



## **AGENDA**

### **RETIREMENT BOARD MEETING**

#### REGULAR MEETING

August 26, 2020, 9:00 a.m.

The Board of Retirement meeting will be accessible telephonically at +1 (408) 650-3123, access code 508-462-629 due to the Contra Costa County and State of California Coronavirus (COVID-19) Shelter In Place Orders, and as permitted by Executive Order N-29-20 issued on March 17, 2020.

Persons who wish to make public comment may submit their comment to [publiccomment@cccera.org](mailto:publiccomment@cccera.org) on the day of the meeting, either before or during the meeting. Public comments are limited to any item of interest to the public that is within the subject matter jurisdiction of the Board of Retirement. (Gov't Code Section 54954.3(a).) All comments submitted will be included in the record of the meeting. The comments will be read into the record at the meeting, subject to a three-minute time limit per comment.

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

1. Pledge of Allegiance.
2. Roll Call.
3. Accept comments from the public.
4. Approve minutes from the July 22, 2020 meeting.

#### **CLOSED SESSION**

5. The Board will go in to closed session pursuant to Govt. Code Section 54956.9(d)(1) to confer with legal counsel regarding pending litigation:
  - a. *Contra Costa County Deputy Sheriffs Association, et al., v. Board of Retirement of CCCERA, et al.*, Supreme Court of the State of California, Case No. S247095

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

## ***OPEN SESSION***

6. Consider and take possible action regarding East Contra Costa Fire Protection District's request to depool cost group #8.
  - a. Presentation from Segal
  - b. Comments from East Contra Costa Fire Protection District
  - c. Comments from Contra Costa County Fire Protection District
  - d. Board consideration and possible action regarding the East Contra Costa Fire Protection District's request to depool cost group #8.
  
7. Review of total portfolio performance for period ending June 30, 2020.
  - a. Presentation from Verus
  - b. Presentation from staff
  
8. Review of portfolio rebalancing report.
  
9. Miscellaneous
  - a. Staff Report
  - b. Outside Professionals' Report
  - c. Trustees' comments



**RETIREMENT BOARD MEETING MINUTES**

REGULAR MEETING  
July 22, 2020  
9:00 a.m.

The Board of Retirement meeting will be accessible telephonically at (408) 650-3123, access code 776-418-773 due to the Contra Costa County and State of California Coronavirus (COVID-19) Shelter In Place Orders, and as permitted by Executive Order N-29-20 issued on March 17, 2020.

**1. Pledge of Allegiance**

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

**2. Roll Call**

Present: Candace Andersen, Donald Finley, Scott Gordon, Jerry Holcombe, Jay Kwon, David MacDonald, John Phillips, Mike Sloan, Todd Smithey and Russell Watts

Absent: Louie Kroll

Staff: Gail Strohl, Chief Executive Officer; Christina Dunn, Deputy Chief Executive Officer; Timothy Price, Chief Investment Officer; Karen Levy, General Counsel; Wrally Dutkiewicz, Compliance Officer; Anne Sommers, Administrative/HR Manager; Henry Gudino, Accounting Manager; Tim Hoppe, Retirement Services Manager; and Jasmine Lee, Member Services Manager

Outside Professional Support:	Representing:
Joe Wiley	Wiley Price & Radulovich LLP
Rob Arnott	Research Affiliates
Brent Leadbetter	Research Affiliates
Sasha Talcott	PIMCO
Chris Tarui	PIMCO

**3. Accept comments from the public**

No member of the public offered comment.

**4. Approval of minutes**

It was **M/S/C** to approve the minutes of the June 24, 2020 meeting. (Yes: Andersen, Finley, Gordon, Holcombe, MacDonald, Phillips, Sloan, Smithey and Watts)

**CLOSED SESSION**

The Board moved into closed session pursuant to Govt. Code Section 54956.9(d)(2).

The Board moved into open session.

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

**6. Appoint audit committee members**

Smithey appointed John Phillips as the Chairperson, Russell Watts as the Vice-Chairperson, and Jerry Holcombe and Todd Smithey as Members-at-Large on the Audit Committee.

**7. Review of report on Growth Sub-Portfolio including managers**

Price reviewed the role of Growth in CCCERA's portfolio.

**8. Presentation from Research Affiliates**

Talcott and Arnott reviewed the role of value in CCCERA's portfolio and its performance.

**9. Consider and take possible action to adopt Board of Retirement Resolution No. 2020-2, Investment Asset Allocation Targets and Ranges**

It was **M/S/C** to adopt Board of Retirement Resolution No. 2020-2, Investment Asset Allocation Targets and Ranges. (Yes: Andersen, Finley, Gordon, Holcombe, MacDonald, Phillips, Sloan, Smithey and Watts)

**10. Consider authorizing the attendance of Board:**

It was **M/S/C** to authorize the attendance of one Board member at the NASRA Annual Conference, August 3-12, 2020, Virtual Program. (Yes: Andersen, Finley, Gordon, Holcombe, MacDonald, Phillips, Sloan, Smithey and Watts)

**11. Miscellaneous**

(a) Staff Report –

Strohl reported CCCERA is celebrating its 75<sup>th</sup> anniversary this month; we are processing our 5th retirement payroll since the shelter in place and it continues to be processed on time; we will have our first virtual pre-retirement workshop tomorrow; and videos to assist members in using the pension calculator and a retirement overview session have been added to the website.

(b) Outside Professionals' Report -



None

- (c) Holcombe reported Richard Cabral passed away. He served on the Board of Retirement for 36 years and was a dedicated, enthusiastic, passionate and engaging member of the Board. He asked that the meeting be adjourned in his memory.

It was **M/S/C** to adjourn the meeting in memory of Richard Cabral. (Yes: Andersen, Finley, Gordon, Holcombe, MacDonald, Phillips, Sloan, Smithey and Watts)

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Todd Smithey, Chairman

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David MacDonald, Secretary



<i>Meeting Date</i> <b>08/26/20</b> <i>Agenda Item</i> <b>#6</b>
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## MEMORANDUM

Date: August 26, 2020  
To: CCCERA Board of Retirement  
From: Gail Strohl, Chief Executive Officer  
Subject: Request from the East Contra Costa Fire Protection District to Depool Cost Group #8.

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### Board Meeting

At today's Board meeting, Segal will present and review the impact of the East Contra Costa Fire Protection District's (ECCFPD) request to depool cost group #8. At the conclusion of this presentation, representatives from ECCFPD and the other district in this cost group, Contra Costa County Fire Protection District (ConFire), will have an opportunity to provide any additional comments.

### Request Overview

ECCFPD in the attached letter has requested the Board's consideration to depool cost group #8, based on liabilities, and establish a new cost group for this district, effective with the December 31, 2019 actuarial valuation.

ConFire opposes this action as indicated in the attached response. ConFire has requested that if this request is approved, that the actual depooling is delayed until the December 31, 2022 actuarial valuation.

### Background

In 2009, CCCERA was depooled, based on payroll, and cost group #8 was created, comprised of ECCFPD and ConFire. Since 2009, no cost groups have depooled. When the depooling occurred, there were a number of considerations for having employers in certain cost groups. The number of active members for each employer was a consideration, since smaller employers could potentially experience less stable plan experience and contribution rates. Generally, unless due to varying benefit structure or governing statute, employers with less than 50 employees were pooled with other employers and were not in their own cost group.

For the Board’s reference, here are the number of active members for ECCFPD in recent years:

Year	Active Safety Members for ECCFPD
2016	42
2017	36
2018	34
2019	39
2020*	38
*as of June 30, 2020	

**Possible Outcomes**

- a) If ECCFPD’s request is approved, then ECCFPD would be depooled based on liabilities and placed in a new cost group #13. As shown in the Segal presentation, there would be a decrease in employer and member rates for ECCFPD and an increase in employer and member rates for ConFire compared to if they had remained in the same cost group. ECCFPD has indicated in their letter that the district would not anticipate making a request for re-pooling, but if it did, it would not make such a request for at least five years. CCCERA would need to consider whether a longer term commitment would be desired.

If the Board were to consider depooling this cost group, the Board would also need to consider the timing of this change. ECCFPD has requested an effective date of the December 31, 2019 actuarial valuation in order to have contribution rates potentially lowered sooner and generate a financial benefit from this action as early as possible.

Whereas, although ConFire opposes this request, they have requested an alternate effective date of December 31, 2022 when the possible increase in contribution rates would be potentially offset from a contribution rate decrease from other activities.

- b) If ECCFPD’s request is not approved, then the cost group would remain intact and no changes would be made.

**For Board Consideration**

Consider and take possible action regarding the East Contra Costa Fire Protection District’s request to depool cost group #8.

A large teal star graphic is positioned in the upper right corner of the slide. It is a four-pointed star with a white center, and its points extend towards the top and right edges of the frame.

# Contra Costa County Employees' Retirement Association

## East Contra Costa Fire Protection District's Request for Depooling from Contra Costa County Fire Protection District within Cost Group #8 (Second Meeting)

August 26, 2020

Andy Yeung, ASA, MAAA, FCA, EA

# EastFire's Request for Depooling from Cost Group #8 with ConFire

- **EastFire's Request**
- **Two methods to allocate assets on depooling**
- **Results under the two methods**
- **Choice of Method to Allocate Assets on Depooling**
- **Appendix – August 12, 2020 Board meeting presentation**

# EastFire's Request

- CCCERA Safety Cost Group #8 includes two employers
  - East Contra Costa Fire Protection District (EastFire) and
  - Contra Costa County Fire Protection District (ConFire)
- EastFire has requested depooling from Cost Group #8 starting with December 31, 2019 valuation
  - General employees in Cost Group #1 excluded from this request
- If depooled, contribution rates for EastFire would be determined based on assets and member demographics of EastFire
  - Demographics of EastFire members is readily identifiable
    - Including inactive vested and retired members
  - Asset share of EastFire requires Board's determination of the method to determine the amount allocated at depooling
    - EastFire is requesting allocation based on liability, not payroll

# Methods to Allocate Assets: Payroll Method

- Determine EastFire and ConFire asset shares in Dec. 31, 2018 valuation by first allocating UAAL in proportion to payroll
  - The assets are then determined by comparing allocated UAAL with each employer's AAL:  $\text{Assets} = \text{AAL} - \text{UAAL}$
- No change in UAAL contribution rates before and after depooling for either EastFire or ConFire
- Consistent with method implicit in developing pooled UAAL contribution rate in annual valuation
- Consistent with method applied in depooling other General and Safety employers in December 31, 2009 valuation
- Used in Board's withdrawal policy for terminating employers

# Methods to Allocate Assets: AAL Method

- Determine EastFire and ConFire asset shares in the Dec. 31, 2018 valuation by first allocating the UAAL in proportion to AAL
  - Note: this is the same as allocating assets in proportion to AAL, because  $\text{Assets} = \text{AAL} - \text{UAAL}$
- The UAAL rate decreases for EastFire and increases for ConFire
  - Changes caused by difference between proportion of payroll and proportion of AAL for EastFire versus ConFire

<b>(Based on 12/31/18 Valuation)</b>	<b>EastFire</b>	<b>ConFire</b>
<b>Proportion of Total Payroll</b>	<b>8.3%</b>	<b>91.7%</b>
<b>Proportion of Total AAL</b>	<b>4.6%</b>	<b>95.4%</b>

- No change in funded ratios before and after depooling for either EastFire or ConFire
- Used in Board's declining employer payroll policy for employers with substantive and permanent decline in payrolls



# EastFire's Request – Estimated Cost Impact

- Estimated impact of depooling on 2019 valuation results
  - Based on EastFire's demographics and assets allocated in proportion to liability (as requested by EastFire)
- Employer Rates (percent of pay)
  - 0.66% increase in Normal Cost (NC) rate for EastFire and 0.06% decrease in NC rate for ConFire
  - 37.85% decrease in Unfunded Actuarial Accrued Liability (UAAL) rate for EastFire and 3.43% increase in UAAL rate for ConFire
- Member Rates (percent of pay)
  - Legacy Tier A: 0.18% decrease for EastFire and 0.02% increase for ConFire
  - PEPRA Tier D: 2.97% decrease for EastFire and 0.65% increase for ConFire
  - PEPRA Tier E: no change

# Possible Contribution Rate Impact from EastFire's Proposed Depooling

- Total (NC & UAAL) rates paid by ConFire & EastFire before and after depooling – *Source: Segal December 9, 2019 Letter*

<u>ConFire</u> Employer Contribution Rate	Valuation Date (12/31)					
	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>
Current before Depooling	65.26%	68.86%	71.49%	73.41%	81.13%	82.43%
Depooling – Payroll Method	N/A	68.80%	71.57%	73.59%	81.46%	83.10%
Depooling – AAL Method	N/A	72.23%	74.97%	76.97%	83.15%	84.66%

<u>EastFire</u> Employer Contribution Rate	Valuation Date (12/31)					
	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>
Current before Depooling	111.83%	115.43%	118.06%	119.98%	82.02%	83.32%
Depooling – Payroll Method	N/A	116.09%	117.19%	117.99%	78.39%	75.93%
Depooling – AAL Method	N/A	78.24%	79.59%	80.57%	59.62%	58.62%

# Choice of Method to Allocate Assets on Depooling

- Methods differ as to what is a “fair” allocation of assets between employers in same Cost Group
- Payroll Method more consistent with historical pooling of experience in Cost Group
  - Assumes UAAL is proportional to active payroll
  - Implicitly assumes similar proportion of active to retired members for all employers
  - Maintains any historical cross subsidies across employers
- AAL Method more consistent with how assets would be allocated if employers had never been pooled
  - Assumes UAAL is proportional to AAL
  - Recognizes any differences in proportion of active to retired members among employers
  - Eliminates any historical cross subsidies across employers

# Comparison of EastFire and ConFire Liabilities, Payrolls and Demographics

Actuarial Accrued Liability (12/31/18 Valuation)	Amounts (\$)		Proportion	
	EastFire	ConFire	EastFire	ConFire
Active	24,964,872	209,608,802	<b>11%</b>	<b>89%</b>
Inactive	3,013,487	2,773,429	52%	48%
Retired	<u>19,621,721</u>	<u>782,874,154</u>	<b>2%</b>	<b>98%</b>
<b>Total</b>	47,600,080	995,256,385	<b>5%</b>	<b>95%</b>
<b>Active Payroll</b>	3,343,867	36,888,734	<b>8%</b>	<b>92%</b>

Participant Counts (12/31/18 Valuation)			Proportion	
	EastFire	ConFire	EastFire	ConFire
Active	<b>34</b>	<b>283</b>	<b>11%</b>	<b>89%</b>
Inactive	29	23	56%	44%
Retired	<u>24</u>	<u>565</u>	<b>4%</b>	<b>96%</b>
<b>Total</b>	87	871	9%	91%
<b>Retirees/Actives (%)</b>	24/34 = <b>71%</b>	565/283 = <b>200%</b>		

# **Appendix – August 12, 2020 Board Meeting Presentation**

East Contra Costa Fire Protection District's  
Request for Depooling from  
Contra Costa County Fire Protection District  
within Cost Group #8

# EastFire's Request for Depooling from Cost Group #8 with ConFire

- EastFire's Request
- What is Pooling?
- Background Behind Pooling at CCCERA
- EastFire's Specific Depooling Request
- Two methods to allocate assets on depooling
- Results under the two methods
- Choice of method to allocate assets
- Depooling and member contribution rates
- EastFire's Request and CCCERA's actuarial funding policy

# EastFire's Request

- CCCERA Safety Cost Group #8 includes two employers
  - East Contra Costa Fire Protection District (EastFire) and
  - Contra Costa County Fire Protection District (ConFire)
- EastFire has requested depooling from Cost Group #8 starting with December 31, 2019 valuation
  - General employees in Cost Group #1 excluded from this request
- If depooled, contribution rates for EastFire would be determined based on assets and member demographics of EastFire
  - Demographics of EastFire members is readily identifiable
    - Including inactive vested and retired members
  - Asset share of EastFire requires Board's determination of the method to determine the amount allocated at depooling
    - EastFire is requesting allocation based on liability, not payroll

# EastFire's Request – Estimated Cost Impact

- Estimated impact of depooling on 2019 valuation results
  - Based on EastFire's demographics and assets allocated in proportion to liability (as requested by EastFire)
- Employer Rates (percent of pay)
  - 0.66% increase in Normal Cost (NC) rate for EastFire and 0.06% decrease in NC rate for ConFire
  - 37.85% decrease in Unfunded Actuarial Accrued Liability (UAAL) rate for EastFire and 3.43% increase in UAAL rate for ConFire
- Member Rates (percent of pay)
  - Legacy Tier A: 0.18% decrease for EastFire and 0.02% increase for ConFire
  - PEPRA Tier D: 2.97% decrease for EastFire and 0.65% increase for ConFire
  - PEPRA Tier E: no change



# EastFire's Request – Effect on Other Cost Groups

- If EastFire's request to depool is approved by the Board (whether asset shares are based on liability or payroll)
  - Future contribution rates for EastFire will be calculated on a percent of payroll basis using only actuarial experience from EastFire
  - Future contribution rates for ConFire will be calculated on a percent of payroll basis using only actuarial experience from ConFire
  - There will be no change in the pooling arrangements for any other cost groups with more than one employer
    - Normal cost rates will continue to be pooled
    - UAAL contribution rates will continue to be pooled and paid in proportion to payroll for each employer

# What is Pooling?

- Pooling combines the actuarial experience of two or more employers in developing a retirement plan's funding requirements
- Actuarial experience is combined in developing
  - Assumptions: salary increases, termination, service & disability retirement, death (before & after retirement), etc.
  - Contribution rates: normal cost (employer and employee) and unfunded actuarial accrued liability (UAAL)
- Pooling is used in other financial programs besides retirement plans
  - Setting insurance rates for life, health, property and casualty programs
  - Providing more data for predicting future events in risk sharing arrangements

# Developing Contribution Rates in a Pooled Plan

- Historically, in 1937 Act retirement systems different employers offering the same benefit formulas have been put in the same rate pool
- Some considerations for smaller employers
  - Pros of pooled plan for smaller employers:
    - Short term variations of experience from the assumption (e.g., higher number of disability) are shared with other employers in the pool
    - May result in more stable plan experience and contribution rates
  - Cons of pooled plan for smaller employers:
    - Smaller employers may end up paying higher/lower rates over the long term if their experience is very different from larger employers
    - Pooling can lead to “cross subsidies” of rates across employers
- Some considerations for larger employers
  - Contribution rates for larger employers are generally less affected by year-to-year experience of smaller employers
  - UAAL rate may change at depooling depending on method used to allocate assets at depooling

# Background Behind Pooling Cost Group #8 at CCCERA

- Before the December 31, 2009 valuation, CCCERA only had four rate pools (General & Safety, with/without enhanced benefits)
- For the December 31, 2009 valuation, the Board acted to depool employers within General and Safety membership groups
  - To depool employers, the Dec. 31, 2002 asset shares were determined by first allocating the UAAL in proportion to each employer's payroll ("Payroll Method")
    - The assets were then determined by comparing the allocated UAAL with each employer's actuarial accrued liability (AAL):  $\text{Assets} = \text{AAL} - \text{UAAL}$
    - The Payroll Method was used to leave UAAL rates unchanged
  - December 31, 2002 assets were brought forward to December 31, 2009 with contributions, benefit and investment returns
- Employers with 50 or more employees were depooled
  - EastFire had slightly less than 50 employees so was not depooled from ConFire

# EastFire's Specific Depooling Request

- Depooling means future contribution rates for EastFire would be calculated based on EastFire's assets and member demographics
  - Demographics of EastFire members is readily identifiable
  - EastFire member data used in calculating Normal Cost & Actuarial Accrued Liability
- Segal estimated the Normal Cost (NC) impact using demographics of EastFire members in the December 31, 2018 valuation:
  - Increase in employer NC (0.66% of payroll) for EastFire and decrease in employer NC (0.06% of payroll) for ConFire
  - Projected to December 31, 2019 using results from December 31, 2018 valuation

# EastFire's Specific Depooling Request

- Determining the initial asset share for EastFire depends on Board's choice of method to allocate assets at depooling
  - Two methods to calculate asset share (allocate assets):
    - Payroll Method and Actuarial Accrued Liability (AAL) Method
  - EastFire's request is for allocation using AAL Method
  - Substantial difference in results between using Payroll Method and AAL Method
- Previously EastFire also requested an adjustment to the treatment of the Pension Obligation Bond (POB) credits for ConFire
  - Discussed at the July 24, 2019 Board meeting
  - That request was not included in current request

# Methods to Allocate Assets: Payroll Method

- Determine EastFire and ConFire asset shares in Dec. 31, 2018 valuation by first allocating UAAL in proportion to payroll
  - The assets are then determined by comparing allocated UAAL with each employer's AAL:  $\text{Assets} = \text{AAL} - \text{UAAL}$
- No change in UAAL contribution rates before and after depooling for either EastFire or ConFire
- Consistent with method implicit in developing pooled UAAL contribution rate in annual valuation
- Consistent with method applied in depooling other General and Safety employers in December 31, 2009 valuation
- Used in Board's withdrawal policy for terminating employers

# Methods to Allocate Assets: AAL Method

- Determine EastFire and ConFire asset shares in the Dec. 31, 2018 valuation by first allocating the UAAL in proportion to AAL
  - Note: this is the same as allocating assets in proportion to AAL, because  $\text{Assets} = \text{AAL} - \text{UAAL}$
- The UAAL rate decreases for EastFire and increases for ConFire
  - Changes caused by difference between proportion of payroll and proportion of AAL for EastFire versus ConFire

<b>(Based on 12/31/18 Valuation)</b>	<b>EastFire</b>	<b>ConFire</b>
<b>Proportion of Total Payroll</b>	<b>8.3%</b>	<b>91.7%</b>
<b>Proportion of Total AAL</b>	<b>4.6%</b>	<b>95.4%</b>

- No change in funded ratios before and after depooling for either EastFire or ConFire
- Used in Board's declining employer payroll policy for employers with substantive and permanent decline in payrolls



# Possible Contribution Rate Impact from EastFire's Proposed Depooling

- Total (NC & UAAL) rates paid by ConFire & EastFire before and after depooling – *Source: Segal December 9, 2019 Letter*

<u>ConFire</u> Employer Contribution Rate	Valuation Date (12/31)					
	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>
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<u>EastFire</u> Employer Contribution Rate	Valuation Date (12/31)					
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Depooling – AAL Method	N/A	78.24%	79.59%	80.57%	59.62%	58.62%

# Contribution Rate Differences and Changes before EastFire's Proposed Depooling

- Two sources of UAAL rate differences and expected future changes even before depooling:
  - 2018 valuation:
    - ConFire rate lower than EastFire by 45.7% from POB Credit only for ConFire
  - 2022 valuation:
    - ConFire's POB Credit would be fully amortized so that portion of ConFire's rate would increase
    - The initial amortization layer referred to as the Restart Amortization Charge would be fully amortized
      - The charge is shared by ConFire & EastFire so that a portion of both employer's rates would decrease
    - A projected net increase in rate for ConFire because the POB credit was greater than the Restart Amortization charge

# Contribution Rate Impact After EastFire's Proposed Depooling

## After depooling - Payroll method

- 2019 valuation: 0.66% increase in NC rate for EastFire and 0.06% decrease in NC rate for ConFire
- 2022 valuation: Same rate impact as before depooling:
  - Net increase for ConFire as POB credit and Restart Amortization charge are both fully amortized.
  - Decrease for EastFire as Restart Amortization fully amortized

## After depooling - AAL method

- 2019 valuation: Same changes in NC as with Payroll Method
- 2019 valuation: ConFire UAAL rate increase of 3.43% and EastFire UAAL rate decrease of 37.85%
- 2022 valuation: smaller decrease in UAAL rate for EastFire as EastFire has smaller share of Restart Amortization Layer
  - Smaller net increase for ConFire

# Choice of Method to Allocate Assets on EastFire's Proposed Depooling

- Payroll Method

- No change in UAAL rate before and after depooling
  - Funded ratios would change
- Consistent with method implicit in developing pooled UAAL contribution rate in annual valuation
- Consistent with method used at 2009 depooling of all employers
- Appropriate if proportion of payroll among employers is stable

- AAL Method

- Change in UAAL rate before and after depooling
  - But funded ratios would be unchanged
- Recognizes different proportions of payrolls vs. liabilities for different employers (as in Slide 11)
- Appropriate for permanent change in proportion of payroll among employers -- as in “Declining Employer Payroll” policy

# Choice of Method to Allocate Assets on Depooling

- Methods differ as to what is a “fair” allocation of assets between employers in same Cost Group
- Payroll Method more consistent with historical pooling of experience in Cost Group
  - Assumes UAAL is proportional to active payroll
  - Implicitly assumes similar proportion of active to retired members for all employers
  - Maintains any historical cross subsidies across employers
- AAL Method more consistent with how assets would be allocated if employers had never been pooled
  - Assumes UAAL is proportional to AAL
  - Recognizes any differences in proportion of active to retired members among employers
  - Eliminates any historical cross subsidies across employers

# Comparison of EastFire and ConFire Liabilities, Payrolls and Demographics

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<b>Active Payroll</b>	3,343,867	36,888,734	<b>8%</b>	<b>92%</b>

Participant Counts (12/31/18 Valuation)			Proportion	
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Inactive	29	23	56%	44%
Retired	<u>24</u>	<u>565</u>	<b>4%</b>	<b>96%</b>
<b>Total</b>	87	871	9%	91%
<b>Retirees/Actives (%)</b>	24/34 = <b>71%</b>	565/283 = <b>200%</b>		

# Depooling and Member Contribution Rates

- PEPRAs tiers – members pay one-half of Normal Cost
  - After depooling, NC rate and so member rates would be based on separate member demographics of EastFire and ConFire
- PEPRAs Tier D
  - EastFire Tier D member rate decreases by 2.97%
  - ConFire Tier D member rate increases by 0.65%
    - NC depends on entry age – lower NC for lower entry ages
      - EastFire average entry age is 25 vs 31 for ConFire
    - Less than 10 EastFire Tier D active members so rate may change with future new members
- PEPRAs Tier E
  - Only ConFire has Tier E members so Tier E member rate unchanged after depooling

# Depooling and Member Contribution Rates

- Legacy tiers – members pay formula basic rate plus one-half cost of COLA
- Basic Rate: After depooling no change in basic member rates
- COLA: Member rates would be based on separate member demographics of EastFire and ConFire
  - EastFire Tier A average COLA member rate decreases by 0.18%
  - ConFire Tier A average COLA member rate increases by 0.02%



# EastFire's Request and CCCERA's Actuarial Funding Policy

- Funding Policy only describes procedures for the depooling action taken as part of December 31, 2009 valuation
  - Including threshold that employers with 50 or more active employees were depooled
- Policy does not specify the method used to allocate assets when depooling
  - For December 31, 2009 depooling action, payroll method used to allocate assets to minimize changes in UAAL rates from depooling
    - Method applied retroactively to allocate assets as of December 31, 2002 valuation
  - EastFire's request to depool based on AAL does not deviate from any provisions of the Funding Policy
    - Policy currently states EastFire is pooled with ConFire so would require a conforming amendment if EastFire is depooled, regardless of method

# Discussion



# **EAST CONTRA COSTA FIRE PROTECTION DISTRICT**

Brian Helmick  
Fire Chief



## **SERVING THE COMMUNITIES OF:**

Bethel Island  
Brentwood  
Byron

Discovery Bay  
Knightsen  
Morgan Territory  
Oakley

February 14, 2020

## **Re: Request for De-Pooling of ECCFPD From Cost Group #8 with ConFire**

Dear CEO Strohl:

Thank you for your assistance in obtaining information from CCCERA's actuary, Segal Consulting, that was necessary for the East Contra Costa Fire Protection District ("ECCFPD") to evaluate its response to the question from CCCERA regarding whether or not ECCFPD would wish to have its safety members de-pooled from Cost Group #8 with ConFire safety members.

After reviewing the information provided and discussions with our Board of Directors, ECCFPD requests that CCCERA initiate the process for de-pooling our agency from Cost Group #8 and establishing a separate Cost Group for ECCFPD, subject to the following:

- As is obvious from the information provided by Segal, in order for ECCFPD to be fairly apportioned its share of the UAAL, the de-pooling must be based on liabilities rather than payroll. We have explained previously why the allocation based on payroll for ECCFPD and ConFire does not result in an appropriate allocation. The de-pooling would need to be made in accordance with the methodology set forth in Segal's letters of December 9 and December 30, 2019, with the outcome summarized under "Depooling Based on Liability."
- The de-pooling should be based on the December 31, 2019 valuation such that ECCFPD could see the results of the change in employer contribution rates in its 2020/2021 fiscal year budget process. ECCFPD has been adversely affected for many years and it is important to us that this process proceed as soon as possible.
- ECCFPD is willing to agree that it would not seek a re-pooling for at least 5 years. ECCFPD does not anticipate making such a request in any event.

Again, we thank CCCERA for its time and efforts to help ECCFPD address this important issue. We look forward to moving forward with CCCERA to accomplish the de-pooling that is critical to the financial success of our agency.

Sincerely,

A handwritten signature in blue ink, appearing to read "Brian Helmick".

Chief Helmick

cc: Shayna van Hoften, Hanson Bridgett LLP  
Judith Boyette, Hanson Bridgett LLP  
Ryan Pesonen, ECCFPD  
Joe Young, ECCFPD  
Regina Rubier, ECCFPD

# ***EAST CONTRA COSTA*** FIRE PROTECTION DISTRICT

---

Brian Helmick  
Fire Chief



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Oakley

## **Introduction**

Thank you for this opportunity to present East Contra Costa Fire Protection District's ("District") response to CCCERA's actuarial consultant's August 2020 report on our District's request to de-pool from Cost Group No. 8. As I presented to you on July 24, 2019, our District requests that it be de-pooled from ConFire based upon the accrued liability method, effective as of the December 31, 2019 valuation. Our District should only be responsible for contribution rates based upon assets and member demographics.

We propose to de-pool prospectively and avoid attempting to reconcile the historical financial inequities from this Board's 2009 initial decision, which was retroactive to 2002. Further, in return for a favorable decision today, our District is willing to waive any challenge to the detrimental financial impact caused by ConFire's pension obligation bond.

## **Our Request is Reasonable**

Our requested Actuarial Accrued Liability (AAL) method is fair to both parties and will accurately reflect each agency's own pension costs.

In 2017 our appointed, and now elected, governing board grew concerned about what they perceived as an unjustified Unfunded Actuarial Accrued Liability (UAAL). Our directors, just like this Board, must exercise their fiduciary responsibilities. Our Board initiated an evaluation of Cost Group No. 8 and concluded that the financial burden imposed on our District is inequitable with ConFire and that this burden has and will continue to detrimentally affect our service delivery, our



# **EAST CONTRA COSTA FIRE PROTECTION DISTRICT**

Brian Helmick  
Fire Chief



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employees, and our strategic planning. The estimated 38% decrease in unfunded liability (Segal, Slide 4) that would flow from de-pooling helps to rectify these impacts.

## **CCCERA’s Actuary Report Supports our District’s Request**

Quite simply, our request to de-pool based on actual liabilities is necessary due to the historical differences in demographics (active vs. retired) between ConFire and East Contra Costa Fire Protection District. Our requested AAL method best reflects our District’s, and ConFire’s, true pension status.

On the other hand, the payroll method fails to reflect the significant demographic differences between our two agencies and creates significant financial inequities. In fact, Segal concedes in Slide 17 that the “AAL Method [is] more consistent with how assets would be allocated if employers had never been pooled.”

Further, on Slide 16 Segal concedes that the AAL method “recognizes different proportions of payrolls vs. liabilities for different employers” and is “[a]ppropriate for permanent change in proportion of payroll among employers...”

On Slide 17 Segal also recognizes that the AAL Method “eliminates any historical cross subsidies across employers.”

The Segal chart at page 13 confirms the significant financial detriment the current pooling and active payroll allocation imposes on our District. It should be noted, however, that Segal *does not show the asset split under the payroll and AAL methods*. Those differences are significant:

<b>Allocation Method</b>	<b>Estimated 12/31/18 District</b>
--------------------------	------------------------------------

# EAST CONTRA COSTA FIRE PROTECTION DISTRICT

Brian Helmick  
Fire Chief



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	Valuation Value of Assets
Payroll	\$31.8 million
AAL	\$38.9 million
Difference	\$7.1 million

To put these numbers in perspective, the \$7.1 million difference above represents over 2 times the District \$3.344 million pension pay shown on slide 18 of Segal’s presentation. While we recognize that no asset allocation method is perfect, this wide range is unacceptable to our District’s ratepayers and employees. As we have explained, the AAL method *is more equitable*.

**There is no CCCERA Policy Preventing De-pooling by the Accrued Liability Method; CCCERA already uses this Method.**

Significantly, Segal further notes that CCCERA’s Funding Policy “*does not specify the method used to allocate assets when de-pooling.*” Segal also observes at Slide 21 that “*EastFire’s request to de-pool based on AAL does not deviate from any provisions of the Funding Policy.*”

It should be also be noted that the Segal Report at Slide 12 acknowledges that the AAL method is used by CCCERA in its declining employer payroll policy for employers with substantive and permanent decline in payrolls. This is necessary to accurately allocate the costs between agencies. This is the same situation we have here. Allocation by active payroll does not accurately allocate pension costs.

**Segal’s Report Acknowledges Problems with the Payroll Method**

# **EAST CONTRA COSTA** FIRE PROTECTION DISTRICT

Brian Helmick  
Fire Chief



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There are deficiencies in the “payroll method” as shown by Segal’s own descriptions:

Slide 17 assumes that the UAAL is proportional to active payroll yet Slide 18 clearly shows that the AAL is *not* proportional to active payroll, so the UAAL would also *not* be proportional to payroll.

Segal also implicitly assumes a similar proportion of active to retired members for all employers, whereas Slide 18 clearly shows that there is not a similar proportion of active to retired members between the District and ConFire. In fact, Segal shows the retiree/active ratio is 71% for the District and 200% for ConFire.

Finally, at Slide 17 Segal admits that the payroll method maintains any historical cross subsidies across employers. These inequitable historical cross subsidies are precisely the problem we face today.

## **Response to ConFire’s Opposition**

By letter dated April 10, 2020 ConFire opposes our District’s de-pooling request, and, if granted, asks for a delay until December 2022. ConFire’s position is understandable: For some 11 years ConFire has enjoyed a rich financial benefit as the far larger demographic member of Cost Group No. 8 and it has reaped benefits from its Pension Obligation Bond. In simple words, East Contra Costa has historically cross-subsidized ConFire. Any further delay simply compounds the inequities imposed upon East Contra Costa.



# ***EAST CONTRA COSTA*** FIRE PROTECTION DISTRICT

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Brian Helmick  
Fire Chief



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## **Closing**

We strongly believe that CCCERA has a fiduciary duty to rectify these historical inequities that have been imposed upon our agency, our employees, and our ratepayers.

Any delay in this Board's decision-making will simply cause further financial hardship upon our District. Moreover, if you vote to allow de-pooling, but restrict it to the payroll method, the historical cross-subsidy of ConFire pension costs by East Contra Costa will go unrectified with significant negative impacts on our critical service delivery and future planning.

Therefore, we ask that you decide today to allow de-pooling based upon the AAL Method.

Thank you again for this opportunity to speak to you.

# **EAST CONTRA COSTA** FIRE PROTECTION DISTRICT

Brian Helmick  
Fire Chief



SERVING THE COMMUNITIES OF:

Bethel Island  
Brentwood  
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Discovery Bay  
Knightser  
Morgan Territory  
Oakley

**August 18, 2020**

Ms. Gail Strohl, Executive Director  
Board Members, Contra Costa County Employee Retirement Association

**VIA: E-mail**

**RE: FOLLOW-UP COMMUNICATION TO BOARD'S CONSIDERATION OF ECCFPD'S REQUEST TO DEPOOL FROM COST GROUP NO. 8**

Dear Board Members and Ms. Strohl:

We appreciate the comprehensive presentation by your actuary, Segal, at your recent meeting, and the Board's questions and comments. However, as we were not afforded an opportunity to respond to certain statements made by Board members, and ConFire, we now do so by addressing selected key points:

1. It appears to us that the Segal report, and Mr. Angelo's responses to questions, are consistent with, and support ECCFPD's request to depool based on the liability method. Mr. Angelo confirmed that this is a fair method which returns both ECCFPD and ConFire back to their respective pension status prior to being joined into a cost group in 2009. Only the liability method eliminates the historical cross-subsidy which has detrimentally impacted ECCFPD.
2. Although some Board members expressed concern that ECCFPD's request would set a "precedent," we understood Mr. Angelo to characterize our request as a "unique" situation. Moreover, Mr. Angelo admitted that he could not identify other similar situations within CCCERA. Therefore, we believe that there is no basis for denying our request for fear of setting an adverse precedent, as a precedent anticipates a situation that is likely to recur. Those are not the facts here.
3. The presentation by ConFire in opposing our depooling request consisted of largely irrelevant and misleading allegations regarding ECCFPD's financial status and service delivery; indeed, ConFire's presentation focused on issues arguably outside of CCCERA's purview. It appears that ConFire's opposition is based on an estimated 1.2 to 1.6 million dollar cost to ConFire if this Board approves ECCFPD's request for depooling based on the liability method. In effect ConFire is insisting the ECCFPD continue to cross-subsidize ConFire's pension costs. In Contrast, the Segal Report and ECCFPD have demonstrated that there is a significant and

# EAST CONTRA COSTA FIRE PROTECTION DISTRICT

Brian Helmick  
Fire Chief



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ongoing financial burden placed on ECCFPD by the current structure of Cost Group No. 8. Finally, we note that ConFire's presentation did not address, and seemed to even ignore, CCCERA's actuarial report and its calculations, actuarial principles, and options for moving forward.

4. As the ECCFPD Board did not exist in 2009, the Board of Supervisors apparently represented ECCFPD's interests in CCCERA's depooling decision and formation of Cost Group No. 8. Based upon comments at your meeting, 50 employees was an arbitrary threshold for determining whether an employer would be allowed to stand alone within CCCERA. It was further noted by Segal that other pension programs have used smaller numbers in the order of 25 employees. Thus the 50 employee threshold should not be considered as a hard rule with respect to our depooling Request.
5. Several Board members expressed concern that as a smaller agency depooling would leave ECCFPD in a vulnerable position relative to volatility in pension contributions. ECCFPD has addressed this possibility by establishing a Pension and Rate Stabilization Trust Fund.
6. Some Board member made comments and negative insinuations about ECCFPD's February 14, 2020 letter to CCCERA where we stated that ECCFPD agrees not to seek re-pooling for at least 5 years (and does not anticipate making such a request in any event). For the record, the above stipulation was made by ECCFPD only in response to concerns raised by CCCERA staff and with the intention of reinforcing our intent not to request repooling.

We look forward to the CCCERA Board rendering its decision at its next meeting, to allow ECCFPD to depool based on the liability method. Please add this communication into CCCERA's administrative record.

Best Regards,



Brian Helmick  
Fire Chief



## CONTRA COSTA COUNTY FIRE PROTECTION DISTRICT

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April 10, 2020

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

**Re: East Contra Costa Fire Protection District's Request to Depool from Cost Group #8 Based on Liabilities as of the December 31, 2019 Actuarial Valuation**

Dear Gail:

This correspondence concerns the letter from the East Contra Costa Fire Protection District, dated February 14, 2020, requesting that CCCERA depool Cost Group #8. For the reasons explained in this letter, Contra Costa County Fire Protection District opposes such an action.

For purposes of clarification, we first note that East Contra Costa Fire Protection District's letter states that depooling Cost Group #8 as of the December 31, 2019 actuarial valuation would impact employer contribution rates in FY 2020-21. However, contribution rates become effective 18 months following the actuarial valuation date. As such, depooling Cost Group #8 as of the December 31, 2019 actuarial valuation would impact FY 2021-22 contribution rates.

As you know, starting with the December 2009 actuarial valuation, CCCERA's Board took action to depool CCCERA's assets, liabilities, and normal cost by employer. But even under the depooling structure, cost sharing arrangements still exist. For example, members of small employers (defined as having fewer than 50 active members) are pooled with the County according to the applicable tier for each member, and safety members of the East Contra Costa Fire Protection District are pooled with safety members of the Contra Costa County Fire Protection District. These cost sharing arrangements are memorialized in the CCCERA Actuarial Funding Policy.

Contra Costa County Fire Protection District opposes the request to depool Cost Group #8, because such a move would be contrary to CCCERA's existing policy. Depooling a very small employer to reduce the size of its financial contributions in the near term does not seem consistent with the goals of managing and controlling future contribution volatility and ensuring the systematic funding of future benefit payments.

Additionally, there is no assurance that such an action would have enough of an impact on that small employer to ensure future financial stability and continuity of services. East Contra Costa Fire Protection District's request indicated that the District was agreeable to not seeking to re-pool for at least five years. We do not think any such guarantee can be made in these tumultuous times.

Contra Costa County Fire Protection District will make its final POB payment in August 2022. If the CCCERA Board does grant East Contra Costa Fire Protection District's request to depool Cost Group #8, we respectfully request that the Board delay depooling until the December 2022 actuarial valuation (i.e., after the UAAL charge and POB credit layers drop off due to being fully amortized).

Sincerely,

A handwritten signature in black ink, appearing to read "L T Broschard III". The signature is written in a cursive, somewhat stylized font.

Lewis T. Broschard III  
Fire Chief



Meeting Date  
**08/26/20**  
Agenda Item  
**#7a.**

**Verus**<sup>777</sup>



**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**



**PERIOD ENDING: JUNE 30, 2020**

Investment Performance Review for

**Contra Costa County Employees' Retirement Association**

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Investment Landscape

TAB I

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Investment Performance  
Review

TAB II





**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**

3<sup>RD</sup> QUARTER 2020  
Investment Landscape



# Recent Verus research

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

## Annual outlooks

### 2020 REAL ASSETS OUTLOOK

The ongoing impact of COVID-19 on the global economy has dramatically altered our outlook on inflation, risk and asset class returns. Going into 2020, valuations for many risk assets were rich and expected returns were low. In a matter of weeks, we've seen a broad market sell-off, improving valuations.

- A combination of poor performance, high volatility and ESG-related concerns are driving a shift in investor preference within real assets.
- The shutdowns of economies around the globe will likely have lasting impacts and create some stress and distress for affected assets and those with highly levered capital structures.
- Negative impacts in real estate will likely take several quarters to flow through the appraisal cycle on the private side, creating challenges for existing assets and opportunities for fresh capital.

## Topics of interest

### BROADENING DIVERSITY CONSIDERATION

CIO Ian Toner, CFA, and Public Markets Managing Director Marianne Feeley, CFA, outline broader elements of diversity – beyond ownership – that may be used to characterize the demographic qualities of an investment firm. It frames the broader approach to understanding diversity that we are adapting at Verus, which is an integral part of our process of collecting and using information about investment managers.

### STRATEGIC LIQUIDITY

An analysis of illiquid allocations across a universe of portfolios suggests that institution type and size may be the determining factors in how much capital is allocated to illiquid assets. We believe illiquid allocations should be based on the financial situation of the institution. Verus has developed a framework to analyze the impact illiquid asset programs have on the overall portfolio.

## Sound thinking

### KNOWING WHERE YOU'RE GOING MATTERS

CIO Ian Toner, CFA, and Public Markets Managing Director Marianne Feeley, CFA, outline broader elements of diversity – beyond ownership – that may be used to characterize the demographic qualities of an investment firm.

It frames the broader approach to understanding diversity that we are adapting at Verus, which is an integral part of our process of collecting and using information about investment managers.

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Equity 27

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Appendix 41

# 2<sup>nd</sup> quarter summary

## THE ECONOMIC CLIMATE

- U.S. GDP grew at a -9.5% rate year-over-year in Q2 (-32.9% quarterly annualized rate). The contraction consisted of decreased consumer spending, exports, inventory investment, fixed investment, as well as state and local government expenditures. Federal government spending partly offset the slowdown. **p. 11**
- The U.S. labor market experienced a historic shock in Q2, as unemployment jumped from 4.4% in March to 14.7% in April, then recovered partially to 11.1% in June. Recent labor market data have beat expectations materially, but the severity of the shock is notable. A majority of the unemployed have reported their job losses as temporary. It will be important to watch what portion of these losses are indeed temporary rather than permanent. **p. 13**

## PORTFOLIO IMPACTS

- Most major equity benchmarks are within 15% of all-time highs, despite major damage that COVID-19 has inflicted on the global economy. Some of this damage has been mitigated by government support, but some damage is likely yet to be felt. **p. 28**
- U.S. core inflation fell steeply from 2.1% in March to 1.2% in June, while food prices have risen. COVID-19 has led to a significant rise in at-home meal preparation (greater demand for certain items), while reportedly negatively impacting food processing facilities (less supply). **p. 12**

## THE INVESTMENT CLIMATE

- The Federal Reserve continued to roll out the litany of support programs that were announced in the first quarter. The Fed's balance sheet grew from \$5.3 trillion to \$7.1 trillion over the second quarter. **p. 23**
- Moves in the CBOE VIX Index moderated in June. The long-term average of the index is near 19. It has remained above that level since February, reaching a high point of 85 on March 18th, and closing June at 30. **p. 36**
- The Fed expanded the list of eligible securities for purchase to include corporate debt. While the Fed will primarily target investment grade debt securities, it will also buy some non-investment grade debt from "fallen angels" which were investment-grade prior to the pandemic. **p. 23**

## ASSET ALLOCATION ISSUES

- U.S. equities delivered an incredible comeback, following a sudden and significant sell-off in March. The S&P 500 rallied +20.5% in the second quarter, bringing year-to-date performance to -3.1%, and positive +7.5% over the past twelve months. **p. 30**
- The U.S. dollar weakened in Q2, falling -2.3%. The market recovery (less demand for safe-haven currencies) and materially lower U.S. interest rates (less attractive U.S. dollar) have likely contributed to depreciation. **p. 39**

A mildly underweight risk stance appears appropriate in today's environment

We remain watchful of the COVID-19 second wave and its impact on economic reopening

# What drove the market in Q2?

“The second wave of coronavirus: How bad will it be as lockdowns ease?”

## U.S. DAILY NEW CONFIRMED COVID-19 CASES

1/31	2/29	3/31	4/30	5/31	6/30
2	8	26,169	29,419	19,665	45,596

Article Source: *The Philadelphia Inquirer*, May 6<sup>th</sup>, 2020

“Early results from Moderna coronavirus vaccine trial show participants developed antibodies against the virus”

## MODERNA U.S. EQUITY SHARE PRICE

1/31	2/29	3/31	4/30	5/31	6/30
\$20.51	\$25.93	\$29.95	\$45.99	\$61.50	\$64.21

Article Source: *CNN*, May 18<sup>th</sup>, 2020

“Nasdaq erases losses for 2020 as mega-cap tech rallies offset coronavirus drag”

## NASDAQ COMPOSITE INDEX TOTAL RETURN MINUS S&P 500 TOTAL RETURN

Jan	Feb	Mar	Apr	May	Jun
+2.1%	+2.0%	+2.3%	+2.7%	+2.1%	+4.1%

Article Source: *Business Insider*, May 7<sup>th</sup>, 2020

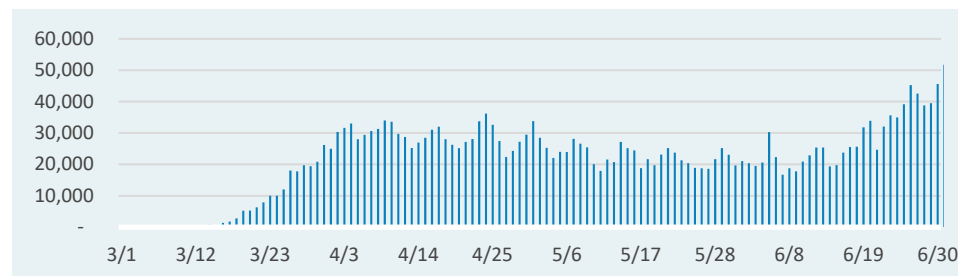
“How China’s national security law could change Hong Kong forever”

## HONG KONG VISITOR ARRIVALS (YEAR OVER YEAR CHANGE)

Dec	Jan	Feb	Mar	Apr	May
-51.5%	-52.7%	-96.4%	-98.6%	-99.9%	-99.9%

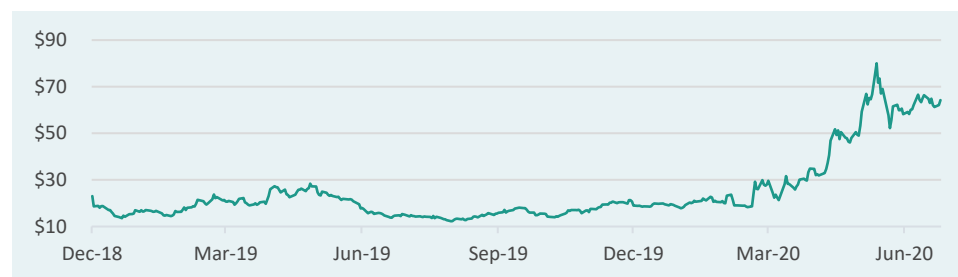
Article Source: *CNBC*, July 1<sup>st</sup>, 2020

## DAILY NEW COVID-19 CASES (UNITED STATES)



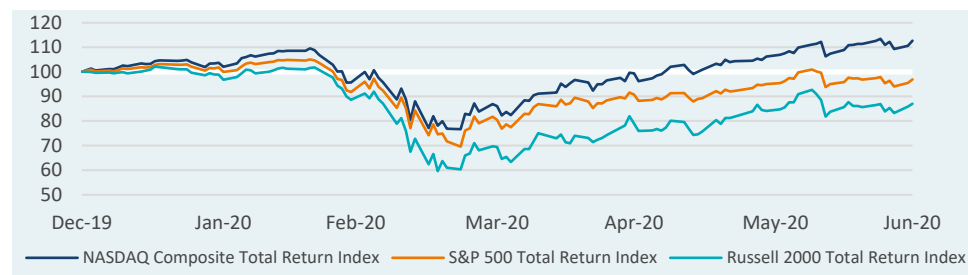
Source: *Bloomberg*, as of 6/30/20

## MODERNA INC. SHARE PRICE



Source: *Bloomberg*, as of 6/30/20

## U.S. EQUITY INDEX PERFORMANCE (INDEXED 12/31/2019=100)



Source: *NASDAQ*, *Standard and Poor's*, *FTSE Russell*, *Bloomberg*, as of 6/30/20

# Economic environment

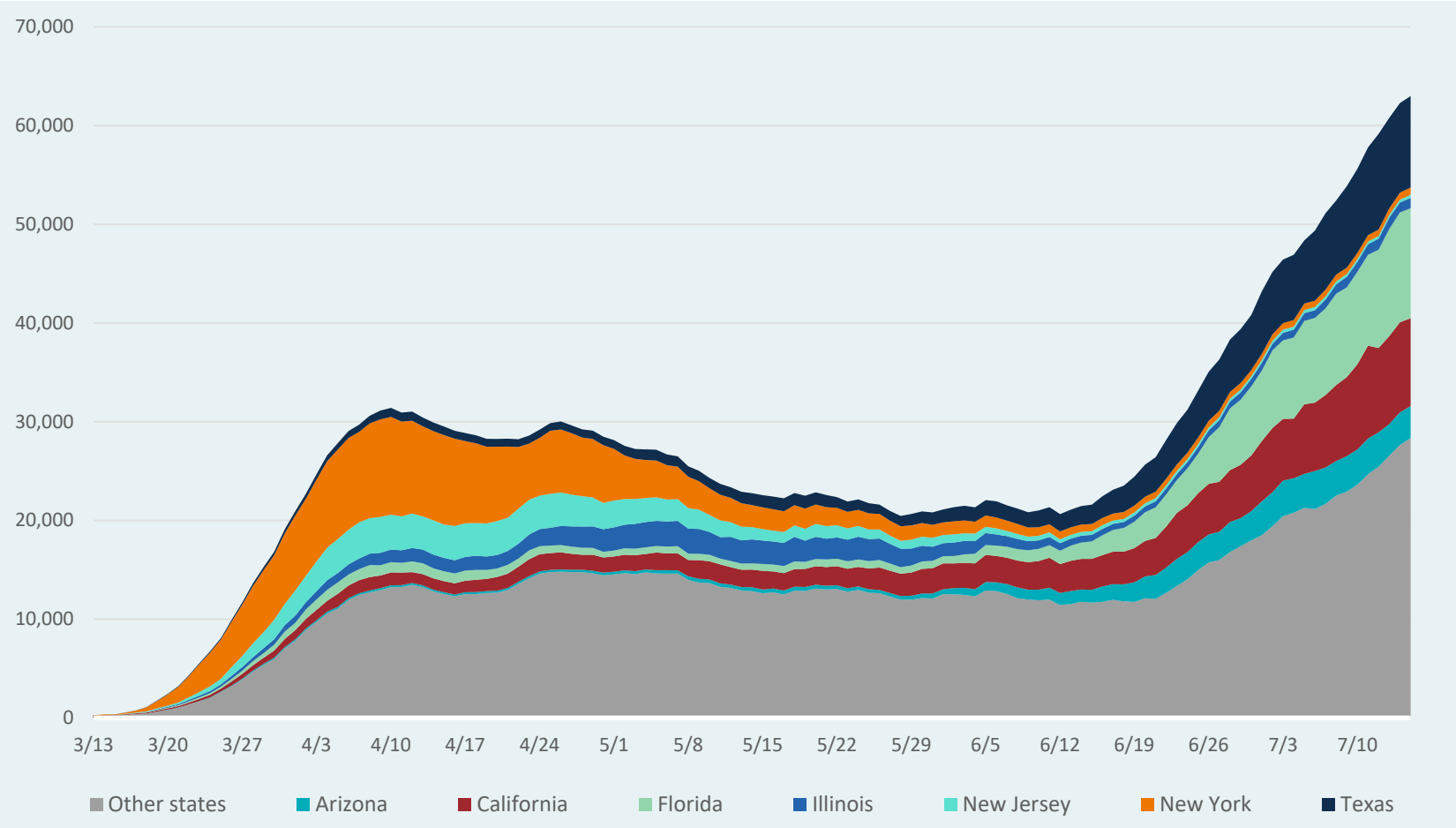
# U.S. economics summary

- U.S. GDP grew at a -9.5% rate year-over-year in Q2 (-32.9% quarterly annualized rate). The contraction consisted of decreased consumer spending, exports, inventory investment, fixed investment, as well as state and local government expenditures. Federal government spending partly offset the slowdown.
- U.S. core inflation exhibited a steep drop from 2.1% in March to 1.2% in June. Headline inflation also slowed from 1.5% to 0.6%, pushed lower by the recent decline in energy prices. On the other hand, food prices have been rising—specifically meats, poultry, fish and eggs—due in large part to interruptions at processing plants.
- As of June 29<sup>th</sup> there were 34 states with a transmission rate of COVID-19 above 1.0, an indication that the virus continues to spread exponentially. Southern states and Sun Belt states are in retreat—taking lockdown steps reminiscent of March and April—only weeks after governors began to reopen their economies.
- The Bloomberg Consumer Comfort Index experienced a dramatic weakening year-to-date, falling from a near-record high of 67.3 in late January to 34.7 in May, then ending June at 43.3.
- The U.S. labor market experienced a historic shock in Q2 as unemployment jumped from 4.4% in March to 14.7% in April, then recovered partially to 11.1% in June.
- It has been reported that 8.6% of all mortgages in the U.S. are in forbearance. To put this number into perspective, during the 2008-2009 housing crisis the mortgage default rate reached approximately 10%. If a large portion of loans in forbearance later face foreclosure, this could put significant pressure on the housing market.

	Most Recent	12 Months Prior
GDP (YoY)	(9.5%) 6/30/20	2.0% 6/30/19
Inflation (CPI YoY, Core)	1.2% 5/31/20	2.0% 5/31/19
Expected Inflation (5yr-5yr forward)	1.5% 6/30/20	1.8% 6/30/19
Fed Funds Target Range	0% – 0.25% 6/30/20	2.25% – 2.50% 6/30/19
10 Year Rate	0.7% 6/30/20	2.0% 6/30/19
U-3 Unemployment	11.1% 6/30/20	3.7% 6/30/19
U-6 Unemployment	18.0% 6/30/20	7.2% 6/30/19

# COVID-19 update

U.S. DAILY NEW CASES DECOMPOSITION (7-DAY TRAILING AVERAGE)



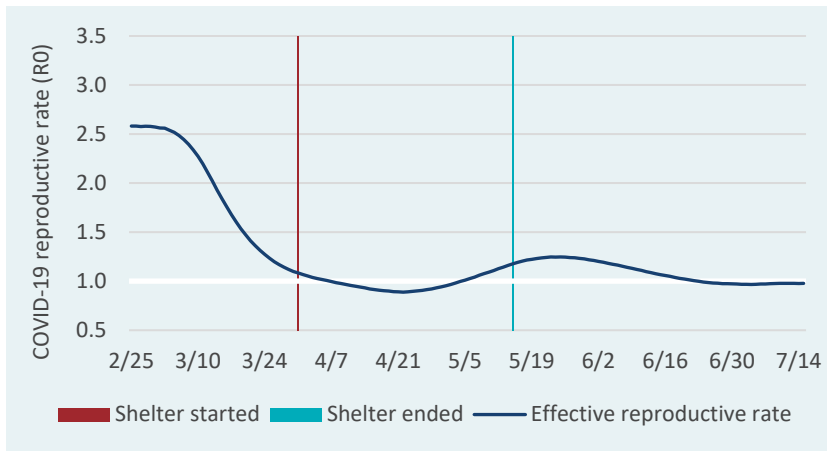
Toward the end of June, daily case growth began to indicate the emergence of a second wave of COVID-19

Most of the resurgence has occurred across a small group of U.S. states

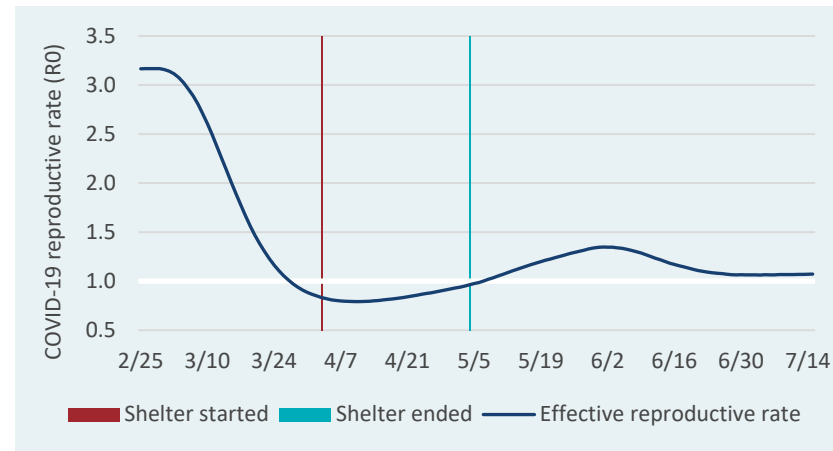
Source: Bloomberg, as of 7/15/20

# Reproductive rates (R0) by state hot spot

## ARIZONA

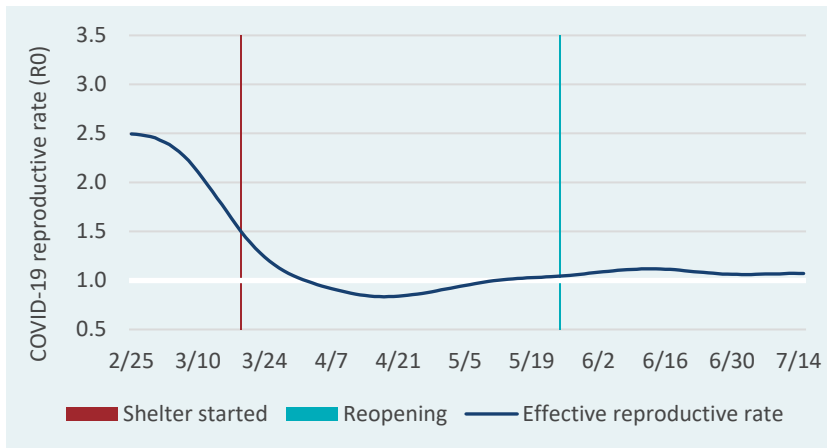


## FLORIDA

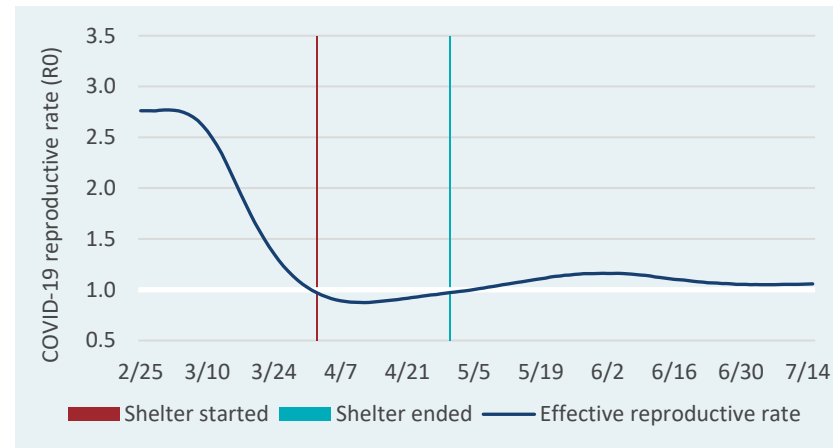


In many states around the country, resurgences in R0 rates above 1.0 began prior to the formal ending of shelter-in-place orders

## CALIFORNIA



## TEXAS

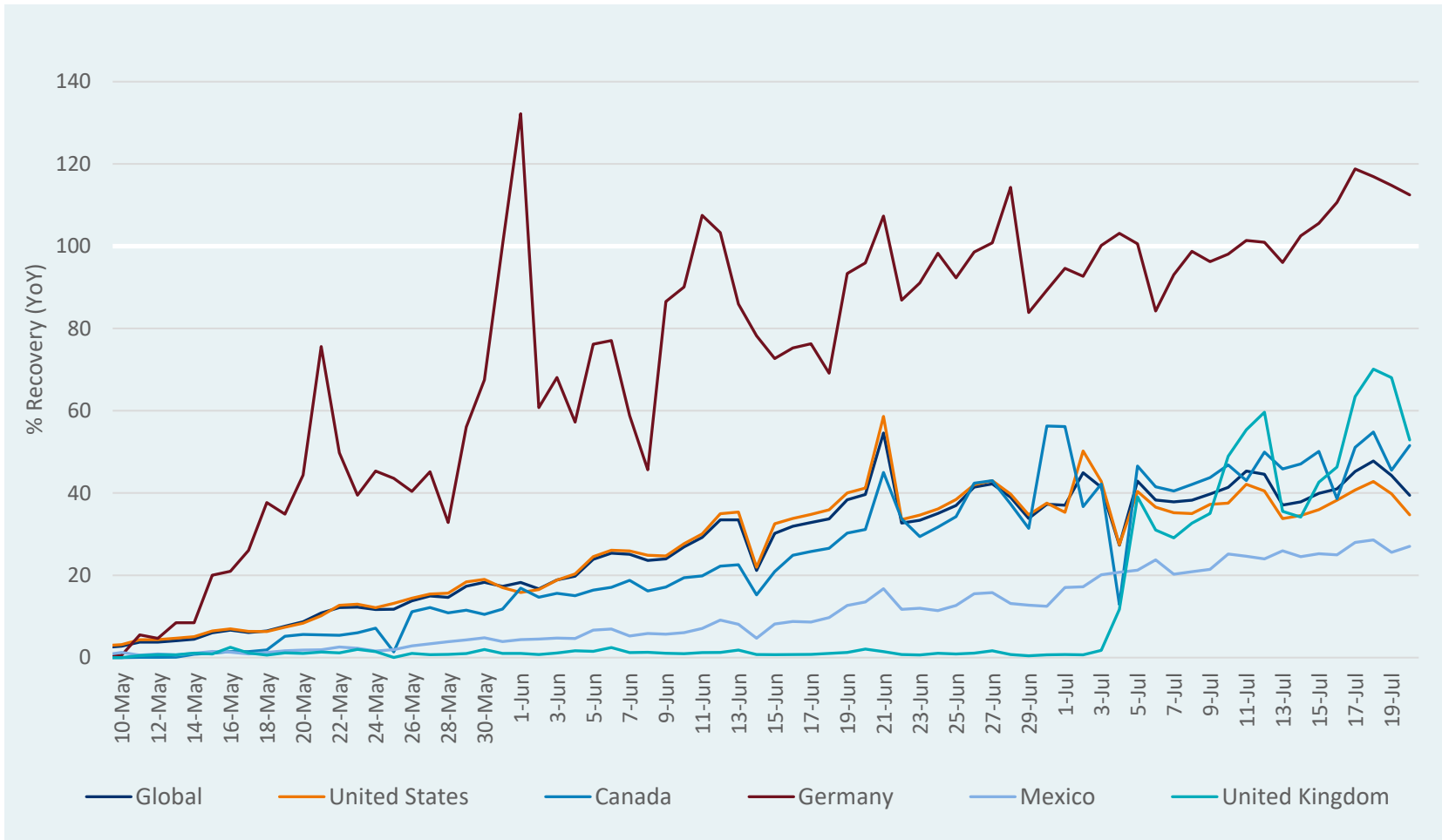


Source: rt.live, as of 7/15/20. The R0 rate represents the average number of additional people each infected person will transmit the virus to. R0 rates below 1.0 indicate the virus will decline and eventually die out.



# Restaurants reopening

## RECOVERY OF RESTAURANT INDUSTRY



Restaurant activity recovered notably from May through June, but remains far below pre-pandemic levels

Source: OpenTable, as of 7/20/20 – Number of meals served for a given week relative to the same week of the prior year

# GDP growth

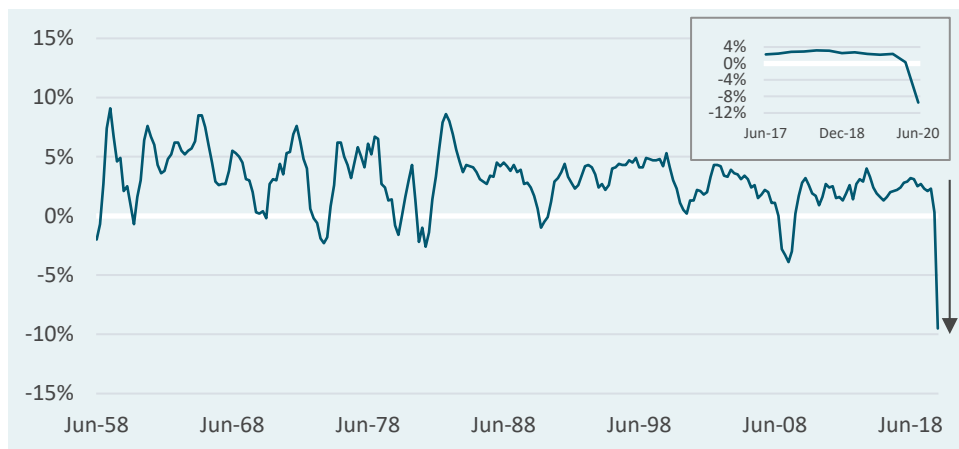
U.S. GDP grew at a -9.5% rate year-over-year in Q2 (-32.9% quarterly annualized rate). The contraction consisted of decreased consumer spending, exports, inventory investment, fixed investment, as well as state and local government expenditures. Federal government spending partly offset the slowdown.

The United States runs a significant trade deficit, and imports far more than it exports in U.S. dollar terms. As a result, the slowdown in global trade in the second quarter provided a tailwind for GDP growth as exports fell less in nominal terms than imports, leading to a reduction in the size of the trade deficit. Additionally, the recent inventory

drawdowns may leave room for inventory builds to contribute positively to GDP growth in the coming quarters. Still, consumption accounts for roughly 70% of GDP. The financial health of the consumer and the willingness of the consumer to spend will likely determine the shape of the recovery over the remainder of the year.

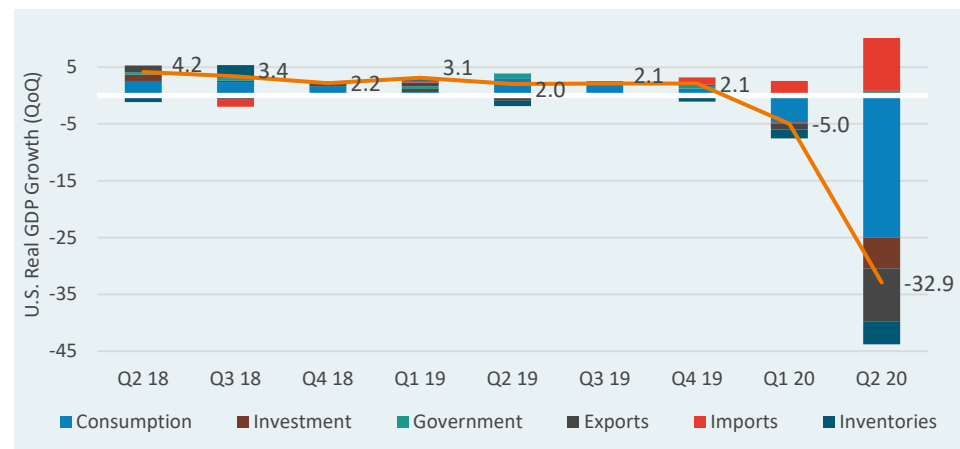
Thus far, fiscal support through the CARES Act and other packages have amounted to roughly 12% of U.S. GDP. Only Japan (42%) has spent more as a percentage of GDP. Moving forward into Q3, the ability and willingness of Congress to provide further accommodation will feature prominently in discussions around the economic outlook.

**U.S. REAL GDP GROWTH (YOY)**



Source: Bloomberg, as of 6/30/20

**U.S. GDP GROWTH ATTRIBUTION**



Source: BEA, annualized quarterly rate, as of 6/30/20

# Inflation

U.S. core inflation exhibited a steep drop from 2.1% in March to 1.2% in June. Headline inflation also slowed from 1.5% to 0.6%, pushed lower by the recent decline in energy prices.

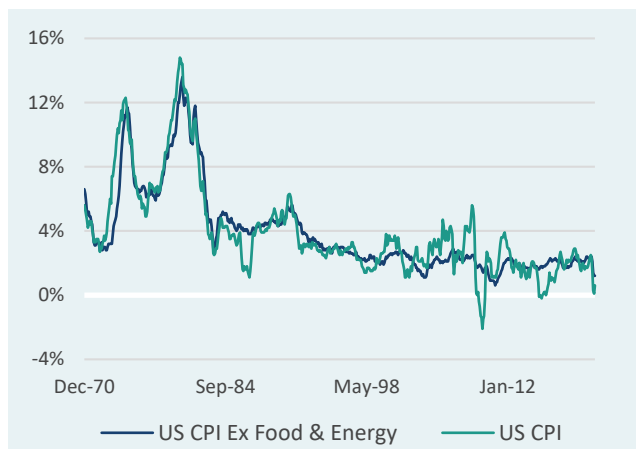
On the other hand, food prices have been increasing—specifically meats, poultry, fish and eggs. COVID-19 has led to a significant rise in at-home meal preparation (greater demand for certain items), while reportedly interrupting food processing plants (less supply). Both effects may be contributing to recent price increases.

The 10yr U.S. TIPS inflation breakeven rate recovered to 1.3%

from a low of 0.5% on March 19<sup>th</sup>. The breakeven rate is at a level not seen since 2016 at the depths of an oil crash that sparked broad fears of deflation.

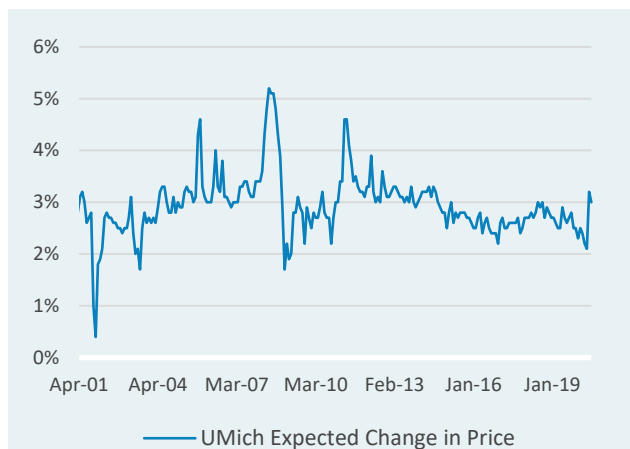
Interestingly, consumer inflation surveys indicate that expectations jumped significantly from 2.1% in April to 3.0% in June. Investors have engaged in an ongoing debate regarding the possible direction of inflation throughout the economic recovery. There seem to be reasonable arguments for inflationary pressures, but also for deflationary pressures, as a result of the COVID-19 induced economic slowdown.

**U.S. CPI (YOY)**



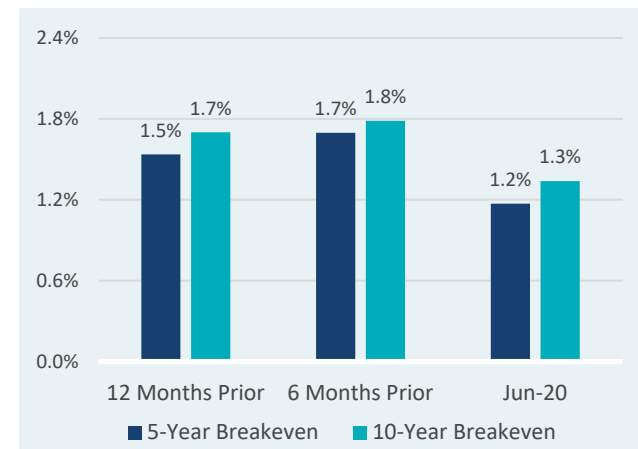
Source: Bloomberg, as of 6/30/20

**CONSUMER INFLATION EXPECTATIONS**



Source: University of Michigan, as of 6/30/20

**BREAKEVEN INFLATION RATES**



Source: Bloomberg, as of 6/30/20

# Labor market

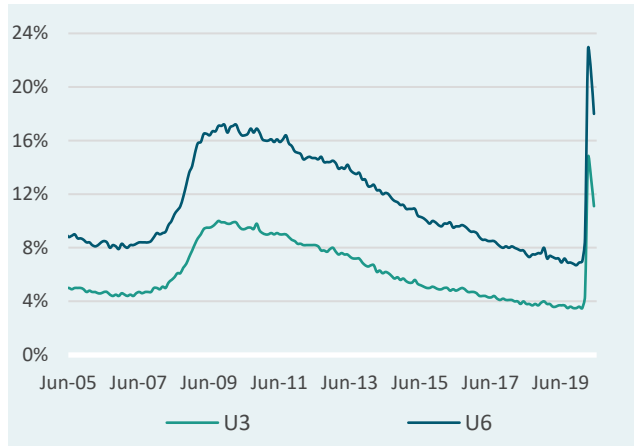
The U.S. labor market experienced a historic shock in Q2, as unemployment jumped from 4.4% in March to 14.7% in April, before recovering partially to 11.1% in June. However, many workers were not present at work but remained categorized as employed. If these workers were instead counted as jobless, the true unemployment rate may have reached 20% before recovering to around 12%. Although recent labor market data has generally beat expectations by a wide margin, the severity of the shock and current magnitude of dislocation is notable. Most of the unemployed have reported their joblessness to be temporary and believe that their employer will be calling them back to work.

It will be important to watch what portion of job losses are indeed temporary, and what portion end up being more permanent in nature.

Churn within the labor market has remained extremely elevated as businesses have contended with the constantly-evolving COVID-19 situation and its impacts on mandated social distancing controls. Additionally, some employers have decided to remain closed until the end of July to allow their employees the flexibility to receive an additional \$600 in weekly unemployment benefits set to expire on July 31<sup>st</sup>.

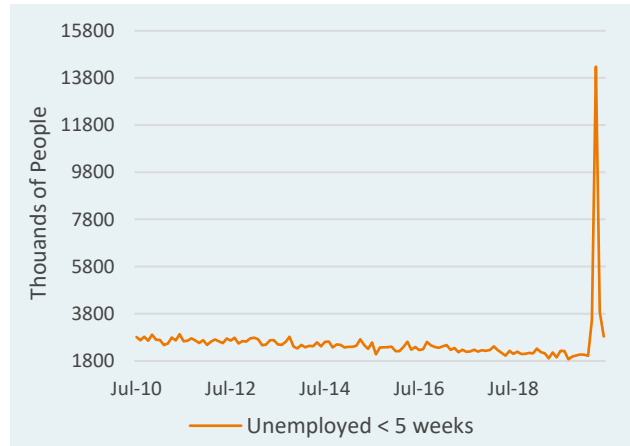
U.S. labor market experienced the largest negative shock in modern history

## U.S. UNEMPLOYMENT



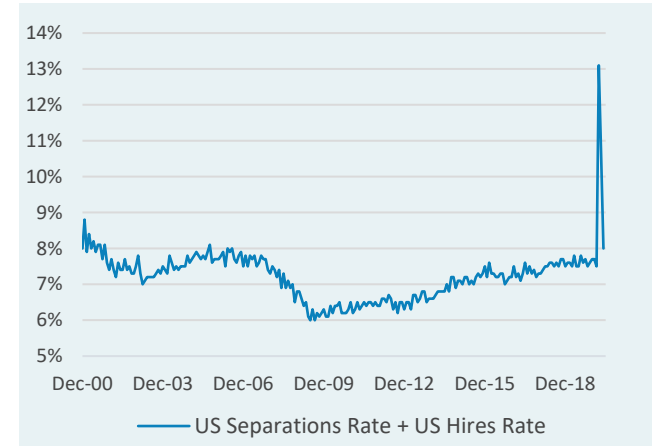
Source: FRED, as of 6/30/20

## U.S. UNEMPLOYMENT DURATION



Source: U.S. Bureau of Labor Statistics, as of 6/30/20

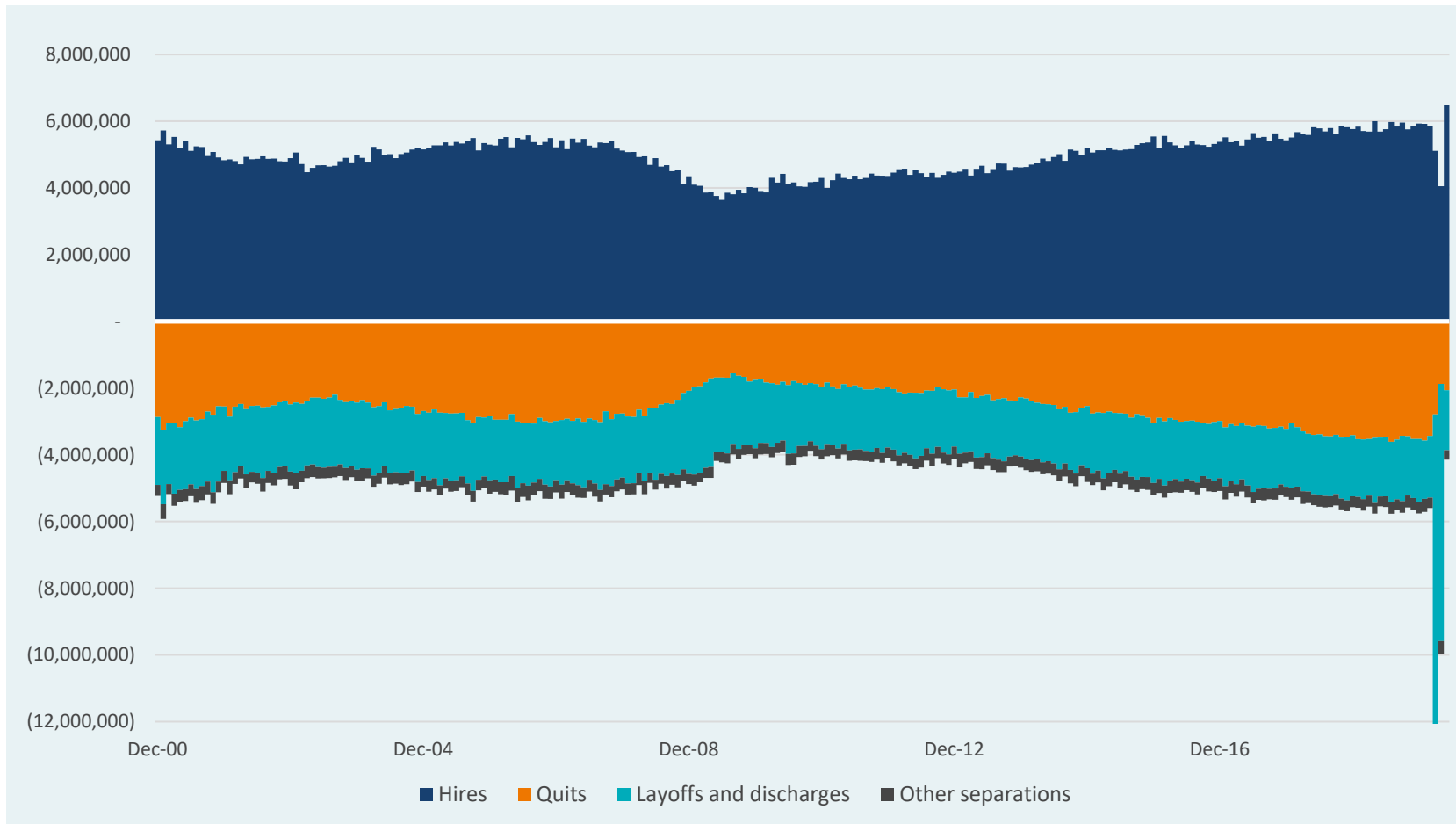
## U.S. LABOR MARKET CHURN



Source: BLS, as of 5/31/20 – Chart illustrates the total number of U.S. workers departing work and starting new work

# Labor market churn

MONTHLY JOB HIRES, QUILTS, LAYOFFS & DISCHARGES, AND OTHER SEPARATIONS LEVELS

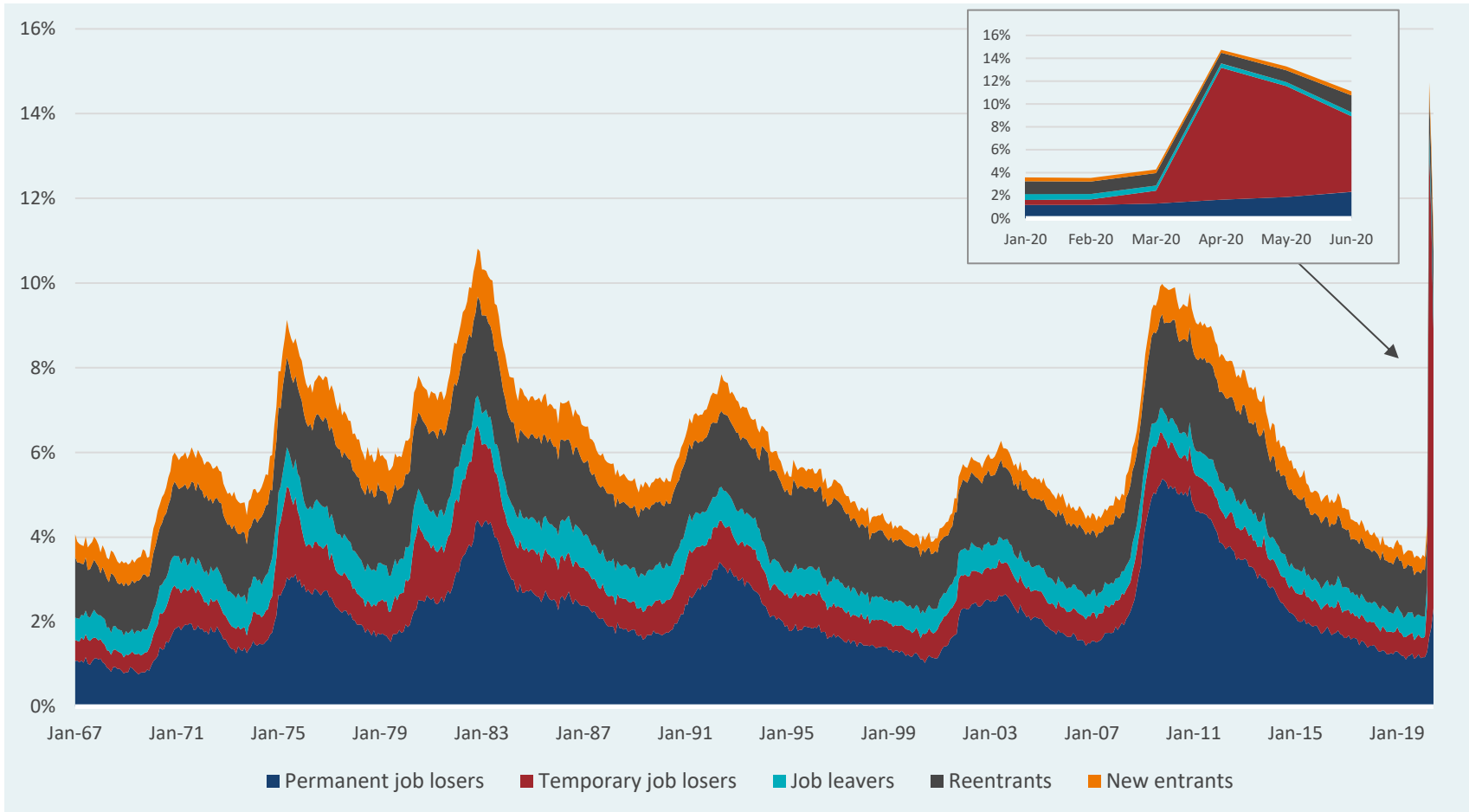


While voluntary separations (quits) have slowed, both hires and involuntary separations have spiked to record levels

Source: BLS, as of 5/31/20

# Permanent job losses are increasing...

U-3 UNEMPLOYMENT RATE – CONTRIBUTION BY COHORT



Many temporarily unemployed workers have gone back to work

Some temporary job losses have become permanent, while many unemployed have reignited their job search

Source: BLS, as of 6/30/20

# The consumer

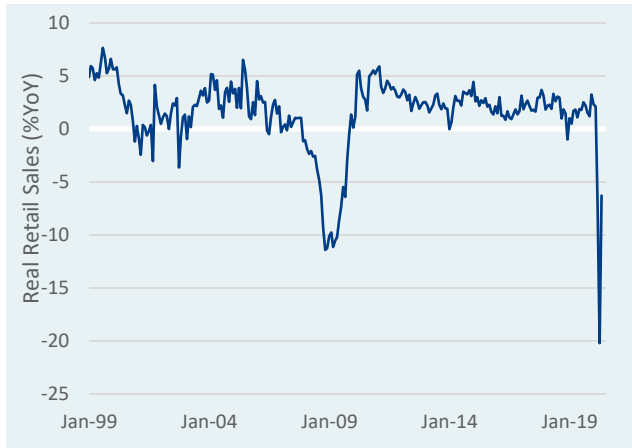
The U.S. consumer has been the greatest support to moderate domestic economic growth in recent years. Consumers have also shown conservatism in their spending habits and restraint in the use of credit, with household balance sheets remaining robust. The economic slowdown resulted in a severe drop in spending—a drop-off in fact nearly double the size of the contraction experienced during the 2008-2009 Global Financial Crisis.

Between February and May, revolving U.S. consumer credit outstanding shrunk by about \$104 billion to \$996 billion, indicating that American consumers have been paying down

their credit card debts significantly. Some of this deleveraging has been made possible by recent fiscal stimulus.

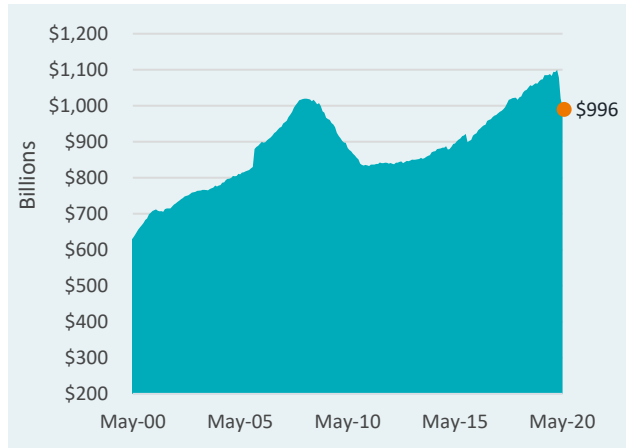
The U.S. personal savings rate reached 32% in April—the highest reading since its inception in the 1960s. The extreme conservatism shown recently has likely been fueled by uncertainty around job security, but also by a simple inability to spend as restaurants and businesses which typically are the recipients of discretionary spending have been forced to (or have willingly) closed their doors, and vacation plans have been delayed or canceled.

**REAL RETAIL SALES GROWTH (YOY)**



Source: FRED, as of 5/31/20

**U.S. REVOLVING CREDIT OUTSTANDING**



Source: Federal Reserve, as of 5/31/20

**PERSONAL SAVINGS RATE**



Source: FRED, as of 5/31/20

# Sentiment

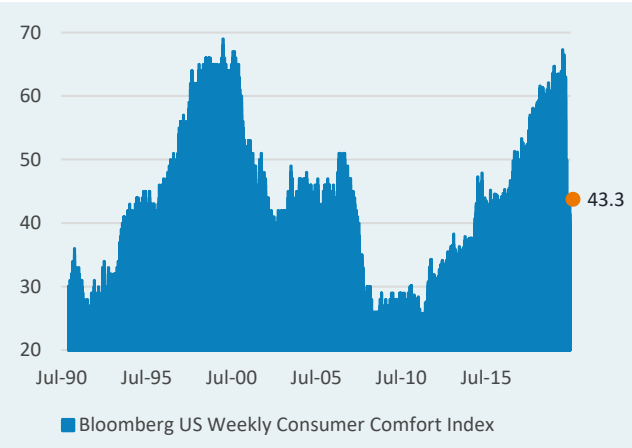
The Bloomberg Consumer Comfort Index attempts to gauge Americans' view on the economy, their personal financial situation, and buying conditions. The index experienced a dramatic weakening year-to-date, falling from a near-record high of 67.3 in late January to 34.7 in May, then ending June at 43.3.

The University of Michigan Consumer Sentiment Survey is similar in purpose to the Bloomberg index. The survey attempts to gauge attitudes about the business climate, personal finances, and spending conditions. This index also showed a significant weakening in Q2 which was comparable

in magnitude to past U.S. economic slowdowns, falling from 101.0 in February to 71.8 in April, before partially rebounding to 78.1 in June. The rebound was reportedly supported by gains in employment. Few survey respondents anticipated favorable economic conditions anytime soon.

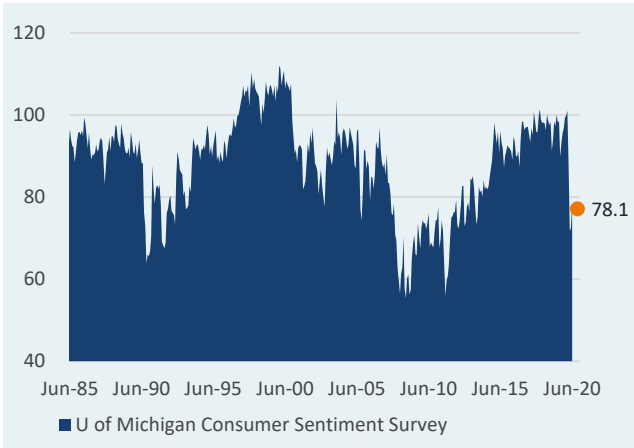
The Small Business Optimism Index has rebounded since the onset of COVID-19 and the subsequent economic slowdown. The index rose to 100.6, as many business owners reportedly expect sales to improve, remain optimistic about future business conditions, and generally expect the recession to be short-lived.

### CONSUMER COMFORT



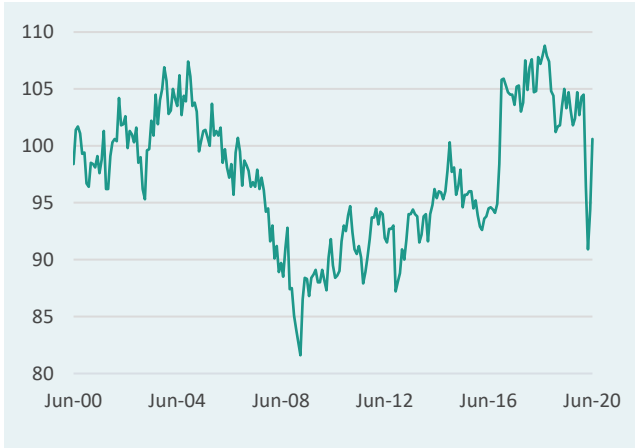
Source: Bloomberg, as of 6/30/20

### CONSUMER SENTIMENT



Source: University of Michigan, as of 6/30/20

### SMALL BUSINESS OPTIMISM



Source: NFIB, as of 6/30/20



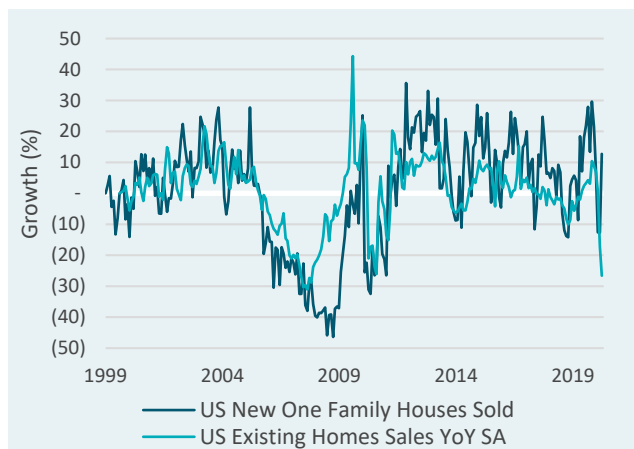
# Housing

Existing home sales slowed significantly in Q2, dropping -26.6% year-over-year in June. The 30-year fixed mortgage interest rate fell further, finishing the second quarter at 3.07%. Near record-low interest rates have likely boosted home demand, helping to mitigate the significant effects of the economic recession. Trends in the housing market are typically slower-moving and often lag economic downturns, which may mean the true impact of COVID-19 on the U.S. housing market has yet to be seen.

backed mortgages who have been affected by COVID-19 are able to request forbearance on mortgage payments for up to 180 days, with an option to extend for an additional 180 days. According to Black Knight, a mortgage data provider, 8.6% of all mortgages in the United States were in forbearance during late-June. To put this number into perspective, during the 2008-2009 housing crisis the mortgage default rate reached approximately 10%. If these loans in forbearance later face foreclosure, it could put significant pressure on the housing market.

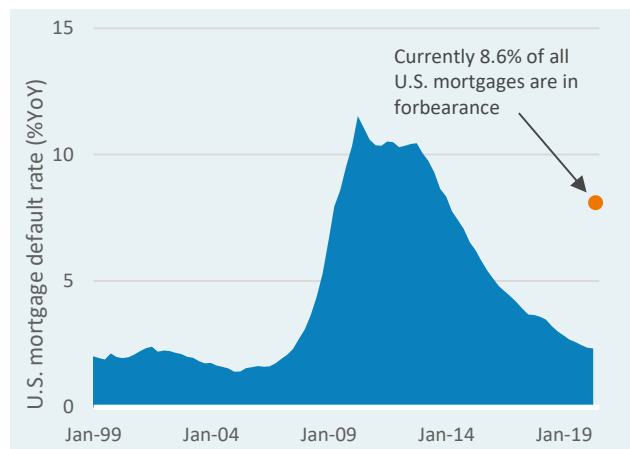
Under the new CARES Act, homeowners with federally-

**U.S. HOME SALES (YOY)**



Source: FRED, as of 5/31/20

**MORTGAGE DEFAULT RATE (%)**



Source: FRED, as of 3/31/20

**30YR FIXED RATE MORTGAGE**



Source: FRED, as of 6/30/20

# International economics summary

— In Q1, most international economies began contracting in what will likely turn out to be a global recession. The steady and stable economic expansion in recent years has shifted suddenly with the onset of COVID-19. The IMF now expects 2020 global GDP to fall -4.9%, followed by a +5.4% recovery in 2021.

— Policymakers in Brussels achieved unanimous approval on a €750 billion stimulus package to help support an economic recovery within the European Union. After much debate, officials decided to distribute €390 billion in the form of grants to member states hardest hit by the pandemic (Italy/Spain), and the other €360 in low-interest, non-concessionary loans for members of the bloc.

— U.S.-China relations were further strained Q2. The Trump administration placed restrictions on U.S. exports to Hong Kong in response to a Chinese law which

effectively tightens control over the territory. The restrictions apply to only 2.2% of U.S. exports, but sanctions on China could unravel an already fragile agreement between the two global powers. U.S.-China tensions have been escalating and will warrant close monitoring in the coming months.

— Headline consumer prices fell materially over the second quarter as spending at brick-and-mortar stores, restaurants, and bars weakened alongside the implementation of social distancing controls. Continued broad-based price declines could soon lead to deflation risks for many economies.

— Since hitting lows of -304.6 in early May, the Citi Eurozone Economic Surprise Index rallied back to -99.8, indicating that economic data have been improving relative to median economist estimates. Continued relative strengthening could be supportive to the equity market.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	(9.5%) 6/30/20	0.1% 5/31/20	11.1% 6/30/20
Eurozone	(3.1%) 3/31/20	0.3% 6/30/20	7.4% 5/31/20
Japan	(1.7%) 3/31/20	0.3% 6/30/20	2.9% 5/31/20
BRICS Nations	(4.1%) 3/31/20	4.9% 3/31/20	5.1% 3/31/20
Brazil	(0.3%) 3/31/20	1.9% 5/31/20	12.9% 5/31/20
Russia	1.6% 3/31/20	2.9% 5/31/20	6.1% 5/31/20
India	4.7% 12/31/19	5.8% 3/31/20	8.5% 12/31/17
China	(6.8%) 3/31/20	2.4% 5/31/20	3.7% 3/31/20

# International economics

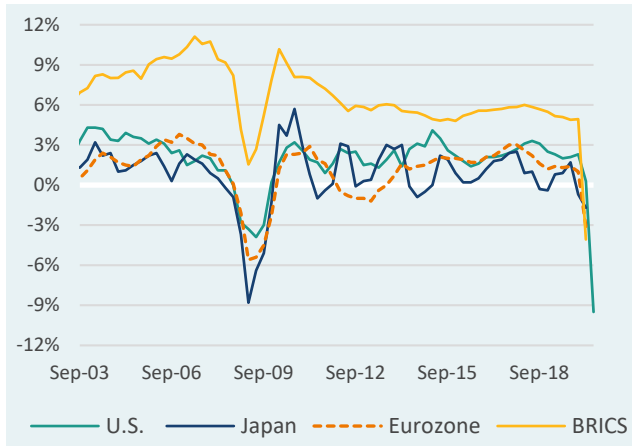
In the first quarter, most international economies began contracting, in what will likely turn out to be a global recession. The steady and stable economic expansion in recent years has shifted suddenly with the onset of COVID-19. The IMF now expects 2020 global GDP to fall -4.9%, followed by a +5.4% recovery in 2021.

Headline consumer prices fell internationally over Q2 as spending at brick-and-mortar stores, restaurants, and bars weakened alongside the implementation of social distancing controls. Continued broad-based price declines could soon lead to deflation risks for many economies. A large contributor to disinflation has been the recent sell-off in crude oil. The price of a barrel of Brent crude oil fell from

around \$80 per barrel at year-end to around \$30 per barrel at the end of Q1, and bottomed at \$22.90 on April 28<sup>th</sup>. Oil later recovered, due in part to certain economies beginning to gradually reopen, as well as price-supportive output cuts announced by OPEC+.

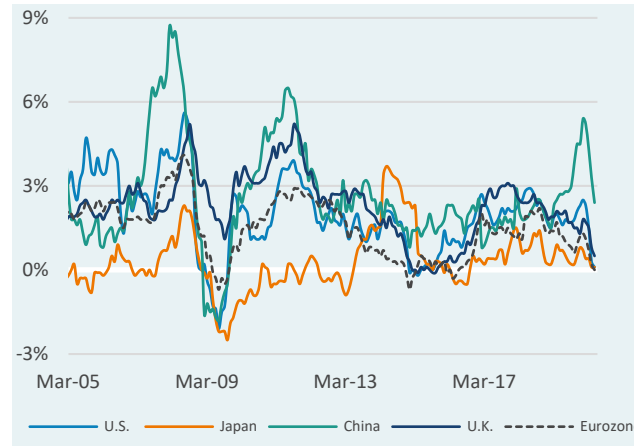
Policymakers in Brussels managed to achieve unanimous approval on a €750 billion stimulus package to help support an economic recovery within the European Union. After much debate, officials decided to distribute €390 billion in the form of grants to member states hardest hit by the pandemic (Italy/Spain), and the other €360 in low-interest, non-concessionary loans for members of the bloc.

**REAL GDP GROWTH (YOY)**



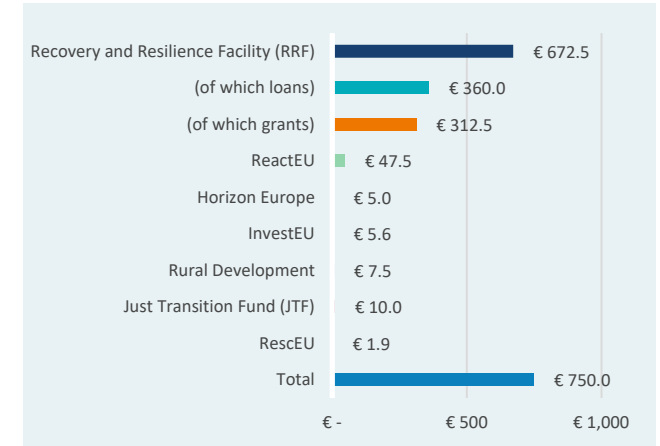
Source: Bloomberg, as of 6/30/20, or most recent release

**INFLATION (CPI YOY)**



Source: Bloomberg, inflation range of past 5 years, as of 5/31/20

**E.U. STIMULUS PACKAGE (BILLIONS)**



Source: European Council, as of 7/21/20

# U.S.-China tensions escalating



# Fixed income rates & credit

# Interest rate environment

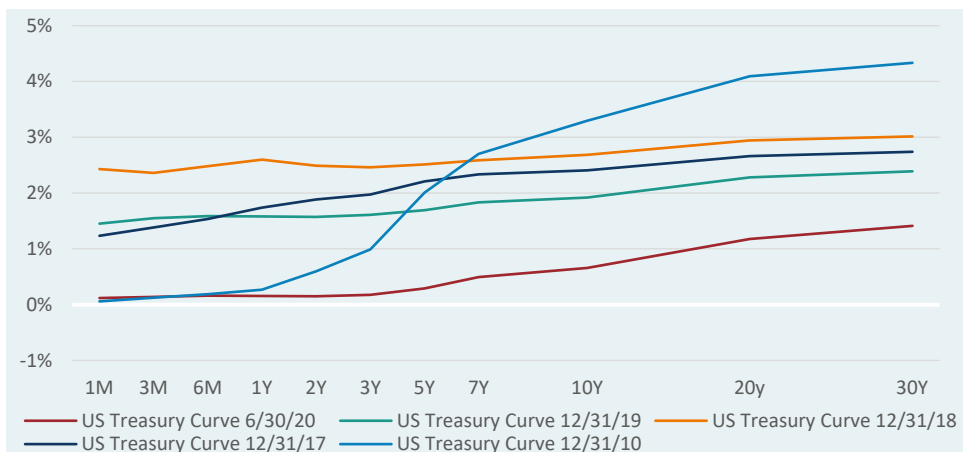
- The Federal Reserve continued to roll out the litany of support programs it announced in the first quarter. The Fed’s balance sheet grew from \$5.3 trillion to \$7.1 trillion over the second quarter.
- It appears the Federal Reserve may implement a yield curve control policy as a component of its policy toolkit. At the June Fed meeting, officials acknowledged that while setting intermediate-term yield caps may help strengthen short-term rate guidance, they remained concerned about several potential implications of beginning down that path.
- The Fed also expanded the list of eligible securities for purchase through its Primary and Secondary Market Credit Facilities to include corporate debt, either directly through companies or through exchange-traded funds. The Fed indicated that it would primarily target investment grade debt securities, and that it would also purchase certain non-investment grade debt from “fallen angels” which held investment-grade debt ratings prior to the pandemic.
- The European Central Bank increased the size of its Pandemic Emergency Purchase Programme from the initial €750 billion to a total of €1.35 trillion. The ECB will now be able to deploy the funds in a “flexible manner over time, across asset classes and among jurisdictions” through June 2021, which may help reduce borrowing costs.
- Real yields continued to decline around the globe as nominal sovereign bond yields were largely unchanged and longer-term inflation expectations recovered.
- Emerging market debt yields fell considerably in the second quarter, likely supported by disinflationary effects of the sell-off in commodities which emboldened central bankers to adopt more accommodative policy.

Area	Short Term (3M)	10-Year
United States	0.13%	0.66%
Germany	(0.56%)	(0.46%)
France	(0.52%)	(0.11%)
Spain	(0.49%)	0.46%
Italy	(0.29%)	1.26%
Greece	0.32%	1.20%
U.K.	0.01%	0.17%
Japan	(0.17%)	0.02%
Australia	0.21%	0.87%
China	1.74%	2.84%
Brazil	2.04%	6.83%
Russia	4.57%	5.92%

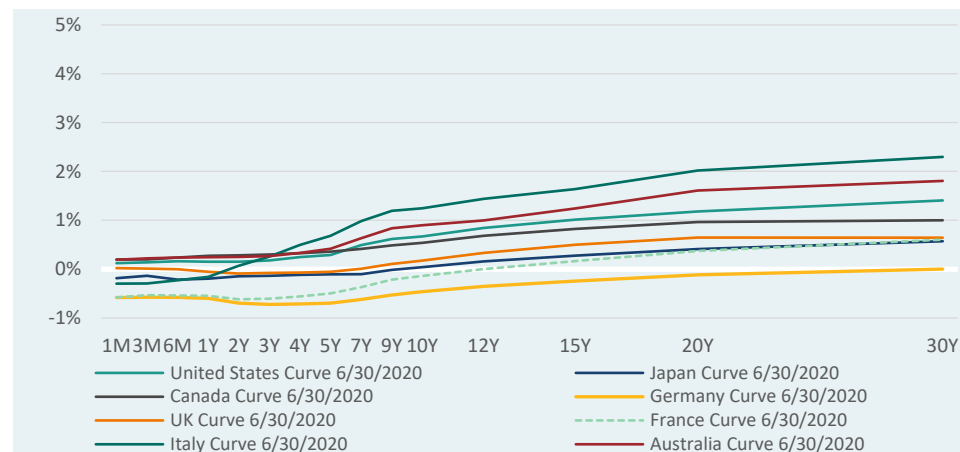
Source: Bloomberg, as of 6/30/20

# Yield environment

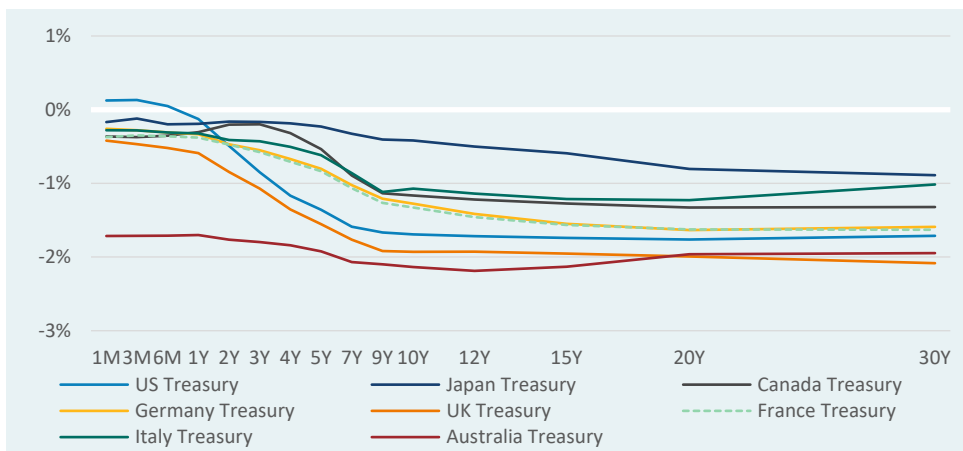
## U.S. YIELD CURVE



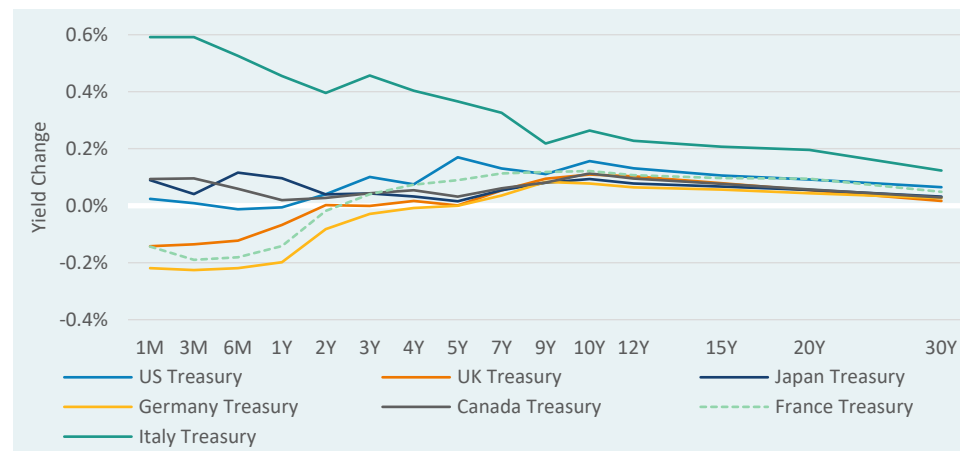
## GLOBAL GOVERNMENT YIELD CURVES



## YIELD CURVE CHANGES OVER LAST FIVE YEARS



## IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 6/30/20

# Credit environment

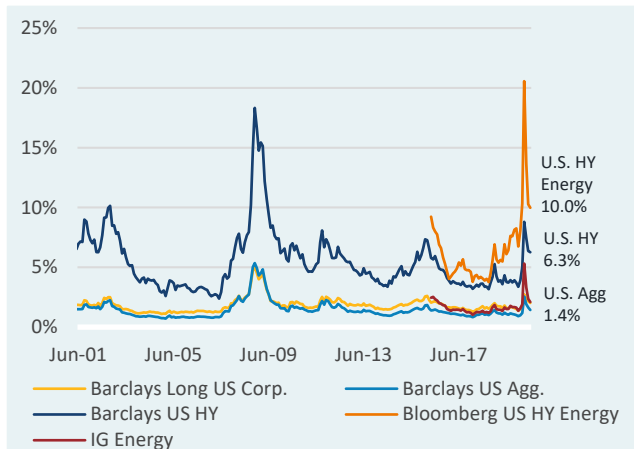
Despite historically weak economic data releases throughout Q2, a significant degree of confidence and liquidity was restored to credit markets due to continued support from the Federal Reserve, which ended the quarter with nearly \$10 billion in corporate debt on its balance sheet. Accordingly, credit markets displayed a dramatic recovery, with some of the worst performing sectors of Q1 leading the rebound. High yield and leveraged loans returned 10.2% and 9.7%, respectively, while the broad U.S. Credit Index returned 8.2%. Within U.S. credit, longer-duration and lower-quality issues tended to perform best.

Credit spreads tightened across the board in Q2, as U.S. corporate investment grade tightened to 150 bps from 272 bps at the end

of the first quarter, and high yield spreads moved from 880 bps to 626 bps.

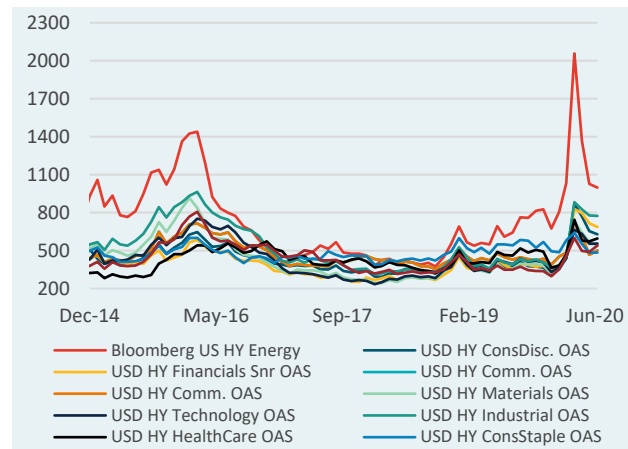
U.S. investment grade downgrades slowed dramatically in June, with only two issuers deteriorating to high yield status. This was down from three issuers in May, five issuers in April, and a peak of 10 issuers in March. So far in 2020, a majority of downgrades have come from the energy and automotive sectors, which have contributed 40% and 25% of total fallen angels, respectively.

## SPREADS



Source: Barclays, Bloomberg, as of 6/30/20

## HIGH YIELD SECTOR SPREADS (BPS)



Source: Bloomberg, as of 6/30/20

Market	Credit Spread (OAS)	
	6/30/20	6/30/19
Long U.S. Corp	2.0%	1.6%
U.S. Inv Grade Corp	1.5%	1.2%
U.S. High Yield	6.3%	3.8%
U.S. Bank Loans*	6.2%	4.4%

Source: Barclays, Credit Suisse, Bloomberg, as of 6/30/20

\*Discount margin (4-year life)



# Default & issuance

The second quarter saw a broad upsurge in default activity with \$76.2 billion of defaults. This figure was only slightly below the \$76.6 billion worth of defaults seen in Q1 2009.

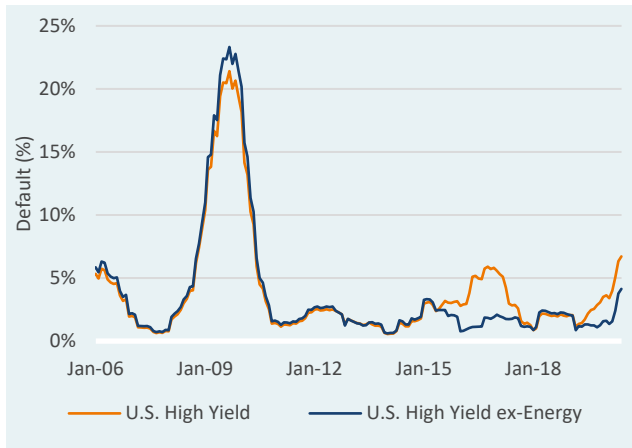
Through the first half of 2020, 60 companies defaulted which pushed the par-weighted U.S. high yield default rate to a 10-year high of 6.2%. The default rate of bank loans rose to 4.0% from 1.9% in Q1, remaining at a lower level than high yield largely due to less representation from the energy sector.

The energy sector continues to experience the greatest pain year-to-date, with 18 defaults/distressed transactions comprising 30% of the

\$106 billion total. The next hardest-hit sectors have been telecommunications (15.8%), cable & satellite (13.6%), and retail (10.4%).

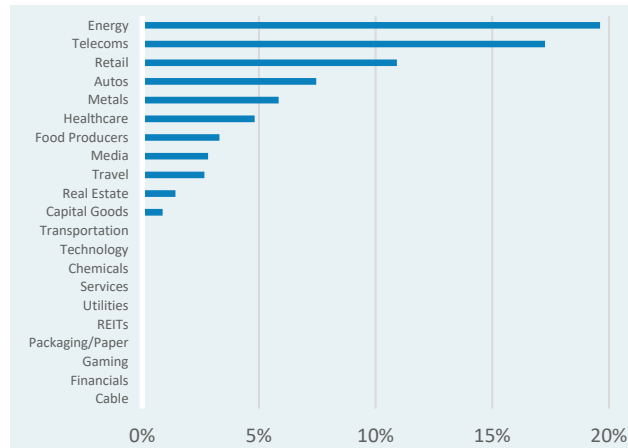
So far, 2020 has seen record issuance of investment grade and high yield bonds. Investment grade issuance peaked in April with \$284 billion of new issues, before falling back to a still elevated level of \$163 billion in June. Year-to-date net issuance of investment grade was \$781 billion, driven by a record \$1.2 trillion of new issuance. High yield has also seen aggressive new issuance, with \$218 billion over 330 new issues.

**HY DEFAULT RATE (ROLLING 1-YEAR)**



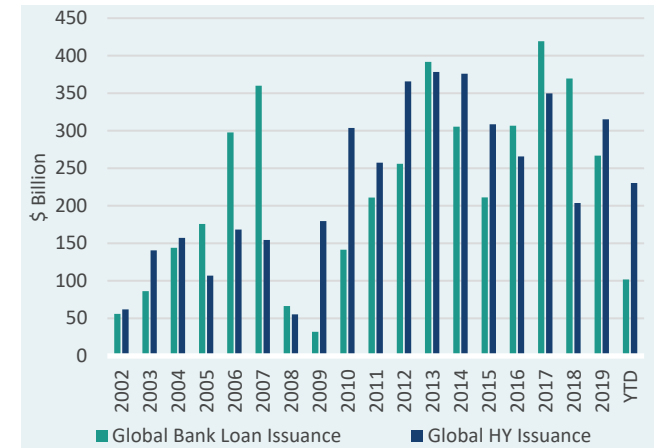
Source: BofA Merrill Lynch, as of 6/30/20

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



Source: BofA Merrill Lynch, as of 6/30/20 – par weighted

**GLOBAL ISSUANCE (\$ BILLIONS)**



Source: Bloomberg, BofA Merrill Lynch, as of 6/30/20

# Equity

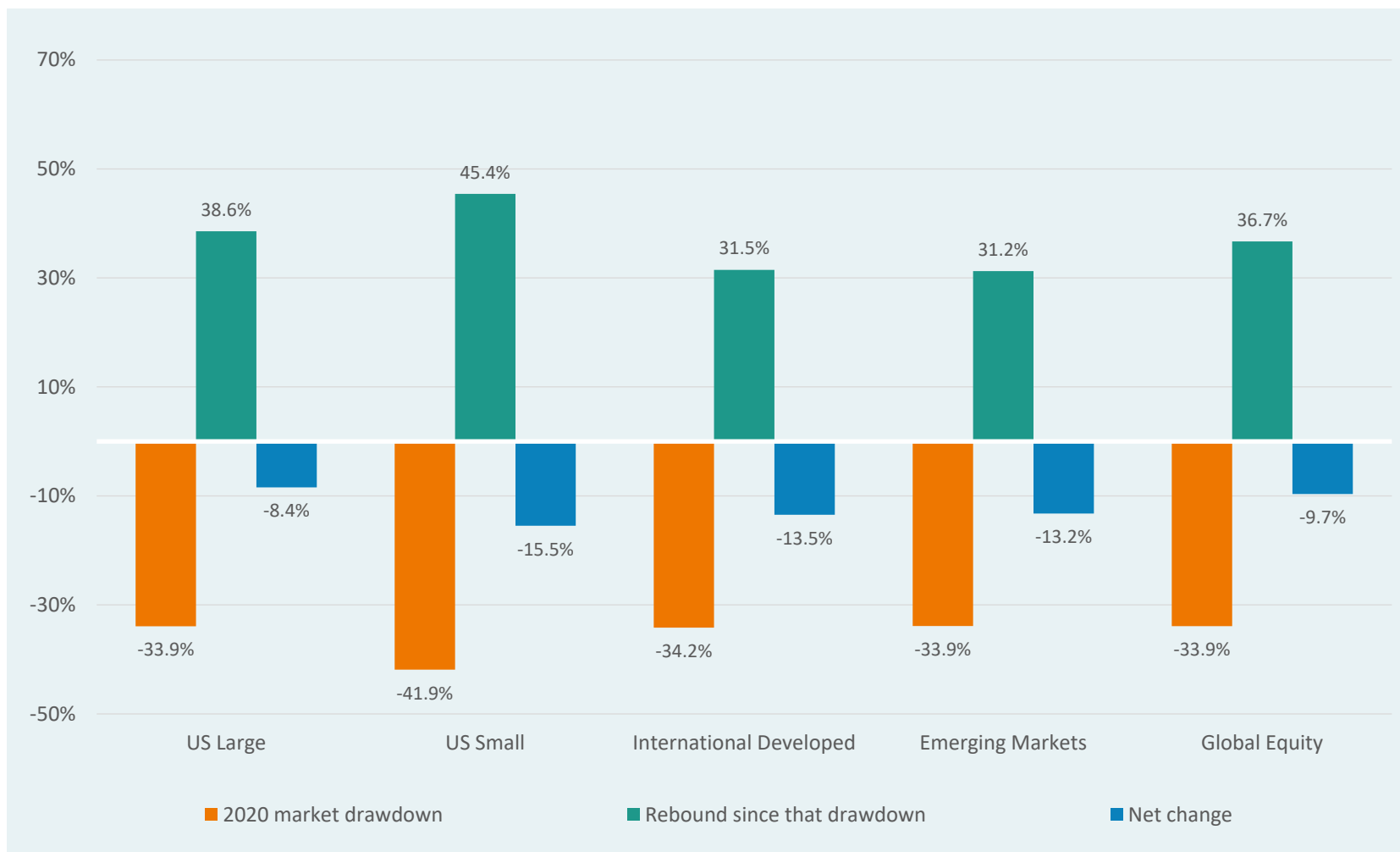
# Equity environment

- U.S. equities delivered an incredible comeback, following the sudden sell-off in March. The S&P 500 rallied +20.5% in Q2, bringing year-to-date performance to -3.1%, and positive +7.5% over the past twelve months. International developed equities (MSCI EAFE +12.9% QTD, -5.1% YoY) and emerging market equities (MSCI EM +18.1% QTD, -3.4% YoY) lagged the domestic market.
- Most major equity benchmarks are within 15% of all-time highs, despite major damage that COVID-19 has inflicted on the global economy. Some of this damage has been mitigated by government support, but some damage is likely yet to be felt.
- According to FactSet, the estimated S&P 500 year-over-year decline in earnings for Q2 is -43.8%. This would mark the largest decline in earnings since Q4 2008 (-69.1%).
- Moves in the CBOE VIX Index moderated in June. The long-term average of the index is near 19. It has remained above that level since February, reaching a high point of 85.0 on March 18th, and closing June at 30.4.
- The U.S. dollar weakened in Q2, falling -2.3% according to the Bloomberg Dollar Spot Index. The market recovery (less demand for save-haven currencies) and materially lower U.S. interest rates (less attractive U.S. Dollar) have likely contributed to the move.
- Growth stocks beat value stocks for the ninth consecutive month. The Russell 1000 Growth Index (+27.8%) outperformed the Russell 1000 Value Index (+14.3%). Sector performance disparity continues to impact the behavior of value. While energy delivered outsized returns relative to the overall index, other value-tilted sectors such as utilities and financials delivered poor performance.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
US Large Cap (S&P 500)	20.5%		7.5%	
US Small Cap (Russell 2000)	25.4%		(6.6%)	
US Large Value (Russell 1000 Value)	14.3%		(8.8%)	
US Large Growth (Russell 1000 Growth)	27.8%		23.3%	
International Large (MSCI EAFE)	14.9%	12.9%	(5.1%)	(2.1%)
Eurozone (Euro Stoxx 50)	20.1%	17.8%	(6.4%)	(2.7%)
U.K. (FTSE 100)	9.0%	9.2%	(15.9%)	(12.2%)
Japan (NIKKEI 225)	17.9%	18.2%	6.6%	9.0%
Emerging Markets (MSCI Emerging Markets)	18.1%	16.6%	(3.4%)	1.7%

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 6/30/20

# Equity market peak-to-trough



Equity markets around the world have recovered most of their losses

As of 6/30/20 - "Peak-to-trough" is defined as the total loss from the highest value achieved in 2020 to the lowest value achieved following the COVID-19 market drawdown. "Net change" is the difference between the market price on June 30<sup>th</sup> and the highest value achieved in 2020. Indexes include: S&P 500, Russell 2000, MSCI EAFE, MSCI Emerging Markets, MSCI ACWI.

# Domestic equity

U.S. equities delivered an incredible comeback, following the sudden and significant sell-off in March. The S&P 500 rallied +20.5% in the second quarter, bringing the year-to-date performance to -3.1%, and positive +7.5% over the past year.

While the Consumer Discretionary (+32.9%) and IT (+30.5%) sectors did post outsized performance, participation in the rebound was broad-based and not confined to mega-cap tech names such as Amazon. The S&P 500 Equal-Weighted Index outperformed the S&P 500 Index by 1.2%.

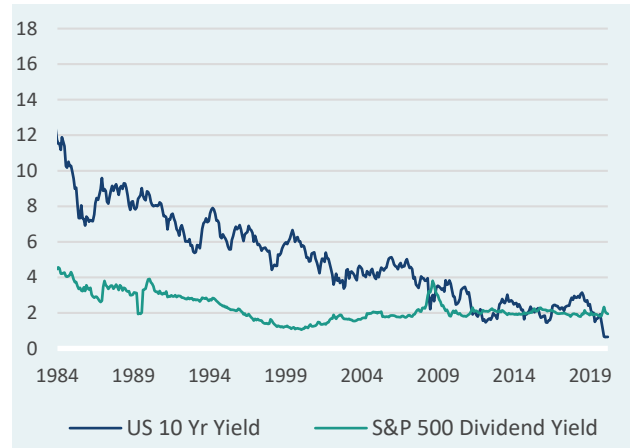
U.S. Treasury yields have moved closer to zero in 2020, which has reignited an ongoing discussion around the extent to which this dynamic will affect the equity market. We believe that the recent decline in interest rates should foundationally have a lifting effect on the value of equities, all else equal, since the value of a stock equals the present value of all future cash flows from that stock (lower interest rates result in higher present values). Generationally-low interest rates also create difficulties in holding higher quality fixed income due to inherent drag on portfolio performance. This potentially puts pressure on investors to make larger allocations to risky assets.

**S&P 500**



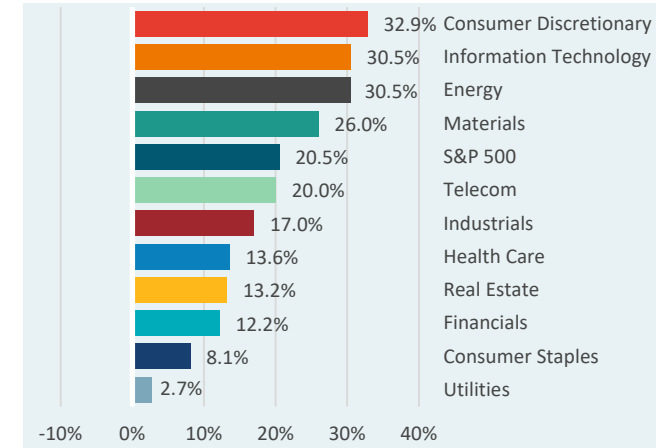
Source: Standard & Poor's, as of 6/30/20

**DIVIDEND YIELD VS BOND YIELD**



Source: Standard & Poor's, as of 6/30/20

**Q2 SECTOR PERFORMANCE**



Source: Standard & Poor's, as of 6/30/20

# Domestic equity size & style

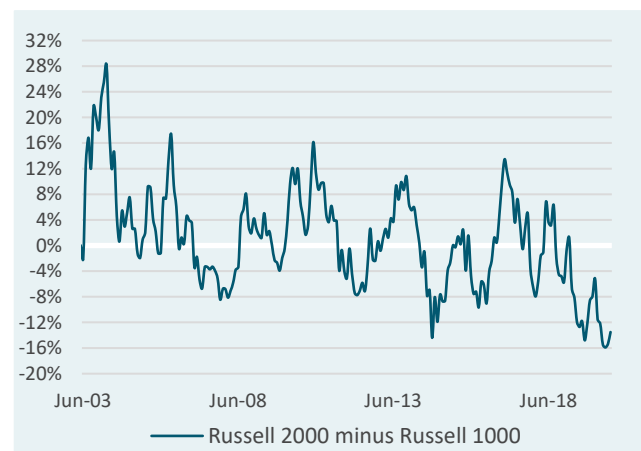
Growth stocks beat value stocks for the ninth consecutive month. The Russell 1000 Growth Index (+27.8%) outperformed the Russell 1000 Value Index (+14.3%). Small stocks beat large during the quarter (Russell 2000 +25.4%, Russell 1000 +21.8%), but continue to lag significantly over the longer-term.

Sector performance disparity continues to impact the behavior of value. While energy (+32.6%) delivered outsized returns over the quarter relative to the overall index (+21.8%), other value-tilted sectors such as financials (+16.3%), consumer staples (+9.0%), and utilities (+4.0%)

presented a drag on overall index performance.

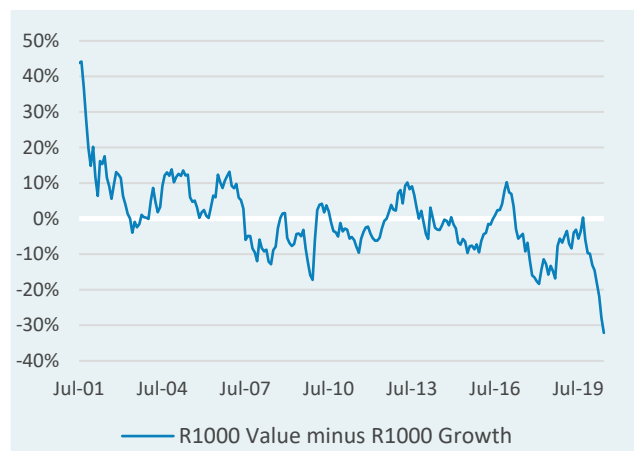
We believe it is extremely difficult to successfully make short-term bets on style factors. Factor performance can be incredibly noisy and vulnerable to sector randomness. Value has become historically cheap, to arguably attractive levels, though a catalyst for a value turnaround is not yet evident. We are watching closely the developments in this space to identify potential opportunities. However, we continue to believe that consistent long-term exposure to the value factor is an ideal implementation approach for most investors, most of the time.

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



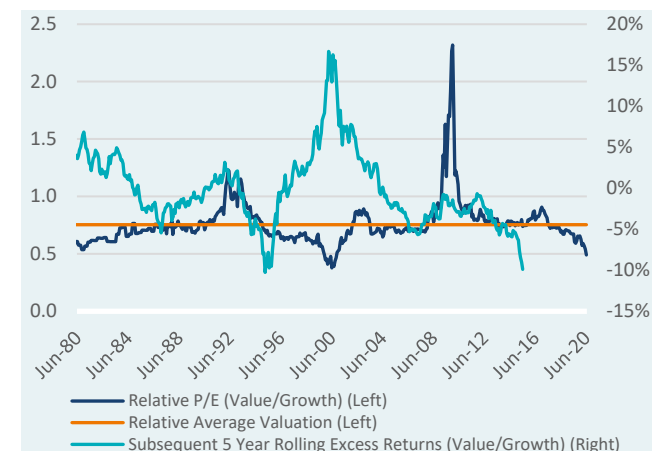
Source: FTSE, as of 6/30/20

**VALUE VS GROWTH (YOY)**



Source: FTSE, as of 6/30/20

**VALUE APPEARS HISTORICALLY CHEAP**



Source: Russell, Bloomberg, as of 6/30/20

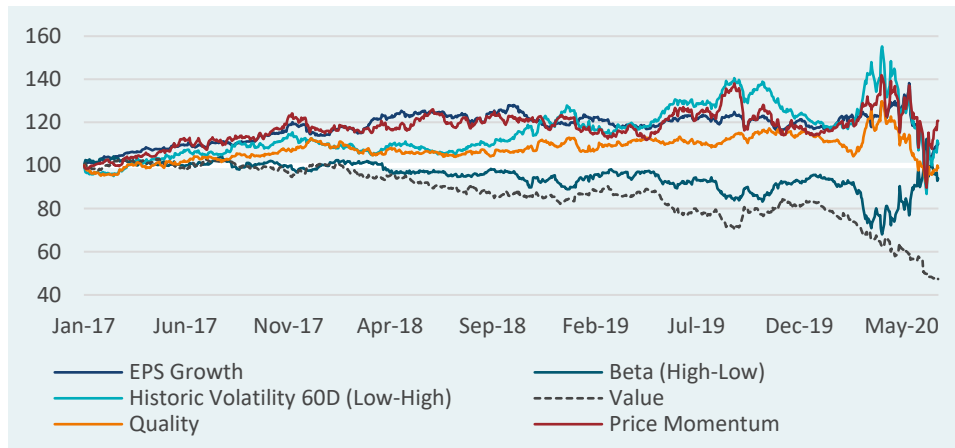
# Equity factor monitor

A significant rotation into higher beta, higher volatility, and/or lower quality (long/short, sector neutral, S&P 500 Index quintiles) stocks occurred during the second quarter. The change in investor preferences began in early April and was likely triggered by a combination of extraordinary central bank intervention, along with better than initially expected economic news and COVID-19 pandemic-related data. The rotation began moderating in mid-June as higher quality stocks bounced back.

From a longer-term perspective, the Q2 rotation did not come close to reversing the longer-term positive results accruing to the momentum and low volatility equity factors.

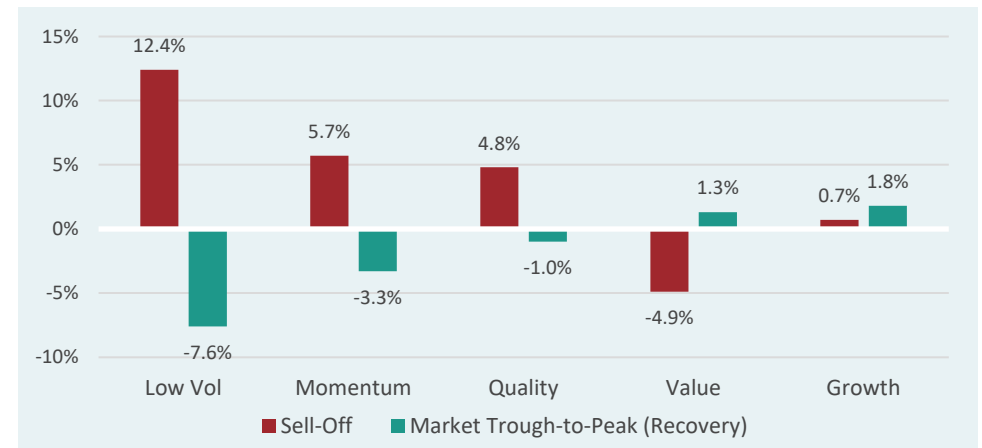
The value factor continued its long-term run of weak results during the quarter. Some have speculated that the value factor returns may benefit from a change in market regime from the current low growth and inflation backdrop to an environment of higher growth and inflation. The rise of factor-focused investing through dedicated smart beta ETFs could also be playing a role. Historical analysis suggests growth is the only factor showing relatively low sensitivity to both upturns and downturns. This analysis also indicates that low volatility, momentum, and quality factors were better protectors of capital during sell-offs.

## FACTOR PERFORMANCE (INDEXED 1/2/2017=100)



Source: J.P. Morgan, as of 6/26/20

## MEDIAN STYLE PERFORMANCE DURING MARKET SELL-OFF & RECOVERY



Source: J.P. Morgan, as of 6/26/20

# International developed equity

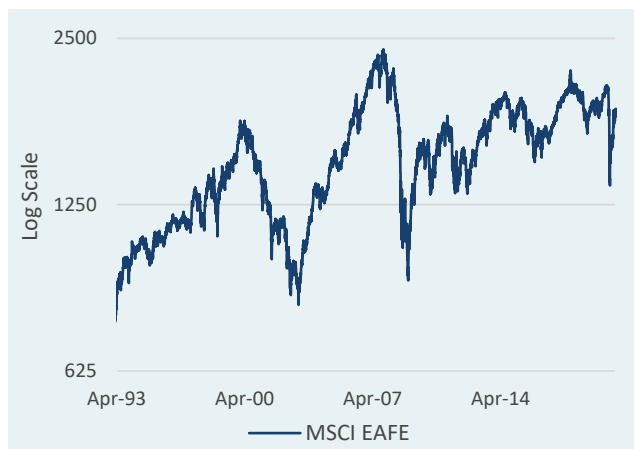
Equity markets around the world delivered a surprisingly strong recovery in the second quarter, rising between 12% to 20%. U.K. equities have lagged, only rising +7.8% over the quarter and remained down -23.3% over the year-to-date. Eurozone equities were among the top performers (MSCI Euro +19.6%). However, international equities lagged domestic markets (S&P 500 +20.5%).

On a one-year basis, the volatility of currency markets detracted from the performance of investors with unhedged currency exposure. Investors in international developed

equities lost -3.0% due to currency movement (MSCI EAFE), and investors in emerging markets lost -5.1% (MSCI EM).

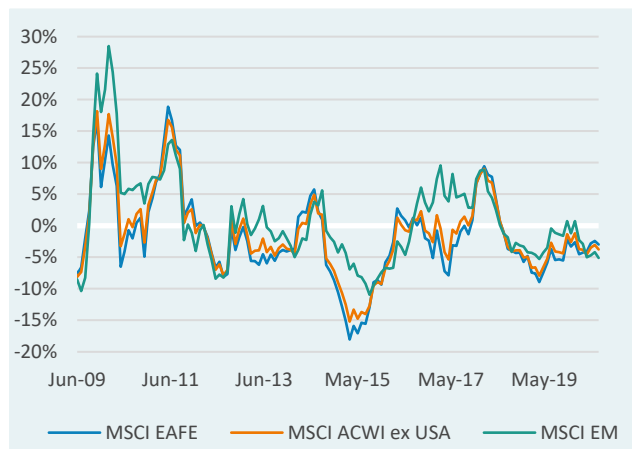
Earnings have fallen materially while equity prices recovered much of their losses. These two effects have led to a significant jump in equity valuations. This dynamic is not uncommon in environments where investors “look to the other side” of a crisis and generally expect tough conditions to be short-lived. With that said, if earnings do not recover to prior levels in a timely manner, investors may begin to question elevated multiples.

**INTERNATIONAL DEVELOPED EQUITIES**



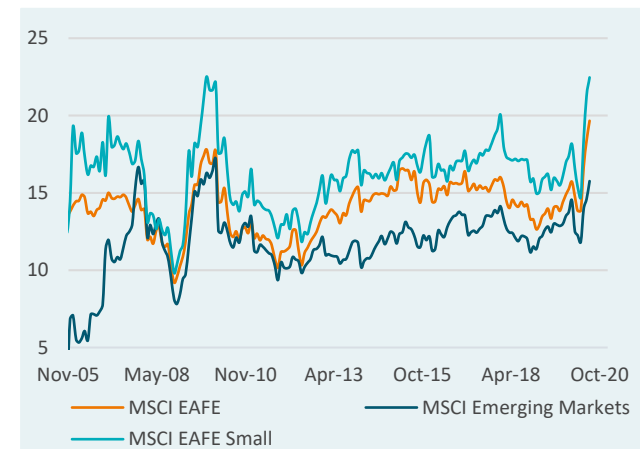
Source: MSCI, as of 6/30/20

**EFFECT OF CURRENCY (1-YEAR ROLLING)**



Source: MSCI, as of 6/30/20

**FORWARD P/E**



Source: MSCI, as of 6/30/20



# Emerging market equity

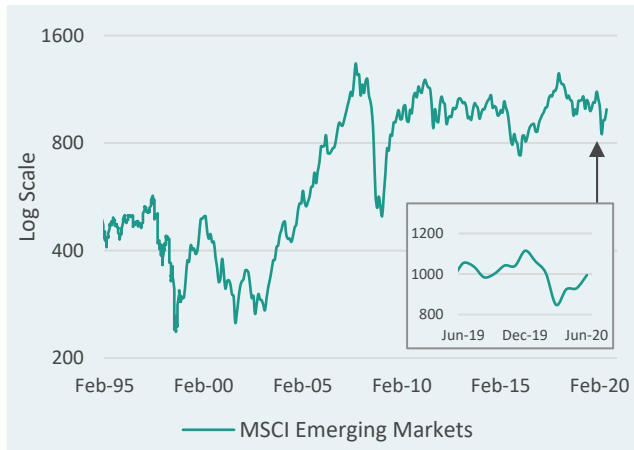
Emerging market equities (MSCI EM +18.1%) underperformed U.S. (S&P 500 +20.5%) while outperforming international developed equities (MSCI EAFE +14.9%) over the quarter. Within the emerging market complex, Latin American equities outperformed Asia over the quarter (MSCI EM Latin American +19.1% vs. MSCI EM Asia +17.8%) but underperformed year-to-date (-35.2% vs. -3.5%).

Low inflation in emerging economies may allow central banks more room to maneuver relative to developed economies with regard to the use of monetary policy in

encouraging economic growth during the global slowdown.

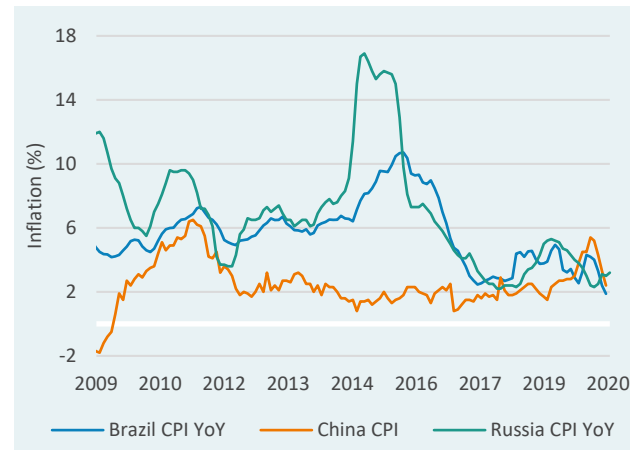
Emerging currencies appreciated in Q2, which was additive to performance (MSCI EM Unhedged +18.1%, MSCI EM Hedged +16.6%). The significant depreciation of the Brazilian real and Turkish lira provided material headwinds for the performance of U.S. investors who have unhedged exposure to emerging markets. On the other hand, the Russian ruble saw large gains as the currency benefitted from rising oil prices.

## EMERGING MARKET EQUITY



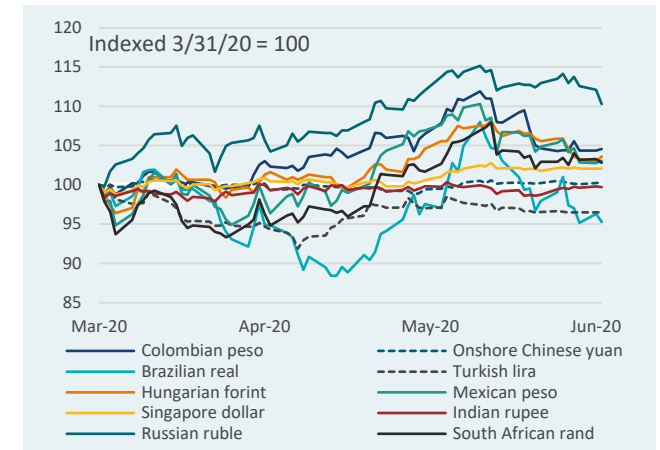
Source: MSCI, as of 6/30/20

## INFLATION (YOY)



Source: Bloomberg, as of 6/30/20

## J.P. MORGAN EMCI CONSTITUENTS (VS. USD)



Source: Bloomberg, as of 6/30/20

# Equity valuations

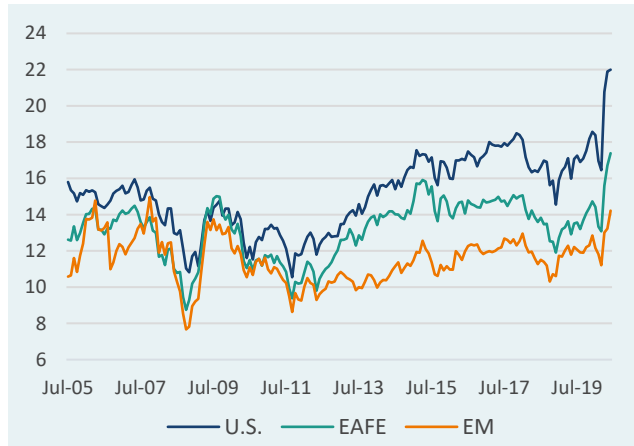
Equity valuations fell in Q1 alongside the broad market selloff. In Q2, valuations reflated significantly as investors seemed to interpret the pandemic-induced earnings recession as more temporary in nature.

Equity prices are typically viewed as the present value of the sum of future cash flows. If the earnings drawdown is indeed temporary and “v-shaped” in nature, this implies mathematically a more modest loss of equity value. Furthermore, near zero interest rates in the developed world likely offset some of this impact (lower interest rates increase

the present value of equity). While we do not necessarily disagree with the argument that the equity rebound has been *too much too soon*, these two effects (potentially quick recovery but very low interest rates) may help us to better understand the recent rally.

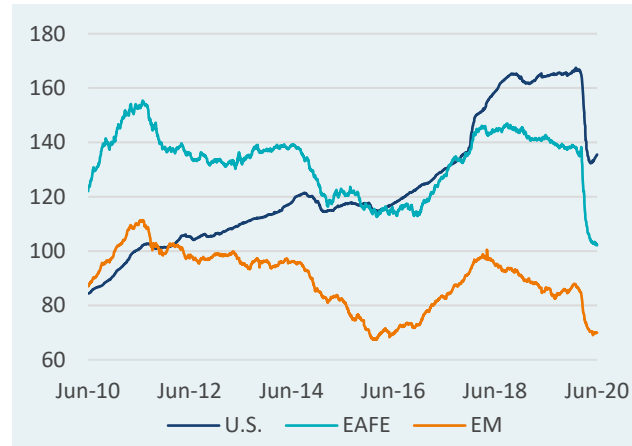
Expected earnings over the next 12 months appear to have bottomed in the United States and look close to bottoming for the international developed and emerging markets. These expectations may provide some stability to equity valuations in the coming months.

## FORWARD P/E RATIOS



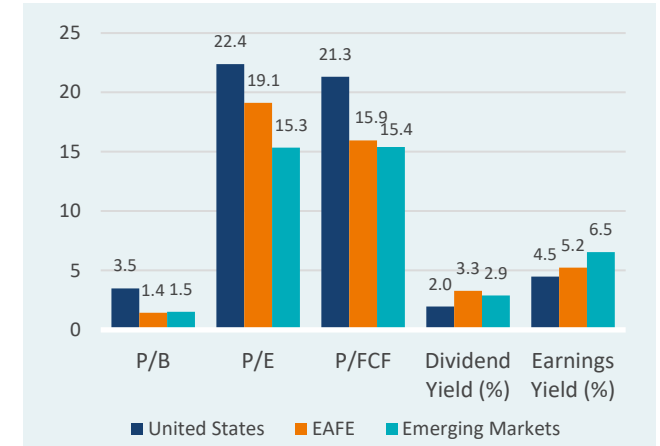
Source: MSCI, 12m forward P/E, as of 3/31/20

## BLENDED FORWARD 12-MONTH EPS ESTIMATES



Source: MSCI, 12m forward EPS, as of 6/30/20

## VALUATION METRICS (3-MONTH AVERAGE)



Source: Bloomberg, MSCI as of 6/30/20 - trailing P/E

# Equity volatility

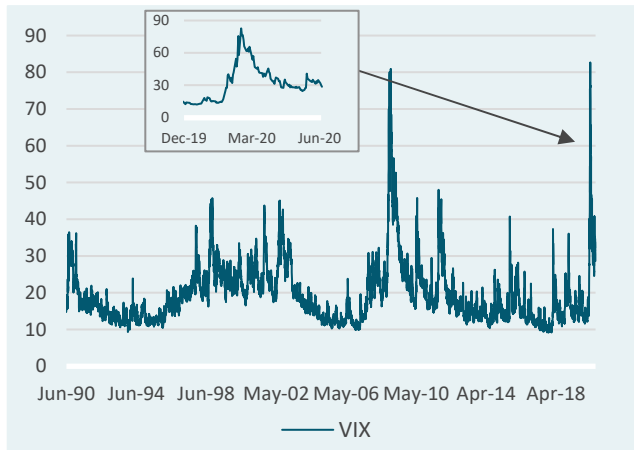
Moves in the CBOE VIX Index moderated in June. The long-term average of the index is near 19. It has remained above that level since February, reaching a high point of 85.0 on March 18th, and closing June at 30.4.

The VIX futures curve, which reflects expectations for future implied volatility of S&P 500 Index options, has taken on an inverted “v-shape” over the next six months, indicating market participants are pricing in higher S&P 500 volatility toward the end of the year around the U.S. election. After October, the market expectation is for volatility to subside

considerably. In normal circumstances, the VIX futures curve exhibits a moderate upward slope due to the skewed and mean-reverting nature of volatility generally (it is low most of the time, though there are occasional, large, short-lived spikes).

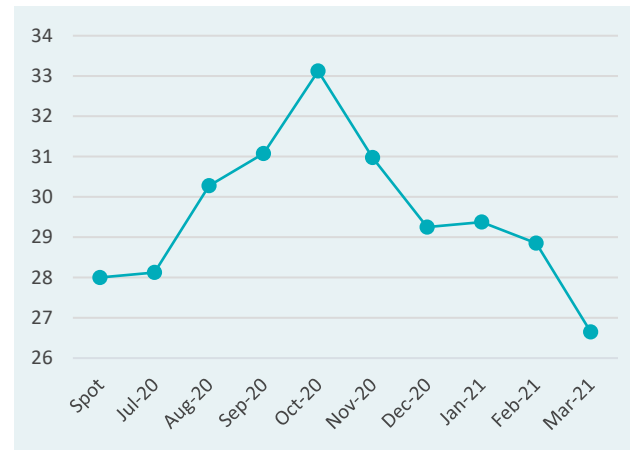
In the first quarter, the implied volatility on S&P 500 Index out-of-the-money put options spiked relative to similarly out-of-the-money call options, indicating investor preference for downside protection. That preference faded over the second quarter, but remained fairly strong relative to recent history.

**U.S. IMPLIED VOLATILITY (VIX)**



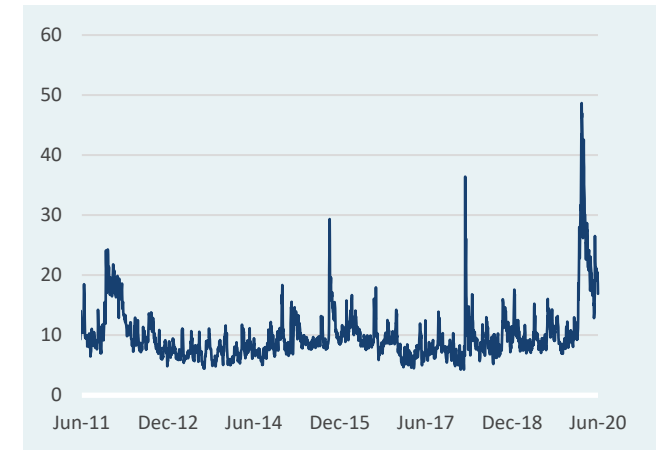
Source: CBOE, as of 6/30/20

**VIX FUTURES CURVE**



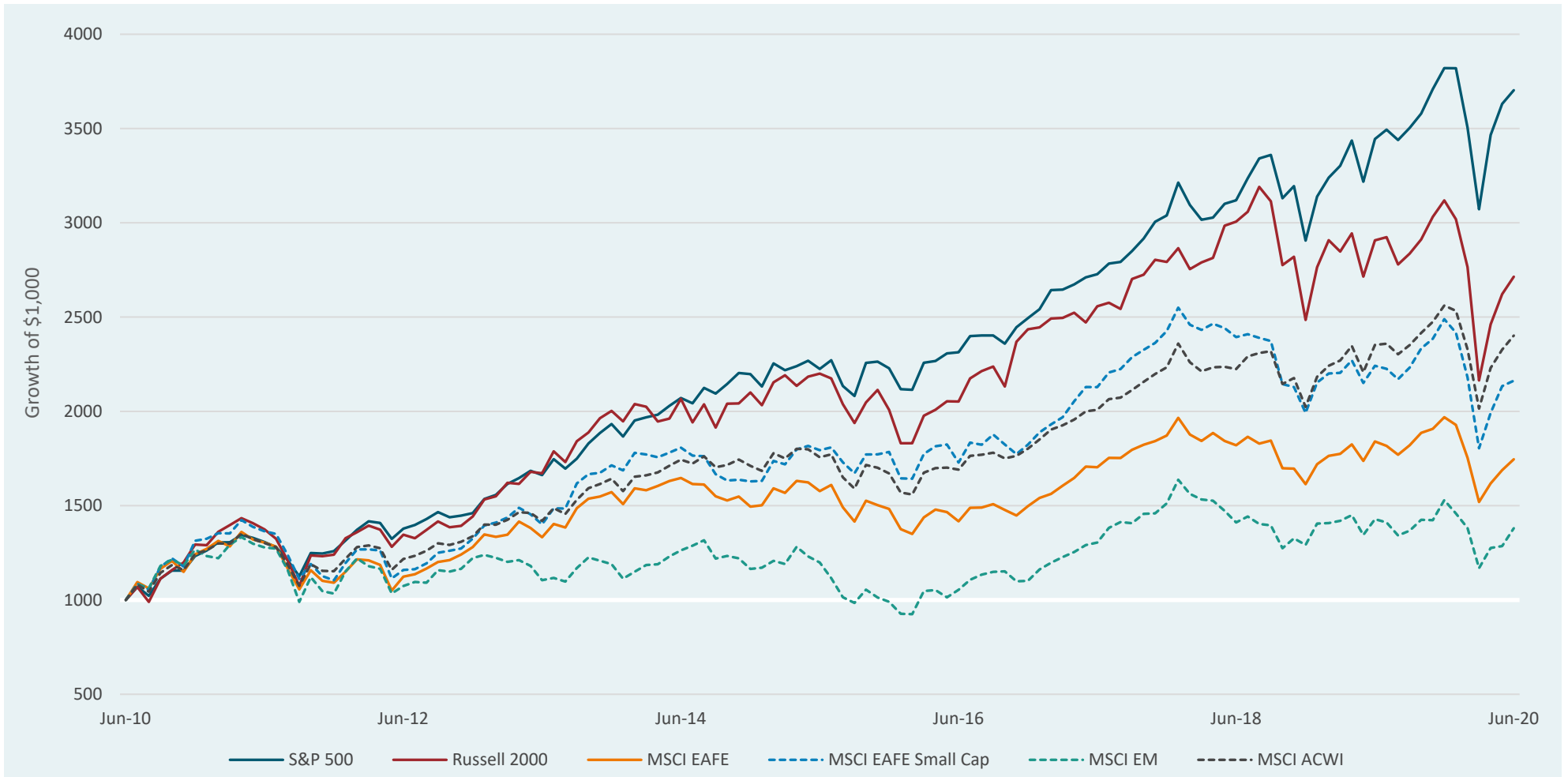
Source: CBOE, Bloomberg, as of 6/30/20

**30-DAY 10-DELTA SKEW (S&P 500 OPTIONS)**



Source: CBOE, Bloomberg, as of 6/30/20

# Long-term equity performance



Source: Morningstar, as of 6/30/20

# Other assets

# Currency

The U.S. dollar weakened in the second quarter, falling -2.3% according to the Bloomberg Dollar Spot Index. The dollar fell -2.4% against the Euro, appreciated +0.4% against the British pound, and fell -0.1% relative to the Japanese yen. The market recovery (less demand for safe-haven currencies) and materially lower U.S. interest rates (less attractive U.S. dollar) have likely contributed to the move lower.

As the euro strengthened in Q2, some currency analysts have adopted a more optimistic view on the common currency. Improved macroeconomic conditions relative to the United

States, the potential implications of a strong cyclical rebound, as well as the ECB's apparent unwillingness to push rates much lower below 0%, may be leading to euro appreciation.

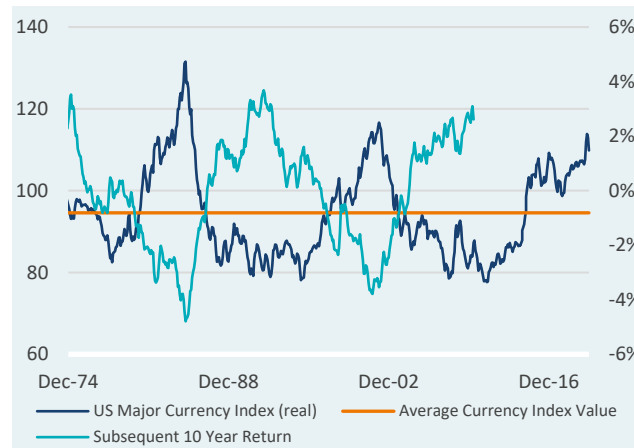
The MSCI Currency Factor Mix Index, constructed as a combination of individual currency factor indices (carry, value, momentum) declined 1.7% in Q2. The momentum factor (-7.8%) drove declines in the overall index as the U.S. dollar began to weaken relative to other major currency pairs following a period of strong appreciation.

**BLOOMBERG DOLLAR SPOT INDEX**



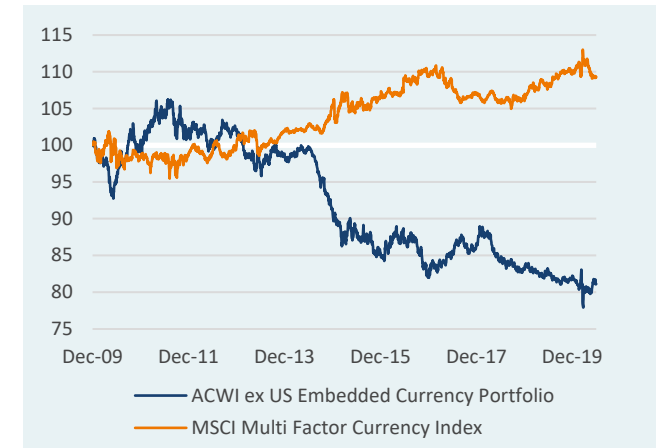
Source: Bloomberg, as of 6/30/20

**USD CURRENCY LEVEL & SUBSEQUENT RETURN**



Source: Federal Reserve, as of 6/30/20

**EMBEDDED CURRENCY VS CURRENCY BETA**



Source: MSCI, Bloomberg, as of 6/30/20

# Commodities

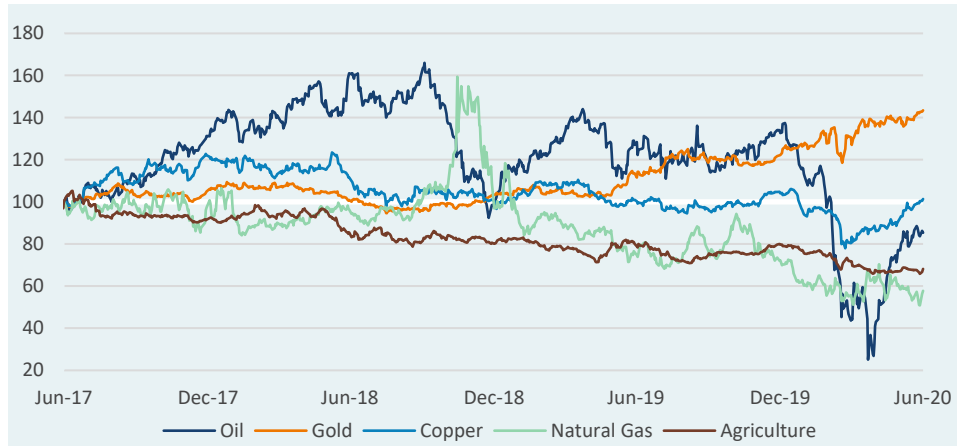
The Bloomberg Commodity Index returned 5.1% in the second quarter, though the index remains depressed year-to-date (-19.4%). A global recession driven by COVID-19 has led to an unprecedented industrial slowdown, severely impacting the demand for energy. The energy (-46.3%) and petroleum (-49.8%) components of the index have dragged performance lower year-to-date.

Gold prices climbed higher during Q2 amidst a backdrop of heightened geopolitical and economic uncertainty, lower global real yields (which diminish the opportunity cost of holding gold), and a weakening U.S. dollar. Spot gold prices

rose from \$1577/oz to \$1781/oz, their highest level since 2011, and have returned 17.1% so far this year. Industrial metals (+12.3%) were bid higher in the second quarter alongside oil, perhaps on enthusiasm around reopening plans and a possible economic rebound. Copper (+21.2%) experienced supply-side tailwinds as COVID-19 spread through Peru, raising production concerns.

Some of the poor recent performance of commodities has been caused by an upward sloping futures curve, which can generate losses due to negative “roll return”. Unattractive futures curve shape continues to contribute to performance.

## COMMODITY PERFORMANCE



Source: Bloomberg, as of 6/30/20

## COMMODITIES ROLL RETURN



Source: Standard & Poor's, as of 6/30/20

# Appendix



# Periodic table of returns

BEST ↑

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	YTD	5-Year	10-Year
Large Cap Growth	38.7	66.4	31.8	14.0	25.9	56.3	26.0	34.5	32.6	39.8	5.2	79.0	29.1	14.3	18.6	43.3	13.5	13.3	31.7	37.3	6.7	36.4	9.8	15.9	17.2
US Bonds	27.0	43.1	22.8	8.4	10.3	48.5	22.2	21.4	26.9	16.2	1.4	37.2	26.9	7.8	18.1	38.8	13.2	5.7	21.3	30.2	1.9	31.4	6.1	10.5	14.0
Real Estate	20.3	33.2	12.2	7.3	6.7	47.3	20.7	20.1	23.5	15.8	-6.5	34.5	24.5	2.6	17.9	34.5	13.0	0.9	17.3	25.0	0.0	28.5	0.7	7.0	12.9
Cash	19.3	27.3	11.6	3.3	1.6	46.0	18.3	14.0	22.2	11.8	-21.4	32.5	19.2	1.5	17.5	33.5	11.8	0.6	12.1	22.2	-1.5	26.5	0.4	6.9	10.5
Hedge Funds of Funds	16.2	26.5	7.0	2.8	1.0	39.2	16.5	7.5	18.4	11.6	-25.9	28.4	16.8	0.4	16.4	33.1	6.0	0.0	11.8	21.7	-3.5	25.5	-2.3	5.5	10.4
60/40 Global Portfolio	8.7	21.3	4.1	-2.4	-6.0	29.9	14.3	6.3	15.5	10.3	-33.8	23.3	16.1	-2.1	15.3	23.3	4.9	-0.8	11.2	14.6	-6.0	22.4	-2.3	4.6	9.8
Large Cap Equity	15.6	24.3	6.0	2.5	-5.9	30.0	14.5	7.1	16.6	10.9	-28.9	27.2	16.7	0.1	16.3	32.5	5.6	-0.4	11.3	17.1	-4.8	22.0	-2.8	4.3	7.8
Small Cap Growth	4.9	20.9	-3.0	-5.6	-11.4	29.7	12.9	5.3	15.1	7.0	-35.6	20.6	15.5	-2.9	14.6	12.1	4.2	-1.4	8.0	13.7	-8.3	18.6	-3.1	4.3	6.8
Emerging Markets Equity	1.2	13.2	-7.3	-9.1	-15.5	25.2	11.4	4.7	13.3	7.0	-36.8	19.7	13.1	-4.2	11.5	11.0	3.4	-2.5	7.1	7.8	-9.3	18.4	-9.8	2.9	5.7
International Equity	-2.5	11.4	-7.8	-9.2	-15.7	23.9	9.1	4.6	10.4	5.8	-37.6	18.9	10.2	-5.5	10.5	9.0	2.8	-3.8	5.7	7.7	-11.0	8.7	-11.3	2.1	3.8
Small Cap Equity	-5.1	7.3	-14.0	-12.4	-20.5	11.6	6.9	4.6	9.1	4.4	-38.4	11.5	8.2	-5.7	4.8	0.1	0.0	-4.4	2.6	7.0	-11.2	7.8	-13.0	1.4	3.3
Large Cap Value	-6.5	4.8	-22.4	-19.5	-21.7	9.0	6.3	4.2	4.8	-0.2	-38.5	5.9	6.5	-11.7	4.2	-2.0	-1.8	-7.5	1.0	3.5	-12.9	7.7	-16.3	1.3	2.7
Commodities	-25.3	-0.8	-22.4	-20.4	-27.9	4.1	4.3	3.2	4.3	-1.6	-43.1	0.2	5.7	-13.3	0.1	-2.3	-4.5	-14.9	0.5	1.7	-13.8	6.4	-19.4	1.1	0.6
Small Cap Value	-27.0	-1.5	-30.6	-21.2	-30.3	1.0	1.4	2.4	2.1	-9.8	-53.2	-16.9	0.1	-18.2	-1.1	-9.5	-17.0	-24.7	0.3	0.9	-14.6	2.1	-23.5	-7.7	-5.8

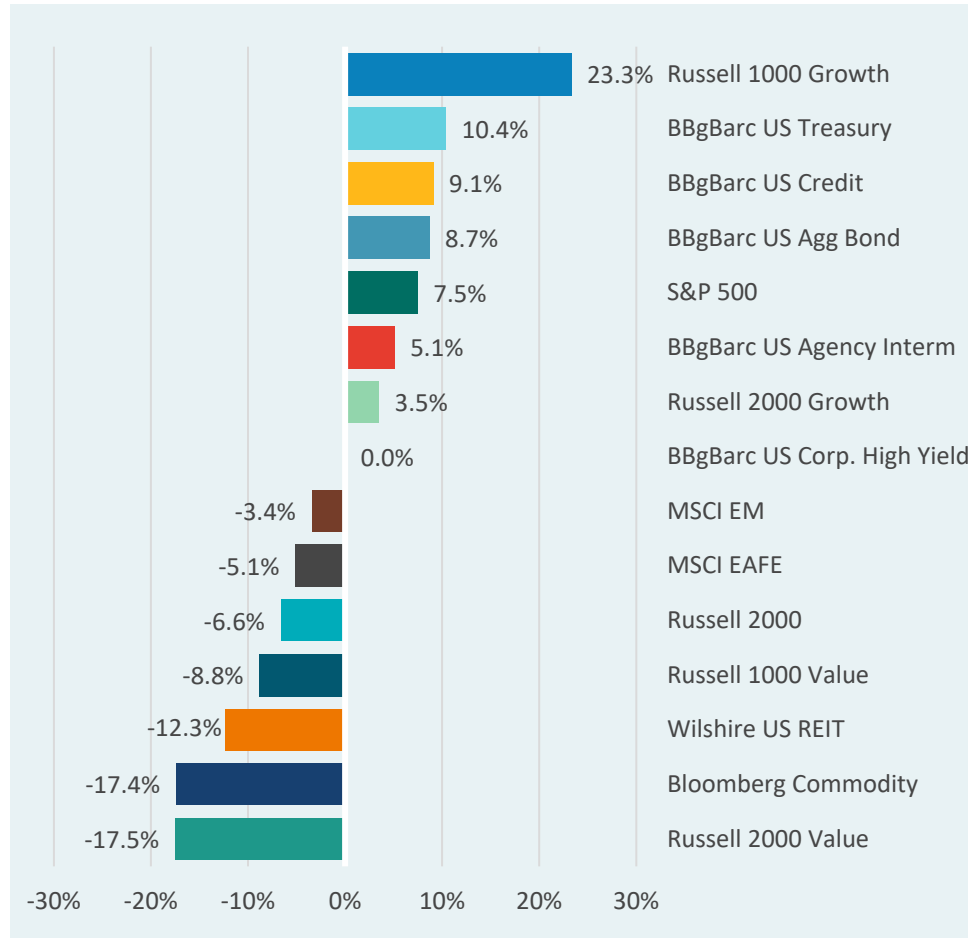
↓ WORST

- Large Cap Equity
- Small Cap Growth
- Commodities
- Large Cap Value
- International Equity
- Real Estate
- Large Cap Growth
- Emerging Markets Equity
- Hedge Funds of Funds
- US Bonds
- 60% MSCI ACWI/40% BBgBarc Global Bond
- Cash

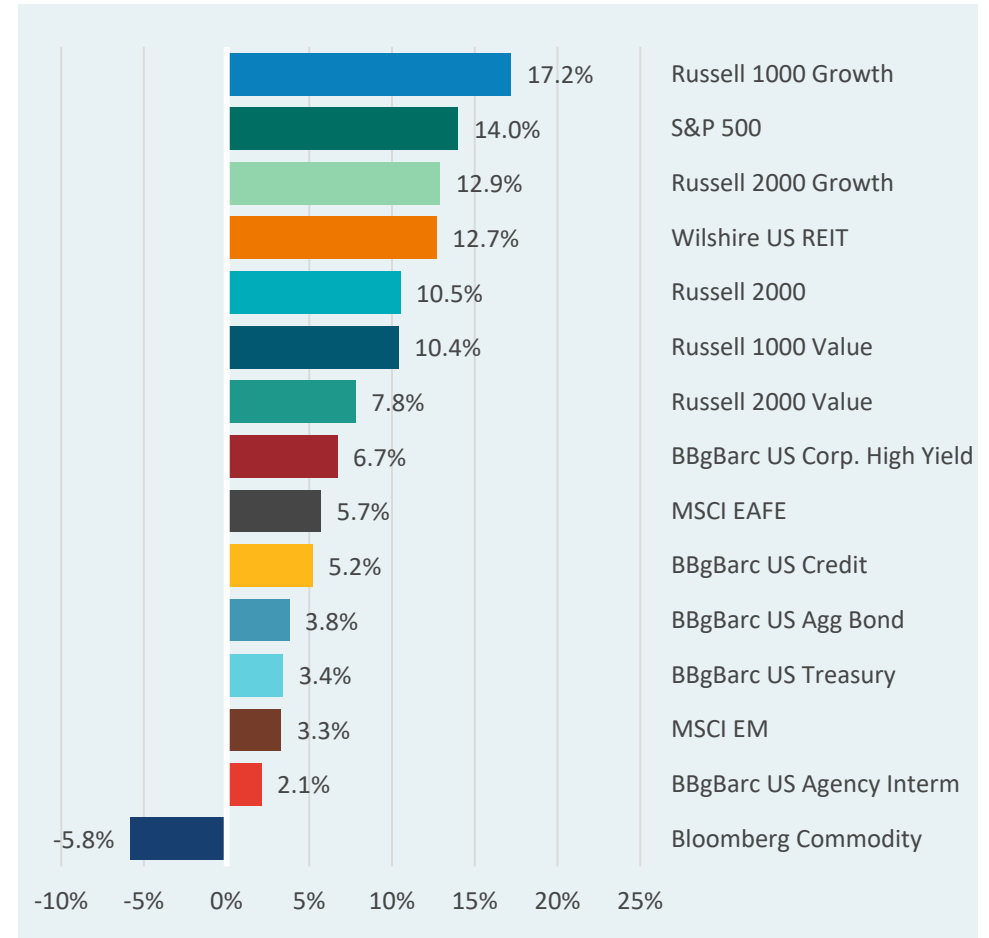
Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, BBgBarc US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, BBgBarc Global Bond. NCREIF Property Index performance data as of 3/31/20.

# Major asset class returns

ONE YEAR ENDING JUNE



TEN YEARS ENDING JUNE



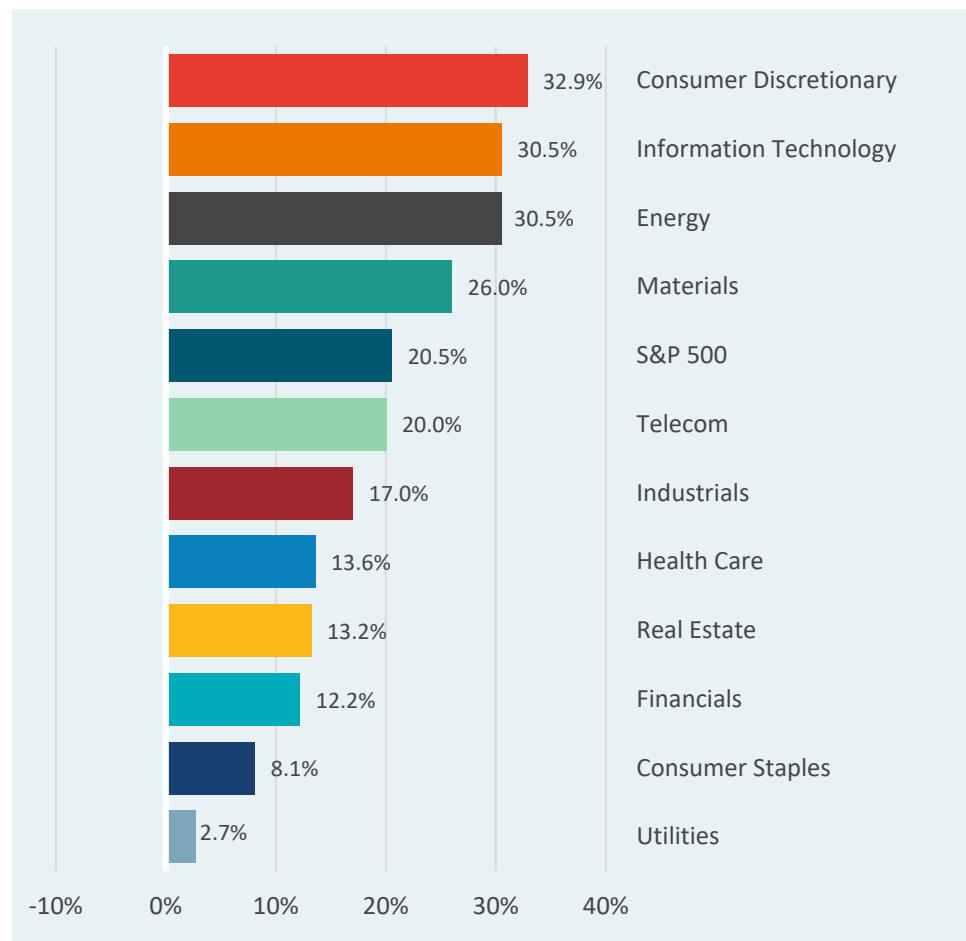
\*Only publicly traded asset performance is shown here. Performance of private assets is typically released with a 3- to 6-month delay.

Source: Morningstar, as of 6/30/20

Source: Morningstar, as of 6/30/20

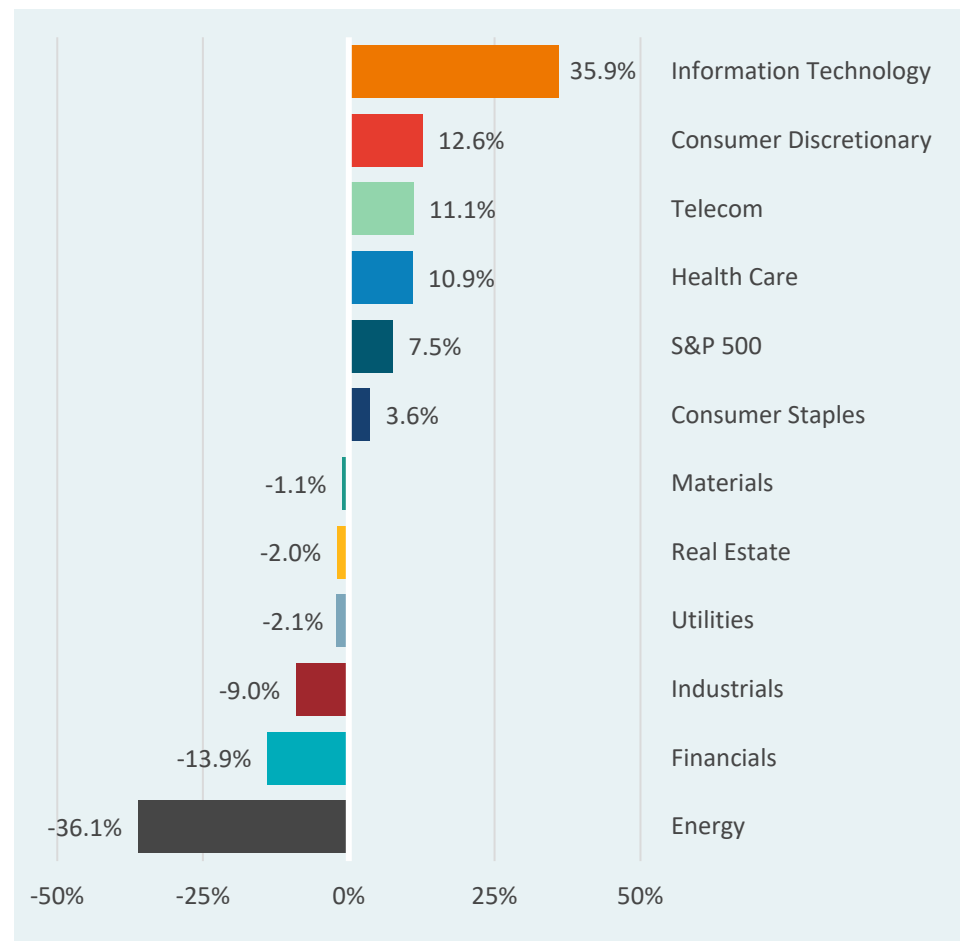
# S&P 500 sector returns

QTD



Source: Morningstar, as of 6/30/20

ONE YEAR ENDING JUNE

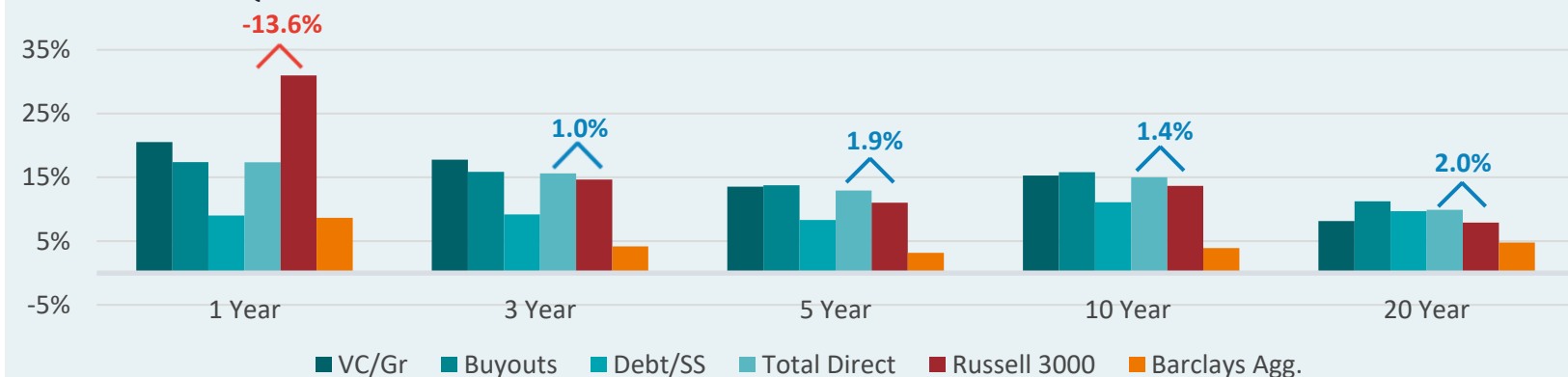


Source: Morningstar, as of 6/30/20

# Private equity vs. public performance

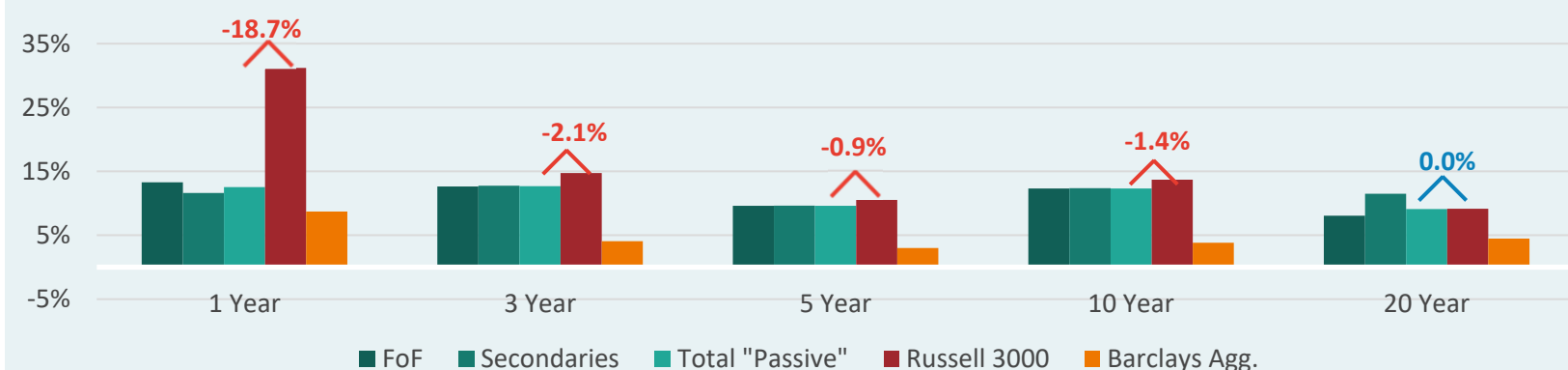
As of 12/31/2019

## DIRECT PRIVATE EQUITY FUND INVESTMENTS



Direct P.E Fund Investments outperformed comparable public equities across all time periods, except on a 1-year basis

## "PASSIVE" STRATEGIES



"Passive" strategies underperformed comparable public equities across all time periods, except on a 20-year basis

Sources: Thomson Reuters Cambridge Universe's PME Module: U.S. Private Equity Funds sub asset classes as of December 31, 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

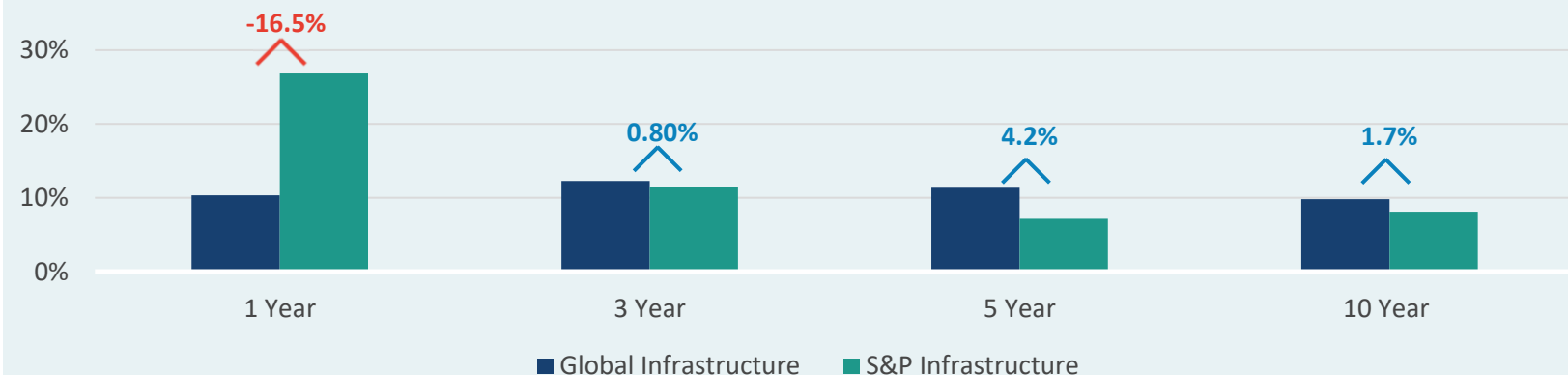
As of 12/31/2019

## GLOBAL NATURAL RESOURCES FUNDS



N.R. funds underperformed the MSCI World Natural Resources benchmark across all time periods, except on a 10 year basis

## GLOBAL INFRASTRUCTURE FUNDS



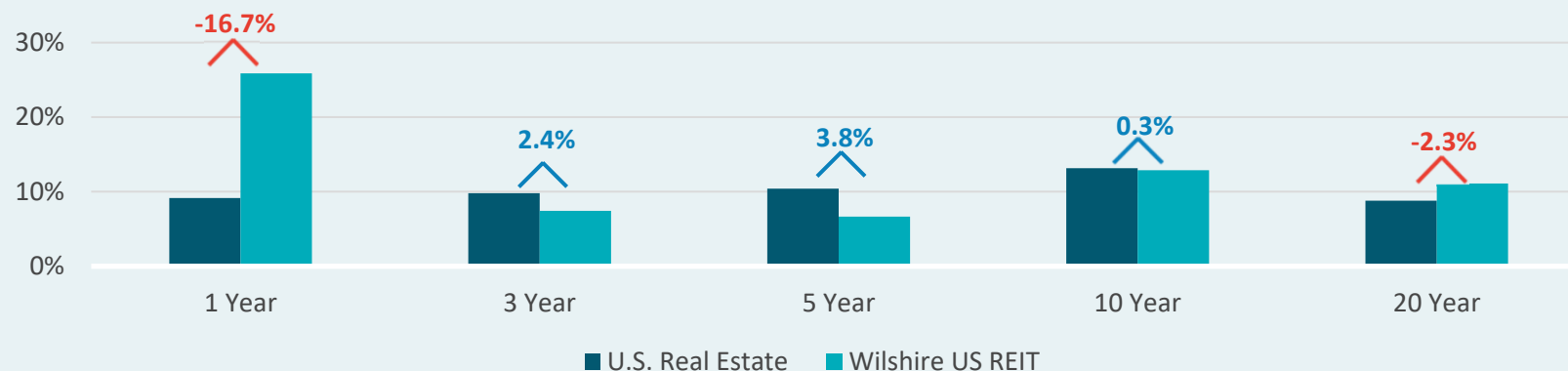
Infra. funds outperformed the S&P Infra. across all periods, except on a 1-year basis

Sources: Thomson Reuters CJA PME: Global Natural Resources (vintage 1999 and later, inception of MSCI World Natural Resources benchmark) and Global Infrastructure (vintage 2002 and later, inception of S&P Infrastructure benchmark) universes as of December 31, 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

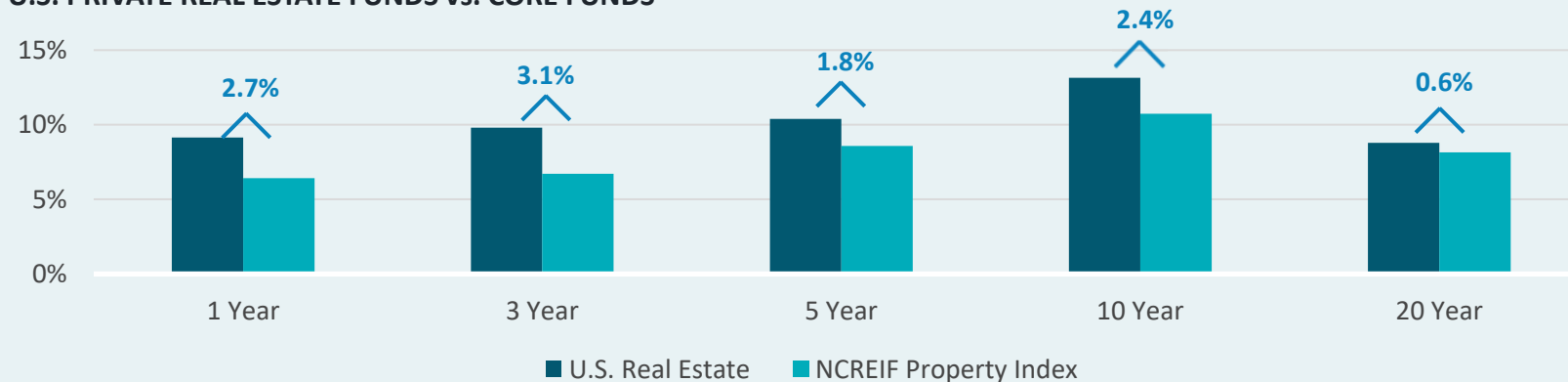
As of 12/31/2019

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- and 20-year basis, but not over 3-, 5-, and 10-years basis.

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: U.S. Real Estate universes as of December 31, 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
<b>Core Index</b>							
S&P 500	2.0	20.5	(3.1)	7.5	10.7	10.7	14.0
S&P 500 Equal Weighted	1.6	21.7	(10.8)	(3.2)	5.4	7.1	12.6
DJ Industrial Average	1.8	18.5	(8.4)	(0.5)	9.1	10.6	13.0
Russell Top 200	2.4	20.9	(0.5)	11.2	12.5	11.9	14.6
Russell 1000	2.2	21.8	(2.8)	7.5	10.6	10.5	14.0
Russell 2000	3.5	25.4	(13.0)	(6.6)	2.0	4.3	10.5
Russell 3000	2.3	22.0	(3.5)	6.5	10.0	10.0	13.7
Russell Mid Cap	1.8	24.6	(9.1)	(2.2)	5.8	6.8	12.3
<b>Style Index</b>							
Russell 1000 Growth	4.4	27.8	9.8	23.3	19.0	15.9	17.2
Russell 1000 Value	(0.7)	14.3	(16.3)	(8.8)	1.8	4.6	10.4
Russell 2000 Growth	3.8	30.6	(3.1)	3.5	7.9	6.9	12.9
Russell 2000 Value	2.9	18.9	(23.5)	(17.5)	(4.3)	1.3	7.8

## INTERNATIONAL EQUITY

<b>Broad Index</b>							
MSCI ACWI	3.2	19.2	(6.3)	2.1	6.1	6.5	9.2
MSCI ACWI ex US	4.5	16.1	(11.0)	(4.8)	1.1	2.3	5.0
MSCI EAFE	3.4	14.9	(11.3)	(5.1)	0.8	2.1	5.7
MSCI EM	7.4	18.1	(9.8)	(3.4)	1.9	2.9	3.3
MSCI EAFE Small Cap	1.4	19.9	(13.1)	(3.5)	0.5	3.8	8.0
<b>Style Index</b>							
MSCI EAFE Growth	3.2	16.9	(3.5)	4.2	5.9	5.5	7.8
MSCI EAFE Value	3.6	12.4	(19.3)	(14.5)	(4.4)	(1.6)	3.5
<b>Regional Index</b>							
MSCI UK	1.4	7.8	(23.3)	(17.7)	(3.9)	(2.5)	3.9
MSCI Japan	(0.0)	11.6	(7.1)	3.1	3.0	3.4	6.1
MSCI Euro	6.2	19.6	(12.7)	(7.7)	(0.9)	1.6	5.0
MSCI EM Asia	8.2	17.8	(3.5)	4.9	4.1	4.8	5.8
MSCI EM Latin American	5.3	19.1	(35.2)	(32.5)	(7.2)	(3.2)	(3.8)

## FIXED INCOME

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
<b>Broad Index</b>							
BBgBarc US TIPS	1.1	4.2	6.0	8.3	5.0	3.7	3.5
BBgBarc US Treasury Bills	0.0	0.0	0.7	1.7	1.8	1.2	0.7
BBgBarc US Agg Bond	0.6	2.9	6.1	8.7	5.3	4.3	3.8
<b>Duration</b>							
BBgBarc US Treasury 1-3 Yr	0.0	0.2	3.0	4.1	2.7	1.9	1.3
BBgBarc US Treasury Long	0.1	0.2	21.2	25.4	12.0	9.3	7.7
BBgBarc US Treasury	0.1	0.5	8.7	10.4	5.6	4.1	3.4
<b>Issuer</b>							
BBgBarc US MBS	(0.1)	0.7	3.5	5.7	4.0	3.2	3.1
BBgBarc US Corp. High Yield	1.0	10.2	(3.8)	0.0	3.3	4.8	6.7
BBgBarc US Agency Interm	0.1	0.8	3.7	5.1	3.3	2.5	2.1
BBgBarc US Credit	1.8	8.2	4.8	9.1	6.1	5.5	5.2

## OTHER

<b>Index</b>							
Bloomberg Commodity	2.3	5.1	(19.4)	(17.4)	(6.1)	(7.7)	(5.8)
Wilshire US REIT	2.3	10.6	(17.8)	(12.3)	0.2	5.7	12.7
CS Leveraged Loans	1.3	9.7	(4.8)	(2.3)	2.1	4.6	5.0
Alerian MLP	(8.2)	47.2	(38.3)	(44.1)	(18.3)	(13.6)	(1.4)
<b>Regional Index</b>							
JPM EMBI Global Div	3.5	12.3	(2.8)	0.5	3.6	5.3	6.0
JPM GBI-EM Global Div	0.5	9.8	(6.9)	(2.8)	1.1	2.3	1.6
<b>Hedge Funds</b>							
HFRI Composite	1.9	9.0	(3.5)	(0.6)	2.1	2.3	3.7
HFRI FOF Composite	1.3	7.2	(2.3)	(0.2)	2.0	1.4	2.7
<b>Currency (Spot)</b>							
Euro	1.0	2.4	0.1	(1.4)	(0.5)	0.2	(0.9)
Pound	(0.1)	(0.4)	(6.7)	(2.9)	(1.7)	(4.7)	(1.9)
Yen	(0.1)	0.1	0.7	(0.1)	1.4	2.6	(2.0)

Source: Morningstar, HFR, as of 6/30/20

# 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](http://www.lanqerresearch.com))

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

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

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

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# Contra Costa County Employees' Retirement Association

Investment Performance Review

Period Ending: June 30, 2020



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LOS ANGELES 310-297-1777

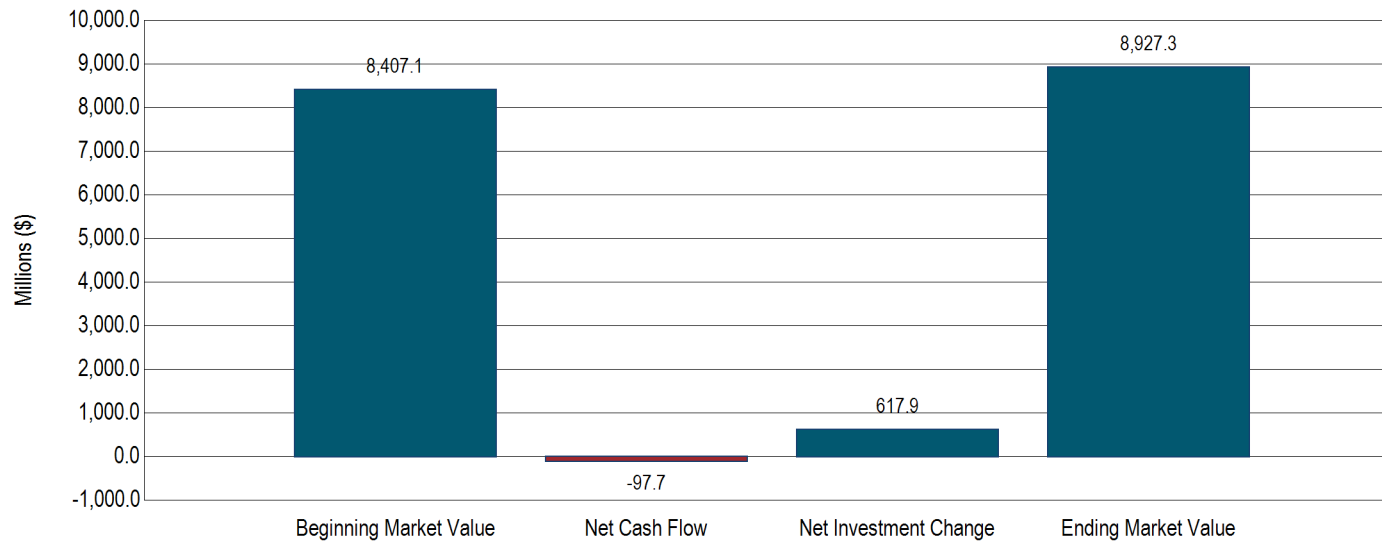
SAN FRANCISCO 415-362-3484

PITTSBURGH 412-784-6678

Portfolio Reconciliation

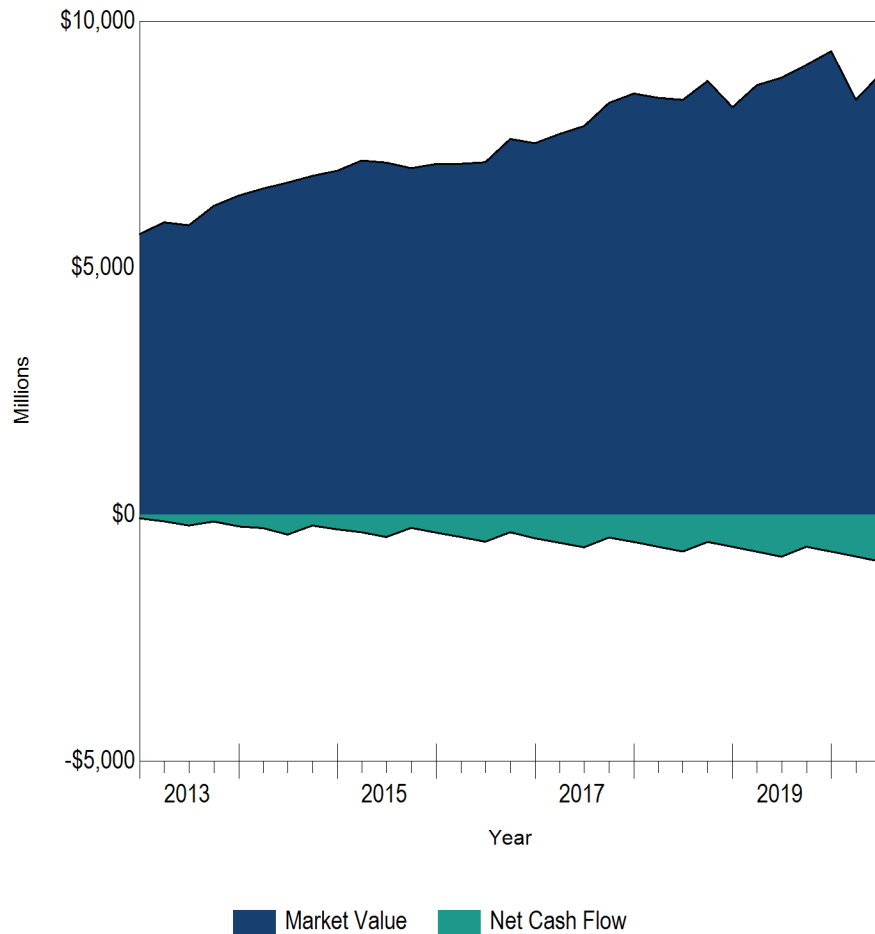
	Last Three Months	Year-To-Date
Beginning Market Value	\$8,407,112,435	\$9,390,188,036
Net Cash Flow	-\$97,718,117	-\$190,494,378
Net Investment Change	\$617,942,880	-\$272,356,460
Ending Market Value	\$8,927,337,198	\$8,927,337,198

Change in Market Value  
Last Three Months

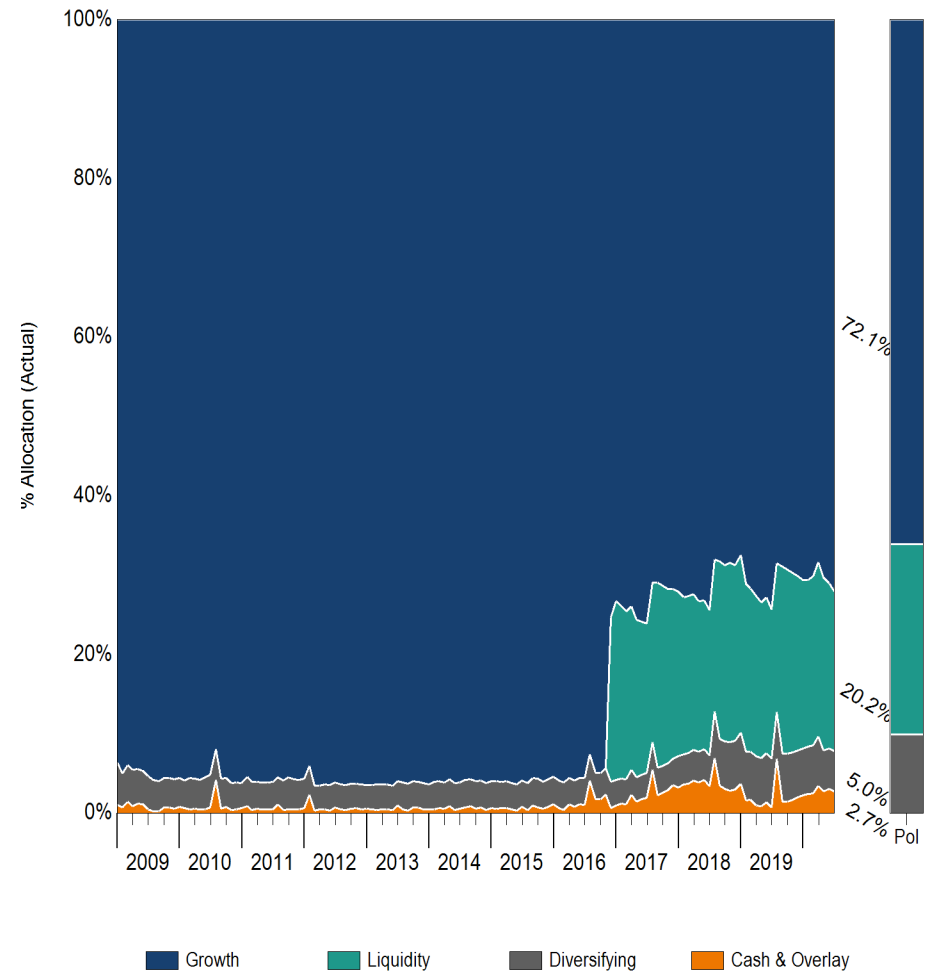


Contributions and withdrawals may include intra-account transfers between managers/funds.

Market Value History  
Cumulative Cash Flows



Asset Allocation History

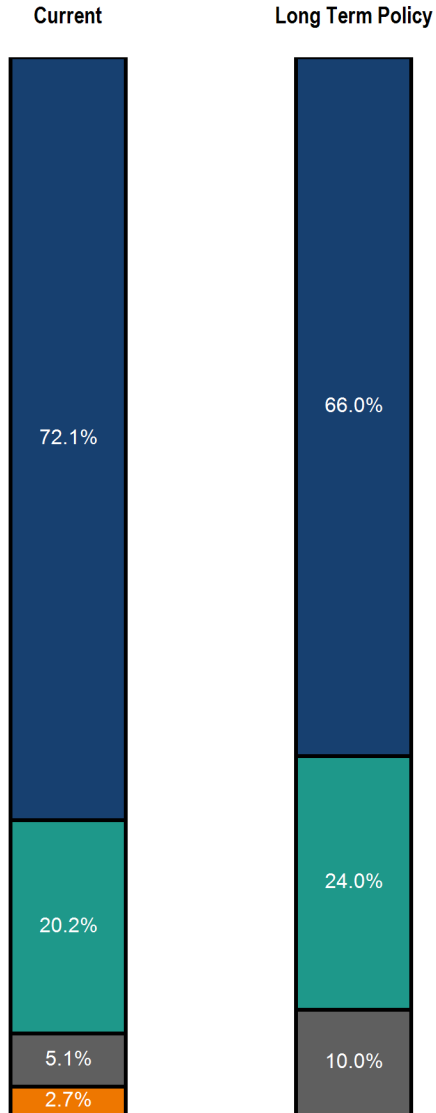


Policy reflects FFP 4-Yr allocations approved in June 2019.

Total Fund

Asset Allocation vs. Long Term Target Policy

Period Ending: June 30, 2020



Allocation vs. Long Term Target

	Current Balance	Current Allocation	Long Term Target	Difference
Growth	\$6,434,445,124	72.1%	66.0%	\$542,402,574
Liquidity	\$1,799,245,251	20.2%	24.0%	-\$343,315,677
Diversifying	\$451,344,281	5.1%	10.0%	-\$441,389,439
Cash & Overlay	\$242,302,542	2.7%	--	\$242,302,542
<b>Total</b>	<b>\$8,927,337,198</b>	<b>100.0%</b>	<b>100.0%</b>	

Allocation vs. Current Targets

	Current Balance	Current Allocation	Current Target	Difference
Growth	\$6,434,445,124	72.1%	68.0%	\$363,855,830
Liquidity	\$1,799,245,251	20.2%	24.0%	-\$343,315,677
Diversifying	\$451,344,281	5.1%	8.0%	-\$262,842,695
Cash & Overlay	\$242,302,542	2.7%	--	\$242,302,542
<b>Total</b>	<b>\$8,927,337,198</b>	<b>100.0%</b>	<b>100.0%</b>	

Long Term Targets reflect FFP 4-Yr allocations approved in June 2019.  
 Current Targets reflect targets approved in June 2019.

Total Fund  
Executive Summary (Net of Fees)

Period Ending: June 30, 2020

	% of Portfolio	QTD	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015
<b>Total Fund</b>	<b>100.0</b>	<b>7.4</b>	<b>-2.8</b>	<b>1.7</b>	<b>4.9</b>	<b>5.3</b>	<b>8.5</b>	<b>14.6</b>	<b>-2.7</b>	<b>13.9</b>	<b>6.9</b>	<b>2.1</b>
Policy Index		6.0	-3.2	2.0	5.4	6.0	8.9	14.6	-0.9	13.7	8.9	0.6
<b>Growth</b>	<b>72.1</b>	<b>9.5</b>	<b>-4.3</b>	<b>1.2</b>	<b>5.8</b>	<b>6.4</b>	<b>--</b>	<b>18.4</b>	<b>-3.9</b>	<b>18.7</b>	<b>7.6</b>	<b>2.3</b>
Custom Growth Benchmark		8.1	-6.1	0.7	6.2	7.2	--	19.3	-2.1	19.3	10.1	0.3
<b>Diversifying</b>	<b>5.1</b>	<b>1.6</b>	<b>-3.6</b>	<b>-1.3</b>	<b>0.7</b>	<b>0.2</b>	<b>1.5</b>	<b>6.8</b>	<b>-2.3</b>	<b>2.6</b>	<b>0.8</b>	<b>-1.8</b>
Custom Diversifying Benchmark		1.9	2.6	4.5	4.0	3.9	3.8	6.1	1.4	4.7	4.1	2.5
<b>Liquidity</b>	<b>20.2</b>	<b>2.4</b>	<b>2.6</b>	<b>3.9</b>	<b>3.1</b>	<b>--</b>	<b>--</b>	<b>4.8</b>	<b>1.7</b>	<b>1.4</b>	<b>--</b>	<b>--</b>
BBgBarc US Govt/Credit 1-3 Yr. TR		1.2	2.9	4.2	2.9	--	--	4.0	1.6	0.8	--	--

\*Correlation between the Growth and Diversifying composites is .80, .60 and .51 over the previous 1, 3 and 5 year periods respectively.

Policy Index (7/1/2019-Present): 10% Russell 3000, 18% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 24% BBgBarc 1-3 Yr Gov/Credit, 3.5% BBgBarc US Aggregate, 2% BBgBarc Global Aggregate, 5% ICE BofAML High Yield Master II +2%, 2% ICE BofAML High Yield Master II, 1% Wilshire REIT, 1.6% NCREIF Property Index, 6.4% NCREIF ODCE Index, 2.0% CPI +4%, 11% S&P 500 +4%(Lagged), 2.5% HFRI EH Equity Market Neutral. Policy Index (7/1/2018-6/30/2019): 11% Russell 3000, 19% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 23% BBgBarc 1-3 Yr Gov/Credit, 3.5% BBgBarc US Aggregate, 2% BBgBarc Global Aggregate, 4% ICE BofAML High Yield Master II +2%, 2% ICE BofAML High Yield Master II, 1% Wilshire REIT, 1.8% NCREIF Property Index, 7.2% NCREIF ODCE Index, 2.0% CPI +4%, 10% S&P 500 +4%(Lagged), 2.5% HFRI EH Equity Market Neutral. Policy Index (10/1/2017-6/30/2018): 16.3% Russell 3000, 18.8% MSCI ACWI ex-US (Gross), 8.6% MSCI ACWI (Net), 25% BBgBarc 1-3 Yr Gov/Credit, 3.5% BBgBarc US Aggregate, 1.9% ICE BofAML High Yield Master II +2%, 4.3% ICE BofAML High Yield Master II, 1% Wilshire REIT, 1.6% NCREIF Property Index, 6.4% NCREIF ODCE Index, 2.5% CPI +4%, 10.1% S&P 500 +4%(Lagged). Policy Index (1/1/2017-9/30/2017): 22.9% Russell 3000, 11% MSCI ACWI ex-US (Gross), 10.9% MSCI ACWI (Net), 22.4% BBgBarc 1-3 Yr Gov/Credit, 3.2% BBgBarc US Aggregate, 1.7% ICE BofAML High Yield Master II +2%, 5.1% ICE BofAML High Yield Master II, 1% Wilshire REIT, 1.7% NCREIF Property Index, 6.8% NCREIF ODCE Index, 3.6% CPI +4%, 8.1% S&P 500 +4%(Lagged), 1.6% 90-day T-Bills. Policy Index (4/1/2012-12/31/16): 27.7% Russell 3000, 10.6% MSCI ACWI ex-US (Gross), 12.3% MSCI ACWI (Net), 19.6% BBgBarc U.S. Aggregate, 5% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 5.4% Wilshire REIT, 6.75% NCREIF Property Index, 1.35% FTSE/EPRA NAREIT Developed exUS, 6.8% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills. Policy Index (4/1/2011-3/31/2012): 31% Russell 3000, 10.4% MSCI EAFE (Gross), 9.6% MSCI ACWI (Net), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% Wilshire REIT, 3.1% NCREIF Property Index, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills. Policy Index (4/1/2010-3/31/2011): 35.6% Russell 3000, 10.4% MSCI EAFE (Gross), 5% MSCI ACWI (Net), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% Wilshire REIT, 3.1% NCREIF Property Index, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills. Policy Index (7/1/2009-3/31/2010): 40.6% Russell 3000, 10.4% MSCI EAFE (Gross), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% Wilshire REIT, 3.1% NCREIF Property Index, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.

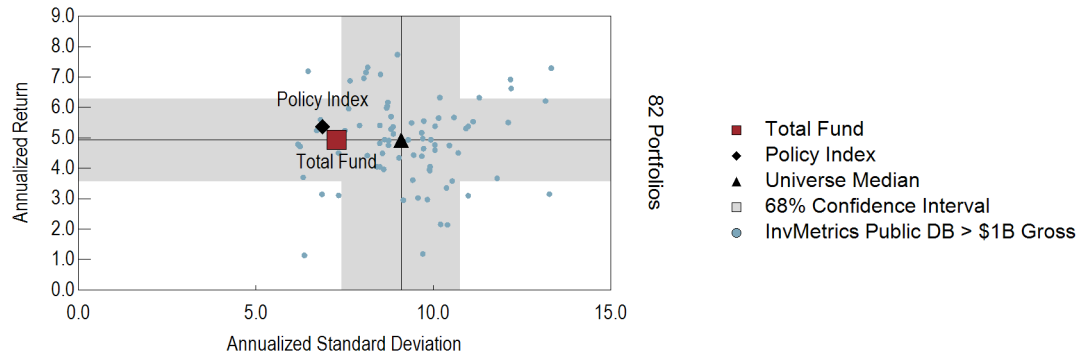
# Total Fund Executive Summary (Net of Fees)

Period Ending: June 30, 2020

## 3 Years

	Anlzd Return	Ann Excess BM Return	Anlzd Standard Deviation	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Information Ratio	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Total Fund	4.93%	-0.43%	7.28%	-0.52%	1.02	2.00%	0.92	0.45	-0.22	101.93%	108.12%

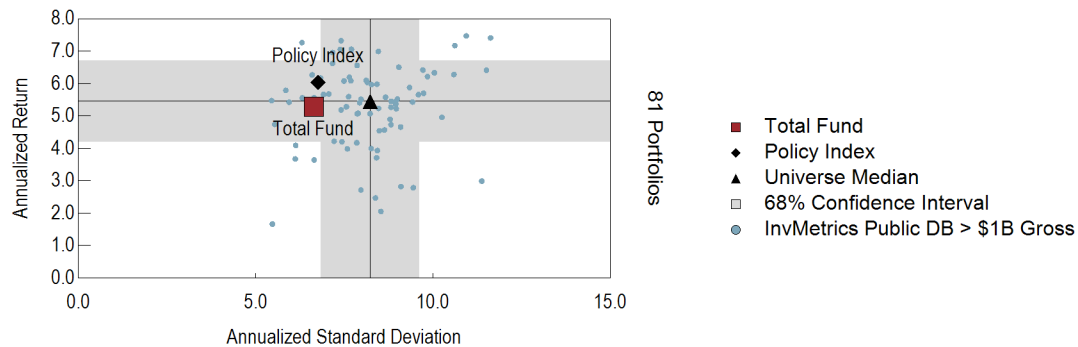
## Risk vs. Return



## 5 Years

	Anlzd Return	Ann Excess BM Return	Anlzd Standard Deviation	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Information Ratio	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Total Fund	5.28%	-0.76%	6.64%	-0.40%	0.94	1.94%	0.92	0.63	-0.39	93.21%	101.27%

## Risk vs. Return



Total Fund  
Performance Summary (Gross of Fees)

Period Ending: June 30, 2020

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015	Inception	Inception Date
<b>Total Fund</b>	<b>8,927,337,198</b>	<b>100.0</b>	<b>7.4</b>	<b>-2.7</b>	<b>2.0</b>	<b>5.2</b>	<b>5.6</b>	<b>9.0</b>	<b>14.9</b>	<b>-2.5</b>	<b>14.2</b>	<b>7.4</b>	<b>2.7</b>		
Policy Index			6.0	-3.2	2.0	5.4	6.0	8.9	14.6	-0.9	13.7	8.9	0.6		
InvMetrics Public DB > \$1B Gross Rank			85	17	31	42	40	11	83	25	83	74	5		
<b>Total Fund ex Overlay &amp; Cash</b>	<b>8,685,034,656</b>	<b>97.3</b>	<b>7.5</b>	<b>-2.5</b>	<b>2.0</b>	<b>5.3</b>	<b>5.7</b>	<b>9.0</b>	<b>14.7</b>	<b>-2.1</b>	<b>14.1</b>	<b>7.4</b>	<b>2.7</b>		
Policy Index			6.0	-3.2	2.0	5.4	6.0	8.9	14.6	-0.9	13.7	8.9	0.6		
InvMetrics Public DB > \$1B Gross Rank			85	16	31	38	36	10	85	20	84	74	5		
<b>Growth</b>	<b>6,434,445,124</b>	<b>72.1</b>	<b>9.6</b>	<b>-4.2</b>	<b>1.5</b>	<b>6.1</b>	<b>6.8</b>	<b>--</b>	<b>18.7</b>	<b>-3.6</b>	<b>19.1</b>	<b>8.1</b>	<b>3.0</b>		
Custom Growth Benchmark			8.1	-6.1	0.7	6.2	7.2	--	19.3	-2.1	19.3	10.1	0.3		
<b>Total Domestic Equity</b>	<b>971,627,488</b>	<b>10.9</b>	<b>24.0</b>	<b>-4.7</b>	<b>2.1</b>	<b>8.2</b>	<b>8.4</b>	<b>13.5</b>	<b>26.7</b>	<b>-7.2</b>	<b>23.9</b>	<b>11.5</b>	<b>1.1</b>		
Russell 3000			22.0	-3.5	6.5	10.0	10.0	13.7	31.0	-5.2	21.1	12.7	0.5		
InvMetrics Public DB US Eq Gross Rank			6	29	68	56	66	24	87	78	6	77	21		
BlackRock Russell 1000 Index	198,853,668	2.2	21.8	-2.8	7.5	10.6	--	--	31.4	-4.8	--	--	--	10.7	Apr-17
Russell 1000			21.8	-2.8	7.5	10.6	--	--	31.4	-4.8	--	--	--	10.7	Apr-17
eV US Large Cap Equity Gross Rank			37	41	40	41	--	--	39	47	--	--	--		
Jackson Square Partners	277,961,088	3.1	30.0	13.8	20.5	17.1	12.3	16.5	27.9	-2.0	29.3	-4.4	6.1	11.2	May-05
Russell 1000 Growth			27.8	9.8	23.3	19.0	15.9	17.2	36.4	-1.5	30.2	7.1	5.7	11.5	May-05
eV US Large Cap Growth Equity Gross Rank			23	21	49	58	79	50	93	59	47	98	37		
Boston Partners	209,106,640	2.3	16.8	-16.7	-8.4	2.0	4.5	11.0	24.3	-8.7	20.1	15.1	-3.9	9.7	Jun-95
Russell 1000 Value			14.3	-16.3	-8.8	1.8	4.6	10.4	26.5	-8.3	13.7	17.3	-3.8	8.5	Jun-95
eV US Large Cap Value Equity Gross Rank			45	72	68	66	69	49	77	55	23	50	65		
Emerald Advisers	159,569,780	1.8	32.5	0.3	3.9	10.6	8.1	15.9	30.3	-10.1	28.8	10.1	4.1	13.2	Apr-03
Russell 2000 Growth			30.6	-3.1	3.5	7.9	6.9	12.9	28.5	-9.3	22.2	11.3	-1.4	11.0	Apr-03
eV US Small Cap Growth Equity Gross Rank			56	58	61	59	71	34	45	85	26	54	19		
Ceredex	126,136,312	1.4	17.5	-21.4	-18.4	-2.7	1.8	--	18.4	-11.3	11.4	29.8	-4.4	7.6	Nov-11
Russell 2000 Value			18.9	-23.5	-17.5	-4.3	1.3	--	22.4	-12.9	7.8	31.7	-7.5	7.0	Nov-11
eV US Small Cap Value Equity Gross Rank			81	46	72	48	51	--	87	25	48	32	52		

Individual closed end funds are not shown in performance summary table. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

Total Fund  
Performance Summary (Gross of Fees)

Period Ending: June 30, 2020

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015	Inception	Inception Date
<b>Total International Equity</b>	<b>1,549,422,307</b>	<b>17.4</b>	<b>18.6</b>	<b>-9.6</b>	<b>-2.6</b>	<b>2.6</b>	<b>2.9</b>	6.3	<b>23.7</b>	<b>-14.3</b>	<b>25.5</b>	<b>1.2</b>	<b>-1.2</b>		
MSCI ACWI ex USA Gross			16.3	-10.8	-4.4	1.6	2.7	5.5	22.1	-13.8	27.8	5.0	-5.3		
MSCI EAFE Gross			15.1	-11.1	-4.7	1.3	2.5	6.2	22.7	-13.4	25.6	1.5	-0.4		
InvMetrics Public DB ex-US Eq Gross Rank			44	40	35	23	48	33	28	44	90	89	28		
<b>International Equity</b>	<b>946,717,190</b>	<b>10.6</b>	<b>18.6</b>	<b>-4.0</b>	<b>4.3</b>	<b>5.1</b>	<b>4.8</b>	<b>7.3</b>	<b>27.0</b>	<b>-13.6</b>	<b>25.3</b>	<b>1.2</b>	<b>-1.2</b>		
MSCI ACWI ex USA Gross			16.3	-10.8	-4.4	1.6	2.7	5.5	22.1	-13.8	27.8	5.0	-5.3		
InvMetrics Public DB ex-US Eq Gross Rank			43	6	8	10	14	11	7	21	93	89	28		
Pyrford	442,003,290	5.0	12.6	-9.0	-2.3	2.2	3.2	--	22.1	-10.1	19.8	3.4	-2.9	2.5	May-14
MSCI ACWI ex USA Value			12.8	-19.4	-15.3	-4.0	-1.2	--	15.7	-14.0	22.7	8.9	-10.1	-1.9	May-14
eV ACWI ex-US Value Equity Gross Rank			75	4	6	8	13	--	35	5	84	74	59		
William Blair	504,713,901	5.7	24.4	0.9	10.9	8.0	6.3	--	32.0	-16.8	30.9	-1.4	0.5	6.9	Oct-10
MSCI ACWI ex USA Growth			19.1	-2.6	5.8	6.1	5.6	--	27.3	-14.4	32.0	0.1	-1.3	5.2	Oct-10
eV ACWI ex-US Growth Equity Gross Rank			45	34	30	48	66	--	39	69	81	55	69		
<b>Emerging Markets Equity</b>	<b>602,705,117</b>	<b>6.8</b>	<b>18.5</b>	<b>-17.2</b>	<b>-11.8</b>	<b>-0.5</b>	<b>--</b>	<b>--</b>	<b>19.4</b>	<b>-15.3</b>	<b>--</b>	<b>--</b>	<b>--</b>		
MSCI Emerging Markets			18.1	-9.8	-3.4	1.9	--	--	18.4	-14.6	--	--	--		
InvMetrics Public DB Emg Mkt Eq Gross Rank			70	92	92	61	--	--	31	51	--	--	--		
PIMCO RAE Emerging Markets	287,988,049	3.2	16.8	-21.8	-18.2	-3.1	--	--	14.6	-12.3	--	--	--	-2.5	Feb-17
MSCI Emerging Markets			18.1	-9.8	-3.4	1.9	--	--	18.4	-14.6	--	--	--	4.4	Feb-17
eV Emg Mkts Equity Gross Rank			76	99	97	93	--	--	82	19	--	--	--		
TT Emerging Markets	314,717,068	3.5	20.1	-12.5	-5.1	--	--	--	24.8	-18.4	--	--	--	0.0	Jul-17
MSCI Emerging Markets			18.1	-9.8	-3.4	--	--	--	18.4	-14.6	--	--	--	-0.1	Jul-17
eV Emg Mkts Equity Gross Rank			45	70	58	--	--	--	24	83	--	--	--		
<b>Total Global Equity</b>	<b>925,208,955</b>	<b>10.4</b>	<b>21.2</b>	<b>2.4</b>	<b>10.8</b>	<b>9.8</b>	<b>9.5</b>	<b>10.7</b>	<b>28.9</b>	<b>-7.8</b>	<b>23.7</b>	<b>7.6</b>	<b>2.2</b>		
MSCI ACWI			19.2	-6.3	2.1	6.1	6.5	9.2	26.6	-9.4	24.0	7.9	-2.4		
InvMetrics Public DB Glbl Eq Gross Rank			4	1	1	1	1	1	3	60	79	40	16		
Artisan Partners	511,057,045	5.7	28.0	11.8	23.4	16.0	14.4	--	37.0	-7.9	32.9	5.6	9.2	14.5	Oct-12
MSCI ACWI			19.2	-6.3	2.1	6.1	6.5	--	26.6	-9.4	24.0	7.9	-2.4	8.2	Oct-12
eV All Global Equity Gross Rank			10	5	6	7	6	--	7	40	11	61	4		
First Eagle	414,027,367	4.6	13.6	-7.4	-1.8	3.5	5.4	--	21.0	-7.6	15.1	11.7	0.2	7.0	Jan-11
MSCI ACWI			19.2	-6.3	2.1	6.1	6.5	--	26.6	-9.4	24.0	7.9	-2.4	7.2	Jan-11
eV All Global Equity Gross Rank			82	52	61	67	62	--	82	38	89	19	49		

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Total Fund  
Performance Summary (Gross of Fees)

Period Ending: June 30, 2020

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015	Inception	Inception Date
<b>Private Credit</b>	<b>636,279,788</b>	<b>7.1</b>	<b>-3.0</b>	<b>-3.1</b>	<b>1.1</b>	<b>5.4</b>	<b>6.9</b>	<b>12.0</b>	<b>7.7</b>	<b>8.3</b>	<b>10.4</b>	<b>8.2</b>	<b>12.9</b>		
ICE BofAML High Yield Master II +2%			10.1	-3.8	0.9	5.0	6.7	8.6	16.7	-0.3	9.6	19.8	-2.7		
<b>Total High Yield</b>	<b>197,837,624</b>	<b>2.2</b>	<b>6.2</b>	<b>-5.3</b>	<b>-1.0</b>	<b>2.7</b>	<b>3.9</b>	<b>6.3</b>	<b>16.0</b>	<b>-3.2</b>	<b>6.5</b>	<b>14.3</b>	<b>-3.5</b>		
ICE BofAML High Yield Master II			9.6	-4.8	-1.1	2.9	4.6	6.5	14.4	-2.3	7.5	17.5	-4.6		
eV US High Yield Fixed Inc Gross Rank			92	78	71	80	77	74	15	88	74	47	68		
Allianz Global Investors	197,837,624	2.2	6.2	-5.3	-1.0	2.7	3.9	6.3	16.0	-3.2	6.5	14.3	-3.5	6.7	Apr-00
ICE BofAML High Yield Master II			9.6	-4.8	-1.1	2.9	4.6	6.5	14.4	-2.3	7.5	17.5	-4.6	6.7	Apr-00
eV US High Yield Fixed Inc Gross Rank			92	78	71	80	77	73	15	88	74	47	68		
<b>Total Real Estate</b>	<b>690,951,813</b>	<b>7.7</b>	<b>-3.2</b>	<b>-4.1</b>	<b>-1.5</b>	<b>5.6</b>	<b>6.5</b>	<b>11.6</b>	<b>8.1</b>	<b>7.4</b>	<b>11.1</b>	<b>5.5</b>	<b>13.5</b>		
Real Estate Benchmark			-0.1	-2.3	0.9	5.2	6.5	9.9	7.7	6.7	7.1	6.7	8.3		
NCREIF-ODCE			-1.6	-0.6	2.2	5.7	7.3	10.8	5.3	8.3	7.6	8.8	15.0		
NCREIF Property Index			-1.0	-0.3	2.7	5.4	6.8	9.7	6.4	6.7	7.0	8.0	13.3		
Adelante	68,077,283	0.8	10.9	-15.1	-9.2	2.4	4.8	10.2	28.2	-5.0	7.8	4.1	5.1	9.5	Sep-01
Wilshire REIT			10.6	-17.8	-12.3	0.2	4.0	9.2	25.8	-4.8	4.2	7.2	4.2	9.0	Sep-01
<b>Private Equity</b>	<b>1,018,666,872</b>	<b>11.4</b>	<b>-3.0</b>	<b>-0.8</b>	<b>3.8</b>	<b>7.8</b>	<b>8.1</b>	<b>11.3</b>	<b>8.4</b>	<b>12.1</b>	<b>11.9</b>	<b>9.4</b>	<b>11.6</b>		
S&P 500 Index +4% (Lagged)			-18.7	-10.5	-3.2	9.3	11.0	14.9	8.4	22.6	23.3	20.0	3.4		
<b>Risk Parity</b>	<b>444,450,277</b>	<b>5.0</b>	<b>7.2</b>	<b>-3.3</b>	<b>1.2</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>		
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			12.7	-2.3	3.4	--	--	--	--	--	--	--	--		
AQR Global Risk Premium-EL	223,929,256	2.5	5.1	-5.4	-0.2	--	--	--	--	--	--	--	--	7.8	Jan-19
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			12.7	-2.3	3.4	--	--	--	--	--	--	--	--	10.3	Jan-19
PanAgora Risk Parity Multi Asset	220,521,021	2.5	9.4	-1.2	2.7	--	--	--	--	--	--	--	--	8.8	Feb-19
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			12.7	-2.3	3.4	--	--	--	--	--	--	--	--	6.3	Feb-19

Individual closed end funds are not shown in performance summary table. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

# Total Fund Performance Summary (Gross of Fees)

Period Ending: June 30, 2020

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015	Inception	Inception Date
<b>Diversifying</b>	<b>451,344,281</b>	<b>5.1</b>	<b>1.7</b>	<b>-3.4</b>	<b>-1.0</b>	<b>1.0</b>	<b>0.5</b>	<b>1.9</b>	<b>7.1</b>	<b>-2.0</b>	<b>2.8</b>	<b>1.3</b>	<b>-1.4</b>		
<i>Custom Diversifying Benchmark</i>			1.9	2.6	4.5	4.0	3.9	3.8	6.1	1.4	4.7	4.1	2.5		
<b>Diversifying Fixed Income</b>	<b>272,674,734</b>	<b>3.1</b>	<b>2.1</b>	<b>0.6</b>	<b>3.1</b>	<b>2.9</b>	<b>2.8</b>	<b>3.3</b>	<b>8.6</b>	<b>-1.7</b>	<b>2.8</b>	<b>2.8</b>	<b>1.6</b>		
<i>eV US Core Fixed Inc Gross Rank</i>			97	99	99	99	99	99	80	99	96	72	15		
AFL-CIO	271,780,575	3.0	1.9	5.5	7.5	5.2	4.2	4.1	8.2	0.6	3.6	2.4	1.6	6.3	Jun-91
<i>BBgBarc US Aggregate TR</i>			2.9	6.1	8.7	5.3	4.3	3.8	8.7	0.0	3.5	2.6	0.6	5.9	Jun-91
<i>eV US Core Fixed Inc Gross Rank</i>			99	75	90	89	92	80	88	16	76	87	15		
<b>Diversifying Equity</b>	<b>178,669,547</b>	<b>2.0</b>	<b>0.4</b>	<b>-12.7</b>	<b>-10.6</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>3.3</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>		
Parametric Defensive Equity	178,669,547	2.0	0.4	-12.7	-10.6	--	--	--	3.3	--	--	--	--	-6.4	Jul-18
<i>91 Day T-Bill +4%</i>			1.0	2.4	5.3	--	--	--	6.1	--	--	--	--	5.8	Jul-18
<b>Liquidity</b>	<b>1,799,245,251</b>	<b>20.2</b>	<b>2.5</b>	<b>2.6</b>	<b>4.0</b>	<b>3.2</b>	<b>--</b>	<b>--</b>	<b>4.9</b>	<b>1.8</b>	<b>1.5</b>	<b>--</b>	<b>--</b>		
<i>BBgBarc US Govt/Credit 1-3 Yr. TR</i>			1.2	2.9	4.2	2.9	--	--	4.0	1.6	0.8	--	--		
<i>eV US Short Duration Fixed Inc Gross Rank</i>			54	64	66	43	--	--	34	24	50	--	--		
DFA Short Credit	381,344,231	4.3	2.9	2.0	3.6	2.9	--	--	5.2	1.2	1.9	--	--	2.9	Nov-16
<i>ICE BofA 1-5 Yrs US Corp &amp; Govt TR</i>			1.8	3.8	5.3	3.5	--	--	5.1	1.4	1.3	--	--	3.2	Nov-16
<i>eV US Short Duration Fixed Inc Gross Rank</i>			38	80	81	80	--	--	21	93	26	--	--		
Insight Short Duration	814,518,772	9.1	3.4	2.2	4.1	3.0	--	--	4.7	1.7	1.5	--	--	2.8	Nov-16
<i>BBgBarc US Govt/Credit 1-3 Yr. TR</i>			1.2	2.9	4.2	2.9	--	--	4.0	1.6	0.8	--	--	2.6	Nov-16
<i>eV US Short Duration Fixed Inc Gross Rank</i>			26	78	64	69	--	--	45	38	50	--	--		
Sit Short Duration	603,382,248	6.8	0.7	4.0	4.7	4.0	--	--	4.9	2.5	1.3	--	--	3.5	Nov-16
<i>BBgBarc US Govt 1-3 Yr TR</i>			0.3	3.0	4.1	2.7	--	--	3.6	1.6	0.4	--	--	2.4	Nov-16
<i>eV US Short Duration Fixed Inc Gross Rank</i>			92	8	33	3	--	--	35	1	68	--	--		
<b>Total Cash</b>	<b>192,211,467</b>	<b>2.2</b>	<b>0.4</b>	<b>0.9</b>	<b>2.4</b>	<b>2.1</b>	<b>1.5</b>	<b>3.1</b>	<b>3.3</b>	<b>1.7</b>	<b>0.9</b>	<b>0.9</b>	<b>0.1</b>		
<i>91 Day T-Bills</i>			0.0	0.4	1.3	1.7	1.1	0.6	2.1	1.9	0.9	0.3	0.0		
Cash	192,006,578	2.2	0.4	0.9	2.6	2.2	1.6	3.1	3.4	1.7	0.9	0.9	0.1		
State Street Cash/Tax Reclaims	194,209	0.0	2.3	-0.8	-9.4	--	--	--	--	--	--	--	--		
Northern Trust Transition	10,681	0.0	2.0	3.5	5.6	--	--	--	--	--	--	--	--		

Individual closed end funds are not shown in performance summary table. Effective 3/1/2019 the custodian of record switched from State Street to Northern Trust. Wellington Real Total Return was liquidated 4/30/2020. \$894,159 in residual value is reflected in the Diversifying Fixed Income composite. State Street Cash/Tax Reclaims reflects \$-28,918 in cash and \$223,127 in potential tax reclaims at State Street after assets were transferred to Northern Trust. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

# Total Fund Performance Summary (Net of Fees)

Period Ending: June 30, 2020

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015	Inception	Inception Date
<b>Total Fund</b>	<b>8,927,337,198</b>	<b>100.0</b>	<b>7.4</b>	<b>-2.8</b>	<b>1.7</b>	<b>4.9</b>	<b>5.3</b>	<b>8.5</b>	<b>14.6</b>	<b>-2.7</b>	<b>13.9</b>	<b>6.9</b>	<b>2.1</b>		
<i>Policy Index</i>			6.0	-3.2	2.0	5.4	6.0	8.9	14.6	-0.9	13.7	8.9	0.6		
<b>Total Fund ex Overlay &amp; Cash</b>	<b>8,685,034,656</b>	<b>97.3</b>	<b>7.4</b>	<b>-2.7</b>	<b>1.8</b>	<b>5.0</b>	<b>5.3</b>	<b>8.5</b>	<b>14.4</b>	<b>-2.4</b>	<b>13.8</b>	<b>6.9</b>	<b>2.1</b>		
<i>Policy Index</i>			6.0	-3.2	2.0	5.4	6.0	8.9	14.6	-0.9	13.7	8.9	0.6		
<b>Growth</b>	<b>6,434,445,124</b>	<b>72.1</b>	<b>9.5</b>	<b>-4.3</b>	<b>1.2</b>	<b>5.8</b>	<b>6.4</b>	<b>--</b>	<b>18.4</b>	<b>-3.9</b>	<b>18.7</b>	<b>7.6</b>	<b>2.3</b>		
<i>Custom Growth Benchmark</i>			8.1	-6.1	0.7	6.2	7.2	--	19.3	-2.1	19.3	10.1	0.3		
<b>Total Domestic Equity</b>	<b>971,627,488</b>	<b>10.9</b>	<b>23.9</b>	<b>-4.9</b>	<b>1.7</b>	<b>7.7</b>	<b>7.9</b>	<b>13.1</b>	<b>26.1</b>	<b>-7.6</b>	<b>23.5</b>	<b>11.1</b>	<b>0.6</b>		
<i>Russell 3000</i>			22.0	-3.5	6.5	10.0	10.0	13.7	31.0	-5.2	21.1	12.7	0.5		
BlackRock Russell 1000 Index	198,853,668	2.2	21.8	-2.8	7.4	10.6	--	--	31.4	-4.8	--	--	--	10.7	Apr-17
<i>Russell 1000</i>			21.8	-2.8	7.5	10.6	--	--	31.4	-4.8	--	--	--	10.7	Apr-17
Jackson Square Partners	277,961,088	3.1	29.9	13.6	20.0	16.6	11.8	16.1	27.3	-2.4	28.7	-4.8	5.6	10.7	May-05
<i>Russell 1000 Growth</i>			27.8	9.8	23.3	19.0	15.9	17.2	36.4	-1.5	30.2	7.1	5.7	11.5	May-05
Boston Partners	209,106,640	2.3	16.7	-16.9	-8.7	1.7	4.2	10.7	23.8	-8.9	19.7	14.7	-4.2	9.4	Jun-95
<i>Russell 1000 Value</i>			14.3	-16.3	-8.8	1.8	4.6	10.4	26.5	-8.3	13.7	17.3	-3.8	8.5	Jun-95
Emerald Advisers	159,569,780	1.8	32.4	0.1	3.2	9.9	7.5	15.2	29.4	-10.7	28.0	9.4	3.5	12.6	Apr-03
<i>Russell 2000 Growth</i>			30.6	-3.1	3.5	7.9	6.9	12.9	28.5	-9.3	22.2	11.3	-1.4	11.0	Apr-03
Ceredex	126,136,312	1.4	17.4	-21.6	-18.9	-3.2	1.3	--	17.7	-11.8	10.7	29.1	-5.0	7.0	Nov-11
<i>Russell 2000 Value</i>			18.9	-23.5	-17.5	-4.3	1.3	--	22.4	-12.9	7.8	31.7	-7.5	7.0	Nov-11
<b>Total International Equity</b>	<b>1,549,422,307</b>	<b>17.4</b>	<b>18.4</b>	<b>-9.8</b>	<b>-3.1</b>	<b>2.1</b>	<b>2.4</b>	<b>5.9</b>	<b>23.2</b>	<b>-14.7</b>	<b>25.0</b>	<b>0.8</b>	<b>-1.6</b>		
<i>MSCI ACWI ex USA Gross</i>			16.3	-10.8	-4.4	1.6	2.7	5.5	22.1	-13.8	27.8	5.0	-5.3		
<i>MSCI EAFE Gross</i>			15.1	-11.1	-4.7	1.3	2.5	6.2	22.7	-13.4	25.6	1.5	-0.4		
<b>International Equity</b>	<b>946,717,190</b>	<b>10.6</b>	<b>18.5</b>	<b>-4.2</b>	<b>3.9</b>	<b>4.7</b>	<b>4.4</b>	<b>6.9</b>	<b>26.5</b>	<b>-13.9</b>	<b>24.8</b>	<b>0.8</b>	<b>-1.6</b>		
<i>MSCI ACWI ex USA Gross</i>			16.3	-10.8	-4.4	1.6	2.7	5.5	22.1	-13.8	27.8	5.0	-5.3		
Pyrford	442,003,290	5.0	12.5	-9.2	-2.7	1.8	2.8	--	21.6	-10.5	19.3	3.0	-3.3	2.1	May-14
<i>MSCI ACWI ex USA Value</i>			12.8	-19.4	-15.3	-4.0	-1.2	--	15.7	-14.0	22.7	8.9	-10.1	-1.9	May-14
William Blair	504,713,901	5.7	24.3	0.7	10.4	7.6	5.9	--	31.5	-17.1	30.4	-1.8	0.0	6.5	Oct-10
<i>MSCI ACWI ex USA Growth</i>			19.1	-2.6	5.8	6.1	5.6	--	27.3	-14.4	32.0	0.1	-1.3	5.2	Oct-10
<b>Emerging Markets Equity</b>	<b>602,705,117</b>	<b>6.8</b>	<b>18.3</b>	<b>-17.5</b>	<b>-12.3</b>	<b>-1.1</b>	<b>--</b>	<b>--</b>	<b>18.7</b>	<b>-15.7</b>	<b>--</b>	<b>--</b>	<b>--</b>		
<i>MSCI Emerging Markets</i>			18.1	-9.8	-3.4	1.9	--	--	18.4	-14.6	--	--	--		
PIMCO RAE Emerging Markets	287,988,049	3.2	16.7	-22.0	-18.6	-3.5	--	--	14.0	-12.6	--	--	--	-3.0	Feb-17
<i>MSCI Emerging Markets</i>			18.1	-9.8	-3.4	1.9	--	--	18.4	-14.6	--	--	--	4.4	Feb-17
TT Emerging Markets	314,717,068	3.5	19.9	-12.8	-5.7	--	--	--	24.0	-18.9	--	--	--	-0.6	Jul-17
<i>MSCI Emerging Markets</i>			18.1	-9.8	-3.4	--	--	--	18.4	-14.6	--	--	--	-0.1	Jul-17

Individual closed end funds are not shown in performance summary table. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

Total Fund  
Performance Summary (Net of Fees)

Period Ending: June 30, 2020

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015	Inception	Inception Date
<b>Total Global Equity</b>	<b>925,208,955</b>	<b>10.4</b>	<b>21.0</b>	<b>2.0</b>	<b>10.0</b>	<b>9.0</b>	<b>8.7</b>	<b>10.0</b>	<b>27.9</b>	<b>-8.5</b>	<b>22.8</b>	<b>6.9</b>	<b>1.6</b>		
MSCI ACWI			19.2	-6.3	2.1	6.1	6.5	9.2	26.6	-9.4	24.0	7.9	-2.4		
Artisan Partners	511,057,045	5.7	27.8	11.3	22.5	15.1	13.5	--	36.0	-8.6	31.9	4.8	8.4	13.7	Oct-12
MSCI ACWI			19.2	-6.3	2.1	6.1	6.5	--	26.6	-9.4	24.0	7.9	-2.4	8.2	Oct-12
First Eagle	414,027,367	4.6	13.4	-7.8	-2.6	2.7	4.6	--	20.1	-8.3	14.3	10.9	-0.6	6.3	Jan-11
MSCI ACWI			19.2	-6.3	2.1	6.1	6.5	--	26.6	-9.4	24.0	7.9	-2.4	7.2	Jan-11
<b>Private Credit</b>	<b>636,279,788</b>	<b>7.1</b>	<b>-3.0</b>	<b>-3.1</b>	<b>1.1</b>	<b>5.4</b>	<b>6.5</b>	<b>10.7</b>	<b>7.7</b>	<b>8.3</b>	<b>10.4</b>	<b>6.9</b>	<b>11.6</b>		
ICE BofAML High Yield Master II +2%			10.1	-3.8	0.9	5.0	6.7	8.6	16.7	-0.3	9.6	19.8	-2.7		
<b>Total High Yield</b>	<b>197,837,624</b>	<b>2.2</b>	<b>6.1</b>	<b>-5.5</b>	<b>-1.6</b>	<b>2.3</b>	<b>3.5</b>	<b>6.0</b>	<b>15.4</b>	<b>-3.6</b>	<b>6.1</b>	<b>13.9</b>	<b>-3.9</b>		
ICE BofAML High Yield Master II			9.6	-4.8	-1.1	2.9	4.6	6.5	14.4	-2.3	7.5	17.5	-4.6		
Allianz Global Investors	197,837,624	2.2	6.1	-5.5	-1.6	2.3	3.5	5.9	15.4	-3.6	6.1	13.9	-3.9	6.2	Apr-00
ICE BofAML High Yield Master II			9.6	-4.8	-1.1	2.9	4.6	6.5	14.4	-2.3	7.5	17.5	-4.6	6.7	Apr-00
<b>Total Real Estate</b>	<b>690,951,813</b>	<b>7.7</b>	<b>-3.2</b>	<b>-4.1</b>	<b>-1.6</b>	<b>5.6</b>	<b>6.2</b>	<b>10.8</b>	<b>8.1</b>	<b>7.4</b>	<b>11.0</b>	<b>4.8</b>	<b>12.4</b>		
Real Estate Benchmark			-0.1	-2.3	0.9	5.2	6.5	9.9	7.7	6.7	7.1	6.7	8.3		
NCREIF-ODCE			-1.6	-0.6	2.2	5.7	7.3	10.8	5.3	8.3	7.6	8.8	15.0		
NCREIF Property Index			-1.0	-0.3	2.7	5.4	6.8	9.7	6.4	6.7	7.0	8.0	13.3		
Adelante	68,077,283	0.8	10.7	-15.4	-9.8	1.9	4.3	9.6	27.5	-5.5	7.2	3.6	4.6	8.9	Sep-01
Wilshire REIT			10.6	-17.8	-12.3	0.2	4.0	9.2	25.8	-4.8	4.2	7.2	4.2	9.0	Sep-01
<b>Private Equity</b>	<b>1,018,666,872</b>	<b>11.4</b>	<b>-3.0</b>	<b>-0.8</b>	<b>3.8</b>	<b>7.8</b>	<b>7.9</b>	<b>10.0</b>	<b>8.4</b>	<b>12.1</b>	<b>11.9</b>	<b>8.9</b>	<b>9.9</b>		
S&P 500 Index +4% (Lagged)			-18.7	-10.5	-3.2	9.3	11.0	14.9	8.4	22.6	23.3	20.0	3.4		
<b>Risk Parity</b>	<b>444,450,277</b>	<b>5.0</b>	<b>7.2</b>	<b>-3.3</b>	<b>1.2</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>		
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			12.7	-2.3	3.4	--	--	--	--	--	--	--	--		
AQR Global Risk Premium-EL	223,929,256	2.5	5.1	-5.4	-0.2	--	--	--	--	--	--	--	--	7.8	Jan-19
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			12.7	-2.3	3.4	--	--	--	--	--	--	--	--	10.3	Jan-19
PanAgora Risk Parity Multi Asset	220,521,021	2.5	9.4	-1.2	2.7	--	--	--	--	--	--	--	--	8.8	Feb-19
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			12.7	-2.3	3.4	--	--	--	--	--	--	--	--	6.3	Feb-19

Individual closed end funds are not shown in performance summary table. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

Total Fund  
Performance Summary (Net of Fees)

Period Ending: June 30, 2020

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2019	2018	2017	2016	2015	Inception	Inception Date
<b>Diversifying</b>	<b>451,344,281</b>	<b>5.1</b>	<b>1.6</b>	<b>-3.6</b>	<b>-1.3</b>	<b>0.7</b>	<b>0.2</b>	<b>1.5</b>	<b>6.8</b>	<b>-2.3</b>	<b>2.6</b>	<b>0.8</b>	<b>-1.8</b>		
<i>Custom Diversifying Benchmark</i>			1.9	2.6	4.5	4.0	3.9	3.8	6.1	1.4	4.7	4.1	2.5		
<b>Diversifying Fixed Income</b>	<b>272,674,734</b>	<b>3.1</b>	<b>2.0</b>	<b>0.4</b>	<b>2.7</b>	<b>2.6</b>	<b>2.4</b>	<b>2.9</b>	<b>8.3</b>	<b>-2.0</b>	<b>2.6</b>	<b>2.3</b>	<b>1.1</b>		
AFL-CIO	271,780,575	3.0	1.8	5.3	7.0	4.7	3.8	3.6	7.8	0.2	3.2	1.9	1.1	5.9	Jun-91
<i>BBgBarc US Aggregate TR</i>			2.9	6.1	8.7	5.3	4.3	3.8	8.7	0.0	3.5	2.6	0.6	5.9	Jun-91
<b>Diversifying Equity</b>	<b>178,669,547</b>	<b>2.0</b>	<b>0.3</b>	<b>-12.9</b>	<b>-11.0</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>3.0</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>		
Parametric Defensive Equity	178,669,547	2.0	0.3	-12.9	-11.0	--	--	--	3.0	--	--	--	--	-6.6	Jul-18
<i>91 Day T-Bill +4%</i>			1.0	2.4	5.3	--	--	--	6.1	--	--	--	--	5.8	Jul-18
<b>Liquidity</b>	<b>1,799,245,251</b>	<b>20.2</b>	<b>2.4</b>	<b>2.6</b>	<b>3.9</b>	<b>3.1</b>	<b>--</b>	<b>--</b>	<b>4.8</b>	<b>1.7</b>	<b>1.4</b>	<b>--</b>	<b>--</b>		
<i>BBgBarc US Govt/Credit 1-3 Yr. TR</i>			1.2	2.9	4.2	2.9	--	--	4.0	1.6	0.8	--	--		
DFA Short Credit	381,344,231	4.3	2.9	1.9	3.5	2.8	--	--	5.2	1.1	1.8	--	--	2.8	Nov-16
<i>ICE BofA 1-5 Yrs US Corp &amp; Govt TR</i>			1.8	3.8	5.3	3.5	--	--	5.1	1.4	1.3	--	--	3.2	Nov-16
Insight Short Duration	814,518,772	9.1	3.4	2.2	4.0	3.0	--	--	4.6	1.7	1.5	--	--	2.8	Nov-16
<i>BBgBarc US Govt/Credit 1-3 Yr. TR</i>			1.2	2.9	4.2	2.9	--	--	4.0	1.6	0.8	--	--	2.6	Nov-16
Sit Short Duration	603,382,248	6.8	0.7	3.9	4.5	3.8	--	--	4.7	2.3	1.1	--	--	3.4	Nov-16
<i>BBgBarc US Govt 1-3 Yr TR</i>			0.3	3.0	4.1	2.7	--	--	3.6	1.6	0.4	--	--	2.4	Nov-16
<b>Total Cash</b>	<b>192,211,467</b>	<b>2.2</b>	<b>0.4</b>	<b>0.9</b>	<b>2.4</b>	<b>2.1</b>	<b>1.5</b>	<b>3.0</b>	<b>3.3</b>	<b>1.7</b>	<b>0.9</b>	<b>0.9</b>	<b>0.1</b>		
<i>91 Day T-Bills</i>			0.0	0.4	1.3	1.7	1.1	0.6	2.1	1.9	0.9	0.3	0.0		
Cash	192,006,578	2.2	0.4	0.9	2.6	2.2	1.6	3.1	3.4	1.7	0.9	0.9	0.1		
State Street Cash/Tax Reclaims	194,209	0.0	2.3	-0.8	-9.4	--	--	--	--	--	--	--	--		
Northern Trust Transition	10,681	0.0	2.0	3.5	5.6	--	--	--	--	--	--	--	--		

Individual closed end funds are not shown in performance summary table. Effective 3/1/2019 the custodian of record switched from State Street to Northern Trust. Wellington Real Total Return was liquidated 4/30/2020. \$894,159 in residual value is reflected in the Diversifying Fixed Income composite. State Street Cash/Tax Reclaims reflects \$-28,918 in cash and \$223,127 in potential tax reclaims at State Street after assets were transferred to Northern Trust. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

Total Fund  
Closed End Funds - Investment Summary

Period Ending: June 30, 2020

StepStone Group Analysis (*)												
Closing Date	Manager Name/Fund Name	Estimated Market Value as of 6/30/20 <sup>1</sup>	Total Commitment	% Called	Contributed Capital	Current Qtr. Change in Contributed Capital	Current Qtr. Change in Distributed Capital	Total Distributions	Remaining Commitment	Distrib./ Paid-In (DPI) <sup>2</sup>	Tot. Value/ Paid-In (TVPI) <sup>3</sup>	Latest Valuation
<b>Private Credit</b>												
8/31/2015	Angelo Gordon Energy Credit Opp. <sup>4</sup>	\$2,696,354	\$16,500,000	114%	\$18,750,000	\$0	\$0	\$18,829,566	\$2,319,783	1.00	1.15	3/31/2020
12/18/2017	Stepstone CC Opportunities Fund	\$603,281,324	\$920,000,000	68%	\$628,840,336	\$104,356,400	\$20,000,226	\$41,561,858	\$312,624,565	0.07	1.03	3/31/2020
8/1/2012	Torchlight IV	\$9,640,793	\$60,000,000	141%	\$84,866,971	\$0	\$0	\$104,809,507	\$0	1.23	1.35	3/31/2020
3/12/2015	Torchlight V	\$20,661,317	\$75,000,000	80%	\$60,000,000	\$0	\$0	\$55,039,262	\$15,000,000	0.92	1.26	3/31/2020
<b>Total Private Credit</b>		<b>\$636,279,788</b>										
% of Portfolio (Market Value)		7.1%										

\*All Data provided by StepStone Group

<sup>1</sup>Latest valuation + capital calls - distributions

<sup>2</sup>(DPI) is equal to (capital returned / capital called)

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

<sup>4</sup>Capital has been fully called and fund is in redemption.

Total Fund  
Closed End Funds - Investment Summary

Period Ending: June 30, 2020

Verus Internal Analysis													
Inception Date	Manager Name/Fund Name	Estimated Market Value as of 6/30/2020 <sup>1</sup>	Total Commitment	Total % Called	Capital Called	Current Qtr. Capital Called	Current Qtr. Distributions	Total Distributions <sup>8</sup>	Remaining Commitment	Distrib./Paid-In (DPI) <sup>2</sup>	Tot. Value/Paid-In (TVPI) <sup>3</sup>	Latest Valuation	
<b>Real Estate</b>													
1/23/2012	Angelo Gordon Realty Fund VIII <sup>7</sup>	\$21,305,986	\$80,000,000	94%	\$75,401,855	\$0	\$0	\$98,433,174	\$12,334,302	1.31	1.59	3/31/2020	
12/8/2014	Angelo Gordon Realty Fund IX	\$61,900,590	\$65,000,000	93%	\$60,125,000	\$0	\$0	\$15,275,000	\$7,572,500	0.25	1.28	3/31/2020	
6/23/2005	DLJ RECP III	\$17,453,734	\$75,000,000	134%	\$100,709,313 <sup>4</sup>	\$0	\$0	\$69,364,915	\$4,031,338	0.69	0.86	3/31/2020	
2/11/2008	DLJ RECP IV	\$69,157,176	\$100,000,000	130%	\$129,892,605 <sup>5</sup>	\$0	\$0	\$89,287,687	\$3,162,610	0.69	1.22	3/31/2020	
7/1/2014	DLJ RECP V	\$46,752,201	\$75,000,000	114%	\$85,612,038 <sup>6</sup>	\$0	\$0	\$58,913,882	\$20,556,753	0.69	1.23	3/31/2020	
3/19/2019	DLJ RECP VI	\$24,031,389	\$50,000,000	51%	\$25,335,866	\$0	\$0	\$220,742	\$25,050,462	0.01	0.96	3/31/2020	
6/17/1998	Hearthstone II <sup>7</sup>	-\$359	\$25,000,000	80%	\$19,932,386	\$0	\$0	\$27,473,662	\$0	1.38	1.38	3/31/2020	
6/30/2013	Invesco Real Estate III <sup>7</sup>	\$2,104,525	\$35,000,000	93%	\$32,386,423	\$0	\$0	\$42,502,805	\$2,613,577	1.31	1.38	6/30/2020	
6/30/2014	Invesco Real Estate IV <sup>7</sup>	\$17,067,337	\$35,000,000	87%	\$30,546,401	\$737,662	\$0	\$22,353,948	\$4,453,599	0.73	1.29	6/30/2020	
6/30/2013	Invesco Real Estate V	\$31,781,063	\$75,000,000	48%	\$36,096,852	\$10,184,855	\$0	\$4,723,439	\$42,644,651 <sup>9</sup>	0.13	1.01	6/30/2020	
7/16/2013	LaSalle Income & Growth VI <sup>7</sup>	\$25,148,186	\$75,000,000	95%	\$71,428,571	\$0	\$0	\$81,401,001	\$3,571,429	1.14	1.49	3/31/2020	
2/28/2017	LaSalle Income & Growth VII	\$53,275,553	\$75,000,000	93%	\$70,098,608	\$0	\$0	\$31,765,322	\$4,901,392	0.45	1.21	3/31/2020	
7/3/2013	Long Wharf Fund IV <sup>7</sup>	\$2,845,126	\$25,000,000	100%	\$25,000,000	\$0	\$0	\$33,793,648	\$0	1.35	1.47	6/30/2020	
9/30/2016	Long Wharf Fund V <sup>7</sup>	\$40,590,821	\$50,000,000	100%	\$50,000,000	\$0	\$0	\$19,764,653	\$0	0.40	1.21	6/30/2020	
6/27/2019	Long Wharf Fund VI	\$5,630,368	\$50,000,000	14%	\$6,769,078	\$376,611	\$0	\$0	\$43,230,922	0.00	0.83	6/30/2020	
12/31/2011	Oaktree REOF V <sup>7</sup>	\$4,084,889	\$50,000,000	100%	\$50,000,000	\$0	\$0	\$75,380,955	\$5,000,000 <sup>9</sup>	1.51	1.59	6/30/2020	
9/30/2013	Oaktree REOF VI <sup>7</sup>	\$28,010,799	\$80,000,000	100%	\$80,000,000	\$0	\$0	\$84,010,175	\$18,400,000 <sup>9</sup>	1.05	1.40	6/30/2020	
4/1/2015	Oaktree REOF VII	\$50,630,348	\$65,000,000	96%	\$62,400,000	\$0	\$0	\$27,040,000	\$21,515,000 <sup>9</sup>	0.43	1.24	6/30/2020	
11/10/2013	Paulson Real Estate Fund II <sup>7</sup>	\$26,276,470	\$20,000,000	97%	\$19,345,623	\$0	\$0	\$6,796,190	\$654,377	0.35	1.71	3/31/2020	
1/25/2012	Siguler Guff DREOF	\$28,974,111	\$75,000,000	93%	\$69,375,000	\$0	\$50,944	\$94,169,190	\$5,625,000	1.36	1.78	3/31/2020	
8/31/2013	Siguler Guff DREOF II	\$46,382,584	\$70,000,000	89%	\$61,985,000	\$0	\$0	\$38,524,419	\$8,015,000	0.62	1.37	3/31/2020	
1/27/2016	Siguler Guff DREOF II Co-Inv	\$19,471,633	\$25,000,000	82%	\$20,537,862	\$0	\$626,876	\$8,948,350	\$4,462,138	0.44	1.38	3/31/2020	
<b>Total Closed End Real Estate</b>		<b>\$622,874,530</b>	<b>\$1,275,000,000</b>	<b>93%</b>	<b>\$1,182,978,483</b>	<b>\$11,299,128</b>	<b>\$677,820</b>	<b>\$930,143,156</b>	<b>\$237,795,049</b>	<b>0.79</b>	<b>1.31</b>		
<b>% of Portfolio (Market Value)</b>		<b>7.0%</b>											

<sup>1</sup>Latest valuation + capital calls - distributions

<sup>2</sup>(DPI) is equal to (capital returned / capital called)

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

<sup>4</sup>Includes \$7,360,987 in management fees charged outside the fund.

<sup>5</sup>Includes \$11,322,966 in management fees charged outside the fund.

<sup>6</sup>Includes \$986,559 in management fees charged outside the fund.

<sup>7</sup>Capital has been fully called and fund is in redemption.

<sup>8</sup>Total distributions may include recallable distributions

<sup>9</sup>Remianing commitment includes recallable distributions



Total Fund  
Closed End Funds - Investment Summary

Period Ending: June 30, 2020

StepStone Group Analysis (\*)

Closing Date	Manager Name/Fund Name	Estimated Market Value as of 6/30/20 <sup>1</sup>	Total Commitment	Total % Called	Contributed Capital	Current Qtr. Change in Contributed Capital	Current Qtr. Change in Distributed Capital	Total Distributions	Remaining Commitment	Distrib./Paid-In (DPI) <sup>2</sup>	Tot. Value/Paid-In (TVPI) <sup>3</sup>	Latest Valuation
<b>Private Equity &amp; Venture Capital</b>												
2/11/2004	Adams Street Partners	\$133,183,342	\$210,000,000	89%	\$186,850,625	\$57,500	\$8,119,149	\$166,250,050	\$23,149,375	0.89	1.60	3/31/2020
1/15/2009	Adams Street Partners II	\$5,421,212	\$30,000,000	95%	\$28,365,000	\$0	\$0	\$42,440,681	\$1,635,000	1.50	1.69	12/31/2019
9/21/2012	Adams Street Partners - Fund 5	\$20,308,948	\$40,000,000	77%	\$30,845,875	\$0	\$884,703	\$18,066,140	\$9,154,125	0.59	1.24	12/31/2019
1/18/1996	Adams Street Partners - BPF	\$1,675,988	\$59,565,614	97%	\$57,517,409	\$0	\$0	\$102,731,103	\$2,048,205	1.79	1.82	3/31/2020
3/31/2016	Adams Street Venture Innovation	\$61,346,909	\$75,000,000	68%	\$51,037,500	\$0	\$0	\$0	\$23,962,500	0.00	1.20	12/31/2019
5/18/2018	AE Industrial Partners Fund II, LP	\$11,243,771	\$35,000,000	33%	\$11,447,209	\$3,525,354	\$0	\$0	\$23,552,791	0.00	0.98	3/31/2020
11/27/2013	Aether Real Assets III	\$16,825,094	\$25,000,000	96%	\$23,989,908	\$393,261	\$93,323	\$3,907,122	\$3,228,971	0.16	0.86	3/31/2020
11/30/2013	Aether Real Assets III Surplus	\$43,258,881	\$50,000,000	102%	\$50,911,030	\$427,559	\$7,913	\$8,973,151	\$2,346,552	0.18	1.03	3/31/2020
1/30/2016	Aether Real Assets IV	\$33,268,960	\$50,000,000	78%	\$39,090,752	\$0	\$0	\$2,271,703	\$13,174,389	0.06	0.91	3/31/2020
4/30/2004	Bay Area Equity Fund I <sup>4</sup>	\$2,398,356	\$10,000,000	100%	\$10,000,000	\$0	\$0	\$37,018,019	\$0	3.70	3.94	3/31/2020
6/29/2009	Bay Area Equity Fund II <sup>4</sup>	\$9,619,852	\$10,000,000	100%	\$10,000,000	\$0	\$0	\$3,684,910	\$0	0.37	1.33	3/31/2020
6/30/2013	Commonfund	\$28,580,649	\$50,000,000	90%	\$45,024,995	\$250,000	\$250,000	\$12,160,771	\$4,975,005	0.27	0.90	3/31/2020
7/15/2005	EIF US Power Fund II <sup>4</sup>	\$5,922,810	\$50,000,000	130%	\$65,029,556	\$0	\$1,351,351	\$74,001,371	\$0	1.14	1.23	12/31/2019
5/31/2007	EIF US Power Fund III <sup>4</sup>	\$14,139,376	\$65,000,000	110%	\$71,409,097	\$0	\$0	\$73,638,258	\$0	1.03	1.23	3/31/2020
11/28/2011	EIF US Power Fund IV	\$39,444,043	\$50,000,000	128%	\$63,787,701	\$354,495	\$354,495	\$31,372,533	\$4	0.49	1.11	3/31/2020
11/28/2016	EIF US Power Fund V	\$47,104,612	\$50,000,000	98%	\$49,088,987	\$780,602	\$12,500	\$9,229,621	\$7,911,452	0.19	1.15	3/31/2020
2/21/2019	Genstar Capital Partners IX, L.P.	\$10,974,985	\$50,000,000	25%	\$12,306,038	\$0	\$295,914	\$980,160	\$38,674,122	0.08	0.97	3/31/2020
11/18/2009	Oaktree PIF 2009	\$1,131,116	\$40,000,000	87%	\$34,816,729	\$0	\$559,908	\$45,799,610	\$6,308,961	1.32	1.35	3/31/2020
5/2/2013	Ocean Avenue Fund II	\$28,572,744	\$30,000,000	90%	\$27,000,000	\$900,000	\$0	\$16,039,096	\$3,000,000	0.59	1.65	3/31/2020
4/15/2016	Ocean Avenue Fund III	\$56,366,582	\$50,000,000	87%	\$43,500,000	\$0	\$0	\$10,000,000	\$6,500,000	0.23	1.53	3/31/2020
11/30/2007	Paladin III	\$28,104,538	\$25,000,000	136%	\$34,036,377	\$268,524	\$12,973,727	\$37,895,846	\$459,904	1.11	1.94	3/31/2020
8/22/2011	Pathway 6	\$35,961,207	\$40,000,000	96%	\$38,531,323	\$277,405	\$2,032,974	\$29,243,258	\$3,854,759	0.76	1.69	12/31/2019
7/10/2013	Pathway 7	\$73,529,015	\$70,000,000	96%	\$66,950,823	\$1,567,076	\$4,230,705	\$31,314,250	\$6,232,085	0.47	1.57	12/31/2019
11/23/2015	Pathway 8	\$52,376,344	\$50,000,000	80%	\$40,082,065	\$1,223,610	\$0	\$5,748,233	\$12,222,627	0.14	1.45	12/31/2019
1/19/1999	Pathway	\$11,914,199	\$125,000,000	100%	\$125,272,699	\$320,124	\$2,924,817	\$177,269,811	\$10,680,014	1.42	1.51	12/31/2019
7/31/2009	Pathway 2008	\$18,226,421	\$30,000,000	98%	\$29,281,938	\$44,707	\$892,267	\$30,890,649	\$3,194,311	1.05	1.68	12/31/2019
6/3/2014	Siguler Guff CCCERA Opportunities	\$185,464,139	\$200,000,000	83%	\$165,583,208	\$3,141,926	\$0	\$66,430,997	\$38,097,500	0.40	1.52	12/31/2019
11/30/2016	Siguler Guff Secondary Opportunities <sup>4</sup>	\$66,766	\$50,000,000	60%	\$29,999,802	\$0	\$0	\$42,724,959	\$20,000,198	1.42	1.43	12/31/2019
5/18/2018	Siris Partners IV, L.P.	\$15,491,392	\$35,000,000	54%	\$18,842,410	\$2,637,925	\$0	\$0	\$16,157,590	0.00	0.82	3/31/2020
6/28/2019	TPG Healthcare Partners, L.P.	\$1,924,961	\$24,000,000	12%	\$2,960,719	\$2,253,280	\$0	\$0	\$21,039,281	-	-	3/31/2020
5/24/2019	Trident VIII, L.P.	\$2,844,950	\$40,000,000	7%	\$2,868,551	\$2,868,551	\$0	\$0	\$37,131,449	-	-	-
12/8/2015	Wastewater Opportunity Fund	\$21,974,711	\$25,000,000	95%	\$23,769,697	\$0	\$0	\$2,031,922	\$1,252,530	0.09	1.01	3/31/2020
<b>Total Private Equity and Venture Capital</b>		<b>\$1,018,666,872</b>	<b>\$1,743,565,614</b>	<b>85%</b>	<b>\$1,490,198,023</b>	<b>\$21,291,899</b>	<b>\$34,983,747</b>	<b>\$1,082,114,225</b>	<b>\$339,943,699</b>	<b>0.73</b>	<b>1.41</b>	

% of Portfolio (Market Value) 11.4%

\* All Data provided by StepStone Group

<sup>1</sup>Latest valuation + capital calls - distributions

<sup>2</sup>(DPI) is equal to (capital returned / capital called)

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

<sup>4</sup>Capital has been fully called and fund is in redemption.



Total Fund  
Closed End Funds - IRR Summary

Period Ending: June 30, 2020

Private Credit	Inception	Fund Level (G) <sup>2</sup>	CCCERA (G)	Fund Level (N) <sup>2,3</sup>	CCCERA (N) <sup>3</sup>	IRR Date
Angelo Gordon Energy Cred Opp. <sup>4</sup>	09/24/2015	-	-	-	6.5%	03/31/2020
Stepstone CC Opportunities Fund	02/02/2018	-	4.0%	-	3.1%	03/31/2020
Torchlight IV	08/01/2012	12.5%	12.9%	9.9%	10.6%	03/31/2020
Torchlight V	03/12/2015	16.1%	16.2%	10.9%	10.9%	03/31/2020

Real Estate	Inception	Fund Level (G) <sup>2</sup>	CCCERA (G)	Fund Level (N) <sup>2,3</sup>	CCCERA (N) <sup>3</sup>	IRR Date
Angelo Gordon VIII <sup>4</sup>	01/23/2012	-	-	-	14.5%	03/31/2020
Angelo Gordon IX	12/08/2014	-	-	-	9.7%	03/31/2020
DLJ RECP III	06/23/2005	0.0%	0.0%	-3.0%	-2.0%	03/31/2020
DLJ RECP IV	02/11/2008	5.0%	5.0%	3.0%	4.0%	03/31/2020
DLJ RECP V	07/01/2014	20.0%	20.0%	10.0%	10.0%	03/31/2020
DLJ RECP VI <sup>1</sup>	03/19/2019	-	-	-	-	-
Hearthstone II <sup>4</sup>	06/17/1998	-	30.1%	-	30.1%	03/31/2020
Invesco Fund III <sup>4</sup>	06/30/2013	15.1%	-	12.0%	-	03/31/2020
Invesco Fund IV <sup>4</sup>	06/30/2014	17.0%	-	13.4%	-	03/31/2020
Invesco Fund V	02/20/2019	15.9%	-	12.5%	-	03/31/2020
LaSalle Income & Growth VI <sup>4</sup>	07/16/2013	13.9%	13.9%	11.5%	11.6%	03/31/2020
LaSalle Income & Growth VII	02/28/2017	10.0%	10.0%	8.0%	8.0%	03/31/2020
Long Wharf IV <sup>4</sup>	07/03/2013	16.7%	16.8%	12.3%	12.3%	06/30/2020
Long Wharf V <sup>4</sup>	09/30/2016	11.6%	12.3%	8.3%	8.8%	06/30/2020
Long Wharf VI	06/27/2019	-3.5%	-1.1%	-23.7%	-7.5%	06/30/2020
Oaktree REOF V <sup>4</sup>	12/31/2011	16.7%	-	12.3%	-	06/30/2020
Oaktree REOF VI <sup>4</sup>	09/30/2013	13.2%	-	8.9%	-	06/30/2020
Oaktree REOF VII	04/01/2015	31.5%	-	19.0%	-	06/30/2020
Paulson <sup>4</sup>	11/10/2013	-	-	13.8%	-	12/31/2019
Siguler Guff I	01/25/2012	13.7%	16.4%	12.2%	13.3%	03/31/2020
Siguler Guff II	08/31/2013	11.3%	11.3%	9.9%	9.0%	03/31/2020
Siguler Guff DREOF II Co-Inv	01/27/2016	13.5%	13.8%	12.5%	10.7%	03/31/2020

<sup>1</sup>Manager has yet to report IRR figure.

<sup>2</sup>Fund level data includes CCCERA and all other fund investors.

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

<sup>4</sup>Capital has been fully called and fund is in redemption.

Total Fund  
Closed End Funds - IRR Summary

Period Ending: June 30, 2020

Private Equity & Venture Capital	Closing Date	Fund Level (G) <sup>2</sup>	CCCERA (G)	Fund Level (N) <sup>2,3</sup>	CCCERA (N) <sup>3</sup>	IRR Date
Adams Street Partners	2/11/2004	-	12.0%	-	9.6%	3/31/2020
Adams Street Partners II	12/31/2008	-	17.8%	-	14.1%	3/31/2020
Adams Street Partners - Fund 5	12/31/2008	-	6.5%	-	3.9%	3/31/2020
Adams Street Partners Venture	1/18/1996	-	19.4%	-	15.3%	3/31/2020
Adams Street Partners - BPF	3/31/2016	-	14.2%	-	11.6%	3/31/2020
AE Industrial Partners Fund II, LP <sup>1</sup>	5/18/2018	-	-	-	-	-
Aether Real Assets III	11/27/2013	-0.8%	-0.8%	-4.5%	-4.5%	3/31/2020
Aether Real Assets III Surplus	11/30/2013	2.7%	2.7%	0.7%	0.7%	3/31/2020
Aether Real Assets IV	1/30/2016	0.2%	20.0%	-5.0%	-5.0%	3/31/2020
Bay Area Equity Fund I <sup>9</sup>	11/26/2003	31.5%	31.5%	23.1%	23.1%	3/31/2020
Bay Area Equity Fund II <sup>9</sup>	11/26/2003	8.8%	8.8%	4.2%	4.2%	3/31/2020
CommonFund	6/30/2013	-	-	-	11.4%	3/31/2020
Energy Investor Fund II <sup>9</sup>	7/15/2005	6.3%	5.9%	3.7%	3.3%	3/31/2020
Energy Investor Fund III <sup>9</sup>	5/31/2007	6.0%	6.0%	3.5%	3.5%	3/31/2020
Energy Investor Fund IV	8/31/2010	4.9%	5.0%	1.4%	1.2%	3/31/2020
Energy Investor Fund V	11/28/2016	16.4%	13.4%	11.7%	8.8%	3/31/2020
Genstar Capital Partners IX, L.P. <sup>1</sup>	2/21/2019	-	-	-	-	-
Oaktree PIF 2009	2/28/2010	6.7%	-	6.5%	-	3/31/2020
Ocean Avenue II	8/15/2013	-	-	14.7%	-	3/31/2020
Ocean Avenue III	4/15/2016	-	-	26.1%	-	3/31/2020
Paladin III	11/30/2007	20.6%	-	12.2%	-	3/31/2020
Pathway 6	8/22/2011	15.0%	15.0%	12.5%	12.5%	3/31/2020
Benchmark <sup>4</sup>		13.1%	-	-	-	3/31/2020
Pathway 7	7/10/2013	15.3%	15.3%	13.0%	13.0%	3/31/2020
Benchmark <sup>5</sup>		12.4%	-	-	-	3/31/2020
Pathway 8	11/23/2015	16.1%	16.4%	14.3%	14.8%	3/31/2020
Benchmark <sup>6</sup>		10.0%	-	-	-	3/31/2020
Pathway Private Equity Fund	1/19/1999	10.1%	10.1%	8.2%	8.2%	3/31/2020
Benchmark <sup>7</sup>		10.2%	-	-	-	3/31/2020
Pathway Private Equity Fund 2008	7/31/2009	13.5%	13.5%	11.0%	11.0%	3/31/2020
Benchmark <sup>8</sup>		12.3%	-	-	-	3/31/2020
Siguler Guff CCCERA Opportunities	6/3/2014	16.9%	17.5%	16.3%	14.8%	3/31/2020
Siguler Guff Secondary Opportunities <sup>9</sup>	8/31/2013	55.4%	118.5%	49.5%	69.1%	3/31/2020
Siris Partners IV, L.P. <sup>1</sup>	5/18/2018	-	-	-	-	-
TPG Healthcare Partners, L.P. <sup>1</sup>	6/28/2019	-	-	-	-	-
Trident VIII, L.P. <sup>1</sup>	5/24/2019	-	-	-	-	-
Wastewater Opportunity Fund	12/8/2015	6.5%	-	0.8%	-	3/31/2020

<sup>1</sup>Manager has yet to report IRR figure.

<sup>2</sup>Fund level data includes CCCERA and all other fund investors.

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

<sup>4</sup>Private IQ global all private equity median pooled return for vintage years 2011-2014, as of March 31, 2020.

<sup>5</sup>Private IQ global all private equity median pooled return for vintage years 2012-2016, as of March 31, 2020.

<sup>6</sup>Private IQ global all private equity median pooled return for vintage years 2015-2018, as of March 31, 2020.

<sup>7</sup>Private IQ global all private equity median pooled return for vintage years 1999-2011, as of March 31, 2020.

<sup>8</sup>Private IQ global all private equity median pooled return for vintage years 2008-2014, as of March 31, 2020.

<sup>9</sup>Capital has been fully called and fund is in redemption.

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

Period Ending: June 30, 2020

	3 Years										
	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
BlackRock Russell 1000 Index	10.61%	-0.03%	17.39%	-0.03%	1.00	0.02%	1.00	0.51	-1.89	99.84%	99.99%
Jackson Square Partners	16.64%	-2.36%	17.68%	-1.79%	0.97	4.48%	0.94	0.85	-0.53	89.98%	99.10%
Boston Partners	1.68%	-0.14%	19.12%	-0.23%	1.05	2.75%	0.98	0.00	-0.05	104.96%	103.13%
Emerald Advisers	9.88%	2.02%	23.68%	1.93%	1.01	4.65%	0.96	0.35	0.43	105.07%	97.81%
Ceredex	-3.20%	1.15%	23.21%	0.99%	0.96	4.98%	0.96	-0.21	0.23	96.70%	96.45%
Pyrford	1.75%	5.70%	12.89%	4.53%	0.70	6.51%	0.91	0.01	0.88	76.60%	70.10%
William Blair	7.59%	1.52%	16.46%	1.08%	1.07	3.32%	0.96	0.36	0.46	111.71%	102.09%
PIMCO RAE Emerging Markets	-3.53%	-5.42%	21.22%	-5.63%	1.11	5.61%	0.94	-0.24	-0.97	95.52%	112.57%
Artisan Partners	15.09%	8.96%	16.05%	9.41%	0.93	5.67%	0.88	0.84	1.58	125.97%	82.88%
First Eagle	2.74%	-3.40%	12.63%	-1.94%	0.76	4.60%	0.96	0.09	-0.74	60.22%	80.60%
Allianz Global Investors	2.30%	-0.64%	7.66%	-0.19%	0.85	2.05%	0.96	0.08	-0.31	87.20%	93.59%
Adelante	1.86%	1.63%	16.90%	1.65%	0.93	1.93%	0.99	0.01	0.85	95.53%	91.44%
AFL-CIO	4.71%	-0.61%	3.07%	-0.14%	0.91	0.79%	0.94	0.99	-0.78	86.52%	85.69%

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

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

Period Ending: June 30, 2020

	5 Years										
	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
Jackson Square Partners	11.79%	-4.10%	15.85%	-3.56%	0.97	5.22%	0.89	0.67	-0.78	83.88%	104.83%
Boston Partners	4.17%	-0.47%	16.73%	-0.72%	1.05	2.90%	0.97	0.18	-0.16	103.21%	103.20%
Emerald Advisers	7.47%	0.62%	20.94%	0.67%	0.99	4.71%	0.95	0.30	0.13	97.27%	97.61%
Ceredex	1.27%	0.02%	19.62%	0.14%	0.90	6.07%	0.91	0.01	0.00	81.75%	93.87%
Pyrford	2.76%	4.01%	12.21%	3.64%	0.70	6.53%	0.87	0.13	0.61	66.89%	72.61%
William Blair	5.89%	0.27%	14.92%	0.14%	1.02	3.15%	0.96	0.32	0.09	102.83%	100.44%
Total Global Equity	8.74%	2.29%	12.90%	3.13%	0.87	3.28%	0.96	0.59	0.70	93.43%	86.05%
Artisan Partners	13.51%	7.06%	15.12%	7.30%	0.96	5.85%	0.85	0.82	1.21	136.13%	90.38%
First Eagle	4.65%	-1.81%	11.08%	-0.11%	0.74	4.85%	0.93	0.32	-0.37	56.09%	74.77%
Allianz Global Investors	3.51%	-1.07%	7.02%	-0.43%	0.86	1.85%	0.96	0.34	-0.58	84.39%	95.46%
Adelante	4.31%	0.32%	15.61%	0.59%	0.93	1.94%	0.99	0.20	0.17	90.12%	94.16%
AFL-CIO	3.78%	-0.52%	2.85%	-0.05%	0.89	0.82%	0.93	0.93	-0.63	84.58%	84.01%

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

# Total Fund Investment Fund Fee Analysis

Period Ending: June 30, 2020

Name	Asset Class	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
BlackRock Russell 1000 Index	Growth	0.03% of Assets	\$198,853,668	\$59,656	0.03%
Jackson Square Partners	Growth	0.50% of First 100.0 Mil, 0.40% of Next 150.0 Mil, 0.35% Thereafter	\$277,961,088	\$1,197,864	0.43%
Boston Partners	Growth	0.50% of First 25.0 Mil, 0.30% Thereafter	\$209,106,640	\$677,320	0.32%
Emerald Advisers	Growth	0.75% of First 10.0 Mil, 0.60% Thereafter	\$159,569,780	\$972,419	0.61%
Ceredex	Growth	0.85% of First 10.0 Mil, 0.68% of Next 40.0 Mil, 0.51% Thereafter	\$126,136,312	\$745,295	0.59%
Pyrford	Growth	0.70% of First 50.0 Mil, 0.50% of Next 50.0 Mil, 0.35% Thereafter	\$442,003,290	\$1,797,012	0.41%
William Blair	Growth	0.80% of First 20.0 Mil, 0.60% of Next 30.0 Mil, 0.50% of Next 50.0 Mil, 0.45% of Next 50.0 Mil, 0.40% of Next 50.0 Mil, 0.30% Thereafter	\$504,713,901	\$1,929,142	0.38%
PIMCO RAE Emerging Markets	Growth	0.75% of First 50.0 Mil, 0.68% of Next 50.0 Mil, 0.50% of Next 100.0 Mil, 0.45% Thereafter	\$287,988,049	\$1,608,446	0.56%
TT Emerging Markets	Growth	0.70% of First 100.0 Mil, 0.65% of Next 100.0 Mil, 0.60% Thereafter	\$314,717,068	\$2,038,302	0.65%
Artisan Partners	Growth	0.75% of Assets	\$511,057,045	\$3,832,928	0.75%
First Eagle	Growth	0.75% of Assets	\$414,027,367	\$3,105,205	0.75%
Allianz Global Investors	Growth	0.50% of First 50.0 Mil, 0.40% of Next 50.0 Mil, 0.35% Thereafter	\$197,837,624	\$792,432	0.40%
AQR Global Risk Premium-EL	Growth	0.38% of Assets	\$223,929,256	\$850,931	0.38%

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

Total Fund  
Investment Fund Fee Analysis

Period Ending: June 30, 2020

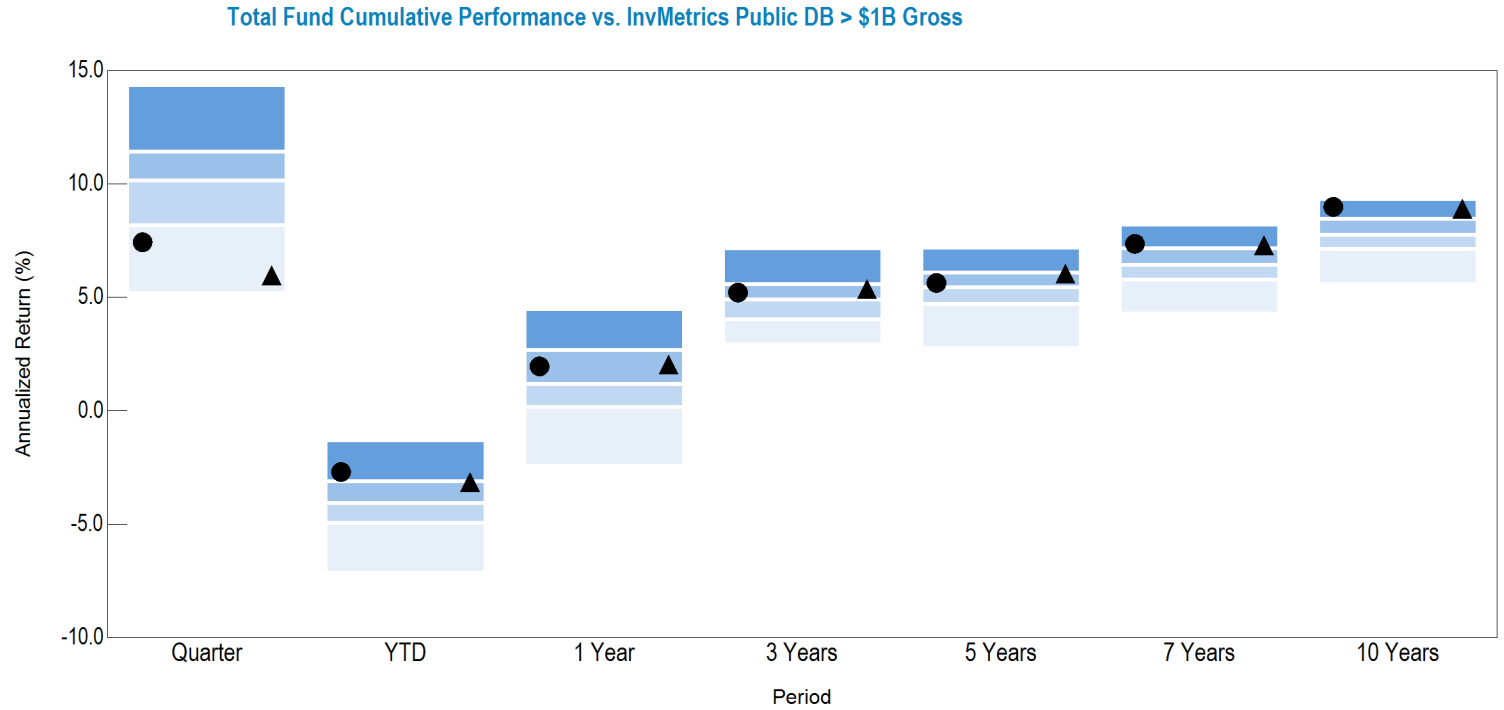
Name	Asset Class	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
PanAgora Risk Parity Multi Asset	Growth	0.35% of Assets	\$220,521,021	\$771,824	0.35%
AFL-CIO	Diversifying	0.43% of Assets	\$271,780,575	\$1,168,656	0.43%
Parametric Defensive Equity	Diversifying	0.42% of First 200.0 Mil, 0.39% Thereafter	\$178,669,547	\$750,412	0.42%
DFA Short Credit	Liquidity	0.20% of First 25.0 Mil, 0.10% Thereafter	\$381,344,231	\$406,344	0.11%
Insight Short Duration	Liquidity	0.06% of First 500.0 Mil, 0.05% of Next 500.0 Mil, 0.04% Thereafter	\$814,518,772	\$457,259	0.06%
Sit Short Duration	Liquidity	0.15% of Assets	\$603,382,248	\$905,073	0.15%

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

Total Fund

Peer Universe Comparison: Cumulative Performance (Gross of Fees)

Period Ending: June 30, 2020



	Return (Rank)													
5th Percentile	14.3	-1.3	4.5	7.1	7.2	8.2	9.3							
25th Percentile	11.4	-3.1	2.7	5.6	6.1	7.2	8.5							
Median	10.2	-4.1	1.2	4.9	5.4	6.5	7.8							
75th Percentile	8.2	-4.9	0.2	4.0	4.7	5.8	7.1							
95th Percentile	5.2	-7.1	-2.4	2.9	2.8	4.3	5.6							
# of Portfolios	82	82	82	82	81	77	74							
● Total Fund	7.4	(85)	-2.7	(17)	2.0	(31)	5.2	(42)	5.6	(40)	7.4	(21)	9.0	(11)
▲ Policy Index	6.0	(92)	-3.2	(29)	2.0	(31)	5.4	(36)	6.0	(29)	7.3	(23)	8.9	(14)

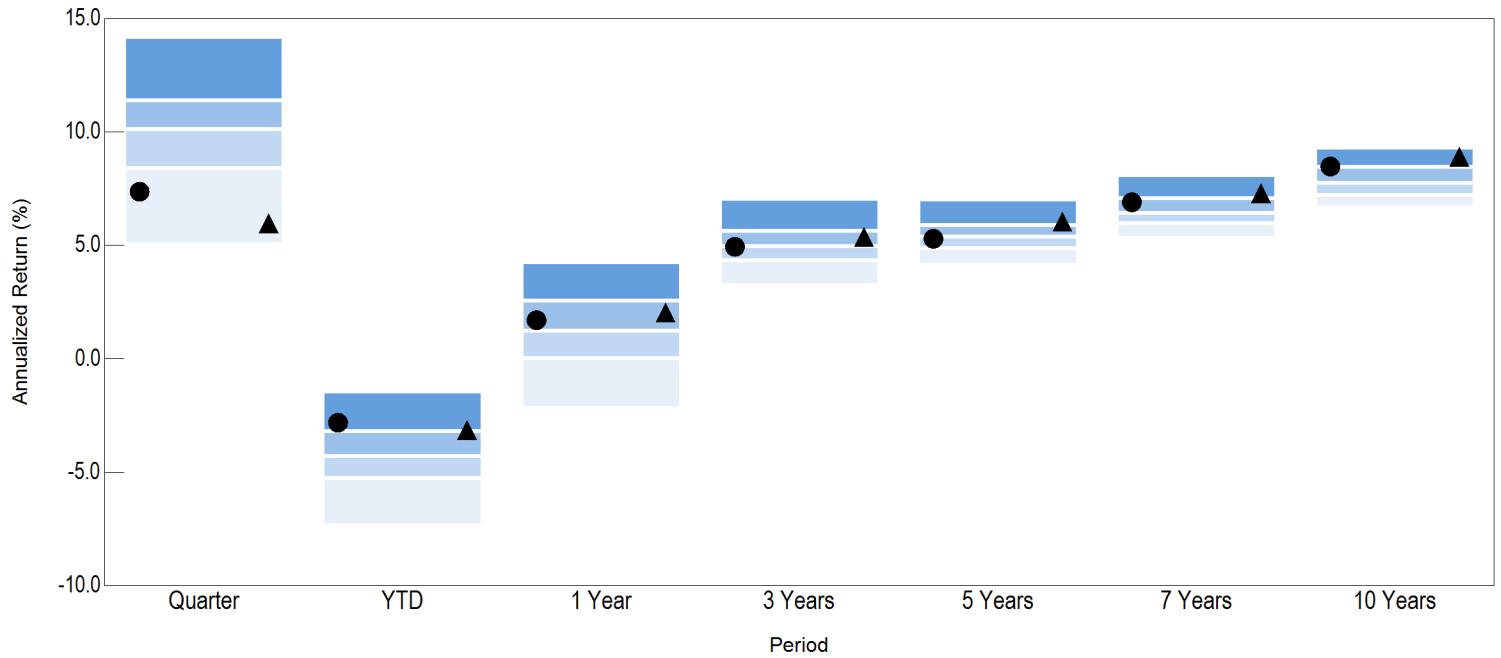
Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation.

Total Fund

Peer Universe Comparison: Cumulative Performance (Net of Fees)

Period Ending: June 30, 2020

Total Fund Cumulative Performance vs. InvMetrics Public DB > \$1B Net



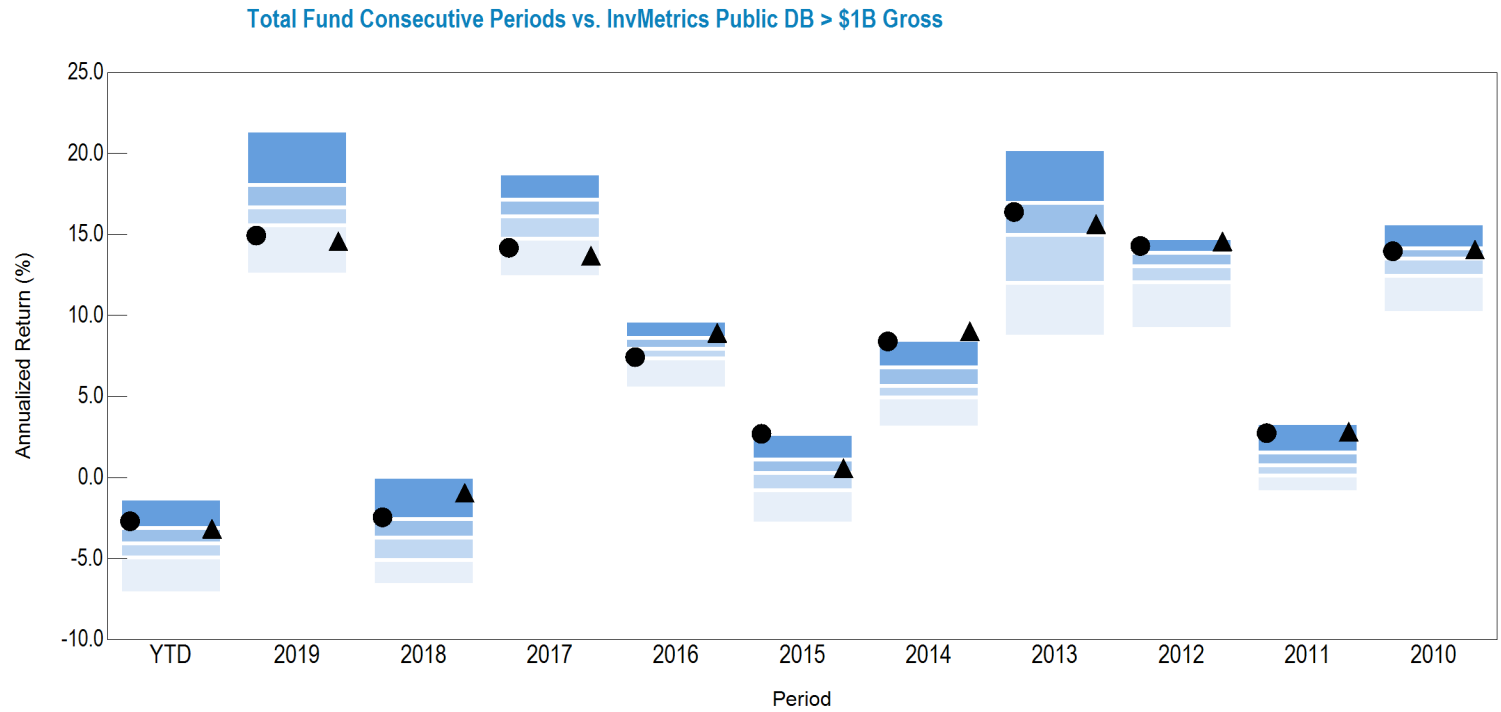
	Quarter		YTD		1 Year		3 Years		5 Years		7 Years		10 Years	
<b>5th Percentile</b>	14.2	-1.5	4.2	7.0	7.0	8.1	9.3							
<b>25th Percentile</b>	11.4	-3.2	2.6	5.7	5.9	7.1	8.5							
<b>Median</b>	10.1	-4.3	1.3	5.0	5.4	6.4	7.8							
<b>75th Percentile</b>	8.4	-5.2	0.0	4.4	4.9	6.0	7.2							
<b>95th Percentile</b>	5.0	-7.3	-2.2	3.2	4.2	5.3	6.7							
<b># of Portfolios</b>	71	71	71	71	70	68	64							
<b>● Total Fund</b>	7.4 (86)	-2.8 (18)	1.7 (36)	4.9 (51)	5.3 (55)	6.9 (35)	8.5 (26)							
<b>▲ Policy Index</b>	6.0 (91)	-3.2 (25)	2.0 (35)	5.4 (32)	6.0 (24)	7.3 (20)	8.9 (11)							



# Total Fund

## Peer Universe Comparison: Consecutive Periods (Gross of Fees)

Period Ending: June 30, 2020



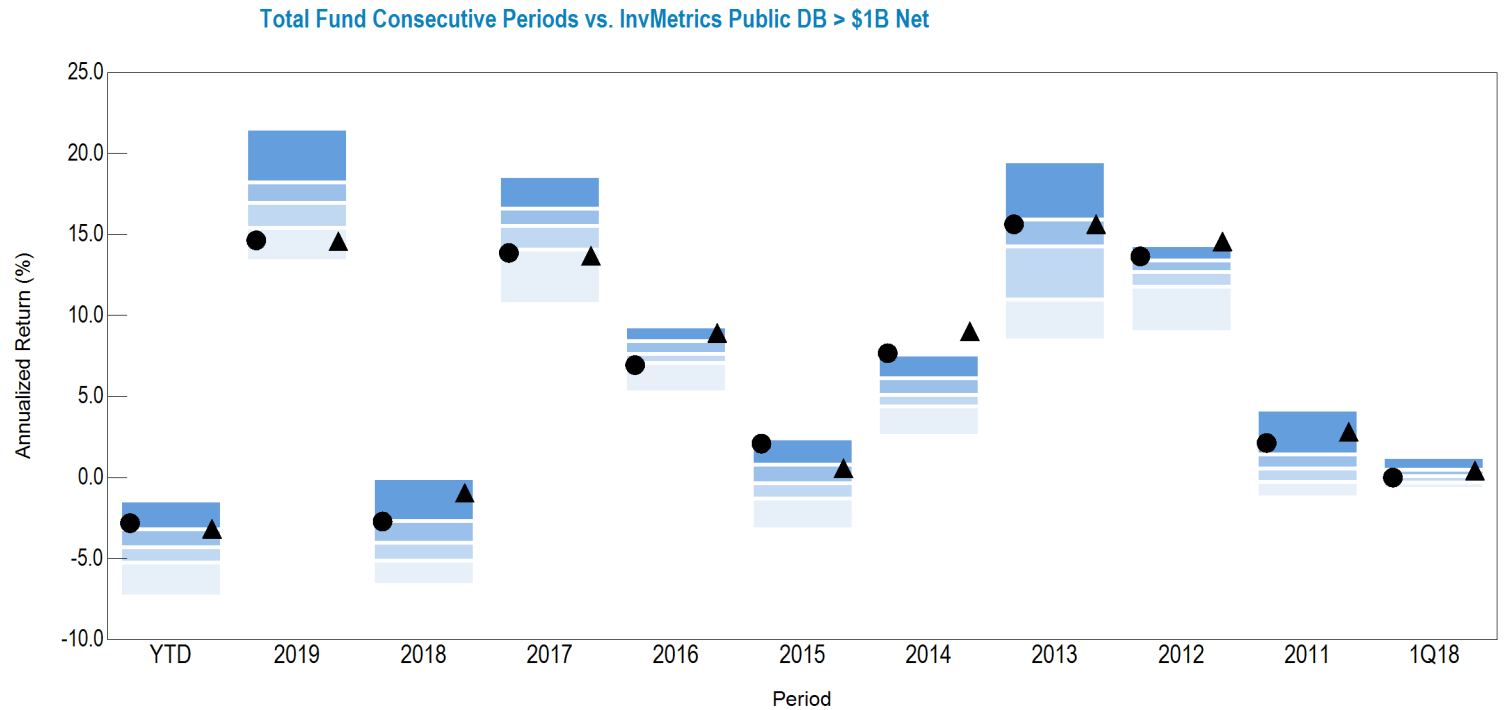
	Return (Rank)											
	YTD	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	
5th Percentile	-1.3	21.4	0.0	18.8	9.7	2.7	8.5	20.2	14.7	3.3	15.7	
25th Percentile	-3.1	18.1	-2.6	17.2	8.6	1.1	6.8	17.0	13.9	1.6	14.2	
Median	-4.1	16.7	-3.7	16.2	8.0	0.3	5.7	15.0	13.0	0.8	13.5	
75th Percentile	-4.9	15.6	-5.1	14.8	7.4	-0.7	4.9	12.0	12.1	0.1	12.5	
95th Percentile	-7.1	12.5	-6.6	12.4	5.5	-2.8	3.1	8.7	9.2	-0.9	10.2	
# of Portfolios	82	81	71	98	92	98	79	67	74	68	66	
● Total Fund	-2.7 (17)	14.9 (83)	-2.5 (25)	14.2 (83)	7.4 (74)	2.7 (5)	8.4 (6)	16.4 (33)	14.3 (13)	2.7 (9)	14.0 (29)	
▲ Policy Index	-3.2 (29)	14.6 (87)	-0.9 (8)	13.7 (89)	8.9 (15)	0.6 (40)	9.0 (2)	15.6 (43)	14.6 (8)	2.8 (9)	14.1 (27)	

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

Total Fund

Peer Universe Comparison: Consecutive Periods (Net of Fees)

Period Ending: June 30, 2020

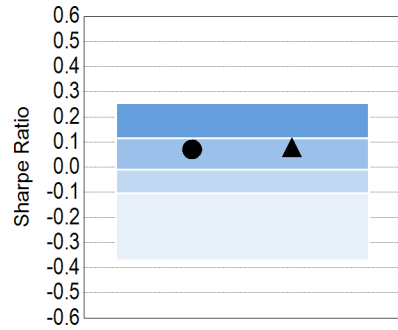


	Return (Rank)										
	YTD	2019	2018	2017	2016	2015	2014	2013	2012	2011	1Q18
5th Percentile	-1.5	21.5	-0.1	18.6	9.3	2.4	7.6	19.5	14.3	4.2	1.2
25th Percentile	-3.2	18.2	-2.7	16.6	8.4	0.8	6.1	16.0	13.4	1.5	0.5
Median	-4.3	17.0	-4.0	15.6	7.7	-0.4	5.1	14.3	12.7	0.6	0.1
75th Percentile	-5.2	15.4	-5.1	14.1	7.1	-1.3	4.4	11.0	11.8	-0.3	-0.3
95th Percentile	-7.3	13.4	-6.6	10.7	5.3	-3.2	2.6	8.5	9.0	-1.2	-0.7
# of Portfolios	71	69	63	61	62	57	55	48	44	42	60
● Total Fund	-2.8 (18)	14.6 (92)	-2.7 (27)	13.9 (81)	6.9 (78)	2.1 (12)	7.7 (5)	15.6 (33)	13.6 (21)	2.1 (12)	0.0 (56)
▲ Policy Index	-3.2 (25)	14.6 (92)	-0.9 (8)	13.7 (85)	8.9 (13)	0.6 (29)	9.0 (2)	15.6 (33)	14.6 (1)	2.8 (11)	0.4 (35)

Total Fund  
Sharpe Ratio Ranking (Gross of Fees)

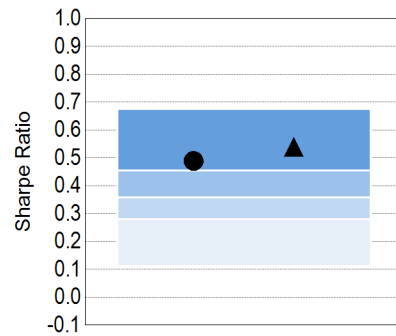
Period Ending: June 30, 2020

Sharpe Ratio  
1 Year



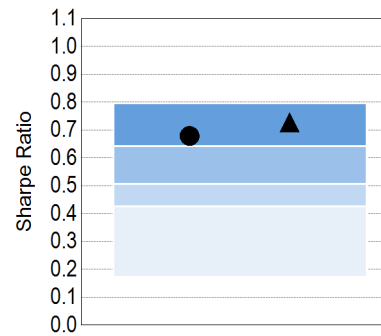
● Total Fund	
Value	0.1
Rank	31
▲ Policy Index	
Value	0.1
Rank	30
Universe	
5th %tile	0.3
25th %tile	0.1
Median	0.0
75th %tile	-0.1
95th %tile	-0.4

Sharpe Ratio  
3 Year



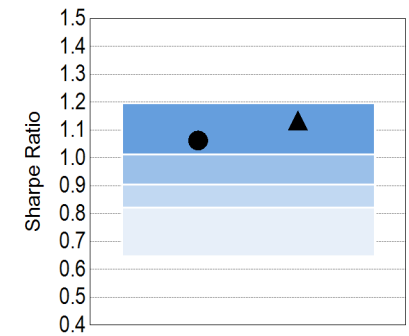
● Total Fund	
Value	0.5
Rank	19
▲ Policy Index	
Value	0.5
Rank	11
Universe	
5th %tile	0.7
25th %tile	0.5
Median	0.4
75th %tile	0.3
95th %tile	0.1

Sharpe Ratio  
5 Year



● Total Fund	
Value	0.7
Rank	17
▲ Policy Index	
Value	0.7
Rank	13
Universe	
5th %tile	0.8
25th %tile	0.6
Median	0.5
75th %tile	0.4
95th %tile	0.2

Sharpe Ratio  
10 Year



● Total Fund	
Value	1.1
Rank	13
▲ Policy Index	
Value	1.1
Rank	9
Universe	
5th %tile	1.2
25th %tile	1.0
Median	0.9
75th %tile	0.8
95th %tile	0.6

## Domestic Equity Managers

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# Jackson Square Partners Manager Portfolio Overview

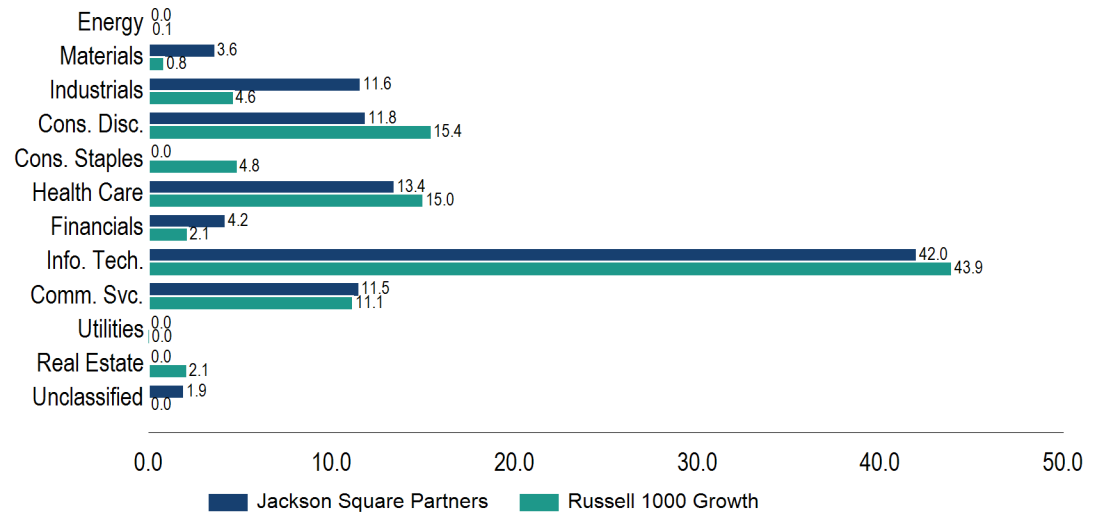
Period Ending: June 30, 2020

Domestic equity large cap growth portfolio concentrated in companies with sustainable long-term growth characteristics. Primary personnel include Jeffrey Van Harte, Christopher Bonavico, Christopher Ericksen, and Daniel Prislin.

## Characteristics

	Portfolio	Russell 1000 Growth
Number of Holdings	27	435
Weighted Avg. Market Cap. (\$B)	373.05	546.27
Median Market Cap. (\$B)	81.61	12.67
Price To Earnings	47.97	33.46
Price To Book	8.07	10.46
Price To Sales	5.11	4.43
Return on Equity (%)	26.46	34.52
Yield (%)	0.51	0.92
Beta	0.92	1.00

## Sector Allocation (%) vs Russell 1000 Growth



## Largest Holdings

	End Weight	Return
MICROSOFT CORP	9.73	29.40
AMAZON.COM INC	6.44	41.50
VISA INC	5.33	20.10
PAYPAL HOLDINGS INC	4.74	81.98
MASTERCARD INC	4.56	22.59
CHARTER COMMUNICATIONS INC	4.38	16.90
SERVICENOW INC	4.33	41.34
ALPHABET INC	3.90	22.04
IQVIA HOLDINGS INC	3.86	31.54
UBER TECHNOLOGIES INC	3.81	11.32

## Top Contributors

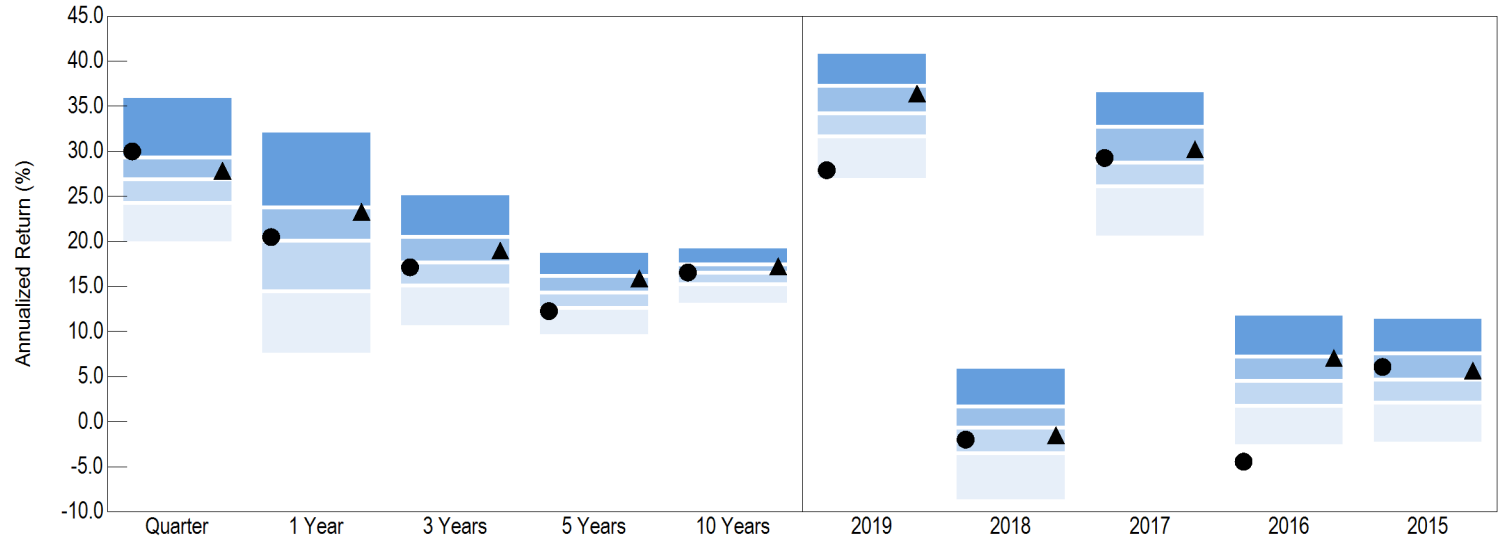
	Avg Wgt	Return	Contribution
PAYPAL HOLDINGS INC	1.25	81.98	1.03
MICROSOFT CORP	3.27	29.40	0.96
AMAZON.COM INC	1.82	41.50	0.76
AUTODESK INC.	1.10	53.23	0.58
COUPA SOFTWARE INC	0.53	98.27	0.52
SERVICENOW INC	1.22	41.34	0.50
IQVIA HOLDINGS INC	1.54	31.54	0.49
VISA INC	1.90	20.10	0.38
ILLUMINA INC	1.06	35.60	0.38
KKR & CO INC	1.15	32.29	0.37

## Bottom Contributors

	Avg Wgt	Return	Contribution
CME GROUP INC	1.53	-5.58	-0.09
SCHWAB (CHARLES) CORP	0.94	0.87	0.01
ARISTA NETWORKS INC	0.69	3.69	0.03
INTUITIVE SURGICAL INC	0.40	15.07	0.06
NIKE INC	0.52	18.80	0.10
UBER TECHNOLOGIES INC	0.89	11.32	0.10
WASTE MANAGEMENT INC.	0.68	15.00	0.10
BALL CORP	1.63	7.70	0.13
DOMINO'S PIZZA INC	1.01	14.24	0.14
TAKE-TWO INTERACTIVE SOFTWARE INC	0.83	17.67	0.15

Unclassified sector allocation includes cash allocations.

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

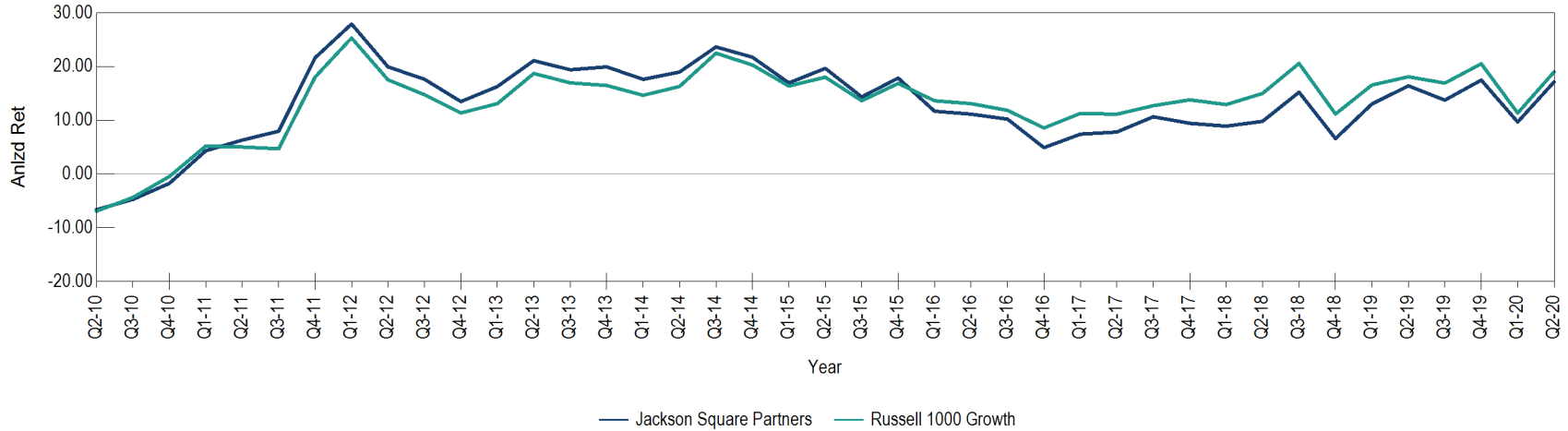


	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
5th Percentile	36.1	32.3	25.3	18.9	19.4	41.0	6.1	36.7	12.0	11.6
25th Percentile	29.4	23.8	20.5	16.2	17.5	37.3	1.7	32.7	7.3	7.6
Median	27.0	20.1	17.7	14.4	16.5	34.2	-0.6	28.8	4.6	4.7
75th Percentile	24.3	14.5	15.1	12.7	15.3	31.7	-3.5	26.2	1.8	2.1
95th Percentile	19.9	7.5	10.5	9.5	13.0	26.9	-8.8	20.5	-2.7	-2.4
# of Portfolios	251	251	246	234	213	253	255	265	282	270
● Jackson Square Partners	30.0 (23)	20.5 (49)	17.1 (58)	12.3 (79)	16.5 (50)	27.9 (93)	-2.0 (59)	29.3 (47)	-4.4 (98)	6.1 (37)
▲ Russell 1000 Growth	27.8 (42)	23.3 (30)	19.0 (39)	15.9 (29)	17.2 (30)	36.4 (32)	-1.5 (57)	30.2 (42)	7.1 (26)	5.7 (42)

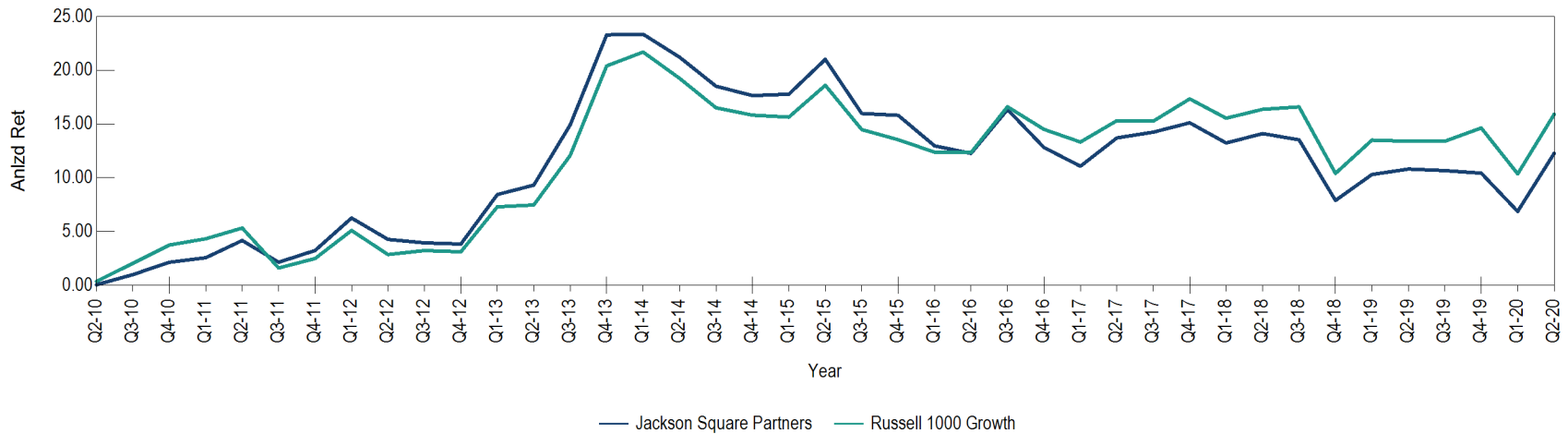
Jackson Square Partners  
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees)

Period Ending: June 30, 2020

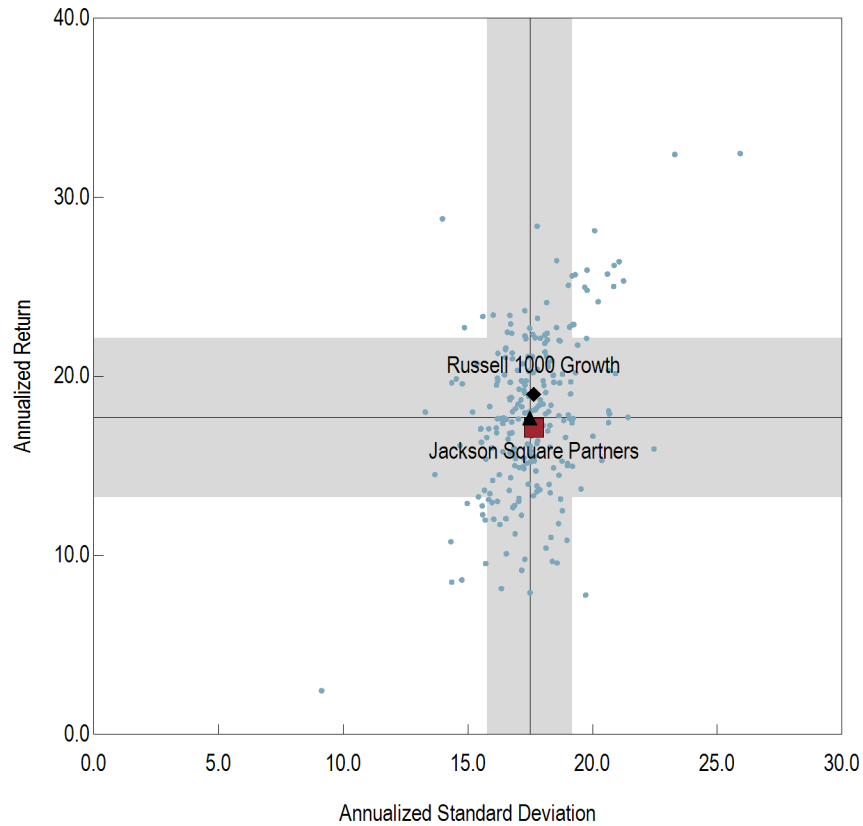
Rolling 3 Year Annualized Return (%)



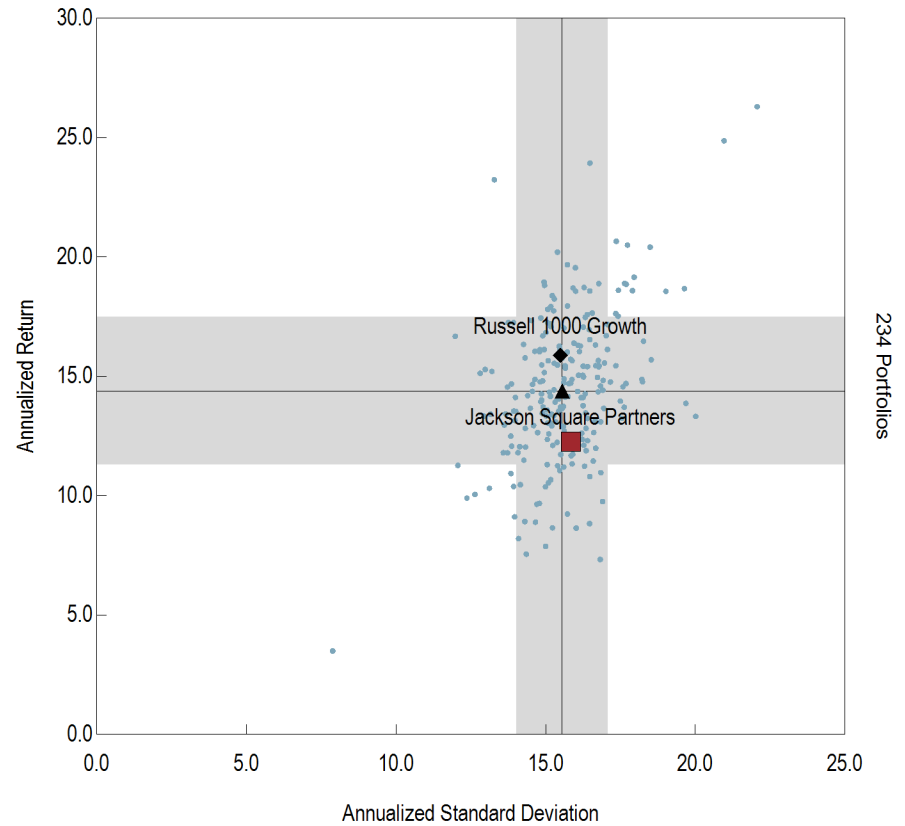
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Jackson Square Partners	17.1%	17.7%	0.9
Russell 1000 Growth	19.0%	17.6%	1.0
eV US Large Cap Growth Equity Gross Median	17.7%	17.5%	0.9

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Jackson Square Partners	12.3%	15.8%	0.7
Russell 1000 Growth	15.9%	15.5%	1.0
eV US Large Cap Growth Equity Gross Median	14.4%	15.5%	0.9



# Boston Partners Manager Portfolio Overview

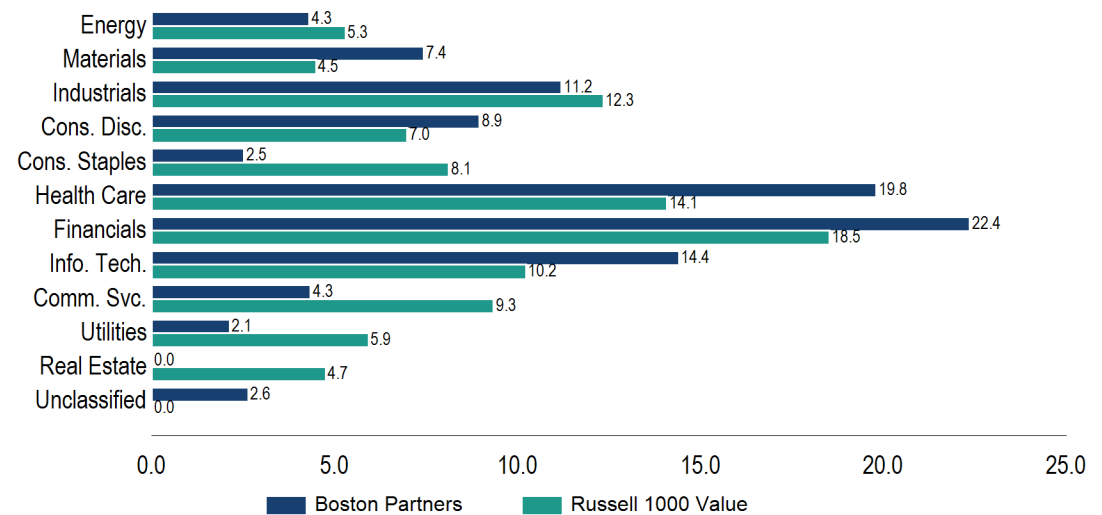
Period Ending: June 30, 2020

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

## Characteristics

	Portfolio	Russell 1000 Value
Number of Holdings	97	839
Weighted Avg. Market Cap. (\$B)	120.09	102.44
Median Market Cap. (\$B)	26.33	8.38
Price To Earnings	15.63	17.33
Price To Book	2.52	2.41
Price To Sales	1.42	2.00
Return on Equity (%)	18.81	15.13
Yield (%)	2.16	2.61
Beta	1.08	1.00

## Sector Allocation (%) vs Russell 1000 Value



## Largest Holdings

	End Weight	Return
BERKSHIRE HATHAWAY INC	3.43	-2.36
JPMORGAN CHASE & CO	3.20	5.60
CISCO SYSTEMS INC	2.98	19.72
JOHNSON & JOHNSON	2.86	8.00
CIGNA CORP	2.64	5.91
BANK OF AMERICA CORP	2.57	12.62
ALPHABET INC	2.34	22.04
PFIZER INC	2.22	1.21
BARRICK GOLD CORP	2.10	47.48
CHUBB LTD	2.08	14.05

## Top Contributors

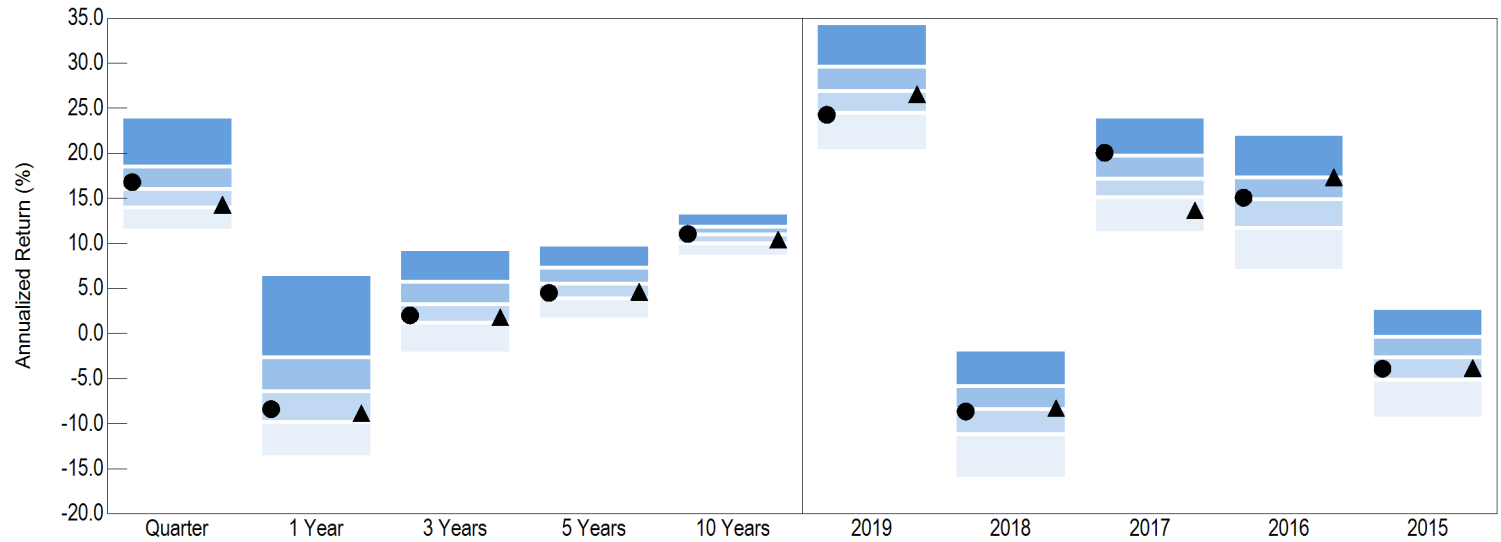
	Avg Wgt	Return	Contribution
BARRICK GOLD CORP	0.87	47.48	0.41
AUTOZONE INC	0.68	33.35	0.23
BEST BUY CO INC	0.37	54.14	0.20
DUPONT DE NEMOURS INC	0.34	56.73	0.19
MARATHON PETROLEUM CORP	0.29	60.92	0.17
BANK OF AMERICA CORP	1.16	12.62	0.15
NXP SEMICONDUCTORS NV	0.38	38.00	0.14
AMERICAN INTERNATIONAL GROUP INC	0.46	29.82	0.14
LAM RESEARCH CORP	0.36	35.28	0.13

## Bottom Contributors

	Avg Wgt	Return	Contribution
WELLS FARGO & CO	0.63	-9.00	-0.06
BERKSHIRE HATHAWAY INC	1.57	-2.36	-0.04
HUNTINGTON INGALLS INDUSTRIES INC	0.28	-3.75	-0.01
EDISON INTERNATIONAL	0.52	-0.88	0.00
SOUTHWEST AIRLINES CO.	0.10	-4.02	0.00
REINSURANCE GROUP OF AMERICA INC.	0.04	-6.04	0.00
FIRSTENERGY CORP.	0.02	-2.28	0.00
WESTROCK COMPANY	0.03	0.77	0.00
COCA-COLA EUROPEAN PARTNERS PLC	0.10	0.61	0.00

Unclassified sector allocation includes cash allocations.

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

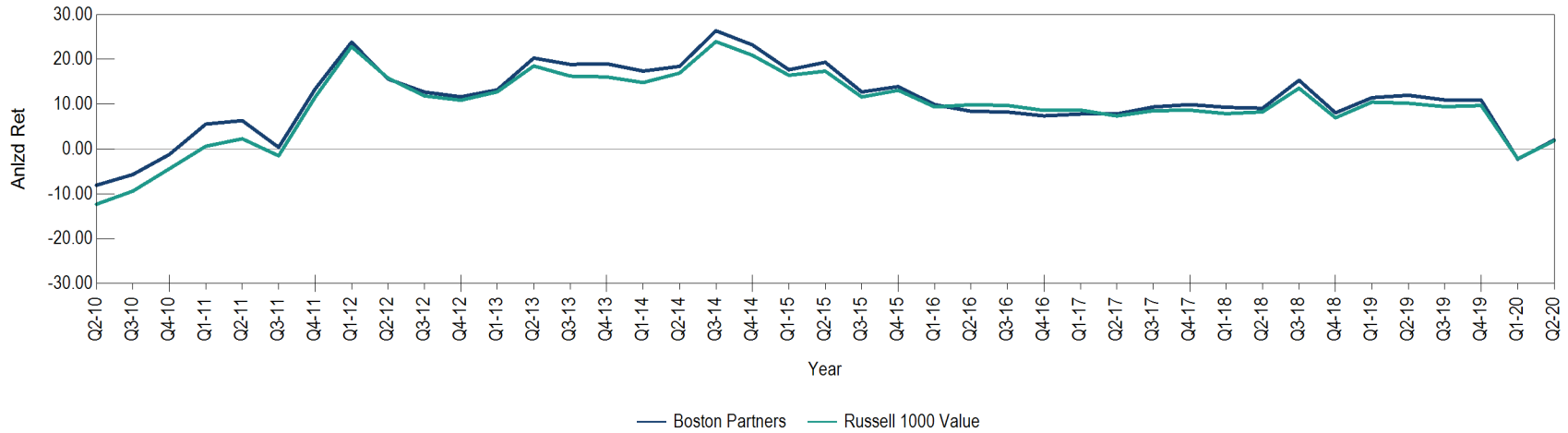


	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
<b>5th Percentile</b>	24.0	6.5	9.3	9.8	13.4	34.4	-1.8	24.0	22.1	2.8
<b>25th Percentile</b>	18.6	-2.6	5.8	7.3	11.9	29.6	-5.8	19.8	17.4	-0.4
<b>Median</b>	16.0	-6.4	3.3	5.6	11.0	26.9	-8.3	17.2	15.0	-2.6
<b>75th Percentile</b>	14.0	-9.8	1.3	3.9	10.1	24.5	-11.1	15.1	11.8	-5.1
<b>95th Percentile</b>	11.4	-13.7	-2.2	1.6	8.5	20.3	-16.1	11.2	7.0	-9.4
<b># of Portfolios</b>	324	324	319	309	263	331	336	342	346	312
<b>● Boston Partners</b>	16.8 (45)	-8.4 (68)	2.0 (66)	4.5 (69)	11.0 (49)	24.3 (77)	-8.7 (55)	20.1 (23)	15.1 (50)	-3.9 (65)
<b>▲ Russell 1000 Value</b>	14.3 (73)	-8.8 (70)	1.8 (69)	4.6 (66)	10.4 (70)	26.5 (54)	-8.3 (50)	13.7 (87)	17.3 (26)	-3.8 (64)

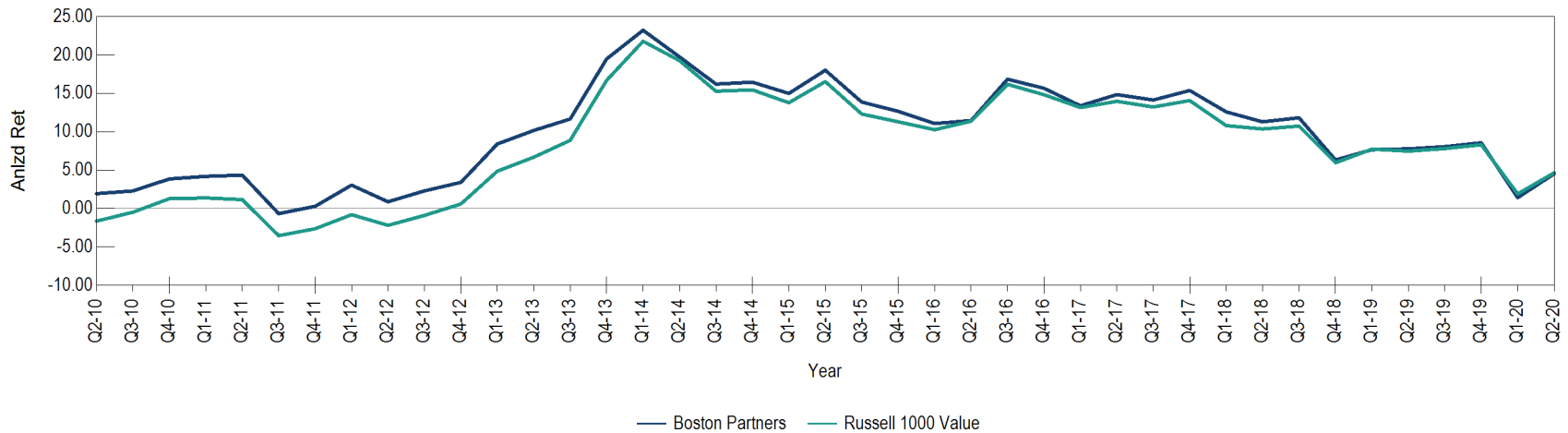
Boston Partners  
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees)

Period Ending: June 30, 2020

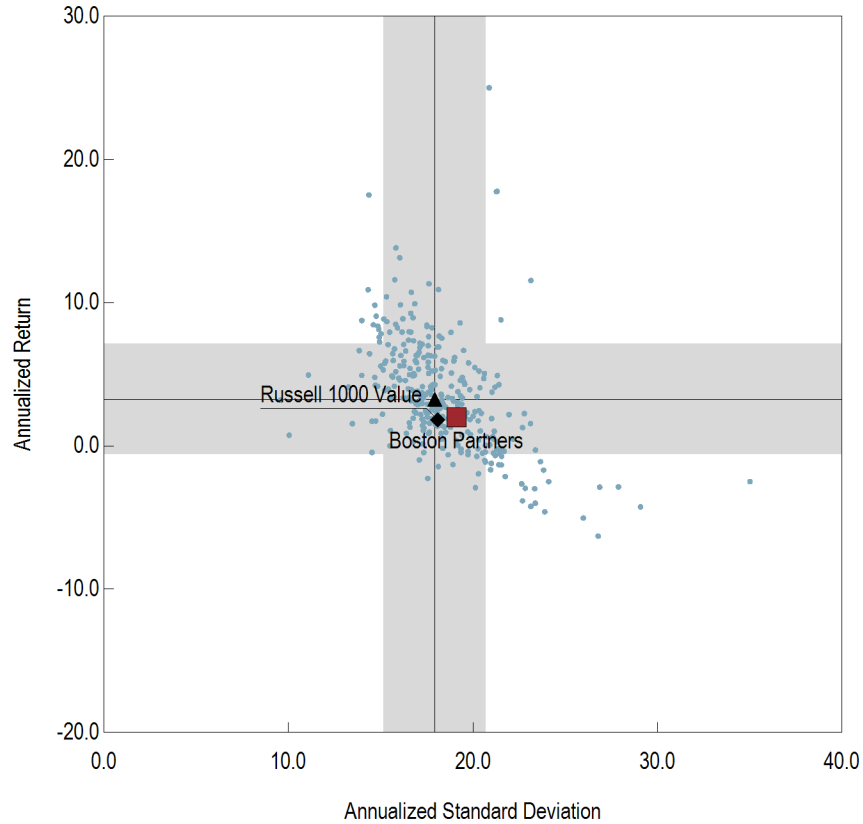
Rolling 3 Year Annualized Return (%)



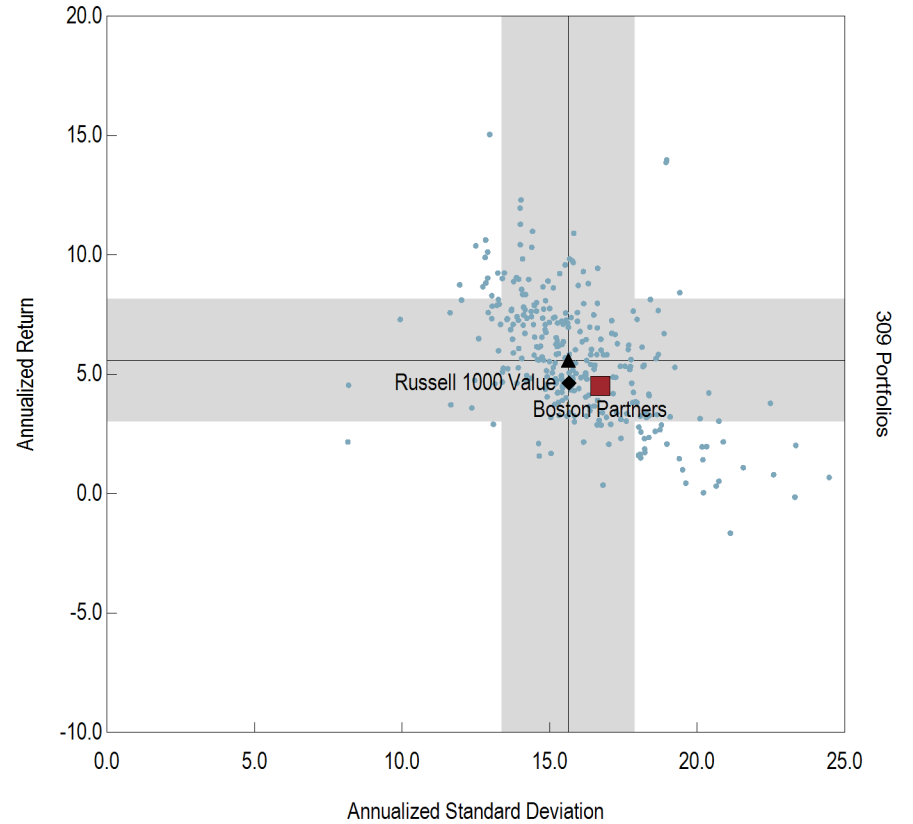
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Boston Partners	2.0%	19.1%	0.0
Russell 1000 Value	1.8%	18.1%	0.0
eV US Large Cap Value Equity Gross Median	3.3%	17.9%	0.1

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Boston Partners	4.5%	16.7%	0.2
Russell 1000 Value	4.6%	15.6%	0.2
eV US Large Cap Value Equity Gross Median	5.6%	15.6%	0.3

# Emerald Advisers Manager Portfolio Overview

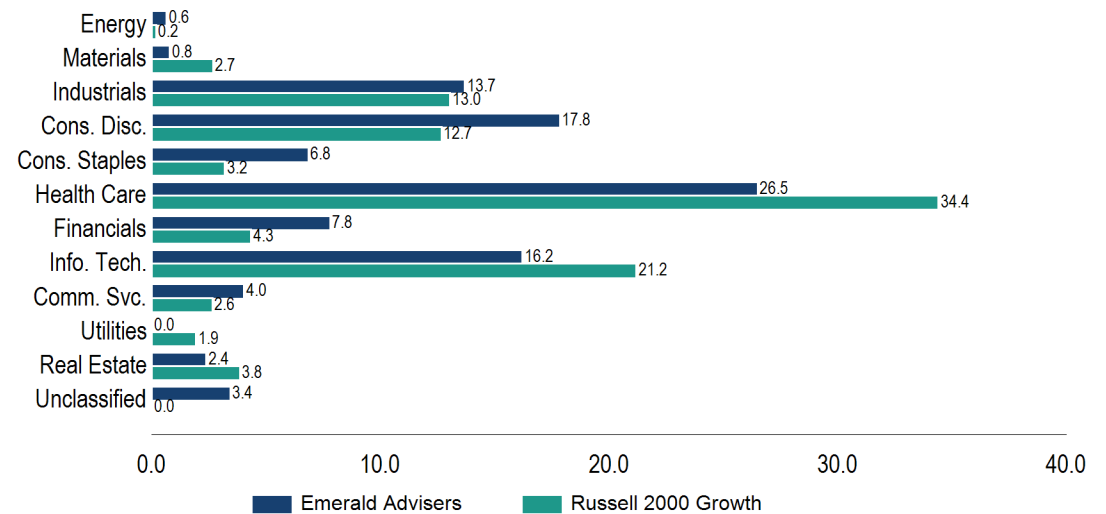
Period Ending: June 30, 2020

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

## Characteristics

	Portfolio	Russell 2000 Growth
Number of Holdings	118	1,081
Weighted Avg. Market Cap. (\$B)	3.15	2.48
Median Market Cap. (\$B)	2.25	0.85
Price To Earnings	25.50	26.16
Price To Book	4.66	4.34
Price To Sales	2.65	2.26
Return on Equity (%)	-20.94	-19.36
Yield (%)	0.34	0.53
Beta	1.05	1.00

## Sector Allocation (%) vs Russell 2000 Growth



## Largest Holdings

	End Weight	Return
CHEGG INC	3.32	87.98
FRESHPET INC	2.79	30.98
NEOGENOMICS INC	2.00	12.21
TREX CO INC	1.99	62.30
HORIZON THERAPEUTICS PUBLIC LTD CO	1.99	87.64
CHURCHILL DOWNS INC	1.95	29.33
PALOMAR HOLDINGS INC	1.82	47.46
VARONIS SYSTEMS INC	1.72	38.97
RAPID7 INC	1.70	17.75
BIOHAVEN PHARMACEUTICAL HOLDING CO LTD	1.60	114.84

## Top Contributors

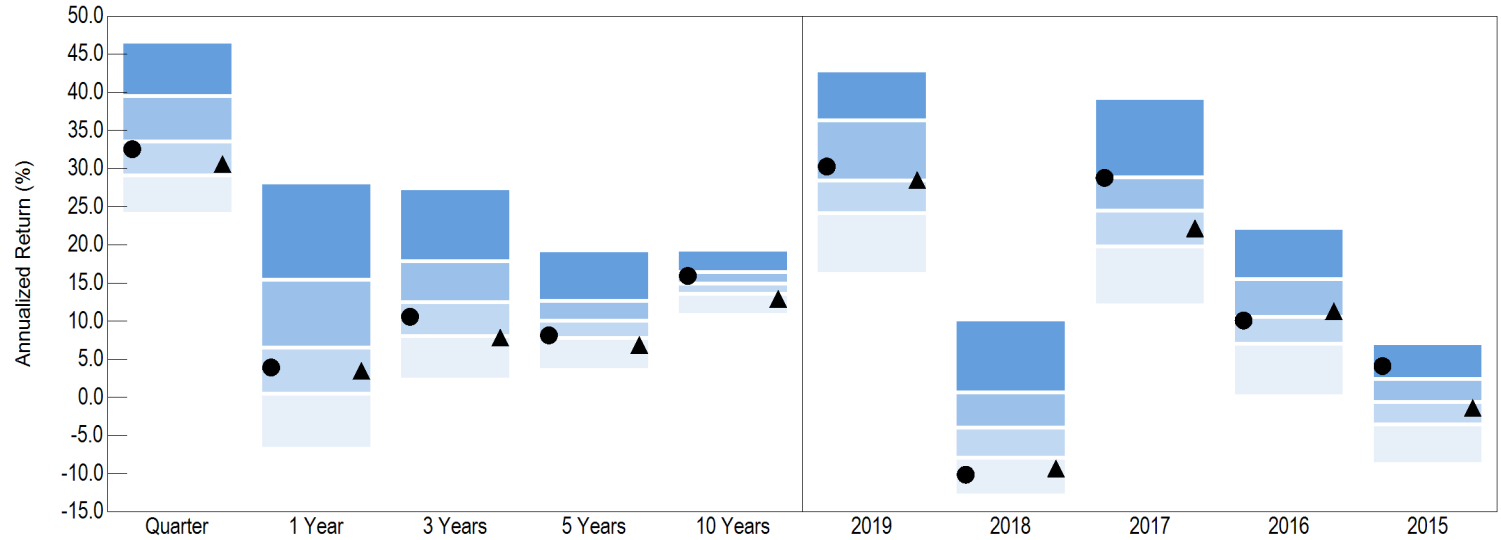
	Avg Wgt	Return	Contribution
CHEGG INC	1.04	87.98	0.92
HORIZON THERAPEUTICS PUBLIC LTD CO	0.70	87.64	0.61
TREX CO INC	0.83	62.30	0.52
BIOHAVEN PHARMACEUTICAL HOLDING CO LTD	0.37	114.84	0.42
MERITAGE HOMES CORP	0.30	108.49	0.32
FRESHPET INC	0.94	30.98	0.29
PALOMAR HOLDINGS INC	0.53	47.46	0.25
REPLIMUNE GROUP INC	0.15	149.25	0.22
SVMK INC	0.30	74.24	0.22

## Bottom Contributors

	Avg Wgt	Return	Contribution
EHEALTH INC	0.35	-30.24	-0.11
VAREX IMAGING CORP	0.16	-33.29	-0.05
HAEMONETICS CORP	0.51	-10.13	-0.05
COGENT COMMUNICATIONS HOLDINGS INC	0.66	-4.77	-0.03
OYSTER POINT PHARMA INC	0.15	-17.49	-0.03
SIMPLY GOOD FOODS CO (THE)	0.68	-3.53	-0.02
AEROJET ROCKETDYNE HOLDINGS INC	0.38	-5.24	-0.02
KARYOPHARM THERAPEUTICS INC	0.39	-1.41	-0.01

Unclassified sector allocation includes cash allocations.

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

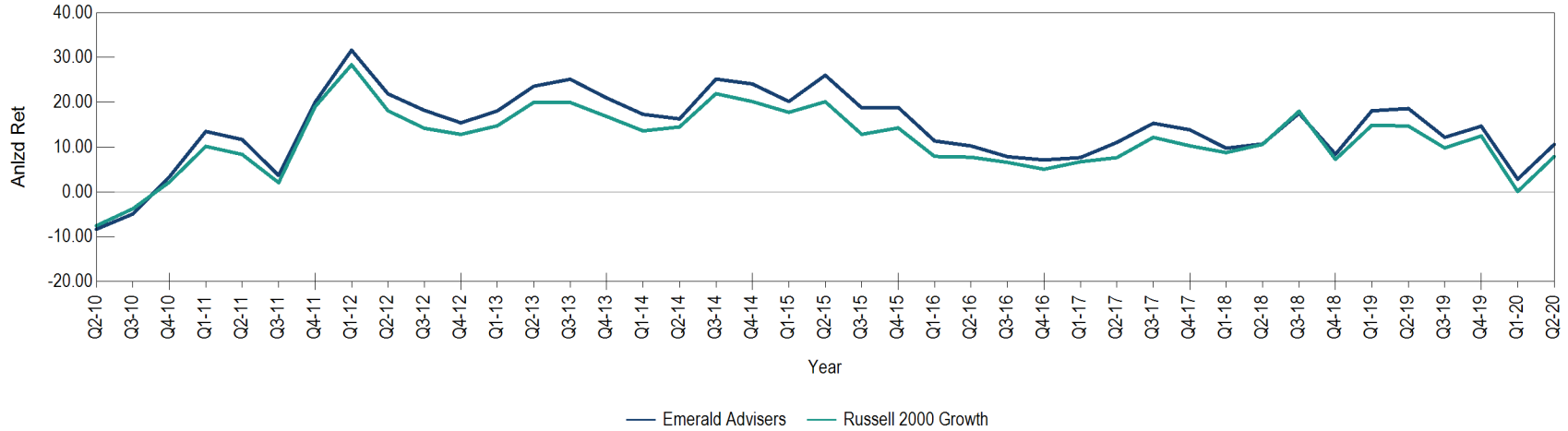


	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
5th Percentile	46.6	28.1	27.4	19.2	19.3	42.8	10.2	39.2	22.2	7.1
25th Percentile	39.5	15.4	17.9	12.7	16.5	36.4	0.7	28.9	15.5	2.5
Median	33.6	6.6	12.6	10.1	15.0	28.5	-3.9	24.6	10.6	-0.6
75th Percentile	29.1	0.6	8.1	7.8	13.7	24.2	-7.9	19.8	7.1	-3.5
95th Percentile	24.2	-6.7	2.4	3.7	10.8	16.2	-12.8	12.1	0.2	-8.7
# of Portfolios	156	156	156	150	136	157	164	174	170	154
● Emerald Advisers	32.5 (56)	3.9 (61)	10.6 (59)	8.1 (71)	15.9 (34)	30.3 (45)	-10.1 (85)	28.8 (26)	10.1 (54)	4.1 (19)
▲ Russell 2000 Growth	30.6 (67)	3.5 (61)	7.9 (78)	6.9 (82)	12.9 (84)	28.5 (51)	-9.3 (80)	22.2 (62)	11.3 (49)	-1.4 (59)

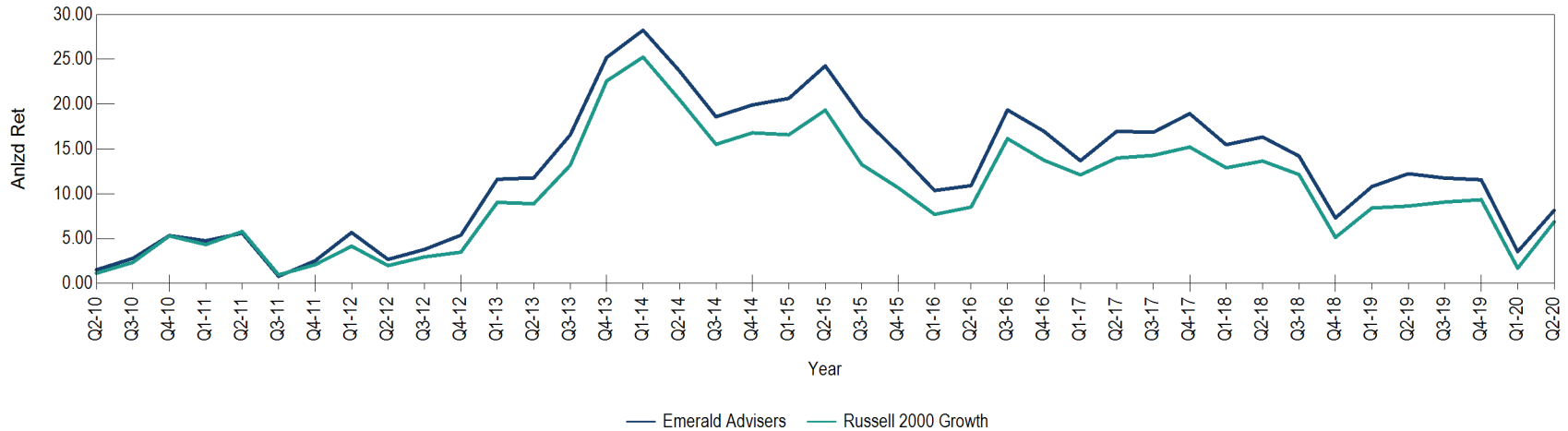
Emerald Advisers  
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees)

Period Ending: June 30, 2020

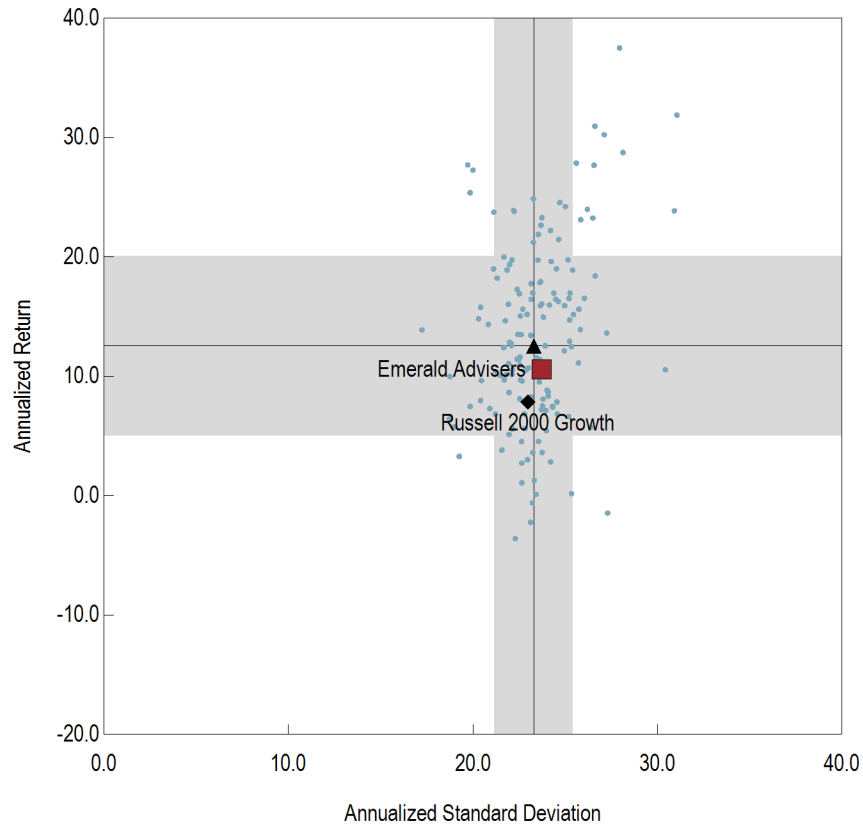
Rolling 3 Year Annualized Return (%)



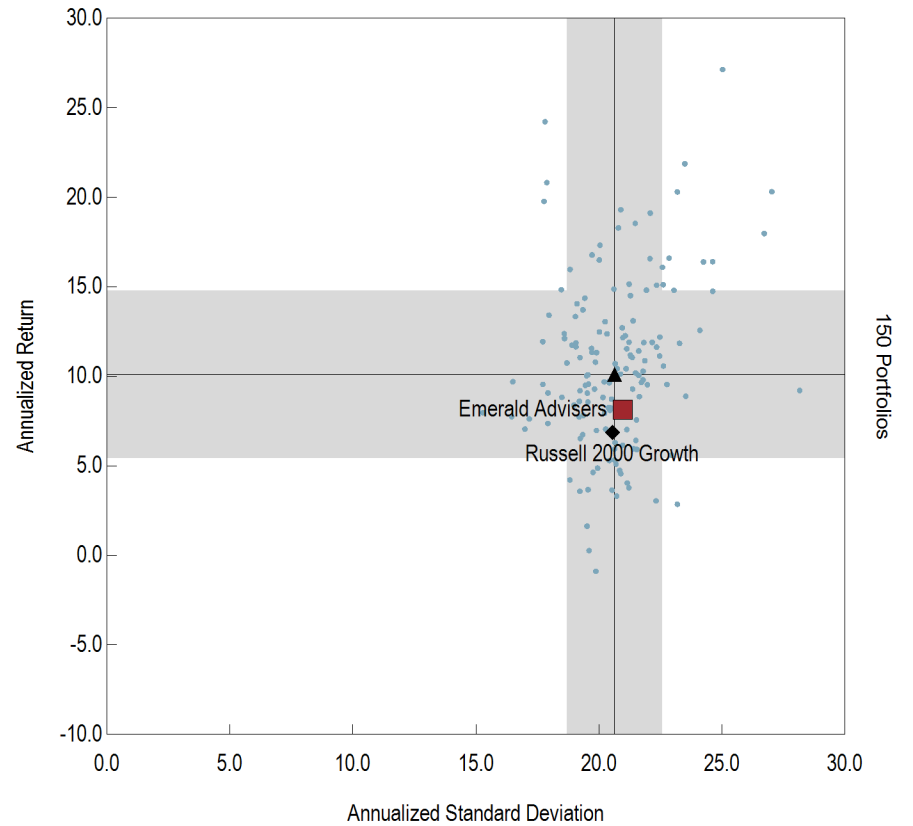
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Emerald Advisers	10.6%	23.7%	0.4
Russell 2000 Growth	7.9%	23.0%	0.3
eV US Small Cap Growth Equity Gross Median	12.6%	23.3%	0.5

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Emerald Advisers	8.1%	21.0%	0.3
Russell 2000 Growth	6.9%	20.6%	0.3
eV US Small Cap Growth Equity Gross Median	10.1%	20.6%	0.4



# Ceredex Manager Portfolio Overview

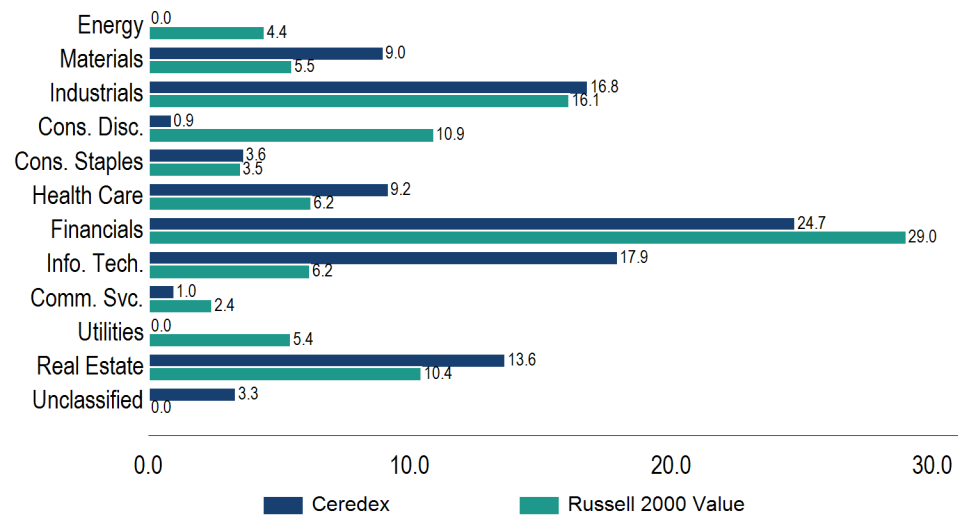
Period Ending: June 30, 2020

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

## Characteristics

	Portfolio	Russell 2000 Value
Number of Holdings	51	1,439
Weighted Avg. Market Cap. (\$B)	4.61	1.66
Median Market Cap. (\$B)	3.90	0.53
Price To Earnings	17.84	12.31
Price To Book	2.12	1.65
Price To Sales	1.93	1.01
Return on Equity (%)	14.14	1.72
Yield (%)	2.37	2.28
Beta	0.91	1.00

## Sector Allocation (%) vs Russell 2000 Value



## Largest Holdings

	End Weight	Return
KEMPER CORP	4.93	-1.98
POWER INTEGRATIONS INC	4.91	34.00
HILL-ROM HOLDINGS INC	4.83	9.38
PHYSICIANS REALTY TRUST	4.59	27.95
QUANTA SERVICES INC.	4.47	24.00
HEALTHCARE TRUST OF AMERICA INC	4.34	10.80
APTARGROUP INC.	4.30	12.86
FIRST AMERICAN FINANCIAL CORP	3.94	14.18
PENTAIR PLC	3.64	28.45
SLM CORP	2.91	-1.86

## Top Contributors

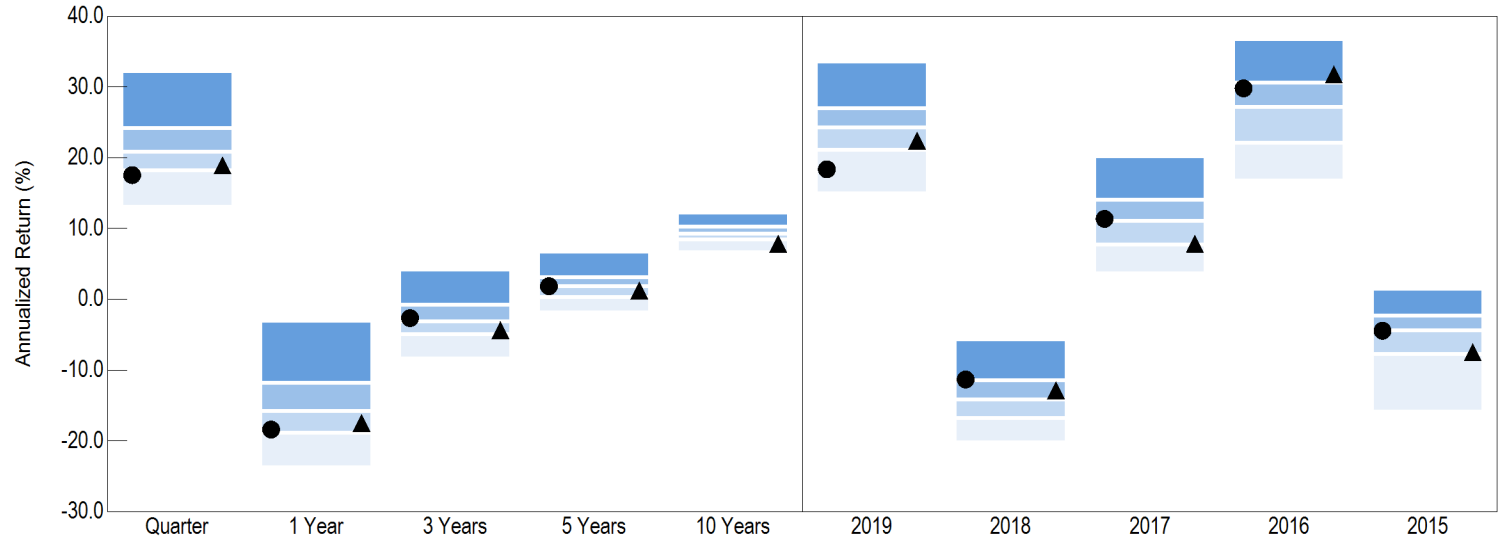
	Avg Wgt	Return	Contribution
POWER INTEGRATIONS INC	1.78	34.00	0.61
PHYSICIANS REALTY TRUST	1.43	27.95	0.40
QUANTA SERVICES INC.	1.40	24.00	0.34
PENSKE AUTOMOTIVE GROUP INC	0.85	38.25	0.33
MONOLITHIC POWER SYSTEMS INC	0.74	41.83	0.31
GRACE (W R) & CO	0.68	43.57	0.29
CUBIC CORP	1.53	16.27	0.25
ENERGIZER HOLDINGS INC	0.40	58.08	0.23
MKS INSTRUMENTS INC	0.58	39.31	0.23

## Bottom Contributors

	Avg Wgt	Return	Contribution
KEMPER CORP	2.11	-1.98	-0.04
SLM CORP	1.16	-1.86	-0.02
AMERISAFE INC	0.32	-4.72	-0.01
COVANTA HOLDING CORP	0.00	13.14	0.00
HORACE MANN EDUCATORS CORP	0.50	1.22	0.01
CUBESMART	0.38	1.98	0.01
OUTFRONT MEDIA INC	0.17	5.12	0.01
COMTECH TELECOMMUNICATIONS CORP.	0.03	27.84	0.01
ALEXANDER & BALDWIN INC	0.20	8.65	0.02

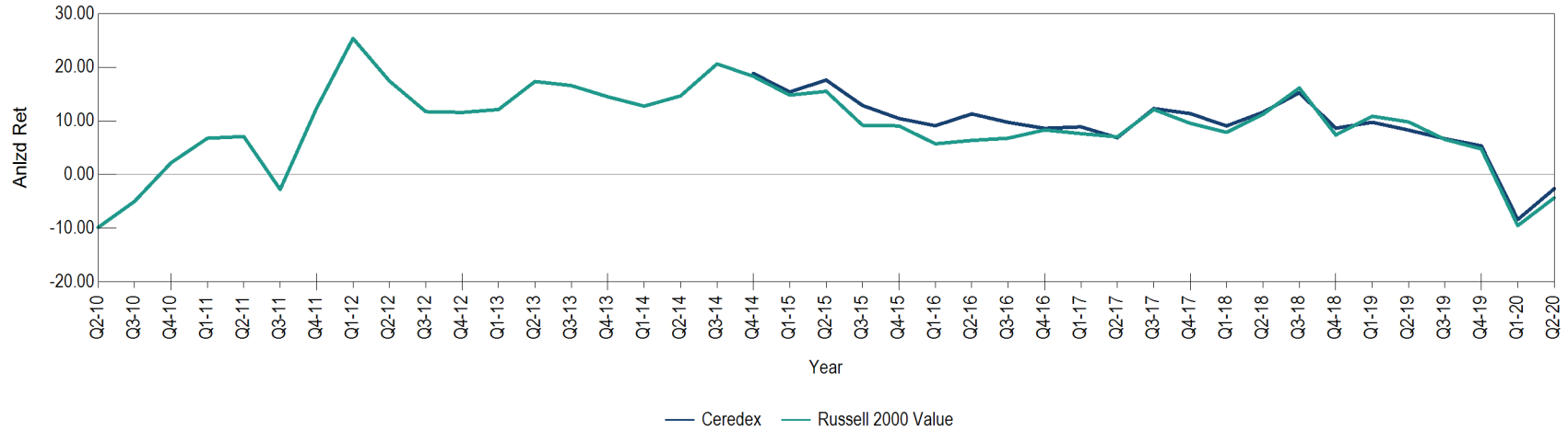
Unclassified sector allocation includes cash allocations.

Ceredex vs. eV US Small Cap Value Equity Gross Universe

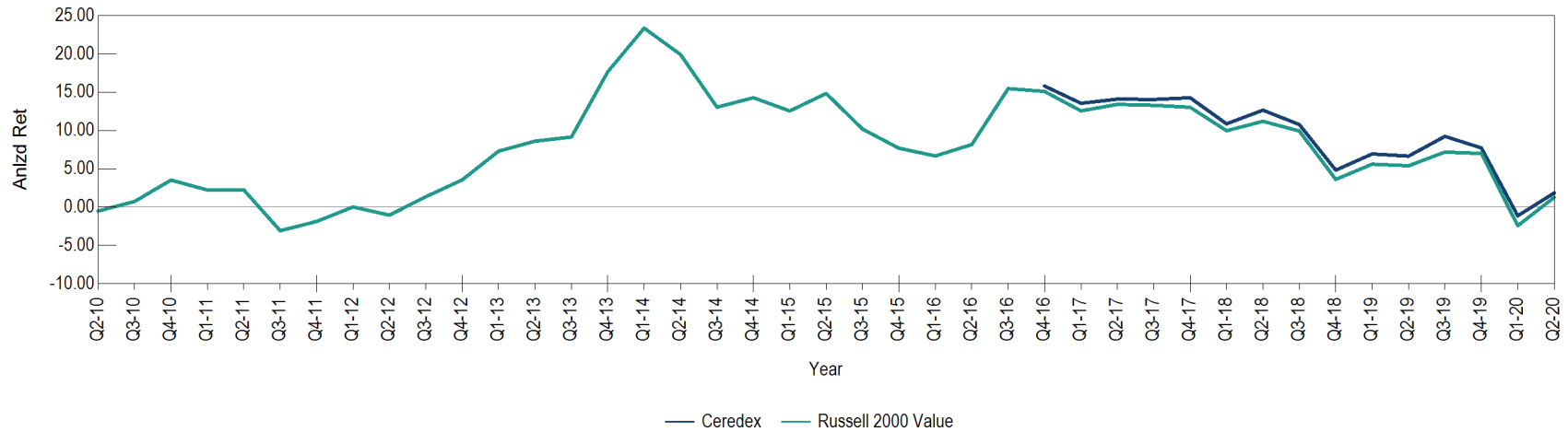


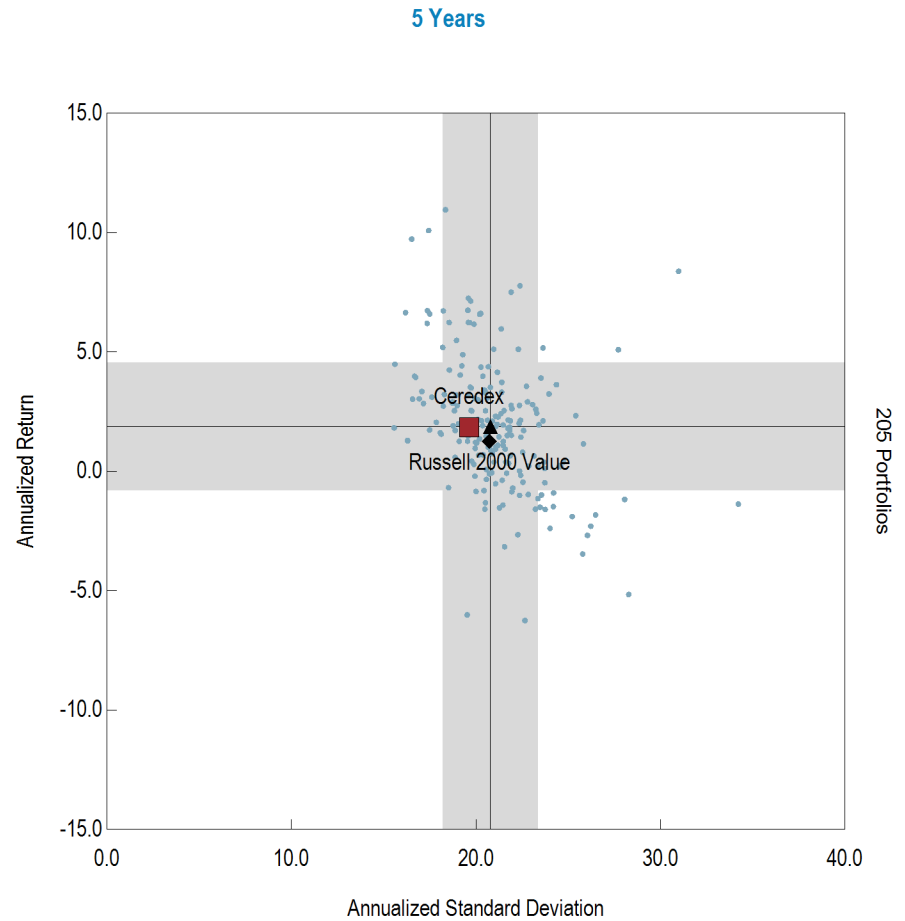
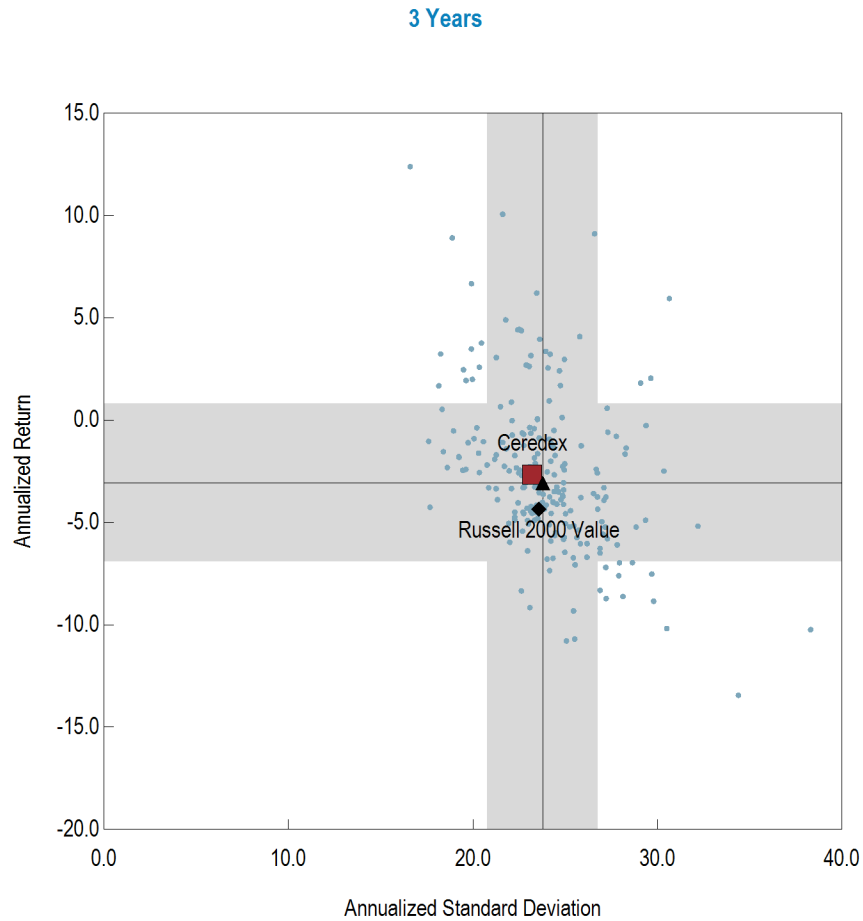
	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
5th Percentile	32.2	-3.1	4.2	6.7	12.2	33.6	-5.7	20.2	36.7	1.5
25th Percentile	24.2	-11.7	-0.7	3.2	10.3	27.0	-11.4	14.1	30.7	-2.2
Median	20.9	-15.7	-3.1	1.9	9.3	24.4	-14.0	11.1	27.2	-4.3
75th Percentile	18.2	-18.8	-4.9	0.4	8.6	21.2	-16.7	7.8	22.2	-7.7
95th Percentile	13.1	-23.7	-8.3	-1.8	6.7	15.0	-20.2	3.7	16.8	-15.8
# of Portfolios	219	218	213	205	185	217	220	224	222	212
● Ceredex	17.5 (81)	-18.4 (72)	-2.7 (48)	1.8 (51)	-- (--)	18.4 (87)	-11.3 (25)	11.4 (48)	29.8 (32)	-4.4 (52)
▲ Russell 2000 Value	18.9 (71)	-17.5 (64)	-4.3 (69)	1.3 (64)	7.8 (88)	22.4 (69)	-12.9 (39)	7.8 (75)	31.7 (17)	-7.5 (74)

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)





**3 Years**

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Ceredex	-2.7%	23.2%	-0.2
Russell 2000 Value	-4.3%	23.6%	-0.3
eV US Small Cap Value Equity Gross Median	-3.1%	23.8%	-0.2

**5 Years**

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Ceredex	1.8%	19.6%	0.0
Russell 2000 Value	1.3%	20.7%	0.0
eV US Small Cap Value Equity Gross Median	1.9%	20.8%	0.0

# International Equity Managers

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# Pyrford Manager Portfolio Overview

Period Ending: June 30, 2020

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

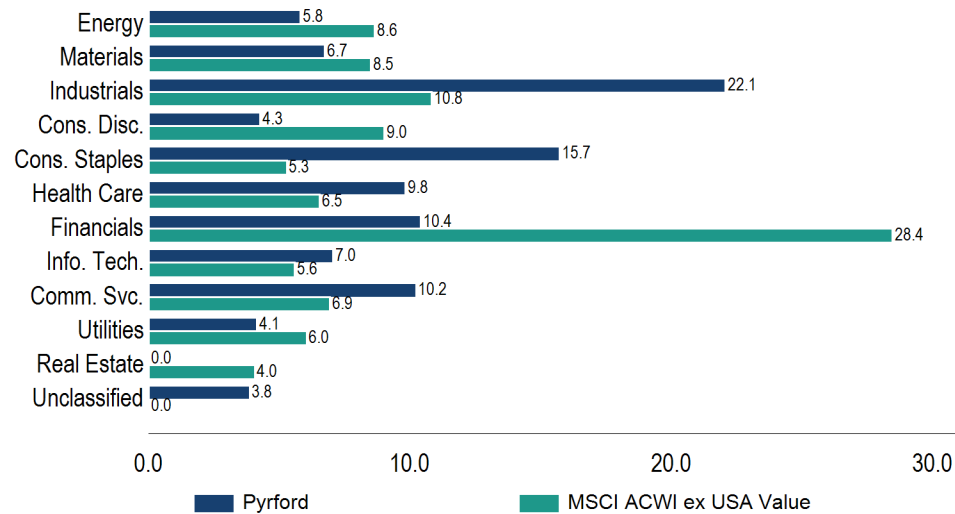
## Characteristics

	MSCI ACWI Portfolio	MSCI ACWI ex USA Value
Number of Holdings	74	1,607
Weighted Avg. Market Cap. (\$B)	57.75	44.32
Median Market Cap. (\$B)	20.27	6.33
Price To Earnings	16.96	11.88
Price To Book	2.51	1.77
Price To Sales	1.49	0.89
Return on Equity (%)	16.42	10.12
Yield (%)	4.05	4.18
Beta	0.78	1.00

## Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
<b>Totals</b>		
Developed	89.3%	72.1%
Emerging*	6.8%	27.9%
<b>Top 10 Largest Countries</b>		
United Kingdom	15.3%	12.0%
Japan	13.2%	16.2%
Australia	11.4%	4.7%
Switzerland	10.8%	4.8%
Germany	10.2%	7.7%
France	7.7%	7.1%
Hong Kong	4.4%	2.1%
Netherlands	4.4%	0.9%
Singapore	4.4%	0.7%
Taiwan*	4.1%	3.6%
<b>Total-Top 10 Largest Countries</b>	<b>86.0%</b>	<b>59.7%</b>

## Sector Allocation (%) vs MSCI ACWI ex USA Value



## Top Contributors

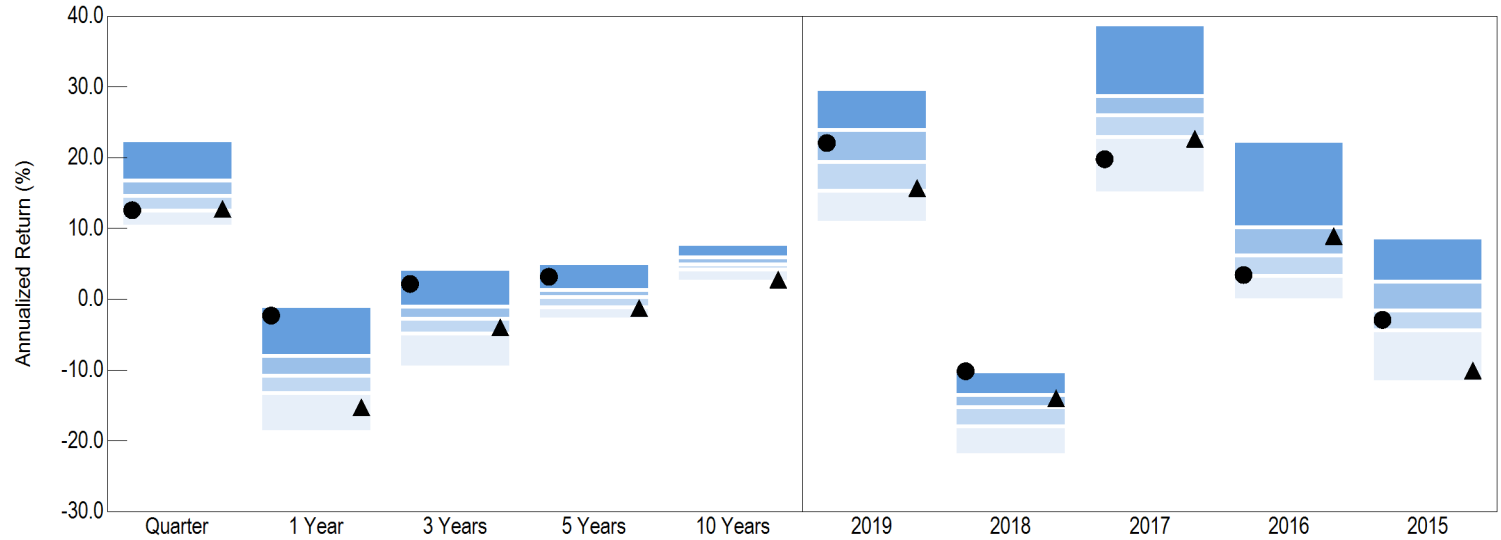
	Avg Wgt	Return	Contribution
COMPUTERSHARE LTD CPU	1.49	53.50	0.80
BRENTAG AG	1.68	47.08	0.79
GEA GROUP	1.14	59.02	0.67
WOODSIDE PETROLEUM LTD	1.73	33.74	0.58
SAP SE	1.83	26.88	0.49
LEGAL & GENERAL GROUP PLC	2.23	21.04	0.47
DEUTSCHE POST AG	1.31	35.32	0.46
RECKITT BENCKISER GROUP PLC	1.96	22.37	0.44
SANOFI	2.06	19.91	0.41
NEWCREST MINING LTD	0.75	53.88	0.41

## Bottom Contributors

	Avg Wgt	Return	Contribution
NIHON KOHDEN CORP	2.39	-10.66	-0.25
VTECH HOLDINGS LTD	0.93	-16.94	-0.16
CHINA MOBILE LTD	1.80	-6.39	-0.11
BP PLC	1.06	-8.66	-0.09
ROYAL DUTCH SHELL PLC	0.96	-8.60	-0.08
POWER ASSETS HOLDINGS LTD	1.15	-5.18	-0.06
ROYAL DUTCH SHELL PLC	1.00	-5.53	-0.06
SINGAPORE TELECOMMUNICATIONS LTD	1.35	-1.15	-0.02
TOTAL SE	1.41	0.20	0.00

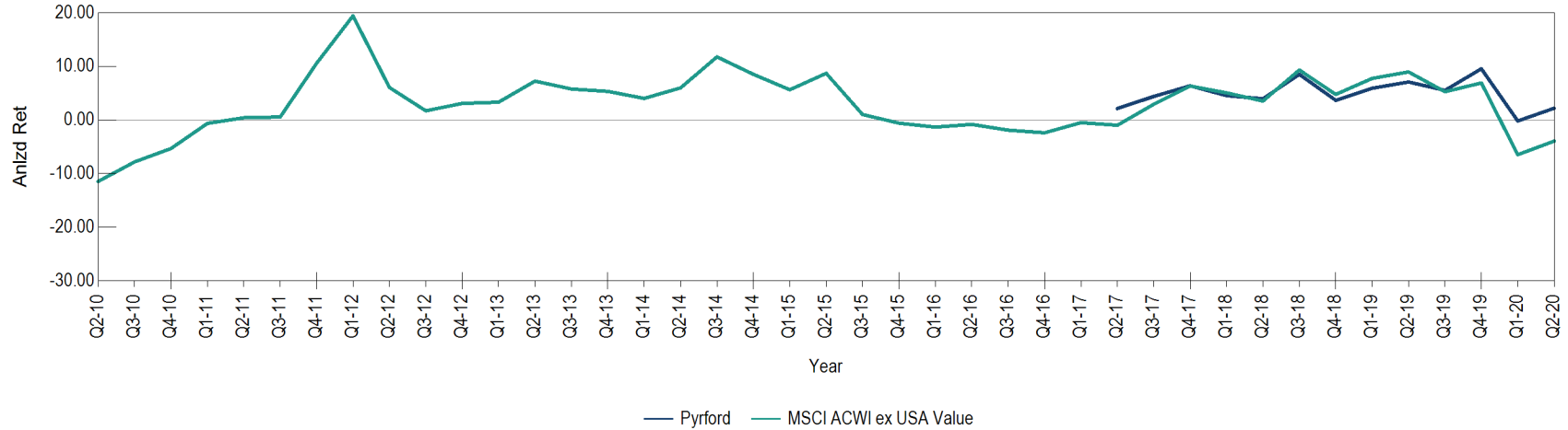
Unclassified sector allocation includes cash allocations.

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

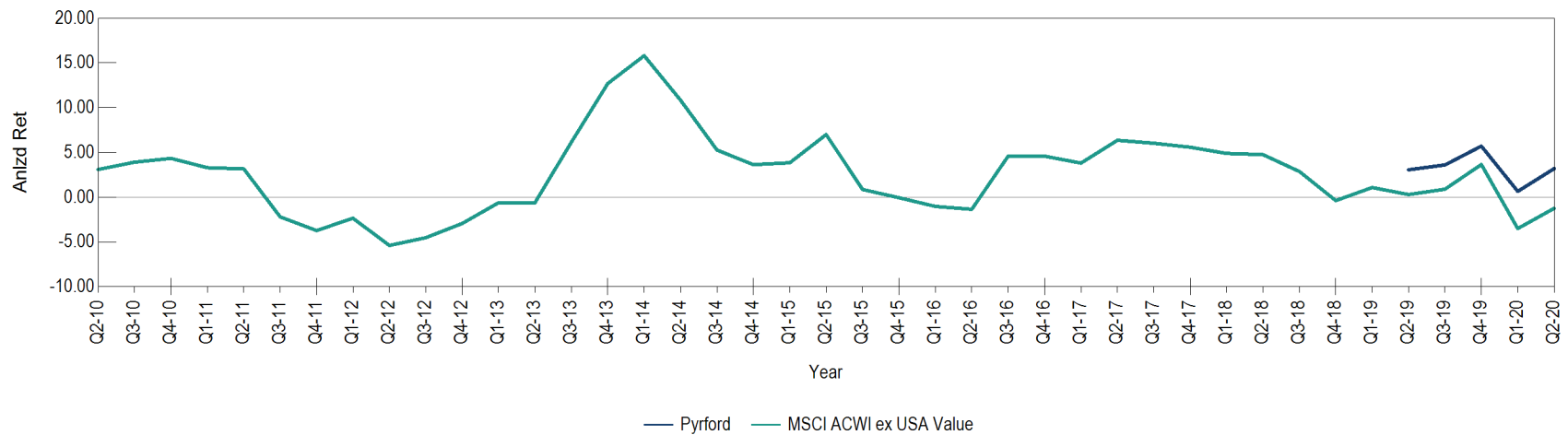


	Return (Rank)																			
5th Percentile	22.4	-1.0	4.3	5.0	7.8	29.6	-10.2	38.8	22.3	8.7										
25th Percentile	16.8	-7.9	-1.0	1.4	5.9	24.0	-13.4	28.8	10.2	2.5										
Median	14.6	-10.7	-2.7	0.4	5.0	19.5	-15.2	26.0	6.2	-1.6										
75th Percentile	12.6	-13.1	-4.8	-1.1	4.2	15.4	-17.9	23.0	3.3	-4.3										
95th Percentile	10.3	-18.7	-9.5	-2.8	2.6	10.8	-21.9	15.0	-0.1	-11.6										
# of Portfolios	50	50	48	46	28	52	54	56	55	45										
● Pyrford	12.6	(75)	-2.3	(6)	2.2	(8)	3.2	(13)	--	(--)	22.1	(35)	-10.1	(5)	19.8	(84)	3.4	(74)	-2.9	(59)
▲ MSCI ACWI ex USA Value	12.8	(75)	-15.3	(86)	-4.0	(69)	-1.2	(86)	2.8	(95)	15.7	(74)	-14.0	(32)	22.7	(77)	8.9	(35)	-10.1	(93)

Rolling 3 Year Annualized Return (%)

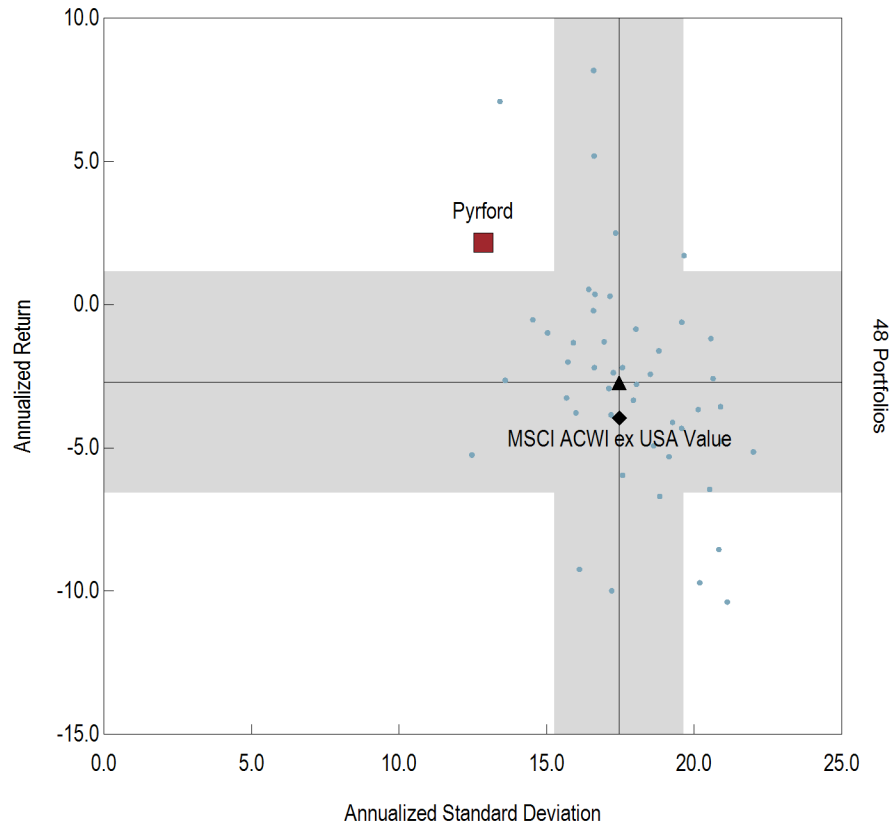


Rolling 5 Year Annualized Return (%)

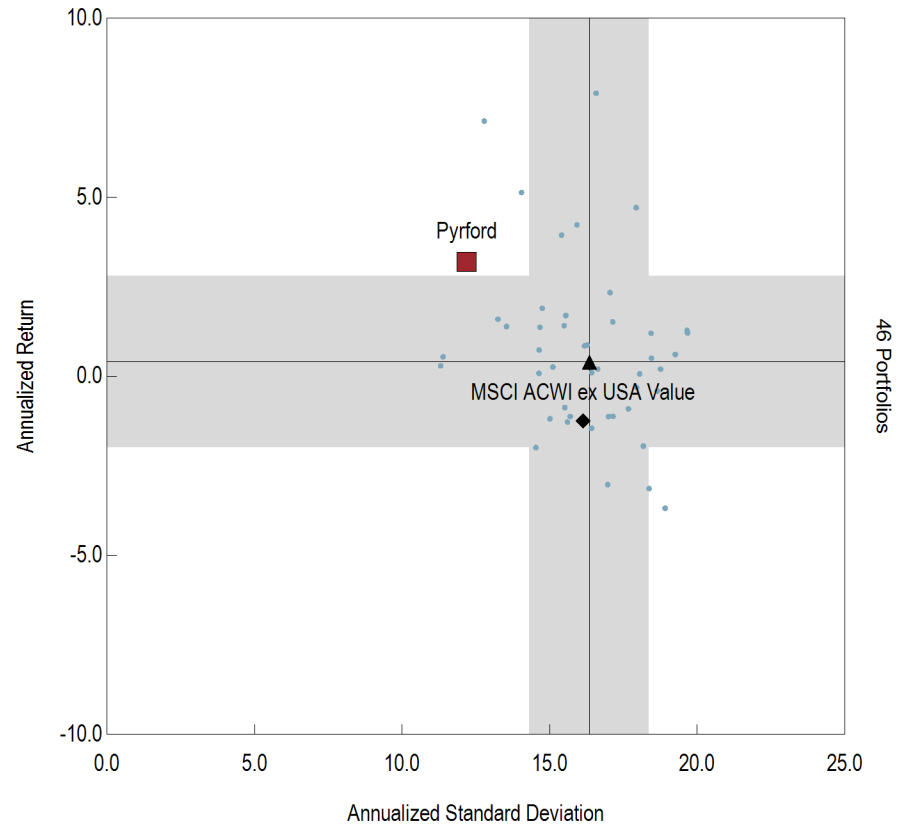




3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Pyrford	2.2%	12.9%	0.0
MSCI ACWI ex USA Value	-4.0%	17.5%	-0.3
eV ACWI ex-US Value Equity Gross Median	-2.7%	17.5%	-0.2

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Pyrford	3.2%	12.2%	0.2
MSCI ACWI ex USA Value	-1.2%	16.1%	-0.1
eV ACWI ex-US Value Equity Gross Median	0.4%	16.3%	-0.1

# William Blair Manager Portfolio Overview

Period Ending: June 30, 2020

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

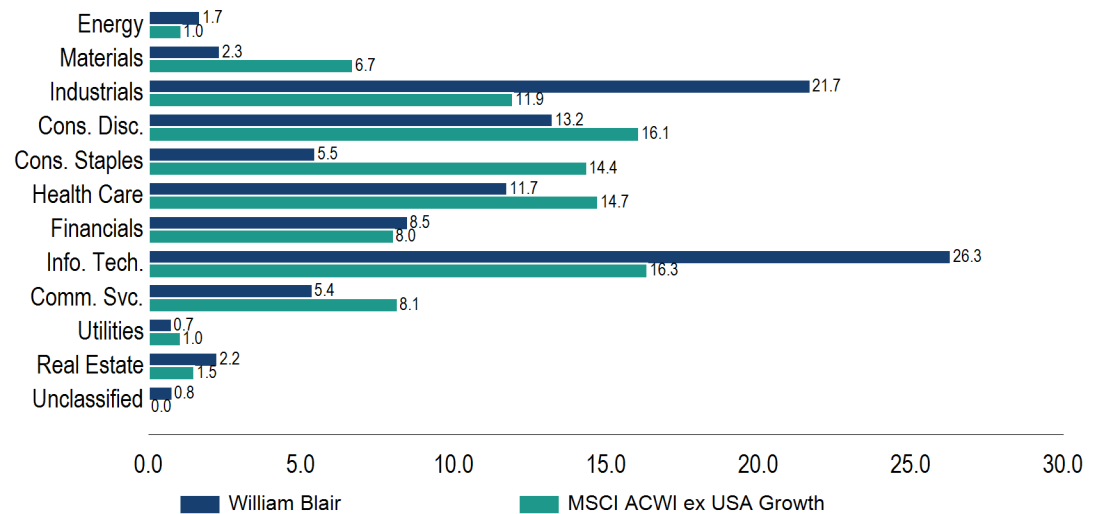
## Characteristics

	MSCI ACWI Portfolio	MSCI ACWI ex USA Growth
Number of Holdings	185	1,040
Weighted Avg. Market Cap. (\$B)	62.15	113.77
Median Market Cap. (\$B)	11.21	8.86
Price To Earnings	31.28	26.26
Price To Book	5.17	4.05
Price To Sales	3.52	2.50
Return on Equity (%)	20.21	18.57
Yield (%)	1.04	1.59
Beta	1.17	1.00

## Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
<b>Totals</b>		
Developed	84.4%	70.8%
Emerging*	15.1%	29.2%
<b>Top 10 Largest Countries</b>		
Japan	12.7%	16.8%
United Kingdom	11.7%	6.4%
France	11.2%	7.0%
Hong Kong	8.5%	2.4%
China*	6.6%	12.5%
Switzerland	6.2%	8.6%
Germany	5.8%	4.3%
Denmark	5.3%	2.8%
Sweden	4.8%	2.6%
United States	4.6%	0.0%
<b>Total-Top 10 Largest Countries</b>	<b>77.5%</b>	<b>63.3%</b>

## Sector Allocation (%) vs MSCI ACWI ex USA Growth



## Top Contributors

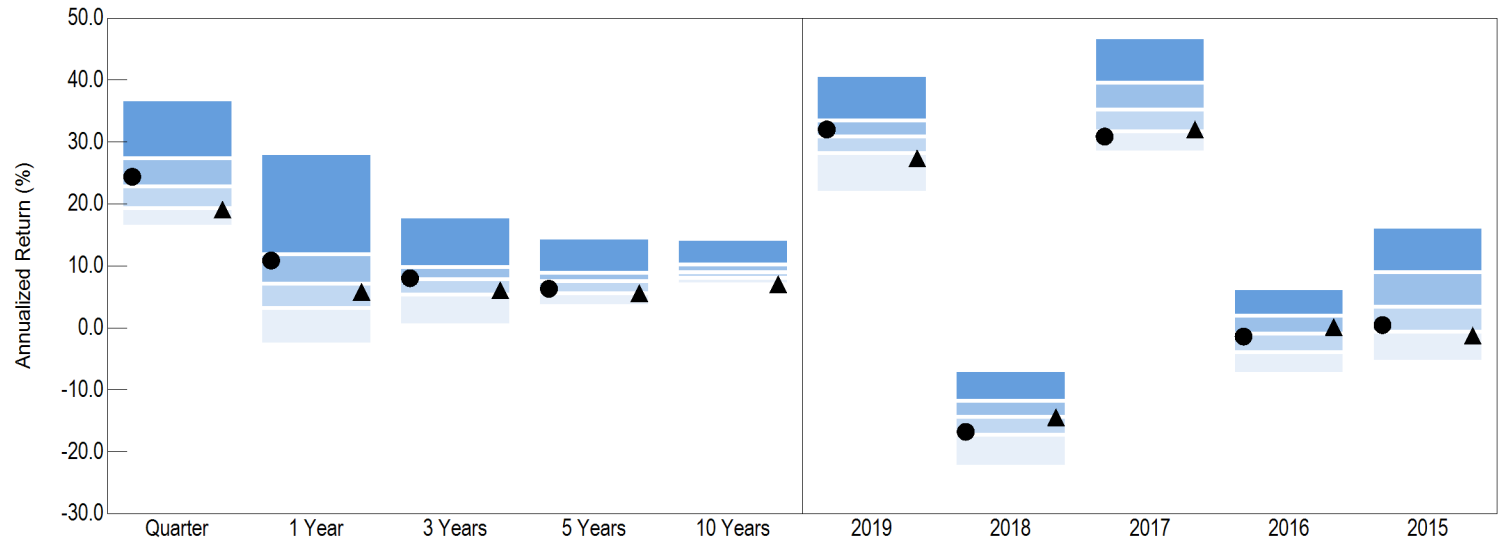
	Avg Wgt	Return	Contribution
TENCENT HOLDINGS LTD	2.59	31.52	0.82
ASML HOLDING NV	2.04	38.72	0.79
MEDIATEK INCORPORATION	0.86	81.21	0.69
ADYEN N.V	0.87	72.09	0.63
LONZA GROUP AG, ZUERICH	2.12	27.82	0.59
KEYENCE CORP	1.84	29.37	0.54
SEA LTD	0.37	142.02	0.53
LULULEMON ATHLETICA INC	0.72	64.61	0.47
ATLAS COPCO AB	1.68	26.95	0.45
GENMAB A/S	0.65	65.23	0.42

## Bottom Contributors

	Avg Wgt	Return	Contribution
COMPASS GROUP PLC	0.95	-12.33	-0.12
HISCOX LTD	0.25	-15.05	-0.04
SSP GROUP PLC	0.10	-16.65	-0.02
FABEGE AB	0.20	-7.75	-0.02
WAREHOUSES DE PAUW SCA WDP, MEISE	0.26	-2.82	-0.01
WH SMITH PLC	0.14	-4.19	-0.01
VICTREX PLC	0.24	-1.11	0.00
BIDVEST GROUP LTD	0.07	-0.13	0.00
GREGGS PLC	0.33	0.02	0.00
ALTEN	0.01	19.72	0.00

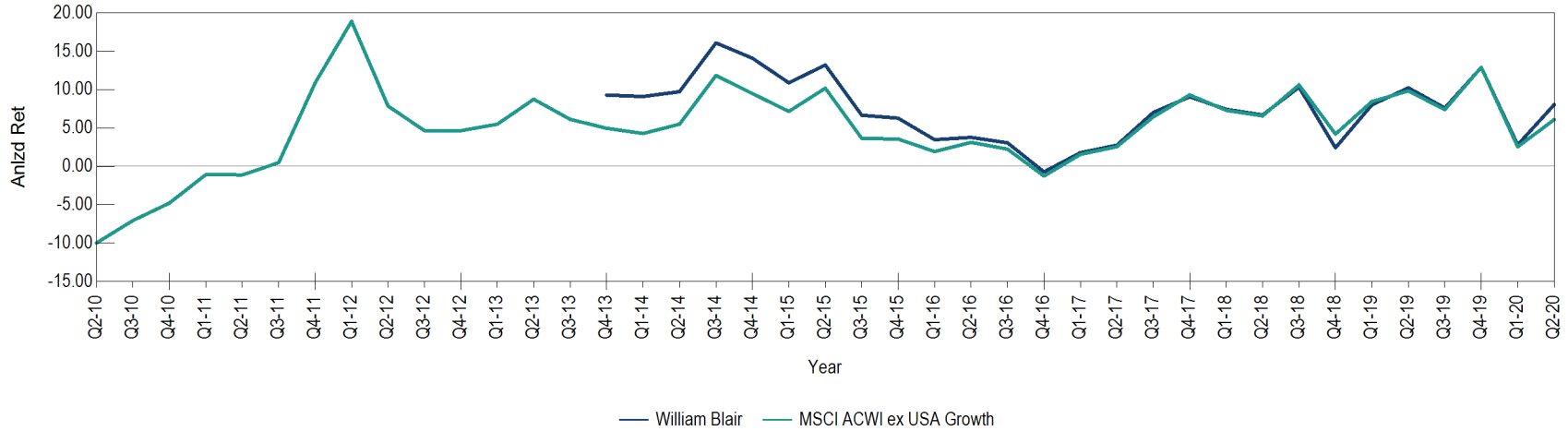
Unclassified sector allocation includes cash allocations.

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

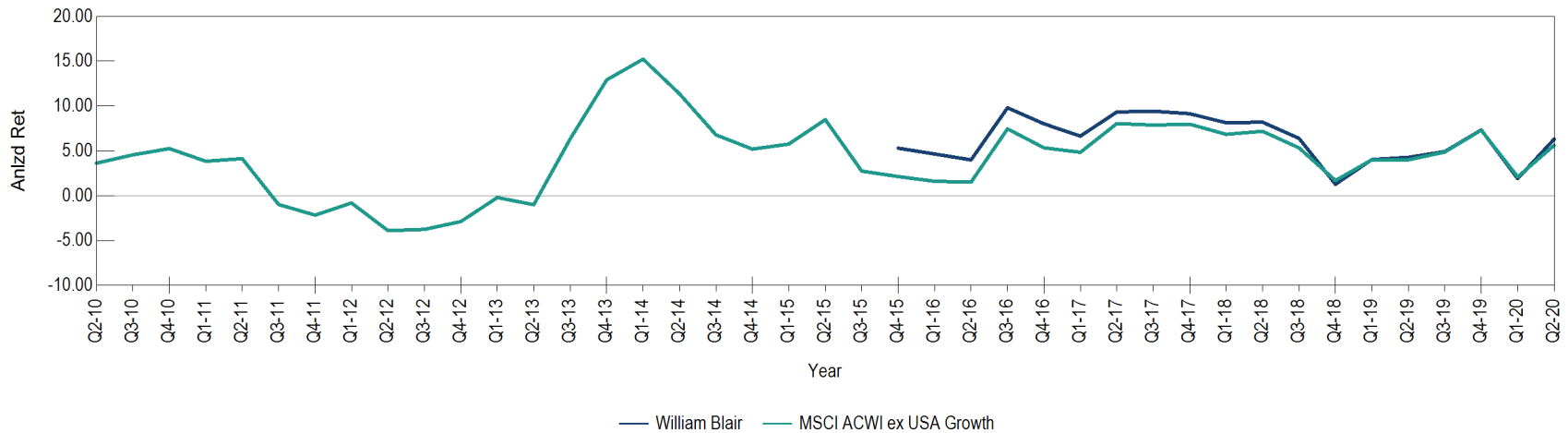


	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
5th Percentile	36.9	28.1	18.0	14.5	14.3	40.8	-6.8	46.8	6.3	16.3
25th Percentile	27.4	11.9	9.9	9.0	10.3	33.6	-11.7	39.6	2.0	9.0
Median	22.9	7.2	7.9	7.6	9.0	31.0	-14.3	35.3	-0.9	3.5
75th Percentile	19.4	3.3	5.4	5.6	8.1	28.3	-17.2	31.8	-3.9	-0.5
95th Percentile	16.4	-2.6	0.5	3.6	7.1	21.8	-22.3	28.3	-7.4	-5.4
# of Portfolios	96	96	93	83	59	93	82	94	90	70
● William Blair	24.4 (45)	10.9 (30)	8.0 (48)	6.3 (66)	-- (--)	32.0 (39)	-16.8 (69)	30.9 (81)	-1.4 (55)	0.5 (69)
▲ MSCI ACWI ex USA Growth	19.1 (78)	5.8 (60)	6.1 (69)	5.6 (76)	7.0 (96)	27.3 (80)	-14.4 (51)	32.0 (75)	0.1 (45)	-1.3 (83)

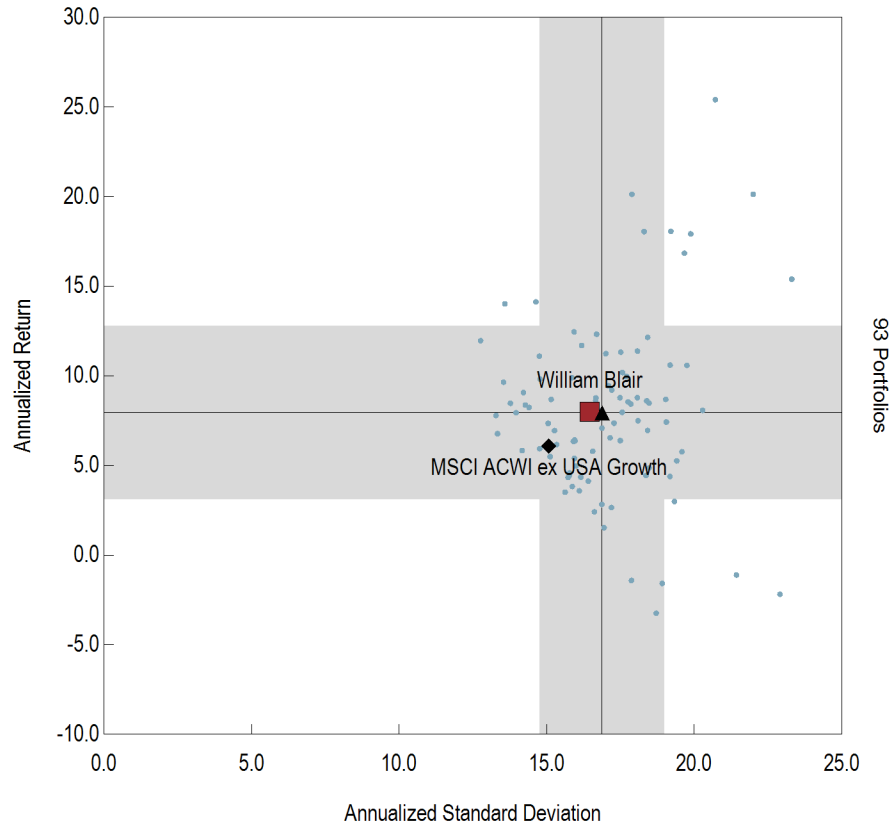
Rolling 3 Year Annualized Return (%)



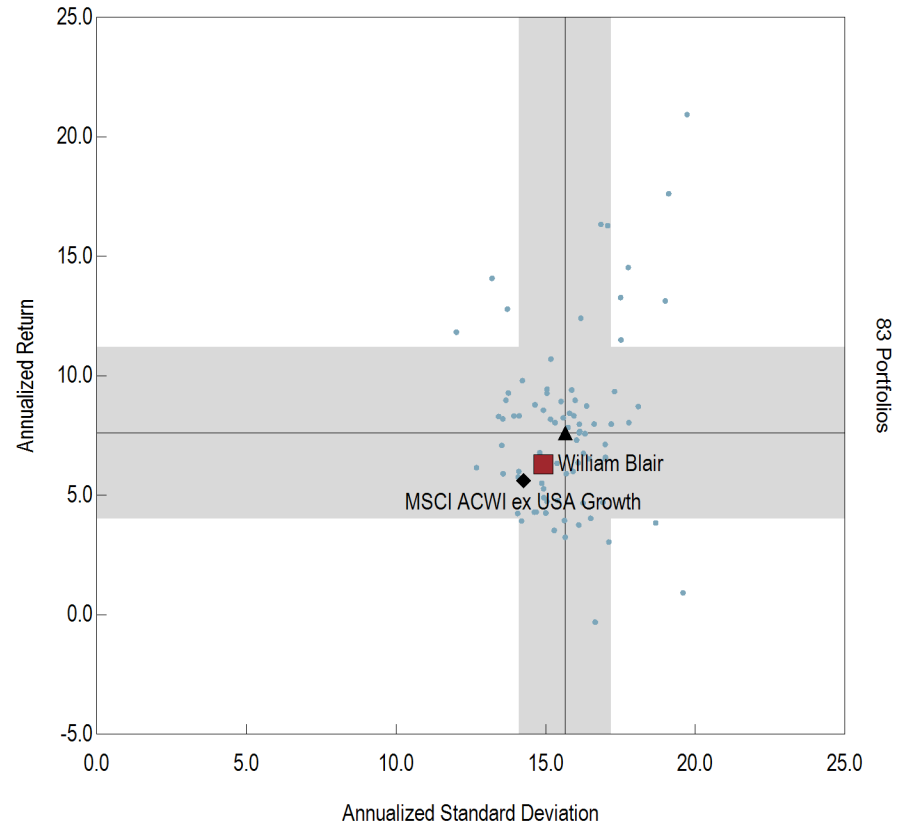
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
William Blair	8.0%	16.5%	0.4
MSCI ACWI ex USA Growth	6.1%	15.1%	0.3
eV ACWI ex-US Growth Equity Gross Median	7.9%	16.9%	0.4

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
William Blair	6.3%	14.9%	0.3
MSCI ACWI ex USA Growth	5.6%	14.3%	0.3
eV ACWI ex-US Growth Equity Gross Median	7.6%	15.7%	0.4

# PIMCO RAE Emerging Markets Manager Portfolio Overview

Period Ending: June 30, 2020

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

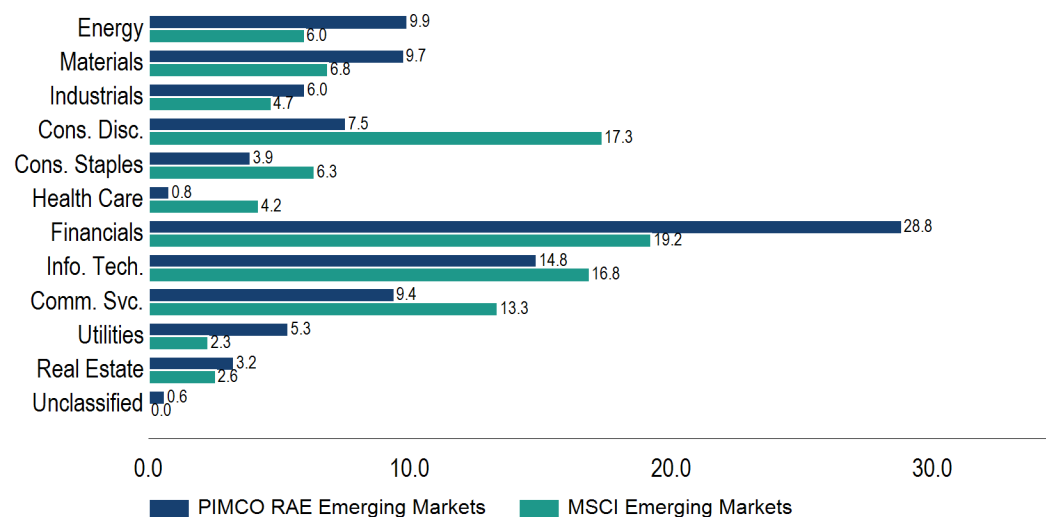
## Characteristics

	Portfolio	MSCI Emerging Markets
Number of Holdings	611	1,385
Weighted Avg. Market Cap. (\$B)	35.30	130.73
Median Market Cap. (\$B)	3.17	5.42
Price To Earnings	8.22	15.55
Price To Book	1.83	2.94
Price To Sales	0.48	1.51
Return on Equity (%)	8.56	15.61
Yield (%)	4.84	2.66
Beta	1.14	1.00

## Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
<b>Totals</b>		
Developed	7.8%	0.0%
Emerging*	91.7%	100.0%
<b>Top 10 Largest Countries</b>		
Korea*	17.2%	11.6%
China*	16.2%	41.0%
Taiwan*	13.8%	12.3%
Russia*	9.3%	3.2%
India*	9.2%	8.0%
Hong Kong	7.3%	0.0%
Brazil*	5.7%	5.1%
Turkey*	4.7%	0.5%
South Africa*	4.0%	3.8%
Mexico*	3.4%	1.7%
<b>Total-Top 10 Largest Countries</b>	<b>90.8%</b>	<b>87.2%</b>

## Sector Allocation (%) vs MSCI Emerging Markets



## Top Contributors

	End Weight	Return	Contribution
VODAFONE IDEA LIMITED	0.37	242.60	0.91
SASOL LTD	0.27	267.97	0.71
GOLD FIELDS LTD	0.63	97.89	0.62
RELIANCE INFRASTRUCTURE LTD	0.19	280.15	0.54
INDIABULLS HOUSING FINANCE LTD	0.39	114.53	0.44
AU OPTRONICS	0.85	49.71	0.42
INNOLUX CORP	0.75	54.82	0.41
VEDANTA LTD	0.63	64.77	0.41
SAMSUNG ELECTRONICS CO LTD	3.40	11.91	0.41
TATA MOTORS	1.03	38.55	0.40

## Bottom Contributors

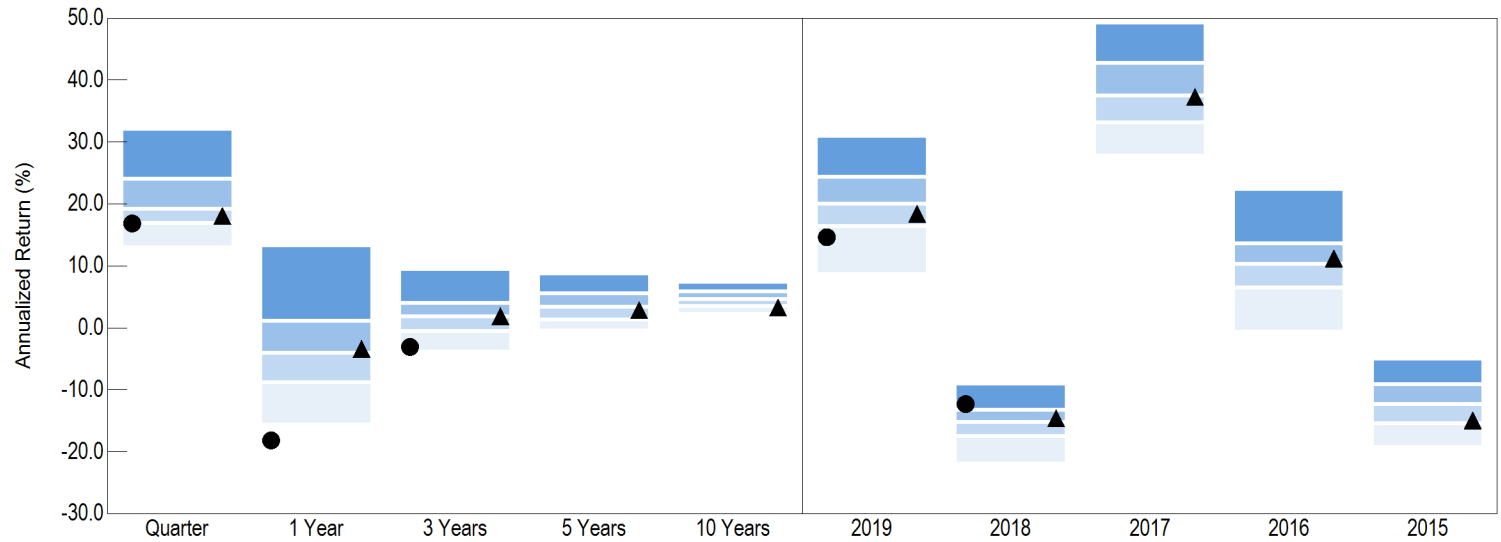
	End Weight	Return	Contribution
INDUSTRIAL & COMMERCIAL BANK OF CHINA LTD	1.84	-6.24	-0.11
CHINA PETROLEUM & CHEMICAL CORP SINOPEC	0.93	-10.41	-0.10
CHINA MOBILE LTD	1.10	-6.39	-0.07
BANK OF CHINA LTD	1.96	-3.36	-0.07
SIAM COMMERCIAL BANK PUBLIC CO LTD	0.28	-20.49	-0.06
CHINA CONSTRUCTION BANK CORP	4.25	-1.10	-0.05
CHINA MINSHENG BANKING CORP	0.49	-7.63	-0.04
CITIC LTD	0.50	-6.89	-0.03

Unclassified sector allocation includes cash allocations.

PIMCO RAE Emerging Markets  
 Manager Performance Comparisons (Gross of Fees)

Period Ending: June 30, 2020

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



	Return (Rank)															
5th Percentile	32.1	13.3	9.4	8.7	7.4	30.9	-9.0	49.2	22.4	-5.0						
25th Percentile	24.2	1.2	4.1	5.7	5.9	24.4	-13.2	42.8	13.7	-9.0						
Median	19.3	-4.0	1.9	3.5	4.7	20.1	-15.2	37.6	10.4	-12.2						
75th Percentile	17.0	-8.7	-0.4	1.5	3.5	16.5	-17.4	33.2	6.6	-15.3						
95th Percentile	13.1	-15.5	-3.8	-0.4	2.3	8.8	-21.8	27.8	-0.6	-19.2						
# of Portfolios	401	399	367	329	167	386	355	343	337	273						
● PIMCO RAE Emerging Markets	16.8 (76)	-18.2 (97)	-3.1 (93)	-- (--)	-- (--)	14.6 (82)	-12.3 (19)	-- (--)	-- (--)	-- (--)						
▲ MSCI Emerging Markets	18.1 (66)	-3.4 (46)	1.9 (51)	2.9 (60)	3.3 (83)	18.4 (63)	-14.6 (43)	37.3 (53)	11.2 (45)	-14.9 (70)						

# TT Emerging Markets Manager Portfolio Overview

Period Ending: June 30, 2020

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

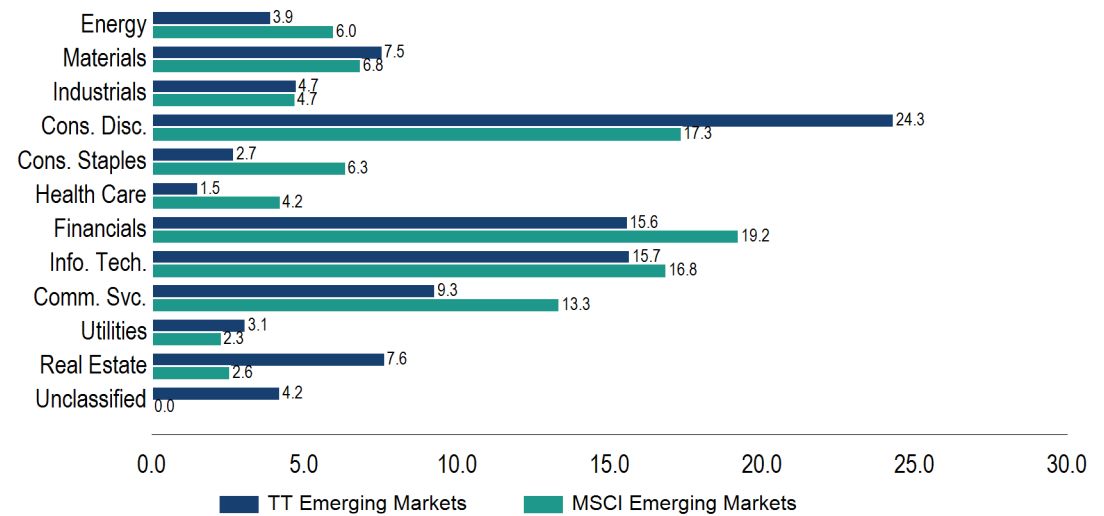
## Characteristics

	Portfolio	MSCI Emerging Markets
Number of Holdings	66	1,385
Weighted Avg. Market Cap. (\$B)	116.27	130.73
Median Market Cap. (\$B)	9.62	5.42
Price To Earnings	16.78	15.55
Price To Book	3.10	2.94
Price To Sales	1.81	1.51
Return on Equity (%)	16.23	15.61
Yield (%)	2.18	2.66
Beta		1.00

## Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
<b>Totals</b>		
Developed	26.2%	0.0%
Emerging*	72.9%	100.0%
Frontier**	0.6%	0.0%
<b>Top 10 Largest Countries</b>		
India*	14.9%	8.0%
Korea*	14.3%	11.6%
Hong Kong	13.8%	0.0%
China*	13.5%	41.0%
Brazil*	9.0%	5.1%
Taiwan*	8.5%	12.3%
South Africa*	6.3%	3.8%
United States	5.4%	0.0%
Netherlands	3.4%	0.0%
Russia*	2.7%	3.2%
<b>Total-Top 10 Largest Countries</b>	<b>92.5%</b>	<b>85.0%</b>

## Sector Allocation (%) vs MSCI Emerging Markets



## Top Contributors

	End Weight	Return	Contribution
NASPERS LTD	6.26	27.32	1.71
SAMSUNG ELECTRONICS CO LTD	7.88	17.36	1.37
TENCENT HOLDINGS LTD	4.15	31.52	1.31
RELIANCE INDUSTRIES LTD	1.90	54.76	1.04
HANSOL CHEMICAL	1.53	62.90	0.96
ALIBABA GROUP HOLDING LTD	8.63	10.91	0.94
LOJAS AMERICANAS PN REP1 PN	1.35	68.87	0.93
TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	5.00	18.02	0.90

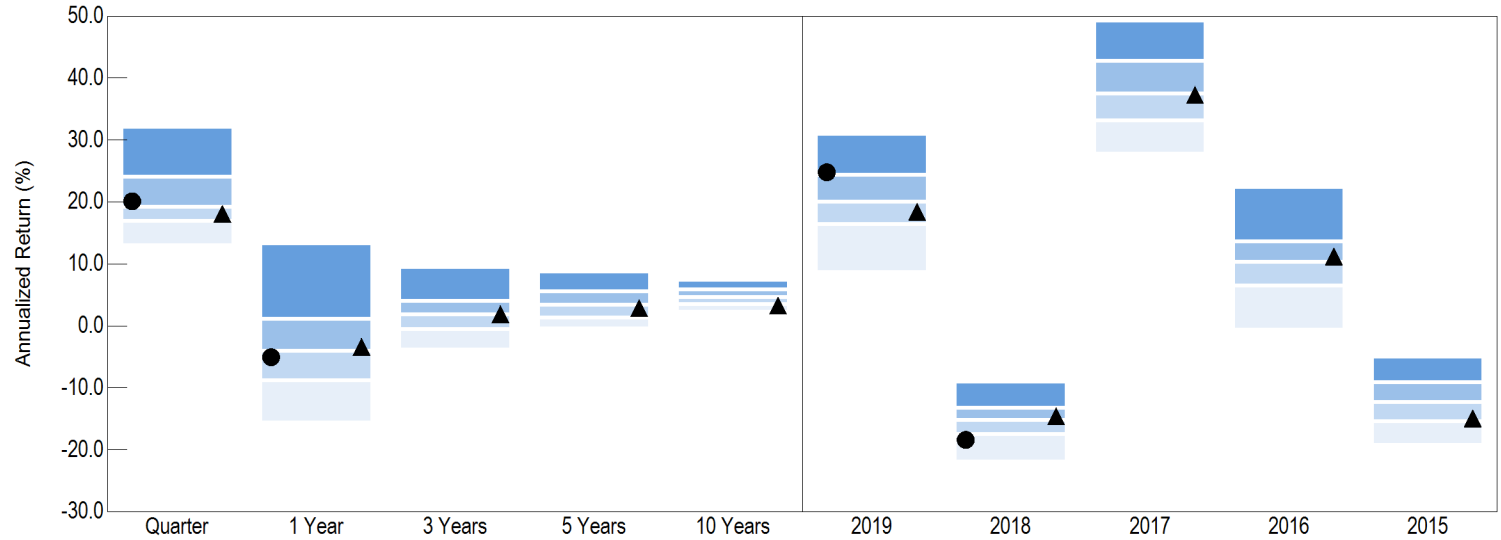
## Bottom Contributors

	End Weight	Return	Contribution
SUNAC CHINA HOLDINGS LTD	3.28	-6.03	-0.20
CHINA GAS HOLDINGS LTD	1.63	-11.48	-0.19
OCI NV	0.91	-13.33	-0.12
INTERGLOBE AVIATION LTD	0.81	-7.07	-0.06
NOAH HOLDINGS LTD	0.76	-1.51	-0.01
MEDICLINIC INTERNATIONAL PLC	0.31	-2.13	-0.01
CHINA MOBILE LTD	0.03	-7.91	0.00
CHINA OVERSEAS LAND & INVESTMENT LTD	0.88	-0.12	0.00
FIBRA UNO ADMINISTRACION DE MEXICO	1.63	1.18	0.02

Unclassified sector allocation includes cash allocations.



TT Emerging Markets vs. eV Emg Mkts Equity Gross Universe



	Return (Rank)																				
5th Percentile	32.1	13.3	9.4	8.7	7.4	30.9	-9.0	49.2	22.4	-5.0											
25th Percentile	24.2	1.2	4.1	5.7	5.9	24.4	-13.2	42.8	13.7	-9.0											
Median	19.3	-4.0	1.9	3.5	4.7	20.1	-15.2	37.6	10.4	-12.2											
75th Percentile	17.0	-8.7	-0.4	1.5	3.5	16.5	-17.4	33.2	6.6	-15.3											
95th Percentile	13.1	-15.5	-3.8	-0.4	2.3	8.8	-21.8	27.8	-0.6	-19.2											
# of Portfolios	401	399	367	329	167	386	355	343	337	273											
● TT Emerging Markets	20.1 (45)	-5.1 (58)	-- (--)	-- (--)	-- (--)	24.8 (24)	-18.4 (83)	-- (--)	-- (--)	-- (--)											
▲ MSCI Emerging Markets	18.1 (66)	-3.4 (46)	1.9 (51)	2.9 (60)	3.3 (83)	18.4 (63)	-14.6 (43)	37.3 (53)	11.2 (45)	-14.9 (70)											

## Global Equity Managers

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# Artisan Partners Manager Portfolio Overview

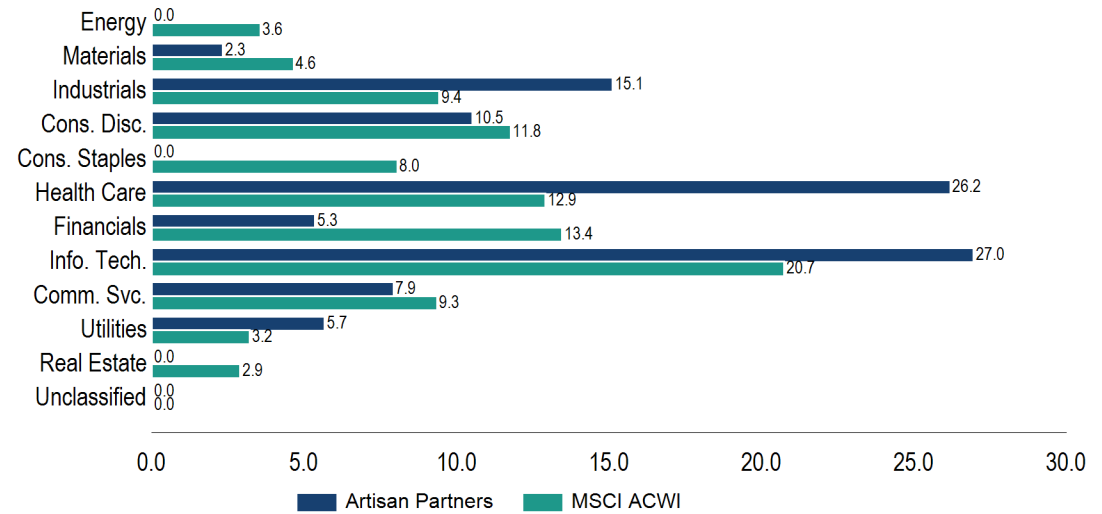
Period Ending: June 30, 2020

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

## Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	45	2,988
Weighted Avg. Market Cap. (\$B)	154.81	233.96
Median Market Cap. (\$B)	43.99	9.11
Price To Earnings	39.05	19.62
Price To Book	5.05	3.47
Price To Sales	3.86	1.90
Return on Equity (%)	18.42	19.06
Yield (%)	0.91	2.24
Beta	1.02	1.00

## Sector Allocation (%) vs MSCI ACWI



## Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
<b>Totals</b>		
Developed	98.9%	87.8%
Emerging*	1.1%	12.2%
<b>Top 10 Largest Countries</b>		
United States	56.7%	57.6%
United Kingdom	8.3%	3.9%
Hong Kong	7.2%	0.9%
Denmark	7.1%	0.6%
Netherlands	5.1%	1.2%
Switzerland	4.7%	2.8%
Sweden	3.2%	0.8%
Japan	3.1%	7.0%
Spain	2.3%	0.7%
Germany	1.3%	2.5%
<b>Total-Top 10 Largest Countries</b>	<b>98.9%</b>	<b>78.1%</b>

## Top Contributors

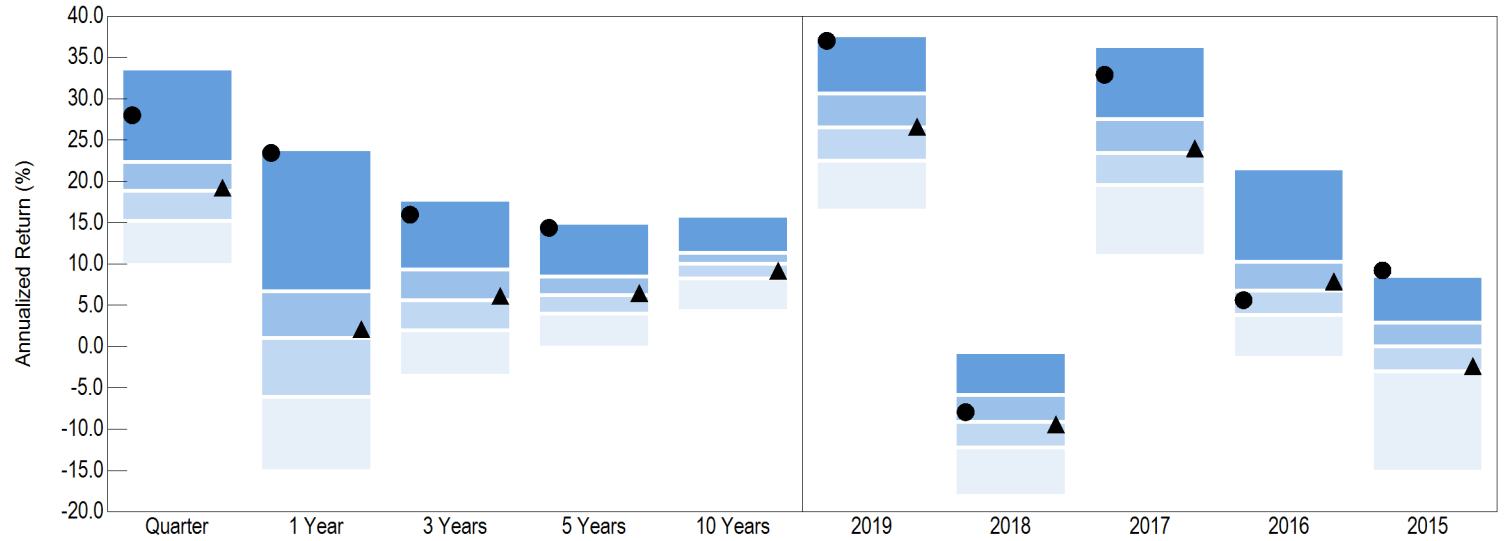
	Avg Wgt	Return	Contribution
ZOOM VIDEO COMMUNICATIONS INC	3.71	73.52	2.73
LOWE'S COS INC	3.56	57.96	2.07
TECHTRONIC INDUSTRIES CO LTD	3.73	51.99	1.94
GENMAB A/S	2.86	65.23	1.87
VEEVA SYSTEMS INC	3.38	49.91	1.69
MICROSOFT CORP	5.54	29.40	1.63
IHS MARKIT LTD	5.18	26.15	1.35
LONZA GROUP AG, ZUERICH	4.65	27.82	1.29
CERIDIAN HCM HOLDING INC	1.48	58.32	0.86

## Bottom Contributors

	Avg Wgt	Return	Contribution
L3HARRIS TECHNOLOGIES INC	3.55	-5.39	-0.19
NEXTERA ENERGY INC	2.51	0.36	0.01
AIA GROUP LTD	1.05	4.43	0.05
ARISTA NETWORKS INC	2.04	3.69	0.08
STARBUCKS CORP	0.66	12.54	0.08
VISA INC	0.60	20.10	0.12
BOSTON SCIENTIFIC CORP	1.76	7.60	0.13
HOYA CORP	1.40	11.59	0.16
TELEFONAKTIEBOLAGET LM ERICSSON	1.23	14.11	0.17
KONINKLIJKE PHILIPS NV	1.22	15.13	0.18

Unclassified sector allocation includes cash allocations.

Artisan Partners vs. eV All Global Equity Gross Universe

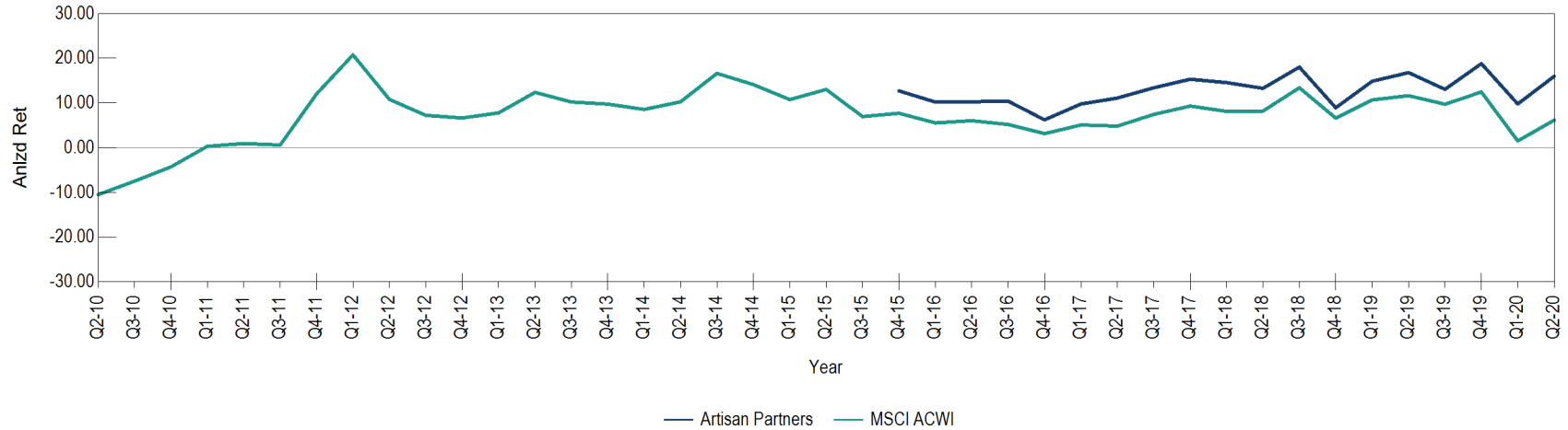


	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
5th Percentile	33.6	23.9	17.7	14.9	15.8	37.6	-0.7	36.3	21.5	8.5
25th Percentile	22.3	6.7	9.3	8.5	11.4	30.7	-5.8	27.6	10.3	3.0
Median	18.9	1.1	5.6	6.3	10.0	26.6	-9.1	23.5	6.8	0.1
75th Percentile	15.2	-6.1	2.0	4.0	8.3	22.6	-12.2	19.6	3.9	-2.9
95th Percentile	9.9	-15.0	-3.5	-0.1	4.3	16.5	-18.1	11.0	-1.4	-15.1
# of Portfolios	1,046	1,046	968	848	536	989	920	880	842	692
● Artisan Partners	28.0 (10)	23.4 (6)	16.0 (7)	14.4 (6)	-- (--)	37.0 (7)	-7.9 (40)	32.9 (11)	5.6 (61)	9.2 (4)
▲ MSCI ACWI	19.2 (48)	2.1 (46)	6.1 (46)	6.5 (48)	9.2 (66)	26.6 (50)	-9.4 (53)	24.0 (47)	7.9 (42)	-2.4 (73)

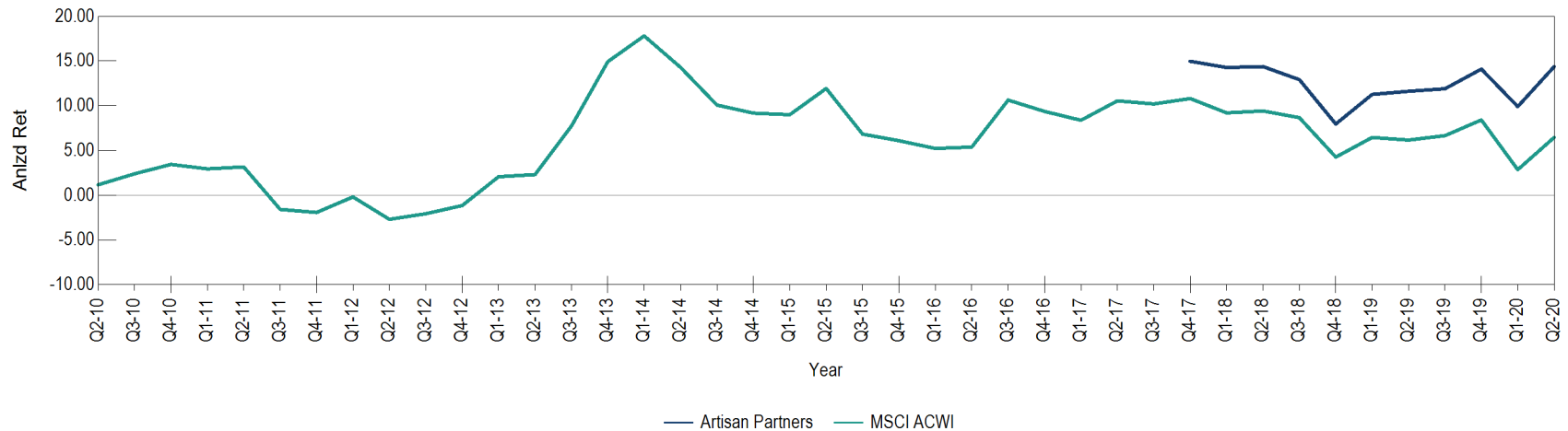
Artisan Partners  
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees)

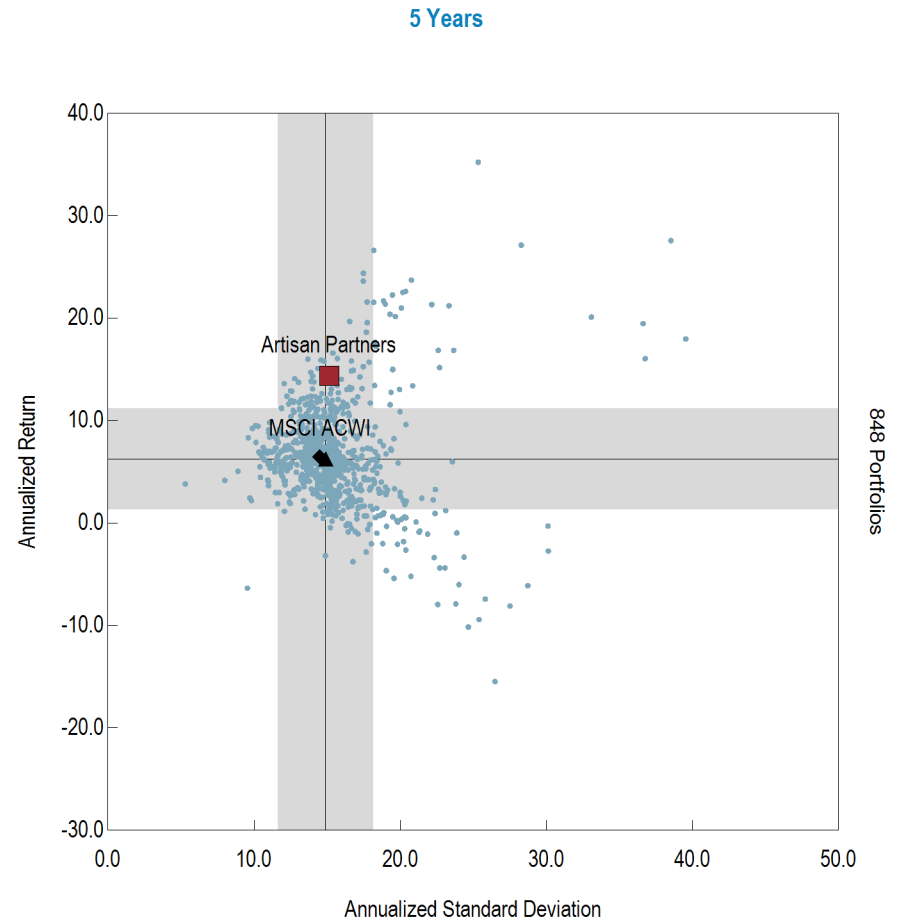
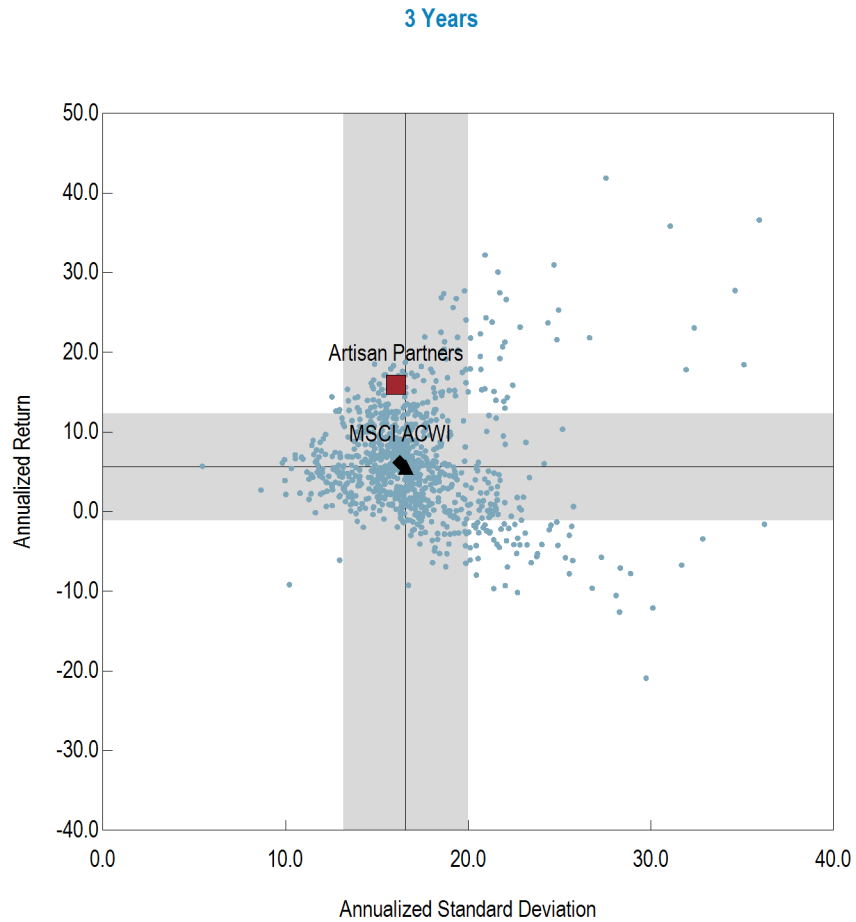
Period Ending: June 30, 2020

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)





	<b>3 Years</b>		
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Artisan Partners	16.0%	16.1%	0.9
MSCI ACWI	6.1%	16.3%	0.3
eV All Global Equity Gross Median	5.6%	16.6%	0.2

	<b>5 Years</b>		
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Artisan Partners	14.4%	15.1%	0.9
MSCI ACWI	6.5%	14.5%	0.4
eV All Global Equity Gross Median	6.3%	14.9%	0.4

# First Eagle Manager Portfolio Overview

Period Ending: June 30, 2020

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

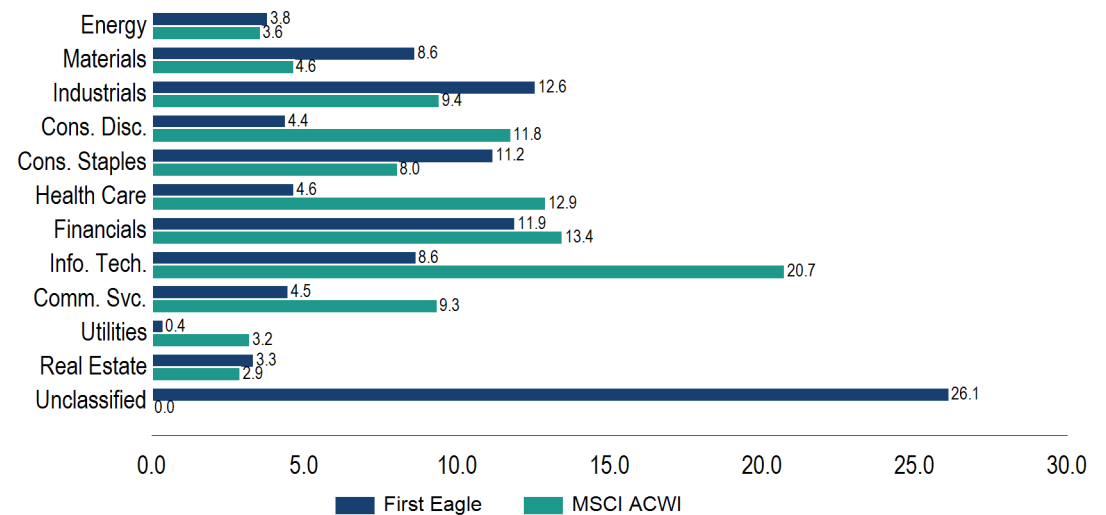
## Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	136	2,988
Weighted Avg. Market Cap. (\$B)	93.84	233.96
Median Market Cap. (\$B)	20.66	9.11
Price To Earnings	17.33	19.62
Price To Book	2.51	3.47
Price To Sales	1.74	1.90
Return on Equity (%)	15.94	19.06
Yield (%)	2.29	2.24
Beta	0.76	1.00

## Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
<b>Totals</b>		
Developed	81.6%	87.8%
Emerging*	4.9%	12.2%
<b>Top 10 Largest Countries</b>		
United States	49.4%	57.6%
Cash	13.5%	0.0%
Japan	9.8%	7.0%
France	5.0%	3.0%
United Kingdom	4.3%	3.9%
Canada	3.9%	2.8%
Switzerland	2.0%	2.8%
Korea*	1.9%	1.4%
Singapore	1.5%	0.3%
Belgium	1.2%	0.3%
<b>Total-Top 10 Largest Countries</b>	<b>92.5%</b>	<b>79.0%</b>

## Sector Allocation (%) vs MSCI ACWI



## Top Contributors

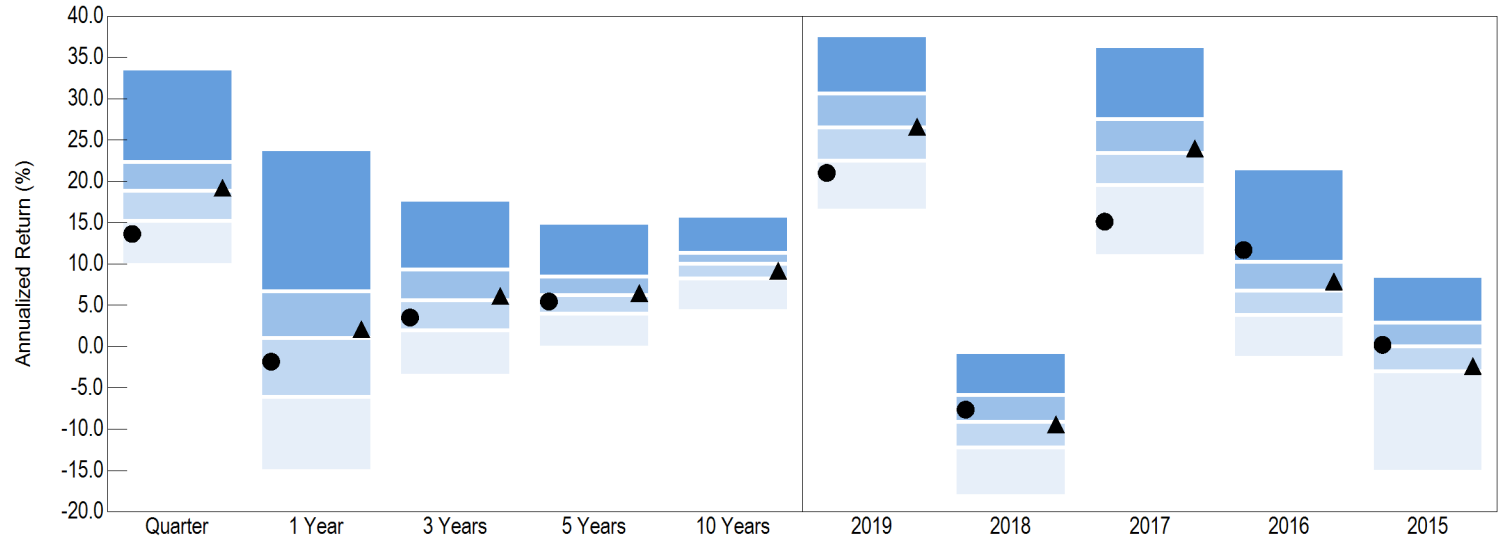
	End Weight	Return	Contribution
SPDR GOLD TRUST	11.36	13.05	1.48
WHEATON PRECIOUS METALS CORP	1.00	60.37	0.60
FANUC CORP	1.76	31.51	0.55
BARRICK GOLD CORP	1.16	47.48	0.55
NEWMONT CORPORATION	1.46	36.96	0.54
FACEBOOK INC	1.15	36.13	0.42
ORACLE CORP	2.67	14.89	0.40
EXXON MOBIL CORP	1.95	20.10	0.39
SCHLUMBERGER LTD	0.95	37.23	0.35
WEYERHAEUSER CO	1.05	32.51	0.34

## Bottom Contributors

	End Weight	Return	Contribution
JARDINE MATHESON HOLDINGS LTD	0.59	-16.52	-0.10
WELLS FARGO & CO	0.43	-9.00	-0.04
ALLEGHANY CORP	0.33	-11.44	-0.04
NUTRIEN LTD	0.90	-4.12	-0.04
PHILIP MORRIS INTERNATIONAL INC	1.48	-2.42	-0.04
UNIVERSAL HEALTH SERVICES INC.	0.45	-6.25	-0.03
LLOYDS BANKING GROUP PLC	0.42	-2.92	-0.01
EQUITY RESIDENTIAL	0.30	-3.72	-0.01
BERKSHIRE HATHAWAY INC	0.52	-1.73	-0.01
CHOFU SEISAKUSHO CO LTD	0.08	-10.28	-0.01

Unclassified sector allocation includes cash allocations and Gold allocations (11.4% as of 6/30/2020).

First Eagle vs. eV All Global Equity Gross Universe



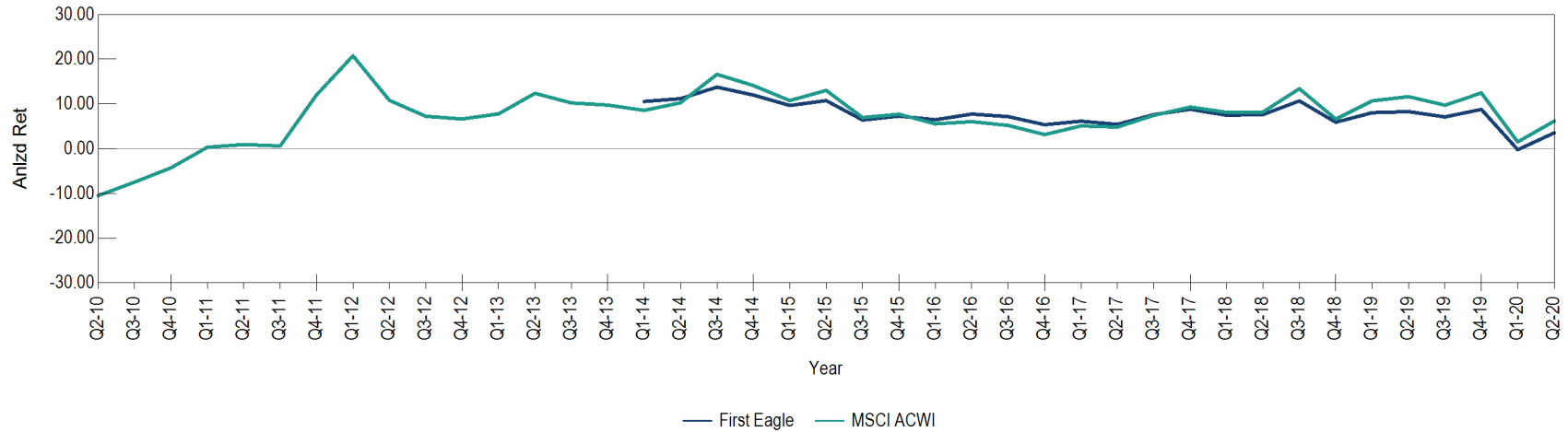
	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
<b>5th Percentile</b>	33.6	23.9	17.7	14.9	15.8	37.6	-0.7	36.3	21.5	8.5
<b>25th Percentile</b>	22.3	6.7	9.3	8.5	11.4	30.7	-5.8	27.6	10.3	3.0
<b>Median</b>	18.9	1.1	5.6	6.3	10.0	26.6	-9.1	23.5	6.8	0.1
<b>75th Percentile</b>	15.2	-6.1	2.0	4.0	8.3	22.6	-12.2	19.6	3.9	-2.9
<b>95th Percentile</b>	9.9	-15.0	-3.5	-0.1	4.3	16.5	-18.1	11.0	-1.4	-15.1
<b># of Portfolios</b>	1,046	1,046	968	848	536	989	920	880	842	692
<b>● First Eagle</b>	13.6 (82)	-1.8 (61)	3.5 (67)	5.4 (62)	-- (--)	21.0 (82)	-7.6 (38)	15.1 (89)	11.7 (19)	0.2 (49)
<b>▲ MSCI ACWI</b>	19.2 (48)	2.1 (46)	6.1 (46)	6.5 (48)	9.2 (66)	26.6 (50)	-9.4 (53)	24.0 (47)	7.9 (42)	-2.4 (73)



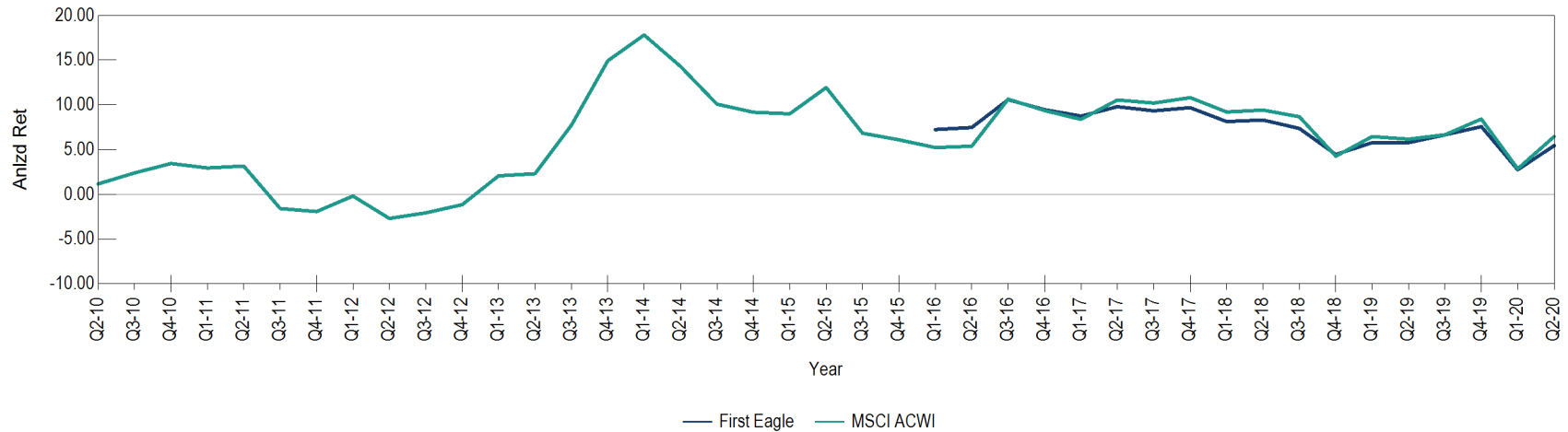
First Eagle  
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees)

Period Ending: June 30, 2020

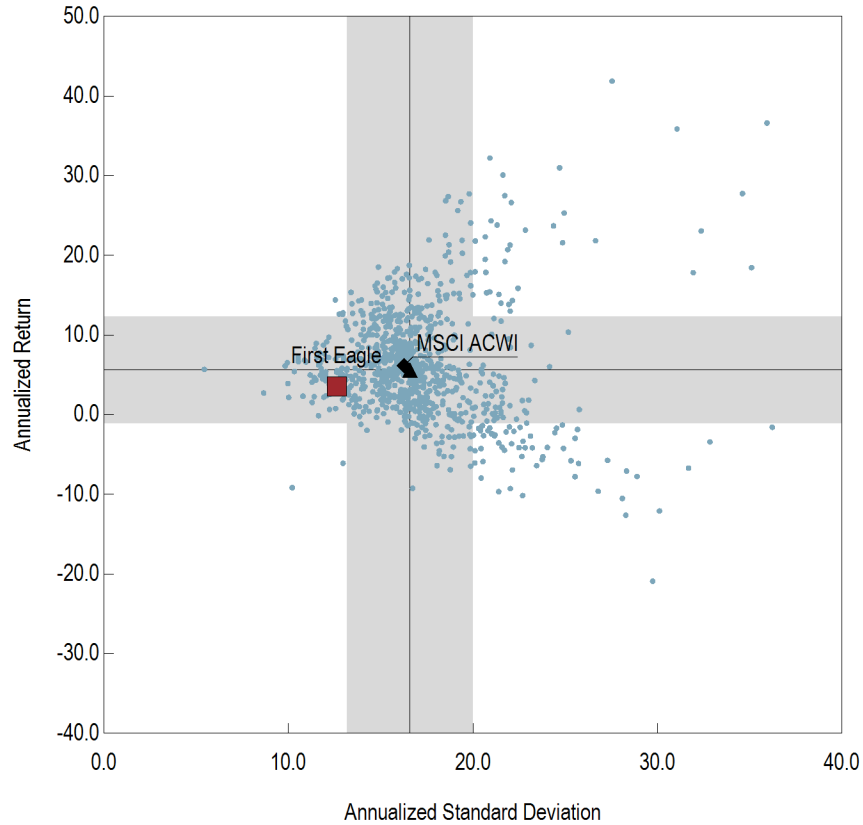
Rolling 3 Year Annualized Return (%)



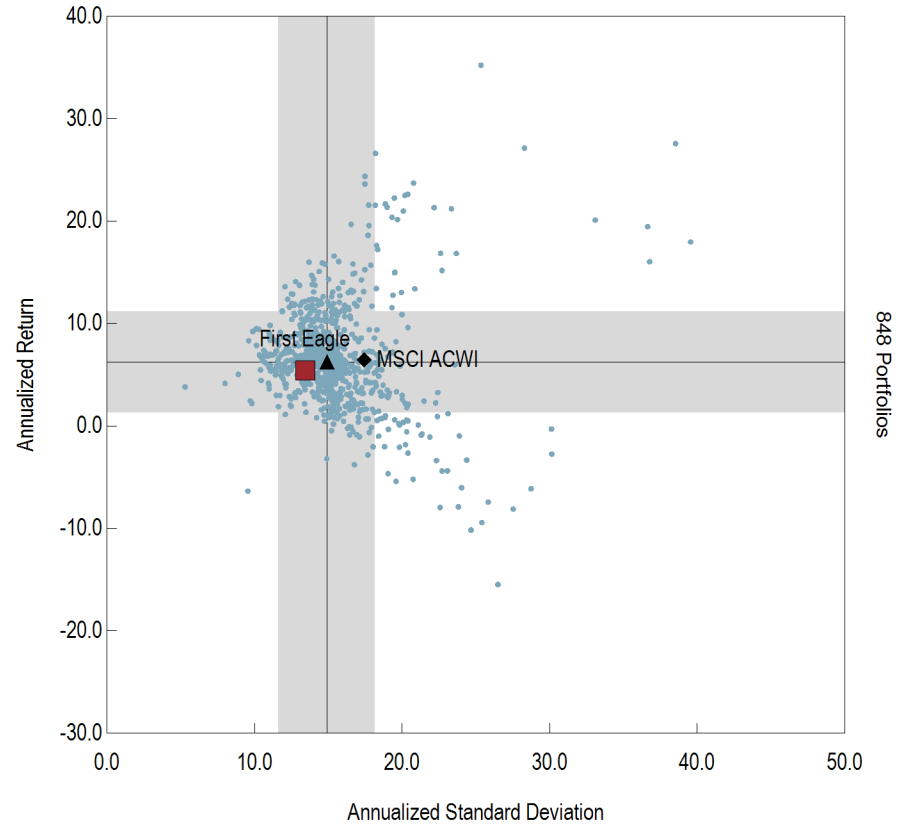
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
First Eagle	3.5%	12.6%	0.1
MSCI ACWI	6.1%	16.3%	0.3
eV All Global Equity Gross Median	5.6%	16.6%	0.2

5 Years

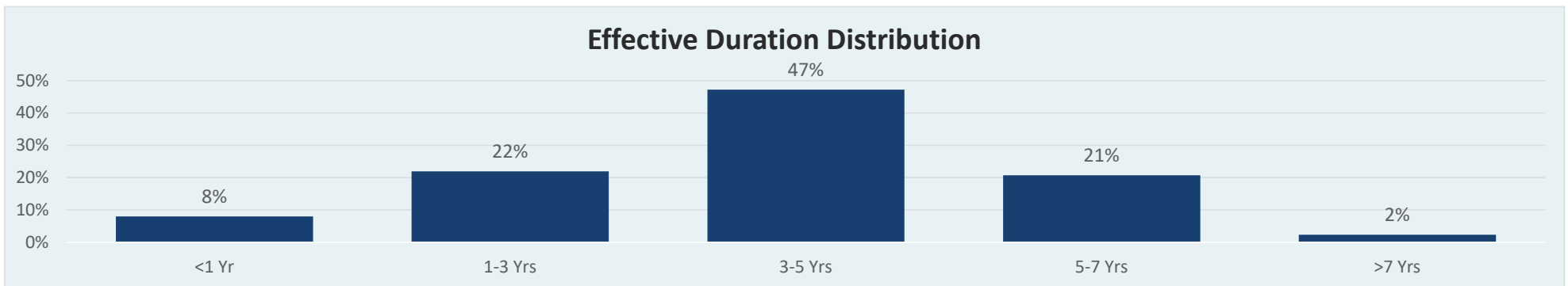
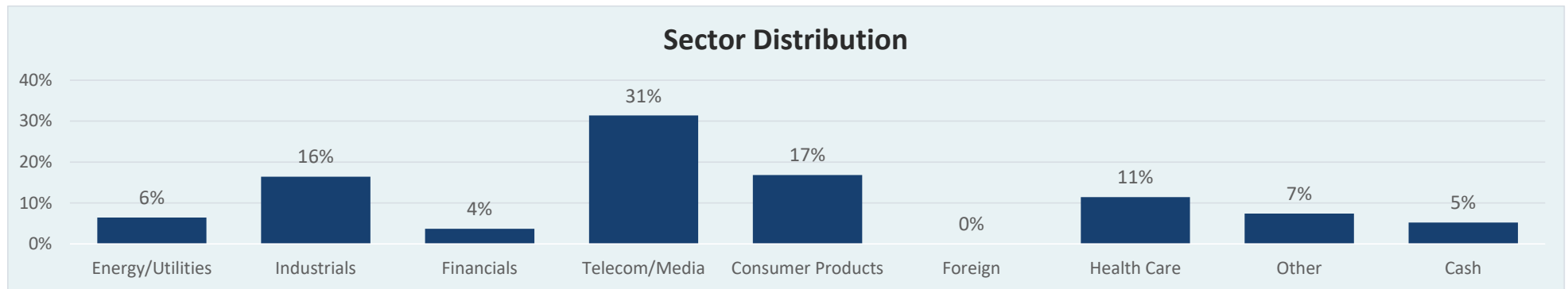
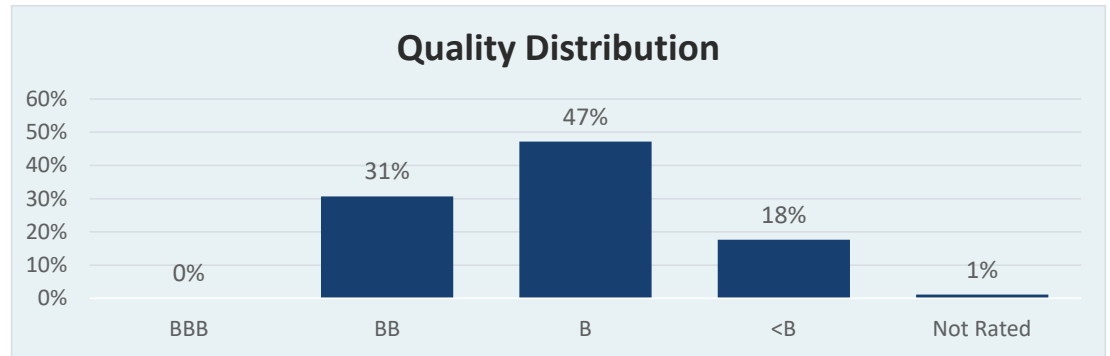
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
First Eagle	5.4%	11.1%	0.4
MSCI ACWI	6.5%	14.5%	0.4
eV All Global Equity Gross Median	6.3%	14.9%	0.4

## High Yield Managers

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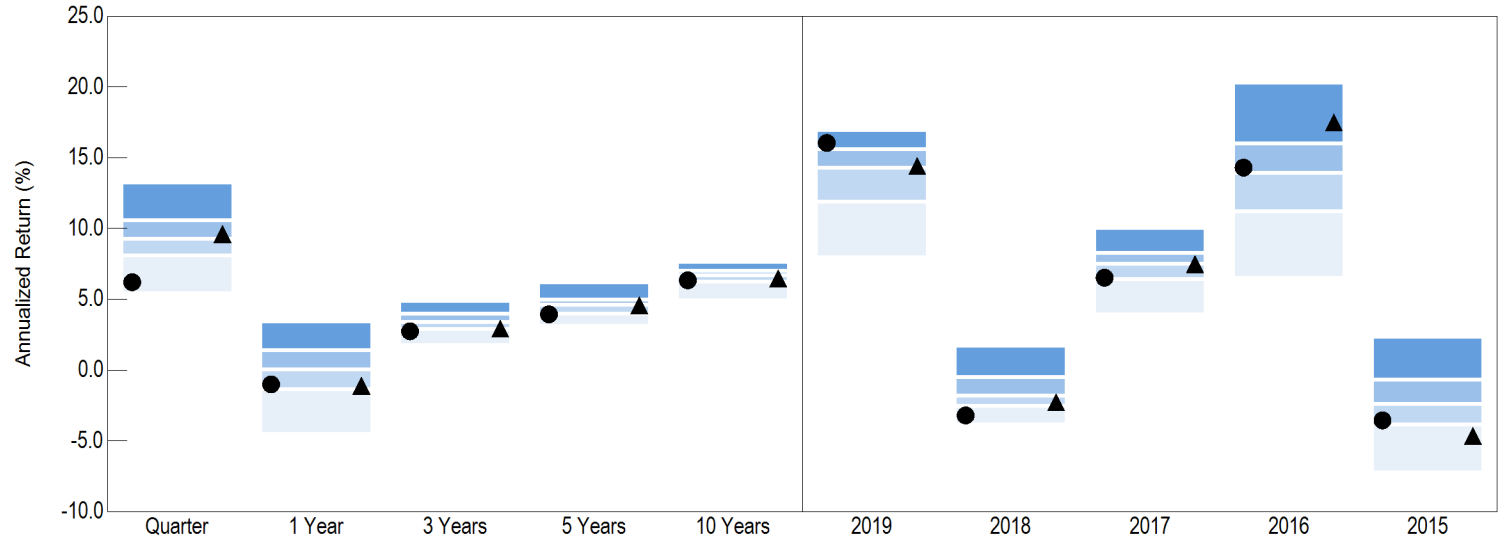
Domestic high yield fixed income portfolio with a focus on security selection. Primary personnel include Douglas Forsyth, Justin Kass, William Stickney, and Michael Yee.

	Allianz	ICE BofAML HY Master II
Effective Duration	3.70	4.20
Yield to Maturity	6.40	7.00
Average Quality	B1	B1
Average Coupon	6.5%	6.1%



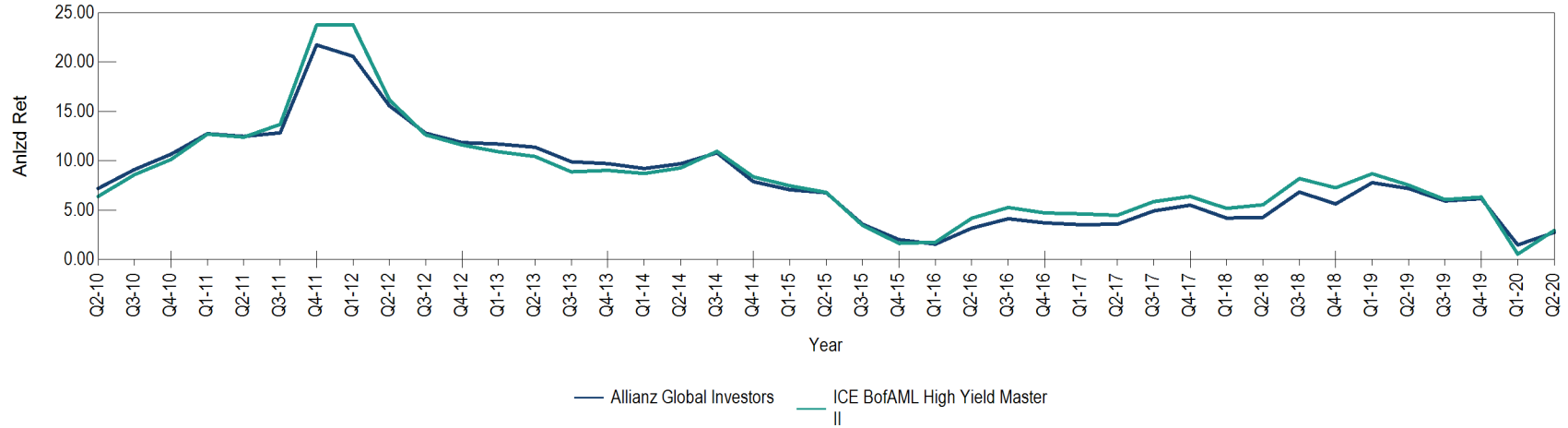
Quality distribution excludes cash.

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

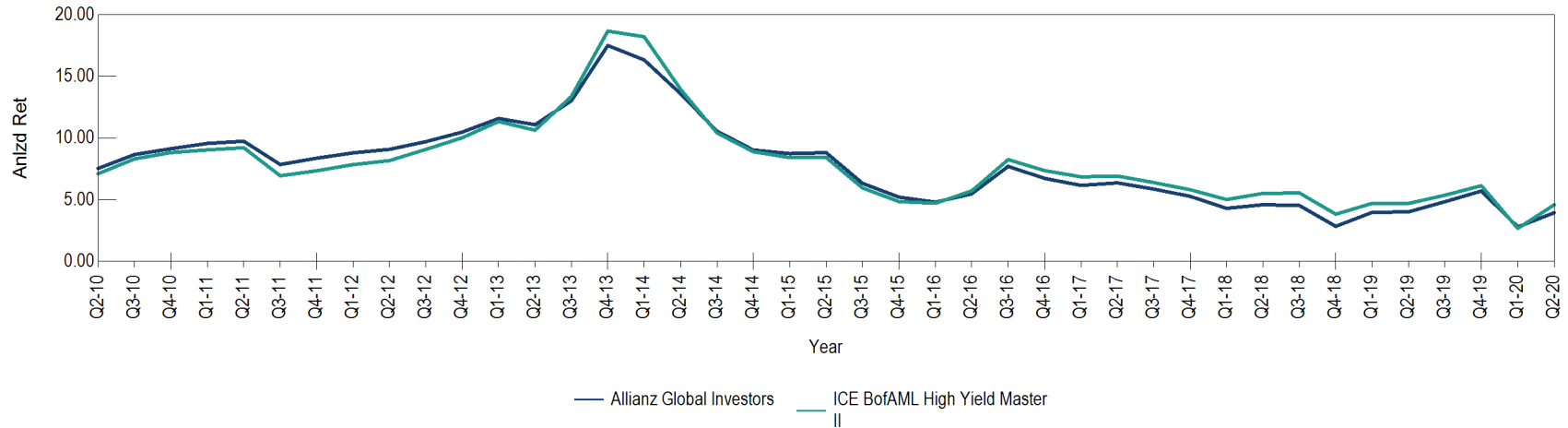


	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
5th Percentile	13.2	3.4	4.8	6.2	7.6	16.9	1.7	10.0	20.3	2.3
25th Percentile	10.6	1.4	4.0	5.0	7.0	15.6	-0.5	8.3	16.0	-0.7
Median	9.3	0.1	3.4	4.6	6.7	14.3	-1.8	7.5	14.0	-2.4
75th Percentile	8.1	-1.3	2.9	4.0	6.3	11.9	-2.5	6.5	11.3	-3.8
95th Percentile	5.5	-4.5	1.8	3.1	5.0	8.0	-3.8	4.0	6.6	-7.2
# of Portfolios	214	214	205	189	138	226	210	198	183	155
● Allianz Global Investors	6.2 (92)	-1.0 (71)	2.7 (80)	3.9 (77)	6.3 (73)	16.0 (15)	-3.2 (88)	6.5 (74)	14.3 (47)	-3.5 (68)
▲ ICE BofAML High Yield Master II	9.6 (44)	-1.1 (73)	2.9 (75)	4.6 (53)	6.5 (69)	14.4 (49)	-2.3 (69)	7.5 (53)	17.5 (14)	-4.6 (83)

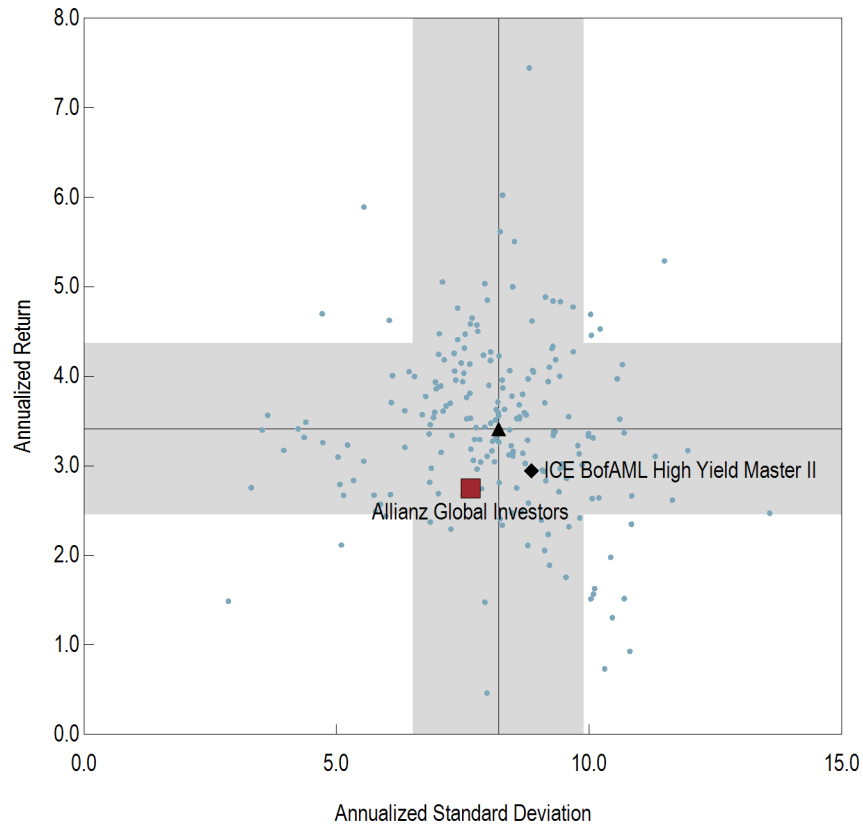
Rolling 3 Year Annualized Return (%)



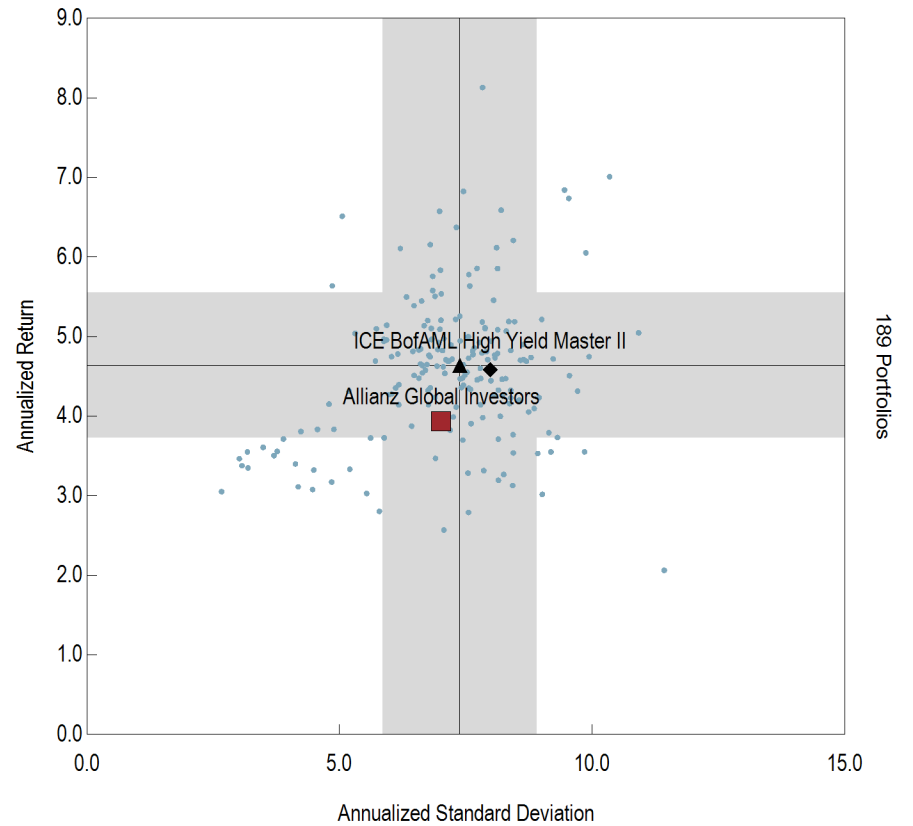
Rolling 5 Year Annualized Return (%)



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Allianz Global Investors	2.7%	7.7%	0.1
ICE BofAML High Yield Master II	2.9%	8.9%	0.1
eV US High Yield Fixed Inc Gross Median	3.4%	8.2%	0.2

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Allianz Global Investors	3.9%	7.0%	0.4
ICE BofAML High Yield Master II	4.6%	8.0%	0.4
eV US High Yield Fixed Inc Gross Median	4.6%	7.4%	0.5

# Real Estate Managers

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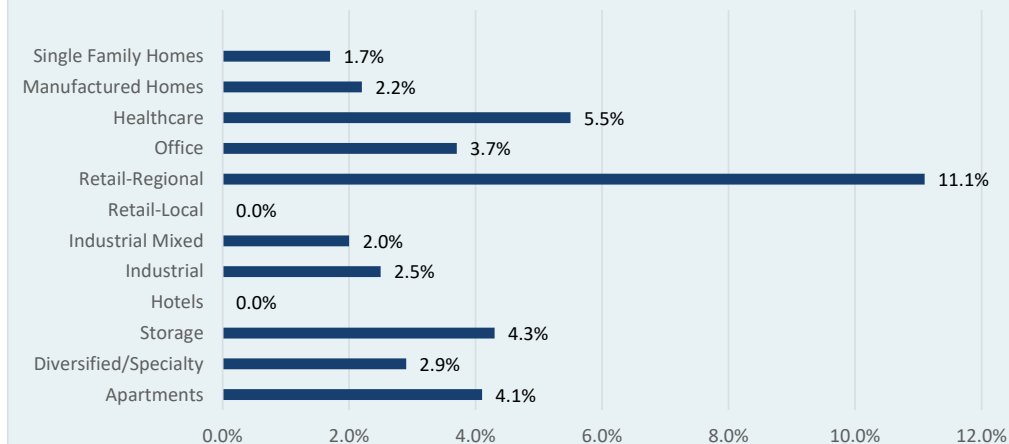


Diversified portfolio of U.S. REITs with a focus on the underlying real estate assets

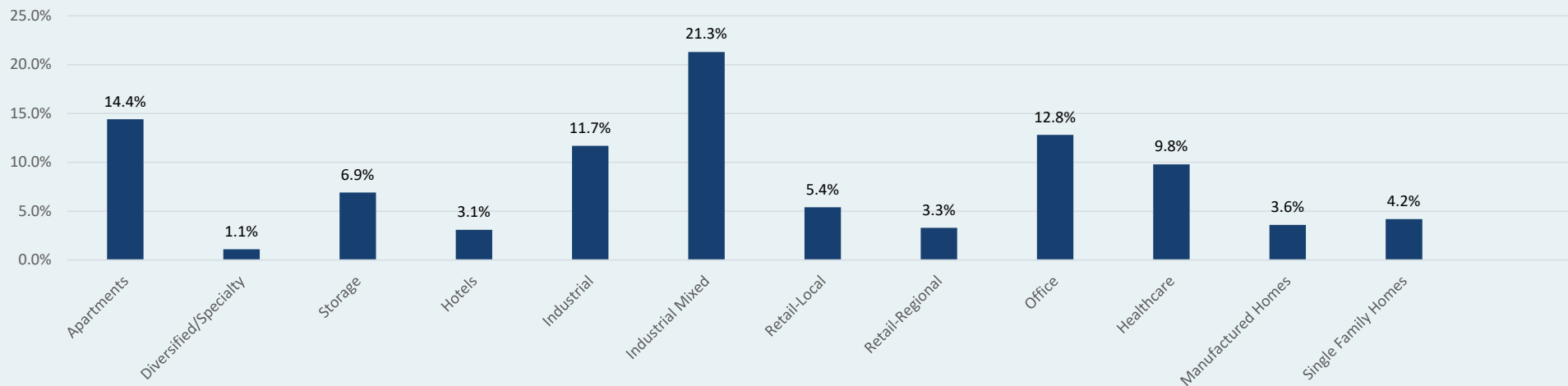
**Top Five Holdings**

Company	Property Type	Allocation
Equinix Inc	Industrial Mixed	11.9%
ProLogis Inc.	Industrial	9.9%
Duke Realty Corporation	Industrial Mixed	4.9%
Equity Residential	Apartments	4.8%
AvalonBay Communities	Apartments	4.6%

**Dividend Yield by Property Type**



**Property Type Allocation**



2.2% is allocated to Cash and Cash Equivalents.

## Diversifying Fixed Income Managers

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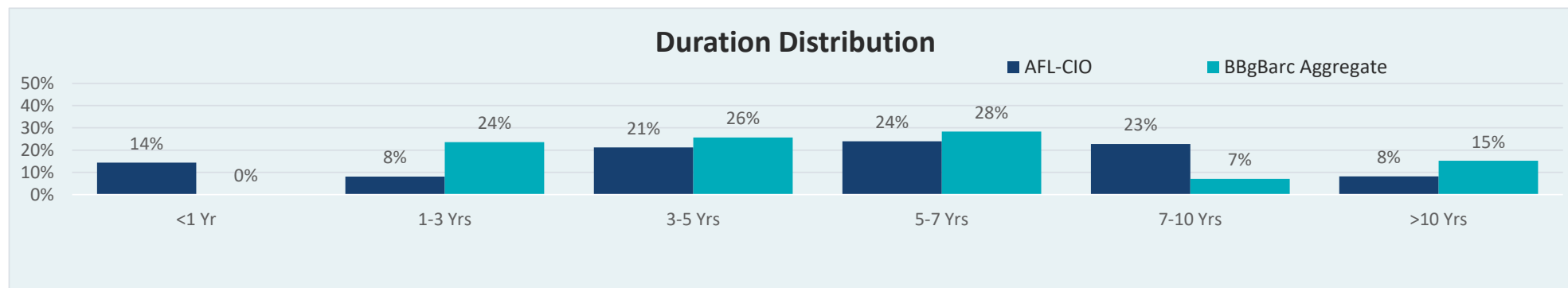
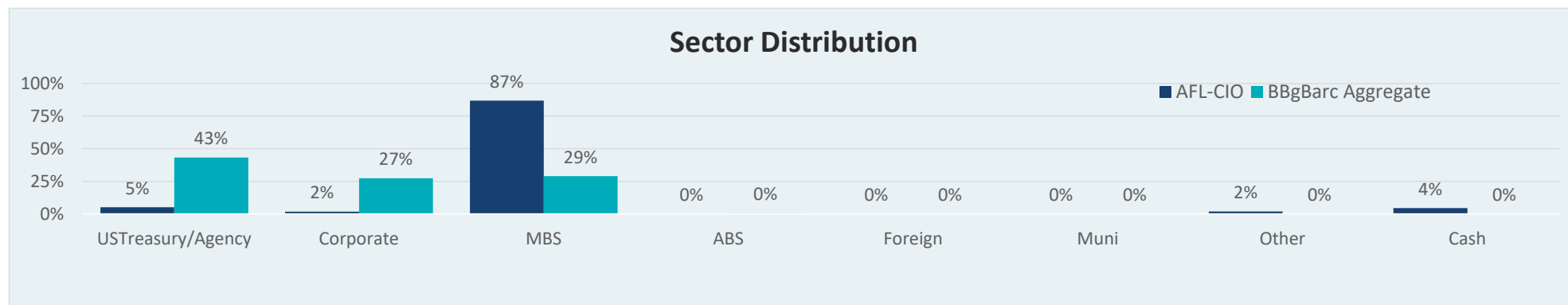
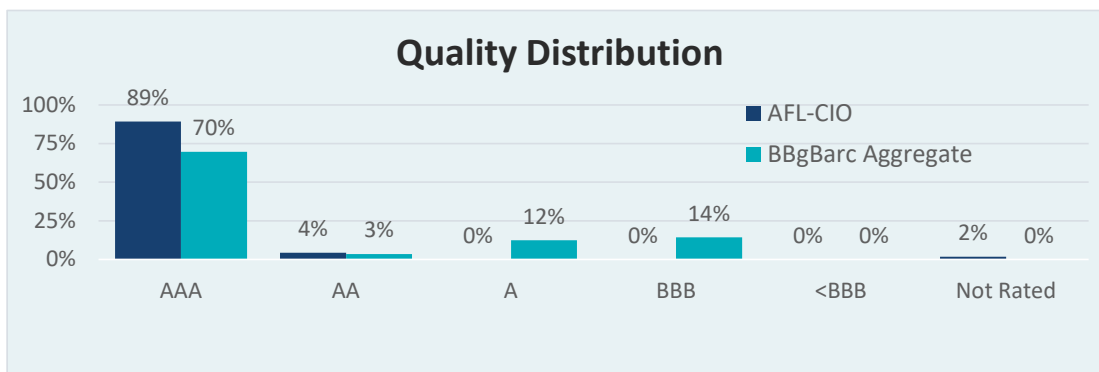
# AFL-CIO

## Manager Portfolio Overview

Period Ending: June 30, 2020

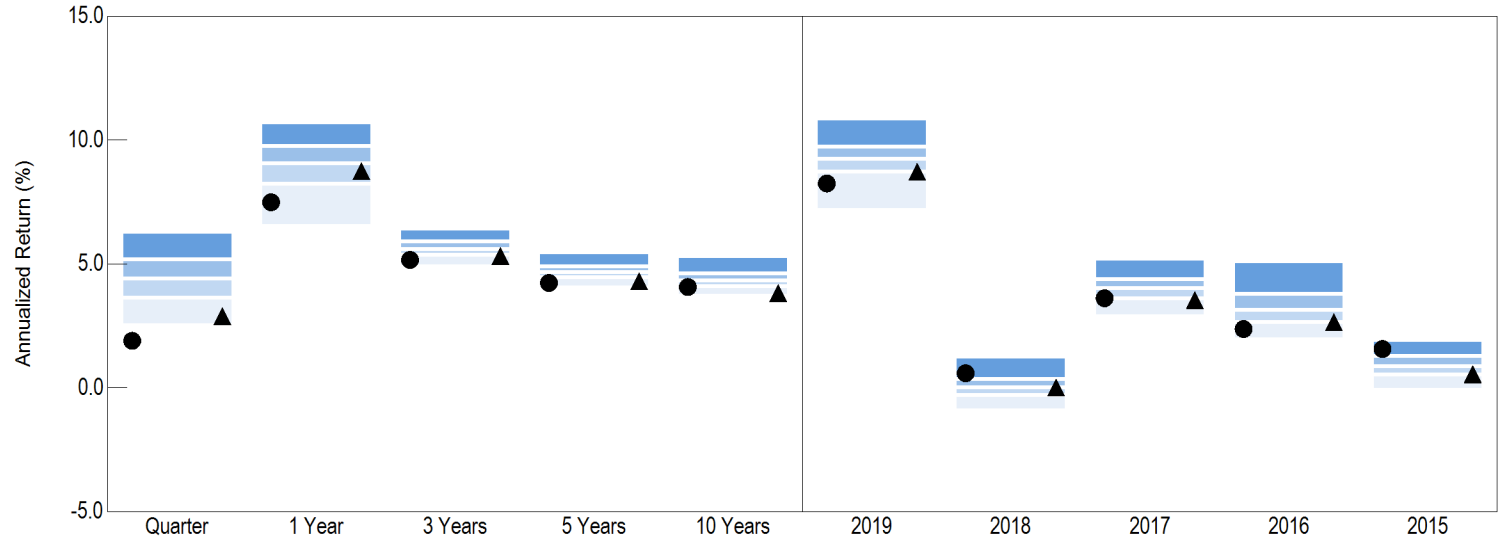
Domestic core fixed income portfolio with an exclusive focus on mortgage-related securities. Primary personnel include Stephen Coyle and Chang Su.

	AFL-CIO	BBgBarc Aggregate
Effective Duration	5.71	6.10
Yield to Maturity	2.78	2.77
Average Quality	AAA	AA/AA+
Average Coupon	3.0%	3.0%



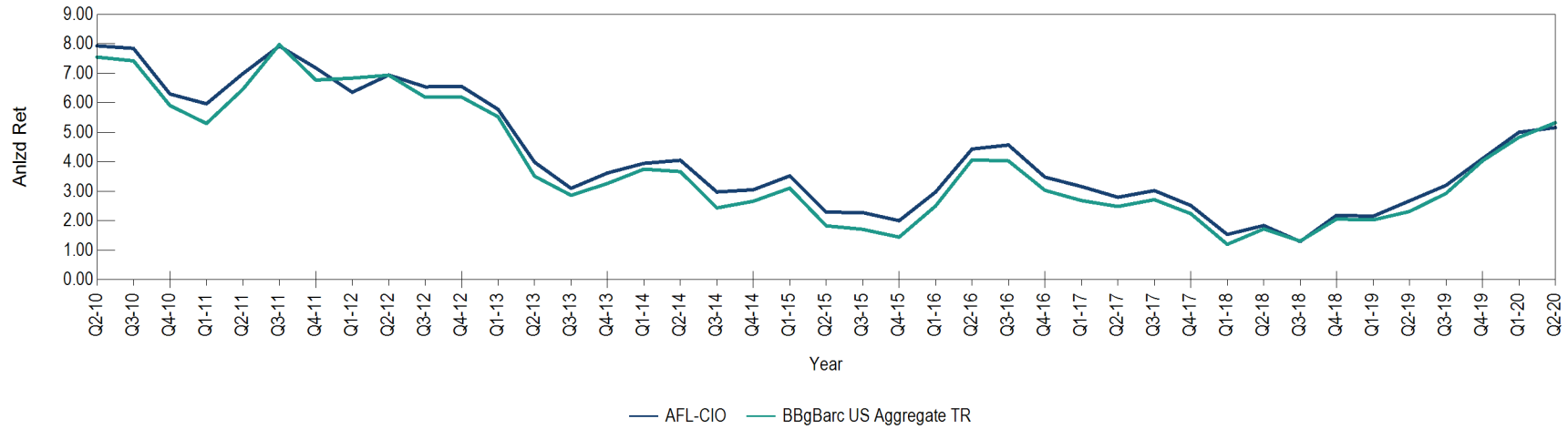
Duration and Quality distributions exclude cash.

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

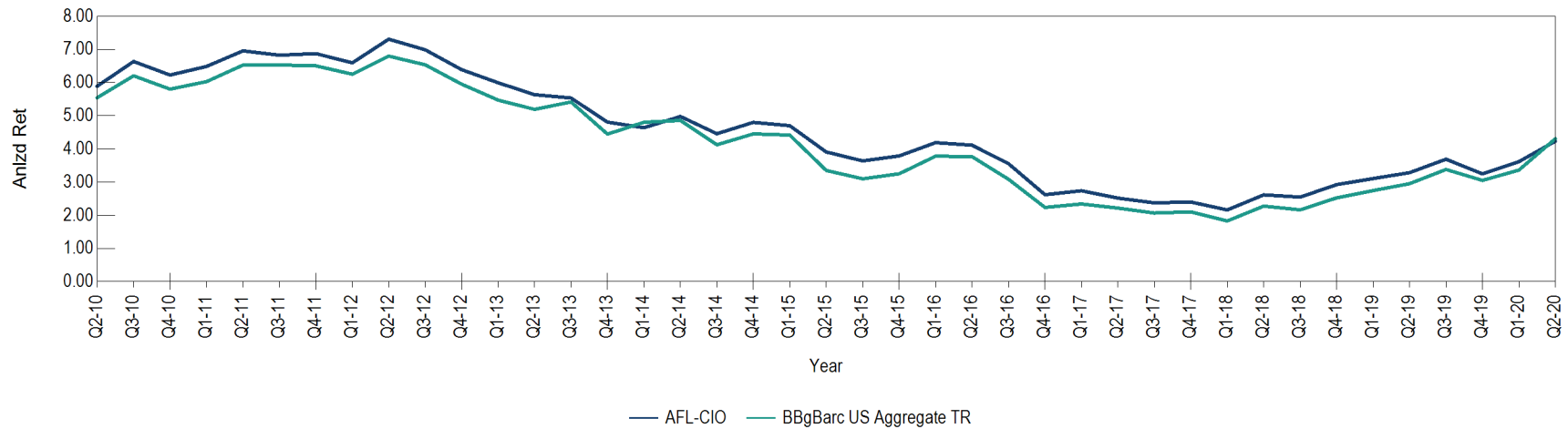


	Return (Rank)									
	Quarter	1 Year	3 Years	5 Years	10 Years	2019	2018	2017	2016	2015
5th Percentile	6.3	10.7	6.4	5.4	5.3	10.9	1.2	5.2	5.1	1.9
25th Percentile	5.2	9.8	5.9	4.9	4.6	9.8	0.4	4.4	3.8	1.3
Median	4.4	9.1	5.6	4.7	4.3	9.3	0.0	4.0	3.2	0.9
75th Percentile	3.6	8.2	5.4	4.5	4.1	8.7	-0.3	3.6	2.7	0.5
95th Percentile	2.5	6.5	4.9	4.1	3.7	7.2	-0.9	2.9	2.0	-0.1
# of Portfolios	224	224	221	217	206	228	240	233	223	196
● AFL-CIO	1.9 (99)	7.5 (90)	5.2 (89)	4.2 (92)	4.1 (80)	8.2 (88)	0.6 (16)	3.6 (76)	2.4 (87)	1.6 (15)
▲ BBgBarc US Aggregate TR	2.9 (92)	8.7 (64)	5.3 (80)	4.3 (88)	3.8 (93)	8.7 (77)	0.0 (54)	3.5 (79)	2.6 (77)	0.6 (75)

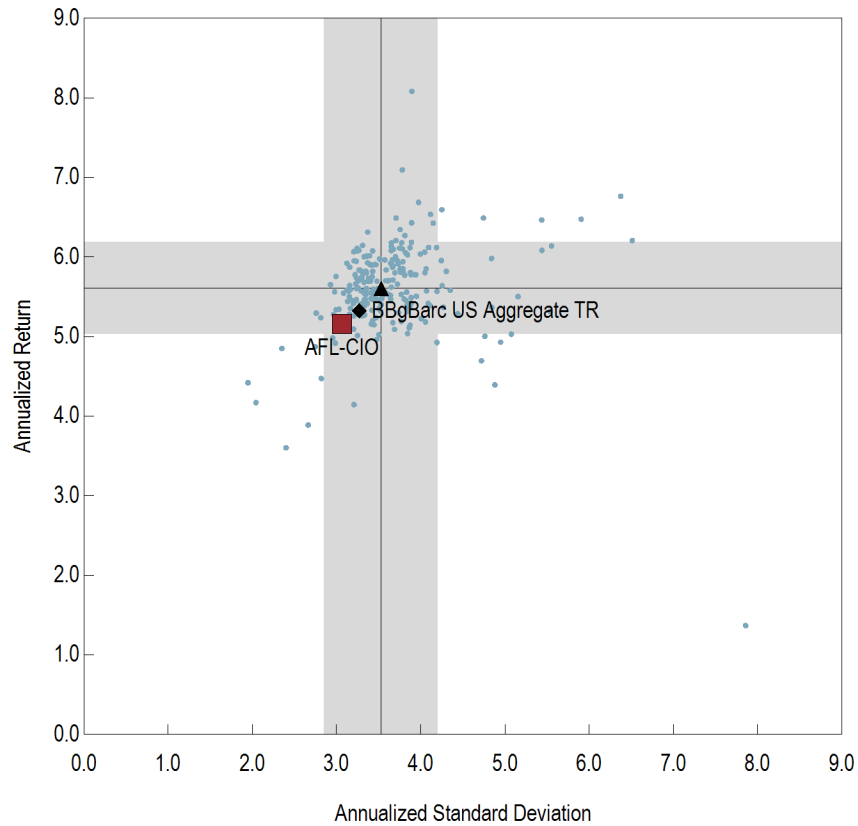
Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)

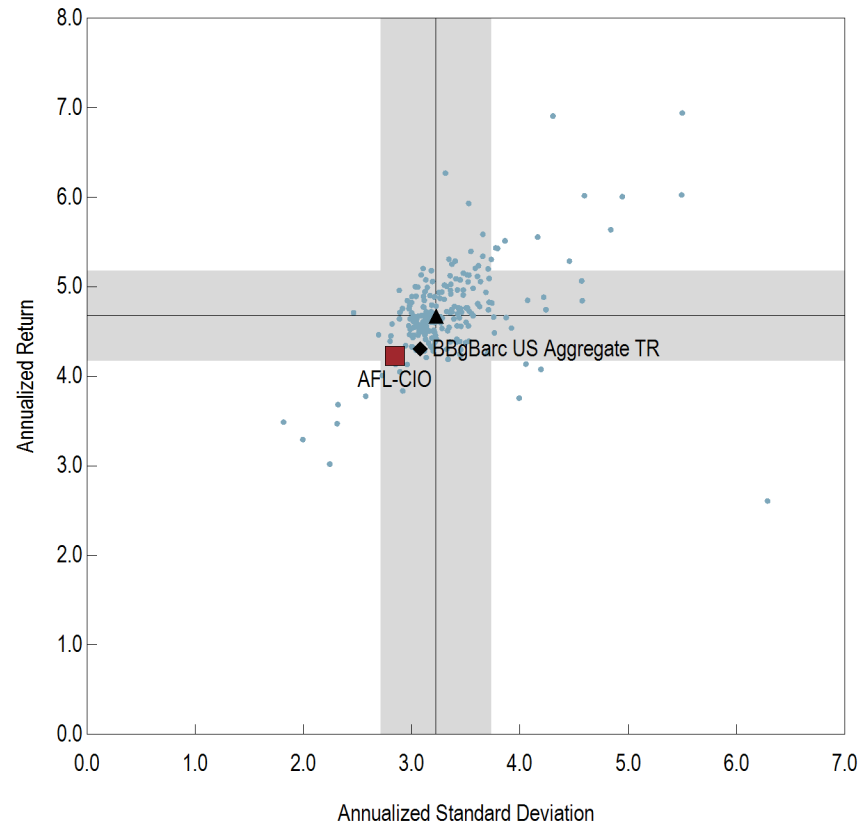


3 Years



221 Portfolios

5 Years



217 Portfolios

3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
AFL-CIO	5.2%	3.1%	1.1
BBgBarc US Aggregate TR	5.3%	3.3%	1.1
eV US Core Fixed Inc Gross Median	5.6%	3.5%	1.1

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
AFL-CIO	4.2%	2.8%	1.1
BBgBarc US Aggregate TR	4.3%	3.1%	1.0
eV US Core Fixed Inc Gross Median	4.7%	3.2%	1.1

## Liquidity Managers

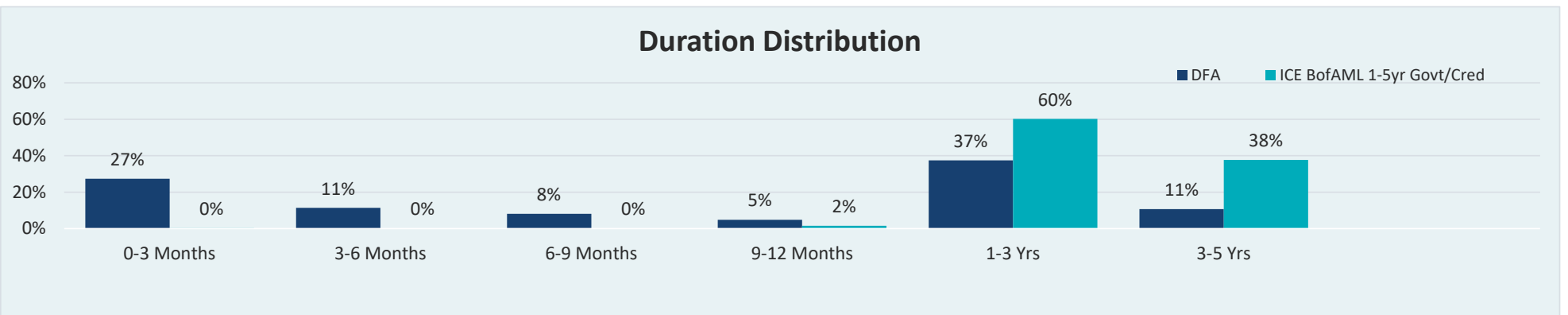
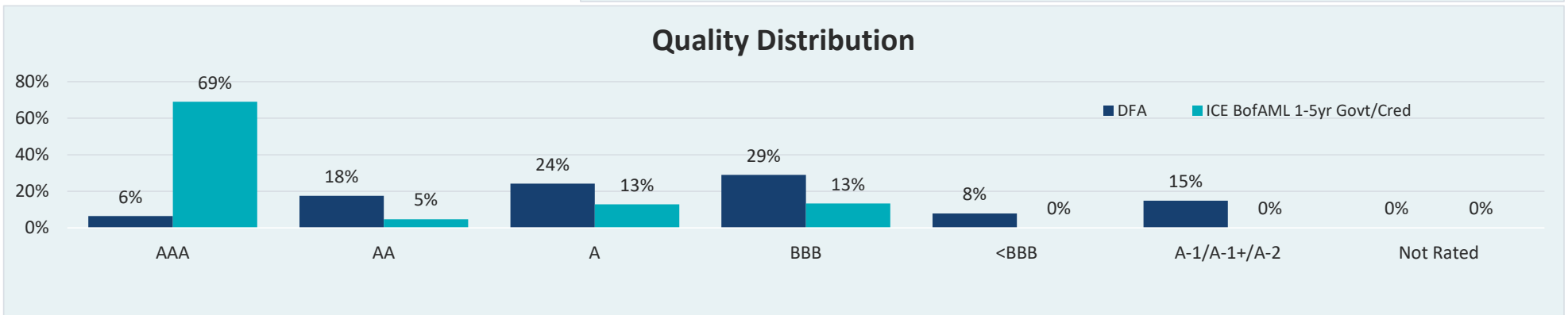
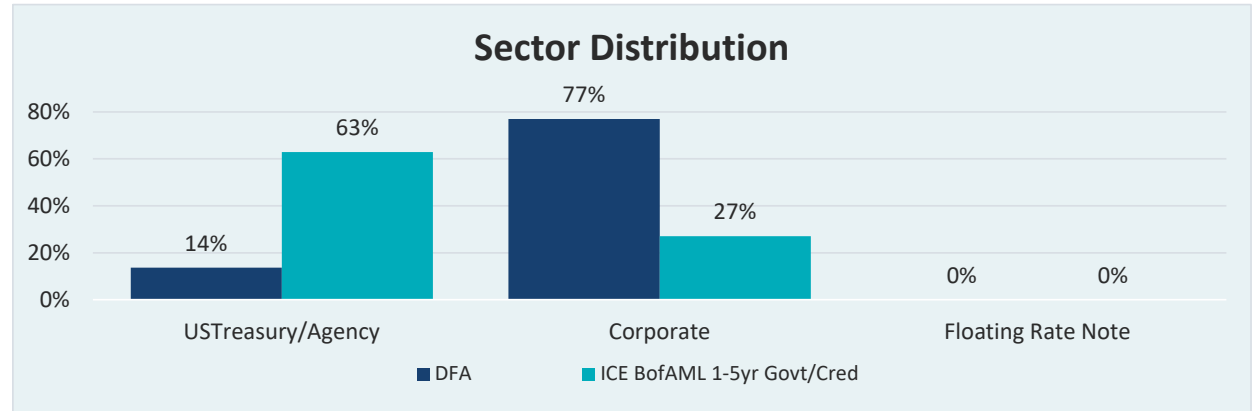
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# DFA Short Credit Manager Portfolio Overview

Period Ending: June 30, 2020

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

	DFA	ICE BofAML 1-5yr Govt/Cred
Effective Duration	1.27	2.69
Yield to Maturity	1.00	0.56
Average Quality	A	AA+
Average Coupon	2.28%	2.41%



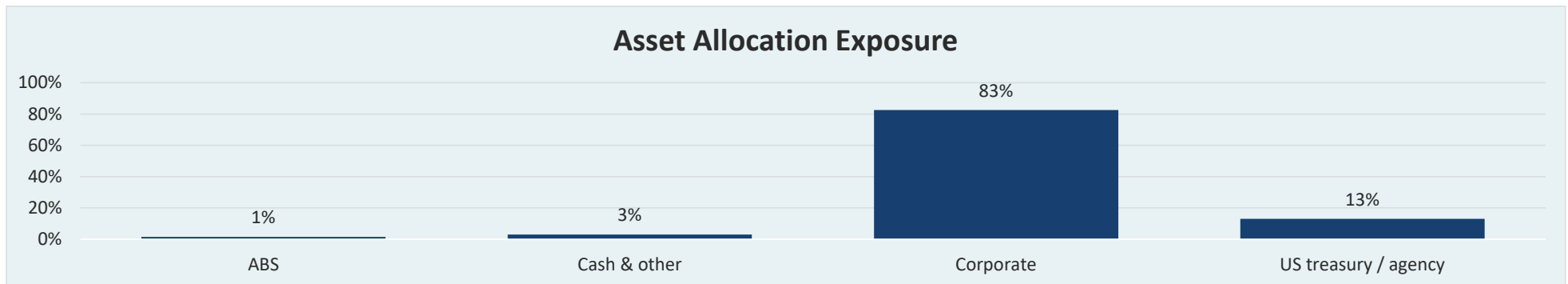
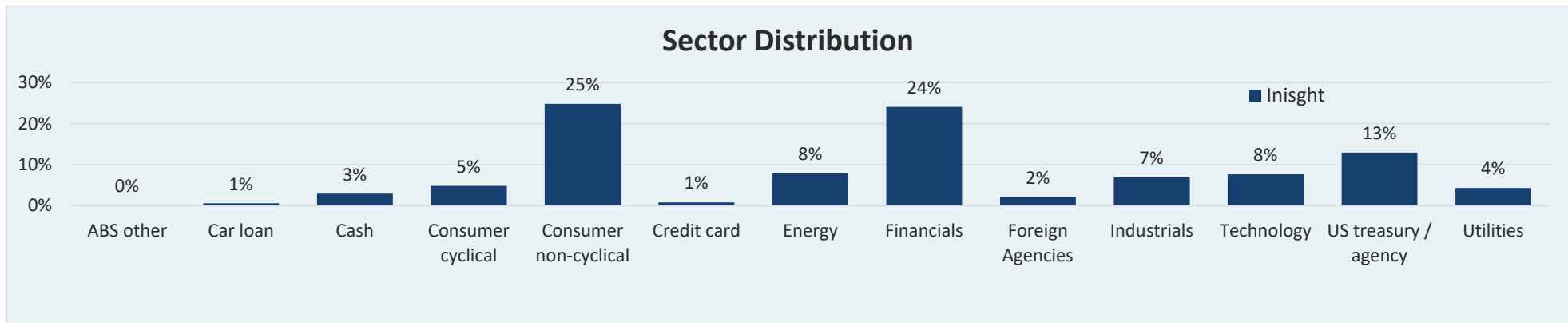
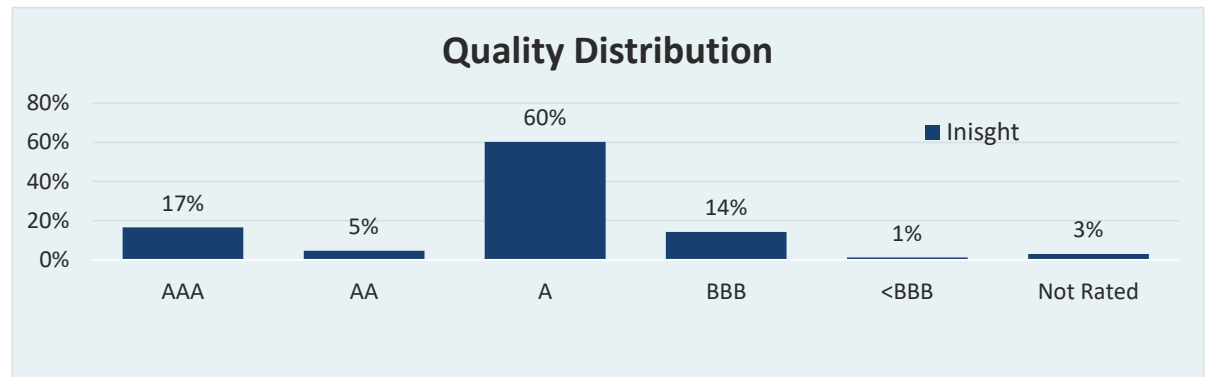


# Insight Short Duration Manager Portfolio Overview

Period Ending: June 30, 2020

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

	Inisight	BBgBarc 1-3yr Govt
Effective Duration	1.30	1.90
Yield to Maturity	0.81	0.20
Average Quality	A+	AAA
Average Coupon	2.65%	1.70%

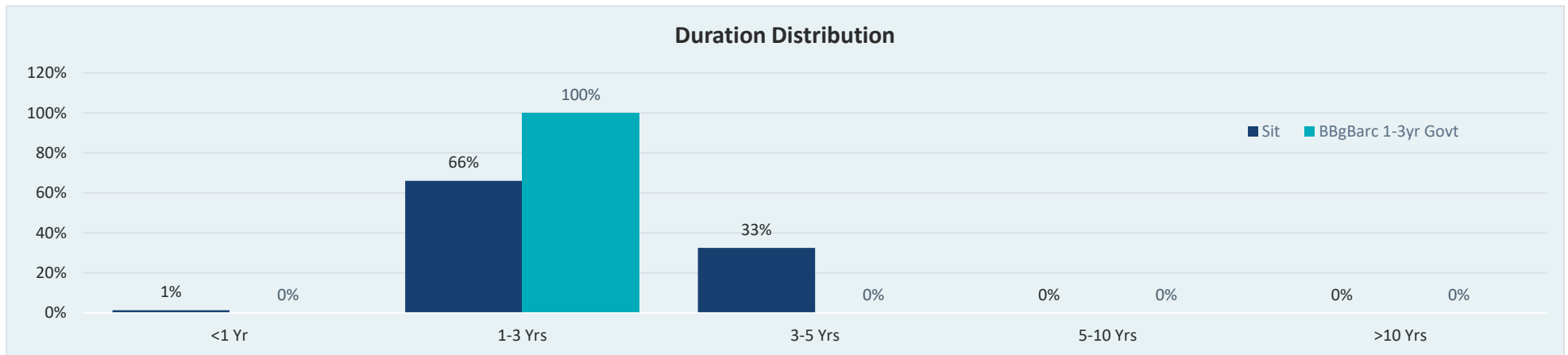
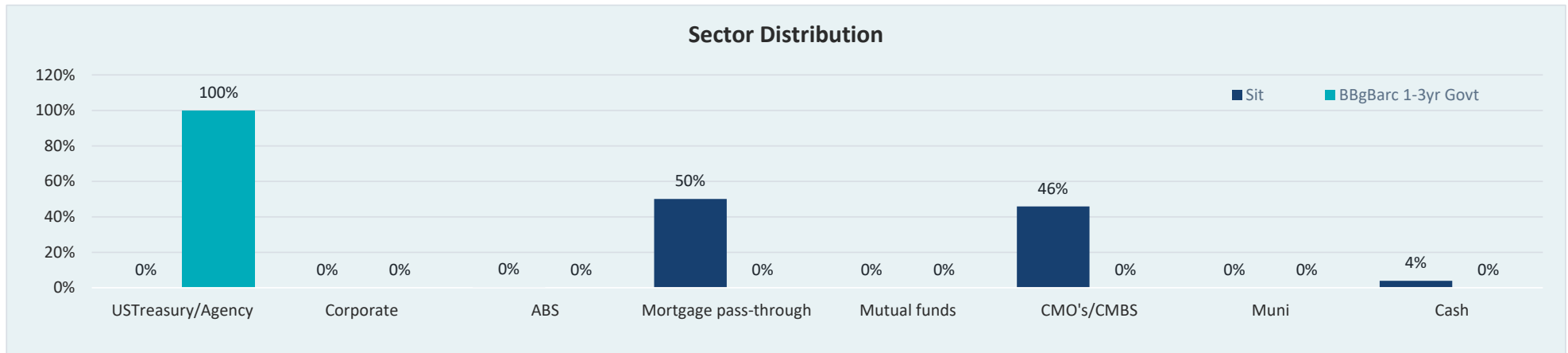
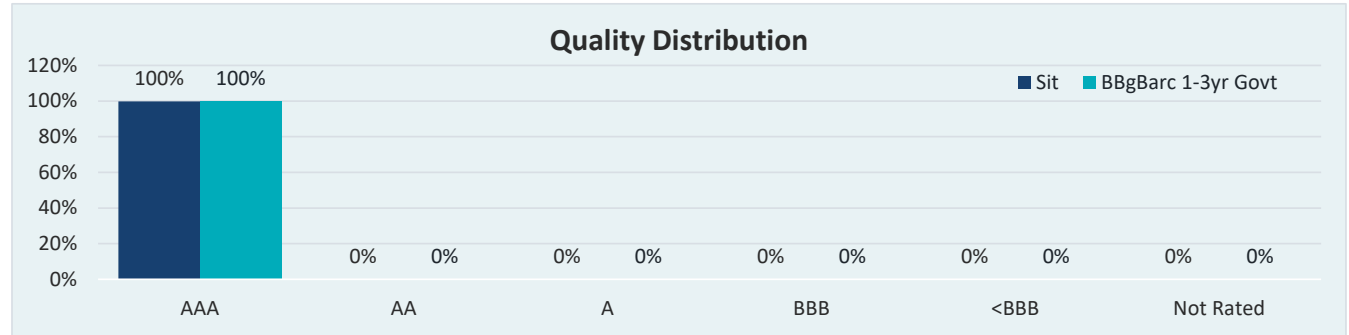


# Sit Short Duration Manager Portfolio Overview

Period Ending: June 30, 2020

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

	Sit	BBgBarc 1-3yr Govt
<b>Modified Duration</b>	<b>3.00</b>	<b>1.90</b>
<b>Yield to Maturity</b>	<b>1.60</b>	<b>0.20</b>
<b>Average Quality</b>	<b>AAA</b>	<b>AAA</b>
<b>Average Coupon</b>	<b>5.90%</b>	<b>1.70%</b>



Performance Return Calculations	
Performance is calculated using Modified Dietz and for time periods with large cash flow (generally greater than 10% of portfolio value), Time Weighted Rates of Return (TWRR) methodologies. Monthly returns are geometrically linked and annualized for periods longer than one year.	
Data Source	
Verus is an independent third party consulting firm and calculates returns from best source book of record data. Returns calculated by Verus may deviate from those shown by the manager in part, but not limited to, differences in prices and market values reported by the custodian and manager, as well as significant cash flows into or out of an account. It is the responsibility of the manager and custodian to provide insight into the pricing methodologies and any difference in valuation.	
Illiquid Alternatives	
Due to the inability to receive final valuation prior to report production, closed end funds (including but are not limited to Real Estate, Hedge Funds, Private Equity, and Private Credit) performance is typically reported at a one-quarter lag. Valuation is reported at a one-quarter lag, adjusted for current quarter flow (cash flows are captured real time). Closed end fund performance is calculated using a time-weighted return methodology consistent with all portfolio and total fund performance calculations. For Private Markets, performance reports also include Verus-calculated multiples based on flows and valuations (e.g. DPI and TVPI) and manager-provided IRRs.	
Policy & Custom Index Composition	
Policy Index (7/1/2019 - present)	10% Russell 3000, 18% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 1% Wilshire REIT, 1.6% NCREIF Property Index, 6.4% NCREIF ODCE Index, 2% CPI + 4%, 11% S&P 500 +4% (Lagged), 5% ICE BofAML High Yield Master II +2%, 2% ICE BofAML High Yield Master II, 24% BBgBarc 1-3 Yr Gov/Credit, 3.5% BBgBarc US Aggregate, 2% BBgBarc Global Aggregate, 2.5% HFRI EH Equity Market Neutral.
Policy Index (7/1/2018 - 6/30/2019)	11% Russell 3000, 19% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 1% Wilshire REIT, 1.8% NCREIF Property Index, 7.2% NCREIF ODCE Index, 2% CPI + 4%, 10% S&P 500 +4% (Lagged), 4% ICE BofAML High Yield Master II +2%, 2% ICE BofAML High Yield Master II, 23% BBgBarc 1-3 Yr Gov/Credit, 3.5% BBgBarc US Aggregate, 2% BBgBarc Global Aggregate, 2.5% HFRI EH Equity Market Neutral.
Policy Index (10/1/2017 - 6/30/2018)	16.3% Russell 3000, 18.8% MSCI ACWI ex-US (Gross), 8.6% MSCI ACWI (Net), 1% Wilshire REIT, 1.6% NCREIF Property Index, 6.4% NCREIF ODCE Index, 2.5% CPI + 4%, 10.1% S&P 500 +4% (Lagged), 1.9% ICE BofAML High Yield Master II +2%, 4.3% ICE BofAML High Yield Master II, 25% BBgBarc 1-3 Yr Gov/Credit, 3.5% BBgBarc US Aggregate.
Policy Index (1/1/2017 - 9/30/2017)	22.9% Russell 3000, 11% MSCI ACWI ex-US (Gross), 10.9% MSCI ACWI (Net), 1% Wilshire REIT, 1.7% NCREIF Property Index, 6.8% NCREIF ODCE Index, 3.6% CPI + 4%, 8.1% S&P 500 +4% (Lagged), 1.7% ICE BofAML High Yield Master II +2%, 5.1% ICE BofAML High Yield Master II, 22.4% BBgBarc 1-3 Yr Gov/Credit, 3.2% BBgBarc US Aggregate, 1.6% 91-Day T-Bills.
Policy Index (4/1/2012-12/31/2016)	27.7% Russell 3000, 10.6% MSCI ACWI ex-US (Gross), 12.3% MSCI ACWI (Net), 19.6% BBgBarc U.S. Aggregate, 5% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 13.5% Real Estate Benchmark, 6.8% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Policy Index (4/1/2011-3/31/2012)	31% Russell 3000, 10.4% MSCI EAFE (Gross), 9.6% MSCI ACWI (Net), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% DJ Wilshire REIT, 3.1% NCREIF, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Policy Index (4/1/2010-3/31/2011)	35.6% Russell 3000, 10.4% MSCI EAFE (Gross), 5% MSCI ACWI (Net), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% DJ Wilshire REIT, 3.1% NCREIF, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Policy Index (7/1/2009-3/31/2010)	40.6% Russell 3000, 10.4% MSCI EAFE (Gross), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% DJ Wilshire REIT, 3.1% NCREIF, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Custom Growth Benchmark (7/1/2019 - present)	14.7% Russell 3000, 26.4% MSCI ACWI ex-US (Gross), 16.2% MSCI ACWI (Net), 1.5% Wilshire REIT, 2.4% NCREIF Property Index, 9.4% NCREIF ODCE Index, 16.2% S&P 500 +4% (Lagged), 7.4% ICE BofAML High Yield Master II +2%, 2.9% ICE BofAML High Yield Master II, 2.9% BBgBarc Global Bond
Custom Growth Benchmark (7/1/2018 - 6/30/2019)	16.0% Russell 3000, 27.5% MSCI ACWI ex-US (Gross), 15.9% MSCI ACWI (Net), 1.5% Wilshire REIT, 2.6% NCREIF Property Index, 10.4% NCREIF ODCE Index, 14.5% S&P 500 +4% (Lagged), 5.8% ICE BofAML High Yield Master II +2%, 2.9% ICE BofAML High Yield Master II, 2.9% BBgBarc Global Bond
Custom Growth Benchmark (9/30/2017-6/30/2018)	23.6% Russell 3000, 27.2% MSCI ACWI ex-US (Gross), 12.5% MSCI ACWI (Net), 1.5% Wilshire REIT, 2.3% NCREIF Property Index, 9.3% NCREIF ODCE Index, 14.6% S&P 500 +4% (Lagged), 2.8% ICE BofAML High Yield Master II +2%, 6.2% ICE BofAML High Yield Master II
Custom Growth Benchmark (1/1/2017-9/30/2017)	32.6% Russell 3000, 15.7% MSCI ACWI ex-US (Gross), 15.5% MSCI ACWI (Net), 1.4% Wilshire REIT, 2.4% NCREIF Property Index, 9.6% NCREIF ODCE Index, 1.6% CPI +4%, 11.5% S&P 500 +4% (Lagged), 2.4% ICE BofAML High Yield Master II +2%, 7.3% ICE BofAML High Yield Master II
Custom Growth Benchmark (Prior to 1/1/2017)	Weighted-average of the benchmarks of the sub-composites that make up the composite.
Custom Diversifying Benchmark (7/1/2018 - present)	43.75% BBgBarc US Aggregate, 25% CPI + 4%, 31.25% HFRI EH Equity Market Neutral.
Custom Diversifying Benchmark (10/1/2017 - 6/30/2018)	58.33% BBgBarc US Aggregate, 41.67% CPI + 4%.
Custom Diversifying Benchmark (1/1/2017 - 9/30/2017)	56.1% BBgBarc US Aggregate, 43.9% CPI + 4%.
Custom Diversifying Benchmark (Prior to 1/1/2017)	Weighted-average of the benchmarks of the sub-composites that make up the composite.
Real Estate Benchmark (current)	11% Wilshire REIT, 18% NCREIF Property Index, 71% NCREIF ODCE Index.
Real Estate Benchmark (4/1/2012-11/30/2016)	40% Wilshire REIT, 50% NCREIF Property Index, 10% FTSE/EPRA NAREIT Developed ex-US.

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

Other Disclosures

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

# Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## Disclaimer

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*Meeting Date*  
**08/26/20**  
*Agenda Item*  
**#7b.**

**Memorandum**

Date: August 26, 2020  
To: CCCERA Board of Retirement Trustees  
From: Timothy Price, Chief Investment Officer  
Subject: Investment Staff Report – Q2 2020

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**Overview**

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

**Summary**

CCCERA’s Total Fund is performing as expected, exhibiting returns above expectations for the amount of risk taken. This is measured by the Sharpe Ratio (risk-adjusted return), and a comparison to the Simple Target Index. The Simple Target Index is the most basic index which could replicate CCCERA’s Total Fund, and is made up of 68% MSCI ACWI, 24% Bloomberg 1-3 Year Gov/Credit, and 8% 3-Month Treasury Bills (please see the Total Fund pages in the appendix for additional details). CCCERA’s portfolio is much more complex, especially as it relates to allocations to private equity, private credit, and real estate.

CCCERA has been rewarded for implementing a more complex portfolio, and has outperformed the Simple Target Index over the trailing five years, while experiencing less risk (volatility). Details on performance relative to this index are included in the appendix. It is worth noting that CCCERA’s Total Fund return is an aggregate of the performance of the Liquidity, Growth, and Risk Diversifying sub-portfolios.

Given the COVID-19 related economic shock that occurred during the first quarter, it is important to note that CCCERA investment staff rebalanced from the Risk Diversifying sub-portfolio into credit and equity on a measured basis. Much of this investment activity occurred in April and May.



### **1) Liquidity**

The purpose of the liquidity program is to match four years of benefit payments with high credit quality, low duration assets. The liquidity sub-portfolio is made up of three fixed income managers, all of whom pursue a high quality, low duration investment approach. In the second quarter of 2020, all managers held high quality (as measured by credit ratings), low duration portfolios. The average credit quality for the entire liquidity program is AA- (AAA is the highest rating), and the duration is 1.8 years, which is considered short.

### **2) Growth**

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

One notable change from the prior quarter is the Growth portfolio's 5-year annualized performance relative to the MSCI ACWI. For the trailing five-year period ending June 30, 2020, the Growth portfolio returned 6.4% relative to the index return of 6.5%, for a relative underperformance of 0.1%. During the second quarter of 2020, the public markets rebounded sharply, with the MSCI ACWI Index returning 19.2%, after having lost 21.4% in the first quarter. In comparison, CCCERA's Growth sub-portfolio lost 12.6% in the first quarter of 2020 and gained 9.5% in the second quarter. Consequently, the trailing five-year relative performance of CCCERA's Growth sub-portfolio's is now -0.1% as of June 30, 2020.

### **3) Risk Diversifying**

The Risk Diversifying mandate holds assets that are expected to diversify the growth portfolio's volatility while offering moderate growth. The mandate as a whole seeks to be highly liquid, have a low beta to the growth market, and produce positive real returns. In the first quarter, the Risk Diversifying mandate fulfilled one of these goals. The entire mandate can be liquidated within 90 days, meeting the requirement of high liquidity. The correlation of the mandate to growth markets is 0.7, which shows slightly deteriorating diversification compared to 0.5 correlation as of December 31, 2019. However, trailing real (net of inflation) returns over the past five years is -1.4%, an improvement from last quarter's -2.3%, but remains below expectations. We have begun to reposition this portfolio with the liquidation of the Wellington strategy in May and the funding of the Acadian MAARS strategy in August.

The Liquidity and Growth sub-portfolios are largely functioning well and within expectations. We have begun to restructure the Risk Diversifying sub-portfolio to address performance concerns. By and large, the product teams and asset managers across all managers are stable, and we have no organizational concerns with our investment managers. CCCERA's Total Fund in aggregate is performing in line with expectations, having a higher return and a lower level of volatility compared to the Simple Target Index. Enclosed are additional details on CCCERA's Total Fund, sub-portfolios, and individual investment strategies.



### CCCERA Portfolio Report Card

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

#### Liquidity

Objective	Measurement	Current Period Data	Status
High Quality	Credit Quality	AA-	Meeting Expectations
Low Risk	Duration	1.8 years	Meeting Expectations
Appropriately Sized	Months of Benefit Payments Invested	37 Months	Meeting Expectations

#### Growth

Objective	Measurement	Current Period Data	Status
Growth of Plan Assets	Absolute Returns	Trailing 5 yr return of 6.4%	Meeting Expectations
	Benchmark Relative Returns	-0.1% relative to ACWI over trailing 5 years	Slightly below Expectations
Efficient Capital Deployment	Sharpe Ratio	CCCERA: 0.5 MSCI ACWI: 0.3 (over trailing 5 years)	Meeting Expectations

#### Risk Diversifying

Objective	Measurement	Current Period Data	Status
Offset Volatility in Growth Portfolio	Correlation	0.7 over trailing 5 years	Below Expectations
Positive Real Returns	Returns	Trailing 5 yr real return of -1.4%	Below Expectations
High Liquidity	% of Portfolio that can be liquidated within 90 days	100%	Meeting Expectations

#### Total Fund

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

**Appendix – Liquidity Sub-Portfolio**

Manager Reviews

**Organizational Stability**

	Portfolio Management Assessment	1 Year Product Asset Growth	1 Year Firm Asset Growth	Regulatory Action in Last Year?
Insight	Good	-11%	8%	N
Sit	Good	5%	1%	N
DFA	Good	2%	-12%	N

**Performance**

	Portfolio Average Credit Quality	Portfolio Average Duration	Portfolio Average Yield	1 Year Total Return
Insight	A+	1.3	0.8	4.2%
Sit	AAA	3.0	1.6	4.7%
DFA	A	1.3	1.0	2.7%

**Manager Notes:**

All three Liquidity managers performed in line with expectations over the prior year, with Sit in particular experiencing the benefit of a flight to quality in their portfolio of government-guaranteed mortgages.

**Manager Theses:**

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

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

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

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

## Appendix – Growth Sub-Portfolio

### Manager Reviews

#### Organizational Stability

	Portfolio Management Assessment	1 Year Product Asset Growth	1 Year Firm Asset Growth	Regulatory Action in Last Year?
Boston Partners	Good	-26%	-27%	N
Jackson Square	Good	-1%	3%	N
BlackRock Index Fund	Good	9%	7%	N
Emerald Advisors	Good	-8%	-11%	N
Ceredex	Good	-37%	-19%	N
Pyrford (BMO)	Good	1%	0%	N
William Blair	Good	-1%	1%	N
First Eagle	Good	-17%	4%	N
Artisan Global	Good	21%	6%	N
PIMCO/RAE EM	Good	-48%	4%	N
TT EM	Good	35%	-3%	N
Adelante	Good	-10%	-11%	N
Allianz	Good	-20%	-2%	N
AQR	Good	-17%	-27%	N
PanAgora	Good	1%	-25%	N
Private Equity	Good	--	--	N
Private Credit	Good	--	--	N
Real Estate	Good	--	--	N

### Performance

	Trailing 1 Year Return	Trailing 5 Year Return	Performance in Line with Expectations?
Boston Partners	-9%	4%	Y
Jackson Square	20%	12%	Y
BlackRock Index Fund	8%	11%	Y
Emerald Advisors	3%	7%	Y
Ceredex	-18%	2%	N
Pyrford (BMO)	-3%	3%	N
William Blair	10%	5%	Y
First Eagle	-2%	5%	Y
Artisan Global	22%	13%	Y
PIMCO/RAE EM	-19%	0%	N
TT EM	-6%	6%	Y
Adelante	-10%	4%	Y
Allianz	-3%	2%	N
AQR	0%	4%	Y
PanAgora	3%	8%	Y
	1Yr Premium	5 Year Premium	
Private Equity	2%	1%	Y
Private Credit	-1%	0%	Y
Real Estate	-4%	0%	Y

#### Manager Notes:

In the first quarter, I highlighted the fact that value-oriented strategies suffered even more than their growth or core peers in the initial COVID-19 related selloff. Boston Partners (large cap value), Ceredex (small cap value) and PIMCO (emerging market value), all suffered considerable short-term underperformance relative to the MSCI ACWI index and have not rebounded as strongly in the second quarter. Value strategies are clearly out of favor at the moment and we continue to re-underwrite these strategies, but we note that the value factor is extremely cheap at the moment and we have not yet found a reason to believe that this should persist over the long term.

#### Manager Theses:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## Appendix – Risk Diversifying Sub-Portfolio

### Organizational Stability

	Portfolio Management Assessment	1 Year Product Asset Growth	1 Year Firm Asset Growth	Regulatory Action in Last Year?
AFL-CIO	Good	2%	2%	N
Parametric	Good	-1%	22%	N

### Performance

	Trailing 1 Year Correlation to Growth	Trailing 3 Year Correlation to Growth	1 Year Return	5 Year Return	% of Portfolio Liquid in 90 Days
AFL-CIO	-0.7	-0.3	7%	4%	100%
Parametric	0.9	0.7	-11%	-1%	100%

### Manager Notes:

After the end of the first quarter, the Wellington strategy was liquidated. The Acadian MAARS strategy was funded in early August and will be reflected in the third quarter report.

### Manager Theses:

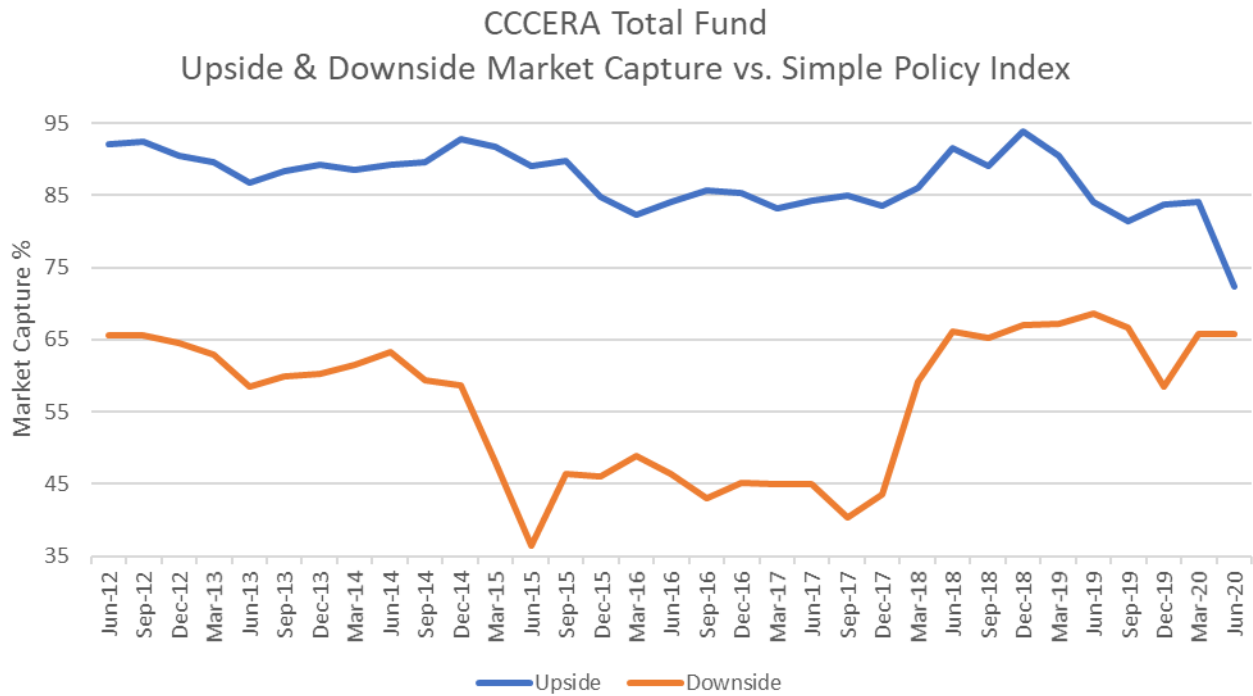
Managers in the risk diversifying allocation seek to have a low correlation with the growth portfolio, positive returns in flat and falling equity markets, and a high degree of liquidity. These managers work together to offset some of the risks in the growth portfolio.

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

**Parametric:** Portfolio of paired options selling intended to collect insurance premiums by selling puts and calls on the S&P 500 with collateral invested in US Treasury portfolio.

## Appendix Data – Total Fund

### Rolling 3-Year Total Fund Upside/Downside Market Capture



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

## Total Fund Quarterly Attribution

	CCCERA Total Fund			Simple Target Index			Analysis		
	Allocation	Return	Return Contribution	Allocation	Return	Return Contribution	Allocation Difference	Return Difference	Total Effect
Liquidity	25.2%	2.4%	0.6%	24.0%	1.2%	0.3%	1.2%	1.3%	0.3%
Growth	67.8%	9.5%	6.4%	68.0%	19.2%	13.1%	-0.2%	-9.7%	-6.6%
Risk Diversifying	7.1%	1.6%	0.1%	8.0%	0.0%	0.0%	-0.9%	1.6%	0.1%
Total Fund	100%		7.2%	100%		13.4%	-0.1%		-6.2%

## CCCERA Total Fund Performance vs. Simple Target Index

	One Year		Three Years		Five Years		Ten Years	
	CCCERA	STI	CCCERA	STI	CCCERA	STI	CCCERA	STI
Return	1.7	3.7	4.9	5.3	5.3	4.9	8.5	7.0
Volatility	14.6	23.3	9.4	14.5	7.8	11.8	7.9	10.9
Sharpe	0.0	0.1	0.3	0.2	0.5	0.3	1.0	0.6

The Simple Target Index is made up of 68% MSCI ACWI, 24% Bloomberg 1-3 Year Gov/Credit, and 8% 3-Month Treasury Bill. This purpose of this index is to examine whether CCCERA is being rewarded for pursuing a more nuanced portfolio versus a very simple representative portfolio.

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

The Sharpe ratio is a measure of risk adjusted returns which shows the amount of return a portfolio earns above the risk free rate per unit of volatility. While the CCCERA portfolio slightly lagged the STI over the past year, the Total Fund has met or exceeded the Sharpe ratio relative to the Simple Target Index, indicating that CCCERA is being favorably rewarded for the risk taken in the portfolio.





*Meeting Date*  
**08/26/20**  
*Agenda Item*  
**#8**

**Memorandum**

Date: August 26, 2020  
To: CCCERA Board of Retirement Trustees  
From: Timothy Price, Chief Investment Officer  
Subject: 2020 Liquidity Sub-portfolio Funding and Rebalancing

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**Overview**

Every year, CCCERA receives the bulk of annual employer contributions in late July as employers take advantage of the CCCERA pre-payment discount policy. This creates a large influx of cash that is incorporated into our annual rebalancing, which both refreshes the Liquidity sub-portfolio with the next tranche of benefit payments and provides an opportunity to rebalance the Growth and Diversifying sub-portfolios. A preview of these shifts was provided previously in our Annual Funding Plan memo and actual activity largely followed the plan outlined in that document.

CCCERA received its annual pre-payments of employer contributions in late July and used these proceeds in conjunction with several withdrawals from investment managers to rebalance the portfolio. Through both pre-payments and withdrawals CCCERA raised approximately \$640 mm in cash, which was used to fund the Liquidity sub-portfolio for an additional year as well as fund the Acadian MAARS strategy within the Risk Diversifying sub-portfolio. Manager withdrawals occurred in the domestic, international and global equity mandates as well as from the high yield portfolio. The net result of the rebalancing shifted CCCERA's portfolio towards the asset allocation which was approved by the Board on July 22, 2020 (BOR Resolution 2020-2).

During the month of July, when the bulk of the rebalancing occurred, global equity markets were up considerably, giving us an opportunity to harvest some gains earned since the market trough in late March.

The following tables show the rebalancing trades which occurred between the end of July and early August, 2020. Funds were raised from the following sources:

Employer Pre-Payments	\$314	million
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***Manager Withdrawals***

Boston Partners	\$20	million
Jackson Square	\$90	million
BlackRock	\$15	million
Emerald Advisors	\$20	million
William Blair	\$35	million
Artisan	\$40	million
Allianz	\$40	million
Cash	\$66	million
<b>Total Cash Raised</b>	<b>\$640</b>	<b>million</b>

Proceeds were invested with the following investment managers:

Insight	\$410	million
DFA	\$130	million
Acadian	\$100	million
<b>Total Invested</b>	<b>\$640</b>	<b>million</b>

# CCCERA Asset Allocation

Liquidity	June 30, 2020 Market Value	Rebalancing Increase/Decrease	August 4, 2020 Market Value	Percentage of Total Fund	Target	Current Target Over/(Under)
Sit	603,382,248		605,658,898	6.5%	6.0%	0.5%
Dimensional Fund Advisors	381,344,231	\$ 130,000,000	498,160,067	5.3%	6.0%	-0.7%
Insight	814,518,772	\$ 410,000,000	1,200,426,698	12.8%	13.0%	-0.2%
<b>Total Liquidity</b>	<b>1,799,245,251</b>	<b>\$ 540,000,000</b>	<b>2,304,245,663</b>	<b>24.5%</b>	<b>25.0%</b>	<b>-0.5%</b>
				<b>Range</b>		
				<b>16% - 28%</b>		
<b>Growth</b>						
<b>Domestic Equity</b>						
Boston Partners	209,106,725	\$ (20,000,000)	199,395,134	2.1%	2.0%	0.1%
Jackson Square	277,961,088	\$ (90,000,000)	206,725,594	2.2%	2.0%	0.2%
BlackRock Index Fund	198,853,668	\$ (15,000,000)	197,546,081	2.1%	2.0%	0.1%
Emerald Advisors	159,569,780	\$ (20,000,000)	153,477,744	1.6%	1.5%	0.1%
Ceredex	126,136,312		131,866,260	1.4%	1.5%	-0.1%
<b>Total Domestic Equity</b>	<b>971,627,572</b>	<b>\$ (145,000,000)</b>	<b>889,010,813</b>	<b>9.5%</b>	<b>9.0%</b>	<b>0.5%</b>
<b>Global &amp; International Equity</b>						
Pyrford (BMO)	442,003,290		461,851,322	4.9%	5.0%	-0.1%
William Blair	504,713,901	\$ (35,000,000)	516,850,508	5.5%	5.0%	0.5%
First Eagle	414,027,367		437,657,508	4.7%	4.0%	0.7%
Artisan Global Opportunities	511,057,045	\$ (40,000,000)	471,057,045	5.0%	4.0%	1.0%
PIMCO/RAE Emerging Markets	287,988,049		287,988,049	3.1%	4.0%	-0.9%
TT Emerging Markets	314,723,866		314,723,866	3.4%	4.0%	-0.6%
<b>Total Global &amp; International Equity</b>	<b>2,474,513,518</b>	<b>\$ (75,000,000)</b>	<b>2,490,128,299</b>	<b>26.5%</b>	<b>26.0%</b>	<b>0.5%</b>
<b>Private Equity</b>						
Private Credit	1,017,093,034		1,019,168,326	10.9%	11.0%	-0.1%
Real Estate - Value Add	615,483,685		636,338,885	6.8%	7.0%	-0.2%
Real Estate - Opportunistic & Distressed	182,377,987		182,377,987	1.9%	4.0%	-2.1%
Real Estate - REIT (Adelante)	444,521,758		444,521,758	4.7%	4.0%	0.7%
High Yield (Allianz)	68,077,283		71,328,311	0.8%	1.0%	-0.2%
Risk Parity	197,837,624	\$ (40,000,000)	168,226,755	1.8%	1.5%	0.3%
AQR GRP EL	223,929,256		223,929,256	2.4%	5.0%	-0.3%
PanAgora	220,521,020		220,521,020	2.3%		
<b>Total Other Growth Assets</b>	<b>2,969,841,648</b>	<b>\$ (40,000,000)</b>	<b>2,966,412,297</b>	<b>31.6%</b>	<b>33.5%</b>	<b>-1.9%</b>
<b>Total Growth Assets</b>	<b>6,415,982,738</b>	<b>\$ (260,000,000)</b>	<b>6,345,551,409</b>	<b>67.6%</b>	<b>68.5%</b>	<b>-0.9%</b>
				<b>Range</b>		
				<b>60% - 80%</b>		
<b>Risk Diversifying</b>						
AFL-CIO	272,314,036		273,857,973	2.9%	3.0%	-0.1%
Parametric Defensive Equity	178,669,547		180,983,305	1.9%	2.0%	-0.1%
Wellington Real Total Return	921,688		418,450	0.0%		0.0%
Acadian Multi-Asset Abs. Return		\$ 100,000,000	100,000,000	1.1%	1.5%	-0.4%
<b>Total Risk Diversifying</b>	<b>451,905,270</b>	<b>\$ 100,000,000</b>	<b>555,259,727</b>	<b>5.9%</b>	<b>6.5%</b>	<b>-0.6%</b>
				<b>Range</b>		
				<b>0% - 10%</b>		
<b>Cash and Overlay</b>						
Overlay (Parametric)	50,091,075		56,115,773	0.6%		0.6%
Cash	192,006,578	\$ (66,057,825)	126,443,301	1.3%		1.3%
<b>Total Cash and Overlay</b>	<b>242,097,653</b>	<b>\$ (66,057,825)</b>	<b>182,559,075</b>	<b>1.9%</b>	<b>0.0%</b>	<b>1.9%</b>
<b>Employer Pre-payment</b>	<b>313,942,175</b>	<b>\$ (313,942,175)</b>				
<b>Total Fund</b>	<b>8,909,230,911</b>	<b>\$ -</b>	<b>9,387,615,874</b>	<b>100%</b>	<b>100%</b>	

\*Current targets and ranges reflect asset allocation targets accepted by the Board on July 22, 2020 (BOR Resolution 2020-2)