



**State of Connecticut**  
**Office of the Treasurer**

SHAWN T. WOODEN  
TREASURER

**M E M O R A N D U M**

**TO: Members of Investment Advisory Council**

**FROM: Shawn T. Wooden, State Treasurer and Council Secretary**

**DATE: December 4, 2020**

**SUBJECT: Investment Advisory Council Meeting – December 9, 2020**

Enclosed is the agenda package for the Investment Advisory Council meeting on Wednesday, December 9, 2020 starting at 9:00 A.M.

The following subjects will be covered at the meeting:

- Item 1: Approval of the Minutes of the November 18, 2020 IAC Meeting**
- Item 2: Opening Comments by the Treasurer**
- Item 3: Combined Investment Fund Review as of September 30, 2020**  
Meketa Investment group will provide an overview of the Combined Investment Fund as of September 30, 2020.
- Item 4: Domestic Equity Fund – Small Cap Request for Proposal**  
Paul Osinloye, Principal Investment Officer will review the project plan and scope of services for the Domestic Equity Fund Small Cap investment manager search.
- Item 5: Alternative Investment Fund Review as of September 30, 2020**  
Kevin Cullinan, Chief Risk Officer, will provide an overview of the Alternative Investment Fund as of September 30, 2020
- Item 6: Real Assets and Real Estate Review as of June 30, 2020**  
Danita Johnson, Principal Investment Officer, will provide an overview of the Real Assets and Real Estate portfolios as of June 30, 2020
- Item 7: Private Equity and Private Credit Review as of June 30, 2020**  
Mark Evans, Principal Investment Officer, will provide an overview of the Private Equity and Private Credit portfolios as of June 30, 2020

**Item 8: Presentation by and Consideration of K5 Private Investors, LP**

Mark Evans, Principal Investment Officer, will provide opening remarks and introduce K5 Private Investors, a Private Investment Fund opportunity.

**Item 9: Presentation by and Consideration of Livingbridge 7, LP**

Mark Evans, Principal Investment Officer, will provide opening remarks and introduce Livingbridge 7, a Private Investment Fund opportunity.

**Item 10: Other Business**

- Discussion of the preliminary agenda for the January 13, 2021 IAC meeting

**Item 11: Comments by the Chair**

We look forward to reviewing these agenda items with you at the December 9<sup>th</sup> meeting.

If you find that you are unable to attend this meeting, please email [katrina.farquhar@ct.gov](mailto:katrina.farquhar@ct.gov).

STW/kf

Enclosures

INVESTMENT ADVISORY COUNCIL

Wednesday, November 18, 2020

**SUCH MINUTES ARE IN DRAFT FORM AND SUBJECT TO THE FINAL REVIEW  
AND APPROVAL OF THE INVESTMENT ADVISORY COUNCIL**

**MEETING NO. 481`**

**Members present:**

D. Ellen Shuman, Chair  
Treasurer Wooden, Secretary  
Thomas Fiore, representing Secretary Melissa McCaw  
Joshua Hall  
Michael Knight  
Steven Muench  
William Murray  
Patrick Sampson\*  
Carol Thomas

\*12:00pm departure

**Members absent:**

Michael LeClair

**Others present:**

Laurie Martin, Chief Investment Officer  
Kevin Cullinan, Chief Risk Officer  
Patricia DeMaras, Legal Counsel  
Mark Evans, Principal Investment Officer  
Katrina Farquhar, Executive Assistant  
Lyndsey Farris, Principal Investment Officer  
John Flores, General Counsel  
Felicia Genca, Securities Analyst  
Karen Grenon, Legal Counsel  
Darrell Hill, Deputy Treasurer  
Barbara Housen, Chief Compliance Officer, Deputy General Counsel  
Danita Johnson, Principal Investment Officer  
Harvey Kelly, Pension Fund Analyst  
Raynald Leveque, Deputy Chief Investment Officer  
Steven Meier, Senior Principal Investment Officer  
Paul Osinloye, Principal Investment Officer  
Christine Shaw, Assistant Treasurer for Corporate Governance &  
Sustainable Investment  
Michael Terry, Principal Investment Officer

**Guests:**

Kevin Alcala, Goldman Sachs  
Greg Balewicz, Lord Abbett  
Drianne Benner, Appomattox  
Mary Beth Boyle, Rock Creek  
LaRoy Brantley, Meketa Investment Group  
Gar Chung, Financial Investment News  
Declan Dehenan, BNY Mellon

Dyice Ellis-Beckham, Invesco  
Marilyn Freeman, Capital Prospects  
Will Greene, Loop Capital  
Deirdre Guice-Minor, T. Rowe Price  
Lauren Lake, American Triple I Partners  
Christopher Morgan, Franklin Templeton  
Aneta Ortiz, Invesco  
Ann Parker Weeden, AllianceBernstein  
Jon Peterson, IPE  
Keith Phaneuf, CT Mirror  
Adam Rees, Pageant Media  
William Rejeski, Goldman Sachs  
Richard Ross, CT Resident  
Lisa Rotenberg, Goldman Sachs  
Liz Smith, AllianceBernstein  
Bessi Tozluku, Pretium  
Ryan Wagner, T. Rowe Price

With a quorum present, Chair D. Ellen Shuman called the Investment Advisory Council (“IAC”) meeting to order at 9:01 a.m.

#### **Approval of Minutes of the October 14, 2020 IAC Meeting**

Chair Shuman called for a motion to accept the minutes of the October 14, 2020 IAC meeting. **Carol Thomas moved to approve the minutes of the October 14, 2020 IAC meeting. The motion was seconded by Thomas Fiore. There was one abstention by William Murray. There being no further discussion, the Chair called for a vote and the motion passed.**

#### **Comments by the Treasurer**

Treasurer Wooden welcomed IAC members and began by reporting that he recently provided the Governor and General Assembly with the monthly Cash and Bonding Report, as of the end of September 2020, which highlighted Connecticut’s continued strong cash position during the pandemic and summarized planned bond issuances for Fiscal Year 2021.

Next, he discussed the launch of the Connecticut Achieving a Better Life Experience Savings Program (“ABLE CT”) to benefit Connecticut’s disability community. He explained this was an initiative approved by the legislature in 2015, following the ABLE Act signed into law by the federal government in 2014. Treasurer Wooden also reported that the first virtual Conference of Municipalities and discussed public finance during Covid-19, as well as provided updates on the investment performance of the Short-Term Investment Fund and the CT Municipal Employees Retirement Fund.

Then, Treasurer Wooden mentioned his recent announcement of the launch of a new Diversity Disclosure Initiative that he is co-chairing with Illinois State Treasurer Michael Frerichs. He explained this is a new coalition of institutional investors and advisors, saying it is grounded in



numerous studies that demonstrate that companies in the top quartile for diversity are more likely to outperform on profitability than those in the bottom quartile.

Finally, he provided a brief overview of the meeting agenda and closed by thanking the IAC for their participation and patience given the full agenda, noting it is important work in advancing the investment program.

#### **Update on the Market and the Connecticut Retirement Plans and Trust Funds Performance for Month Ending September 30, 2020**

Laurie Martin, Chief Investment Officer (“CIO”), provided an update on the Connecticut Retirement Plans and Trust Fund’s performance and commented on the capital market environment and the economic outlook.

#### **Master Custodian Request for Proposal**

Laurie Martin, CIO, provided a review of the project plan and scope of services for the master custodian search.

#### **The Watch List**

Kevin Cullinan, Chief Risk Officer, provided an update on the Watch List.

#### **Presentation by and Consideration of the Finalists for the Private Capital Consultant Search**

Mark Evans, Principal Investment Officer (“PIO”), provided opening remarks and introduced the finalists for the Private Capital Consultant search.

Aksia LLC, represented by Michelle Davidson, Partner, Co-Head of Advisory; Sylvia Owens, Managing Director - Global Private Credit and Real Assets Strategist; Jennifer Wildeman, Senior Portfolio Advisor; and Matthew Coyne, Senior Portfolio Advisor, Hamilton Lane Advisors LLC, represented by Mario Giannini, Chief Executive Officer; Katie Moore, Managing Director, Relationship Management; and Tim D’Arcy, Managing Director, Business Development, and StepStone Group LP, represented by Scott Hart, CEO; Lindsay Creedon, Partner; Michael Elio, Partner; Marcc-andre Mittermayer, Partner; Dave Han, VP; Aditya Raina, VP; and Alice Song, Associate, made a presentation to the IAC.

#### **Roll Call of Reactions for the Finalists for the Private Capital Consultant Search**

Messrs. Fiore, Murray, Joshua Hall, Michael Knight, Steven Muench, Patrick Sampson, Ms. Thomas and Chair Shuman provided feedback on the finalists for the Private Capital Consultant search. Chair Shuman called for a motion to waive the 45-day comment period. **A motion was made by Ms. Thomas, seconded by Mr. Muench, to waive the 45-day comment period for the finalists for the Private Capital Consultant search. There being no discussion, the Chair called for a vote and the motion passed.**

#### **Presentation by and Consideration of Clearlake Flagship Plus Partners**

Mr. Evans, PIO, provided opening remarks and introduced Clearlake Flagship Plus Partners (“Clearlake”), a Private Investment Fund (“PIF”) opportunity.

Clearlake, represented by Jose Feliciano, Co-Founder & Managing Partner, made a presentation to the IAC.

### **Roll Call of Reactions for the Clearlake Flagship Plus Partners**

Messrs. Fiore, Hall, Knight, Muench, Murray, Ms. Thomas and Chair Shuman provided feedback on Clearlake. Chair Shuman called for a motion to waive the 45-day comment period. **A motion was made by Mr. Murray, seconded by Mr. Hall, to waive the 45-day comment period for Clearlake. There being no discussion, the Chair called for a vote and the motion passed.**

### **Consideration of Secondary Overflow Fund IV L.P.**

Mr. Evans, PIO, provided opening remarks and discussed an additional allocation to Secondary Overflow Fund IV L.P. (“SOF IV”), a current investment within the PIF.

### **Roll Call of Reactions for the Secondary Overflow Fund IV L.P.**

Messrs. Fiore, Hall, Knight, Muench, Murray, Ms. Thomas and Chair Shuman provided feedback on SOF IV. Chair Shuman called for a motion to waive the 45-day comment period. **A motion was made by Mr. Murray, seconded by Mr. Muench, to waive the 45-day comment period for SOF IV. There being no discussion, the Chair called for a vote and the motion passed.**

### **Presentation by and Consideration of IPI Partners II**

Danita Johnson, PIO, provided opening remarks and introduced IPI Partners II (“IPI II”), a Real Assets Fund (“RAF”) opportunity.

IPI II, represented by Matt A’Hearn, Partner and Bill Janes, Investment Committee Member & Partner, made a presentation to the IAC.

### **Roll Call of Reactions for the IPI Partners II**

Messrs. Fiore, Hall, Knight, Muench, Murray, Ms. Thomas and Chair Shuman provided feedback on IPI II. Chair Shuman called for a motion to waive the 45-day comment period. **A motion was made by Mr. Muench, seconded by Mr. Murray, to waive the 45-day comment period for IPI II. There being no discussion, the Chair called for a vote and the motion passed.**

### **Presentation by and Consideration of ISQ Global Infrastructure III**

Danita Johnson, PIO, provided opening remarks and introduced ISQ Global Infrastructure III (“ISQ III”), a RAF opportunity.

ISQ III, represented by Adil Rahmathulla, Managing Partner; Andreas Moon, Managing Director; and Ed Saunders, Investor Relations, made a presentation to the IAC.

### **Roll Call of Reactions for the ISQ Global Infrastructure III**

Messrs. Fiore, Hall, Knight, Muench, Murray, Ms. Thomas and Chair Shuman provided feedback on ISQ III. Chair Shuman called for a motion to waive the 45-day comment period. **A motion**

**was made by Mr. Fiore, seconded by Mr. Murray, to waive the 45-day comment period for ISQ III. There being no discussion, the Chair called for a vote and the motion passed.**

#### **Presentation by and Consideration of TruAmerica Workforce Housing Fund**

Danita Johnson, PIO, provided opening remarks and introduced TruAmerica Workforce Housing Fund (“TruAmerica”), a RAF opportunity.

TruAmerica, represented by Robert Hart, Founder, CEO & President; Mark Enfield, Chief Administrative Officer; Noah Hochman, Co-Chief Investment Officer; and Eryn Mack, Director of Culture & Organizational Effectiveness, made a presentation to the IAC.

#### **Roll Call of Reactions for the TruAmerica Workforce Housing Fund**

Messrs. Fiore, Hall, Knight, Muench, Murray, Ms. Thomas and Chair Shuman provided feedback on TruAmerica. Chair Shuman called for a motion to waive the 45-day comment period. **A motion was made by Mr. Murray, seconded by Ms. Thomas, to waive the 45-day comment period for TruAmerica. There being no discussion, the Chair called for a vote and the motion passed.**

#### **Report on Corporate Governance**

Christine Shaw, Assistant Treasurer for Corporate Governance & Sustainable Investment, provided a report on Corporate Governance activities for the quarters ended June 30, 2020 and September 30, 2020.

#### **Comments by the Chair**

Chair Shuman noted the IAC schedule for the 2021 calendar year was included in the package. She invited the council members to submit agenda items for the next meeting, which will be held on December 9, 2020.

#### **Other Business**

There being no further business, the Chair called for a motion to adjourn the meeting. **Ms. Thomas moved to adjourn the meeting and the motion was seconded by Mr. Fiore. There being no discussion, the meeting was adjourned at 2:41 p.m.**

# State of Connecticut Retirement Plans and Trust Funds

Summary Investment Review  
As of September 30, 2020

Fund Evaluation Report

## Agenda

1. Executive Summary
2. Third Quarter Investment Review
3. Horizon Fund Review
4. Retirement Plan and Trust Attribution
5. Appendices
  - The World Markets Third Quarter of 2020
  - Capital Markets Outlook & Risk Metrics as of October 31, 2020
  - Global Macroeconomic Outlook September 2020
  - Disclaimer, Glossary, and Notes

## **Executive Summary**

**Market Commentary**

- Much like the second quarter, the risk rally continued into August, with the S&P reaching record highs, propelled by accommodative monetary policy and optimism around the next round of fiscal stimulus.
- However, the market sentiment shifted in September as most asset classes declined, influenced by rising virus cases and concerns over the next stimulus package.
- As expected, the Fed kept rates unchanged at the November FOMC meeting and pledged to continue its quantitative easing measures, buying assets like mortgage-securities and US Treasuries.
- The recently released economic data continued to show the general improvements in the US economy, but the recovery pace has slowed.
  - The third-quarter GDP rose at an annualized rate of 33.1%, which followed the 31.4% decline in the second quarter, suggesting a robust economic rebound.
  - In October, the unemployment rate declined from the recent April 14.7% peak, falling to 6.9% as businesses and consumers emerged from the lockdown.
  - The Institute for Supply Management (ISM) reported a reading of 59.3 for October. It was the highest since November 2018 and followed a reading of 55.4 in September.
  - US consumers increased, albeit modestly, their spending by 1.4% in September, which marked the fifth straight monthly increase in consumer spending.
  - Inflation was 0.2% in September and 1.4% over the past 12 months; however, it remained well below the Fed's 2% average target.

**Retirement Plan and Trust Fund Commentary**

- At the end of the first quarter of Fiscal Year 2021, the largest three retirement plans of the State of Connecticut Retirement Plans and Trust Funds were valued at a total of approximately \$35.6 billion.
- The primary driver of positive relative performance across the three Plans for the first fiscal quarter was the Emerging Markets International Stock Fund, which added 300 basis points (“bps”) of excess return relative to its benchmark, followed by the Alternative Investment Fund, which added 200 bps of excess return above its performance hurdle.
  - Additionally, the Emerging Markets International Stock Fund was the strongest absolute performer, gaining 12.8% for the quarter.
- The weakest relative performer was the Private Investment Fund, which underperformed its respective benchmark by 1,300 bps for the quarter. As a reminder, the PIF is benchmarked against a public market benchmark, the Russell 3000 + 250 bps (lagged a quarter).
  - Real Estate and Infrastructure were the worst absolute performers, decreasing 0.8% for the quarter.
    - As a reminder, private market valuations are lagged in the report.
- The Teachers’ Retirement Fund’s (“TERF”) market value was \$18.9 billion as of September 30, and the Fund was up 5.3% for the quarter.
  - TERF lagged its policy benchmark by 130 bps, driven mostly by relative underperformance in the Private Investment Fund and an overweight to Core Fixed Income Fund.



**Retirement Plan and Trust Fund Commentary (continued)**

- The State Employees' Retirement Fund's ("SERF") market value was \$13.9 billion as of September 30, 2020, and the Fund was up 5.4% for the quarter.
  - SERF underperformed its policy benchmark by 120 bps during the first fiscal quarter for similar drivers as TERF.
- The Municipal Employees' Retirement Fund's ("MERF") market value was \$2.8 billion as of September 30, 2020, and the portfolio returned 5.3% for the first fiscal quarter.
  - MERF lagged the policy index by 130 bps in the first fiscal quarter, also driven mostly by relative performance in the Private Investment Fund and overweight to Core Fixed Income Fund.
- The State Judges and Probate Judges and Employees' Retirement Funds returned 5.3% in the quarter, underperforming their respective policy benchmark by 130 bps.
- Of the Trusts, the Arts Endowment produced the most substantial absolute return, up 6.5% for the first fiscal quarter. Seven out of nine Trust Funds outperformed their respective policy benchmarks during the quarter.
- The Connecticut Horizon Fund ("the CHF"), valued at \$1.5 billion on September 30, returned 6.5% for the first fiscal quarter and exceeded its custom index by 30 bps.

## Combined Investment Funds Commentary

## Domestic Equity Fund (\$7.9B)

- The Domestic Equity Fund (“DEF”) returned 9.2% (net of fees) for the first fiscal quarter ending September 30, performing in line with the Russell 3000 Index.
  - The DEF ranked in the 29<sup>th</sup> percentile of the All US Equity peer group for that same time period.
  - With a three-year annualized return of 11.5% and a five-year annualized return of 13.7%, the DEF stood in 32<sup>nd</sup> and 28<sup>th</sup> percentiles of the peer group for the trailing three-year and five-year periods, respectively<sup>1</sup>.
- The Fund’s matched performance with the benchmark was mainly due to its large cap tilt. Large cap stocks regained leadership during the quarter as the Russell 1000 index returned 9.5% while the Russell 2000 Index returned 4.9%.

## Developed Markets International Stock Fund (\$4.3B)

- The Developed Markets International Stock Fund (“DMISF”) returned 5.7% (net of fees) for the first fiscal quarter, outperforming the MSCI EAFE IMI Net Index by 10 bps, and ranked in the 63<sup>rd</sup> percentile of its international equity peer group<sup>2</sup>.
  - The DMISF portfolio returned 0.9% and 6.3% for the annualized three- and five-year periods, ranking in the 50<sup>th</sup> and 40<sup>th</sup> percentiles.
- International markets were strongly positive but lagged the US markets, despite some modest USD weakness.
- Over the quarter, value stocks (as measured by the MSCI Indices) continued to lag growth stocks as the MSCI EAFE Value Index was up 1.2% for the quarter while the MSCI EAFE Growth Index gained 8.4%.

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<sup>1</sup> eVestment Alliance All US Equity Net

<sup>2</sup> eVestment Alliance All EAFE Equity Net

**Combined Investment Funds Commentary (continued)****Emerging Markets International Stock Fund (\$3.9B)**

- The Emerging Markets International Stock Fund (“EMISF”) returned 12.8% (net of fees) for the first fiscal quarter and exceeded the MSCI Emerging Market IMI Index, by 300 bps.
  - EMISF ranked in the 27<sup>th</sup> percentile for a one-year period ending September 30 and in the 22<sup>nd</sup> and 30<sup>th</sup> percentiles during the trailing three- and five-year periods.
- In US dollar terms, emerging markets had positive performance for the quarter, outperforming both the US market and developed ex US markets.

**Core Fixed Income Fund (\$6.7 B)**

- The Core Fixed Income Fund returned 0.9% for the first fiscal quarter (net of fees), outperforming the Bloomberg Barclays Aggregate Index by 30 bps, and ranked in the 62<sup>nd</sup> percentile amongst peers<sup>1</sup>.
  - The Core Fixed Income Fund was up 7.3% for the one-year period ending September 30, performing slightly better than the index. With a return of 4.9% for the trailing three-year period and 4.0% for the trailing five-year period, the portfolio ranked in the 86<sup>th</sup> and 83<sup>rd</sup> percentiles, respectively.
- All active managers within the Core Fixed Income Fund slightly outperformed the index during the quarter as spreads tightened modestly.

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<sup>1</sup> eVestment Alliance US Core Fixed Income Net

**Combined Investment Funds Commentary (continued)****High Yield Bond Fund (\$2.3B)**

- The High Yield Bond Fund returned 5.3% (net of fees) in the first fiscal quarter, advancing the BBgBarc US High Yield 2% Issuer Cap by 70 bps and ranking in the 16<sup>th</sup> percentile of the US High Yield peer group for the quarter<sup>1</sup>.
  - With a three-year annualized return of 3.6% and a five-year annualized return of 6.0%, the High Yield Bond Fund ranked in the 49<sup>th</sup> and 43<sup>rd</sup> percentiles.
- Four of the five managers in the portfolio exceeded the performance hurdle during the quarter causing the portfolio to outperform for the quarter.
- High yield bonds continued its rally after a volatile first quarter. Unlike the second quarter, this quarter was characterized by the outperformance of the CCC rated sector.

**The Emerging Markets Debt Fund (\$1.9B)**

- The Emerging Markets Debt Fund returned 2.3% (net of fees) in the first fiscal quarter, beating the spliced 50% JPM EMBI Global Diversified Index / 50% GBI EM Global Diversified Index return by 80 bps and ranked in the 45<sup>th</sup> percentile among peers<sup>2</sup>.
  - The Emerging Markets Debt fund ranked in the 77<sup>th</sup> percentile and the 64<sup>th</sup> percentile for the trailing three- and five-year time horizons based on respective returns of 0.4% and 5.2%.
- Emerging market debt continued the prior quarter's recovery, although at a much slower pace, given the increased volatility in September.

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<sup>1</sup> eVestment Alliance US High Yield Fixed Income Net

<sup>2</sup> eVestment Alliance Emerging Markets Fixed Income – Blended Currency Net

Combined Investment Funds Commentary (continued)

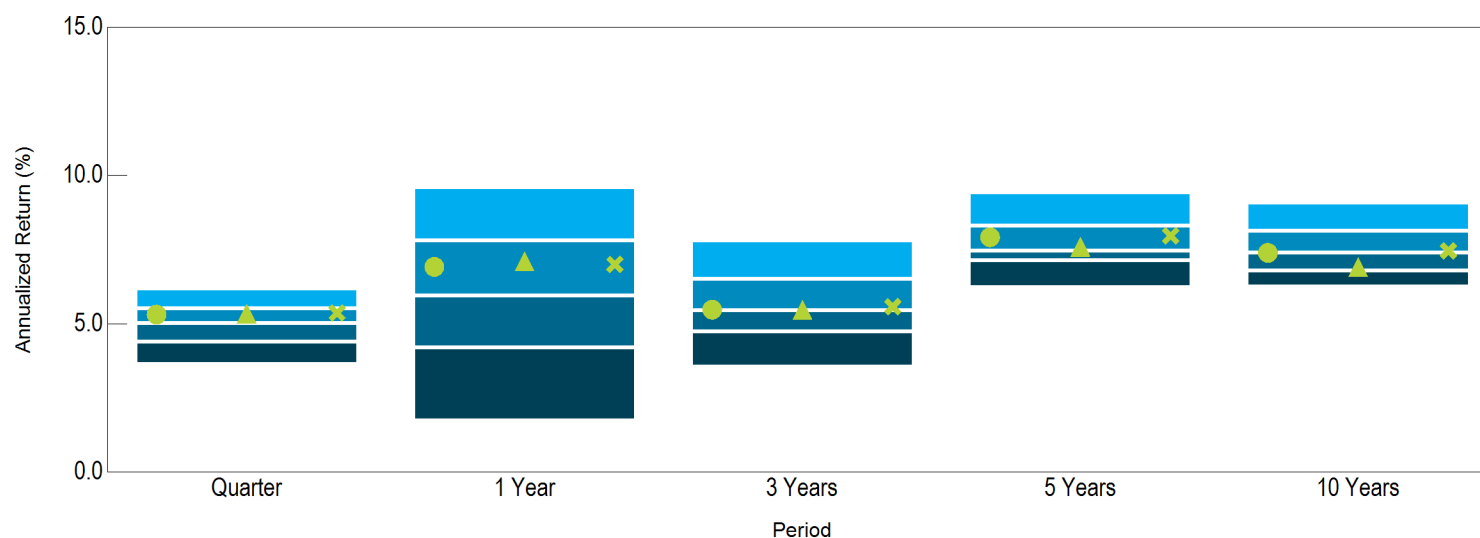
Liquidity Fund (\$0.8B)

- The Liquidity Fund returned 0.1% in the first fiscal quarter, performing in line with the benchmark. The Liquidity Fund currently ranks in the 34<sup>th</sup> percentile of its peer group<sup>1</sup>.
  - The Liquidity Fund ranked 46<sup>th</sup> for the three-year period and finished in the 26<sup>th</sup> percentile for the five-year period based on returns of 1.8% and 1.6%, respectively.

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<sup>1</sup> US Cash Management Net

### State Employees' Retirement Fund, Teachers' Retirement Fund & Municipal Employees' Retirement Fund vs. InvMetrics Public DB > \$1B Net Universe As of September 30, 2020



	Period				
	Return (Rank)				
5th Percentile	6.2	9.6	7.8	9.4	9.1
25th Percentile	5.5	7.8	6.5	8.3	8.1
Median	5.0	6.0	5.5	7.5	7.4
75th Percentile	4.4	4.2	4.8	7.2	6.8
95th Percentile	3.7	1.7	3.6	6.2	6.3
# of Portfolios	77	77	77	75	69
● Teachers' Retirement Fund	5.3 (36)	6.9 (39)	5.5 (52)	7.9 (42)	7.4 (52)
▲ Municipal Employees' Retirement Fund	5.3 (35)	7.1 (38)	5.5 (52)	7.6 (46)	6.9 (72)
✕ State Employees' Retirement Fund	5.4 (34)	7.0 (38)	5.6 (48)	8.0 (41)	7.5 (49)

Represents the InvMetrics Public DB >\$1 bn Net peer group as of September 30, 2020. Total System performance is net of fees. Includes 77 plans.

## **Third Quarter Investment Review**

### Performance Summary

	Market Value (\$)	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
<b>State of Connecticut Plans</b>	<b>37,717,769,908</b>						
<b>Teachers' Retirement Fund</b>	<b>18,931,026,501</b>	<b>5.3</b>	<b>1.7</b>	<b>6.9</b>	<b>5.5</b>	<b>7.9</b>	<b>7.4</b>
Teachers Custom Index		6.6	2.8	7.5	6.1	8.2	7.6
Teachers Dynamic Index		5.8	2.7	7.8	6.3	8.4	--
<b>State Employees' Retirement Fund</b>	<b>13,869,747,693</b>	<b>5.4</b>	<b>1.7</b>	<b>7.0</b>	<b>5.6</b>	<b>8.0</b>	<b>7.5</b>
State Employees Custom Index		6.6	2.8	7.5	6.1	8.2	7.6
State Employees Dynamic Index		5.9	2.8	7.9	6.4	8.5	--
<b>Municipal Employees' Retirement Fund</b>	<b>2,823,181,039</b>	<b>5.3</b>	<b>1.7</b>	<b>7.1</b>	<b>5.5</b>	<b>7.6</b>	<b>6.9</b>
Municipal Employees Custom Index		6.6	2.8	7.5	5.9	7.9	7.2
Municipal Employees Dynamic Index		5.9	2.8	8.0	6.2	8.1	--
<b>State Judges Retirement Fund</b>	<b>250,513,048</b>	<b>5.3</b>	<b>1.7</b>	<b>7.0</b>	<b>5.5</b>	<b>7.6</b>	<b>7.0</b>
State Judges Custom Index		6.6	2.8	7.5	5.9	7.9	7.2
State Judges Dynamic Index		5.9	2.8	7.9	6.4	8.2	--
<b>Probate Judges and Employees Retirement Fund</b>	<b>115,258,976</b>	<b>5.3</b>	<b>1.6</b>	<b>6.9</b>	<b>5.4</b>	<b>7.6</b>	<b>7.0</b>
Probate Judges Custom Index		6.6	2.8	7.5	5.9	8.0	7.3
Probate Judges Dynamic Index		5.8	2.7	7.9	6.2	8.2	--
<b>Agricultural College Fund</b>	<b>699,486</b>	<b>0.9</b>	<b>7.1</b>	<b>7.3</b>	<b>4.9</b>	<b>4.1</b>	<b>4.0</b>
Agriculture Custom Index		0.6	6.8	7.0	5.2	4.2	4.0
Agriculture Dynamic Index		0.6	6.8	7.0	5.2	4.2	--
<b>Andrew C. Clark Fund</b>	<b>1,335,394</b>	<b>3.3</b>	<b>5.6</b>	<b>8.6</b>	<b>5.7</b>	<b>6.1</b>	<b>5.8</b>
Andrew C. Clark Custom Index		2.8	5.1	8.1	6.0	6.2	5.8
Andrew C. Clark Dynamic Index		3.0	5.1	8.1	6.0	6.2	--
<b>Arts Endowment</b>	<b>20,414,882</b>	<b>6.5</b>	<b>2.8</b>	<b>8.8</b>	<b>5.5</b>	<b>6.0</b>	<b>5.4</b>
Arts Custom Index		6.3	1.0	7.0	5.6	5.9	5.5
Arts Dynamic Index		5.9	2.0	8.0	5.7	--	--



## State of Connecticut Retirement Plans and Trust Funds | As of September 30, 2020

	Market Value (\$)	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
<b>Hopemead State Park Trust Fund</b>	<b>4,550,378</b>	<b>3.2</b>	<b>5.4</b>	<b>8.4</b>	<b>5.6</b>	<b>6.1</b>	<b>5.6</b>
<i>Hopemead Fund Custom Index</i>		2.8	5.1	8.1	6.0	6.2	5.8
<i>Hopemead Fund Dynamic Index</i>		2.9	4.9	7.9	5.9	6.1	--
<b>Ida Eaton Fund</b>	<b>2,839,699</b>	<b>3.4</b>	<b>5.6</b>	<b>8.6</b>	<b>5.7</b>	<b>6.1</b>	<b>5.8</b>
<i>Ida Eaton Fund Custom Index</i>		2.8	5.1	8.1	6.0	6.2	5.8
<i>Ida Eaton Fund Dynamic Index</i>		3.0	5.1	8.1	6.0	6.2	--
<b>Police &amp; Fire Survivors Fund</b>	<b>39,690,317</b>	<b>5.3</b>	<b>1.7</b>	<b>6.9</b>	<b>5.5</b>	<b>7.7</b>	<b>7.4</b>
<i>Police &amp; Fire Custom Index</i>		6.6	2.8	7.5	5.9	8.0	--
<i>Police &amp; Fire Dynamic Index</i>		5.9	2.8	7.9	6.3	8.3	--
<b>School Fund</b>	<b>12,970,442</b>	<b>3.3</b>	<b>5.5</b>	<b>8.5</b>	<b>5.6</b>	<b>6.1</b>	<b>5.7</b>
<i>School Fund Custom Index</i>		2.8	5.1	8.1	6.0	6.2	5.8
<i>School Fund Dynamic Index</i>		3.0	4.9	8.0	6.0	6.2	--
<b>Soldiers, Sailors, &amp; Marines Fund</b>	<b>84,912,171</b>	<b>3.3</b>	<b>5.5</b>	<b>8.5</b>	<b>5.6</b>	<b>6.1</b>	<b>5.6</b>
<i>Soldiers, Sailors, &amp; Marines Custom Index</i>		2.8	5.1	8.1	6.0	6.2	5.5
<i>Soldiers, Sailors, &amp; Marines Dynamic Index</i>		2.9	5.0	8.0	6.0	6.2	--
<b>State Attorney's Retirement Fund</b>	<b>2,242,865</b>	<b>5.3</b>	<b>1.7</b>	<b>6.9</b>	<b>5.0</b>	<b>7.8</b>	<b>6.3</b>
<i>State Attorney's Custom Index</i>		6.6	2.8	7.5	6.6	8.5	--
<i>State Attorney's Dynamic Index</i>		5.9	2.8	7.9	6.4	8.4	--
<b>OPEB</b>	<b>1,558,387,284</b>	<b>5.4</b>	<b>1.8</b>	<b>7.1</b>	<b>5.7</b>	<b>7.3</b>	<b>--</b>
<i>OPEB Custom Index</i>		6.6	2.8	7.5	6.1	7.6	--
<i>OPEB Dynamic Index</i>		5.9	2.8	8.0	6.6	7.9	--

### Performance Summary

	Market Value (\$)	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
<b>State of Connecticut Total Fund</b>	<b>37,717,769,908</b>	<b>100.0</b>						
<b>Domestic Equity Fund</b>	<b>7,935,231,844</b>	<b>21.0</b>	<b>9.2</b>	<b>5.7</b>	<b>15.3</b>	<b>11.5</b>	<b>13.7</b>	<b>13.4</b>
Domestic Equity Fund ex CHF			9.4	6.3	16.0	12.2	14.2	13.7
Russell 3000			9.2	5.4	15.0	11.6	13.7	13.5
eV All US Equity Net Median			6.8	-2.9	4.7	6.5	9.8	11.2
eV All US Equity Net Rank			29	33	32	32	28	28
<b>Developed Markets International Stock Fund</b>	<b>4,293,817,485</b>	<b>11.4</b>	<b>5.7</b>	<b>-5.7</b>	<b>1.7</b>	<b>0.9</b>	<b>6.3</b>	<b>6.3</b>
Developed Markets International Stock Fund ex CHF			5.5	-6.1	1.2	0.8	6.2	6.3
MSCI EAFE IMI Net USD			5.6	-6.7	1.4	0.7	5.6	5.0
Spliced MSCI EAFE IMI (net)			5.6	-6.7	1.4	0.7	5.6	5.0
eV All EAFE Equity Net Median			6.6	-6.0	2.9	0.8	5.6	5.7
eV All EAFE Equity Net Rank			63	48	55	50	40	38
<b>Emerging Markets International Stock Fund</b>	<b>3,852,654,931</b>	<b>10.2</b>	<b>12.8</b>	<b>4.5</b>	<b>16.0</b>	<b>4.5</b>	<b>10.6</b>	<b>3.4</b>
MSCI Emerging Market IMI Net			9.8	-1.3	10.1	2.0	8.4	2.3
eV Emg Mkts Equity Net Median			9.7	-1.4	10.3	1.9	8.4	2.7
eV Emg Mkts Equity Net Rank			15	25	27	22	30	36
<b>Core Fixed Income Fund</b>	<b>6,679,030,160</b>	<b>17.7</b>	<b>0.9</b>	<b>7.1</b>	<b>7.3</b>	<b>4.9</b>	<b>4.0</b>	<b>3.6</b>
BBgBarc US Aggregate TR			0.6	6.8	7.0	5.2	4.2	3.6
eV US Core Fixed Inc Net Median			1.1	7.2	7.2	5.4	4.4	3.9
eV US Core Fixed Inc Net Rank			62	54	47	86	83	76
<b>High Yield Debt Fund</b>	<b>2,330,150,859</b>	<b>6.2</b>	<b>5.3</b>	<b>1.1</b>	<b>3.7</b>	<b>3.6</b>	<b>6.0</b>	<b>5.9</b>
BBgBarc US High Yield 2% Issuer Cap TR			4.6	0.6	3.2	4.2	6.8	6.5
eV US High Yield Fixed Inc Net Median			4.5	0.3	2.6	3.6	5.9	6.0
eV US High Yield Fixed Inc Net Rank			16	27	19	49	43	54

## State of Connecticut Total Fund | As of September 30, 2020

	Market Value (\$)	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
<b>Emerging Markets Debt Fund</b>	<b>1,931,576,567</b>	<b>5.1</b>	<b>2.3</b>	<b>-5.4</b>	<b>-1.5</b>	<b>0.4</b>	<b>5.2</b>	<b>3.1</b>
Spliced 50% JPM EMBI Global Diversified / 50% GBI EM Global Diversified			1.5	-3.4	0.0	1.9	5.5	3.7
eV Emg Mkts Fixed Inc - Blended Currency Net Median			2.2	-2.3	1.4	1.8	5.6	3.6
eV Emg Mkts Fixed Inc - Blended Currency Net Rank			45	85	85	77	64	67
<b>Liquidity Fund</b>	<b>772,266,042</b>	<b>2.0</b>	<b>0.1</b>	<b>0.6</b>	<b>1.1</b>	<b>1.8</b>	<b>1.6</b>	<b>0.9</b>
50% 3 Month T-Bills / 50% Barclays 1-3 Yr Treasury Bond Index			0.1	1.8	2.2	2.1	1.5	0.9
eV US Cash Management Net Median			0.0	0.6	1.1	1.8	1.3	0.7
eV US Cash Management Net Rank			34	52	51	46	26	21
<b>Real Assets Fund</b>	<b>4,492,036,340</b>	<b>11.9</b>	<b>0.8</b>	<b>0.5</b>	<b>1.8</b>	<b>5.3</b>	<b>6.6</b>	<b>9.3</b>
<b>U.S. TIPS</b>	<b>1,868,612,348</b>	<b>5.0</b>	<b>3.1</b>	--	--	--	--	--
BBgBarc US TIPS TR			3.0	9.2	10.1	5.8	4.6	3.6
<b>Real Estate</b>	<b>2,472,686,493</b>	<b>6.6</b>	<b>-0.8</b>	<b>-0.7</b>	<b>0.6</b>	<b>4.9</b>	<b>6.4</b>	<b>9.2</b>
NCREIF-ODCE			0.5	-0.1	1.4	5.2	6.6	10.3
<b>Natural Resources</b>	<b>100,163,601</b>	<b>0.3</b>	<b>0.0</b>	--	--	--	--	--
CPI + 4%			2.1	3.7	5.4	5.8	5.9	5.8
<b>Infrastructure</b>	<b>50,573,899</b>	<b>0.1</b>	<b>-0.8</b>	--	--	--	--	--
CPI + 4%			2.1	3.7	5.4	5.8	5.9	5.8
<b>Private Investment Fund</b>	<b>3,068,565,912</b>	<b>8.1</b>	<b>9.2</b>	<b>6.8</b>	<b>11.1</b>	<b>13.2</b>	<b>12.0</b>	<b>12.9</b>
Russell 3000 + 250bp 1Q Lagged			22.2	7.2	9.0	11.6	13.7	13.5
<b>Alternative Investment Fund</b>	<b>2,575,647,541</b>	<b>6.8</b>	<b>2.6</b>	<b>-3.9</b>	<b>-2.0</b>	<b>1.9</b>	<b>1.9</b>	--
Custom Return Benchmark			0.6	3.4	4.6	4.1	2.6	--
91 Day T-Bills +3%			0.8	2.7	3.8	4.6	4.2	3.6
HFRI FOF: Diversified Index			3.9	2.8	5.7	3.1	3.0	3.0
CPI + 4%			2.1	3.7	5.4	5.8	5.9	5.8
<b>Private Credit Fund</b>	<b>149,822,876</b>	<b>0.4</b>	<b>5.3</b>	--	--	--	--	--
S&P/LSTA Leveraged Loan + 150bps			4.5	0.5	2.6	4.6	5.6	5.8

Performance Summary										
	Market Value (\$)	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Domestic Equity Fund</b>	<b>7,935,231,844</b>	<b>100.0</b>	<b>9.2</b>	<b>5.7</b>	<b>15.3</b>	<b>11.5</b>	<b>13.7</b>	<b>13.4</b>	--	
<i>Domestic Equity Fund ex CHF</i>			9.4	6.3	16.0	12.2	14.2	13.7	--	
<i>Russell 3000</i>			9.2	5.4	15.0	11.6	13.7	13.5	--	
Rhumblin Russell 1000 Index Fund	3,100,188,777	39.1	9.5	--	--	--	--	--	17.8	May-20
<i>Russell 1000</i>			9.5	6.4	16.0	12.4	14.1	13.8	17.8	May-20
T. Rowe Price U.S. Structured Equity Research	3,440,224,795	43.4	9.5	6.1	16.1	12.9	14.9	14.2	16.8	Mar-09
<i>S&amp;P 500</i>			8.9	5.6	15.1	12.3	14.1	13.7	16.4	Mar-09
Xponance S&P 500 Index Fund	565,753,110	7.1	8.9	--	--	--	--	--	16.4	Apr-20
<i>S&amp;P 500</i>			8.9	5.6	15.1	12.3	14.1	13.7	31.3	Apr-20
SSgA Russell 1000	7,784	0.0								
<i>Russell 1000</i>			9.5	6.4	16.0	12.4	14.1	13.8	9.1	Apr-96

## Developed Markets International Stock Fund | As of September 30, 2020

Performance Summary										
	Market Value (\$)	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Developed Markets International Stock Fund</b>	<b>4,293,817,485</b>	<b>100.0</b>	<b>5.7</b>	<b>-5.7</b>	<b>1.7</b>	<b>0.9</b>	<b>6.3</b>	<b>6.3</b>	--	
<i>Developed Markets International Stock Fund ex CHF</i>			5.5	-6.1	1.2	0.8	6.2	6.3	--	
<i>MSCI EAFE IMI Net USD</i>			5.6	-6.7	1.4	0.7	5.6	5.0	--	
<i>Spliced MSCI EAFE IMI (net)</i>			5.6	-6.7	1.4	0.7	5.6	5.0	--	
SSgA Passive Non-US	2,118,046,726	49.3	4.8	-7.0	0.4	0.8	5.4	4.8	6.3	Sep-03
<i>Spliced MSCI EAFE Index</i>			4.8	-7.1	0.5	0.6	5.3	4.7	6.2	Sep-03
Acadian Non-US Core	607,807,738	14.2	6.2	-3.7	3.8	1.5	9.0	8.4	4.0	Jan-07
<i>Spliced MSCI EAFE Index</i>			4.8	-7.1	0.5	0.6	5.3	4.7	2.3	Jan-07
Causeway	580,525,152	13.5	1.9	-15.7	--	--	--	--	-12.0	Nov-19
<i>MSCI EAFE Value</i>			1.2	-18.3	-11.9	-5.9	1.1	2.1	-15.0	Nov-19
Fiera Capital	607,542,276	14.1	11.2	6.8	--	--	--	--	11.1	Nov-19
<i>MSCI EAFE Growth</i>			8.4	4.6	13.4	7.1	9.2	7.0	9.5	Nov-19
AQR Non-US Core	2,846,338	0.1								
MSCI EAFE ETF	821,117	0.0								
Schroders International Small Cap	707,209	0.0								
DFA International Small Cap Value	2,163,364	0.1								
William Blair International Small Cap	649,981	0.0								
Blackrock Transition	451,249	0.0								
Northern Transition	75,277	0.0								
Russell Transition	2,007,071	0.0								

## Emerging Markets International Stock Fund | As of September 30, 2020

	Performance Summary									Inception Date
	Market Value (\$)	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	
<b>Emerging Markets International Stock Fund</b>	<b>3,852,654,931</b>	<b>100.0</b>	<b>12.8</b>	<b>4.5</b>	<b>16.0</b>	<b>4.5</b>	<b>10.6</b>	<b>3.4</b>	--	
<i>MSCI Emerging Market IMI Net</i>			9.8	-1.3	10.1	2.0	8.4	2.3	--	
ARGA	227,008,643	5.9	5.0	-17.3	-5.2	--	--	--	-7.3	Apr-19
<i>MSCI Emerging Markets</i>			9.6	-1.2	10.5	2.4	9.0	2.5	4.3	Apr-19
GQG Emerging Markets	792,115,038	20.6	18.7	18.1	25.1	--	--	--	18.8	May-19
<i>MSCI Emerging Markets</i>			9.6	-1.2	10.5	2.4	9.0	2.5	3.0	May-19
Lazard Asset Management	403,553,294	10.5	8.8	-0.1	12.1	--	--	--	4.1	Apr-19
<i>MSCI Emerging Markets</i>			9.6	-1.2	10.5	2.4	9.0	2.5	4.3	Apr-19
Schroders Emerging Markets	1,547,824,983	40.2	13.0	2.4	15.0	5.4	12.1	5.2	6.0	Feb-10
<i>MSCI Emerging Markets</i>			9.6	-1.2	10.5	2.4	9.0	2.5	3.9	Feb-10
Driehaus Capital Management	868,955,825	22.6	11.9	6.3	19.0	--	--	--	11.3	Apr-19
<i>MSCI Emerging Markets</i>			9.6	-1.2	10.5	2.4	9.0	2.5	4.3	Apr-19

	Performance Summary									Inception Date
	Market Value (\$)	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	
<b>Core Fixed Income Fund</b>	<b>6,679,030,160</b>	<b>100.0</b>	<b>0.9</b>	<b>7.1</b>	<b>7.3</b>	<b>4.9</b>	<b>4.0</b>	<b>3.6</b>	--	
<i>BBgBarc US Aggregate TR</i>			0.6	6.8	7.0	5.2	4.2	3.6	--	
BlackRock Core Bond	607,153,781	9.1	1.0	7.8	8.2	5.6	4.5	4.1	5.6	Apr-96
<i>BBgBarc US Aggregate TR</i>			0.6	6.8	7.0	5.2	4.2	3.6	5.3	Apr-96
Goodwin Core Bond	1,415,085,075	21.2	1.2	7.6	7.6	5.7	4.8	4.3	5.3	Dec-97
<i>BBgBarc US Aggregate TR</i>			0.6	6.8	7.0	5.2	4.2	3.6	5.1	Dec-97
Longfellow	442,102,574	6.6	1.4	6.6	6.7	--	--	--	8.8	Dec-18
<i>BBgBarc US Aggregate TR</i>			0.6	6.8	7.0	5.2	4.2	3.6	9.6	Dec-18
Pugh Capital Management	442,946,461	6.6	0.7	7.3	7.5	--	--	--	9.8	Dec-18
<i>BBgBarc US Aggregate TR</i>			0.6	6.8	7.0	5.2	4.2	3.6	9.6	Dec-18
SSgA Passive Core Bond	2,360,575,508	35.3	0.5	6.4	6.6	4.8	3.9	3.5	5.3	Jul-95
<i>BBgBarc US Aggregate TR</i>			0.6	6.8	7.0	5.2	4.2	3.6	5.3	Jul-95
Wellington Core Bond	1,310,477,975	19.6	1.0	8.1	8.4	5.8	5.0	4.3	5.5	Jan-98
<i>BBgBarc US Aggregate TR</i>			0.6	6.8	7.0	5.2	4.2	3.6	5.1	Jan-98

Performance Summary										
	Market Value (\$)	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>High Yield Debt Fund</b>	<b>2,330,150,859</b>	<b>100.0</b>	<b>5.3</b>	<b>1.1</b>	<b>3.7</b>	<b>3.6</b>	<b>6.0</b>	<b>5.9</b>	--	
<i>BBgBarc US High Yield 2% Issuer Cap TR</i>			4.6	0.6	3.2	4.2	6.8	6.5	--	
AllianceBernstein High Yield	366,039,227	15.7	5.3	1.2	4.4	4.4	--	--	5.2	Feb-17
<i>BBgBarc US High Yield 2% Issuer Cap TR</i>			4.6	0.6	3.2	4.2	6.8	6.5	4.9	Feb-17
Columbia High Yield	657,079,287	28.2	4.8	0.9	3.8	4.4	--	--	5.3	Mar-17
<i>BBgBarc US High Yield 2% Issuer Cap TR</i>			4.6	0.6	3.2	4.2	6.8	6.5	4.6	Mar-17
DDJ High Yield	276,765,007	11.9	7.4	0.3	3.4	2.2	--	--	3.7	Feb-17
<i>BBgBarc US High Yield 2% Issuer Cap TR</i>			4.6	0.6	3.2	4.2	6.8	6.5	4.9	Feb-17
Nomura High Yield	587,650,051	25.2	5.5	1.0	3.5	3.8	--	--	4.5	Mar-17
<i>BBgBarc US High Yield 2% Issuer Cap TR</i>			4.6	0.6	3.2	4.2	6.8	6.5	4.6	Mar-17
Shenkman High Yield	270,205,636	11.6	4.2	0.9	3.3	4.2	6.1	5.7	6.5	Jan-08
<i>BBgBarc US High Yield 2% Issuer Cap TR</i>			4.6	0.6	3.2	4.2	6.8	6.5	7.3	Jan-08
Loomis High Yield	5,682,129	0.2								
Russell Transition	153,966,247	6.6								



	Performance Summary									Inception Date
	Market Value (\$)	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	
<b>Emerging Markets Debt Fund</b>	<b>1,931,576,567</b>	<b>100.0</b>	<b>2.3</b>	<b>-5.4</b>	<b>-1.5</b>	<b>0.4</b>	<b>5.2</b>	<b>3.1</b>	--	
<i>Spliced 50% JPM EMBI Global Diversified / 50% GBI EM Global Diversified</i>			1.5	-3.4	0.0	1.9	5.5	3.7	--	
Ashmore Emerging Markets Debt	88,740	0.0								
Payden & Rygel Emerging Markets Debt	635,611,764	32.9	2.0	-4.1	0.5	1.8	--	--	3.0	Oct-16
<i>Spliced 50% JPM EMBI Global Diversified / 50% GBI EM Global Diversified</i>			1.5	-3.4	0.0	1.9	5.5	3.7	2.9	Oct-16
Fidelity Emerging Markets Debt	18,425,061	1.0								
Aberdeen Emerging Markets Debt	590,042,490	30.5	--	--	--	--	--	--	0.0	Sep-20
<i>Spliced 50% JPM EMBI Global Diversified / 50% GBI EM Global Diversified</i>			1.5	-3.4	0.0	1.9	5.5	3.7	-1.9	Sep-20
PIMCO Emerging Markets Debt	593,621,467	30.7	--	--	--	--	--	--	0.0	Sep-20
<i>Spliced 50% JPM EMBI Global Diversified / 50% GBI EM Global Diversified</i>			1.5	-3.4	0.0	1.9	5.5	3.7	-1.9	Sep-20
NRTS Transition	84,802,895	4.4	--	--	--	--	--	--	0.0	Sep-20

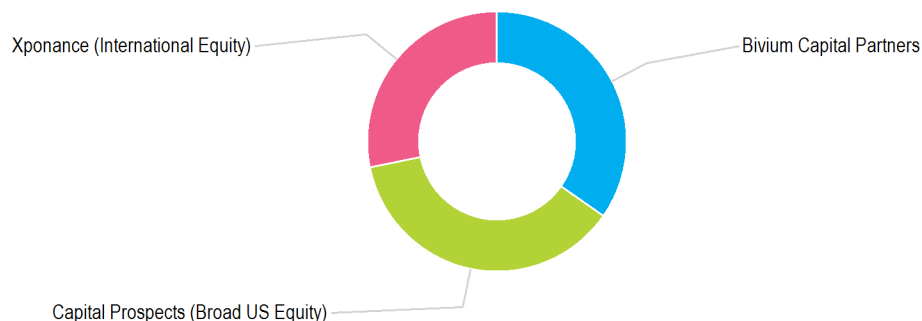
	Performance Summary									Inception (%)	Inception Date
	Market Value (\$)	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)			
Liquidity Fund	772,266,042	100.0	0.1	0.6	1.1	1.8	1.6	0.9	--		
50% 3 Month T-Bills / 50% Barclays 1-3 Yr Treasury Bond Index			0.1	1.8	2.2	2.1	1.5	0.9	--		
Liquidity Fund	772,266,042	100.0	0.1	0.5	--	--	--	--	0.5	Jan-20	

	Performance Summary									
	Market Value (\$)	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Real Assets Fund</b>	<b>4,492,036,340</b>	<b>100.0</b>	<b>0.8</b>	<b>0.5</b>	<b>1.8</b>	<b>5.3</b>	<b>6.6</b>	<b>9.3</b>	<b>4.4</b>	<b>Sep-87</b>
<b>U.S. TIPS</b>	<b>1,868,612,348</b>	<b>41.6</b>	<b>3.1</b>	--	--	--	--	--	<b>4.2</b>	<b>Jun-20</b>
<i>BBgBarc US TIPS TR</i>			3.0	9.2	10.1	5.8	4.6	3.6	4.2	Jun-20
<b>Real Estate</b>	<b>2,472,686,493</b>	<b>55.0</b>	<b>-0.8</b>	<b>-0.7</b>	<b>0.6</b>	<b>4.9</b>	<b>6.4</b>	<b>9.2</b>	<b>4.3</b>	<b>Sep-87</b>
<i>NCREIF-ODCE</i>			0.5	-0.1	1.4	5.2	6.6	10.3	7.2	Sep-87
<b>Natural Resources</b>	<b>100,163,601</b>	<b>2.2</b>	<b>0.0</b>	--	--	--	--	--	<b>-16.2</b>	<b>May-20</b>
<i>CPI + 4%</i>			2.1	3.7	5.4	5.8	5.9	5.8	3.3	May-20
<b>Infrastructure</b>	<b>50,573,899</b>	<b>1.1</b>	<b>-0.8</b>	--	--	--	--	--	<b>-3.0</b>	<b>May-20</b>
<i>CPI + 4%</i>			2.1	3.7	5.4	5.8	5.9	5.8	3.3	May-20

Performance Summary										
	Market Value (\$)	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>State of Connecticut Horizon Fund</b>	<b>1,506,489,983</b>	<b>100.0</b>	<b>6.5</b>	<b>-0.3</b>	<b>6.7</b>	<b>4.9</b>	<b>7.3</b>	<b>--</b>	<b>--</b>	<b>Sep-05</b>
<i>Connecticut Horizon Fund Custom Index</i>			<i>6.2</i>	<i>-1.6</i>	<i>6.3</i>	<i>6.3</i>	<i>9.7</i>	<i>9.8</i>	<i>7.4</i>	<i>Sep-05</i>
<b>State of Connecticut Horizon Fund Public Markets</b>	<b>1,254,357,469</b>	<b>83.3</b>	<b>7.0</b>	<b>-0.3</b>	<b>7.8</b>	<b>5.3</b>	<b>8.4</b>	<b>8.4</b>	<b>6.7</b>	<b>Sep-05</b>
<i>Connecticut Horizon Fund Custom Index</i>			<i>6.2</i>	<i>-1.6</i>	<i>6.3</i>	<i>6.3</i>	<i>9.7</i>	<i>9.8</i>	<i>7.4</i>	<i>Sep-05</i>
<b>Bivium Capital Partners (US Small Cap)</b>	<b>349,832,287</b>	<b>23.2</b>	<b>6.0</b>	<b>-6.1</b>	<b>2.3</b>	<b>0.7</b>	<b>6.4</b>	<b>8.7</b>	<b>6.4</b>	<b>Sep-05</b>
<i>Russell 2000</i>			<i>4.9</i>	<i>-8.7</i>	<i>0.4</i>	<i>1.8</i>	<i>8.0</i>	<i>9.9</i>	<i>7.0</i>	<i>Sep-05</i>
<b>Bivium Capital Partners (Core Fixed Income)</b>	<b>84,797,221</b>	<b>5.6</b>	<b>1.5</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>2.6</b>	<b>Mar-20</b>
<i>BBgBarc US Aggregate TR</i>			<i>0.6</i>	<i>6.8</i>	<i>7.0</i>	<i>5.2</i>	<i>4.2</i>	<i>3.6</i>	<i>2.9</i>	<i>Mar-20</i>
<b>Capital Prospects (Broad US Equity)</b>	<b>465,214,897</b>	<b>30.9</b>	<b>8.6</b>	<b>5.7</b>	<b>14.7</b>	<b>10.3</b>	<b>11.7</b>	<b>11.8</b>	<b>8.2</b>	<b>Sep-05</b>
<i>Russell 3000</i>			<i>9.2</i>	<i>5.4</i>	<i>15.0</i>	<i>11.6</i>	<i>13.7</i>	<i>13.5</i>	<i>9.1</i>	<i>Sep-05</i>
<b>Xponance (International Equity)</b>	<b>353,765,944</b>	<b>23.5</b>	<b>7.4</b>	<b>-4.9</b>	<b>2.7</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>0.1</b>	<b>Sep-18</b>
<i>MSCI ACWI ex USA</i>			<i>6.3</i>	<i>-5.4</i>	<i>3.0</i>	<i>1.2</i>	<i>6.2</i>	<i>4.0</i>	<i>1.0</i>	<i>Sep-18</i>

## Horizon Fund Review

#### Allocation



#### Performance Summary

	Market Value (\$)	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>State of Connecticut Horizon Fund Public Markets</b>	<b>1,254,357,469</b>	<b>100.0</b>	<b>7.0</b>	<b>-0.3</b>	<b>7.8</b>	<b>5.3</b>	<b>8.4</b>	<b>8.4</b>	<b>6.7</b>	<b>Sep-05</b>
<i>Connecticut Horizon Fund Custom Index</i>			6.2	-1.6	6.3	6.3	9.7	9.8	7.4	Sep-05
<b>Bivium Capital Partners (US Small Cap)</b>	<b>349,832,287</b>	<b>27.9</b>	<b>6.0</b>	<b>-6.1</b>	<b>2.3</b>	<b>0.7</b>	<b>6.4</b>	<b>8.7</b>	<b>6.4</b>	<b>Sep-05</b>
<i>Russell 2000</i>			4.9	-8.7	0.4	1.8	8.0	9.9	7.0	Sep-05
<b>Bivium Capital Partners (Core Fixed Income)</b>	<b>84,797,221</b>	<b>6.8</b>	<b>1.5</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>2.6</b>	<b>Mar-20</b>
<i>BBgBarc US Aggregate TR</i>			0.6	6.8	7.0	5.2	4.2	3.6	2.9	Mar-20
<b>Capital Prospects (Broad US Equity)</b>	<b>465,214,897</b>	<b>37.1</b>	<b>8.6</b>	<b>5.7</b>	<b>14.7</b>	<b>10.3</b>	<b>11.7</b>	<b>11.8</b>	<b>8.2</b>	<b>Sep-05</b>
<i>Russell 3000</i>			9.2	5.4	15.0	11.6	13.7	13.5	9.1	Sep-05
<b>Xponance (International Equity)</b>	<b>353,765,944</b>	<b>28.2</b>	<b>7.4</b>	<b>-4.9</b>	<b>2.7</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>0.1</b>	<b>Sep-18</b>
<i>MSCI ACWI ex USA</i>			6.3	-5.4	3.0	1.2	6.2	4.0	1.0	Sep-18

#### Connecticut Horizon Fund

##### Manager Allocation

	Number of Managers	% of Total Program Managers	% of MV
Connecticut Based	4	5	10
Emerging Manager	23	29	77
African-American Owned	2	3	5
Asian Owned	4	5	13
Hispanic Owned	5	6	10
Native American Owned	1	1	5
Women Owned	6	8	33
<b>Total</b>	<b>33</b>		

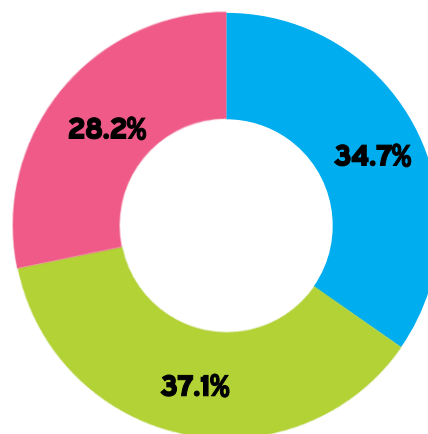
##### Classification by Asset Class

	Style	MV of CT (\$ USD)	# of Managers	% of Total CHF	% of CRPTF
Bivium Capital	U.S. Small Cap/Fixed Income	\$434,629,508	11	34.7	1.2
Capital Prospects	Broad U.S. Equity	\$465,214,897	12	37.1	1.2
Xponance	International Equity	\$353,765,944	10	28.2	0.9
<b>Total</b>		<b>\$1,253,610,349</b>			
<b>Total CRPTF</b>		<b>\$37,717,769,908</b>			

■ **Bivium Capital**

■ **Capital Prospects**

■ **Xponance**



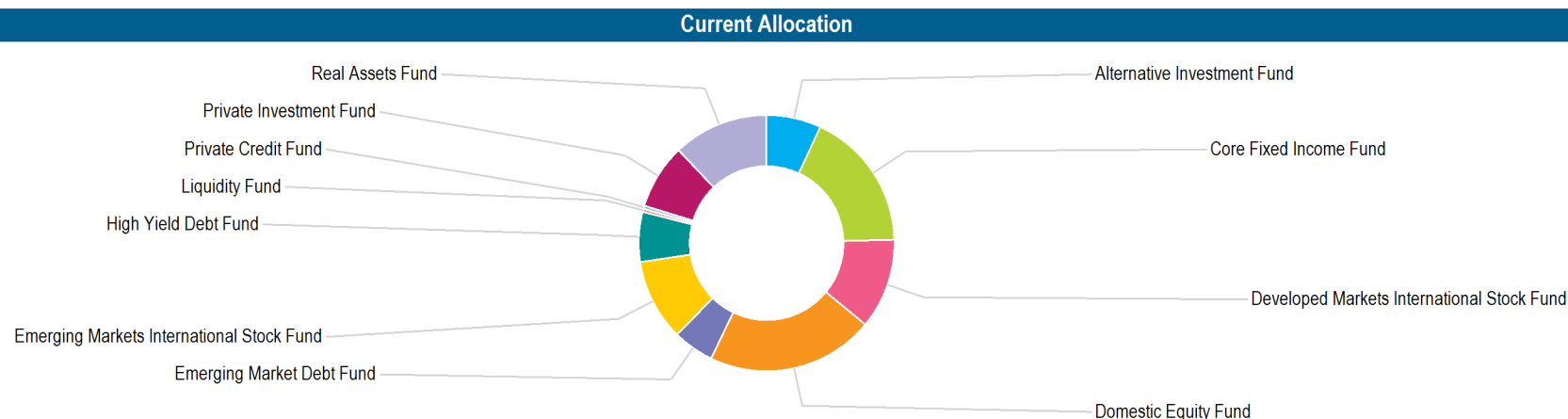
Note: Some managers are counted twice as they are in multiple programs.

### Sub-Advisors As of September 30, 2020

Capital	Market Value (\$)	Connecticut Based	Emerging Manager	African- American Owned	Asian Owned	Hispanic Owned	Native American Owned	Women Owned
Affinity Investment Advisors (Xponance)	37,547,375		1		1			
AMI Asset Mgt (Bivium Capital)	39,794,210		1					
Argus Investors Counsel (Capital Prospects)	40,112,044	1	1					1
Ativo Capital (Xponance)	45,050,334		1			1		
Aubrey Capital (Xponance)	28,838,659		1					
Martin (Xponance)	24,141,322		1					1
Cardinal Capital Management (Capital Prospects)	19,048,686	1						
Channing Capital Management (Capital Prospects)	28,333,915		1	1				
Cove Street Capital (Bivium Capital)	38,255,819		1					
Denali Advisors (Xponance, Capital Prospects)	57,202,943		1				1	
Essex Investment Management (Bivium Capital)	28,200,843		1					
GIA Partners (Bivium Fixed)	25,779,001					1		
North of South (Xponance)	30,019,773		1					
High Pointe Capital Management (Capital Prospects)	31,733,071		1		1			
LM Capital (Bivium Fixed)	29,793,495					1		
Matarin (Bivium Capital & Capital Prospects)	103,589,256		1					1
Phocas Capital (Bivium Capital)	65,559,150				1			
Profit Investment Management (Capital Prospects)	40,087,963		1	1				
Ramirez Asset Management (Bivium Fixed)	29,403,684					1		
Redwood Investments (Bivium, Capital Prospects, & Xponance)	154,323,107		1					1
Renaissance Capital (Capital Prospects)	38,625,856	1	1					1
Shaker Investments (Capital Prospects)	37,736,903		1					
Strategic Global Advisors (Xponance)	47,248,598		1					1
Thomson Horstmann & Bryant (Bivium Capital)	27,350,935	1			1			
Twin Capital Management (Capital Prospects)	30,073,145		1					
Summit Creek (Capital Prospects)	38,769,558		1					
Granahan Investment Management (Bivium Capital)	49,749,088		1					
Foresight Global (Xponance)	25,181,209		1		1			
Frontier Global (Xponance)	20,108,216		1			1		
<b>Total</b>	<b>1,253,610,349</b>							



## **Retirement Plan and Trust Attribution**

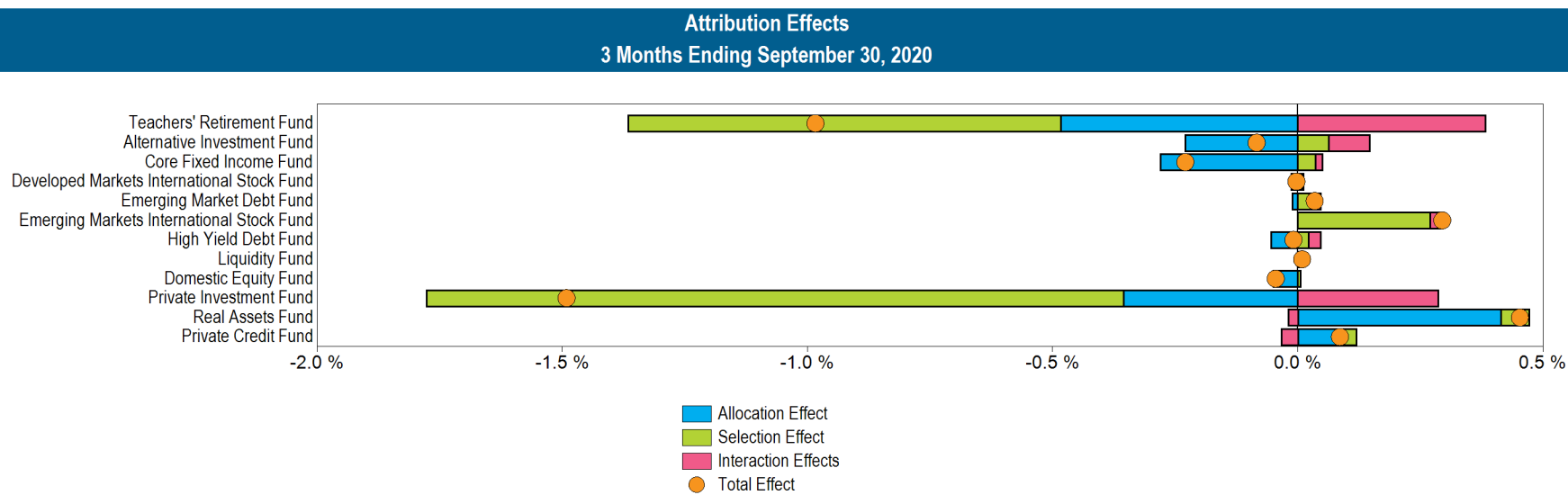


#### Asset Allocation vs. Target

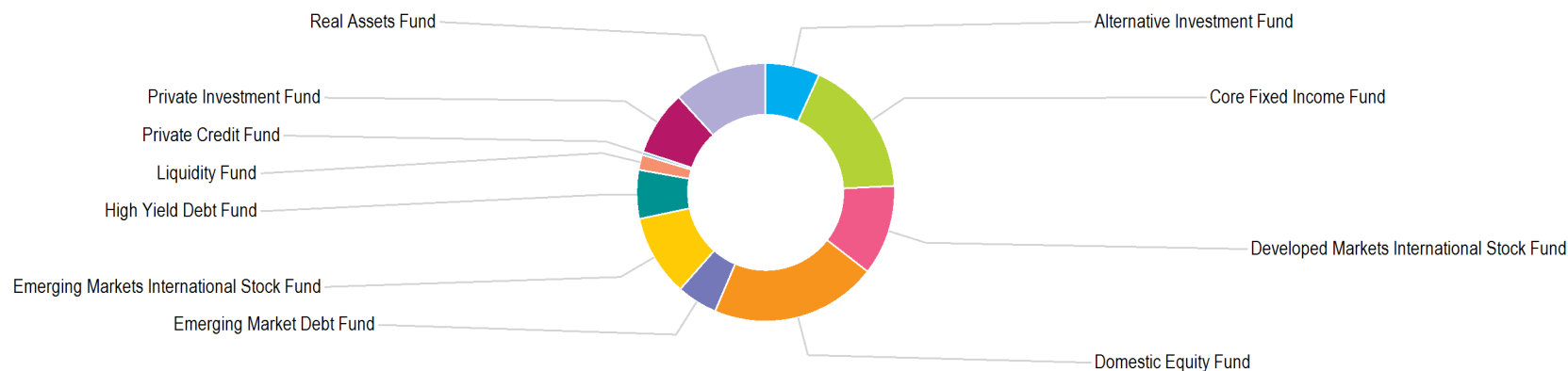
As Of September 30, 2020

	Current	Current	Policy	Policy Range	Difference
Domestic Equity Fund	\$4,009,953,361	21.2%	20.0%	15.0% - 25.0%	1.2%
Developed Markets International Stock Fund	\$2,166,260,084	11.4%	11.0%	6.0% - 16.0%	0.4%
Emerging Markets International Stock Fund	\$1,947,734,758	10.3%	9.0%	4.0% - 14.0%	1.3%
Core Fixed Income Fund	\$3,352,377,322	17.7%	13.0%	8.0% - 18.0%	4.7%
Emerging Market Debt Fund	\$977,607,338	5.2%	5.0%	0.0% - 10.0%	0.2%
High Yield Debt Fund	\$1,183,604,350	6.3%	3.0%	0.0% - 8.0%	3.3%
Real Assets Fund	\$2,282,331,929	12.1%	19.0%	10.0% - 25.0%	-6.9%
Private Investment Fund	\$1,553,540,938	8.2%	10.0%	5.0% - 15.0%	-1.8%
Alternative Investment Fund	\$1,305,715,643	6.9%	3.0%	0.0% - 10.0%	3.9%
Liquidity Fund	\$76,299,295	0.4%	2.0%	0.0% - 3.0%	-1.6%
Private Credit Fund	\$75,542,386	0.4%	5.0%	0.0% - 10.0%	-4.6%
<b>Total</b>	<b>\$18,930,967,404</b>	<b>100.0%</b>	<b>100.0%</b>		

Attribution Summary							
3 Months Ending September 30, 2020							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Alternative Investment Fund	2.6%	0.6%	2.0%	0.1%	-0.2%	0.1%	-0.1%
Core Fixed Income Fund	0.9%	0.6%	0.3%	0.0%	-0.3%	0.0%	-0.2%
Developed Markets International Stock Fund	5.7%	5.6%	0.1%	0.0%	0.0%	0.0%	0.0%
Emerging Market Debt Fund	2.3%	1.5%	0.8%	0.0%	0.0%	0.0%	0.0%
Emerging Markets International Stock Fund	12.8%	9.8%	3.1%	0.3%	0.0%	0.0%	0.3%
High Yield Debt Fund	5.3%	4.6%	0.7%	0.0%	-0.1%	0.0%	0.0%
Liquidity Fund	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Domestic Equity Fund	9.2%	9.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Private Investment Fund	9.2%	22.2%	-13.0%	-1.4%	-0.4%	0.3%	-1.5%
Real Assets Fund	0.8%	0.5%	0.3%	0.1%	0.4%	0.0%	0.5%
Private Credit Fund	5.2%	4.5%	0.7%	0.0%	0.1%	0.0%	0.1%
<b>Total</b>	<b>5.3%</b>	<b>6.3%</b>	<b>-1.0%</b>	<b>-0.9%</b>	<b>-0.5%</b>	<b>0.4%</b>	<b>-1.0%</b>



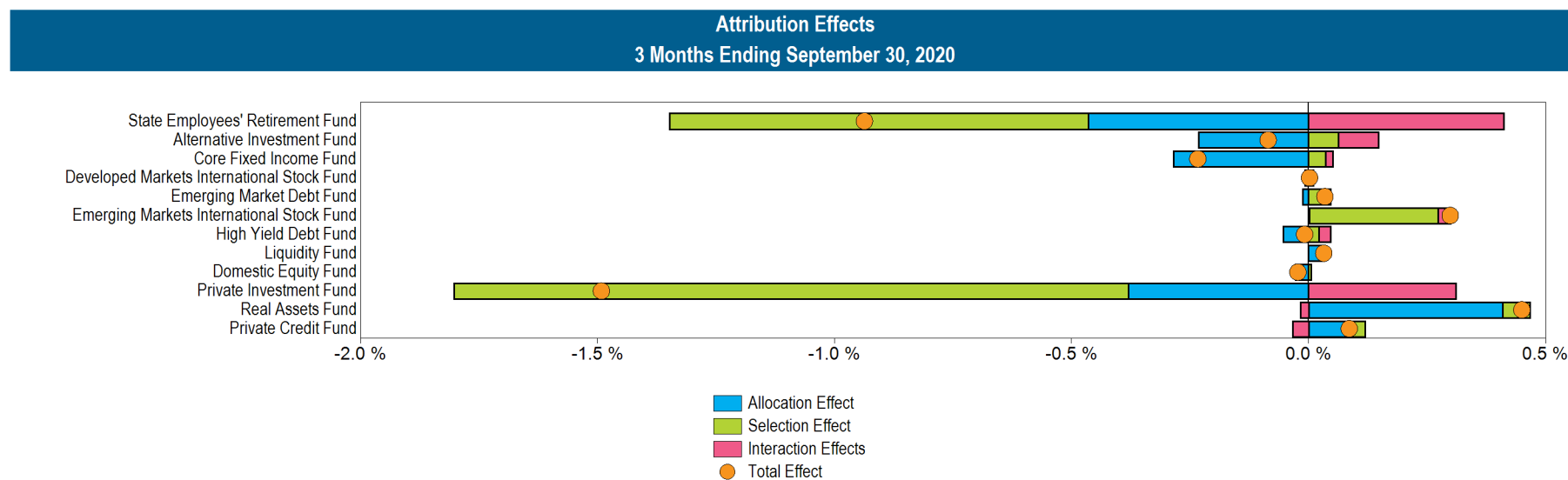
#### Current Allocation



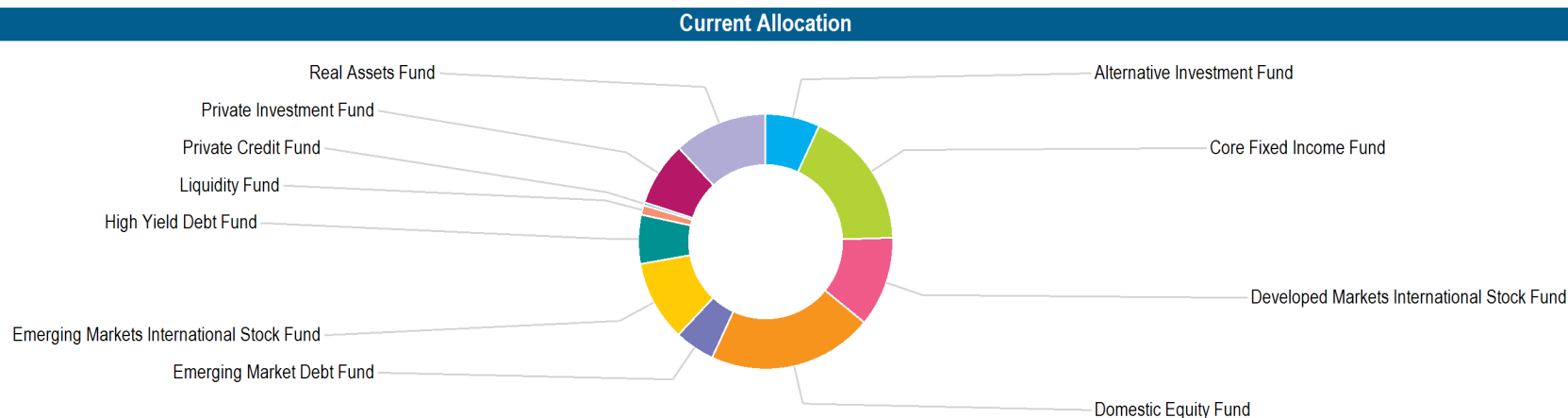
#### Asset Allocation vs. Target As Of September 30, 2020

	Current	Current	Policy	Policy Range	Difference
Domestic Equity Fund	\$2,895,193,334	20.9%	20.0%	15.0% - 25.0%	0.9%
Developed Markets International Stock Fund	\$1,566,672,404	11.3%	11.0%	6.0% - 16.0%	0.3%
Emerging Markets International Stock Fund	\$1,408,773,489	10.2%	9.0%	4.0% - 14.0%	1.2%
Core Fixed Income Fund	\$2,415,646,177	17.4%	13.0%	8.0% - 18.0%	4.4%
Emerging Market Debt Fund	\$708,118,437	5.1%	5.0%	0.0% - 10.0%	0.1%
High Yield Debt Fund	\$849,674,826	6.1%	3.0%	0.0% - 8.0%	3.1%
Real Assets Fund	\$1,639,916,843	11.8%	19.0%	10.0% - 25.0%	-7.2%
Private Investment Fund	\$1,124,828,218	8.1%	10.0%	5.0% - 15.0%	-1.9%
Alternative Investment Fund	\$943,317,368	6.8%	3.0%	0.0% - 10.0%	3.8%
Liquidity Fund	\$262,283,744	1.9%	2.0%	0.0% - 3.0%	-0.1%
Private Credit Fund	\$55,225,758	0.4%	5.0%	0.0% - 10.0%	-4.6%
<b>Total</b>	<b>\$13,869,650,598</b>	<b>100.0%</b>	<b>100.0%</b>		

Attribution Summary							
3 Months Ending September 30, 2020							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Alternative Investment Fund	2.6%	0.6%	2.0%	0.1%	-0.2%	0.1%	-0.1%
Core Fixed Income Fund	0.9%	0.6%	0.3%	0.0%	-0.3%	0.0%	-0.2%
Developed Markets International Stock Fund	5.7%	5.6%	0.1%	0.0%	0.0%	0.0%	0.0%
Emerging Market Debt Fund	2.3%	1.5%	0.8%	0.0%	0.0%	0.0%	0.0%
Emerging Markets International Stock Fund	12.8%	9.8%	3.1%	0.3%	0.0%	0.0%	0.3%
High Yield Debt Fund	5.3%	4.6%	0.7%	0.0%	-0.1%	0.0%	0.0%
Liquidity Fund	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Domestic Equity Fund	9.2%	9.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Private Investment Fund	9.2%	22.2%	-13.0%	-1.4%	-0.4%	0.3%	-1.5%
Real Assets Fund	0.8%	0.5%	0.3%	0.1%	0.4%	0.0%	0.5%
Private Credit Fund	5.2%	4.5%	0.7%	0.0%	0.1%	0.0%	0.1%
<b>Total</b>	<b>5.4%</b>	<b>6.3%</b>	<b>-0.9%</b>	<b>-0.9%</b>	<b>-0.5%</b>	<b>0.4%</b>	<b>-0.9%</b>



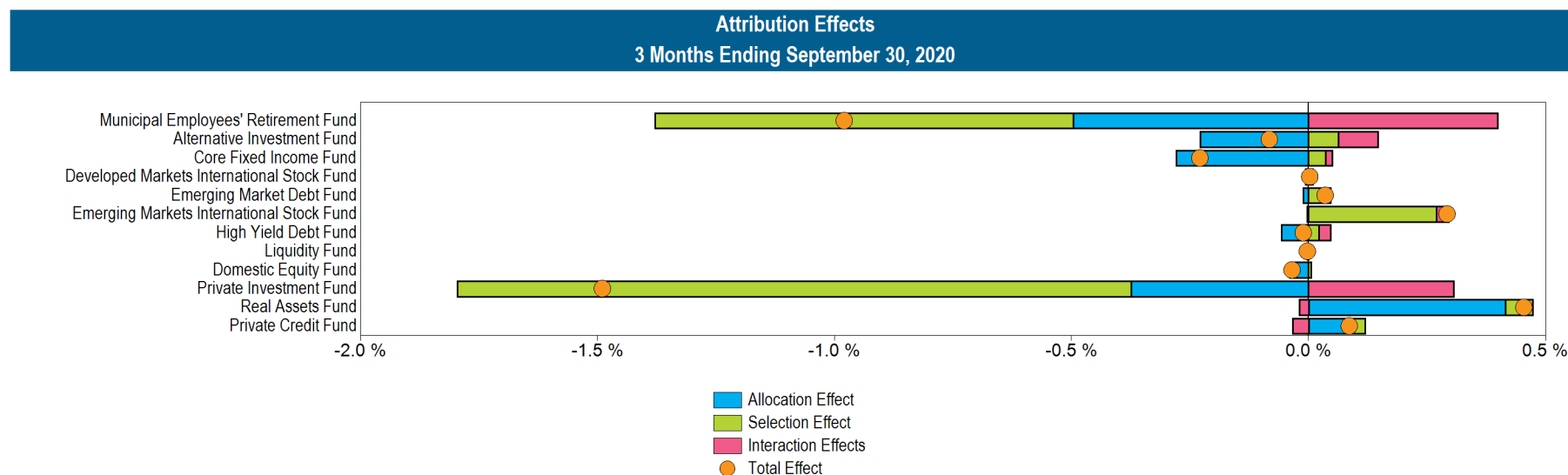
### Municipal Employees' Retirement Fund | As of September 30, 2020



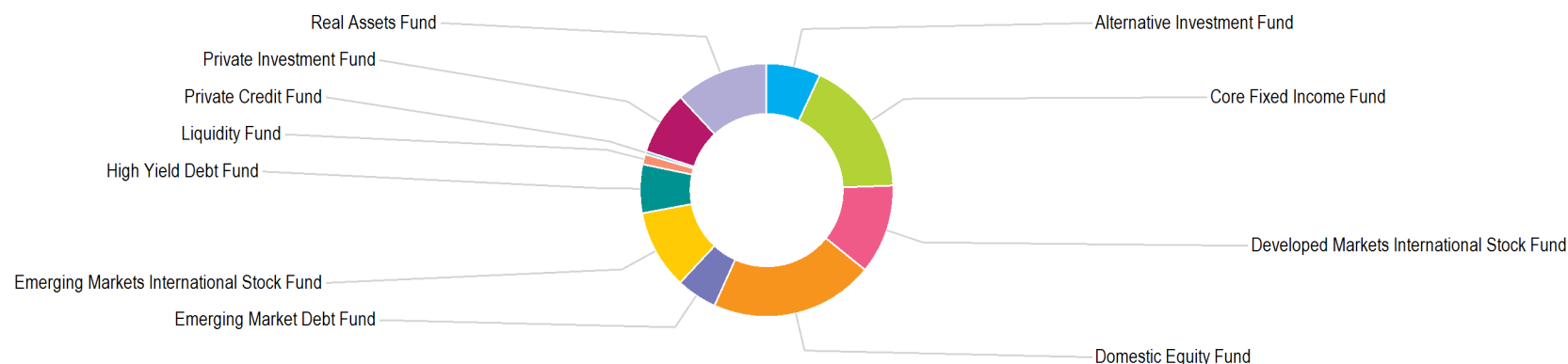
#### Asset Allocation vs. Target As Of September 30, 2020

	Current	Current	Policy	Policy Range	Difference
Domestic Equity Fund	\$593,419,842	21.0%	20.0%	15.0% - 25.0%	1.0%
Developed Markets International Stock Fund	\$320,716,947	11.4%	11.0%	6.0% - 16.0%	0.4%
Emerging Markets International Stock Fund	\$288,445,834	10.2%	9.0%	4.0% - 14.0%	1.2%
Core Fixed Income Fund	\$495,878,925	17.6%	13.0%	8.0% - 18.0%	4.6%
Emerging Market Debt Fund	\$144,413,910	5.1%	5.0%	0.0% - 10.0%	0.1%
High Yield Debt Fund	\$175,034,337	6.2%	3.0%	0.0% - 8.0%	3.2%
Real Assets Fund	\$336,332,248	11.9%	19.0%	10.0% - 25.0%	-7.1%
Private Investment Fund	\$229,858,600	8.1%	10.0%	5.0% - 15.0%	-1.9%
Alternative Investment Fund	\$193,838,773	6.9%	3.0%	0.0% - 10.0%	3.9%
Liquidity Fund	\$34,067,605	1.2%	2.0%	0.0% - 3.0%	-0.8%
Private Credit Fund	\$11,154,276	0.4%	5.0%	0.0% - 10.0%	-4.6%
<b>Total</b>	<b>\$2,823,161,298</b>	<b>100.0%</b>	<b>100.0%</b>		

Attribution Summary							
3 Months Ending September 30, 2020							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Alternative Investment Fund	2.6%	0.6%	2.0%	0.1%	-0.2%	0.1%	-0.1%
Core Fixed Income Fund	0.9%	0.6%	0.3%	0.0%	-0.3%	0.0%	-0.2%
Developed Markets International Stock Fund	5.7%	5.6%	0.1%	0.0%	0.0%	0.0%	0.0%
Emerging Market Debt Fund	2.3%	1.5%	0.8%	0.0%	0.0%	0.0%	0.0%
Emerging Markets International Stock Fund	12.8%	9.8%	3.1%	0.3%	0.0%	0.0%	0.3%
High Yield Debt Fund	5.3%	4.6%	0.7%	0.0%	-0.1%	0.0%	0.0%
Liquidity Fund	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Domestic Equity Fund	9.2%	9.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Private Investment Fund	9.2%	22.2%	-13.0%	-1.4%	-0.4%	0.3%	-1.5%
Real Assets Fund	0.8%	0.5%	0.3%	0.1%	0.4%	0.0%	0.5%
Private Credit Fund	5.2%	4.5%	0.7%	0.0%	0.1%	0.0%	0.1%
<b>Total</b>	<b>5.3%</b>	<b>6.3%</b>	<b>-1.0%</b>	<b>-0.9%</b>	<b>-0.5%</b>	<b>0.4%</b>	<b>-1.0%</b>



#### Current Allocation



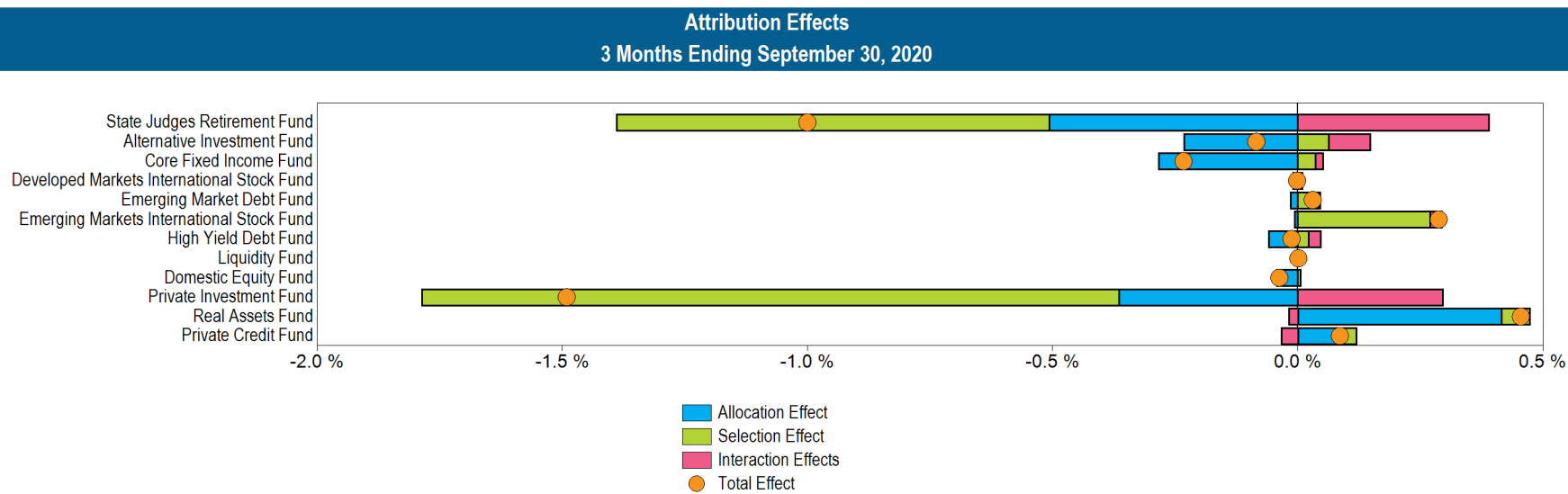
#### Asset Allocation vs. Target

As Of September 30, 2020

	Current	Current	Policy	Policy Range	Difference
Domestic Equity Fund	\$52,403,164	20.9%	20.0%	15.0% - 25.0%	0.9%
Developed Markets International Stock Fund	\$28,500,718	11.4%	11.0%	6.0% - 16.0%	0.4%
Emerging Markets International Stock Fund	\$25,416,257	10.1%	9.0%	4.0% - 14.0%	1.1%
Core Fixed Income Fund	\$43,924,105	17.5%	13.0%	8.0% - 18.0%	4.5%
Emerging Market Debt Fund	\$12,962,351	5.2%	5.0%	0.0% - 10.0%	0.2%
High Yield Debt Fund	\$15,535,446	6.2%	3.0%	0.0% - 8.0%	3.2%
Real Assets Fund	\$29,798,718	11.9%	19.0%	10.0% - 25.0%	-7.1%
Private Investment Fund	\$20,256,683	8.1%	10.0%	5.0% - 15.0%	-1.9%
Alternative Investment Fund	\$17,373,867	6.9%	3.0%	0.0% - 10.0%	3.9%
Liquidity Fund	\$3,340,121	1.3%	2.0%	0.0% - 3.0%	-0.7%
Private Credit Fund	\$999,834	0.4%	5.0%	0.0% - 10.0%	-4.6%
<b>Total</b>	<b>\$250,511,265</b>	<b>100.0%</b>	<b>100.0%</b>		

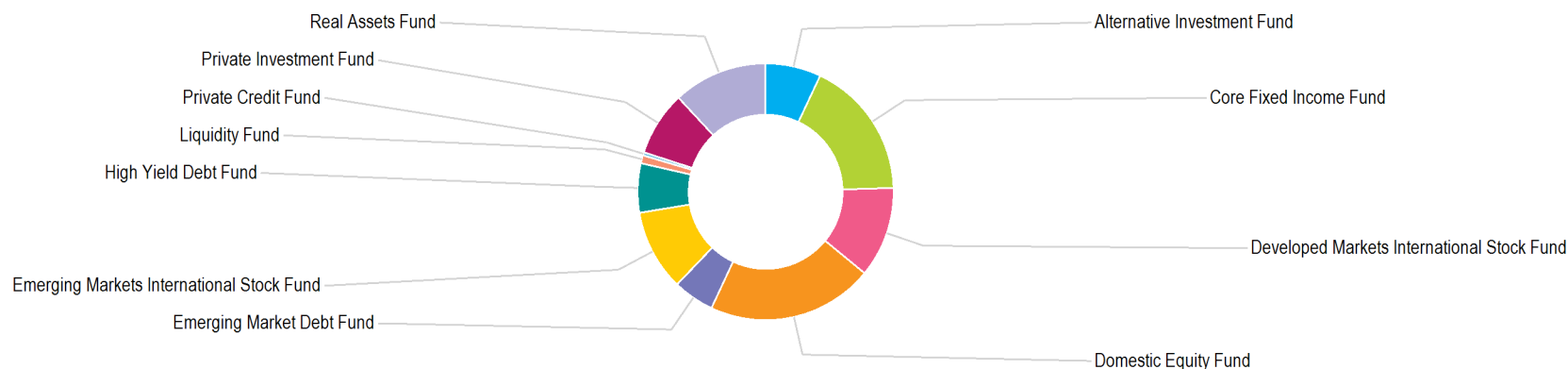


Attribution Summary							
3 Months Ending September 30, 2020							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Alternative Investment Fund	2.6%	0.6%	2.0%	0.1%	-0.2%	0.1%	-0.1%
Core Fixed Income Fund	0.9%	0.6%	0.3%	0.0%	-0.3%	0.0%	-0.2%
Developed Markets International Stock Fund	5.7%	5.6%	0.1%	0.0%	0.0%	0.0%	0.0%
Emerging Market Debt Fund	2.3%	1.5%	0.8%	0.0%	0.0%	0.0%	0.0%
Emerging Markets International Stock Fund	12.8%	9.8%	3.1%	0.3%	0.0%	0.0%	0.3%
High Yield Debt Fund	5.3%	4.6%	0.7%	0.0%	-0.1%	0.0%	0.0%
Liquidity Fund	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Domestic Equity Fund	9.2%	9.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Private Investment Fund	9.2%	22.2%	-13.0%	-1.4%	-0.4%	0.3%	-1.5%
Real Assets Fund	0.8%	0.5%	0.3%	0.1%	0.4%	0.0%	0.5%
Private Credit Fund	5.2%	4.5%	0.7%	0.0%	0.1%	0.0%	0.1%
<b>Total</b>	<b>5.3%</b>	<b>6.3%</b>	<b>-1.0%</b>	<b>-0.9%</b>	<b>-0.5%</b>	<b>0.4%</b>	<b>-1.0%</b>



### Probate Judges and Employees Retirement Fund | As of September 30, 2020

#### Current Allocation



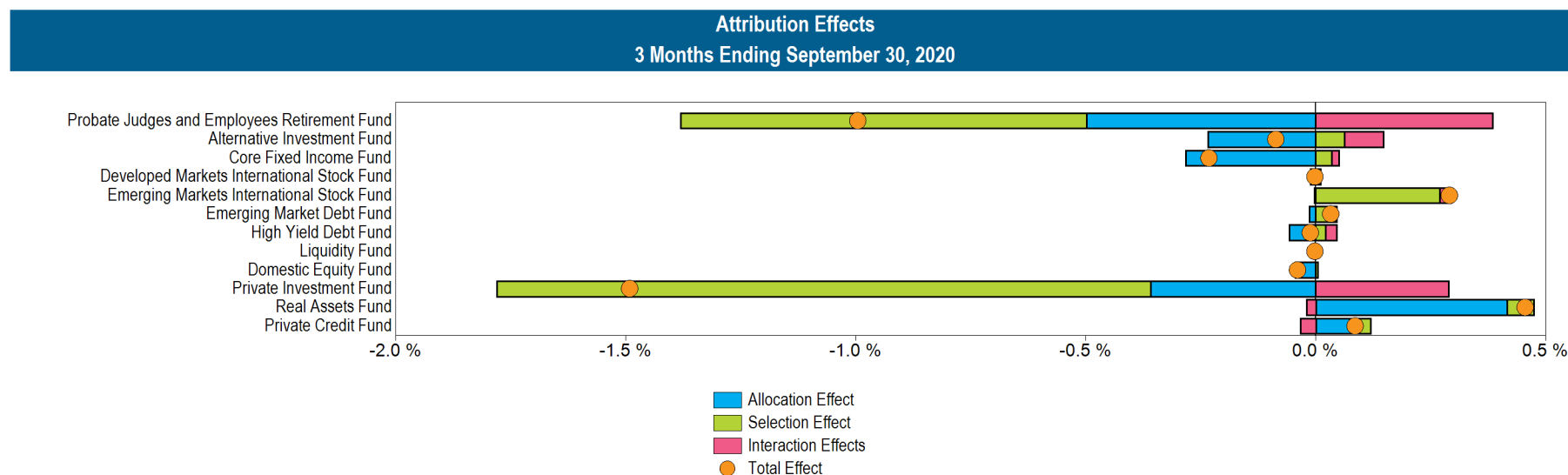
#### Asset Allocation vs. Target

As Of September 30, 2020

	Current	Current	Policy	Policy Range	Difference
Domestic Equity Fund	\$24,171,238	21.0%	20.0%	15.0% - 25.0%	1.0%
Developed Markets International Stock Fund	\$13,143,257	11.4%	11.0%	6.0% - 16.0%	0.4%
Emerging Markets International Stock Fund	\$11,750,437	10.2%	9.0%	4.0% - 14.0%	1.2%
Core Fixed Income Fund	\$20,219,125	17.5%	13.0%	8.0% - 18.0%	4.5%
Emerging Market Debt Fund	\$5,952,186	5.2%	5.0%	0.0% - 10.0%	0.2%
High Yield Debt Fund	\$7,170,288	6.2%	3.0%	0.0% - 8.0%	3.2%
Real Assets Fund	\$13,738,741	11.9%	19.0%	10.0% - 25.0%	-7.1%
Private Investment Fund	\$9,383,511	8.1%	10.0%	5.0% - 15.0%	-1.9%
Alternative Investment Fund	\$8,061,360	7.0%	3.0%	0.0% - 10.0%	4.0%
Liquidity Fund	\$1,198,242	1.0%	2.0%	0.0% - 3.0%	-1.0%
Private Credit Fund	\$469,780	0.4%	5.0%	0.0% - 10.0%	-4.6%
<b>Total</b>	<b>\$115,258,163</b>	<b>100.0%</b>	<b>100.0%</b>		

### Probate Judges and Employees Retirement Fund | As of September 30, 2020

Attribution Summary							
3 Months Ending September 30, 2020							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Alternative Investment Fund	2.6%	0.6%	2.0%	0.1%	-0.2%	0.1%	-0.1%
Core Fixed Income Fund	0.9%	0.6%	0.3%	0.0%	-0.3%	0.0%	-0.2%
Developed Markets International Stock Fund	5.7%	5.6%	0.1%	0.0%	0.0%	0.0%	0.0%
Emerging Markets International Stock Fund	12.8%	9.8%	3.1%	0.3%	0.0%	0.0%	0.3%
Emerging Market Debt Fund	2.3%	1.5%	0.8%	0.0%	0.0%	0.0%	0.0%
High Yield Debt Fund	5.3%	4.6%	0.7%	0.0%	-0.1%	0.0%	0.0%
Liquidity Fund	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Domestic Equity Fund	9.2%	9.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Private Investment Fund	9.2%	22.2%	-13.0%	-1.4%	-0.4%	0.3%	-1.5%
Real Assets Fund	0.8%	0.5%	0.3%	0.1%	0.4%	0.0%	0.5%
Private Credit Fund	5.2%	4.5%	0.7%	0.0%	0.1%	0.0%	0.1%
<b>Total</b>	<b>5.3%</b>	<b>6.3%</b>	<b>-1.0%</b>	<b>-0.9%</b>	<b>-0.5%</b>	<b>0.4%</b>	<b>-1.0%</b>

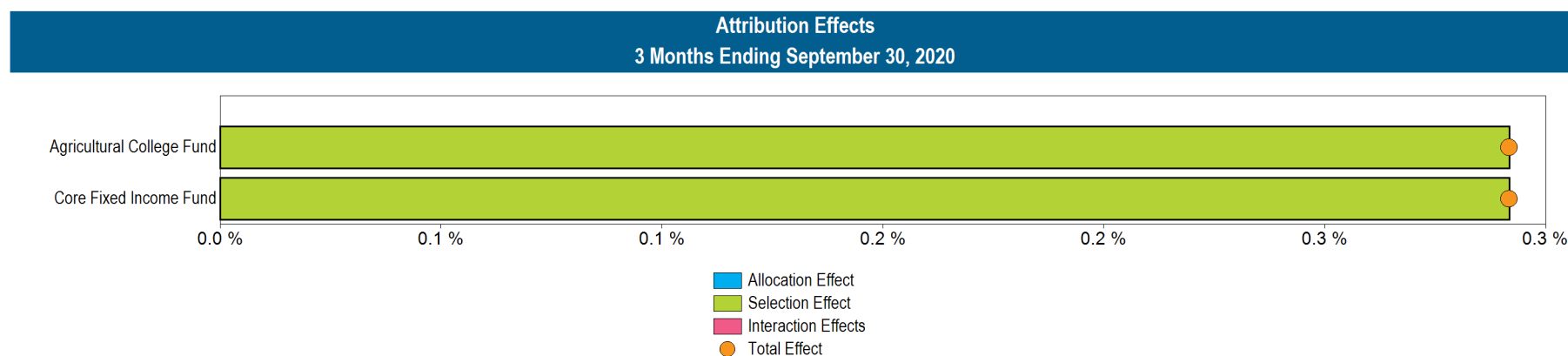


Current Allocation

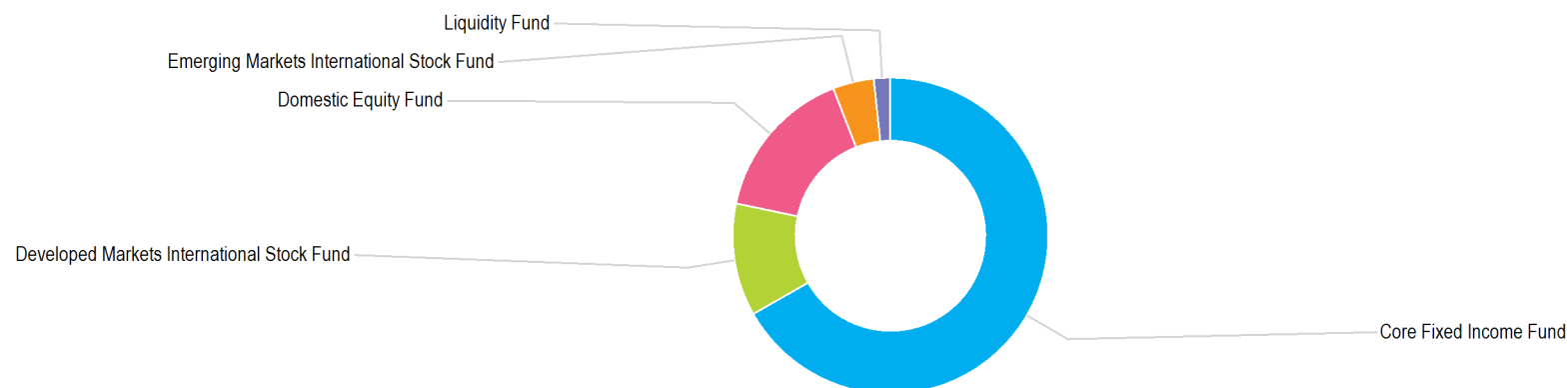


Asset Allocation vs. Target						
As Of September 30, 2020						
	Current	Current	Policy	Policy Range	Difference	
Core Fixed Income Fund	\$699,486	100.0%	100.0%	0.0% - 100.0%	0.0%	
Total	\$699,486	100.0%	100.0%			

Attribution Summary							
3 Months Ending September 30, 2020							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Core Fixed Income Fund	0.9%	0.6%	0.3%	0.3%	0.0%	0.0%	0.3%
<b>Total</b>	<b>0.9%</b>	<b>0.6%</b>	<b>0.3%</b>	<b>0.3%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.3%</b>



#### Current Allocation

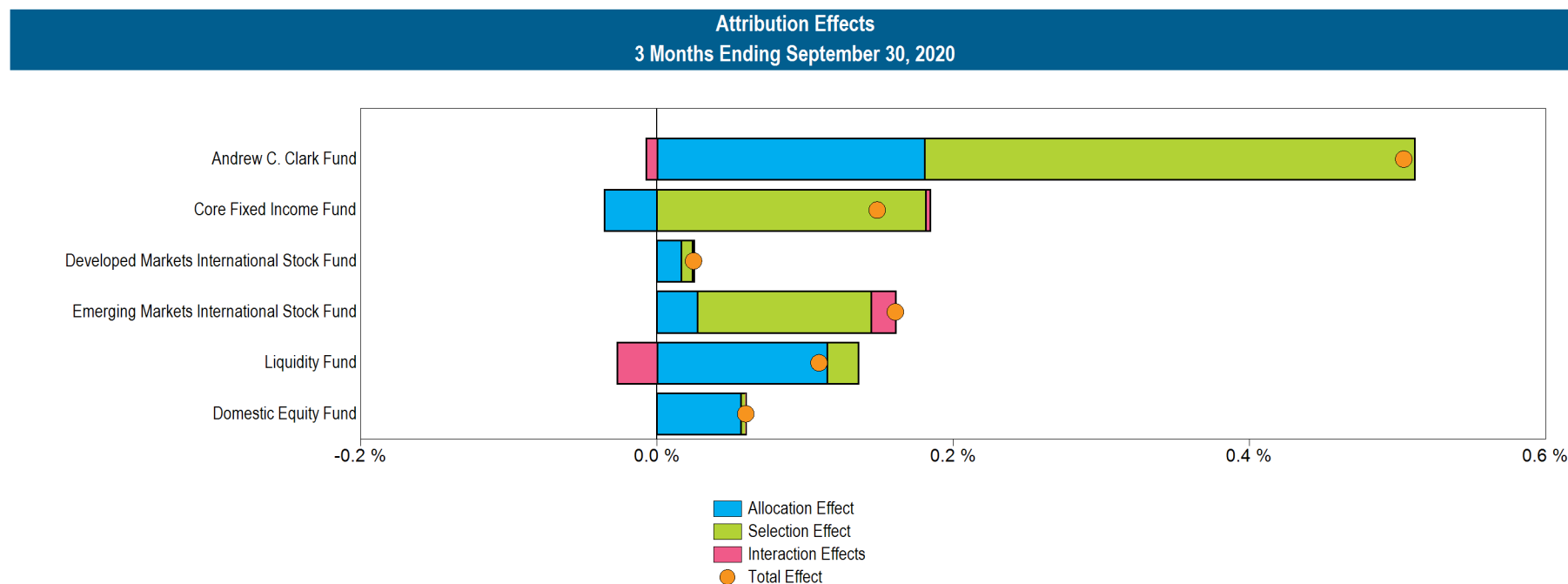


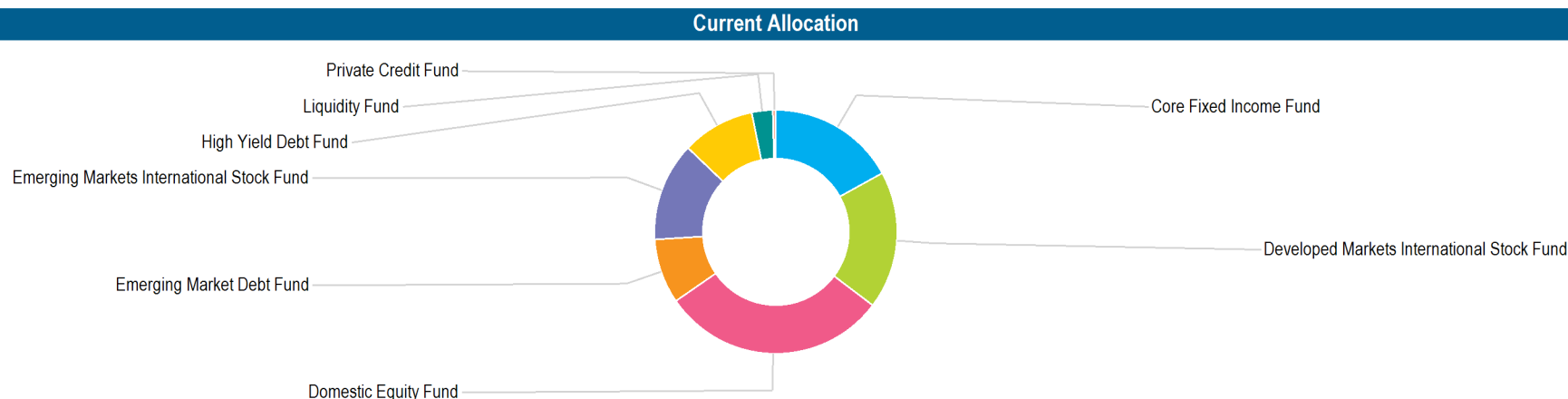
#### Asset Allocation vs. Target

As Of September 30, 2020

	Current	Current	Policy	Policy Range	Difference
Domestic Equity Fund	\$211,181	15.8%	15.0%	10.0% - 20.0%	0.8%
Developed Markets International Stock Fund	\$153,707	11.5%	11.0%	6.0% - 16.0%	0.5%
Emerging Markets International Stock Fund	\$56,107	4.2%	4.0%	0.0% - 5.0%	0.2%
Core Fixed Income Fund	\$891,183	66.7%	67.0%	57.0% - 77.0%	-0.3%
Liquidity Fund	\$23,215	1.7%	3.0%	0.0% - 4.0%	-1.3%
<b>Total</b>	<b>\$1,335,394</b>	<b>100.0%</b>	<b>100.0%</b>		

Attribution Summary							
3 Months Ending September 30, 2020							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Core Fixed Income Fund	0.9%	0.6%	0.3%	0.2%	0.0%	0.0%	0.1%
Developed Markets International Stock Fund	5.7%	5.6%	0.1%	0.0%	0.0%	0.0%	0.0%
Emerging Markets International Stock Fund	12.8%	9.8%	3.1%	0.1%	0.0%	0.0%	0.2%
Liquidity Fund	0.8%	0.1%	0.7%	0.0%	0.1%	0.0%	0.1%
Domestic Equity Fund	9.2%	9.2%	0.0%	0.0%	0.1%	0.0%	0.1%
<b>Total</b>	<b>3.3%</b>	<b>2.8%</b>	<b>0.5%</b>	<b>0.3%</b>	<b>0.2%</b>	<b>0.0%</b>	<b>0.5%</b>



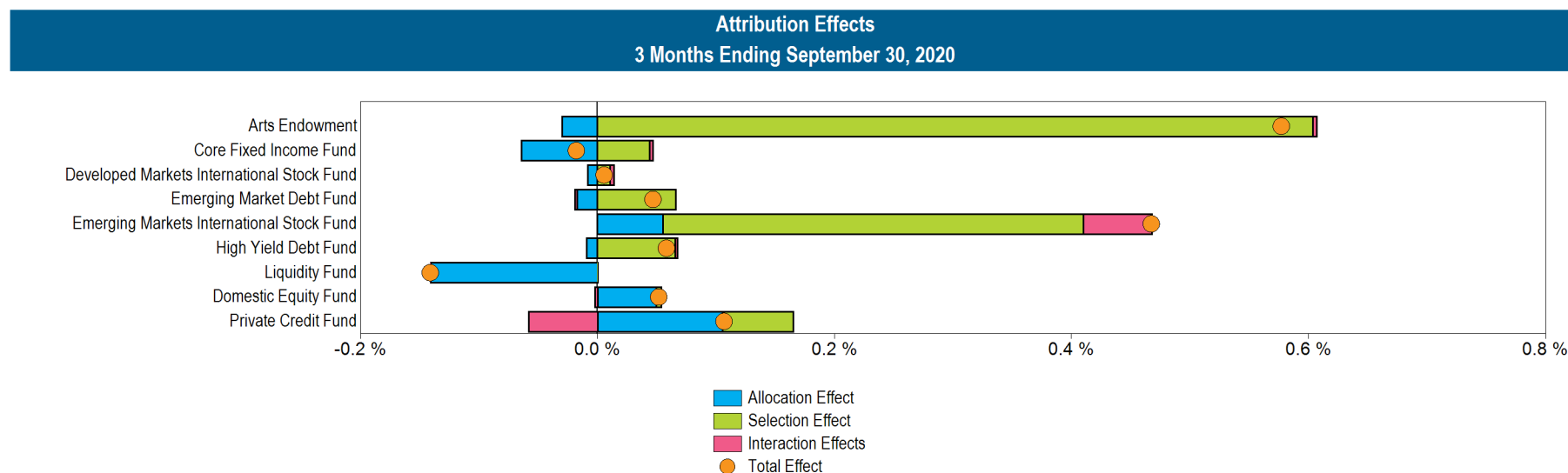


#### Asset Allocation vs. Target As Of September 30, 2020

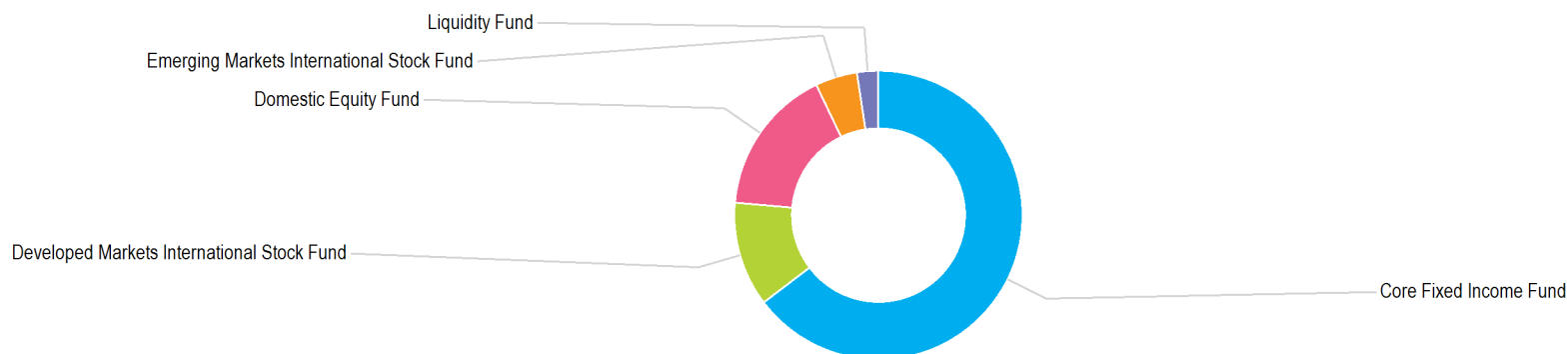
	Current	Current	Policy	Policy Range	Difference
Domestic Equity Fund	\$6,141,632	30.1%	28.0%	23.0% - 33.0%	2.1%
Developed Markets International Stock Fund	\$3,732,251	18.3%	17.0%	12.0% - 22.0%	1.3%
Emerging Markets International Stock Fund	\$2,671,752	13.1%	12.0%	7.0% - 17.0%	1.1%
Core Fixed Income Fund	\$3,467,943	17.0%	16.0%	11.0% - 21.0%	1.0%
Emerging Market Debt Fund	\$1,761,538	8.6%	8.0%	3.0% - 13.0%	0.6%
High Yield Debt Fund	\$1,980,898	9.7%	9.0%	4.0% - 14.0%	0.7%
Liquidity Fund	\$569,432	2.8%	1.0%	0.0% - 3.0%	1.8%
Private Credit Fund	\$89,435	0.4%	9.0%	4.0% - 14.0%	-8.6%
<b>Total</b>	<b>\$20,414,882</b>	<b>100.0%</b>	<b>100.0%</b>		



Attribution Summary							
3 Months Ending September 30, 2020							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Core Fixed Income Fund	0.9%	0.6%	0.3%	0.0%	-0.1%	0.0%	0.0%
Developed Markets International Stock Fund	5.7%	5.6%	0.1%	0.0%	0.0%	0.0%	0.0%
Emerging Market Debt Fund	2.3%	1.5%	0.8%	0.1%	0.0%	0.0%	0.0%
Emerging Markets International Stock Fund	12.8%	9.8%	3.1%	0.4%	0.1%	0.1%	0.5%
High Yield Debt Fund	5.3%	4.6%	0.7%	0.1%	0.0%	0.0%	0.1%
Liquidity Fund	0.1%	0.1%	0.0%	0.0%	-0.1%	0.0%	-0.1%
Domestic Equity Fund	9.2%	9.2%	0.0%	0.0%	0.0%	0.0%	0.1%
Private Credit Fund	5.2%	4.5%	0.7%	0.1%	0.1%	-0.1%	0.1%
<b>Total</b>	<b>6.3%</b>	<b>5.8%</b>	<b>0.6%</b>	<b>0.6%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.6%</b>



#### Current Allocation

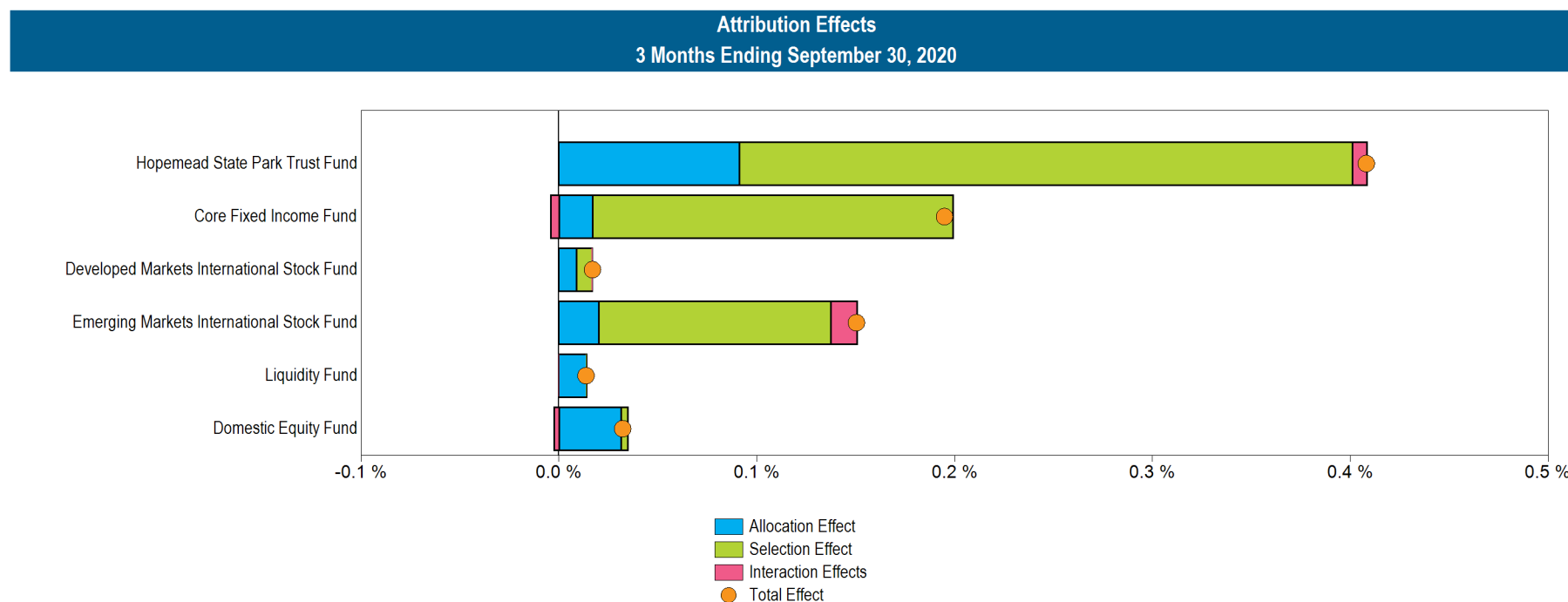


#### Asset Allocation vs. Target

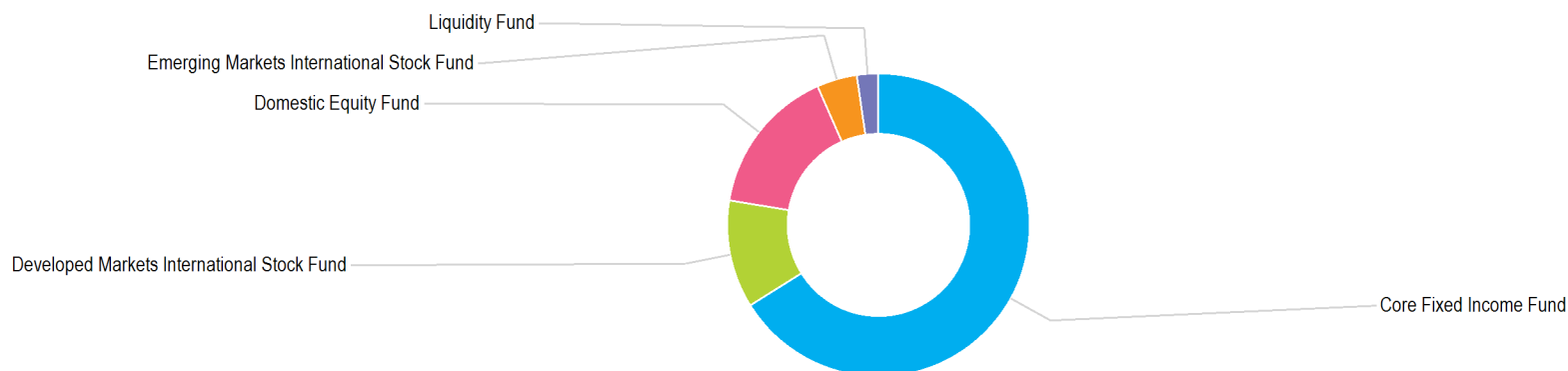
As Of September 30, 2020

	Current	Current	Policy	Policy Range	Difference
Domestic Equity Fund	\$752,525	16.5%	15.0%	10.0% - 20.0%	1.5%
Developed Markets International Stock Fund	\$534,234	11.7%	11.0%	6.0% - 16.0%	0.7%
Emerging Markets International Stock Fund	\$212,944	4.7%	4.0%	0.0% - 5.0%	0.7%
Core Fixed Income Fund	\$2,940,319	64.6%	67.0%	57.0% - 77.0%	-2.4%
Liquidity Fund	\$110,356	2.4%	3.0%	0.0% - 4.0%	-0.6%
<b>Total</b>	<b>\$4,550,378</b>	<b>100.0%</b>	<b>100.0%</b>		

Attribution Summary							
3 Months Ending September 30, 2020							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Core Fixed Income Fund	0.9%	0.6%	0.3%	0.2%	0.0%	0.0%	0.2%
Developed Markets International Stock Fund	5.7%	5.6%	0.1%	0.0%	0.0%	0.0%	0.0%
Emerging Markets International Stock Fund	12.8%	9.8%	3.1%	0.1%	0.0%	0.0%	0.2%
Liquidity Fund	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Domestic Equity Fund	9.2%	9.2%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Total</b>	<b>3.2%</b>	<b>2.8%</b>	<b>0.4%</b>	<b>0.3%</b>	<b>0.1%</b>	<b>0.0%</b>	<b>0.4%</b>



#### Current Allocation

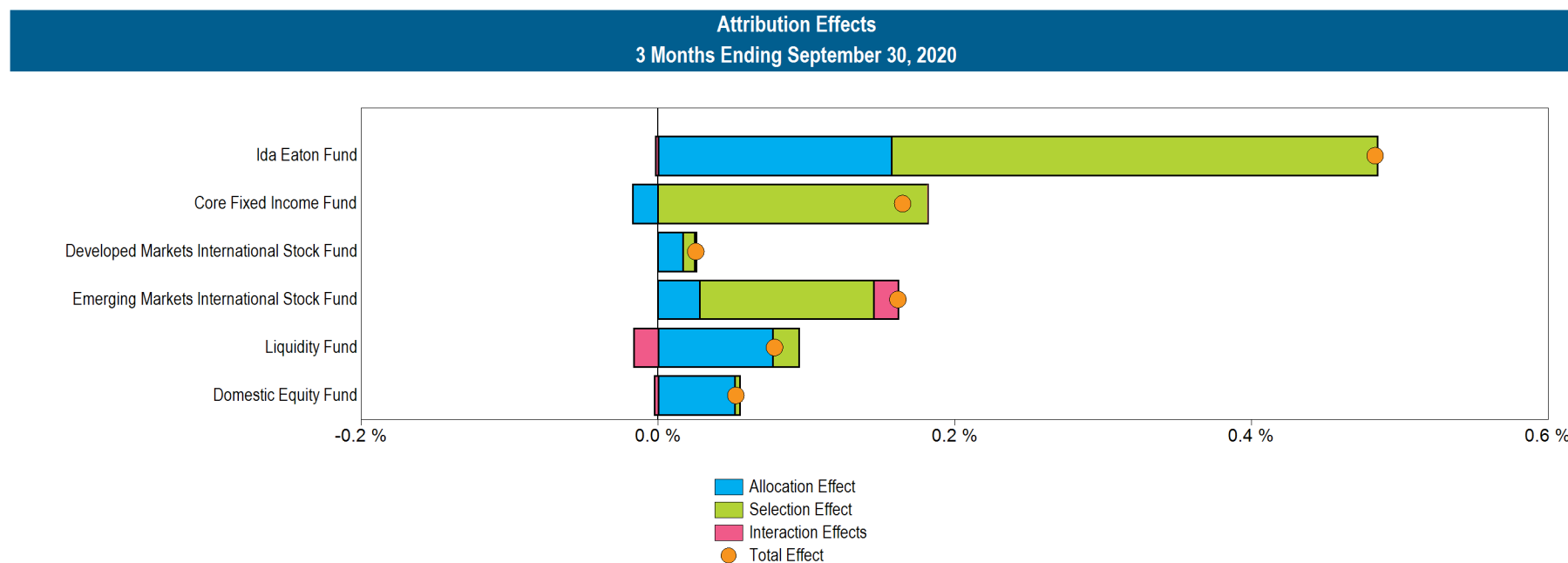


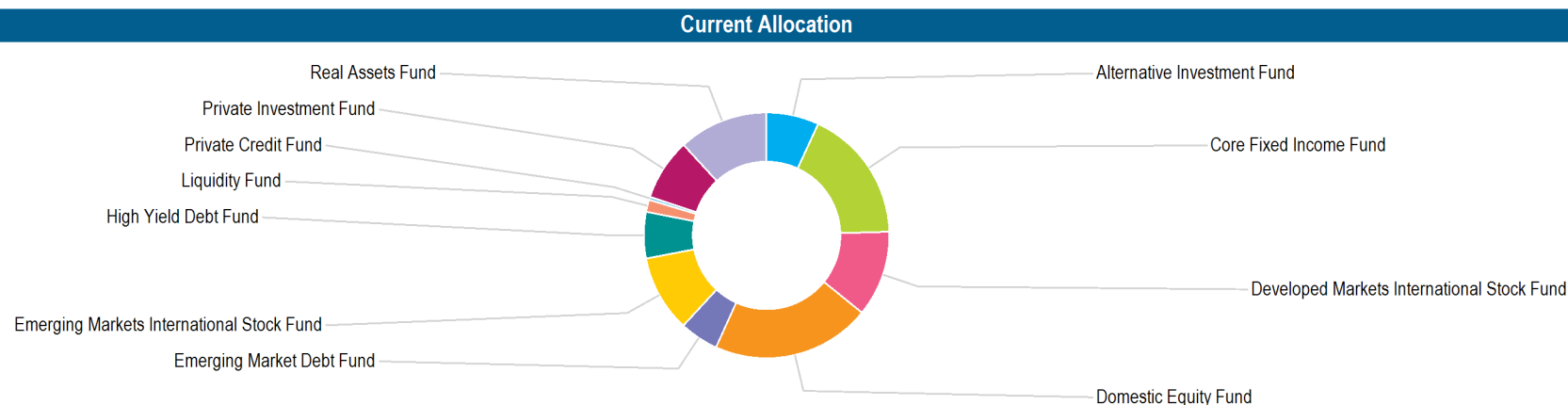
#### Asset Allocation vs. Target

As Of September 30, 2020

	Current	Current	Policy	Policy Range	Difference
Domestic Equity Fund	\$449,767	15.8%	15.0%	10.0% - 20.0%	0.8%
Developed Markets International Stock Fund	\$327,221	11.5%	11.0%	6.0% - 16.0%	0.5%
Emerging Markets International Stock Fund	\$121,477	4.3%	4.0%	0.0% - 5.0%	0.3%
Core Fixed Income Fund	\$1,875,926	66.1%	67.0%	57.0% - 77.0%	-0.9%
Liquidity Fund	\$65,307	2.3%	3.0%	0.0% - 4.0%	-0.7%
<b>Total</b>	<b>\$2,839,699</b>	<b>100.0%</b>	<b>100.0%</b>		

Attribution Summary							
3 Months Ending September 30, 2020							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Core Fixed Income Fund	0.9%	0.6%	0.3%	0.2%	0.0%	0.0%	0.2%
Developed Markets International Stock Fund	5.7%	5.6%	0.1%	0.0%	0.0%	0.0%	0.0%
Emerging Markets International Stock Fund	12.8%	9.8%	3.1%	0.1%	0.0%	0.0%	0.2%
Liquidity Fund	0.6%	0.1%	0.6%	0.0%	0.1%	0.0%	0.1%
Domestic Equity Fund	9.2%	9.2%	0.0%	0.0%	0.1%	0.0%	0.1%
<b>Total</b>	<b>3.3%</b>	<b>2.8%</b>	<b>0.5%</b>	<b>0.3%</b>	<b>0.2%</b>	<b>0.0%</b>	<b>0.5%</b>



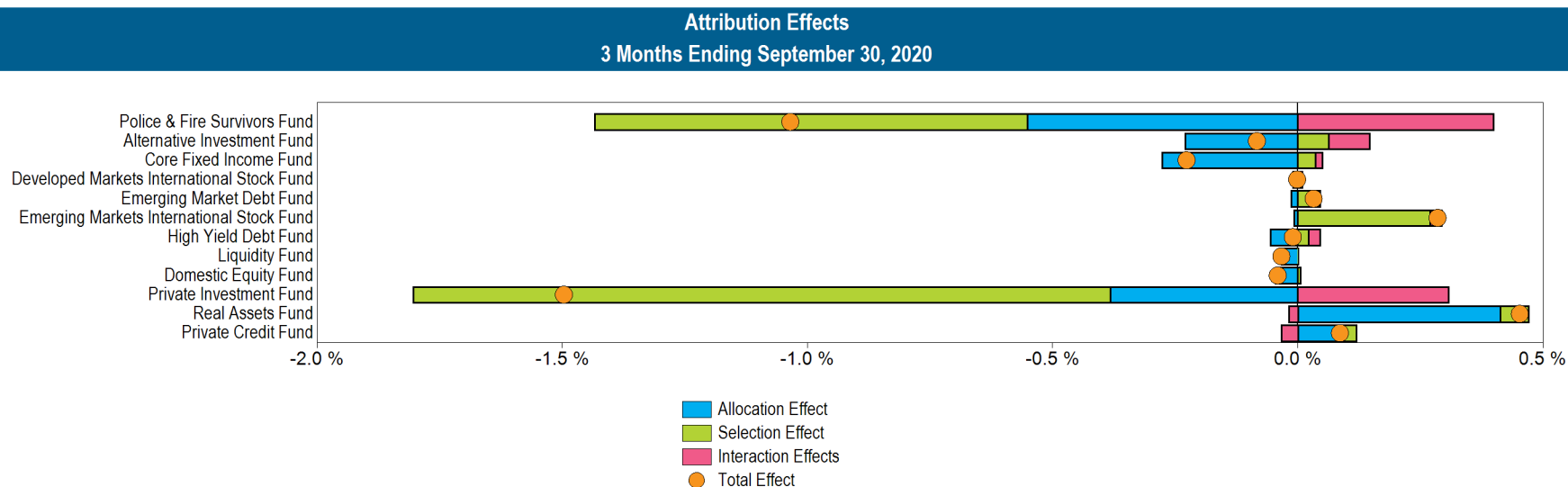


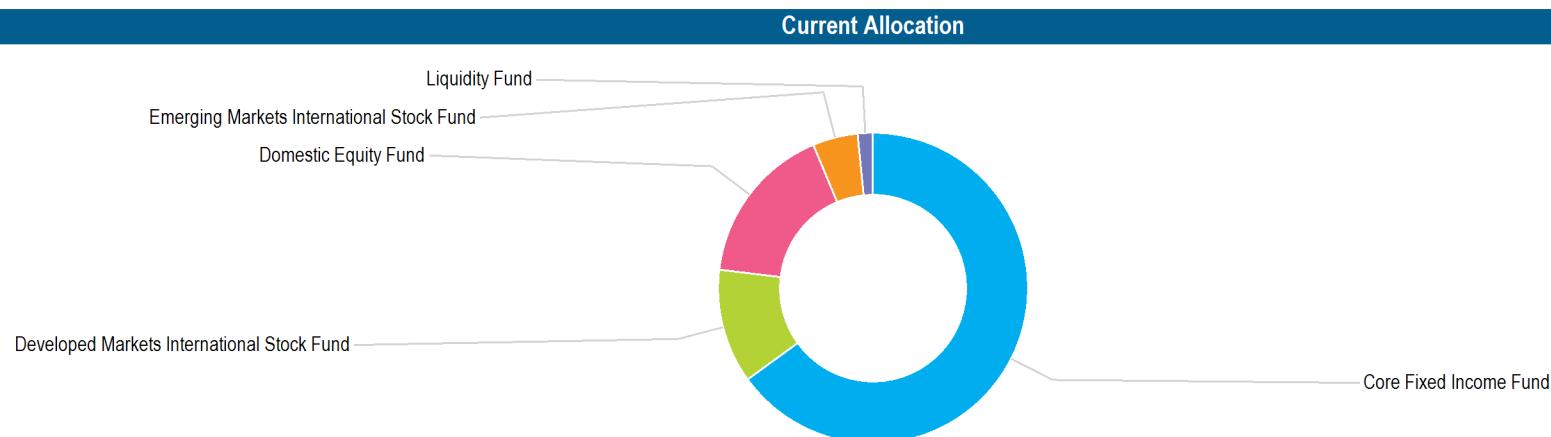
#### Asset Allocation vs. Target

As Of September 30, 2020

	Current	Current	Policy	Policy Range	Difference
Domestic Equity Fund	\$8,283,721	20.9%	20.0%	15.0% - 25.0%	0.9%
Developed Markets International Stock Fund	\$4,503,232	11.3%	11.0%	6.0% - 16.0%	0.3%
Emerging Markets International Stock Fund	\$4,023,400	10.1%	9.0%	4.0% - 14.0%	1.1%
Core Fixed Income Fund	\$6,968,477	17.6%	13.0%	8.0% - 18.0%	4.6%
Emerging Market Debt Fund	\$2,037,054	5.1%	5.0%	0.0% - 10.0%	0.1%
High Yield Debt Fund	\$2,439,941	6.1%	3.0%	0.0% - 8.0%	3.1%
Real Assets Fund	\$4,692,347	11.8%	19.0%	10.0% - 25.0%	-7.2%
Private Investment Fund	\$3,211,073	8.1%	10.0%	5.0% - 15.0%	-1.9%
Alternative Investment Fund	\$2,728,510	6.9%	3.0%	0.0% - 10.0%	3.9%
Liquidity Fund	\$644,544	1.6%	2.0%	0.0% - 3.0%	-0.4%
Private Credit Fund	\$157,727	0.4%	5.0%	0.0% - 10.0%	-4.6%
<b>Total</b>	<b>\$39,690,027</b>	<b>100.0%</b>	<b>100.0%</b>		

Attribution Summary							
3 Months Ending September 30, 2020							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Alternative Investment Fund	2.6%	0.6%	2.0%	0.1%	-0.2%	0.1%	-0.1%
Core Fixed Income Fund	0.9%	0.6%	0.3%	0.0%	-0.3%	0.0%	-0.2%
Developed Markets International Stock Fund	5.7%	5.6%	0.1%	0.0%	0.0%	0.0%	0.0%
Emerging Market Debt Fund	2.3%	1.5%	0.8%	0.0%	0.0%	0.0%	0.0%
Emerging Markets International Stock Fund	12.8%	9.8%	3.1%	0.3%	0.0%	0.0%	0.3%
High Yield Debt Fund	5.3%	4.6%	0.7%	0.0%	-0.1%	0.0%	0.0%
Liquidity Fund	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Domestic Equity Fund	9.2%	9.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Private Investment Fund	9.2%	22.2%	-13.0%	-1.4%	-0.4%	0.3%	-1.5%
Real Assets Fund	0.8%	0.5%	0.3%	0.1%	0.4%	0.0%	0.5%
Private Credit Fund	5.2%	4.5%	0.7%	0.0%	0.1%	0.0%	0.1%
<b>Total</b>	<b>5.3%</b>	<b>6.3%</b>	<b>-1.0%</b>	<b>-0.9%</b>	<b>-0.6%</b>	<b>0.4%</b>	<b>-1.0%</b>



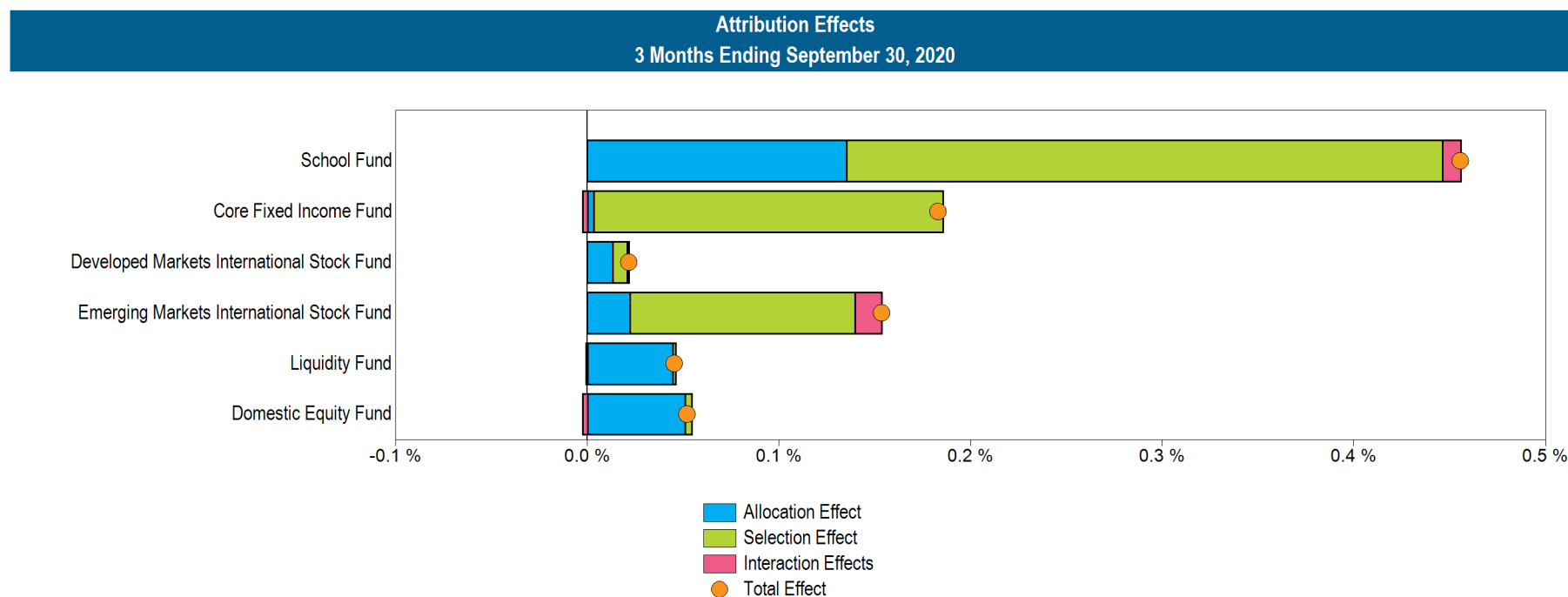


#### Asset Allocation vs. Target As Of September 30, 2020

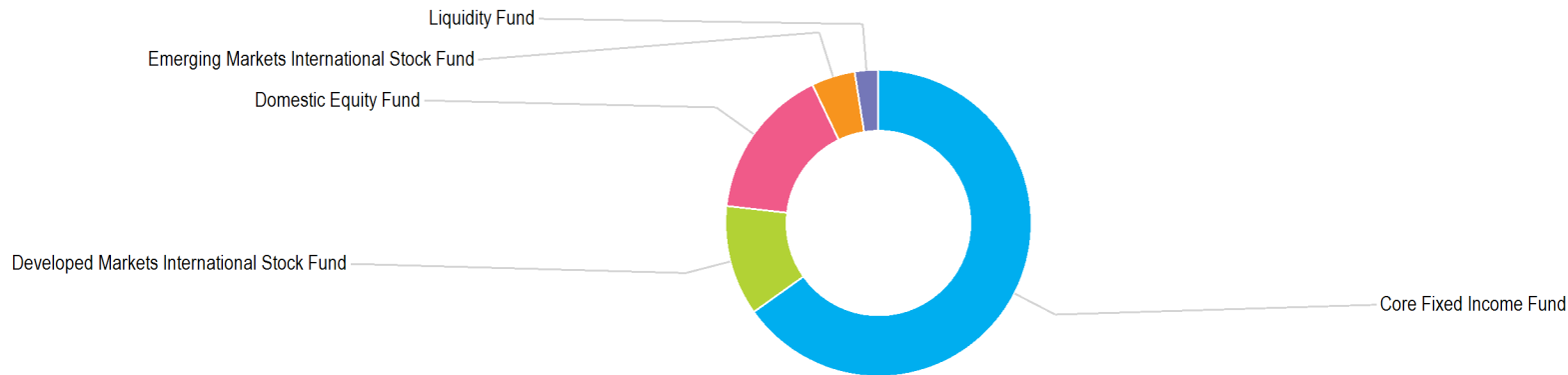
	Current	Current	Policy	Policy Range	Difference
Domestic Equity Fund	\$2,181,546	16.8%	15.0%	10.0% - 20.0%	1.8%
Developed Markets International Stock Fund	\$1,540,611	11.9%	11.0%	6.0% - 16.0%	0.9%
Emerging Markets International Stock Fund	\$609,887	4.7%	4.0%	0.0% - 5.0%	0.7%
Core Fixed Income Fund	\$8,436,651	65.0%	67.0%	57.0% - 77.0%	-2.0%
Liquidity Fund	\$201,747	1.6%	3.0%	0.0% - 4.0%	-1.4%
<b>Total</b>	<b>\$12,970,442</b>	<b>100.0%</b>	<b>100.0%</b>		



Attribution Summary							
3 Months Ending September 30, 2020							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Core Fixed Income Fund	0.9%	0.6%	0.3%	0.2%	0.0%	0.0%	0.2%
Developed Markets International Stock Fund	5.7%	5.6%	0.1%	0.0%	0.0%	0.0%	0.0%
Emerging Markets International Stock Fund	12.8%	9.8%	3.1%	0.1%	0.0%	0.0%	0.2%
Liquidity Fund	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Domestic Equity Fund	9.2%	9.2%	0.0%	0.0%	0.1%	0.0%	0.1%
<b>Total</b>	<b>3.3%</b>	<b>2.8%</b>	<b>0.5%</b>	<b>0.3%</b>	<b>0.1%</b>	<b>0.0%</b>	<b>0.5%</b>



#### Current Allocation

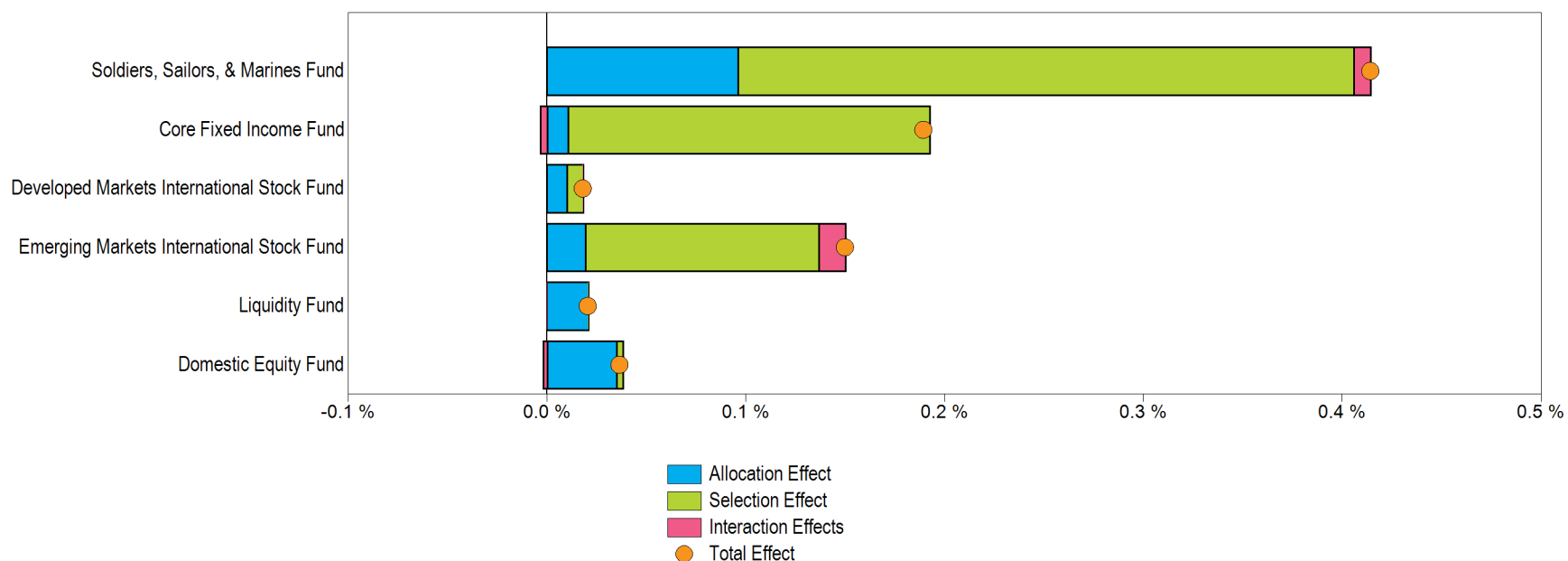


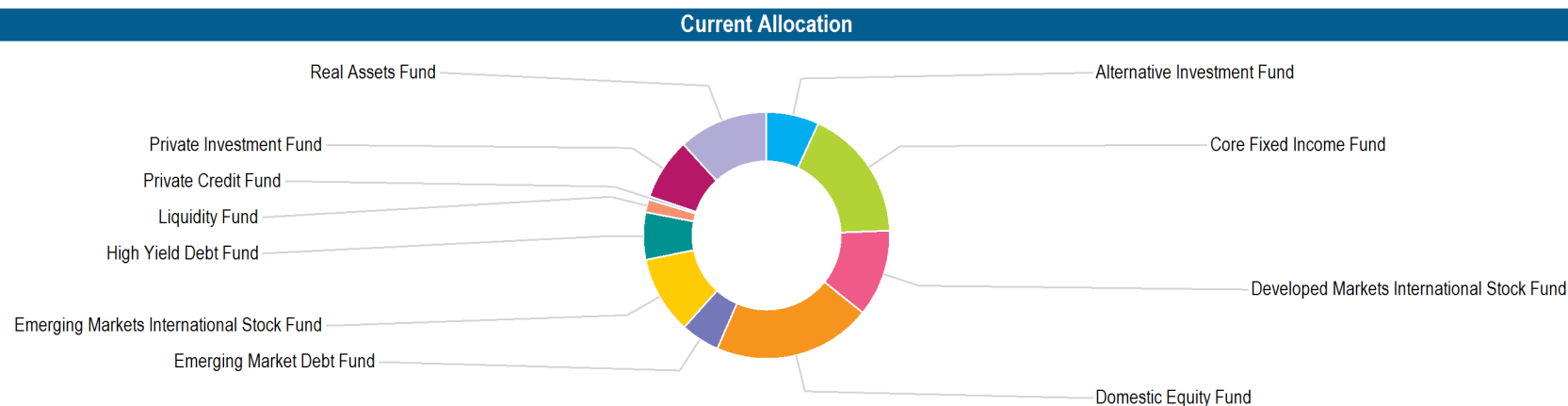
#### Asset Allocation vs. Target As Of September 30, 2020

	Current	Current	Policy	Policy Range	Difference
Domestic Equity Fund	\$13,708,243	16.1%	15.0%	10.0% - 20.0%	1.1%
Developed Markets International Stock Fund	\$9,868,320	11.6%	11.0%	6.0% - 16.0%	0.6%
Emerging Markets International Stock Fund	\$3,938,191	4.6%	4.0%	0.0% - 5.0%	0.6%
Core Fixed Income Fund	\$55,253,616	65.1%	67.0%	57.0% - 77.0%	-1.9%
Liquidity Fund	\$2,143,800	2.5%	3.0%	0.0% - 4.0%	-0.5%
<b>Total</b>	<b>\$84,912,171</b>	<b>100.0%</b>	<b>100.0%</b>		

Attribution Summary							
3 Months Ending September 30, 2020							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Core Fixed Income Fund	0.9%	0.6%	0.3%	0.2%	0.0%	0.0%	0.2%
Developed Markets International Stock Fund	5.7%	5.6%	0.1%	0.0%	0.0%	0.0%	0.0%
Emerging Markets International Stock Fund	12.8%	9.8%	3.1%	0.1%	0.0%	0.0%	0.1%
Liquidity Fund	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Domestic Equity Fund	9.2%	9.2%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Total</b>	<b>3.2%</b>	<b>2.8%</b>	<b>0.4%</b>	<b>0.3%</b>	<b>0.1%</b>	<b>0.0%</b>	<b>0.4%</b>

### Attribution Effects 3 Months Ending September 30, 2020



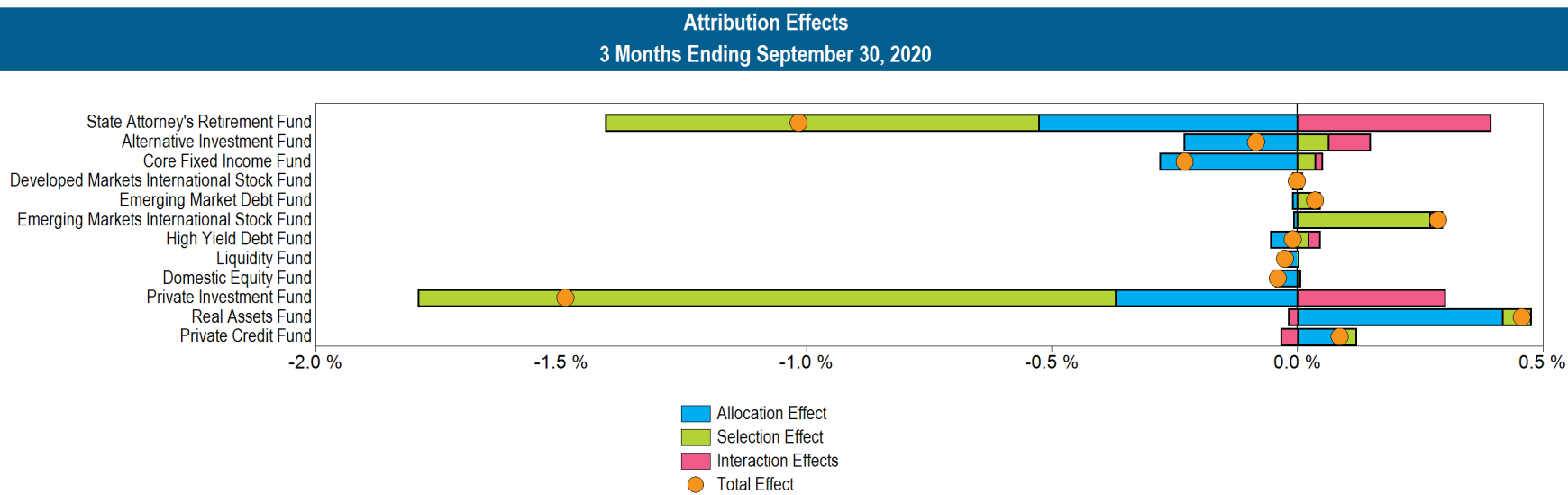


#### Asset Allocation vs. Target

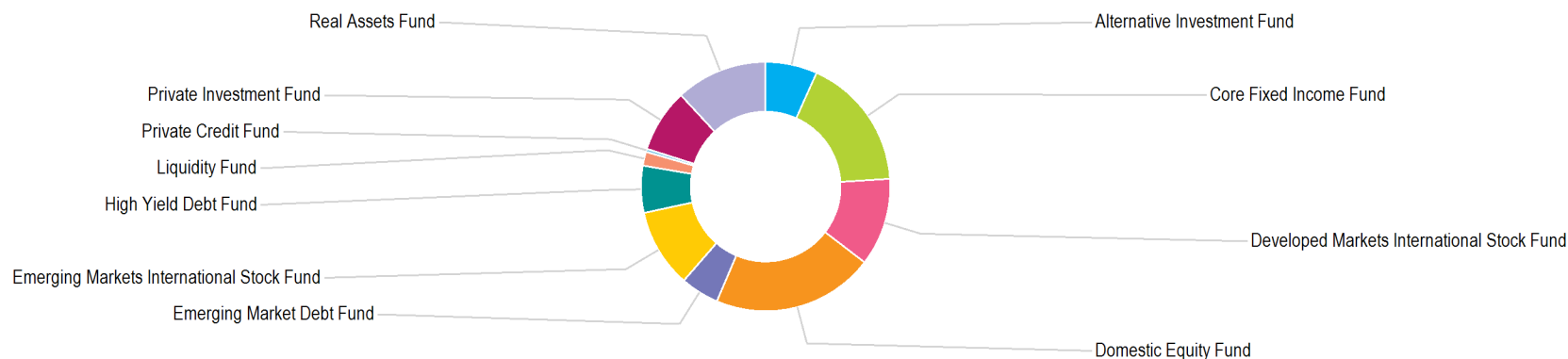
As Of September 30, 2020

	Current	Current	Policy	Policy Range	Difference
Domestic Equity Fund	\$466,361	20.8%	20.0%	15.0% - 25.0%	0.8%
Developed Markets International Stock Fund	\$254,578	11.4%	11.0%	6.0% - 16.0%	0.4%
Emerging Markets International Stock Fund	\$227,725	10.2%	9.0%	4.0% - 14.0%	1.2%
Core Fixed Income Fund	\$391,417	17.5%	13.0%	8.0% - 18.0%	4.5%
Emerging Market Debt Fund	\$113,611	5.1%	5.0%	0.0% - 10.0%	0.1%
High Yield Debt Fund	\$138,283	6.2%	3.0%	0.0% - 8.0%	3.2%
Real Assets Fund	\$265,749	11.8%	19.0%	10.0% - 25.0%	-7.2%
Private Investment Fund	\$181,861	8.1%	10.0%	5.0% - 15.0%	-1.9%
Alternative Investment Fund	\$154,942	6.9%	3.0%	0.0% - 10.0%	3.9%
Liquidity Fund	\$39,205	1.7%	2.0%	0.0% - 3.0%	-0.3%
Private Credit Fund	\$9,116	0.4%	5.0%	0.0% - 10.0%	-4.6%
<b>Total</b>	<b>\$2,242,850</b>	<b>100.0%</b>	<b>100.0%</b>		

Attribution Summary							
3 Months Ending September 30, 2020							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Alternative Investment Fund	2.6%	0.6%	2.0%	0.1%	-0.2%	0.1%	-0.1%
Core Fixed Income Fund	0.9%	0.6%	0.3%	0.0%	-0.3%	0.0%	-0.2%
Developed Markets International Stock Fund	5.7%	5.6%	0.1%	0.0%	0.0%	0.0%	0.0%
Emerging Market Debt Fund	2.3%	1.5%	0.8%	0.0%	0.0%	0.0%	0.0%
Emerging Markets International Stock Fund	12.8%	9.8%	3.1%	0.3%	0.0%	0.0%	0.3%
High Yield Debt Fund	5.3%	4.6%	0.7%	0.0%	-0.1%	0.0%	0.0%
Liquidity Fund	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Domestic Equity Fund	9.2%	9.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Private Investment Fund	9.2%	22.2%	-13.0%	-1.4%	-0.4%	0.3%	-1.5%
Real Assets Fund	0.8%	0.5%	0.3%	0.1%	0.4%	0.0%	0.5%
Private Credit Fund	5.2%	4.5%	0.7%	0.0%	0.1%	0.0%	0.1%
<b>Total</b>	<b>5.3%</b>	<b>6.3%</b>	<b>-1.0%</b>	<b>-0.9%</b>	<b>-0.5%</b>	<b>0.4%</b>	<b>-1.0%</b>



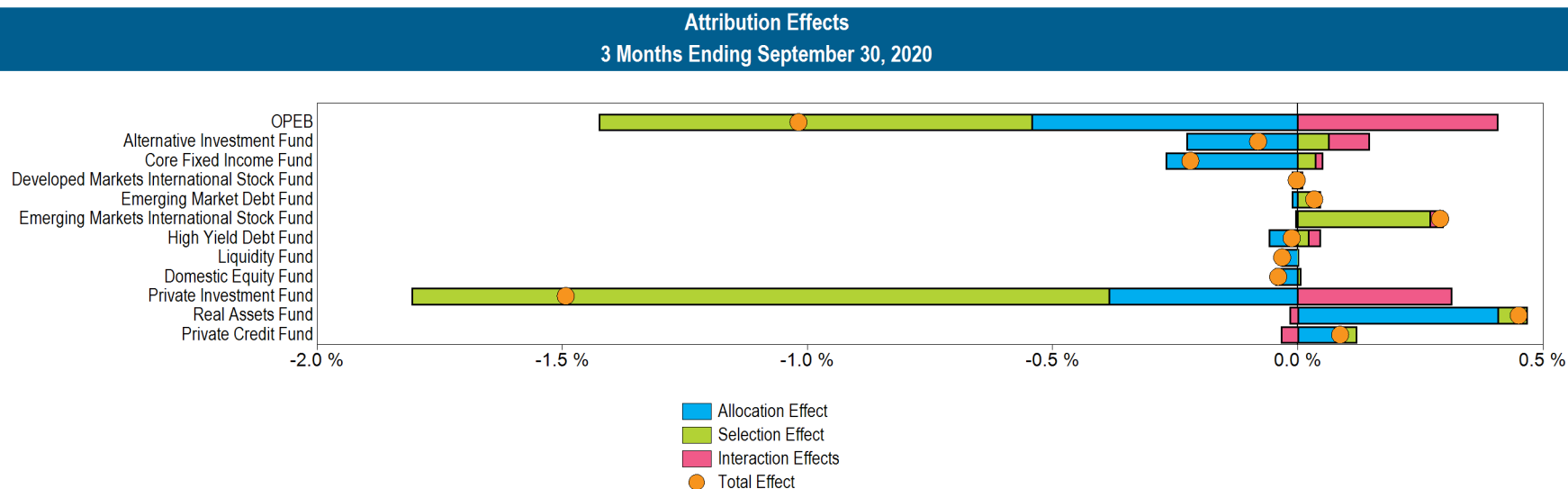
#### Current Allocation



#### Asset Allocation vs. Target As Of September 30, 2020

	Current	Current	Policy	Policy Range	Difference
Domestic Equity Fund	\$327,895,929	21.0%	20.0%	15.0% - 25.0%	1.0%
Developed Markets International Stock Fund	\$177,609,919	11.4%	11.0%	6.0% - 16.0%	0.4%
Emerging Markets International Stock Fund	\$158,672,673	10.2%	9.0%	4.0% - 14.0%	1.2%
Core Fixed Income Fund	\$270,063,963	17.3%	13.0%	8.0% - 18.0%	4.3%
Emerging Market Debt Fund	\$78,610,139	5.0%	5.0%	0.0% - 10.0%	0.0%
High Yield Debt Fund	\$94,572,487	6.1%	3.0%	0.0% - 8.0%	3.1%
Real Assets Fund	\$184,959,790	11.9%	19.0%	10.0% - 25.0%	-7.1%
Private Investment Fund	\$127,305,041	8.2%	10.0%	5.0% - 15.0%	-1.8%
Alternative Investment Fund	\$104,457,298	6.7%	3.0%	0.0% - 10.0%	3.7%
Liquidity Fund	\$28,054,681	1.8%	2.0%	0.0% - 3.0%	-0.2%
Private Credit Fund	\$6,174,560	0.4%	5.0%	0.0% - 10.0%	-4.6%
<b>Total</b>	<b>\$1,558,376,479</b>	<b>100.0%</b>	<b>100.0%</b>		

Attribution Summary							
3 Months Ending September 30, 2020							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Alternative Investment Fund	2.6%	0.6%	2.0%	0.1%	-0.2%	0.1%	-0.1%
Core Fixed Income Fund	0.9%	0.6%	0.3%	0.0%	-0.3%	0.0%	-0.2%
Developed Markets International Stock Fund	5.7%	5.6%	0.1%	0.0%	0.0%	0.0%	0.0%
Emerging Market Debt Fund	2.3%	1.5%	0.8%	0.0%	0.0%	0.0%	0.0%
Emerging Markets International Stock Fund	12.8%	9.8%	3.1%	0.3%	0.0%	0.0%	0.3%
High Yield Debt Fund	5.3%	4.6%	0.7%	0.0%	-0.1%	0.0%	0.0%
Liquidity Fund	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Domestic Equity Fund	9.2%	9.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Private Investment Fund	9.2%	22.2%	-13.0%	-1.4%	-0.4%	0.3%	-1.5%
Real Assets Fund	0.8%	0.5%	0.3%	0.1%	0.4%	0.0%	0.5%
Private Credit Fund	5.2%	4.5%	0.7%	0.0%	0.1%	0.0%	0.1%
<b>Total</b>	<b>5.3%</b>	<b>6.3%</b>	<b>-1.0%</b>	<b>-0.9%</b>	<b>-0.5%</b>	<b>0.4%</b>	<b>-1.0%</b>

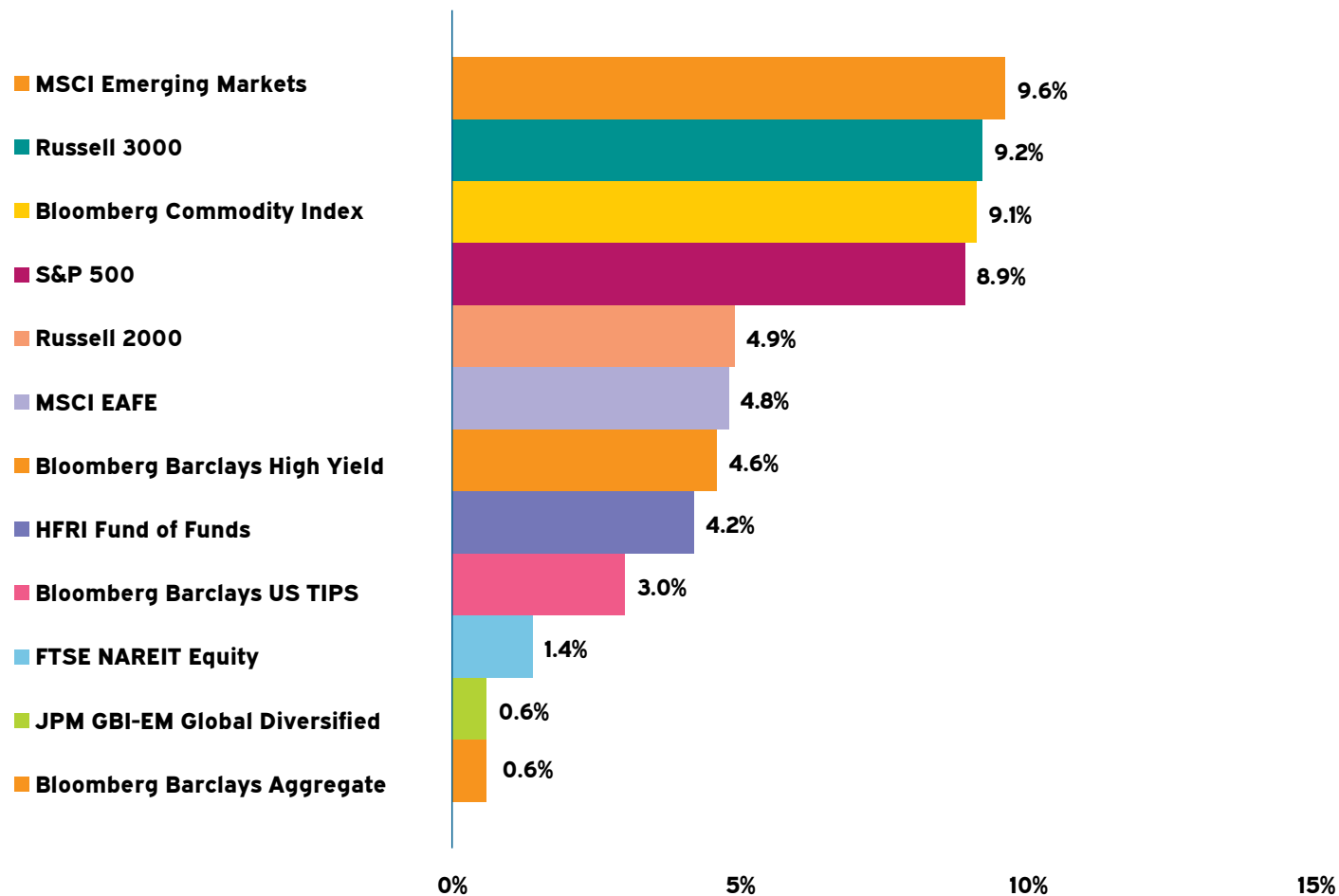


## Appendices



## **The World Markets Third Quarter of 2020**

### The World Markets<sup>1</sup> Third Quarter of 2020



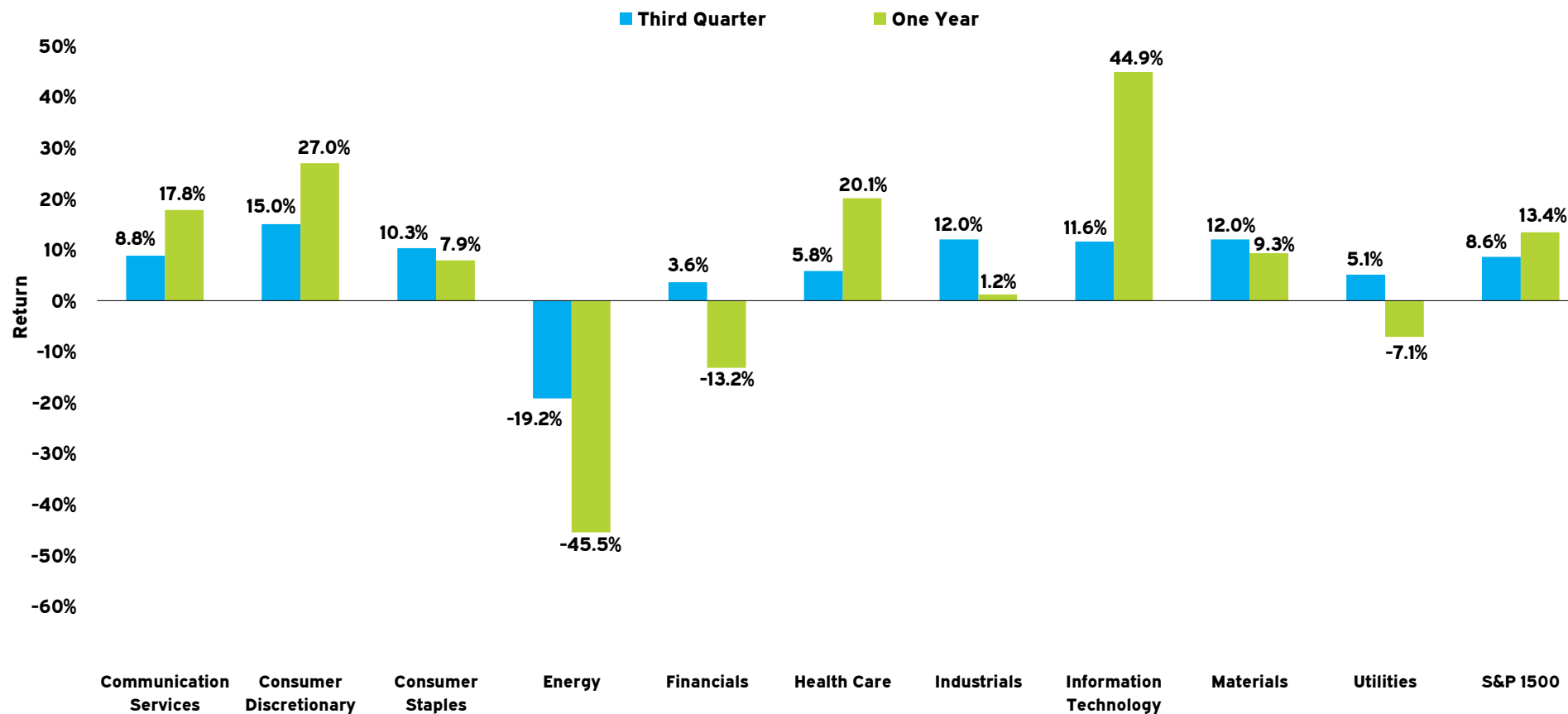
<sup>1</sup> Source: InvestorForce.

## Index Returns<sup>1</sup>

	3Q20 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
<b>Domestic Equity</b>						
S&P 500	8.9	5.6	15.1	12.3	14.1	13.7
Russell 3000	9.2	5.4	15.0	11.6	13.7	13.5
Russell 1000	9.5	6.4	16.0	12.4	14.1	13.8
Russell 1000 Growth	13.2	24.3	37.5	21.7	20.1	17.3
Russell 1000 Value	5.6	-11.6	-5.0	2.6	7.7	9.9
Russell MidCap	7.5	-2.3	4.6	7.1	10.1	11.8
Russell MidCap Growth	9.4	13.9	23.2	16.2	15.5	14.6
Russell MidCap Value	6.4	-12.8	-7.3	0.8	6.4	9.7
Russell 2000	4.9	-8.7	0.4	1.8	8.0	9.9
Russell 2000 Growth	7.2	3.9	15.7	8.2	11.4	12.3
Russell 2000 Value	2.6	-21.5	-14.9	-5.1	4.1	7.1
<b>Foreign Equity</b>						
MSCI ACWI (ex. US)	6.3	-5.4	3.0	1.2	6.2	4.0
MSCI EAFE	4.8	-7.1	0.5	0.6	5.3	4.6
MSCI EAFE (Local Currency)	1.2	-9.4	-4.7	0.6	4.8	6.3
MSCI EAFE Small Cap	10.3	-4.2	6.8	1.4	7.4	7.3
MSCI Emerging Markets	9.6	-1.2	10.5	2.4	9.0	2.5
MSCI Emerging Markets (Local Currency)	8.6	2.7	12.5	4.8	9.6	5.6
<b>Fixed Income</b>						
Bloomberg Barclays Universal	1.0	6.2	6.7	5.1	4.5	3.9
Bloomberg Barclays Aggregate	0.6	6.8	7.0	5.2	4.2	3.6
Bloomberg Barclays US TIPS	3.0	9.2	10.1	5.8	4.6	3.6
Bloomberg Barclays High Yield	4.6	0.6	3.3	4.2	6.8	6.5
JPM GBI-EM Global Diversified	0.6	-6.3	-1.4	0.2	4.8	0.5
<b>Other</b>						
FTSE NAREIT Equity	1.4	-17.5	-18.2	0.2	3.9	7.9
Bloomberg Commodity Index	9.1	-12.1	-8.2	-4.2	-3.1	-6.0
HFRI Fund of Funds	4.2	2.5	5.6	2.9	3.1	2.9

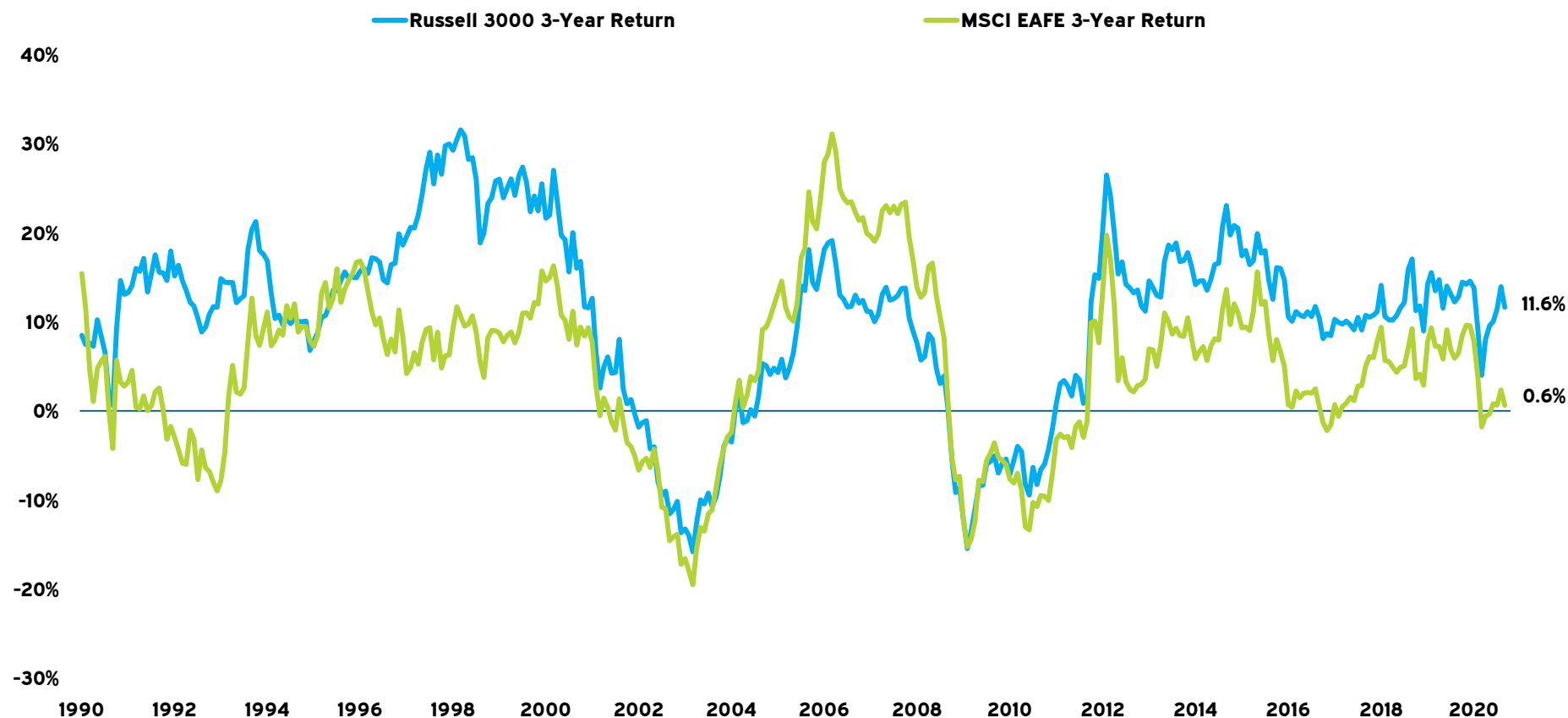
<sup>1</sup> Source: InvestorForce.

### S&P Sector Returns<sup>1</sup>



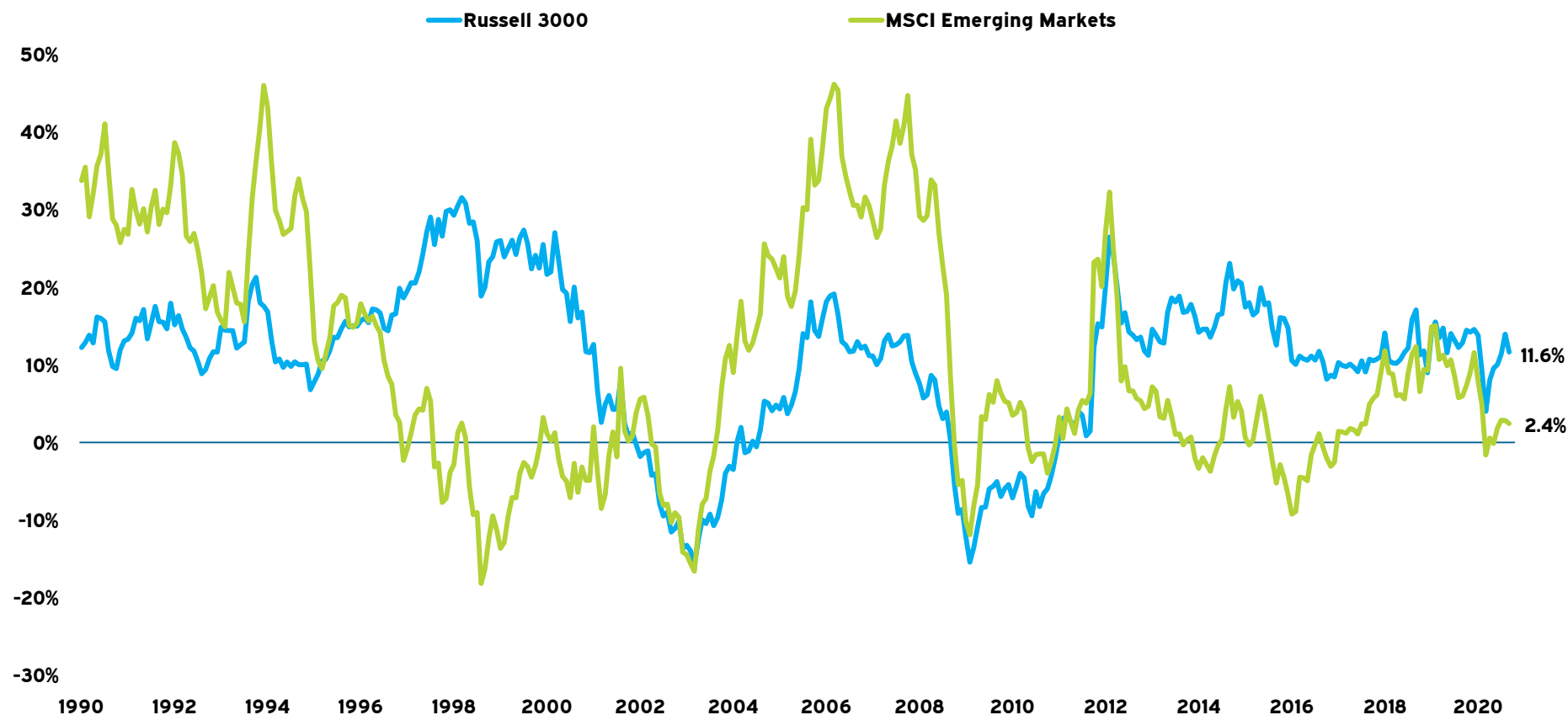
<sup>1</sup> Source: InvestorForce. Represents S&P 1500 (All Cap) data.

### US and Developed Market Foreign Equity Rolling Three-Year Returns<sup>1</sup>



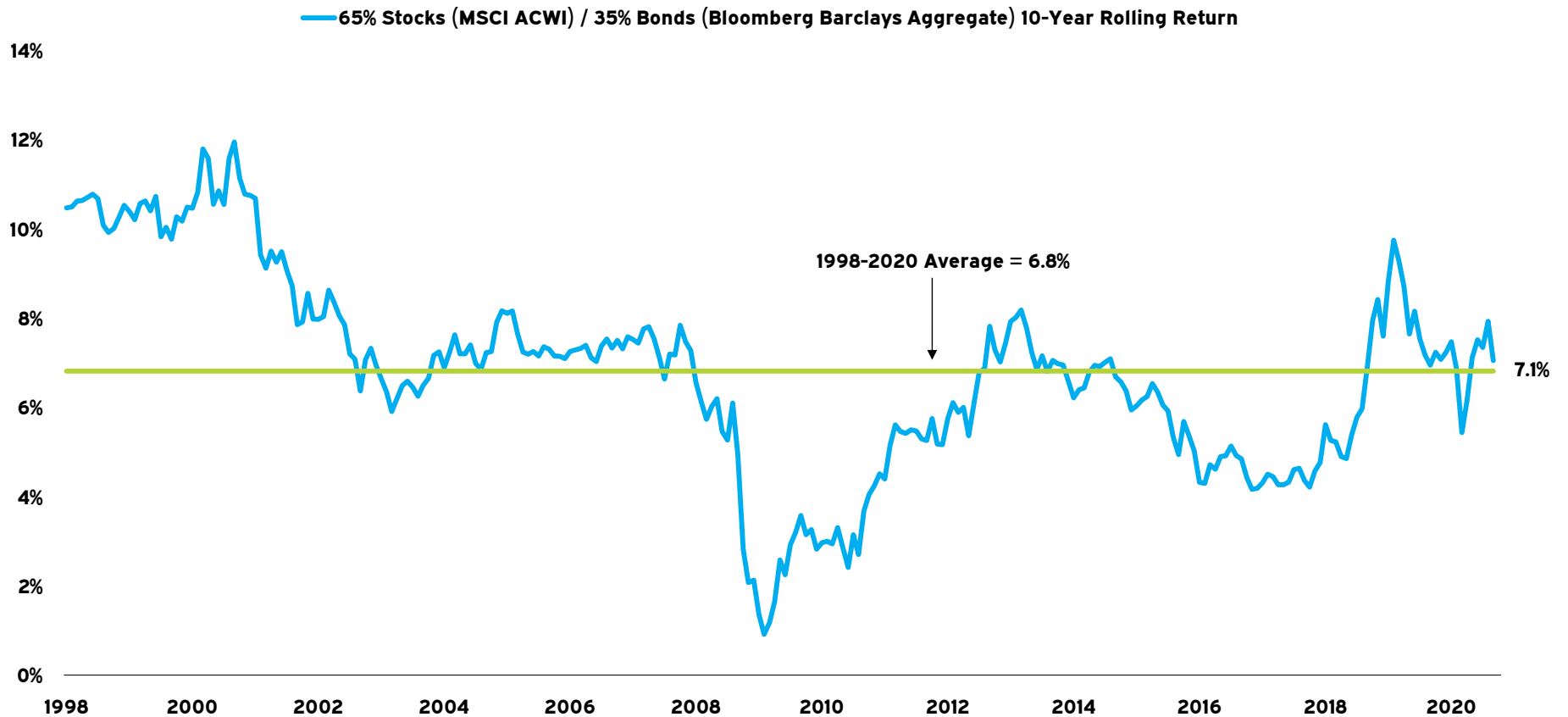
<sup>1</sup> Source: InvestorForce.

### US and Emerging Market Equity Rolling Three-Year Returns<sup>1</sup>



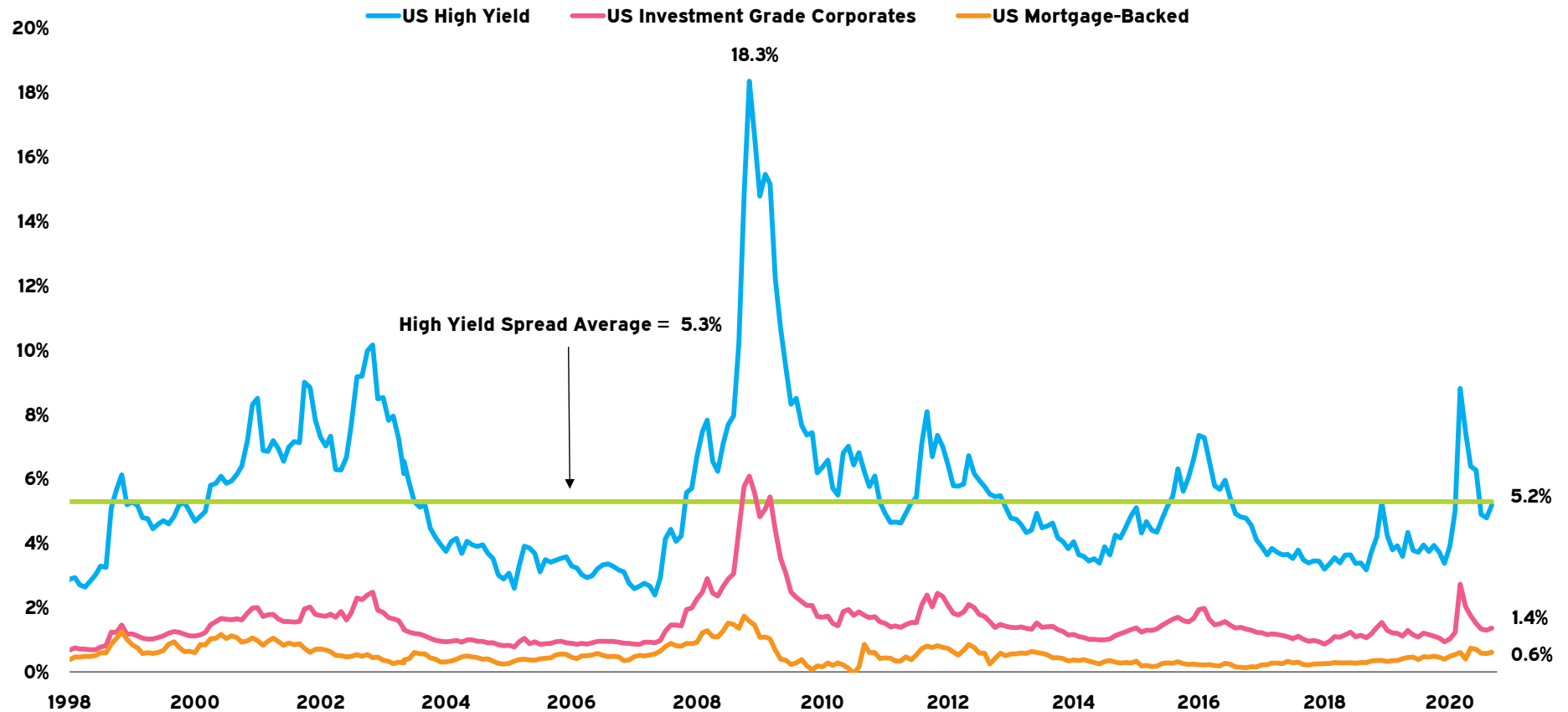
<sup>1</sup> Source: InvestorForce.

### Rolling Ten-Year Returns: 65% Stocks and 35% Bonds<sup>1</sup>



<sup>1</sup> Source: InvestorForce.

### Credit Spreads vs. US Treasury Bonds<sup>1,2</sup>

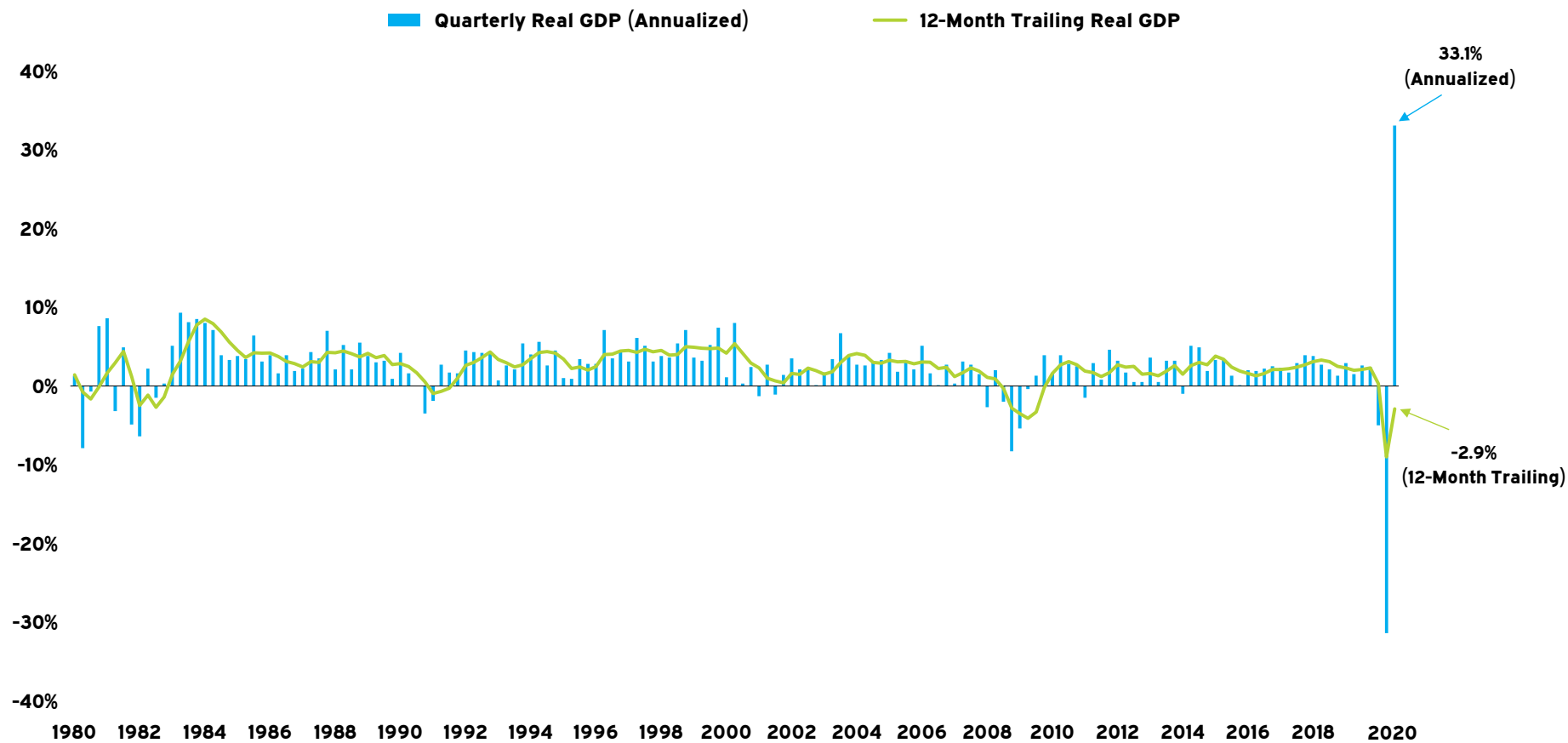


<sup>1</sup> Source: Barclays Live. Data represents the OAS.

<sup>2</sup> The median high yield spread was 4.8% from 1997-2020.

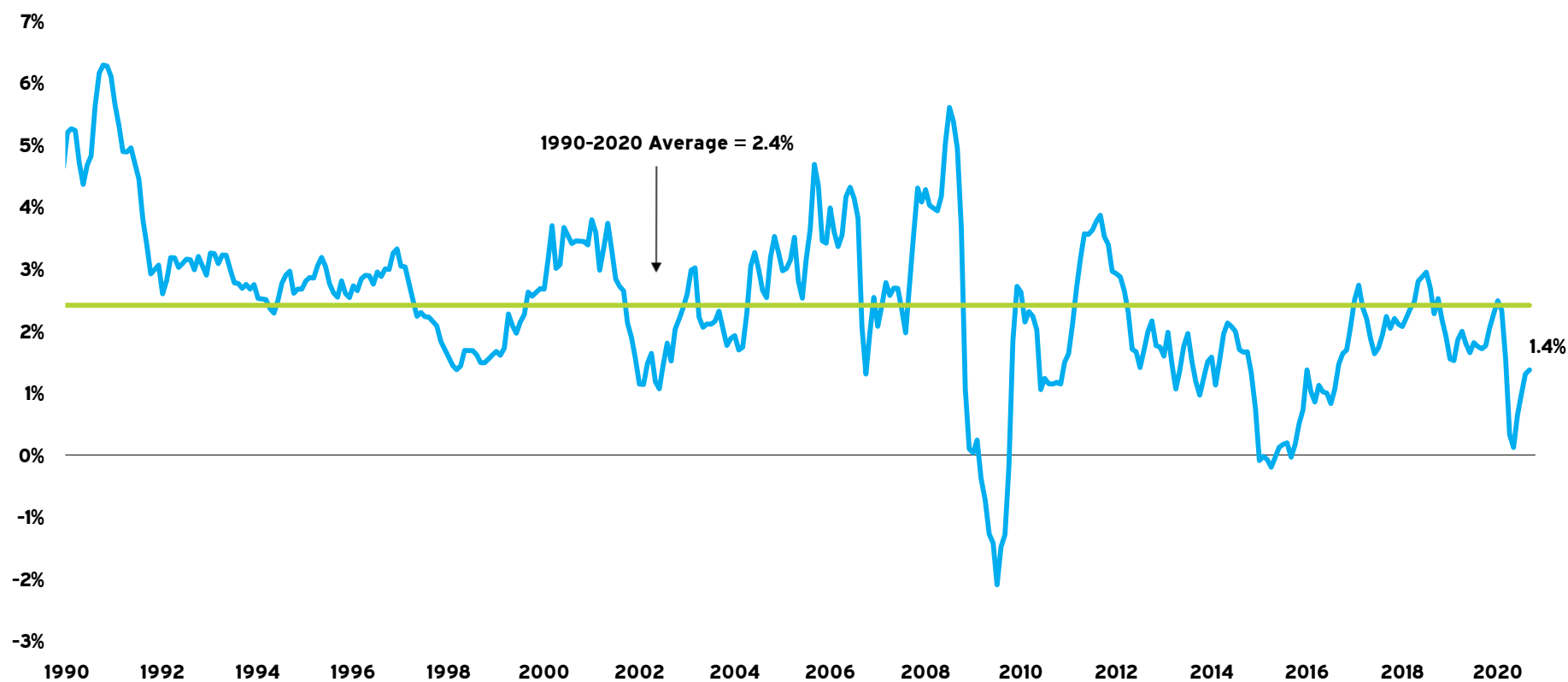


### US Real Gross Domestic Product (GDP) Growth<sup>1</sup>



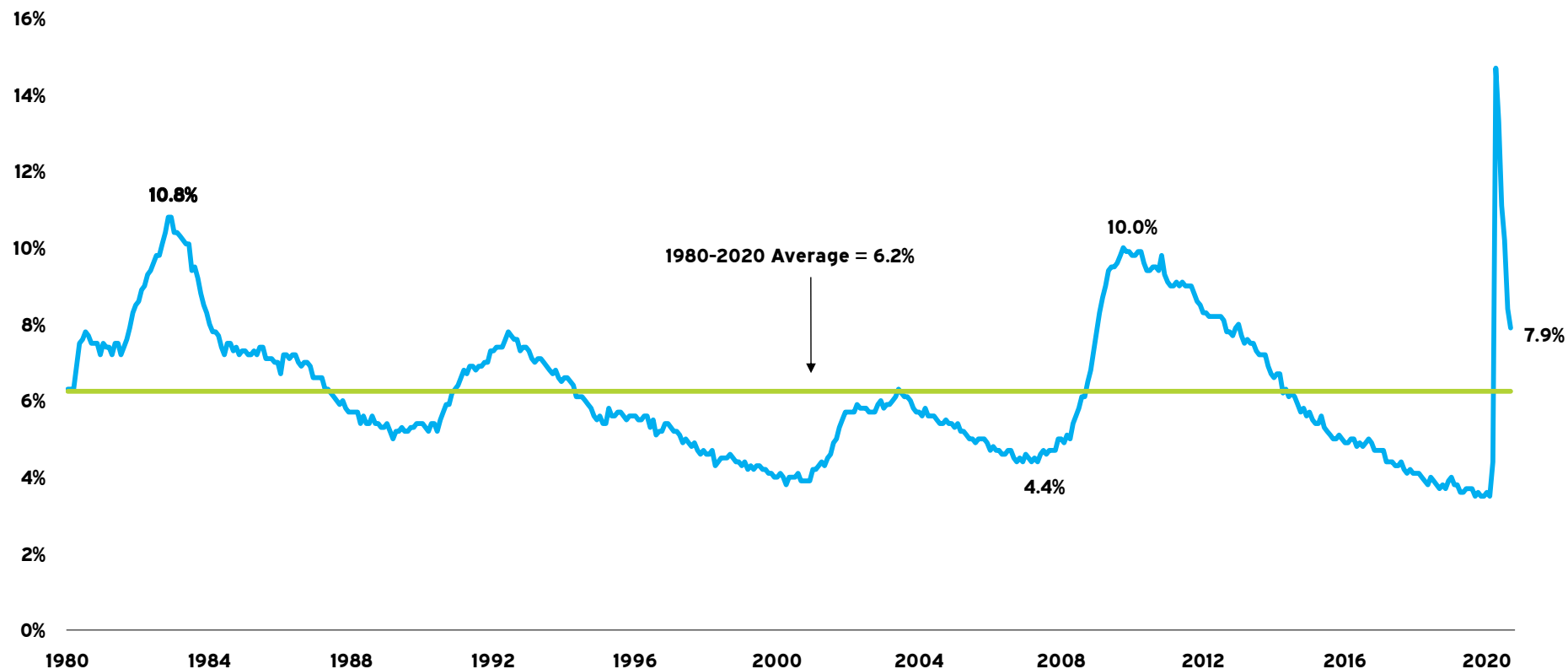
<sup>1</sup> Source: Bureau of Economic Analysis. Data is as of Q3 2020 and represents the first estimate.

### US Inflation (CPI) Trailing Twelve Months<sup>1</sup>



<sup>1</sup> Source: Bureau of Labor Statistics. Data is non-seasonally adjusted CPI, which may be volatile in the short-term. Data is as of September 30, 2020.

### US Unemployment<sup>1</sup>



<sup>1</sup> Source: Bureau of Labor Statistics. Data is as of September 30, 2020.

## Capital Markets Outlook & Risk Metrics

As of October 31, 2020

## Capital Markets Outlook

### Takeaways

- October saw a modest reversal from the primary themes of Q2 and Q3. In particular, global equity markets generally produced flat-to-negative returns, although small cap and value stocks regained some ground relative to their counterparts. Additionally, longer-term interest rates in the US ticked up slightly, resulting in negative returns for most safe haven assets (e.g., US Treasury bonds).
- Risk-oriented markets have rebounded significantly since the March lows, although October represented a pause to the recovery. Despite some catch-up in October, there continues to be a high degree of divergence among equity regions/styles/capitalizations, and this is exemplified at the extremes with US large cap growth stocks outperforming US small cap value stocks by nearly 40% thus far in 2020.
- While the shorter portions of the US Treasury curve were stable during October, yields rose by 10-20 basis points for US Treasuries greater than 5 years in maturity. Although this movement is not significant in an absolute sense, at current interest rate levels such a move does modestly impact bond prices.
- Real yields in the US ticked up during October, with the most significant movements occurring at the longer end of the curve. The entire real yield curve does, however, remain in negative territory.
- Q3 GDP and other economic data indicate that an economic recovery was well underway. However, recent increases in COVID-related cases/deaths, as well as newly announced shutdowns in Europe and other regions, represent a new headwind to the recovery.

## Capital Markets Outlook

### Takeaways

- Market activity appears to be focused on two items: 1) 2020 election results and 2) vaccine development and COVID-related shutdowns. Returning to pre-COVID levels of economic activity is not expected to occur until 2021 at the earliest.
- Implied equity market volatility<sup>1</sup> increased throughout October before ending the month at around 38. Conversely, our Systemic Risk measure decreased during the month, while implied fixed income volatility<sup>2</sup> increased.
- While valuations for several risk-based asset classes appear neutral-to-attractive at first glance, it is important to note that the full impact on corporate earnings and solvencies remains unknown. The path that the global economy will take moving forward is uncertain.
- The Market Sentiment Indicator<sup>3</sup> returned to grey (i.e., neutral) at month-end.

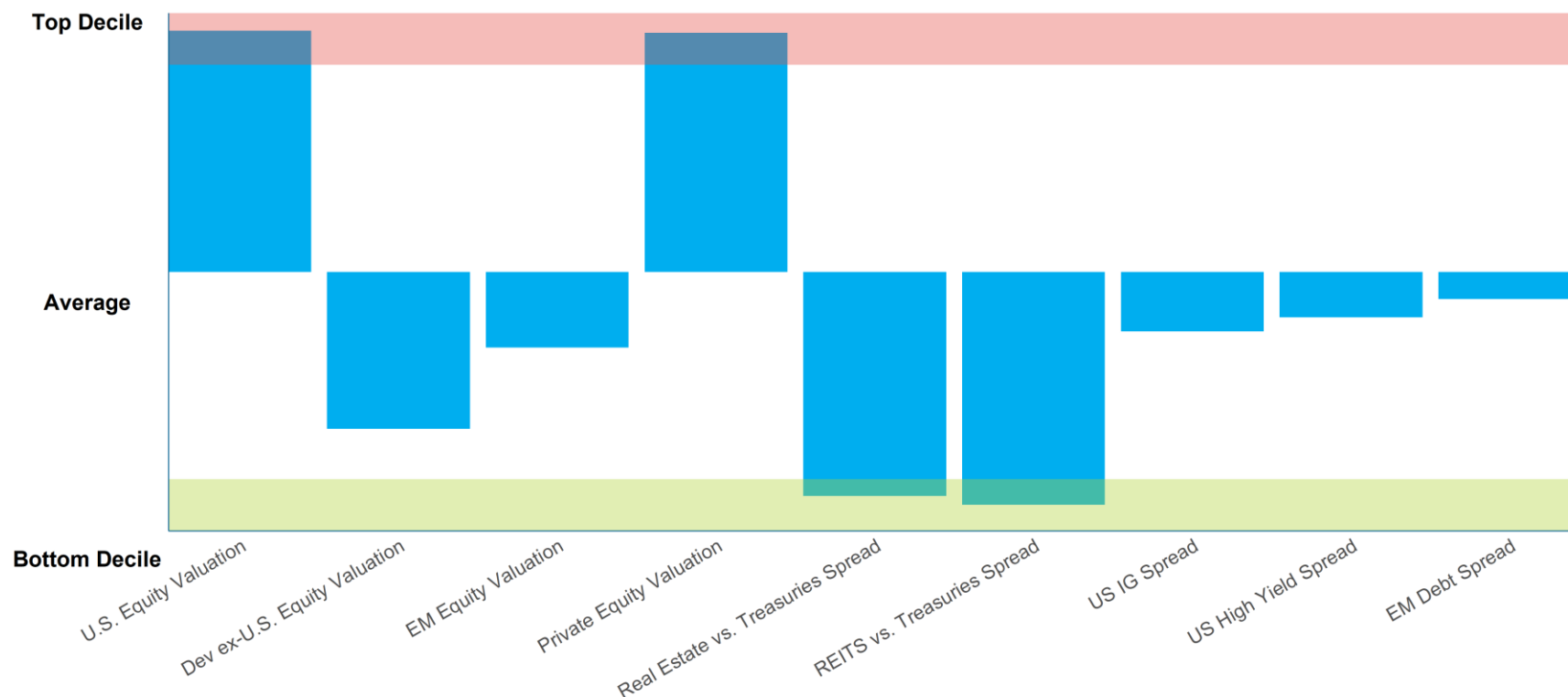
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<sup>1</sup> As measured by VIX Index.

<sup>2</sup> As measured by MOVE Index.

<sup>3</sup> See Appendix for the rationale for selection and calculation methodology used for the risk metrics.

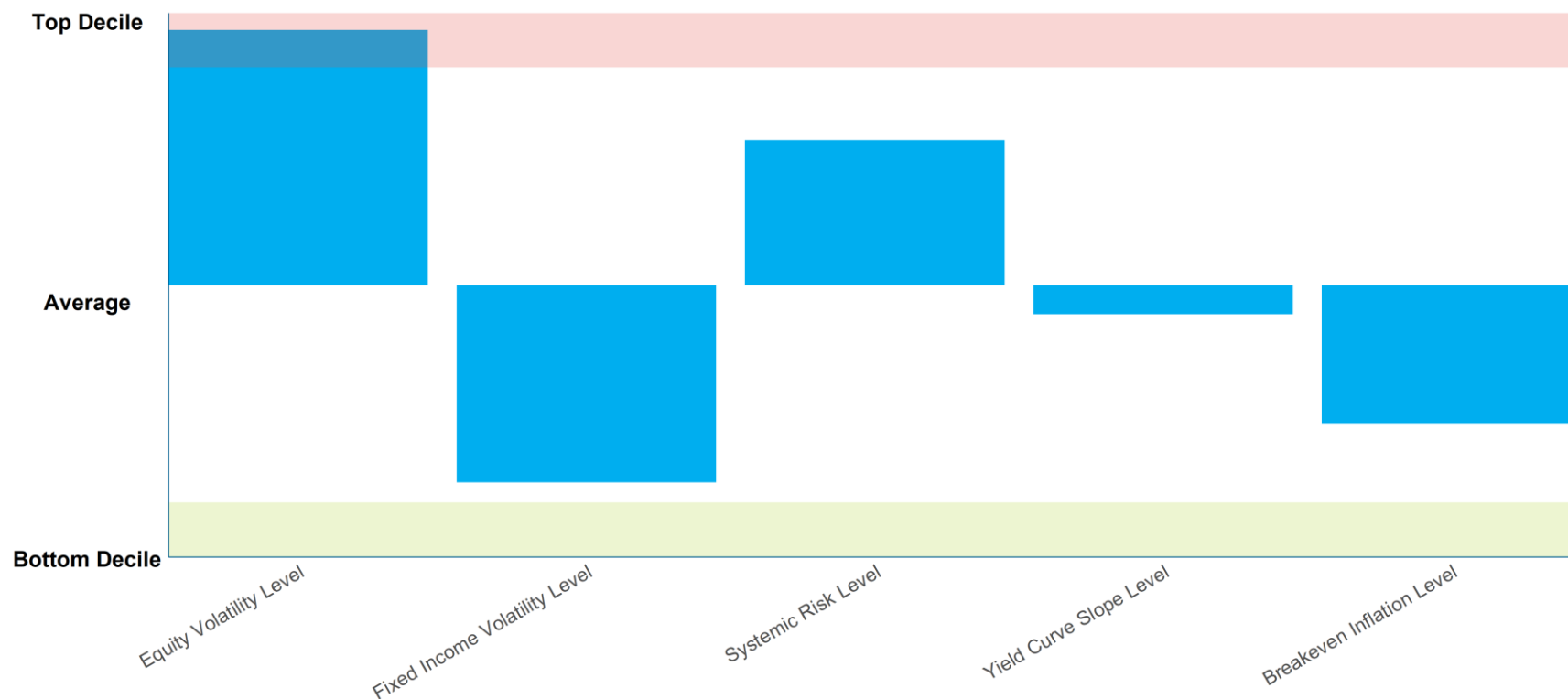
### Risk Overview/Dashboard (1) (As of October 31, 2020)<sup>1</sup>



- Dashboard (1) summarizes the current state of the different valuation metrics per asset class relative to their own history.

<sup>1</sup> With the exception of Private Equity Valuation, that is YTD as of December 31, 2019.

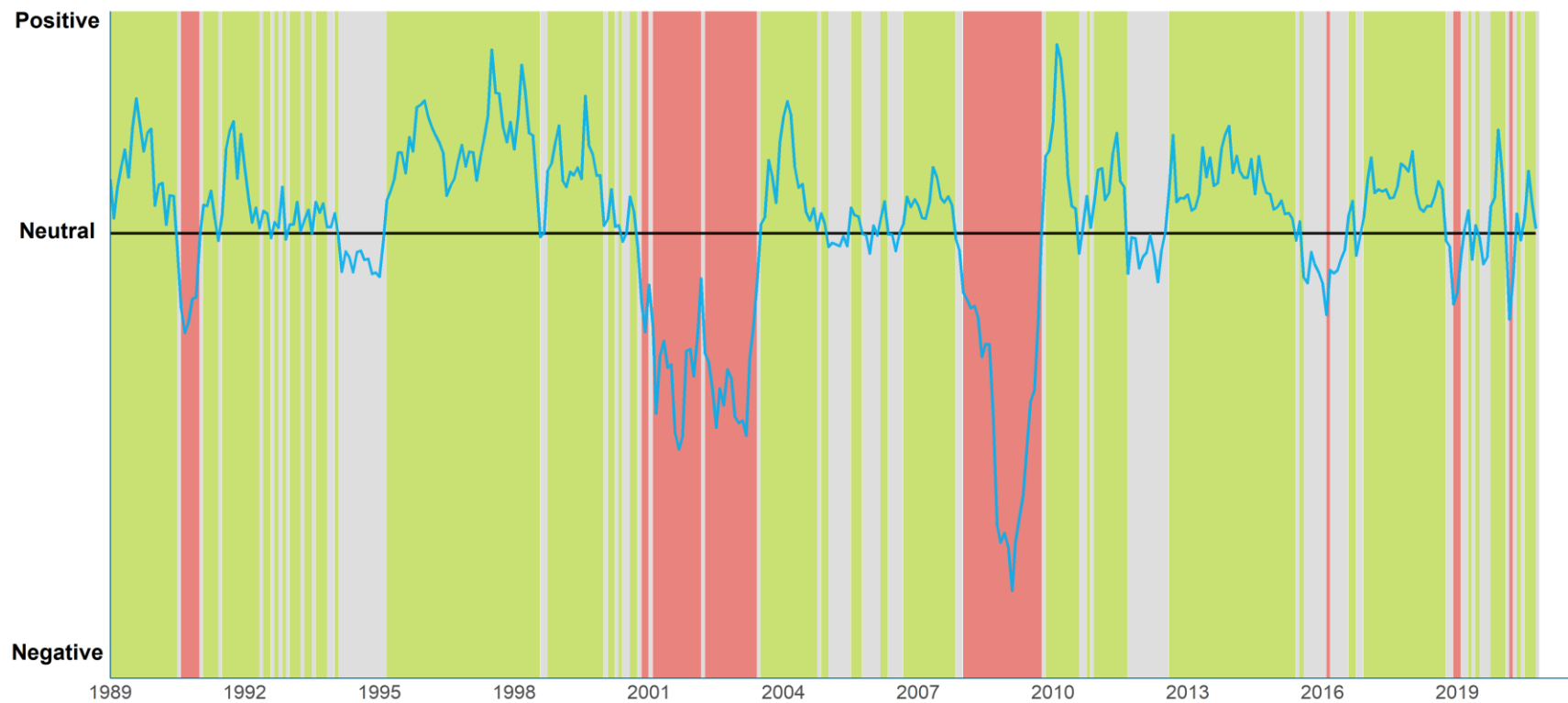
### Risk Overview/Dashboard (2) (As of October 31, 2020)



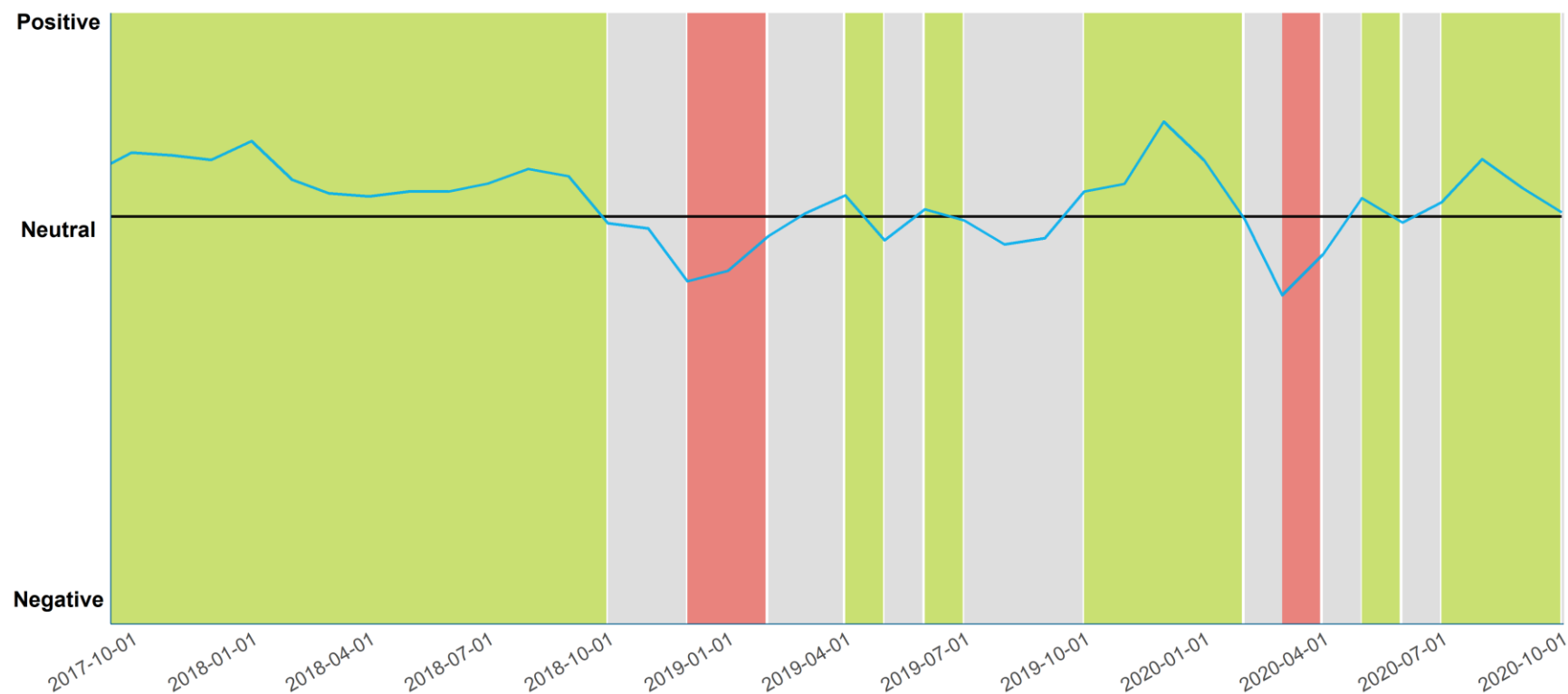
- Dashboard (2) shows how the current level of each indicator compares to its respective history.



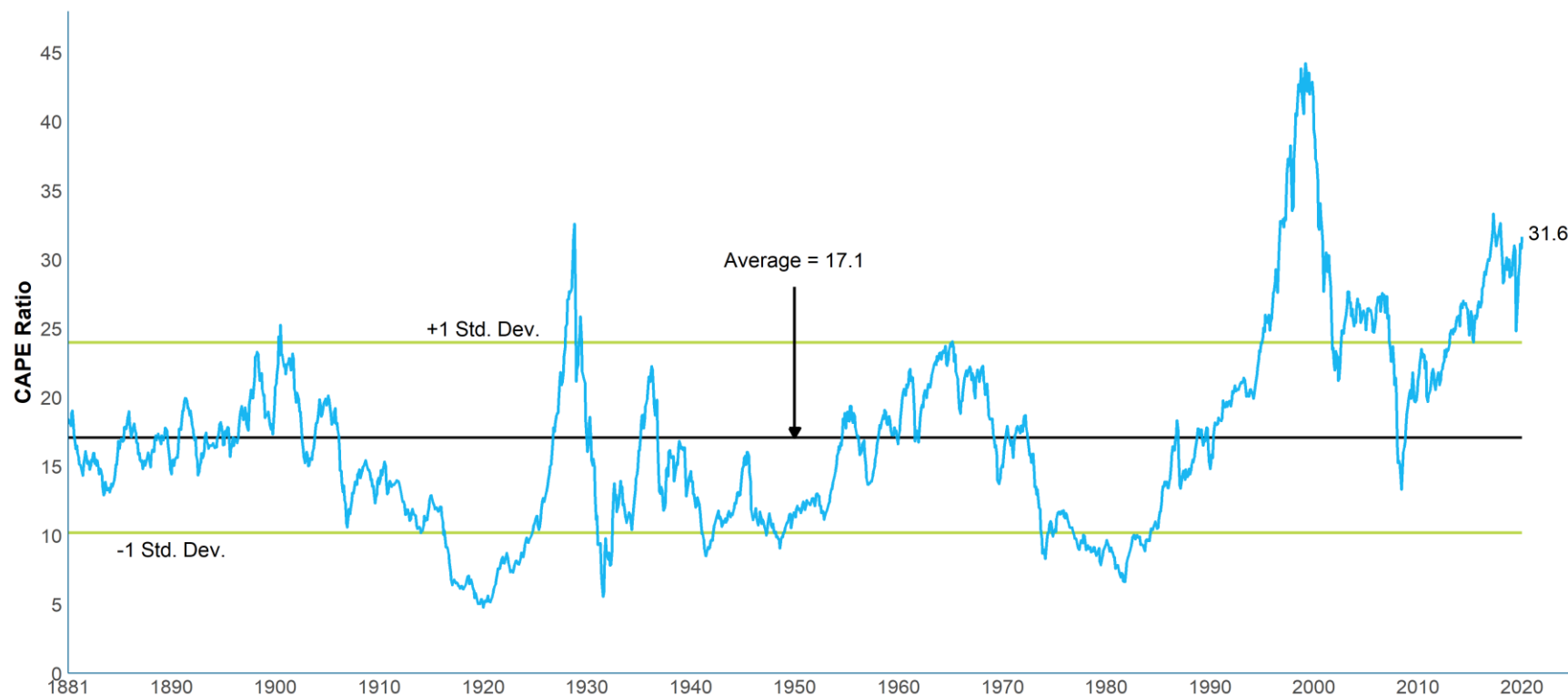
Market Sentiment Indicator (All History)  
(As of October 31, 2020)



Market Sentiment Indicator (Last Three Years)  
(As of October 31, 2020)



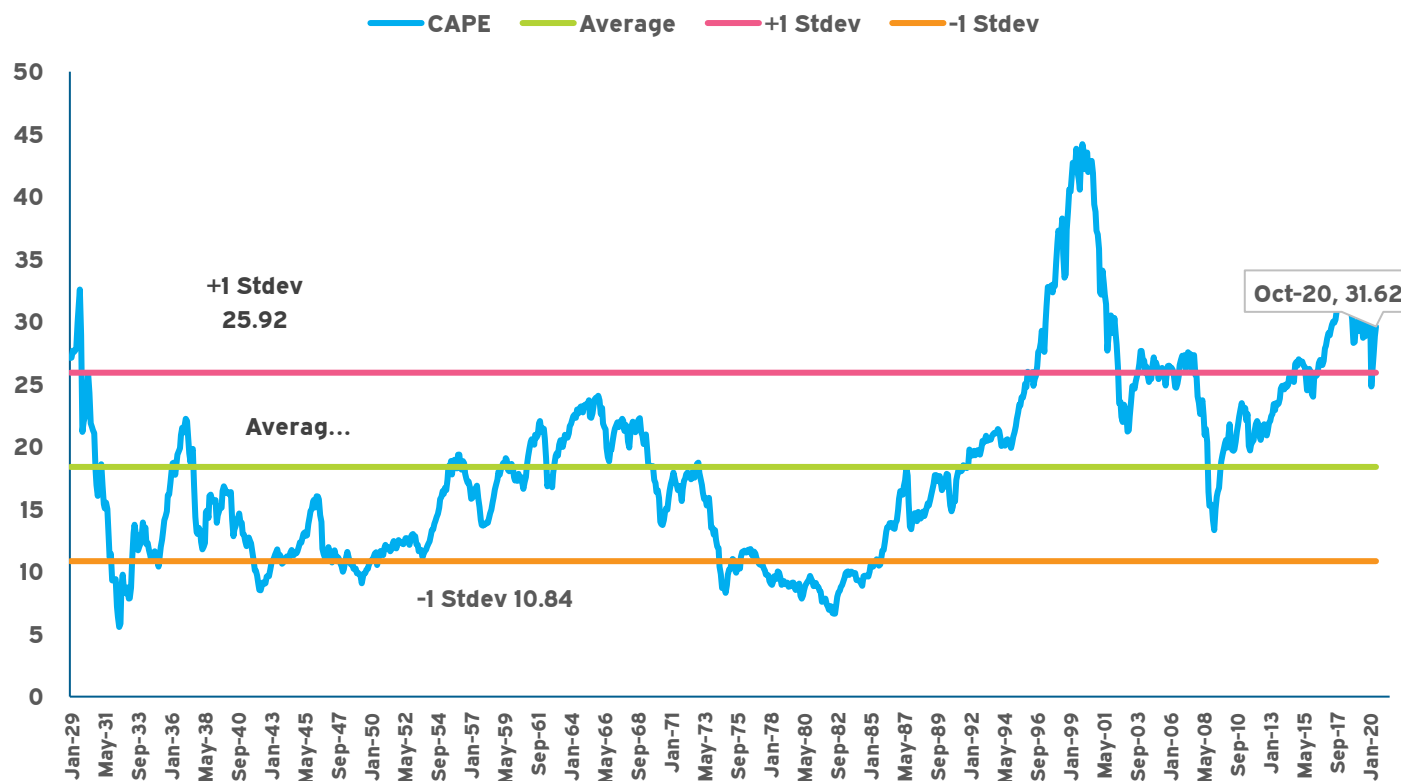
### US Equity Cyclically Adjusted P/E<sup>1</sup> (As of October 31, 2020)



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

<sup>1</sup> US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group.

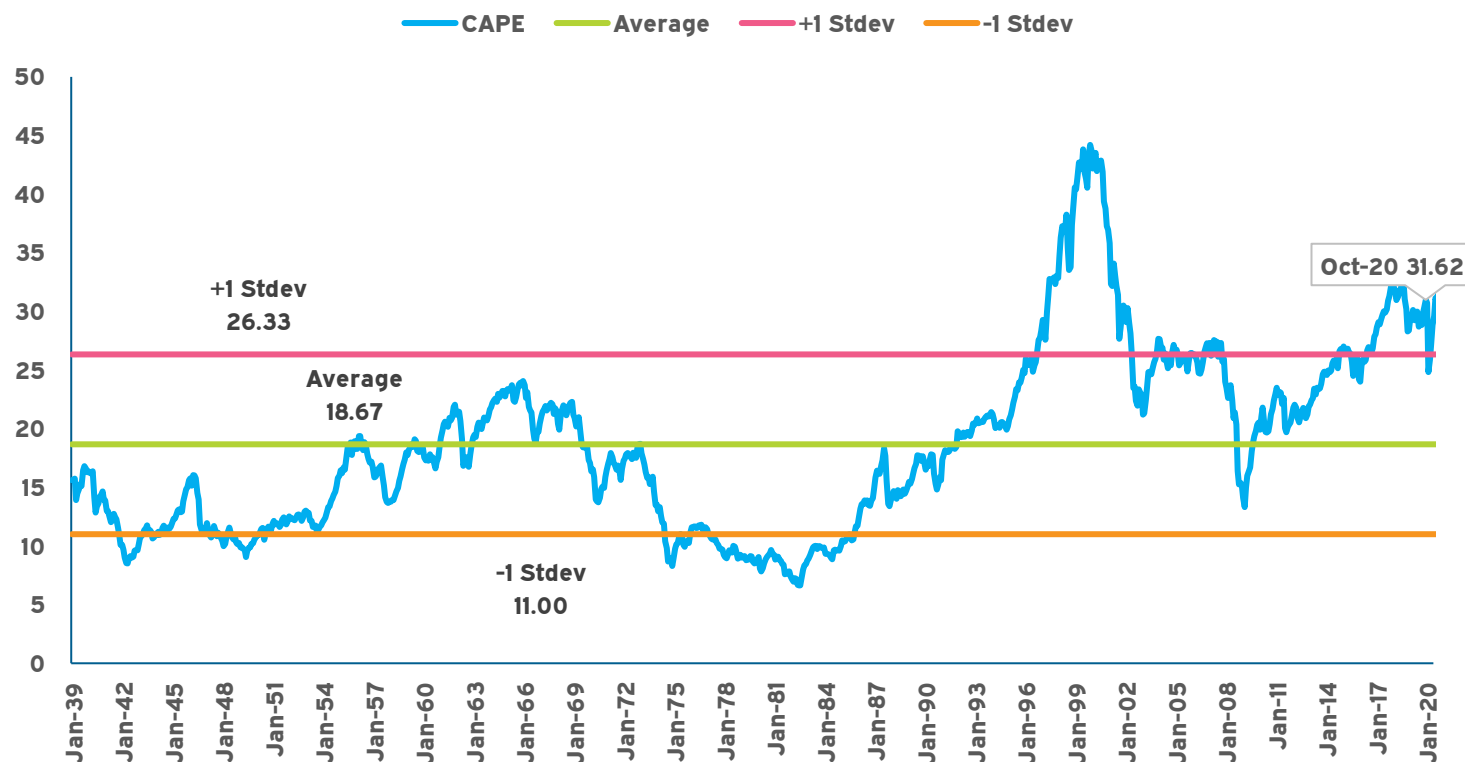
### US Equity Cyclically Adjusted P/E<sup>1</sup> Since the Great Depression (As of October 31, 2020)



- Moving up the starting date to the Great Depression does not meaningfully alter the average or standard deviation of the data.

<sup>1</sup> US Equity Cyclically Adjusted P/E on S&P 500 Index – Source: Robert Shiller, Yale University and Meketa Investment Group.

### US Equity Cyclically Adjusted P/E<sup>1</sup> Since the End of World War II (As of October 31, 2020)



- Moving up the starting date to the end of WWII does not meaningfully alter the average or standard deviation of the data.

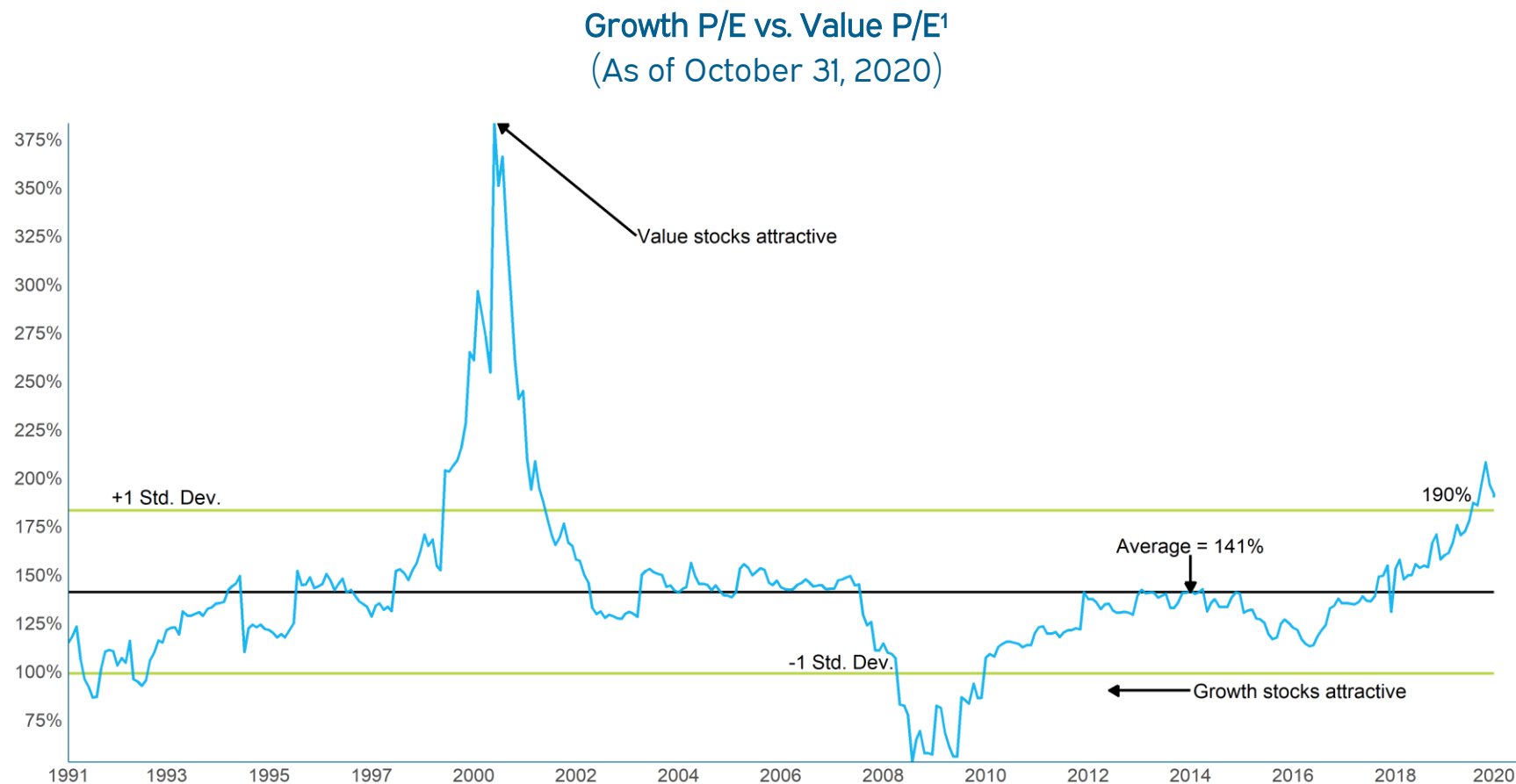
<sup>1</sup> US Equity Cyclically Adjusted P/E on S&P 500 Index – Source: Robert Shiller, Yale University and Meketa Investment Group.

### Small Cap P/E vs. Large Cap P/E<sup>1</sup> (As of October 31, 2020)



- This chart compares the relative attractiveness of small cap US equities vs. large cap US equities on a valuation basis. A higher (lower) figure indicates that large cap (small cap) is more attractive.

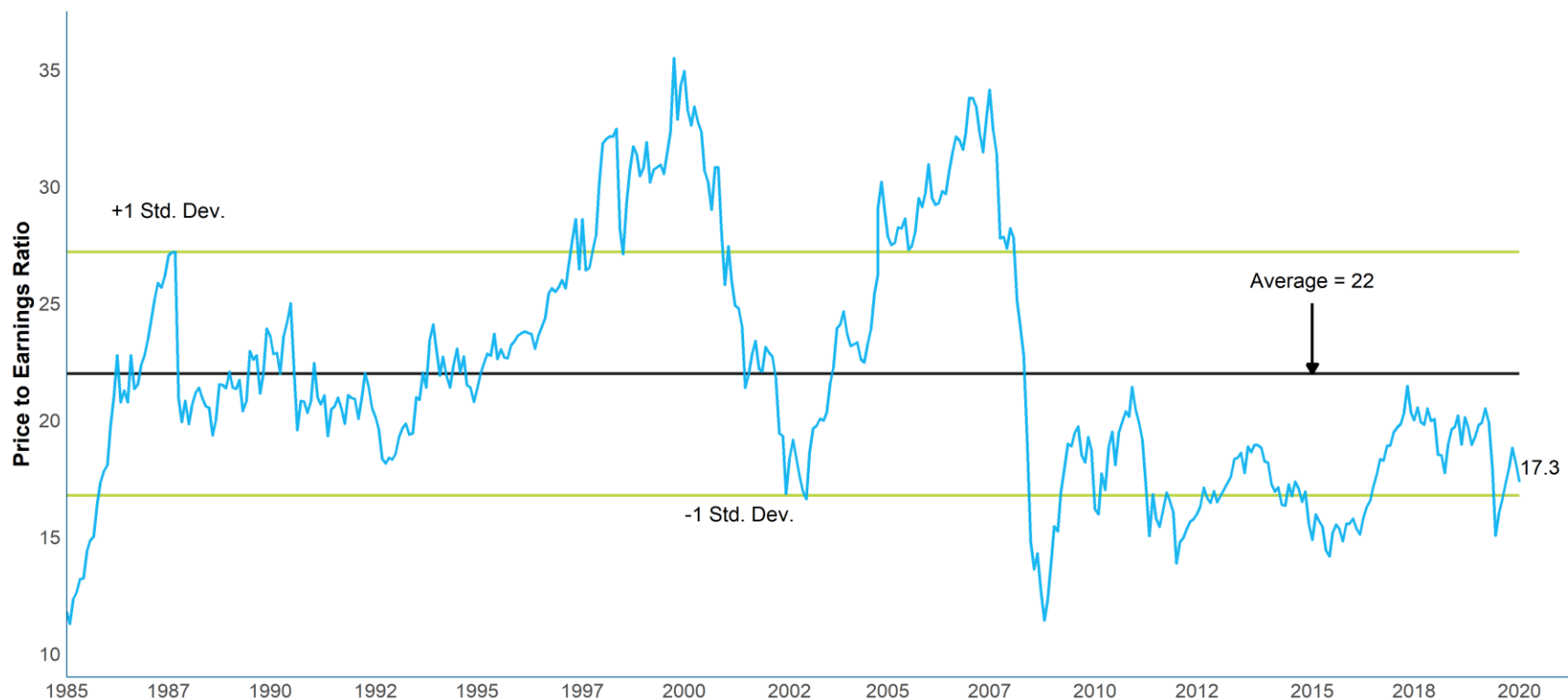
<sup>1</sup> Small Cap P/E (Russell 2000 Index) vs. Large Cap P/E (Russell 1000 Index) - Source: Russell Investments. Earnings figures represent 12-month "as reported" earnings.



- This chart compares the relative attractiveness of US growth equities vs. US value equities on a valuation basis. A higher (lower) figure indicates that value (growth) is more attractive.

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

### Developed International Equity Cyclically Adjusted P/E<sup>1</sup> (As of October 31, 2020)

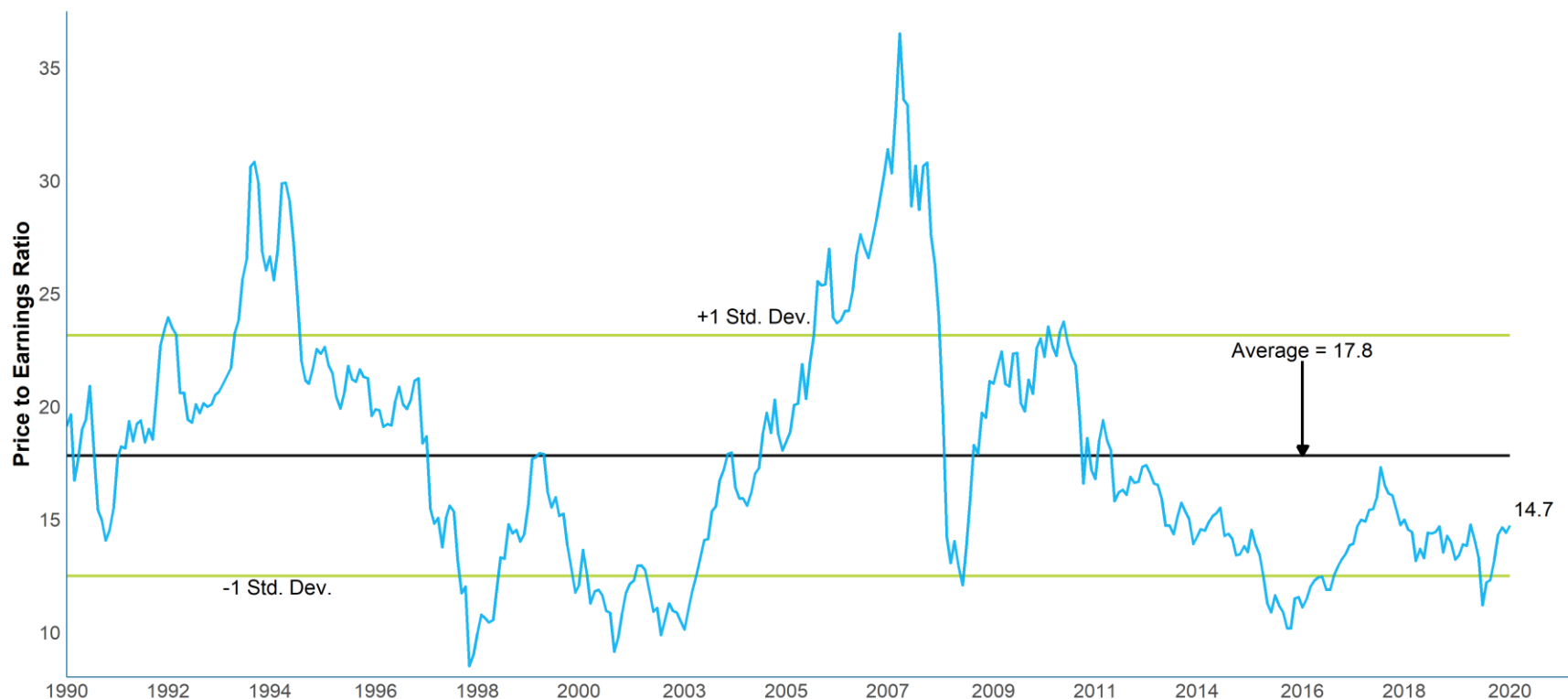


- This chart details one valuation metric for developed international equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

<sup>1</sup> Developed International Equity (MSCI EAFE ex Japan Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years.



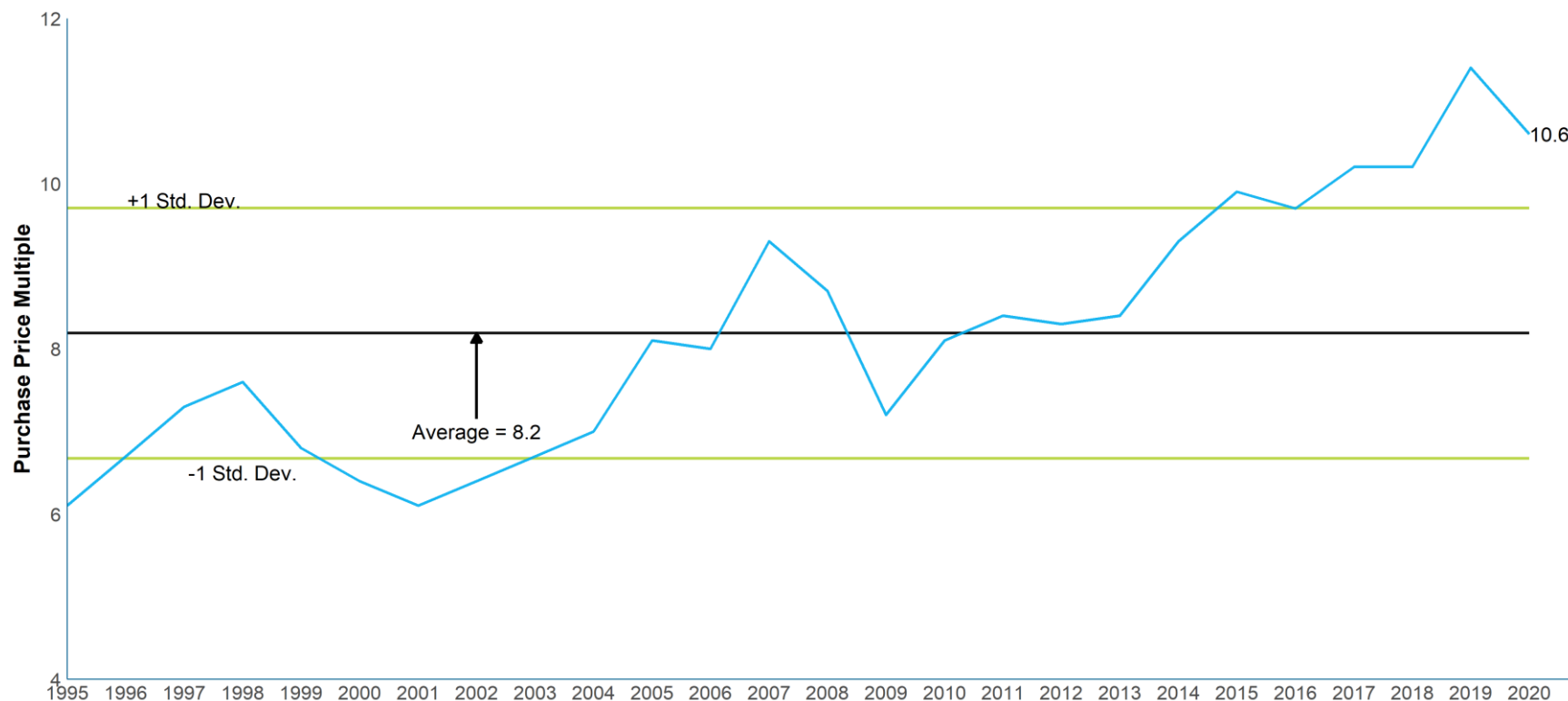
### Emerging Market Equity Cyclically Adjusted P/E<sup>1</sup> (As of October 31, 2020)



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

<sup>1</sup> Emerging Market Equity (MSCI Emerging Markets Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years.

### Private Equity Multiples<sup>1</sup> (As of February 29, 2020)<sup>2</sup>

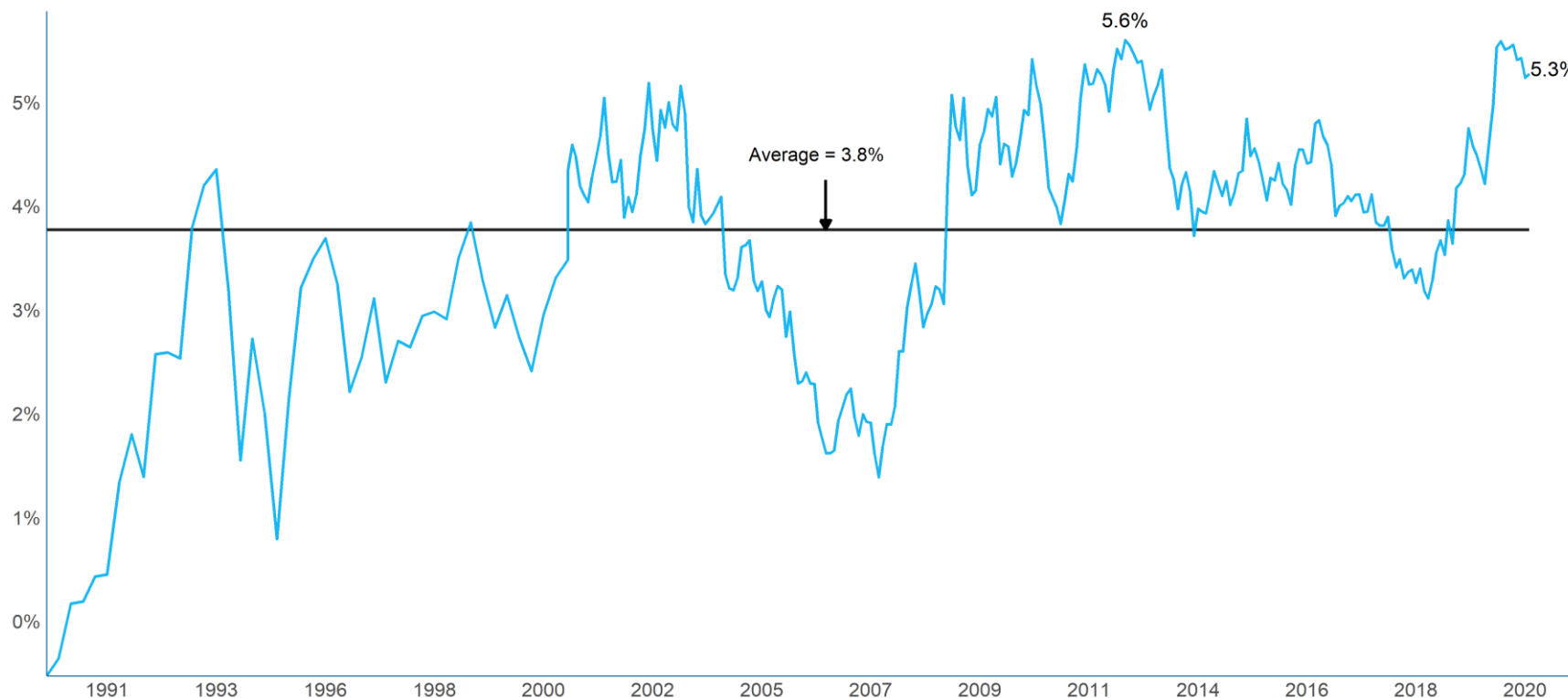


- This chart details one valuation metric for the private equity market. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

<sup>1</sup> Private Equity Multiples – Source: S&P LCD Average EBITDA Multiples Paid in All LBOs.

<sup>2</sup> Annual figures, except for 2020 (YTD).

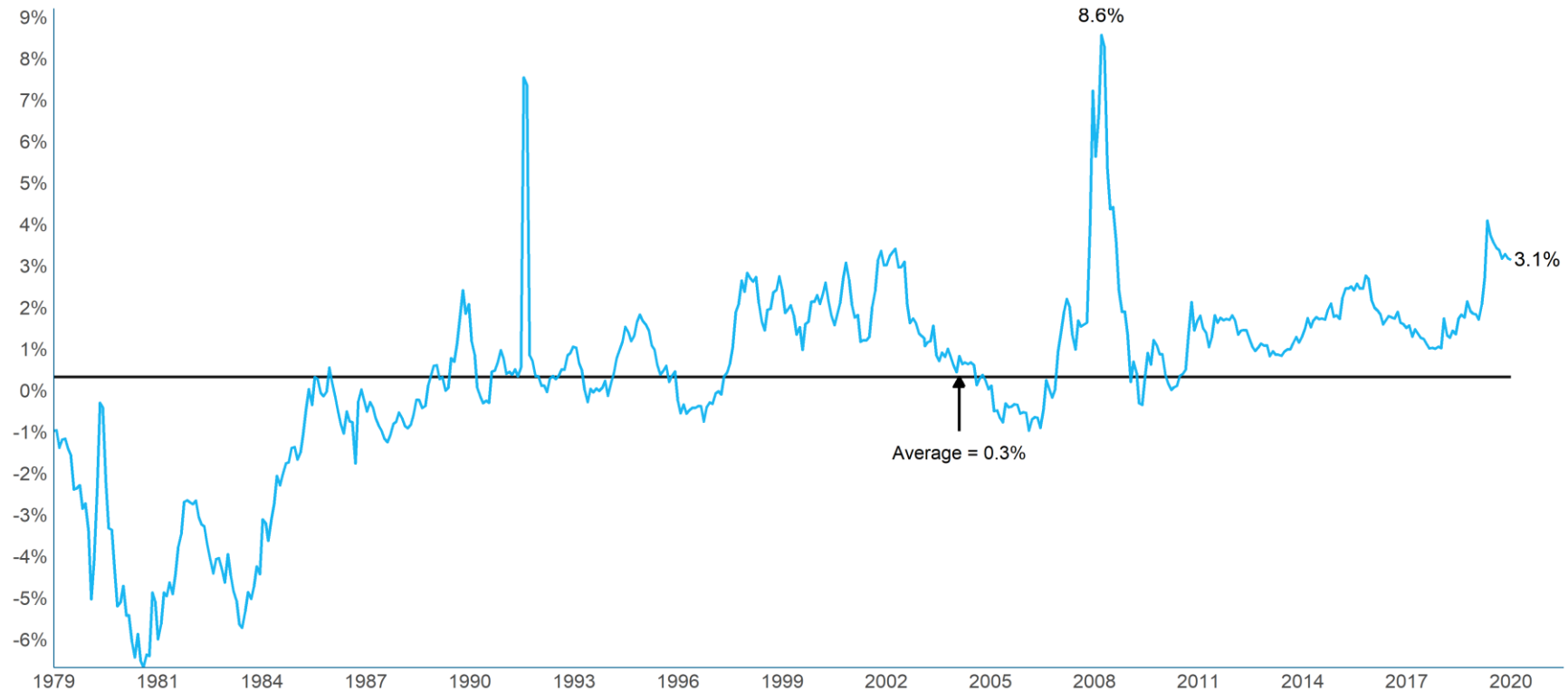
### Core Real Estate Spread vs. Ten-Year Treasury<sup>1</sup> (As of October 31, 2020)



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

<sup>1</sup> Core Real Estate Spread vs. Ten-Year Treasury – Source: Real Capital Analytics, US Treasury, Bloomberg, and Meketa Investment Group. Core Real Estate is proxied by weighted sector transaction based indices from Real Capital Analytics and Meketa Investment Group.

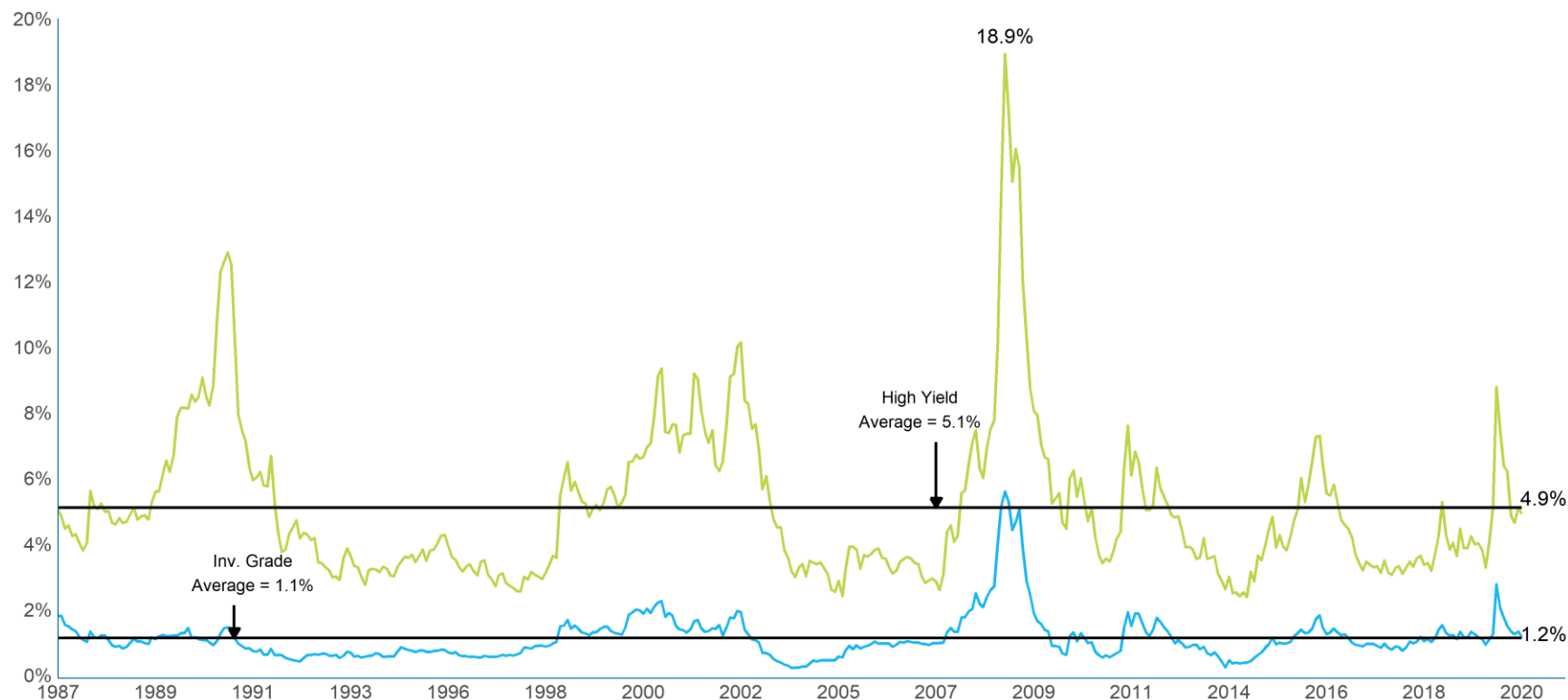
### REITs Dividend Yield Spread vs. Ten-Year Treasury<sup>1</sup> (As of October 31, 2020)



- This chart details one valuation metric for the public REITs market. A higher (lower) figure indicates cheaper (more expensive) valuation.

<sup>1</sup> REITs Dividend Yield Spread vs. Ten-Year Treasury – Source: NAREIT, US Treasury. REITs are proxied by the yield for the NAREIT Equity index.

### Credit Spreads<sup>1</sup> (As of October 31, 2020)



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

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

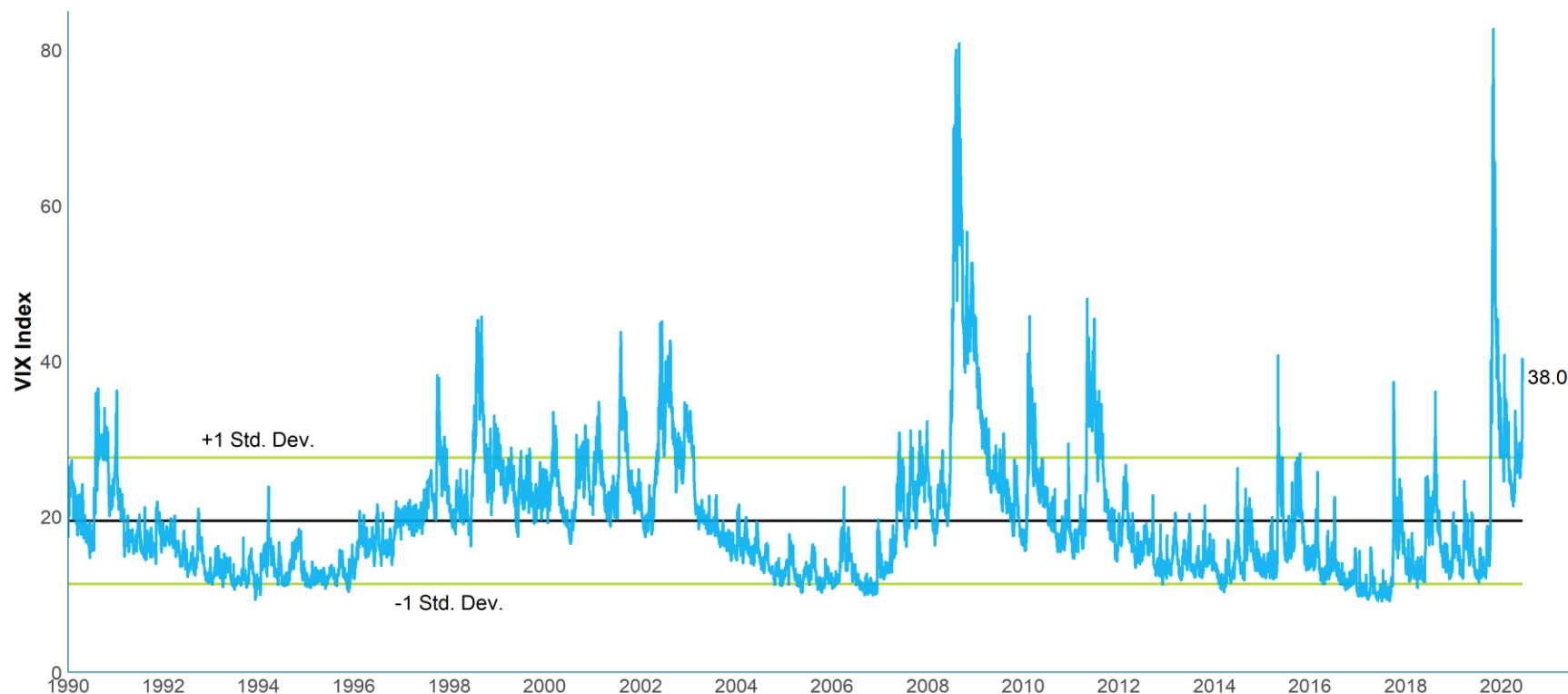
### Emerging Market Debt Spreads<sup>1</sup> (As of October 31, 2020)



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

<sup>1</sup> EM Spreads – Source: Bloomberg. Option Adjusted Spread (OAS) for the Bloomberg Barclays EM USD Aggregate Index.

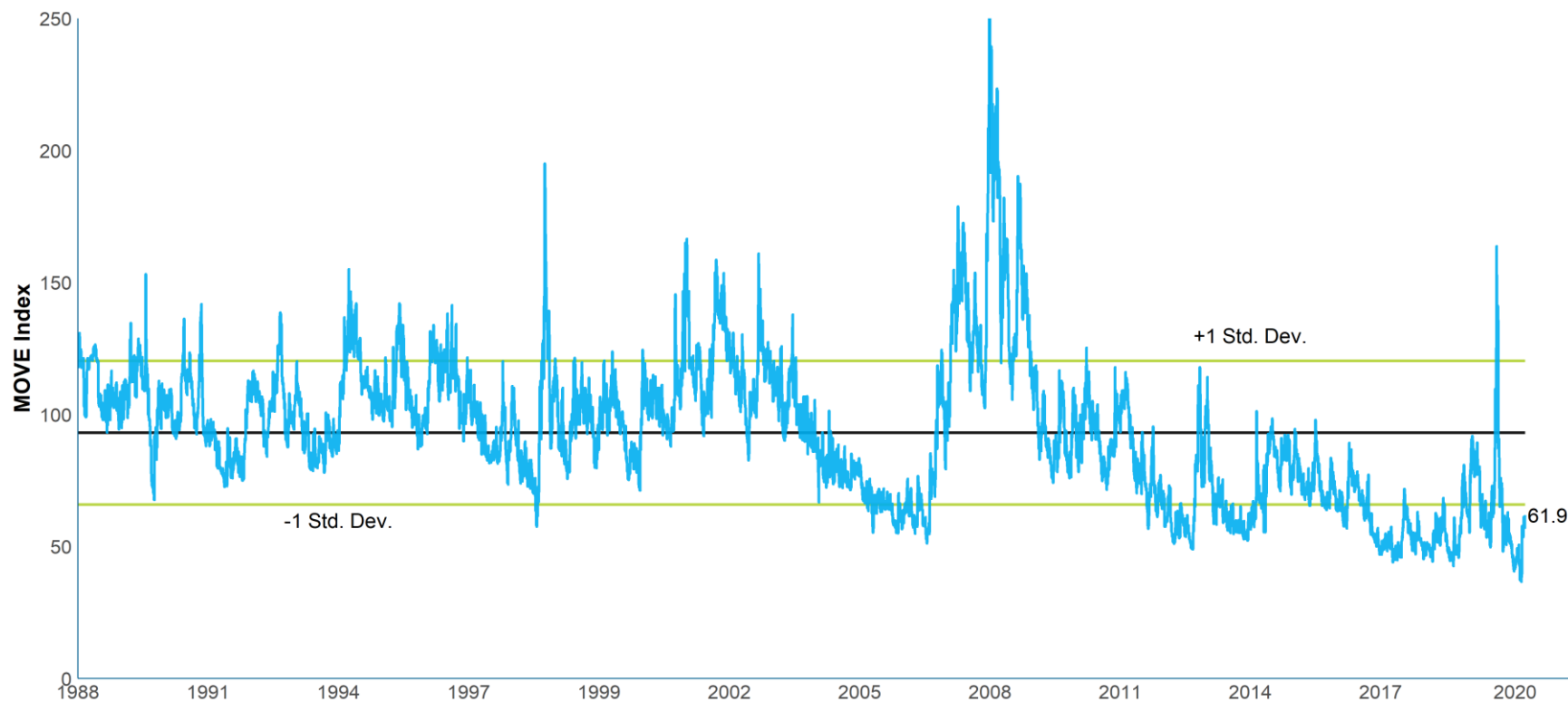
### Equity Volatility<sup>1</sup> (As of October 31, 2020)



- This chart details historical implied equity market volatility. This metric tends to increase during times of stress/fear and while declining during more benign periods.

<sup>1</sup> Equity Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by VIX Index, a Measure of implied option volatility for US equity markets.

### Fixed Income Volatility<sup>1</sup> (As of October 31, 2020)

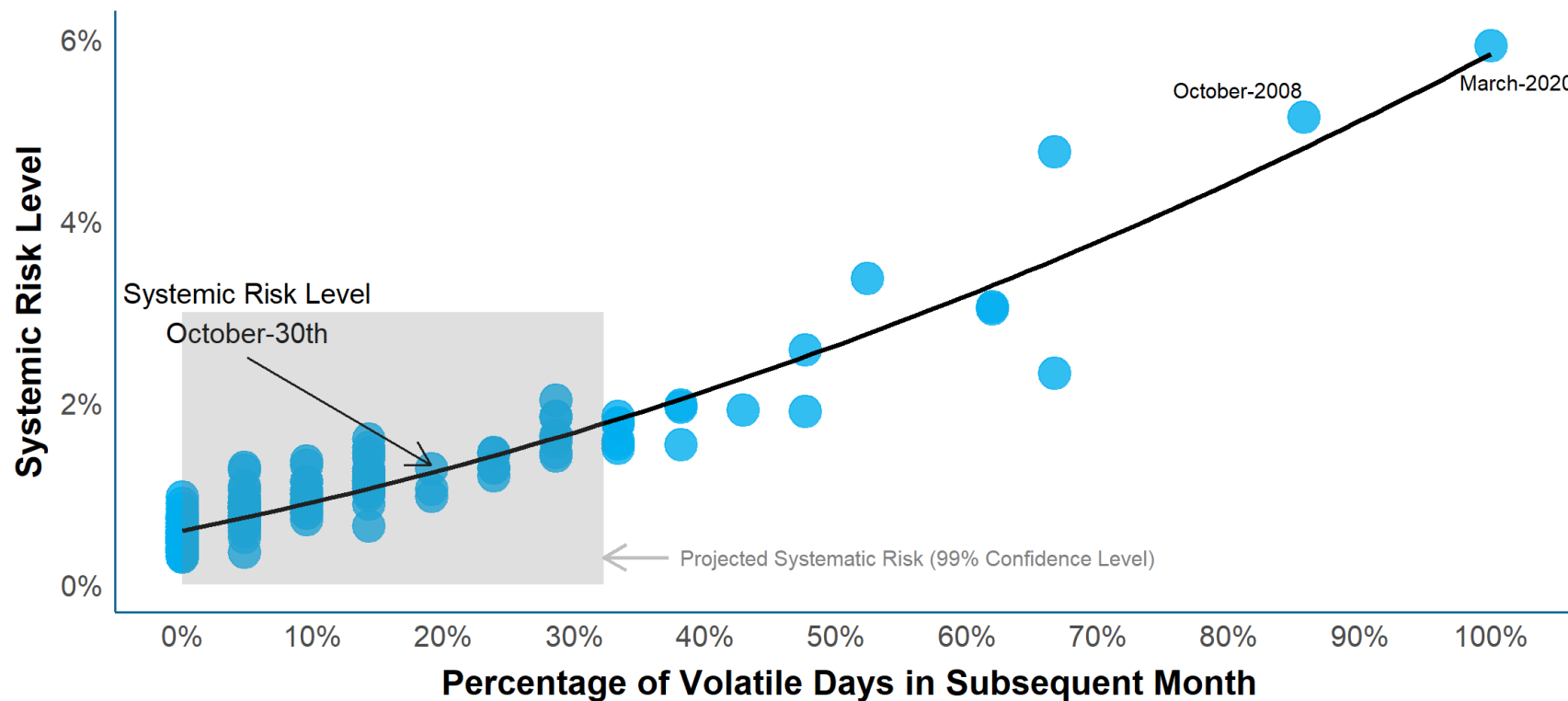


- This chart details historical implied fixed income market volatility. This metric tends to increase during times of stress/fear and while declining during more benign periods.

<sup>1</sup> Fixed Income Volatility – Source: Bloomberg, and Meketa Investment Group. Fixed Income Volatility proxied by MOVE Index, a Measure of implied option volatility for US Treasury markets.



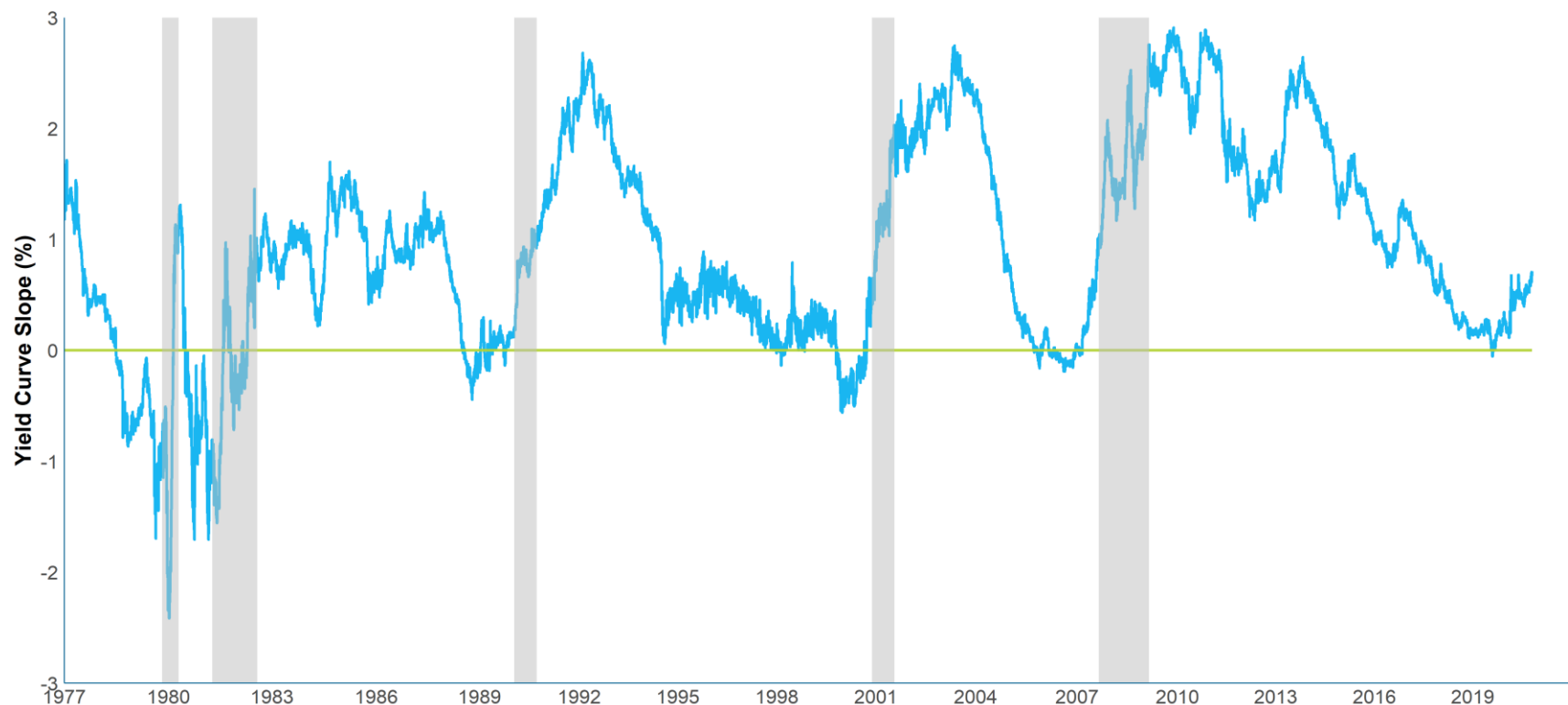
### Systemic Risk and Volatile Market Days<sup>1</sup> (As of October 31, 2020)



- Systemic Risk is a measure of 'System-wide' risk, which indicates herding type behavior.

<sup>1</sup> Source: Meketa Investment Group. Volatile days are defined as the top 10 percent of realized turbulence, which is a multivariate distance between asset returns.

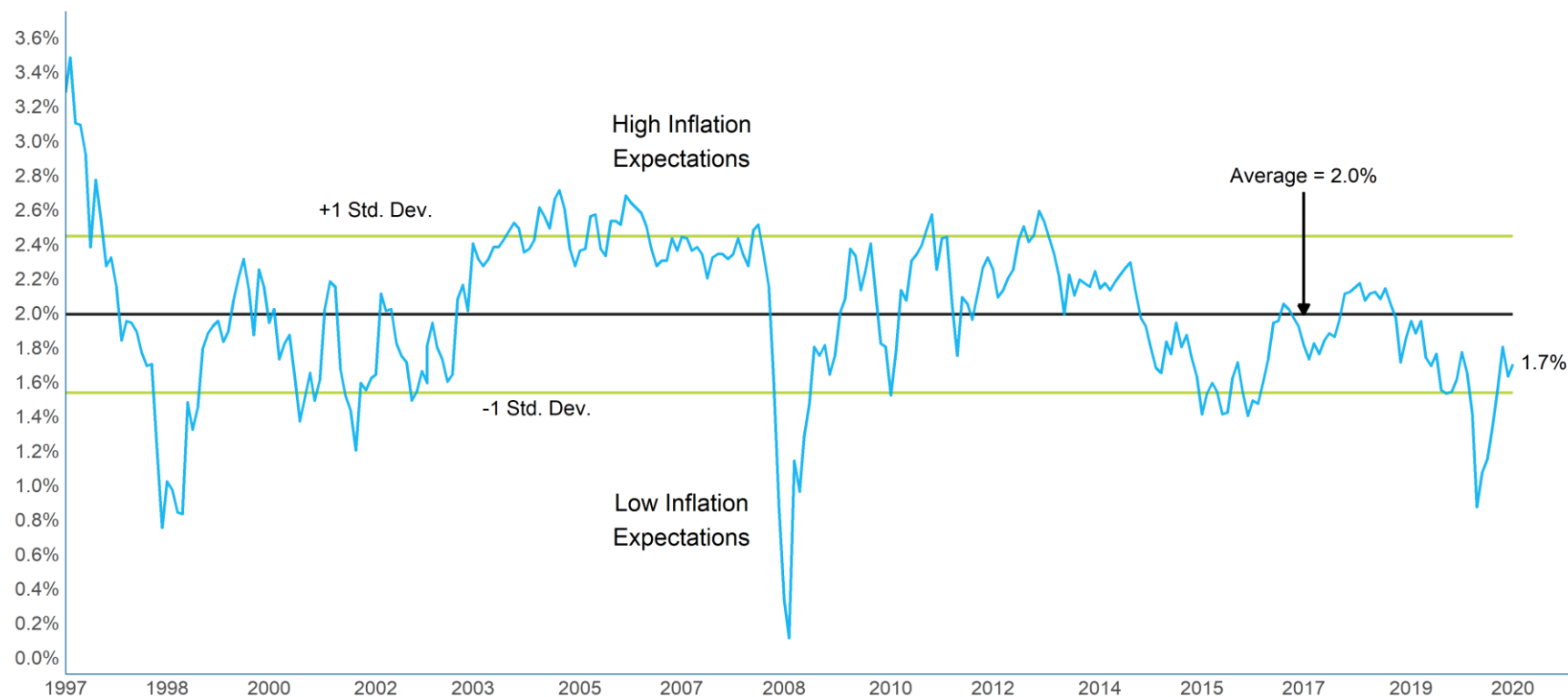
Yield Curve Slope (Ten Minus Two)<sup>1</sup>  
(As of October 31, 2020)



- This chart details the historical difference in yields between ten-year and two-year US Treasury bonds/notes. A higher (lower) figure indicates a steeper (flatter) yield curve slope.

<sup>1</sup> Yield Curve Slope (Ten Minus Two) – Source: Bloomberg, and Meketa Investment Group. Yield curve slope is calculated as the difference between the 10-Year US Treasury Yield and 2-Year US Treasury Yield.

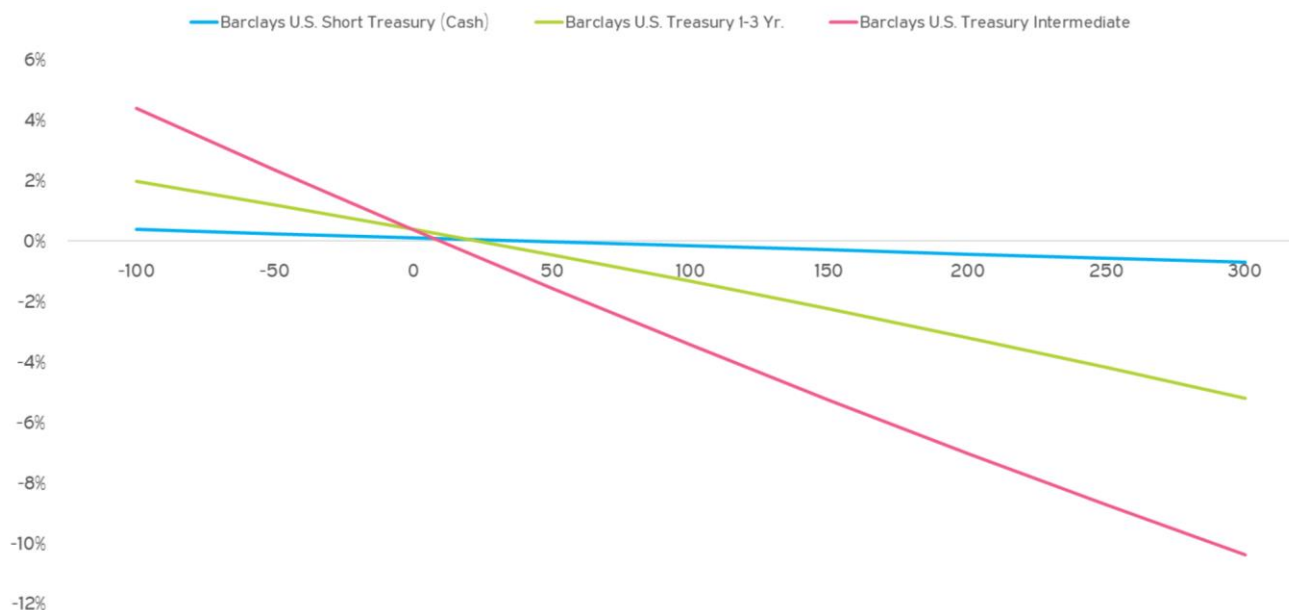
### Ten-Year Breakeven Inflation<sup>1</sup> (As of October 31, 2020)



- This chart details the difference between nominal and inflation-adjusted US Treasury bonds. A higher (lower) figure indicates higher (lower) inflation expectations.

<sup>1</sup> Ten-Year Breakeven Inflation – Source: US Treasury and Federal Reserve. Inflation is measured by the Consumer Price Index (CPI-U NSA).

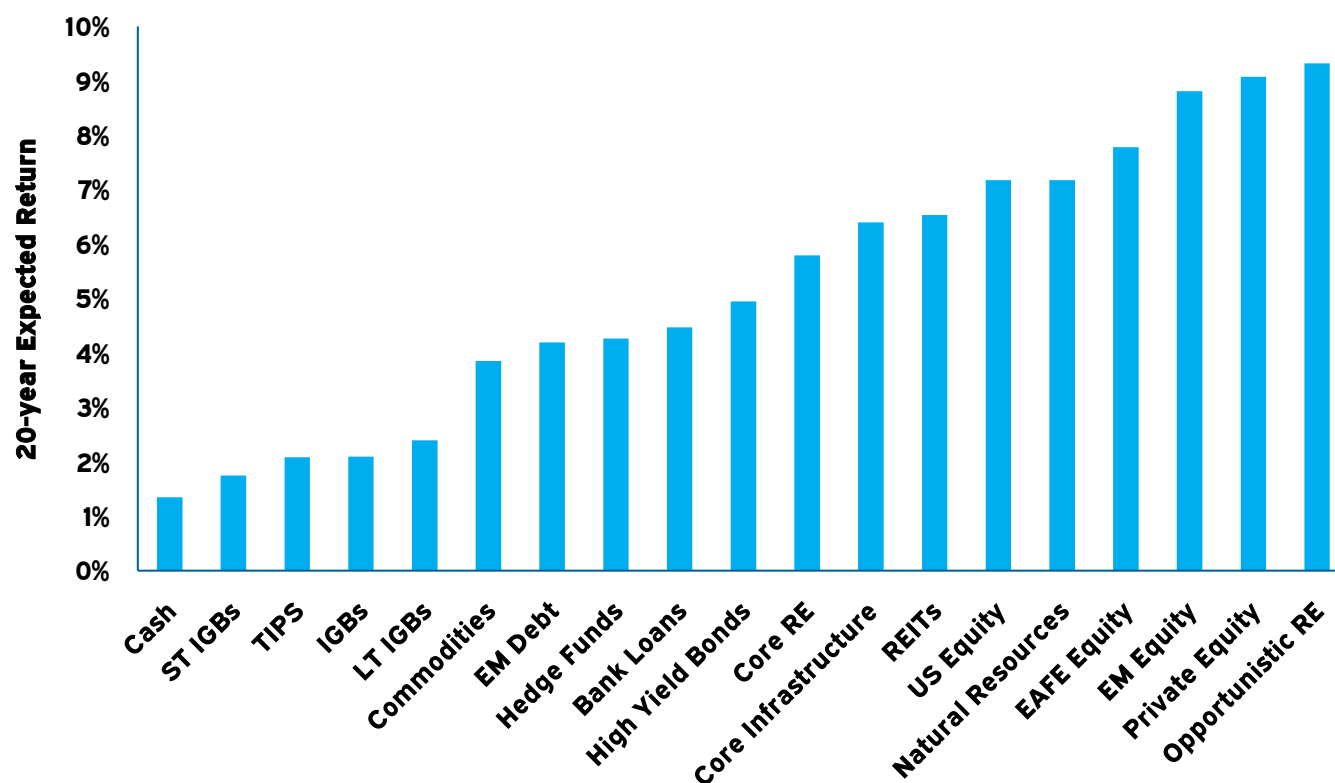
### Total Return Given Changes in Interest Rates (bps)<sup>1</sup> (As of October 31, 2020)



	Total Return for Given Changes in Interest Rates (bps)									Statistics	
	-100	-50	0	50	100	150	200	250	300	Duration	YTW
Barclays US Short Treasury (Cash)	0.4%	0.2%	0.1%	0.0%	-0.2%	-0.3%	-0.4%	-0.6%	-0.7%	0.27	0.09%
Barclays US Treasury 1-3 Yr.	1.9%	1.2%	0.4%	-0.5%	-1.4%	-2.3%	-3.2%	-4.2%	-5.2%	1.65	0.37%
Barclays US Treasury Intermediate	4.4%	2.3%	0.3%	-1.6%	-3.5%	-5.3%	-7.0%	-8.8%	-10.4%	3.92	0.34%
Barclays US Treasury Long	23.0%	11.7%	1.5%	-7.6%	-15.5%	-22.3%	-27.9%	-32.4%	-35.8%	19.24	1.50%

<sup>1</sup> Data represents the expected total return from a given change in interest rates (shown in basis points) over a 12-month period assuming a parallel shift in rates. Source: Bloomberg, and Meketa Investment Group.

### Long-Term Outlook – 20-Year Annualized Expected Returns<sup>1</sup>



- This chart details Meketa’s long-term forward-looking expectations for total returns across asset classes.

<sup>1</sup> Source: Meketa Investment Group’s 2020 Annual Asset Study.

## Appendix

Data Sources and Explanations<sup>1</sup>

- US Equity Cyclically Adjusted P/E on S&P 500 Index – Source: Robert Shiller and Yale University.
- Small Cap P/E (Russell 2000 Index) vs. Large Cap P/E (Russell 1000 Index) – Source: Russell Investments. Earnings figures represent 12-month “as reported” earnings.
- Growth P/E (Russell 3000 Growth Index) vs. Value (Russell 3000 Value Index) P/E – Source: Bloomberg, MSCI, and Meketa Investment Group. Earnings figures represent 12-month “as reported” earnings.
- Developed International Equity (MSCI EAFE ex Japan Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years.
- Emerging Market Equity (MSCI Emerging Markets Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years.
- Private Equity Multiples – Source: S&P LCD Average EBITDA Multiples Paid in All LBOs.
- Core Real Estate Spread vs. Ten-Year Treasury – Source: Real Capital Analytics, US Treasury, Bloomberg, and Meketa Investment Group. Core Real Estate is proxied by weighted sector transaction based indices from Real Capital Analytics and Meketa Investment Group.

<sup>1</sup> All Data as of October 31, 2020 unless otherwise noted.

## Appendix

### Data Sources and Explanations<sup>1</sup>

- REITs Dividend Yield Spread vs. Ten-Year Treasury – Source: NAREIT, US Treasury. REITs are proxied by the yield for the NAREIT Equity index.
- Credit Spreads – Source: Barclays Capital. High Yield is proxied by the Barclays High Yield index and Investment Grade Corporates are proxied by the Barclays US Corporate Investment Grade index.
  - Spread is calculated as the difference between the Yield to Worst of the respective index and the 10-Year Treasury Yield.
- EM Debt Spreads – Source: Bloomberg, and Meketa Investment Group. Option Adjusted Spread (OAS) for the Bloomberg Barclays EM USD Aggregate Index.
- Equity Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by VIX Index, a Measure of implied option volatility for US equity markets.
- Fixed Income Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by MOVE Index, a Measure of implied option volatility for US Treasury markets.
- Systemic Risk and Volatile Market Days – Source: Meketa Investment Group. Volatile days are defined as the top 10 percent of realized turbulence, which is a multivariate distance between asset returns.
- Systemic Risk, which measures risk across markets, is important because the more contagion of risk that exists between assets, the more likely it is that markets will experience volatile periods.

<sup>1</sup> All Data as of October 31, 2020 unless otherwise noted.

## Appendix

### Data Sources and Explanations<sup>1</sup>

- Yield Curve Slope (Ten Minus Two) – Source: Bloomberg, and Meketa Investment Group. Yield curve slope is calculated as the difference between the 10-Year US Treasury Yield and 2-Year US Treasury Yield.
- Ten-Year Breakeven Inflation – Source: US Treasury and Federal Reserve. Inflation is measured by the Consumer Price Index (CPI-U NSA).

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<sup>1</sup> All Data as of October 31, 2020 unless otherwise noted.



## Meketa Market Sentiment Indicator

### Explanation, Construction and Q&A

Meketa has created the MIG Market Sentiment Indicator (MIG-MSI) to complement our valuation-focused Risk Metrics. This measure of sentiment is meant to capture significant and persistent shifts in long-lived market trends of economic growth risk, either towards a risk-seeking trend or a risk-aversion trend.

### This appendix explores:

- What is the Meketa Market Sentiment Indicator?
- How do I read the indicator graph?
- How is the Meketa Market Sentiment Indicator constructed?
- What do changes in the indicator mean?

Meketa has created a market sentiment indicator for monthly publication (the MIG-MSI – see below) to complement Meketa's Risk Metrics.

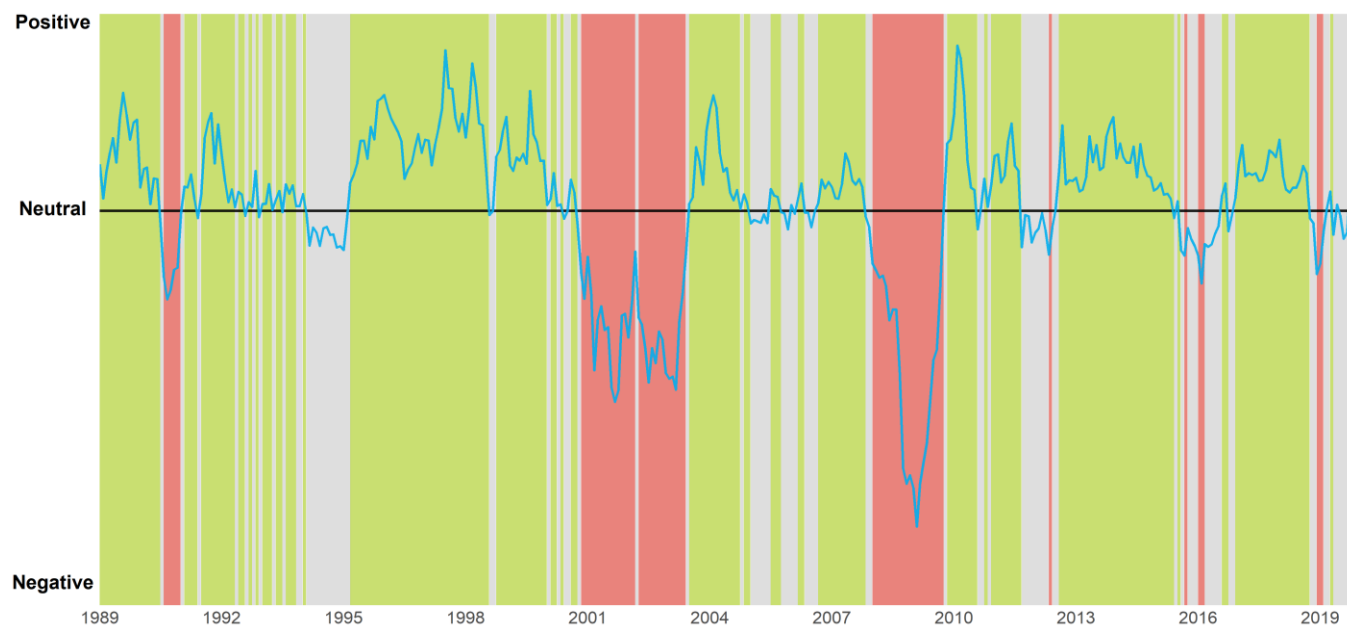
- Meketa's Risk Metrics, which rely significantly on standard market measures of relative valuation, often provide valid early signals of increasing long-term risk levels in the global investment markets. However, as is the case with numerous valuation measures, the Risk Metrics may convey such risk concerns long before a market corrections take place. The MIG-MSI helps to address this early-warning bias by measuring whether the markets are beginning to acknowledge key Risk Metrics trends, and / or indicating non-valuation based concerns. Once the MIG-MSI indicates that the market sentiment has shifted, it is our belief that investors should consider significant action, particularly if confirmed by the Risk Metrics. Importantly, Meketa believes the Risk Metrics and MIG-MSI should always be used in conjunction with one another and never in isolation. The questions and answers below highlight and discuss the basic underpinnings of the Meketa MIG-MSI:

### What is the Meketa Market Sentiment Indicator (MIG-MSI)?

- The MIG-MSI is a measure meant to gauge the market's sentiment regarding economic growth risk. Growth risk cuts across most financial assets, and is the largest risk exposure that most portfolios bear. The MIG-MSI takes into account the momentum (trend over time, positive or negative) of the economic growth risk exposure of publicly traded stocks and bonds, as a signal of the future direction of growth risk returns; either positive (risk seeking market sentiment), or negative (risk averse market sentiment).

### How do I read the Meketa Market Sentiment Indicator graph?

- Simply put, the MIG-MSI is a color-coded indicator that signals the market's sentiment regarding economic growth risk. It is read left to right chronologically. A green indicator on the MIG-MSI indicates that the market's sentiment towards growth risk is positive. A gray indicator indicates that the market's sentiment towards growth risk is neutral or inconclusive. A red indicator indicates that the market's sentiment towards growth risk is negative. The black line on the graph is the level of the MIG-MSI. The degree of the signal above or below the neutral reading is an indication the signal's current strength.
- Momentum as we are defining it is the use of the past behavior of a series as a predictor of its future behavior.



### How is the Meketa Market Sentiment Indicator (MIG-MSI) Constructed?

- The MIG-MSI is constructed from two sub-elements representing investor sentiment in stocks and bonds:
  - Stock return momentum: Return momentum for the S&P 500 Equity Index (trailing 12-months)
  - Bond yield spread momentum: Momentum of bond yield spreads (excess of the measured bond yield over the identical duration US Treasury bond yield) for corporate bonds (trailing 12-months) for both investment grade bonds (75% weight) and high yield bonds (25% weight).
  - Both measures are converted to Z-scores and then combined to get an “apples to apples” comparison without the need of re-scaling.
- The black line reading on the graph is calculated as the average of the stock return momentum measure and the bonds spread momentum measure.<sup>1</sup> The color reading on the graph is determined as follows:
  - If both stock return momentum and bond spread momentum are positive = GREEN (positive)
  - If one of the momentum indicators is positive, and the other negative = GRAY (inconclusive)
  - If both stock return momentum and bond spread momentum are negative = RED (negative)

<sup>1</sup> Momentum as we are defining it is the use of the past behavior of a series as a predictor of its future behavior.

“Time Series Momentum” Moskowitz, Ooi, Pedersen, August 2010. <http://pages.stern.nyu.edu/~lpederse/papers/TimeSeriesMomentum.pdf>

### What does the Meketa Market Sentiment Indicator (MIG-MSI) mean? Why might it be useful?

- There is strong evidence that time series momentum is significant and persistent. In particular, across an extensive array of asset classes, the sign of the trailing 12-month return (positive or negative) is indicative of future returns (positive or negative) over the next 12-month period. The MIG-MSI is constructed to measure this momentum in stocks and corporate bond spreads. A reading of green or red is agreement of both the equity and bond measures, indicating that it is likely that this trend (positive or negative) will continue over the next 12 months. When the measures disagree, the indicator turns gray. A gray reading does not necessarily mean a new trend is occurring, as the indicator may move back to green, or into the red from there. The level of the reading (black line) and the number of months at the red or green reading, gives the user additional information on which to form an opinion, and potentially take action.

## **Global Macroeconomic Outlook September 2020**

### Global Economic Outlook

The lock-down of the global economy to slow the spread of the COVID-19 pandemic led the IMF to materially alter expectations for economic growth.

- The IMF now forecasts a 4.4% decline in global GDP in 2020, followed by a sharp 5.2% recovery in 2021.
- In advanced economies, GDP is projected to decline by 5.8% for 2020, and recover by 3.9% in 2021, as economies reopen and vaccine progress is potentially made. The US is expected to fare similarly, declining 4.3% in 2020 and recovering by 3.1% in 2021.
- The euro-area is forecasted to take the greatest hit to growth, declining 8.3% in 2020 and recovering 5.2% in 2021. Expectations for Spain and Italy, which implemented some of the most stringent and aggressive quarantine and containment measures, are heavily influencing weakness across the broader region; both economies are anticipated to decline by double digits this year. The Japanese economy is expected to decline by 5.3% in 2020, but only recover by 2.3% in 2021.
- Growth projections are also weak for emerging economies, although China is expected to post 1.9% growth for 2020, and significant 8.2% growth in 2021. The growth expectations are due primarily to the Chinese government's ability to quickly impose aggressive distancing measures, largely isolate and contain the virus, and then quickly move to re-open their economy.
- Inflation is projected to be low, consistent with decreased economic activity, with inflation in most developed economies expected below 1.0%; in some countries, notably Japan, deflation is expected.

	Real GDP (%) <sup>1</sup>			Inflation (%) <sup>1</sup>		
	IMF 2020 Forecast	IMF 2021 Forecast	Actual 10 Year Average	IMF 2020 Forecast	IMF 2021 Forecast	Actual 10 Year Average
World	-4.4	5.2	3.7	3.2	3.4	3.5
Advanced Economies	-5.8	3.9	2.0	0.8	1.6	1.5
US	-4.3	3.1	2.3	1.5	2.8	1.8
Euro Area	-8.3	5.2	1.4	0.4	0.9	1.3
Japan	-5.3	2.3	1.4	-0.1	0.3	1.4
Emerging Economies	-3.3	6.1	5.1	5.0	4.7	5.2
China	1.9	8.2	7.6	2.9	2.7	2.5

<sup>1</sup> Source: IMF. World Economic Outlook. As of October 2020 Update. "Actual 10 Year Average" represents data from 2010 to 2019.



### Global Economic Outlook (continued)

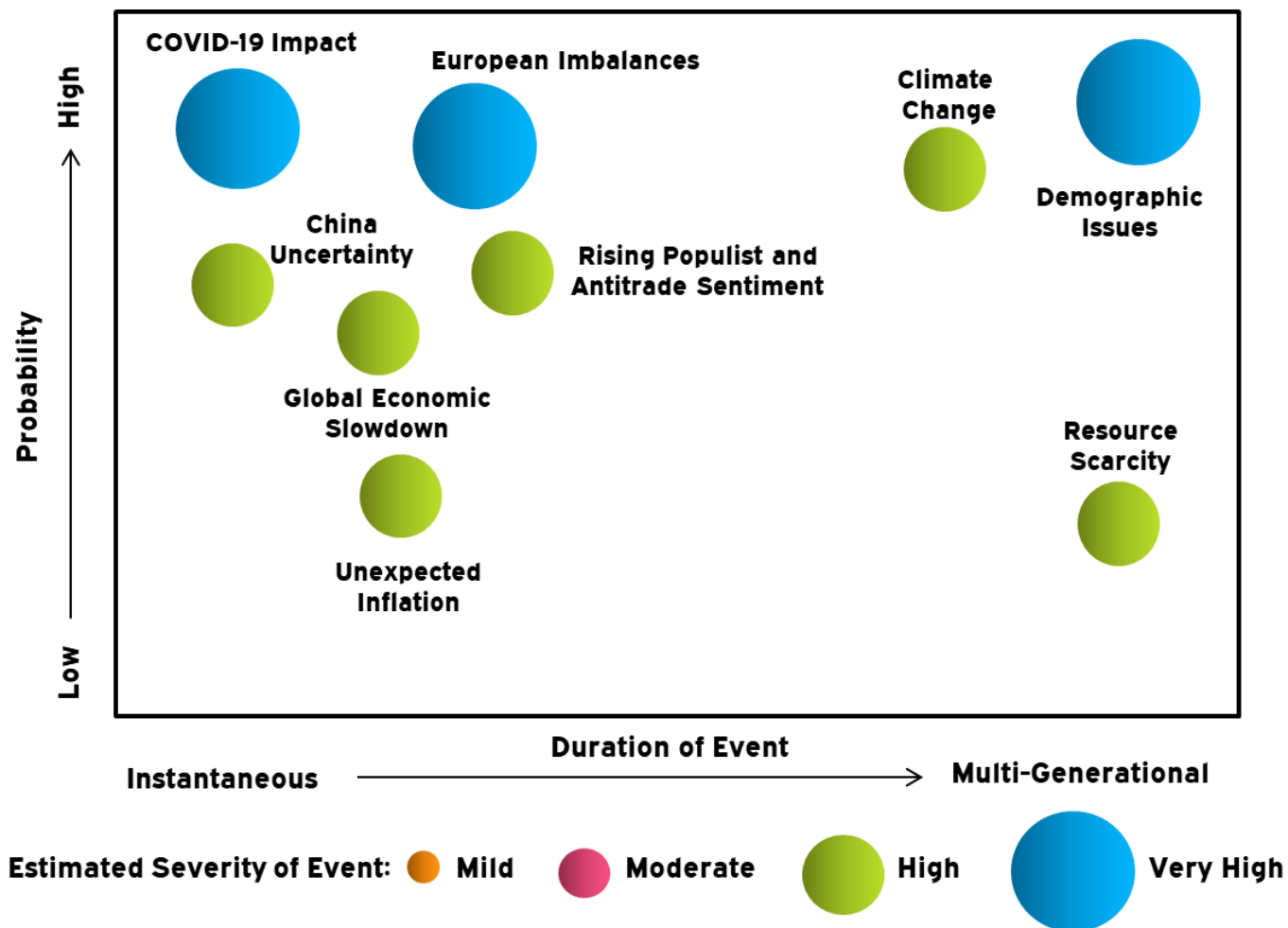
In an effort to stem the expected significant declines in economic activity, fiscal and monetary authorities across the globe responded with immediate and aggressive stimulus measures.

- US fiscal and monetary responses have been unprecedented. Fiscal authorities released over \$2.4 trillion in directed stimulus and are discussing the next round of support, while monetary authorities cut policy rates effectively to zero, deployed trillions in stimulus measures, backstop liquidity, and funding programs to mitigate the economic deterioration. Monetary policy makers are also actively considering additional measures, including yield curve targeting and maturity extension of QE purchases should conditions warrant.
- Japanese authorities took measures similar to those in the US, directing fiscal stimulus where needed most, including loans to small businesses and direct stimulus to consumers, while the central bank continued, and expanded, their quantitative easing purchase program. The Bank of Japan also expanded collateral and liquidity requirements, and initiated 0% loans to businesses directly hit by the virus. They continue to keep short-term interest rates in negative territory (-0.1%) and target a 0% rate on the ten-year government bond.
- Countries in the euro-area launched stimulus packages targeting areas hit hardest by virus-related restrictions. The European Central Bank also took directed measures, with targeted long-term refinancing operations for small and medium sized business, keeping rates at historic lows, and a 750 billion euro emergency purchase program, which was subsequently expanded to include lower-quality corporate debt. The majority of funds from the 750 billion euro package will be distributed to the countries and sectors most impacted by the virus, and will take the form of grants and loans.
- Fiscal and monetary policy in China was already accommodative prior to the onset of the COVID-19 crisis, but as the pandemic developed, policy makers took further steps to support the economy. Additional tax cuts, low-interest rate loans, and extra government payments to qualifying citizens represented the bulk of the fiscal response. On the monetary side, policy rates were cut, repo facilities were expanded, and reserve requirements were lowered further.

We acknowledge the wide breadth of new issues being presented by the pandemic, and among those we are considering are the following:

1) Economies opening too soon from virus-related restrictions, and ultimately needing to re-deploy lockdown policies; 2) Consumers permanently, or for an extended period of time, changing economic behavior; 3) Persistently high unemployment due to a significant number of companies not surviving the economic downturn, and; 4) Virus-related fears affecting the future of globalization.

### Macroeconomic Risk Matrix



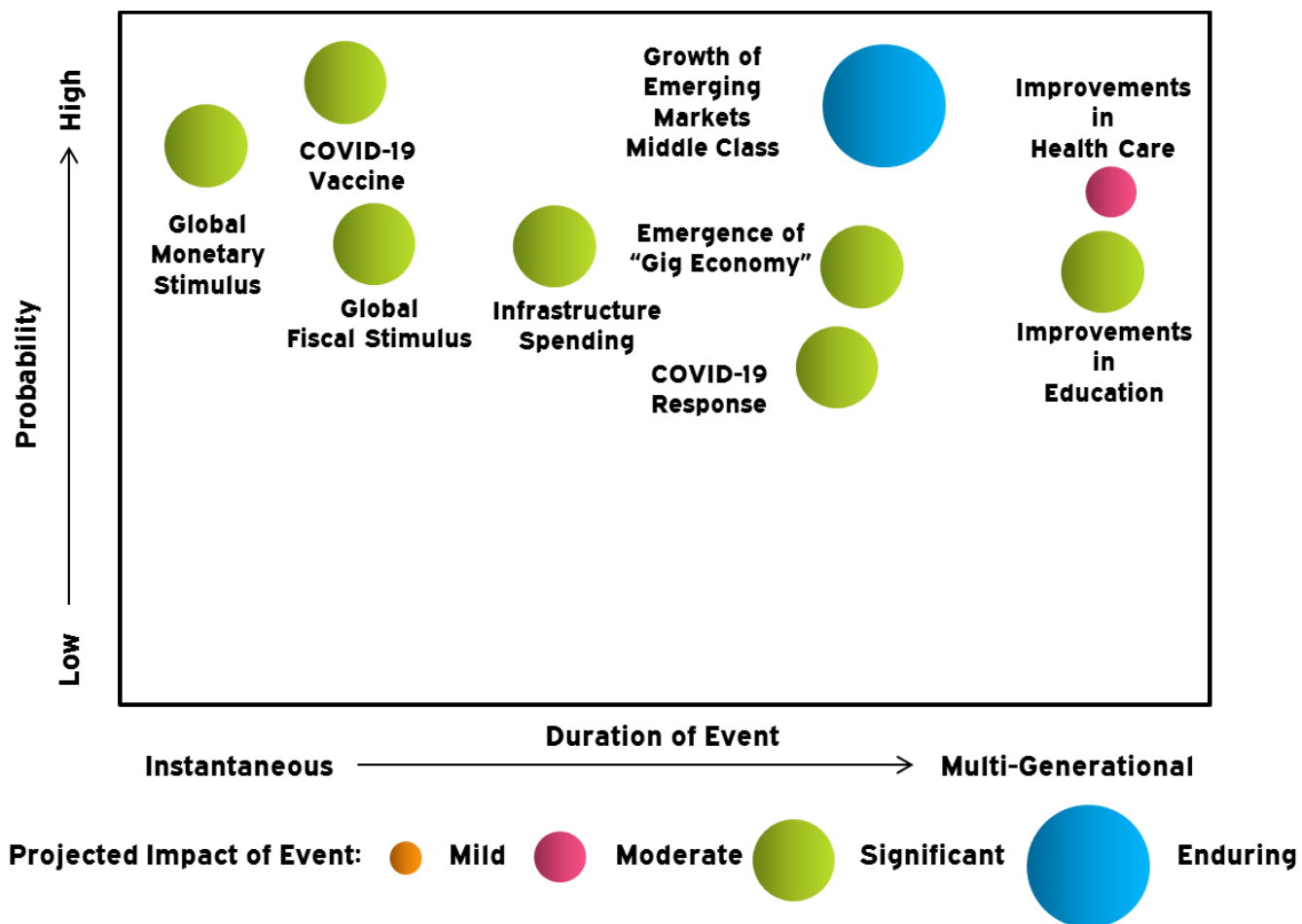
## Macroeconomic Risk Overviews

<b>China Uncertainty</b>	The process of transitioning from a growth model based on fixed asset investment by the government to a model of consumption-based growth will be difficult. Some progress was made on trade tensions with the US by the passing of a phase-one trade deal, but many issues still need to be resolved with uncertainties related to the next administration's approach toward China. As China tries to manage a smooth economic transition through fiscal and monetary policies, heightened financial risks exist. An increase in COVID-19 cases in China could further weigh on the economy, and others, going forward.
<b>Climate Change</b>	The earth's average temperature has been increasing since preindustrial times with the pace accelerating over the last 35 years. Increased levels of greenhouse gases like carbon dioxide have been the main cause of higher temperatures as they trap heat in the atmosphere. Warmer temperatures have led to the melting of glaciers and polar ice and increased precipitation in wet regions and reduced it in dry regions. The economic impacts of climate change are many, including declining crop yields, effects on livestock health, shifts in tourism, damage to infrastructure (rising sea levels and more extreme weather), and higher levels of disease and malnutrition.
<b>COVID-19 Impact &amp; Response Risks</b>	Developments with the COVID-19 pandemic are of principal and immediate concern. Clarity on when a vaccine might be available for public distribution will be the greatest factor impacting when the global economy may fully re-open and begin to meaningfully rebuild from the record job losses and the significant decline in global GDP. Relatedly, market participants are also discussing the potential risk across sovereign debt markets, particularly the US Treasury market, amidst the significant increase in debt issuance necessary to fund the stimulus measures. While appetite for safe-haven assets remains given all the uncertainty, as economies begin to recover and demand for these assets wane, selling pressures on the back of the record issuance could push yields higher than expected and put pressure on government debt servicing requirements. Asset price inflation could also be a risk, as the record easing from monetary policy prompts increased (and potentially excessive) demand for risk assets.
<b>Demographic Issues</b>	In Japan and Europe, birth rates have declined for decades, resulting in populations becoming older and smaller relative to the rest of the world. In China, their so-called "one child" policy helped to reduce population growth, but has created other issues for the government. As life expectancy increases, the prior policy creates complications with a low working base left to support a relatively large and aging population. These demographic trends will have negative long-term impacts on GDP growth and fiscal budgets, amplifying debt problems. In the US, an increase in savings rates by age cohorts that are traditionally biased to spending is also impacting respective economic growth rates.
<b>European Imbalances</b>	Structural issues persist in the Eurozone, related to the combination of a single currency and monetary authority with 17 separate fiscal authorities. Within the European Union, tensions exist, as highlighted by political changes in Italy and the prior UK referendum, related to policies on immigration, laws, and budgetary issues. The UK officially left the EU in January 2020, and has now entered an 11-month transition period where the two parties are attempting to negotiate a trade deal.

## Macroeconomic Risk Overviews (continued)

<b>Global Economic Slowdown</b>	COVID-19 restrictions have significantly weighed on economic activity globally and lead to many countries entering recessions. The question now is the degree of economic deterioration and the duration of the recovery once it takes hold. Many economies have started to reopen, but with the rise in cases in some areas there could be a return to restrictions, or a slowing of the reopening process, further delaying recovery. Expectations for a vaccine are high with some strong recent developments, but the fact remains that broad distribution of a vaccine is months away (assuming one is approved) making it too early to reasonably assess when this risk declines.
<b>Resource Scarcity</b>	The growing world population, urbanization, and a growing middle class, particularly in emerging economies, could all lead to a scarcity of resources, including food, water, land, energy, and minerals. As natural resource demand continues to grow, rising commodity prices may hurt the living standards of many and increase the risk of geopolitical conflicts.
<b>Rising Populist and Antitrade Sentiment</b>	Tariffs started by the US against China and some of its allies, along with elections/votes in Europe, UK, and Latin America highlight growing populist/antitrade sentiment. Stagnant wages, growing inequality, and the perception of jobs being lost abroad are key contributors to ongoing unrest. Reducing trade and imposing tariffs will likely lead to higher prices, reduced efficiencies, and heightened tensions between countries. As economies begin to recover from the COVID-19 crisis, the risk remains for certain areas to be blamed for the outbreak and the emergency measures taken disproportionately benefiting some, further increasing tensions.
<b>Unexpected Inflation</b>	Developed countries across the world are struggling to generate inflation despite record low (or negative) interest rates and monetary and fiscal stimulus. Most traditional measures of inflation remain near or below central bank targets. With expectations for a significant increase in inflation low, an unexpected rise could be disruptive, leading to higher interest rates and lower growth and valuations. Further, the inability of monetary authorities to meaningfully impact the direction of inflation could prove problematic should deflationary-forces take hold.

### Positive Macroeconomic Trends Matrix



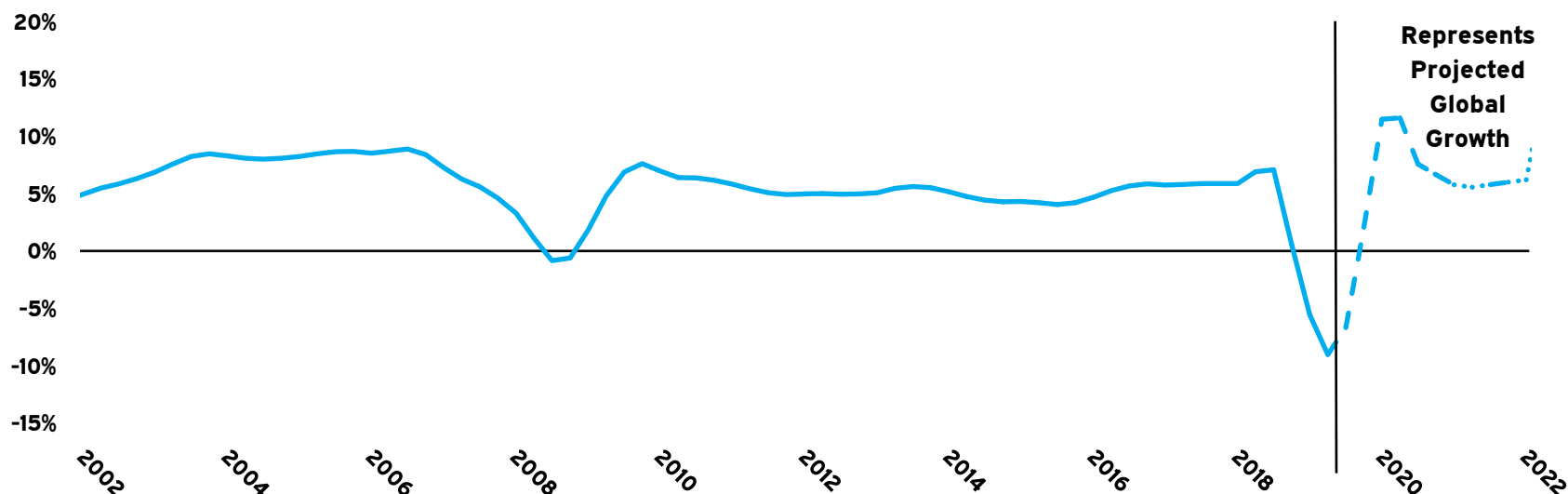
## Positive Macroeconomic Trends Overviews

<b>COVID-19 Response</b>	Many public and private companies are aggressively working towards a vaccine, rebuilding personal protective equipment supplies and capabilities, and changing business operating frameworks to better support the immediate societal changes due to the pandemic. The collective efforts of the global community, and the lessons learned from the various measures taken, will provide valuable guidance for addressing pandemic-related risks in the future.
<b>COVID-19 Vaccine</b>	Pharmaceutical companies globally are racing to develop a vaccine to fight COVID-19 with many in late stage trials. One vaccine developed by Pfizer, in collaboration with the German drug company BioNTech, appears particularly promising. In its trial it was over 90% effective in preventing the disease among participants who did not have the virus. Pfizer is planning to petition the FDA for an emergency authorization of the vaccine later in November once all the required data is collected. If all goes well, they anticipate producing enough doses by year-end to immunize 15 to 20 million people with production continuing into 2021. A highly effective treatment for COVID-19 would allow people to slowly return to previous activities driving economic growth, employment, and particularly benefiting industries like travel and tourism that have been hard hit by the pandemic.
<b>Emergence of "Gig Economy"</b>	The "gig economy" has taken a material hit due to the virus-related economic shut-down, but should ultimately rebound once the recovery is meaningfully underway. The new structure allows workers flexibility in the jobs they take, their schedules, and offers the ability to work outside of a traditional office. For companies, it has led to lower labor and overhead costs (more employees are working remotely), flexibility in hiring workers temporarily, and lower recruiting and training costs.
<b>Global Monetary Stimulus</b>	The record stimulus measures taken by global central banks have provided a meaningful support to financial markets. With policymakers openly stating their strategy to keep policy extremely accommodative until the COVID-19 induced crisis has passed with a measured degree of confidence, easy financial conditions should provide support for riskier and higher-yielding assets, and support broad economic growth.
<b>Global Fiscal Stimulus</b>	Consistent with the emergency measures taken by monetary authorities, fiscal policy turned notably accommodative amidst the COVID-19 crisis. A number of countries, including the world's largest, unleashed record levels of direct stimulus to support their respective economies. Measures have taken many forms, including direct cash disbursements to consumers, extension of unemployment benefits, and loans and grants to small- and mid-sized businesses. The recently announced EU stimulus measures, which represents a broadly positive development for the Union that has historically resisted reaching coordinated agreements, suggests a more positive and cordial relationship going forward which should help the overall economic picture for the area.
<b>Growth of Emerging Markets Middle Class</b>	In emerging economies, the middle class is projected to grow significantly over the next twenty years. This growing middle class should increase consumption globally, which in turn will drive GDP growth and create jobs.

**Positive Macroeconomic Trends Overviews (continued)**

<b>Improvements in Education/Health Care</b>	Literacy rates and average life spans have increased globally, particularly in emerging economies. Higher literacy rates will drive future growth, helping people learn new skills and improve existing skills. Longer lives increase incentives for long-term investments in education and training, resulting in a more productive work force and ultimately more growth.
<b>Infrastructure Spending</b>	The incoming Biden administration plans to make a significant investment in infrastructure (~\$2 trillion) with the goal of increasing economic growth, adding jobs, and reducing climate change. The plan focuses on improving roads, bridges, transportation (trains/auto industry), and broadband. It includes a focus on having public transportation and freight transitioning to running on clean energy or electricity, as well as encouraging increased production of energy efficient cars. Incentives would also be introduced to make buildings and homes more prepared to withstand harsh weather and be more energy efficient.

### Global Nominal Gross Domestic Product (GDP) Growth<sup>1</sup>

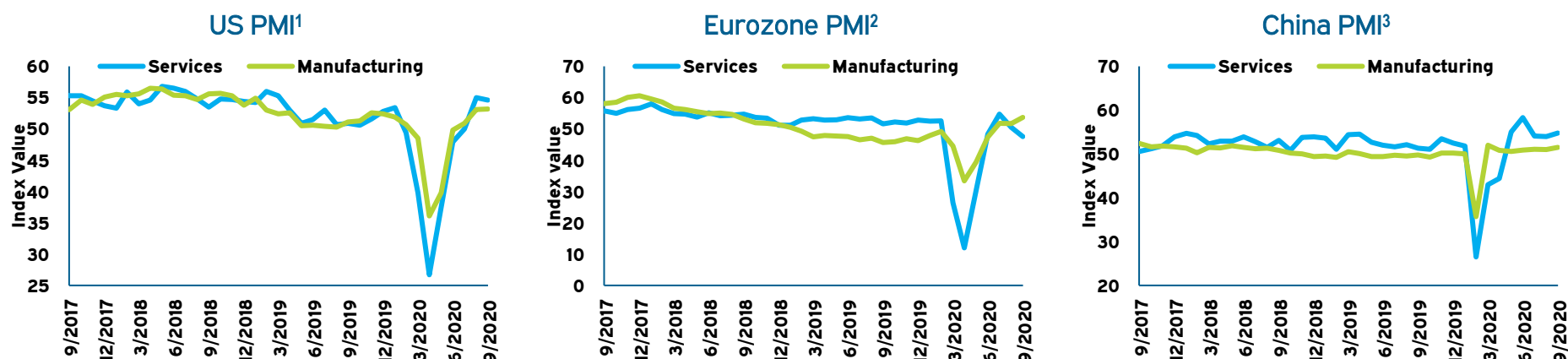


- Global GDP experienced a historic decline in the second quarter of 2020 due to the COVID-19 pandemic and the severe economic restrictions to stem the spread.
- The third quarter saw strong recoveries in many countries as economies reopened. Looking forward, forecasts are for a notable recovery over the next year as a vaccine is anticipated and economic growth is expected to return to longer-term averages.
- That said, the recent rise in infections could increase the risk of economies needing to reinstate economic restrictions, which would weigh on growth.

<sup>1</sup> Source: Oxford Economics (GDP, US\$ prices & PPP exchange rate, nominal (World), QoQ annualized). Updated September 2020.



### Global PMIs

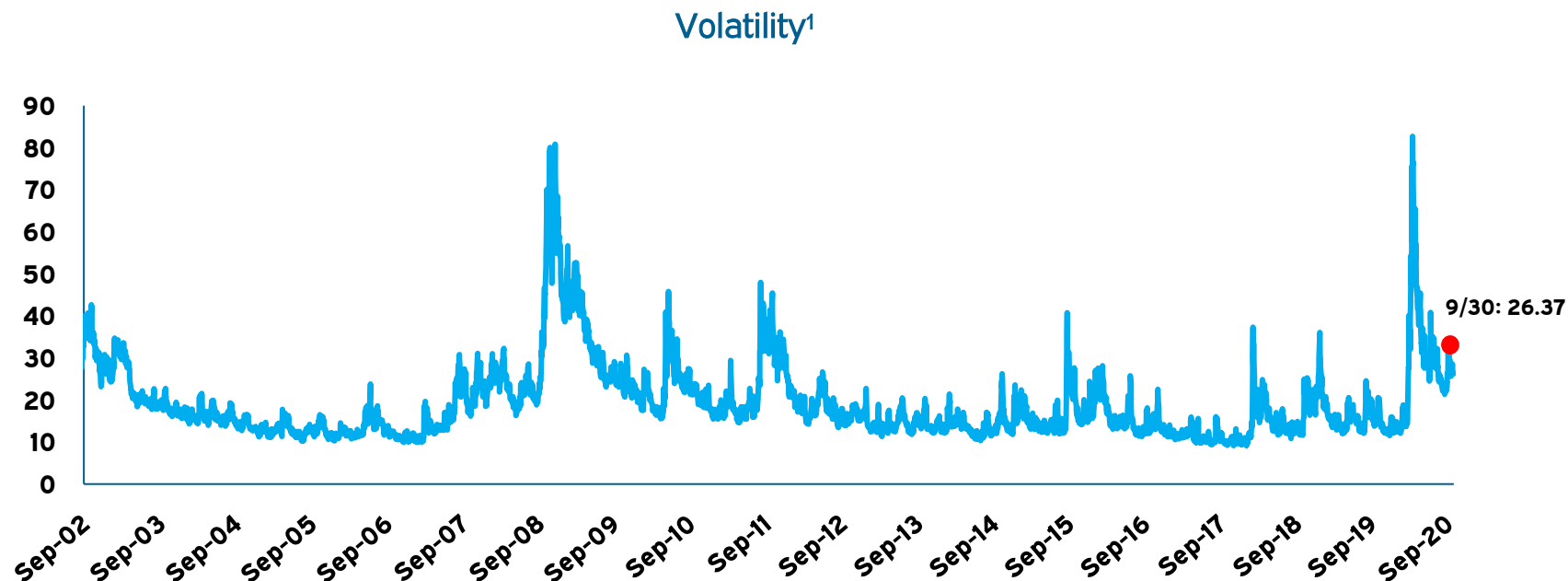


- Purchasing Managers Indices (PMI) based on surveys of private sector companies, initially collapsed across the world to record lows, as output, new orders, production, and employment were materially impacted by closed economies.
- Readings below 50 represent contractions across underlying components and act as a leading indicator of economic activity, including the future paths of GDP, employment, and industrial production.
- The services sector has been particularly hard hit by the stay-at-home restrictions in many places.
- As the Chinese economy reopened over the last few months, their PMIs, particularly in the service sector, recovered materially. In the US and Europe the indices have improved from their lows to above contraction levels in most cases.

<sup>1</sup> Source: Bloomberg. US Markit Services and Manufacturing PMI. Data is as of September 2020.

<sup>2</sup> Source: Bloomberg. Eurozone Markit Services and Manufacturing PMI. Data is as of September 2020.

<sup>3</sup> Source: Bloomberg. Caixin Services and Manufacturing PMI. Data is as of September 2020.



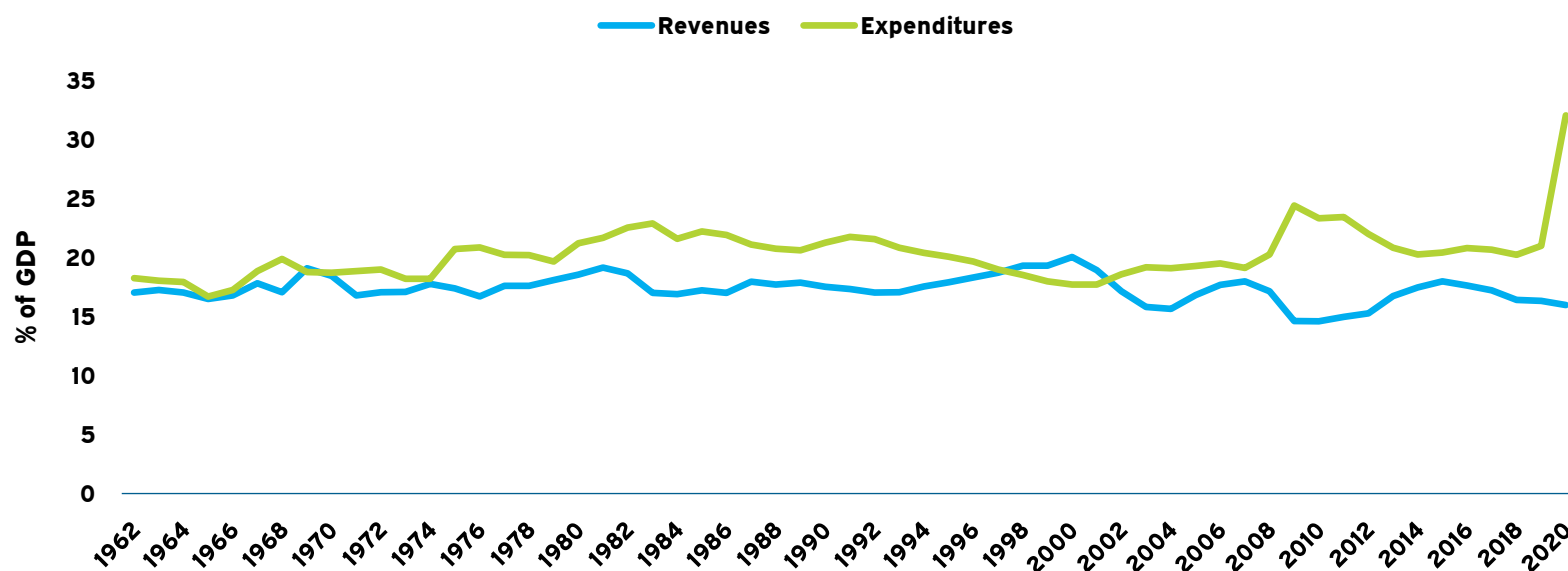
- With the fiscal and monetary support and corresponding improvement in investor risk sentiment, expectations of short-term volatility, as measured by the VIX index, declined relatively quickly from record levels.
- At the recent height, the VIX index reached 82.7, surpassing the pinnacle of volatility during the GFC, showing the magnitude of the crisis, and of investor fear.
- We saw a recent spike in volatility, given stalled fiscal stimulus in the US, the impending election, and rising COVID-19 cases.
- Going forward, there remains the risk of additional spikes in volatility (as seen in the continued elevated index level), as investors continue to process the impacts of COVID-19 and the effectiveness of the policy response.

<sup>1</sup> Bloomberg. Represents daily VIX data and is as of September 30, 2020.

## Policy Responses

	Fiscal	Monetary
United States	<p>\$50 billion to states for virus-related support, interest waived on student loans, flexibility on tax payments and filings, expanded COVID-19 testing, paid sick leave for hourly workers, \$2 trillion package for individuals, businesses, and state/local governments. Additional \$484 billion package to replenish small business loans, provide funding to hospitals, and increase testing.</p>	<p>Cut policy rates to zero, deployed outcome-based forward guidance suggesting aggressively accommodative policy for the foreseeable future, unlimited QE4, offering trillions in repo market funding, restarted and extended CPFF, PDCF, MMMF programs to support lending and financing markets, expanded US dollar swap lines with foreign central banks, announced IG corporate debt buying program with subsequent amendment for certain HY securities, Main Street Lending program, Muni liquidity facility, repo facility with foreign central banks, easing of some financial regulations for lenders, and changed inflation mandate to allow for periods of inflation beyond policy target.</p>
Euro Area	<p>European Union: Shared 750 billion euro stimulus package.  German: 220 billion euro stimulus.  France: 57 billion euro stimulus.  Italy: 75 billion euro stimulus.  Spain: 200 billion euro and 700 million euro loan and aid package, respectively.</p>	<p>Targeted longer-term refinancing operations aimed at small and medium sized businesses, under more favorable pricing, and announced the 750 billion euro Pandemic Emergency Purchase Program, and then expanded the purchases to include lower-quality corporate debt.</p>
Japan	<p>Hundreds of trillions in yen stimulus for citizens and businesses, including low interest loans, deferrals on taxes, and direct cash handouts.</p>	<p>Initially increased QE purchases (ETFs, corporate bonds, and CP) and then expanded to unlimited purchases and doubling of corporate debt and commercial paper, expanded collateral and liquidity requirements, and 0% interest loans to businesses hurt by virus.</p>
China	<p>Tax cuts, low-interest business loans, extra payments to gov't benefit recipients.</p>	<p>Expanded repo facility, policy rate cuts, lowered reserve requirements, loan-purchase scheme.</p>
Canada	<p>\$7.1 billion in loans to businesses to help with virus damage, C\$381 billion stimulus.</p>	<p>Cut policy rates, expanded bond-buying and repos, lowered bank reserve requirements.</p>
UK (BOE)	<p>190 billion pound stimulus, Tax cut for retailers, small business cash grants, benefits for those infected with virus, expanded access to gov't benefits for self and un-employed.</p>	<p>Lowered policy rates and capital requirements for UK banks, restarts QE program and subsequently increased the purchase amounts.</p>
Australia	<p>\$11.4 billion, subsidies for impacted industries like tourism, one-time payment to gov't benefit recipients.</p>	<p>Policy rate cut, started QE.</p>

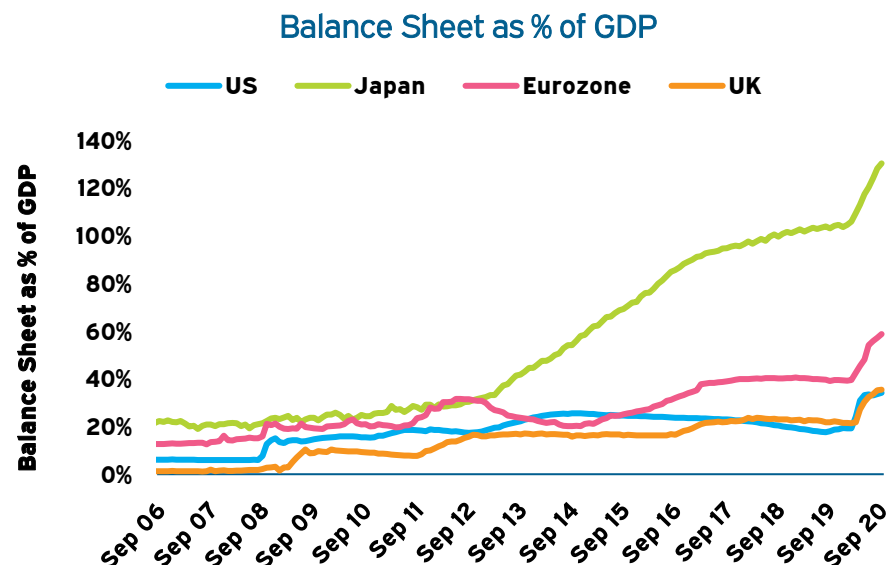
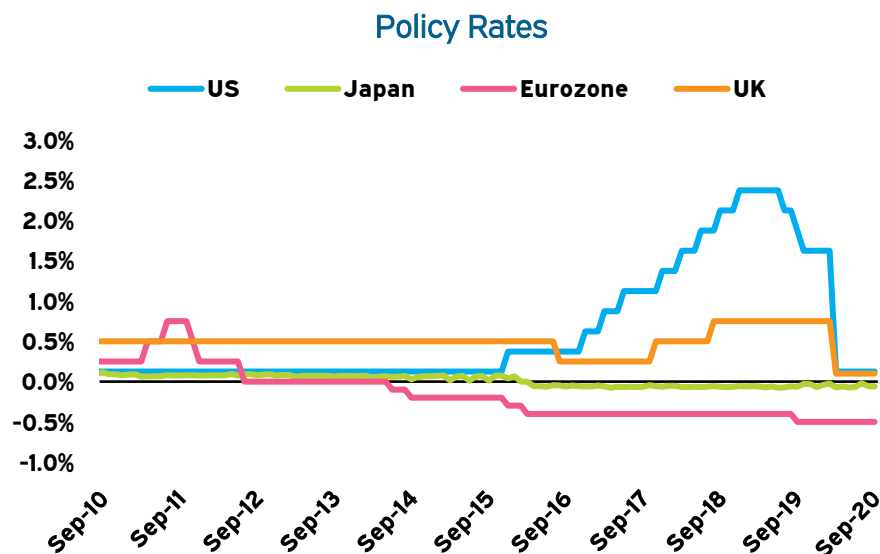
### Fiscal Stimulus so far in Context<sup>1</sup>



- The spread between federal spending and receipts was relatively narrow from the 1960s up until the Global Financial Crisis.
- With a few exceptions, the US government has generally spent more than it has taken in.
- The pandemic pushed expenditures as a percentage of GDP to above 30%; far exceeding revenues.
- Going forward, the pace of economic growth and potential changes to US tax policy will likely impact the degree to which this issue becomes a risk for US borrowing costs over the long-run.

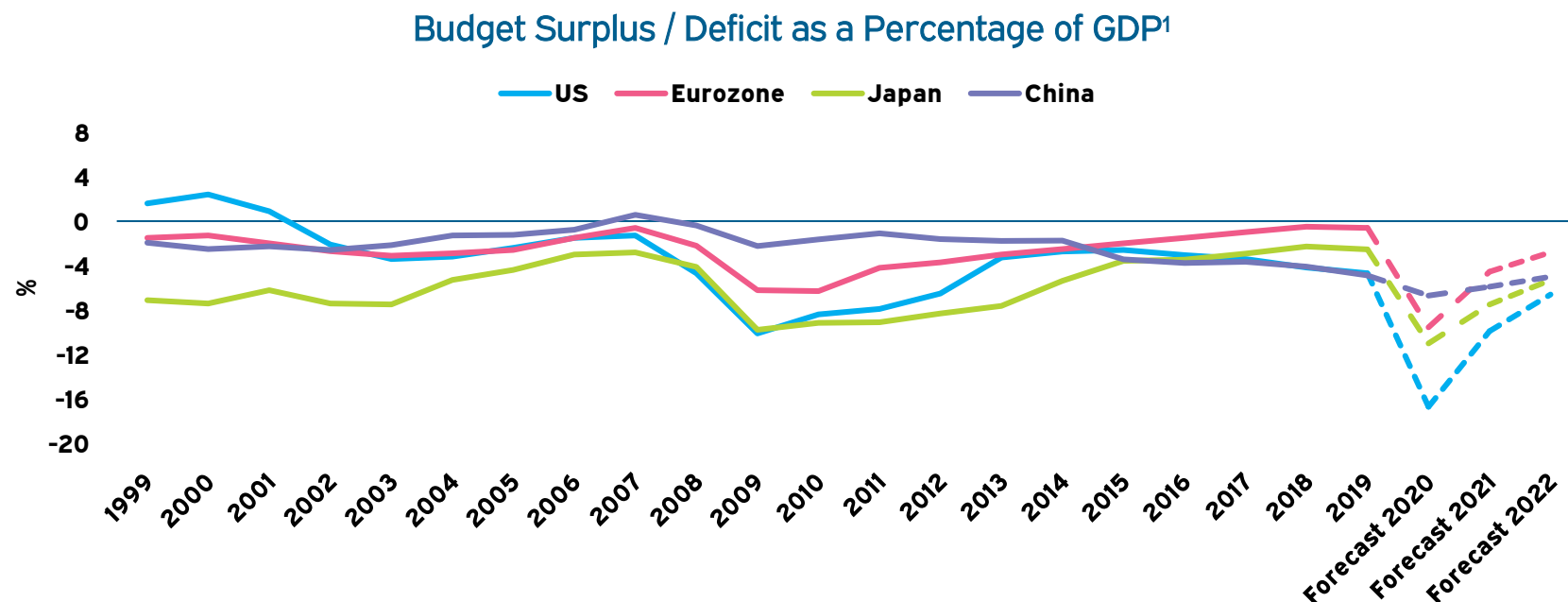
<sup>1</sup> Source: Congressional Budget Office. As of September 30, 2020.

### Central Bank Response<sup>1</sup>



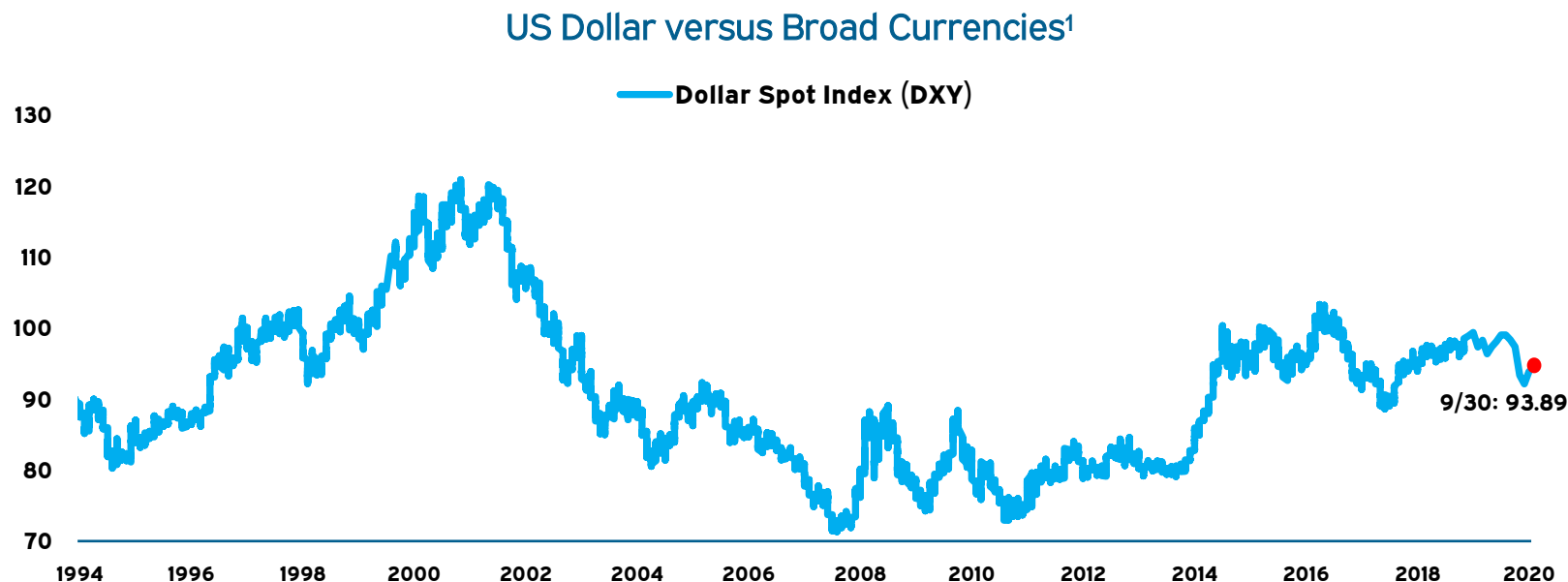
- Global central banks took aggressive policy actions as signs of economic deterioration emerged due to the restrictions put in place to stop the spread of COVID-19.
- Measures include the cutting of policy rates, deploying emergency stimulus through expanded quantitative easing, liquidity programs to support funding markets, targeted refinancing operations, and outcome-based forward guidance commitments to keep monetary policy accommodative until the pandemic is thoroughly under control.
- Stimulative measures will likely stay in place for some time, but uncertainties remain regarding the effectiveness of monetary policy supporting the economy through COVID-19 and the potential inflationary impacts of the response.

<sup>1</sup> Source: Bloomberg. Data is as of September 30, 2020.



- Budget deficits are deteriorating meaningfully for developed economies due to the massive fiscal support and the severe economic contraction's effect on tax revenue.
- If fiscal and monetary policy stimulus measures fail to meaningfully stimulate growth, deficits could remain historically high and require additional sovereign debt issuance to cover the shortfall, increasing solvency concerns and interest rate risks.

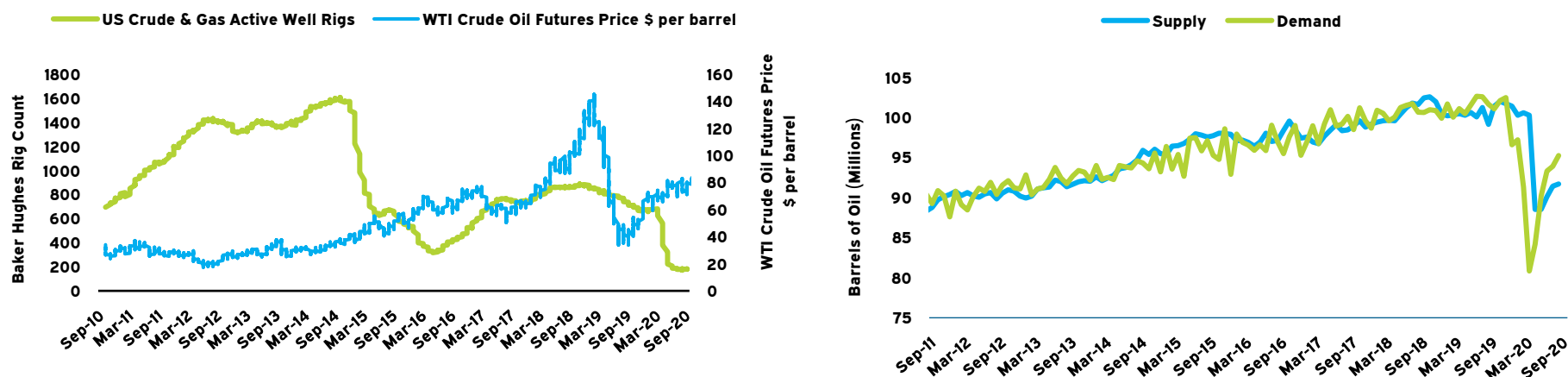
<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2019. Projections via Bloomberg Forecasts September 2020.



- When financial markets began aggressively reacting to the COVID-19 developments, the US dollar experienced notable selling pressure as investors sought safe-haven exposure in currencies like the Japanese yen.
- As the crisis grew into a pandemic, investors' preferences shifted to holding US dollars and highly liquid, short-term securities like US Treasury bills. This global demand for US dollars led to appreciation versus most major currencies.
- To help ease the heightened demand for US dollars, the Federal Reserve, working with a number of global central banks, re-established the US dollar swap program, providing relief to other currencies.
- Recently we have seen some weakness in the dollar as the US has struggled with containing the virus and the economic recovery has slowed. Going forward, the dollar's safe haven quality and the higher interest rates in the US could provide support.

<sup>1</sup> Source: Bloomberg. Data is as of September 30, 2020.

### Oil Price and Rig Activity<sup>1</sup>

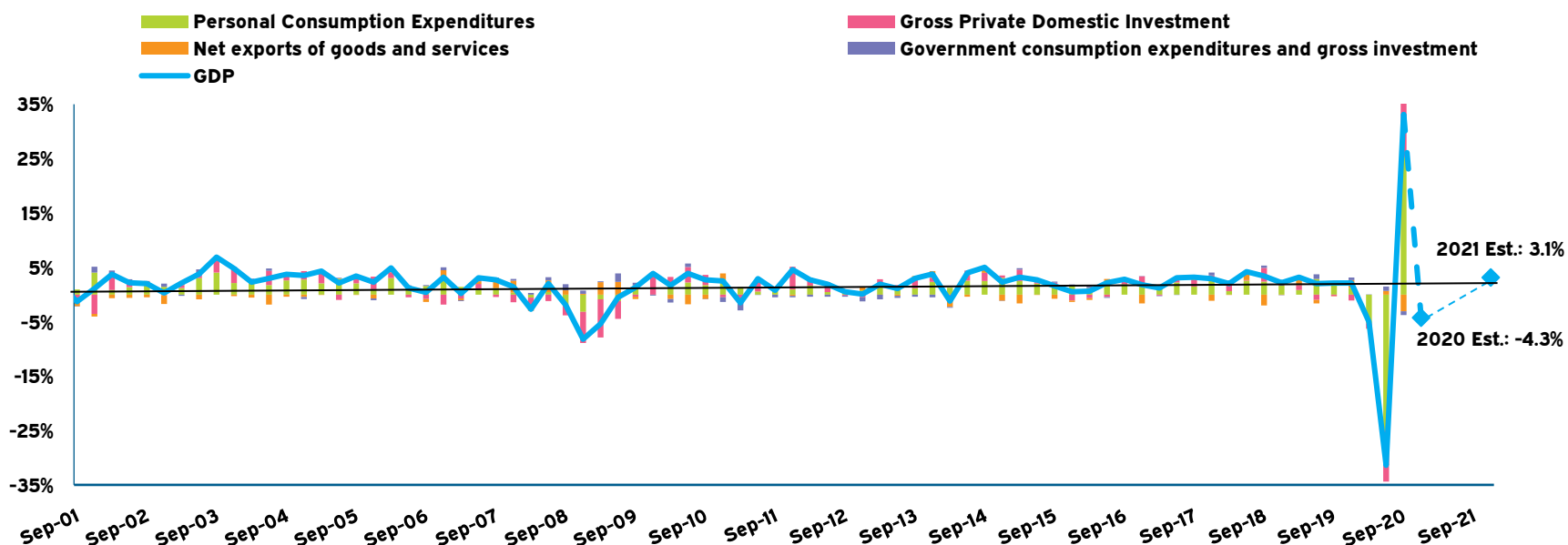


- Oil prices experienced significant pressure earlier in the year given pandemic induced declines in demand, as well as a Saudi Arabia-initiated price war after Russia decided not to participate in the proposed OPEC+ supply cuts.
- An agreement across the cartel was finally achieved, providing support to oil prices, and then expectations on building demand by reopening global economies pushed oil prices back to roughly \$40 by the end of the quarter.
- As OPEC+ starts rolling back production cuts, and the virus spread increases with the potential to weigh on demand, oil prices could experience renewed price pressure.

<sup>1</sup> Source: Monthly data via Bloomberg. Rig count and oil price data is weekly. Data is as of September 30, 2020.

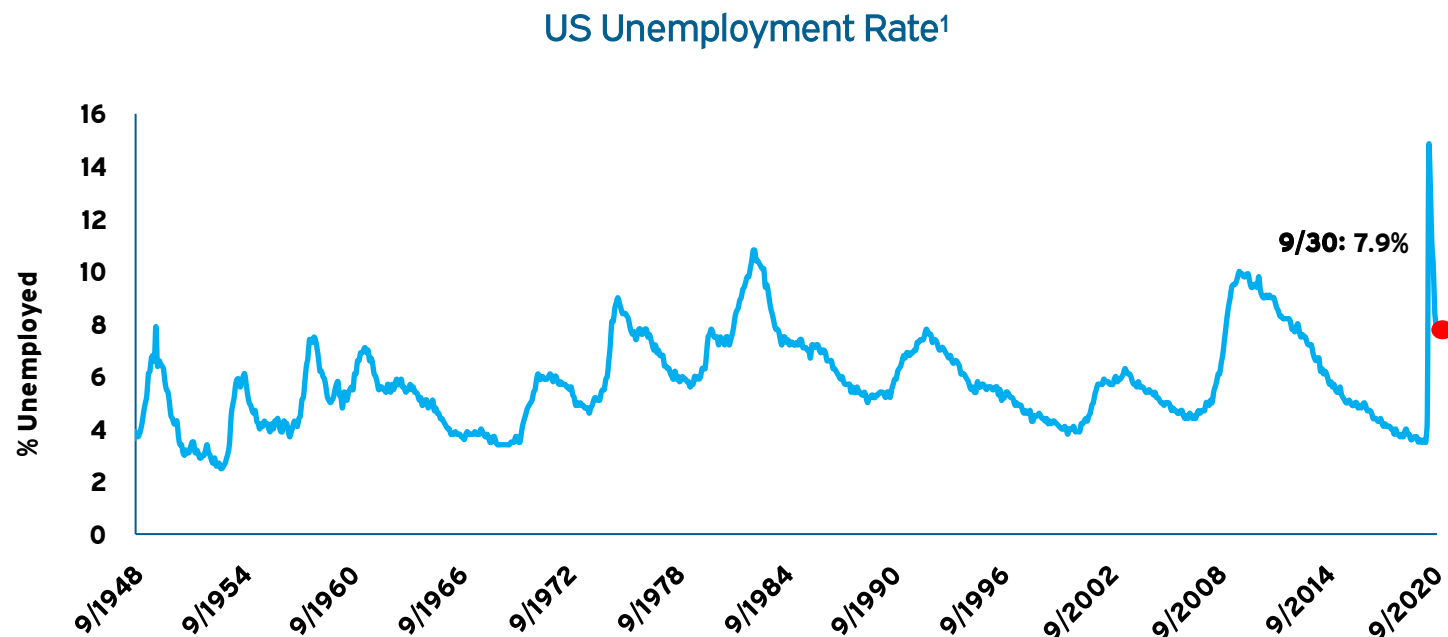


### US Real Gross Domestic Product (GDP) Growth<sup>1</sup>



- After a record decline in GDP during the second quarter (-31.4% annualized), the US economy experienced a record gain (+33.1 annualized) in the third quarter as the economy slowly reopened.
- A recovery in consumption was the main driver of the historic growth given significant pent-up demand from pandemic related restrictions earlier in the year.
- US growth is forecasted to rebound by 3.1% annually in 2021, as the economy normalizes. The risk remains that the recent spike in cases may drive renewed restrictions and consumers to reconsider returning to their prior spending and consumption preferences.

<sup>1</sup> Source: US Bureau of Economic Analysis. Data is as of the third quarter of 2020 and represents the first estimate. Annual projections via IMF World Economic Outlook October 2020 thereafter.

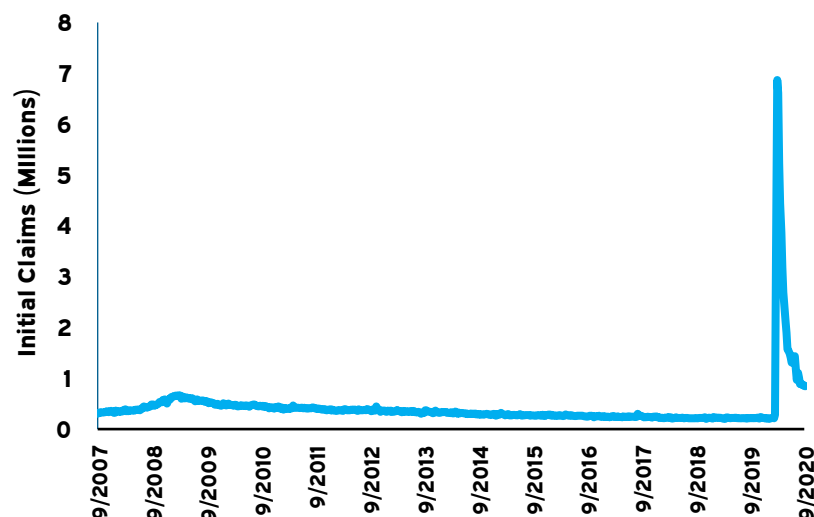


- The US labor picture improved over the quarter, as the economy slowly reopened, but unemployment levels remain high. The jump in cases as the quarter ended prompted concerns about the sustainability of the recovery.
- The Bureau of Labor Statistics continues to include supplementary notes in monthly labor releases, cautioning about the overall reliability of the data due to collection challenges amidst the pandemic.
- Enhanced unemployment benefits has largely supported those without jobs. As of this writing, the \$300 extension of benefits provided by President Trump is in the process of expiring.

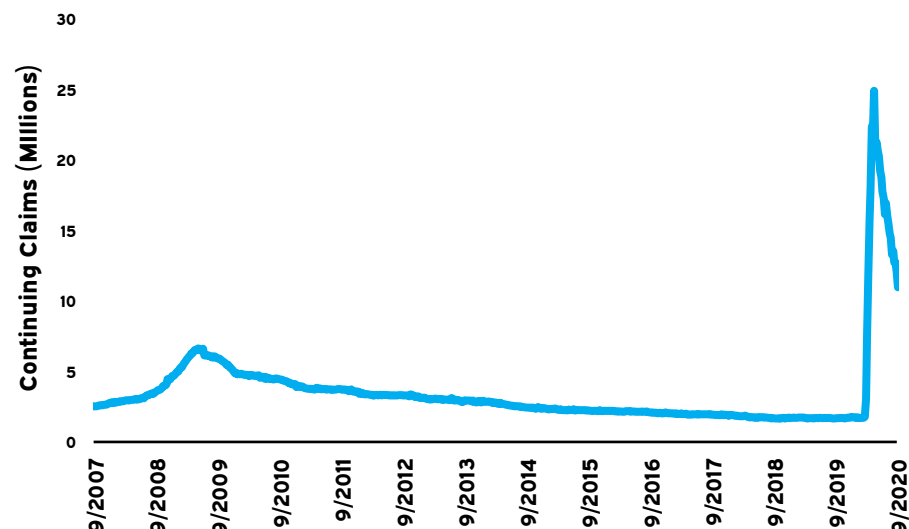
<sup>1</sup> Source: Bloomberg. Data is as of September 30, 2020.

### US Jobless Claims

US Initial Jobless Claims<sup>1</sup>



Continuing Claims<sup>2</sup>

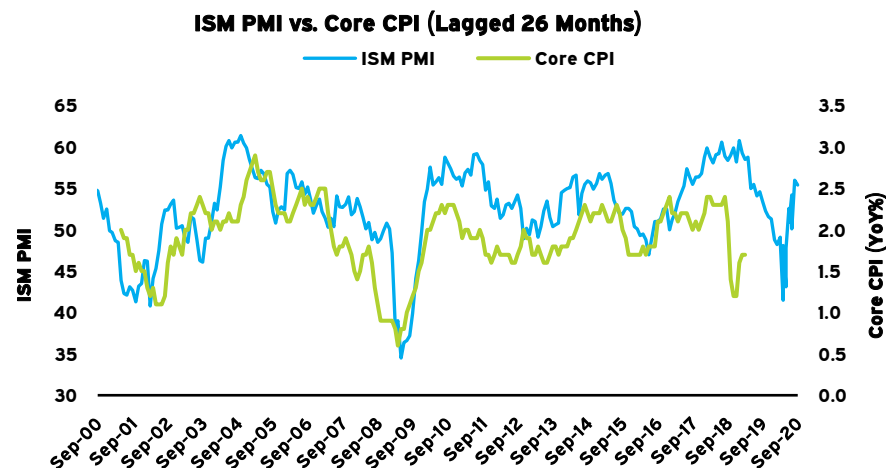
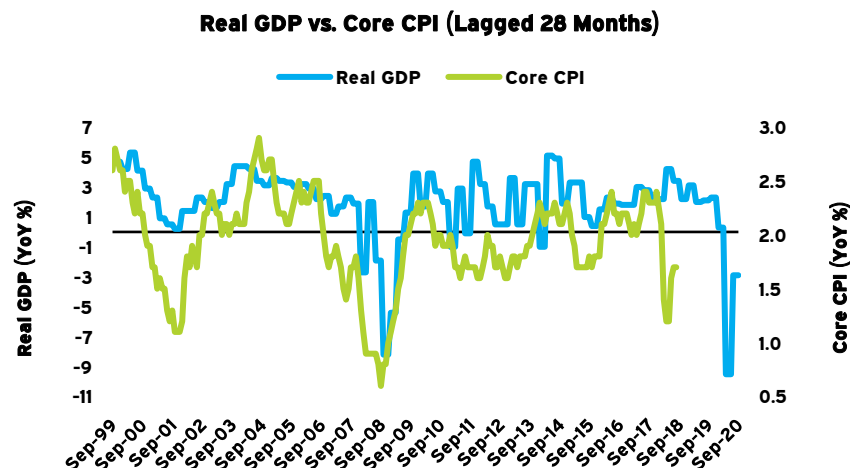


- Through September, nearly 63 million people filed for initial unemployment benefits since the onset of the crisis. This level exceeds the 22 million jobs added since the GFC, highlighting that this situation is without precedent. Despite the recent decline in initial claims, they remain many multiples above the peak of the GFC.
- Continuing jobless claims (i.e., those currently receiving benefits) declined from the record level of 24.9 million people, ending the quarter at 11.2 million, but also remain at record levels.

<sup>1</sup> Source: Bloomberg. Seasonally adjusted initial jobless claims. Data is as of September 25, 2020.

<sup>2</sup> Source: Bloomberg. US Continuing Jobless Claims SA. Data is as of September 25, 2020.

### US Inflation<sup>1, 2</sup>



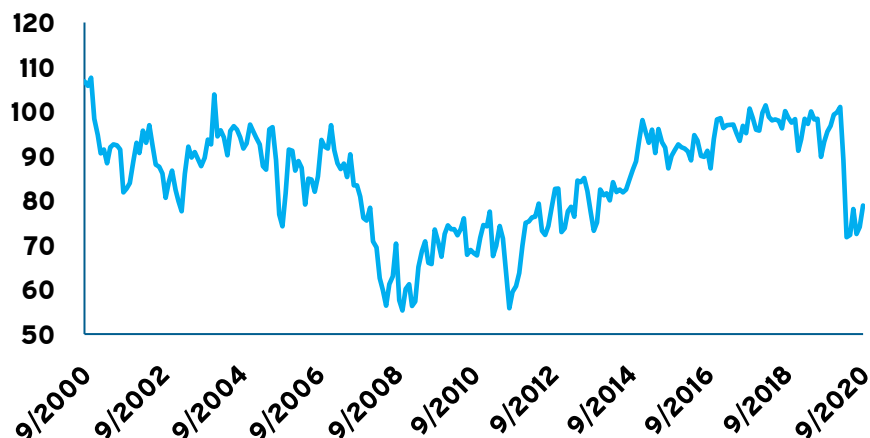
- Inflation is considered a lagging indicator, reflecting past economic conditions.
- This leads to economic conditions today being a means of forecasting future inflation levels.
- Real GDP and manufacturing indicators, like the ISM Purchasing Managers Index, have historically been useful indicators of future inflation.
- Initially, manufacturing data and GDP declined dramatically from their peaks. This led to aggressive fiscal and monetary responses in the US (and globally) to help mitigate the impact of the pandemic on the global economy resulting in corresponding improvements in data.
- As fiscal and monetary policy measures stimulate the economy, we could ultimately see increases in growth and inflation but, in the short-term, deflationary risks are of a greater concern.

<sup>1</sup> Source: Bloomberg. Data is monthly and as of September 30, 2020 for Core CPI. Data for US Real GDP is annual and as of the third quarter (first estimate). It is compared to each monthly CPI data point for the respective quarter for illustrative purposes.

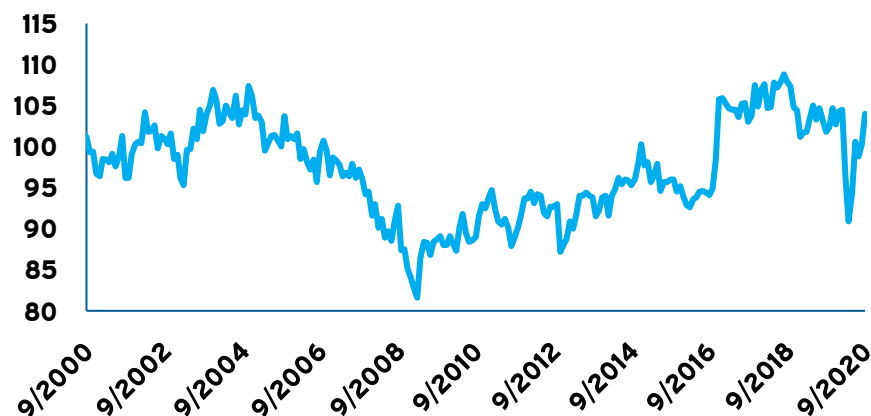
<sup>2</sup> The last data point for ISM PMI and Core CPI represents the September 30, 2020 value.

### Sentiment Indicators

University of Michigan Consumer Sentiment<sup>1</sup>



Small Business Confidence<sup>2</sup>



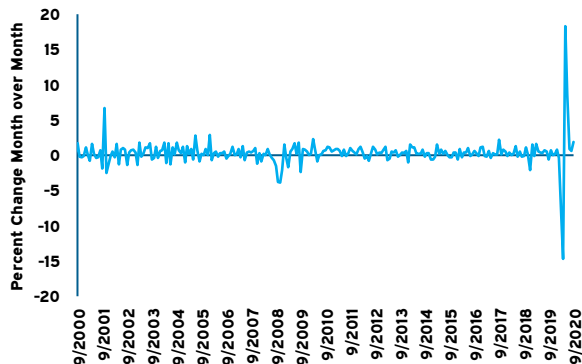
- The attitudes of businesses and consumers today are often a useful indicator of future economic activity.
- Consumer spending comprises close to 70% of US GDP, making the attitudes of consumers an important driver of economic growth. Additionally, small businesses comprise a majority of the economy, making sentiment in that segment important too.
- As restrictions caused many businesses to close and employees to be laid off, sentiment indicators saw corresponding declines.
- Recently, as the economy began reopening, sentiment measures improved, but they remain at multi-year lows and fragile going forward given the spike in virus cases.

<sup>1</sup> Source: Bloomberg. University of Michigan Consumer Sentiment Index. Data is as of September 30, 2020.

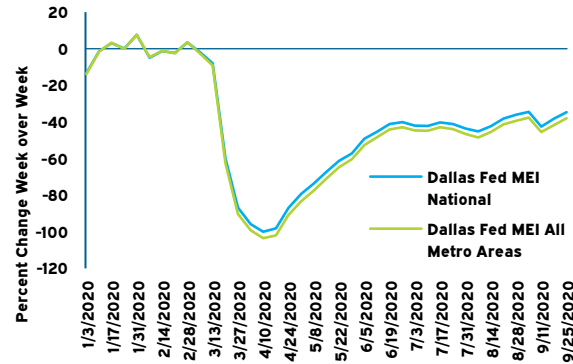
<sup>2</sup> Source: Bloomberg. NFIB Small Business Optimism Index. Data is as of September 30, 2020.

### US High Frequency Data

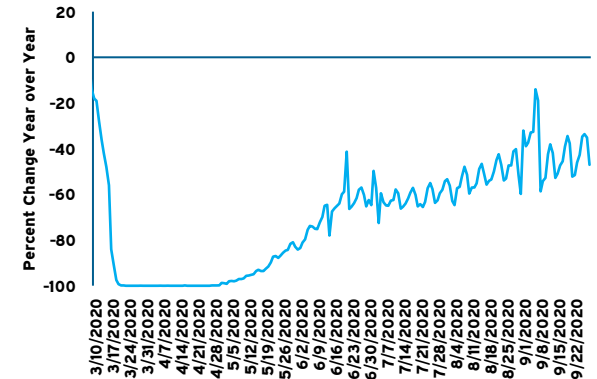
US Retail Sales<sup>1</sup>



Dallas Fed Mobility and Engagement Index<sup>2</sup>



Restaurant Traffic<sup>3</sup>

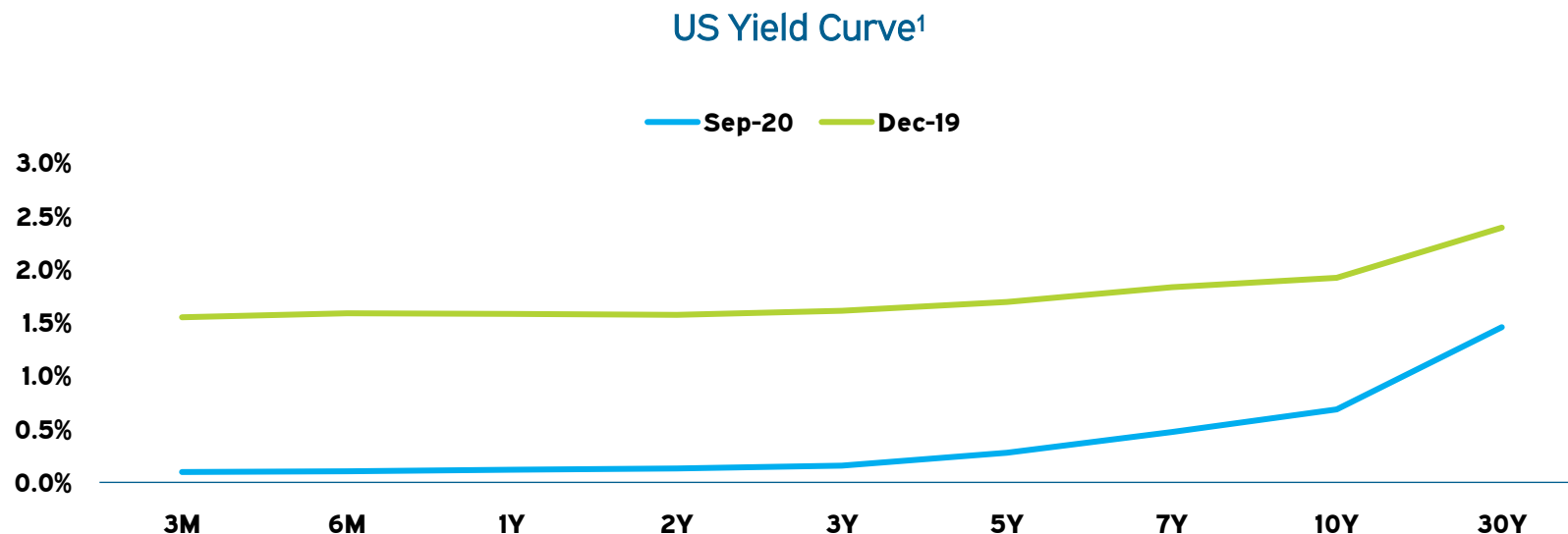


- Due to stay-at-home orders and forced business closures, many industries have seen revenues plummet, and in some cases, virtually vanish. As the economy reopens, some measures have improved significantly while others remain weak.
- Companies operating in the retail and restaurant industries, and other leisure and hospitality focused businesses, have been impacted dramatically and remain vulnerable depending on the tracking of the virus.
- Looking forward, improvements in these indicators could offer early signs of a decline in the virus' economic impact.

<sup>1</sup> Source: Bloomberg. Data is as of September 30, 2020 and represents the adjusted Retail Sales SA Monthly % Change.

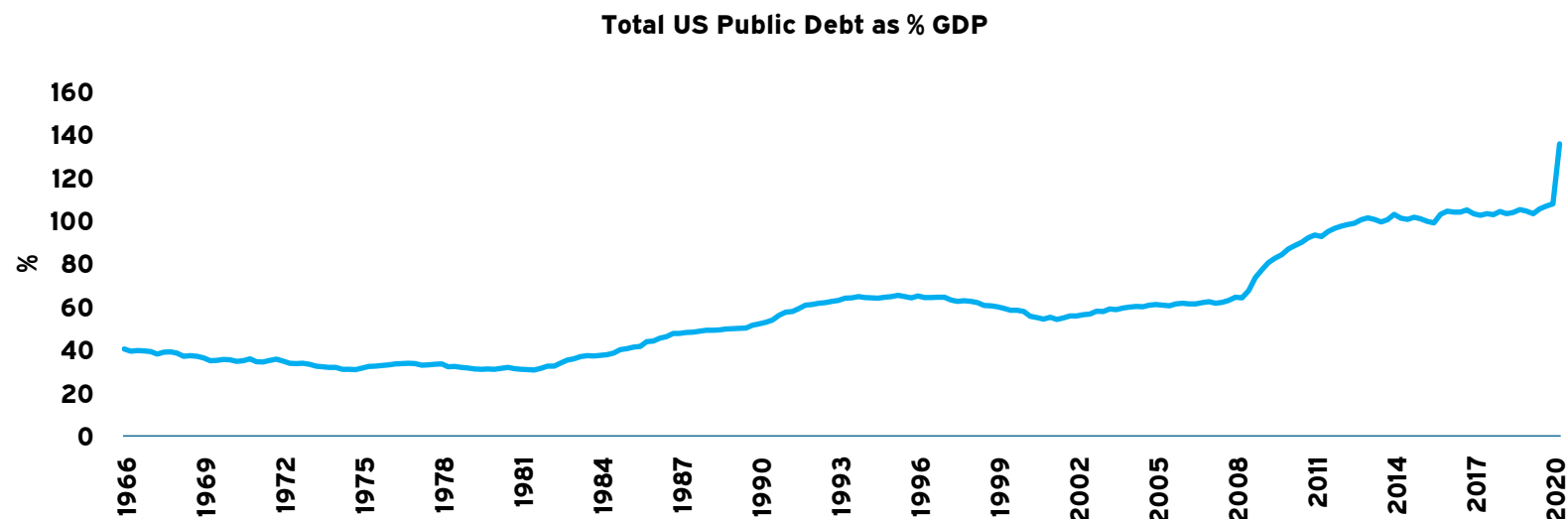
<sup>2</sup> Source: Bloomberg. Data is as of September 25, 2020 and represents the deviation from normal mobility behaviors induced by COVID-19 (formerly the "Social Distancing Index"). The index represents a weighted average of various lengths of time that a mobile device, like a cell phone, leaves its "home" or place of residence, and/or how long a device stays at home. A decline in this index represents a mobile device at home for a longer period of time than average.

<sup>3</sup> Source: Bloomberg. This data shows year-over-year seated diners at restaurants on the OpenTable network across all channels: online reservations, phone reservations, and walk-ins. Only states or cities with 50+ restaurants in the sample are included. All such restaurants on the OpenTable network in either period are included. Data is as of September 30, 2020. Index start date 2/19/20.



- The US Treasury yield curve declined materially since 2019.
- Cuts in monetary policy rates and policy makers' open commitments to keep rates low for the foreseeable future drove yields down in shorter maturities, while flight-to-quality flows, low inflation, and economic growth uncertainty drove the changes in longer maturities.
- The Federal Reserve's unlimited quantitative easing purchase program provided further downward pressure on interest rates, particularly in the short- and medium-term sectors due to the purchases being focused on those segments.
- It is likely that rates will remain low for some time given the Federal Reserve's pledge to support the economy. This will pressure investors to consider higher risk assets to meet their return objectives.

<sup>1</sup> Source: Bloomberg. Data is as of September 30 2020. Numbers represent month-end values.

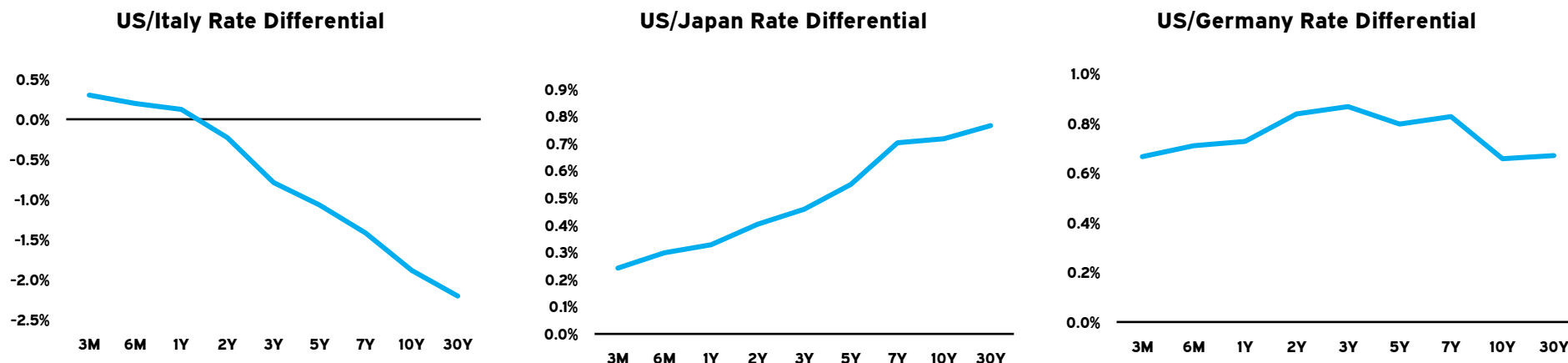
Treasury Issuance Continues to Increase<sup>1</sup>

- Treasury issuance continues to increase as the government raises funds to pay for programs related to supporting the economy during the pandemic.
- Many are becoming more concerned about the rising debt service as the debt surpasses 100% of US GDP.
- However, the Federal Reserve's purchase program is acquiring a significant portion of outstanding Treasury debt, and thus the government needs to worry less about those interest or principal payments as the Fed's interest payments are remitted back to the Treasury. Also, for an advanced economy like the US with domestic denominated debt, high levels of debt can often be supported for some time, as has been the case in Japan.

<sup>1</sup> Source: Federal Reserve Bank of St. Louis. As of June 30, 2020.



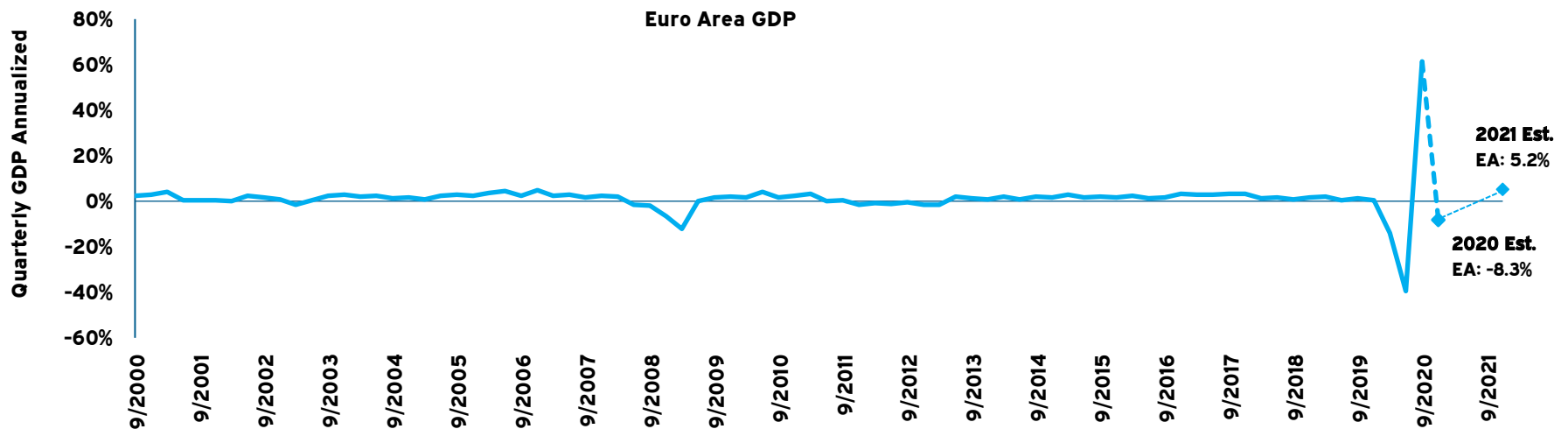
### Government Sovereign Debt Curves<sup>1</sup>



- Despite the US yield curve declining dramatically this year, interest rates in the US remain higher than many other countries.
- Compared to Japanese and German sovereign debt yields, US rates remain higher across the yield curve. However, the majority of the US yield curve is now lower than that of Italy, given greater risks to the Italian economy from the impact of COVID-19.

<sup>1</sup> Source: Bloomberg. Data is as of September 30, 2020. Rate differential data represents the differences in the yield for a US Treasury at each maturity versus the respective similar bond for each country.

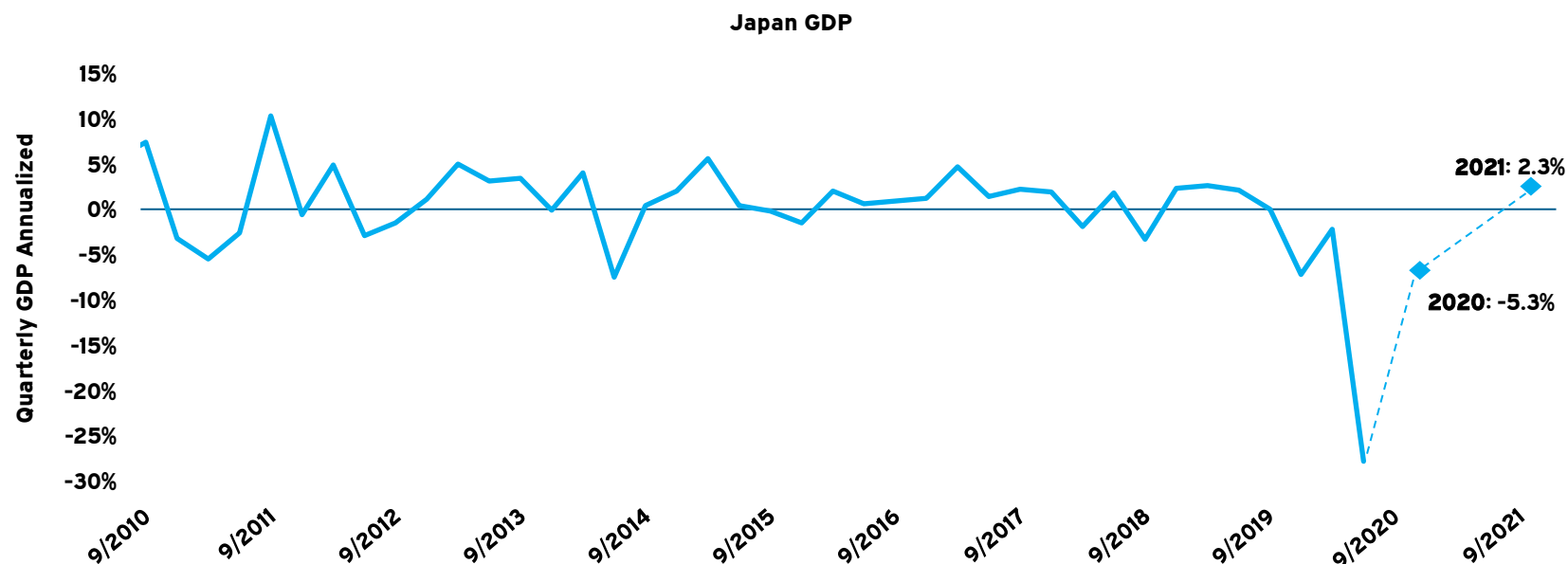
### European Economic Conditions<sup>1</sup>



- Like the US, euro area GDP fell at a historic annualized rate in the second quarter (-39.5%) only to post a historic gain (+61.3%) in the third quarter as economies reopened.
- Projections for the full year are for a decline of 8.3% in the broad euro area, according to the IMF. Economic growth is expected to be around 5.2% in 2021, but with the same risks as in the US of potentially reopening economies too soon.
- Major economies such as France, Spain, and Italy have been materially impacted by distancing measures and the recent spike in cases, and are expected to decline by as much as 9.5% (France), 12.0% (Spain), and 9.8% (Italy) for the year; recovery estimates for 2021 are 6.6%, 6.3%, and 5.5% respectively.

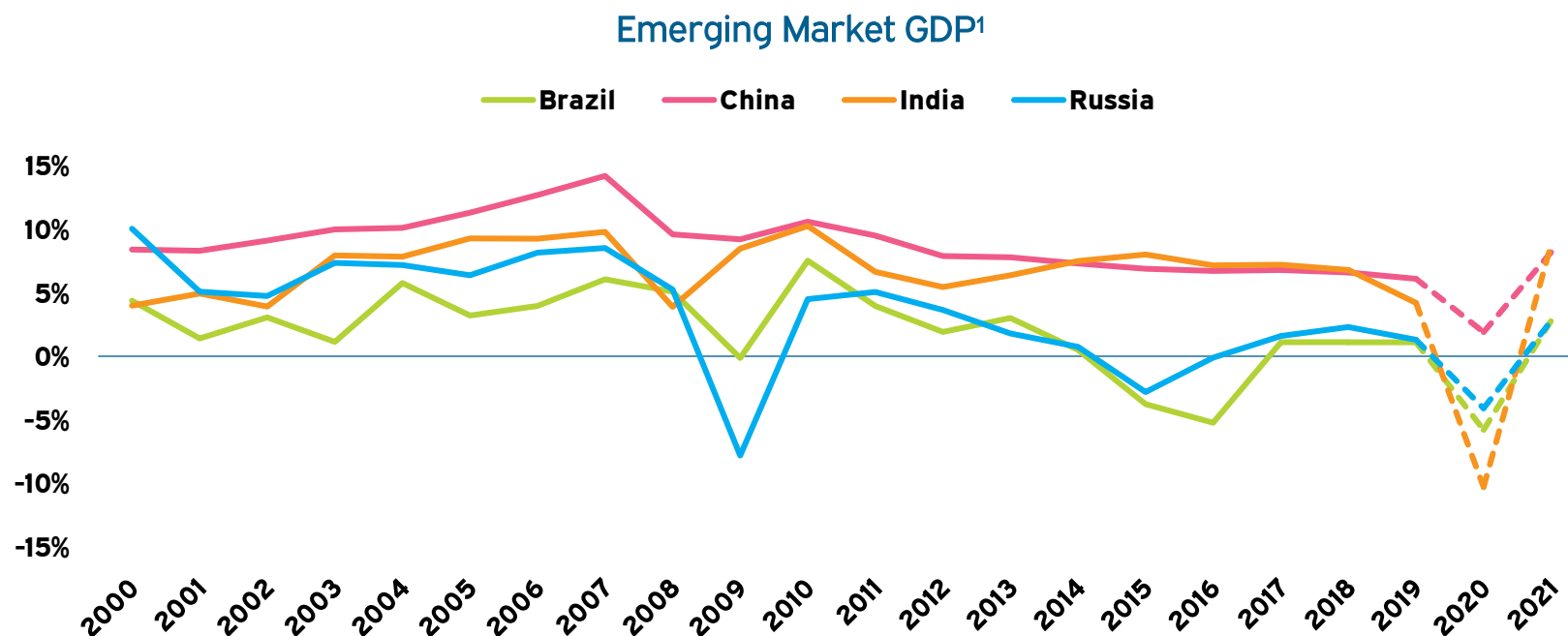
<sup>1</sup> Source: Bloomberg. Data is as of the third quarter of 2020. Annual projections via IMF World Economic Outlook October 2020 thereafter. Euro Area figures are annualized by Meketa.

### Japanese Economic Conditions<sup>1</sup>



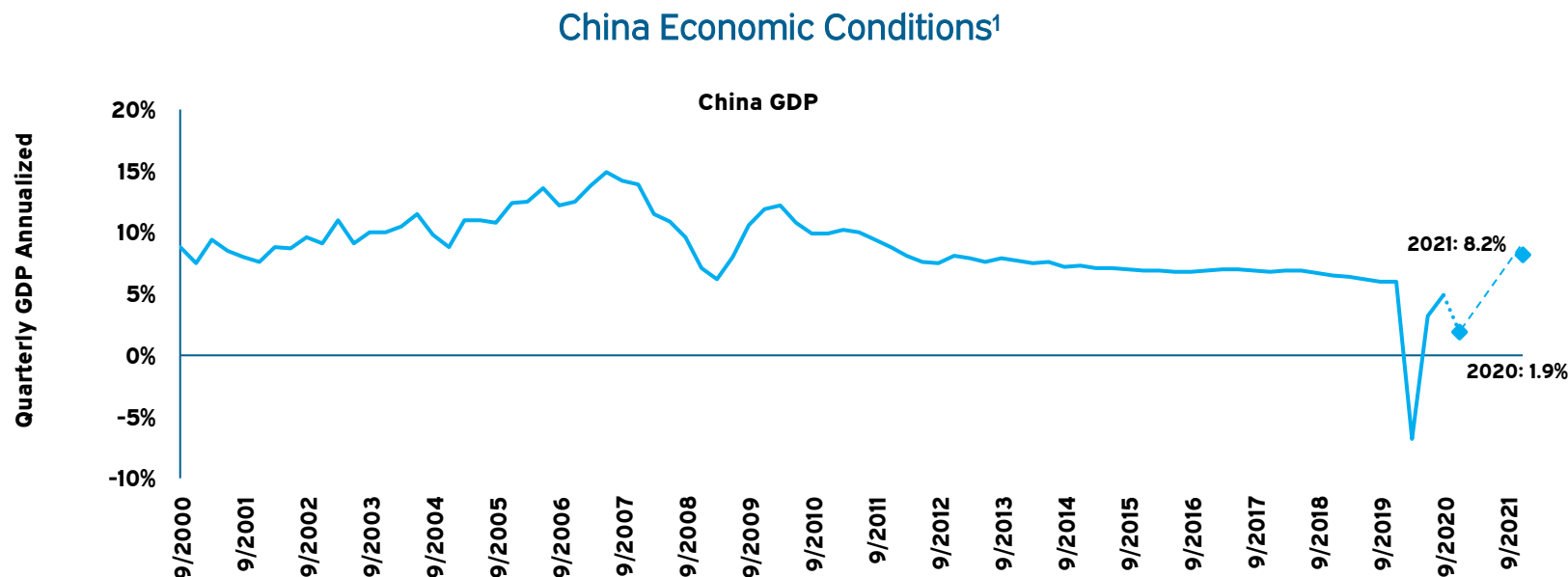
- Before the spread of the COVID-19 virus, Japan's economy was already experiencing stress, with GDP declining 7.0% (annualized) in the fourth quarter of 2019, as consumption declined due to the October sales tax hike.
- After the first quarter decline of 2.2% (annualized), the Japanese economy declined a record 27.8% (annualized) in the second quarter driven by the COVID-19 impacts and pushing Japan further into a recession.
- Of all the major economies, Japan's central bank had the largest stimulus in place coming into the crisis that they, like others, expanded to offset the economic impact of restrictions.
- Similar to other major economies, the Japanese economy is expected to decline in 2020, but recover in 2021.

<sup>1</sup> Source: Bloomberg. Data is as of the second quarter of 2020. Annual projections via IMF World Economic Outlook October 2020 thereafter.



- Emerging markets, broadly, are expected to see economic deterioration and recoveries similar to developed economies.
- Behind the US, emerging economies like India, Brazil, Russia, and Mexico have become hotspots for the virus and with relatively weaker healthcare systems, often close living conditions, and generally poor populations, the potential exist for a huge humanitarian crisis.
- However, some economies such as China, are expected to experience less impact, largely due to aggressive societal measures taken to mitigate the spread of the virus, which, in the case of China, has allowed authorities to re-open sooner than other economies.

<sup>1</sup> Source: IMF. World Economic Outlook. October 2020 update. Estimates start after 2019.



- China is one of the few major economies with positive growth projections for 2020 (+1.9%) with a significant increase (+8.2%) forecasted in 2021.
- The positive growth expectations are largely due to the Chinese government's ability to quickly impose aggressive distancing measures, largely isolate and contain the virus, and then quickly move to re-open their economy.

<sup>1</sup> Source: Bloomberg. Data is as of the third quarter of 2020. Annual projections via IMF World Economic Outlook October 2020 thereafter.

## Summary

Several issues are of primary concern going forward:

- 1) **Economies opening too soon from virus-related restrictions, and ultimately needing to re-deploy lockdown policies.**
  - A number of countries, including the US, whose policies allowed for greater flexibility in social distancing are now seeing spikes in infections. This could move governments to re-impose distancing measures, or completely shutter economies, which would likely depress employment and economic growth.
- 2) **Consumers permanently, or for an extended period of time, changing economic behaviors.**
  - The COVID-19 pandemic resulted in an immediate change to societal norms that could last beyond the actual virus. Changing consumer spending and work-environment preferences could limit large events including concerts and sports, dining out, travel, and leisure activities. As consumers make up a large portion of developed economy GDPs, this could drive many companies to failure with lasting impacts on the economy.
- 3) **Persistently high unemployment due to a significant number of companies not surviving the downturn.**
  - Persistently high unemployment due to the failure of companies (and potentially entire sectors) and changing consumer preferences could hurt the growth of economies and, subsequently, government spending on mandatory and discretionary services going forward.

### Summary (continued)

#### 4) Virus-related fears affecting globalization.

- Appetite for globalization was already waning before the pandemic, as seen in the increase in populist and anti-trade sentiment over the last few years. This has been perhaps most evident in the trade wars initiated by the current US administration against a number of its trading partners, including China and Europe. With an increase in rhetoric regarding certain countries not doing enough to limit the spread of the virus outside their borders, as well as restrictions on transportation and sanitation concerns, many countries could elect to advance policies that limit trade and globalization.

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PERFORMANCE DATA CONTAINED HEREIN REPRESENT PAST PERFORMANCE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.

**Credit Risk:** Refers to the risk that the issuer of a fixed income security may default (i.e., the issuer will be unable to make timely principal and/or interest payments on the security.)

**Duration:** Measure of the sensitivity of the price of a bond to a change in its yield to maturity. Duration summarizes, in a single number, the characteristics that cause bond prices to change in response to a change in interest rates. For example, the price of a bond with a duration of three years will rise by approximately 3% for each 1% decrease in its yield to maturity. Conversely, the price will decrease 3% for each 1% increase in the bond's yield. Price changes for two different bonds can be compared using duration. A bond with a duration of six years will exhibit twice the percentage price change of a bond with a three-year duration. The actual calculation of a bond's duration is somewhat complicated, but the idea behind the calculation is straightforward. The first step is to measure the time interval until receipt for each cash flow (coupon and principal payments) from a bond. The second step is to compute a weighted average of these time intervals. Each time interval is measured by the present value of that cash flow. This weighted average is the duration of the bond measured in years.

**Information Ratio:** This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return), and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

**Jensen's Alpha:** A measure of the average return of a portfolio or investment in excess of what is predicted by its beta or "market" risk.  $\text{Portfolio Return} - [\text{Risk Free Rate} + \text{Beta} \times (\text{market return} - \text{Risk Free Rate})]$ .

**Market Capitalization:** For a firm, market capitalization is the total market value of outstanding common stock. For a portfolio, market capitalization is the sum of the capitalization of each company weighted by the ratio of holdings in that company to total portfolio holdings; thus it is a weighted-average capitalization. Meketa Investment Group considers the largest 65% of the broad domestic equity market as large capitalization, the next 25% of the market as medium capitalization, and the smallest 10% of stocks as small capitalization.

**Market Weighted:** Stocks in many indices are weighted based on the total market capitalization of the issue. Thus, the individual returns of higher market-capitalization issues will more heavily influence an index's return than the returns of the smaller market-capitalization issues in the index.

**Maturity:** The date on which a loan, bond, mortgage, or other debt/security becomes due and is to be paid off.

**Prepayment Risk:** The risk that prepayments will increase (homeowners will prepay all or part of their mortgage) when mortgage interest rates decline; hence, investors' monies will be returned to them in a lower interest rate environment. Also, the risk that prepayments will slow down when mortgage interest rates rise; hence, investors will not have as much money as previously anticipated in a higher interest rate environment. A prepayment is any payment in excess of the scheduled mortgage payment.

**Price-Book Value (P/B) Ratio:** The current market price of a stock divided by its book value per share. Meketa Investment Group calculates P/B as the current price divided by Compustat's quarterly common equity. Common equity includes common stock, capital surplus, retained earnings, and treasury stock adjusted for both common and nonredeemable preferred stock. Similar to high P/E stocks, stocks with high P/B's tend to be riskier investments.

**Price-Earnings (P/E) Ratio:** A stock's market price divided by its current or estimated future earnings. Lower P/E ratios often characterize stocks in low growth or mature industries, stocks in groups that have fallen out of favor, or stocks of established blue chip companies with long records of stable earnings and regular dividends. Sometimes a company that has good fundamentals may be viewed unfavorably by the market if it is an industry that is temporarily out of favor. Or a business may have experienced financial problems causing investors to be skeptical about its future. Either of these situations would result in lower relative P/E ratios. Some stocks exhibit above-average sales and earnings growth or expectations for above average growth. Consequently, investors are willing to pay more for these companies' earnings, which results in elevated P/E ratios. In other words, investors will pay more for shares of companies whose profits, in their opinion, are expected to increase faster than average. Because future events are in no way assured, high P/E stocks tend to be riskier and more volatile investments. Meketa Investment Group calculates P/E as the current price divided by the I/B/E/S consensus of twelve-month forecast earnings per share.

**Quality Rating:** The rank assigned a security by such rating services as Fitch, Moody's, and Standard & Poor's. The rating may be determined by such factors as (1) the likelihood of fulfillment of dividend, income, and principal payment of obligations; (2) the nature and provisions of the issue; and (3) the security's relative position in the event of liquidation of the company. Bonds assigned the top four grades (AAA, AA, A, BBB) are considered investment grade because they are eligible bank investments as determined by the controller of the currency.

**Sharpe Ratio:** A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

**STIF Account:** Short-term investment fund at a custodian bank that invests in cash-equivalent instruments. It is generally used to safely invest the excess cash held by portfolio managers.

**Standard Deviation:** A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

**Style:** The description of the type of approach and strategy utilized by an investment manager to manage funds. For example, the style for equities is determined by portfolio characteristics such as price-to-book value, price-to-earnings ratio, and dividend yield. Equity styles include growth, value, and core.

**Tracking Error:** A divergence between the price behavior of a position or a portfolio and the price behavior of a benchmark, as defined by the difference in standard deviation.

**Yield to Maturity:** The yield, or return, provided by a bond to its maturity date; determined by a mathematical process, usually requiring the use of a “basis book.” For example, a 5% bond pays \$5 a year interest on each \$100 par value. To figure its current yield, divide \$5 by \$95—the market price of the bond—and you get 5.26%. Assume that the same bond is due to mature in five years. On the maturity date, the issuer is pledged to pay \$100 for the bond that can be bought now for \$95. In other words, the bond is selling at a discount of 5% below par value. To figure yield to maturity, a simple and approximate method is to divide 5% by the five years to maturity, which equals 1% pro rata yearly. Add that 1% to the 5.26% current yield, and the yield to maturity is roughly 6.26%.

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

**Yield to Worst:** The lowest potential yield that can be received on a bond without the issuer actually defaulting. The yield to worst is calculated by making worst-case scenario assumptions on the issue by calculating the returns that would be received if provisions, including prepayment, call, or sinking fund, are used by the issuer.

**NCREIF Property Index (NPI):** Measures unleveraged investment performance of a very large pool of individual commercial real estate properties acquired in the private market by tax-exempt institutional investors for investment purposes only. The NPI index is capitalization-weighted for a quarterly time series composite total rate of return.

**NCREIF Fund Index - Open End Diversified Core Equity (NFI-ODCE):** Measures the investment performance of 28 open-end commingled funds pursuing a core investment strategy that reflects funds' leverage and cash positions. The NFI-ODCE index is equal-weighted and is reported gross and net of fees for a quarterly time series composite total rate of return.

Sources: Investment Terminology, International Foundation of Employee Benefit Plans, 1999.

The Handbook of Fixed Income Securities, Fabozzi, Frank J., 1991

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Throughout this report, numbers may not sum due to rounding.

Returns for periods greater than one year are annualized throughout this report.

Values shown are in millions of dollars, unless noted otherwise.



# TEACHER'S RETIREMENT FUND

Net of All Fees and Expenses

Periods Ending October 31, 2020

Funds <i>Benchmark</i>	Percent Holdings	Policy Weights	Lower Range	Upper Range	Market Value (mil.)	Month	Three Months	Fiscal YTD	Calendar YTD	One Year	Compound, annualized returns			
											Three Year	Five Year	Seven Year	Ten Year
<b>Teacher's Retirement Fund</b>	<b>100.0%</b>				<b>\$18,985.9</b>	<b>-0.56</b>	<b>1.04</b>	<b>4.73</b>	<b>1.11</b>	<b>4.54</b>	<b>4.80</b>	<b>6.96</b>	<b>6.28</b>	<b>7.10</b>
<i>Policy Benchmark</i>						-0.10	1.74	6.27	2.46	5.63	5.85	7.37	6.55	7.39
<i>Dynamic Benchmark</i>						-0.31	1.10	5.31	2.18	5.58	5.57	7.22	6.51	N/A
<b>Domestic Equity</b>	<b>20.6%</b>	<b>20.0</b>	15.0	25.0	<b>\$3,906.7</b>	<b>-2.18</b>	<b>0.80</b>	<b>6.85</b>	<b>3.36</b>	<b>10.37</b>	<b>9.83</b>	<b>11.45</b>	<b>11.06</b>	<b>12.70</b>
<i>Russell 3000</i>						-2.16	1.11	6.85	3.14	10.15	10.04	11.48	11.09	12.80
<b>Developed Markets ISF</b>	<b>10.9%</b>	<b>11.0</b>	6.0	16.0	<b>\$2,074.7</b>	<b>-3.71</b>	<b>-1.40</b>	<b>1.74</b>	<b>-9.20</b>	<b>-5.24</b>	<b>-1.25</b>	<b>4.11</b>	<b>3.84</b>	<b>5.60</b>
<i>MSCI EAFE IMI Net</i>						-3.92	-1.03	1.42	-10.34	-6.09	0.05	4.07	4.08	5.64
<b>Emerging Markets ISF</b>	<b>10.4%</b>	<b>9.0</b>	4.0	14.0	<b>\$1,981.6</b>	<b>2.36</b>	<b>4.54</b>	<b>15.51</b>	<b>6.98</b>	<b>14.74</b>	<b>4.51</b>	<b>9.63</b>	<b>4.22</b>	<b>3.26</b>
<i>MSCI Emerging Markets IMI</i>						1.80	2.57	11.77	0.49	7.63	1.47	7.36	3.14	2.21
<b>Core Fixed Income</b>	<b>17.5%</b>	<b>13.0</b>	8.0	18.0	<b>\$3,329.2</b>	<b>-0.46</b>	<b>-1.15</b>	<b>0.43</b>	<b>6.58</b>	<b>6.52</b>	<b>4.70</b>	<b>3.92</b>	<b>3.52</b>	<b>3.48</b>
<i>Barclays U.S. Aggregate Bond Index</i>						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	3.55
<b>Emerging Market Debt</b>	<b>5.1%</b>	<b>5.0</b>	0.0	10.0	<b>\$970.1</b>	<b>0.07</b>	<b>-1.82</b>	<b>2.34</b>	<b>-5.35</b>	<b>-3.11</b>	<b>0.81</b>	<b>4.44</b>	<b>2.27</b>	<b>2.93</b>
<i>50% JPM EMBI Global Div / 50% JPM GBI EM Global Div</i>						0.20	-1.65	1.66	-3.22	-1.39	2.38	4.82	2.46	3.51
<b>High Yield</b>	<b>6.0%</b>	<b>3.0</b>	0.0	8.0	<b>\$1,136.2</b>	<b>0.39</b>	<b>0.91</b>	<b>5.72</b>	<b>1.49</b>	<b>4.08</b>	<b>3.61</b>	<b>5.54</b>	<b>4.36</b>	<b>5.68</b>
<i>Bloomberg Barclays U.S. High Yield 2% Issuer Cap Index</i>						0.49	0.42	5.09	0.33	2.97	3.87	5.92	4.57	5.92
<b>Liquidity Fund</b>	<b>2.6%</b>	<b>2.0</b>	0.0	3.0	<b>\$490.4</b>	<b>0.01</b>	<b>0.05</b>	<b>0.07</b>	<b>0.62</b>	<b>0.93</b>	<b>1.75</b>	<b>1.53</b>	<b>0.90</b>	<b>0.77</b>
<i>50% U.S. 3-Month T-Bill / 50% Bloomberg Barclays US Government Treasury 1 to 3 Year Index</i>						-0.02	-0.01	0.04	1.49	1.78	1.98	1.47	1.09	0.83
<b>Real Assets<sup>(1)</sup></b>	<b>11.7%</b>	<b>19.0</b>	10.0	25.0	<b>\$2,227.0</b>	<b>N/A</b>	<b>-0.03</b>	<b>0.81</b>	<b>0.50</b>	<b>1.00</b>	<b>4.90</b>	<b>6.60</b>	<b>8.16</b>	<b>9.12</b>
<i>Blended Custom Benchmark 1Q in Arrears<sup>(2)</sup></i>						N/A	-0.76	0.17	2.75	4.09	5.61	6.87	8.34	9.75
<b>Private Investment<sup>(1)</sup></b>	<b>7.9%</b>	<b>10.0</b>	5.0	15.0	<b>\$1,505.6</b>	<b>N/A</b>	<b>9.66</b>	<b>10.91</b>	<b>8.45</b>	<b>11.40</b>	<b>13.56</b>	<b>12.26</b>	<b>13.28</b>	<b>12.90</b>
<i>Russell 3000 + 250 basis points 1Q in Arrears<sup>(2)</sup></i>						N/A	14.23	29.24	13.34	15.32	12.83	13.16	12.56	13.75
<b>Private Credit<sup>(1)</sup></b>	<b>0.4%</b>	<b>5.0</b>	0.0	10.0	<b>\$84.0</b>	<b>N/A</b>	<b>3.16</b>	<b>7.47</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<i>S&amp;P / LSTA Leveraged Loan Index + 150 basis points 1Q in Arrears<sup>(2)</sup></i>						N/A	7.40	12.37	N/A	N/A	N/A	N/A	N/A	N/A
<b>Alternative Investment Fund</b>	<b>6.7%</b>	<b>3.0</b>	0.0	10.0	<b>\$1,280.3</b>	<b>-0.17</b>	<b>1.24</b>	<b>2.47</b>	<b>-4.10</b>	<b>-2.93</b>	<b>1.74</b>	<b>2.22</b>	<b>2.73</b>	<b>N/A</b>
<i>Absolute Return Strategy blended benchmark<sup>(3)</sup></i>						-0.14	0.07	0.46	3.25	4.03	4.03	2.61	1.86	N/A

<sup>(1)</sup> Actual performance, reported one quarter in arrears.

<sup>(2)</sup> A blended benchmark comprised of the weightings of Real Estate, Infrastructure / Natural Resources and U.S. TIPS as of April 2020.

<sup>(3)</sup> A blended benchmark comprised of the weightings of each of the investments utilized within the fund of funds vehicle multiplied by their respective benchmarks as of April 2020.



# STATE EMPLOYEES' RETIREMENT FUND

Net of All Fees and Expenses

Periods Ending October 31, 2020

Funds <i>Benchmark</i>	Percent Holdings	Policy Weights	Lower Range	Upper Range	Market Value (mil.)	Month	Three Months	Fiscal YTD	Calendar YTD	One Year	Compound, annualized returns			
											Three Year	Five Year	Seven Year	Ten Year
<b>State Employees' Retirement Fund</b>	<b>100.0%</b>				<b>\$13,765.1</b>	<b>-0.56</b>	<b>1.05</b>	<b>4.78</b>	<b>1.18</b>	<b>4.61</b>	<b>4.89</b>	<b>7.02</b>	<b>6.34</b>	<b>7.16</b>
<i>Policy Benchmark</i>						-0.10	1.74	6.27	2.46	5.63	5.85	7.37	6.56	7.43
<i>Dynamic Benchmark</i>						-0.31	1.12	5.38	2.28	5.68	5.67	7.33	6.61	N/A
<b>Domestic Equity</b>	<b>20.6%</b>	<b>20.0</b>	15.0	25.0	<b>\$2,837.4</b>	<b>-2.18</b>	<b>0.80</b>	<b>6.85</b>	<b>3.36</b>	<b>10.37</b>	<b>9.83</b>	<b>11.45</b>	<b>11.06</b>	<b>12.70</b>
<i>Russell 3000</i>						-2.16	1.11	6.85	3.14	10.15	10.04	11.48	11.09	12.80
<b>Developed Markets ISF</b>	<b>10.9%</b>	<b>11.0</b>	6.0	16.0	<b>\$1,500.5</b>	<b>-3.71</b>	<b>-1.40</b>	<b>1.74</b>	<b>-9.20</b>	<b>-5.24</b>	<b>-1.25</b>	<b>4.11</b>	<b>3.83</b>	<b>5.60</b>
<i>MSCI EAFE IMI Net</i>						-3.92	-1.03	1.42	-10.34	-6.09	0.05	4.07	4.08	5.64
<b>Emerging Markets ISF</b>	<b>10.5%</b>	<b>9.0</b>	4.0	14.0	<b>\$1,442.1</b>	<b>2.36</b>	<b>4.54</b>	<b>15.51</b>	<b>6.98</b>	<b>14.74</b>	<b>4.51</b>	<b>9.63</b>	<b>4.22</b>	<b>3.26</b>
<i>MSCI Emerging Markets IMI</i>						1.80	2.57	11.77	0.49	7.63	1.47	7.36	3.14	2.21
<b>Core Fixed Income</b>	<b>17.4%</b>	<b>13.0</b>	8.0	18.0	<b>\$2,399.0</b>	<b>-0.46</b>	<b>-1.15</b>	<b>0.43</b>	<b>6.58</b>	<b>6.52</b>	<b>4.70</b>	<b>3.92</b>	<b>3.52</b>	<b>3.48</b>
<i>Barclays U.S. Aggregate Bond Index</i>						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	3.55
<b>Emerging Market Debt</b>	<b>5.1%</b>	<b>5.0</b>	0.0	10.0	<b>\$702.7</b>	<b>0.07</b>	<b>-1.82</b>	<b>2.34</b>	<b>-5.35</b>	<b>-3.11</b>	<b>0.81</b>	<b>4.44</b>	<b>2.27</b>	<b>2.93</b>
<i>50% JPM EMBI Global Div / 50% JPM GBI EM Global Div</i>						0.20	-1.65	1.66	-3.22	-1.39	2.38	4.82	2.46	3.51
<b>High Yield</b>	<b>5.9%</b>	<b>3.0</b>	0.0	8.0	<b>\$815.6</b>	<b>0.39</b>	<b>0.91</b>	<b>5.72</b>	<b>1.49</b>	<b>4.08</b>	<b>3.61</b>	<b>5.54</b>	<b>4.36</b>	<b>5.69</b>
<i>Bloomberg Barclays U.S. High Yield 2% Issuer Cap Index</i>						0.49	0.42	5.09	0.33	2.97	3.87	5.92	4.57	5.92
<b>Liquidity Fund</b>	<b>2.7%</b>	<b>2.0</b>	0.0	3.0	<b>\$372.8</b>	<b>0.01</b>	<b>0.05</b>	<b>0.08</b>	<b>0.62</b>	<b>0.93</b>	<b>1.75</b>	<b>1.53</b>	<b>0.90</b>	<b>0.78</b>
<i>50% U.S. 3-Month T-Bill / 50% Bloomberg Barclays US Government Treasury 1 to 3 Year Index</i>						-0.02	-0.01	0.04	1.49	1.78	1.98	1.47	1.09	0.83
<b>Real Assets<sup>(1)</sup></b>	<b>11.7%</b>	<b>19.0</b>	10.0	25.0	<b>\$1,608.6</b>	<b>N/A</b>	<b>-0.03</b>	<b>0.81</b>	<b>0.50</b>	<b>1.00</b>	<b>4.90</b>	<b>6.60</b>	<b>8.16</b>	<b>9.12</b>
<i>Blended Custom Benchmark 1Q in Arrears<sup>(2)</sup></i>						N/A	-0.76	0.17	2.75	4.09	5.61	6.87	8.34	9.75
<b>Private Investment<sup>(1)</sup></b>	<b>7.9%</b>	<b>10.0</b>	5.0	15.0	<b>\$1,090.1</b>	<b>N/A</b>	<b>9.66</b>	<b>10.91</b>	<b>8.45</b>	<b>11.40</b>	<b>13.56</b>	<b>12.26</b>	<b>13.28</b>	<b>12.90</b>
<i>Russell 3000 + 250 basis points 1Q in Arrears<sup>(2)</sup></i>						N/A	14.23	29.24	13.34	15.32	12.83	13.16	12.56	13.75
<b>Private Credit<sup>(1)</sup></b>	<b>0.5%</b>	<b>5.0</b>	0.0	10.0	<b>\$61.9</b>	<b>N/A</b>	<b>3.16</b>	<b>7.47</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<i>S&amp;P / LSTA Leveraged Loan Index + 150 basis points 1Q in Arrears<sup>(2)</sup></i>						N/A	7.40	12.37	N/A	N/A	N/A	N/A	N/A	N/A
<b>Alternative Investment Fund</b>	<b>6.8%</b>	<b>3.0</b>	0.0	8.0	<b>\$934.4</b>	<b>-0.17</b>	<b>1.24</b>	<b>2.47</b>	<b>-4.10</b>	<b>-2.93</b>	<b>1.74</b>	<b>2.22</b>	<b>2.73</b>	<b>N/A</b>
<i>Absolute Return Strategy blended benchmark<sup>(3)</sup></i>						-0.14	0.07	0.46	3.25	4.03	4.03	2.61	1.86	N/A

<sup>(1)</sup> Actual performance, reported one quarter in arrears.

<sup>(2)</sup> A blended benchmark comprised of the weightings of Real Estate, Infrastructure / Natural Resources and U.S. TIPS as of April 2020.

<sup>(3)</sup> A blended benchmark comprised of the weightings of each of the investments utilized within the fund of funds vehicle multiplied by their respective benchmarks as of April 2020.



# **MUNICIPAL EMPLOYEES RETIREMENT FUND**

Net of All Fees and Expenses  
Periods Ending October 31, 2020

Funds <i>Benchmark</i>	Percent Holdings	Policy Weights	Lower Range	Upper Range	Market Value (mil.)	Month	Three Months	Fiscal YTD	Calendar YTD	One Year	Compound, annualized returns			
											Three Year	Five Year	Seven Year	Ten Year
<b>Municipal Employees' Retirement Fund</b> <i>Policy Benchmark</i> <i>Dynamic Benchmark</i>	100.0%				\$2,802.3	-0.56	1.04	4.75	1.18	4.72	4.91	6.81	6.11	6.64
						-0.10	1.74	6.27	2.46	5.63	5.73	7.13	6.19	7.02
						-0.31	1.10	5.34	2.29	5.79	5.63	7.08	6.23	N/A
<b>Domestic Equity</b> <i>Russell 3000</i>	20.7%	20.0	15.0	25.0	\$579.6	-2.18	0.80	6.85	3.36	10.37	9.83	11.45	11.06	12.70
						-2.16	1.11	6.85	3.14	10.15	10.04	11.48	11.09	12.80
<b>Developed Markets ISF</b> <i>MSCI EAFE IMI Net</i>	11.0%	11.0	6.0	16.0	\$307.2	-3.71	-1.40	1.74	-9.20	-5.24	-1.25	4.11	3.84	5.60
						-3.92	-1.03	1.42	-10.34	-6.09	0.05	4.07	4.08	5.64
<b>Emerging Markets ISF</b> <i>MSCI Emerging Markets IMI</i>	10.5%	9.0	4.0	14.0	\$294.2	2.36	4.54	15.51	6.98	14.74	4.51	9.63	4.23	3.26
						1.80	2.57	11.77	0.49	7.63	1.47	7.36	3.14	2.21
<b>Core Fixed Income</b> <i>Barclays U.S. Aggregate Bond Index</i>	17.6%	13.0	8.0	18.0	\$492.5	-0.46	-1.15	0.43	6.58	6.52	4.70	3.92	3.52	3.49
						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	3.55
<b>Emerging Market Debt</b> <i>50% JPM EMBI Global Div / 50% JPM GBI EM Global Div</i>	5.1%	5.0	0.0	10.0	\$143.3	0.07	-1.82	2.34	-5.35	-3.11	0.81	4.44	2.27	2.93
						0.20	-1.65	1.66	-3.22	-1.39	2.38	4.82	2.46	3.51
<b>High Yield</b> <i>Bloomberg Barclays U.S. High Yield 2% Issuer Cap Index</i>	6.0%	3.0	0.0	8.0	\$168.0	0.39	0.91	5.72	1.49	4.08	3.61	5.54	4.36	5.68
						0.49	0.42	5.09	0.33	2.97	3.87	5.92	4.57	5.92
<b>Liquidity Fund</b> <i>50% U.S. 3-Month T-Bill / 50% Bloomberg Barclays US Government Treasury 1 to 3 Year Index</i>	2.2%	2.0	0.0	3.0	\$63.0	0.01	0.05	0.08	0.62	0.93	1.75	1.53	0.90	0.79
						-0.02	-0.01	0.04	1.49	1.78	1.98	1.47	1.09	0.83
<b>Real Assets<sup>(1)</sup></b> <i>Blended Custom Benchmark 1Q in Arrears<sup>(2)</sup></i>	11.7%	19.0	15.0	25.0	\$328.9	N/A	-0.03	0.81	0.50	1.00	4.90	6.60	8.16	9.12
						N/A	-0.76	0.17	2.75	4.09	5.61	6.87	8.34	9.75
<b>Private Investment<sup>(1)</sup></b> <i>Russell 3000 + 250 basis points 1Q in Arrears<sup>(2)</sup></i>	7.9%	10.0	5.0	15.0	\$222.8	N/A	9.66	10.91	8.45	11.40	13.56	12.26	13.28	12.90
						N/A	14.23	29.24	13.34	15.32	12.83	13.16	12.56	13.75
<b>Private Credit<sup>(1)</sup></b> <i>S&amp;P / LSTA Leveraged Loan Index + 150 basis points 1Q in Arrears<sup>(2)</sup></i>	0.5%	5.0	0.0	10.0	\$12.9	N/A	3.16	7.47	N/A	N/A	N/A	N/A	N/A	N/A
						N/A	7.40	12.37	N/A	N/A	N/A	N/A	N/A	N/A
<b>Alternative Investment Fund</b> <i>Absolute Return Strategy blended benchmark<sup>(3)</sup></i>	6.8%	3.0	0.0	10.0	\$190.0	-0.17	1.24	2.47	-4.10	-2.93	1.74	2.22	2.73	N/A
						-0.14	0.07	0.46	3.25	4.03	4.03	2.61	1.86	N/A

<sup>(1)</sup> Actual performance, reported one quarter in arrears.

<sup>(2)</sup> A blended benchmark comprised of the weightings of Real Estate, Infrastructure / Natural Resources and U.S. TIPS as of April 2020.

<sup>(3)</sup> A blended benchmark comprised of the weightings of each of the investments utilized within the fund of funds vehicle multiplied by their respective benchmarks as of April 2020.



**OPEB FUND**  
**Net of All Fees and Expenses**  
**Periods Ending October 31, 2020**

Funds <i>Benchmark</i>	Percent Holdings	Policy Weights	Lower Range	Upper Range	Market Value (mil.)	Month	Three Months	Fiscal YTD	Calendar YTD	One Year	Compound, annualized returns			
											Three Year	Five Year	Seven Year	Ten Year
<b>OPEB</b>	<b>100.0%</b>				<b>\$1,575.7</b>	<b>-0.57</b>	<b>1.05</b>	<b>4.80</b>	<b>1.23</b>	<b>4.70</b>	<b>5.12</b>	<b>6.58</b>	<b>6.15</b>	<b>N/A</b>
<i>Policy Benchmark</i>						-0.10	1.74	6.27	2.46	5.63	5.89	6.87	6.34	N/A
<i>Dynamic Benchmark</i>						-0.32	1.12	5.39	2.29	5.70	5.99	6.96	6.35	N/A
<b>Domestic Equity</b>	<b>20.4%</b>	<b>20.0</b>	15.0	25.0	<b>\$322.2</b>	<b>-2.18</b>	<b>0.80</b>	<b>6.85</b>	<b>3.36</b>	<b>10.37</b>	<b>9.84</b>	<b>11.45</b>	<b>11.06</b>	<b>N/A</b>
<i>Russell 3000</i>						-2.16	1.11	6.85	3.14	10.15	10.04	11.48	11.09	N/A
<b>Developed Markets ISF</b>	<b>10.9%</b>	<b>11.0</b>	6.0	15.0	<b>\$172.0</b>	<b>-3.71</b>	<b>-1.40</b>	<b>1.74</b>	<b>-9.20</b>	<b>-5.24</b>	<b>-1.24</b>	<b>4.11</b>	<b>3.83</b>	<b>N/A</b>
<i>MSCI EAFE IMI Net</i>						-3.92	-1.03	1.42	-10.34	-6.09	0.05	4.07	4.08	N/A
<b>Emerging Markets ISF</b>	<b>10.4%</b>	<b>9.0</b>	4.0	14.0	<b>\$163.9</b>	<b>2.36</b>	<b>4.54</b>	<b>15.51</b>	<b>6.98</b>	<b>14.74</b>	<b>4.51</b>	<b>9.62</b>	<b>4.23</b>	<b>N/A</b>
<i>MSCI Emerging Markets IMI</i>						1.80	2.57	11.77	0.49	7.63	1.47	7.36	3.14	N/A
<b>Core Fixed Income</b>	<b>17.0%</b>	<b>13.0</b>	8.0	18.0	<b>\$268.2</b>	<b>-0.46</b>	<b>-1.15</b>	<b>0.43</b>	<b>6.58</b>	<b>6.52</b>	<b>4.69</b>	<b>3.92</b>	<b>3.52</b>	<b>N/A</b>
<i>Barclays U.S. Aggregate Bond Index</i>						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	N/A
<b>Emerging Market Debt</b>	<b>5.1%</b>	<b>5.0</b>	0.0	10.0	<b>\$81.0</b>	<b>0.07</b>	<b>-1.82</b>	<b>2.33</b>	<b>-5.35</b>	<b>-3.12</b>	<b>0.81</b>	<b>4.45</b>	<b>2.27</b>	<b>N/A</b>
<i>50% JPM EMBI Global Div / 50% JPM GBI EM Global Div</i>						0.20	-1.65	1.66	-3.22	-1.39	2.38	4.82	2.46	N/A
<b>High Yield</b>	<b>5.8%</b>	<b>3.0</b>	0.0	8.0	<b>\$90.8</b>	<b>0.39</b>	<b>0.91</b>	<b>5.72</b>	<b>1.49</b>	<b>4.08</b>	<b>3.60</b>	<b>5.53</b>	<b>4.36</b>	<b>N/A</b>
<i>Bloomberg Barclays U.S. High Yield 2% Issuer Cap Index</i>						0.49	0.42	5.09	0.33	2.97	3.87	5.92	4.57	N/A
<b>Liquidity Fund</b>	<b>3.9%</b>	<b>2.0</b>	0.0	3.0	<b>\$62.0</b>	<b>0.01</b>	<b>0.05</b>	<b>0.08</b>	<b>0.63</b>	<b>0.94</b>	<b>1.77</b>	<b>1.58</b>	<b>0.94</b>	<b>N/A</b>
<i>50% U.S. 3-Month T-Bill / 50% Bloomberg Barclays US Government Treasury 1 to 3 Year Index</i>						-0.02	-0.01	0.04	1.49	1.78	1.98	1.47	1.09	N/A
<b>Real Assets<sup>(1)</sup></b>	<b>11.5%</b>	<b>19.0</b>	15.0	25.0	<b>\$180.9</b>	<b>N/A</b>	<b>-0.03</b>	<b>0.81</b>	<b>0.50</b>	<b>1.00</b>	<b>4.90</b>	<b>6.60</b>	<b>8.16</b>	<b>N/A</b>
<i>Blended Custom Benchmark 1Q in Arrears<sup>(2)</sup></i>						N/A	-0.76	0.17	2.75	4.09	5.61	6.87	8.34	N/A
<b>Private Investment<sup>(1)</sup></b>	<b>7.8%</b>	<b>10.0</b>	5.0	15.0	<b>\$123.4</b>	<b>N/A</b>	<b>9.66</b>	<b>10.91</b>	<b>8.45</b>	<b>11.40</b>	<b>13.56</b>	<b>12.26</b>	<b>13.29</b>	<b>N/A</b>
<i>Russell 3000 + 250 basis points 1Q in Arrears<sup>(2)</sup></i>						N/A	14.23	29.24	13.34	15.32	12.83	13.16	12.56	N/A
<b>Private Credit<sup>(1)</sup></b>	<b>0.5%</b>	<b>5.0</b>	0.0	10.0	<b>\$7.4</b>	<b>N/A</b>	<b>3.16</b>	<b>7.47</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<i>S&amp;P / LSTA Leveraged Loan Index + 150 basis points 1Q in Arrears<sup>(2)</sup></i>						N/A	7.40	12.37	N/A	N/A	N/A	N/A	N/A	N/A
<b>Alternative Investment Fund</b>	<b>6.6%</b>	<b>3.0</b>	0.0	10.0	<b>\$104.0</b>	<b>-0.17</b>	<b>1.24</b>	<b>2.47</b>	<b>-4.10</b>	<b>-2.93</b>	<b>1.74</b>	<b>2.22</b>	<b>2.73</b>	<b>N/A</b>
<i>Absolute Return Strategy blended benchmark<sup>(3)</sup></i>						-0.14	0.07	0.46	3.25	4.03	4.03	2.61	1.86	N/A

<sup>(1)</sup> Actual performance, reported one quarter in arrears.

<sup>(2)</sup> A blended benchmark comprised of the weightings of Real Estate, Infrastructure / Natural Resources and U.S. TIPS as of April 2020.

<sup>(3)</sup> A blended benchmark comprised of the weightings of each of the investments utilized within the fund of funds vehicle multiplied by their respective benchmarks as of April 2020.





# **PROBATE JUDGES EMPLOYEES' RETIREMENT FUND**

Net of All Fees and Expenses  
Periods Ending October 31, 2020

Funds <i>Benchmark</i>	Percent Holdings	Policy Weights	Lower Range	Upper Range	Market Value (mil.)	Month	Three Months	Fiscal YTD	Calendar YTD	One Year	Compound, annualized returns			
											Three Year	Five Year	Seven Year	Ten Year
<b>Probate Judges Employees' Retirement Fund</b>	<b>100.0%</b>				<b>\$115.1</b>	<b>-0.56</b>	<b>1.05</b>	<b>4.74</b>	<b>1.08</b>	<b>4.52</b>	<b>4.79</b>	<b>6.79</b>	<b>6.09</b>	<b>6.68</b>
<i>Policy Benchmark</i>						-0.10	1.74	6.27	2.46	5.63	5.72	7.21	6.27	7.08
<i>Dynamic Benchmark</i>						-0.31	1.11	5.32	2.22	5.63	5.66	7.18	6.33	N/A
<b>Domestic Equity</b>	<b>20.3%</b>	<b>20.0</b>	15.0	25.0	<b>\$23.4</b>	<b>-2.18</b>	<b>0.80</b>	<b>6.85</b>	<b>3.36</b>	<b>10.37</b>	<b>9.83</b>	<b>11.45</b>	<b>11.06</b>	<b>12.70</b>
<i>Russell 3000</i>						-2.16	1.11	6.85	3.14	10.15	10.04	11.48	11.09	12.80
<b>Developed Markets ISF</b>	<b>10.9%</b>	<b>11.0</b>	6.0	16.0	<b>\$12.5</b>	<b>-3.71</b>	<b>-1.40</b>	<b>1.74</b>	<b>-9.20</b>	<b>-5.24</b>	<b>-1.25</b>	<b>4.11</b>	<b>3.84</b>	<b>5.60</b>
<i>MSCI EAFE IMI</i>						-3.92	-1.03	1.42	-10.34	-6.09	0.05	4.07	4.08	5.64
<b>Emerging Markets ISF</b>	<b>10.3%</b>	<b>9.0</b>	4.0	14.0	<b>\$11.9</b>	<b>2.36</b>	<b>4.54</b>	<b>15.51</b>	<b>6.98</b>	<b>14.74</b>	<b>4.51</b>	<b>9.63</b>	<b>4.22</b>	<b>3.26</b>
<i>MSCI Emerging Markets IMI</i>						1.80	2.57	11.77	0.49	7.63	1.47	7.36	3.14	2.21
<b>Core Fixed Income</b>	<b>17.4%</b>	<b>13.0</b>	8.0	18.0	<b>\$20.1</b>	<b>-0.46</b>	<b>-1.15</b>	<b>0.43</b>	<b>6.58</b>	<b>6.52</b>	<b>4.70</b>	<b>3.92</b>	<b>3.52</b>	<b>3.49</b>
<i>Barclays U.S. Aggregate Bond Index</i>						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	3.55
<b>Emerging Market Debt</b>	<b>5.1%</b>	<b>5.0</b>	0.0	10.0	<b>\$5.9</b>	<b>0.07</b>	<b>-1.82</b>	<b>2.33</b>	<b>-5.35</b>	<b>-3.11</b>	<b>0.81</b>	<b>4.44</b>	<b>2.26</b>	<b>2.93</b>
<i>50% JPM EMBI Global Div / 50% JPM GBI EM Global Div</i>						0.20	-1.65	1.66	-3.22	-1.39	2.38	4.82	2.46	3.51
<b>High Yield</b>	<b>5.9%</b>	<b>3.0</b>	0.0	8.0	<b>\$6.8</b>	<b>0.39</b>	<b>0.91</b>	<b>5.72</b>	<b>1.49</b>	<b>4.08</b>	<b>3.61</b>	<b>5.54</b>	<b>4.36</b>	<b>5.68</b>
<i>Bloomberg Barclays U.S. High Yield 2% Issuer Cap Index</i>						0.49	0.42	5.09	0.33	2.97	3.87	5.92	4.57	5.92
<b>Liquidity Fund</b>	<b>3.1%</b>	<b>2.0</b>	0.0	3.0	<b>\$3.5</b>	<b>0.01</b>	<b>0.05</b>	<b>0.08</b>	<b>0.62</b>	<b>0.93</b>	<b>1.75</b>	<b>1.52</b>	<b>0.90</b>	<b>0.78</b>
<i>50% U.S. 3-Month T-Bill / 50% Bloomberg Barclays US Government Treasury 1 to 3 Year Index</i>						-0.02	-0.01	0.04	1.49	1.78	1.98	1.47	1.09	0.83
<b>Real Assets<sup>(1)</sup></b>	<b>11.7%</b>	<b>19.0</b>	15.0	25.0	<b>\$13.4</b>	<b>N/A</b>	<b>-0.03</b>	<b>0.81</b>	<b>0.50</b>	<b>1.00</b>	<b>4.90</b>	<b>6.60</b>	<b>8.16</b>	<b>9.12</b>
<i>Blended Custom Benchmark 1Q in Arrears<sup>(2)</sup></i>						N/A	-0.76	0.17	2.75	4.09	5.61	6.87	8.34	9.75
<b>Private Investment<sup>(1)</sup></b>	<b>7.9%</b>	<b>10.0</b>	5.0	15.0	<b>\$9.1</b>	<b>N/A</b>	<b>9.66</b>	<b>10.91</b>	<b>8.45</b>	<b>11.40</b>	<b>13.56</b>	<b>12.26</b>	<b>13.28</b>	<b>12.90</b>
<i>Russell 3000 + 250 basis points 1Q in Arrears<sup>(2)</sup></i>						N/A	14.23	29.24	13.34	15.32	12.83	13.16	12.56	13.75
<b>Private Credit<sup>(1)</sup></b>	<b>0.4%</b>	<b>5.0</b>	0.0	10.0	<b>\$0.4</b>	<b>N/A</b>	<b>3.16</b>	<b>7.47</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<i>S&amp;P / LSTA Leveraged Loan Index + 150 basis points 1Q in Arrears<sup>(2)</sup></i>						N/A	7.40	12.37	N/A	N/A	N/A	N/A	N/A	N/A
<b>Alternative Investment Fund</b>	<b>7.0%</b>	<b>3.0</b>	0.0	10.0	<b>\$8.0</b>	<b>-0.17</b>	<b>1.24</b>	<b>2.47</b>	<b>-4.10</b>	<b>-2.93</b>	<b>1.74</b>	<b>2.22</b>	<b>2.73</b>	<b>N/A</b>
<i>Absolute Return Strategy blended benchmark<sup>(3)</sup></i>						-0.14	0.07	0.46	3.25	4.03	4.03	2.61	1.86	N/A

<sup>(1)</sup> Actual performance, reported one quarter in arrears.

<sup>(2)</sup> A blended benchmark comprised of the weightings of Real Estate, Infrastructure / Natural Resources and U.S. TIPS as of April 2020.

<sup>(3)</sup> A blended benchmark comprised of the weightings of each of the investments utilized within the fund of funds vehicle multiplied by their respective benchmarks as of April 2020.



# STATE JUDGES RETIREMENT FUND

Net of All Fees and Expenses

Periods Ending October 31, 2020

Funds <i>Benchmark</i>	Percent Holdings	Policy Weights	Lower Range	Upper Range	Market Value (mil.)	Month	Three Months	Fiscal YTD	Calendar YTD	One Year	Compound, annualized returns			
											Three Year	Five Year	Seven Year	Ten Year
<b>State Judges Retirement Fund</b>	<b>100.0%</b>				<b>\$249.1</b>	<b>-0.57</b>	<b>1.04</b>	<b>4.75</b>	<b>1.11</b>	<b>4.58</b>	<b>4.94</b>	<b>6.82</b>	<b>6.13</b>	<b>6.76</b>
<i>Policy Benchmark</i>						-0.10	1.74	6.27	2.46	5.63	5.73	7.13	6.19	7.02
<i>Dynamic Benchmark</i>						-0.32	1.11	5.34	2.25	5.69	5.78	7.17	6.29	N/A
<b>Domestic Equity</b>	<b>20.5%</b>	<b>20.0</b>	15.0	25.0	<b>\$51.2</b>	<b>-2.18</b>	<b>0.80</b>	<b>6.85</b>	<b>3.36</b>	<b>10.37</b>	<b>9.83</b>	<b>11.45</b>	<b>11.06</b>	<b>12.70</b>
<i>Russell 3000</i>						-2.16	1.11	6.85	3.14	10.15	10.04	11.48	11.09	12.80
<b>Developed Markets ISF</b>	<b>11.0%</b>	<b>11.0</b>	6.0	16.0	<b>\$27.3</b>	<b>-3.71</b>	<b>-1.40</b>	<b>1.74</b>	<b>-9.20</b>	<b>-5.24</b>	<b>-1.25</b>	<b>4.11</b>	<b>3.84</b>	<b>5.60</b>
<i>MSCI EAFE IMI Net</i>						-3.92	-1.03	1.42	-10.34	-6.09	0.05	4.07	4.08	5.64
<b>Emerging Markets ISF</b>	<b>10.4%</b>	<b>9.0</b>	4.0	14.0	<b>\$25.9</b>	<b>2.36</b>	<b>4.54</b>	<b>15.51</b>	<b>6.98</b>	<b>14.74</b>	<b>4.51</b>	<b>9.63</b>	<b>4.23</b>	<b>3.26</b>
<i>MSCI Emerging Markets IMI</i>						1.80	2.57	11.77	0.49	7.63	1.47	7.36	3.14	2.21
<b>Core Fixed Income</b>	<b>17.5%</b>	<b>13.0</b>	8.0	18.0	<b>\$43.6</b>	<b>-0.46</b>	<b>-1.15</b>	<b>0.43</b>	<b>6.58</b>	<b>6.52</b>	<b>4.69</b>	<b>3.92</b>	<b>3.52</b>	<b>3.49</b>
<i>Barclays U.S. Aggregate Bond Index</i>						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	3.55
<b>Emerging Market Debt</b>	<b>5.2%</b>	<b>5.0</b>	0.0	10.0	<b>\$12.9</b>	<b>0.07</b>	<b>-1.82</b>	<b>2.33</b>	<b>-5.35</b>	<b>-3.11</b>	<b>0.81</b>	<b>4.44</b>	<b>2.27</b>	<b>2.93</b>
<i>50% JPM EMBI Global Div / 50% JPM GBI EM Global Div</i>						0.20	-1.65	1.66	-3.22	-1.39	2.38	4.82	2.46	3.51
<b>High Yield</b>	<b>6.0%</b>	<b>3.0</b>	0.0	8.0	<b>\$14.9</b>	<b>0.39</b>	<b>0.91</b>	<b>5.72</b>	<b>1.49</b>	<b>4.08</b>	<b>3.61</b>	<b>5.54</b>	<b>4.36</b>	<b>5.68</b>
<i>Bloomberg Barclays U.S. High Yield 2% Issuer Cap Index</i>						0.49	0.42	5.09	0.33	2.97	3.87	5.92	4.57	5.92
<b>Liquidity Fund</b>	<b>2.5%</b>	<b>2.0</b>	0.0	3.0	<b>\$6.3</b>	<b>0.01</b>	<b>0.05</b>	<b>0.08</b>	<b>0.62</b>	<b>0.93</b>	<b>1.75</b>	<b>1.53</b>	<b>0.90</b>	<b>0.75</b>
<i>50% U.S. 3-Month T-Bill / 50% Bloomberg Barclays US Government Treasury 1 to 3 Year Index</i>						-0.02	-0.01	0.04	1.49	1.78	1.98	1.47	1.09	0.83
<b>Real Assets<sup>(1)</sup></b>	<b>11.7%</b>	<b>19.0</b>	15.0	25.0	<b>\$29.1</b>	<b>N/A</b>	<b>-0.03</b>	<b>0.81</b>	<b>0.50</b>	<b>1.00</b>	<b>4.90</b>	<b>6.60</b>	<b>8.16</b>	<b>9.12</b>
<i>Blended Custom Benchmark 1Q in Arrears<sup>(2)</sup></i>						N/A	-0.76	0.17	2.75	4.09	5.61	6.87	8.34	9.75
<b>Private Investment<sup>(1)</sup></b>	<b>7.9%</b>	<b>10.0</b>	5.0	15.0	<b>\$19.6</b>	<b>N/A</b>	<b>9.66</b>	<b>10.91</b>	<b>8.45</b>	<b>11.40</b>	<b>13.56</b>	<b>12.26</b>	<b>13.28</b>	<b>12.90</b>
<i>Russell 3000 + 250 basis points 1Q in Arrears<sup>(2)</sup></i>						N/A	14.23	29.24	13.34	15.32	12.83	13.16	12.56	13.75
<b>Private Credit<sup>(1)</sup></b>	<b>0.4%</b>	<b>5.0</b>	0.0	10.0	<b>\$0.9</b>	<b>N/A</b>	<b>3.16</b>	<b>7.47</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<i>S&amp;P / LSTA Leveraged Loan Index + 150 basis points 1Q in Arrears<sup>(2)</sup></i>						N/A	7.40	12.37	N/A	N/A	N/A	N/A	N/A	N/A
<b>Alternative Investment Fund</b>	<b>6.9%</b>	<b>3.0</b>	0.0	10.0	<b>\$17.3</b>	<b>-0.17</b>	<b>1.24</b>	<b>2.47</b>	<b>-4.10</b>	<b>-2.93</b>	<b>1.74</b>	<b>2.22</b>	<b>2.73</b>	<b>N/A</b>
<i>Absolute Return Strategy blended benchmark<sup>(3)</sup></i>						-0.14	0.07	0.46	3.25	4.03	4.03	2.61	1.86	N/A

<sup>(1)</sup> Actual performance, reported one quarter in arrears.

<sup>(2)</sup> A blended benchmark comprised of the weightings of Real Estate, Infrastructure / Natural Resources and U.S. TIPS as of April 2020.

<sup>(3)</sup> A blended benchmark comprised of the weightings of each of the investments utilized within the fund of funds vehicle multiplied by their respective benchmarks as of April 2020.



# STATE'S ATTORNEYS' RETIREMENT FUND

Net of All Fees and Expenses  
Periods Ending October 31, 2020

Funds <i>Benchmark</i>	Percent Holdings	Policy Weights	Lower Range	Upper Range	Market Value (mil.)	Month	Three Months	Fiscal YTD	Calendar YTD	One Year	Compound, annualized returns			
											Three Year	Five Year	Seven Year	Ten Year
<b>State's Attorneys' Retirement Fund</b>	<b>100.0%</b>				<b>\$2.2</b>	<b>-0.56</b>	<b>1.05</b>	<b>4.75</b>	<b>1.10</b>	<b>4.55</b>	<b>4.35</b>	<b>6.68</b>	<b>5.79</b>	<b>6.11</b>
<i>Policy Benchmark</i>						-0.10	1.74	6.27	2.46	5.63	5.97	7.41	6.45	N/A
<i>Dynamic Benchmark</i>						-0.31	1.11	5.33	2.26	5.68	5.72	7.26	6.37	N/A
<b>Domestic Equity</b>	<b>20.4%</b>	<b>20.0</b>	15.0	25.0	<b>\$0.5</b>	<b>-2.18</b>	<b>0.80</b>	<b>6.85</b>	<b>3.36</b>	<b>10.37</b>	<b>9.84</b>	<b>11.45</b>	<b>11.06</b>	<b>12.70</b>
<i>Russell 3000</i>						-2.16	1.11	6.85	3.14	10.15	10.04	11.48	11.09	12.80
<b>Developed Markets ISF</b>	<b>10.9%</b>	<b>11.0</b>	6.0	16.0	<b>\$0.2</b>	<b>-3.71</b>	<b>-1.40</b>	<b>1.74</b>	<b>-9.20</b>	<b>-5.24</b>	<b>-1.25</b>	<b>4.11</b>	<b>3.84</b>	<b>N/A</b>
<i>MSCI EAFE IMI Net</i>						-3.92	-1.03	1.42	-10.34	-6.09	0.05	4.07	4.08	N/A
<b>Emerging Markets ISF</b>	<b>10.4%</b>	<b>9.0</b>	4.0	14.0	<b>\$0.2</b>	<b>2.36</b>	<b>4.54</b>	<b>15.51</b>	<b>6.98</b>	<b>14.74</b>	<b>4.50</b>	<b>9.62</b>	<b>4.22</b>	<b>N/A</b>
<i>MSCI Emerging Markets IMI</i>						1.80	2.57	11.77	0.49	7.63	1.47	7.36	3.14	N/A
<b>Core Fixed Income</b>	<b>17.4%</b>	<b>13.0</b>	8.0	18.0	<b>\$0.4</b>	<b>-0.46</b>	<b>-1.15</b>	<b>0.43</b>	<b>6.58</b>	<b>6.52</b>	<b>4.69</b>	<b>3.92</b>	<b>3.52</b>	<b>3.52</b>
<i>Barclays U.S. Aggregate Bond Index</i>						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	3.55
<b>Emerging Market Debt</b>	<b>5.1%</b>	<b>5.0</b>	0.0	10.0	<b>\$0.1</b>	<b>0.07</b>	<b>-1.82</b>	<b>2.33</b>	<b>-5.35</b>	<b>-3.11</b>	<b>0.80</b>	<b>4.44</b>	<b>2.26</b>	<b>2.92</b>
<i>50% JPM EMBI Global Div / 50% JPM GBI EM Global Div</i>						0.20	-1.65	1.66	-3.22	-1.39	2.38	4.82	2.46	3.51
<b>High Yield</b>	<b>6.0%</b>	<b>3.0</b>	0.0	8.0	<b>\$0.1</b>	<b>0.39</b>	<b>0.91</b>	<b>5.72</b>	<b>1.49</b>	<b>4.08</b>	<b>3.61</b>	<b>5.54</b>	<b>4.36</b>	<b>5.66</b>
<i>Bloomberg Barclays U.S. High Yield 2% Issuer Cap Index</i>						0.49	0.42	5.09	0.33	2.97	3.87	5.92	4.57	5.92
<b>Liquidity Fund</b>	<b>3.1%</b>	<b>2.0</b>	0.0	3.0	<b>\$0.1</b>	<b>0.01</b>	<b>0.05</b>	<b>0.08</b>	<b>0.63</b>	<b>0.93</b>	<b>1.75</b>	<b>1.54</b>	<b>0.91</b>	<b>0.79</b>
<i>50% U.S. 3-Month T-Bill / 50% Bloomberg Barclays US Government Treasury 1 to 3 Year Index</i>						-0.02	-0.01	0.04	1.49	1.78	1.98	1.47	1.09	0.83
<b>Real Assets<sup>(1)</sup></b>	<b>11.7%</b>	<b>19.0</b>	15.0	25.0	<b>\$0.3</b>	<b>N/A</b>	<b>-0.03</b>	<b>0.81</b>	<b>0.50</b>	<b>1.00</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<i>Blended Custom Benchmark 1Q in Arrears<sup>(2)</sup></i>						N/A	-0.76	0.17	2.75	4.09	N/A	N/A	N/A	N/A
<b>Private Investment<sup>(1)</sup></b>	<b>7.9%</b>	<b>10.0</b>	5.0	15.0	<b>\$0.2</b>	<b>N/A</b>	<b>9.66</b>	<b>10.91</b>	<b>8.45</b>	<b>11.40</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<i>Russell 3000 + 250 basis points 1Q in Arrears<sup>(2)</sup></i>						N/A	14.23	29.24	13.34	15.32	N/A	N/A	N/A	N/A
<b>Private Credit<sup>(1)</sup></b>	<b>0.4%</b>	<b>5.0</b>	0.0	10.0	<b>\$0.0</b>	<b>N/A</b>	<b>3.16</b>	<b>7.47</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<i>S&amp;P / LSTA Leveraged Loan Index + 150 basis points 1Q in Arrears<sup>(2)</sup></i>						N/A	7.40	12.37	N/A	N/A	N/A	N/A	N/A	N/A
<b>Alternative Investment Fund</b>	<b>6.9%</b>	<b>3.0</b>	0.0	10.0	<b>\$0.2</b>	<b>-0.17</b>	<b>1.24</b>	<b>2.47</b>	<b>-4.10</b>	<b>-2.93</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<i>Absolute Return Strategy blended benchmark<sup>(3)</sup></i>						-0.14	0.07	0.46	3.25	4.03	N/A	N/A	N/A	N/A

<sup>(1)</sup> Actual performance, reported one quarter in arrears.

<sup>(2)</sup> A blended benchmark comprised of the weightings of Real Estate, Infrastructure / Natural Resources and U.S. TIPS as of April 2020.

<sup>(3)</sup> A blended benchmark comprised of the weightings of each of the investments utilized within the fund of funds vehicle multiplied by their respective benchmarks as of April 2020.



# **AGRICULTURAL COLLEGE FUND**

Net of All Fees and Expenses

Periods Ending October 31, 2020

Funds	Percent Holdings	Policy Weights	Lower Range	Upper Range	Market Value (mil.)	Month	Three Months	Fiscal YTD	Calendar YTD	One Year	Compound, annualized returns			
											Three Year	Five Year	Seven Year	Ten Year
<b>Benchmark</b>														
<b>Agricultural College Fund</b>	<b>100.0%</b>				<b>\$0.7</b>	<b>-0.46</b>	<b>-1.16</b>	<b>0.45</b>	<b>6.60</b>	<b>6.55</b>	<b>4.74</b>	<b>3.96</b>	<b>3.55</b>	<b>3.84</b>
Policy Benchmark						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	3.83
Dynamic Benchmark						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	N/A
<b>Core Fixed Income</b>	<b>99.1%</b>	<b>100.0</b>	100.0	100.0	<b>\$0.7</b>	<b>-0.46</b>	<b>-1.15</b>	<b>0.43</b>	<b>6.58</b>	<b>6.52</b>	<b>4.70</b>	<b>3.92</b>	<b>3.52</b>	<b>3.48</b>
Barclays U.S. Aggregate Bond Index						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	3.55
<b>Liquidity Fund <sup>(1)</sup></b>	<b>0.9%</b>				<b>\$0.0</b>	<b>0.01</b>	<b>0.03</b>	<b>0.03</b>	<b>0.60</b>	<b>0.91</b>	<b>1.59</b>	<b>1.19</b>	<b>0.67</b>	<b>0.64</b>
50% U.S. 3-Month T-Bill / 50% Bloomberg Barclays US Government Treasury 1 to 3 Year Index						-0.02	-0.01	0.04	1.49	1.78	1.98	1.47	1.09	0.83

<sup>(1)</sup> Operational cash balance and expense accruals



**ANDREW C. CLARK FUND**  
Net of All Fees and Expenses  
Periods Ending October 31, 2020

Funds <i>Benchmark</i>	Percent Holdings	Policy Weights	Lower Range	Upper Range	Market Value (mil.)	Month	Three Months	Fiscal YTD	Calendar YTD	One Year	Compound, annualized returns			
											Three Year	Five Year	Seven Year	Ten Year
<b>Andrew C. Clark Fund</b>	<b>100.0%</b>				<b>\$1.3</b>	<b>-0.98</b>	<b>-0.53</b>	<b>2.32</b>	<b>4.57</b>	<b>6.41</b>	<b>5.04</b>	<b>5.49</b>	<b>4.85</b>	<b>5.53</b>
<i>Policy Benchmark</i>						-0.98	-0.66	1.81	4.06	5.87	5.35	5.48	5.01	5.53
<i>Dynamic Benchmark</i>						-1.01	-0.62	1.96	3.99	5.81	5.37	5.52	5.01	N/A
<b>Domestic Equity</b>	<b>15.6%</b>	<b>15.0</b>	10.0	20.0	<b>\$0.2</b>	<b>-2.18</b>	<b>0.80</b>	<b>6.85</b>	<b>3.36</b>	<b>10.37</b>	<b>9.84</b>	<b>11.46</b>	<b>11.06</b>	<b>12.69</b>
<i>Russell 3000</i>						-2.16	1.11	6.85	3.14	10.15	10.04	11.48	11.09	12.80
<b>Developed Markets ISF</b>	<b>11.1%</b>	<b>11.0</b>	6.0	16.0	<b>\$0.1</b>	<b>-3.71</b>	<b>-1.40</b>	<b>1.74</b>	<b>-9.20</b>	<b>-5.24</b>	<b>-1.24</b>	<b>4.12</b>	<b>3.84</b>	<b>N/A</b>
<i>MSCI EAFE IMI Net</i>						-3.92	-1.03	1.42	-10.34	-6.09	0.05	4.07	4.08	N/A
<b>Emerging Markets ISF</b>	<b>4.3%</b>	<b>4.0</b>	0.0	5.0	<b>\$0.1</b>	<b>2.36</b>	<b>4.54</b>	<b>15.51</b>	<b>6.98</b>	<b>14.74</b>	<b>4.51</b>	<b>9.63</b>	<b>4.23</b>	<b>N/A</b>
<i>MSCI Emerging Markets IMI</i>						1.80	2.57	11.77	0.49	7.63	1.47	7.36	3.14	N/A
<b>Core Fixed Income</b>	<b>66.9%</b>	<b>67.0</b>	57.0	77.0	<b>\$0.9</b>	<b>-0.46</b>	<b>-1.15</b>	<b>0.43</b>	<b>6.58</b>	<b>6.52</b>	<b>4.70</b>	<b>3.92</b>	<b>3.52</b>	<b>3.48</b>
<i>Barclays U.S. Aggregate Bond Index</i>						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	3.55
<b>Liquidity Fund</b>	<b>2.0%</b>	<b>3.0</b>	0.0	4.0	<b>\$0.0</b>	<b>0.01</b>	<b>0.33</b>	<b>0.77</b>	<b>1.32</b>	<b>1.63</b>	<b>4.29</b>	<b>3.52</b>	<b>2.21</b>	<b>1.73</b>
<i>50% U.S. 3-Month T-Bill / 50% Bloomberg Barclays US Government Treasury 1 to 3 Year Index</i>						-0.02	-0.01	0.04	1.49	1.78	1.98	1.47	1.09	0.83



# **SOLDIERS' SAILORS' & MARINES' FUND**

Net of All Fees and Expenses

Periods Ending October 31, 2020

Funds	Percent Holdings	Policy Weights	Lower Range	Upper Range	Market Value (mil.)	Month	Three Months	Fiscal YTD	Calendar YTD	One Year	Compound, annualized returns			
											Three Year	Five Year	Seven Year	Ten Year
<b>Benchmark</b>														
<b>Soldiers' Sailors' &amp; Marines Fund</b>	<b>100.0%</b>				<b>\$83.9</b>	<b>-0.97</b>	<b>-0.55</b>	<b>2.25</b>	<b>4.49</b>	<b>6.32</b>	<b>5.01</b>	<b>5.47</b>	<b>4.84</b>	<b>5.38</b>
Policy Benchmark						-0.98	-0.66	1.81	4.06	5.87	5.35	5.48	5.01	5.34
Dynamic Benchmark						-1.01	-0.64	1.89	3.92	5.73	5.35	5.52	5.00	N/A
<b>Domestic Equity</b>	<b>16.0%</b>	<b>15.0</b>	10.0	20.0	<b>\$13.4</b>	<b>-2.18</b>	<b>0.80</b>	<b>6.85</b>	<b>3.36</b>	<b>10.37</b>	<b>9.84</b>	<b>11.46</b>	<b>11.06</b>	<b>12.70</b>
Russell 3000						-2.16	1.11	6.85	3.14	10.15	10.04	11.48	11.09	12.80
<b>Developed Markets ISF</b>	<b>11.3%</b>	<b>11.0</b>	6.0	16.0	<b>\$9.5</b>	<b>-3.71</b>	<b>-1.40</b>	<b>1.74</b>	<b>-9.20</b>	<b>-5.24</b>	<b>-1.24</b>	<b>4.12</b>	<b>3.84</b>	<b>N/A</b>
MSCI EAFE IMI Net						-3.92	-1.03	1.42	-10.34	-6.09	0.05	4.07	4.08	N/A
<b>Emerging Markets ISF</b>	<b>4.8%</b>	<b>4.0</b>	0.0	5.0	<b>\$4.0</b>	<b>2.36</b>	<b>4.54</b>	<b>15.51</b>	<b>6.98</b>	<b>14.74</b>	<b>4.51</b>	<b>9.63</b>	<b>4.23</b>	<b>N/A</b>
MSCI Emerging Markets IMI						1.80	2.57	11.77	0.49	7.63	1.47	7.36	3.14	N/A
<b>Core Fixed Income</b>	<b>65.4%</b>	<b>67.0</b>	57.0	77.0	<b>\$54.9</b>	<b>-0.46</b>	<b>-1.15</b>	<b>0.43</b>	<b>6.58</b>	<b>6.52</b>	<b>4.70</b>	<b>3.92</b>	<b>3.52</b>	<b>3.48</b>
Barclays U.S. Aggregate Bond Index						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	3.55
<b>Liquidity Fund</b>	<b>2.5%</b>	<b>3.0</b>	0.0	4.0	<b>\$2.1</b>	<b>0.01</b>	<b>0.05</b>	<b>0.08</b>	<b>0.62</b>	<b>0.93</b>	<b>1.74</b>	<b>1.53</b>	<b>0.90</b>	<b>0.79</b>
50% U.S. 3-Month T-Bill / 50% Bloomberg Barclays US Government Treasury 1 to 3 Year Index						-0.02	-0.01	0.04	1.49	1.78	1.98	1.47	1.09	0.83



**SCHOOL FUND**  
**Net of All Fees and Expenses**  
**Periods Ending October 31, 2020**

Funds	Percent Holdings	Policy Weights	Lower Range	Upper Range	Market Value (mil.)	Month	Three Months	Fiscal YTD	Calendar YTD	One Year	Compound, annualized returns			
											Three Year	Five Year	Seven Year	Ten Year
<b>Benchmark</b>														
<b>School Fund</b>	<b>100.0%</b>				<b>\$12.8</b>	<b>-0.99</b>	<b>-0.58</b>	<b>2.25</b>	<b>4.43</b>	<b>6.30</b>	<b>5.01</b>	<b>5.48</b>	<b>4.86</b>	<b>5.48</b>
Policy Benchmark						-0.98	-0.66	1.81	4.06	5.87	5.35	5.48	5.01	5.53
Dynamic Benchmark						-1.03	-0.67	1.89	3.85	5.70	5.33	5.52	5.02	N/A
<b>Domestic Equity</b>	<b>16.6%</b>	<b>15.0</b>	10.0	20.0	<b>\$2.1</b>	<b>-2.18</b>	<b>0.80</b>	<b>6.85</b>	<b>3.36</b>	<b>10.37</b>	<b>9.84</b>	<b>11.46</b>	<b>11.06</b>	<b>12.70</b>
Russell 3000						-2.16	1.11	6.85	3.14	10.15	10.04	11.48	11.09	12.80
<b>Developed Markets ISF</b>	<b>11.5%</b>	<b>11.0</b>	6.0	16.0	<b>\$1.5</b>	<b>-3.71</b>	<b>-1.40</b>	<b>1.74</b>	<b>-9.20</b>	<b>-5.24</b>	<b>-1.24</b>	<b>4.12</b>	<b>3.84</b>	<b>N/A</b>
MSCI EAFE IMI Net						-3.92	-1.03	1.42	-10.34	-6.09	0.05	4.07	4.08	N/A
<b>Emerging Markets ISF</b>	<b>4.8%</b>	<b>4.0</b>	0.0	5.0	<b>\$0.6</b>	<b>2.36</b>	<b>4.54</b>	<b>15.51</b>	<b>6.98</b>	<b>14.74</b>	<b>4.51</b>	<b>9.63</b>	<b>4.22</b>	<b>N/A</b>
MSCI Emerging Markets IMI						1.80	2.57	11.77	0.49	7.63	1.47	7.36	3.14	N/A
<b>Core Fixed Income</b>	<b>65.2%</b>	<b>67.0</b>	57.0	77.0	<b>\$8.4</b>	<b>-0.46</b>	<b>-1.15</b>	<b>0.43</b>	<b>6.58</b>	<b>6.52</b>	<b>4.70</b>	<b>3.92</b>	<b>3.52</b>	<b>3.48</b>
Barclays U.S. Aggregate Bond Index						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	3.55
<b>Liquidity Fund</b>	<b>1.8%</b>	<b>3.0</b>	0.0	4.0	<b>\$0.2</b>	<b>0.02</b>	<b>0.07</b>	<b>0.12</b>	<b>1.21</b>	<b>1.72</b>	<b>3.02</b>	<b>2.45</b>	<b>1.42</b>	<b>1.15</b>
50% U.S. 3-Month T-Bill / 50% Bloomberg Barclays US Government Treasury 1 to 3 Year Index						-0.02	-0.01	0.04	1.49	1.78	1.98	1.47	1.09	0.83



# IDA EATON COTTON FUND

Net of All Fees and Expenses

Periods Ending October 31, 2020

Funds	Percent Holdings	Policy Weights	Lower Range	Upper Range	Market Value (mil.)	Month	Three Months	Fiscal YTD	Calendar YTD	One Year	Compound, annualized returns			
											Three Year	Five Year	Seven Year	Ten Year
<b>Benchmark</b>														
<b>IDA Eaton Cotton Fund</b>	<b>100.0%</b>				<b>\$2.8</b>	<b>-0.98</b>	<b>-0.50</b>	<b>2.36</b>	<b>4.56</b>	<b>6.41</b>	<b>5.04</b>	<b>5.49</b>	<b>4.85</b>	<b>5.53</b>
Policy Benchmark						-0.98	-0.66	1.81	4.06	5.87	5.35	5.48	5.01	5.53
Dynamic Benchmark						-1.01	-0.59	2.00	4.00	5.82	5.37	5.52	5.04	N/A
<b>Domestic Equity</b>	<b>15.6%</b>	<b>15.0</b>	10.0	20.0	<b>\$0.4</b>	<b>-2.18</b>	<b>0.80</b>	<b>6.85</b>	<b>3.36</b>	<b>10.37</b>	<b>9.84</b>	<b>11.46</b>	<b>11.06</b>	<b>12.70</b>
Russell 3000						-2.16	1.11	6.85	3.14	10.15	10.04	11.48	11.09	12.80
<b>Developed Markets ISF</b>	<b>11.1%</b>	<b>11.0</b>	6.0	16.0	<b>\$0.3</b>	<b>-3.71</b>	<b>-1.40</b>	<b>1.74</b>	<b>-9.20</b>	<b>-5.24</b>	<b>-1.24</b>	<b>4.12</b>	<b>3.84</b>	<b>N/A</b>
MSCI EAFE IMI Net						-3.92	-1.03	1.42	-10.34	-6.09	0.05	4.07	4.08	N/A
<b>Emerging Markets ISF</b>	<b>4.4%</b>	<b>4.0</b>	0.0	5.0	<b>\$0.1</b>	<b>2.36</b>	<b>4.54</b>	<b>15.51</b>	<b>6.98</b>	<b>14.74</b>	<b>4.51</b>	<b>9.63</b>	<b>4.23</b>	<b>N/A</b>
MSCI Emerging Markets IMI						1.80	2.57	11.77	0.49	7.63	1.47	7.36	3.14	N/A
<b>Core Fixed Income</b>	<b>66.3%</b>	<b>67.0</b>	57.0	77.0	<b>\$1.9</b>	<b>-0.46</b>	<b>-1.15</b>	<b>0.43</b>	<b>6.58</b>	<b>6.52</b>	<b>4.70</b>	<b>3.92</b>	<b>3.52</b>	<b>3.48</b>
Barclays U.S. Aggregate Bond Index						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	3.55
<b>Liquidity Fund</b>	<b>2.6%</b>	<b>3.0</b>	0.0	4.0	<b>\$0.1</b>	<b>0.01</b>	<b>0.28</b>	<b>0.65</b>	<b>1.20</b>	<b>1.51</b>	<b>4.61</b>	<b>3.69</b>	<b>2.32</b>	<b>1.78</b>
50% U.S. 3-Month T-Bill / 50% Bloomberg Barclays US Government Treasury 1 to 3 Year Index						-0.02	-0.01	0.04	1.49	1.78	1.98	1.47	1.09	0.83





**HOPEMEAD FUND**  
Net of All Fees and Expenses  
Periods Ending October 31, 2020

Funds <i>Benchmark</i>	Percent Holdings	Policy Weights	Lower Range	Upper Range	Market Value (mil.)	Month	Three Months	Fiscal YTD	Calendar YTD	One Year	Compound, annualized returns			
											Three Year	Five Year	Seven Year	Ten Year
<b>Hopemead Fund</b>	<b>100.0%</b>				<b>\$4.5</b>	<b>-0.98</b>	<b>-0.58</b>	<b>2.22</b>	<b>4.37</b>	<b>6.23</b>	<b>4.97</b>	<b>5.43</b>	<b>4.80</b>	<b>5.35</b>
<i>Policy Benchmark</i>						-0.98	-0.66	1.81	4.06	5.87	5.35	5.48	5.01	5.53
<i>Dynamic Benchmark</i>						-1.02	-0.67	1.86	3.81	5.65	5.30	5.47	4.96	N/A
<b>Domestic Equity</b>	<b>16.3%</b>	<b>15.0</b>	10.0	20.0	<b>\$0.7</b>	<b>-2.18</b>	<b>0.80</b>	<b>6.85</b>	<b>3.36</b>	<b>10.37</b>	<b>9.84</b>	<b>11.46</b>	<b>11.06</b>	<b>12.69</b>
<i>Russell 3000</i>						-2.16	1.11	6.85	3.14	10.15	10.04	11.48	11.09	12.80
<b>Developed Markets ISF</b>	<b>11.4%</b>	<b>11.0</b>	6.0	16.0	<b>\$0.5</b>	<b>-3.71</b>	<b>-1.40</b>	<b>1.74</b>	<b>-9.20</b>	<b>-5.24</b>	<b>-1.24</b>	<b>4.12</b>	<b>3.84</b>	<b>N/A</b>
<i>MSCI EAFE IMI Net</i>						-3.92	-1.03	1.42	-10.34	-6.09	0.05	4.07	4.08	N/A
<b>Emerging Markets ISF</b>	<b>4.8%</b>	<b>4.0</b>	0.0	5.0	<b>\$0.2</b>	<b>2.36</b>	<b>4.54</b>	<b>15.51</b>	<b>6.98</b>	<b>14.74</b>	<b>4.51</b>	<b>9.63</b>	<b>4.23</b>	<b>N/A</b>
<i>MSCI Emerging Markets IMI</i>						1.80	2.57	11.77	0.49	7.63	1.47	7.36	3.14	N/A
<b>Core Fixed Income</b>	<b>64.8%</b>	<b>67.0</b>	57.0	77.0	<b>\$2.9</b>	<b>-0.46</b>	<b>-1.15</b>	<b>0.43</b>	<b>6.58</b>	<b>6.52</b>	<b>4.69</b>	<b>3.92</b>	<b>3.52</b>	<b>3.48</b>
<i>Barclays U.S. Aggregate Bond Index</i>						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	3.55
<b>Liquidity Fund</b>	<b>2.7%</b>	<b>3.0</b>	0.0	4.0	<b>\$0.1</b>	<b>0.01</b>	<b>0.05</b>	<b>0.08</b>	<b>0.62</b>	<b>0.93</b>	<b>1.75</b>	<b>1.53</b>	<b>0.90</b>	<b>0.80</b>
<i>50% U.S. 3-Month T-Bill / 50% Bloomberg Barclays US Government Treasury 1 to 3 Year Index</i>						-0.02	-0.01	0.04	1.49	1.78	1.98	1.47	1.09	0.83



# ARTS ENDOWMENT FUND

Net of All Fees and Expenses

Periods Ending October 31, 2020

Funds <i>Benchmark</i>	Percent Holdings	Policy Weights	Lower Range	Upper Range	Market Value (mil.)	Month	Three Months	Fiscal YTD	Calendar YTD	One Year	Compound, annualized returns			
											Three Year	Five Year	Seven Year	Ten Year
<b>Arts Endowment Fund</b>	<b>100.0%</b>				<b>\$20.2</b>	<b>-1.05</b>	<b>0.41</b>	<b>5.34</b>	<b>1.70</b>	<b>5.71</b>	<b>4.57</b>	<b>5.38</b>	<b>4.77</b>	<b>5.21</b>
<i>Policy Benchmark</i>						-0.88	0.86	5.32	0.03	3.94	4.78	5.26	4.86	5.34
<i>Dynamic Benchmark</i>						-1.13	0.27	4.66	0.82	4.74	4.86	N/A	N/A	N/A
<b>Domestic Equity</b>	<b>29.7%</b>	<b>28.0</b>	23.0	33.0	<b>\$6.0</b>	<b>-2.18</b>	<b>0.80</b>	<b>6.85</b>	<b>3.36</b>	<b>10.37</b>	<b>9.84</b>	<b>11.46</b>	<b>11.07</b>	<b>N/A</b>
<i>Russell 3000</i>						-2.16	1.11	6.85	3.14	10.15	10.04	11.48	11.09	N/A
<b>Developed Markets ISF</b>	<b>17.7%</b>	<b>17.0</b>	12.0	22.0	<b>\$3.6</b>	<b>-3.71</b>	<b>-1.40</b>	<b>1.74</b>	<b>-9.20</b>	<b>-5.24</b>	<b>-1.25</b>	<b>4.13</b>	<b>3.85</b>	<b>N/A</b>
<i>MSCI EAFE IMI Net</i>						-3.92	-1.03	1.42	-10.34	-6.09	0.05	4.07	4.08	N/A
<b>Emerging Markets ISF</b>	<b>13.5%</b>	<b>12.0</b>	7.0	17.0	<b>\$2.7</b>	<b>2.36</b>	<b>4.54</b>	<b>15.51</b>	<b>6.98</b>	<b>14.74</b>	<b>4.50</b>	<b>9.64</b>	<b>4.23</b>	<b>N/A</b>
<i>MSCI Emerging Markets IMI</i>						1.80	2.57	11.77	0.49	7.63	1.47	7.36	3.14	N/A
<b>Core Fixed Income</b>	<b>17.0%</b>	<b>16.0</b>	11.0	21.0	<b>\$3.4</b>	<b>-0.46</b>	<b>-1.15</b>	<b>0.43</b>	<b>6.58</b>	<b>6.52</b>	<b>4.70</b>	<b>3.92</b>	<b>3.52</b>	<b>3.48</b>
<i>Barclays U.S. Aggregate Bond Index</i>						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	3.55
<b>Emerging Market Debt</b>	<b>8.7%</b>	<b>8.0</b>	3.0	13.0	<b>\$1.7</b>	<b>0.07</b>	<b>-1.82</b>	<b>2.33</b>	<b>-5.35</b>	<b>-3.11</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<i>50% JPM EMBI Global Div / 50% JPM GBI EM Global Div</i>						0.20	-1.65	1.66	-3.22	-1.39	N/A	N/A	N/A	N/A
<b>High Yield</b>	<b>9.4%</b>	<b>9.0</b>	4.0	14.0	<b>\$1.9</b>	<b>0.39</b>	<b>0.91</b>	<b>5.72</b>	<b>1.49</b>	<b>4.08</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<i>Bloomberg Barclays U.S. High Yield 2% Issuer Cap Index</i>						0.49	0.42	5.09	0.33	2.97	N/A	N/A	N/A	N/A
<b>Private Credit<sup>(1)</sup></b>	<b>0.4%</b>	<b>9.0</b>	4.0	14.0	<b>\$0.1</b>	<b>N/A</b>	<b>3.16</b>	<b>7.47</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<i>S&amp;P / LSTA Leveraged Loan Index + 150 basis points 1Q in Arrears^</i>						N/A	7.40	12.37	N/A	N/A	N/A	N/A	N/A	N/A
<b>Liquidity Fund</b>	<b>3.6%</b>	<b>1.0</b>	0.0	3.0	<b>\$0.7</b>	<b>0.01</b>	<b>0.05</b>	<b>0.08</b>	<b>0.62</b>	<b>0.92</b>	<b>1.75</b>	<b>1.49</b>	<b>0.88</b>	<b>0.77</b>
<i>50% U.S. 3-Month T-Bill / 50% Bloomberg Barclays US Government Treasury 1 to 3 Year Index</i>						-0.02	-0.01	0.04	1.49	1.78	1.98	1.47	1.09	0.83

<sup>(1)</sup> Actual performance, reported one quarter in arrears,



# **POLICEMEN AND FIREMEN SURVIVORS' BENEFIT FUND**

Net of All Fees and Expenses  
Periods Ending October 31, 2020

Funds <i>Benchmark</i>	Percent Holdings	Policy Weights	Lower Range	Upper Range	Market Value (mil.)	Month	Three Months	Fiscal YTD	Calendar YTD	One Year	Compound, annualized returns			
											Three Year	Five Year	Seven Year	Ten Year
<b>Policemen and Firemen Survivors' Benefit Fund</b>	<b>100.0%</b>				<b>\$39.6</b>	<b>-0.56</b>	<b>1.04</b>	<b>4.73</b>	<b>1.10</b>	<b>4.55</b>	<b>4.87</b>	<b>6.87</b>	<b>6.23</b>	<b>7.14</b>
<i>Policy Benchmark</i>						-0.10	1.74	6.27	2.46	5.63	5.76	7.24	6.32	N/A
<i>Dynamic Benchmark</i>						-0.31	1.10	5.30	2.24	5.66	5.72	7.22	6.37	N/A
<b>Domestic Equity</b>	<b>20.4%</b>	<b>20.0</b>	15.0	25.0	<b>\$8.1</b>	<b>-2.18</b>	<b>0.80</b>	<b>6.85</b>	<b>3.36</b>	<b>10.37</b>	<b>9.83</b>	<b>11.45</b>	<b>11.06</b>	<b>12.88</b>
<i>Russell 3000</i>						-2.16	1.11	6.85	3.14	10.15	10.04	11.48	11.09	12.80
<b>Developed Markets ISF</b>	<b>10.9%</b>	<b>11.0</b>	6.0	16.0	<b>\$4.3</b>	<b>-3.71</b>	<b>-1.40</b>	<b>1.74</b>	<b>-9.20</b>	<b>-5.24</b>	<b>-1.25</b>	<b>4.11</b>	<b>3.84</b>	<b>N/A</b>
<i>MSCI EAFE IMI Net</i>						-3.92	-1.03	1.42	-10.34	-6.09	0.05	4.07	4.08	N/A
<b>Emerging Markets ISF</b>	<b>10.4%</b>	<b>9.0</b>	4.0	14.0	<b>\$4.1</b>	<b>2.36</b>	<b>4.54</b>	<b>15.51</b>	<b>6.98</b>	<b>14.74</b>	<b>4.51</b>	<b>9.63</b>	<b>4.23</b>	<b>N/A</b>
<i>MSCI Emerging Markets IMI</i>						1.80	2.57	11.77	0.49	7.63	1.47	7.36	3.14	N/A
<b>Core Fixed Income</b>	<b>17.5%</b>	<b>13.0</b>	8.0	18.0	<b>\$6.9</b>	<b>-0.46</b>	<b>-1.15</b>	<b>0.43</b>	<b>6.58</b>	<b>6.52</b>	<b>4.70</b>	<b>3.92</b>	<b>3.52</b>	<b>3.54</b>
<i>Barclays U.S. Aggregate Bond Index</i>						-0.45	-1.30	0.17	6.32	6.19	5.07	4.08	3.78	3.55
<b>Emerging Market Debt</b>	<b>5.1%</b>	<b>5.0</b>	0.0	10.0	<b>\$2.0</b>	<b>0.07</b>	<b>-1.82</b>	<b>2.33</b>	<b>-5.35</b>	<b>-3.11</b>	<b>0.81</b>	<b>4.44</b>	<b>2.26</b>	<b>2.93</b>
<i>50% JPM EMBI Global Div / 50% JPM GBI EM Global Div</i>						0.20	-1.65	1.66	-3.22	-1.39	2.38	4.82	2.46	3.51
<b>High Yield</b>	<b>5.9%</b>	<b>3.0</b>	0.0	8.0	<b>\$2.3</b>	<b>0.39</b>	<b>0.91</b>	<b>5.72</b>	<b>1.49</b>	<b>4.08</b>	<b>3.61</b>	<b>5.54</b>	<b>4.36</b>	<b>5.66</b>
<i>Bloomberg Barclays U.S. High Yield 2% Issuer Cap Index</i>						0.49	0.42	5.09	0.33	2.97	3.87	5.92	4.57	5.92
<b>Liquidity Fund</b>	<b>3.1%</b>	<b>2.0</b>	0.0	3.0	<b>\$1.2</b>	<b>0.01</b>	<b>0.05</b>	<b>0.08</b>	<b>0.62</b>	<b>0.93</b>	<b>1.75</b>	<b>1.53</b>	<b>0.90</b>	<b>0.79</b>
<i>50% U.S. 3-Month T-Bill / 50% Bloomberg Barclays US Government Treasury 1 to 3 Year Index</i>						-0.02	-0.01	0.04	1.49	1.78	1.98	1.47	1.09	0.83
<b>Real Assets<sup>(1)</sup></b>	<b>11.6%</b>	<b>19.0</b>	15.0	25.0	<b>\$4.6</b>	<b>N/A</b>	<b>-0.03</b>	<b>0.81</b>	<b>0.50</b>	<b>1.00</b>	<b>4.90</b>	<b>6.60</b>	<b>8.16</b>	<b>9.08</b>
<i>Blended Custom Benchmark 1Q in Arrears<sup>(2)</sup></i>						N/A	-0.76	0.17	2.75	4.09	5.61	6.87	8.34	9.75
<b>Private Investment<sup>(1)</sup></b>	<b>7.9%</b>	<b>10.0</b>	5.0	15.0	<b>\$3.1</b>	<b>N/A</b>	<b>9.66</b>	<b>10.91</b>	<b>8.45</b>	<b>11.40</b>	<b>13.56</b>	<b>12.26</b>	<b>13.28</b>	<b>N/A</b>
<i>Russell 3000 + 250 basis points 1Q in Arrears<sup>(2)</sup></i>						N/A	14.23	29.24	13.34	15.32	12.83	13.16	12.56	N/A
<b>Private Credit<sup>(1)</sup></b>	<b>0.4%</b>	<b>5.0</b>	0.0	10.0	<b>\$0.1</b>	<b>N/A</b>	<b>3.16</b>	<b>7.47</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<i>S&amp;P / LSTA Leveraged Loan Index + 150 basis points 1Q in Arrears<sup>(2)</sup></i>						N/A	7.40	12.37	N/A	N/A	N/A	N/A	N/A	N/A
<b>Alternative Investment Fund</b>	<b>6.9%</b>	<b>3.0</b>	0.0	10.0	<b>\$2.7</b>	<b>-0.17</b>	<b>1.24</b>	<b>2.47</b>	<b>-4.10</b>	<b>-2.93</b>	<b>1.74</b>	<b>2.22</b>	<b>2.73</b>	<b>N/A</b>
<i>Absolute Return Strategy blended benchmark<sup>(3)</sup></i>						-0.14	0.07	0.46	3.25	4.03	4.03	2.61	1.86	N/A

<sup>(1)</sup> Actual performance, reported one quarter in arrears.

<sup>(2)</sup> A blended benchmark comprised of the weightings of Real Estate, Infrastructure / Natural Resources and U.S. TIPS as of April 2020.

<sup>(3)</sup> A blended benchmark comprised of the weightings of each of the investments utilized within the fund of funds vehicle multiplied by their respective benchmarks as of April 2020.



**State of Connecticut**  
**Office of the Treasurer**

SHAWN T. WOODEN  
TREASURER

December 4, 2020

Members of the Investment Advisory Council ("IAC")

**Re: Domestic Equity Fund - Small Capitalization Manager Request for Proposal**

Dear Fellow IAC Member:

At the December 9, 2020 meeting of the IAC, I will present for your information the proposed project plan and required screening and selection criteria for the purpose of procuring a Domestic Equity Fund ("DEF") small capitalization manager for the Connecticut Retirement Plans and Trust Funds ("CRPTF"). My office will conduct a competitive search through a Request for Proposal ("RFP"), resulting in the hiring of one or possibly more managers.

The DEF primarily invests in equity securities of U.S. corporations and currently has an oversized large capitalization tilt with no small capitalization exposure beyond the emerging manager allocation. The inclusion of DEF investments is intended to provide diversification for the broader CRPTF portfolio. It is expected that the DEF would have increased small capitalization exposure at the conclusion of this RFP, which would enable the CRPTF to obtain a more balanced alignment of the DEF.

I look forward to discussing this search with you at the December 9<sup>th</sup> IAC meeting.

Sincerely,

Shawn T. Wooden  
State Treasurer

**State of Connecticut Retirement Plans & Trust Funds**  
**Domestic Equity Fund (Small Cap) Investment Manager Search 2020**  
***Proposed Project Plan***

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<b>GENERAL PROCESS</b>	<b>Timing</b>	<b>PFM</b>	<b>Treasurer</b>	<b>IAC</b>
Review and Approve Draft Scope of Services, Proposed Project Plan and Search Criteria	Week of Nov 23, 2020	Incorporate Treasurer's comments; send to Treasurer for approval	Review and approve project action plan	
Present Proposed Project Plan/Selection Criteria	Dec 9, 2020		Present to IAC	Comment and advise
Issue RFP	Jan 8, 2021	Post RFP on Treasurer's website		
RFP Deadline	Feb 19, 2021	Verify submissions		
Conduct Due Diligence and Select Semi-Finalists	Feb – Mar 2021	Review RFP responses; Conduct due diligence, interview candidates, provide semi-finalist recommendations that will include legal and compliance unit responses.	Review recommendation and approve semi-finalist candidates	
Interview Semi-Finalists	Mar 2021	Participate in interviews	Interview firms/ Select finalist(s) for presentation to the Treasurer during 2 <sup>nd</sup> half of March 2021	
Present Treasurer's Recommendation to IAC	Apr 14, 2021 <sup>1</sup>		Present finalist(s) at April 14, 2021 IAC meeting and request waiver of 45-day comment period to IAC. <i>45-day comment period ends June 9, 2021</i>	Review Treasurer's recommendation and communicate feedback. Act on waiver request
Treasurer's Review	Week of Apr 19, 2021		Consider feedback of IAC	
Designate Preferred Vendor(s)	Week of Apr 26, 2021		Finalize selection/designate Preferred Vendor(s). Announce decision to IAC at May 12, 2021 meeting	
Notify Preferred Vendor(s)	Week of May 10, 2021	Draft Preferred Vendor notification letter	Issue notification letter	
Negotiate Fee and Contract Terms	Initiate May 2021 if IAC waives comment period.	Participate in negotiations; prepare and review contracts and submit to Treasurer for approval	Approve contract terms and consultant fees; sign contracts	
Obtain Final Contract Authorization(s)	Early June 2021	Work with the Attorney General's Office to secure final execution of contracts		
Award Contracts	June 2021			

**State of Connecticut Retirement Plans & Trust Funds**  
**Domestic Equity Fund (Small Cap) Investment Manager Search 2020**  
**Screening and Selection Criteria<sup>2</sup>**

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**1. Organization/Management**

- a. Business management and ownership
- b. Stability (financial and organization)
- c. Commitment to client service/ability and resources available
- d. Technology and reporting capabilities
- e. Risk management and compliance operations
- f. Number of years the firm has been operating as investment manager for institutional funds
- g. Commitment of firm to investment services – e. g., percent of revenues generated from investment management arm of business
- h. Number of client relationships added and terminated in the last five years

**2. Relevant Experience and Client Base**

- a. Overall investment management expertise of investment team; particularly with regard to U.S. Domestic Equity small capitalization portfolios
- b. Quality and timeliness of performance reporting, monitoring, compliance and other CRPTF reporting requirements
- c. Performance of like U.S. Domestic Equity small capitalization equity accounts to the proposed U.S. Domestic Equity small capitalization mandate with at least two years of history
- d. Experience with public pension fund clients
- e. References from similar clients
- f. General understanding of CRPTF investment manager needs

**3. Other Specific Criteria**

- a. Responsible corporate citizenship and commitment to CRPTF's Diversity Principles
- b. Incorporation of Environmental, Social and Governance issues into the investment selection process
- c. Possible site visit

**4. Cost of Proposal**

<sup>2</sup>Such factors as conformance with RFP instructions/specifications and state-mandated contractual terms and disclosure requirements; will consider "Developed" firms where the principals have worked together with another investment firm.

# The State of Connecticut Retirement Plans and Trust Funds Alternative Investments Fund

September 30, 2020

Quarterly Review

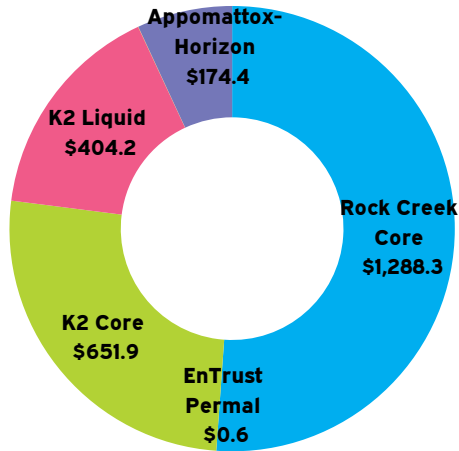
## Agenda

1. AIF Absolute Return Strategies Summary
2. AIF Absolute Return Strategies Full Report
3. AIF Connecticut Horizon Fund (CHF) Portfolio
4. Disclaimer, Glossary, and Notes

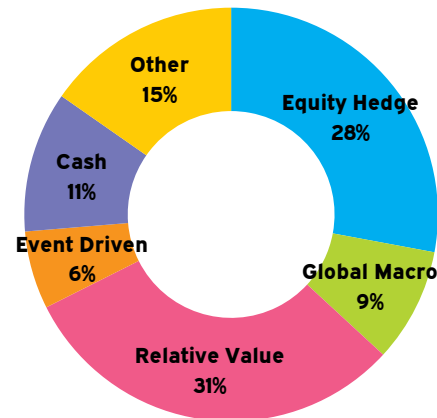


## **AIF Absolute Return Strategies Summary Report**

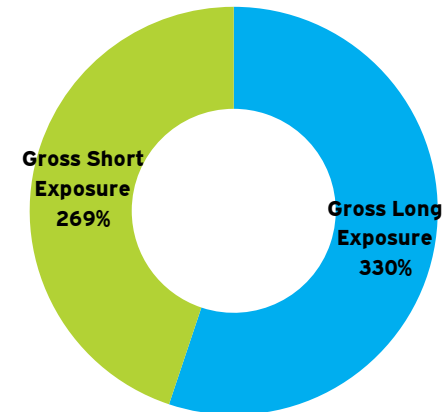
NAV: \$2,519.5 million



Strategy Allocation



Exposure Summary



- The Absolute Return Portfolio increased by \$67.1 million over the quarter. Rock Creek increased by \$36.6 million, K2 increased by \$23.3 million, Appomattox increased by \$7.2 million, and EnTrust decreased by approximately \$4,100.
- The Absolute Return Portfolio's strategy allocation was modified this quarter to match the four HFRI Sectors: Equity Hedge, Relative Value, Global Macro and Event Driven. Underlying partners are maintaining cash positions to satisfy redemptions for the ongoing trimming of the Absolute Return Portfolio.
- Net exposure was effectively unchanged over the quarter, ending the period at 61%. Gross exposure (long plus short), which can serve as an approximation for risk taking has increased from 326% to 599% over the quarter.

### Absolute Return Strategies Portfolio – Performance & Risk Summary

Performance Summary	Market Value (\$)	% of Portfolio	QTD	1 Yr	3 Yr	5 Yr	Inception
Absolute Return Strategies Portfolio	2,519,475,818	100.0	2.7	-1.6	1.5	2.4	3.0
CT AIF Return Benchmark			0.6	4.6	4.1	2.6	1.4
HFRI FOF: Diversified Index			3.9	5.7	3.1	3.0	2.7
Rock Creek	1,288,329,180	51.1	2.9	-4.5	1.1	2.2	3.0
K2	1,056,151,920	41.9	2.3	2.1	2.6	3.1	3.4
Appomattox	174,378,798	6.9	4.3	-1.2	-0.2	0.9	0.2
EnTrust Global	615,920	0.0	-0.7	-15.6	-12.9	-6.4	-1.9

Trailing 3-Year Risk Summary	Standard Deviation (%)	Sharpe Ratio	Max Drawdown (%)	Max Drawdown Length	Beta	Correlation	Kurtosis	Skew
Absolute Return Strategies Portfolio	7.2	-0.03	-12.1	2	0.54	0.84	22.5	-4.3
CT AIF Risk Benchmark <sup>1</sup>	11.3	0.37	-14.8	3	-	-	2.6	-0.9

Trailing 5-Year Risk Summary	Standard Deviation (%)	Sharpe Ratio	Max Drawdown (%)	Max Drawdown Length	Beta	Correlation	Kurtosis	Skew
Absolute Return Strategies Portfolio	5.9	0.22	-12.1	2	0.48	0.79	29.8	-4.7
CT AIF Risk Benchmark <sup>1</sup>	9.7	0.72	-14.8	3	-	-	3.4	-0.8

<sup>1</sup> CT AIF Risk Benchmark has been extrapolated back in history. The objectives of the portfolio have changed over time, and thus, this risk benchmark was not directly applicable prior to 1/1/2020.

## AIF Investment Guideline Compliance As of September 30, 2020

### Actual Allocation versus Policy Target

	Current Allocation (%)	Lower Target	Policy Target	Upper Target	Yes/No
CRPTF	6.8	0	2.8	10	Yes

\*Notes: The CRPTF allocations shown above represent the AIF allocation within the total CRPTF portfolio.

### Portfolio Status – Compliance and Guidelines for CRPTF

Type	Description	Fulfillment
Liquidity Parameters (A)	Exposure to investments with lock-up provisions greater than one year but less than five years will be limited to 10% of the target allocation to AIF	Yes
Liquidity Parameters (B)	No liquid investment strategies are permitted in vehicles or structures that require a commitment of capital of more than 10 years	Yes
Manager Diversification <sup>1</sup>	No more than 20% of the AIF's policy target allocation should be invested in any one investment vehicle	Yes
Target Volatility	The Absolute Return target volatility (standard deviation of monthly returns), should be between equity volatility and fixed income volatility over a market cycle	Yes
Target Correlation	The correlation of the Absolute Return portfolio to the CT Risk Benchmark is targeted to be less than 0.40 over a market cycle	No <sup>2</sup>

<sup>1</sup> This is examined at the subadvisor level.

<sup>2</sup> CT AIF Risk Benchmark has been extrapolated back in history. The objectives of the portfolio have changed over time, and thus, this risk benchmark was not directly applicable prior to 1/1/2020.

## **AIF Absolute Return Strategies Full Report**

Absolute Return Strategies Portfolio | As of September 30, 2020

Performance Summary										
	Market Value (\$)	% of Portfolio	1 Mo (%)	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Inception (%)	Inception Date
<b>Absolute Return Strategies Portfolio</b>	<b>2,519,475,818</b>	<b>100.0</b>	<b>0.1</b>	<b>2.7</b>	<b>-3.8</b>	<b>-1.6</b>	<b>1.5</b>	<b>2.4</b>	<b>3.0</b>	<b>Feb-11</b>
Custom Return Benchmark			-0.2	0.6	3.4	4.6	4.1	2.6	1.4	Feb-11
HFRI FOF: Diversified Index			0.0	3.9	2.8	5.7	3.1	3.0	2.7	Feb-11
<b>Rock Creek</b>	<b>1,288,329,180</b>	<b>51.1</b>	<b>0.2</b>	<b>2.9</b>	<b>-6.8</b>	<b>-4.5</b>	<b>1.1</b>	<b>2.2</b>	<b>3.0</b>	<b>Feb-11</b>
Rock Creek Blended Benchmark			0.0	0.0	1.3	2.6	3.4	2.2	1.2	Feb-11
<b>K2</b>	<b>1,056,151,920</b>	<b>41.9</b>	<b>-0.4</b>	<b>2.3</b>	<b>0.1</b>	<b>2.1</b>	<b>2.6</b>	<b>3.1</b>	<b>3.4</b>	<b>Apr-11</b>
K2 Blended Benchmark			-0.4	1.4	6.2	7.4	5.0	3.2	1.7	Apr-11
<b>Appomattox</b>	<b>174,378,798</b>	<b>6.9</b>	<b>2.0</b>	<b>4.3</b>	<b>-2.5</b>	<b>-1.2</b>	<b>-0.2</b>	<b>0.9</b>	<b>0.2</b>	<b>Sep-14</b>
Appomattox Blended Benchmark			0.0	0.0	1.4	2.6	3.4	2.2	1.8	Sep-14
<b>EnTrust Permal</b>	<b>615,920</b>	<b>0.0</b>	<b>-1.8</b>	<b>-0.7</b>	<b>-13.9</b>	<b>-15.6</b>	<b>-12.9</b>	<b>-6.4</b>	<b>-1.9</b>	<b>Mar-11</b>
Custom Return Benchmark			-0.2	0.6	3.4	4.6	4.1	2.6	1.4	Mar-11

EnTrust Permal portfolios are in liquidation.

Absolute Return Strategies Portfolio | As of September 30, 2020

	Market Value (\$)	% of Portfolio	1 Mo (%)	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Inception (%)	Inception Date
<b>Absolute Return Strategies Portfolio</b>	<b>2,519,475,818</b>	<b>100.0</b>	<b>0.1</b>	<b>2.7</b>	<b>-3.8</b>	<b>-1.6</b>	<b>1.5</b>	<b>2.4</b>	<b>3.0</b>	<b>Feb-11</b>
Custom Return Benchmark			-0.2	0.6	3.4	4.6	4.1	2.6	1.4	Feb-11
HFRI FOF: Diversified Index			0.0	3.9	2.8	5.7	3.1	3.0	2.7	Feb-11
<b>CRPTF - Core + Liquid Portfolios Total</b>	<b>2,344,481,100</b>	<b>93.1</b>	<b>0.0</b>	<b>2.6</b>	<b>-4.5</b>	<b>-2.3</b>	<b>1.6</b>	<b>2.5</b>	<b>3.2</b>	<b>Feb-11</b>
Custom Return Benchmark			-0.2	0.6	3.4	4.6	4.1	2.6	1.4	Feb-11
<b>CRPTF - Core Portfolios Total</b>	<b>1,940,260,277</b>	<b>77.0</b>	<b>0.0</b>	<b>2.8</b>	<b>0.8</b>	<b>2.9</b>	<b>2.7</b>	<b>3.2</b>	<b>3.6</b>	<b>Feb-11</b>
Custom Return Benchmark			-0.2	0.6	3.4	4.6	4.1	2.6	1.4	Feb-11
<b>CRPTF - Liquid Portfolios Total</b>	<b>404,220,823</b>	<b>16.0</b>	<b>-0.1</b>	<b>2.0</b>	<b>-10.7</b>	<b>-8.4</b>	<b>--</b>	<b>--</b>	<b>-1.1</b>	<b>Jun-18</b>
Custom Return Benchmark			-0.2	0.6	3.4	4.6	4.1	2.6	4.9	Jun-18
<b>CRPTF - Horizon Portfolios Total</b>	<b>174,378,798</b>	<b>6.9</b>	<b>2.0</b>	<b>4.3</b>	<b>-2.5</b>	<b>-1.2</b>	<b>-0.2</b>	<b>0.9</b>	<b>0.2</b>	<b>Sep-14</b>
Custom Return Benchmark			-0.2	0.6	3.4	4.6	4.1	2.6	2.2	Sep-14

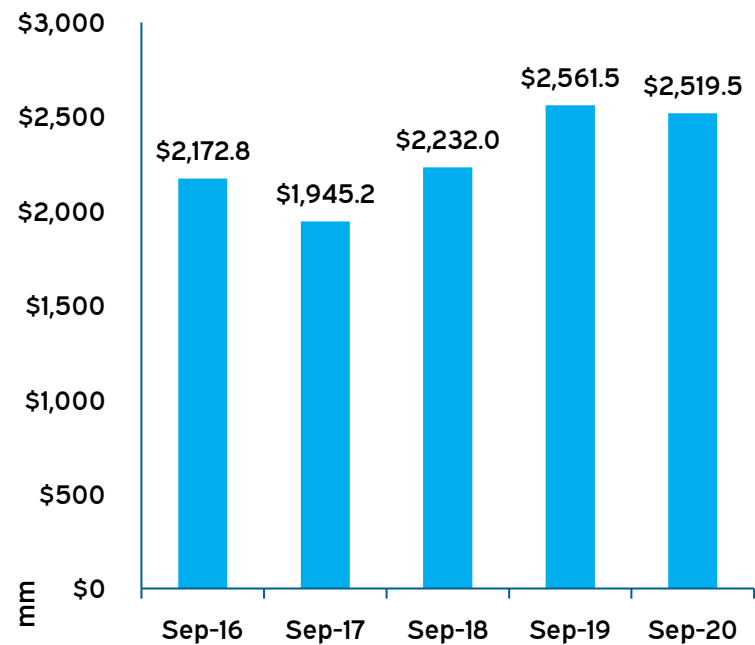
Core +Liquid Portfolios valuation does not include Entrust Permal.

Investment Expense Analysis				
As Of September 30, 2020				
Name	Fee Schedule	Market Value	% of Portfolio	Estimated Fee Value
<b>Rock Creek</b>		<b>\$1,288,329,180</b>	<b>51.1%</b>	
Rock Creek - Core Portfolio	0.35% of Assets	\$1,288,329,180	51.1%	\$4,509,152
<b>K2</b>		<b>\$1,056,151,920</b>	<b>41.9%</b>	
K2 - Core Portfolio	0.35% of Assets	\$651,931,097	25.9%	\$2,281,759
K2 - Liquid Portfolio	0.35% of Assets	\$404,220,823	16.0%	\$1,414,773
<b>Appomattox</b>		<b>\$174,378,798</b>	<b>6.9%</b>	
Appomattox	0.40% of Assets	\$168,596,101	6.7%	\$674,384
Appomattox (Restructuring)	0.40% of Assets	\$5,782,697	0.2%	\$23,131
<b>EnTrust Permal</b>		<b>\$615,920</b>	<b>0.0%</b>	
Permal - Portfolio A	0.50% of Assets	\$236,208	0.0%	\$1,181
Permal - Portfolio B	0.50% of Assets	\$379,712	0.0%	\$1,899
<b>Total</b>		<b>\$2,519,475,818</b>	<b>100.0%</b>	<b>\$8,906,279</b>

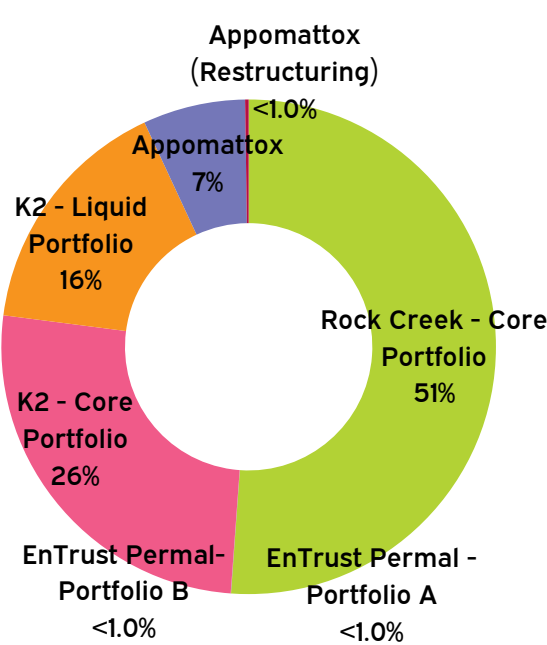
Permal portfolios A and B also charge performance based fees of 5% of the funds' returns above the USD LIBOR +2%.



Historical Market Value



Manager Allocation



Absolute Return Strategies – Trailing 3-Year Risk Summary | As of September 30, 2020

	Standard Deviation (%)	Sharpe Ratio	Max Drawdown (%)	Max Drawdown Length	Beta	Correlation	Kurtosis	Skew
Absolute Return Strategies Portfolio	7.2	-0.03	-12.1	2	0.54	0.84	22.5	-4.3
CT AIF Risk Benchmark <sup>1</sup>	11.3	0.37	-14.8	3	-	-	2.6	-0.9
Rock Creek - Core Portfolio <sup>2</sup>	5.6	0.20	-8.3	2	0.43	0.86	17.8	-3.6
K2 - Core Portfolio	5.0	0.21	-7.6	2	0.39	0.89	10.1	-2.4
K2 - Liquid Portfolio <sup>3</sup>	7.2	-0.02	-9.8	2	0.50	0.87	13.8	-3.3
CT AIF Risk Benchmark	12.6	0.41	-14.8	3	-	-	2.0	-0.9

<sup>1</sup> CT AIF Risk Benchmark has been extrapolated back in history. The objectives of the portfolio have changed over time, and thus, this risk benchmark was not directly applicable prior to 1/1/2020

<sup>2</sup> Includes assets from former Rock Creek –Liquid Portfolio after April 1, 2020.

<sup>3</sup> K2 – Liquid Portfolio and benchmark risk data are calculated from inception date of 7/31/2018.

Absolute Return Strategies – Trailing 5-Year Risk Summary | As of September 30, 2020

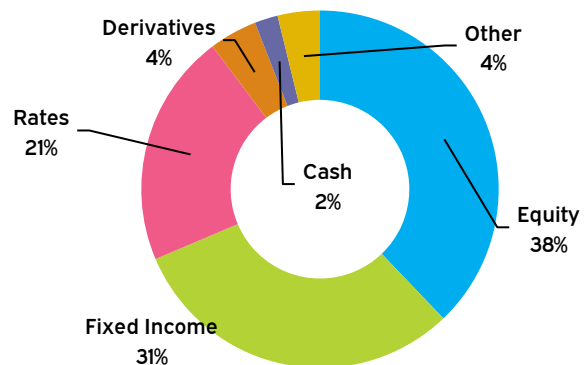
	Standard Deviation (%)	Sharpe Ratio	Max Drawdown (%)	Max Drawdown Length	Beta	Correlation	Kurtosis	Skew
Absolute Return Strategies Portfolio	5.9	0.22	-12.1	2	0.48	0.79	29.8	-4.7
<i>CT AIF Risk Benchmark<sup>1</sup></i>	<i>9.7</i>	<i>0.72</i>	<i>-14.8</i>	<i>3</i>	<i>-</i>	<i>-</i>	<i>3.4</i>	<i>-0.8</i>
Rock Creek – Core Portfolio <sup>2</sup>	4.8	0.43	-8.3	2	0.40	0.80	19.4	-3.6
K2 – Core Portfolio	4.4	0.47	-7.6	2	0.35	0.78	10.5	-2.3
K2 – Liquid Portfolio <sup>3</sup>	-	-	-	-	-	-	-	-
<i>CT AIF Risk Benchmark</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>

<sup>1</sup> CT AIF Risk Benchmark has been extrapolated back in history. The objectives of the portfolio have changed over time, and thus, this risk benchmark was not directly applicable prior to 1/1/2020.

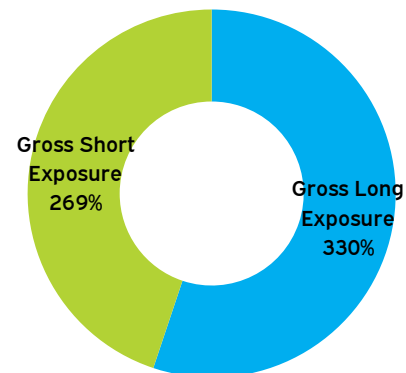
<sup>2</sup> Includes assets from former Rock Creek –Liquid Portfolio after April 1, 2020.

<sup>3</sup> K2 – Liquid Portfolio inception based risk statistics are located in the 3-year risk table.

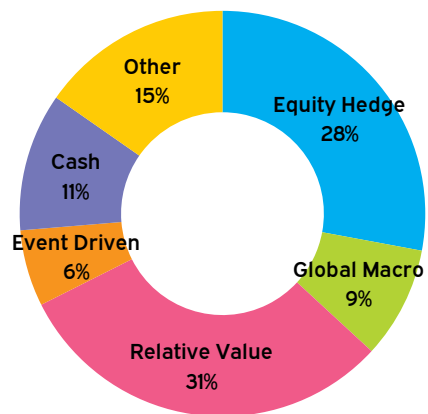
#### Instrument Allocation<sup>1</sup>



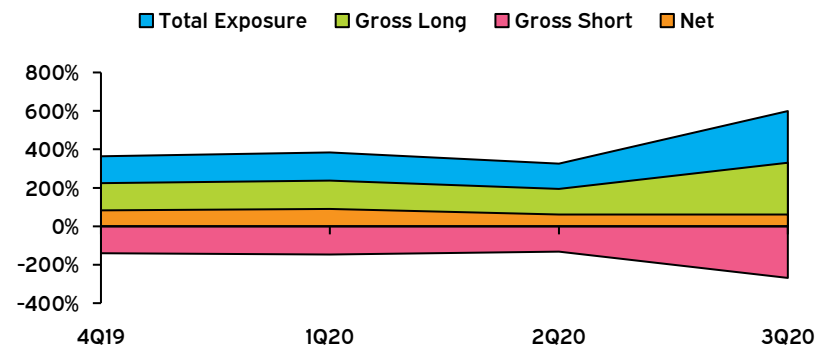
#### Exposure Report



#### Strategy Allocation



#### Exposure History



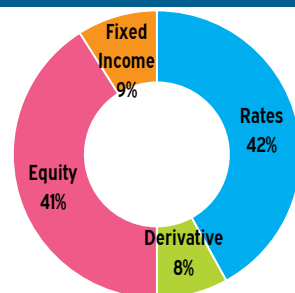
<sup>1</sup> 2% Cash allocation comes from Appomattox (Restructuring).

### Rock Creek - Core Portfolio | As of September 30, 2020

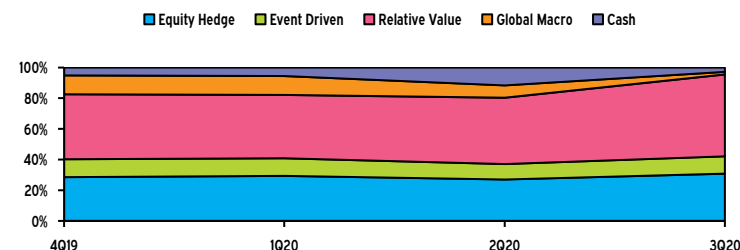
#### Account Information

Mandate:	Hedge Fund, Fund of Funds
Market Value:	\$1288.3 M
Portfolio Manager:	Team
Location:	Washington, DC
Inception Date:	2/1/2011
Account Type:	Separately Managed
# of Investments:	28
Fee Schedule:	0.35% Management Fee

#### Instrument Allocation



#### Historical Strategy Allocations



#### Portfolio Performance Summary

	3Q20 (%)	1 YR (%)	3 YR (%)	5 YR (%)	Since 2/2011 (%)
Rock Creek - Core Portfolio	2.9	2.5	2.8	3.3	3.6
Rock Creek Blended Benchmark	0.0	2.6	3.4	2.2	1.2

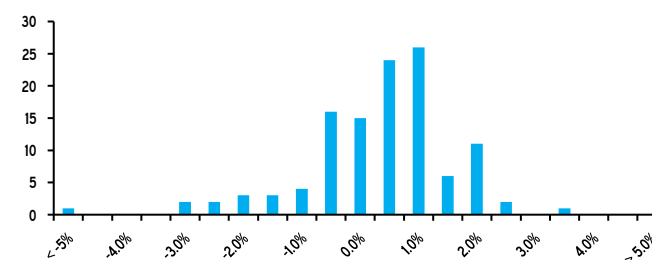
#### 5 Year Risk Summary

	Standard Deviation (%)	Sharpe Ratio	Max Drawdown (%)	Max Drawdown Length	Beta	Correlation
Rock Creek - Core Portfolio	4.8	0.43	-8.3	2	0.40	0.80
CT AIF Risk Benchmark <sup>1</sup>	9.7	0.72	-14.8	3	-	-

Geographic Exposure Allocation (%)	9/30/2020	6/30/2020	3/31/2020	12/31/2019
North America	72	78	71	70
Developed Europe	15	9	13	13
Developed Asia	7	7	10	11
Emerging Markets	6	6	6	6

Exposure Report (%)	9/30/2020	6/30/2020	3/31/2020	12/31/2019
Total Gross Exposure	570	313	630	530
Gross Long Exposure	316	187	348	296
Gross Short Exposure	254	126	282	234
Net Exposure	63	60	67	62

#### Return Distribution



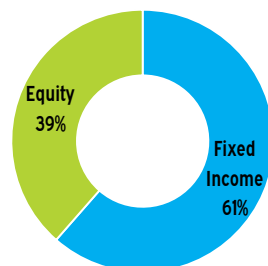
<sup>1</sup> CT AIF Risk Benchmark has been extrapolated back in history. The objectives of the portfolio have changed over time, and thus, this risk benchmark was not directly applicable prior to 1/1/2020.

### K2 - Core Portfolio | As of September 30, 2020

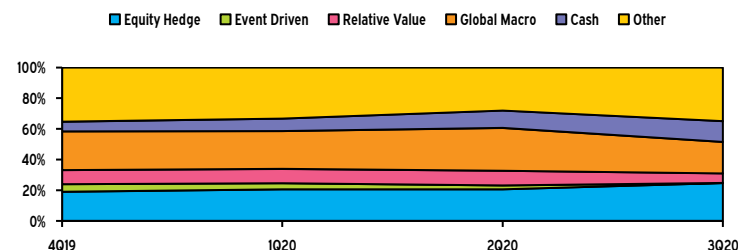
#### Account Information

Mandate:	Hedge Fund, Fund of Funds
Market Value:	\$651.9 M
Portfolio Manager:	Team
Location:	Stamford, CT
Inception Date:	4/1/2011
Account Type:	Separately Managed
# of Investments:	17
Fee Schedule:	0.35% of assets

#### Instrument Allocation



#### Historical Strategy Allocations



#### Portfolio Performance Summary

	3Q20 (%)	1 YR (%)	3 YR (%)	5 YR (%)	Since 4/2011 (%)
K2 - Core Portfolio	2.4	3.6	2.7	3.2	3.5
K2 Blended Benchmark	1.4	7.4	5.0	3.2	1.7

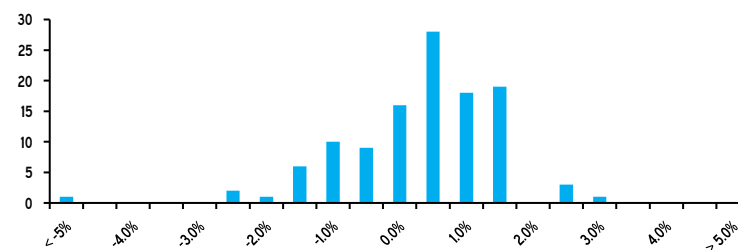
#### 5 Year Risk Summary

	Standard Deviation (%)	Sharpe Ratio	Max Drawdown (%)	Max Drawdown Length	Beta	Correlation
K2 - Core Portfolio	4.4	0.47	-7.6	2	0.35	0.78
CT AIF Risk Benchmark <sup>1</sup>	9.7	0.72	-14.8	3	-	-

Geographic Exposure Allocation (%)	9/30/2020	6/30/2020	3/31/2020	12/31/2019
North America	61	60	70	67
Developed Europe	28	29	13	14
Developed Asia	7	7	5	6
Emerging Markets	3	5	12	13

Exposure Report (%)	9/30/2020	6/30/2020	3/31/2020	12/31/2019
Total Gross Exposure	981	1199	589	538
Gross Long Exposure	519	614	326	302
Gross Short Exposure	462	585	263	236
Net Exposure	56	29	63	65

#### Return Distribution



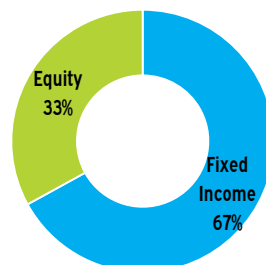
<sup>1</sup> CT AIF Risk Benchmark has been extrapolated back in history. The objectives of the portfolio have changed over time, and thus, this risk benchmark was not directly applicable prior to 1/1/2020.

### K2 - Liquid Portfolio | As of September 30, 2020

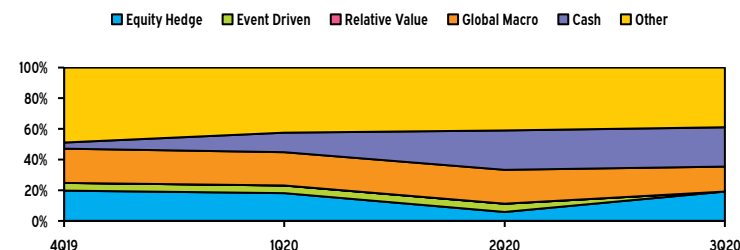
#### Account Information

Mandate:	Hedge Fund, Fund of Funds
Market Value:	\$404.2 M
Portfolio Manager:	Team
Location:	Stamford, CT
Inception Date:	7/1/2018
Account Type:	Separately Managed
# of Investments:	9
Fee Schedule:	0.35% of assets

#### Instrument Allocation



#### Historical Strategy Allocations



#### Portfolio Performance Summary

	3Q20 (%)	1 YR (%)	3 YR (%)	5 YR (%)	Since 7/2018 (%)
K2 - Liquid Portfolio	2.0	-0.2	NA	NA	1.6
K2 Blended Benchmark	1.4	7.4	5.0	3.2	6.3

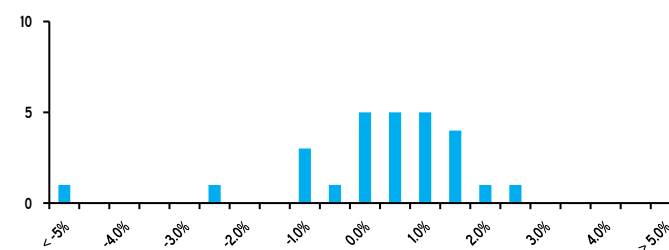
#### 5 Year Risk Summary

	Standard Deviation (%)	Sharpe Ratio	Max Drawdown (%)	Max Drawdown Length	Beta	Correlation
K2 - Liquid Portfolio <sup>1</sup>	7.2	-0.02	-9.8	2	0.50	0.87
CT AIF Risk Benchmark <sup>2</sup>	13.1	0.16	-14.8	3	-	-

Geographic Exposure Allocation (%)	9/30/2020	6/30/2020	3/31/2020	12/31/2019
North America	69	69	64	65
Emerging Markets	14	17	17	15
Developed Europe	13	11	14	15
Developed Asia	4	4	6	5

Exposure Report (%)	9/30/2020	6/30/2020	3/31/2020	12/31/2019
Total Gross Exposure	278	158	213	225
Gross Long Exposure	170	108	142	158
Gross Short Exposure	108	49	72	67
Net Exposure	63	59	70	91

#### Return Distribution



<sup>1</sup> K2 - Liquid Portfolio and benchmark risk data are calculated from inception date of 7/31/2018.

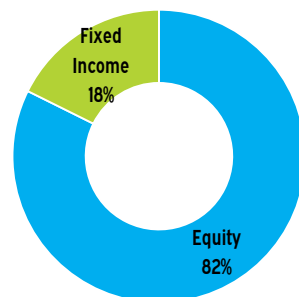
<sup>2</sup> CT AIF Risk Benchmark has been extrapolated back in history. The objectives of the portfolio have changed over time, and thus, this risk benchmark was not directly applicable prior to 1/1/2020.

### Permal - Portfolio A | As of September 30, 2020

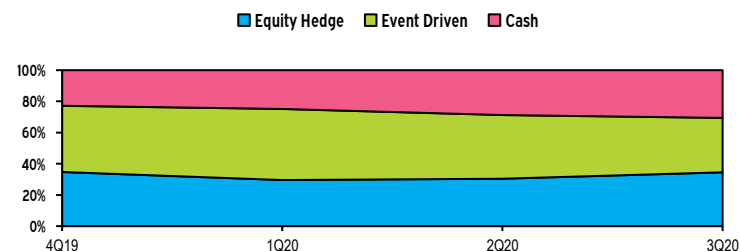
#### Account Information<sup>1</sup>

Mandate:	Hedge Fund, Fund of Funds
Market Value:	\$0.2 M
Portfolio Manager:	Team
Location:	New York, NY
Inception Date:	3/31/2011
Account Type:	Separately Managed
# of Investments:	Not Provided
Fee Schedule:	0.5% of assets

#### Instrument Allocation



#### Historical Strategy Allocations



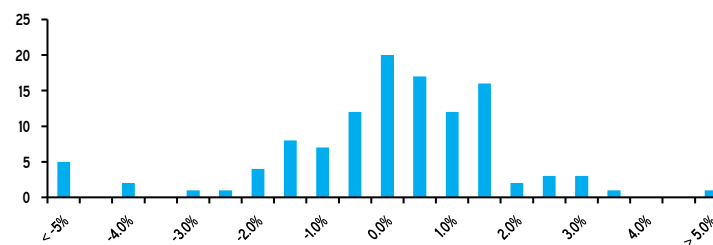
#### Portfolio Performance Summary

	3Q20 (%)	1 YR (%)	3 YR (%)	5 YR (%)	Since 3/2011 (%)
Permal - Portfolio A	-6.9	-21.3	-13.3	-7.3	-2.3
HFRI Fund of Funds Composite Index	4.2	5.7	2.9	3.1	2.5

Geographic Exposure Allocation (%)	9/30/2020	6/30/2020	3/31/2020	12/31/2019
North America	65	65	65	65
Developed Europe	19	19	19	19
Developed Asia	15	15	15	15
Emerging Markets	0	0	0	0

Exposure Report (%)	9/30/2020	6/30/2020	3/31/2020	12/31/2019
Total Gross Exposure	42	42	42	42
Gross Long Exposure	42	42	42	42
Gross Short Exposure	0	0	0	0
Net Exposure	42	42	42	42

#### Return Distribution



<sup>1</sup> Portfolio is in liquidation.

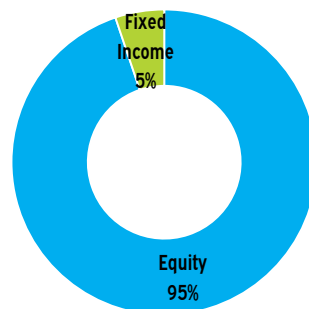


### Permal - Portfolio B | As of September 30, 2020

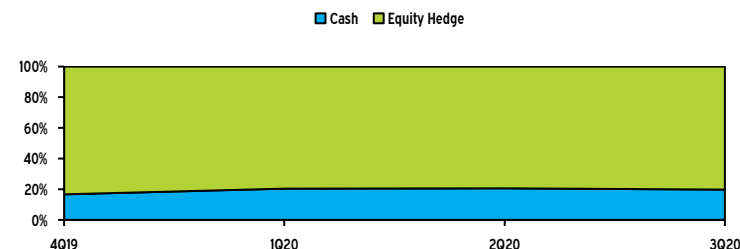
#### Account Information<sup>1</sup>

Mandate:	Hedge Fund, Fund of Funds
Market Value:	\$0.4 M
Portfolio Manager:	Team
Location:	New York, NY
Inception Date:	4/1/2013
Account Type:	Separately Managed
# of Investments:	Not Provided
Fee Schedule:	0.5% of assets

#### Instrument Allocation



#### Historical Strategy Allocations



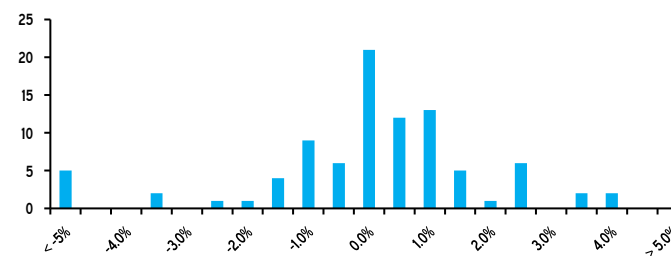
#### Portfolio Performance Summary

	3Q20 (%)	1 YR (%)	3 YR (%)	5 YR (%)	Since 4/2013 (%)
Permal - Portfolio B	3.7	-13.5	-15.6	-7.6	-4.3
HFRI Fund of Funds Composite Index	4.2	5.7	2.9	3.1	3.1

Geographic Exposure Allocation (%)	9/30/2020	6/30/2020	3/31/2020	12/31/2019
North America	100	100	100	100
Emerging Markets	0	0	0	0
Developed Europe	0	0	0	0
Developed Asia	0	0	0	0

Exposure Report (%)	9/30/2020	6/30/2020	3/31/2020	12/31/2019
Total Gross Exposure	51	51	51	51
Gross Long Exposure	51	51	51	51
Gross Short Exposure	0	0	0	0
Net Exposure	51	51	51	51

#### Return Distribution



<sup>1</sup> Portfolio is in liquidation.

## Absolute Return Strategies Portfolio – Investment Guidelines Summary

## Prudence Crandall Core Portfolio

	Rock Creek	K2
Benchmark	HFRI Fund of Funds Conservative	HFRI Fund of Funds Conservative
Target Return		
Target Volatility	< 5%	< 5%
Risk Management		
Target Beta	.25 (MSCI ACWI)	.20 (S&P 500 & S&P/LSTA Leveraged Loan Index)
Target Correlation	N/A	.50 (S&P 500)
Maximum Drawdown	Monthly: 3% Cycle (3-5 Years): 10%	Monthly: 2% Cycle (3-5 Years): 5%
Manager Concentration		
Minimum	10	10
Maximum	30	30
Strategy Concentration		
Minimum	N/A	N/A
Maximum	40%	50%
Liquidity	-	-
Weekly	-	-
Monthly	-	-
Quarterly	50%	50%
Semi-Annual	-	-
Annual	80%	80%
>Annual	90%	90%
Side Pockets (Max)	10%	10%

### Prudence Crandall Liquid Portfolio

K2	
Benchmark	HFRI Fund of Funds Diversified
Target Return	13-Week T-Bills +400
Target Volatility	< 6%
Risk Management	
Target Beta	.30 (S&P 500 & S&P/LSTA Leveraged Loan Index)
Target Correlation	.80 (S&P 500)
Manager Concentration	
Minimum	5
Maximum	15
Strategy Concentration	
Minimum	N/A
Maximum	25%
Liquidity	
Daily	-
Weekly	-
Monthly	90%
Quarterly	100%
Semi-Annual	-
Annual	-
>Annual	-
Side Pockets	-

## **AIF Connecticut Horizon Fund (CHF) Portfolio**

Connecticut Horizon Fund – Performance | As of September 30, 2020

	3Q20 (%)	1 YR (%)	3 YR (%)	5 YR (%)	Since Inception Date	Since Inception (%)
Connecticut Horizon Fund	4.3	-1.2	-0.2	0.9	9/1/2014	0.2
Appomattox	4.3	-1.2	-0.2	0.9	9/1/2014	0.2
<i>Appomattox Blended Benchmark</i>	0.0	2.6	3.4	2.2	9/1/2014	1.8

Connecticut Horizon Fund – Trailing 3-Year Risk Summary | As of September 30, 2020

	Standard Deviation (%)	Sharpe Ratio	Max Drawdown (%)	Max Drawdown Length	Beta	Correlation	Kurtosis	Skew
Connecticut Horizon Fund	8.6	-0.22	-13.8	2	-	-	22.1	-4.2
Appomattox	9.0	-0.25	-14.9	26	0.61	0.76	20.1	-4.0
<i>CT AIF Risk Benchmark<sup>1</sup></i>	<i>11.3</i>	<i>0.37</i>	<i>-14.8</i>	<i>3</i>	<i>-</i>	<i>-</i>	<i>2.6</i>	<i>-0.9</i>
Appomattox (Restructuring)	3.2	-0.96	-7.7	21	-	-	4.5	-1.3

<sup>1</sup> CT AIF Risk Benchmark has been extrapolated back in history. The objectives of the portfolio have changed over time, and thus, this risk benchmark was not directly applicable prior to 1/1/2020.

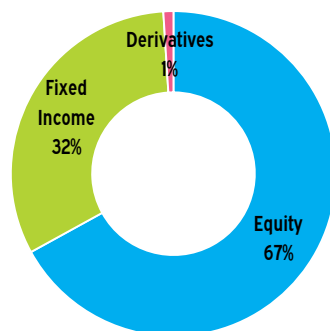
	Standard Deviation (%)	Sharpe Ratio	Max Drawdown (%)	Max Drawdown Length	Beta	Correlation	Kurtosis	Skew
Connecticut Horizon Fund	6.8	-0.03	-13.8	2	-	-	32.6	-5.0
Appomattox	7.2	-0.03	-14.9	26	0.52	0.71	30.5	-4.7
<i>CT AIF Risk Benchmark<sup>1</sup></i>	<i>9.7</i>	<i>0.72</i>	<i>-14.8</i>	<i>3</i>	<i>-</i>	<i>-</i>	<i>3.4</i>	<i>-0.8</i>
Appomattox (Restructuring)	3.2	-0.4	-7.7	21	-	-	3.4	-0.7

<sup>1</sup> CT AIF Risk Benchmark has been extrapolated back in history. The objectives of the portfolio have changed over time, and thus, this risk benchmark was not directly applicable prior to 1/1/2020

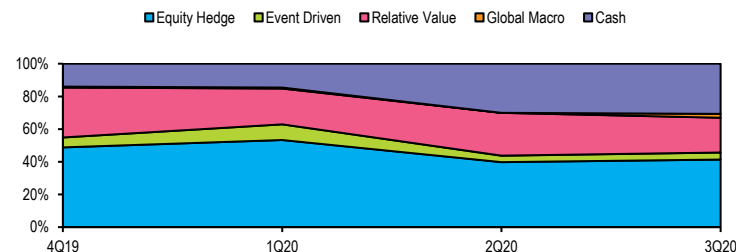
#### Account Information

Mandate:	Hedge Fund, Fund of Funds
Market Value:	\$168.6 M
Portfolio Manager:	Team
Location:	New York, NY
Inception Date:	9/1/2014
Account Type:	Separately Managed
# of Investments:	22
Fee Schedule:	0.40% Management Fee

#### Instrument Allocation



#### Historical Strategy Allocations



#### Portfolio Performance Summary

	3Q20 (%)	1 YR (%)	3 YR (%)	5 YR (%)	Since 9/2014 (%)
Appomattox	4.4	-1.3	-0.6	1.0	0.4
Appomattox Blended Benchmark	0.0	2.6	3.4	2.2	1.8

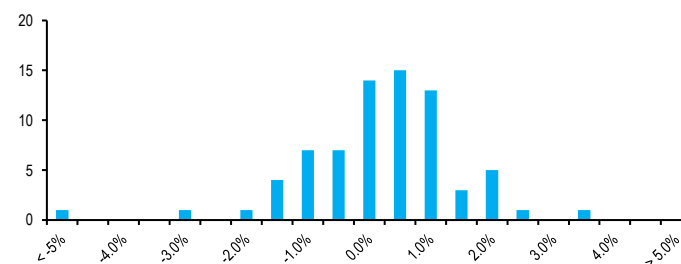
#### 5 Year Risk Summary

	Standard Deviation (%)	Sharpe Ratio	Max Drawdown (%)	Max Drawdown Length	Beta	Correlation
Appomattox	7.2	-0.03	-14.9	26	0.52	0.71
CT AIF Risk Benchmark <sup>1</sup>	9.7	0.72	-14.8	3	-	-

Geographic Exposure Allocation (%)	9/30/2020	6/30/2020	3/31/2020	12/31/2019
North America	84	85	80	81
Developed Europe	9	10	12	11
Emerging Markets	7	5	7	2
Developed Asia	0	0	0	6

Exposure Report (%)	9/30/2020	6/30/2020	3/31/2020	12/31/2019
Total Gross Exposure	137	138	151	144
Gross Long Exposure	102	102	103	103
Gross Short Exposure	35	36	48	41
Net Exposure	68	67	56	63

#### Return Distribution



<sup>1</sup> CT AIF Risk Benchmark has been extrapolated back in history. The objectives of the portfolio have changed over time, and thus, this risk benchmark was not directly applicable prior to 1/1/2020.

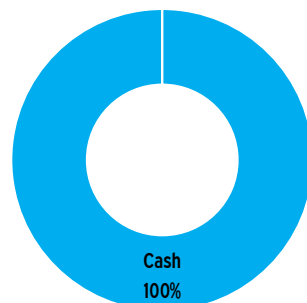


### Appomattox (Restructuring) | As of September 30, 2020

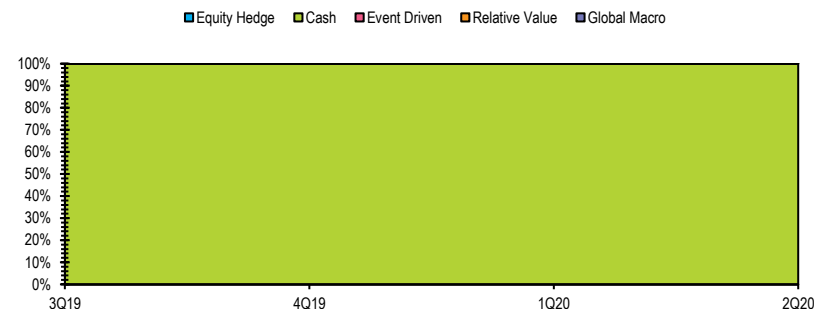
#### Account Information

Mandate:	Hedge Fund, Fund of Funds
Market Value:	\$5.8 M
Portfolio Manager:	Team
Location:	New York, NY
Inception Date:	10/1/2014
Account Type:	Separately Managed
# of Investments:	Not Provided
Fee Schedule:	0.40% Management Fee

#### Instrument Allocation



#### Historical Strategy Allocations



#### Portfolio Performance Summary

	3Q20 (%)	1 YR (%)	3 YR (%)	5 YR (%)	Since 10/2014 (%)
Appomattox (Restructuring)	1.1	0.1	-1.4	-0.1	-0.5
Appomattox Blended Benchmark	0.0	2.6	3.4	2.2	1.9

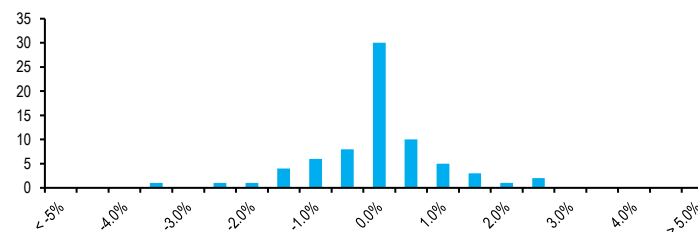
#### 5 Year Risk Summary

	Standard Deviation (%)	Sharpe Ratio	Max Drawdown (%)	Max Drawdown Length	Beta	Correlation
Appomattox (Restructuring)	3.2	-0.4	-7.7	21	-	-

Geographic Exposure Allocation (%)	9/30/2020	6/30/2020	3/31/2020	12/31/2019
Emerging Markets	0	0	0	0
North America	0	0	0	0
Developed Europe	0	0	0	0
Developed Asia	0	0	0	0

Exposure Report (%)	9/30/2020	6/30/2020	3/31/2020	12/31/2019
Total Gross Exposure	0	0	0	0
Gross Long Exposure	0	0	0	0
Gross Short Exposure	0	0	0	0
Net Exposure	0	0	0	0

#### Return Distribution



### Thomas Welles Fund Portfolio

Appomattox	
Benchmark	HFRI Fund of Funds Conservative
Target Return	13-Week T-Bills +300
Target Volatility	< 5%
Risk Management	
Target Beta	.35 (S&P 500 & S&P/LSTA Leveraged Loan Index)
Target Correlation	.80 (S&P 500)
Maximum Drawdown	Monthly: N/A Cycle (3-5 Years): N/A
Manager Concentration	
Minimum	7
Maximum	20
Strategy Concentration	
Minimum	N/A
Maximum	30%
Liquidity	
Weekly	
Monthly	
Quarterly	50%
Semi-Annual	
Annual	80%
>Annual	90%
Side Pockets (Max)	10%

## **Disclaimer, Glossary, and Notes**

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PERFORMANCE DATA CONTAINED HEREIN REPRESENT PAST PERFORMANCE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.

**Credit Risk:** Refers to the risk that the issuer of a fixed income security may default (i.e., the issuer will be unable to make timely principal and/or interest payments on the security).

**Duration:** Measure of the sensitivity of the price of a bond to a change in its yield to maturity. Duration summarizes, in a single number, the characteristics that cause bond prices to change in response to a change in interest rates. For example, the price of a bond with a duration of three years will rise by approximately 3% for each 1% decrease in its yield to maturity. Conversely, the price will decrease 3% for each 1% increase in the bond's yield. Price changes for two different bonds can be compared using duration. A bond with a duration of six years will exhibit twice the percentage price change of a bond with a three-year duration. The actual calculation of a bond's duration is somewhat complicated, but the idea behind the calculation is straightforward. The first step is to measure the time interval until receipt for each cash flow (coupon and principal payments) from a bond. The second step is to compute a weighted average of these time intervals. Each time interval is measured by the present value of that cash flow. This weighted average is the duration of the bond measured in years.

**Information Ratio:** This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return), and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

**Jensen's Alpha:** A measure of the average return of a portfolio or investment in excess of what is predicted by its beta or "market" risk.  $\text{Portfolio Return} - [\text{Risk Free Rate} + \text{Beta} \times (\text{market return} - \text{Risk Free Rate})]$ .

**Market Capitalization:** For a firm, market capitalization is the total market value of outstanding common stock. For a portfolio, market capitalization is the sum of the capitalization of each company weighted by the ratio of holdings in that company to total portfolio holdings; thus it is a weighted-average capitalization. Meketa Investment Group considers the largest 65% of the broad domestic equity market as large capitalization, the next 25% of the market as medium capitalization, and the smallest 10% of stocks as small capitalization.

**Market Weighted:** Stocks in many indices are weighted based on the total market capitalization of the issue. Thus, the individual returns of higher market-capitalization issues will more heavily influence an index's return than the returns of the smaller market-capitalization issues in the index.

**Maturity:** The date on which a loan, bond, mortgage, or other debt/security becomes due and is to be paid off.

**Prepayment Risk:** The risk that prepayments will increase (homeowners will prepay all or part of their mortgage) when mortgage interest rates decline; hence, investors' monies will be returned to them in a lower interest rate environment. Also, the risk that prepayments will slow down when mortgage interest rates rise; hence, investors will not have as much money as previously anticipated in a higher interest rate environment. A prepayment is any payment in excess of the scheduled mortgage payment.

**Price-Book Value (P/B) Ratio:** The current market price of a stock divided by its book value per share. Meketa Investment Group calculates P/B as the current price divided by Compustat's quarterly common equity. Common equity includes common stock, capital surplus, retained earnings, and treasury stock adjusted for both common and nonredeemable preferred stock. Similar to high P/E stocks, stocks with high P/B's tend to be riskier investments.

**Price-Earnings (P/E) Ratio:** A stock's market price divided by its current or estimated future earnings. Lower P/E ratios often characterize stocks in low growth or mature industries, stocks in groups that have fallen out of favor, or stocks of established blue chip companies with long records of stable earnings and regular dividends. Sometimes a company that has good fundamentals may be viewed unfavorably by the market if it is an industry that is temporarily out of favor. Or a business may have experienced financial problems causing investors to be skeptical about its future. Either of these situations would result in lower relative P/E ratios. Some stocks exhibit above-average sales and earnings growth or expectations for above average growth. Consequently, investors are willing to pay more for these companies' earnings, which results in elevated P/E ratios. In other words, investors will pay more for shares of companies whose profits, in their opinion, are expected to increase faster than average. Because future events are in no way assured, high P/E stocks tend to be riskier and more volatile investments. Meketa Investment Group calculates P/E as the current price divided by the I/B/E/S consensus of twelve-month forecast earnings per share.

**Quality Rating:** The rank assigned a security by such rating services as Fitch, Moody's, and Standard & Poor's. The rating may be determined by such factors as (1) the likelihood of fulfillment of dividend, income, and principal payment of obligations; (2) the nature and provisions of the issue; and (3) the security's relative position in the event of liquidation of the company. Bonds assigned the top four grades (AAA, AA, A, BBB) are considered investment grade because they are eligible bank investments as determined by the controller of the currency.

**Sharpe Ratio:** A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk-free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

**SI:** Since Inception

**STIF Account:** Short-term investment fund at a custodian bank that invests in cash-equivalent instruments. It is generally used to safely invest the excess cash held by portfolio managers.

**Standard Deviation:** A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

**Style:** The description of the type of approach and strategy utilized by an investment manager to manage funds. For example, the style for equities is determined by portfolio characteristics such as price-to-book value, price-to-earnings ratio, and dividend yield. Equity styles include growth, value, and core.

**Tracking Error:** A divergence between the price behavior of a position or a portfolio and the price behavior of a benchmark, as defined by the difference in standard deviation.

**Yield to Maturity:** The yield, or return, provided by a bond to its maturity date; determined by a mathematical process, usually requiring the use of a “basis book.” For example, a 5% bond pays \$5 a year interest on each \$100 par value. To figure its current yield, divide \$5 by \$95—the market price of the bond—and you get 5.26%. Assume that the same bond is due to mature in five years. On the maturity date, the issuer is pledged to pay \$100 for the bond that can be bought now for \$95. In other words, the bond is selling at a discount of 5% below par value. To figure yield to maturity, a simple and approximate method is to divide 5% by the five years to maturity, which equals 1% pro rata yearly. Add that 1% to the 5.26% current yield, and the yield to maturity is roughly 6.26%.

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

**Yield to Worst:** The lowest potential yield that can be received on a bond without the issuer actually defaulting. The yield to worst is calculated by making worst-case scenario assumptions on the issue by calculating the returns that would be received if provisions, including prepayment, call, or sinking fund, are used by the issuer.

**NCREIF Property Index (NPI):** Measures unleveraged investment performance of a very large pool of individual commercial real estate properties acquired in the private market by tax-exempt institutional investors for investment purposes only. The NPI index is capitalization-weighted for a quarterly time series composite total rate of return.

**NCREIF Fund Index - Open End Diversified Core Equity (NFI-ODCE):** Measures the investment performance of 28 open-end commingled funds pursuing a core investment strategy that reflects funds' leverage and cash positions. The NFI-ODCE index is equal-weighted and is reported gross and net of fees for a quarterly time series composite total rate of return.

Sources: Investment Terminology, International Foundation of Employee Benefit Plans, 1999.

The Handbook of Fixed Income Securities, Fabozzi, Frank J., 1991

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Throughout this report, numbers may not sum due to rounding.

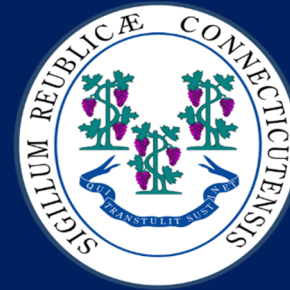
Returns for periods greater than one year are annualized throughout this report.

Values shown are in millions of dollars, unless noted otherwise.

# CONNECTICUT RETIREMENT PLANS & TRUST FUNDS

## REAL ESTATE FUND PERFORMANCE REVIEW

Second Quarter 2020



December 9, 2020



BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO



# **REAL ESTATE PORTFOLIO REVIEW**

*SECOND QUARTER 2020*

NEPC, LLC

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# PORTFOLIO PERFORMANCE SUMMARY

The table below displays trailing time period performance for the State of Connecticut Real Estate Portfolio as of June 30, 2020, along with select benchmarks

- The policy benchmark is the NCREIF ODCE Index, which is comprised of open-end core real estate funds; we also show two additional benchmarks:
  - The NCREIF Property Index, a benchmark of unlevered core real estate returns
  - The C|A Non-Core Real Estate benchmark consists of non-core (value-add and opportunistic) closed-end real estate funds
- The total real estate portfolio generated a total net return of -1.4% in the second quarter, as COVID-19 continues to impact asset values
  - The portfolio has generated an annualized return of 6.6% over the trailing five years

Portfolio Performance	Net Asset Value (\$M)	YTD	1 Year	3 Year	5 Year	10 Year	Inception
State of Connecticut: Total Real Estate Portfolio	\$2,281.4	-2.7%	0.4%	5.0%	6.6%	9.1%	5.3%
Policy Benchmark: <i>NFI-ODCE Index</i> <sup>1</sup>		-1.0%	1.3%	4.7%	6.4%	9.8%	N/A
Other Real Estate Benchmarks							
<i>NCREIF Property Index</i> <sup>2</sup>		-0.3%	2.7%	5.4%	6.8%	9.7%	N/A
<i>C A Non-Core Real Estate Index</i> <sup>3</sup>		-6.2%	-1.7%	5.6%	7.2%	10.5%	N/A

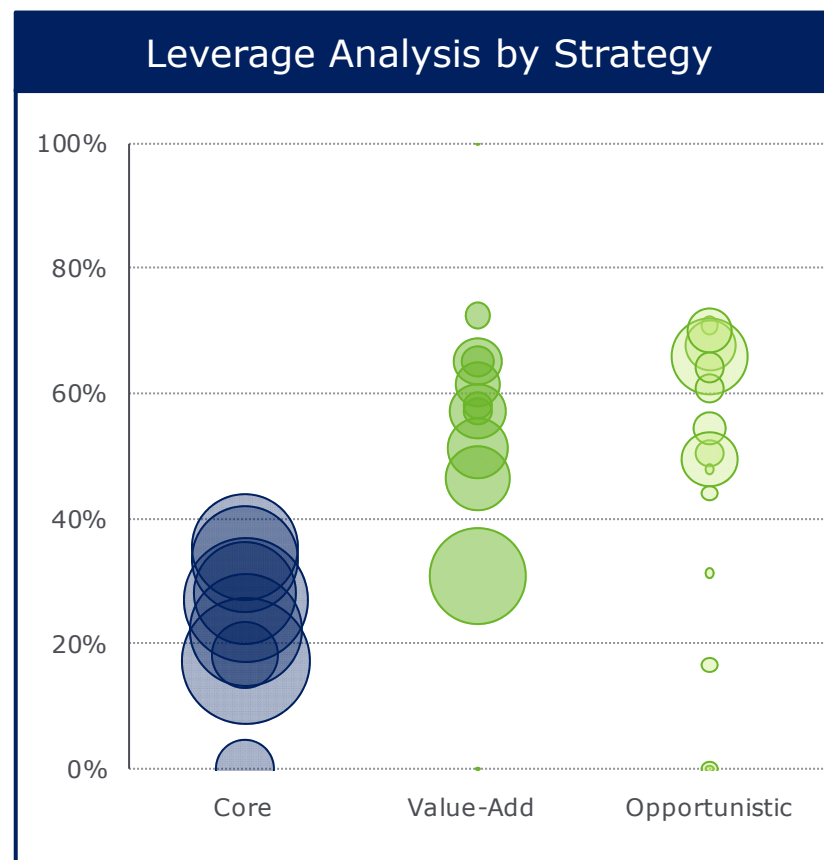
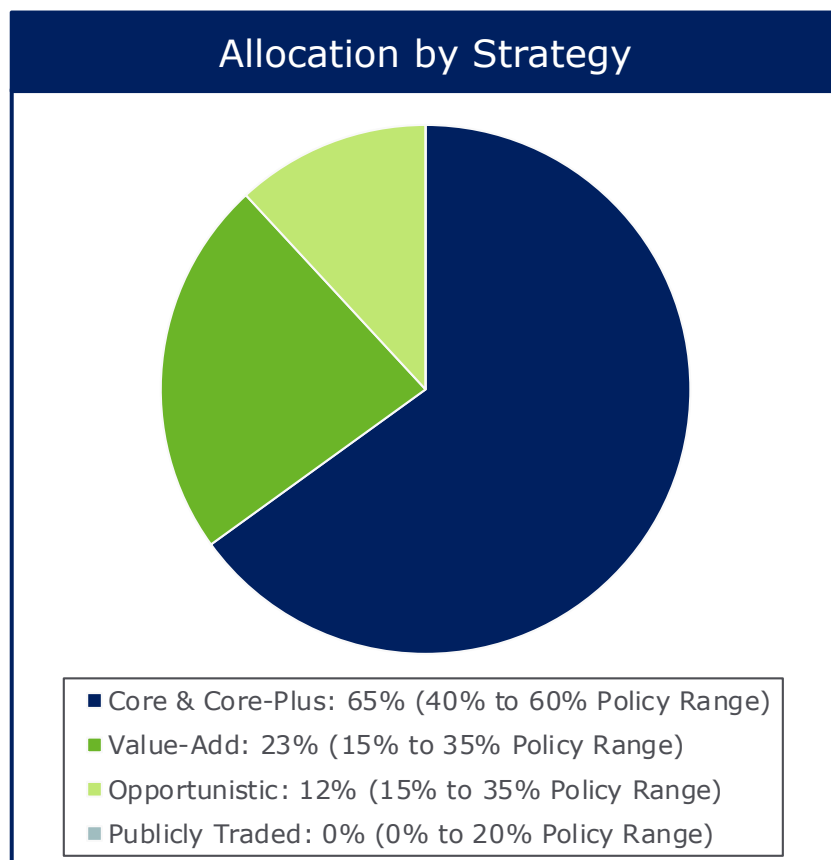
Data as of June 30, 2020. Sources include NCREIF, Thomson-One/Cambridge Associates, Manager data, and NEPC. Additional notes:

1. The NFI-ODCE Index represents pooled returns of open-end comingled core funds in the ODCE Index. The ODCE includes the effects of leverage, and returns shown are time-weighted and net of fees.
2. The NCREIF Property Index (NPI) represents property-level returns of institutionally-owned core real estate properties in the United States. The NPI is unlevered, and returns are time-weighted and gross of fees.
3. The C|A Benchmark (with data provided by Thomson-One) represents pooled horizon internal rate of return (IRR) calculations, net of fees, across value-add and opportunistic real estate funds. This is the same benchmark that was referred to as the "Thomson-One/Cambridge Benchmark" in reports prior to Q2 2020.
4. The timing and magnitude of fund cash flows are integral to the IRR performance. Benchmark indices that are time weighted measures should not be directly compared to dollar-weighted IRR calculations. Index data is continuously updated and is therefore subject to change.



# PORTFOLIO HIGHLIGHTS

- **Relative to the policy target ranges, the State of Connecticut real estate portfolio is currently over-allocated to core real estate and under-allocated to opportunistic real estate**
  - The portfolio is in compliance with regard to value-add and publicly traded real estate
- **The portfolio has a weighted average leverage ratio of 34.7%**



Data as of June 30, 2020.

Leverage measured as loan-to-value and is reported by each underlying Manager. Size of bubble indicates relative size of investment (by net asset value).

# MANAGER RELATIONSHIPS

- **As of June 30, 2020, the real estate portfolio had 41 active investments with 24 managers**
  - The top 10 managers represent over 75% of the portfolio, by both current net asset value and total potential exposure

## Top Ten Relationships – NAV

Manager Name	# of Funds	NAV (\$M)
Morgan Stanley Real Estate	1	\$277.06
Barings Real Estate	1	\$262.94
PGIM Real Estate	1	\$212.30
UBS Realty Advisors	3	\$211.63
USAA Real Estate	2	\$194.64
Hart Realty Advisors	1	\$194.52
American Realty Advisors	1	\$177.99
Clarion Partners	1	\$160.96
The Blackstone Group	5	\$156.82
Crow Holdings	2	\$99.64
Total Top Ten		\$1,948.50
85% of Total Portfolio (by Net Asset Value)		

## Top Ten Relationships – Total Exposure

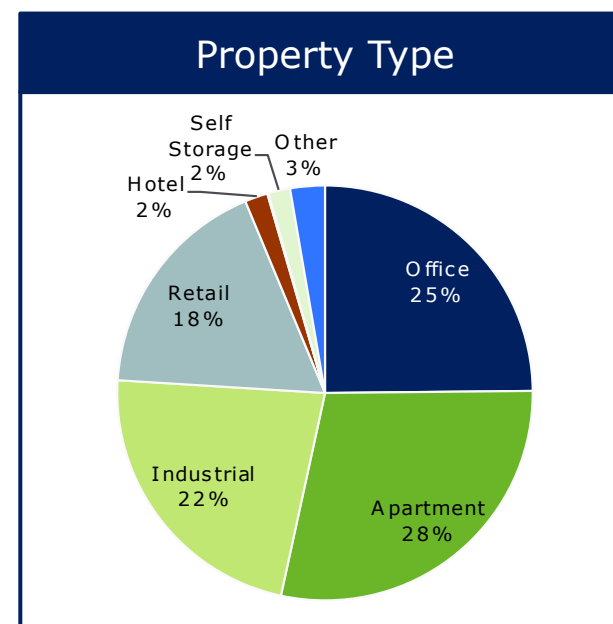
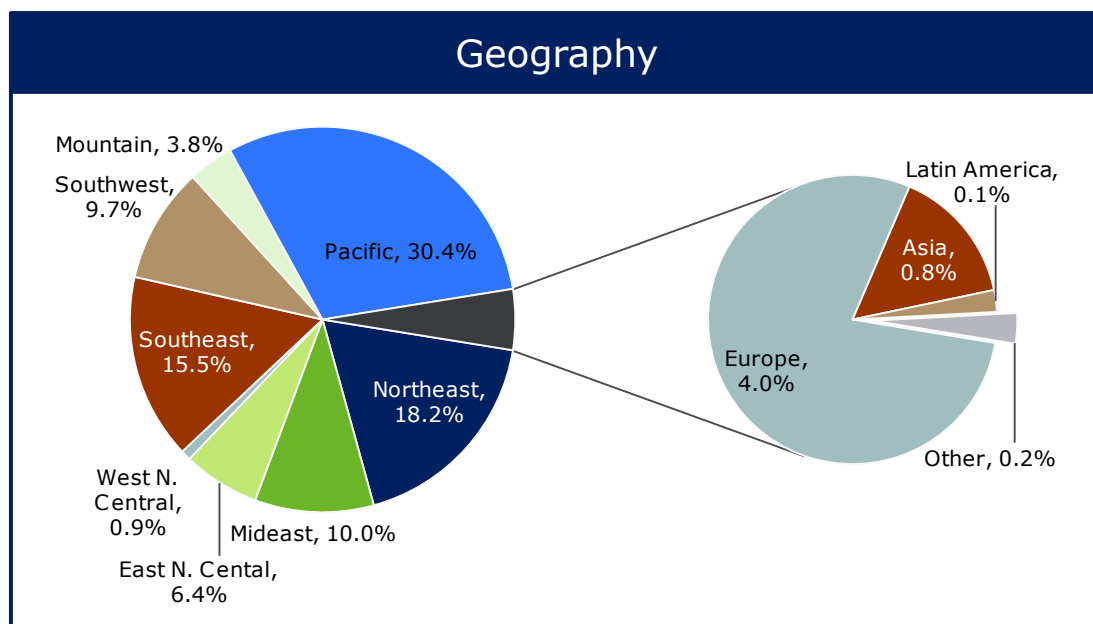
Manager Name	# of Funds	Exposure (\$M)
Morgan Stanley Real Estate	1	\$277.06
Barings Real Estate	1	\$262.94
Hart Realty Advisors	1	\$229.04
PGIM Real Estate	1	\$212.30
UBS Realty Advisors	3	\$211.63
The Blackstone Group	5	\$198.09
USAA Real Estate	2	\$194.64
American Realty Advisors	1	\$177.99
Clarion Partners	1	\$160.96
Gerding Edlen	3	\$144.79
Total Top Ten		\$2,069.44
78% of Total Portfolio (by Total Exposure)		



Data as of June 30, 2020. Total Exposure is calculated as current net asset value plus any unfunded capital commitments.

# PORTFOLIO DIVERSIFICATION

- **The State of Connecticut real estate portfolio is broadly diversified by property type and geography within the U.S.**
- **The portfolio remains heavily concentrated in the United States**
  - About 5% of the portfolio is invested outside the U.S., with the majority of that exposure in Europe
- **The portfolio is primarily invested the four main property types (apartments, industrial, office, and retail)**
  - Hotel assets, self-storage, and other property types account for approximately 6% of the overall portfolio

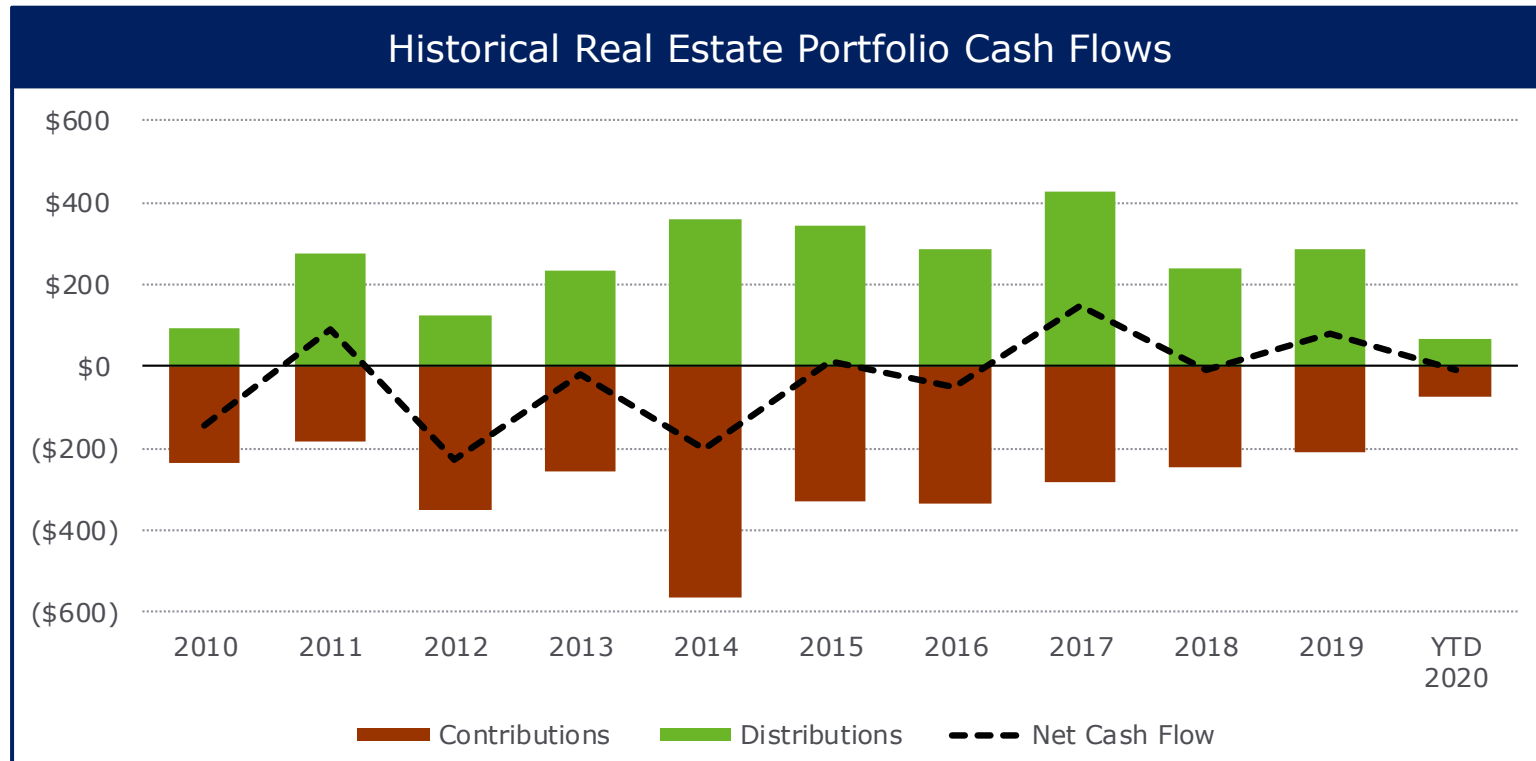


Data as of June 30, 2020. Breakouts provided by Managers.

Note: Hotel, self-storage, and other property types represent 6.25% of the portfolio; the pie chart appears to show 7% due to rounding of the underlying figures.

# 10-YEAR CASH FLOWS

- The chart below illustrates the capital invested, distributed, and net cash flows for the real estate portfolio for 2020 YTD and the past 10 full years
- In the second quarter of 2020, the real estate portfolio produced a slightly negative net cash flow, of approximately \$10.3 million
  - This included approximately \$34.0 million in contributions and approximately \$23.7 million in distributions
  - Year-to-date, the real estate portfolio has seen net outflows of approximately \$9.3 million



Data as of June 30, 2020.

**DETAILED REAL ESTATE  
PERFORMANCE**  
*SECOND QUARTER 2020*

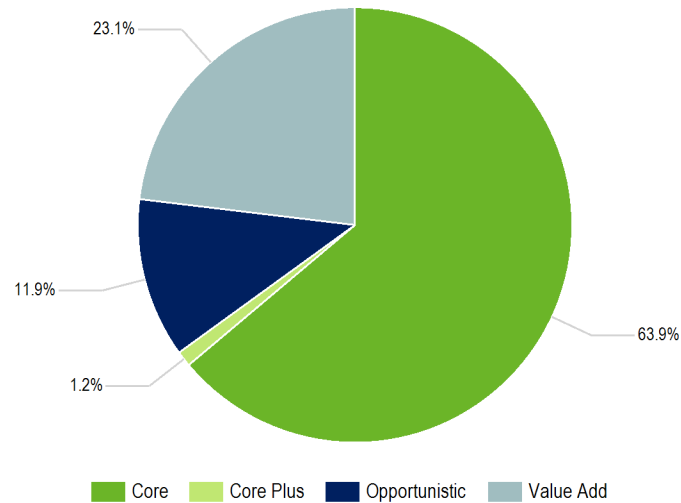
NEPC, LLC

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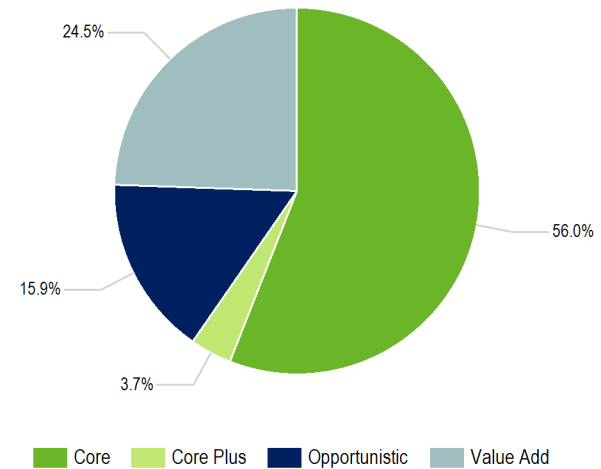
## State of Connecticut

# ANALYSIS BY STRATEGY

Real Estate Valuation by Strategy



Real Estate Fund Exposure by Strategy



Investments		Commitments			Contributions & Distributions			Valuations				Performance		
Investment Strategy		Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Fund Exposure	DPI	TVPI	IRR
Total Core		\$1,628.53	\$34.53	1.19	\$1,939.12	\$1.73	\$1,193.34	\$1,457.25	\$2,650.59	\$709.74	\$1,491.78	0.61	1.37	6.18%
Total Core Plus		\$100.00	\$71.78	0.28	\$28.22	-\$0.03	\$0.00	\$26.34	\$26.34	-\$1.85	\$98.12	0.00	0.93	-9.47%
Total Opportunistic		\$1,478.13	\$152.37	0.98	\$1,451.09	\$26.84	\$1,562.41	\$270.81	\$1,833.22	\$355.29	\$423.17	1.06	1.24	5.16%
Total Value Add		\$1,001.42	\$124.87	0.90	\$902.18	\$26.15	\$529.52	\$526.94	\$1,056.47	\$128.13	\$651.81	0.57	1.14	3.17%
Total		\$4,208.08	\$383.53	1.03	\$4,320.62	\$54.70	\$3,285.27	\$2,281.35	\$5,566.62	\$1,191.31	\$2,664.88	0.75	1.27	5.29%

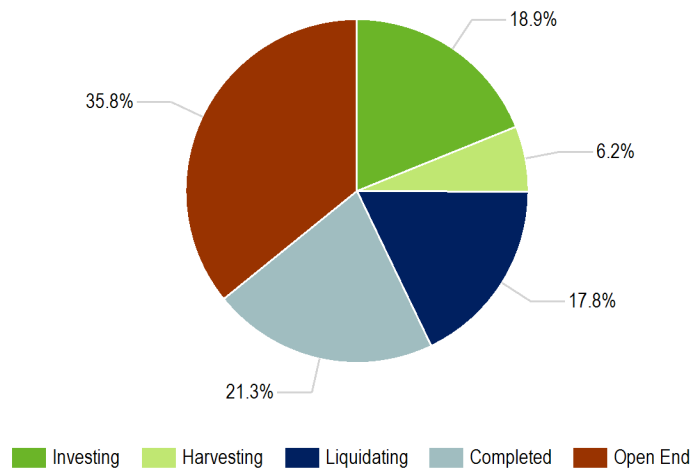




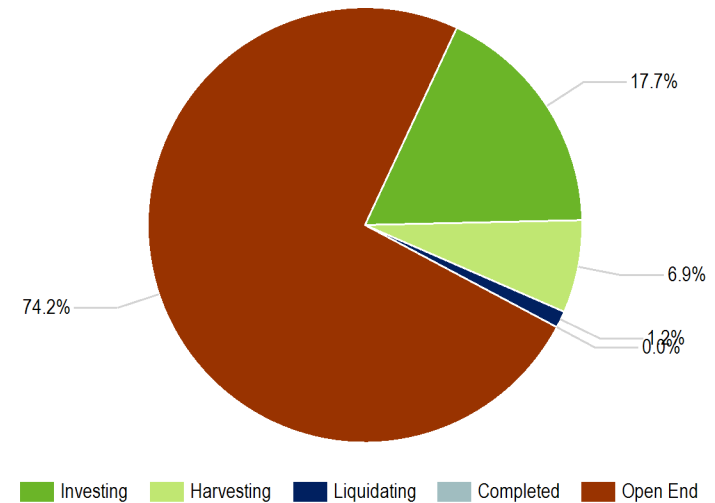
## State of Connecticut

# ANALYSIS BY LIFECYCLE

Commitment by Lifecycle



Valuation by Lifecycle

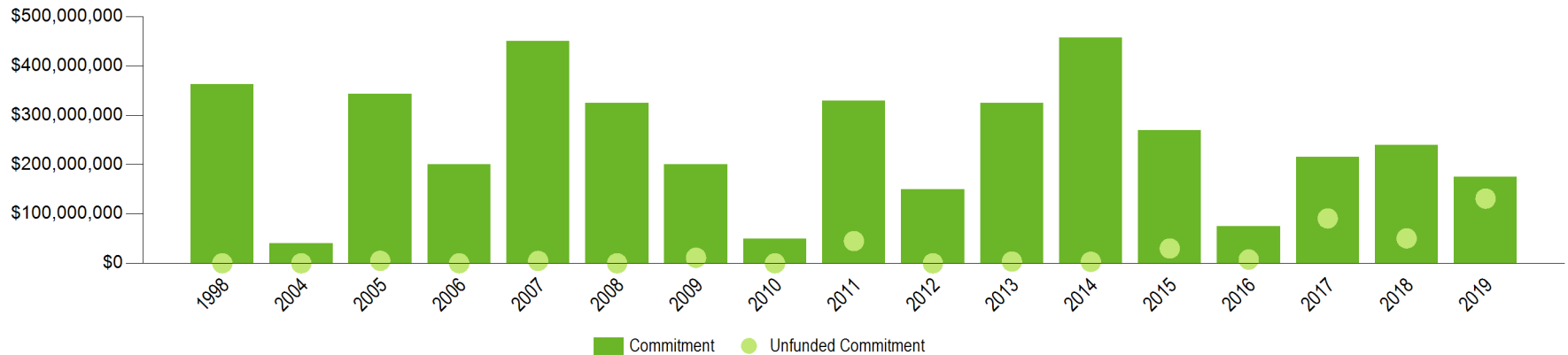


Investments	Commitments			Contributions & Distributions			Valuations			Performance		
Lifecycle	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Total Investing	\$795.00	\$293.63	0.65	\$519.74	\$9.81	\$215.55	\$403.81	\$619.36	\$89.81	0.41	1.17	10.04%
Total Harvesting	\$260.00	\$23.58	1.03	\$266.74	\$6.97	\$173.14	\$157.01	\$330.14	\$56.43	0.63	1.21	7.53%
Total Liquidating	\$749.08	\$31.80	1.03	\$768.91	\$28.87	\$916.62	\$28.49	\$945.12	\$147.34	1.15	1.18	3.64%
Total Completed	\$896.66	\$0.00	1.06	\$947.74	\$4.36	\$1,019.46	\$0.00	\$1,019.46	\$67.36	1.07	1.07	1.65%
Total Open End	\$1,507.34	\$34.53	1.21	\$1,817.49	\$4.70	\$960.50	\$1,692.04	\$2,652.54	\$830.36	0.53	1.46	7.86%
Total	\$4,208.08	\$383.53	1.03	\$4,320.62	\$54.70	\$3,285.27	\$2,281.35	\$5,566.62	\$1,191.31	0.75	1.27	5.29%



# ANALYSIS BY VINTAGE YEAR

Commitments By Vintage Year



Investments	Commitments		Contributions & Distributions			Valuations			Performance		
Vintage Year	Commitment	Unfunded Commitment	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Total 1998	\$363.13	\$0.00	\$409.49	\$0.15	\$539.88	\$0.00	\$539.88	\$130.24	1.32	1.32	5.24%
Total 2004	\$40.00	\$0.00	\$40.76	\$3.98	\$57.01	\$0.00	\$57.01	\$12.27	1.27	1.27	9.36%
Total 2005	\$343.53	\$5.06	\$339.38	\$2.72	\$302.98	\$0.26	\$303.23	-\$38.87	0.89	0.89	-2.56%
Total 2006	\$200.00	\$0.00	\$201.00	\$7.82	\$127.05	\$2.32	\$129.36	-\$79.46	0.61	0.62	-5.55%
Total 2007	\$450.00	\$4.91	\$451.81	\$12.32	\$417.28	\$282.07	\$699.35	\$235.21	0.90	1.51	5.63%
Total 2008	\$325.00	\$0.00	\$325.16	\$0.00	\$192.24	\$264.97	\$457.21	\$132.05	0.59	1.41	5.02%
Total 2009	\$200.00	\$11.26	\$226.29	\$6.23	\$308.96	\$15.61	\$324.57	\$92.05	1.33	1.40	12.54%
Total 2010	\$50.00	\$0.00	\$50.59	\$0.00	\$66.65	\$0.00	\$66.65	\$16.06	1.32	1.32	10.96%
Total 2011	\$329.08	\$45.10	\$564.11	\$0.00	\$528.53	\$197.80	\$726.33	\$162.22	0.94	1.29	9.88%
Total 2012	\$150.00	\$0.00	\$223.19	\$0.29	\$127.40	\$177.99	\$305.39	\$81.90	0.57	1.37	12.10%
Total 2013	\$325.00	\$3.50	\$321.50	\$0.00	\$113.87	\$371.09	\$484.95	\$163.45	0.35	1.51	8.51%
Total 2014	\$457.34	\$3.08	\$464.23	\$5.38	\$217.78	\$398.94	\$616.72	\$147.10	0.46	1.31	7.22%
Total 2015	\$270.00	\$30.12	\$260.23	\$6.00	\$182.76	\$167.35	\$350.11	\$83.89	0.69	1.32	13.82%
Total 2016	\$75.00	\$7.66	\$67.34	\$5.15	\$57.51	\$37.49	\$95.00	\$22.50	0.79	1.31	10.85%
Total 2017	\$215.00	\$91.00	\$129.98	\$3.74	\$19.23	\$134.84	\$154.06	\$20.34	0.14	1.15	7.75%
Total 2018	\$240.00	\$50.57	\$201.82	\$1.38	\$26.16	\$190.15	\$216.31	\$13.12	0.13	1.06	6.09%
Total 2019	\$175.00	\$131.29	\$43.71	-\$0.46	\$0.00	\$40.49	\$40.49	-\$2.76	0.00	0.94	-11.13%
Total	\$4,208.08	\$383.53	\$4,320.62	\$54.70	\$3,285.27	\$2,281.35	\$5,566.62	\$1,191.31	0.75	1.27	5.29%

APPENDIX 1:  
**INVESTMENT LEVEL PERFORMANCE**  
*AS OF JUNE 30, 2020*

## State of Connecticut

# RETURN SUMMARY

Investments			Trailing Period Returns (IRR) %						
Investment Name	Vintage Year	Commitment	(Qtr)	(YTD)	(1 Yr)	(3 Yrs)	(5 Yrs)	(10 Yrs)	SI IRR
AEW Core Real Estate Separate Account	2005	\$243.53							0.16%
AEW Partners III, L.P.	1998	\$100.00							8.77%
American Core Realty Separate Account	2012	\$150.00	0.01%	2.51%	9.15%	8.68%	11.00%		12.10%
Apollo Real Estate Investment Fund III, L.P.	1998	\$75.00			-16.22%	22.49%	182.72%	22.69%	6.25%
Artemis Real Estate Partners Income & Growth Fund, L.P.	2019	\$100.00	0.20%	-7.37%					-9.47%
Barings Core Property Fund, L.P.	2008	\$250.00	-0.09%	1.19%	3.93%	6.14%	7.85%	9.10%	6.31%
BIG Real Estate Fund I, L.P.	2018	\$65.00	2.99%	3.77%	9.01%				9.38%
Blackstone Real Estate Partners Europe III, L.P.	2009	\$50.00	-4.85%	-4.35%	-6.17%	1.12%	3.99%	10.60%	10.73%
Blackstone Real Estate Partners Europe V, L.P.	2017	\$50.00	2.67%	-5.84%	-1.11%	7.49%			7.33%
Blackstone Real Estate Partners VI, L.P.	2007	\$100.00	-0.25%	-17.79%	-2.91%	14.28%	5.63%	21.38%	13.23%
Blackstone Real Estate Partners VIII, L.P.	2015	\$100.00	3.32%	-3.58%	5.69%	10.07%			12.30%
Blackstone Real Estate Special Situations Fund II, L.P.	2011	\$74.08	-1.06%	-1.16%	-12.79%	-3.11%	-3.14%		9.29%
Canyon-Johnson Urban Fund II, L.P.	2005	\$50.00	-0.15%	-0.18%	-1.10%	3.44%	-19.93%	-7.63%	-10.43%
Canyon-Johnson Urban Fund III, L.P.	2010	\$50.00	-2.36%	-4.77%	-53.32%	85.37%	8.15%	13.69%	10.96%
Capri Select Income II, L.P.	2005	\$30.00	-0.61%	-2.74%		57.54%	19.64%	15.38%	-9.88%
Colony Realty Partners II, L.P.	2006	\$50.00							-13.75%
Covenant Apartment Fund IX, L.P.	2018	\$50.00	1.85%	5.31%	9.58%				4.91%
Covenant Apartment Fund V (Institutional), L.P.	2007	\$25.00							2.90%
Covenant Apartment Fund VI (Institutional), L.P.	2008	\$25.00							13.50%
Covenant Apartment Fund VIII, L.P.	2015	\$30.00	2.47%	2.35%	22.27%	21.98%			19.04%
Crow Holdings Realty Partners VII, L.P.	2016	\$75.00	-0.69%	-0.38%	3.93%	11.76%			10.85%
Crow Holdings Realty Partners VIII, L.P.	2018	\$75.00	2.17%	4.50%	9.55%				10.87%
Cypress Acquisition Partners Retail Fund, L.P.	2014	\$50.00	-26.75%	-70.13%	-74.37%	-41.08%	-28.21%		-25.16%
Gerding Edlen Green Cities II, L.P.	2014	\$30.00	0.86%	1.67%	7.08%	0.58%	5.52%		9.69%
Gerding Edlen Green Cities III, L.P.	2017	\$50.00	-2.78%	-1.97%	0.87%	5.75%			6.93%
Gerding Edlen Green Cities IV, L.P.	2019	\$75.00	-0.45%	-1.54%	-3.67%				-8.38%
Hart Realty Advisors-Core Separate Account	2011	\$180.00	-1.67%	0.28%	2.18%	3.78%	5.01%		8.05%
IL & FS India Realty Fund II, LLC	2008	\$50.00	-0.23%	-64.86%	-64.90%	-41.55%	-26.29%	-11.03%	-10.31%
JP Morgan Strategic Property Fund	2014	\$90.00			0.49%	5.43%	7.26%		7.60%
Landmark Real Estate Fund VII, L.P.	2015	\$40.00	-4.57%	-4.51%	-6.41%	1.19%	7.60%		8.37%
Landmark Real Estate Partners VIII, L.P.	2017	\$65.00	-6.30%	-7.29%	-1.53%				12.03%
Lion Industrial Trust	2014	\$102.34	1.75%	4.53%	9.27%	13.90%			13.58%



## State of Connecticut

# RETURN SUMMARY

Investments			Trailing Period Returns (IRR) %						
Investment Name	Vintage Year	Commitment	(Qtr)	(YTD)	(1 Yr)	(3 Yrs)	(5 Yrs)	(10 Yrs)	SI IRR
Lone Star Real Estate Fund II (U.S.), L.P.	2011	\$75.00	1.72%	-12.55%	-4.48%	-2.77%	9.65%		25.35%
MacFarlane Urban Real Estate Fund II, L.P.	2007	\$100.00							-16.47%
New Boston Real Estate Individual and Institutional Investment Fund, L.P. IV	1998	\$15.00							3.10%
Prime Property Fund, LLC	2007	\$225.00	-1.85%	-1.25%	1.71%	5.80%	7.85%	11.72%	7.60%
PRISA I, L.P.	2014	\$185.00	-1.43%	-0.01%	2.43%	5.81%	7.07%		7.46%
Rockwood Capital Real Estate Partners Fund V, L.P.	2004	\$40.00							9.36%
Rockwood Capital Real Estate Partners Fund VI, L.P.	2005	\$20.00	-2.60%	-5.73%	-7.75%	2.30%	-15.17%	7.68%	-0.85%
Rockwood Capital Real Estate Partners Fund VII, L.P.	2006	\$50.00	-2.13%	-47.15%	-48.03%	-16.07%	-5.17%	12.14%	-6.85%
Starwood Distressed Opportunity Fund IX Global, L.P.	2013	\$50.00	-8.89%	-16.02%	-17.03%	-1.30%	5.88%		17.71%
Starwood Global Opportunity Fund VII, L.P.	2006	\$50.00	-5.84%	-13.12%	-12.42%	0.43%	-2.36%	4.57%	-2.37%
Starwood Global Opportunity Fund VIII, L.P.	2009	\$50.00	-15.19%	-30.46%	-24.95%	-8.98%	-5.26%	12.07%	11.88%
Starwood Global Opportunity Fund X, L.P.	2015	\$100.00	-6.42%	-10.17%	-5.87%	7.53%			15.80%
Starwood Opportunity Fund XI Global, L.P.	2017	\$50.00	-6.63%	-15.73%	0.68%				11.89%
Trumbull Property Fund, L.P.	2013	\$75.00	-2.60%	-8.00%	-7.37%	-0.39%	2.70%		3.93%
Trumbull Property Income Fund, L.P.	2013	\$50.00	-1.42%	-0.95%	1.84%	4.54%	5.96%		6.73%
UBS Trumbull Property Growth & Income Fund, L.P.	2013	\$50.00	-3.65%	-4.93%	-1.17%	5.70%	9.02%		10.09%
Urban Strategy America Fund, L.P.	2006	\$50.00	0.20%	15.98%	23.46%	4.42%	-0.38%	2.53%	-1.84%
USAA Eagle Real Estate Feeder 1, L.P.	2013	\$100.00	-5.70%	-5.21%	-3.33%	3.61%	6.76%		9.25%
USAA Eagle Real Estate Feeder 1, L.P.	2018	\$50.00	-5.72%	-5.32%	-4.12%				-1.04%
Walton Street Real Estate Fund II, L.P.	1998	\$73.13							13.03%
Westport Senior Living Investment Fund, L.P.	1998	\$100.00							-13.20%
WLR IV PPIP Co-Invest, L.P.	2009	\$100.00	-0.06%	-0.54%	-5.40%	6.49%	5.81%	15.98%	14.38%
<b>Total</b>		<b>\$4,208.08</b>	<b>-1.43%</b>	<b>-2.66%</b>	<b>0.43%</b>	<b>5.03%</b>	<b>6.60%</b>	<b>9.14%</b>	<b>5.29%</b>



## State of Connecticut

# ANALYSIS BY FUND

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
AEW Core Real Estate Separate Account	2005	\$243.53	\$0.00	\$243.53	\$0.00	\$245.21	\$0.00	\$245.21	\$1.69	1.01	1.01	0.16%
AEW Partners III, L.P.	1998	\$100.00	\$0.00	\$101.69	\$0.00	\$150.65	\$0.00	\$150.65	\$48.95	1.48	1.48	8.77%
American Core Realty Separate Account	2012	\$150.00	\$0.00	\$223.19	\$0.29	\$127.40	\$177.99	\$305.39	\$81.90	0.57	1.37	12.10%
Apollo Real Estate Investment Fund III, L.P.	1998	\$75.00	\$0.00	\$78.82	\$0.00	\$116.21	\$0.00	\$116.21	\$37.39	1.47	1.47	6.25%
Artemis Real Estate Partners Income & Growth Fund, L.P.	2019	\$100.00	\$71.78	\$28.22	-\$0.03	\$0.00	\$26.34	\$26.34	-\$1.85	0.00	0.93	-9.47%
Barings Core Property Fund, L.P.	2008	\$250.00	\$0.00	\$250.00	\$0.00	\$128.56	\$262.94	\$391.51	\$141.51	0.51	1.57	6.31%
BIG Real Estate Fund I, L.P.	2018	\$65.00	\$24.79	\$52.60	\$0.62	\$18.72	\$39.04	\$57.76	\$4.54	0.35	1.09	9.38%
Blackstone Real Estate Partners Europe III, L.P.	2009	\$50.00	\$6.62	\$45.94	\$6.23	\$71.15	\$6.06	\$77.22	\$25.05	1.36	1.48	10.73%
Blackstone Real Estate Partners Europe V, L.P.	2017	\$50.00	\$10.71	\$39.76	\$2.44	\$3.13	\$45.00	\$48.13	\$5.94	0.07	1.14	7.33%
Blackstone Real Estate Partners VI, L.P.	2007	\$100.00	\$4.91	\$99.61	\$12.09	\$217.54	\$5.01	\$222.55	\$110.84	1.95	1.99	13.23%
Blackstone Real Estate Partners VIII, L.P.	2015	\$100.00	\$17.00	\$103.34	\$6.01	\$41.44	\$99.48	\$140.92	\$31.56	0.38	1.29	12.30%
Blackstone Real Estate Special Situations Fund II, L.P.	2011	\$74.08	\$2.03	\$72.05	\$0.00	\$84.83	\$1.27	\$86.10	\$14.06	1.18	1.20	9.29%
Canyon-Johnson Urban Fund II, L.P.	2005	\$50.00	\$5.06	\$44.94	\$0.00	\$19.87	\$0.17	\$20.04	-\$24.90	0.44	0.45	-10.43%
Canyon-Johnson Urban Fund III, L.P.	2010	\$50.00	\$0.00	\$50.59	\$0.00	\$66.65	\$0.00	\$66.65	\$16.06	1.32	1.32	10.96%
Capri Select Income II, L.P.	2005	\$30.00	\$0.00	\$30.45	\$0.00	\$15.88	\$0.01	\$15.89	-\$14.56	0.52	0.52	-9.88%
Colony Realty Partners II, L.P.	2006	\$50.00	\$0.00	\$51.00	\$0.00	\$13.19	\$0.00	\$13.19	-\$37.81	0.26	0.26	-13.75%
Covenant Apartment Fund IX, L.P.	2018	\$50.00	\$11.00	\$39.00	\$0.76	\$1.81	\$39.62	\$41.42	\$1.66	0.05	1.04	4.91%
Covenant Apartment Fund V (Institutional), L.P.	2007	\$25.00	\$0.00	\$25.00	\$0.23	\$30.28	\$0.00	\$30.28	\$5.05	1.20	1.20	2.90%
Covenant Apartment Fund VI (Institutional), L.P.	2008	\$25.00	\$0.00	\$25.16	\$0.00	\$39.52	\$0.00	\$39.52	\$14.36	1.57	1.57	13.50%
Covenant Apartment Fund VIII, L.P.	2015	\$30.00	\$0.00	\$30.00	-\$0.02	\$28.66	\$17.69	\$46.35	\$16.37	0.96	1.55	19.04%
Crow Holdings Realty Partners VII, L.P.	2016	\$75.00	\$7.66	\$67.34	\$5.15	\$57.51	\$37.49	\$95.00	\$22.50	0.79	1.31	10.85%
Crow Holdings Realty Partners VIII, L.P.	2018	\$75.00	\$14.78	\$60.22	\$0.00	\$5.63	\$62.15	\$67.79	\$7.57	0.09	1.13	10.87%
Cypress Acquisition Partners Retail Fund, L.P.	2014	\$50.00	\$1.10	\$57.36	\$0.00	\$14.10	\$12.49	\$26.59	-\$30.77	0.25	0.46	-25.16%
Gerding Edlen Green Cities II, L.P.	2014	\$30.00	\$1.98	\$29.53	\$0.98	\$29.60	\$13.18	\$42.78	\$12.27	0.97	1.40	9.69%
Gerding Edlen Green Cities III, L.P.	2017	\$50.00	\$2.02	\$48.86	\$1.39	\$6.22	\$53.95	\$60.17	\$9.92	0.12	1.20	6.93%
Gerding Edlen Green Cities IV, L.P.	2019	\$75.00	\$59.51	\$15.49	-\$0.44	\$0.00	\$14.15	\$14.15	-\$0.91	0.00	0.94	-8.38%
Hart Realty Advisors-Core Separate Account	2011	\$180.00	\$34.52	\$416.96	\$0.00	\$334.18	\$194.52	\$528.70	\$111.74	0.80	1.27	8.05%
IL & FS India Realty Fund II, LLC	2008	\$50.00	\$0.00	\$50.00	\$0.00	\$24.16	\$2.02	\$26.18	-\$23.82	0.48	0.52	-10.31%
JP Morgan Strategic Property Fund	2014	\$90.00	\$0.00	\$90.00	\$1.43	\$120.44	\$0.00	\$120.44	\$29.01	1.32	1.32	7.60%
Landmark Real Estate Fund VII, L.P.	2015	\$40.00	\$3.12	\$36.88	\$0.00	\$29.11	\$14.53	\$43.64	\$6.76	0.79	1.18	8.37%
Landmark Real Estate Partners VIII, L.P.	2017	\$65.00	\$43.97	\$24.71	-\$0.08	\$7.62	\$20.20	\$27.82	\$3.19	0.31	1.13	12.03%



## State of Connecticut

# ANALYSIS BY FUND

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Lion Industrial Trust	2014	\$102.34	\$0.00	\$102.34	\$2.97	\$19.28	\$160.96	\$180.24	\$74.94	0.18	1.71	13.58%
Lone Star Real Estate Fund II (U.S.), L.P.	2011	\$75.00	\$8.54	\$75.11	\$0.00	\$109.52	\$2.01	\$111.53	\$36.42	1.46	1.48	25.35%
MacFarlane Urban Real Estate Fund II, L.P.	2007	\$100.00	\$0.00	\$102.20	\$0.00	\$27.72	\$0.00	\$27.72	-\$74.49	0.27	0.27	-16.47%
New Boston Real Estate Individual and Institutional Investment Fund, L.P. IV	1998	\$15.00	\$0.00	\$15.00	\$0.00	\$17.34	\$0.00	\$17.34	\$2.34	1.16	1.16	3.10%
Prime Property Fund, LLC	2007	\$225.00	\$0.00	\$225.00	\$0.00	\$141.75	\$277.06	\$418.81	\$193.81	0.63	1.86	7.60%
PRISA I, L.P.	2014	\$185.00	\$0.00	\$185.00	\$0.00	\$34.36	\$212.30	\$246.66	\$61.66	0.19	1.33	7.46%
Rockwood Capital Real Estate Partners Fund V, L.P.	2004	\$40.00	\$0.00	\$40.76	\$3.98	\$57.01	\$0.00	\$57.01	\$12.27	1.27	1.27	9.36%
Rockwood Capital Real Estate Partners Fund VI, L.P.	2005	\$20.00	\$0.00	\$20.46	\$2.72	\$22.01	\$0.08	\$22.09	-\$1.09	0.95	0.95	-0.85%
Rockwood Capital Real Estate Partners Fund VII, L.P.	2006	\$50.00	\$0.00	\$50.00	\$7.82	\$31.84	\$0.60	\$32.44	-\$25.38	0.55	0.56	-6.85%
Starwood Distressed Opportunity Fund IX Global, L.P.	2013	\$50.00	\$3.50	\$46.50	\$0.00	\$59.33	\$14.16	\$73.50	\$27.00	1.28	1.58	17.71%
Starwood Global Opportunity Fund VII, L.P.	2006	\$50.00	\$0.00	\$50.00	\$0.00	\$39.01	\$1.29	\$40.30	-\$9.70	0.78	0.81	-2.37%
Starwood Global Opportunity Fund VIII, L.P.	2009	\$50.00	\$4.64	\$52.98	\$0.00	\$76.27	\$4.76	\$81.03	\$28.05	1.44	1.53	11.88%
Starwood Global Opportunity Fund X, L.P.	2015	\$100.00	\$10.00	\$90.00	\$0.00	\$83.55	\$35.65	\$119.19	\$29.19	0.93	1.32	15.80%
Starwood Opportunity Fund XI Global, L.P.	2017	\$50.00	\$34.30	\$16.65	\$0.00	\$2.26	\$15.69	\$17.95	\$1.30	0.14	1.08	11.89%
Trumbull Property Fund, L.P.	2013	\$75.00	\$0.00	\$75.00	\$0.00	\$15.30	\$76.64	\$91.94	\$16.94	0.20	1.23	3.93%
Trumbull Property Income Fund, L.P.	2013	\$50.00	\$0.00	\$50.00	\$0.00	\$10.99	\$61.15	\$72.13	\$22.13	0.22	1.44	6.73%
UBS Trumbull Property Growth & Income Fund, L.P.	2013	\$50.00	\$0.00	\$50.00	\$0.00	\$8.98	\$73.84	\$82.81	\$32.81	0.18	1.66	10.09%
Urban Strategy America Fund, L.P.	2006	\$50.00	\$0.00	\$50.00	\$0.00	\$43.00	\$0.43	\$43.43	-\$6.57	0.86	0.87	-1.84%
USAA Eagle Real Estate Feeder 1, L.P.	2013	\$100.00	\$0.00	\$100.00	\$0.00	\$19.27	\$145.30	\$164.57	\$64.57	0.19	1.65	9.25%
USAA Eagle Real Estate Feeder 1, L.P.	2018	\$50.00	\$0.00	\$50.00	\$0.00	\$0.00	\$49.34	\$49.34	-\$0.66	0.00	0.99	-1.04%
Walton Street Real Estate Fund II, L.P.	1998	\$73.13	\$0.00	\$73.13	\$0.15	\$171.65	\$0.00	\$171.65	\$98.37	2.34	2.34	13.03%
Westport Senior Living Investment Fund, L.P.	1998	\$100.00	\$0.00	\$140.84	\$0.00	\$84.03	\$0.00	\$84.03	-\$56.81	0.60	0.60	-13.20%
WLR IV PPIP Co-Invest, L.P.	2009	\$100.00	\$0.00	\$127.38	\$0.00	\$161.54	\$4.79	\$166.33	\$38.95	1.27	1.31	14.38%
<b>Total</b>		<b>\$4,208.08</b>	<b>\$383.53</b>	<b>\$4,320.62</b>	<b>\$54.70</b>	<b>\$3,285.27</b>	<b>\$2,281.35</b>	<b>\$5,566.62</b>	<b>\$1,191.31</b>	<b>0.75</b>	<b>1.27</b>	<b>5.29%</b>



## State of Connecticut

# ANALYSIS BY LIFECYCLE

Investments		Commitments			Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Call Ratio	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>Investing</b>													
Artemis Real Estate Partners Income & Growth Fund, L.P.	2019	\$100.00	\$71.78	0.28	\$28.22	-\$0.03	\$0.00	\$26.34	\$26.34	-\$1.85	0.00	0.93	-9.47%
BIG Real Estate Fund I, L.P.	2018	\$65.00	\$24.79	0.81	\$52.60	\$0.62	\$18.72	\$39.04	\$57.76	\$4.54	0.35	1.09	9.38%
Blackstone Real Estate Partners Europe V, L.P.	2017	\$50.00	\$10.71	0.80	\$39.76	\$2.44	\$3.13	\$45.00	\$48.13	\$5.94	0.07	1.14	7.33%
Covenant Apartment Fund IX, L.P.	2018	\$50.00	\$11.00	0.78	\$39.00	\$0.76	\$1.81	\$39.62	\$41.42	\$1.66	0.05	1.04	4.91%
Crow Holdings Realty Partners VII, L.P.	2016	\$75.00	\$7.66	0.90	\$67.34	\$5.15	\$57.51	\$37.49	\$95.00	\$22.50	0.79	1.31	10.85%
Crow Holdings Realty Partners VIII, L.P.	2018	\$75.00	\$14.78	0.80	\$60.22	\$0.00	\$5.63	\$62.15	\$67.79	\$7.57	0.09	1.13	10.87%
Gerding Edlen Green Cities III, L.P.	2017	\$50.00	\$2.02	0.98	\$48.86	\$1.39	\$6.22	\$53.95	\$60.17	\$9.92	0.12	1.20	6.93%
Gerding Edlen Green Cities IV, L.P.	2019	\$75.00	\$59.51	0.21	\$15.49	-\$0.44	\$0.00	\$14.15	\$14.15	-\$0.91	0.00	0.94	-8.38%
Landmark Real Estate Fund VII, L.P.	2015	\$40.00	\$3.12	0.92	\$36.88	\$0.00	\$29.11	\$14.53	\$43.64	\$6.76	0.79	1.18	8.37%
Landmark Real Estate Partners VIII, L.P.	2017	\$65.00	\$43.97	0.38	\$24.71	-\$0.08	\$7.62	\$20.20	\$27.82	\$3.19	0.31	1.13	12.03%
Starwood Global Opportunity Fund X, L.P.	2015	\$100.00	\$10.00	0.90	\$90.00	\$0.00	\$83.55	\$35.65	\$119.19	\$29.19	0.93	1.32	15.80%
Starwood Opportunity Fund XI Global, L.P.	2017	\$50.00	\$34.30	0.33	\$16.65	\$0.00	\$2.26	\$15.69	\$17.95	\$1.30	0.14	1.08	11.89%
<b>Total Investing</b>		<b>\$795.00</b>	<b>\$293.63</b>	<b>0.65</b>	<b>\$519.74</b>	<b>\$9.81</b>	<b>\$215.55</b>	<b>\$403.81</b>	<b>\$619.36</b>	<b>\$89.81</b>	<b>0.41</b>	<b>1.17</b>	<b>10.04%</b>
<b>Harvesting</b>													
Blackstone Real Estate Partners VIII, L.P.	2015	\$100.00	\$17.00	1.03	\$103.34	\$6.01	\$41.44	\$99.48	\$140.92	\$31.56	0.38	1.29	12.30%
Covenant Apartment Fund VIII, L.P.	2015	\$30.00	\$0.00	1.00	\$30.00	-\$0.02	\$28.66	\$17.69	\$46.35	\$16.37	0.96	1.55	19.04%
Cypress Acquisition Partners Retail Fund, L.P.	2014	\$50.00	\$1.10	1.15	\$57.36	\$0.00	\$14.10	\$12.49	\$26.59	-\$30.77	0.25	0.46	-25.16%
Gerding Edlen Green Cities II, L.P.	2014	\$30.00	\$1.98	0.98	\$29.53	\$0.98	\$29.60	\$13.18	\$42.78	\$12.27	0.97	1.40	9.69%
Starwood Distressed Opportunity Fund IX Global, L.P.	2013	\$50.00	\$3.50	0.93	\$46.50	\$0.00	\$59.33	\$14.16	\$73.50	\$27.00	1.28	1.58	17.71%
<b>Total Harvesting</b>		<b>\$260.00</b>	<b>\$23.58</b>	<b>1.03</b>	<b>\$266.74</b>	<b>\$6.97</b>	<b>\$173.14</b>	<b>\$157.01</b>	<b>\$330.14</b>	<b>\$56.43</b>	<b>0.63</b>	<b>1.21</b>	<b>7.53%</b>
<b>Liquidating</b>													
Blackstone Real Estate Partners Europe III, L.P.	2009	\$50.00	\$6.62	0.92	\$45.94	\$6.23	\$71.15	\$6.06	\$77.22	\$25.05	1.36	1.48	10.73%
Blackstone Real Estate Partners VI, L.P.	2007	\$100.00	\$4.91	1.00	\$99.61	\$12.09	\$217.54	\$5.01	\$222.55	\$110.84	1.95	1.99	13.23%
Blackstone Real Estate Special Situations Fund II, L.P.	2011	\$74.08	\$2.03	0.97	\$72.05	\$0.00	\$84.83	\$1.27	\$86.10	\$14.06	1.18	1.20	9.29%
Canyon-Johnson Urban Fund II, L.P.	2005	\$50.00	\$5.06	0.90	\$44.94	\$0.00	\$19.87	\$0.17	\$20.04	-\$24.90	0.44	0.45	-10.43%
Capri Select Income II, L.P.	2005	\$30.00	\$0.00	1.01	\$30.45	\$0.00	\$15.88	\$0.01	\$15.89	-\$14.56	0.52	0.52	-9.88%
IL & FS India Realty Fund II, LLC	2008	\$50.00	\$0.00	1.00	\$50.00	\$0.00	\$24.16	\$2.02	\$26.18	-\$23.82	0.48	0.52	-10.31%
Lone Star Real Estate Fund II (U.S.), L.P.	2011	\$75.00	\$8.54	1.00	\$75.11	\$0.00	\$109.52	\$2.01	\$111.53	\$36.42	1.46	1.48	25.35%
Rockwood Capital Real Estate Partners Fund VI, L.P.	2005	\$20.00	\$0.00	1.02	\$20.46	\$2.72	\$22.01	\$0.08	\$22.09	-\$1.09	0.95	0.95	-0.85%
Rockwood Capital Real Estate Partners Fund VII, L.P.	2006	\$50.00	\$0.00	1.00	\$50.00	\$7.82	\$31.84	\$0.60	\$32.44	-\$25.38	0.55	0.56	-6.85%





## State of Connecticut

# ANALYSIS BY LIFECYCLE

Investments		Commitments			Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Call Ratio	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Starwood Global Opportunity Fund VII, L.P.	2006	\$50.00	\$0.00	1.00	\$50.00	\$0.00	\$39.01	\$1.29	\$40.30	-\$9.70	0.78	0.81	-2.37%
Starwood Global Opportunity Fund VIII, L.P.	2009	\$50.00	\$4.64	1.06	\$52.98	\$0.00	\$76.27	\$4.76	\$81.03	\$28.05	1.44	1.53	11.88%
Urban Strategy America Fund, L.P.	2006	\$50.00	\$0.00	1.00	\$50.00	\$0.00	\$43.00	\$0.43	\$43.43	-\$6.57	0.86	0.87	-1.84%
WLR IV PPIP Co-Invest, L.P.	2009	\$100.00	\$0.00	1.27	\$127.38	\$0.00	\$161.54	\$4.79	\$166.33	\$38.95	1.27	1.31	14.38%
<b>Total Liquidating</b>		<b>\$749.08</b>	<b>\$31.80</b>	<b>1.03</b>	<b>\$768.91</b>	<b>\$28.87</b>	<b>\$916.62</b>	<b>\$28.49</b>	<b>\$945.12</b>	<b>\$147.34</b>	<b>1.15</b>	<b>1.18</b>	<b>3.64%</b>
<b>Completed</b>													
AEW Core Real Estate Separate Account	2005	\$243.53	\$0.00	1.00	\$243.53	\$0.00	\$245.21	\$0.00	\$245.21	\$1.69	1.01	1.01	0.16%
AEW Partners III, L.P.	1998	\$100.00	\$0.00	1.02	\$101.69	\$0.00	\$150.65	\$0.00	\$150.65	\$48.95	1.48	1.48	8.77%
Apollo Real Estate Investment Fund III, L.P.	1998	\$75.00	\$0.00	1.05	\$78.82	\$0.00	\$116.21	\$0.00	\$116.21	\$37.39	1.47	1.47	6.25%
Canyon-Johnson Urban Fund III, L.P.	2010	\$50.00	\$0.00	1.01	\$50.59	\$0.00	\$66.65	\$0.00	\$66.65	\$16.06	1.32	1.32	10.96%
Colony Realty Partners II, L.P.	2006	\$50.00	\$0.00	1.02	\$51.00	\$0.00	\$13.19	\$0.00	\$13.19	-\$37.81	0.26	0.26	-13.75%
Covenant Apartment Fund V (Institutional), L.P.	2007	\$25.00	\$0.00	1.00	\$25.00	\$0.23	\$30.28	\$0.00	\$30.28	\$5.05	1.20	1.20	2.90%
Covenant Apartment Fund VI (Institutional), L.P.	2008	\$25.00	\$0.00	1.01	\$25.16	\$0.00	\$39.52	\$0.00	\$39.52	\$14.36	1.57	1.57	13.50%
MacFarlane Urban Real Estate Fund II, L.P.	2007	\$100.00	\$0.00	1.02	\$102.20	\$0.00	\$27.72	\$0.00	\$27.72	-\$74.49	0.27	0.27	-16.47%
New Boston Real Estate Individual and Institutional Investment Fund, L.P. IV	1998	\$15.00	\$0.00	1.00	\$15.00	\$0.00	\$17.34	\$0.00	\$17.34	\$2.34	1.16	1.16	3.10%
Rockwood Capital Real Estate Partners Fund V, L.P.	2004	\$40.00	\$0.00	1.02	\$40.76	\$3.98	\$57.01	\$0.00	\$57.01	\$12.27	1.27	1.27	9.36%
Walton Street Real Estate Fund II, L.P.	1998	\$73.13	\$0.00	1.00	\$73.13	\$0.15	\$171.65	\$0.00	\$171.65	\$98.37	2.34	2.34	13.03%
Westport Senior Living Investment Fund, L.P.	1998	\$100.00	\$0.00	1.41	\$140.84	\$0.00	\$84.03	\$0.00	\$84.03	-\$56.81	0.60	0.60	-13.20%
<b>Total Completed</b>		<b>\$896.66</b>	<b>\$0.00</b>	<b>1.06</b>	<b>\$947.74</b>	<b>\$4.36</b>	<b>\$1,019.46</b>	<b>\$0.00</b>	<b>\$1,019.46</b>	<b>\$67.36</b>	<b>1.07</b>	<b>1.07</b>	<b>1.65%</b>
<b>Open End</b>													
American Core Realty Separate Account	2012	\$150.00	\$0.00	1.49	\$223.19	\$0.29	\$127.40	\$177.99	\$305.39	\$81.90	0.57	1.37	12.10%
Barings Core Property Fund, L.P.	2008	\$250.00	\$0.00	1.00	\$250.00	\$0.00	\$128.56	\$262.94	\$391.51	\$141.51	0.51	1.57	6.31%
Hart Realty Advisors-Core Separate Account	2011	\$180.00	\$34.52	2.32	\$416.96	\$0.00	\$334.18	\$194.52	\$528.70	\$111.74	0.80	1.27	8.05%
JP Morgan Strategic Property Fund	2014	\$90.00	\$0.00	1.00	\$90.00	\$1.43	\$120.44	\$0.00	\$120.44	\$29.01	1.32	1.32	7.60%
Lion Industrial Trust	2014	\$102.34	\$0.00	1.00	\$102.34	\$2.97	\$19.28	\$160.96	\$180.24	\$74.94	0.18	1.71	13.58%
Prime Property Fund, LLC	2007	\$225.00	\$0.00	1.00	\$225.00	\$0.00	\$141.75	\$277.06	\$418.81	\$193.81	0.63	1.86	7.60%
PRISA I, L.P.	2014	\$185.00	\$0.00	1.00	\$185.00	\$0.00	\$34.36	\$212.30	\$246.66	\$61.66	0.19	1.33	7.46%
Trumbull Property Fund, L.P.	2013	\$75.00	\$0.00	1.00	\$75.00	\$0.00	\$15.30	\$76.64	\$91.94	\$16.94	0.20	1.23	3.93%
Trumbull Property Income Fund, L.P.	2013	\$50.00	\$0.00	1.00	\$50.00	\$0.00	\$10.99	\$61.15	\$72.13	\$22.13	0.22	1.44	6.73%
UBS Trumbull Property Growth & Income Fund, L.P.	2013	\$50.00	\$0.00	1.00	\$50.00	\$0.00	\$8.98	\$73.84	\$82.81	\$32.81	0.18	1.66	10.09%



## State of Connecticut

# ANALYSIS BY LIFECYCLE

Investments		Commitments			Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Call Ratio	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
USAA Eagle Real Estate Feeder 1, L.P.	2013	\$100.00	\$0.00	1.00	\$100.00	\$0.00	\$19.27	\$145.30	\$164.57	\$64.57	0.19	1.65	9.25%
USAA Eagle Real Estate Feeder 1, L.P.	2018	\$50.00	\$0.00	1.00	\$50.00	\$0.00	\$0.00	\$49.34	\$49.34	-\$0.66	0.00	0.99	-1.04%
Total Open End		\$1,507.34	\$34.53	1.21	\$1,817.49	\$4.70	\$960.50	\$1,692.04	\$2,652.54	\$830.36	0.53	1.46	7.86%
Total		\$4,208.08	\$383.53	1.03	\$4,320.62	\$54.70	\$3,285.27	\$2,281.35	\$5,566.62	\$1,191.31	0.75	1.27	5.29%



## State of Connecticut

# ANALYSIS BY VINTAGE YEAR

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>1998</b>												
AEW Partners III, L.P.	1998	\$100.00	\$0.00	\$101.69	\$0.00	\$150.65	\$0.00	\$150.65	\$48.95	1.48	1.48	8.77%
Apollo Real Estate Investment Fund III, L.P.	1998	\$75.00	\$0.00	\$78.82	\$0.00	\$116.21	\$0.00	\$116.21	\$37.39	1.47	1.47	6.25%
New Boston Real Estate Individual and Institutional Investment Fund, L.P. IV	1998	\$15.00	\$0.00	\$15.00	\$0.00	\$17.34	\$0.00	\$17.34	\$2.34	1.16	1.16	3.10%
Walton Street Real Estate Fund II, L.P.	1998	\$73.13	\$0.00	\$73.13	\$0.15	\$171.65	\$0.00	\$171.65	\$98.37	2.34	2.34	13.03%
Westport Senior Living Investment Fund, L.P.	1998	\$100.00	\$0.00	\$140.84	\$0.00	\$84.03	\$0.00	\$84.03	-\$56.81	0.60	0.60	-13.20%
<b>Total 1998</b>		<b>\$363.13</b>	<b>\$0.00</b>	<b>\$409.49</b>	<b>\$0.15</b>	<b>\$539.88</b>	<b>\$0.00</b>	<b>\$539.88</b>	<b>\$130.24</b>	<b>1.32</b>	<b>1.32</b>	<b>5.24%</b>
<b>2004</b>												
Rockwood Capital Real Estate Partners Fund V, L.P.	2004	\$40.00	\$0.00	\$40.76	\$3.98	\$57.01	\$0.00	\$57.01	\$12.27	1.27	1.27	9.36%
<b>Total 2004</b>		<b>\$40.00</b>	<b>\$0.00</b>	<b>\$40.76</b>	<b>\$3.98</b>	<b>\$57.01</b>	<b>\$0.00</b>	<b>\$57.01</b>	<b>\$12.27</b>	<b>1.27</b>	<b>1.27</b>	<b>9.36%</b>
<b>2005</b>												
AEW Core Real Estate Separate Account	2005	\$243.53	\$0.00	\$243.53	\$0.00	\$245.21	\$0.00	\$245.21	\$1.69	1.01	1.01	0.16%
Canyon-Johnson Urban Fund II, L.P.	2005	\$50.00	\$5.06	\$44.94	\$0.00	\$19.87	\$0.17	\$20.04	-\$24.90	0.44	0.45	-10.43%
Capri Select Income II, L.P.	2005	\$30.00	\$0.00	\$30.45	\$0.00	\$15.88	\$0.01	\$15.89	-\$14.56	0.52	0.52	-9.88%
Rockwood Capital Real Estate Partners Fund VI, L.P.	2005	\$20.00	\$0.00	\$20.46	\$2.72	\$22.01	\$0.08	\$22.09	-\$1.09	0.95	0.95	-0.85%
<b>Total 2005</b>		<b>\$343.53</b>	<b>\$5.06</b>	<b>\$339.38</b>	<b>\$2.72</b>	<b>\$302.98</b>	<b>\$0.26</b>	<b>\$303.23</b>	<b>-\$38.87</b>	<b>0.89</b>	<b>0.89</b>	<b>-2.56%</b>
<b>2006</b>												
Colony Realty Partners II, L.P.	2006	\$50.00	\$0.00	\$51.00	\$0.00	\$13.19	\$0.00	\$13.19	-\$37.81	0.26	0.26	-13.75%
Rockwood Capital Real Estate Partners Fund VII, L.P.	2006	\$50.00	\$0.00	\$50.00	\$7.82	\$31.84	\$0.60	\$32.44	-\$25.38	0.55	0.56	-6.85%
Starwood Global Opportunity Fund VII, L.P.	2006	\$50.00	\$0.00	\$50.00	\$0.00	\$39.01	\$1.29	\$40.30	-\$9.70	0.78	0.81	-2.37%
Urban Strategy America Fund, L.P.	2006	\$50.00	\$0.00	\$50.00	\$0.00	\$43.00	\$0.43	\$43.43	-\$6.57	0.86	0.87	-1.84%
<b>Total 2006</b>		<b>\$200.00</b>	<b>\$0.00</b>	<b>\$201.00</b>	<b>\$7.82</b>	<b>\$127.05</b>	<b>\$2.32</b>	<b>\$129.36</b>	<b>-\$79.46</b>	<b>0.61</b>	<b>0.62</b>	<b>-5.55%</b>
<b>2007</b>												
Blackstone Real Estate Partners VI, L.P.	2007	\$100.00	\$4.91	\$99.61	\$12.09	\$217.54	\$5.01	\$222.55	\$110.84	1.95	1.99	13.23%
Covenant Apartment Fund V (Institutional), L.P.	2007	\$25.00	\$0.00	\$25.00	\$0.23	\$30.28	\$0.00	\$30.28	\$5.05	1.20	1.20	2.90%
MacFarlane Urban Real Estate Fund II, L.P.	2007	\$100.00	\$0.00	\$102.20	\$0.00	\$27.72	\$0.00	\$27.72	-\$74.49	0.27	0.27	-16.47%
Prime Property Fund, LLC	2007	\$225.00	\$0.00	\$225.00	\$0.00	\$141.75	\$277.06	\$418.81	\$193.81	0.63	1.86	7.60%
<b>Total 2007</b>		<b>\$450.00</b>	<b>\$4.91</b>	<b>\$451.81</b>	<b>\$12.32</b>	<b>\$417.28</b>	<b>\$282.07</b>	<b>\$699.35</b>	<b>\$235.21</b>	<b>0.90</b>	<b>1.51</b>	<b>5.63%</b>



## State of Connecticut

# ANALYSIS BY VINTAGE YEAR

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>2008</b>												
Barings Core Property Fund, L.P.	2008	\$250.00	\$0.00	\$250.00	\$0.00	\$128.56	\$262.94	\$391.51	\$141.51	0.51	1.57	6.31%
Covenant Apartment Fund VI (Institutional), L.P.	2008	\$25.00	\$0.00	\$25.16	\$0.00	\$39.52	\$0.00	\$39.52	\$14.36	1.57	1.57	13.50%
IL & FS India Realty Fund II, LLC	2008	\$50.00	\$0.00	\$50.00	\$0.00	\$24.16	\$2.02	\$26.18	-\$23.82	0.48	0.52	-10.31%
<b>Total 2008</b>		<b>\$325.00</b>	<b>\$0.00</b>	<b>\$325.16</b>	<b>\$0.00</b>	<b>\$192.24</b>	<b>\$264.97</b>	<b>\$457.21</b>	<b>\$132.05</b>	<b>0.59</b>	<b>1.41</b>	<b>5.02%</b>
<b>2009</b>												
Blackstone Real Estate Partners Europe III, L.P.	2009	\$50.00	\$6.62	\$45.94	\$6.23	\$71.15	\$6.06	\$77.22	\$25.05	1.36	1.48	10.73%
Starwood Global Opportunity Fund VIII, L.P.	2009	\$50.00	\$4.64	\$52.98	\$0.00	\$76.27	\$4.76	\$81.03	\$28.05	1.44	1.53	11.88%
WLR IV PPIP Co-Invest, L.P.	2009	\$100.00	\$0.00	\$127.38	\$0.00	\$161.54	\$4.79	\$166.33	\$38.95	1.27	1.31	14.38%
<b>Total 2009</b>		<b>\$200.00</b>	<b>\$11.26</b>	<b>\$226.29</b>	<b>\$6.23</b>	<b>\$308.96</b>	<b>\$15.61</b>	<b>\$324.57</b>	<b>\$92.05</b>	<b>1.33</b>	<b>1.40</b>	<b>12.54%</b>
<b>2010</b>												
Canyon-Johnson Urban Fund III, L.P.	2010	\$50.00	\$0.00	\$50.59	\$0.00	\$66.65	\$0.00	\$66.65	\$16.06	1.32	1.32	10.96%
<b>Total 2010</b>		<b>\$50.00</b>	<b>\$0.00</b>	<b>\$50.59</b>	<b>\$0.00</b>	<b>\$66.65</b>	<b>\$0.00</b>	<b>\$66.65</b>	<b>\$16.06</b>	<b>1.32</b>	<b>1.32</b>	<b>10.96%</b>
<b>2011</b>												
Blackstone Real Estate Special Situations Fund II, L.P.	2011	\$74.08	\$2.03	\$72.05	\$0.00	\$84.83	\$1.27	\$86.10	\$14.06	1.18	1.20	9.29%
Hart Realty Advisors-Core Separate Account	2011	\$180.00	\$34.52	\$416.96	\$0.00	\$334.18	\$194.52	\$528.70	\$111.74	0.80	1.27	8.05%
Lone Star Real Estate Fund II (U.S.), L.P.	2011	\$75.00	\$8.54	\$75.11	\$0.00	\$109.52	\$2.01	\$111.53	\$36.42	1.46	1.48	25.35%
<b>Total 2011</b>		<b>\$329.08</b>	<b>\$45.10</b>	<b>\$564.11</b>	<b>\$0.00</b>	<b>\$528.53</b>	<b>\$197.80</b>	<b>\$726.33</b>	<b>\$162.22</b>	<b>0.94</b>	<b>1.29</b>	<b>9.88%</b>
<b>2012</b>												
American Core Realty Separate Account	2012	\$150.00	\$0.00	\$223.19	\$0.29	\$127.40	\$177.99	\$305.39	\$81.90	0.57	1.37	12.10%
<b>Total 2012</b>		<b>\$150.00</b>	<b>\$0.00</b>	<b>\$223.19</b>	<b>\$0.29</b>	<b>\$127.40</b>	<b>\$177.99</b>	<b>\$305.39</b>	<b>\$81.90</b>	<b>0.57</b>	<b>1.37</b>	<b>12.10%</b>
<b>2013</b>												
Starwood Distressed Opportunity Fund IX Global, L.P.	2013	\$50.00	\$3.50	\$46.50	\$0.00	\$59.33	\$14.16	\$73.50	\$27.00	1.28	1.58	17.71%
Trumbull Property Fund, L.P.	2013	\$75.00	\$0.00	\$75.00	\$0.00	\$15.30	\$76.64	\$91.94	\$16.94	0.20	1.23	3.93%
Trumbull Property Income Fund, L.P.	2013	\$50.00	\$0.00	\$50.00	\$0.00	\$10.99	\$61.15	\$72.13	\$22.13	0.22	1.44	6.73%
UBS Trumbull Property Growth & Income Fund, L.P.	2013	\$50.00	\$0.00	\$50.00	\$0.00	\$8.98	\$73.84	\$82.81	\$32.81	0.18	1.66	10.09%
USAA Eagle Real Estate Feeder 1, L.P.	2013	\$100.00	\$0.00	\$100.00	\$0.00	\$19.27	\$145.30	\$164.57	\$64.57	0.19	1.65	9.25%
<b>Total 2013</b>		<b>\$325.00</b>	<b>\$3.50</b>	<b>\$321.50</b>	<b>\$0.00</b>	<b>\$113.87</b>	<b>\$371.09</b>	<b>\$484.95</b>	<b>\$163.45</b>	<b>0.35</b>	<b>1.51</b>	<b>8.51%</b>



## State of Connecticut

# ANALYSIS BY VINTAGE YEAR

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>2014</b>												
Cypress Acquisition Partners Retail Fund, L.P.	2014	\$50.00	\$1.10	\$57.36	\$0.00	\$14.10	\$12.49	\$26.59	-\$30.77	0.25	0.46	-25.16%
Gerding Edlen Green Cities II, L.P.	2014	\$30.00	\$1.98	\$29.53	\$0.98	\$29.60	\$13.18	\$42.78	\$12.27	0.97	1.40	9.69%
JP Morgan Strategic Property Fund	2014	\$90.00	\$0.00	\$90.00	\$1.43	\$120.44	\$0.00	\$120.44	\$29.01	1.32	1.32	7.60%
Lion Industrial Trust	2014	\$102.34	\$0.00	\$102.34	\$2.97	\$19.28	\$160.96	\$180.24	\$74.94	0.18	1.71	13.58%
PRISA I, L.P.	2014	\$185.00	\$0.00	\$185.00	\$0.00	\$34.36	\$212.30	\$246.66	\$61.66	0.19	1.33	7.46%
<b>Total 2014</b>		<b>\$457.34</b>	<b>\$3.08</b>	<b>\$464.23</b>	<b>\$5.38</b>	<b>\$217.78</b>	<b>\$398.94</b>	<b>\$616.72</b>	<b>\$147.10</b>	<b>0.46</b>	<b>1.31</b>	<b>7.22%</b>
<b>2015</b>												
Blackstone Real Estate Partners VIII, L.P.	2015	\$100.00	\$17.00	\$103.34	\$6.01	\$41.44	\$99.48	\$140.92	\$31.56	0.38	1.29	12.30%
Covenant Apartment Fund VIII, L.P.	2015	\$30.00	\$0.00	\$30.00	-\$0.02	\$28.66	\$17.69	\$46.35	\$16.37	0.96	1.55	19.04%
Landmark Real Estate Fund VII, L.P.	2015	\$40.00	\$3.12	\$36.88	\$0.00	\$29.11	\$14.53	\$43.64	\$6.76	0.79	1.18	8.37%
Starwood Global Opportunity Fund X, L.P.	2015	\$100.00	\$10.00	\$90.00	\$0.00	\$83.55	\$35.65	\$119.19	\$29.19	0.93	1.32	15.80%
<b>Total 2015</b>		<b>\$270.00</b>	<b>\$30.12</b>	<b>\$260.23</b>	<b>\$6.00</b>	<b>\$182.76</b>	<b>\$167.35</b>	<b>\$350.11</b>	<b>\$83.89</b>	<b>0.69</b>	<b>1.32</b>	<b>13.82%</b>
<b>2016</b>												
Crow Holdings Realty Partners VII, L.P.	2016	\$75.00	\$7.66	\$67.34	\$5.15	\$57.51	\$37.49	\$95.00	\$22.50	0.79	1.31	10.85%
<b>Total 2016</b>		<b>\$75.00</b>	<b>\$7.66</b>	<b>\$67.34</b>	<b>\$5.15</b>	<b>\$57.51</b>	<b>\$37.49</b>	<b>\$95.00</b>	<b>\$22.50</b>	<b>0.79</b>	<b>1.31</b>	<b>10.85%</b>
<b>2017</b>												
Blackstone Real Estate Partners Europe V, L.P.	2017	\$50.00	\$10.71	\$39.76	\$2.44	\$3.13	\$45.00	\$48.13	\$5.94	0.07	1.14	7.33%
Gerding Edlen Green Cities III, L.P.	2017	\$50.00	\$2.02	\$48.86	\$1.39	\$6.22	\$53.95	\$60.17	\$9.92	0.12	1.20	6.93%
Landmark Real Estate Partners VIII, L.P.	2017	\$65.00	\$43.97	\$24.71	-\$0.08	\$7.62	\$20.20	\$27.82	\$3.19	0.31	1.13	12.03%
Starwood Opportunity Fund XI Global, L.P.	2017	\$50.00	\$34.30	\$16.65	\$0.00	\$2.26	\$15.69	\$17.95	\$1.30	0.14	1.08	11.89%
<b>Total 2017</b>		<b>\$215.00</b>	<b>\$91.00</b>	<b>\$129.98</b>	<b>\$3.74</b>	<b>\$19.23</b>	<b>\$134.84</b>	<b>\$154.06</b>	<b>\$20.34</b>	<b>0.14</b>	<b>1.15</b>	<b>7.75%</b>
<b>2018</b>												
BIG Real Estate Fund I, L.P.	2018	\$65.00	\$24.79	\$52.60	\$0.62	\$18.72	\$39.04	\$57.76	\$4.54	0.35	1.09	9.38%
Covenant Apartment Fund IX, L.P.	2018	\$50.00	\$11.00	\$39.00	\$0.76	\$1.81	\$39.62	\$41.42	\$1.66	0.05	1.04	4.91%
Crow Holdings Realty Partners VIII, L.P.	2018	\$75.00	\$14.78	\$60.22	\$0.00	\$5.63	\$62.15	\$67.79	\$7.57	0.09	1.13	10.87%
USAA Eagle Real Estate Feeder 1, L.P.	2018	\$50.00	\$0.00	\$50.00	\$0.00	\$0.00	\$49.34	\$49.34	-\$0.66	0.00	0.99	-1.04%
<b>Total 2018</b>		<b>\$240.00</b>	<b>\$50.57</b>	<b>\$201.82</b>	<b>\$1.38</b>	<b>\$26.16</b>	<b>\$190.15</b>	<b>\$216.31</b>	<b>\$13.12</b>	<b>0.13</b>	<b>1.06</b>	<b>6.09%</b>



## State of Connecticut

# ANALYSIS BY VINTAGE YEAR

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>2019</b>												
Artemis Real Estate Partners Income & Growth Fund, L.P.	2019	\$100.00	\$71.78	\$28.22	-\$0.03	\$0.00	\$26.34	\$26.34	-\$1.85	0.00	0.93	-9.47%
Gerding Edlen Green Cities IV, L.P.	2019	\$75.00	\$59.51	\$15.49	-\$0.44	\$0.00	\$14.15	\$14.15	-\$0.91	0.00	0.94	-8.38%
<b>Total 2019</b>		<b>\$175.00</b>	<b>\$131.29</b>	<b>\$43.71</b>	<b>-\$0.46</b>	<b>\$0.00</b>	<b>\$40.49</b>	<b>\$40.49</b>	<b>-\$2.76</b>	<b>0.00</b>	<b>0.94</b>	<b>-11.13%</b>
<b>Total</b>		<b>\$4,208.08</b>	<b>\$383.53</b>	<b>\$4,320.62</b>	<b>\$54.70</b>	<b>\$3,285.27</b>	<b>\$2,281.35</b>	<b>\$5,566.62</b>	<b>\$1,191.31</b>	<b>0.75</b>	<b>1.27</b>	<b>5.29%</b>



## State of Connecticut

# ANALYSIS BY INVESTMENT STRATEGY

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
<b>Core</b>												
AEW Core Real Estate Separate Account	2005	\$243.53	\$0.00	\$243.53	\$0.00	\$245.21	\$0.00	\$245.21	\$1.69	1.01	1.01	0.16%
American Core Realty Separate Account	2012	\$150.00	\$0.00	\$223.19	\$0.29	\$127.40	\$177.99	\$305.39	\$81.90	0.57	1.37	12.10%
Barings Core Property Fund, L.P.	2008	\$250.00	\$0.00	\$250.00	\$0.00	\$128.56	\$262.94	\$391.51	\$141.51	0.51	1.57	6.31%
Capri Select Income II, L.P.	2005	\$30.00	\$0.00	\$30.45	\$0.00	\$15.88	\$0.01	\$15.89	-\$14.56	0.52	0.52	-9.88%
Hart Realty Advisors-Core Separate Account	2011	\$180.00	\$34.52	\$416.96	\$0.00	\$334.18	\$194.52	\$528.70	\$111.74	0.80	1.27	8.05%
JP Morgan Strategic Property Fund	2014	\$90.00	\$0.00	\$90.00	\$1.43	\$120.44	\$0.00	\$120.44	\$29.01	1.32	1.32	7.60%
Prime Property Fund, LLC	2007	\$225.00	\$0.00	\$225.00	\$0.00	\$141.75	\$277.06	\$418.81	\$193.81	0.63	1.86	7.60%
PRISA I, L.P.	2014	\$185.00	\$0.00	\$185.00	\$0.00	\$34.36	\$212.30	\$246.66	\$61.66	0.19	1.33	7.46%
Trumbull Property Fund, L.P.	2013	\$75.00	\$0.00	\$75.00	\$0.00	\$15.30	\$76.64	\$91.94	\$16.94	0.20	1.23	3.93%
Trumbull Property Income Fund, L.P.	2013	\$50.00	\$0.00	\$50.00	\$0.00	\$10.99	\$61.15	\$72.13	\$22.13	0.22	1.44	6.73%
USAA Eagle Real Estate Feeder 1, L.P.	2013	\$100.00	\$0.00	\$100.00	\$0.00	\$19.27	\$145.30	\$164.57	\$64.57	0.19	1.65	9.25%
USAA Eagle Real Estate Feeder 1, L.P.	2018	\$50.00	\$0.00	\$50.00	\$0.00	\$0.00	\$49.34	\$49.34	-\$0.66	0.00	0.99	-1.04%
<b>Total Core</b>		<b>\$1,628.53</b>	<b>\$34.53</b>	<b>\$1,939.12</b>	<b>\$1.73</b>	<b>\$1,193.34</b>	<b>\$1,457.25</b>	<b>\$2,650.59</b>	<b>\$709.74</b>	<b>0.61</b>	<b>1.37</b>	<b>6.18%</b>
<b>Core Plus</b>												
Artemis Real Estate Partners Income & Growth Fund, L.P.	2019	\$100.00	\$71.78	\$28.22	-\$0.03	\$0.00	\$26.34	\$26.34	-\$1.85	0.00	0.93	-9.47%
<b>Total Core Plus</b>		<b>\$100.00</b>	<b>\$71.78</b>	<b>\$28.22</b>	<b>-\$0.03</b>	<b>\$0.00</b>	<b>\$26.34</b>	<b>\$26.34</b>	<b>-\$1.85</b>	<b>0.00</b>	<b>0.93</b>	<b>-9.47%</b>
<b>Opportunistic</b>												
AEW Partners III, L.P.	1998	\$100.00	\$0.00	\$101.69	\$0.00	\$150.65	\$0.00	\$150.65	\$48.95	1.48	1.48	8.77%
Apollo Real Estate Investment Fund III, L.P.	1998	\$75.00	\$0.00	\$78.82	\$0.00	\$116.21	\$0.00	\$116.21	\$37.39	1.47	1.47	6.25%
Blackstone Real Estate Partners Europe III, L.P.	2009	\$50.00	\$6.62	\$45.94	\$6.23	\$71.15	\$6.06	\$77.22	\$25.05	1.36	1.48	10.73%
Blackstone Real Estate Partners Europe V, L.P.	2017	\$50.00	\$10.71	\$39.76	\$2.44	\$3.13	\$45.00	\$48.13	\$5.94	0.07	1.14	7.33%
Blackstone Real Estate Partners VI, L.P.	2007	\$100.00	\$4.91	\$99.61	\$12.09	\$217.54	\$5.01	\$222.55	\$110.84	1.95	1.99	13.23%
Blackstone Real Estate Partners VIII, L.P.	2015	\$100.00	\$17.00	\$103.34	\$6.01	\$41.44	\$99.48	\$140.92	\$31.56	0.38	1.29	12.30%
Canyon-Johnson Urban Fund II, L.P.	2005	\$50.00	\$5.06	\$44.94	\$0.00	\$19.87	\$0.17	\$20.04	-\$24.90	0.44	0.45	-10.43%
Canyon-Johnson Urban Fund III, L.P.	2010	\$50.00	\$0.00	\$50.59	\$0.00	\$66.65	\$0.00	\$66.65	\$16.06	1.32	1.32	10.96%
IL & FS India Realty Fund II, LLC	2008	\$50.00	\$0.00	\$50.00	\$0.00	\$24.16	\$2.02	\$26.18	-\$23.82	0.48	0.52	-10.31%
Landmark Real Estate Fund VII, L.P.	2015	\$40.00	\$3.12	\$36.88	\$0.00	\$29.11	\$14.53	\$43.64	\$6.76	0.79	1.18	8.37%
Landmark Real Estate Partners VIII, L.P.	2017	\$65.00	\$43.97	\$24.71	-\$0.08	\$7.62	\$20.20	\$27.82	\$3.19	0.31	1.13	12.03%
Lone Star Real Estate Fund II (U.S.), L.P.	2011	\$75.00	\$8.54	\$75.11	\$0.00	\$109.52	\$2.01	\$111.53	\$36.42	1.46	1.48	25.35%
MacFarlane Urban Real Estate Fund II, L.P.	2007	\$100.00	\$0.00	\$102.20	\$0.00	\$27.72	\$0.00	\$27.72	-\$74.49	0.27	0.27	-16.47%
Starwood Distressed Opportunity Fund IX Global, L.P.	2013	\$50.00	\$3.50	\$46.50	\$0.00	\$59.33	\$14.16	\$73.50	\$27.00	1.28	1.58	17.71%



## State of Connecticut

# ANALYSIS BY INVESTMENT STRATEGY

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Starwood Global Opportunity Fund VII, L.P.	2006	\$50.00	\$0.00	\$50.00	\$0.00	\$39.01	\$1.29	\$40.30	-\$9.70	0.78	0.81	-2.37%
Starwood Global Opportunity Fund VIII, L.P.	2009	\$50.00	\$4.64	\$52.98	\$0.00	\$76.27	\$4.76	\$81.03	\$28.05	1.44	1.53	11.88%
Starwood Global Opportunity Fund X, L.P.	2015	\$100.00	\$10.00	\$90.00	\$0.00	\$83.55	\$35.65	\$119.19	\$29.19	0.93	1.32	15.80%
Starwood Opportunity Fund XI Global, L.P.	2017	\$50.00	\$34.30	\$16.65	\$0.00	\$2.26	\$15.69	\$17.95	\$1.30	0.14	1.08	11.89%
Walton Street Real Estate Fund II, L.P.	1998	\$73.13	\$0.00	\$73.13	\$0.15	\$171.65	\$0.00	\$171.65	\$98.37	2.34	2.34	13.03%
Westport Senior Living Investment Fund, L.P.	1998	\$100.00	\$0.00	\$140.84	\$0.00	\$84.03	\$0.00	\$84.03	-\$56.81	0.60	0.60	-13.20%
WLR IV PPIP Co-Invest, L.P.	2009	\$100.00	\$0.00	\$127.38	\$0.00	\$161.54	\$4.79	\$166.33	\$38.95	1.27	1.31	14.38%
<b>Total Opportunistic</b>		<b>\$1,478.13</b>	<b>\$152.37</b>	<b>\$1,451.09</b>	<b>\$26.84</b>	<b>\$1,562.41</b>	<b>\$270.81</b>	<b>\$1,833.22</b>	<b>\$355.29</b>	<b>1.06</b>	<b>1.24</b>	<b>5.16%</b>
<b>Value Add</b>												
BIG Real Estate Fund I, L.P.	2018	\$65.00	\$24.79	\$52.60	\$0.62	\$18.72	\$39.04	\$57.76	\$4.54	0.35	1.09	9.38%
Blackstone Real Estate Special Situations Fund II, L.P.	2011	\$74.08	\$2.03	\$72.05	\$0.00	\$84.83	\$1.27	\$86.10	\$14.06	1.18	1.20	9.29%
Colony Realty Partners II, L.P.	2006	\$50.00	\$0.00	\$51.00	\$0.00	\$13.19	\$0.00	\$13.19	-\$37.81	0.26	0.26	-13.75%
Covenant Apartment Fund IX, L.P.	2018	\$50.00	\$11.00	\$39.00	\$0.76	\$1.81	\$39.62	\$41.42	\$1.66	0.05	1.04	4.91%
Covenant Apartment Fund V (Institutional), L.P.	2007	\$25.00	\$0.00	\$25.00	\$0.23	\$30.28	\$0.00	\$30.28	\$5.05	1.20	1.20	2.90%
Covenant Apartment Fund VI (Institutional), L.P.	2008	\$25.00	\$0.00	\$25.16	\$0.00	\$39.52	\$0.00	\$39.52	\$14.36	1.57	1.57	13.50%
Covenant Apartment Fund VIII, L.P.	2015	\$30.00	\$0.00	\$30.00	-\$0.02	\$28.66	\$17.69	\$46.35	\$16.37	0.96	1.55	19.04%
Crow Holdings Realty Partners VII, L.P.	2016	\$75.00	\$7.66	\$67.34	\$5.15	\$57.51	\$37.49	\$95.00	\$22.50	0.79	1.31	10.85%
Crow Holdings Realty Partners VIII, L.P.	2018	\$75.00	\$14.78	\$60.22	\$0.00	\$5.63	\$62.15	\$67.79	\$7.57	0.09	1.13	10.87%
Cypress Acquisition Partners Retail Fund, L.P.	2014	\$50.00	\$1.10	\$57.36	\$0.00	\$14.10	\$12.49	\$26.59	-\$30.77	0.25	0.46	-25.16%
Gerding Edlen Green Cities II, L.P.	2014	\$30.00	\$1.98	\$29.53	\$0.98	\$29.60	\$13.18	\$42.78	\$12.27	0.97	1.40	9.69%
Gerding Edlen Green Cities III, L.P.	2017	\$50.00	\$2.02	\$48.86	\$1.39	\$6.22	\$53.95	\$60.17	\$9.92	0.12	1.20	6.93%
Gerding Edlen Green Cities IV, L.P.	2019	\$75.00	\$59.51	\$15.49	-\$0.44	\$0.00	\$14.15	\$14.15	-\$0.91	0.00	0.94	-8.38%
Lion Industrial Trust	2014	\$102.34	\$0.00	\$102.34	\$2.97	\$19.28	\$160.96	\$180.24	\$74.94	0.18	1.71	13.58%
New Boston Real Estate Individual and Institutional Investment Fund, L.P. IV	1998	\$15.00	\$0.00	\$15.00	\$0.00	\$17.34	\$0.00	\$17.34	\$2.34	1.16	1.16	3.10%
Rockwood Capital Real Estate Partners Fund V, L.P.	2004	\$40.00	\$0.00	\$40.76	\$3.98	\$57.01	\$0.00	\$57.01	\$12.27	1.27	1.27	9.36%
Rockwood Capital Real Estate Partners Fund VI, L.P.	2005	\$20.00	\$0.00	\$20.46	\$2.72	\$22.01	\$0.08	\$22.09	-\$1.09	0.95	0.95	-0.85%
Rockwood Capital Real Estate Partners Fund VII, L.P.	2006	\$50.00	\$0.00	\$50.00	\$7.82	\$31.84	\$0.60	\$32.44	-\$25.38	0.55	0.56	-6.85%
UBS Trumbull Property Growth & Income Fund, L.P.	2013	\$50.00	\$0.00	\$50.00	\$0.00	\$8.98	\$73.84	\$82.81	\$32.81	0.18	1.66	10.09%
Urban Strategy America Fund, L.P.	2006	\$50.00	\$0.00	\$50.00	\$0.00	\$43.00	\$0.43	\$43.43	-\$6.57	0.86	0.87	-1.84%
<b>Total Value Add</b>		<b>\$1,001.42</b>	<b>\$124.87</b>	<b>\$902.18</b>	<b>\$26.15</b>	<b>\$529.52</b>	<b>\$526.94</b>	<b>\$1,056.47</b>	<b>\$128.13</b>	<b>0.57</b>	<b>1.14</b>	<b>3.17%</b>
<b>Total</b>		<b>\$4,208.08</b>	<b>\$383.53</b>	<b>\$4,320.62</b>	<b>\$54.70</b>	<b>\$3,285.27</b>	<b>\$2,281.35</b>	<b>\$5,566.62</b>	<b>\$1,191.31</b>	<b>0.75</b>	<b>1.27</b>	<b>5.29%</b>





APPENDIX 2:  
**QUARTERLY REAL ESTATE  
TRANSACTIONS**  
*SECOND QUARTER 2020*

## State of Connecticut

# QUARTERLY TRANSACTION SUMMARY

Fund Name	Month Ended	Capital Call	Additional Fee	Recallable Distribution	Distribution	Net Cash Flow
American Core Realty Separate Account	6/30/2020				-2,490,000	-2,490,000
<b>Total: American Core Realty Separate Account</b>					<b>-2,490,000</b>	<b>-2,490,000</b>
Artemis Real Estate Partners Income & Growth Fund, L.P.	6/30/2020	8,514,653				8,514,653
<b>Total: Artemis Real Estate Partners Income &amp; Growth Fund, L.P.</b>		<b>8,514,653</b>				<b>8,514,653</b>
Barings Core Property Fund, L.P.	6/30/2020				-1,482,488	-1,482,488
<b>Total: Barings Core Property Fund, L.P.</b>					<b>-1,482,488</b>	<b>-1,482,488</b>
BIG Real Estate Fund I, L.P.	6/30/2020	4,689,522			-950,985	3,738,537
<b>Total: BIG Real Estate Fund I, L.P.</b>		<b>4,689,522</b>			<b>-950,985</b>	<b>3,738,537</b>
Blackstone Real Estate Partners Europe III, L.P.	6/30/2020		40,119			40,119
<b>Total: Blackstone Real Estate Partners Europe III, L.P.</b>			<b>40,119</b>			<b>40,119</b>
Blackstone Real Estate Partners Europe V, L.P.	6/30/2020	813,251	142,232			955,483
<b>Total: Blackstone Real Estate Partners Europe V, L.P.</b>		<b>813,251</b>	<b>142,232</b>			<b>955,483</b>
Blackstone Real Estate Partners VI, L.P.	6/30/2020				-99,179	-99,179
<b>Total: Blackstone Real Estate Partners VI, L.P.</b>					<b>-99,179</b>	<b>-99,179</b>
Blackstone Real Estate Partners VIII, L.P.	6/30/2020	2,697,400	276,612		-135,094	2,838,918
<b>Total: Blackstone Real Estate Partners VIII, L.P.</b>		<b>2,697,400</b>	<b>276,612</b>		<b>-135,094</b>	<b>2,838,918</b>
Covenant Apartment Fund IX, L.P.	6/30/2020	6,500,000	156,250		-805,111	5,851,139
<b>Total: Covenant Apartment Fund IX, L.P.</b>		<b>6,500,000</b>	<b>156,250</b>		<b>-805,111</b>	<b>5,851,139</b>



## State of Connecticut

# QUARTERLY TRANSACTION SUMMARY

Fund Name	Month Ended	Capital Call	Additional Fee	Recallable Distribution	Distribution	Net Cash Flow
Covenant Apartment Fund VIII, L.P.	6/30/2020				-158,429	-158,429
<b>Total: Covenant Apartment Fund VIII, L.P.</b>					<b>-158,429</b>	<b>-158,429</b>
Crow Holdings Realty Partners VII, L.P.	6/30/2020		134,135		-4,377,430	-4,243,295
<b>Total: Crow Holdings Realty Partners VII, L.P.</b>			<b>134,135</b>		<b>-4,377,430</b>	<b>-4,243,295</b>
Crow Holdings Realty Partners VIII, L.P.	6/30/2020				-1,022,753	-1,022,753
<b>Total: Crow Holdings Realty Partners VIII, L.P.</b>					<b>-1,022,753</b>	<b>-1,022,753</b>
Gerding Edlen Green Cities II, L.P.	6/30/2020				-60,770	-60,770
<b>Total: Gerding Edlen Green Cities II, L.P.</b>					<b>-60,770</b>	<b>-60,770</b>
Gerding Edlen Green Cities III, L.P.	6/30/2020	168,258				168,258
<b>Total: Gerding Edlen Green Cities III, L.P.</b>		<b>168,258</b>				<b>168,258</b>
Gerding Edlen Green Cities IV, L.P.	6/30/2020	571,114	-131,977			439,137
<b>Total: Gerding Edlen Green Cities IV, L.P.</b>		<b>571,114</b>	<b>-131,977</b>			<b>439,137</b>
Hart Realty Advisors-Core Separate Account	6/30/2020	421,225			-1,373,175	-951,950
<b>Total: Hart Realty Advisors-Core Separate Account</b>		<b>421,225</b>			<b>-1,373,175</b>	<b>-951,950</b>
Landmark Real Estate Fund VII, L.P.	6/30/2020	803,910			-3,074,211	-2,270,301
<b>Total: Landmark Real Estate Fund VII, L.P.</b>		<b>803,910</b>			<b>-3,074,211</b>	<b>-2,270,301</b>
Lion Industrial Trust	6/30/2020		411,430		-1,603,193	-1,191,763
<b>Total: Lion Industrial Trust</b>			<b>411,430</b>		<b>-1,603,193</b>	<b>-1,191,763</b>



## State of Connecticut

# QUARTERLY TRANSACTION SUMMARY

Fund Name	Month Ended	Capital Call	Additional Fee	Recallable Distribution	Distribution	Net Cash Flow
Lone Star Real Estate Fund II (U.S.), L.P.	6/30/2020				-85,296	-85,296
<b>Total: Lone Star Real Estate Fund II (U.S.), L.P.</b>					<b>-85,296</b>	<b>-85,296</b>
Prime Property Fund, LLC	6/30/2020				-2,810,767	-2,810,767
<b>Total: Prime Property Fund, LLC</b>					<b>-2,810,767</b>	<b>-2,810,767</b>
PRISA I, L.P.	6/30/2020				-1,577,210	-1,577,210
<b>Total: PRISA I, L.P.</b>					<b>-1,577,210</b>	<b>-1,577,210</b>
Starwood Opportunity Fund XI Global, L.P.	6/30/2020	7,750,000				7,750,000
<b>Total: Starwood Opportunity Fund XI Global, L.P.</b>		<b>7,750,000</b>				<b>7,750,000</b>
Trumbull Property Fund, L.P.	6/30/2020				-688,147	-688,147
<b>Total: Trumbull Property Fund, L.P.</b>					<b>-688,147</b>	<b>-688,147</b>
Trumbull Property Income Fund, L.P.	6/30/2020				-505,626	-505,626
<b>Total: Trumbull Property Income Fund, L.P.</b>					<b>-505,626</b>	<b>-505,626</b>
UBS Trumbull Property Growth & Income Fund, L.P.	6/30/2020				-380,601	-380,601
<b>Total: UBS Trumbull Property Growth &amp; Income Fund, L.P.</b>					<b>-380,601</b>	<b>-380,601</b>
<b>Grand Total</b>		<b>32,929,333</b>	<b>1,028,801</b>		<b>-23,680,466</b>	<b>10,277,668</b>

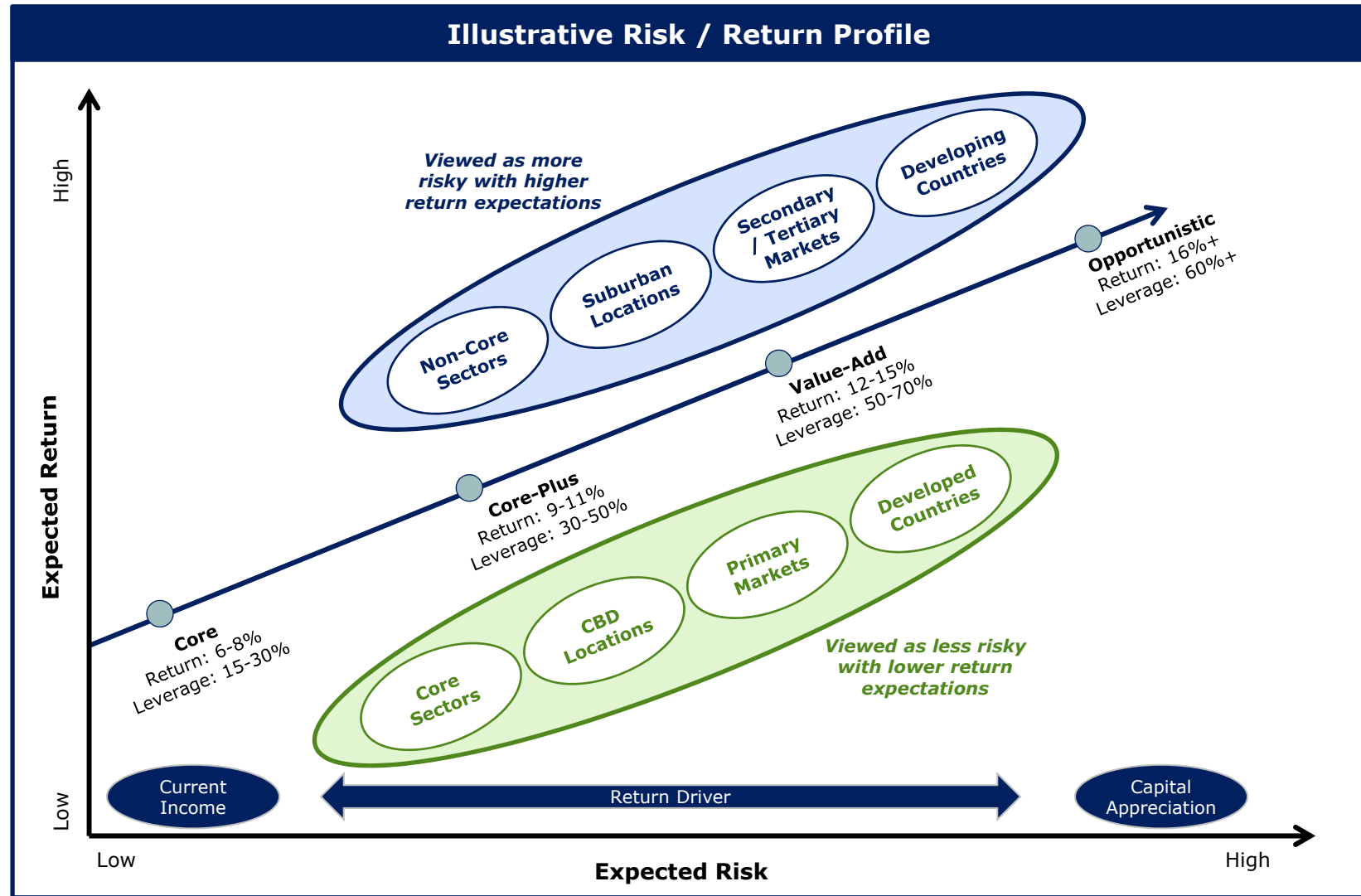


**APPENDIX 3:  
REAL ESTATE STRATEGY  
SUMMARIES & GLOSSARY**

# SPECTRUM OF REAL ESTATE INVESTMENT STRATEGIES

	Real Estate Investment Style / Overview	Investment Strategy	Portfolio Role	Considerations
Core Strategies	<b>Core / Core-Plus</b> <ul style="list-style-type: none"> <li>Return driver: income</li> <li>Primary vehicle: open-end funds</li> <li>Historical avg. returns: 7-8% / 8%-10%</li> <li>Leverage: 15-40% / 40%-50%</li> <li>Hold period: long-term</li> </ul>	Stabilized income producing assets	<ul style="list-style-type: none"> <li>Current income</li> <li>Broad exposure to commercial real estate (asset class beta)</li> <li>Inflation protection</li> </ul>	<ul style="list-style-type: none"> <li>Vehicles are semi-liquid (entrance/exit queues)</li> <li>Limited alpha producing opportunities</li> </ul>
	<b>RE Securities</b> <ul style="list-style-type: none"> <li>Return driver: income</li> <li>Primary vehicle: REIT funds</li> <li>Historical avg. returns: 7-9%</li> <li>Leverage: 30-50%</li> <li>Hold period: long-term</li> </ul>	Stabilized income producing assets	<ul style="list-style-type: none"> <li>Current income (dividends)</li> <li>Long-term exposure to commercial real estate (beta)</li> <li>Long-term inflation protection</li> </ul>	<ul style="list-style-type: none"> <li>Volatility</li> <li>Equity correlation</li> </ul>
Non-Core Strategies	<b>Value-Add</b> <ul style="list-style-type: none"> <li>Return driver: income/appreciation</li> <li>Primary vehicle: varies</li> <li>Historical avg returns: 8-10%</li> <li>Leverage: 40-70%</li> <li>Hold period: 3-5 years</li> </ul>	Properties requiring lease-up, repositioning, renovation or rehabilitation	<ul style="list-style-type: none"> <li>Provides part current income and capital appreciation</li> <li>Some inflation protection</li> </ul>	<ul style="list-style-type: none"> <li>Vehicles are semi-liquid or illiquid</li> <li>Vintage year is important</li> <li>Higher leverage vs core</li> <li>Poor benchmarks</li> </ul>
	<b>Opportunistic</b> <ul style="list-style-type: none"> <li>Return driver: appreciation</li> <li>Primary vehicle: closed-end funds</li> <li>Historical avg. returns: 10-12%</li> <li>Leverage: 60%+</li> <li>Hold period: varies</li> </ul>	Distressed investments, recapitalizations, development, etc.	<ul style="list-style-type: none"> <li>Real estate alpha through capital appreciation with minimal current income</li> </ul>	<ul style="list-style-type: none"> <li>Vehicles are illiquid</li> <li>Vintage year is important</li> <li>High leverage</li> <li>Poor benchmarks</li> </ul>

# RELATIVE EXPECTED RISK RETURN PROFILE



Notes:

- Debt-related strategies can span the illustrative risk / return spectrum depending on the specific strategy
- Manager-specific risk, operations and leverage can skew expected risk / return profile



# GLOSSARY OF TERMS

- **Commitment Amount** – The amount an investor has committed to invest with the General Partner
- **Paid In Capital** – The amount an investor has contributed for investments and management fees
- **Capital to be Funded** – The remaining amount an investor contractually has left to fund its commitments
- **Additional Fees** – Fees that are outside the capital commitment, also includes interest paid/received due from subsequent closings of the fund
- **Cumulative Distributions** – The amount an investor has received from realized and partially realized investments
- **Valuation** – Sum of the fair market value of all investments plus cash
- **Call Ratio** – Calculated by dividing Amount Funded by Capital Committed
- **DPI Ratio** - Calculated by dividing Amount Distributed by Amount Funded
- **Market Exposure** – Calculated by adding Reported Value plus Unfunded Commitments
- **Total Value** – Calculated by adding Amount Distributed and Reported Value. Represents the total amount an investor should expect to receive from their investments
- **Net Benefit** – Calculated by subtracting Total Value by Capital to be Funded plus Additional Fees
- **Total Value to Paid In Capital Ratio** – Calculated by dividing Total Value by Amount Funded. Represents the multiple of the overall cash invested that an investor is expected to receive
- **IRR** - The calculation of the IRR (Internal Rate of Return) takes into consideration the timing of cash contributions and distributions to and from the partnerships, the length of time the investments have been held and the sum of the Reported Value
- **Index Comparison Method (ICM)** – represents the hypothetical IRR of a private investment program that is computed by assuming the fund flows were invested in and out of a publicly traded index. The resulting hypothetical market value of the program is then used with the program's actual cash flows to compute a hypothetical IRR. This hypothetical IRR can be compared with the actual IRR to determine whether the private investment program outperformed the publicly traded index
- **Valuation ICM** – The valuation equivalent that ICM calculates for the public market is called valuation ICM
- **KS PME** – The Kaplan Schoar Public Markets Equivalent is a ratio of the future value of all distributions divided by the future value of all contributions using the index return as the discount rate. The ending valuation is treated as a distribution in this method
- **IRR ICM** – The IRR equivalent that ICM calculates for the public market is called IRR ICM





## APPENDIX 4: **DISCLAIMERS & DISCLOSURES**

# DISCLAIMER

- **Past performance is no guarantee of future results.**
- **The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.**
- **Information used to prepare this report was obtained directly from the investment managers or custodians, and market index data was provided by other external sources. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.**
- **This report may contain confidential or proprietary information and may not be copied or redistributed to any party not legally entitled to receive it.**



# ALTERNATIVE INVESTMENT DISCLOSURES

**In addition, it is important that investors understand the following characteristics of non-traditional investment strategies including hedge funds, real estate and private equity:**

1. Performance can be volatile and investors could lose all or a substantial portion of their investment
2. Leverage and other speculative practices may increase the risk of loss
3. Past performance may be revised due to the revaluation of investments
4. These investments can be illiquid, and investors may be subject to lock-ups or lengthy redemption terms
5. A secondary market may not be available for all funds, and any sales that occur may take place at a discount to value
6. These funds are not subject to the same regulatory requirements as registered investment vehicles
7. Managers may not be required to provide periodic pricing or valuation information to investors
8. These funds may have complex tax structures and delays in distributing important tax information
9. These funds often charge high fees
10. Investment agreements often give the manager authority to trade in securities, markets or currencies that are not within the manager's realm of expertise or contemplated investment strategy



# State of Connecticut Retirement Fund

## Second Quarter 2020

Private Markets Program

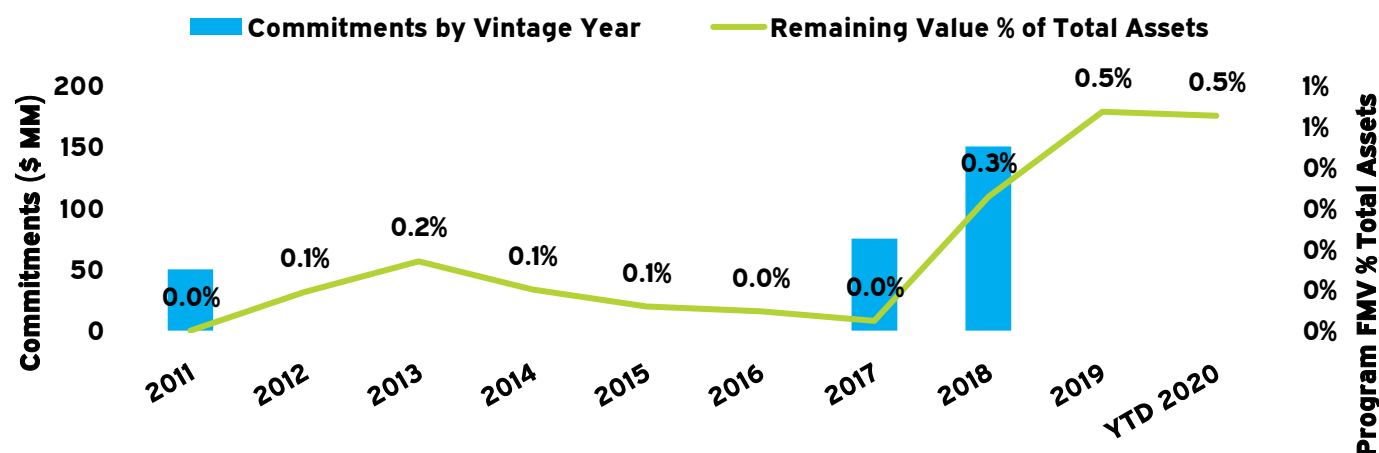
## Table of Contents

1. Private Credit Program
2. Real Assets Program

## Private Credit Program

### Introduction

CRPTF made its first commitment to a private debt fund in 2011, there were just three additional commitments over the next nine years. In early 2020 the CRPTF approved a 5% allocation to private credit, and is expected to significantly increase the pace and regularity of commitments to meet the newly established target.



### Program Status

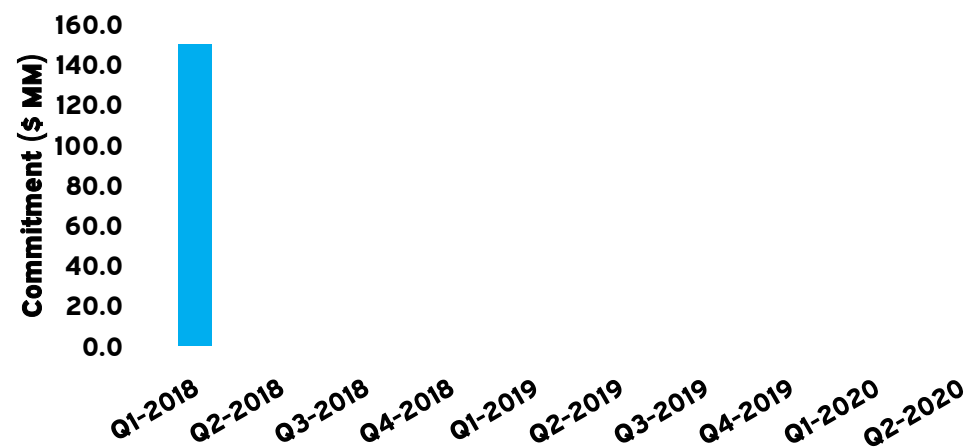
No. of Investments	4
Committed (\$ MM)	275.0
Contributed (\$ MM)	255.5
Distributed (\$ MM)	112.4
Remaining Value (\$ MM)	188.6

### Performance Since Inception

	Program	Peer Universe
DPI	0.44x	0.44x
TVPI	1.18x	1.21x
IRR	10.5%	7.9%

Commitments

Recent Quarterly Commitments



Commitments This Quarter

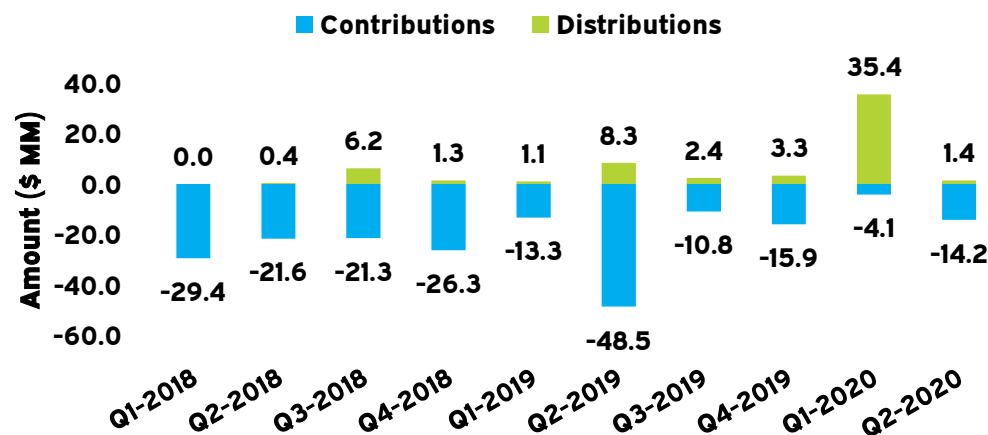
Fund	Strategy	Region	Amount (MM)
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None to report.



### Cash Flows

#### Recent Quarterly Cash Flows



#### Largest Contributions This Quarter

Fund	Vintage	Strategy	Region	Amount (\$MM)
Anchorage VI	2018	Distressed	Global: All	7.50
Crescent DL II	2017	Direct Lending	North America	6.71

#### Largest Distributions This Quarter

Fund	Vintage	Strategy	Region	Amount (\$MM)
Owl Rock I	2018	Direct Lending	North America	1.39

### Significant Events

- On May 6, 2020, Crescent Direct Lending II closed a \$3.6 million Senior Secured First Lien Term Loan to support the add-on acquisition of Cal-Tex Protective Coatings, Incorporated by existing portfolio company CC SAG Acquisition Corp (d.b.a. Vanguard Dealer Services). The company is owned by Cornell Capital.
- Anchorage Illiquid Opportunities VI called an additional 10% of commitments during the second quarter, increasing the total called commitments to 84.5%.
- Anchorage Illiquid Opportunities VI invested approximately \$175 million during the second quarter. Specifically, the Fund added \$108 million of exposure in the Distressed Debt segment and \$61 million in the Structured Credit segment.
- During the second quarter, Owl Rock Capital Corporation I's portfolio experienced an increase in valuation due to changes in underlying loan valuations. The portfolio moved two loans to non-accrual status which account for 1.8% of fair value for the portfolio.
- Owl Rock origination volume was lower than the first quarter and significantly below 2019 new loan originations. The portfolio maintained its asset mix of 80% invested in first lien loans.
- Owl Rock also actively managed the liabilities of the portfolio to position for further potential volatility.

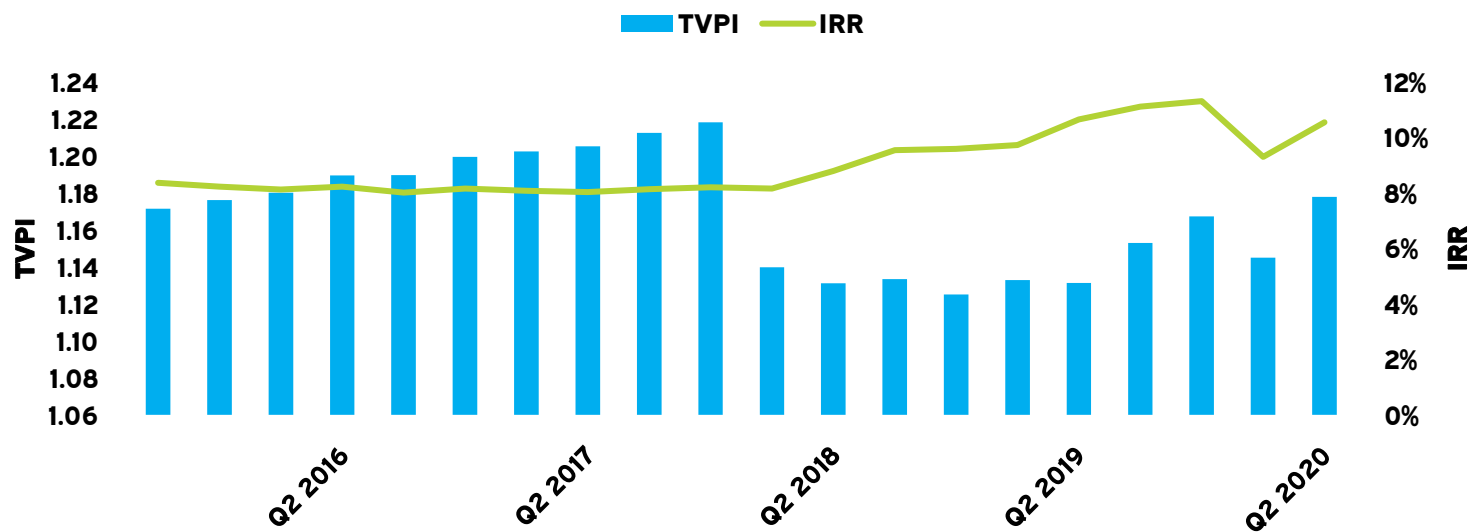
### By Strategy

Group	Number	Committed (\$ MM)	Contributed (\$ MM)	Unfunded (\$ MM)	Distributed (\$ MM)	Remaining Value (\$ MM)	Exposure (\$ MM)	DPI (X)	TVPI (X)	IRR (%)
Direct Lending	2	150.0	142.1	8.7	49.3	115.5	124.2	0.35	1.16	12.1
Distressed	2	125.0	113.4	11.6	63.0	73.1	84.7	0.56	1.20	9.6
<b>Total</b>	<b>4</b>	<b>275.0</b>	<b>255.5</b>	<b>20.3</b>	<b>112.4</b>	<b>188.6</b>	<b>208.9</b>	<b>0.44</b>	<b>1.18</b>	<b>10.5</b>

### By Vintage

Group	Number	Committed (\$ MM)	Contributed (\$ MM)	Unfunded (\$ MM)	Distributed (\$ MM)	Remaining Value (\$ MM)	Exposure (\$ MM)	DPI (X)	TVPI (X)	IRR (%)
2011	1	50.0	50.0	0.0	63.0	0.0	0.0	1.26	1.26	8.8
2017	1	75.0	67.1	8.7	8.3	63.8	72.6	0.12	1.08	6.6
2018	2	150.0	138.4	11.6	41.1	124.8	136.4	0.30	1.20	14.1
<b>Total</b>	<b>4</b>	<b>275.0</b>	<b>255.5</b>	<b>20.3</b>	<b>112.4</b>	<b>188.6</b>	<b>208.9</b>	<b>0.44</b>	<b>1.18</b>	<b>10.5</b>

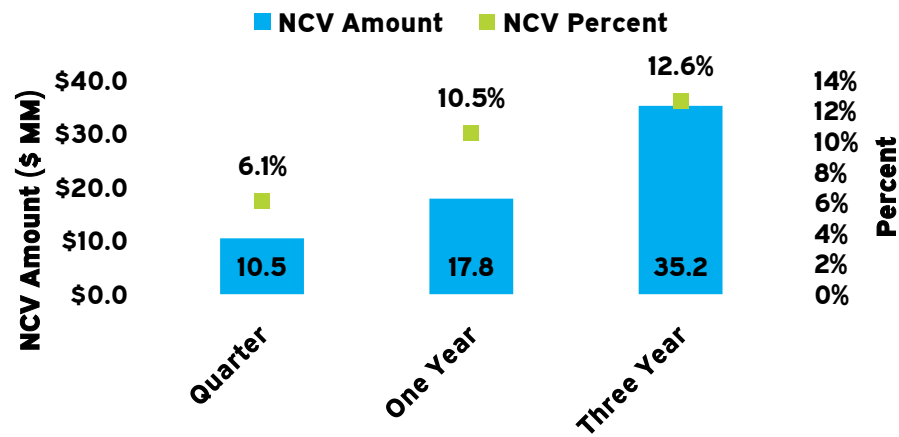
#### Since Inception Performance Over Time



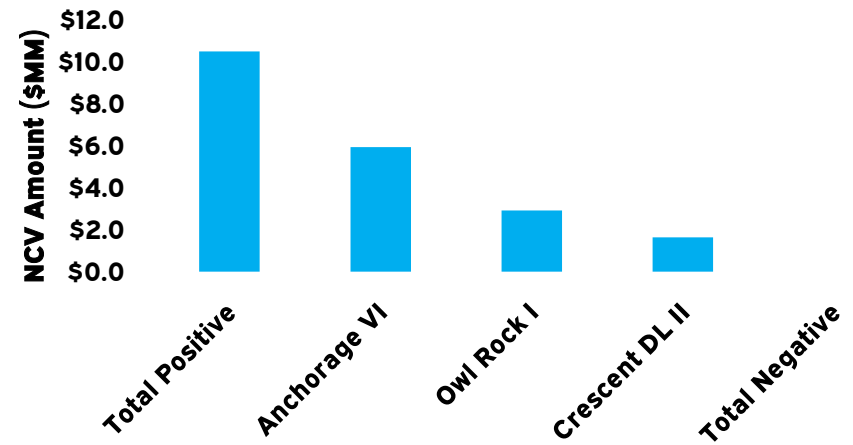
#### Horizon IRRs

	1 Year (%)	3 Year (%)	5 Year (%)	10 Year (%)	Since Inception (%)
Aggregate Portfolio	10.3	12.4	11.8	10.5	10.5
Public Market Equivalent	1.4	3.6	4.2	4.5	4.3

Periodic NCV



1 Quarter Drivers Of NCV

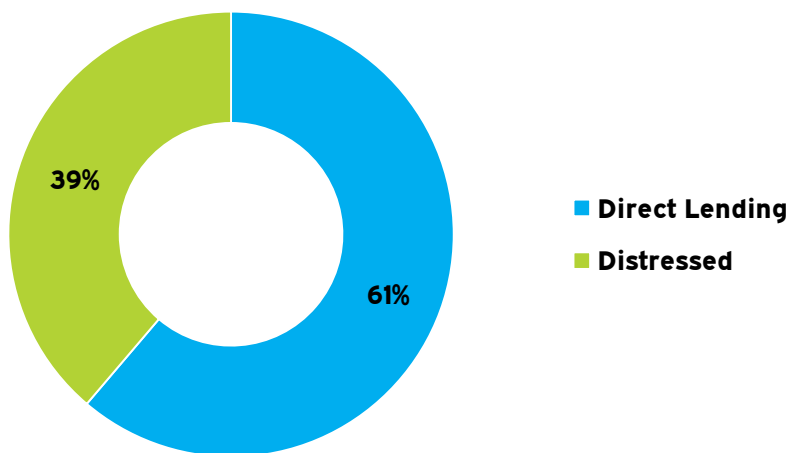


### Fund Performance: Sorted By Vintage And Strategy

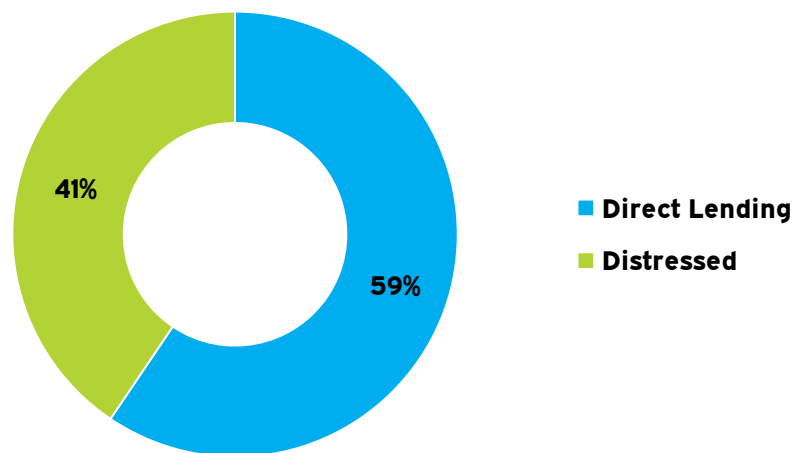
By Investment	Vintage	Strategy	Committed (\$ MM)	Contributed (\$ MM)	Unfunded (\$ MM)	Distributed (\$ MM)	Remaining Value (\$ MM)	TVPI (X)	Peer TVPI (X)	IRR (%)	Peer IRR (%)
Marathon Euro Credit	2011	Distressed	50.0	50.0	0.0	63.0	0.0	1.26	1.29	8.8	7.3
Crescent DL II	2017	Direct Lending	75.0	67.1	8.7	8.3	63.8	1.08	1.12	6.6	7.9
Owl Rock I	2018	Direct Lending	75.0	75.0	0.0	41.0	51.6	1.24	1.08	15.8	7.8
Anchorage VI	2018	Distressed	75.0	63.4	11.6	0.0	73.1	1.15	1.08	11.8	7.8
<b>Total</b>			<b>275.0</b>	<b>255.5</b>	<b>20.3</b>	<b>112.4</b>	<b>188.6</b>	<b>1.18</b>	<b>1.21</b>	<b>10.5</b>	<b>7.9</b>

#### By Strategy

Percent of FMV

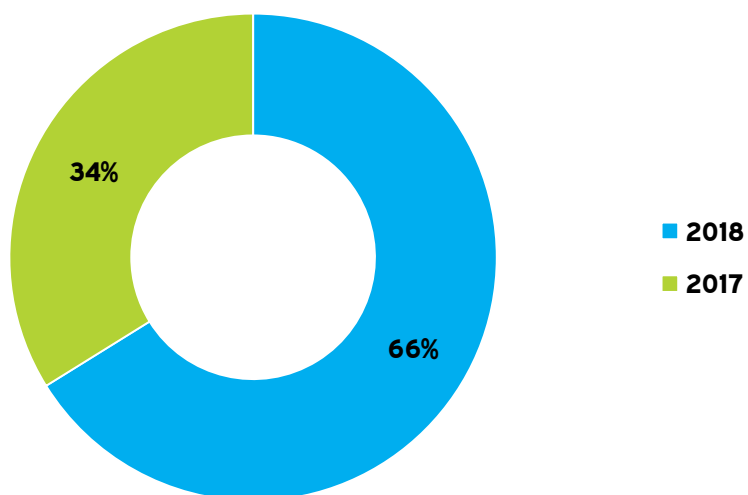


Percent of Exposure

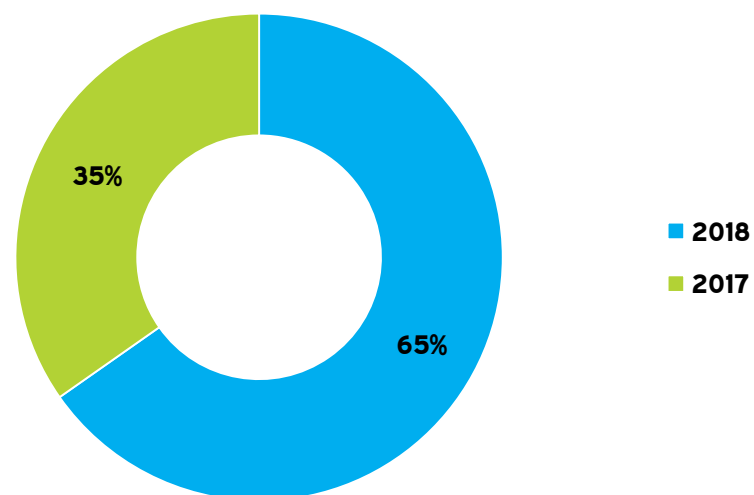


#### By Vintage

Percent of FMV



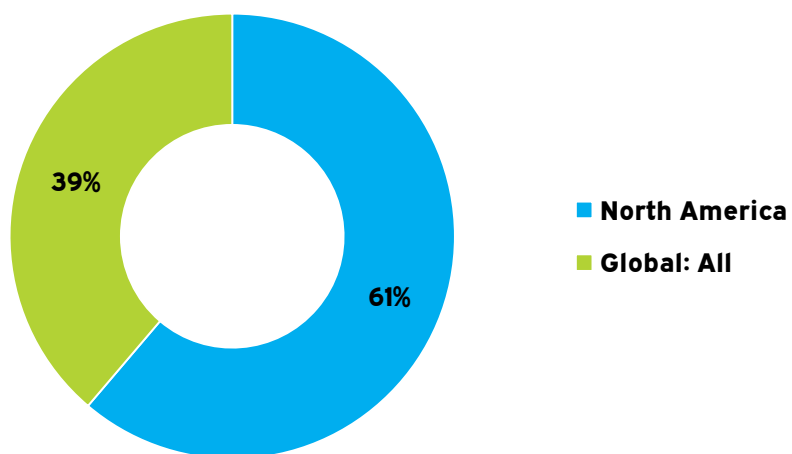
Percent of Exposure



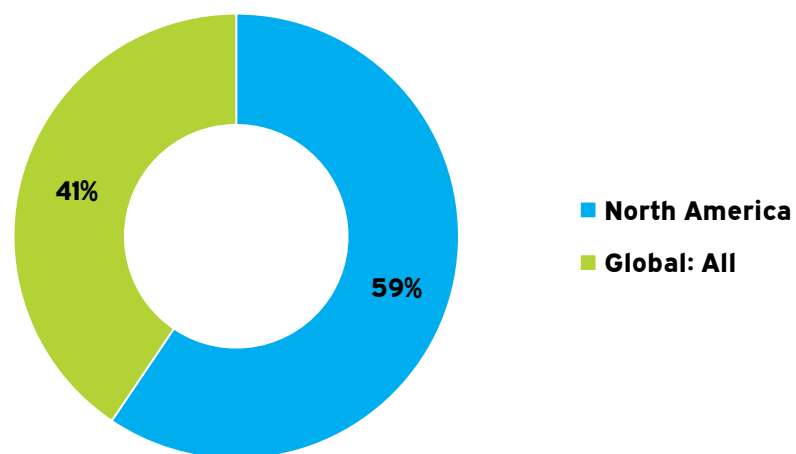


#### By Geographic Focus

Percent of FMV



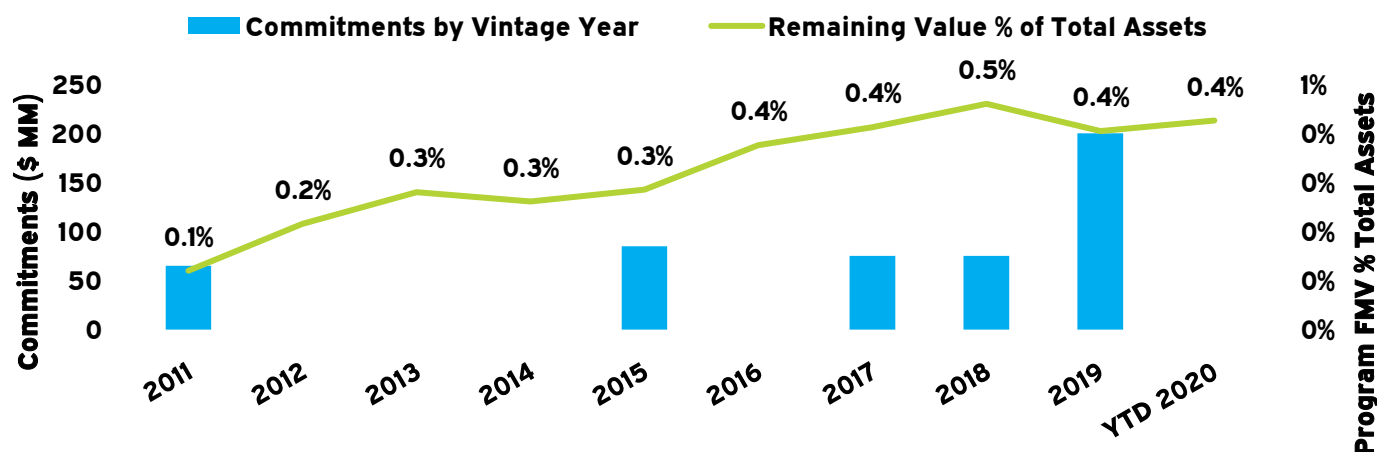
Percent of Exposure



## Real Assets Program

### Introduction

CRPTF made its first commitment to a real assets fund in 2011, there were five additional commitments over the next nine years. In early 2020 the CRPTF approved a target allocation of 4.2% to the Real Assets Program in addition to a maximum exposure limitation of 5.25% of total plan assets remains in existence.



### Program Status

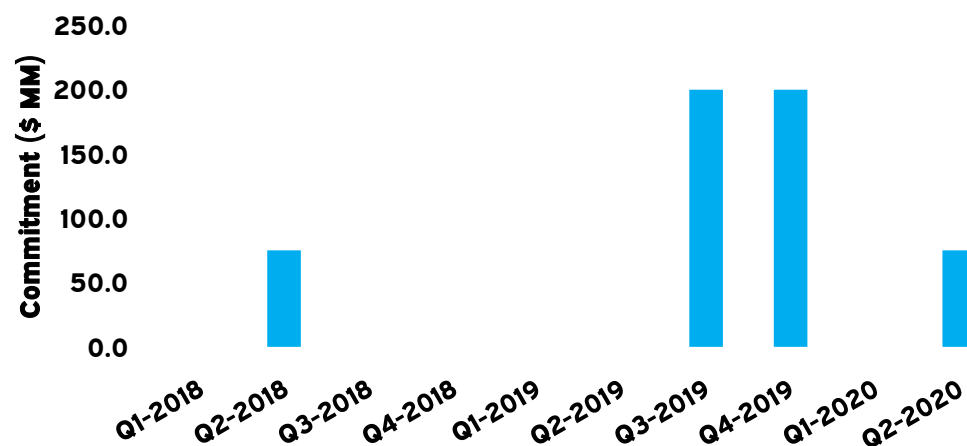
No. of Investments	7
Committed (\$ MM)	760.0
Contributed (\$ MM)	275.3
Distributed (\$ MM)	153.0
Remaining Value (\$ MM)	153.0

### Performance Since Inception

	Program	Peer Universe
DPI	0.56x	0.32x
TVPI	1.11x	1.09x
IRR	3.7%	3.25%

### Commitments

Recent Quarterly Commitments

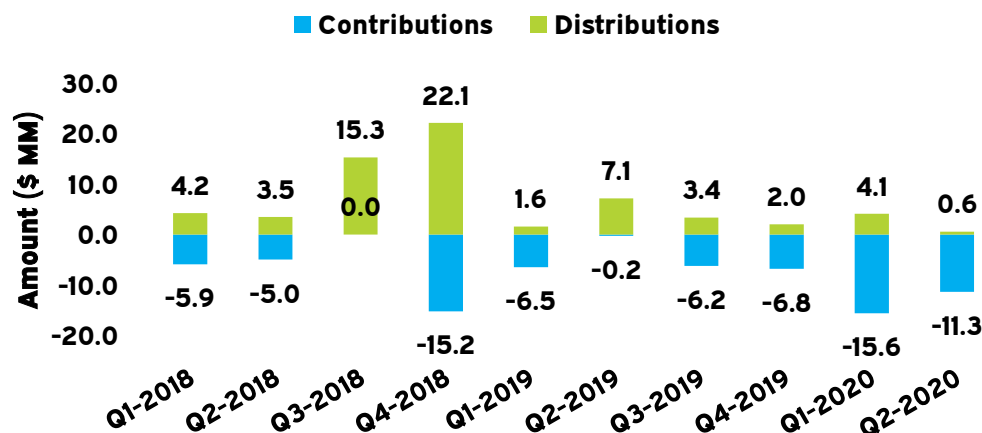


Commitments This Quarter

Fund	Strategy	Region	Amount (MM)
Homestead III	Harvested	North America	75.00

### Cash Flows

#### Recent Quarterly Cash Flows



#### Largest Contributions This Quarter

Fund	Vintage	Strategy	Region	Amount (\$MM)
Homestead III	2018	Harvested	North America	10.49
GIP IV	2019	Infrastructure	Global: Developed	0.77
EIG XV	2010	Natural Resources	Global: All	0.09

#### Largest Distributions This Quarter

Fund	Vintage	Strategy	Region	Amount (\$MM)
EIG XV	2010	Natural Resources	Global: All	0.31
Homestead III	2018	Harvested	North America	0.24

## Significant Events

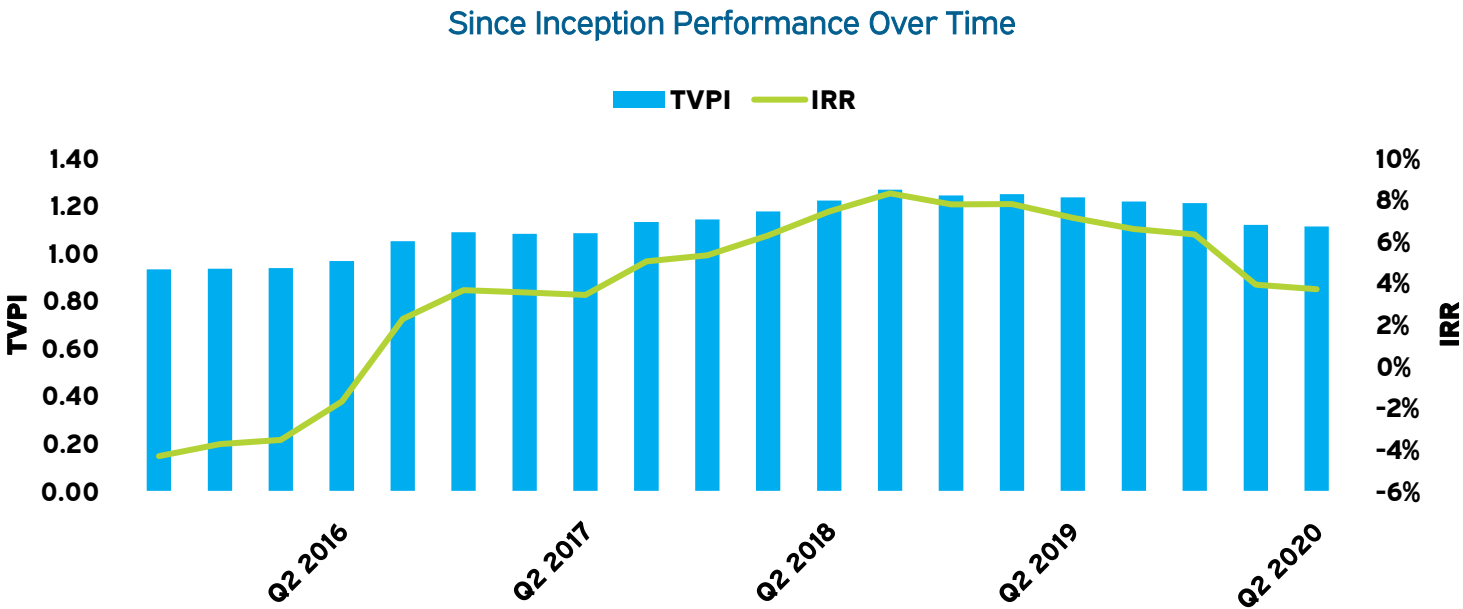
- During the second quarter, Homestead Capital USA Farmland Fund III acquired four new projects in two states for a combined total of approximately \$48.1 million. The acquisitions include three corn and soybean farms in Illinois, totaling \$35 million, and one corn, rice and soybean farm in Mississippi, totaling \$13.1 million.
- During the second quarter, Homestead Capital USA Farmland Fund III accepted eight new investors with total capital commitments of \$130 million. As a result, as of June 30, 2020, the Fund had received \$532 million in commitments from its Limited Partners.
- Archlight Energy Partner Fund VI's unrealized portfolio increased by 5% (\$191 million) over the second quarter. Investments with notable valuation changes over the quarter included Midcoast Energy (16%, \$106 million), AL-Perdido (21%, \$92 million), Lightstone Generation (28%, \$50 million), Great River Hydro (21%, \$18 million), Bruin Resources (-100%, -\$46 million), and Limetree Bay Holdings ( -39%, -\$25 million).
- On May 5<sup>th</sup> 2020, EIG Energy Fund XV announced that Emily Rodgers has joined the firm as ESG Director. Ms. Rodgers will be a senior member of the firm and Chair of the ESG Committee. She joins from Apache Corporation, where she served as the company's global Environment and Sustainability Director, and has fifteen years' experience in energy and ESG-related functions.
- On June 25<sup>th</sup> 2020, Global Infrastructure Partners announced that it has become a signatory to the United Nations-supported Principles for Responsible Investment (PRI).

### By Strategy

Group	Number	Committed (\$ MM)	Contributed (\$ MM)	Unfunded (\$ MM)	Distributed (\$ MM)	Remaining Value (\$ MM)	Exposure (\$ MM)	DPI (X)	TVPI (X)	IRR (%)
Harvested	1	75.0	10.5	64.5	0.2	8.6	73.1	0.02	0.84	NM
Infrastructure	5	625.0	201.4	428.6	100.1	129.9	558.5	0.50	1.14	5.1
Natural Resources	1	60.0	63.4	0.0	52.6	14.5	14.5	0.83	1.06	1.4
<b>Total</b>	<b>7</b>	<b>760.0</b>	<b>275.3</b>	<b>493.1</b>	<b>153.0</b>	<b>153.0</b>	<b>646.1</b>	<b>0.56</b>	<b>1.11</b>	<b>3.7</b>

### By Vintage

Group	Number	Committed (\$ MM)	Contributed (\$ MM)	Unfunded (\$ MM)	Distributed (\$ MM)	Remaining Value (\$ MM)	Exposure (\$ MM)	DPI (X)	TVPI (X)	IRR (%)
Open-end	1	200.0	0.0	200.0	0.0	0.0	200.0	0.00	NM	NM
2010	1	60.0	63.4	0.0	52.6	14.5	14.5	0.83	1.06	1.4
2011	1	65.0	65.9	0.0	62.9	23.7	23.7	0.95	1.31	8.0
2015	1	85.0	86.1	0.0	34.3	56.4	56.4	0.40	1.05	1.7
2017	1	75.0	47.8	29.4	2.8	49.9	79.3	0.06	1.10	10.9
2018	1	75.0	10.5	64.5	0.2	8.6	73.1	0.02	0.84	NM
2019	1	200.0	1.6	199.1	0.0	NM	199.0	0.00	NM	NM
<b>Total</b>	<b>7</b>	<b>760.0</b>	<b>275.3</b>	<b>493.1</b>	<b>153.0</b>	<b>153.0</b>	<b>646.1</b>	<b>0.56</b>	<b>1.11</b>	<b>3.7</b>

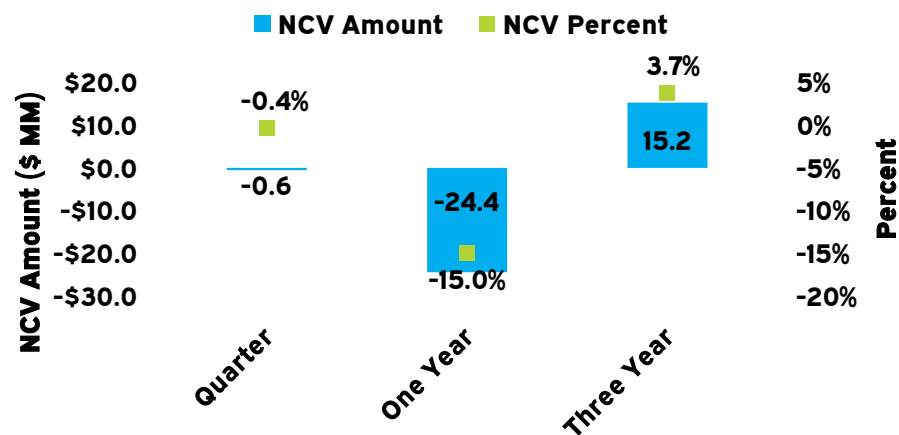


Horizon IRRs

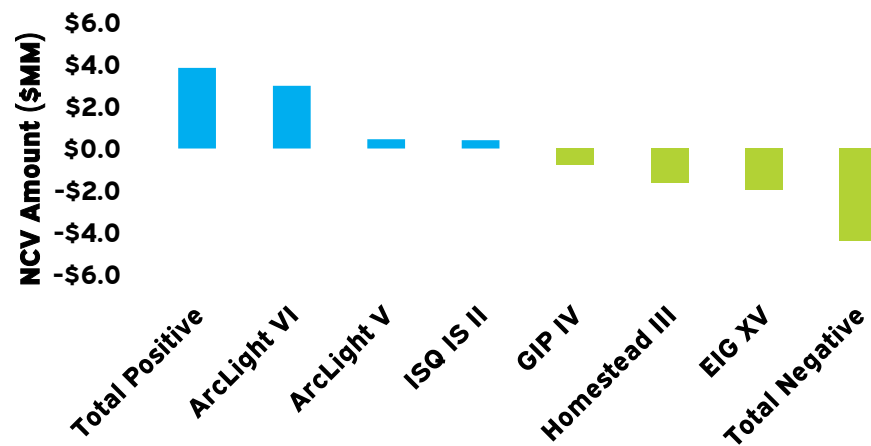
	1 Year (%)	3 Year (%)	5 Year (%)	10 Year (%)	Since Inception (%)
Aggregate Portfolio	-15.7	4.1	3.9	3.7	3.7



Periodic NCV



1 Quarter Drivers Of NCV

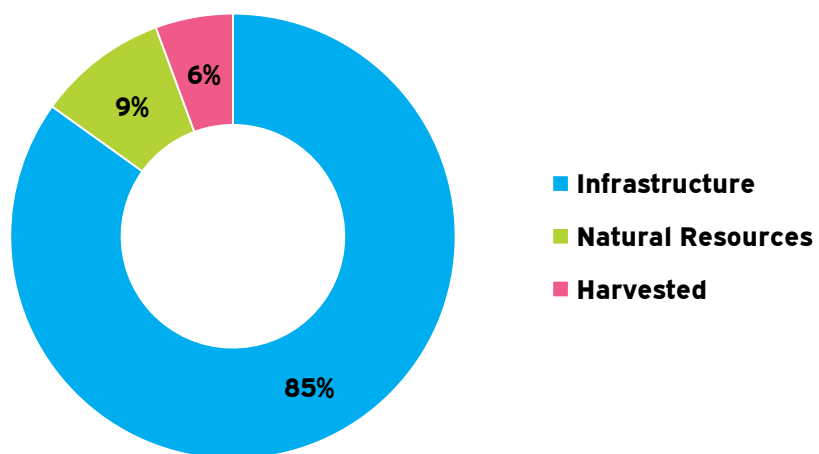


### Fund Performance: Sorted By Vintage And Strategy

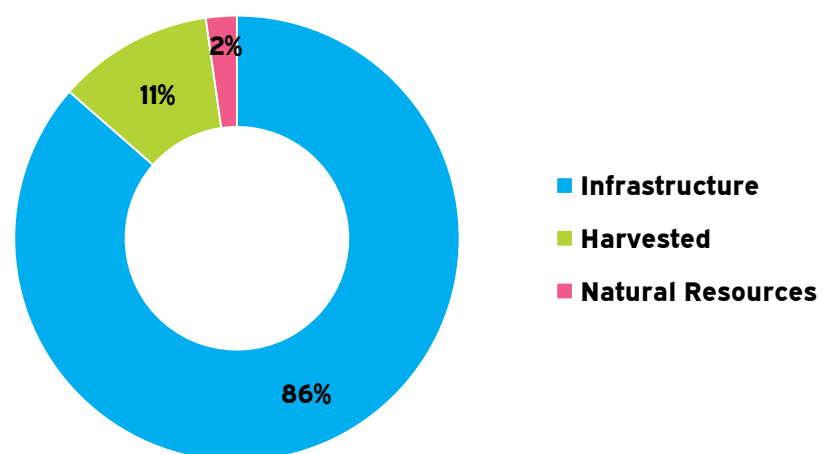
By Investment	Vintage	Strategy	Committed (\$ MM)	Contributed (\$ MM)	Unfunded (\$ MM)	Distributed (\$ MM)	Remaining Value (\$ MM)	TVPI (X)	Peer TVPI (X)	IRR (%)	Peer IRR (%)
IFM IS	Open-end	Infrastructure	200.0	0.0	200.0	0.0	0.0	NM	NM	NM	NM
EIG XV	2010	Natural Resources	60.0	63.4	0.0	52.6	14.5	1.06	1.20	1.4	3.1
ArcLight V	2011	Infrastructure	65.0	65.9	0.0	62.9	23.7	1.31	0.92	8.0	-1.5
ArcLight VI	2015	Infrastructure	85.0	86.1	0.0	34.3	56.4	1.05	1.10	1.7	4.2
ISQ IS II	2017	Infrastructure	75.0	47.8	29.4	2.8	49.9	1.10	0.96	10.9	-2.5
Homestead III	2018	Harvested	75.0	10.5	64.5	0.2	8.6	0.84	0.99	NM	NM
GIP IV	2019	Infrastructure	200.0	1.6	199.1	0.0	NM	NM	NM	NM	NM
<b>Total</b>			<b>760.0</b>	<b>275.3</b>	<b>493.1</b>	<b>153.0</b>	<b>153.0</b>	<b>1.11</b>	<b>NM</b>	<b>3.7</b>	<b>NM</b>

#### By Strategy

Percent of FMV

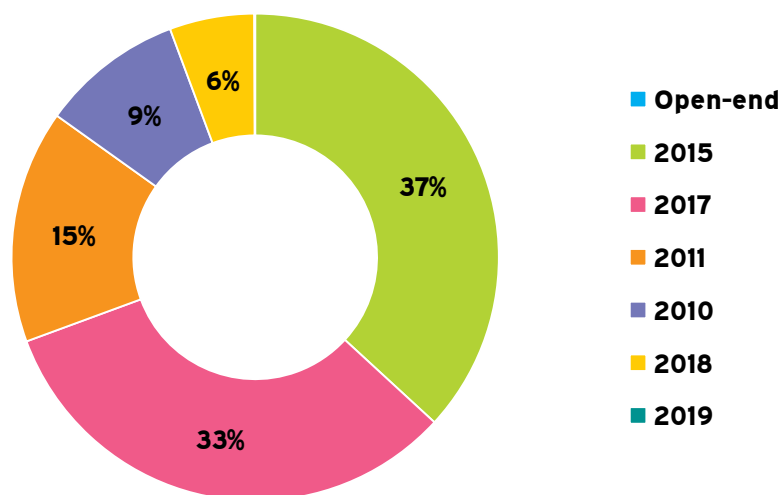


Percent of Exposure

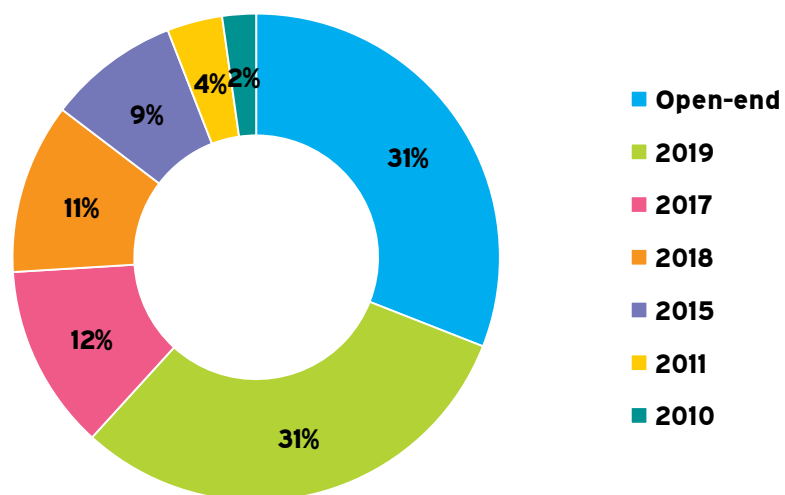


#### By Vintage

Percent of FMV

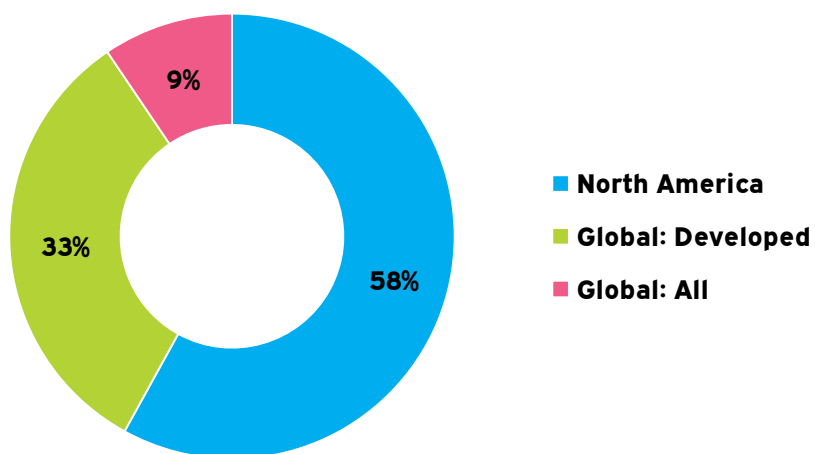


Percent of Exposure

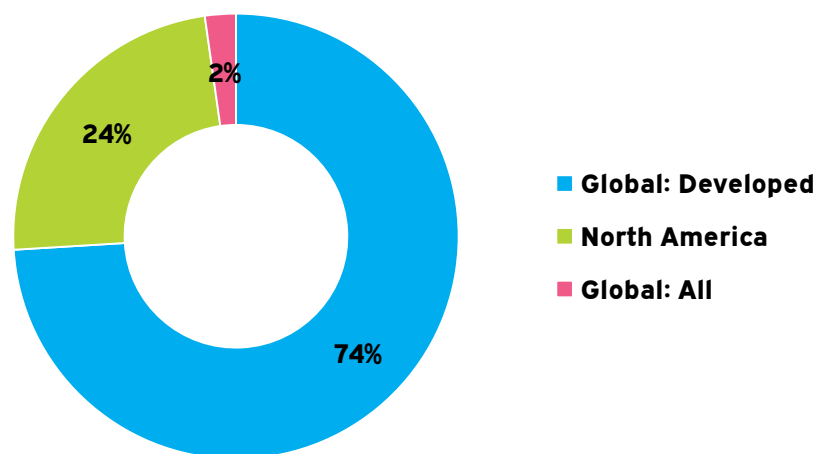


#### By Geographic Focus

Percent of FMV



Percent of Exposure

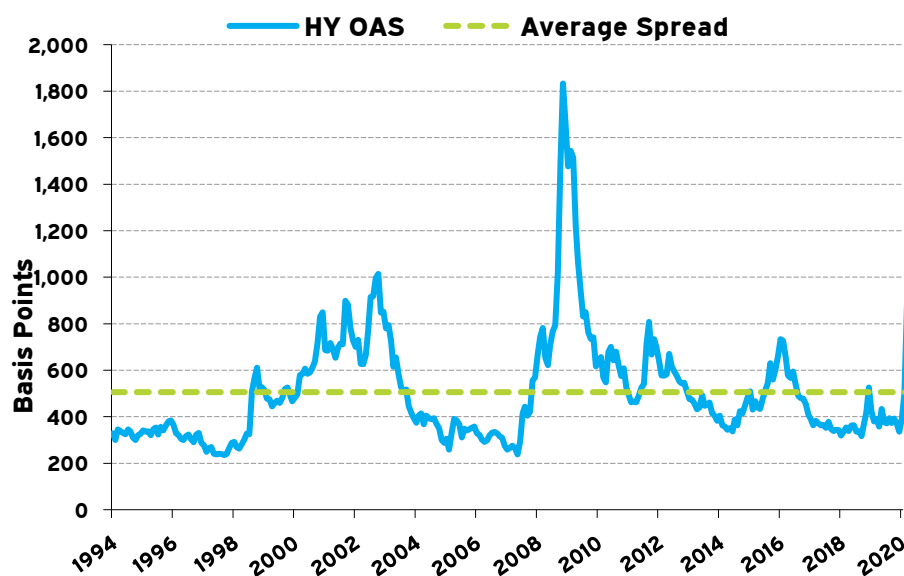


### Private Debt

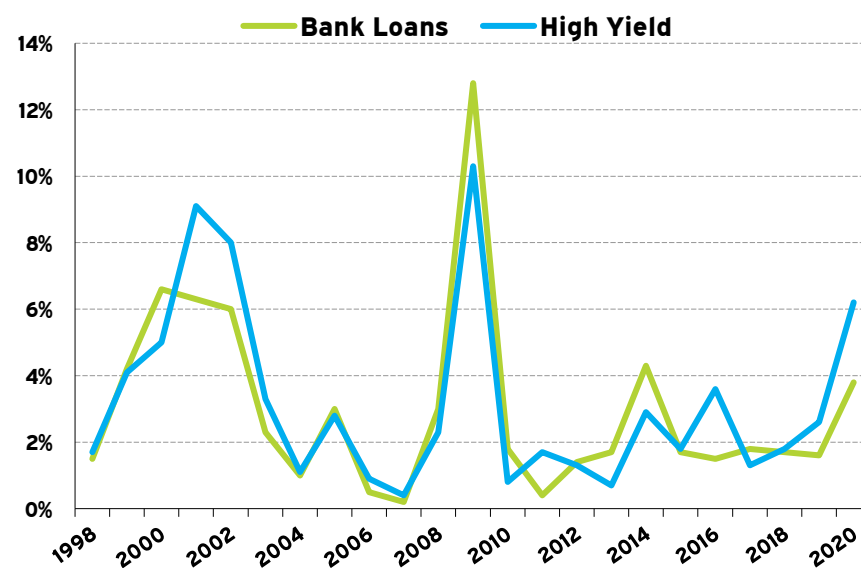
The beginning of second quarter marked a sharp reversal from the first quarter in credit markets as investors began to digest new stimulus and credit markets support programs announced by the Federal Reserve at the end of March. These programs were further clarified during April and began implementation in earnest in May, which fueled the recovery in the higher rated corporate bonds and structured credit markets.

High yield bond spreads, which ended March at 880 basis points, compressed each month during the quarter to finish June at 626 basis points. The average price of the index recovered from \$85.70 to \$95.89. Default rates in high yield bonds and bank loans shot up to 6.2% and 3.6%, respectively, from sub-3% levels in both asset classes for the prior three years. Outside of corporate credit markets, many areas were slower to stabilize, particularly in certain structured products segments such as commercial real estate and junior tranches of mortgage securitizations. Price discovery continued in these markets as investors sought to assess the long-term impacts of COVID-19.

#### U.S. Corporate High Yield Spread<sup>1</sup>



#### U.S. Corporate Default Rate<sup>2</sup>



<sup>1</sup> Source: Barclays Capital

<sup>2</sup> Source: JP Morgan

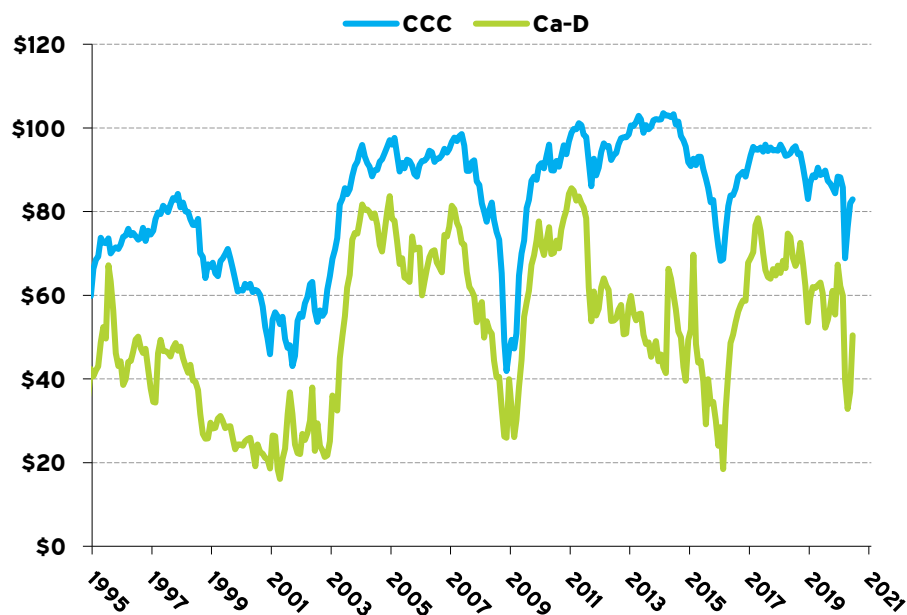
Market & Industry Analysis | As of June 30, 2020

### Distressed & Opportunistic Debt

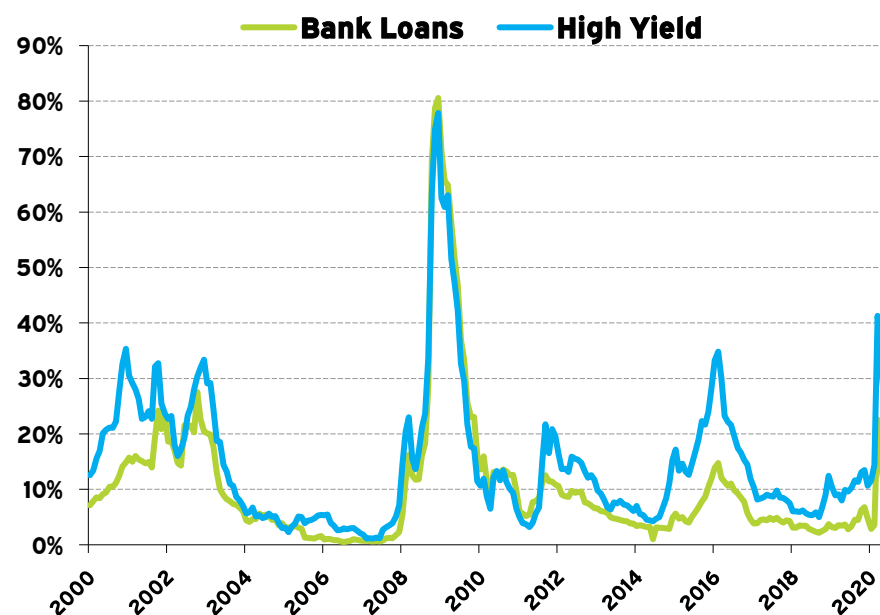
With the primary credit markets largely closed during March and April, opportunities for distressed and opportunistic investors began to emerge. Borrowers that required capital to make interest payments, meet margin requirements or refinance looming maturities did so at high interest rates often with the additional burden make-whole provisions or minimum return requirements to lenders. Bankruptcies and distressed exchanges during the second quarter were the highest quarter on record, surpassing the first quarter of 2009 with more than \$82 billion in total volume. Year-to-date there has now been more than \$100 billion in defaulted debt which makes 2020 already the second highest annual default total.

Pricing in the lowest rated debt segments recovered during the second quarter, however distressed ratios remain elevated. Energy continues to be the industry with the highest default rate and distressed ratio with more than \$50 billion of bonds trading at distressed levels or 26% of the total distressed debt volume. Health care (10%), services (9%) industrials (8%) are the next most distressed industries.

**Lower Rated Debt Pricing<sup>1</sup>**



**Distressed Ratio<sup>2</sup>**



<sup>1</sup> Source: Barclays Capital

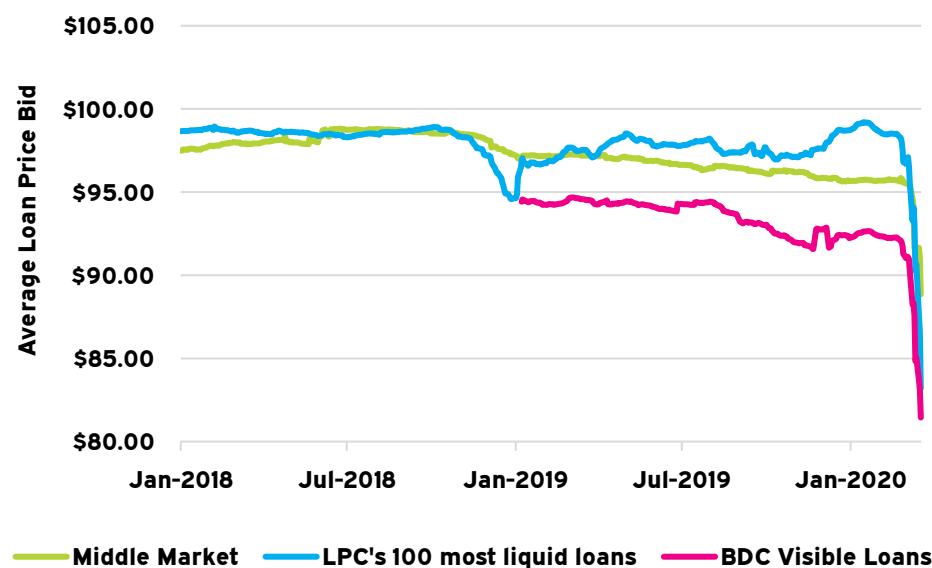
<sup>2</sup> Source: Bank Loans trading below \$80, Credit Suisse; High Yield trading at spread of more than 1,000bps, Deutsche Bank.

## Private Senior & Subordinated Debt

New private debt issuance slowed materially in the second quarter as corporate transactions slowed and lenders exercised caution. Corporate direct lending volumes were halved from first quarter levels and middle market LBO activity was essentially zero. Lenders spent the quarter working to assess their portfolios and borrowers' liquidity. In some instances, private equity sponsors and non-sponsored owners quickly handed the keys to lenders, but in most cases lenders and management worked to amend loan documents and inject liquidity to stave off restructurings.

Secondary pricing in the middle market loans did not recover with the larger syndicated loan market. This may be an indication of capital markets' expectations that smaller companies may struggle more than larger more diverse companies as a result of COVID-19.

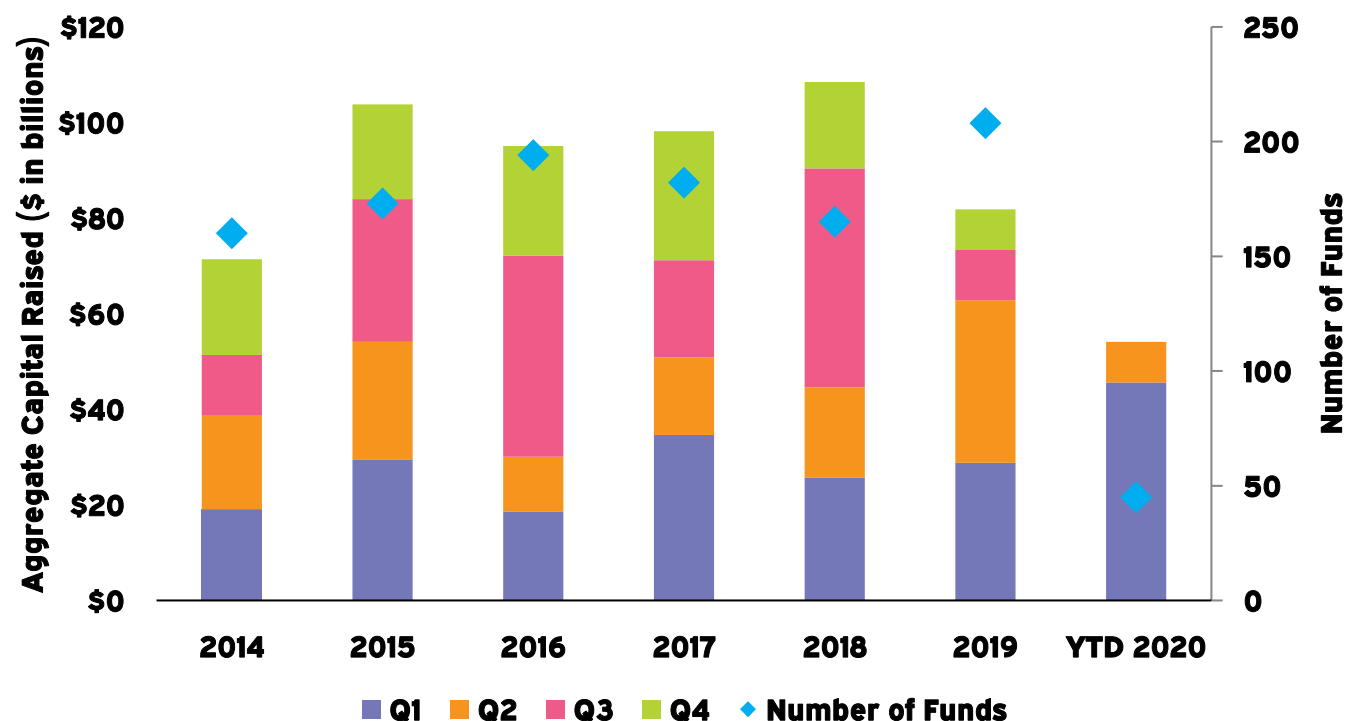
### Senior Loan Secondary Market Pricing<sup>1</sup>



<sup>1</sup> Source: Refinitiv LPC



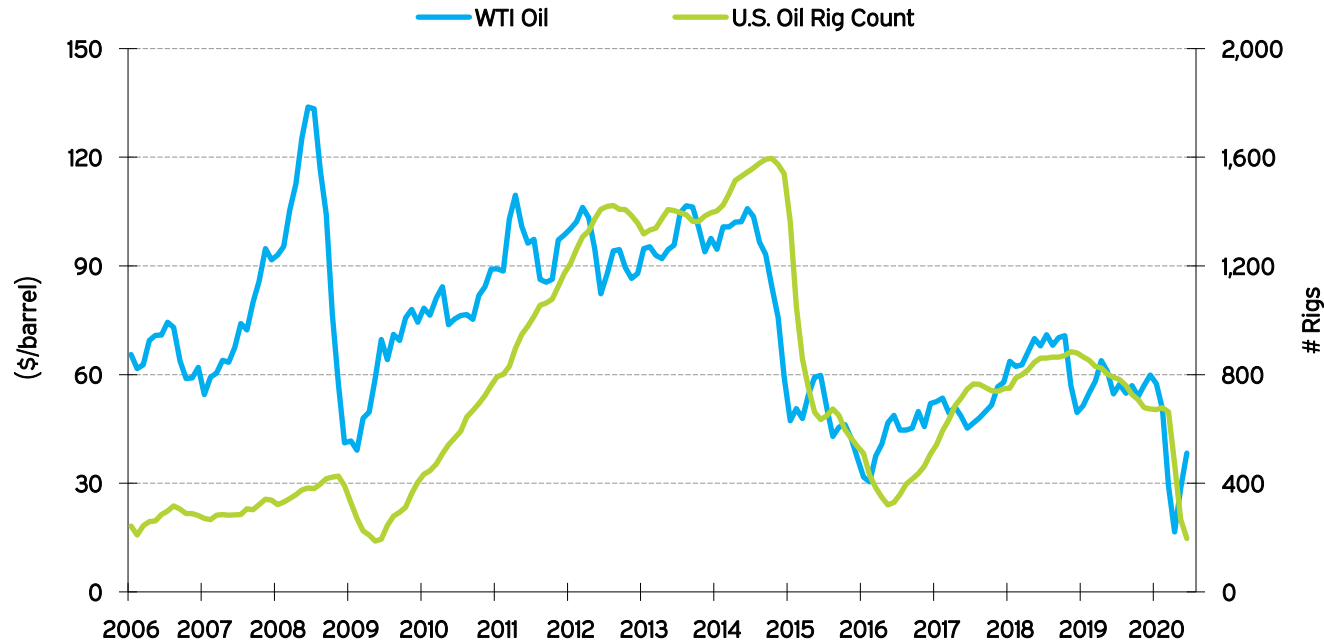
## Global Quarterly Unlisted Natural Resource Fundraising<sup>1</sup>



Fundraising momentum slowed in the second quarter of 2020, with \$9 billion in commitments compared to over \$40 billion in the first quarter. The number of funds decreased from the average per quarter in 2019 with just 15 funds, but the average fund size increased from just under \$1 billion in 2019 to \$0.5 billion during the second quarter of 2020. As of June 30, 2020, Preqin reported a total of 322 unlisted natural resources funds with a combined fundraising target of approximately \$190 billion. The majority of natural resources managers fundraising during the second quarter were focused on North America, accounting for approximately 44% of cumulative targeted capitalization in the market.

<sup>1</sup> Source: Preqin Private Capital Fundraising Update, Q2 2020.

### Extracted Resources Oil Price vs. Active U.S. Rigs<sup>1</sup>

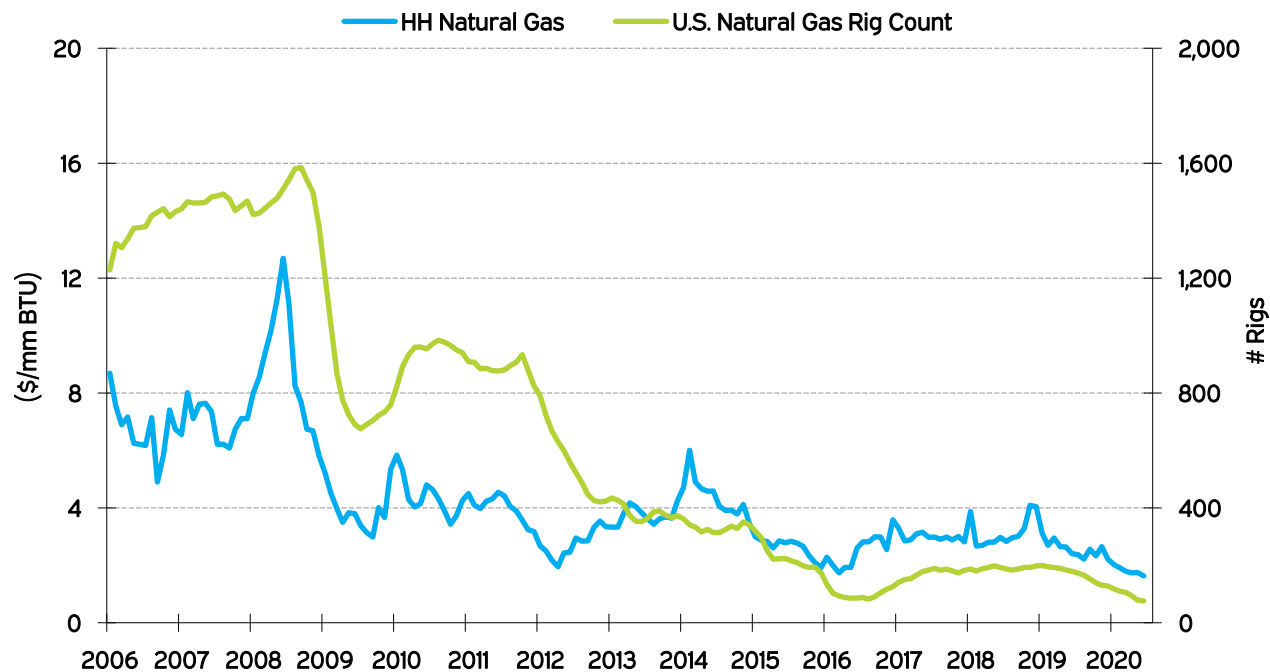


The confluence of decreased oil demand from travel restrictions and work-from-home policies stemming from the global pandemic, Russia and Saudi Arabia supply disagreements, and strong U.S. production contributed to historic volatility for oil prices during the quarter. Front-month oil price contracts briefly reached ~\$40 a barrel in April but subsequently rebounded. Relative to the prior quarter, West Texas Intermediate oil prices increased by 31% to \$38 per barrel, while Brent prices increased 26% to \$40 per barrel. With lower prices, oil and gas companies temporarily shut-in production and reduced capex spending; however, many resumed production by the end of the quarter. The U.S. oil rig count fell by 663 to 196 during the quarter as companies curtailed capex spending. U.S. gasoline prices for regular blend decreased to \$2.26 during the second quarter, representing an 8% quarterly decrease and 24% decline from one year prior.

<sup>1</sup> Source: EIA and Baker Hughes.

### Extracted Resources

#### Natural Gas Price vs. Active U.S. Rigs <sup>1</sup>

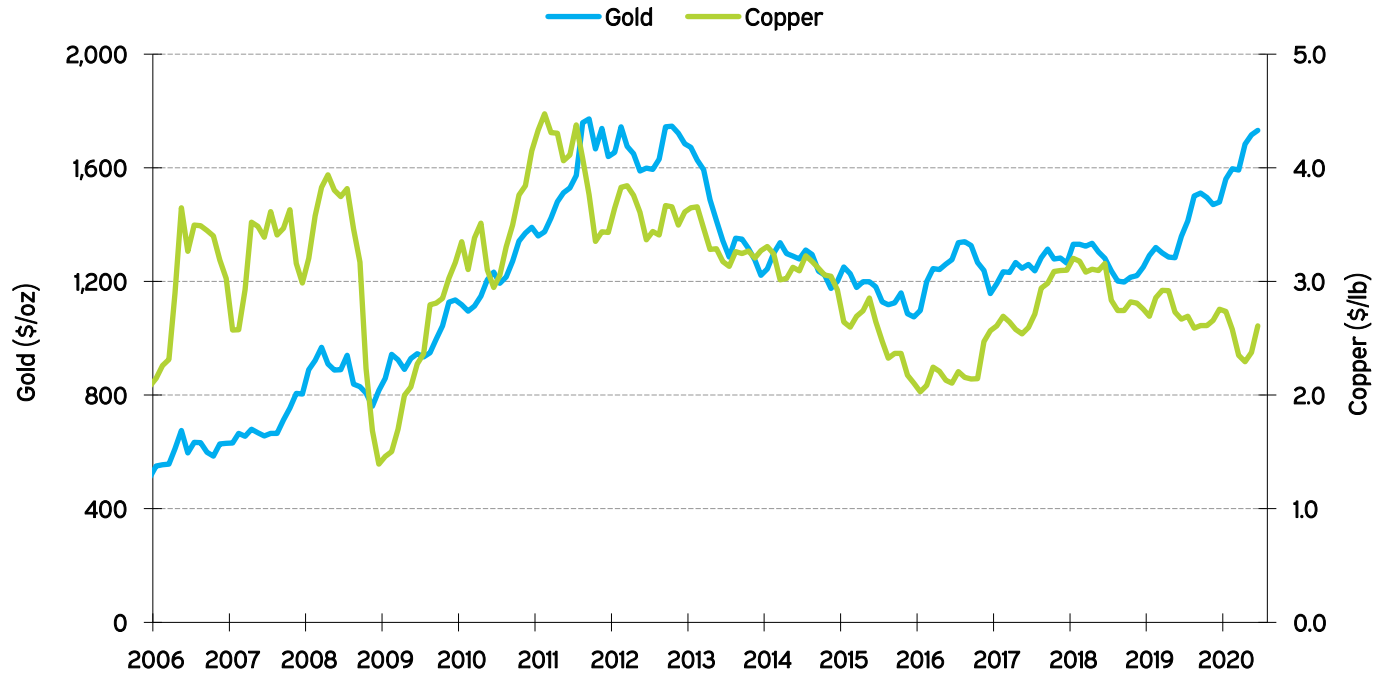


Henry Hub natural gas spot prices ended the quarter at approximately \$1.63/MM BTU, representing a 9% decrease relative to the prior quarter and a 32% decrease from one year prior. During the quarter, the U.S. natural gas rig count fell by 30 to 76. Total U.S. natural gas production averaged almost 98 billion cubic feet per day ("bcf/d"), a slight decrease from 103 bcf/d from the prior quarter.

<sup>1</sup> Source: EIA and Baker Hughes.

#### Extracted Resources

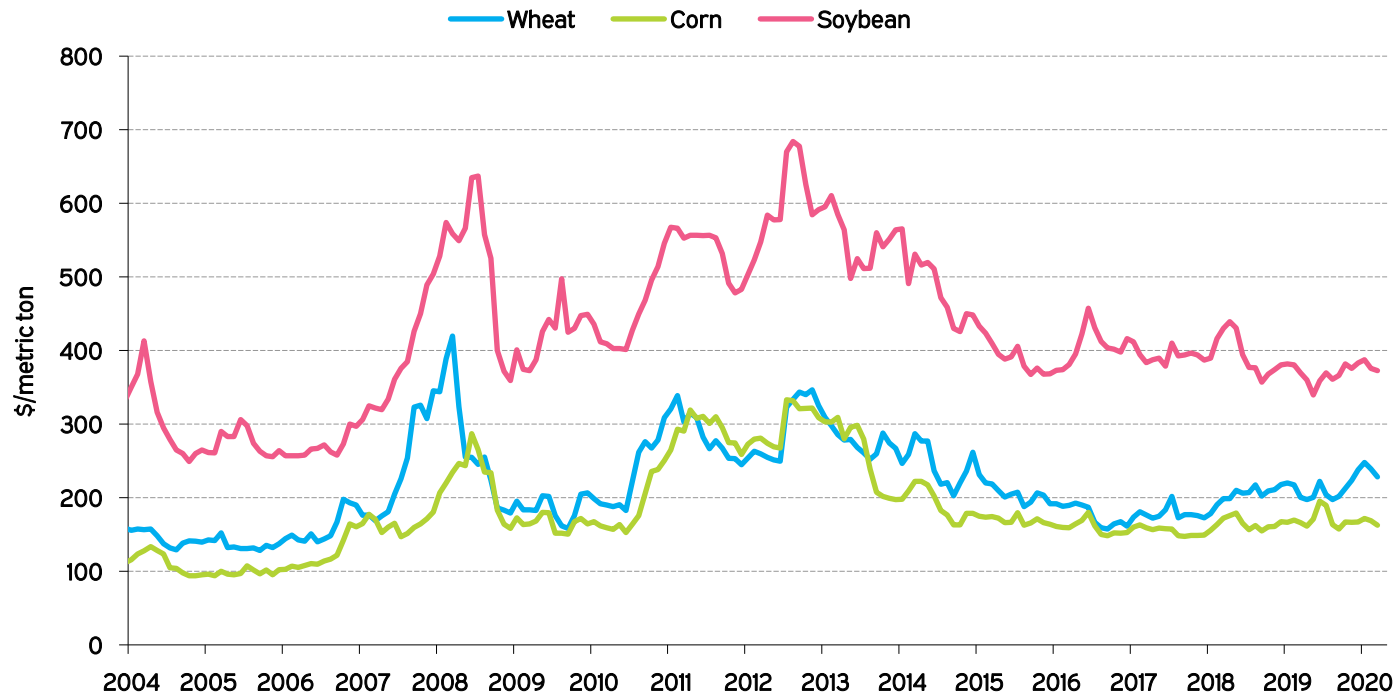
#### Metals Prices



Despite a rebound in the public equity markets in the second quarter, safe haven assets such as precious metals performed well. The price of gold continued its multi-year increase and finished the quarter at approximately \$1,732 per ounce, representing a 9% quarterly increase and 27% increase from one year prior. During the quarter, silver prices increased by 19% to \$17 per ounce. Copper prices increased by 11% during the quarter to \$2.61 per ounce and was largely driven by strong demand from China as its economy restarted.

<sup>1</sup> Source: World Bank

## Harvested Resources Wheat, Corn, & Soybean<sup>1</sup>

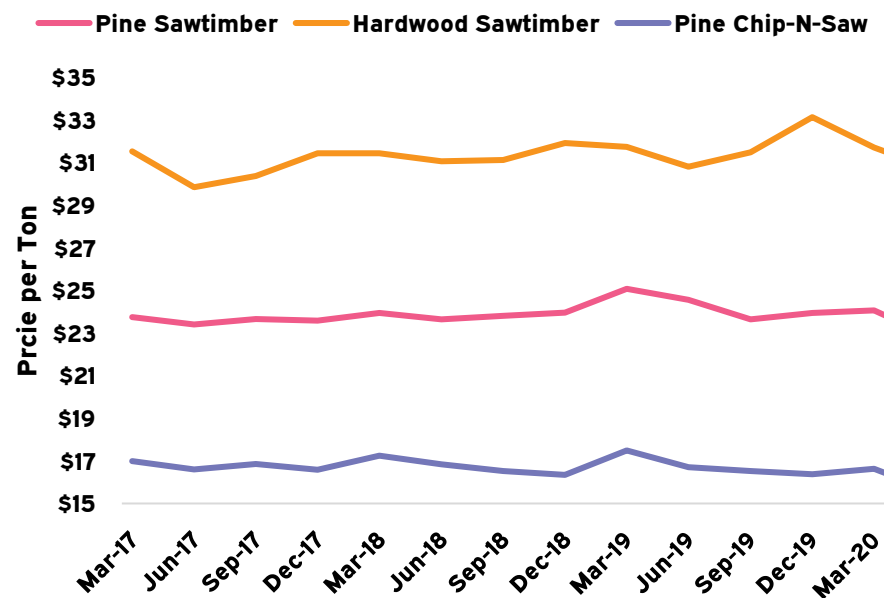
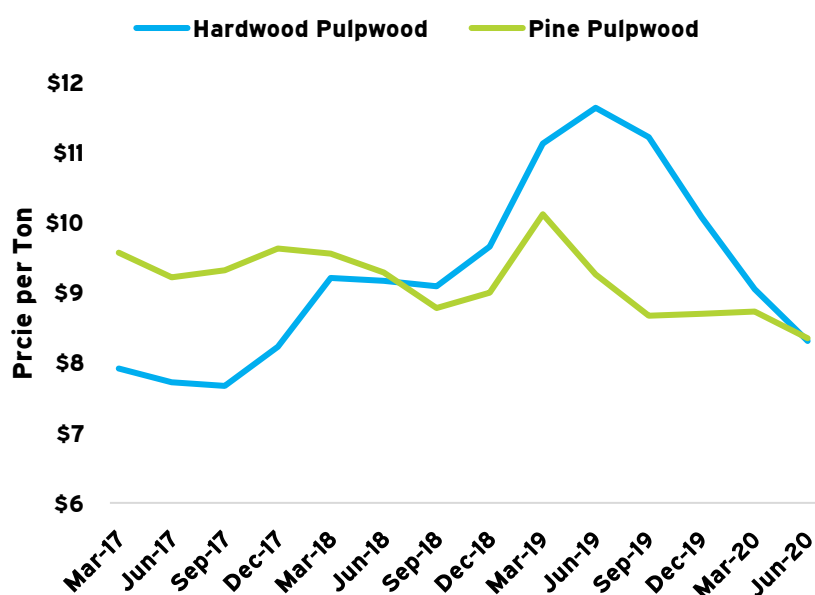


U.S. grain prices have been under pressure for several years as the Chinese government curtailed purchases from U.S. farmers as a result of trade tensions and tariffs. A trade agreement between the U.S. and China reached in early 2020 provided hope for increased purchases. To date, China's purchases have increased; however, the amounts and trajectory are not currently expected to reach targeted amounts by year-end. During the quarter, wheat, corn, and soybean prices fell by 12%, 9%, and 1%, respectively. During the second quarter, the NCREIF Farmland index increased by 0.6% primarily driven by income returns of 0.6%.

<sup>1</sup> Source: World Bank

## Harvested Resources

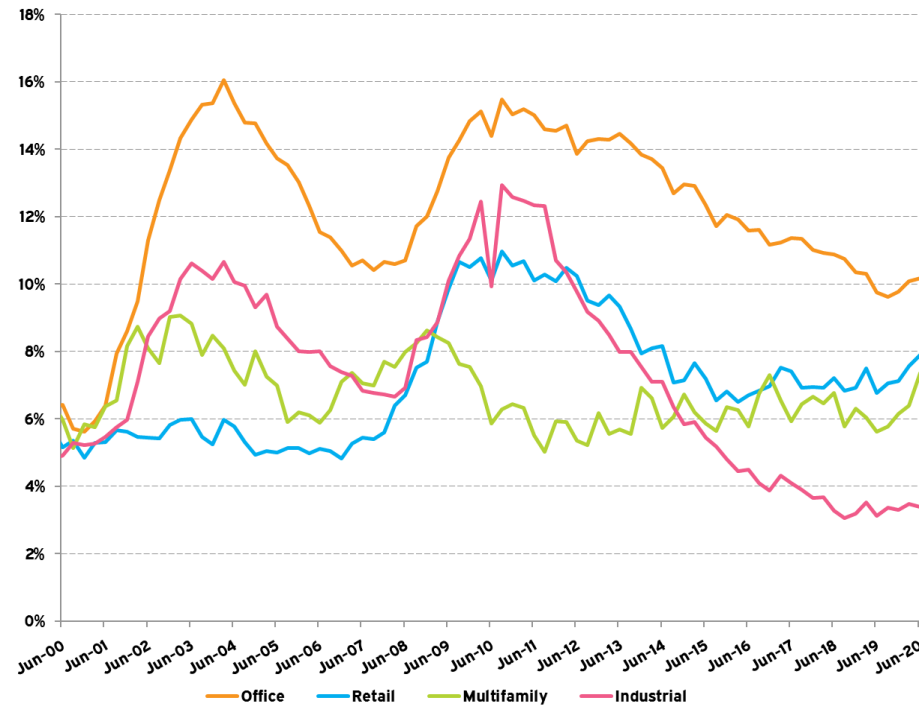
### U.S. South Timber Prices<sup>1</sup>



U.S. South average timber prices have remained fairly consistent over the past several years for sawtimber and chip-n-saw, while pulpwood has experienced more volatility. Pulpwood are small to medium-sized trees chipped into small fibers primarily for conversion into paper products. Hardwood pulpwood experienced the largest decline in the second quarter decreasing by 8%. Over the past 12 months pine and hardwood pulpwood have decrease 29% and 10% respectively. Sawtimber, a more valuable product, is often used for furniture veneers or used as wood-based posts for electrical or telecommunications wires. Hardwood and pine sawtimber experienced decreases in average prices during the second quarter of 3% and 5%, respectively. The NCREIF Timberland index was flat for the quarter with income returns of 0.5% offsetting asset depreciation returns.

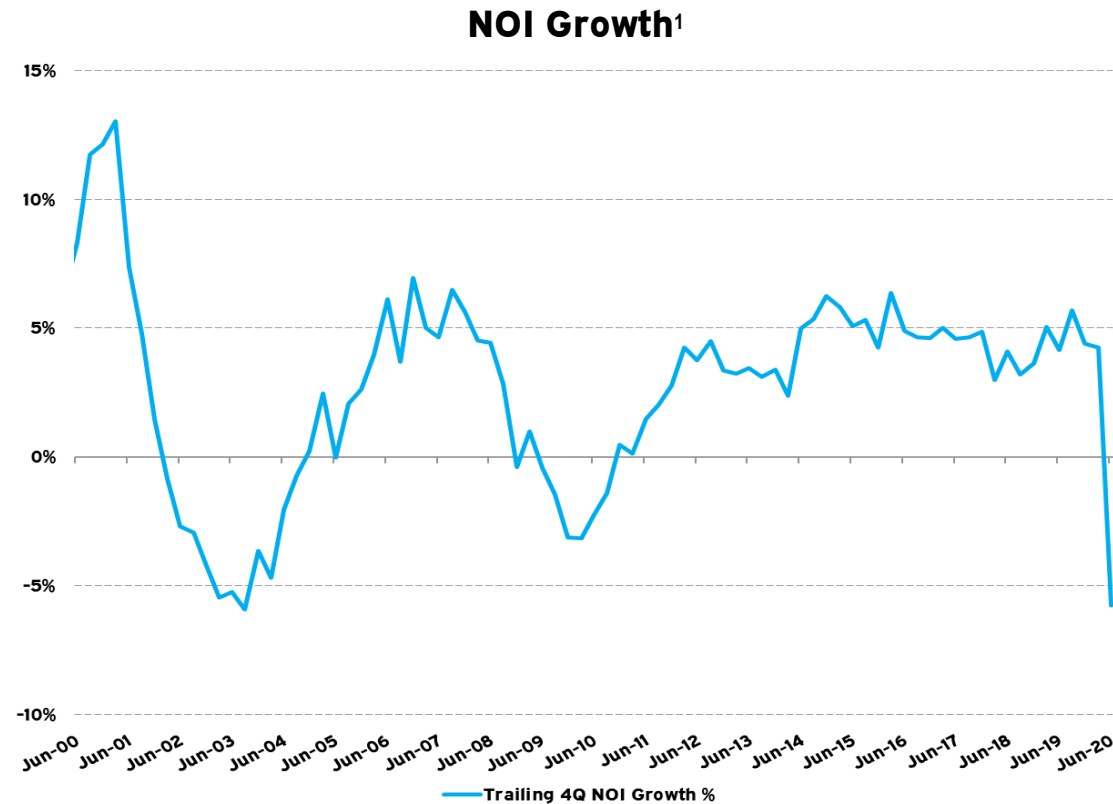
<sup>1</sup> Source: Bloomberg

### Real Estate Fundamentals Vacancy by Property Type<sup>1</sup>



In the second quarter of 2020, vacancy rates increased for all property types except industrial. Multifamily vacancy has increased significantly in 2020, reaching its highest level since 2009. Retail and office vacancies have been increasing over the trailing twelve months. Industrial vacancies appear to have bottomed out just above 3.0%, at all-time lows for the sector. Compared to one year ago, vacancy rates in multifamily increased 175 basis points, office increased 43 basis points, industrial increased 26 basis points, and retail increased 114 basis points. Overall, the vacancy rate across all properties increased 85 basis points from Q2 2019.

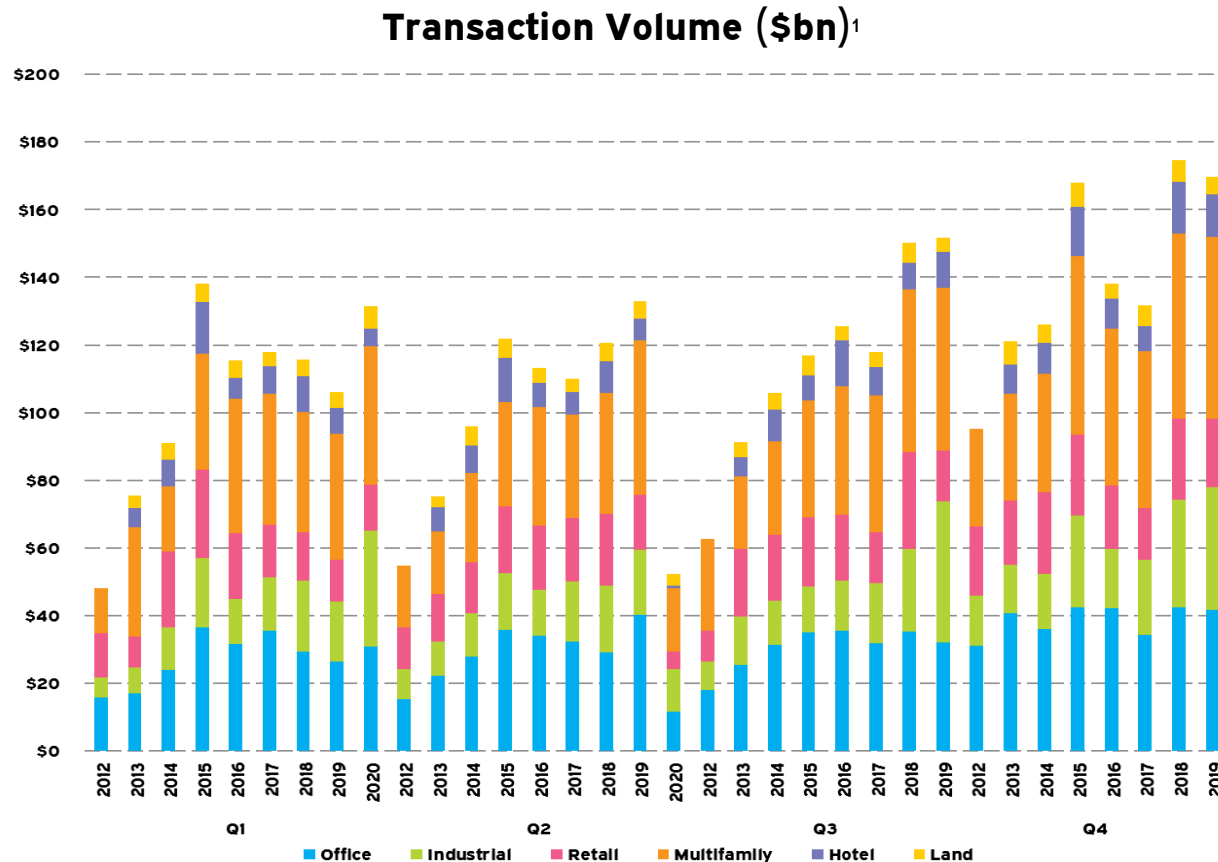
<sup>1</sup> Source: NCREIF



The trailing twelve-month rate of NOI decreased significantly to -5.8% in the second quarter of 2020. The ongoing COVID-19 pandemic has disrupted commercial and multifamily property markets and NOI has been impacted negatively as operating expenses have not been as responsive to the shutdown when compared to revenues. Industrial NOI trended down to 5.6% for the trailing year ending Q2 2020. Office NOI growth trended down slightly to 2.3% year-over-year, and Apartment NOI moved down to -1.5%. Retail NOI growth for the trailing four quarters decreased significantly to -32.7%.

<sup>1</sup> Source: NCREIF

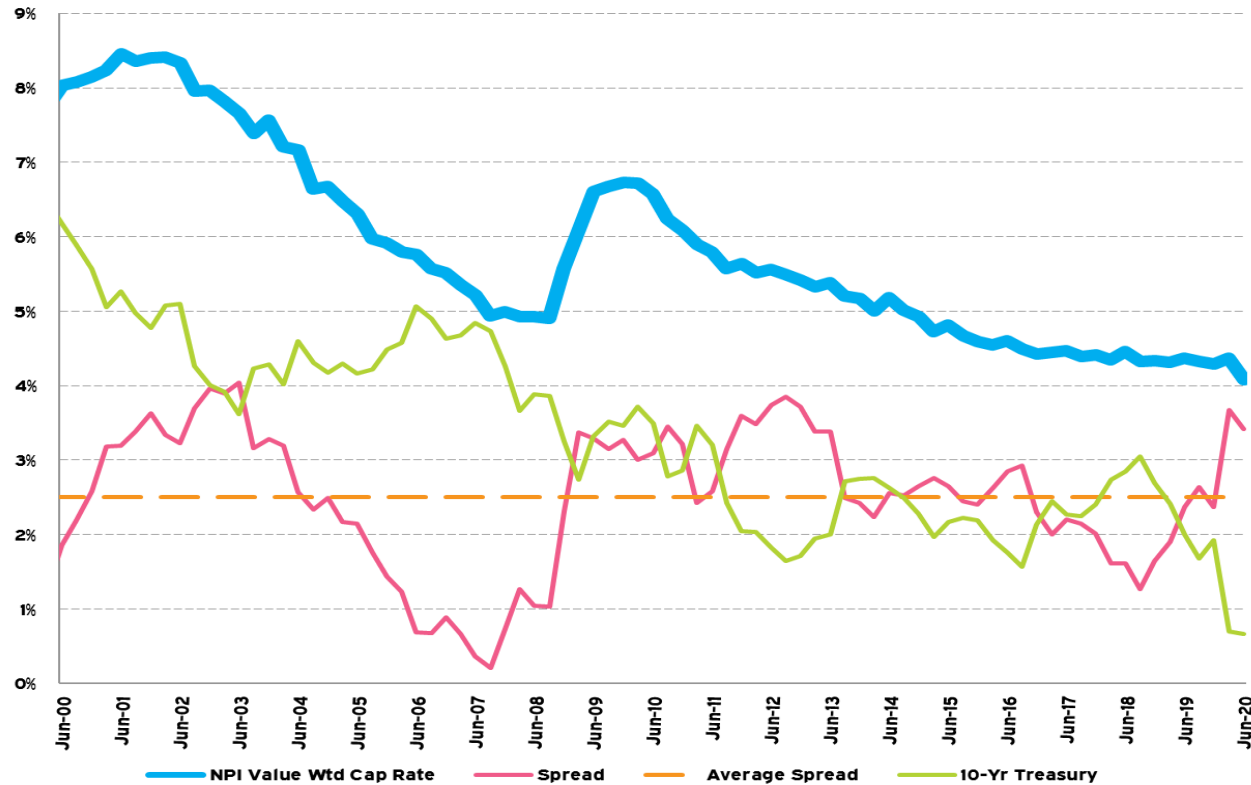




Private real estate transaction volume for properties valued over \$2.5 million for Q2 2020 was down significantly from Q2 2019 to \$52.3 billion. Compared to a year ago, industrial (-36.2%), multifamily (-59.2%), office (-69.3%), retail (-68.7%), and hotel (-89.9%) experienced a decrease in transaction volume. Multifamily and industrial properties made up the largest percentages of total transaction volume during the quarter, at 36% and 24%, respectively.

<sup>1</sup> Source: PREA

### Real Estate Capital Markets Cap Rates vs. 10-Year Treasury<sup>1</sup>



The NPI Value Weighted Cap Rate dropped in Q2 2020 to 4.1%. The 10-year Treasury yield peaked above 3.0% in Q3 2018 and had been on a downward trend and dropped significantly in Q1 2020 down to 0.7%, where it stayed for Q2 2020. The spread between cap rates and treasury yields increased dramatically in Q1 2020 and now is 342 basis points in Q2 2020, which is 92 basis points above the long-term average spread.

<sup>1</sup> Source: NCREIF and U.S. Department of the Treasury

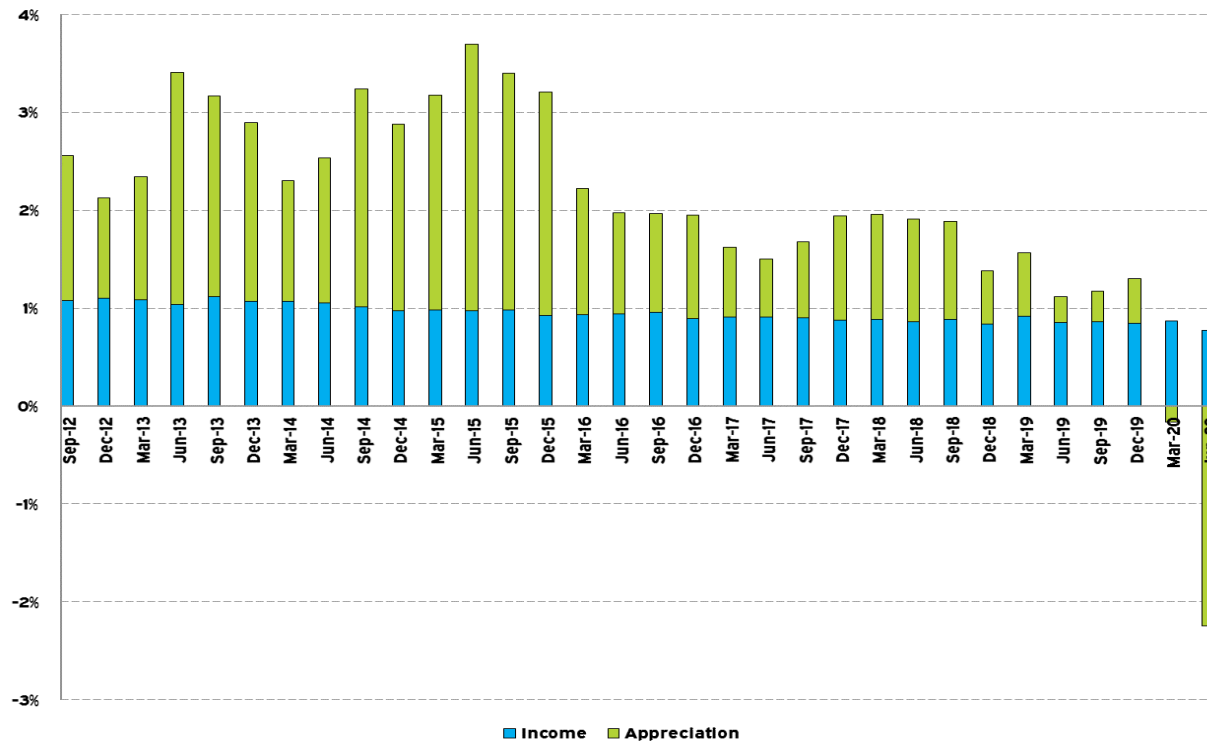
### Trailing Period Returns<sup>1</sup>

<i>As of June 30, 2020</i>	1 Year	3 Years	5 Years	10 Years
NFI-ODCE (EW, net)	1.7%	5.1%	6.7%	10.0%
NFI-ODCE (VW, net)	1.3	4.7	6.4	9.8
NCREIF Property Index	2.7	5.4	6.8	9.7
NAREIT Equity REIT Index	-6.5	3.4	6.5	10.4

Private real estate indices posted negative quarterly returns in Q2 2020, but are still positive over the 1-year, 3-year, 5-year, and 10-year time horizons. Public real estate performance in 2020 has been volatile, posting a -23.4% in Q1 2020 and 13.3% in Q2 2020.

<sup>1</sup> Source: NCREIF

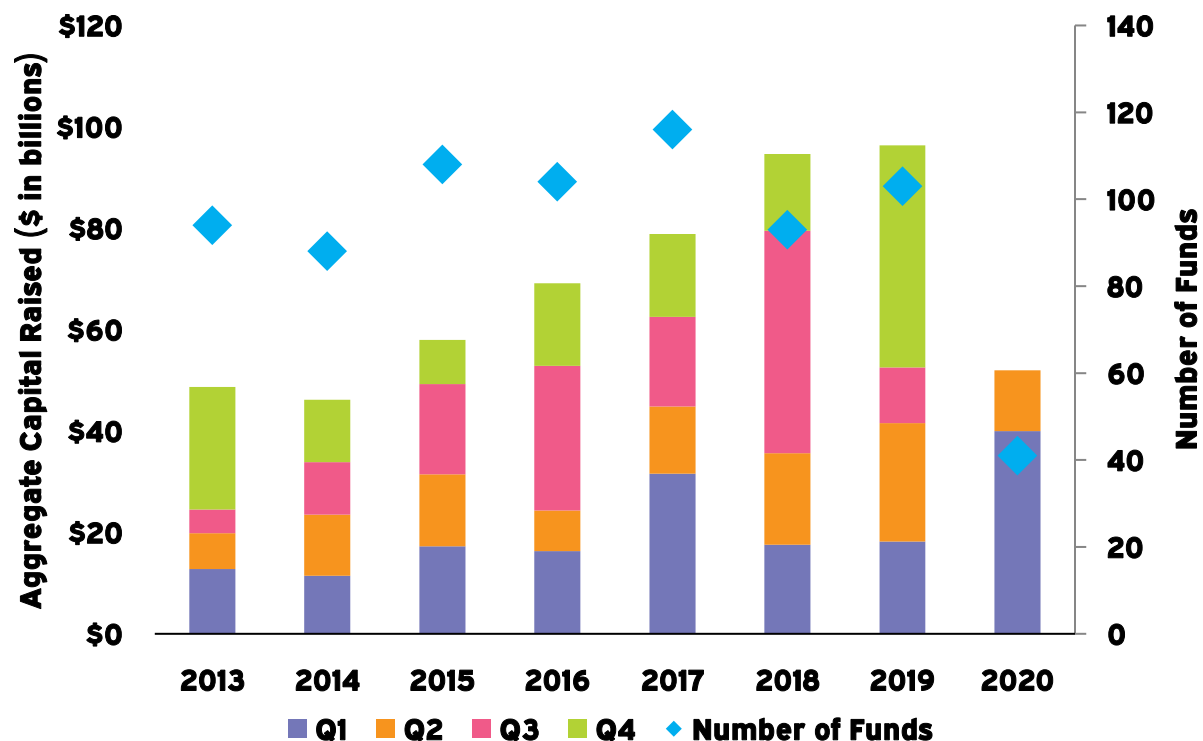
#### ODCE Return Components<sup>1</sup> (Equal Weight, Net)



The NFI-ODCE Equal Weight return for Q2 2020 was negative, down to -1.5%, which is 218 basis points lower than the previous quarter. The income component of the quarterly return dropped slightly from the previous quarter to 0.8%, but appreciation for the quarter was -2.3% due to valuation adjustments caused by COVID-19.

<sup>1</sup> Source: NCREIF

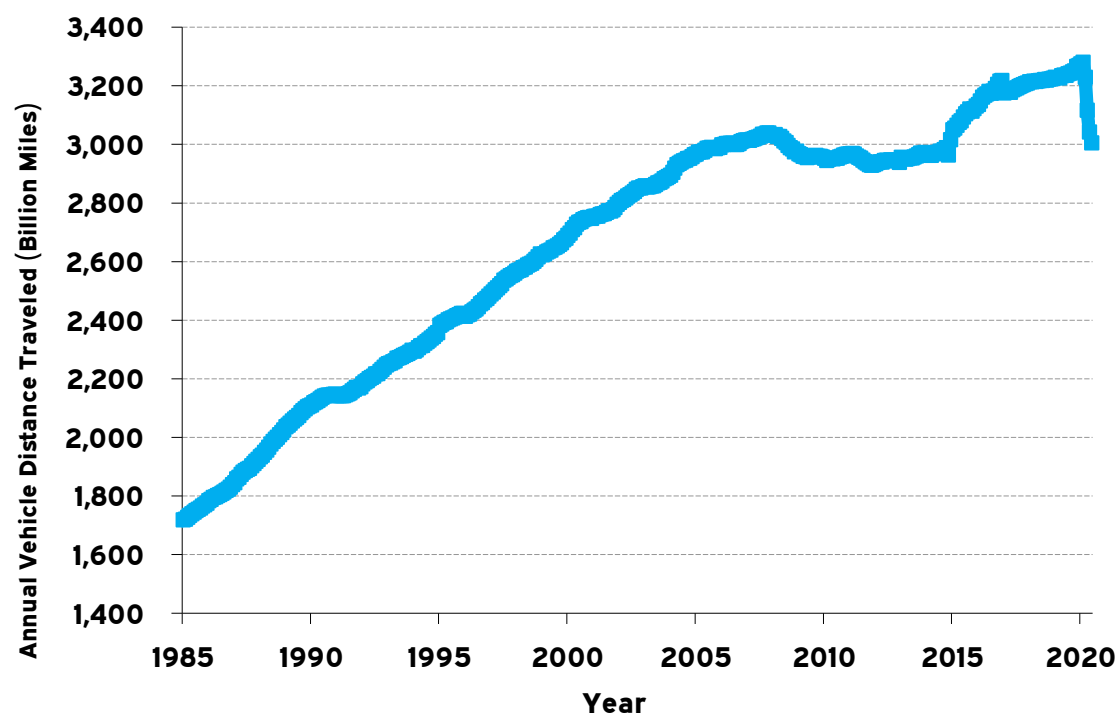
## Global Quarterly Unlisted Infrastructure Fundraising<sup>1</sup>



Capital raised in the second quarter of 2020 was the smallest second quarter fundraising since 2016. In the second quarter, the average fund raised was \$0.8 billion, less than the 2019 average of \$0.9 billion. As of June 30, 2020, a total of 246 unlisted infrastructure funds were in market, according to Preqin, with a combined fundraising target of approximately \$186 billion.

<sup>1</sup> Source: Preqin 2020 Global Infrastructure Report.

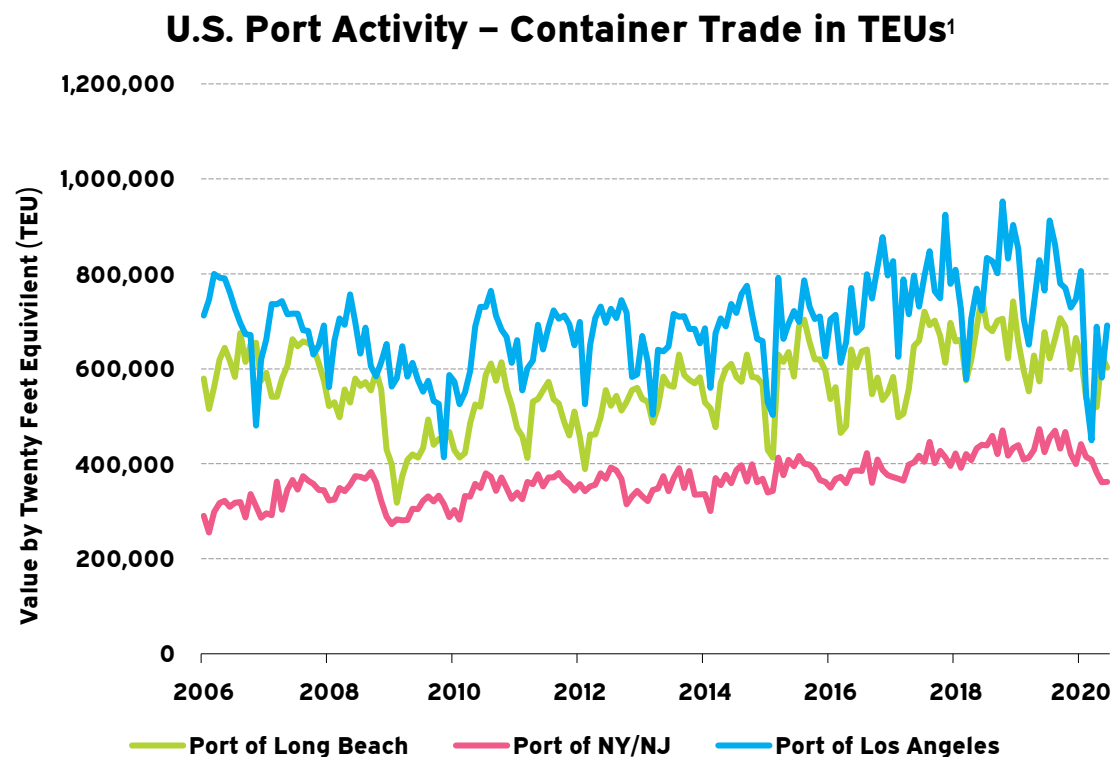
### Moving 12-month Total on All U.S. Roads<sup>1</sup>



Through June 2020, the second quarter was far below pace for travel on U.S. roads totaling approximately 627.4 billion miles. This represented a decrease of 25.8% over the same period in 2019.

Up to this point in 2020, the average U.S. price of a gallon of gas went down to a monthly average of \$2.26 per gallon, with a peak of \$2.64. This compared to \$2.69 and \$2.95 seen in 2019.

<sup>1</sup> Source: U.S. Department of Transportation, Federal Highway Administration: Office of Highway Policy Information.

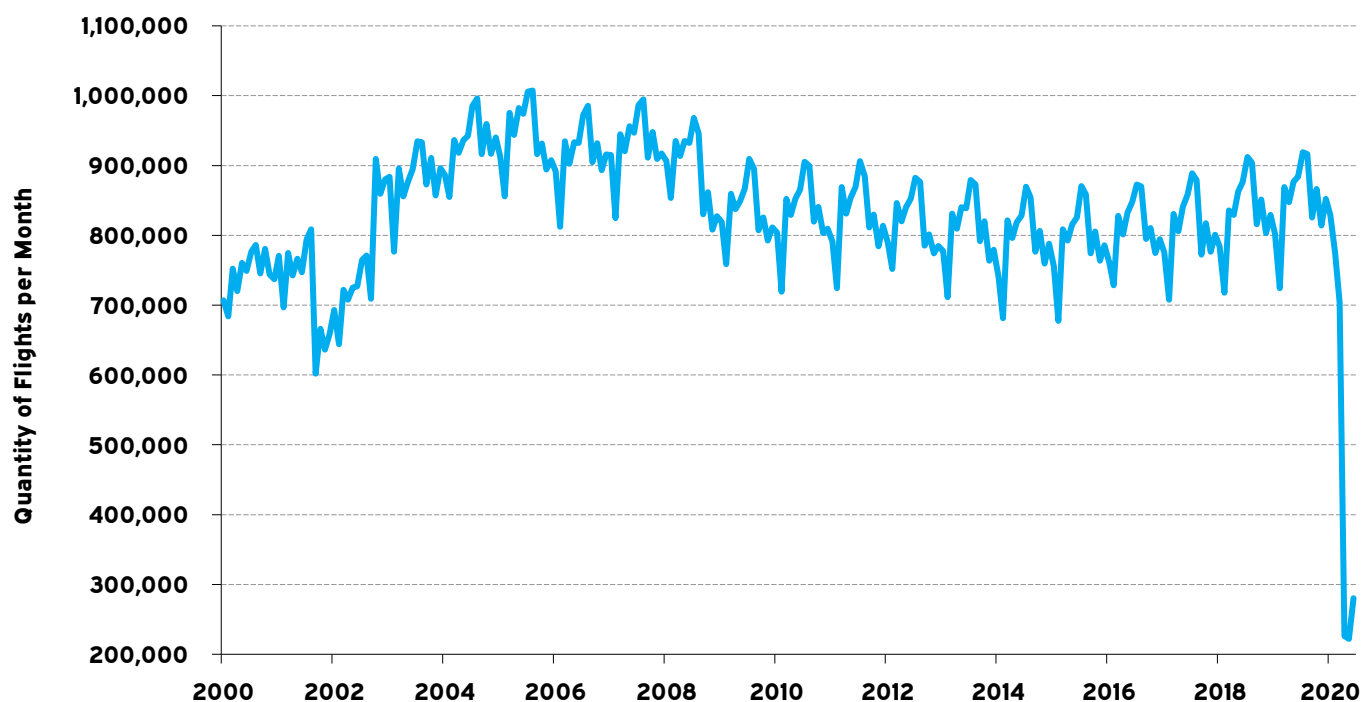


The chart represents the top three U.S. ports by container volume, as measured by twenty-foot equivalent units (TEU). Activity at the three ports provides a high-level representation of the volume of imports received into the U.S. more broadly.

During the second quarter of 2020, volumes at the three ports decreased by 718,390 units relative to the same period in 2019. On a year-over-year basis, the combined port volumes decreased by 1,785,996 TEU, or 7.85%, over the prior 12-month period. The Port of Long Beach recorded a decrease of 5.68% (444,295 TEU), the Port of NY/NJ reported an decrease of 4.1 % (214,335 TEU) and the Port of Los Angeles recorded a decrease of 11.64% (1,127,366 TEU) from the prior 12 months.

<sup>1</sup> Source: [www.polb.com](http://www.polb.com), [www.panynj.gov](http://www.panynj.gov), and [www.portoflosangeles.org](http://www.portoflosangeles.org)

### Total U.S. Domestic and International Flights<sup>1</sup>



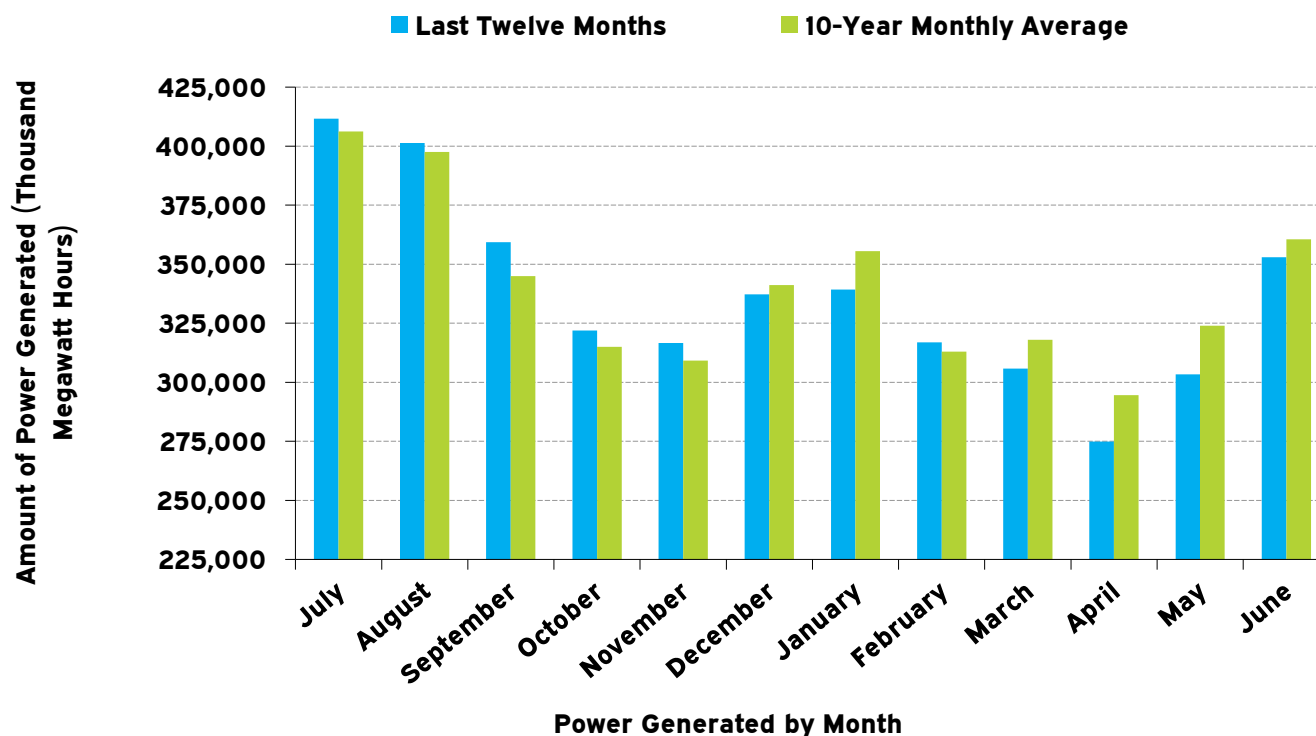
The chart above represents all U.S. domestic and international flights, excluding foreign point-to-point flights by month. Air traffic is cyclical with peaks in the summer months and declines in the winter months.

There were nearly 1.9 million less flights during the second quarter of 2020, representing a 72.1% decrease compared to the same period in 2019. Much of this loss was in April as air travel became unavailable and less recommended due to the pandemic. Air traffic activity decreased by 18.7% over the 12 months ending June 30, 2020 over the previous period. In addition to the number of flights during the second quarter decreasing year-over-year, the total number of passengers travelling on U.S. and international airlines decreased by 25.7% from 2019 to 2020 with the lowest international travelers since 2003.

<sup>1</sup> Source: Bureau of Transportation Statistics: Flights, All U.S., and Foreign Carriers.



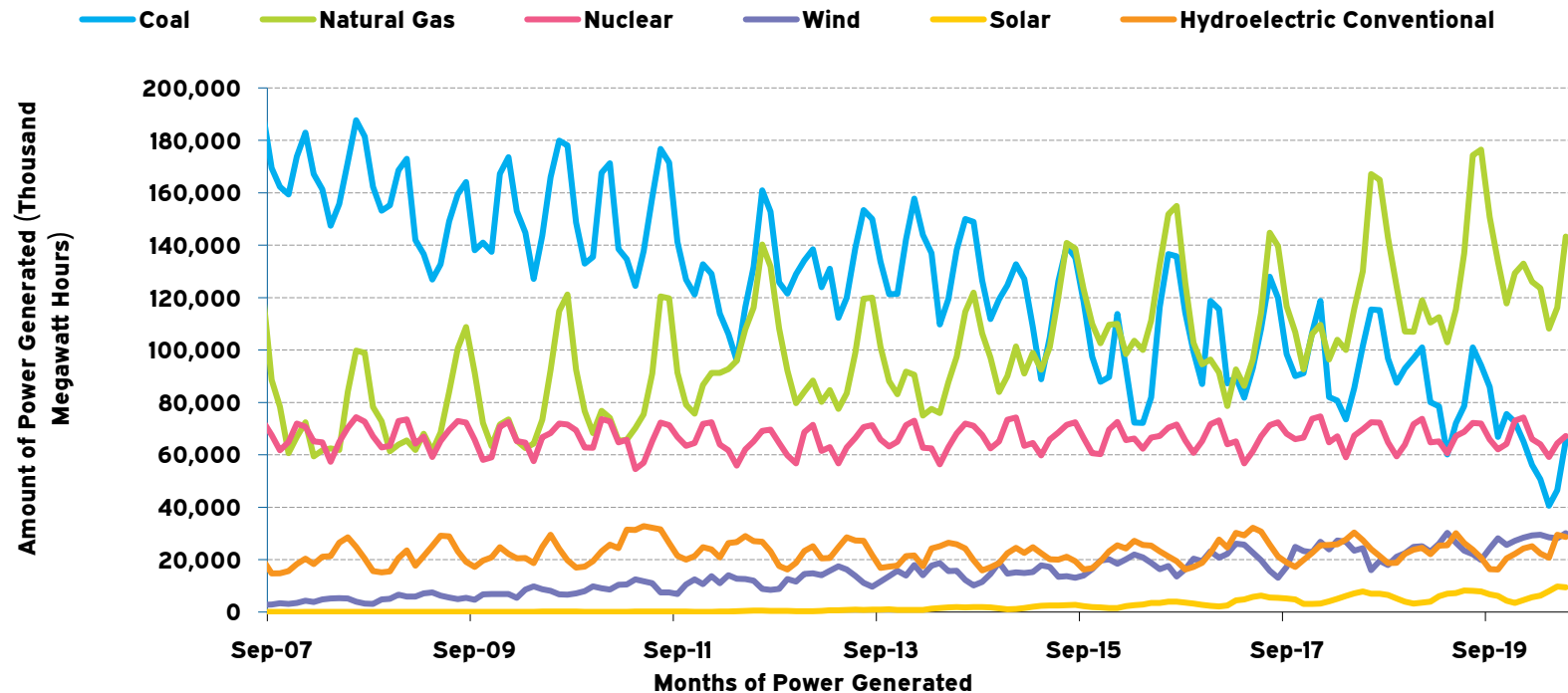
### Total U.S. Power Generation<sup>1</sup>



The graph above represents the total net generation for the past 12 months compared to the 10-year average for each month. Over the past year, power generation was below the 10-year average in 6 out of the 12 months, including the past four months. Net energy generation in the U.S. decreased by 4.5% during the second quarter, compared to the same period in 2019. For the 12 months ended June 30, 2020, net energy generation decreased by 2.2% over the previous 12 months.

<sup>1</sup> Source: U.S. Energy Information Administration: Electric Power Monthly, June 2020.

### U.S. Power Generation by Source<sup>1</sup>



Power generation sources in the U.S., natural gas, wind, and solar increased 3.5%, 8.5%, and 21.2%, respectively in the second quarter of 2020 (versus the same period in the previous year). Generation from coal, nuclear, and hydroelectric conventional dropped by 27.6%, 2.9%, and 3.6%, respectively, during the same period. Wind and utility scale solar continue to make up a small portion of total net energy generation in the U.S., accounting for only 9.3% and 2.9% of energy generation in the second quarter, while coal, natural gas, and nuclear accounted for 16.4%, 39.5%, and 20.5%, respectively. However, the growth of wind and solar as sources of energy generation continues to increase at a faster rate than coal and natural gas, especially over the last couple of years.

<sup>1</sup> Source: U.S. Energy Information Administration: Electric Power Monthly, June 2020.

Below are details on specific terminology and calculation methodologies used throughout this report:

<b>Committed</b>	The original commitment amount made to a given fund. Some funds may be denominated in non-USD currencies, and such commitment amounts represent the sum of fund contributions translated to USD at their daily conversion rates plus the unfunded balance translated at the rate as of the date of this report.
<b>Contributed</b>	The amount of capital called by a fund manager against the commitment amount. Contributions may be used for new or follow-on investments, fees, and expenses, as outlined in each fund's limited partnership agreement. Some capital distributions from funds may reduce contributed capital balances. Some funds may be denominated in non-USD currencies, and such aggregate contributions represent the sum of each fund contribution translated to USD at its daily conversion rate.
<b>Distributed</b>	The amount of capital returned from a fund manager for returns of invested capital, profits, interest, and other investment related income. Some distributions may be subject to re-investment, as outlined in each fund's limited partnership agreement. Some funds may be denominated in non-USD currencies, and such aggregate distributions represent the sum of each fund distribution translated to USD at its daily conversion rate.
<b>DPI</b>	Acronym for "Distributed-to-Paid-In", which is a performance measurement for Private Market investments. The performance calculation equals Distributed divided by Contributed. DPIs for funds and groupings of funds are net of all fund fees and expenses as reported to by fund managers to Meketa. Program-level DPIs are net of both fund fees and expenses and fees paid to Meketa attributable to the Program.
<b>Exposure</b>	Represents the sum of the investor's Unfunded and Remaining Value.
<b>IRR</b>	Acronym for "Internal Rate of Return", which is a performance measurement for Private Market investments. IRRs are calculated by Meketa based on daily cash flows and Remaining Values as of the date of this report. IRRs for funds and groupings of funds are net of all fund fees and expenses as reported by fund managers to Meketa. Program-level IRRs are net of both fund fees and expenses and fees paid to Meketa attributable to the Program.
<b>NCV</b>	Acronym for "Net Change in Value", which is a performance measurement for Private Market investments. The performance calculation equals the appreciation or depreciation over a time period neutralized for the impact of cash flows that occurred during the time period.

<b>NM</b>	<p>Acronym for “Not Meaningful”, which indicates that a performance calculation is based on data over too short a timeframe to yet be meaningful or not yet possible due to inadequate data. Meketa begins reporting IRR calculations for investments once they have reached more than two years since first capital call. NM is also used within this report in uncommon cases where the manager has reported a negative Remaining Value for an investment.</p>
<b>Peer Universe</b>	<p>The performance for a set of comparable private market funds. The peer returns used in this report are provided by Thomson ONE, based on data from Cambridge Associates as of the date of this report. Program-level peer universe performance represents the pooled return for a set of funds of corresponding vintages and strategies across all regions globally. Fund-level peer performance represents the median return for a set of funds of the same vintage and the program’s set of corresponding strategies across all regions globally. Data sets that include less than five funds display performance as “NM”. Meketa utilizes the following Thomson ONE strategies for peer universes:</p> <p>Infrastructure: Infrastructure</p> <p>Natural Resources: Private Equity Energy, Upstream Energy &amp; Royalties, and Timber</p> <p>Private Debt: Subordinated Capital, Credit Opportunities, Senior Debt, and Control-Oriented Distressed</p> <p>Private Equity (including Private Debt): Venture Capital, Growth Equity, Buyout, Subordinated Capital, Credit Opportunities, Senior Debt, and Control-Oriented Distressed</p> <p>Private Equity (excluding Private Debt): Venture Capital, Growth Equity, and Buyout</p> <p>Real Assets (excluding Real Estate): Infrastructure, Private Equity Energy, Upstream Energy &amp; Royalties, and Timber</p> <p>Real Assets (including Real Estate): Infrastructure, Private Equity Energy, Upstream Energy &amp; Royalties, Timber, and Real Estate</p> <p>Real Estate: Real Estate</p>
<b>Public Market Equivalent (“PME”)</b>	<p>A calculation methodology that seeks to compare the performance of a portfolio of private market investments with public market indices. The figures presented in this report are based on the PME+ framework, which represents a net IRR value based on the actual timing and size of the private market program’s daily cash flows and the daily appreciation or depreciation of an equivalent public market index. Meketa utilizes the following indices for private market program PME+ calculations:</p> <p>Infrastructure: Dow Jones Brookfield Global Infrastructure Index</p> <p>Natural Resources: S&amp;P Global Natural Resources Index</p> <p>Private Debt: Barclays Capital U.S. Corporate High Yield Bond Index</p>

	<p>Private Equity: MSCI ACWI Investable Market Index</p> <p>Real Assets (excluding Real Estate): Equal blend of Dow Jones Brookfield Global Infrastructure Index and S&amp;P Global Natural Resources Index</p> <p>Real Assets (including Real Estate): Equal blend of Dow Jones Brookfield Global Infrastructure Index, S&amp;P Global Natural Resources Index, and Dow Jones U.S. Select Real Estate Securities Index</p> <p>Real Estate: Dow Jones U.S. Select Real Estate Securities Index</p>
<b>Remaining Value</b>	The investor's value as reported by a fund manager on the investor's capital account statement. All investor values in this report are as of the date of this report, unless otherwise noted. Some funds may be denominated in non-USD currencies, and such remaining values represent the fund's local currency value translated to USD at the rate as of the date of this report.
<b>TVPI</b>	Acronym for "Total Value-to-Paid-In", which is a performance measurement for Private Market investments. The performance calculations represents Distributed plus Remaining Value, then divided by Contributed. TVPIs for funds and groupings of funds are net of all fund fees and expenses as reported to by fund managers to Meketa. Program-level TVPIs are net of both fund fees and expenses and fees paid to Meketa attributable to the Program.
<b>Unfunded</b>	The remaining balance of capital that a fund manager has yet to call against a commitment amount. Meketa updates unfunded balances for funds to reflect all information provided by fund managers provided in their cash flow notices. Some funds may be denominated in non-USD currencies, and such unfunded balances represent the fund's local currency unfunded balance translated to USD at the rate as of the date of this report.

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In general, the valuation numbers presented in this report are prepared by the custodian bank for listed securities, and by the fund manager or appropriate General Partner in the case of unlisted securities. The data used in the market comparison sections of this report are sourced from various databases. These data are continuously updated and are subject to change.

This report does not contain all the information necessary to fully evaluate the potential risks of any of the investments described herein. Because of inherent uncertainties involved in the valuations of investments that are not publicly traded, any estimated fair values shown in this report may differ significantly from the values that would have been used had a ready market for the underlying securities existed, and the differences could be material.

This document may contain certain forward-looking statements, forecasts, estimates, projections, and opinions ("Forward Statements"). No representation is made or will be made that any Forward Statements will be achieved or will prove to be correct. A number of factors, in addition to any risk factors stated in this material, could cause actual future results to vary materially from the Forward Statements. No representation is given that the assumptions disclosed in this document upon which Forward Statements may be based are reasonable. There can be no assurance that the investment strategy or objective of any fund or investment will be achieved, or that the client will receive a return of the amount invested.

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Because there is no readily accessible market for private markets assets (companies and partnerships), the values placed on private markets assets are calculated by General Partners using conservative and industry standard pricing procedures. Annually, an independent auditor reviews the pricing procedures employed by the General Partner of each partnership.

The values of companies and partnerships are audited at year-end, and are not audited at other quarter-end periods. While financial information may be audited, there is some discretion as to the method employed to price private companies and, therefore, private markets partnerships. At all times, Meketa Investment Group expects General Partners to utilize conservative and industry standard pricing procedures, and requires the General Partners to disclose those procedures in their reports. However, because of the inherent uncertainty of valuation, these estimated values may differ from the values that would be used if a ready market for the investments existed, and the differences could be significant.



Quarterly Report

Connecticut Retirement Plans and Trust Funds

June 30, 2020



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An investment involves a number of risks and there are conflicts of interest.

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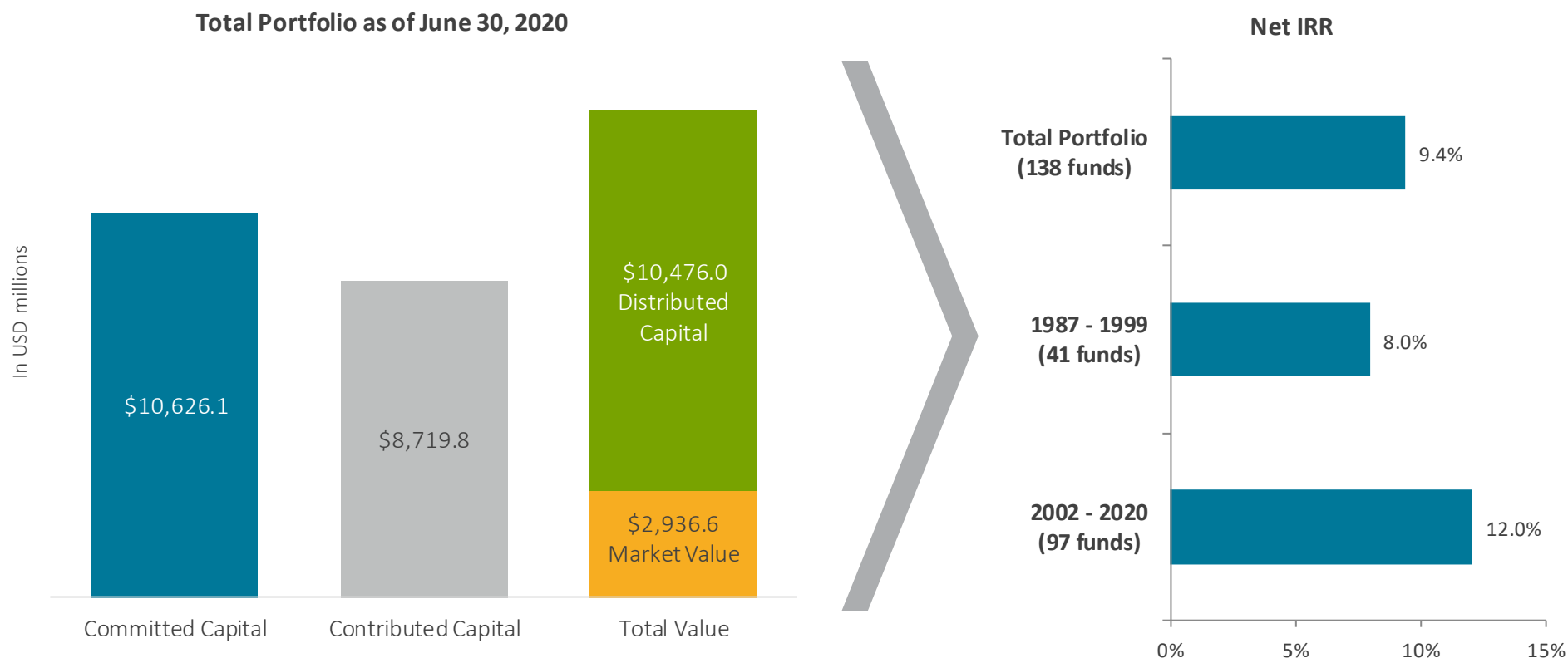
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# I. Quarterly Update

- The State of Connecticut Retirement Plans & Trust Funds (“CRPTF”) established the Private Investment Fund (“PIF”) with the objective to outperform the public equity market over the long term.
- StepStone Group LP (“StepStone”) was engaged by CRPTF October 2015 to provide private equity advisory services for prospective investment opportunities and monitoring and reporting services for existing and new investments.
- This report has been prepared by StepStone and reviews the performance of the PIF and discusses significant market developments and trends.
- The performance presented in this report is based on cash flows, valuations, and activity data reported by PIF’s fund managers as well as historical data transitioned by StepStone from PIF’s prior advisor.
- There is a reporting time lag in private equity due to the time necessary to collect and corroborate the performance data. Similar to other investors, PIF’s fund managers typically deliver their financial reports between 60 and 90 days after quarter end. As a result, the performance data provided herein is as of June 30, 2020. All quarter-end references are on a calendar year basis.
- PIF began building its private equity portfolio in 1987 and has an 10% long term target allocation to private equity. In order to implement its investment strategy, PIF commits capital to various limited partnership funds managed by fund managers.
- Funds are typically structured with 4 to 6 year investment periods and 10 to 12 year lives. Early in their life cycle, funds typically exhibit negative cash flow and negative or low returns as capital called from investors to fund new underlying investments and fees to managers exceed the cash distributed from the underlying investments in the form of income, appreciation, or return of capital. Accordingly, while this report includes short-term performance results, the reader is encouraged to focus on long-term performance results.
- The returns within this report are calculated using the internal rate of return (“IRR”) method. The IRR calculation is industry standard for measuring performance of private equity funds and recommended by the CFA Institute. The IRR calculation is a dollar-weighted return measurement, which considers both cash flow timing and amount.

# Portfolio Summary

- Since inception through June 30, 2020, the PIF program committed \$10.6 billion to 138 funds, made \$8.7 billion of contributions, received \$10.5 billion of distributions, and has a market value of \$2.9 billion, which represents approximately 8.2% of total CRPTF.
- Since inception through June 30, 2020, PIF's total portfolio generated a net IRR of 9.4% and a net TVPI of 1.5x invested capital.
- PIF's fund investments made prior to 2002 generated a lower net IRR of 8.0% and reduced the aggregate return.
- An investment moratorium was enacted between 1999 and 2002.
- PIF's fund investments with vintages 2002 through 2020 performed better, generating a net IRR of 12.0% and a net TVPI of 1.6x invested capital.



The returns presented herein are calculated using the internal rate of return methodology and are net of underlying fund manager fees and expenses, but before any fees paid to StepStone.

Results include data from all CRPTF portfolios.

Contributed Capital includes funding both inside and outside of the commitment.

Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.

# Quarterly Snapshot

	<u>Returns - 2Q 2020</u>	
	Quarter Ended	12 Months Ended
PIF Net IRR	9.5%	10.5%
Russell 3000 + 250 bps <sup>1</sup>	22.6%	9.0%

*In USD millions.*

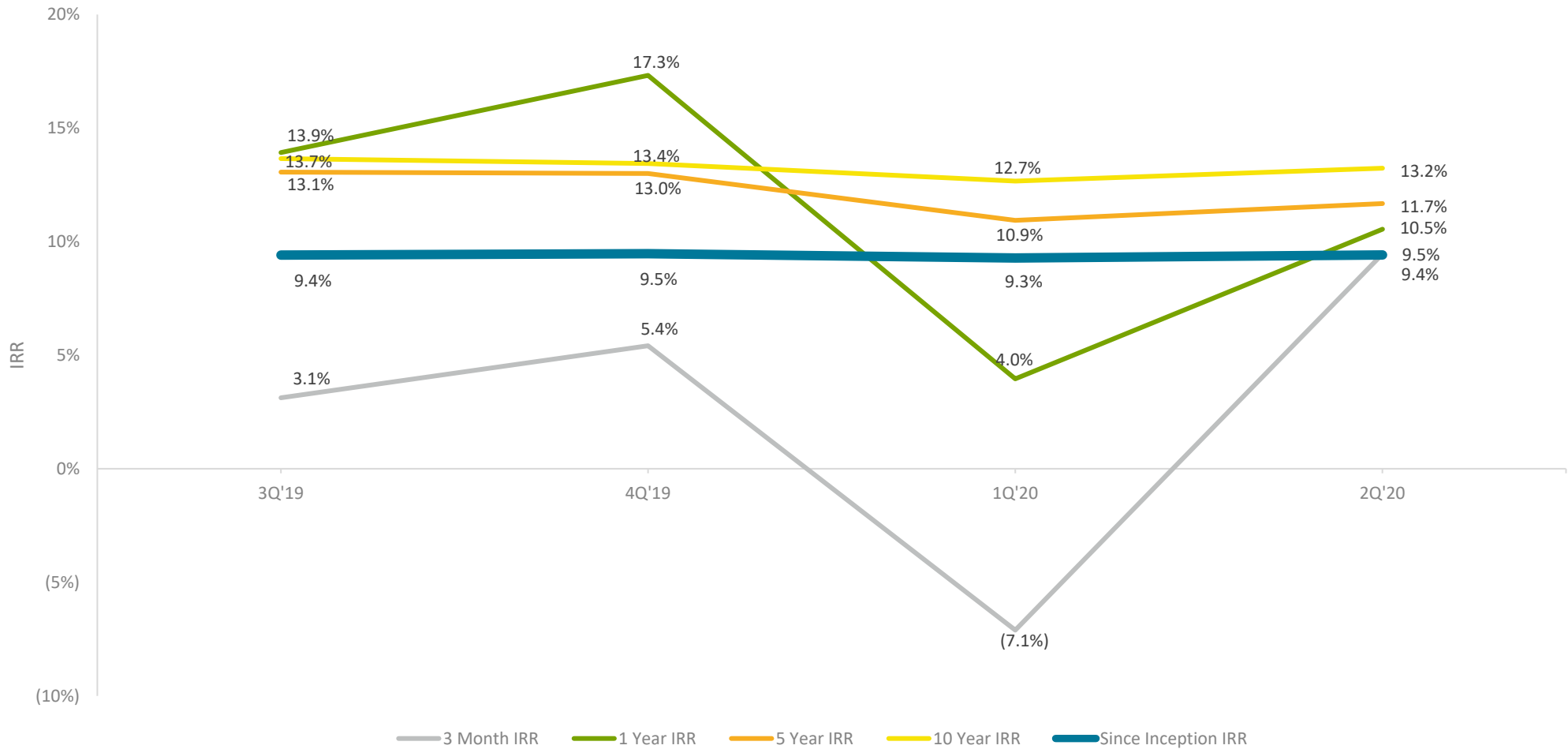
	<u>Cash Flow - 2Q 2020</u>	
	Quarter Ended	12 Months Ended
Contributions	\$114.9	\$468.9
Distributions	64.2	428.4
Net Cash Flow	<b>(\$50.7)</b>	<b>(\$40.5)</b>

	<u>Portfolio Construction - 2Q 2020</u>	
	# Managers	# Funds
Active - Beginning of Quarter	46	87
Commitments Closed	2	5
Liquidations	0	0
<b>Active - End of Quarter</b>	<b>48</b>	<b>92</b>

<sup>1</sup>The Benchmark is defined as The Russell 3000 index + 250 bps. Benchmark returns less than 1 year are annualized. Benchmark was changed from the S&P500 + 500 bps, effective May 31, 2019.

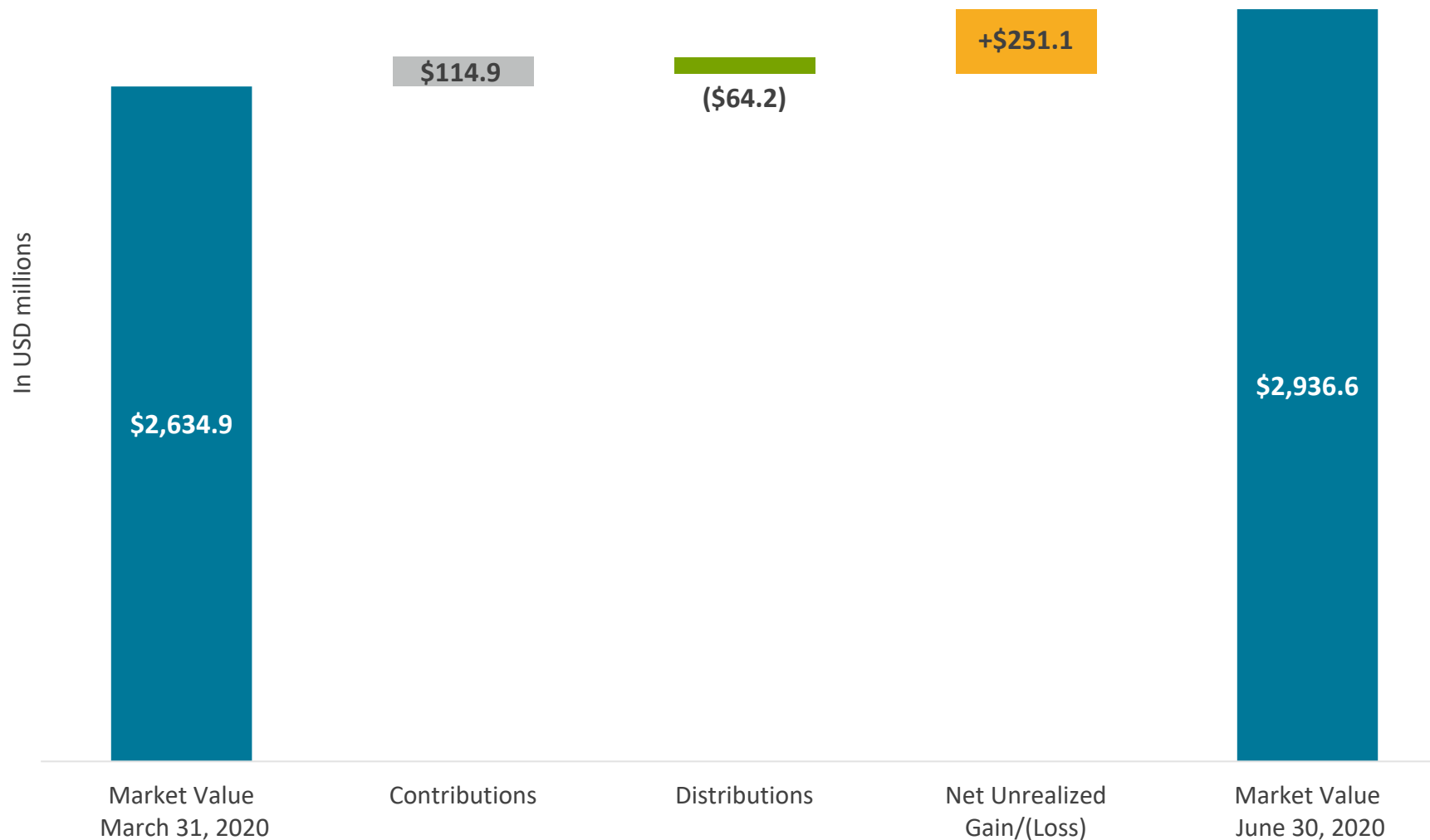
Past performance is not necessarily indicative of future results and there can be no assurance that the fund will achieve comparable results or avoid substantial losses.

## PIF Total Portfolio Periodized Returns for Trailing Four Quarters



# Capital Account Change

## Quarterly Portfolio Activity



# Fiscal Year 2020 Commitments



In USD millions.

## Closed Through 4Q FY 2020

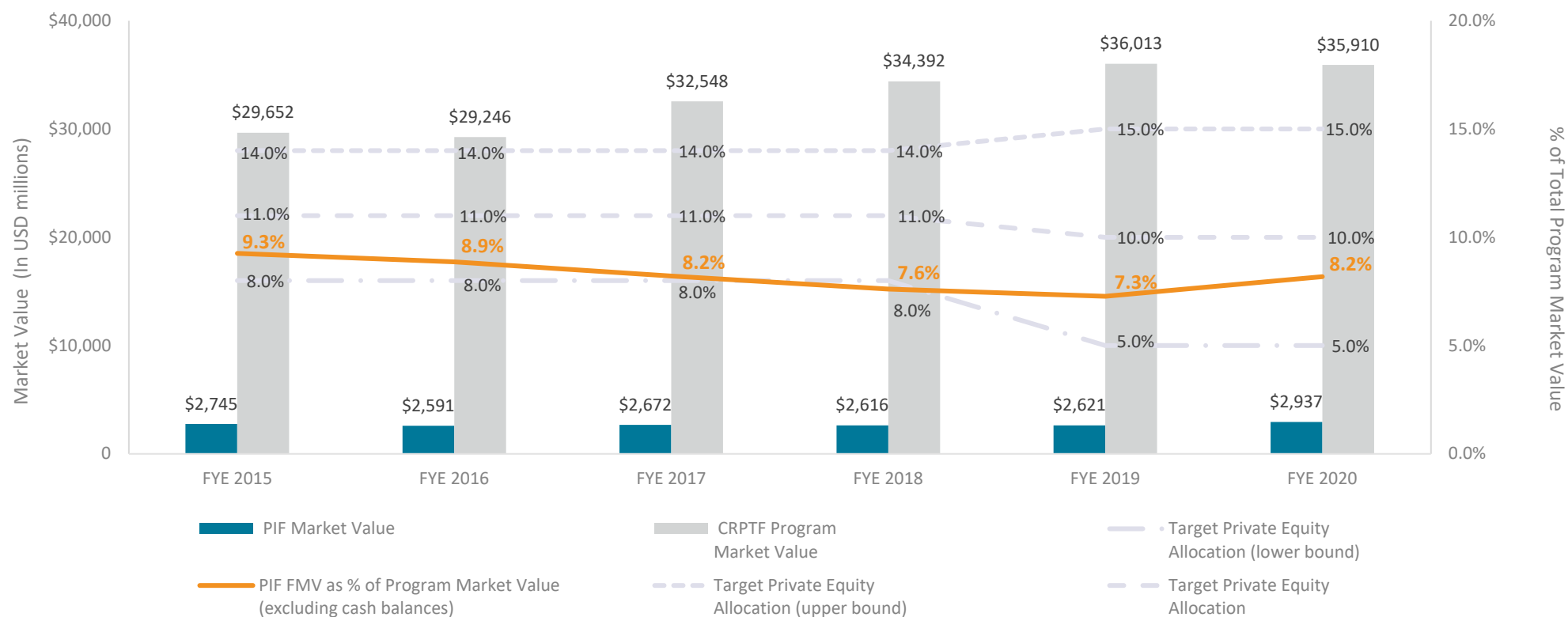
Investment	Fiscal Quarter Closed	Vintage Year	Sub-Strategy	Geographic Focus	Committed Capital
Vistria Fund III, L.P.	Q1FY'20	2020	Small Buyout	North America	\$75.0
Dover Street X, L.P.	Q2FY'20	2020	Secondaries	Global	100.0
Georgian Partners Growth Fund V, L.P.	Q2FY'20	2020	Growth Equity	North America	75.0
Hollyport Secondary Opportunities VII, L.P.	Q2FY'20	2020	Secondaries	Global	75.0
JFL Equity Investors V, L.P.	Q2FY'20	2019	Middle-Market Buyout	North America	100.0
Secondary Overflow Fund IV, L.P.	Q2FY'20	2019	Secondaries	Global	50.0
Clearlake Capital Partners VI, L.P.	Q3FY'20	2020	Distressed/Restructuring	North America	75.0
Hg Genesis 9, L.P.	Q4FY'20	2020	Middle-Market Buyout	Europe	73.5
Hg Saturn 2	Q4FY'20	2020	Large Buyout	Europe	100.0
Stellex Capital Partners II LP	Q4FY'20	2020	Distressed/Restructuring	North America	100.0
Altaris Health Partners V, L.P.	Q4FY'20	2020	Small Buyout	North America	100.0
Leeds Equity Partners VII, L.P.	Q4FY'20	2020	Small Buyout	North America	75.0
<b>Total</b>					<b>\$998.5</b>
<b>Fiscal Year 2020 Strategic Plan Commitment Pacing Target:</b>					<b>\$950.0</b>

Closed commitments in a foreign currency are converted into US Dollars using exchange rate as of the report date.



# PIF Market Value vs. Asset Allocation Policy

CRPTF Private Equity Market Value as % of Program Market Value



# Connecticut Horizon Fund & In-State Program



## Horizon Fund

- Through June 30, 2020, the PIF had committed \$240.0 million to CHF designated private equity mandates since inception.
- Since inception through June 30, 2020, the PIF's CHF designated investments generated a Net IRR of 7.2%.

As of June 30, 2020. In USD millions.

	Vintage Year	Commitment Up To	Contributed Capital	Unfunded Commitment	Distributed Capital	Exposure	Market Value	TVPI	Net IRR
CT Horizon Legacy Fund, L.P.	2008	\$15.0	\$13.8	\$2.6	\$8.4	\$4.3	\$1.7	0.7x	(5.6%)
M2 - Connecticut Emerging Private Equity Fund of Funds, L.P.	2008	105.0	113.3	6.4	94.8	73.1	66.6	1.4x	8.0%
Nutmeg Opportunities Fund L.P. CT-EM	2010	35.0	18.1	6.8	5.2	31.7	25.0	1.7x	8.5%
Nutmeg Opportunities Fund II, LLC - EM	2017	35.0	21.9	14.6	-	44.6	30.0	1.4x	16.8%
Freeman CT Horizon Investment Fund, LLC	2019	50.0	8.8	42.0	0.1	51.0	9.0	NM	NM
<b>Total</b>		<b>\$240.0</b>	<b>\$175.9</b>	<b>\$72.4</b>	<b>\$108.5</b>	<b>\$204.7</b>	<b>\$132.3</b>	<b>1.4x</b>	<b>7.2%</b>

## In-State Program

- Through June 30, 2020, the PIF had committed \$145.0 million to In-State designated private equity mandates.
- Since inception through June 30, 2020, the PIF's In-State investments generated a Net IRR of 11.0%.

As of June 30, 2020. In USD millions.

	Vintage Year	Commitment Up To	Contributed Capital	Unfunded Commitment	Distributed Capital	Exposure	Market Value	TVPI	Net IRR
Connecticut Growth Capital, LLC	2016	\$50.0	\$34.1	\$18.5	\$22.1	\$41.5	\$23.0	1.3x	14.9%
Constitution Fund V, LLC - Series B	2017	20.0	15.7	4.6	3.5	17.2	12.6	1.0x	1.5%
Nutmeg Opportunities Fund II, LLC – CT-Direct Investment	2017	50.0	-	50.0	-	50.0	-	NM	NM
Constitution Fund V, LLC - Series D	2019	25.0	6.7	18.3	-	24.9	6.5	NM	NM
<b>Total</b>		<b>\$145.0</b>	<b>\$56.4</b>	<b>\$91.4</b>	<b>\$25.6</b>	<b>\$133.5</b>	<b>\$42.1</b>	<b>1.2x</b>	<b>11.0%</b>

Note: in August 2018, the commitment for Connecticut Growth Capital, LLC was reduced by US\$25.0 million resulting in an updated commitment of US\$50.0 million.

An IRR is not meaningful in the early years of a partnership's life given the J-curve effect. The J-curve refers to the shape of the curve that illustrates a fund's performance over time. During the initial years of a fund's life, due to illiquidity, stagnant valuations, fees and expenses, a fund's performance tends to be negative (the bottom of the "J"). Eventually, as portfolio companies are realized or increase in value and fees become a smaller percentage of overall contributions, fund performance improves and investors' returns move up the "J" shaped curve. Performance for investments held less than two years is not considered meaningful. TVPI and Net IRR will be displayed two years following the first capital call. TVPI is the ratio of Distributed Capital plus Market Value to Contributed Capital. Net IRR is defined as the annualized, compound rate of return using daily draws, distributions and Market Value as of the Report Date, net of fees and expenses, including late closing interest.

IRR and TVPI for certain vehicles may have been impacted by Stepstone's or the underlying GPs' use of subscription-backed credit facilities by such vehicles. Reinvested/recycled amounts increase contributed capital.

Market Value is defined as the investor's value as reported by the fund's manager.

Exposure is defined as the sum of an investor's Market Value plus Unfunded Commitment.

Data compiled from cash flow notices and quarterly financial statements provided by fund managers.

Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.

## II. Portfolio Review

# Portfolio Summary



As of June 30, 2020. In USD millions.

Group	Number of Funds	Committed Capital	Contributed Capital	Unfunded Commitment	Distributed Capital	Market Value	Exposure	DPI	TVPI	Net IRR
<b>By Vehicle</b>										
Fund of Funds	20	\$2,350.2	\$2,034.2	\$299.7	\$2,983.6	\$854.3	\$1,154.1	1.5x	1.9x	17.9%
Primary	110	7,570.9	6,268.3	1,687.1	7,094.9	1,955.2	3,642.3	1.1x	1.4x	7.0%
Secondary Fund of Funds	8	705.0	417.4	295.8	397.4	127.1	423.0	1.0x	1.3x	5.8%
<b>Total</b>	<b>138</b>	<b>\$10,626.1</b>	<b>\$8,719.8</b>	<b>\$2,282.7</b>	<b>\$10,476.0</b>	<b>\$2,936.6</b>	<b>\$5,219.3</b>	<b>1.2x</b>	<b>1.5x</b>	<b>9.4%</b>
<b>By Strategy</b>										
Buyout	71	\$5,140.6	\$4,161.3	\$1,190.6	\$5,229.2	\$1,441.0	\$2,631.6	1.3x	1.6x	9.4%
Fund of Funds	8	455.0	274.1	186.6	170.7	223.9	410.4	0.6x	1.4x	9.3%
Growth Equity	2	125.0	40.1	85.2	0.0	47.6	132.8	0.0x	1.2x	NM
Multi-Strategy	5	390.2	409.1	29.2	500.2	9.2	38.4	1.2x	1.2x	3.9%
Special Situations	32	2,379.3	1,917.5	650.9	1,928.4	568.5	1,219.4	1.0x	1.3x	6.2%
Venture Capital	20	2,136.0	1,917.7	140.3	2,647.3	646.5	786.7	1.4x	1.7x	12.2%
<b>Total</b>	<b>138</b>	<b>\$10,626.1</b>	<b>\$8,719.8</b>	<b>\$2,282.7</b>	<b>\$10,476.0</b>	<b>\$2,936.6</b>	<b>\$5,219.3</b>	<b>1.2x</b>	<b>1.5x</b>	<b>9.4%</b>
<b>By Age</b>										
Pre-2011 Vintages	80	\$6,489.5	\$6,437.4	\$153.0	\$9,324.7	\$796.2	\$949.2	1.4x	1.6x	9.0%
Vintages 2011-2020	58	4,136.6	2,282.4	2,129.7	1,151.3	2,140.4	4,270.1	0.5x	1.4x	15.5%
<b>Total</b>	<b>138</b>	<b>\$10,626.1</b>	<b>\$8,719.8</b>	<b>\$2,282.7</b>	<b>\$10,476.0</b>	<b>\$2,936.6</b>	<b>\$5,219.3</b>	<b>1.2x</b>	<b>1.5x</b>	<b>9.4%</b>

Market Value is defined as the investor's value as reported by the fund's manager.

Exposure is defined as the sum of an investor's Market Value plus Unfunded Commitment.

DPI is the ratio of Distributed Capital to Contributed Capital.

TVPI is the ratio of Distributed Capital plus Market Value to Contributed Capital.

Net IRR is defined as the annualized, compound rate of return using daily draws, distributions and Market Value as of the Report Date, net of fees and expenses, including late closing interest.

Results include fully liquidated investments (if applicable).

Commitments made in a foreign currency have been converted into US Dollars using an exchange rate as of the Report Date.

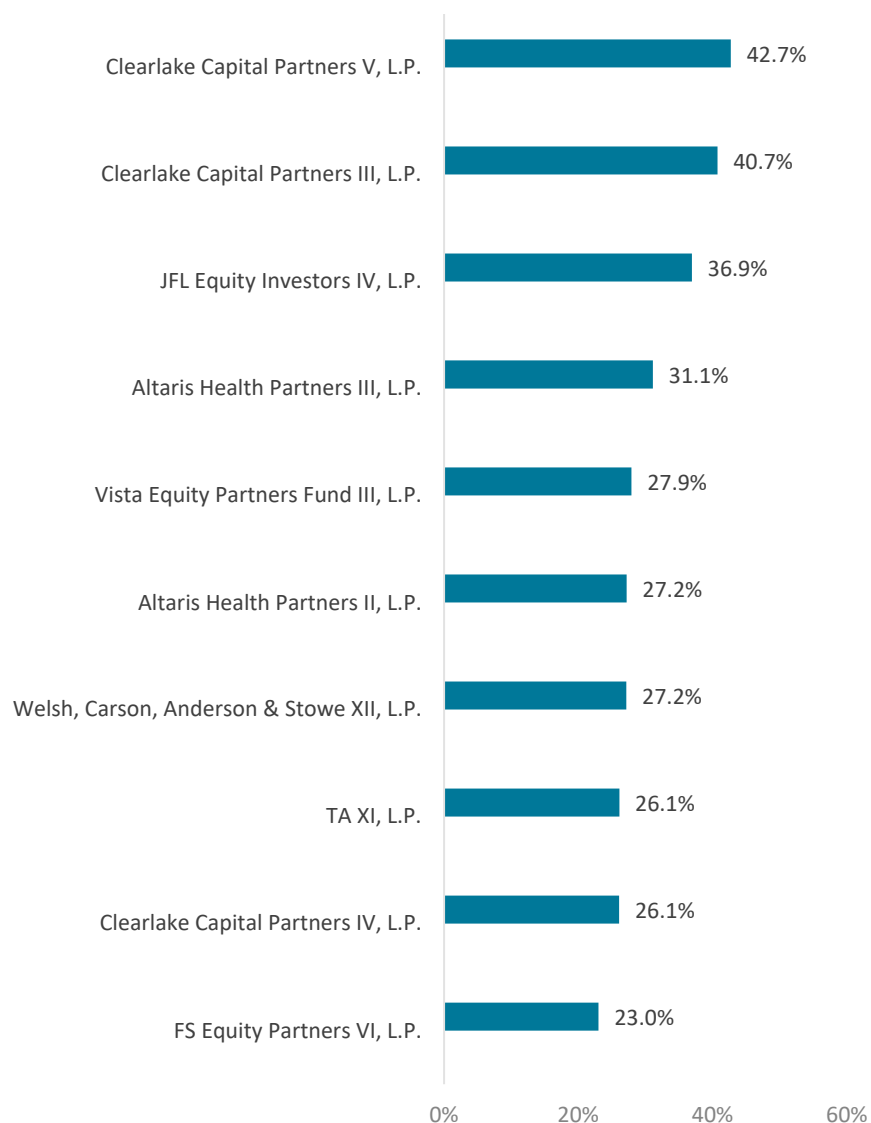
Returns calculated for funds in the early years of their lives are not particularly meaningful given the J-curve effect. During these early years, due to illiquidity, stagnant valuations, fees and expenses, fund performance tends to be negative (the bottom of the "J").

Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.

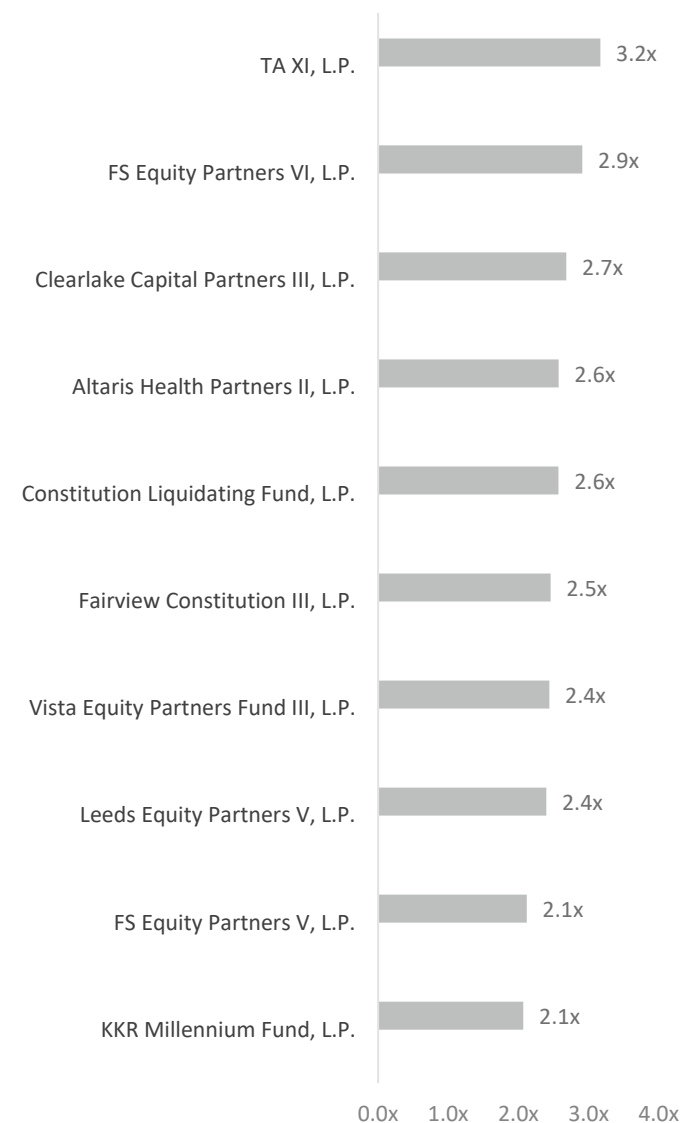
# Top Performing Investments

The following charts depict the top ten performing active investments in the Portfolio by IRR and TVPI through June 30, 2020.

Top 10 Active Performers by IRR



Top 10 Active Performers by TVPI

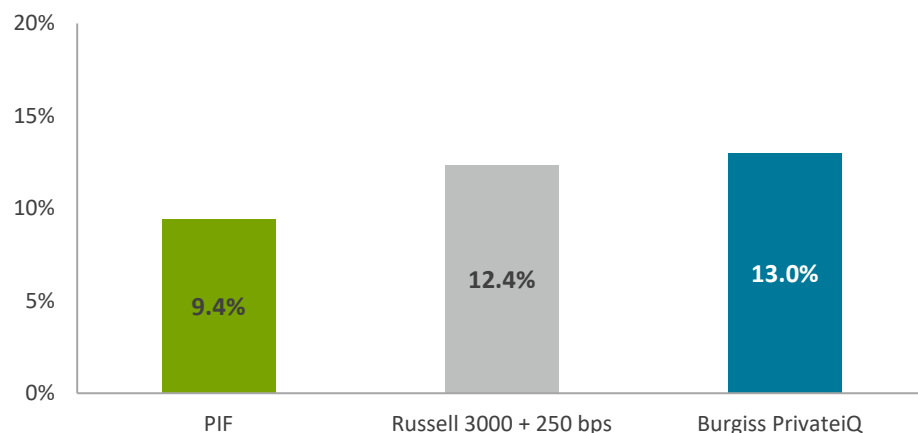


# Performance versus Benchmarks: Total PIF Program

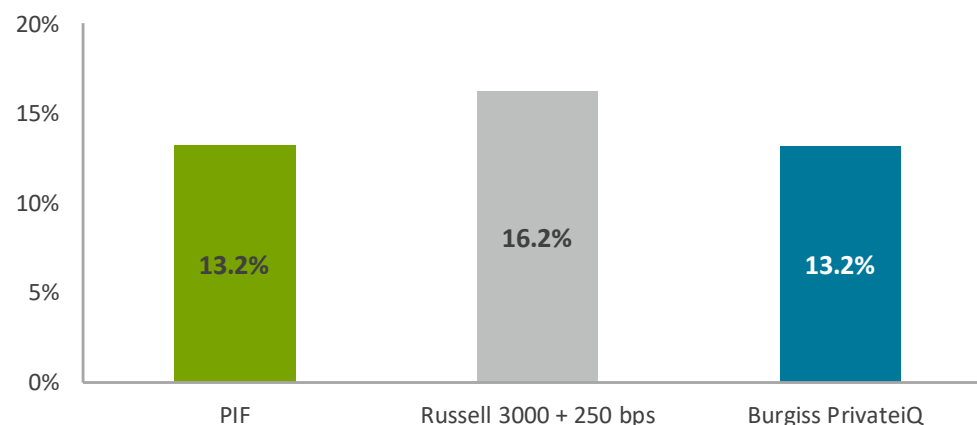


- Since inception to June 30, 2020, the total PIF program (including the Connecticut Horizon Fund and In-State Programs) generated a Net IRR of 9.4%. Over this time period, compared to the current Russell 3000 + 250 bps benchmark, the total PIF program underperformed by 294 basis points.
- For the 10 years ending June 30, 2020, the total PIF program generated a Net IRR of 13.2%. Over this time period, compared to the current Russell 3000 + 250 bps benchmark, the total PIF program underperformed by 299 basis points.

Since Inception Net IRR vs. Benchmarks  
as of June 30, 2020



10-Year Net IRR vs. Benchmarks  
as of June 30, 2020



Returns are calculated using the internal rate of return methodology and are after the deduction of underlying fund manager fees and expenses.

The Benchmark is defined as The Russell 3000 index + 250 bps. Benchmark was changed from the S&P500 (10-year annualized return) + 500 bps, effective May 31, 2019.

Since Inception Burgiss PrivateIQ Benchmark: All Private Equity, Pooled IRR, for Vintages 1987-2000, as of June 30, 2020. This benchmark data is continuously updated and therefore subject to change.

10-Year Burgiss PrivateIQ Benchmark: All Private Equity, Pooled IRR, for Vintages 1987-2000, as of June 30, 2020. This benchmark data is continuously updated and therefore subject to change.

Comparisons between private equity and public equity returns need to be viewed with caution as private equity is an illiquid asset class, whereas publicly listed securities are marked-to-market daily. Despite quarterly mark-to-market of private holdings, valuations are believed to be incorporated at a slower pace than the public markets.

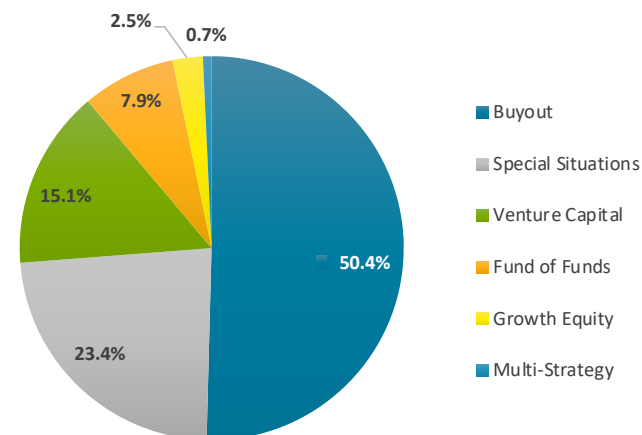
The referenced indices are shown for general market comparisons and are not meant to represent any particular fund. An investor cannot directly invest in an index. Moreover, indices do not reflect commissions or fees that may be charged to an investment product based on the index, which may materially affect the performance data presented.

**Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.**

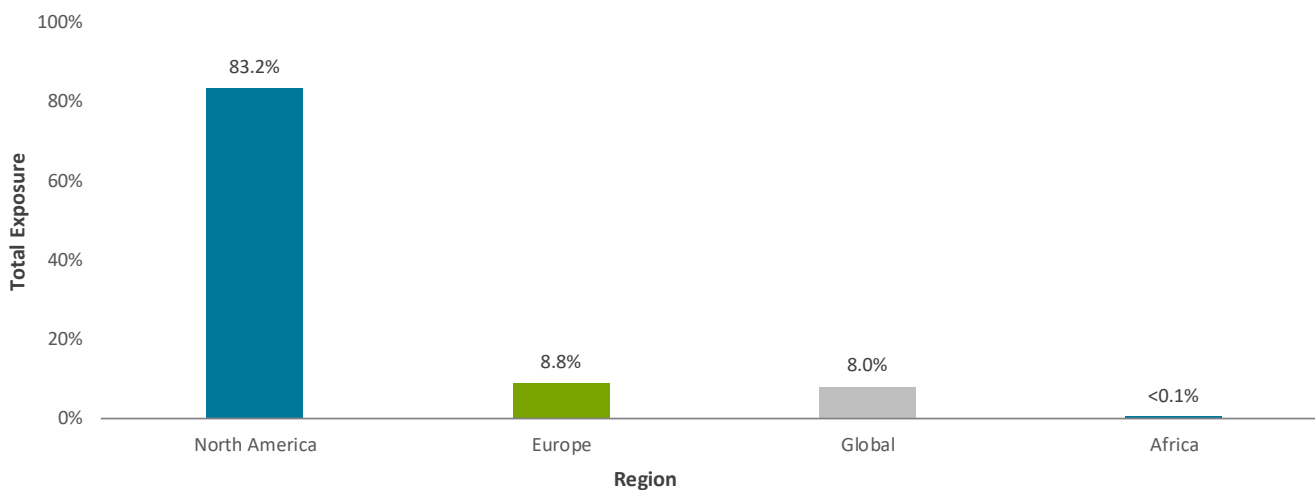
# Portfolio Diversification

- As of June 30, 2020, the Portfolio is primarily concentrated in funds employing Buyout strategies, which represent 50.4% of total exposure as of quarter-end. In terms of geographic focus, the Portfolio is primarily concentrated in Funds targeting investments in North America, which accounted for 83.2% of total exposure as of quarter-end.
- Approximately 36.2% of total exposure is attributable to Funds with commitments made more than five years ago while approximately 39.2% of total exposure is attributable to commitments made less than three years ago.

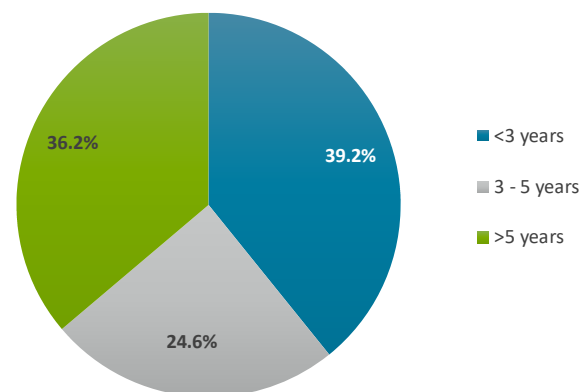
Portfolio Diversification by Strategy



Portfolio Diversification by Region



Portfolio Diversification by Age

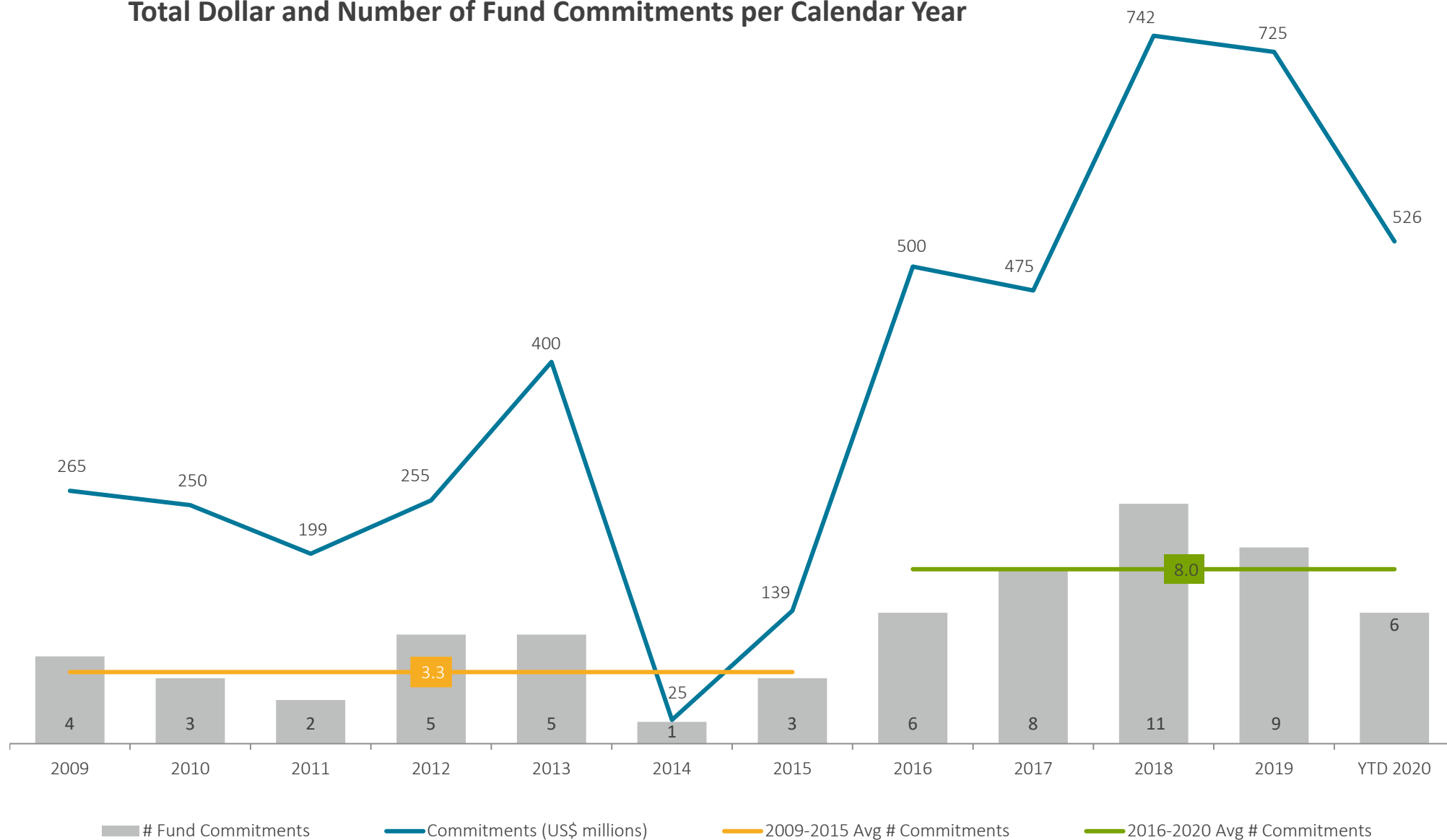


Global funds are those that target a geographically diverse set of investments and therefore do not confine to one geographic region.

As of June 30, 2020, the Portfolio is also invested in funds with exposure to investments located in Asia. Altogether, these investments account for less than 0.1% of aggregate Portfolio exposure.

# Calendar Year Commitments

## Total Dollar and Number of Fund Commitments per Calendar Year

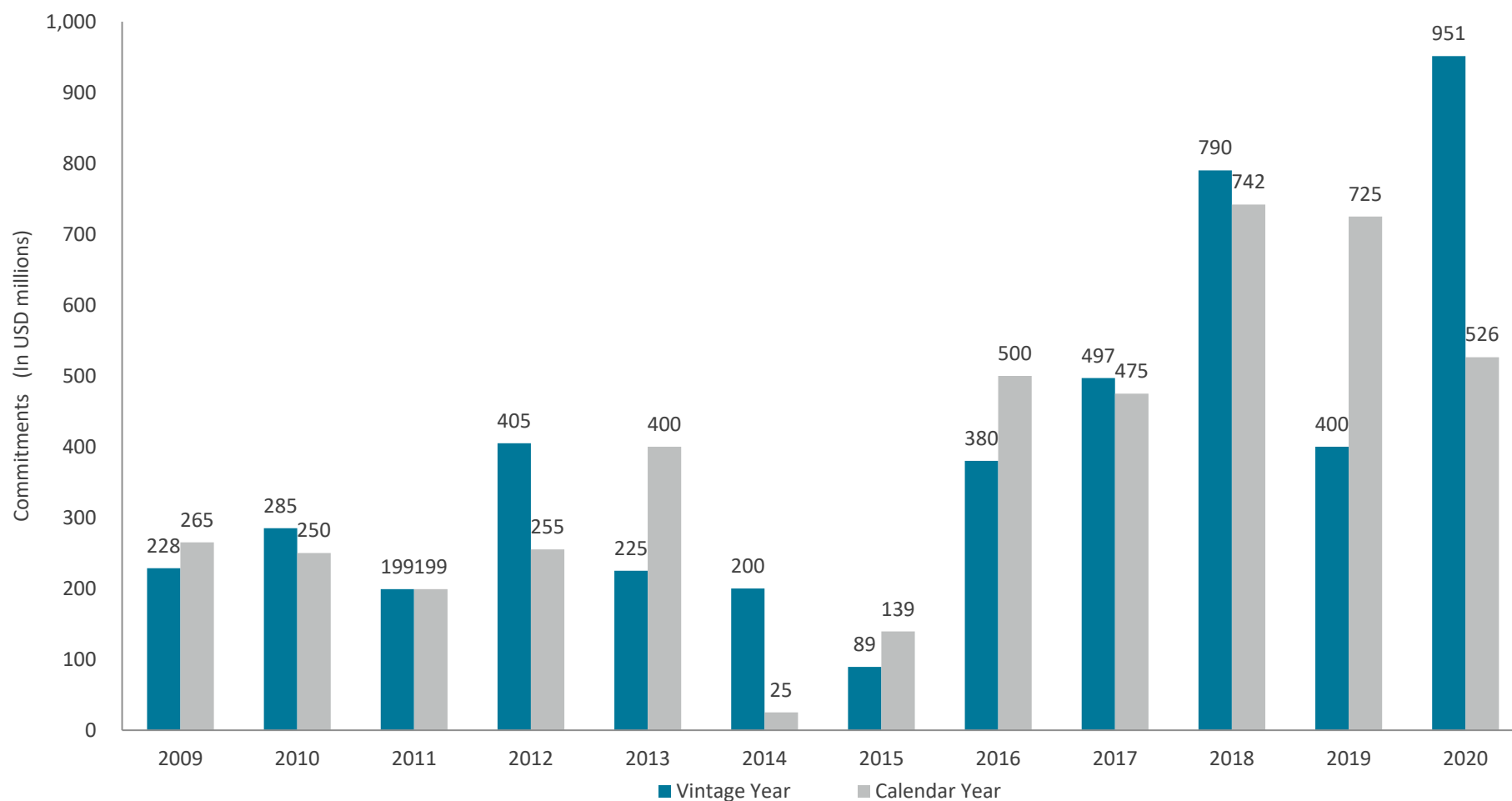


Calendar Year represents the year in which a commitment to a fund formally closed.  
 Closed commitments in a foreign currency are converted into US dollars using exchange rate as of commitment date, if applicable.  
 Commitments were compiled through the Report Date.



# Annual Commitments

## Annual Commitments



Vintage Year is defined as the earlier of the year in which investors first contribute capital to a fund or the year a fund commences operating activity. If neither first contribution or first investment has occurred as of Report Date, Commitment Year is used as a preliminary Vintage Year.

Calendar Year represents the year in which a commitment to a fund formally closed.

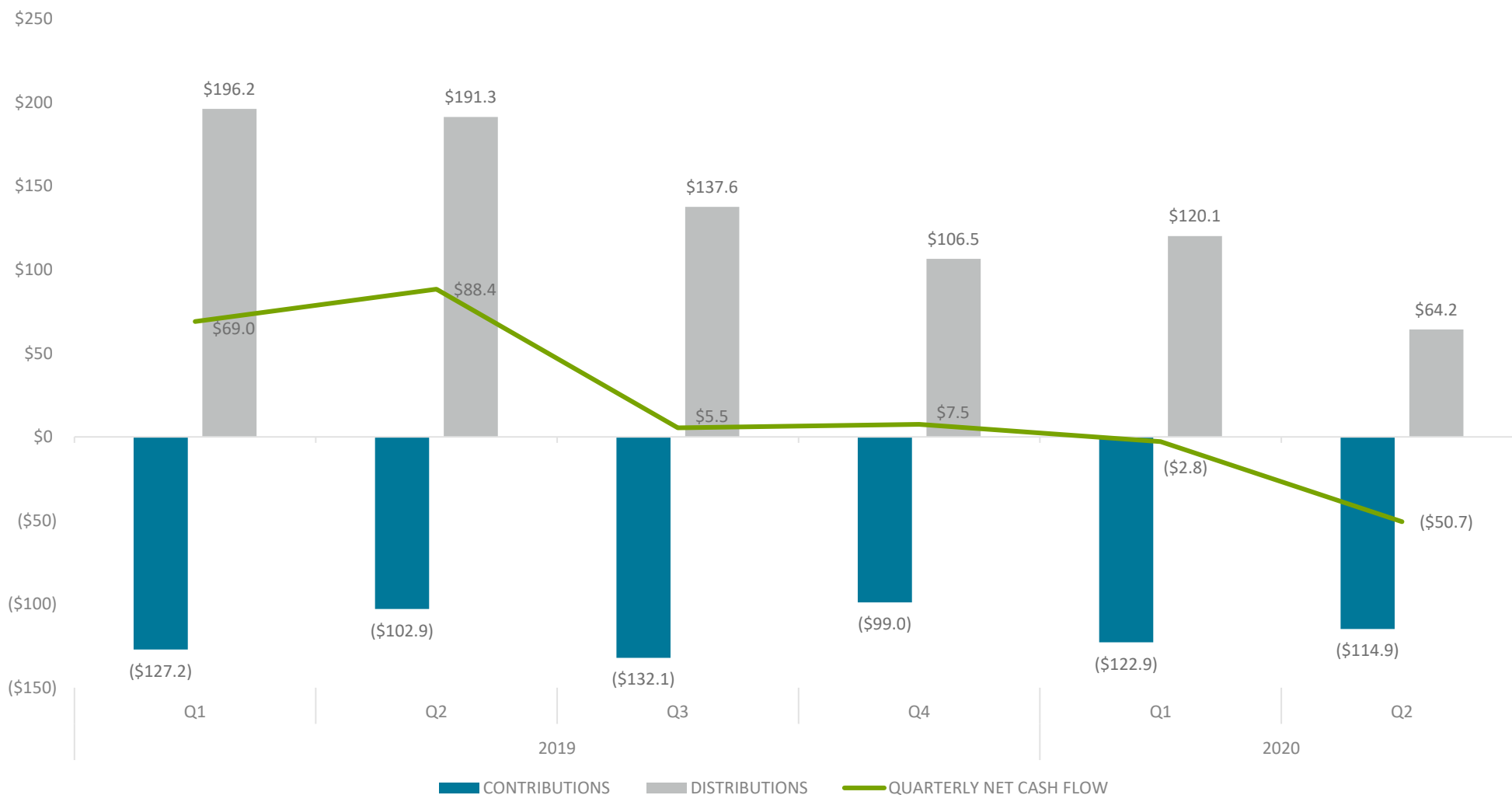
Closed commitments in a foreign currency are converted into US dollars using exchange rate as of commitment date, if applicable.

Commitments were compiled through the Report Date.

# Quarterly Cash Flow

For the second consecutive quarter, Q2 2020 contributions exceeded quarterly distributions, posting a \$50.7 million net cash outflow for the second quarter of 2020.

Quarterly contributions were 6.5% lower than the prior quarter and quarterly distributions were 46.5% lower than the prior quarter. Compared to the same period last year, quarterly contributions were up 11.6% and quarterly distributions were down 66.4% for the second quarter of 2020.

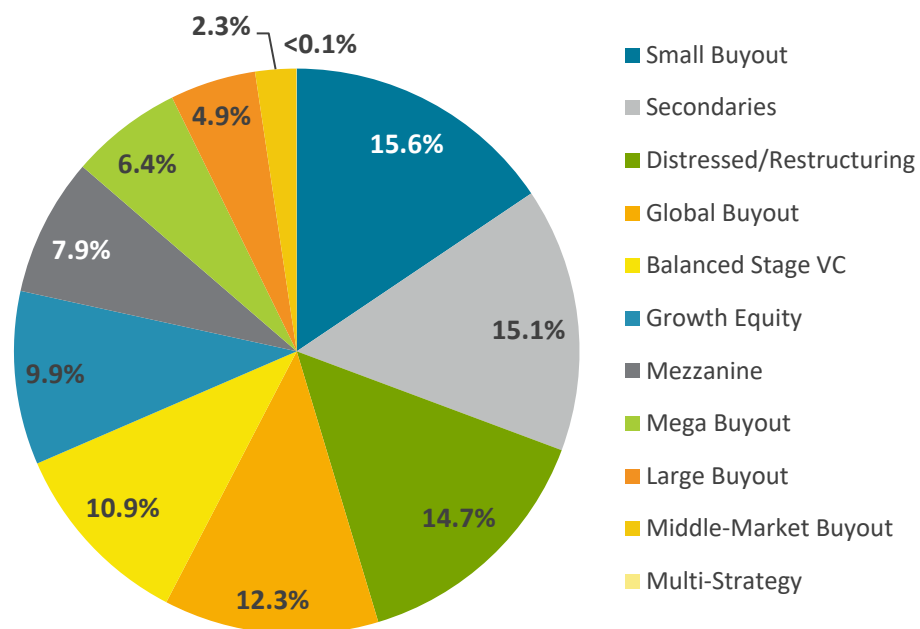


Cash flow data was compiled through the Report Date.  
Referenced cash flows occurred within their respective calendar years.

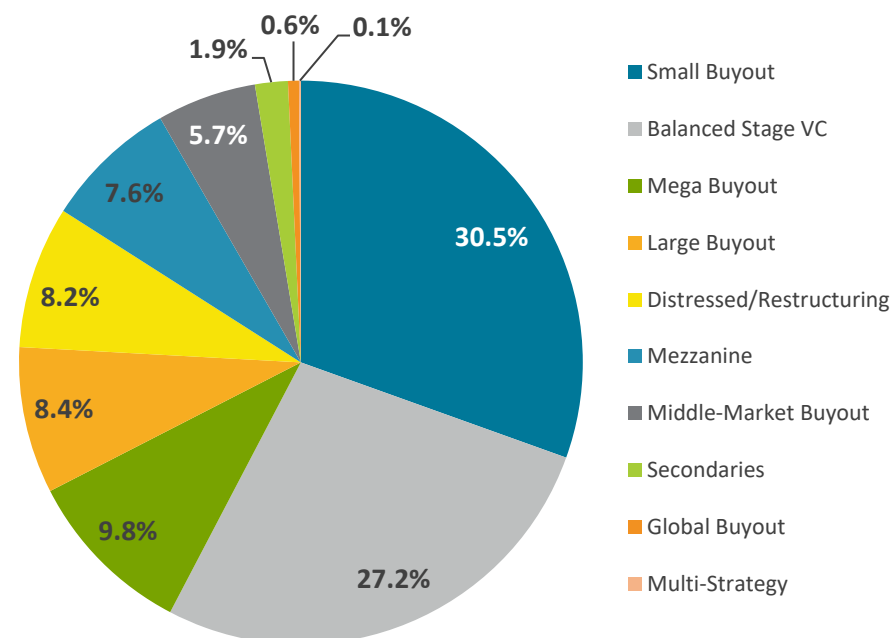
# Annual Cash Flow

During the first half of 2020, Small Buyout and Secondaries funds were the most active in terms of capital calls, drawing \$73.0 million, or 30.7%, of YTD 2020 contributed capital. Small Buyout and Balanced Stage VC funds were the most active in terms of distributions, together distributing \$106.3 million, or 57.7%, of total distributed capital in calendar year 2020.

## YTD Contributions by Sub-Strategy

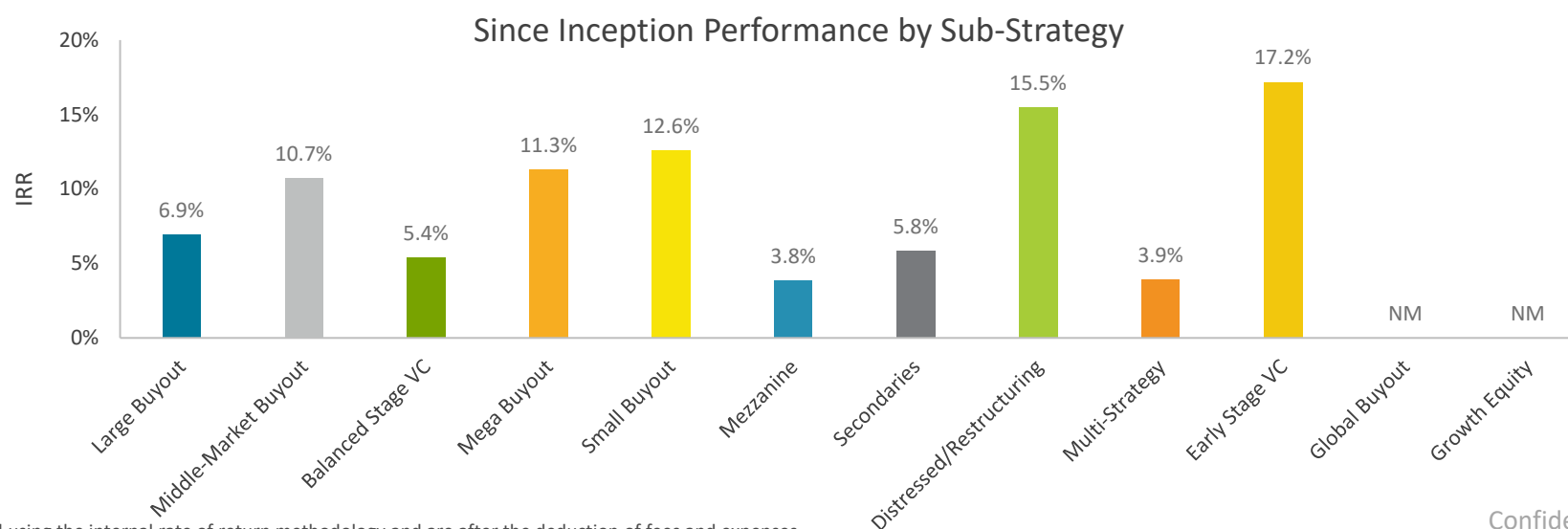
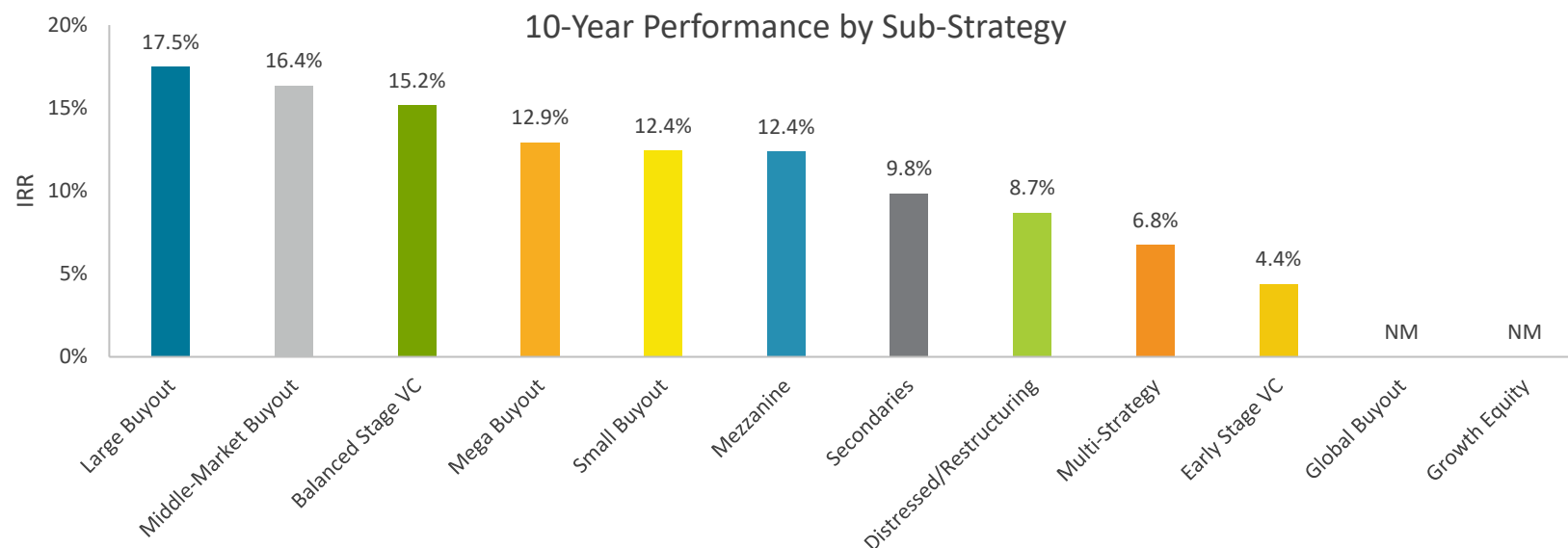


## YTD Distributions by Sub-Strategy



# Performance by Sub-Strategy

- For the ten years ending June 30, 2020, the returns generated within Large Buyout funds have exceeded other strategies.
- Since inception, Early Stage Venture Capital (“VC”) and Distressed funds have performed well above many other strategies. VC is a strategy that typically carries significant risk and PIF’s outperformance has been primarily driven by Constitution Liquidating Fund (20.0% net IRR). Clearlake Capital Partners III, IV & V continue to deliver strong performance for Distressed funds.



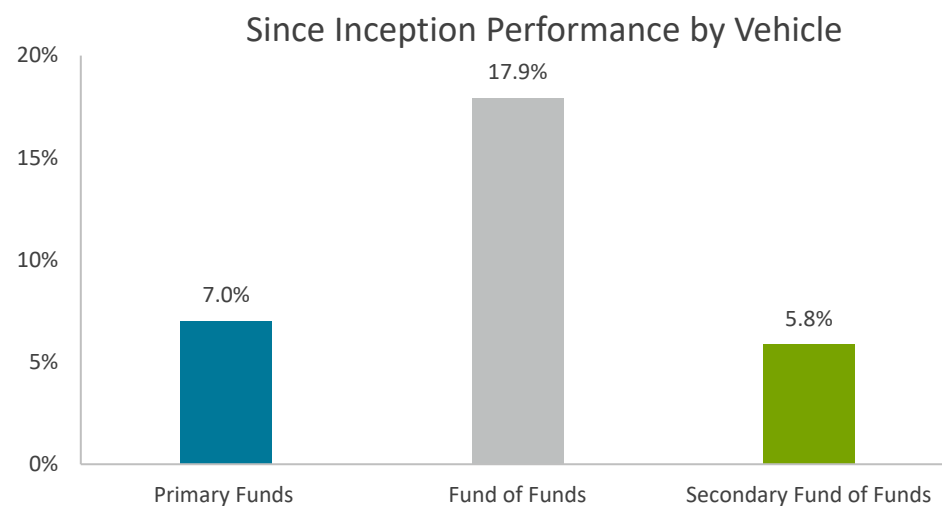
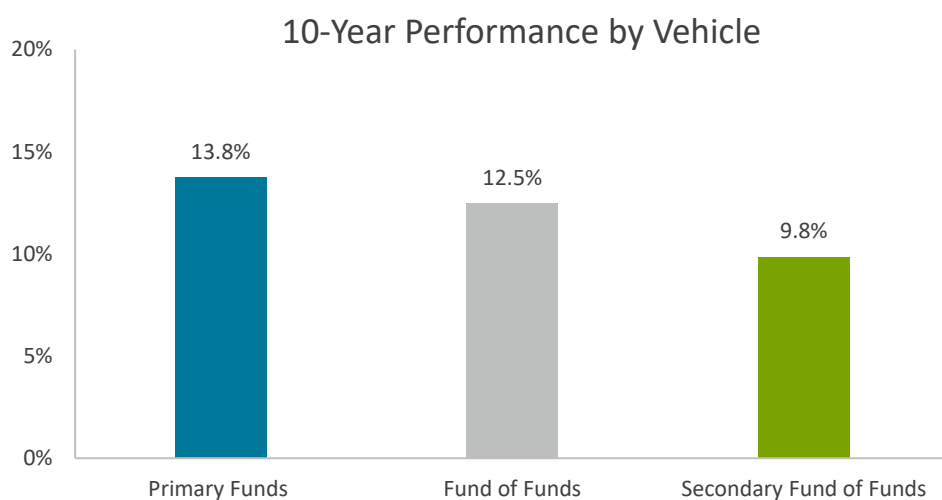
Returns are calculated using the internal rate of return methodology and are after the deduction of fees and expenses.

IRR and TVPI for certain vehicles may have been impacted by Stepstone’s or the underlying GPs’ use of subscription-backed credit facilities by such vehicles. Reinvested/recycled amounts increase contributed capital.

Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.

# Performance by Vehicle

- For the ten years ending June 30, 2020, returns generated within Primary funds exceeded other vehicle types.
- Since inception, Fund-of-Funds have performed better than other vehicles.
- The disparity between Fund-of-Funds performance during the last ten years and since inception is driven primarily by the Portfolio's commitment to Constitution Liquidating Fund, a 1987 vintage-year fund, which generated an IRR of 20.0% as of June 30, 2020. Constitution Liquidating Fund also accounts for 35.7% of the total value of PIF Funds-of-Funds investments made since inception.



# Benchmark Summary



- The below presentation provides multiple period returns of the portfolio compared to the benchmark.
- Since inception the portfolio has underperformed the current Russell 3000 + 250 bps benchmark by 294 bps.
- For the ten years ending June 30, 2020, the portfolio has underperformed the current Russell 3000 + 250 bps benchmark by 299 bps.

*As of June 30, 2020.*

<b>Allocations</b>	<b>1-Year</b>	<b>3-Year</b>	<b>5-Year</b>	<b>10-Year</b>	<b>Since Inception</b>
Aggregate Portfolio	10.5%	13.2%	11.7%	13.2%	9.4%
Russell 3000 + 250 bps	9.0%	12.5%	12.5%	16.2%	12.4%
<b>Relative Performance</b>	<b>1.5%</b>	<b>0.6%</b>	<b>(0.9%)</b>	<b>(3.0%)</b>	<b>(2.9%)</b>

Russell 3000 Benchmark data is as of 1994 through June 30, 2020 + 250 basis points. Benchmark was changed from the S&P500 (10-year annualized return) + 500 bps, effective May 31, 2019.

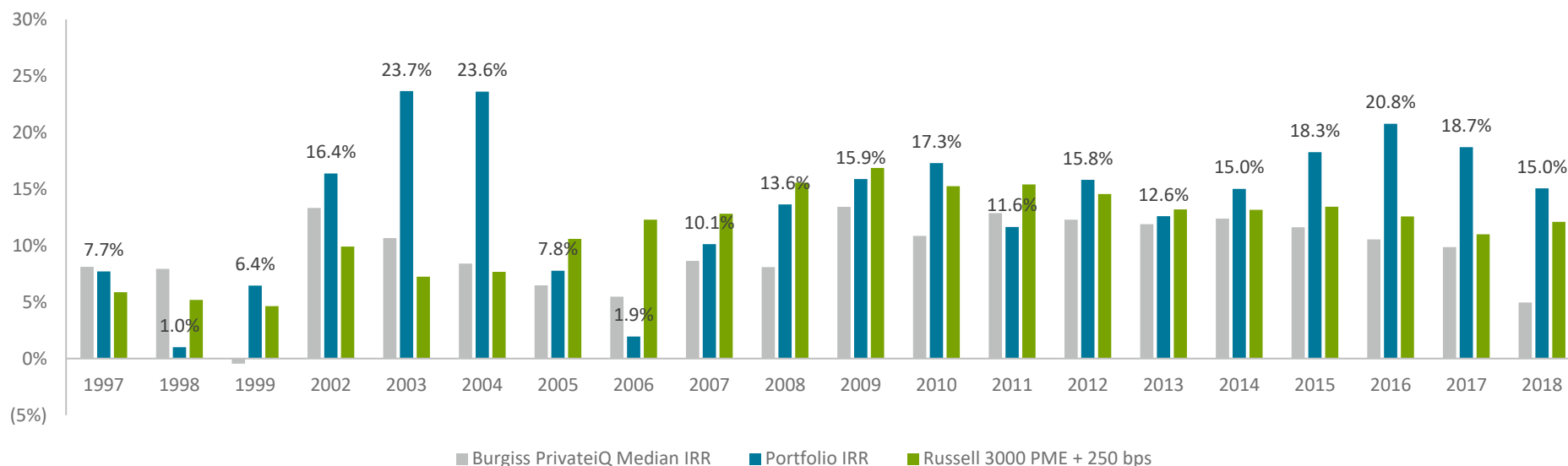
Net IRR is defined as the annualized, compound rate of return using daily draws, distributions and Market Value as of the Report Date, net of fees and expenses, including late closing interest.

The referenced indices are shown for general market comparisons and are not meant to represent any particular fund. An investor cannot directly invest in an index. Moreover, indices do not reflect commissions or fees that may be charged to an investment product based on the index, which may materially affect the performance data presented.

**Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.**

# Analysis by Vintage Year

- The below presentation provides the since inception returns of the portfolio by vintage year compared to both the Burgiss PrivateIQ Median IRR benchmark as well as the Russel 3000 + 250 bps PME+ returns.
- Vintage year 2004 has the highest relative performance exceeding the Burgiss PrivateIQ Median IRR benchmark by 1,521 bps.
- Vintage year 1998 has the lowest relative performance underperforming the Burgiss PrivateIQ Median IRR benchmark by 693 bps.



Burgiss PrivateIQ Median IRR data is as of June 30, 2020. Russell 3000 PME data is as of June 30, 2020. PME+ was changed from S&P500 + 500 bps to Russel 3000 + 250 bps effective May 31, 2019.

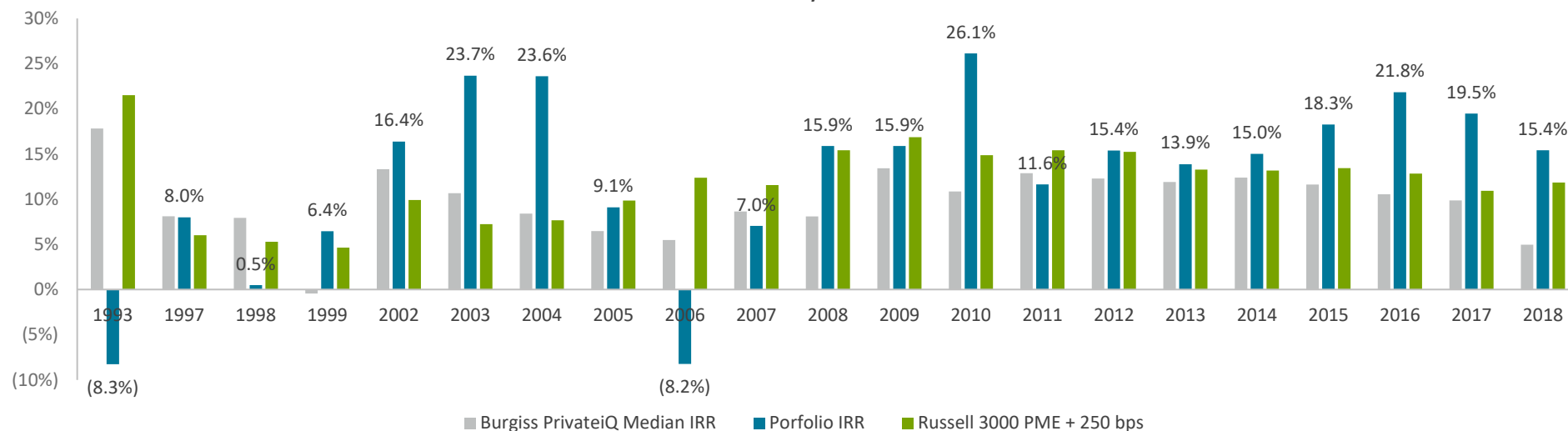
Net IRR is defined as the annualized, compound rate of return using daily draws, distributions and Market Value as of the Report Date, net of fees and expenses, including late closing interest.

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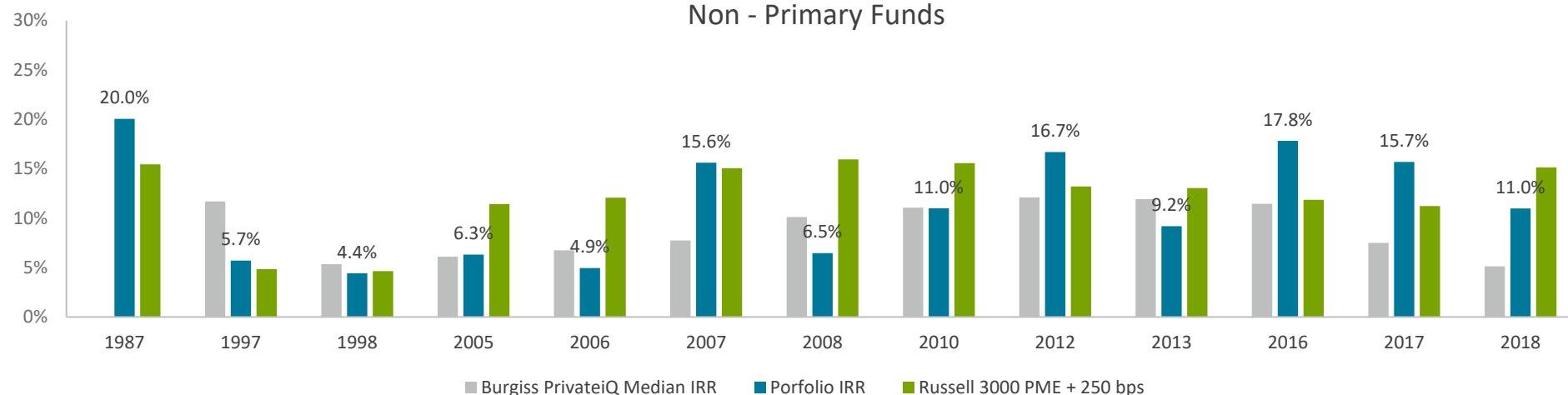
**Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.**

# Analysis by Vintage Year

## Primary Funds



## Non - Primary Funds



Primary Funds are private equity funds that acquire ownership interests directly in operating companies. Non-Primary Funds are private equity funds that invest in other funds or make secondary market purchases of interests in private equity funds and/or operating companies.

Burgiss PrivateIQ Median IRR data is as of June 30, 2020. Russell 3000 PME data is as of June 30, 2020. PME+ was changed from S&P500 + 500 bps to Russel 3000 + 250 bps effective May 31, 2019.

The benchmarks represented in the Non-Primary Funds chart are not considered to be appropriate for fund-of-funds that commit capital to underlying funds over multiple vintage years.

Insufficient non-primary benchmarking data available to construct a valid and reliable benchmark for vintage years 1987 and 1998.

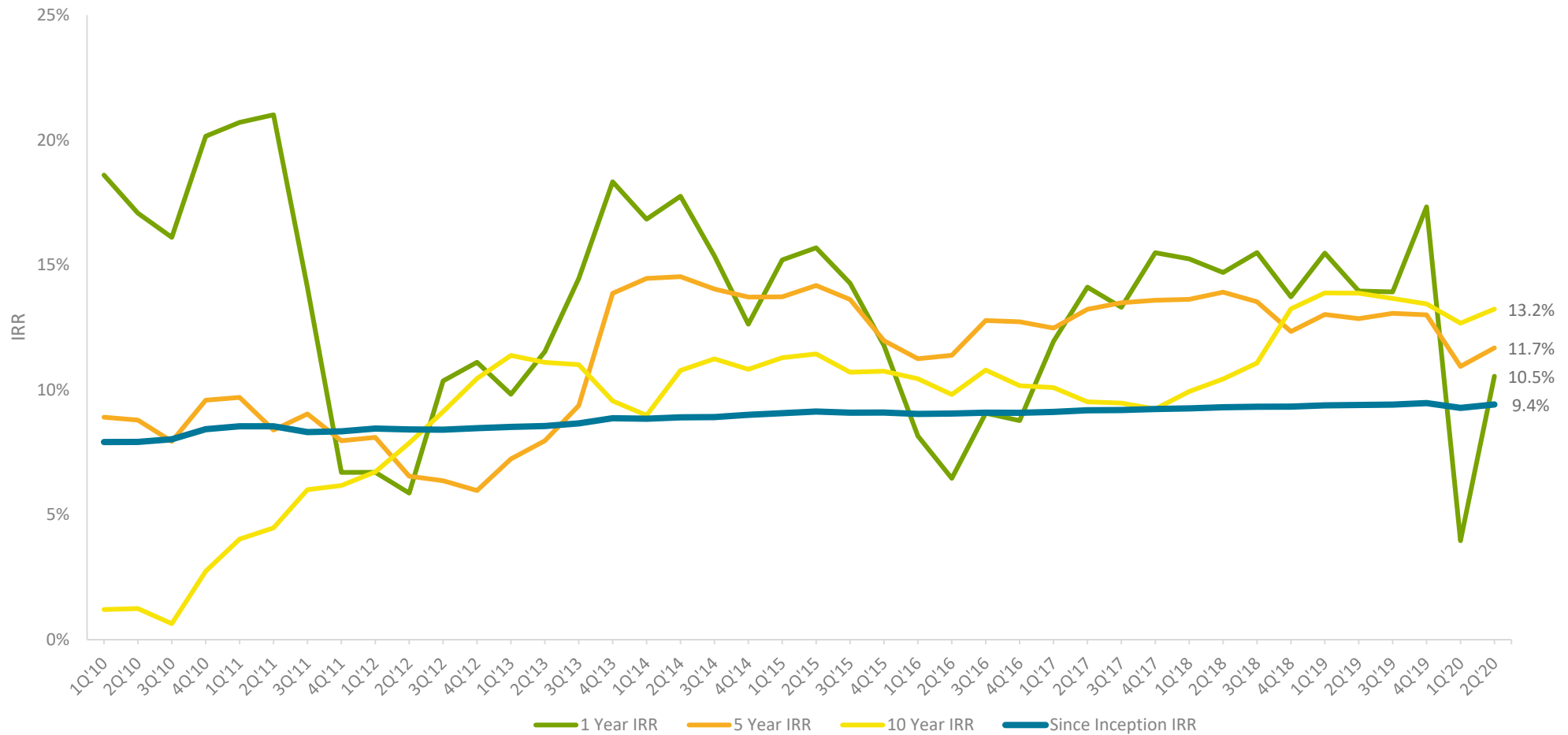
The analysis excludes the most recent vintage years, as fund performance is deemed not yet meaningful (NM).

The referenced indices are shown for general market comparisons and are not meant to represent any particular fund. An investor cannot directly invest in an index. Moreover, indices do not reflect commissions or fees that may be charged to an investment product based on the index, which may materially affect the performance data presented.

Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.



## PIF Total Portfolio Periodized Returns for Trailing 10 years



# Investment Performance by Sub Strategy – Active Funds



As of June 30, 2020. In USD millions.

	Vintage Year	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Exposure	Total Value	Gain/(Loss)	Unfunded	TVPI	IRR	TVPI Quartile	IRR Quartile
<b>Buyout</b>													
<b>Global Buyout</b>													
BC European Capital X	2017	\$91.9	\$79.2	\$1.5	\$95.2	\$101.6	\$88.7	\$9.5	\$14.4	1.1x	8.2%	Second	Second
EQT VIII, L.P.	2018	80.7	48.9	4.5	56.0	87.1	55.4	6.5	36.3	NM	NM	NM	NM
<b>Global Buyout Total</b>		<b>172.6</b>	<b>128.2</b>	<b>6.0</b>	<b>151.2</b>	<b>188.7</b>	<b>144.1</b>	<b>16.0</b>	<b>50.7</b>	<b>1.1x</b>	<b>10.3%</b>		
<b>Large Buyout</b>													
Court Square Capital Partners II, L.P.	2007	94.0	91.7	163.3	6.3	9.5	169.7	78.0	3.2	1.9x	12.6%	Second	Second
Court Square Capital Partners III, L.P.	2013	50.0	53.2	33.9	50.1	53.4	84.0	30.8	3.4	1.6x	18.4%	Second	Second
Gilbert Global Equity Partners, L.P.	1998	150.0	135.2	195.1	0.3	0.3	195.4	60.2	-	1.4x	3.2%	Second	Third
Hg Saturn 2	2020	100.0			1.4	101.4	1.4	1.4	100.0	NM	NM	NM	NM
Siris Partners IV, L.P.	2018	50.0	26.9		23.8	46.9	23.8	(3.1)	23.1	NM	NM	NM	NM
TA XI, L.P.	2010	75.0	73.7	143.8	89.5	90.8	233.3	159.6	1.3	3.2x	26.1%	First	First
Vista Equity Partners Fund IV, L.P.	2012	75.0	80.5	101.9	47.4	59.6	149.2	68.8	12.2	1.9x	16.2%	Second	Second
Welsh, Carson, Anderson & Stowe XI, L.P.	2009	100.0	100.0	130.3	30.1	30.1	160.4	60.4	-	1.6x	11.5%	Fourth	Fourth
Welsh, Carson, Anderson & Stowe XII, L.P.	2016	100.0	91.3	51.9	98.6	108.9	150.5	59.3	10.3	1.6x	27.2%	First	First
Welsh, Carson, Anderson & Stowe XIII, L.P.	2019	125.0	7.8		3.1	120.3	3.1	(4.8)	117.2	NM	NM	NM	NM
<b>Large Buyout Total</b>		<b>919.0</b>	<b>660.3</b>	<b>820.3</b>	<b>350.5</b>	<b>621.2</b>	<b>1,170.8</b>	<b>510.6</b>	<b>270.6</b>	<b>1.8x</b>	<b>9.1%</b>		
<b>Mega Buyout</b>													
Apollo Investment Fund IX, L.P.	2018	125.0	33.7	3.2	28.7	122.5	31.9	(1.8)	93.8	NM	NM	NM	NM
Apollo Investment Fund VIII, L.P.	2014	125.0	118.8	59.2	92.7	110.0	151.9	33.0	17.3	1.3x	8.3%	Third	Fourth
KKR 2006 Fund, L.P.	2007	125.0	132.8	191.3	36.2	38.4	227.4	94.7	2.2	1.7x	8.4%	Second	Third
KKR Millennium Fund, L.P.	2002	100.0	103.0	212.8	0.1	0.1	212.9	110.0	-	2.1x	16.4%	Second	Third
Thomas H. Lee Equity Fund VI, L.P.	2007	100.0	105.8	164.3	5.2	9.9	169.4	63.7	4.8	1.6x	7.9%	Third	Third
Vista Equity Partners Fund VI, L.P.	2016	100.0	112.2	25.5	148.0	162.1	173.5	61.4	14.1	1.5x	19.6%	First	First
Vista Equity Partners Fund VII, L.P.	2018	100.0	26.0	0.2	25.1	99.2	25.3	(0.7)	74.2	NM	NM	NM	NM
<b>Mega Buyout Total</b>		<b>775.0</b>	<b>632.2</b>	<b>656.4</b>	<b>335.9</b>	<b>542.2</b>	<b>992.3</b>	<b>360.2</b>	<b>206.3</b>	<b>1.6x</b>	<b>11.0%</b>		
<b>Middle-Market Buyout</b>													
Ethos US Dollar Fund V-B	2006	50.0	59.4	62.3	2.5	2.5	64.8	5.4	0.0	1.1x	2.0%	Fourth	Third
FS Equity Partners V, L.P.	2004	75.0	60.6	121.8	6.4	20.9	128.3	67.7	14.5	2.1x	15.4%	First	Second
FS Equity Partners VI, L.P.	2009	75.0	78.4	190.6	37.3	38.1	228.0	149.6	0.7	2.9x	23.0%	First	Second
Hg Genesis 9, L.P.	2020	76.4			-	76.4	-	-	76.4	NM	NM	NM	NM
JFL Equity Investors V, L.P.	2020	100.0			(0.5)	99.5	(0.5)	(0.5)	100.0	NM	NM	NM	NM
Vista Equity Partners Fund III, L.P.	2008	50.0	54.1	127.6	4.3	8.2	131.9	77.8	4.0	2.4x	27.9%	First	First
Wellspring Capital Partners V, L.P.	2011	75.0	81.9	94.5	31.1	58.4	125.7	43.8	27.2	1.5x	15.0%	Third	Third
Wellspring Capital Partners VI, L.P.	2018	75.0	25.7		23.4	72.7	23.4	(2.3)	49.3	0.9x	(7.6%)	Fourth	Fourth
Yucaipa American Alliance Fund II, LP	2008	75.0	103.2	99.0	65.3	65.3	164.3	61.0	0.0	1.6x	8.3%	Third	Third
Yucaipa American Alliance Fund III, L.P.	2015	39.3	33.1	2.0	32.6	40.8	34.7	1.6	8.2	1.0x	2.1%	Fourth	Fourth
<b>Middle-Market Buyout Total</b>		<b>690.6</b>	<b>496.3</b>	<b>697.9</b>	<b>202.4</b>	<b>482.8</b>	<b>900.4</b>	<b>404.1</b>	<b>280.3</b>	<b>1.8x</b>	<b>14.7%</b>		

# Investment Performance by Sub Strategy – Active Funds



As of June 30, 2020. In USD millions.

	Vintage Year	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Exposure	Total Value	Gain/(Loss)	Unfunded	TVPI	IRR	TVPI Quartile	IRR Quartile
<b>Small Buyout</b>													
Altaris Constellation Partners IV, L.P.	2018	\$10.0	\$5.1		\$6.0	\$10.9	\$6.0	\$0.9	\$4.9	1.2x	12.6%	First	First
Altaris Health Partners II, L.P.	2008	40.0	39.2	96.5	4.4	10.0	100.9	61.7	5.6	2.6x	27.2%	First	First
Altaris Health Partners III, L.P.	2014	50.0	49.9	36.4	66.5	74.6	102.9	53.1	8.1	2.1x	31.1%	First	First
Altaris Health Partners IV, L.P.	2018	40.0	24.1		27.2	43.1	27.2	3.1	15.9	1.1x	10.3%	Second	Second
Altaris Health Partners V, L.P.	2020	100.0			-	100.0	-	-	100.0	NM	NM	NM	NM
Boston Ventures Limited Partnership VII	2007	75.0	63.5	67.0	8.0	20.4	75.0	11.5	12.4	1.2x	3.0%	Fourth	Fourth
Freeman CT Horizon Investment Fund, LLC	2019	50.0	8.8	0.1	9.0	51.0	9.2	0.3	42.0	NM	NM	NM	NM
GenNx360 Capital Partners II, L.P.	2014	25.0	29.2	15.5	29.0	31.1	44.5	15.3	2.1	1.5x	15.4%	Second	Second
ICV Partners II, L.P.	2005	40.0	42.2	70.2	0.8	1.9	71.0	28.8	1.1	1.7x	11.9%	Second	Second
JFL Equity Investors III, L.P.	2011	49.0	54.8	45.8	33.0	40.2	78.8	24.1	7.2	1.4x	9.7%	Fourth	Fourth
JFL Equity Investors IV, L.P.	2017	75.0	65.4	33.2	89.5	100.3	122.7	57.2	10.9	1.9x	36.9%	First	First
Leeds Equity Partners V, L.P.	2009	40.0	39.8	68.4	26.8	32.3	95.2	55.5	5.4	2.4x	19.3%	Second	Third
Leeds Equity Partners VI, L.P.	2017	75.0	58.1	0.3	69.6	86.8	69.9	11.8	17.2	1.2x	11.8%	Second	Third
Leeds Equity Partners VII, L.P.	2020	75.0			-	75.0	-	-	75.0	NM	NM	NM	NM
RFE Investment Partners VII, L.P.	2008	40.0	38.9	60.0	6.7	7.0	66.7	27.8	0.3	1.7x	8.0%	Second	Third
RFE Investment Partners VIII, L.P.	2012	40.0	41.5	21.1	37.5	37.9	58.6	17.1	0.4	1.4x	8.8%	Third	Fourth
Vistria Fund III, L.P.	2020	75.0	0.9		(0.0)	74.1	(0.0)	(0.9)	74.1	NM	NM	NM	NM
<b>Small Buyout Total</b>		<b>899.0</b>	<b>561.4</b>	<b>514.7</b>	<b>414.0</b>	<b>796.7</b>	<b>928.7</b>	<b>367.3</b>	<b>382.6</b>	<b>1.7x</b>	<b>13.3%</b>		
<b>Buyout Total</b>		<b>3,456.2</b>	<b>2,478.3</b>	<b>2,695.4</b>	<b>1,454.1</b>	<b>2,631.6</b>	<b>4,136.3</b>	<b>1,658.1</b>	<b>1,190.6</b>	<b>1.7x</b>	<b>11.2%</b>		
<b>Fund of Funds</b>													
<b>Secondaries</b>													
Hollyport Secondary Opportunities VII, L.P.	2020	75.0	18.8		23.4	79.6	23.4	4.5	56.3	NM	NM	NM	NM
<b>Secondaries Total</b>		<b>75.0</b>	<b>18.8</b>		<b>23.4</b>	<b>79.6</b>	<b>23.4</b>	<b>4.5</b>	<b>56.3</b>	<b>NM</b>	<b>NM</b>	<b>NM</b>	<b>NM</b>
<b>Small Buyout</b>													
CT Horizon Legacy Fund, L.P.	2008	15.0	13.8	8.4	1.7	4.3	10.0	(3.8)	2.6	0.7x	(5.6%)	Fourth	Fourth
M2 - Connecticut Emerging Private Equity Fund of Funds, L.P.	2008	105.0	113.3	94.8	66.6	73.1	161.4	48.1	6.4	1.4x	8.0%	Third	Third
Nutmeg Opportunities Fund II, LLC – CT-Direct Investment	2017	50.0			-	50.0	-	-	50.0	NM	NM	NM	NM
Nutmeg Opportunities Fund II, LLC - EM	2017	35.0	21.9		30.0	44.6	30.0	8.1	14.6	1.4x	16.8%	First	First
Nutmeg Opportunities Fund II, LLC - SMMBF	2018	65.0	24.4		27.5	69.6	27.5	3.1	42.1	1.1x	11.0%	Second	Second
Nutmeg Opportunities Fund L.P. CT-EM	2010	35.0	18.1	5.2	25.0	31.7	30.2	12.1	6.8	1.7x	8.5%	Second	Third
Nutmeg Opportunities Fund L.P. CT-SMMBF	2010	75.0	63.8	62.4	49.7	57.5	112.1	48.2	7.9	1.8x	13.9%	Second	Second
<b>Small Buyout Total</b>		<b>380.0</b>	<b>255.3</b>	<b>170.7</b>	<b>200.5</b>	<b>330.8</b>	<b>371.2</b>	<b>115.9</b>	<b>130.3</b>	<b>1.5x</b>	<b>9.0%</b>		
<b>Fund of Funds Total</b>		<b>455.0</b>	<b>274.1</b>	<b>170.7</b>	<b>223.9</b>	<b>410.4</b>	<b>394.6</b>	<b>120.5</b>	<b>186.6</b>	<b>1.4x</b>	<b>9.3%</b>		
<b>Growth Equity</b>													
<b>Growth Equity</b>													
Aldrich Capital Partners Fund, LP	2018	50.0	23.5		32.3	59.2	32.3	8.8	26.9	NM	NM	NM	NM
Georgian Partners Growth Fund V, L.P.	2020	75.0	16.7	0.0	15.3	73.6	15.3	(1.4)	58.3	NM	NM	NM	NM
<b>Growth Equity Total</b>		<b>125.0</b>	<b>40.1</b>	<b>0.0</b>	<b>47.6</b>	<b>132.8</b>	<b>47.6</b>	<b>7.4</b>	<b>85.2</b>	<b>NM</b>	<b>NM</b>	<b>NM</b>	<b>NM</b>
<b>Growth Equity Total</b>		<b>125.0</b>	<b>40.1</b>	<b>0.0</b>	<b>47.6</b>	<b>132.8</b>	<b>47.6</b>	<b>7.4</b>	<b>85.2</b>	<b>NM</b>	<b>NM</b>	<b>NM</b>	<b>NM</b>

# Investment Performance by Sub Strategy – Active Funds



As of June 30, 2020. In USD millions.

	Vintage Year	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Exposure	Total Value	Gain/(Loss)	Unfunded	TVPI	IRR	TVPI Quartile	IRR Quartile
<b>Multi-Strategy</b>													
<b>Multi-Strategy</b>													
GCM Grosvenor CT Cleantech Opportunities Fund, L.P.	2007	\$25.0	\$27.0	\$8.3	\$3.1	\$5.1	\$11.3	(\$15.6)	\$2.0	0.4x	(12.4%)	Fourth	Fourth
PineBridge Global Emerging Markets Partners	1997	85.2	82.8	109.4	1.7	4.0	111.1	28.3	2.4	1.3x	7.1%	Third	Third
StepStone Pioneer Capital Buyout Fund II, L.P.	2006	175.0	188.2	253.2	4.4	29.3	257.6	69.4	24.8	1.4x	4.9%	Third	Third
<b>Multi-Strategy Total</b>		<b>285.2</b>	<b>298.0</b>	<b>370.9</b>	<b>9.2</b>	<b>38.4</b>	<b>380.1</b>	<b>82.1</b>	<b>29.2</b>	<b>1.3x</b>	<b>4.5%</b>		
<b>Multi-Strategy Total</b>		<b>285.2</b>	<b>298.0</b>	<b>370.9</b>	<b>9.2</b>	<b>38.4</b>	<b>380.1</b>	<b>82.1</b>	<b>29.2</b>	<b>1.3x</b>	<b>4.5%</b>		
<b>Special Situations</b>													
<b>Distressed/Restructuring</b>													
Castlelake Credit Strategies Fund II, L.P.	2012	50.0	46.7	38.9	22.7	26.4	61.6	14.9	3.8	1.3x	5.8%	First	Third
Clearlake Capital Partners III, L.P.	2012	40.0	56.2	122.8	28.0	39.8	150.7	94.5	11.9	2.7x	40.7%	First	First
Clearlake Capital Partners IV, L.P.	2015	50.0	72.7	52.3	59.7	64.0	112.0	39.3	4.3	1.5x	26.1%	First	First
Clearlake Capital Partners V, L.P.	2018	60.0	55.3	16.9	66.7	79.8	83.5	28.3	13.1	1.5x	42.7%	First	First
Clearlake Capital Partners VI, L.P.	2020	75.0	7.3	0.0	-	74.6	6.9	(0.4)	67.7	NM	NM	NM	NM
Clearlake Opportunity Partners II, L.P.	2019	75.0	19.1	0.2	20.2	76.2	20.4	1.4	55.9	NM	NM	NM	NM
Pegasus Partners IV, L.P.	2007	75.0	96.8	72.7	14.0	14.0	86.7	(10.1)	0.0	0.9x	(2.2%)	Fourth	Fourth
Pegasus Partners V, L.P.	2012	50.0	65.0	52.1	41.7	41.7	93.8	28.8	-	1.4x	9.0%	First	Second
Stellex Capital Partners II LP	2020	100.0			-	100.0	-	-	100.0	NM	NM	NM	NM
WLR Recovery Fund IV, L.P.	2007	100.0	90.8	117.8	3.5	7.0	121.3	30.5	3.4	1.3x	7.2%	Second	Second
<b>Distressed/Restructuring Total</b>		<b>675.0</b>	<b>509.8</b>	<b>473.6</b>	<b>256.5</b>	<b>523.5</b>	<b>737.0</b>	<b>227.2</b>	<b>260.1</b>	<b>1.4x</b>	<b>9.7%</b>		
<b>Mezzanine</b>													
Audax Mezzanine III, L.P.	2011	75.0	72.5	82.9	12.2	14.7	95.1	22.6	2.5	1.3x	9.5%	Third	Third
Balance Point Capital Partners III, L.P.	2018	50.0	31.0	3.5	31.6	52.6	35.1	4.1	21.0	NM	NM	NM	NM
Connecticut Growth Capital, LLC	2016	50.0	34.1	22.1	23.0	41.5	45.1	11.0	18.5	1.3x	14.9%	Second	Second
GarMark Partners II, L.P.	2005	75.0	105.8	135.4	2.6	2.6	138.0	32.2	-	1.3x	9.4%	Third	Second
ICG Europe Fund VII, L.P.	2018	84.3	33.2	0.1	40.8	92.0	40.4	7.2	51.7	NM	NM	NM	NM
Ironwood Mezzanine Fund IV, L.P.	2017	50.0	20.1	5.4	16.6	46.4	22.0	1.8	29.9	1.1x	8.8%	Third	Third
Levine Leichtman Capital Partners IV, L.P.	2008	75.0	74.7	121.6	7.2	20.9	128.7	54.1	13.7	1.7x	18.0%	Second	First
Levine Leichtman Capital Partners V, L.P.	2013	75.0	93.8	63.9	68.0	82.0	131.9	38.1	14.0	1.4x	11.6%	Third	Third
<b>Mezzanine Total</b>		<b>534.3</b>	<b>465.2</b>	<b>434.8</b>	<b>201.9</b>	<b>352.6</b>	<b>636.2</b>	<b>171.0</b>	<b>151.1</b>	<b>1.4x</b>	<b>12.3%</b>		

# Investment Performance by Sub Strategy – Active Funds



As of June 30, 2020. In USD millions.

	Vintage Year	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Exposure	Total Value	Gain/(Loss)	Unfunded	TVPI	IRR	TVPI Quartile	IRR Quartile
<b>Secondaries</b>													
Dover Street X, L.P.	2020	\$100.0	\$10.0		\$14.5	\$104.5	\$14.5	\$4.5	\$90.0	NM	NM	NM	NM
Landmark Equity Partners XIV, L.P.	2010	100.0	97.8	112.8	13.9	16.8	126.7	28.9	2.9	1.3x	9.2%	Third	Third
Landmark Equity Partners XV, L.P.	2013	100.0	76.2	57.4	35.2	65.1	92.6	16.4	29.9	1.2x	9.2%	Third	Third
Landmark Equity Partners XVI, L.P.	2017	100.0	35.0	4.7	37.2	106.9	41.9	6.9	69.6	NM	NM	NM	NM
Secondary Overflow Fund IV, L.P.	2019	50.0	2.9		2.9	50.1	2.9	0.1	47.1	NM	NM	NM	NM
<b>Secondaries Total</b>		<b>450.0</b>	<b>221.9</b>	<b>174.8</b>	<b>103.8</b>	<b>343.3</b>	<b>278.6</b>	<b>56.7</b>	<b>239.6</b>	<b>1.3x</b>	<b>10.4%</b>		
<b>Special Situations Total</b>		<b>1,659.3</b>	<b>1,196.9</b>	<b>1,083.3</b>	<b>562.2</b>	<b>1,219.4</b>	<b>1,651.8</b>	<b>454.9</b>	<b>650.9</b>	<b>1.4x</b>	<b>10.7%</b>		
<b>Venture Capital</b>													
<b>Balanced Stage VC</b>													
Constitution Fund V, LLC - Series A	2016	130.0	108.2	2.7	147.3	169.1	150.0	41.8	21.8	1.4x	17.8%	Second	Second
Constitution Fund V, LLC - Series B	2017	20.0	15.7	3.5	12.6	17.2	16.1	0.4	4.6	1.0x	1.5%	Fourth	Fourth
Constitution Fund V, LLC - Series C	2019	75.0	10.9		10.0	74.1	10.0	(0.9)	64.1	NM	NM	NM	NM
Constitution Fund V, LLC - Series D	2019	25.0	6.7		6.5	24.9	6.5	(0.1)	18.3	NM	NM	NM	NM
Fairview Constitution II, L.P.	2005	200.0	211.7	284.0	36.3	39.4	320.2	108.6	3.1	1.5x	6.6%	Second	Second
Fairview Constitution III, L.P.	2007	300.0	302.8	513.9	230.1	248.9	744.1	441.2	18.8	2.5x	17.5%	Second	First
Fairview Constitution IV, L.P.	2012	150.0	147.7	91.2	197.2	204.2	288.3	140.7	7.0	2.0x	16.7%	Third	Third
Syndicated Communications Venture Partners V, L.P.	2006	27.3	27.3	0.7	0.7	0.7	1.4	(25.9)	-	0.1x	(29.0%)	Fourth	Fourth
<b>Balanced Stage VC Total</b>		<b>927.3</b>	<b>831.0</b>	<b>895.9</b>	<b>640.7</b>	<b>778.4</b>	<b>1,536.7</b>	<b>705.7</b>	<b>137.7</b>	<b>1.8x</b>	<b>12.0%</b>		
<b>Early Stage VC</b>													
Constitution Liquidating Fund, L.P.	1987	640.0	532.6	1,364.0	4.6	7.2	1,368.6	835.9	2.6	2.6x	20.0%	Second	First
Crescendo III, L.P.	1998	36.8	36.8	19.3	1.2	1.2	20.5	(16.4)	-	0.6x	(9.0%)	Fourth	Fourth
<b>Early Stage VC Total</b>		<b>676.8</b>	<b>569.5</b>	<b>1,383.3</b>	<b>5.8</b>	<b>8.3</b>	<b>1,389.1</b>	<b>819.6</b>	<b>2.6</b>	<b>2.4x</b>	<b>19.6%</b>		
<b>Venture Capital Total</b>		<b>1,604.1</b>	<b>1,400.4</b>	<b>2,279.2</b>	<b>646.5</b>	<b>786.7</b>	<b>2,925.7</b>	<b>1,525.3</b>	<b>140.3</b>	<b>2.1x</b>	<b>19.1%</b>		
<b>Grand Total</b>		<b>\$ 7,584.8</b>	<b>\$ 5,687.9</b>	<b>\$ 6,599.5</b>	<b>\$ 2,943.4</b>	<b>\$ 5,219.3</b>	<b>\$ 9,536.1</b>	<b>\$ 3,848.3</b>	<b>\$ 2,282.7</b>	<b>1.7x</b>	<b>15.8%</b>		

Market Value is defined as the capital account balance as reported by the General Partner, generally on a fair value basis. TVPI is the ratio of Distributed Capital plus Market Value to Contributed Capital.

Net IRR is defined as the annualized, compound rate of return using daily draws, distributions and Market Value as of the Report Date, net of fees and expenses, including late closing interest.

IRR and TVPI for certain vehicles may have been impacted by Stepstone's or the underlying GPs' use of subscription-backed credit facilities by such vehicles. Reinvested/recycled amounts increase contributed capital.

Performance for investments held less than two years is not considered meaningful ("NM"). TVPI, IRR and respective Quartile rankings are displayed two years following the first capital call.

Active investments are displayed as commitments made through the report date; excludes liquidated funds. Schedule of Investments shows Crescendo III, L.P. Liquidating Trust due to a small remaining Market Value.

Benchmark: Burgiss PrivateIQ Quartile Ranking for Median IRR and TVPI based on fund strategy and vintage year, reported as of June 30, 2020.

Commitments made in a foreign currency have been converted into US dollars using an exchange rate as of the report date, if applicable.

Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.

# Investment Performance by Vintage Year – Active Funds



As of June 30, 2020. In USD millions.

	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Exposure	Total Value	Gain /(Loss)	Unfunded	TVPI	IRR	TVPI Quartile	IRR Quartile
<b>1987</b>												
Constitution Liquidating Fund, L.P.	\$640.0	\$532.6	\$1,364.0	\$4.6	\$7.2	\$1,368.6	\$835.9	\$2.6	2.6x	20.0%	Second	First
<b>1987 Total</b>	<b>640.0</b>	<b>532.6</b>	<b>1,364.0</b>	<b>4.6</b>	<b>7.2</b>	<b>1,368.6</b>	<b>835.9</b>	<b>2.6</b>	<b>2.6x</b>	<b>20.0%</b>		
<b>1997</b>												
PineBridge Global Emerging Markets Partners	85.2	82.8	109.4	1.7	4.0	111.1	28.3	2.4	1.3x	7.1%	Third	Third
<b>1997 Total</b>	<b>85.2</b>	<b>82.8</b>	<b>109.4</b>	<b>1.7</b>	<b>4.0</b>	<b>111.1</b>	<b>28.3</b>	<b>2.4</b>	<b>1.3x</b>	<b>7.1%</b>		
<b>1998</b>												
Crescendo III, L.P.	36.8	36.8	19.3	1.2	1.2	20.5	(16.4)	-	0.6x	(9.0%)	Fourth	Fourth
Gilbert Global Equity Partners, L.P.	150.0	135.2	195.1	0.3	0.3	195.4	60.2	-	1.4x	3.2%	Second	Third
<b>1998 Total</b>	<b>186.8</b>	<b>172.0</b>	<b>214.4</b>	<b>1.4</b>	<b>1.4</b>	<b>215.8</b>	<b>43.8</b>	<b>-</b>	<b>1.3x</b>	<b>2.0%</b>		
<b>2002</b>												
KKR Millennium Fund, L.P.	100.0	103.0	212.8	0.1	0.1	212.9	110.0	-	2.1x	16.4%	Second	Third
<b>2002 Total</b>	<b>100.0</b>	<b>103.0</b>	<b>212.8</b>	<b>0.1</b>	<b>0.1</b>	<b>212.9</b>	<b>110.0</b>	<b>-</b>	<b>2.1x</b>	<b>16.4%</b>		
<b>2004</b>												
FS Equity Partners V, L.P.	75.0	60.6	121.8	6.4	20.9	128.3	67.7	14.5	2.1x	15.4%	First	Second
<b>2004 Total</b>	<b>75.0</b>	<b>60.6</b>	<b>121.8</b>	<b>6.4</b>	<b>20.9</b>	<b>128.3</b>	<b>67.7</b>	<b>14.5</b>	<b>2.1x</b>	<b>15.4%</b>		
<b>2005</b>												
Fairview Constitution II, L.P.	200.0	211.7	284.0	36.3	39.4	320.2	108.6	3.1	1.5x	6.6%	Second	Second
GarMark Partners II, L.P.	75.0	105.8	135.4	2.6	2.6	138.0	32.2	-	1.3x	9.4%	Third	Second
ICV Partners II, L.P.	40.0	42.2	70.2	0.8	1.9	71.0	28.8	1.1	1.7x	11.9%	Second	Second
<b>2005 Total</b>	<b>315.0</b>	<b>359.6</b>	<b>489.5</b>	<b>39.7</b>	<b>43.9</b>	<b>529.2</b>	<b>169.6</b>	<b>4.2</b>	<b>1.5x</b>	<b>7.6%</b>		
<b>2006</b>												
Ethos US Dollar Fund V-B	50.0	59.4	62.3	2.5	2.5	64.8	5.4	0.0	1.1x	2.0%	Fourth	Third
StepStone Pioneer Capital Buyout Fund II, L.P.	175.0	188.2	253.2	4.4	29.3	257.6	69.4	24.8	1.4x	4.9%	Third	Third
Syndicated Communications Venture Partners V, L.P.	27.3	27.3	0.7	0.7	0.7	1.4	(25.9)	-	0.1x	(29.0%)	Fourth	Fourth
<b>2006 Total</b>	<b>252.3</b>	<b>274.9</b>	<b>316.2</b>	<b>7.6</b>	<b>32.4</b>	<b>323.8</b>	<b>48.9</b>	<b>24.8</b>	<b>1.2x</b>	<b>2.7%</b>		
<b>2007</b>												
Boston Ventures Limited Partnership VII	75.0	63.5	67.0	8.0	20.4	75.0	11.5	12.4	1.2x	3.0%	Fourth	Fourth
Court Square Capital Partners II, L.P.	94.0	91.7	163.3	6.3	9.5	169.7	78.0	3.2	1.9x	12.6%	Second	Second
Fairview Constitution III, L.P.	300.0	302.8	513.9	230.1	248.9	744.1	441.2	18.8	2.5x	17.5%	Second	First
GCM Grosvenor CT Cleantech Opportunities Fund, L.P.	25.0	27.0	8.3	3.1	5.1	11.3	(15.6)	2.0	0.4x	(12.4%)	Fourth	Fourth
KKR 2006 Fund, L.P.	125.0	132.8	191.3	36.2	38.4	227.4	94.7	2.2	1.7x	8.4%	Second	Third
Pegasus Partners IV, L.P.	75.0	96.8	72.7	14.0	14.0	86.7	(10.1)	0.0	0.9x	(2.2%)	Fourth	Fourth
Thomas H. Lee Equity Fund VI, L.P.	100.0	105.8	164.3	5.2	9.9	169.4	63.7	4.8	1.6x	7.9%	Third	Third
WLR Recovery Fund IV, L.P.	100.0	90.8	117.8	3.5	7.0	121.3	30.5	3.4	1.3x	7.2%	Second	Second
<b>2007 Total</b>	<b>894.0</b>	<b>911.1</b>	<b>1,298.6</b>	<b>306.4</b>	<b>353.2</b>	<b>1,604.9</b>	<b>693.8</b>	<b>46.8</b>	<b>1.8x</b>	<b>10.1%</b>		

# Investment Performance by Vintage Year – Active Funds



As of June 30, 2020. In USD millions.

	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Exposure	Total Value	Gain /(Loss)	Unfunded	TVPI	IRR	TVPI Quartile	IRR Quartile
<b>2008</b>												
Altaris Health Partners II, L.P.	\$40.0	\$39.2	\$96.5	\$4.4	\$10.0	\$100.9	\$61.7	\$5.6	2.6x	27.2%	First	First
CT Horizon Legacy Fund, L.P.	15.0	13.8	8.4	1.7	4.3	10.0	(3.8)	2.6	0.7x	(5.6%)	Fourth	Fourth
Levine Leichtman Capital Partners IV, L.P.	75.0	74.7	121.6	7.2	20.9	128.7	54.1	13.7	1.7x	18.0%	Second	First
M2 - Connecticut Emerging Private Equity Fund of Funds, L.P.	105.0	113.3	94.8	66.6	73.1	161.4	48.1	6.4	1.4x	8.0%	Third	Third
RFE Investment Partners VII, L.P.	40.0	38.9	60.0	6.7	7.0	66.7	27.8	0.3	1.7x	8.0%	Second	Third
Vista Equity Partners Fund III, L.P.	50.0	54.1	127.6	4.3	8.2	131.9	77.8	4.0	2.4x	27.9%	First	First
Yucaipa American Alliance Fund II, LP	75.0	103.2	99.0	65.3	65.3	164.3	61.0	0.0	1.6x	8.3%	Third	Third
<b>2008 Total</b>	<b>400.0</b>	<b>437.3</b>	<b>607.8</b>	<b>156.1</b>	<b>188.8</b>	<b>764.0</b>	<b>326.7</b>	<b>32.7</b>	<b>1.7x</b>	<b>13.6%</b>		
<b>2009</b>												
FS Equity Partners VI, L.P.	75.0	78.4	190.6	37.3	38.1	228.0	149.6	0.7	2.9x	23.0%	First	Second
Leeds Equity Partners V, L.P.	40.0	39.8	68.4	26.8	32.3	95.2	55.5	5.4	2.4x	19.3%	Second	Third
Welsh, Carson, Anderson & Stowe XI, L.P.	100.0	100.0	130.3	30.1	30.1	160.4	60.4	-	1.6x	11.5%	Fourth	Fourth
<b>2009 Total</b>	<b>215.0</b>	<b>218.1</b>	<b>389.4</b>	<b>94.3</b>	<b>100.4</b>	<b>483.6</b>	<b>265.5</b>	<b>6.2</b>	<b>2.2x</b>	<b>17.8%</b>		
<b>2010</b>												
Landmark Equity Partners XIV, L.P.	100.0	97.8	112.8	13.9	16.8	126.7	28.9	2.9	1.3x	9.2%	Third	Third
Nutmeg Opportunities Fund L.P. CT-EM	35.0	18.1	5.2	25.0	31.7	30.2	12.1	6.8	1.7x	8.5%	Second	Third
Nutmeg Opportunities Fund L.P. CT-SMMBF	75.0	63.8	62.4	49.7	57.5	112.1	48.2	7.9	1.8x	13.9%	Second	Second
TA XI, L.P.	75.0	73.7	143.8	89.5	90.8	233.3	159.6	1.3	3.2x	26.1%	First	First
<b>2010 Total</b>	<b>285.0</b>	<b>253.4</b>	<b>324.2</b>	<b>178.0</b>	<b>196.8</b>	<b>502.2</b>	<b>248.8</b>	<b>18.8</b>	<b>2.0x</b>	<b>17.3%</b>		
<b>2011</b>												
Audax Mezzanine III, L.P.	75.0	72.5	82.9	12.2	14.7	95.1	22.6	2.5	1.3x	9.5%	Third	Third
JFL Equity Investors III, L.P.	49.0	54.8	45.8	33.0	40.2	78.8	24.1	7.2	1.4x	9.7%	Fourth	Fourth
Wellspring Capital Partners V, L.P.	75.0	81.9	94.5	31.1	58.4	125.7	43.8	27.2	1.5x	15.0%	Third	Third
<b>2011 Total</b>	<b>199.0</b>	<b>209.2</b>	<b>223.2</b>	<b>76.4</b>	<b>113.3</b>	<b>299.6</b>	<b>90.4</b>	<b>36.9</b>	<b>1.4x</b>	<b>11.6%</b>		
<b>2012</b>												
Castlelake Credit Strategies Fund II, L.P.	50.0	46.7	38.9	22.7	26.4	61.6	14.9	3.8	1.3x	5.8%	First	Third
Clearlake Capital Partners III, L.P.	40.0	56.2	122.8	28.0	39.8	150.7	94.5	11.9	2.7x	40.7%	First	First
Fairview Constitution IV, L.P.	150.0	147.7	91.2	197.2	204.2	288.3	140.7	7.0	2.0x	16.7%	Third	Third
Pegasus Partners V, L.P.	50.0	65.0	52.1	41.7	41.7	93.8	28.8	-	1.4x	9.0%	First	Second
RFE Investment Partners VIII, L.P.	40.0	41.5	21.1	37.5	37.9	58.6	17.1	0.4	1.4x	8.8%	Third	Fourth
Vista Equity Partners Fund IV, L.P.	75.0	80.5	101.9	47.4	59.6	149.2	68.8	12.2	1.9x	16.2%	Second	Second
<b>2012 Total</b>	<b>405.0</b>	<b>437.5</b>	<b>427.9</b>	<b>374.4</b>	<b>409.6</b>	<b>802.3</b>	<b>364.8</b>	<b>35.3</b>	<b>1.8x</b>	<b>15.8%</b>		
<b>2013</b>												
Court Square Capital Partners III, L.P.	50.0	53.2	33.9	50.1	53.4	84.0	30.8	3.4	1.6x	18.4%	Second	Second
Landmark Equity Partners XV, L.P.	100.0	76.2	57.4	35.2	65.1	92.6	16.4	29.9	1.2x	9.2%	Third	Third
Levine Leichtman Capital Partners V, L.P.	75.0	93.8	63.9	68.0	82.0	131.9	38.1	14.0	1.4x	11.6%	Third	Third
<b>2013 Total</b>	<b>225.0</b>	<b>223.3</b>	<b>155.2</b>	<b>153.3</b>	<b>200.5</b>	<b>308.5</b>	<b>85.2</b>	<b>47.2</b>	<b>1.4x</b>	<b>12.6%</b>		



# Investment Performance by Vintage Year – Active Funds



As of June 30, 2020. In USD millions.

	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Exposure	Total Value	Gain /(Loss)	Unfunded	TVPI	IRR	TVPI Quartile	IRR Quartile
<b>2014</b>												
Altaris Health Partners III, L.P.	\$50.0	\$49.9	\$36.4	\$66.5	\$74.6	\$102.9	\$53.1	\$8.1	2.1x	31.1%	First	First
Apollo Investment Fund VIII, L.P.	125.0	118.8	59.2	92.7	110.0	151.9	33.0	17.3	1.3x	8.3%	Third	Fourth
GenNx360 Capital Partners II, L.P.	25.0	29.2	15.5	29.0	31.1	44.5	15.3	2.1	1.5x	15.4%	Second	Second
<b>2014 Total</b>	<b>200.0</b>	<b>197.9</b>	<b>111.1</b>	<b>188.2</b>	<b>215.7</b>	<b>299.4</b>	<b>101.4</b>	<b>27.4</b>	<b>1.5x</b>	<b>15.0%</b>		
<b>2015</b>												
Clearlake Capital Partners IV, L.P.	50.0	72.7	52.3	59.7	64.0	112.0	39.3	4.3	1.5x	26.1%	First	First
Yucaipa American Alliance Fund III, L.P.	39.3	33.1	2.0	32.6	40.8	34.7	1.6	8.2	1.0x	2.1%	Fourth	Fourth
<b>2015 Total</b>	<b>89.3</b>	<b>105.8</b>	<b>54.4</b>	<b>92.3</b>	<b>104.8</b>	<b>146.7</b>	<b>40.9</b>	<b>12.5</b>	<b>1.4x</b>	<b>18.3%</b>		
<b>2016</b>												
Connecticut Growth Capital, LLC	50.0	34.1	22.1	23.0	41.5	45.1	11.0	18.5	1.3x	14.9%	Second	Second
Constitution Fund V, LLC - Series A	130.0	108.2	2.7	147.3	169.1	150.0	41.8	21.8	1.4x	17.8%	Second	Second
Vista Equity Partners Fund VI, L.P.	100.0	112.2	25.5	148.0	162.1	173.5	61.4	14.1	1.5x	19.6%	First	First
Welsh, Carson, Anderson & Stowe XII, L.P.	100.0	91.3	51.9	98.6	108.9	150.5	59.3	10.3	1.6x	27.2%	First	First
<b>2016 Total</b>	<b>380.0</b>	<b>345.7</b>	<b>102.2</b>	<b>417.0</b>	<b>481.6</b>	<b>519.1</b>	<b>173.4</b>	<b>64.6</b>	<b>1.5x</b>	<b>20.7%</b>		
<b>2017</b>												
BC European Capital X	91.9	79.2	1.5	95.2	101.6	88.7	9.5	14.4	1.1x	8.2%	Second	Second
Constitution Fund V, LLC - Series B	20.0	15.7	3.5	12.6	17.2	16.1	0.4	4.6	1.0x	1.5%	Fourth	Fourth
Ironwood Mezzanine Fund IV, L.P.	50.0	20.1	5.4	16.6	46.4	22.0	1.8	29.9	1.1x	8.8%	Third	Third
JFL Equity Investors IV, L.P.	75.0	65.4	33.2	89.5	100.3	122.7	57.2	10.9	1.9x	36.9%	First	First
Landmark Equity Partners XVI, L.P.	100.0	35.0	4.7	37.2	106.9	41.9	6.9	69.6	NM	NM	NM	NM
Leeds Equity Partners VI, L.P.	75.0	58.1	0.3	69.6	86.8	69.9	11.8	17.2	1.2x	11.8%	Second	Third
Nutmeg Opportunities Fund II, LLC – CT-Direct Investment	50.0			-	50.0	-	-	50.0	NM	NM	NM	NM
Nutmeg Opportunities Fund II, LLC - EM	35.0	21.9		30.0	44.6	30.0	8.1	14.6	1.4x	16.8%	First	First
<b>2017 Total</b>	<b>496.9</b>	<b>295.5</b>	<b>48.6</b>	<b>350.7</b>	<b>553.8</b>	<b>391.3</b>	<b>95.8</b>	<b>211.1</b>	<b>1.3x</b>	<b>19.9%</b>		



# Investment Performance by Vintage Year – Active Funds



As of June 30, 2020. In USD millions.

	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Exposure	Total Value	Gain /(Loss)	Unfunded	TVPI	IRR	TVPI Quartile	IRR Quartile
<b>2018</b>												
Aldrich Capital Partners Fund, LP	\$50.0	\$23.5		\$32.3	\$59.2	\$32.3	\$8.8	\$26.9	NM	NM	NM	NM
Altaris Constellation Partners IV, L.P.	10.0	5.1		6.0	10.9	6.0	0.9	4.9	1.2x	12.6%	First	First
Altaris Health Partners IV, L.P.	40.0	24.1		27.2	43.1	27.2	3.1	15.9	1.1x	10.3%	Second	Second
Apollo Investment Fund IX, L.P.	125.0	33.7	3.2	28.7	122.5	31.9	(1.8)	93.8	NM	NM	NM	NM
Balance Point Capital Partners III, L.P.	50.0	31.0	3.5	31.6	52.6	35.1	4.1	21.0	NM	NM	NM	NM
Clearlake Capital Partners V, L.P.	60.0	55.3	16.9	66.7	79.8	83.5	28.3	13.1	1.5x	42.7%	First	First
EQT VIII, L.P.	80.7	48.9	4.5	56.0	87.1	55.4	6.5	36.3	NM	NM	NM	NM
ICG Europe Fund VII, L.P.	84.3	33.2	0.1	40.8	92.0	40.4	7.2	51.7	NM	NM	NM	NM
Nutmeg Opportunities Fund II, LLC - SMMBF	65.0	24.4		27.5	69.6	27.5	3.1	42.1	1.1x	11.0%	Second	Second
Siris Partners IV, L.P.	50.0	26.9		23.8	46.9	23.8	(3.1)	23.1	NM	NM	NM	NM
Vista Equity Partners Fund VII, L.P.	100.0	26.0	0.2	25.1	99.2	25.3	(0.7)	74.2	NM	NM	NM	NM
Wellspring Capital Partners VI, L.P.	75.0	25.7		23.4	72.7	23.4	(2.3)	49.3	0.9x	(7.6%)	Fourth	Fourth
<b>2018 Total</b>	<b>790.1</b>	<b>357.7</b>	<b>28.3</b>	<b>389.0</b>	<b>835.6</b>	<b>411.7</b>	<b>54.1</b>	<b>452.2</b>	<b>1.2x</b>	<b>15.0%</b>		
<b>2019</b>												
Clearlake Opportunity Partners II, L.P.	75.0	19.1	0.2	20.2	76.2	20.4	1.4	55.9	NM	NM	NM	NM
Constitution Fund V, LLC - Series C	75.0	10.9		10.0	74.1	10.0	(0.9)	64.1	NM	NM	NM	NM
Constitution Fund V, LLC - Series D	25.0	6.7		6.5	24.9	6.5	(0.1)	18.3	NM	NM	NM	NM
Freeman CT Horizon Investment Fund, LLC	50.0	8.8	0.1	9.0	51.0	9.2	0.3	42.0	NM	NM	NM	NM
Secondary Overflow Fund IV, L.P.	50.0	2.9		2.9	50.1	2.9	0.1	47.1	NM	NM	NM	NM
Welsh, Carson, Anderson & Stowe XIII, L.P.	125.0	7.8		3.1	120.3	3.1	(4.8)	117.2	NM	NM	NM	NM
<b>2019 Total</b>	<b>400.0</b>	<b>56.2</b>	<b>0.4</b>	<b>51.8</b>	<b>396.5</b>	<b>52.2</b>	<b>(4.0)</b>	<b>344.6</b>	<b>NM</b>	<b>NM</b>		

# Investment Performance by Vintage Year – Active Funds



As of June 30, 2020. In USD millions.

	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Exposure	Total Value	Gain /(Loss)	Unfunded	TVPI	IRR	TVPI Quartile	IRR Quartile
<b>2020</b>												
Altaris Health Partners V, L.P.	\$100.0			-	\$100.0	-	-	\$100.0	NM	NM	NM	NM
Clearlake Capital Partners VI, L.P.	75.0	7.3	0.0	-	74.6	6.9	(0.4)	67.7	NM	NM	NM	NM
Dover Street X, L.P.	100.0	10.0		14.5	104.5	14.5	4.5	90.0	NM	NM	NM	NM
Georgian Partners Growth Fund V, L.P.	75.0	16.7	0.0	15.3	73.6	15.3	(1.4)	58.3	NM	NM	NM	NM
Hg Genesis 9, L.P.	76.4			-	76.4	-	-	76.4	NM	NM	NM	NM
Hg Saturn 2	100.0			1.4	101.4	1.4	1.4	100.0	NM	NM	NM	NM
Hollyport Secondary Opportunities VII, L.P.	75.0	18.8		23.4	79.6	23.4	4.5	56.3	NM	NM	NM	NM
JFL Equity Investors V, L.P.	100.0			(0.5)	99.5	(0.5)	(0.5)	100.0	NM	NM	NM	NM
Leeds Equity Partners VII, L.P.	75.0			-	75.0	-	-	75.0	NM	NM	NM	NM
Stellax Capital Partners II LP	100.0			-	100.0	-	-	100.0	NM	NM	NM	NM
Vistria Fund III, L.P.	75.0	0.9		(0.0)	74.1	(0.0)	(0.9)	74.1	NM	NM	NM	NM
<b>2020 Total</b>	<b>951.4</b>	<b>53.7</b>	<b>0.0</b>	<b>54.1</b>	<b>958.8</b>	<b>60.9</b>	<b>7.3</b>	<b>897.8</b>	<b>NM</b>	<b>NM</b>		
<b>Grand Total</b>	<b>\$ 7,584.8</b>	<b>\$ 5,687.9</b>	<b>\$ 6,599.5</b>	<b>\$ 2,943.4</b>	<b>\$ 5,219.3</b>	<b>\$ 9,536.1</b>	<b>\$ 3,848.3</b>	<b>\$ 2,282.7</b>	<b>1.7x</b>	<b>15.8%</b>		

Market Value is defined as the capital account balance as reported by the General Partner, generally on a fair value basis. TVPI is the ratio of Distributed Capital plus Market Value to Contributed Capital.

Net IRR is defined as the annualized, compound rate of return using daily draws, distributions and Market Value as of the Report Date, net of fees and expenses, including late closing interest.

IRR and TVPI for certain vehicles may have been impacted by Stepstone's or the underlying GPs' use of subscription-backed credit facilities by such vehicles. Reinvested/recycled amounts increase contributed capital.

Performance for investments held less than two years is not considered meaningful ("NM"). TVPI, IRR and respective Quartile rankings are displayed two years following the first capital call.

Active investments are displayed as commitments made through the report date; excludes liquidated funds. Schedule of Investments shows Crescendo III, L.P. Liquidating Trust due to a small remaining Market Value.

Benchmark: Burgiss PrivateIQ Quartile Ranking for Median IRR and TVPI based on fund strategy and vintage year, reported as of June 30, 2020.

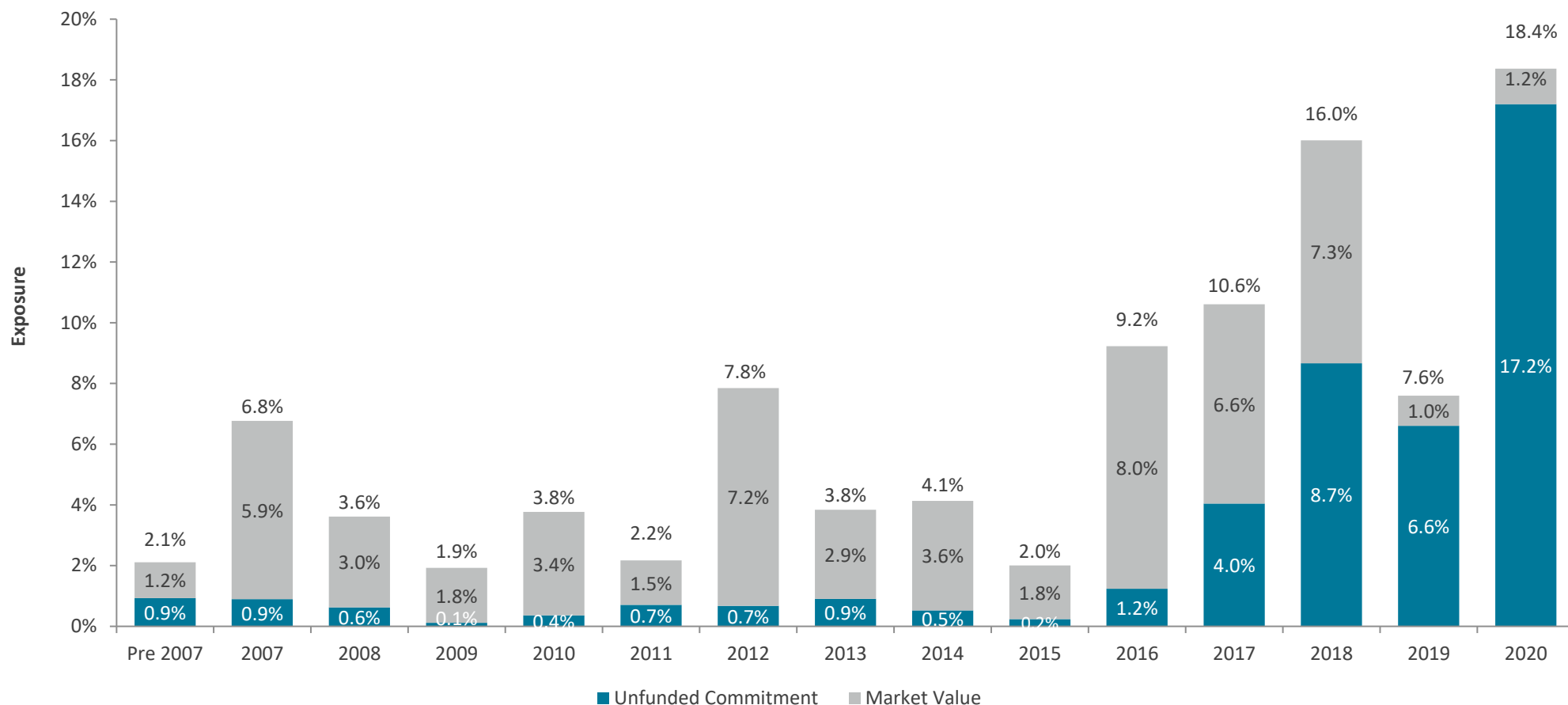
Commitments made in a foreign currency have been converted into US dollars using an exchange rate as of the report date, if applicable.

Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.

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# Exposure by Vintage Year



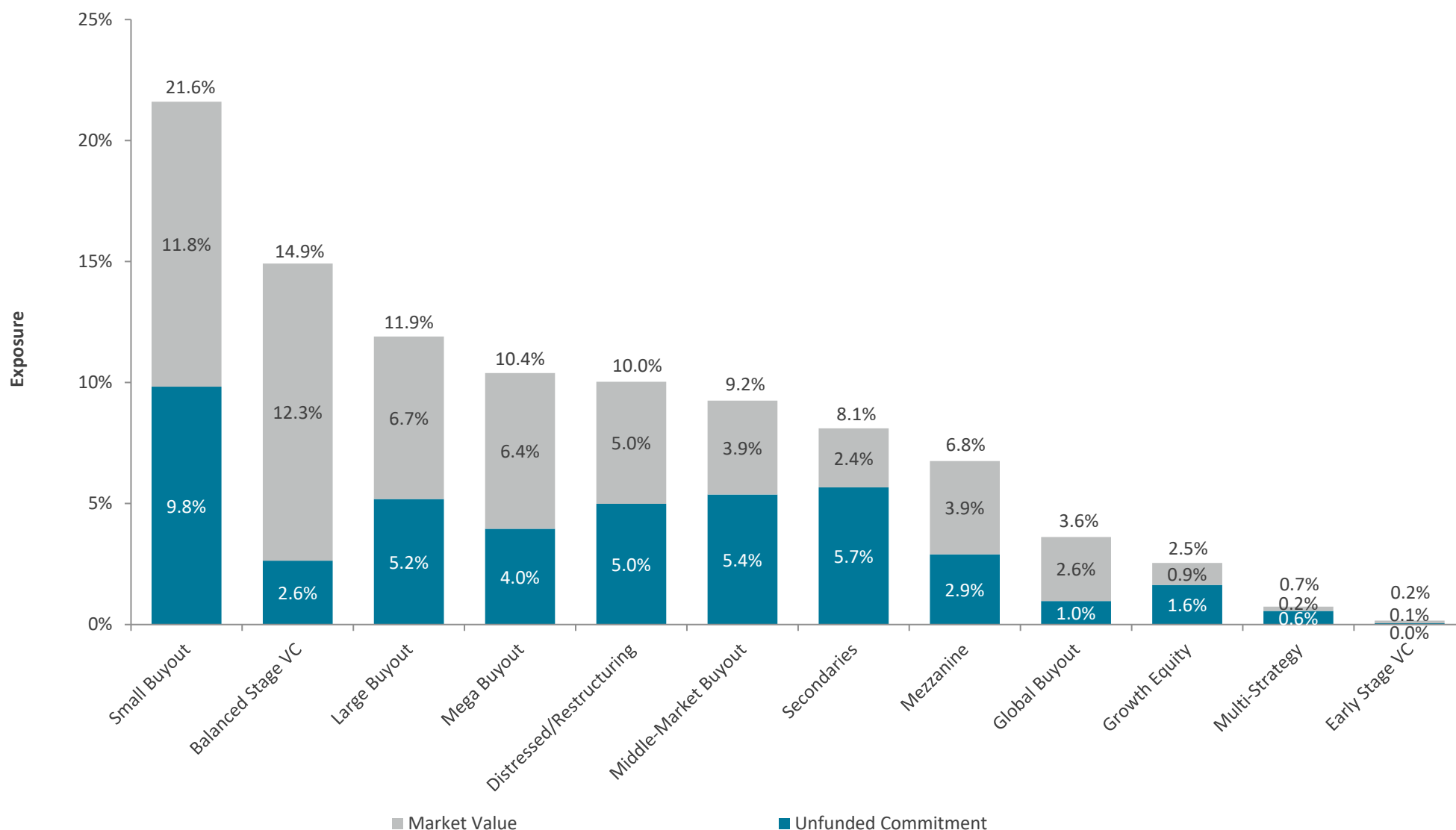
Exposure is defined as the sum of an investor's Market Value plus Unfunded Commitment.

Data includes commitments through the Report Date.

Data reflects active funds.

Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.

# Exposure by Sub-Strategy



Exposure is defined as the sum of an investor's Market Value plus Unfunded Commitment.

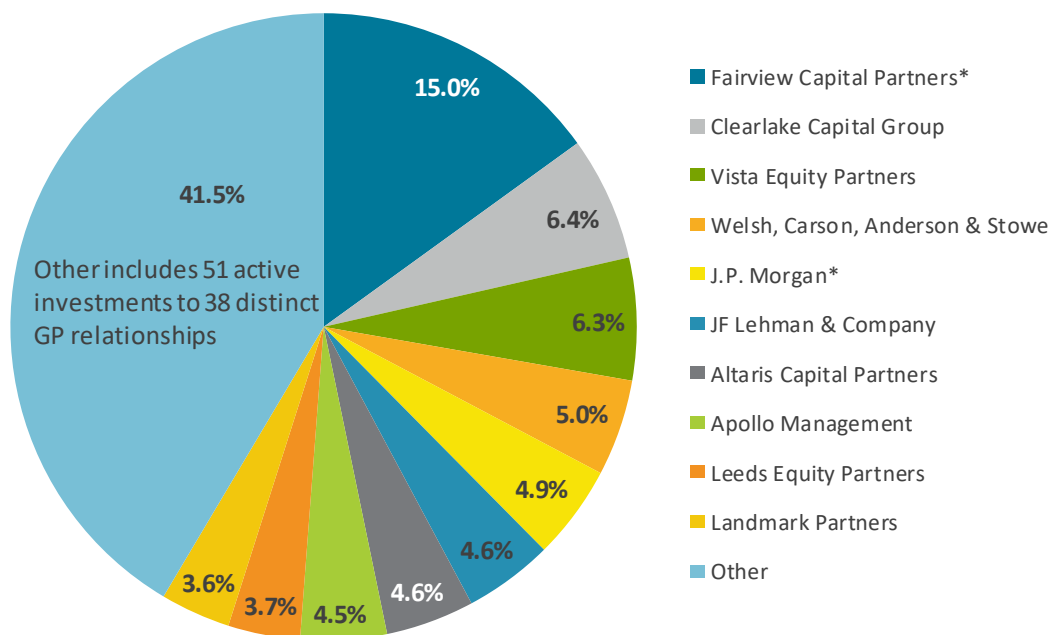
Data includes commitments through the Report Date.

Data reflects active funds.

Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.

# Top Managers by Exposure - Active Funds

Total Exposure by Active Manager



- The accompanying chart shows the PIF's current exposure and performance by underlying active manager\*\*.
- As of June 30, 2020, CRPTF has a Private Equity portfolio consisting of 92 active investments across 48 unique managers.
- Ten managers account for 58.5% of the portfolio's total exposure, or \$3.1 billion.

As of June 30, 2020. In USD millions.

Manager	# of Funds	Exposure	% of Total	TVPI	IRR
Fairview Capital Partners*	8	\$785	15.0%	2.2x	19.6%
Clearlake Capital Group	5	334	6.4%	1.7x	37.0%
Vista Equity Partners	4	329	6.3%	1.8x	22.5%
Welsh, Carson, Anderson & Stowe	3	259	5.0%	1.6x	9.4%
J.P. Morgan*	5	253	4.9%	1.6x	12.6%
JF Lehman & Company	3	240	4.6%	1.7x	17.4%
Altaris Capital Partners	5	239	4.6%	1.9x	19.3%
Apollo Management	2	233	4.5%	1.2x	7.5%
Leeds Equity Partners	3	194	3.7%	1.7x	18.1%
Landmark Partners	3	189	3.6%	1.2x	5.3%
Other	51	2,164	41.5%	1.4x	5.9%
<b>Total</b>	<b>92</b>	<b>\$ 5,219</b>	<b>100.0%</b>	<b>1.5x</b>	<b>9.4%</b>

\*Fairview Capital Partners and JP Morgan fund totals include sub-allocations within a single fund entity.

\*\*IRRs presented include active funds only.

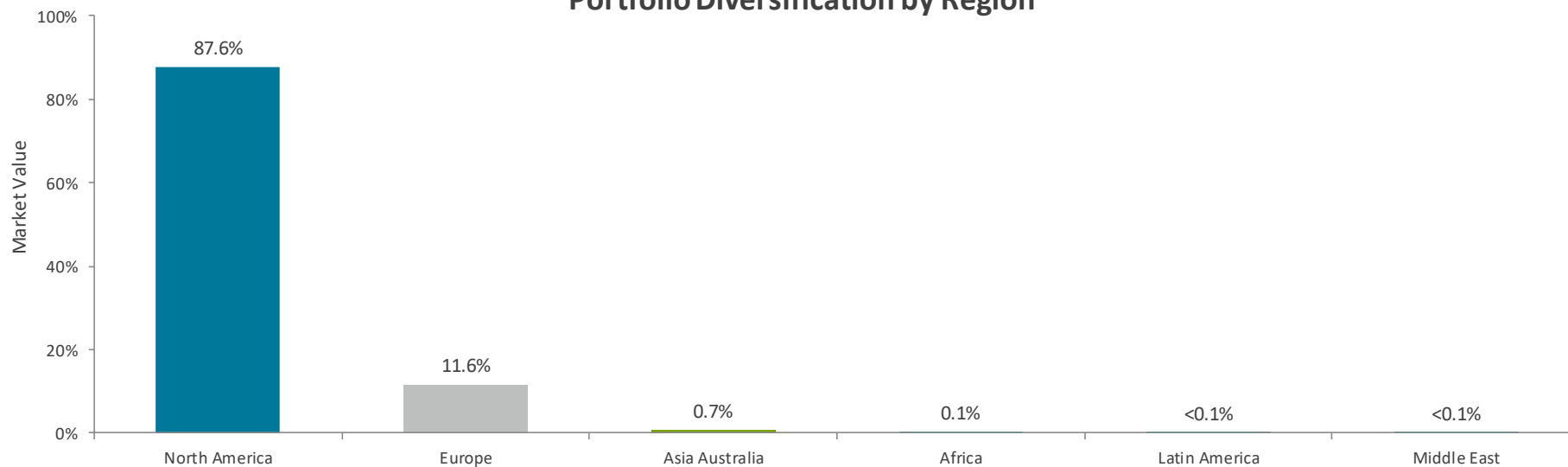
Exposure is defined as the sum of an investor's Market Value plus Unfunded Commitment.

IRR and TVPI for certain vehicles may have been impacted by Stepstone's or the underlying GPs' use of subscription-backed credit facilities by such vehicles. Reinvested/recycled amounts increase contributed capital.

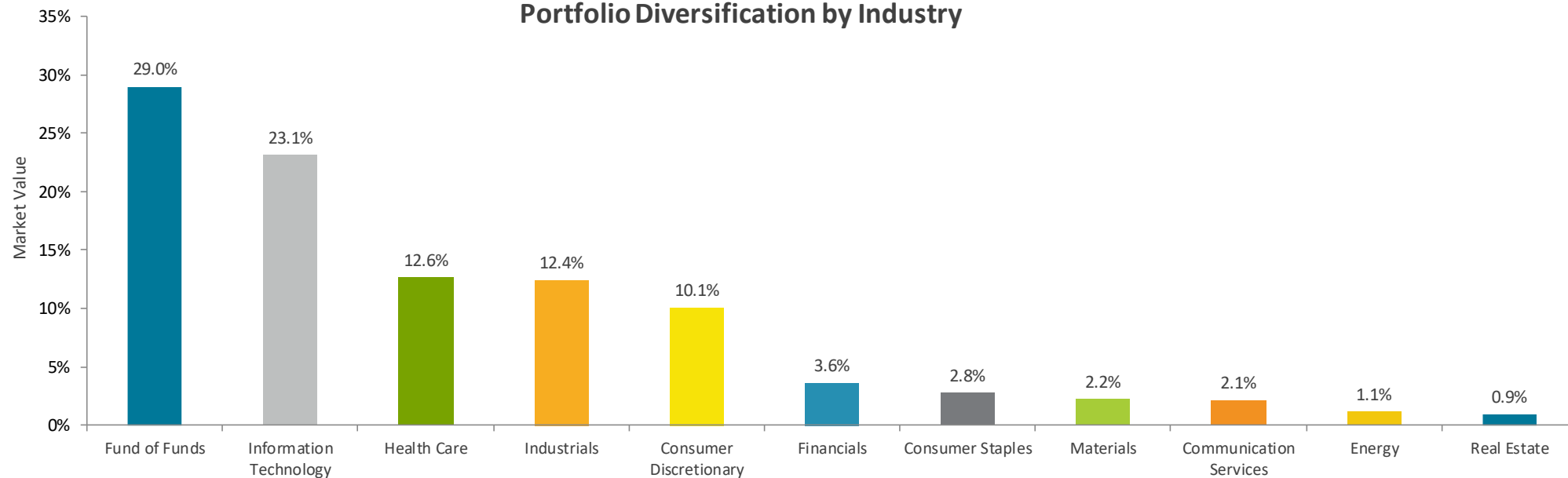
Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.

# Holdings by Region and Industry

**Portfolio Diversification by Region**



**Portfolio Diversification by Industry**



Market Value represents the value of portfolio holdings as reported by fund managers.  
 Values are estimated based on the investor's percent interest in each fund's portfolio holdings.  
 Values are converted to the investor's currency, when applicable, as of the Report Date.

### III. Connecticut Horizon Fund

# Executive Summary



## Portfolio Summary

This report presents an overview of the Connecticut Retirement Plans and Trust Funds ("CRPTF") Connecticut Horizon Fund ("CHF") private equity program as of June 30, 2020.

CHF was formed by CRPTF in 2007 with the objective of enhancing portfolio returns, diversifying assets and achieving certain strategic goals. In particular:

- 1) CHF was established to generate financial returns commensurate with the private equity asset class. In accordance with CRPTF's Investment Policy Statement, the program will seek to generate annual returns of five percentage points greater than the Russell 3000 ten-year rolling average.
- 2) CHF was established to enhance diversification in CRPTF's private equity portfolio. CRPTF's Private Investment Fund is largely managed by established fund managers targeting mainstream market segments. CHF will provide exposure to investments that are different from those already in CRPTF's portfolio.
- 3) CHF was established to diversify the management of CRPTF's assets while providing opportunities for emerging, minority and women-owned, and Connecticut-based investment firms to compete for a share of the Treasury's investment business.

The CRPTF has allocated \$240.0 million for CHF investments since inception through commitments made to five private equity fund-of-funds. During 2007, CHF commitments were made to Aldus CT Horizon and M2 - Connecticut Emerging Private Equity Fund of Funds ("M2CTEPEFF"). During 2009, Muller & Monroe was appointed to replace Aldus Equity as the general partner of the Aldus CT Horizon fund, which was renamed the CT Horizon Legacy fund. In addition, Aldus CT Horizon's uncommitted capital was reallocated to M2CTEPEFF.

In 2009, the CRPTF committed \$110.0 million to Nutmeg Opportunities Fund, of which \$35.0 million was designated for CHF investments. During June 2017, the CRPTF made a commitment of \$150.0 million to Nutmeg Opportunities Fund II, of which up to \$35.0 million was designated for CHF investments. In January 2019 the CRPTF made a commitment of \$50.0 million to Freeman CT Horizon Investment Fund.



# Connecticut Horizon Fund



- Through June 30, 2020, the PIF had committed \$240.0 million to CHF designated private equity mandates since inception.
- Since inception through June 30, 2020, the PIF's CHF designated investments generated a Net IRR of 7.2%. During the same time period, the Russell 3000 generated an IRR of 8.6%.

As of June 30, 2020. In USD millions.

	Vintage Year	Commitment Up To	Contributed Capital	Unfunded Commitment	Distributed Capital	Exposure	Market Value	TVPI	Net IRR
CT Horizon Legacy Fund, L.P.	2008	\$15.0	\$13.8	\$2.6	\$8.4	\$4.3	\$1.7	0.7x	(5.6%)
M2 - Connecticut Emerging Private Equity Fund of Funds, L.P.	2008	105.0	113.3	6.4	94.8	73.1	66.6	1.4x	8.0%
Nutmeg Opportunities Fund L.P. CT-EM	2010	35.0	18.1	6.8	5.2	31.7	25.0	1.7x	8.5%
Nutmeg Opportunities Fund II, LLC - EM	2017	35.0	21.9	14.6	-	44.6	30.0	1.4x	16.8%
Freeman CT Horizon Investment Fund, LLC	2019	50.0	8.8	42.0	0.1	51.0	9.0	NM	NM
<b>Total</b>		<b>\$240.0</b>	<b>\$175.9</b>	<b>\$72.4</b>	<b>\$108.5</b>	<b>\$204.7</b>	<b>\$132.3</b>	<b>1.4x</b>	<b>7.2%</b>

An IRR is not meaningful in the early years of a partnership's life given the J-curve effect. The J-curve refers to the shape of the curve that illustrates a fund's performance over time. During the initial years of a fund's life, due to illiquidity, stagnant valuations, fees and expenses, a fund's performance tends to be negative (the bottom of the "J"). Eventually, as portfolio companies are realized or increase in value and fees become a smaller percentage of overall contributions, fund performance improves and investors' returns move up the "J" shaped curve. Performance for investments held less than two years is not considered meaningful. TVPI and Net IRR will be displayed two years following the first capital call.

TVPI is the ratio of Distributed Capital plus Market Value to Contributed Capital.

Net IRR is defined as the annualized, compound rate of return using daily draws, distributions and Market Value as of the Report Date, net of fees and expenses, including late closing interest.

IRR and TVPI for certain vehicles may have been impacted by Stepstone's or the underlying GPs' use of subscription-backed credit facilities by such vehicles. Reinvested/recycled amounts increase contributed capital.

Market Value is defined as the investor's value as reported by the fund's manager. Exposure is defined as the sum of an investor's Market Value plus Unfunded Commitment.

Data compiled from cash flow notices and quarterly financial statements provided by fund managers.

**Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.**

# Connecticut Horizon Fund Investment Schedule



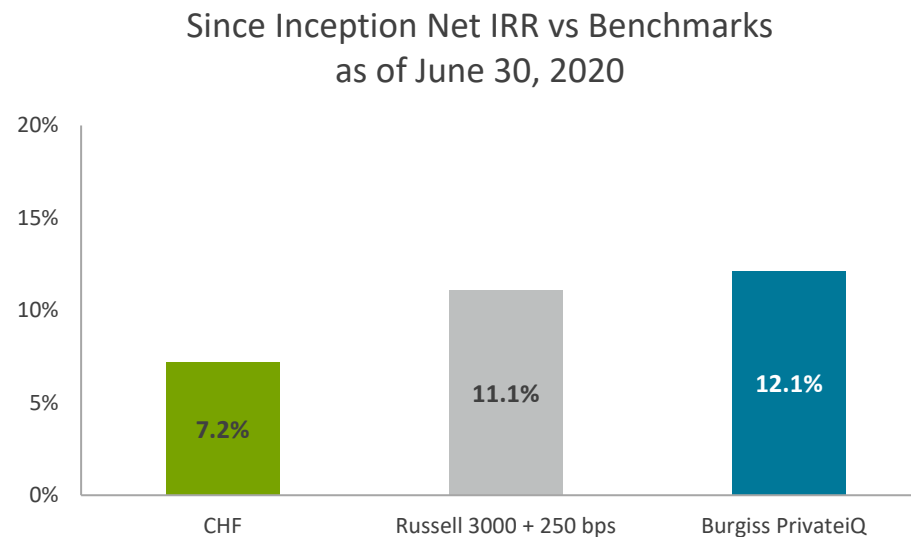
As of June 30, 2020. In USD millions.

Fund / FOF Holding	Investment Type	Holding Strategy	CHF Demographic	Year of Investment	Invested Capital	Distributed Capital	Market Value	TVPI
<b>CT Horizon Legacy Fund, L.P.</b>		Commitment Date: 06/30/2008		CHF Commitment: US\$15.0 million				
Capital Point Partners Fund, L.P.	Primary Fund	Mezzanine	African American	2008	5.6	5.2	0.9	1.1x
groSolar	Co-Investment	Energy	Emerging Strategy	2009	2.0	0.0	0.0	0.0x
Vicente Capital Partners Growth Equity Fund, L.P.	Primary Fund	Growth Equity	African American	2009	4.0	3.2	0.8	1.0x
					<b>\$11.6</b>	<b>\$8.4</b>	<b>\$1.7</b>	<b>0.9x</b>
<b>Freeman CT Horizon Investment Fund, LLC</b>		Commitment Date: 01/08/2019		CHF Commitment: US\$50.0 million				
NexPhase Capital Fund IV	Primary Fund	Buyout	Asian	2020	1.7	0.0	2.1	1.2x
Reverence Capital Partners Opportunities Fund II, L.P.	Secondary	Buyout	Emerging Firm	2019	2.9	0.1	3.2	1.1x
Wavecrest Growth Partners I, L.P.	Secondary	Growth Equity	Asian, Emerging Firm	2019	3.6	0.0	3.8	1.1x
					<b>\$8.2</b>	<b>\$0.1</b>	<b>\$9.0</b>	<b>1.1x</b>
<b>M2 - Connecticut Emerging Private Equity Fund of Funds, L.P.</b>		Commitment Date: 11/28/2007		CHF Commitment: US\$105.0 million				
Altus Capital Partners II, L.P.	Primary Fund	Buyout	Connecticut-based	2011	6.9	8.1	2.4	1.5x
Brightwood Capital SBIC I, L.P.	Primary Fund	Mezzanine	African American	2011	9.2	13.7	7.0	2.2x
Carpenter Community BancFund-A	Primary Fund	Growth Equity	Emerging Firm	2009	7.8	12.8	0.0	1.7x
Clearview Capital Fund II, LP, Secondary	Primary Fund	Buyout	Connecticut-based	2008	7.5	17.9	2.8	2.8x
DBL Equity Fund-BAEF II	Primary Fund	Venture Capital	Women	2011	7.0	2.6	6.8	1.3x
Estancia Capital Partners, L.P.	Primary Fund	Buyout	Hispanic	2012	9.6	5.5	9.2	1.5x
Hispania Private Equity II, L.P.	Primary Fund	Buyout	Hispanic	2009	3.8	6.1	0.7	1.8x
Ironwood Mezzanine Fund III, L.P.	Primary Fund	Mezzanine	Connecticut-based	2011	9.6	8.3	3.4	1.2x
MANSA Capital Fund I, L.P.	Primary Fund	Growth Equity	African American	2012	8.9	0.8	6.8	0.8x
Mill Road Capital II, L.P.	Primary Fund	Buyout	Connecticut-based	2012	10.5	4.3	9.4	1.3x
MK Capital II, L.P.	Primary Fund	Growth Equity	Emerging Firm	2011	6.3	3.4	8.7	1.9x
Siris Partners II	Primary Fund	Buyout	African American	2012	11.0	6.0	9.3	1.4x
SW Pelham Fund III, L.P.	Primary Fund	Mezzanine	African American	2008	4.4	5.9	0.0	1.3x
					<b>\$102.4</b>	<b>\$95.5</b>	<b>\$66.6</b>	<b>1.6x</b>
<b>Nutmeg Opportunities Fund II, LLC - EM</b>		Commitment Date: 06/09/2017		CHF Commitment: US\$35.0 million				
Financial Partners Fund I (Secondary 2)	Primary Fund	Growth Equity	Connecticut-based, Emerging Firm	2018	2.8	3.6	4.3	2.3x
Financial Partners Fund II, L.P.	Secondary	Growth Equity	Connecticut-based, Emerging Firm	2017	9.7	3.1	13.1	1.2x
Southfield Capital II, L.P.	Primary Fund	Buyout	Connecticut-based	2017	12.6	9.2	12.6	1.4x
					<b>\$25.0</b>	<b>\$15.9</b>	<b>\$30.0</b>	<b>1.4x</b>
<b>Nutmeg Opportunities Fund L.P. CT-EM</b>		Commitment Date: 12/23/2008		CHF Commitment: US\$35.0 million				
Altus Capital Partners II, L.P.	Primary Fund	Buyout	Connecticut-based	2018	4.6	5.4	1.6	1.5x
Atlantic Street Capital II	Primary Fund	Distressed Debt	Connecticut-based	2011	6.1	9.3	4.9	2.3x
Atlantic Street Capital III	Primary Fund	Buyout	Connecticut-based	2016	4.9	0.0	4.2	0.9x
Longitude Venture Partners II	Primary Fund	Venture Capital	Connecticut-based	2011	5.6	1.9	5.3	1.3x
North Castle Partners VI	Primary Fund	Buyout	Connecticut-based	2016	4.8	0.3	4.3	1.0x
Southfield Capital II, L.P.	Primary Fund	Buyout	Connecticut-based	2017	4.2	3.1	2.8	1.4x
Tengram Capital Partners Gen2 Fund	Primary Fund	Growth Equity	Connecticut-based	2013	4.8	4.9	1.9	1.4x
					<b>\$35.0</b>	<b>\$24.8</b>	<b>\$25.0</b>	<b>1.4x</b>
<b>Total</b>					<b>\$182.3</b>	<b>\$144.7</b>	<b>\$132.3</b>	<b>1.5x</b>

Underlying Limited Partner level performance may differ from aggregate fund-level performance due to an additional layer of fees and expenses paid as a result of the fund-of-funds structure. Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses. No assurance can be given that the performance of unrealized investments has not significantly changed from the date the performance reflected herein was determined.

# Performance versus Benchmarks: CHF

- Since inception to June 30, 2020, CHF generated a Net IRR of 7.2%. Compared to the current Russell 3000 + 250 bps benchmark, CHF underperformed by 388 basis points.



Returns are calculated using the internal rate of return methodology and are after the deduction of underlying fund manager fees and expenses.

The Benchmark is defined as The Russell 3000 index + 250 bps.

Since Inception Burgiss Benchmark: All Private Equity Fund-of-Funds, Pooled IRR for Vintages 2008, 2010, 2017, and 2019 as of June 30, 2020. This benchmark data is continuously updated and therefore subject to change. Comparisons between private equity and public equity returns need to be viewed with caution as private equity is an illiquid asset class, whereas publicly listed securities are marked-to-market daily. Despite quarterly mark-to-market of private holdings, valuations are believed to be incorporated at a slower pace than the public markets.

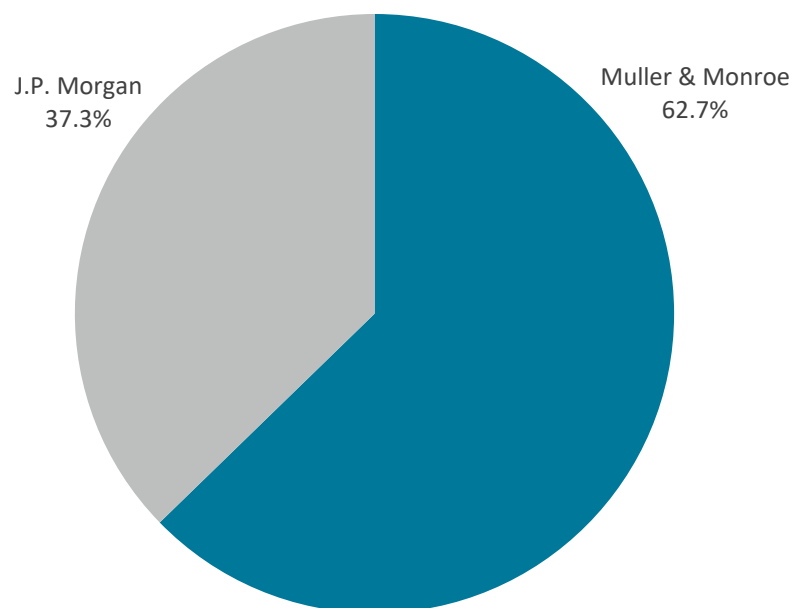
The referenced indices are shown for general market comparisons and are not meant to represent any particular fund. An investor cannot directly invest in an index. Moreover, indices do not reflect commissions or fees that may be charged to an investment product based on the index, which may materially affect the performance data presented.

**Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.**

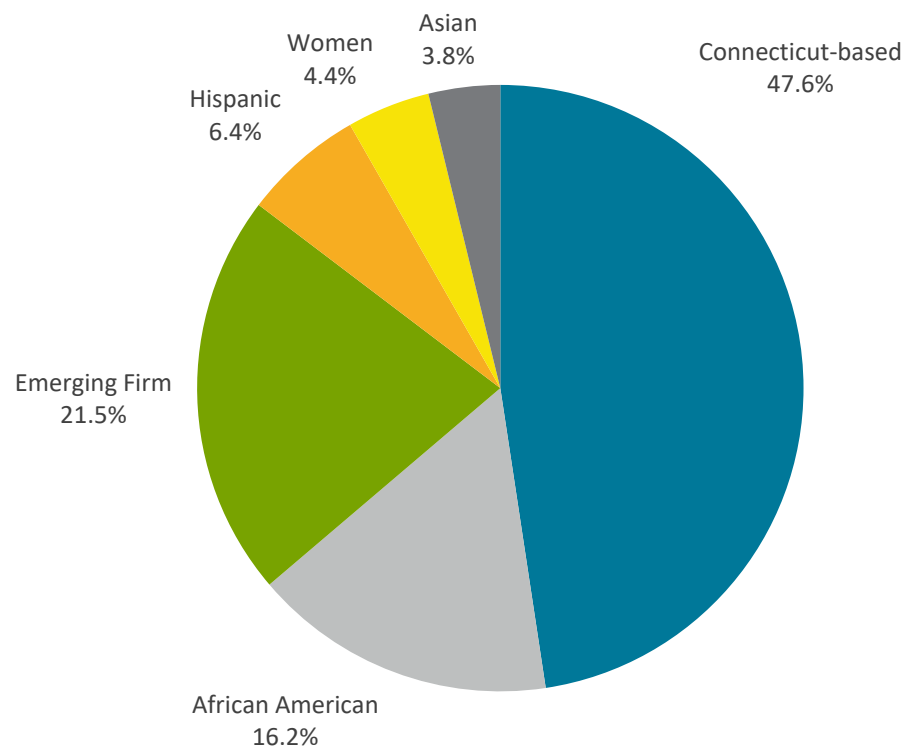
# CHF Diversification by Manager and Diversity Category



## Manager Exposure



## Diversity Category



## IV. In-State Program

## Portfolio Summary

This report presents an overview of the Connecticut Retirement Plans and Trust Funds ("CRPTF") In-State Private Equity Program ("In-State Program") as of June 30, 2020.

The In-State Program initiative was presented to and supported by the Investment Advisory Council in 2015, with the objective of enhancing portfolio returns, diversifying assets and achieving certain strategic goals. In particular, the In-State Program was established to diversify the management of CRPTF's assets while providing capital for Connecticut-based companies.

The CRPTF has committed \$145.0 million to the In-State Program since inception, which was allocated to four private equity funds: Connecticut Growth Capital, Constitution Fund V (Series B and D), and Nutmeg Opportunities Fund II – CT-Direct Investments.

# In-State Program

- As of June 30, 2020, the In-State Program's four funds have invested in 13 companies. Those companies employ and/or have employed 767 Connecticut-based employees<sup>1</sup> including four portfolio company investments that have been exited.
- As of June 30, 2020, Connecticut Growth Capital has invested in seven companies with 577 Connecticut-based employees<sup>1</sup>, which, including three exited companies, accounts for 75.2% of the total Connecticut-based employees.
- Of active investments, portfolio company Budderfly has seen the largest growth in Connecticut-based employees<sup>1</sup>. Since Connecticut Growth Capital's initial investment in Budderfly, the number of employees has increased 62.9%.
- As of June 30, 2020, Nutmeg Opportunities Fund II, LLC CT - Direct Investment has not closed any investment opportunities.

*As of June 30, 2020. In USD millions.*

	Vintage Year	Commitment Up To	Contributed Capital	Unfunded Commitment	Distributed Capital	Exposure	Market Value	TVPI	Net IRR	Number of CT-Based Employees			
										Initial Investment	Current	Change	% Change
Connecticut Growth Capital, LLC	2016	\$50.0	\$34.1	\$18.5	\$22.1	\$41.5	\$23.0	1.3x	14.9%	483	577	94	19.5%
Constitution Fund V, LLC - Series B	2017	20.0	15.7	4.6	3.5	17.2	12.6	1.0x	1.5%	177	155	-22	(12.4%)
Nutmeg Opportunities Fund II, LLC – CT-Direct Investment	2017	50.0	-	50.0	-	50.0	-	NM	NM	0	0	0	0.0%
Constitution Fund V, LLC - Series D	2019	25.0	6.7	18.3	-	24.9	6.5	NM	NM	27	35	8	29.6%
<b>Total</b>		<b>\$145.0</b>	<b>\$56.4</b>	<b>\$91.4</b>	<b>\$25.6</b>	<b>\$133.5</b>	<b>\$42.1</b>	<b>1.2x</b>	<b>11.0%</b>	<b>687</b>	<b>767</b>	<b>80</b>	<b>11.6%</b>

Note: in August 2018, the commitment for Connecticut Growth Capital, LLC was reduced by US\$25.0 million resulting in an updated commitment of US\$50.0 million.

<sup>1</sup>All employee data was provided to the State of Connecticut from the General Partners of each fund, who then provided it to StepStone as of Q2 2020. Initial Investment refers to the number of Connecticut-based employees at the time that each underlying investment is made.

An IRR is not meaningful in the early years of a partnership's life given the J-curve effect. The J-curve refers to the shape of the curve that illustrates a fund's performance over time. During the initial years of a fund's life, due to illiquidity, stagnant valuations, fees and expenses, a fund's performance tends to be negative (the bottom of the "J"). Eventually, as portfolio companies are realized or increase in value and fees become a smaller percentage of overall contributions, fund performance improves and investors' returns move up the "J" shaped curve. Performance for investments held less than two years is not considered meaningful. TVPI and Net IRR will be displayed two years following the first capital call. IRR and TVPI for certain vehicles may have been impacted by Stepstone's or the underlying GPs' use of subscription-backed credit facilities by such vehicles. Reinvested/recycled amounts increase contributed capital.

TVPI is the ratio of Distributed Capital plus Market Value to Contributed Capital.

Net IRR is defined as the annualized, compound rate of return using daily draws, distributions and Market Value as of the Report Date, net of fees and expenses, including late closing interest.

Market Value is defined as the investor's value as reported by the fund's manager.

Exposure is defined as the sum of an investor's Market Value plus Unfunded Commitment.

Data compiled from cash flow notices and quarterly financial statements provided by fund managers.

**Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.**

# In-State Program Company Holdings

- As of June 30, 2020, the In-State Program had 13 investments across the three funds. Of those investments, Connecticut Growth Capital had invested in seven portfolio companies, Constitution Fund V - Series B had invested in four, and Constitution Fund V - Series D had invested in two portfolio companies.

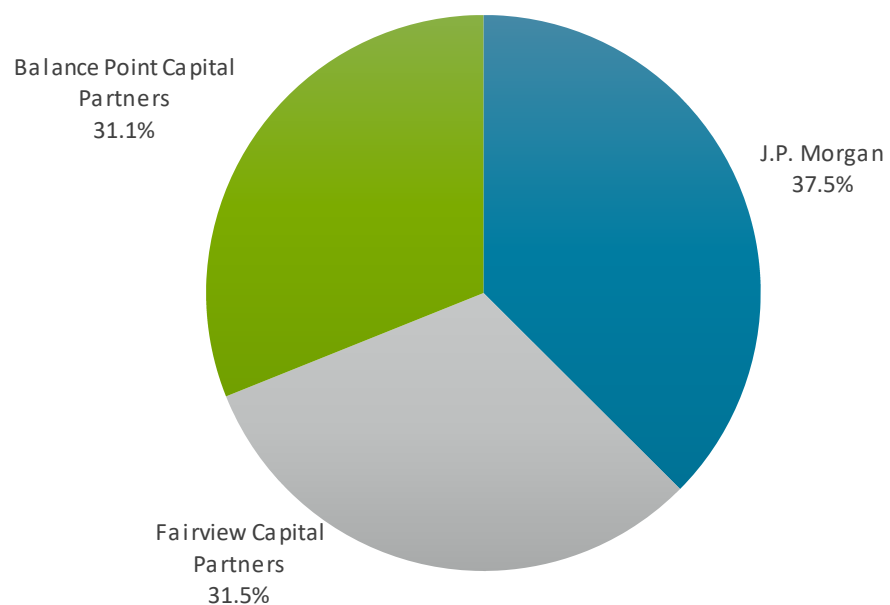
As of June 30, 2020. In USD millions.

Company	Year of Initial Investment	Exit Date	Industry
<b>Connecticut Growth Capital, LLC</b>	<i>Commitment Date: 12/15/2016</i>	<i>Commitment Up To: US\$50.0 million</i>	
APS Technology	2017		Energy
Awareness Technologies, Inc.	2019	2019	Information Technology
Budderfly	2019		Industrials
Clarus Parent Holdings, LLC	2016	2019	Information Technology
Health Media Network, LLC	2018		Health Care
OneSource Water, LLC	2016	2016	Consumer Discretionary
ProHealth	2016		Health Care
<b>Constitution Fund V, LLC - Series B</b>	<i>Commitment Date: 12/30/2016</i>	<i>Commitment Up To: US\$20.0 million</i>	
D42 Holdings	2019		Information Technology
eVariant, Inc.	2017	2019	Health Care
Lumerity 365, LLC	2019		Financials
R4 Technologies, LLC	2017		Communication Services
<b>Constitution Fund V, LLC - Series D</b>	<i>Commitment Date: 12/21/2018</i>	<i>Commitment Up To: US\$25.0 million</i>	
Covr Financial Technologies, Inc.	2019		Information Technology
Rallybio, LLC	2020		Health Care
<b>Nutmeg Opportunities Fund II, LLC – CT-Direct Investment</b>	<i>Commitment Date: 06/09/2017</i>	<i>Commitment Up To: US\$50.0 million</i>	

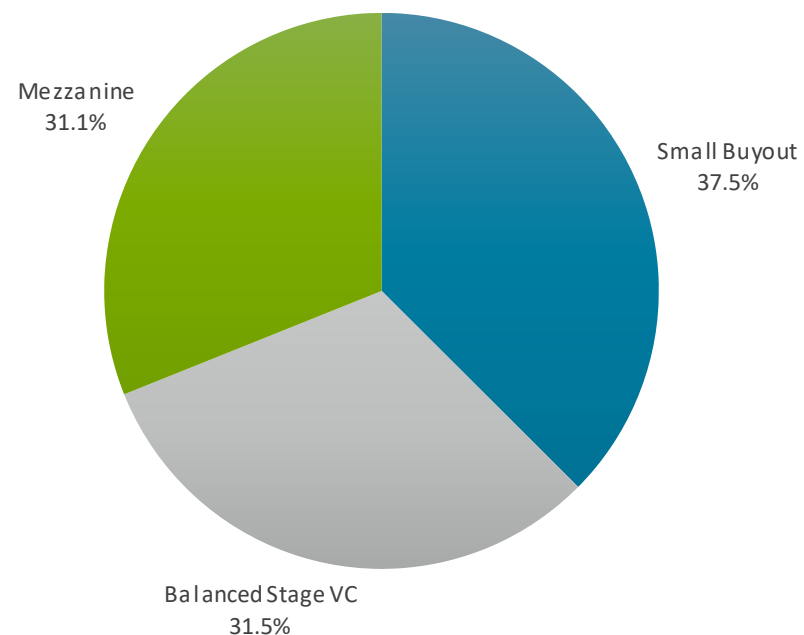


# In-State Diversification by Manager and Sub-Strategy

## Manager Exposure



## Strategy Exposure



## V. Market Update

The spread of COVID-19 had a profound impact on global economies and markets during the first quarter of 2020. Equities and bond yields suffered both steep declines not seen since the Global Financial Crisis and record volatility, as the global pandemic forced countries into lockdowns in order to contain the outbreak. While the COVID-19 pandemic continues to cause significant disruption in nearly every aspect of the world economy, several countries have begun to ease quarantines and social distancing guidelines in an effort to restore economic activity. However, there remains hesitancy in a return to normalcy due to fear of a potential “second wave” of infections.

Uncertainty regarding the pandemic’s economic impact sent the Chicago Board Option Exchange’s Volatility Index (“VIX”) to an all-time high and countries across the world approve massive stimulus packages to help combat the global economic shutdown. Oil prices also plunged during the quarter, as talks between OPEC and other oil producers failed to reach an agreement on extensions to production cuts coinciding with, and exacerbated by, weaker demand due to the virus. While the stock markets have seen a V-shape recovery in recent months, it remains to be seen how long it will take for economies around the world to fully recover. As of this writing, the U.S. unemployment rate is at its highest level since the Great Depression.

All global equity indices declined in Q2 2020, led by the MSCI Europe Index declining 24.8%, as the virus shutdown an economy that was already struggling with economic growth. The MSCI Emerging Markets Index followed suit, falling 23.9%, as COVID-19 became a pandemic and the prospect of a global recession loomed. Meanwhile, the S&P 500 Total Return Index tumbled 19.6%, as confirmed U.S. cases rose to over 100,000 and jobless claims soared above three million in the last week of March. In response, the Federal Reserve cut interest rates to 0% and announced unlimited quantitative easing. The U.S. Congress also passed a historic US\$2.2 trillion stimulus package that included US\$250.0 billion for households, US\$500.0 billion for loans to distressed companies and US\$350.0 billion for small business loans.

Given the significant and rapid decline in the public markets, StepStone conducted proprietary analyses<sup>1</sup> utilizing its extensive database of private market funds and incorporated into its assessments, previous historic public market downturns, including the Global Financial Crisis (“GFC”). Results showed that private equity returns compared to the S&P 500 Total Return Index were roughly 60% of the down-capture<sup>2</sup> during the GFC. Historically, StepStone notes that general partners were not forced to sell ‘at the bottom,’ and therefore valuations would not capture all the volatility in a market in turmoil.

Nonetheless, during extreme periods of market dislocation and volatility, capital activity and liquidity in the private markets is severely impacted. Using data from StepStone’s Data and Risk Operations Group, the ratio of distribution activity relative to contributions decreased significantly from pre-COVID outbreak in the U.S. from a ratio of over 1.0 in February 2020 to 0.3 in April 2020. During this same period, StepStone analyzed the capital calls from funds and saw a large uptick in general partners calling capital to pay off or reduce their line of credit (“LOC”).

In private debt market, U.S. leveraged buyout (“LBO”) debt volume decreased 3.8% quarter-over-quarter and 37.8% year-over-year to US\$22.8 billion but was still 10.0% higher than the 10-year quarterly average of US\$20.7 billion. According to data from S&P, purchase price multiples for U.S. LBOs were 11.2x EBITDA in the first quarter, down from 11.3x EBITDA in the prior quarter, but above the 10-year average of 9.7x EBITDA. Average debt multiples of large corporate U.S. LBO loans decreased to 5.3x from 5.9x over the quarter, which is below the 10-year average of 5.5x. Equity contributions for U.S. LBOs decreased to 46.7%, down from the recent high of 50.6% at year-end 2019, but above the 10-year average of 41.7%<sup>3</sup>.

<sup>1</sup>Source: StepStone Portfolio Analytics & Reporting (“SPAR”) as of April 2020. SPAR data are updated continuously; values are subject to change.

<sup>2</sup>Down-capture is ratio of decline in private markets relative to an index, measured peak to trough

<sup>3</sup>S&P U.S. LBO Review, Q2 2020

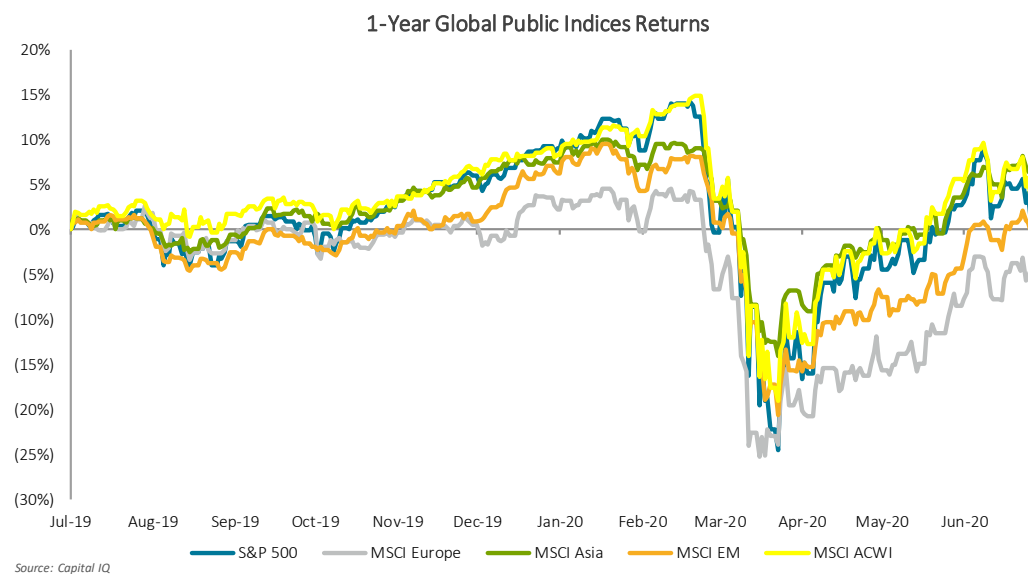
Global private equity fundraising totaled US\$147.9 billion in the first quarter, representing a decline of 16.5% quarter-over-quarter but flat compared to the first quarter of 2019. U.S.-focused funds represented 65.0% of total dollar amount raised during the quarter, above the 10-year average of 60.3%. Funds raised in Europe, Asia, and the Rest of World made up 6.4%, 10.6% and 18.0%, respectively, of global fundraising for the quarter. Dollars invested by private equity funds fell 3.4% quarter-over-quarter but was up 8.7% year-over-year, however the average investment per company increased 10.7% quarter-over-quarter to US\$24.3 million. Companies operating in the Information Technology sector continue to account for a significant portion of the invested capital, with over 48.5% of the capital deployed in the first quarter.

Private equity-backed IPO transaction volume increased in the first quarter by 18.0% compared to the prior quarter and by 39.9% compared to the first quarter of 2019, with US\$5.3 billion raised in 16 IPOs. The largest IPOs of the first quarter were completed by Pharmaceutical Product Development, LLC (NASDAQ: PPD), which raised US\$1.8 billion, and GFL Environmental Inc (NYSE: GFL), which raised US\$1.4 billion. Together these deals represented 61.6% of the total value for all IPOs during the quarter. M&A activity increased 13.9% quarter-over-quarter to US\$117.8 billion but was down 40.1% compared to the first quarter of 2019. The largest M&A deals of the quarter were the US\$12.9 billion purchase of Liberty Property Trust by Prologis, L.P. and the US\$9.1 billion purchase of InterXion Holding N.V. by Digital Realty Trust, Inc. (NYSE: DLR). Together these deals represented 18.7% of the total value for all deals during the quarter<sup>4</sup>.

<sup>4</sup>Capital IQ Transaction Screening Report as of June 9, 2020

# Market Overview – Public Markets

- After the sharp decline in global equity markets in the first quarter from global fears of the impact of COVID-19, global markets rebounded quickly in Q2
  - S&P 500 Total Return led all indices during the quarter, returning 20.5%



## Regional Indices

	3 Mo	1 Yr	3 Yr	5 Yr	10 Yr
MSCI Asia	14.1%	0.1%	1.1%	1.8%	3.8%
MSCI Europe	14.3%	(8.8%)	(2.7%)	(1.3%)	2.7%
MSCI EM	17.3%	(5.7%)	(0.5%)	0.5%	0.8%
MSCI ACWI	18.7%	0.3%	4.1%	4.4%	6.9%
S&P 500	20.0%	5.4%	8.6%	8.5%	11.6%
S&P 500 Total Return*	20.5%	7.5%	10.7%	10.7%	14.0%

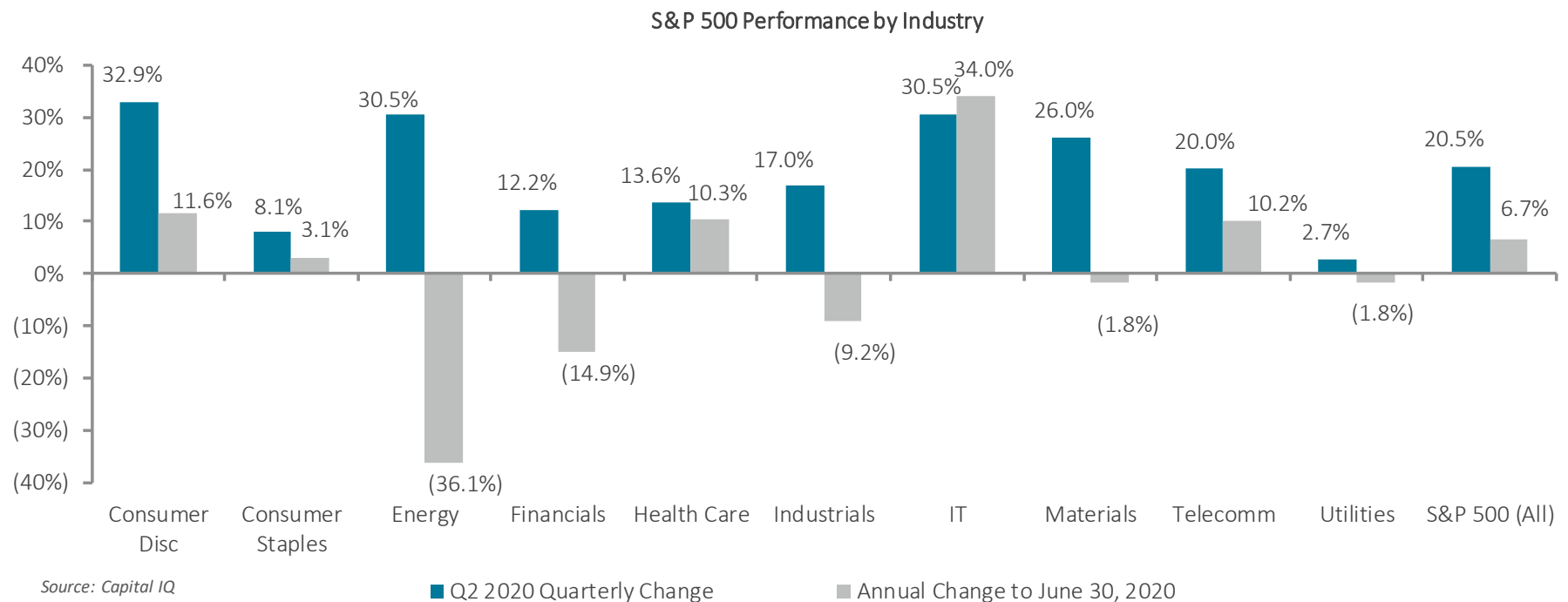
For the period ended June 30, 2020

\*Includes reinvestment of dividends.

Source: Capital IQ

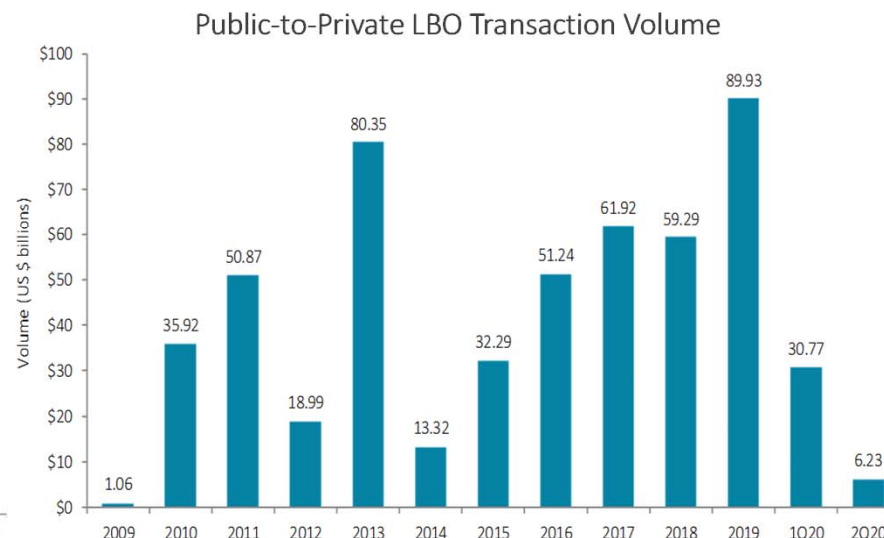
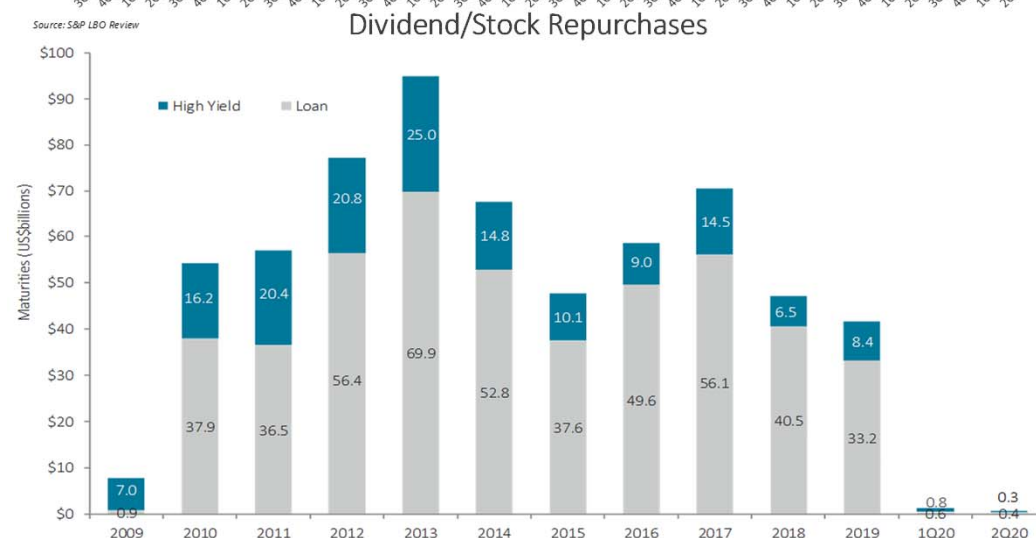
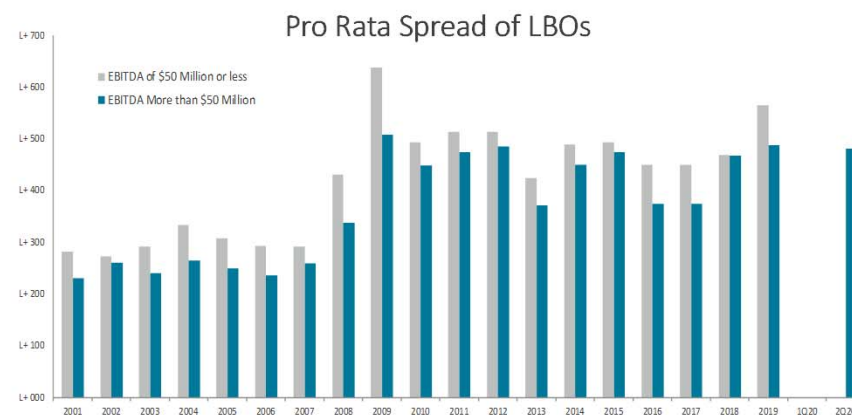
# Market Overview – Sector Overview

- All ten industry sectors increased during the quarter
  - Consumer Discretionary and Information Technology were the top performing sectors, up 32.9% and 30.5%, respectively, for the quarter
  - Consumer Staples and Utilities saw modest gains, gaining 8.1% and 2.7%, respectively, for the quarter



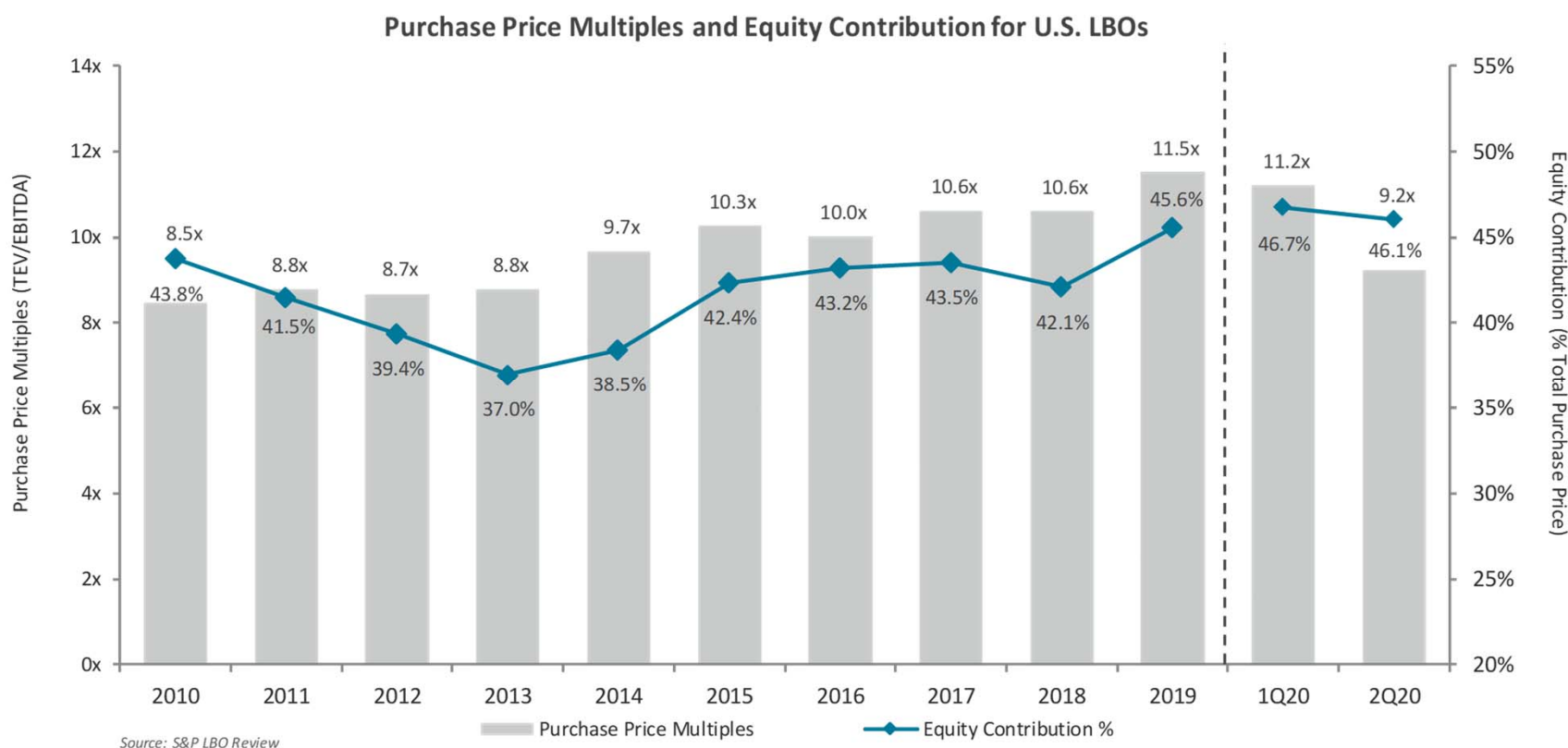
# Market Overview – LBO Activity

- U.S. LBO loan new issuance totaled US\$15.6 billion during the quarter, representing a quarter-over-quarter decrease of 31.4% and a decrease of 8.2% from the second quarter of 2019
  - Spreads of LBOs with EBITDAs greater than \$50 million remained at the LIBOR+ 500 level during the quarter
  - Dividend/Stock repurchase volume decreased 91.0%, compared to the prior period
  - Public-to-Private LBO transaction volume decreased 8.1%, compared to the prior year period



# Market Overview – LBO Activity

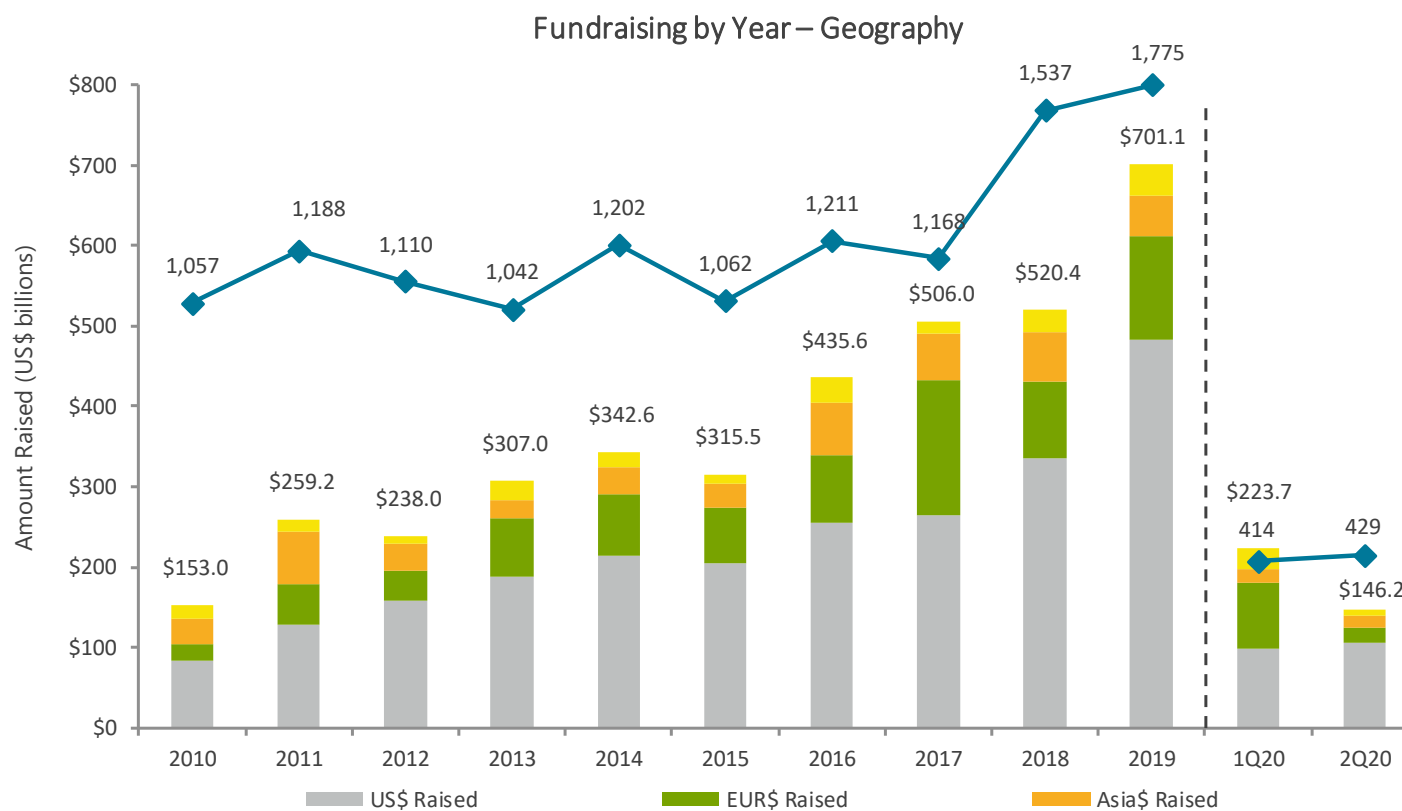
- Purchase price multiples for U.S. LBOs was 9.2x EBITDA, a decrease from 11.2x in the first quarter of 2020 and below the 10-year average of 9.7x
  - Equity contributions for US LBOs decreased from 46.7% to 46.1% quarter-over-quarter





# Market Overview – Private Equity Fundraising

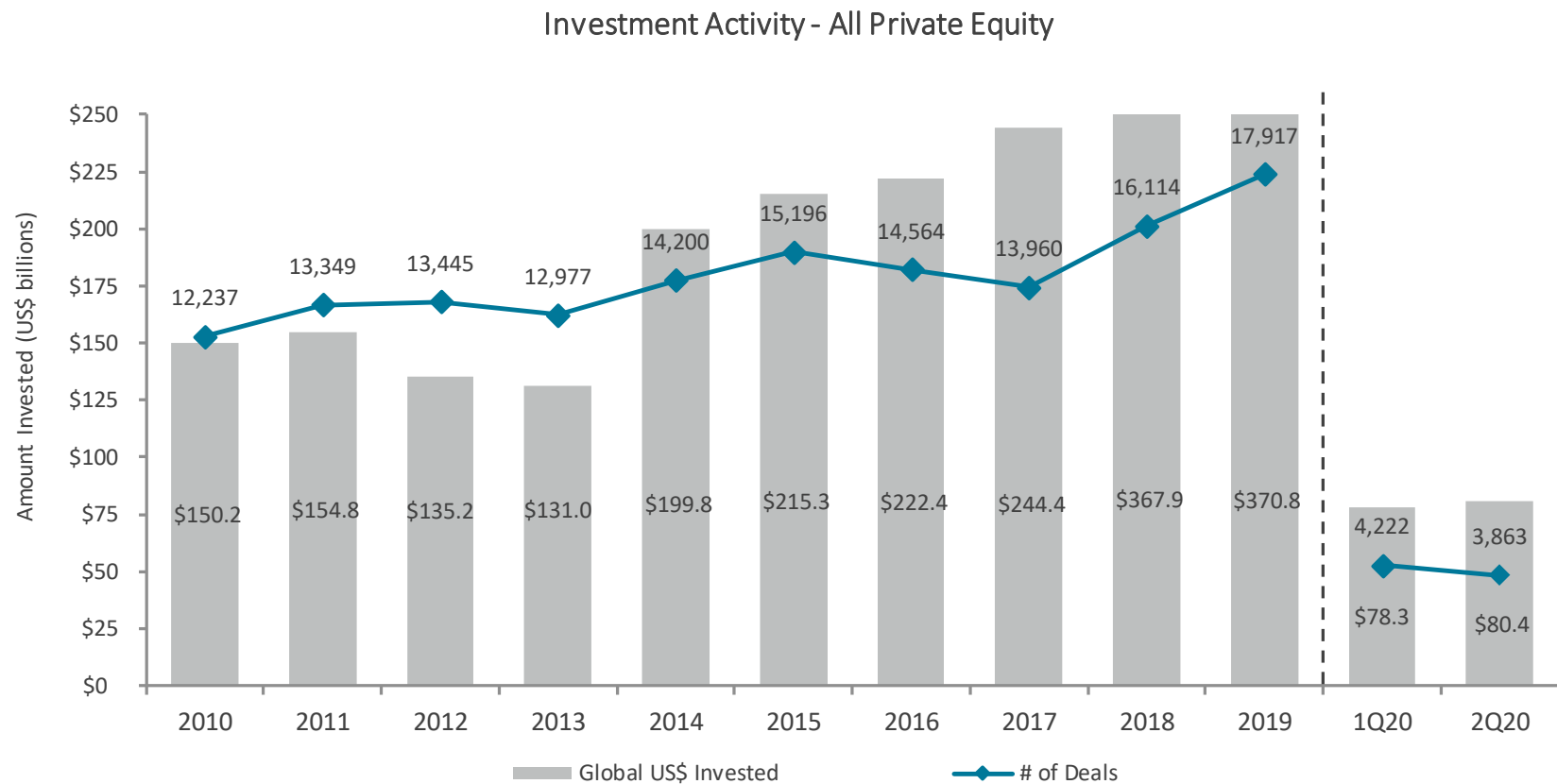
- Private equity fundraising totaled US\$146.2 billion in the second quarter, representing a decrease of 34.6% quarter-over-quarter
  - Buyout fundraising totaled US\$100.6 billion and Venture Capital raised US\$29.9 billion in the second quarter
  - The US represented 72.9% of total funds raised in the quarter, higher than the 10-year average of 60.4%



Source: Refinitiv

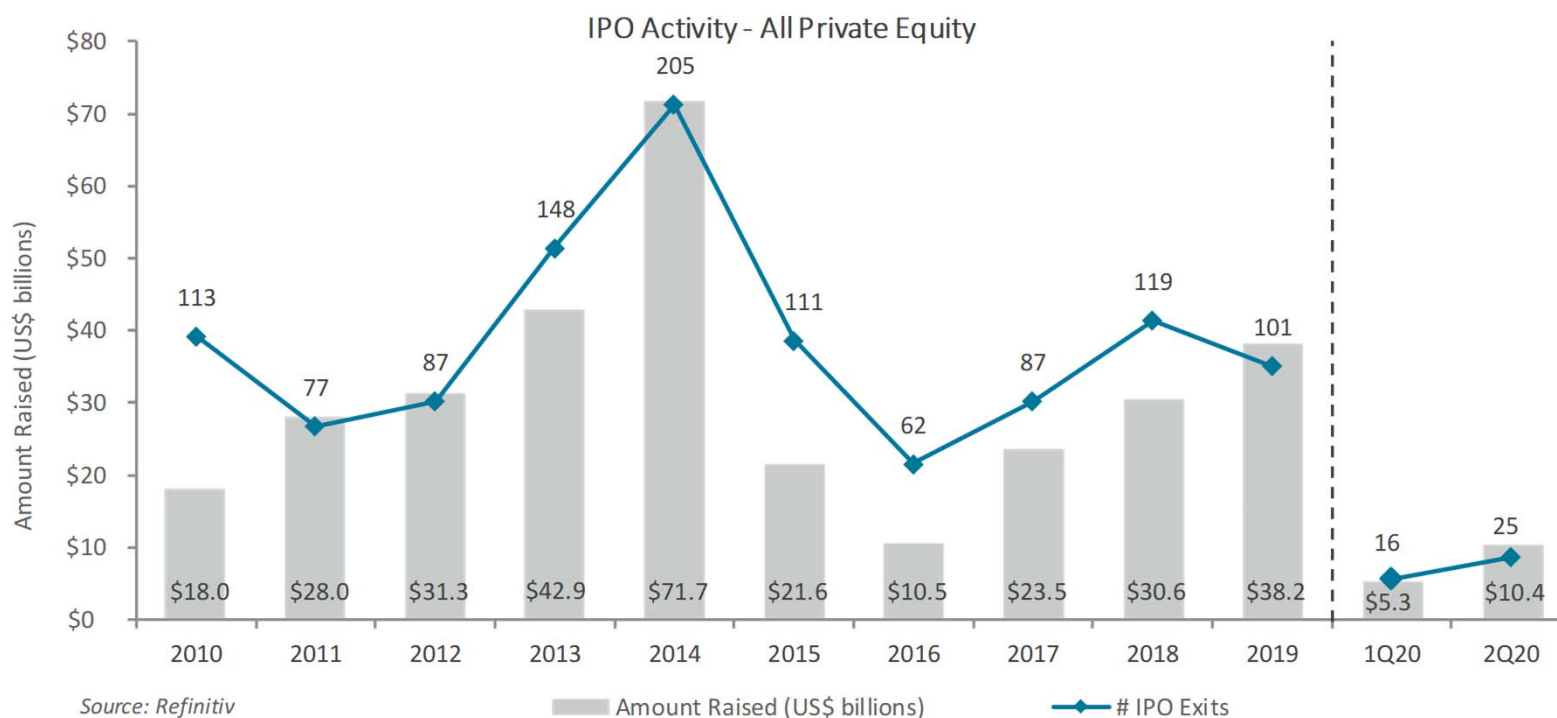
# Market Overview – Private Equity Investment Activity

- Private equity funds invested US\$80.4 billion globally during the second quarter, representing a decrease of 12.1% compared to the prior year
  - The average investment size during the quarter was US\$20.8 million, up 12.2% compared to last quarter



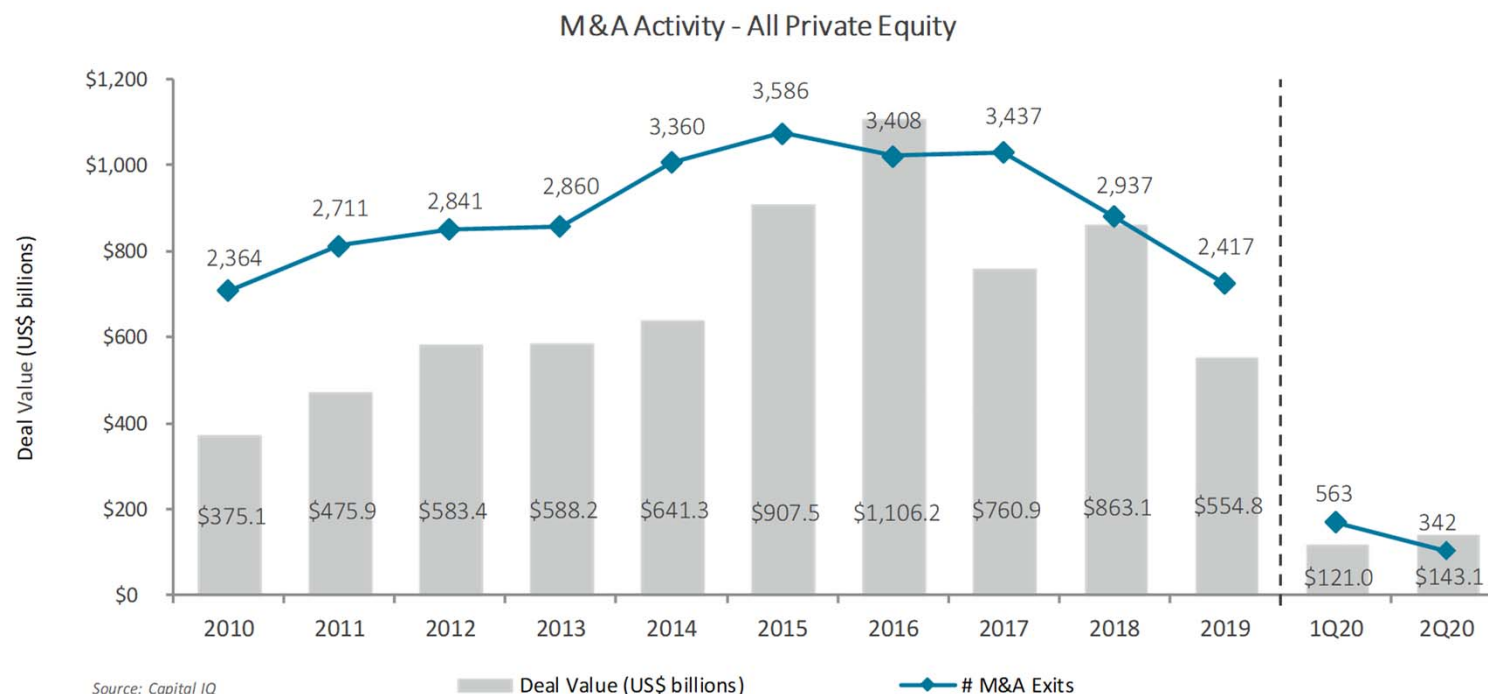
# Market Overview – IPO Activity

- During the second quarter, Thomson ONE tracked 25 private equity-backed IPOs raising US\$10.4 billion in proceeds, on the New York Stock Exchange and the NASDAQ
  - The number of private equity-backed IPOs increased 56.3%, compared to last quarter
  - The total amount raised increased 95.1%, compared to the prior quarter
  - The largest IPOs of the second quarter were completed by Dun & Bradstreet Inc (NYSE: DNB), which raised US\$2.0 billion, and Zoominfo LLC (NASDAQ: ZI), which raised US\$934.5 million



# Market Overview – M&A Activity

- Private equity-backed M&A volume totaled US\$143.1 billion in deals closed during the second quarter, an increase of 34.1% compared to the prior year
  - The number of M&A deals decreased 39.3%, compared to the prior quarter
  - The largest M&A deals of the quarter were the US\$83.6 billion purchase of Sprint Corporation by T-Mobile US, Inc. (NASDAQ: TMUS) and the US\$6.0 billion purchase of Iqsa Services Limited by The Blackstone Group Inc. (NYSE: BX)



## VI. Glossary

# Glossary

Term	Definition
<b>Balanced Stage Venture Capital</b>	A Venture Capital fund focused on both Early Stage and Late Stage companies
<b>Bridge Financing</b>	Temporary funding that will eventually be replaced by permanent capital from equity investors or debt lenders
<b>Buyout</b>	Fund whose strategy is to acquire controlling interests in companies
<b>Co/Direct Investment</b>	Investment made directly into a company, rather than indirectly through a fund
<b>Committed Capital</b>	Total dollar amount of capital pledged to a fund
<b>Contributed Capital</b>	Total capital contributed to a fund for investments, fees and expenses, including late closing interest paid, less returns of excess capital called and bridge financing
<b>Cost Basis</b>	Remaining amount of invested capital
<b>Debt</b>	Security type that signifies a repayment obligation by a company (e.g. senior debt, subordinated debt, bridge loan etc.)
<b>Distressed</b>	A company's final Stage of development. Company is generally experiencing operational or financial distress
<b>Distressed / Turnaround</b>	Fund whose strategy it is to acquire the Equity or Debt of companies experiencing operational or financial distress
<b>Distributed Capital</b>	Capital distributed to the limited partners, including late closing interest earned
<b>DPI (Distributions to Paid In / The Realization Multiple)</b>	Total gross distributions divided by total gross contributions
<b>Early Stage</b>	A company's first Stage of development. Company is generally generating modest or no revenues
<b>Equity</b>	Security type that signifies ownership of a company (e.g. common stock, preferred stock, warrants, etc.)
<b>Expansion Stage</b>	A company's third Stage of development. Company is generally experiencing high growth and nearing profitability
<b>Exposure</b>	Sum of Market Value plus Unfunded Commitment
<b>Fund-of-Funds</b>	Fund whose strategy is to make investments in other funds
<b>Fund Stage</b>	A fund progresses through three stages over its life: investment (investment period), distribution (post-investment period), and liquidation
<b>Geographic Region</b>	Market location of a company: North America, Western Europe, Africa/Middle East, Latin America, Asia/Pacific Rim
<b>Global Buyout</b>	Fund whose strategy is to acquire or recapitalize businesses with international exposure
<b>Growth Equity</b>	Fund whose strategy is to invest in companies to expand or restructure operations, enter new markets or finance an acquisition without a change of control of the business
<b>Infrastructure</b>	Fund whose strategy is to acquire interests in physical structures and networks that provide the essential services for society's economic and social needs, e.g. roads, tunnels, communication networks, etc.
<b>Internal Rate of Return (IRR)</b>	The discount rate that results in a net present value of zero of a series of cash flows. The IRR considers both cash flow timing and amount and is the preferred performance measure for private market funds
<b>Invested Capital</b>	Capital invested by a fund in portfolio holdings
<b>Investment Type</b>	Classification of an investment vehicle: Primary Fund, Secondary Fund, Fund-of-Funds
<b>J-Curve</b>	Refers to the shape of the curve illustrating a fund's performance over time. During the initial years of a fund's life, as a result of illiquidity, stagnant valuations, fees and expenses, a fund's performance tends to be negative (the bottom of the "J"). Eventually, as portfolio companies are realized or increase in value and fees become a smaller percentage of overall contributions, performance improves and investors' returns move up the "J" shaped curve
<b>Large</b>	Company with a Size greater than \$1 billion
<b>Large Buyout</b>	Fund whose strategy is to acquire or recapitalize Medium/Large sized businesses, Fund size of \$3-6 billion

# Glossary

Term	Definition
<b>Late Stage</b>	A company's second Stage of development. Company is generally generating high revenue growth and high losses
<b>Lower-Mid</b>	Company with a Size greater than \$100 million, but less than \$250 million
<b>Market Value</b>	Holding value of a portfolio company assigned by the General Partner, which generally represents fair value
<b>Mature</b>	A company's fourth Stage of development. Company is generally generating modest to no growth and operating profitably
<b>Mega Buyout</b>	Fund whose strategy is to acquire or recapitalize Large businesses, Fund size over \$6 billion
<b>Mezzanine</b>	Fund whose strategy is to acquire subordinated debentures issued by companies
<b>Middle-Market Buyout</b>	Fund whose strategy is to acquire or recapitalize middle-market businesses, Fund size between \$1-\$3 billion
<b>Multi-Strategy</b>	A Fund that invests across multiple strategies
<b>Natural Resources</b>	Fund whose strategy is to acquire interests in naturally occurring, economically valuable raw materials and all physical facilities and capabilities required for the extraction, refinement, and delivery to end users, e.g. oil and gas properties, timberland, etc.
<b>Net IRR</b>	Annualized effective compound rate of return using daily contributions, distributions and Market Value as of the Report Date, net of all fees and expenses, including late closing interest
<b>Percent Interest</b>	Represents an investor's economic interest in a fund based upon the investor's commitment divided by total fund commitments
<b>Primary Investment</b>	An interest in a private equity fund acquired directly from the fund manager during the fundraising period
<b>Public Market Equivalent (PME)</b>	A private equity benchmark that represents the performance of a public market index expressed in terms of an IRR, using the same cash flows and timing as the investor's investment activity in private equity. The PME serves as a proxy for the return the investor could have achieved by investing in the public market. The PME benchmark return assumes cash flows are invested at the end of each day.
<b>Publication Date</b>	Refers to the date this report was created as reflected in the Executive Summary
<b>Real Assets</b>	Fund whose strategy is to invest in assets that are tangible or physical in nature such as land, machinery, and livestock
<b>Real Estate</b>	Fund whose strategy is to acquire interests in real estate property
<b>Realized Capital</b>	Capital distributed to a fund from portfolio holdings
<b>Recallable / Recyclable Capital</b>	Capital that has been previously distributed by a fund to investors but may be called again for investment purposes. It is generally associated with realizations that have occurred in the early years of a fund or refers to uninvested capital that has been temporarily returned.
<b>Recapitalization</b>	The reorganization of a company's capital structure
<b>Report Date</b>	Refers to the end date of the reporting period as reflected on the cover page
<b>Return on Investment (ROI)</b>	Ratio of Realized Capital plus Market Value to Invested Capital

# Glossary

Term	Definition
<b>Russell 3000® Total Return Index</b>	The Russell 3000® Total Return Index measures the performance, including dividend reinvestment, of the largest 3000 U.S. companies representing approximately 98% of the investable U.S. equity market.
<b>RVPI (Residual Value to Paid In)</b>	The market value of all remaining investments within a fund divided by total gross contributions
<b>Secondary Investment</b>	Investments that involve the purchase of private equity fund interests or portfolios of direct investments in privately held companies from existing institutional Investors
<b>Sector</b>	Industry in which the company operates: technology, telecommunications, healthcare, financial services, industrial, consumer, energy, etc.
<b>Size</b>	Capitalization size of a company: Large, Upper-Mid, Lower-Mid, Small
<b>Small Business Investment Company (SBIC)</b>	Lending and investment firms that are licensed and regulated by the Small Business Administration (SBA). The licensing enables them to borrow from the federal government to supplement the private funds of their Investors.
<b>Small Buyout</b>	Fund whose strategy is to acquire or recapitalize Small businesses typically with a TEV of less than \$250 million, Fund size of less than \$100 million
<b>Stage</b>	The course of development through which a company passes from its inception to its termination: Early, Late, Expansion, Mature, Distressed
<b>Sub-Asset Class</b>	Private equity investments are generally classified as Buyout, Venture Capital, Mezzanine, Distressed/Turnaround, and Fund-of-Funds
<b>Total Value</b>	Equals the sum of Market Value and Distributed Capital
<b>TVPI (Total Value to Paid In)</b>	Market value plus gross distributions divided by total gross contributions
<b>Unfunded Commitment</b>	Amount of capital that remains to be contributed to a fund as defined in a fund's limited partnership agreement
<b>Upper-Mid</b>	Company with a Size greater than \$250 million but less than \$1 billion
<b>Venture Capital</b>	Fund whose strategy is to make investments in Early Stage and/or Late Stage companies
<b>Vintage Year</b>	Vintage Year is defined as the earlier of the year in which investors first contribute capital to a fund or the year a fund commences operating activity. If neither first contribution or first investment has occurred as of Report Date, Commitment Year is used as a preliminary Vintage Year.





**State of Connecticut**  
**Office of the Treasurer**

SHAWN T. WOODEN  
TREASURER

December 4, 2020

Members of the Investment Advisory Council ("IAC")

**Re: Consideration of K5 Private Investors, L.P.**

Dear Fellow IAC Member:

At the December 9, 2020 meeting of the IAC, I will present for your consideration a private equity opportunity for the Private Investment Fund ("PIF") in the Connecticut Retirement Plans and Trust Funds (the "CRPTF"): K5 Private Investors, L.P. ("K5" or the "Fund). K5 has a targeted size of \$3.25 billion and is being raised by K1 Investment Management, LLC ("K1"), based in Manhattan Beach, CA.

I am considering an investment of up to \$125 million in K5, a fund that will make growth buyout and select influential minority investments in middle market enterprise software companies, primarily headquartered in North America. K1's expertise is in identifying smaller, high growth enterprise software companies that K1 supports with strategic capital and operating resources to create market leaders. A commitment to K5 would provide the CRPTF with the opportunity to gain exposure to a market segment enjoying favorable long-term growth trends through a high quality, sector focused manager consistent with my strategic objectives for the PIF portfolio.

Attached for your review is the recommendation from Laurie Martin, Chief Investment Officer, and the due diligence report prepared by StepStone. I look forward to our discussion of these materials at next week's meeting.

Sincerely,

Shawn T. Wooden  
State Treasurer

OFFICE OF THE STATE TREASURER  
**MEMORANDUM**



**DECISION**

**TO:** Shawn T. Wooden, Treasurer

**FROM:** Laurie Martin, Chief Investment Officer

**CC:** Darrell V. Hill, Deputy Treasurer  
Raynald Leveque, Deputy Chief Investment Officer  
Kevin Cullinan, Chief Risk Officer  
Mark E. Evans, Principal Investment Officer  
Olivia Wall, Investment Officer

**DATE:** November 23, 2020

**SUBJECT:** K5 Private Investors, L.P. – Final Due Diligence

**Summary**

The purpose of this memorandum is to recommend that the Connecticut Retirement Plans and Trust Funds (the “CRPTF”) consider a commitment of up to \$125 million to K5 Private Investors, L.P. (“K5” or the “Fund”). K5 will focus on making growth buyouts and select influential minority investments in middle market enterprise software companies, primarily headquartered in North America. The Fund has a target size of \$3.25 billion with a \$3.9 billion hard cap.

The Fund’s general partner, K5 Capital Advisors, L.P. (the “GP”), is an affiliate of K1 Investment Management, LLC (“K1” or the “Firm”). K1 was founded in 2010 and is based in Manhattan Beach, CA. The Firm had approximately \$6.5 billion in assets under management as of June 30, 2020 and maintains an exclusive focus on private equity investments in the middle market software enterprise companies. The GP held a first close for the Fund in April 2020 and had closed on \$2.5 billion as of the date herein. The GP expects to hold a final close during the first quarter of 2021.

**Strategic Allocation within the Private Investment Fund**

The Fund’s buyout strategy falls under the Corporate Finance allocation of the Private Investment Fund (“PIF”). The IPS establishes target allocations ranges of 70% to 100% to Corporate Finance investments within the PIF portfolio as measured by a percentage of total exposure, defined as market value plus unfunded commitments. As of September 30, 2020, the PIF’s total exposure to Corporate Finance strategies was approximately 84%.

More specifically, the Fund’s strategy would be categorized as a middle-market buyout fund. As of September 30, 2020, middle-market buyout funds represented approximately 7% of the PIF’s total exposure. The recommended K5 commitment would be consistent with the PIF’s strategic pacing plan targeted middle market exposure of 10% to 14% of the PIF’s total portfolio.

The Fund commitment would represent Connecticut’s first partnership with K1. Pension Funds Management (“PFM”) investment professionals believe that K1, which has generated attractive returns through its expertise investing in smaller, high growth enterprise software companies, would make a compelling addition to the PIF portfolio.

## **Investment Strategy and Market Opportunities**

K5 will follow the same investment strategy as K1's most recent funds and focus on growth buyout investments in middle market enterprise software companies primarily headquartered in North America. KI generally defines its target companies as those with less than \$100 million of run rate revenue at the time of the Firm's initial investment and generally with total enterprise values ("TEV") below \$250 million.

K1 believes that the market opportunity in enterprise software is driven by long-term, favorable tailwinds, including ever-increasing computing power, the adoption of Software-as-a-Service ("SaaS") applications, and productivity gains derived from the automation of otherwise manual processes. According to Gartner Research, the global SaaS market was expected to total \$236 billion of revenue in 2019 and to reach \$341 billion by the end of 2023, representing a compound annual growth rate of 9.3%. The Firm also views its targeted middle market segment as underserved by sector focused private equity firms.

Across the enterprise software market, K1 generally remains agnostic with regards to underlying sub-sectors and end-customer industry verticals. Instead, the Firm will continue its bottom-up investment thesis of targeting companies that have the following revenue resilience characteristics:

- Significant switching costs for end-customers as the products are either mission critical or provide a highly valued system of record;
- High degree of recurring revenue and customer retention, ideally 90% or higher; and,
- Very diversified customer bases.

Based on these targeted revenue resilience factors, the Firm's investments have been oriented toward market subsectors demonstrating such characteristics, including application software, healthcare technology, systems software, IT consulting, interactive media, and advertising services.

K5 will focus primarily on making control buyout investments in North America, which may be complemented by strategic add-on acquisitions outside of North America. The Firm will selectively make growth investments by taking a minority interest in a company; however, control buyouts have represented more than 90% of invested capital across K1's three more recent funds: K2 Private Investors, L.P. ("K2"), K3 Private Investors, L.P. ("K3"), and K4 Private Investors, L.P. ("K4"). Overall, the Firm's investment strategy will remain focused on investment opportunities that have the potential for growth, underpinned by operating enhancements to support organic growth and acquisitions. K1 categorizes control buyouts into two categories: growth and transformative. Growth buyouts are categorized as companies with strong business models but that may still be unprofitable or running at breakeven because the company is experiencing such rapid growth. KI characterizes transformation buyouts as those involving lower growth companies that may be at or near profitability but likely require intense operational engagement. K1 expects that the Fund will be more heavily weighted toward growth buyouts consistent with the Firm's more recent investment activities.

K1 has built, and continues to expand, a direct sourcing organization to generate advantaged deal flow and support the development of relationships with entrepreneurs, executives, and other investors in its target markets. K1's dedicated sourcing team of more than 20 professionals will continue to focus on directly sourced investments through systematic outreach programs and referrals from founders and management teams to build proprietary deal flow. The Firm maintains

a proprietary database of more than 40 thousand software companies, which K1 augments with proprietary algorithms and other data sources to prioritize leads and track the developments of companies over time and in advance of potential investment opportunities. The effectiveness of K1's sourcing practices are demonstrated by the Firm's ability to source and close transactions outside of intermediated processes, including both platform company and add-on investments. As of June 30, 2020, 74% of all deals completed by K1 did not include an intermediary. Moreover, K1 was the first institutional investor in 67% of the companies in which it had invested as of June 2020.

Post-acquisition, K1 seeks to drive portfolio company value creation through its programmatic Operations strategy, which focuses on supporting both operating improvements as well as the effective integration of add-on acquisitions. The Firm's proprietary IOps program is implemented by its specialized operational consulting affiliate, K1 Operations, which has a team of more than 30 professionals that focuses on enhancing each portfolio company across six functional areas: human capital, sales and marketing, product and engineering, customer experience and success, finance and accounting, and mergers and acquisitions. The strategic project plans developed for each portfolio company often include the objective of achieving organic and M&A driven revenue and profit growth, product development, and workflow improvements. The Firm aims to create category leaders in each market in which it invests by targeting companies that can serve as platforms for further add-on acquisitions. From inception to June 30, 2020, the Firm had completed over 128 transactions, inclusive of platforms and add-ons. K1 Operations will occasionally engage with third-party consultants and senior advisors from K1's Management Advisory Board ("MAB") to support the Firm's portfolio companies further. The MAB is made up of unaffiliated experienced industry professionals with whom the Firm may engage to advise on industry trends and/or to serve as portfolio company board members.

Given the Firm's focus on growth buyout and transformation buyout investments, K1 generally capitalizes its companies with prudent leverage levels to provide each company with the time and flexibility to implement strategic operational initiatives. As of June 30, 2020, more than three-quarters of K1's platform companies had no net debt at the time of investment and the balance were modestly leveraged.

K1 will seek to build K5's portfolio with 15 to 20 platform companies, at the pace of seven to ten deals a year. While K1 is raising a larger fund with K5, the Firm remains focused on targeting software companies in the lower end of the middle market, or those with less than \$100 million of run rate revenue. All prior K1 funds have invested exclusively in this market segment despite increases in prior fund sizes. In addition to populating the K5 portfolio with more platform companies than K4, which had 12, the Firm expects to complete a larger number of add-on acquisitions per portfolio to consolidate market share faster. K5 expects to average approximately five add-ons per portfolio company, which is line with the average of four add-ons completed per platform company in the more mature K3 portfolio. PFM investment professional note that the Firm has historically demonstrated the ability to successfully integrate add-on acquisitions and has continued to grow headcount significantly to accommodate the larger number of platforms.

### **Firm and Management Team**

K1 was founded in 2010 by Neil Malik, Taylor Beaupain, Hasan Askari and Dan Ghammachi (the "Co-Founders") after spinning out from the Kayne Anderson Capital Advisors ("Kayne Anderson"),

a multi-strategy alternative asset manager based in Los Angeles. Neil Malik, K1's Chief Executive Officer and a Managing Partner, had founded the Kayne Anderson growth equity practice and co-led three funds there before departing to found K1. Malik is responsible for K1's overall strategy, investment activities, and governance. The Firm's senior management team consists of the Co-Founders along with Managing Partner Ronald Cano, who joined in 2014 from Clearlake Capital, and two Principals, George Mansour III and Michael Velcich. Sujit Banerjee was recruited to K1 from Element Partners in 2013 to lead K1 Operations. The Firm's investment committee is made up of Neil Malik, Taylor Beaupain, Hasan Askari, Ronald Cano and Sujit Banerjee. The approval of all investments requires the unanimous support of the investment committee members.

K1 maintains only one fund strategy and one office in Manhattan Beach, California, which the Firm believes is critical to sustaining a collaborative culture. As of June 30, 2020, K1's team comprised 62 professionals focused on investments and support as well as a 34-member Operations team. Under Neil Malik's leadership, K1 has organized its professionals into four functional teams created to build expertise in the areas deemed critical to the Firm's investment strategy: Sourcing, Execution, Diligence, Reporting, and Operations teams.

Co-Founder and Managing Partner Hasan Askari leads the Sourcing team with the assistance of Michael Velcich. The team is responsible for the Firm's direct deal sourcing efforts. The Sourcing team employs a data-centric, programmatic approach to sourcing, similar to an enterprise software sales team. Co-Founder and Managing Partner Taylor Beaupain leads the Execution team with the assistance of George Mansour III. The team is responsible for the legal and financing matters of investments, including sell-side and financing workflows as well as transaction negotiation and documentation. Managing Partner Ronald Cano leads the Diligence team, which is focused on completing business reviews of the Firm's investment opportunities, including detailed financial analysis and forecasting of revenue and cost drivers. The diligence team also provides support to the existing portfolio, including workflows related to annual budgeting, add-on acquisitions, subsequent transaction and financing events, and valuation analyses. The Reporting team is responsible for maintaining the Firm's compliance and reporting requirements in addition to managing all Firm information technology, infrastructure and general administration activities.

### **Track Record**

Since inception, the Firm had invested \$2.4 billion in 45 transactions generating a gross internal rate of return ("IRR") and total value multiple ("TVM") of 30.6% and 1.9x, respectively, as of June 30, 2020. Eliminating cross-fund or multi series investments, these 45 deals involved investments in 40 distinct companies. As of June 30, 2020, the Firm had realized 10 of these 40 distinct companies, which generated a gross IRR of 58% and a TVM of 5.8x on \$205 million of invested capital. Please note that these returns do not include the investments made by K1 Special Opportunities Fund, L.P. ("SOF"), which was formed to co-invest alongside certain K1 funds. As shown in the table below, the Firm had generated a net IRR of 22.6% and net TVM of 1.6x across K1 through K4 as of June 30, 2020.

(\$US in millions, as of June 30, 2020)

(\$ in millions, as of June 30, 2020)

K1 Investment Management													
Investment Performance Summary													
Fund	Vintage Year	Fund Size	# Positions	Invested Capital	Realized Value	Unrealized Value	Total Value	Gross/Net			Quartile Rank		
								TVM	IRR	DPI	TVM	IRR	DPI
K1	2011	\$220	12	\$204	\$529	\$232	\$760	3.7x / 2.4x	34.2% / 24.2%	2.6x / 1.8x	1 <sup>st</sup>	1 <sup>st</sup>	1 <sup>st</sup>
K2	2014	\$300	8	\$263	\$109	\$658	\$767	2.9x / 2.1x	28.7% / 21.6%	0.4x / 0.4x	1 <sup>st</sup>	1 <sup>st</sup>	3 <sup>rd</sup>
K3	2016	\$812	12	\$616	\$542	\$914	\$1,456	2.4x / 1.8x	40.5% / 32.6%	0.9x / 0.6x	1 <sup>st</sup>	1 <sup>st</sup>	1 <sup>st</sup>
K4	2018	\$2,014	13	\$1,358	\$1	\$1,636	\$1,637	1.2x / 1.1x	14.0% / 6.5%	0.0x / 0.0x	2 <sup>nd</sup>	2 <sup>nd</sup>	2 <sup>nd</sup>
Total <sup>1</sup>		\$3,346	45	\$2,441	\$1,180	\$3,440	\$4,620	1.9x / 1.6x	30.6% / 22.6%	0.5x / 0.4x			
SOF	2016	\$122	9	\$110	\$16	\$216	\$231	1.9x / 1.8x	23.8% / 19.9%	0.3x / 0.1x	1 <sup>st</sup>	1 <sup>st</sup>	2 <sup>nd</sup>

Source: K1, Burgiss Private IQ US Buyout Investments 6/30/20

1. Excludes co-investments made through K1 Special Opportunities Fund, LP. ("SOF")

As of June 30, 2020, the Firm's more mature K1 through K3 funds were ranked as first quartile funds across all relevant Burgiss Private iQ benchmarks, with the exception of K2 ranking in the third quartile on a distributed to paid in capital ("DPI") basis. K4, which made its first investment in May 2018, is currently ranked as a second quartile fund for 2018 vintage for US buyout funds. The unrealized K1 portfolio companies have continued to build value subsequent to June 2020, and the Firm is currently exploring liquidity options for various portfolio companies.

The Firm's inception to date loss ratio of 0.6% is below the 4% market average for US buyout firms according to Stepstone and is indicative of K1's focus on companies with revenue resilience and customer diversification. PFM staff notes that while K1 had a loss ratio of 7.5%, all subsequent funds had not generated a realized loss as of June 30, 2020. K1's loss ratio is largely driven by a single investment, which had more hardware exposure than was typical of the Firm's other investments. The hardware exposure resulted in large initial cash outlays, a lumpy balance sheet, and a less predictable business model that was further weighed down during the energy industry's contraction in 2015-2016. The Firm has since focused on investments with minimal hardware exposure and is now more cognizant to the volatility caused by end market industries.

## **Key Strengths**

- Demonstrated Strong Investment Performance.** K5 will follow the same strategy as the Firm's predecessor funds. As of June 30, 2020, K1 through K4 were ranked as first or second quartile funds across all relevant Burgiss Private iQ benchmarks, with the exception of K2 ranking third quartile on a DPI basis. As a result of its expertise and focus on enterprise software companies delivering mission critical services, K1 has delivered these strong returns with realized losses of less than 1%, which is significantly favorable to its industry peers. The Firm's focus on driving organic growth, operational improvements, and effective execution of its buy and build strategy have been the primary drivers of value creation across all funds.
- Dedicated Middle Market Enterprise Software Sector Focus.** The Firm has been exclusively dedicated to investing in middle market enterprise software companies since inception and has one of the largest software-focused private equity teams focused on the North American market. Despite serial fund size increases, the Firm has remained exclusively focused on companies with less than \$100 million of run rate revenue at entry. As technology becomes increasingly complex and integrated, it requires deeper and broader teams to have a complete understanding of market dynamics and outlooks. K1 is managed and organized to continue to foster the development of the Firm's expertise in enterprise software investing. The Firm's dedicated operations affiliate

has supported its investment professionals with over 128 transactions, inclusive of platforms and add-ons, which have bolstered the Firm's strategy to build market leaders with each of its portfolio companies.

### **Major Risks/Concerns and Mitigants**

1. **Cross-Fund Transactions / Potential Conflicts of Interest.** Although the Firm generally underwrites investments to three-to-five year holding periods, several K1 companies have received investment from more than one fund K1 fund through a subsequent financing. Such cross-fund investments raise concerns of conflicts of interest between investors in the participating funds. These investments have generally involved follow-on financings for existing portfolio companies and not the sale of assets from one fund to another. Should such conflicts arise, K1 seeks the consent of the respective fund advisory boards, which would be required before the transaction was allowed to proceed. In addition, the Firm has fairness opinions performed by reputable third-party advisory firms for any potential cross-fund transactions. Lastly, K1's Chief Compliance officer must approve of any proposed cross-fund dealings before such a transaction is affected.
2. **Increased Fund Size.** K5 is targeting a \$3.25 billion fund size with a \$3.9 billion hard cap, representing a significant increase from K4's \$2.0 billion fund size. Such a significant fund size increase raises concerns that potential Fund returns could be adversely impacted by both the investment and operations teams' capacity to effectively deploy a larger pool of capital and the potential for style drift, including the pursuit of larger investments. The investment and operations team capacity concerns are mitigated by the Firm's staff growth from 70 when K4 was raised to 96 as of June 30, 2020. Notably, the Firm has one of the largest investment teams relative to its peers investing in middle market software companies. While the size of platform investments and purchase price have skewed higher as K1 has raised larger funds, the Firm has maintained a disciplined focus on the lower end of the middle market. K1 will look to deploy the K5's larger capital pool by increasing the number of platform companies in the Fund as well as the number of add-ons to each platform investment, both of which should effectively leverage the Firm's robust, proprietary sourcing and operations capabilities.

### **Legal and Regulatory Disclosure (provided by Legal)**

In its disclosure to the Office of the Treasurer, K1 Investment Management, LLC ("K1" or the "Firm")), states (i) it has no material legal or non-routine regulatory matters, (ii) no material claims under its fidelity, fiduciary or E&O insurance policies, and (iii) no ongoing internal investigations to report. The Firm states it has adequate procedures in place to undertake internal investigations of its employees, officers and directors.

### **Compliance Review**

The Chief Compliance Officer's Workforce Diversity & Corporate Citizenship review is attached.

### **Environment, Social & Governance Analysis ("ESG")**

The Assistant Treasurer for Corporate Governance & Sustainable Investment's Evaluation and Implementation of Sustainable Principles review is attached.

# COMPLIANCE REVIEW FOR PRIVATE INVESTMENT FUND

## SUMMARY OF LEGAL AND POLICY<sup>1</sup> ATTACHMENTS

SUBMITTED BY

**K5 PRIVATE INVESTORS, L.P.**

### I. Review of Required Legal and Policy Attachments

K5 PRIVATE INVESTORS, L.P. (“K5”) a California-based minority (Asian-American) firm<sup>2</sup>, completed all required legal and policy attachments. The firm disclosed no impermissible third party fees, campaign contributions, known conflicts, gifts or legal/regulatory proceedings.

### II. Workforce Diversity (See Also 3 year Workforce Diversity Snapshot Page Attached)

As of June 2020, K5’s parent company, K1 Investment Management LLC (“K1” or “the company”), employed 101, 34 more than the 67 employed in June 2018. The company identified no women and 4 minority males serving as Executive/Senior Level Officials and Managers, i.e., serving at the senior most level of the firm. During the period 2019 – 2020, 7 women and 9 minorities were promoted within the ranks of professionals or managers.

#### **Commitment and Plans to Further Enhance Diversity**

Since its founding, K1’s hiring and management practices have expanded opportunities for people of all socio-economic backgrounds without regard to educational pedigree by targeting high-aptitude, high-energy individuals. K1 is working to establish a formal Equality & Diversity policy and believes it has promoted these principles since the inception of the firm. Diversity is a cornerstone of K1’s hiring and management practices, and it seeks to promote gender equality and social inclusion throughout all of its functional teams. For example, K1 subscribes to a “hire for values, train the domain” approach for its hiring and primarily hires individuals from non-traditional backgrounds. In addition to K1’s recruitment efforts, it is also committed to retaining and training employees and has developed formal learning and development programs. For example, K1 has a “Cross-Functional Associate” program which provides ongoing training and development to associates to prepare for increased involvement in leading deals. Each cohort generally includes members from each functional area and is comprised of professionals who have demonstrated mastery in their respective function. The curriculum was designed by K1’s principals. The program is viewed as a key pipeline for developing diverse senior leadership that will in turn lead to diverse representation on portfolio company boards.

#### *Workforce Statistics*

#### **For Executive/Senior Level Officials and Managers:**

- Women held 0% of these positions in all 3 years reported as follows: 2020 (0 of 8), 2019 (0 of 6), and 2018 (0 of 6).

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<sup>1</sup> The Treasury’s Policy Unit will prepare a separate Summary with respect to K5’s ESG submission.

<sup>2</sup> Not Connecticut certified as minority-owned.



- Minorities held 50% (4 of 8) (37.5% Asian, and 12.5% Hispanic) of these positions in 2020, down from 66.7% (4 of 6) (50% Asian and 16.7% Hispanic) in both 2019 and 2018.

**At the Management Level overall:**

- Women held 15% (5 of 33) of these positions in 2020, down from 18% (5 of 28) in 2019, but up from 9% (2 of 23) in 2018.
- Minorities held 42.4% (14 of 33) (33.3% Asian, 3% Hispanic, 0% Black, and 6.1% Two or More Races) of these positions in 2020, up from 35.7% (10 of 28) (25% Asian, 7.1% Hispanic, 0% Black, and 3.6% Two or More Races) in 2019, and 39.1% (9 of 23) (26.1% Asian, 8.7% Hispanic, 0% Black, and 4.3% Two or More Races) in 2018.

**At the Professional Level:**

- Women held 34% (21 of 61) of these positions in 2020, up from 33% (16 of 49) in 2019 and 33% (13 of 39) in 2018.
- Minorities held 27.9% (17 of 61) (23% Asian, 0% Hispanic, 3.3% Black, and 1.6% Two or More Races) of these positions in 2020, down from 36.7% (18 of 49) (28.6% Asian, 0% Hispanic, 4.1% Black, and 4.1% Two or More Races) in 2019, and 35.9% (14 of 39) (28.2% Asian, 0% Hispanic, 5.1% Black, and 2.6% Two or More Races) in 2018.

**Firm-wide:**

- Women held 53% (32 of 101) of these positions in 2020, up from 31% (26 of 83) in 2019, and 28% (19 of 67) in 2018.
- Minorities held 34.7% (35 of 101) (26.7% Asian, 2% Hispanic, 2% Black, and 4% Two or More Races) of these positions in 2020, down from 37.3% (31 of 83) (27.7% Asian, 2.4% Hispanic, 2.4% Black, and 4.8% Two or More Races) in 2019, and 37.3% (25 of 67) (28.4% Asian, 3% Hispanic, 3% Black, and 3% Two or More Races) in 2018.

### III. Corporate Citizenship

Charitable Giving:

K1 supports charitable causes through financial donations and volunteering. In Q1 2020, K1 donated over \$25,000 to food banks serving the communities of the firm's portfolio companies. In 2019, employees volunteered 370 hours and K1 donated \$177,761 through a combination of employee giving and the company's Employee Donation Matching program, which matches up to \$1,000 per employee per year. Causes benefitting include, college scholarships, mentoring programs for underserved youth, homelessness, environmental issues, and cancer research/patient support stakeholders. Additionally, K1 offers unlimited vacation days for its employees, and supports employees choosing to take off for charitable activities. Historically, there have been several K1 employees who have used this benefit to serve in 1-2 week-long volunteer programs. For example, one individual spent two weeks in Tanzania volunteering with the Innovative Technology and Energy Center, whose mission is to bring renewable energy and enabling technologies to promote economic development, training and entrepreneurship in rural Tanzania. Another example is an individual who volunteers annually with California Abilities Network, whose mission is to serve people in Southern California with disabilities and their families through life skills training, supported employment, and social programming. K1 supports Connecticut by donating an annual sponsorship of a charitable gala that is hosted by a large healthcare system in the State.

Internships/Scholarships:

K1 provides internship opportunities to students that expose them to a career in finance. Internships are generally offered during the school year and the summer. The programs include a combination of hands-on experience working alongside full-time team members, participation in cross-functional training sessions and networking opportunities across the company. In 2019, K1 hosted four summer interns one of whom was female. In 2020, K1 is hosting three summer interns, two of whom are minorities including one individual who was introduced to the company via SEO Scholars.

Procurement:

K1 does not currently have a written procurement policy or program specifically designed to foster business relationships with women-owned, minority-owned, and/or emerging businesses.

**Evaluation and Implementation of Sustainable Principles (provided by Assistant Treasurer of Corporate Governance and Sustainable Investing Policy)**

	Criteria	Responses
1	Firm has an ESG policy	Yes
1a	Firm described its ESG policy	Yes
2	Firm provided examples of ESG factors considered in the decision-making process, explained the financial impact of these ESG factors	Yes
3	Designated staff responsible for sustainability policies and research	Yes
4	Firm provides training/resources on sustainability issues, explained sources of ESG-related data	Yes
5	Signatory/member of sustainability-related initiatives or groups	Yes
6	Policy for evaluating current or prospective relationships with manufacturers or retailers of civilian firearms	Yes
7	Policy that requires safe and responsible use, ownership or production of guns	N/A
8	Enhanced screening of manufacturers or retailers of civilian firearms	Yes
9	Enhanced screening of any industry/sector subject to increased regulatory oversight, potential adverse social and/or environmental impacts	Yes
10	Merchant credit relationships with retailers of civilian firearms and accessories	No
10a	If yes, firm confirms compliance with laws governing firearms sales	N/A
11	Overall assessment of responses (e.g., depth of approach to ESG and integration)	<p>K1 described a thorough, systematic framework for ESG integration, and offered numerous examples of specific ESG metrics that are used to evaluate prospective investments. While the firm is not a member of any of the sustainability-focused organizations identified in our questionnaire, K1 has retained a third party consultant to support its ESG integration and reporting.</p> <p>With respect to business with manufacturers of civilian firearms, the firm's ESG policy explicitly prohibits them. They also negatively screen companies within specific industries/sectors, such as fossil fuels, alcohol, gambling or factory farms.</p>
	<p><b>SCORE:</b></p> <p><b>Excellent - 1</b> Detailed description of ESG philosophy and integration; ongoing ESG assessment; established framework; member of sustainability-oriented organizations; enhanced screening of firearms and/or higher-risk sectors</p> <p><b>Very Good - 2</b> Detailed description of ESG philosophy and integration; ongoing ESG assessment; established framework; member of sustainability-oriented organizations</p> <p><b>Satisfactory - 3</b> General description of ESG philosophy and integration; some evidence of framework for ongoing ESG assessment; member of sustainability-oriented organizations</p> <p><b>Needs Improvement - 4</b> Generic and/or vague description of ESG philosophy and integration; no ongoing ESG assessment; no dedicated ESG staff or resources</p> <p><b>Poor - 5</b> Incomplete or non-responsive</p>	1

**State of Connecticut  
Retirement Plans and Trust Funds**

**Recommendation Report**

**K5 Private Investors**

**November 20, 2020**

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## Executive Summary

<b>Fund</b>	K5 Private Investors, L.P. (the "Fund," "K5" or "Fund V")
<b>General Partner</b>	K1 Investment Management ("K1," the "GP" or the "Firm")
<b>Report Date</b>	Data as of March 31, 2020
<b>Fundraising</b>	The GP is currently raising K5 Private Investors, which is targeting US\$3.25 billion of commitments with a hard cap of US\$3.9 billion. The Fund held its first close on US\$2.0 billion of capital commitments in Q2 2020 and anticipates having another close by the end of Q3 2020. To date, K1 has experienced a 94% re-up rate among existing LPs. References indicated to StepStone that the Fund will likely hit its hard cap of US\$3.9 billion.
<b>Source</b>	Connecticut Retirement Plans and Trust Funds ("CRPTF") sourced the investment opportunity directly for evaluation for the Private Investment Fund ("PIF").
<b>Key Terms</b>	<p><u>Management Fee</u>: The Management Fee shall equal 2% per annum of an amount equal to the Non-Affiliated Partners' Percentage of the aggregate Commitments.</p> <p><u>Carried Interest</u>: The Carried Interest allocation will be 20% after an 8% Preferred Return for Limited Partners (with 100% GP catch-up), subject to clawback.</p> <p><u>Termination Provisions</u>: For cause termination of the Fund permitted upon Limited Partners and Parallel Fund Limited Partners holding at least a majority of the Aggregate Commitments electing to dissolve the Partnership by delivering a written notice to the General Partner. No fault termination any time after the second anniversary of the Final Closing Date, Limited Partners and Parallel Fund Limited Partners holding at least 75% of the Aggregate Commitments may deliver to the General Partner a written notice of their desire to limit new Investments.</p> <p><u>Key Person</u>: A General Partner shall give the Limited Partners and the Parallel Fund Limited Partners written notice promptly after either (i) R. Neil Malik ceases to be active in the Partnership's affairs on the basis contemplated below for any reason or (ii) there ceases to be at least two Approved Executive Officers active in the Partnership's affairs on the basis contemplated below for any reason. Approved Executive Offices means each means each of R. Neil Malik, Taylor Beaupain, Hasan Askari, Ronald E. Cano II.</p>
<b>Investment Strategy</b>	The Firm targets enterprise software companies with less than US\$250 million of total enterprise value ("TEV"). Target companies provide system of record services, have a high degree of recurring revenue, and have limited customer concentration. The Firm's strategy has shifted away from minority, growth investments and towards growth and transformation buyouts over time. Post-investment, K1 will pursue a buy-and-build strategy and complete

multiple add-on acquisitions per platform company in order to create category leaders within their respective markets. The Fund will seek to build a portfolio of 15-20 companies. StepStone estimates that Fund V will need to deploy between US\$100 million and US\$300 million of equity in each platform as K1 executes add-on acquisitions over time.

## Management Team

The Firm was established in 2010 by a small team consisting of Neil Malik, Taylor Beaupain, Dan Ghammachi and Hasan Askari, who spun out of Kayne Anderson, a multi-strategy asset manager based in Los Angeles, California. Neil Malik formerly founded the growth equity practice at Kayne Anderson and co-led three funds before departing with multiple team members in 2010. All founders continue to serve in senior leadership positions at K1 today. Ron Cano is the only senior lateral hire at the Firm who joined K1 in 2014 after spending his early private equity career at Clearlake and Vista.

## Track Record

Since the Firm's founding in 2011, K1 has completed 45 platform investments and 106 add-on acquisitions across Funds I-IV, totaling US\$2.5 billion of invested capital. As of March 31, 2020, these investments have generated a gross TVM/IRR of 1.8x/37%. Approximately 22% of total value has been realized. The Firm's realized loss ratio of 7% is largely driven by growth investments completed in Fund I. Since then, K1's strategy has shifted towards control, buyout positions where the Firm can implement more operational improvements in order to accelerate growth and improve margins. Pro-forma for two realizations in May and June 2020, respectively, K1 has generated a realized gross TVM of 5.1x with a realized loss ratio of 6%.

(US\$ in millions, as of March 31, 2020)

K1 Investment Performance													
Fund	Vintage Year	Fund Size	# of Deals	Invested Capital	Realized Value	Unrealized Value	Total Value	Gross TVM	Gross IRR	Loss Ratio	Net TVM	Net IRR	DPI
K1	2011	\$220	12	\$204	\$413	\$344	\$757	3.7x	37%	7%	2.5x	25%	1.4x
K2	2014	300	8	260	70	652	722	2.8x	40%	0%	2.0x	22%	0.3x
K3	2016	812	12	608	504	840	1,343	2.2x	52%	0%	1.8x	32%	0.6x
K4	2018	2,014	13	1,419	1	1,584	1,585	1.1x	12%	0%	1.0x	3%	0.1x
Total Realized Investments			9	214	960	3	963	4.5x	66%	7%			
Total Unrealized Investments			36	2,277	27	3,417	3,444	1.5x	25%	0%			
Total		\$3,346	45	\$2,491	\$988	\$3,420	\$4,407	1.8x	37%	1%	1.5x	23%	0.4x

## Investment Evaluation

**(+) Large, Cohesive Team with Minimal Turnover:** K1's team comprises 61 professionals focused on investments and Firm support as well as 34 members on the Ops Team. In StepStone's view, K1 has a large team relative to its peers. Overall, its team of 51 investment professionals is larger in size than that of Francisco Partners, Accel-KKR, Thoma Bravo Discover, Providence Strategic Growth and Vista Foundation. However, this is largely driven by K1's outsized group of junior professionals, who make up nearly 80% of K1's investment team. StepStone believes K1 is well positioned for continued growth given its large team size. Since inception, K1 has not had any turnover on the investment team above the senior associate level. While instances of turnover may continue to occur on the Ops Team, the investment team has remained stable. StepStone does not view turnover on the Ops Team as a key concern.

**(+) Sourcing Approach:** The Firm employs a data-centric, programmatic approach to sourcing, similar to an enterprise software sales team. In addition, K1 maintains a customer relationship management (“CRM”) database, which stores private company information for more than 38,000 software companies. The Firm actively targets software companies that are not specifically seeking a transaction or are engaged in a sale process. K1 seeks to build relationships with management teams over time in order to position the Firm as a trusted strategic partner if companies seek liquidity or decide to run a sale process. Measured from initial contact to close, the average time for K1 to close a deal has been slightly more than two years. Due to K1’s focus on proprietary deal sourcing, the Firm has been the first institutional investor in 67% of the companies in which it has invested.

**(+) Enterprise Software Focus:** Enterprise software possesses many characteristics that make it an attractive area of focus for investors, such as high degrees of recurring revenue, high switching costs, and compelling ROICs. K1 is exclusively focused on enterprise software investments, making it one of the largest software-focused teams in the Middle Market. As technology becomes increasingly complex and integrated, it requires deeper and broader investment teams to have a complete understanding. Within enterprise software, the Firm does not target specific sub-sectors but has historically invested in application software, healthcare technology, systems software, IT consulting, interactive media, and advertising.

**(+) Strong Absolute and Relative Performance of Funds I-III:** As of March 31, 2020, Funds I-III have generated net TVMs of 1.8-2.5x and net IRRs of 22-32%, placing each fund in the first quartile across both metrics relative to Private IQ’s US Buyout benchmarks for each fund vintage. In addition, Fund II and Fund III have generated no losses to date while Fund I, which has a weighted average hold period of 5.8 years, has a low overall loss ratio of 7%. On a gross basis, Funds I-III have all generated IRRs of at least 37%.

**(+) One Team, One Office, One Fund Philosophy:** The Firm believes in fostering a cohesive culture among its team members by having a single investment team located in a single office investing a single fund product. In addition, Mr. Malik indicated to StepStone that he would prefer not to sell an ownership stake in the GP to a third-party because it may prove detrimental to the cohesive culture Mr. Malik has engendered at K1.

**(-) Fund Size Increase / Portfolio Construction:** At its hard cap, Fund V would be nearly twice the size of Fund IV and almost five times as large as Fund III. Consistent with prior funds, Fund V will seek to invest in software businesses with TEVs less than US\$250 million. While Fund V will seek to construct a portfolio of 15-20 platform companies, slightly larger than Fund IV’s portfolio of 13 companies, StepStone believes the Fund will likely need to complete 65 add-on acquisitions, averaging approximately four per platform, in order to invest cumulative equity of US\$100-300 million per platform. StepStone expects Fund V will most closely resemble the composition of Fund IV, which has made five investments requiring equity checks of at least US\$150 million, representing 67% of Fund IV by invested capital. However, these investments are less mature with a median hold period of 1.3 years. While the Firm has generated a strong realized gross TVM of 4.5x, all nine investments required less than US\$75 million of equity and are unlikely to be representative of the



Fund. As a result, StepStone believes K1 is less proven with investments requiring at least US\$150 million of equity, which are likely to comprise the vast majority of Fund V's investments. In addition, StepStone believes that the Fund's entry multiples will likely be above the Firm's historical purchase prices as Fund V targets larger businesses. However, StepStone notes that since 2011, K1's 34-member Ops team has helped integrate 106 add-on acquisitions as of March 31, 2020. To date, the vast majority of K1's add-on acquisitions have been integrated successfully into the Firm's platform companies. Further, the Firm utilizes a direct origination process where K1 will cold call companies in order to develop relationships with management teams over time. Across Funds I-IV, more than 95% of the Firm's platform investments have been sourced through cold calls. References indicated to StepStone that K1 has an aggressive sourcing operation and is constantly developing relationships with management teams. In StepStone's view, K1 is supported by a large team relative to its peers. Further, Fund IV's larger investments are exhibiting strong, early operational performance.

**(-) Key Person Risk / Neil Malik:** References affirmed that Mr. Malik, who serves as the CEO of K1, is the clear key person at the Firm. He not only represents the face of the Firm but is the sole owner of the management company and will receive an outsized portion of the carried interest. K1's team is also younger than most firms and depends on Mr. Malik's leadership. Of the 51 investment professionals at the Firm, only three are over the age of 35. StepStone believes that Mr. Malik remains critical to the organization. The LPA includes a single Key Person trigger on Mr. Malik, which StepStone views as appropriate. Mr. Malik is also supported by three additional Managing Partners, who each lead one of K1's key functional areas. These include Hasan Askari (Sourcing), Taylor Beaupain (Execution) and Ronald Cano (Diligence). The investment team is further supported by Director Matt Jones, who leads the Firm's investor relations, reporting and compliance teams. Messrs. Malik, Beaupain and Askari have been with the Firm since its inception 10 years ago. They also worked together for many years at Kayne Anderson before spinning out to start K1. Mr. Cano joined the Firm in 2014 after spending his early private equity career at Clearlake and Vista.

**(-) Siloed Sourcing, Diligence, Execution, Reporting, and Operational Teams:** K1's team is divided into dedicated practice groups focused on various areas of the Firm, which is unique relative to its peers. These functional areas first began with Sourcing, Execution and Operations before eventually breaking up the Execution team into Diligence, Execution and Reporting. In StepStone's view, investment teams that are specialized by function may lack sufficient accountability due to a lack of clear responsibility for investments. In addition, StepStone believes K1's sourcing method, which predominantly consists of cold calling CEOs, may prove more challenging to execute at a significantly larger fund size. However, through references, multiple portfolio company CEOs indicated to StepStone that there was clear communication across functional teams and often viewed K1's professionals as extensions of their own staff. Additionally, every investment opportunity is cross staffed with multiple members of each functional group. Investment opportunities are also assigned to one or two "deal leads," who serve as key points of contact for each company. The deal leads help maintain a fluid dialogue pre- and post-investment and are ultimately responsible for

investment outcomes. Further, new hires at K1 undergo a cross functional associate program that helps professionals gain experience across all of the Firm's functional verticals.

**(-) Competitive Landscape:** K1 invests in a highly competitive market environment and IT valuations have increased significantly over the last few years. The Firm will compete for deal flow against multiple software-focused buyout firms, growth equity specialists and generalist PE firms with software practices. The Firm will need to remain disciplined on valuations and portfolio construction given these market dynamics. While the software market is highly competitive, StepStone believes K1 is differentiated through its data-centric, programmatic sourcing approach and its Intelligent Operations ("IOps") framework. Additionally, K1 is exclusively focused on enterprise software investments, making it one of the largest software-focused teams in the Middle Market.

## Recommendation

StepStone believes the Fund represents an attractive investment opportunity for investors seeking exposure to a software-focused GP targeting transformational and growth buyouts in North American Small and Lower Middle Market companies. The Firm benefits from a relatively large investment team compared to other software-focused managers and pursues a differentiated sourcing approach that has enabled the Firm to generate proprietary deal flow. The Firm has generated strong, absolute and relative returns across its prior funds. As of March 31, 2020, Funds I-III have generated net TVMs of 1.8-2.5x and net IRRs of 22-32%, placing each fund in the first quartile across both metrics relative to Private IQ's US Buyout benchmarks for each fund vintage.

## Investment Strategy

K1 provides transformational and growth capital for enterprise software companies in North America. The Firm has a control-oriented bias but may opportunistically complete minority, growth investments. K1's professionals are specialized with distinct sourcing, investment, and operational teams that utilizes a variety of internally developed software to capture and analyze investment data to aid in decision making. K1 seeks to build category leaders within the enterprise software market, targeting companies with less than US\$100 million of revenue at entry to serve as platforms for further add-on acquisitions. Since inception, the Firm has completed 128 transactions, including K1 SOF investments, in the enterprise software industry as of June 16, 2020. The Fund will continue K1's historical strategy of investing in Small and Lower Middle Market software companies that provide mission-critical applications with high recurring revenue and significant customer diversification.

The Firm utilizes a direct origination process where K1 will cold call a large volume of companies in order to develop relationships with select management teams over time. Measured from initial contact to close, the average time for K1 to close a deal has been slightly more than two years. The Firm's sourcing approach provides K1 with insights into target portfolio companies' business models and management team capabilities prior to completing an investment. Across Funds I-IV, more than 95% of the Firm's platform investments have been sourced through cold calls. Post-acquisition, K1 will offer portfolio companies a suite of operational services across six functional areas: human capital management, sales and marketing, product and engineering, customers experience, finance and accounting, and mergers and acquisitions. References indicated to StepStone that K1's approach to value creation is highly collaborative. One of the Firm's key operating initiatives is to hire institutional talent at its portfolio companies. As a point of reference, K1 hired 229 professionals across its unrealized portfolio, including 42 executive-level hires, in 2019.

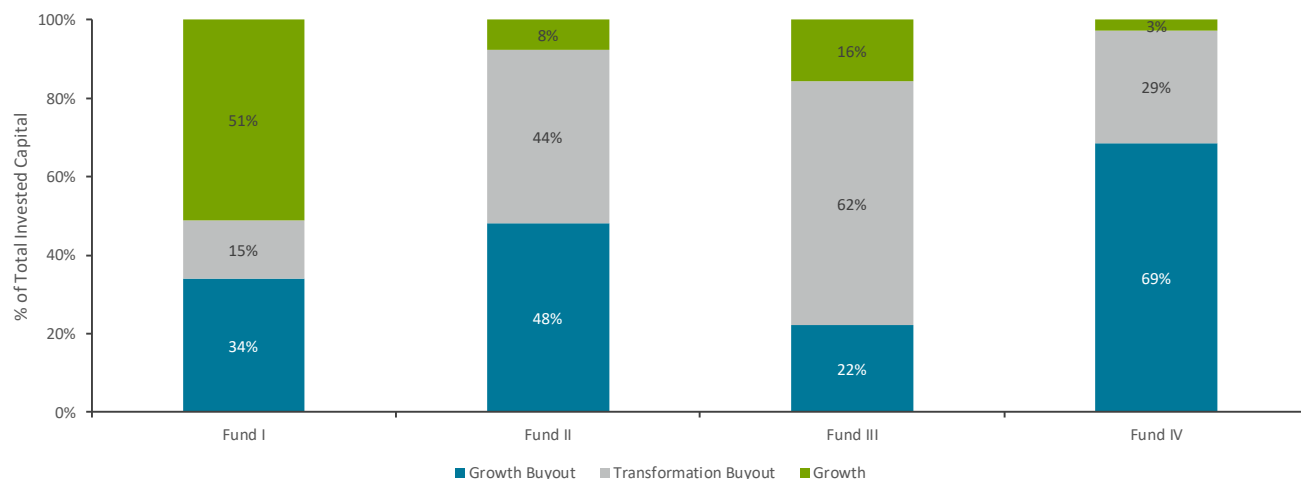
## Portfolio Characteristics

**Sector Focus:** Since inception, K1 has focused on investing in Small and Lower Middle Market enterprise software businesses. Within enterprise software, the Firm does not target specific sub-sectors but has historically invested in application software, healthcare technology, systems software, IT consulting, interactive media, and advertising. On a realized basis, K1 has generated its strongest performance in application software, generating a gross TVM of 4.6x on invested capital of US\$191 million. Consistent with the Firm's prior funds, StepStone believes K5 will primarily target application software companies. The Firm's healthcare technology deals have generated the weakest performance to date. However, these investments are less mature with a weighted average holding period of 1.7 years compared to 2.4 years and 2.7 years for application software and other, respectively.

**Transaction Type:** As K1's strategy has evolved over time, the Firm has pursued fewer growth equity investments and more buyout transactions. K1 further differentiates buyout investments between growth buyouts and transformation buyouts. While both types of buyout transactions are control investments, growth buyouts are categorized by companies with strong business models, higher growth profiles, and are typically unprofitable or breakeven at entry. Transformation buyouts are characterized by profitable, or near profitable, companies with lower growth profiles that require a more intense operational engagement. Since inception, growth buyouts, transformation buyouts, and growth investments have represented 52%, 37%, and 10%, respectively, of K1's total invested capital. While buyout deals have represented the majority of Funds II-IV by invested capital, Fund IV skews heavily towards growth buyouts, a material change relative to Fund III. StepStone believes Fund IV's higher concentration of growth buyout deals reflects K1's opportunistic, bottom-up approach to sourcing. K1 indicated to StepStone that Fund V may pursue a greater number of transformation buyout investments due to a larger opportunity set in the Firm's pipeline. While growth buyout deals have historically had a lower margin profile than transformation buyouts, both types of investments have not generated any losses to date. While growth investments have generated the strongest performance to date, growth and transformation buyouts are less mature with weighted average hold periods of 1.8 years and 2.5 years, respectively. On a realized basis, transformation buyouts have generated the strongest gross TVM of 5.5x across five investments, and growth buyouts, consisting of only one deal, generated the second highest realized gross TVM of 4.3x. While K1 has proved its ability to generate attractive risk-adjusted returns across buyout investments, StepStone believes LPs should closely monitor the

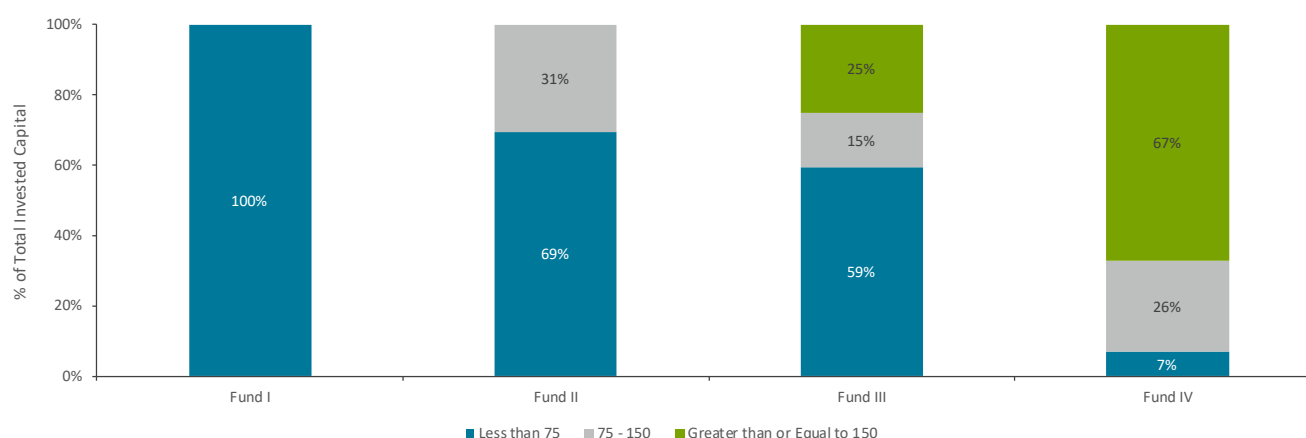
Firm's investments in unprofitable, high growth companies to ensure that these businesses have a clear path to profitability.

#### Transaction Type by Fund



**Equity Check Size:** Since inception, more than 75% of K1's deals have required less than US\$75 million of equity with median equity check sizes of US\$41 million or less across Funds I-III. In addition, K1 has only realized nine investments, all requiring less than US\$75 million of equity. While the Firm's most mature investments, those requiring less than US\$75 million of equity, have generated the strongest performance to date, StepStone expects these investments will represent a minority of Fund V by invested capital. Of Fund IV's 13 investments as of March 31, 2020, only five required less than US\$75 million of equity, representing 7% of K4 by total invested capital. StepStone expects K5 will most closely resemble the composition of K4, which has made five investments requiring equity checks of at least US\$150 million, representing 67% of K4 by invested capital. While K1 is less proven with investments requiring at least US\$150 million of equity, which are likely to comprise a significant portion of Fund V, StepStone believes these portfolio companies have demonstrated positive, early momentum. Post-investment, K1 will pursue add-on acquisitions at platform companies in order to consolidate market share and build category leaders within the enterprise software market. By pursuing a large number of Small and Lower Middle Market add-on acquisitions, K1 will seek to deploy US\$100-300 million per platform. Due to the Firm's large sourcing team and pipeline of investment opportunities, StepStone believes K1 will likely be able to execute a large number of add-on acquisitions to invest the Fund. However, LPs should closely monitor the portfolio construction of K5 to ensure the Firm is able to scale its strategy at a significantly larger fund size.

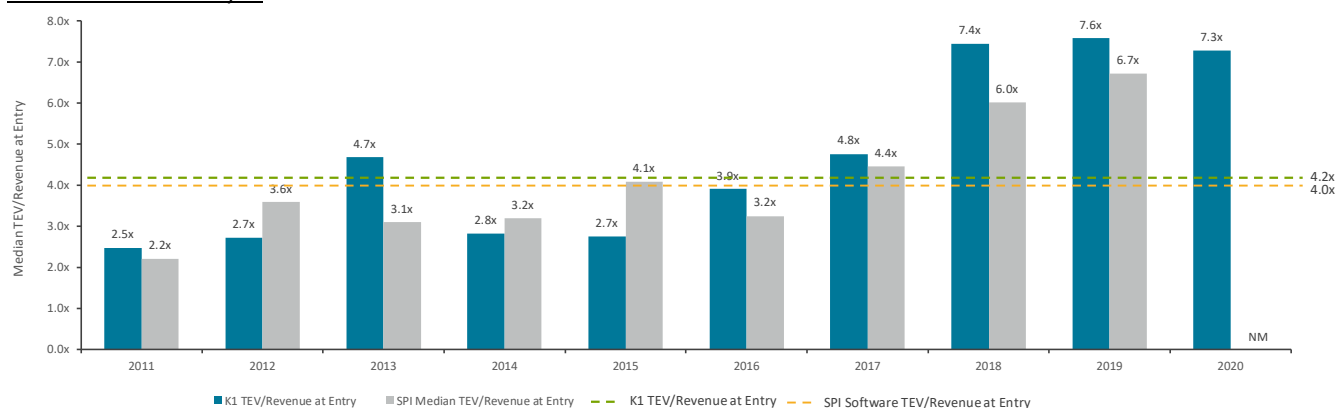
#### K1 Fund Composition by Equity Check Size



**Company Size:** As K1's funds have scaled in size, the Firm has targeted larger companies. Fund V, which at its hard cap is nearly twice as large as Fund IV and almost five times as large as Fund III, will seek to invest in companies with TEVs of up to US\$250 million. While the Fund will seek to build a larger portfolio of businesses, StepStone believes K1 will target companies at the higher end of the Fund's target TEV range. Of K1's six investments completed in companies with entry TEVs above US\$175 million, the majority of these deals were cross-fund investments where the GP invested in the company at a lower TEV through a prior fund. StepStone notes that each of these high TEV, cross-fund investments generated strong operational performance in earlier funds. While K1 has typically invested in companies within the Fund's target TEV range, StepStone believes the Firm may pursue companies with larger TEV size where K1 has proprietary knowledge into the company's operating performance through a prior fund. While several of the Firm's investments in portfolio companies with TEVs above US\$175 million have generated strong, early operational performance, StepStone notes that K1 is less proven at this range.

**Purchase Prices:** K1's median entry TEV/Revenue multiples have typically been in-line with the median entry multiples of software buyouts tracked by StepStone's SPI database between 2011 and 2019. Since 2011, the Firm has paid a median of 4.2x revenue at entry, which is slightly above SPI's software median of 4.0x revenue. However, in recent years K1 has paid above-market entry multiples for several unprofitable companies. While multiple investments in these years were completed at above-market multiples, these portfolio companies have generated significant revenue growth with CAGRs (inclusive of M&A) in excess of 20%. While StepStone's SPI software benchmark reflects a rise in entry multiples over time, the Firm's recent purchase prices have been above-market. StepStone believes the Fund will likely continue to purchase businesses at or above-market entry multiples as Fund V seeks to invest in larger companies.

#### K1 Purchase Price Analysis



Source: StepStone Private Markets Intelligence (SPI), as of March 31, 2020. Includes 440 Buyout investments completed between 2011 and 2019 in application/systems software and internet infrastructure companies based in North America. StepStone acquires proprietary operating metrics through investment due diligence and portfolio monitoring.

**Leverage:** Since inception, K1 has been more limited in the amount of leverage it applies to its portfolio companies. Due to the Firm's focus on growth buyout and transformation buyout investments, 21 of the Firm's 45 investments generated negative EBITDA at entry. As a result, the majority of K1's investments had no debt at closing and the median leverage ratio for those companies that had debt at entry was 1.0x as of March 31, 2020.

#### **Competitive Landscape**

Historically, K1 competed against few institutional enterprise software investors as Fund I and Fund II completed investments in Small Market companies with median entry TEVs of US\$24.7 million and US\$28.5 million, respectively. However, K1 rapidly scaled its fund size in subsequent funds and has targeted larger businesses with Fund III and Fund IV, completing investments in companies with median entry TEVs of US\$77.6 million and US\$125.0 million, respectively. Due to its significant increase in target fund size, K5 will target larger businesses with TEVs up to US\$250.0 million. As a result, StepStone believes the Firm may experience more competition against established GPs with dedicated software funds or practices. Due to K1's focus on both growth and buyout investments, StepStone believes the Firm may compete with a variety of growth equity and software buyouts specialists with established track records. A description of both technology-focused growth equity firms and software buyout firms the Firm may compete with are discussed below.

**Growth Equity Competitors:**

- **Providence Strategic Growth (“PSG”):** PSG closed on US\$2.0 billion of capital commitments in September 2019 for its fourth fund, which is targeting software and technology enabled service companies with a particular focus on mobile payments, business applications, security, and artificial intelligence. The fund targets profitable North American companies, which typically have no prior institutional capital, with TEVs of up to US\$300 million. PSG also has an aggressive add-on practice which seeks to scale software platforms through M&A in addition to organic growth.
- **Insight Partners (“Insight”):** Insight is currently investing Insight Partners Fund XI, a 2020 vintage fund, targeting growth stage software, software enabled services, and internet companies. With total capital commitments of US\$9.5 billion, the fund will complete growth equity investments in companies with TEVs of US\$100-2,000 million. Due to the fund’s target TEV size, StepStone believes the Firm will likely face modest competition with Insight for smaller companies or add-ons.

**Buyout Competitors:**

- **Accel-KKR (“AKKR”):** AKKR raised US\$2.6 billion of capital commitments in July 2019 for its sixth buyout fund, targeting software and technology enabled services companies with TEVs up to US\$400 million. In addition, AKKR is currently raising a Small Market fund that will seek to invest in businesses similar to those targeted by its flagship funds but will pursue companies with TEVs of less than US\$50 million. AKKR employs a systematic outbound sourcing program that generates thousands of investment opportunities. Post-investment, AKKR will seek to implement operational improvements and execute a buy-and-build strategy to accelerate growth. Given the AKKR’s software focus, sourcing strategy, and target TEV size, StepStone believes K1 may face moderate competition with AKKR.
- **Vista Equity Partners (“Vista”):** Vista is currently raising its fourth Middle Market buyout fund that will seek to make control investments in enterprise software companies with TEVs of US\$200-750 million. In addition, Vista closed on US\$850 million of capital commitments for its second Small Market buyout fund in 2019, which will seek to invest in software businesses with TEVs up to US\$200 million. Vista will seek to invest in companies with significant opportunity to affect operational change and add value by implementing Vista’s best software operating practices. Due to Vista’s strong enterprise software reputation and operational expertise, StepStone believes K1 may face moderate competition with Vista.
- **Thoma Bravo (“TB”):** TB is raising its third Middle Market fund that will seek to make control investments in application, security, and infrastructure software businesses in North America with TEVs of US\$300-800 million. In addition, TB is also raising its first Small Market fund that will seek to invest in software companies with TEVs of less than US\$250 million. TB will employ a buy-and-build strategy and implement cost reduction initiatives in order to increase margins over time. Given TB’s focus and target TEV size, StepStone believes K1 may face moderate competition with Thoma Bravo.
- **Francisco Partners (“FP”):** FP recently closed on US\$7.5 billion of capital commitments for its sixth buyout fund targeting control investments in technology businesses with TEVs of US\$125-2,000 million. In addition, FP closed on US\$1.5 billion of capital commitments in 2020 for its second Small Market fund that will seek to invest in technology companies with TEVs of less than US\$250 million. Both funds have a focus on infrastructure software, healthcare IT, security software, application software, education technology, and financial technology. FP employs a bifurcated strategy, targeting both value-oriented and growth-oriented investments in technology companies. StepStone believes K1 will likely face modest competition with FP.

Historically, K1 pursued more growth equity investments with Fund I's minority, growth investments representing 51% of the fund by total invested capital. However, the Firm's strategy has evolved towards more control, buyout investments, which have represented 93% of Funds II-IV by total invested capital. As K1 scales its fund size above US\$3.0 billion, the Firm will likely compete against the above firms for platform investments and add-on investments.

While both Vista and Thoma Bravo's flagship funds have migrated up market, they have both raised dedicated Middle Market software buyout platforms, Vista Foundation and Thoma Bravo Discover, which may compete with K1 for platform investments and add-on acquisitions. However, these firms will likely also provide a source of liquidity for K1 as the Firm launches sale processes for its portfolio companies. One example can be found in Vista Foundation's acquisition of Granicus in August 2016.

While the software market is highly competitive, StepStone believes K1 has several key differentiators. These include the Firm's data-centric, programmatic sourcing approach and its Intelligent Operations ("IOps") framework. As further discussed below, K1 has modeled its sourcing team similar to an enterprise software sales team and maintains a customer relationship management ("CRM") database, which stores private company information for more than 38,000 software companies. The Firm actively targets software companies that may not be seeking third-party capital or are engaged in a sale process. K1 seeks to build relationships with management teams over time in order to position the Firm as a trusted strategic partner when companies seek liquidity. Due to K1's focus on proprietary deal sourcing, the Firm has been the first institutional investor in 67% of the companies in which it has invested. As a result, the Firm's IOps framework is centered around investing in people and systems necessary to institutionalize portfolio companies. The IOps framework is structured so operating professionals are deeply integrated in portfolio companies' operations. References indicated to StepStone that K1's operating professionals tend to be viewed as extensions of portfolio company staff as opposed to external consultants.

## Evaluation of the Strategy

### Merits

- ▲ **Buy-and-Build Strategy / Target TEV Size:** Post-investment, K1 will pursue add-on acquisitions at platform companies in order to consolidate market share and build category leaders within the enterprise software market. By pursuing a large number of Small Market (TEVs below US\$250 million) add-on acquisitions, K1 will seek to accelerate revenue growth at platform companies at accretive purchase prices. The Firm has extensive integration experience with approximately 106 add-on acquisitions completed across Funds I-IV as of March 31, 2020.
- ▲ **Sourcing Approach:** The Firm employs a data-centric, programmatic approach to sourcing, similar to an enterprise software sales team. In addition, K1 maintains a customer relationship management (“CRM”) database, which stores private company information for more than 38,000 software companies. The Firm actively targets software companies that are not specifically seeking a transaction or are engaged in a sale process. K1 seeks to build relationships with management teams over time in order to position the Firm as a trusted strategic partner if companies seek liquidity or decide to run a sale process. Measured from initial contact to close, the average time for K1 to close a deal has been slightly more than two years. Due to K1’s focus on proprietary deal sourcing, the Firm has been the first institutional investor in 67% of the companies in which it has invested.
- ▲ **Enterprise Software Focus:** Enterprise software possesses many characteristics that make it an attractive area of focus for investors, such as high degrees of recurring revenue, high switching costs, and compelling ROICs. K1 is exclusively focused on enterprise software investments, making it one of the largest software-focused teams in the Middle Market. As technology becomes increasingly complex and integrated, it requires deeper and broader investment teams to have a complete understanding. Within enterprise software, the Firm does not target specific sub-sectors but has historically invested in application software, healthcare technology, systems software, IT consulting, interactive media, and advertising.

### Risks

- ▼ **Fund Size Increase / Portfolio Construction:** At its hard cap, Fund V would be nearly twice the size of Fund IV and five times as large as Fund III. Consistent with prior funds, Fund V will seek to invest in software businesses with TEVs less than US\$250 million. While Fund V will seek to construct a portfolio of 15-20 platform companies, slightly larger than Fund IV’s portfolio of 13 companies, StepStone believes the Fund will likely need to complete 65 add-on acquisitions, averaging approximately four per platform, in order to invest cumulative equity of US\$100-300 million per platform. StepStone expects Fund V will most closely resemble the composition of Fund IV, which has made five investments requiring equity checks of at least US\$150 million, representing 67% of Fund IV by invested capital. However, these investments are less mature with a median hold period of 1.3 years. While the Firm has generated a strong realized gross TVM of 4.5x, all nine investments required less than US\$75 million of equity and are unlikely to be representative of the Fund. As a result, StepStone believes K1 is less proven with investments requiring at least US\$150 million of equity, which are likely to comprise the vast majority of Fund V’s investments. However, since 2011, K1’s 34-member Ops team has helped integrate 106 add-on acquisitions as of March 31, 2020. To date, the vast majority of K1’s add-on acquisitions have been integrated successfully into the Firm’s platform companies. The Firm utilizes a direct origination process where K1 will cold call companies in order to develop relationships with management teams over time. Across Funds I-IV, more than 95% of the Firm’s platform investments have been sourced through cold calls. References indicated to StepStone that K1 has an aggressive sourcing operation and is constantly developing relationships with management teams. In StepStone’s view, K1 has a large team relative to its peers and is well positioned for continued growth given its large team size. Further, Fund IV’s five investments with at least US\$150 million of equity have exhibited strong operating performance.
- ▼ **Competitive Landscape:** K1 invests in a highly competitive market environment and IT valuations have increased significantly over the last few years. The Firm will compete for deal flow against multiple software-focused buyout firms, growth equity specialists and generalist PE firms with software practices. The Firm will need to remain



disciplined on valuations and portfolio construction given these market dynamics. While the software market is highly competitive, StepStone believes K1 is differentiated through its data-centric, programmatic sourcing approach and its IOps framework. K1 is exclusively focused on enterprise software investments, making it one of the largest software-focused teams in the Middle Market.

- ▼ **Increasing Number of Cross-Fund Investments:** Since 2011, K1 has completed six cross-fund investments. StepStone typically prefers GPs to avoid making cross-fund investments due to the perceived conflicts of interest related to the independent valuation of assets and timing mismatch between the various fund terms. K1 has obtained LPAC approval for every cross-fund investment. Several of K1's cross-fund investments have been the result of the Firm's buy-and-build strategy where K1 will seek to complete add-on acquisitions in order to accelerate revenue and EBITDA growth. If a portfolio company within a prior fund reaches its equity concentration limit, the Firm will likely utilize capital from its most recent fund in order to execute additional acquisitions. K1 will seek to build relationships with management teams at companies that are not actively seeking capital. As a result, the Firm often structures its initial investment as a minority position and will seek to increase its ownership to a control position over time.

## Management Team

K1 was formed in 2010 by a small team that spun out of Kayne Anderson, a multi-strategy asset manager based in Los Angeles, California. Neil Malik founded the growth equity practice at Kayne Anderson and co-led three funds before departing with multiple team members in 2010. The Firm's founding team of Neil Malik, Taylor Beaupain, Dan Ghammachi and Hasan Askari kept their headquarters in Los Angeles and are still at K1 today. K1 is based in a single office in Manhattan Beach, California, and employs over 95 full-time professionals across the Firm and Ops Team.

As the organization grew, Mr. Malik eventually divided up the Firm into dedicated practice groups focused on various areas of the Firm. These functional areas first began with Sourcing, Execution and Operations before eventually breaking up the Execution team into Diligence, Execution and Reporting. In 2013, Mr. Malik hired Sujit Banerjee to lead K1 Operations ("Ops Team"), a dedicated consulting practice focused on adding value to K1's portfolio companies post-investment. Mr. Ghammachi eventually transitioned from the investment committee and investment team to the Ops Team.

### Professionals

K1's team comprises 61 professionals focused on investments and Firm support as well as 34 members on the Ops Team. K1 is led by CEO/Managing Partner Neil Malik, who co-founded the Firm in 2010. Mr. Malik is supported by three additional Managing Partners, who each lead one of K1's key functional areas. These include Hasan Askari (Sourcing), Taylor Beaupain (Execution) and Ronald Cano (Diligence) (collectively with Mr. Malik, the "Partners"). The investment team is further supported by Director Matt Jones, who leads the Firm's investor relations, reporting and compliance teams.

Messrs. Malik, Beaupain and Askari have been with the Firm since its inception 10 years ago. They also worked together for many years at Kayne Anderson before spinning out to start K1. Mr. Cano joined the Firm in 2014 after spending his early private equity career at Clearlake and Vista. In addition to Mr. Banerjee, this group makes up the investment committee.

Messrs. Askari, Beaupain and Cano each manage dedicated functional groups which dedicate the majority of their respective schedules to different aspects of the investment process.

### Investment Team Overview



While K1's investment team is structured into these functional groups, the GP and portfolio company management teams do not feel that the team members are siloed. Every investment opportunity is cross staffed with multiple members of each functional group, but opportunities are also assigned one or two "deal leads," who are the key points of contact for each company.

References affirmed that Mr. Malik is the clear key person at the Firm. He continues to control an outsized share of economics and represents the face of the Firm. Mr. Malik expressed his desire for K1 to outlive his full-time role and believes that the GP's functional group setup will help achieve that. K1's team is also younger than most firms and depends on Mr. Malik's leadership. Of the 51 investment professionals at the Firm, only three are over the age of 35. StepStone believes that Mr. Malik remains critical to the organization.

The Ops Team is a dedicated consulting resource focused on value creation for K1's portfolio companies. The Ops Team has developed a series of best practices, Intelligent Operations, focused on six functional areas: human capital management; sales and marketing; product and engineering; customer experience and success; finance and accounting; and mergers and acquisitions. The 34-member Ops Team focus on various areas of best practices and work with portfolio companies on a project basis.

In StepStone's view, K1 has a large team relative to its peers. Overall, its investment team of 51 professionals is larger in size than that of Francisco Partners, Accel-KKR, Thoma Bravo Discover, Providence Strategic Growth and Vista Foundation. However, this is largely driven by K1's outsized group of junior professionals, who make up nearly 80% of K1's investment team. StepStone believes K1 is well positioned for continued growth given its large team size. However, the Firm may become more constrained at the senior level over time as its portfolio continues to grow. The GP will need to retain and continue to empower its top mid-level talent in order to successfully manage larger funds.

#### **Turnover**

Since inception, K1 has not had any turnover on the investment team above the senior associate level. While there were not mid-level or senior departures from the investment team, there were select instances of mid-level or senior-level departures from K1 Ops. There does not appear to be a clear pattern in the reasons for these departures. While instances of turnover may continue to occur on the Ops Team, the investment team has remained stable. StepStone does not view turnover on the Ops Team as a key concern.

#### **Capacity**

StepStone analyzed K1's historical investment pace and how Fund V is likely to be invested. At its target, K5 would be 61% larger than K4 and 4x the size of K3. At the stated hard cap, K5 would be nearly double the size of K4 and nearly 5x the size of K3. This substantial step-up will require the GP to adjust its portfolio size, average investment size or the number of add-ons it completes for platform companies.

K1 has sought to keep a consistent focus on Small and Lower Middle Market software companies across all of its funds. In the earlier funds, the GP would often take minority positions in companies and use modest M&A. Over time, the GP began to take control positions more frequently and utilize increased M&A for its companies. However, the GP has largely kept a similar number of portfolio companies in each fund to date. To partially compensate for the increase in fund size, K1 plans to make 15-20 investments in K5 compared to the 12-13 investments in K3 and K4. Once K4 is fully invested, StepStone estimates that K5's average investment size will be 30-40% larger than the average investment in K4.

K1 has maintained a rapid investment pace and StepStone believes the GP will maintain this pace in K5. Using the average pace of K1's first four funds, StepStone estimates that K1 will make six to seven new platform investments annually.

However, the GP will need to prove it can complete substantially more add-on acquisitions for each platform in order to fully invest K5.

#### Fund Size and Capacity Analysis

(US\$ in millions)

K1 Fund Size & Capacity Analysis						
	Fund I	Fund II	Fund III	Fund IV	Fund V Target	Fund V Hard Cap
Vintage	2011	2014	2016	2018	2020	2020
Fund Size	\$220	\$300	\$812	\$2,014	\$3,250	\$3,900
Investment Period (Years)	3.0	2.6	2.5	2.1	2.6	2.6
Average capital invested per year	\$68	\$100	\$243	\$676	\$1,147	\$1,376
Number of Investments	12	8	12	13	16	18
Average Investment Size (Current)	\$17	\$33	\$51	\$109	\$183	\$195
Average Investment Size (Projected)	\$17	\$33	\$61	\$139	\$183	\$195
New Deals Per Year	4.0	3.1	4.8	6.2	6.3	7.1

#### **GP Commit**

K1 will commit at least US\$70 million to the Fund, representing 2.2% of commitments. The GP commitment will be funded entirely with cash and without the use of fee waivers.

#### **Investment Committee**

K1's investment committee ("IC") comprises Messrs. Malik, Askari, Beaupain, Cano and Banerjee. K1's IC uses a voting system in which the IC members vote from a 1 (low) to a 5 (high) on several factors related to an investment opportunity (e.g. valuation, GP angle, management team, etc.). Votes are cast through a digital system and then shared with the team for discussion.

In addition to the five IC members, the seven Principals and Vice Presidents also join IC meetings and cast votes on every investment. When any member casts a vote that is not in line with other team members, they are invited to share their perspective for further discussion. Mr. Malik believes this inclusion gives all team members practice in critical thinking and helps reveal an individual's potential biases when voting.

While K1 does not have a formal threshold for approving investments, the GP will seek to build unanimous consensus across the five voting members before proceeding on an investment.

## Evaluation of the Management Team

### Merits

- ▲ **Large, Cohesive Team with Minimal Turnover:** K1's team comprises 61 professionals focused on investments and Firm support as well as 34 members on the Ops Team. In StepStone's view, K1 has a large team relative to its peers. Overall, its team of 51 investment professionals is larger in size than that of its peers. However, this is largely driven by K1's outsized group of junior professionals, who make up nearly 80% of K1's investment team. StepStone believes K1 is well positioned for continued growth given its large team size. Since inception, K1 has not had any turnover on the investment team above the senior associate level. While instances of turnover may continue to occur on the Ops Team, the investment team has remained stable. StepStone does not view turnover on the Ops Team as a key concern.
- ▲ **One Team, One Office, One Fund Philosophy:** The Firm believes in fostering a cohesive culture among its team members by having a single investment team located in a single office investing a single fund product. In addition, Mr. Malik indicated to StepStone that he would prefer not to sell an ownership stake in the GP to a third-party because it may prove detrimental to the cohesive culture Mr. Malik has engendered at K1.
- ▶ **Operating Expertise:** The Ops Team is a dedicated consulting resource focused on value creation for K1's portfolio companies. The Ops Team has developed a series of best practices, Intelligent Operations, focused on six functional areas: human capital management; sales and marketing; product and engineering; customer experience and success; finance and accounting; and mergers and acquisitions. K1 primarily leverages its operating professionals to help portfolio companies execute M&A and accelerate growth. While the Ops Team does not participate in carried interest and has experienced a moderate level of turnover, portfolio company CEO references consistently felt that the Ops Team was helpful.

### Risks

- ▼ **Siloed Sourcing, Diligence, Execution, Reporting, and Operational Teams:** K1's team is divided into dedicated practice groups focused on various areas of the Firm, which is unique relative to its peers. These functional areas first began with Sourcing, Execution and Operations before eventually breaking up the Execution team into Diligence, Execution and Reporting. In StepStone's view, investment teams that are specialized by function may lack sufficient accountability due to a lack of clear responsibility for investments. However, multiple portfolio company CEOs indicated to StepStone that there was clear communication across functional teams and often viewed K1's professionals as extensions of their own staff. Every investment opportunity is cross staffed with multiple members of each functional group. In addition, investment opportunities are also assigned to one or two "deal leads," who serve as key points of contact for each company. The deal leads help maintain a fluid dialogue pre- and post-investment and are ultimately responsible for investment outcomes. New hires at K1 undergo a cross functional associate program that helps professionals gain experience across all of the Firm's functional verticals. The Firm's focus on training its junior professionals and promoting from within ensures that all team members understand K1's model and have clear point of contacts in each functional vertical.
- ▼ **Key Person Risk / Neil Malik:** References affirmed that Mr. Malik, who serves as the CEO of K1, is the clear key person at the Firm. He not only represents the face of the Firm but will also receive an outsized portion of the carried interest and is sole owner of the management company. K1's team is also younger than most firms and depends on Mr. Malik's leadership. Of the 51 investment professionals at the Firm, only three are over the age of 35. StepStone believes that Mr. Malik remains critical to the organization. Mr. Malik is supported by three additional Managing Partners, who each lead one of K1's key functional areas. These include Hasan Askari (Sourcing), Taylor Beaupain (Execution) and Ronald Cano (Diligence). The investment team is further supported by Director Matt Jones, who leads the Firm's investor relations, reporting and compliance teams. Messrs. Malik, Beaupain and Askari have been with the Firm since its inception 10 years ago. They also worked together for many years at Kayne Anderson before spinning out to start K1. Mr. Cano joined the Firm in 2014 after spending his early

private equity career at Clearlake and Vista. In conversations with StepStone, Mr. Malik has expressed his desire for K1 to outlive his full-time role and believes that the GP's functional group setup will help achieve that. StepStone notes that Mr. Malik rarely leads new deals for the Firm. To date there has been no turnover on the investment team above the senior associate level. This supports the cohesiveness of the team and appropriate compensation. The LPA includes a single Key Person trigger on Mr. Malik.

## Track Record

Since the Firm's founding in 2011, K1 has completed 45 platform investments and 106 add-on acquisitions across Funds I-IV, totaling US\$2.5 billion of invested capital. As of March 31, 2020, these investments have generated a gross TVM/IRR of 1.8x/37%. Approximately 22% of total value has been realized. The Firm's realized loss ratio of 7% is largely driven by growth investments completed in Fund I. Since then, K1's strategy has shifted towards control, buyout positions where the Firm can implement more operational improvements in order to accelerate growth and improve margins. Pro-forma for the Firm's realizations in May and June 2020, respectively, K1 has generated a realized gross TVM of 5.1x with a realized loss ratio of 6%.

Since raising Fund I, K1 has rapidly scaled its fund size and targeted a similar number of platform investments with consistent TEV sizes over time. With a target size of US\$3.25 billion of capital commitments, and a hard cap of US\$3.9 billion, Fund V will be at least 61% larger than Fund IV, which is 70% invested with a weighted average hold period of approximately one year. While Fund V will seek to build a larger portfolio of 15-20 platform companies with similar TEV sizes targeted by prior funds, StepStone believes K1 will need to pursue a larger number of add-on acquisitions to successfully deploy the Fund.

Fund I, a 2011 vintage fund, was invested following the GFC and has generated strong absolute and relative performance with a gross TVM/IRR of 3.7x/37% and a net TVM/IRR of 2.5x/25%, which places the fund in the first quartile across both metrics relative to Private iQ's US Buyout benchmarks. As of March 31, 2020, Fund I is 55% realized by total value with a weighted average hold period of 5.8 years. While Fund I's DPI of 1.4x places the fund in the second quartile, K1's recent portfolio realization will likely result in a first quartile DPI for Fund I.

Fund II, a 2014 vintage fund, raised US\$300 million of capital commitments, a modest increase over Fund I. However, Fund II constructed a more concentrated portfolio with only eight platform investments. As of March 31, 2020, Fund II has generated strong absolute and relative returns with a gross TVM/IRR of 2.8x/40% and a net TVM/IRR of 2.0x/22%, which places the fund in the first quartile across both metrics. With a weighted average hold period of 4.6 years, Fund II is only 10% realized by total value. As a result, Fund II's DPI of 0.3x places the fund in the third quartile relative to Private iQ's US Buyout benchmark. Pro-forma for the May and June 2020 exits, StepStone estimates that Fund II's DPI improves to approximately 0.4x, placing the fund in the second quartile.

Fund III, a 2016 vintage fund, raised US\$812 million of capital commitments, more than 2.7x than Fund II. While Fund III has invested in a similar number of platform investments as Fund I, K3 has completed 39 add-on acquisitions, which is significantly greater than the 25 and 27 add-on acquisitions completed in Fund I and Fund II, respectively. As of March 31, 2020, Fund III has generated strong absolute and relative returns with a gross TVM/IRR of 2.2x/52% and a net TVM/IRR of 1.8x/32%, placing the fund in the first quartile across both metrics. With a weighted average hold period of 2.8 years, Fund III is 37% realized by total value with a first quartile DPI of 0.6x.

Fund IV, a 2018 vintage fund, raised US\$2.0 billion of capital commitments and is approximately 2.5x larger than Fund III. In just over one year, Fund IV is 70% invested across 13 platform investments and 15 add-on acquisitions. The fund remains completely unrealized and has generated a gross TVM/IRR of 1.1x/12% as of March 31, 2020.

Performance Summary

(US\$ in millions, as of March 31, 2020)

K1 Investment Performance													
Fund	Vintage Year	Fund Size	# of Deals	Invested Capital	Realized Value	Unrealized Value	Total Value	Gross TVM	Gross IRR	Loss Ratio	Net TVM	Net IRR	DPI
K1	2011	\$220	12	\$204	\$413	\$344	\$757	3.7x	37%	7%	2.5x	25%	1.4x
K2	2014	300	8	260	70	652	722	2.8x	40%	0%	2.0x	22%	0.3x
K3	2016	812	12	608	504	840	1,343	2.2x	52%	0%	1.8x	32%	0.6x
K4	2018	2,014	13	1,419	1	1,584	1,585	1.1x	12%	0%	1.0x	3%	0.1x
Total Realized Investments			9	214	960	3	963	4.5x	66%	7%			
Total Unrealized Investments			36	2,277	27	3,417	3,444	1.5x	25%	0%			
Total		\$3,346	45	\$2,491	\$988	\$3,420	\$4,407	1.8x	37%	1%	1.5x	23%	0.4x

**Relative Performance**

As of March 31, 2020, Funds I-III have all generated net TVMs and net IRRs that rank in the first quartile for their respective vintages. In addition, Fund I and Fund III's DPI rank in the second and first quartile, respectively. Fund II has generated limited realizations to date and ranks in the third quartile by DPI. However, pro-forma for an exit in June 2020, StepStone estimates that Fund II's DPI improves to 0.4x, placing the fund in the second quartile. Overall, StepStone believes K1 has generated strong relative performance since inception.

Relative Performance

(US\$ in millions, as of March 31, 2020)

K1 Net Relative Performance						Private iQ					
						United States			K1		
						First Quartile			Quartile Rank		
Fund	Vintage	Fund Size	Net TVM	Net IRR	DPI	Net TVM	Net IRR	DPI	Net TVM	Net IRR	DPI
K1	2011	\$220	2.5x	25%	1.4x	2.2x	23%	1.5x	First	First	Second
K2	2014	300	2.0x	22%	0.3x	1.8x	21%	0.8x	First	First	Third
K3	2016	812	1.8x	32%	0.6x	1.4x	18%	0.3x	First	First	First
K4	2018	2,014	1.0x	3%	0.1x	1.1x	11%	0.1x	Second	Second	Second
Total		\$3,346	1.5x	23%	0.4x						



## Evaluation of the Track Record

### Merits

- ▲ **Strong Absolute and Relative Performance of Funds I-III:** As of March 31, 2020, Funds I-III have generated net TVMs of 1.8-2.5x and net IRRs of 22-32%, placing each fund in the first quartile across both metrics relative to Private IQ's US Buyout benchmarks for each fund vintage. In addition, Fund II and Fund III have generated no losses to date while Fund I, which has a weighted average hold period of 5.8 years, has a low overall loss ratio of 7%. On a gross basis, Funds I-III have all generated IRRs in excess of 37%.
- ▲ **Realized Performance:** Pro-forma for the Firm's realizations in May and June 2020, respectively, K1 has generated a realized gross TVM of 5.1x with a realized loss ratio of 6%.

### Risks

- ▼ **Limited Realizations / Extended Hold Periods:** As of March 31, 2020, K1 has only realized nine investments generating limited liquidity for LPs. Funds I-III have generated DPIs of 1.4x, 0.3x, and 0.6x, which ranks in the second, third, and first quartile, respectively. In addition, Fund I and Fund II's unrealized portfolios had average hold periods of 6.3 years and 4.2 years, respectively, and remain significantly unrealized. Post March 31, 2020, K1 realized two investments in the second quarter of 2020. In May 2020, the Firm exited a Fund I company at a gross TVM of over 15.0x. This exit is expected to increase Fund I's DPI into the first quartile relative to Private IQ's US Buyout benchmark. K1's June 2020 exit resulted in a gross TVM of over 6.0x for Fund II and Fund III. K1 indicated to StepStone that the Firm has received significant investor interest for several large investments. StepStone believes the Firm will likely run sales processes for several investments over the next one to two years.

### Fundraising

The GP is currently raising K5 Private Investors, which is targeting US\$3.25 billion of commitments with a hard cap of US\$3.9 billion. The Fund held its first close on US\$2.0 billion of capital commitments in Q2 2020 and anticipates having another close by the end of Q3 2020. To date, K1 has experienced a 94% re-up rate among existing LPs. References indicated to StepStone that the Fund will likely hit its hard cap of US\$3.9 billion.

### Portfolio Fit

K5 meets the investment criteria and guidelines set forth in CRPTF's Investment Policy Statement. Fund V would be considered a fiscal year 2021 commitment to the Large Buyout portfolio within the Private Investment Fund. As of December 31, 2019, Connecticut's investments in Large Buyout represented 11% of aggregate PIF exposure and has generated a net IRR of 9%. Inclusive of PIF investments approved after December 31, 2019, PIF's Large Buyout increases to 13% following a US\$100 million commitment to the Fund.

Exposure Analysis	CRPTF Current Exposure	IRR	CRPTF Pro Forma Exposure
<b>Strategy</b>			
Large Buyout	11%	9%	13%

*Note: Table reflects active investments only, liquidated funds excluded.*

### Environmental, Social & Governance

The Firm has implemented as ESG policy that is derived from the American Investment Council's guidelines for responsible investment. In addition, the Firm draws upon the Sustainability Accounting Standards Board to identify and understand material ESG matters for software companies. Although K1 is not a signatory of the United Nations Principles for Responsible Investment, the Firm does contribute towards the United Nations Sustainable Development Goals. K1 also incorporates the Private Equity Growth Capital Council guidelines for responsible investment and considers best practices issued by the Institutional Limited Partners' Association.

K1's investment professionals, with assistance from the Firm's operations team, are primarily responsible for ensuring that the consideration of ESG issues is integrated into the private equity investment decision process in collaboration with K1's legal and compliance teams. Ultimately, the Firm's Chief Compliance Officer and reporting team are responsible for ESG initiatives and are often supported by Blue Sky Sustainability, an external ESG consultant. As part of compliance training during onboarding, K1 employees are required to review the Compliance Manual which contains a Responsible Investment Policy that includes ESG related factors to bear in mind as part of investment diligence. A formal ESG questionnaire must be completed by deal teams for investment opportunities being evaluated for final Investment Committee review and approval. Generally, ESG-related factors are considered during initial sourcing activities so that companies with disqualifying triggers are quickly removed from K1's pipeline. The sourcing team is responsible for cataloging and reporting on all outreach and will consult with the Chief Compliance Officer for guidance as needed.

As a part of K1's regular communication forums, ESG-related matters will frequently be a part of the discussion. K1 began the implementation of an ESG monitoring software which it expects to be operational in Q4 2020. The software will allow K1 to monitor ESG-related metrics in real-time and create a more standardized set of ESG-related goals to manage across its portfolio. K1 includes an ESG presentation part of its Annual General Meeting and will be hosting an ESG-focused webinar in H2 2020.

The Firm has implemented as ESG policy that is derived from the American Investment Council's guidelines for responsible investment. In addition, the Firm draws upon the Sustainability Accounting Standards Board to identify and understand material ESG matters for software companies. K1's ESG policy outlines the Firm's intention to consider environmental, public health, safety, and social issues associated with target companies when evaluating whether to

invest in a particular company or entity. K1's investment professionals, with assistance from the Firm's operations team, are primarily responsible for ensuring that the consideration of ESG issues is integrated into private equity investment decisions in collaboration with K1's legal and compliance teams. Where additional subject matter expertise is needed, K1 may consider utilizing external resources as relevant and necessary. As a part of K1's regular communication forums, ESG-related matters will frequently be a part of the discussion.

### **Recommendation**

StepStone believes the Fund represents an attractive investment opportunity for investors seeking exposure to a software-focused GP targeting transformational and growth buyouts in North American Small and Lower Middle Market companies. The Firm benefits from a relatively large investment team compared to other software-focused managers and pursues a differentiated sourcing approach that has enabled the Firm to generate proprietary deal flow. The Firm has generated strong, absolute and relative returns across its prior funds. As of March 31, 2020, Funds I-III have generated net TVMs of 1.8-2.5x and net IRRs of 22-32%, placing each fund in the first quartile across both metrics relative to Private IQ's US Buyout benchmarks for each fund vintage.

## **Appendix I**

### **Summary of Due Diligence Performed**

In our review of the offering, we conducted the following additional due diligence:

- March – April 2020
  - Held update calls with GP
  - Attended the Firm’s annual general meeting
- July 2020
  - Met onsite with members of the Fund’s investment team
  - Prepared and completed an investment memorandum

## Appendix II

### Investment Team Member Biographies

**Neil Malik – Chief Executive Officer & Managing Partner.** Mr. Malik is the Chief Executive Officer and a Managing Partner of K1 Investment Management. He is responsible for managing the Firm’s strategy, governance and investment activities. Previously, Mr. Malik founded the growth equity practice at Kayne Anderson Capital Advisors where he focused on growth equity and buyout investments. Mr. Malik also previously worked in the private equity groups of Brentwood Associates and Olympus Partners where he focused on investments in lower middle-market companies. Mr. Malik started his career in the mergers and acquisitions group of J.P. Morgan Securities. Mr. Malik is a graduate of the Harvard Business School, where he received an MBA, and of the University of Pennsylvania, where he received a BS in Finance from the Wharton School and a BAS in Electrical Engineering and Computer Science from the School of Engineering and Applied Sciences, magna cum laude. Mr. Malik is an alumnus and board member of Sponsors for Educational Opportunity (SEO) and a member of Young Presidents’ Organization (YPO).

**Hasan Askari – Managing Partner.** Mr. Askari is a Managing Partner at K1 Investment Management and oversees the Firm’s 21-person Sourcing team. He is responsible for sourcing new investments and is an active board member for K1’s portfolio companies and advisor to K1’s management teams. Previously, Mr. Askari worked in the growth equity practice at Kayne Anderson Capital Advisors where he focused on growth equity and buyout investments. Mr. Askari also previously worked at Pathway Capital Management where he focused on monitoring and analyzing private equity fund investments. Mr. Askari started his career in the client coverage group of Morgan Stanley. Mr. Askari is a graduate of the Marshall School of Business at the University of Southern California, where he received a BS in Business Administration. Mr. Askari serves on the Board of Directors of UgandaProject, a grassroots non-profit focused on supporting orphans in Uganda. Previously, he was a member of the Board of Governors for the University of Southern California’s Alumni Association.

**Taylor Beaupain – Managing Partner.** Mr. Beaupain is a Managing Partner at K1 Investment Management and oversees the Firm’s six-person Execution team. He is responsible for legal execution and financing of investments and is an active board member for K1’s portfolio companies and advisor to K1’s management teams. Previously, Mr. Beaupain was a partner in the growth equity practice at Kayne Anderson Capital Advisors where he focused on growth equity and buyout investments. Mr. Beaupain started his career in the financial sponsors investment banking group of Merrill Lynch where he advised global private equity firms on mergers, acquisitions and financings. Mr. Beaupain is a graduate of the UCLA Anderson School of Management, where he received an MBA and was a Dean’s Scholar, and of Washington and Lee University, where he received a BS in Business Administration, summa cum laude. Mr. Beaupain has served as a director of numerous companies and serves on the board of the UCLA Anderson Fink Center for Finance & Investments.

**Ronald Cano II – Managing Partner.** Mr. Cano is a Managing Partner at K1 Investment Management and oversees the Firm’s 21-person Diligence team. He is responsible for the diligence of new investments and is an active board member for K1’s portfolio companies and advisor to K1’s management teams. Previously, Mr. Cano worked at Vista Equity Partners and Clearlake Capital where he focused on buyout investments of software companies. Mr. Cano also previously worked in the Global Strategy and Acquisitions group at Thomson SA where he managed minority and control investments, in addition to assisting the management teams on various operational initiatives. Mr. Cano started his career in the technology, media and telecom group at Bear Stearns. Mr. Cano is a graduate of the Stanford Graduate School of Business, where he received an MBA, and of Georgetown University, where he received a BS in Business Administration, cum laude. Mr. Cano has served as a director of numerous companies and is actively involved with the Robert Toigo Foundation, of which he is an alumnus.

**George Mansour III – Principal.** Mr. Mansour is a Principal at K1 Investment Management and manages the Firm’s six-person Execution team. Mr. Mansour is responsible for overseeing the Debt Capital Markets team in addition to evaluating new investments. He is an active board member for K1’s portfolio companies and advisor to K1’s management teams. Previously, Mr. Mansour founded the software recurring revenue lending practice at PNC Business Credit where he originated, underwrote and managed more than US\$1 billion in transaction volume. Mr. Mansour started his career

in the technology finance group of Wells Fargo. Mr. Mansour is a graduate of Bordeaux Business School, where he received an MBA, and of Western Washington University, where he received a BS in Finance.

**Michael Velcich – Principal.** Mr. Velcich is a Principal at K1 Investment Management and manages the Firm’s 21-person Sourcing Team. Mr. Velcich is responsible for sourcing and evaluating new investments. He is an active board member for K1’s portfolio companies and advisor to K1’s management teams. Previously, Mr. Velcich worked at Frontier Capital, Adams Street Partners and Kayne Anderson Capital Advisors, where he focused on sourcing and evaluating new investment opportunities. Mr. Velcich is a graduate of the University of Chicago Booth School of Business, where he received an MBA, and of Stanford University, where he received a BA in History.

## Glossary

Term	Definition
<b>Balanced Stage Venture Capital</b>	A Venture Capital fund focused on both Early Stage and Late Stage companies
<b>Bridge Financing</b>	Temporary funding that will eventually be replaced by permanent capital from equity investors or debt lenders
<b>Buyout</b>	Fund whose strategy is to acquire controlling interests in companies
<b>Carried Interest</b>	The general partner's share of the profits. The carried interest, rather than the management fee, is designed to be the general partner's chief incentive to strong performance.
<b>Co/Direct Investment</b>	Investment made directly into a company, rather than indirectly through a fund
<b>Committed Capital</b>	Total dollar amount of capital pledged to a fund
<b>Contributed Capital</b>	Total capital contributed to a fund for investments, fees and expenses, including late closing interest paid, less returns of excess capital called and bridge financing
<b>Cost Basis</b>	Remaining amount of invested capital
<b>Debt</b>	Security type that signifies a repayment obligation by a company (e.g. senior debt, subordinated debt, bridge loan etc.)
<b>Distressed</b>	A company's final Stage of development. Company is generally experiencing operational or financial distress
<b>Distressed / Turnaround</b>	Fund whose strategy it is to acquire the Equity or Debt of companies experiencing operational or financial distress
<b>Distributed Capital</b>	Capital distributed to the limited partners, including late closing interest earned
<b>Dow Jones US Total Stock Market Total Return Index</b>	The Dow Jones US Total Stock Market Total Return Index measures all U.S. equity securities with readily available prices. It is a free float-adjusted market capitalization weighted index and is calculated with dividend reinvestment
<b>DPI (Distributions to Paid In / The Realization Multiple)</b>	Total gross distributions divided by total gross contributions
<b>Early Stage</b>	A company's first Stage of development. Company is generally generating modest or no revenues
<b>Equity</b>	Security type that signifies ownership of a company (e.g. common stock, preferred stock, warrants, etc.)
<b>Expansion Stage</b>	A company's third Stage of development. Company is generally experiencing high growth and nearing profitability
<b>Exposure</b>	Sum of Remaining Value plus Unfunded Commitment
<b>Fund-of-Funds</b>	Fund whose strategy is to make investments in other funds
<b>Fund Stage</b>	A fund progresses through three stages over its life: investment (investment period), distribution (post-investment period), and liquidation
<b>Geographic Region</b>	Market location of a company: North America, Western Europe, Africa/Middle East, Latin America, Asia/Pacific Rim
<b>Growth Equity</b>	Fund whose strategy is to invest in companies to expand or restructure operations, enter new markets or finance an acquisition without a change of control of the business
<b>Infrastructure</b>	Fund whose strategy is to acquire interests in physical structures and networks that provide the essential services for society's economic and social needs, e.g. roads, tunnels, communication networks, etc.
<b>Internal Rate of Return (IRR)</b>	The discount rate that results in a net present value of zero of a series of cash flows. The IRR considers both cash flow timing and amount and is the preferred performance measure for private market funds
<b>Invested Capital</b>	Capital invested by a fund in portfolio holdings
<b>Investment Type</b>	Classification of an investment vehicle: Primary Fund, Secondary Fund, Fund-of-Funds
<b>J-Curve</b>	Refers to the shape of the curve illustrating a fund's performance over time. During the initial years of a fund's life, as a result of illiquidity, stagnant valuations, fees and expenses, a fund's performance tends to be negative (the bottom of the "J"). Eventually, as portfolio companies are realized or increase in value and fees become a smaller percentage of overall contributions, performance improves and investors' returns move up the "J" shaped curve
<b>Large</b>	Company with a Size greater than \$1 billion
<b>Late Stage</b>	A company's second Stage of development. Company is generally generating high revenue growth and high losses

Term	Definition
<b>Loss Ratio</b>	The percentage of capital in deals with a total value below cost, over total invested capital
<b>Lower-Mid</b>	Company with a Size greater than \$100 million, but less than \$250 million
<b>Lower Quartile</b>	The point at which 75% of all returns in a group are greater and 25% are lower.
<b>Mature</b>	A company's fourth Stage of development. Company is generally generating modest to no growth and operating profitably
<b>Mega Buyout</b>	Fund whose strategy is to acquire or recapitalize Large businesses, Fund size over \$6 billion
<b>Mezzanine</b>	Fund whose strategy is to acquire subordinated debentures issued by companies
<b>Middle-Market Buyout</b>	Fund whose strategy is to acquire or recapitalize middle-market businesses, Fund size between \$1-\$3 billion
<b>MSCI ACWI Index - Total Return</b>	The MSCI ACWI Total Return is a reflection of the performance of the MSCI ACWI Index, including dividend reinvestment, as calculated by Bloomberg. The MSCI ACWI Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets. The MSCI ACWI consists of 45 country indices comprising 24 developed and 21 emerging market country indices
<b>Multi-Strategy</b>	A Fund that invests across multiple strategies
<b>Natural Resources</b>	Fund whose strategy is to acquire interests in naturally occurring, economically valuable raw materials and all physical facilities and capabilities required for the extraction, refinement, and delivery to end users, e.g. oil and gas properties, timberland, etc.
<b>Net Asset Value ("NAV")</b>	In the context of this report, represents the fair value of an investment, as defined within each limited partnership agreement, yet in compliance with the governmental regulation, generally prepared on a GAAP basis
<b>Net IRR</b>	Annualized effective compound rate of return using daily contributions, distributions and Remaining Value as of the Report Date, net of all fees and expenses, including late closing interest
<b>Percent Interest</b>	Represents an investor's economic interest in a fund based upon the investor's commitment divided by total fund commitments
<b>Primary Investment</b>	An interest in a private equity fund acquired directly from the fund manager during the fundraising period
<b>Public Market Equivalent (PME)</b>	A private equity benchmark that represents the performance of a public market index expressed in terms of an IRR, using the same cash flows and timing as the investor's investment activity in private equity. The PME serves as a proxy for the return the investor could have achieved by investing in the public market. The PME benchmark return assumes cash flows are invested at the end of each day
<b>Publication Date</b>	Refers to the date this report was created as reflected in the Executive Summary
<b>Quartile</b>	Segment of a sample representing a sequential quarter (25%) of the group.
<b>Real Assets</b>	Fund whose strategy is to invest in assets that are tangible or physical in nature such as land, machinery, and livestock
<b>Real Estate</b>	Fund whose strategy is to acquire interests in real estate property
<b>Realized Capital</b>	Capital distributed to a fund from portfolio holdings
<b>Recallable / Recyclable Capital</b>	Capital that has been previously distributed by a fund to investors but may be called again for investment purposes. It is generally associated with realizations that have occurred in the early years of a fund or refers to uninvested capital that has been temporarily returned (i.e. returns of excess capital)
<b>Recapitalization</b>	The reorganization of a company's capital structure
<b>Remaining Value</b>	Capital account balance as reported by the General Partner, generally on a fair value basis
<b>Report Date</b>	Refers to the end date of the reporting period as reflected on the cover page
<b>Return on Investment (ROI)</b>	Ratio of Realized Capital plus Unrealized Value to Invested Capital



Term	Definition
<b>Russell 1000® Total Return Index</b>	The Russell 1000® Total Return Index measures the performance, including dividend reinvestment, of the large-cap segment of the U.S. equity universe. It is a subset of the Russell 3000® Index and includes approximately 1000 of the largest securities based on a combination of their market cap and current index membership. The Russell 1000 represents approximately 92% of the U.S. market.
<b>Russell 3000® Total Return Index</b>	The Russell 3000® Total Return Index measures the performance, including dividend reinvestment, of the largest 3000 U.S. companies representing approximately 98% of the investable U.S. equity market.
<b>RVPI (Residual Value to Paid In)</b>	The current value of all remaining investments within a fund divided by total gross contributions
<b>S&amp;P 500 Price Index</b>	The S&P 500 Price Index is a capitalization-weighted index of 500 stocks. The index is designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries.
<b>S&amp;P 500 Total Return Index</b>	The S&P 500 Total Return Index is a reflection of the performance of the S&P 500 Index, including dividend reinvestment. All regular cash dividends are assumed to be reinvested in the S&P 500 Index on the ex-date. Special cash dividends trigger a price adjustment in the price return index.
<b>Secondary Investment</b>	Investments that involve the purchase of private equity fund interests or portfolios of direct investments in privately held companies from existing institutional Investors
<b>Sector</b>	Industry in which the company operates: technology, telecommunications, healthcare, financial services, diversified, industrial, consumer, energy, etc.
<b>Size</b>	Capitalization size of a company: Large, Upper-Mid, Lower-Mid, Small
<b>Small</b>	Company with a Size of less than \$100 million
<b>Small Business Investment Company (SBIC)</b>	Lending and investment firms that are licensed and regulated by the Small Business Administration (SBA). The licensing enables them to borrow from the federal government to supplement the private funds of their Investors
<b>Small Buyout</b>	Fund whose strategy is to acquire or recapitalize Small businesses
<b>Stage</b>	The course of development through which a company passes from its inception to its termination: Early, Late, Expansion, Mature, Distressed
<b>Sub-Asset Class</b>	Private equity investments are generally classified as Buyout, Venture Capital, Mezzanine, Distressed/Turnaround, and Fund-of-Funds
<b>Subordinated Debt</b>	Debt with inferior liquidation privileges to senior debt in case of a bankruptcy and consequently, will carry higher interest rates than senior debt to compensate for the subordination.
<b>Term Sheet</b>	A summary of key terms between two or more parties. A non-binding outline of the principal points which definitive agreements will supercede and cover in detail.
<b>TVM (Total Value Multiple) / TVPI (Total Value to Paid In)</b>	Net asset value plus gross distributions divided by total gross contributions
<b>Unfunded Commitment</b>	Amount of capital that remains to be contributed to a fund as defined in a fund's limited partnership agreement
<b>Unrealized Value</b>	Holding value of a portfolio company assigned by the General Partner, which generally represents fair value
<b>Upper-Mid</b>	Company with a Size greater than \$250 million but less than \$1 billion
<b>Upper Quartile</b>	The point at which 25% of all returns in a group are greater and 75% are lower.
<b>Venture Capital</b>	Fund whose strategy is to make investments in Early Stage and/or Late Stage companies
<b>Vintage Year</b>	The calendar year in which an investor first contributes capital to a fund
<b>Vintage Year</b>	The calendar year in which an investor first contributes capital to a fund
<b>Write-Down</b>	A reduction in the value of an investment.
<b>Write-Off</b>	The write-down of a portfolio company's holdings to a valuation of zero and the venture capital investors receive no proceeds from their investment.
<b>Write-Up</b>	An increase in the value of an investment.

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# K1 INVESTMENT MANAGEMENT

ENTERPRISE SOFTWARE INVESTORS



*PRESENTED TO STATE OF CONNECTICUT TREASURER'S OFFICE*

DECEMBER 9, 2020





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Forward-looking statements and discussions of the business environment and investment strategy of the fund included in the memorandum and this supplement (e.g., with respect to financial markets, business opportunities, demand, investment pipeline and other conditions) were generally prepared prior to the advent of the novel coronavirus outbreak ("COVID-19") and do not reflect its ongoing and ultimate potential effects, all of which may substantially and adversely impact the fund's execution of its investment strategy.





# WHO WE ARE

## PLATFORM OVERVIEW



K1 INVESTMENT  
MANAGEMENT

ENTERPRISE SOFTWARE INVESTORS

**2011**

FOUNDED

**100+**

PROFESSIONALS

**130+**

TRANSACTIONS

Data as of September 30, 2020.





**SECTOR**

OUR COMPETITIVE ADVANTAGE

# **DIFFERENTIATED STRATEGY**

**SOURCING**

**OPERATIONS**







**1**

## OFFICE

MANHATTAN BEACH, CA



**1**

## STRATEGY

ENTERPRISE SOFTWARE



**1**

## TEAM

~100 PROFESSIONALS

Data as of September 30, 2020.





OUR BRAND PROMISE

# BUILDING CATEGORY LEADERS

**APTTUS**



Buildium®



Checkmarx

 **chirotouch**

 **emburse**



GRANICUS

**onit**

**RAVE**  
MOBILE SAFETY

  
**LITERA**  
MICROSYSTEMS

 **smarsh**™





# OUR UNDERWRITING STANDARDS

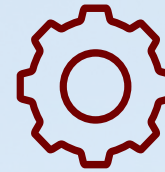
## INVESTMENT CRITERIA

<\$100M

REVENUE AT  
ENTRY



MISSION CRITICAL  
APPLICATIONS



SYSTEM OF  
RECORD



HIGH RECURRING  
REVENUE



HIGH REVENUE  
RETENTION



CUSTOMER  
DIVERSIFICATION





SPECIALIZED OPERATIONAL  
EXPERTISE

# K1 OPERATIONS



SALES &  
MARKETING



PRODUCT &  
ENGINEERING



HUMAN CAPITAL  
MANAGEMENT



CUSTOMER SUCCESS  
& SUPPORT



FINANCE &  
ACCOUNTING



MERGERS &  
ACQUISITIONS





# Q&A DISCUSSION

THANK YOU







**State of Connecticut**  
**Office of the Treasurer**

SHAWN T. WOODEN  
TREASURER

December 4, 2020

Members of the Investment Advisory Council ("IAC")

Re: **Consideration of Livingbridge 7 LP**

Dear Fellow IAC Member:

At the December 9, 2020 meeting of the IAC, I will present for your consideration a private equity opportunity for the Private Investment Fund ("PIF") in the Connecticut Retirement Plans and Trust Funds (the "CRPTF"): Livingbridge 7 LP ("Livingbridge 7" or the "Fund"). Livingbridge EP LLP ("Livingbridge"), based in London, England, is raising the Fund, which has a target size of £1.25 billion and a hard cap of £1.4 billion.

I am considering an investment of up to £100 million (approximately \$133 million) in Livingbridge 7, a fund that will focus on control and substantial minority investments in high growth, small to medium size companies predominantly located in the United Kingdom. Livingbridge has successfully developed and executed a thematic investment approach and replicable practices to create value through revenue and profit growth as well as enhancing the strategic positioning of its portfolio companies. Livingbridge 7 would provide the CRPTF an opportunity to add exposure to a proven, top performing manager focused on the UK middle market, a strategy and market that would be highly complementary to the PIF's existing portfolio.

Attached for your review is the recommendation from Laurie Martin, Chief Investment Officer, and the due diligence report prepared by StepStone. I look forward to our discussion of these materials at next week's meeting.

Sincerely,

A handwritten signature in blue ink that reads "Shawn T. Wooden".

Shawn T. Wooden  
State Treasurer

OFFICE OF THE STATE TREASURER  
**MEMORANDUM**

---



**DECISION**

**TO:** Shawn T. Wooden, Treasurer

**FROM:** Laurie Martin, Chief Investment Officer

**CC:** Darrell V. Hill, Deputy Treasurer  
Raynald D. Leveque, Deputy Chief Investment Officer  
Kevin Cullinan, Chief Risk Officer  
Mark E. Evans, Principal Investment Officer  
Olivia Wall, Investment Officer

**DATE:** November 23, 2020

**SUBJECT:** Livingbridge 7 LP – Final Due Diligence

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**Summary**

The purpose of this memorandum is to recommend that the Connecticut Retirement Plans and Trust Funds (the “CRPTF”) consider a commitment of up to £100 million (approximately \$133 million) to Livingbridge 7 LP (“Livingbridge 7”, or the “Fund”). Livingbridge 7 will focus on making control and influential minority private equity investments in high growth, small and mid-sized companies primarily headquartered in the United Kingdom (the “UK”). The Fund has a target size of £1.25 billion with hard cap of £1.4 billion.

The Fund’s general partner (the “GP”) is an affiliate of Livingbridge EP LLP (“Livingbridge” or the “Firm”). Livingbridge, with approximately £2.9 billion of assets under management, is headquartered in London, England and has been investing in growth-oriented, entrepreneurial businesses in the UK since 1995. The GP had closed on approximately £930 million of limited partner capital as of late October and will hold a final close during the first quarter of 2021.

**Strategic Allocation within the Private Investment Fund**

The Fund’s growth buyout strategy falls under the Corporate Finance allocation of the Private Investment Fund (“PIF”). The IPS establishes target allocation ranges of 70% to 100% to Corporate Finance investments within the PIF portfolio as measured by a percentage of total exposure, defined as market value plus unfunded commitments. The PIF’s estimated total exposure to Corporate Finance strategies was approximately 84% as of September 30, 2020.

At a sub-strategy level, Livingbridge 7 would be categorized as a middle-market buyout fund. As of September 30, 2020, middle-market buyout funds represented approximately 7% of the PIF’s total exposure. A Fund commitment would be consistent with the PIF’s strategic pacing plan objectives of targeting 10% to 14% of the PIF’s total exposure in middle market investment strategies. In addition, Livingbridge 7’s focus on investments in the UK and other international markets would align with the PIF’s strategic pacing plan objective of increasing the PIF’s exposure to European focused strategies to approximately 20% of the total portfolio. As of September 30, 2020, the PIF’s European managers represented approximately 9% of total exposure.

The recommended Livingbridge 7 commitment would represent Connecticut's first partnership with Livingbridge. Pension Funds Management ("PFM") investment professionals believe that the Fund presents an attractive opportunity to add one of the UK's most successful mid-market private equity managers to the PIF portfolio. The Firm has developed proven practices and expertise to support its high growth companies in achieving substantial value creation.

### **Investment Strategy and Market Opportunities**

Livingbridge 7 will be a continuation of the Firm's Mid Market investment strategy, which focuses on control and substantial minority investments in high growth, small to medium size companies predominantly located in the UK. The Firm utilizes a thematic investment approach to specifically target investment opportunities in the growth segments of the healthcare and education, consumer, business services, and technology, media and telecommunication ("TMT") sectors with an increased focus on tech-enabled services businesses. Livingbridge's primary focus is on companies with enterprise values between £50 million and £300 million that operate within its targeted sectors and headquartered in the U.K and other British Isles as well as selectively in continental Europe, Australia and New Zealand.

Livingbridge seeks to invest with profitable, founder led and other entrepreneurial companies that are looking for a partner to support transformative growth and strategic value creation objectives. With more than two decades of experience and over 130 investments made in this market segment, Livingbridge has identified common constraints that challenge these high growth companies, including incomplete or under-resourced management teams, substandard technology strategies, limited or no international presence, and insufficient corporate infrastructure to scale. To address these needs, the Livingbridge investment strategy focuses on transforming each of its portfolio companies by addressing what the Firm calls the "3Ps" as outlined below.

- *People* – Ensuring the appropriate management talent is in the right positions when needed.
- *Platform* – Putting the financial, technological, and operational infrastructure in place to support continued high growth.
- *Positioning* – Optimizing the strategic positioning and long-term sustainable growth profile of the company in order to maximize value creation and return potential.

Key components of the Livingbridge investment strategy are the Firm's ability to identify and close attractive investment opportunities and then to utilize replicable and proven value creation practices to support the company for sustained growth through and beyond the Fund's hold period. Livingbridge's leadership has developed the organizational structure, resources, and institutional practices to successfully execute its strategy. The Firm's investment team is organized into the following groups that work collaboratively across the investment life cycle.

- *Origination & Insight ("O&I")* – Livingbridge established a dedicated deal origination function in 2001 based on leadership's belief that building an information advantage and a high-quality pipeline of opportunities would be a competitive differentiator. The O&I team is comprised of skilled sales professionals that initiate discussions with targeted companies as well as research professionals that utilize various data sources to monitor and identify market and sector trends used to qualify target opportunities. The O&I professionals support the New Investment team further with competitive insights used during the diligence process as well as the identification of add-on acquisition targets for Livingbridge portfolio companies.

- New Investment – Members of the New Investment team take the lead on investment opportunity due diligence and execution while continuing to work closely with portfolio companies post-acquisition. Livingbridge’s Mid Market funds, including Livingbridge 7, have a dedicated New Investment team consisting of six senior professionals, which are supported by a larger group of more junior New Investment team professionals that work across the Firm.
- Value Strategy Group (“VSG”) – The VSG team is comprised of experienced portfolio directors that contribute to the due diligence assessment of each opportunity, including the evaluation of a target’s management team, value creation opportunities, and scalability. Post-acquisition, a VSG member team is responsible for the development and execution of the value creation strategy for each company and serves on the company’s board. In addition, Livingbridge appoints a senior VSG team member as the “Fund Manager” for each Livingbridge fund. The role of the Fund Manager is to take a holistic view of each portfolio, including focusing on fund level diversification, risk minimization, and liquidity options.
- Growth Acceleration Team (“GAT”) – GAT members are functional experts that work closely with the VSG team on each company’s value creation plan. The GAT includes a Talent Function, which supports the human capital needs of each Livingbridge company, and Growth Experts that work closely with portfolio companies to enhance customer acquisition and retention, pricing, data analysis, technology, and digitalization capabilities.

Similar to the more junior members of the New Investment team, the Firm’s O&I, VSG, and GAT resources provide support across the Livingbridge platform, which currently includes the Mid Market and Enterprise Value fund series. The Enterprise Value funds focus on the same sectors and geographies as the Mid Market Funds but target smaller companies with enterprise values below £50 million.

The Firm’s strategy is to target returns of 2.5x to 3.0x on each investment, driven primarily by a focus on revenue and EBITDA growth and improving each company’s strategic value. Livingbridge generally utilizes modest leverage at investment entry to provide its companies with the flexibility necessary to execute against a transformative growth plan, including the investment in personnel, infrastructure, and technology that may temporarily depress earnings during the early stages of Livingbridge’s investment. In addition, Livingbridge recognizes that many small and mid-sized company founders are averse to typical buyout leverage multiples and/or selling a controlling interest in their companies. The Firm believes its willingness to be a minority or majority investor and its more prudent leverage practices are competitive advantages, particularly with the higher growth, entrepreneurial and founder-led companies targeted.

Livingbridge believes strongly that its portfolio diversification practices have contributed significantly to the Firm’s ability to generate consistent returns and limited losses. Consistent with prior funds, the GP will seek to construct the Livingbridge 7 portfolio to be well diversified across sector, type, number of positions, and vintage year. Livingbridge expects to invest an average of £40 million to £55 million per company in 20 to 22 platform investments in the Fund, with 14 to 16 of those in the UK, one to two in continental Europe, and four to five in Australia and New Zealand. The Firm’s investments in continental Europe are generally focused on those opportunities where Livingbridge has identified the ability to leverage its expertise and insights previously developed within the same sub-sector in the UK. Similarly, Livingbridge’s investment activities in Australia and New Zealand are focused on opportunities that allow the Firm to utilize



the institutional knowledge of, and investment practices developed for, its targeted services sectors.

### **Firm and Management Team**

Livingbridge became an independent firm in 2005, through a spinout from F&C Group Limited led by Managing Partner Wol Kolade. Kolade had joined the predecessor to F&C in 1993 and led that business starting in 1998. Livingbridge is currently led by Kolade and six additional Founding Partners of the Firm that have worked together for more than 20 years on average. Shani Zindel is a Partner and Chief Investment Officer who joined the predecessor firm in 1997. Sheenagh Egan is a Partner and Chief Operating Officer and Compliance Officer who also joined the Livingbridge predecessor firm in 1997. Livingbridge utilizes a Partnership Board, Management Committee, and Audit and Risk Committee, each comprised of the Firm's senior professionals, to oversee firmwide strategy, operating objectives, risk, and controls. The Livingbridge management company is owned and controlled by the Partners and senior executives of the Firm with no outside investor involvement.

Livingbridge utilizes a four-stage process for the review and approval of investment opportunities, which includes an independent review by the Firm's Portfolio Fund Risk Committee as well as a full compliance, risk, environmental, social and stewardship assessment by the Firm's Legal & Compliance unit. The approval process culminates with the Final Appraisal decision of the Investment Committee, which for Livingbridge 7 will consist of senior members of the Firm and be chaired by Wol Kolade. The Investment Committee must vote unanimously to approve a new investment as well as follow-on investments not pre-approved. Similarly, the Livingbridge 7 Investment Committee must unanimously support a proposed realization for all portfolio companies.

Livingbridge currently has more than 100 employees, including an investment team of over 55 professionals. As previously outlined, the Livingbridge 7 and the other Mid Market funds have a dedicated team of six partner level investment professionals that are supported by the broader platform resources. The Firm's largest office is its headquarters in London and it also maintains satellite offices in Manchester and Birmingham to support the Firm's investment activities in the UK and across Europe. The Firm opened its Melbourne, Australia office in 2016 to begin exploring investment opportunities in Australia and New Zealand. The Melbourne office was established by Gareth Young, who had been a member of the VSG team in London between 2004 and 2011 before relocating to Australia for family reasons. After leading Lazard Australia Private Equity for several years, Young rejoined Livingbridge in 2016 and now serves as the Head of Australia. Livingbridge opened a Boston, MA office in 2018 primarily to support the international growth of its UK portfolio companies by identifying strategic acquisitions in the US.

### **Track Record**

Livingbridge had invested £1.1 billion in 68 deals across its Mid Market funds as of June 30, 2020, which generated a gross internal rate of return ("IRR") and total value multiple ("TVM") of 30% and 2.2x, respectively. As of the same date, Livingbridge had realized 46 Mid Market investments, which returned £1.4 billion of total value, or 3.0x invested capital, and a gross IRR of 30%. As shown in the table below, Livingbridge Mid Market funds had generated a net IRR of 22% and net TVM of 1.8x as of June 30, 2020.

(£ in millions, as of June 30, 2020)

Livingbridge Mid Market Strategy Investment Performance Summary													
	Vintage	Fund		Invested	Realized	Unrealized	Total	Gross / Net			Quartile Rank		
Fund	Year	Size	# Deals	Capital	Value	Value	Value	TVM	IRR	DPI	TVM	IRR	DPI
Fund II	1999	£95	13	£67	£177	£0	£177	2.6x / 2.2x	28% / 22%	2.6x / 2.2x	1 <sup>st</sup>	1 <sup>st</sup>	1 <sup>st</sup>
Fund III	2003	£151	16	£123	£359	£0	£359	2.9x / 2.3x	32% / 24%	2.9x / 2.3x	2 <sup>nd</sup>	2 <sup>nd</sup>	2 <sup>nd</sup>
Fund IV	2007	£235	11	£149	£389	£1	£390	2.6x / 1.9x	29% / 18%	1.9x / 1.9x	1 <sup>st</sup>	1 <sup>st</sup>	1 <sup>st</sup>
Fund V	2012	£360	13	£281	£557	£344	£901	3.2x / 2.4x	37% / 27%	2.4x / 1.6x	1 <sup>st</sup>	1 <sup>st</sup>	1 <sup>st</sup>
Fund VI	2016	£660	15	£464	£8	£538	£546	1.2x / 1.1x	11% / 3%	n/m	4 <sup>th</sup>	4 <sup>th</sup>	4 <sup>th</sup>
Total		£1,501	68	£1,084	£1,490	£884	£2,374	2.2x / 1.8x	30% / 22%	1.8x / 1.1x			

Source: Livingbridge, StepStone, Burgiss Private iQ European Private Equity Buyout Benchmark. Quartile Rank based on net returns.

Livingbridge Mid Market Funds II through IV were fully realized as of June 30, 2020, with each fund benchmarked in the first or second quartile across all relevant Burgiss Private iQ benchmarks. PFM staff notes that Livingbridge 3 fell just outside of the first quartile of the TVM and distributed to paid in capital (“DPI”) benchmarks for vintage year 2003 funds. Livingbridge 4 was invested through the Global Financial Crisis, and the Firm did not make a new investment between June 2008 and April 2010. In addition, Livingbridge 4 was not fully deployed as the manager reserved capital for potential follow-on needs that did not materialize. Despite these factors, the fund still generated first quartile results.

Livingbridge 5, a 2012 vintage year fund, has also produced top quartile results. As of June 30, 2020, the fund had realized six of its 13 portfolio companies at a combined gross and IRR and TVM of 41% and 3.9x, respectively. The six realized Livingbridge 5 investments have returned 1.7x the fund’s total capital invested in all 13 portfolio companies.

Livingbridge 6 made its first investment in December 2016, and the manager expects to make one or two more platform investments before the fund is fully committed. PFM investment professionals are not concerned by Livingbridge 6’s current fourth quartile rankings as of June 30, 2020 for several reasons. The portfolio’s average hold period was approximately 1.6 years as of June 30, 202. Consistent with Livingbridge’s investment strategy and prior fund’s valuation development cycle, the majority of the Livingbridge 6 portfolio companies are still early in the investment and transformation stage, which can dampen valuations on a temporary basis. While Covid-19 has had an adverse impact on several companies, Livingbridge expects the permanent impact to be generally limited to a delay in the fund’s overall valuation creation trajectory. Lastly, Livingbridge has relatively conservative valuation practices, which has generally resulted in realized valuations exceeding interim carrying values. Livingbridge did announce the fund’s first exit in November, with the sale of internet cloud, software and IT support services provider Giacom to a strategic buyer. The fund’s Giacom investment was exited at a premium to the most recent carrying value.

## **Key Strengths**

1. **Proven, Growth-Oriented Strategy.** Livingbridge 7 will follow the same, growth-oriented investment strategy that Livingbridge has successfully executed since 1999. The Firm had created organizational practices and resources specifically designed to assist small and mid-sized companies achieve and sustain growth trajectories. This replicable strategy has led to consistent increases in strategic and commercial value based primarily on revenue and earnings growth and not through financial engineering. StepStone’s analysis of the Mid Market realized

investments through October 2019 concluded that revenue growth and EBITDA margin expansion were responsible for 82% of the unlevered returns achieved on these investments.

2. **Experienced Leadership and Investment Teams.** Livingbridge's seven Founding Partners still actively led the Firm and have been working together for between 15 and 23 years. The broader Partner team have worked together for more than 17 years on average. Leadership stability and the institutional knowledge developed over more than two decades of investing in the same market sectors should continue to benefit Livingbridge and the Fund. The Firm's leadership has continued to invest to expand the size and strength of the investment team as well as the information and other resources necessary to sustain Livingbridge's competitive advantages in its target markets.
3. **Consistent, Strong Performance.** Livingbridge has achieved its targeted 2.5x to 3.0x gross TVM for each of its three realized funds, which have returned net 2.1x investor capital on a combined basis. Livingbridge 5 is currently tracking to exceed these targets, and the manager believes Livingbridge 6's value will continue to develop toward the firm's target. PFM investment professionals note that Livingbridge has generated strong historical returns with lower leverage than its peers and with a total loss ratio of less than 8%, which has also been below that of its peers. In addition, Livingbridge's disciplined portfolio construction and risk management practices have led to consistent returns across economic cycles and sectors as well as minority and majority ownership positions.

### **Major Risks and Mitigants**

1. **Increased Fund Size.** Livingbridge 7 is likely to achieve its targeted size of £1.25 billion, which would represent a nearly 90% increase to the size of Livingbridge 6. Significant fund size growth can cause concerns that the Firm's ability to effectively execute its strategy may be negatively impacted by pressure to deploy a larger pool of capital or insufficient team capacity. While there is risk involved, PFM investment professionals are satisfied that Livingbridge has the organizational capacity, disciplined portfolio construction practices, and a large market opportunity to support a larger fund size.

The Firm has more than doubled its investment team since it began investing Livingbridge 6 in late 2016. Historically, Livingbridge has focused on vintage year diversification within each fund and has paced its commitments across four to five years regardless of fund size. The GP does expect that Livingbridge 7 will invest in two to six more platform companies than Livingbridge 6, however, that growth will be spread across the Firm's investment teams in the UK, Europe, and Australia and New Zealand, with no team expected to make significantly more investments than were completed in Livingbridge 6. Lastly, Livingbridge's deal sourcing and opportunity tracking capabilities have continued to expand over time and most of the Firm's investments made since 2007 have been sourced through its internally developed pipeline. Currently, Livingbridge deal sourcing database tracks more than 24,000 companies, including a high potential target list of more than 200 opportunities that may be actionable during the Fund's life.

2. **Product Expansion.** Livingbridge is currently raising a new fund strategy and is likely to consider an additional strategy in 2022. Product or strategy proliferation raises the risk of management distraction and questions related to whether the manager's interests are fully aligned with its investors. Livingbridge is seeking to raise £600 million for Livingbridge Core

Equity 1 (“Core”), which will focus on investing in a select number of companies that Livingbridge’s Mid Market or Enterprise funds are seeking to exit. The Core fund is meant to allow Livingbridge’s investors to participate in the next phase of sustained growth and value creation that these companies have been positioned for while in the Mid Market or Enterprise funds, but that has historically inured to the benefit of whichever firm buys these companies from Livingbridge. The Core fund is Livingbridge’s version of a continuation fund, which many private equity managers have implemented on a one-off basis to allow the firm and its investors to continue to back strong performers. PFM investment professionals believe that Livingbridge will continue to resource its flagship Mid Market strategy appropriately and that Core will efficiently leverage the Firm’s broader platform. In addition, Livingbridge’s approach to the Core strategy appears thoughtful, including addressing potential conflicts of interests and proposed terms that are intended to align interests. PFM staff believe Livingbridge will continue to invest in expanding the Firm’s investment team and platform resources should Livingbridge decide to launch its True Minority strategy, which is expected to focus on taking small minority interests in companies with enterprise values below £300 million.

#### **Legal and Regulatory Disclosure (provided by Legal)**

In its disclosure to the Office of the Treasurer, Livingbridge EP LLP (“Livingbridge”) stated that there are no material legal or non-routine regulatory matters to disclose.

Livingbridge states that there are no material claims under its fidelity, fiduciary or E&O insurance policies to report, and no ongoing internal investigations to report.

Livingbridge states that no material changes in ownership occurred in the past two years.

Livingbridge states that it has sufficient procedures in place to undertake internal investigations of its employees, officers and directors. Livingbridge is authorized and regulated by the UK Financial Conduct Authority, which requires it to maintain adequate procedures on all regulatory and compliance matters.

#### **Compliance Review**

The Chief Compliance Officer’s Workforce Diversity & Corporate Citizenship review is attached.

#### **Environment, Social & Governance Analysis (“ESG”)**

The Assistant Treasurer for Corporate Governance & Sustainable Investment’s Evaluation and Implementation of Sustainable Principles review is attached.

# COMPLIANCE REVIEW FOR LIVINGBRIDGE 7, LP

## SUMMARY OF LEGAL AND POLICY<sup>1</sup> ATTACHMENTS

SUBMITTED BY

### LIVINGBRIDGE EP LLP

#### I. Review of Required Legal and Policy Attachments

LIVINGBRIDGE EP LLP (“Livingbridge”) a London, United Kingdom (UK)-based firm, completed all necessary attachments, except *Legal and Policy Attachment B, Nondiscrimination Affidavit*, which it represented it will complete if selected. It disclosed no third party fees, campaign contributions, known conflicts, gifts or legal/regulatory proceedings.

**Compliance Note:** If selected, Livingbridge must provide an executed *Legal and Policy Attachment B, Nondiscrimination Affidavit* prior to contracting with the Treasury.

#### II. Workforce Diversity

As of August 2020, Livingbridge employed 104, 17 more than the 87 employed in 2018.

As a UK firm subject to the General Data Protection Regulation (GDPR), Livingbridge does not collect data regarding the ethnicity and/or racial identity of members of its workforce. Livingbridge did provide data regarding the gender make up of its workforce. It also disclosed some basic racial/ ethnic identity data for employees who serve at the Management level of the firm. It identified 3 women and 2 minority males as key managers and/or senior officers. It reported that over the last 3 years (2017-2020), 7 women were promoted within the ranks of professionals or managers.

#### Commitment and Plans to Further Enhance Diversity

Livingbridge has an equal opportunities and diversity policy. This policy covers the firm's commitment, and practices regarding equal employment opportunity, including the recruitment, development, retention and promotion of a diverse and inclusive workforce and non-discrimination based on gender, race, ethnicity, sexual orientation, age and other legally protected categories. The firm continuously looks to enhance and maintain its diverse workforce. Livingbridge plays an active role in multiple industry workplace diversity and inclusion organizations including, Impetus Trust, Guy's and St Thomas' Charity, Level 20, and Aleto Foundation. Its Managing Partner was listed in the 2019 Green Park Britain's Black Asian and Minority Ethnic 100 Business Leaders. The Managing Partner has been actively involved in projects to increase the diversity in the wider “PE and Investment Management industry”. In 2020 he co-founded the #100Black Interns initiative<sup>2</sup> that will offer internships, in Investment Management firms, to black students across the UK in an effort to increase the number of black persons entering the asset management industry.

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<sup>1</sup> The Treasury Unit responsible for reviewing Livingbridge's ESG submission will prepare a separate report.

<sup>2</sup> The 100 Black Interns initiative is aimed at addressing the chronic underrepresentation of Black talent in the British investment management industry. The program has firms participating from all parts of the investment management industry including, hedge funds, private equity, credit and real estate managers, together with consultants and pension funds. It is being coordinated by a number of individuals, including the Managing Partner of Livingbridge.

### *Workforce Statistics*

#### **For Executive/Senior Level Officials and Managers:**

- Women held 50% (3 of 6) of these positions in 2020, down from 60% (3 of 5) held in 2019, but the same 50% (2 of 4) held in 2018.
- Minorities<sup>3</sup> held 33.3% (2 of 6) of these positions in 2020, up from 20% (1 of 5) held in 2019 and 25% (1 of 4) held in 2018.

#### **At the Management Level overall:**

- Women held 32% (5 of 16) of these positions in 2020, up from up from 29% (4 of 14) held in both 2019 and 2018.
- Minorities<sup>4</sup> held 12.5% (2 of 16) of these positions in 2020, down from 14.3% (2 of 14) held in both 2019 and 2018.

#### **At the Professional Level:**

- Women held 36% of these positions in both 2020 (25 of 69) and 2019 (23 of 64), up from 34% (19 of 56) held in 2018.
- Minorities - this data not collected per the GDPR, to which Livingbridge, A UK firm is subject.

#### **Firm-wide:**

- Women held 41% (43 of 104) of these positions in 2020, down from 44% (44 of 100) held in 2019, and 45% (39 of 87) held in 2018.
- Minorities - this data not collected per the GDPR, to which Livingbridge, A UK firm is subject.

### **III. Corporate Citizenship**

#### *Charitable Giving:*

Although Livingbridge does not have a specific policy it encourages employees' charitable giving. The firm is proud to support a range of charities and its employees have raised money for many causes through triathlons, marathons, bike races and even a Santa run. From its inception the firm has always had an institutional emphasis on good corporate citizenship.

#### *Internships/Scholarships:*

Livingbridge does not currently offer internships but recently signed up for the “#100BlackIntern” initiative, which will begin in the summer of 2021.

#### *Procurement:*

Livingbridge does not have a procurement policy or program designed to foster business relationships with women-owned, minority-owned, and/or emerging businesses.

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<sup>3</sup> No details regarding ethnicity (e.g. Asian, Hispanic, etc., were) provided, as such information is not required to be collected in the UK.

<sup>4</sup> See footnote 3, above.

**Evaluation and Implementation of Sustainable Principles (provided by Assistant Treasurer of Corporate Governance and Sustainable Investing Policy)**

Criteria		Responses
1	Firm has an ESG policy	Yes
1a	If yes, firm described its ESG policy	Yes
2	If yes, firm provided examples of ESG factors considered in the decision-making process, explained the financial impact of these ESG factors	Yes
3	Designated staff responsible for sustainability policies and research	Yes
4	Firm provides training/resources on sustainability issues, explained sources of ESG-related data	Yes
5	Signatory/member of sustainability-related initiatives or groups	No, however they do take into account guidance from UNPRI on responsible investing and ESG.
6	Policy for evaluating current or prospective relationships with manufacturers or retailers of civilian firearms	No, however their restricted investment criteria precludes the Firm from making investments in
7	Policy that requires safe and responsible use, ownership or production of guns	No
8	Enhanced screening of manufacturers or retailers of civilian firearms	Yes
9	Enhanced screening of any industry/sector subject to increased regulatory oversight, potential adverse social and/or environmental impacts	Yes
10	Merchant credit relationships with retailers of civilian firearms and accessories	No
10a	If yes, firm confirms compliance with laws governing firearms sales	N/A
11	Overall assessment of responses (e.g., depth of approach to ESG and integration)	<p>Livingbridge described a comprehensive approach to ESG integration, from pre-investment due diligence to ongoing monitoring. In addition to the Firm's 16 member Partnership Board, ultimately responsible for ESG, the firm has an ESG steering group that reports to the Partnership Board. While the Firm is not a signatory of UN PRI, they use the principles as a guide on responsible investing and ESG.</p> <p>The firm does not have a policy specific to civilian firearms because they do not do business with manufacturers or retailers of firearms. The firm conducts enhanced screening of industry/sectors subject to increased regulatory oversight.</p>
<p><b>SCORE:</b></p> <p><b>Excellent - 1</b> Detailed description of ESG philosophy and integration; ongoing ESG assessment; established framework; member of sustainability-oriented organizations; enhanced screening of firearms and/or higher-risk sectors</p> <p><b>Very Good - 2</b> Detailed description of ESG philosophy and integration; ongoing ESG assessment; established framework; member of sustainability-oriented+B3 organizations</p> <p><b>Satisfactory - 3</b> General description of ESG philosophy and integration; some evidence of framework for ongoing ESG assessment; member of sustainability-oriented organizations</p> <p><b>Needs Improvement - 4</b> Generic and/or vague description of ESG philosophy and integration; no ongoing ESG assessment; no dedicated ESG staff or resources</p> <p><b>Poor - 5</b> Incomplete or non-responsive</p>		1

**State of Connecticut**  
**Retirement Plans and Trust Funds**

**Recommendation Report**

**Livingbridge 7**

**November 20, 2020**



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## Executive Summary

<b>Fund</b>	Livingbridge 7 (“Fund 7” or the “Fund”)
<b>General Partner</b>	Livingbridge EP LLP (“Livingbridge” or the “Firm”)
<b>Report Date</b>	Data as of June 30, 2020
<b>Fundraising</b>	Fund 7’s target size is £1.25 billion, with a hard cap of £1.4 billion. As of October 2020, Livingbridge 7 has closed on a total of c.£930 million in committed capital and the GP anticipates that a final close will take place in early 2021. However, StepStone notes that LPAC approval is required should the GP wish to accept additional commitment in excess of the fund size, and up to the £1.4 billion hard cap. At this stage, the GP expects that the fund will likely end up at the target size, rather than the hard cap.
<b>Source</b>	Connecticut Retirement Plans and Trust Funds (“CRPTF”) sourced the investment opportunity directly for evaluation for the Private Investment Fund (“PIF”).
<b>Key Terms</b>	<p><u>Management Fee</u>: From the First Closing Date until the end of the Investment Period, 2% per annum of the Total Commitments; and thereafter until the 8th anniversary of the Commencement Date, 80% of the Management Fee paid in respect of the preceding 12-month period; from the 8th anniversary of the Commencement Date until the 9th anniversary of the Commencement Date, 60% of the Management Fee paid in respect of the preceding 12-month period; and thereafter until termination of the Partnership, 40% of the Management Fee paid in respect of the preceding 12-month period.</p> <p><u>Carried Interest</u>: The Carried Interest allocation will be 20% after an 8% Preferred Return for Limited Partners (with 25% GP catch-up), subject to clawback.</p> <p><u>Termination Provisions</u>: No for cause termination of the Fund clause. No fault termination of the Fund at any time upon the vote LPs holding an aggregate equal to or exceeding 75% of Total Commitments</p> <p><u>Key Person</u>: If at any time prior to the end of the Investment Period, (a) there are fewer than five Key Executives devoting substantially all of their business time to the Required Business, (b) there are fewer than six Key Executives devoting substantially all of their business time to the Required Business to the extent that either Oluwole Kolade and Shani Zindel cease to devote substantially all of their business time to the Required Business, or (c) both Oluwole Kolade and Shani Zindel cease to devote substantially all of their business time to the Required Business (any such event shall be a “Key Person Event”). Key Executive(s) means Oluwole Kolade, Mark Turner, Shani Zindel, Liz Jones, Matt Caffrey, Daniel Smith, Xavier Woodward, Amy Yateman-Smith and David Kirby and any replacements of such persons approved.</p>

## Investment Strategy

Livingbridge targets investments in Small to Lower Middle Market businesses across four core sectors (Consumer Markets; Business Services; Healthcare & Education and TMT) that have the potential to double revenue during their holding periods. Livingbridge 7 is the Firm's latest fund within its flagship Mid Market strategy, and will take majority and significant minority positions (above 25% ownership) in businesses with total enterprise value ("TEV") of between £50 million and £300 million, making corresponding equity investments of between £25 million and £100 million in order to construct a portfolio of 18 to 22 assets. Livingbridge also operates an Enterprise strategy, which takes majority and significant minority positions in businesses with TEV of less than £50 million, requiring equity checks of less than £25 million. The Firm recently launched the fundraise of Livingbridge Core Equity 1, with a target fund size of £600 million. The Core Equity fund will acquire ownership stakes of less than 50% in existing Livingbridge portfolio businesses, typically alongside other Private Equity firms. The Firm had also anticipated launch a second new strategy, the True Minority strategy, which will take minority ownership stakes of up to 25% in businesses with TEV of up to £300 million. As of October 2020, Livingbridge has postponed the launch of True Minority Fund I until 2022 at the earliest. This strategy was expected to be led by Partners Mark Advani and Andrew Garside.

## Management Team

Livingbridge is led by its Managing Partner, Wol Kolade, who is supported by Livingbridge's Chief Investment Officer, Shani Zindel. In aggregate, Livingbridge's Mid Market strategy utilizes ~36 investment professionals (collectively, the "Investment Team"), including five Partners and a Managing Director focused on the Mid Market strategy. This includes the recent transition of Partner Andrew Garside from the True Minority Strategy following the postponement of the strategy's launch to focus his efforts on the Mid-Market strategy.

## Track Record

Since 1999, Livingbridge has invested c.£1.1 billion in 68 investments across five funds. This invested capital has yielded c.£2.4 billion of total value, generating a gross TVM/IRR of 2.2x/30% and a net TVM/IRR of 1.8x/22% as of June 30, 2020. Approximately 63% of total value has been realized (c.£1.5 billion), whilst 37% of total value remains active (£884 million).

(£ in millions, as of June 30, 2020)

Livingbridge Investment Performance														
Fund	Vintage Year	Fund Size	# of Deals	Invested Capital	Realized Value	Unrealized Value	Total Value	Gross TVM	Gross IRR	Loss Ratio	Net TVM	Net IRR	DPI	
Fund 2	1999	£95	13	£67	£177	-	£177	2.6x	28%	10.6%	2.2x	22%	2.2x	
Fund 3	2003	151	16	123	359	-	359	2.9x	32%	13.3%	2.3x	24%	2.3x	
Fund 4	2007	235	11	149	389	1	390	2.6x	29%	12.6%	1.9x	18%	1.9x	
Realized Funds		£481	40	£339	£925	£1	£926	2.7x	29%	12.4%				
Fund 5	2012	£360	13	£281	£557	£344	£901	3.2x	37%	0.0%	2.4x	27%	1.6x	
Fund 6	2016	660	15	464	8	538	547	1.2x	11%	8.9%	1.1x	3%	0.0x	
Substantially Unrealized Funds		£1,020	28	£745	£565	£883	£1,448	1.9x	31%	5.5%				
Total Realized Investments			46	465	1,398	16	1,415	3.0x	30%	9.1%				
Total Unrealized Investments			22	618	92	868	959	1.6x	22%	6.7%				
Total		£1,501	68	£1,084	£1,490	£884	£2,374	2.2x	30%	7.7%	1.8x	22%	1.1x	

Note: Note: Fund 1 is excluded due to limited relevance to current fund, given different fund structure and team responsible for investing.

## Investment Evaluation

**(+) Experienced and Cohesive Partner Group:** Livingbridge's Partner Group is an experienced and cohesive group, with an average of 18 years of private equity experience, having worked together at Livingbridge for an average of 17 years. Just one Partner has departed the Firm since inception (none within the Mid Market strategy), and additions to the Partner group have been made solely through internal promotion. StepStone believes that this combination of experience and cohesion are key merits of the opportunity.

**(+) Established Investment Team Roles Supported by Dedicated Sourcing and Value Creation Teams:** The Firm's investment professionals are split between the New Investment Team ("NIT"), who lead on sourcing and executing new investments, and the Value Strategy Group ("VSG"), who lead on the operational value creation for existing investments. The Investment Team is supported further by two functional groups, the Origination & Insight Team who are dedicated to supporting origination and market mapping efforts, and the Growth Acceleration Team ("GAT") of functional experts that support project-based value creation initiatives. StepStone believes that Livingbridge's institutional set-up and support teams provide an edge relative to most competitors in the UK Small and Middle Market.

**(+) Proven, Growth-Focused Value Creation Strategy:** Livingbridge has consistently employed the same value creation strategy across its track record, focusing on accelerating growth in high-performing companies, implemented with the assistance of a nine-person Value Strategy Group and eight person Growth Acceleration Team. Based on StepStone's Drivers of Investment Returns analysis, Livingbridge has created 47% of total realized value through revenue growth, which demonstrates the success of Livingbridge's top-line driven value creation efforts.

**(+) Consistent Upper Quartile Track Record:** Livingbridge has generated top quartile performance in Fund 2, Fund 4 and Fund 5 across net TVM, net IRR and DPI metrics. Fund 3 generated second quartile performance across all three metrics. Additionally, Livingbridge's loss ratios have been consistently lower than benchmarks across their 21 year history.

**(-) Step-Up in Fund Size and Target Investment Size:** The target fund size represents an 89% increase from Fund 6. As a result, Livingbridge will increase its target equity check and TEV at entry. Assuming that Livingbridge will deploy Fund 7 into 20 portfolio companies, it will invest average equity checks of £56 million, which is larger than the largest single equity check that the Firm's flagship funds have written to date (£48 million). Furthermore, it has increased its maximum TEV at entry to £300 million, despite having only invested in four companies with TEV at entry of over £100 million (all less than £200 million). Livingbridge's largest investment, loveholidays, was acquired for a TEV of £190 million in May 2018, however Livingbridge had tracked the company for over five years prior, when it was a much smaller company. The total equity check required for the company was around £120 million, however the Firm right-sized its check to £48 million and invited co-investors to participate in order to avoid fund concentration risk. StepStone has enquired as to the Firm's pipeline and notes that it includes a significant number of investment opportunities requiring at least £50 million of equity. Livingbridge further believes that its pipeline of larger opportunities will increase over time, as high-growth companies that it has tracked historically

continue to scale. Livingbridge has also increased its investment team size by ~44% since the start of Fund 6, which helps to support the AUM growth.

**(-) International Expansion:** Since recently opening an office in Melbourne, Australia, Livingbridge has completed two Australasian investments. Furthermore, the Firm recently completed its first Continental European investment since Fund 2. The Firm is expected to make between four to five Australasian investments and one to two Continental European investments in Fund 7. It should be noted that each of the non-UK investments has generated promising interim performance.

**(-) Platform Expansion:** Livingbridge is seeking to raise two other products: the Core fund, which is focused on acquiring attractive larger assets (TEVs of up to £600 million) for longer holding periods and with a target fund size of £600 million and the True Minority fund, which is focused on taking small minority (less than 25% ownership) positions in businesses with TEV of less than £300 million, with a target fund size of £300 million. However, as of October 2020, Livingbridge has postponed the launch of True Minority Fund I until 2022 at the earliest. In addition to these, Livingbridge is also currently deploying Livingbridge Enterprise 3, which invests in smaller companies with TEV of up to £50 million. This multitude of strategies may distract the Firm's senior leadership and may lead to increased conflict of interest situations. It will also draw on the resources of the NIT Pool and VSG at the expense of Fund 7. However, Fund 7 is the latest in Livingbridge's flagship strategy, and is expected to continue to draw the majority of capacity from any of the Firm's shared resources. In addition, a portion of carried interest is also distributed to the broader Livingbridge platform in order to ensure that knowledge is disseminated across the platform and encourage a cohesive, team-oriented culture across strategies.

**(-) Underperformance of Fund 6 Relative to Other 2016 Vintages:** Fund 6 has generated fourth quartile performance across all metrics. As of June 30, 2020, the fund was 74% drawn with a total of 15 investments completed. The performance of Livingbridge 6 represents an important reference point as it is the Firm's largest to date as measured by total commitments. The increase in fund size relative to the previous fund was 87% for Fund 6 (vs. 89% for Fund 7). Therefore Fund 6's outcome could be indicative of Livingbridge's ability to successfully deploy larger pools of committed capital. Despite its nascency (with a weighted average hold period of ~1.6 years), Fund 6's unrealized portfolio demonstrated healthy revenue and EBITDA growth going into COVID, and StepStone believes that the majority of the fund's unrealized assets are likely to suffer a low COVID impact, while some assets (such as Adarma, a cyber-security consultancy, and Giacom, a cloud software marketplace) may see a positive impact. Livingbridge expects to fully realize two Fund 6 investments in the next six months, both of which are expected to be realized above their respective holding values, as of June 30, 2020, generating gross TVMs in excess of 2.1x.

## **Recommendation**

In StepStone's view, a commitment to Livingbridge 7 represents an attractive investment opportunity for investors seeking exposure to an established, UK-based manager with a successful track record targeting Small and Lower Middle Market companies. Livingbridge's Partner group is an experienced and cohesive group that have cultivated a team-oriented culture across strategies. StepStone believes that Livingbridge's institutional set-up and support teams provide an edge relative to most competitors in the UK Small and Middle Market and that the Firm has proven an ability to execute a consistent value creation strategy across its track record focusing on accelerating growth in high-performing companies.

### Investment Strategy

Fund 7 will target majority and controlling minority investments in Small and Lower Middle Market businesses with a TEV of between £50 million and £300 million. Livingbridge will aim to make corresponding equity investments of between £25 million and £100 million in order to construct a portfolio of approximately 18 to 22 companies. The Firm will continue to target investments within its four core sectors: Consumer Markets; Business Services; Healthcare & Education and TMT, which have remained constant since 1998. Livingbridge will complete both minority and majority investments within Fund 7, consistent with its strategy employed since inception. The Firm does not have a preference between owning an economic minority or majority, but in minority situations will always ensure appropriate legal controls are in place to allow Livingbridge to exert a level of control to effect change as if it were a majority shareholder. Livingbridge seeks to invest in entrepreneurial, profitable, high-growth businesses that are disrupting their markets.

The Firm utilizes a dedicated Origination & Insight Team in order to identify potential investment opportunities prior to a formal auction process being initiated. Through this proactive approach and by using a bespoke CRM system supported by proprietary AI, Livingbridge aims to originate proactive deal flow. It also attempts to gain a preferential position in competitive situations through established relationships with management teams or vendors prior to a sales process. Livingbridge also leverages its VSG to drive value creation across its portfolio, utilizing a clear and repeatable strategy developed and refined over the Firm's organizational history. The VSG focuses its efforts on three key pillars ("the 3 Ps") in order to provide the foundation for growth:

- **People** – Supplementing existing management teams with high quality, targeted hires at appropriate levels;
- **Platform** – Ensuring each portfolio company has the required financial, technological and operational infrastructure to achieve Livingbridge's targeted growth levels; and
- **Position** – Strategically positioning, sustaining and optimizing each portfolio company as a high quality asset in a defined market in order to maximize value upon realization.

### Portfolio Characteristics

**UK Focused with Broadening International Coverage:** Historically, Livingbridge was a purely UK-focused investor, making platform investments almost exclusively in the UK market from offices in London, Birmingham and Manchester. While the UK remains Livingbridge's core focus, it has also explored other international markets into which to expand its strategy. This includes establishing offices in Boston, U.S. and Melbourne, Australia in 2016 and 2017, respectively. Both these international offices are in place to support the geographical expansion of Livingbridge investments. The Firm also makes select platform investments in Australia and New Zealand from its Melbourne office. Fund 7 is able to invest up to 30% of total commitments into companies headquartered outside the UK, and within either the U.S., Australia or New Zealand. Livingbridge expects to make between four to five investments in either Australia or New Zealand with Fund 7. StepStone has some concerns about the Firm's recent international expansion, having witnessed "hub and spoke" office models fail as a result of new / smaller local teams needing to establish themselves and often competing more aggressively for investment opportunities in auctioned settings. StepStone notes that Livingbridge's Australian office was established and is led by Gareth Young, a Managing Director who had previously left the Firm in 2011 to relocate to Australia with his family. Mr. Young had joined Livingbridge originally in 2004 as a member of the VSG team in London, but departed in 2011 as an Investment Director to relocate to Melbourne, Australia with his family. In Melbourne, he joined Lazard Australia Private Equity, where he eventually rose to become Head of Private Equity and chair of its investment committee. Livingbridge is experienced at managing office locations across the UK and the Firm operates a cohesive model, deliberately promoting a team-orientated investment approach in order to remove motivations for individuals to oversell their own deals. It also skews its incentives in line with performance over the long term. Overall, StepStone believes that Livingbridge has executed its office expansions well, and has taken a differentiated approach. Furthermore, the Firm's collaborative approach is well-suited to operating multiple office locations. Nonetheless, the geographic expansion and deviation from the Firm's historical focus on the UK should be carefully monitored.

**Small to Lower Middle Market Investments:** StepStone categorizes the Fund’s anticipated size of £1.25 billion as operating in the Middle Market. However, the scale of target investments (TEV of between £50 million and £300 million) shows that Livingbridge will operate within the Small to Lower Middle Market by company size. The evolution of Livingbridge’s investments by TEV over time reflects the growth in fund sizes coupled with pressure to deploy larger amounts of capital per investment. However, a small proportion of its investments (26%) since inception have been completed in companies with TEV of at least £50 million. StepStone notes that this has increased in recent funds, such that the majority of Fund 6 investments (75%) are within Fund 7’s target range. Across the Livingbridge track record, performance has generally been stronger in smaller TEV investments, in particular those of less than £50 million. The Firm’s experience in companies with TEV of greater than £100 million is limited, with just four unrealized investments in Fund 6 that are held on a blended basis at a 1.3x gross TVM. StepStone believes that Livingbridge’s track record of larger investments is unproven, as opposed to weak. The Firm has implemented a consistent strategy regardless of TEV size in the past, and StepStone believes that the same strategy is applicable to slightly larger businesses. StepStone takes comfort that the Firm’s origination approach has also provided visibility on opportunities in companies that are greater in TEV size than it has targeted in the past. StepStone has reviewed Livingbridge’s pipeline and notes that this includes a significant number of investment opportunities requiring at least £50 million of equity. Livingbridge further believes that its pipeline of larger opportunities will increase over time, as high-growth companies that it has tracked historically continue to scale. For example, by the end of Fund 7’s investment period, the Firm believes it will be targeting equity checks of close to £70 million on average.

**Conservative Use of Leverage:** Livingbridge typically uses limited senior leverage as part of its transaction structures, preferring conservative capital structures at entry. The Firm’s conservative use of leverage has been typically materially below benchmark levels since the GFC. In certain growth cases, the Firm will utilize no external leverage at entry. This is, in part, informed by the fact that Small to Lower Middle Market businesses have the potential to generate volatile performance relative to their larger, more mature peers. It is also reflective of the fact that at acquisition, many companies do not have a sophisticated enough finance function or have never managed debt positions. Therefore, management teams may be wary of taking on significant debt. Livingbridge’s prudent use of leverage at entry allows management teams to focus on supporting the business by reinvesting in growth initiatives through internally generated cash flows. Each portfolio company is evaluated on a case-by-case basis during due diligence in order to assess its ability to support financial leverage.

**Fair Prices for High Quality Assets:** Livingbridge does not expect its direct sourcing approach to allow it to pay meaningfully below-market prices, as the majority of vendors will “price check” offers, even in bilateral negotiations. However, deeper knowledge of target companies gained through early or preferred access to management or financial information allows the Firm to not spend time on opportunities where its value-add proposition will not afford it a competitive advantage. Scenarios in which Livingbridge has been successful in competitive situations, despite not submitting the highest bid, are primarily the result of management teams preferring to work with Livingbridge and assigning a greater future value to their roll-over proceeds from a partnership with Livingbridge vs. an alternative sponsor. In recent years, Livingbridge’s entry multiples have grown significantly on average, although the rate of this increase is reflective of increased pricing across the UK Small Market. Despite the relatively high absolute multiples paid for businesses acquired compared to the benchmark, StepStone believes that the quality of Livingbridge’s portfolio companies (with typically stronger growth profiles compared to peers in their markets) is such that these typically offer better value relative to most directly comparable businesses.

### **Competitive Landscape**

Livingbridge operates in the UK Small to Lower Middle Market segment, which is characterized by a deep pool of both PE funds and target businesses willing to work with institutional private investors. In its target market, Livingbridge is differentiated by its proprietary origination approach, sector knowledge and strong track record of helping businesses grow through operational value creation. In StepStone’s view, there are four investor types with whom Fund 7 will compete for deals:



- **Generalist Country Funds:** The UK is home to a multitude of generalist country funds that may compete with Livingbridge for local deal flow. Most of the players in the Small and Lower Middle Market have smaller investment teams relative to their fund sizes and operate as generalists rather than with any specific sector-focus. While StepStone expects these types of funds to be the competitors for the Firm's deal flow, StepStone believes that Livingbridge is well positioned to compete with these players given its proprietary origination approach (explained in further detail in the Proactive Sourcing sub-section), well-resourced team, and sector expertise within the UK Small and Lower Middle Market.
- **Sector-Focused Funds:** Sector-focused funds often possess relationship networks and insight into underlying sector / company trends. However, there are a limited number of sector-focused managers in Europe that invest in the Small and Lower Middle Market (e.g. G Square in the Healthcare sector, Cabot Square in Financial Services). StepStone expects that Livingbridge will compete only selectively with such managers, most likely in the Healthcare and Financial Services sectors.
- **Pan-Regional / Pan-European Funds:** Pan-European funds and funds with a multi-regional focus may selectively compete with Livingbridge for deal flow. Firms such as Bridgepoint Development Capital could target similar companies to Livingbridge. However, these managers will execute only some of their investments in the UK and will typically target companies with larger TEVs. StepStone believes that the regional players will compete only occasionally with Livingbridge and could also present a credible exit route for the Firm's portfolio companies.
- **Industrial Buyers:** Livingbridge is expected to compete with opportunistic industrial buyers on rare occasions. These buyers are often willing to pay higher upfront prices for businesses. However, industrial buyers typically target larger and more professionalized businesses and are more likely to be buyers of Livingbridge's portfolio companies rather than competitors. Existing owners and/or management teams often wish to retain significant stakes in their businesses following a sale in order to participate in future value creation. In such instances, private equity is often perceived as an attractive alternative to selling to an industrial buyer, despite a higher upfront price.

## Evaluation of the Strategy

### Merits

- ▲ **Proven, Growth-Focused Value Creation Strategy:** Livingbridge has consistently employed the same value creation strategy across its track record, focusing on accelerating growth in high-performing companies, implemented with the assistance of a ~10 person Value Strategy Group and eight person Growth Acceleration Team. Based on StepStone's DIR analysis, Livingbridge has created 47% of total realized value through revenue growth, which demonstrates the success of Livingbridge's top-line driven value creation efforts.
- ▲ **Sector Expertise:** Livingbridge targets Small to Lower Middle Market investments across four core sectors: Consumer Markets; Business Services; Healthcare & Education and TMT, which have remained consistent since 1998, contributing to the Firm's specialized sector knowledge. This focus affords the Firm a degree of specialization that generalist competitors may not possess, but does not unduly limit the scope of the market in which Livingbridge can invest.
- ▲ **Proactive Origination Approach:** Utilizing its dedicated three-person Origination & Insight Team, Livingbridge employs a proactive origination model. Since the formation of this team in 2000, the Firm has developed and refined a methodology for identifying and accessing high quality deal flow. The result of this work is a proven ability to generate a high proportion of non-intermediated deal flow, with c.70% of investments sourced in Fund 6 without the involvement of an intermediary.

### Risks

- ▼ **Limited Experience in Larger Investments:** For Fund 7, Livingbridge will increase its target equity check and TEV at entry. Assuming that Livingbridge will deploy Fund 7 into 20 portfolio companies, it will invest average equity checks of £56 million, which is larger than the largest single equity check that the Firm has written to date (£48 million). Furthermore, it has raised the maximum TEV at entry for Fund 7 to £300 million, despite having only invested in four companies with TEV at entry of over £100 million (all less than £200 million). StepStone takes comfort that the Firm's origination approach has also provided visibility on opportunities in companies that are greater in TEV size than it has targeted in the past. For example, loveholidays was acquired for a TEV of £190 million, however Livingbridge had tracked the company for over five years prior, starting when it was a much smaller company. Based on its current pipeline, Livingbridge is confident that Fund 7 will not present challenges to deployment, despite Fund 7's material step-up in size from that of Fund 6. StepStone has analyzed the current pipeline and notes that this includes a significant number of investment opportunities requiring at least £50 million of equity. Livingbridge further believes that its pipeline of larger opportunities will increase over time, as high-growth companies that it has tracked historically continue to scale.
- ▼ **International Strategy Drift:** Since recently opening an office in Melbourne, Australia, Livingbridge has completed two Australasian investments. Furthermore, the Firm recently completed its first Continental European investment since Fund 2. The Firm is expected to make between four to five Australasian investments and one to two Continental European investments in Fund 7. Each of the non-UK investments have generated promising interim performance. From its discussions with the GP, StepStone judges that Livingbridge has been thoughtful about its international expansion and has transparently communicated with investors. StepStone notes that Livingbridge's Australian office was established and is led by Gareth Young, a Managing Director who had previously left the Firm in 2011 to relocate to Australia with his family. Mr. Young had joined Livingbridge originally in 2004 as a member of the VSG team in London, but departed in 2011 as an Investment Director to relocate to Melbourne, Australia with his family. In Melbourne, he joined Lazard Australia Private Equity, where he eventually rose to become Head of Private Equity and chair of its investment committee.
- ▼ **Step-Up in Fund Size:** The target fund size represents an 89% increase from Fund 6. As a result, the Firm will be required to complete a larger number of investments and increase its average equity check significantly in order to successfully deploy the fund. Fund 6 is expected to be deployed in 3.5 years, while the Firm has communicated its intention to utilize the full five-year investment period for Fund 7. This will allow the Firm more time to make a

larger number of investments (18-22) compared to Fund 6 (17 expected). StepStone has analyzed the current pipeline and notes that it includes a significant number of investment opportunities requiring at least £50 million of equity. Livingbridge further believes that its pipeline of larger opportunities will increase over time, as high-growth companies that it has tracked historically continue to scale.

- ▼ **Brexit Risk:** The Brexit vote in June 2016 has created uncertainty in the UK economy and resulted in projections of muted economic growth during the short- and medium-term. Brexit continues to imply the potential for a number of private market risks, particularly in the UK, including constrained deal flow, asset pricing dislocation, a difficult exit environment and adverse operating performance of private companies. The ongoing volatility and potential depreciation of the GBP is a consideration for international investors seeking exposure to UK funds through GBP-denominated funds. StepStone believes that the macroeconomic uncertainty in the UK will also provide PE firms with opportunities to transform companies and sectors to be more competitive in whatever outcome emerges from Brexit. StepStone believes that Livingbridge is well positioned in this regard, with its focus on companies operating within services, unaffected by cross-border trading in goods, and its conservative approach to leverage to manage any potential risk. Livingbridge has generated a strong track record across its prior funds, despite varying macroeconomic conditions in the UK.

## Management Team

Livingbridge is led by its Managing Partner, Wol Kolade, who is supported by Livingbridge’s Chief Investment Officer, Shani Zindel. In aggregate, Livingbridge’s Mid Market strategy utilizes ~36 investment professionals (collectively, the “Investment Team”), including five Partners and a Managing Director focused on the Mid Market strategy. This includes the recent transition of Partner Andrew Garside to focus his efforts on the Mid-Market strategy. They are supported by ~20 mid and junior level investment professionals shared across the Livingbridge platform, as well as ~10 dedicated investment professionals who lead the operational improvement of portfolio companies (the “Value Strategy Group” or “VSG”). This Investment Team is further supported by three professionals dedicated to sourcing new investments (the “Origination & Insight Team”) and a group of eight in-house functional professionals (the “Growth Acceleration Team” or “GAT”) to support the VSG in implementing value creation plans.

### Professionals

The NIT is primarily responsible for appraising new investment opportunities. It consists of ~30 investment professionals, including 10 senior investment professionals (eight Partners, a Managing Director and a Director) that are dedicated to either the Enterprise, Mid Market or True Minority strategy. The Partner Group consists of investment professionals that have an average of 18 years of private equity experience, and have been working together at Livingbridge for an average of 17 years. Prior to joining Livingbridge, Partners came from a mix of private equity and corporate finance backgrounds. Additions to the Partner group have been made solely through internal promotion. While Livingbridge has an established senior team and does not expect to make any senior hires in the near future, the Firm will continue to add mid- and junior-level investment professionals on a selective basis during the investment period of Fund 7.

#### Livingbridge Tenure of Partners

Livingbridge Partners												
Name	Title	Age	Previous Experience	Livingbridge Tenure	Principal Investing Experience	1997	1998	1999	2000	2001	2002	2003
Wol Kolade	Managing Partner	52	F&C Management, Barclays	26	26							
Shani Zindel	Partner	48	Fisher Hoffman Sithole	22	22							
Adam Holloway	Partner	52	Deloitte	20	20							
Mark Turner	Partner	48	BT, Global Crossing, Deloitte, NatWest	18	18							
Liz Jones	Partner	44	Barclays	18	22							
Daniel Smith	Partner	47	RBS	16	18							
Matthew Caffrey	Partner	45	Rothschild, Arthur Andersen	14	14							
Xavier Woodward	Partner	47	Societe Generale, KPMG	8	8							
Gareth Young	Managing Director	40	Lazard Australia Private Equity	11	16							
Amy Yateman-Smith	Partner	36	KPMG	8	8							
Partner Total:												
Partner Average:												

There are five Partners (Liz Jones, Daniel Smith, Matt Caffrey, Xavier Woodward and Andrew Garside) and one Managing Director (Gareth Young) who are dedicated to the Mid Market strategy and will be responsible for deploying Fund 7. Due to the postponement of the True Minority strategy launch (which was expected to be led by Messrs. Advani and Garside) Mark Advani has moved to lead the Enterprise strategy, while Mr. Garside has transitioned to focus his efforts on the Mid-Market strategy. Approximately 20 junior to mid-level NIT professionals (Analyst to Investment Director) work across Livingbridge’s three strategies (the “NIT Pool”), although StepStone understands that the Mid Market strategy is likely to encompass the majority of capacity for these professionals.

The VSG works alongside the NIT to develop and execute Livingbridge’s value creation strategy for each investment. It consists of ten investment professionals, including three Partners (Adam Holloway, Mark Turner and Amy Yateman-Smith), two Investment Directors, five Investment Managers (including two new hires completed following StepStone’s diligence in February 2020) and one Analyst.

Livingbridge’s Investment Team operates out of three offices in London (UK), Manchester (UK), and Melbourne (Australia). Livingbridge also has a satellite office in Birmingham where four investment professionals spend a portion of

their time, and an office in Boston, U.S., however this is staffed solely with professionals from the GAT (further details in the Growth Acceleration Team sub-section). The London office is the most established office and is fully staffed with both deal sourcing and execution professionals. Livingbridge's Australian office was established and is led by Gareth Young, a Managing Director who had previously left the Firm in 2011 to relocate to Australia with his family. Mr. Young's role is akin to that of a Partner, with his title as Managing Director a regulatory aberration. The Firm viewed an expansion into Australia as an opportunity to re-hire a proven, high-quality employee, and to test out a new market. The Australian office was expected to focus on add-on acquisitions and international expansion of portfolio companies as well as certain local investment opportunities across Australasia that list "expansion into the UK" as a major component of value creation. The office has executed two platform investments to date.

In addition, Livingbridge was one of the first GPs to establish a dedicated origination function in 2001, recognizing a need to secure a sourcing advantage against its peers to originate proprietary dealflow. The Origination & Insight Team consists of three professionals who conduct sector, market and company research (including market mapping and the identification of potential add-on acquisitions) to assist in filtering investment opportunities, and then initiate relationships with potential target companies, ultimately seeking to arrange meetings between management teams and NIT professionals.

Further, the Firm's value creation efforts are supported by the Growth Acceleration Team. This team is composed of in-house functional experts to provide specific strategic and practical support. GAT was formerly considered part of the VSG, however given the project-based nature of the work undertaken by GAT, the Firm felt it was logical to split this into a separate group.

### **Capacity**

StepStone analyzed Livingbridge's historical investment pace as well as the likely investment pace of Fund 7, assuming £1.25 billion of committed capital. It is expected that Livingbridge will invest approximately £1.125 billion (90% of commitments) across 20 companies, writing an average equity check per investment of £56 million and investing evenly over a five-year period. The Fund will seek to invest an average of £225 million annually across approximately three to four portfolio companies. This represents a step up of 51% compared to the expected average annual deployment of Fund 6 of 149 million.

Overall, StepStone believes that Livingbridge is adequately staffed to deploy Fund 7. While the step-up in fund size is material (89%), Livingbridge has sequentially raised larger funds without being challenged from a deployment perspective. Fund 4 is an exception to this trend due to its interrupted investment period which overlapped with the Global Financial Crisis ("GFC"). Fund 4 had reserved capital for follow-on investments which were not materialized due to the challenging deal environment after the GFC. While StepStone believes that Livingbridge will be challenged in its ability to deploy Fund 7, the increase in team size and the Firm's stated intent to take 5 years to complete the investment period help to mitigate this concern.

Fund Size & Capacity Analysis

(£ in millions)

Livingbridge Fund Size & Capacity Analysis			
	Fund 5	Fund 6	Fund 7
<b>Fund:</b>			
Vintage Year	2012	2016	2020
Fund Size	353	660	1,250
% Growth	50%	87%	89%
Total Invested (Estimated)	277	594	1,125
Investment Period (Years)	4	4	5
Number of Investments (+ Projected)	14	17	20
<b>Team:</b>			
Total # of Partners	5	8	10
Other Investment Staff	10	17	26
Total # of Investment Staff	15	25	36
<b>Investment Pacing:</b>			
Average # of Deals Per Year	3.5	4.3	4.0
Average Investment Size Per Deal	20	35	56
Average Capital Invested Per Year	69	149	225
Average # of Deals Per Partner	2.8	2.1	2.0
Average # of Deals Per Partner Per Year	0.7	0.5	0.4
Average Capital Invested Per Partner	55	74	113
Average Capital Invested Per Partner Per Year	14	19	23

**Turnover**

Livingbridge has a tenured group of senior professionals, and has suffered limited Partner turnover since inception. Just one Partner, Paul Morris, has left the Firm since 2013. Mr. Morris was originally part of the VCT team at Livingbridge, then moved onto the Enterprise team, and departed in 2018. Mr. Morris did not work on any Mid Market investments and StepStone understands that his departure will have no effect on the deployment of Fund 7.

However, 18 additional investment professionals from junior to senior level have departed since 2013. Most of these departures were due to a desire to leave private equity, performance or cultural fit. At StepStone's onsite, Mr. Kolade shared a number of Livingbridge's values, including curiosity, teamwork, tenacity, honesty and innovation. StepStone has met with numerous investment professionals, and believes that the Firm has a strong and positive culture that rewards these values.

**GP Commit**

The GP will commit a minimum of 2.0% of total commitments to Fund 7, equivalent to £25 million based on an assumed fund size of £1.25 billion. This percentage is consistent with the GP commitment to Funds 5 and 6. Livingbridge's GP commitment is consistent with other UK Small Market funds (typically between 2.0% and 3.0%), however StepStone would prefer a larger commitment, particularly from the more senior Partners, given the realized carried interest proceeds from Fund 4 and significant expected carried interest proceeds from Fund 5.

**Investment Committee**

Livingbridge's Investment Committee is chaired by Mr. Kolade (Managing Partner), and includes each of the Partners from the Investment Team for Fund 7. The IC is required to vote initially on each investment proposal, with unanimous approval required to proceed with an investment. A subset of the IC, including each of the Partners with the exception of the more recent promotions (Ms. Yateman-Smith and Mr. Kirby) is required to vote unanimously in favor before an investment can be executed ("Final Approval"). This subset of the IC also approves all follow-on investments subject to unanimous approval. A smaller subset of this group, including the most senior Partners (Messrs. Kolade, Turner, Holloway, Advani, Smith and Ms. Zindel and Jones) is required to approve exits, subject to unanimous approval.

## Evaluation of the Management Team

### Merits

- ▲ **Experienced and Cohesive Partner Group:** Livingbridge's Partner Group is an experienced and cohesive group, with an average of 18 years of private equity experience, having worked together at Livingbridge for an average of 17 years. Just one Partner has departed the Firm since inception (none within the Mid Market strategy), and additions to the Partner group have been made solely through internal promotion. StepStone believes that this combination of experience and cohesion are key merits of the opportunity.
- ▲ **Large, Well Resourced Investment Team with Defined Roles:** Fund 7 will be deployed by a team of ~36 investment professionals, which compares favorably to the Firm's closest peers in the UK Small to Middle Market. The Firm's investment professionals are split between the New Investment Team, who lead on sourcing and executing new investments, and the Value Strategy Group, who lead on the operational value creation for existing investments.
- ▲ **Dedicated Sourcing and Value Creation Teams:** The Investment team is supported further by two functional groups, the Origination & Insight Team who are dedicated to supporting origination and market mapping efforts, and the Growth Acceleration Team of functional experts that support project-based value creation initiatives. StepStone believes that Livingbridge's institutional set-up and support teams provide an edge relative to most competitors in the UK Small and Middle Market.

### Risks

- ▼ **International Expansion:** Livingbridge has recently opened offices in Australia and the U.S. The team will likely face competition from more established local private equity managers in these geographies. The U.S. will focus on add-on acquisitions and the international expansion of portfolio companies, while the Australian office will also focus on these in addition to platform investments. The latter predominantly in companies for which expansion into the UK market is a major component of the value creation plan. Livingbridge is also experienced at growing businesses outside the UK, having supported the overseas expansion of several companies across Funds 4-6.
- ▼ **Platform Expansion:** Livingbridge is seeking to raise two other products: the True Minority fund focused on taking small minority (less than 25% ownership) positions in businesses with TEV of less than £300 million, with a target fund size of £300 million, and the Core fund to acquire attractive larger assets (TEVs of up to £600 million) for longer holding periods and with a target fund size of £600 million. However, as of October 2020, Livingbridge has postponed the launch of True Minority Fund I until 2022 at the earliest. This strategy was expected to be led by Partners Mark Advani and Andrew Garside. In addition to these, Livingbridge is also currently deploying Livingbridge Enterprise 3, which invests in smaller companies with TEV of up to £50 million. This multitude of strategies may distract the Firm's senior leadership and will also draw on the resources of the NIT Pool and VSG at the expense of Fund 7. These new strategies may also introduce conflicts of interest and misalignment with LPs. Fund 7 is the latest in Livingbridge's flagship strategy, and is expected to continue to draw the majority of capacity from any of the Firm's shared resources. There are clear boundaries in terms of ownership stake percentage and equity check between the Mid Market strategy and the Enterprise and True Minority strategies. The Core strategy will acquire assets from the Mid Market strategy, but StepStone understands that Livingbridge will ensure that external parties will lead pricing of assets, and each transaction will require LPAC approval.

## Track Record

Since 1999, Livingbridge has invested c.£1.1 billion in 68 investments across five funds. This invested capital has yielded c.£2.4 billion of total value, generating a gross TVM/IRR of 2.2x/30% and a net TVM/IRR of 1.8x/22% as of June 30, 2020. Approximately 63% of total value has been realized (c.£1.5 billion), whilst 37% of total value remains active (£884 million).

### Livingbridge Performance Overview

(£ in millions, as of June 30, 2020)

Livingbridge Investment Performance													
Fund	Vintage Year	Fund Size	# of Deals	Invested Capital	Realized Value	Unrealized Value	Total Value	Gross TVM	Gross IRR	Loss Ratio	Net TVM	Net IRR	DPI
Fund 2	1999	£95	13	£67	£177	-	£177	2.6x	28%	10.6%	2.2x	22%	2.2x
Fund 3	2003	151	16	123	359	-	359	2.9x	32%	13.3%	2.3x	24%	2.3x
Fund 4	2007	235	11	149	389	1	390	2.6x	29%	12.6%	1.9x	18%	1.9x
Realized Funds		£481	40	£339	£925	£1	£926	2.7x	29%	12.4%			
Fund 5	2012	£360	13	£281	£557	£344	£901	3.2x	37%	0.0%	2.4x	27%	1.6x
Fund 6	2016	660	15	464	8	538	547	1.2x	11%	8.9%	1.1x	3%	0.0x
Substantially Unrealized Funds		£1,020	28	£745	£565	£883	£1,448	1.9x	31%	5.5%			
Total Realized Investments			46	465	1,398	16	1,415	3.0x	30%	9.1%			
Total Unrealized Investments			22	618	92	868	959	1.6x	22%	6.7%			
Total		£1,501	68	£1,084	£1,490	£884	£2,374	2.2x	30%	7.7%	1.8x	22%	1.1x

### Relative Performance

The below details the net performance of Livingbridge's five latest funds relative to the European Private Equity Buyout benchmark, per the Burgiss Private iQ database as of June 30, 2020.

- **Fund 2:** 1999 vintage. Top quartile performer across all metrics and is fully realized as of June 30, 2020.
- **Fund 3:** 2003 vintage. Second quartile performer across all metrics and is fully realized as of June 30, 2020.
- **Fund 4:** 2007 vintage. Top quartile performer across all metrics and is fully realized as of June 30, 2020.
- **Fund 5:** 2012 vintage. Top quartile performer across all metrics. As of June 30, 2020, the fund had six fully realized investments, together representing 54% of total value. Fund 5's realized investments performed strongly, generating a gross TVM/IRR of 3.9x/41% on a blended basis. StepStone expects Fund 5's net TVM to remain strong as a result of the expected realizations of the seven remaining assets.
- **Fund 6:** 2016 vintage. Fourth quartile performer across all metrics. As of June 30, 2020, the fund was 74% drawn with a total of 15 investments completed. Despite its nascency, Fund 6's unrealized portfolio demonstrated healthy revenue and EBITDA growth going into COVID, and StepStone believes that the majority of the fund's unrealized assets are likely to suffer a low COVID impact, while some assets (such as Adarma, a cyber-security consultancy, and Giacom, a cloud software marketplace) may see a positive impact. Livingbridge expects to fully realize two Fund 6 investments in the next six months, both of which are expected to be realized above their holding values, as of June 30, 2020, generating gross TVMs in excess of 2.1x.



Livingbridge Relative Performance Summary**Performance vs. Public Market Indices**

The Kaplan & Scholar (“K&S”) PME Analysis compares private equity fund performance to a hypothetical portfolio of similarly timed investments within a public equity index. This analysis discounts fund contributions and distributions based on realized public equity index returns during the same time period, with the ratio representing the sum of discounted distributions and market value divided by the sum of discounted contributions. A PME value greater than 1.0 indicates that the investor benefitted from investing in the private equity fund rather than the public equity index.

In analyzing Livingbridge’s performance relative to public equity markets, StepStone compared the performance of Funds 2-6 to that of three indices listed in the London Stock Exchange; The FTSE 100 Index (a public index consisting of the largest 100 companies by market capitalization traded on the London Stock Exchange), the FTSE 250 Index (a public index consisting of the 101st to 350th largest companies by market capitalization traded on the London Stock Exchange and the FTSE Small Cap Index (a public index consisting of the 351st to the 619th largest companies by market capitalization traded on the London Stock Exchange).

Livingbridge’s Funds 2-6 have outperformed the FTSE 100, generating high PMEs and positive Direct Alphas. Livingbridge’s Direct Alpha was created during periods when the FTSE 100 performed strongly (1999-2001, 2003-2007, 2009-2016), underscoring Livingbridge’s ability to generate meaningful outperformance compared to its public equity benchmark, even during a “bull market” in public equities.

StepStone further analyzed Livingbridge’s performance versus the FTSE 250 and FTSE Small Cap indices, where the constituent companies of these respective indices are more representative of Livingbridge’s UK Small and Lower Middle Market investment strategy. Funds 2-6 have consistently outperformed these indices, demonstrating Livingbridge’s track record of success within this segment of the market.

Livingbridge PME Analysis

Livingbridge Performance vs. Public Market Indices							
Fund	Vintage	vs. FTSE 100 Index		vs. FTSE 250 Index		vs. FTSE SmallCap Index (GBP)	
		PME	Direct Alpha	PME	Direct Alpha	PME	Direct Alpha
Fund 2	1999	2.4	29%	1.8	20%	2.1	24%
Fund 3	2003	2.1	20%	1.7	14%	2.2	21%
Fund 4	2007	1.7	16%	1.4	9%	1.4	11%
Fund 5	2012	2.4	26%	2.2	22%	2.1	21%
Fund 6	2016	1.2	12%	1.2	10%	1.2	9%
<b>Total</b>		<b>1.8</b>	<b>23%</b>	<b>1.6</b>	<b>16%</b>	<b>1.7</b>	<b>21%</b>

## Evaluation of the Track Record

### Merits

- ▲ **Strong and Consistent Track Record:** Livingbridge has generated top quartile performance in Fund 2, Fund 4 and Fund 5 across net TVM, net IRR and DPI metrics. Fund 3 generated second quartile performance on across all three metrics. Additionally, Livingbridge's loss ratios have been consistently lower than benchmarks across their 21 year history.
- ▲ **Strong Realized Performance:** Livingbridge has achieved strong results across its realized portfolio of 45 investments, which achieved a blended realized gross TVM/realized IRR of 3.1x/31%. 31% of realized investments have generated greater than a 3.0x realized gross TVM, highlighting the Firm's ability to identify businesses with potential for outperformance.
- ▲ **Healthy Unrealized Portfolio that is Conservatively Valued:** Livingbridge's unrealized portfolio of 7 investments across Fund 5, as of June 30, 2020, generated strong operating performance going into COVID. These growth rates were in line with or higher than publicly listed peers, which, on average are valued higher than Livingbridge's Fund 5 portfolio companies. StepStone believes that the majority of the fund's unrealized assets are likely to suffer a low COVID impact, and some assets (such as Vanguard, a provider of mobile operating theatres to the NHS) may see a positive impact. Processes for full and partial exits have begun for four assets (Broadstone, Exclaimer, Red Box, and Southern Communications), which are expected to be completed between Q4 2020 and H1 2021. Livingbridge expects each of these assets to be realized above their holding values as of June 30, 2020. Additionally, despite its nascency (with a weighted average hold period of ~1.6 years), Fund 6's unrealized portfolio also demonstrated healthy revenue and EBITDA growth, going into COVID, and StepStone believes that the majority of the fund's unrealized assets are likely to suffer a low COVID impact, while some assets (such as Adarma, a cyber-security consultancy, and Giacom, a cloud software marketplace) may see a positive impact. Livingbridge expects to fully realize two Fund 6 investments in the next six months, both of which are expected to be realized above their respective carrying values, as of June 30, 2020, generating gross TVMs in excess of 2.1x. As such, StepStone believes that there is further value embedded within Livingbridge's unrealized portfolio that should be realized upon exit.

### Risks

- ▼ **Wide Gross/Net Spreads of Fund 4 and Fund 5:** The two funds have generated wide gross/net performance spreads. The gross/net spread of Fund 5 is explained by the fund's slow initial pace of deployment, with the fund's first investment completed 10 months after the fund's first equity drawdown. The gross/net spread of Fund 4 is explained by the Firm's failure to deploy the entire fund while charging management fees on total commitments, with just 78% of committed capital drawn during the life of the fund. Despite the wide gross/net spread, recorded net performance has been attractive and within the top quartile for all but one of prior mature funds.
- ▼ **Underperformance of Fund 6 Relative to Other 2016 Vintages:** Fund 6 is a fourth quartile performer across all metrics. As of June 30, 2020, the fund was 74% drawn with a total of 15 investments completed. The performance of Livingbridge 6 represents an important reference point as it is the Firm's largest to date as measured by total commitments. The increase in fund size relative to the previous fund was 87% for Fund 6 (vs. 89% for Fund 7). Therefore Fund 6's outcome could be indicative of Livingbridge's ability to successfully deploy larger pools of committed capital. StepStone believes that the majority of the fund's unrealized assets are likely to suffer a low COVID impact, with certain assets seeing a positive impact. Livingbridge expects to fully realize two Fund 6 investments in the next six months, each of which are expected to realized above their respective holding values, as of June 30, 2020, generating gross TVMs in excess of 2.1x. Given the ongoing development of COVID-19 and the relative nascency of Fund 6's portfolio, StepStone believes that it is too early to assess the relative impact on Fund 6 in terms of benchmarking to UK Small Buyout funds of a similar vintage.

### Fundraising

Fund 7's target size is £1.25 billion, with a hard cap of £1.4 billion. As of October 2020, Livingbridge 7 has closed on a total of c.£930 million in committed capital and the GP anticipates that a final close will take place in early 2021. However, StepStone notes that LPAC approval is required should the GP wish to accept additional commitment in excess of the fund size, and up to the £1.4 billion hard cap. At this stage, the GP expects that the fund will likely end up at the target size, rather than the hard cap.

### Portfolio Fit

The Fund meets the investment criteria and guidelines set forth in CRPTF's Investment Policy Statement. Livingbridge 7 would be considered a 2020 commitment to the Middle Market Buyout portfolio within the Private Investment Fund. As of March 31, 2020, Connecticut's investments in Middle Market Buyout funds represented 9% of aggregate PIF exposure and has generated a net IRR of 10%. Inclusive of PIF investments approved after March 31, 2020, a £100 million commitment to the Fund would increase PIF's buyout exposure to 11%. A commitment to Livingbridge 7 would also provide for greater international exposure and be additive to achieving PIF's long-term targeted exposure in Europe.

Exposure Analysis	CRPTF Current Exposure	IRR	CRPTF Pro Forma Exposure
<b>Strategy</b>			
Middle Market Buyout	9%	15%	11%

*Note: Table reflects active investments only, liquidated funds excluded.*

### Environmental, Social & Governance

Livingbridge has an established ESG policy (including an "ESG Framework" and "ESG Governance Structure") that it applies to all investments both before and after completion. StepStone has reviewed the policy and notes its high level of detail.

Livingbridge is not a signatory to the UN PRI or TCFD, but takes into account guidance from these bodies (in addition to the BVCA and IPEV) on responsible investing. The Firm does not plan on becoming a signatory in the near future, as it has deemed these too theoretical, preferring a more bespoke and practical approach for its own policy. The Firm will consider and evaluate ESG integration in side letters.

ESG at the Firm level is the responsibility of the Partnership Board, while ESG at the portfolio company level is the responsibility of the Legal Counsel (also the "ESG Officer"). External consultants are also utilized to corroborate risks identified, and to assess or advise on any particular ESG issues for a number of portfolio companies. Currently, Livingbridge utilizes the services of Corporate Balance, UK ESG consultant, for this purpose.

The Firm's ESG Framework is an integrated part of Livingbridge's pre- and post-investment activities. Training is provided to all new staff to explain its key tenets.

StepStone reviewed examples of Livingbridge IC papers, and could not see evidence of a dedicated ESG section. Livingbridge was able to share a number of opportunities that its IC declined on the basis of ESG, including a residential care provider where the Firm uncovered the omission of unfavorable independent care quality reports from its website, and a digital marketing agency with a high concentration of gambling and gaming clients.

Post-acquisition, Livingbridge Board members are responsible for ensuring that ESG remains a key Board agenda item, with management ultimately responsible for implementing any suggested changes.

Livingbridge reports on ESG matters on an annual basis in its audited Investor Reports. However, there is not a standard set of ESG KPIs that are shared with LPs. Interim updates are provided to LPs as and when they are deemed necessary by the GP. ESG is not a standard LPAC agenda item. Livingbridge has not suffered any material ESG events to date.

StepStone views Livingbridge's approach to ESG as satisfactory for a Small to Lower Middle Market GP. The Firm is not a signatory to the UN PRI, but its approach to implementing ESG is detailed and it has adopted processes and procedures which are influenced by the UN PRI. StepStone notes the Firm's approach to addressing and monitoring diversity is above average.

### **Recommendation**

In StepStone's view, a commitment to Livingbridge 7 represents an attractive investment opportunity for investors seeking exposure to an established, UK-based manager with a successful track record targeting Small and Lower Middle Market companies. Livingbridge's Partner group is an experienced and cohesive group that have cultivated a team-oriented culture across strategies. StepStone believes that Livingbridge's institutional set-up and support teams provide an edge relative to most competitors in the UK Small and Middle Market and that the Firm has proven an ability to execute a consistent value creation strategy across its track record focusing on accelerating growth in high-performing companies.

## **Appendix I**

### **Summary of Due Diligence Performed**

In our review of the offering, we conducted the following additional due diligence:

- July 2019
  - Attended Livingbridge AGM
- February 2020
  - Prepared and completed an investment memorandum
- October 2020
  - Completed update addendum to investment memorandum

## Appendix II

### Investment Team Member Biographies

**Wol Kolade (Managing Partner):** Mr. Kolade joined Livingbridge in January 1993. In 2005, Mr. Kolade led Livingbridge's spin-off from its parent company, F&C and has been instrumental in developing the company's strategy and building the team ever since. Mr. Kolade leads Livingbridge's overall strategy, chairs the Management Committee and is occasionally involved in sourcing investments. Prior to joining Livingbridge, Mr. Kolade spent three years at Barclays. In addition to his role at Livingbridge, Mr. Kolade has taken an active role within the broader private equity community, having served as Chairman of the British Private Equity and Venture Capital Association ("BVCA") in 2007 and 2008, and Chairman of the Responsible Investment Advisory Board in 2009 and 2010. He is the Chairman of the Guys and St. Thomas Charity, and serves on the NHS Improvement Board as a Non-Executive Director.

**Shani Zindel (Partner, Chief Investment Officer):** Ms. Zindel is one of the longest standing members of the team, having worked at a Livingbridge predecessor firm alongside Mr. Kolade. Prior to joining Livingbridge and its predecessor firm, Ms. Zindel worked at Fisher Hoffman Sithole as a Managing Chartered Accountant in South Africa. Ms. Zindel is Livingbridge's Chief Investment Officer ("CIO"), with oversight across all investments made by the Livingbridge platform. She also chairs Livingbridge's weekly deal flow meeting in her role as CIO and manages monitoring and development of the Firm's pipeline.

**Adam Holloway (Partner, VSG):** Mr. Holloway joined Livingbridge in 1999 to establish and lead the Firm's portfolio management function. He is currently Co-Head of the VSG, and sits on the boards of six portfolio companies. Prior to joining Livingbridge, Mr. Holloway spent nearly 10 years at Deloitte, where he worked across the firm's Corporate Finance, Corporate Restructuring and Insolvency practices.

**Mark Turner (Partner, VSG):** Mr. Turner joined Livingbridge in 2001 and is currently Co-Head of the VSG alongside Mr. Holloway. As Co-Head of the VSG, Mr. Turner currently sits on the boards of three portfolio companies. Prior to joining Livingbridge, Mr. Turner worked at Deloitte in London across the firm's Corporate Restructuring and Reorganization Services practices. Mr. Turner also worked at British Telecommunications and Global Crossing where he held acquisition integration and business planning roles.

**Liz Jones (Partner, NIT):** Ms. Jones joined Livingbridge in 2001, and leads the Firm's Healthcare & Education sector coverage. Prior to joining Livingbridge, Ms. Jones spent seven years at Barclays, including four years at Barclays Ventures where she completed eight investments. Ms. Jones is noted as a regular attendee of UK healthcare market events, and is known to have a good network and knowledge of the industry.

**Daniel Smith (Partner, NIT):** Mr. Smith joined Livingbridge in 2003, and leads the Firm's Consumer sector coverage. Prior to joining Livingbridge, Mr. Smith was an Assistant Director at Royal Bank Private Equity and was part of the team that established the Birmingham office. Prior to that, Mr. Smith worked at the Royal Bank of Scotland for nine years where he held various corporate banking, leveraged finance, private equity and development capital positions.

**Matthew Caffrey (Partner, NIT):** Mr. Caffrey joined Livingbridge in 2005, and leads the Firm's TMT sector coverage. Mr. Caffrey was promoted to Partner in 2016 and represents the third newest addition to the Partner Group. Prior to joining Livingbridge, Mr. Caffrey spent six years at Andersen working in corporate finance. He then moved to NM Rothschild & Sons where he worked in the Leveraged Finance division and spent three years building the firm's Birmingham office. Mr. Caffrey was previously based in Manchester, but now works from the London office.

**Xavier Woodward (Partner, NIT):** Mr. Woodward joined Livingbridge in 2011, and leads both the Manchester office and the Firm's Financial Services sub-sector coverage within Business Services. Mr. Woodward was promoted to Partner in 2018 and is the second newest addition to the Partner Group. Prior to joining Livingbridge, Mr. Woodward spent 13 years in corporate finance at Société Générale and KPMG, specializing in the financial services sector.

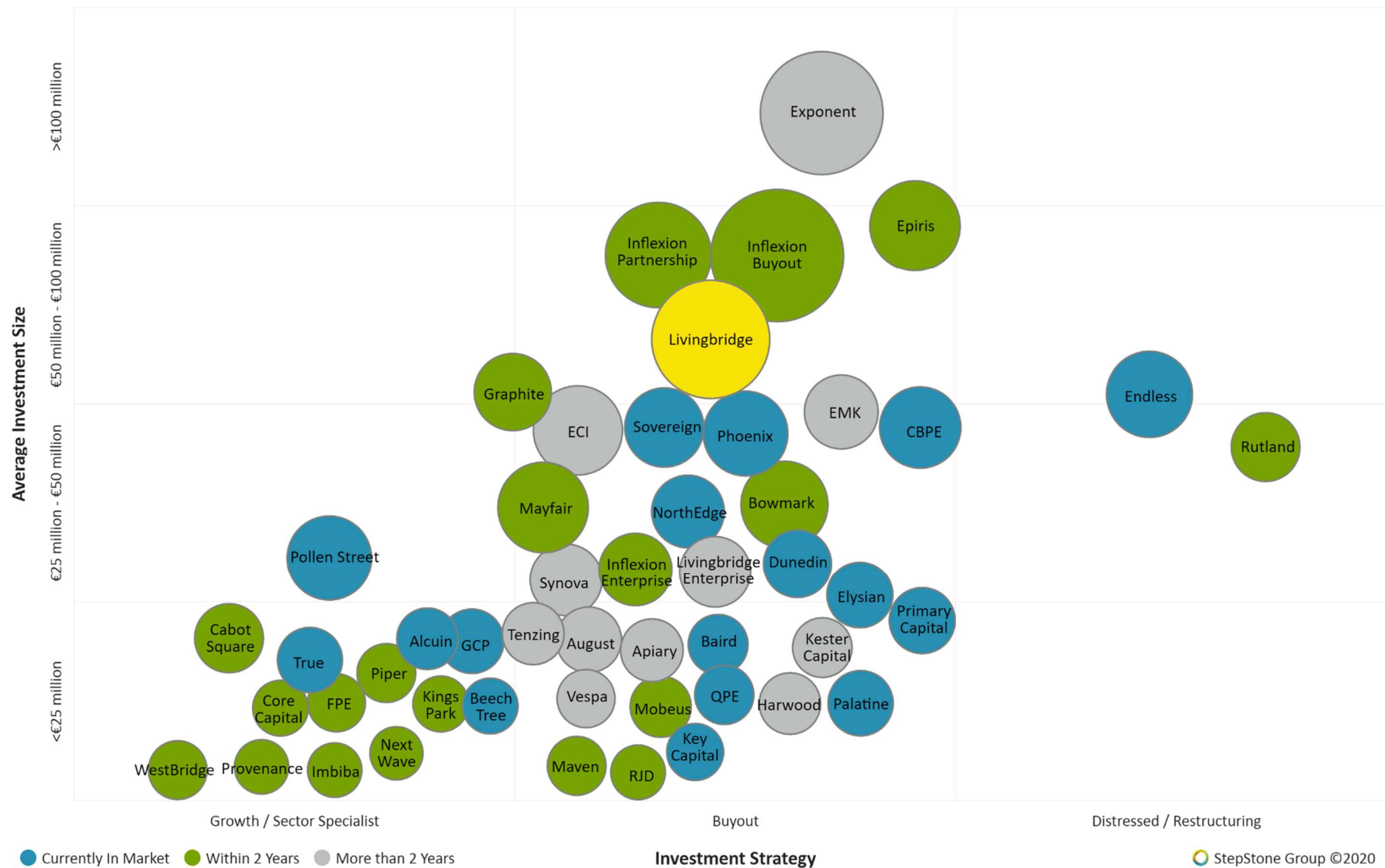
**Gareth Young (Managing Director, NIT):** Mr. Young joined Livingbridge originally in 2004 as a member of the VSG, but departed in 2011 as an Investment Director to relocate to Melbourne, Australia with his family. In Melbourne, he joined Lazard Australia Private Equity, where eventually rose to become Head of Private Equity and chair of its investment committee. Mr. Young re-joined Livingbridge in 2016 as a Managing Director to lead its investments in Australasia. His role is akin to that of a Partner, with his title as Managing Director due to working for an Australian subsidiary of Livingbridge EP LLP.

**Amy Yateman-Smith (Partner, VSG):** Ms. Yateman-Smith joined Livingbridge in 2011, and is a member of the VSG. Ms. Yateman-Smith was promoted to Partner in 2020, and is the newest addition to the Partner Group. As the Fund Director for Fund 6, she was responsible for managing its portfolio construction, and she will retain this role for Fund 7. Prior to joining Livingbridge, Ms. Yateman-Smith spent six years at KPMG, training as a chartered accountant before then working in transaction services, advising private equity and corporate clients on financial due diligence.



## Appendix III Market Map

### United Kingdom Market Map



## Glossary

Term	Definition
<b>Balanced Stage Venture Capital</b>	A Venture Capital fund focused on both Early Stage and Late Stage companies
<b>Bridge Financing</b>	Temporary funding that will eventually be replaced by permanent capital from equity investors or debt lenders
<b>Buyout</b>	Fund whose strategy is to acquire controlling interests in companies
<b>Carried Interest</b>	The general partner's share of the profits. The carried interest, rather than the management fee, is designed to be the general partner's chief incentive to strong performance.
<b>Co/Direct Investment</b>	Investment made directly into a company, rather than indirectly through a fund
<b>Committed Capital</b>	Total dollar amount of capital pledged to a fund
<b>Contributed Capital</b>	Total capital contributed to a fund for investments, fees and expenses, including late closing interest paid, less returns of excess capital called and bridge financing
<b>Cost Basis</b>	Remaining amount of invested capital
<b>Debt</b>	Security type that signifies a repayment obligation by a company (e.g. senior debt, subordinated debt, bridge loan etc.)
<b>Distressed</b>	A company's final Stage of development. Company is generally experiencing operational or financial distress
<b>Distressed / Turnaround</b>	Fund whose strategy it is to acquire the Equity or Debt of companies experiencing operational or financial distress
<b>Distributed Capital</b>	Capital distributed to the limited partners, including late closing interest earned
<b>Dow Jones US Total Stock Market Total Return Index</b>	The Dow Jones US Total Stock Market Total Return Index measures all U.S. equity securities with readily available prices. It is a free float-adjusted market capitalization weighted index and is calculated with dividend reinvestment
<b>DPI (Distributions to Paid In / The Realization Multiple)</b>	Total gross distributions divided by total gross contributions
<b>Early Stage</b>	A company's first Stage of development. Company is generally generating modest or no revenues
<b>Equity</b>	Security type that signifies ownership of a company (e.g. common stock, preferred stock, warrants, etc.)
<b>Expansion Stage</b>	A company's third Stage of development. Company is generally experiencing high growth and nearing profitability
<b>Exposure</b>	Sum of Remaining Value plus Unfunded Commitment
<b>Fund-of-Funds</b>	Fund whose strategy is to make investments in other funds
<b>Fund Stage</b>	A fund progresses through three stages over its life: investment (investment period), distribution (post-investment period), and liquidation
<b>Geographic Region</b>	Market location of a company: North America, Western Europe, Africa/Middle East, Latin America, Asia/Pacific Rim
<b>Growth Equity</b>	Fund whose strategy is to invest in companies to expand or restructure operations, enter new markets or finance an acquisition without a change of control of the business
<b>Infrastructure</b>	Fund whose strategy is to acquire interests in physical structures and networks that provide the essential services for society's economic and social needs, e.g. roads, tunnels, communication networks, etc.
<b>Internal Rate of Return (IRR)</b>	The discount rate that results in a net present value of zero of a series of cash flows. The IRR considers both cash flow timing and amount and is the preferred performance measure for private market funds
<b>Invested Capital</b>	Capital invested by a fund in portfolio holdings
<b>Investment Type</b>	Classification of an investment vehicle: Primary Fund, Secondary Fund, Fund-of-Funds
<b>J-Curve</b>	Refers to the shape of the curve illustrating a fund's performance over time. During the initial years of a fund's life, as a result of illiquidity, stagnant valuations, fees and expenses, a fund's performance tends to be negative (the bottom of the "J"). Eventually, as portfolio companies are realized or increase in value and fees become a smaller percentage of overall contributions, performance improves and investors' returns move up the "J" shaped curve
<b>Large</b>	Company with a Size greater than \$1 billion
<b>Late Stage</b>	A company's second Stage of development. Company is generally generating high revenue growth and high losses

Term	Definition
<b>Loss Ratio</b>	The percentage of capital in deals with a total value below cost, over total invested capital
<b>Lower-Mid</b>	Company with a Size greater than \$100 million, but less than \$250 million
<b>Lower Quartile</b>	The point at which 75% of all returns in a group are greater and 25% are lower.
<b>Mature</b>	A company's fourth Stage of development. Company is generally generating modest to no growth and operating profitably
<b>Mega Buyout</b>	Fund whose strategy is to acquire or recapitalize Large businesses, Fund size over \$6 billion
<b>Mezzanine</b>	Fund whose strategy is to acquire subordinated debentures issued by companies
<b>Middle-Market Buyout</b>	Fund whose strategy is to acquire or recapitalize middle-market businesses, Fund size between \$1-\$3 billion
<b>MSCI ACWI Index - Total Return</b>	The MSCI ACWI Total Return is a reflection of the performance of the MSCI ACWI Index, including dividend reinvestment, as calculated by Bloomberg. The MSCI ACWI Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets. The MSCI ACWI consists of 45 country indices comprising 24 developed and 21 emerging market country indices
<b>Multi-Strategy</b>	A Fund that invests across multiple strategies
<b>Natural Resources</b>	Fund whose strategy is to acquire interests in naturally occurring, economically valuable raw materials and all physical facilities and capabilities required for the extraction, refinement, and delivery to end users, e.g. oil and gas properties, timberland, etc.
<b>Net Asset Value ("NAV")</b>	In the context of this report, represents the fair value of an investment, as defined within each limited partnership agreement, yet in compliance with the governmental regulation, generally prepared on a GAAP basis
<b>Net IRR</b>	Annualized effective compound rate of return using daily contributions, distributions and Remaining Value as of the Report Date, net of all fees and expenses, including late closing interest
<b>Percent Interest</b>	Represents an investor's economic interest in a fund based upon the investor's commitment divided by total fund commitments
<b>Primary Investment</b>	An interest in a private equity fund acquired directly from the fund manager during the fundraising period
<b>Public Market Equivalent (PME)</b>	A private equity benchmark that represents the performance of a public market index expressed in terms of an IRR, using the same cash flows and timing as the investor's investment activity in private equity. The PME serves as a proxy for the return the investor could have achieved by investing in the public market. The PME benchmark return assumes cash flows are invested at the end of each day
<b>Publication Date</b>	Refers to the date this report was created as reflected in the Executive Summary
<b>Quartile</b>	Segment of a sample representing a sequential quarter (25%) of the group.
<b>Real Assets</b>	Fund whose strategy is to invest in assets that are tangible or physical in nature such as land, machinery, and livestock
<b>Real Estate</b>	Fund whose strategy is to acquire interests in real estate property
<b>Realized Capital</b>	Capital distributed to a fund from portfolio holdings
<b>Recallable / Recyclable Capital</b>	Capital that has been previously distributed by a fund to investors but may be called again for investment purposes. It is generally associated with realizations that have occurred in the early years of a fund or refers to uninvested capital that has been temporarily returned (i.e. returns of excess capital)
<b>Recapitalization</b>	The reorganization of a company's capital structure
<b>Remaining Value</b>	Capital account balance as reported by the General Partner, generally on a fair value basis
<b>Report Date</b>	Refers to the end date of the reporting period as reflected on the cover page
<b>Return on Investment (ROI)</b>	Ratio of Realized Capital plus Unrealized Value to Invested Capital

Term	Definition
<b>Russell 1000® Total Return Index</b>	The Russell 1000® Total Return Index measures the performance, including dividend reinvestment, of the large-cap segment of the U.S. equity universe. It is a subset of the Russell 3000® Index and includes approximately 1000 of the largest securities based on a combination of their market cap and current index membership. The Russell 1000 represents approximately 92% of the U.S. market.
<b>Russell 3000® Total Return Index</b>	The Russell 3000® Total Return Index measures the performance, including dividend reinvestment, of the largest 3000 U.S. companies representing approximately 98% of the investable U.S. equity market.
<b>RVPI (Residual Value to Paid In)</b>	The current value of all remaining investments within a fund divided by total gross contributions
<b>S&amp;P 500 Price Index</b>	The S&P 500 Price Index is a capitalization-weighted index of 500 stocks. The index is designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries.
<b>S&amp;P 500 Total Return Index</b>	The S&P 500 Total Return Index is a reflection of the performance of the S&P 500 Index, including dividend reinvestment. All regular cash dividends are assumed to be reinvested in the S&P 500 Index on the ex-date. Special cash dividends trigger a price adjustment in the price return index.
<b>Secondary Investment</b>	Investments that involve the purchase of private equity fund interests or portfolios of direct investments in privately held companies from existing institutional Investors
<b>Sector</b>	Industry in which the company operates: technology, telecommunications, healthcare, financial services, diversified, industrial, consumer, energy, etc.
<b>Size</b>	Capitalization size of a company: Large, Upper-Mid, Lower-Mid, Small
<b>Small</b>	Company with a Size of less than \$100 million
<b>Small Business Investment Company (SBIC)</b>	Lending and investment firms that are licensed and regulated by the Small Business Administration (SBA). The licensing enables them to borrow from the federal government to supplement the private funds of their Investors
<b>Small Buyout</b>	Fund whose strategy is to acquire or recapitalize Small businesses
<b>Stage</b>	The course of development through which a company passes from its inception to its termination: Early, Late, Expansion, Mature, Distressed
<b>Sub-Asset Class</b>	Private equity investments are generally classified as Buyout, Venture Capital, Mezzanine, Distressed/Turnaround, and Fund-of-Funds
<b>Subordinated Debt</b>	Debt with inferior liquidation privileges to senior debt in case of a bankruptcy and consequently, will carry higher interest rates than senior debt to compensate for the subordination.
<b>Term Sheet</b>	A summary of key terms between two or more parties. A non-binding outline of the principal points which definitive agreements will supercede and cover in detail.
<b>TVM (Total Value Multiple) / TVPI (Total Value to Paid In)</b>	Net asset value plus gross distributions divided by total gross contributions
<b>Unfunded Commitment</b>	Amount of capital that remains to be contributed to a fund as defined in a fund's limited partnership agreement
<b>Unrealized Value</b>	Holding value of a portfolio company assigned by the General Partner, which generally represents fair value
<b>Upper-Mid</b>	Company with a Size greater than \$250 million but less than \$1 billion
<b>Upper Quartile</b>	The point at which 25% of all returns in a group are greater and 75% are lower.
<b>Venture Capital</b>	Fund whose strategy is to make investments in Early Stage and/or Late Stage companies
<b>Vintage Year</b>	The calendar year in which an investor first contributes capital to a fund
<b>Vintage Year</b>	The calendar year in which an investor first contributes capital to a fund
<b>Write-Down</b>	A reduction in the value of an investment.
<b>Write-Off</b>	The write-down of a portfolio company's holdings to a valuation of zero and the venture capital investors receive no proceeds from their investment.
<b>Write-Up</b>	An increase in the value of an investment.

## **IMPORTANT INFORMATION**

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PAST PERFORMANCE IS NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. ACTUAL PERFORMANCE MAY VARY.

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# Presentation to Connecticut Retirement Plans and Trust Funds

9 December 2020



LIVINGBRIDGE

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# Presentation to Connecticut

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## Livingbridge attendees



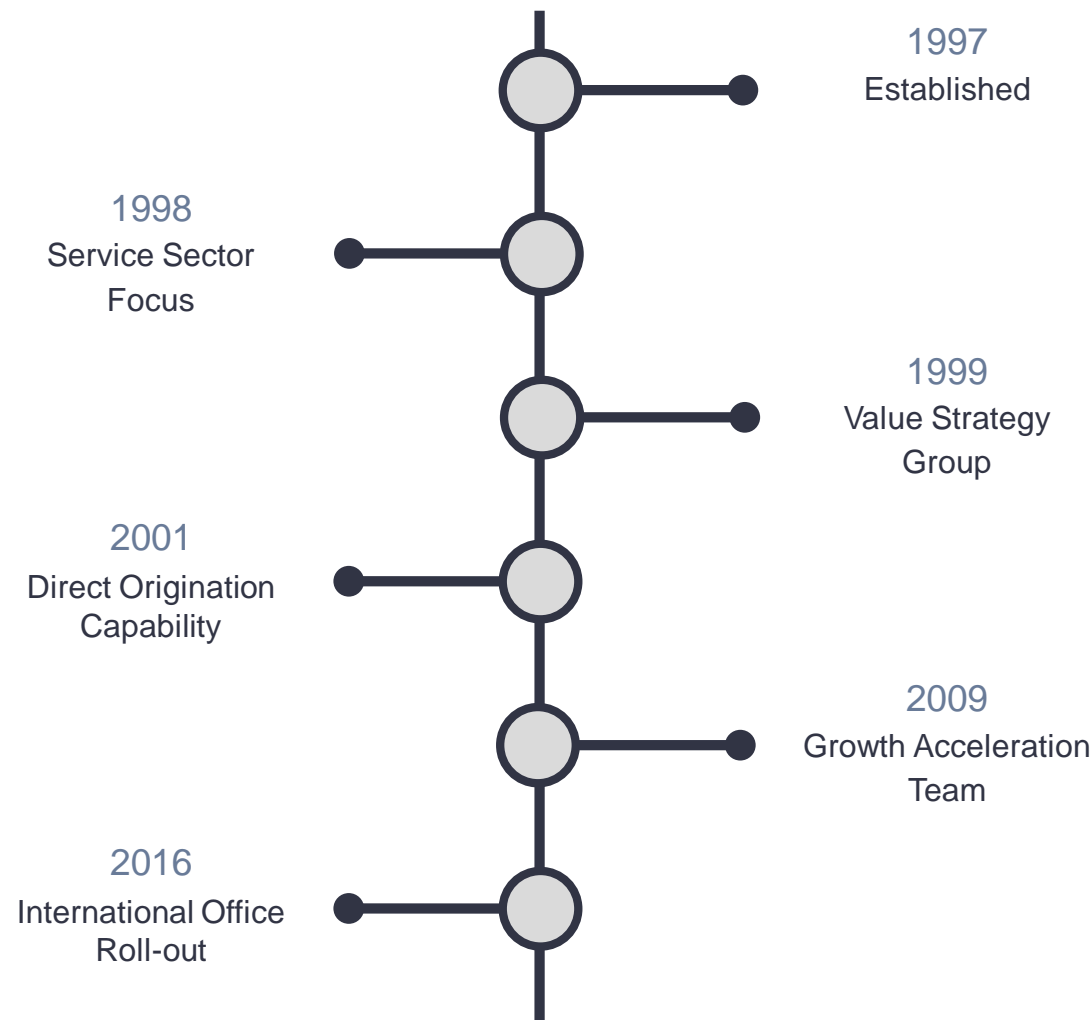
**Wol Kolade**  
Founder Partner & Managing Partner



**Shani Zindel**  
Founder Partner & CIO

# Livingbridge

“... a business in private equity”



**Today**  
**AUM: £2.9bn <sup>(1)</sup>**

**138 Investments Gross Multiple 2.0x <sup>(2)</sup>**

**99 Realisations Gross Multiple 2.6x <sup>(3)</sup>**

**130+ Strategic Bolt-Ons <sup>(2)</sup>**

**56 Investment Professionals**

**Partner experience of 260+ years**

**Locations:**

London  


Manchester  


Birmingham  


Melbourne  


Boston  


(1) As at 1 November 2020  
(2) Investments made across the platform from January 1999 to 30 November 2020  
(3) Realised investments made across the platform from January 1999 to 30 November 2020



# Mid Market strategy

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Central pillars of investment strategy have remained largely unchanged over time

## Fund investment strategy

- **Profile:** Majority or substantial minority positions in high-growth, entrepreneurial small to medium-sized businesses, typically with EVs between £50 million and £300 million. Preference for companies that have demonstrated profitability with strong core management teams
- **Geography:** Predominantly UK, with select international presence and diversification
- **Sector:** Tech-enabled businesses in the TMT, Business Services, Healthcare & Education, and Consumer services sectors and sub-sectors
- **Current Mid Market fund:** Livingbridge 6 (2016 vintage) in the process of finalising its last investment

## Portfolio construction

- Target **consistent returns** at a fund level
- Focus on **diversification**

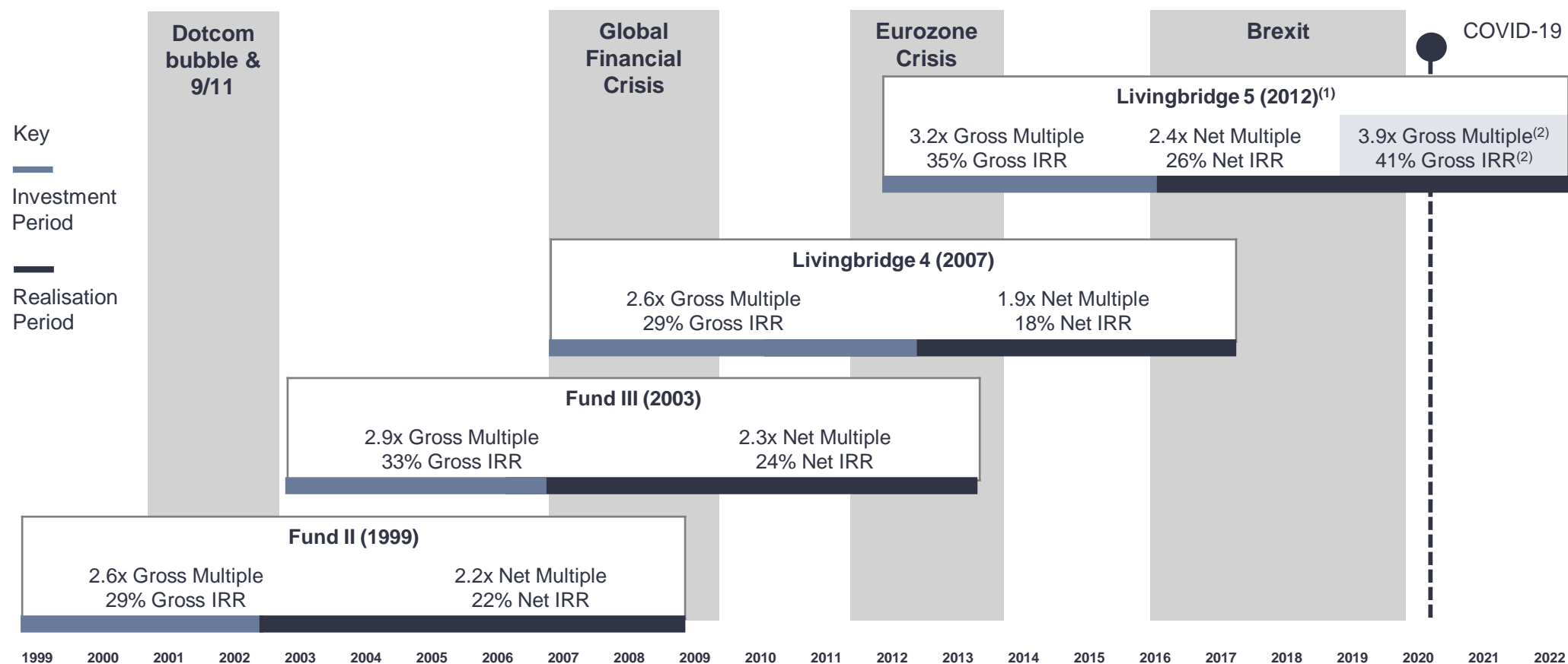
## Portfolio risk management

- Drive **early liquidity** when possible
- **Focus resources on upside** opportunities and exit underperformers

# Resilient and consistent returns through market dislocations

Investing and exiting through economic and geopolitical cycles for the last 20 years

Livingbridge Institutional funds since 1999 that are realised or in divestment stage



Average realised gross multiple of 3.0x across 46 realisations from the above funds<sup>(1)</sup>

# Livingbridge leadership

Experienced and deep senior management team with dedicated expertise



**Wol Kolade**  
Managing Partner  
1993



**Shani Zindel**  
CIO  
1997



**Sheenagh Egan**  
COO  
1997



**Liz Jones**  
Health/Ed. lead  
2001



**Matthew Caffrey**  
TMT lead  
2005



**Mark Advani**  
Enterprise  
1999



**Adam Holloway**  
VSG  
1999



**Mark Turner**  
VSG  
2001



**Amy Yateman-Smith**  
VSG  
2011



**Dan Smith**  
Consumer lead  
2003



**Andrew Garside**  
Mid Market  
2005



**Pete Clarke**  
Enterprise  
2002



**Fiona Dane**  
IR / Fundraising  
2001



**Dave Kirby**  
GAT + Services lead  
2016



**Xavier Woodward**  
Head of Manchester  
2011



**Gareth Young**  
Head of Australia  
2004



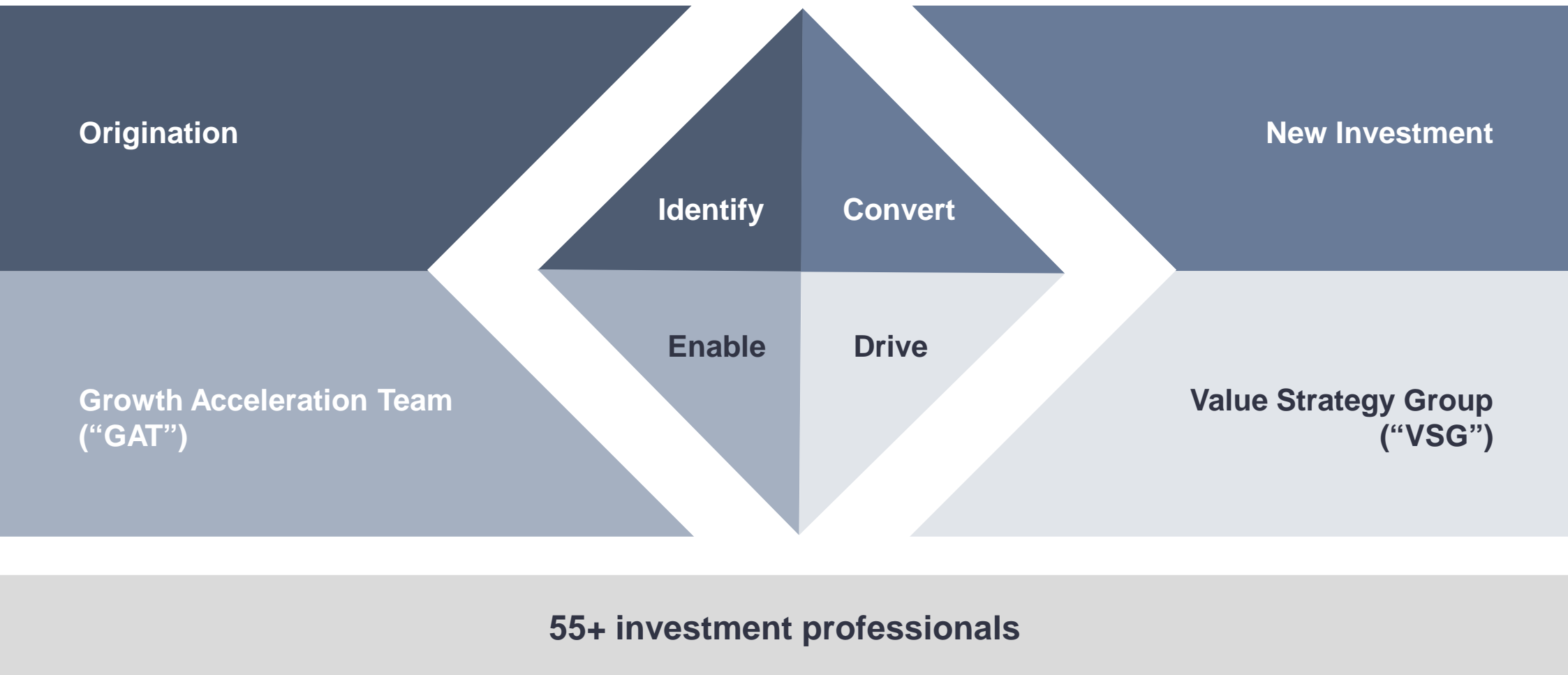
**Matt Upton**  
Enterprise  
2012

- Stable leadership team with no Founding Partner departures
- Combined Partner tenure of 260+ years
- Large investment team of 55+
- 45+ non-investment professionals
- In-house specialists including legal, tax & finance
- Strong corporate memory based on sharing and instilling learnings

# Large, differentiated and values-focused investment team

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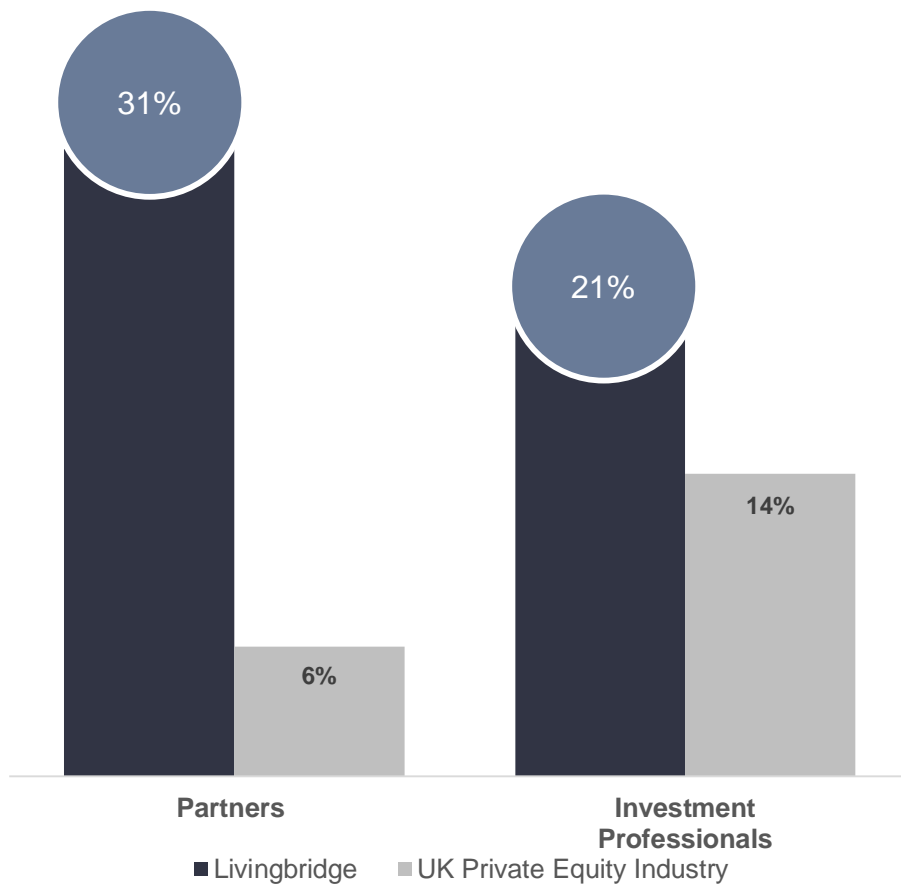
Platform built for collaboration



# Diversity and ESG

## Diversity at the heart of the business

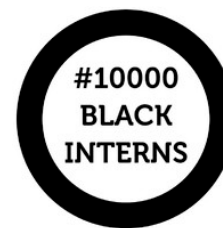
Female representation at Livingbridge vs. UK PE <sup>(1)</sup>



## Enhanced ESG

### ESG improving business performance

- High levels of ESG integrity and a responsible investment approach
- Long term strategy and focus on ESG improvements for each portfolio company
- Education and advocacy through best practice portfolio company networking events and support of ESG consultants
- Livingbridge team engages in a wide variety of charitable activities and proudly supports Impetus PEF



# Key messages

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## 20+ years investing in entrepreneurial businesses

- **Exceptional track record consistent across cycles:** 2.6x realised gross multiple generated across 99 exits since 1999<sup>(1)</sup>
- **Large, experienced and differentiated investment team with specialist expertise:** Deep senior leadership bench that has worked together through numerous market cycles is supported by large platform resource. All members incentivised across the platform to promote collaboration
- **Legacy commitment to good corporate citizenship:** Industry leader in promoting diversity and strong ESG values across the business and our investee companies
- **Livingbridge 7 opportunity:** T£1.25bn to invest in high-growth profitable SMEs predominantly in the UK

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