non-service-connected disability but has died, and Bennie Ferma, the surviving spouse, has elected to receive an optional death allowance pursuant to Government Code § 31781.1.

2004.4.3 **Service Retirements:**

Name	Effective Retirement Date	Department
Abbeduto, James	February 29, 2020	Deferred - Aging & Adult Services
Berbano, Elizabeth	March 1, 2020	San Mateo Medical Center
Chu, Hung-Ming	February 28, 2020	Behavioral Health & Recovery Services
Costa, Antonino	February 4, 2020	Sheriff's Office
Flores, Pedro	February 22, 2020	Behavioral Health & Recovery Services
Gutierrez, Grace	February 29, 2020	San Mateo Medical Center
Hori, Richard	February 22, 2020	Probation Dept.
Hurst, Roslyn	February 29, 2020	Human Services Agency
Khan, Khairul	February 29, 2020	San Mateo Medical Center
Markrow, Sherry	March 1, 2020	Library
Ozan, Julieta	February 14, 2020	Def'd - Behavioral Health & Recovery Srvs
Rude, Theresa	February 8, 2020	Deferred – Human Services Agency
Salazar, Ron	February 28, 2020	Sheriff's Office
Slusser, Lester	February 28, 2020	Sheriff's Office
Walker, Pamela	February 15, 2020	Probation Dept.
Watson, Victoria	February 8, 2020	San Mateo Medical Center
White, William	February 29, 2020	Library
Wilcox-Rittgers, Terry	February 21, 2020	Behavioral Health & Recovery Services
Wuslich, Kristina	February 27, 2020	Deferred – Parks & Recreation
Young, Robert	February 28, 2020	Deferred – Probation Dept

2004.4.4 **Continuances:**

Survivor's Name

Bernstein, Diana
Buddress, Patricia
Cuadra, Vickie
Duignan, Sue
Koenig, Lois

Beneficiary of:

Bernstein, Allen
Buddress, Loren
Cuadra, Manuel
Duignan, James
Koenig, Paul

2004.4.5 **Deferred Retirements:**

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

Name

Arteaga, Manuel
Belous, Sheila
Cai, Selina
Cisco, Kristine
Cota, Mara
Derespini, Ronald
Gongon, Arlen
Hernandez, Marta
Jewett, Rebecca
Perez, Ashley
Robinson, Sharma
Porter, Karl
Sharma, Jasneet
Susantin, Danny
Trajano, Jeannette
Weaver, Jeff

Retirement Plan Type

G4, Vested - Auto Defer - Code 31700
G4, Vested
G7, Vested
G7, Non-vested - Reciprocity
G5, Vested - Auto Defer - Code 31700
S4, Vested
G4, Vested
G5, Vested - Reciprocity
G5, Vested - Reciprocity
G7, Vested - Auto Defer - Code 31700
G4, Vested - Reciprocity
G2, Vested - Auto Defer - Code 31700
G7, Vested - Reciprocity
G7, Non-vested - Reciprocity
G2, Vested - Auto Defer - Code 31700
G7, Vested - Reciprocity

2004.4.6 **Member Account Refunds:**

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

Name

Davis, Cynthia
Delgado, Annmarie
Lewis, Vernon
Masuoka, Nicole
Moran, Alexis
Almendrala, Richie
Espinoza, Juan
Gulde, Sairo Mel
Roberts, Fran
Tan, Bernard

Retirement Plan Type

G7, Non-vested
G7, Non-vested
G4, Vested
G7, Non-vested
G7, Non-vested
G7, Vested
S7, Non-vested
G7, Non-vested
G4, Non-vested
G7, Non-vested

2004.4.7 **Member Account Rollovers:**

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

Name	Retirement Plan Type
Almendrala, Richie	G7, Vested
Meehan, Patrick	G7, Non-vested
Zhu, Allison	G7, Non-vested

2004.4.8 **Member Account Redeposits:** None.

2004.4.9 **Acceptance of Trustees' Reports of Educational Activities:** The Board accepted the submitted report for educational activity attended by Ms. Lee.

2004.4.10 **Correction of Monthly Payment:** The Board ratifies the correction in underpaid benefits for the following individuals:

Name	Retirement Plan Type
Lindecker, Joan	G1
O'Meara, Christine	G1
Robinson, Audrey	P2
Vega, Aurora	G1

2004.4.11 **Approval to Renew Fiduciary Liability Insurance Policy:** The Board authorized the County's Risk Manager to renew fiduciary liability insurance coverage with RLO Insurance Services through May 27, 2021.

2004.4.12 **Approval of 10th Amendment to Contract with Vitech Systems Group, Inc.:** The Board approved the resolution authorizing the Chief Executive Officer to execute a Tenth Amendment to the agreement with Vitech Systems Group, Inc. up to \$12,500,000 for all services through December 31, 2022.

2004.4.13 **Approval of Resolutions that Define Comp Earnable and Pensionable Comp:** The Board approved the amendments to (1) the two Resolutions defining Compensation Earnable, pursuant to Government §31461 for members who are not subject to Government Code §7522.34 and (2) the two Resolutions defining Pensionable Compensation for members who are subject to Government Code §7522.34.

2004.5.2 **Discussion of Actuarial Assumption for the June 30, 2020 Actuarial Valuation:** Mr. Collier and Mr. Glyde discussed the assumptions to be used for this year's valuation and the impact that the current market downturn may have on the employer contribution rates. They also addressed SamCERA's expected return over the next 10 and 30 years and answered questions from the Board. This item was informational and for discussion only, no action was taken.

Mr. Bowler joined the teleconference at 10:20 a.m.

2004.6.1 **Report on Preliminary Monthly Portfolio Performance Report for the Period Ended March 31, 2020:** Mr. Coultrip reported that SamCERA's net preliminary return for March was down -8.6% bringing the preliminary trailing twelve month return ending March 2020 to -4.6% net. This item was informational and for discussion only, no action was taken.

2004.6.2 **Report on Cash Overlay (Parametric) Annual Review:** Ms. Ng reviewed the meeting notes from the annual review of SamCERA's overlay manager. Staff spoke with Parametric on March 5th via

conference call. The overlay program results were in line with long-term expectations and there were no significant concerns identified during the review. This item was informational and for discussion only, no action was taken.

- 2004.6.3 **Annual Review of Northern Trust Custodial Bank:** Ms. Ng reviewed the meeting notes from the annual review of SamCERA's custodial bank, Northern Trust. Staff met at SamCERA's office with Northern Trust on March 5th. There were no major concerns identified during the review. This item was informational and for discussion only, no action was taken.
- 2004.6.4 **Approval of Public Real Asset Restructuring:** Mr. Nicolini presented the recommendation of adding a passive U.S. TIPS allocation to SamCERA's public real assets strategy.
- Action:** Mr. Hackleman moved to approve the public real asset restructuring. The motion was seconded by Mr. David and carried with a vote of 9-0, with trustees Arnott, Battey, Bowler, David, Hackleman, Hoefler, O'Malley, Raw and Tashman all in favor; none opposed.
- 2004.6.5 **Approval of Core Bond Fixed Income Manager:** Ms. Jadallah reviewed the core fixed income manager search process with the Board and answered their questions.
- Action:** Mr. Bowler moved to approve the recommendation to invest 4% of plan assets (approximately \$180 million) in the NISA core fixed income strategy in a separate account structure. The motion was seconded by Mr. David and carried with a vote of 9-0, with trustees Arnott, Battey, Bowler, David, Hackleman, Hoefler, O'Malley, Raw and Tashman all in favor; none opposed.
- 2004.6.6 **Approval of International Equity Manager Structure:** Mr. Coultrip presented the recommended changes to the current international manager structure, better aligning the portfolio to the international equity policy benchmark.
- Action:** Mr. Raw moved to approve the proposed International Equity manager structure. The motion was seconded by Ms. Arnott and carried with a vote of 9-0, with trustees Arnott, Battey, Bowler, David, Hackleman, Hoefler, O'Malley, Raw and Tashman all in favor; none opposed.
- 2004.6.7 **Approval of Potential Sale of Alternative Investment (to be heard in Closed Session, Confidential under Gov. Code §54956.81 and §6254.26, see item C2):** The Board adjourned into Closed Session using SamCERA's 2nd AT&T teleconference line at 11:45 a.m. to hear item 6.7. and reconvened in Open Session at 12:08 p.m. See Closed Session report under C2.
- 2004.8.1 **Chief Executive Officer's Report:** Mr. Hood informed the Board that the County is continuing weekly teleconferences with Department Heads regarding COVID-19 and that he anticipates the June Board Meeting will also be held via teleconference. Mr. Hood reported that staff had processed 95 retirements, along with COLAs this month and gave kudos to those involved in getting the job done. He also reported that staff is working with Cheiron to complete the triennial study. Mr. Hood mentioned a few agenda items for next month's Board meeting including the formation of the Ad Hoc Nominating Committee, economic assumptions and next fiscal year's budget.
- 2004.8.2 **Assistant Executive Officer's Report:** Ms. Smith requested that Board members submit their \$25 non-recourse renewal check. She informed the Board that she has submitted SamCERA's remobilization plan to the County and is also in the process of purchasing Personal Protective Equipment for staff. She also informed the Board that closed captioning is now available for Financial Knowledge Network classes online.

- 2004.8.3 **Chief Investment Officer's Report:** Mr. Coultrip reported that staff will be holding two annual manager review meetings via teleconference on May 7th with Blackrock at 8:00 a.m. and QMA at 10:00 a.m.
- 2004.8.4 **Chief Legal Counsel's Report:** Ms. Carlson reported that the California Supreme Court will hold oral argument in the *Alameda County Deputy Sheriff's Assn. v. Alameda County Employees' Retirement Assn.* case which addresses whether statutory amendments to the County Employees Retirement Law (CERL) made by the Public Employees' Pension Reform Act (PEPRA) reduces the scope of the pre-existing definition of pensionable compensation and impairs employees' vested rights protected by the federal and state Constitutions. She also added that the oral argument will be online on May 5th.
- C2 **Approval of Potential Sale of Alternative Investment (Confidential under Gov. Code §54956.81 and §6254.26 – see also item 6.7)** Ms. Carlson reported that the Board voted to terminate SamCERA's investment in AQR Delta XN. The motion passed a vote of 9-0, with trustees Arnott, Battey, Bowler, David, Hackleman, Hoefler, O'Malley, Raw and Tashman all in favor; none opposed. No other reportable action was taken.
- 2004.10 **Adjournment:** Mr. Hoefler adjourned the meeting at 12:10 p.m. in memory of the deceased members listed below.

Williams, Maria	March 18, 2020	Crystal Springs Rehab Center
Moore, Joseph	March 19, 2020	Sheriff's
Brown, George	March 22, 2020	Supt of Schools
Werner, May	March 22, 2020	Health
Charles, Edwina	March 27, 2020	Library
Emert, Loretta	March 29, 2020	Sheriff's

Kurt Hoefler
Board Chair

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

June 2, 2020

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

None.

4.3 Service Retirements

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

Name	Effective Retirement Date	Department
Aguilar, Liberty	March 21, 2020	Assessor, Clerk-Recorder
Anderson, Susan	March 27, 2020	Public Safety Communications
Anorico, Evelyn	March 31, 2020	San Mateo County Health
Aragaki, Brandee	April 1, 2020	Probation
Astesano, Margaret	March 3, 2020	Deferred - Superior Court
Baird, Catherine	April 1, 2020	Aging & Adult Services
Barron, Amy	April 1, 2020	Aging & Adult Services
Bassett-McConnell, Theresa	March 28, 2020	Behavioral Health & Recovery Services
Benitez, Irma	March 28, 2020	Public Health
Brodie, Barbara	March 28, 2020	Correctional Health
Brown, Dora	March 28, 2020	San Mateo County Health
Buchanan, Paul	March 21, 2020	Aging & Adult Services
Burch, Thomas	April 1, 2020	Human Resources Dept.
Buttram, Mary	April 1, 2020	Deferred – Behavioral Health & Recovery Services

Capovilla, Leo	March 28, 2020	Sheriff's Office
Carter, Georgia	March 28, 2020	Sheriff's Office
Catalon, Joel	March 14, 2020	San Mateo County Health
Chiang, William	April 1, 2020	Deferred - Board of Supervisors
Chilton, Gisele	March 28, 2020	Aging & Adult Services
Cody, Mark	March 22, 2020	Sheriff's Office
Costa, Julie	March 22, 2020	Sheriff's Office
Crowder, Fred	March 28, 2020	Agriculture, Weights & Measures
DeMarco, Toni	March 28, 2020	Behavioral Health & Recovery Services
DiMauro, Jody	March 28, 2020	Probation
Edwards, Larry	March 29, 2020	Sheriff's Office
Eggemeyer, James	April 1, 2020	Sustainability Office
Enrico, Virginia	March 28, 2020	Aging & Adult Services
Escobar, Leticia	March 29, 2020	San Mateo County Health
Farris, Lisa	March 14, 2020	Probation
Foucrault, Robin	April 1, 2020	Sheriff's Office
Fox, Aida	April 1, 2020	Family Health Services
Gandolfi, Phyllis	March 17, 2020	QDRO of Brendon Donegan
Gonzales, John	March 31, 2020	Sheriff's Office
Gorman, Linda	March 28, 2020	Probation
Guan, Jing	April 1, 2020	San Mateo County Health
Hansen, Marguerite	March 31, 2020	Def'd - San Mateo County Health
Haritakis, Sylvia	March 31, 2020	Sheriff's Office
Harris, Sandra	April 1, 2020	Superior Court
Herranz, Pamela	April 1, 2020	Superior Court
Huerta, Gabriel	April 1, 2020	Sheriff's Office
Joy, Stephen	April 1, 2020	Information Services Dept.
King, Scott	March 27, 2020	Sheriff's Office
Kresevich, Charlene	April 1, 2020	Superior Court
Kudszus, Alexander	April 1, 2020	San Mateo County Health

Labrenz, Karina	March 28, 2020	Library
Lino, Cristina	April 1, 2020	San Mateo County Health
LoCoco, Joseph	April 1, 2020	Public Works
Maciel, Maria	March 21, 2020	San Mateo County Health
Madlambayan, Gayla	March 31, 2020	San Mateo County Health
Maharaj, Amita	April 1, 2020	Probation
Makela, Linda	April 1, 2020	Superior Court
Manio, Melanie	April 1, 2020	Human Services Agency
Martin, Bradley	April 1, 2020	Sheriff's Office
Martin, Cheryl	March 7, 2019	Sheriff's Office
McCarthy, Vielka	March 21, 2020	Probation
McCulloh, Craig	April 1, 2020	Aging & Adult Services
McDuffie, Marvin	March 5, 2020	Sheriff's Office
Meren, Julieta	April 1, 2020	San Mateo County Health
Mitchell, Michael	March 21, 2020	Sheriff's Office
Morris, Thomas	March 4, 2020	Aging & Adult Services
Newby, June	March 28, 2020	Sheriff's Office
Nielsen, Donna	March 15, 2020	Sheriff's Office
Nita, Martha	March 28, 2020	San Mateo County Health
O'Shaugnessy, Sophie	April 1, 2020	San Mateo County Health
Parra, Victoria	March 27, 2020	San Mateo County Health
Paterson, James	April 1, 2020	Sheriff's Office
Portillo, Melby	March 20, 2020	San Mateo County Health
Powell-Cobb, Cynthia	March 14, 2020	Probation
Rangel, Robert	March 31, 2020	Sheriff's Office
Recio, Justa	March 28, 2020	San Mateo County Health
Reeves, Laura	March 14, 2020	Assessor Clerk Recorder
Reyes-Avila, Maria	April 1, 2020	Human Services Agency
Rosier, Marty	April 1, 2020	Family Health Services
Rushworth, Rose	April 1, 2020	Controller
Sanchez, Christopher	March 14, 2020	Probation

Santos-Herbert, Helen	March 28, 2020	San Mateo County Health
Scheff, Paul	March 28, 2020	Sheriff's Office
Schneider, Mark	March 31, 2020	Parks Dept.
Sheridan, Kellyann	March 21, 2020	Behavioral Health & Recovery Services
Sierra-Caronongan, Belle	March 20, 2020	Human Resources Dept
Silvestri Ellerhorst, Ann Marie	March 28, 2020	San Mateo County Health
Soosaipillai, Miruni	March 31, 2020	Deferred - County Counsel
Sosa, Jim	March 28, 2020	Behavioral Health & Recovery Services
Sparks, Marni	March 19, 2020	Deferred - Probation
Sugiyama, Glen	March 19, 2020	Probation
Sullivan, Connie	March 27, 2020	San Mateo County Health
Trabucco, Joseph	March 28, 2020	Aging & Adult Services
Trabucco, Norma	March 28, 2020	Behavioral Health & Recovery Services
Umali, Brenda	March 21, 2020	San Mateo County Health
Vazquez, Elizabeth	March 28, 2020	Public Works
Walsh, Gregory	March 10, 2020	Def'd - Assessor, Clerk-Recorder
Whelan, Carol	March 28, 2020	Assessor, Clerk-Recorder

4.4 Continuances

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

Survivor's Name	Beneficiary of:
Finck, Phuong Le	Finck, Peter
Wyman, Kay	Wyman, Donald

4.5 Deferred Retirements

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

Name	Retirement Plan Type
Anaya, Olga	G4, Vested - Reciprocity
Bandoma, Danna	G7, Vested
Brandon, Clifford	G4, Vested - Auto Defer - Code 31700

Flores, Felicia	G7, Vested - Reciprocity
Joisha, Ahalya	G7, Vested
Kaye, Ana	G7, Vested - Reciprocity
Lee, YickYee	G5, Vested - Reciprocity
Liang, Laura	G7, Non-vested - Reciprocity
Miller, Gregory	S4, Vested
Padua, Jessica	G4, Vested - Auto Defer - Code 31700
Porras, Adrianna	P4, Vested - Auto Defer - Code 31700
Tayama, Tricia	G4, Vested

4.6 Member Account Refunds

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

Name	Retirement Plan Type
Castronova, Brandon	G7, Non-vested
Guzman, Andrew	G7, Non-vested
Hernandez, Rodrigo	G7, Non-vested
Maldonado, David	G7, Non-vested
Martins, Eduardo	G7, Non-vested
Richardson, Isaac	G4, Non-vested
Romo Mendoza, Esther	G7, Non-vested
Stovall, Robert	G4, Non-vested
Thomas, Nancy (FBO: Thomas, Jennifer)	G2, Vested
Walters, Markus	G7, Non-vested
Walker, Alayna	G7, Non-vested
Wostenberg, Darren	G4, Non-vested

4.7 Member Account Rollovers

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

Name	Retirement Plan Type
Alegria, Lilian	G4, Non-vested
Cabaj, Robert (FBO: Ferma, Bennie)	G2, Vested
Higley-Anderson, Briana	G7, Non-vested
Jurow, John	G4, Vested

Kaur, Sareeda (FBO: Vednaigam, Sharon)	G2, Vested
Lee, Megan	G7, Non-vested
Menezes, Nicholas	S4, Non-vested
Navarro, Michael	G4, Vested
Reyes, Maria Celeste	G7, Non-vested
Scholl, Daniel	G7, Vested

4.8 Member Account Redeposits

None.

4.9 Acceptance of Trustees' Reports of Educational Activities Through Outside Provider

See memo.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

June 2, 2020

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:

SACRS Spring Conference Webinars
Susan Lee

Attachments

Trustee's Education Proof of Participation Certificates and Summaries

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



Trustee Name Susan Lee		Date(s) of Event 5/12/20-5/22/20
Education Event Name Spring Conference Webinar Series		
Event Provider SACRS		
Type of Participation: Attended Event <input type="checkbox"/> Listened to Audio/Watched Video <input checked="" type="checkbox"/>		Eligible Credit: Total hours for sessions you participated in: <u>13</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?

Investments, Litigation, Covid 19 impact on investing, current macroeconomics, China A share, market volatility

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).

Trustee Signature <i>(print this form and sign)</i> Susan Lee	Date 5/22/20
---	------------------------


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

June 7, 2020

Agenda Item 5.2

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, 2020, Actuarial Valuation

Recommendation

Provide direction to Milliman, Inc as to the economic actuarial assumptions to be used in the June 30, 2020 actuarial valuation. Staff recommends the following assumptions be used:

- The economic assumptions remain set at: investment return at 6.5%, 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.

Discussion

Today, the Board will be asked to provide guidance to Milliman, Inc. regarding the economic assumptions to be used in its June 30, 2020, annual actuarial valuation of the system. As reflected in Mr. Collier's comments and presentation at the April 28th meeting, Milliman's opinion is that it would be reasonable for the Board to retain all the economic assumptions used in the June 30, 2019 annual valuation. Nick Collier, lead actuary, will be participating in the telephonic Board meeting to provide any additional information regarding assumptions for the 2020 annual valuation. As requested by the Board, Milliman has also provided sample member rate changes to show the impact of lowering the investment return assumption to 6.25%.

At the July meeting, Milliman will present its "Investigation of Experience" report (our upcoming triennial experience study for fiscal years 2017-2020). Based on those findings, Milliman will make recommendations as to the demographic assumptions to be used in the June 30, 2020 annual valuation.

At the July meeting, the Board will adopt the demographic assumptions to be used. The resulting annual valuation will be presented at the September meeting, at which time the Board will approve employer and employee rates to be recommended to the Board of Supervisors for adoption.

Attachments

Milliman's April 2020 Presentation on Economic Assumptions for the 2020 Valuation
Sample Changes in Member Rates if 6.25% Investment Return Assumption is Adopted

2020 Experience and Assumption Study

Economic Assumptions

Nick Collier
Craig Glyde

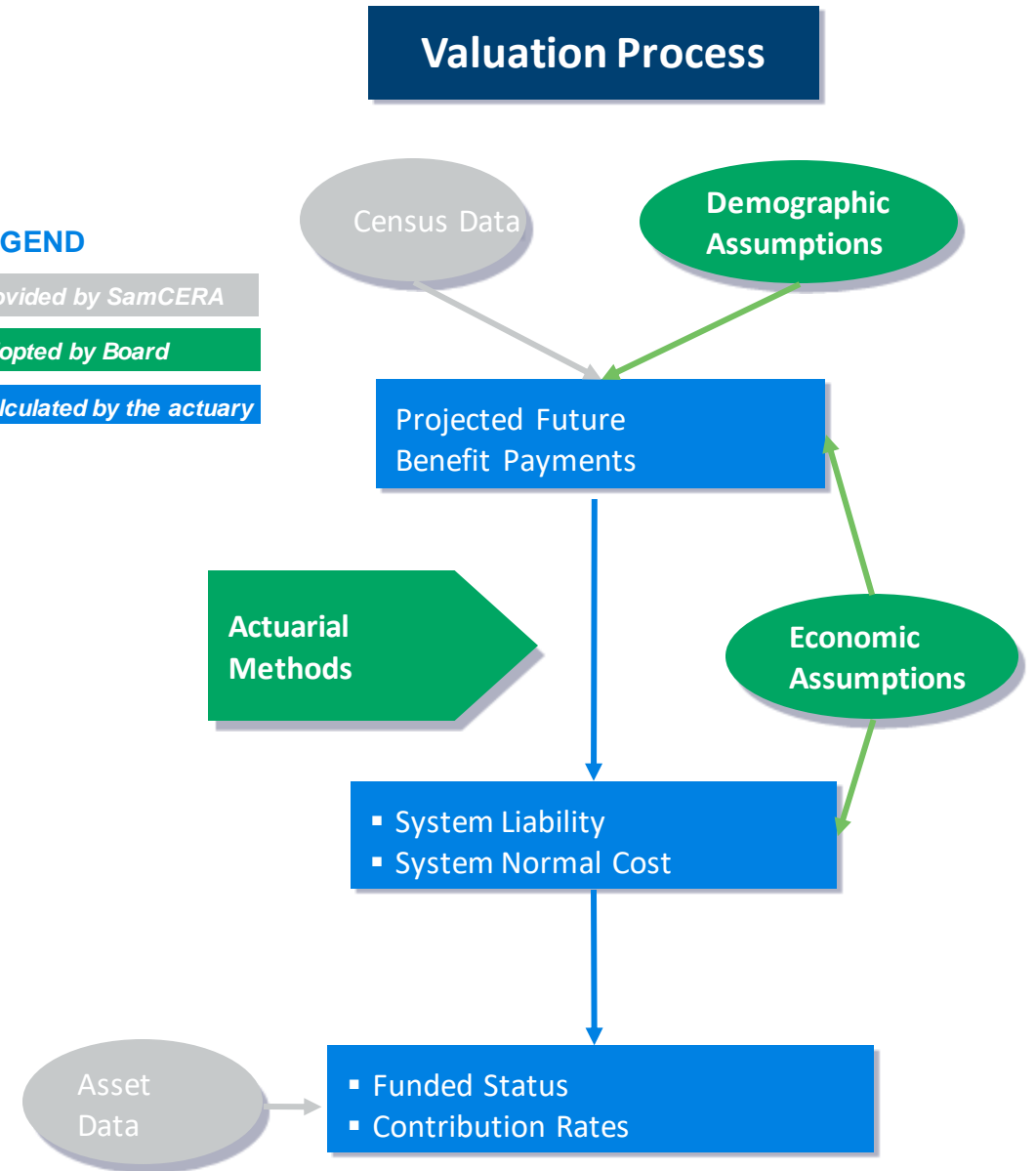
APRIL 28, 2020

Schedule

- April 2020 meeting:
 - Discuss economic assumptions
- June 2020 meeting:
 - Adopt economic assumptions (Follow-up discussion if needed)
- July 2020 meeting
 - Demographic assumption discussion
 - Adopt assumptions to be used in 2020 valuation
- September 2020 meeting
 - Valuation results
 - Adopt member and employer contribution rates for fiscal year beginning July 1, 2021

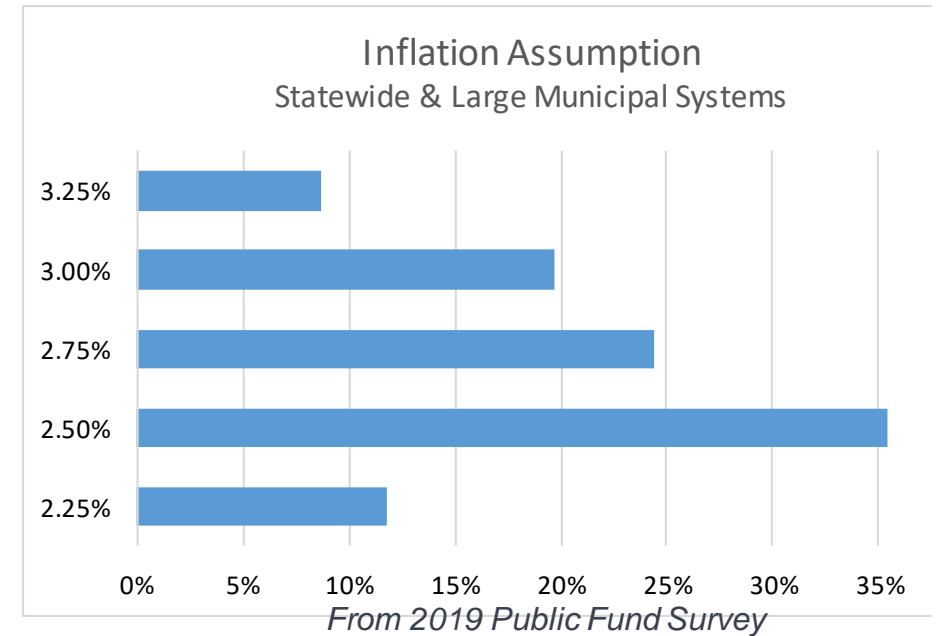
LEGEND

- Provided by SamCERA
- Adopted by Board
- Calculated by the actuary

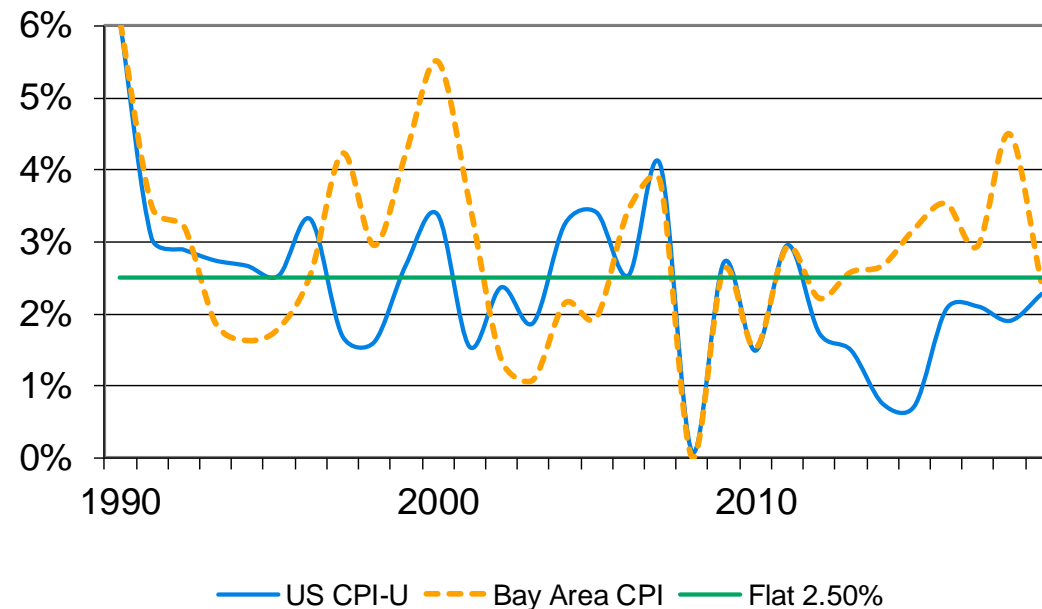


Price Inflation

- Current price inflation assumption is 2.50%
 - CalPERS and CalSTRS are at 2.75%
 - 2.75% is median assumption for large systems, but 2.50% is now the most common
- Long-range Social Security projection is 2.6%
- Other forecasts are lower
 - Implied inflation from TIPS
 - Most investment consultants
- Current assumption is reasonable



Historical Inflation



General Wage Growth

- An individual member's assumed annual salary increase is composed of:
 - Inflation
 - Real wage growth
 - Individual merit/longevity component
- Real wage growth represents the increase in wages in excess of inflation due to improvements in productivity and competitive market pressures
- National average real wage growth has been 0.6% over last 50 years
- Estimated SamCERA-specific real wage growth has been close to 1.0% (somewhat more for Safety and less for General and Probation) over last 30 years
- Current assumption is reasonable

Decade	Wage Growth	CPI Increase	Real Wage Inflation
2009-2018	2.4%	1.8%	0.6%
1999-2008	3.7%	2.5%	1.2%
1989-1998	4.1%	3.1%	1.0%
1979-1988	6.2%	5.9%	0.3%
1969-1978	6.6%	6.7%	-0.1%
Prior 50 Years			
1969-2018	4.5%	3.9%	0.6%

Current Assumption	
Price Inflation	2.50%
Real Wage Growth	<u>0.50%</u>
General Wage Growth	3.00%

Payroll Growth

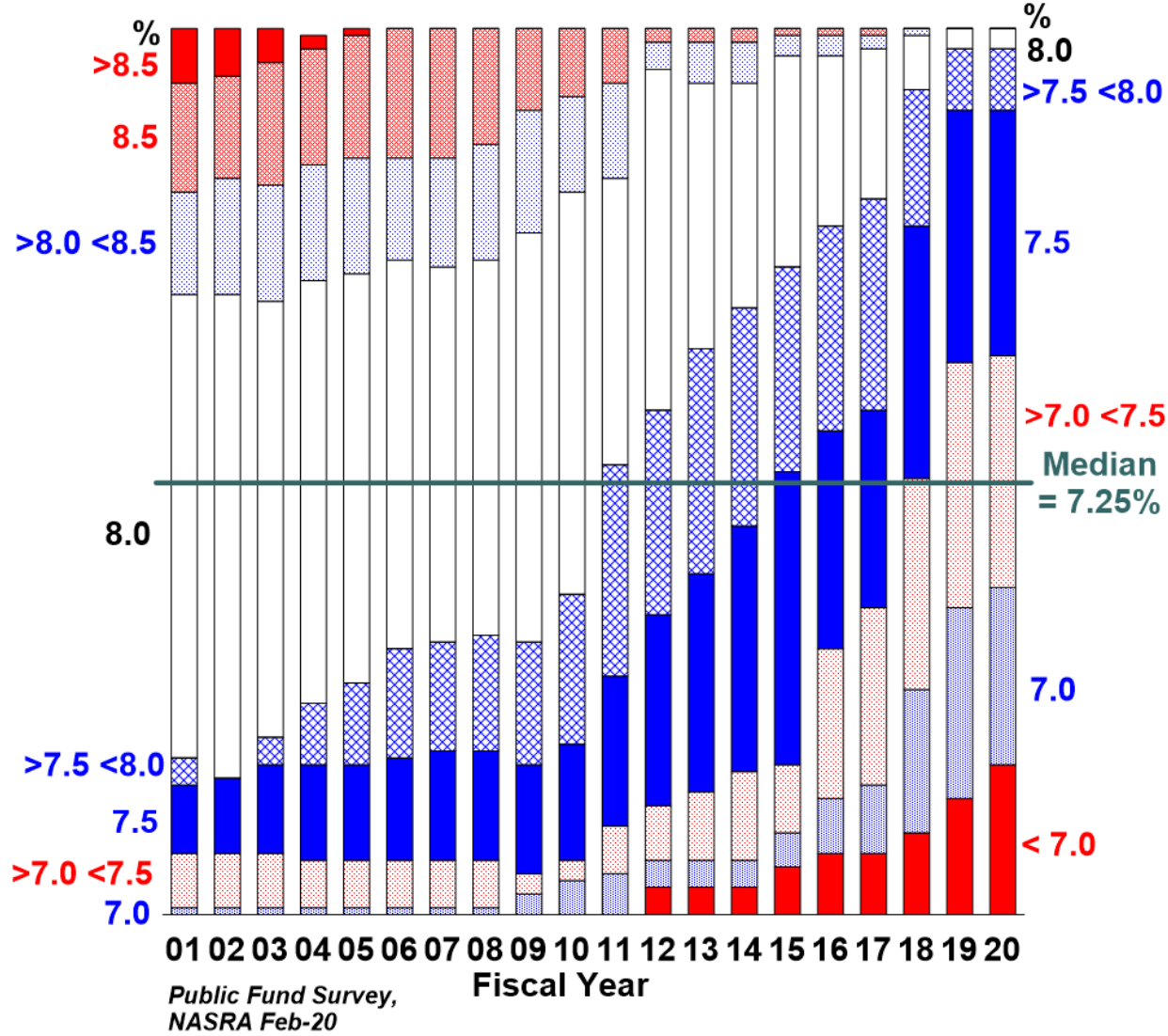
- The system payroll growth assumption is used in the calculation to amortize the unfunded liability
- Fairly standard among public retirement systems to have payroll growth equal to general wage growth
- Historical County payroll has increased at a greater rate than the general wage increase due to increase in number of active members, but this has for the most part 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 6.5%
- Verus' expected 10-year return for SamCERA is 6.3% as of March 31, 2020
 - Based on 1.6% assumed inflation
- Other investment consultants
 - Milliman's expectations
 - Slightly lower than 6% as of the end of 2019 (based on 2.3% assumed inflation)
 - Close to Verus' expectations as of that date
 - 2019 Horizon survey of capital market assumptions (survey of 18 advisors)
 - Outdated at this point, but to provide a relative perspective, average of long term capital market assumptions from Horizon are about 1% higher than Milliman's
- Investment 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 indexing on equities and fixed income)

Investment Return – Other Systems

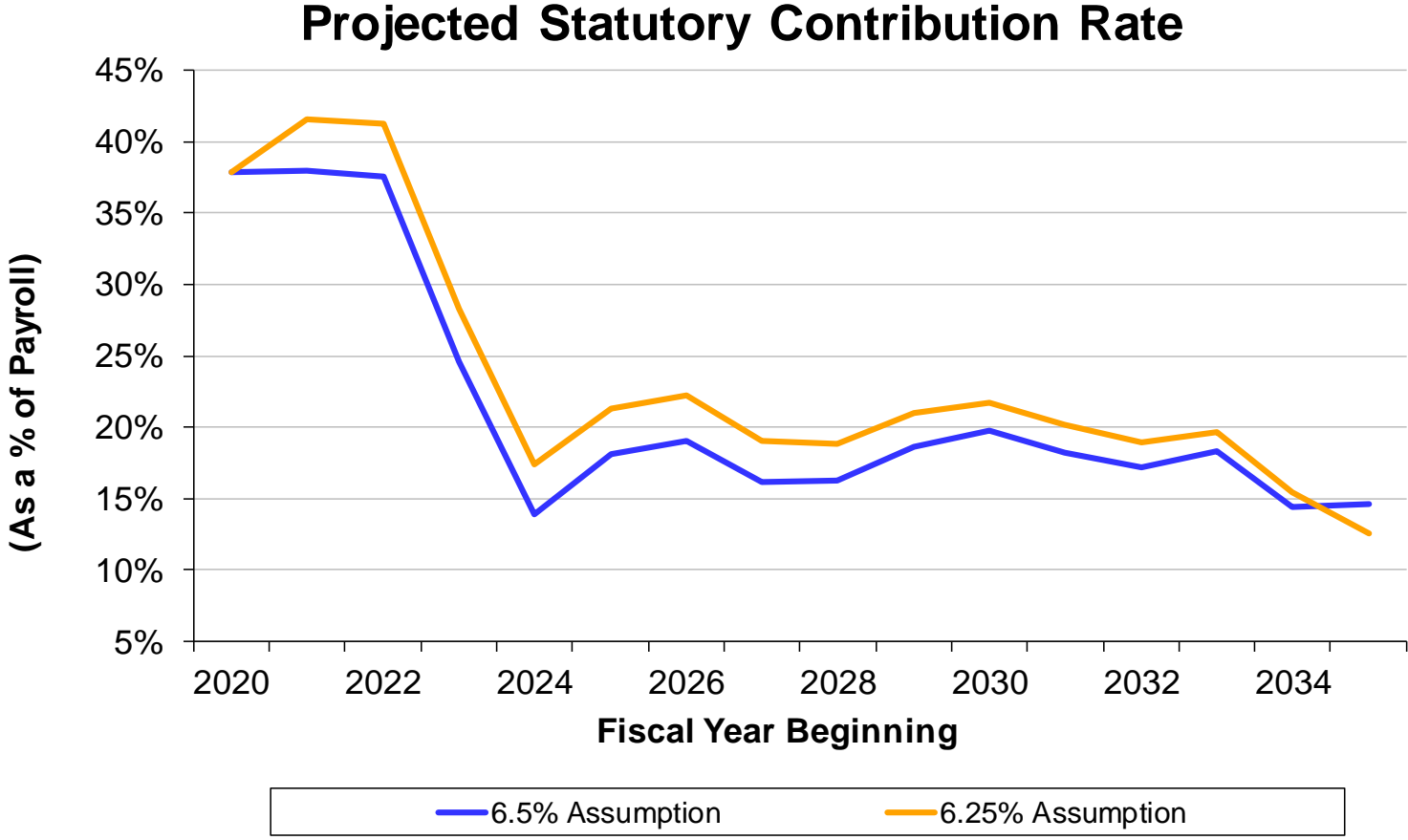
- Median for statewide systems is 7.25%
- CalPERS and CalSTRS at 7.00%
- Other '37 Act systems at 7.00% or 7.25%



Financial Impact of 6.25% Assumption

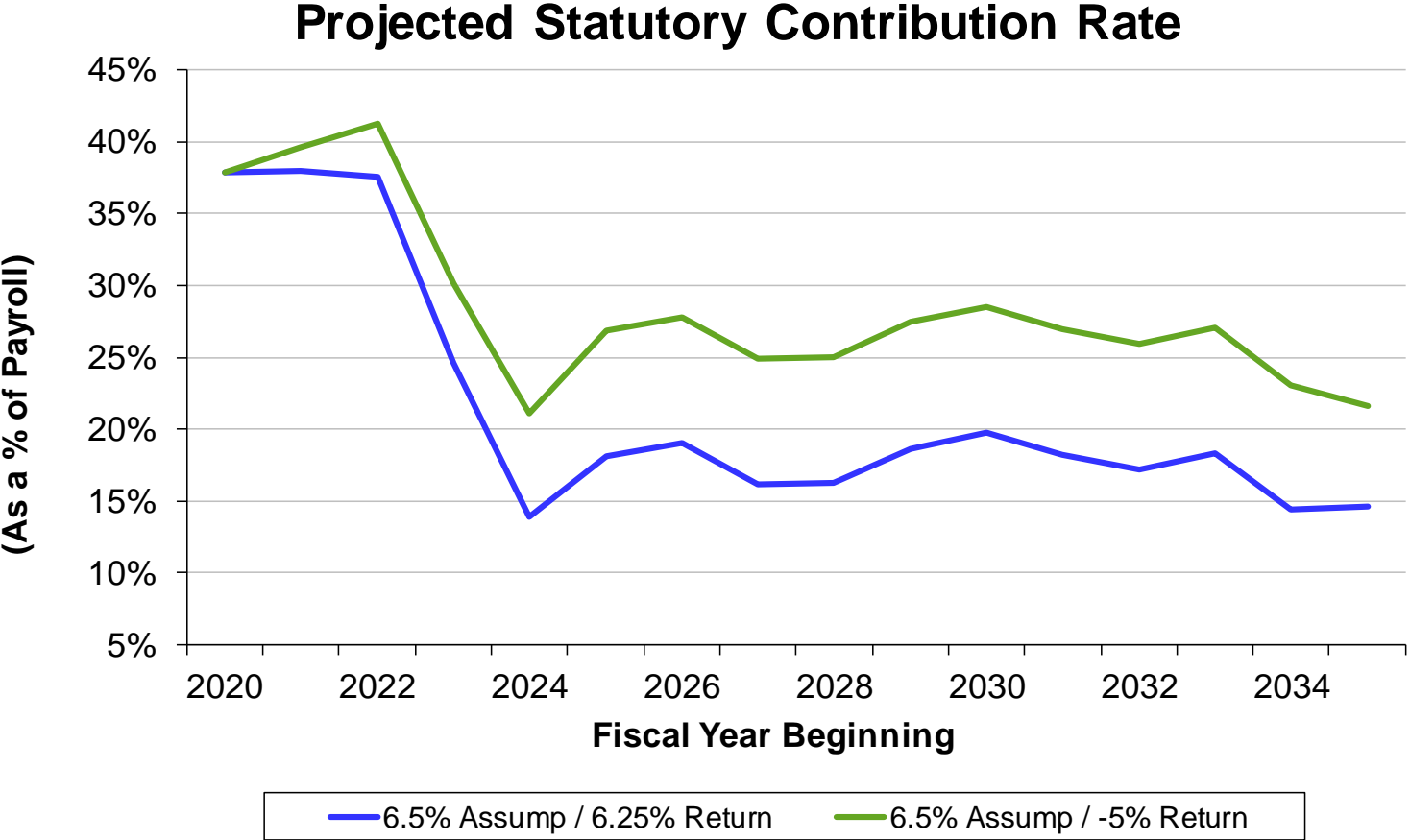
- Employer contribution rate
 - Estimated increase of 3.8% of pay for next fiscal year
- Member contribution rates – Will vary by plan and member entry age, but rough estimates are:
 - Plan 4 General – Increase of about 0.5% of pay (Example: \$20 a pay period based on \$4,000 bi-weekly)
 - Plan 7 General – Increase of about 0.5% of pay (Example: \$15 a pay period based on \$3,000 bi-weekly)
 - Plan 4 Safety / Probation – Increase of about 0.8% of pay (Example: \$40 a pay period based on \$5,000 bi-weekly)
 - Plan 7 Safety / Probation – Increase of about 0.8% of pay (Example: \$32 a pay period based on \$4,000 bi-weekly)

Financial Impact of 6.25% Assumption – Projection



Note: Assumes 6.25% future returns under both scenarios.

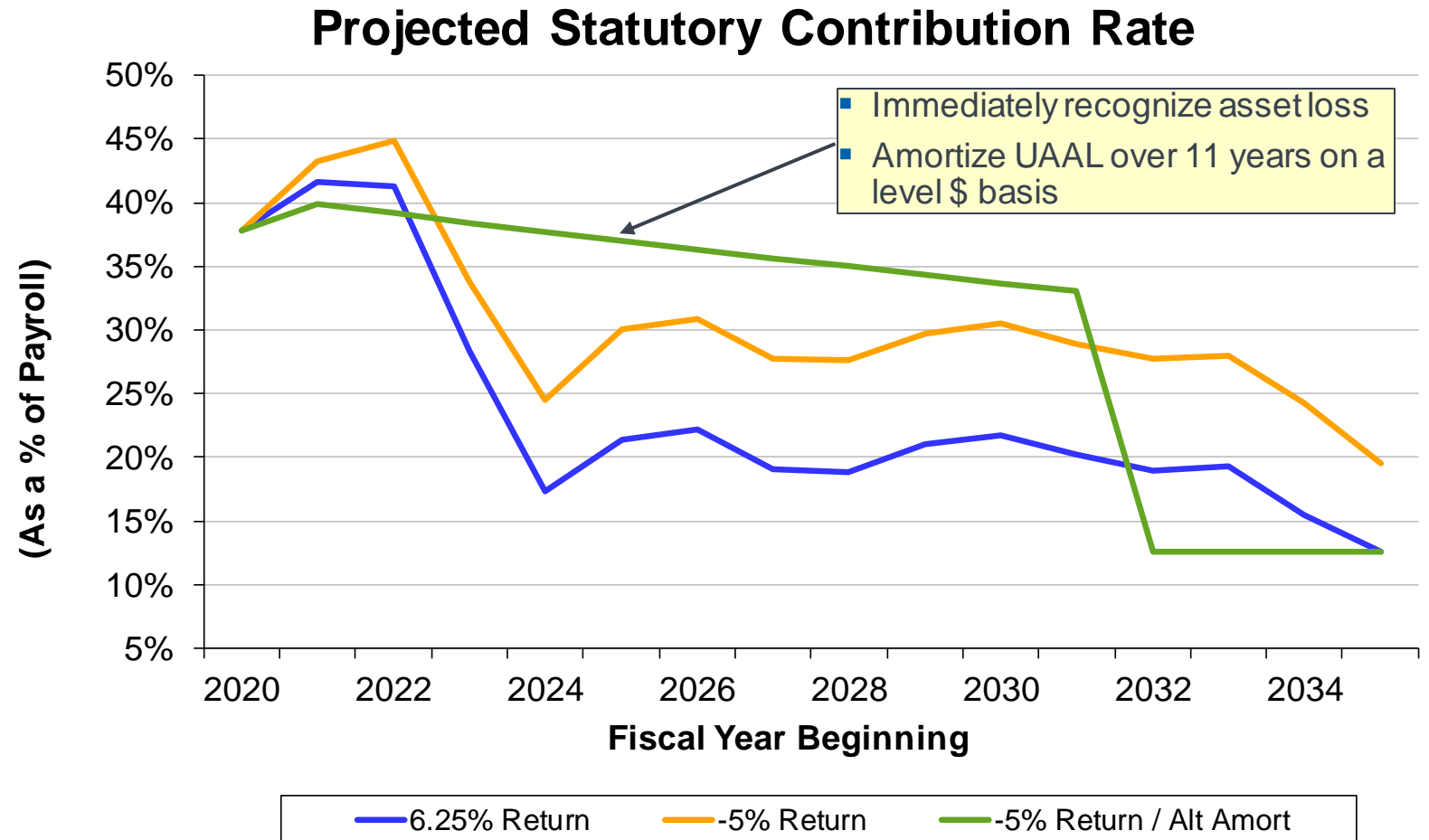
Impact of Poor FYE Return – No Assumption Change



Note: Assumes 6.25% future returns under both scenarios.

Financial Impact of 6.25% Assumption – Poor FYE2020 Return

- Assumes -5% FYE 2020 Return and 6.25% return assumption adopted
- SamCERA has options to mitigate large short-term increases in employer contribution rates
 - Example shown that reduces the short-term spike but still provides reasonable funding
 - Not a recommendation, just a reminder alternatives are available



Conclusion

- Investment return assumption
 - Support for lowering assumption: Verus' 10-year expected return (net of expenses) is just fractionally above 6%
 - Milliman's capital market assumptions are generally close to Verus
 - Support for retaining assumption
 - Assumed long-term inflation is higher which should ultimately result in higher returns
 - Other investment consultants (as indicated by Horizon survey) have historically been more optimistic
- Other economic assumptions are reasonable
- Demographic assumptions will be discussed in July

Questions



Caveats and Disclaimers

This cost calculations shown in this presentation are based on the data, methods, assumptions and plan provisions described in our actuarial valuation report dated September 17, 2019. 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 LACERA'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.

**Sample Changes in Member Rates
if 6.25% Investment Return Assumption is Adopted
(Estimate based on June 30, 2019 Actuarial Valuation⁽¹⁾)**

	<u>Entry Age</u>	<u>Current</u>	<u>Proposed</u>	<u>Increase</u>	<u>Range of Changes for All Entry Ages</u>
General Members - County					
Plan 1	35	15.32%	15.96%	0.64%	0.48% to 0.73%
Plan 2	35	14.33%	14.94%	0.61%	0.47% to 0.69%
Plan 4	35	13.33%	13.88%	0.55%	0.38% to 0.63%
Plan 5	35	8.91%	9.42%	0.51%	0.34% to 0.57%
Plan 7	All	9.11%	9.64%	0.53%	0.53% to 0.53%
Probation Members					
Plan 1	25	18.56%	19.48%	0.92%	0.61% to 0.98%
Plan 2	25	18.43%	19.41%	0.98%	0.69% to 1.03%
Plan 4	25	16.68%	17.60%	0.92%	0.69% to 0.97%
Plan 5	25	16.37%	17.27%	0.90%	0.67% to 0.94%
Plan 6	25	12.37%	13.12%	0.75%	0.50% to 0.81%
Plan 7	All	14.97%	15.88%	0.91%	0.91% to 0.91%
Safety Members -- Other than Deputy Sheriffs					
Plan 1	25	19.54%	20.43%	0.89%	0.59% to 0.95%
Plan 2	25	19.88%	20.93%	1.05%	0.79% to 1.10%
Plan 4	25	18.17%	19.10%	0.93%	0.70% to 0.97%
Plan 5	25	16.87%	17.76%	0.89%	0.65% to 0.93%
Plan 6	25	12.56%	13.33%	0.77%	0.50% to 0.82%
Plan 7	All	15.28%	16.10%	0.82%	0.82% to 0.82%

1 Final FYB 2021 member rates will be determined based on the June 30, 2020 valuation.

- 2 Cost Sharing varies for Deputy Sheriffs as follows, so total rate is either 2.0%, 1.5%, or 0.5% less than shown depending on the level of service.
- 3.0% if employee is less than age 45 and has less than 5 years of service.
 - 3.5% if employee is less than age 45 and has between 5 and 15 years of service.
 - 4.5% if employee is older than age 45 or has at least 15 years of service.

**Sample Changes in Member Rates
if 6.25% Investment Return Assumption is Adopted
(Estimate based on June 30, 2019 Actuarial Valuation⁽¹⁾)**

	<u>Entry Age</u>	<u>Current</u>	<u>Proposed</u>	<u>Increase</u>	<u>Range of Changes for All Entry Ages</u>
General Members - County (Bi-Weekly Pay of \$4,000)					
Plan 1	35	\$ 613	\$ 638	\$ 25	\$19 to \$29
Plan 2	35	\$ 573	\$ 598	\$ 25	\$19 to \$27
Plan 4	35	\$ 533	\$ 555	\$ 22	\$15 to \$25
Plan 5	35	\$ 356	\$ 377	\$ 21	\$14 to \$23
Plan 7	All	\$ 364	\$ 386	\$ 22	\$22 to \$22
Probation Members (Bi-Weekly Pay of \$4,000)					
Plan 1	25	\$ 742	\$ 779	\$ 37	\$25 to \$39
Plan 2	25	\$ 737	\$ 776	\$ 39	\$28 to \$41
Plan 4	25	\$ 667	\$ 704	\$ 37	\$28 to \$39
Plan 5	25	\$ 655	\$ 691	\$ 36	\$27 to \$38
Plan 6	25	\$ 495	\$ 525	\$ 30	\$20 to \$32
Plan 7	All	\$ 599	\$ 635	\$ 36	\$36 to \$36
Safety Members -- Other than Deputy Sheriffs (Bi-Weekly Pay of \$5,000)					
Plan 1	25	\$ 977	\$ 1,022	\$ 45	\$30 to \$47
Plan 2	25	\$ 994	\$ 1,047	\$ 53	\$40 to \$55
Plan 4	25	\$ 908	\$ 955	\$ 47	\$35 to \$49
Plan 5	25	\$ 843	\$ 888	\$ 45	\$33 to \$47
Plan 6	25	\$ 628	\$ 667	\$ 39	\$25 to \$41
Plan 7	All	\$ 764	\$ 805	\$ 41	\$41 to \$41

1 Final FYB 2021 member rates will be determined based on the June 30, 2020 valuation.

2 Cost Sharing varies for Deputy Sheriffs as follows, so total rate is either 2.0%, 1.5%, or 0.5% less than shown depending on the level of service.

3.0% if employee is less than age 45 and has less than 5 years of service.

3.5% if employee is less than age 45 and has between 5 and 15 years of service.

4.5% if employee is older than age 45 or has at least 15 years of service.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

June 2, 2020

Agenda Item 6.1

TO: Board of Retirement

FROM: Michael Coultrip, Chief Investment Officer 

SUBJECT: Preliminary Monthly Portfolio Performance Report for the Period Ended April 30, 2020

Recommendation

Accept the preliminary performance report dated April 30, 2020.

Background

This preliminary report is intended to provide a high-level view of the portfolio and its trends. It is not intended to provide short-term performance upon which the Board would act. The quarterly performance metrics are not yet available for our private equity, private credit, private real asset, and real estate portfolios. The performance for these portfolios will be reflected in the quarterly performance report generated by Verus.

The attached performance report shows both net and gross of fee returns for the total plan on page one, with net composite returns (pages 2-3) and net manager returns (pages 4-10) also shown.

Discussion

The fund's net preliminary return for April was 5.6%, bringing the preliminary trailing twelve-month net return ending April 2020 to -1.1%. The preliminary twelve-month net return is below SamCERA's Plan Benchmark return of +1.0% and SamCERA's Actuarial Assumed Earnings Rate of 6.5%.

Global markets rebounded from the massive March sell-off as unprecedented monetary and fiscal policies, along with optimism regarding a gradual reopening of global economies, helped fuel a risk-on rally. The U.S. equity market (measured by the S&P 500 Index) was up 12.8% on the month, making it the largest monthly increase since 1974 (although the index is still down just over 9% year-to-date). Small-cap stocks were up 13.7%. International markets were also higher on the month. Developed international equity (as measured by MSCI EAFE) was up 6.5%, while emerging markets were up 9.2%.

Economic data started reflecting the impacts from the COVID-19 lockdown. First quarter real GDP was down 4.4% on an annualized quarterly basis, although the full GDP impact is expected to show next quarter. The unemployment rate rose to 14.7%, the highest since the Great Depression.

The general U.S. fixed income market was higher by 1.8%, as credit spreads narrowed while interest rates were lower across the board. The 10-year U.S. Treasury yield decreased 3 basis points and ended at 0.64% by month-end. High Yield fixed income returns were up 4.5% as credit spreads narrowed.

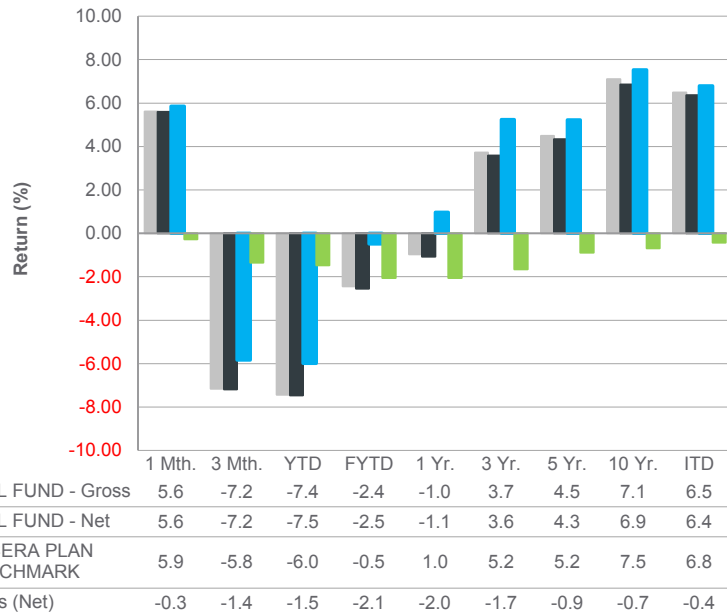
Attachments

Northern Trust Monthly Preliminary Performance Report
Verus Capital Market Update

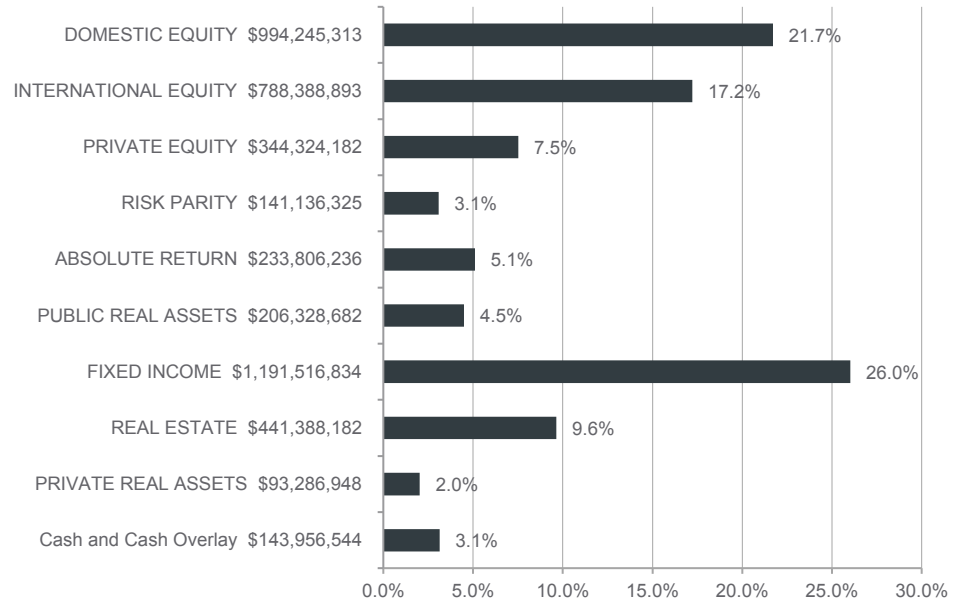
San Mateo County Composite Return Summary April 30, 2020



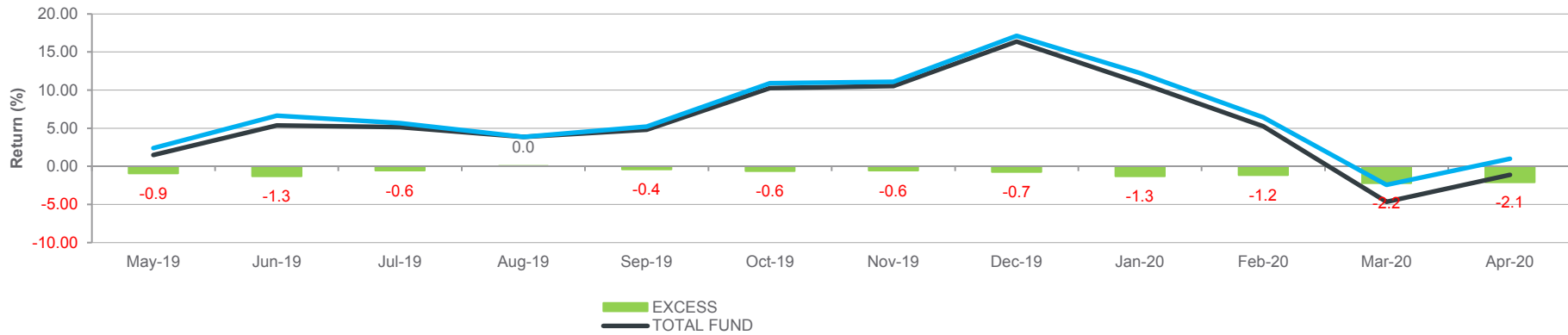
Total Fund Performance



Asset Allocation



Rolling Month End Annual Returns

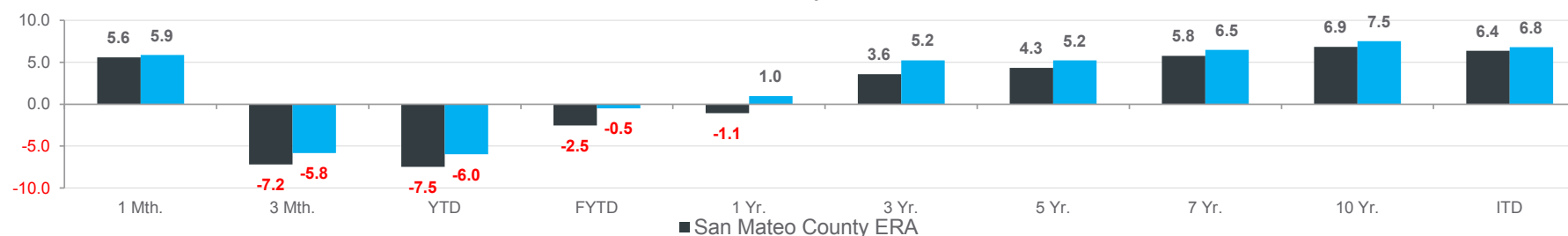


San Mateo County Composite Return Summary

April 30, 2020



Return Comparison



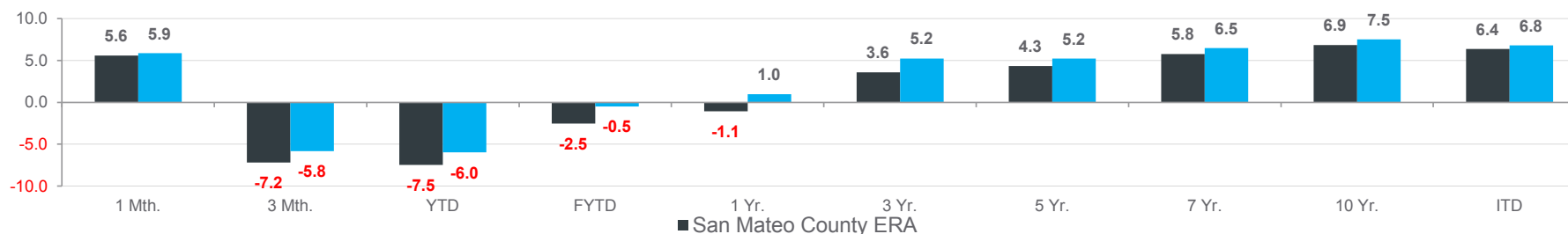
Composite Returns (Net of Manager Fees)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
San Mateo County ERA	4,578,378,139	5.6	-7.2	-7.5	-2.5	-1.1	3.6	4.3	5.8	6.9	6.4
Samcera Total Plan Benchmark		5.9	-5.8	-6.0	-0.5	1.0	5.2	5.2	6.5	7.5	6.8
Excess		-0.3	-1.4	-1.5	-2.1	-2.0	-1.7	-0.9	-0.7	-0.7	-0.4
San Mateo Ex-Clifton Overlay	4,541,355,503	5.5	-7.1	-7.4	-2.4	-0.9	3.5	4.3	5.7	6.8	6.3
Samcera Total Plan Benchmark		5.9	-5.8	-6.0	-0.5	1.0	5.2	5.2	6.5	7.5	6.8
Excess		-0.4	-1.3	-1.4	-2.0	-1.9	-1.7	-1.0	-0.8	-0.7	-0.5
Total Equity	1,782,634,206	10.0	-12.6	-13.8	-6.2	-5.8	3.8	4.7	7.0	7.8	7.2
Samcera Total Equity Benchmark		10.7	-12.1	-13.0	-5.2	-5.2	4.5	5.8	8.0	8.7	7.8
Excess		-0.8	-0.5	-0.7	-1.0	-0.6	-0.7	-1.0	-1.0	-0.9	-0.6
Fixed Income	1,191,516,834	1.1	-1.7	-0.2	2.0	4.4	3.6	3.7	3.3	4.9	5.4
Samcera Fixed Income Benchmark		3.0	-0.1	1.2	4.3	7.1	4.5	3.8	3.0	4.0	5.1
Excess		-1.9	-1.6	-1.4	-2.4	-2.7	-0.9	-0.0	0.3	0.9	0.4
Risk Parity	141,136,325	3.1	-9.1	-8.5	-4.0	1.3	4.2	3.5	3.8	--	5.6
Samcera Risk Parity Benchmark		7.3	-6.8	-6.7	-1.2	0.6	4.8	5.6	7.0	--	7.5
Excess		-4.2	-2.2	-1.8	-2.9	0.7	-0.7	-2.0	-3.3	--	-1.9

San Mateo County Composite Return Summary

April 30, 2020



Return Comparison



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
Alternatives	578,130,418	7.1	2.8	2.9	9.3	11.2	5.8	6.1	5.2	-2.6	-1.3
Samcera Alternatives Benchmark		0.3	4.4	5.9	11.2	14.8	10.7	8.8	8.8	9.2	8.1
Excess		6.9	-1.5	-2.9	-1.9	-3.6	-4.9	-2.7	-3.6	-11.8	-9.4
Inflation Hedge	741,003,813	2.6	-9.6	-10.3	-9.1	-7.9	0.0	--	--	--	3.3
SamCERA Inflation Hedge Index		2.6	-5.5	-6.7	-4.0	-2.3	3.1	--	--	--	4.5
Excess		-0.1	-4.2	-3.6	-5.1	-5.6	-3.1	--	--	--	-1.2
Cash	106,933,908	0.1	0.2	0.3	0.8	1.0	1.0	0.8	0.7	0.7	1.9
Samcera Cash Benchmark		0.0	0.4	0.6	1.6	2.1	1.8	1.2	0.9	0.6	1.9
Excess		0.0	-0.2	-0.3	-0.8	-1.1	-0.8	-0.4	-0.1	0.1	0.0

San Mateo County Composite Return Summary

April 30, 2020



Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
Total Equity	1,782,634,206	10.0	-12.6	-13.8	-6.2	-5.8	3.8	4.7	7.0	7.8	7.2
Samcera Total Equity Benchmark		10.7	-12.1	-13.0	-5.2	-5.2	4.5	5.8	8.0	8.7	7.8
Excess		-0.8	-0.5	-0.7	-1.0	-0.6	-0.7	-1.0	-1.0	-0.9	-0.6
Domestic Equity	994,245,313	12.5	-11.4	-11.8	-3.4	-2.5	6.8	7.6	9.9	10.4	8.3
Samcera Dom. Equity Benchmark		13.2	-10.3	-10.4	-1.1	-1.0	8.0	8.3	10.6	11.2	8.7
Excess		-0.7	-1.1	-1.4	-2.3	-1.4	-1.3	-0.7	-0.6	-0.8	-0.5
Large Cap Equity	927,959,179	12.4	-10.3	-10.3	-1.7	-0.5	8.1	8.7	10.9	11.0	9.1
Russell 1000		13.2	-9.8	-9.7	-0.1	0.1	8.7	8.7	11.0	11.6	9.4
Excess		-0.8	-0.5	-0.6	-1.6	-0.6	-0.6	-0.0	-0.1	-0.6	-0.4
Blackrock Russell 1000	486,027,923	13.2	-9.7	-9.6	-0.1	0.1	8.7	--	--	--	9.7
Russell 1000		13.2	-9.8	-9.7	-0.1	0.1	8.7	--	--	--	9.7
Excess		0.0	0.0	0.0	0.0	0.0	0.0	--	--	--	0.1
DE Shaw Commingled Fund	142,998,148	13.3	-10.2	-10.8	-1.6	1.1	7.9	8.8	--	--	9.0
Russell 1000		13.2	-9.8	-9.7	-0.1	0.1	8.7	8.7	--	--	8.6
Excess		0.1	-0.4	-1.2	-1.4	1.0	-0.8	0.0	--	--	0.4
Acadian US MGD V-SL	147,676,175	10.8	-12.3	-12.9	-5.7	-3.7	--	--	--	--	8.1
Russell 1000		13.2	-9.8	-9.7	-0.1	0.1	--	--	--	--	14.3
Excess		-2.4	-2.5	-3.2	-5.6	-3.8	--	--	--	--	-6.2
Panagora Defuseq -SL	151,256,933	10.5	-13.2	-12.7	-6.9	-4.2	--	--	--	--	10.9
Russell 1000		13.2	-9.8	-9.7	-0.1	0.1	--	--	--	--	14.3
Excess		-2.7	-3.4	-3.0	-6.8	-4.3	--	--	--	--	-3.4
Small Cap Equity	66,286,134	13.9	-24.4	-27.9	-21.9	-23.7	-6.2	-1.7	2.5	5.5	4.6
Russell 2000		13.7	-18.5	-21.1	-15.3	-16.4	-0.8	2.9	6.2	7.7	6.6
Excess		0.2	-5.9	-6.8	-6.6	-7.3	-5.4	-4.6	-3.7	-2.2	-2.0
QMA US Small Cap	66,286,134	13.9	-24.4	-27.9	-21.9	-23.7	-6.2	--	--	--	-0.7
Russell 2000		13.7	-18.5	-21.1	-15.3	-16.4	-0.8	--	--	--	3.0
Excess		0.2	-5.9	-6.8	-6.6	-7.3	-5.4	--	--	--	-3.7

San Mateo County Composite Return Summary

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Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
International Equity	788,388,893	6.9	-14.1	-16.1	-9.5	-9.7	0.4	0.9	2.4	3.3	4.8
SamCERA Custom Hedge Intl		7.7	-14.3	-16.2	-10.0	-10.1	0.3	0.4	2.0	3.2	4.3
Excess		-0.8	0.2	0.0	0.5	0.4	0.1	0.5	0.4	0.1	0.4
Developed Markets Equity	715,986,841	6.6	-13.5	-15.3	-8.1	-8.5	1.0	1.3	3.0	3.8	3.8
MS AC WldxUS IMI Nt		8.1	-15.6	-17.9	-11.9	-11.8	-0.5	-0.1	1.7	3.0	3.9
Excess		-1.6	2.1	2.6	3.8	3.3	1.5	1.4	1.3	0.8	-0.2
Baillie Gifford	234,334,027	9.6	-10.0	-12.0	-2.1	-2.2	4.2	3.6	5.0	--	6.5
MSCI ACWI ex USA Growth		8.7	-10.2	-11.1	-3.3	-2.0	4.8	3.3	4.4	--	--
Excess		0.9	0.2	-1.0	1.2	-0.2	-0.6	0.4	0.6	--	--
Blackrock EAFE Index Fund	241,561,168	6.4	-16.1	-17.8	-12.0	-11.2	-0.3	0.2	--	--	0.8
MSCI EAFE ND		6.5	-16.1	-17.8	-12.1	-11.3	-0.6	-0.2	--	--	0.5
Excess		-0.0	0.0	0.1	0.1	0.2	0.3	0.3	--	--	0.3
Mondrian Investment Partners	201,336,492	5.4	-20.3	-23.3	-17.4	-18.3	-3.5	-1.9	0.4	2.4	3.6
MSCI ACWI xUSA Value		6.4	-20.3	-23.9	-19.7	-20.0	-4.4	-2.8	-0.4	1.4	3.3
Excess		-1.1	0.0	0.6	2.4	1.7	0.9	0.9	0.8	1.0	0.3
Parametriccurr Ovrla	38,755,154	-2.5	15.0	28.4	37.4	26.9	--	--	--	--	41.5
--		--	--	--	--	--	--	--	--	--	--
Excess		--	--	--	--	--	--	--	--	--	--
Emerging Markets Equity	72,402,052	10.3	-19.7	-23.5	-20.9	-20.4	-5.1	-3.0	-1.9	--	-1.1
MSCI Emerging Markets ND		9.2	-12.5	-16.6	-10.7	-12.0	0.6	-0.1	0.7	--	1.0
Excess		1.2	-7.2	-6.9	-10.2	-8.4	-5.6	-2.9	-2.7	--	-2.1
EV Parametric EM	72,402,052	10.3	-19.7	-23.5	-20.9	-20.4	-5.1	--	--	--	-0.7
MSCI Emerging Markets GD		9.2	-12.5	-16.6	-10.4	-11.7	0.9	--	--	--	3.2
Excess		1.2	-7.2	-7.0	-10.5	-8.7	-6.0	--	--	--	-4.0
Fixed Income	1,191,516,834	1.1	-1.7	-0.2	2.0	4.4	3.6	3.7	3.3	4.9	5.4
Samcera Fixed Income Benchmark		3.0	-0.1	1.2	4.3	7.1	4.5	3.8	3.0	4.0	5.1
Excess		-1.9	-1.6	-1.4	-2.4	-2.7	-0.9	-0.0	0.3	0.9	0.4

San Mateo County Composite Return Summary

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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	795,129,105	2.0	1.1	2.5	5.1	7.7	4.3	3.7	3.5	4.5	5.3
BBG Barclays US Aggregate		1.8	3.0	5.0	7.6	10.8	5.2	3.8	3.3	4.0	5.1
Excess		0.2	-1.9	-2.4	-2.4	-3.2	-0.9	-0.1	0.2	0.6	0.2
FIAM Core Bond	247,145,784	2.9	1.8	3.9	6.8	9.9	5.1	4.1	3.6	4.5	4.9
BBG Barclays US Aggregate		1.8	3.0	5.0	7.6	10.8	5.2	3.8	3.3	4.0	4.6
Excess		1.1	-1.2	-1.1	-0.7	-1.0	-0.1	0.3	0.3	0.5	0.4
Western Total Return	135,288,145	4.1	-5.2	-4.9	-1.0	0.7	2.5	--	--	--	3.3
BBG Barclays US Aggregate		1.8	3.0	5.0	7.6	10.8	5.2	--	--	--	4.1
Excess		2.4	-8.2	-9.9	-8.6	-10.1	-2.6	--	--	--	-0.8
Blackrock Inter Gov	209,563,096	0.3	4.0	5.5	6.8	9.3	4.2	--	--	--	4.1
BBG Barclays US Aggregate		1.8	3.0	5.0	7.6	10.8	5.2	--	--	--	5.2
Excess		-1.5	1.0	0.5	-0.7	-1.5	-1.0	--	--	--	-1.1
DoubleLine	203,132,080	1.3	--	--	--	--	--	--	--	--	1.6
BBG Barclays US Aggregate		1.8	--	--	--	--	--	--	--	--	1.2
Excess		-0.5	--	--	--	--	--	--	--	--	0.4
Opportunistic Credit	396,387,729	-0.8	-7.2	-5.7	-4.2	-1.9	3.0	4.4	5.1	7.3	7.8
BB Barc BA Intermediate HY Ind		5.8	-5.0	-4.9	-0.9	0.9	3.3	4.1	4.2	6.1	6.6
Excess		-6.5	-2.2	-0.9	-3.3	-2.9	-0.4	0.3	0.8	1.3	1.2
Pimco Private Income	34,463,131	0.0	0.0	1.6	4.7	4.7	--	--	--	--	4.3
BB Barc BA Intermediate HY Ind		5.8	-5.0	-4.9	-0.9	0.9	--	--	--	--	1.8
Excess		-5.8	5.0	6.5	5.6	3.8	--	--	--	--	2.5
AG CREDIT SOL FU LP	8,659,956	0.0	15.5	15.5	--	--	--	--	--	--	15.5
BB Barc BA Intermediate HY Ind		5.8	-5.0	-4.9	--	--	--	--	--	--	-4.9
Excess		-5.8	20.6	20.4	--	--	--	--	--	--	20.4
AG CSF ANX DISLOC FD	7,500,000	0.0	--	--	--	--	--	--	--	--	0.0
BB Barc BA Intermediate HY Ind		5.8	--	--	--	--	--	--	--	--	5.8
Excess		-5.8	--	--	--	--	--	--	--	--	-5.8

San Mateo County Composite Return Summary

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Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
AG Opportunistic Whole Loan	4,043,118	0.0	2.5	2.5	12.8	13.9	20.8	14.7	--	--	11.5
BB Barc BA Intermediate HY Ind		5.8	-5.0	-4.9	-0.9	0.9	3.3	4.1	--	--	4.1
Excess		-5.8	7.6	7.4	13.7	13.0	17.5	10.6	--	--	7.3
Angelo Gordon	2,335,853	0.0	2.4	2.4	13.1	20.3	24.2	16.8	15.7	--	14.8
BB Barc BA Intermediate HY Ind		5.8	-5.0	-4.9	-0.9	0.9	3.3	4.1	4.2	--	4.7
Excess		-5.8	7.5	7.3	14.0	19.3	20.9	12.7	11.4	--	10.2
Blackrock Direct Lending Feede	2,458,242	0.0	0.0	-7.0	-7.0	--	--	--	--	--	-7.0
BB Barc BA Intermediate HY Ind		5.8	-5.0	-4.9	-0.9	--	--	--	--	--	1.6
Excess		-5.8	5.0	-2.1	-6.1	--	--	--	--	--	-8.6
Beach Point Select Fund	48,932,016	-10.0	-11.3	-9.1	-6.9	-3.4	2.2	4.5	--	--	5.3
BB Barc BA Intermediate HY Ind		5.8	-5.0	-4.9	-0.9	0.9	3.3	4.1	--	--	4.3
Excess		-15.8	-6.2	-4.3	-6.0	-4.3	-1.2	0.5	--	--	1.0
Brigade Cap Mngmt	67,797,143	1.9	-17.2	-14.1	-14.5	-12.9	-2.4	0.6	1.5	--	4.2
BB Barc BA Intermediate HY Ind		5.8	-5.0	-4.9	-0.9	0.9	3.3	4.1	4.2	--	6.0
Excess		-3.8	-12.2	-9.3	-13.6	-13.8	-5.8	-3.5	-2.7	--	-1.8
White Oak Yield Spec	33,129,488	0.0	2.3	2.3	5.4	7.4	5.4	--	--	--	--
BB Barc BA Intermediate HY Ind		5.8	-5.0	-4.9	-0.9	0.9	3.3	--	--	--	3.7
Excess		-5.8	7.4	7.2	6.3	6.5	2.1	--	--	--	--
PIMCO Div. Income Fund	105,417,543	2.6	-6.5	-5.1	-2.4	0.5	--	--	--	--	2.8
BB Barc BA Intermediate HY Ind		5.8	-5.0	-4.9	-0.9	0.9	--	--	--	--	2.9
Excess		-3.1	-1.5	-0.2	-1.5	-0.4	--	--	--	--	-0.1
TCP Direct Lending VIII	33,028,803	-4.6	-2.4	-2.4	-0.3	1.2	4.8	--	--	--	--
BB Barc BA Intermediate HY Ind		5.8	-5.0	-4.9	-0.9	0.9	3.3	--	--	--	4.7
Excess		-10.3	2.6	2.4	0.5	0.3	1.4	--	--	--	--
Franklin Templeton	48,622,435	0.2	-5.5	-5.5	-7.5	-6.2	-1.8	0.2	0.3	--	2.7
BB Barclays Multiverse Index		2.0	-0.3	0.9	2.2	5.8	3.7	2.8	1.7	--	2.4
Excess		-1.8	-5.3	-6.4	-9.7	-12.0	-5.5	-2.6	-1.4	--	0.3

San Mateo County Composite Return Summary

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Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
Risk Parity	141,136,325	3.1	-9.1	-8.5	-4.0	1.3	4.2	3.5	3.8	--	5.6
Samcera Risk Parity Benchmark		7.3	-6.8	-6.7	-1.2	0.6	4.8	5.6	7.0	--	7.5
Excess		-4.2	-2.2	-1.8	-2.9	0.7	-0.7	-2.0	-3.3	--	-1.9
AQR Global Risk III	68,440,206	1.8	-11.0	-11.2	-6.0	-0.7	4.0	2.6	2.5	--	4.6
Samcera Risk Parity Benchmark		7.3	-6.8	-6.7	-1.2	0.6	4.8	5.6	7.0	--	7.5
Excess		-5.5	-4.1	-4.4	-4.9	-1.3	-0.8	-3.0	-4.5	--	-2.9
Panagora	72,696,119	4.3	-6.7	-5.2	-1.5	3.8	4.5	4.5	--	--	5.6
Samcera Risk Parity Benchmark		7.3	-6.8	-6.7	-1.2	0.6	4.8	5.6	--	--	5.8
Excess		-3.0	0.2	1.5	-0.3	3.1	-0.3	-1.0	--	--	-0.2
Alternatives	578,130,418	7.1	2.8	2.9	9.3	11.2	5.8	6.1	5.2	-2.6	-1.3
Samcera Alternatives Benchmark		0.3	4.4	5.9	11.2	14.8	10.7	8.8	8.8	9.2	8.1
Excess		6.9	-1.5	-2.9	-1.9	-3.6	-4.9	-2.7	-3.6	-11.8	-9.4
Private Equity	344,324,182	12.0	15.9	16.5	31.7	38.6	19.0	17.2	17.1	--	-12.5
Samcera PE Benchmark		13.5	-9.6	-9.5	1.3	1.9	11.2	11.6	13.9	--	15.1
Excess		-1.5	25.5	26.0	30.3	36.7	7.7	5.6	3.2	--	-27.7
Absolute Return	233,806,236	0.1	-12.0	-12.4	-13.9	-15.8	-8.0	-2.7	-0.2	--	0.5
Samcera LIBOR + 4%		0.4	1.4	1.8	4.9	6.0	5.9	5.3	5.0	--	4.8
Excess		-0.3	-13.3	-14.2	-18.9	-21.9	-13.9	-8.0	-5.2	--	-4.3
AQR Delta XN	43,230,810	-0.7	-20.6	-22.8	-26.8	-30.1	-15.2	-7.2	-3.5	--	-2.2
Samcera LIBOR + 4%		0.4	1.4	1.8	4.9	6.0	5.9	5.3	5.0	--	4.8
Excess		-1.1	-21.9	-24.6	-31.8	-36.1	-21.1	-12.5	-8.5	--	-7.0
Aberdeen Std GARS	73,652,552	0.2	-4.5	-2.1	0.8	1.8	1.1	--	--	--	0.5
Samcera LIBOR + 4%		0.4	1.4	1.8	4.9	6.0	5.9	--	--	--	5.4
Excess		-0.3	-5.8	-3.9	-4.1	-4.2	-4.8	--	--	--	-4.9
Graham Global Investment	71,838,853	0.5	-4.2	--	--	--	--	--	--	--	-4.2
Samcera LIBOR +4%		0.4	1.4	--	--	--	--	--	--	--	1.4
Excess		0.1	-5.6	--	--	--	--	--	--	--	-5.6

San Mateo County Composite Return Summary

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Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
PIMCO MAARS Fund L.P.	45,084,020	0.2	--	--	--	--	--	--	--	--	0.2
Samcera LIBOR +4%		0.4	--	--	--	--	--	--	--	--	0.4
Excess		-0.3	--	--	--	--	--	--	--	--	-0.3
Inflation Hedge	741,003,813	2.6	-9.6	-10.3	-9.1	-7.9	0.0	--	--	--	3.3
SamCERA Inflation Hedge Index		2.6	-5.5	-6.7	-4.0	-2.3	3.1	--	--	--	4.5
Excess		-0.1	-4.2	-3.6	-5.1	-5.6	-3.1	--	--	--	-1.2
Real Estate	441,388,182	1.3	1.3	3.4	5.6	6.7	7.3	--	--	--	8.1
Samcera NCREIF ODCE EW (gross)		0.0	0.9	0.9	3.9	5.3	7.1	--	--	--	7.3
Excess		1.3	0.4	2.5	1.7	1.4	0.2	--	--	--	0.8
Invesco Core Real Estate	277,783,375	1.6	1.6	3.8	5.7	6.8	7.4	8.9	10.2	11.5	7.8
Samcera NCREIF ODCE EW (gross)		0.0	0.9	0.9	3.9	5.3	7.1	8.7	10.0	11.5	7.6
Excess		1.6	0.6	2.9	1.8	1.5	0.4	0.2	0.1	-0.0	0.2
Invesco US Val IV	14,643,008	0.7	0.7	5.4	11.9	11.9	12.2	--	--	--	12.6
Samcera NCREIF ODCE EW (gross)		0.0	0.9	0.9	3.9	5.3	7.1	--	--	--	8.1
Excess		0.7	-0.2	4.5	8.0	6.6	5.2	--	--	--	4.5
PGIM Real Estate US Debt Fund	85,182,676	1.1	1.1	2.5	4.2	5.7	--	--	--	--	4.9
Samcera NCREIF ODCE EW (gross)		0.0	0.9	0.9	3.9	5.3	--	--	--	--	6.8
Excess		1.1	0.2	1.6	0.3	0.4	--	--	--	--	-1.9
Invesco US VAL V	13,324,685	0.8	0.8	5.7	12.1	12.1	--	--	--	--	5.9
Samcera NCREIF ODCE EW (gross)		0.0	0.9	0.9	3.9	5.3	--	--	--	--	--
Excess		0.8	-0.1	4.7	8.3	6.9	--	--	--	--	--
Harrison Street Core Property	50,454,438	0.9	0.9	0.9	--	--	--	--	--	--	0.9
Samcera NCREIF ODCE EW (gross)		0.0	0.9	0.9	--	--	--	--	--	--	0.9
Excess		0.9	0.0	0.0	--	--	--	--	--	--	0.0
Public Real Assets	206,328,682	8.3	-26.1	-29.4	-28.5	-27.4	-7.8	--	--	--	--
SamCera Liquid Real Asset Inde		7.9	-17.6	-21.0	-18.5	-17.1	-2.9	--	--	--	1.4
Excess		0.3	-8.5	-8.4	-10.0	-10.4	-4.9	--	--	--	--

San Mateo County Composite Return Summary

April 30, 2020

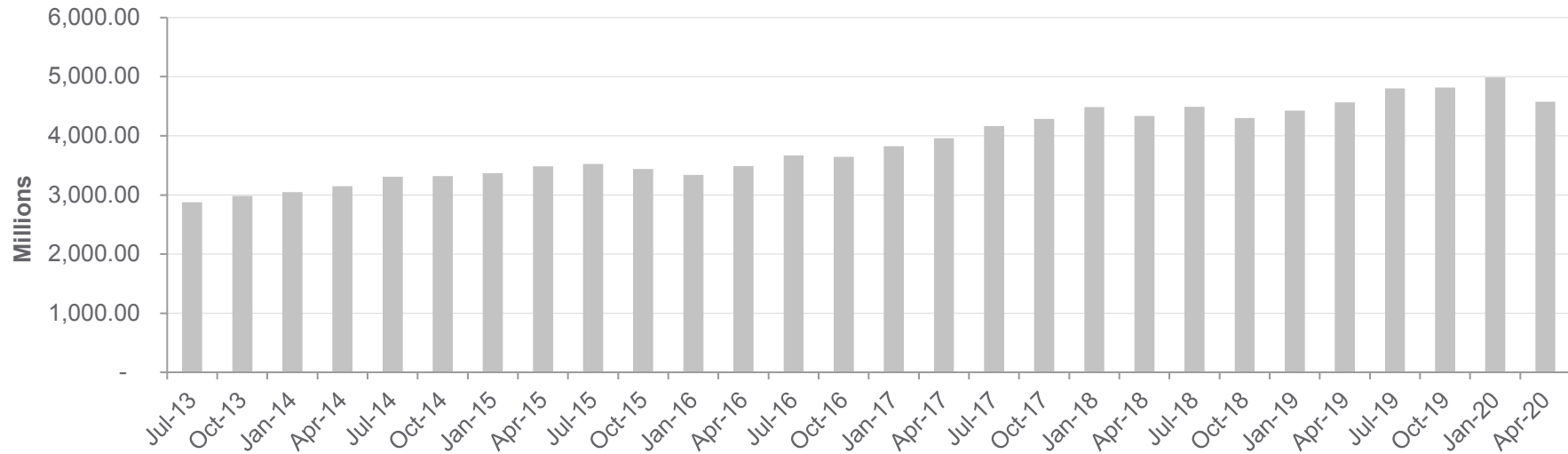


Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
CUSHING MLP ALPHA TR	22	--	--	--	--	--	--	--	--	--	--
50% BC US TIPS/50% SamCERA CRA		--	--	--	--	--	--	--	--	--	--
Excess		--	--	--	--	--	--	--	--	--	--
SSGA CST REAL ASSET NL	206,328,660	8.3	-17.0	-20.4	-18.0	-16.7	-2.9	--	--	--	--
SamCera Liquid Real Asset Inde		7.9	-17.6	-21.0	-18.5	-17.1	-2.9	--	--	--	-0.6
Excess		0.3	0.6	0.6	0.5	0.4	0.0	--	--	--	--
Private Real Assets	93,286,948	-3.2	-1.8	-1.4	-3.1	-2.2	-5.4	--	--	--	6.7
SamCERA Private Real Asset Idx		-1.4	1.6	2.2	3.2	5.4	4.9	--	--	--	6.8
Excess		-1.8	-3.5	-3.5	-6.2	-7.5	-10.3	--	--	--	-0.1
Cash	106,933,908	0.1	0.2	0.3	0.8	1.0	1.0	0.8	0.7	0.7	1.9
Samcera Cash Benchmark		0.0	0.4	0.6	1.6	2.1	1.8	1.2	0.9	0.6	1.9
Excess		0.0	-0.2	-0.3	-0.8	-1.1	-0.8	-0.4	-0.1	0.1	0.0
General Account	70,110,818	0.1	0.3	0.4	1.5	1.9	1.9	1.3	1.0	0.8	2.0
Transition Account	5,022	--	--	--	--	--	--	--	--	--	--
County Treasury Pool	36,818,067	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	2.4
Ex-Parametric MN Overlay	37,022,636	21.2	-18.5	-29.9	-22.2	-24.7	12.5	19.9	--	--	18.2
San Mateo County ERA	4,578,378,139	5.6	-7.2	-7.5	-2.5	-1.1	3.6	4.3	5.8	6.9	6.4
Samcera Total Plan Benchmark		5.9	-5.8	-6.0	-0.5	1.0	5.2	5.2	6.5	7.5	6.8
Excess		-0.3	-1.4	-1.5	-2.1	-2.0	-1.7	-0.9	-0.7	-0.7	-0.4

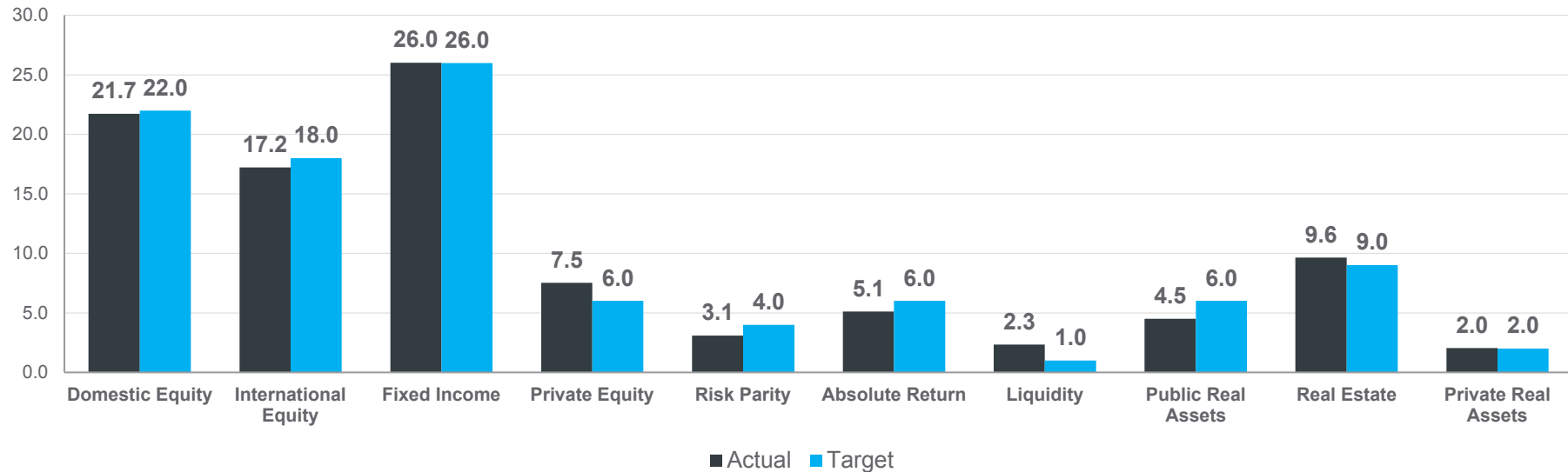
Record of Asset Growth

	Three Months	One Year
TOTAL FUND		
Beginning Market Value	4,986,537,732	4,567,542,731
Contributions	12,548,951	318,706,824
Withdrawals	-63,316,064	-258,826,011
Income Received	15,296,048	58,656,834
Gain/Loss	-372,366,521	-106,484,405
Ending Market Value	4,578,378,139	4,578,378,139

Net Asset Values Over Time (\$000)

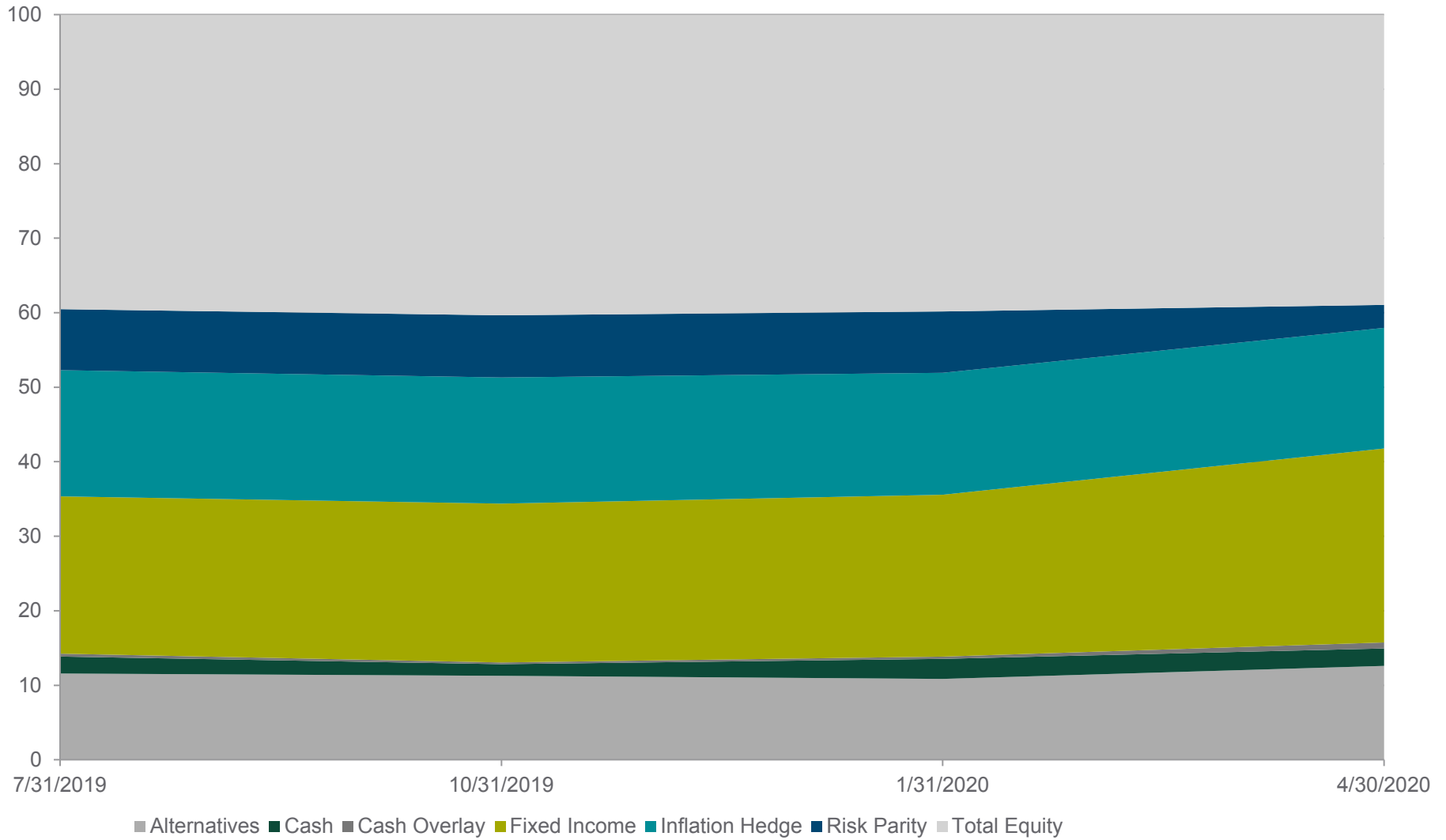


Actual vs Target Weights

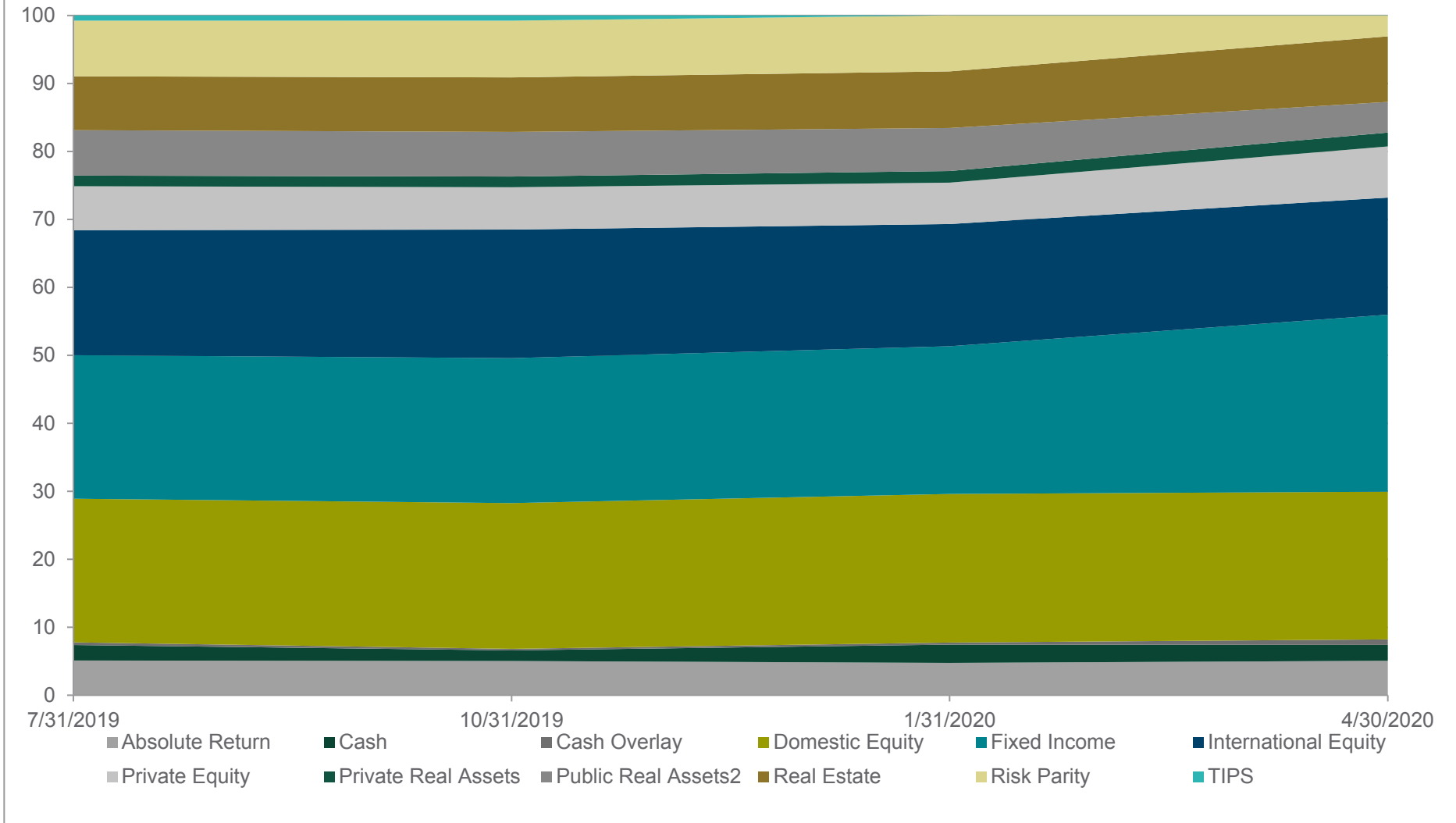


	Min	Actual	Target	Deviation	Max
Domestic Equity	20.0	21.7	22.0	-0.3	24.0
International Equity	16.0	17.2	18.0	-0.8	20.0
Fixed Income	24.0	26.0	26.0	0.0	28.0
Private Equity	4.0	7.5	6.0	1.5	8.0
Risk Parity	2.0	3.1	4.0	-0.9	6.0
Absolute Return	4.0	5.1	6.0	-0.9	8.0
Liquidity	0.0	2.3	1.0	1.3	2.0
Public Real Assets	4.0	4.5	6.0	-1.5	8.0
Real Estate	7.0	9.6	9.0	0.6	11.0
Private Real Assets	0.0	2.0	2.0	0.0	4.0

Asset Allocation over Time



Sub-Asset Class Allocation Over Time



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**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**

APRIL 2020
Capital Markets Update

Market commentary

U.S. ECONOMICS

- In Q1, real GDP contracted at an annualized quarterly rate of -4.8% (exp. -3.7%). Personal consumption expenditures, which account for nearly 70% of the economy, detracted -5.3% from total growth. On a year-over-year basis, GDP expanded 0.3%. Growth in the second quarter is still expected to be far worse than Q1 growth.
- In April, total nonfarm payrolls fell by 20.5 million (exp. 22m) and unemployment rose to 14.7%, the highest level since the Great Depression. The underemployment rate, which includes part-time workers who would prefer full-time jobs and workers in full-time jobs not using all their skills, spiked from 8.7% to 22.8%.
- The ISM Manufacturing PMI contracted further in April, dropping to 41.5 from 49.1 in March. The ISM Services PMI fell from 52.5 to 41.8 dropping into the contractionary territory below 50.0, and to its lowest level since April 2009.

U.S. EQUITIES

- The S&P 500 climbed 12.8% in April, marking the highest monthly return for the index since 1974. Despite posting its first monthly advance of the year, the S&P 500 was still down -9.3% year-to-date.
- With roughly 88% of S&P 500 companies reporting Q1 earnings, aggregate sales and earnings growth have come in at 1.0% and -7.5%, respectively. Sales growth has exceeded expectations by 1.1% and earnings growth has beaten estimates by 0.6%.
- The forward 12-month P/E ratio of the S&P 500 was 20.5 at month-end, above the 16.3x multiple which was recorded at the end of the first quarter (March 31). The last time the forward 12-month P/E was above 20.0 was in April 2002.

U.S. FIXED INCOME

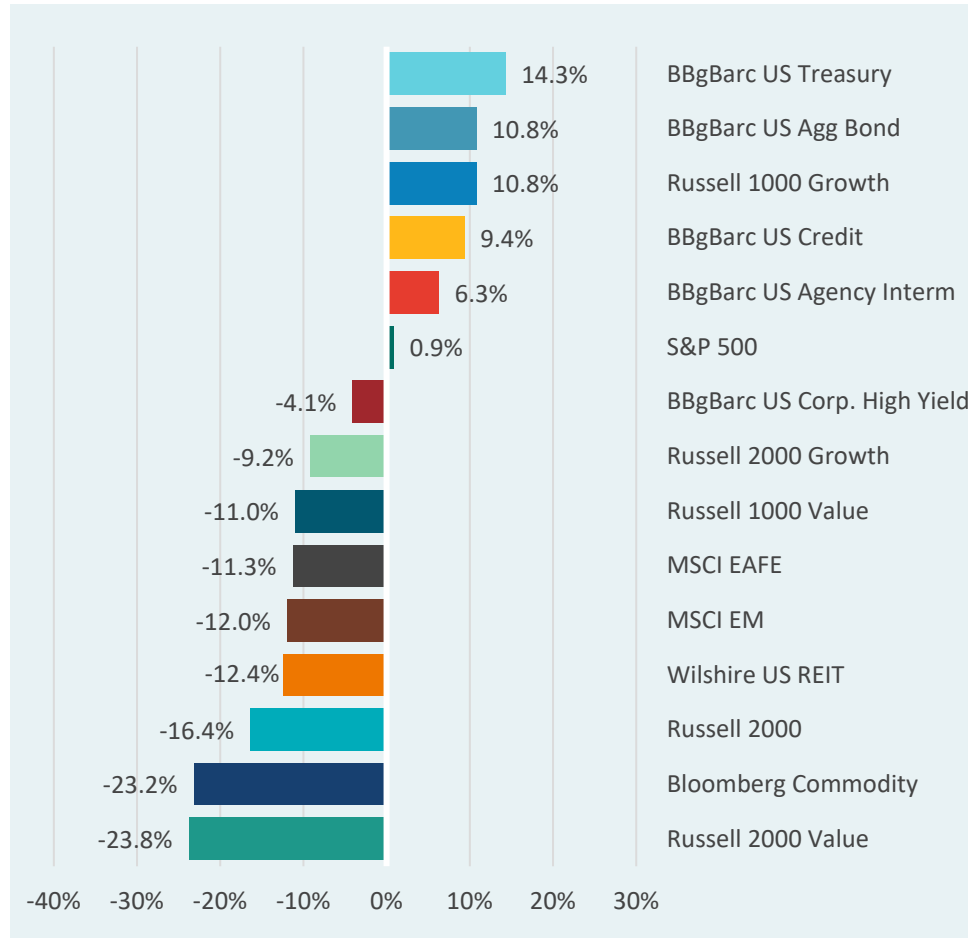
- In the May FOMC meeting, the Federal Reserve guided that interest rates would remain near zero percent for as long as necessary to achieve its dual mandate of full employment and stable prices. The Federal Reserve balance sheet has grown by \$2.4 trillion over the past two months.
- On April 9th, the Federal Reserve created the Municipal Liquidity Facility which will backstop \$500 billion in municipal borrowing. During the Global Financial Crisis, the Federal Reserve elected not to intervene in the municipal and state funding markets.
- In order to finance the large amount of fiscal stimulus spending approved by Congress, the Treasury has begun issuing long-term debt, taking advantage of historically low financing costs.

INTERNATIONAL MARKETS

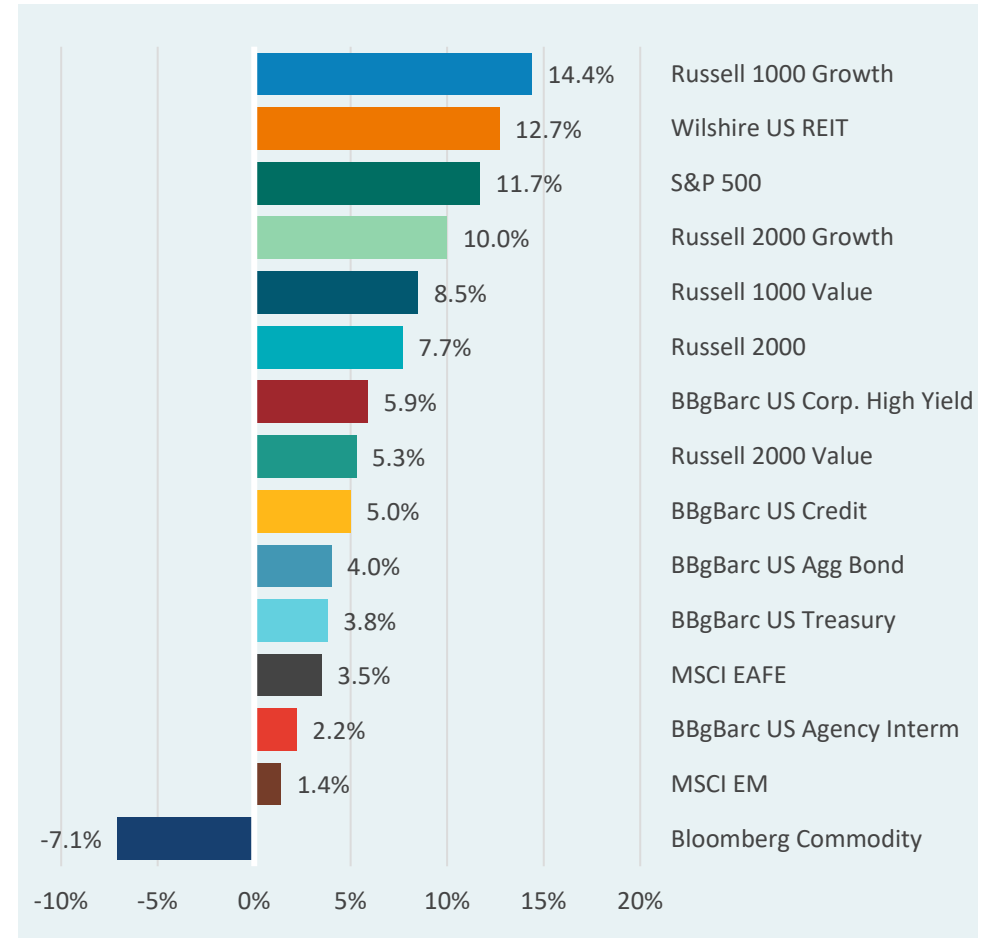
- COVID-19 left few places in the world untouched. Global confirmed cases increased by 2.3 million people in April, and the death toll climbed to 233,824. After months of government-enforced lockdowns and halts to international travel, countries are beginning to set the stage for a gradual reopening.
- In Q1 2020, GDP contracted at a quarterly annualized rate of -3.3% in the Eurozone, -4.1% in Spain, -4.8% in Italy, and -5.4% in France. Global governments have stepped in, providing an unprecedented amount of stimulus to combat mass layoffs and other economic fallout from COVID-19.
- The European Central Bank's Public Sector Purchase Program, which was introduced as quantitative easing in 2015, was ruled by German authorities to be in violation of E.U. treaties.

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 4/30/20

Source: Morningstar, as of 4/30/20

U.S. large cap equities

- In April, the S&P 500 Index bounced back, returning 12.9% following a precipitous slide in equity prices in the first quarter. The advance was likely supported by evidence that the transmission of COVID-19 was slowing in certain hot spots, as well as promises of both fiscal and monetary support.
- Analysts slashed earnings estimates for S&P 500 companies. During the month of April, the median EPS estimate for the index declined -28.4%. The largest decline in quarterly EPS estimates during the Global Financial Crisis was -20.6% back in Q1 2009.
- All eleven GICS sectors contributed positively to returns, and the Energy sector (+29.8%) was the top performer as concerns around oversupply faded following an OPEC+ decision to cut oil production. The Consumer Discretionary sector (+20.5%) fueled the move higher for the overall index.
- The CBOE VIX Index of implied volatility fell 19.8 points in April, starting the month at 57.1 and closing the month at 37.2. The popular “fear gauge” is still well above its 3-year average of 18.7.

S&P 500 PRICE INDEX



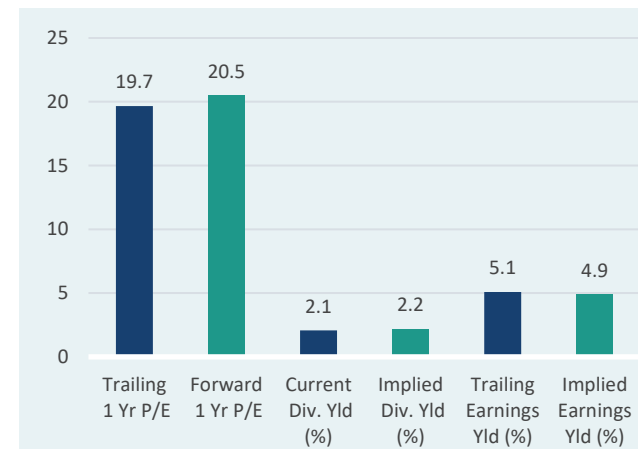
Source: Bloomberg, as of 4/30/20

IMPLIED VOLATILITY (VIX INDEX)



Source: CBOE, as of 4/30/20

S&P 500 VALUATION SNAPSHOT

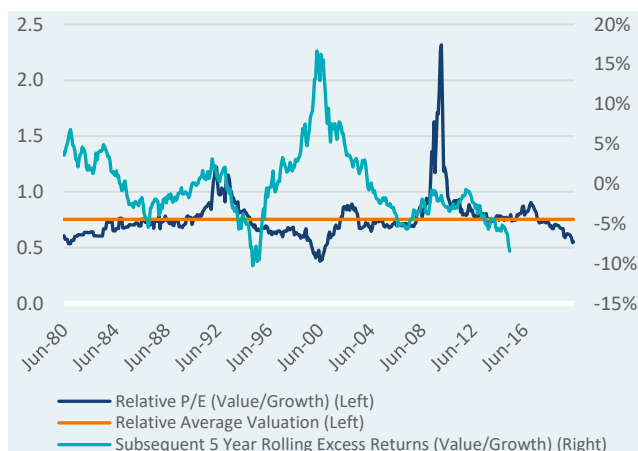


Source: Bloomberg, as of 4/30/20

Domestic equity size and style

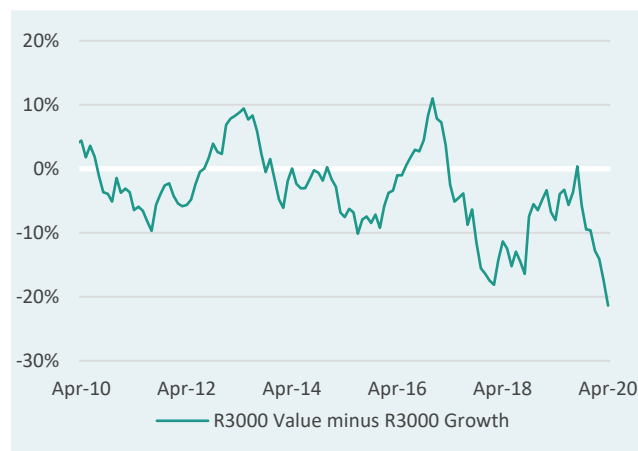
- The Russell 3000 Value Index (+11.3%) continued to underperform the Russell 3000 Growth Index (+14.8%). The underperformance of the value factor relative to the growth factor was attributable to the Health Care and Consumer Discretionary sectors being more highly weighted in the growth index.
- The Russell 2000 Index advanced 13.7% while the Russell 1000 Index gained 13.2%. Small-cap equities, which tend to outperform in anticipation of higher economic growth, notched their best monthly performance since April 2011.
- The Russell Mid-Cap Index (+14.4%) outperformed the small- and large-cap indexes measured, respectively, by the Russell 2000 (+13.7%) and the Russell Top 200 (+12.8%). Some analysts have argued mid-caps are well positioned, being large enough to weather the impact of the pandemic and small enough that global supply chain disruptions may not affect them quite as hard.
- The S&P 500 Low Volatility High Dividend Index (+10.7%) underperformed the S&P 500 Index (+12.8%). Mega-cap tech stocks powered the S&P 500 rebound in April while safer, higher-yielding stocks lagged.

VALUE VS. GROWTH RELATIVE VALUATIONS



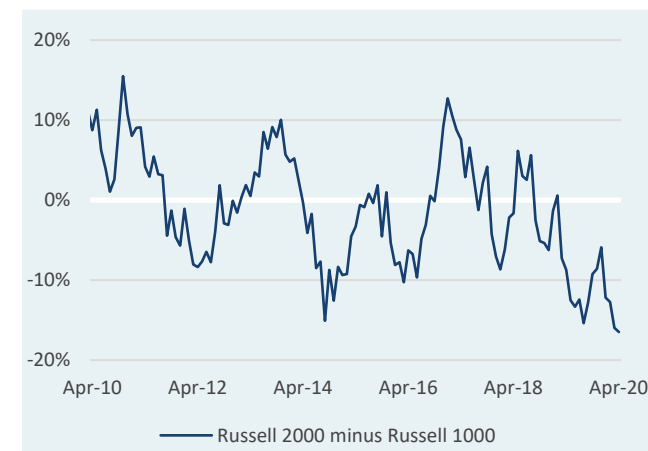
Source: Russell, Bloomberg, as of 4/30/20

VALUE VS. GROWTH 1-YR ROLLING RELATIVE PERFORMANCE



Source: FTSE, Bloomberg, as of 4/30/20

SMALL VS. LARGE 1-YR ROLLING RELATIVE PERFORMANCE

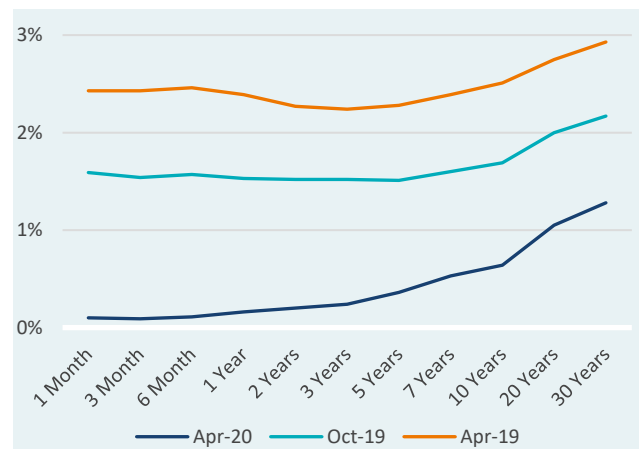


Source: FTSE, Bloomberg, as of 4/30/20

Fixed income

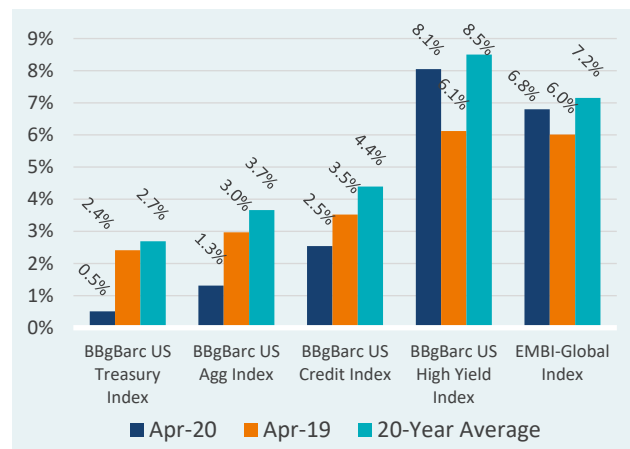
- On April 9th, the Federal Reserve announced that the Primary and Secondary Corporate Credit Facilities, which were initially slated to support \$100 billion in new financing, were expanded. The facilities will now backstop up to \$750 billion in corporate debt.
- The Fed also announced the establishment of the Main Street Lending Program aimed at supporting businesses too large to participate in the Paycheck Protection Program and too small to qualify for the Corporate Credit Facility loans. The program will fund up to \$600 billion in four-year loans.
- In a bounce-back month for riskier credit, local-currency denominated emerging market debt (J.P. Morgan GBI-EM +3.9%) outperformed hard-currency denominated emerging market debt (J.P. Morgan EMBI +2.2%). Outperformance was partly attributed to emerging market currency tailwinds.
- Five-year breakeven inflation rates have fallen 1.2% since April 2019. Some analysts have expressed the view that despite the massive fiscal and monetary policy response, the pandemic is likely to introduce disinflationary, rather than inflationary pressures.

U.S. TREASURY YIELD CURVE



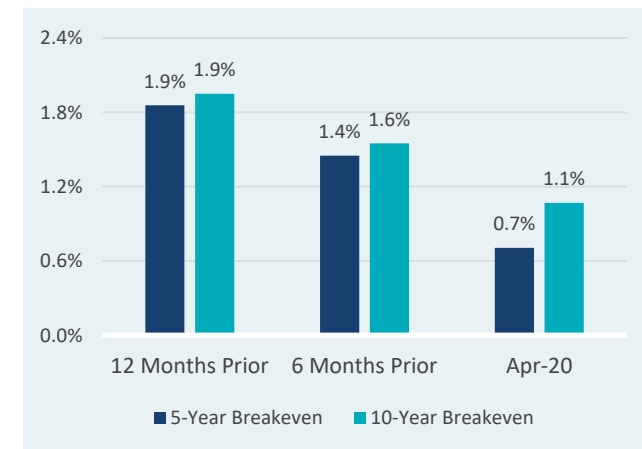
Source: Bloomberg, as of 4/30/20

NOMINAL YIELDS



Source: Morningstar, as of 4/30/20

BREAKEVEN INFLATION RATES

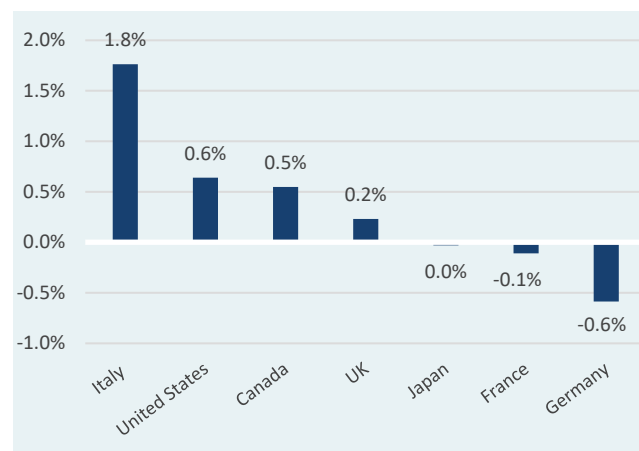


Source: Bloomberg, as of 4/30/20

Global markets

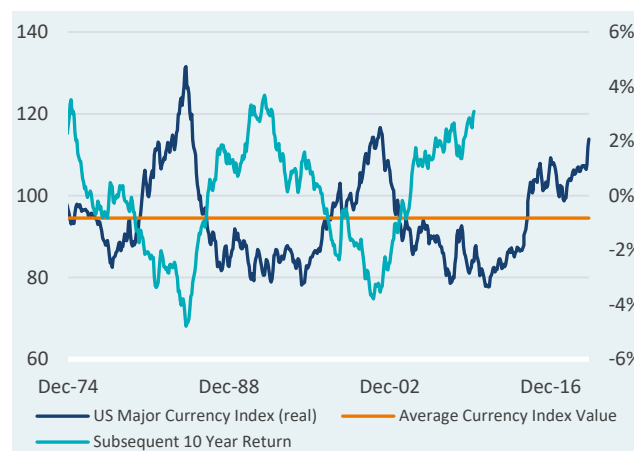
- The pound rallied +1.7% against the U.S. dollar, resulting in currency tailwinds for unhedged U.S. investors in U.K. equities. The MSCI United Kingdom Index, hedged to U.S. dollars, returned +3.5%, while the unhedged index returned +5.1%.
- In Q1 2020, Chinese GDP contracted at a -6.8% quarter over quarter annualized rate, marking the first contraction since 1992. The People’s Bank of China has stepped forward to provide support to its economy, which was battered by COVID-19 related disruptions in Q1. Aggregate financing to the real economy increased 12.0% year-over-year in April, a 22-month high.
- Global equities (MSCI ACWI +10.7%) outperformed both emerging market equities (MSCI EM +9.2%) and international developed equities (MSCI EAFE +6.5%), likely buoyed by a bounce back in U.S. equities. The four countries with the largest economies in the Eurozone were among the top six countries in terms of confirmed COVID-19 cases.
- The J.P. Morgan Global FX Volatility Index declined from 11.0% to 8.6%, after hitting multi-year peaks at 15.0% in mid-March. Currency markets have calmed down markedly following the Fed’s rollout of liquidity programs which have eased dollar funding pressures.

GLOBAL SOVEREIGN 10-YEAR YIELDS



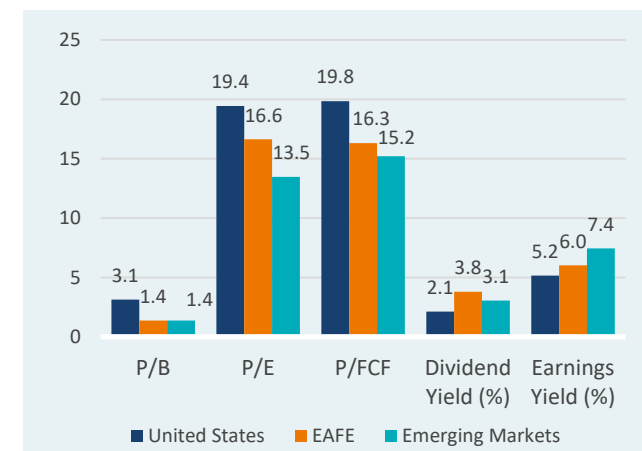
Source: Bloomberg, as of 4/30/20

U.S. DOLLAR MAJOR CURRENCY INDEX



Source: Federal Reserve, as of 4/30/20

MSCI VALUATION METRICS (3-MONTH AVG)



Source: Bloomberg, as of 4/30/20

Commodities

- The Bloomberg Commodity Index fell -1.5% during the month of April. Precious Metals (+5.9%) and Industrial Metals (+2.3%) significantly outperformed the index overall. The Petroleum component (-14.9%) was a major laggard for the second month in row.
- WTI crude oil futures pricing briefly dropped into negative territory prior to the rolling of the front-month contract from May to June. The precipitous decline in oil demand resulted in a supply glut and the eventual depletion of storage capacity. This forced investors unable to take physical receipt of oil to sell their contracts at negative prices, namely, paying other investors to take their oil.

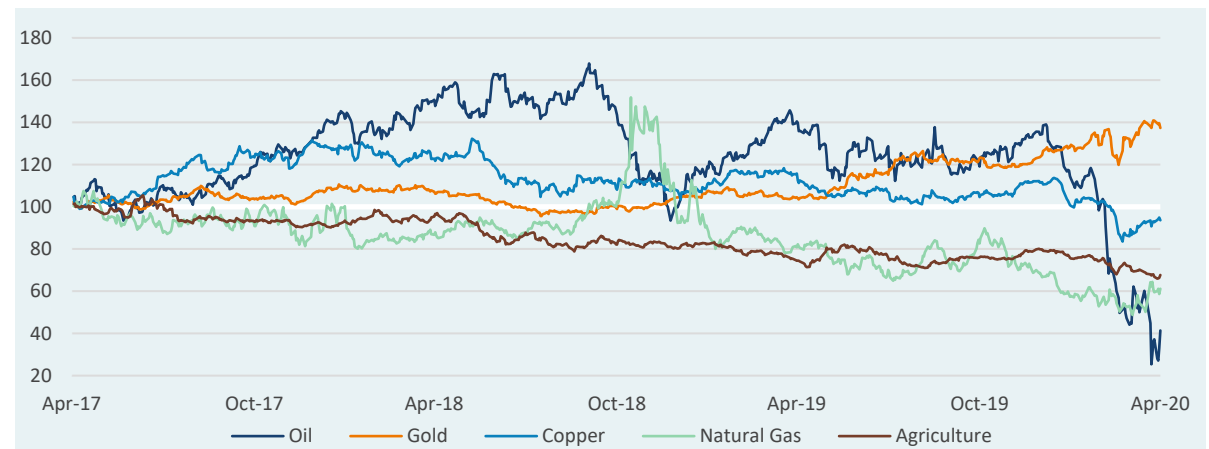
- On April 12th, to prop up oil prices amidst withered demand, OPEC+ agreed to cut production by 9.7 million barrels per day effective May 1st and extending through June. The U.S. Secretary of Energy said about two to three million barrels per day will be taken offline in the U.S. this year due to low prices.
- The Bloomberg Precious Metals Sub-Index posted a +5.9% return for the month as investors sought a store of value amidst many economies' vast stimulus spending. Gold prices rose +6.1% in April to \$1,690 per ounce. Other precious metals including platinum showed their largest monthly gains in almost four years.

INDEX AND SECTOR PERFORMANCE

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Bloomberg Commodity	(1.5)	(1.5)	(24.5)	(23.2)	(8.6)	(9.1)	(7.1)
Bloomberg Agriculture	(5.7)	(5.7)	(15.0)	(7.6)	(10.5)	(8.2)	(4.4)
Bloomberg Energy	(3.5)	(3.5)	(52.8)	(56.4)	(20.0)	(21.4)	(17.6)
Bloomberg Grains	(6.0)	(6.0)	(12.7)	(4.7)	(9.6)	(9.0)	(4.8)
Bloomberg Industrial Metals	2.3	2.3	(16.6)	(18.1)	(3.7)	(4.4)	(5.5)
Bloomberg Livestock	(5.1)	(5.1)	(31.8)	(37.3)	(14.6)	(11.0)	(6.2)
Bloomberg Petroleum	(14.9)	(14.9)	(66.0)	(66.3)	(22.6)	(23.4)	(16.1)
Bloomberg Precious Metals	5.9	5.9	4.7	23.6	5.9	4.6	1.7
Bloomberg Softs	(3.6)	(3.6)	(19.8)	(14.5)	(15.5)	(9.5)	(6.2)

Source: Morningstar, as of 4/30/20

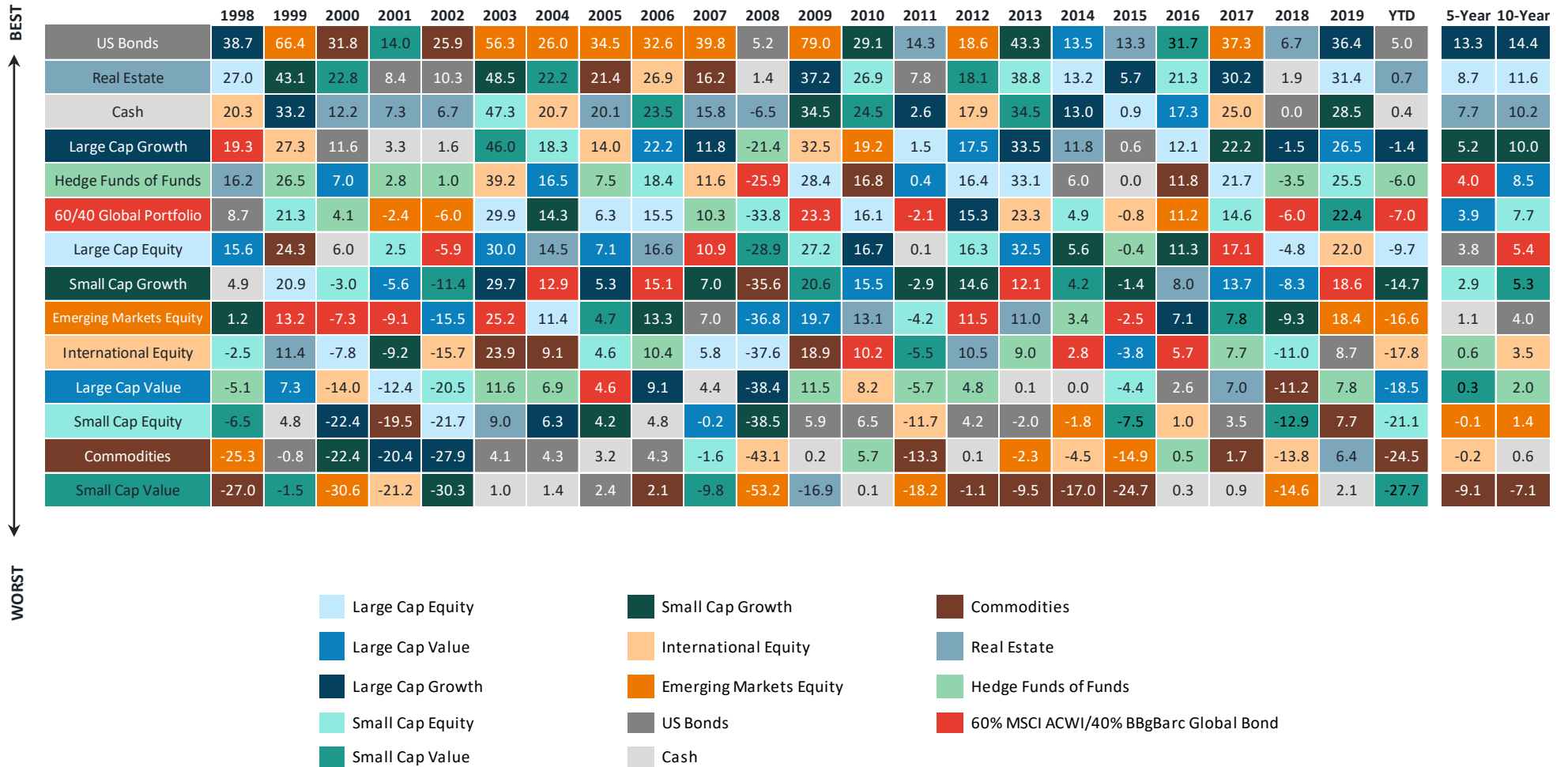
COMMODITY PERFORMANCE



Source: Bloomberg, as of 4/30/20

Appendix

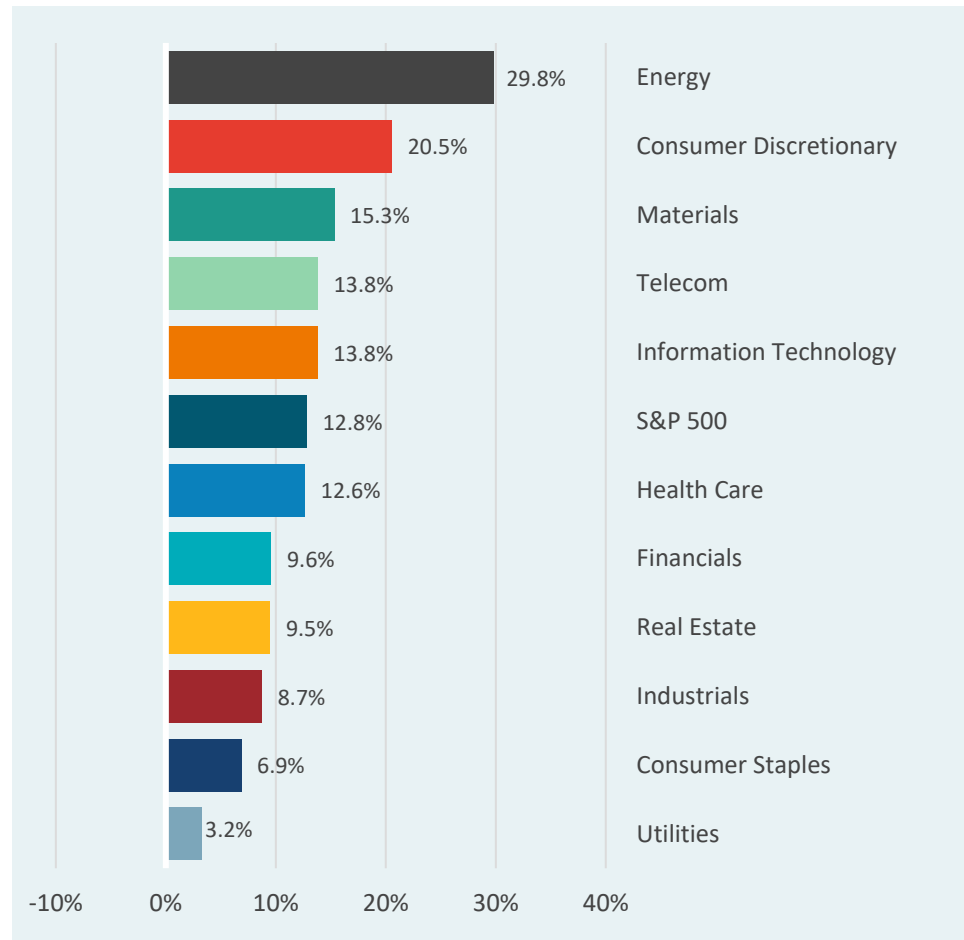
Periodic table of returns



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, BBgBarc US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, BBgBarc Global Bond. NCREIF Property Index performance data as of 3/31/20.

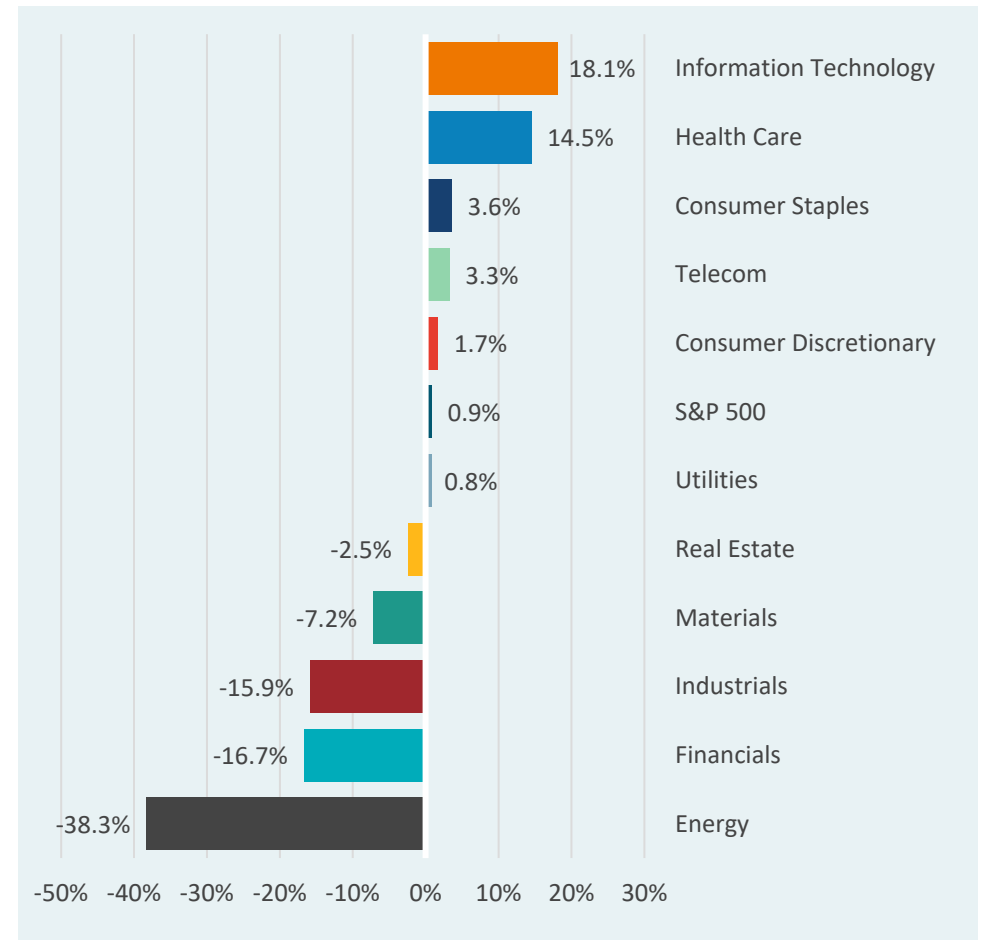
S&P 500 sector returns

QTD



Source: Morningstar, as of 4/30/20

ONE YEAR ENDING APRIL



Source: Morningstar, as of 4/30/20

Detailed index returns

DOMESTIC EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Core Index							
S&P 500	12.8	12.8	(9.3)	0.9	9.0	9.1	11.7
S&P 500 Equal Weighted	14.4	14.4	(16.1)	(8.9)	3.9	5.5	10.4
DJ Industrial Average	11.2	11.2	(14.1)	(6.2)	7.7	9.1	11.0
Russell Top 200	12.8	12.8	(7.1)	3.9	10.7	10.3	12.2
Russell 1000	13.2	13.2	(9.7)	0.1	8.7	8.7	11.6
Russell 2000	13.7	13.7	(21.1)	(16.4)	(0.8)	2.9	7.7
Russell 3000	13.2	13.2	(10.4)	(1.0)	8.0	8.3	11.3
Russell Mid Cap	14.4	14.4	(16.6)	(10.0)	3.5	4.8	9.8
Style Index							
Russell 1000 Growth	14.8	14.8	(1.4)	10.8	15.7	13.3	14.4
Russell 1000 Value	11.2	11.2	(18.5)	(11.0)	1.4	3.9	8.5
Russell 2000 Growth	14.9	14.9	(14.7)	(9.2)	4.2	5.2	10.0
Russell 2000 Value	12.3	12.3	(27.7)	(23.8)	(6.1)	0.3	5.3

INTERNATIONAL EQUITY

Broad Index							
MSCI ACWI	10.7	10.7	(12.9)	(5.0)	4.5	4.4	6.9
MSCI ACWI ex US	7.6	7.6	(17.5)	(11.5)	(0.3)	(0.2)	2.9
MSCI EAFE	6.5	6.5	(17.8)	(11.3)	(0.6)	(0.2)	3.5
MSCI EM	9.2	9.2	(16.6)	(12.0)	0.6	(0.1)	1.4
MSCI EAFE Small Cap	10.4	10.4	(20.0)	(12.3)	(1.0)	2.1	5.7
Style Index							
MSCI EAFE Growth	7.4	7.4	(11.4)	(2.1)	4.4	3.2	5.6
MSCI EAFE Value	5.4	5.4	(24.4)	(20.5)	(5.7)	(3.7)	1.3
Regional Index							
MSCI UK	5.1	5.1	(25.1)	(20.8)	(3.9)	(3.7)	2.2
MSCI Japan	5.4	5.4	(12.3)	(3.0)	2.4	2.2	4.4
MSCI Euro	5.7	5.7	(22.9)	(17.8)	(3.8)	(1.7)	2.1
MSCI EM Asia	9.2	9.2	(10.6)	(5.7)	3.6	1.8	4.2
MSCI EM Latin American	6.3	6.3	(42.2)	(37.3)	(11.2)	(6.6)	(6.1)

FIXED INCOME

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
BBgBarc US TIPS	2.8	2.8	4.5	9.5	4.2	3.1	3.5
BBgBarc US Treasury Bills	0.0	0.0	0.6	2.2	1.8	1.2	0.7
BBgBarc US Agg Bond	1.8	1.8	5.0	10.8	5.2	3.8	4.0
Duration							
BBgBarc US Treasury 1-3 Yr	0.1	0.1	2.9	5.3	2.7	1.9	1.4
BBgBarc US Treasury Long	2.0	2.0	23.4	37.8	13.6	8.4	8.9
BBgBarc US Treasury	0.6	0.6	8.9	14.3	5.8	3.9	3.8
Issuer							
BBgBarc US MBS	0.6	0.6	3.5	7.8	4.0	3.1	3.3
BBgBarc US Corp. High Yield	4.5	4.5	(8.8)	(4.1)	1.9	3.4	5.9
BBgBarc US Agency Interm	0.4	0.4	3.3	6.3	3.2	2.4	2.2
BBgBarc US Credit	4.6	4.6	1.3	9.4	5.4	4.3	5.0

OTHER

Index							
Bloomberg Commodity	(1.5)	(1.5)	(24.5)	(23.2)	(8.6)	(9.1)	(7.1)
Wilshire US REIT	8.4	8.4	(19.4)	(12.4)	0.2	5.7	12.7
CS Leveraged Loans	4.3	4.3	(9.5)	(7.1)	0.5	4.6	5.0
Alerian MLP	47.6	47.6	(38.2)	(43.1)	(19.7)	(15.6)	(1.3)
Regional Index							
JPM EMBI Global Div	2.2	2.2	(11.4)	(5.0)	0.7	2.9	5.1
JPM GBI-EM Global Div	3.9	3.9	(11.9)	(2.7)	0.1	0.4	0.7
Hedge Funds							
HFRI Composite	4.8	4.8	(6.6)	(3.4)	1.2	1.5	3.0
HFRI FOF Composite	2.7	2.7	(6.0)	(3.4)	0.8	0.6	2.0
Currency (Spot)							
Euro	(0.2)	(0.2)	(2.4)	(2.3)	0.2	(0.5)	(1.9)
Pound	1.7	1.7	(4.8)	(3.2)	(0.8)	(3.9)	(1.9)
Yen	1.0	1.0	1.6	4.2	1.4	2.3	(1.3)

Source: Morningstar, HFR, as of 4/30/20

Notices & disclosures

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SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

June 2, 2020

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, 2020

Recommendation

Accept Verus Advisory's quarterly performance report for the period ended March 31, 2020.

Discussion

The 1st quarter net total return for the SamCERA portfolio was -12.6%, which was 150 bps lower than the -11.1% policy benchmark return. As can be seen on Page 20 and 21, absolute return and public real assets were the primary source of underperformance during the quarter.

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

Attachment

Verus Quarterly Performance Report Ending 03/31/2020



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



PERIOD ENDING: MARCH 31, 2020

Investment Performance Review for

San Mateo County Employees' Retirement Association

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VERUSINVESTMENTS.COM

SEATTLE 206-622-3700

LOS ANGELES 310-297-1777

SAN FRANCISCO 415-362-3484

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1st quarter summary

THE ECONOMIC CLIMATE

- Real GDP grew at a 0.3% rate year-over-year in the first quarter (-4.8% quarterly annualized rate). Personal consumption expenditures shrunk -7.6%, resulting in a -5.3% hit to headline growth. Forecasts of Q2 GDP growth have varied between -15% to -35%.
- The U.S. government quickly crafted and implemented historic stimulus measures to combat the economic impact of the virus. Support of this magnitude has not been seen since the Great Depression of the 1930s.

PORTFOLIO IMPACTS

- U.S. equities experienced an unusually sudden and significant sell-off in March as investors grew fearful of the health and economic impacts of COVID-19. During Q1 the S&P 500 fell -19.6%, international developed equities (MSCI EAFE) fell -22.8% and emerging markets (MSCI EM) fell -23.6%.
- U.S. core inflation increased 2.1% YoY in March. Headline inflation slowed to 1.5%, pushed lower by a sharp decline in energy prices which will likely have persistent effects in future months. Downward pressure could be compounded as households slow spending due to loss of income and a greater propensity to save rather than spend.

THE INVESTMENT CLIMATE

- In mid-March, the Federal Open Market Committee cut interest rates by a full 1.00% to a new range of 0 – 0.25%. This surprise action was taken on a Sunday with the intent to get out ahead of economic impacts of COVID-19.
- Implied volatility spiked in March to a record daily close of 82.7%, surpassing the high of 80.9% reached in November 2008 during the depths of the global financial crisis.
- Central banks are facing an economic slowdown and need for monetary policy support, but very little room to cut interest rates. This is a risk that has been discussed for years. We believe fiscal policies will play a much larger role in addressing the inevitable economic slowdown.

ASSET ALLOCATION ISSUES

- Risk markets experienced one of the most sudden corrections on record, amidst extreme volatility. The S&P 500 showed its largest one-day drop since 1987 (March 16 -11.98%) and its largest one-day gain since 2008 (March 24 +9.38%). Implied volatility reached global financial crisis levels, and high yield credit spreads temporarily expanded above 11%. Some of these losses were recovered toward the end of March as the market rebounded.
- The U.S. dollar appreciated significantly in the first quarter, rising 7.1% on a trade-weighted basis, resulting in losses for investors with unhedged currency exposure.

An underweight risk stance appears appropriate in today's environment

We remain watchful for investment opportunities

U.S. economics summary

- Real GDP grew at a 0.3% rate year-over-year in the first quarter (-4.8% quarterly annualized rate). Personal consumption expenditures shrunk -7.6%, resulting in a -5.3% hit to headline growth. Forecasts of Q2 GDP growth have varied between -15% to -35%.
- The U.S. government quickly crafted and implemented historic stimulus measures to combat the economic impacts of the virus. Support of this magnitude has not been seen since the Great Depression of the 1930s.
- U.S. core inflation rose 2.1% YoY in March. Headline inflation slowed to 1.5%, pushed lower by a sharp decline in energy prices which will likely have persistent effects in the coming months. This downward pressure could be compounded as households slow spending due to loss of income and show a greater propensity to save.
- The U.S. labor market exhibited a sharp weakening in March, as unemployment jumped to 4.4%. Some have estimated the true unemployment rate in April to be above 10%.
- March economic data should not be expected to fully reflect the extent of COVID-19. We are watching daily data releases to gain a better understanding of how conditions are evolving.
- The Bloomberg Consumer Comfort Index exhibited its sharpest two week drop since 1985, from 63.0 to 56.3, dipping from a 20-year high of 67.3 that was achieved in January.
- Existing homes sales increased +7.2% in February YoY, and new homes sales were up +14.3%. The 30-year fixed mortgage interest rate has continued to fall, finishing Q1 at 3.33%.

	Most Recent	12 Months Prior
GDP (YoY)	0.3% 3/31/20	2.7% 3/31/19
Inflation (CPI YoY, Core)	2.1% 3/31/20	2.0% 3/31/19
Expected Inflation (5yr-5yr forward)	1.3% 3/31/20	2.4% 3/31/19
Fed Funds Target Range	0% – 0.25% 3/31/20	2.25% – 2.50% 3/31/19
10 Year Rate	0.7% 3/31/20	2.4% 3/31/19
U-3 Unemployment	4.4% 3/31/20	3.8% 3/31/19
U-6 Unemployment	8.7% 3/31/20	7.4% 3/31/19

International economics summary

- Most international developed economies grew at a rate of 0.5% to 2.5% in Q4. The low and stable expansion of recent years has changed suddenly with the onset of COVID-19. Many global economies will enter recession in 2020. On April 14th the IMF revised their 2020 global growth forecast from +3.3% to -3.0%.
- Governments are using monetary and fiscal policies to fill the large hole in spending and lending that the slowdown may cause. These policies vary in their characteristics and aggressiveness.
- Governments with limited ability to implement stimulus policies may face tougher economic fallout. Specifically, European Union member nations that cannot exercise independent actions may see greater difficulties ahead as income gaps cannot be supplemented with fiscal spending.
- The World Trade Organization (WTO) forecast a 13%-32% fall in global trade in 2020 – a larger decrease than witnessed during the global financial crisis. This forecast was paired with the expectation of a 21%-24% rebound in trade throughout 2021.
- While not yet reflected in the most recent economic data, unemployment rates around the world are certain to rise considerably.
- The COVID-19 virus breakout originated in China, and many investors have pointed to China as a testcase for how the virus might play out economically. Although the data released by China suggests the outbreak has been defeated, there is increasing evidence that the severity of virus has been underreported – perhaps severely.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	0.3% <i>3/31/20</i>	1.5% <i>3/31/20</i>	4.4% <i>3/31/20</i>
Eurozone	1.0% <i>12/31/19</i>	0.7% <i>3/31/20</i>	7.3% <i>2/29/20</i>
Japan	(0.7%) <i>12/31/19</i>	0.4% <i>3/31/20</i>	2.3% <i>2/29/20</i>
BRICS Nations	5.0% <i>12/31/19</i>	4.9% <i>3/31/20</i>	5.0% <i>12/31/19</i>
Brazil	1.7% <i>12/31/19</i>	3.3% <i>3/31/20</i>	11.6% <i>2/29/20</i>
Russia	2.1% <i>12/31/19</i>	2.6% <i>3/31/20</i>	4.6% <i>2/29/20</i>
India	4.7% <i>12/31/19</i>	5.9% <i>3/31/20</i>	8.5% <i>12/31/17</i>
China	6.0% <i>12/31/19</i>	4.3% <i>3/31/20</i>	3.6% <i>12/31/19</i>

Equity environment

- U.S. equities experienced an unusually sudden and significant sell-off in March as investors grew fearful of the health and economic impacts of COVID-19 spread. During Q1 the S&P 500 fell -19.6%, international developed equities (MSCI EAFE) fell -22.8% and emerging markets (MSCI EM) fell -23.6%.
- The greatest influence on equity performance in 2020 will perhaps be the path of corporate earnings. The degree to which corporate earnings will fall is largely unknown with few reliable estimates.
- Implied volatility spiked in March to a record daily close of 82.7%, surpassing the high of 80.9% in November 2008 during the depths of the global financial crisis.
- In March, a squabble between OPEC+ members led to a historic drop in energy prices. The energy sector faces sharply falling demand and potentially significant oversupply due to oil producers' decision to ramp up production in an oil war. The energy sector experienced a loss of -50.5% in Q1.
- The U.S. dollar appreciated significantly in the first quarter, rising 7.1% on a trade-weighted basis, resulting in large losses for investors with unhedged currency exposure. As is often the case during higher risk market environments, demand for safe-haven currencies positively impacted the dollar.
- Value stocks severely underperformed growth stocks during the first quarter (Russell 1000 Value -26.7%, Russell 1000 Growth -14.1%). Small cap stocks underperformed large cap stocks by a similar magnitude (Russell 2000 -30.6%, Russell 1000 -20.2%). Value and size factors continue to experience an extended period of relative underperformance.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
US Large Cap (S&P 500)	(19.6%)		(7.0%)	
US Small Cap (Russell 2000)	(30.6%)		(24.0%)	
US Large Value (Russell 1000 Value)	(26.7%)		(17.2%)	
US Large Growth (Russell 1000 Growth)	(14.1%)		(0.9%)	
International Large (MSCI EAFE)	(22.8%)	(19.9%)	(14.4%)	(10.3%)
Eurozone (Euro Stoxx 50)	(27.0%)	(24.8%)	(16.6%)	(12.0%)
U.K. (FTSE 100)	(28.8%)	(23.0%)	(22.0%)	(16.4%)
Japan (NIKKEI 225)	(18.6%)	(18.8%)	(6.7%)	(6.8%)
Emerging Markets (MSCI Emerging Markets)	(23.6%)	(18.5%)	(17.7%)	(12.7%)

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 3/31/20

Domestic equity

U.S. equities experienced an unusually sudden and significant sell-off in March as investors grew fearful of the health and economic impacts of COVID-19 spread. During Q1 the S&P 500 fell -19.6%, international developed equities (MSCI EAFE) fell -22.8% and emerging markets (MSCI EM) fell -23.6%.

At the same time that COVID-19 was spreading throughout the U.S., a squabble between OPEC+ members led to a historic drop in energy prices. The energy sector faces a perfect storm – sharply falling demand due to a global economic slowdown, and potentially significant oversupply due to oil producers’ decision to ramp up production in an oil war. The energy sector experienced a loss of -50.5% in Q1.

The greatest influence on equity performance in 2020 will perhaps be the path of corporate earnings. The degree to which corporate earnings will fall throughout the year is largely unknown with few reliable estimates.

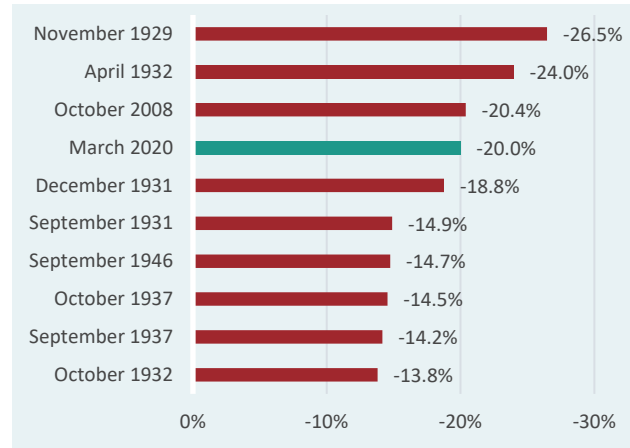
We continue to believe an underweight to international developed equities is appropriate. The economic pain that European Union member countries face may be significant, and membership to the EU inherently limits the ability of these countries to enact certain changes to address weakening economies. The U.S. market may continue to perform relatively well throughout the economic recovery.

S&P 500



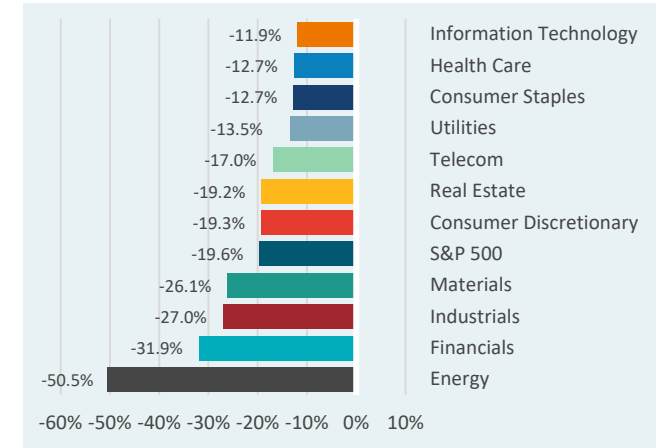
Source: Standard & Poor's, as of 3/31/20

WORST S&P 500 MAX MONTHLY DRAWDOWNS



Source: Standard & Poor's, as of 3/31/20

Q1 SECTOR PERFORMANCE



Source: Standard & Poor's, as of 3/31/20

Domestic equity size & style

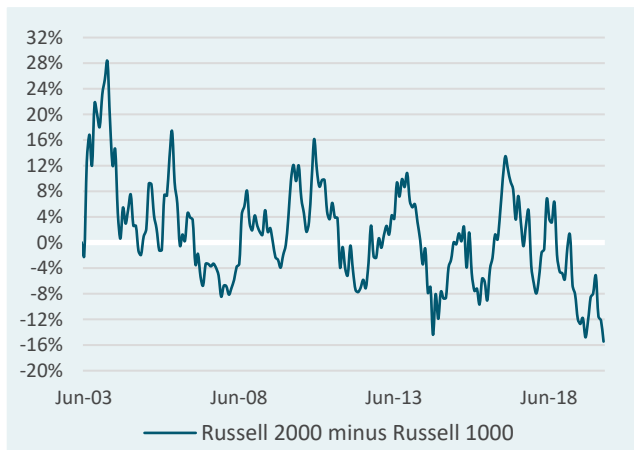
Value stocks severely underperformed growth stocks during the first quarter (Russell 1000 Value -26.7%, Russell 1000 Growth -14.1%). Small cap stocks underperformed large cap stocks by a similar magnitude (Russell 2000 -30.6%, Russell 1000 -20.2%). Value and size factors continue to experience a surprisingly long period of relative underperformance.

Once again, the impact of sector performance on the value premium in Q1 was notable – specifically energy and financial sectors (-50.5% and -31.9%, respectively) which tend to be value-tilted. Energy prices saw a historic drop fueled by OPEC+ infighting and likely the intent of the cartel to push out U.S. energy producers. Financial stocks delivered losses as

falling interest rates hurt profitability. Information Technology (-11.9%), a sector that tends to contain more growth stocks, was the best performer.

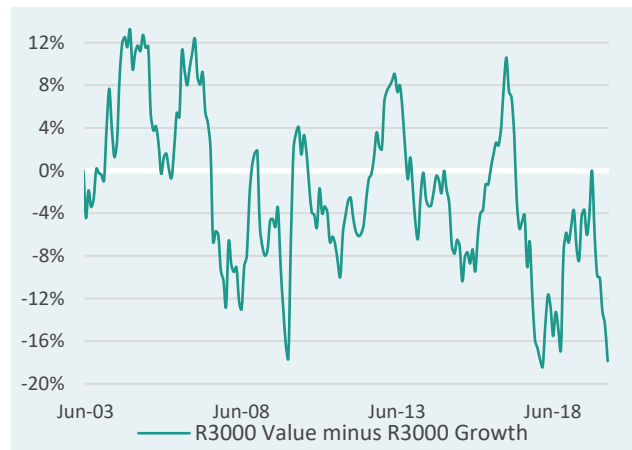
We believe that it is extremely difficult to successfully make short-term bets on style factors. Factor performance can be incredibly noisy and vulnerable to sector randomness. Market events of the past month seem to support this belief. While value in particular continues to be historically cheap, price itself does not translate to short-term outperformance – a catalyst for a turnaround should also be clearly identified and understood. We remain watchful and believe that consistent long-term exposure to these style factors is an ideal implementation approach for most investors, most of the time.

SMALL CAP VS LARGE CAP (YOY)



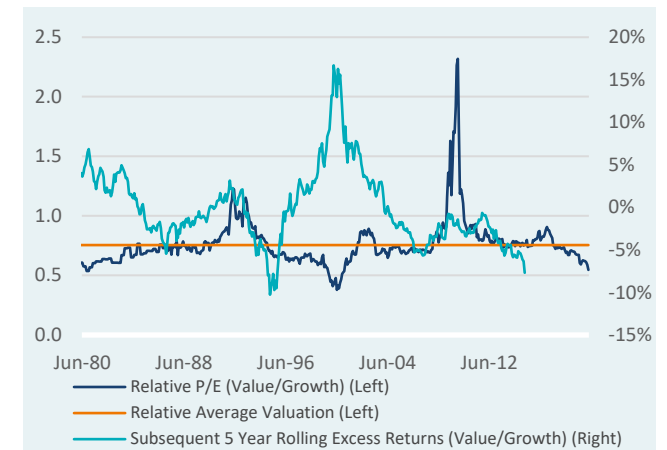
Source: FTSE, as of 3/31/20

VALUE VS GROWTH (YOY)



Source: FTSE, as of 3/31/20

VALUE HISTORICALLY CHEAP



Source: Russell, Bloomberg, as of 3/31/20

International developed equity

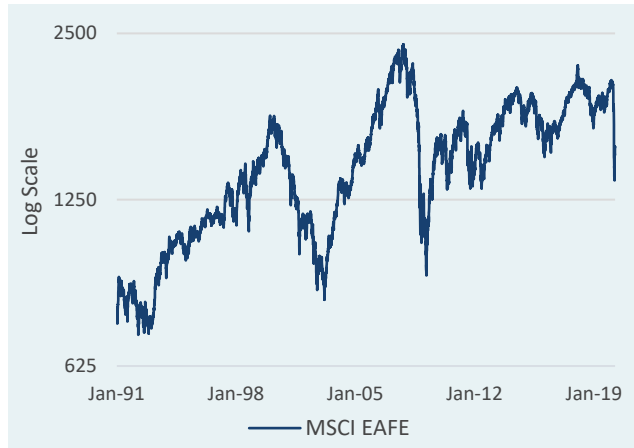
Equity markets around the world sold off broadly in the first quarter, down between -16% to -29%. Japanese equities were among the best performing (MSCI Japan -17%) while the U.K. was one of the worst performing (MSCI U.K. -29%).

As the global transactional currency, demand for U.S. dollars tends to ramp up when markets become stressed and companies abroad require dollars to pay down dollar-denominated liabilities. In the first quarter, the U.S. dollar gained +2.3% against the Euro and +6.4% against the British pound, resulting in losses for U.S. investors in European

equities with unhedged currency exposure. In mid-March, the Federal Reserve expanded its dollar swap liquidity lines and opened a FIMA repo facility which will allow foreign monetary authorities to enter repurchase agreements with the Fed. Both measures worked to help improve U.S. dollar liquidity abroad, and as a result, slow the pace of appreciation of the U.S. dollar relative to international pairs.

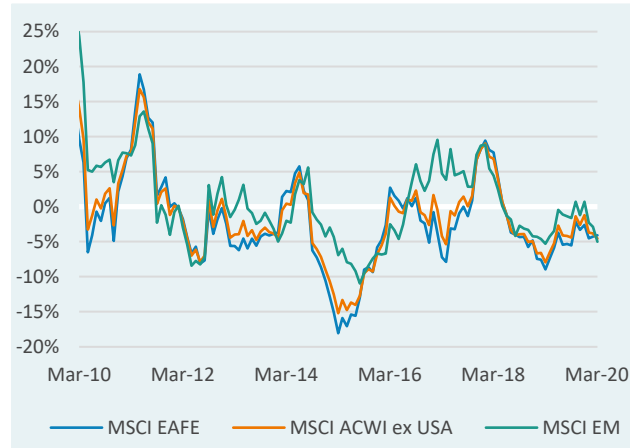
Cross-currency basis, which measure the additional premia investors must pay to swap one currency for another over a term, narrowed in March, signaling that the Fed's efforts to ease dollar funding strains have proved effective thus far.

INTERNATIONAL DEVELOPED EQUITIES



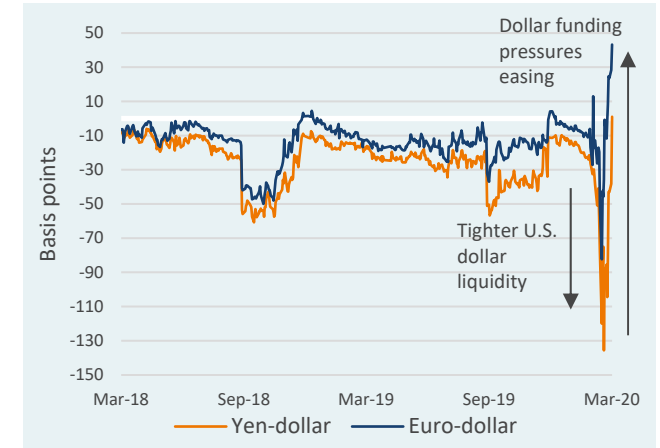
Source: MSCI, as of 3/31/20

EFFECT OF CURRENCY (1-YEAR ROLLING)



Source: MSCI, as of 3/31/20

3M/3M CROSS CURRENCY BASIS SWAPS



Source: Bloomberg, as of 3/31/20

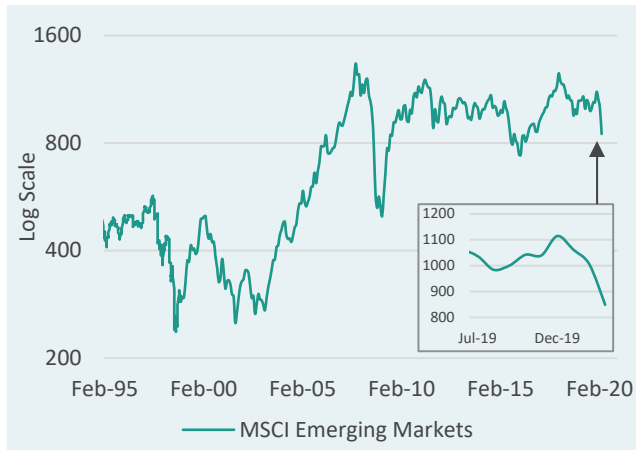
Emerging market equity

Emerging market equities (MSCI EM -23.6%) underperformed both U.S. (S&P 500 -19.6%) and international developed equities (MSCI EAFE -22.8%) over the quarter. Within the complex, Latin American equities (MSCI EM Latin American -45.6%) dramatically underperformed Asian equities (MSCI EM Asia -18.1%), which were propped up by remarkably resilient Chinese equity markets. Currency exposure also played a big role in the outperformance of EM Latin America over EM Asia, as the U.S. dollar strengthened significantly against the Brazilian real, and the Mexican peso, and was little changed against the Chinese renminbi.

Inflation remains low in emerging economies and may face downward pressure in the coming months as energy prices have fallen. Central banks may have more room to maneuver relative to developed economies with regard to monetary policy, as interest rates are closer to average levels.

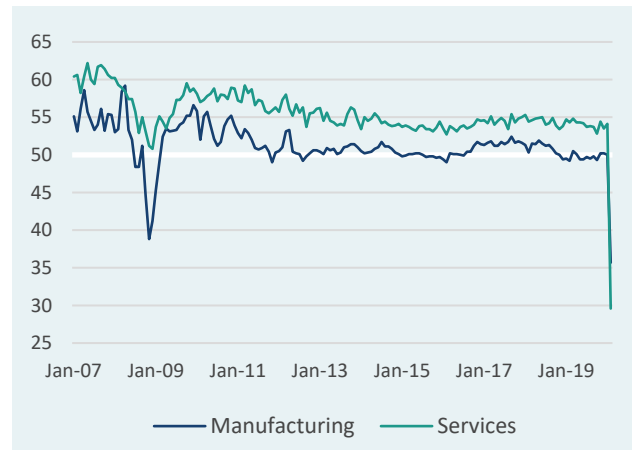
Countries viewed as having poor health infrastructure as well as economic dependence on oil prices fared the worst. Mexico's sovereign debt rating was downgraded by several rating agencies, and Moody's downgraded South Africa's sovereign debt rating below investment-grade.

EMERGING MARKET EQUITY



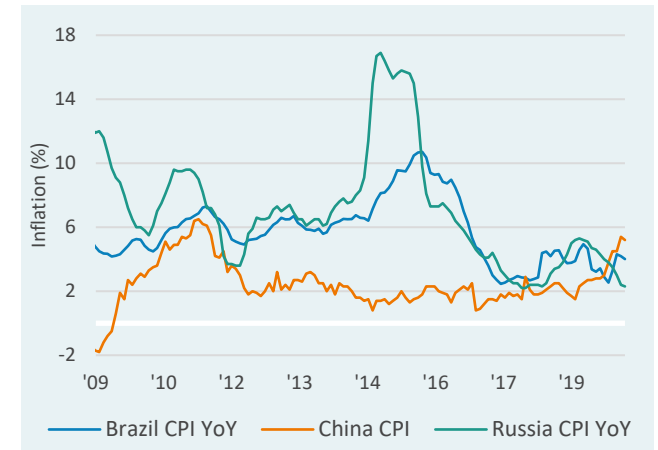
Source: MSCI, as of 3/31/20

CHINA PURCHASING MANAGERS' INDICES



Source: China Federation of Logistics and Purchasing, as of 2/29/20

INFLATION (CPI YOY)



Source: Bloomberg, as of 2/29/20

Interest rate environment

- In mid-March, the Federal Open Market Committee cut interest rates by a full 1.00% to a new range of 0 – 0.25%. This surprise action was taken on a Sunday with the intent to get out ahead of the economic impacts of COVID-19.
- On April 9th, the Federal Reserve announced an additional \$2.3 Trillion program aimed towards providing financing to small businesses and municipalities. The program included \$1M-\$25M sized loans at an interest rate of 2.5%-4.0% with a four-year maturity. This move involved Fed purchases of certain types of low-grade speculative debt, a reversal from comments just weeks earlier that the Federal Reserve would stick to investment-grade debt purchases.
- The European Central Bank (ECB) announced a €750B asset purchase program in March to address effects of the virus. ECB President Christine Lagarde claimed that there are “no limits to our commitment to the

euro”. Bond yields of Euro member countries fell on the news.

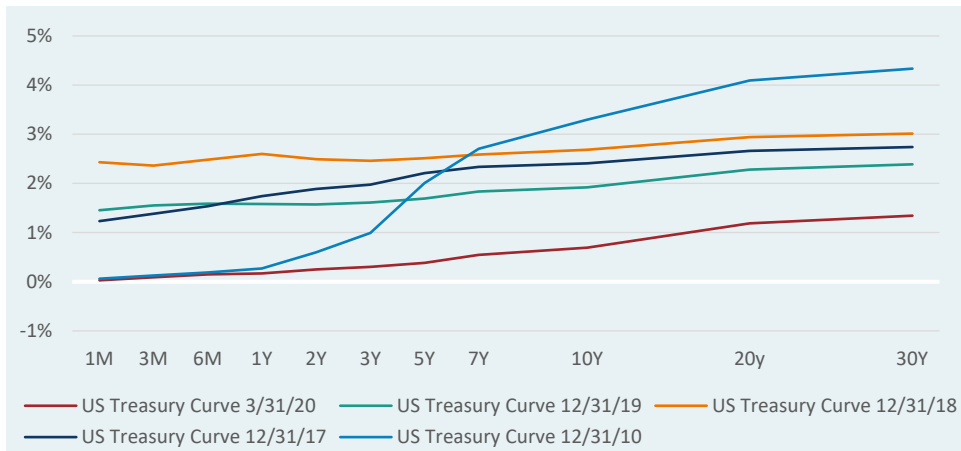
- Central banks are now facing a unique problem – an immediate economic slowdown and need for monetary policy support, but very little room to cut interest rates to provide that support. This is a risk that has been discussed by investors for years, only now becoming reality. We believe fiscal policies will play a much larger role in addressing the inevitable economic slowdown.
- The Federal Reserve rolled out several liquidity programs which were components of its Global Financial Crisis playbook and are aimed at ensuring the flow of credit to U.S. households and businesses, as well as financial market stability. The New York Fed began offering up to \$500B in overnight liquidity through repurchase agreements and has expanded dollar swap lines to alleviate any possible strains in global U.S. dollar funding markets.

Area	Short Term (3M)	10-Year
United States	0.09%	0.67%
Germany	(0.71%)	(0.47%)
France	(0.50%)	(0.02%)
Spain	(0.23%)	0.67%
Italy	(0.05%)	1.52%
Greece	0.16%	1.63%
U.K.	0.03%	0.36%
Japan	(0.30%)	0.01%
Australia	0.37%	0.76%
China	1.34%	2.58%
Brazil	3.37%	7.77%
Russia	5.47%	6.70%

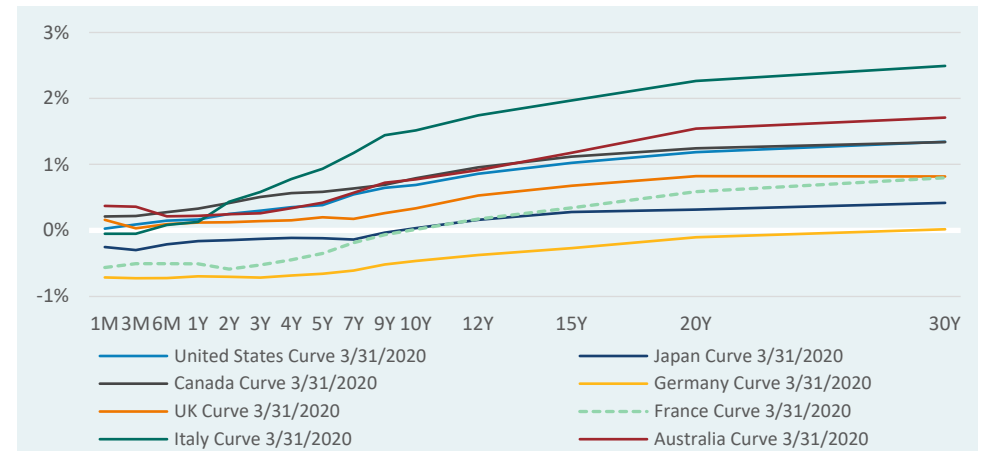
Source: Bloomberg, as of 3/31/20

Yield environment

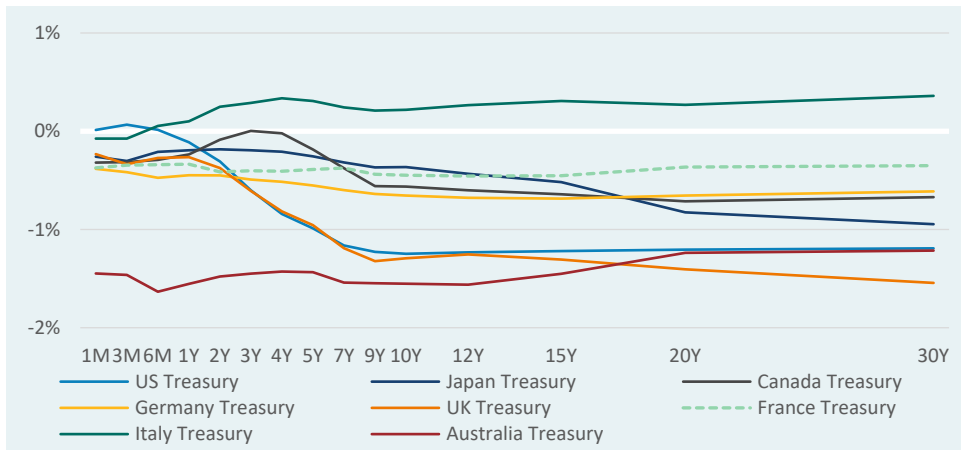
U.S. YIELD CURVE



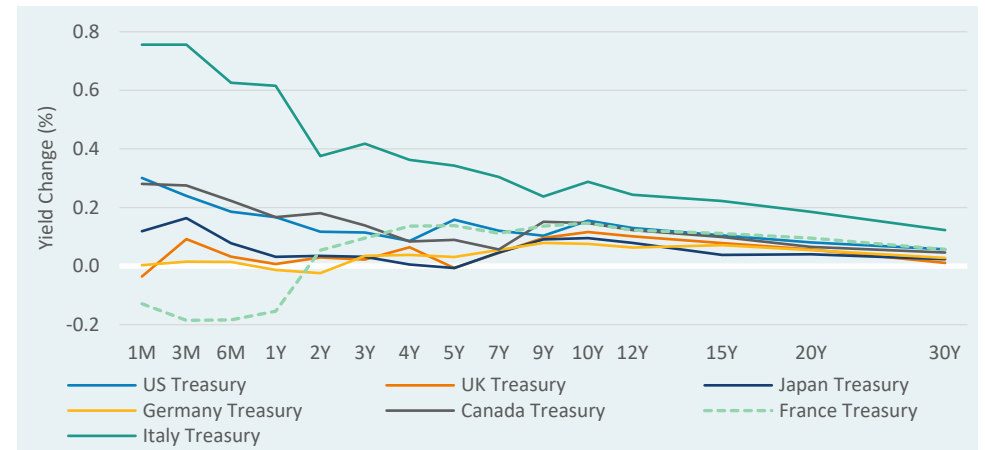
GLOBAL GOVERNMENT YIELD CURVES



YIELD CURVE CHANGES OVER LAST FIVE YEARS



IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 3/31/20

Currency

The U.S. dollar appreciated significantly in the first quarter, rising 7.1% on a trade-weighted basis, resulting in losses for investors with unhedged currency exposure. As is often the case during higher risk market environments, demand for safe-haven currencies contributed to the rising dollar.

Historically speaking, environments where the U.S. dollar was much more expensive than average tended to be followed by an eventual mean-reversion. However, this mean-reversion effect is not a sure bet, and it can take years (or perhaps decades) to occur. As recent years have shown,

leaving currency exposure unhedged tends to result in uncompensated volatility, and occasional (or frequent) large and sharp losses or gains.

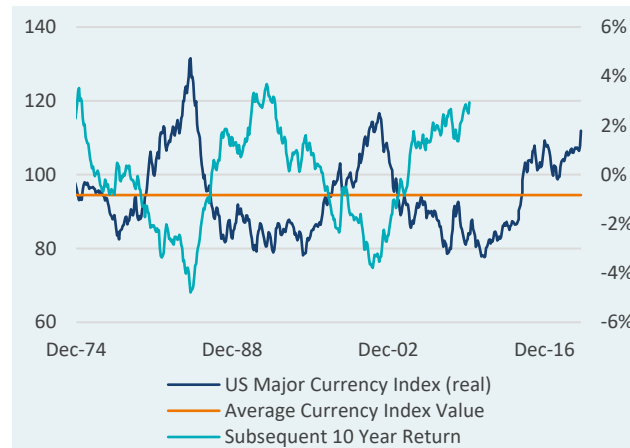
The MSCI Currency Factor Mix Index, constructed as a combination of individual Currency Factor indices (carry, value, momentum) advanced 1.2% in Q1. The momentum factor (+8.7%) posted strong gains as appreciating currencies continued to strengthen while the carry factor (-7.2%) lagged as the exchange rate adjustments implied by local interest rate differentials occurred faster than expected.

BLOOMBERG DOLLAR SPOT INDEX



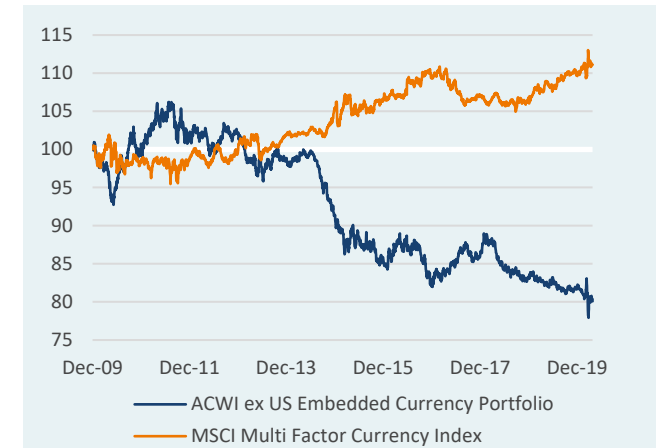
Source: Bloomberg, as of 3/31/20

USD CURRENCY LEVEL & SUBSEQUENT RETURN



Source: Federal Reserve, Verus, as of 3/31/20

EMBEDDED CURRENCY VS CURRENCY BETA



Source: MSCI, Bloomberg, as of 3/31/20

- The Total Fund, net of manager fees, returned -12.6% in the First quarter of 2020 and in the ranked 48th percentile among other public plans greater than \$1 billion (median of -12.6%). It lagged the policy index return of -11.1%. The Total Fund ex Overlay returned -12.7% for the quarter. The Total Fund one-year return of -5.0% lagged the policy index return of -2.3% and ranked in the 55th percentile of its peer universe. The three-year return of 2.1% (68th percentile) lagged the median large public plan (2.8%) and the policy index (3.6%).

- First quarter results were enhanced by the following factors:
 1. Baillie Gifford lost -19.7% beating the MSCI ACWI ex US (-23.3%). Baillie Gifford's focus on good quality names contributed to relative performance during the quarter.
 2. Mondrian outperformed the MSCI ACWI ex US Value down -27.2% vs 28.5% for the index. Country allocations added to relative returns especially within the Asia Pacific market, where equity markets were relatively resilient due to strong company balance sheets (particularly within Japan).

- First quarter results were hindered by the following factors:
 1. QMA small cap lost -36.7% trailing the Russell 2000 (-30.6%). Their valuation factors hurt relative performance for the quarter, as value stocks continued to underperform growth stocks. QMA is also emphasizing valuation as the growth value spread is over 90th percentile historically.
 2. Parametric Core trailed the MSCI EM Index (-30.7% versus -23.6%). The strategic underweight to China hurt during the first Quarter as China was moderately successful in stimulating their economy.
 3. Western TRU lost -8.9% as spreads widened during the quarter. They underperformed the Barclays US Aggregate (3.1%). As spreads widened investments in investment grade bonds and high yield bonds hurt relative performance.

Total Fund
Performance Summary (Net of Fees)

Period Ending: March 31, 2020

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Total Fund**	-12.6	48	-7.8	48	-5.0	55	-1.1	53	2.1	68	3.4	57	6.4	43
<i>Policy Index¹</i>	-11.1	29	-5.9	24	-2.3	18	0.6	22	3.6	27	4.3	24	7.1	20
<i>InvMetrics Public DB > \$1B Net Median</i>	-12.6		-8.0		-5.0		-1.0		2.8		3.7		6.4	
Total Fund ex Overlay	-12.7	52	-7.9	50	-5.1	55	-1.3	57	1.9	75	3.3	63	6.3	54
<i>Policy Index¹</i>	-11.1	29	-5.9	24	-2.3	18	0.6	22	3.6	27	4.3	24	7.1	20
<i>InvMetrics Public DB > \$1B Net Median</i>	-12.6		-8.0		-5.0		-1.0		2.8		3.7		6.4	
Public Equity	-22.0	34	-15.2	37	-12.1	40	-5.2	52	1.0	53	2.8	54	6.8	61
<i>Blended Public Equity Index¹</i>	-21.5	23	-14.4	25	-11.5	29	-4.8	44	1.6	37	3.2	37	7.2	49
<i>InvMetrics All DB Total Eq Net Median</i>	-22.6		-15.8		-12.6		-5.1		1.0		2.9		7.2	
US Equity	-22.0	43	-14.6	44	-11.3	49	-2.3	48	2.8	49	4.7	45	9.3	47
<i>Blended US Equity Index¹</i>	-20.9	20	-12.7	14	-9.1	15	-0.6	16	4.0	18	5.6	21	10.1	15
<i>Russell 3000</i>	-20.9	20	-12.7	14	-9.1	15	-0.6	16	4.0	18	5.8	13	10.1	13
<i>InvMetrics All DB US Eq Net Median</i>	-22.3		-14.9		-11.4		-2.4		2.7		4.6		9.2	
Large Cap Equity	-20.7	49	-13.1	51	-9.4	50	-0.5	42	4.3	40	6.3	32	10.0	39
<i>Russell 1000</i>	-20.2	47	-11.8	43	-8.0	44	0.3	39	4.6	37	6.2	33	10.4	31
<i>eV US Large Cap Equity Net Median</i>	-20.9		-13.1		-9.5		-1.7		2.9		4.7		9.3	
<i>Acadian US MGD V</i>	-21.3	66	-15.0	76	-11.0	70	--	--	--	--	--	--	--	--
<i>BlackRock Russell 1000</i>	-20.2	51	-11.8	42	-8.0	45	0.3	34	4.7	28	--	--	--	--
<i>DE Shaw</i>	-21.3	66	-13.1	57	-10.8	69	-1.9	63	3.8	45	6.3	20	10.6	9
<i>PanAgora Defuseq</i>	-21.0	62	-15.8	81	-11.2	71	--	--	--	--	--	--	--	--
<i>Russell 1000</i>	-20.2	51	-11.8	42	-8.0	45	0.3	34	4.6	28	6.2	21	10.4	14
<i>eV US Large Cap Core Equity Net Median</i>	-20.1		-12.7		-8.7		-1.3		3.4		5.0		9.6	

* 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, 2020

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Small Cap Equity	-36.7	84	-31.4	79	-31.2	84	-17.7	78	-9.5	74	-4.2	85	4.9	79
<i>Russell 2000</i>	-30.6	47	-25.5	46	-24.0	48	-11.9	48	-4.6	46	-0.2	48	6.9	49
<i>eV US Small Cap Equity Net Median</i>	-31.3		-26.4		-24.7		-12.5		-5.3		-0.6		6.8	
QMA US Small Cap	-36.7	95	-31.4	92	-31.2	94	-17.7	88	-9.5	90	--	--	--	--
<i>Russell 2000</i>	-30.6	48	-25.5	47	-24.0	47	-11.9	49	-4.6	47	-0.2	52	6.9	57
<i>eV US Small Cap Core Equity Net Median</i>	-30.7		-26.2		-24.7		-12.3		-5.0		-0.2		7.1	
International Equity	-22.0	14	-15.7	15	-12.9	16	-8.5	15	-1.1	20	0.3	21	2.5	41
<i>Blended International Equity Index¹</i>	-22.2	15	-16.4	20	-14.2	24	-9.6	22	-1.4	22	0.1	23	2.7	37
<i>MSCI EAFE Gross</i>	-22.7	19	-17.2	26	-13.9	22	-8.7	16	-1.3	22	-0.1	29	3.2	22
<i>InvMetrics All DB ex-US Eq Net Median</i>	-24.4		-18.8		-16.5		-11.3		-2.6		-0.9		2.3	
Developed Markets	-23.2	49	-16.5	47	-13.5	46	-8.7	43	-1.3	48	0.1	48	2.7	71
<i>MSCI ACWI ex USA Gross</i>	-23.3	51	-17.8	55	-15.1	55	-9.6	52	-1.5	50	-0.2	54	2.5	75
<i>InvMetrics All DB Dev Mkt ex-US Eq Net Median</i>	-23.2		-17.1		-14.3		-9.2		-1.5		0.0		3.3	
Baillie Gifford	-19.7	48	-10.7	24	-5.4	24	-5.2	36	2.2	58	2.4	53	--	--
<i>MSCI ACWI ex US¹</i>	-23.3	81	-17.8	87	-15.1	89	-9.6	75	-1.5	92	-0.2	91	--	--
<i>MSCI ACWI ex US Growth¹</i>	-18.2	27	-11.0	28	-6.9	39	-4.8	35	2.9	40	2.5	53	--	--
<i>eV ACWI ex-US Growth Equity Net Median</i>	-19.8		-13.2		-9.1		-6.7		2.7		2.7		5.2	
BlackRock EAFE Index	-22.8	38	-17.3	37	-14.1	33	-8.8	29	-1.5	39	-0.3	47	--	--
<i>MSCI EAFE</i>	-22.8	39	-17.4	38	-14.4	35	-9.2	33	-1.8	45	-0.6	56	2.7	79
<i>MSCI EAFE Gross</i>	-22.7	38	-17.2	37	-13.9	31	-8.7	28	-1.3	36	-0.1	45	3.2	70
<i>eV EAFE Core Equity Net Median</i>	-24.0		-18.2		-15.9		-11.2		-2.2		-0.5		3.8	
Mondrian	-27.2	34	-21.6	39	-20.5	41	-12.1	18	-4.6	31	-2.2	29	1.8	51
<i>MSCI ACWI ex USA Value Gross</i>	-28.5	49	-24.6	68	-23.2	62	-14.5	44	-5.9	43	-2.9	53	0.7	72
<i>MSCI ACWI ex USA Gross</i>	-23.3	14	-17.8	13	-15.1	11	-9.6	10	-1.5	6	-0.2	12	2.5	30
<i>eV ACWI ex-US Value Equity Net Median</i>	-28.5		-22.6		-21.8		-14.8		-6.5		-2.9		1.8	

1. See Appendix for Benchmark History.

Total Fund
Performance Summary (Net of Fees)

Period Ending: March 31, 2020

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Emerging Markets	-30.7	86	-28.3	92	-26.8	92	-18.2	80	-7.6	86	-3.6	89	--	--
MSCI Emerging Markets Gross	-23.6	22	-18.0	22	-17.4	24	-12.4	17	-1.3	12	0.0	18	1.0	24
InvMetrics All DB Emg Mkt Eq Net Median	-25.8		-20.7		-19.6		-14.8		-4.1		-1.7		-0.2	
Parametric Core	-30.7	89	-28.3	91	-26.8	88	-18.2	86	-7.6	89	--	--	--	--
MSCI Emerging Markets Gross	-23.6	35	-18.0	34	-17.4	39	-12.4	28	-1.3	30	0.0	35	1.0	53
eV Emg Mkts Equity Net Median	-25.1		-20.1		-19.1		-14.1		-2.7		-0.9		1.3	
Parametric Currency Overlay	31.6	--	40.7	--	36.5	--	--	--	--	--	--	--	--	--
Fixed Income	-2.4	69	0.1	66	2.7	67	3.2	61	3.1	60	3.3	28	4.8	19
Blended Fixed Income Index ¹	-1.8	62	1.3	52	4.3	47	4.8	38	3.8	32	3.3	30	3.8	58
InvMetrics All DB Total Fix Inc Net Median	-1.0		1.4		4.0		4.0		3.3		2.8		3.9	
Core Fixed	0.8	--	3.3	--	6.0	--	4.7	--	3.8	--	3.2	--	4.4	--
BBgBarc US Aggregate TR	3.1	--	5.7	--	8.9	--	6.7	--	4.8	--	3.4	--	3.9	--
BlackRock Intermediate Govt	5.2	46	6.5	60	9.0	61	6.4	65	4.3	66	--	--	--	--
BBgBarc US Govt Int TR	5.2	46	6.4	61	8.9	62	6.3	67	4.1	68	2.8	60	2.8	76
BBgBarc US Aggregate TR	3.1	99	5.7	76	8.9	62	6.7	56	4.8	40	3.4	28	3.9	5
eV US Government Fixed Inc Net Median	5.1		6.8		9.5		6.7		4.7		3.1		3.4	
DoubleLine*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BBgBarc US Aggregate TR	3.1	3	5.7	1	8.9	1	6.7	1	4.8	1	3.4	5	3.9	50
eV US Securitized Fixed Inc Net Median	-1.9		-0.8		1.1		2.5		2.4		2.6		3.9	
FIAM Bond	1.0	69	3.8	58	7.1	57	5.8	51	4.4	50	3.4	25	4.4	20
BBgBarc US Aggregate TR	3.1	15	5.7	12	8.9	13	6.7	15	4.8	15	3.4	30	3.9	56
Western TRU	-8.9	99	-5.3	99	-3.2	99	-1.4	99	1.0	99	--	--	--	--
3-Month Libor Total Return USD	0.4	80	1.4	92	2.1	99	2.3	99	2.1	99	1.5	99	0.9	99
BBgBarc US Aggregate TR	3.1	15	5.7	12	8.9	13	6.7	15	4.8	15	3.4	30	3.9	56
eV US Core Fixed Inc Net Median	1.7		4.1		7.3		5.9		4.4		3.2		3.9	

* Funded March 2020.

1. See Appendix for Benchmark History.

Total Fund
Performance Summary (Net of Fees)

Period Ending: March 31, 2020

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Opportunistic Credit	-8.7	--	-6.1	--	-3.8	--	0.2	--	2.2	--	4.0	--	7.5	--
<i>BBgBarc BA Intermediate HY¹</i>	-10.0	--	-6.3	--	-3.6	--	1.3	--	1.9	--	3.1	--	4.8	--
Angelo Gordon Opportunistic*	-24.2	--	-20.1	--	-15.8	--	-1.1	--	5.1	--	5.8	--	--	--
Angelo Gordon STAR*	-11.4	--	-7.6	--	-2.4	--	8.4	--	12.5	--	10.0	--	--	--
<i>BBgBarc US Aggregate TR</i>	3.1	--	5.7	--	8.9	--	6.7	--	4.8	--	3.4	--	3.9	--
Angelo Gordon Credit Solutions*	15.1	1	--	--	--	--	--	--	--	--	--	--	--	--
<i>BBgBarc BA Intermediate HY</i>	-10.0	19	-6.3	15	-3.6	15	1.3	5	1.9	7	3.1	12	4.8	72
<i>eV US High Yield Fixed Inc Net Median</i>	-12.1		-8.9		-6.6		-1.0		0.6		2.3		5.2	
Beach Point Select	-12.8	58	-8.5	45	-5.7	34	-0.9	48	1.7	9	4.5	2	--	--
<i>BBgBarc BA Intermediate HY</i>	-10.0	19	-6.3	15	-3.6	15	1.3	5	1.9	7	3.1	12	4.8	72
<i>eV US High Yield Fixed Inc Net Median</i>	-12.1		-8.9		-6.6		-1.0		0.6		2.3		5.2	
Brigade Capital	-18.4	98	-16.1	98	-14.5	99	-6.5	99	-2.9	99	0.3	99	--	--
<i>BBgBarc BA Intermediate HY</i>	-10.0	19	-6.3	15	-3.6	15	1.3	5	1.9	7	3.1	12	4.8	72
<i>50% Barclays HY/ 50% Bank Loan</i>	-12.9	60	-10.1	68	-8.2	73	-2.0	74	0.0	71	2.0	66	--	--
<i>eV US High Yield Fixed Inc Net Median</i>	-12.1		-8.9		-6.6		-1.0		0.6		2.3		5.2	
PIMCO Diversified	-7.3	6	-4.6	7	-1.2	2	2.1	3	--	--	--	--	--	--
<i>Blended PIMCO Diversified Index¹</i>	-9.1	11	-5.7	11	-2.4	7	1.2	7	1.9	6	3.1	13	5.1	55
<i>BBgBarc BA Intermediate HY</i>	-10.0	19	-6.3	15	-3.6	15	1.3	5	1.9	7	3.1	12	4.8	72
<i>eV US High Yield Fixed Inc Net Median</i>	-12.1		-8.9		-6.6		-1.0		0.6		2.3		5.2	
Franklin Templeton	-5.8	41	-7.7	64	-6.4	70	-3.4	80	-2.0	91	0.4	85	--	--
<i>BBgBarc Multiverse TR</i>	-1.1	16	0.2	18	3.5	19	1.6	27	3.4	17	2.7	27	2.6	64
<i>eV All Global Fixed Inc Net Median</i>	-7.1		-4.5		-2.0		-0.4		1.6		2.0		3.3	

* Preliminary return as of 03/31/2020.

1. See Appendix for Benchmark History.

Total Fund
Performance Summary (Net of Fees)

Period Ending: March 31, 2020

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Private Credit	-1.2	--	2.5	--	4.2	--	6.2	--	6.3	--	--	--	--	--
<i>Cliffwater Direct Lending Index[†]</i>	2.0	--	5.9	--	8.3	--	8.5	--	8.5	--	8.4	--	10.3	--
Blackrock DL Feeder IX-U**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<i>Cliffwater Direct Lending Index</i>	2.0	1	5.9	1	8.3	1	8.5	1	8.5	1	8.4	1	10.3	1
<i>eV US High Yield Fixed Inc Net Median</i>	-12.1	--	-8.9	--	-6.6	--	-1.0	--	0.6	--	2.3	--	5.2	--
PIMCO Private Income [*]	0.0	1	5.2	1	--	--	--	--	--	--	--	--	--	--
<i>BBgBarc BA Intermediate HY</i>	-10.0	19	-6.3	15	-3.6	15	1.3	5	1.9	7	3.1	12	4.8	72
<i>Cliffwater Direct Lending Index</i>	2.0	1	5.9	1	8.3	1	8.5	1	8.5	1	8.4	1	10.3	1
<i>eV US High Yield Fixed Inc Net Median</i>	-12.1	--	-8.9	--	-6.6	--	-1.0	--	0.6	--	2.3	--	5.2	--
TCP Direct Lending VIII [†]	-3.3	2	-0.4	1	1.3	1	4.9	1	5.3	1	--	--	--	--
White Oak Yield [*]	0.0	1	3.6	1	5.3	1	6.4	1	--	--	--	--	--	--
<i>Cliffwater Direct Lending Index</i>	2.0	1	5.9	1	8.3	1	8.5	1	8.5	1	8.4	1	10.3	1
<i>eV US High Yield Fixed Inc Net Median</i>	-12.1	--	-8.9	--	-6.6	--	-1.0	--	0.6	--	2.3	--	5.2	--
Risk Parity	-12.2	--	-7.9	--	-2.7	--	0.9	--	3.4	--	2.8	--	--	--
<i>Blended Risk Parity Index¹</i>	-12.4	--	-6.9	--	-3.5	--	0.5	--	3.3	--	4.3	--	--	--
AQR GRP, 10% Volatility	-14.2	--	-9.2	--	-4.0	--	0.3	--	3.4	--	2.2	--	--	--
PanAgora	-9.7	--	-6.1	--	-1.0	--	1.8	--	3.6	--	3.5	--	--	--
<i>Blended Risk Parity Index</i>	-12.4	--	-6.9	--	-3.5	--	0.5	--	3.3	--	4.3	--	--	--
<i>S&P Risk Parity 10% Target Volatility Index TR USD</i>	-10.8	--	-5.8	--	-1.7	--	2.1	--	2.8	--	2.2	--	4.9	--
Alternatives	-1.9	--	3.7	--	5.9	--	3.6	--	4.3	--	6.0	--	--	--
<i>Blended Alternatives Index¹</i>	5.5	--	10.6	--	19.5	--	10.5	--	10.8	--	9.0	--	--	--
Private Equity***[†]	7.3	3	19.9	3	27.0	1	18.6	10	16.2	26	16.9	8	--	--
<i>Blended Private Equity Index¹</i>	9.8	1	17.0	5	34.0	1	14.5	29	15.2	29	13.7	22	15.7	4
<i>InvMetrics All DB Private Eq Net Median</i>	1.7	--	6.1	--	9.4	--	10.4	--	11.9	--	11.0	--	11.4	--

* Preliminary return as of 03/31/2020.

** Funded March 2020.

*** 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, 2020

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Hedge Fund/Absolute Return	-12.3	66	-13.4	86	-15.2	90	-11.8	95	-7.9	94	-3.0	86	--	--
<i>Libor 1 month +4%</i>	1.2	7	4.3	6	6.0	7	6.1	3	5.9	5	5.3	3	4.8	8
<i>InvMetrics All DB Hedge Funds Net Median</i>	-9.4		-7.4		-6.1		-1.7		0.5		0.6		2.8	
AQR DELTA XN	-23.1	88	-26.3	94	-29.6	97	-22.0	99	-15.2	99	-7.5	95	--	--
Aberdeen Standard GARS	-2.7	32	0.2	29	1.5	30	1.1	37	1.1	52	--	--	--	--
Graham Quant Macro*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<i>Libor 1 month +4%</i>	1.2	19	4.3	17	6.0	18	6.1	13	5.9	19	5.3	22	4.8	44
<i>eV Alt All Multi-Strategy Median</i>	-7.5		-5.6		-3.8		-1.2		1.2		1.5		4.0	
Inflation Hedge	-12.6	--	-10.5	--	-9.5	--	-3.3	--	-0.6	--	--	--	--	--
<i>Blended Inflation Hedge Index¹</i>	-8.9	--	-6.3	--	-3.7	--	-0.2	--	1.9	--	--	--	--	--
Real Estate	1.3	15	5.5	1	6.7	7	7.2	7	7.4	9	9.0	5	11.4	5
<i>NCREIF ODCE</i>	1.0	33	3.8	26	4.9	36	6.2	31	6.8	22	8.5	18	11.4	5
<i>InvMetrics All DB Real Estate Pub Net Median</i>	0.5		3.0		4.5		5.7		6.2		7.4		10.1	
Harrison Street Core Property**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<i>NCREIF ODCE</i>	1.0	--	3.8	--	4.9	--	6.2	--	6.8	--	8.5	--	11.4	--
Invesco	1.6	--	5.8	--	6.8	--	7.2	--	7.4	--	8.9	--	11.4	--
<i>NCREIF ODCE</i>	1.0	--	3.8	--	4.9	--	6.2	--	6.8	--	8.5	--	11.4	--
Invesco US Val IV	0.7	--	9.2	--	10.3	--	11.6	--	11.6	--	--	--	--	--
<i>NCREIF ODCE</i>	1.0	--	3.8	--	4.9	--	6.2	--	6.8	--	8.5	--	11.4	--
<i>NCREIF CEVA 1Q Lag - NET</i>	3.0	--	9.1	--	12.3	--	11.9	--	11.5	--	12.6	--	--	--
Invesco US Val V	1.0	--	6.7	--	12.5	--	--	--	--	--	--	--	--	--
<i>NCREIF ODCE</i>	1.0	--	3.8	--	4.9	--	6.2	--	6.8	--	8.5	--	11.4	--
<i>NCREIF CEVA 1Q Lag - NET</i>	3.0	--	9.1	--	12.3	--	11.9	--	11.5	--	12.6	--	--	--
PGIM RE US Debt Fund	1.1	--	4.1	--	5.6	--	6.1	--	--	--	--	--	--	--
<i>NCREIF ODCE</i>	1.0	--	3.8	--	4.9	--	6.2	--	6.8	--	8.5	--	11.4	--

* Funded February 2020.

** Funded January 2020.

1. See Appendix for Benchmark History.

Total Fund
Performance Summary (Net of Fees)

Period Ending: March 31, 2020

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Private Real Asset**	0.6	--	-0.1	--	1.6	--	-2.3	--	-5.0	--	4.8	--	--	--
<i>Blended Private Real Asset Index¹</i>	6.5	--	7.5	--	21.5	--	5.4	--	5.6	--	6.0	--	--	--
<i>Blended Secondary CA Private RA Index¹</i>	0.7	--	-0.6	--	2.0	--	2.7	--	6.1	--	4.9	--	--	--
Public Real Assets	-33.9	--	-33.1	--	-32.5	--	-17.5	--	-9.9	--	--	--	--	--
<i>Blended Public Real Asset Index¹</i>	-27.1	--	-24.9	--	-23.6	--	-11.7	--	-5.8	--	-0.7	--	--	--
Cushing MLP Alpha TR*														
SSgA Custom Real Asset	-26.5	--	-24.3	--	-23.0	--	-11.3	--	-5.5	--	--	--	--	--
<i>SSgA Custom Real Asset Index*</i>	-27.1	--	-24.9	--	-23.6	--	-11.7	--	-5.8	--	--	--	--	--
Cash	0.3	--	0.8	--	1.1	--	1.2	--	1.1	--	1.1	--	0.9	--
<i>91 Day T-Bills</i>	0.4	--	1.3	--	1.9	--	2.0	--	1.7	--	1.1	--	0.6	--
General Account	0.4	--	1.5	--	2.7	--	4.0	--	3.3	--	2.6	--	1.4	--
Treasury & LAIF	-3.5	--	-2.1	--	-1.3	--	1.0	--	1.7	--	1.3	--	1.1	--
<i>91 Day T-Bills</i>	0.4	--	1.3	--	1.9	--	2.0	--	1.7	--	1.1	--	0.6	--

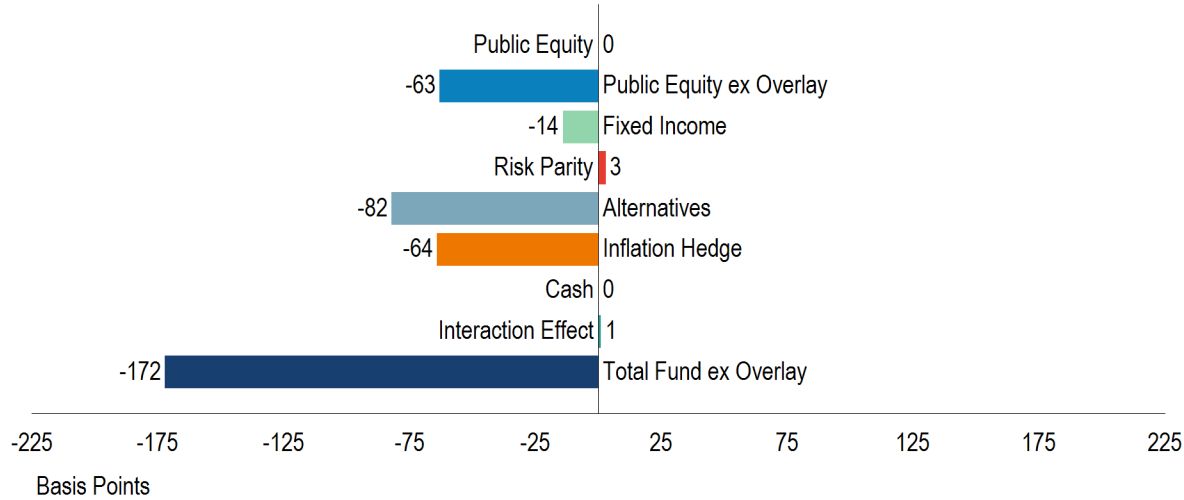
** Returns are one-quarter lag.

* Liquidating as of March 2020.

1. See Appendix for Benchmark History.

Total Fund ex Overlay
Performance Attribution

Period Ending: March 31, 2020

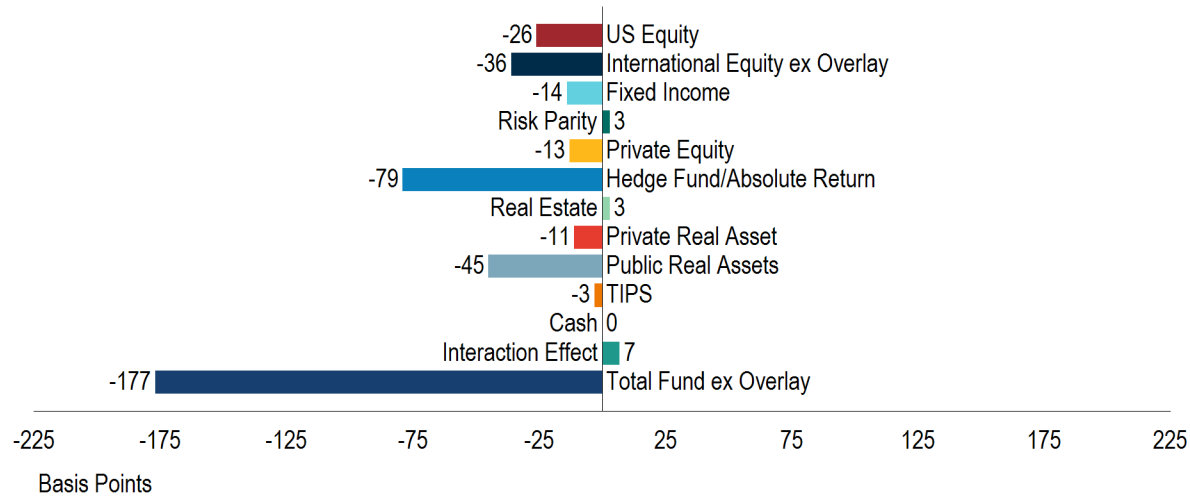


	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction *	Total Effects
Public Equity	-21.99%	-21.47%	-0.52%	0.00%	0.00%	0.00%	0.00%
Public Equity ex Overlay	-22.90%	-21.47%	-1.43%	-0.63%	0.15%	0.01%	-0.47%
Fixed Income	-2.43%	-1.76%	-0.66%	-0.14%	0.03%	0.00%	-0.11%
Risk Parity	-12.15%	-12.44%	0.29%	0.03%	0.02%	0.04%	0.08%
Alternatives	-1.93%	5.48%	-7.41%	-0.82%	0.03%	-0.05%	-0.83%
Inflation Hedge	-12.63%	-8.89%	-3.74%	-0.64%	0.00%	0.01%	-0.63%
Cash	0.26%	0.37%	-0.12%	0.00%	0.24%	0.00%	0.24%
Total	-12.84%	-11.12%	-1.72%	-2.19%	0.46%	0.01%	-1.72%

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, 2020

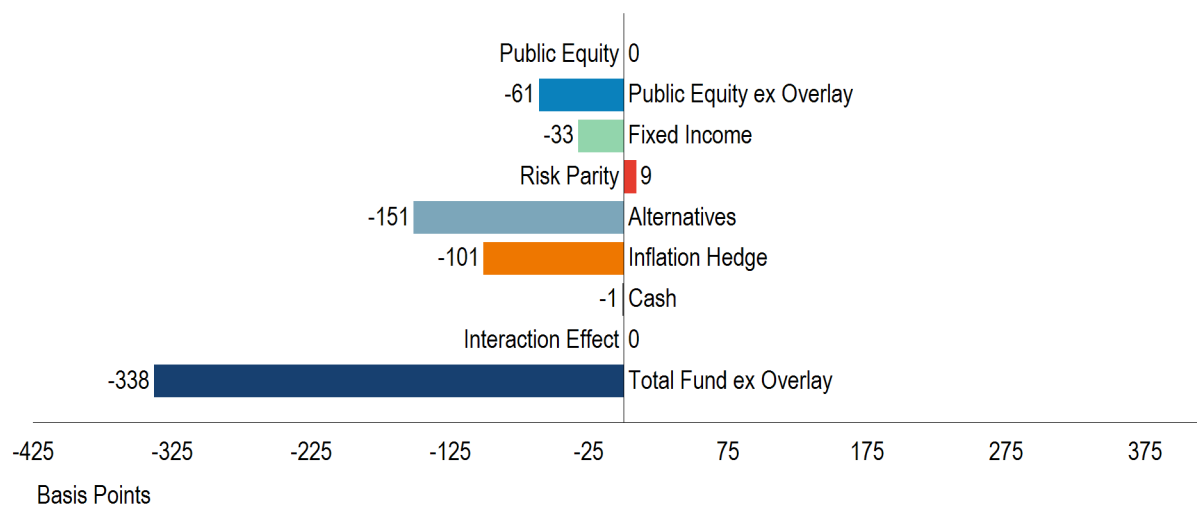


	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction *	Total Effects
US Equity	-22.01%	-20.90%	-1.11%	-0.26%	0.05%	0.00%	-0.21%
International Equity ex Overlay	-24.00%	-22.18%	-1.82%	-0.36%	0.09%	0.01%	-0.26%
Fixed Income	-2.43%	-1.76%	-0.66%	-0.14%	0.03%	0.00%	-0.11%
Risk Parity	-12.15%	-12.44%	0.29%	0.03%	0.02%	0.04%	0.08%
Private Equity	7.35%	9.83%	-2.48%	-0.13%	0.10%	-0.03%	-0.06%
Hedge Fund/Absolute Return	-12.33%	1.24%	-13.57%	-0.79%	-0.02%	0.02%	-0.79%
Real Estate	1.31%	0.97%	0.34%	0.03%	0.07%	0.00%	0.10%
Private Real Asset	0.57%	6.51%	-5.93%	-0.11%	-0.01%	0.00%	-0.12%
Public Real Assets	-33.95%	-27.07%	-6.87%	-0.45%	-0.05%	-0.01%	-0.52%
TIPS	--	3.51%	--	-0.03%	-0.12%	0.03%	-0.12%
Cash	0.26%	0.37%	-0.12%	0.00%	0.24%	0.00%	0.24%
Total	-12.89%	-11.11%	-1.77%	-2.22%	0.39%	0.07%	-1.77%

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, 2020

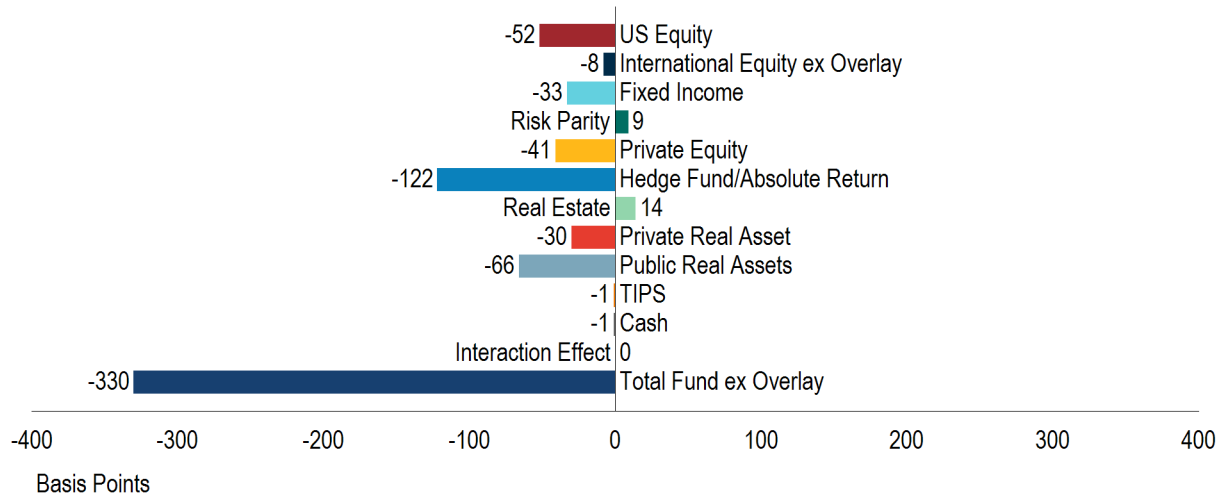


	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction *	Total Effects
Public Equity	-12.09%	-11.46%	-0.63%	0.00%	0.00%	0.00%	0.00%
Public Equity ex Overlay	-12.97%	-11.46%	-1.51%	-0.61%	0.00%	0.00%	-0.61%
Fixed Income	2.72%	4.34%	-1.62%	-0.33%	0.00%	0.00%	-0.33%
Risk Parity	-2.75%	-3.48%	0.73%	0.09%	0.00%	0.00%	0.09%
Alternatives	5.90%	19.47%	-13.57%	-1.51%	0.00%	0.00%	-1.51%
Inflation Hedge	-9.47%	-3.73%	-5.74%	-1.01%	0.00%	0.00%	-1.01%
Cash	1.14%	1.85%	-0.71%	-0.01%	0.00%	0.00%	-0.01%
Total	-5.25%	-1.87%	-3.38%	-3.38%	0.00%	0.00%	-3.38%

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, 2020



	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction *	Total Effects
US Equity	-11.32%	-9.13%	-2.19%	-0.52%	0.00%	0.00%	-0.52%
International Equity ex Overlay	-14.93%	-14.21%	-0.71%	-0.08%	0.00%	0.00%	-0.08%
Fixed Income	2.72%	4.34%	-1.62%	-0.33%	0.00%	0.00%	-0.33%
Risk Parity	-2.75%	-3.48%	0.73%	0.09%	0.00%	0.00%	0.09%
Private Equity	26.96%	34.02%	-7.06%	-0.41%	0.00%	0.00%	-0.41%
Hedge Fund/Absolute Return	-15.19%	5.97%	-21.16%	-1.22%	0.00%	0.00%	-1.22%
Real Estate	6.71%	4.88%	1.84%	0.14%	0.00%	0.00%	0.14%
Private Real Asset	1.59%	21.53%	-19.94%	-0.30%	0.00%	0.00%	-0.30%
Public Real Assets	-32.46%	-23.61%	-8.85%	-0.66%	0.00%	0.00%	-0.66%
TIPS	--	8.76%	--	-0.01%	0.00%	0.00%	-0.01%
Cash	1.14%	1.85%	-0.71%	-0.01%	0.00%	0.00%	-0.01%
Total	-5.29%	-1.99%	-3.30%	-3.30%	0.00%	0.00%	-3.30%

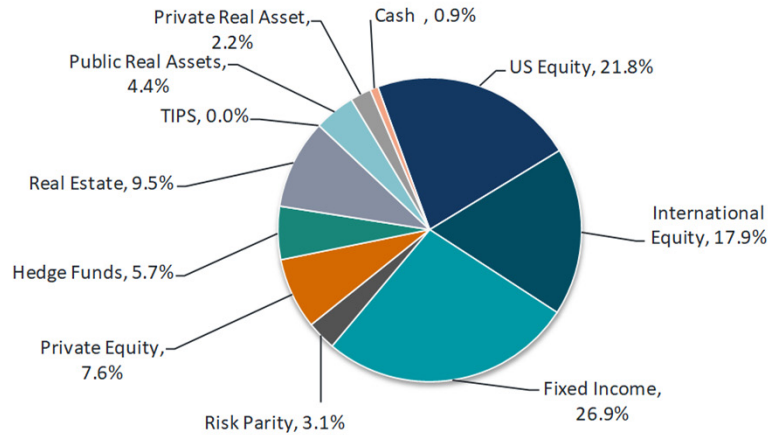
Attribution does not include the impact of the Parametric Minneapolis strategy.
* Interaction Effects include Residual Effects.

Total Fund

Asset Allocation Analysis

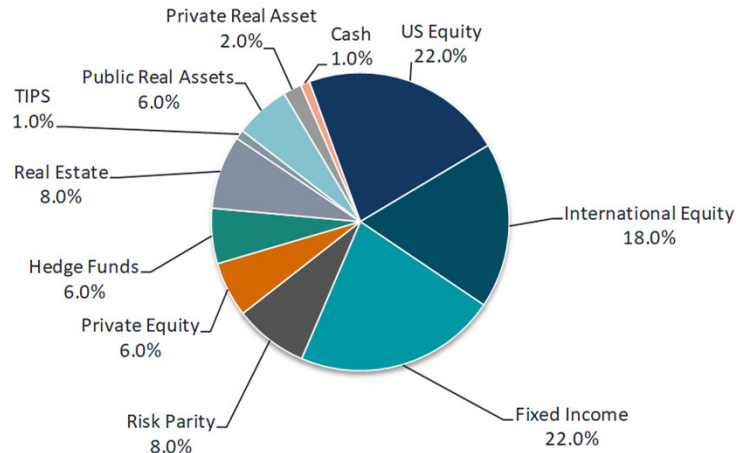
Period Ending: March 31, 2020

Current w/ Overlay



ASSET ALLOCATION	MARKET VALUE W/ OVERLAY	W/ OVERLAY	W/O OVERLAY
US Equity	955,621,833	21.8%	20.7%
International Equity	781,720,746	17.9%	17.0%
Fixed Income	1,178,748,985	26.9%	26.4%
Risk Parity	136,903,348	3.1%	3.1%
Private Equity	331,252,571	7.6%	7.6%
Hedge Funds	247,536,287	5.7%	5.7%
Real Estate	416,860,191	9.5%	9.5%
TIPS	0	0.0%	0.0%
Public Real Assets	190,626,719	4.4%	4.4%
Private Real Asset	97,457,691	2.2%	2.2%
Cash	37,230,046	0.9%	3.4%
TOTAL	4,373,958,417	100.0%	100.0%

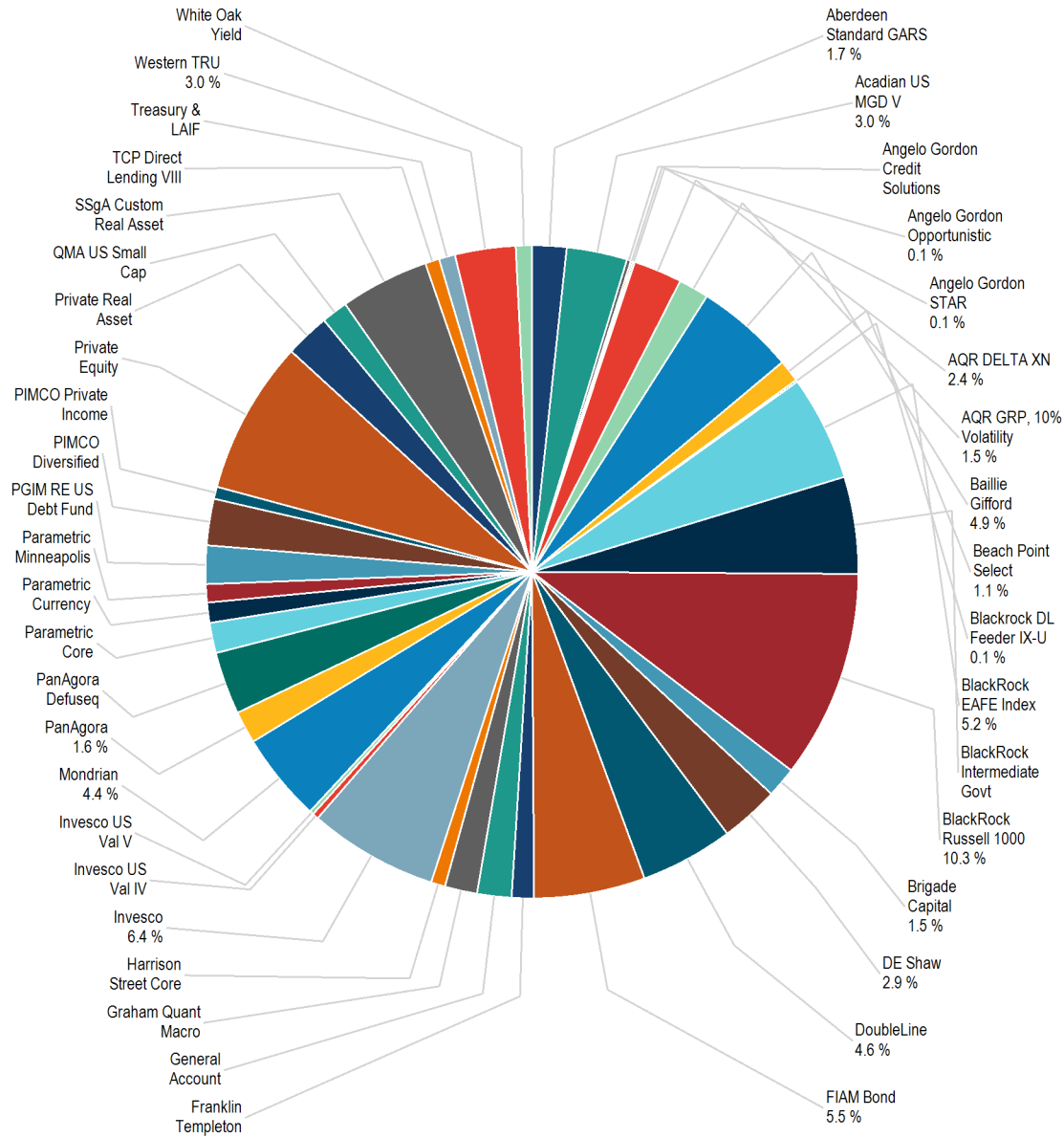
Target



ASSET ALLOCATION	W/ OVERLAY	TARGET	DIFF
US Equity	21.8%	22.0%	-0.2%
International Equity	17.9%	18.0%	-0.1%
Fixed Income	26.9%	22.0%	4.9%
Risk Parity	3.1%	8.0%	-4.9%
Private Equity	7.6%	6.0%	1.6%
Hedge Funds	5.7%	6.0%	-0.3%
Real Estate	9.5%	8.0%	1.5%
TIPS	0.0%	1.0%	-1.0%
Public Real Assets	4.4%	6.0%	-1.6%
Private Real Asset	2.2%	2.0%	0.2%
Cash	0.9%	1.0%	-0.1%
TOTAL	100.0%	100.0%	0.0%

Total Fund Manager Allocation Analysis

Period Ending: March 31, 2020



	Actual	Actual
Aberdeen Standard GARS	\$73,515,573	2%
Acadian US MGD V	\$133,233,462	3%
Angelo Gordon Credit Solutions	\$8,750,781	0%
Angelo Gordon Opportunistic	\$3,063,385	0%
Angelo Gordon STAR	\$2,949,326	0%
AQR DELTA XN	\$103,557,464	2%
AQR GRP, 10% Volatility	\$67,226,250	2%
Baillie Gifford	\$213,773,112	5%
Beach Point Select	\$48,083,380	1%
Blackrock DL Feeder IX-U	\$2,458,242	0%
BlackRock EAFE Index	\$226,952,946	5%
BlackRock Intermediate Govt	\$208,865,785	5%
BlackRock Russell 1000	\$452,478,069	10%
Brigade Capital	\$66,530,324	2%
Cushing MLP Alpha TR	\$66,770	0%
DE Shaw	\$126,200,819	3%
DoubleLine	\$200,536,434	5%
FIAM Bond	\$240,109,938	5%
Franklin Templeton	\$48,533,393	1%
General Account	\$72,810,120	2%
Graham Quant Macro	\$70,463,250	2%
Harrison Street Core Property	\$30,000,000	1%
Invesco	\$277,783,770	6%
Invesco US Val IV	\$14,643,008	0%
Invesco US Val V	\$9,250,743	0%
Mondrian	\$190,897,824	4%
PanAgora	\$69,677,098	2%
PanAgora Defuseq	\$136,905,611	3%
Parametric Core	\$65,554,331	1%
Parametric Currency Overlay	\$44,816,913	1%
Parametric Minneapolis Overlay	\$39,680,227	1%
PGIM RE US Debt Fund	\$85,182,670	2%
PIMCO Diversified	\$102,730,971	2%
PIMCO Private Income	\$27,263,131	1%
Private Equity	\$331,252,571	8%
Private Real Asset	\$97,457,691	2%
QMA US Small Cap	\$58,192,716	1%
SSgA Custom Real Asset	\$190,559,950	4%
TCP Direct Lending VIII	\$32,261,599	1%
Transition 3	\$8	0%
Treasury & LAIF	\$36,657,902	1%
Western TRU	\$129,900,961	3%
White Oak Yield	\$33,129,900	1%
Total	\$4,373,958,417	100%

Statistics Summary

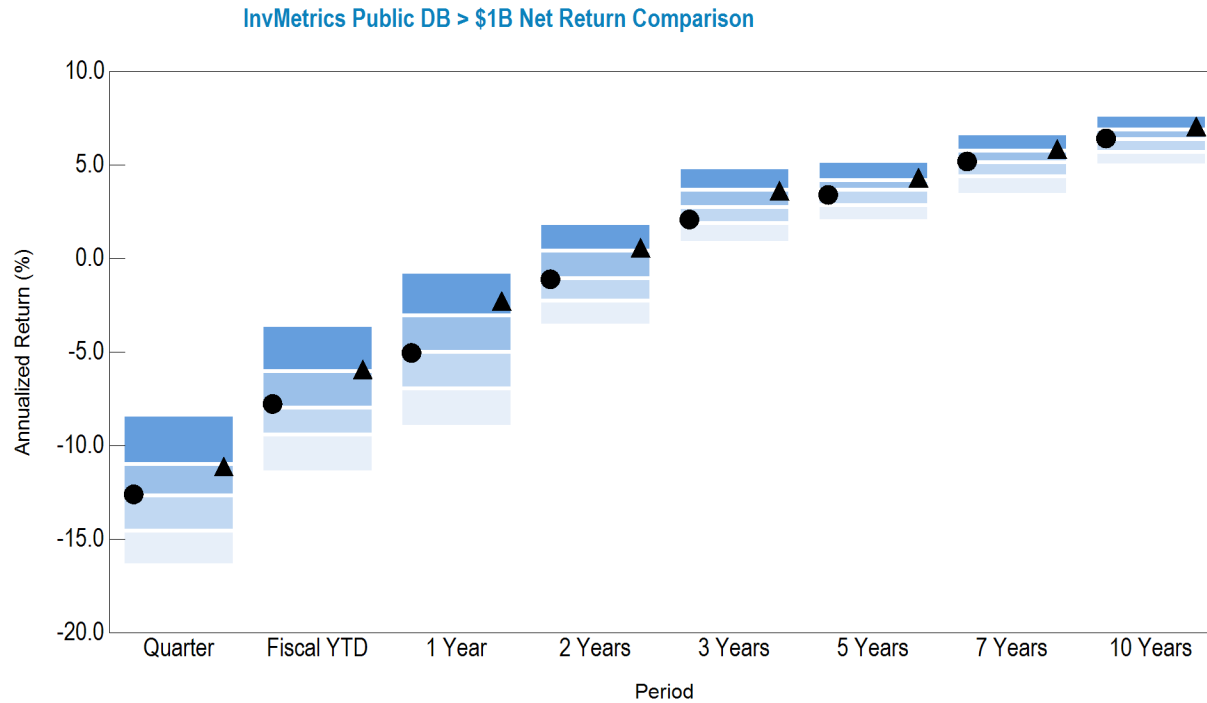
3 Years

	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	2.1%	68	8.3%	49	0.0	70	-1.3	95	1.2%	57
Policy Index	3.6%	27	7.9%	27	0.2	30	--	--	0.0%	1
InvMetrics Public DB > \$1B Net Median	2.8%	--	8.5%	--	0.1	--	0.0	--	1.2%	--

Statistics Summary

5 Years

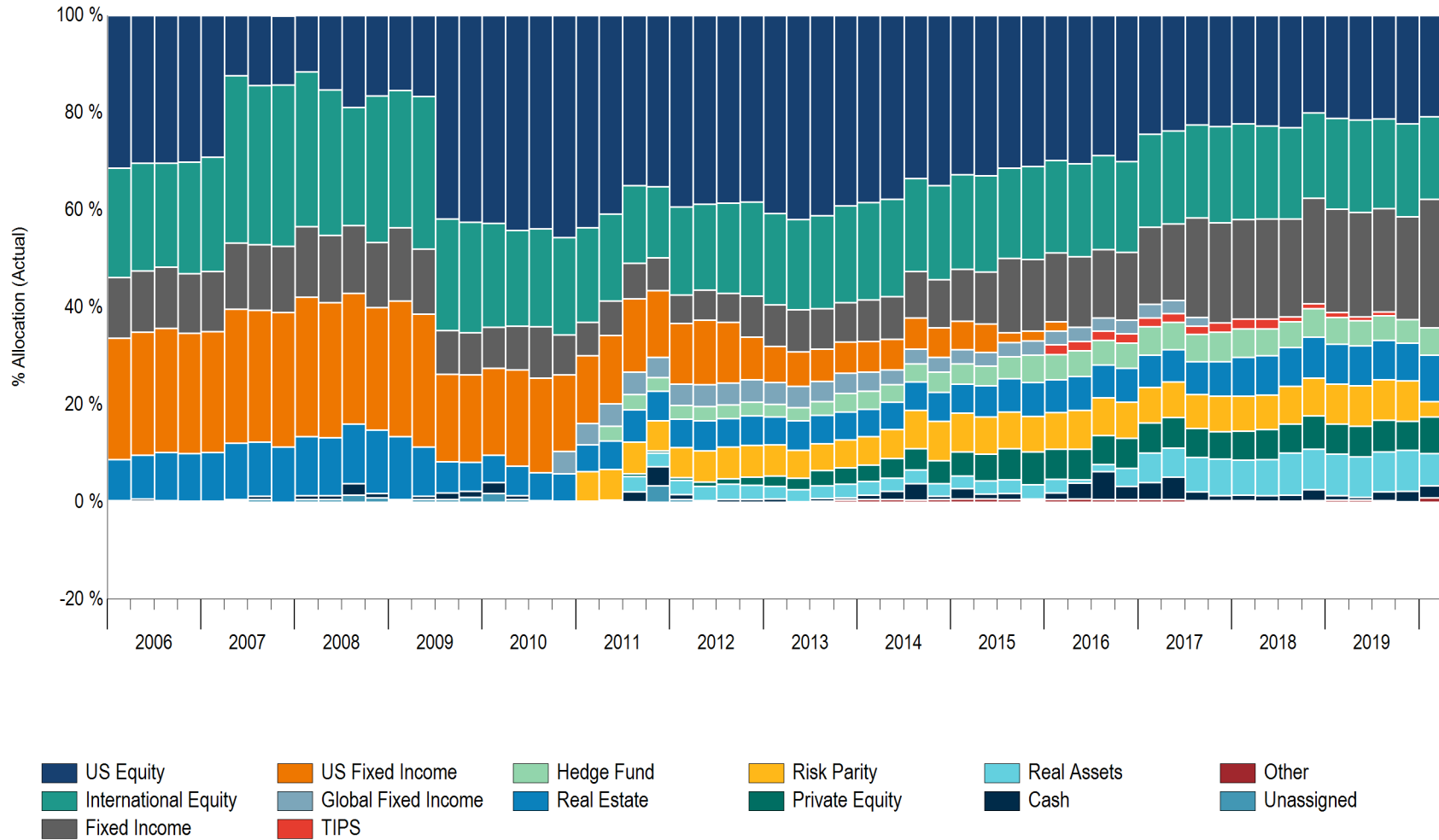
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
Total Fund	3.4%	57	7.7%	47	0.3	53	-0.8	88	1.2%	52
Policy Index	4.3%	24	7.7%	44	0.4	32	--	--	0.0%	1
InvMetrics Public DB > \$1B Net Median	3.7%	--	7.8%	--	0.3	--	-0.1	--	1.2%	--



	Quarter	Fiscal YTD	1 Year	2 Years	3 Years	5 Years	7 Years	10 Years
Return (Rank)								
5th Percentile	-8.3	-3.6	-0.7	1.9	4.9	5.2	6.7	7.7
25th Percentile	-10.9	-6.0	-3.0	0.5	3.7	4.2	5.8	6.9
Median	-12.6	-8.0	-5.0	-1.0	2.8	3.7	5.2	6.4
75th Percentile	-14.5	-9.4	-6.9	-2.2	1.9	2.9	4.4	5.7
95th Percentile	-16.4	-11.4	-9.0	-3.6	0.9	2.0	3.4	5.0
# of Portfolios	62	62	62	62	62	59	58	55
● Total Fund	-12.6 (48)	-7.8 (48)	-5.0 (55)	-1.1 (53)	2.1 (68)	3.4 (57)	5.2 (50)	6.4 (43)
▲ Policy Index	-11.1 (29)	-5.9 (24)	-2.3 (18)	0.6 (22)	3.6 (27)	4.3 (24)	5.9 (21)	7.1 (20)

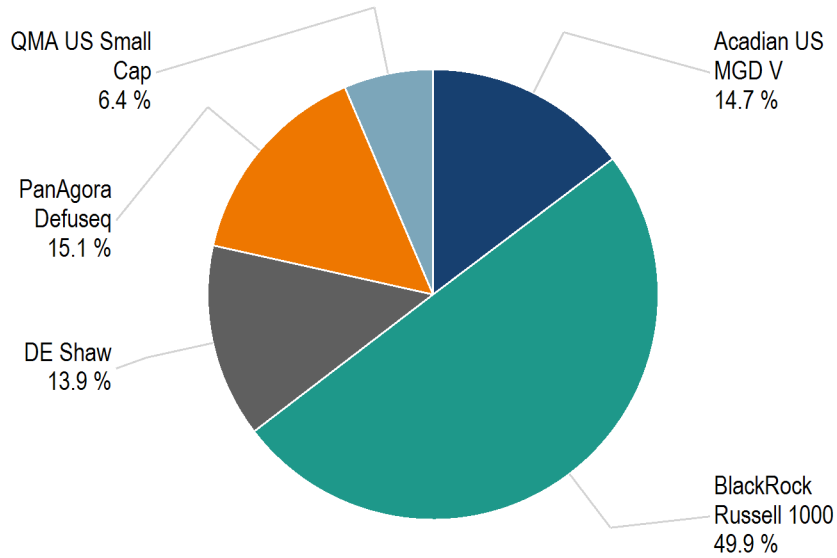
Total Fund
Asset Allocation History

Period Ending: March 31, 2020



US Equity
 Manager Allocation Analysis

Period Ending: March 31, 2020



	Actual \$	Actual %	Manager Contribution to Excess Return %
Acadian US MGD V	\$133,233,462	14.7%	-0.2%
BlackRock Russell 1000	\$452,478,069	49.9%	0.0%
DE Shaw	\$126,200,819	13.9%	-0.2%
PanAgora Defuseq	\$136,905,611	15.1%	-0.1%
QMA US Small Cap	\$58,192,716	6.4%	-0.5%
Transition Account	\$8	0.0%	0.0%
Actual vs. Policy Weight Difference			-0.2%
Total	\$907,010,684	100.0%	-1.1%

Statistics Summary

3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
US Equity	2.8%	15.7%	0.1	-1.2	1.0%
Blended US Equity Index	4.0%	15.8%	0.1	--	0.0%
Russell 3000	4.0%	15.8%	0.1	--	0.0%

Statistics Summary

3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Large Cap Equity	4.3%	15.1%	0.2	-0.3	1.1%
Russell 1000	4.6%	15.5%	0.2	--	0.0%
BlackRock Russell 1000	4.7%	15.5%	0.2	0.7	0.0%
Russell 1000	4.6%	15.5%	0.2	--	0.0%
DE Shaw	3.8%	15.4%	0.1	-0.4	2.3%
Russell 1000	4.6%	15.5%	0.2	--	0.0%
Small Cap Equity	-9.5%	23.2%	-0.5	-1.3	3.7%
Russell 2000	-4.6%	21.2%	-0.3	--	0.0%
QMA US Small Cap	-9.5%	23.2%	-0.5	-1.3	3.7%
Russell 2000	-4.6%	21.2%	-0.3	--	0.0%

Statistics Summary

5 Years

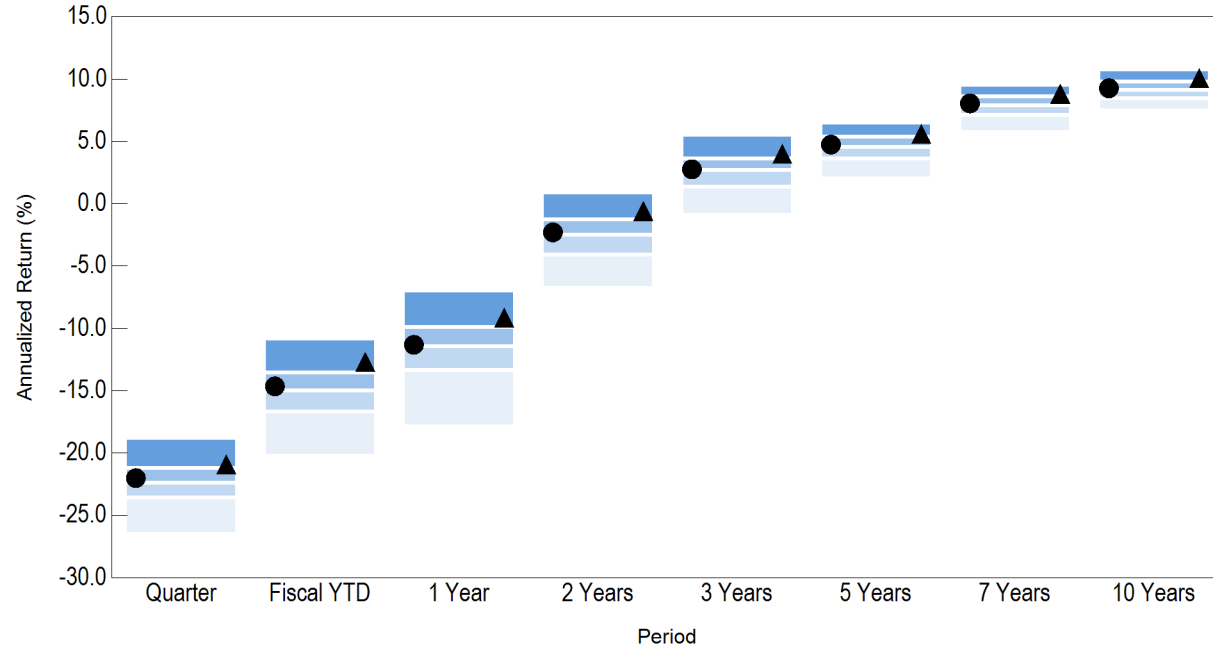
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
US Equity	4.7%	14.1%	0.3	-0.9	0.9%
Blended US Equity Index	5.6%	14.2%	0.3	--	0.0%
Russell 3000	5.8%	14.2%	0.3	0.4	0.4%

Statistics Summary

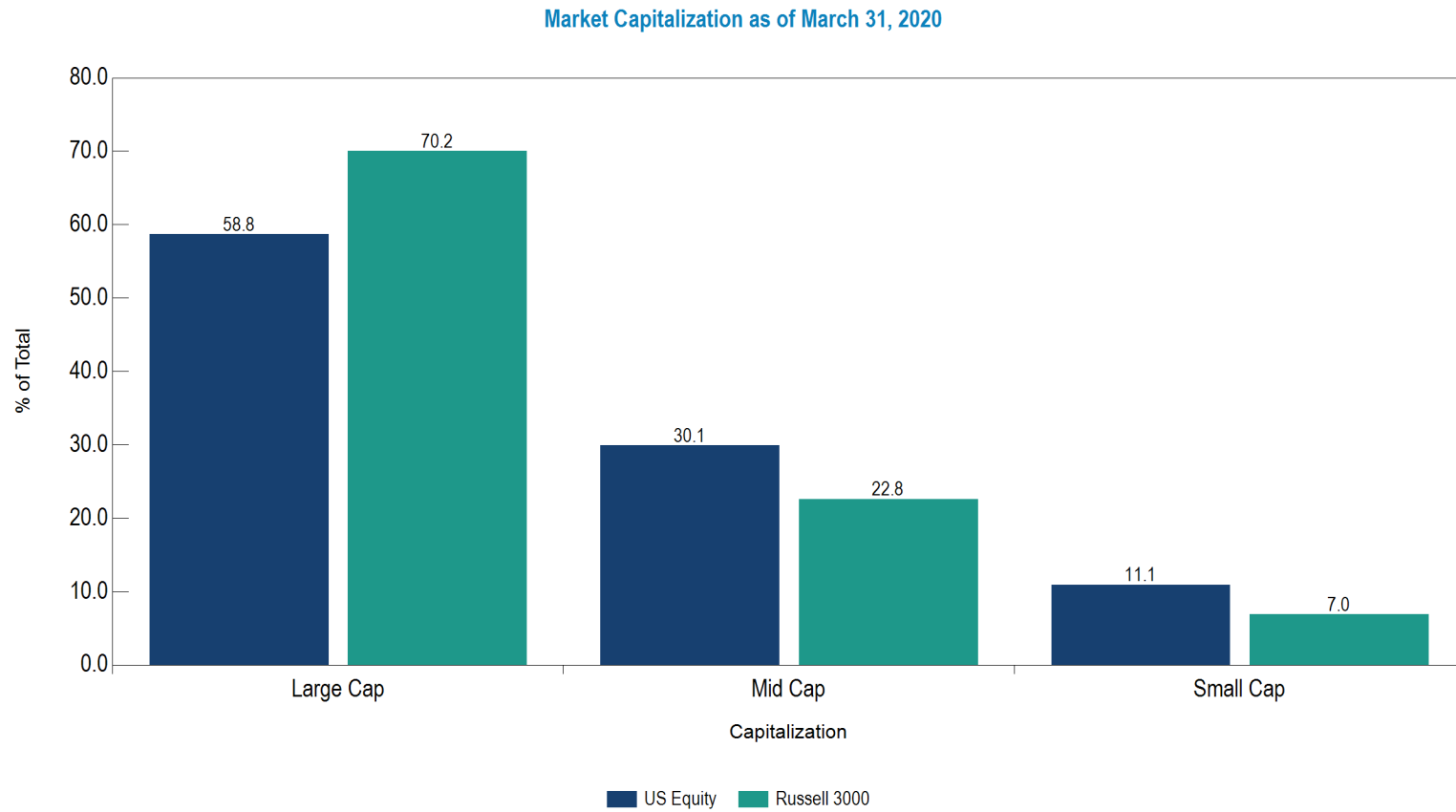
5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Large Cap Equity	6.3%	13.6%	0.4	0.1	1.2%
Russell 1000	6.2%	13.9%	0.4	--	0.0%
DE Shaw	6.3%	13.9%	0.4	0.0	2.2%
Russell 1000	6.2%	13.9%	0.4	--	0.0%
Small Cap Equity	-4.2%	20.3%	-0.3	-1.1	3.5%
Russell 2000	-0.2%	19.2%	-0.1	--	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	-18.8	-10.8	-7.0	0.9	5.5	6.5	9.5	10.8
25th Percentile	-21.2	-13.5	-9.9	-1.2	3.7	5.4	8.6	9.8
Median	-22.3	-14.9	-11.4	-2.4	2.7	4.6	7.9	9.2
75th Percentile	-23.5	-16.6	-13.3	-4.1	1.4	3.7	7.1	8.5
95th Percentile	-26.5	-20.2	-17.8	-6.7	-0.8	2.1	5.8	7.5
# of Portfolios	578	577	575	570	558	530	485	371
● US Equity	-22.0 (43)	-14.6 (44)	-11.3 (49)	-2.3 (48)	2.8 (49)	4.7 (45)	8.1 (47)	9.3 (47)
▲ Blended US Equity Index	-20.9 (20)	-12.7 (14)	-9.1 (15)	-0.6 (16)	4.0 (18)	5.6 (21)	8.8 (17)	10.1 (15)



See appendix for the market capitalization breakpoints.

Characteristics

	Portfolio	Russell 3000
Number of Holdings	2,996	2,976
Weighted Avg. Market Cap. (\$B)	174.6	227.2
Median Market Cap. (\$B)	2.2	1.1
Price To Earnings	16.1	16.8
Price To Book	3.3	3.6
Price To Sales	2.3	2.5
Return on Equity (%)	22.4	21.9
Yield (%)	2.5	2.3
Beta (holdings; domestic)	1.0	1.0

Top Holdings

MICROSOFT	3.7%
APPLE	3.1%
AMAZON.COM	1.9%
JOHNSON & JOHNSON	1.5%
ALPHABET A	1.2%
VERIZON COMMUNICATIONS	1.2%
FACEBOOK CLASS A	1.1%
PROCTER & GAMBLE	1.0%
VISA 'A'	0.9%
JP MORGAN CHASE & CO.	0.9%

Best Performers

	Return %
ATHERSYS (ATHX)	143.9%
FORTY SEVEN (FTSV)	142.4%
KALA PHARMACEUTICALS (KALA)	138.2%
ADURO BIOTECH (ADRO)	132.2%
TOCAGEN (TOCA)	128.8%
INOVIO PHARMACEUTICALS (INO)	125.5%
NEON THERAPEUTICS (NTGN)	123.7%
ZOOM VIDEO COMMUNICATIONS A (ZM)	114.8%
CYTOSORBENTS (CTSO)	100.8%
TELADOC HEALTH (TDOC)	85.2%

Worst Performers

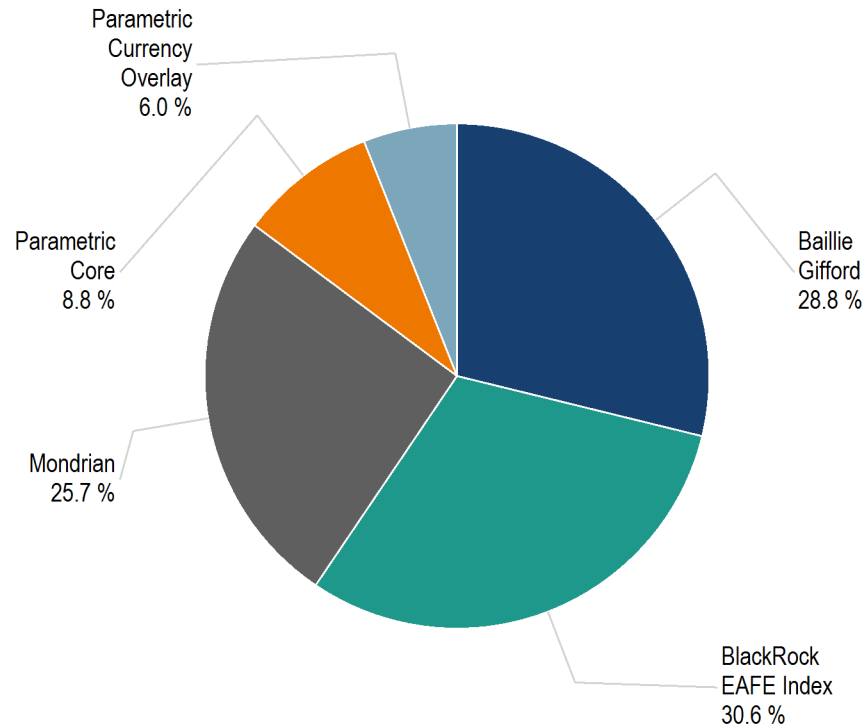
	Return %
INTERNAP (INAPQ)	-97.2%
PIER 1 IMPORTS (PIRRQ)	-96.5%
STAGE STORES (SSINQ)	-95.5%
CENTENNIAL RSO.DEV.CL.A (CDEV)	-94.3%
VALARIS A (VAL)	-93.1%
INDEPENDENCE CNTRT.DRL. (ICD)	-93.0%
QEP RESOURCES (QEP)	-92.5%
MCDERMOTT INTL. (MDRIQ)	-91.4%
WHITING PETROLEUM (WLL)	-90.9%
AMPLIFY ENERGY (AMPY)	-90.4%

US Equity Performance Attribution vs. Russell 3000

	Total Effects	Attribution Effects				Returns		Sector Weights			
		Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	0.3%	0.1%	0.2%	0.0%	-50.3%	-51.9%	3.3%	4.1%			
Materials	0.0%	0.1%	0.0%	0.0%	-26.3%	-28.0%	3.3%	2.9%			
Industrials	0.0%	0.0%	0.0%	0.0%	-27.9%	-27.7%	9.2%	9.9%			
Consumer Discretionary	-0.6%	-0.5%	0.0%	-0.1%	-26.3%	-21.5%	11.4%	10.1%			
Consumer Staples	0.1%	0.0%	0.1%	0.0%	-11.7%	-11.2%	7.5%	6.5%			
Health Care	-0.2%	-0.2%	0.0%	0.0%	-14.2%	-13.0%	13.8%	14.1%			
Financials	-0.5%	-0.6%	0.1%	0.0%	-37.2%	-32.7%	12.9%	13.5%			
Information Technology	-0.5%	-0.3%	-0.2%	0.0%	-14.2%	-12.8%	19.8%	22.5%			
Communication Services	-0.2%	-0.2%	0.0%	0.0%	-19.8%	-17.5%	9.0%	9.4%			
Utilities	0.1%	-0.1%	0.2%	-0.1%	-15.2%	-13.2%	5.9%	3.2%			
Real Estate	-0.2%	-0.2%	0.0%	0.0%	-29.3%	-24.4%	3.7%	4.0%			
Cash	0.0%	--	--	--	--	--	0.0%	0.0%			
Unclassified	0.0%	0.0%	0.0%	0.0%	-20.0%	-20.7%	0.2%	0.0%			
Portfolio	-1.6%	=	-1.9%	+	0.4%	+	0.0%	-22.3%	-20.7%	100.0%	100.0%

U.S. Effective Style Map





	Actual \$	Actual %	Manager Contribution to Excess Return %
Baillie Gifford	\$213,773,112	28.8%	1.0%
BlackRock EAFE Index	\$226,952,946	30.6%	0.0%
Mondrian	\$190,897,824	25.7%	0.4%
Parametric Core	\$65,554,331	8.8%	-0.7%
Parametric Currency Overlay	\$44,816,913	6.0%	0.0%
Actual vs. Policy Weight Difference			-0.5%
Total	\$741,995,127	100.0%	0.2%

Statistics Summary

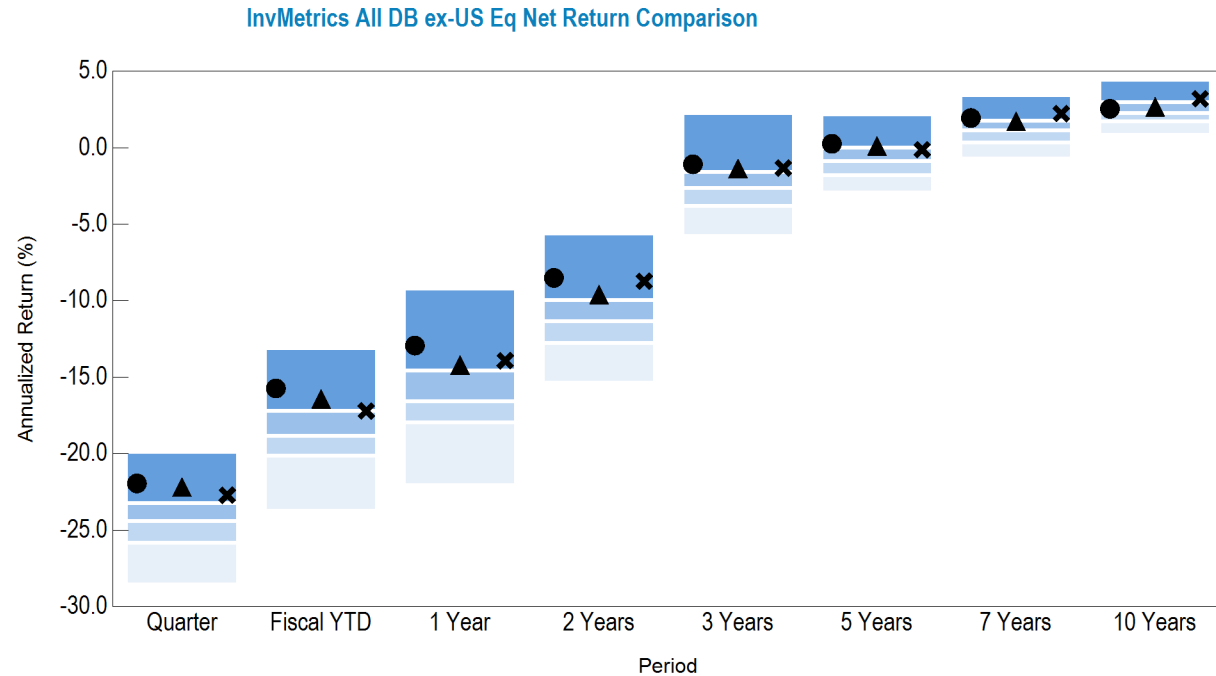
3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
International Equity	-1.1%	14.5%	-0.2	0.2	1.3%
Blended International Equity Index	-1.4%	14.6%	-0.2	--	0.0%
Developed Markets	-1.3%	15.2%	-0.2	0.1	1.8%
MSCI ACWI ex USA Gross	-1.5%	15.1%	-0.2	--	0.0%
Baillie Gifford	2.2%	15.5%	0.0	0.8	4.9%
MSCI ACWI ex US	-1.5%	15.1%	-0.2	--	0.0%
Mondrian	-4.6%	16.6%	-0.4	0.4	2.8%
MSCI ACWI ex USA Value Gross	-5.9%	16.9%	-0.5	--	0.0%
BlackRock EAFE Index	-1.5%	14.6%	-0.2	1.6	0.2%
MSCI EAFE	-1.8%	14.6%	-0.2	--	0.0%
Emerging Markets	-7.6%	18.0%	-0.5	-1.3	5.1%
MSCI Emerging Markets Gross	-1.3%	17.4%	-0.2	--	0.0%
Parametric Core	-7.6%	18.0%	-0.5	-1.3	5.1%
MSCI Emerging Markets Gross	-1.3%	17.4%	-0.2	--	0.0%

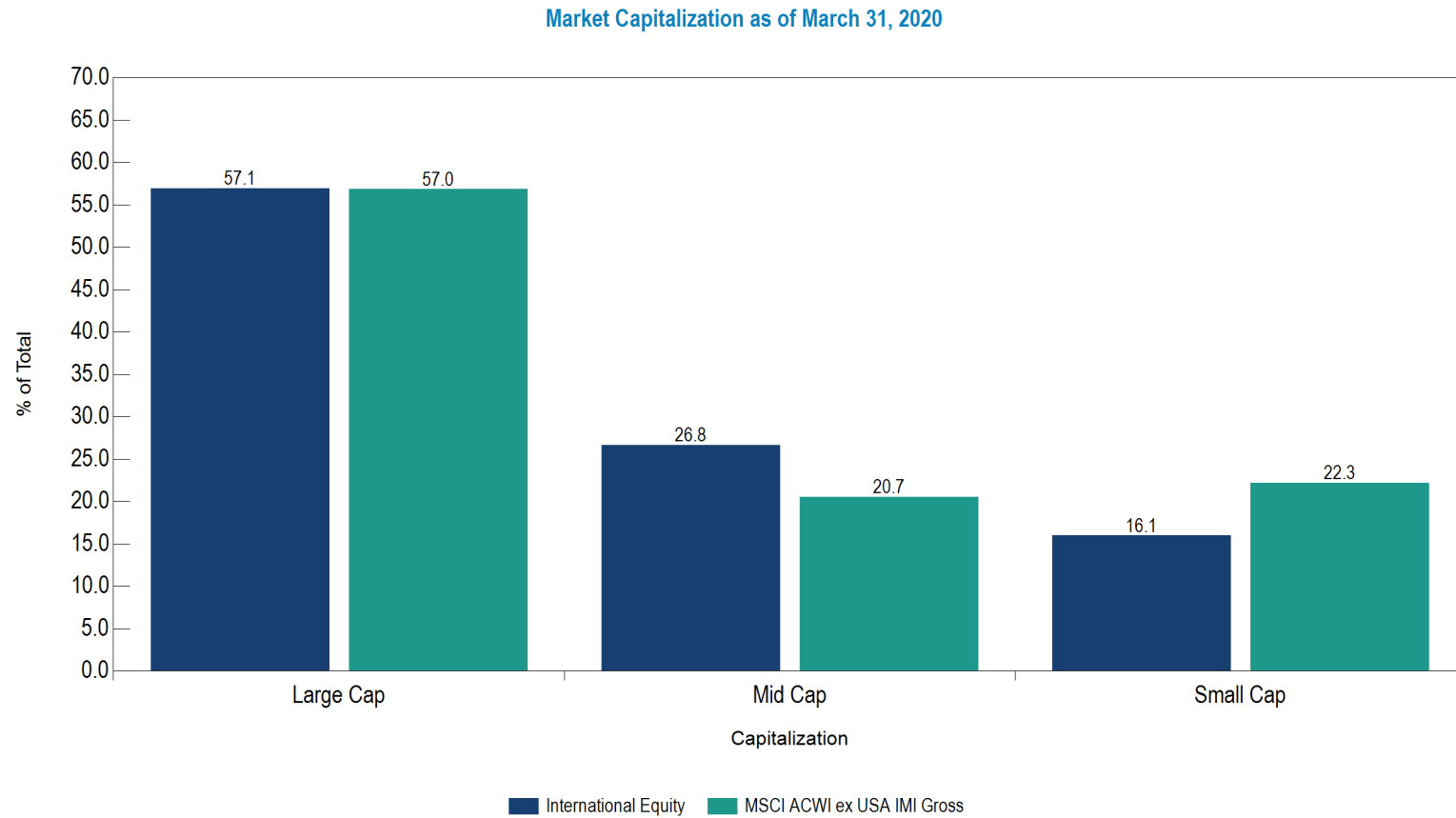
Statistics Summary

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
International Equity	0.3%	14.0%	-0.1	0.1	1.6%
Blended International Equity Index	0.1%	14.2%	-0.1	--	0.0%
Developed Markets	0.1%	14.4%	-0.1	0.1	2.0%
MSCI ACWI ex USA Gross	-0.2%	14.5%	-0.1	--	0.0%
Baillie Gifford	2.4%	15.2%	0.1	0.6	4.7%
MSCI ACWI ex US	-0.2%	14.5%	-0.1	--	0.0%
BlackRock EAFE Index	-0.3%	14.1%	-0.1	1.9	0.2%
MSCI EAFE	-0.6%	14.1%	-0.1	--	0.0%
Mondrian	-2.2%	15.0%	-0.2	0.2	4.1%
MSCI ACWI ex USA Value Gross	-2.9%	16.0%	-0.3	--	0.0%
Emerging Markets	-3.6%	17.4%	-0.3	-0.8	4.8%
MSCI Emerging Markets Gross	0.0%	17.6%	-0.1	--	0.0%



	Return (Rank)							
	Quarter	Fiscal YTD	1 Year	2 Years	3 Years	5 Years	7 Years	10 Years
5th Percentile	-19.9	-13.1	-9.2	-5.6	2.3	2.2	3.4	4.4
25th Percentile	-23.2	-17.2	-14.5	-10.0	-1.6	0.0	1.8	3.0
Median	-24.4	-18.8	-16.5	-11.3	-2.6	-0.9	1.2	2.3
75th Percentile	-25.8	-20.1	-17.9	-12.7	-3.8	-1.8	0.4	1.7
95th Percentile	-28.5	-23.7	-22.0	-15.3	-5.7	-2.9	-0.7	0.8
# of Portfolios	382	381	381	378	364	348	314	233
● International Equity	-22.0 (14)	-15.7 (15)	-12.9 (16)	-8.5 (15)	-1.1 (20)	0.3 (21)	1.9 (24)	2.5 (41)
▲ Blended International Equity Index	-22.2 (15)	-16.4 (20)	-14.2 (24)	-9.6 (22)	-1.4 (22)	0.1 (23)	1.7 (27)	2.7 (37)
✕ MSCI EAFE Gross	-22.7 (19)	-17.2 (26)	-13.9 (22)	-8.7 (16)	-1.3 (22)	-0.1 (29)	2.2 (18)	3.2 (22)



See appendix for the market capitalization breakpoints.

Characteristics

	Portfolio	MSCI ACWI ex USA IMI Gross
Number of Holdings	2,148	6,578
Weighted Avg. Market Cap. (\$B)	50.2	60.8
Median Market Cap. (\$B)	5.0	1.2
Price To Earnings	13.7	12.9
Price To Book	2.6	2.4
Price To Sales	1.3	1.3
Return on Equity (%)	15.3	14.8
Yield (%)	3.5	3.7
Beta (holdings; global)	1.0	0.9

Top Holdings

ALIBABA GROUP HOLDING ADR 1:8	1.4%
UNITED OVERSEAS BANK	1.1%
ASML HOLDING	1.0%
SANOFI	1.0%
NOVARTIS 'R'	1.0%
TAIWAN SEMICON.SPN.ADR 1:5	1.0%
AIA GROUP	1.0%
SHOPIFY 'A' (NYS)	1.0%
GLAXOSMITHKLINE	0.9%
NESTLE 'N'	0.8%

Best Performers

	Return %
CELLTRION HEALTHCARE (KO:CLL)	60.8%
GLOBAL POWER SYNERGY FB (Q:GPSF)	58.3%
SOHO CHINA (K:SOHO)	36.8%
TOP GLOVE CORPORATION (L:TOGL)	29.9%
BIOMERIEUX (F:BIM)	26.4%
CHUGAI PHARM. (J:CP@N)	24.8%
SPENCER S RETAIL (IN:SS3)	23.8%
NEXON (J:NXCL)	22.5%
SUN ART RETAIL GROUP (K:SARG)	22.3%
SARTORIUS STEDIM BIOTECH (F:DIM)	21.1%

Worst Performers

	Return %
SASOL (R:SOLJ)	-90.5%
NAMPAK (R:NPKJ)	-88.5%
TONGAAT-HULETT (R:TONJ)	-87.0%
FLIGHT CENTRE TRAVEL GP. (A:FLTX)	-80.4%
CVC BRA.OPD.E ACDV. ON (BR:CVC)	-80.3%
EOH (R:EOHJ)	-80.3%
AVIANCA HOLDING PREF. (CB:AVT)	-78.0%
BUMI ARMADA (L:ARMO)	-75.9%
ALSEA DE CV (MX:ALE)	-75.5%
REDEFINE PROPERTIES (R:RDFJ)	-75.5%

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	0.2%	-0.1%	0.2%	0.2%	-39.0%	-39.1%	4.4%	5.7%			
Materials	0.1%	-0.1%	0.1%	0.2%	-28.6%	-27.9%	5.2%	7.8%			
Industrials	0.0%	0.1%	-0.1%	0.0%	-26.6%	-27.4%	14.3%	13.0%			
Consumer Discretionary	-0.4%	-0.3%	0.0%	-0.1%	-28.5%	-25.8%	13.6%	12.0%			
Consumer Staples	-0.1%	-0.1%	0.0%	0.0%	-15.8%	-14.8%	9.1%	9.0%			
Health Care	-0.1%	-0.2%	0.1%	0.0%	-11.7%	-9.6%	9.6%	8.7%			
Financials	0.3%	-0.3%	0.2%	0.3%	-31.5%	-31.2%	17.0%	20.1%			
Information Technology	0.4%	0.3%	0.0%	0.1%	-14.3%	-18.6%	9.7%	9.6%			
Communication Services	-0.4%	-0.4%	0.1%	-0.1%	-22.1%	-15.4%	7.2%	6.4%			
Utilities	0.0%	0.0%	0.0%	0.0%	-15.5%	-16.6%	3.1%	3.4%			
Real Estate	0.0%	-0.3%	0.1%	0.2%	-36.0%	-27.2%	2.0%	4.3%			
Cash	1.0%	0.0%	1.0%	0.0%	0.4%	--	4.6%	0.0%			
Unclassified	0.0%	0.0%	0.0%	0.0%	-2.6%	-24.0%	0.0%	0.0%			
Portfolio	1.0%	=	-1.3%	+	1.6%	+	0.7%	-23.0%	-24.0%	100.0%	100.0%

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	
Europe									
Austria	-42.9%	-38.2%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Belgium	-33.4%	-28.7%	0.3%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%
Czech Republic*	-32.7%	-37.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Denmark	-20.7%	-9.3%	1.0%	1.2%	-0.1%	0.0%	0.0%	0.0%	-0.1%
Finland	-14.1%	-20.5%	0.7%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
France	-28.4%	-27.5%	5.3%	6.8%	-0.1%	0.1%	0.0%	0.0%	0.0%
Germany	-27.2%	-27.3%	7.3%	5.6%	0.0%	-0.1%	0.0%	0.0%	-0.1%
Greece*	-39.5%	-42.8%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Hungary*	-33.9%	-38.7%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Ireland	-14.7%	-27.4%	0.5%	0.4%	0.1%	0.0%	0.0%	0.0%	0.1%
Italy	-25.5%	-29.2%	1.7%	1.7%	0.1%	0.0%	0.0%	0.0%	0.1%
Luxembourg	-48.4%	-24.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Netherlands	-20.8%	-21.6%	2.6%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%
Norway	-33.3%	-36.5%	0.2%	0.6%	0.0%	0.0%	0.0%	0.0%	0.1%
Poland*	-32.8%	-36.0%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Portugal	7.1%	-19.2%	0.4%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%
Russia*	-38.5%	-36.4%	1.1%	1.0%	-0.1%	0.0%	0.1%	0.0%	0.0%
Spain	-32.8%	-29.8%	2.0%	1.8%	-0.1%	0.0%	0.0%	0.0%	-0.1%
Sweden	-17.1%	-22.6%	3.0%	2.1%	0.1%	0.0%	0.0%	0.0%	0.1%
Switzerland	-14.8%	-11.7%	4.9%	5.9%	-0.2%	-0.1%	0.0%	0.0%	-0.2%
United Kingdom	-32.9%	-29.6%	13.4%	10.8%	-0.4%	-0.1%	-0.1%	-0.1%	-0.7%

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

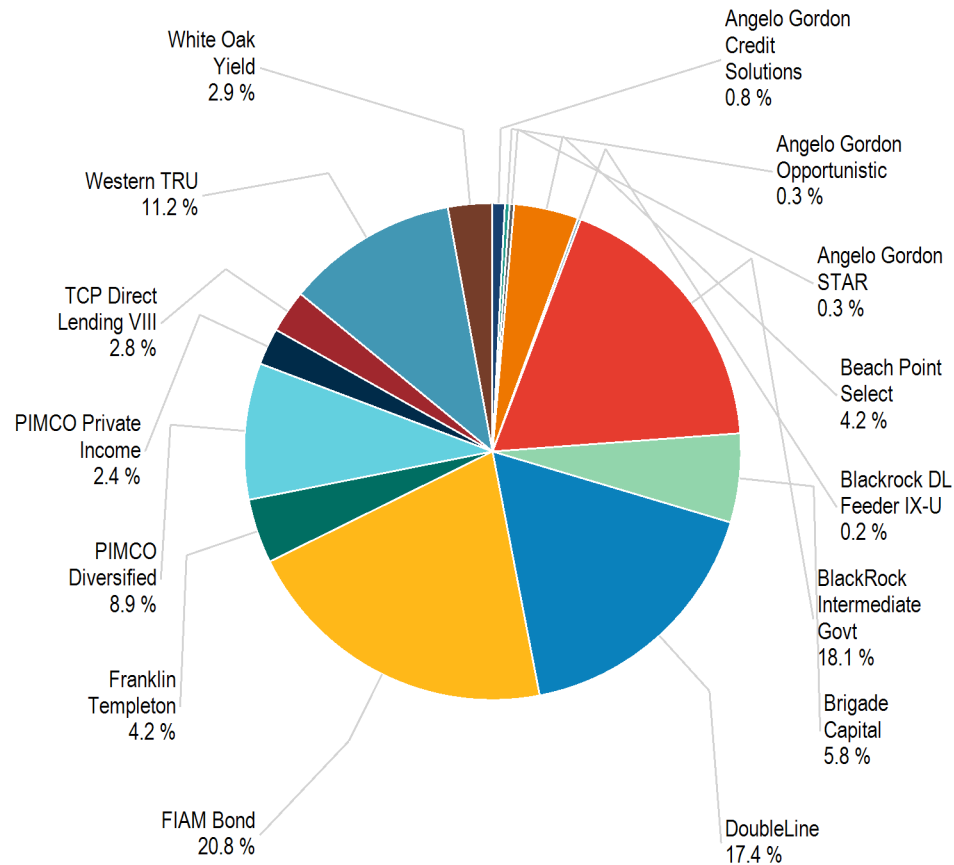
	Returns and Weights				Attribution Effects				Total Effects	
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect		
AsiaPacific										
Australia	-34.6%	-33.7%	3.4%	4.6%	-0.1%	0.0%	0.1%	0.0%	0.1%	
China*	-15.1%	-10.6%	4.1%	8.3%	-0.4%	-0.4%	0.0%	0.2%	-0.6%	
Hong Kong	-18.5%	-17.6%	4.3%	2.2%	0.0%	0.1%	0.0%	0.0%	0.0%	
India*	-31.2%	-31.8%	3.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	
Indonesia*	-42.5%	-41.1%	0.4%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	
Japan	-15.0%	-17.4%	18.5%	17.1%	0.4%	0.0%	0.0%	0.0%	0.5%	
Korea*	-21.6%	-22.6%	1.8%	3.3%	0.0%	0.0%	0.1%	0.0%	0.0%	
Malaysia*	-23.1%	-21.3%	0.7%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	
New Zealand	-24.3%	-22.8%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
Pakistan*	-35.4%	-34.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Philippines*	-29.6%	-32.8%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	
Singapore	-29.2%	-28.2%	2.4%	0.9%	0.0%	0.0%	0.0%	0.0%	-0.1%	
Taiwan*	-18.4%	-19.5%	2.4%	3.4%	0.0%	0.0%	0.0%	0.0%	0.0%	
Thailand*	-21.7%	-35.0%	0.4%	0.7%	0.1%	0.0%	0.0%	0.0%	0.1%	
Americas										
Argentina*	-51.0%	-43.6%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
Brazil*	-42.7%	-50.6%	1.8%	2.1%	0.2%	0.0%	0.0%	0.0%	0.2%	
Canada	-18.3%	-28.7%	1.2%	6.7%	0.4%	0.0%	0.4%	-0.3%	0.6%	
Chile*	-38.0%	-34.4%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
Colombia*	-44.4%	-49.7%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
Mexico*	-37.7%	-36.1%	1.0%	0.6%	0.0%	0.0%	0.0%	0.0%	-0.1%	
Peru*	-34.6%	-35.8%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
United States	-21.8%	-19.8%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

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	
Other									
Egypt*	-27.2%	-29.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Israel	-19.3%	-20.5%	0.1%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%
Kuwait**	-25.9%	-26.8%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Qatar*	-16.1%	-17.8%	0.2%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
Romania**	-28.4%	-30.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Saudi Arabia*	--	-23.5%	0.0%	0.7%	--	0.0%	0.0%	--	0.0%
South Africa*	-36.2%	-40.9%	1.2%	1.3%	0.1%	0.0%	0.0%	0.0%	0.1%
Turkey*	-28.8%	-29.6%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
United Arab Emirates*	-31.1%	-28.1%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Totals									
Americas	-32.0%	-34.3%	6.0%	9.9%	0.1%	0.2%	0.4%	0.0%	0.7%
Europe	-26.5%	-25.3%	45.1%	42.6%	-0.6%	0.0%	0.0%	0.0%	-0.7%
Asia/Pacific	-20.1%	-20.1%	42.2%	44.5%	-0.1%	-0.1%	0.2%	0.0%	0.0%
Other	-31.3%	-30.3%	2.1%	3.1%	0.1%	0.0%	0.0%	0.0%	0.1%
Cash	0.4%	--	4.6%	0.0%	0.0%	1.0%	0.0%	0.0%	1.0%
Total	-23.0%	-24.0%	100.0%	100.0%	-0.5%	1.1%	0.6%	-0.1%	1.0%
Totals									
Developed	-23.2%	-23.8%	75.0%	73.4%	0.0%	0.0%	0.4%	0.0%	0.4%
Emerging*	-27.5%	-24.6%	20.3%	26.6%	-0.6%	0.0%	0.1%	0.1%	-0.4%
Frontier**	-26.2%	--	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cash	0.4%	--	4.6%	0.0%	0.0%	1.0%	0.0%	0.0%	1.0%

Fixed Income Manager Allocation Analysis

Period Ending: March 31, 2020



	Actual \$	Actual %	Manager Contribution to Excess Return %
Angelo Gordon Credit Solutions	\$8,750,781	0.8%	0.1%
Angelo Gordon Opportunistic	\$3,063,385	0.3%	-0.1%
Angelo Gordon STAR	\$2,949,326	0.3%	-0.1%
Beach Point Select	\$48,083,380	4.2%	-0.1%
Blackrock DL Feeder IX-U	\$2,458,242	0.2%	0.0%
BlackRock Intermediate Govt	\$208,865,785	18.1%	0.0%
Brigade Capital	\$66,530,324	5.8%	-0.7%
DoubleLine	\$200,536,434	17.4%	0.0%
FIAM Bond	\$240,109,938	20.8%	-0.6%
Franklin Templeton	\$48,533,393	4.2%	-0.2%
PIMCO Diversified	\$102,730,971	8.9%	0.2%
PIMCO Private Income	\$27,263,131	2.4%	0.3%
TCP Direct Lending VIII	\$32,261,599	2.8%	-0.2%
Western TRU	\$129,900,961	11.2%	-1.3%
White Oak Yield	\$33,129,900	2.9%	-0.1%
Actual vs. Policy Weight Difference			2.1%
Total	\$1,155,167,550	100.0%	-0.7%

Fixed Income
Risk vs. Return (3 Years)

Period Ending: March 31, 2020

Statistics Summary

3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Fixed Income	3.1%	2.9%	0.5	-0.5	1.5%
Blended Fixed Income Index	3.8%	3.5%	0.6	--	0.0%
Core Fixed	3.8%	2.4%	0.9	-0.7	1.4%
BBgBarc US Aggregate TR	4.8%	3.2%	1.0	--	0.0%
BlackRock Intermediate Govt	4.3%	2.6%	1.0	3.5	0.0%
BBgBarc US Govt Int TR	4.1%	2.6%	0.9	--	0.0%
FIAM Bond	4.4%	3.3%	0.8	-0.4	1.2%
BBgBarc US Aggregate TR	4.8%	3.2%	1.0	--	0.0%
Western TRU	1.0%	5.8%	-0.1	-0.2	5.8%
3-Month Libor Total Return USD	2.1%	0.1%	2.2	--	0.0%
Opportunistic Credit	2.2%	5.8%	0.1	0.1	2.6%
BBgBarc BA Intermediate HY	1.9%	6.5%	0.0	--	0.0%
Angelo Gordon Opportunistic	5.1%	17.1%	0.2	0.0	17.1%
BBgBarc US Aggregate TR	4.8%	3.2%	1.0	--	0.0%
Angelo Gordon STAR	12.5%	10.8%	1.0	0.7	10.9%
BBgBarc US Aggregate TR	4.8%	3.2%	1.0	--	0.0%
Beach Point Select	1.7%	7.7%	0.0	-0.1	3.0%
BBgBarc BA Intermediate HY	1.9%	6.5%	0.0	--	0.0%
Brigade Capital	-2.9%	10.9%	-0.4	-0.8	5.8%
BBgBarc BA Intermediate HY	1.9%	6.5%	0.0	--	0.0%
Franklin Templeton	-2.0%	7.0%	-0.5	-0.7	7.8%
BBgBarc Multiverse TR	3.4%	3.9%	0.4	--	0.0%

Statistics Summary

3 Years

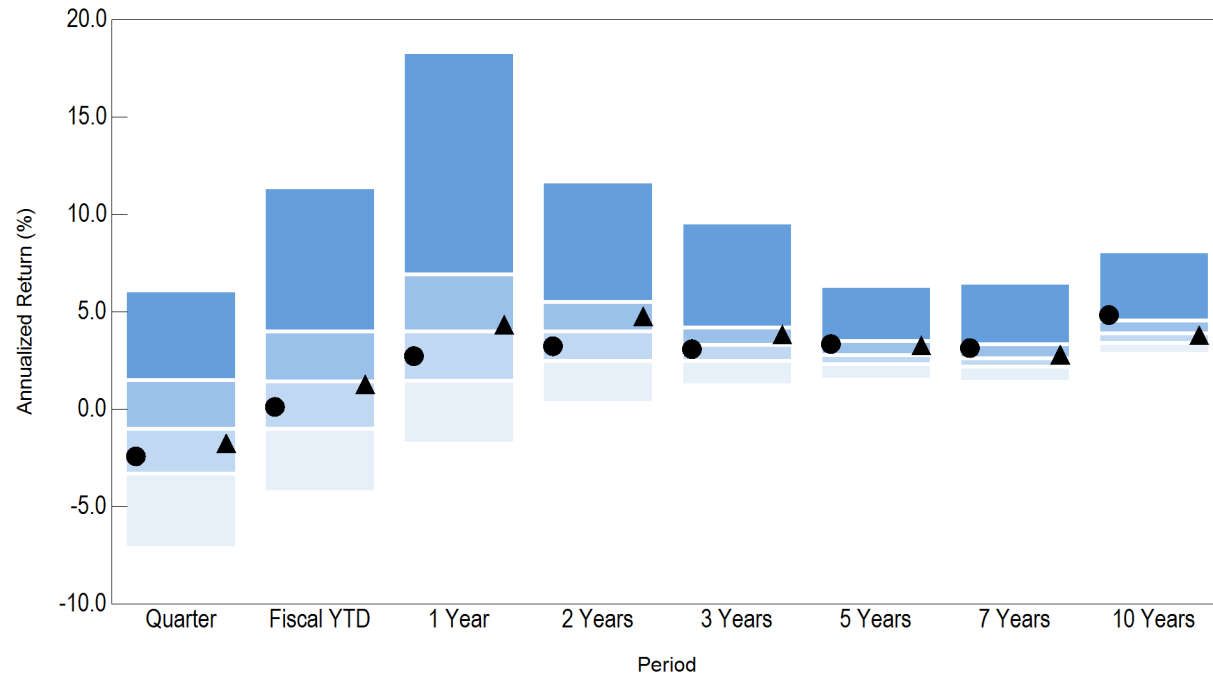
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Private Credit	6.3%	2.3%	2.0	-0.6	3.4%
Cliffwater Direct Lending Index	8.5%	3.5%	1.9	--	0.0%
TCP Direct Lending VIII	5.3%	3.5%	1.0	-0.6	5.5%
Cliffwater Direct Lending Index	8.5%	3.5%	1.9	--	0.0%

Statistics Summary

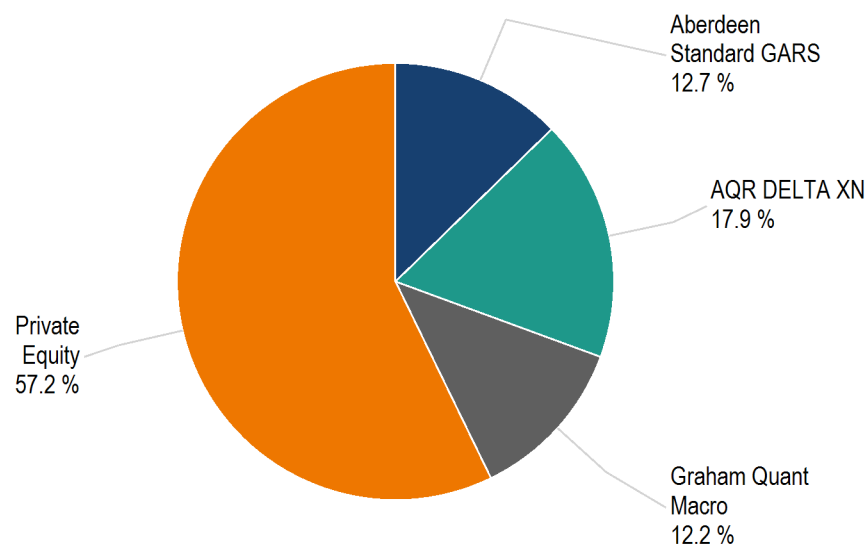
5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Fixed Income	3.3%	3.1%	0.7	0.0	1.9%
Blended Fixed Income Index	3.3%	3.3%	0.6	--	0.0%
Core Fixed	3.2%	2.7%	0.8	-0.1	1.7%
BBgBarc US Aggregate TR	3.4%	3.1%	0.7	--	0.0%
FIAM Bond	3.4%	3.3%	0.7	0.1	1.1%
BBgBarc US Aggregate TR	3.4%	3.1%	0.7	--	0.0%
Opportunistic Credit	4.0%	5.3%	0.5	0.3	2.9%
BBgBarc BA Intermediate HY	3.1%	5.9%	0.3	--	0.0%
Angelo Gordon Opportunistic	5.8%	13.5%	0.3	0.2	13.7%
BBgBarc US Aggregate TR	3.4%	3.1%	0.7	--	0.0%
Angelo Gordon STAR	10.0%	8.9%	1.0	0.7	9.2%
BBgBarc US Aggregate TR	3.4%	3.1%	0.7	--	0.0%
Beach Point Select	4.5%	6.7%	0.5	0.5	2.9%
BBgBarc BA Intermediate HY	3.1%	5.9%	0.3	--	0.0%
Brigade Capital	0.3%	10.1%	-0.1	-0.5	5.6%
BBgBarc BA Intermediate HY	3.1%	5.9%	0.3	--	0.0%
Franklin Templeton	0.4%	7.2%	-0.1	-0.3	8.5%
BBgBarc Multiverse TR	2.7%	4.6%	0.3	--	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	6.1	11.4	18.3	11.7	9.6	6.3	6.5	8.1
25th Percentile	1.5	4.0	6.9	5.5	4.2	3.5	3.3	4.6
Median	-1.0	1.4	4.0	4.0	3.3	2.8	2.6	3.9
75th Percentile	-3.3	-1.0	1.5	2.5	2.5	2.3	2.2	3.4
95th Percentile	-7.1	-4.2	-1.7	0.3	1.2	1.6	1.4	2.8
# of Portfolios	331	331	330	326	316	297	277	216
● Fixed Income	-2.4 (69)	0.1 (66)	2.7 (67)	3.2 (61)	3.1 (60)	3.3 (28)	3.1 (31)	4.8 (19)
▲ Blended Fixed Income Index	-1.8 (62)	1.3 (52)	4.3 (47)	4.8 (38)	3.8 (32)	3.3 (30)	2.8 (43)	3.8 (58)



	Actual \$	Actual %	Manager Contribution to Excess Return %
Aberdeen Standard GARS	\$73,515,573	12.7%	-0.8%
AQR DELTA XN	\$103,557,464	17.9%	-6.1%
Graham Quant Macro	\$70,463,250	12.2%	0.0%
Private Equity	\$331,252,571	57.2%	-1.4%
Actual vs. Policy Weight Difference			0.8%
Total	\$578,788,858	100.0%	-7.4%

Statistics Summary

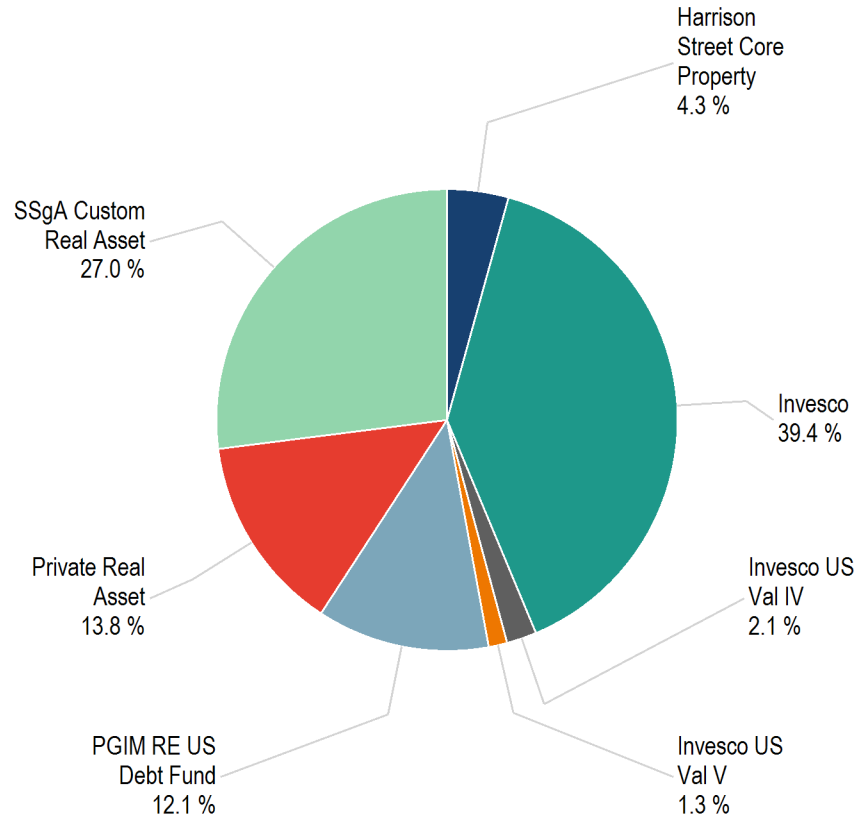
3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Alternatives	4.3%	7.3%	0.4	-0.8	8.3%
Blended Alternatives Index	10.8%	6.4%	1.4	--	0.0%
Private Equity	16.2%	11.5%	1.3	0.1	14.1%
Blended Private Equity Index	15.2%	12.5%	1.1	--	0.0%
Hedge Fund/Absolute Return	-7.9%	6.6%	-1.5	-2.1	6.6%
Libor 1 month +4%	5.9%	0.2%	26.3	--	0.0%
AQR DELTA XN	-15.2%	10.9%	-1.6	-1.9	10.9%
Libor 1 month +4%	5.9%	0.2%	26.3	--	0.0%
Aberdeen Standard GARS	1.1%	4.5%	-0.1	-1.1	4.5%
Libor 1 month +4%	5.9%	0.2%	26.3	--	0.0%

Statistics Summary

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Alternatives	6.0%	6.8%	0.7	-0.4	7.9%
Blended Alternatives Index	9.0%	6.2%	1.3	--	0.0%
Private Equity	16.9%	11.2%	1.4	0.2	14.1%
Blended Private Equity Index	13.7%	11.9%	1.1	--	0.0%
Hedge Fund/Absolute Return	-3.0%	6.2%	-0.7	-1.3	6.2%
Libor 1 month +4%	5.3%	0.2%	17.4	--	0.0%
AQR DELTA XN	-7.5%	9.5%	-0.9	-1.3	9.6%
Libor 1 month +4%	5.3%	0.2%	17.4	--	0.0%



	Actual \$	Actual %	Manager Contribution to Excess Return %
Cushing MLP Alpha TR	\$66,770	0.0%	-4.4%
Harrison Street Core Property	\$30,000,000	4.3%	0.0%
Invesco	\$277,783,770	39.4%	0.2%
Invesco US Val IV	\$14,643,008	2.1%	0.0%
Invesco US Val V	\$9,250,743	1.3%	0.0%
PGIM RE US Debt Fund	\$85,182,670	12.1%	0.0%
Private Real Asset	\$97,457,691	13.8%	-0.6%
SSgA Custom Real Asset	\$190,559,950	27.0%	0.2%
Actual vs. Policy Weight Difference			0.9%
Total	\$704,944,602	100.0%	-3.7%

Statistics Summary

3 Years

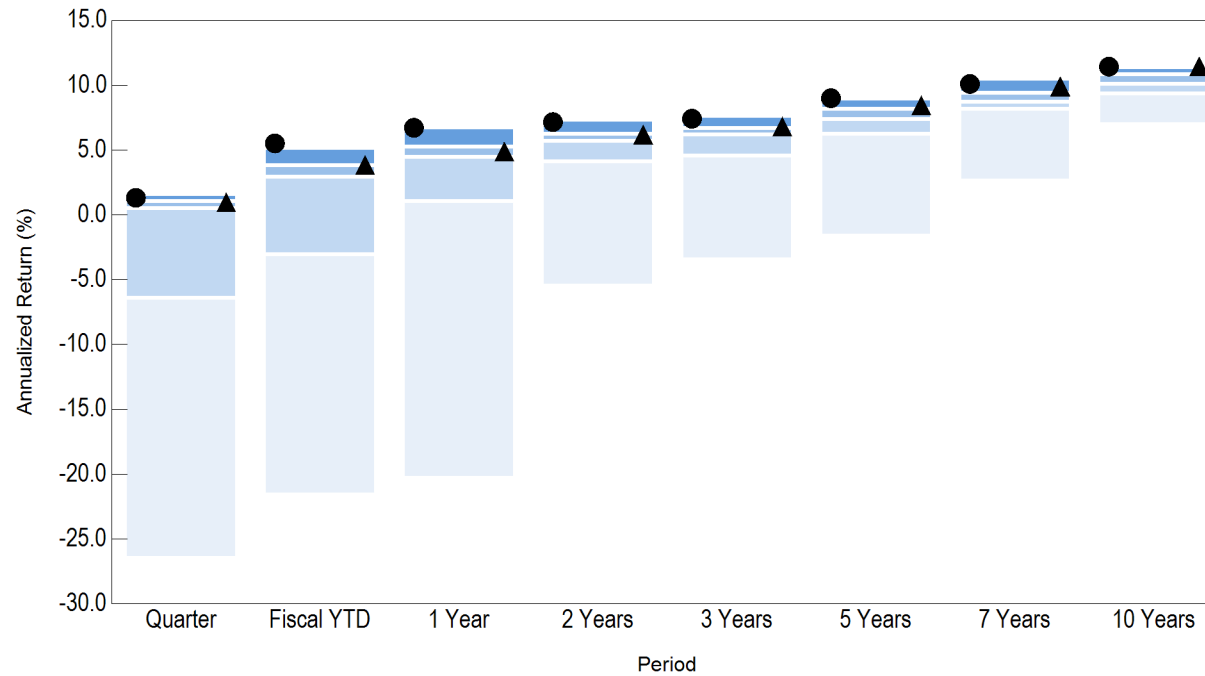
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Inflation Hedge	-0.6%	6.7%	-0.3	-1.2	2.2%
Blended Inflation Hedge Index	1.9%	5.3%	0.0	--	0.0%
Real Estate	7.4%	3.1%	1.8	0.9	0.7%
NCREIF ODCE	6.8%	2.9%	1.8	--	0.0%
Invesco	7.4%	3.1%	1.8	0.8	0.8%
NCREIF ODCE	6.8%	2.9%	1.8	--	0.0%
Invesco US Val IV	11.6%	5.5%	1.8	1.4	3.5%
NCREIF ODCE	6.8%	2.9%	1.8	--	0.0%
Private Real Asset	-5.0%	8.0%	-0.8	-0.9	11.6%
Blended Private Real Asset Index	5.6%	11.2%	0.3	--	0.0%
Public Real Assets	-9.9%	18.2%	-0.6	-0.9	4.4%
Blended Public Real Asset Index	-5.8%	14.8%	-0.5	--	0.0%
SSgA Custom Real Asset	-5.5%	14.6%	-0.5	1.0	0.4%
SSgA Custom Real Asset Index	-5.8%	14.8%	-0.5	--	0.0%

Statistics Summary

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error Rank
Real Estate	9.0%	4.0%	1.9	0.4	33
NCREIF ODCE	8.5%	3.7%	2.0	--	1
Invesco	8.9%	4.0%	1.9	0.4	--
NCREIF ODCE	8.5%	3.7%	2.0	--	--
Private Real Asset	4.8%	21.6%	0.2	-0.1	--
Blended Private Real Asset Index	6.0%	8.8%	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	1.6	5.2	6.7	7.3	7.6	9.0	10.5	11.4
25th Percentile	1.1	3.8	5.3	6.3	6.7	8.2	9.5	10.9
Median	0.5	3.0	4.5	5.7	6.2	7.4	8.7	10.1
75th Percentile	-6.4	-3.0	1.1	4.2	4.6	6.3	8.2	9.4
95th Percentile	-26.4	-21.5	-20.3	-5.4	-3.4	-1.6	2.7	7.0
# of Portfolios	95	95	92	91	87	86	76	61
● Real Estate	1.3 (15)	5.5 (1)	6.7 (7)	7.2 (7)	7.4 (9)	9.0 (5)	10.1 (7)	11.4 (5)
▲ NCREIF ODCE	1.0 (33)	3.8 (26)	4.9 (36)	6.2 (31)	6.8 (22)	8.5 (18)	9.9 (8)	11.4 (5)

Acadian Asset Management – Acadian U.S. Managed Volatility

Acadian attempts to take advantage of the mispricing of risk by building low-risk equity portfolios that hold predominantly low-risk stocks, and then also adding information on the correlation structure of equities to help further reduce risk through diversification.

Angelo, Gordon & Co. – AG STAR Fund

The STAR Fund will focus on CMBS and non-Agency RMBS priced between 25-75% of par, which AG believes are even today mispriced due to their complex nature and a dearth of natural buyers capable of accurately valuing these assets. In addition, AG will target securities that are well-positioned to benefit from home and commercial property price stabilization and recovery, and/or borrower credit quality improvement. In this regard the STAR Fund will be more aggressive than the PPIP Fund since it will target securities that are more geared to a recovery of the commercial and residential real estate markets. The Fund will utilize a moderate amount of leverage (1x to 1.5x) and is targeting a base-case 15% net IRR with a downside return in the mid/high single digits and an upside projection of 25%+ returns.

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

As bank balance sheets have strengthened since the crisis, Angelo Gordon expects approximately \$40 billion of re-performing loans and non-performing loans will trade hands each year in the near term. By acquiring these loans at a discounted price and replacing original servicers with better-focused special servicers, Angelo Gordon believes it can improve operational efficiency and generate attractive returns. To take advantage of this opportunity, Angelo Gordon established this Opportunistic Whole Loan Fund to make investments primarily in a portfolio of non-performing loans and re-performing, but will 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. Angelo Gordon has been an active participant in the residential and consumer debt market since 2008. The Partnership's investment approach to residential mortgage loans and securities is guided by an analytically based investment process anchored by distressed asset valuation and cash flow modeling. Angelo Gordon's analysis of re-performing and non-performing loans begins with its loan due diligence process. This process will include a review of substantially all of the properties in the pool, as well as a review of the loan files backing the loan pool. In addition, a macro overlay is embedded in the investment process which incorporates general economic trends, along with specific views on interest rates, unemployment, collateral appreciation or depreciation, governmental intervention in creditors' rights and liquidation timelines.

Angelo, Gordon & Co. – Credit Solutions

This fund is Angelo, Gordon's re-entry into the special situations private fund market. The fund expects to hold concentrated positions in the US and within Europe in both public and private markets.

AQR Capital Management - AQR Delta

The AQR DELTA Fund aims to deliver efficient exposure to a well-diversified portfolio of hedge fund strategies, including Convertible Arbitrage, Event Driven, Fixed Income Relative Value, Equity Market Neutral, Long/Short Equity, Dedicated Short Bias, Global Macro, Managed Futures, and Emerging Markets. The Delta Fund's approach is to capture and deliver the "hedge fund risk premiums" that explain much of the returns of each of these strategies by building bottom-up positions in each strategy. AQR's research has demonstrated that many hedge funds use similar strategies to generate returns. These strategies are often well-known, widely understood and share common exposures. AQR's experience and research suggests much of the insight underlying these strategies - as well as a meaningful portion of their returns - can be captured using a dynamic, disciplined investment approach. Just as the equity risk premium can explain a large portion of the returns from equity investing, hedge fund risk premiums can explain the returns from hedge fund investing. Importantly, while compensation for equity risk is dependent on economic growth, hedge fund risk premiums are largely unrelated to economic activity, and thus provide attractive diversification properties.

AQR – Risk Parity

The objective of Global Risk Parity (GRP) is to generate excess returns from a risk diversified portfolio of asset exposures. AQR believes that its approach maximizes the diversification benefit across a broad range of economic environments. For many institutional portfolios, equity risk has historically been the predominant risk and the source of most return expectations since equities offer higher expected returns to compensate for their high risk. Investor preference for and concentration in equities has been driven by their expected return needs, which cannot be satisfied in a well-diversified un-levered portfolio. GRP is a diversified portfolio that can be scaled to similar levels of risk as a portfolio concentrated in equities, but with a higher expected return resulting from diversification across asset class risk. The approach helps do away with the compromise of concentrating in high risk assets to meet high return needs. Consistent with portfolio theory, the GRP strategy is designed to maximize diversification across a broad spectrum of liquid global risk premia to create a portfolio with higher expected risk-adjusted returns. Research shows that risk-adjusted returns across asset classes are similar over the long-term. Since realized risk-adjusted returns across asset classes are similar, AQR expects a portfolio that is diversified equally by risk to perform better. The Global Risk Premium strategy aims to deliver efficient market exposure across four broad asset classes in a risk balanced fashion.

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 80-120 stocks, with country and sector weights +/-6% relative to the index and industry 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 – EAFE Index

The EAFE Index Fund seeks to replicate the return of the MSCI EAFE Index. This index represents the developed equity markets outside of North America: Europe, Austral, Asia and the Far East.

BlackRock – Intermediate Government Index

The Intermediate Government Index Fund seeks to track the results of an index composed of U.S. dollar-denominated government, government related, and investment grade U.S. corporate bonds with maturities between 1 and 10 years.

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 – Direct Lending Fund

Upon completion of the TCP acquisition, the former TCP team is raising a direct lending portfolio. The fund will invest in privately originated, performing senior secured debt primarily in North American based companies with an average EV of \$750 million.

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.

Cushing MLP Alpha TR

A strategy focusing on bottom-up research of company and sectors that will allow them to identify superior distribution growth opportunities in public MLPs.

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 19 years in the course of research conducted for purposes of managing the firm's hedge funds. In addition to its beta one strategies, D.E. Shaw manages substantial assets in its hedge fund strategies. 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 in its Securitized Income portfolios.

Eaton Vance/Parametric – Structured Emerging Markets Core Equity

Parametric utilizes a structured, rules-based approach, which they believe is capable of generating enhanced returns with lower volatility compared to both traditional active management and passive capitalization weighted indices. The basic idea is to structure the portfolio with more balanced country weights than the market cap weighted indices, and also to capture a rebalancing premium. This provides more diversification and greater exposure to smaller countries than is provided by the market cap weighted indices. The approach is to divide emerging markets countries into three tiers, and to equally weight the countries within each tier. Tier 1 countries are the largest eight countries that dominate the cap weighted index. Each successive tier is comprised of smaller countries, each of which is given a smaller target weighting in the model portfolio. In aggregate, the eight Tier 1 countries are given a much lower weighting than in the capitalization weighted index, but they nevertheless comprise more than 50% of the portfolio. The Core SEM strategy targets excess return of 3% over a market cycle with 2.5%-4.5% tracking error. It is designed to generate a level of volatility 90%-100% of the MSCI EM index. The strategy invests in 44 countries and will typically hold 700-1,000 securities. Turnover is expected to be in the range of 5%-15%.

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 will 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). Invesco Value Fund IV will provide a nice compliment to the more conservative Invesco Core Fund and offer 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.

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

PanAgora’s Defensive Equity strategy seeks to balance risk exposures within the portfolio across multiple dimensions to achieve true diversification. The Defensive Equity approach is used to construct equity portfolios designed to achieve tailored exposure to certain factors, including low volatility, multi-factor (value, quality, and momentum), and high dividend yield while maintaining less risk concentration throughout the portfolio.

Panagora – Diversified Risk Multi Asset Fund

The Multi Asset team is headed up by Edward Qian, CIO of the group, and the founder of Panagora’s risk parity strategy. A staff of approximately thirteen works in this group on research and portfolio construction, with some people spending more time on the former and some more on the latter. Panagora implements risk parity by distinguishing between three categories of assets: equities, nominal fixed income, and inflation protection. Each of these categories corresponds to a respective economic environment: economic growth, economic contraction and inflation. Panagora’s risk allocation targets 40% each from equities and nominal fixed income, and 20% from inflation protection. In addition to applying concept of risk parity between asset classes, Panagora also applies it within each asset class. The 40/40/20 allocation to equities/nominal fixed income/inflation protection is a long-term strategic allocation. In 2009 Panagora introduced what they refer to as “Dynamic Risk Allocation” or “DRA,” which involves tactically tilting the risk allocations away from the neutral targets in order to enhance returns and reduce risk.

Parametric Currency Overlay – Currency Hedge

An overlay hedge placed on half of the notional value of international equities. The portfolio uses Parametric for this overlay.

PIMCO Diversified

PIMCO Diversified Income Fund offers a broad and flexible multi-credit approach in a liquid and cost-effective format. The Diversified Income Fund seeks to produce consistent above benchmark performance using diversified sources of alpha from a universe that includes global credit as well as “non-core” credit sectors (ex., securitized, emerging markets).

PIMCO Private Income Fund

PIMCO Private Income Fund provides an attractive 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.

PGIM RE Debt

PGIM Real Estate US Debt Fund 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.

Pyramis Global Advisors – 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.

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.

Standard Life Aberdeen Global Absolute Return Strategy (GARS)

The Standard Life Aberdeen Global Absolute Return Strategy (GARS) was initially launched in 2005 to help address Standard Life's own pension plan's deficit problem. GARS' primary investment objective is to deliver a positive absolute return over the medium to long term with lower volatility than equities, irrespective of market conditions. It seeks returns through dynamic allocation to investment opportunities in traditional and advanced asset classes, and also separately exploits the team's security selection expertise. In the search for attractive investment positions, the team follows a rigorous research process. This includes a variety of research techniques, including broad global macro-economic, fundamental analysis, quantitative research and valuation modeling. 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 rigorously examines and review position proposals to approve a high conviction, short list of positions that work well together. Having a cash benchmark means that GARS has a potentially unrestricted investment universe and all portfolio holdings are at the Portfolio Manager's discretion. The GARS portfolio also routinely uses a variety of conventional derivatives for investment, liquidity, efficiency and hedging purposes. The GARS strategy has experienced significant growth in its asset under management since it becomes available to external investors in 2006.

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 Commodity Index, S&P Global Natural Resources Index, and S&P Global Infrastructure Index. The portfolio is used to fund upcoming private real asset mandates.

Tennenbaum Capital Partners - TCP Direct Lending Fund VIII

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.

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.

Policy Index and Benchmark History

Period Ending: March 31, 2020

Total Plan Policy Index	As of:									
	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%
60/40 MSCI World/BBgBarc Global Aggregate (RP)	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
60/40 Russell 3000/BBgBarc US Aggregate (RP)	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%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
BBgBarc Aggregate	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	12.0%	10.0%	
BBgBarc BA Intermediate HY	8.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	6.0%	6.0%	
BBgBarc BBB	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
BBgBarc Credit BAA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
BBgBarc Multiverse	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	3.0%	
BBgBarc TIPS	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%	
Citigroup non-US WGBI	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%	
Blended Liquid Real Asset	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	0.0%	0.0%	
Blended Private Real Asset	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	8.0%	7.0%	5.0%	
Labor +4% (HF)	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	5.0%	
MSCI ACWI ex-US	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)	9.0%	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%	19.0%	19.0%	
MSCI ACWI ex-US IMI (Net)	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%	
NCREIF ODCE	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%	
Russell 1000	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%	
Russell 2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Russell 3000	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%	7.0%	7.0%	7.0%	
Russell 3000 +3% 1Q Lag (PE)	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%	
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

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/BBgBarc 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/BBgBarc 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%
BBgBarc 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%
BBgBarc 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%
BBgBarc 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%
BBgBarc 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%
BBgBarc 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%
BBgBarc 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 Liquid 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%
Labor +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%
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%	20.0%	20.0%	20.0%
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, 2020

Public Equity Benchmark	As of:																	
	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%	34.0%	31.3%	23.1%	0.0%	0.0%	0.0%	
MSCI ACWI ex US IMI 100% Hedged (Net)	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%	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)	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%	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%	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%	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%	8.3%	12.0%	13.2%	13.5%	15.4%	24.2%	25.0%	25.0%	
Russell 3000	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%	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%

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:												
	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
BBgBarc Aggregate	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%
BBgBarc BA Intermediate HY	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%
BBgBarc BBB	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%
BBgBarc Credit BAA	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%
BBgBarc Multiverse	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%
BBgBarc TIPS	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 WGBl	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%

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

Risk Parity Benchmark	As of:	
	1/1/17	10/1/10
BBgBarc Aggregate	0.0%	40.0%
BBgBarc Global Aggregate	40.0%	0.0%
MSCI World	60.0%	0.0%
Russell 3000	0.0%	60.0%
	100.0%	100.0%

Alternatives Benchmark	As of:						
	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/BBgBarc US Aggregate (RP)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	30.0%
Bloomberg Commodity	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%	11.8%	12.5%	0.0%
Libor +4% (HF)	50.0%	46.2%	46.2%	41.7%	29.4%	25.0%	15.0%
Russell 3000 +3% (PE)	0.0%	0.0%	53.8%	58.3%	41.2%	43.8%	40.0%
Russell 3000 +3% 1Q Lag (PE)	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%

Policy Index and Benchmark History

Period Ending: March 31, 2020

Alternatives Benchmark	As of:						
	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/BBgBarc US Aggregate (RP)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	30.0%
Bloomberg Commodity	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%	11.8%	12.5%	0.0%
Libor +4% (HF)	50.0%	46.2%	46.2%	41.7%	29.4%	25.0%	15.0%
Russell 3000 +3% (PE)	0.0%	0.0%	53.8%	58.3%	41.2%	43.8%	40.0%
Russell 3000 +3% 1Q Lag (PE)	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%

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%
	100.0%	100.0%

Hedge Fund Benchmark	As of:
	10/1/10
Libor +4%	100.0%
	100.0%

Inflation Hedge	As of:				
	10/1/19	4/1/18	2/1/17	10/1/16	4/1/16
BBgBarc TIPS	5.88%	11.11%	12.50%	14.3%	14.3%
Bloomberg Commodity	0.00%	0.00%	0.00%	0.0%	21.4%
CPI +5% (RA)	0.00%	0.00%	0.00%	0.0%	14.3%
Blended Liquid Real Asset	35.29%	33.34%	0.00%	0.0%	0.0%
Blended Private Real Asset	11.77%	11.11%	43.75%	35.7%	0.0%
NCREIF ODCE	47.06%	44.44%	43.75%	50.0%	50.0%
	100.0%	100.0%	100.0%	100.0%	100.0%

Public Real Asset Benchmark	As of:	
	10/1/16	1/1/14
Bloomberg Roll Select Commodity	34.0%	0.0%
S&P Global Large-MidCap Commodity and Resources	33.0%	0.0%
S&P Global Infrastructure	33.0%	0.0%
CPI +5%	0.0%	100.0%
	100.0%	100.0%

Private Real Asset Benchmark	As of:		
	4/1/18	10/1/16	1/1/14
Bloomberg Roll Select Commodity	0.0%	34.0%	0.0%
S&P Global Large-MidCap Commodity and Resources	0.0%	33.0%	0.0%
50/50 S&P Global Infra & Lrg-MidCap Com & Resources +2% 1QL	100.0%	0.0%	0.0%
S&P Global Infrastructure	0.0%	33.0%	0.0%
CPI +5%	0.0%	0.0%	100.0%
	100.0%	100.0%	100.0%

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%
	100.0%

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%
	100.0%	100.0%	100.0%

Policy Index and Benchmark History

Period Ending: March 31, 2020

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%
	100.0%	100.0%

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%
	100.0%	100.0%

Brigade Secondary Benchmark	As of:	
	8/1/10	
BBgBarc High Yield	50.0%	
Credit Suisse Leveraged Loans	50.0%	
	100.0%	

AQR GRP, 10% Volatility	As of:	
	1/1/17	3/1/11
BBgBarc Aggregate	0.0%	40.0%
BBgBarc Global Aggregate	40.0%	0.0%
MSCI World	60.0%	0.0%
Russell 3000	0.0%	60.0%
	100.0%	100.0%

PanAgora	As of:	
	1/1/17	8/1/14
BBgBarc Aggregate	0.0%	40.0%
BBgBarc Global Aggregate	40.0%	0.0%
MSCI World	60.0%	0.0%
Russell 3000	0.0%	60.0%
	100.0%	100.0%

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%	
	100.0%	

Fee Schedule

Period Ending: March 31, 2020

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-EAFE Equity Index Fund

On All Assets:	0.03% per annum
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BlackRock-Russell 1000 Index Fund

On All Assets:	0.01% per annum
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BlackRock-Intermediate Govt Bond Index Fund

On All Assets:	0.025% per annum
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Cushing Asset Management

First \$50 million:	0.70% per annum
Next \$50 million:	0.60% per annum
Thereafter:	0.55% per annum

DoubleLine

On All Assets:	0.30% per annum
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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:	0.20% per annum
Next \$50 million:	0.175% per annum
Next \$100 million:	0.10% per annum
Thereafter:	0.085% 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

On All Assets:	0.30% per annum
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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
----------------	-----------------

QMA

First \$50 million:	0.55% per annum
Thereafter:	0.50% per annum

Western Asset Management

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

Mondrian Investment Partners

Assets Below \$190 million

First \$20 million:	1.00% per annum
Thereafter:	0.33% per annum

Assets Above \$190 million

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

Name	Primary Benchmark	Rule 1	Rule 2	Rule 3
Acadian US MGD V	Russell 1000	--	--	--
DE Shaw	Russell 1000	✓	✓	✓
PanAgora Defuseq	Russell 1000	--	--	--
QMA US Small Cap	Russell 2000	--	--	--
Baillie Gifford	MSCI ACWI ex US	✓	R	✓
Mondrian	MSCI ACWI ex USA Value Gross	✓	✓	✓
Parametric Core	MSCI Emerging Markets Gross	--	--	--
DoubleLine	BBgBarc US Aggregate TR	--	--	--
FIAM Bond	BBgBarc US Aggregate TR	✓	✓	✓
Western TRU	3-Month Libor Total Return USD	--	--	--
Angelo Gordon Opportunistic	BBgBarc US Aggregate TR	✓	--	R
Angelo Gordon STAR	BBgBarc US Aggregate TR	✓	--	✓
Angelo Gordon Credit Solutions	BBgBarc BA Intermediate HY	--	--	--
Beach Point Select	BBgBarc BA Intermediate HY	✓	✓	✓
Brigade Capital	BBgBarc BA Intermediate HY	R	R	R
PIMCO Diversified	Blended PIMCO Diversified Index	--	--	--
Franklin Templeton	BBgBarc Multiverse TR	--	--	--
Blackrock DL Feeder IX-U	Cliffwater Direct Lending Index	--	--	--
PIMCO Private Income	BBgBarc BA Intermediate HY	--	--	--
TCP Direct Lending VIII	Cliffwater Direct Lending Index	--	--	--
White Oak Yield	Cliffwater Direct Lending Index	--	--	--
AQR DELTA XN	Libor 1 month +4%	R	R	R
Aberdeen Standard GARS	Libor 1 month +4%	--	--	--
Graham Quant Macro	Libor 1 month +4%	--	--	--

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, 2020

Name	Primary Benchmark	Rule 1	Rule 2	Rule 3
Acadian US MGD V	Russell 1000	--	--	--
DE Shaw	Russell 1000	✓	✓	✓
PanAgora Defuseq	Russell 1000	--	--	--
QMA US Small Cap	Russell 2000	--	--	--
Baillie Gifford	MSCI ACWI ex US	✓	✓	✓
Mondrian	MSCI ACWI ex USA Value Gross	✓	✓	✓
Parametric Core	MSCI Emerging Markets Gross	--	--	--
DoubleLine	BBgBarc US Aggregate TR	--	--	--
FIAM Bond	BBgBarc US Aggregate TR	✓	✓	✓
Western TRU	3-Month Libor Total Return USD	--	--	--
Angelo Gordon Opportunistic	BBgBarc US Aggregate TR	✓	--	✗
Angelo Gordon STAR	BBgBarc US Aggregate TR	✓	--	✓
Angelo Gordon Credit Solutions	BBgBarc BA Intermediate HY	--	--	--
Beach Point Select	BBgBarc BA Intermediate HY	✓	✓	✓
Brigade Capital	BBgBarc BA Intermediate HY	✗	✗	✗
PIMCO Diversified	Blended PIMCO Diversified Index	--	--	--
Franklin Templeton	BBgBarc Multiverse TR	--	--	--
Blackrock DL Feeder IX-U	Cliffwater Direct Lending Index	--	--	--
PIMCO Private Income	BBgBarc BA Intermediate HY	--	--	--
TCP Direct Lending VIII	Cliffwater Direct Lending Index	--	--	--
White Oak Yield	Cliffwater Direct Lending Index	--	--	--
AQR DELTA XN	Libor 1 month +4%	✗	✗	✗
Aberdeen Standard GARS	Libor 1 month +4%	--	--	--
Graham Quant Macro	Libor 1 month +4%	--	--	--

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**

2ND QUARTER 2020
Investment Landscape

Recent Verus research

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Annual outlooks

ACTIVE MANAGEMENT ENVIRONMENT

Our work on active management addresses some shortfalls of the traditional analysis, which uses the median product to describe the active management universe as a whole. These improvements and insights have allowed us to better understand product behavior and may allow for more informed selection in the future.

Sound thinking

TEN THOUGHTS FOR 2020

A new year begins, and with it comes an opportunity to assess whether the correct areas were focused on in the previous year, and to create new suggested topics of interest for the year ahead. In this piece, our CIO, Ian Toner, will try to help investors prioritize shorter-term actions they might take, while addressing longer-term issues to improve their success.

THE JUDGMENTAL WAITER

In this piece our CIO, Ian Toner, lays out how Verus is approaching the challenge of building customized ESG advice and service to each of our clients, and outlines the significant resource commitment Verus is making during 2020 and beyond to provide that tailored support.

COVID-19

MARKET UPDATE 3/17/20

The first few weeks of March have been almost unprecedented in terms of market volatility and behavior. The combination of health concerns and oil market disruption has led to market moves of a type that we rarely see. Underlying this, there is also a real human concern about our families, and the human effect on people we love as the coronavirus spreads. So what are long term investors to do?

MARKET UPDATE 4/9/20

The COVID-19 crisis has had a sudden impact on the capital markets, which has been made worse by the recent disruption in the oil market. Now is a good time for investors to take stock of the possible intermediate and long-term implications of these disruptions, as well as to try to assess the possible short-term factors which might cause further market disruption.

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1st quarter summary

THE ECONOMIC CLIMATE

- Real GDP grew at a 0.3% rate year-over-year in the first quarter (-4.8% quarterly annualized rate). Personal consumption expenditures shrunk -7.6%, resulting in a -5.3% hit to headline growth. Forecasts of Q2 GDP growth have varied between -15% to -35%. **p. 9**
- The U.S. government quickly crafted and implemented historic stimulus measures to combat the economic impact of the virus. Support of this magnitude has not been seen since the Great Depression of the 1930s. **p. 10**

PORTFOLIO IMPACTS

- U.S. equities experienced an unusually sudden and significant sell-off in March as investors grew fearful of the health and economic impacts of COVID-19. During Q1 the S&P 500 fell -19.6%, international developed equities (MSCI EAFE) fell -22.8% and emerging markets (MSCI EM) fell -23.6%. **p. 25**
- U.S. core inflation increased 2.1% YoY in March. Headline inflation slowed to 1.5%, pushed lower by a sharp decline in energy prices which will likely have persistent effects in future months. Downward pressure could be compounded as households slow spending due to loss of income and a greater propensity to save rather than spend. **p. 11**

THE INVESTMENT CLIMATE

- In mid-March, the Federal Open Market Committee cut interest rates by a full 1.00% to a new range of 0 – 0.25%. This surprise action was taken on a Sunday with the intent to get out ahead of economic impacts of COVID-19. **p. 19**
- Implied volatility spiked in March to a record daily close of 82.7%, surpassing the high of 80.9% reached in November 2008 during the depths of the global financial crisis. **p. 32**
- Central banks are facing an economic slowdown and need for monetary policy support, but very little room to cut interest rates. This is a risk that has been discussed for years. We believe fiscal policies will play a much larger role in addressing the inevitable economic slowdown. **p. 19**

ASSET ALLOCATION ISSUES

- Risk markets experienced one of the most sudden corrections on record, amidst extreme volatility. The S&P 500 showed its largest one-day drop since 1987 (March 16 -11.98%) and its largest one-day gain since 2008 (March 24 +9.38%). Implied volatility reached global financial crisis levels, and high yield credit spreads temporarily expanded above 11%. Some of these losses were recovered toward the end of March as the market rebounded. **p. 27**
- The U.S. dollar appreciated significantly in the first quarter, rising 7.1% on a trade-weighted basis, resulting in losses for investors with unhedged currency exposure. **p. 36**

An underweight risk stance appears appropriate in today's environment

We remain watchful for investment opportunities

What drove the market in Q1?

“World Health Organization declares the coronavirus outbreak a global pandemic”

GLOBAL CONFIRMED COVID-19 CASES

1/31	2/15	2/29	3/15	3/31	4/15
11,374	69,267	86,351	164,403	857,778	2,077,469

Article Source: CNBC, March 11th, 2020

“Vix Hits Highest Level Since the Financial Crisis as Volatility Soars”

CBOE VIX INDEX

Oct	Nov	Dec	Jan	Feb	Mar
13.22	12.62	13.78	18.84	40.11	53.54

Article Source: Barron's, March 9th, 2020

“Fed announces unlimited QE and sets up several new lending programs”

FEDERAL RESERVE BALANCE SHEET (USD TRILLIONS)

3/4	3/11	3/18	3/25	4/1	4/8
4.3	4.4	4.7	5.3	5.9	6.1

Article Source: MarketWatch, March 23rd, 2020

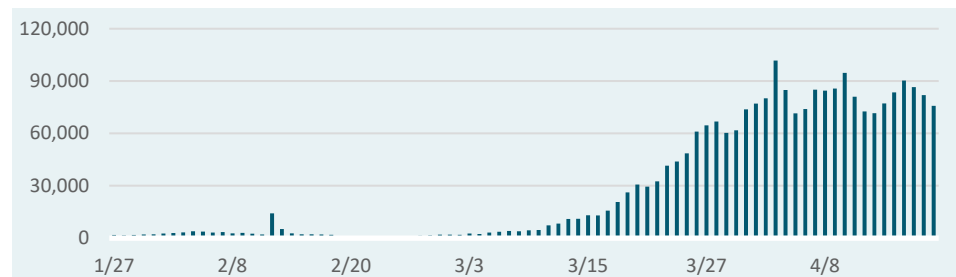
“Coronavirus job losses could total 47 million, unemployment rate may hit 32 percent, Fed estimates”

INITIAL WEEKLY JOBLESS CLAIMS

3/6	3/13	3/20	3/27	4/3	4/10
211,000	282,000	3,307,000	6,867,000	6,615,000	5,245,000

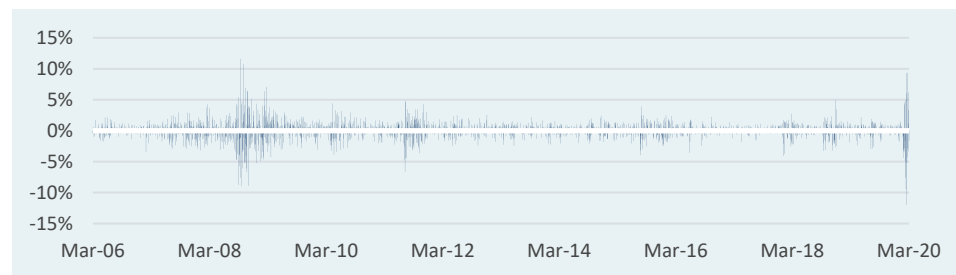
Article Source: NBC News, March 30th, 2020

DAILY NEW COVID-19 CASES (WORLDWIDE)



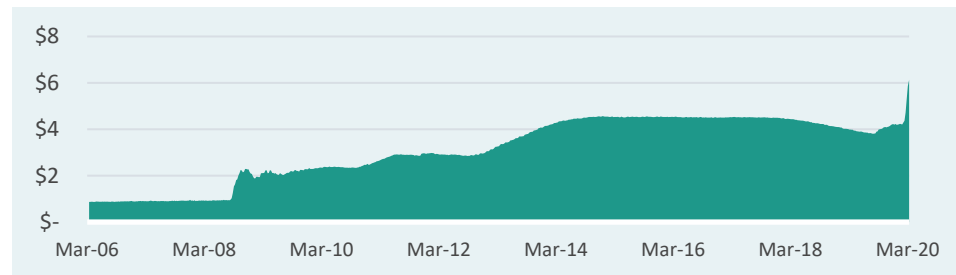
Source: Worldometer, as of 4/19/20

S&P 500 INDEX 1-DAY PERCENTAGE PRICE MOVE



Source: Standard & Poor's, Bloomberg, as of 3/31/20

FEDERAL RESERVE BALANCE SHEET (USD TRILLIONS)



Source: Federal Reserve, as of 4/8/20

Economic environment

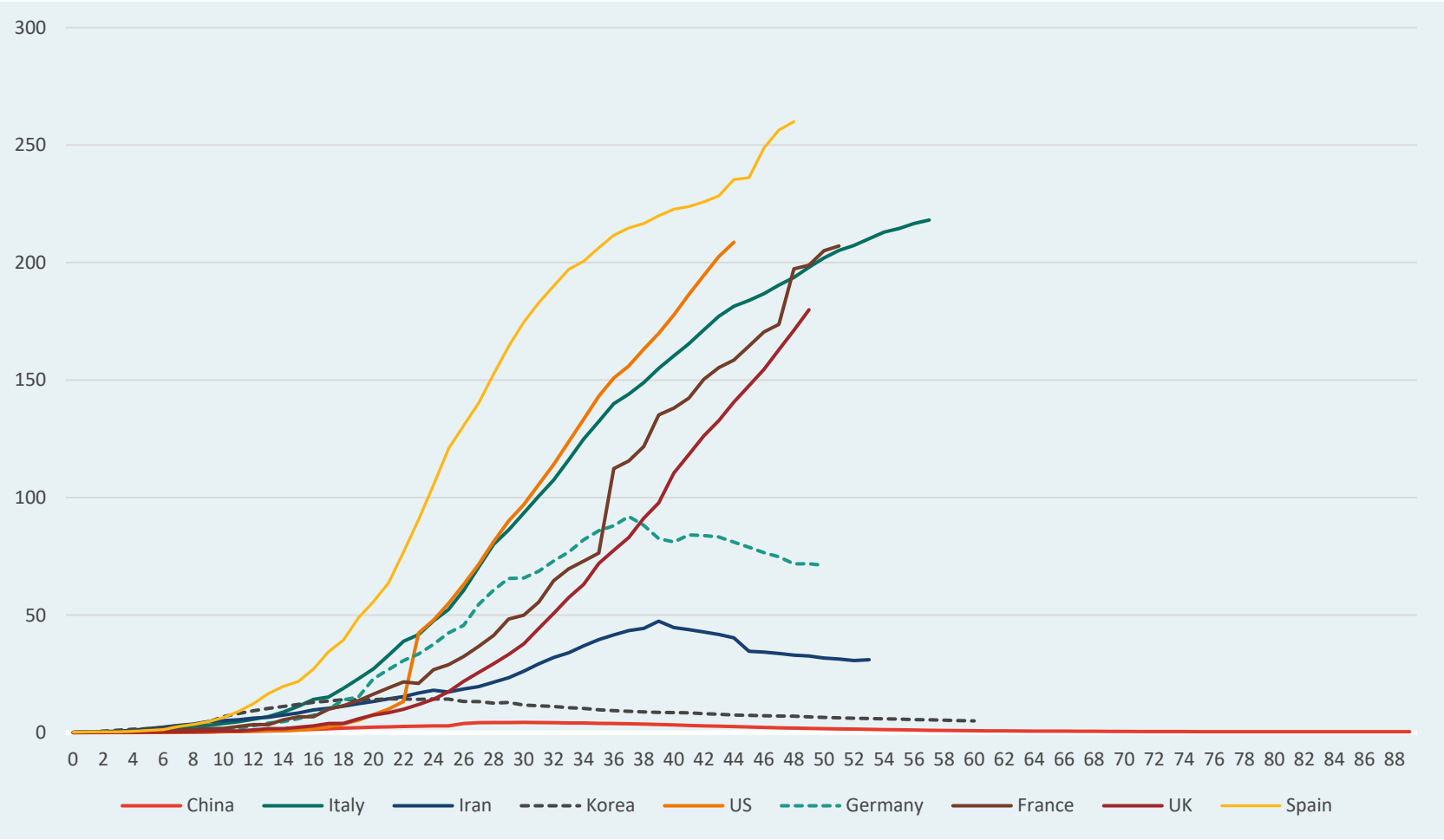
U.S. economics summary

- Real GDP grew at a 0.3% rate year-over-year in the first quarter (-4.8% quarterly annualized rate). Personal consumption expenditures shrunk -7.6%, resulting in a -5.3% hit to headline growth. Forecasts of Q2 GDP growth have varied between -15% to -35%.
- The U.S. government quickly crafted and implemented historic stimulus measures to combat the economic impacts of the virus. Support of this magnitude has not been seen since the Great Depression of the 1930s.
- U.S. core inflation rose 2.1% YoY in March. Headline inflation slowed to 1.5%, pushed lower by a sharp decline in energy prices which will likely have persistent effects in the coming months. This downward pressure could be compounded as households slow spending due to loss of income and show a greater propensity to save.
- The U.S. labor market exhibited a sharp weakening in March, as unemployment jumped to 4.4%. Some have estimated the true unemployment rate in April to be above 10%.
- March economic data should not be expected to fully reflect the extent of COVID-19. We are watching daily data releases to gain a better understanding of how conditions are evolving.
- The Bloomberg Consumer Comfort Index exhibited its sharpest two week drop since 1985, from 63.0 to 56.3, dipping from a 20-year high of 67.3 that was achieved in January.
- Existing homes sales increased +7.2% in February YoY, and new homes sales were up +14.3%. The 30-year fixed mortgage interest rate has continued to fall, finishing Q1 at 3.33%.

	Most Recent	12 Months Prior
GDP (YoY)	0.3% 3/31/20	2.7% 3/31/19
Inflation (CPI YoY, Core)	2.1% 3/31/20	2.0% 3/31/19
Expected Inflation (5yr-5yr forward)	1.3% 3/31/20	2.4% 3/31/19
Fed Funds Target Range	0% – 0.25% 3/31/20	2.25% – 2.50% 3/31/19
10 Year Rate	0.7% 3/31/20	2.4% 3/31/19
U-3 Unemployment	4.4% 3/31/20	3.8% 3/31/19
U-6 Unemployment	8.7% 3/31/20	7.4% 3/31/19

COVID-19 update

ACTIVE CASES PER 100,000 PEOPLE



The COVID-19 crisis has quickly become a global pandemic

Source: Bloomberg, aggregated official country statistics, x-axis indexed to when the country first reached 100 cases, as of 4/17/20

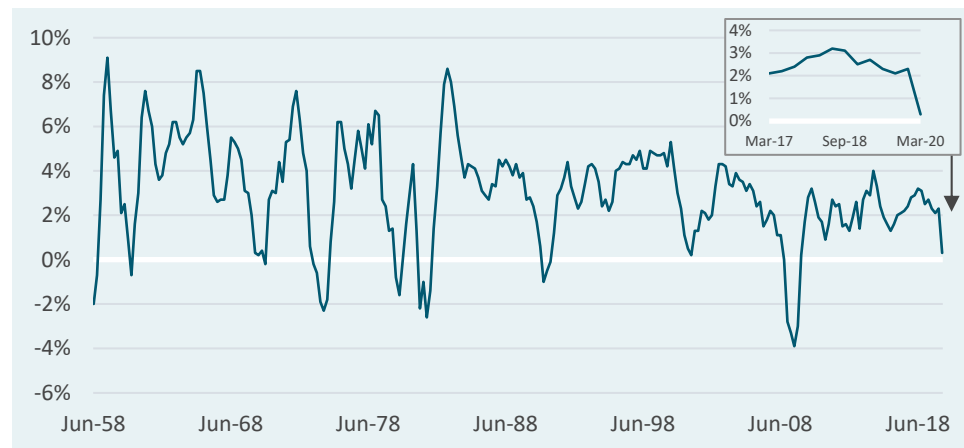
GDP growth

Real GDP grew at a 0.3% rate year-over-year in the first quarter (-4.8% quarterly annualized rate). Personal consumption expenditures shrunk -7.6%, resulting in a -5.3% hit to headline growth. Forecasts of Q2 GDP growth have varied between -15% to -35%.

The United States fiscal and monetary response to COVID-19 is unparalleled. The first response was from the Federal Reserve, swiftly cutting interest rates to zero, though 0% was not far away from levels at the time. The administration then rolled out the Families First Coronavirus Response Act, which guaranteed sick days to full-time workers, prorated for part-time workers. Next was an expansion of the

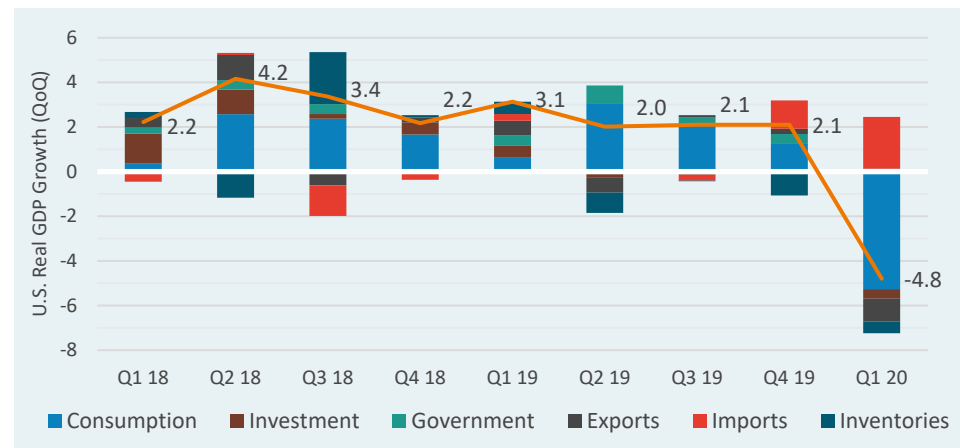
Family and Medical Leave Act, which provided paid leave for employees of businesses with fewer than 500 staff. For workers requiring more than two weeks of leave, the act covered those employees for up to 14 weeks. The most recent CARES Act was the largest in modern history, at \$2.2 Trillion in size. It included up to \$1,200 payments to every American, a \$600 increase in weekly unemployment benefits, expansion of unemployment to many of those not previously eligible, \$350 Billion in loans to small businesses, \$500 Billion in aid to corporations, and additional funding to individual states and government programs.

U.S. REAL GDP GROWTH (YOY)



Source: Bloomberg, as of 3/31/20

U.S. GDP GROWTH ATTRIBUTION



Source: BEA, annualized quarterly rate, as of 3/31/20

U.S. fiscal response

Families First Coronavirus Response Act:

- 10 sick days to full-time workers, prorated for part-time workers. This legislation applies to most U.S. workers, though some restrictions exist.
- Food support for low-income families increased through programs such as: increased SNAP coverage for jobless and lower-income Americans, emergency food allotments, and guaranteed school lunches.

Family and Medical Leave Act:

- This existing act has been amended to provide paid leave for employees of businesses with fewer than 500 staff in size.
- For workers who still require time off after the first two weeks, this act covers these employees for up to 14 weeks.

\$2.2 Trillion Coronavirus Relief Package

- \$1,200 checks to every American, which begin to be phased out for Americans with more than \$75,000 of income and fully phased out for Americans with more than \$99,000 in income. It was communicated that these non-taxable checks would be issued within weeks.
- Weekly unemployment benefits were increased by \$600 per week for up to 4 months and were made available to many who previously did not qualify, such as freelance workers and furloughed employees.
- \$350 Billion in loans to small businesses.
- Companies with fewer than 500 employees could be eligible for up to \$10 Million in forgivable loans to meet payroll needs.
- \$500 Billion in aid to corporations, \$100 Billion in aid to hospitals, \$150 Billion for state and local governments.
- 60-day delays in home foreclosures. Optional 6-month student loan deferrals.

Inflation

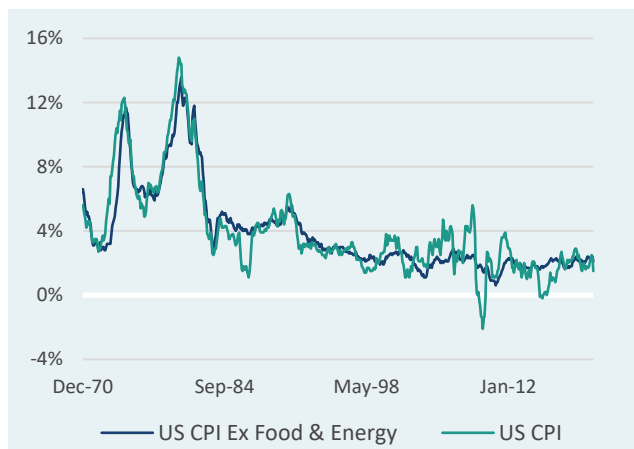
U.S. core inflation increased 2.1% YoY in March. Headline inflation slowed to 1.5%, pushed lower by a sharp decline in energy prices which will likely have continued effects over the coming months. This downward pressure could be compounded as households slow spending due to loss of income and show a greater propensity to save rather than spend.

During the sudden market sell-off in March, the U.S. TIPS inflation breakeven rate fell drastically from 1.7% to a low of 0.5%, ending the month at 0.9%. U.S. TIPS breakevens have historically tended to plummet in times of market turmoil.

We believe these moves may partially reflect the illiquidity of TIPS in volatile environments, rather than falling inflation expectations. This draws into question the usefulness of TIPS breakeven rates as a pure indication of investors' inflation forecasts. Inflation swaps, such as the 5-year Inflation Swap Forward Rate, may offer a cleaner reflection of true inflation expectations.

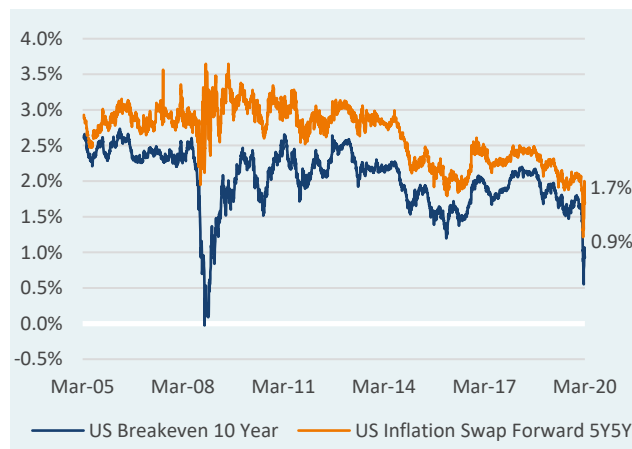
Consumer inflation surveys indicate that expectations were relatively flat, moving from 2.3% in December to 2.2% in March.

U.S. CPI (YOY)



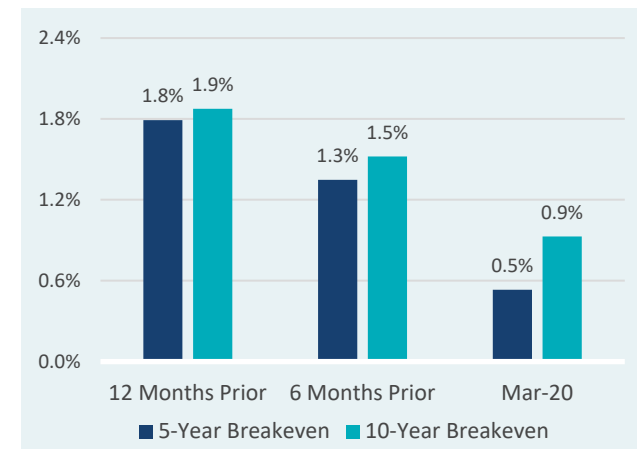
Source: Bloomberg, as of 3/31/20

U.S. INFLATION INDICATORS



Source: FRED, Bloomberg, as of 3/31/20

INFLATION EXPECTATIONS



Source: Bloomberg, as of 3/31/20

Labor market

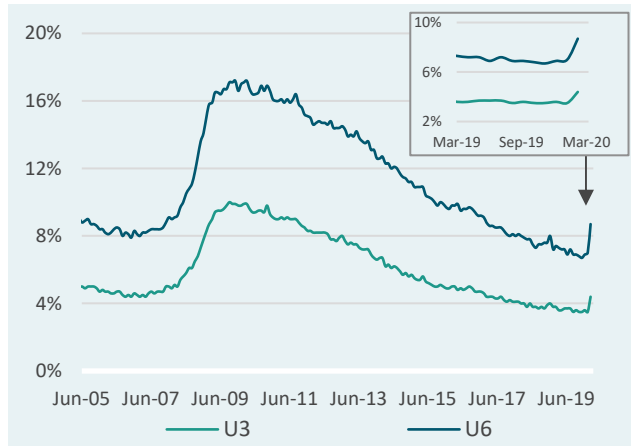
The U.S. labor market exhibited a sharp weakening in March, as unemployment jumped to 4.4%. Some have estimated the true unemployment rate in April to be above 10%.

The total number of Americans applying for unemployment skyrocketed to 6.65 Million at the end of March – a number historically unthinkable. This figure may stay elevated due to shelter-in-place mandates and widespread business closures across the country.

The NFIB Small Business Optimism Index decreased by 8.1 in March to 96.4, which was the largest drop of the series' history. Survey respondents indicated greater uncertainty on the horizon, contracting business conditions, falling sales in the coming six months, and fewer job openings. NFIB stated that "Small business orders are bracing themselves for a significant reduction in consumer spending and future orders." The organization also reported that around half of small businesses indicated that they cannot survive a shutdown of more than two months under current conditions.

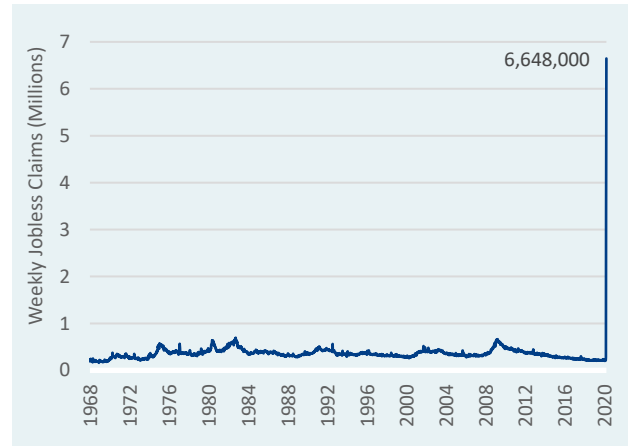
U.S. labor market is experiencing the largest negative shock in modern history

U.S. UNEMPLOYMENT



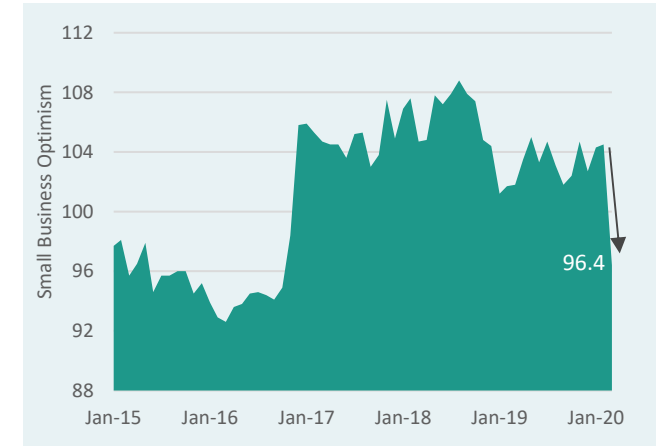
Source: FRED, as of 3/31/20

WEEKLY JOBLESS CLAIMS



Source: FRED, as 3/31/20

SMALL BUSINESS OPTIMISM



Source: NFIB, as of 3/31/20

The consumer

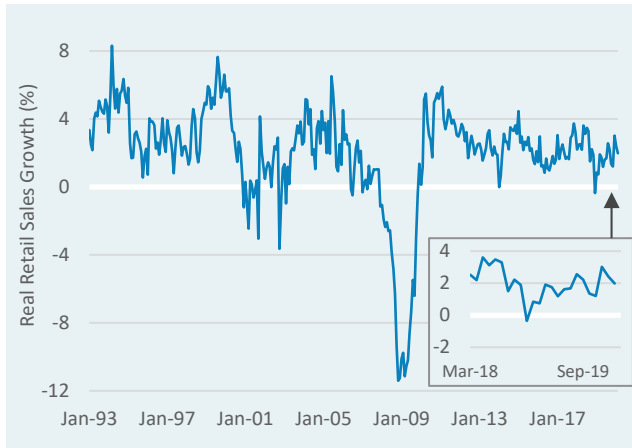
The U.S. consumer has been the greatest support to moderate domestic economic growth of recent years. At the same time, spending and use of credit has been conservative, and household balance sheets have remained robust. The relatively strong position of households at the onset of the crisis may help mitigate some pain of the COVID-19 economic slowdown.

U.S. retail sales declined -8.7% in March from the prior month, the largest ever decline since the series' inception in 1992. Big ticket discretionary purchases are likely to see severe slowdowns due to coronavirus.

Consumers appear to be paring back more elective purchases and allocating more of their income toward staple goods. In March, sales at clothing and home furnishing stores fell -51% and -27% respectively, while food and beverage purchases (+27%) posted a record advance.

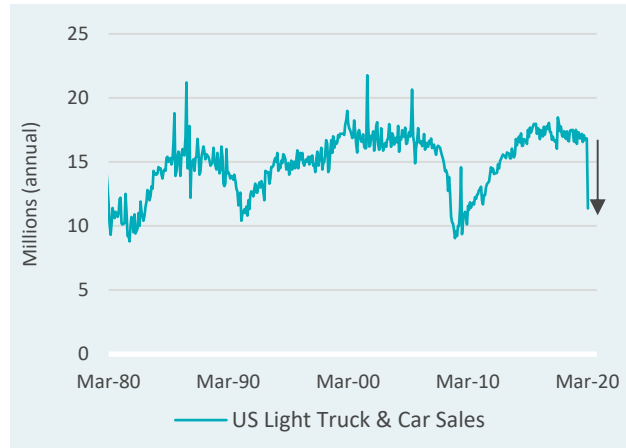
Data from Google suggests that consumers have been travelling far less as of late, and whether that trend continues will be interesting to observe as we move into spring in the United States. Filling station receipts fell around 17% in March, and those revenues are less likely to be "made up" later in the year.

REAL RETAIL SALES GROWTH (YOY)



Source: FRED, as of 2/29/20

U.S. AUTO SALES



Source: Bloomberg, as of 3/31/20

HOUSEHOLD DEBT BURDEN



Source: FRED, as of 12/31/19

Sentiment

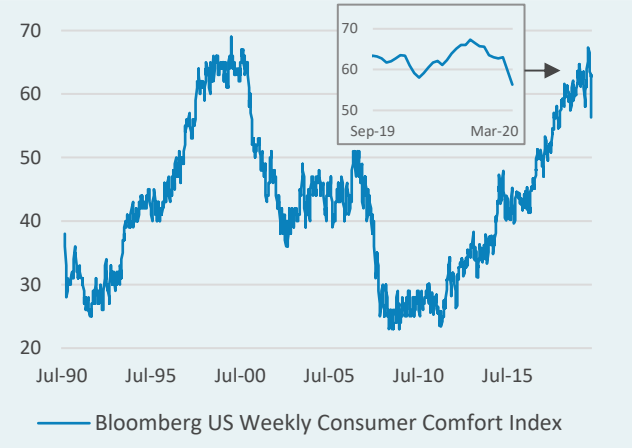
The Bloomberg Consumer Comfort Index exhibited its sharpest two week drop since 1985, falling from 63.0 to 56.3, down from a 20-year high of 67.3 that was achieved in January. Slowing business activity, rising unemployment, and greater uncertainty has led to a broad deterioration in consumer confidence.

Small business owners have been among the hardest hit by the COVID-19 economic disruptions. The NFIB Small Business Optimism Index registered its largest ever single month drop

in March, falling -8.1 points to 96.4. Plummeting expectations for real sales over the next six months drove the decline in the overall index, and it appears Main Street business owners are anticipating and bracing themselves for continued economic disruptions moving forward.

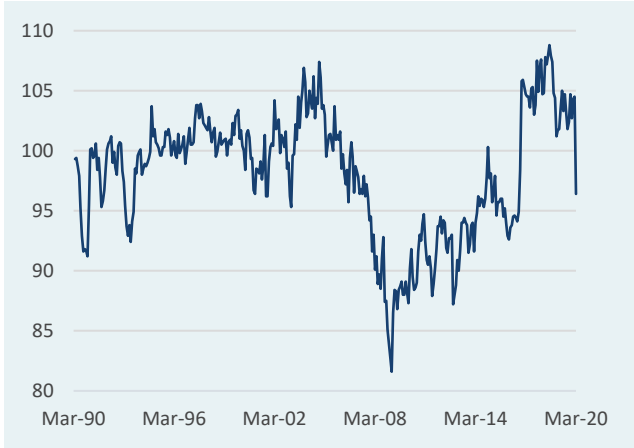
While hiring activity remained relatively healthy in early March, hiring plans showed a significant drop-off in February, a signal of a strong downturn in the coming months.

CONSUMER COMFORT



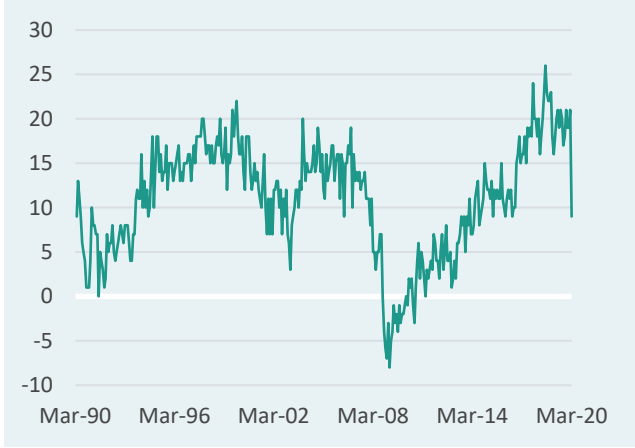
Source: Bloomberg, as of 3/31/20

SMALL BUSINESS OPTIMISM



Source: NFIB, as of 3/31/20

SMALL BUSINESS HIRING PLANS INDEX



Source: NFIB, as of 3/31/20

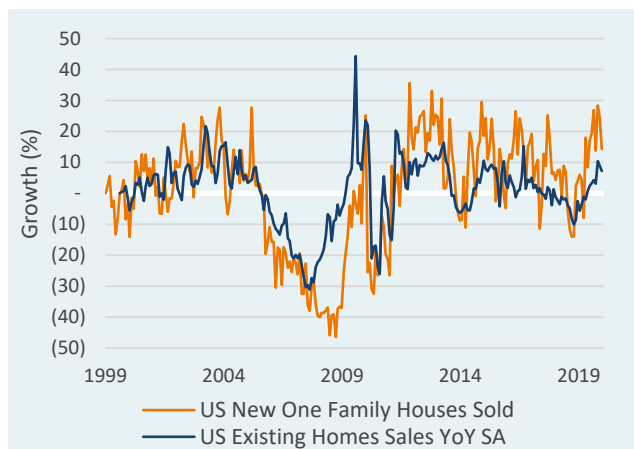
Housing

The housing market exhibited strength to start the year, with February existing homes sales rising 7.2% YoY, and new home sales up 14.3%. The 30-year fixed mortgage interest rate has continued to fall, finishing Q1 at 3.33%. Near record-low interest rates will likely continue to support housing prices and demand, as home affordability improves for Americans.

It is difficult to forecast the effect that COVID-19 will have on the housing market, as there are perhaps two opposing forces at work. The first effect is falling mortgage rates, which should be supportive of home values and purchase activity, assuming U.S. interest rates remain lower as they

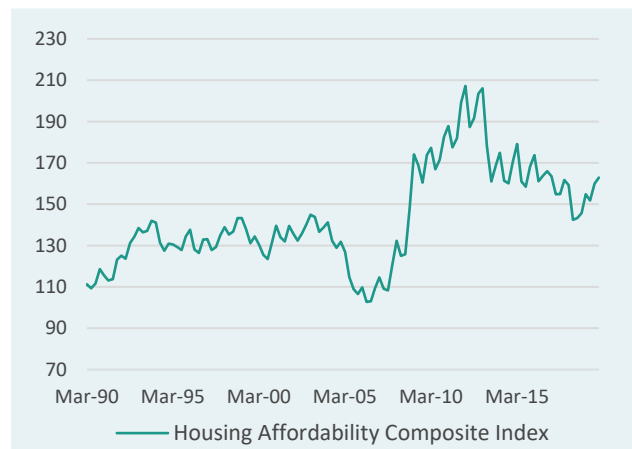
typically do during market strain. The second effect – a slowing U.S. economy – is of course negative on housing values and demand. Millions of job losses have occurred in the first few weeks of the COVID-19 nationwide shutdown, and many Americans will soon struggle to meet mortgage payments. Under the new CARES Act, homeowners with Federally-backed mortgages who have been affected by COVID-19 can request forbearance on mortgage payments for up to 180 days, with an option to extend for an additional 180 days. This intervention will hopefully ease some of the strains and mitigate some downside risk during a time of historically unprecedented spikes in unemployment.

U.S. HOME SALES (YOY)



Source: FRED, as of 2/29/20

HOUSING AFFORDABILITY INDEX



Source: Bloomberg, NAHB, as of 12/31/19 (see appendix)

30YR FIXED RATE MORTGAGE



Source: FRED, as of 3/31/20

International economics summary

- Most international developed economies grew at a rate of 0.5% to 2.5% in Q4. The low and stable expansion of recent years has changed suddenly with the onset of COVID-19. Many global economies will enter recession in 2020. On April 14th the IMF revised their 2020 global growth forecast from +3.3% to -3.0%.
- Governments are using monetary and fiscal policies to fill the large hole in spending and lending that the slowdown may cause. These policies vary in their characteristics and aggressiveness.
- Governments with limited ability to implement stimulus policies may face tougher economic fallout. Specifically, European Union member nations that cannot exercise independent actions may see greater difficulties ahead as income gaps cannot be supplemented with fiscal spending.
- The World Trade Organization (WTO) forecast a 13%-32% fall in global trade in 2020 – a larger decrease than witnessed during the global financial crisis. This forecast was paired with the expectation of a 21%-24% rebound in trade throughout 2021.
- While not yet reflected in the most recent economic data, unemployment rates around the world are certain to rise considerably.
- The COVID-19 virus breakout originated in China, and many investors have pointed to China as a testcase for how the virus might play out economically. Although the data released by China suggests the outbreak has been defeated, there is increasing evidence that the severity of virus has been underreported – perhaps severely.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	0.3% <i>3/31/20</i>	1.5% <i>3/31/20</i>	4.4% <i>3/31/20</i>
Eurozone	1.0% <i>12/31/19</i>	0.7% <i>3/31/20</i>	7.3% <i>2/29/20</i>
Japan	(0.7%) <i>12/31/19</i>	0.4% <i>3/31/20</i>	2.3% <i>2/29/20</i>
BRICS Nations	5.0% <i>12/31/19</i>	4.9% <i>3/31/20</i>	5.0% <i>12/31/19</i>
Brazil	1.7% <i>12/31/19</i>	3.3% <i>3/31/20</i>	11.6% <i>2/29/20</i>
Russia	2.1% <i>12/31/19</i>	2.6% <i>3/31/20</i>	4.6% <i>2/29/20</i>
India	4.7% <i>12/31/19</i>	5.9% <i>3/31/20</i>	8.5% <i>12/31/17</i>
China	6.0% <i>12/31/19</i>	4.3% <i>3/31/20</i>	3.6% <i>12/31/19</i>

International economics

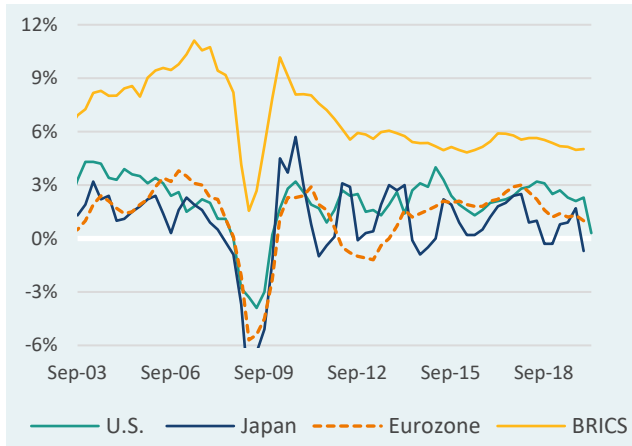
Most international developed economies grew at a rate of 0.5% to 2.5% in Q4. The low and stable expansion of recent years has changed suddenly with the onset of COVID-19. Many global economies will enter recession in 2020. On April 14th the IMF revised their 2020 global growth forecast from +3.3% to -3.0%.

Governments are using monetary and fiscal policies to fill the potentially large hole in spending and lending that the slowdown may cause. These policies vary in their characteristics. For example, the UK government has taken a more aggressive stance, committing to subsidize 80% of the salaries of workers who become unemployed, up to £2,500 per month for a three-month period.

The World Trade Organization (WTO) forecast a 13%-32% fall in global trade in 2020 – a larger decrease than witnessed during the global financial crisis due to broader restrictions on labor and travel that are not involved with a typical recession. This forecast was paired with the expectation of a 21%-24% rebound in trade throughout 2021, though forecasts of the shape and nature of the recovery may be more speculative in nature.

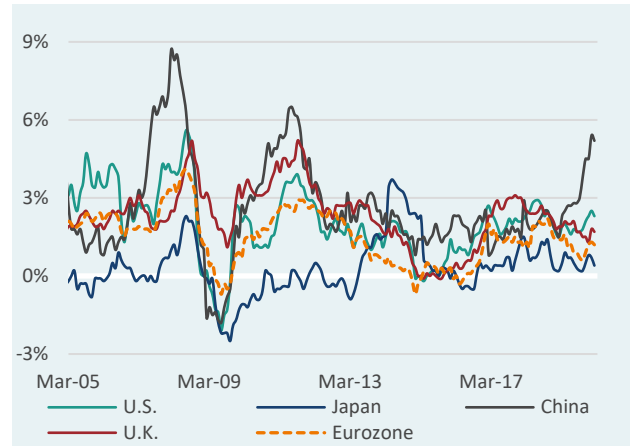
Due to the extremely quick onset of COVID-19 and its economic impacts, many traditional economic metrics do not yet reflect the effects of the virus since these metrics are released with a one-month or greater lag.

REAL GDP GROWTH (YOY)



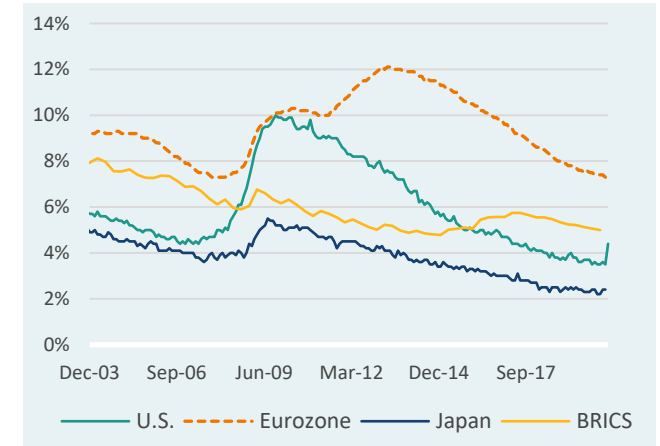
Source: Bloomberg, as of 3/31/20 or most recent release

INFLATION (CPI YOY)



Source: Bloomberg, inflation range of past 5 years, as of 2/29/20

UNEMPLOYMENT RATE



Source: Bloomberg, as of 3/31/20 or most recent release

Fixed income rates & credit

Interest rate environment

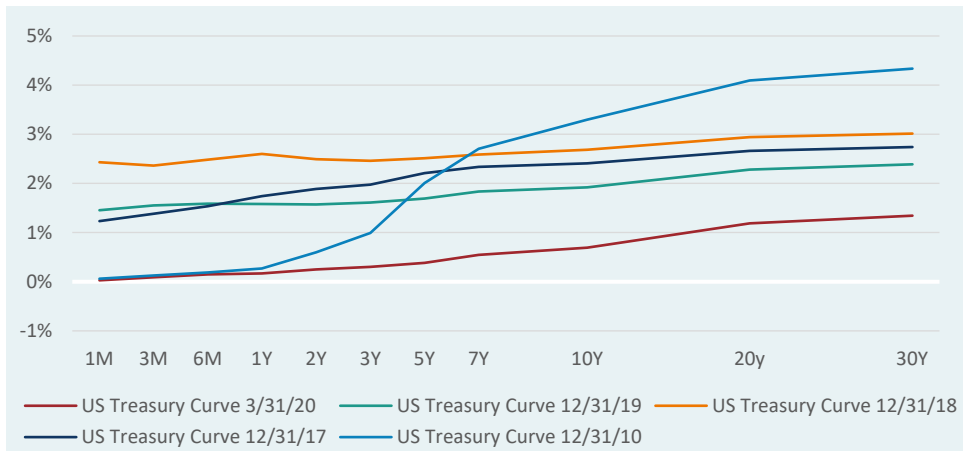
- In mid-March, the Federal Open Market Committee cut interest rates by a full 1.00% to a new range of 0 – 0.25%. This surprise action was taken on a Sunday with the intent to get out ahead of the economic impacts of COVID-19.
- On April 9th, the Federal Reserve announced an additional \$2.3 Trillion program aimed towards providing financing to small businesses and municipalities. The program included \$1M-\$25M sized loans at an interest rate of 2.5%-4.0% with a four-year maturity. This move involved Fed purchases of certain types of low-grade speculative debt, a reversal from comments just weeks earlier that the Federal Reserve would stick to investment-grade debt purchases.
- The European Central Bank (ECB) announced a €750B asset purchase program in March to address effects of the virus. ECB President Christine Lagarde claimed that there are “no limits to our commitment to the euro”. Bond yields of Euro member countries fell on the news.
- Central banks are now facing a unique problem – an immediate economic slowdown and need for monetary policy support, but very little room to cut interest rates to provide that support. This is a risk that has been discussed by investors for years, only now becoming reality. We believe fiscal policies will play a much larger role in addressing the inevitable economic slowdown.
- The Federal Reserve rolled out several liquidity programs which were components of its Global Financial Crisis playbook and are aimed at ensuring the flow of credit to U.S. households and businesses, as well as financial market stability. The New York Fed began offering up to \$500B in overnight liquidity through repurchase agreements and has expanded dollar swap lines to alleviate any possible strains in global U.S. dollar funding markets.

Area	Short Term (3M)	10-Year
United States	0.09%	0.67%
Germany	(0.71%)	(0.47%)
France	(0.50%)	(0.02%)
Spain	(0.23%)	0.67%
Italy	(0.05%)	1.52%
Greece	0.16%	1.63%
U.K.	0.03%	0.36%
Japan	(0.30%)	0.01%
Australia	0.37%	0.76%
China	1.34%	2.58%
Brazil	3.37%	7.77%
Russia	5.47%	6.70%

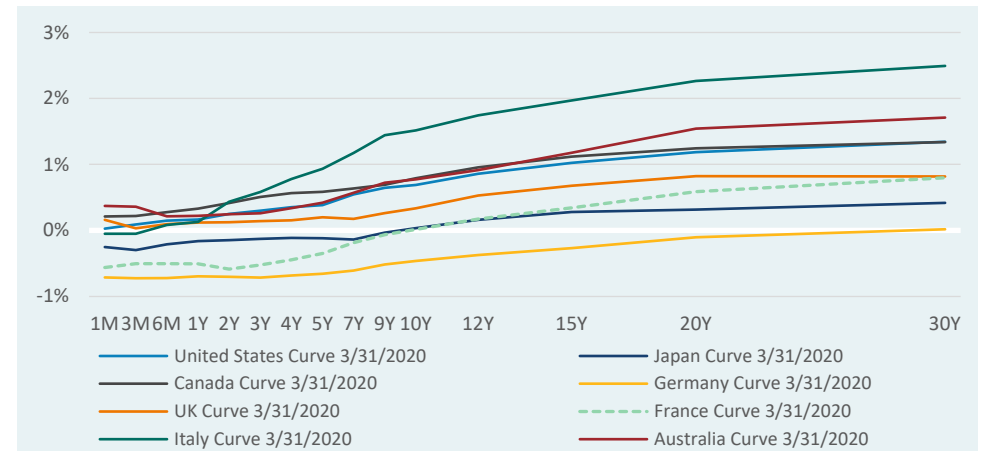
Source: Bloomberg, as of 3/31/20

Yield environment

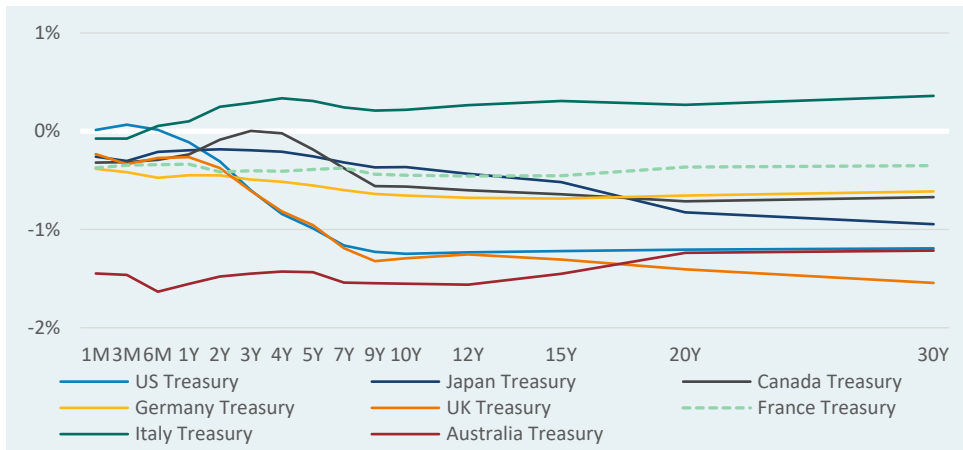
U.S. YIELD CURVE



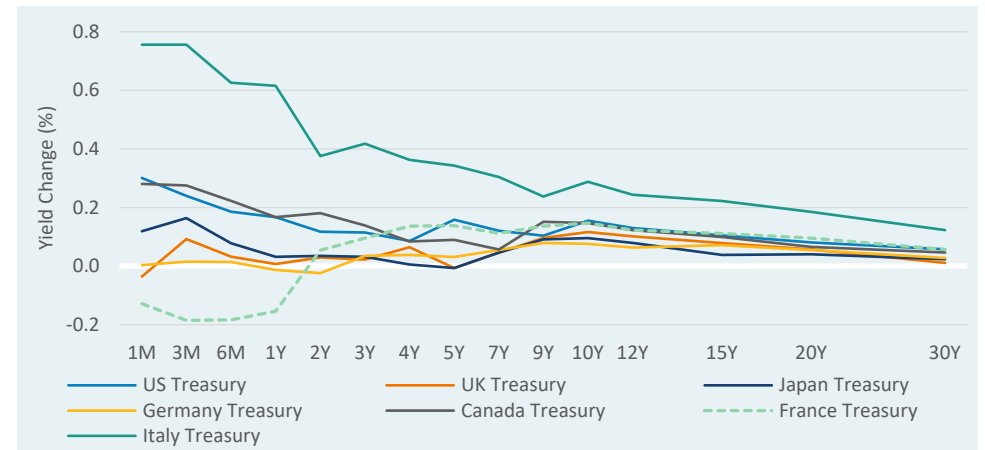
GLOBAL GOVERNMENT YIELD CURVES



YIELD CURVE CHANGES OVER LAST FIVE YEARS



IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 3/31/20

Credit environment

After a positive start to the year following the completion of phase one of the US-China trade deal, the impacts of the COVID-19 pandemic struck fear into credit markets, causing a broad-based sell-off and liquidity crisis in early March. This volatility prompted decisive Fed action, including but not limited to announcing unlimited QE and the reopening of several financial crisis-era liquidity facilities, which collectively incited a partial recovery in the last week of the quarter and restored a reasonable level of liquidity to credit markets.

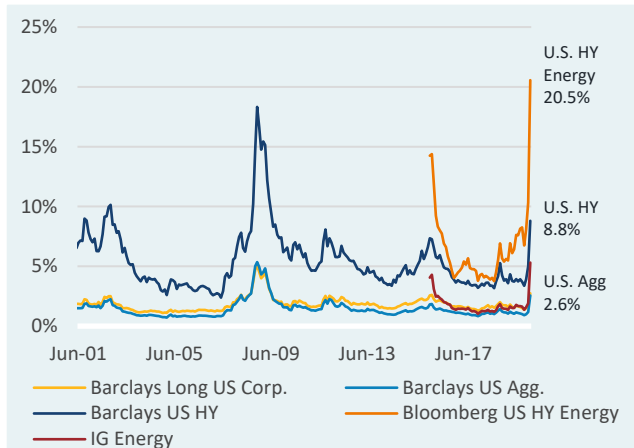
U.S. investment grade credit spreads widened from 93 bps at the end of 2019 to 272 bps at the end of the quarter after reaching highs of 373 bps in March. Similarly, high yield credit spreads spiked from 336 bps to 880 bps over the quarter, after March highs of 1100 bps. High yield ex-

Energy spreads increased from 295 bps to 749 bps over the same period.

The US Aggregate finished the quarter up 3.15%, while investment grade credit fell -3.63% followed by high yield -12.68% and leveraged loans -13.05%. In general, higher quality bonds meaningfully outperformed lower quality.

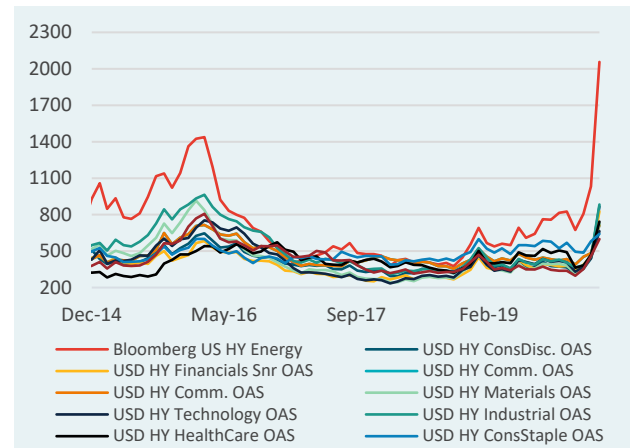
While the energy sector within high yield was the top performer in Q4 2019, the sector was faced with both a supply and demand shock with the Saudi Arabia-Russia production conflict and COVID-19 outbreak, causing it to decline by -38.94% in Q1 2020. The utility and technology sectors held up relatively well, declining -5.1% and -5.3%, respectively.

SPREADS



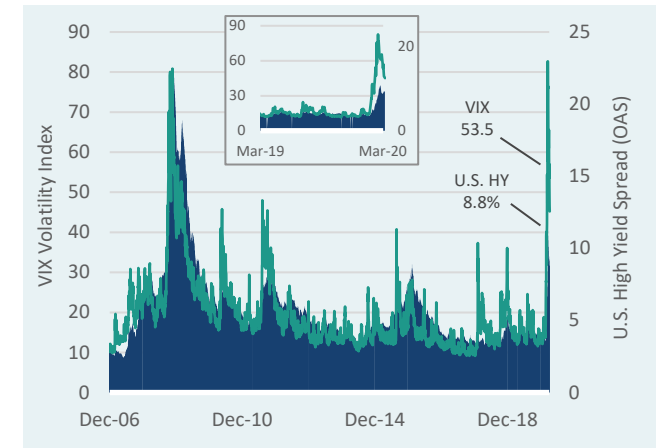
Source: Barclays, Bloomberg, as of 3/31/20

HIGH YIELD SECTOR SPREADS (BPS)



Source: Bloomberg, as of 3/31/20

CREDIT SPREADS MOVING WITH VOLATILITY



Source: CBOE, BofA, as of 3/31/20

Default & issuance

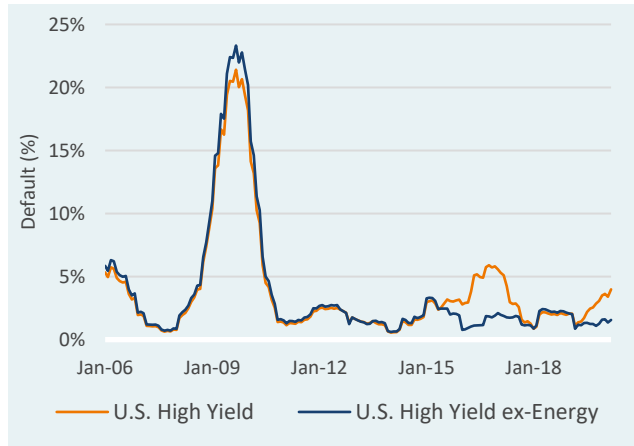
The first quarter saw 13 defaults affecting \$23.5 Billion in bonds and loans. However, one company, Frontier Communications, accounted for \$16.7 Billion of the total. For context, this quarterly amount compares with 43 defaults affecting \$51.5 Billion in bonds and loans for the full year of 2019. While this quarter ranks as the seventh highest in default volume on record, fixed income investors are expecting the worst is yet to come as companies grapple with the COVID-19-induced economic shutdown.

In March, the par-weighted U.S. high-yield default rate rose to a three-year high of 3.4%, up from 2.6% at the end of last year. Loan default rates rose less dramatically, to 1.9% over the trailing 12 months, up from 1.6% at year end.

Energy has driven around 45% of total defaults over the last 12 months, and in Q1 the full year 2020 outlook for the sector worsened dramatically. The trailing 12-month energy default rate in high yield ended the quarter at 9.8% (high yield ex-energy was 2.2%) while the trailing 12-month energy default rate in loans ended at 13.0% (loan ex-energy was 1.8%). In addition to energy, travel and tourism, gaming, leisure, retail, and restaurants appear particularly vulnerable in the current economic environment.

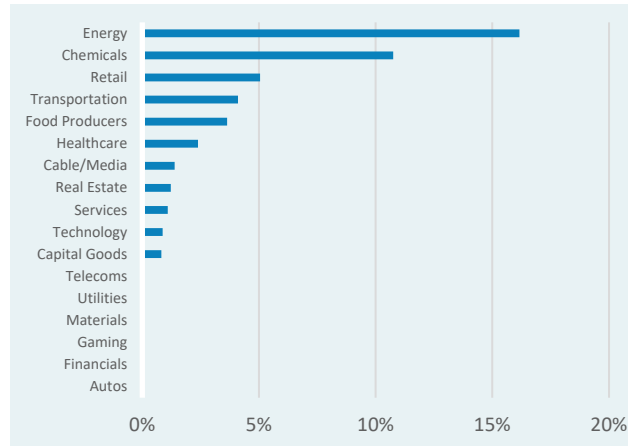
Investment grade bond issuance boomed in Q1 as companies tried to shore up liquidity for the coming recession. This was particularly pronounced in March, which saw a record \$262 Billion in investment grade issuance. Q1 also saw \$73 Billion in high yield volume and loan issuance spike to \$199 Billion.

HY DEFAULT RATE (ROLLING 1-YEAR)



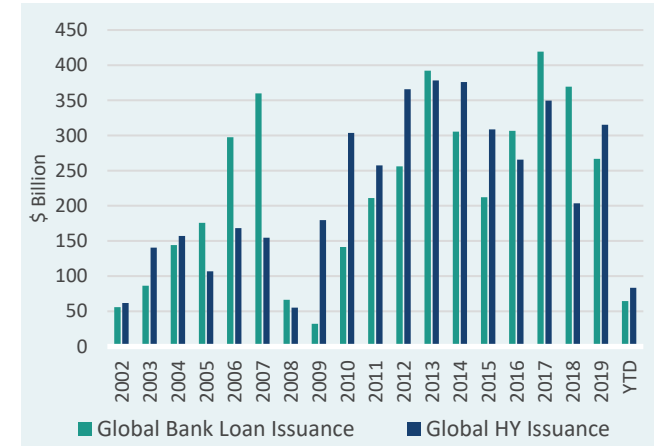
Source: BofA Merrill Lynch, as of 3/31/20

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



Source: BofA Merrill Lynch, as of 3/31/20 – par weighted

GLOBAL ISSUANCE (\$ BILLIONS)



Source: Bloomberg, BofA Merrill Lynch, as of 3/31/20

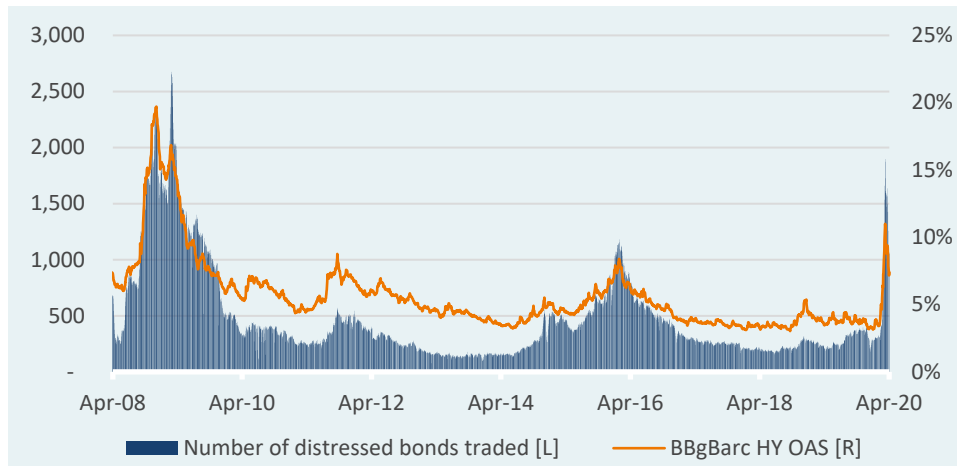
High yield – what happened?

The considerable economic fallout from the COVID-19 pandemic and collapsing oil prices broadly impacted credit markets. Credit spreads topped 1,000 basis points for the first time since the global financial crisis and the number of distressed bonds soared from 218 at the beginning of the year to a peak of 1,896. Higher defaults typically follow slowing growth and credit spread widening. J.P. Morgan’s estimates of credit defaults increased from a 3% rate to an 8% rate for the near-term.

Approximately half of the investment grade bond market now sits within the BBB rated segment, which is the lowest

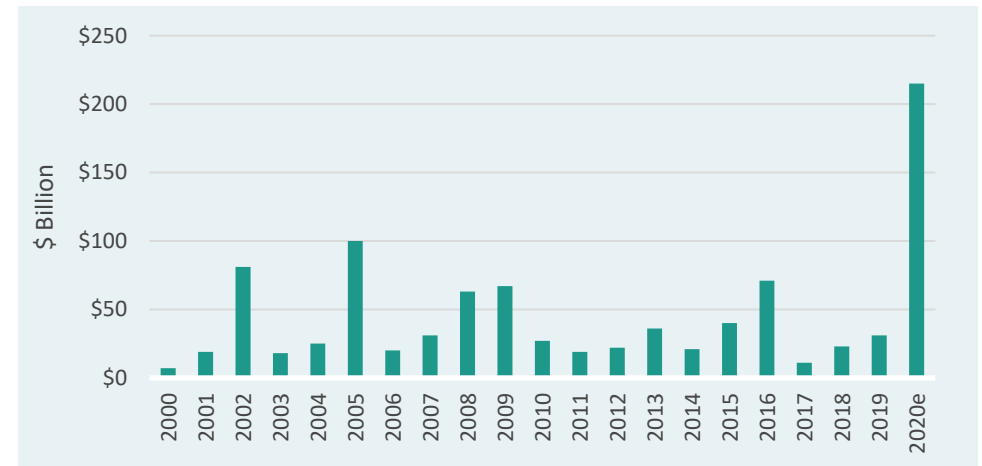
rung on the investment grade scale. Some market participants now expect more than \$200 Billion to fall from the investment grade to the high yield space. Because the BBB sector alone totals more the twice the size of the entire high yield market, downgrades and subsequent forced selling are likely to add pressure to that already stressed market segment throughout the rest of the year. These dislocations have already impacted strategies across the space as investors redeem capital, resulting in suspensions and even closures.

VOLUME AND SPREADS



Source: J.P. Morgan, Bloomberg, as of 4/16/20

FALLEN ANGELS



Equity

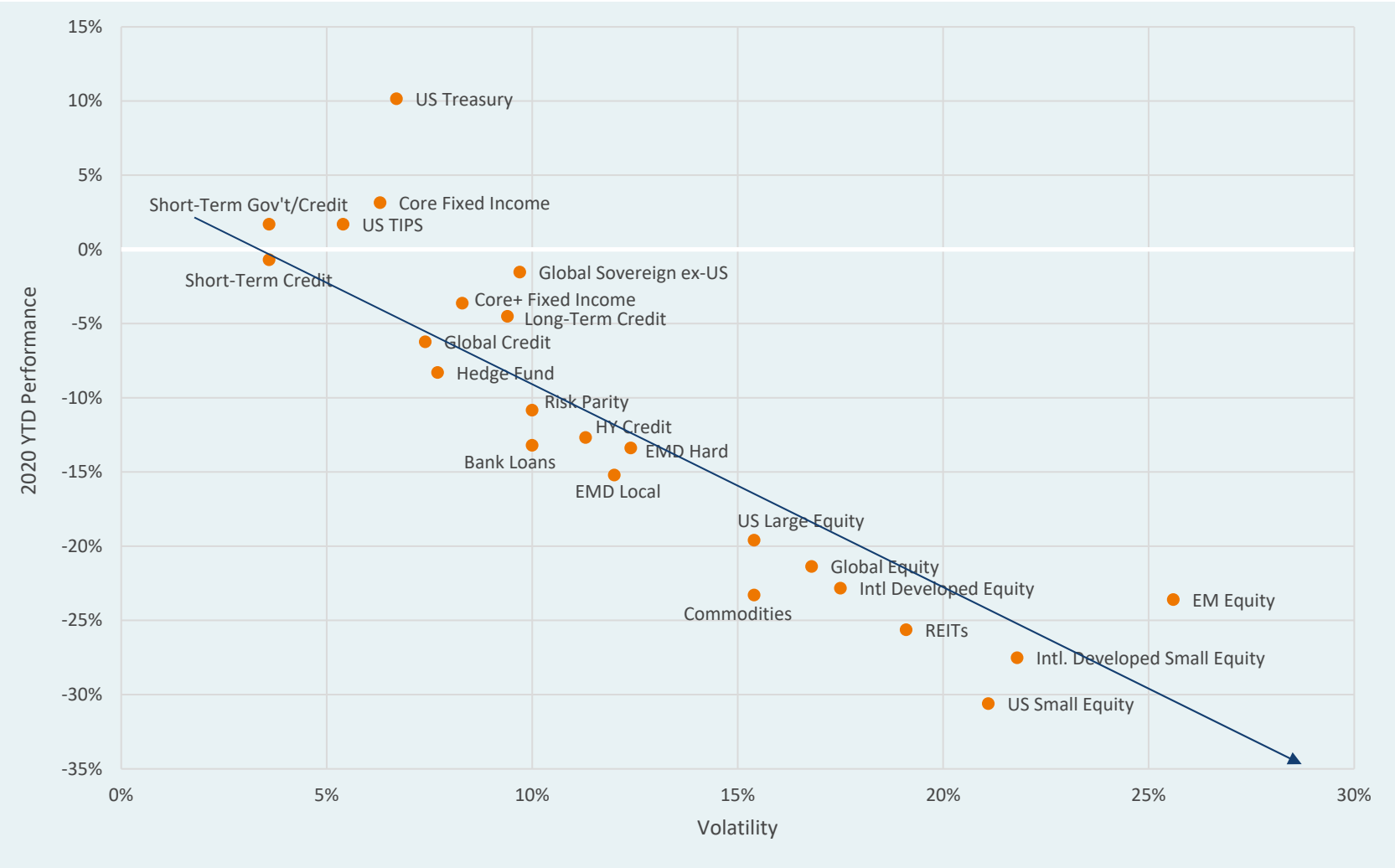
Equity environment

- U.S. equities experienced an unusually sudden and significant sell-off in March as investors grew fearful of the health and economic impacts of COVID-19 spread. During Q1 the S&P 500 fell -19.6%, international developed equities (MSCI EAFE) fell -22.8% and emerging markets (MSCI EM) fell -23.6%.
- The greatest influence on equity performance in 2020 will perhaps be the path of corporate earnings. The degree to which corporate earnings will fall is largely unknown with few reliable estimates.
- Implied volatility spiked in March to a record daily close of 82.7%, surpassing the high of 80.9% in November 2008 during the depths of the global financial crisis.
- In March, a squabble between OPEC+ members led to a historic drop in energy prices. The energy sector faces sharply falling demand and potentially significant oversupply due to oil producers' decision to ramp up production in an oil war. The energy sector experienced a loss of -50.5% in Q1.
- The U.S. dollar appreciated significantly in the first quarter, rising 7.1% on a trade-weighted basis, resulting in large losses for investors with unhedged currency exposure. As is often the case during higher risk market environments, demand for safe-haven currencies positively impacted the dollar.
- Value stocks severely underperformed growth stocks during the first quarter (Russell 1000 Value -26.7%, Russell 1000 Growth -14.1%). Small cap stocks underperformed large cap stocks by a similar magnitude (Russell 2000 -30.6%, Russell 1000 -20.2%). Value and size factors continue to experience an extended period of relative underperformance.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
US Large Cap (S&P 500)	(19.6%)		(7.0%)	
US Small Cap (Russell 2000)	(30.6%)		(24.0%)	
US Large Value (Russell 1000 Value)	(26.7%)		(17.2%)	
US Large Growth (Russell 1000 Growth)	(14.1%)		(0.9%)	
International Large (MSCI EAFE)	(22.8%)	(19.9%)	(14.4%)	(10.3%)
Eurozone (Euro Stoxx 50)	(27.0%)	(24.8%)	(16.6%)	(12.0%)
U.K. (FTSE 100)	(28.8%)	(23.0%)	(22.0%)	(16.4%)
Japan (NIKKEI 225)	(18.6%)	(18.8%)	(6.7%)	(6.8%)
Emerging Markets (MSCI Emerging Markets)	(23.6%)	(18.5%)	(17.7%)	(12.7%)

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 3/31/20

Q1 performance



Riskier assets performed the worst in Q1...

...and this relationship was fairly consistent across most asset classes

Source: Verus, as of 3/31/20 – Volatility is based on our forward looking 10-year Capital Market Assumptions

Domestic equity

U.S. equities experienced an unusually sudden and significant sell-off in March as investors grew fearful of the health and economic impacts of COVID-19 spread. During Q1 the S&P 500 fell -19.6%, international developed equities (MSCI EAFE) fell -22.8% and emerging markets (MSCI EM) fell -23.6%.

At the same time that COVID-19 was spreading throughout the U.S., a squabble between OPEC+ members led to a historic drop in energy prices. The energy sector faces a perfect storm – sharply falling demand due to a global economic slowdown, and potentially significant oversupply due to oil producers’ decision to ramp up production in an oil war. The energy sector experienced a loss of -50.5% in Q1.

The greatest influence on equity performance in 2020 will perhaps be the path of corporate earnings. The degree to which corporate earnings will fall throughout the year is largely unknown with few reliable estimates.

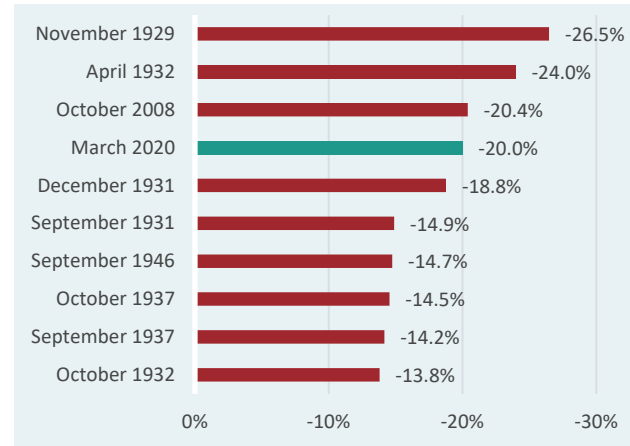
We continue to believe an underweight to international developed equities is appropriate. The economic pain that European Union member countries face may be significant, and membership to the EU inherently limits the ability of these countries to enact certain changes to address weakening economies. The U.S. market may continue to perform relatively well throughout the economic recovery.

S&P 500



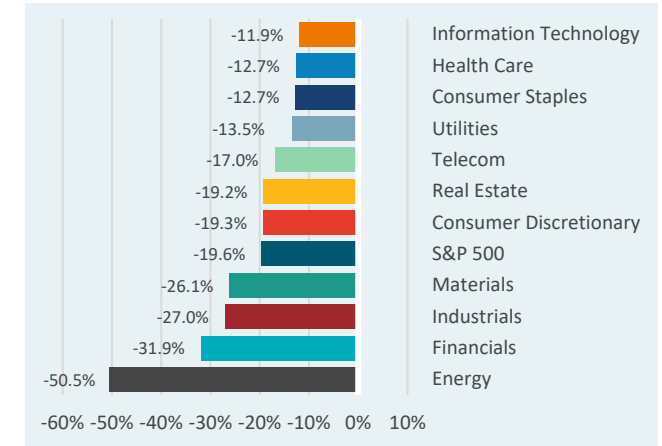
Source: Standard & Poor's, as of 3/31/20

WORST S&P 500 MAX MONTHLY DRAWDOWNS



Source: Standard & Poor's, as of 3/31/20

Q1 SECTOR PERFORMANCE



Source: Standard & Poor's, as of 3/31/20

Domestic equity size & style

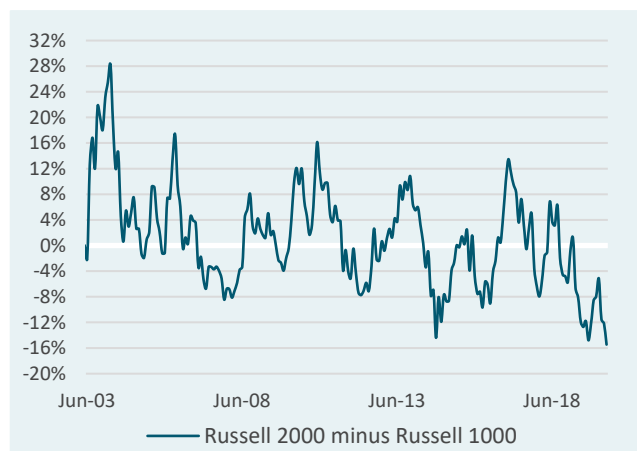
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Once again, the impact of sector performance on the value premium in Q1 was notable – specifically energy and financial sectors (-50.5% and -31.9%, respectively) which tend to be value-tilted. Energy prices saw a historic drop fueled by OPEC+ infighting and likely the intent of the cartel to push out U.S. energy producers. Financial stocks delivered losses as

falling interest rates hurt profitability. Information Technology (-11.9%), a sector that tends to contain more growth stocks, was the best performer.

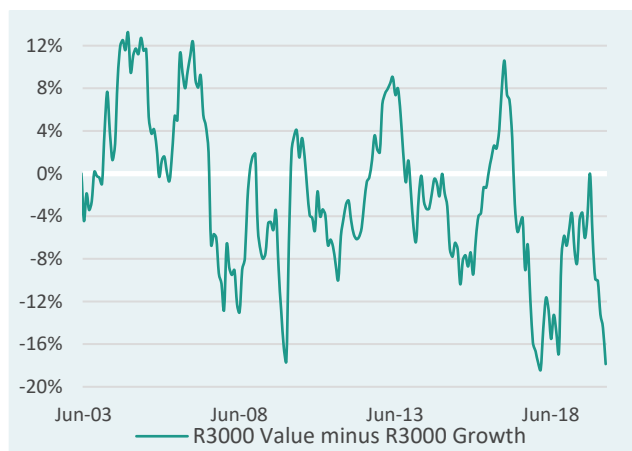
We believe that it is extremely difficult to successfully make short-term bets on style factors. Factor performance can be incredibly noisy and vulnerable to sector randomness. Market events of the past month seem to support this belief. While value in particular continues to be historically cheap, price itself does not translate to short-term outperformance – a catalyst for a turnaround should also be clearly identified and understood. We remain watchful and believe that consistent long-term exposure to these style factors is an ideal implementation approach for most investors, most of the time.

SMALL CAP VS LARGE CAP (YOY)



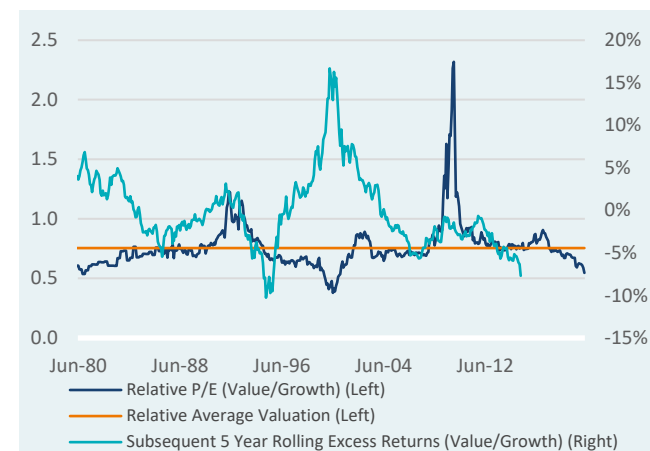
Source: FTSE, as of 3/31/20

VALUE VS GROWTH (YOY)



Source: FTSE, as of 3/31/20

VALUE HISTORICALLY CHEAP



Source: Russell, Bloomberg, as of 3/31/20

International developed equity

Equity markets around the world sold off broadly in the first quarter, down between -16% to -29%. Japanese equities were among the best performing (MSCI Japan -17%) while the U.K. was one of the worst performing (MSCI U.K. -29%).

As the global transactional currency, demand for U.S. dollars tends to ramp up when markets become stressed and companies abroad require dollars to pay down dollar-denominated liabilities. In the first quarter, the U.S. dollar gained +2.3% against the Euro and +6.4% against the British pound, resulting in losses for U.S. investors in European

equities with unhedged currency exposure. In mid-March, the Federal Reserve expanded its dollar swap liquidity lines and opened a FIMA repo facility which will allow foreign monetary authorities to enter repurchase agreements with the Fed. Both measures worked to help improve U.S. dollar liquidity abroad, and as a result, slow the pace of appreciation of the U.S. dollar relative to international pairs.

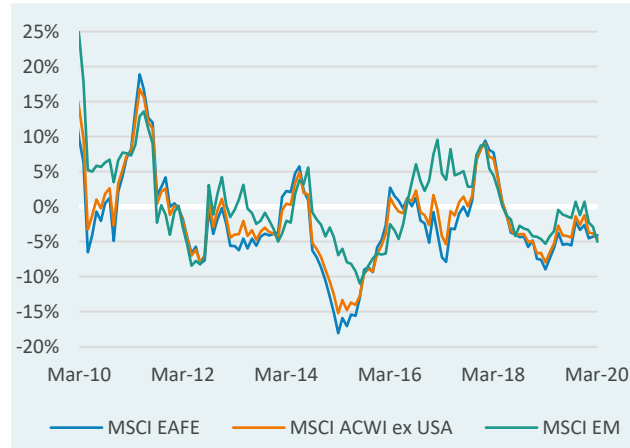
Cross-currency basis, which measure the additional premia investors must pay to swap one currency for another over a term, narrowed in March, signaling that the Fed's efforts to ease dollar funding strains have proved effective thus far.

INTERNATIONAL DEVELOPED EQUITIES



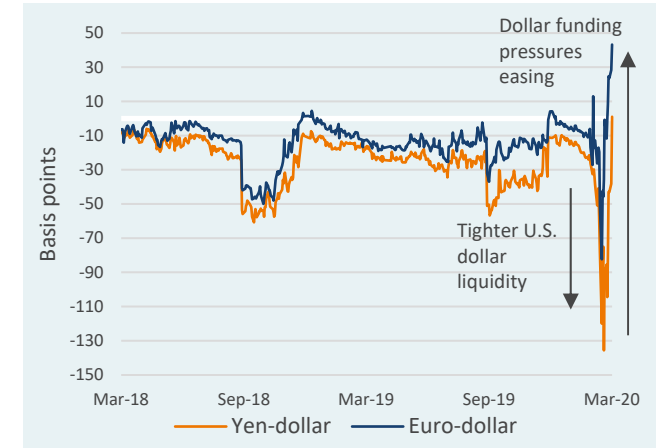
Source: MSCI, as of 3/31/20

EFFECT OF CURRENCY (1-YEAR ROLLING)



Source: MSCI, as of 3/31/20

3M/3M CROSS CURRENCY BASIS SWAPS



Source: Bloomberg, as of 3/31/20

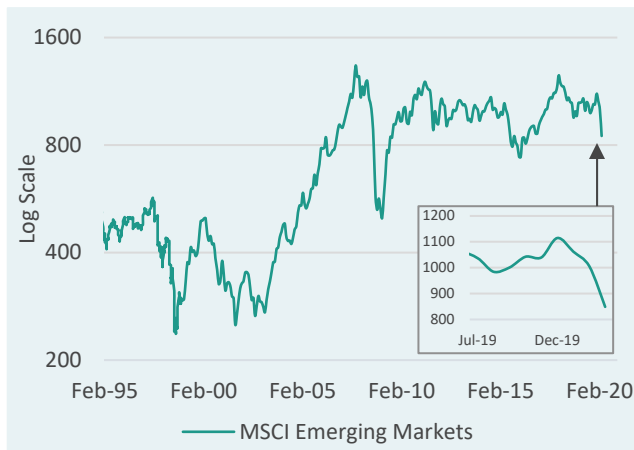
Emerging market equity

Emerging market equities (MSCI EM -23.6%) underperformed both U.S. (S&P 500 -19.6%) and international developed equities (MSCI EAFE -22.8%) over the quarter. Within the complex, Latin American equities (MSCI EM Latin American -45.6%) dramatically underperformed Asian equities (MSCI EM Asia -18.1%), which were propped up by remarkably resilient Chinese equity markets. Currency exposure also played a big role in the outperformance of EM Latin America over EM Asia, as the U.S. dollar strengthened significantly against the Brazilian real, and the Mexican peso, and was little changed against the Chinese renminbi.

Inflation remains low in emerging economies and may face downward pressure in the coming months as energy prices have fallen. Central banks may have more room to maneuver relative to developed economies with regard to monetary policy, as interest rates are closer to average levels.

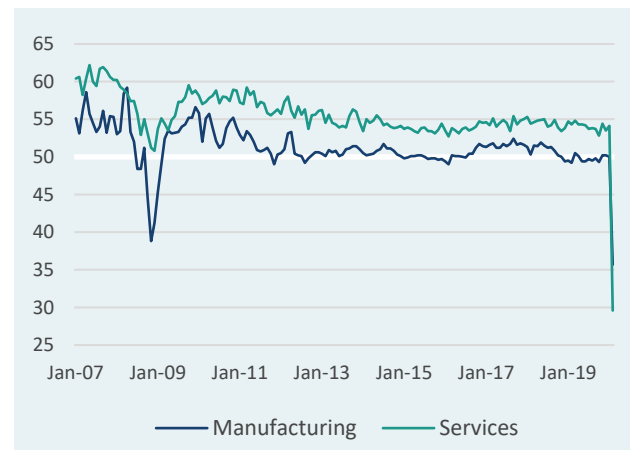
Countries viewed as having poor health infrastructure as well as economic dependence on oil prices fared the worst. Mexico's sovereign debt rating was downgraded by several rating agencies, and Moody's downgraded South Africa's sovereign debt rating below investment-grade.

EMERGING MARKET EQUITY



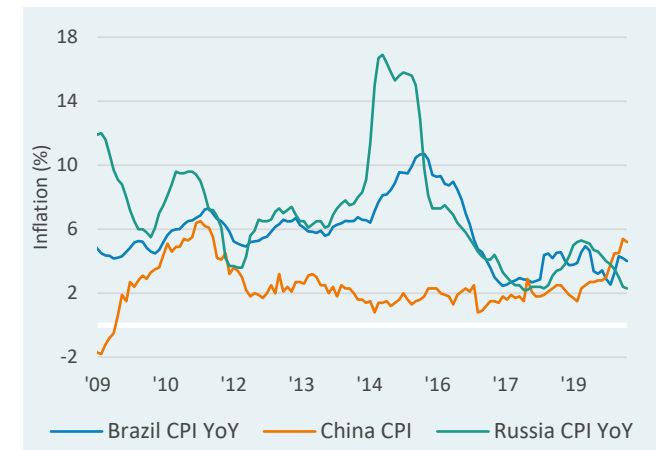
Source: MSCI, as of 3/31/20

CHINA PURCHASING MANAGERS' INDICES



Source: China Federation of Logistics and Purchasing, as of 2/29/20

INFLATION (CPI YOY)



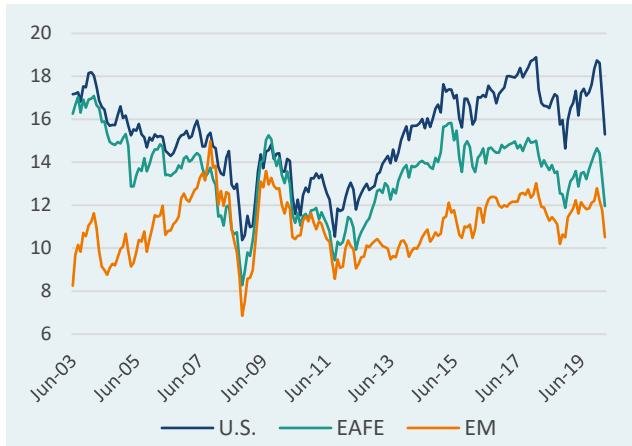
Source: Bloomberg, as of 2/29/20

Equity valuations

Throughout the significant Q1 market sell-off, losses across global markets have been fairly similar. This has resulted in U.S. equities retaining their status as the most expensive market, though we believe this may be justified as governments with limited ability to implement stimulus policies could face tougher economic fallout. Specifically, European Union member nations that cannot exercise independent actions may see greater difficulties ahead as income gaps cannot be supplemented with government spending.

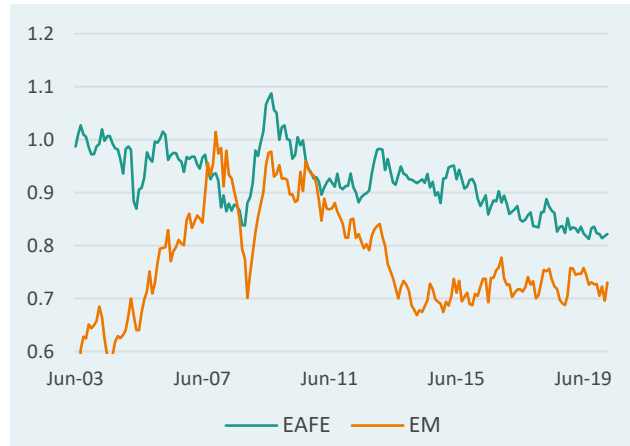
In 2005, Thomas Friedman put forth the notion that “The World is Flat”, and that the 21st century will be characterized by globalization, with historical and geographical divisions becoming less relevant. In Friedman’s world, companies produce their goods where it is cheapest to do so, often in emerging and developing economies with fewer labor protections. Supply chains are built within profit maximization frameworks often with little regard for the risks associated with having a supply chain concentrated in one or a few countries. Looking ahead, it will be interesting to follow whether Friedman’s world becomes slightly bumpier.

FORWARD P/E RATIOS



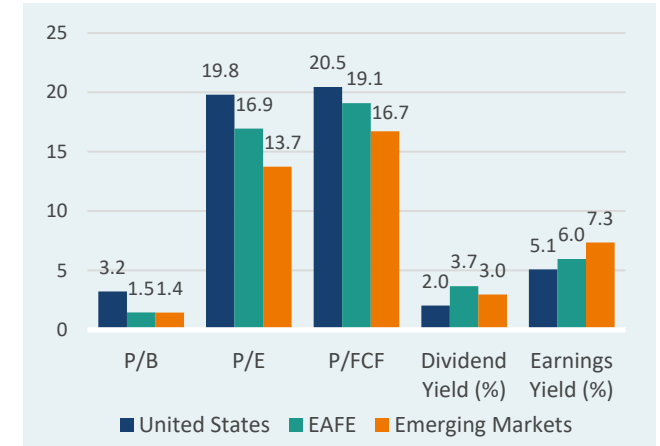
Source: MSCI, 12m forward P/E, as of 3/31/20

FORWARD P/E RATIOS (RELATIVE TO THE U.S.)



Source: MSCI, 12m forward P/E, as of 3/31/20

VALUATION METRICS (3-MONTH AVERAGE)



Source: Bloomberg, MSCI as of 3/31/20 - trailing P/E

Equity volatility

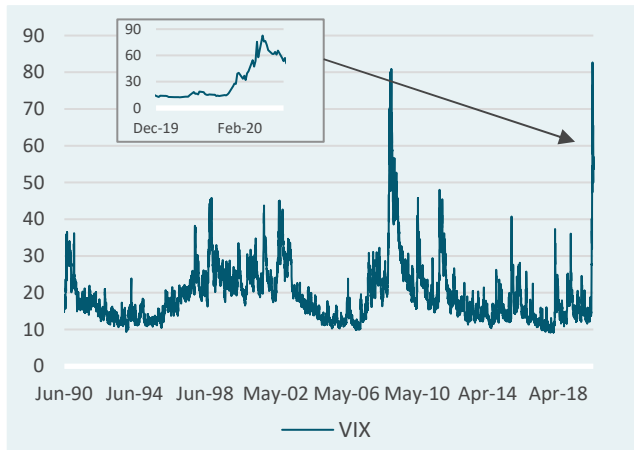
Risk markets experienced one of the most sudden corrections on record, amidst extreme volatility. The S&P 500 showed its largest one-day drop since 1987 (March 16 -11.9%) and its largest one-day gain since 2008 (March 24 +9.4%). The transition from a very low- to a very high-volatility environment likely caught many investors off guard.

Implied volatility (CBOE VIX Index) spiked in March to a record daily close of 82.7, surpassing the high of 80.9 on November 20th, 2008 during the depths of the global financial crisis. Such extreme levels of market volatility can

create difficulties for investors in managing portfolios. Processes such as portfolio rebalancing that are often systematic can become complex and subjective when equities are exhibiting nearly double-digit daily moves.

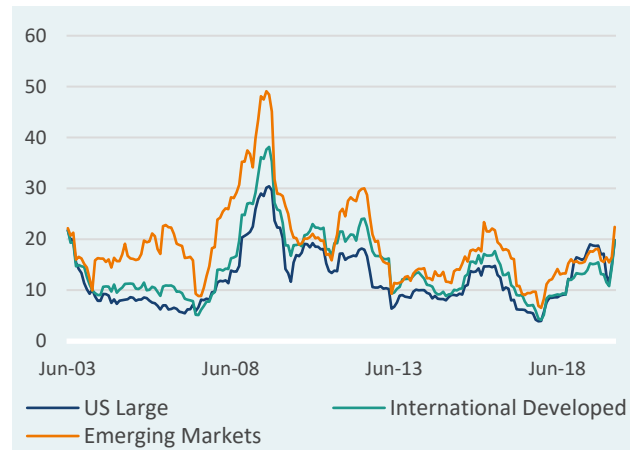
The S&P 500 Price Index closed at 2237 on March 23rd, -33.9% below February 19th peaks. Since then, U.S. equities have staged a remarkable rebound in the foreground of a historically bleak economic background. Debate over whether the rebound is justified has continued as economic uncertainty remains at unprecedented levels.

U.S. IMPLIED VOLATILITY (VIX)



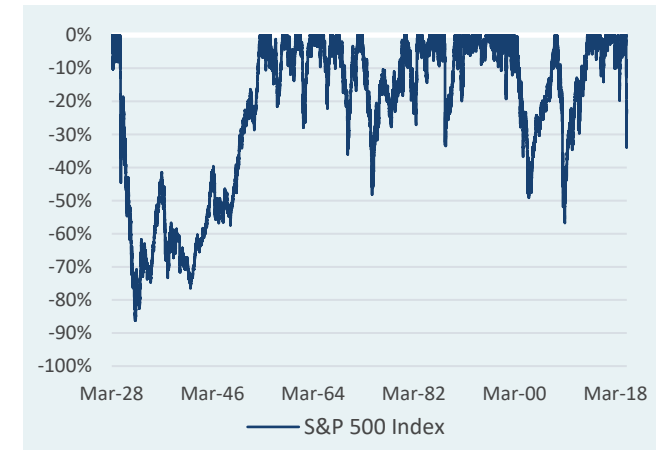
Source: CBOE, as of 3/31/20

ROLLING 1-YEAR REALIZED VOLATILITY



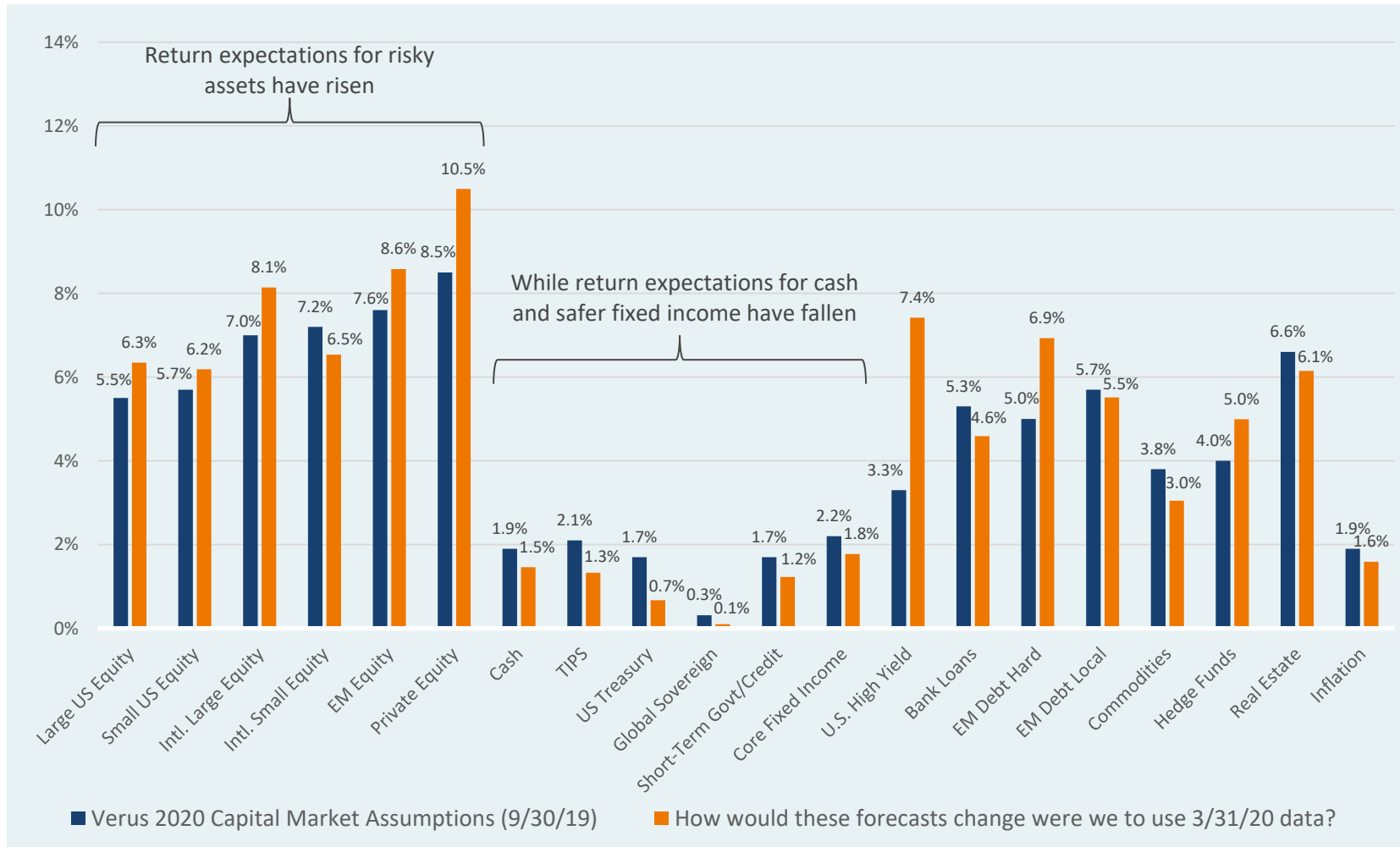
Source: Standard & Poor's, MSCI, Bloomberg, as of 3/31/20

MAX DRAWDOWN FROM PRIOR PEAKS



Source: Standard & Poor's, Bloomberg, as of 3/31/20

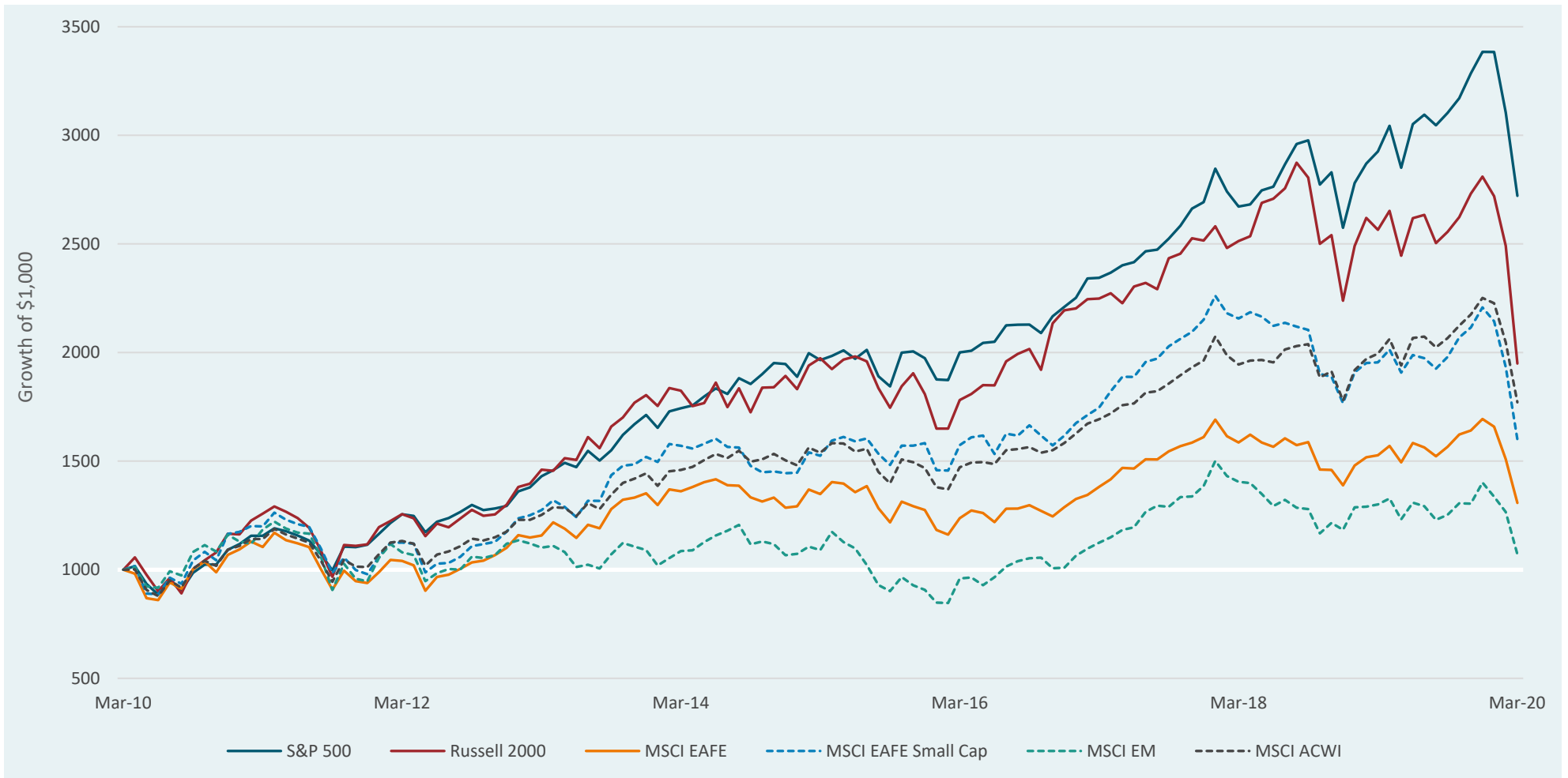
How have return expectations changed?



The overall portfolio's expected return may have risen or fallen during Q1, depending on the asset allocation & risk level

Source: Verus

Long-term equity performance



Source: Morningstar, as of 3/31/20

Other assets

Currency

The U.S. dollar appreciated significantly in the first quarter, rising 7.1% on a trade-weighted basis, resulting in losses for investors with unhedged currency exposure. As is often the case during higher risk market environments, demand for safe-haven currencies contributed to the rising dollar.

Historically speaking, environments where the U.S. dollar was much more expensive than average tended to be followed by an eventual mean-reversion. However, this mean-reversion effect is not a sure bet, and it can take years (or perhaps decades) to occur. As recent years have shown,

leaving currency exposure unhedged tends to result in uncompensated volatility, and occasional (or frequent) large and sharp losses or gains.

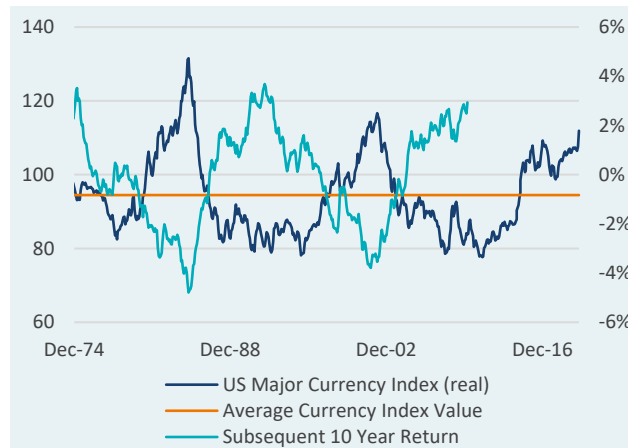
The MSCI Currency Factor Mix Index, constructed as a combination of individual Currency Factor indices (carry, value, momentum) advanced 1.2% in Q1. The momentum factor (+8.7%) posted strong gains as appreciating currencies continued to strengthen while the carry factor (-7.2%) lagged as the exchange rate adjustments implied by local interest rate differentials occurred faster than expected.

BLOOMBERG DOLLAR SPOT INDEX



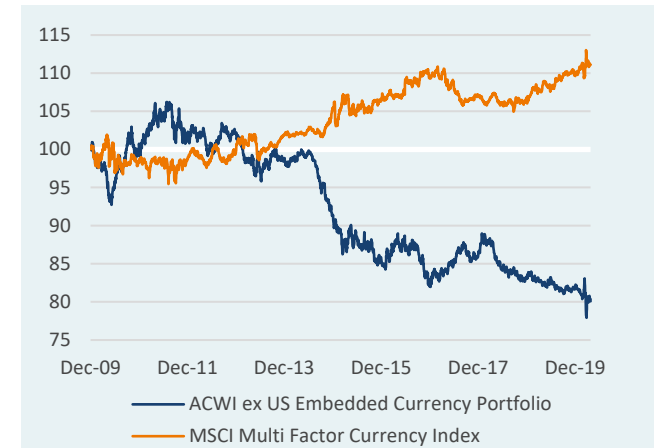
Source: Bloomberg, as of 3/31/20

USD CURRENCY LEVEL & SUBSEQUENT RETURN



Source: Federal Reserve, Verus, as of 3/31/20

EMBEDDED CURRENCY VS CURRENCY BETA



Source: MSCI, Bloomberg, as of 3/31/20

Oil crisis

In mid-March, the price of oil experienced a sudden drop as Russia refused to join the OPEC recommended production cuts. In retribution, Saudi Arabia signaled that they would increase production drastically in April upon expiration of the OPEC pact. These events led to a 30% one-day drop in price, and historically volatile trading.

Russia's actions are likely linked to increased U.S. sanctions on its energy producers, which have negatively impacted the economy. Sanctions have prevented Russia from completing the Nord Stream 2 gas pipeline in the Baltic Sea, a project that \$11 Billion had previously been invested in, which would

carry Russian Gas directly to Germany and would circumvent the Ukraine. Sanctions were also levied against Russia's Rosneft for allegedly supporting the Nicolas Maduro regime in Venezuela. It is estimated that 70% of oil production in Venezuela was going through Rosneft.

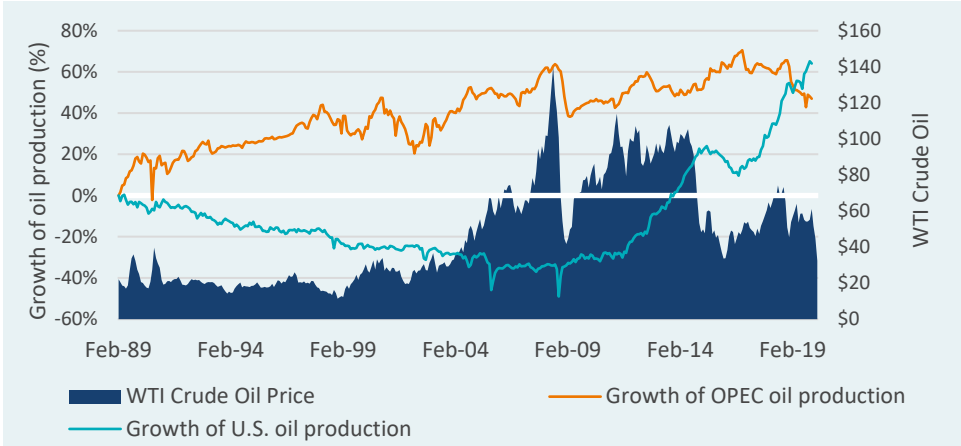
A similar dynamic occurred during the oil crash of 2014 as OPEC let oil plummet, arguably with the intent to put U.S. oil producers out of business. American oil production has been ramped up drastically over the last decade, at a time when OPEC producers were working to minimize their own production in order to balance global supply.

WTI OIL PRICE



Source: FRED, as of 3/31/20

GLOBAL OIL PRODUCER CONFLICT



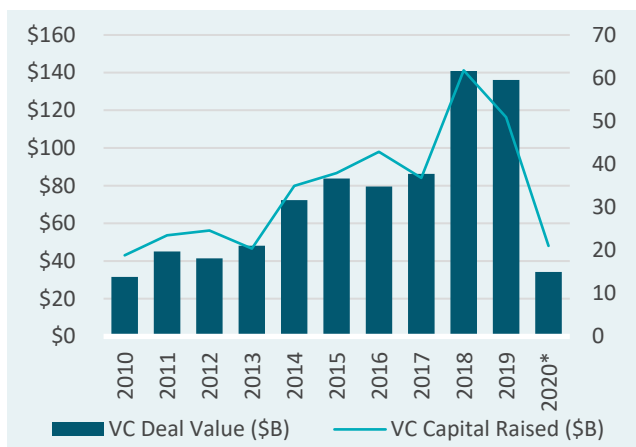
Source: Bloomberg, U.S. Energy Information Administration, as of 3/31/20

Private markets

Deals plateaued in buyouts and venture; multiples are steady; buyout fundraising has slowed

- Before the impending market dislocation, venture capital fundraising was on pace to eclipse 2019, while total deal volume and number of deals had plateaued. \$21 Billion of venture capital was raised in the U.S. in Q1 2020, constituting 40% of capital raised in 2019. Deal value and number of deals in the quarter represented 25% and 19% of 2019's totals, respectively.
- Buyout activity continued to decrease in Q1 2020 from 2019. Through the first quarter, buyouts dollar value and number of transactions amounted to 18% and 19% of 2019 levels, respectively. The size of the average buyout, \$135.6M, has decreased from 2019, \$145.2M. Similarly, fundraising has also slowed. Only 46 buyout funds representing \$45 Billion closed in Q1 2020, down from 249 funds representing \$315 Billion in 2019.
- Pricing multiples on completed buyout deals remained in line with 2019's. Median EV/EBITDA is 12.9x (up slightly from 12.7x in 2019) with debt multiples unchanged at 5.9x. Debt as a percentage of transaction value hovers around 45%.

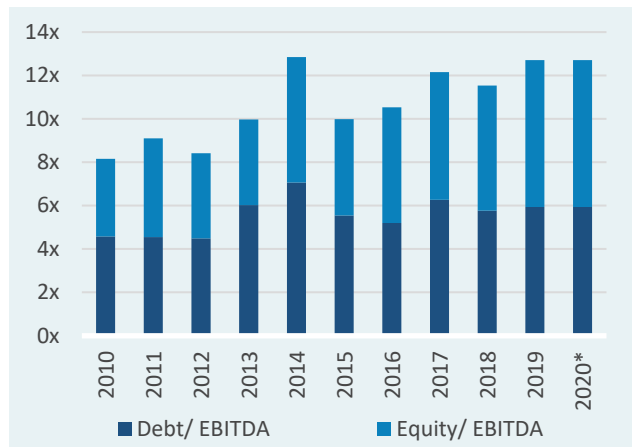
VENTURE DEAL VOLUME & FUNDRAISING



*2020 figures through 3/31/20

Source: PitchBook

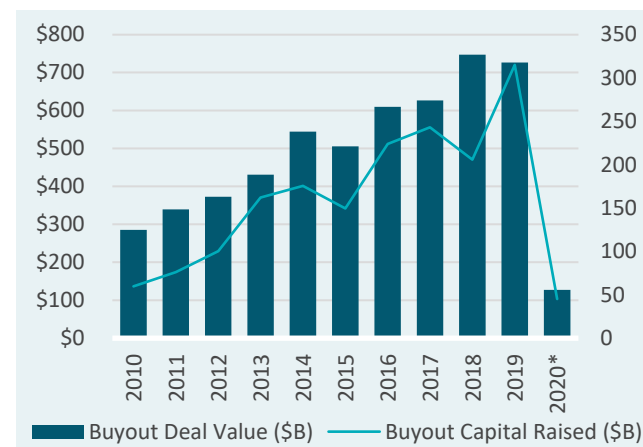
TRANSACTION MULTIPLES



*2020 figures through 3/31/20

Source: PitchBook

BUYOUTS DEAL VOLUME & CAPITAL RAISED

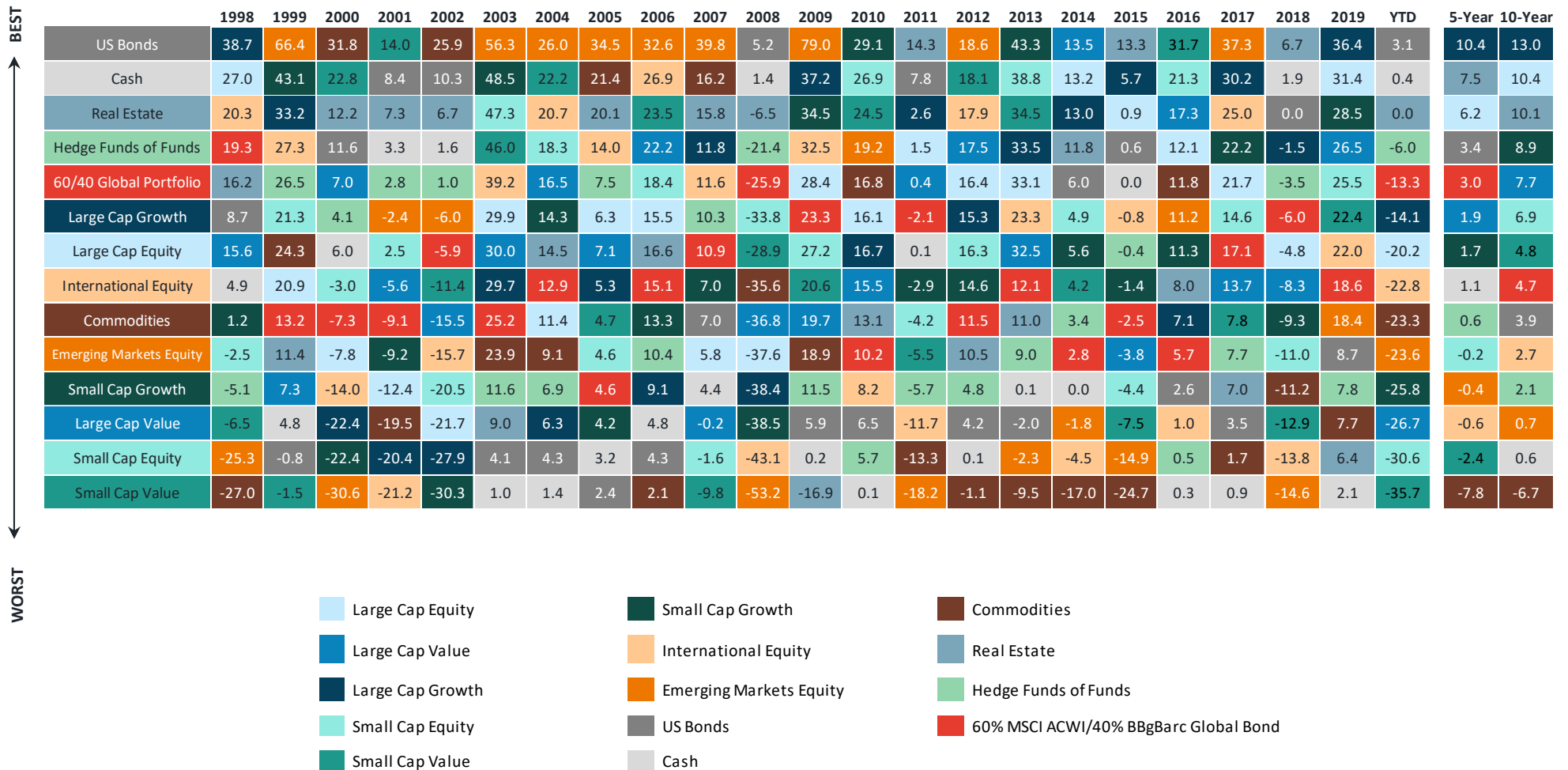


*2020 figures through 3/31/20

Source: PitchBook

Appendix

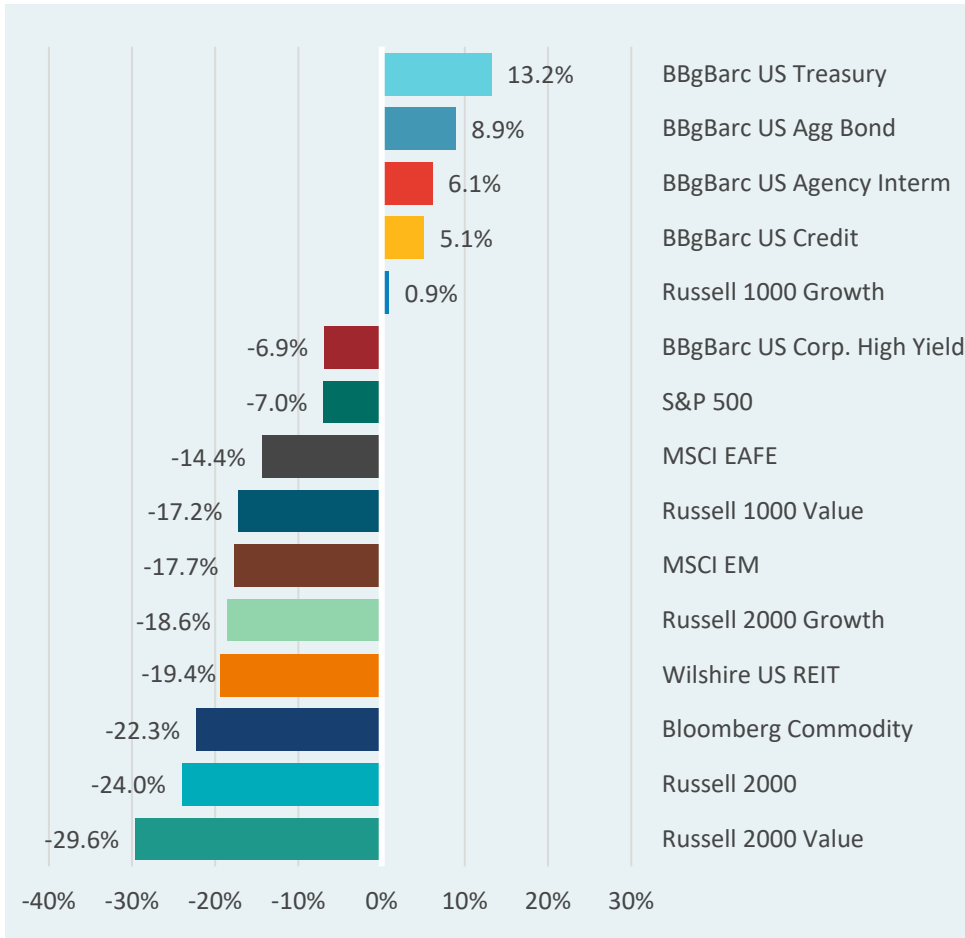
Periodic table of returns



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, BBgBarc US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, BBgBarc Global Bond. NCREIF Property Index performance data as of 12/31/19.

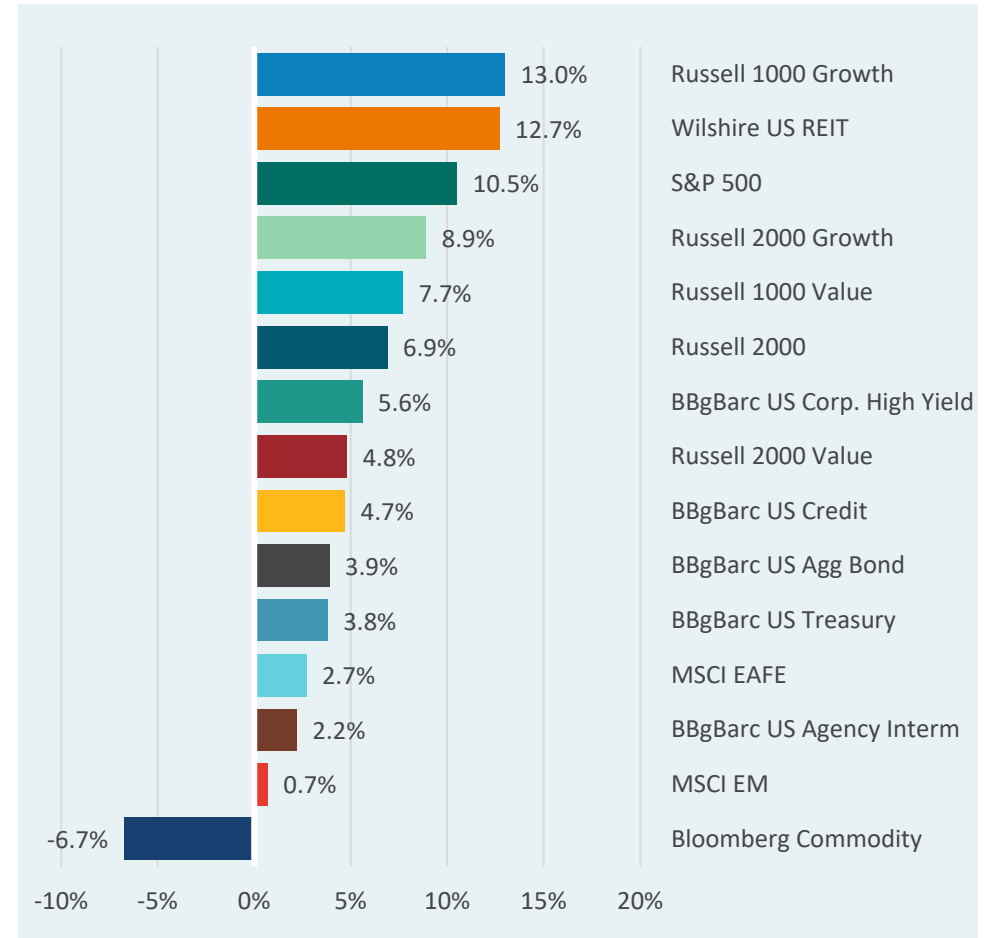
Major asset class returns

ONE YEAR ENDING MARCH



Source: Morningstar, as of 3/31/20

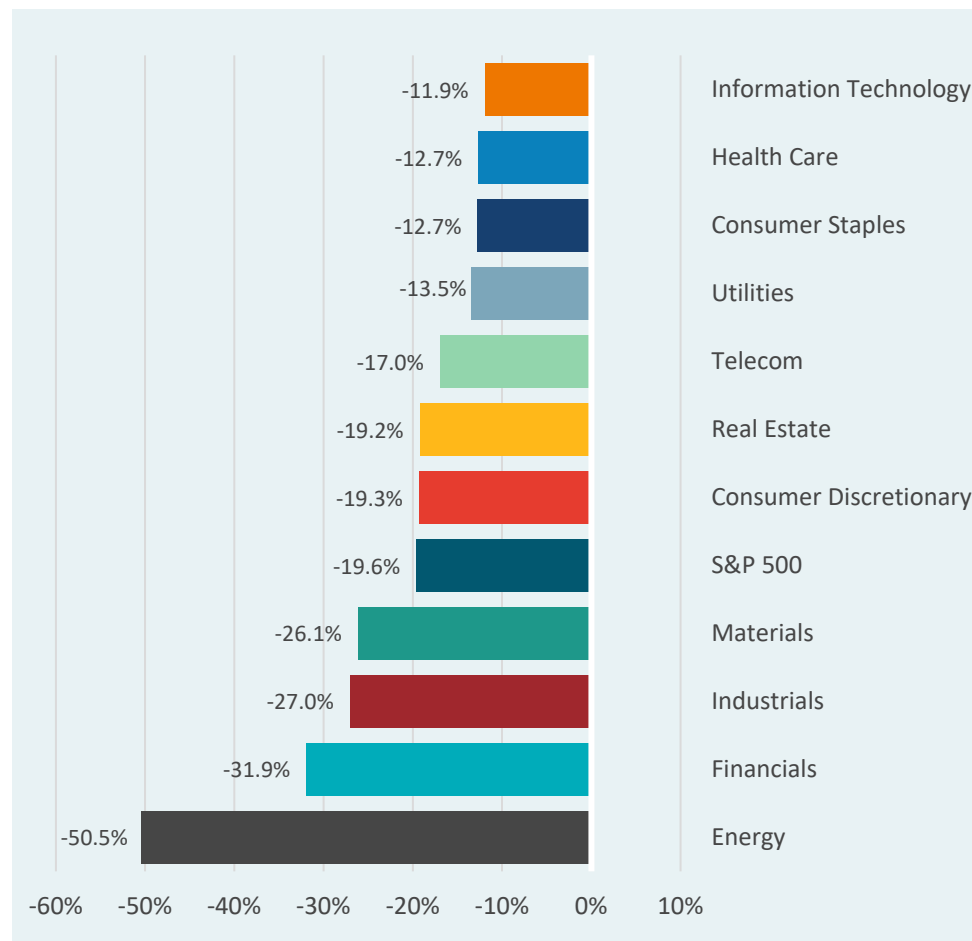
TEN YEARS ENDING MARCH



Source: Morningstar, as of 3/31/20

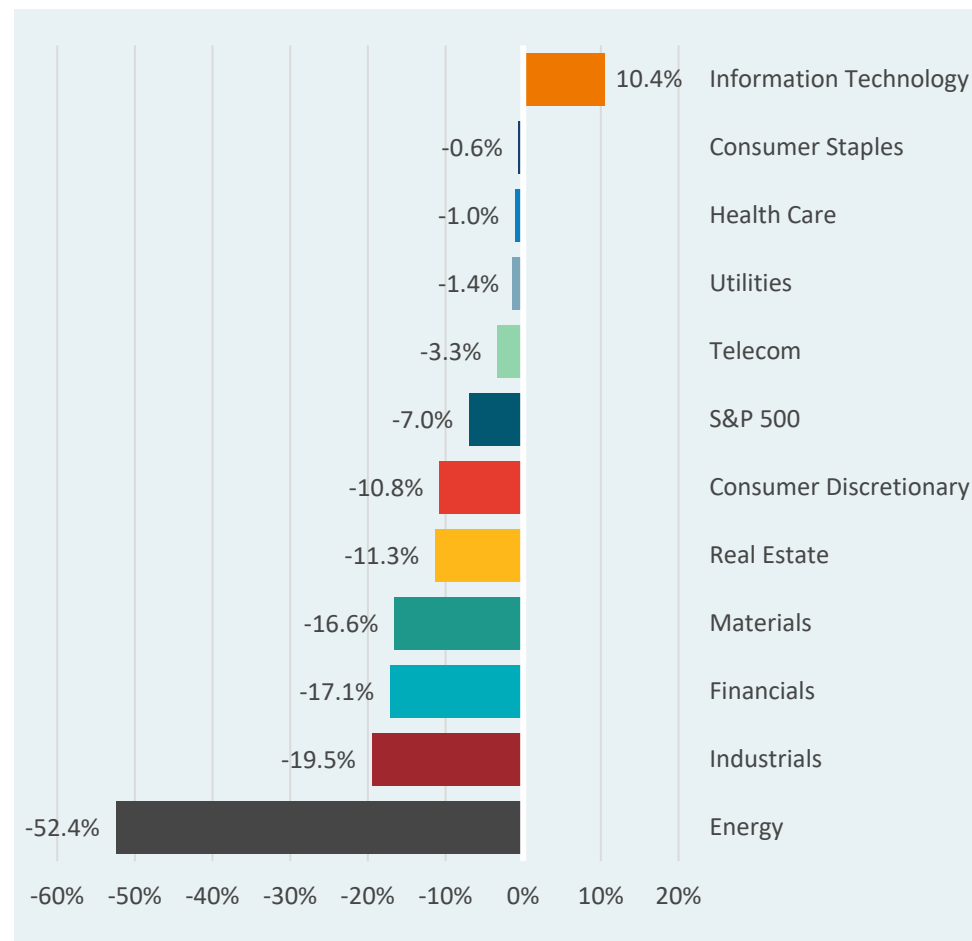
S&P 500 sector returns

Q1 2020



Source: Morningstar, as of 3/31/20

ONE YEAR ENDING MARCH

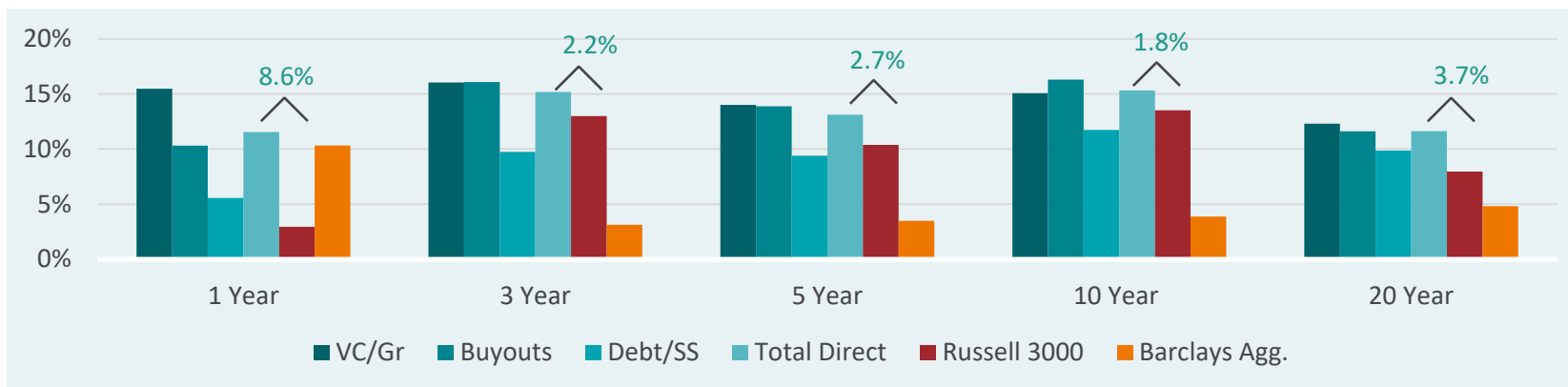


Source: Morningstar, as of 3/31/20

Private equity vs. public performance

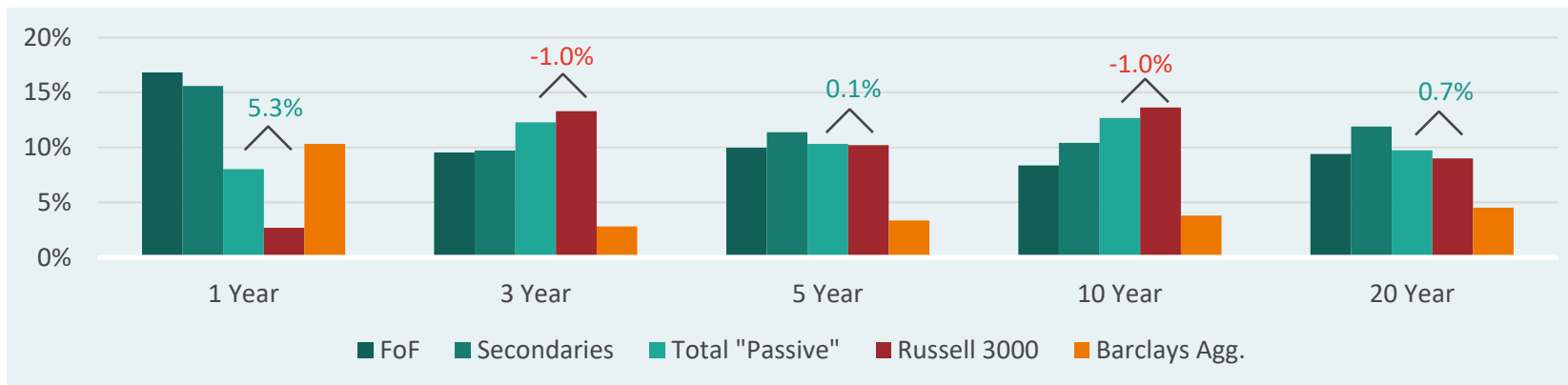
As of 9/30/2019

DIRECT PRIVATE EQUITY FUND INVESTMENTS



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

"PASSIVE" STRATEGIES



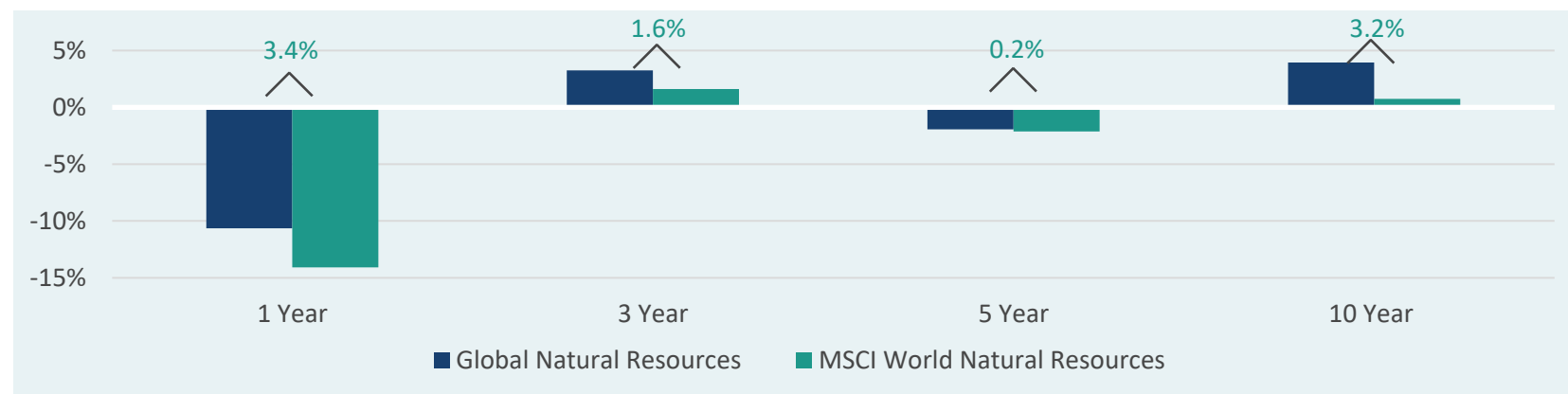
"Passive" strategies outperformed comparable public equities on a 1-, 5-, and 20-year basis, and underperformed on a 3- and 10-year basis

Sources: Thomson Reuters Cambridge Universe's PME Module: U.S. Private Equity Funds sub asset classes as of September 30, 2019. 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 equity vs. liquid real assets performance

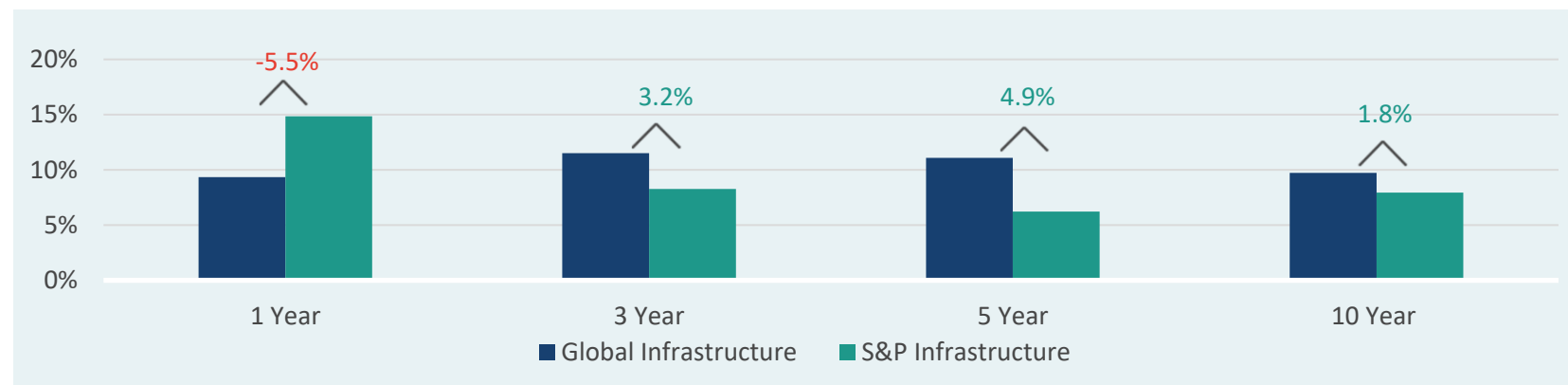
As of 9/30/2019

GLOBAL NATURAL RESOURCES FUNDS



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

GLOBAL INFRASTRUCTURE FUNDS



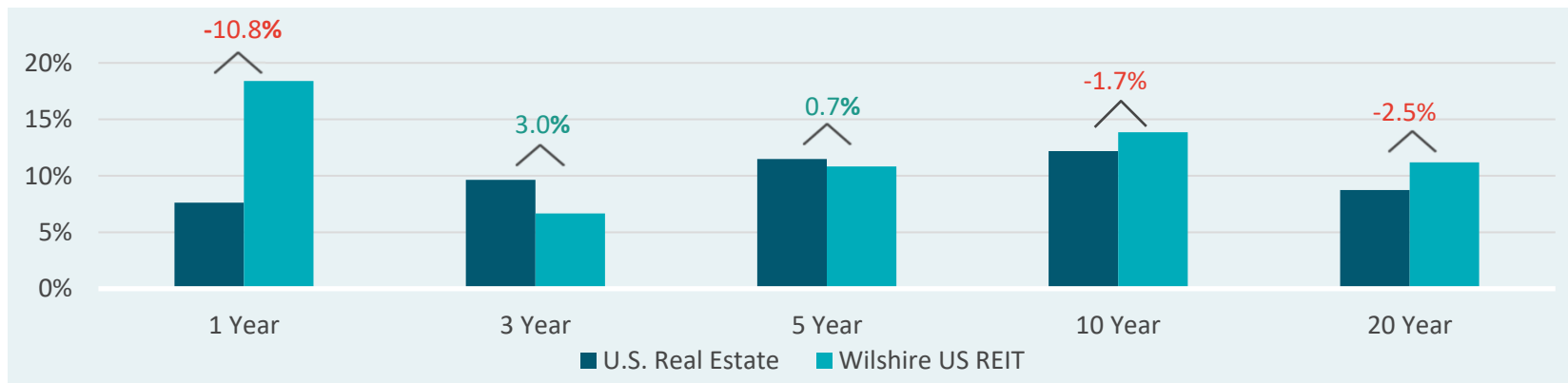
Infra. funds outperformed the S&P Infra. across all periods, except on a 1-year basis

Sources: Thomson Reuters C|A 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, 2019. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real assets universes.

Private vs. liquid & core real estate performance

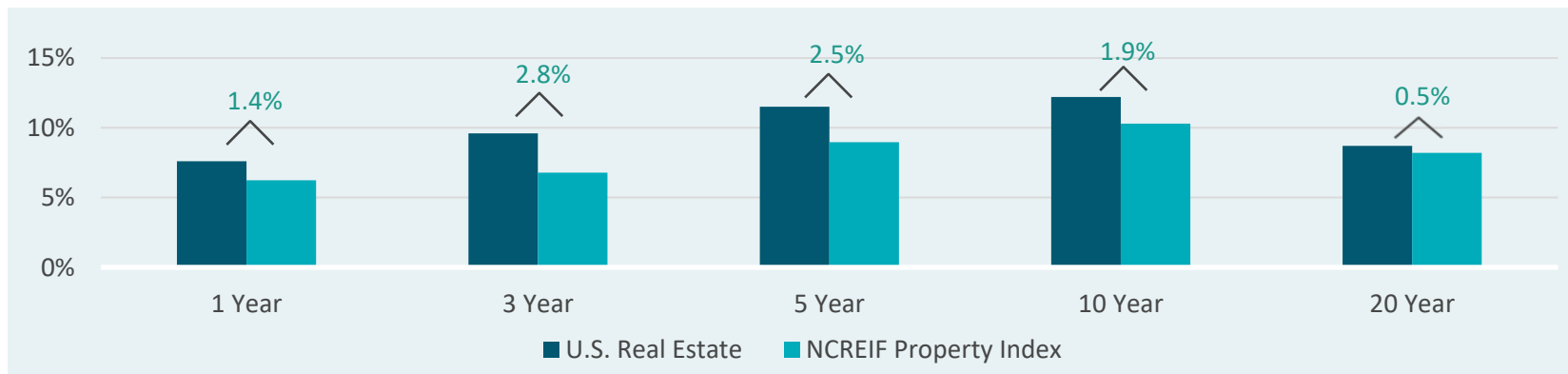
As of 9/30/2019

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



U.S. Private R.E. funds underperformed the Wilshire U.S. REIT Index on a 1-, 10-, and 20-year basis, but not over 3- and 5-years

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



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

Sources: Thomson Reuters C|A PME: Global and U.S. Real Estate universes as of September 30, 2019. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real estate universes.

Detailed index returns

DOMESTIC EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Core Index							
S&P 500	(12.4)	(19.6)	(19.6)	(7.0)	5.1	6.7	10.5
S&P 500 Equal Weighted	(18.0)	(26.7)	(26.7)	(17.6)	(0.4)	2.8	9.2
DJ Industrial Average	(13.6)	(22.7)	(22.7)	(13.4)	4.4	6.9	10.0
Russell Top 200	(11.0)	(17.7)	(17.7)	(4.1)	6.7	7.9	11.0
Russell 1000	(13.2)	(20.2)	(20.2)	(8.0)	4.6	6.2	10.4
Russell 2000	(21.7)	(30.6)	(30.6)	(24.0)	(4.6)	(0.2)	6.9
Russell 3000	(13.8)	(20.9)	(20.9)	(9.1)	4.0	5.8	10.1
Russell Mid Cap	(19.5)	(27.1)	(27.1)	(18.3)	(0.8)	1.8	8.8
Style Index							
Russell 1000 Growth	(9.8)	(14.1)	(14.1)	0.9	11.3	10.4	13.0
Russell 1000 Value	(17.1)	(26.7)	(26.7)	(17.2)	(2.2)	1.9	7.7
Russell 2000 Growth	(19.1)	(25.8)	(25.8)	(18.6)	0.1	1.7	8.9
Russell 2000 Value	(24.7)	(35.7)	(35.7)	(29.6)	(9.5)	(2.4)	4.8

INTERNATIONAL EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
MSCI ACWI	(13.5)	(21.4)	(21.4)	(11.3)	1.5	2.8	5.9
MSCI ACWI ex US	(14.5)	(23.4)	(23.4)	(15.6)	(2.0)	(0.6)	2.1
MSCI EAFE	(13.3)	(22.8)	(22.8)	(14.4)	(1.8)	(0.6)	2.7
MSCI EM	(15.4)	(23.6)	(23.6)	(17.7)	(1.6)	(0.4)	0.7
MSCI EAFE Small Cap	(17.2)	(27.5)	(27.5)	(18.1)	(2.9)	1.0	4.8
Style Index							
MSCI EAFE Growth	(9.2)	(17.5)	(17.5)	(5.8)	3.0	2.5	4.7
MSCI EAFE Value	(17.7)	(28.2)	(28.2)	(22.8)	(6.7)	(3.8)	0.6
Regional Index							
MSCI UK	(16.0)	(28.8)	(28.8)	(23.0)	(4.9)	(3.3)	1.6
MSCI Japan	(7.1)	(16.8)	(16.8)	(6.7)	1.0	1.8	3.8
MSCI Euro	(17.2)	(27.0)	(27.0)	(18.3)	(4.4)	(2.3)	1.1
MSCI EM Asia	(11.7)	(18.1)	(18.1)	(12.1)	1.3	1.4	3.5
MSCI EM Latin American	(34.5)	(45.6)	(45.6)	(40.8)	(13.0)	(5.9)	(6.7)

FIXED INCOME

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
BBgBarc US TIPS	(1.8)	1.7	1.7	6.8	3.5	2.7	3.5
BBgBarc US Treasury Bills	0.3	0.6	0.6	2.4	1.8	1.2	0.7
BBgBarc US Agg Bond	(0.6)	3.1	3.1	8.9	4.8	3.4	3.9
Duration							
BBgBarc US Treasury 1-3 Yr	1.3	2.8	2.8	5.4	2.7	1.8	1.4
BBgBarc US Treasury Long	6.1	20.9	20.9	32.6	13.4	7.3	9.0
BBgBarc US Treasury	2.9	8.2	8.2	13.2	5.8	3.6	3.8
Issuer							
BBgBarc US MBS	1.1	2.8	2.8	7.0	4.0	2.9	3.3
BBgBarc US Corp. High Yield	(11.5)	(12.7)	(12.7)	(6.9)	0.8	2.8	5.6
BBgBarc US Agency Interm	0.9	2.9	2.9	6.1	3.2	2.3	2.2
BBgBarc US Credit	(6.6)	(3.1)	(3.1)	5.1	4.2	3.3	4.7

OTHER

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Index							
Bloomberg Commodity	(12.8)	(23.3)	(23.3)	(22.3)	(8.6)	(7.8)	(6.7)
Wilshire US REIT	(20.0)	(25.6)	(25.6)	(19.4)	(2.5)	5.7	12.7
CS Leveraged Loans	(12.5)	(13.2)	(13.2)	(9.5)	(0.7)	4.6	5.0
Alerian MLP	(48.1)	(58.1)	(58.1)	(61.9)	(29.9)	(21.1)	(4.7)
Regional Index							
JPM EMBI Global Div	(13.8)	(13.4)	(13.4)	(6.8)	0.4	2.8	4.9
JPM GBI-EM Global Div	(11.1)	(15.2)	(15.2)	(6.5)	(0.8)	0.3	0.5
Hedge Funds							
HFRI Composite	(5.9)	(8.3)	(8.3)	(4.0)	0.7	1.3	2.9
HFRI FOF Composite	(4.9)	(6.0)	(6.0)	(2.6)	1.0	0.6	2.1
Currency (Spot)							
Euro	(0.1)	(2.3)	(2.3)	(2.3)	0.9	0.4	(2.1)
Pound	(2.9)	(6.4)	(6.4)	(4.8)	(0.3)	(3.5)	(2.0)
Yen	(0.1)	0.7	0.7	2.5	1.1	2.1	(1.4)

Source: Morningstar, HFR, as of 3/31/20

Definitions

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

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

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

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

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Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

June 2, 2020

Agenda Item 6.3

TO: Board of Retirement

FROM: Doris Ng, Investment Analyst 

SUBJECT: Report on Real Estate Annual Manager Reviews

Recommendation

Accept and review the report on the annual reviews of SamCERA's real estate managers, INVESCO and PGIM.

Background

On April 2nd and April 16th, SamCERA staff and consultant held annual review meetings through teleconference with our real estate managers, INVESCO and PGIM.

Each meeting lasted approximately 1.5 - 2 hours, and consisted of a firm/organizational update, investment process review, performance review and attribution, and current positioning/market outlook.

Discussion

INVESCO's Core Real Estate fund, an open-ended commingled pool which invests in institutional quality office, retail, industrial and multi-family residential real estate assets, was reviewed. INVESCO's U.S. Value-Add Fund IV and V, both closed-end funds which acquire and reposition fundamentally sound, but "broken core" real estate into institutional-quality assets across the same sectors, were also reviewed.

PGIM's Real Estate U.S. Debt fund, an open-ended commingled fund that invests primarily in senior loans secured by U.S. commercial real estate, was reviewed next.

Attached you will find meeting notes summarizing the findings and details from the annual reviews.

Attachments

INVESCO Core Real Estate Annual Review Meeting Notes
INVESCO Value-Add IV & V Real Estate Annual Review Meeting Notes (confidential)
PGIM Real Estate U.S. Debt Fund Annual Review Meeting Notes (confidential)

Research Meeting Notes

Investment Organization	Invesco
Business Type	Publicly Traded
Firm Inception Date	1935
Firm \$AUM	\$1.2 trillion
Investment Org Attendees	Jay Hurley, Max Swango, Michelle Foss
Verus Attendees	John Nicolini
SamCERA Attendees	Susan Lee, Scott Hood, Michael Coultrip, Lilibeth Dames, Doris Ng
Interview Date(s)	4/2/20
Meeting Type	Phone Call
Meeting Purpose	Update
Strategy Name	Invesco Core Real Estate
Strategy Inception Date	2004
Asset Class (Style)	Real Estate
If other, please name	
Sub-Style	Equity
Strategy \$AUM	\$14.5 billion (Core)
AIC Approved (Yes or No)	Yes

Notes and Analysis

Firm:

Invesco is a large investment management firm with assets under management of \$1.2 trillion and more than 8,000 employees worldwide. The product mix within Invesco is broad with both public and private market strategies and a mix of retail and institutional clients. Growth within the platform has come from acquisitions in the ETF market and from a growing alternatives asset class platform. Most recently, Invesco closed on the acquisition of Oppenheimer Funds from MassMutual which added an additional \$250 million in AUM.

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Team/People:

The structure of Invesco's real estate team emphasizes specialization and a focus on accountability. The Invesco Core Real Estate fund is overseen by three committees composed of senior professionals. The Investment Committee is responsible for approving acquisitions and sales. The Steering Committee governs the Fund's investment and governance policy. And the North American Direct Investment Strategy Group oversees execution, including market selection and sector allocation. In addition to the Portfolio Management Team, INVESCO employs professionals dedicated to a range of real estate specializations including research, acquisitions, financing, underwriting, closing and due diligence, asset management, and accounting and reporting.

Bill Grubbs serves as lead portfolio for the Core Fund and has been with Invesco for 14 years. Michelle Foss is co-portfolio manager on the Core Fund and joined Invesco in 2014. Michelle was most recently with Bailard where she was a core, open end real estate fund manager. She had worked with Bill previously at Prudential 22 years ago. The broader North American real estate team consists of 215 employees located in five regional offices. Bill Grubbs and Michelle Foss are based in San Francisco, with Dallas being the real estate team's headquarters.

Process/Philosophy

SamCERA is one of the founding investors in the Invesco Core Real Estate fund in 2004. As a founding investor, SamCERA has benefited from lower fees than those paid by more recent investors. This fund is Invesco's largest and flagship real estate fund and has assets of \$14.5 billion. Invesco's Core Fund invests in high quality office, apartment, industrial and retail properties in major markets while utilizing a conservative balance sheet. The Fund's performance target is to outperform the NCREIF ODCE Index over longer time periods.

Four broad principles underlie Invesco's approach to core real estate investing. They seek to manage a diversified portfolio, both geographically and by property type. The portfolio holds office, industrial, retail and apartment properties. The portfolio maintains an income-oriented investment approach. Attractive markets and properties must offer investments that are "durable" with barriers to entry, in growing areas and liquid, meaning that it's possible to redeem if desired. They strive to have a conservative risk profile, with strong balance sheets, limited leverage and selective exposure to value-add type investments. Invesco also strives to be transparent and efficient in client communication and reporting.

The investment process has both top down and bottom up elements. Invesco has long term strategic ranges for each property type with an overweight to apartments. They develop a view about different regions and cities and focus on specific target markets. Invesco is looking primarily at gateway cities and up-and-coming markets. They are most selective in office and industrial properties, where they believe a market needs to have high value jobs and high barriers to entry to be attractive. Invesco also seeks to generate returns on a bottom up basis with property specific selection within their target property type ranges and preferred regions.

The Core Fund will selectively make value add investments (up to 15% allowed). But they do so only in cases where replacement cost is lower than purchasing an existing property. Value add investments are not made with the expectation of a quick sale, but of holding the property in the portfolio for purposes of generating income. While there are some value-add investments in the Core Fund, there isn't overlap in exposure with the Value-Add Fund. The Value-Add Fund has higher return/risk expectations of 12-15%, so most transactions that fit that mandate would fall outside the risk parameters of the Core Fund.

Performance

Michelle Foss discussed Invesco's outlook and positioning within the Core Fund. The most notable sector over/underweight within the Core Fund is the modest overweight to multifamily and modest underweight to office, relative to the ODCE Index. Invesco has been overweight to multifamily for many years but continue to believe that the sector will outperform relative to office in an economic slowdown. Though the team has been growing their exposure to industrial assets, they have been relatively late to the sector which has been a performance headwind given the strength in the sector. Invesco has utilized their build-to-core portfolio to grow exposure in the industrial sector as they look to add modern buildings near key submarkets. The apartment overweight has helped during the recent downturn as multi-family assets are expected to hold-up relatively well versus retail and office properties. The retail segment shifted towards what Invesco calls "experiential", meaning that the property offers a unique experience that can't be replicated easily. They also look for retail centers anchored by grocers in high-barrier to entry locations.

The manage to core portfolio (i.e. value-add) will be providing material appreciation and growth in the Fund's income as projects in the industrial and apartment portfolio generate rental income. The manage to core portfolio represents about 12.1% of gross asset value, with industrial projects comprising 39%, office 24%, self-storage 12%, multi-family 12%, life sciences 7% and mixed-use 6%.


The Core Fund outperformed the ODCE index over all trailing time periods. Outperformance was attributed to strong appreciation in Los Angeles and Bay Area properties, as well as the Industrial portfolio. As of year-end 2019, debt to total assets was 24.7% which is still a conservative level relative to the asset classes history. Invesco has maintained a longer duration than most peers as they lock-in low fixed rates. The weighted average remaining term on their debt was 7.6 years with an average contract interest rate of 3.8% at year-end.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

June 2, 2020

Agenda Item 6.4

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 strategies.

Background

On May 7th, SamCERA staff held annual review meetings through teleconference for our small-cap core equity manager, Quantitative Management Associates – QMA, and our passive index strategies with Blackrock. 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, took place on May 21st, and will be reported at the next scheduled board meeting.

Discussion

The Blackrock Russell 1000, EAFE and Intermediate Government Bond Index Funds were reviewed first. The firm noted some changes to its senior leadership team overseeing ETF and Index Investments, but these changes are not expected to directly or materially impact portfolio management of the investments. Next, the QMA 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.

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
QMA Annual Review Meeting Notes

Date of meeting: 5/7/2020

Location: SamCERA Office

Manager Representative(s)

Scott Dohemann (Head of US Product Strategy),
Anthony Freitas (Managing Director),
Gordon Readey (Director, Global Fixed Income)

Verus Representative(s)

Joseph Abdou

Account AUM (Q1-2020)

Russell 1000 \$490 mm
Intermediate Govt. Bond
\$230 mm
EAFE \$254 mm

Client Representative(s)

Susan Lee (Trustee), Scott Hood (CEO), Mike Coultrip
(CIO), Lilibeth Dames (Analyst), Doris Ng (Analyst)

Product Description

BlackRock uses a full replication approach for the Russell 1000 and MSCI EAFE Index funds. They hold each stock in the same proportion in which they are represented in the Russell 1000 Index and the MSCI EAFE Index, respectively. Blackrock uses a stratified sampling technique for the Intermediate Government Bond Index, in which they divide the index into subsets (cells) based on upon relative parameters (e.g. credit quality, maturity, sector), and sample bonds from each index cell. 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.

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 two most significant deals were the mergers with Merrill Lynch Investment Managers (MLIM) in 2006 and Barclays Global Investors (BGI) in 2009. MLIM began managing assets in the UK in 1946 as part of S.G. Warburg & Co. (later known as Mercury Asset Management), and in the US in 1976 under the Merrill Lynch name. BGI traces its roots back to 1922, when its predecessor organizations, Wells Fargo Investment Advisors and Wells Fargo Bank, began managing US institutional assets. BGI was formed in 1995 from the merger of Barclays de Zoete Wedd Investment Management and Wells Fargo Nikko Investment Advisors. Other notable acquisitions include State Street Research & Management (2005), Quellos Group (2007) and R3 Capital Partners (2009). In addition to its asset management business, BlackRock provides risk management and advisory services through its BlackRock Solutions arm. BlackRock acquired Tenenbaum in 2018 (another SamCERA manager) to enhance its credit research. In 2018 BlackRock also acquired eFront with the focus on adding some of its features to Aladdin.

Total firm assets at 12/31/19 were \$7.4 trillion with \$3.8 trillion in equities and around \$2.3 trillion in Fixed Income. During 2019, BlackRock saw \$240 billion in net inflows in the index funds. The firm's iShares (ETFs) business continues to be a significant driver of growth.

BlackRock is following up to the letter Larry Fink wrote in 2019 regarding sustainability. This has been an initiative through 2019 and will continue in 2020. BlackRock has started to incorporate sustainability in how they vote proxies.

Investment Team

BlackRock employs a large team of portfolio managers, research professionals, strategists and traders on its index team, which manages both institutional (index fund) and iShares applications. Most of these employees are located in San Francisco.

The Global Equity Trading group has a team of approximately 50 traders as of 31 December 2019 and executes trades on behalf of all portfolio management teams. The team is organized along regions, asset classes and investment styles

The Global Trading team within the Trading and Liquidity Strategy Group includes approximately 85 traders globally as of 31 December 2019 that focus on executing trades across fixed income instruments. Trading sector coverage includes government, agency, supranational, sovereign and corporate cash bonds, interest rate and credit derivatives, futures and other exchange traded derivatives, and repos.

Investment Strategy

BlackRock focuses on three objectives in the management of its index funds: minimizing tracking error, minimizing transaction costs, and minimizing investment and operational risks. BlackRock believe 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.

There are multiple, small sources of tracking to the benchmark in index management. Commissions, taxes, market impact and cash drag are small detractors from performance. Securities lending and a tax advantage specific to international portfolios are persistent tailwinds.

While the equity index funds are fully replicated, fixed income index funds utilize stratified sampling. Treasuries, which comprise the 95% of the market value for the Bloomberg Barclays U.S. Intermediate Government Index, are largely replicated while Agency exposure, which comprises a small percentage of the index yet has a large number of issues, utilizes more sampling. The fixed income funds can also invest in “off the run” Treasuries, purchased after auctions, when they are cheaper.

Performance & Positioning

For the past year ended 3/31/20, the three funds have met expectations from a performance and tracking standpoint. Annual expected tracking errors for the funds are as follows: Russell 1000 Fund (0-5 bps), EAFE Index (0-15 bps), and Intermediate Government Bond Index Fund (5-10 bps). BlackRock’s passive size and scale is a differentiator, and the ability to cross trade is an important means of cost reduction. For the BlackRock Equity Index funds they received approximately 4 bps from securities lending, while cash drag costs were offset by transaction costs. The EAFE index gained 39 bps from a tax advantage but gave back about 8 bps in cash drag.

All index providers took different approaches to index rebalances. S&P delayed their rebalance from March 20, 2020 and will do a larger one in June. MSCI decided to postpone the inclusion of Kuwait until later this year. And FTSE Russell decided to go ahead with their March 20th rebalance.

Conclusion

BlackRock's mandates for SamCERA successfully replicate the returns of their underlying benchmarks with tight tracking. We consider BlackRock to be a top tier passive manager.

Date of meeting: 5/7/2020

Location: Zoom Call

Manager Representative(s)

Gavin Smith (Portfolio Manager)
Stacy Mintz (Head of Equity Portfolio Management)
Patrick McDonough (Portfolio Manager)
Patrick McMenamain (Relationship Management)
Brad Zenz (Client Relations)

Verus Representative(s)

Joseph Abdou

Client Representative(s)

Susan Lee (Trustee), Scott Hood (CEO), Mike Coultrip (CIO),
Lilibeth Dames (Analyst), Doris Ng (Analyst)

Product Description

Quantitative Management Associates (QMA) 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. QMA 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 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.

QMA was added to the SamCERA portfolio in August 2016. QMA managed \$58 million for SamCERA as of 3/31/20.

Organization

QMA is an SEC-registered investment adviser, organized as a Limited Liability Company in the state of New Jersey. Founded in 1975, QMA 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.

QMA 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.

QMA's primary office is located in Newark, NJ, where the team responsible for the US Small Cap Core Equity strategy is based. QMA'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, QMA acquired Wadhvani Asset Management (WAM), a team of 30 investment professionals in London. They joined offices with a smaller QMA London office. WAM uses high frequency trading and different signals/timing than QMA. There is not expected to be any integration of signals between WAM and QMA.

Investment Team

QMA's investment team includes 23 PhDs, many of whom have spent all or most of their careers at the firm. The US Core Equity team has worked together for an average of 11 years and has an average of 18 years of investment experience. All US Small Cap Core Equity portfolios are team managed.

Peter Xu, PhD and George Patterson co-head the team. George Patterson, PhD joined QMA in October 2017 as Co-Head of the Quantitative Equity platform, partnering with Peter Xu, PhD. Peter now focuses primarily on research, whereas George manages the team. SamCERA's portfolio manager Stacie Mintz, CFA has worked on the small cap portfolio since its inception in 1997. The San Francisco office has grown from 4 to 12 professionals in recent years with a subset of the team joining from GMO.

George Sakoullis who was brought on a few years ago to lead the multi-asset portfolios is leaving in July 2020. The strategy SamCERA is in will not be affected by his departure.

Investment Strategy

QMA'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.

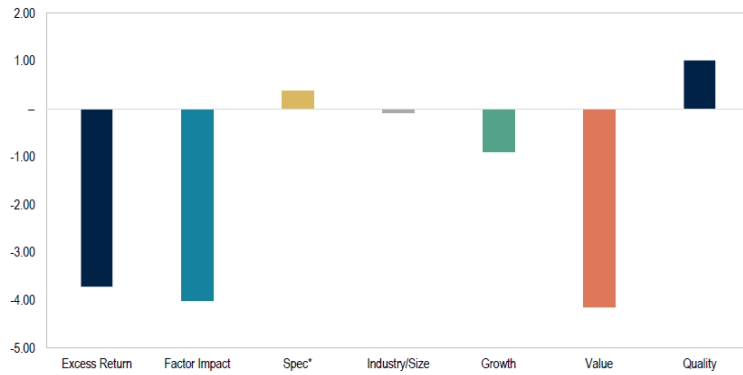
QMA will also tilt the portfolio based on shorter term signals and currently has a larger than average weighting to valuation based on its assessment that valuations are cheap compared to historical ranges. QMA has incorporated some new shorter-term growth signals into its approach, including machine learning-based inputs, while maintaining longer-term fundamental earnings insights.

QMA 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. Portfolio tilts (ex. Value overweight) are discussed and deliberated by the portfolio management team prior to implementation.

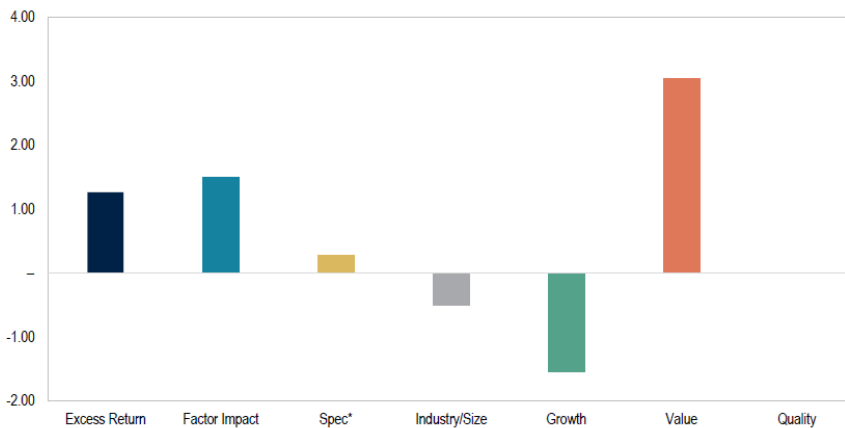
Performance & Positioning

Since SamCERA's portfolio inception in August 2016, the QMA small cap portfolio underperformed by 324 bps at 3/31/20 (-3.7% vs. -0.4% for the Russell 2000 Index). The value factor which hurt performance in 2017, and 2018 started working towards the end of 2019, but didn't work in Q1 2020. The three charts below depict the time periods where value was in favor and out of favor.

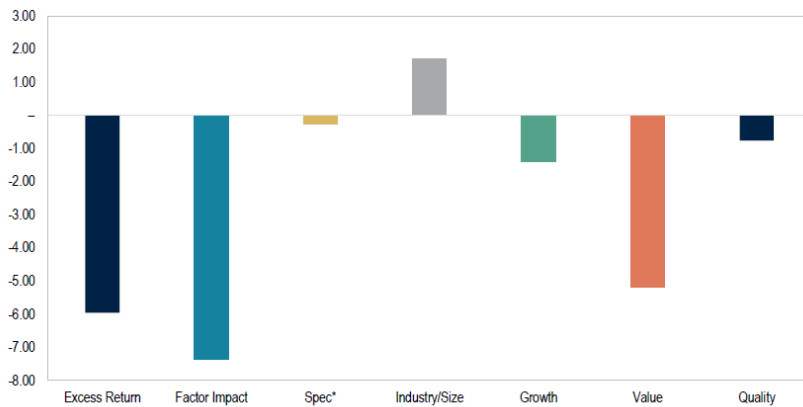
Performance Attribution by Factor
12/31/2018 – 8/31/2019



Performance Attribution by Factor
8/31/2019 – 12/31/2019



Performance Attribution by Factor
Q1 2020



QMA started to add to its valuation factor weighting when the factor crossed the 80th percentile of historical growth value spreads. They are currently at their max weighting since the factor is in the 99th percentile of historical norm. This hurt recent performance, but they expect it to enhance results going forward.

Conclusion


The value factor has hurt QMA performance and led to both short-term and since inception underperformance for this relatively new SamCERA manager. Given the general value headwinds, we understand why the strategy underperformed, and we believe that QMA should remain in the SamCERA portfolio.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

June 3, 2020

Agenda Item 6.5

TO: Board of Retirement

FROM: Michael Coultrip, Chief Investment Officer 

SUBJECT: Presentation of Private Asset Semi-Annual Performance Reports as of December 31, 2019

Recommendation

Accept and review Verus' semi-annual private equity and private real assets performance reports as of December 31, 2019.

Background

The Board of Retirement approved the implementation of SamCERA's private equity program in August 2010. The Board subsequently approved the implementation of SamCERA's private real asset program in October 2013. Verus provides a semi-annual private equity and private real asset performance report as of June 30th and December 31st each year.

Discussion

As of December 31, 2019, SamCERA's private equity portfolio had a total market value of \$316.9 million (7.2% of SamCERA's total fund). SamCERA's target allocation for Private Equity is 6.0%. The venture capital sub-asset class remains above policy target as a result of a significant increase in value to a select portfolio company.

The private equity portfolio has a 18.40% net IRR since inception. For the six-month period from July 1, 2019 through December 31, 2019, SamCERA committed to one new fund for a total of \$10 million. This brought the sum of private equity funds in the portfolio to twenty-seven with \$457.9 million in committed capital across seventeen private equity managers.

As of December 31, 2019, SamCERA's private real assets portfolio had a total market value of \$87.9 million (2.0% of SamCERA's total fund). SamCERA's new target asset allocation to private real assets is 3.0%.

The private real assets portfolio has a -0.94% net IRR since inception. For the six-month period from July 1, 2019 through December 31, 2019, SamCERA made no additional commitments to private real assets. As of December 31, 2019, there were eleven private asset funds in the portfolio with \$204.8 million in committed capital across nine private real asset managers.

Faraz Shooshani and John Nicolini will review the performance reports with the Board and be available for questions.

Attachments

Verus Semi-Annual Private Equity Performance Report for Period Ending 12/31/2019

Verus Semi-Annual Private Real Assets Performance Report for Period Ending 12/31/2019



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



PERIOD ENDING: DECEMBER 31, 2019

Private Equity Review

San Mateo County Employees' Retirement Association

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LOS ANGELES 310-297-1777

SAN FRANCISCO 415-362-3484

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Private Equity Portfolio Diversification	10		

- PE Portfolio Diversification by Strategy
- PE Portfolio Diversification by Geography
- PE Portfolio Diversification by Industry
- PE Portfolio Diversification by Vintage Year

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Market Commentary

DEBT RELATED

- **HY issuance was up and leveraged loan issuance was down.** 2019 US high yield issuance of \$267 billion¹ was up 58.9% compared 2018. At \$808 billion¹, leveraged lending declined for the second consecutive year to the lowest volume in four years. Issuance was down 35% YoY and \$594 billion lower compared to 2017's record year.
- **Spreads tightened across the board except for CCC index.** US HY Credit Index tightened by 167 bps or 31.0%² versus the same period last year. BB and B index tightened by 152 bps and 98 bps, a 36.7%² and 17.3%² decreases versus the same period last year. However, in 2019 CCC index increased by 17.3%² from 2018.
- **Slight increase in LBO debt, with deterioration in interest coverage.** US total leverage (Debt / EBITDA) for 2019 at 5.9x³ up 5.8% from the same time last year. Interest coverage (EBITDA / Cash Interest) of 2019 was 2.7x³, down 1.5% from 2018.

GLOBAL

- **PE dry powder keeps surging globally except for Europe.** For 2019, global total PE dry powder was at \$1.57 trillion⁴, up 6.7% from 2018. US total PE was up by 6.0% to \$857.0 billion⁴; Europe total PE was down by 1.1% to \$2991.9 billion⁴; Asia total PE was up by 13.5% to \$361.4 billion⁴; and the rest of world total PE was up by 20.3% to \$52.8 billion⁴.
- **Investment activity was down.** During 2019, global PE firms invested in \$667.6 billion⁶ worth of deals, down 17.2% from the same time prior year and closed on 21,892 transactions⁶, down 15.2% from 2018.

US BUYOUTS

- **Dry powder was up.** For 2019, US buyout was \$449.6 billion⁴, up by 10.0% from the same time in 2018.
- **More fundraising activity with significantly larger fund sizes.** In 2019, US buyout firms across all buyout strategies raised \$240.3 billion⁵, up by 84.6% from same time prior year.
- **Investment activity was down.** During 2019, US buyout firms invested in \$213.8 billion⁶ worth of deals, down 25.1% from the same time last year and closed on 2,882 transactions⁶, down 17.4% versus the same time in 2018.

Market Commentary

- **LBO price multiples were up.** As of December 31, 2019, US LBO purchase price multiples (Enterprise Value / EBITDA) were at 11.5x⁷, an 8.6% increase from 2018.
- **Exit activity slowed down but large transactions.** During 2019, US buyout firms exited 898 companies¹², representing \$186.2 billion¹² in total transaction value. This represented a 20.3% decrease in the number of exits and a 7.6% decrease in total transaction value compared to the same time last year. However, the average exit size increased 16.0% to \$207.2 million in 2019 from \$178.6 million in 2018.

US VENTURE CAPITAL

- **Dry powder increased.** For 2019, US VC dry powder was at \$123.8 billion⁴, up 10.0% from the last year.
- **Fundraising activity slowed down, but average fund size increased.** US VC firms raised \$49.9 billion⁵ during 2019, a 13.7% increase from the same period last year. 449 funds⁵ closed in 2019, a 12.5% decrease from the same period last year. The average US VC fund size increased to \$111.1 million⁵ by 29.9% versus the same period last year.
- **Investment activities was up.** US VC firms deployed \$129.0 billion⁶ in capital in 2019, an 1.4% increase from 2018. The number of rounds closed at 5,835⁶, a 15.5% decrease from the same time last year. The average investment per deal increased to \$26.8 million⁶, a 18.1% increase from prior year.
- **All stages valuations were up.** Compared to 2018, the average pre-money valuations increased across all stages in 2019: up 14.3% at \$8.0 million⁸ for Seed stage, 17.6% at \$29.4 million⁸ for early stage VC, and 15.8% at \$88.0 million⁸ for late stage VC. Over the past 3 years, the average pre-money valuations of Seed stage, early stage and late stage investments were up 33.3%, 55.3%, and 60.7%, respectively⁹.
- **Exit activity decreased with less transactions.** US VC firms exited 611 companies⁶ in 2019, down by 10.8% from last year, representing \$70.0 billion⁶ in transaction value down by 11.0% from the same period last year.

Market Commentary

EX US

- **Ex US dry powder grew but less than dry powder in the US.** PE dry powder outside the US grew to \$708.2 billion⁴ for 2019, a 7.5% increase versus last year. However, dry powder outside the US was still 17.4% less than dry powder in the US (\$857.0 billion⁴).
 - **Europe buyout and VC dry powders were up.** For 2019, Europe buyout dry power was \$198.0 billion⁴, up by 1.5% from last year. Same time, VC dry powder in Europe grew to \$31.7 billion⁴, a 17.0% increase from prior year.
 - **In Asia, dry powder of VC and growth equity kept increasing, but buyouts decreased.** At the end of 2019, Asia buyout dry power was \$88.9 billion⁴, down by 3.9% from last year. VC dry powder in Asia increased to \$103.4 billion⁴, up by 10.7% from prior year. Growth equity dry powder grew to \$147.0 billion⁴, a 29.4% increase from 2018.
- **Fundraising outside of US was down.** In 2019, ex-US fundraising was down 8.4% to \$264.7 billion⁵ compared to same time prior year. The decrease was led by Asian funds which raised \$124.2 billion⁵, down 12.0% from same time last year. Fundraising was down in Europe as well, down by 0.9% from \$125.4 billion in 2018 to \$124.3 billion⁵ in 2019. Fundraising in the rest of the world was down 27.7% to \$16.2 billion⁵ compared to 2018.
- **Investments activity was down except Europe VC and Asia buyout with large deal value.** Both Europe buyout and Asia venture capital firms decreased the number of deals and aggregate deal volume in 2019. Europe venture capital and Asia buyout firms decreased the number of deals but increased aggregate deal volume in 2019.
 - **Europe buyout activities decreased, but VC investment increased .** In 2019, Europe buyout firms transacted on \$115.3 billion⁶ in aggregate value, down by 23.0% from 2018. VC investment activity was up from \$26 billion in 2018 to \$34.6 billion⁶ in 2019, an increase of 33.1%.
 - **Asia buyout activity was up, while VC investment activities was down significantly.** During 2019, Asia buyout firms closed on \$51.5 billion⁶ in aggregate value, up by 20.6% from the same time of last year's \$42.7 billion⁶. VC investment activity was down from \$141.8 billion during 2018 to \$86.2 billion⁶, a decrease of 39.2%.
- **Global purchase price multiples increased.** As of December 31, 2019, global median purchase price multiples (Enterprise Value / EBITDA) was 13.3x¹, a 23.1% increase from the same time last year. This was driven by an 8.6% increase in US purchase multiples at 11.5x⁷, a 34.3% increase in the rest of the world at 12.3x¹¹, and a 9.4% decrease in purchase price multiples in Europe at 8.9x¹¹.
- **Leverage multiples in Europe moved down.** European LBO leverage multiples (Debt / EBITDA) have averaged 5.5x¹⁰ during 2019, a decrease of 3.1% from the same time last year and an 10.5% decrease from the peak (6.1x¹¹) in 2007. European LBO Loan volume at \$53.1 billion¹¹ is down 30.5% versus 2018, a decrease of 50.5% versus the peak of \$107.3 billion¹¹ in the first half of 2007.
- **Exit activity weaker in both Europe and Asia.** During 2019, Europe PE firms aggregate exit value amounted to \$110.9 billion⁶, a 9.9% decrease from the same time last year, while Asia PE firms' exits were down 14.0% from to \$112.9⁶ billion in 2018 to \$97.1⁶ billion in 2019.

Market Commentary

Outlook

- **PE allocations likely to increase slightly.** A recent survey of institutional investors conducted on December 31, 2019 indicated that 41%¹² intend to increase their allocation for private equity compared to 31%¹² during the same period last year. 45%¹² intend to maintain their allocation for private equity compared to 57%¹² during the same period last year. 14%¹² intend to commit less capital to private equity compared to 12%¹² during the same period last year.
- **Institutional investors most interested in investing in North America and like small- to mid-market buyouts.** Based on the survey conducted on December 31, 2019, institutional investors view North America as the most attractive location to invest in the current economic climate with 88%¹² choosing it as their preferred developed market investment destination. This compares favorably versus West Europe (43%¹²) and Asia (21%¹²). China (44%)¹² and India (21%)¹² are the top two desired countries in the emerging markets for investors. In the same survey, 65%¹² of institutional investors also cited the venture capital strategy as presenting the best opportunities in the current financial climate. Small to mid-market buyout strategy was mentioned next with 60%¹² of institutional investors believing it presented the best opportunities.

Notes

1. *Leveraged Loan Monthly Thomson Reuters LPC*
2. *Guggenheim High-Yield Bank Loan Outlook*
3. *LCD's Leveraged Buyout Review*
4. *Preqin Dry powder by Geography (Preqin Website) Dry powder includes Buyout, Distressed PE, Growth, Mezzanine, Co-investments, Balanced, and Venture Strategies.*
5. *Preqin Private Equity Historical Fundraising Statistics*
6. *Preqin Pro Buyout and Venture Deals and Exits*
7. *US LBO Review*
8. *PitchBook-NVCA Venture Monitor*
9. *PitchBook's VC Valuations*
10. *LCD European Leveraged Buyout Review*
11. *European Leveraged Lending Review*
 - a. *Ex US Multiples were estimated utilizing a number of sources including Preqin Private Equity-Backed Buyout Deals and Exits Factsheet, LCD's Leveraged Buyout Review, Pitchbook Europe M&A and Leveraged Loan Monthly Thomson Reuters LPC.*
 - b. *Buyout Review, Pitchbook Europe M&A and Leveraged Loan Monthly Thomson Reuters LPC.*
12. *Preqin Investor Update: Alternative Assets*

Investment Type	Policy Target	Policy Range	Market Value %	Market Value \$(000)	Unfunded Commitment \$(000)	Market Value + Unfunded \$(000)
SamCERA - Total Plan			100.0%	4,373,958		
Buyout (60% +/- 20%)	3.6%	2.4%-4.8%	3.7%	163,410	104,829	268,239
Venture Capital (20%, 0%-30%)	1.2%	0.0%-1.8%	2.7%	119,604	9,719	129,323
Debt-Related/Special Situations (20% +/- 10%)	1.2%	0.6%-1.8%	0.8%	33,915	61,042	94,957
Total Private Equity*	6.0%	4%-8%	7.2%	316,929	175,590	492,519

* The Private Equity Policy Target of 7.0% was reduced to 6.0% effective 10/1/2018.

Portfolio Summary

- As of December 31, 2019, the Private Equity Portfolio had a total market value of \$316.9M, with \$163.4M in Buyout, \$119.6M in Venture Capital, and \$33.9M in Debt-Related/Special Situations. Total market value is the current reported value of investments, excluding the remaining amount of unfunded commitments.
- SamCERA has contributed \$320.0M toward its Private Equity commitments. Unfunded commitments total \$175.6M.
- The portfolio exposure at 7.2% is above the new 6% policy target, but within range. All sub-asset classes, except Venture Capital which is above its policy range, are within the policy range while commitments continue to be made to new managers at a slower pace.

Portfolio Activity

- In the second half of 2019, SamCERA committed \$10.0M to Altas Partners Holding II, L.P. and \$15.0M to AG Credit Solutions, L.P. The latter fund was reallocated to the Opportunistic Fixed Income portfolio, effective as of April 7, 2020.

PE Performance

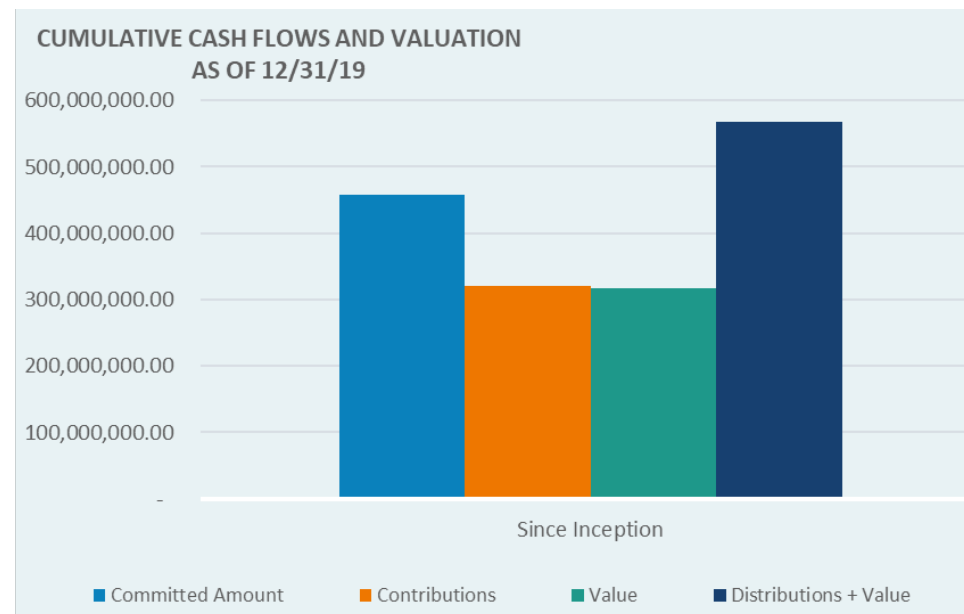
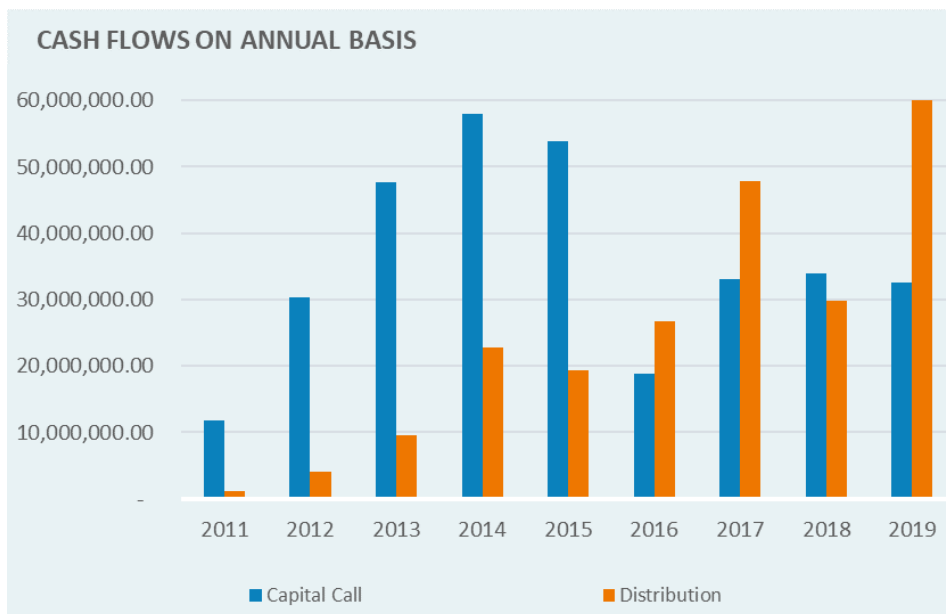
Period Ending: December 31, 2019

Performance

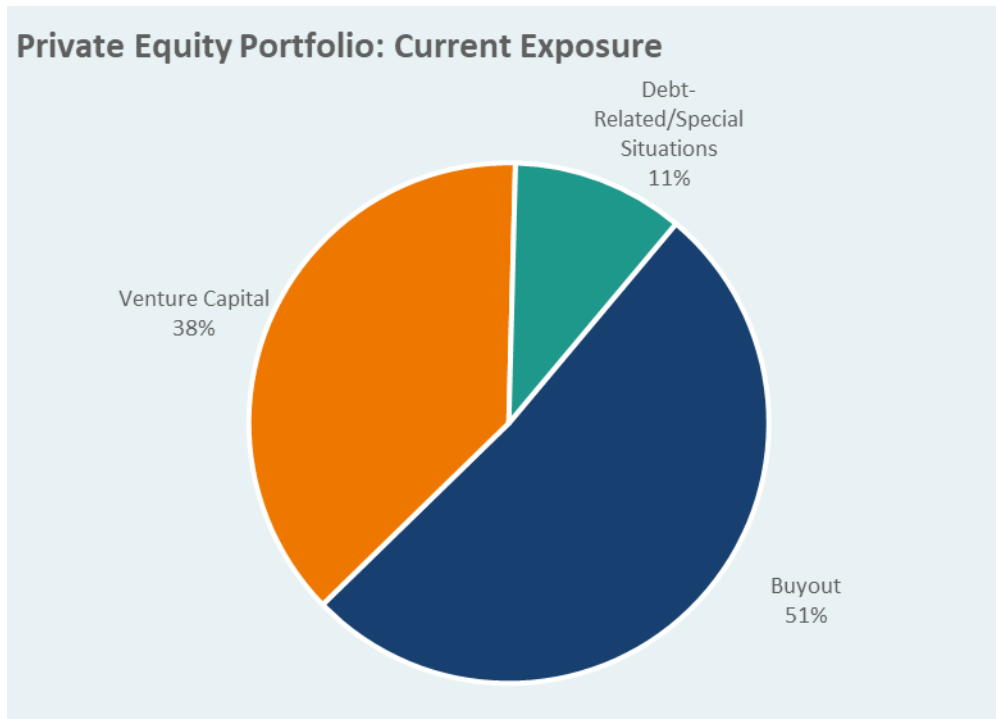
- The Private Equity portfolio's performance, as measured by net IRR, is 18.40%, 534 bps above the same cash flow invested in Russell 3000 Total Return Index of 13.06%. Capital weighted average investment age of the portfolio is 4.19 years.
- The portfolio is currently valued at \$316.9M. Together with \$251.4M in realized distributions, the Total Value at \$568.3M is approximately \$248.3M above \$320.0M total capital contributions, resulting in a total value multiple of 1.78x and a distribution multiple of 0.79x.
- Distributions surpassed contributions with a ratio of 2.8:1 in the year of 2019 compared to 1.4:1 in 2016, 1.4:1 in 2017, and 0.9:1 in 2018.

Attribution of returns:

- Buyouts up \$128.9M / +64.9% versus cost (Cevian II, Great Hill V & VI, Sycamore, ABRY VII, and Warburg Pincus XI leading), with 82.6% of called capital realized and distributed; and
 - Venture Capital up \$102.0M / +187.5% versus cost (Emergence Capital III, General Catalyst VI, NEA 14, and Third Rock III leading), with 67.6% of called capital realized and distributed; and
 - Debt-related/Special Situations up \$17.35M / +25.9% versus cost (ABRY Advanced Securities II and III leading), with 75.3% of called capital realized and distributed.
- Within Private Equity, the current allocation of market value exposure is 51.6% to Buyout, 37.3% to Venture Capital, and 10.7% to Debt-Related/Special Situations.



Investment Type	Commitment	Reported Value	Current Exposure as % of Private Equity
Buyout	279,431,240	163,410,199	51.6%
Venture Capital	64,000,000	119,604,097	37.7%
Debt-Related/Special Situations	114,500,000	33,915,426	10.7%
Total Private Equity	457,931,240	316,929,722	100.0%

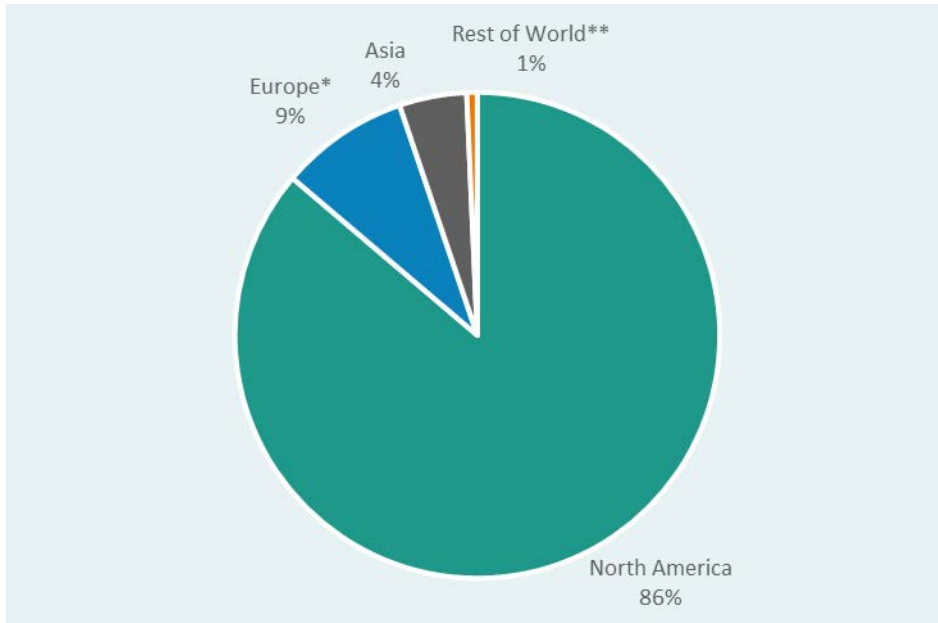


Geography

Portfolio Diversification

Period Ending: December 31, 2019

Geography	Current Exposure
North America	255,165,719
Europe*	25,446,375
Asia	13,405,075
Rest of World**	1,957,511
Total Private Equity	295,974,680



Based on the value of portfolio companies as of December 31, 2019, if provided by the partnerships. Differences between reported value and the total portfolio valuation is due to temporary cash funds, fees, other expenses, and holdings with undisclosed geography breakdown.

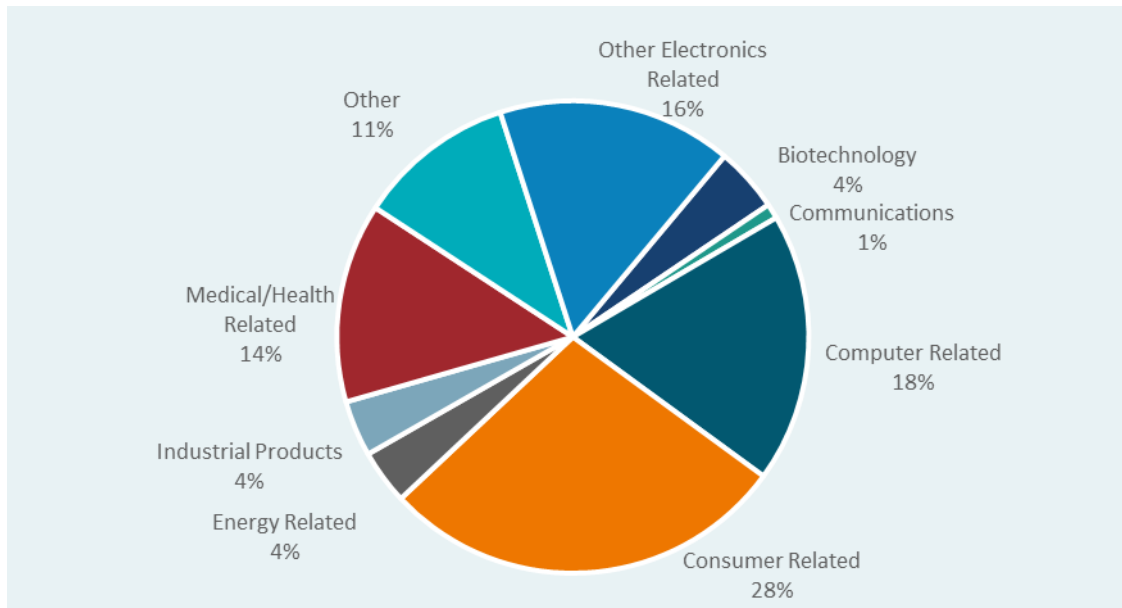
* Europe includes 100% market value from Cevian II.

** Rest of World includes Kenya, United Arab Emirates, Turkey, and Brazil.

Industry Portfolio Diversification

Period Ending: December 31, 2019

Industry	Current Exposure
Biotechnology	12,342,814
Communications	2,842,397
Computer Related	51,400,531
Consumer Related	77,865,463
Energy Related	10,404,166
Industrial Products	10,656,846
Medical/Health Related	37,996,370
Other	30,075,048
Other Electronics Related	44,792,387
Total Private Equity	278,376,022

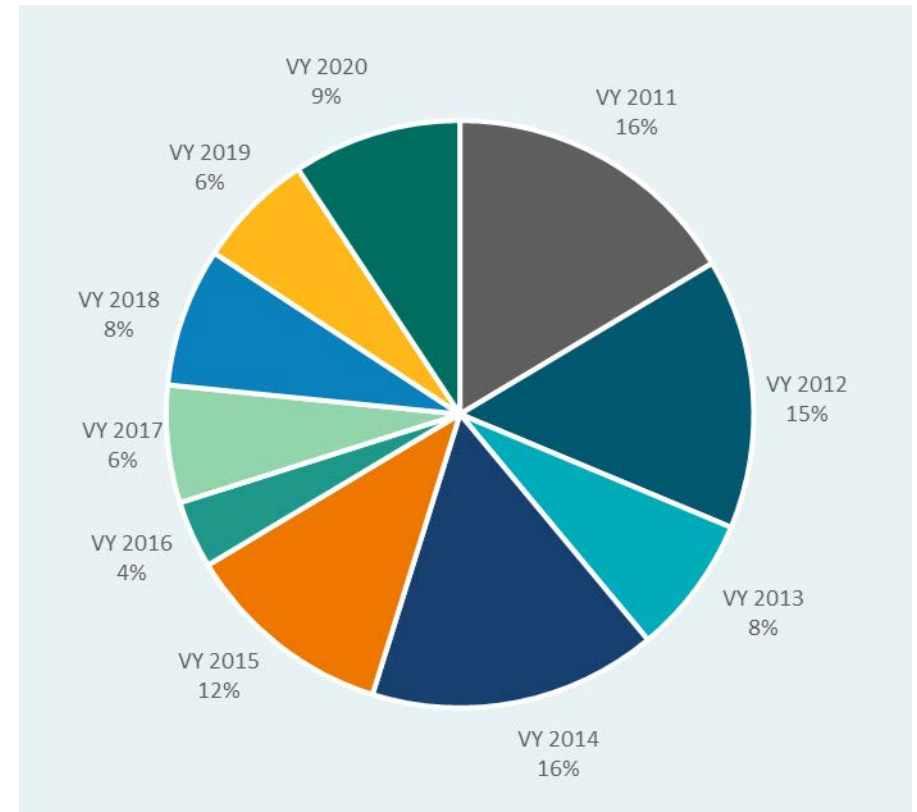


Based on the value of portfolio companies as of December 31, 2019, if provided by the partnerships. Differences between reported value and the total portfolio valuation is due to temporary cash funds, fees, other expenses, and holdings with undisclosed industry breakdown.

Vintage Year Portfolio Diversification

Period Ending: December 31, 2019

Vintage Year	Commitment as of 12/31/19	% of Portfolio Commitment	Reported Value as of 12/31/19
2011	75,000,000	16.38%	32,857,098
2012	68,000,000	14.85%	115,569,386
2013	35,000,000	7.64%	28,547,175
2014	72,500,000	15.83%	60,771,883
2015	53,000,000	11.57%	45,019,690
2016	17,000,000	3.71%	6,562,417
2017	30,000,000	6.45%	19,028,199
2018	35,000,000	7.64%	3,090,821
2019	30,000,000	6.45%	5,483,053
2020	42,431,240	9.27%	0
Total Private Equity	457,931,240	100%	316,929,722



- As of December 31, 2019, the Private Equity Portfolio at 7.2% of the overall plan is above its 6.0% policy target, but within its 4-8% target range.
 - Venture Capital remains above its new policy target, as a result of significant increase in value to a select portfolio company.



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



PERIOD ENDING: DECEMBER 31, 2019

Real Assets Review

San Mateo County Employees' Retirement Association

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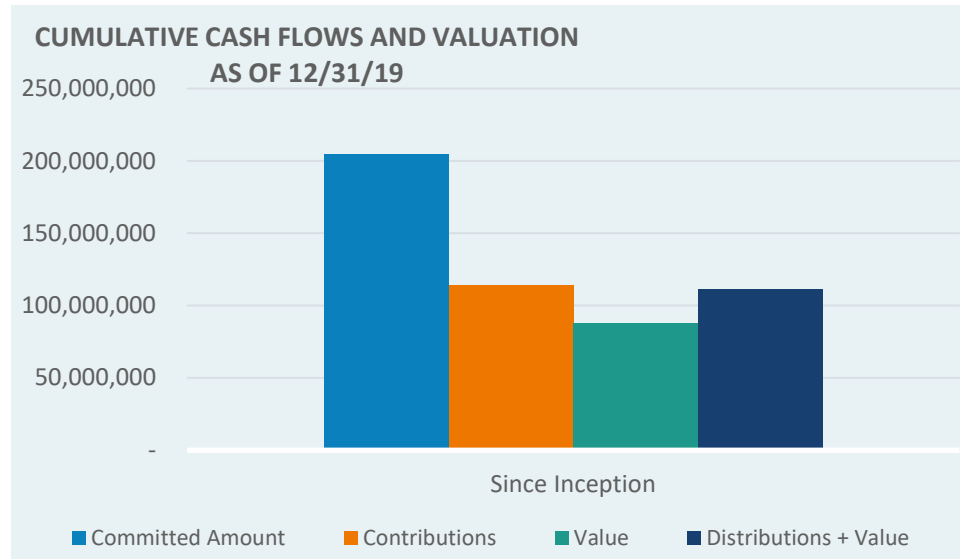
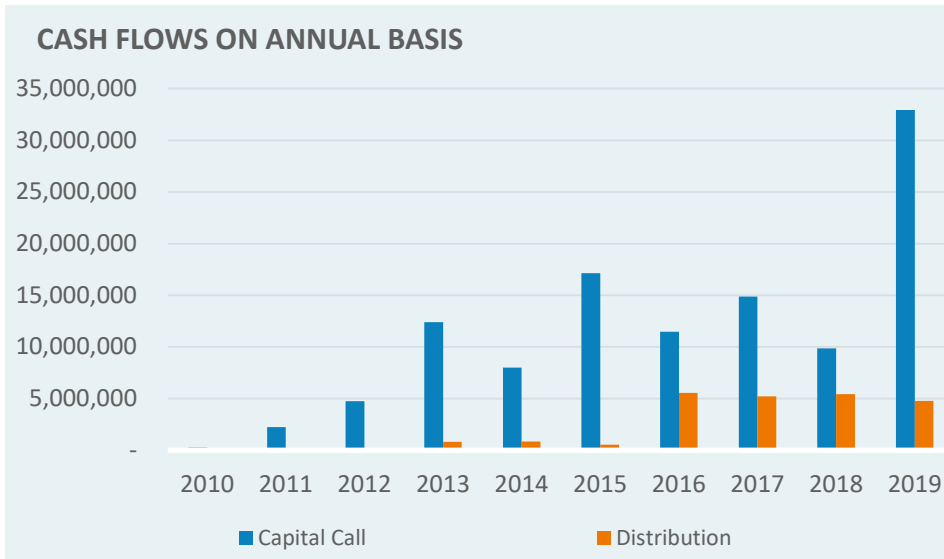
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Performance

- The portfolio is currently valued at \$87.9 million. Together with \$23.2 million in realized distributions, the Total Value at \$111.1 million is approximately \$2.8 million below \$113.9 million total capital contributions, resulting in a total value multiple of 0.98x and a net IRR of -0.94%. If we exclude the investment in Sheridan, the portfolio IRR would be +8.49%. Capital weighted average investment age of the portfolio is 3.2 years.
- SamCERA funded a liquid real asset pool in 2016 that seeks to proxy many of the risk exposures targeted in private real assets. SSgA is managing the pool in a mix of passive exposures to infrastructure, natural resource equities and commodities. In March, the SamCERA board authorized the addition of TIPS to the SSgA mandate so we will reflect that change in the next semi-annual report.
- Within Private Real Assets, the current allocation of market value exposure is 15.4% to Agriculture, 16.1% to Energy, 33.3% to Mining, and 35.2% to Infrastructure. The Portfolio is expected to be diversified over a period of 3 to 5 years.



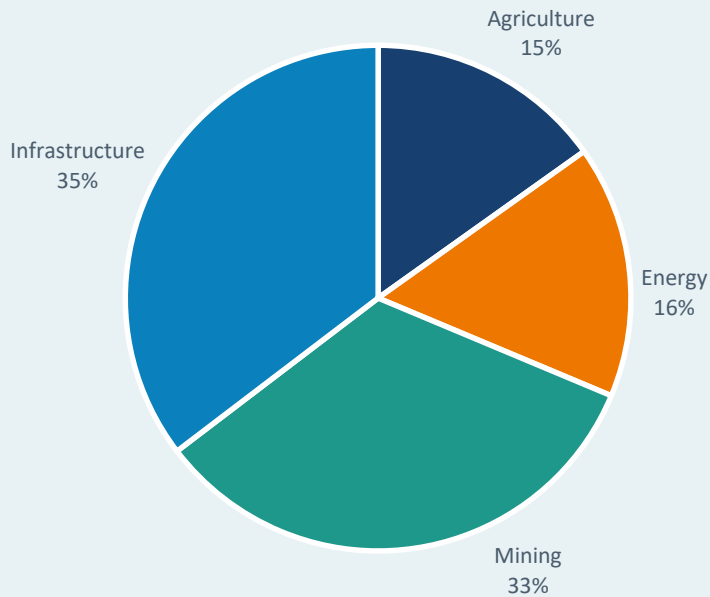
Strategy

Portfolio Diversification

Period Ending: December 31, 2019

Investment Type	Commitment	Current Exposure	Current Exposure as % of Portfolio
Agriculture	15,000,000	13,548,042	15.4%
Energy	49,800,000	14,159,265	16.1%
Mining	55,000,000	29,237,904	33.3%
Infrastructure	85,000,000	30,978,784	35.2%
Total Portfolio	204,800,000	87,923,995	100.0%

REAL ASSETS PORTFOLIO: CURRENT EXPOSURE

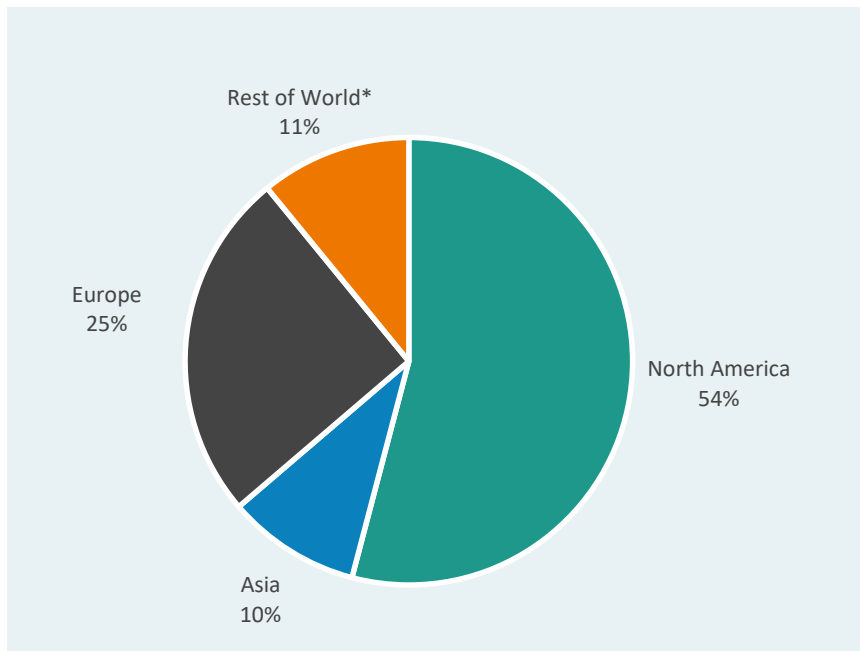


Geography

Portfolio Diversification

Period Ending: December 31, 2019

Geography	Reported Fair Value
North America	47,561,981
Asia	8,478,601
Europe	22,290,903
Rest of World*	9,592,510
Total Portfolio	87,923,995



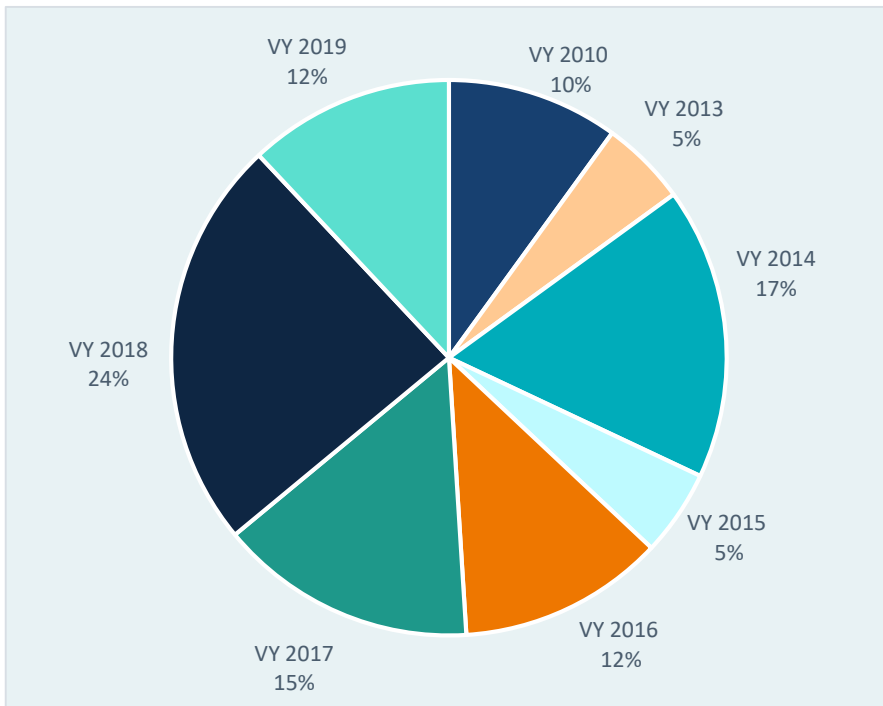
Based on invested capital as of December 31, 2019, if provided by the partnerships. The portfolio is expected to be US-biased given the mandate to hedge domestic inflation.

* Rest of World includes Australia, Chile, Senegal, DRC, and Burkina Faso.

Vintage Year Portfolio Diversification

Period Ending: December 31, 2019

Vintage Year	Commitment as of 12/31/19	% of Portfolio Commitment	Reported Value as of 12/31/19
2010	20,000,000	9.8%	0
2013	10,000,000	4.9%	5,139,482
2014	35,000,000	17.1%	29,648,923
2015	10,000,000	4.9%	13,019,695
2016	25,000,000	12.2%	10,559,785
2017	29,800,000	14.6%	16,427,574
2018	50,000,000	24.4%	7,399,304
2019	25,000,000	12.2%	5,729,232
Total Portfolio	204,800,000	100%	87,923,995



The portfolio is increasingly diversified by vintage year with larger capital commitments expected over the next 2-3 years.

- SamCERA committed \$30.0 million to Brookfield Super Core Infrastructure Fund, a new GP relationship for SamCERA within the infrastructure portfolio.
- Several GPs within SamCERA’s portfolio are coming back to market in 2020 so we will be revisiting those opportunities for potential re-ups. We are also working on a sustainable real asset strategy that could be an interesting investment opportunity with the additional benefit of being ESG-friendly.
- As the shift away from commodity-oriented sectors continues, we will look opportunistically for strategies in the space, but we expect infrastructure to occupy a larger share of real asset portfolios going forward.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

June 2, 2020

Agenda Item 6.6

TO: Board of Retirement

FROM: Michael Coultrip, Chief Investment Officer



SUBJECT: Report on Status of Absolute Return Portfolio

Recommendation

Provide direction to staff and consultant regarding potential options for replacing the AQR DELTA allocation within absolute return.

Background

The primary role of the absolute return portfolio is to provide an attractive return stream to the overall SamCERA portfolio that is not overly dependent on equity markets. The current portfolio allocation is 6%, with 3% in risk premia strategies and 3% in diversified global macro strategies. To further diversify manager risk within the absolute return program, in January the Board approved two new managers to the program, which resulted in PIMCO MAARS and Graham Capital Quant Global being selected. Currently, there are four strategies (two each within risk premia and global macro), each at a 1.5% target weight at the total plan level.

Discussion

At the April Board meeting, the Board approved a full redemption from AQR DELTA. AQR Delta is an alternative risk premia strategy along with the new PIMCO MAARS strategy.

Verus and staff are revisiting the universe of high conviction alternative risk premia managers with a focus on those that offer downside protection and generally have less exposure to equities. The addition of PIMCO MAARS, with its greater emphasis on fixed income, is illustrative of the type of alt risk premia manager we're seeking. The inclusion of global macro within risk premia is another example of a potentially attractive strategy.

We are also reviewing dedicated global macro strategies that fit the objectives for SamCERA's absolute return portfolio.

Attachment

Verus Memorandum on Absolute Return Update

Memorandum

To: SamCERA
From: Verus
Date: June 2, 2020
RE: Absolute return update

Executive Summary

SamCERA allocates 6% of plan assets to absolute return strategies as part of its strategic asset allocation. The goal of SamCERA's absolute return investments are to diversify the portfolio by providing an attractive return stream that is largely uncorrelated to public markets beta, in particular equity beta. At the April Board meeting, SamCERA elected to redeem its investment with AQR DELTA, a hedge fund replication strategy. This memo provides an update on possible uses for the proceeds from DELTA in the absolute return portfolio.

Possible Additions to Absolute Return

SamCERA has four managers in its absolute return portfolio with 3% in risk premia strategies and 3% in diversified, alpha-driven approaches that have low correlation to public markets (one multi-strategy, one quantitative macro long/short). In January 2020, the portfolio was diversified into these four manager positions from two to provide additional manager diversification in order to avoid significant manager drawdowns. The redemption of AQR DELTA, due to ongoing drawdowns, will reduce the risk premia portion to one manager. SamCERA and Verus staff are looking at a number of possibilities to replace the AQR exposure, including another alt risk premia manager and also global macro strategies that exhibit good downside protection.

- Verus and Staff are revisiting the universe of high conviction alternative risk premia managers with a focus on those that offer downside protection and generally have less exposure to equities. The addition of PIMCO MAARS, with its greater emphasis on fixed income, is illustrative of the type of alt risk premia manager we're seeking. The inclusion of global macro within risk premia is another example of a potentially attractive strategy for reasons described below.
- We are also reviewing dedicated global macro strategies that fit the objectives for SamCERA's absolute return portfolio. Global macro managers have the ability to raise and lower risk in their portfolios dynamically which has been critical to generating returns since the start of the global pandemic. Unlike the famous, highly directional global macro strategy run by George Soros in the '80s, there are now many more risk-controlled, all weather approaches in the marketplace. Verus and Staff would only consider a global macro manager that meets this criteria.

Summary

This memo serves as an update to the SamCERA Board. We welcome your input and feedback at this stage in our due diligence.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

June 2, 2020

Agenda Item 7.1

TO: Board of Retirement

FROM: Tat-Ling Chow, Finance Officer *Tat-Ling Chow*
Tariq Ali, Chief Technology Office *Tariq Ali*
Lilibeth Dames, Investment Analyst *Lilibeth Dames*

SUBJECT: SamCERA's Budget for Fiscal Year 2020-21

RECOMMENDATION

Approve SamCERA's Budget for Fiscal Year (FY) 2020-21 totaling \$38.7 million.

	FY 2020-21 <u>Proposed</u>	FY 2019-20 <u>Adopted</u>	Increase <u>(Decrease)</u>	% of <u>Change</u>
<u>SamCERA Budget</u>				
Professional Services	\$ 30,232,571	\$ 27,838,320	\$ 2,394,251	9%
Administrative	7,232,983	7,016,018	216,965	3%
Information Technology	1,225,500	1,962,840	(737,340)	-38%
Total Budget - SamCERA	<u>\$ 38,691,054</u>	<u>\$ 36,817,178</u>	<u>\$ 1,873,876</u>	5%

BACKGROUND

SamCERA's budget consists of three budget units: professional services, administrative, and information technology.

Professional Services Budget – covers professional fees that are authorized by Government Code §31596.1. This Code authorizes the Board of Retirement (the Board) to expend funds from investment earnings of the pension trust for specific professional services, including actuarial consulting, custodial, investment management, investment consulting, and outside legal services.

SamCERA employs professional investment managers to manage its portfolio. Some management fees are performance driven, primarily dependent upon the market value of the assets under management and negotiated fee schedules. As market values of the assets increase, so do management fees. Other management fees are based on contractual agreements. Fees for the actuarial consulting, investment consulting, and global custodian services are either on per-service or per-retainer basis.

The Chief Investment Officer and the investment consultant review the portfolio's performance and report the results to the Board. Staff reviews professional service expenses to ensure fees charged to SamCERA are following respective contractual agreements.

The professional services budget for FY 2020-21 is projected to be \$30 million, 9% higher than the prior year's adopted budget.

	FY 2020-21 Proposed	FY 2019-20 Adopted	Increase	% of Change
<u>Professional Services Budget</u>				
Investment Management	\$ 29,118,571	\$ 26,878,320	\$ 2,240,251	8%
Other Professional Service Fees	1,114,000	960,000	154,000	16%
Total - Professional Services Budget	<u>\$ 30,232,571</u>	<u>\$ 27,838,320</u>	<u>\$ 2,394,251</u>	9%

- Investment management fees are expected to increase by 8%, primarily from the assumed growth in assets under management. In October 2019, the Board approved a new target asset allocation policy, removing the allocation to Risk Parity and increasing the allocation to Diversifying Assets.

Investment Management Fees						
	FY 20-21				FY 19-20	
	Fee	Projected	Performance	Total Projected	Total	% of
	(bps)	Annual Fee	Fee	Fee	Authorized Fee	Change
Investment Manager						
Total Public Equity	30.9	\$ 4,863,940	\$ 960,000	\$ 5,823,940	\$ 5,209,089	12%
Total Fixed Income	39.9	6,098,139	436,362	6,534,501	4,526,646	44%
Total Risk Parity	n/a	-	-	-	1,436,836	-100%
Total Alternative Assets	n/a	9,804,900	945,778	10,750,678	10,773,697	0%
Total Inflation Hedge	n/a	5,690,889	87,313	5,778,202	4,747,052	22%
Total Cash Overlay	n/a	231,250	-	231,250	185,000	25%
TOTAL	56.5	<u>\$ 26,689,118</u>	<u>\$ 2,429,453</u>	<u>\$ 29,118,571</u>	<u>\$ 26,878,320</u>	8%

- Other professional fees, which are mostly on per-service basis, surge by 16%, primarily due to additional funding requirements for the Triennial Experience Study performed by Milliman Incorporated and the Actuarial Audit by Cheiron Incorporated. The remaining increase is caused by the projected cost-of-living adjustment to the investment consulting service charges.

Other Professional Fees					
		FY 20-21		FY 19-20	
Contractor	Service	Fee	Projected	Authorized	% of
		(bps)	Fee	Fee	Change
Milliman Inc.	Actuarial Consulting	0.3	\$ 139,000	\$ 100,000	39%
Cheiron Inc.	Actuarial Audit	0.2	90,000	-	n/a
Verus Investments	Investment Consulting	1.0	535,000	510,000	5%
Northern Trust	Custodian	0.7	350,000	350,000	0%
TOTAL		2.2	<u>\$1,114,000</u>	<u>\$ 960,000</u>	16%

Administrative Budget – accounts for administrative expenses such as salaries and benefits. Government Code §31580.2(a) of the County Employees’ Retirement Law of 1937 limits SamCERA’s administrative budget to twenty-one hundredths of one percent (0.21%) of the accrued actuarial liability of the retirement system.

<u>Administrative Budget</u>	FY 2020-21 Proposed	FY 2019-20 Adopted	Increase (Decrease)	% of Change
Salaries and Benefits				
Salaries	\$ 3,705,944	\$ 3,569,155	\$ 136,789	4% (a)
Benefits	1,842,223	1,702,352	139,871	8% (b)
Total Salaries and Benefits	<u>5,548,167</u>	<u>5,271,507</u>	<u>276,660</u>	5%
Services and Supplies				
Board Expense	8,000	10,000	(2,000)	-20%
Insurance	72,050	80,000	(7,950)	-10% (c)
Medical Record and Appeal Hearing	75,000	75,000	-	0%
Member Education	63,750	63,750	-	0%
Education and Conference	98,914	148,320	(49,406)	-33% (d)
Transportation and Lodging	90,910	117,350	(26,440)	-23% (e)
Property and Equipment	24,082	33,000	(8,918)	-27% (f)
General Office Supplies	37,127	34,000	3,127	9%
Postage and Printing	25,000	28,000	(3,000)	-11% (g)
Leased Facilities	655,272	583,728	71,544	12% (h)
County Services	349,711	393,363	(43,652)	-11% (i)
Audit Services	60,000	58,000	2,000	3%
Other Professional Services	125,000	120,000	5,000	4%
Total Services and Supplies	<u>1,684,816</u>	<u>1,744,511</u>	<u>(59,695)</u>	-3%
Total Administrative Budget	<u>\$ 7,232,983</u>	<u>\$ 7,016,018</u>	<u>\$ 216,965</u>	3%

The proposed administrative budget for FY 2020-21 is about \$7 million, slightly above the prior year’s adopted budget by 3%. This amount approximates to 0.13% of the total accrued actuarial liability of \$5.46 billion at June 30, 2019, compared to the allowable limit of 0.21%.

Budget items with significant changes are discussed below.

- (a) Salaries are 4% higher than the current year’s budget, mainly triggered by negotiated increases in mid-December 2020 for non-management employees and mid-January 2021 for management employees under the latest labor contracts.
- (b) Benefits are 8% higher than the current year’s budget, primarily from employer contributions towards pension with the Board’s decision to lower the assumed investment return by a quarter percent in the 2019 actuarial valuation as well as increases in payroll.

- (c) Education and conference appropriations decline substantially by 31%. With plenty of free educational information available online, the need for purchasing tutorials, literature, and periodicals diminish drastically. As this trend is expected to continue, the budgets for such purchases are abated to match with actual needs. In addition, deliberate efforts have been made to cut funding for offsite trainings and conferences, a measure to support the County’s planned budget cuts due to the adverse financial impacts from the coronavirus pandemic.
- (d) Transportation and lodging outlays are adjusted downwards in alignment with less offsite trainings and conferences.
- (e) Spending on property and equipment is reduced in proportion to the predicted level of new purchases.
- (f) Outlays for postage and printing are expected to drop further with SamCERA’s continuous efforts in encouraging its members to go paperless as well as disseminating information online.
- (g) Lease payments for the office space are up by 12%. In December 2019, SamCERA entered a new lease agreement with the existing landlord for a term of eight years. Under this agreement, the landlord agreed to refurbish the entire office in exchange for SamCERA’s acceptance of the proposed rent increases.
- (h) The decline in County service charges is expected as there is only one disability retirement case to be finalized by the County Counsel. SamCERA previously relied on County Counsel to handle all disability retirement cases. In January 2019, with the Board’s approval, SamCERA switched to private counsel for legal support, which is separately tracked under Other Professional Services.

Information Technology Budget – covers projected expenses for information technology that are authorized by Government Code §31580.2(b). The Code states that “Expenditures for computer software, computer hardware, and computer technology consulting services in support of these computer products shall not be considered a cost of administration of the retirement system.”

	FY 2020-21 Proposed	FY 2019-20 Proposed	Increase (Decrease)	% of Change	
Information Technology Budget					
Computer Equipment and Software	30,000	100,000	\$ (70,000)	-70%	(a)
IT Infrastructure -Software License Maintenance	529,500	1,307,340	(777,840)	-59%	(b)
IT Infrastructure - Maintenance Tools & Equipment	300,000	100,000	200,000	200%	(c)
IT Infrastructure - Contract IT Services	306,000	405,500	(99,500)	-25%	(d)
IT Infrastructure - Imaging	50,000	-	50,000	n/a	(e)
Technology Research and Development	10,000	50,000	(40,000)	-80%	(f)
Total - Information Technology Budget	\$ 1,225,500	\$ 1,962,840	\$ (737,340)	-38%	

The information technology budget for FY 2020-21 is estimated to be \$1.2 million, 38% below the prior year's budget. Areas with significant changes include the following budget items:

- (a) The budget for computer equipment and software is adjusted downward to be in sync with the predicted level of new purchases.
- (b) Software license maintenance is projected to shrink by nearly 60%. In the prior fiscal year, SamCERA entered an agreement with Vitech to purchase 2,500 hours of system support at a discount. The hours purchased but not yet depleted is expected to be sufficient to cover the needs for FY 2020-21.
- (c) The budget for maintenance tools and equipment is adjusted upward with plans to expand the capacities of the existing infrastructure. These plans include acquiring backend servers for disaster recovery and replacing ten laptop computers.
- (d) Contract IT services are anticipated to drop by 25% as most projects requiring consultation from outside experts are expected to be completed before year-end this year.
- (e) An imaging project will be conducted to convert paper documents to digital files, which not only increases overall productivity but also reduces storage costs in the long run.
- (f) The resources allocated to technology research and development are reduced to match the needs for the exploration of new technologies that may benefit all key stakeholders.