



PERSPECTIVES THAT DRIVE ENTERPRISE SUCCESS



PERIOD ENDING: SEPTEMBER 30, 2019

Investment Performance Review for

Imperial County Employees' Retirement System

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Investment Landscape

TAB I

Investment Performance
Review

TAB II



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**

4TH QUARTER 2019
Investment Landscape

Recent Verus research

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Annual outlooks

PRIVATE EQUITY OUTLOOK

In our annual outlook we discuss the following trends occurring in the private markets:

- Continued strong deal flow in 2018, surpassing the all-time high of 2017.
- Another strong year for M&A activity by strategic buyers in response to slowing global growth to shore up profit margins.
- Europe's continued deployment into new investments to surpass exits by almost 2x, despite the uncertainty of political policies.
- Persistent excess returns above public markets and borrower-friendly leveraged financing driving more capital into the private markets, however investors are gravitating towards larger fund managers with longer track records.
- The continued evolution of secondary markets encompassing increasingly complex transactions.

Topics of interests

CRISIS RISK MITIGATION

We went back in time to find the worst periods in U.S. stock market history. There is always a question regarding whether it is possible to employ risk mitigation within a portfolio without giving up too much in terms of returns or paying too much in expenses.

We briefly examine strategies which are thought to mitigate these effects and find that some are better than others. Most institutional investors already have an effective program of crisis risk mitigation in the form of a significant allocation to high-quality bonds. For those wishing to construct a dedicated crisis risk allocation, we suggest a roadmap.

THE INVESTMENT GOLDEN RULE

Effective capital allocation involves distributing financial resources in a way that aligns the goals and objectives of an organization with its investment program. For institutional investors, this involves designing an appropriate strategic asset allocation (SAA), selecting competent investment managers, and then managing the resulting portfolio well. We believe there is a framework that can help. The "Investment Golden Rule" combines the components of the capital allocation process with the return objective in order to improve investment decisions across the organization. In this paper we analyze some practical examples of the capital allocation process through the lens of this framework.

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3rd quarter summary

THE ECONOMIC CLIMATE

- Real GDP grew at a 2.3% rate year-over-year in the second quarter (2.0% quarterly annualized rate). U.S. Q2 consumer spending came in stronger than any time since 2014, while weak business inventory investment acted as a slight drag. **p. 7**
- Trade policies and conflict likely weighed on economic progress. Uncertainty regarding the future of U.S.-China trade relations and supply chain disruptions caused by new tariff impositions are expected to hinder growth in the future. **p. 16**

PORTFOLIO IMPACTS

- U.S. equities outperformed international in Q3 (S&P 500 +1.7%, MSCI EAFE -1.1%) as domestic markets continued to lead. Some convergence of U.S. interest rates with the ultra-low rates of international markets likely supported equity prices over the quarter. **p. 26**
- Core inflation has crept up to cycle-highs in 2019, increasing to 2.4% YoY in September. Headline inflation rose 1.7% YoY, dragged down by falling energy prices. Neither the media nor investors appear to be concerned about rising inflation, as of yet. Investors remain focused on deflationary forces in the global economy. **p. 9**

THE INVESTMENT CLIMATE

- The Federal Open Market Committee cut the range for its benchmark interest rate by 0.25% in both its July and September meetings, bringing the new range for federal funds to 1.75-2.00%. **p. 18**
- Global sovereign bonds rallied, encouraged by muted inflation expectations and dovish guidance from global central banks. Central bankers appealed for fiscal action, citing the limited capacity of monetary policy to sustain further economic expansion. **p. 18**

ASSET ALLOCATION ISSUES

- Risk assets were flat over the quarter. Global equities gained 0.0% and U.S. Treasuries gained 2.4% as domestic interest rates fell. Longer duration exposures continued to outperform. **p. 41**
- The U.S. dollar appreciated 2.6% in Q3 relative to a trade-weighted basket of currencies. Dollar volatility has been suppressed so far in 2019, following large swings experienced during years 2014-2018. Emerging market currencies fell -4.0% in Q3 on the back of U.S. dollar strength. These currencies remain depressed relative to history. **p. 36**

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

What drove the market in Q3?

"Trade talks seen as unlikely to mend U.S.-China divide"

U.S. TREASURY FEDERAL BUDGET NET CUSTOMS RECEIPTS (\$BILLIONS)

Apr	May	Jun	Jul	Aug
\$5.24	\$4.93	\$5.61	\$6.47	\$7.01

Article Source: Reuters, September 16th, 2019

"World Economy Sends Up Flares as Manufacturing Slump Hits U.S."

ISM MANUFACTURING PURCHASING MANAGERS' INDEX

Apr	May	Jun	Jul	Aug	Sep
52.8	52.1	51.7	51.2	49.1	47.8

Article Source: Bloomberg, September 30th, 2019

"Fed Will Weigh Resuming Balance Sheet Growth at October Meeting"

SIZE OF FEDERAL RESERVE BALANCE SHEET (\$TRILLIONS)

Apr	May	Jun	Jul	Aug	Sep
\$3.93	\$3.85	\$3.83	\$3.78	\$3.76	\$3.86

Article Source: The Wall Street Journal, September 19th, 2019

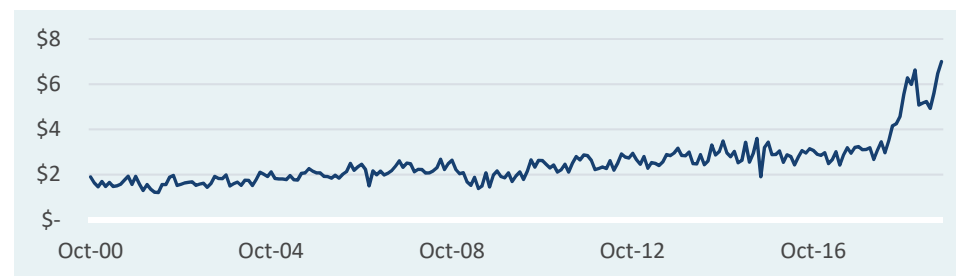
"Can Boris Johnson deliver Brexit as he pledged?"

GBP/USD SPOT EXCHANGE RATE (PRICE OF 1 GBP in USD)

Apr	May	Jun	Jul	Aug	Sep
\$1.30	\$1.26	\$1.27	\$1.22	\$1.22	\$1.23

Article Source: The Australian Financial Review, September 11th, 2019

U.S. TREASURY FEDERAL BUDGET NET RECEIPTS CUSTOMS (\$BILLIONS)



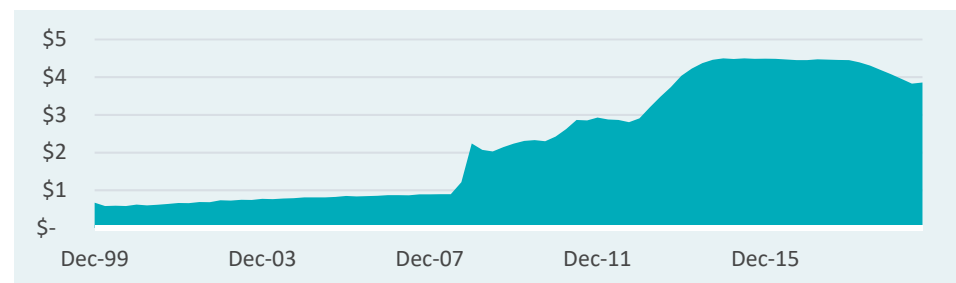
Source: Bloomberg, as of 8/31/19

MANUFACTURING PURCHASING MANAGERS INDEXES (RELATIVE TO 50)



Source: Bloomberg, Federal Reserve, as of 9/30/19. A reading of 0 is considered neutral.

FEDERAL RESERVE BALANCE SHEET (\$TRILLIONS)



Source: Bloomberg, Federal Reserve, as of 9/30/19

Economic environment

U.S. economics summary

- Real GDP grew at a 2.3% rate year-over-year in the second quarter (2.0% quarterly annualized rate). U.S. Q2 consumer spending came in stronger than any time since 2014, while weak business inventory investment acted as a slight drag.
- U.S-China trade remained a major story in Q3. The U.S. scheduled tariff rate hikes on \$250B in already-tariffed Chinese imports, as well as tariff impositions of up to 15% on the remaining \$300B in Chinese imports not currently exposed to duties. The Chinese retaliated with commensurate tariff adjustments. The two sides agreed to continued trade talks in Washington D.C. at the beginning of October.
- Trade conflict has likely weighed on economic progress. Uncertainty regarding the future of U.S.-China trade relations and supply chain disruptions caused by new tariff impositions are expected to act as a drag on growth in the future.
- Core inflation has crept up to cycle-highs, rising 2.4% YoY in September. Headline inflation increased 1.7% YoY, dragged down by falling energy prices.
- The U.S. unemployment rate reached a 50-year low of 3.5% in September. Historically, the rate of unemployment has risen prior to the beginning of each U.S. recession, which suggests the U.S. expansion may still have room to run.
- Despite record unemployment, wage growth remains lukewarm, decelerating from a cycle high of 3.4% achieved in February, to 2.9% in September.
- In October, the IMF cut its 2019 global economic growth forecast from 3.2% to 3.0%, referencing global trade friction as a primary driver.

	Most Recent	12 Months Prior
GDP (YoY)	2.3% 6/30/19	3.2% 6/30/18
Inflation (CPI YoY, Core)	2.4% 9/30/19	2.3% 9/30/18
Expected Inflation (5yr-5yr forward)	1.7% 9/30/19	2.2% 9/30/18
Fed Funds Target Range	1.75 – 2.00% 9/30/19	2.00 – 2.25% 9/30/18
10 Year Rate	1.7% 9/30/19	3.1% 9/30/18
U-3 Unemployment	3.5% 9/30/19	3.7% 9/30/18
U-6 Unemployment	6.9% 9/30/19	7.5% 9/30/18

GDP growth

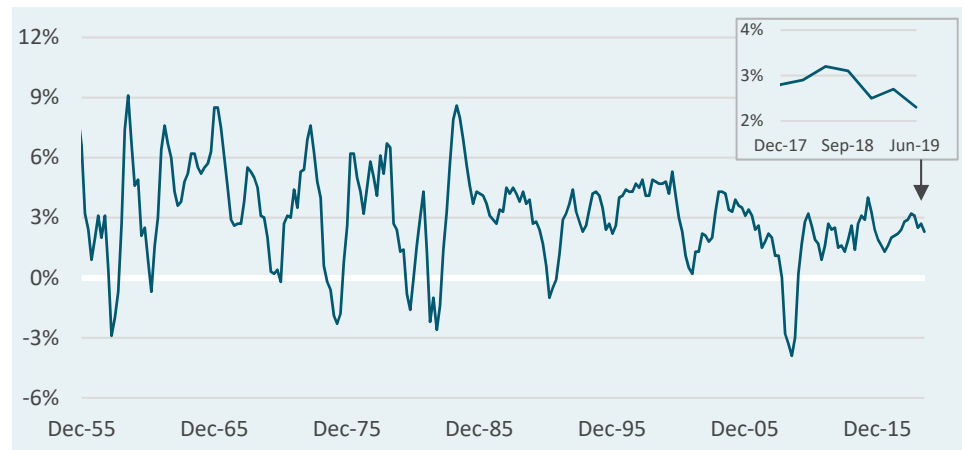
Real GDP grew at a 2.3% rate year-over-year in the second quarter (2.0% quarterly annualized rate). A lack of corporate inventory investment detracted -0.9% from the overall GDP print, perhaps fueled by frontloaded business purchases in efforts to avoid tariffs. Business investment also acted as a slight drag. Weakness was offset by strength in consumer spending not seen since late 2014. Economists broadly expect U.S. economic growth to moderate to a 2.0% pace in 2020.

economic growth. Uncertainty regarding the future of U.S.-China trade relations and supply chain disruptions caused by new tariff impositions are expected to further weigh on trade, spending, and business investment.

On October 9th, the Federal Reserve Bank of Atlanta GDPNow forecast indicated GDP growth of 1.7% in the third quarter. This forecast has recently fallen due to weaker than expected inventory investment.

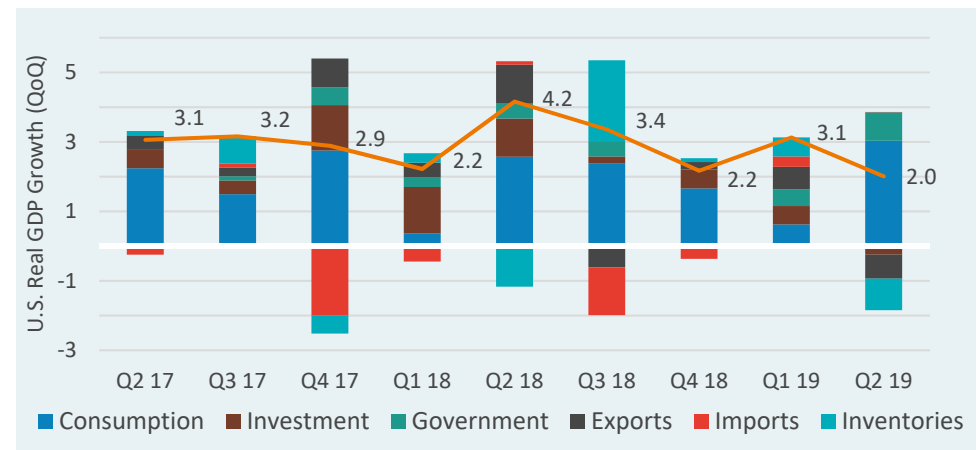
Trade policies and conflict likely resulted in a mild drag on

U.S. REAL GDP GROWTH (YOY)



Source: Bloomberg, as of 6/30/19

U.S. GDP GROWTH ATTRIBUTION



Source: BEA, annualized quarterly rate, as of 6/30/19

Inflation

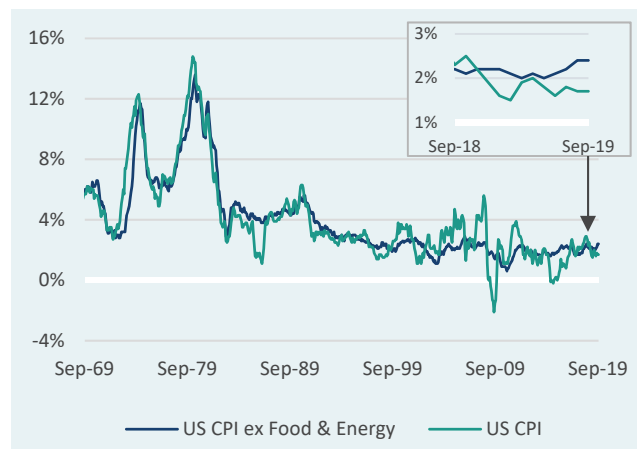
Core inflation has crept up to cycle-highs, rising 2.4% YoY in September. Headline inflation increased 1.7% YoY, held down by falling energy prices. Neither the media nor investors appear to be concerned about rising inflation, as of yet. Investors remain focused on deflationary forces across the global economy.

The market is pricing inflation to be very low over the next 10 years, as indicated by the U.S. 10yr TIPS breakeven inflation rate of 1.52%. This breakeven rate is still a ways

from its cycle low of 1.18% achieved in February 2016, when the price of oil crashed to below \$30 per barrel and pushed inflation down drastically.

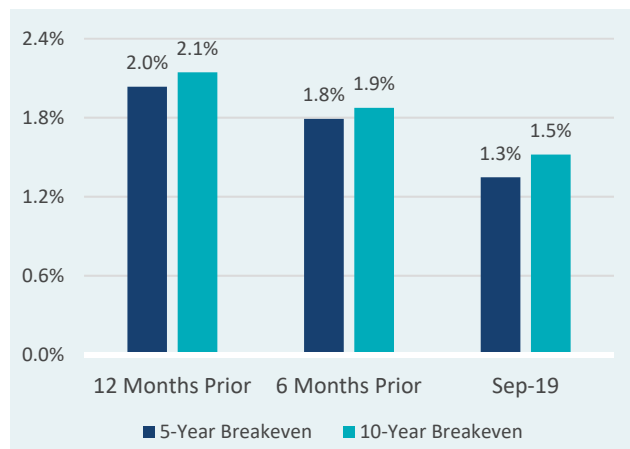
We believe it is likely that inflation will remain subdued. If inflation was to rise persistently, this might place central banks in a perilous position, given their recent unwillingness to raise interest rates. A rising inflation environment would also put upward pressure on interest rates, creating a drag on the global economy.

U.S. CPI (YOY)



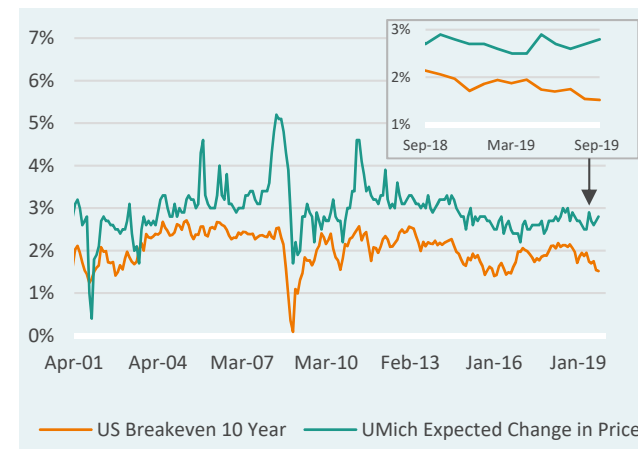
Source: Bloomberg, as of 9/30/19

U.S. BREAKEVEN INFLATION RATES



Source: FRED, as of 9/30/19

INFLATION EXPECTATIONS



Source: Bloomberg, as of 9/30/19

Labor market

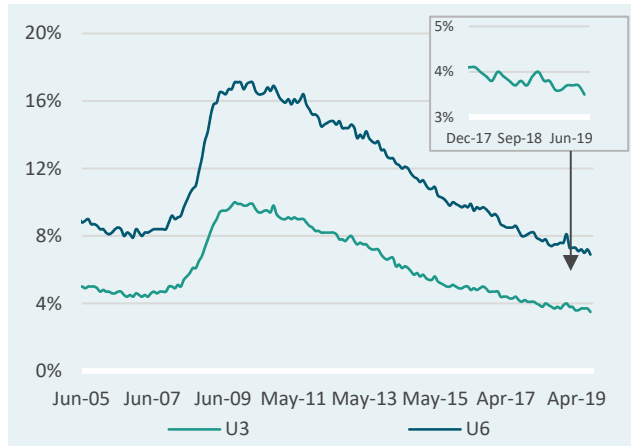
The U.S. unemployment rate reached a 50-year low of 3.5% in September. Historically, the rate of unemployment has risen prior to the beginning of each U.S. recession, which suggests the U.S. expansion may still have room to run. Despite record unemployment, wage growth remains lukewarm, decelerating to 2.9% YoY in September, down from a cycle high of 3.4% YoY achieved in February.

Interestingly, the small pool of U.S. workers who are currently unemployed have been out of work for much

longer, on average, than during past economic cycles. A shift in the composition of U.S. jobs may be contributing to this effect, as many manufacturing jobs have been outsourced/lost, and automated production processes have displaced some workers. Mismatches between the skills of available U.S. job-seekers and the skills required for current jobs appears to be creating some *structural unemployment*. Workers who are *structurally unemployed* require retraining and education to reposition themselves in the labor market.

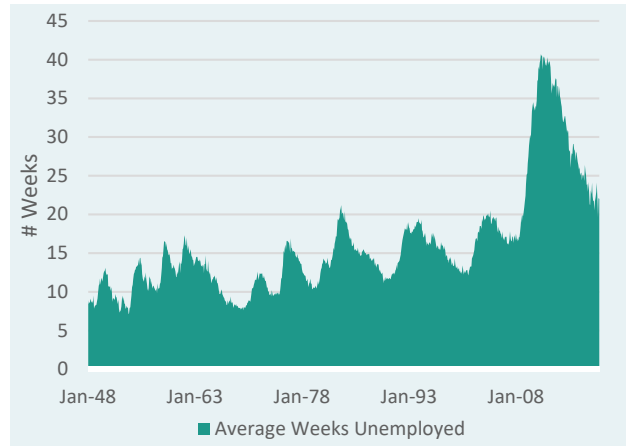
U.S. labor market remains strong, though further upside may be limited

U.S. UNEMPLOYMENT



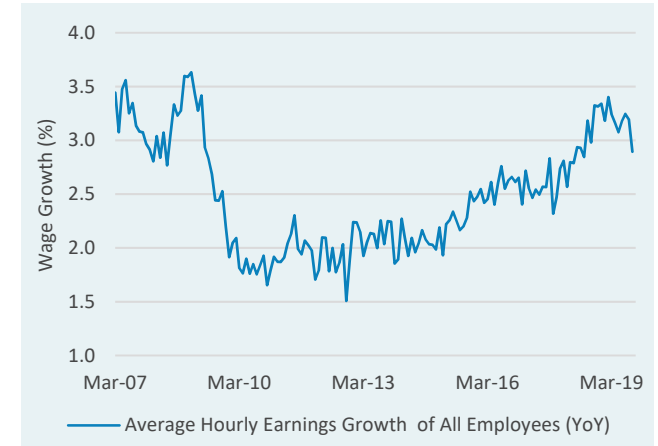
Source: FRED, as of 9/30/19

LENGTH OF UNEMPLOYMENT



Source: FRED, as 9/30/19

U.S. WAGE GROWTH



Source: FRED, as of 9/30/19

The consumer

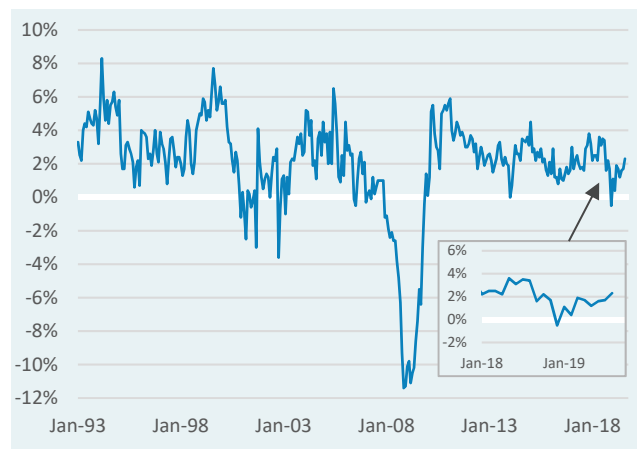
Retail sales fell in late 2018 but recovered year-to-date with a September growth rate of 2.3% YoY. Big-ticket purchases of items such as automobiles and homes have slowed from their 2016 highs.

The U.S. consumer continues to exhibit strength, as the labor market has reached record tightness, sentiment remains solid, and borrowing costs have fallen. However, slowing big ticket purchases will act as a headwind to growth. This slowing may be partly an effect of low interest rate burnout. As interest rates have been low for many years, consumers in need of big-ticket items have likely already purchased those items. Since

consumers are not likely to purchase yet another car or home, the incremental positive impacts of lower interest rates may be limited.

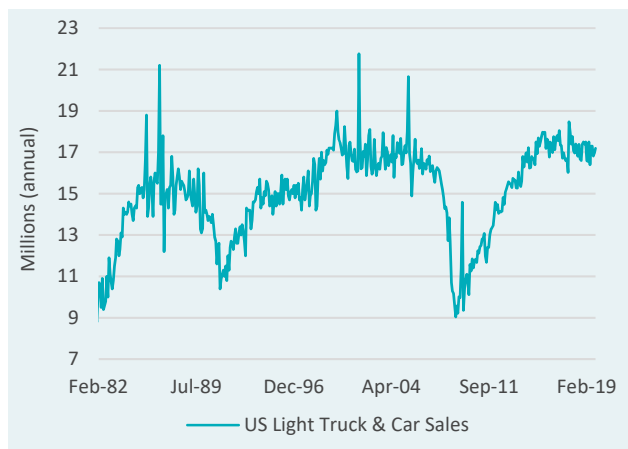
Consumer spending growth throughout this expansion has been a bright spot but has remained moderate, perhaps influenced by memories of the U.S. housing bubble and global financial crisis. Conservative spending habits are reflected in much higher savings rates than those witnessed during the economic boom of the 2000s – during which households spent more of their disposable income than any time since the Great Depression of the 1930s.

REAL RETAIL SALES GROWTH (YOY)



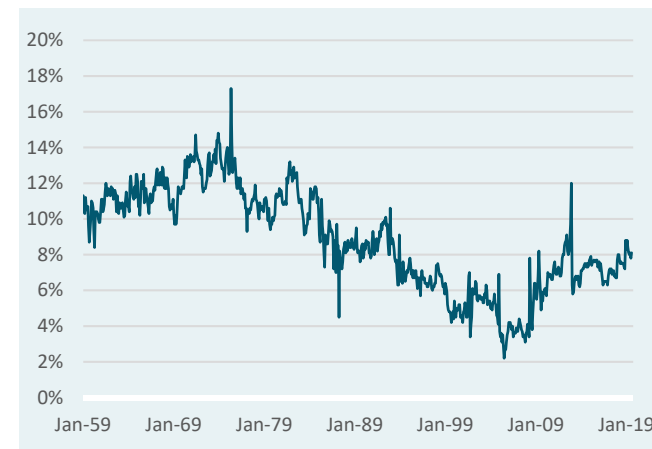
Source: FRED, as of 8/31/19

AUTO SALES



Source: Bloomberg, as of 9/30/19

PERSONAL SAVINGS RATE



Source: FRED, as of 8/31/19

Sentiment

Consumer sentiment faded but remained strong relative to history. The ratcheting up of trade tensions between the U.S. and China cast a shadow over a robust U.S. labor market.

Quits rate data from the Bureau of Labor Statistics indicated that 2.3% of total employed U.S. workers voluntarily quit their jobs in August - a level not seen since April 2001. Policymakers and economists view the quits rate as a measure of job confidence; quits rates typically rise when the labor market is relatively tight, and wages are moving higher.

Over the quarter, the University of Michigan's Consumer Sentiment Index fell from 98.2 to 93.2. Consumers remained more concerned about the near-term future than about the current situation. The two components of the index – Expectations and Current Situation - fell from 89.3 to 83.4 and from 111.9 to 108.5, respectively.

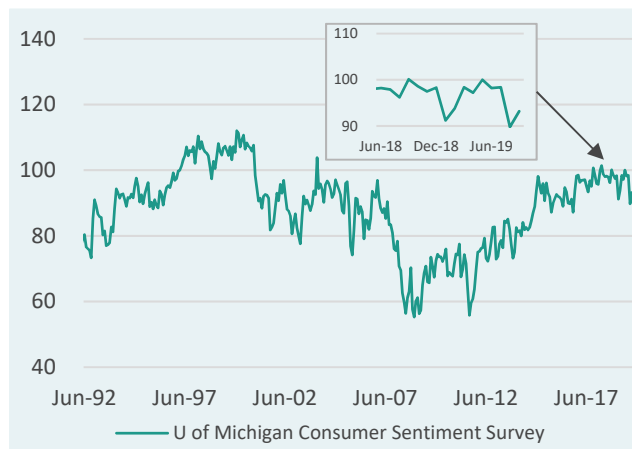
Optimism among small business owners trended lower as well. In the September NFIB report, 30% of small business owners reported they were negatively affected by tariffs.

U.S. WORKER QUIT RATE



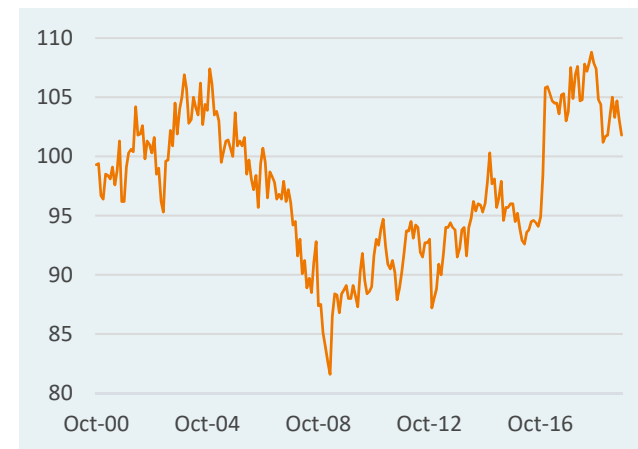
Source: FRED, as of 8/31/19

CONSUMER SENTIMENT



Source: University of Michigan, as of 9/30/19 (see Appendix)

NFIB SMALL BUSINESS OPTIMISM INDEX



Source: NFIB, as of 9/30/19

Housing

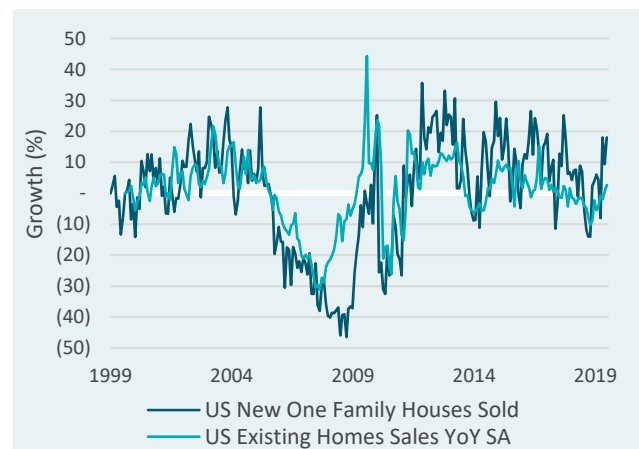
The housing market appears to be cooling off after a strong boom throughout the recent economic expansion. Home prices are falling modestly in some markets, and sales activity slowed in 2018. However, the recent drop in interest rates and mortgage rates has eased the cost of home ownership and may reignite activity.

Existing home sales grew +2.6% YoY in August. New home sales, a far smaller portion of the overall market, grew at a stronger rate of +18% YoY. An increase in new home sales likely reflects rising homebuilder activity in recent years, as indicated by the NAHB Housing Starts and Housing Permits Indices.

Home prices have fallen. The median U.S. home sale price was down -5% YoY in Q2. Falling prices and further weakening of the U.S. economy may create negative momentum as many buyers do not wish to purchase a home in a falling housing market, or in an economy that may be headed for recession.

It is always helpful to remember that home price trends can vary meaningfully by location, which means national statistics are sometimes difficult to interpret at a local level.

U.S. HOME SALES (YOY)



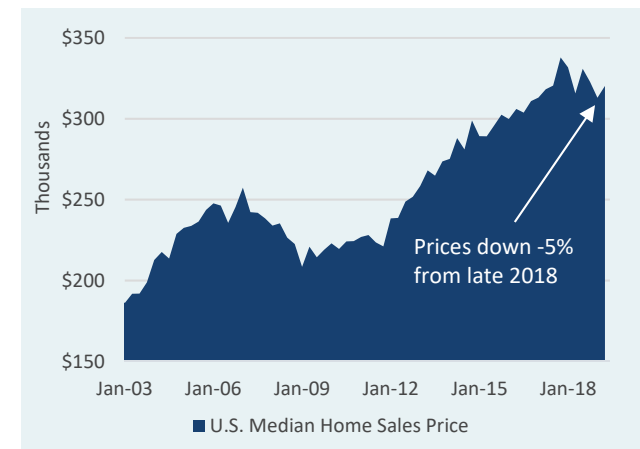
Source: FRED, as of 8/31/19

HOUSING STARTS & PERMITS



Source: Bloomberg, NAHB, as of 8/31/19 (see appendix)

MEDIAN U.S. HOME SALES PRICE



Source: FRED, as of 6/30/19

International economics summary

- The Organization for Economic Development cut its 2019 calendar year forecast for global growth from 3.2% to 2.9% and its 2020 calendar year forecast from 3.4% to 3.0%. Driving the downward revisions were trade tensions, which the OECD estimated would reduce 2019 global growth by 0.6%, cue for central banks to step in and attempt to bolster economic growth through more accommodative policy.
- A major theme in the third quarter was the global manufacturing slowdown, which was illuminated by gloomy European manufacturing PMI data. The Markit Eurozone Manufacturing PMI fell to 45.7, further into contractionary territory indicated by a reading below 50. The German reading fell to 41.7. It has yet to be seen whether manufacturing weakness will spill into the larger services sector, where PMIs still indicate business expansion.
- Inflation has remained subdued across international developed markets, and many pundits have viewed the mild inflation data as a
- Unemployment rates continued to tick lower around the globe. In the U.S., unemployment hit a 50-year low at 3.5%.
- U.S-China negotiations will likely continue to impact trade around the world. The U.S. scheduled tariff rate hikes on \$250B in already-tariffed Chinese imports, as well as tariff impositions of up to 15% on the remaining \$300B in Chinese imports not currently exposed to duties. The Chinese retaliated with commensurate tariff adjustments. The two sides agreed to continued trade talks in Washington D.C. at the beginning of October.
- Dormant trade tensions between the U.S. and the E.U. saw a resurgence over the quarter – the U.S. applied tariffs between 10-25% on \$7.5B of imports from the E.U.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	2.3% 6/30/19	1.7% 9/30/19	3.5% 9/30/19
Eurozone	1.2% 6/30/19	0.8% 9/30/19	7.4% 8/31/19
Japan	1.0% 6/30/19	0.4% 9/30/19	2.3% 5/31/19
BRICS Nations	5.0% 6/30/19	3.1% 9/30/19	5.1% 6/30/19
Brazil	1.0% 6/30/19	2.9% 9/30/19	11.8% 8/31/19
Russia	0.9% 6/30/19	4.0% 9/30/19	4.3% 8/31/19
India	5.8% 3/31/19	4.0% 9/30/19	8.5% 12/31/17
China	6.2% 6/30/19	3.0% 9/30/19	3.6% 6/30/19

International economics

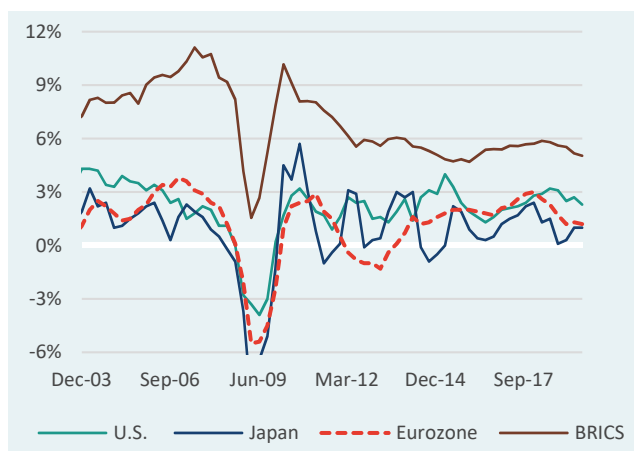
The United States delivered year-over-year GDP growth of 2.3% in the second quarter, extending outperformance relative to other developed nations, which have posted year-over-year growth of around 1.0%.

The Organization for Economic Development cut its 2019 calendar year forecast for global growth from 3.2% to 2.9% and its 2020 calendar year forecast from 3.4% to 3.0%. Driving the downward revisions were trade tensions, which the OECD estimated would reduce 2019 global growth by 0.6%, 2019 U.S. growth by 0.7%, and 2019 Chinese growth by 1.0%

Inflation has remained subdued across international developed markets, and many pundits have viewed the mild inflation data as a cue for central banks to step in and attempt to bolster economic growth through more accommodative policy. Unemployment rates continued to tick lower around the globe. In the U.S., unemployment hit a 50-year low at 3.5%.

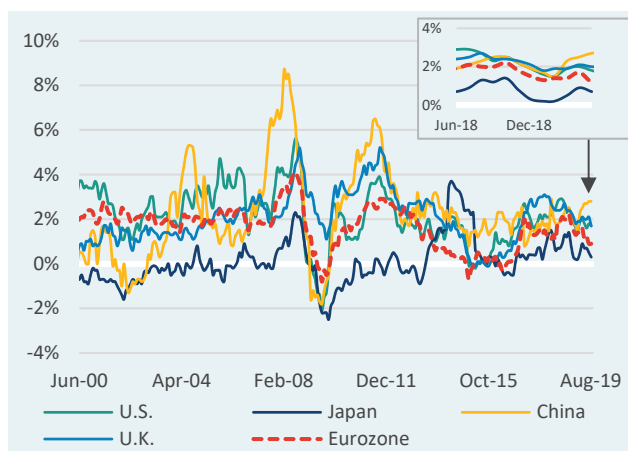
Chinese GDP expanded 6.0% year-over-year in the third quarter, its slowest rate of growth since the first quarter of 1992. Beijing's official target range for 2019 growth is between 6.0-6.5%.

REAL GDP GROWTH (YOY)



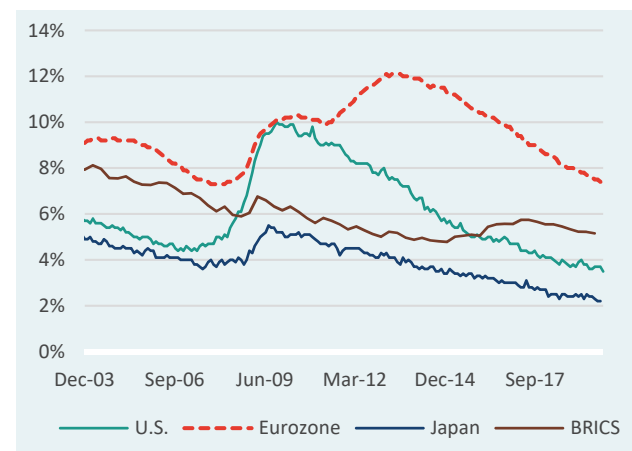
Source: Bloomberg, as of 6/30/19

INFLATION (CPI YOY)



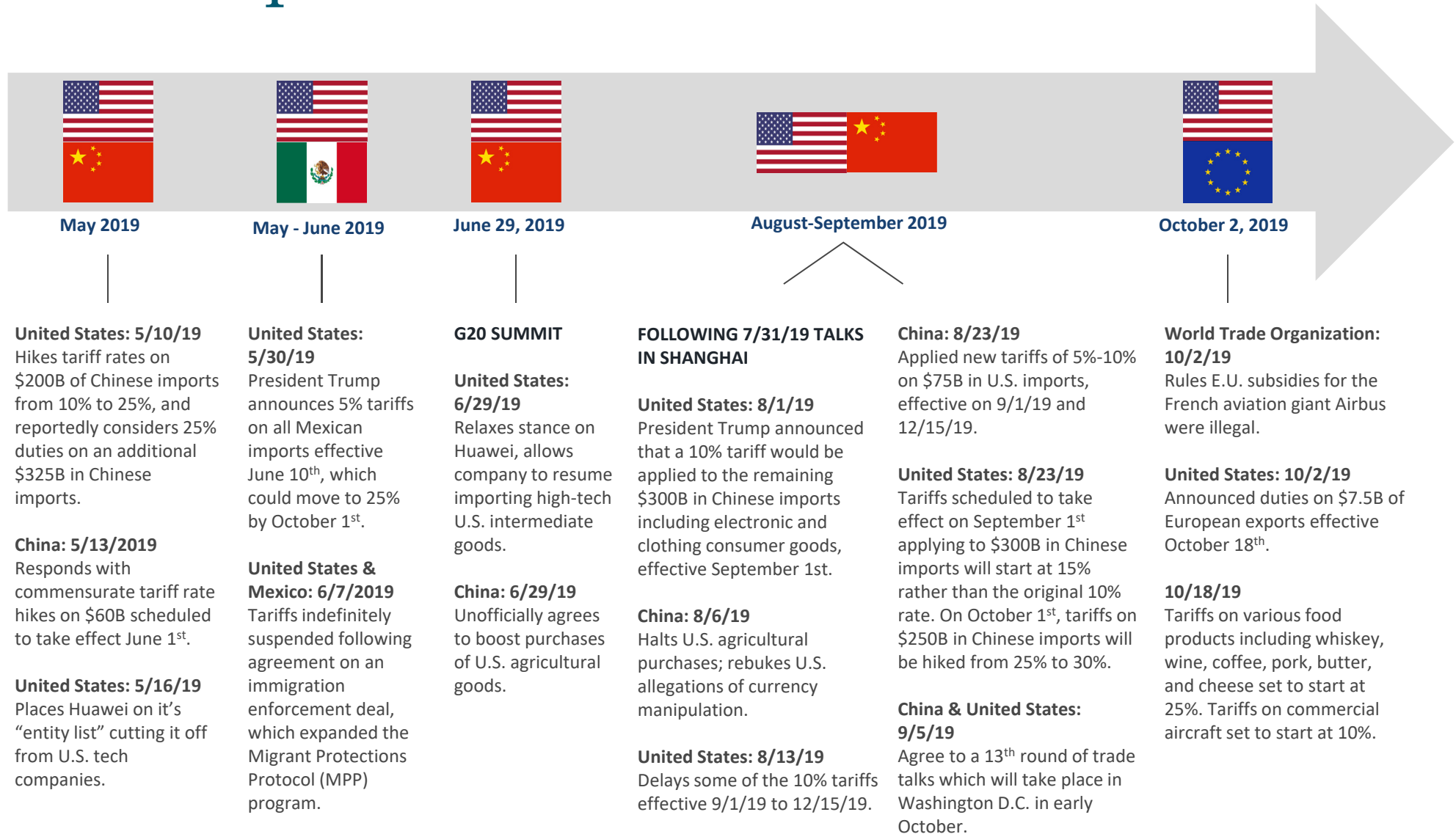
Source: Bloomberg, as of 9/30/19

UNEMPLOYMENT RATE



Source: Bloomberg, as of 9/30/19 or most recent release

Trade update



Source: Wikimedia Commons

Fixed income rates & credit

Interest rate environment

- Global sovereign bonds rallied, encouraged by muted inflation expectations and dovish guidance from global central banks. Central bankers appealed for fiscal action, citing the limited capacity of monetary policy to sustain further economic expansion.
- The Federal Open Market Committee cut the range for its benchmark interest rate by 0.25% in both its July and September meetings, bringing the new range for federal funds to 1.75-2.00%.
- FOMC members appear divided on the likely future path of interest rates. Per the September dot plot, 8 of 17 members expect one further 0.25% cut by the end of 2020, 2 expect no change, and 7 expect either one or two 0.25% rate hikes.
- The European Central Bank delivered a fresh stimulus package in September, in line with expectations. The ECB cut its main deposit rate from -0.40% to -0.50% and announced it would restart asset purchases of €20 billion per month, beginning November 1st.
- Global sovereign yields continued to plummet. In Germany, 10-year bond yields touched fresh all-time lows, and the entire German sovereign curve moved below 0%. In Italy, 10-year bond yields fell 1.28% to 0.82%, boosted by the formation of a new coalition government between the Democratic Party and the Five-Star Movement.
- Repo rates, which represent the overnight rate paid by short-term borrowers of cash, surged as overnight liquidity was constrained. The New York Fed intervened, injecting over \$300 billion into money markets over the course of a few weeks. Fed officials viewed the brief spike in repo rates as a financial “plumbing” issue, which could justify an “organic resumption of balance sheet growth”, not to be confused with crisis-era QE policy.

Area	Short Term (3M)	10-Year
United States	1.81%	1.66%
Germany	(0.57%)	(0.57%)
France	(0.59%)	(0.27%)
Spain	(0.54%)	0.15%
Italy	(0.28%)	0.82%
Greece	0.65%	1.35%
U.K.	0.78%	0.49%
Japan	(0.32%)	(0.21%)
Australia	1.06%	1.02%
China	2.33%	3.14%
Brazil	5.04%	7.05%
Russia	6.58%	7.01%

Source: Bloomberg, as of 9/30/19

Rising global debt – two opposing forces

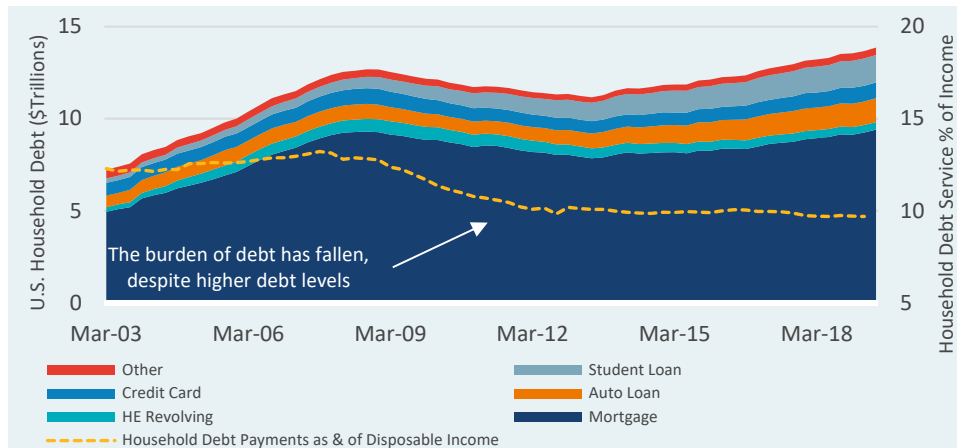
As the world has entered a low interest rate environment, many businesses and households have taken on greater debt. This is a natural trend – cheaper financing makes many purchases economical that were not when interest rates were high. As the cost of debt falls, businesses have also increasingly sought debt as a preferred source of overall financing.

Simultaneously, lower interest rates have offset much of the burden of taking on more debt. Some may argue that if an entity loads up on debt, but interest rates fall enough so that the entity's monthly debt payment does not change, this additional debt does not add significant risk to the entity's situation. It appears this is what is occurring around the world – greater use of debt, with the

burden of that debt largely offset by much lower interest rates. However, we believe risks are heightened in this environment.

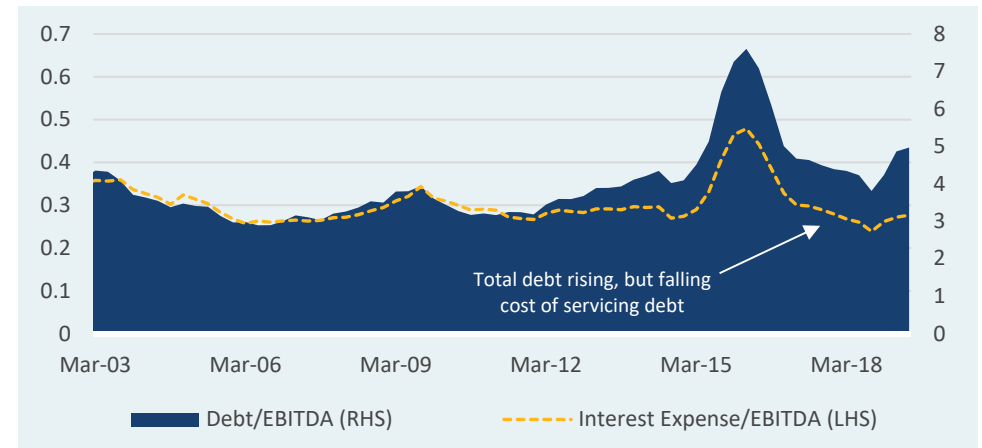
What are the investment implications? Changes in debt levels and interest rates tend to be slow-moving and secular, and difficult to act upon. But these events may in fact be informative about the future. First, expanded budgets and higher debt loads create incentives for governments to keep interest rates low to avoid economic problems. Second, significant corporate profit growth in recent years from financial engineering should not be expected to continue indefinitely. Third, higher debt loads may add to deflationary pressure, if debt service begins to take a greater share of income. We will continue to watch these secular forces.

HOUSEHOLD DEBT BURDEN



Source: FRED, as of 6/30/19

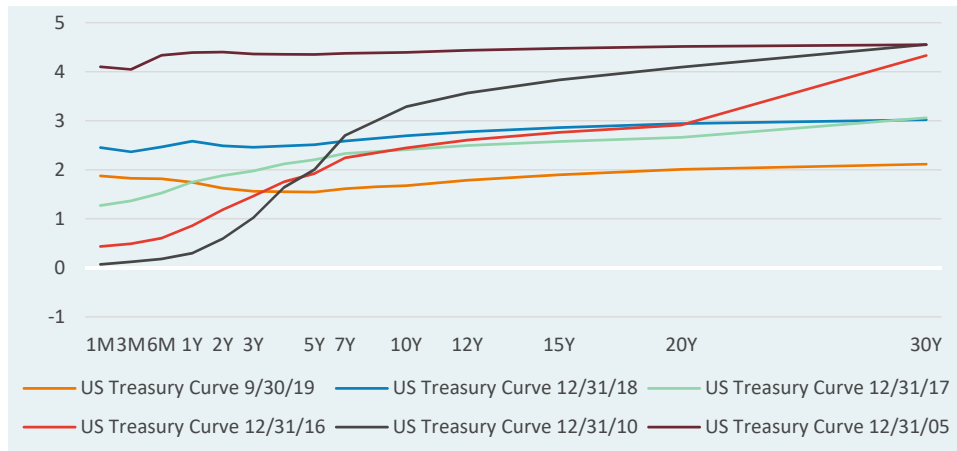
HIGH YIELD DEBT BURDEN



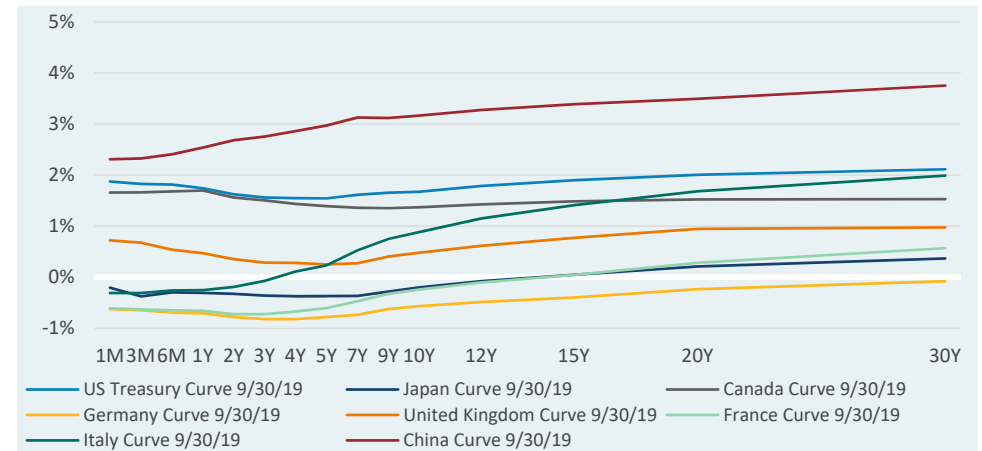
Source: Bank of America Merrill Lynch, as of 6/30/19 – Interest expense divided by total debt

Yield environment

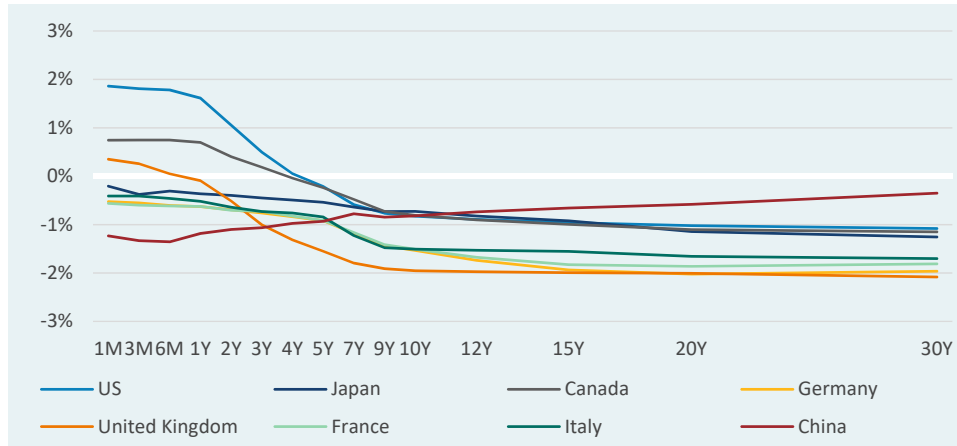
U.S. YIELD CURVE



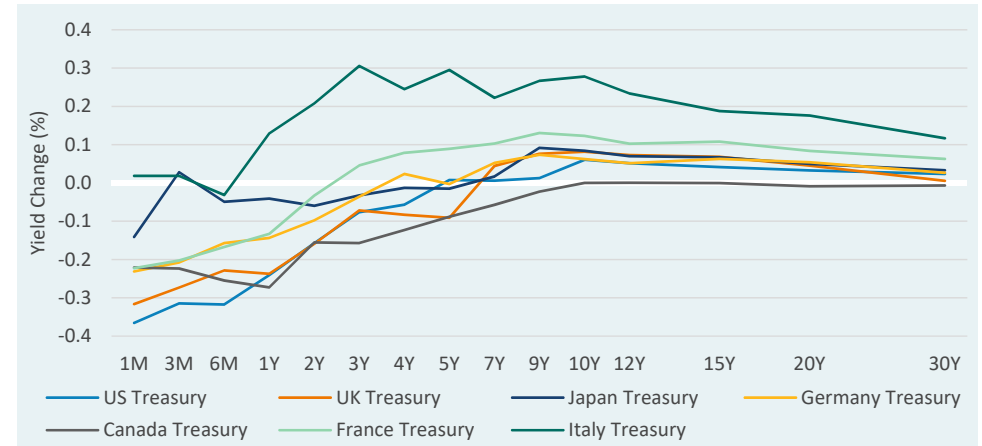
GLOBAL GOVERNMENT YIELD CURVES



YIELD CURVE CHANGES OVER LAST FIVE YEARS



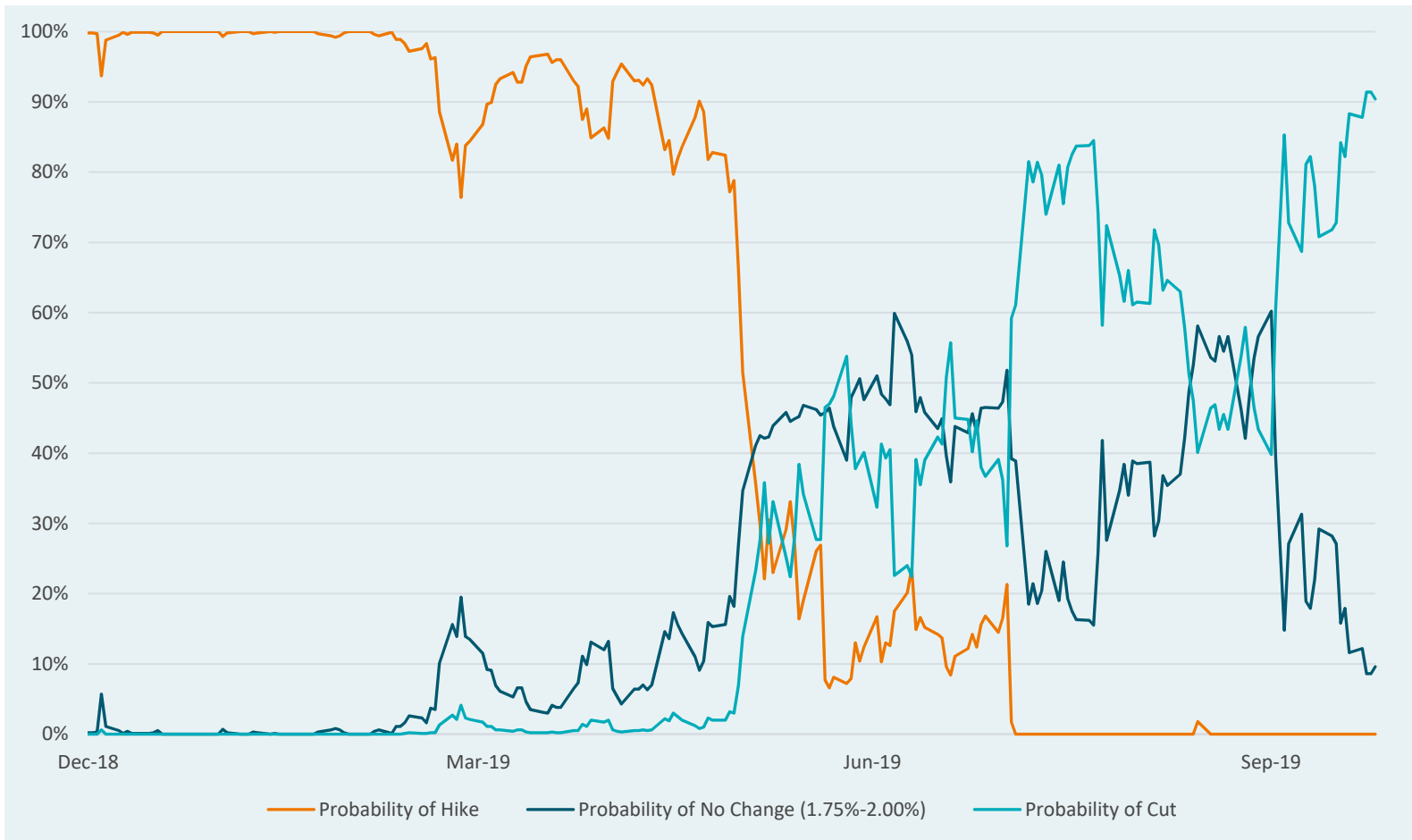
IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 9/30/19

October Fed meeting

FUTURES IMPLIED PROBABILITIES FOR OCTOBER FED RATE DECISION



In September, the Fed cut its range for federal funds by 0.25%, in line with expectations

Investors expect the Fed to cut rates again by 0.25% at the October 30th meeting

Source: Bloomberg, as of 10/24/19

Credit environment

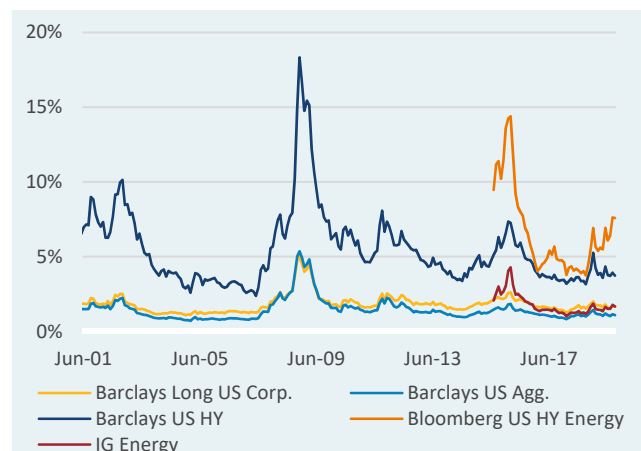
High yield bond spreads tightened slightly during Q3 as below investment grade assets remained somewhat stable over the period. Credit in general has been positively impacted by Federal Reserve dovishness. Anticipation of easier interest rate policies, which could potentially lengthen the credit cycle, has strengthened sentiment for risk assets. BB-rated bonds outperformed both CCC- and B-rated bonds in the third quarter once again. High yield bonds have returned +11.4% YTD, materially outperforming bank loans (+6.4%), but slightly underperforming investment grade credit (+12.6%).

The bank loan market has experienced some modest positive performance as interest rates rose off of their lows during the

quarter. The asset class was impacted by a pause in the Fed's hiking cycle and uncertainty surrounding future moves.

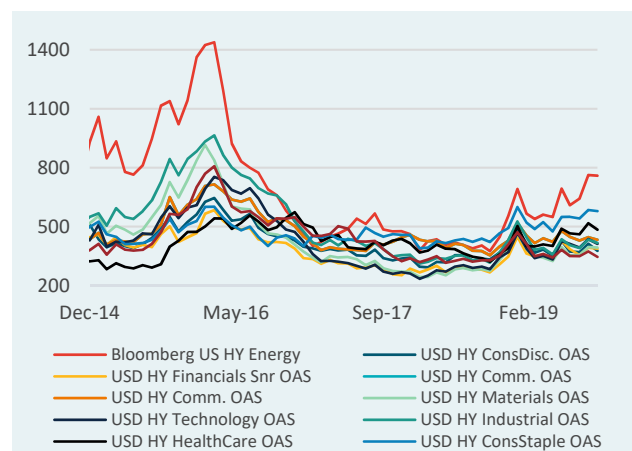
Based on concerns over late-cycle behavior in credit markets, we do not believe investors are being adequately compensated for credit risk. Late-cycle volatility tends to coincide with widening credit spreads and higher propensity for default activity. An underweight to U.S. investment grade, high yield credit, and bank loans may be warranted, with an overweight to emerging market debt which appears to offer more attractive value. This positioning should result in an overall neutral credit risk stance. Within U.S. markets, higher quality and more liquid assets appear most attractive.

SPREADS



Source: Barclays, Bloomberg, as of 9/30/19

HIGH YIELD SECTOR SPREADS (BPS)



Source: Bloomberg, as of 9/30/19

Market	Credit Spread (OAS)	
	9/30/19	9/30/18
Long U.S. Corp	1.7%	1.5%
U.S. Inv Grade Corp	1.2%	1.1%
U.S. High Yield	3.7%	3.2%
U.S. Bank Loans*	4.5%	3.7%

Source: Barclays, Credit Suisse, Bloomberg, as of 9/30/19

*Discount margin (4-year life)

Default & issuance

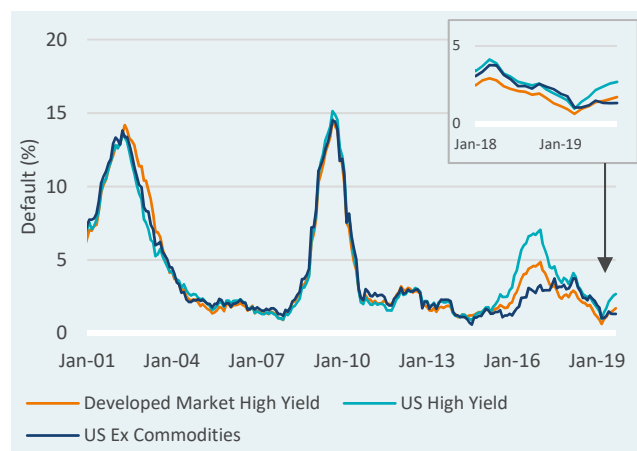
Default activity has been low and stable in the U.S. credit market, despite price volatility. The par-weighted default rate for high yield increased to 2.5% but remains below its long-term average range of 3.0-3.5%. For loans, the par-weighted default rate at the end of the third quarter was 1.4% and remains below the long-term average of 3.1%, according to data from J.P. Morgan. Consumer, retail, telecom, and utilities sectors may be especially prone to stress in the current environment.

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. However, the recent reversal in this recovery trend is notable and worth watching.

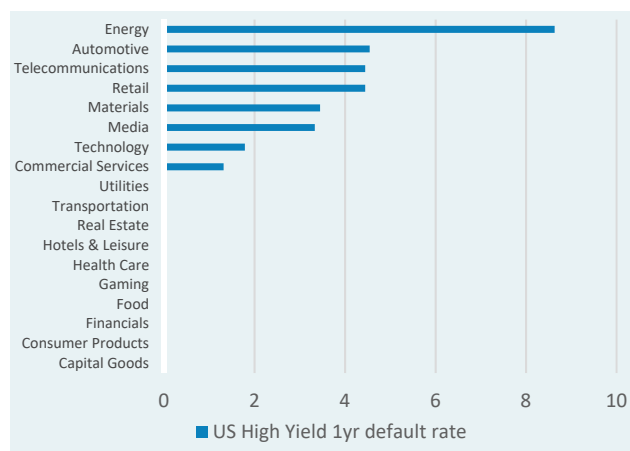
Gross high yield issue activity increased in September as investors took advantage of a dip in yields. Loan market issuance is significantly behind last year's pace, likely influenced by lower demand for floating rate securities now that the Federal Reserve has paused monetary tightening.

HY DEFAULT RATE (ROLLING 1-YEAR)



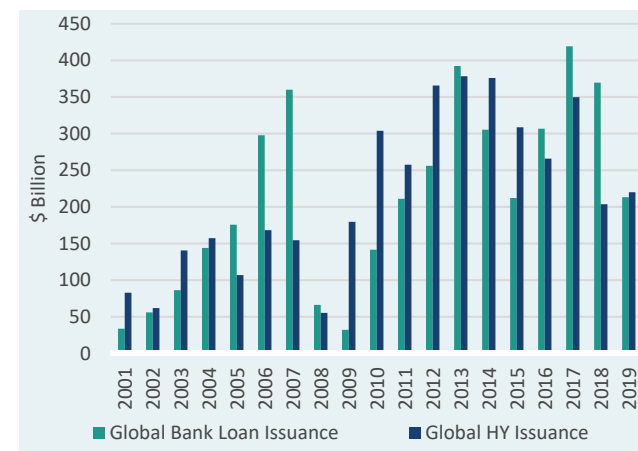
Source: BofA Merrill Lynch, as of 9/30/19

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



Source: BofA Merrill Lynch, as of 9/30/19 – par weighted

GLOBAL ISSUANCE (\$ BILLIONS)



Source: Bloomberg, BofA Merrill Lynch, as of 9/30/19

Equity

Equity environment

- U.S. equities outperformed international in Q3 (S&P 500 +1.7%, MSCI EAFE -1.1%) as domestic markets continued to lead. Some convergence of U.S. interest rates with the ultra-low rates of international markets likely supported equity prices over the quarter. We expect further declines in U.S. yields to be supportive of stocks, as low rates bolster earnings and reduce the attractiveness of fixed income.
- The S&P 500 has delivered moderate returns of 4.3% over the past year. Returns have likely been limited by flat earnings growth of 1.7%, and relatively high valuations. In the third quarter, S&P 500 YoY earnings growth is expected to be -4.1%, which would put U.S. equities on track for three consecutive quarters of earnings loss.
- The U.S. dollar appreciated 2.6% in Q3 relative to a trade-weighted basket of currencies, which created volatility and currency losses for unhedged investors.
- A large rotation from momentum stocks into value stocks occurred in Q3. The selloff was a multi-standard deviation event, with performance of the prior five months largely reversed in several days. The fall was likely due to a combination of better than expected economic news, monetary/fiscal stimulus expectations, and extreme positioning in these factors.
- Value stock performance was on par with growth stocks during the third quarter (Russell 1000 Value +1.4%, Russell 1000 Growth +1.5%) while small cap stocks underperformed large stocks (Russell 2000 -2.4%, Russell 1000 +1.4%). Year-to-date, the size factor and value factor have continued their run of underperformance.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
US Large Cap (S&P 500)	1.7%		4.3%	
US Small Cap (Russell 2000)	(2.4%)		(8.9%)	
US Large Value (Russell 1000 Value)	1.4%		4.0%	
US Large Growth (Russell 1000 Growth)	1.5%		3.7%	
International Large (MSCI EAFE)	(1.1%)	2.3%	(1.3%)	4.2%
Eurozone (Euro Stoxx 50)	(1.4%)	3.8%	1.3%	11.5%
U.K. (FTSE 100)	(2.2%)	1.4%	(2.7%)	5.4%
Japan (NIKKEI 225)	2.9%	3.6%	(8.2%)	(5.9%)
Emerging Markets (MSCI Emerging Markets)	(4.2%)	(2.2%)	(2.0%)	(0.4%)

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 9/30/19

Domestic equity

U.S. equities outpaced international in the third quarter (S&P 500 +1.7%, MSCI EAFE -1.1%) as domestic markets continued to lead. Some convergence of U.S. interest rates with the ultra-low rates of international markets likely supported equity prices over the quarter. We expect further declines in U.S. yields to be supportive of stocks, as low rates bolster earnings and reduce the attractiveness of fixed income.

The S&P 500 has delivered moderate returns of 4.3% over the past year. Returns have likely been limited by slow earnings growth of 1.7%, and relatively high valuations. In the third quarter, S&P 500 YoY earnings growth is expected to be -4.1%, which would put U.S.

equities on track for three consecutive quarters of earnings loss. Revenue growth in Q3 is expected to be 2.8% YoY. Investors may point to seemingly lofty earnings growth expectations for 2020 as reason for optimism, though in reality this is a fairly average forecast. Growth expectations are typically high initially, and then fall to a more realistic level as time passes.

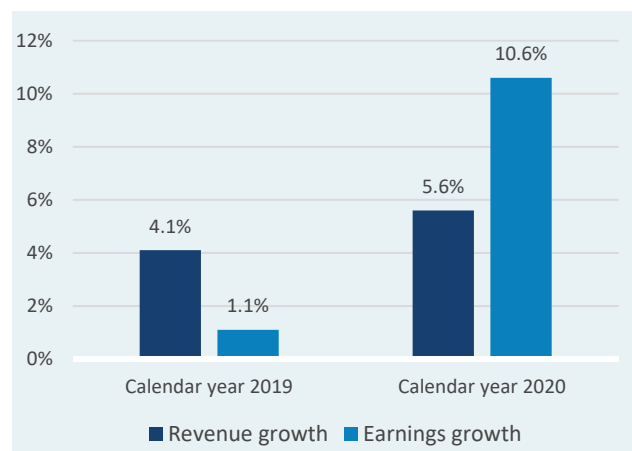
U.S. equities offer lower yields and less attractive valuations relative to other markets around the world, which suggests domestic equities might underperform over the long-term. However, U.S. may continue to outperform over the shorter-term due to relative economic and market strength.

U.S. EQUITIES



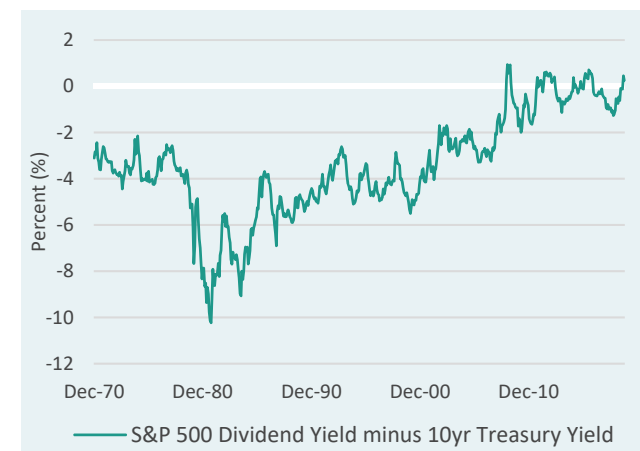
Source: Standard & Poor's, as of 9/30/19

Q3 2019 EARNINGS EXPECTATIONS



Source: FactSet, as of 10/11/19

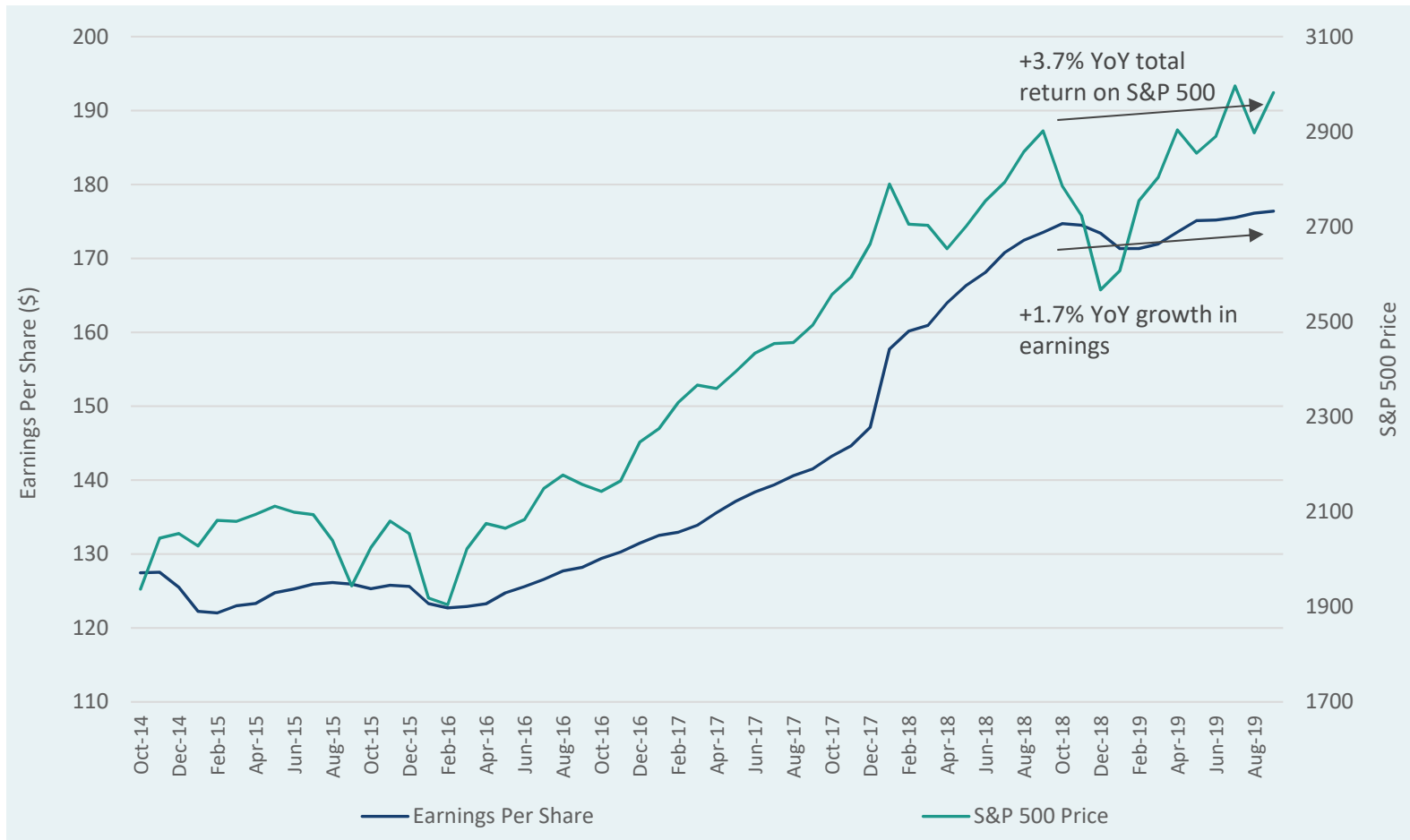
RELATIVE YIELDS



Source: Standard & Poor's, as of 9/30/19

Domestic equity

S&P 500 INDEX PRICE & EARNINGS LEVEL



U.S. equity performance has moderated

If earnings flatten out, this may lead to milder future returns

Source: Standard & Poor's, Bloomberg, as of 9/30/19

Domestic equity size & style

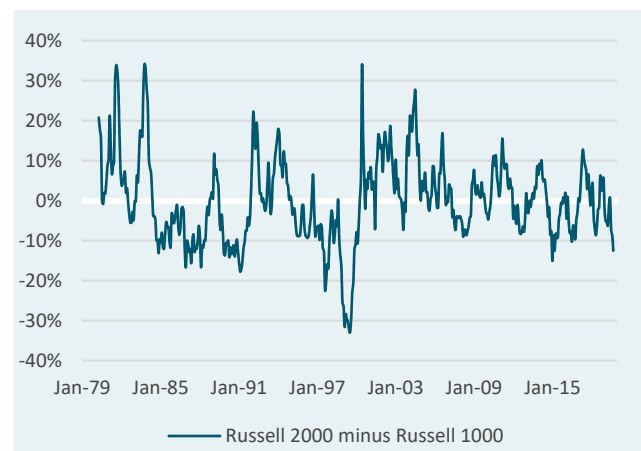
Value stock performance was on par with growth stocks during the third quarter (Russell 1000 Value +1.4%, Russell 1000 Growth +1.5%) while small cap stocks underperformed large stocks (Russell 2000 -2.4%, Russell 1000 +1.4%). Year-to-date, the size factor and value factor have extended their run of weakness.

The impact of sector performance on the value premium was mixed in the third quarter. Financials (+2.0%) and Utilities (+9.3%) outperformed the overall index (S&P 500 +1.7%) which boosted value, but poor Energy (-6.3%) performance counteracted these effects. Information Technology beat the

overall index (+3.3%) which acted as a headwind for value stocks.

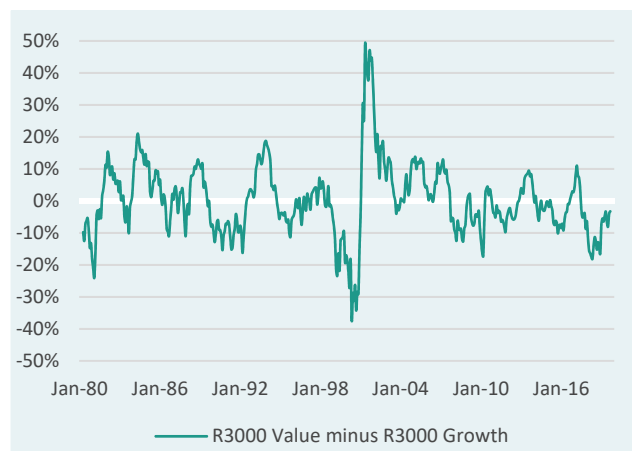
Value stocks have exhibited a long run of underperformance over the past decade. Our view has been that value stocks did not appear attractive, despite persistent performance pain. This was because value stocks had underperformed due to fundamental reasons rather than due to prices becoming stretched. Now, for the first time in this cycle it appears value prices are becoming unusually cheap, as indicated by a large disparity between Russell 1000 Value and Russell 1000 Growth P/E multiples.

SMALL CAP VS LARGE CAP (YOY)



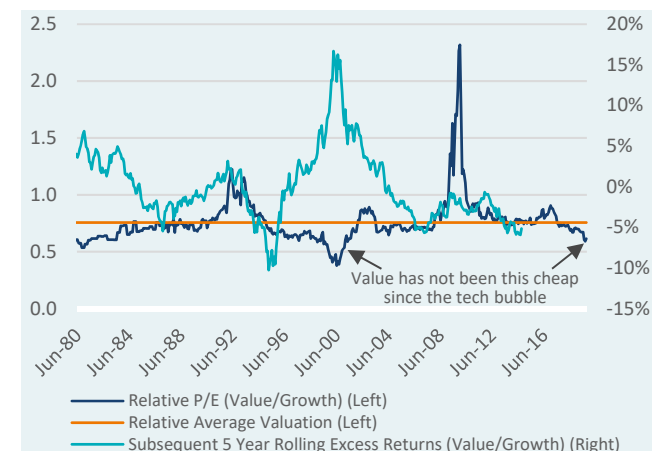
Source: FTSE, as of 9/30/19

VALUE VS GROWTH (YOY)



Source: FTSE, as of 9/30/19

VALUE STARTING TO LOOK CHEAP



Source: Russell, Bloomberg, as of 9/30/19

Domestic equity style – a closer look

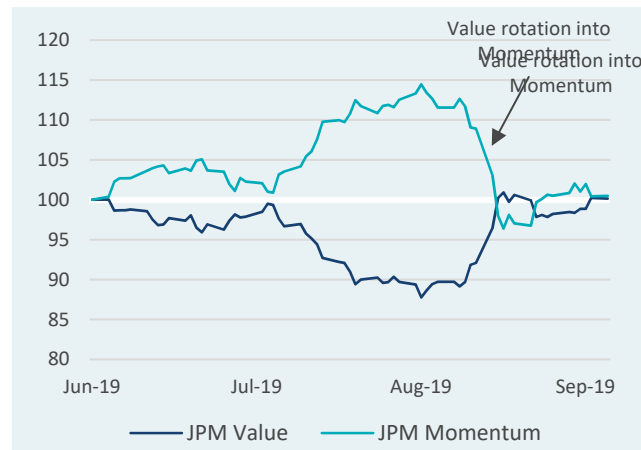
One of the largest rotations in decades into value stocks from momentum stocks occurred in Q3. The selloff was a multi-standard deviation event, with performance accruing from the prior five months largely reversed in several days. The reversal was likely due to a combination of better than expected economic news, monetary/fiscal stimulus expectations, and extreme positioning in these factors.

However, the selloff was short-lived as factor volatility reversed later in September. The Q3 reversal did not negate a long run of poor value results. As mentioned, the value factor

remains cheap relative to history.

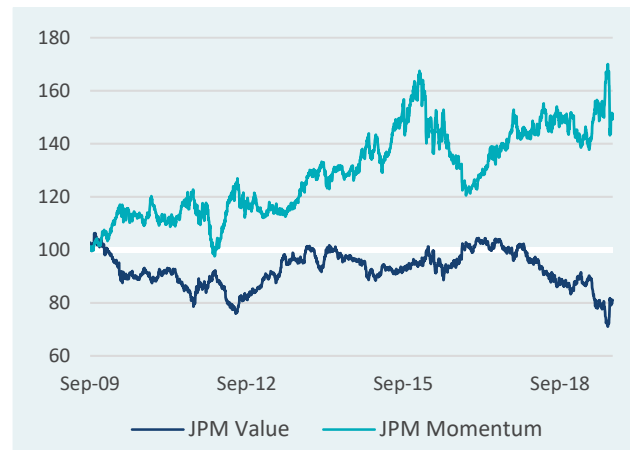
Mean reversion is a key underlying driver of the value factor. After the Global Financial Crisis, the speed at which stocks moved in/out of the respective top (cheap) and bottom (expensive) factor quintiles slowed relative to history. While expensive stocks are now exiting the bottom quintile at a somewhat faster rate, stocks with the most attractive valuations continued to remain cheap for longer periods of time relative to the pre-Global Financial Crisis period.

Q3 CUMULATIVE FACTOR PERFORMANCE
(INDEXED 6/30/2019 = 100)



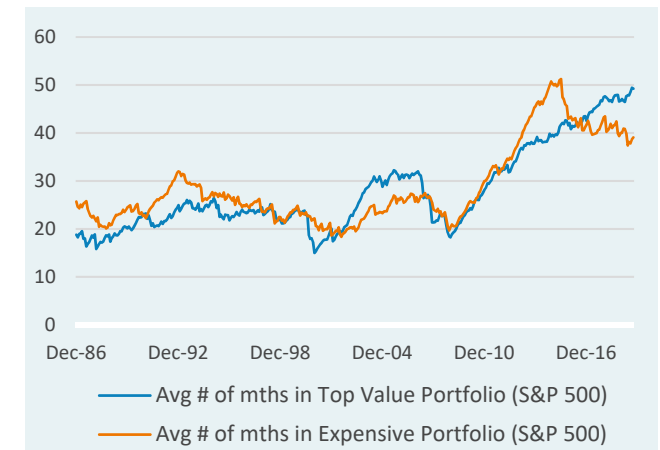
Source: J.P. Morgan Chase & Co., Copyright 2019, as of 9/30/19

10YR CUMULATIVE FACTOR PERFORMANCE
(INDEXED 9/30/2009 = 100)



Source: J.P. Morgan Chase & Co., Copyright 2019, as of 9/30/19

STRUCTURAL HEADWIND TO VALUE



Source: J.P. Morgan Chase & Co., Copyright 2019, as of 9/30/19

International developed equity

International equity performance was impacted heavily by currency movements in the third quarter. In local terms, the MSCI EAFE Index delivered a total return of 1.8%, bringing year-to-date performance to 15.7%. For unhedged U.S. investors however, the MSCI EAFE Index generated a quarterly return of -1.1%, dragging the year-to-date figure to 12.8%. Dollar strength reemerged as a powerful force driving returns due in part to widening interest rate differentials between the U.S. and the rest of the world.

Japanese equities outperformed over the period, delivering a

Q3 return of 3.5% in local terms. Unhedged U.S. investors in the MSCI Japan Index received only 3.1%, as the yen depreciated slightly vs. the U.S. dollar over the period.

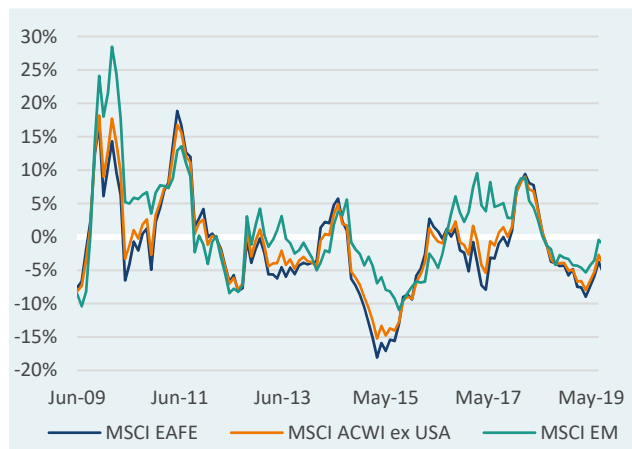
The British pound weakened in July as the new Prime Minister Boris Johnson signaled a much harder line on Brexit than his predecessor's. Toward the end of the quarter, the pound strengthened as markets began pricing a lower likelihood of a "no-deal" Brexit, which many market participants viewed as unfriendly to markets.

INTERNATIONAL DEVELOPED EQUITIES



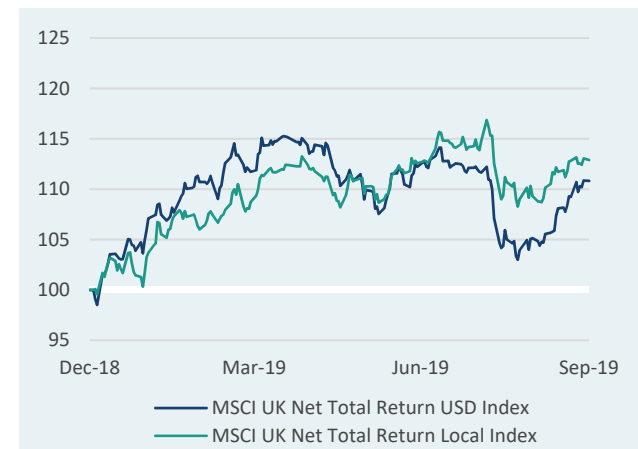
Source: MSCI, as of 9/30/19

EFFECT OF CURRENCY (1-YEAR ROLLING)



Source: MSCI, as of 9/30/19

U.K. EQUITY PERFORMANCE (YTD)



Source: Bloomberg, as of 9/30/19

Emerging market equity

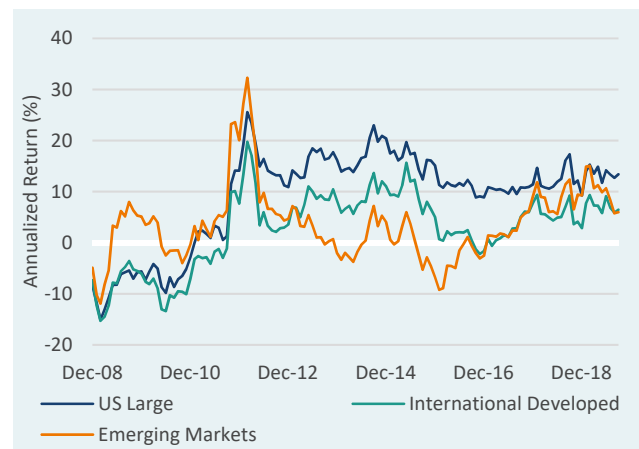
Emerging market equities (MSCI Emerging Markets -4.2%) lagged developed markets (MSCI EAFE -1.1%) over the quarter, while U.S. equities outperformed (S&P 500 +1.7%).

Equity multiples have expanded year-to-date, recovering to the levels of September 2018. Developed and emerging markets continue to appear cheap relative to domestic equity valuations.

We see two opposing forces impacting emerging markets in

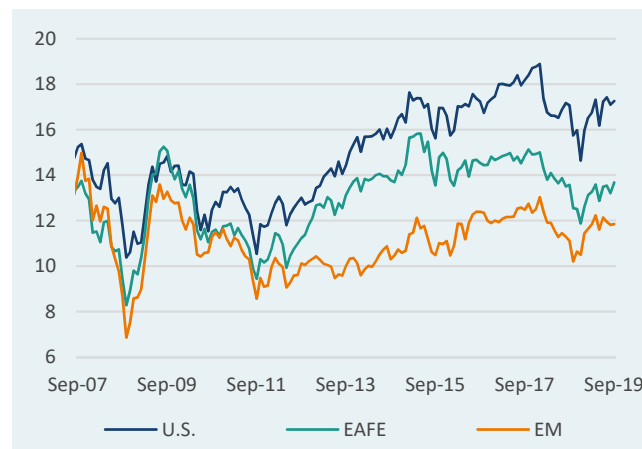
the current environment. The first force is decelerating global growth and a rising probability of recession, which likely bodes poorly for emerging market performance. However, the second force of widespread central bank dovishness may boost emerging market performance in the near term. Specifically, if global growth levels out while central banks unleash another round of easing, there may be material upside to emerging market equities. On balance, we remain moderately bullish on emerging markets, though we are watching developments closely.

EQUITY PERFORMANCE (3-YR ROLLING)



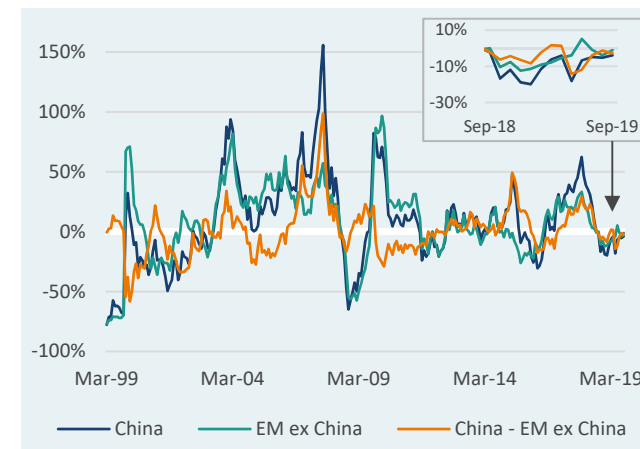
Source: Standard & Poor's, MSCI, as of 9/30/19

FORWARD P/E



Source: MSCI, as of 9/30/19

CHINA & EM: ROLLING 1-YEAR PERFORMANCE (USD)



Source: MSCI, as of 9/30/19

Equity valuations

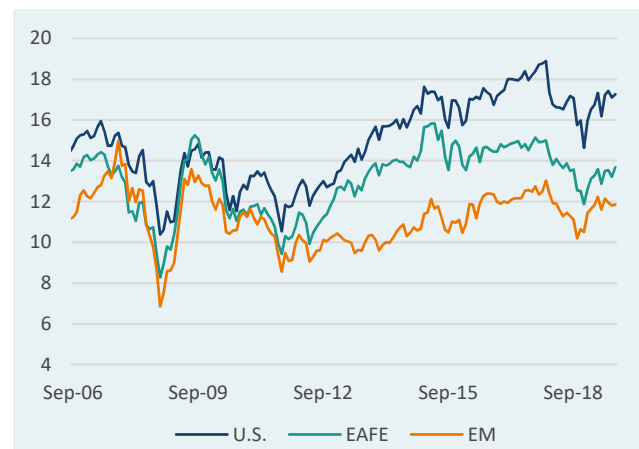
Equity valuations have climbed back up year-to-date as prices recover from their large drop in late 2018. U.S. equities are expensive relative to their long-run average, while international and emerging equities currently sit at normal levels.

The forward P/E multiple on the MSCI US Index ticked up from 17.2x to 17.3x over the quarter and remains above both its 5-year (17.1x) and 10-year (15.3x) averages. International equities remain at a forward P/E multiple (13.7x) between the

5-year (14.2x) and 10-year (13.2x) averages. Emerging market equities became a bit cheaper but are still trading at a forward P/E of 11.9x, above both their 5-year and 10-year averages.

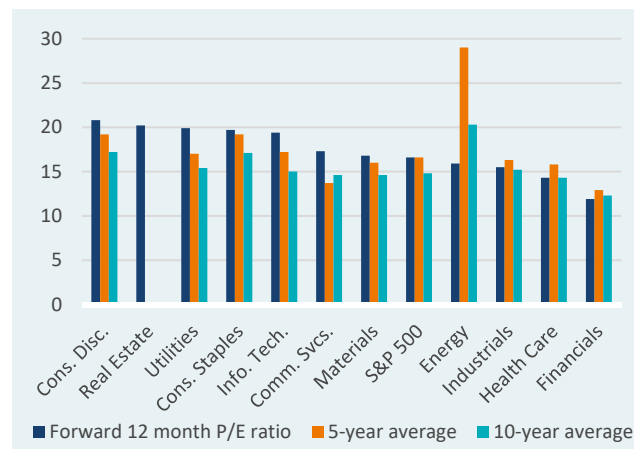
U.S. large cap stocks outperformed most unhedged international and emerging market equities. In a more uncertain geopolitical landscape, investors appear to remain willing to stomach loftier relative valuations in exchange for the quality of U.S. institutions. The U.S. economy is less reliant on exports, and U.S. companies are less reliant on foreign demand, helping to shield U.S. stocks from trade turbulence.

FORWARD P/E RATIOS



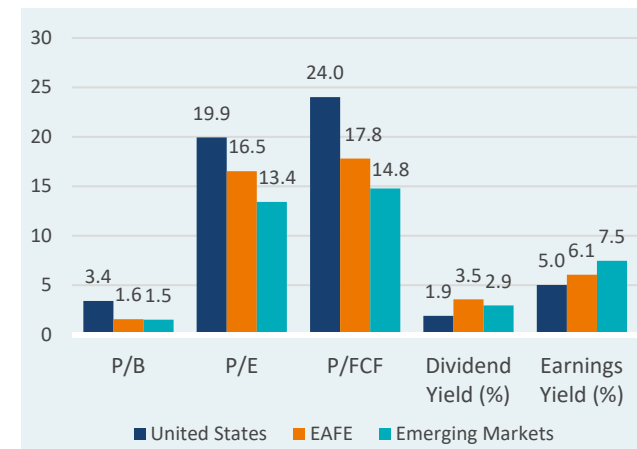
Source: MSCI, 12m forward P/E, as of 9/30/19

S&P 500 INDEX FORWARD SECTOR P/E RATIOS



Source: Standard & Poor's, FactSet, as of 10/11/19

VALUATION METRICS (3-MONTH AVERAGE)



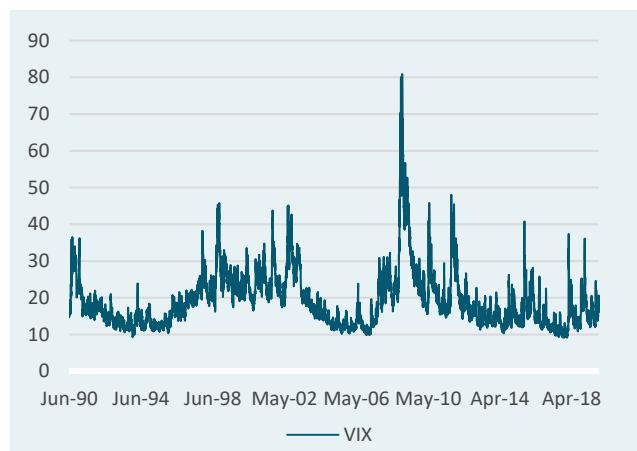
Source: Bloomberg, MSCI as of 9/30/19 - trailing P/E

Equity volatility

Implied volatility on both U.S. stocks and European stocks picked up over the quarter, albeit from depressed levels. The VIX Index which measures the 30-day implied volatility of U.S. stocks jumped to nearly 25.0 in August following a material escalation in U.S.-Chinese trade tensions. By quarter-end, the VIX settled at 16.2, up 1.1 points, and above its year-to-date average of 15.9. In Europe, the V2X Index gauging implied volatility on the Euro Stoxx 50 Index rose from 13.7 to 15.8, above its year-to-date average of 15.4.

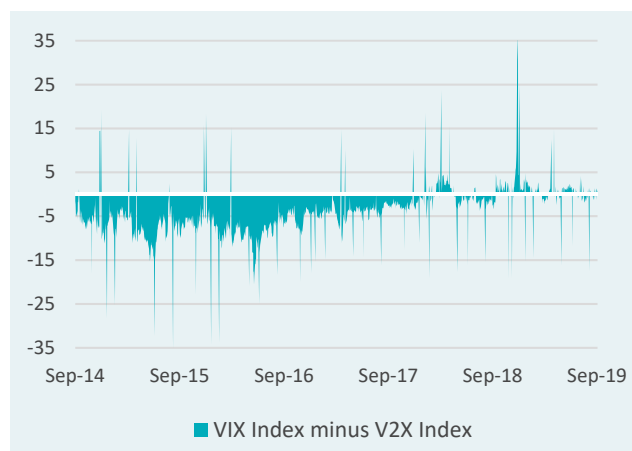
Despite the ratcheting up of trade tension in Q3, the realized trailing 30-day realized volatility on Chinese mainland shares was surprisingly low – falling from 18.0% to 12.9%. In comparison, U.S. 30-day volatility rose from 12.2% to 12.7%. Volatility of U.S. and China equities has only been this close 17% of the time. Looking ahead to Q4, despite realized volatility being low, it is important to remember that Chinese equities have been extremely volatile. As recent as 2014, 30-day annualized volatility reached 60% in mainland China.

U.S. IMPLIED VOLATILITY (VIX)



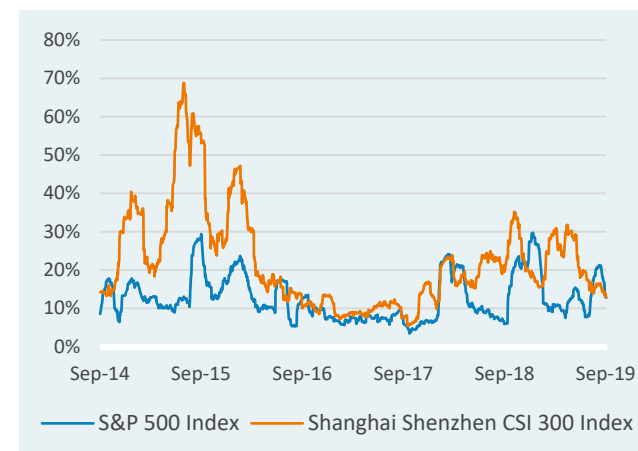
Source: CBOE, as of 9/30/19

U.S. IMPLIED VOLATILITY VS. EUROPEAN IMPLIED VOLATILITY



Source: Bloomberg, as of 9/30/19

30-DAY REALIZED VOLATILITY – U.S. LARGE CAP STOCKS VS. CHINESE MAINLAND STOCKS



Source: Bloomberg, as of 9/30/19

Long-term equity performance



Source: Morningstar, as of 9/30/19

Other assets

Currency

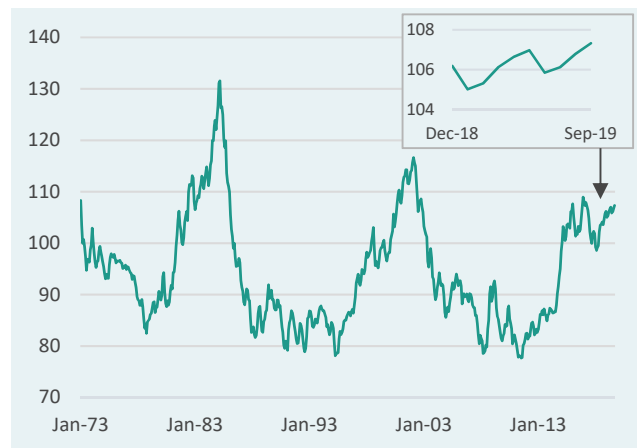
The U.S. dollar appreciated 2.6% in Q3 relative to a trade-weighted basket of currencies. Dollar volatility has been suppressed so far in 2019, following large swings experienced during years 2014-2018. Investors are pricing in a 78% chance of one more 0.25% rate cut by the end of 2019, and a 25% chance of 0.50% in rate cuts. The market continues to price in more aggressive easing than what the Federal Reserve has indicated, which may contribute to volatility if actual easing measures underwhelm the market.

A variety of market scenarios may lead to U.S. dollar

weakness in the short-term, including: aggressive easing by the Federal Reserve which leads to a convergence of U.S. and international interest rates levels, further upside surprise to U.S. inflation, and/or weakening U.S. economic conditions which brings the U.S. more in line with other developed economies.

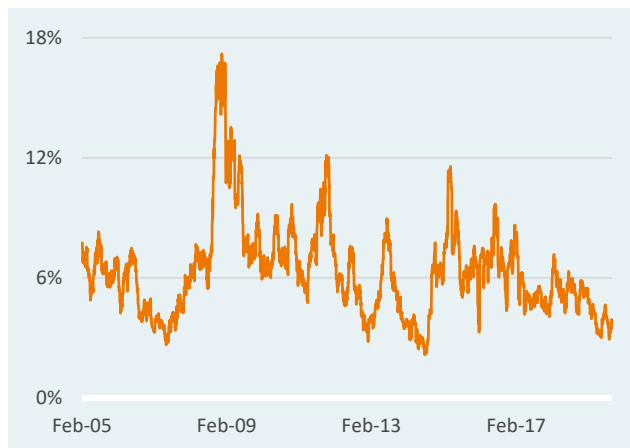
Emerging market currencies fell -4% quarter, on the back of U.S. dollar strength. These currencies remain very depressed relative to history.

U.S. DOLLAR TRADE WEIGHTED INDEX



Source: Federal Reserve, Verus, as of 9/30/19

BLOOMBERG DOLLAR SPOT INDEX REALIZED 30-DAY VOLATILITY



Source: Bloomberg, as of 9/30/19

JPM EMERGING MARKET CURRENCY INDEX



Source: Bloomberg, JPMorgan, as of 9/30/19

Appendix

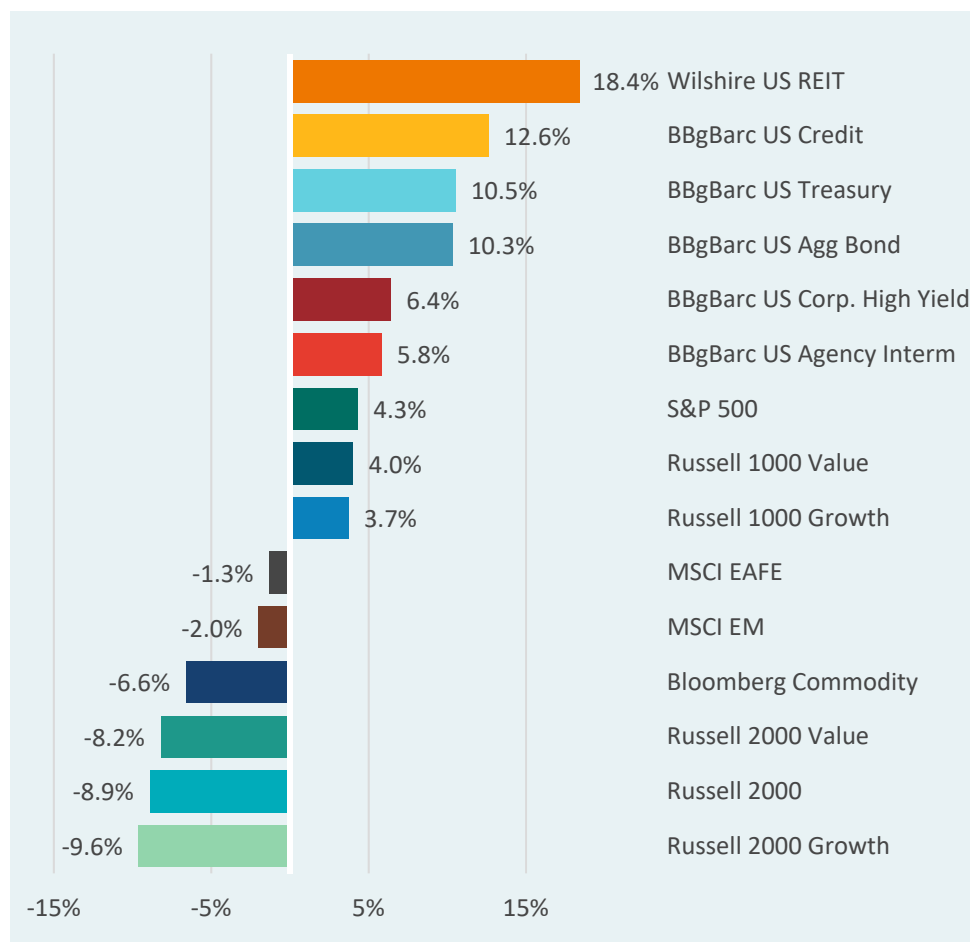
Periodic table of returns

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	YTD	5-Year	10-Year	
BEST ↑	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	23.3	13.1	15.4
	Large Cap Equity	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	18.5	9.9	13.5
	Small Cap Growth	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	16.3	8.8	13.1
	Large Cap Value	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	13.8	8.1	11.6
	Small Cap Equity	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	11.8	6.6	11.5
	60/40 Global Portfolio	8.7	21.3	4.1	-2.4	-6.0	29.9	14.3	6.3	15.5	10.3	-33.8	23.3	16.1	-2.1	15.3	23.3	4.9	-0.8	11.2	14.6	-6.0	11.4	6.4	10.0
	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	9.7	4.6	9.3
	US Bonds	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	9.1	4.1	6.4
	Small Cap Value	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	7.3	3.3	5.0
	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	5.7	2.0	4.1
	Emerging Markets Equity	-5.1	7.3	-14.0	-12.4	-20.5	11.6	6.9	4.6	9.1	4.4	-38.4	11.5	8.2	-5.7	4.8	0.1	0.0	-4.4	2.6	7.0	-11.2	3.9	1.9	3.9
	Real Estate	-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	3.3	0.9	2.9
	Commodities	-25.3	-0.8	-22.4	-20.4	-27.9	4.1	4.3	3.2	4.3	-1.6	-43.1	0.2	5.7	-13.3	0.1	-2.3	-4.5	-14.9	0.5	1.7	-13.8	1.9	0.4	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	1.5	-8.6	-4.3
	WORST ↓																								

Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, BBgBarc US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, BBgBarc Global Bond. NCREIF Property Index performance data as of 6/30/19.

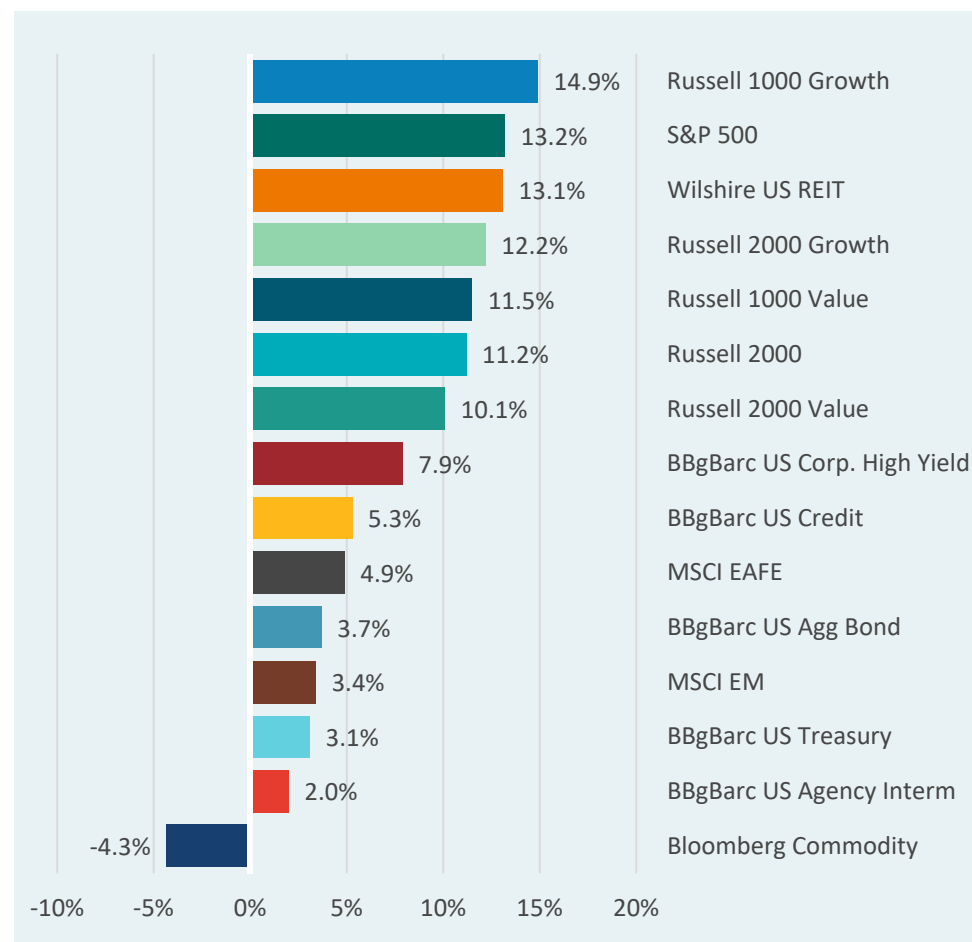
Major asset class returns

ONE YEAR ENDING SEPTEMBER



Source: Morningstar, as of 9/30/19

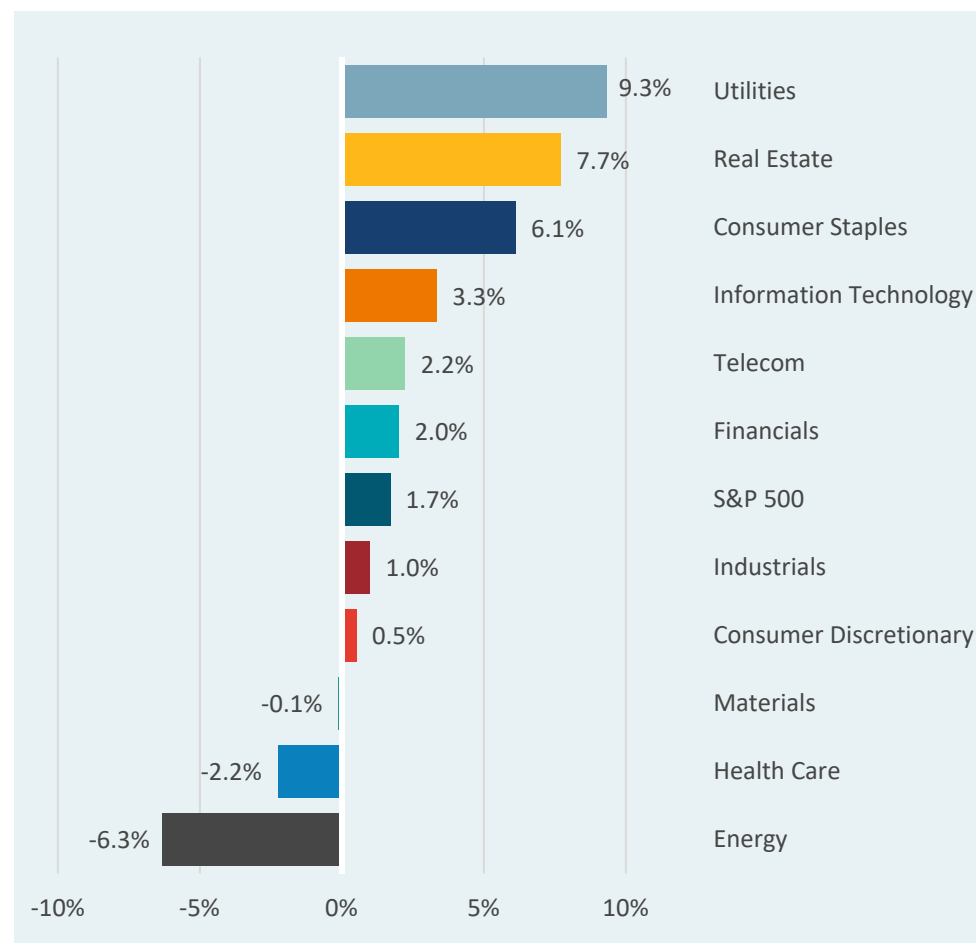
TEN YEARS ENDING SEPTEMBER



Source: Morningstar, as of 9/30/19

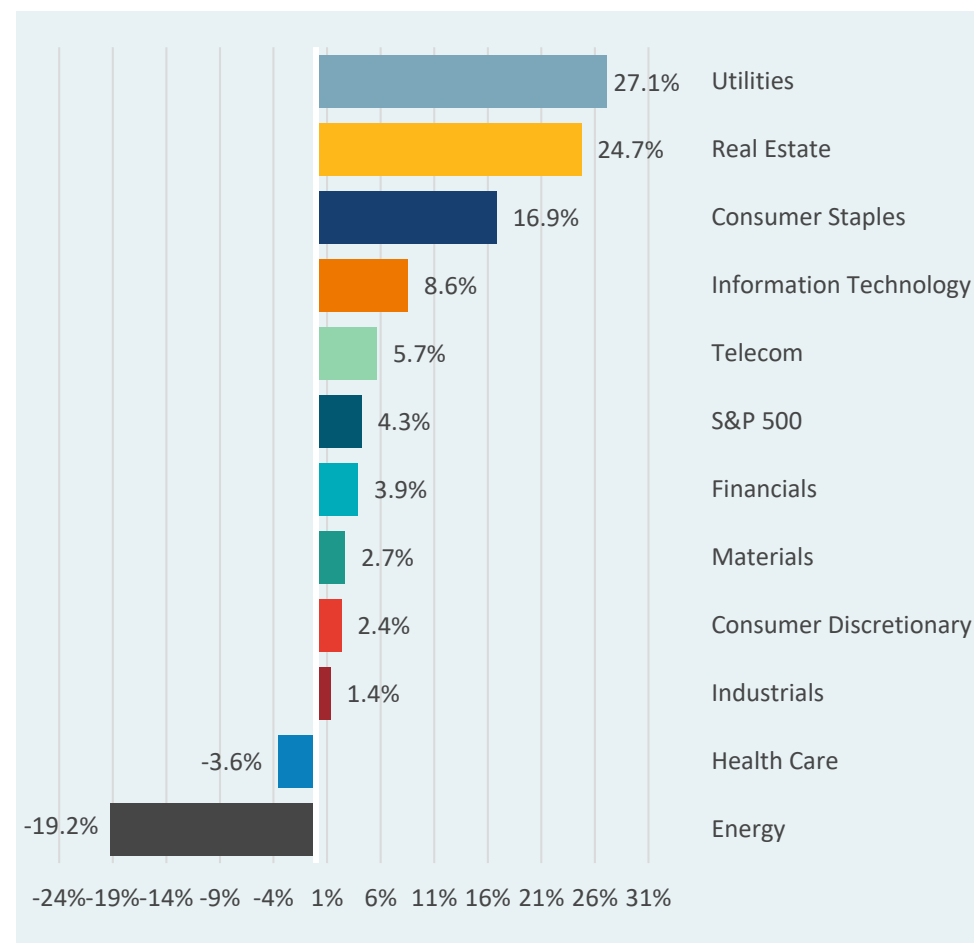
S&P 500 sector returns

Q3



Source: Morningstar, as of 9/30/19

ONE YEAR ENDING SEPTEMBER



Source: Morningstar, as of 9/30/19

Detailed index returns

DOMESTIC EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Core Index							
S&P 500	1.9	1.7	20.6	4.3	13.4	10.8	13.2
S&P 500 Equal Weighted	3.1	0.8	20.1	3.4	11.1	9.5	13.4
DJ Industrial Average	2.1	1.8	17.5	4.2	16.4	12.3	13.6
Russell Top 200	1.6	1.8	20.0	4.1	14.2	11.2	13.3
Russell 1000	1.7	1.4	20.5	3.9	13.2	10.6	13.2
Russell 2000	2.1	(2.4)	14.2	(8.9)	8.2	8.2	11.2
Russell 3000	1.8	1.2	20.1	2.9	12.8	10.4	13.1
Russell Mid Cap	2.0	0.5	21.9	3.2	10.7	9.1	13.1
Style Index							
Russell 1000 Growth	0.0	1.5	23.3	3.7	16.9	13.4	14.9
Russell 1000 Value	3.6	1.4	17.8	4.0	9.4	7.8	11.5
Russell 2000 Growth	(0.8)	(4.2)	15.3	(9.6)	9.8	9.1	12.2
Russell 2000 Value	5.1	(0.6)	12.8	(8.2)	6.5	7.2	10.1

INTERNATIONAL EQUITY

Broad Index							
MSCI ACWI	2.1	(0.0)	16.2	1.4	9.7	6.7	8.3
MSCI ACWI ex US	2.6	(1.8)	11.6	(1.2)	6.3	2.9	4.5
MSCI EAFE	2.9	(1.1)	12.8	(1.3)	6.5	3.3	4.9
MSCI EM	1.9	(4.2)	5.9	(2.0)	6.0	2.3	3.4
MSCI EAFE Small Cap	2.8	(0.4)	12.1	(5.9)	5.9	6.0	7.5
Style Index							
MSCI EAFE Growth	1.1	(0.4)	17.9	2.2	7.8	5.5	6.5
MSCI EAFE Value	4.8	(1.7)	7.7	(4.9)	5.1	1.0	3.2
Regional Index							
MSCI UK	4.2	(2.5)	10.1	(2.9)	4.6	0.4	4.8
MSCI Japan	4.0	3.1	11.1	(4.7)	6.2	5.6	5.5
MSCI Euro	2.8	(2.0)	13.9	(1.1)	7.1	2.4	3.1
MSCI EM Asia	2.0	(3.4)	6.0	(3.9)	6.3	4.1	5.2
MSCI EM Latin American	2.6	(5.6)	6.3	6.7	6.8	(0.8)	(0.5)

FIXED INCOME

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
BBgBarc US TIPS	(1.4)	1.3	7.6	7.1	2.2	2.4	3.5
BBgBarc US Treasury Bills	0.2	0.6	1.9	2.4	1.5	1.0	0.6
BBgBarc US Agg Bond	(0.5)	2.3	8.5	10.3	2.9	3.4	3.7
Duration							
BBgBarc US Treasury 1-3 Yr	(0.1)	0.6	3.1	4.4	1.5	1.3	1.2
BBgBarc US Treasury Long	(2.5)	7.9	19.8	24.8	4.1	6.8	6.9
BBgBarc US Treasury	(0.8)	2.4	7.7	10.5	2.2	2.9	3.1
Issuer							
BBgBarc US MBS	0.1	1.4	5.6	7.8	2.3	2.8	3.1
BBgBarc US Corp. High Yield	0.4	1.3	11.4	6.4	6.1	5.4	7.9
BBgBarc US Agency Interm	(0.2)	1.0	4.1	5.8	1.9	2.0	2.0
BBgBarc US Credit	(0.7)	3.0	12.6	12.6	4.3	4.5	5.3

OTHER

Index							
Bloomberg Commodity	1.2	(1.8)	3.1	(6.6)	(1.5)	(7.2)	(4.3)
Wilshire US REIT	2.8	7.9	27.2	18.4	7.2	10.2	13.1
CS Leveraged Loans	0.4	0.9	6.4	3.1	4.7	4.1	5.4
Alerian MLP	0.8	(5.1)	11.8	(6.4)	(2.7)	(8.2)	7.0
Regional Index							
JPM EMBI Global Div	(0.5)	1.5	13.0	11.6	4.6	5.7	6.9
JPM GBI-EM Global Div	1.0	(0.8)	7.9	10.1	3.1	0.6	2.5
Hedge Funds							
HFRI Composite	(0.3)	(0.5)	6.7	0.3	3.8	2.9	4.0
HFRI FOF Composite	(0.6)	(1.1)	5.0	(0.2)	3.1	1.9	2.7
Currency (Spot)							
Euro	(1.8)	(0.3)	1.5	5.1	(2.1)	0.3	(1.9)
Pound	1.2	(3.2)	(3.2)	(5.5)	(1.7)	(5.3)	(2.6)
Yen	(1.0)	(4.3)	(4.6)	(6.1)	(1.0)	(2.9)	(2.9)

Source: Morningstar, HFR, as of 9/30/19

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.langerresearch.com)

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

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

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

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Imperial County Employees' Retirement System

Investment Performance Review

Period Ending: September 30, 2019



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SEATTLE 206-622-3700

LOS ANGELES 310-297-1777

SAN FRANCISCO 415-362-3484

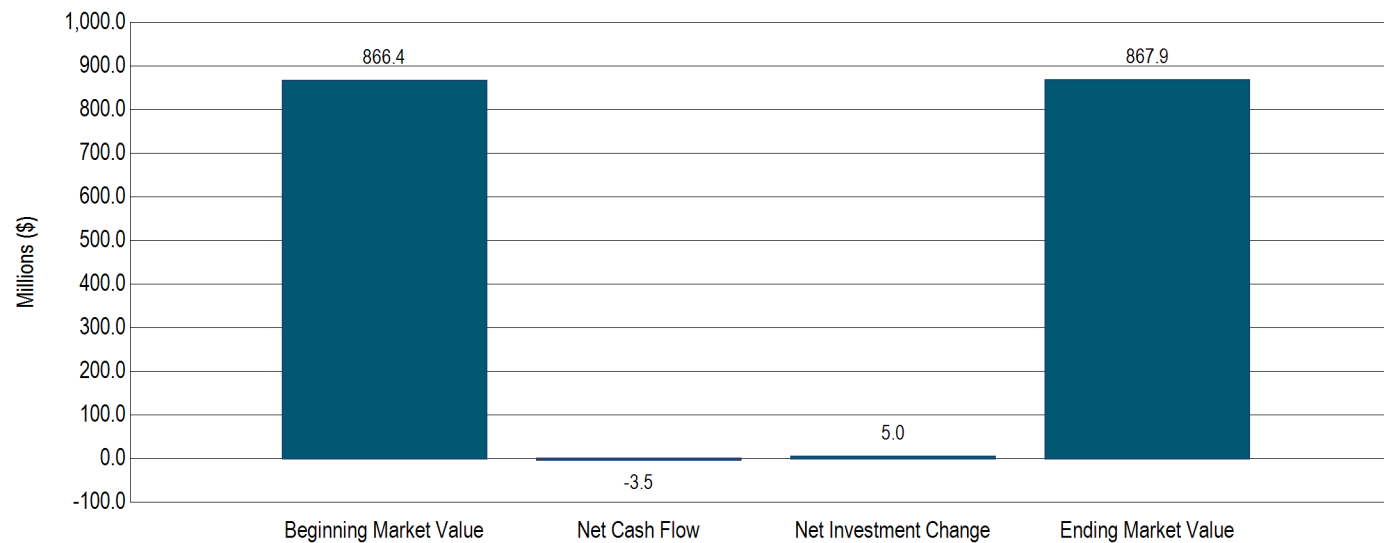
Total Fund Portfolio Reconciliation

Period Ending: September 30, 2019

Portfolio Reconciliation

	Last Three Months	Fiscal Year-To-Date	One Year
Beginning Market Value	\$866,437,865	\$866,437,865	\$843,412,746
Net Cash Flow	-\$3,474,290	-\$3,474,290	-\$8,529,583
Net Investment Change	\$4,984,208	\$4,984,208	\$33,064,621
Ending Market Value	\$867,947,783	\$867,947,783	\$867,947,783

Change in Market Value Last Three Months

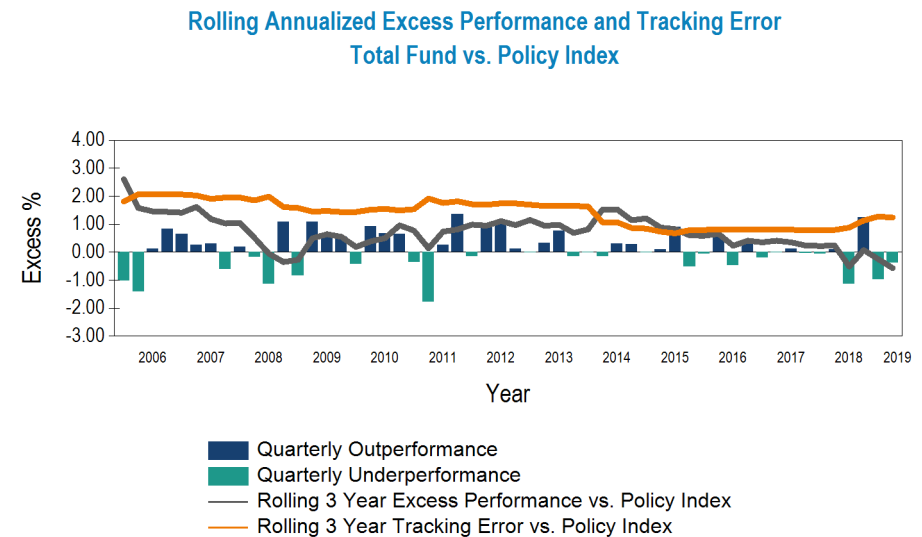
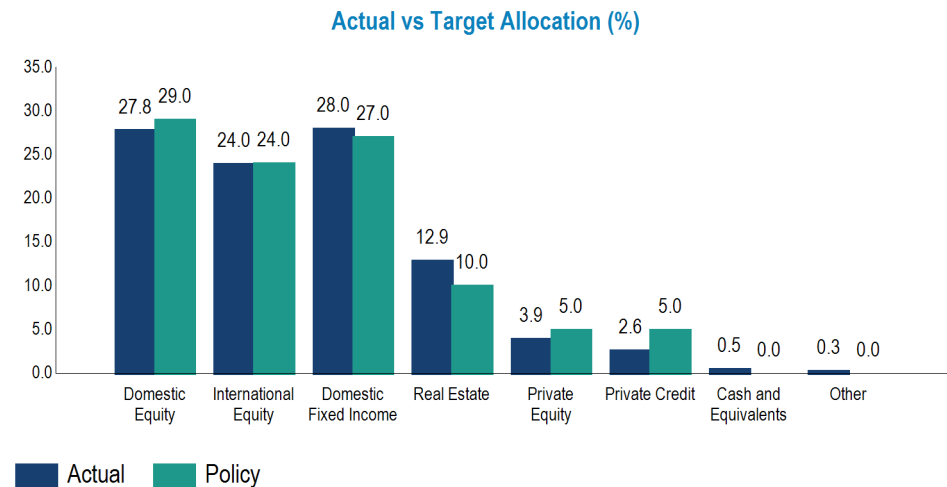


Contributions and withdrawals may include intra-account transfers between managers/funds. Fee transactions are excluded from Portfolio Reconciliation.

Total Fund Executive Summary (Gross of Fees)

Period Ending: September 30, 2019

	QTD	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs
Total Fund	0.7	12.0	0.7	4.2	7.9	6.4	8.2
Policy Index	1.1	12.3	1.1	5.6	8.5	6.4	7.7
InvMetrics Public DB Gross Rank	59	64	59	51	56	55	50
Total Domestic Equity	1.2	20.1	1.2	3.0	12.9	10.4	13.1
Russell 3000	1.2	20.1	1.2	2.9	12.8	10.4	13.1
InvMetrics Public DB US Eq Gross Rank	39	42	39	42	32	37	26
Total International Equity	-2.3	10.9	-2.3	-1.6	6.5	3.5	4.7
MSCI ACWI ex USA Gross	-1.7	12.1	-1.7	-0.7	6.8	3.4	4.9
InvMetrics Public DB ex-US Eq Gross Rank	83	76	83	54	45	58	76
Total Fixed Income	2.3	9.3	2.3	9.8	3.5	3.9	5.0
BBgBarc US Aggregate TR	2.3	8.5	2.3	10.3	2.9	3.4	3.7
InvMetrics Public DB Total Fix Inc Gross Rank	9	19	9	21	48	22	38
Total Real Estate	0.7	3.8	0.7	5.3	6.0	8.9	10.5
NCREIF-ODCE	1.3	3.8	1.3	5.6	7.3	9.3	10.9
Total Private Equity	4.5	9.4	4.5	13.3	17.9	16.7	--
Russell 3000 +3% (Lagged)	4.9	4.0	4.9	12.2	17.4	13.5	--
Total Private Credit	2.3	6.9	2.3	10.2	--	--	--
BBgBarc High Yield +2% (Lagged)	3.0	6.5	3.0	9.6	--	--	--
Total Opportunistic	-0.5	-12.1	-0.5	-7.2	7.1	7.0	16.8
Assumption Rate + 1%	2.0	6.1	2.0	8.3	8.3	8.4	8.7

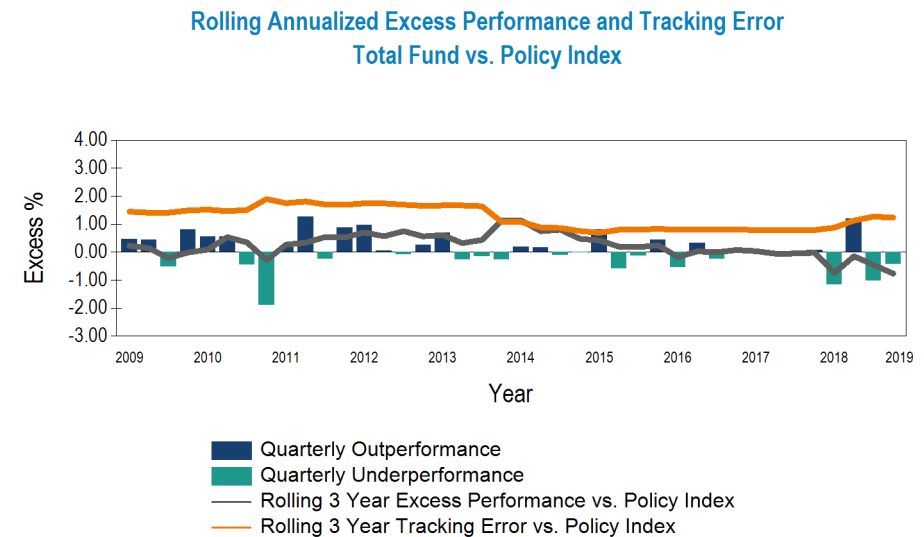
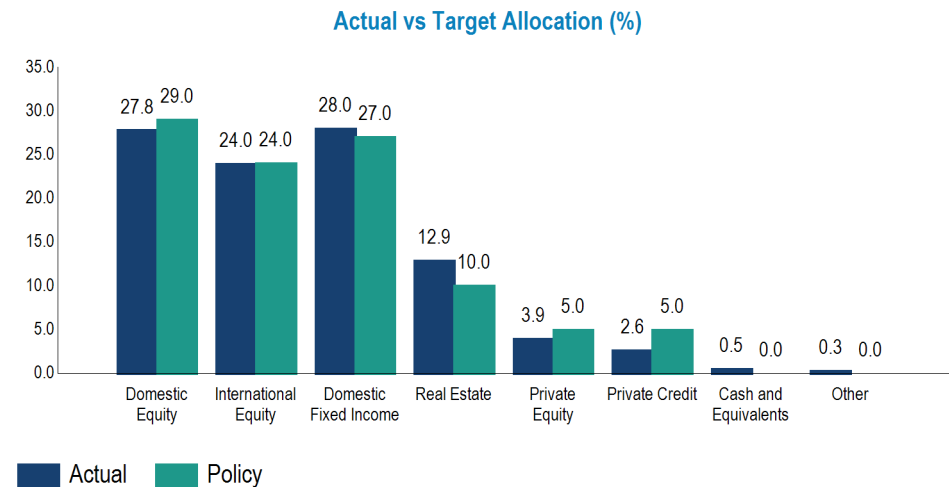


New Policy Index (as of 10/1/2018): 29% Russell 3000, 24% MSCI ACWI ex USA Gross, 27% BBgBarc US Aggregate, 10% NCREIF Property Index, 5% Russell 3000 +3% (Lagged), 5% BBgBarc High Yield +2% (Lagged). Prior Policy Index (10/1/2016 to 9/30/2018): 29% Russell 3000, 24% MSCI ACWI Ex USA Gross, 27% BBgBarc Aggregate, 5% NCREIF Property Index, 5% NCREIF Property Index +2%, 5% Russell 3000 +3% (Lagged), 5% BBgBarc High Yield +2% (Lagged). Prior quarter Private Equity returns and index data are used. All returns are (G) gross of fees. 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 Executive Summary (Net of Fees)

Period Ending: September 30, 2019

	QTD	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs
Total Fund	0.7	11.9	0.7	4.0	7.7	6.1	7.8
Policy Index	1.1	12.3	1.1	5.6	8.5	6.4	7.7
Total Domestic Equity	1.2	20.1	1.2	3.0	12.9	10.4	13.0
Russell 3000	1.2	20.1	1.2	2.9	12.8	10.4	13.1
Total International Equity	-2.4	10.7	-2.4	-1.9	6.1	3.1	4.2
MSCI ACWI ex USA Gross	-1.7	12.1	-1.7	-0.7	6.8	3.4	4.9
Total Fixed Income	2.3	9.1	2.3	9.5	3.2	3.6	4.7
BBgBarc US Aggregate TR	2.3	8.5	2.3	10.3	2.9	3.4	3.7
Total Real Estate	0.7	3.8	0.7	5.3	6.0	8.4	9.8
NCREIF-ODCE	1.3	3.8	1.3	5.6	7.3	9.3	10.9
Total Private Equity	4.5	9.4	4.5	13.3	17.7	15.7	--
Russell 3000 +3% (Lagged)	4.9	4.0	4.9	12.2	17.4	13.5	--
Total Private Credit	2.3	6.9	2.3	10.2	--	--	--
BBgBarc High Yield +2% (Lagged)	3.0	6.5	3.0	9.6	--	--	--
Total Opportunistic	-0.5	-12.1	-0.5	-7.2	6.9	6.2	15.5
Assumption Rate + 1%	2.0	6.1	2.0	8.3	8.3	8.4	8.7



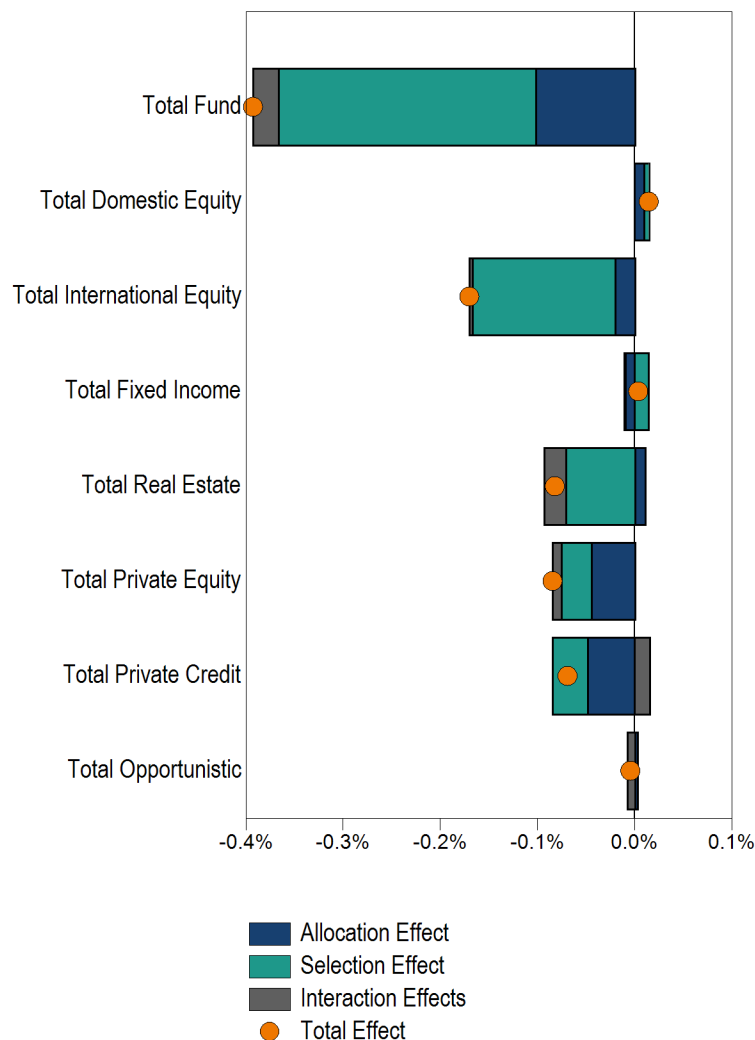
New Policy Index (as of 10/1/2018): 29% Russell 3000, 24% MSCI ACWI ex USA Gross, 27% BBgBarc US Aggregate, 10% NCREIF Property Index, 5% Russell 3000 +3% (Lagged), 5% BBgBarc High Yield +2% (Lagged). Prior Policy Index (10/1/2016 to 9/30/2018): 29% Russell 3000, 24% MSCI ACWI Ex USA Gross, 27% BBgBarc Aggregate, 5% NCREIF Property Index, 5% NCREIF Property Index +2%, 5% Russell 3000 +3% (Lagged), 5% BBgBarc High Yield +2% (Lagged). Prior quarter Private Equity returns and index data are used. All returns are (G) gross of fees. 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

Attribution Analysis - Asset Class Level (Gross of Fees)

Period Ending: September 30, 2019

Attribution Effects



Performance Attribution

	Quarter	YTD
Wtd. Actual Return	0.72%	12.14%
Wtd. Index Return *	1.18%	12.87%
Excess Return	-0.46%	-0.73%
Selection Effect	-0.19%	0.08%
Allocation Effect	-0.21%	-0.63%
Interaction Effect	-0.06%	-0.19%

*Calculated from benchmark returns and weightings of each component.

Attribution Summary Last Three Months

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total Domestic Equity	1.2%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Total International Equity	-2.3%	-1.7%	-0.6%	-0.1%	-0.1%	0.0%	-0.3%
Total Fixed Income	2.3%	2.3%	0.1%	0.0%	0.0%	0.0%	0.0%
Total Real Estate	0.7%	1.4%	-0.7%	0.0%	0.0%	-0.1%	-0.1%
Total Private Equity	4.5%	4.9%	-0.3%	0.0%	0.0%	0.0%	-0.1%
Total Private Credit	2.3%	3.0%	-0.7%	0.0%	0.0%	0.0%	-0.1%
Total Opportunistic	-0.5%	2.0%	-2.5%	0.0%	0.0%	0.0%	0.0%
Total	0.7%	1.2%	-0.5%	-0.2%	-0.2%	-0.1%	-0.5%

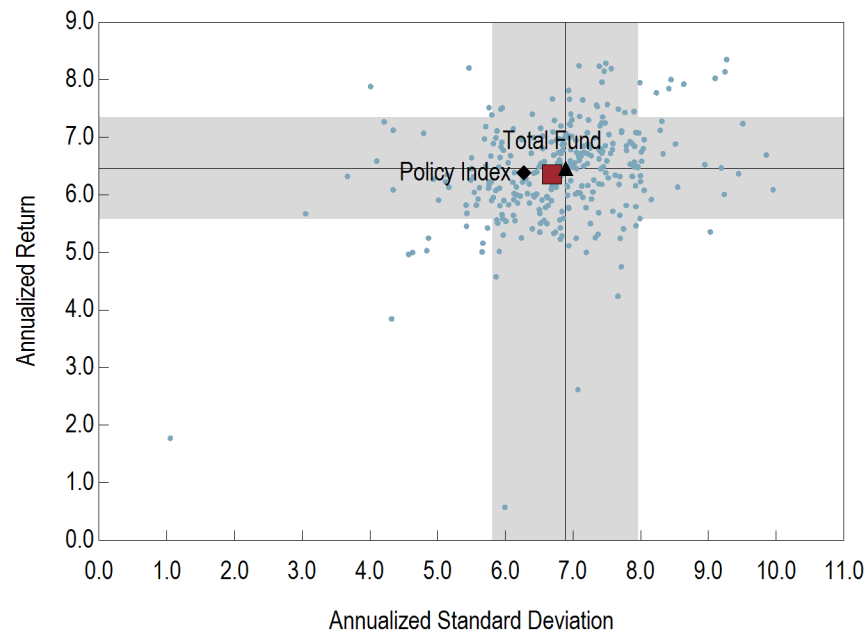
Weighted returns shown in attribution analysis may differ from actual returns.

Total Fund Risk Analysis - 5 Years (Gross of Fees)

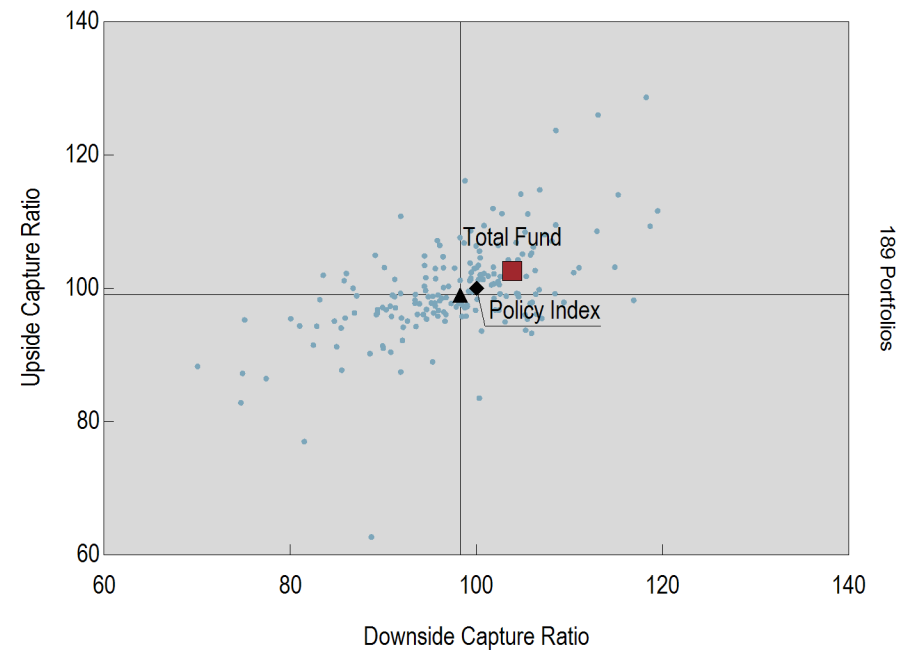
Period Ending: September 30, 2019

	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
Total Fund	6.35%	-0.03%	6.69%	-0.38%	1.06	1.00%	0.98	0.81	-0.03	102.58%	103.85%

Risk vs. Return



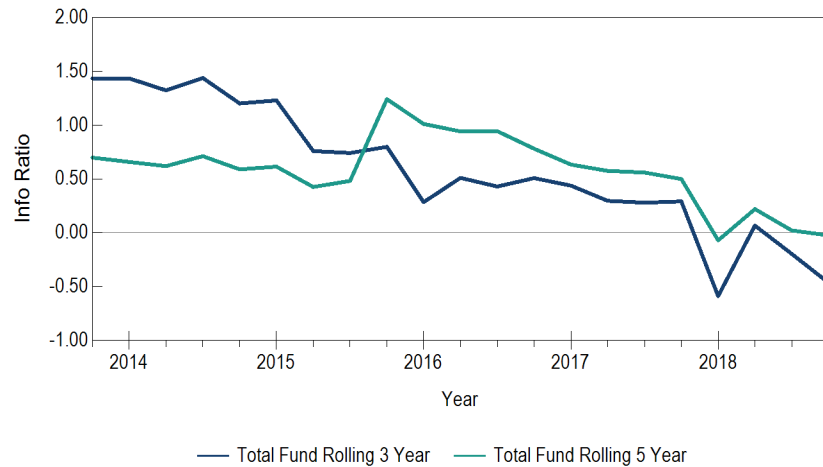
Up Markets vs. Down Markets



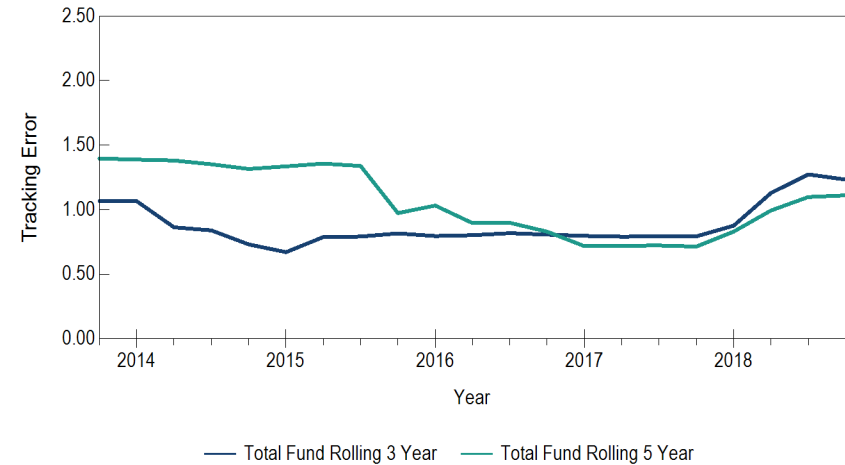
Total Fund Rolling Risk Statistics (Gross of Fees)

Period Ending: September 30, 2019

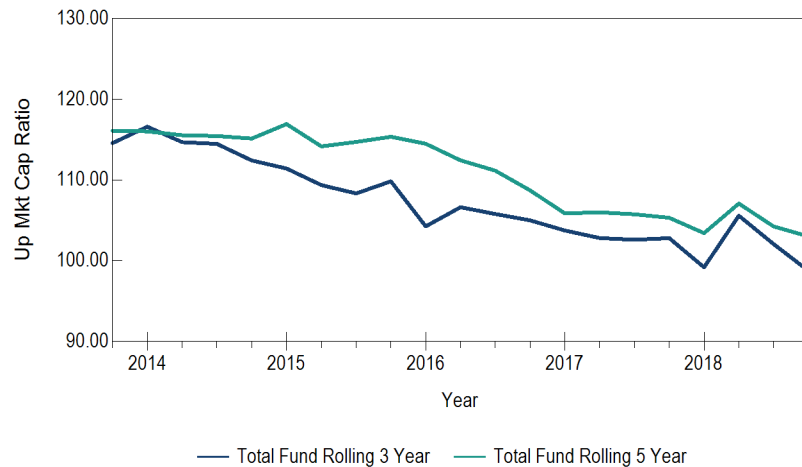
Rolling Information Ratio



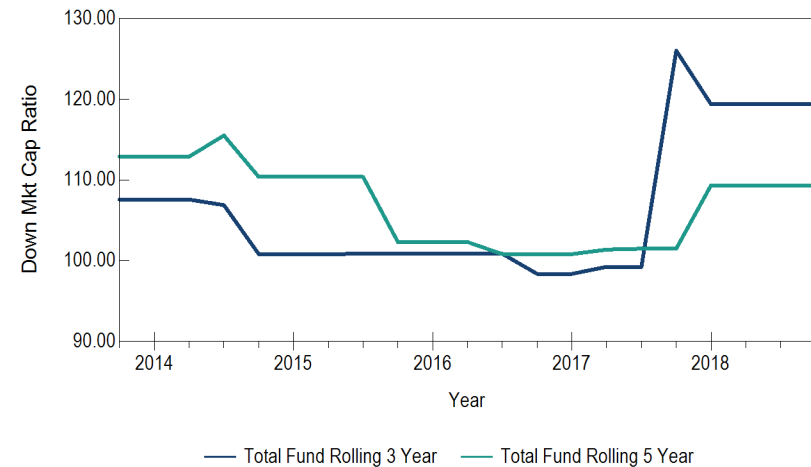
Rolling Tracking Error



Rolling Up Market Capture Ratio (%)



Rolling Down Market Capture Ratio (%)



Total Fund Performance Summary (Gross of Fees)

Period Ending: September 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014	Inception	Inception Date
Total Fund	867,947,783	100.0	0.7	12.0	0.7	4.2	7.9	6.4	8.2	-4.0	16.2	7.8	0.0	4.8	9.2	Mar-89
Policy Index			1.1	12.3	1.1	5.6	8.5	6.4	7.7	-2.8	15.9	8.3	-1.2	4.9	--	Mar-89
InvMetrics Public DB Gross Rank			59	64	59	51	56	55	50	50	30	49	53	74	7	Mar-89
Total Domestic Equity	241,281,135	27.8	1.2	20.1	1.2	3.0	12.9	10.4	13.1	-5.2	21.2	12.9	0.3	10.2	--	--
Russell 3000			1.2	20.1	1.2	2.9	12.8	10.4	13.1	-5.2	21.1	12.7	0.5	12.6	--	--
Russell 3000			1.2	20.1	1.2	2.9	12.8	10.4	13.1	-5.2	21.1	12.7	0.5	12.6	--	--
InvMetrics Public DB US Eq Gross Rank			39	42	39	42	32	37	26	35	35	51	44	73	--	--
BlackRock Russell 3000	241,281,135	27.8	1.2	20.1	1.2	3.0	12.9	--	--	-5.2	21.2	12.9	--	--	11.9	Dec-15
Russell 3000			1.2	20.1	1.2	2.9	12.8	--	--	-5.2	21.1	12.7	--	--	11.6	Dec-15
eV US All Cap Core Equity Gross Rank			60	49	60	49	44	--	--	49	49	35	--	--	47	Dec-15
Total International Equity	208,010,416	24.0	-2.3	10.9	-2.3	-1.6	6.5	3.5	4.7	-14.0	28.3	4.7	-3.5	-4.4	--	--
MSCI ACWI ex USA Gross			-1.7	12.1	-1.7	-0.7	6.8	3.4	4.9	-13.8	27.8	5.0	-5.3	-3.4	--	--
MSCI ACWI ex USA Gross			-1.7	12.1	-1.7	-0.7	6.8	3.4	4.9	-13.8	27.8	5.0	-5.3	-3.4	--	--
InvMetrics Public DB ex-US Eq Gross Rank			83	76	83	54	45	58	76	35	59	40	57	74	--	--
BlackRock International Equity	144,983,842	16.7	-1.0	13.2	-1.0	-1.0	6.9	3.7	5.3	-13.4	25.5	1.5	-0.5	-4.7	7.1	Jul-03
MSCI EAFE Gross			-1.0	13.3	-1.0	-0.8	7.0	3.8	5.4	-13.4	25.6	1.5	-0.4	-4.5	7.2	Jul-03
eV All EAFE Equity Gross Rank			45	43	45	30	37	68	80	35	65	47	67	64	67	Jul-03
DFA Emerging Markets Value	29,528,630	3.4	-6.9	0.4	-6.9	-6.7	5.8	2.0	2.8	-11.4	34.5	20.5	-18.3	-3.9	3.8	Jan-07
MSCI Emerging Markets Gross			-4.1	6.2	-4.1	-1.6	6.4	2.7	3.7	-14.2	37.8	11.6	-14.6	-1.8	4.0	Jan-07
eV Emg Mkts Equity Gross Rank			98	99	98	97	59	78	98	16	70	7	92	84	66	Jan-07
Harding Loevner Emerging Markets	33,497,943	3.9	-3.4	11.6	-3.4	0.3	5.3	--	--	-18.6	35.0	--	--	--	6.2	Jul-16
MSCI Emerging Markets Gross			-4.1	6.2	-4.1	-1.6	6.4	--	--	-14.2	37.8	--	--	--	7.3	Jul-16
eV Emg Mkts Equity Gross Rank			43	23	43	46	70	--	--	84	68	--	--	--	51	Jul-16
Total Fixed Income	243,050,259	28.0	2.3	9.3	2.3	9.8	3.5	3.9	5.0	-0.5	4.6	5.1	-0.3	5.9	--	--
BBgBarc US Aggregate TR			2.3	8.5	2.3	10.3	2.9	3.4	3.7	0.0	3.5	2.6	0.6	6.0	--	--
BBgBarc US Aggregate TR			2.3	8.5	2.3	10.3	2.9	3.4	3.7	0.0	3.5	2.6	0.6	6.0	--	--
InvMetrics Public DB Total Fix Inc Gross Rank			9	19	9	21	48	22	38	58	59	41	55	15	--	--
Tortoise Capital	101,659,060	11.7	2.5	9.7	2.5	10.6	3.9	4.4	5.4	0.2	4.5	5.1	1.2	7.0	6.5	Dec-92
BBgBarc US Aggregate TR			2.3	8.5	2.3	10.3	2.9	3.4	3.7	0.0	3.5	2.6	0.6	6.0	5.5	Dec-92
eV US Core Plus Fixed Inc Gross Rank			26	45	26	39	54	17	32	24	70	45	15	16	37	Dec-92
MackKay Shields Core Plus Opportunities	98,375,740	11.3	2.6	9.6	2.6	10.3	3.7	--	--	-0.7	4.9	5.1	--	--	3.3	Mar-15
BBgBarc US Aggregate TR			2.3	8.5	2.3	10.3	2.9	--	--	0.0	3.5	2.6	--	--	3.0	Mar-15
eV US Core Plus Fixed Inc Gross Rank			19	49	19	61	68	--	--	69	54	46	--	--	86	Mar-15

Since Inception ranking is from the beginning of the first complete month. Templeton Foreign Equity liquidated 10/27/2015. TimesSquare, BlackRock Russell 1000 and T. Rowe liquidated 12/10/2015. BlackRock Russell 3000 funded 12/10/2015. Harding Loevner funded 7/5/2016. Parametric liquidated 7/5/2016. Vontobel liquidated 7/13/2016. Gresham MTAP liquidated 8/22/2016. BlackRock Commodities liquidated 9/2/2016. ARA American Strategic Value Realty funded 1/4/2018.

Total Fund Performance Summary (Gross of Fees)

Period Ending: September 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014	Inception	Inception Date
BlackRock US TIPS	43,015,460	5.0	1.3	7.6	1.3	7.2	2.4	2.6	3.6	-1.1	3.2	4.8	-1.2	3.6	4.2	Apr-07
BBgBarc US TIPS TR			1.3	7.6	1.3	7.1	2.2	2.4	3.5	-1.3	3.0	4.7	-1.4	3.6	4.1	Apr-07
eV US TIPS / Inflation Fixed Inc Gross Rank			39	51	39	29	45	45	56	47	46	37	43	45	62	Apr-07
Total Real Estate	112,066,673	12.9	0.7	3.8	0.7	5.3	6.0	8.9	10.5	7.5	5.8	7.5	16.1	13.0	--	
NCREIF ODCE			1.3	3.8	1.3	5.6	6.6	8.4	9.7	7.1	7.0	8.0	13.3	11.8	--	
NCREIF-ODCE			1.3	3.8	1.3	5.6	7.3	9.3	10.9	8.3	7.6	8.8	15.0	12.5	--	
ASB Real Estate	36,283,608	4.2	-0.8	2.2	-0.8	3.4	4.5	7.8	--	6.6	4.0	5.6	17.3	13.5	9.2	Dec-12
NCREIF-ODCE			1.3	3.8	1.3	5.6	7.3	9.3	--	8.3	7.6	8.8	15.0	12.5	10.3	Dec-12
NCREIF Property Index			1.4	4.8	1.4	6.2	6.8	8.6	--	6.7	7.0	8.0	13.3	11.8	9.2	Dec-12
Clarion Lion	37,473,444	4.3	1.4	4.4	1.4	6.3	7.5	10.0	11.5	8.6	7.9	9.1	15.7	13.2	5.4	Dec-06
NCREIF-ODCE			1.3	3.8	1.3	5.6	7.3	9.3	10.9	8.3	7.6	8.8	15.0	12.5	6.1	Dec-06
NCREIF Property Index			1.4	4.8	1.4	6.2	6.8	8.6	9.8	6.7	7.0	8.0	13.3	11.8	6.9	Dec-06
ARA American Strategic Value Realty	36,533,695	4.2	1.5	5.4	1.5	7.0	--	--	--	--	--	--	--	--	8.0	Jan-18
NCREIF ODCE +2%			1.8	5.3	1.8	7.7	--	--	--	--	--	--	--	--	8.1	Jan-18
1221 State St. Corp	1,775,926	0.2	0.0	0.0	0.0	0.0	0.0	3.3	1.1	0.0	0.0	17.5	0.0	0.0	1.1	Sep-08
Total Private Equity	34,125,108	3.9	4.5	9.4	4.5	13.3	17.9	16.7	--	21.3	18.8	12.3	18.7	24.6	--	
Russell 3000 +3% (Lagged)			4.9	4.0	4.9	12.2	17.4	13.5	--	21.1	22.2	18.4	2.5	21.2	--	
Russell 3000 +3% (Lagged)			4.9	4.0	4.9	12.2	17.4	13.5	--	21.1	22.2	18.4	2.5	21.2	--	
Harbourvest Buyout IX	7,465,153	0.9	3.3	11.5	3.3	17.0	21.0	19.0	--	23.6	23.2	15.8	21.1	17.7	--	Sep-11
Harbourvest Credit Ops IX	1,289,458	0.1	2.3	5.8	2.3	8.6	13.9	12.9	--	14.4	17.5	10.9	16.1	16.9	--	Sep-11
Harbourvest International PE VI	2,581,785	0.3	-8.2	-6.0	-8.2	-4.0	10.5	10.4	--	14.8	19.4	13.6	9.8	26.5	--	Jun-10
Harbourvest Venture IX	4,848,402	0.6	11.4	23.4	11.4	31.1	20.2	19.5	--	25.9	9.4	6.5	24.2	35.7	--	Sep-11
Harbourvest 2017 Global Fund	14,147,410	1.6	5.5	7.0	5.5	9.3	--	--	--	20.9	--	--	--	--	17.9	Sep-17
Harbourvest 2018 Global Fund	3,792,900	0.4	7.4	9.8	7.4	--	--	--	--	--	--	--	--	--	9.8	Dec-18
Russell 3000 + 3%			1.9	22.7	1.9	--	--	--	--	--	--	--	--	--	11.6	Dec-18
Total Private Credit	22,807,604	2.6	2.3	6.9	2.3	10.2	--	--	--	6.7	--	--	--	--	--	
BBgBarc High Yield +2% (Lagged)			3.0	6.5	3.0	9.6	--	--	--	5.1	--	--	--	--	--	
BBgBarc High Yield +2% (Lagged)			3.0	6.5	3.0	9.6	--	--	--	5.1	--	--	--	--	--	
Portfolio Advisors	22,807,604	2.6	2.3	6.9	2.3	10.2	--	--	--	6.7	--	--	--	--	7.1	Oct-17
BBgBarc High Yield +2% (Lagged)			3.0	6.5	3.0	9.6	--	--	--	5.1	--	--	--	--	6.7	Oct-17
Total Opportunistic	2,420,840	0.3	-0.5	-12.1	-0.5	-7.2	7.1	7.0	16.8	32.0	5.3	7.3	4.5	17.9	--	
Assumption Rate + 1%			2.0	6.1	2.0	8.3	8.3	8.4	8.7	8.3	8.4	8.5	8.5	8.8	--	

Since Inception ranking is from the beginning of the first complete month. Templeton Foreign Equity liquidated 10/27/2015. TimesSquare, BlackRock Russell 1000 and T. Rowe liquidated 12/10/2015. BlackRock Russell 3000 funded 12/10/2015. Harding Loevner funded 7/5/2016. Parametric liquidated 7/5/2016. Vontobel liquidated 7/13/2016. Gresham MTAP liquidated 8/22/2016. BlackRock Commodities liquidated 9/2/2016. ARA American Strategic Value Realty funded 1/4/2018.

Total Fund

Performance Summary (Net of Fees)

Period Ending: September 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014	Inception	Inception Date
Total Fund	867,947,783	100.0	0.7	11.9	0.7	4.0	7.7	6.1	7.8	-4.1	16.0	7.4	-0.4	4.4	8.7	Mar-89
<i>Policy Index</i>			1.1	12.3	1.1	5.6	8.5	6.4	7.7	-2.8	15.9	8.3	-1.2	4.9	--	Mar-89
Total Domestic Equity	241,281,135	27.8	1.2	20.1	1.2	3.0	12.9	10.4	13.0	-5.2	21.2	12.8	0.1	10.0	--	
<i>Russell 3000</i>			1.2	20.1	1.2	2.9	12.8	10.4	13.1	-5.2	21.1	12.7	0.5	12.6	--	
<i>Russell 3000</i>			1.2	20.1	1.2	2.9	12.8	10.4	13.1	-5.2	21.1	12.7	0.5	12.6	--	
BlackRock Russell 3000	241,281,135	27.8	1.2	20.1	1.2	3.0	12.9	--	--	-5.2	21.2	12.8	--	--	11.9	Dec-15
<i>Russell 3000</i>			1.2	20.1	1.2	2.9	12.8	--	--	-5.2	21.1	12.7	--	--	11.6	Dec-15
Total International Equity	208,010,416	24.0	-2.4	10.7	-2.4	-1.9	6.1	3.1	4.2	-14.3	27.9	4.4	-4.0	-4.9	--	
<i>MSCI ACWI ex USA Gross</i>			-1.7	12.1	-1.7	-0.7	6.8	3.4	4.9	-13.8	27.8	5.0	-5.3	-3.4	--	
<i>MSCI ACWI ex USA Gross</i>			-1.7	12.1	-1.7	-0.7	6.8	3.4	4.9	-13.8	27.8	5.0	-5.3	-3.4	--	
BlackRock International Equity	144,983,842	16.7	-1.1	13.1	-1.1	-1.1	6.8	3.6	5.1	-13.5	25.4	1.3	-0.6	-4.8	6.9	Jul-03
<i>MSCI EAFE Gross</i>			-1.0	13.3	-1.0	-0.8	7.0	3.8	5.4	-13.4	25.6	1.5	-0.4	-4.5	7.2	Jul-03
DFA Emerging Markets Value	29,528,630	3.4	-7.0	0.0	-7.0	-7.2	5.3	1.4	2.2	-11.9	33.8	19.8	-18.8	-4.4	3.2	Jan-07
<i>MSCI Emerging Markets Gross</i>			-4.1	6.2	-4.1	-1.6	6.4	2.7	3.7	-14.2	37.8	11.6	-14.6	-1.8	4.0	Jan-07
Harding Loevner Emerging Markets	33,497,943	3.9	-3.7	10.8	-3.7	-0.7	4.2	--	--	-19.5	33.6	--	--	--	5.1	Jul-16
<i>MSCI Emerging Markets Gross</i>			-4.1	6.2	-4.1	-1.6	6.4	--	--	-14.2	37.8	--	--	--	7.3	Jul-16
Total Fixed Income	243,050,259	28.0	2.3	9.1	2.3	9.5	3.2	3.6	4.7	-0.8	4.3	4.8	-0.6	5.6	--	
<i>BBgBarc US Aggregate TR</i>			2.3	8.5	2.3	10.3	2.9	3.4	3.7	0.0	3.5	2.6	0.6	6.0	--	
<i>BBgBarc US Aggregate TR</i>			2.3	8.5	2.3	10.3	2.9	3.4	3.7	0.0	3.5	2.6	0.6	6.0	--	
Tortoise Capital	101,659,060	11.7	2.4	9.5	2.4	10.3	3.6	4.1	5.1	-0.1	4.3	4.8	0.9	6.7	6.2	Dec-92
<i>BBgBarc US Aggregate TR</i>			2.3	8.5	2.3	10.3	2.9	3.4	3.7	0.0	3.5	2.6	0.6	6.0	5.5	Dec-92
Mackay Shields Core Plus Opportunities	98,375,740	11.3	2.5	9.3	2.5	9.9	3.3	--	--	-1.0	4.5	4.7	--	--	3.0	Mar-15
<i>BBgBarc US Aggregate TR</i>			2.3	8.5	2.3	10.3	2.9	--	--	0.0	3.5	2.6	--	--	3.0	Mar-15
BlackRock US TIPS	43,015,460	5.0	1.3	7.6	1.3	7.1	2.3	2.5	3.5	-1.2	3.2	4.8	-1.3	3.6	4.1	Apr-07
<i>BBgBarc US TIPS TR</i>			1.3	7.6	1.3	7.1	2.2	2.4	3.5	-1.3	3.0	4.7	-1.4	3.6	4.1	Apr-07

Total Fund

Performance Summary (Net of Fees)

Period Ending: September 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014	Inception	Inception Date
Total Real Estate	112,066,673	12.9	0.7	3.8	0.7	5.3	6.0	8.4	9.8	7.5	5.8	6.5	15.0	11.6	--	
NCREIF ODCE			1.3	3.8	1.3	5.6	6.6	8.4	9.7	7.1	7.0	8.0	13.3	11.8	--	
NCREIF-ODCE			1.3	3.8	1.3	5.6	7.3	9.3	10.9	8.3	7.6	8.8	15.0	12.5	--	
ASB Real Estate	36,283,608	4.2	-0.8	2.2	-0.8	3.4	4.4	7.3	--	6.6	4.0	4.6	16.2	12.5	8.6	Dec-12
NCREIF-ODCE			1.3	3.8	1.3	5.6	7.3	9.3	--	8.3	7.6	8.8	15.0	12.5	10.3	Dec-12
NCREIF Property Index			1.4	4.8	1.4	6.2	6.8	8.6	--	6.7	7.0	8.0	13.3	11.8	9.2	Dec-12
Clarion Lion	37,473,444	4.3	1.4	4.4	1.4	6.3	7.4	9.5	10.7	8.6	7.9	8.0	14.6	12.2	4.6	Dec-06
NCREIF-ODCE			1.3	3.8	1.3	5.6	7.3	9.3	10.9	8.3	7.6	8.8	15.0	12.5	6.1	Dec-06
NCREIF Property Index			1.4	4.8	1.4	6.2	6.8	8.6	9.8	6.7	7.0	8.0	13.3	11.8	6.9	Dec-06
ARA American Strategic Value Realty	36,533,695	4.2	1.5	5.4	1.5	7.0	--	--	--	--	--	--	--	--	8.0	Jan-18
NCREIF ODCE +2%			1.8	5.3	1.8	7.7	--	--	--	--	--	--	--	--	8.1	Jan-18
1221 State St. Corp	1,775,926	0.2	0.0	0.0	0.0	0.0	0.0	3.3	1.1	0.0	0.0	17.5	0.0	0.0	1.1	Sep-08
Total Private Equity	34,125,108	3.9	4.5	9.4	4.5	13.3	17.7	15.7	--	21.3	18.8	10.6	16.3	20.2	--	
Russell 3000 +3% (Lagged)			4.9	4.0	4.9	12.2	17.4	13.5	--	21.1	22.2	18.4	2.5	21.2	--	
Russell 3000 +3% (Lagged)			4.9	4.0	4.9	12.2	17.4	13.5	--	21.1	22.2	18.4	2.5	21.2	--	
Harbourvest Buyout IX	7,465,153	0.9	3.3	11.5	3.3	17.0	20.9	17.7	--	23.6	23.2	13.7	18.0	12.3	--	Sep-11
Harbourvest Credit Ops IX	1,289,458	0.1	2.3	5.8	2.3	8.6	13.8	11.6	--	14.4	17.5	8.5	12.8	11.7	--	Sep-11
Harbourvest International PE VI	2,581,785	0.3	-8.2	-6.0	-8.2	-4.0	10.4	9.7	--	14.8	19.4	12.2	8.3	23.5	--	Jun-10
Harbourvest Venture IX	4,848,402	0.6	11.4	23.4	11.4	31.1	20.1	18.8	--	25.9	9.4	5.3	22.4	31.9	--	Sep-11
Harbourvest 2017 Global Fund	14,147,410	1.6	5.5	7.0	5.5	9.3	--	--	--	20.9	--	--	--	--	17.9	Sep-17
Harbourvest 2018 Global Fund	3,792,900	0.4	7.4	9.8	7.4	--	--	--	--	--	--	--	--	--	9.8	Dec-18
Russell 3000 + 3%			1.9	22.7	1.9	--	--	--	--	--	--	--	--	--	11.6	Dec-18
Total Private Credit	22,807,604	2.6	2.3	6.9	2.3	10.2	--	--	--	6.7	--	--	--	--	--	
BBgBarc High Yield +2% (Lagged)			3.0	6.5	3.0	9.6	--	--	--	5.1	--	--	--	--	--	
BBgBarc High Yield +2% (Lagged)			3.0	6.5	3.0	9.6	--	--	--	5.1	--	--	--	--	--	
Portfolio Advisors	22,807,604	2.6	2.3	6.9	2.3	10.2	--	--	--	6.7	--	--	--	--	7.1	Oct-17
BBgBarc High Yield +2% (Lagged)			3.0	6.5	3.0	9.6	--	--	--	5.1	--	--	--	--	6.7	Oct-17
Total Opportunistic	2,420,840	0.3	-0.5	-12.1	-0.5	-7.2	6.9	6.2	15.5	32.0	5.3	5.0	3.0	16.0	--	
Assumption Rate + 1%			2.0	6.1	2.0	8.3	8.3	8.4	8.7	8.3	8.4	8.5	8.5	8.8	--	

Investment Manager
Performance Analysis - 3 & 5 Years (Net of Fees)

Period Ending: September 30, 2019

3 Years

	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
BlackRock Russell 3000	12.87%	0.03%	12.54%	0.03%	1.00	0.04%	1.00	0.90	0.82	100.17%	99.99%
BlackRock International Equity	6.81%	-0.20%	11.10%	-0.21%	1.00	0.16%	1.00	0.48	-1.24	99.77%	100.98%
DFA Emerging Markets Value	5.26%	-1.12%	14.00%	-0.83%	0.96	4.03%	0.92	0.27	-0.28	97.15%	102.81%
Harding Loevner Emerging Markets	4.22%	-2.15%	14.97%	-2.28%	1.02	4.32%	0.92	0.18	-0.50	95.45%	106.12%
Tortoise Capital	3.56%	0.63%	3.07%	0.94%	0.90	0.76%	0.95	0.66	0.84	100.71%	81.34%
MacKay Shields Core Plus Opportunities	3.31%	0.38%	3.17%	0.59%	0.93	0.66%	0.96	0.56	0.58	100.17%	88.36%
BlackRock US TIPS	2.31%	0.09%	3.28%	0.10%	1.00	0.03%	1.00	0.24	2.91	101.04%	98.96%
ASB Real Estate	4.44%	-2.86%	2.39%	-0.23%	0.64	1.77%	0.66	1.22	-1.62	59.90%	--
Clarion Lion	7.38%	0.08%	3.10%	0.08%	1.00	0.67%	0.95	1.89	0.11	102.03%	--

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
BlackRock International Equity	3.56%	-0.21%	12.27%	-0.22%	1.00	0.12%	1.00	0.21	-1.71	99.56%	100.64%
DFA Emerging Markets Value	1.43%	-1.28%	16.54%	-1.36%	1.03	4.08%	0.94	0.03	-0.31	104.12%	105.13%
Tortoise Capital	4.14%	0.76%	2.92%	1.06%	0.91	0.85%	0.92	1.09	0.90	105.02%	81.58%
BlackRock US TIPS	2.52%	0.08%	3.54%	0.05%	1.01	0.13%	1.00	0.44	0.57	101.28%	99.85%
ASB Real Estate	7.32%	-2.02%	4.29%	-1.48%	0.94	1.99%	0.79	1.48	-1.02	78.84%	--
Clarion Lion	9.49%	0.15%	4.41%	-0.49%	1.07	0.93%	0.96	1.93	0.16	106.42%	--

Private Equity Non Marketable Securities Overview

Period Ending: September 30, 2019

Vintage	Manager & Fund Name	Estimated 9/30 Market Value ³	Total Commitment	Capital Called	% Called	Remaining Commitment	Capital Returned	Market Value for IRR	Distrib./ Paid-In (DPI) ¹	Tot. Value/ Paid-In (TVPI) ²	Net IRR Since Inception ⁴	IRR Date	
2011	HarbourVest IX-Buyout	\$7,465,153	\$10,000,000	\$8,275,000	83%	\$1,725,000	\$5,980,978	\$7,679,039	72.3%	162.5%	17.7%	6/30/19	
2011	HarbourVest IX-Credit	\$1,289,458	\$2,000,000	\$1,500,000	75%	\$500,000	\$905,796	\$1,309,785	60.4%	146.4%	13.8%	6/30/19	
2008	HarbourVest Int'l VI ⁵	\$2,581,785	\$3,712,930	\$2,605,981	70%	\$1,106,949	\$1,920,778	\$2,650,021	73.7%	172.8%	14.8%	6/30/19	
2011	HarbourVest IX-Venture	\$4,848,402	\$4,000,000	\$3,800,000	95%	\$200,000	\$2,403,375	\$5,039,836	63.2%	190.8%	18.7%	6/30/19	
2017	HarbourVest 2017 Global	\$14,147,410	\$30,000,000	\$13,200,000	44%	\$16,800,000	\$1,510,137	\$13,269,694	11.4%	118.6%	18.8%	6/30/19	
2018	HarbourVest 2018 Global	\$3,792,900	\$20,000,000	\$3,600,000	18%	\$16,400,000	\$0	\$1,314,191	0.0%	105.4%	-7.1%	12/31/18	
Total Illiquid Private Equity		\$34,125,108	\$69,712,930	\$32,980,981	47%	\$36,731,949	\$12,721,064	\$31,262,566	94.8%	133.4%			
% of Portfolio (Market Value)		3.9%							Management Fee	Admin Fee	Interest Expense	Other Expense	Total Expense ⁶
								HarbourVest IX-Buyout	\$24,917	\$0	\$0	\$6,752	\$31,669
								HarbourVest IX-Credit	\$2,896	\$0	\$0	\$4,978	\$7,874
								HarbourVest Int'l VI	\$6,728	\$0	\$0	\$140	\$6,868
								HarbourVest IX-Venture	\$9,984	\$0	\$0	\$515	\$10,499
								HarbourVest 2017 Global	\$64,714	\$0	\$0	\$73,159	\$137,873
								HarbourVest 2018 Global	\$40,148	\$0	\$0	\$21,334	\$61,482
									\$149,387	\$0	\$0	\$106,878	\$256,265

¹(DPI) is equal to (capital returned / capital called)

²(TVPI) is equal to (market value + capital returned) / capital called

³Last known market value + capital calls - distributions (preliminary MV's as of 6/30/19)

⁴Net IRR is calculated on the cash flows of all the limited partners of the fund and is net of all fees. Each IRR figure is provided by its respective manager.

⁵HarbourVest International Private Equity Partners VI-Partnership Fund L.P. values are originally presented in euros and are calculated to dollars using XE™.

⁶All fees and expenses are for 2Q 2019

HarbourVest 2017 Global Fund first capital call issued 9/21/2017. Portfolio Advisors first capital call issued 10/5/2017. HarbourVest 2018 Global Fund first capital call issued 12/13/2018.

Private Credit Non Marketable Securities Overview

Period Ending: September 30, 2019

		Estimated 9/30	Total	Capital	%	Remaining	Capital	Market Value	Distrib./	Tot. Value/	Net IRR	
Vintage	Manager & Fund Name	Market Value ³	Commitment	Called	Called	Commitment	Returned	for IRR	Paid-In (DPI) ¹	Paid-In (TVPI) ²	Since Inception ⁴	IRR Date
2013	Portfolio Advisors Credit Strategies Fund	\$12,697,182	\$11,250,000	\$11,250,000	100%	\$0	\$0	\$12,436,215	0.0%	112.9%	8.5%	6/30/19
2017	Crescent Direct Lending Levered Fund II	\$4,473,027	\$7,000,000	\$4,163,737	59%	\$2,836,263	\$48,772	\$3,470,456	1.2%	108.6%	11.6%	6/30/19
2017	Audax Direct Lending Fund A	\$1,625,122	\$7,000,000	\$1,602,519	23%	\$5,397,481	\$72,094	NA	4.5%	105.9%	NM ⁶	NM ⁶
2018	Ares Capital Europe IV	\$3,703,822	\$8,000,000	\$2,995,668	37%	\$5,004,332	\$81,940	NA	2.7%	126.4%	NM ⁷	NM ⁷
2019	Lone Star Fund XI	\$308,452	\$5,750,000	\$308,452	5%	\$5,441,548	\$0	NA	NA	NA	NA	NA
2019	Ascribe Opportunities IV	\$0	\$6,000,000	\$0	0%	\$6,000,000	\$0	NA	NA	NA	NA	NA

Total Illiquid Private Credit	\$22,807,604	\$45,000,000	\$20,320,375	45%	\$24,679,625	\$202,806	\$15,906,671	78.3%	79.3%
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% of Portfolio (Market Value)	2.6%
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	Management Fee	Accrued Carried Interest	Admin Fee	Interest Expense	Other Expense	Total Expense ⁵
Portfolio Advisors CSF	\$0	\$85,010	\$0	\$0	\$0	\$85,010
Crescent Direct Lending II	\$55,634	\$8,164	\$3,147	\$0	\$0	\$66,945
Audax Direct Lending A	\$9,081	\$0	\$0	\$0	\$32,834	\$41,915
Ares Capital Europe IV	\$11,671	\$12,702	\$15,583	\$0	\$0	\$39,956
Ascribe Opportunities IV	\$0	\$0	\$0	\$0	\$0	\$0
Lone Star Fund XI	\$0	\$0	\$0	\$0	\$0	\$0

\$76,386	\$105,876	\$18,730	\$0	\$32,834	\$233,826
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¹(DPI) is equal to (capital returned / capital called)

²(TVPI) is equal to (market value + capital returned) / capital called

³Last known market value + capital calls - distributions (preliminary MV's as of 6/30/19)

⁴Net IRR is calculated on the cash flows of all the limited partners of the fund and is net of all fees. Each IRR figure is provided by its respective manager.

⁵All fees and expenses are for 2Q 2019

⁶The Fund issued its first capital call on October 26, 2018. As such it does not consider the IRR to be meaningful.

⁷Given the nature of the ACE IV strategy, Ares will begin reporting fund-level IRR metrics beginning in Q3 2019, one year after the fund's first investment.

Opportunistic Non Marketable Securities Overview

Period Ending: September 30, 2019

Vintage	Manager & Fund Name	Estimated 9/30 Market Value ³	Total Commitment	Capital Called	% Called	Remaining Commitment	Capital Returned	Market Value for IRR	Distrib./ Paid-In (DPI) ¹	Tot. Value/ Paid-In (TVPI) ²	Net IRR Since Inception ⁵	IRR Date	
2010	KKR Mezzanine ⁶	\$2,282,552	\$10,000,000	\$10,000,000	100%	\$0	\$13,137,486	\$2,251,093	131.4%	154.2%	8.2%	9/30/19	
2011	PIMCO BRAVO ⁴	\$138,288	\$10,000,000	\$10,000,000	100%	\$0	\$18,054,734	\$138,288	180.5%	181.9%	22.0%	6/30/19	
Total Illiquid Opportunistic		\$2,420,840	\$20,000,000	\$20,000,000	100%	\$0	\$31,192,220	\$2,389,381	11.9%	167.9%			
% of Portfolio (Market Value)		0.3%											
							Management Fee	Accrued Carried Interest	Admin Fee	Interest Expense	Other Expense	Total Expense ⁷	
							KKR Mezzanine	\$7,842	\$106,963	\$0	\$0	\$3,839	\$118,644
							PIMCO BRAVO	\$0	\$22,203	\$50	\$0	\$0	\$22,253
								\$7,842	\$129,166	\$50	\$0	\$3,839	\$140,897

¹(DPI) is equal to (capital returned / capital called)

²(TVPI) is equal to (market value + capital returned) / capital called

³Last known market value + capital calls - distributions (preliminary MV's as of 6/30/19)

⁴Investment period ended, no further capital to be called.

⁵Net IRR is calculated on the cash flows of all the limited partners of the fund and is net of all fees. Each IRR figure is provided by its respective manager.

⁶KKR: Total capital called is \$11,796,786, which includes recycled distributions. Unused capital commitment is \$1,054,718 after including distribution proceeds available for reinvestment

⁷All fees and expenses are for 2Q 2019

Total Fund Financial Reconciliation (Last Three Months)

Period Ending: September 30, 2019

Manager	Beginning Market Value	Contributions	Disbursements	Fees ²	Net Cash Flow	Investment Income	Capital Gain/ Loss	Total Gains/Earnings/ Losses	Ending Market Value
Blackrock Russell 3000 Index	\$262,816,129	\$0	(\$23,643,626)	\$0	(\$23,643,626)	\$0	\$2,108,632	\$2,108,632	\$241,281,135
DFA Emerging Markets	\$31,745,291	\$0	\$0	\$0	\$0	\$0	(\$2,216,661)	(\$2,216,661)	\$29,528,630
Harding Loevner Emerging Markets	\$34,690,243	\$0	\$0	\$0	\$0	\$0	(\$1,192,300)	(\$1,192,300)	\$33,497,943
Blackrock International Equity	\$146,521,759	\$0	\$0	\$0	\$0	\$0	(\$1,537,917)	(\$1,537,917)	\$144,983,842
Tortoise Capital	\$99,177,506	\$0	\$0	\$0	\$0	\$0	\$2,481,553	\$2,481,553	\$101,659,060
MacKay Shields Core Plus Opp.	\$95,990,873	\$0	\$0	\$0	\$0	\$0	\$2,384,866	\$2,384,866	\$98,375,740
Blackrock US TIPS	\$43,733,892	\$0	(\$1,060,794)	\$0	(\$1,060,794)	\$0	\$342,363	\$342,363	\$43,015,460
Clarion Lion Properties	\$36,954,606	\$272,703	(\$371,532)	(\$91,741)	(\$190,570)	\$0	\$709,408	\$709,408	\$37,473,444
ICERS State Street Real Estate	\$1,753,200	\$36,671	(\$13,955)	\$0	\$22,716	\$10	\$0	\$10	\$1,775,926
ASB Allegiance Real Estate	\$36,485,098	\$80,532	\$0	(\$80,532)	\$0	\$278,147	(\$479,636)	(\$201,490)	\$36,283,608
ARA American Strategic Value Realty	\$20,588,785	\$15,417,500	\$0	\$0	\$15,417,500	\$0	\$527,409	\$527,409	\$36,533,695
Portfolio Advisors Credit Strategies Fund	\$12,436,215	\$0	\$0	\$0	\$0	\$81,838	\$179,129	\$260,967	\$12,697,182
Crescent Direct Lending II	\$3,396,978	\$1,002,571	\$0	(\$58,781)	\$943,790	\$0	\$132,259	\$132,259	\$4,473,027
Audax Direct Lending A	\$1,103,253	\$497,438	(\$20,461)	(\$41,915)	\$435,063	\$28,204	\$58,602	\$86,806	\$1,625,122
Ares Capital Europe IV	\$2,297,715	\$810,607	(\$36,938)	(\$27,254)	\$746,415	\$88,301	\$571,391	\$659,692	\$3,703,822
Lone Star Fund XI	\$22,246	\$286,206	\$0	\$0	\$286,206	\$0	(\$0)	(\$0)	\$308,452
PIMCO BRAVO ¹	\$227,169	\$0	\$0	(\$50)	(\$50)	\$0	(\$88,831)	(\$88,831)	\$138,288
KKR Mezzanine I ¹	\$2,174,410	\$31,459	\$0	(\$11,681)	\$19,778	\$36,004	\$52,360	\$88,364	\$2,282,552
HarbourVest International VI ¹	\$2,887,264	\$0	(\$68,236)	(\$6,868)	(\$75,104)	\$51	(\$230,426)	(\$230,375)	\$2,581,785
HarbourVest Buyout IX ¹	\$7,433,234	\$0	(\$213,886)	(\$31,669)	(\$245,555)	\$354	\$277,120	\$277,474	\$7,465,153
HarbourVest Credit Opportunities IX ¹	\$1,280,685	\$0	(\$20,327)	(\$7,873)	(\$28,200)	\$1,361	\$35,612	\$36,973	\$1,289,458
HarbourVest Venture IX ¹	\$4,525,058	\$0	(\$191,343)	(\$10,499)	(\$201,842)	\$765	\$524,421	\$525,186	\$4,848,402
HarbourVest 2017 Global ¹	\$12,580,256	\$1,200,000	(\$322,284)	(\$137,873)	\$739,843	\$7,004	\$820,307	\$827,311	\$14,147,410
HarbourVest 2018 Global ¹	\$1,431,318	\$2,200,000	\$0	(\$66,737)	\$2,133,263	\$0	\$228,319	\$228,319	\$3,792,900
Cash	\$3,623,992	\$612,674	(\$50,919)	\$0	\$561,755	\$0	\$0	\$0	\$4,185,748
Totals	\$865,877,177	\$22,448,361	(\$26,014,302)	(\$573,473)	(\$4,139,412)	\$522,039	\$5,687,980	\$6,210,019	\$867,947,783

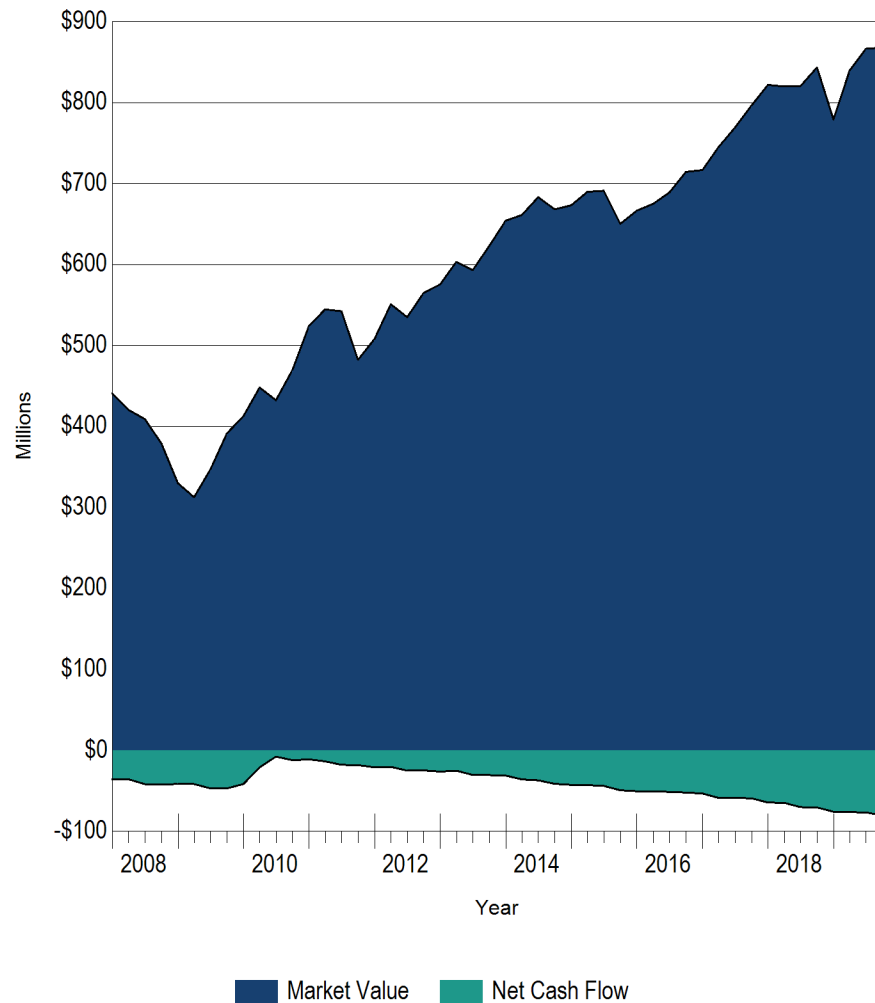
¹Market value as of 6/30/2019/ +/- 3Q19 calls and distributions

²Fee transactions not included in the Portfolio Reconciliation page at beginning of report

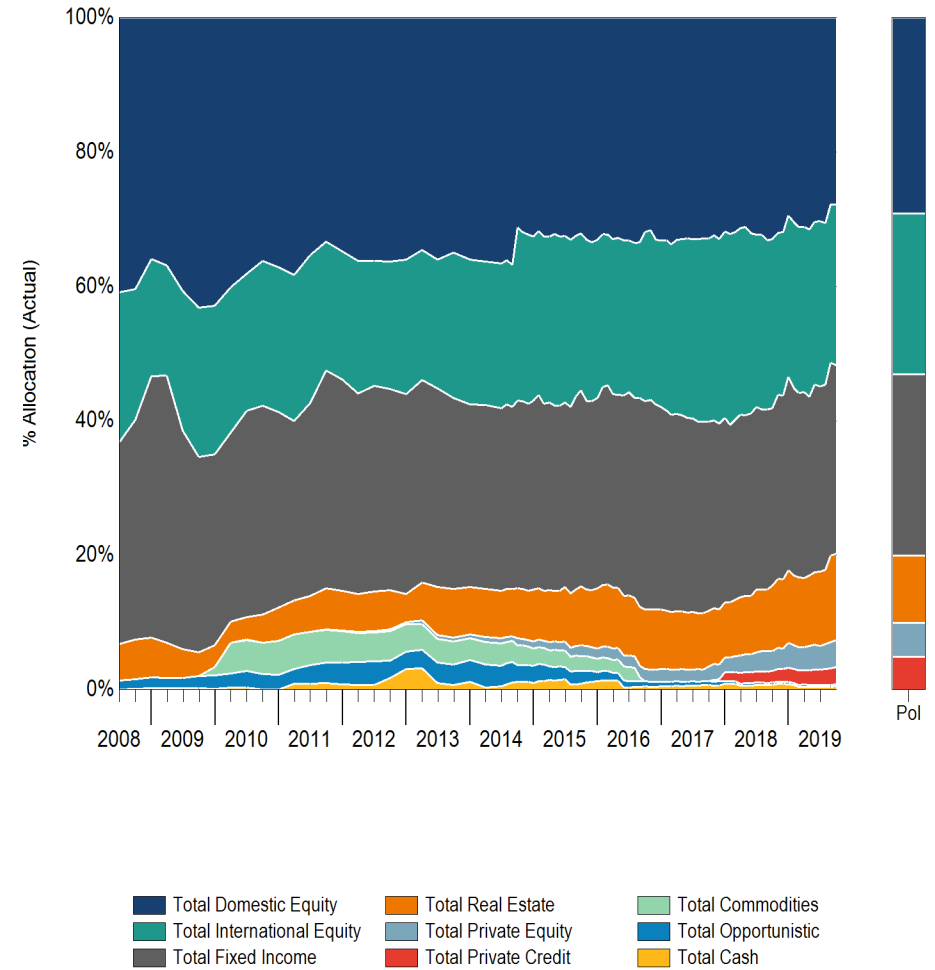
Total Fund Asset Allocation History

Period Ending: September 30, 2019

Market Value History

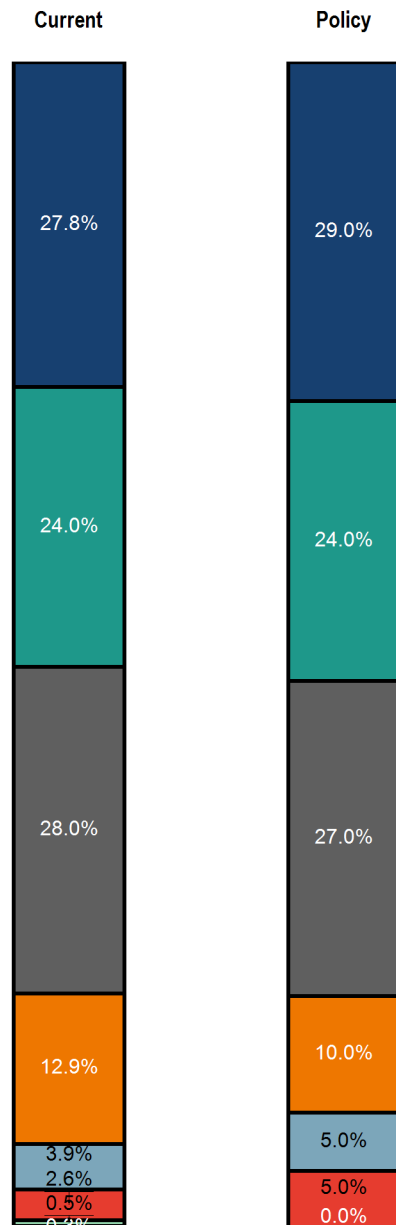


Asset Allocation History



Total Fund Asset Allocation vs. Policy

Period Ending: September 30, 2019



	Current Balance	Current Allocation	Policy	Difference	Policy Range	Within IPS Range?
Domestic Equity	\$241,281,135	27.8%	29.0%	-\$10,423,722	19.0% - 39.0%	Yes
International Equity	\$208,010,416	24.0%	24.0%	-\$297,052	14.0% - 34.0%	Yes
Domestic Fixed Income	\$243,050,259	28.0%	27.0%	\$8,704,358	17.0% - 40.0%	Yes
Real Estate	\$112,066,673	12.9%	10.0%	\$25,271,895	5.0% - 15.0%	Yes
Private Equity	\$34,125,108	3.9%	5.0%	-\$9,272,281	0.0% - 10.0%	Yes
Private Credit	\$22,807,604	2.6%	5.0%	-\$20,589,785	0.0% - 10.0%	Yes
Cash and Equivalents	\$4,185,748	0.5%	0.0%	\$4,185,748	0.0% - 0.0%	No
Other	\$2,420,840	0.3%	0.0%	\$2,420,840	0.0% - 10.0%	Yes
Total	\$867,947,783	100.0%	100.0%			

Total Fund Investment Fee Analysis

Period Ending: September 30, 2019

Account	Fee Schedule	Market Value As of 9/30/2019	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
1221 State St. Corp	No Fee	\$1,775,926	0.2%	--	--
ARA American Strategic Value Realty	1.25% of First 10.0 Mil, 1.20% of Next 15.0 Mil, 1.10% of Next 25.0 Mil, 1.00% Thereafter	\$36,533,695	4.3%	\$431,871	1.18%
ASB Real Estate	1.25% of First 5.0 Mil, 1.00% of Next 10.0 Mil, 0.75% Thereafter	\$36,283,608	4.2%	\$322,127	0.89%
BlackRock International Equity	0.15% of First 50.0 Mil, 0.10% of Next 50.0 Mil	\$144,983,842	16.9%	\$125,000	0.09%
BlackRock Russell 3000	0.03% of Assets	\$241,281,135	28.1%	\$72,384	0.03%
BlackRock US TIPS	0.07% of Assets	\$43,015,460	5.0%	\$30,111	0.07%
Cash Account	No Fee	\$4,185,748	0.5%	--	--
Clarion Lion	1.25% of First 10.0 Mil, 1.00% of Next 15.0 Mil, 0.85% Thereafter	\$37,473,444	4.4%	\$381,024	1.02%
DFA Emerging Markets Value	0.57% of Assets	\$29,528,630	3.4%	\$168,313	0.57%
Harbourvest 2017 Global Fund	262,500 Annually	\$14,147,410	1.6%	\$262,500	1.86%
Harbourvest 2018 Global Fund	138,000 Annually	\$3,792,900	0.4%	\$138,000	3.64%
Harbourvest Buyout IX	100,000 Annually	\$7,465,153	0.9%	\$100,000	1.34%
Harbourvest Credit Ops IX	20,000 Annually	\$1,289,458	0.2%	\$20,000	1.55%
Harbourvest International PE VI	35,000 Annually	\$2,581,785	0.3%	\$35,000	1.36%
Harbourvest Venture IX	40,000 Annually	\$4,848,402	0.6%	\$40,000	0.83%
Harding Loevner Emerging Markets	1.05% of Assets	\$33,497,943	3.9%	\$351,728	1.05%
KKR Mezzanine Partners	150,000 Annually	\$2,282,552	0.3%	\$150,000	6.57%
MacKay Shields Core Plus Opportunities	0.35% of Assets	\$98,375,740	11.5%	\$344,315	0.35%
PIMCO BRAVO	1.90% of Assets	\$138,288	0.0%	\$2,627	1.90%
Portfolio Advisors Credit Strategies Fund	180,000 Annually	\$12,697,182	1.5%	\$180,000	1.42%
Tortoise Capital	0.29% of First 100.0 Mil, 0.25% of Next 100.0 Mil	\$101,659,060	11.9%	\$289,148	0.28%
Investment Management Fee		\$857,837,361	100.0%	\$3,444,149	0.40%

*HarbourVest, KKR and PIMCO BRAVO fees are estimated gross management fees only and do not include incentive allocations or offsetting cash flows received by the fund.

*HarbourVest International Private Equity VI fees are based on committed Euros, actual US Dollar amount will fluctuate based on exchange rates.

*Verus advisory fee shown for disclosure purposes only and is not included in total investment management fee calculations.

*Portfolio Advisors fee is 0.20% on committed capital and 1.00% on invested capital.

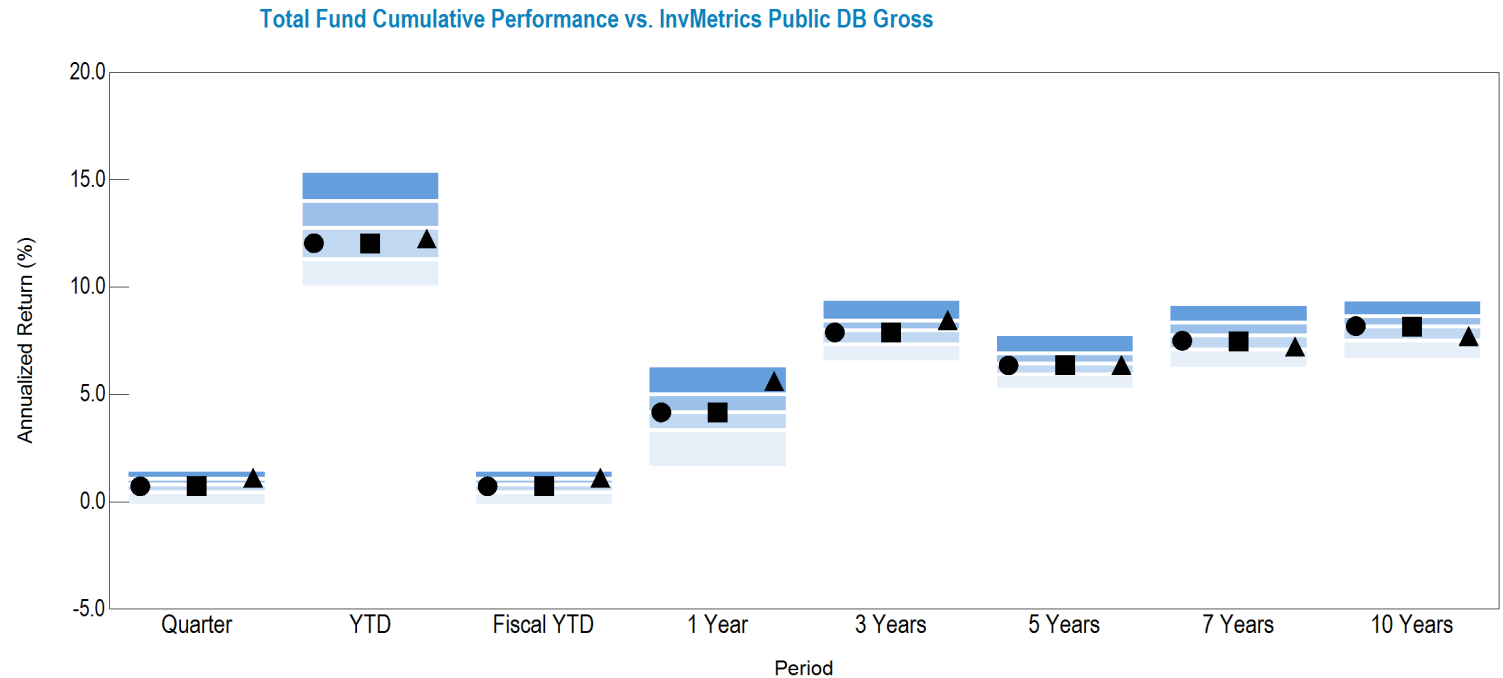
*Total fund market value excludes other investments managed by Portfolio Advisors.

*HarbourVest funds annual fee amounts calculated by applying the average annual fee charged to each fund over its expected lifecycle by its respective capital commitment.

Total Fund

Peer Universe Comparison: Cumulative Performance (Gross of Fees)

Period Ending: September 30, 2019

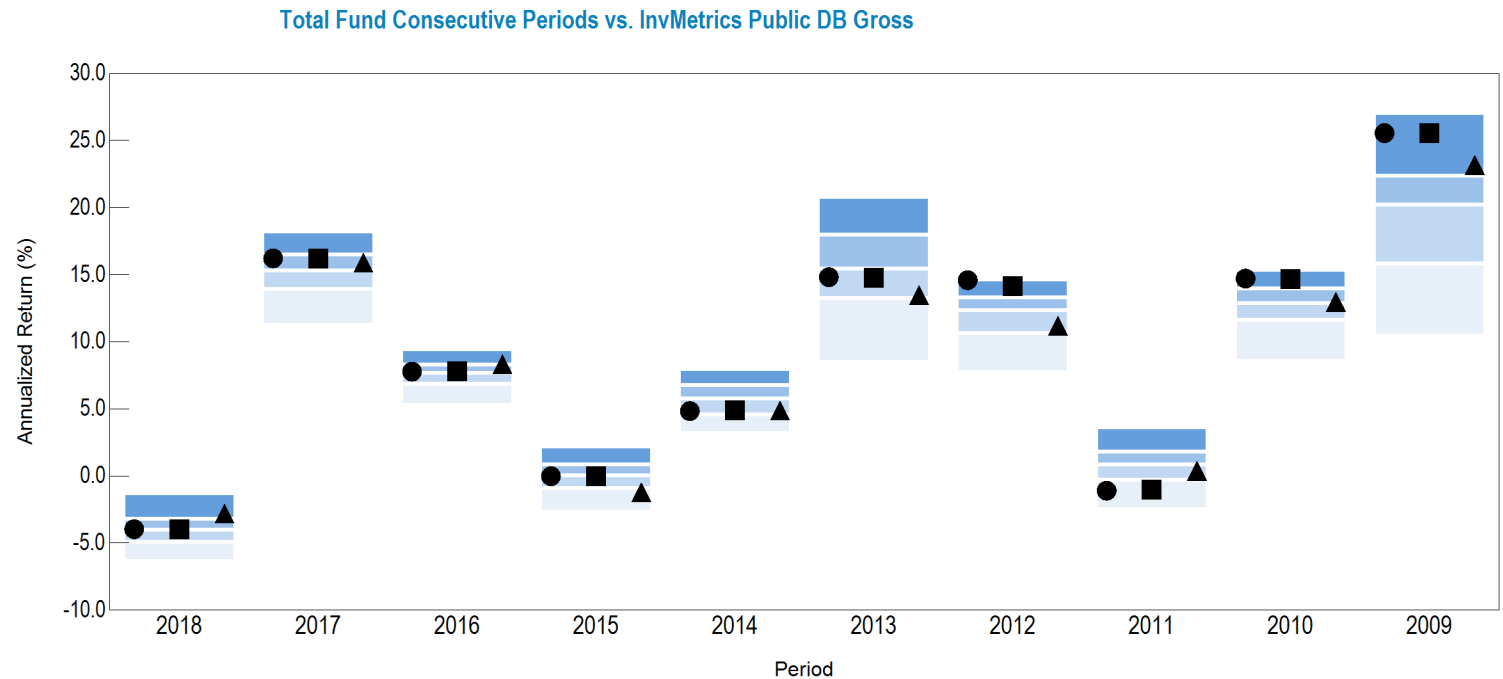


	Return (Rank)							
5th Percentile	1.5	15.4	1.5	6.3	9.4	7.8	9.2	9.4
25th Percentile	1.1	14.0	1.1	5.0	8.4	6.9	8.4	8.7
Median	0.8	12.8	0.8	4.2	8.0	6.5	7.8	8.2
75th Percentile	0.5	11.3	0.5	3.4	7.4	6.0	7.1	7.5
95th Percentile	-0.2	10.0	-0.2	1.6	6.5	5.2	6.2	6.6
# of Portfolios	343	339	343	336	325	315	297	267
● Total Fund	0.7 (59)	12.0 (64)	0.7 (59)	4.2 (51)	7.9 (56)	6.4 (55)	7.5 (64)	8.2 (50)
■ Total Fund ex Parametric	0.7 (59)	12.0 (64)	0.7 (59)	4.2 (51)	7.9 (56)	6.4 (55)	7.5 (65)	8.1 (52)
▲ Policy Index	1.1 (23)	12.3 (60)	1.1 (23)	5.6 (12)	8.5 (25)	6.4 (54)	7.2 (70)	7.7 (68)

Total Fund

Peer Universe Comparison: Consecutive Periods (Gross of Fees)

Period Ending: September 30, 2019



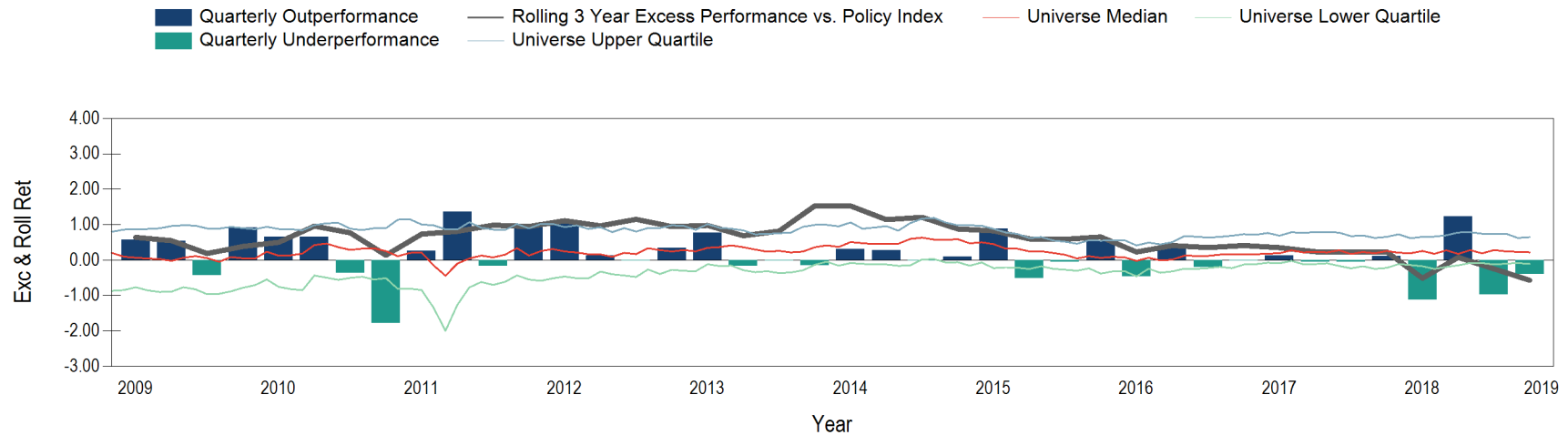
	Return (Rank)									
5th Percentile	-1.3	18.2	9.4	2.2	8.0	20.8	14.6	3.6	15.4	27.0
25th Percentile	-3.1	16.5	8.4	0.9	6.8	18.0	13.4	1.9	14.0	22.4
Median	-4.0	15.3	7.7	0.1	5.8	15.5	12.4	0.9	12.9	20.2
75th Percentile	-4.9	14.0	6.9	-0.9	4.6	13.3	10.7	-0.3	11.7	15.9
95th Percentile	-6.3	11.3	5.3	-2.6	3.2	8.5	7.8	-2.5	8.6	10.5
# of Portfolios	319	304	305	316	248	231	236	206	188	184
● Total Fund	-4.0 (50)	16.2 (30)	7.8 (49)	0.0 (53)	4.8 (74)	14.8 (59)	14.6 (6)	-1.1 (89)	14.7 (13)	25.6 (11)
■ Total Fund ex Parametric	-4.0 (50)	16.2 (30)	7.8 (49)	0.0 (53)	4.9 (72)	14.7 (59)	14.2 (11)	-1.0 (88)	14.7 (15)	25.6 (11)
▲ Policy Index	-2.8 (18)	15.9 (40)	8.3 (26)	-1.2 (81)	4.9 (72)	13.5 (74)	11.2 (72)	0.4 (63)	13.0 (49)	23.2 (23)

Total Fund

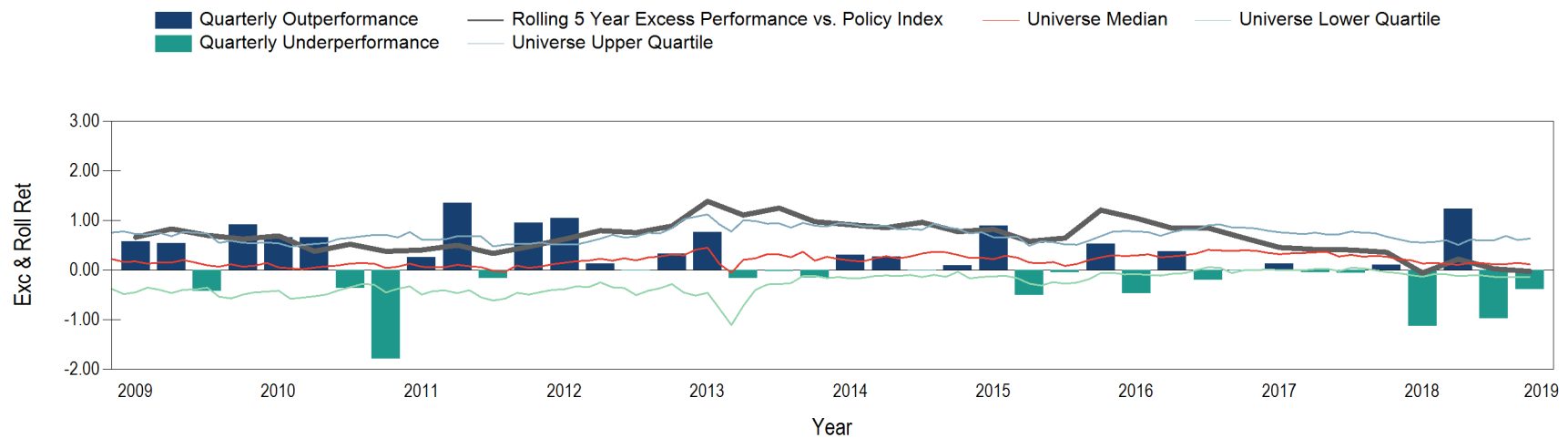
Rolling Return Analysis (Gross of Fees)

Period Ending: September 30, 2019

Rolling 3 Year Annualized Excess Performance



Rolling 5 Year Annualized Excess Performance



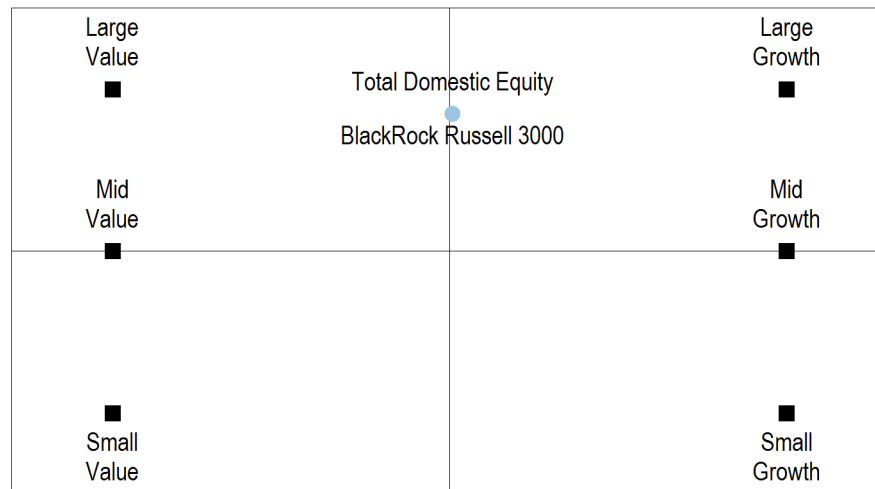
Total Domestic Equity

Asset Class Overview (Gross of Fees)

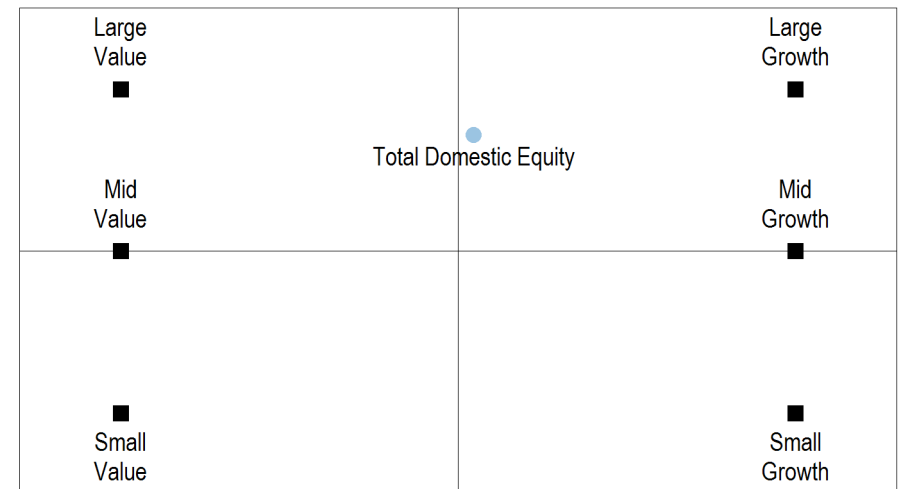
Period Ending: September 30, 2019

	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Domestic Equity	241,281,135	1.2	20.1	1.2	3.0	12.9	10.4	13.1	-5.2	21.2	12.9	0.3	10.2
<i>Russell 3000</i>		1.2	20.1	1.2	2.9	12.8	10.4	13.1	-5.2	21.1	12.7	0.5	12.6
<i>InvMetrics Public DB US Eq Gross Rank</i>		39	42	39	42	32	37	26	35	35	51	44	73
BlackRock Russell 3000	241,281,135	1.2	20.1	1.2	3.0	12.9	--	--	-5.2	21.2	12.9	--	--
<i>Russell 3000</i>		1.2	20.1	1.2	2.9	12.8	--	--	-5.2	21.1	12.7	--	--
<i>eV US All Cap Core Equity Gross Rank</i>		60	49	60	49	44	--	--	49	49	35	--	--

U.S. Effective Style Map
3 Years Ending September 30, 2019



U.S. Effective Style Map
5 Years Ending September 30, 2019



Total Domestic Equity
Asset Class Overview (Net of Fees)

Period Ending: September 30, 2019

	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Domestic Equity	241,281,135	1.2	20.1	1.2	3.0	12.9	10.4	13.0	-5.2	21.2	12.8	0.1	10.0
<i>Russell 3000</i>		<i>1.2</i>	<i>20.1</i>	<i>1.2</i>	<i>2.9</i>	<i>12.8</i>	<i>10.4</i>	<i>13.1</i>	<i>-5.2</i>	<i>21.1</i>	<i>12.7</i>	<i>0.5</i>	<i>12.6</i>
BlackRock Russell 3000	241,281,135	1.2	20.1	1.2	3.0	12.9	--	--	-5.2	21.2	12.8	--	--
<i>Russell 3000</i>		<i>1.2</i>	<i>20.1</i>	<i>1.2</i>	<i>2.9</i>	<i>12.8</i>	<i>--</i>	<i>--</i>	<i>-5.2</i>	<i>21.1</i>	<i>12.7</i>	<i>--</i>	<i>--</i>

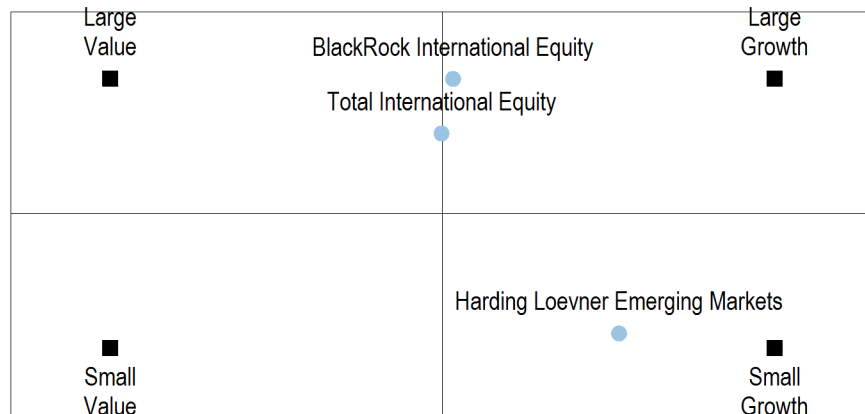
Total International Equity

Asset Class Overview (Gross of Fees)

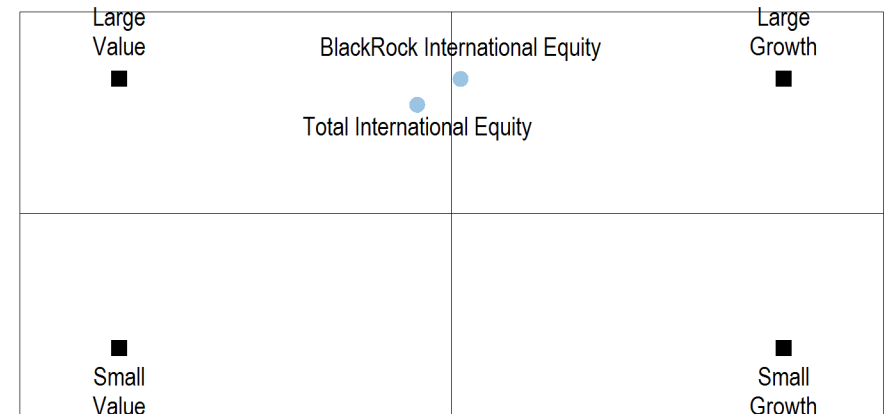
Period Ending: September 30, 2019

	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total International Equity	208,010,416	-2.3	10.9	-2.3	-1.6	6.5	3.5	4.7	-14.0	28.3	4.7	-3.5	-4.4
MSCI ACWI ex USA Gross		-1.7	12.1	-1.7	-0.7	6.8	3.4	4.9	-13.8	27.8	5.0	-5.3	-3.4
InvMetrics Public DB ex-US Eq Gross Rank		83	76	83	54	45	58	76	35	59	40	57	74
BlackRock International Equity	144,983,842	-1.0	13.2	-1.0	-1.0	6.9	3.7	5.3	-13.4	25.5	1.5	-0.5	-4.7
MSCI EAFE Gross		-1.0	13.3	-1.0	-0.8	7.0	3.8	5.4	-13.4	25.6	1.5	-0.4	-4.5
eV All EAFE Equity Gross Rank		45	43	45	30	37	68	80	35	65	47	67	64
DFA Emerging Markets Value	29,528,630	-6.9	0.4	-6.9	-6.7	5.8	2.0	2.8	-11.4	34.5	20.5	-18.3	-3.9
MSCI Emerging Markets Gross		-4.1	6.2	-4.1	-1.6	6.4	2.7	3.7	-14.2	37.8	11.6	-14.6	-1.8
eV Emg Mkts Equity Gross Rank		98	99	98	97	59	78	98	16	70	7	92	84
Harding Loevner Emerging Markets	33,497,943	-3.4	11.6	-3.4	0.3	5.3	--	--	-18.6	35.0	--	--	--
MSCI Emerging Markets Gross		-4.1	6.2	-4.1	-1.6	6.4	--	--	-14.2	37.8	--	--	--
eV Emg Mkts Equity Gross Rank		43	23	43	46	70	--	--	84	68	--	--	--

EAFE Effective Style Map
3 Years Ending September 30, 2019



EAFE Effective Style Map
5 Years Ending September 30, 2019



Total International Equity Asset Class Overview (Net of Fees)

Period Ending: September 30, 2019

	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total International Equity	208,010,416	-2.4	10.7	-2.4	-1.9	6.1	3.1	4.2	-14.3	27.9	4.4	-4.0	-4.9
MSCI ACWI ex USA Gross		-1.7	12.1	-1.7	-0.7	6.8	3.4	4.9	-13.8	27.8	5.0	-5.3	-3.4
BlackRock International Equity	144,983,842	-1.1	13.1	-1.1	-1.1	6.8	3.6	5.1	-13.5	25.4	1.3	-0.6	-4.8
MSCI EAFE Gross		-1.0	13.3	-1.0	-0.8	7.0	3.8	5.4	-13.4	25.6	1.5	-0.4	-4.5
DFA Emerging Markets Value	29,528,630	-7.0	0.0	-7.0	-7.2	5.3	1.4	2.2	-11.9	33.8	19.8	-18.8	-4.4
MSCI Emerging Markets Gross		-4.1	6.2	-4.1	-1.6	6.4	2.7	3.7	-14.2	37.8	11.6	-14.6	-1.8
Harding Loevner Emerging Markets	33,497,943	-3.7	10.8	-3.7	-0.7	4.2	--	--	-19.5	33.6	--	--	--
MSCI Emerging Markets Gross		-4.1	6.2	-4.1	-1.6	6.4	--	--	-14.2	37.8	--	--	--

EM Effective Style Map
3 Years Ending September 30, 2019

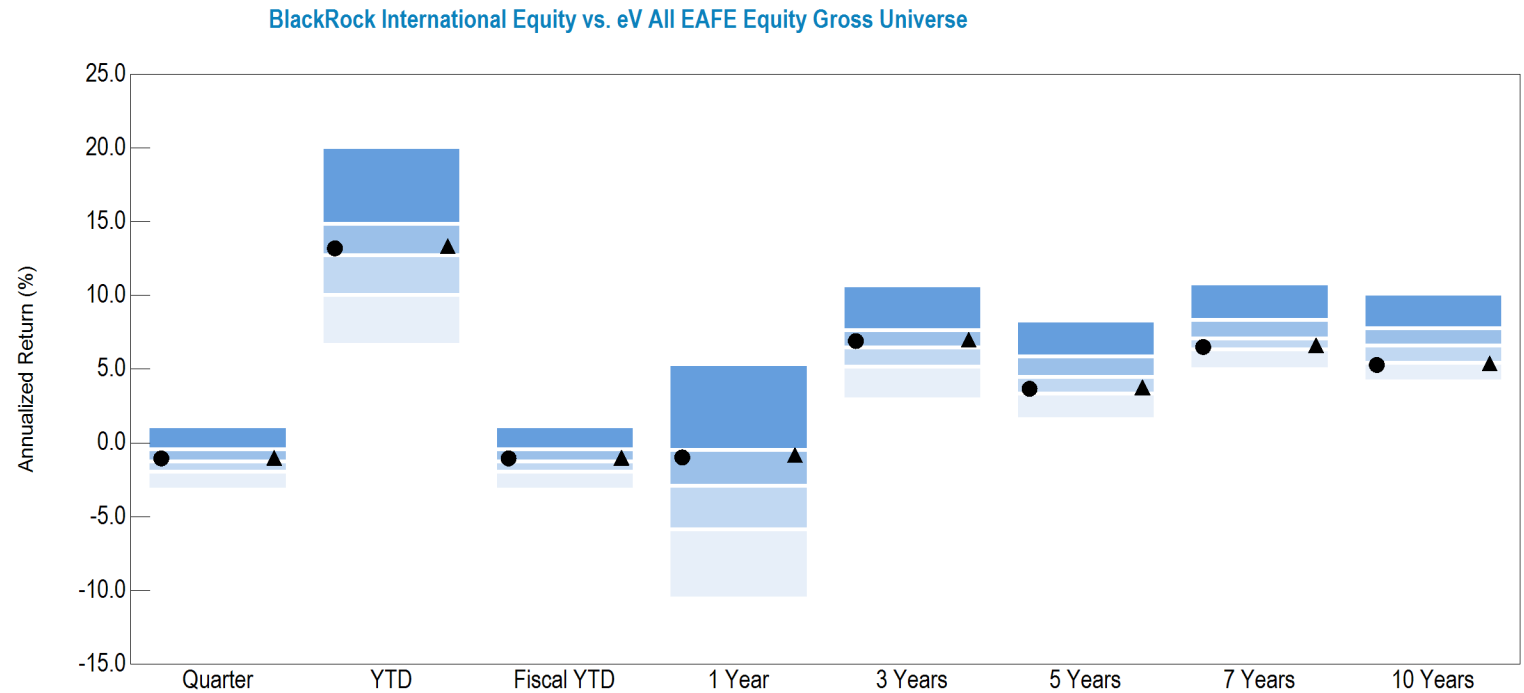


EM Effective Style Map
5 Years Ending September 30, 2019



BlackRock International Equity Cumulative Performance Comparison (Gross of Fees)

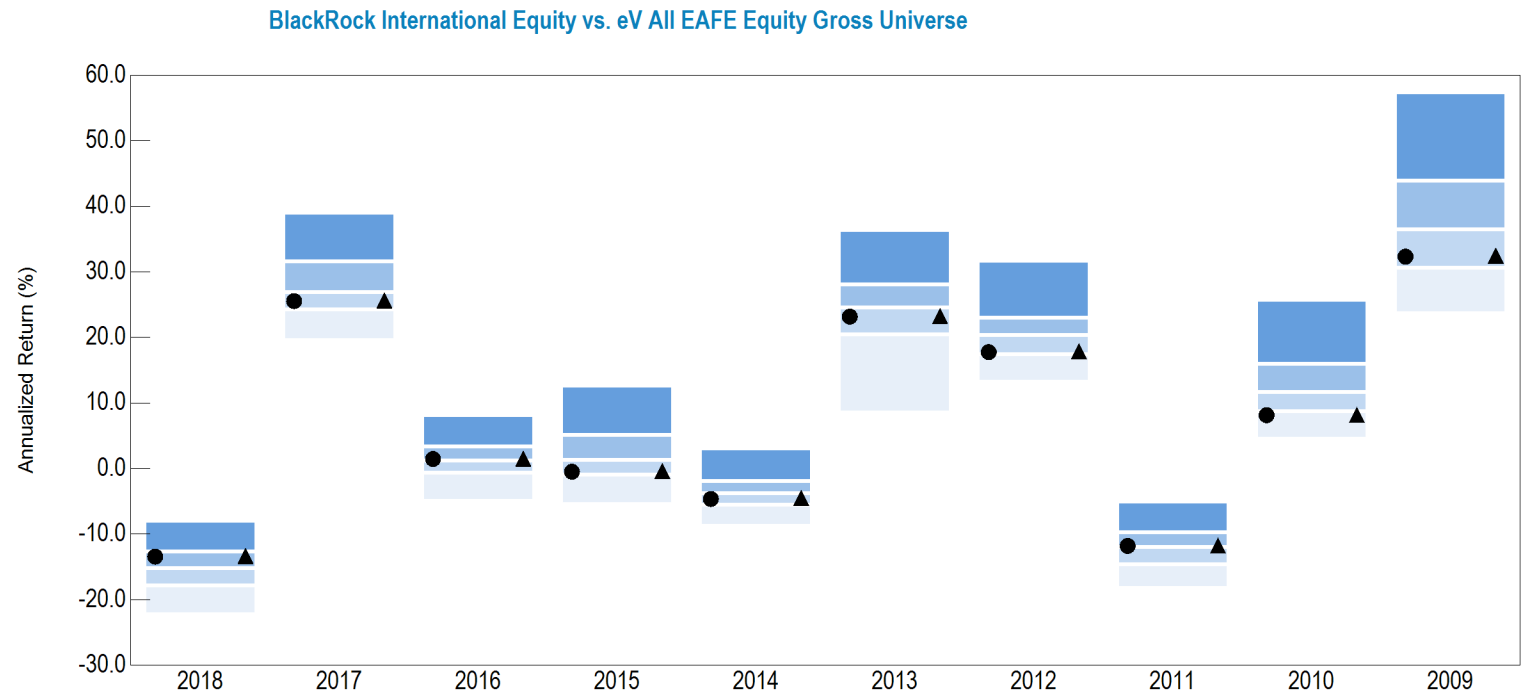
Period Ending: September 30, 2019



	Return (Rank)							
5th Percentile	1.1	20.0	1.1	5.3	10.6	8.3	10.8	10.1
25th Percentile	-0.4	14.9	-0.4	-0.4	7.7	5.9	8.4	7.8
Median	-1.2	12.7	-1.2	-2.9	6.5	4.5	7.1	6.6
75th Percentile	-1.9	10.1	-1.9	-5.9	5.2	3.4	6.3	5.4
95th Percentile	-3.1	6.7	-3.1	-10.5	3.0	1.6	5.0	4.2
# of Portfolios	387	387	387	387	369	328	295	263
● BlackRock International Equity	-1.0 (45)	13.2 (43)	-1.0 (45)	-1.0 (30)	6.9 (37)	3.7 (68)	6.5 (69)	5.3 (80)
▲ MSCI EAFE Gross	-1.0 (43)	13.3 (41)	-1.0 (43)	-0.8 (28)	7.0 (36)	3.8 (65)	6.6 (66)	5.4 (78)

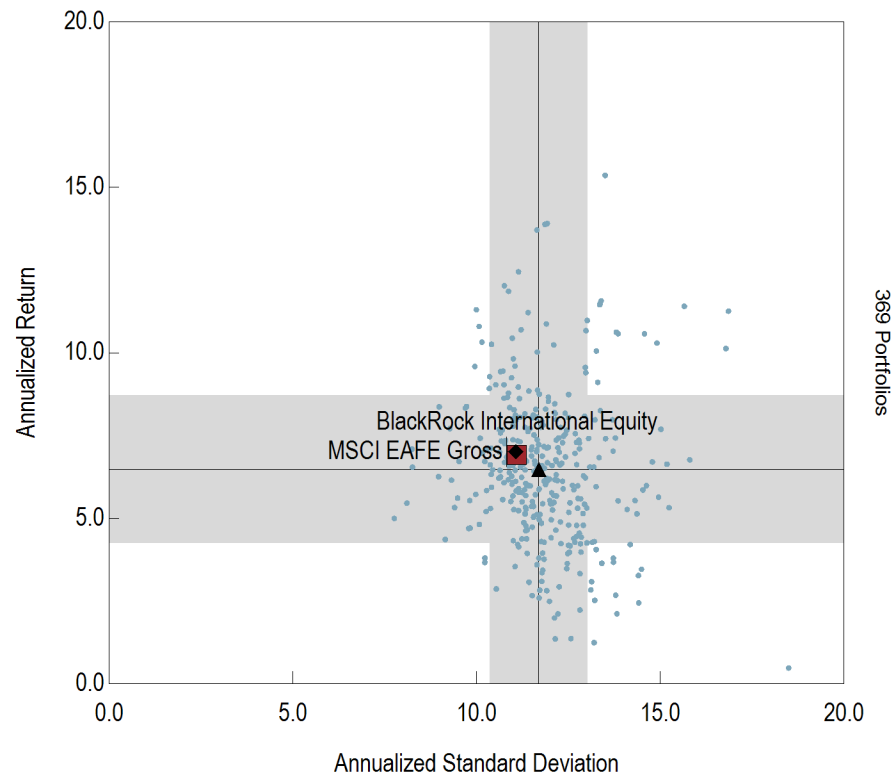
BlackRock International Equity Consecutive Performance Comparison (Gross of Fees)

Period Ending: September 30, 2019



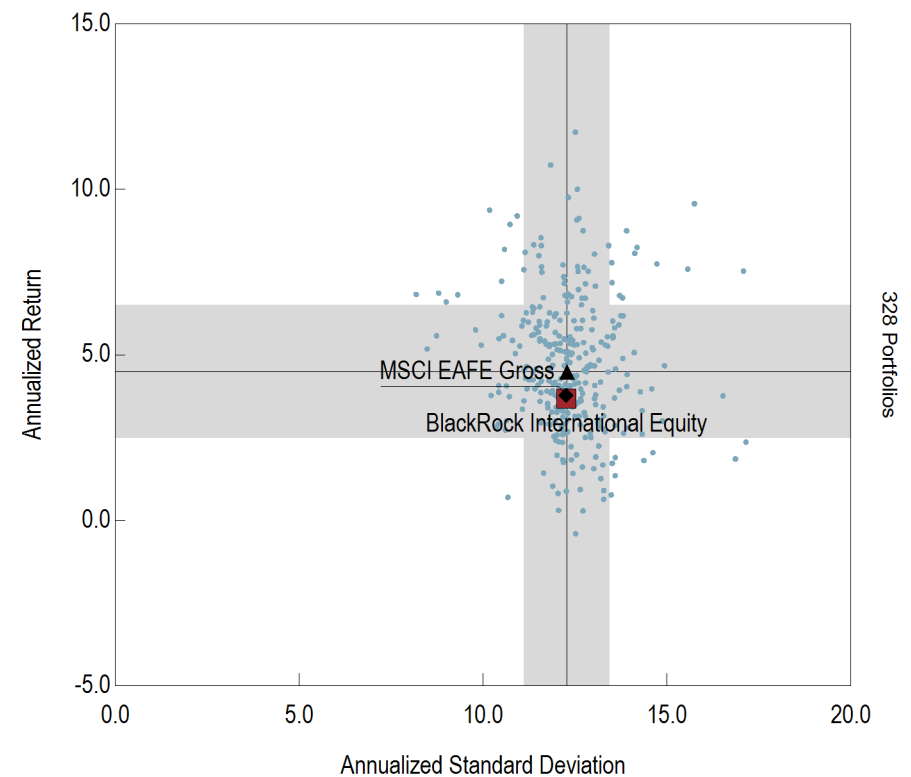
	Return (Rank)									
5th Percentile	-8.0	39.0	8.1	12.6	3.0	36.3	31.7	-5.1	25.7	57.3
25th Percentile	-12.6	31.6	3.4	5.2	-1.9	28.1	23.1	-9.7	16.1	44.0
Median	-15.1	27.0	1.3	1.4	-3.7	24.6	20.4	-12.0	11.7	36.5
75th Percentile	-17.8	24.3	-0.6	-0.9	-5.4	20.5	17.5	-14.5	8.7	30.7
95th Percentile	-22.2	19.7	-4.9	-5.4	-8.6	8.6	13.3	-18.2	4.6	23.7
# of Portfolios	391	370	350	325	314	284	263	278	352	455
● BlackRock International Equity	-13.4 (35)	25.5 (65)	1.5 (47)	-0.5 (67)	-4.7 (64)	23.2 (61)	17.8 (74)	-11.8 (48)	8.1 (79)	32.3 (68)
▲ MSCI EAFE Gross	-13.4 (35)	25.6 (63)	1.5 (47)	-0.4 (66)	-4.5 (60)	23.3 (60)	17.9 (72)	-11.7 (47)	8.2 (78)	32.5 (67)

Annualized Return vs. Annualized Standard Deviation
3 Years Ending September 30, 2019



- BlackRock International Equity
- ◆ MSCI EAFE Gross
- ▲ Universe Median
- 68% Confidence Interval
- eV All EAFE Equity Gross

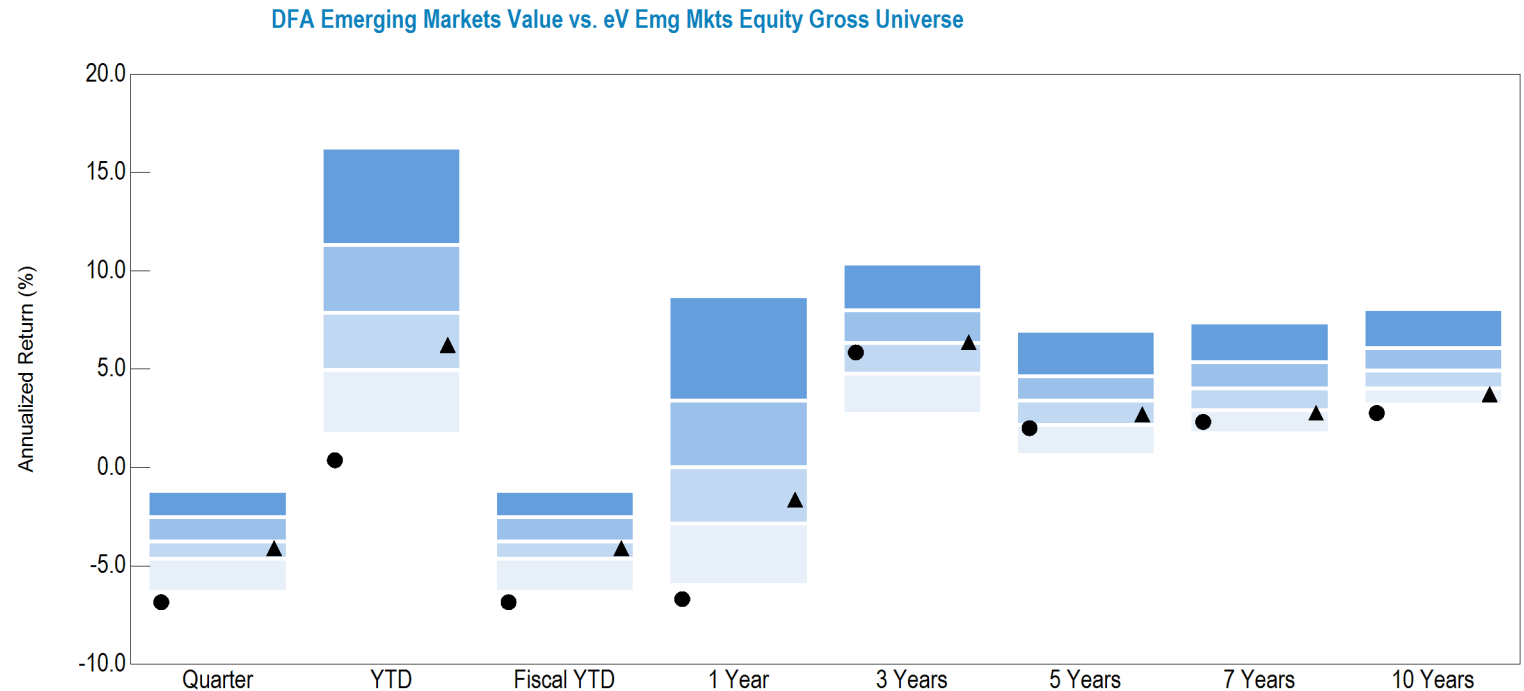
Annualized Return vs. Annualized Standard Deviation
5 Years Ending September 30, 2019



- BlackRock International Equity
- ◆ MSCI EAFE Gross
- ▲ Universe Median
- 68% Confidence Interval
- eV All EAFE Equity Gross

DFA Emerging Markets Value Cumulative Performance Comparison (Gross of Fees)

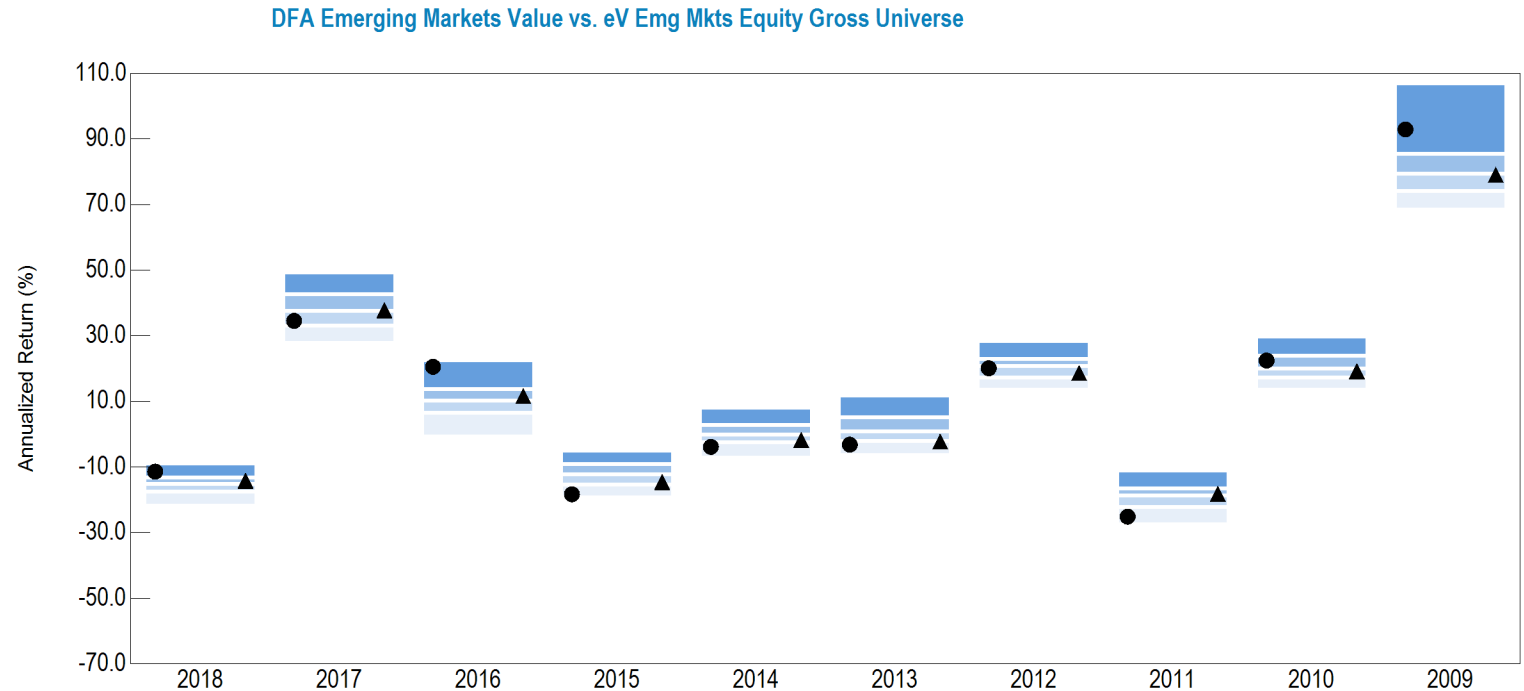
Period Ending: September 30, 2019



	Return (Rank)							
5th Percentile	-1.2	16.2	-1.2	8.7	10.4	6.9	7.4	8.0
25th Percentile	-2.5	11.3	-2.5	3.4	8.0	4.7	5.4	6.1
Median	-3.8	7.9	-3.8	0.0	6.3	3.4	4.0	4.9
75th Percentile	-4.6	5.0	-4.6	-2.8	4.8	2.2	2.9	4.0
95th Percentile	-6.3	1.7	-6.3	-5.9	2.7	0.6	1.7	3.2
# of Portfolios	360	360	360	359	336	296	234	142
● DFA Emerging Markets Value	-6.9 (98)	0.4 (99)	-6.9 (98)	-6.7 (97)	5.8 (59)	2.0 (78)	2.3 (89)	2.8 (98)
▲ MSCI Emerging Markets Gross	-4.1 (59)	6.2 (63)	-4.1 (59)	-1.6 (64)	6.4 (50)	2.7 (63)	2.8 (79)	3.7 (83)

DFA Emerging Markets Value Consecutive Performance Comparison (Gross of Fees)

Period Ending: September 30, 2019

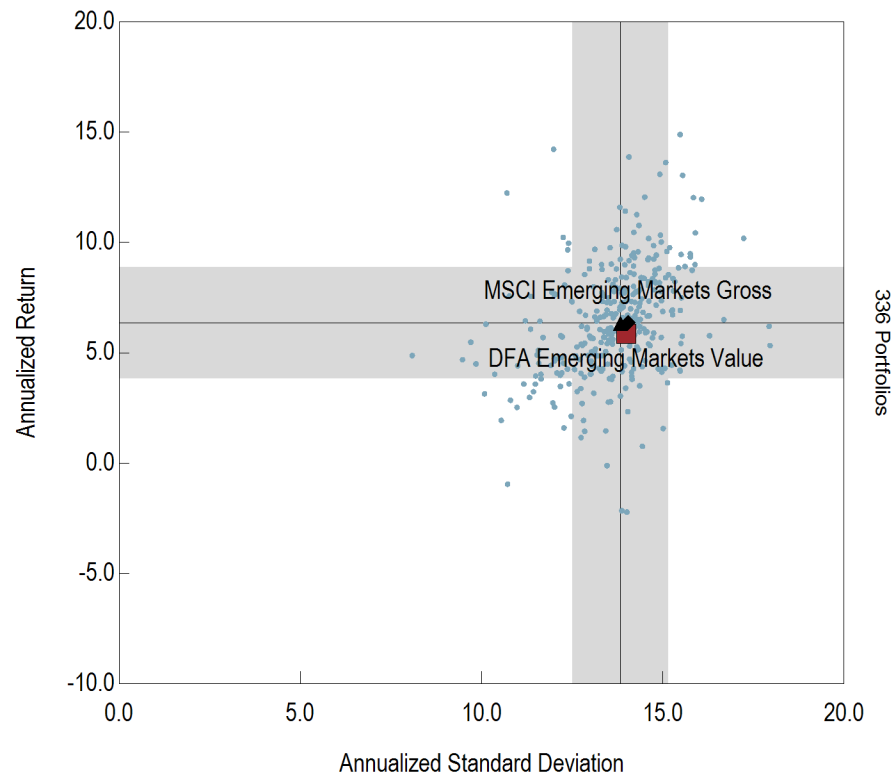


	Return (Rank)									
5th Percentile	-9.0	49.2	22.4	-5.0	8.0	11.7	28.4	-11.1	29.6	106.8
25th Percentile	-13.2	42.8	13.7	-9.0	2.9	5.2	23.0	-16.4	23.9	85.5
Median	-15.2	37.6	10.4	-12.2	-0.1	1.0	20.9	-18.6	20.1	79.5
75th Percentile	-17.4	33.2	6.6	-15.3	-2.4	-2.0	17.3	-22.2	17.3	74.3
95th Percentile	-21.8	27.8	-0.6	-19.2	-7.0	-6.3	13.7	-27.3	13.7	68.5
# of Portfolios	355	343	337	273	251	198	155	139	113	113
● DFA Emerging Markets Value	-11.4 (16)	34.5 (70)	20.5 (7)	-18.3 (92)	-3.9 (84)	-3.2 (84)	20.1 (56)	-25.2 (92)	22.4 (34)	92.9 (12)
▲ MSCI Emerging Markets Gross	-14.2 (37)	37.8 (49)	11.6 (40)	-14.6 (67)	-1.8 (69)	-2.3 (78)	18.6 (68)	-18.2 (45)	19.2 (62)	79.0 (54)

DFA Emerging Markets Value Risk vs Return Three & Five Year (Gross of Fees)

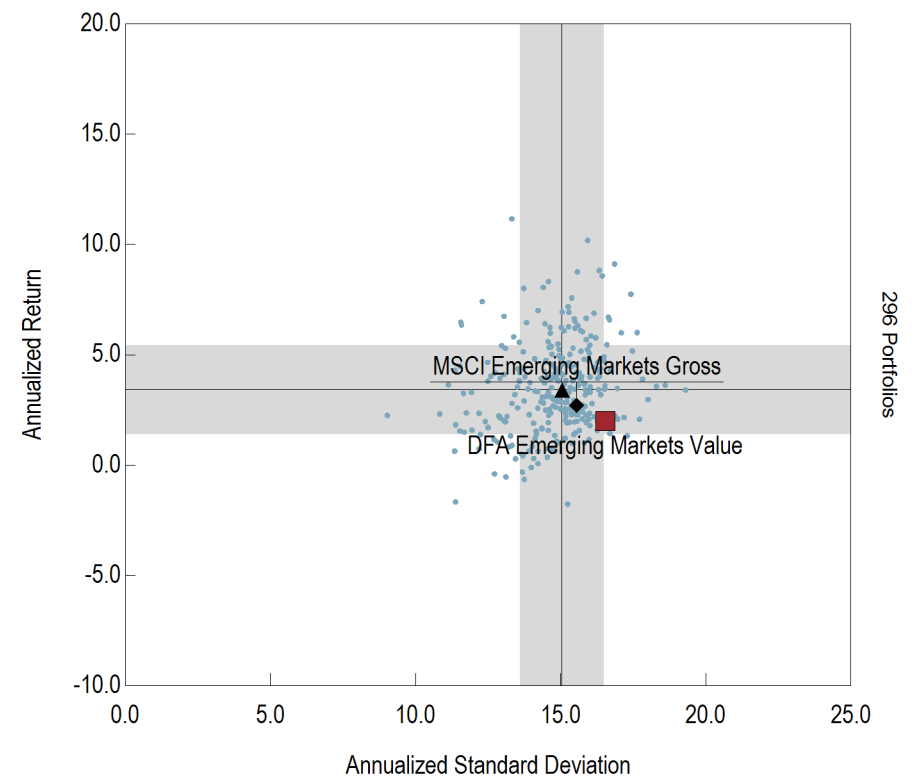
Period Ending: September 30, 2019

Annualized Return vs. Annualized Standard Deviation
3 Years Ending September 30, 2019



- DFA Emerging Markets Value
- ◆ MSCI Emerging Markets Gross
- ▲ Universe Median
- 68% Confidence Interval
- eV Emg Mkts Equity Gross

Annualized Return vs. Annualized Standard Deviation
5 Years Ending September 30, 2019

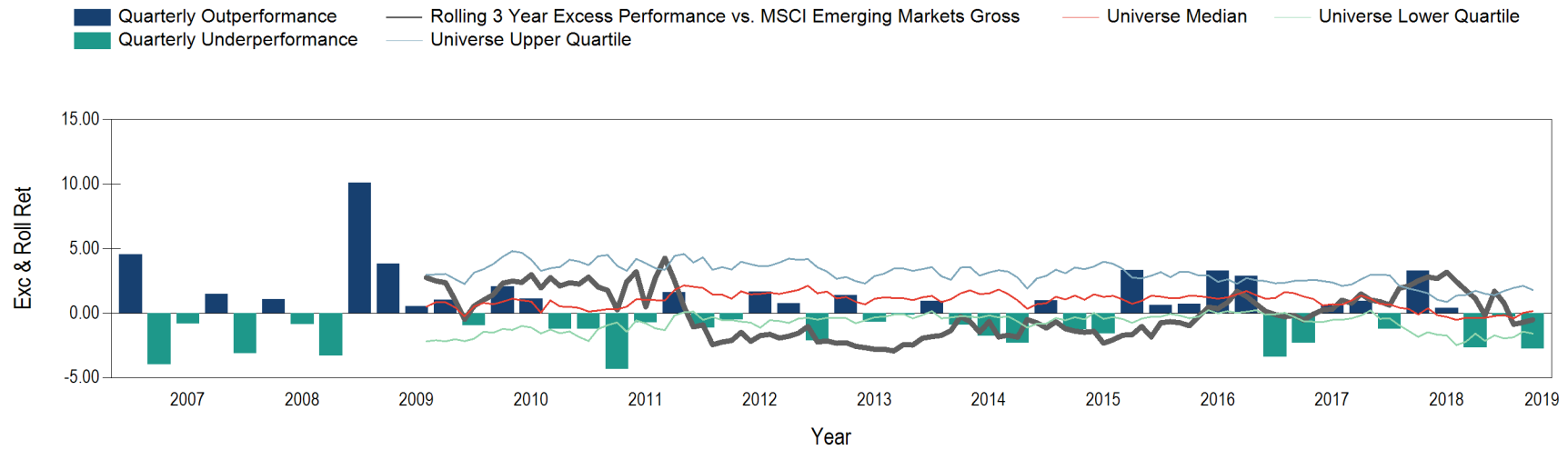


- DFA Emerging Markets Value
- ◆ MSCI Emerging Markets Gross
- ▲ Universe Median
- 68% Confidence Interval
- eV Emg Mkts Equity Gross

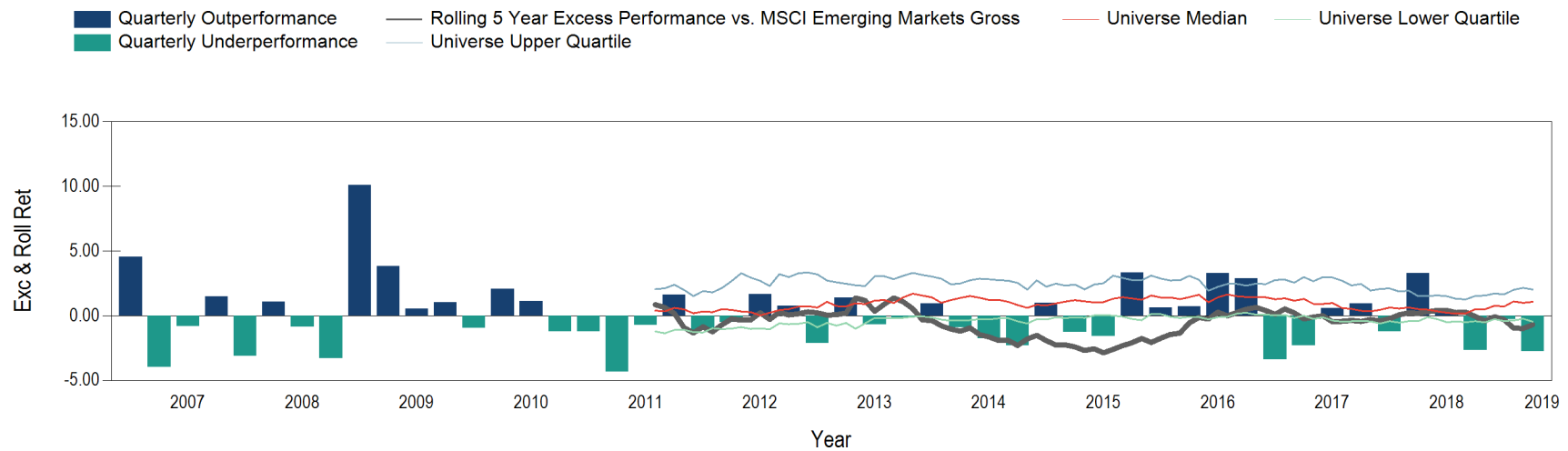
DFA Emerging Markets Value Rolling Return Analysis (Gross of Fees)

Period Ending: September 30, 2019

Rolling 3 Year Annualized Excess Performance



Rolling 5 Year Annualized Excess Performance

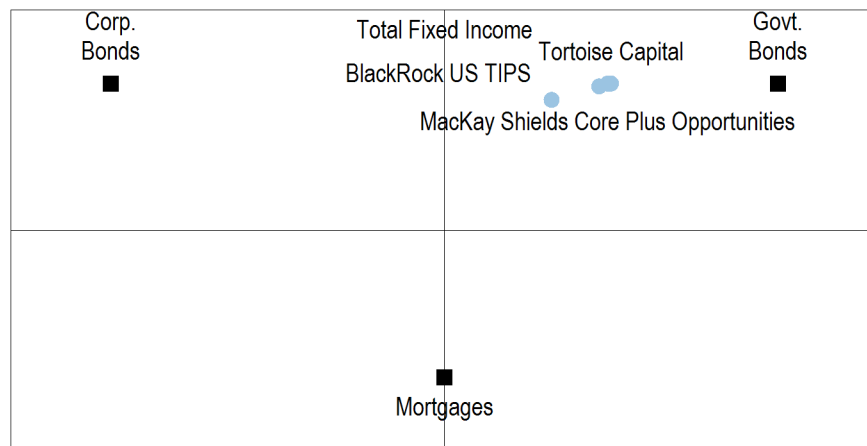


Total Fixed Income Asset Class Overview (Gross of Fees)

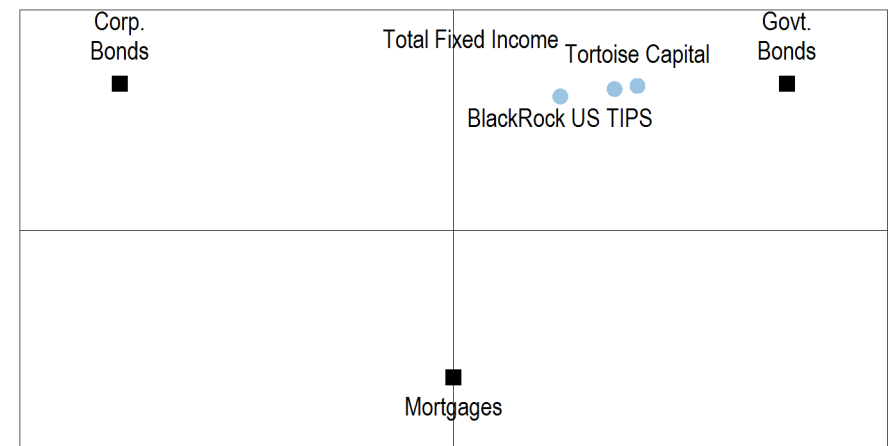
Period Ending: September 30, 2019

	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Fixed Income	243,050,259	2.3	9.3	2.3	9.8	3.5	3.9	5.0	-0.5	4.6	5.1	-0.3	5.9
BBgBarc US Aggregate TR		2.3	8.5	2.3	10.3	2.9	3.4	3.7	0.0	3.5	2.6	0.6	6.0
InvMetrics Public DB Total Fix Inc Gross Rank		9	19	9	21	48	22	38	58	59	41	55	15
Tortoise Capital	101,659,060	2.5	9.7	2.5	10.6	3.9	4.4	5.4	0.2	4.5	5.1	1.2	7.0
BBgBarc US Aggregate TR		2.3	8.5	2.3	10.3	2.9	3.4	3.7	0.0	3.5	2.6	0.6	6.0
eV US Core Plus Fixed Inc Gross Rank		26	45	26	39	54	17	32	24	70	45	15	16
MackKay Shields Core Plus Opportunities	98,375,740	2.6	9.6	2.6	10.3	3.7	--	--	-0.7	4.9	5.1	--	--
BBgBarc US Aggregate TR		2.3	8.5	2.3	10.3	2.9	--	--	0.0	3.5	2.6	--	--
eV US Core Plus Fixed Inc Gross Rank		19	49	19	61	68	--	--	69	54	46	--	--
BlackRock US TIPS	43,015,460	1.3	7.6	1.3	7.2	2.4	2.6	3.6	-1.1	3.2	4.8	-1.2	3.6
BBgBarc US TIPS TR		1.3	7.6	1.3	7.1	2.2	2.4	3.5	-1.3	3.0	4.7	-1.4	3.6
eV US TIPS / Inflation Fixed Inc Gross Rank		39	51	39	29	45	45	56	47	46	37	43	45

Fixed Income Style Map
3 Years Ending September 30, 2019



Fixed Income Style Map
5 Years Ending September 30, 2019



Total Fixed Income Asset Class Overview (Net of Fees)

Period Ending: September 30, 2019

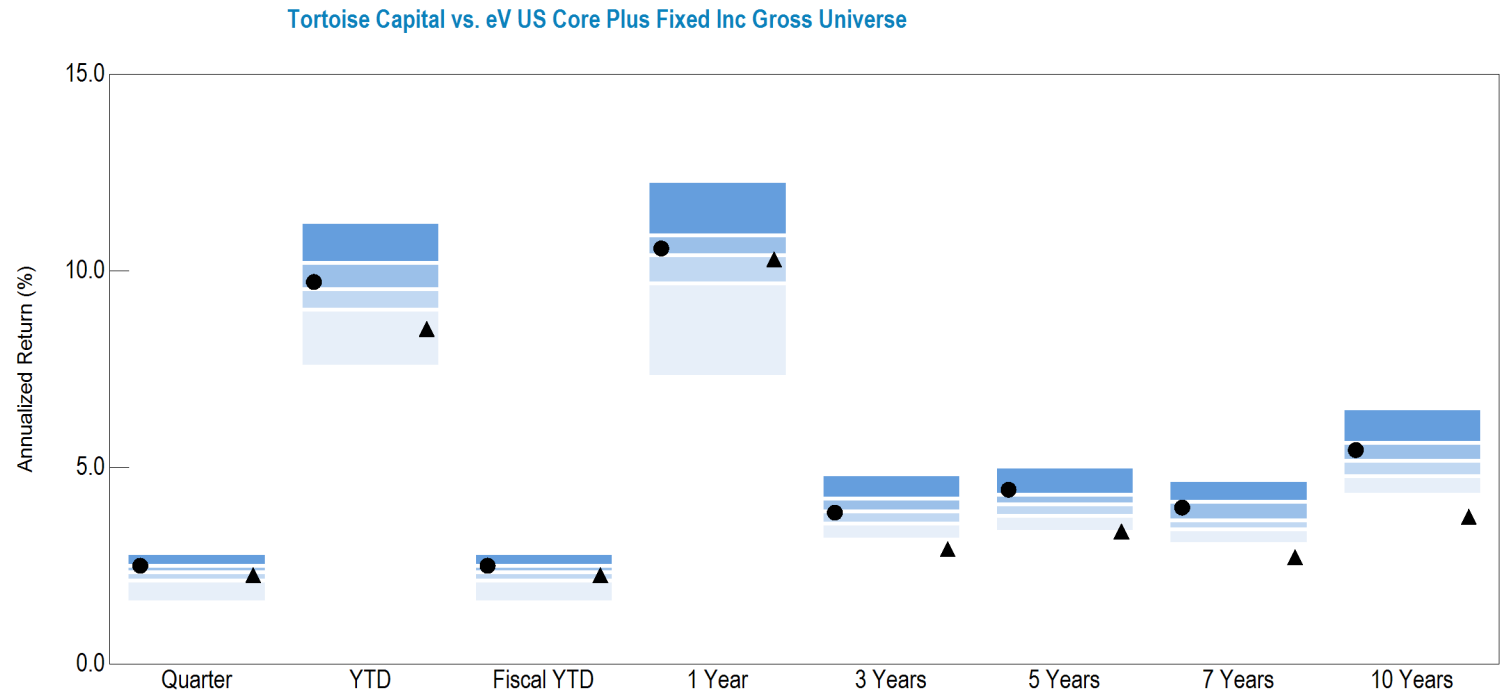
	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Fixed Income	243,050,259	2.3	9.1	2.3	9.5	3.2	3.6	4.7	-0.8	4.3	4.8	-0.6	5.6
BBgBarc US Aggregate TR		2.3	8.5	2.3	10.3	2.9	3.4	3.7	0.0	3.5	2.6	0.6	6.0
Tortoise Capital	101,659,060	2.4	9.5	2.4	10.3	3.6	4.1	5.1	-0.1	4.3	4.8	0.9	6.7
BBgBarc US Aggregate TR		2.3	8.5	2.3	10.3	2.9	3.4	3.7	0.0	3.5	2.6	0.6	6.0
MackKay Shields Core Plus Opportunities	98,375,740	2.5	9.3	2.5	9.9	3.3	--	--	-1.0	4.5	4.7	--	--
BBgBarc US Aggregate TR		2.3	8.5	2.3	10.3	2.9	--	--	0.0	3.5	2.6	--	--
BlackRock US TIPS	43,015,460	1.3	7.6	1.3	7.1	2.3	2.5	3.5	-1.2	3.2	4.8	-1.3	3.6
BBgBarc US TIPS TR		1.3	7.6	1.3	7.1	2.2	2.4	3.5	-1.3	3.0	4.7	-1.4	3.6

Correlation Matrix Last 5 Years

	Total Fixed Income	Tortoise Capital	MackKay Shields Core Plus Opportunities	BlackRock US TIPS	BBgBarc US Aggregate TR
Total Fixed Income	1.00	--	--	--	--
Tortoise Capital	0.99	1.00	--	--	--
MackKay Shields Core Plus Opportunities	--	--	--	--	--
BlackRock US TIPS	0.87	0.82	--	1.00	--
BBgBarc US Aggregate TR	0.94	0.96	--	0.77	1.00

Tortoise Capital Cumulative Performance Comparison (Gross of Fees)

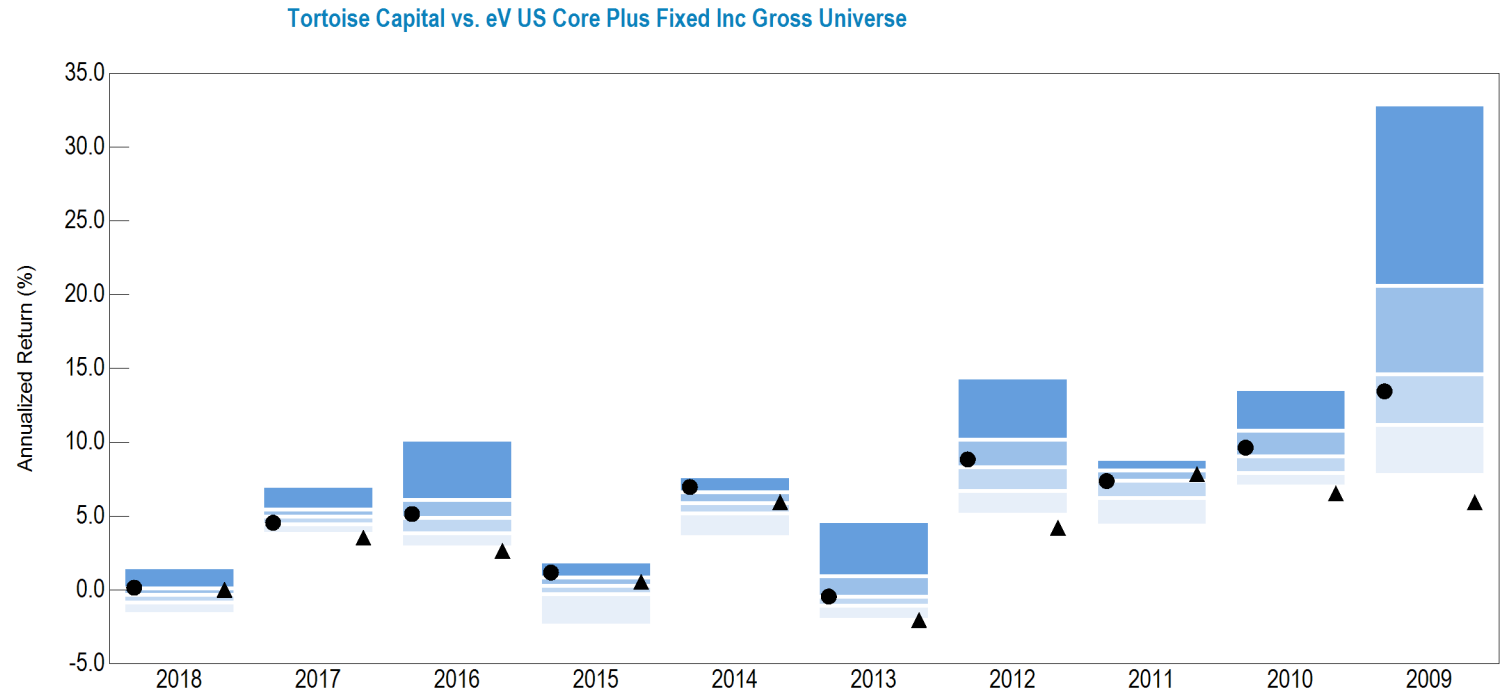
Period Ending: September 30, 2019



	Return (Rank)							
5th Percentile	2.8	11.2	2.8	12.3	4.8	5.0	4.7	6.5
25th Percentile	2.5	10.2	2.5	10.9	4.2	4.3	4.1	5.6
Median	2.3	9.5	2.3	10.4	3.9	4.1	3.7	5.2
75th Percentile	2.1	9.0	2.1	9.7	3.6	3.8	3.4	4.8
95th Percentile	1.6	7.6	1.6	7.3	3.2	3.4	3.1	4.3
# of Portfolios	115	115	115	115	113	109	105	98
● Tortoise Capital	2.5 (26)	9.7 (45)	2.5 (26)	10.6 (39)	3.9 (54)	4.4 (17)	4.0 (29)	5.4 (32)
▲ BBgBarc US Aggregate TR	2.3 (58)	8.5 (87)	2.3 (58)	10.3 (57)	2.9 (97)	3.4 (95)	2.7 (99)	3.7 (99)

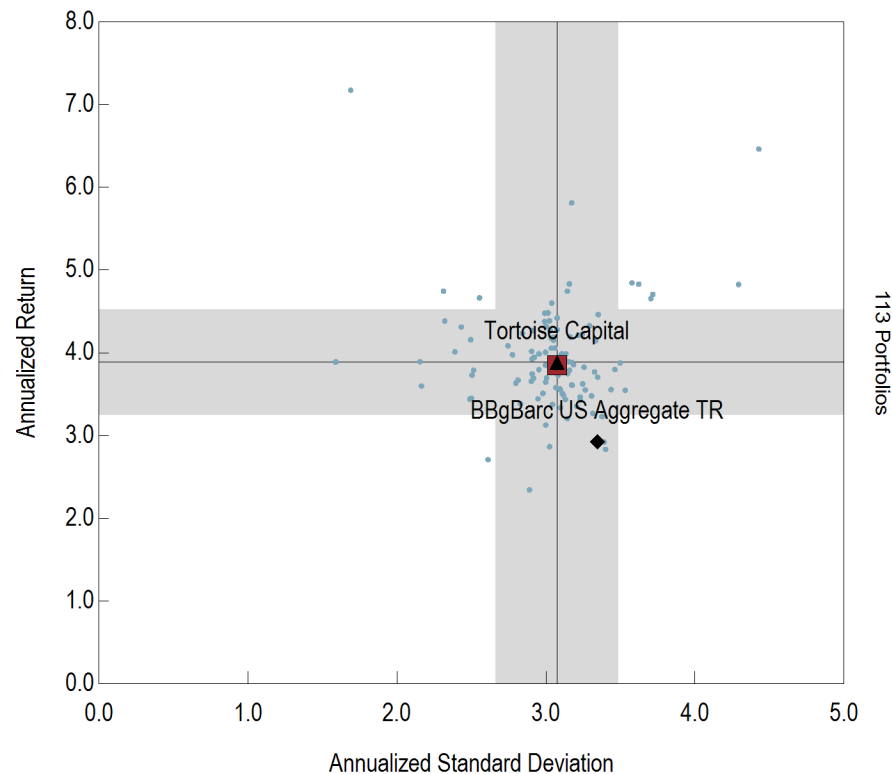
Tortoise Capital
Consecutive Performance Comparison (Gross of Fees)

Period Ending: September 30, 2019



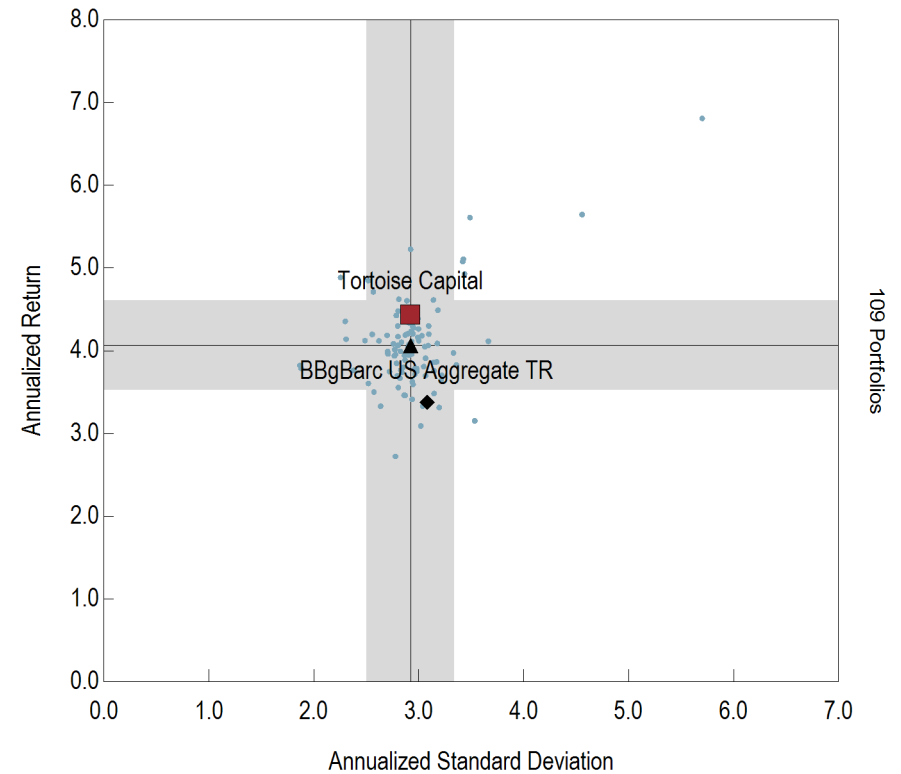
	Return (Rank)									
5th Percentile	1.5	7.0	10.1	1.9	7.7	4.6	14.4	8.8	13.6	32.9
25th Percentile	0.1	5.5	6.1	0.9	6.7	1.0	10.2	8.1	10.8	20.6
Median	-0.3	5.0	4.9	0.3	5.9	-0.4	8.3	7.4	9.1	14.6
75th Percentile	-0.8	4.5	3.9	-0.2	5.2	-1.0	6.7	6.3	8.0	11.2
95th Percentile	-1.6	3.8	2.9	-2.4	3.6	-2.0	5.1	4.4	7.0	7.8
# of Portfolios	120	122	134	115	118	116	124	118	123	128
● Tortoise Capital	0.2 (24)	4.5 (70)	5.1 (45)	1.2 (15)	7.0 (16)	-0.4 (52)	8.8 (45)	7.4 (51)	9.6 (40)	13.5 (55)
▲ BBgBarc US Aggregate TR	0.0 (31)	3.5 (99)	2.6 (97)	0.6 (42)	6.0 (50)	-2.0 (96)	4.2 (97)	7.8 (37)	6.5 (97)	5.9 (99)

Annualized Return vs. Annualized Standard Deviation
3 Years Ending September 30, 2019



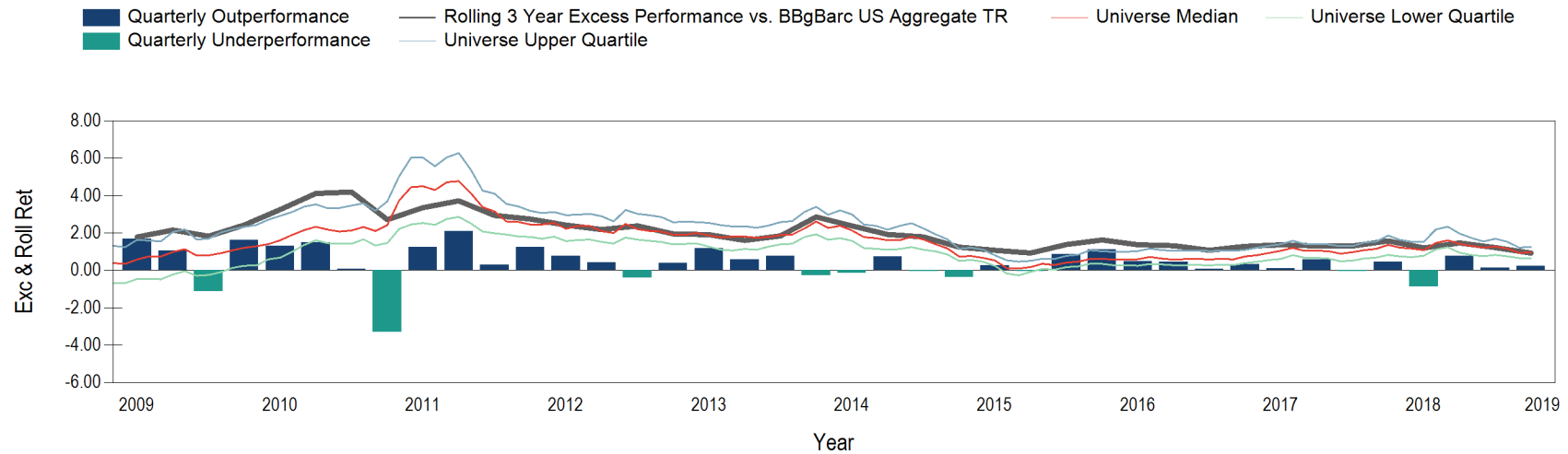
- Tortoise Capital
- ◆ BBgBarc US Aggregate TR
- ▲ Universe Median
- 68% Confidence Interval
- eV US Core Plus Fixed Inc Gross

Annualized Return vs. Annualized Standard Deviation
5 Years Ending September 30, 2019

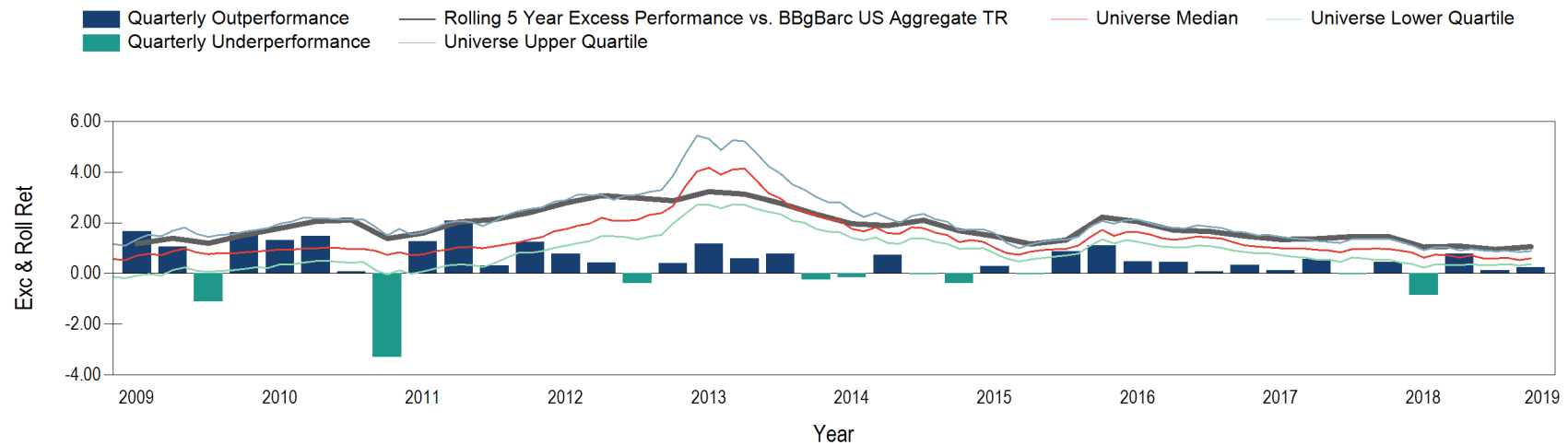


- Tortoise Capital
- ◆ BBgBarc US Aggregate TR
- ▲ Universe Median
- 68% Confidence Interval
- eV US Core Plus Fixed Inc Gross

Rolling 3 Year Annualized Excess Performance



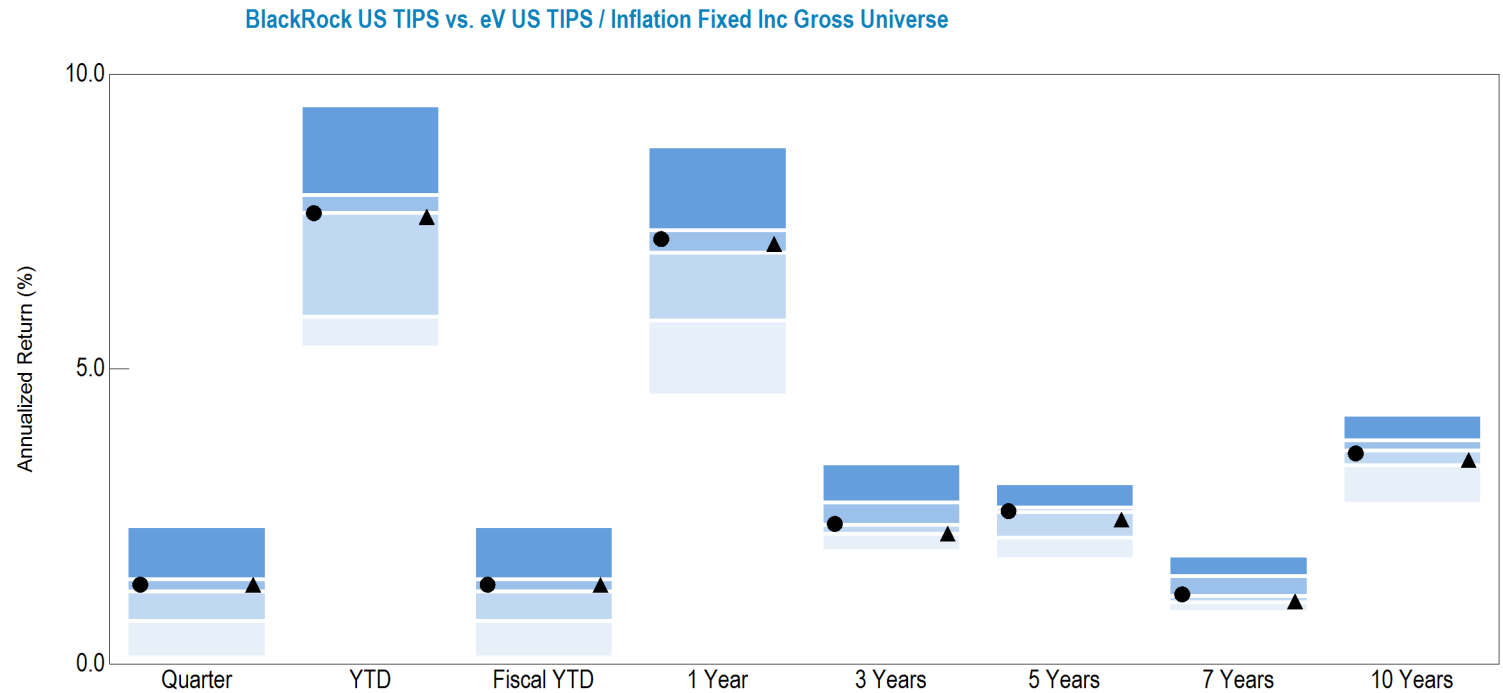
Rolling 5 Year Annualized Excess Performance



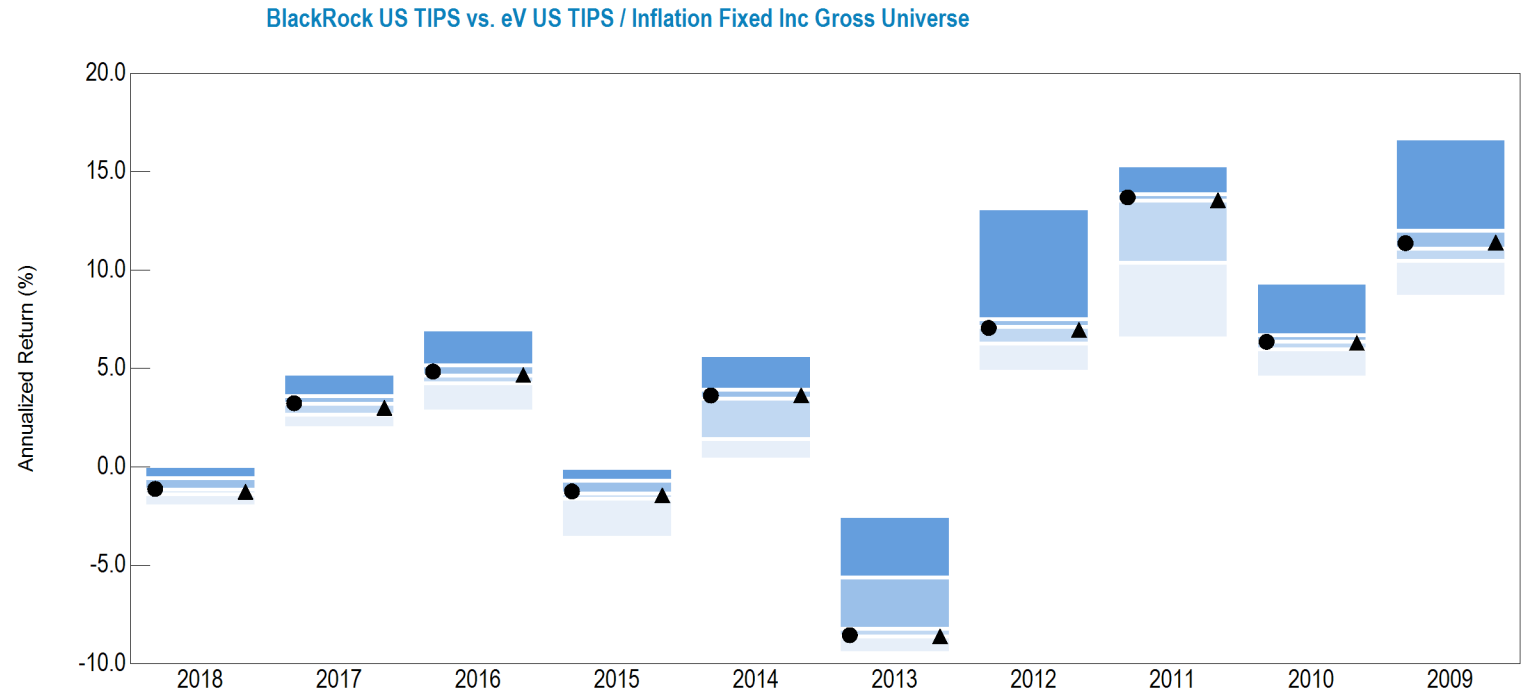
BlackRock US TIPS

Cumulative Performance Comparison (Gross of Fees)

Period Ending: September 30, 2019

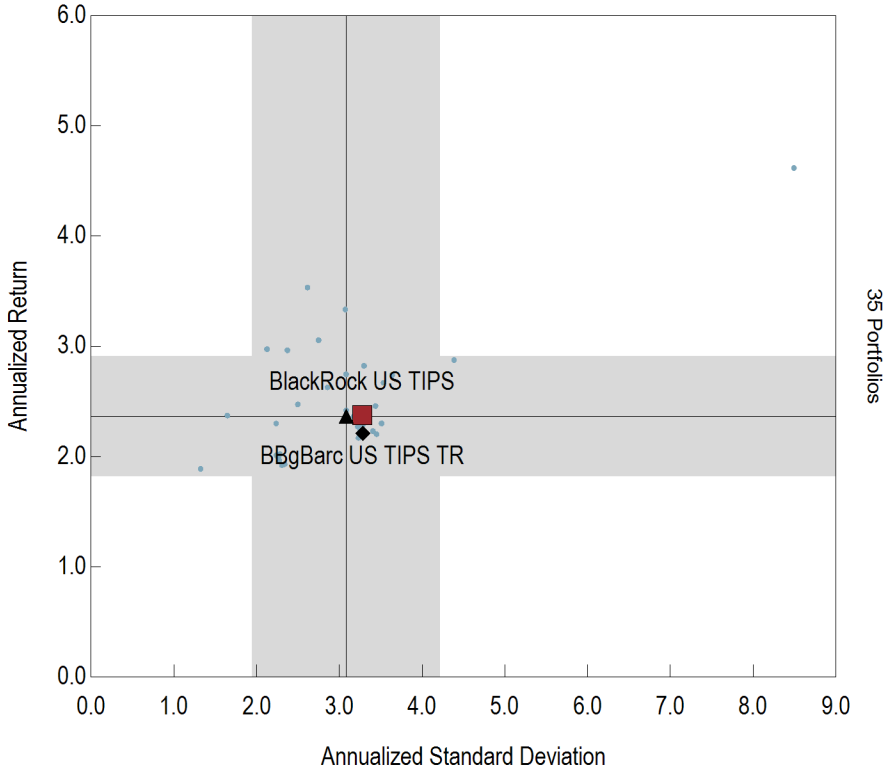


	Return (Rank)							
5th Percentile	2.3	9.5	2.3	8.8	3.4	3.1	1.8	4.2
25th Percentile	1.4	8.0	1.4	7.4	2.7	2.7	1.5	3.8
Median	1.2	7.6	1.2	7.0	2.4	2.6	1.2	3.6
75th Percentile	0.7	5.9	0.7	5.8	2.2	2.2	1.0	3.4
95th Percentile	0.1	5.4	0.1	4.6	1.9	1.8	0.9	2.7
# of Portfolios	35	35	35	35	35	33	33	27
● BlackRock US TIPS	1.3 (39)	7.6 (51)	1.3 (39)	7.2 (29)	2.4 (45)	2.6 (45)	1.2 (44)	3.6 (56)
▲ BBgBarc US TIPS TR	1.3 (39)	7.6 (60)	1.3 (39)	7.1 (34)	2.2 (76)	2.4 (65)	1.1 (71)	3.5 (69)



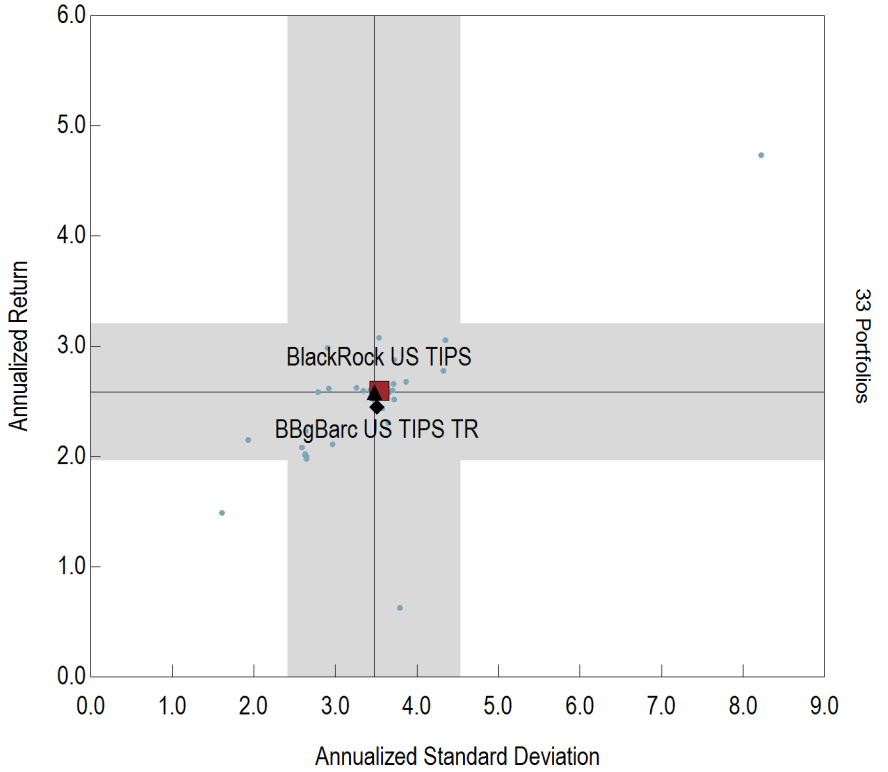
	Return (Rank)									
5th Percentile	0.0	4.7	7.0	-0.1	5.7	-2.5	13.1	15.3	9.4	16.7
25th Percentile	-0.6	3.6	5.2	-0.7	4.0	-5.6	7.5	13.9	6.7	12.0
Median	-1.1	3.2	4.7	-1.3	3.5	-8.2	7.1	13.5	6.4	11.1
75th Percentile	-1.4	2.7	4.3	-1.6	1.4	-8.6	6.3	10.4	6.0	10.5
95th Percentile	-2.0	2.0	2.8	-3.6	0.4	-9.4	4.9	6.6	4.6	8.7
# of Portfolios	41	38	42	44	50	43	43	47	39	37
● BlackRock US TIPS	-1.1 (47)	3.2 (46)	4.8 (37)	-1.2 (43)	3.6 (45)	-8.5 (62)	7.1 (59)	13.7 (37)	6.4 (52)	11.4 (36)
▲ BBgBarc US TIPS TR	-1.3 (65)	3.0 (71)	4.7 (47)	-1.4 (59)	3.6 (44)	-8.6 (76)	7.0 (66)	13.6 (49)	6.3 (57)	11.4 (35)

Annualized Return vs. Annualized Standard Deviation
3 Years Ending September 30, 2019



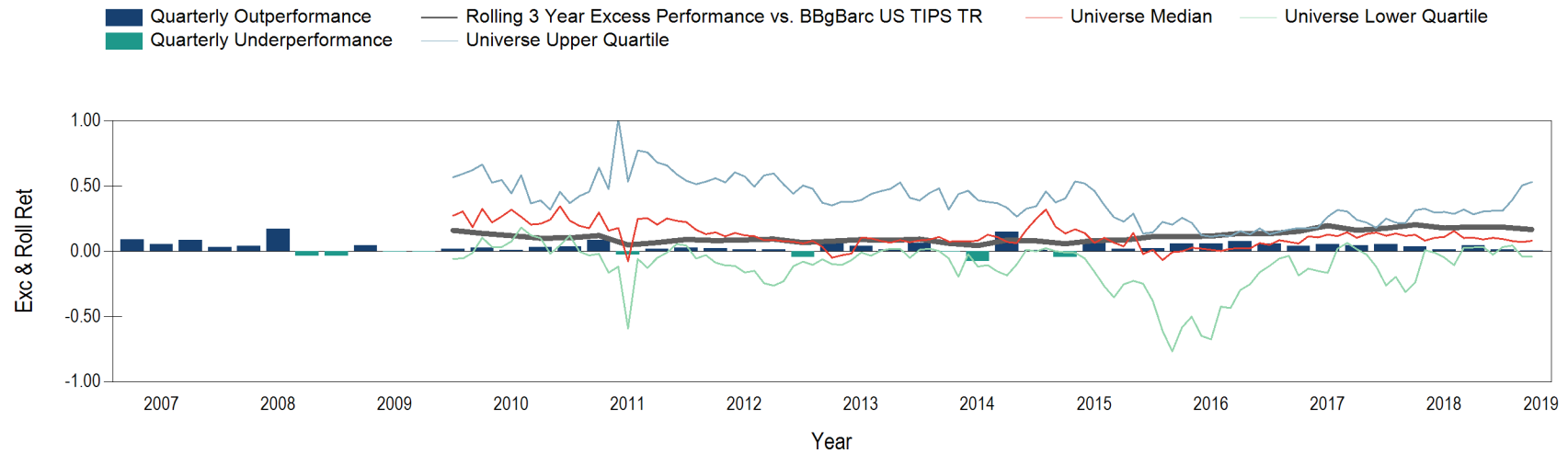
- BlackRock US TIPS
- ◆ BBgBarc US TIPS TR
- ▲ Universe Median
- 68% Confidence Interval
- eV US TIPS / Inflation Fixed Inc Gross

Annualized Return vs. Annualized Standard Deviation
5 Years Ending September 30, 2019

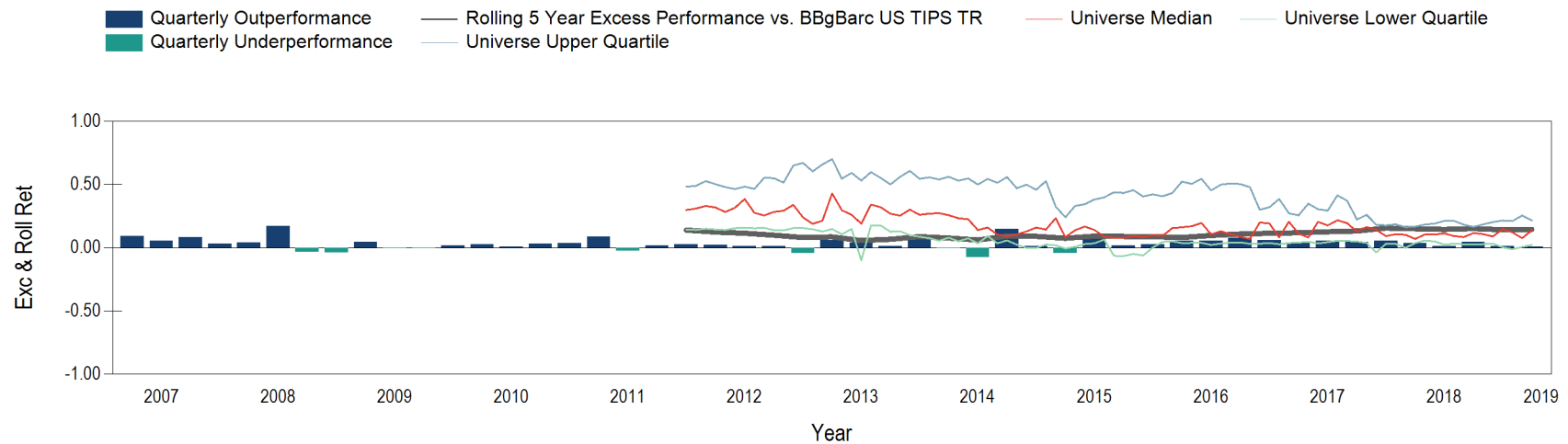


- BlackRock US TIPS
- ◆ BBgBarc US TIPS TR
- ▲ Universe Median
- 68% Confidence Interval
- eV US TIPS / Inflation Fixed Inc Gross

Rolling 3 Year Annualized Excess Performance



Rolling 5 Year Annualized Excess Performance

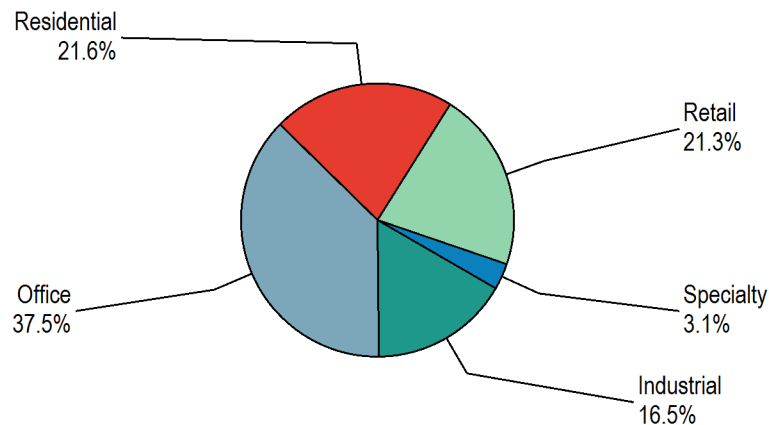


Total Real Estate Asset Class Overview (Gross of Fees)

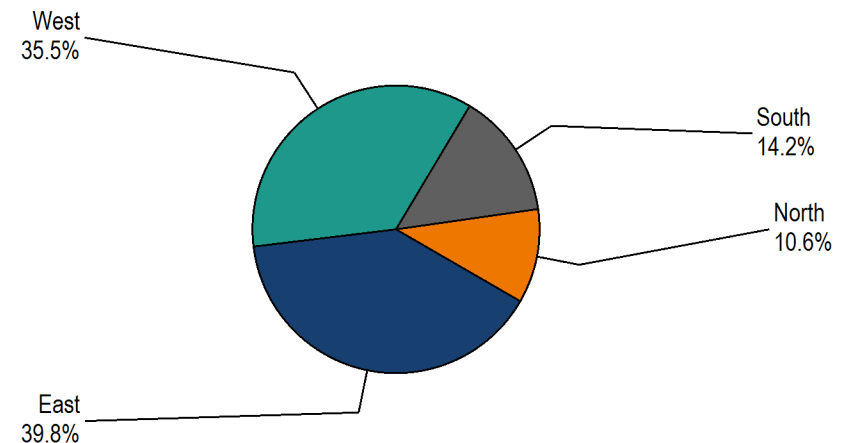
Period Ending: September 30, 2019

	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Real Estate	112,066,673	0.7	3.8	0.7	5.3	6.0	8.9	10.5	7.5	5.8	7.5	16.1	13.0
NCREIF ODCE		1.3	3.8	1.3	5.6	6.6	8.4	9.7	7.1	7.0	8.0	13.3	11.8
NCREIF-ODCE		1.3	3.8	1.3	5.6	7.3	9.3	10.9	8.3	7.6	8.8	15.0	12.5
ASB Real Estate	36,283,608	-0.8	2.2	-0.8	3.4	4.5	7.8	--	6.6	4.0	5.6	17.3	13.5
NCREIF-ODCE		1.3	3.8	1.3	5.6	7.3	9.3	--	8.3	7.6	8.8	15.0	12.5
NCREIF Property Index		1.4	4.8	1.4	6.2	6.8	8.6	--	6.7	7.0	8.0	13.3	11.8
Clarion Lion	37,473,444	1.4	4.4	1.4	6.3	7.5	10.0	11.5	8.6	7.9	9.1	15.7	13.2
NCREIF-ODCE		1.3	3.8	1.3	5.6	7.3	9.3	10.9	8.3	7.6	8.8	15.0	12.5
NCREIF Property Index		1.4	4.8	1.4	6.2	6.8	8.6	9.8	6.7	7.0	8.0	13.3	11.8
ARA American Strategic Value Realty	36,533,695	1.5	5.4	1.5	7.0	--	--	--	--	--	--	--	--
NCREIF ODCE +2%		1.8	5.3	1.8	7.7	--	--	--	--	--	--	--	--
1221 State St. Corp	1,775,926	0.0	0.0	0.0	0.0	0.0	3.3	1.1	0.0	0.0	17.5	0.0	0.0

Property Type Allocation
Allocation as of September 30, 2019



Geographic Diversification
Allocation as of September 30, 2019



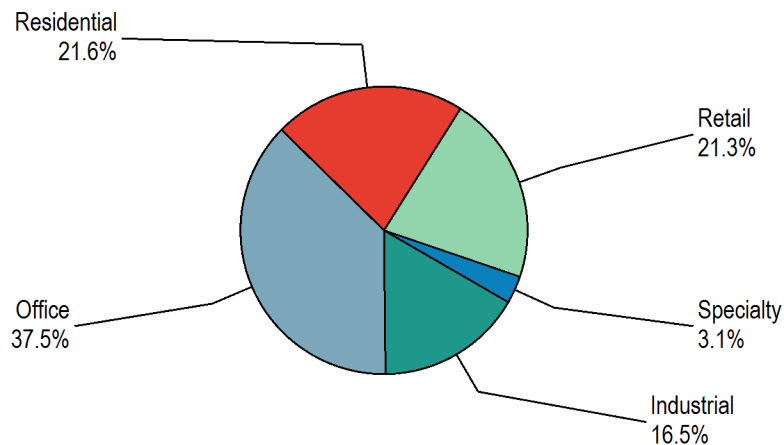
ARA American Strategic Value Realty funded 1/4/2018.

Total Real Estate Asset Class Overview (Net of Fees)

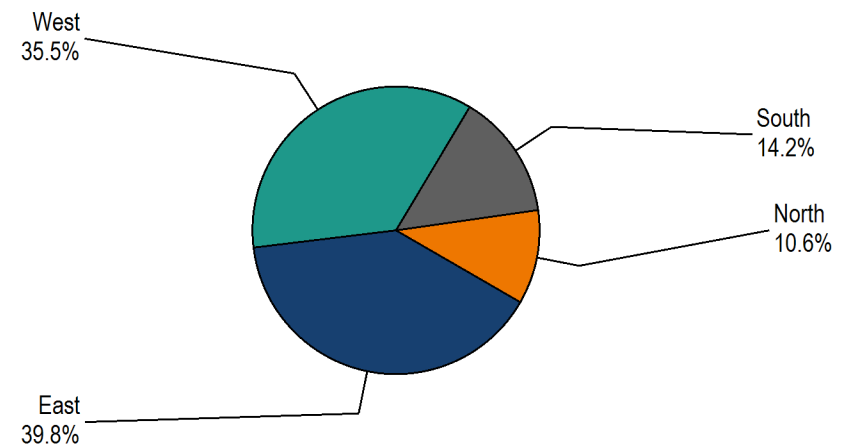
Period Ending: September 30, 2019

	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Real Estate	112,066,673	0.7	3.8	0.7	5.3	6.0	8.4	9.8	7.5	5.8	6.5	15.0	11.6
NCREIF ODCE		1.3	3.8	1.3	5.6	6.6	8.4	9.7	7.1	7.0	8.0	13.3	11.8
NCREIF-ODCE		1.3	3.8	1.3	5.6	7.3	9.3	10.9	8.3	7.6	8.8	15.0	12.5
ASB Real Estate	36,283,608	-0.8	2.2	-0.8	3.4	4.4	7.3	--	6.6	4.0	4.6	16.2	12.5
NCREIF-ODCE		1.3	3.8	1.3	5.6	7.3	9.3	--	8.3	7.6	8.8	15.0	12.5
NCREIF Property Index		1.4	4.8	1.4	6.2	6.8	8.6	--	6.7	7.0	8.0	13.3	11.8
Clarion Lion	37,473,444	1.4	4.4	1.4	6.3	7.4	9.5	10.7	8.6	7.9	8.0	14.6	12.2
NCREIF-ODCE		1.3	3.8	1.3	5.6	7.3	9.3	10.9	8.3	7.6	8.8	15.0	12.5
NCREIF Property Index		1.4	4.8	1.4	6.2	6.8	8.6	9.8	6.7	7.0	8.0	13.3	11.8
ARA American Strategic Value Realty	36,533,695	1.5	5.4	1.5	7.0	--	--	--	--	--	--	--	--
NCREIF ODCE +2%		1.8	5.3	1.8	7.7	--	--	--	--	--	--	--	--
1221 State St. Corp	1,775,926	0.0	0.0	0.0	0.0	0.0	3.3	1.1	0.0	0.0	17.5	0.0	0.0

Property Type Allocation
Allocation as of September 30, 2019



Geographic Diversification
Allocation as of September 30, 2019



ARA American Strategic Value Realty funded 1/4/2018.

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.

Manager Line Up

Manager	Inception Date	Data Source	Manager	Inception Date	Data Source
BlackRock Russell 3000	12/10/2015	J.P. Morgan	1221 State Street Corp	9/30/2008	ICERS/Union Bank
BlackRock International Equity	7/3/2003	J.P. Morgan	Cash	-	J.P. Morgan
DFA Emerging Markets Value	1/11/2007	J.P. Morgan	HarbourVest IX-Buyout	2011 ¹	HarbourVest
Harding Loevner	7/5/2016	Harding Loevner	HarbourVest IX-Credit	2011 ¹	HarbourVest
Bradford & Marzec Fixed (Tortoise Capital)	12/1/1992	J.P. Morgan	HarbourVest International VI	2008 ¹	HarbourVest
MacKay Shields Core Plus Ops	3/2/2015	CITCO	Harbourvest IX-Venture	2011 ¹	HarbourVest
BlackRock US TIPS	4/11/2007	J.P. Morgan	Harbourvest 2017 Global	2017 ¹	HarbourVest
ASB Real Estate	12/31/2012	ASB Real Estate	Harbourvest 2018 Global	2018 ¹	HarbourVest
Clarion Lion	12/31/2006	Clarion Lion	KKR Mezzanine	2010 ¹	KKR
Portfolio Advisors	10/31/2017	Portfolio Advisors	PIMCO BRAVO	2011 ¹	PIMCO
			ARA American Strategic Value Realty	1/4/2018	ARA

¹Represents fund vintage year.

Policy & Custom Index Composition

Policy Index (10/1/2018-Current)	29% Russell 3000, 24% MSCI ACWI ex USA Gross, 27% BBgBarc Aggregate, 10% NCREIF Property, 5% Russell 3000 +3% (Lagged), 5% BBgBarc High Yield +2% (Lagged).
Policy Index (10/1/2016-9/30/2018)	29% Russell 3000, 24% MSCI ACWI ex USA Gross, 27% BBgBarc Aggregate, 5% NCREIF Property, 5% NCREIF Property +2%, 5% Russell 3000 +3% (Lagged), 5% BBgBarc High Yield +2% (Lagged).
Policy Index (7/1/2014-9/30/2016)	29% Russell 3000, 25% MSCI ACWI ex-US (Gross), 30% Barclays U.S. Aggregate, 6% NCREIF Property Index, 5% Bloomberg Commodity Index, 5% Russell 3000 +3% (Lagged).

Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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