



AGENDA

RETIREMENT BOARD MEETING

SECOND MONTHLY MEETING
August 28, 2019
9:00 a.m.

Retirement Board Conference Room
The Willows Office Park
1355 Willow Way, Suite 221
Concord, California

NOTICE OF TELECONFERENCE MEETING

ONE OR MORE MEMBERS OF THE BOARD OF RETIREMENT FOR THE CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION MAY PARTICIPATE IN THE BOARD MEETING, SCHEDULED FOR AUGUST 28, 2019, VIA TELECONFERENCE AT THE LOCATION LISTED BELOW, WHICH IS OPEN TO THE PUBLIC.

TELECONFERENCE LOCATION:

1516 KAMOLE STREET
HONOLULU, HAWAII 96821

THE LOCATION LISTED ABOVE IS ACCESSIBLE TO THE PUBLIC (6:00 A.M. LOCAL TIME), INCLUDING THOSE WITH DISABILITIES.

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

1. Pledge of Allegiance.
2. Accept comments from the public.
3. Approve minutes from the July 24, 2019 meeting.
4. Review of total portfolio performance for period ending June 30, 2019.
 - a. Presentation from Verus
 - b. Presentation from staff
5. Review of portfolio rebalancing report.
6. Update from Chief Investment Officer on Trident and TPG Healthcare Partners.
7. Investment education session: currency
8. Consider authorizing the attendance of Board:
 - a. 2019 Annual Limited Partners Meeting, DLJ Real Estate Capital Partners, September 24, 2019, Boston, MA.
 - b. 7th Annual California Institutional Forum, Markets Group, December 4, 2019, Santa Rosa, CA.

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

9. Miscellaneous
 - a. Staff Report
 - b. Outside Professionals' Report
 - c. Trustees' comments

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



Meeting Date
08/28/19
Agenda Item
#3

MINUTES

RETIREMENT BOARD MEETING MINUTES

REGULAR MEETING
July 24, 2019
9:00 a.m.

Retirement Board Conference Room
The Willows Office Park
1355 Willow Way, Suite 221
Concord, California

Present: Candace Andersen, Scott Gordon, Jerry Holcombe, Jay Kwon, David MacDonald, John Phillips, William Pigeon, Mike Sloan, Todd Smithey and Belinda Zhu (Deputy Treasurer, present and voting in Russell Watts' absence)

Absent: Donnie Finley and Louie Kroll

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

Outside Professional Support: Representing:
John Monroe Segal Consulting
Harvey Leiderman Reed Smith LLP

1. Pledge of Allegiance

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

2. Accept comments from the public

No member of the public offered comment.

3. Approval of Minutes

It was **M/S/C** to approve the minutes from the June 26, 2019 meeting. (Yes: Andersen, Gordon, Holcombe, MacDonald, Phillips, Pigeon, Sloan, Smithey and Zhu)

It was the consensus of the Board to move to Item 5.

5. Appoint audit committee members

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

6. Education on pension obligation bonds

Monroe gave a brief overview of the Unfunded Actuarial Accrued Liability (UAAL) and how it is paid noting that the present value of future benefits is what we want to fund. He reviewed how

POB's are handled in the Actuarial Valuation report noting any POBs reduce the employer's UAAL contribution rates.

7. Discussion of East Contra Costa Fire Protection District request

Monroe reviewed the following requests from Hanson Bridgett LLP on behalf of East Contra Costa Fire Protection District (ECCFPD): 1) that the Board of Retirement make an adjustment to address the treatment of ConFire's Pension Obligation Bonds during the de-pooling and determination of the asset base for Cost Group #8; and 2) that the Board of Retirement consider allocating costs based on liabilities rather than payroll for Cost Group #8.

Chief Brian Helmick, ECCFPD, provided background on the requests noting they have grown concerned with their contribution rates in the past few years.

Chief Lewis Broschard, Contra Costa County Fire Protection District, reported this item has not been brought to their Board so he does not have any prepared remarks.

8. Consider and take possible action to adopt Board of Retirement Resolution No. 2019-5, Funding of I.R.C. Section 115 Trust for Other Post-Employment Benefits for CCCERA employees

It was M/S/C to adopt Board of Retirement Resolution No. 2019-5, Funding of I.R.C. Section 115 Trust for Other Post-Employment Benefits for CCCERA employees. (Yes: Andersen, Gordon, Holcombe, MacDonald, Phillips, Pigeon, Sloan, Smithey and Zhu)

9. Presentation of the Contra Costa County Local Area Formation Commission employer audit report

Dutkiewicz presented the Contra Costa County Local Area Formation Commission employer audit.

10. Presentation of the First 5 Contra Costa Children and Families Commission employer audit report

Dutkiewicz presented the First 5 Contra Costa Children and Families Commission employer audit.

11. Presentation of the Contra Costa In-House Supportive Services Public Authority employer audit report

Dutkiewicz presented the Contra Costa In-House Supportive Services Public Authority employer audit.

12. Consider authorizing the attendance of Board:

- a. It was M/S/C to authorize the attendance of 1 Board member at the Investment Forum, Dimensional Fund Advisors, September 18, 2019, Santa Monica, CA. (Yes: Andersen, Gordon, Holcombe, MacDonald, Phillips, Pigeon, Sloan, Smithey and Zhu)

13. Miscellaneous

- (a) Staff Report –

None

- (b) Outside Professionals' Report –

None

(c) Trustees' comments -

None

CLOSED SESSION

The Board moved into closed session pursuant to Govt. Code Section 54956.9(d)(1).

The Board moved into open session.

4. a. There was no reportable action related to *Nowicki v. CCCERA, et al.*, Contra Costa County Superior Court, Case No. C17-01266.
- b. There was no reportable action related to *CCCERA v. Salgado*, Contra Costa County Superior Court, Case No. MSC19-00580.

It was **M/S/C** to adjourn the meeting. (Yes: Andersen, Gordon, Holcombe, MacDonald, Phillips, Pigeon, Sloan, Smithey and Zhu)

Todd Smithey, Chairman

David MacDonald, Secretary

PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS



PERIOD ENDING: JUNE 30, 2019
Investment Performance Review for

Contra Costa County Employees' Retirement Association

Meeting Date
08/28/19
Agenda Item
#4a.

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VERUSINVESTMENTS.COM

SEATTLE 206-622-3700

LOS ANGELES 300-297-1777

SAN FRANCISCO 415-362-3484

Investment Landscape

TAB I

Investment Performance
Review

TAB II

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**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**

3RD QUARTER 2019
Investment Landscape

Recent Verus research

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

Annual outlooks

REAL ASSETS OUTLOOK

Inflation fears have been subdued in the market over the past year. Both core CPI and headline CPI have been declining over the past nine months and came in at 2.0% and 1.9%, respectively, in March. Over the past twelve months, core CPI has ranged between 2.0 and 2.3%, near the Fed's inflation target. At this stage of the market cycle, we view the risk of deflation from an economic slowdown to be of greater concern than unanticipated inflation.

Topics of interest

A PRACTICAL UNDERSTANDING OF LDI

For corporate pension plans, LDI can be an effective way to reduce the range of outcomes in funded status, which has particular appeal given the asymmetric trade-off associated with a declining funded status relative to a stronger funded status.

Our Topics of Interest paper aims to provide a practical introduction into these issues to assist plan sponsors in evaluating whether LDI makes sense for their organization.

LDI GLIDE PATH CREATION

Our latest Topics of Interest paper on LDI glide path creation seeks to explain the methodology and considerations of building a glide path for a pension plan. It addresses the following points:

- How much of the plan's allocation should be deployed in an LDI strategy?
- How do we align a glide path with the plan's objectives and financial constraints?
- How does the risk of our glide path differ based on changing objectives and financial constraints?

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VERUSINVESTMENTS.COM

SEATTLE 206-622-3700

LOS ANGELES 310-297-1777

SAN FRANCISCO 415-362-3484

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2nd quarter summary

THE ECONOMIC CLIMATE

- U.S. real GDP expanded 3.2% YoY in Q1 (3.1% quarterly annualized rate). Year-over-year growth was the strongest since the second quarter of 2015. The U.S. Congressional Budget Office expects the U.S. economy to slow to a 2.1% pace in 2020, near the growth rate of other developed markets. [p. 7](#)
- Effective May 10th, U.S. tariff rates on \$200 billion in Chinese imports were hiked from 10% to 25%, and the Chinese responded with commensurate tariff rate hikes. In June, Presidents Trump and Xi met on the sidelines of the G20 summit in Osaka. The meeting yielded a “trade truce” in which both countries agreed to pause any additional tariffs. [p. 14](#)

PORTFOLIO IMPACTS

- Equity performance in Q2 appears to have been largely driven by higher prices, rather than improved earnings expectations. Estimated Q2 S&P 500 earnings worsened from -0.5% to -2.6% during this time. [p. 25](#)
- U.S. inflation remained stable at 2.1% YoY in June, excluding food & energy. Headline inflation rose 1.6% YoY, dragged down by falling energy prices. Core inflation has been range-bound over the past five years, fluctuating between 1.7% and 2.3%. Investors and consumers expect this trend to continue. [p. 9](#)

THE INVESTMENT CLIMATE

- The Federal Open Market Committee left the range for its benchmark interest rate unchanged at 2.25%-2.50% and reiterated that it would continue to act appropriately to sustain the expansion. Markets interpreted the press conference as confirmation of a 0.25% rate cut in July. [p. 18 & 19](#)
- European Central Bank President Mario Draghi issued dovish forward guidance, announcing that “additional stimulus” was on the table should the economic backdrop worsen, and inflation remain subdued. European and international developed sovereign yields have fallen along with U.S. yields. German 10-year bunds closed the month at new lows of -0.33%. [p. 18 & 19](#)

ASSET ALLOCATION ISSUES

- Risk assets delivered strong returns over the quarter. Global Equities gained +3.6% and U.S. high yield gained +2.5%. Longer duration exposures generally outperformed as interest rates fell. [p. 41](#)
- U.S. equity prices have continued to rise on expectations of nearly three interest rate cuts in 2019 and perhaps an assumption that U.S. earnings exceptionalism will extend into the future. If domestic conditions converge with other developed economies and these expectations turn out to be overly optimistic, we believe U.S. equities may possess greater downside risk. [p. 26](#)

A neutral risk stance may be appropriate in today's environment

What drove the market in Q2?

“US-China trade truce leaves markets with big questions”

U.S. SOYBEAN EXPORTS TO CHINA (METRIC TONS) (000s)

	Jan	Feb	Mar	Apr	May	Jun
	133	3,217	1,256	719	1,219	1,670

Article Source: CNN, July 1st, 2019

“Bond-Yield Plunge Confounds the World’s Economy”

VALUE OF GLOBAL NEGATIVE-YIELDING DEBT (USD TRILLIONS)

	Jan	Feb	Mar	Apr	May	Jun
	8.85	8.81	10.40	10.03	11.27	12.92

Article Source: Wall Street Journal, June 23rd, 2019

“Fed holds rates steady, but opens the door for a rate cut in the future”

FUTURES IMPLIED PROBABILITY (%) OF CUTTING RATES BY JULY

	Jan	Feb	Mar	Apr	May	Jun
	7.1	5.4	23.6	31.9	47.8	100.0

Article Source: CNBC, June 19th, 2019

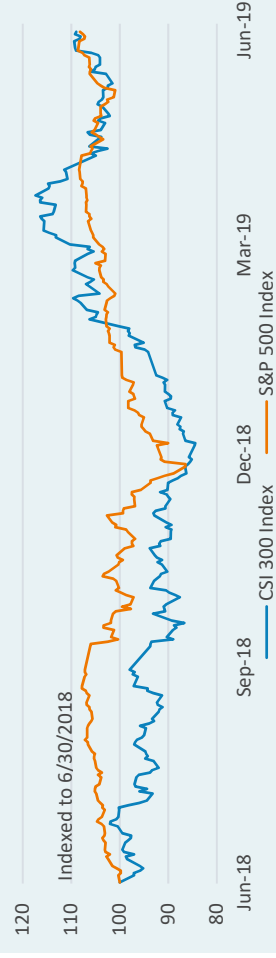
“Draghi Sees Prospect of More ECB Stimulus Amid Weak Inflation”

EUROZONE CONSUMER PRICE INFLATION (YoY %)

	Jan	Feb	Mar	Apr	May	Jun
	1.4	1.5	1.4	1.7	1.2	1.3

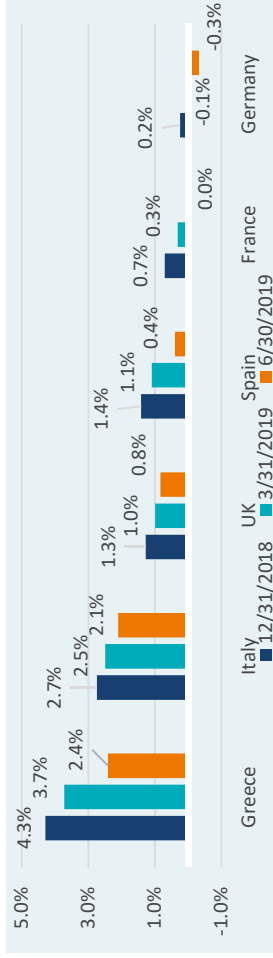
Article Source: Bloomberg, June 18th, 2019

RELATIVE EQUITY MARKET PERFORMANCE (CHINA VS. U.S.)



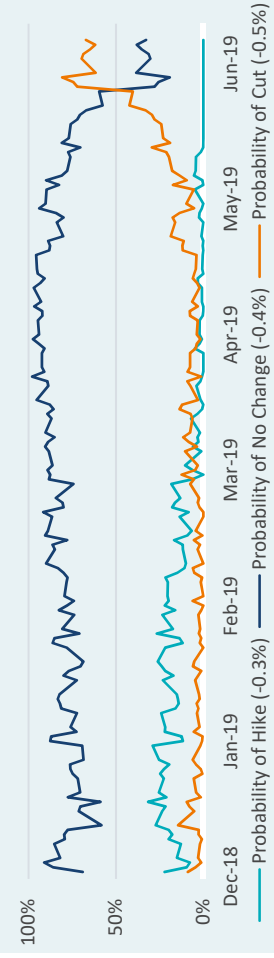
Source: Bloomberg, as of 6/30/19

TEN-YEAR EUROPEAN SOVEREIGN YIELDS



Source: Bloomberg, as of 6/30/19

PROBABILITY OF THE ECB CUTTING ITS MAIN RATE BY SEPTEMBER



Source: Bloomberg, as of 6/30/19

Economic environment

U.S. economics summary

- U.S. real GDP expanded 3.2% YoY in Q1 (3.1% quarterly annualized rate). Year-over-year growth was the strongest since the second quarter of 2015.
- The U.S. economy is expected to slow to a 2.1% pace in 2020, near the growth rate of other developed markets, as indicated by the U.S. Congressional Budget Office.
- U.S.-China trade remained central to headlines over the quarter. Effective May 10th, U.S. tariff rates on \$200 billion in Chinese imports were hiked from 10% to 25%, and the Chinese responded with commensurate tariff increases. In June, Presidents Trump and Xi met on the sidelines of the G20 summit in Osaka. The meeting yielded a “trade truce” in which both countries agreed to pause any additional tariff rate hikes.
- Headline CPI inflation fell from a YoY rate of 1.9% in March to 1.6% in June. PCE inflation, the Fed’s preferred inflation gauge, ticked up from a YoY rate of 1.5% at the end of the 1st quarter to 1.6% in May.
- Average hourly earnings grew 3.1% YoY in June, below expectations of 3.2%. The average non-farm private workweek fell slightly from 34.5 hours per week to 34.4.
- The labor market continued to show strength in Q2. The U-3 unemployment rate touched 50-year lows at 3.6% in May and ended the quarter in June at 3.7%.
- The Federal Open Market Committee messaged that it would continue to “act as appropriate to sustain the expansion”, which markets viewed as dovish. Over the quarter, expectations for additional 2019 rate cuts moved from a 64% chance of a 0.25% cut to a 61% chance of 0.75% in cuts.

	Most Recent	12 Months Prior
GDP (YoY)	3.2% 3/31/19	2.6% 3/31/18
Inflation (CPI YoY, Core)	2.1% 6/30/19	2.2% 6/30/18
Expected Inflation (5yr-5yr forward)	1.9% 6/30/19	2.2% 6/30/18
Fed Funds Target Range	2.25 – 2.50% 6/30/19	1.75 – 2.00% 6/30/18
10 Year Rate	2.0% 6/30/19	2.9% 6/30/18
U-3 Unemployment	3.7% 6/30/19	4.0% 6/30/18
U-6 Unemployment	7.2% 6/30/19	7.8% 6/30/18

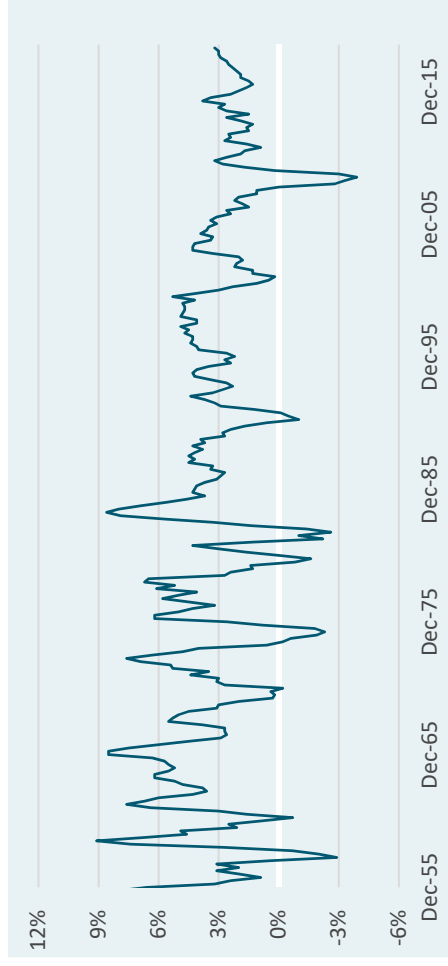
GDP growth

Real GDP grew at an annualized quarterly rate of 3.1% in the first quarter, ahead of analysts' estimates for a 2.3% expansion. Inventory builds and net exports, which tend to be more volatile components of GDP, contributed 1.7% to the print, their most significant addition since 2013. Corporate inventory builds added 0.6% to the overall 3.1% GDP print, a contribution which ranked in the 74th percentile over the past five years. Looking ahead, trade balance volatility may persist as firms around the globe adjust to evolving international trade policies.

U.S. economic growth appears to face many of the same headwinds. The lack of a definitive trade resolution between the U.S. and China, supply chain disruptions caused by new tariff impositions, and the upside limitations of an unemployment rate near 50-year lows may dampen growth prospects for the second quarter. On June 28th, the Federal Reserve Bank of Atlanta GPNOW forecast indicated annualized quarterly GDP growth of 1.5% in the second quarter. This forecast suggests consumer expenditures will provide the greatest contribution of 2.5% to overall growth.

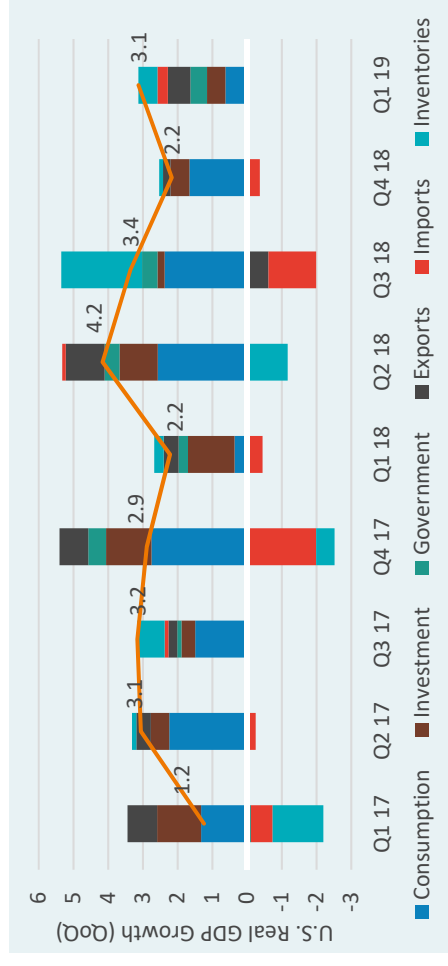
The U.S. economy is expected to slow to 2.1% in 2020, near the growth rate of the developed world

U.S. REAL GDP GROWTH (YOY)



Source: Bloomberg, as of 3/31/19

U.S. GDP GROWTH ATTRIBUTION



Source: BEA, annualized quarterly rate, as of 3/31/19

Inflation

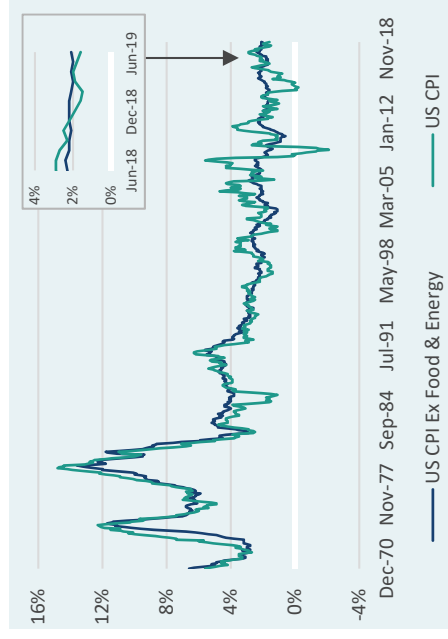
U.S. core inflation (ex-food & energy) remained stable at 2.1% YoY in June. Headline inflation rose 1.6% YoY, dragged down by falling energy prices year-over-year. Core inflation has been range-bound over the past five years, fluctuating between 1.7% and 2.3%. Investors and consumers generally expect this trend to continue, as indicated by market pricing and consumer surveys.

The market is pricing inflation to fall over the next five years (as indicated by U.S. TIPS 5-year breakeven rate of 1.5%) and

is pricing inflation to stay lower for longer (U.S. TIPS 10-year breakeven rate of 1.7%).

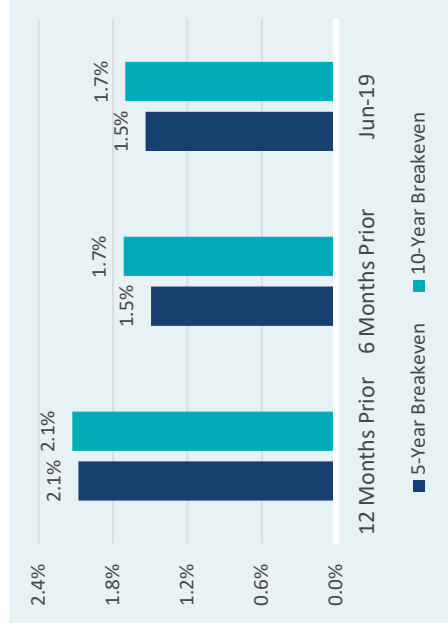
We believe subdued inflation of around 2% has been, and will be, a key influence on Federal Reserve policy. Lower inflation provides the Fed with more legroom for easier positioning to support economic growth and strong employment. If the inflation trend were to shift in either direction, this may put Fed officials in a more tenuous position. We will be watching inflation trends closely.

U.S. CPI (YOY)



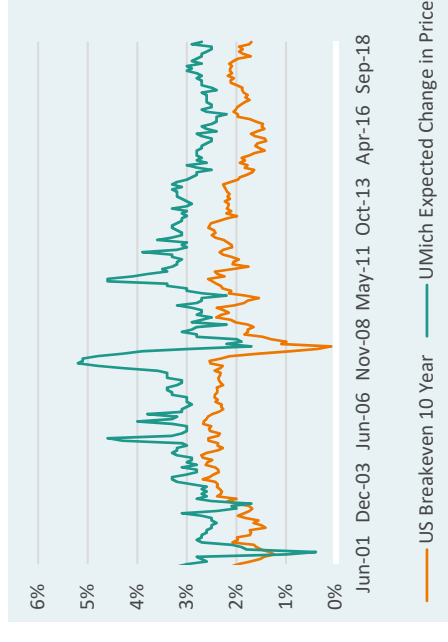
Source: Bloomberg, as of 6/30/19

U.S. BREAKEVEN INFLATION RATES



Source: FRED, as of 6/30/19

INFLATION EXPECTATIONS



Source: Bloomberg, as of 6/30/19

Labor market

The U.S. labor market remains tight. Unemployment during the quarter reached a level of strength not seen since 1969. Nonfarm payrolls expanded by 224,000 in June, well above the consensus estimate of 160,000. The number of U.S. job openings now exceed the number of jobs available.

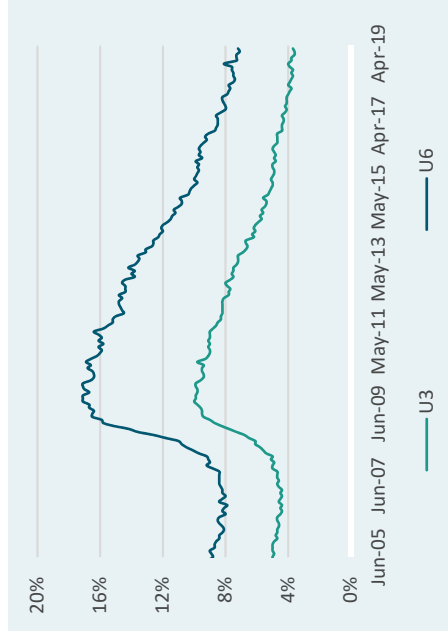
The U.S. unemployment rate was 3.7% in June, according to the narrower U-3 measure which only encompasses those workers seeking a job. The broader U-6 unemployment rate was 7.2%, which also includes discouraged and part-time workers who seek full-time employment.

Given the relatively limited number of unemployed persons and the high percentage of companies reporting that jobs are hard to fill, we believe it may be difficult for job growth to continue at its recent pace.

Wages have grown modestly but have slowed year-to-date. Weak wage growth limits the spending power of consumers, but also reduces the risk of corporate margin deterioration and may limit general price inflation. In June, average hourly earnings rose 3.1% year-over-year.

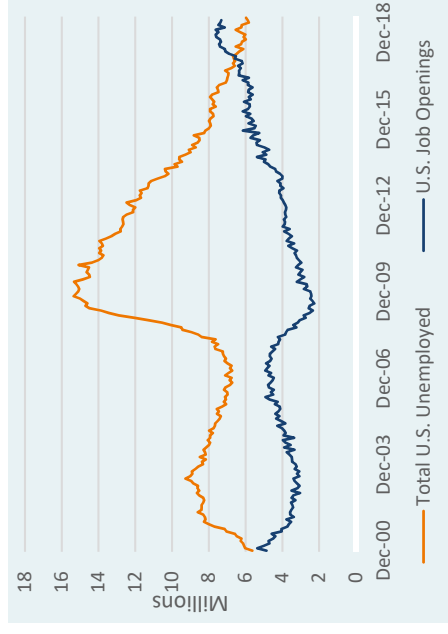
U.S. labor market remains strong, though further upside may be limited

U.S. UNEMPLOYMENT



Source: FRED, as of 6/30/19

U.S. JOB OPENINGS VS. UNEMPLOYED



Source: Bloomberg, as 6/30/19

U.S. WAGE GROWTH



Source: FRED, as of 6/30/19

The consumer

Headline retail sales grew 3.4% from the prior year in June.

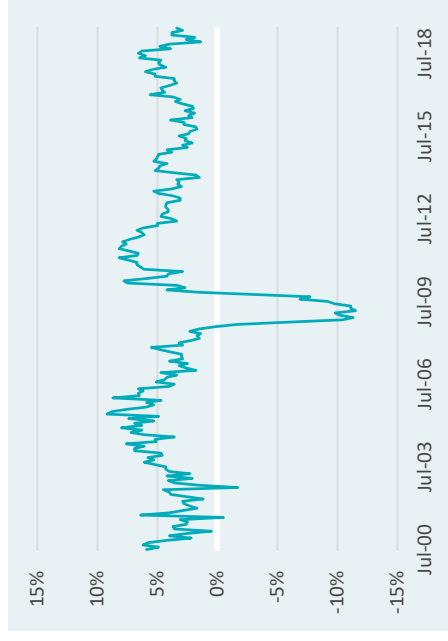
Core retail sales, which exclude spending on automobiles, gasoline, building materials, and food services, grew at a strong pace of 4.6% from the prior year. Typically, core retail sales correspond most closely with the consumer expenditures component of the quarterly GDP calculation.

U.S. personal incomes grew at a YoY rate of 4.1% in May, up from 3.5% at the end of the first quarter. Personal consumption expenditures grew at a YoY rate of 4.2% in May, slightly lower than the pace of 4.4% at the end of Q1. Benign

inflation, improving real wages, and consumers' perceptions of a strong labor market have all likely played a key role in the resilience of consumer spending patterns as of late.

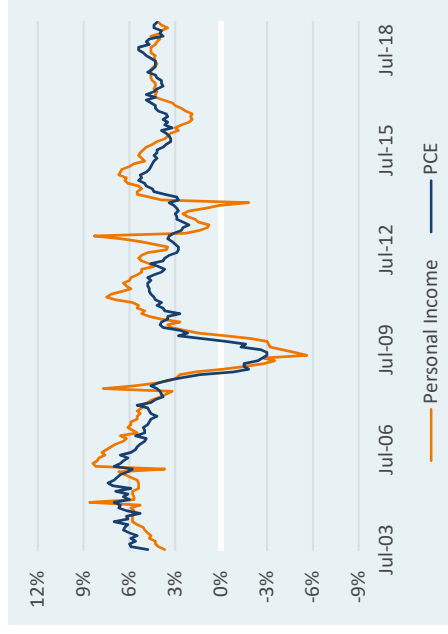
Consumer credit growth has remained tempered over the expansion, but the composition of that credit has shifted. Over the past ten years, student loans have increased their share while mortgage debt has decreased its share.

REAL RETAIL SALES GROWTH (YOY)



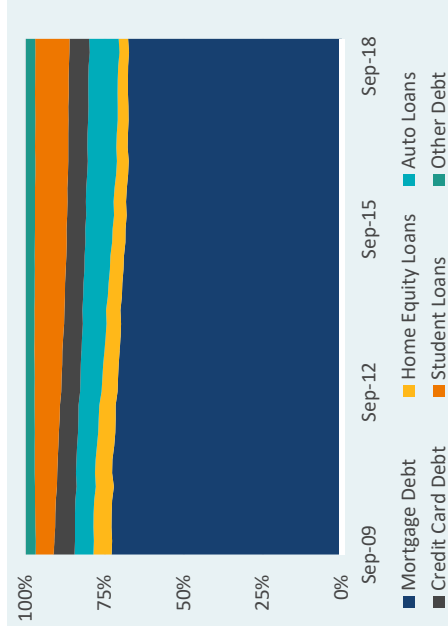
Source: Bloomberg, as of 6/30/19

PERSONAL INCOME AND NOMINAL PERSONAL CONSUMPTION EXPENDITURES (YOY)



Source: Bloomberg, as of 5/31/19

SHARE OF CONSUMER CREDIT OUTSTANDING



Source: Federal Reserve Bank of NY, Bloomberg as of 6/30/19

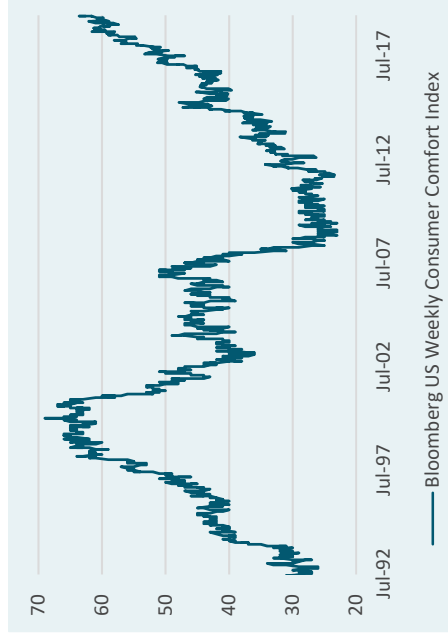
Sentiment

Consumer sentiment indicators were mixed over the quarter but remain very strong relative to history. In May, the University of Michigan Consumer Sentiment Index registered its highest reading since September 2018 at 100.0 but ended the quarter at 98.2, slightly below its March reading. According to the University of Michigan, consumers were concerned about the impact of ongoing trade tensions on the economic outlook and a moderating job market.

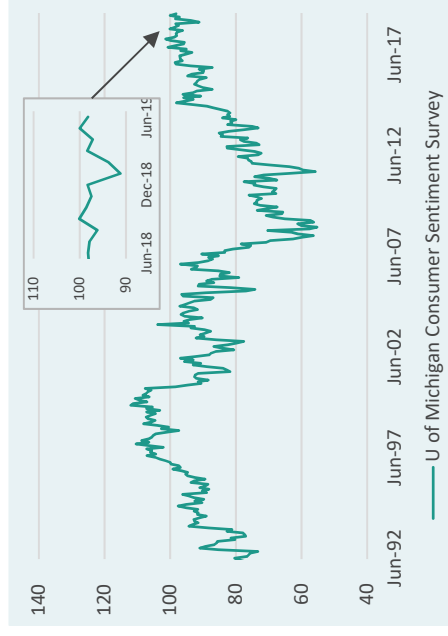
The Bloomberg Consumer Comfort Index rose from 58.9 to 62.6 over the quarter, remaining at cycle highs.

The Conference Board's Consumer Confidence Index advanced in April and May before falling at quarter-end. In June, the indicator fell from 131.3 to 121.5, below expectations for a slight dip to 131.0. While the index remained at a high level, consumers were less optimistic about the current economic climate and the near-term future. The percentage of consumers expecting business conditions to improve in the next six months fell from 21.4% to 18.1% and the percentage expecting conditions to worsen rose from 8.8% to 13.1%.

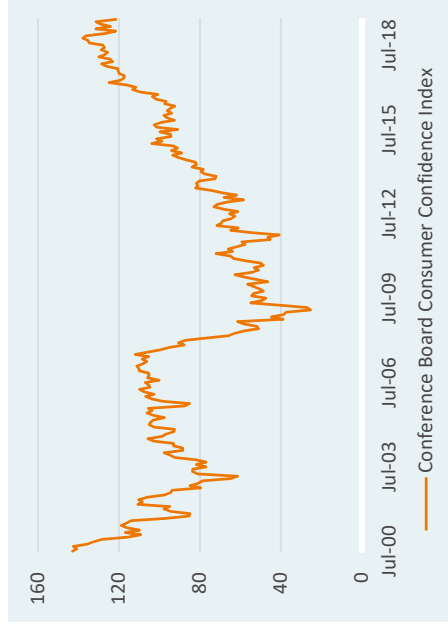
CONSUMER COMFORT INDEX



CONSUMER SENTIMENT



CONSUMER CONFIDENCE



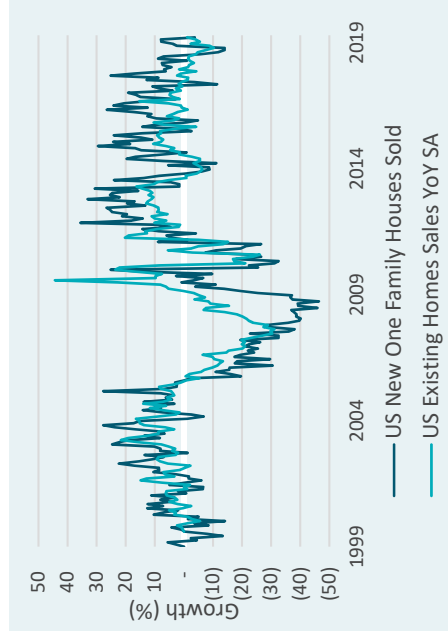
Housing

Some weakness has appeared in the U.S. housing market. U.S. home sales appear to have peaked in late 2017 and have continued to fall, declining -1.1% YoY in May. Higher prices have damaged affordability, and rising interest rates through the end of 2018 likely contributed to weaker purchase activity. On the other hand, the notable shift of the Federal Reserve from rate hikes to rate cuts, and the subsequent drop in interest rates and therefore mortgage rates, may help reignite buying activity.

Housing starts in May were down -4.7% from one year prior, while building permits fell -0.5%. Slowing home construction activity may reflect affordability issues and/or falling homebuilder optimism.

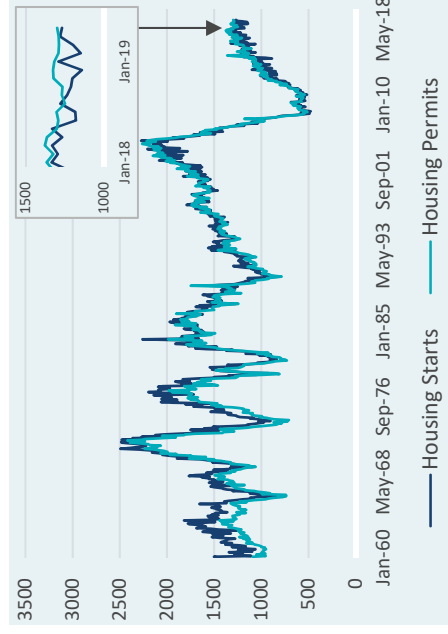
Home prices have fallen slightly. The median U.S. home sale price was down -3% year-over-year as of May. Home price trends can vary significantly by location, which means national statistics are sometimes difficult to interpret at a local level.

U.S. HOME SALES (YOY)



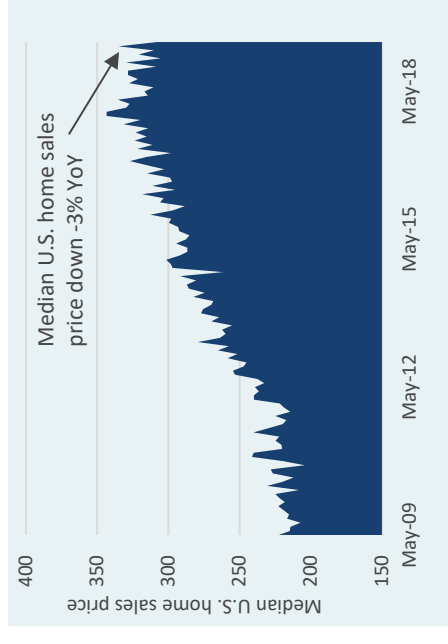
Source: FRED, as of 5/31/19

HOUSING STARTS & PERMITS



Source: Bloomberg, NAHB, as of 5/31/19 (see appendix)

MEDIAN U.S. HOME SALES PRICE



Source: FRED, as of 5/31/19

International economics summary

- U.S.-China trade remained central to headlines over the quarter. Effective May 10th, U.S. tariff rates on \$200 billion in Chinese imports were hiked from 10% to 25%, and the Chinese responded with commensurate tariff rate hikes. In June, Presidents Trump and Xi met on the sidelines of the G20 summit in Osaka. The meeting yielded a “trade truce” in which both countries agreed to pause any additional tariff rate hikes.
- The U.K. Prime Minister Theresa May announced her resignation effective June 7th. In July, Boris Johnson defeated Jeremy Hunt and will replace Theresa May as Britain’s next prime minister. Mr. Johnson has taken a harder line on Brexit than Mr. Hunt, and his election likely increases the probability that the U.K. exits the E.U. without a deal.
- President Trump called off prospective 5% tariffs on Mexican imports after the two countries signed an immigration deal aimed at reducing illegal border crossings. The deal expanded the Migrant Protection Protocols program, which requires asylum-seekers to wait on the Mexican side of the border while their cases are reviewed.
- Chinese GDP growth slowed 0.2% to 6.2% YoY in the second quarter, its slowest rate in 27 years. On a brighter note, YoY growth in industrial production and retail sales both surprised to the upside, supporting the view that Beijing’s countercyclical easing measures have proven effective.
- The Citi Global Economic Surprise Index fell from -18.8 to -27.7 in June, registering its 15th consecutive month in negative territory.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	3.2% 3/31/19	1.6% 6/30/19	3.7% 6/30/19
Eurozone	1.2% 3/31/19	1.1% 5/31/19	7.5% 5/31/19
Japan	0.9% 3/31/19	0.7% 5/31/19	2.4% 5/31/19
BRICS Nations	5.2% 3/31/19	2.4% 3/31/19	5.2% 3/31/19
Brazil	1.4% 3/31/19	3.4% 6/30/19	12.4% 6/30/19
Russia	2.7% 12/31/18	4.7% 6/30/19	4.5% 5/31/19
India	7.2% 12/31/18	3.2% 6/30/19	8.5% 12/31/17
China	6.4% 3/31/19	2.7% 6/30/19	3.7% 3/31/19

International economics

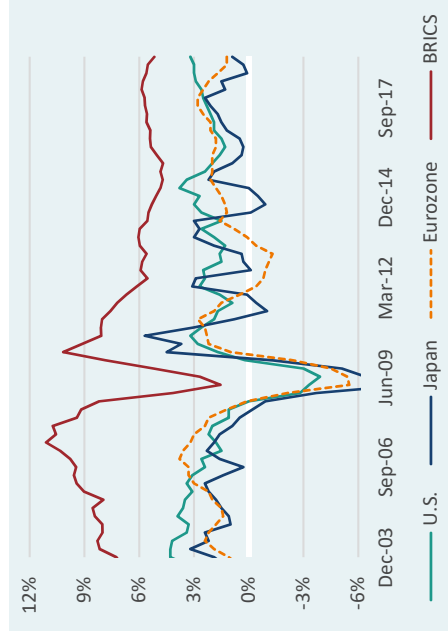
Developed countries are generally exhibiting growth rates between 1-2% YoY. The U.S. remains an exception, at a 3.2% pace, though the domestic economy is forecast to slow to around 2.1% in 2020 as government stimulus fades. Economists expect global growth of 3.3% in both 2019 and 2020, according to Bloomberg.

Inflation remains stable and subdued in developed economies, at or below 2%. Emerging economies have also exhibited lower than average inflation – a 2.4% rate across the BRICS nations. Employment continues to improve in most

markets, though the rate of job gains in some economies appears to be slowing.

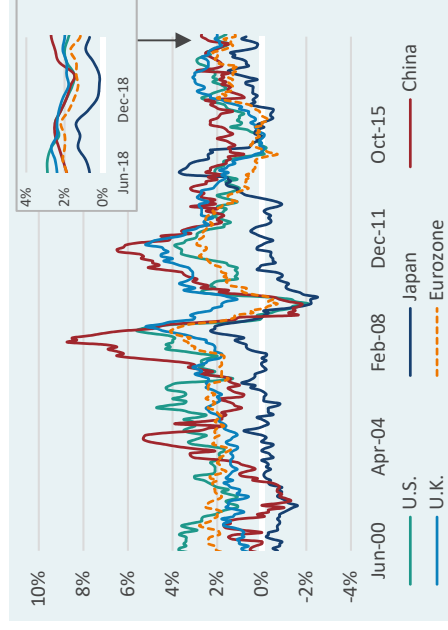
The U.K. Prime Minister Theresa May announced her resignation effective June 7th. In July, Boris Johnson defeated Jeremy Hunt and will replace Theresa May as Britain's next prime minister. Mr. Johnson has taken a harder line on Brexit than Mr. Hunt, and his election likely increases the probability that the U.K. exits the E.U. without a deal.

REAL GDP GROWTH (YOY)



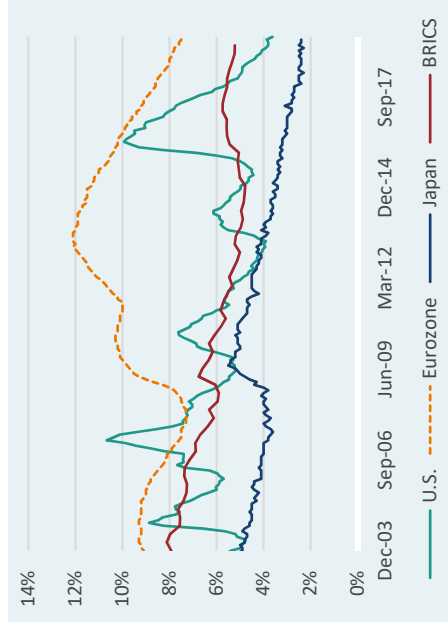
Source: Bloomberg, as of 3/31/19

INFLATION (CPI YOY)



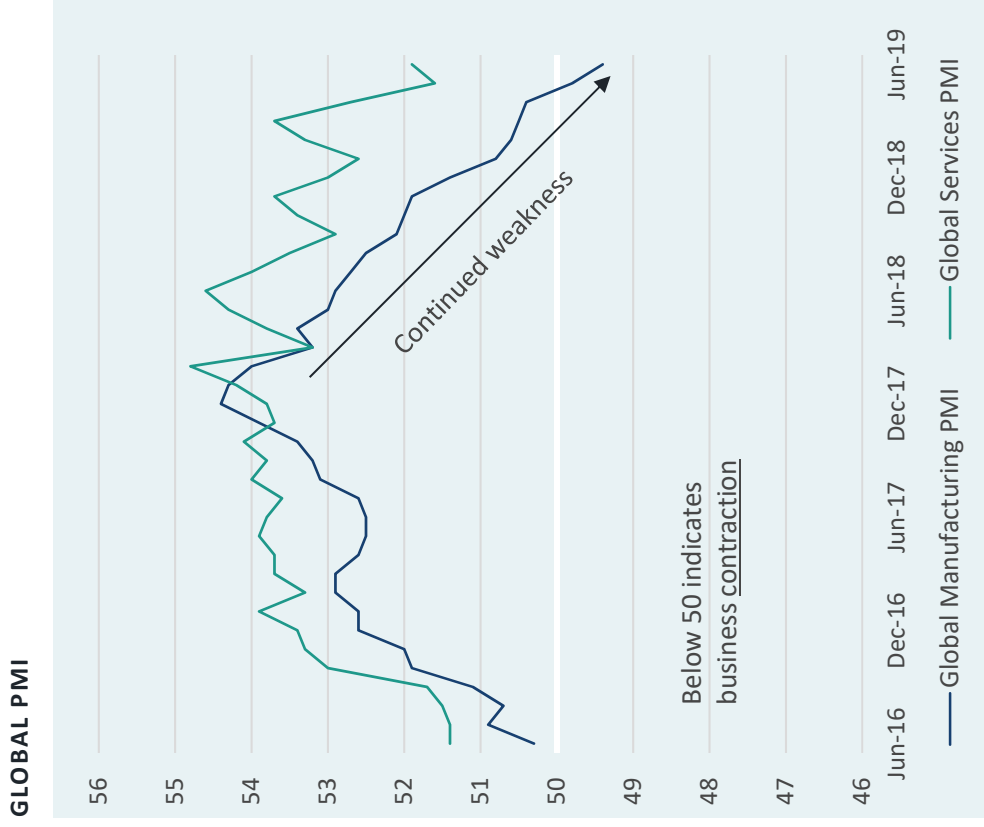
Source: Bloomberg, as of 6/30/19

UNEMPLOYMENT RATE



Source: Bloomberg, as of 6/30/19 or most recent release

Global PMI



Source: JPMorgan, as of 6/30/19

- The PMI business surveys attempt to gauge business sentiment and conditions around the world.
- Surveys have indicated weakening since late 2017 and resumed their decline in the second quarter.
- The Global Manufacturing PMI fell from 50.5 in March to 49.4 in June, below the neutral level of 50.0 that separates expansion from contraction. The stickier Services PMI, which is less cyclical in nature than the Manufacturing PMI, fell from 53.7 to 51.9 over Q2.
- Developed economy Manufacturing PMI readings (48.9) have weakened materially over the past year and are now below emerging economy readings (49.9). Services PMI readings remain similar for developed and emerging economies at 52.0 and 51.5, respectively.
- Surveys remain above levels that might indicate recession.

Fixed income rates & credit

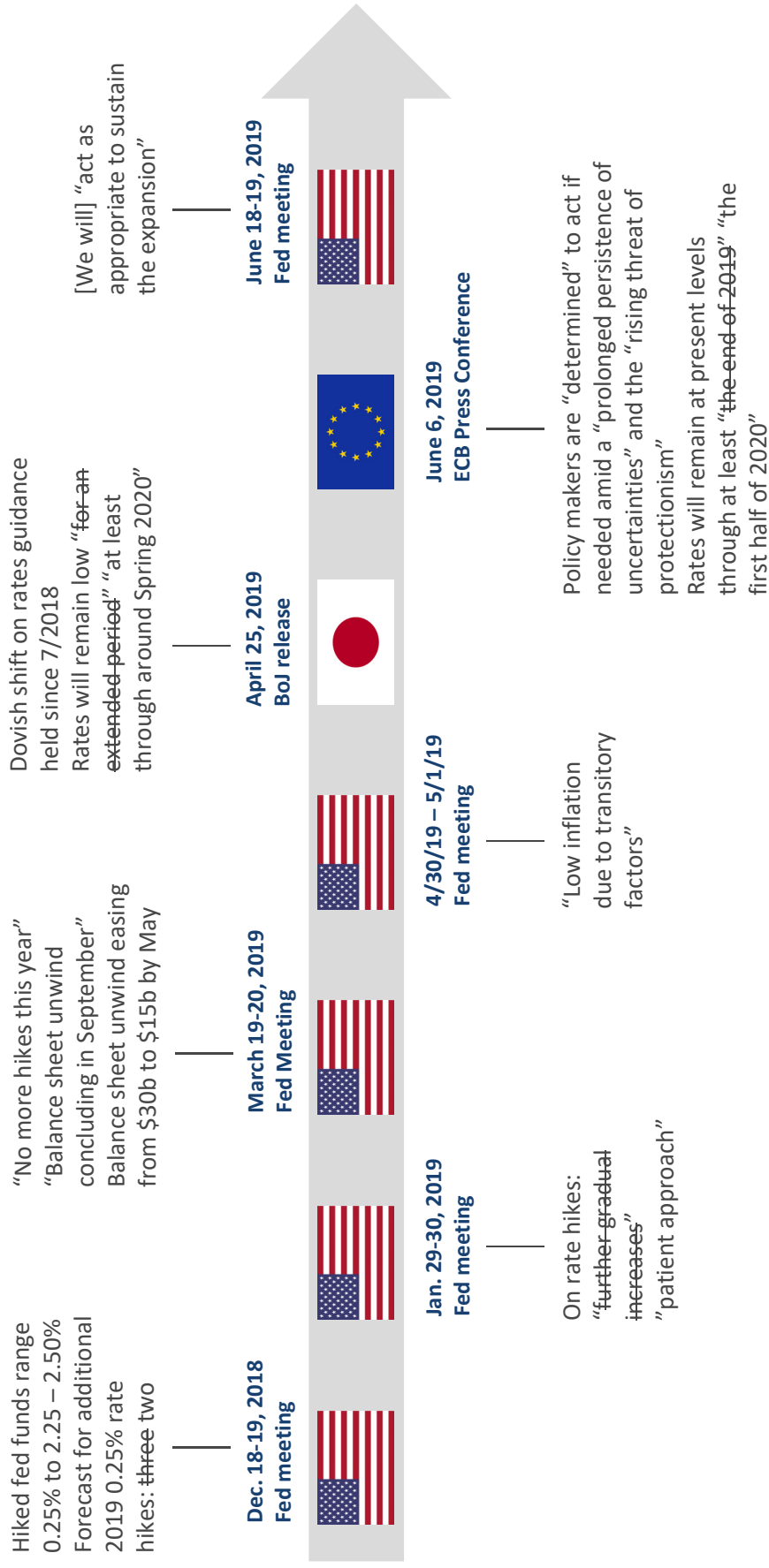
Interest rate environment

- The Federal Open Market Committee left the range for its benchmark interest rate unchanged at 2.25%-2.50% and reiterated that it would continue to act appropriately to sustain the expansion. Markets viewed the Fed's press conference as successful in setting expectations for a 0.25% rate cut in July.
- The fed funds futures market now implies 2 or even 3 rate cuts (0.50% to 0.75% total cuts) as likely by the end of 2019. The market's expectation of three rate cuts seems aggressive, and we worry about possible downside to risk markets if the Fed does not deliver on these expectations.
- U.S. Treasury yields continued to push lower following the messaging from the Federal Reserve. The 10-year U.S. Treasury yield finished the quarter at 2.00%, down from 3.14% in Q4 2018.
- European Central Bank President Mario Draghi announced "additional stimulus" was on the table should the economic backdrop worsen and inflation remain subdued. Over the month, the likelihood that the ECB would cut its main deposit rate from -0.40% to -0.50% by its September meeting rose from 18% to 67%, as indicated by market pricing.
- European and international developed sovereign yields have fallen along with U.S. yields. German 10-year bunds closed the month at new lows of -0.33%.
- High yield bond spreads tightened alongside equities as the asset class was positively impacted by Federal Reserve dovishness. Anticipation of easier interest rate policies, which could potentially lengthen the credit cycle, has strengthened sentiment for risk assets.
- Emerging market bonds delivered outsized returns in Q2. The JPM GBI-EM Index returned +5.6% and the JPM EMBI Index returned +4.1%.

Area	Short Term (3M)	10-Year
United States	2.09%	2.00%
Germany	(0.57%)	(0.33%)
France	(0.55%)	(0.01%)
Spain	(0.47%)	0.39%
Italy	(0.14%)	2.10%
Greece	0.99%	2.41%
U.K.	0.78%	0.83%
Japan	(0.08%)	(0.17%)
Australia	1.43%	1.32%
China	2.25%	3.21%
Brazil	6.24%	7.44%
Russia	8.03%	8.26%

Source: Bloomberg, as of 6/30/19

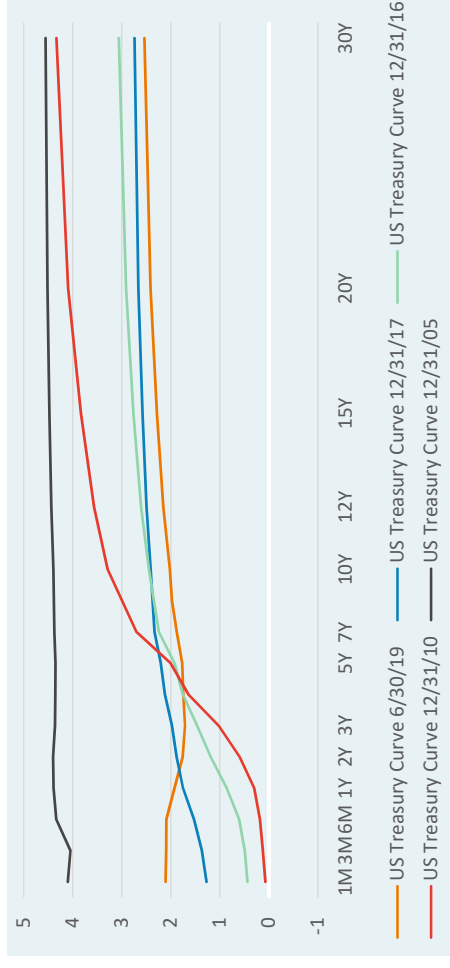
Central bank reversal



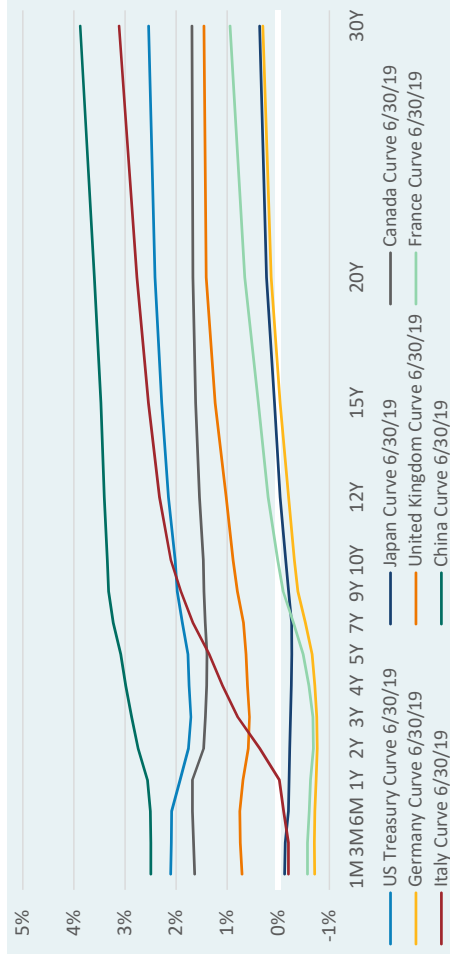
Source: Wikimedia Commons

Yield environment

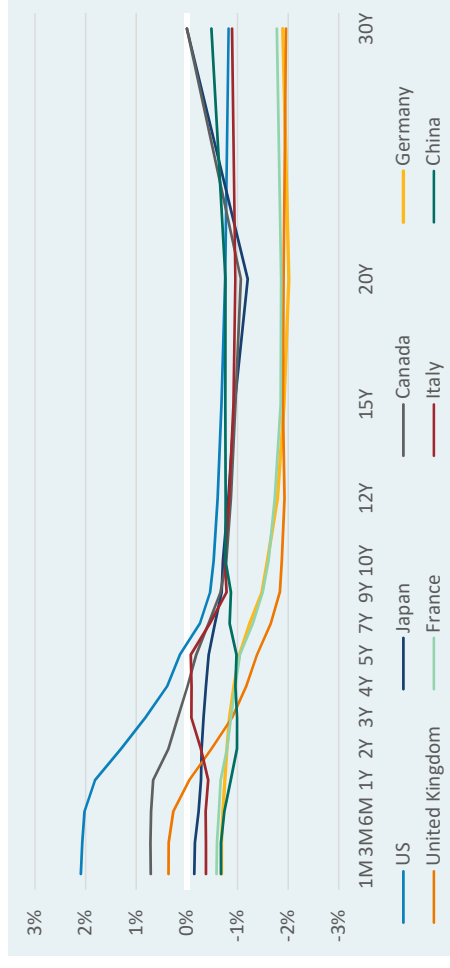
U.S. YIELD CURVE



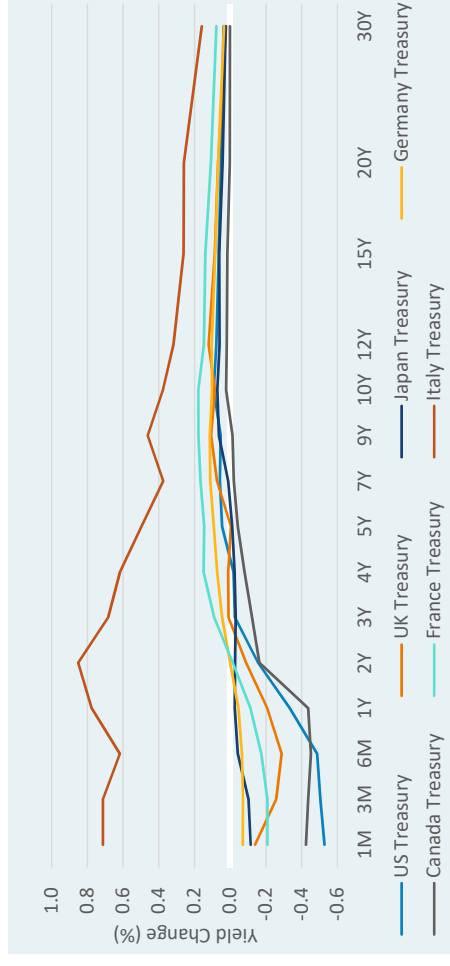
GLOBAL GOVERNMENT YIELD CURVES



YIELD CURVE CHANGES OVER LAST FIVE YEARS



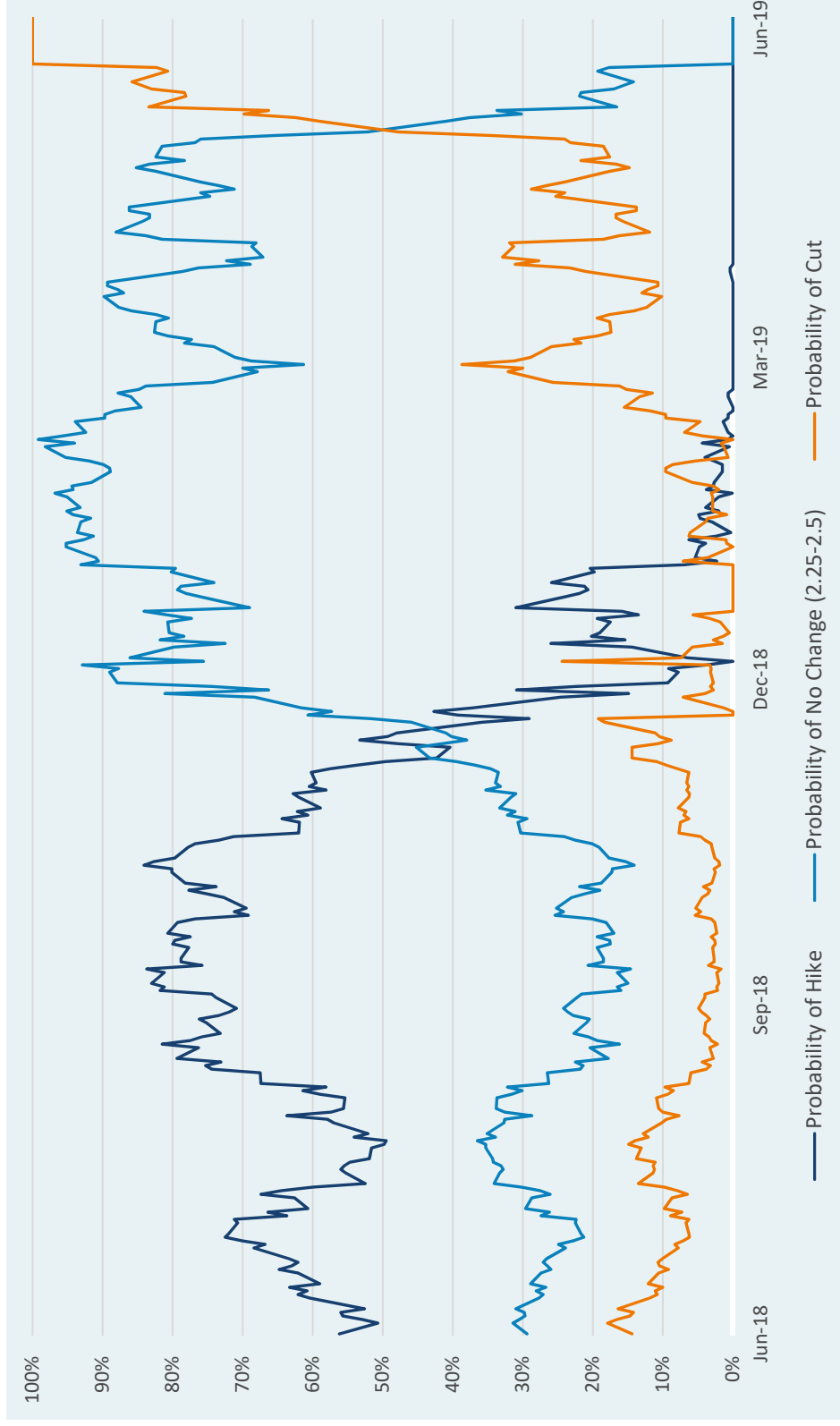
IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 6/30/19

July Fed meeting

FUTURES IMPLIED PROBABILITIES FOR JULY FED RATE DECISION



In April and May, dovish guidance from global central banks made its way into fed funds futures pricing

In June, the Fed pledged to “act appropriately to sustain the expansion” and a 0.25% cut became 100% priced in July

Source: Bloomberg, as of 6/30/19

Credit environment

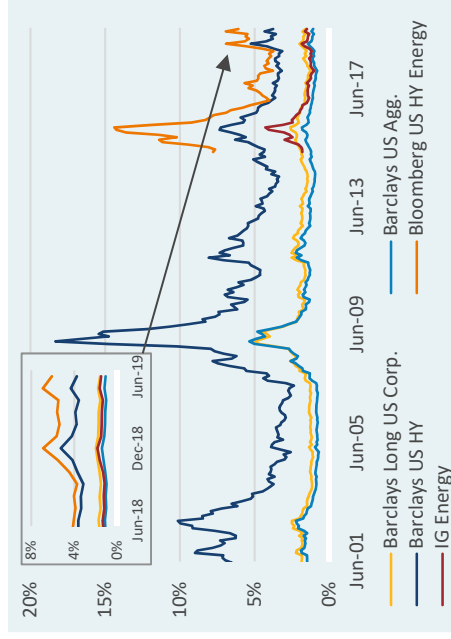
High yield bond spreads tightened alongside equities as the asset class was positively impacted by Federal Reserve dovishness. Anticipation of easier interest rate policies, which could potentially lengthen the credit cycle, has strengthened sentiment for risk assets. BB-rated bonds outperformed both CCC- and B-rated bonds in the second quarter. High yield bonds have returned +9.9% YTD, outperforming investment grade credit (+9.4%) and bank loans (+5.7%).

Bank loan prices continued to decline as demand for the asset class was impacted by a pause in the Fed's hiking cycle and uncertainty surrounding future moves from the Fed. Loan funds

have reported their ninth consecutive monthly outflow in June, totaling over \$40 billion in total. Bank loans have returned +0.3% YTD, underperforming both high yield and investment grade bonds.

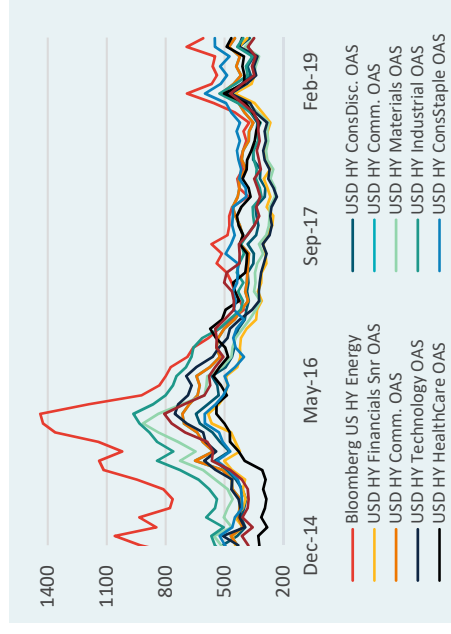
Based on concerns over late-cycle behavior in credit markets, we do not believe investors are being adequately compensated for credit risk. Late-cycle volatility tends to coincide with a jump in credit spreads and steep credit losses. An underweight to U.S. investment grade, high yield credit, and bank loans may be warranted. Within credit, higher quality and more liquid assets appear most attractive.

SPREADS



Source: Barclays, Bloomberg, as of 6/30/19

HIGH YIELD SECTOR SPREADS (BPS)



Source: Bloomberg, as of 6/30/19

Market	6/30/19	6/30/18
Long U.S. Corp	1.6%	1.8%
U.S. Agg Corp	1.1%	1.2%
U.S. High Yield	3.8%	3.6%
U.S. Bank Loans*	4.4%	3.9%

Source: Barclays, Credit Suisse, Bloomberg, as of 6/30/19

*Discount margin (4-year life)

Default & issuance

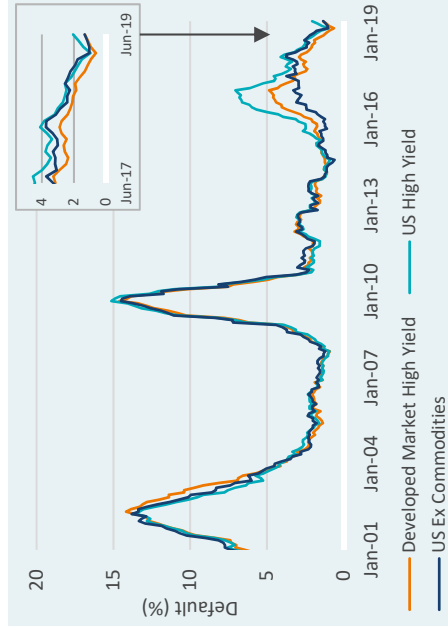
Default activity has been low and stable in the U.S. credit market, despite price volatility. The par-weighted default rate for high yield increased to 1.5% but remains below its long-term average range of 3.0-3.5%. For loans, the par-weighted default rate at the end of the second quarter was 1.3% and remains below the long-term average of 3.1%, according to data from J.P. Morgan. Consumer, retail, telecom, and utilities sectors have been more prone to defaults.

Senior loan and high yield markets have essentially recovered from a wave of defaults seen in 2015-2016 that were

generated by energy and metals/mining sectors. High yield bond recovery rates have improved significantly since that time.

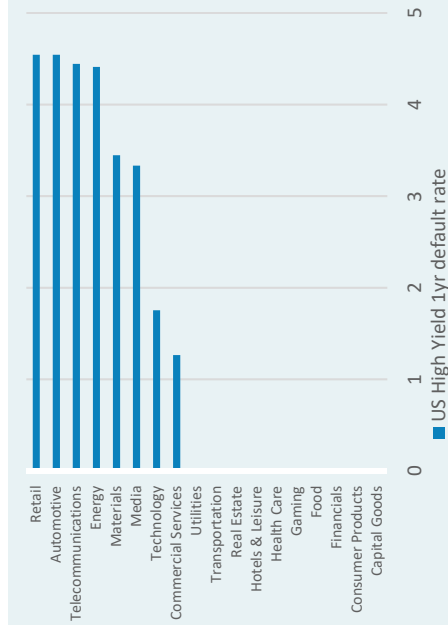
Gross high yield issue activity increased in June as investors took advantage of a dip in yields. Loan market issuance is significantly behind last year's pace, likely influenced by lower demand for floating rate securities now that the Federal Reserve has paused monetary tightening.

HY DEFAULT RATE (ROLLING 1-YEAR)



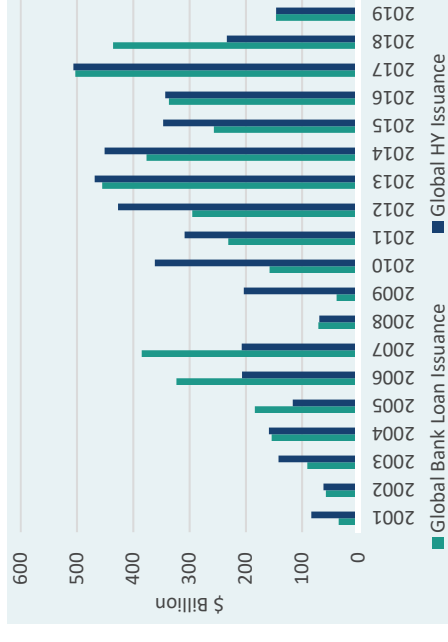
Source: BofA Merrill Lynch, as of 6/30/19

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



Source: BofA Merrill Lynch, as of 6/30/19 – par weighted

GLOBAL ISSUANCE (\$ BILLIONS)



Source: Bloomberg, BofA Merrill Lynch, as of 6/30/19

Equity

Equity environment

- The Russell 1000 Index slightly outperformed international developed equities in Q2, gaining +4.2% while the MSCI EAFE Index gained +3.7%. Perceptions of an accommodative Federal Reserve and views that U.S.-China relations are on a productive track likely impacted price movement.
- Equity performance in Q2 appears to have been largely driven by higher prices, rather than improved earnings expectations. The valuation expansion of equity markets (U.S., international developed, emerging markets) aligned with performance over the quarter.
- According to FactSet, estimated Q2 S&P 500 YoY earnings worsened from -0.5% to -2.6% in Q2. Nine of eleven sectors saw downward revisions to EPS estimates. Further negative revisions will likely act as a headwind to equity performance.
- Currency movement had a material positive impact on unhedged exposure to the U.K. (+3.1%) and Japan (+2.3%) over the quarter, though currency movement had a negligible impact on overall international equity performance (MSCI EAFE). Unhedged currency movement on a 1-year basis has had a substantially negative effect on investors' performance.
- The J.P. Morgan Emerging Market Currency Index gained +0.5% in the second quarter, stabilizing after a downward trend since 2018.
- Size and value factors continued to underperform. Small-cap equities lagged large-cap by -2.1% during the quarter and -13.3% over the past year (Russell 2000 vs. Russell 1000). Value equities underperformed growth by -0.8% over the quarter and by -3.1% over the past year (Russell 1000 Value vs Russell 1000 Growth).

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
US Large Cap (Russell 1000)	4.2%		10.0%	
US Small Cap (Russell 2000)	2.1%		(3.3%)	
US Large Value (Russell 1000 Value)	3.8%		8.5%	
US Large Growth (Russell 1000 Growth)	4.6%		11.6%	
International Large (MSCI EAFE)	3.7%	3.5%	1.1%	4.8%
Eurozone (Euro Stoxx 50)	6.2%	6.4%	0.4%	8.6%
U.K. (FTSE 100)	4.0%	0.9%	(2.3%)	3.7%
Japan (NIKKEI 225)	3.1%	0.8%	0.1%	(2.6%)
Emerging Markets (MSCI Emerging Markets)	0.6%	0.1%	1.2%	1.7%

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 6/30/19

Domestic equity

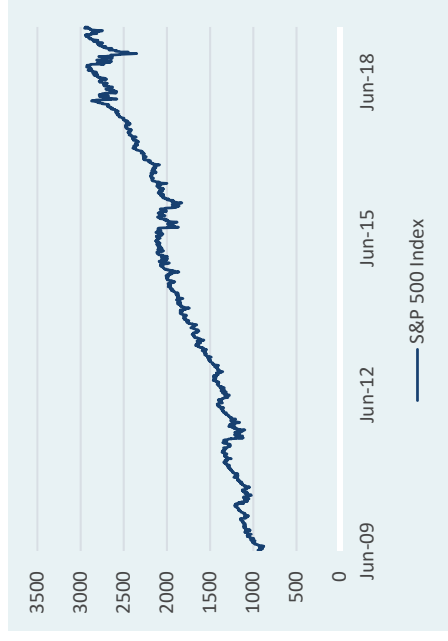
U.S. equities outperformed in the second quarter following a strong rebound in the first quarter. The S&P 500 Index delivered a total return of 4.3%, bringing its first-half return to 18.5%. Perceptions of an accommodative Federal Reserve and views that U.S-China relations were on a productive track likely impacted price movement.

Over the last decade, U.S. equities have led global equity indices, which is not typically the case. In prior periods, U.S. equities have ranked from slightly below average to slightly above average among regional indices. Furthermore, a

portion of U.S. equity outperformance has been due to a move towards high prices, which will most likely negatively impact future performance.

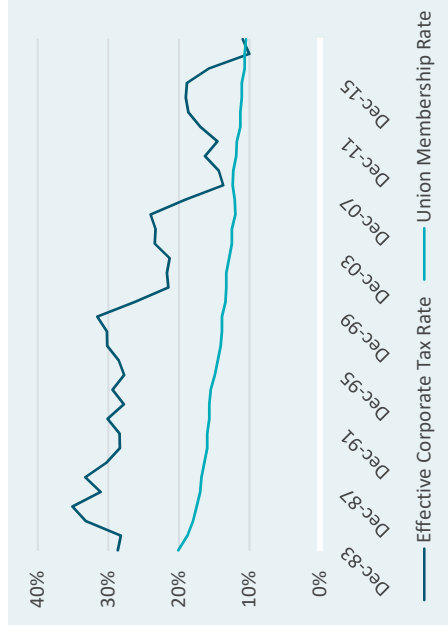
A number of secular trends have helped create a supportive environment for U.S. stocks. Technological advances, falling interest rates and therefore costs of corporate borrowing, and lower corporate tax rates have all helped to boost profit margins to all-time-highs. As expectations moderate, these margins may be increasingly scrutinized by investors.

U.S. EQUITIES



Source: Standard & Poors, as of 6/30/19

SECULAR TRENDS SUPPORTING MARGINS



Source: FRED, BLS, Bloomberg, Verus, as of 6/30/19

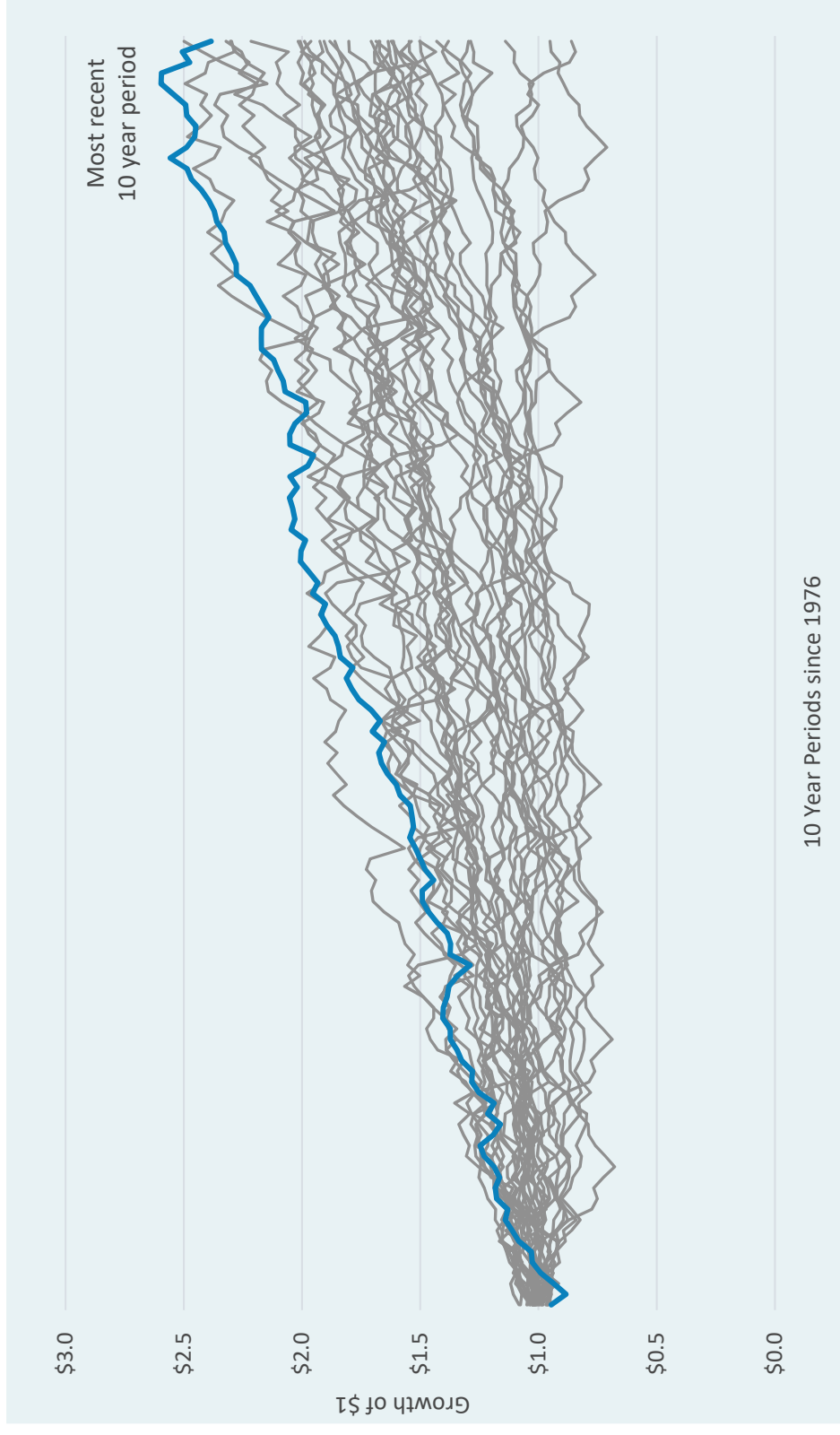
U.S. RELATIVE PERFORMANCE - HISTORICAL



Source: Verus, as of 6/30/19

Domestic equity

DOMESTIC 60/40 EXCESS RETURNS



U.S. asset performance over the past 10 years has been unusually strong

Investors should not necessarily expect U.S. outperformance to continue

Source: Verus, 60/40 (S&P 500 / BBgBarc US Aggregate Bond), excess return over T-bills since 1973

Domestic equity size & style

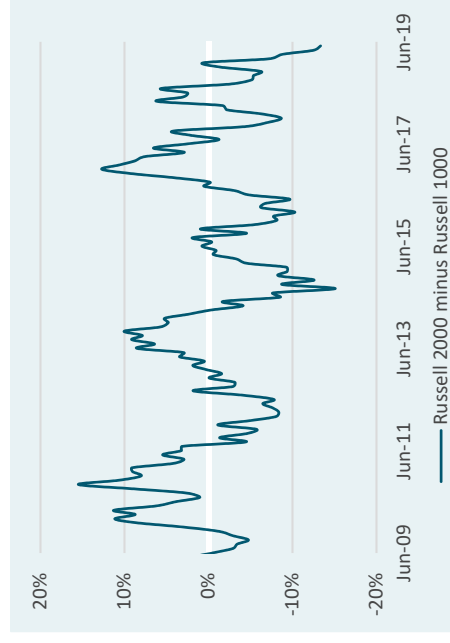
Size and value factors continued to underperform. Small-cap equities lagged large-cap by -2.1% during the quarter and -13.3% over the past year (Russell 2000 vs. Russell 1000). Value equities underperformed growth by -0.8% over the quarter and by -3.1% over the past year (Russell 1000 Value vs Russell 1000 Growth).

Similar to Q1, the impact of sector performance on the value premium was more nuanced in the second quarter. Financials (+8.0%) and Materials (+6.3%) outperformed the overall index (S&P 500 +13.6%), but Energy (-2.8%)

underperformed. Information Technology performed better than the overall index (+6.1%) which acted as a headwind for value stocks.

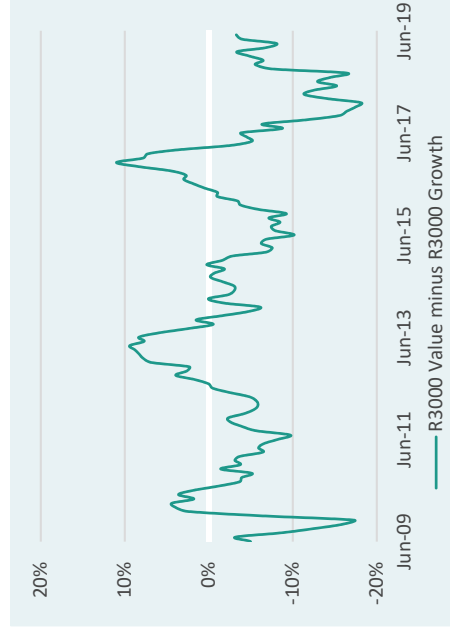
Both small cap and value premia have exhibited underperformance for an extended period of time. Longer periods of underperformance do not necessarily indicate an investment opportunity if value stocks and small cap stocks remain fairly-priced. This appears to be the case today, as neither value stocks nor small cap stocks are particularly cheap by traditional measures.

SMALL CAP VS LARGE CAP (YOY)



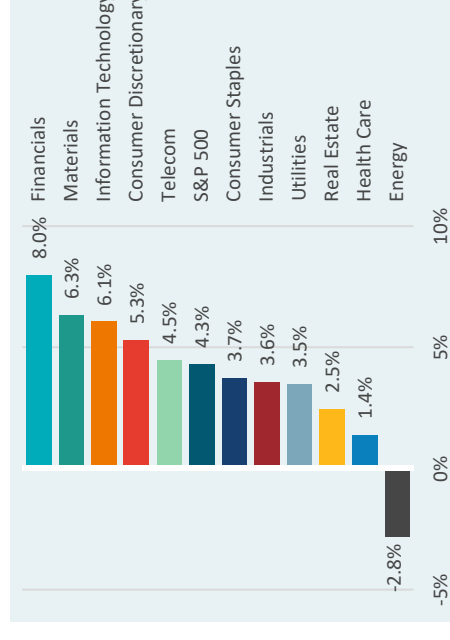
Source: FTSE, as of 6/30/19

VALUE VS GROWTH (YOY)



Source: FTSE, as of 6/30/19

Q2 S&P 500 SECTOR RETURNS



Source: Morningstar, as of 6/30/19

International developed equity

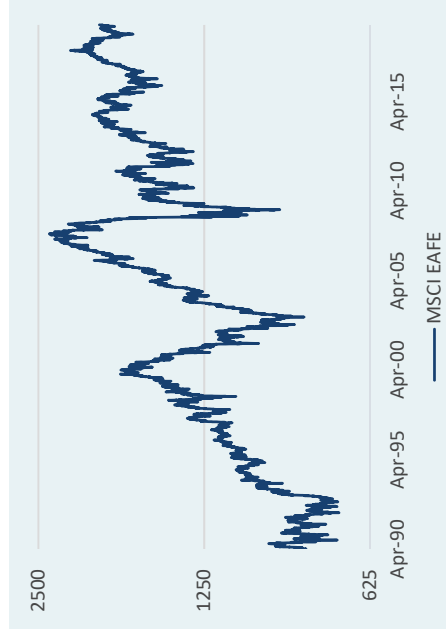
International developed equities posted a second consecutive quarter of solid performance. The MSCI EAFE Index returned +3.9% for the quarter (+14.5% YTD). On a currency hedged basis, the MSCI EAFE Index returned +3.5% for the quarter (+15.2% YTD), indicating that unhedged U.S. investors in EAFE equities benefited from non-dollar exposure over the quarter, but not in the year-to-date.

Japanese equities, which represent about 24% of the MSCI EAFE Index, underperformed, and gained only +0.5% in Q2. Japan's exposure China's economy, which in Q2 grew at its slowest pace in 27 years, likely weighed on performance.

U.K. equities underperformed the international developed equities on an unhedged basis, with the FTSE 100 Index delivering a +3.3% return for the quarter. In U.S. dollar terms, the FTSE 100 Index returned +4.0% in Q2, indicating that the weakness in the British Pound relative to the dollar presented headwinds for unhedged U.S. investors.

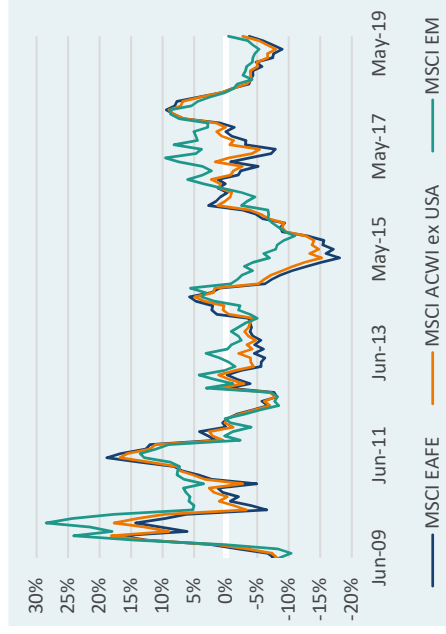
Wage gains and employment have been strong in the U.K., which would typically prompt higher rates and a stronger currency, but the uncertainty surrounding Brexit has likely had a significant impact on the British Pound.

INTERNATIONAL DEVELOPED EQUITIES



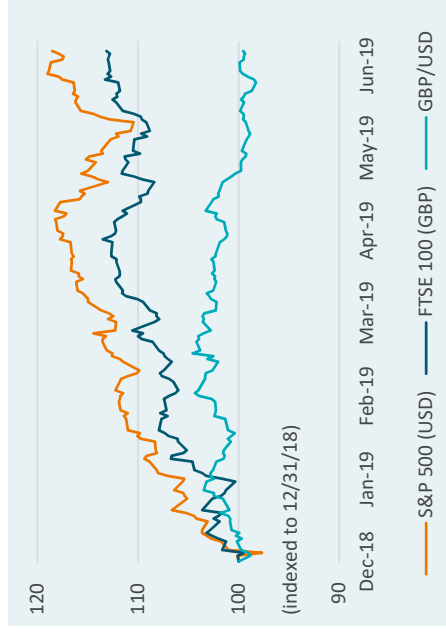
Source: MSCI, as of 6/30/19

EFFECT OF CURRENCY (1-YEAR ROLLING)



Source: MSCI, as of 6/30/19

YTD CUMULATIVE PERFORMANCE (U.S. VS. U.K.)



Source: Bloomberg, as of 6/30/19

Emerging market equity

Emerging market equity performance (MSCI Emerging Markets +0.6%) lagged developed markets (MSCI EAFE +3.7%) over the quarter, while U.S. equities outperformed (Russell 1000 +4.2%). Economists expect emerging market economies to accelerate modestly in 2020 and expect developed economies to slow. This divergence may provide a tailwind to emerging market equity performance. Recent central bank dovishness may also boost returns, as easing conditions have often had an outsized positive impact on the emerging markets.

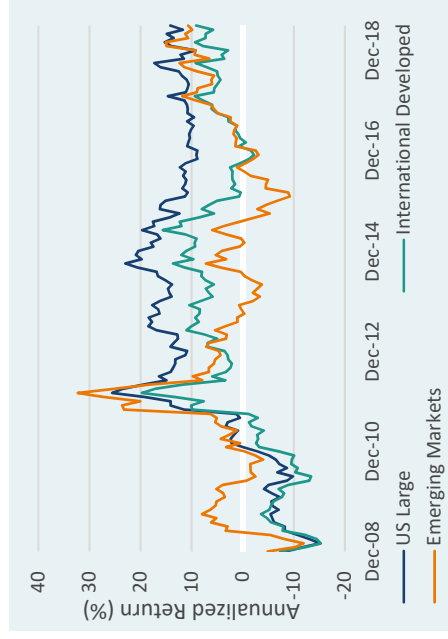
Equity multiples expanded in the second quarter but have

kept near their long-term average - the U.S. being an exception. The divide between U.S. equity valuations and the rest of the world remains wide.

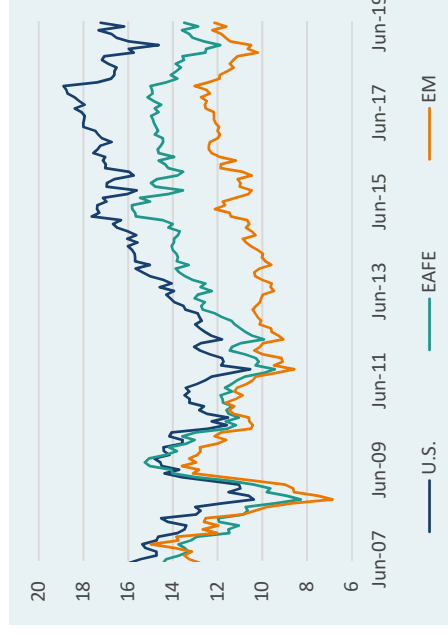
Decelerating global growth and a rising probability of recession presents unique risks to emerging markets, as these markets typically exhibit a higher beta during market downside and upside moves. However, a recession does not appear to be on the immediate horizon, and we believe recent central bank easing may lead to emerging market outperformance in the interim.

Moderate growth and central bank easing may boost emerging market equities

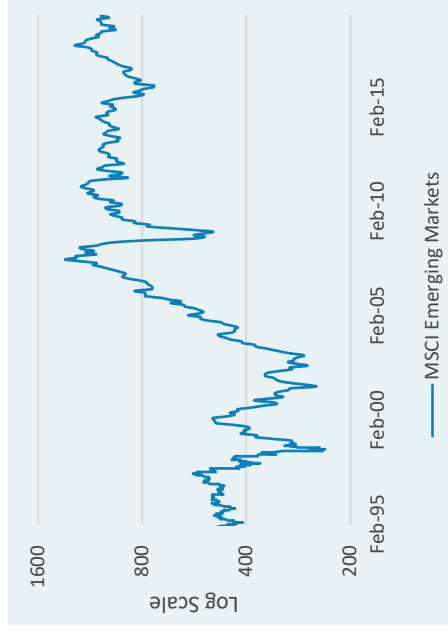
EQUITY PERFORMANCE (3-YR ROLLING)



FORWARD P/E



EMERGING MARKET PERFORMANCE



Source: Standard & Poor's, MSCI, as of 6/30/19

Source: MSCI, as of 6/30/19

Source: MSCI, as of 6/30/19

Equity valuations

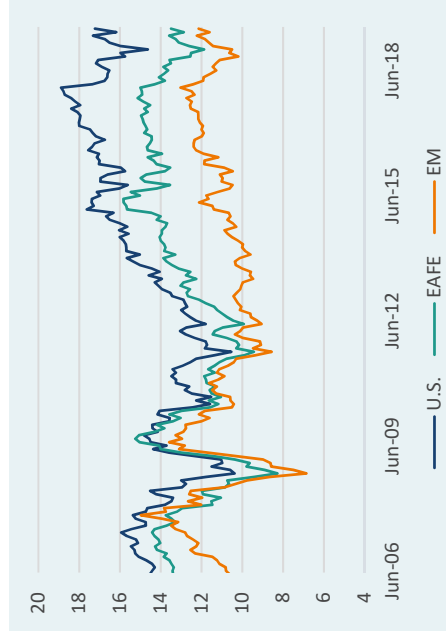
Equity performance in Q2 appears to have been largely driven by higher prices, rather than improved earnings expectations. Valuation expansion of equity markets (U.S., international developed, emerging markets) aligned with performance over the quarter.

forward premium to EAFE equities, and a 42% premium over emerging.

We believe there are reasons that EAFE equity markets warrant cheap valuations, particularly in Europe, but it is difficult to know whether the current valuation gap is justified. As U.S. corporate earnings expectations, business conditions, and economic growth seem to be converging somewhat with the rest of the developed world, investors may begin to question whether such elevated U.S. valuations are appropriate.

The U.S. equity forward P/E multiple sits at 17.2x, with international equities at 13.5x and emerging markets at 12.1x. International and emerging equity valuations remain near their long-term average, while U.S. equities appear expensive relative to history. U.S. equities currently trade at a 27%

FORWARD P/E RATIOS



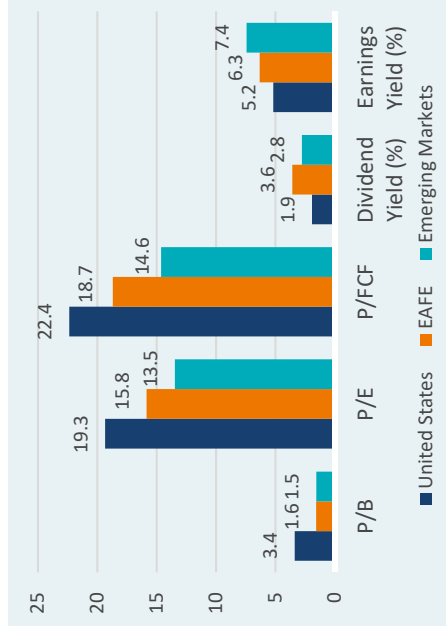
Source: MSCI, as of 6/30/19

U.S. CORPORATE EARNINGS GROWTH (YOY)



Source: Standard & Poor's, as of 6/30/19

VALUATION METRICS (3-MONTH AVERAGE)



Source: Bloomberg, MSCI as of 6/30/19 - trailing P/E

Equity volatility

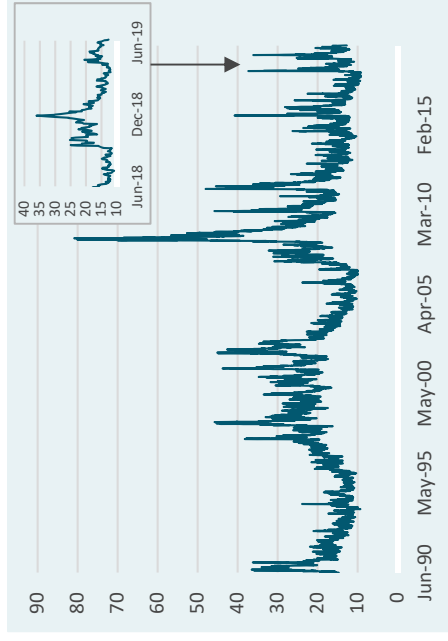
Implied volatility remained depressed over the quarter, as indicated by the VIX Index. Though the implied volatility measure reached as high as 20.6 in the days following the Trump administration’s decision to hike tariff rates on Chinese imports, the VIX Index traded mostly below its long-term average. Out of sixty-three trading days in the second quarter, the VIX Index closed above its historical daily average of 19.2 only three times.

The rolling realized 90-day volatility of the S&P 500 Index retreated from 19.5% to 11.4% over the second quarter. At

quarter-end, the 30-day forward implied volatility of the S&P 500 Index exceeded that of the Euro Stoxx 50 Index. Historically, the VIX has traded at a discount to the V2X, the proxy for expected European equity volatility.

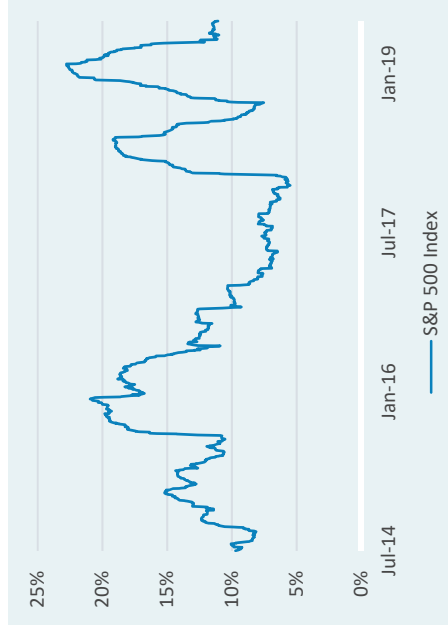
Some pundits have expressed concerns about the low levels of realized volatility despite geopolitical and trade conflict. Other investors have argued that a healthy, less-leveraged financial system is the major driver of a low-vol environment, and that the impacts of geopolitics may be overblown.

U.S. IMPLIED VOLATILITY (VIX)



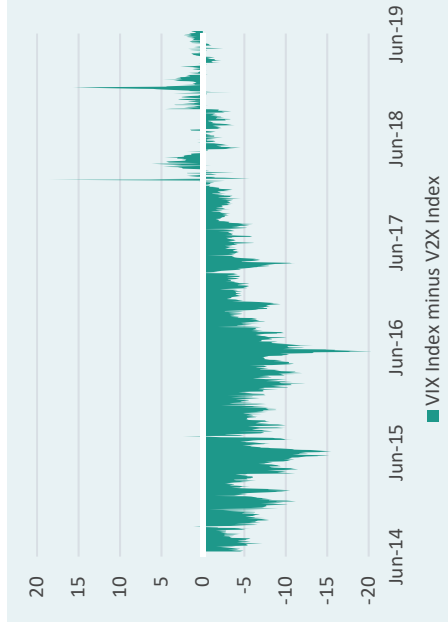
Source: CBOE, as of 6/30/19

REALIZED 90-DAY VOLATILITY



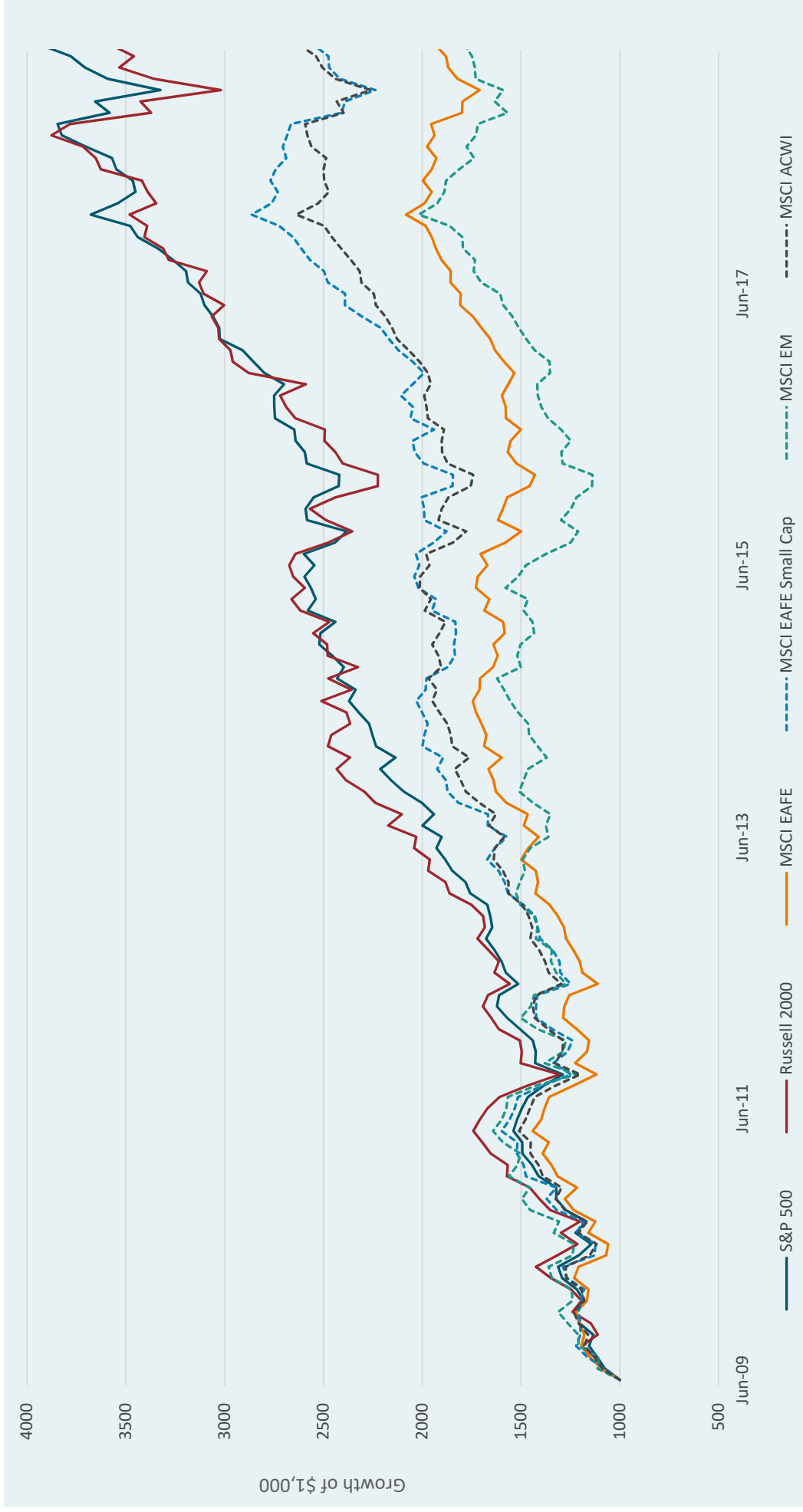
Source: Bloomberg, as of 6/30/19

U.S. IMPLIED VOLATILITY VS. EUROPEAN IMPLIED VOLATILITY



Source: Bloomberg, as of 6/30/19

Long-term equity performance



Source: Morningstar, as of 6/30/19

Other assets

Currency

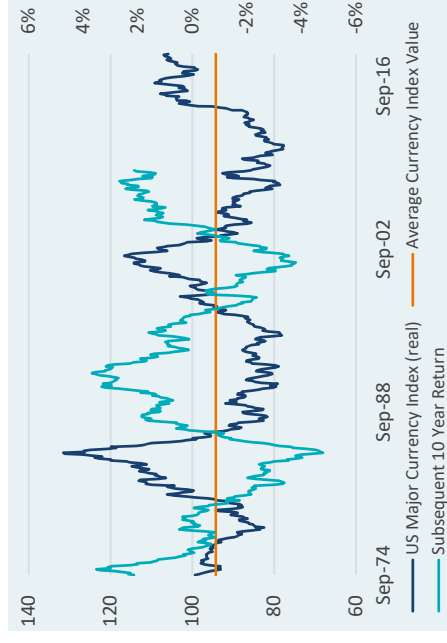
The U.S. dollar depreciated -0.2% in Q2 relative to a trade-weighted basket of currencies. After a period of strength in April and May, the dollar weakened significantly vs. developed currency pairs in June as the Federal Reserve issued dovish guidance. By the end of the quarter, markets were pricing between 0.50% and 0.75% in cuts to the federal funds range in 2019. In Europe, investors were pricing between 0.1% and 0.2% in cuts to the ECB's main deposit rate, which was already in negative territory at -0.40%.

Some analysts attributed the dollar's weakness relative to the euro as a byproduct of converging interest rate differentials driven by the Fed's ability to cut rates more significantly than the ECB.

Emerging market currencies rose in the second quarter, with the JPM Emerging Markets Currency Index gaining 0.5%. The South African Rand led the complex higher.

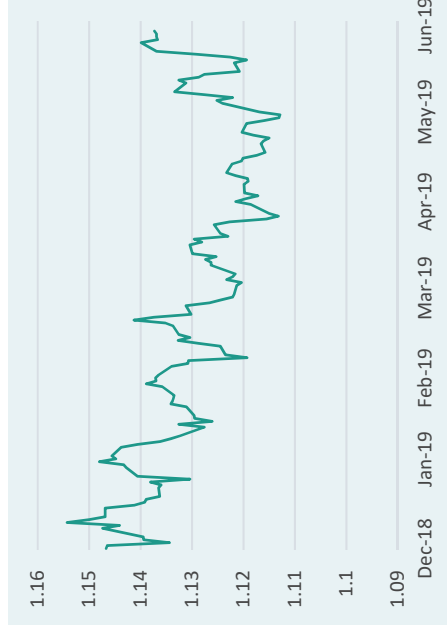
Surprise central bank dovishness has likely contributed to currency movement

U.S. DOLLAR TRADE WEIGHTED INDEX



Source: Federal Reserve, Verus, as of 6/30/19

EUR/USD



Source: Bloomberg, as of 6/30/19

JPM EMERGING MARKET CURRENCY INDEX



Source: Bloomberg, JPMorgan, as of 6/30/19

Hedge funds

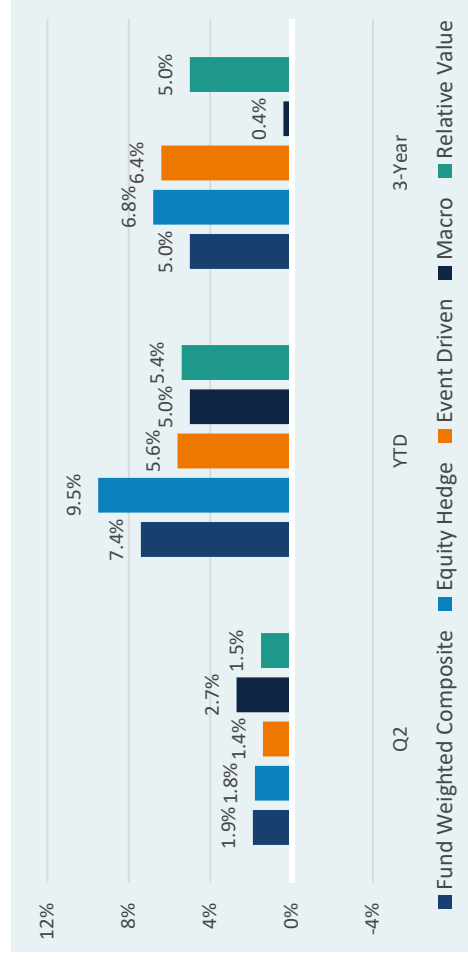
Hedge fund performance was generally positive across strategy types during the second quarter (HFRI Hedge Fund Weighted Composite +1.9% in Q2, +7.4% YTD). This marked the best first half of the year since 2009. Quantitative macro strategies, including CTAs, were the best performing sub strategy group in 2019 Q2 (+2.7%).

Within equities, technology focused funds stood out as top performers (+2.9%) for the quarter. As a group, value-oriented managers (+2.3%) outperformed growth-oriented

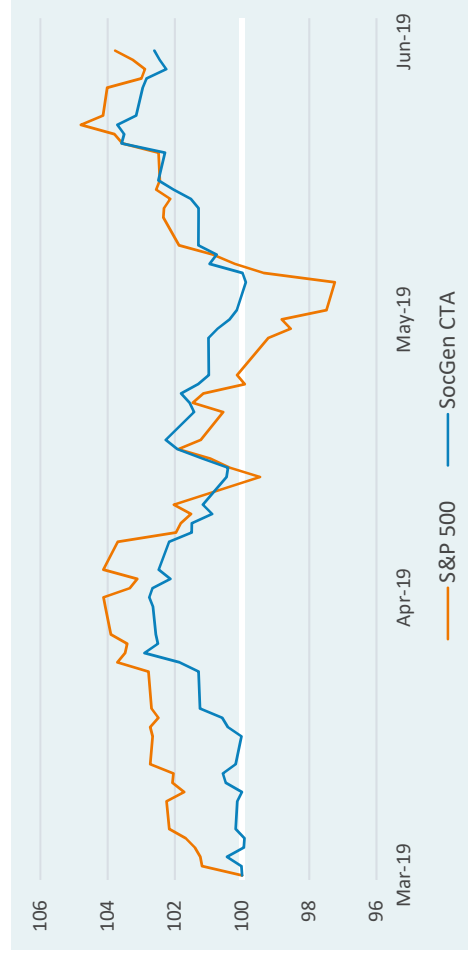
peers (+1.6%). Most other strategy types were modestly positive. Healthcare focused strategies (-0.1%) lagged peers due in part to fears of a changing regulatory environment.

Within the fixed income-oriented strategy set, managers trading corporate bonds (+2.5%) and credit arbitrage (+2.2%) strategies were the best performers during the quarter. Managers trading convertibles (+1.7%), asset backed (+1.4%) and distress (+1.3%) posted more muted gains.

HFRI HEDGE FUND STYLE PERFORMANCE



Q2 2019 CUMULATIVE PERFORMANCE (INDEXED TO 3/31/19)



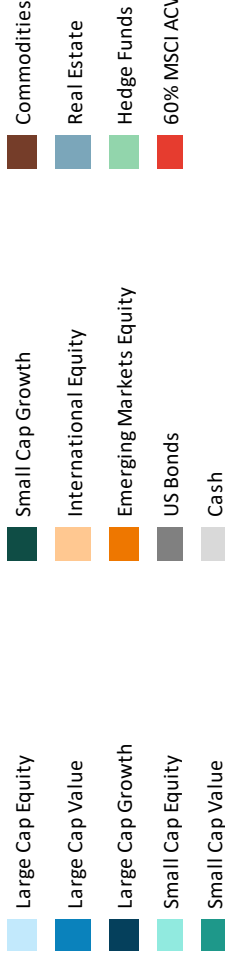
Source: HFRI, as of 6/30/19

Source: Standard & Poor's, Société Générale, as of 6/30/19

Appendix

Periodic table of returns

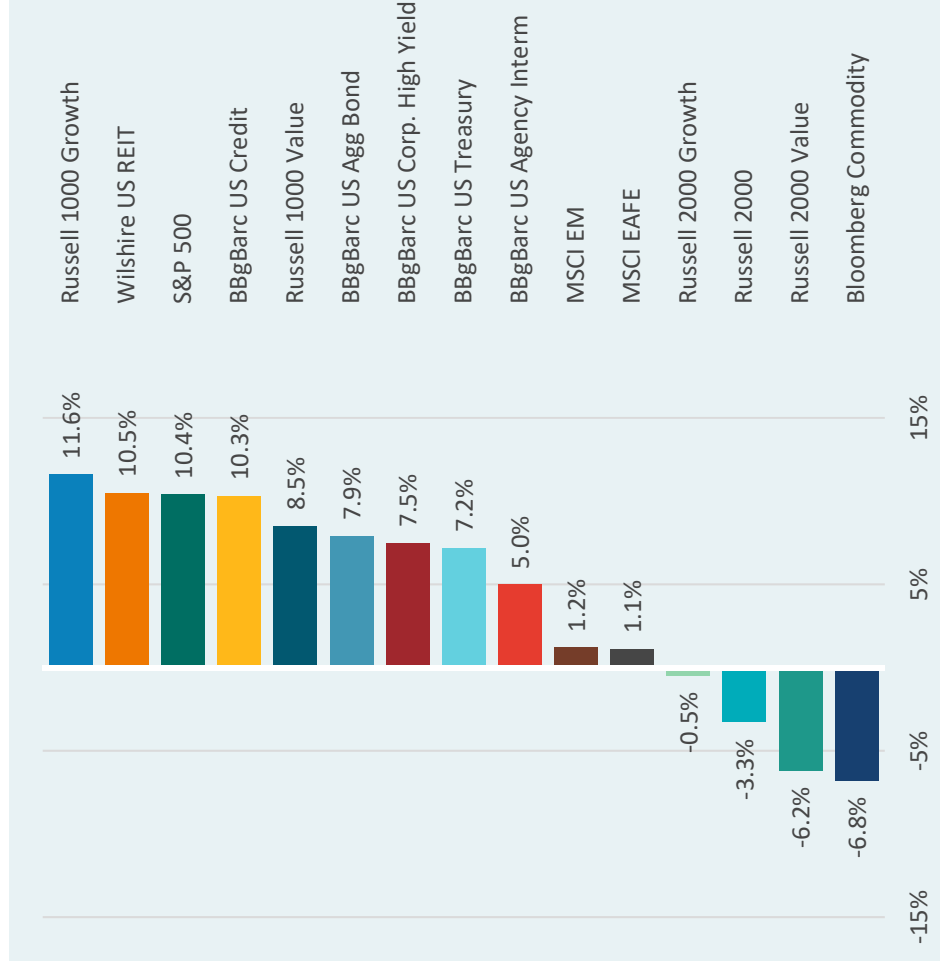
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2018 YTD	5-Year 10-Year	
Large Cap Growth	38.7	66.4	31.8	14.0	25.9	56.3	26.0	34.5	32.6	39.8	5.2	79.0	29.1	14.3	18.6	43.3	13.5	13.3	31.7	37.3	6.7	21.5	13.4	16.3
Small Cap Growth	27.0	43.1	22.8	8.4	10.3	48.5	22.2	21.4	26.9	16.2	1.4	37.2	26.9	7.8	18.1	38.8	13.2	5.7	21.3	30.2	1.9	20.4	10.5	14.8
Large Cap Equity	20.3	33.2	12.2	7.3	6.7	47.3	20.7	20.1	23.5	15.8	-6.5	34.5	24.5	2.6	17.9	34.5	13.0	0.9	17.3	25.0	0.0	18.8	8.6	14.4
Small Cap Equity	19.3	27.3	11.6	3.3	1.6	46.0	18.3	14.0	22.2	11.8	-21.4	32.5	19.2	1.5	17.5	33.5	11.8	0.6	12.1	22.2	-1.5	17.0	8.5	13.4
Large Cap Value	16.2	26.5	7.0	2.8	1.0	39.2	16.5	7.5	18.4	11.6	-25.9	28.4	16.8	0.4	16.4	33.1	6.0	0.0	11.8	21.7	-3.5	16.2	7.5	13.2
International Equity	15.6	24.3	6.0	2.5	-5.9	30.0	14.5	7.1	16.6	10.9	-28.9	27.2	16.7	0.1	16.3	32.5	5.6	-0.4	11.3	17.1	-4.8	14.0	7.1	12.4
Small Cap Value	8.7	21.3	4.1	-2.4	-6.0	29.9	14.3	6.3	15.5	10.3	-33.8	23.3	16.1	-2.1	15.3	23.3	4.9	-0.8	11.2	14.6	-6.0	13.5	5.4	9.1
60/40 Global Portfolio	4.9	20.9	-3.0	-5.6	-11.4	29.7	12.9	5.3	15.1	7.0	-35.6	20.6	15.5	-2.9	14.6	12.1	4.2	-1.4	8.0	13.7	-8.3	12.0	4.3	7.4
Emerging Markets Equity	1.2	13.2	-7.3	-9.1	-15.5	25.2	11.4	4.7	13.3	7.0	-36.8	19.7	13.1	-4.2	11.5	11.0	3.4	-2.5	7.1	7.8	-9.3	10.6	2.9	6.9
Hedge Funds of Funds	-2.5	11.4	-7.8	-9.2	-15.7	23.9	9.1	4.6	10.4	5.8	-37.6	18.9	10.2	-5.5	10.5	9.0	2.8	-3.8	5.7	7.7	-11.0	6.3	2.5	5.8
US Bonds	-5.1	7.3	-14.0	-12.4	-20.5	11.6	6.9	4.6	9.1	4.4	-38.4	11.5	8.2	-5.7	4.8	0.1	0.0	-4.4	2.6	7.0	-11.2	6.1	2.2	3.9
Commodities	-6.5	4.8	-22.4	-19.5	-21.7	9.0	6.3	4.2	4.8	-0.2	-38.5	5.9	6.5	-11.7	4.2	-2.0	-1.8	-7.5	1.0	3.5	-12.9	5.1	2.2	3.2
Real Estate	-25.3	-0.8	-22.4	-20.4	-27.9	4.1	4.3	3.2	4.3	-1.6	-43.1	0.2	5.7	-13.3	0.1	-2.3	-4.5	-14.9	0.5	1.7	-13.8	1.8	0.9	0.5
Cash	-27.0	-1.5	-30.6	-21.2	-30.3	1.0	1.4	2.4	2.1	-9.8	-53.2	-16.9	0.1	-18.2	-1.1	-9.5	-17.0	-24.7	0.3	0.9	-14.6	1.2	-9.1	-3.7



Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, BbgBarc US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFR FOF, MSCI ACWI, BbgBarc Global Bond. NCREIF Property Index performance data as of 3/31/19.

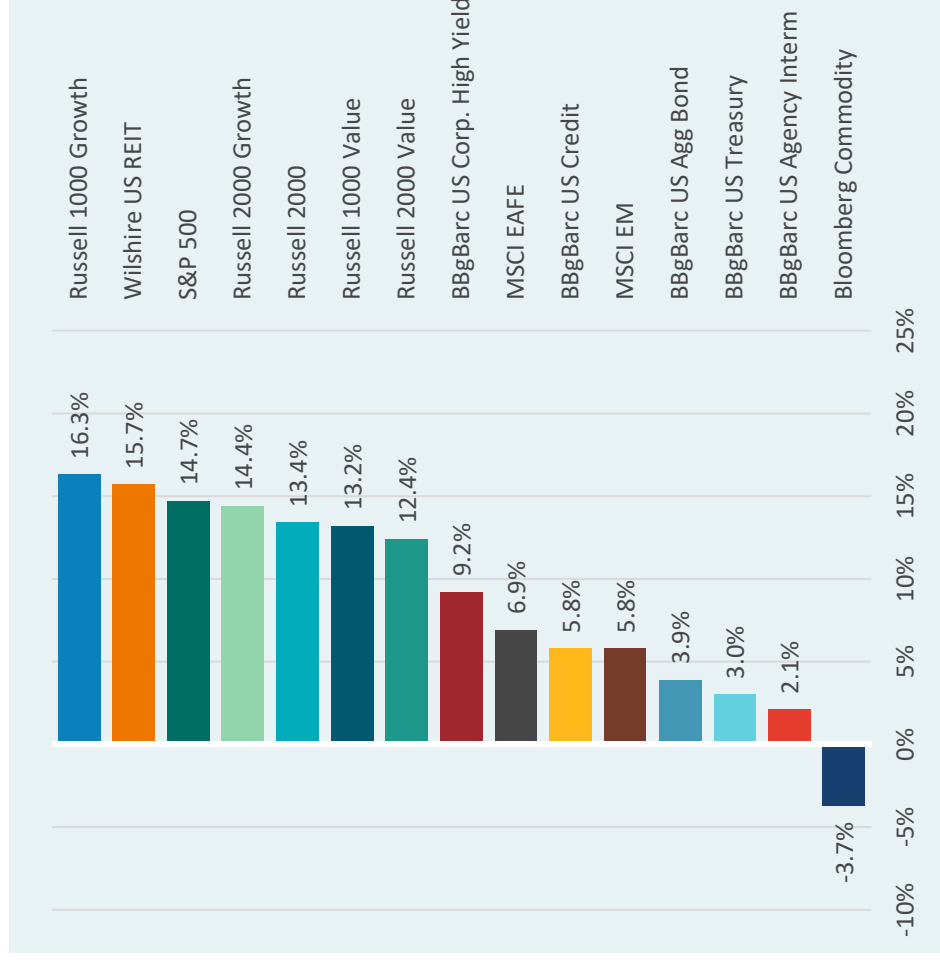
Major asset class returns

ONE YEAR ENDING JUNE



Source: Morningstar, as of 6/30/19

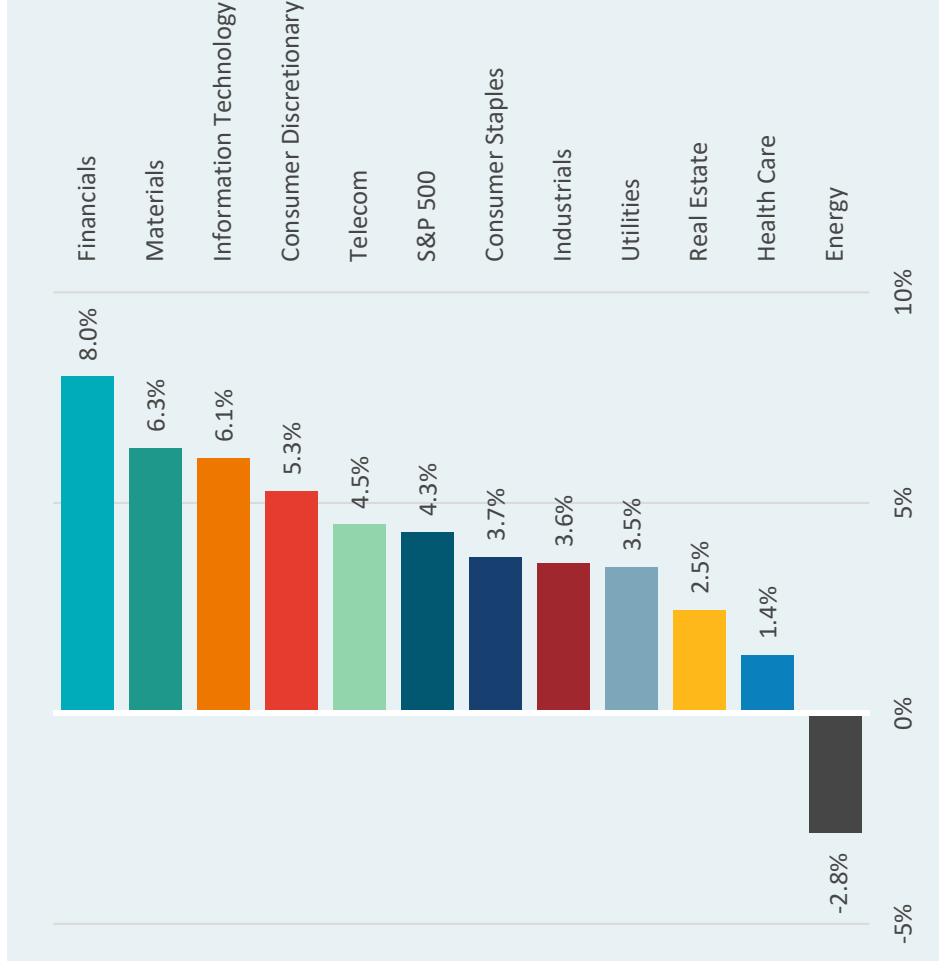
TEN YEARS ENDING JUNE



Source: Morningstar, as of 6/30/19

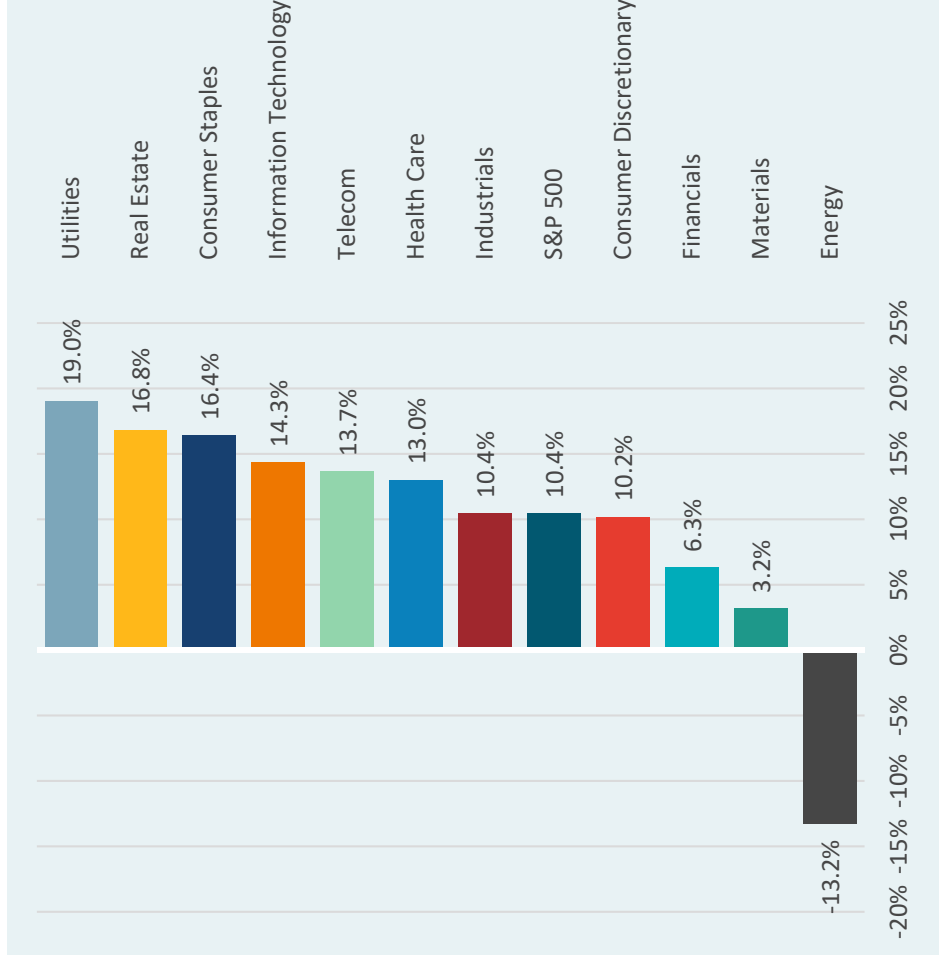
S&P 500 sector returns

Q2



Source: Morningstar, as of 6/30/19

ONE YEAR ENDING JUNE



Source: Morningstar, as of 6/30/19

Detailed index returns

DOMESTIC EQUITY		Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year	FIXED INCOME						
Core Index									Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
S&P 500		7.0	4.3	18.5	10.4	14.2	10.7	14.7	0.9	2.9	6.2	4.8	2.1	1.8	3.6
S&P 500 Equal Weighted		7.5	3.7	19.2	8.2	12.4	9.1	15.6	0.2	0.7	1.3	2.4	1.4	0.9	0.5
DJ Industrial Average		7.3	3.2	15.4	12.2	16.8	12.3	15.0	1.3	3.1	6.1	7.9	2.3	2.9	3.9
Russell Top 200		7.1	4.3	17.9	10.9	14.9	11.2	14.6	Duration						
Russell 1000		7.0	4.2	18.8	10.0	14.1	10.5	14.8	0.5	1.5	2.5	4.0	1.3	1.2	1.2
Russell 2000		7.1	2.1	17.0	(3.3)	12.3	7.1	13.4	1.3	6.0	11.0	12.3	1.3	5.7	6.5
Russell 3000		7.0	4.1	18.7	9.0	14.0	10.2	14.7	0.9	3.0	5.2	7.2	1.3	2.5	3.0
Russell Mid Cap		6.9	4.1	21.3	7.8	12.2	8.6	15.2	Issuer						
Style Index									0.7	2.0	4.2	6.2	2.1	2.6	3.2
Russell 1000 Growth		6.9	4.6	21.5	11.6	18.1	13.4	16.3	2.3	2.5	9.9	7.5	7.5	4.7	9.2
Russell 1000 Value		7.2	3.8	16.2	8.5	10.2	7.5	13.2	0.6	1.7	3.1	5.0	1.6	1.8	2.1
Russell 2000 Growth		7.7	2.7	20.4	(0.5)	14.7	8.6	14.4	2.3	4.3	9.4	10.3	3.7	3.9	5.8
Russell 2000 Value		6.4	1.4	13.5	(6.2)	9.8	5.4	12.4	OTHER						
INTERNATIONAL EQUITY									Index						
Broad Index									2.7	(1.2)	5.1	(6.8)	(2.2)	(9.1)	(3.7)
MSCI ACWI		6.5	3.6	16.2	5.7	11.6	6.2	10.1	Bloomberg Commodity						
MSCI ACWI ex US		6.0	3.0	13.6	1.3	9.4	2.2	6.5	1.4	1.6	17.9	10.5	4.1	7.8	15.7
MSCI EAFE		5.9	3.7	14.0	1.1	9.1	2.2	6.9	0.2	1.6	5.4	4.1	5.4	3.9	6.3
MSCI EM		6.2	0.6	10.6	1.2	10.7	2.5	5.8	2.6	0.3	17.8	5.5	(0.4)	(6.5)	9.1
MSCI EAFE Small Cap		4.2	1.7	12.5	(6.3)	9.1	4.4	9.7	Regional Index						
Style Index									3.4	4.1	11.3	12.4	5.5	5.3	7.8
MSCI EAFE Growth		6.5	5.7	18.5	4.2	9.7	4.4	8.2	JPM EMBI Global Div						
MSCI EAFE Value		5.3	1.5	9.6	(2.1)	8.5	0.1	5.5	5.5	5.6	8.7	9.0	4.2	(0.5)	3.4
Regional Index									Hedge Funds						
MSCI UK		5.0	0.9	12.9	(2.0)	6.9	(0.3)	6.8	2.6	2.0	7.6	1.6	5.1	3.0	4.7
MSCI Japan		3.7	1.0	7.7	(4.2)	8.1	4.5	5.8	HFR I FOF Composite						
MSCI Euro		7.6	5.9	16.2	0.5	10.4	1.1	5.6	1.7	1.6	6.3	1.3	4.3	2.2	3.2
MSCI EM Asia		6.4	(1.2)	9.7	(2.3)	11.2	4.5	7.5	Currency (Spot)						
MSCI EM Latin American		6.2	4.4	12.6	18.4	10.8	(0.8)	2.3	2.2	1.4	(0.4)	(2.5)	0.8	(3.6)	(2.1)
									1.0	(2.3)	(0.1)	(3.6)	(1.6)	(5.7)	(2.5)
									0.8	2.7	1.8	2.8	(1.6)	(1.2)	(1.1)

Source: Morningstar, HFR, as of 6/30/19

Definitions

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

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

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

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

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Contra Costa County Employees' Retirement Association

Investment Performance Review

Period Ending: June 30, 2019



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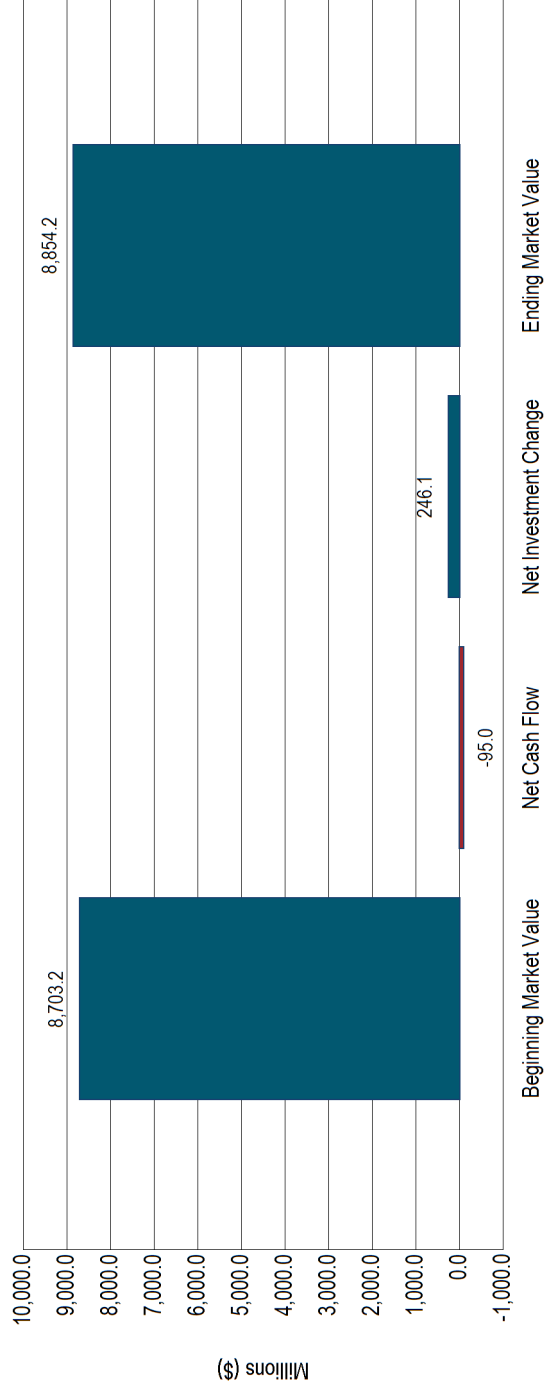
SAN FRANCISCO 415-362-3484

Total Fund
 Portfolio Reconciliation Period Ending: June 30, 2019

Portfolio Reconciliation

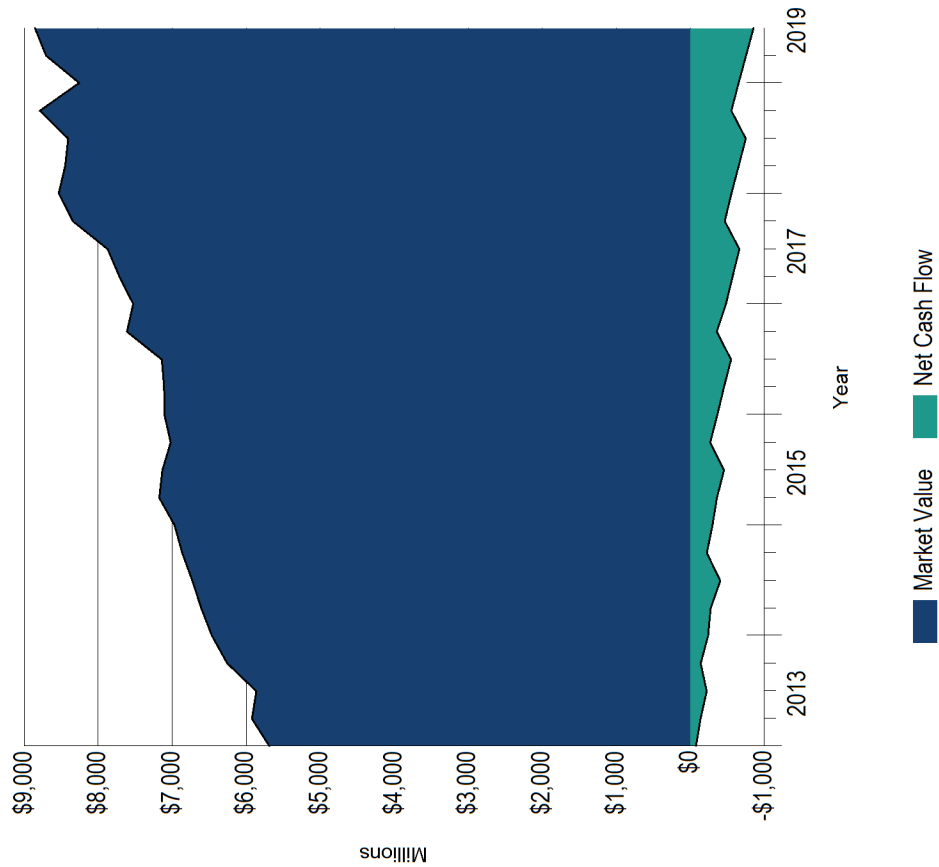
	Last Three Months	Year-To-Date
Beginning Market Value	\$8,703,150,580	\$8,255,873,307
Net Cash Flow	-\$95,031,888	-\$189,460,657
Net Investment Change	\$246,069,218	\$787,775,260
Ending Market Value	\$8,854,187,910	\$8,854,187,910

**Change in Market Value
 Last Three Months**

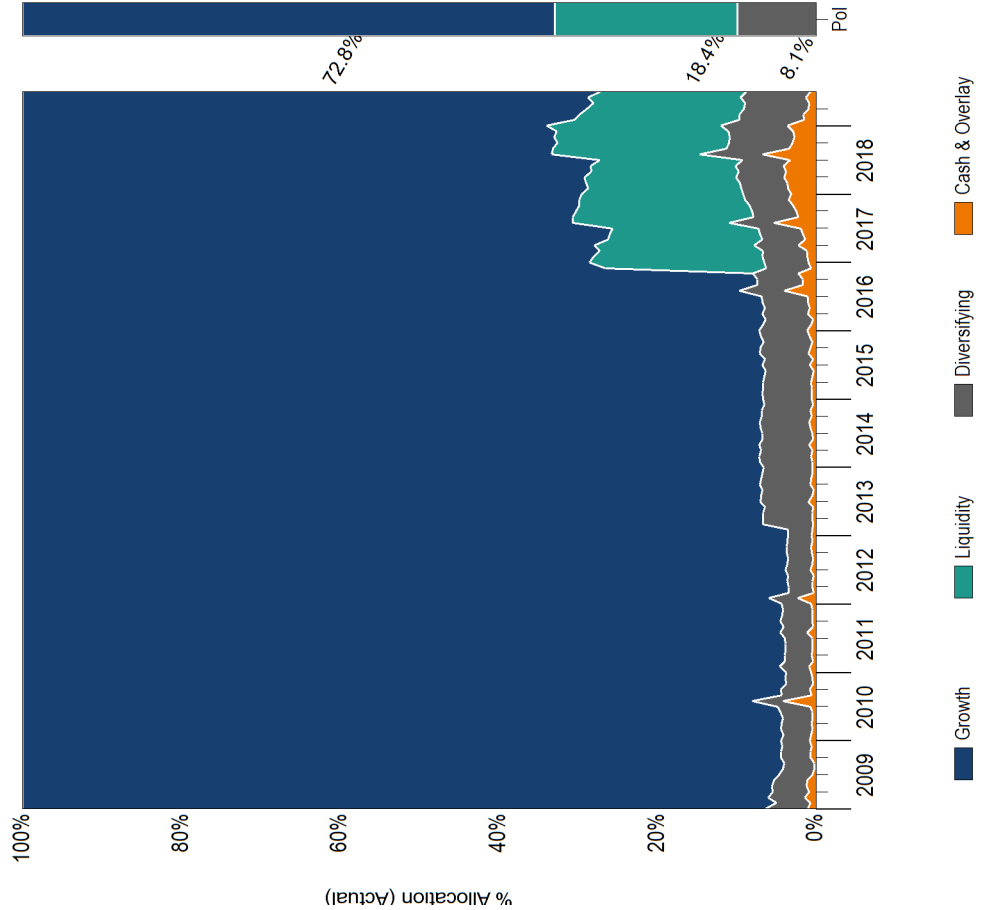


Contributions and withdrawals may include intra-account transfers between managers/funds.

Market Value History
Cumulative Cash Flows

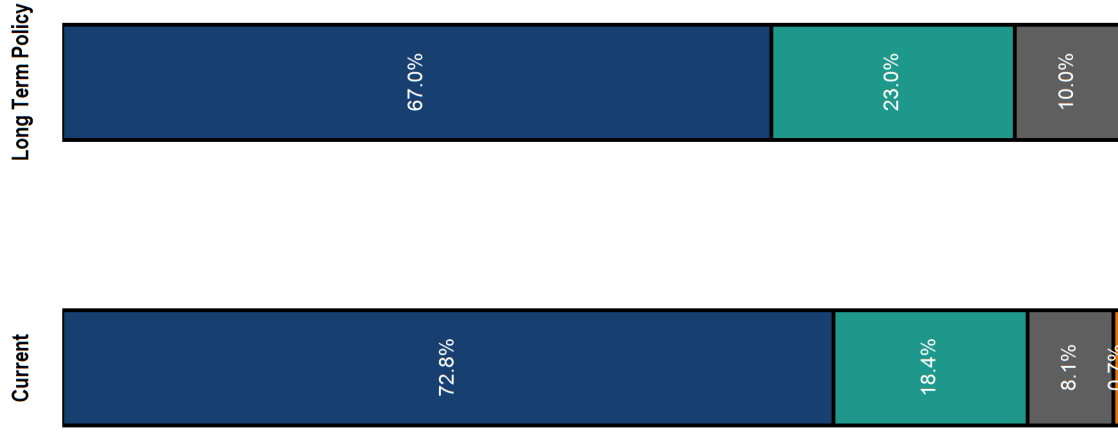


Asset Allocation History



Policy reflects FFP 4-Yr allocations approved in March 2018.

Total Fund
 Asset Allocation vs. Long Term Target Policy Period Ending: June 30, 2019



Allocation vs. Long Term Target

	Current Balance	Current Allocation	Long Term Target	Difference
Growth	\$6,448,786,419	72.8%	67.0%	\$516,480,519
Liquidity	\$1,627,648,500	18.4%	23.0%	-\$408,814,720
Diversifying	\$717,754,720	8.1%	10.0%	-\$167,664,071
Cash & Overlay	\$59,998,272	0.7%	--	\$59,998,272
Total	\$8,854,187,910	100.0%	100.0%	

Allocation vs. Current Targets

	Current Balance	Current Allocation	Current Target	Difference
Growth	\$6,448,786,419	72.8%	69.0%	\$339,396,761
Liquidity	\$1,627,648,500	18.4%	23.0%	-\$408,814,720
Diversifying	\$717,754,720	8.1%	8.0%	\$9,419,687
Cash & Overlay	\$59,998,272	0.7%	--	\$59,998,272
Total	\$8,854,187,910	100.0%	100.0%	

Long Term Targets reflect FFP 4-Yr allocations approved in March 2018.
 Current Targets reflect Phase 3 Targets approved in June 2018.



Total Fund
Executive Summary (Net of Fees) Period Ending: June 30, 2019

	% of Portfolio	QTD	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Fund	100.0	2.8	9.5	6.0	8.1	6.1	9.7	-2.7	13.9	6.9	2.1	7.7
Policy Index		3.8	8.8	6.5	8.4	6.4	10.5	-0.9	13.7	8.9	0.6	9.0
Growth	72.8	3.3	11.9	6.4	10.1	7.4	--	-3.9	18.7	7.6	2.3	8.1
Custom Growth Benchmark		4.8	11.3	7.3	10.9	7.8	--	-2.1	19.3	10.1	0.3	8.4
Diversifying	8.1	1.9	4.4	3.4	1.6	0.2	2.4	-2.3	2.6	0.8	-1.8	1.7
Custom Diversifying Benchmark		1.8	4.1	4.7	3.2	3.6	4.3	1.4	4.7	4.1	2.5	5.4
Liquidity	18.4	1.6	3.4	5.1	--	--	--	1.7	1.4	--	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR		1.5	2.7	4.3	--	--	--	1.6	0.8	--	--	--

**Correlation between the Growth and Diversifying composites is .57, .38 and .32 over the previous 1, 3 and 5 year periods respectively.*

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

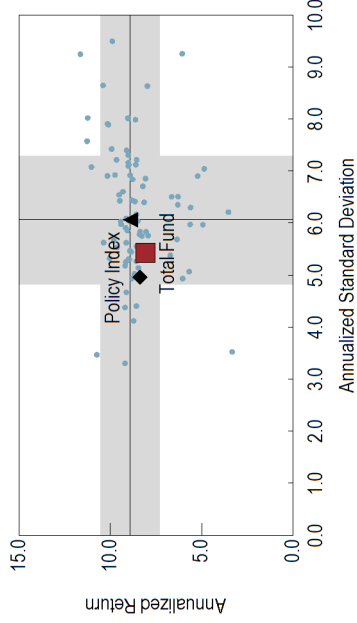
Total Fund
Executive Summary (Net of Fees)

Period Ending: June 30, 2019

3 Years

Total Fund	Anlzd Return	Ann Excess BM Return	Anlzd Standard Deviation	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Information Ratio	Up Mkt Capture Ratio	Down Mkt Capture Ratio
	8.08%	-0.30%	5.42%	-0.77%	1.06	1.47%	0.93	1.23	-0.21	101.58%	111.20%

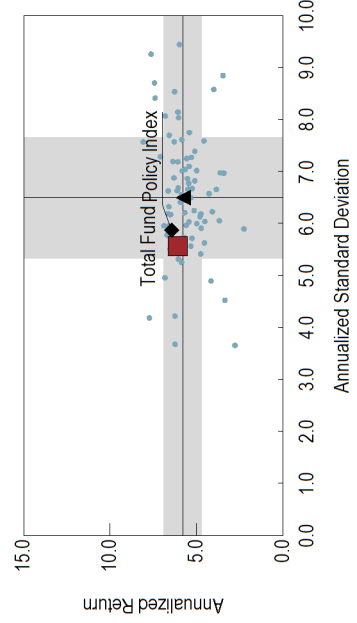
Risk vs. Return



5 Years

Total Fund	Anlzd Return	Ann Excess BM Return	Anlzd Standard Deviation	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Information Ratio	Up Mkt Capture Ratio	Down Mkt Capture Ratio
	6.09%	-0.36%	5.56%	0.26%	0.91	1.74%	0.91	0.94	-0.20	89.91%	90.27%

Risk vs. Return



Total Fund Performance Summary (Gross of Fees) Period Ending: June 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Fund	8,854,213,078	100.0	2.9	9.7	6.3	8.4	6.5	10.3	-2.5	14.2	7.4	2.7	8.4
Policy Index			3.8	8.8	6.5	8.4	6.4	10.5	-0.9	13.7	8.9	0.6	9.0
InvMetrics Public DB > \$1B Gross Rank			58	74	23	72	20	10	25	83	74	5	6
Total Fund ex Overlay & Cash	8,794,214,807	99.3	2.9	9.5	6.4	8.5	6.6	10.3	-2.1	14.1	7.4	2.7	8.4
Policy Index			3.8	8.8	6.5	8.4	6.4	10.5	-0.9	13.7	8.9	0.6	9.0
InvMetrics Public DB > \$1B Gross Rank			60	76	21	69	19	10	20	84	74	5	6
Growth	6,448,811,587	72.8	3.3	12.0	6.7	10.4	7.9	--	-3.6	19.1	8.1	3.0	8.8
Custom Growth Benchmark			4.8	11.3	7.3	10.9	7.8	--	-2.1	19.3	10.1	0.3	8.4
Total Domestic Equity	1,088,152,791	12.3	4.5	18.3	5.8	14.1	10.1	15.0	-7.2	23.9	11.5	1.1	11.4
Russell 3000			4.1	18.7	9.0	14.0	10.2	14.7	-5.2	21.1	12.7	0.5	12.6
InvMetrics Public DB US Eq Gross Rank			33	68	84	32	32	19	78	6	77	21	50
BlackRock Russell 1000 Index			4.2	18.9	10.0	--	--	--	-4.8	--	--	--	--
Russell 1000			4.2	18.8	10.0	--	--	--	-4.8	--	--	--	--
eV US Large Cap Equity Gross Rank			50	42	43	--	--	--	47	--	--	--	--
Jackson Square Partners			7.9	20.8	11.8	16.4	10.8	15.9	-2.0	29.3	-4.4	6.1	13.9
Russell 1000 Growth			4.6	21.5	11.6	18.1	13.4	16.3	-1.5	30.2	7.1	5.7	13.0
eV US Large Cap Growth Equity Gross Rank			2	63	51	71	84	49	59	47	98	37	31
Boston Partners			3.1	13.0	4.9	12.0	7.8	13.6	-8.7	20.1	15.1	-3.9	12.0
Russell 1000 Value			3.8	16.2	8.5	10.2	7.5	13.2	-8.3	13.7	17.3	-3.8	13.5
eV US Large Cap Value Equity Gross Rank			65	87	66	35	54	43	55	23	50	65	55
Emerald Advisers			3.7	25.8	4.9	18.6	12.2	17.8	-10.1	28.8	10.1	4.1	7.3
Russell 2000 Growth			2.7	20.4	-0.5	14.7	8.6	14.4	-9.3	22.2	11.3	-1.4	5.6
eV US Small Cap Growth Equity Gross Rank			62	39	55	46	32	23	85	26	54	19	21
Ceredex			2.3	14.0	-3.5	8.3	6.6	--	-11.3	11.4	29.8	-4.4	3.3
Russell 2000 Value			1.4	13.5	-6.2	9.8	5.4	--	-12.9	7.8	31.7	-7.5	4.2
eV US Small Cap Value Equity Gross Rank			47	64	39	76	35	--	25	48	32	52	74

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 3/15/2019. PanAgora Risk Parity funded 1/18/2019. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

**Total Fund
Performance Summary (Gross of Fees)** Period Ending: June 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total International Equity	1,654,950,552	18.7	3.5	14.9	3.5	7.8	3.2	7.1	-14.3	25.5	1.2	-1.2	0.3
MSCI ACWI ex USA Gross			3.2	14.0	1.8	9.9	2.6	7.0	-13.8	27.8	5.0	-5.3	-3.4
MSCI EAFE Gross			4.0	14.5	1.6	9.6	2.7	7.4	-13.4	25.6	1.5	-0.4	-4.5
InvMetrics Public DB ex-US Eq Gross Rank			21	23	9	79	36	65	44	90	89	28	5
International Equity	967,475,714	10.9	4.7	16.9	3.6	8.6	3.7	7.4	-13.6	25.3	1.2	-1.2	0.3
MSCI ACWI ex USA Gross			3.2	14.0	1.8	9.9	2.6	7.0	-13.8	27.8	5.0	-5.3	-3.4
InvMetrics Public DB ex-US Eq Gross Rank			7	5	9	63	23	54	21	93	89	28	5
Pyrford			3.9	13.7	6.6	7.1	3.1	--	-10.1	19.8	3.4	-2.9	--
MSCI ACWI ex USA Value		5.3	1.6	10.0	-0.1	8.9	0.3	--	-14.0	22.7	8.9	-10.1	--
eV ACWI ex-US Value Equity Gross Rank			13	20	1	63	23	--	5	84	74	59	--
William Blair			5.4	20.1	0.9	10.2	4.3	--	-16.8	30.9	-1.4	0.5	-1.2
MSCI ACWI ex USA Growth		5.6	4.4	17.2	2.6	9.8	4.0	--	-14.4	32.0	0.1	-1.3	-2.6
eV ACWI ex-US Growth Equity Gross Rank			46	47	53	73	81	--	69	81	55	69	37
Emerging Markets Equity	687,474,838	7.8	2.0	12.1	3.5	--	--	--	-15.3	--	--	--	--
MSCI Emerging Markets			0.6	10.6	1.2	--	--	--	-14.6	--	--	--	--
InvMetrics Public DB Emg Mkt Eq Gross Rank			40	31	33	--	--	--	51	--	--	--	--
PIMCO RAE Emerging Markets		4.0	3.0	9.5	3.1	--	--	--	-12.3	--	--	--	--
MSCI Emerging Markets			0.6	10.6	1.2	--	--	--	-14.6	--	--	--	--
eV Emg Mkts Equity Gross Rank			19	80	39	--	--	--	19	--	--	--	--
TT Emerging Markets		3.8	0.8	15.0	3.8	--	--	--	-18.4	--	--	--	--
MSCI Emerging Markets			0.6	10.6	1.2	--	--	--	-14.6	--	--	--	--
eV Emg Mkts Equity Gross Rank			69	22	32	--	--	--	83	--	--	--	--
Total Global Equity	764,932,035	8.6	5.1	19.1	7.8	12.8	8.2	9.5	-7.8	23.7	7.6	2.2	5.2
MSCI ACWI			3.6	16.2	5.7	11.6	6.2	10.1	-9.4	24.0	7.9	-2.4	4.2
InvMetrics Public DB Gbl Eq Gross Rank			1	1	25	24	31	15	60	79	40	16	41
Artisan Partners		4.4	6.4	24.0	9.1	16.8	11.6	--	-7.9	32.9	5.6	9.2	3.9
MSCI ACWI			3.6	16.2	5.7	11.6	6.2	--	-9.4	24.0	7.9	-2.4	4.2
eV All Global Equity Gross Rank			11	7	29	11	7	--	40	11	61	4	56
First Eagle		4.3	3.8	14.1	6.5	8.3	5.8	--	-7.6	15.1	11.7	0.2	4.5
MSCI ACWI			3.6	16.2	5.7	11.6	6.2	--	-9.4	24.0	7.9	-2.4	4.2
eV All Global Equity Gross Rank			45	71	46	81	67	--	38	89	19	49	51

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

**Total Fund
Performance Summary (Gross of Fees)** Period Ending: June 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Private Credit	427,925,306	4.8	3.6	3.2	9.2	9.4	9.4	15.4	8.3	10.4	8.2	12.9	15.4
ICE BofAML High Yield Master II +2%			3.1	11.2	9.8	9.7	6.8	11.4	-0.3	9.6	19.8	-2.7	4.5
Total High Yield	318,978,341	3.6	2.4	11.1	8.1	7.2	4.0	8.7	-3.2	6.5	14.3	-3.5	1.2
ICE BofAML High Yield Master II			2.6	10.2	7.6	7.5	4.7	9.2	-2.3	7.5	17.5	-4.6	2.5
eV US High Yield Fixed Inc Gross Rank			62	15	36	56	78	66	88	74	47	68	83
Allianz Global Investors	318,978,341	3.6	2.4	11.1	8.1	7.2	4.0	8.7	-3.2	6.5	14.3	-3.5	1.2
ICE BofAML High Yield Master II			2.6	10.2	7.6	7.5	4.7	9.2	-2.3	7.5	17.5	-4.6	2.5
eV US High Yield Fixed Inc Gross Rank			62	15	36	56	78	66	88	74	47	68	83
Total Real Estate	767,595,866	8.7	0.9	5.3	7.5	8.7	10.1	14.0	7.4	11.1	5.5	13.5	20.6
Real Estate Benchmark			1.2	4.3	7.0	5.8	8.1	11.0	6.7	7.1	6.7	8.3	18.8
NCREIF-ODCE			1.0	2.4	6.4	7.6	9.8	9.9	8.3	7.6	8.8	15.0	12.5
NCREIF Property Index			1.5	3.3	6.5	6.9	8.8	9.2	6.7	7.0	8.0	13.3	11.8
Adelante	74,996,736	0.8	2.0	19.9	13.2	5.8	8.6	16.1	-5.0	7.8	4.1	5.1	33.4
Wilshire REIT			1.6	17.9	10.5	4.1	7.8	15.7	-4.8	4.2	7.2	4.2	31.8
Private Equity	987,137,914	11.1	2.0	3.6	9.8	11.6	11.0	12.0	12.1	11.9	9.4	11.6	17.3
S&P 500 Index +4% (Lagged)			14.7	0.2	13.8	18.0	15.3	20.5	22.6	23.3	20.0	3.4	24.5
Risk Parity	439,120,430	5.0	5.2	--	--	--	--	--	--	--	--	--	--
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			3.6	--	--	--	--	--	--	--	--	--	--
AQR Global Risk Premium-EL	224,426,901	2.5	5.1	--	--	--	--	--	--	--	--	--	--
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			3.6	--	--	--	--	--	--	--	--	--	--
PanAgora Risk Parity Multi Asset	214,693,529	2.4	5.4	--	--	--	--	--	--	--	--	--	--
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			3.6	--	--	--	--	--	--	--	--	--	--

Individual closed end funds are not shown in performance summary table. AQR Global Risk Parity funded 3/15/2019. PanAgora Risk Parity funded 1/18/2019. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

**Total Fund
Performance Summary (Gross of Fees)** Period Ending: June 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Diversifying	717,754,720	8.1	1.9	4.5	3.6	1.8	0.6	2.8	-2.0	2.8	1.3	-1.4	2.2
Custom Diversifying Benchmark			1.8	4.1	4.7	3.2	3.6	4.3	1.4	4.7	4.1	2.5	5.4
Diversifying Fixed Income	517,988,820	5.8	2.7	6.0	5.5	1.7	2.7	3.8	-1.7	2.8	2.8	1.6	6.6
eV US Core Fixed Inc Gross Rank			94	83	99	99	99	95	99	96	72	15	25
AFL-CIO	332,843,870	3.8	3.4	6.3	8.4	2.7	3.3	4.1	0.6	3.6	2.4	1.6	6.6
BBgBarc US Aggregate TR			3.1	6.1	7.9	2.3	2.9	3.9	0.0	3.5	2.6	0.6	6.0
eV US Core Fixed Inc Gross Rank			19	69	32	56	50	80	16	76	87	15	25
Wellington Real Total Return	185,124,950	2.1	1.4	5.5	0.6	1.8	-2.0	--	-5.6	1.9	-0.1	-4.9	-2.5
CPI + 4%			1.8	4.0	5.7	6.1	5.5	--	6.0	6.2	6.2	4.8	4.8
Diversifying Equity	199,785,900	2.3	0.1	0.8	--	--	--	--	--	--	--	--	--
Parametric Defensive Equity	199,785,900	2.3	0.1	0.8	--	--	--	--	--	--	--	--	--
91 Day T-Bill +4%			1.5	3.2	--	--	--	--	--	--	--	--	--
Liquidity	1,627,648,500	18.4	1.6	3.4	5.2	--	--	--	1.8	1.5	--	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			1.5	2.7	4.3	--	--	--	1.6	0.8	--	--	--
eV US Short Duration Fixed Inc Gross Rank			38	31	20	--	--	--	24	50	--	--	--
DFA Short Credit	339,795,727	3.8	1.6	3.6	5.4	--	--	--	1.2	1.9	--	--	--
ICE BofAML 1-5 Yrs US Corp & Govt TR			1.9	3.6	5.4	--	--	--	1.4	1.3	--	--	--
eV US Short Duration Fixed Inc Gross Rank			45	22	17	--	--	--	93	26	--	--	--
Insight Short Duration	744,843,442	8.4	1.3	2.8	4.2	--	--	--	1.7	1.5	--	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			1.5	2.7	4.3	--	--	--	1.6	0.8	--	--	--
eV US Short Duration Fixed Inc Gross Rank			89	73	80	--	--	--	38	50	--	--	--
Sit Short Duration	543,009,330	6.1	2.2	4.2	6.8	--	--	--	2.5	1.3	--	--	--
BBgBarc US Govt 1-3 Yr TR			1.5	2.5	4.0	--	--	--	1.6	0.4	--	--	--
eV US Short Duration Fixed Inc Gross Rank			3	7	1	--	--	--	1	68	--	--	--
Total Cash	37,166,639	0.4	1.0	1.7	2.7	1.7	1.1	3.2	1.7	0.9	0.9	0.1	-3.0
91 Day T-Bills			0.6	1.2	2.3	1.4	0.9	0.5	1.9	0.9	0.3	0.0	0.0
Cash	36,351,488	0.4	1.1	1.7	2.7	1.7	1.1	3.0	1.7	0.9	0.9	0.1	1.4
State Street Cash/Tax Reclaims	445,319	0.0	0.0	--	--	--	--	--	--	--	--	--	--
Northern Trust Transition	369,833	0.0	0.8	--	--	--	--	--	--	--	--	--	--

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. Effective 3/1/2019 the custodian of record switched from State Street to Northern Trust. State Street Cash/Tax Reclaims reflects \$159,939 in cash and \$285,380 in potential tax reclaims at State Street after assets were transferred to Northern Trust. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

Total Fund Performance Summary (Net of Fees)

Period Ending: June 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Fund	8,854,213,078	100.0	2.8	9.5	6.0	8.1	6.1	9.7	-2.7	13.9	6.9	2.1	7.7
Policy Index			3.8	8.8	6.5	8.4	6.4	10.5	-0.9	13.7	8.9	0.6	9.0
Total Fund ex Overlay & Cash	8,794,214,807	99.3	2.8	9.4	6.1	8.1	6.1	9.7	-2.4	13.8	6.9	2.1	7.7
Policy Index			3.8	8.8	6.5	8.4	6.4	10.5	-0.9	13.7	8.9	0.6	9.0
Growth	6,448,811,587	72.8	3.3	11.9	6.4	10.1	7.4	--	-3.9	18.7	7.6	2.3	8.1
Custom Growth Benchmark			4.8	11.3	7.3	10.9	7.8	--	-2.1	19.3	10.1	0.3	8.4
Total Domestic Equity	1,088,152,791	12.3	4.4	18.0	5.4	13.6	9.7	14.5	-7.6	23.5	11.1	0.6	11.0
Russell 3000			4.1	18.7	9.0	14.0	10.2	14.7	-5.2	21.1	12.7	0.5	12.6
BlackRock Russell 1000 Index		1.5	4.2	18.8	10.0	--	--	--	-4.8	--	--	--	--
Russell 1000			4.2	18.8	10.0	--	--	--	-4.8	--	--	--	--
Jackson Square Partners		3.3	7.8	20.5	11.4	15.9	10.3	15.4	-2.4	28.7	4.8	5.6	13.4
Russell 1000 Growth			4.6	21.5	11.6	18.1	13.4	16.3	-1.5	30.2	7.1	5.7	13.0
Boston Partners		3.0	3.0	12.8	4.5	11.6	7.4	13.2	-8.9	19.7	14.7	-4.2	11.6
Russell 1000 Value			3.8	16.2	8.5	10.2	7.5	13.2	-8.3	13.7	17.3	-3.8	13.5
Emerald Advisers		2.5	3.5	25.4	4.3	17.9	11.6	17.1	-10.7	28.0	9.4	3.5	6.6
Russell 2000 Growth			2.7	20.4	-0.5	14.7	8.6	14.4	-9.3	22.2	11.3	-1.4	5.6
Ceredex		2.0	2.2	13.6	-4.0	7.7	6.0	--	-11.8	10.7	29.1	-5.0	2.7
Russell 2000 Value			1.4	13.5	-6.2	9.8	5.4	--	-12.9	7.8	31.7	-7.5	4.2
Total International Equity	1,654,950,552	18.7	3.4	14.6	3.1	7.3	2.8	6.6	-14.7	25.0	0.8	-1.6	0.0
MSCI ACWI ex USA Gross			3.2	14.0	1.8	9.9	2.6	7.0	-13.8	27.8	5.0	-5.3	-3.4
MSCI EAFE Gross			4.0	14.5	1.6	9.6	2.7	7.4	-13.4	25.6	1.5	-0.4	-4.5
International Equity	967,475,714	10.9	4.6	16.7	3.2	8.2	3.3	7.0	-13.9	24.8	0.8	-1.6	0.0
MSCI ACWI ex USA Gross			3.2	14.0	1.8	9.9	2.6	7.0	-13.8	27.8	5.0	-5.3	-3.4
Pyrford		5.3	3.8	13.5	6.2	6.6	2.6	--	-10.5	19.3	3.0	-3.3	--
MSCI ACWI ex USA Value			1.6	10.0	-0.1	8.9	0.3	--	-14.0	22.7	8.9	-10.1	--
William Blair		5.6	5.3	19.9	0.5	9.8	3.9	--	-17.1	30.4	-1.8	0.0	-1.7
MSCI ACWI ex USA Growth			4.4	17.2	2.6	9.8	4.0	--	-14.4	32.0	0.1	-1.3	-2.6
Emerging Markets Equity	687,474,838	7.8	1.8	11.8	2.9	--	--	--	-15.7	--	--	--	--
MSCI Emerging Markets			0.6	10.6	1.2	--	--	--	-14.6	--	--	--	--
PIMCO RAE Emerging Markets		4.0	2.9	9.2	2.6	--	--	--	-12.6	--	--	--	--
MSCI Emerging Markets			0.6	10.6	1.2	--	--	--	-14.6	--	--	--	--
TT Emerging Markets		3.8	0.7	14.6	3.1	--	--	--	-18.9	--	--	--	--
MSCI Emerging Markets			0.6	10.6	1.2	--	--	--	-14.6	--	--	--	--

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. Effective 7/1/2018. Private Credit and Private Equity data provided by StepStone Group.

Total Fund
Performance Summary (Net of Fees)

Period Ending: June 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Global Equity	764,932,035	8.6	4.9	18.6	6.9	12.0	7.5	8.9	-8.5	22.8	6.9	1.6	4.5
MSCI ACWI			3.6	16.2	5.7	11.6	6.2	10.1	-9.4	24.0	7.9	-2.4	4.2
Artisan Partners	386,747,648	4.4	6.2	23.6	8.3	15.9	10.8	--	-8.6	31.9	4.8	8.4	3.1
MSCI ACWI			3.6	16.2	5.7	11.6	6.2	--	-9.4	24.0	7.9	-2.4	4.2
First Eagle	378,018,808	4.3	3.6	13.7	5.7	7.5	5.0	--	-8.3	14.3	10.9	-0.6	3.7
MSCI ACWI			3.6	16.2	5.7	11.6	6.2	--	-9.4	24.0	7.9	-2.4	4.2
Private Credit	427,925,306	4.8	3.6	3.2	9.2	9.1	8.8	13.4	8.3	10.4	6.9	11.6	12.3
ICE BofAML High Yield Master II +2%			3.1	11.2	9.8	9.7	6.8	11.4	-0.3	9.6	19.8	-2.7	4.5
Total High Yield	318,978,341	3.6	2.3	10.9	7.7	6.8	3.6	8.4	-3.6	6.1	13.9	-3.9	0.8
ICE BofAML High Yield Master II			2.6	10.2	7.6	7.5	4.7	9.2	-2.3	7.5	17.5	-4.6	2.5
Allianz Global Investors	318,978,341	3.6	2.3	10.9	7.7	6.8	3.6	8.3	-3.6	6.1	13.9	-3.9	0.8
ICE BofAML High Yield Master II			2.6	10.2	7.6	7.5	4.7	9.2	-2.3	7.5	17.5	-4.6	2.5
Total Real Estate	767,595,866	8.7	0.9	5.3	7.5	8.5	9.6	13.2	7.4	11.0	4.8	12.4	19.1
Real Estate Benchmark			1.2	4.3	7.0	5.8	8.1	11.0	6.7	7.1	6.7	8.3	18.8
NCREIF-ODCE			1.0	2.4	6.4	7.6	9.8	9.9	8.3	7.6	8.8	15.0	12.5
NCREIF Property Index			1.5	3.3	6.5	6.9	8.8	9.2	6.7	7.0	8.0	13.3	11.8
Adelante	74,996,736	0.8	1.9	19.6	12.6	5.3	8.1	15.5	-5.5	7.2	3.6	4.6	32.7
Wilshire REIT			1.6	17.9	10.5	4.1	7.8	15.7	-4.8	4.2	7.2	4.2	31.8
Private Equity	987,137,914	11.1	2.0	3.6	9.8	11.4	10.3	10.4	12.1	11.9	8.9	9.9	15.2
S&P 500 Index +4% (Lagged)			14.7	0.2	13.8	18.0	15.3	20.5	22.6	23.3	20.0	3.4	24.5
Risk Parity	439,120,430	5.0	5.2	--	--	--	--	--	--	--	--	--	--
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			3.6	--	--	--	--	--	--	--	--	--	--
AQR Global Risk Premium-EL	224,426,901	2.5	5.1	--	--	--	--	--	--	--	--	--	--
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			3.6	--	--	--	--	--	--	--	--	--	--
PanAgora Risk Parity Multi Asset	214,693,529	2.4	5.4	--	--	--	--	--	--	--	--	--	--
60% MSCI ACWI Net/40% BBgBarc Global Aggregate			3.6	--	--	--	--	--	--	--	--	--	--

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. Effective 7/1/2018. Private Credit and Private Equity data provided by StepStone Group.

**Total Fund
Performance Summary (Net of Fees)**

Period Ending: June 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Diversifying	717,754,720	8.1	1.9	4.4	3.4	1.6	0.2	2.4	-2.3	2.6	0.8	-1.8	1.7
Custom Diversifying Benchmark			1.8	4.1	4.7	3.2	3.6	4.3	1.4	4.7	4.1	2.5	5.4
Diversifying Fixed Income	517,968,820	5.8	2.6	5.8	5.2	1.4	2.3	3.4	-2.0	2.6	2.3	1.1	6.1
AFL-CIO	332,843,870	3.8	3.3	6.0	7.9	2.2	2.8	3.7	0.2	3.2	1.9	1.1	6.1
BBgBarc US Aggregate TR			3.1	6.1	7.9	2.3	2.9	3.9	0.0	3.5	2.6	0.6	6.0
Wellington Real Total Return	185,124,950	2.1	1.4	5.5	0.6	1.7	-2.3	--	-5.6	1.9	-0.6	-5.4	-3.1
CPI + 4%			1.8	4.0	5.7	6.1	5.5	--	6.0	6.2	6.2	4.8	4.8
Diversifying Equity	199,785,900	2.3	0.0	0.7	--	--	--	--	--	--	--	--	--
Parametric Defensive Equity	199,785,900	2.3	0.0	0.7	--	--	--	--	--	--	--	--	--
91 Day T-Bill + 4%			1.5	3.2	--	--	--	--	--	--	--	--	--
Liquidity	1,627,648,500	18.4	1.6	3.4	5.1	--	--	--	1.7	1.4	--	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			1.5	2.7	4.3	--	--	--	1.6	0.8	--	--	--
DFA Short Credit	339,795,727	3.8	1.6	3.6	5.2	--	--	--	1.1	1.8	--	--	--
ICE BofAML 1-5 Yrs US Corp & Govt TR			1.9	3.6	5.4	--	--	--	1.4	1.3	--	--	--
Insight Short Duration	744,843,442	8.4	1.3	2.8	4.1	--	--	--	1.7	1.5	--	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			1.5	2.7	4.3	--	--	--	1.6	0.8	--	--	--
Sit Short Duration	543,009,330	6.1	2.2	4.1	6.6	--	--	--	2.3	1.1	--	--	--
BBgBarc US Govt 1-3 Yr TR			1.5	2.5	4.0	--	--	--	1.6	0.4	--	--	--
Total Cash	37,166,639	0.4	1.0	1.7	2.7	1.7	1.1	3.2	1.7	0.9	0.9	0.1	-3.0
91 Day T-Bills			0.6	1.2	2.3	1.4	0.9	0.5	1.9	0.9	0.3	0.0	0.0
Cash	36,351,488	0.4	1.1	1.7	2.7	1.7	1.1	3.0	1.7	0.9	0.9	0.1	1.4
State Street Cash/Tax Reclaims	445,319	0.0	0.0	--	--	--	--	--	--	--	--	--	--
Northern Trust Transition	369,833	0.0	0.8	--	--	--	--	--	--	--	--	--	--

Individual closed end funds are not shown in performance summary table. AQR Global Risk Premium funded 1/18/2019. PanAgora Risk Parity funded 3/15/2019. Effective 3/1/2019 the custodian of record switched from State Street to Northern Trust. State Street Cash/Tax Reclaims reflects \$159,939 in cash and \$285,380 in potential tax reclaims at State Street after assets were transferred to Northern Trust. Effective 7/1/2018, Private Credit and Private Equity data provided by StepStone Group.

Total Fund
Closed End Funds - Investment Summary

Period Ending: June 30, 2019

StepStone Group Analysis (*)													
Closing Date	Manager Name/Fund Name	Estimated Market Value as of 6/30/19 ¹	Total Commitment	% Called	Contributed Capital	Current Qtr. Change in Contributed Capital	Current Qtr. Change in Distributed Capital	Total Distributions	Remaining Commitment	Distrib./Paid-In (DPI) ²	Tot. Value/Paid-In (TVPI) ³	Latest Valuation	
Private Credit													
8/31/2015	Angelo Gordon Energy Credit Opp.	\$4,337,752	\$16,500,000	114%	\$18,750,000	\$0	\$0	\$18,829,566	\$2,319,783	1.00	1.24	3/31/2019	
12/18/2017	Stepstone CC Opportunities Fund	\$337,925,380	\$770,000,000	43%	\$328,521,676	\$78,845,579	\$8,202	\$3,940,538	\$445,403,225	0.01	1.04	3/31/2019	
7/1/2006	Torchlight II	\$1,145,418	\$128,000,000	171%	\$218,263,562	\$0	\$0	\$207,716,693	\$0	0.95	0.96	3/31/2019	
12/12/2008	Torchlight III	\$0	\$75,000,000	112%	\$83,825,058	\$0	\$0	\$124,835,174	\$0	1.49	1.49	12/31/2018	
8/1/2012	Torchlight IV	\$18,576,277	\$60,000,000	141%	\$84,640,541	\$61,853	\$2,677,684	\$96,288,144	\$0	1.14	1.36	6/30/2019	
3/12/2015	Torchlight V	\$65,940,479	\$75,000,000	80%	\$60,000,000	\$7,500,000	\$0	\$7,486,557	\$15,000,000	0.12	1.22	3/31/2019	
		Total Private Credit	\$427,925,306										
		% of Portfolio (Market Value)											
												4.8%	

*All Data provided by StepStone Group
¹Latest valuation + capital calls - distributions
²(DPI) is equal to (capital returned / capital called)
³(TVPI) is equal to (market value + capital returned) / capital called

Total Fund
Closed End Funds - Investment Summary **Period Ending: June 30, 2019**

Verus Internal Analysis

Inception Date	Manager Name/Fund Name	Estimated Market Value as of 6/30/2019 ³	Total Commitment	Total % Called	Capital Called	Current Qtr. Capital Called	Current Qtr. Distributions	Total Distributions ⁵	Remaining Commitment	Distrib./Paid-in (DPI) ¹	Tot. Value/Paid-in (TVPI) ²	Latest Valuation
Real Estate												
1/23/2012	Angelo Gordon Realty Fund VIII	\$23,410,841	\$80,000,000	94%	\$75,401,855	\$0	\$1,400,000	\$97,567,757	\$12,334,302	1.29	1.60	3/31/2019
12/8/2014	Angelo Gordon Realty Fund IX	\$61,419,696	\$65,000,000	86%	\$55,575,000	\$0	\$0	\$8,775,000	\$12,122,500	0.16	1.26	3/31/2019
6/23/2005	DLJ RECP III	\$21,327,120	\$75,000,000	95%	\$70,968,662	\$0	\$0	\$72,565,242	\$4,031,338	1.02	1.32	3/31/2019
2/11/2008	DLJ RECP IV	\$83,562,901	\$100,000,000	96%	\$95,713,945	\$652,323	\$11,599,192	\$79,228,902	\$4,286,055	0.83	1.70	3/31/2019
7/1/2014	DLJ RECP V	\$62,369,546	\$75,000,000	119%	\$89,111,208	\$0	\$0	\$50,780,984	\$15,764,044	0.57	1.27	3/31/2019
3/19/2019	DLJ RECP VI	\$29,349,636	\$50,000,000	59%	\$29,613,001	\$13,408,351	\$0	\$0	\$20,386,999	0.00	0.99	3/31/2019
6/17/1998	Hearststone II ⁴	-\$585	\$25,000,000	80%	\$19,932,386	\$0	\$0	\$19,952,734	\$0	1.00	1.00	3/31/2019
11/26/2007	Invesco Real Estate II	\$419,677	\$85,000,000	92%	\$78,202,813	\$0	\$0	\$100,620,489	\$6,797,187	1.29	1.29	6/30/2019
6/30/2013	Invesco Real Estate III	\$8,360,221	\$35,000,000	93%	\$32,386,423	\$0	\$0	\$36,041,941	\$2,613,577	1.11	1.37	6/30/2019
6/30/2014	Invesco Real Estate IV	\$22,246,509	\$35,000,000	85%	\$29,808,739	\$0	\$2,996,753	\$15,184,792	\$5,191,261	0.51	1.26	6/30/2019
6/30/2013	Invesco Real Estate V	\$18,474,809	\$75,000,000	24%	\$18,018,734	\$7,384,020	\$0	\$0	\$55,981,266	0.00	1.03	6/30/2019
7/16/2013	LaSalle Income & Growth VI	\$28,455,215	\$75,000,000	95%	\$71,428,571	\$0	\$0	\$78,359,290	\$3,571,429	1.10	1.50	3/31/2019
2/28/2017	LaSalle Income & Growth VII	\$49,416,390	\$75,000,000	87%	\$64,959,341	\$7,635,483	\$15,866,036	\$27,979,894	\$20,836,646	0.43	1.19	3/31/2019
7/3/2013	Long Wharf Fund IV	\$7,333,823	\$25,000,000	100%	\$25,000,000	\$0	\$4,044,190	\$29,108,305	\$0	1.16	1.46	6/30/2019
9/30/2016	Long Wharf Fund V	\$43,311,169	\$50,000,000	100%	\$50,000,000	\$0	\$8,454,244	\$15,994,516	\$0	0.32	1.19	6/30/2019
12/31/2011	Oaktree REOF V	\$4,713,271	\$50,000,000	100%	\$50,000,000	\$0	\$360,000	\$75,028,955	\$25,750,000 ⁶	1.50	1.59	3/31/2019
9/30/2013	Oaktree REOF VI	\$32,672,167	\$80,000,000	100%	\$80,000,000	\$0	\$0	\$80,609,408	\$18,400,000 ⁶	1.01	1.42	3/31/2019
4/1/2015	Oaktree REOF VII	\$62,123,691	\$65,000,000	86%	\$56,095,000	\$0	\$0	\$4,615,000	\$13,520,000 ⁶	0.08	1.19	3/31/2019
11/10/2013	Paulson Real Estate Fund II	\$25,548,028	\$20,000,000	97%	\$19,345,623	\$0	\$0	\$5,783,386	\$654,377	0.30	1.62	3/31/2019
1/25/2012	Siguler Guiff DREOF	\$33,468,179	\$75,000,000	93%	\$69,375,000	\$0	\$1,213,363	\$89,592,711	\$5,625,000	1.29	1.77	3/31/2019
8/31/2013	Siguler Guiff DREOF II	\$49,395,194	\$70,000,000	86%	\$60,410,000	\$0	\$2,315,000	\$34,063,107	\$9,590,000	0.56	1.38	3/31/2019
1/27/2016	Siguler Guiff DREOF II Co-Inv	\$25,221,632	\$25,000,000	82%	\$20,537,862	\$0	\$662,500	\$1,634,801	\$4,462,138	0.08	1.31	3/31/2019
Total Closed End Real Estate		\$692,599,130	\$1,310,000,000	89%	\$1,161,884,164	\$54,430,177	\$52,378,609	\$923,487,215	\$242,918,118	0.79	1.39	
% of Portfolio (Market Value)		7.8%										

¹(DPI) is equal to (capital returned / capital called)
²(TVPI) is equal to (market value + capital returned) / capital called
³Latest valuation + capital calls - distributions
⁴No further capital to be called
⁵Total distributions may include recallable distributions
⁶Remaining commitment includes recallable distributions

Total Fund Closed End Funds - Investment Summary

Period Ending: June 30, 2019

StepStone Group Analysis (*)

Closing Date	Manager Name/Fund Name	Estimated Market Value as of 6/30/19 ¹	Total Commitment	Total % Called	Contributed Capital	Current Qtr. Change in Contributed Capital	Current Qtr. Change in Distributed Capital	Total Distributions	Remaining Commitment	Distrib./Paid-In (DPI) ²	Tot. Value/Paid-In (TVPI) ³	Latest Valuation
Private Equity & Venture Capital												
2/11/2004	Adams Street Partners	\$148,604,651	\$210,000,000	88%	\$185,023,125	\$1,740,000	\$6,142,677	\$142,904,125	\$24,976,875	0.77	1.58	3/31/2019
12/31/2008	Adams Street Partners II	\$8,785,571	\$30,000,000	95%	\$28,365,000	\$0	\$0	\$39,234,007	\$1,635,000	1.38	1.69	3/31/2019
12/31/2008	Adams Street Partners - Fund 5	\$21,660,433	\$40,000,000	77%	\$30,611,900	\$0	\$1,359,929	\$15,544,651	\$9,388,100	0.51	1.22	3/31/2019
1/18/1996	Adams Street Partners - BPF	\$1,996,163	\$59,565,614	97%	\$57,517,409	\$0	\$0	\$102,566,990	\$2,048,205	1.78	1.82	3/31/2019
3/31/2016	Adams Street Venture Innovation	\$37,607,512	\$75,000,000	46%	\$34,162,500	\$5,250,000	\$0	\$0	\$40,837,500	0.00	1.10	3/31/2019
5/18/2018	AE Industrial Partners Fund II, LP	\$2,140,809	\$35,000,000	8%	\$2,642,467	\$2,642,467	\$0	\$0	\$32,357,533	0.00	0.81	3/31/2019
11/27/2013	Aether Real Assets III	\$20,369,595	\$25,000,000	89%	\$22,137,883	\$900,210	\$95,724	\$3,417,486	\$4,741,809	0.15	1.07	3/31/2019
11/30/2013	Aether Real Assets IV	\$49,397,061	\$50,000,000	97%	\$48,417,391	\$1,165,097	\$395,202	\$8,149,599	\$4,355,671	0.17	1.19	3/31/2019
1/30/2016	Aether Real Assets V	\$35,307,194	\$50,000,000	63%	\$31,628,317	\$4,598,108	\$0	\$1,881,849	\$20,240,874	0.06	1.18	3/31/2019
11/26/2003	Bay Area Equity Fund I	\$2,412,102	\$10,000,000	100%	\$10,000,000	\$0	\$0	\$2,026,313	\$0	0.20	1.33	3/31/2019
11/26/2003	Bay Area Equity Fund II	\$11,244,921	\$10,000,000	100%	\$10,000,000	\$0	\$0	\$49,128,304	\$0	1.68	1.68	9/30/2018
1/16/2008	Carpenter Bancfund	\$0	\$30,000,000	98%	\$29,314,657	\$0	\$0	\$0	\$0	0.21	1.27	3/31/2019
6/30/2013	Commonfund	\$45,952,245	\$50,000,000	87%	\$43,324,995	\$0	\$1,775,214	\$8,882,790	\$6,675,005	0.21	1.27	3/31/2019
11/26/2003	EIF US Power Fund I	\$0	\$30,000,000	130%	\$38,960,280	\$0	\$0	\$64,488,378	\$0	1.65	1.65	12/27/2018
7/15/2005	EIF US Power Fund II	\$8,089,512	\$50,000,000	130%	\$65,029,556	\$0	\$372,975	\$72,183,801	\$0	1.11	1.23	3/31/2019
5/31/2007	EIF US Power Fund III	\$18,524,452	\$65,000,000	110%	\$71,409,097	\$0	\$168,074	\$72,760,158	\$0	1.02	1.28	3/31/2019
8/31/2010	EIF US Power Fund IV	\$47,225,035	\$65,000,000	124%	\$61,960,263	\$0	\$296,279	\$25,522,135	\$1,786,029	0.41	1.17	3/31/2019
11/28/2016	EIF US Power Fund V	\$41,099,631	\$50,000,000	89%	\$44,311,703	\$0	\$12,500	\$6,057,213	\$9,878,568	0.14	1.06	3/31/2019
2/21/2019	Genstar Capital Partners IX, L.P.	\$0	\$50,000,000	0%	\$0	\$0	\$0	\$0	\$50,000,000	-	-	-
2/12/2004	Nogales	\$0	\$15,000,000	120%	\$18,026,408	\$0	\$0	\$13,856,249	\$0	0.77	0.77	12/22/2017
2/28/2010	Oaktree PIF 2009	\$6,955,501	\$40,000,000	87%	\$34,816,108	\$0	\$0	\$40,787,270	\$6,308,961	1.17	1.37	3/31/2019
8/15/2013	Ocean Avenue Fund II	\$29,881,940	\$30,000,000	87%	\$26,100,000	\$0	\$0	\$10,940,744	\$3,900,000	0.42	1.56	3/31/2019
4/15/2016	Ocean Avenue Fund III	\$48,986,047	\$50,000,000	78%	\$39,000,000	\$6,000,000	\$0	\$6,000,000	\$11,000,000	0.15	1.41	3/31/2019
11/30/2007	Paladin III	\$29,196,629	\$25,000,000	133%	\$33,190,113	\$131,245	\$307,796	\$23,902,748	\$523,382	0.72	1.60	3/31/2019
8/22/2011	Pathway 6	\$36,842,746	\$40,000,000	94%	\$37,637,493	\$305,695	\$1,563,398	\$21,252,810	\$4,508,356	0.56	1.54	3/31/2019
7/10/2013	Pathway 7	\$70,256,174	\$70,000,000	91%	\$63,944,537	\$1,431,282	\$1,536,217	\$18,106,535	\$8,765,254	0.28	1.38	3/31/2019
11/23/2015	Pathway 8	\$42,821,144	\$50,000,000	70%	\$35,037,876	\$1,179,895	\$536,344	\$4,498,717	\$16,446,392	0.13	1.35	3/31/2019
1/19/1999	Pathway	\$17,154,026	\$125,000,000	100%	\$124,729,942	\$145,490	\$3,136,335	\$171,523,084	\$10,995,187	1.38	1.51	3/31/2019
7/31/2009	Pathway 2008	\$19,806,523	\$30,000,000	96%	\$28,632,985	\$74,551	\$1,479,163	\$27,129,692	\$3,471,535	0.94	1.63	3/31/2019
8/31/2013	Siguler Gulf CCCERA Opportunities	\$163,795,020	\$200,000,000	73%	\$146,355,741	\$4,950,000	\$5,592,214	\$47,497,485	\$61,224,772	0.32	1.44	3/31/2019
5/18/2018	Sirius Partners IV, L.P.	\$344,196	\$50,000,000	60%	\$29,999,802	\$0	\$0	\$42,638,494	\$49,356,046	1.42	1.43	12/31/2018
6/28/2019	TPG Healthcare Partners, L.P.	\$4,943,092	\$35,000,000	15%	\$5,340,331	\$0	\$0	\$0	\$29,659,669	0.00	0.93	3/31/2019
5/24/2019	Trident VIII, L.P.	\$0	\$24,000,000	0%	\$0	\$0	\$0	\$0	\$24,000,000	-	-	-
12/8/2015	Wastewater Opportunity Fund	\$15,737,989	\$25,000,000	73%	\$18,184,010	\$0	\$0	\$2,031,922	\$6,838,217	0.11	0.98	3/31/2019
Total Private Equity and Venture Capital		\$987,137,914	\$1,818,565,614	80%	\$1,456,011,889	\$30,514,041	\$24,964,412	\$1,081,911,580	\$485,918,939	0.74	1.42	
										11.1%		

% of Portfolio (Market Value)

* All Data provided by StepStone Group
¹Latest valuation + capital calls - distributions
²(DPI) is equal to (capital returned / capital called)
³(TVPI) is equal to (market value + capital returned) / capital called

Total Fund

Closed End Funds - IRR Summary

Period Ending: June 30, 2019

Private Credit	Inception	Fund Level (G)	CCCERA (G)	Fund Level (N)	CCCERA (N)	IRR Date
Angelo Gordon Energy Cred Opp.	09/24/2015	-	-	-	10.4%	03/31/2019
Stepstone CC Opportunities Fund ¹	02/02/2018	-	-	-	-	-
Torchlight II	07/01/2006	0.0%	0.2%	-1.2%	-1.0%	06/30/2019
Torchlight III	12/12/2008	18.3%	16.3%	13.7%	13.8%	06/30/2018
Torchlight IV	08/01/2012	13.7%	13.3%	11.1%	10.4%	06/30/2019
Torchlight V	03/12/2015	19.4%	19.4%	12.6%	12.5%	03/31/2019
Real Estate	Inception	Fund Level (G)	CCCERA (G)	Fund Level (N)	CCCERA (N)	IRR Date
Angelo Gordon VIII	01/23/2012	-	-	-	15.4%	03/31/2019
Angelo Gordon IX	12/08/2014	-	-	-	12.2%	03/31/2019
DLJ RECP III	06/23/2005	0.0%	0.0%	-2.0%	-2.0%	03/31/2019
DLJ RECP IV	02/11/2008	7.0%	7.0%	4.0%	4.0%	03/31/2019
DLJ RECP V	07/01/2014	23.0%	23.0%	13.0%	13.0%	03/31/2019
DLJ RECP VI ¹	03/19/2019	-	-	-	-	-
Hearthstone II	06/17/1998	-	30.1%	-	30.1%	03/31/2019
Invesco Fund III	06/30/2013	16.1%	-	12.6%	-	03/31/2019
Invesco Fund IV	06/30/2014	18.2%	-	13.4%	-	03/31/2019
Invesco Fund V ¹	02/20/2019	-	-	-	-	-
LaSalle Income & Growth VI	07/16/2013	15.1%	15.1%	12.5%	12.5%	03/31/2019
LaSalle Income & Growth VII	02/28/2017	14.5%	14.9%	11.7%	11.9%	03/31/2019
Long Wharf IV	07/03/2013	17.3%	17.4%	12.6%	12.6%	06/30/2019
Long Wharf V	09/30/2016	16.5%	18.1%	10.8%	11.7%	06/30/2019
Oaktree REOF V	12/31/2011	16.9%	-	12.5%	-	06/30/2019
Oaktree REOF VI	09/30/2013	14.5%	-	9.7%	-	06/30/2019
Oaktree REOF VII	04/01/2015	54.5%	-	31.0%	-	06/30/2019
Paulson	11/10/2013	14.6%	-	13.1%	-	12/31/2018
Siguler Guff I	01/25/2012	14.4%	17.1%	12.8%	14.0%	03/31/2019
Siguler Guff II	08/31/2013	13.1%	12.9%	11.7%	10.6%	03/31/2019
Siguler Guff DREOF II Co-Inv	01/27/2016	15.1%	15.3%	14.0%	11.9%	03/31/2019

¹ Manager has yet to report IRR figure due to no capital invested or meaningful distributions.

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

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

Total Fund

Closed End Funds - IRR Summary

Period Ending: June 30, 2019

Private Equity & Venture Capital	Closing Date	Fund Level (G)	CCERA (G)	Fund Level (N)	CCERA (N)	IRR Date
Adams Street Partners	2/11/2004	-	12.8%	-	10.3%	3/31/2019
Adams Street Partners II	12/31/2008	-	17.1%	-	14.5%	3/31/2019
Adams Street Partners - Fund 5	12/31/2008	-	8.9%	-	6.6%	3/31/2019
Adams Street Partners Venture	1/18/1996	-	23.6%	-	15.3%	3/31/2019
Adams Street Partners - BPF	3/31/2016	-	14.3%	-	11.6%	3/31/2019
AE Industrial Partners Fund II, LP ¹	5/18/2018	-	-	-	-	-
Aether Real Assets III	11/27/2013	5.3%	-	2.8%	2.8%	3/31/2019
Aether Real Assets III Surplus	11/30/2013	7.4%	-	5.9%	5.9%	3/31/2019
Aether Real Assets IV	1/30/2016	17.7%	-	12.9%	1.8%	3/31/2019
Bay Area Equity Fund I	11/26/2003	25.8%	25.8%	23.2%	23.2%	3/31/2019
Bay Area Equity Fund II	11/26/2003	5.7%	5.7%	4.7%	4.7%	3/31/2019
CommonFund	6/30/2013	-	-	-	10.0%	3/31/2019
Energy Investor Fund	11/26/2003	33.5%	34.7%	28.5%	28.3%	3/31/2019
Energy Investor Fund II	7/15/2005	6.5%	6.0%	3.8%	3.4%	3/31/2019
Energy Investor Fund III	5/31/2007	6.7%	6.7%	4.2%	4.2%	3/31/2019
Energy Investor Fund IV	8/31/2010	9.9%	10.0%	5.9%	5.7%	3/31/2019
Energy Investor Fund V	11/28/2016	15.5%	14.2%	8.1%	7.2%	3/31/2019
Genstar Capital Partners IX, L.P. ¹	2/21/2019	-	-	-	-	-
Oaktree PIF 2009	2/28/2010	7.1%	-	6.9%	-	6/30/2019
Ocean Avenue II	8/15/2013	-	-	15.6%	-	3/31/2019
Ocean Avenue III	4/15/2016	-	-	35.6%	-	3/31/2019
Paladin III	11/30/2007	17.3%	-	9.6%	-	3/31/2019
Pathway 6	8/22/2011	16.0%	16.0%	13.4%	13.4%	3/31/2019
Benchmark ⁴		14.3%	-	-	-	3/31/2019
Pathway 7	7/10/2013	15.9%	15.9%	13.1%	13.1%	3/31/2019
Benchmark ⁵		14.1%	-	-	-	3/31/2019
Pathway 8	11/23/2015	21.5%	22.1%	19.3%	20.1%	3/31/2019
Benchmark ⁶		13.7%	-	-	-	3/31/2019
Pathway Private Equity Fund	1/19/1999	10.3%	10.3%	8.4%	8.4%	3/31/2019
Benchmark ⁷		10.4%	-	-	-	3/31/2019
Pathway Private Equity Fund 2008	7/31/2009	14.7%	14.7%	12.1%	12.1%	3/31/2019
Benchmark ⁸		13.2%	-	-	-	3/31/2019
Siguler Guff CCCERA Opportunities	6/3/2014	19.5%	20.6%	18.9%	17.4%	3/31/2019
Siguler Guff Secondary Opportunities	8/31/2013	55.7%	413.2%	50.0%	202.6%	12/31/2018
Siris Partners IV, L.P. ¹	5/18/2018	-	-	-	-	-
TPG Healthcare Partners, L.P. ¹	6/28/2019	-	-	-	-	-
Trident VIII, L.P. ¹	5/24/2019	-	-	-	-	-
Wastewater Opportunity Fund	12/8/2015	8.7%	-	-1.5%	-	12/31/2018

¹Manager has yet to report IRR figure due to no capital invested or meaningful distributions.

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

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

⁴Private IQ global all private equity median pooled return for vintage years 2011-2014, as of March 31, 2019.

⁵Private IQ global all private equity median pooled return for vintage years 2012-2016, as of March 31, 2019.

⁶Private IQ global all private equity median pooled return for vintage years 2015-2018, as of March 31, 2019.

⁷Private IQ global all private equity median pooled return for vintage years 1999-2011, as of March 31, 2019.

⁸Private IQ global all private equity median pooled return for vintage years 2008-2014, as of March 31, 2019.

Total Fund
 Performance Analysis - 5 Years (Net of Fees) Period Ending: June 30, 2019

5 Years

	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
Jackson Square Partners	10.34%	-3.05%	13.33%	-2.38%	0.95	5.00%	0.86	0.71	-0.61	86.99%	104.85%
Boston Partners	7.41%	-0.05%	13.02%	-0.55%	1.07	2.90%	0.95	0.50	-0.02	104.73%	103.66%
Emerald Advisers	11.55%	2.93%	18.02%	2.94%	1.00	4.88%	0.93	0.59	0.60	108.62%	95.53%
Ceredex	6.05%	0.66%	15.57%	1.26%	0.89	5.72%	0.88	0.33	0.12	89.12%	92.77%
Pyrford	2.64%	2.34%	10.31%	2.43%	0.72	5.60%	0.83	0.17	0.42	64.31%	70.71%
William Blair	3.86%	-0.14%	12.32%	0.01%	0.96	2.70%	0.95	0.24	-0.05	91.35%	95.62%
Artisan Partners	10.78%	4.62%	13.22%	4.39%	1.04	5.04%	0.86	0.75	0.92	126.09%	92.19%
First Eagle	4.98%	-1.18%	8.70%	0.67%	0.70	4.51%	0.90	0.47	-0.26	57.39%	68.77%
Allianz Global Investors	3.62%	-1.07%	5.46%	-0.84%	0.95	1.20%	0.95	0.50	-0.90	88.83%	101.91%
Adelante	8.08%	0.24%	13.96%	0.65%	0.95	1.81%	0.99	0.52	0.13	91.20%	93.64%
AFL-CIO	2.84%	-0.11%	2.69%	0.22%	0.89	0.75%	0.94	0.73	-0.15	87.21%	81.08%
Wellington Real Total Return	-2.32%	-7.82%	5.63%	-9.58%	1.32	5.48%	0.06	-0.57	-1.43	-14.93%	1,080.85%

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

Total Fund Investment Fund Fee Analysis **Period Ending: June 30, 2019**

Name	Asset Class	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
BlackRock Russell 1000 Index	Growth	0.03% of Assets	\$135,787,891	\$40,736	0.03%
Jackson Square Partners	Growth	0.50% of First 100.0 Mil, 0.40% of Next 150.0 Mil, 0.35% Thereafter	\$288,330,354	\$1,234,156	0.43%
Boston Partners	Growth	0.50% of First 25.0 Mil, 0.30% Thereafter	\$267,319,996	\$851,960	0.32%
Emerald Advisers	Growth	0.75% of First 10.0 Mil, 0.60% Thereafter	\$222,647,710	\$1,350,886	0.61%
Ceredex	Growth	0.85% of First 10.0 Mil, 0.68% of Next 40.0 Mil, 0.51% Thereafter	\$174,066,839	\$989,741	0.57%
Pyrford	Growth	0.70% of First 50.0 Mil, 0.50% of Next 50.0 Mil, 0.35% Thereafter	\$472,477,417	\$1,903,671	0.40%
William Blair	Growth	0.80% of First 20.0 Mil, 0.60% of Next 30.0 Mil, 0.50% of Next 50.0 Mil, 0.45% of Next 50.0 Mil, 0.40% of Next 50.0 Mil, 0.30% Thereafter	\$494,998,297	\$1,899,995	0.38%
PIMCO RAE Emerging Markets	Growth	0.75% of First 50.0 Mil, 0.68% of Next 50.0 Mil, 0.50% of Next 100.0 Mil, 0.45% Thereafter	\$353,821,590	\$1,904,697	0.54%
TT Emerging Markets	Growth	0.70% of First 100.0 Mil, 0.65% of Next 100.0 Mil, 0.60% Thereafter	\$333,653,248	\$2,151,919	0.64%
Artisan Partners	Growth	0.75% of Assets	\$386,747,648	\$2,900,607	0.75%
First Eagle	Growth	0.75% of Assets	\$378,018,808	\$2,835,141	0.75%
Allianz Global Investors	Growth	0.50% of First 50.0 Mil, 0.40% of Next 50.0 Mil, 0.35% Thereafter	\$318,978,341	\$1,216,424	0.38%
AQR Global Risk Premium-EL	Growth	0.38% of Assets	\$224,426,901	\$852,822	0.38%

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

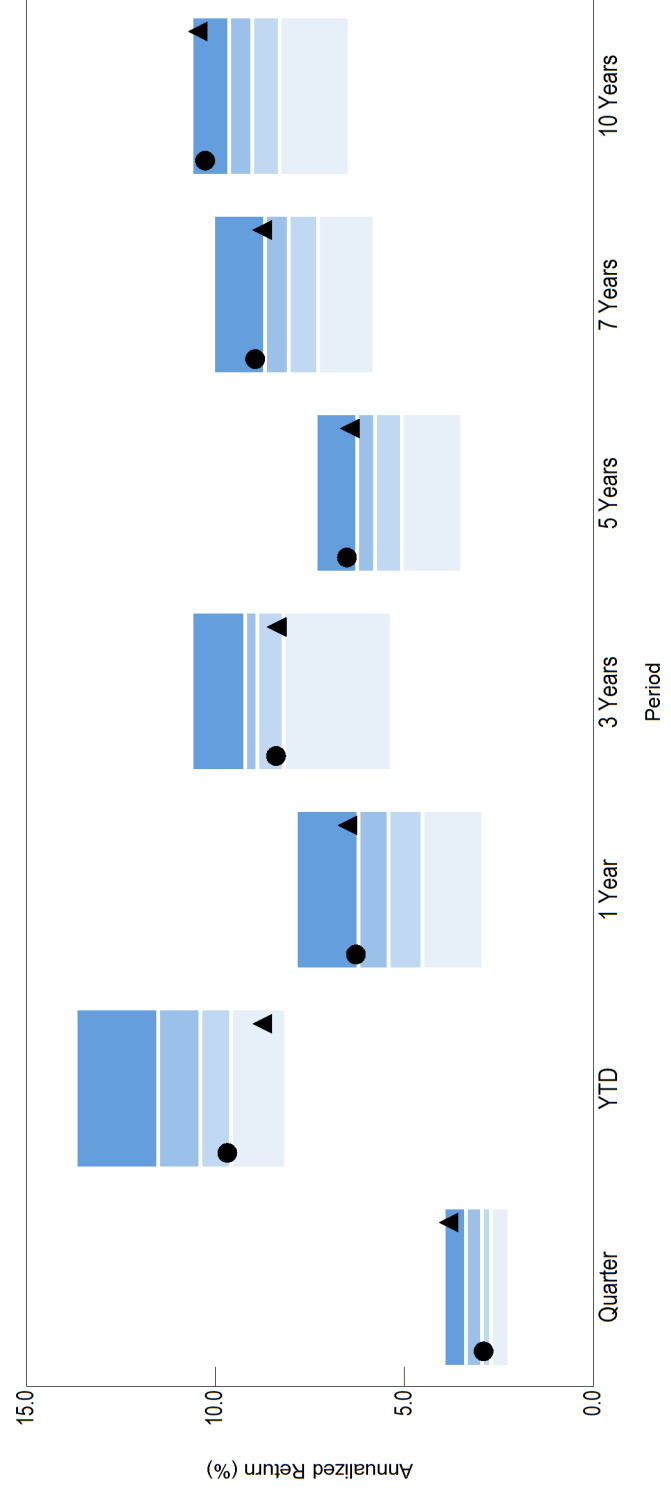
**Total Fund
Investment Fund Fee Analysis** **Period Ending: June 30, 2019**

Name	Asset Class	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
PanAgora Risk Parity Multi Asset	Growth	0.35% of Assets	\$214,693,529	\$751,427	0.35%
AFL-CIO	Diversifying	0.43% of Assets	\$332,843,870	\$1,431,229	0.43%
Wellington Real Total Return	Diversifying	0.35% of Assets	\$185,124,950	\$647,937	0.35%
Parametric Defensive Equity	Diversifying	0.42% of First 200.0 Mil, 0.39% Thereafter	\$199,785,900	\$839,101	0.42%
DFA Short Credit	Liquidity	0.20% of First 25.0 Mil, 0.10% Thereafter	\$339,795,727	\$364,796	0.11%
Insight Short Duration	Liquidity	0.06% of First 500.0 Mil, 0.05% of Next 500.0 Mil, 0.04% Thereafter	\$744,843,442	\$422,422	0.06%
Sit Short Duration	Liquidity	0.15% of Assets	\$543,009,330	\$814,514	0.15%

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

Total Fund
Peer Universe Comparison: Cumulative Performance (Gross of Fees) Period Ending: June 30, 2019

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

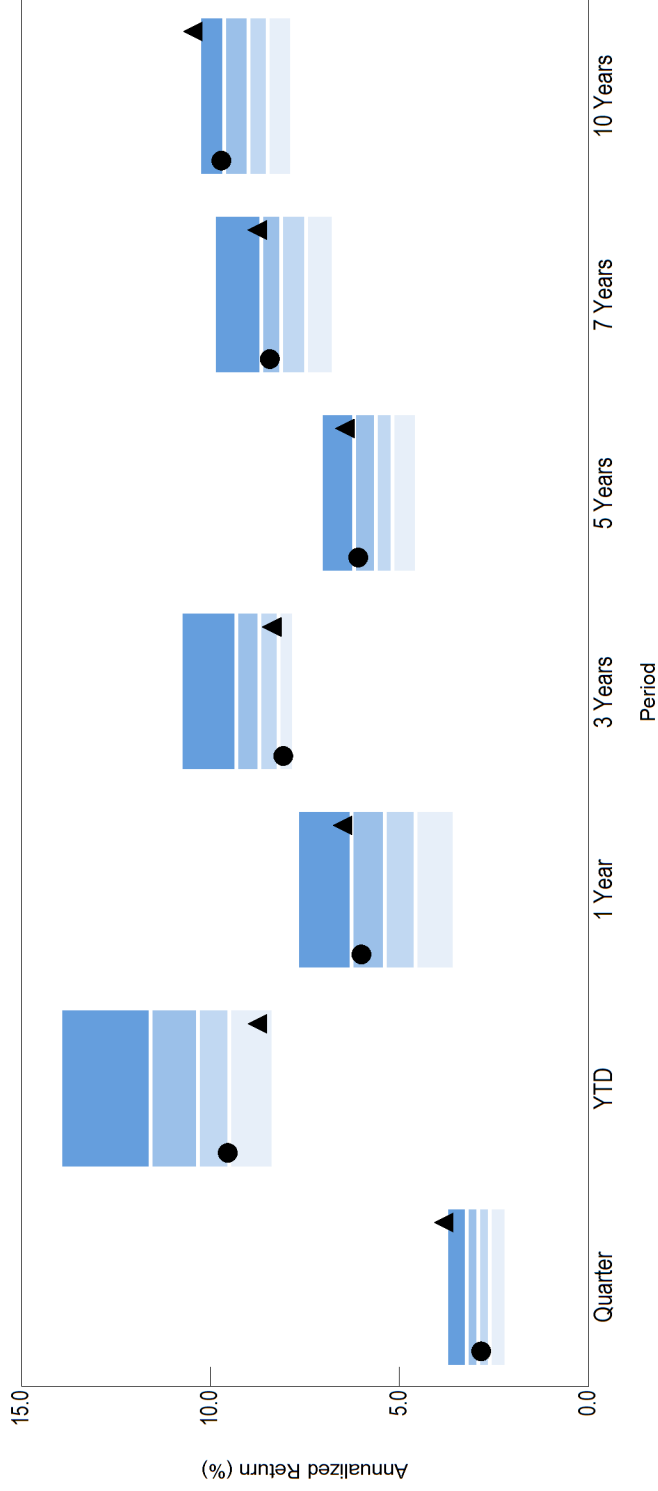


Return (Rank)	Quarter	YTD	1 Year	3 Years	5 Years	7 Years	10 Years
5th Percentile	2.2	8.1	2.9	5.4	3.5	5.8	6.5
25th Percentile	2.7	9.6	4.5	8.2	5.1	7.3	8.3
Median	3.0	10.4	5.4	8.9	5.8	8.1	9.0
75th Percentile	3.4	11.5	6.2	9.2	6.3	8.7	9.6
95th Percentile	4.0	13.7	7.9	10.6	7.3	10.1	10.6
# of Portfolios	88	88	88	88	84	82	77
● Total Fund	2.2	9.6	4.5	8.2	5.1	7.3	8.3
▲ Policy Index	3.4	10.4	5.4	8.9	5.8	8.1	9.0

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

Total Fund Peer Universe Comparison: Cumulative Performance (Net of Fees) Period Ending: June 30, 2019

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

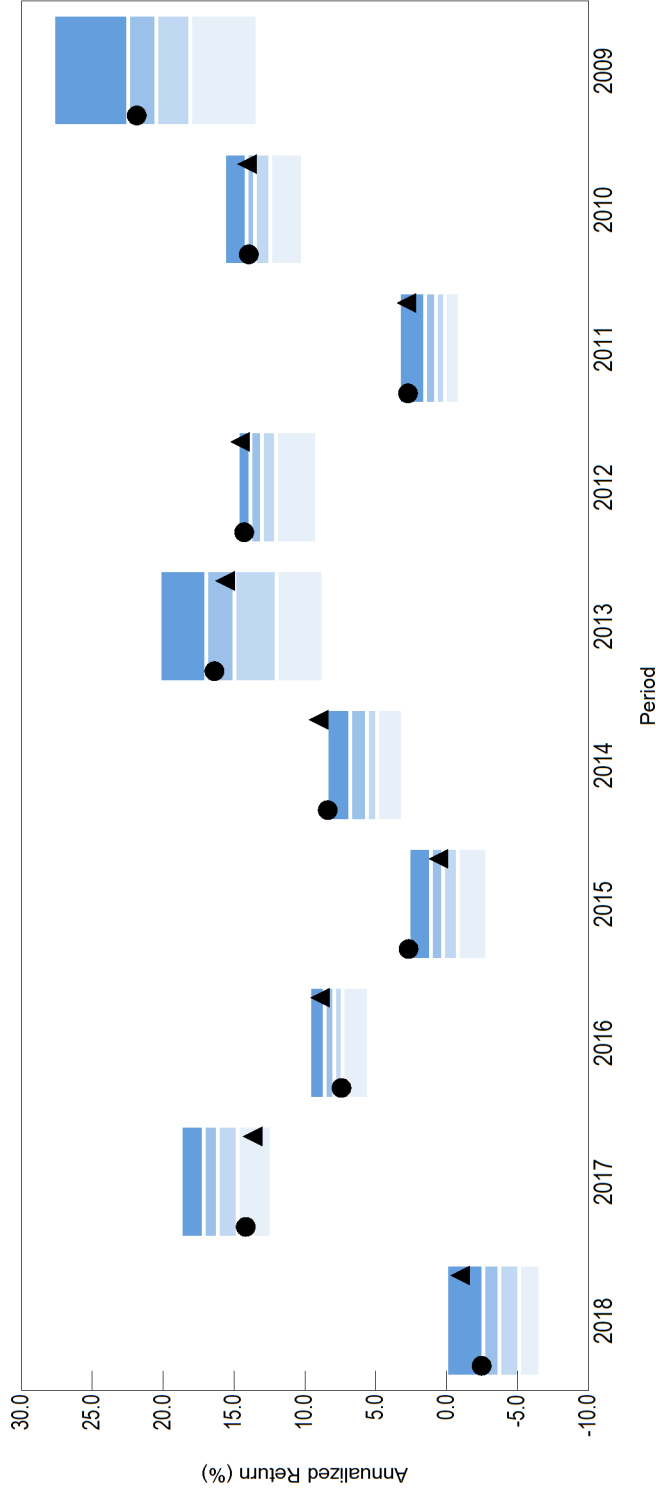


Return (Rank)

5th Percentile	3.8	7.7	10.8	7.1	9.9	10.3
25th Percentile	3.2	6.3	9.3	6.2	8.7	9.6
Median	2.9	5.4	8.7	5.6	8.1	9.0
75th Percentile	2.6	4.6	8.2	5.2	7.5	8.5
95th Percentile	2.2	3.5	7.8	4.5	6.7	7.9
# of Portfolios	78	77	77	73	71	65
● Total Fund	2.8 (57)	6.0 (32)	8.1 (89)	6.1 (32)	8.4 (32)	9.7 (22)
▲ Policy Index	3.8 (5)	6.5 (22)	8.4 (64)	6.4 (17)	8.8 (23)	10.5 (3)

Total Fund
Peer Universe Comparison: Consecutive Periods (Gross of Fees) Period Ending: June 30, 2019

Total Fund Consecutive Periods vs. InvMetrics Public DB > \$1B Gross

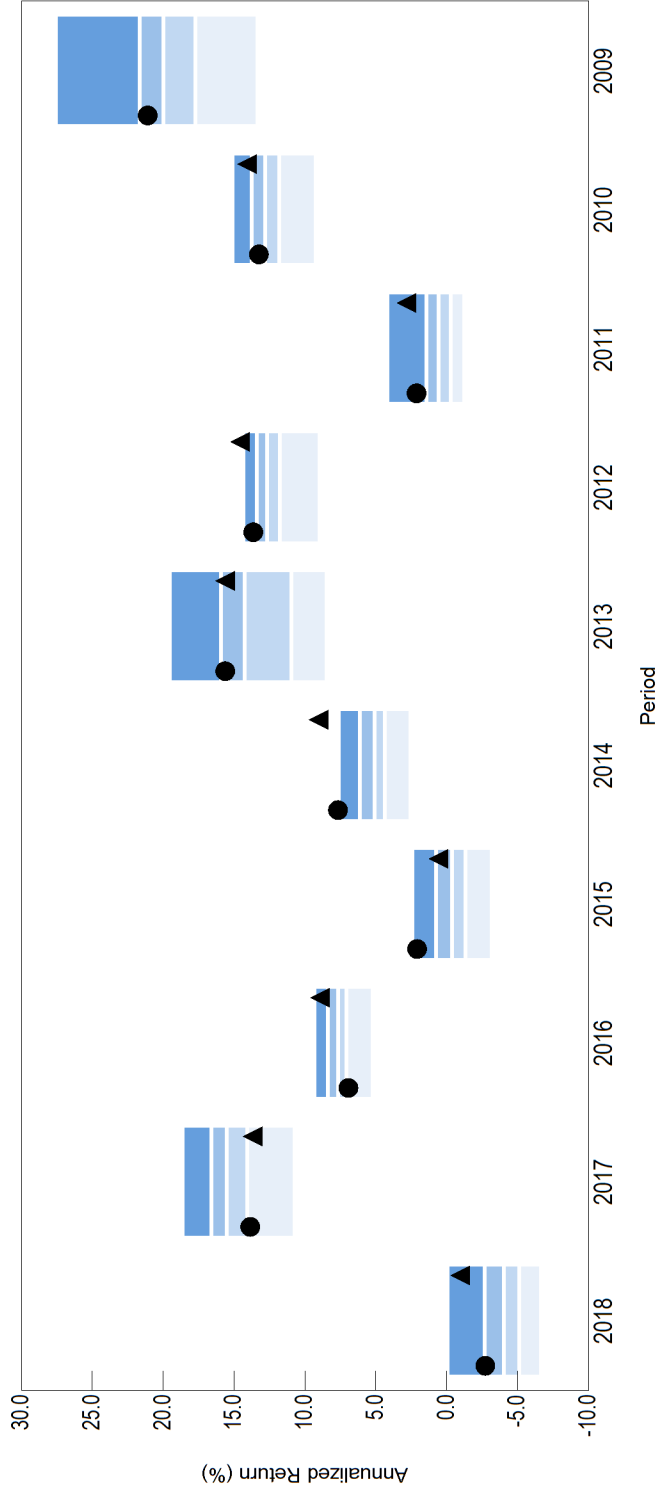


Period	5th Percentile	25th Percentile	Median	75th Percentile	95th Percentile	# of Portfolios	Total Fund	Policy Index
2018	-6.6	-5.1	-3.7	-2.6	-0.0	71	-2.5 (25)	-0.9 (8)
2019	12.4	14.8	16.2	17.2	18.8	98	14.2 (83)	13.7 (89)
2020	3.1	4.9	5.7	6.8	8.5	79	8.4 (6)	9.0 (2)
2021	-2.8	-0.7	0.3	1.1	2.7	98	2.7 (5)	0.6 (40)
2022	9.2	12.1	13.0	13.9	14.7	74	14.3 (13)	14.6 (8)
2023	8.7	12.0	15.0	17.0	20.2	67	16.4 (33)	15.6 (43)
2024	10.2	12.5	13.5	14.2	15.7	66	14.0 (29)	14.1 (27)
2025	-0.9	0.1	0.8	1.6	3.3	68	2.7 (9)	2.8 (9)
2026	13.4	18.1	20.5	22.5	27.7	66	21.9 (34)	--

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

Total Fund
Peer Universe Comparison: Consecutive Periods (Net of Fees) Period Ending: June 30, 2019

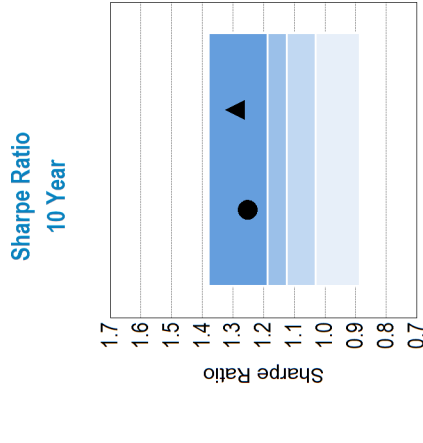
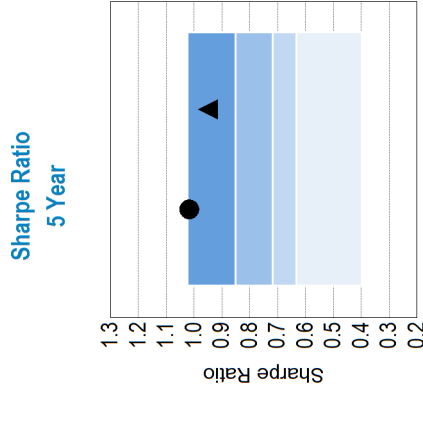
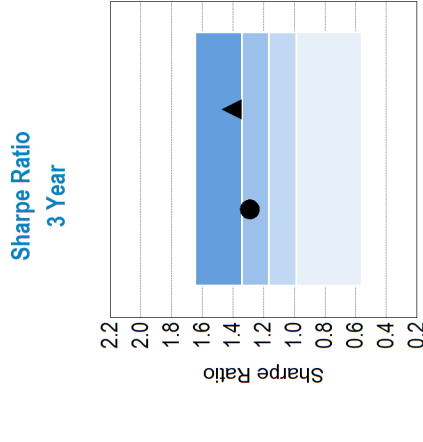
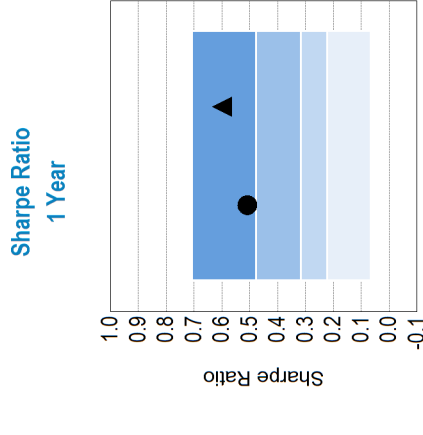
Total Fund Consecutive Periods vs. InvMetrics Public DB > \$1B Net



Return (Rank)

5th Percentile	25th Percentile	Median	75th Percentile	95th Percentile	# of Portfolios	Total Fund	Policy Index
-0.1	-2.7	-4.0	-5.1	-6.6	63	-2.7 (27)	-0.9 (8)
18.6	16.6	15.6	14.1	10.7	61	13.9 (81)	13.7 (85)
9.3	8.4	7.7	7.1	5.3	62	6.9 (78)	8.9 (13)
2.4	0.8	-0.4	-1.3	-3.2	57	2.1 (12)	0.6 (29)
7.6	6.1	5.1	4.4	2.6	55	7.7 (5)	9.0 (2)
19.5	16.0	14.3	11.0	8.5	48	15.6 (33)	15.6 (33)
14.3	13.4	12.7	11.8	9.0	44	13.6 (21)	14.6 (1)
4.2	1.5	0.6	-0.3	-1.2	42	2.1 (12)	2.8 (11)
15.1	13.8	12.8	11.8	9.3	41	13.3 (34)	14.1 (15)
27.5	21.7	20.0	17.7	13.4	40	21.1 (33)	-- (-)

Total Fund
 Sharpe Ratio Ranking (Gross of Fees) Period Ending: June 30, 2019



● Total Fund Value	0.5
● Total Fund Rank	21
▲ Policy Index Value	0.6
▲ Policy Index Rank	12
Universe 5th %tile	0.7
Universe 25th %tile	0.5
Universe Median	0.3
Universe 75th %tile	0.2
Universe 95th %tile	0.1

● Total Fund Value	1.3
● Total Fund Rank	33
▲ Policy Index Value	1.4
▲ Policy Index Rank	18
Universe 5th %tile	1.6
Universe 25th %tile	1.3
Universe Median	1.2
Universe 75th %tile	1.0
Universe 95th %tile	0.6

● Total Fund Value	1.0
● Total Fund Rank	6
▲ Policy Index Value	0.9
▲ Policy Index Rank	15
Universe 5th %tile	1.0
Universe 25th %tile	0.9
Universe Median	0.7
Universe 75th %tile	0.6
Universe 95th %tile	0.4

● Total Fund Value	1.3
● Total Fund Rank	15
▲ Policy Index Value	1.3
▲ Policy Index Rank	13
Universe 5th %tile	1.4
Universe 25th %tile	1.2
Universe Median	1.1
Universe 75th %tile	1.0
Universe 95th %tile	0.9

Domestic Equity Managers

Jackson Square Partners Manager Portfolio Overview

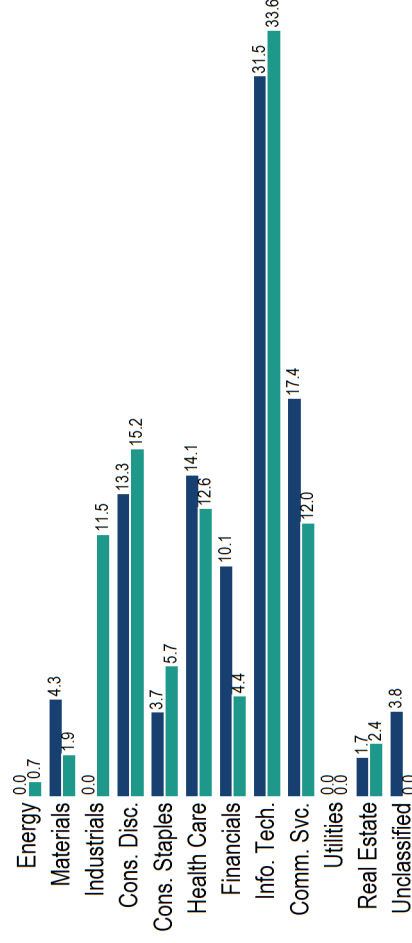
Period Ending: June 30, 2019

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

Characteristics

	Portfolio	Russell 1000 Growth
Number of Holdings	29	546
Weighted Avg. Market Cap. (\$B)	179.89	283.38
Median Market Cap. (\$B)	43.69	12.11
Price To Earnings	26.86	24.92
Price To Book	5.07	7.20
Price To Sales	2.85	2.87
Return on Equity (%)	22.10	37.58
Yield (%)	0.80	1.26
Beta	0.84	1.00

Sector Allocation (%) vs Russell 1000 Growth



Largest Holdings

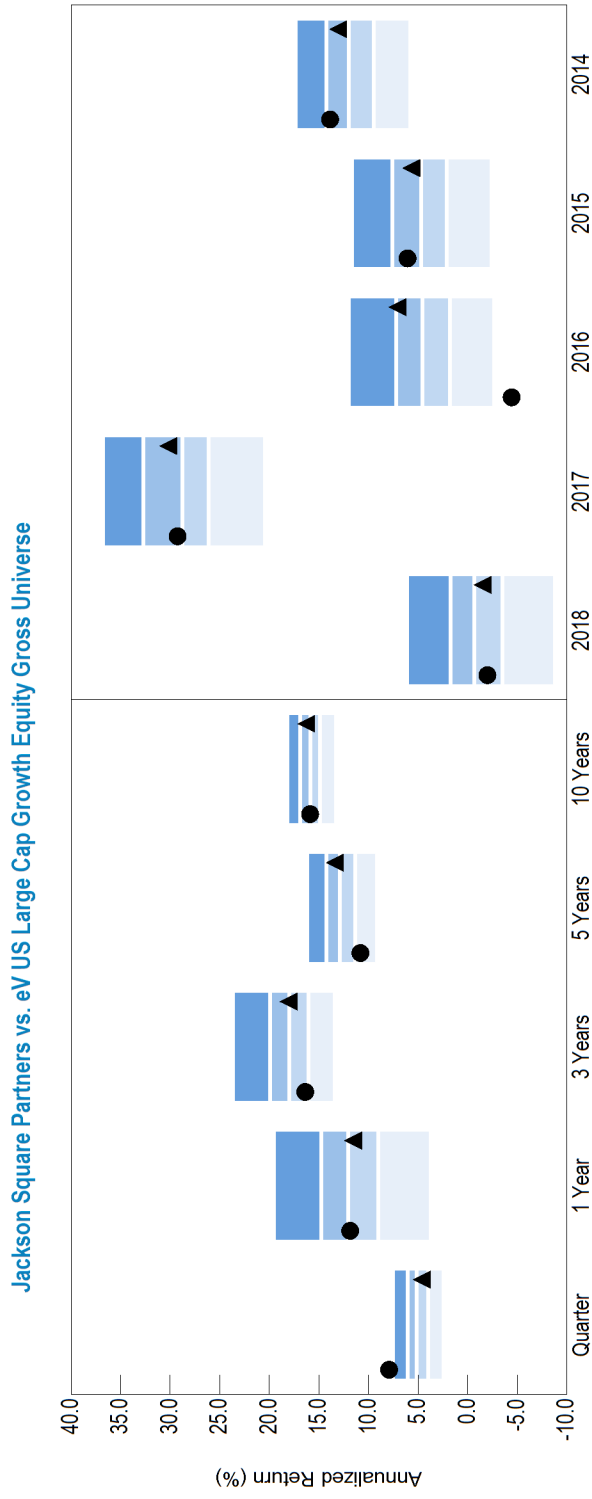
	End Weight	Return	Avg Wgt	Return	Contribution	Avg Wgt	Return	Contribution
MICROSOFT	9.69	14.00	3.31	14.00	0.46	1.27	-17.44	-0.22
IQVIA HOLDINGS	6.13	11.85	1.38	25.13	0.35	1.02	-10.03	-0.10
DOLLAR TREE	5.35	2.24	2.05	11.85	0.24	0.95	-7.99	-0.08
KKR AND A	4.85	8.13	1.16	20.30	0.23	1.05	-5.65	-0.06
BALL	4.30	21.26	1.46	13.59	0.20	0.61	-7.13	-0.04
CHARTER COMMS.CL.A	4.23	13.91	1.36	12.51	0.17	0.25	-7.88	-0.02
HASBRO	4.22	25.13	1.19	13.91	0.17	1.26	-0.88	-0.01
PAYPAL HOLDINGS	4.06	10.23	1.15	13.82	0.16	0.74	-1.06	-0.01
MASTERCARD	4.03	12.51	0.84	18.49	0.15	0.96	1.57	0.01
VISA 'A'	3.89	11.28	1.32	11.28	0.15	0.22	8.31	0.02

Top Contributors

Bottom Contributors

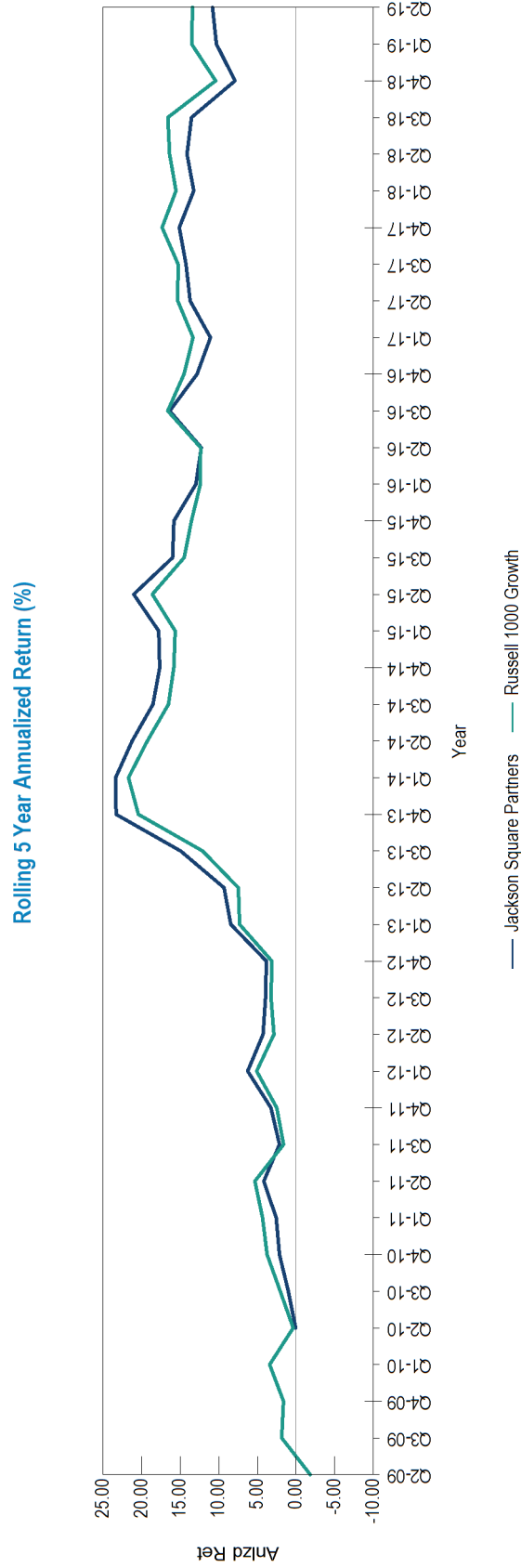
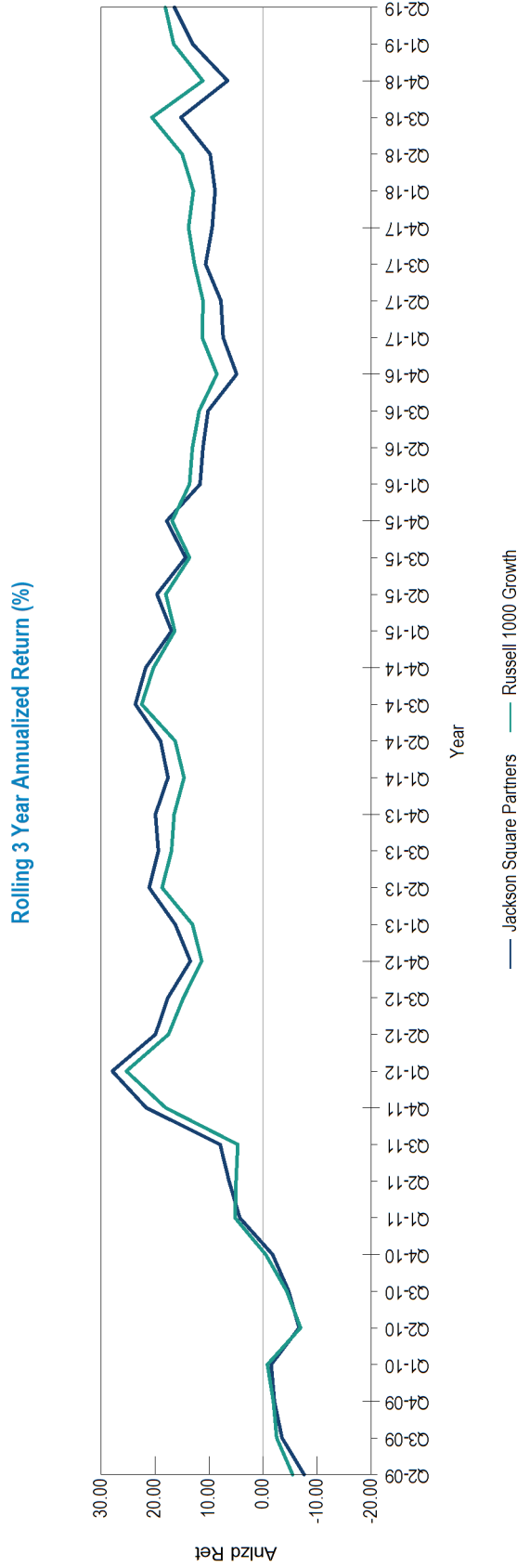
Unclassified sector allocation includes cash allocations.

Jackson Square Partners
 Manager Performance Comparisons (Gross of Fees) Period Ending: June 30, 2019



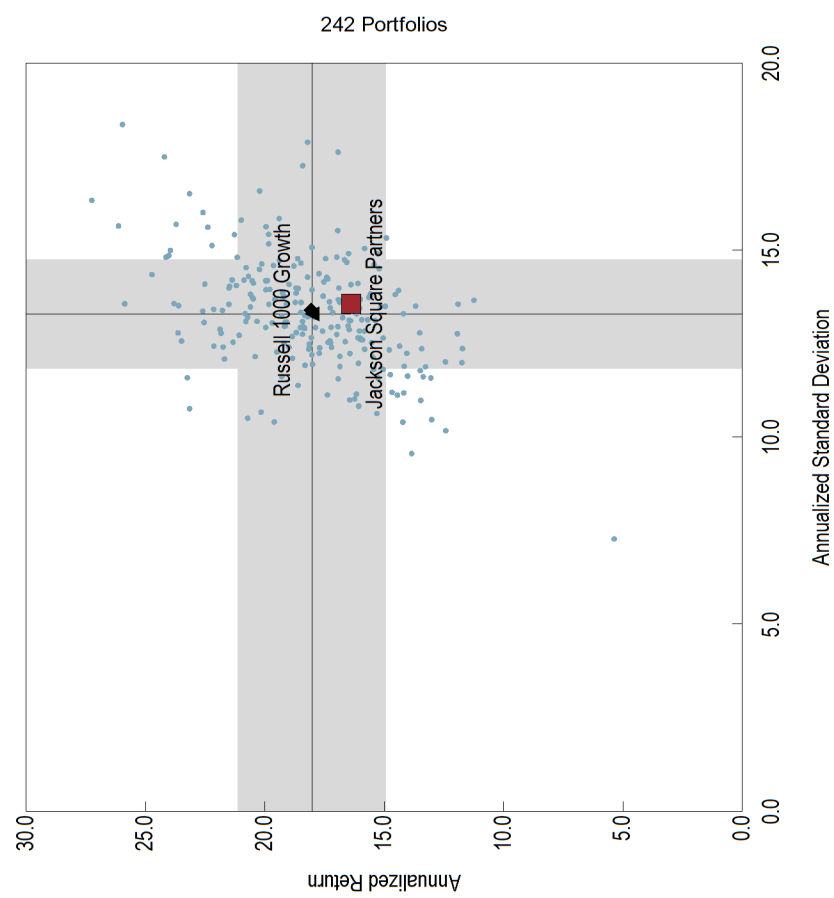
	Quarter	1 Year	3 Years	5 Years	10 Years	2018	2017	2016	2015	2014
5th Percentile	7.5	19.5	23.6	16.2	18.1	6.1	36.7	12.0	11.6	17.3
25th Percentile	6.1	14.8	20.0	14.3	16.9	1.7	32.7	7.3	7.6	14.3
Median	5.2	12.1	18.0	12.9	15.9	-0.6	28.8	4.6	4.7	12.0
75th Percentile	4.0	9.0	16.1	11.4	15.0	-3.5	26.2	1.8	2.1	9.5
95th Percentile	2.5	3.7	13.4	9.2	13.3	-8.8	20.5	-2.7	-2.4	5.8
# of Portfolios	249	249	242	237	213	255	265	282	270	291
● Jackson Square Partners	7.9 (2)	11.8 (52)	16.4 (71)	10.8 (84)	15.9 (50)	-2.0 (59)	29.3 (47)	-4.4 (98)	6.1 (37)	13.9 (31)
▲ Russell 1000 Growth	4.6 (62)	11.6 (55)	18.1 (49)	13.4 (41)	16.3 (39)	-1.5 (57)	30.2 (42)	7.1 (26)	5.7 (42)	13.0 (38)

Jackson Square Partners
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: June 30, 2019



Jackson Square Partners
 Risk vs. Return 3 & 5 Year (Gross of Fees) Period Ending: June 30, 2019

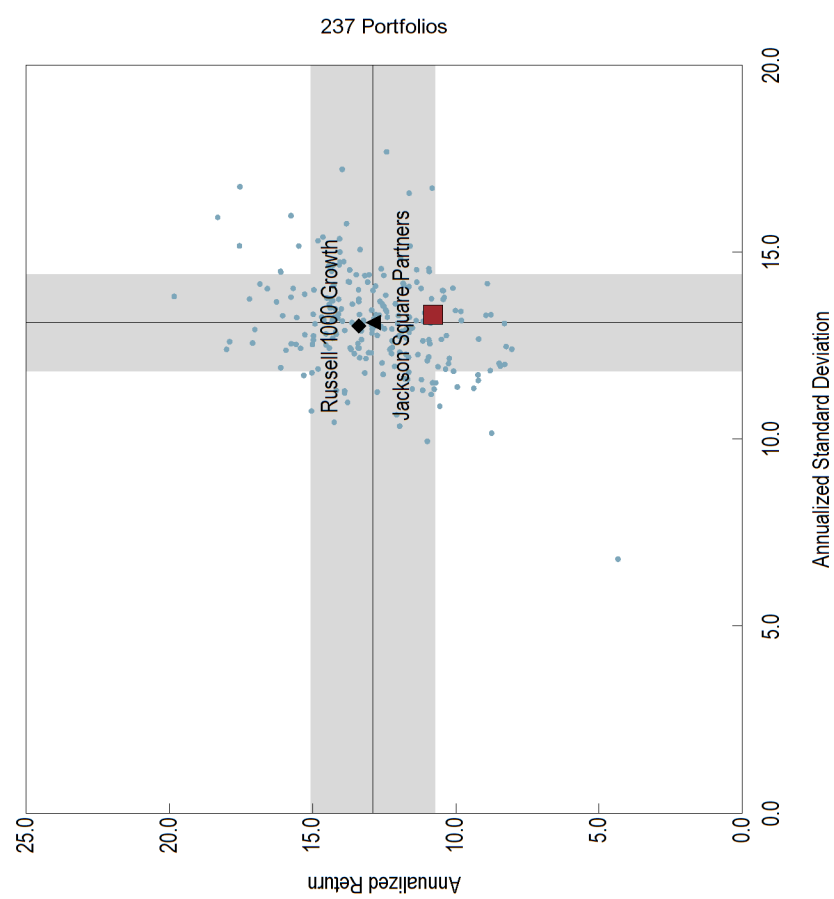
3 Years



3 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Jackson Square Partners	16.4%	13.6%	1.1
Russell 1000 Growth	18.1%	13.4%	1.2
eV US Large Cap Growth Equity Gross Median	18.0%	13.3%	1.3

5 Years



5 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Jackson Square Partners	10.8%	13.3%	0.7
Russell 1000 Growth	13.4%	13.0%	1.0
eV US Large Cap Growth Equity Gross Median	12.9%	13.1%	0.9

Boston Partners Manager Portfolio Overview

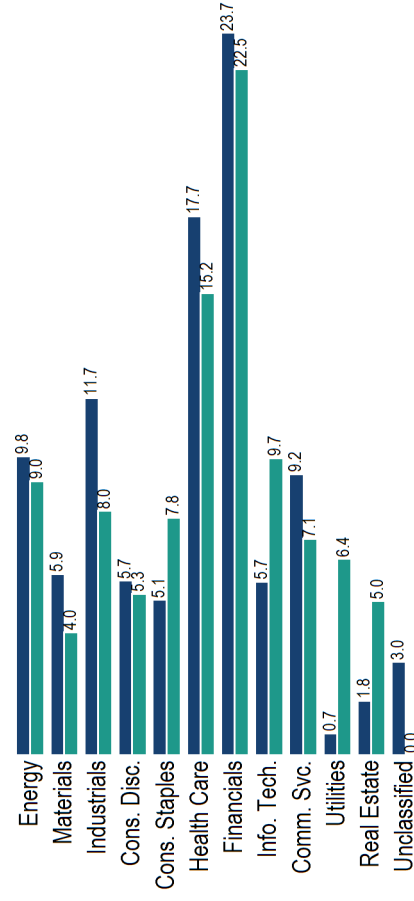
Period Ending: June 30, 2019

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

Characteristics

	Portfolio	Russell 1000 Value
Number of Holdings	84	722
Weighted Avg. Market Cap. (\$B)	132.08	123.11
Median Market Cap. (\$B)	37.03	9.18
Price To Earnings	16.76	17.41
Price To Book	2.31	2.28
Price To Sales	1.51	1.54
Return on Equity (%)	16.40	14.42
Yield (%)	2.17	2.58
Beta	1.05	1.00

Sector Allocation (%) vs Russell 1000 Value



Largest Holdings

	End Weight	Return	Top Contributors				Bottom Contributors				
			Avg Wgt	Return	Contribution	Avg Wgt	Return	Contribution	Avg Wgt	Return	Contribution
BERKSHIRE HATHAWAY 'B'	4.61	6.11	0.55	24.48	0.13	0.51	11.28	0.12	0.27	-12.87	-0.04
BANK OF AMERICA	3.43	5.68	0.92	13.27	0.12	0.45	-7.99	0.09	0.34	-9.67	-0.03
JOHNSON & JOHNSON	3.43	0.32	1.03	11.28	0.12	0.51	-8.15	0.06	0.80	-4.01	-0.03
COMCAST A	2.92	6.31	1.42	6.11	0.09	0.45	-7.99	0.06	0.32	-8.99	-0.03
PROCTER & GAMBLE	2.40	6.12	1.16	6.31	0.07	0.27	-12.87	0.06	0.17	-14.87	-0.02
VERIZON COMMUNICATIONS	2.38	-2.39	1.16	6.31	0.07	0.27	-12.87	0.05	0.12	-18.31	-0.02
CITIGROUP	2.28	13.27	1.16	5.68	0.07	0.34	-9.67	0.05	0.05	0.05	0.05
CHEVRON	2.23	2.02	1.16	5.68	0.07	0.34	-9.67	0.05	0.05	0.05	0.05
PFIZER	2.21	2.90	1.02	6.12	0.06	0.80	-4.01	0.06	0.32	-8.99	-0.03
CISCO SYSTEMS	2.20	2.01	0.66	8.54	0.06	0.17	-14.87	0.06	0.17	-14.87	-0.02
			0.39	13.85	0.05	0.12	-18.31	0.05	0.12	-18.31	-0.02
			0.50	10.55	0.05	0.12	-18.31	0.05	0.12	-18.31	-0.02

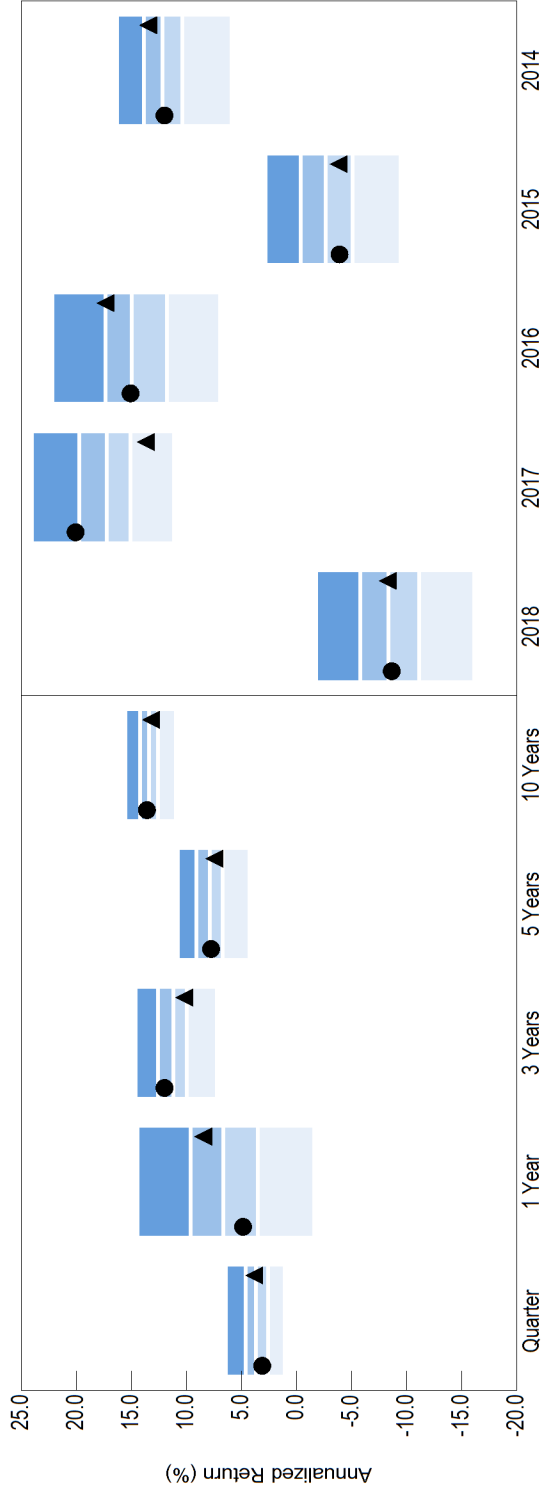
Unclassified sector allocation includes cash allocations.

Boston Partners

Manager Performance Comparisons (Gross of Fees)

Period Ending: June 30, 2019

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

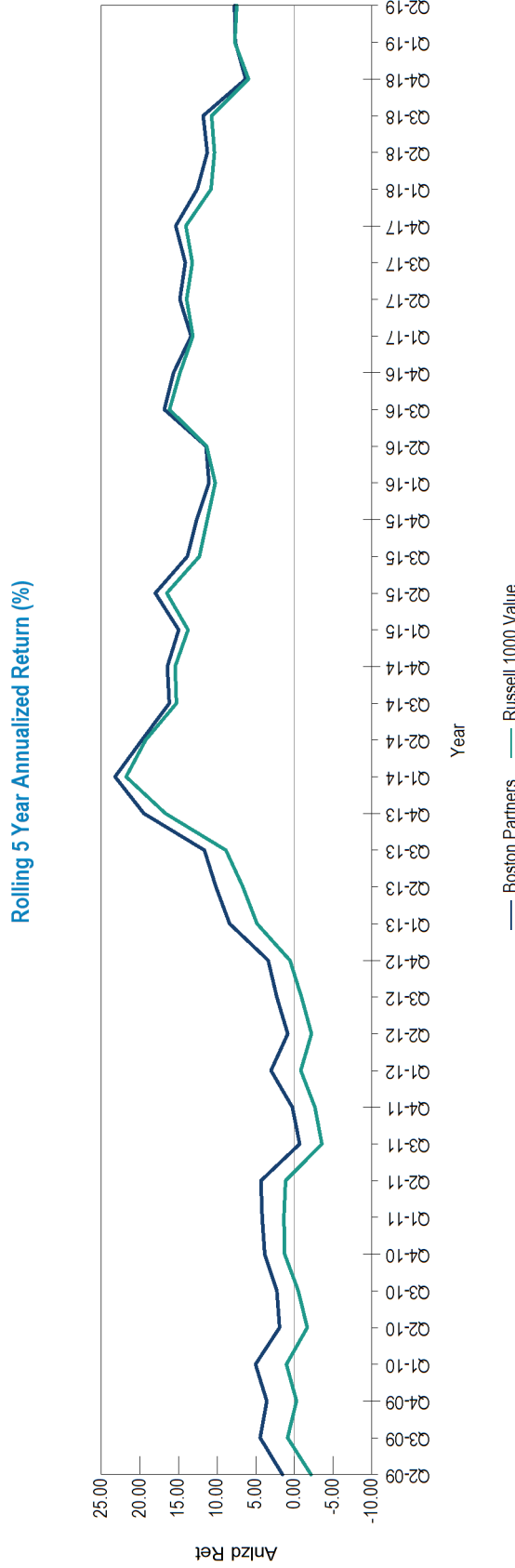
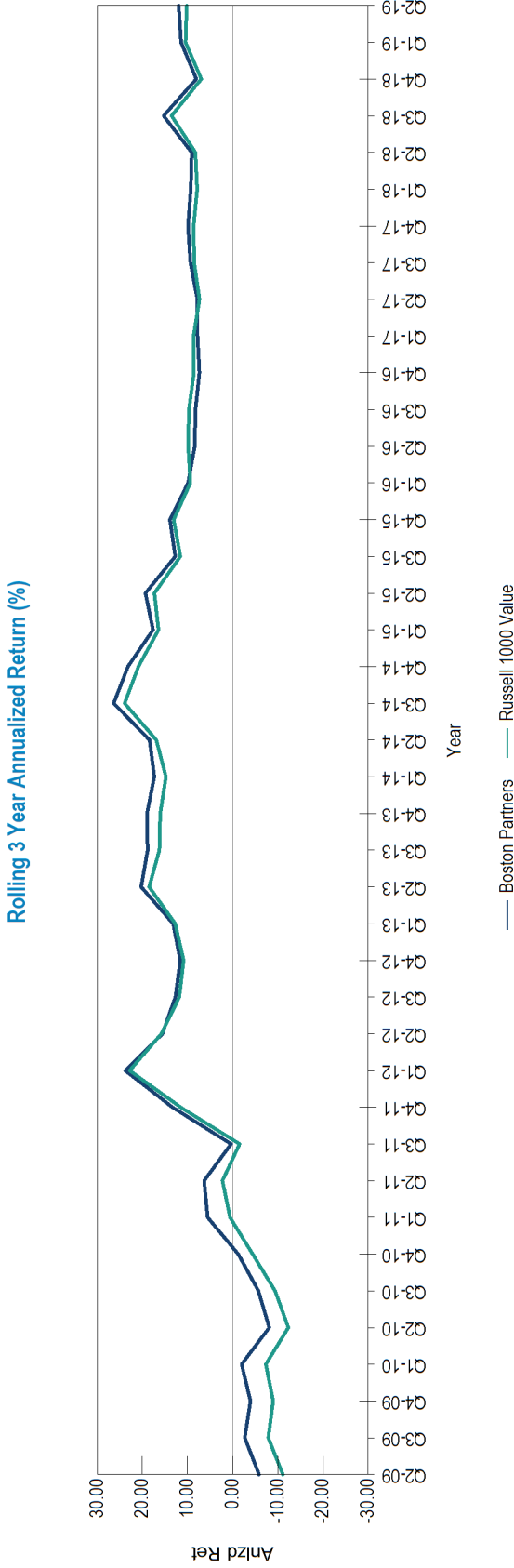


Return (Rank)

5th Percentile	3.1 (65)	4.9 (66)	12.0 (34)	7.8 (55)	13.6 (44)	-8.7 (55)	20.1 (23)	15.1 (50)	-3.9 (65)	12.0 (55)
25th Percentile	3.8 (49)	8.5 (33)	10.2 (71)	7.5 (60)	13.2 (58)	-8.3 (50)	13.7 (87)	17.3 (26)	-3.8 (64)	13.5 (33)
Median	1.1	-1.6	7.3	4.3	11.0	-16.1	11.2	7.0	-9.4	5.9
75th Percentile	2.6	3.5	10.0	6.7	12.6	-11.1	15.1	11.8	-5.1	10.4
95th Percentile	4.6	9.6	12.6	9.1	14.2	-5.8	19.8	17.4	-0.4	13.9
# of Portfolios	325	325	321	314	267	336	342	346	312	307

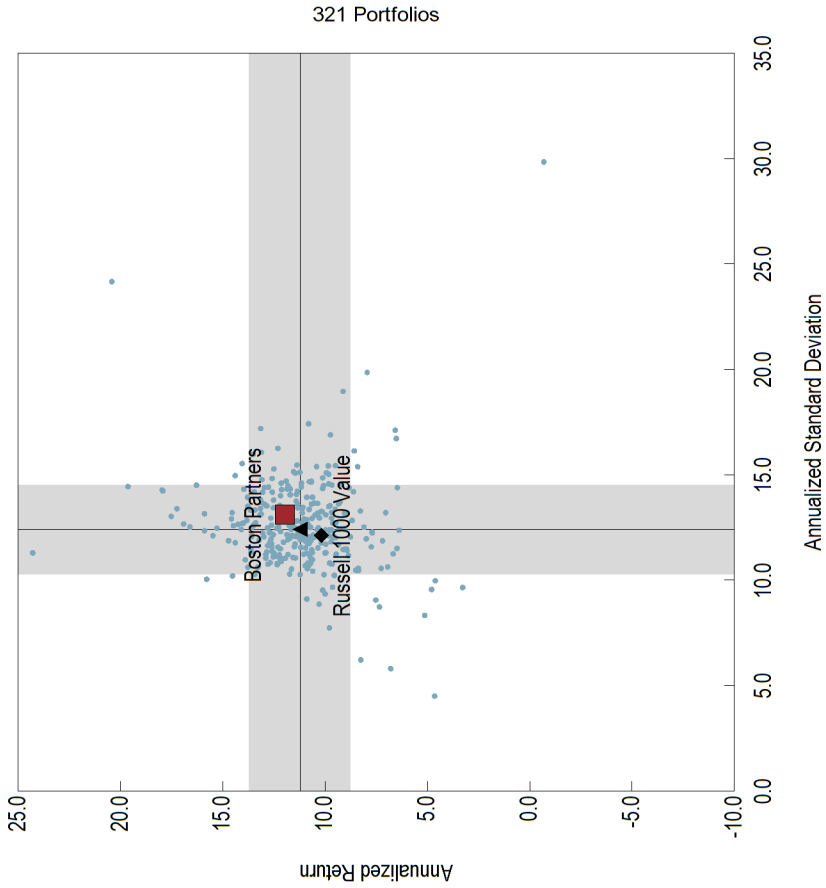
● Boston Partners
▲ Russell 1000 Value

Boston Partners
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: June 30, 2019



Boston Partners
 Risk vs. Return 3 & 5 Year (Gross of Fees) Period Ending: June 30, 2019

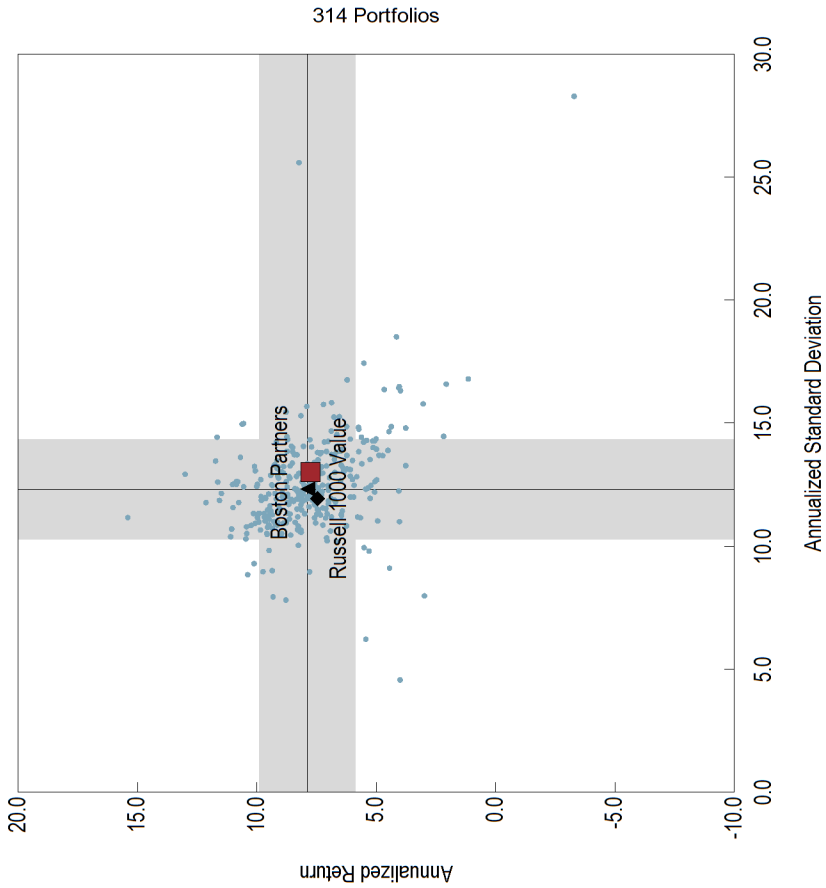
3 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Boston Partners	12.0%	13.1%	0.8
Russell 1000 Value	10.2%	12.1%	0.7
eV US Large Cap Value Equity Gross Median	11.2%	12.4%	0.8

5 Years



5 Years

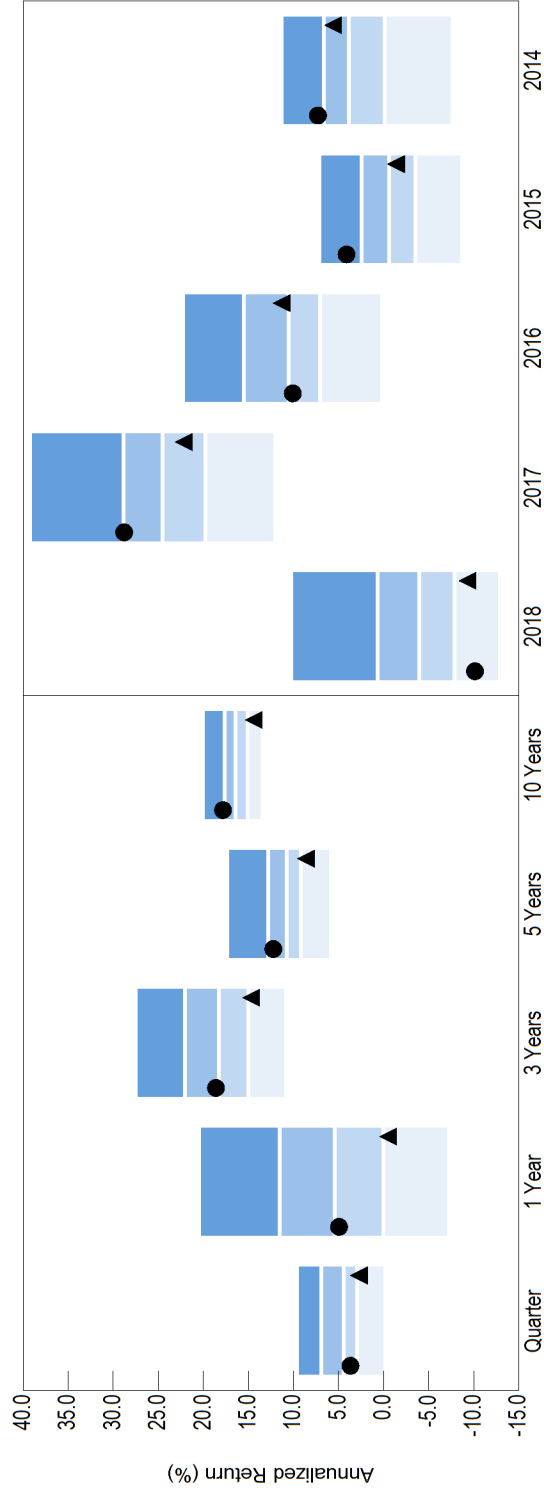
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Boston Partners	7.8%	13.0%	0.5
Russell 1000 Value	7.5%	11.9%	0.6
eV US Large Cap Value Equity Gross Median	7.9%	12.3%	0.6

Emerald Advisers

Manager Performance Comparisons (Gross of Fees)

Period Ending: June 30, 2019

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

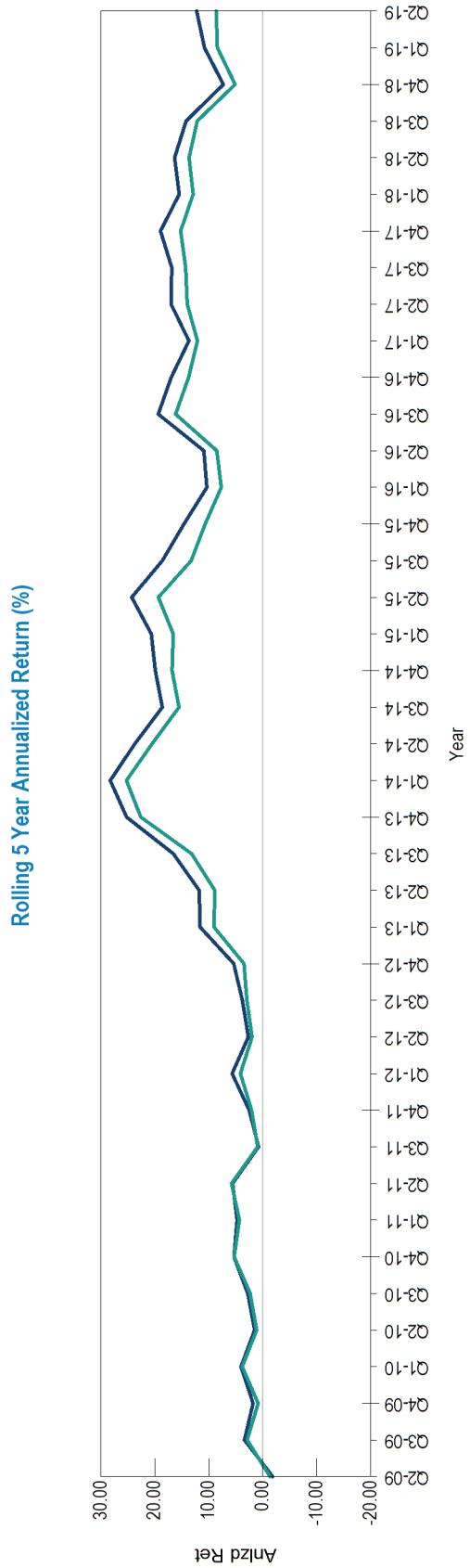
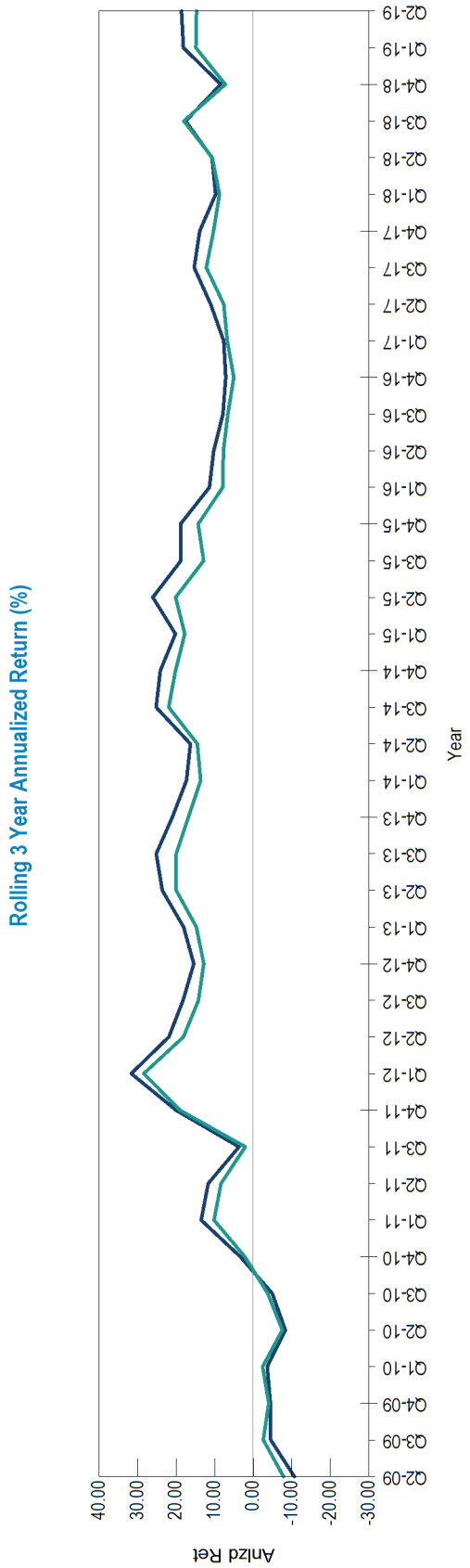


Return (Rank)

5th Percentile	25th Percentile	Median	75th Percentile	95th Percentile	# of Portfolios
9.6	6.9	4.4	3.0	-0.2	159
20.4	11.5	5.5	0.1	-7.2	159
27.5	22.0	18.3	15.1	10.9	155
17.3	12.9	10.8	9.3	5.9	149
20.0	17.7	16.5	15.1	13.5	135
10.2	0.7	-3.9	-7.9	-12.8	164
39.2	28.9	24.6	19.8	12.1	174
22.2	15.5	10.6	7.1	0.2	170
7.1	2.5	-0.6	-3.5	-8.7	154
11.3	6.7	3.9	-0.1	-7.6	161
3.7 (62)	4.9 (55)	-0.5 (80)	12.2 (33)	-10.1 (85)	17.8 (24)
2.7 (79)	4.9 (55)	-0.5 (80)	8.6 (81)	-9.3 (80)	14.4 (86)
			10.1 (54)	11.3 (49)	4.1 (19)
			22.2 (62)	11.3 (49)	-1.4 (59)
			28.8 (26)	10.1 (54)	4.1 (19)
			22.2 (62)	11.3 (49)	-1.4 (59)
			7.3 (21)	7.3 (21)	7.3 (21)
			5.6 (32)	5.6 (32)	5.6 (32)

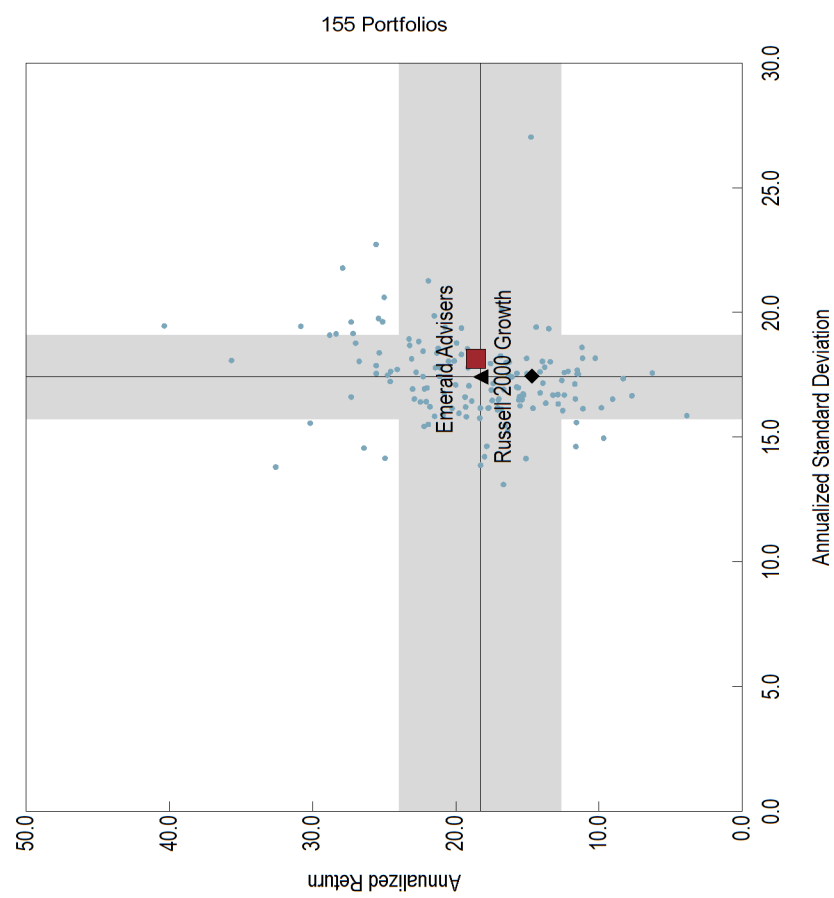
- Emerald Advisers
- ▲ Russell 2000 Growth

Emerald Advisers
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: June 30, 2019



Emerald Advisers
Risk vs. Return 3 & 5 Year (Gross of Fees) Period Ending: June 30, 2019

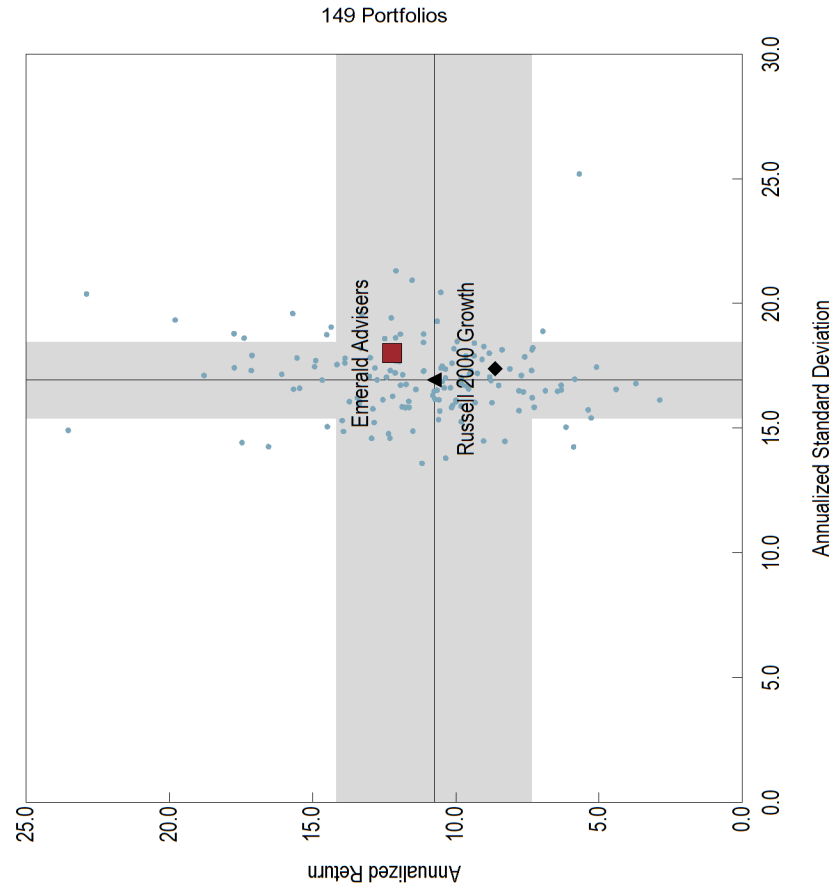
3 Years



3 Years

Emerald Advisers	18.6%	18.1%	0.9
Russell 2000 Growth	14.7%	17.4%	0.8
eV US Small Cap Growth Equity Gross Median	18.3%	17.4%	1.0

5 Years



5 Years

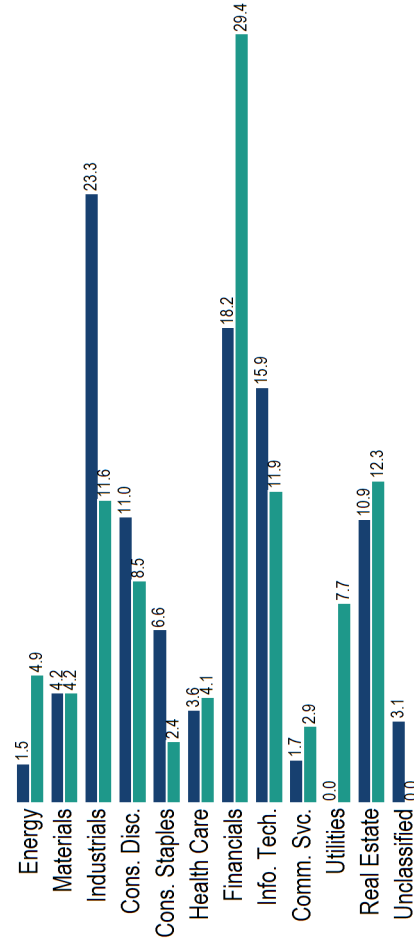
Emerald Advisers	12.2%	18.0%	0.6
Russell 2000 Growth	8.6%	17.4%	0.4
eV US Small Cap Growth Equity Gross Median	10.8%	16.9%	0.6

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

Characteristics

	Portfolio	Russell 2000 Value
Number of Holdings	82	1,347
Weighted Avg. Market Cap. (\$B)	2.78	2.18
Median Market Cap. (\$B)	2.01	0.67
Price To Earnings	20.38	16.21
Price To Book	2.51	1.68
Price To Sales	1.07	0.94
Return on Equity (%)	16.25	5.99
Yield (%)	2.68	2.23
Beta	0.81	1.00

Sector Allocation (%) vs Russell 2000 Value

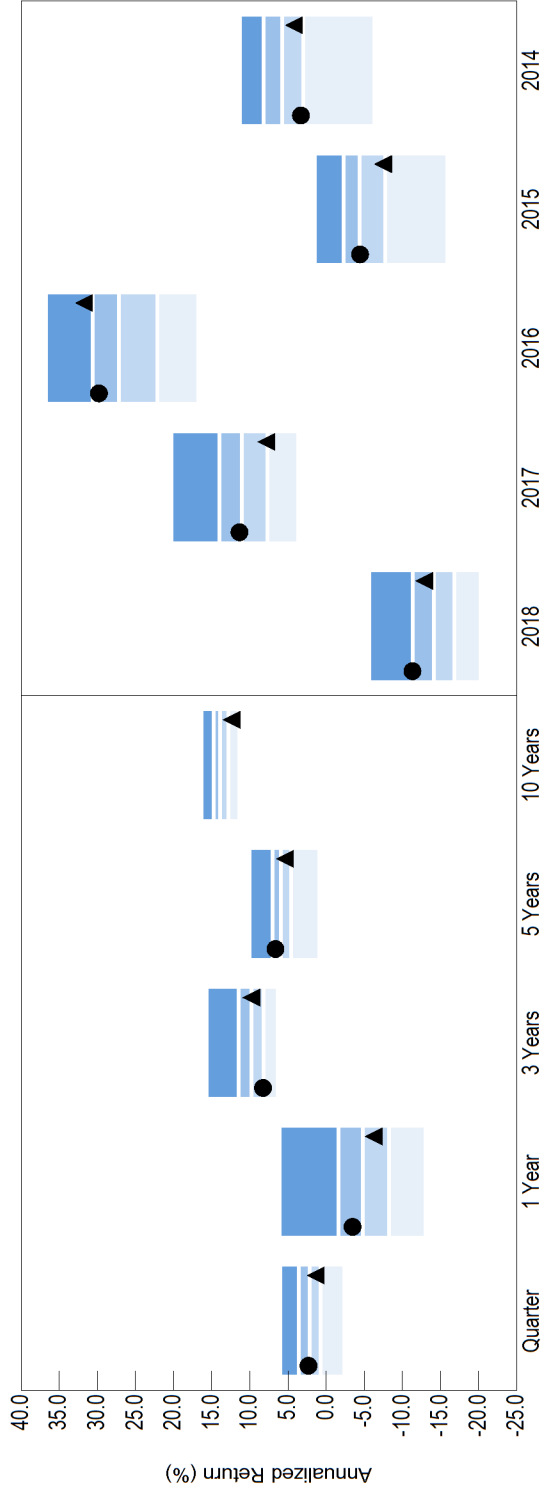


Largest Holdings

	End Weight	Return	Avg Wgt	Return	Contribution
POWER INTEGRATIONS	5.44	14.94	1.70	14.94	0.25
KEMPER	4.61	13.65	0.71	32.12	0.23
ENERGIZER HOLDINGS	3.53	-13.43	0.78	27.76	0.22
OUTFRONT MEDIA	3.51	11.78	0.73	28.40	0.21
CHILDRENS PLACE	3.45	-0.86	1.42	13.65	0.19
PHYSICIANS REALTY TST.	3.24	-6.14	1.13	11.78	0.13
B & G FOODS	3.06	-12.88	0.50	22.47	0.11
CUBIC	2.96	14.65	0.77	14.65	0.11
SABRE	2.88	4.42	0.60	16.38	0.10
EVERCORE A	2.63	-1.95	0.40	22.56	0.09
POWER INTEGRATIONS					
TETRA TECH					
HERMAN MILLER					
LITHIA MOTORS 'A'					
KEMPER					
OUTFRONT MEDIA					
KNOLL					
CUBIC					
APOGEE ENTERPRISES					
COHEN & STEERS					
POWER INTEGRATIONS					
TANGER FAC. OUTLET CNTRS.					
ENERGIZER HOLDINGS					
AMER.EAG.OUTFITTERS					
B & G FOODS					
US SILICA HOLDINGS					
PHYSICIANS REALTY TST.					
SM ENERGY					
MKS INSTRUMENTS					
MOVADO GROUP					
KORN FERRY					

Unclassified sector allocation includes cash allocations.

Ceredex vs. eV US Small Cap Value Equity Gross Universe

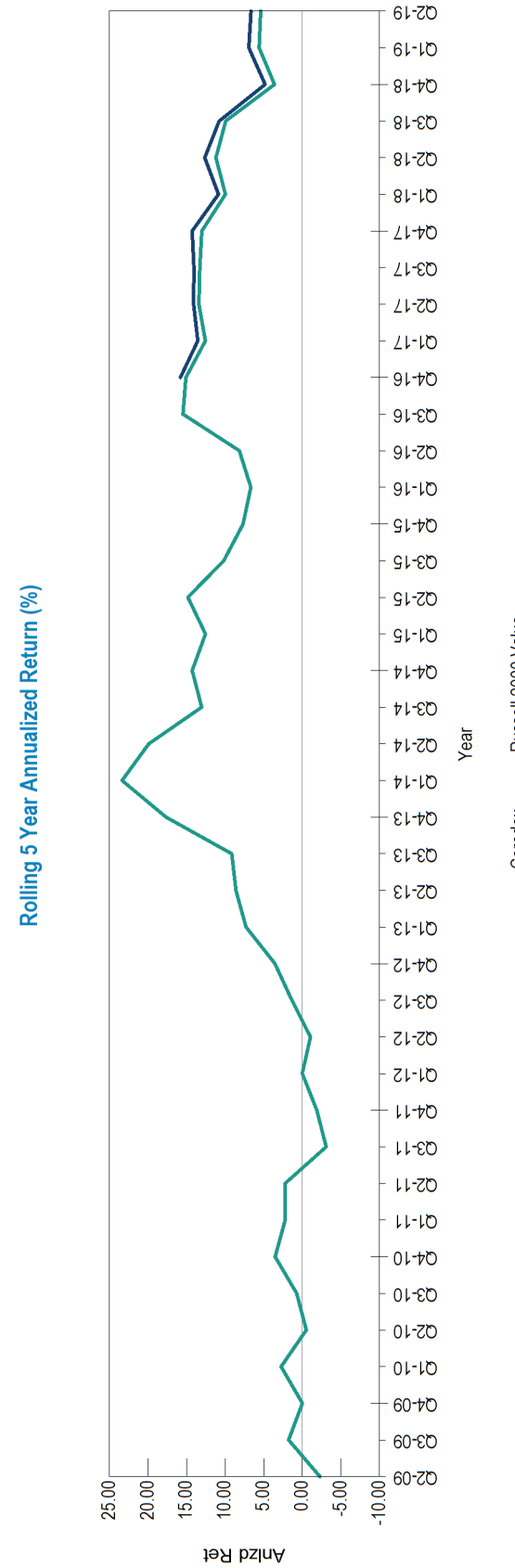
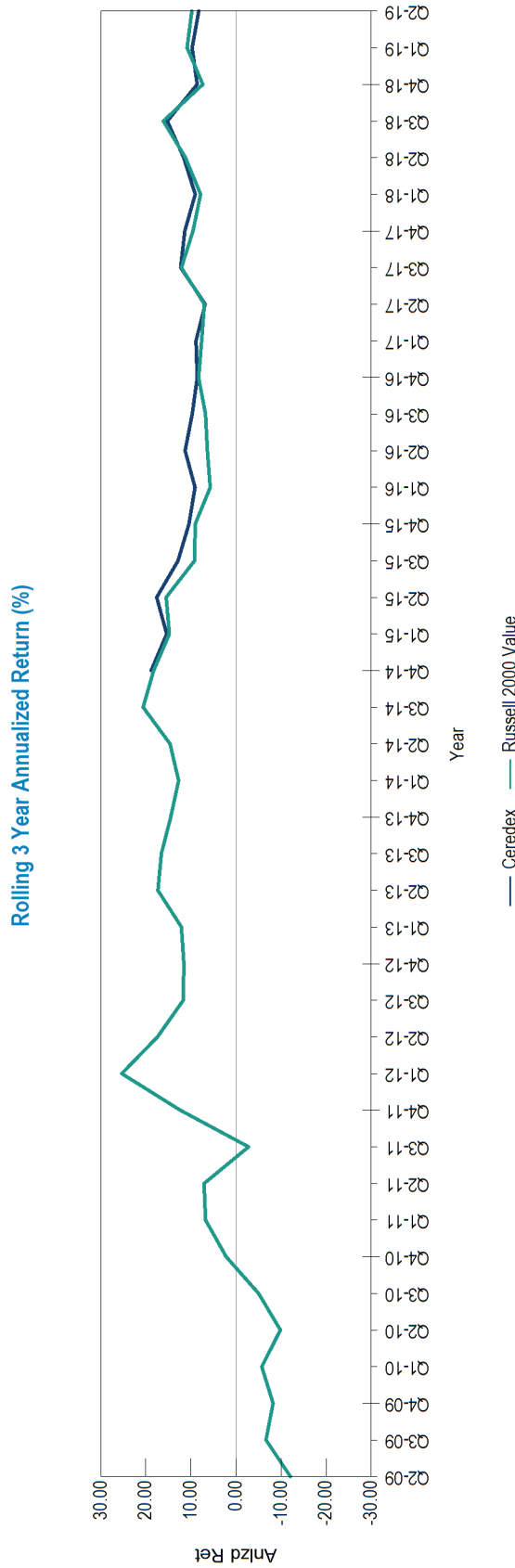


Return (Rank)

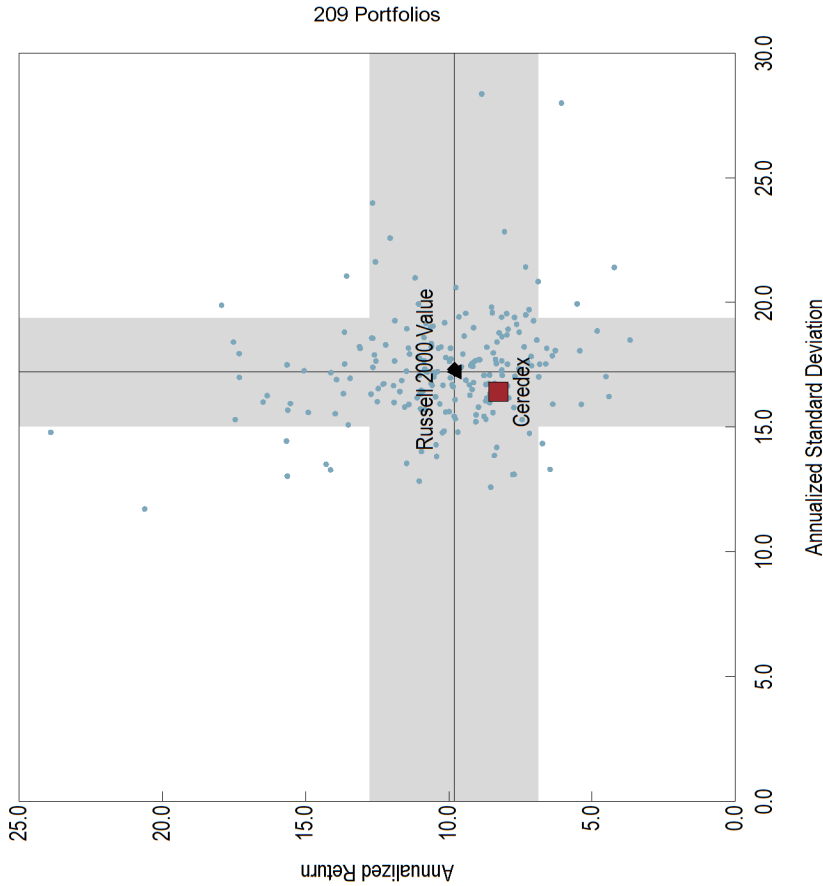
Period	5th Percentile	25th Percentile	Median	75th Percentile	95th Percentile	# of Portfolios
Quarter	6.0	3.6	2.2	0.8	-2.3	214
1 Year	6.1	-1.6	-4.8	-8.2	-13.0	214
3 Years	15.6	11.5	9.8	8.2	6.4	209
5 Years	10.0	7.1	5.9	4.6	0.9	199
10 Years	16.3	14.8	13.9	12.9	11.4	178
2014	11.2	8.2	5.8	3.1	-6.3	206
2015	1.5	-2.2	-4.3	-7.7	-15.8	212
2016	36.7	30.7	27.2	22.2	16.8	222
2017	20.2	14.1	11.1	7.8	3.7	224
2018	-5.7	-11.4	-14.0	-16.7	-20.2	220
2019	2.3 (48)	-3.5 (38)	-6.2 (60)	-11.3 (25)	-12.9 (39)	6.6 (35)
2019	1.4 (68)	-4.4 (52)	-7.5 (74)	-11.3 (25)	-12.9 (39)	5.4 (63)

● Ceredex
▲ Russell 2000 Value

Ceredex
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: June 30, 2019



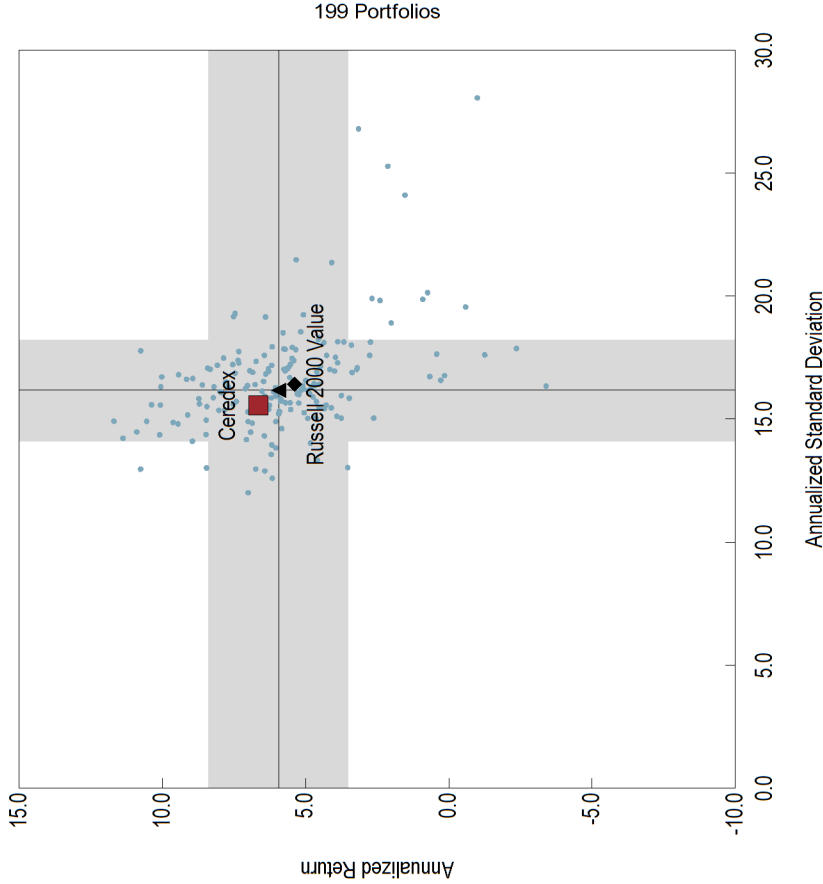
3 Years



3 Years

Ceredex	8.3%	16.4%	0.4
Russell 2000 Value	9.8%	17.3%	0.5
eV US Small Cap Value Equity Gross Median	9.8%	17.2%	0.5

5 Years



5 Years

Ceredex	6.6%	15.6%	0.4
Russell 2000 Value	5.4%	16.4%	0.3
eV US Small Cap Value Equity Gross Median	5.9%	16.2%	0.3

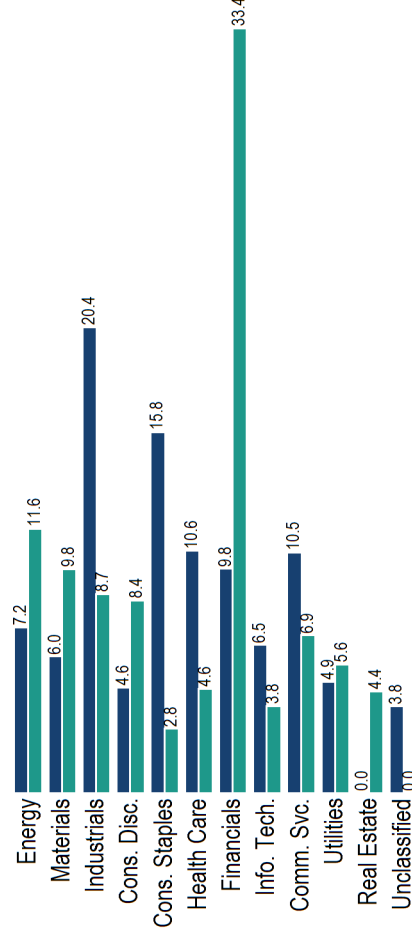
International Equity Managers

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

Characteristics

	Portfolio	MSCI ACWI ex USA Value
Number of Holdings	75	1,314
Weighted Avg. Market Cap. (\$B)	65.27	50.77
Median Market Cap. (\$B)	25.13	6.99
Price To Earnings	17.58	11.61
Price To Book	2.56	1.65
Price To Sales	1.54	0.86
Return on Equity (%)	17.15	11.91
Yield (%)	3.75	4.46
Beta	0.82	1.00

Sector Allocation (%) vs MSCI ACWI ex USA Value



Country Allocation

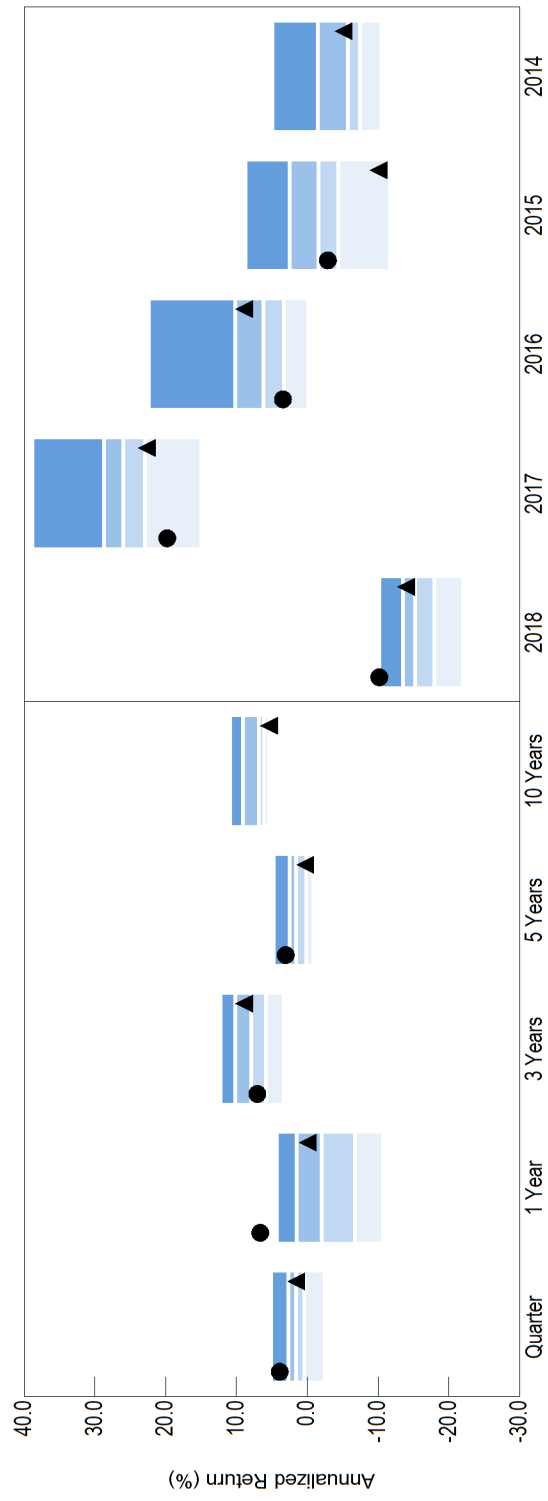
	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	89.5%	72.9%
Emerging*	6.7%	27.1%
Cash	3.8%	
Top 10 Largest Countries		
Switzerland	14.1%	3.1%
United Kingdom	12.4%	15.2%
Australia	11.1%	5.0%
Japan	11.1%	16.1%
Germany	8.7%	5.6%
France	8.5%	6.8%
Singapore	5.1%	1.0%
Hong Kong	4.8%	2.7%
Sweden	4.7%	1.3%
Netherlands	4.3%	0.9%
Total-Top 10 Largest Countries	84.7%	57.6%

	Top Contributors			Bottom Contributors		
	Avg Wgt	Return	Contribution	Avg Wgt	Return	Contribution
NESTLE 'R'	3.77	11.60	0.44	IMPERIAL BRANDS	0.96	-30.23
KDDI	1.76	18.18	0.32	JAPAN TOBACCO	2.57	-8.12
SAP	1.58	20.27	0.32	BRITISH AMERICAN TOBACCO	1.44	-14.39
PANALPINA				CHINA MOBILE	1.81	-8.90
WELTTRANSPORT HOLDING	0.76	38.49	0.29	VTECH HOLDINGS	1.05	-12.48
ATLAS COPCO A	1.40	20.12	0.28	NIHON KOHDEN	1.40	-8.88
KONE 'B'	1.48	17.08	0.25	COMPUTERSHARE	1.54	-6.24
AXIATA GROUP	1.21	19.86	0.24	VODAFONE GROUP	1.24	-7.04
NOVARTIS 'R'	3.00	7.61	0.23	QBE INSURANCE GROUP	1.47	-5.06
AIR LIQUIDE	1.77	12.68	0.22	SSE	0.97	-7.68
SINGAPORE TELECOM	1.39	16.03	0.22			

Unclassified sector allocation includes cash allocations.

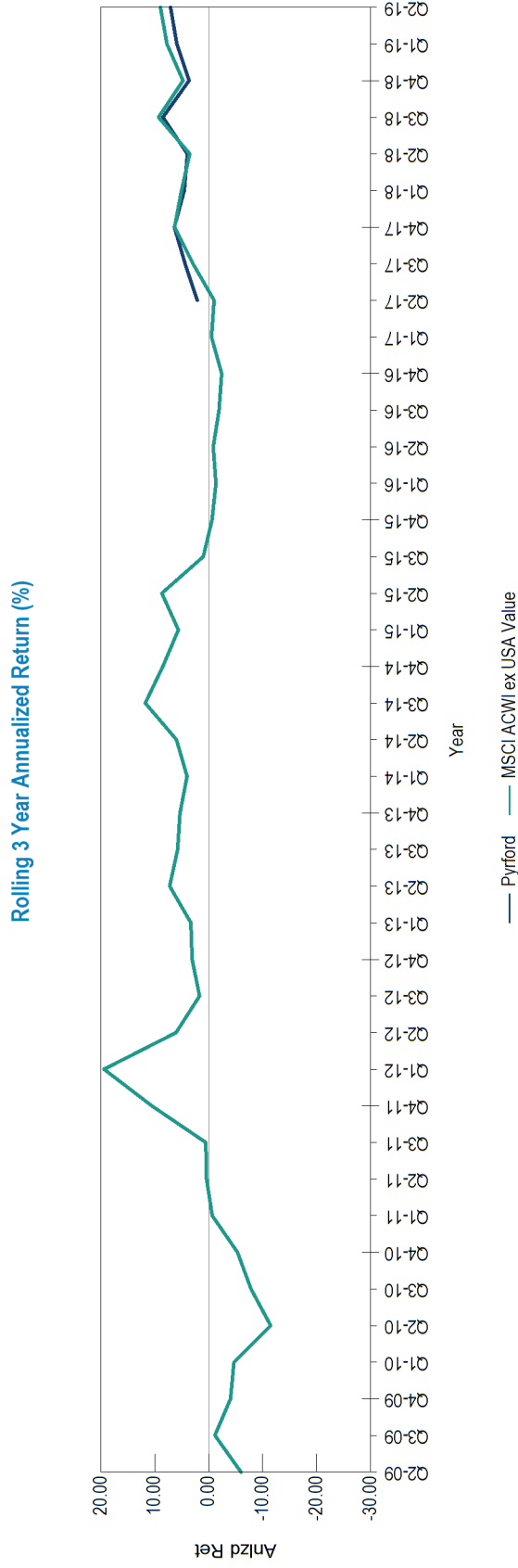
Pyrford
 Manager Performance Comparisons (Gross of Fees) Period Ending: June 30, 2019

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

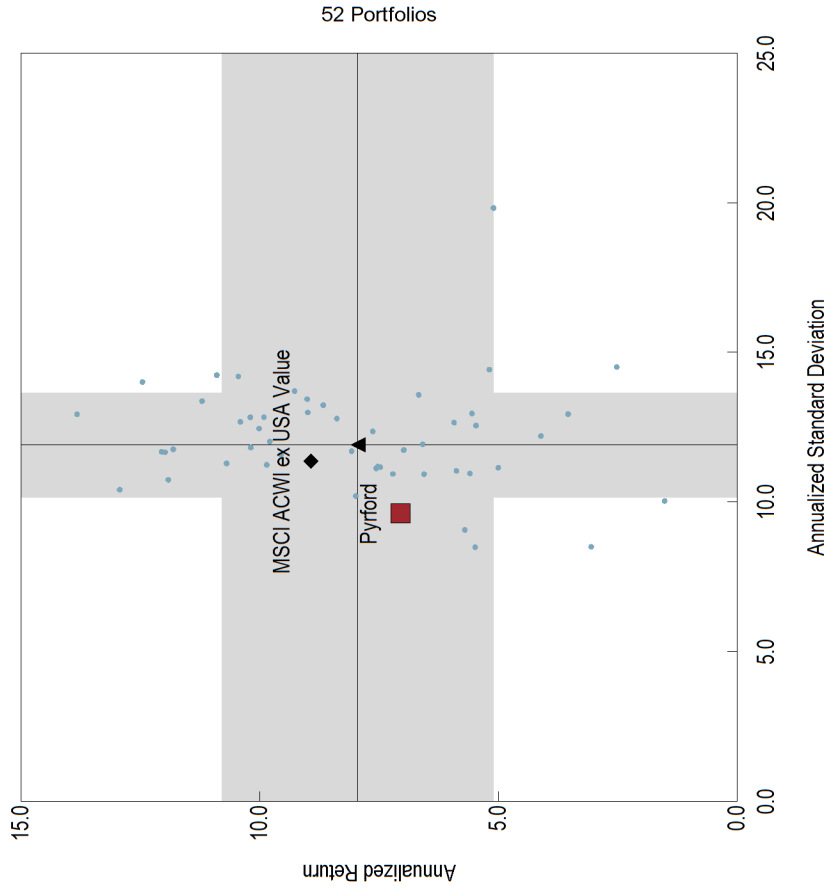


Return (Rank)	Quarter	1 Year	3 Years	5 Years	10 Years	2014	2015	2016	2017	2018	2019
5th Percentile	5.0	4.3	12.2	4.7	10.9	-10.2	8.7	22.3	38.8	-10.2	4.9
25th Percentile	2.7	1.6	10.2	2.6	9.1	-13.4	2.5	10.2	28.8	-13.4	-1.4
Median	1.6	-2.0	7.9	1.6	6.8	-15.2	-1.6	6.2	26.0	-15.2	-5.7
75th Percentile	0.5	-6.6	5.8	0.2	6.1	-17.9	-4.3	3.3	23.0	-17.9	-7.4
95th Percentile	-2.5	-10.6	3.3	-0.8	5.4	-21.9	-11.6	-0.1	15.0	-21.9	-10.4
# of Portfolios	54	54	52	44	26	54	45	55	56	54	37
● Pyrford	3.9 (13)	6.6 (1)	7.1 (63)	3.1 (23)	--	-10.1 (5)	-2.9 (59)	3.4 (74)	19.8 (84)	-10.1 (5)	--
▲ MSCI ACWI ex USA Value	1.6 (53)	-0.1 (29)	8.9 (42)	0.3 (75)	5.4 (95)	-14.0 (32)	-10.1 (93)	8.9 (35)	22.7 (77)	-14.0 (32)	-5.1 (49)

Pyrford
 Manager Performance - Rolling 3 Year (Gross of Fees) Period Ending: June 30, 2019



3 Years

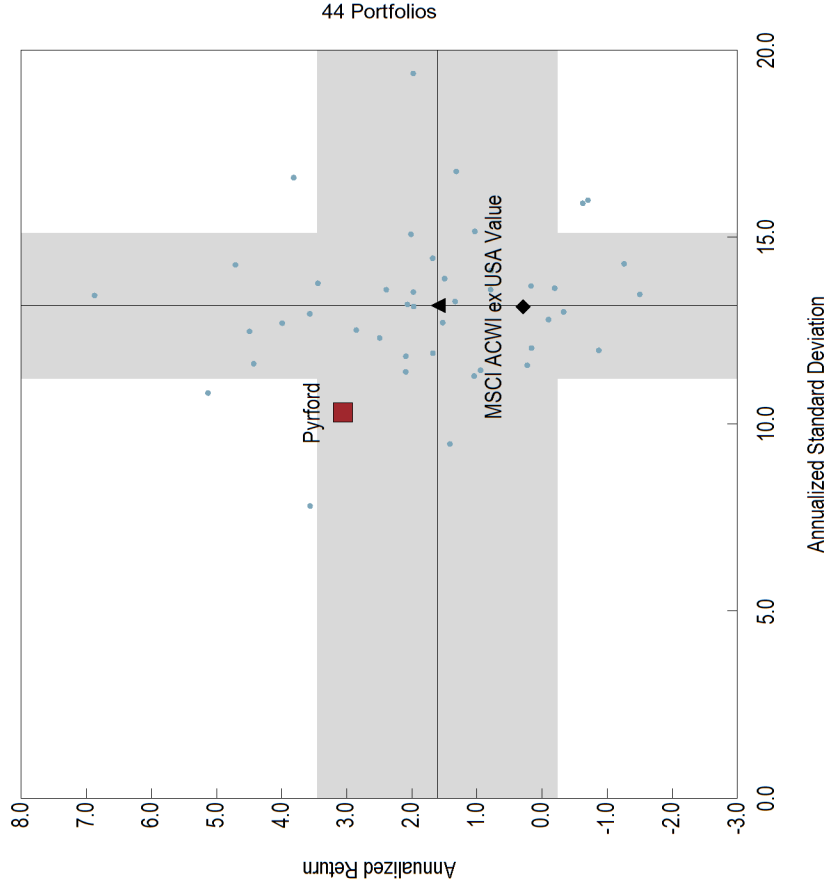


3 Years

Pyrford	7.1%	9.6%	0.6
MSCI ACWI ex USA Value	8.9%	11.4%	0.7
eV ACWI ex-US Value Equity Gross Median	7.9%	11.9%	0.5

Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
7.1%	9.6%	0.6
8.9%	11.4%	0.7
7.9%	11.9%	0.5

5 Years



5 Years

Pyrford	3.1%	10.3%	0.2
MSCI ACWI ex USA Value	0.3%	13.1%	0.0
eV ACWI ex-US Value Equity Gross Median	1.6%	13.2%	0.1

Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
3.1%	10.3%	0.2
0.3%	13.1%	0.0
1.6%	13.2%	0.1

William Blair Manager Portfolio Overview

Period Ending: June 30, 2019

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

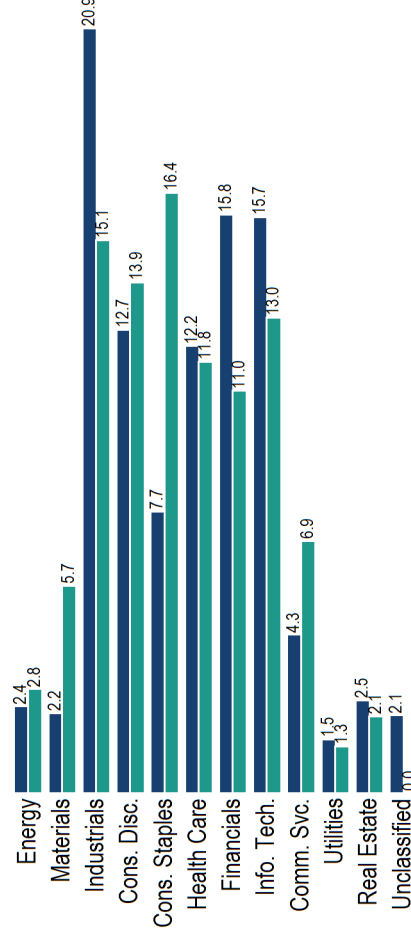
Characteristics

	Portfolio	MSCI ACWI ex USA Growth
Number of Holdings	200	1,148
Weighted Avg. Market Cap. (\$B)	64.00	79.36
Median Market Cap. (\$B)	10.67	8.11
Price To Earnings	24.73	20.73
Price To Book	4.17	3.11
Price To Sales	2.41	1.76
Return on Equity (%)	22.62	18.80
Yield (%)	1.63	2.00
Beta	1.09	1.00

Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	83.8%	74.1%
Emerging*	14.3%	25.9%
Top 10 Largest Countries		
United Kingdom	14.6%	7.4%
France	11.4%	8.3%
Japan	10.5%	15.7%
Switzerland	6.8%	9.1%
China*	6.2%	8.2%
Canada	6.2%	6.7%
Hong Kong	5.8%	2.7%
Germany	5.0%	5.9%
Netherlands	4.8%	3.8%
Denmark	3.7%	2.1%
Total-Top 10 Largest Countries	75.2%	69.9%

Sector Allocation (%) vs MSCI ACWI ex USA Growth

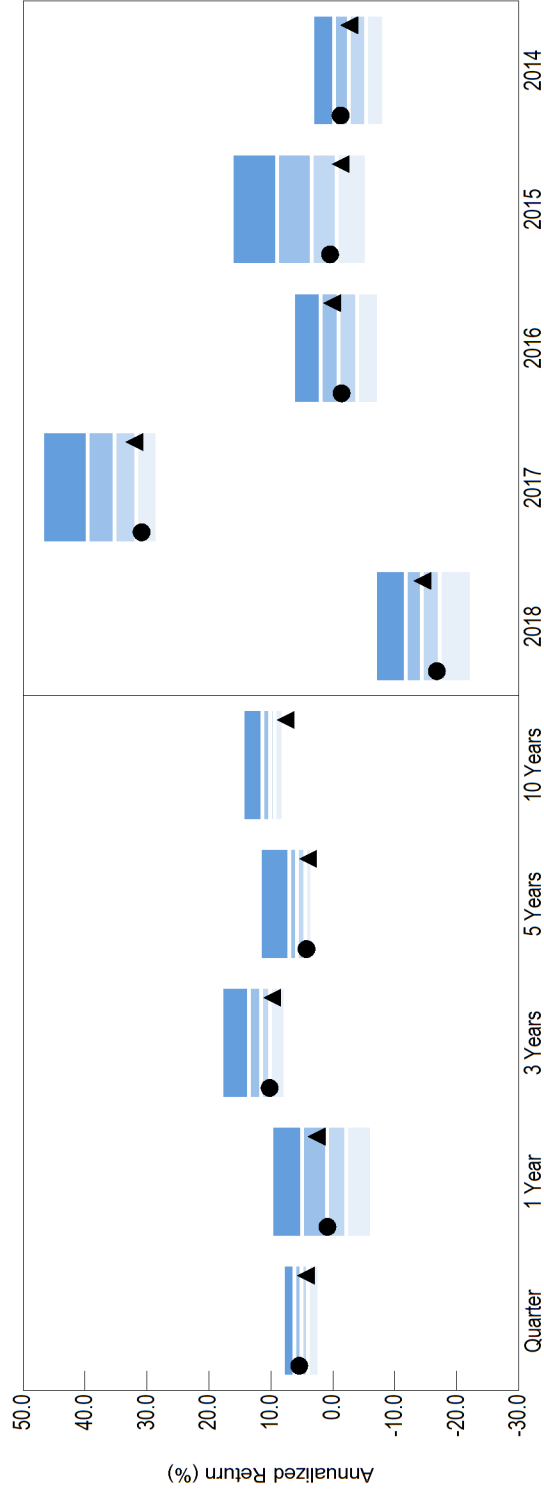


	Avg Wgt	Return	Contribution	Avg Wgt	Return	Contribution
Top Contributors						
SAP	1.32	20.27	0.27	ALIBABA GROUP HOLDING ADR 1.8	2.13	-7.13
LVMH	1.31	17.11	0.22	YAKULT HONSHA	0.56	-15.72
SIKA	0.79	24.07	0.19	CHECK POINT SFTW.TECHS.	0.83	-8.60
AIA GROUP	1.91	9.68	0.19	FEVERTREE DRINKS	0.24	-24.76
EXPERIAN	1.35	13.22	0.18	VONOVIA	1.06	-5.60
RELX	1.06	15.60	0.16	SWEDISH ORPHAN BIOVITRUM	0.28	-18.02
DSV 'B'	0.83	18.81	0.16	SHIMADZU	0.30	-15.18
HOYA	0.97	16.02	0.15	AMBU B	0.11	-38.74
LI NING	0.29	51.25	0.15	TECHNOPRO HOLDINGS	0.41	-9.81
VEOLIA ENVIRON	1.06	14.02	0.15	NESTE	0.90	-4.06
Bottom Contributors						

Unclassified sector allocation includes cash allocations.

William Blair
 Manager Performance Comparisons (Gross of Fees) Period Ending: June 30, 2019

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

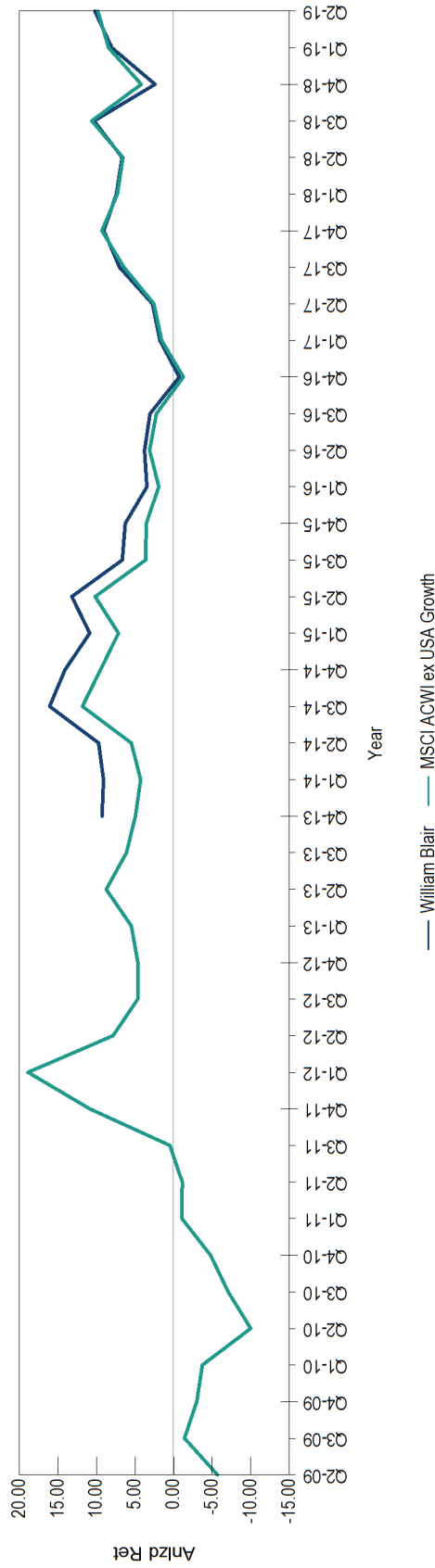


Return (Rank)

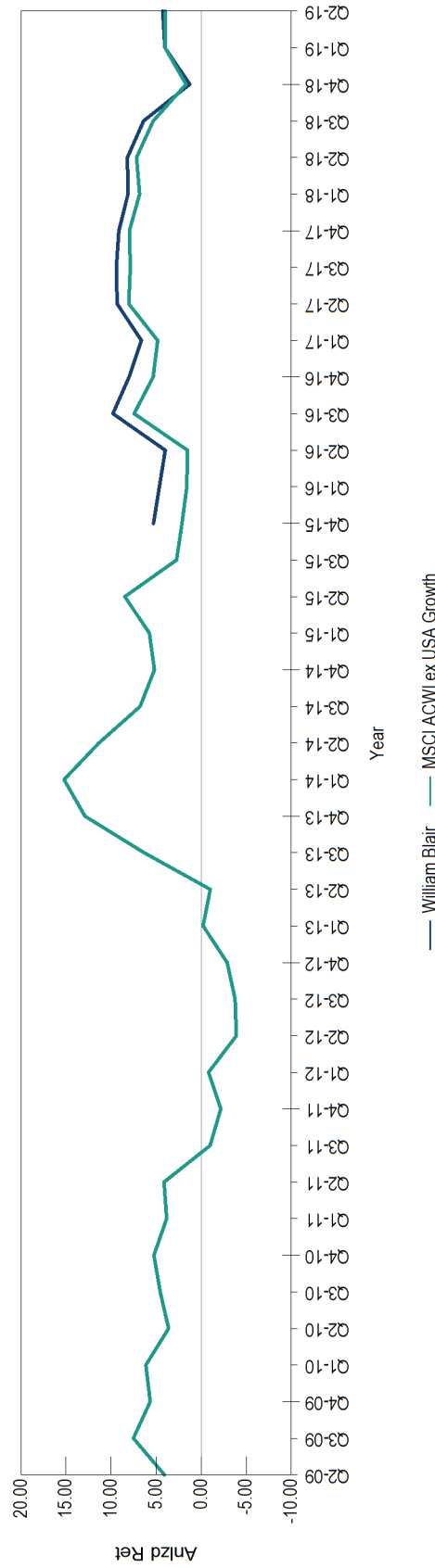
5th Percentile	8.0	17.9	11.7	14.5	-6.8	46.8	6.3	16.3	3.2
25th Percentile	6.3	13.5	7.1	11.4	-11.7	39.6	2.0	9.0	-0.1
Median	5.2	11.6	5.9	10.1	-14.3	35.3	-0.9	3.5	-2.5
75th Percentile	4.1	10.1	4.5	9.4	-17.2	31.8	-3.9	-0.5	-5.3
95th Percentile	2.3	7.7	3.4	8.0	-22.3	28.3	-7.4	-5.4	-8.2
# of Portfolios	87	85	76	54	82	94	90	70	50
● William Blair	5.4 (46)	10.2 (73)	4.3 (81)	--	-16.8 (69)	30.9 (81)	-1.4 (55)	0.5 (69)	-1.2 (37)
▲ MSCI ACWI ex USA Growth	4.4 (72)	9.8 (79)	4.0 (89)	7.6 (99)	-14.4 (51)	32.0 (75)	0.1 (45)	-1.3 (83)	-2.6 (53)

William Blair
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: June 30, 2019

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)

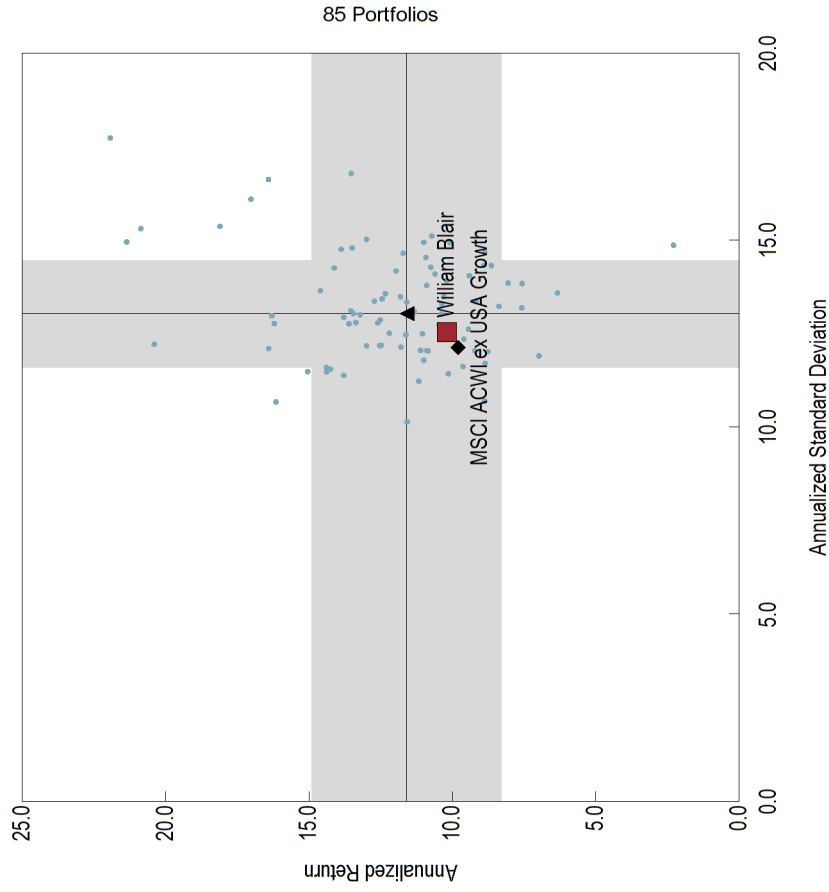


William Blair

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

Period Ending: June 30, 2019

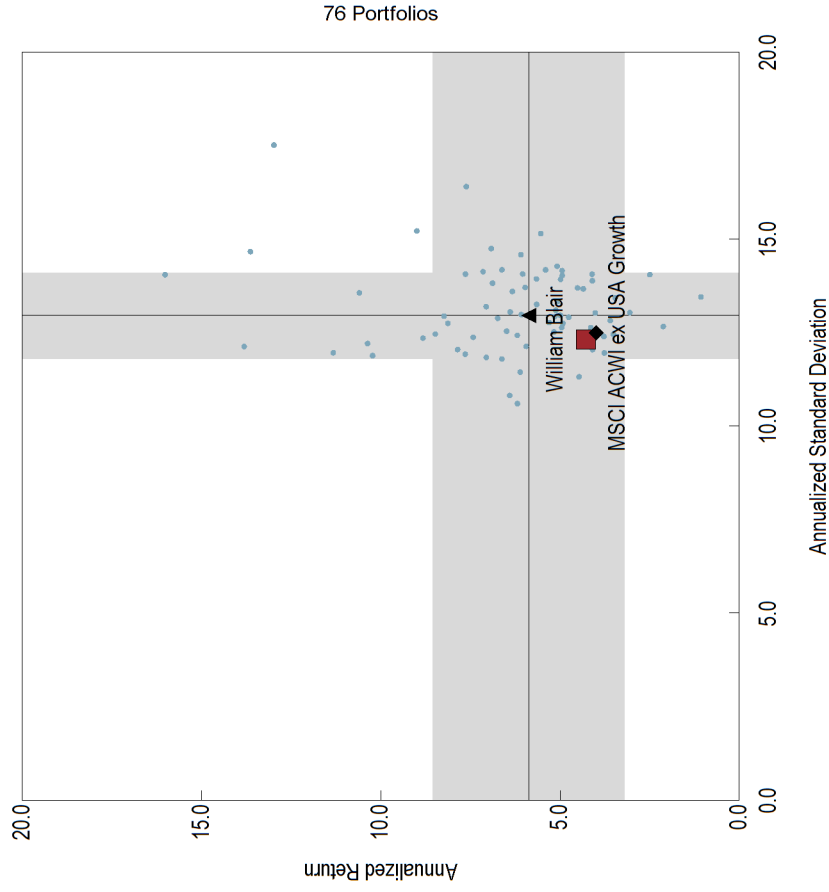
3 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
William Blair	10.2%	12.5%	0.7
MSCI ACWI ex USA Growth	9.8%	12.1%	0.7
eV ACWI ex-US Growth Equity Gross Median	11.6%	13.0%	0.8

5 Years



5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
William Blair	4.3%	12.3%	0.3
MSCI ACWI ex USA Growth	4.0%	12.5%	0.3
eV ACWI ex-US Growth Equity Gross Median	5.9%	13.0%	0.4

PIMCO RAE Emerging Markets Manager Portfolio Overview

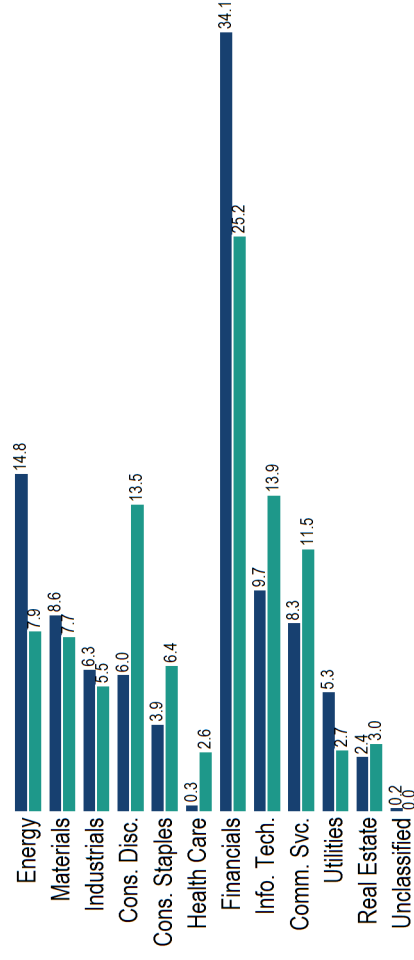
Period Ending: June 30, 2019

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

Characteristics

	Portfolio	MSCI Emerging Markets
Number of Holdings	614	1,193
Weighted Avg. Market Cap. (\$B)	39.17	81.67
Median Market Cap. (\$B)	3.86	5.56
Price To Earnings	8.85	14.07
Price To Book	1.64	2.43
Price To Sales	0.53	1.24
Return on Equity (%)	10.85	17.03
Yield (%)	4.09	2.81
Beta		1.00

Sector Allocation (%) vs MSCI Emerging Markets



Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	8.8%	0.0%
Emerging*	91.0%	100.0%
Top 10 Largest Countries		
China*	18.7%	31.7%
Korea*	17.2%	12.4%
Russia*	11.9%	4.0%
Taiwan*	10.2%	10.9%
Hong Kong	8.3%	0.0%
Brazil*	7.2%	7.6%
India*	5.9%	9.0%
South Africa*	5.0%	5.9%
Turkey*	3.2%	0.5%
Thailand*	2.7%	3.0%
Total-Top 10 Largest Countries	90.3%	84.9%



Top Contributors

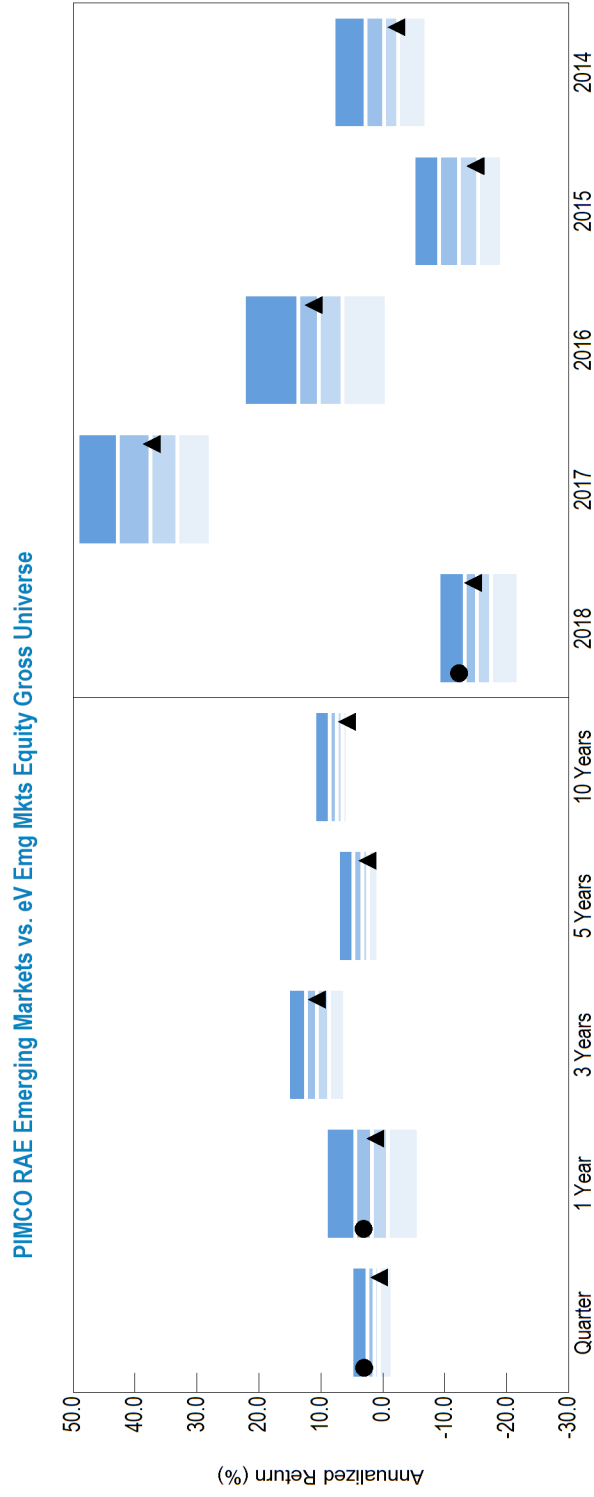
	End Weight	Return	Contribution
PJSC GAZPROM ADR CDI 1:2	5.58	62.30	3.48
BANK OF PIRAEUS	0.27	155.14	0.42
KIA MOTORS	0.93	22.36	0.21
JBS ON	0.57	35.36	0.20
MTN GROUP	0.86	23.19	0.20
HYUNDAI MOTOR	1.26	15.17	0.19
GOLD FIELDS SPN.ADR 1:1	0.38	45.04	0.17
NATIONAL BK.OF GREECE	0.29	57.09	0.17
ALPHA BANK	0.34	44.65	0.15
ABSA GROUP	0.55	22.89	0.13

Bottom Contributors

	End Weight	Return	Contribution
KOREA ELECTRIC POWER	0.86	-16.00	-0.14
SASOL	0.63	-20.41	-0.13
CHINA MOBILE	1.33	-8.90	-0.12
PJSC LUKOIL SPON (LON) ADR	1.80	-5.78	-0.10
CHINA PTL.& CHM. 'H'	0.91	-8.93	-0.08
LENOVO GROUP	0.57	-13.89	-0.08
INNOLUX	0.27	-27.26	-0.07
AU OPTRONICS	0.31	-18.69	-0.06
CNOOC	0.98	-5.73	-0.06
PETROCHINA 'H'	0.42	-12.91	-0.05

Unclassified sector allocation includes cash allocations.

PIMCO RAE Emerging Markets
 Manager Performance Comparisons (Gross of Fees) Period Ending: June 30, 2019



	Quarter	1 Year	3 Years	5 Years	10 Years	2014	2015	2016	2017	2018
Return (Rank)										
5th Percentile	5.0	9.2	15.2	7.1	11.0	-9.0	-5.0	22.4	49.2	-9.0
25th Percentile	2.6	4.5	12.5	4.8	8.6	-13.2	-9.0	13.7	42.8	-13.2
Median	1.4	1.8	10.7	3.4	7.5	-15.2	-12.2	10.4	37.6	-15.2
75th Percentile	0.6	-0.8	8.8	2.5	6.6	-17.4	-15.3	6.6	33.2	-17.4
95th Percentile	-1.4	-5.7	6.2	0.8	5.7	-21.8	-19.2	-0.6	27.8	-21.8
# of Portfolios	353	353	328	284	141	355	273	337	343	355
● PIMCO RAE Emerging Markets	3.0 (19)	3.1 (39)	-- (-)	-- (-)	-- (-)	-12.3 (19)	-- (-)	-- (-)	-- (-)	-12.3 (19)
▲ MSCI Emerging Markets	0.6 (76)	1.2 (59)	10.7 (52)	2.5 (74)	5.8 (95)	-14.6 (43)	-14.9 (70)	11.2 (45)	37.3 (53)	-14.6 (43)

TT Emerging Markets Manager Portfolio Overview

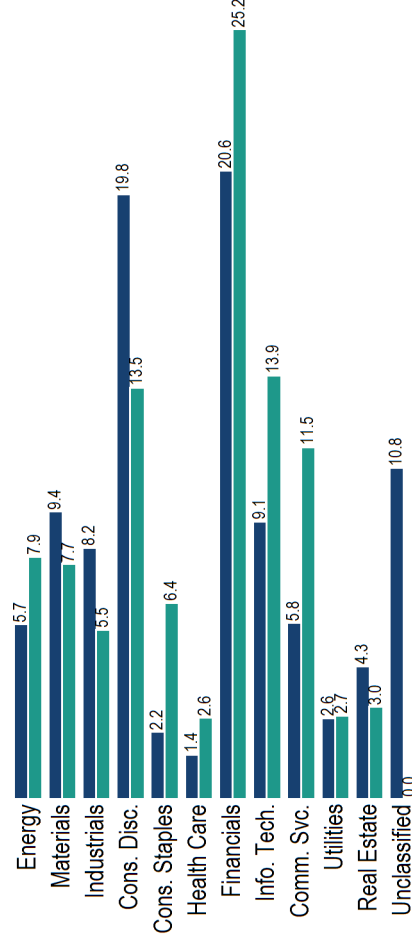
Period Ending: June 30, 2019

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

Characteristics

	Portfolio	MSCI Emerging Markets
Number of Holdings	72	1,193
Weighted Avg. Market Cap. (\$B)	76.00	81.67
Median Market Cap. (\$B)	6.18	5.56
Price To Earnings	12.00	14.07
Price To Book	2.51	2.43
Price To Sales	1.08	1.24
Return on Equity (%)	15.88	17.03
Yield (%)	2.39	2.81
Beta		1.00

Sector Allocation (%) vs MSCI Emerging Markets



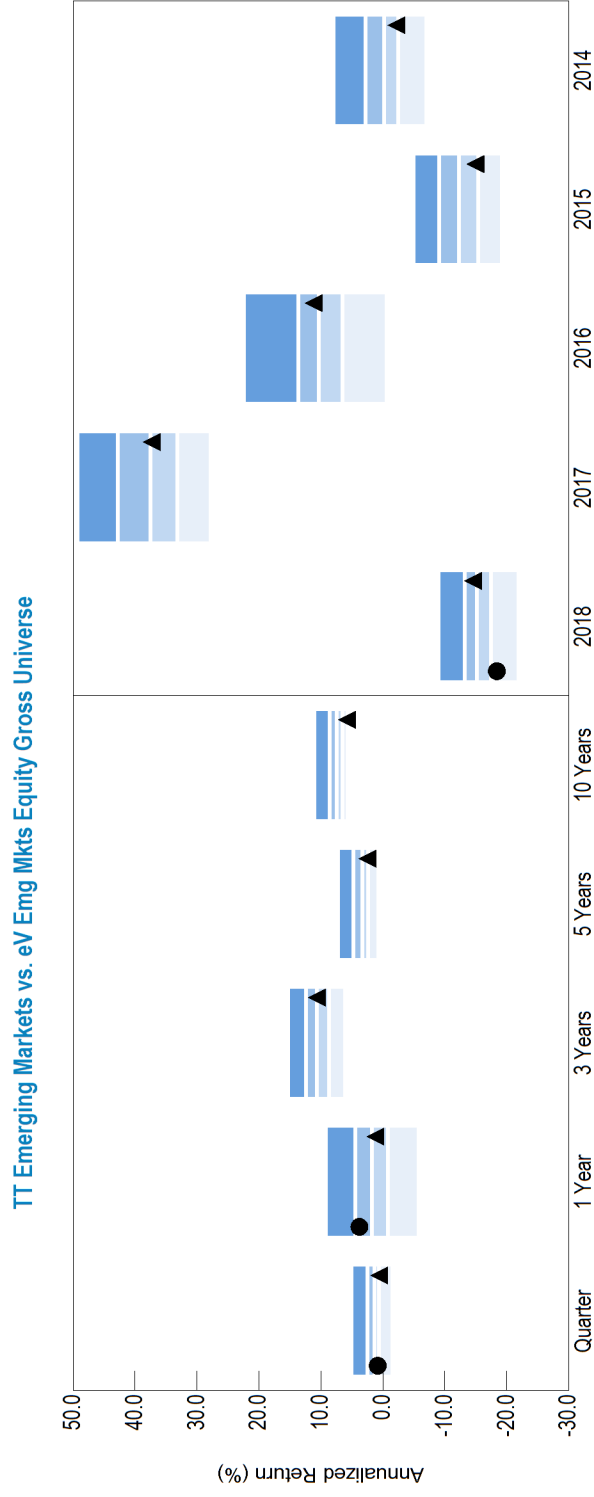
Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	24.8%	0.0%
Emerging*	68.5%	100.0%
Frontier**	2.3%	0.0%
Top 10 Largest Countries		
China*	13.4%	31.7%
Korea*	13.3%	12.4%
India*	12.8%	9.0%
Hong Kong	9.9%	0.0%
Brazil*	8.6%	7.6%
Russia*	7.6%	4.0%
Netherlands	4.7%	0.0%
South Africa*	4.6%	5.9%
Cash	4.4%	0.0%
United States	4.2%	0.0%
Total-Top 10 Largest Countries	83.5%	70.5%

Country Allocation

	TT Emerging Markets	MSCI Emerging Markets	
Top Contributors			
	End Weight	Return	Contribution
PJSC GAZPROM ADR (OTC) CDI 1:2	1.47	61.95	0.91
QUDIAN ADR 1:1	1.31	48.22	0.63
VEON ADR 1:1	1.46	33.97	0.50
SBERBANK RUSSIA ADR 1:4	1.40	23.58	0.33
NASPERS	4.61	4.95	0.23
ICICI BANK	2.31	9.53	0.22
PUBLIC JOINT STOCK POLYUS GDR	1.39	15.74	0.22
BB SEGURIDADE ON	0.87	23.98	0.21
MAGNIT	1.54	11.76	0.18
ESTACIO PARTICIPACOES ON	1.39	12.78	0.18
Bottom Contributors			
	End Weight	Return	Contribution
ALIBABA GROUP HOLDING ADR 1:8	6.43	-7.13	-0.46
INDUSIND BANK	2.06	-20.47	-0.42
SAMSONITE INTERNATIONAL	1.46	-25.30	-0.37
FIRST QUANTUM MRLS.	0.99	-16.03	-0.16
ARVIND FASHIONS	0.41	-34.53	-0.14
CHINA EVERBRIGHT (HSC) INTERNATIONAL	1.61	-8.49	-0.14
KINGBOARD LAMINATES HDG.	1.58	-8.33	-0.13
LUKOIL OAO SPN ADR 1:1	1.75	-6.03	-0.11
GODREJ INDUSTRIES	1.09	-9.44	-0.10
CEMEX ADR 1:10	1.33	-7.51	-0.10

Unclassified sector allocation includes cash allocations.



Return (Rank)

5th Percentile	5.0	15.2	7.1	11.0	-9.0	49.2	22.4	-5.0	8.0
25th Percentile	2.6	12.5	4.8	8.6	-13.2	42.8	13.7	-9.0	2.9
Median	1.4	10.7	3.4	7.5	-15.2	37.6	10.4	-12.2	-0.1
75th Percentile	0.6	8.8	2.5	6.6	-17.4	33.2	6.6	-15.3	-2.4
95th Percentile	-1.4	6.2	0.8	5.7	-21.8	27.8	-0.6	-19.2	-7.0
# of Portfolios	353	328	284	141	355	343	337	273	251
● TT Emerging Markets	0.8 (69)	-- (31)	-- (--)	-- (--)	-18.4 (83)	-- (--)	-- (--)	-- (--)	-- (--)
▲ MSCI Emerging Markets	0.6 (76)	10.7 (59)	2.5 (74)	5.8 (95)	-14.6 (43)	37.3 (53)	11.2 (45)	-14.9 (70)	-2.2 (74)

Global Equity Managers

Artisan Partners Manager Portfolio Overview

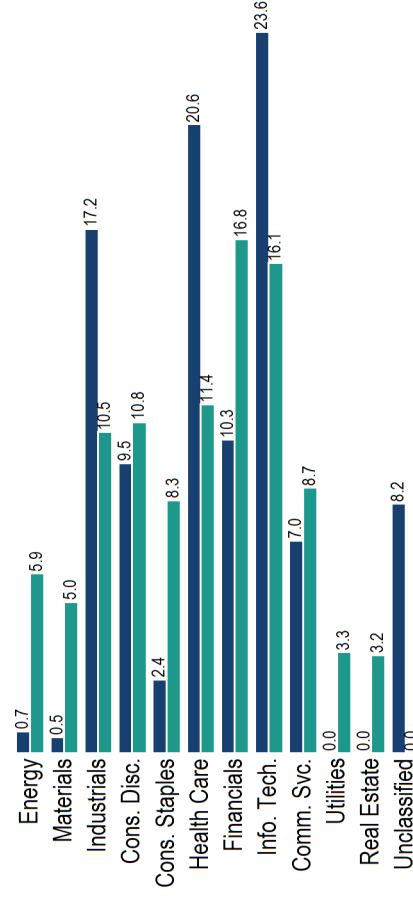
Period Ending: June 30, 2019

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

Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	46	2,847
Weighted Avg. Market Cap. (\$B)	120.09	147.74
Median Market Cap. (\$B)	27.32	9.38
Price To Earnings	32.51	17.63
Price To Book	5.12	2.93
Price To Sales	3.09	1.53
Return on Equity (%)	21.86	19.99
Yield (%)	0.83	2.49
Beta	1.27	1.00

Sector Allocation (%) vs MSCI ACWI



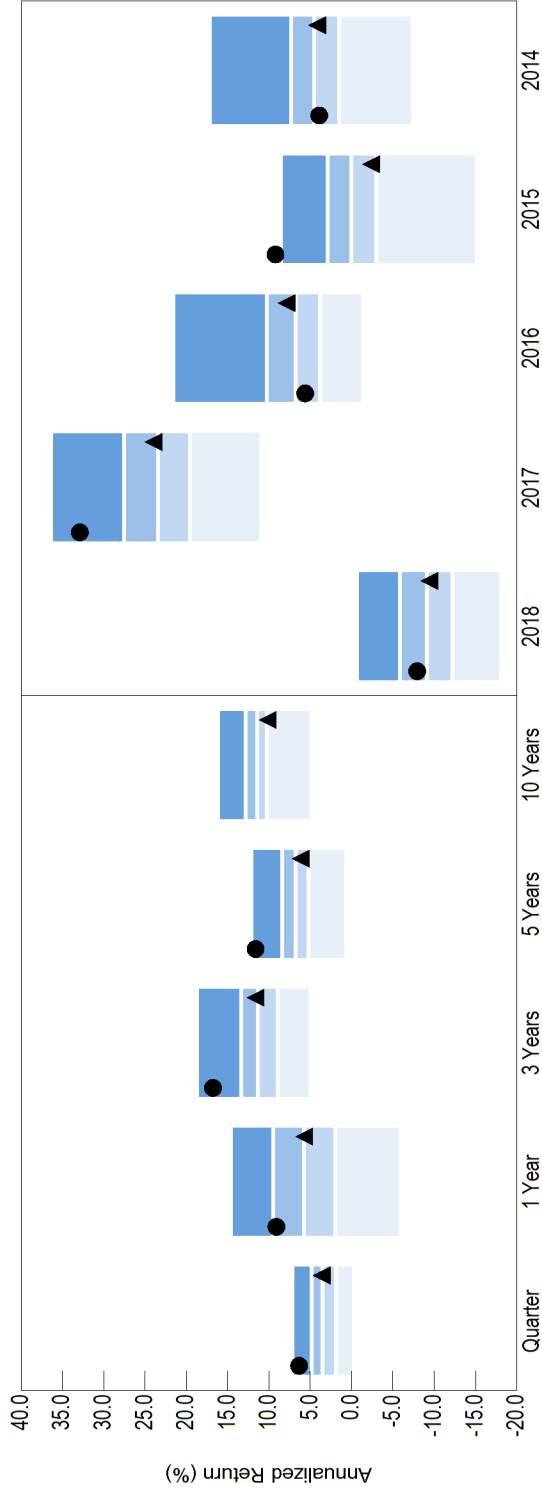
Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	89.6%	88.2%
Emerging*	2.2%	11.8%
Top 10 Largest Countries		
United States	56.4%	55.2%
United Kingdom	8.8%	5.0%
Cash	8.2%	0.0%
Hong Kong	6.8%	1.2%
Switzerland	5.3%	2.8%
Denmark	4.5%	0.5%
India*	2.2%	1.1%
Japan	2.0%	7.1%
Germany	2.0%	2.6%
Spain	1.4%	0.9%
Total-Top 10 Largest Countries	97.5%	76.4%

	Avg Wgt	Return	Contribution	Avg Wgt	Return	Contribution
IHS MARKIT	6.24	17.18	1.07	2.14	-24.76	-0.53
TECHTRONIC INDS.	3.88	15.04	0.58	1.23	-27.16	-0.33
TEMENOS N	2.53	22.05	0.56	2.64	-7.99	-0.21
VISA 'A'	4.32	11.28	0.49	2.42	-7.43	-0.18
ADIDAS	1.65	28.14	0.46	1.79	-6.92	-0.12
L3HARRIS TECHNOLOGIES	2.30	18.86	0.43	1.42	-5.31	-0.08
BOSTON SCIENTIFIC	3.28	11.99	0.39	2.02	-3.11	-0.06
NINTENDO	1.19	28.55	0.34	0.54	-10.73	-0.06
PAGSEGURO DIGITAL A	1.05	30.55	0.32	1.61	-3.10	-0.05
HDFC BANK ADR 1:3	2.47	12.76	0.32	2.79	-1.58	-0.04

Unclassified sector allocation includes cash allocations.

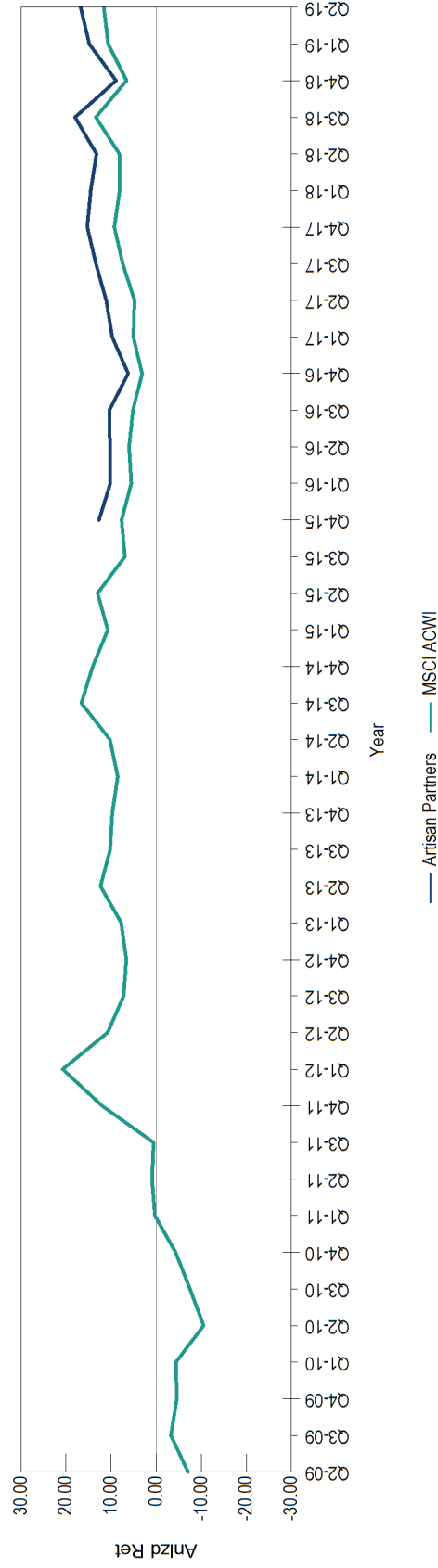
Artisan Partners vs. eV All Global Equity Gross Universe



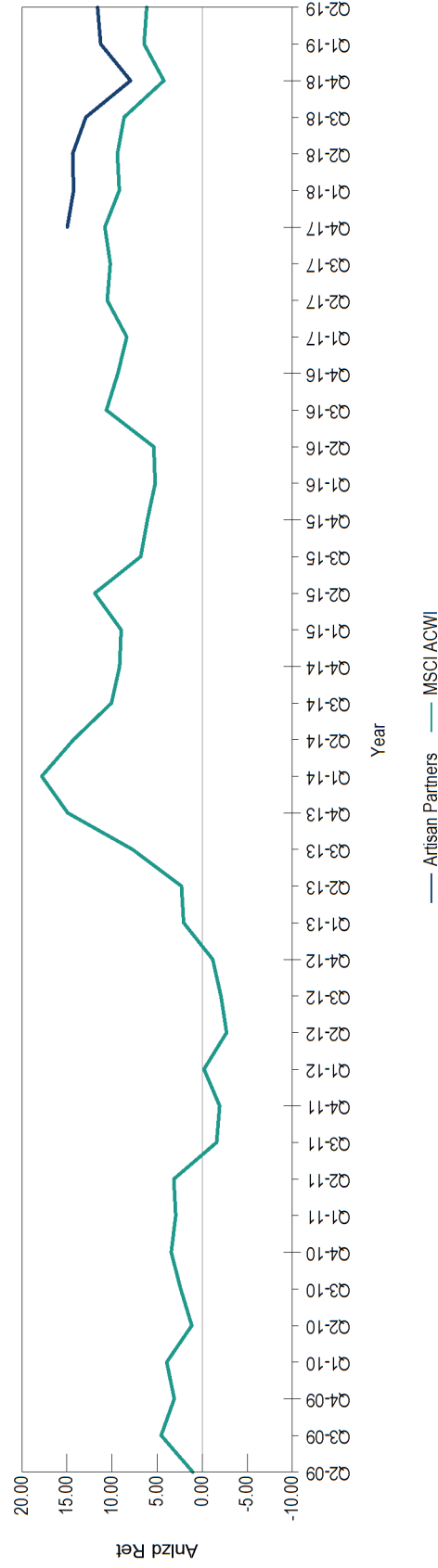
Return (Rank)

	Quarter	1 Year	3 Years	5 Years	10 Years	2014	2015	2016	2017	2018
5th Percentile	7.2	14.5	18.7	12.1	16.1	-0.7	8.5	21.5	36.3	-0.7
25th Percentile	4.9	9.5	13.4	8.5	12.8	-5.8	3.0	10.3	27.6	-5.8
Median	3.6	5.8	11.3	6.8	11.5	-9.1	0.1	6.8	23.5	-9.1
75th Percentile	2.0	2.0	9.0	5.3	10.3	-12.2	-2.9	3.9	19.6	-12.2
95th Percentile	-0.2	-5.9	5.0	0.7	4.8	-18.1	-15.1	-1.4	11.0	-18.1
# of Portfolios	917	917	857	742	478	920	692	842	880	920
● Artisan Partners	6.4 (11)	9.1 (29)	16.8 (11)	11.6 (7)	--	-7.9 (40)	9.2 (4)	5.6 (61)	32.9 (11)	-7.9 (40)
▲ MSCIACWI	3.6 (50)	5.7 (51)	11.6 (47)	6.2 (63)	10.1 (77)	-9.4 (53)	-2.4 (73)	7.9 (42)	24.0 (47)	-9.4 (53)

Rolling 3 Year Annualized Return (%)

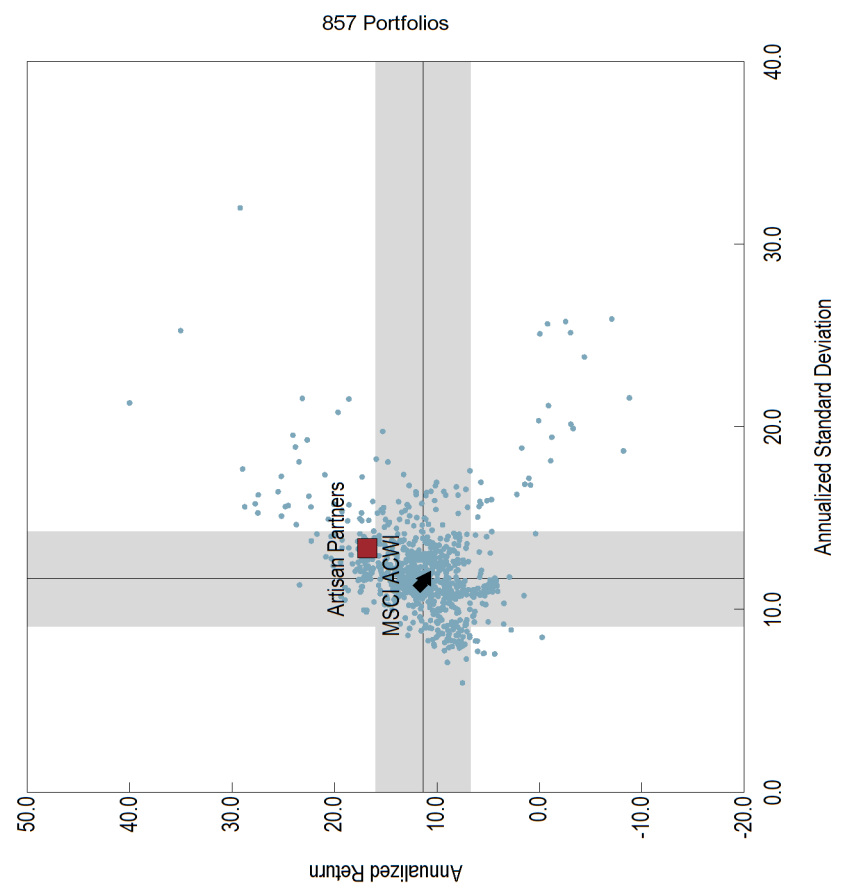


Rolling 5 Year Annualized Return (%)



Artisan Partners
 Risk vs. Return 3 & 5 Year (Gross of Fees) Period Ending: June 30, 2019

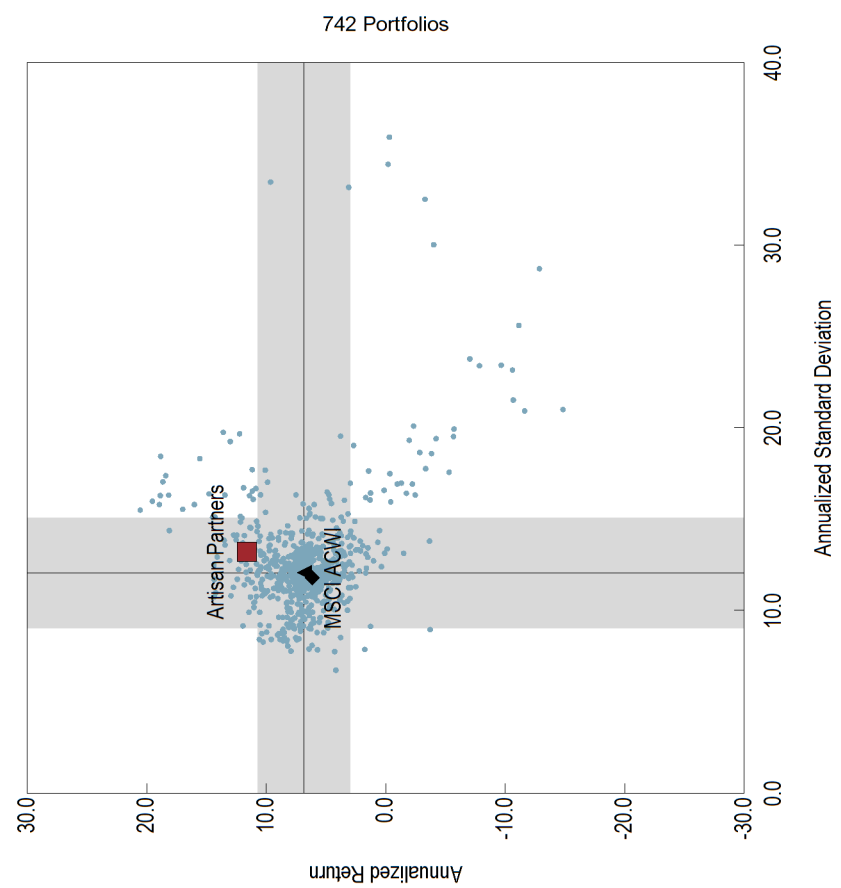
3 Years



3 Years

	Artisan Partners	MSCI ACWI	eV All Global Equity Gross Median
Annualized Return	16.8%	11.6%	11.3%
Annualized Standard Deviation	13.3%	11.3%	11.7%
Sharpe Ratio	1.2	0.9	0.9

5 Years



5 Years

	Artisan Partners	MSCI ACWI	eV All Global Equity Gross Median
Annualized Return	11.6%	6.2%	6.8%
Annualized Standard Deviation	13.2%	11.8%	12.1%
Sharpe Ratio	0.8	0.4	0.5

First Eagle Manager Portfolio Overview

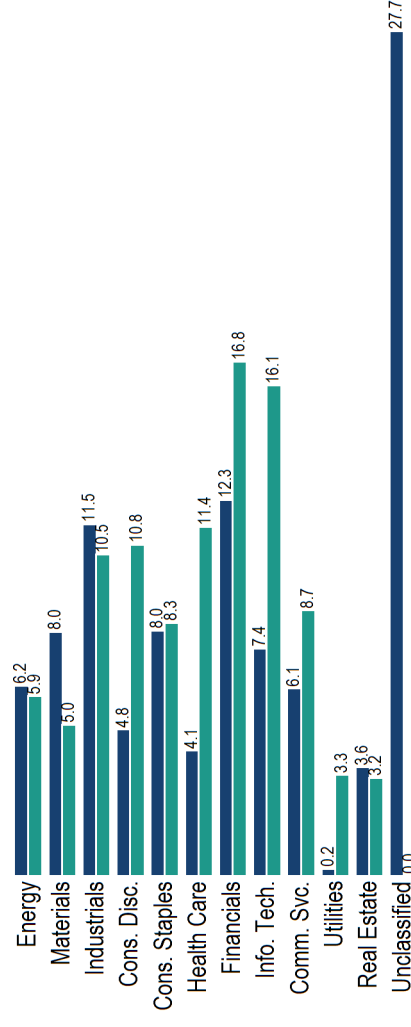
Period Ending: June 30, 2019

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

Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	130	2,847
Weighted Avg. Market Cap. (\$B)	74.50	147.74
Median Market Cap. (\$B)	18.97	9.38
Price To Earnings	17.23	17.63
Price To Book	2.31	2.93
Price To Sales	1.42	1.53
Return on Equity (%)	15.04	19.99
Yield (%)	2.38	2.49
Beta	0.71	1.00

Sector Allocation (%) vs MSCI ACWI



Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
Totals		
Developed	78.4%	88.2%
Emerging*	3.4%	11.8%
Cash	18.2%	
Top 10 Largest Countries		
United States	44.9%	55.2%
Cash	18.2%	0.0%
Japan	11.3%	7.1%
France	5.5%	3.4%
United Kingdom	5.4%	5.0%
Canada	2.7%	3.0%
Switzerland	2.3%	2.8%
Korea*	1.9%	1.5%
Singapore	1.3%	0.4%
Hong Kong	1.2%	1.2%
Total-Top 10 Largest Countries	94.6%	79.6%

Top Contributors

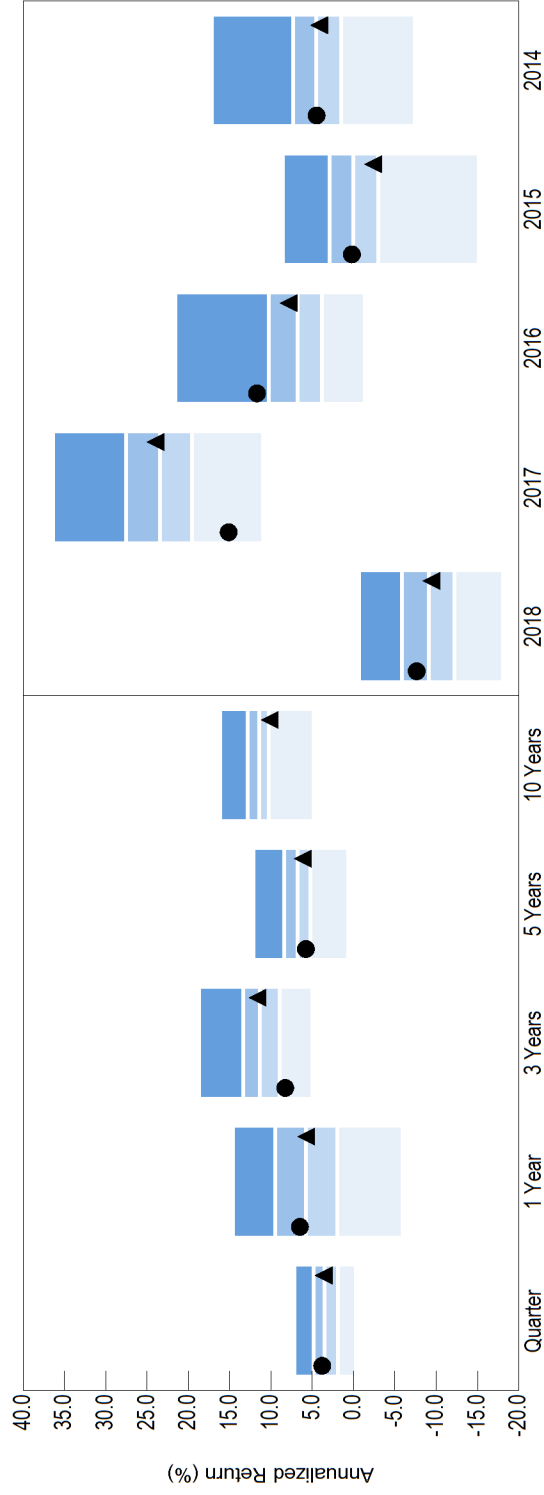
	Avg Wgt	Return	Contribution	End Weight	Return	Contribution
SPDR GOLD SHARES	2.85	9.17	0.26	1.36	-14.39	-0.20
KDDI	0.43	18.18	0.08	0.92	-15.85	-0.15
DANONE	0.45	13.06	0.06	0.79	-17.87	-0.14
W R BERKLEY	0.32	17.83	0.06	1.13	-11.95	-0.14
ORACLE	0.83	6.54	0.05	0.75	-16.35	-0.12
FANUC	0.53	8.45	0.04	1.63	-7.51	-0.12
NESTLE 'R'	0.38	11.60	0.04	1.13	-9.84	-0.11
KIA MOTORS	0.18	22.36	0.04	1.98	-4.08	-0.08
NEWCREST MINING	0.17	23.73	0.04	0.80	-8.01	-0.06
COMCAST A	0.64	6.31	0.04	0.22	-26.66	-0.06
BRITISH AMERICAN TOBACCO						
3M						
TERADATA						
BANK OF NEW YORK MELLON						
NATIONAL OILWELL VARCO						
SCHLUMBERGER						
PHILIP MORRIS INTL.						
EXXON MOBIL						
LLOYDS BANKING GROUP						
CIELO ON						

Bottom Contributors

Unclassified sector allocation includes cash allocations and Gold allocations (8.8% as of 6/30/2019).

First Eagle
 Manager Performance Comparisons (Gross of Fees) Period Ending: June 30, 2019

First Eagle vs. eV All Global Equity Gross Universe

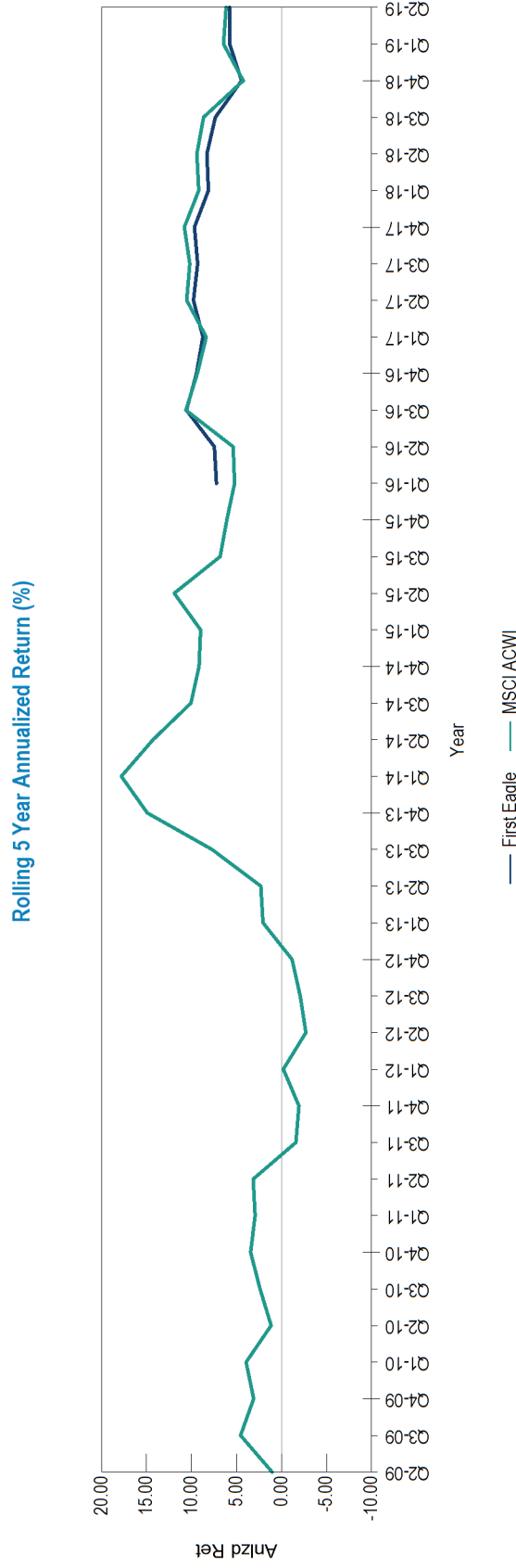
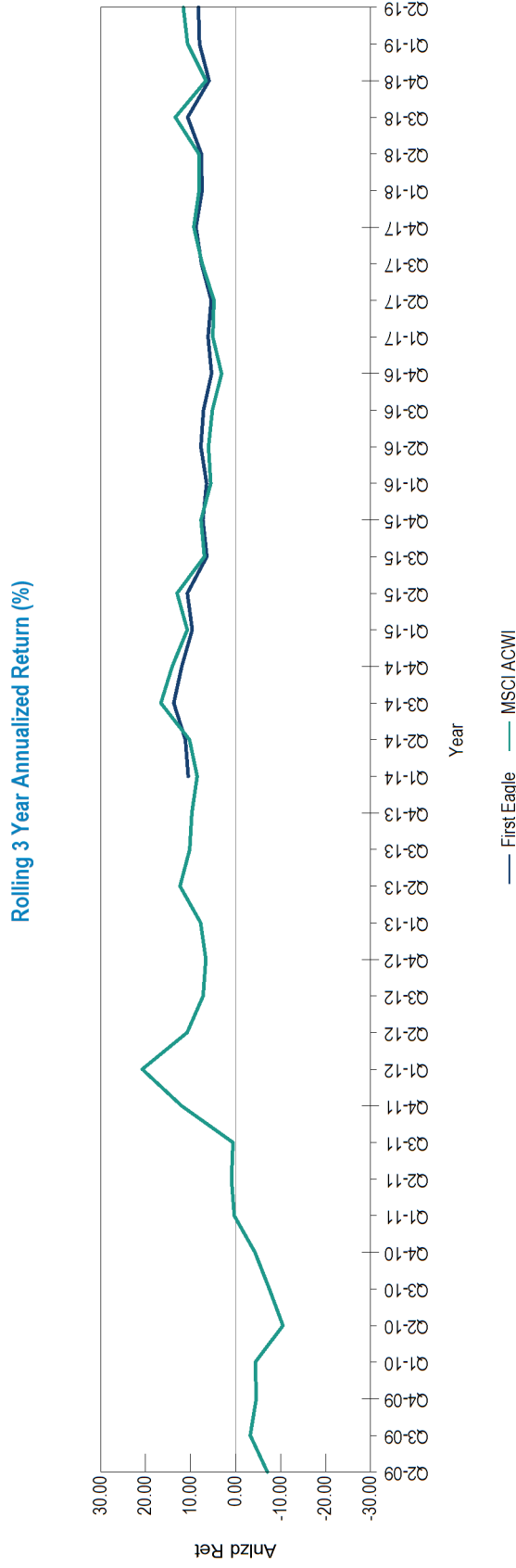


Return (Rank)

Period	5th Percentile	25th Percentile	Median	75th Percentile	95th Percentile	# of Portfolios
Quarter	7.2	4.9	3.6	2.0	-0.2	917
1 Year	14.5	9.5	5.8	2.0	-5.9	917
3 Years	18.7	13.4	11.3	9.0	5.0	857
5 Years	12.1	8.5	6.8	5.3	0.7	742
10 Years	16.1	12.8	11.5	10.3	4.8	478
2014	17.1	7.4	4.6	1.5	-7.4	609
2015	8.5	3.0	0.1	-2.9	-15.1	692
2016	21.5	10.3	6.8	3.9	-1.4	842
2017	36.3	27.6	23.5	19.6	11.0	880
2018	-0.7	-5.8	-9.1	-12.2	-18.1	920
2019	-7.6	-9.4	-9.4	-9.4	-9.4	920

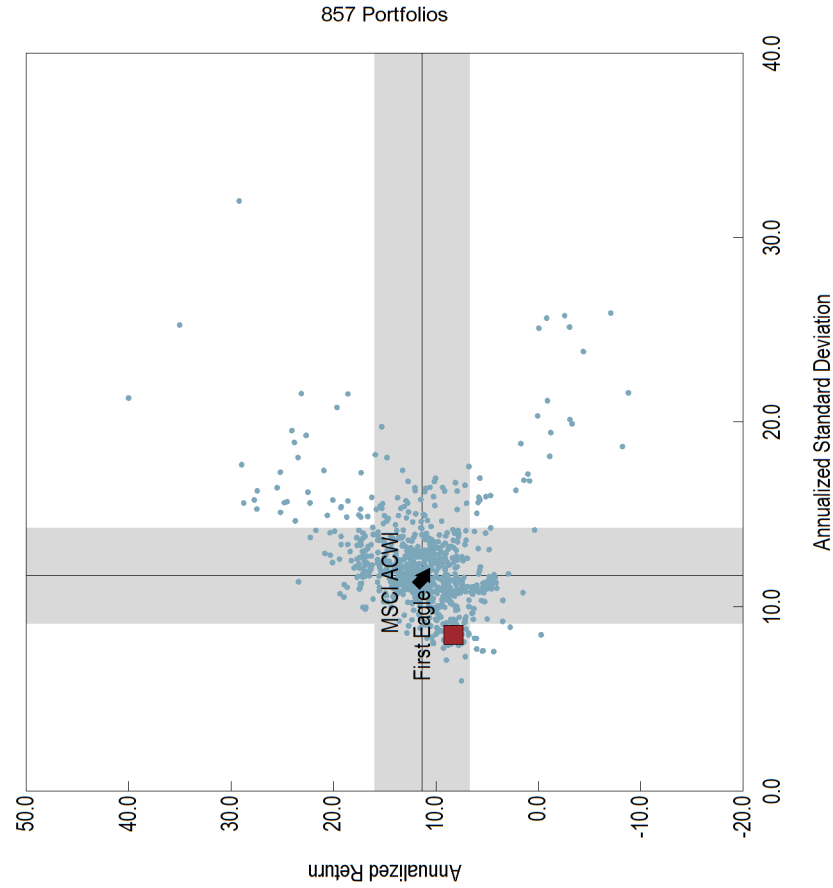
● First Eagle
 ▲ MSCIACWI

First Eagle
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: June 30, 2019



First Eagle
 Risk vs. Return 3 & 5 Year (Gross of Fees) Period Ending: June 30, 2019

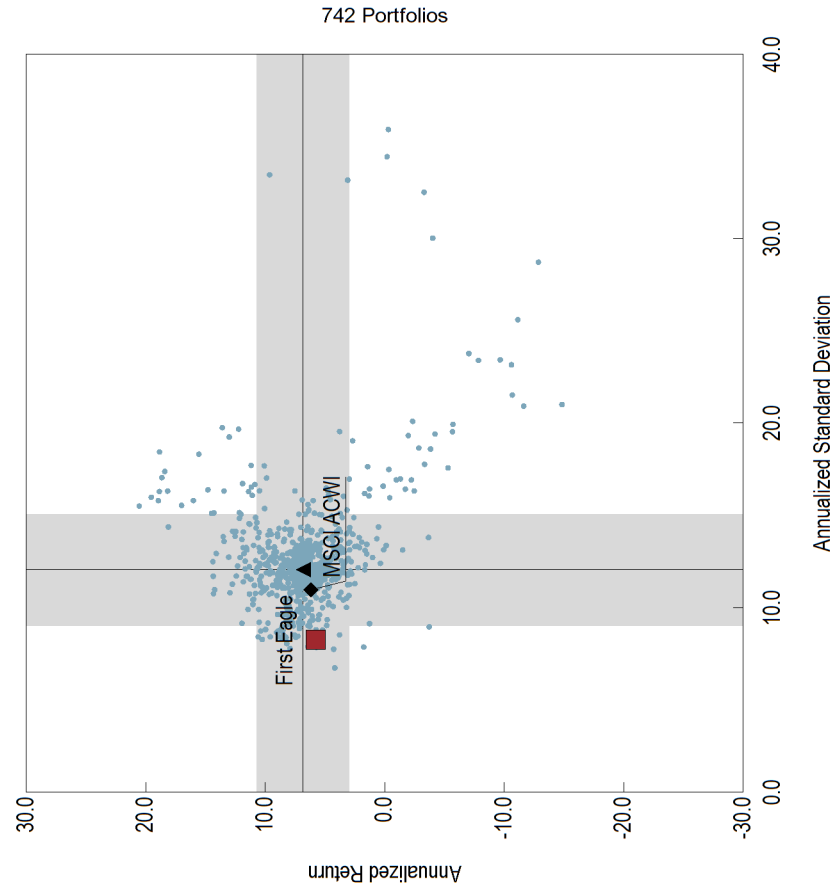
3 Years



3 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
First Eagle	11.3%	11.7%	0.9
MSCI ACWI	11.6%	11.3%	0.9
eV All Global Equity Gross Median	8.3%	8.5%	0.8

5 Years



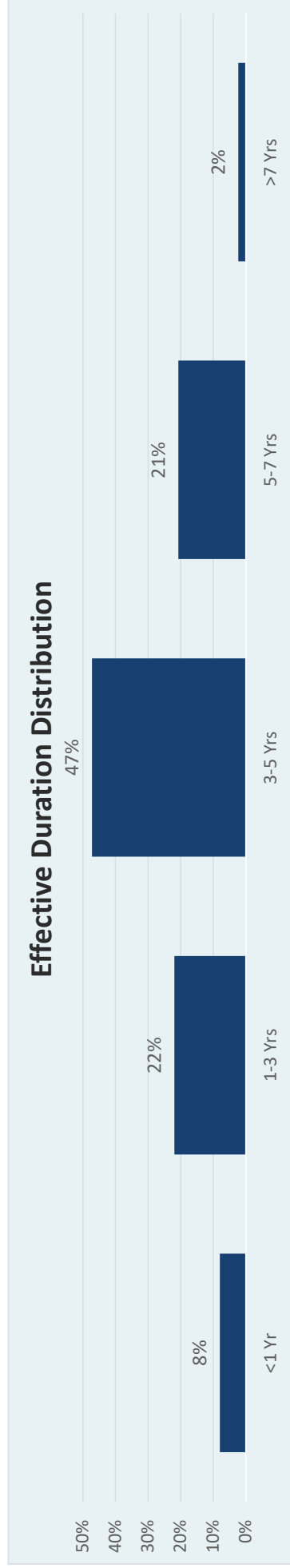
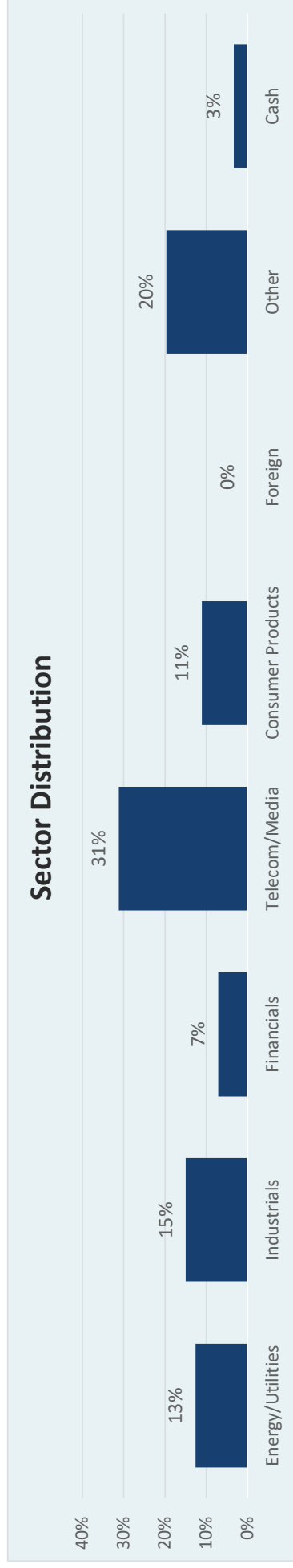
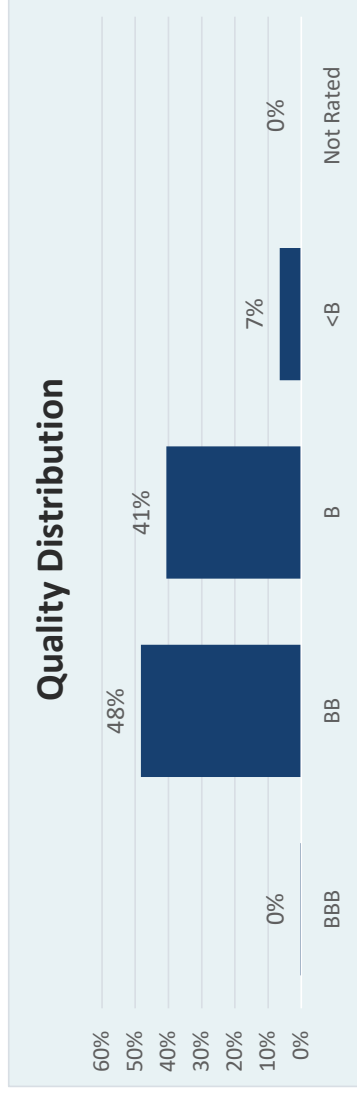
5 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
First Eagle	6.8%	12.1%	0.5
MSCI ACWI	6.2%	11.8%	0.4
eV All Global Equity Gross Median	5.8%	8.7%	0.6

High Yield Managers

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

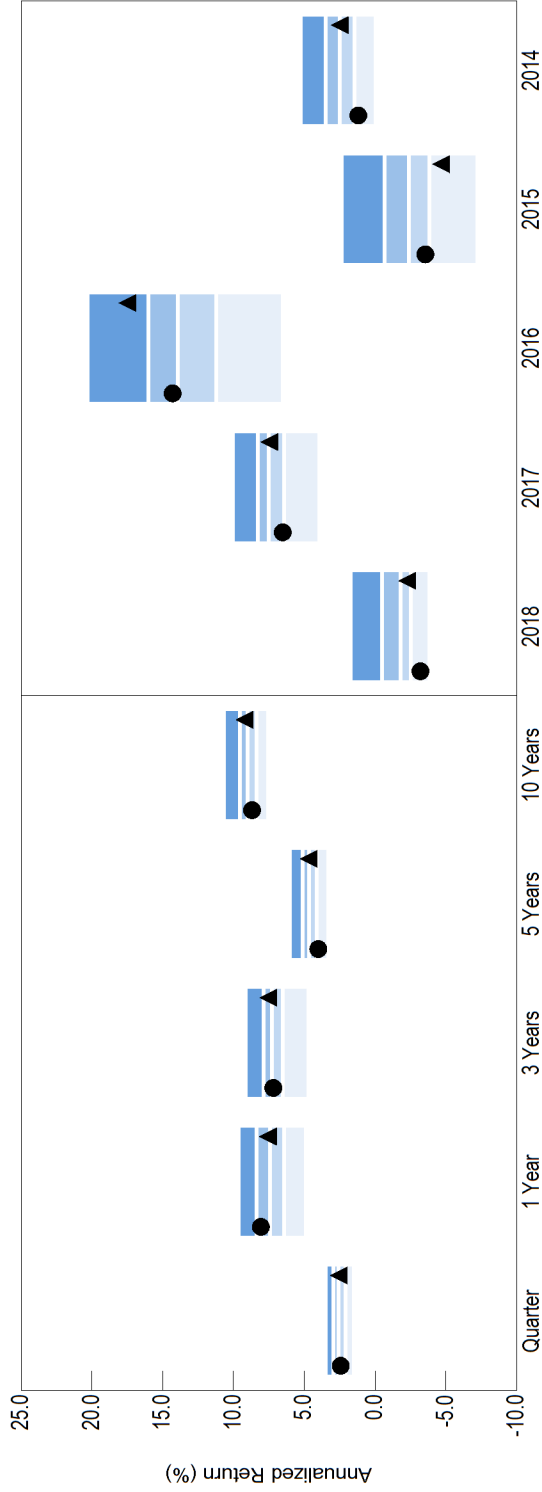
	Allianz	ICE BofAML HY Master II
Effective Duration	3.80	3.50
Yield to Maturity	6.20	6.50
Average Quality	B1	B1
Average Coupon	6.5%	6.4%



Quality distribution excludes cash.

Allianz Global Investors
 Manager Performance Comparisons (Gross of Fees) Period Ending: June 30, 2019

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

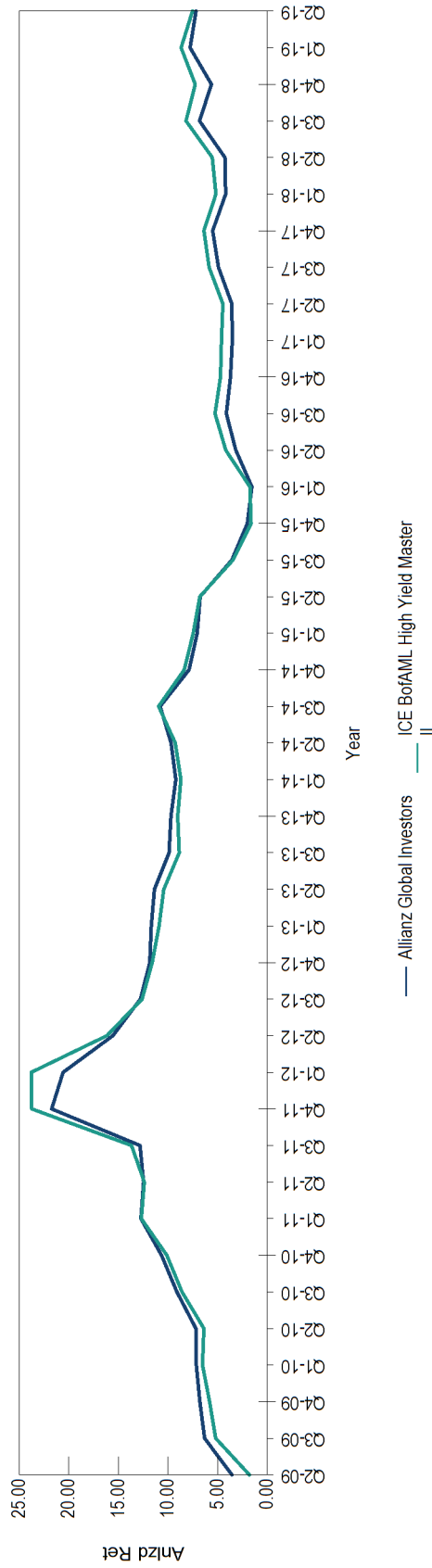


Return (Rank)

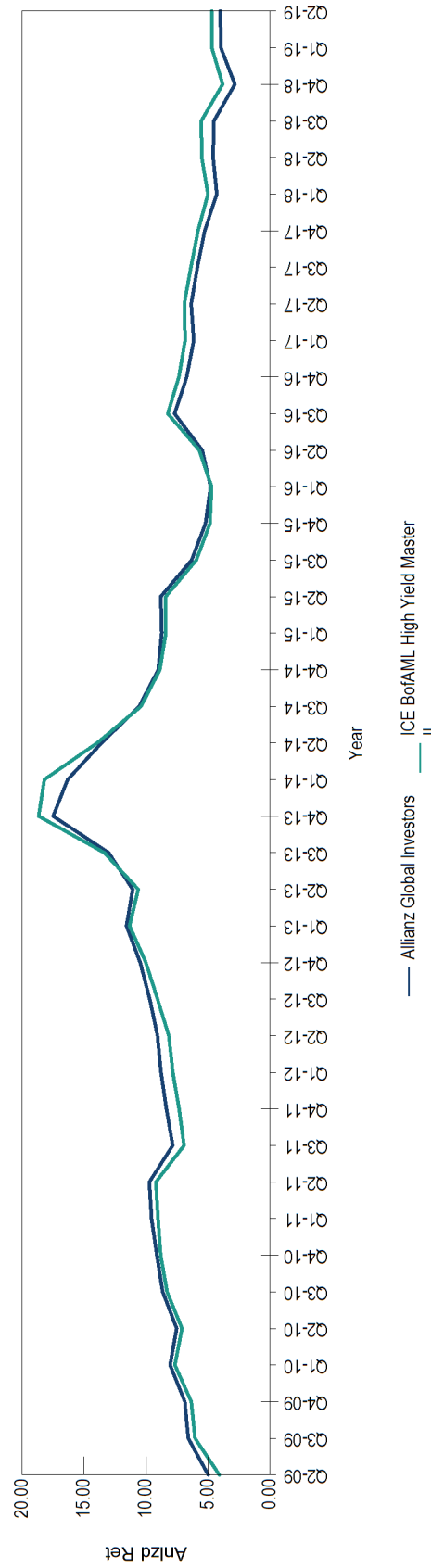
5th Percentile	3.5	9.6	9.1	6.0	10.6	1.7	10.0	20.3	2.3	5.2
25th Percentile	3.0	8.4	7.9	5.2	9.6	-0.5	8.3	16.0	-0.7	3.5
Median	2.6	7.5	7.3	4.7	9.0	-1.8	7.5	14.0	-2.4	2.5
75th Percentile	2.1	6.5	6.6	4.2	8.4	-2.5	6.5	11.3	-3.8	1.5
95th Percentile	1.5	4.9	4.8	3.3	7.6	-3.8	4.0	6.6	-7.2	0.0
# of Portfolios	198	198	190	178	126	210	198	183	155	141
● Allianz Global Investors	2.4 (62)	8.1 (36)	7.2 (57)	4.0 (79)	8.7 (67)	-3.2 (88)	6.5 (74)	14.3 (47)	-3.5 (68)	1.2 (83)
▲ ICE BofAML High Yield Master II	2.6 (53)	7.6 (47)	7.5 (40)	4.7 (50)	9.2 (41)	-2.3 (69)	7.5 (53)	17.5 (14)	-4.6 (83)	2.5 (50)

Allianz Global Investors
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees) Period Ending: June 30, 2019

Rolling 3 Year Annualized Return (%)



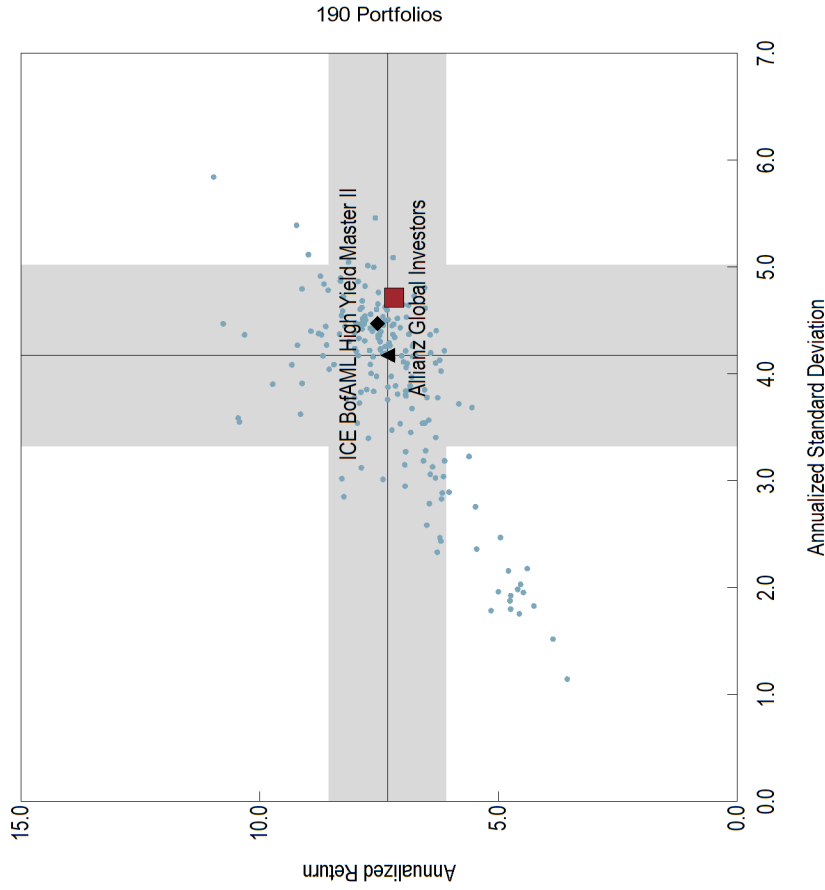
Rolling 5 Year Annualized Return (%)



Allianz Global Investors
 Risk vs. Return 3 & 5 Year (Gross of Fees)

Period Ending: June 30, 2019

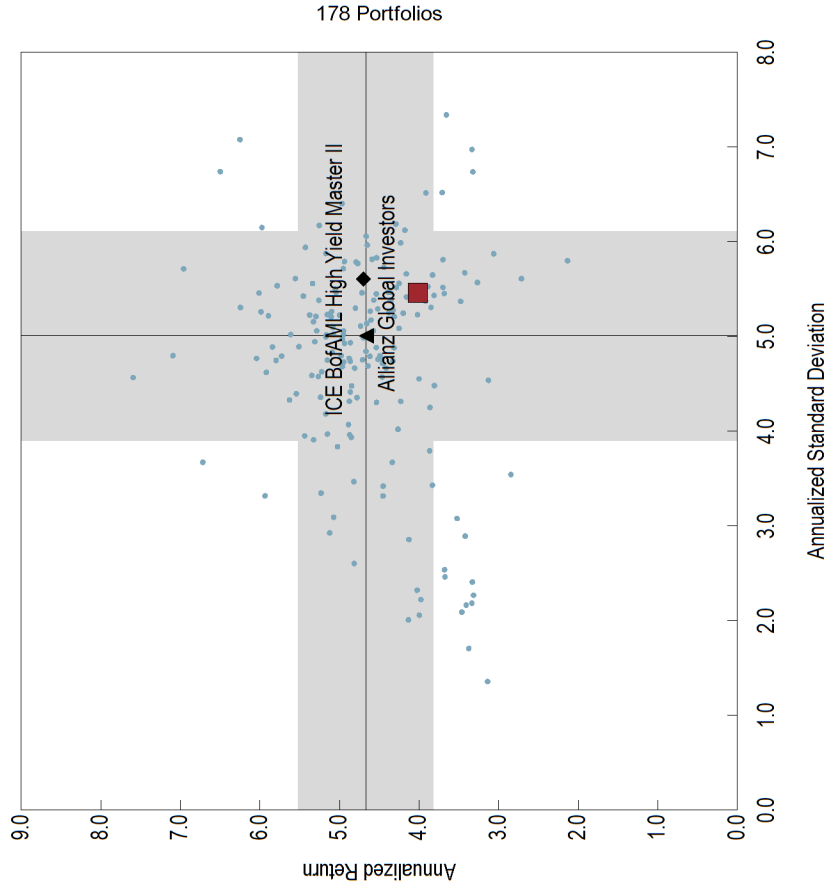
3 Years



3 Years

Allianz Global Investors	7.2%	4.7%	1.2
ICE BofAML High Yield Master II	7.5%	4.5%	1.4
eV US High Yield Fixed Inc Gross Median	7.3%	4.2%	1.5

5 Years



5 Years

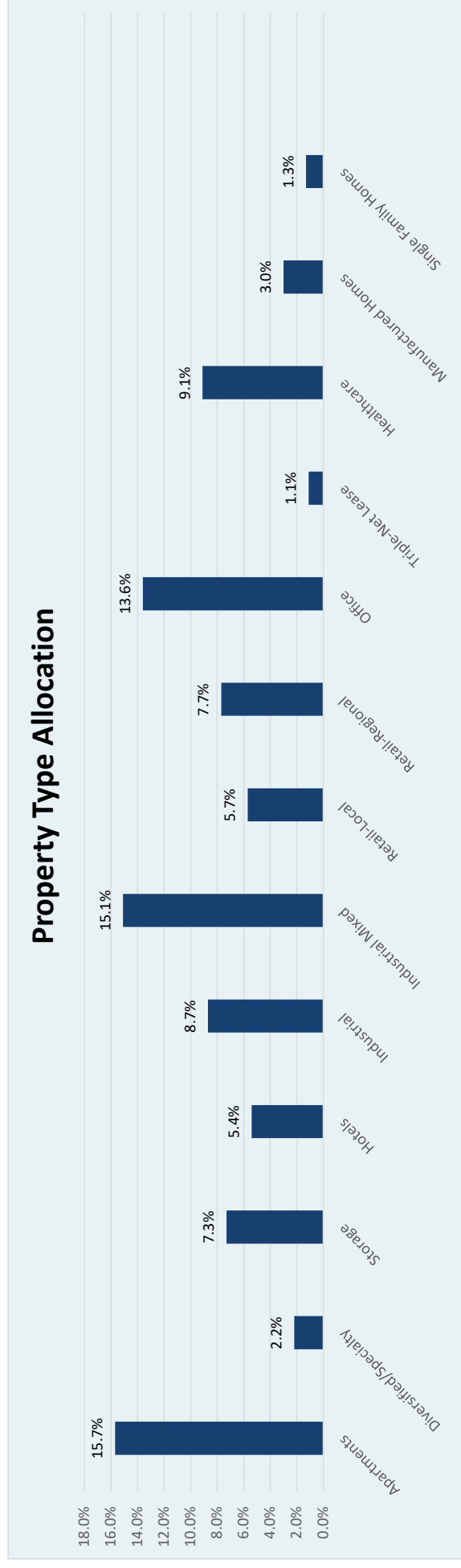
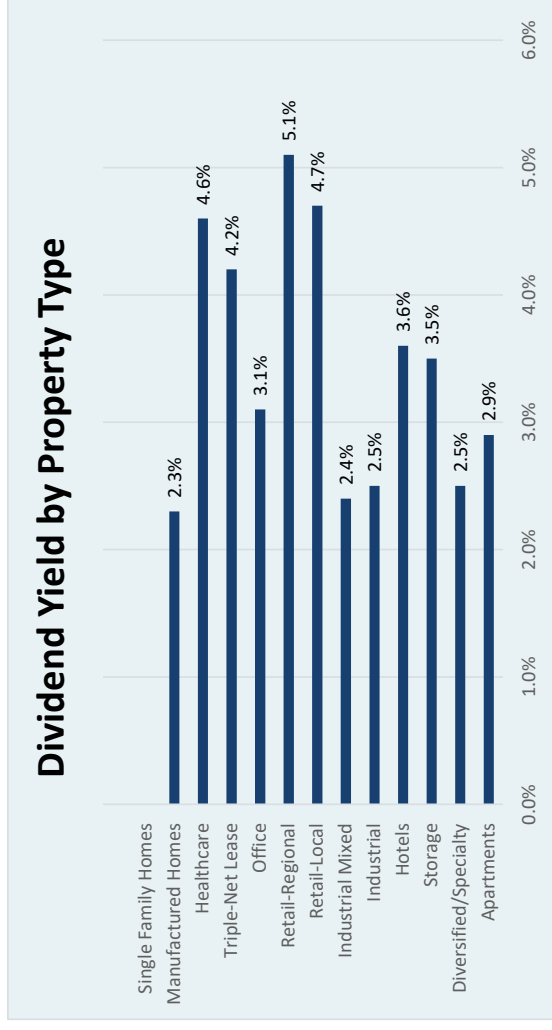
Allianz Global Investors	4.0%	5.5%	0.6
ICE BofAML High Yield Master II	4.7%	5.6%	0.7
eV US High Yield Fixed Inc Gross Median	4.7%	5.0%	0.8

Real Estate Managers

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

Top Five Holdings

Company	Property Type	Allocation
Simon Property Group	Retail-Regional	7.7%
PoLogis Inc.	Industrial	7.2%
Equinix Inc	Industrial Mixed	6.8%
Equity Residential	Apartments	5.7%
HCP Inc.	Healthcare	4.4%



4% is allocated to Cash and Cash Equivalents.

Diversifying Fixed Income Managers

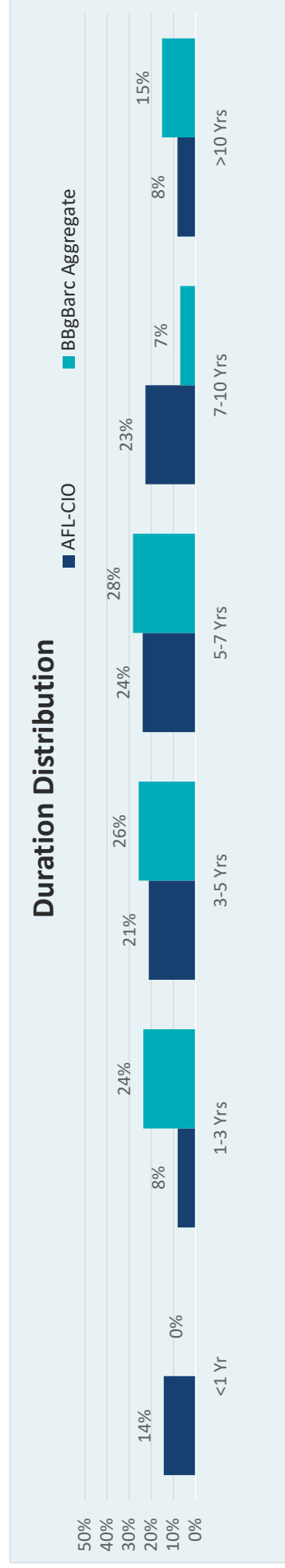
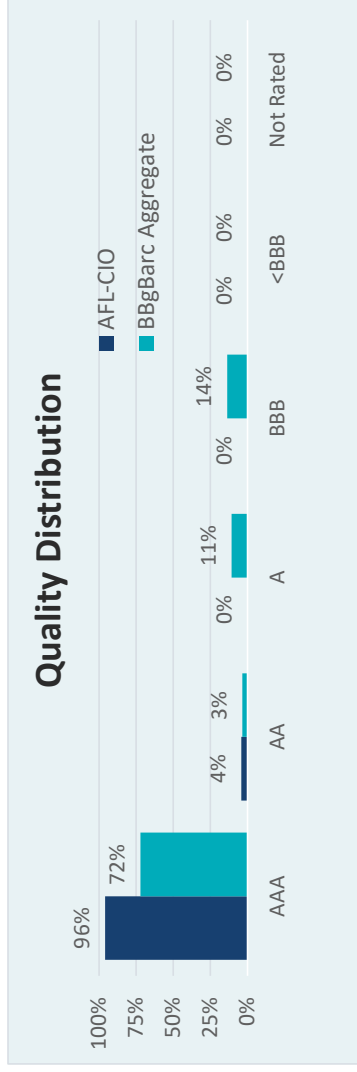
AFL-CIO

Manager Portfolio Overview

Period Ending: June 30, 2019

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

	AFL-CIO	BBgBarc Aggregate
Effective Duration	5.55	5.92
Yield to Maturity	3.23	3.08
Average Quality	AAA	AA
Average Coupon	3.3%	3.3%



Duration and Quality distributions exclude cash.

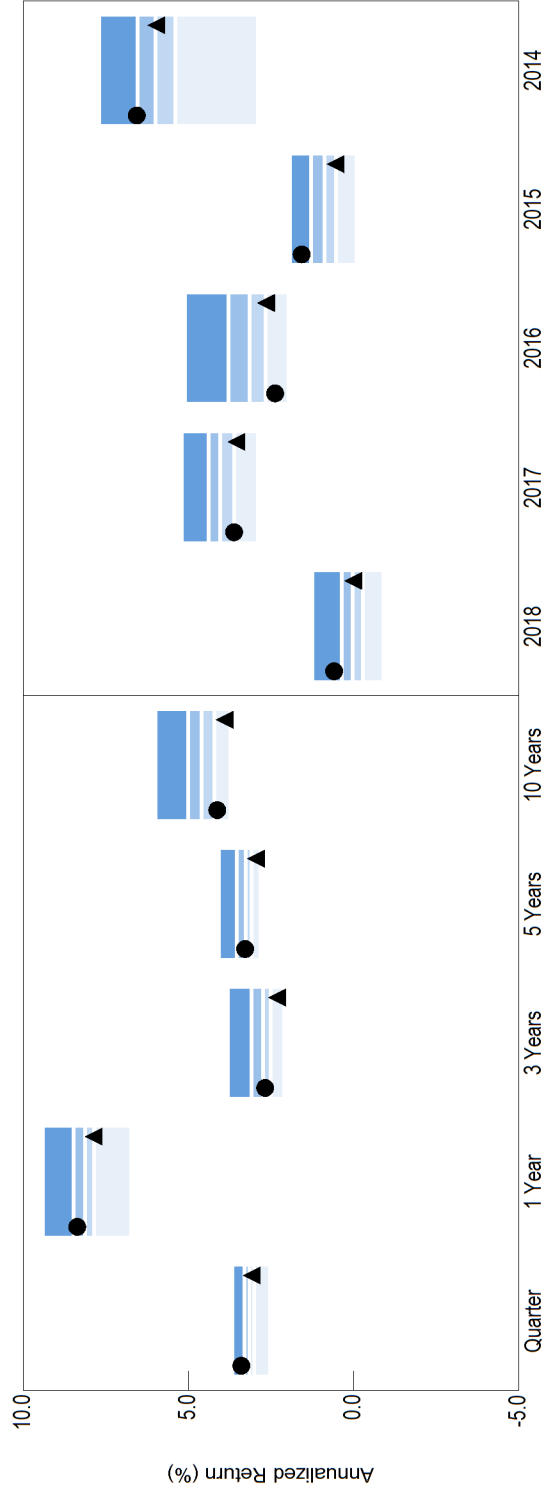


AFL-CIO

Manager Performance Comparisons (Gross of Fees)

Period Ending: June 30, 2019

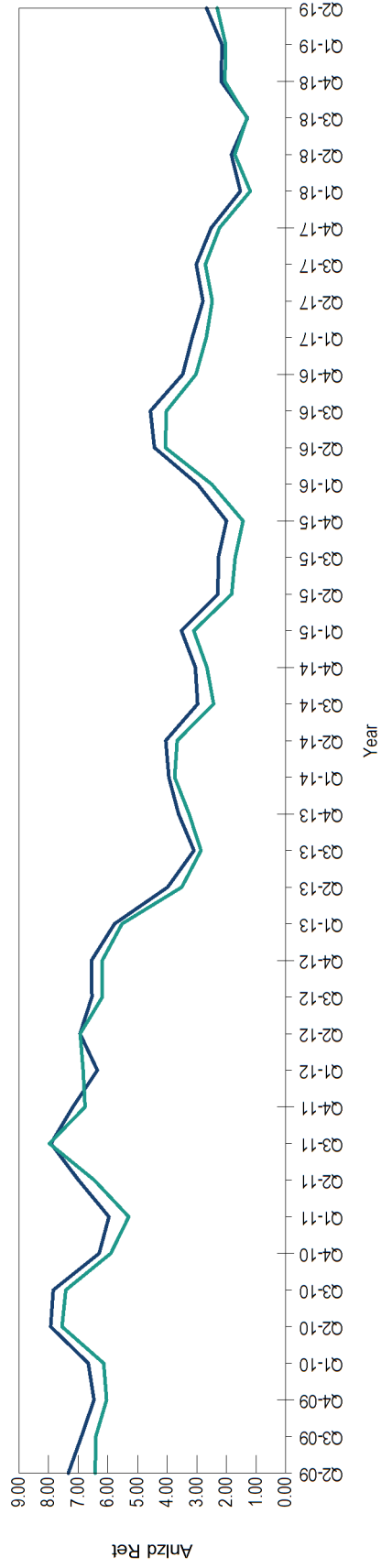
AFL-CIO vs. eV US Core Fixed Inc Gross Universe



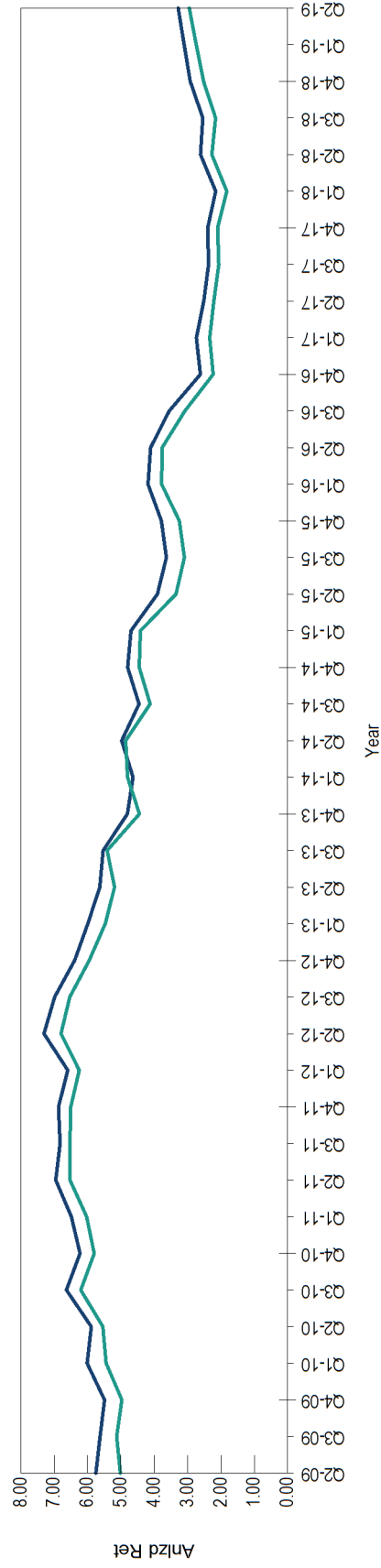
Return (Rank)

	Quarter	1 Year	3 Years	5 Years	10 Years	2014	2015	2016	2017	2018	2019
5th Percentile	3.7	9.4	3.8	4.1	6.0	1.2	1.9	5.1	5.2	1.2	1.9
25th Percentile	3.3	8.5	3.1	3.5	5.0	0.4	1.3	3.8	4.4	0.4	1.3
Median	3.2	8.1	2.8	3.3	4.6	0.0	0.9	3.2	4.0	0.0	0.9
75th Percentile	3.0	7.9	2.5	3.1	4.2	-0.3	0.5	2.7	3.6	-0.3	0.5
95th Percentile	2.5	6.7	2.1	2.8	3.7	-0.9	-0.1	2.0	2.9	-0.9	-0.1
# of Portfolios	222	222	218	214	197	240	196	223	233	240	196
● AFL-CIO	3.4 (19)	8.4 (33)	2.7 (57)	3.3 (50)	4.1 (81)	0.6 (16)	1.6 (15)	2.4 (87)	3.6 (76)	0.6 (16)	1.6 (15)
▲ BbgBarc US Aggregate TR	3.1 (67)	7.9 (74)	2.3 (90)	2.9 (89)	3.9 (92)	0.0 (54)	0.6 (75)	2.6 (77)	3.5 (79)	0.0 (54)	0.6 (75)

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)

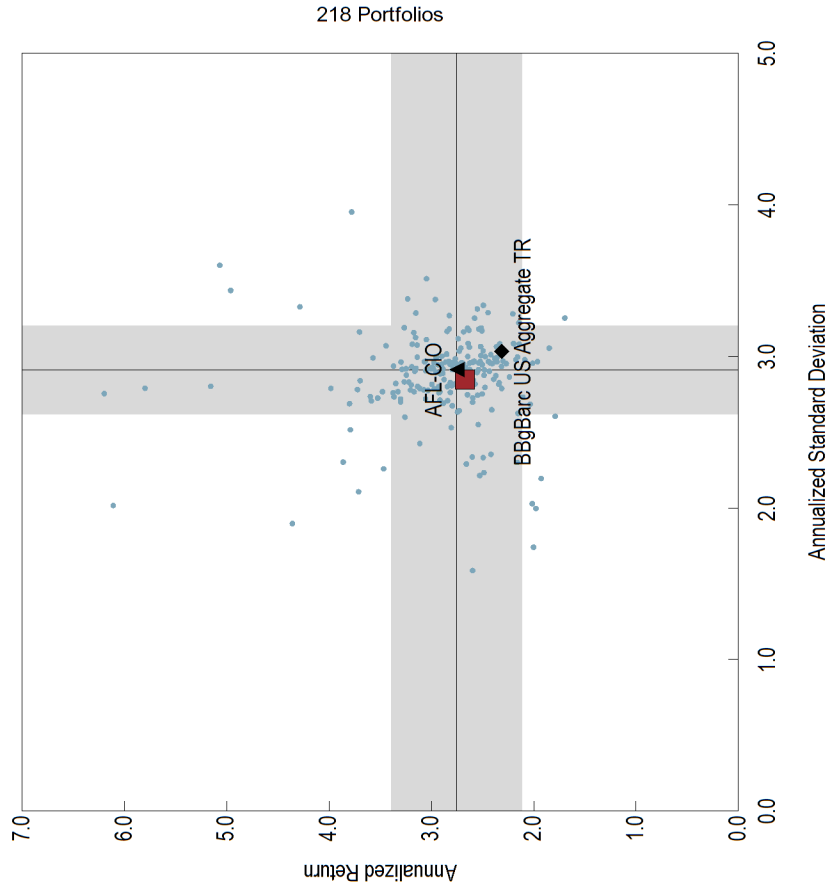


AFL-CIO

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

Period Ending: June 30, 2019

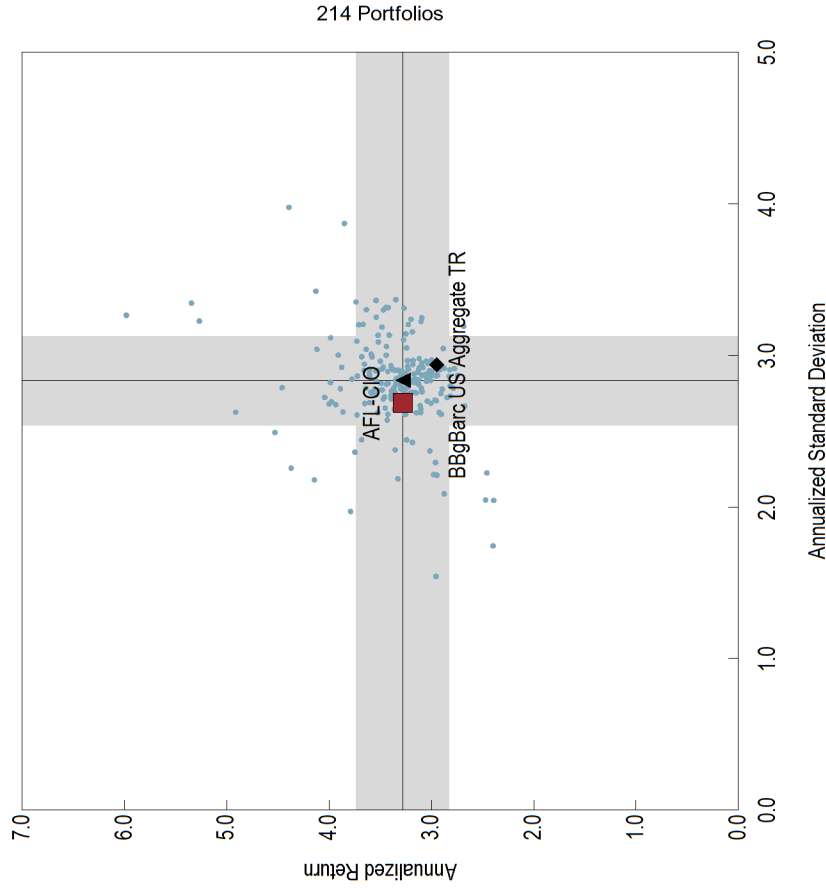
3 Years



3 Years

AFL-CIO	2.7%	2.8%	0.4
BBgBarc US Aggregate TR	2.3%	3.0%	0.3
eV US Core Fixed Inc Gross Median	2.8%	2.9%	0.5

5 Years



5 Years

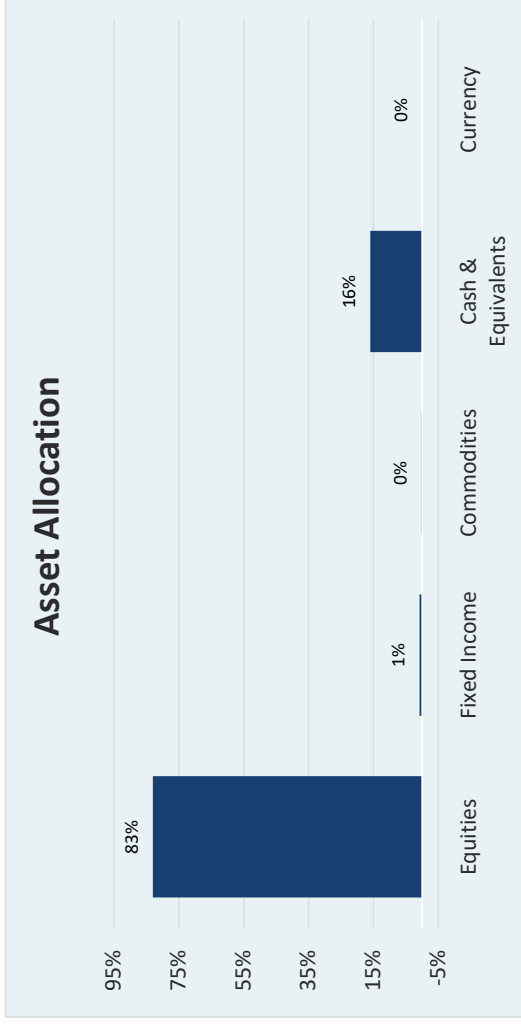
AFL-CIO	3.3%	2.7%	0.9
BBgBarc US Aggregate TR	2.9%	2.9%	0.7
eV US Core Fixed Inc Gross Median	3.3%	2.8%	0.9

Wellington Total Return Manager Portfolio Overview

Period Ending: June 30, 2019

Tactical multi-asset class real return strategy with a focus on managing risk of active strategies used to gain exposure to attractive assets of markets.

	Wellington Total Return
Number of Equity Holdings	1,052
Number of Commodity Holdings	122
Effective Duration (Years)	5.30



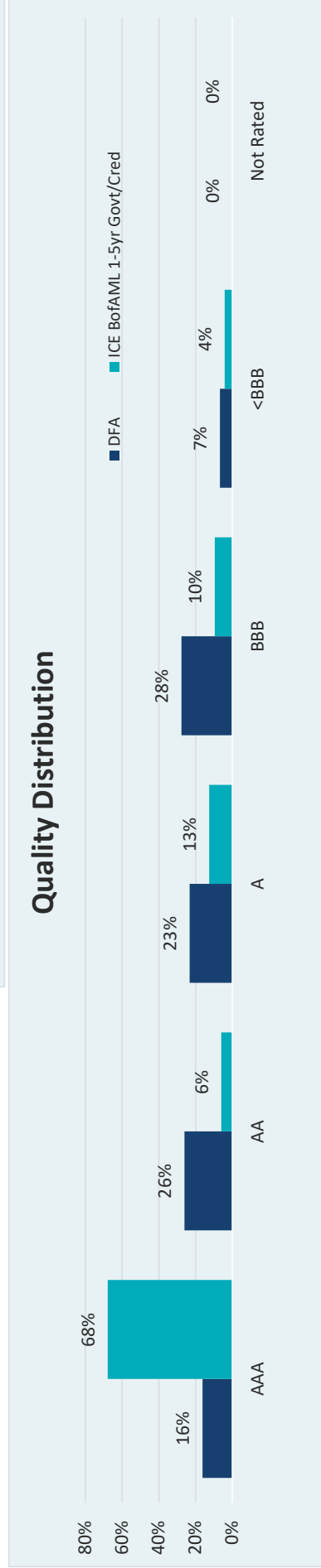
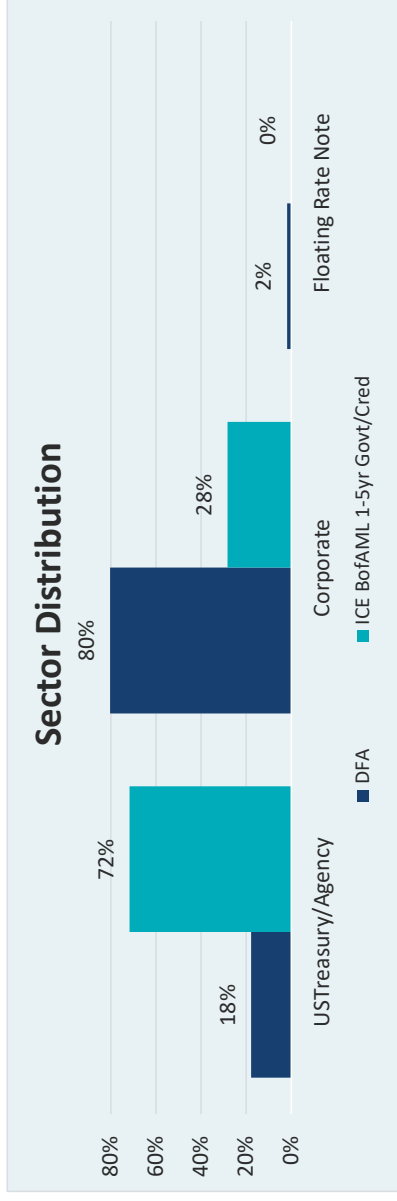
Liquidity Managers

DFA Short Credit Manager Portfolio Overview

Period Ending: June 30, 2019

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

	DFA	ICE BofAML 1-5yr Govt/Cred
Effective Duration	1.78	2.63
Yield to Maturity	2.35	2.04
Average Quality	A	Aa1
Average Coupon	2.82%	2.68%

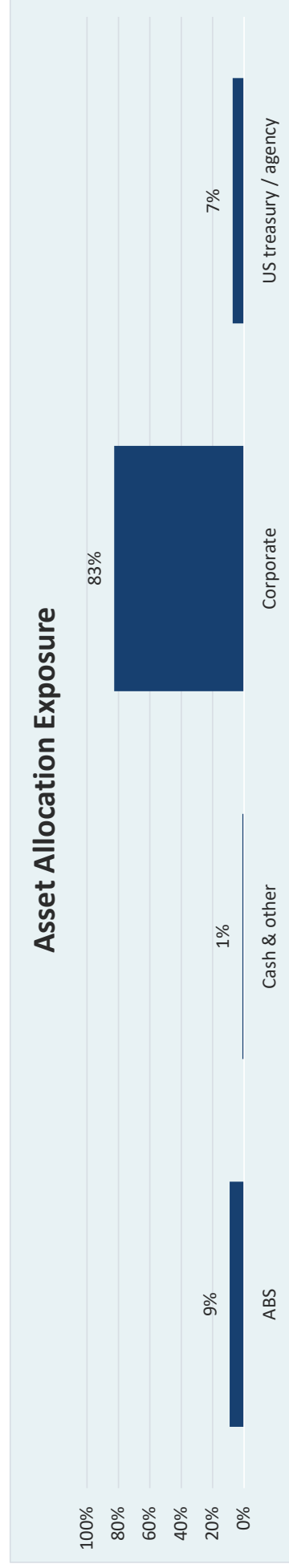
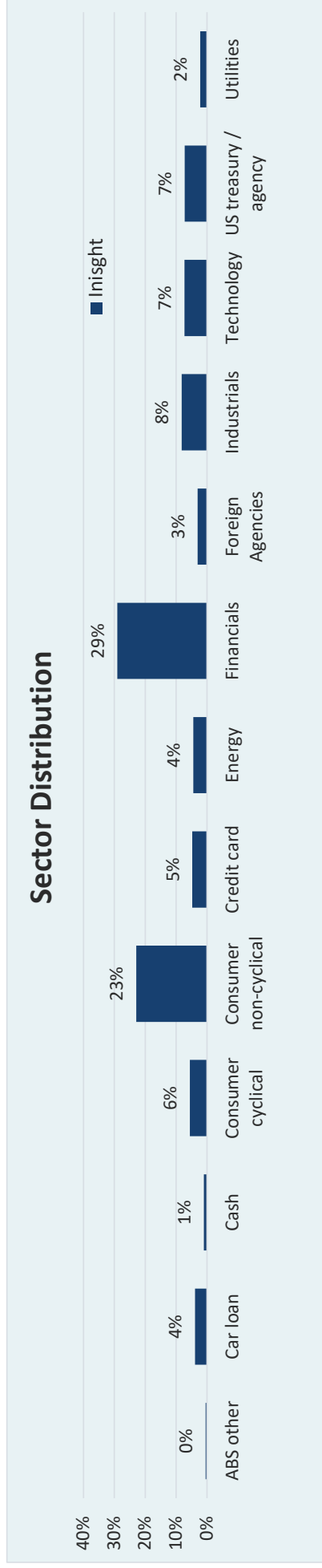
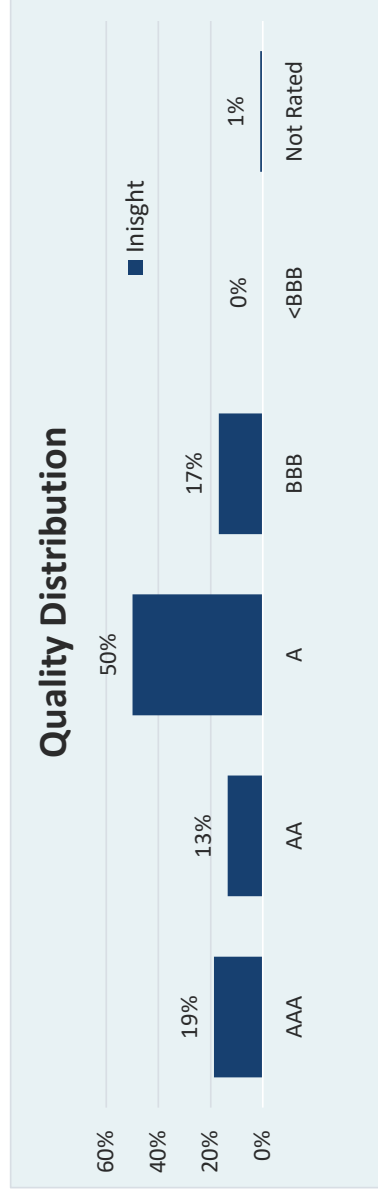


Insight Short Duration Manager Portfolio Overview

Period Ending: June 30, 2019

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

	Insight	BBgBarc 1-3yr Govt
Effective Duration	1.44	1.90
Yield to Maturity	2.78	1.80
Average Quality	A+	AAA
Average Coupon	2.43%	2.13%

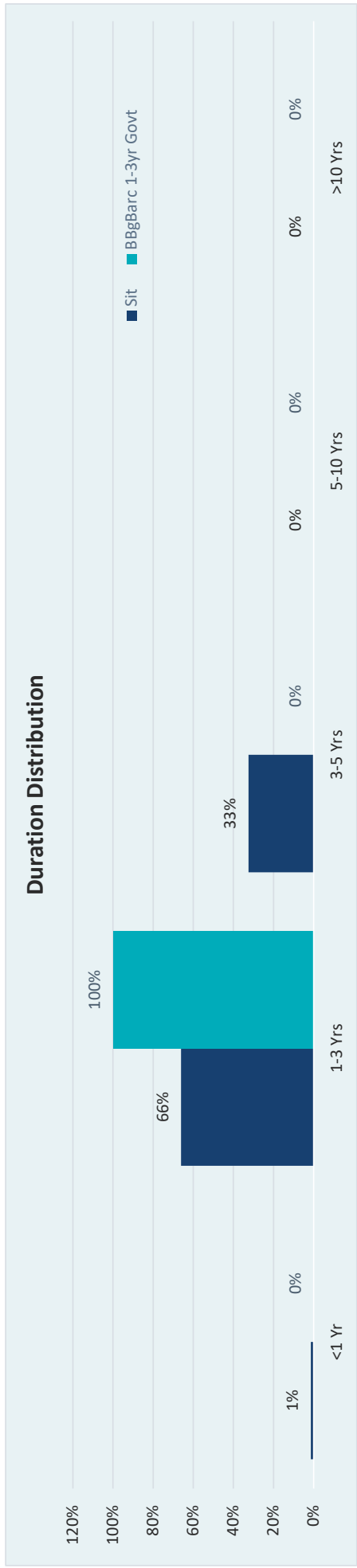
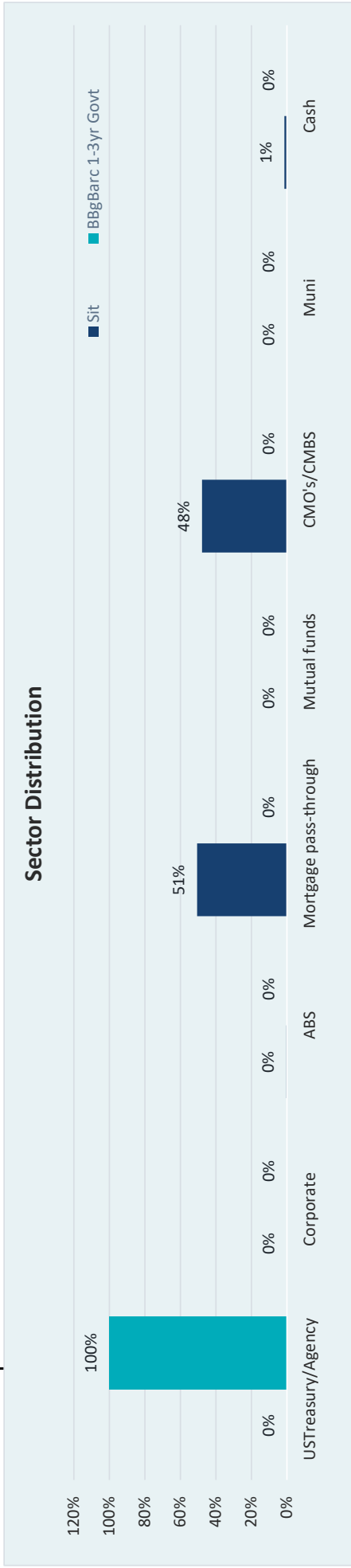


Sit Short Duration Manager Portfolio Overview

Period Ending: June 30, 2019

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

	Sit	BBgBarc 1-3yr Govt
Adjusted Duration	2.60	1.90
Yield to Maturity	2.40	1.80
Average Quality	AAA	AAA
Average Coupon	6.5%	2.1%



Performance Return Calculations

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

Data Source

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

Illiquid Alternatives

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

Policy & Custom Index Composition

Policy Index (7/1/2018 - present)	11% Russell 3000, 19% MSCI ACWI ex-US (Gross), 11% MSCI ACWI (Net), 1% Wilshire REIT, 1.8% NCREIF Property Index, 7.2% NCREIF ODCE Index, 2% CPI + 4%, 10% S&P 500 +4% (Lagged), 4% ICE BofAML High Yield Master II +2%, 2% ICE BofAML High Yield Master II, 23% BBgBarc 1-3 Yr Gov/Credit, 3.5% BBgBarc US Aggregate, 2% BBgBarc Global Aggregate, 2.5% HFRI EH Equity Market Neutral.
Policy Index (10/1/2017 - 6/30/2018)	16.3% Russell 3000, 18.8% MSCI ACWI ex-US (Gross), 8.6% MSCI ACWI (Net), 1% Wilshire REIT, 1.6% NCREIF Property Index, 6.4% NCREIF ODCE Index, 2.5% CPI + 4%, 10.1% S&P 500 +4% (Lagged), 1.9% ICE BofAML High Yield Master II +2%, 4.3% ICE BofAML High Yield Master II, 25% BBgBarc 1-3 Yr Gov/Credit, 3.5% BBgBarc US Aggregate.
Policy Index (1/1/2017 - 9/30/2017)	22.9% Russell 3000, 11% MSCI ACWI ex-US (Gross), 10.9% MSCI ACWI (Net), 1% Wilshire REIT, 1.7% NCREIF Property Index, 6.8% NCREIF ODCE Index, 3.6% CPI + 4%, 8.1% S&P 500 +4% (Lagged), 1.7% ICE BofAML High Yield Master II +2%, 5.1% ICE BofAML High Yield Master II, 22.4% BBgBarc 1-3 Yr Gov/Credit, 3.2% BBgBarc US Aggregate, 1.6% 91-Day T-Bills.
Policy Index (4/1/2012-12/31/2016)	27.7% Russell 3000, 10.6% MSCI ACWI ex-US (Gross), 12.3% MSCI ACWI (Net), 19.6% BBgBarc U.S. Aggregate, 5% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 13.5% Real Estate Benchmark, 6.8% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Policy Index (4/1/2011-3/31/2012)	31% Russell 3000, 10.4% MSCI EAFE (Gross), 9.6% MSCI ACWI (Net), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% DJ Wilshire REIT, 3.1% NCREIF, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Policy Index (4/1/2010-3/31/2011)	35.6% Russell 3000, 10.4% MSCI EAFE (Gross), 5% MSCI ACWI (Net), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% DJ Wilshire REIT, 3.1% NCREIF, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Policy Index (7/1/2009-3/31/2010)	40.6% Russell 3000, 10.4% MSCI EAFE (Gross), 25% BBgBarc U.S. Aggregate, 3% ICE BofAML High Yield Master II, 4% BBgBarc Global Aggregate, 8.4% DJ Wilshire REIT, 3.1% NCREIF, 5% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Custom Growth Benchmark (7/1/2018 - present)	16.0% Russell 3000, 27.5% MSCI ACWI ex-US (Gross), 15.9% MSCI ACWI (Net), 1.5% Wilshire REIT, 2.6% NCREIF Property Index, 10.4% NCREIF ODCE Index, 14.5% S&P 500 +4% (Lagged), 5.8% ICE BofAML High Yield Master II +2%, 2.9% ICE BofAML High Yield Master II, 2.9% BBgBarc Global Bond
Custom Growth Benchmark (9/30/2017-6/30/2018)	23.6% Russell 3000, 27.2% MSCI ACWI ex-US (Gross), 12.5% MSCI ACWI (Net), 1.5% Wilshire REIT, 2.3% NCREIF Property Index, 9.3% NCREIF ODCE Index, 14.6% S&P 500 +4% (Lagged), 2.8% ICE BofAML High Yield Master II +2%, 6.2% ICE BofAML High Yield Master II
Custom Growth Benchmark (1/1/2017-9/30/2017)	32.6% Russell 3000, 15.7% MSCI ACWI ex-US (Gross), 15.5% MSCI ACWI (Net), 1.4% Wilshire REIT, 2.4% NCREIF Property Index, 9.6% NCREIF ODCE Index, 1.6% CPI +4%, 11.5% S&P 500 +4% (Lagged), 2.4% ICE BofAML High Yield Master II +2%, 7.3% ICE BofAML High Yield Master II
Custom Growth Benchmark (Prior to 1/1/2017)	Weighted-average of the benchmarks of the sub-composites that make up the composite.
Custom Diversifying Benchmark (7/1/2018 - present)	43.75% BBgBarc US Aggregate, 25% CPI + 4%, 31.25% HFRI EH Equity Market Neutral.
Custom Diversifying Benchmark (10/1/2017 - 6/30/2018)	58.33% BBgBarc US Aggregate, 41.67% CPI + 4%.
Custom Diversifying Benchmark (1/1/2017 - 9/30/2017)	56.1% BBgBarc US Aggregate, 43.9% CPI + 4%.
Custom Diversifying Benchmark (Prior to 1/1/2017)	Weighted-average of the benchmarks of the sub-composites that make up the composite.
Real Estate Benchmark (current)	11% Wilshire REIT, 18% NCREIF Property Index, 71% NCREIF ODCE Index.
Real Estate Benchmark (4/1/2012-11/30/2016)	40% Wilshire REIT, 50% NCREIF Property Index, 10% FTSE/EPR/NAREIT Developed ex-US.

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

Other Disclosures

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

Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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Meeting Date
08/28/19
Agenda Item
#4b.

MEMORANDUM

Date: August 28, 2019
To: CCCERA Board of Retirement
From: Timothy Price, Chief Investment Officer
Subject: Investment Staff Report – Q2 2019

Overview

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

Summary

CCCERA's Total Fund is performing as expected, exhibiting returns above expectations for the amount of risk taken. This is measured by the Sharpe Ratio (risk-adjusted return), and a comparison to the Simple Target Index. The Simple Target Index is the most basic index which could replicate CCCERA's Total Fund, and is made up of 69% MSCI ACWI, 23% Bloomberg 1-3 Year Gov/Credit, and 8% 3-Month Treasury Bills (please see the Total Fund pages in the appendix for additional details). CCCERA's portfolio is much more complex, especially as it relates to allocations to private equity, private credit, and real estate.

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

1) Liquidity

The purpose of the liquidity program is to match four years of benefit payments with high credit quality, low duration assets. The liquidity sub-portfolio is made up of three fixed income managers, all of whom pursue a high quality, low duration investment approach. Through the second quarter of 2019, all managers held high quality portfolios (as measured by credit ratings), low duration portfolios. The average credit quality for the entire liquidity program is AA- (AAA is the highest rating), and the duration is 1.9 years, which is considered short.

2) Growth

The Growth portfolio is designed to take advantage of capital appreciation and income opportunities globally. To achieve this, the Growth portfolio includes a variety of assets, from stocks and growth oriented bonds to private equity, real estate, and private credit. In the second quarter, CCCERA's Growth portfolio returned 3.3% on the strength of a rebound in global public equity markets.

3) Risk Diversifying

The Risk Diversifying mandate holds assets that are expected to diversify the growth portfolio's volatility while offering moderate growth. The mandate as a whole seeks to be highly liquid, have a low beta to the growth market, and produce positive real returns. In the first quarter, the Risk Diversifying mandate fulfilled most of these goals. The entire mandate is able to be liquidated within 30 days, meeting the requirement of high liquidity. The correlation of the mandate to growth markets is 0.3, which shows good diversification. Trailing real (net of inflation) returns over the past five years is -1.2%, which remains below expectations. We continue to explore additional mandates that can strengthen this sub-portfolio.

The Liquidity, Growth, and Risk Diversifying sub-portfolios are largely functioning well and within expectations. The product teams and asset managers are stable, and at this time we see few causes of organizational concern at our investment managers. CCCERA's Total Fund in aggregate is performing in line with expectations, having a higher return and a lower level of volatility compared to the Simple Target Index. Enclosed are additional details on CCCERA's Total Fund, sub-portfolios, and individual investment strategies.

CCCERA Portfolio Report Card

Below we have itemized those elements of each of CCCERA's sub-portfolios and Total Fund which we believe the Board should pay particular attention to. Additional details on each of the sub-portfolios are available in the appendix.

Liquidity

Objective	Measurement	Current Period Data	Status
High Quality	Credit Quality	AA-	Meeting Expectations
Low Risk	Duration	1.90 years	Meeting Expectations
Appropriately Sized	Months of Benefit Payments Invested	37 Months	Meeting Expectations

Growth

Objective	Measurement	Current Period Data	Status
Growth of Plan Assets	Absolute Returns	Trailing 5yr return of 7.4%	Meeting Expectations
	Benchmark Relative Returns	1.2% over ACWI over trailing 5 years	Meeting Expectations
Efficient Capital Deployment	Sharpe Ratio	CCCERA: 0.97 MSCI ACWI: 0.49 (over trailing 5 years)	Meeting Expectations

Risk Diversifying

Objective	Measurement	Current Period Data	Status
Offset Volatility in Growth Portfolio	Correlation	0.5 over trailing 5 years	Meeting Expectations
Positive Real Returns	Returns	Trailing 5yr real return of -1.2%	Below Expectations
High Liquidity	% of Portfolio that can be liquidated within 90 days	100%	Meeting Expectations

Total Fund

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

Appendix – Liquidity Sub-Portfolio

Manager Reviews

Organizational Stability

	Portfolio Management Assessment	1 Year Product Asset Growth	1 Year Firm Asset Growth	Regulatory Action in Last Year?
Insight	Good	6%	6%	N
Sit	Good	9%	-2%	N
DFA	Good	3%	1%	N

Performance

	Portfolio Average Credit Quality	Portfolio Average Duration	Portfolio Average Coupon	1 Year Total Return
Insight	A+	1.4	2.4	4.2%
Sit	AAA	2.6	6.5	6.6%
DFA	A	1.8	2.8	5.0%

Manager Notes:

Insight:

Due to the recent departure of Jesse Fogarty, we are planning on conducting an on-site review with Insight on our next New York visit.

Manager Theses:

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

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

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

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

Appendix – Growth Sub-Portfolio

Manager Reviews

Organizational Stability

	Portfolio Management Assessment	1 Year Product Asset Growth	1 Year Firm Asset Growth	Regulatory Action in Last Year?
Boston Partners	Good	2%	-8%	N
Jackson Square	Good	-6%	2%	N
BlackRock Index Fund	Good	7%	9%	N
Emerald Advisors	Good	-2%	-8%	N
Ceredex	Good	-20%	-8%	N
Pyrford (BMO)	Good	11%	14%	N
William Blair	Good	-11%	-9%	N
First Eagle	Good	-9%	-10%	N
Artisan Global	Good	7%	0%	N
PIMCO/RAE EM	Good	35%	8%	N
TT EM	Good	27%	16%	N
Adelante	Good	12%	12%	N
Allianz	Good	-2%	1%	N
AQR	Good	-7%	-14%	N
PanAgora	Good	3%	-10%	N
Private Equity	Good	--	--	N
Private Credit	Good	--	--	N
Real Estate	Good	--	--	N

Performance

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

Manager Notes:

Staff completed an on-site visit with Boston Partners in July to review the recent additions of David Cohen and Stephanie McGirr (both based in Boston) to the portfolio management team previously consisting of David Pyle (San Francisco) and Mark Donovan (Los Angeles).

Manager Theses:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Appendix – Risk Diversifying Sub-Portfolio**Organizational Stability**

	Portfolio Management Assessment	1 Year Product Asset Growth	1 Year Firm Asset Growth	Regulatory Action in Last Year?
Wellington	Satisfactory	-59%	3%	N
AFL-CIO	Good	7%	7%	N
Parametric	Good	22%	79%	N

Performance

	Trailing 1 Year Correlation to Growth	Trailing 3 Year Correlation to Growth	1 Year Return	5 Year Return	% of Portfolio Liquid in 30 Days
Wellington	0.7	0.6	1%	-2%	100%
AFL-CIO	0.1	0.1	8%	3%	100%
Parametric	1.0	0.9	5%	7%	100%

Manager Notes:**AFL-CIO:**

Chang Suh, the longtime portfolio manager of this strategy, assumed the CEO at AFL-CIO Housing Investment Trust in late 2018. Staff conducted an on-site review with the firm in July 2019 to review organizational changes and potential adjustments to the fund’s investment guidelines.

Wellington:

The Real Total Return strategy follows a dual mandate of diversification as well as a sensitivity to inflation. The lack of inflationary pressures in the U.S. has meant that the inflation sensitive strategies have experienced negative results over the past several years. Staff recently conducted an on-site review with Wellington in July and we are actively evaluating alternate strategies for this portion of the Risk Diversifying Sub-Portfolio.

Manager Theses:

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

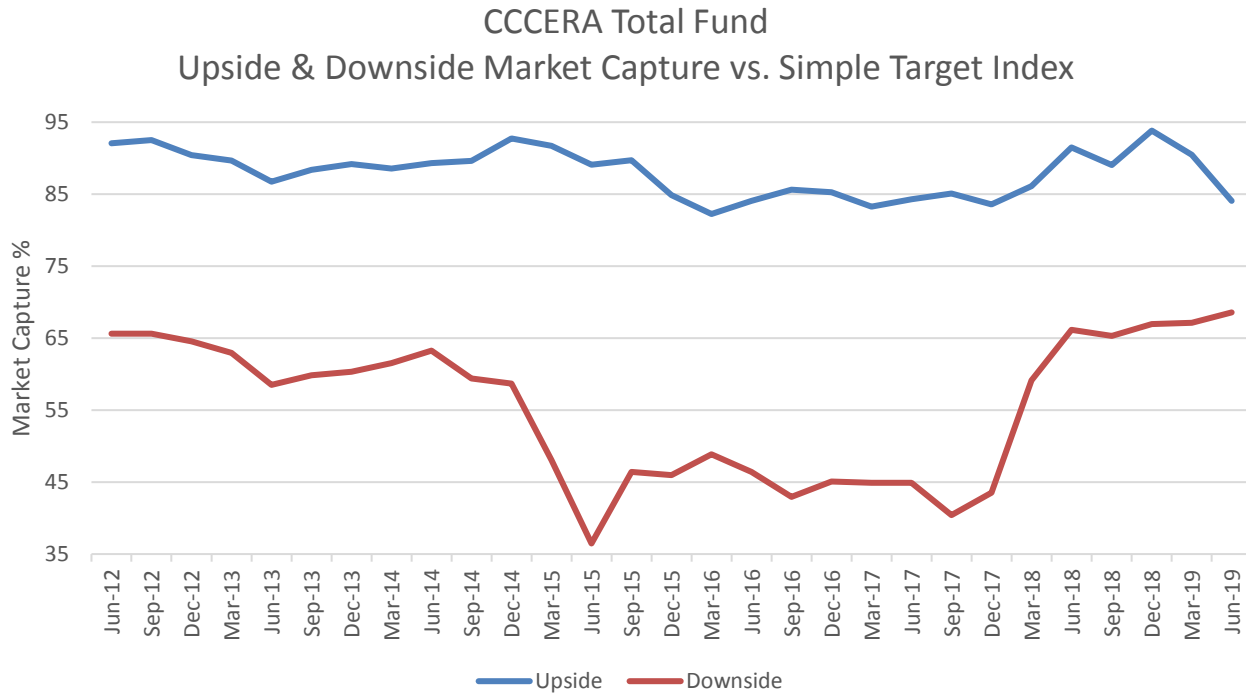
AFL-CIO: Portfolio of domestic, high quality fixed income securities which are backed by commercial and residential mortgages.

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

Wellington: Multi-strategy fund which tactically rotates between assets to produce returns.

Appendix Data – Total Fund

Rolling 3-Year Total Fund Upside/Downside Market Capture



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

Total Fund Quarterly Attribution

	CCCERA Total Fund			Simple Target Index			Analysis		
	Allocation	Return	Return Contribution	Allocation	Return	Return Contribution	Allocation Difference	Return Difference	Total Effect
Liquidity	21%	1.6%	0.3%	23%	0.6%	0.1%	-2.3%	1.0%	0.2%
Growth	71%	3.3%	2.3%	69%	3.6%	2.5%	2.1%	-0.4%	-0.2%
Risk Diversifying	8%	1.9%	0.2%	8%	1.5%	0.1%	0.1%	0.4%	0.0%
Total Fund	100%		2.8%	100%		2.8%	-0.1%		0.0%

CCCERA Total Fund Performance vs. Simple Target Index

	One Year		Three Years		Five Years		Ten Years	
	CCCERA	STI	CCCERA	STI	CCCERA	STI	CCCERA	STI
Return	6.0	5.5	8.1	7.9	6.1	4.3	9.7	7.6
Volatility	9.8	14.4	5.7	8.1	5.4	7.5	7.8	10.1
Sharpe	0.4	0.2	1.2	0.8	1.0	0.5	1.2	0.7

The Simple Target Index is made up of 69% MSCI ACWI, 23% Bloomberg 1-3 Year Gov/Credit, and 8% 3-Month Treasury Bill. This purpose of this index is to examine whether or not CCCERA is being rewarded for pursuing a more nuanced portfolio versus a very simple representative index.

CCCERA's Total Fund has produced strong risk adjusted returns over most trailing periods. Additionally, the CCCERA Portfolio has exceeded the Simple Target Index over all trailing periods. This would indicate that CCCERA has been rewarded for engaging in more complex investments which target outperformance versus investing passively in the publicly traded market.

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



<i>Meeting Date</i> 08/28/19 <i>Agenda Item</i> #5

MEMORANDUM

Date: August 28, 2019
To: CCCERA Board of Retirement
From: Timothy Price, Chief Investment Officer
Subject: 2019 Liquidity Sub-portfolio Funding and Rebalancing

Overview

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

CCCERA received its annual pre-payments of employer contributions in late July and used these proceeds in conjunction with nine withdrawals from investment managers to rebalance the portfolio. Through both pre-payments and withdrawals CCCERA raised approximately \$650 mm in cash, which was used to fund the Liquidity sub-portfolio for an additional year as well as contribute to the BlackRock Russell 1000 and cash balances. Manager withdrawals occurred in the domestic, international and global equity mandates as well as from the high yield portfolio. The net result of the rebalancing shifted CCCERA's portfolio towards the asset allocation which was approved by the Board on June 26, 2019 (BOR Resolution 2019-4).

For the domestic equity portfolio reductions, CCCERA Investment Staff solicited bids from CCCERA's transition manager pool for the partial redemption of the Emerald small cap portfolio and selected Russell to liquidate \$70 mm of the existing portfolio. Other managers were directed to raise the required distributions internally. During the month of July, when the bulk of the rebalancing occurred, US equity markets were up while most other major market segments were down modestly as were the US debt markets.

The following tables show the rebalancing trades which occurred between the end of July and early August, 2019. Funds were raised from the following sources:

Employer Pre-Payments	\$300	million
-----------------------	-------	---------

Manager Withdrawals

Boston Partners	\$40	million
Jackson Square	\$60	million
Emerald Advisors	\$70	million
Ceredex	\$20	million
Pyrford	\$20	million
William Blair	\$40	million
Artisan	\$20	million
First Eagle	\$10	million
Allianz	\$70	million
Total Cash Raised	\$650	million

Proceeds were invested with the following investment managers:

Insight	\$350	million
DFA	\$200	million
BlackRock	\$50	million
Cash	\$50	million
Total Invested	\$650	million

CCCERA Asset Allocation

Liquidity	June 30, 2019 Market Value	Rebalancing Increase/Decrease	August 1 Market Value	August 1, 2019 Total Fund %	Target	Over/(Under)
Insight	744,843,442	350,000,000	1,072,817,411	11.9%	12.0%	-0.1%
Sit	543,009,330		538,837,001	6.0%	6.0%	-0.0%
Dimensional Fund Advisors	339,795,727	200,000,000	527,265,321	5.8%	6.0%	-0.2%
Total Liquidity	1,627,648,500	550,000,000	2,138,919,732	23.6%	24.0%	-0.4%
Growth						
Domestic Equity						
Boston Partners	267,319,996	(40,000,000)	231,592,007	2.6%	2.5%	0.1%
Jackson Square	288,330,354	(60,000,000)	234,004,694	2.6%	2.5%	0.1%
BlackRock Index Fund	135,787,891	50,000,000	187,892,782	2.1%	2.0%	0.1%
Emerald Advisors	222,647,710	(70,000,000)	156,373,137	1.7%	1.5%	0.2%
Ceredex	174,066,839	(20,000,000)	157,447,174	1.7%	1.5%	0.2%
Total Domestic Equity	1,088,152,791	(140,000,000)	967,309,793	10.7%	10.0%	0.7%
Global & International Equity						
Pyrford (BMO)	472,477,417	(20,000,000)	447,013,835	4.9%	5.0%	-0.1%
William Blair	494,998,297	(40,000,000)	451,724,415	5.0%	5.0%	-0.0%
First Eagle	378,018,808	(10,000,000)	369,003,841	4.1%	4.0%	0.1%
Artisan Global Opportunities	386,747,648	(20,000,000)	375,384,806	4.1%	4.0%	0.1%
PIMCO/RAE Emerging Markets	353,821,590		342,311,326	3.8%	4.0%	-0.2%
TT Emerging Markets	333,648,354		332,910,620	3.7%	4.0%	-0.3%
Total Global & International Equity	2,419,712,114	(90,000,000)	2,318,348,844	25.6%	26.0%	-0.4%
Private Equity						
Private Credit	960,285,393		994,759,762	11.0%	11.0%	-0.0%
Real Estate - Value Add	412,574,488		343,274,805	3.8%	5.0%	-1.2%
Real Estate - Opportunistic & Distressed	177,142,324		177,526,653	2.0%	4.0%	-2.0%
Real Estate - REIT (Adelante)	510,022,267		509,891,493	5.6%	4.0%	1.6%
High Yield (Allianz)	74,996,736		76,253,840	0.8%	1.0%	-0.2%
Risk Parity Managers	318,978,341	(70,000,000)	240,032,121	2.7%	2.0%	0.7%
Total Other Growth Assets	439,120,431	(70,000,000)	442,646,967	4.9%	5.0%	-0.1%
Total Growth Assets	6,400,984,886	(300,000,000)	6,070,044,278	67.1%	68.0%	-0.9%
Risk Diversifying						
AFL-CIO	333,624,990		333,354,520	3.7%	3.5%	0.2%
Parametric Defensive Equity	199,785,900		200,114,901	2.2%	2.5%	-0.3%
Wellington Real Total Return	185,543,216		186,837,610	2.1%	2.0%	0.1%
Total Risk Diversifying	718,954,106	0	720,307,031	8.0%	8.0%	0.0%
Cash and Overlay						
Overlay (Parametric)	22,831,632		13,391,665	0.1%	0.0%	0.1%
Cash	36,721,321	49,528,907	108,715,756	1.2%	0.0%	1.2%
Total Cash and Overlay	59,552,953	49,528,907	122,107,421	1.3%	0.0%	1.3%
Employer Pre-payment	299,528,907	(299,528,907)				
Total Fund	9,106,669,352	(0)	9,051,378,463	100%	100%	0%

*Current targets reflect asset allocation accepted by the Board on June 26, 2019 (BOR Resolution 2019-4)



Meeting Date
08/28/19
Agenda Item
#6

MEMORANDUM

Date: August 28, 2019
To: CCCERA Board of Retirement
From: Timothy Price, Chief Investment Officer
Subject: Update on Private Equity Commitments

Overview

CCCERA has recently made two commitments to private equity funds using the delegated authority granted in the Investment Policy Statement. Commitments of \$40 mm and \$24 mm were made to Trident VIII, L.P. and TPG Healthcare Partners, L.P., respectively. An overview of the manager underwriting process as well as a brief description of each fund is included below. This memo is for informational purposes only and no action is required from the Board at this time.

Investment Policy Statement

The CCCERA Investment Policy Statement adopted by the Board on September 28, 2016 (amended on April 24, 2019) outlines the hiring process for new investment mandates. Mandates up to a \$100 mm threshold are approved via a staff review process, while mandates above this threshold require approval by the Board. The relevant section of the policy is highlighted below.

Hiring a new manager

The CIO shall have the authority to hire new managers (i.e., purchase interests in new investment vehicles) in accordance with the Plan's active risk budget and up to an investment amount of \$100 million. The \$100 million shall represent the cumulative total amount of originally committed capital under the management of a single investment manager and its affiliates. (By way of example, two vintage year funds under one manager with a commitment of \$50 million each would reach the total of \$100 million.) The CEO shall have authority to execute the contracts, consistent with the delegation of authority outlined in this IPS. Any cumulative commitment above \$100 million shall require explicit Board approval. In all cases, the hiring process must be consistent with the requirements for vendor selection detailed in the Procedures and other Plan policy documents, including but not limited to the Code of Fiduciary Conduct and Ethics, Conflict of Interest Code, Placement Agent Disclosure Policy and Procurement of Products and Services Policy.

Subject to the foregoing limitations, the CIO, with the assistance of the Consultant and Specialty Consultants, shall conduct all due diligence activities in connection with hiring new managers. The CIO shall invite the involvement of one or more Board members in the due diligence process.

Staff Procedures

The CCCERA investment staff procedures that govern the investment office's internal workflow are outlined below. Among other items, the procedures outline the various steps involved in the investment mandate vetting process. Broadly speaking, this process has five main components:

1. Of Interest Initial expression of interest based upon fit with CCCERA guidelines and needs.
2. Prospective Initial review of organization, team and opportunity set.
3. Due Diligence Deeper review of strategy, including operational aspects and initial legal review.
4. Underwriting Formal recommendation drafted and presented.
5. Contracting CEO executes final version of agreement(s).

Trident VIII, L.P.

Trident VIII is an upper middle market private equity fund focused on control buyouts, growth-oriented recapitalizations, and de novo investments in the financial services sector. Trident VIII will invest primarily in North America and Western Europe and will generally target control positions or substantial minority positions with board representation and extensive shareholder rights. Trident VIII will target equity check sizes of \$75-\$750 mm. Trident VIII is a \$6.6 bn fund (\$40 mm of which is the CCCERA commitment).

Charles Davis, CEO and Stephen Friedman, Chairman have led the firm for over 20 years and both have over 30 years of experience in the financial services sector. Davis was former Head of the Financial Institutions Group at Goldman Sachs and a Director of Goldman Sachs. Friedman is a former Chairman of the New York Fed and former Chairman of Goldman Sachs. Overall the senior investment team includes six Senior Principals who average ~19 years at the firm and 18 Principals who average ~13 years at the firm. The firm is headquartered in Greenwich, CT.

TPG Healthcare Partners, L.P.

TPG Healthcare Partners is an upper middle market private equity fund focused on control buyouts and transformational transactions in the healthcare sector. TPG Healthcare Partners will invest primarily in North America and Europe and will target control positions or minority positions. The Fund will target companies with enterprise values of \$500 mm or more. TPG Healthcare Partners is a \$2.6 bn fund (\$24 mm of which is the CCCERA commitment).

Todd Sisitsky has been leading TPG's healthcare investment team since 2007 and has been primarily responsible for the strategy's performance over the last 10+ years. John Schilling has led TPG's healthcare operations team during much of the last 10 years (he joined TPG in 2011) and has an attractive mix of experience (medical doctor, former Partner at McKinsey, and corporate operating experience at a large healthcare company). Overall, the senior healthcare investment team includes three Partners with average tenure of ~12 years with TPG and two Principals with average tenure of ~8 years with TPG. The TPG healthcare team is based in San Francisco, CA.



Meeting Date 08/28/19 Agenda Item #7

MEMORANDUM

Date: August 28, 2019

To: CCCERA Board of Retirement

From: Timothy Price, Chief Investment Officer

Subject: Currency Education Session

Overview

Verus will be presenting an educational session on the impact of foreign currency in the CCCERA portfolio and various options about how to accept or mitigate this risk, including the role of currency hedging. The vast majority of currency risk in today’s portfolio exists within the public equity allocations. CCCERA has historically managed these non-US equity allocations on either an unhedged basis (accepted the currency risk) or by delegating the hedging decision to the underlying equity manager. Over the past several years, the role of non-US equity in the CCCERA portfolio has expanded, both in developed and emerging markets.

Asset Class	Current Target	Includes foreign currency?
Short-duration fixed income	24%	No
Domestic equity	10%	Generally no
<i>Global equity</i>	<i>8%</i>	<i>Yes, approximately half of the allocation</i>
<i>International equity</i>	<i>10%</i>	<i>Yes</i>
<i>Emerging market equity</i>	<i>8%</i>	<i>Yes</i>
Private equity	11%	Not in current portfolio
Private credit	5%	Limited
Real estate	9%	Limited
High yield	2%	No
Risk parity	5%	No
Risk diversifying	8%	No

Due to this expansion of non-US equity positions that now encompass nearly a quarter of the total fund, the impact of currency on total CCCERA performance has increased as well. Today’s educational session is intended to provide a foundation for further discussions around currency impacts and role of this risk factor in CCCERA’s portfolio prospectively. This is an educational agenda item, no action is required.

Verus⁷⁷



**PERSPECTIVES
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AUGUST 2019

Currency Educational Session

Contra Costa County Employees' Retirement System

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Framing the currency problem

What is currency risk?

Denomination currency risk

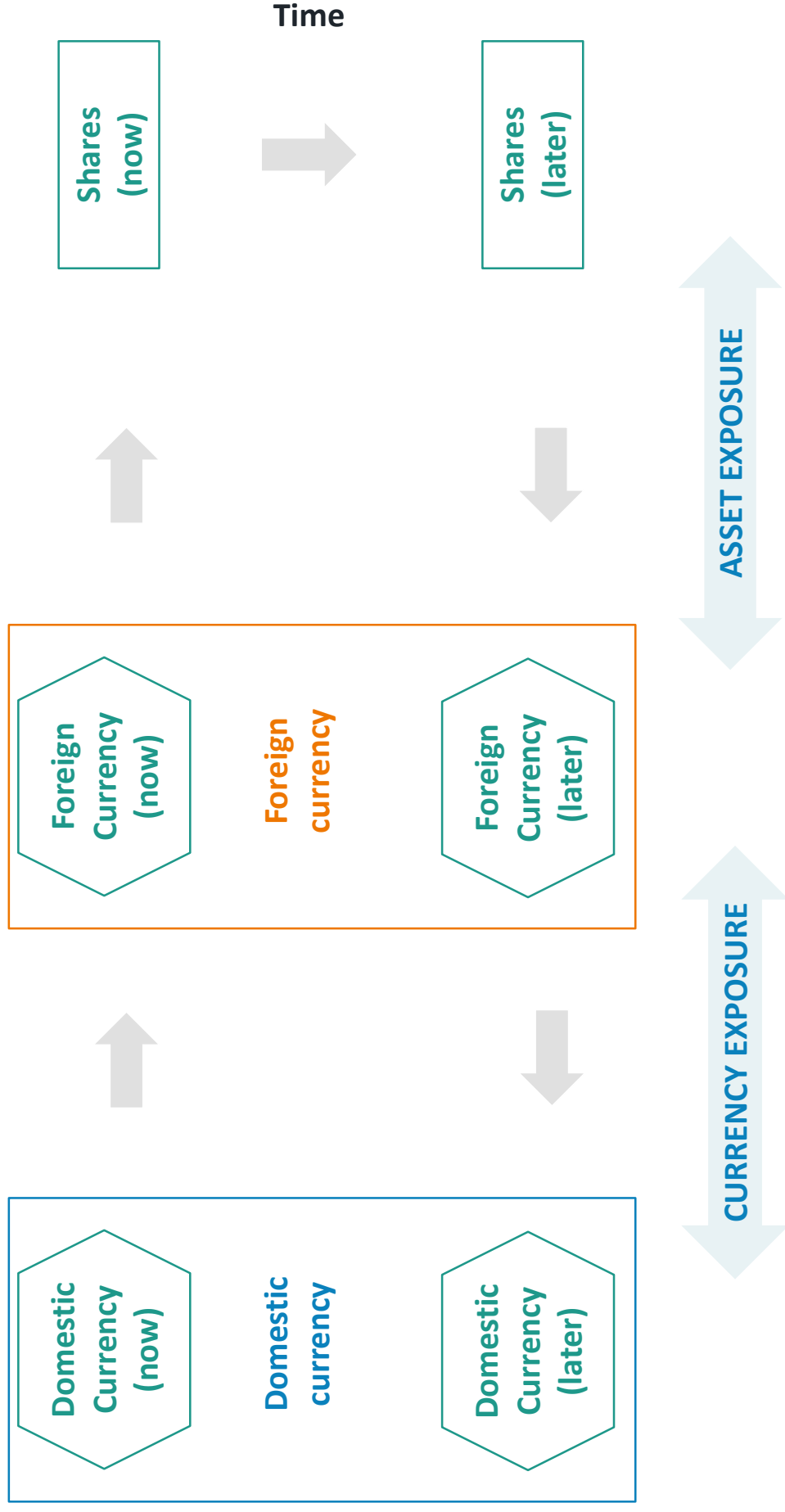
- The risk that the exchange rate between the currency in which an asset is denominated and the investor's domestic currency will change during the time in which the investor holds the asset
- Such an exchange rate movement would make the apparent price of the asset change, for good or ill, simply due to exchange rate movements
- This risk affects the PRICE of the security as observed by a foreign buyer

Internal corporate currency risk

- The exposure that all corporates have to a wide range of currency exposures
- Assets owned, staff employed, revenues earned and costs incurred may all be priced in currencies other than the investor's domestic currency
- The corporate treasurer will typically own this problem, and will structure the business and transactions to avoid negative implications where possible
- This risk affects the VALUE of the security in its own currency of listing

For portfolio construction purposes the literature, and this presentation, focuses on denomination currency risk

Denomination currency risk

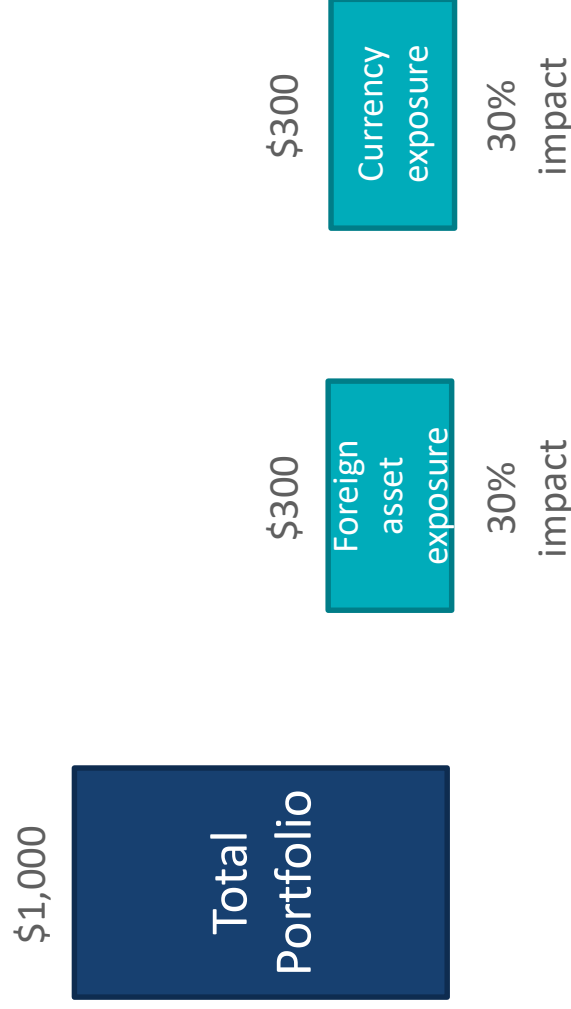


Foreign currency exposure

Non-U.S. dollar denominated assets should be thought of as two distinct exposures that have different return drivers

- The foreign asset in local currency terms
- An equal exposure to the foreign currency

Movements in foreign exchange rates have the same impact on the total portfolio return as movements in asset prices

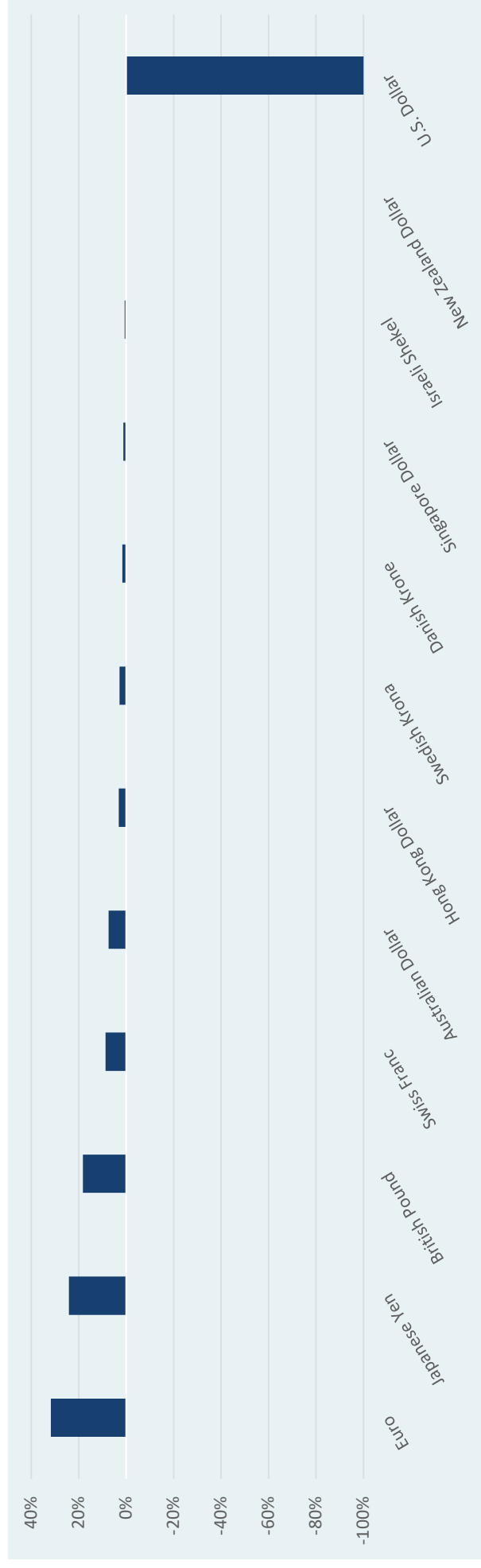


Embedded currency portfolio

There are two important points about the currency exposure caused by foreign asset ownership (embedded currency)

- The long positions are naively determined by the market capitalization of the portfolio, and not based on insight into the currency market
- These positions are 100% funded by a short position to the U.S. dollar

EMBEDDED CURRENCY PORTFOLIO EXAMPLE

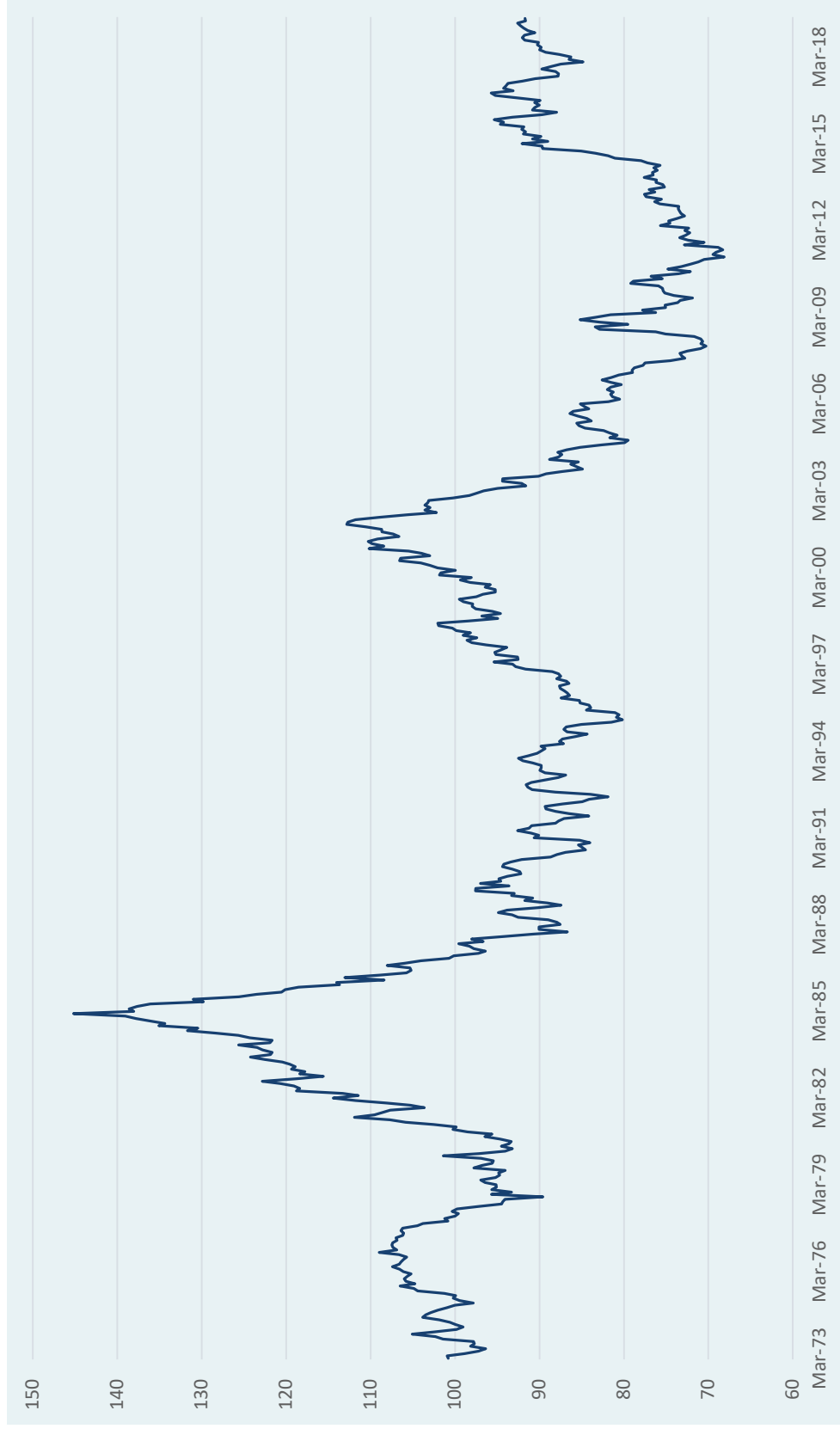


Based on the MSCI EAFE Index

U.S. dollar movements

Volatility in the U.S. dollar can cause big swings in the performance of embedded currency

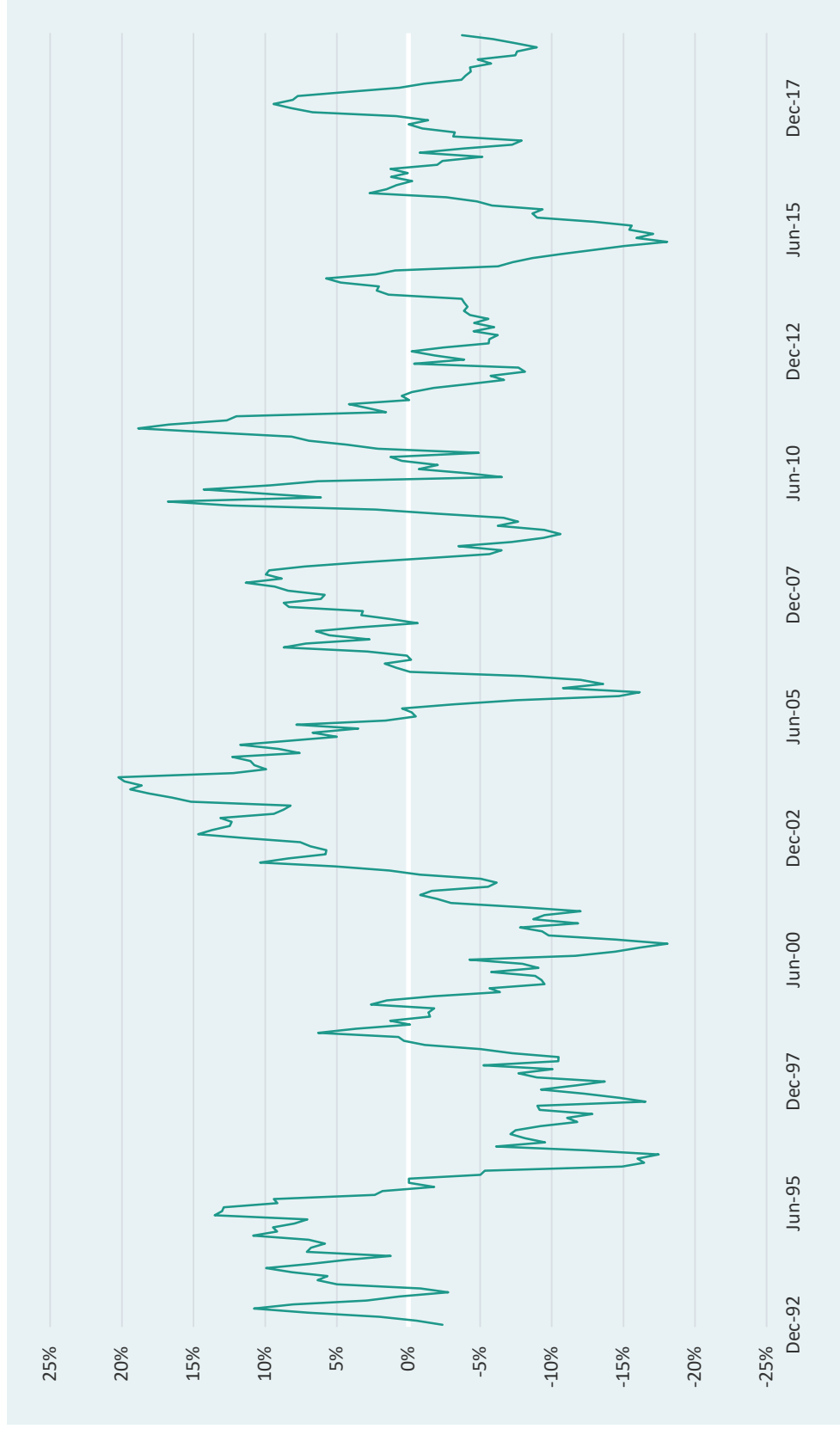
U.S. DOLLAR TRADE WEIGHTED INDEX



Source: FRED, as of 7/31/19

Impact of embedded currency

EMBEDDED CURRENCY 1 YEAR ROLLING PERFORMANCE

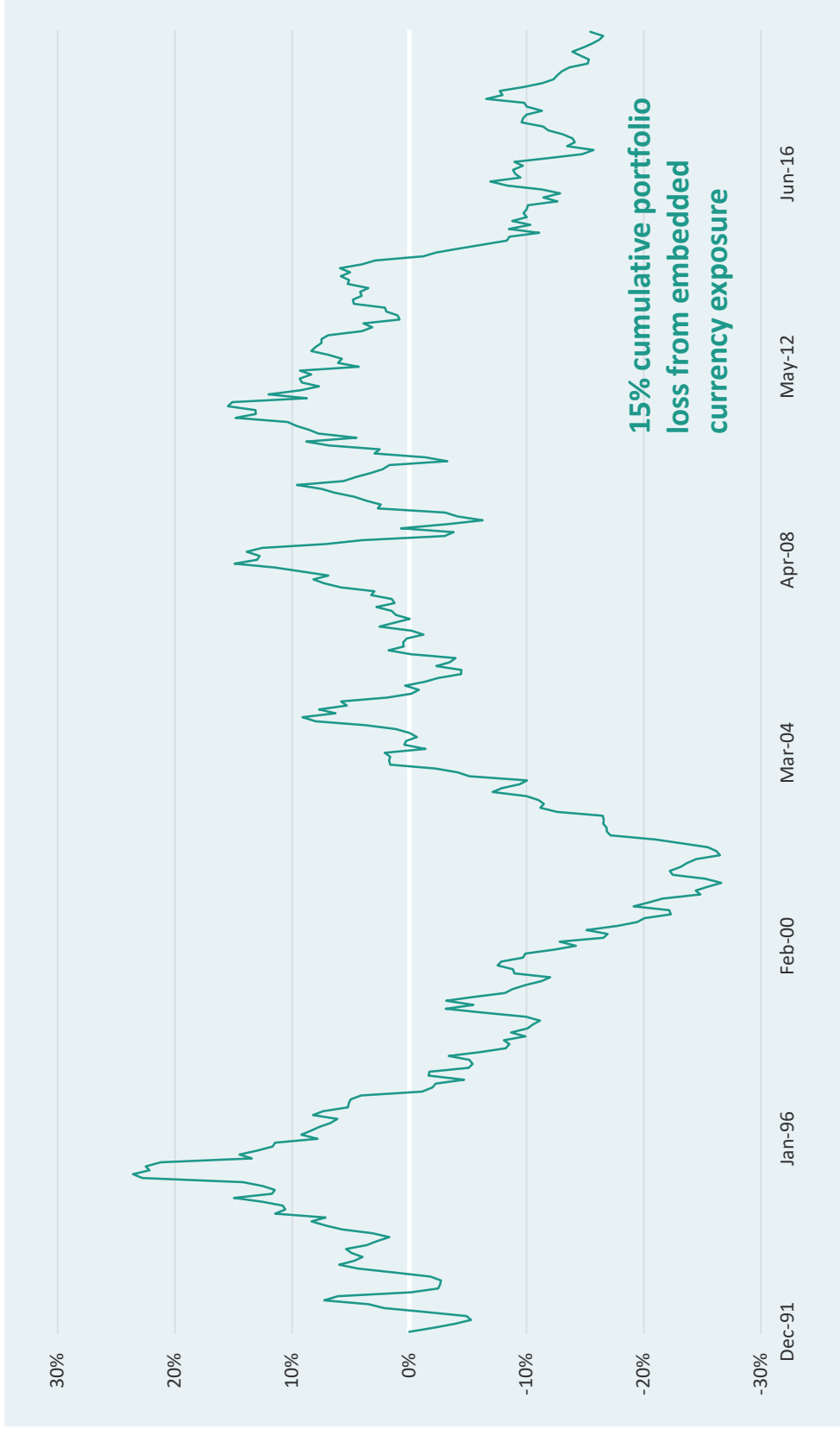


Embedded currency returns can have a big impact on portfolios

Source: Verus, MSCI, as of 6/30/19, based on the MSCI EAFE Index

Long-term impact

EMBEDDED CURRENCY CUMULATIVE PERFORMANCE

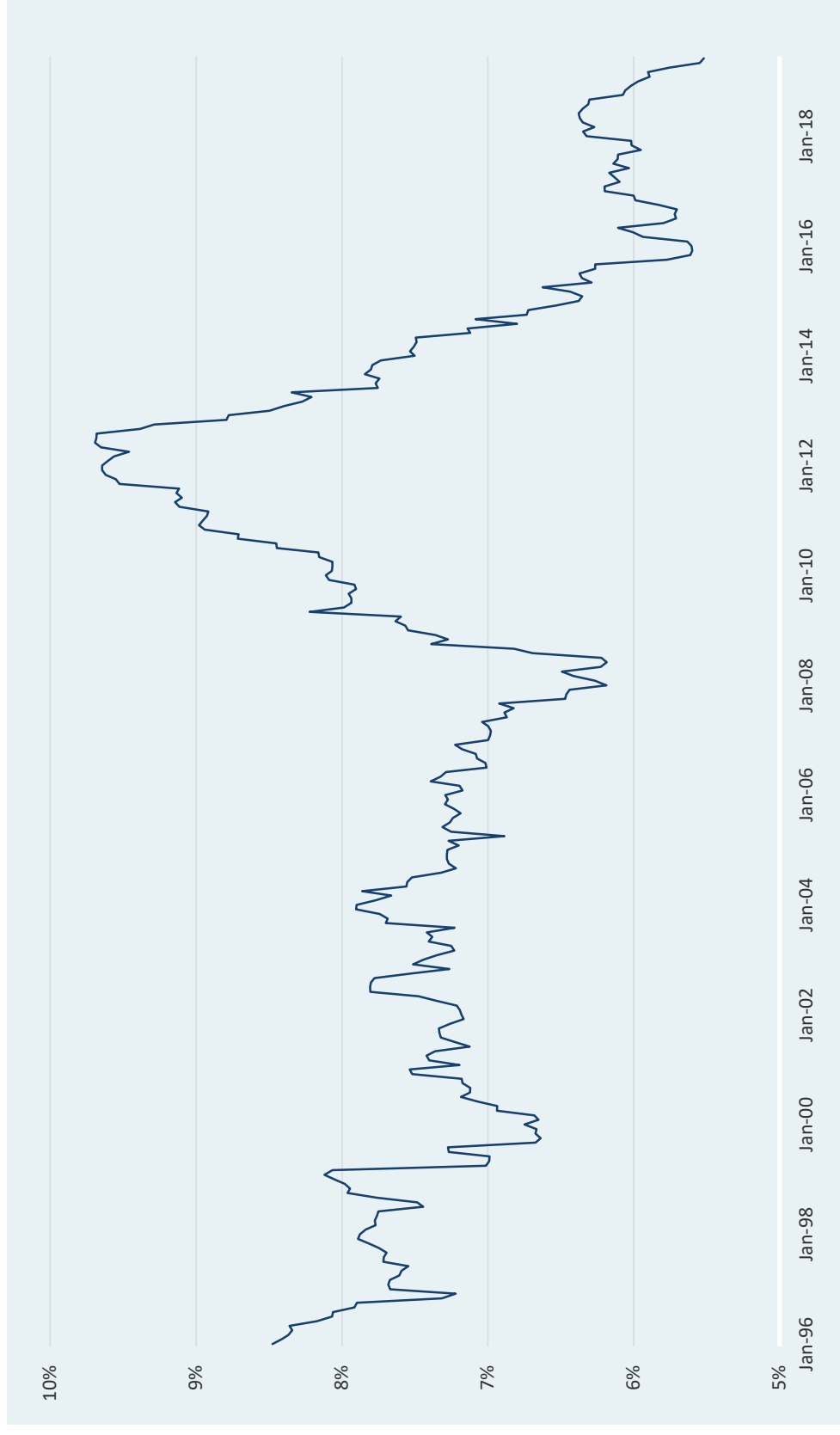


Currency swings have mostly evened out over the long run

Source: Verus, MSCI, as of 6/30/19, based on the MSCI EAFE Index

Embedded currency volatility

EMBEDDED CURRENCY 5-YEAR ROLLING RISK



Embedded
currency has
delivered
significant
volatility

Source: Verus, MSCI, as of 6/30/19, based on the MSCI EAFE Index

Uncompensated risk

There is no evidence to support the idea that a naively constructed currency portfolio (embedded currency) should demand a risk premium

- While impossible to forecast, it is reasonable to expect a long-term return of zero from the **embedded currency exposure**
- This is not the case for risk – embedded currency exposure has historically added volatility to portfolios
- This experience suggests that embedded currency represents a source of uncompensated risk

Approaches to currency investing

Our views on currency

Foreign currency exposure can have a material impact on portfolio risk and return, and we believe investors should understand and manage this exposure

- **If a portfolio is constructed appropriately**, currency investing is not a wash, even in the long run
- Historically, foreign currency exposure embedded in international assets has added significant volatility to the total portfolio without compensation

Investors should consider the following when investing in currency:

- Know what you own
- Understand the tools available
- Determine the objective of the currency strategy
- Implement the strategy with a long-term timeframe in mind

Possible approaches

Leave currency risk unhedged (do nothing strategy)

- This strategy involves exposure to an uncompensated risk, and will be heavily impacted by U.S. dollar movements

Hedge currency risk

- Reduce risk by removing the exposure to foreign currency

Currency Beta

- Change the nature of the currency exposure to reflect the currency market as a whole, with the goal of improving portfolio risk adjusted performance

Active Currency Management

- Build active currency insights into the portfolio, with the goal of improving portfolio performance and generating alpha

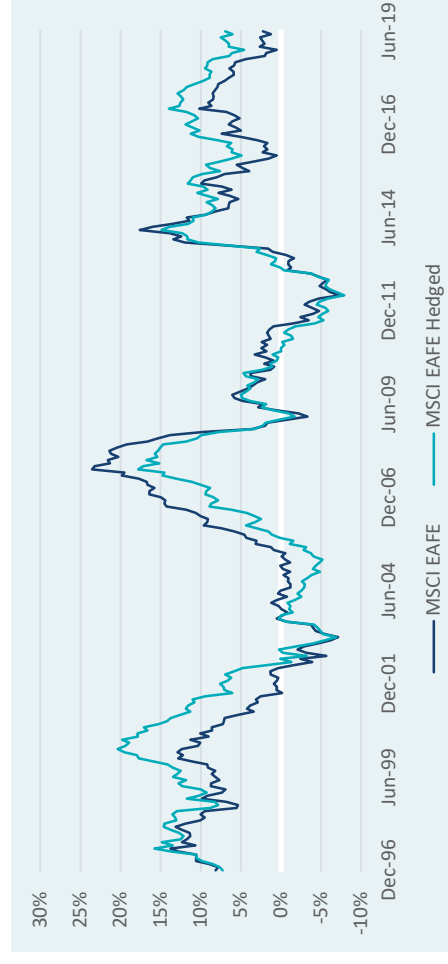


Fixed hedge

A fixed hedge can remove all or part of the exposure to currencies other than the investor's domestic currency

- The main goal is to get rid of, or reduce an uncompensated risk, allowing risk to be taken elsewhere to return the portfolio to the accepted risk target
- A hedged benchmark has outperformed in some periods, and underperformed in others, but the long-term return has been similar
- Peer risk will result
- This approach involves cash flows, with higher cash outflows needed in dollar weakness environments
- The hedging can be performed by a single central hedging manager in a highly cost-effective manner

5-YEAR ROLLING PERFORMANCE

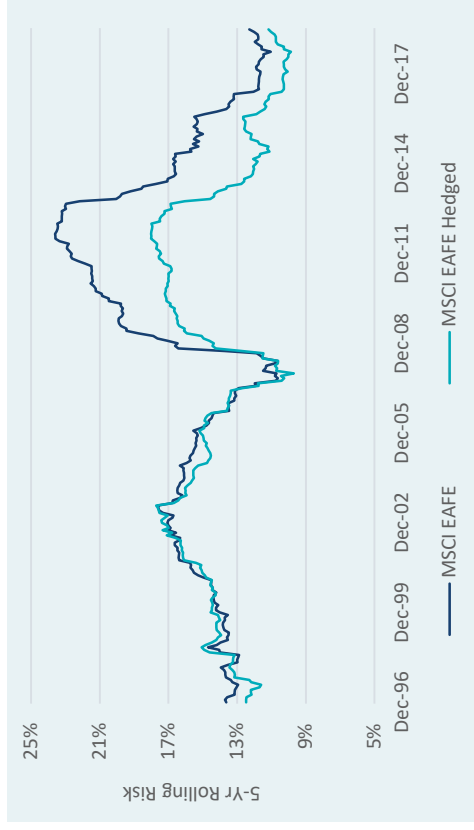
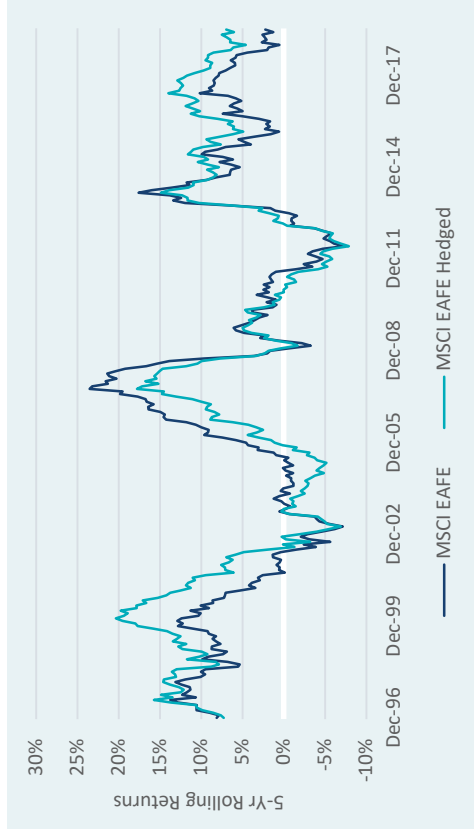


5-YEAR ROLLING RISK

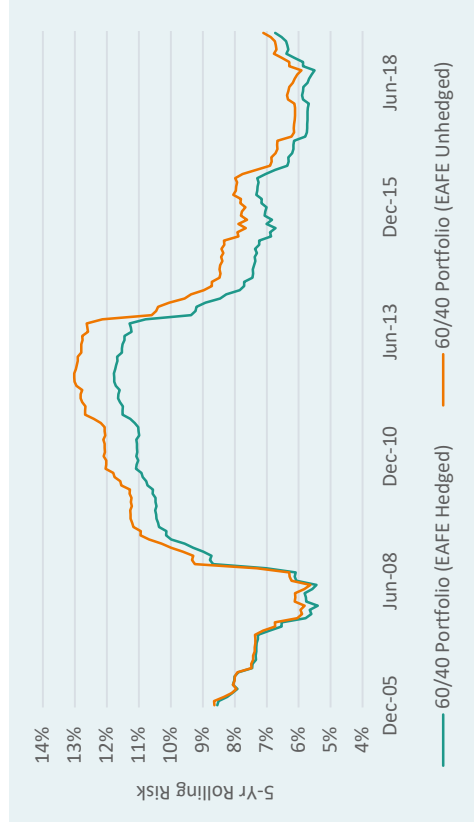
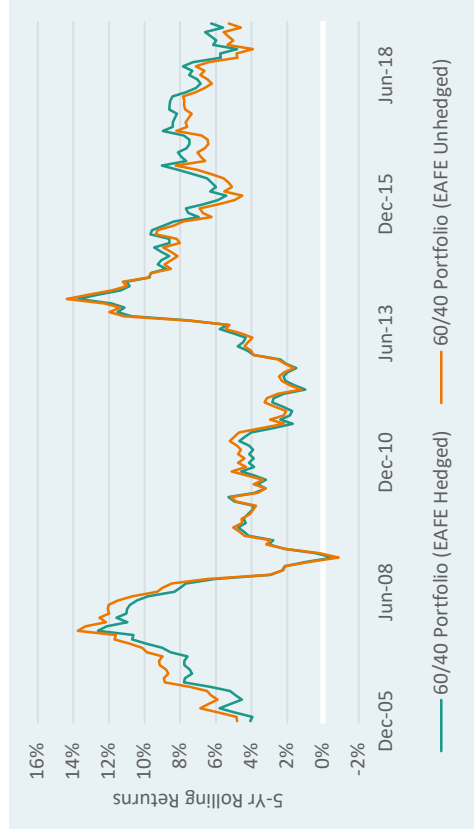


Source: MSCI, MPI, as of 6/30/19

Fully hedged vs. unhedged



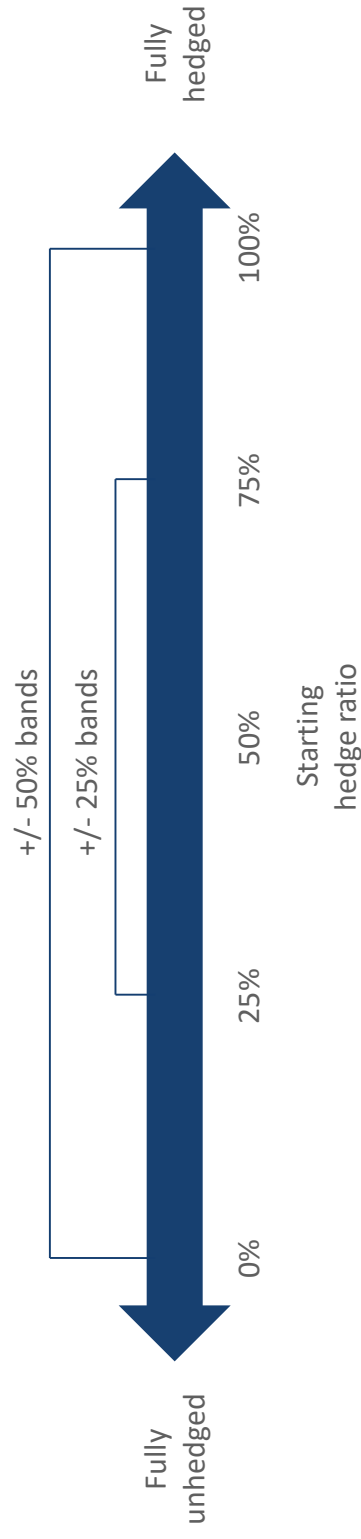
Currency exposure has increased portfolio risk



Source: MSCI, MPI, as of 6/30/19

Dynamic hedging

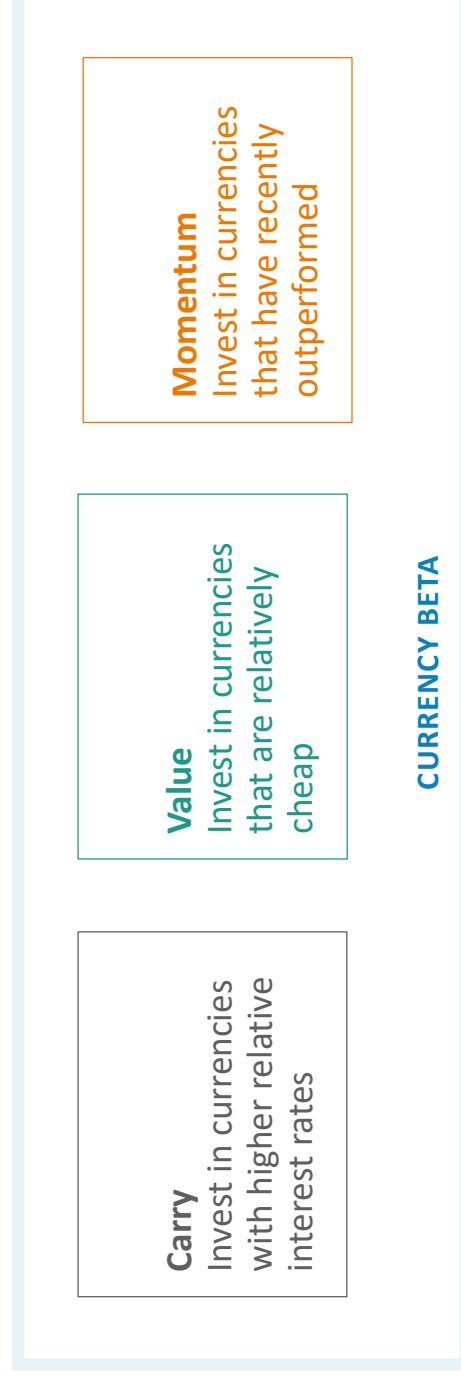
- Dynamic hedging allows a manager to implement active views with a hedging program
- A normal starting hedge ratio is 50%
- Dynamic hedge bands typically range between +/- 25-50%
- The goal of the dynamic hedge is to reduce currency exposure while improving performance relative to a fixed hedge by adjusting the hedge ratio. The manager's currency market views dictate these changes to the hedge ratio.
- The cash flow volatility associated with hedging program can often be mitigated by outperformance generated by the dynamic hedge



Currency beta

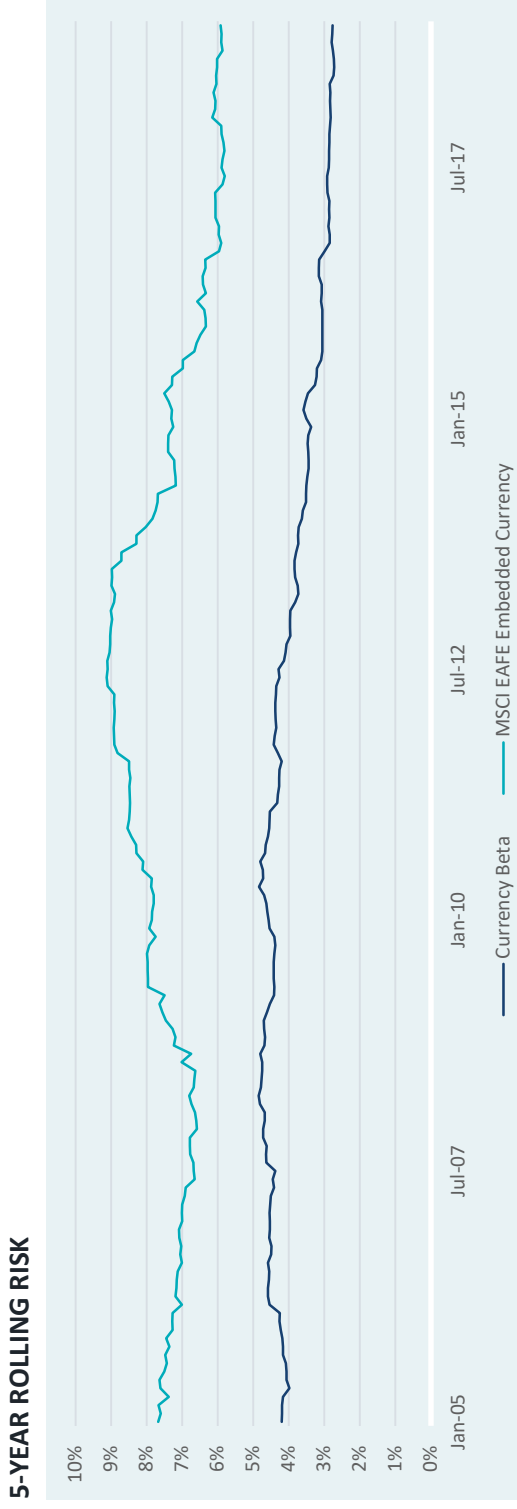
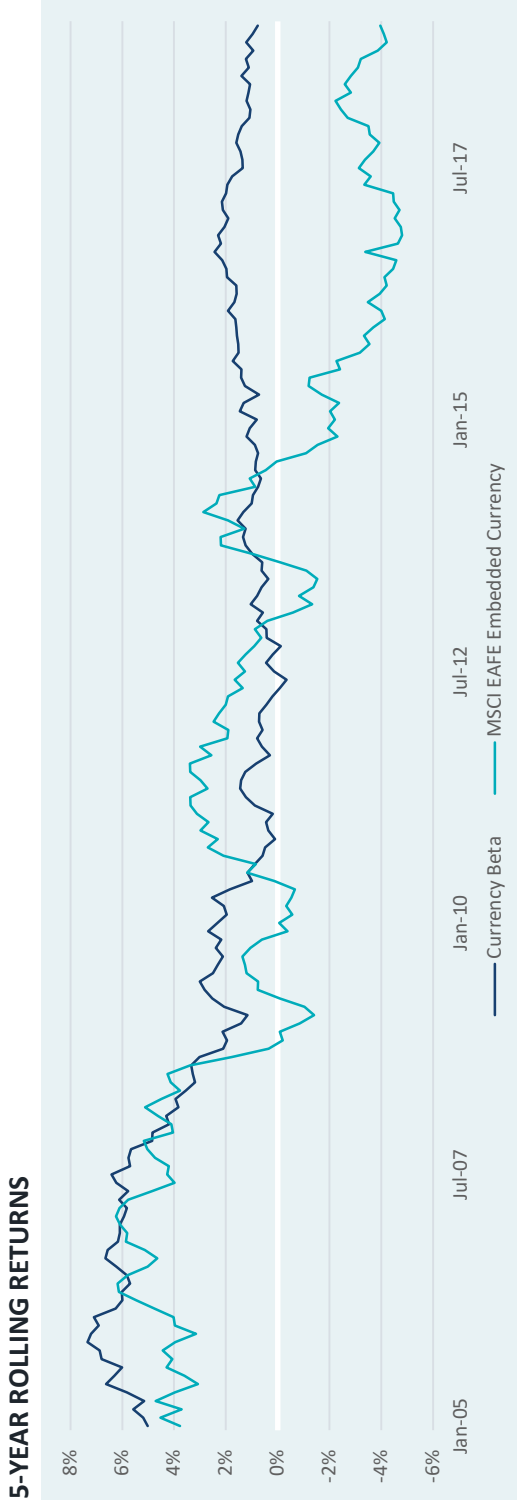
Currency beta can be thought of as a factor-based benchmark that can be used to identify return drivers in the market, and is similar to passive management in equities

- Transparent, rules-based approach
- Factors have historically received a risk premium
- A currency beta benchmark has experienced positive returns of around 3% over the past 20 years with much less volatility and drawdown risk than embedded currency
- Currency beta is equally weighted between the three factors, and is rebalanced monthly



Currency beta vs. embedded currency

Currency beta has provided higher returns with lower risk



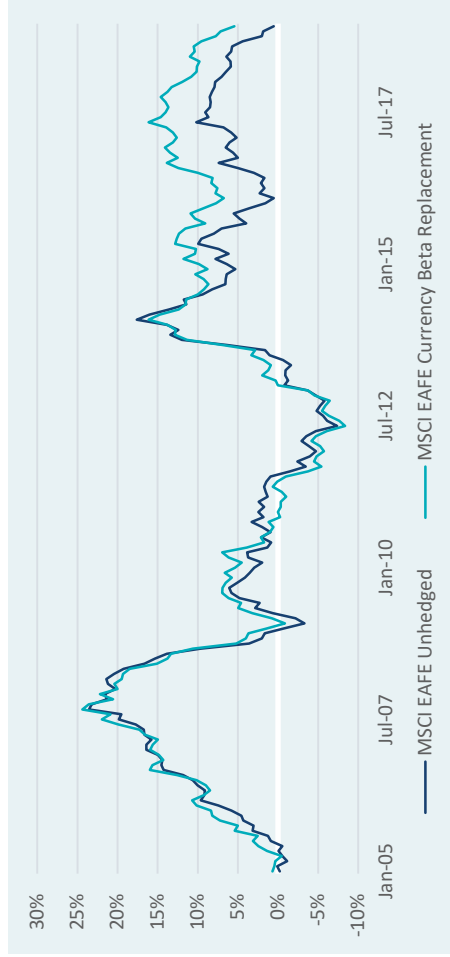
Source: Verus, MSCI, as of 12/31/18, currency beta is represented by MSCI Currency Factor Mix Index

Currency beta replacement

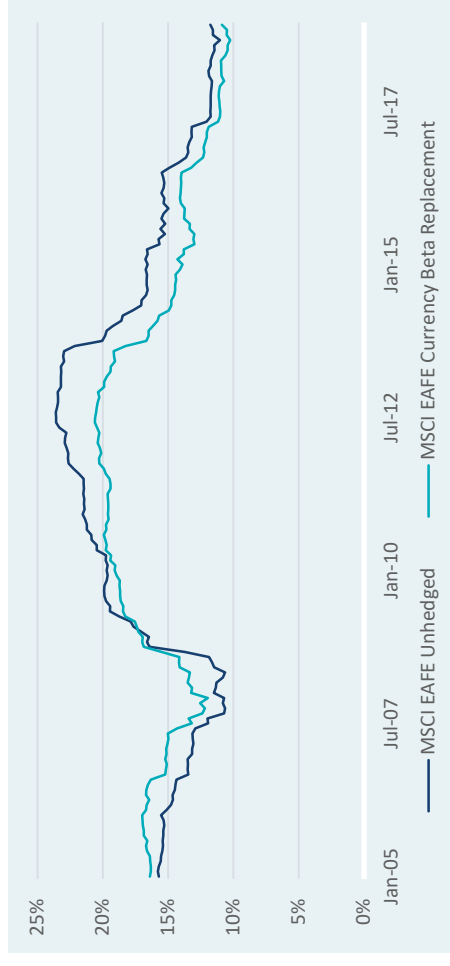
One possible approach is to hedge the embedded currency and replace it with currency beta

- Replace the uncompensated embedded currency exposure with something that has historically had positive returns
- This strategy has provided better returns with lower risk
- Drawdowns have also been less severe

5-YEAR ROLLING RETURNS



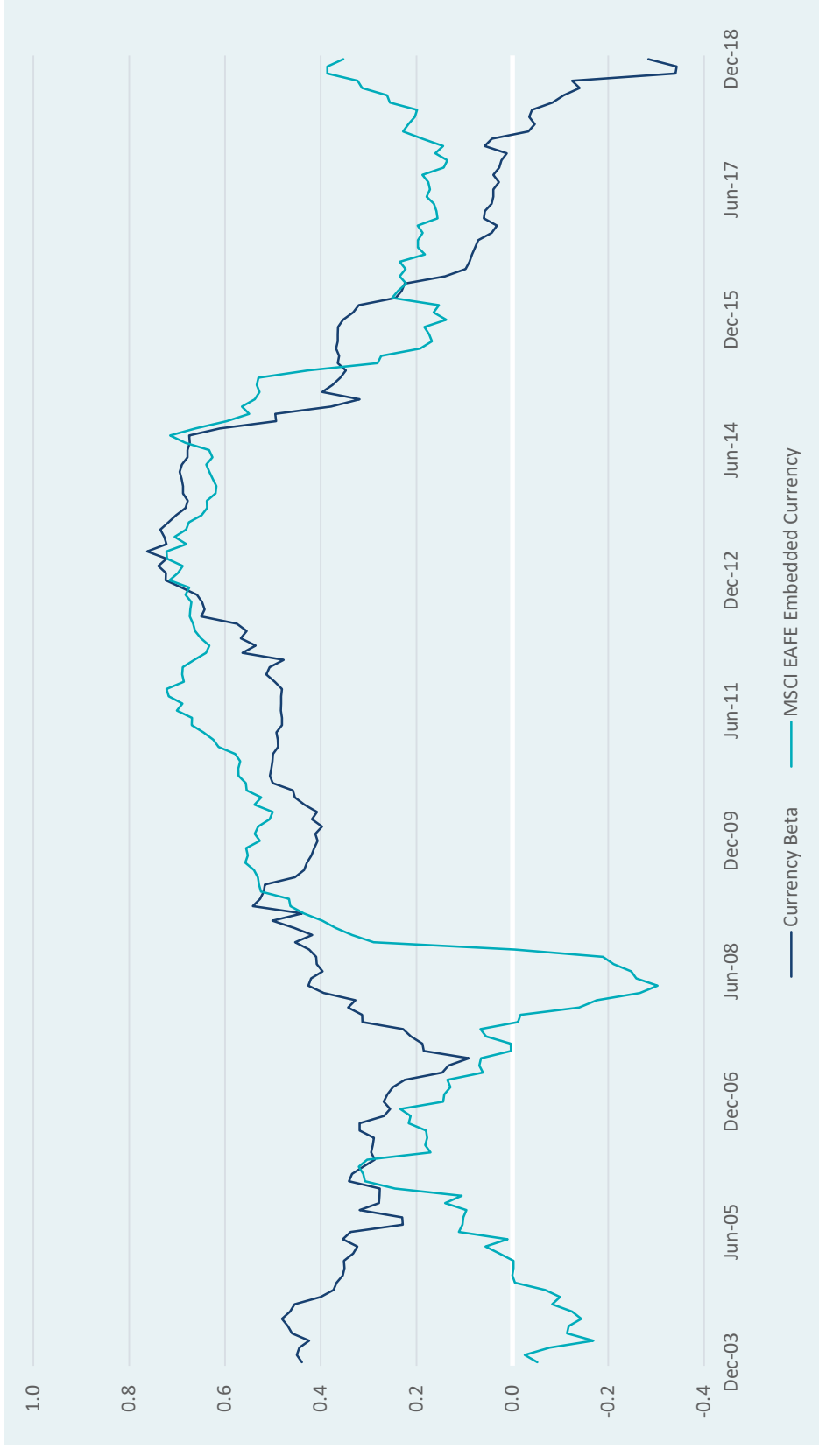
5-YEAR ROLLING RISK



Source: Verus, MSCI, as of 12/31/18, currency beta is represented by MSCI Currency Factor Mix Index

Diversification

3-YEAR ROLLING CORRELATIONS WITH 60/40 GLOBAL PORTFOLIO

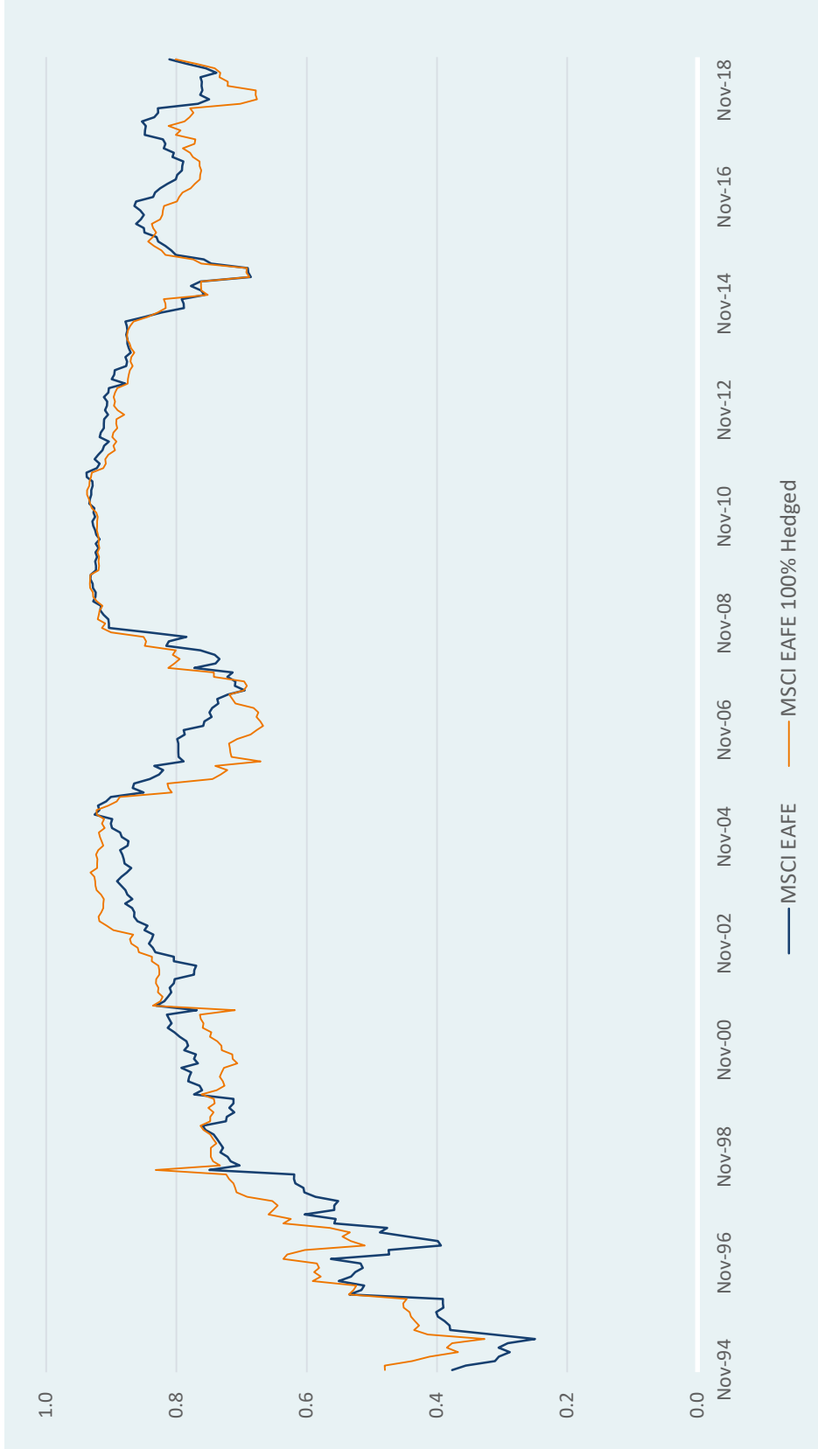


Currency beta has provided diversification at the total portfolio level

Source: Verus, MPI, MSCI, as of 12/31/18, currency beta is represented by the MSCI Currency Factor Mix Index

Correlation

5-YEAR ROLLING CORRELATIONS WITH S&P 500



Source: MSCI, Standard & Poor's, as of 6/30/19

Active currency replacement

Just like other asset classes, currency investors can choose between passive (currency beta) and active products

- Using currency beta as the starting point benchmark, managers can build active insights into the portfolio using quantitative and fundamental insights to potentially improve risk adjusted returns
- The three factors used in currency beta – carry, value and momentum – heavily influence many active products
- Active products can be tailored for client specific needs

Important considerations

Other factors to consider

There are a number of common factors investors need to consider in each of these cases:

- **Use of derivatives** – Intentional currency investing involves the use of derivative contracts. While currency forwards have some non-derivative characteristics, investors with sensitivity to derivatives are likely to also have sensitivity to forward use.
- **Liquidity needs** – Liquidity considerations are involved. The nature of the exposures implemented may have liquidity consequences, and investors should be sure that their liquidity risk profile is matched to the proposed solution.
- **Complexity** – Additional complexity is likely involved. This means that board time must be spent in the lead up to adoption, and perhaps even on an ongoing basis (in particular where new members join the board) to ensure that decision-making stability is retained.
- **Peer risk** – A carefully thought out intentional currency approach will most likely involve peer risk. Weighing the sensitivity of the board to peer risk relative to the benefits of the possible investment outcomes concerned is an important part of adopting any approach.

Timing

Some investors have expressed concern with the recent strength in the U.S. dollar over the past few years, and are expecting a reversal in the medium-term trend. This expectation is being used as a reason to leave the embedded currency exposure unchanged. While not illogical, we disagree with this strategy for several reasons.

- Predicting currency movements is extremely difficult
- One of the primary goals of a currency program is risk reduction over the long-term
- Risk can be taken elsewhere in the portfolio to possibly enhance returns
- The embedded currency portfolio is an inefficient way to express these views
- A dynamic hedge may be an appropriate tool to allow a manager with expertise to adjust the hedge ratio depending on market conditions

Implementation

Which solution is right for you?

Asset size &
custodian

- Fund size impacts available strategies
- Custodial arrangement impacts available strategies

Objectives

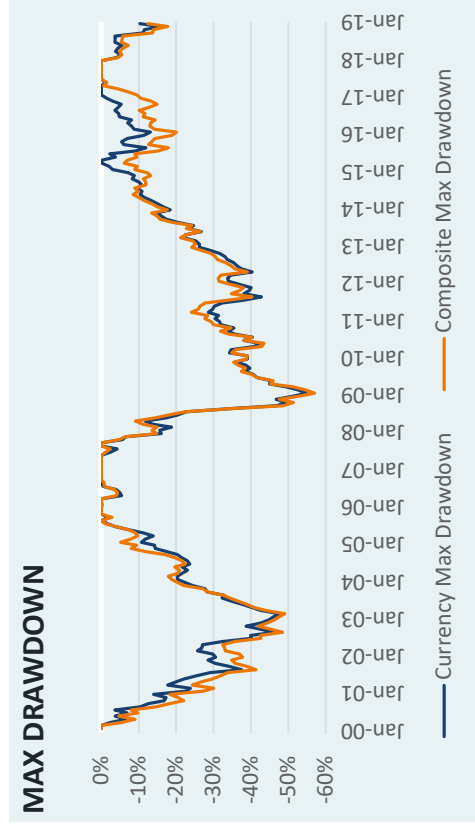
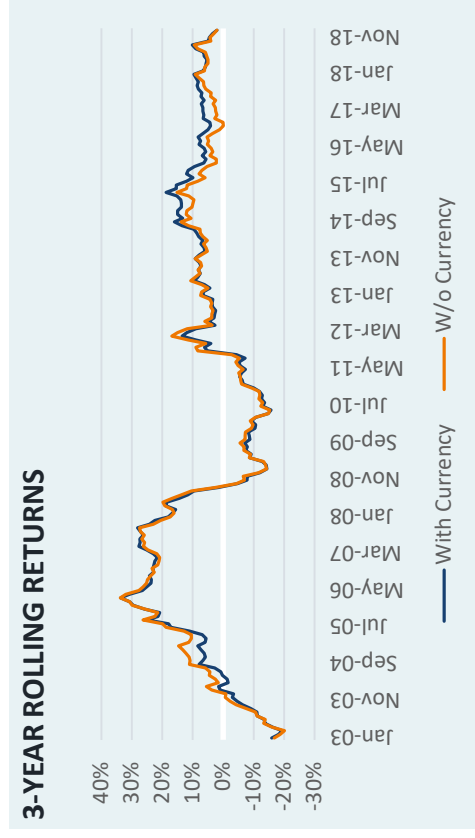
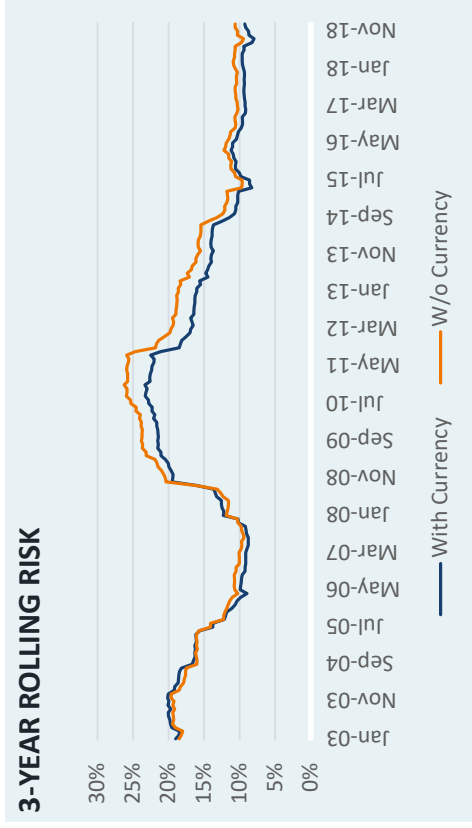
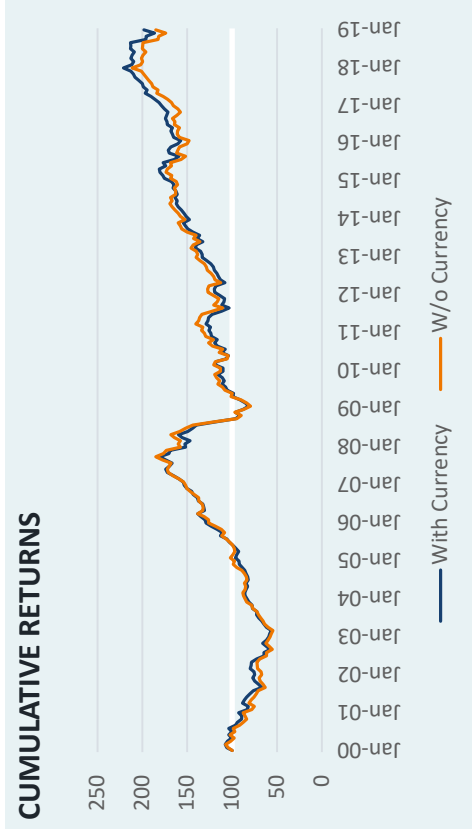
- **Volatility reduction**
- **Diversification**
- **Return enhancement**

Risk assessment

- **Derivatives**
- **Liquidity**
- **Complexity**
- **Exposures**
- **Peer risk**
- **Tracking error**

- **Managers**
- **Timeframe**
- **Cash flow management**
- **Potential IPS revisions**

CCCERA currency analysis



Source: Verus, CCCERA international equity exposure with currency and without currency

Notices & disclosures

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Meeting Date
08/28/19
Agenda Item
#8a.

DLJ REAL ESTATE CAPITAL PARTNERS

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the
DATE

September 24, 2019

Boston, MA

Invitation to Follow

2019 Annual Limited Partners Meeting

7th Annual California Institutional Forum

*An Annual Meeting of the Regional Institutional Investor Community – Wednesday, December 4, 2019
Hyatt Regency Sonoma Wine Country, 170 Railroad St, Santa Rosa, CA 95401*

DESIGNED FOR:

Pensions, Endowments, Foundations, Hospital Plans, Insurance Companies & Investment Consultants

2019 CONTRIBUTORS

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Voya Investment Management | ArrowMark Partners | Capital Fund Management

Brandes Investment Partners | IFM Investors | HSBC Global Asset Management

Morgan Stanley Investment Management | Vontobel Asset Management | Robeco

7:30 Registration & Welcome Coffee**8:00 Breakfast Workshop: Enhanced Indexing – Beyond Passive Investing**

Despite its popularity, passive investing isn't offering investors the best available exposure to the equity markets. We argue that enhanced indexing may be an even better alternative. It is supported by theory and evidence, allows for better ESG integration, and contributes to a liquid and efficient market.

Presenter:

Jan de Koning, Senior Portfolio Manager, **Robeco**

8:30 Welcome Remarks

Organizer: **William Coba**, Co-Head of Investor Relations, North America Institutional, **Markets Group**

Co-Chairperson: **Joel Damon**, Director, Senior Relationship Manager, **Allianz Global Investors**

Co-Chairperson: **Amanda Montgomery**, Director, Senior Relationship Manager, **Allianz Global Investors**

8:40 Panel: Fixed Income Risks

Evaluating the real risks in a fixed income portfolio has always been challenging endeavor. Is it interest rate risk, credit risk or liquidity risk that is moving the value of portfolio up or down? Is it worth paying for active management or will simply trying to invest in a fixed income benchmark at a rock bottom fee accomplish the same portfolio objective? As central banking policy evolves from quantitative easing to quantitative tightening, seeking the right solutions may lead to significant performance dispersion depending on the true risk that either an active manager or a benchmark is taking.

Panelists:

Speaker, Managing Director, **Putnam Investments**

9:20 Keynote Presentation: Understanding the Chinese Markets

The opening of the China A-shares market to foreign investors is expected to transform global markets and how investors look at Emerging Markets allocations. While the market is large -it is roughly equivalent in size to the European equity market- and offers access to high growth "new economy" sectors, risks still remain, especially for those not familiar with investing in China. Allianz Global Investors CEO Doug Eu began managing China equities in the early 1990s and built a strong Asia business in the following decade. He offers insight on the past and present Chinese equity markets, the unique role of the Chinese government, and other considerations investors in the A-share market should understand in order to best capture this new market opportunity.

Presenter: **Douglas Eu**, Managing Director, Chief Executive Officer US, **Allianz Global Investors**

9:50 Panel: Alternatives with Global Diversification Can Offer a Different Type of Performance in a Late Cycle

2019 predictions suggest slower growth, rising rates, ongoing geopolitical tensions and more volatility. Many institutional investors today are looking to alternatives to deliver return potential when stocks and bonds suffer and to protect against inflation. Can alternatives heed these challenges? Real assets have emerged as a compelling alternative to traditional equity and bond markets for their diversification benefits, as well as the opportunity for income and capital appreciation. This panel will explore the benefits of a diversified approach to alternatives investing, both by asset class, sector and geography.

Panelists:

Speaker, Managing Director, **Nuveen**

10:30 Morning Coffee Break**10:50 Panel: An Evolving World for Alternative Credit**

Following the global financial crisis, a low-rate environment has forced investors to rethink asset allocation in order to meet their portfolio objectives. This prolonged market condition has put particular stress on traditional credit and fixed income instruments that have historically played a critical role in portfolios. Further, hedge fund strategies employed to provide diversification and non-correlation have struggled to deliver. These dynamics are leading investors to increasingly embrace alternative credit strategies that look to take advantage of more complex, and often less liquid, opportunities. The panelists will seek to define the various segments within alternative credit, to highlight several key characteristics of these strategies, and to discuss real-time examples of opportunities in today's market.

Panelists:

Timothy Beresford, Client Portfolio Manager, **ArrowMark Partners**

11:30 Panel: Strategic Asset Allocation

A low-growth, high-volatility environment gives more power to an argument for diversification among wide arrays of asset classes. But where should an investor look to invest when most asset classes are trading at high valuations? How can they keep track of and counter changing risk profiles and more complex correlations? While many funds appropriately tend not to change asset allocations as result of political events or near-term or even intermediate risks, are they positioning portions of the portfolio--or even sub-strategies within allocations--for the likelihood of significant fiscal stimulus, tax breaks, deregulation, potential protectionist policies and/or currency impacts? The panelists will discuss how they are thinking (and what they are doing) regarding their strategic asset allocation and portfolio positioning.

Panelists:

Amit Sinha, Head of Multi Asset Design, **Voya Investment Management**

12:10 Panel: Commodities in Your Alternative Bucket

After years of low inflation and falling costs for good and services, commodities are again showing signs of life. With prices on the upswing, there may be value now in revisiting some fundamental questions regarding the class, such as what role do commodities play in an alternative's allocation? What are some of the different ways to get exposure, and are oil and gold enough for a portfolio? Could performance figures and diversification benefits make a compelling case for commodities? These questions, along with discourse around rising interest rates, the value of the U.S. dollar, and inflation expectations, will be taken on by the panel with respect to a prognosis for commodities performance in 2019 and beyond.

Panelists:

Juan Carlos Artigas, Director, Investment Research, **World Gold Council**

12:50 Networking Luncheon Hosted By: Vontobel Asset Management

In the format of roundtables, small discussion groups are formed by topic. This is your opportunity to interact with some of our star speakers of the day, ask questions, and make connections.

1:50 Panel: Evolution of Emerging Market Equities

Over the course of the past two decades, investment in emerging market equities has been polarizing. Return patterns have been volatile, along with a seemingly ever-changing set of opportunities and challenges. While emerging market countries remain drivers of global growth and are expected to deliver higher relative returns, on average compared to developed countries, institutional investors have less than 3% of their capital dedicated to the asset class. What factors should investors consider when debating whether to allocate to or diversify within the asset class?

Panelists:

Christopher Garrett, Director, Institutional Group, **Brandes Investment Partners**

2:30 Panel: Alternative Beta: Implications for Your Portfolio

Big data and technology are set to have profound impact on the world, and firms with the capability to harness this data are well positioned to remain at the forefront of this revolution. But can quantitative investment techniques be applied to create consistent returns not correlated to wider market performance? As alternative beta/risk premia strategies become more defined, it has become increasingly important for investors to understand the role these strategies play within their portfolios and what to look for when evaluating such strategies.

Panelists:

Oliver Schupp, Head of North America, **Capital Fund Management**

3:10 Panel: Trends in Private Equity: Selectively Deploying Capital

It seems that private equity managers have lately been quite selective in deploying the capital they have at their disposal, characterized by smaller deals. What implications, if any, does this behavior have for valuations? What industry sectors could be desirable considering the economic outlook? And for institutional investors still looking to commit more, what has and what has not changed in their expectations? These and other critical questions regarding investing in the asset class will be discussed.

Panelists:

Speaker, Director, **Morgan Stanley Investment Management**

3:50 Afternoon Coffee Break**4:10 Panel: ESG Now and Then: Recent Trends in ESG Implementation**

The ESG discussion is rapidly evolving as are the techniques for incorporating ESG analytics and factors into the portfolio construction process. This panel will explore how investors are assessing ESG's longer-term material impacts and how they are positioning their portfolios to avoid these potential risks. The panel will also examine specific strategies investors are using to address and integrate ESG issues in active management frameworks.

Moderator:

Daniel Ingram, Vice President, Responsible Investment Research and Consulting, **Wilshire Associates**

Panelists:

Travis Antoniono, Investment Officer, Corporate Governance, **California State Teachers' Retirement System**

Marc Gauthier, University Treasurer and Investment Officer, **Concordia University**

Speaker, Managing Director, **HSBC Global Asset Management**



4:50 Fireside Chat: State Controller Betty T. Yee

Ms. Yee was elected in November 2014, following two terms of service on the California Board of Equalization. As Controller, she continues to serve the Board as its fifth voting member. Reelected for a second term as Controller in 2018, Ms. Yee is only the tenth woman in California history to be elected to statewide office. As the state's chief fiscal officer, Ms. Yee chairs the Franchise Tax Board and serves as a member of the California Public Employees' Retirement System (CalPERS) and the California State Teachers' Retirement System (CalSTRS) Boards. These two boards have a combined portfolio of more than \$570 billion. Ms. Yee also serves on the Ceres Board of Directors, a nonprofit organization working to mobilize many of the world's largest investors to advance global sustainability and take stronger action on climate change.

5:05 Chief Investment Officer Roundtable

Chief Investment Officers constantly face unique sets of challenges and investing environments. In this discussion, chief investment officers will focus on the key investment and management issues facing their funds, along with what they consider to be their plans' "best ideas" with regard to investment strategy. They will speak to what are the best performing asset allocations they have made this year, what a successful allocation looks like, and how they are identifying these investments.

Moderator:

Ian Toner, Chief Investment Officer, **Verus**

Panelists:

Gary Dokes, Chief Investment Officer, **Arizona Community Foundation**

5:35 Closing Remarks

Co-Chairperson: **Joel Damon**, Director, Senior Relationship Manager, **Allianz Global Investors**

Co-Chairperson: **Amanda Montgomery**, Director, Senior Relationship Manager, **Allianz Global Investors**

5:40 Networking Cocktail Hosted By: **IFM Investors**

6:40 Invitation-Only Dinner Hosted By: **Allianz Global Investors**