

PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS



PERIOD ENDING: SEPTEMBER 30, 2016

Investment Performance Review for

**Imperial County Employees' Retirement System** 

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# 3<sup>rd</sup> quarter summary

#### THE ECONOMIC CLIMATE

- The U.S. labor market continues to improve but at a slower pace. Real wage growth has risen but not as quickly as other periods of similar labor market tightness. Consumer expenditures remain the primary positive contributor to GDP growth. p. 8, 9
- U.S. inflation has risen steadily with Core CPI at 2.3%
   YoY as of August. Energy and gasoline prices continue
   to weigh on the Headline CPI figure of 1.1% YoY. p. 13
- The presidential election approaches. There has historically been a weak relationship between election outcomes and market performance. This election appears to have unique characteristics and may cause more unpredictable effects. p. 18

#### MARKET PORTFOLIO IMPACTS

Central bank discussions indicate we may be nearing fiscal expansion as a next form of policy accommodation. As fiscal policies are typically less analyzed and less understood by investors, markets may be more prone to surprise in this environment.
 p. 20

#### THE INVESTMENT CLIMATE

- U.S. corporate earnings are expected to decline by
   -2.1%, which would be the sixth consecutive
   quarter of YoY decline. Almost all of this decline is
   attributable to energy sector weakness. p. 30
- Low inflation and low bond yields may help to explain higher than usual equity valuations.
   However, this does not negate the fact that higher equity valuations historically have materially reduced subsequent returns. p. 35

## **ASSET ALLOCATION ISSUES**

- We continue to remain underweight risk and believe that downside market potential outweighs upside market potential. p. 29
- Emerging market earnings per share growth turned positive in 2016, reversing a 5-year downward trend. Valuations remain below average on a relative basis and upside potential seems attractive. Investors may consider moving to an overweight in emerging market equities, though risks should be carefully considered. p. 33

We remain underweight to risk

Investors should be watchful of corporate earnings, and U.S. inflation trends



# What drove the market in Q3?

## "FED STANDS PAT, BUT SAYS CASE FOR RATE INCREASE HAS STRENGTHENED"

**December Rate Hike Expectations** 

Apr 29th	May 31st	June 30th	July 29th	Aug 31st	Sep 30th
41%	42%	9%	31%	45%	51%

Source: WSJ, September 22<sup>nd</sup> 2016

## **"U.S. GOVERNMENT BONDS RALLY AS CENTRAL BANKS CALM INVESTORS"**

10-Year Treasury Yield

Aug 26th	Sep 2nd	Sep 9th	Sep 16th	Sep 23rd	Sep 30 <sup>th</sup>
1.63%	1.60%	1.67%	1.69%	1.62%	1.59%

Source: WSJ, September 22<sup>nd</sup> 2016

## "ELECTION UNCERTAINTY WEIGHS ON MARKETS"

## **U.S. Presidential Election Polls**

Marc	March 31st June 30th		Septemb	per 30th	
Trump	Clinton	Trump	Clinton	Trump	Clinton
39.1%	49.7%	39.8%	44.6%	44.4%	47.5%

Source: CNBC, September 27th 2016

## "POUND STERLING FALLS BELOW \$1.31 HITTING NEW 31-YEAR LOW"

## **GBP/USD**

Apr 29th	May 31st	June 30th	July 29th	Aug 31st	Sep 30th	
\$1.46	\$1.45	\$1.32	\$1.33	\$1.31	\$1.30	

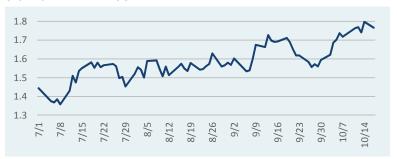
Source: The Independent, July 5<sup>th</sup> 2016

## **DECEMBER RATE HIKE EXPECTATIONS**



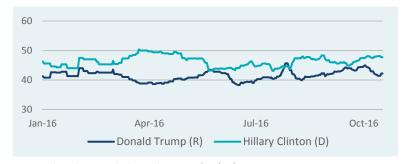
Source: Bloomberg, as of 10/17/16

#### U.S. 10-YEAR TREASURY YIELD



Source: Federal Reserve, as of 10/17/16

#### U.S. PRESIDENTIAL ELECTION POLLS



Source: Bloomberg, Real Clear Politics, as of 10/17/16



# Economic environment



# U.S. economics summary

- U.S. real GDP grew 1.4% YoY in Q2, up from 0.8% in Q1. This positive growth reflects contributions from greater consumer expenditures, exports, and non-residential fixed investments. These were partially offset by a decrease in private inventory investment.
- Headline inflation (CPI) rose 1.1% as of August YoY while core CPI rose 2.3%. Lower energy prices, and gasoline in particular (-17.8%), have weighed heavily on the headline inflation figure. Medical care services (+4.9%) and shelter (+3.4%) contributed to higher prices.
- If the U.S. economy continues to move closer to full employment and higher inflation, the market has expected the Fed to want to push harder for rate

- "normalization". However, the fear of disrupting financial markets and raising rates too early, too quickly, remains.
- Over the last few quarters we have continued to see the slow and steady return to the workforce of discouraged workers. This may help explain why productivity growth and wage inflation are lower than might be expected at this level of unemployment.
- Additions to nonfarm payrolls averaged slightly under 200,000 in the third quarter as the overall labor market continued to show strength. The unemployment rate increased slightly to 5.0% as more people entered the labor force.

	Most Recent	12 Months Prior
GDP (annual YoY)	1.4% 6/30/16	3.9% 6/30/15
Inflation (CPI YoY, Headline)	1.1% 8/31/16	0.2% 8/31/15
Expected Inflation (5yr-5yr forward)	1.8% 9/30/16	1.8% 9/30/15
Fed Funds Rate	0.25% 9/30/16	0.12% 9/30/15
10 Year Rate	1.6% 9/30/16	2.0% 9/30/15
U-3 Unemployment	5.0% 9/30/16	5.1% 9/30/15
U-6 Unemployment	9.7% 9/30/16	10.0% 9/30/15



# U.S. economics – GDP growth

U.S. real GDP grew 1.4% YoY in the second quarter, up from 0.8% in the first quarter. This positive growth reflects contributions from personal consumption expenditures, exports, and non-residential fixed investment. These were partially offset by a decrease in private inventory investment.

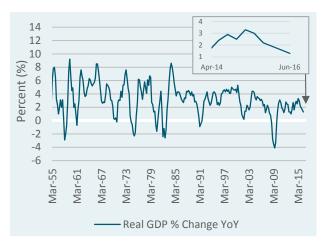
Domestic exports of goods and services grew 1.8% YoY in the second quarter while imports grew 0.2%. A stronger U.S. dollar and weaker demand from China have likely detracted somewhat from export growth.

The manufacturing sector continues to show weakness as durable goods orders have declined during three of the past four months. Additionally, shipments of manufactured durable goods also fell in August, down -0.4%.

The IMF cut U.S. growth expectations to 1.6% for 2016, down from 2.6% in 2015 and down 0.6% from three months prior. Lower business investment has been a primary headwind to growth, with investment decreasing for three consecutive quarters.

Consumer spending continues to drive growth

## U.S. REAL GDP GROWTH



Source: FRED, as of 6/30/16

## IMF U.S. GROWTH EXPECTATIONS



Source: IMF, as of 10/4/16

## U.S. GDP COMPONENTS



Source: FRED



# U.S. economics – Unemployment

U.S. unemployment has fluctuated between 4.7% and 5.0% over the past year, and currently sits at a rate of 5.0%. The back-and-forth pull between unemployment rate and participation rate continues as workers rejoin the workforce (higher participation) which then adds to the employment candidate pool (higher unemployment).

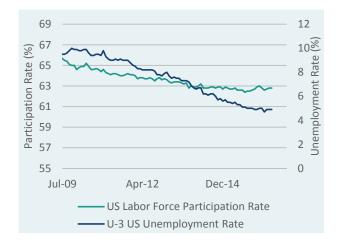
Average length of unemployment has trended downward to 27.6 weeks in August relative to 28.3

weeks one year prior. This is still substantially higher than the long-term median of 14 weeks (since 1948).

In August 151,000 nonfarm jobs were added, below the trailing 12 month average of 204,000.

Over the past year, real average hourly earnings have risen by 1.3%. Positive upward pressure in average hourly earnings may help sustain economic growth and may also add to inflation pressures.

## **U.S. UNEMPLOYMENT & PARTICIPATION**



Source: FRED, as of 8/31/16

## UNEMPLOYMENT DURATION



Source: FRED, as of 8/31/16

## **REAL AVERAGE HOURLY EARNINGS**



Source: FRED, as of 8/31/16



## U.S. economics – The consumer

While corporates and governments seem to be at a later stage in terms of their credit cycles, consumer credit expansion has not been as pronounced. A healthy deleveraging has occurred across households since the global financial crisis, with credit expansion only picking up in recent years. It may make sense that the U.S. consumer has been a major contributor to economic growth.

Relatively strong gains in spending have been accompanied by modest increases in real wages and disposable income. Consumer lending growth accelerated

during the quarter, in part due to low borrowing costs and higher consumer confidence. Consumer loans at commercial banks rose 8.8% year-over-year in August. While this growth rate is higher than what we have seen during the current economic expansion, it is within a normal range with regard to historical experience.

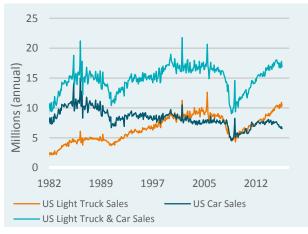
Auto sales have also been robust this year, a good indicator of consumer strength, though sales growth has flattened somewhat and automakers have increased pervehicle incentive spending to all time highs.

#### **CONSUMER LOAN GROWTH**



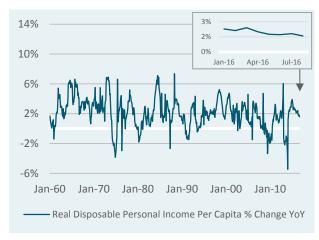
## Source: FRED, as of 8/31/16

## **AUTO SALES**



Source: FRED, as of 8/31/16

#### **GROWTH OF DISPOSABLE INCOME**

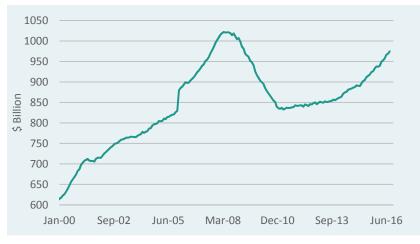


Source: FRED, as of 8/31/16



## U.S. economics – The consumer

## US REVOLVING OUTSTANDING CONSUMER CREDIT



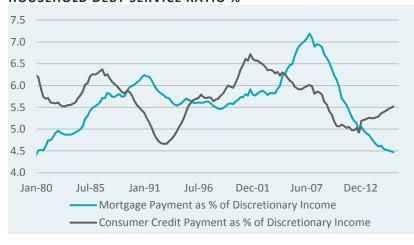
## US HOUSEHOLD DEBT AS % OF DISPOSABLE INCOME



Consumer credit expansion has not been as robust as previous recoveries

Debt service ratios remain low

## **HOUSEHOLD DEBT SERVICE RATIO %**



## **HOUSING STARTS**



Source: FRED, as of 8/31/16



## U.S. economics – Sentiment

Consumer sentiment weakened slightly over the quarter. The University of Michigan Sentiment Index ended the quarter lower. Those surveyed indicated that current conditions worsened while expectations for future conditions brightened. The Bloomberg Consumer Comfort Index also declined, falling to its lowest level since mid-December.

zero for 18 consecutive months. However, following July the indicator slipped back into slightly negative territory.

The Citigroup Economic Surprise Index unexpectedly jumped into positive territory in July after staying below

## **CONSUMER COMFORT INDEX**



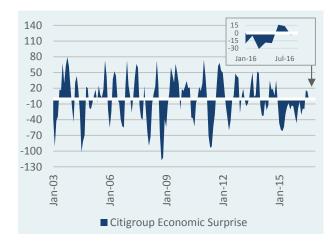
Source: Bloomberg, as of 9/25/16 (see Appendix)

## **CONSUMER SENTIMENT**



Source: University of Michigan, as of 9/30/16 (see Appendix)

## **ECONOMIC SURPRISE**



Source: Bloomberg, as of 9/30/16 (see Appendix)



# U.S. economics – Housing

U.S. housing inventories are near historic lows across single and multifamily markets. Limited supply may help to put upward pressure on new construction activity, which has been below average.

Vacancy rates are near all-time lows in the rental space while homeownership rates continue to fall. Demand for rental properties has increased and multifamily housing starts continue to ramp up; however, multifamily homes are thought to contribute

substantially less to economic growth than that of single-family homes. This may factor into future economic growth.

Lower mortgage rates and moderate wage growth have helped to suppress household debt burdens through greater discretionary income. These forces have contributed to a stronger consumer which may bolster future home purchase and ownership trends, especially as home affordability remains high.

## **HOME AFFORDABILITY**



Source: National Association of Realtors, as of 6/30/16

## **HOMEOWNERSHIP RATE**



Source: FRED, as of 7/1/2016

## **NEW & EXISTING HOME SALES**



Source: Bloomberg, as of 8/31/16



## U.S. economics – Inflation

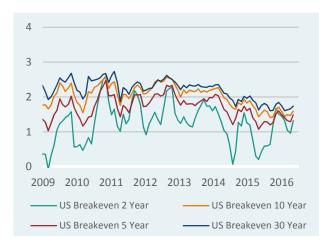
Inflation expectations were mixed during the quarter. The University of Michigan Inflation Expectations Survey reflected lower expected inflation, while the U.S. 10yr TIPS Breakeven indicated higher expectations.

Headline inflation rose 1.1% YoY while core inflation rose 2.3% YoY. Energy and gasoline continue to weigh on prices, while medical care services and shelter (housing costs) put upward pressure on overall prices.

Inflation surveys and inflation-sensitive instruments are inherently different and we might therefore expect discrepancies across these indicators.

Public fear of inflation remains very low, and the Federal Reserve is hesitant to raise rates. We believe investors should be watchful of inflation trends. An inflation overshoot remains a potential danger, given less worry over inflation and less ability and/or willingness of the Fed to raise rates.

## **U.S. TIPS BREAKEVEN INFLATION**



## U.S. CPI (YOY)



#### Source: FRED, as of 7/31/16

## MARKET EXPECTATIONS OF INFLATION



Source: Bloomberg, as of 9/30/16



Source: FRED, as of 8/31/16

## Where are we now?

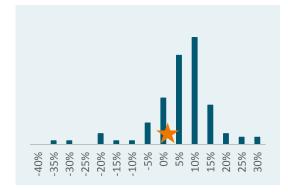
**RETAIL SALES, YOY (SINCE 1993)** 



U OF MICH. CONFIDENCE (SINCE 1978)



DURABLE GOODS ORDERS, YOY (SINCE 1992)



clearly do not fall at the top end of their historical distribution, they are not outside normal

ranges

While these

metrics

PERSONAL INCOME, YOY (1948)



PERSONAL CONSUMPTION, YOY (SINCE 1947)



**CITI SURPRISE INDEX (SINCE 2003)** 



Source: Bloomberg, as of 9/30/16



# International economics summary

- Developed economies continued to experience slow growth and low inflation. While inflation ticked up slightly in the Eurozone to 0.4%, it remains materially under the ECB's target of "below, but close to, 2%".
- The ECB left monetary policy unchanged at its September meeting, and cut economic growth expectations for the next three years.
- The BOJ shook up its monetary policy after completing a "comprehensive assessment of its current easing programs". The central bank stated it will intentionally overshoot its inflation target of 2% and introduced a 0% target for the 10-year yield.

- Britain elected new prime
  minister Theresa May, who will
  be responsible for implementing
  Brexit. Increased uncertainty
  surrounding the timing and
  nature of the political change will
  continue. The potential impact of
  this uncertainty led to the first
  rate cut by the BOE since 2009.
- The IMF once again downgraded global growth forecasts for 2016 and 2017, this time to just above 3%. It now warns against economic stagnation and states that countries have found themselves in the position of relying on monetary and fiscal policy to lift growth prospects, and that this may be unsustainable.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	1.4%	1.1%	5.0%
	6/30/16	8/31/16	9/30/16
Western	1.8%	0.4%	8.5%
Europe	6/30/16	9/30/16	6/30/16
Japan	0.8%	(0.5%)	3.2%
	6/30/16	8/31/16	6/30/16
BRIC Nations	5.1%	3.8%	5.5%
	6/30/16	6/30/16	6/30/16
Brazil	(3.8%)	9.0%	11.7%
	6/30/16	8/31/16	9/30/16
Russia	(0.6%)	6.9%	5.6%
	6/30/16	8/31/16	6/30/16
India	<b>7.1%</b> 6/30/16	5.1% 8/31/16	<b>7.1%</b> 12/31/15
China	6.7% 6/30/16	1.3% 8/31/16	<b>4.1%</b> 6/30/16



## International economics

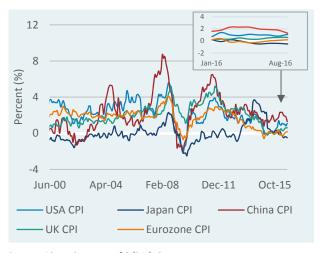
Further downward revisions and lackluster growth in Europe and Japan have encouraged central banks to maintain stimulus measures. Japan implemented a policy initiative which will target a 0% yield for the 10-year government bond. Japan continues to struggle with deflation as headline CPI fell to -0.5% YoY in August.

While economic data released in the U.K. post-Brexit has significantly beaten expectations, uncertainty remains regarding the specific details of the country's exit from the European Union. In its latest report, the BOE lowered the

2017 growth forecast to 0.8% from 2.3%. The central bank also expects inflation to hit 2.4% in 2018 and 2019, citing the fall of the pound sterling.

Emerging market economic growth picked up slightly at 4.6% YoY in the second quarter. After a drop off in growth following the global financial crisis, the outlook for emerging economies has improved. With slow growth expectations for developed markets, an opportunity may exist in both emerging market equities and fixed income.

## INTERNATIONAL INFLATION



Source: Bloomberg, as of 8/31/16

## **REAL GDP GROWTH**



Source: Bloomberg, as of 6/30/16

## EM VS. DM REAL GDP GROWTH



Source: Bloomberg, as of 6/30/16



## Post-Brexit

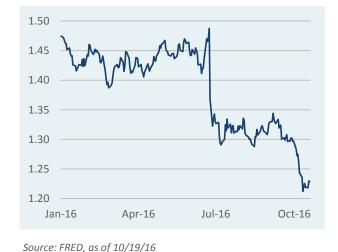
There have been significant changes in U.K. and European political behavior following the Brexit vote. Rear guard actions in both Parliament and the courts in the U.K. have begun to attempt to slow or stop the implementation of Brexit. The Prime Minister has said that Article 50 will be triggered in March 2017.

One of the key elements of the discussion has been debate over whether Brexit should be a 'hard' Brexit (full withdrawal from the Single Market) or a 'soft' Brexit (with continuing participation in the Single Market for a fee, and with continuing free movement of people). Pro-Brexit

campaigners point out that this issue was extensively discussed during the campaign, while Remainers claim that the U.K. population was ill-informed during the run-up to the vote, although their hand is weakened by the fact that their predictions of economic chaos were a Brexit vote to win have so far failed to materialize.

The remaining EU members remain unsure how to proceed, with hard-line negotiators appointed by the EU but strong financial interests in many countries in close ongoing trading links with the U.K.

## GBP/USD



**EUROPEAN EQUITY MOVEMENT** 



Source: Bloomberg, 6/23-9/30/16 – shown in local currency terms

## **U.K. BALANCE OF TRADE**



Source: Bloomberg, as of 9/30/16



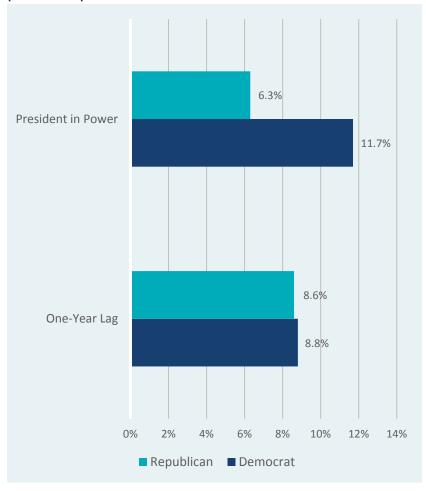
# U.S. presidential election

Correlation between election results and long-term market performance has generally been weak, and the outcome depends on how the data is sliced. The S&P 500 has experienced greater price appreciation with a Democrat in power, but the results are less clear when a one-year policy lag is introduced; research results depend on how the relationship is defined.

It appears that a Clinton win would most likely result in little change from the current macroeconomic policy. However, strong congressional pressure would be likely on trade issues, and there would be continuing challenges to the long term sustainability of the Affordable Care Act. Both candidates have supported increased spending on infrastructure, which would provide support for the materials and construction sectors.

A Trump win might bring greater uncertainty because his economic policy plans are less known/understood. Trump's impact may also be felt more quickly through his use of executive orders to reshape the regulatory environment, and some policies enacted by Obama may be undone, through the same means.

## AVERAGE CALENDAR YEAR S&P 500 PRICE RETURN (1951-2015)



The relationship between election results and market performance is weak

Note: Top chart = annualized return during time in office, Lower chart = annualized return during time in office but with 1-year lag



# Fixed income rates & credit



## Interest rate environment

- The U.S. Treasury curve continued to flatten, influenced by increased expectations of an interest rate hike by the end of the year.
- Global interest rates remain near all time lows, although volatility picked up. Continued easing by central banks in addition to low inflation and expectations for slowing growth contribute to an environment of secularly low yields.
- When thinking about bond yields today, it may be useful not only to consider nominal yields, which are at historic lows, but also real yields, which paint a much more reasonable picture. Current levels of inflation and future expectations may help put things into context. Furthermore, investors may see markets drive yields higher if inflation expectations were to rise.

- Negative yielding sovereign and corporate debt was \$11.6 trillion at quarter end, mostly from Japan and the Eurozone. We remain concerned about Japanese and European rates as negative yields and low liquidity detract from the attractiveness of these assets.
- Yields on Japanese Treasuries increased sharply in late July after the BOJ chose to keep stimulus measures on hold. The 10-year JGB yield briefly traded around 0% before falling back into negative territory at the end of September.
- European sovereign bonds sold off during the beginning of September over concerns that central banks may begin cutting back on monetary easing measures.

Area	Short Term (3M)	10 Year
United States	0.27%	1.59%
Germany	(0.76%)	(0.12%)
France	(0.67%)	0.19%
Spain	(0.60%)	0.88%
Italy	(0.39%)	1.19%
Greece	3.34%	8.28%
U.K.	0.32%	0.75%
Japan	(0.33%)	(0.09%)
Australia	1.75%	1.91%
China	2.23%	2.74%
Brazil	13.73%	11.60%
Russia	9.80%	8.17%

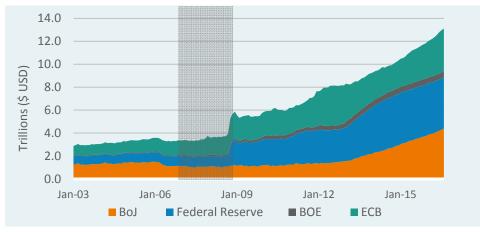
Source: Bloomberg, as of 9/30/16



# Unwinding QE

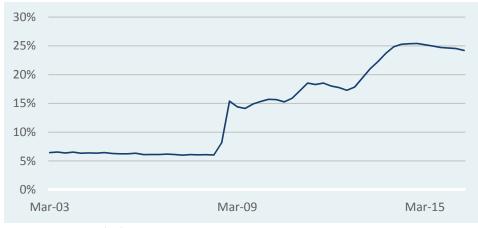
- It appears that we may be nearing the end stage of monetary policy expansion, with over \$7 trillion added to central bank balance sheets. The way in which central banks choose to unwind asset purchases, or how they manage them, could have a significant impact on financial markets.
- Balance sheets may be slowly trimmed through gradual asset sales, or by allowing existing bonds to mature. Shrinking the balance sheet in this manner naturally has a tightening effect, which places downward pressure on asset prices.
- Balance sheet sizes may also be maintained for some time or possibly indefinitely. Were the velocity of money to begin to pick up this balance sheet expansion might lead to inflationary pressure.
- Balance sheets might also be monetized by writing off assets, allowing governments to "walk away" from their debt. With few historical comparisons, forecasting the effects of such write offs is exceptionally difficult. In addition to inflation concerns, this strategy could undermine the independence of central banks and public confidence in them.

## **CENTRAL BANKS BALANCE SHEETS**



Source: FRED, Federal Reserve, BOE, ECB, Verus, as of 8/1/16

#### FEDERAL RESERVE ASSETS TO GDP

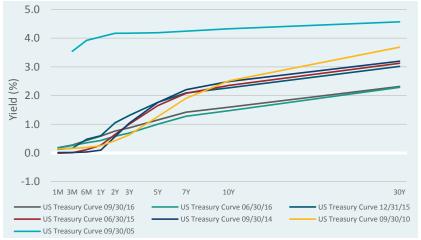


Source: FRED, as of 6/30/16

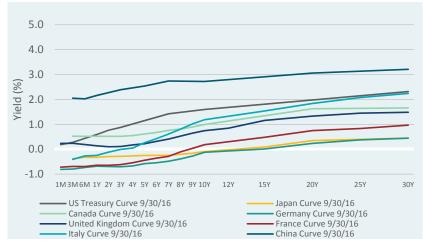


## Yield environment

## U.S. YIELD CURVE

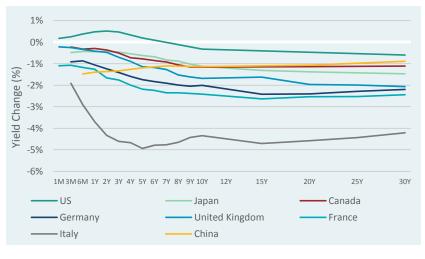


#### **GLOBAL GOVERNMENT YIELD CURVES**



Global
investors
continue to
prefer U.S.
Treasuries
due to higher
relative
yields

## YIELD CURVE CHANGES OVER LAST FIVE YEARS



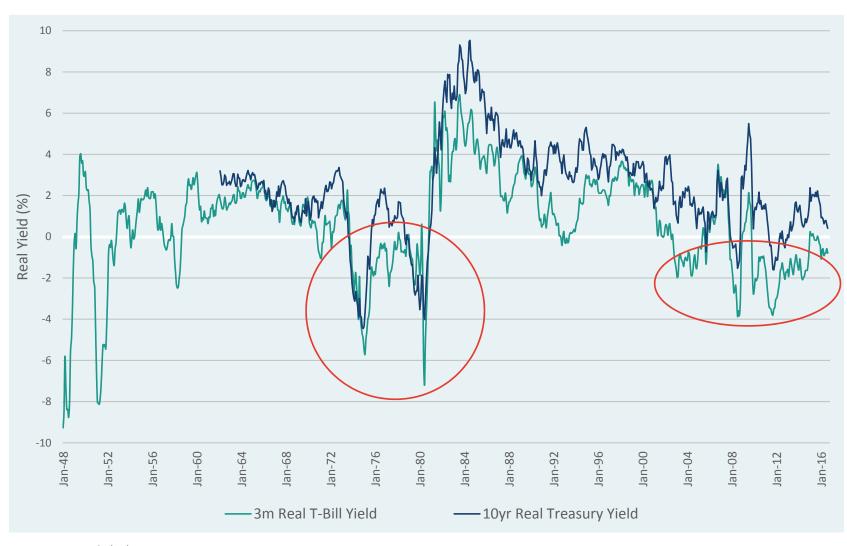
## **IMPLIED CHANGES OVER NEXT YEAR**



Source: Bloomberg, as of 9/30/16



## Yield environment



Negative <u>real</u> yields are not a new phenomenon

Yield levels should be viewed in context of the inflation environment

Source: Verus, as of 8/31/16



## Credit environment

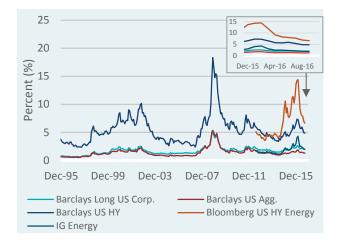
High yield returns across all sectors - energy and metals and mining in particular - have been strong since the trough in Q1. As evidence of this performance, high yield spreads have compressed to below 5.1% as of September from a high of 8.9% earlier in the year.

U.S. credit markets have broadly normalized following increased volatility in Q1. While below the long-term trend, U.S. GDP growth has remained positive, which has been a tailwind to credit markets in general. In addition, foreign demand for U.S. credit issuance has

remained positive as low developed market yields have been supportive of the "carry trade", where investors buy relatively higher yielding assets.

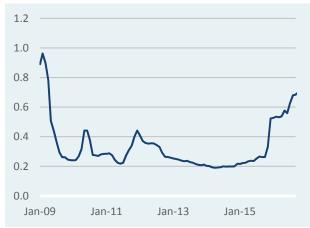
LIBOR rates have increased meaningfully as investors prepared for the pending regulatory changes to money market funds. Prime funds will now report a floating NAV. This change has prompted some investors to redeem their exposures, thereby reducing their demand for commercial paper and LIBOR-based loans causing the rate to increase.

## **CREDIT SPREADS**



Source: Barclays Capital Indices, Bloomberg, as of 9/30/16

## **3 MONTH LIBOR**



Source: Bloomberg, as of 9/30/16

## **SPREADS**

Market	Credit Spread (9/30/16)	Credit Spread (1 Year Ago)
Long US Corporate	1.8%	2.1%
US Aggregate	0.9%	1.2%
US High Yield	5.1%	6.8%
US High Yield Energy	6.6%	11.4%
US Bank Loans	3.9%	3.9%

Source: Barclays, Credit Suisse, Bloomberg, as of 9/30/16



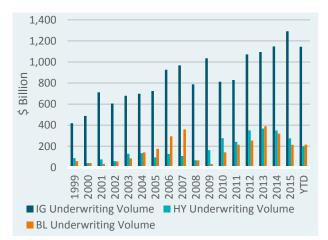
## Issuance and default

Defaults have trended higher in recent months, particularly in the high yield debt space. Default rates have risen well above the trailing 20-year average and are at the highest levels since the global financial crisis; however, much of this activity has been driven specifically by energy issuers. Overall issuance is on track for a year-over-year decline.

New bond issuance in emerging markets, especially corporates, has continued at a relatively strong pace. Many of these issuers can only borrow in U.S. dollars. As such, eventual rises in U.S. interest rates would increase borrowing costs. Investors' appetites for emerging market debt remains strong based on relative value compared to developed market bonds.

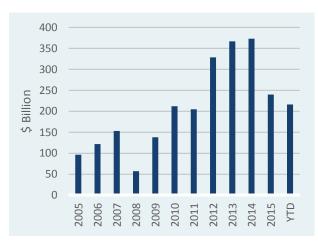
The recent increase in LIBOR rates has been a headwind for bank loan borrowers, as reflected in flattening issuance.

## **U.S. DEBT ISSUANCE**



Source: Bloomberg, BofA Merrill Lynch, as of 9/30/16

## **EM DEBT ISSUANCE**



Source: JP Morgan, as of 9/30/16

## HY DEFAULT TRENDS (ROLLING 1 YEAR)



Source: Credit Suisse, BofA, as of 9/30/16



# Fixed income – rising yields



During rising
yield
environments
(6 months of
consecutive
rising yields)
BC Agg and
S&P 500
returns have
shown very
different
correlation

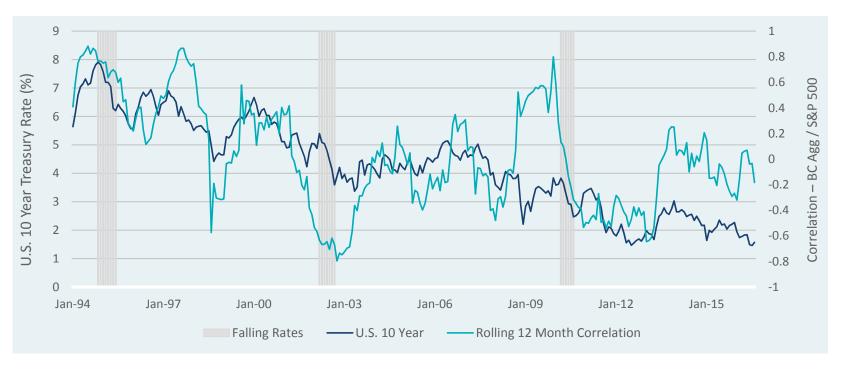
We are currently in a negative correlation environment

Date	Months	Yield increase	Average return correlation*
Jan 1994-Jun 1994	6	1.68	0.70
Dec 1995-May 1996	6	1.28	0.30
Mar 1999-Aug 1999	6	0.73	0.11
Dec 2005-June 2006	7	0.75	-0.18
Sep 2010-Mar 2011	7	0.96	-0.44

<sup>\*</sup>Rolling 12 Month correlation between Barclays US Aggregate and S&P 500. "Rising yield environment" is defined as 6 months of consecutive yield increases Source: Bloomberg, MPI, as of 8/31/16



# Fixed income – decreasing yields



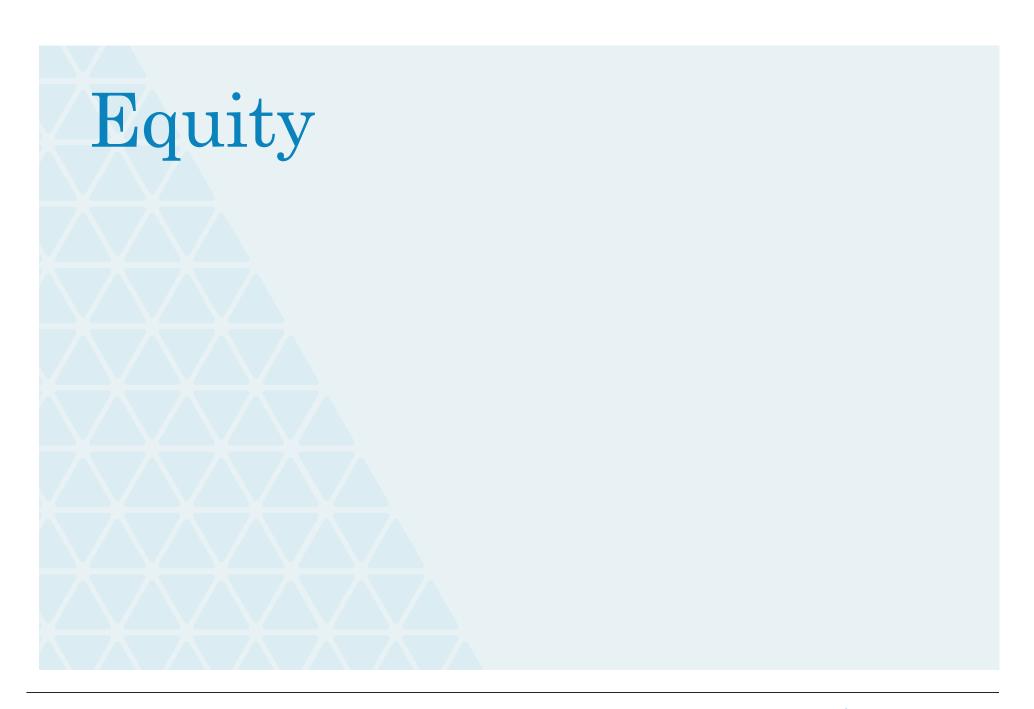
Correlations
have varied
during
decreasing
yield
environments
(6 months of
falling yields),
from -0.66 to
0.71

Diversification benefits have not been clearly linked to the rate environment

Date	Months	Yield decrease	Average return correlation*
Nov 1994-June 1995	8	1.70	0.71
Mar 2002-Sep 2002	7	1.80	-0.66
Mar 2010-Aug 2010	6	1.36	-0.07

\*Rolling 12 Month correlation between Barclays US Aggregate and S&P 500. "Decreasing yield environment" is defined as 6 months of consecutive yield decreases. Source: Bloomberg, MPI, as of 8/31/16





# Equity environment

- Equity market risks continue to appear asymmetrical to the downside - the U.S. equity market in particular.
- U.S. equities rallied to start the quarter as central banks communicated to the markets that further monetary easing would be available if necessary, in response to the Brexit vote. In the final two months of the quarter, the U.S. equity markets stayed relatively flat and volatility was below average.
- A sixth consecutive quarter of year-over-year earnings decline is expected for the S&P. FactSet has forecast a -2.1% earnings decline for Q3.
- Information technology (12.9%)
   was the best performing sector
   in the S&P 500 by a large margin
   on the back of higher earnings

- expectations. Utilities (-5.9%) and telecom services (-5.6%) were the worst performing sectors in the index.
- The FTSE 100 (hedged) returned
   7.1% over the third quarter after
   concerns over the impact of
   Brexit somewhat subsided.
- The U.S. dollar fell 0.7% in Q3 on a trade-weighted basis.
   Recent dollar stabilization may be disrupted if the Fed goes ahead with further rate hikes. As most developed economies remain in easing mode, further U.S. hikes would likely add to dollar strength.

	QTD TOTAL RETURN YTD TOTAL RETURN		L RETURN	1 YEAR TOTAL RETURN		
	(unhedged)	(hedged)	(unhedged)	(hedged)	(unhedged)	(hedged)
US Large Cap (Russell 1000)	4.0%		7.9%		14.9%	
US Small Cap (Russell 2000)	9.0%		11.5%		15.5%	
US Large Value (Russell 1000 Value)	3.5%		10.0%		16.2%	
US Large Growth (Russell 1000 Growth)	4.6%		6.0%		13.8%	
International Large (MSCI EAFE)	6.4%	6.3%	1.7%	(1.0%)	6.5%	5.3%
Eurozone (Euro Stoxx 50)	6.3%	4.8%	(2.4%)	(4.1%)	0.4%	0.5%
U.K. (FTSE 100)	4.0%	7.1%	0.6%	14.1%	1.5%	18.4%
Japan (NIKKEI 225)	8.2%	5.9%	4.4%	(14.3%)	13.6%	(6.2%)
Emerging Markets (MSCI Emerging Markets)	9.0%	6.3%	16.0%	9.7%	16.8%	10.7%

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 9/30/16



# Domestic equity

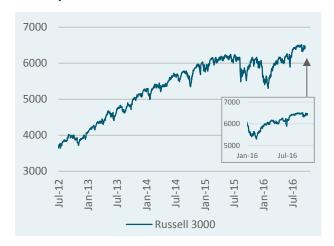
After minimal reaction to Brexit, domestic equities continued higher in July, then delivered two quiet months to finish the quarter. The S&P 500 returned 3.9% in Q3. The market appears to be taking a wait-and-see approach with important oncoming events such as elections and Federal Reserve meetings.

With higher equity prices and lower overall earnings, valuations have expanded. The forward earnings multiple for the S&P 500 was 18.5 at quarter end,

relative to its 25-year average of 16.6 (in the 81<sup>st</sup> percentile). Year-over-year earnings growth is expected to be negative for the sixth consecutive quarter, heavily influenced by the energy sector and lower oil prices. As the effects of monetary stimulus on U.S. financial markets wanes, earnings will play an important role for future equity returns.

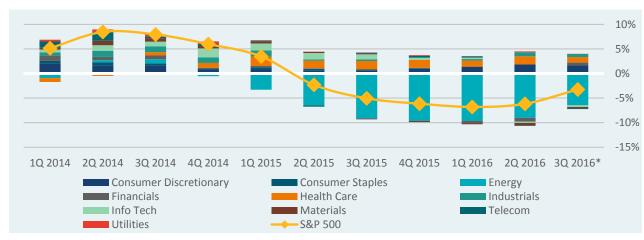
U.S.
earnings
results will
likely dictate
the path of
equities

## **U.S. EQUITIES**



Source: Russell Investments, as of 9/26/16

## SECTOR IMPACT ON S&P 500 EARNINGS GROWTH



Source: Bloomberg, as of 9/30/16



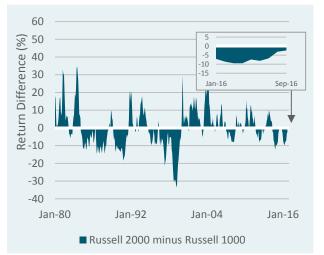
# Domestic equity size and style

Growth stocks outperformed value during the third quarter as the Russell 1000 Growth Index and Russell 1000 Value Index returned 4.6% and 3.5%, respectively. However, value has outperformed growth by 4.0% year-to-date.

3.5% year-to-date, reversing a recent trend of large cap outperformance. The relative P/E ratio of small to large cap equities at the end of September was 2.07 - well above its long-term average of 1.39 - suggesting that small cap stocks may be relatively overvalued.

In the third quarter, the Russell 2000 Index returned 9.0% and the Russell 1000 Index returned 4.0%. Small cap equities have also beaten large cap equities by

## SMALL CAP VS LARGE CAP (YOY)



Source: Russell Investments, as of 9/30/16

## **VALUE VS GROWTH (YOY)**



Source: Russell Investments, as of 9/30/16

## RELATIVE P/E RATIO (SMALL VS LARGE)



Source: Russell, Bloomberg, as of 9/30/16



# International equity

Central banks remained accommodative in Q3, helping to generate a rally in international equities. Low and negative yields in Japan and the Eurozone helped maintain the relative attractiveness of equities in these markets.

On a hedged basis, international developed equities outperformed domestic equities with the MSCI EAFE returning 6.3%, and the S&P 500 returning only 3.9% during the quarter.

Financial stocks continue to lag, though the third quarter saw more healthy returns. Banks in Japan and the Eurozone were given a boost when the BOJ and ECB chose not to increase stimulus measures. Significant headwinds remain, however, as negative interest rates continue to hurt bank profitability.

## **GLOBAL EQUITY PERFORMANCE**



Source: Bloomberg, as of 9/30/16

## 12-MONTH ROLLING RELATIVE FINANCIAL SECTOR RETURNS



Source: MPI, as of 9/30/16, in local currency terms

## INTERNATIONAL FORWARD P/E RATIOS



Source: MSCI, as of 9/30/16



# Emerging market equity

Emerging market equities experienced a rebound during Q3, returning 6.3% on a hedged basis and 9% unhedged. Emerging market earnings per share growth turned positive in 2016, reversing a 5-year downward trend. Valuations remain below average and materially more attractive than those of developed markets.

Moderating commodity prices, continued developed central bank accommodation, less U.S. dollar strengthening, and stability in China, have helped to bolster investor risk appetites and the emerging market

outlook, fueling fund flows into these markets.

Many emerging market economies experienced a rough readjustment period following the commodity supercycle reversal and saw severe currency depreciation. However, many economies such as Russia have allowed currency devaluation to work as an effective economic shock absorber to mitigate current account problems which these economies often experience during commodity (export) price choppiness.

## **ECONOMIC GROWTH (REAL GDP YOY)**



Source: Bloomberg, as of 6/30/16

## EM VS. DM REAL GDP GROWTH



Source: Bloomberg, as of 6/30/16

## **FORWARD P/E**



Source: MSCI, as of 9/30/16



# Equity valuations

Domestic large cap equity valuations remain above average. The forward earnings multiple for the S&P 500 was 18.5 at quarter end, relative to its 25-year average of 16.6. This places the forward P/E in the 81st percentile of the past 25 years.

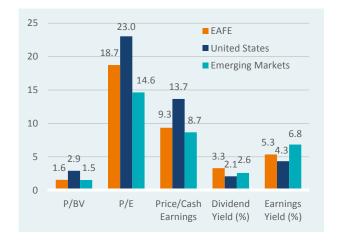
Large cap equity valuations are also slightly above average based on the Shiller P/E ratio.

Small cap equity valuations are above long-term

averages, suggesting that small caps are currently overvalued. The forward P/E ratio for the Russell 2000 as of September 30<sup>th</sup> was 28.1, compared to the long-term average of 25.3.

Historically, low interest rate and low inflationary environments have coincided with above-average valuations (see slide 35). This makes it difficult to tell whether equities are truly overvalued or if current valuations simply reflect the economic environment.

## MSCI VALUATION METRICS (3 MONTH AVERAGE)



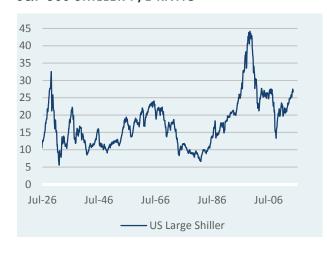
Source: MSCI, as of 9/30/16

## FORWARD P/E



Source: Yale/Shiller, Verus as of 9/30/16

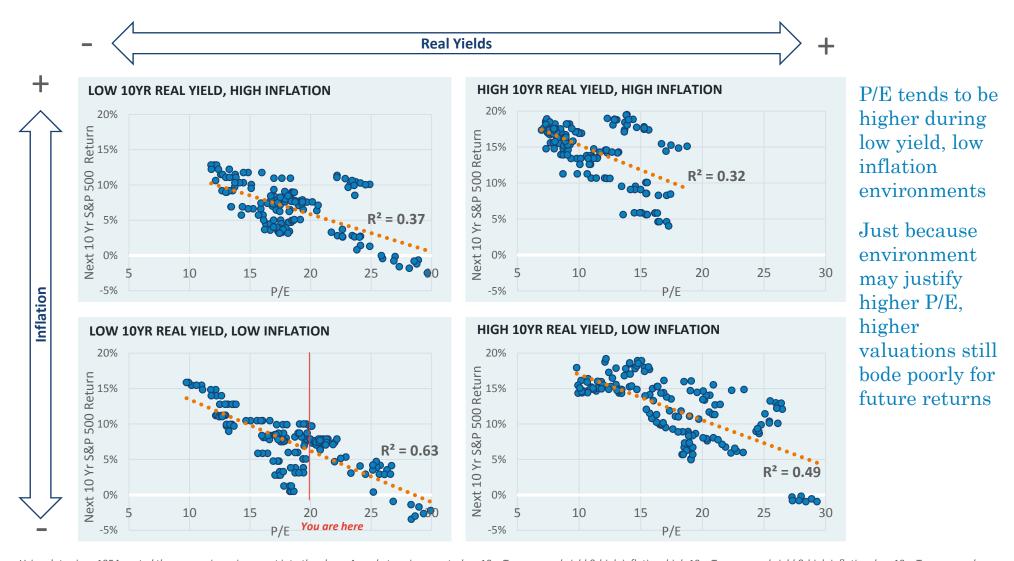
## S&P 500 SHILLER P/E RATIO



Source: Yale/Shiller, as of 9/30/16



# Putting valuations into context



Using data since 1954, sorted the economic environment into the above 4 market environments: low 10yr Treasury real yield & high inflation, high 10yr Treasury real yield & high inflation, low 10yr Treasury real yield & low inflation, and high 10yr real yield & low inflation. Within each quadrant, plotted each point-in-time P/E level for the S&P 500 (the x-axis) and the subsequent 10 year equity return (y-axis).



# Equity volatility

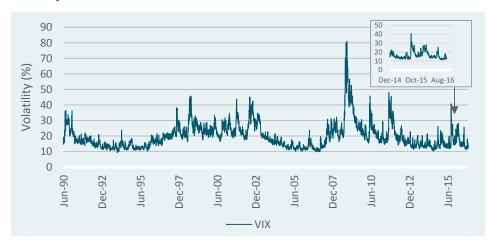
Following a substantial spike in volatility during the Brexit vote announcement, equity volatility fell and remained subdued. The VIX index has averaged around a level of 20 during the past 25 years. More recently investors have seen VIX levels below this average which is typical during equity bull markets.

Volatility expectations, as indicated by VIX, continue to be low, though we might expect rising levels given

political uncertainty leading up to the U.S. presidential election.

International equity market volatility has remained in a normal range, following choppiness during news surrounding and following the Brexit referendum. Unhedged currency exposure has also added to variation in investors' experienced equity returns — and much more so in recent years.

### U.S. EQUITY VOLATILITY



### Source: CBOE, as of 9/22/16

### INTERNATIONAL EQUITY VOLATILITY

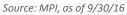


Source: MSCI, as of 9/30/16



# Long-term equity performance







# Other assets

# Commodities

Commodity prices, and oil in particular, continue to fill the news headlines. Though short-term price movements are not particularly relevant to portfolio decision-making, effects of the commodity supercycle reversal are important.

Declining profits in the energy sector have pushed U.S. equity earnings into negative territory for the past 1.5 years. Many commodity exporting nations have

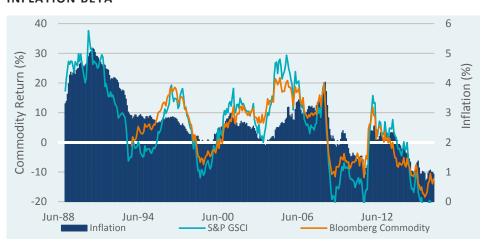
realized extreme currency devaluation which has harshly impacted the unhedged returns of foreign investors. Here at home energy-related debt defaults are accelerating and fueling worries that a prolonged energy slump could have a serious fallout effects for the U.S. energy sector. OPEC members and nonmembers alike continue discussions regarding production cut strategies and agreements, though it is debatable whether these agreements will be upheld.

### COMMODITY PERFORMANCE



Source: Bloomberg, as of 9/30/16

### **INFLATION BETA**



Source: Standard & Poor's, Bloomberg, as of 9/30/16



# Currency

The U.S. dollar, weighted by major trading partners, fell 0.7% in the third quarter, benefitting investors with unhedged equity exposure. The pound sterling has had the opposite effect for U.S. investors, as new multidecade lows were reached during the quarter, following a significant market flash crash (but recovery).

After a recent period of appreciation, the dollar has stabilized so far this year. Moderation of the USD would have a positive impact on earnings of U.S. companies with significant international exposure.

However, with the Fed expected to continue increasing interest rates while other central banks are still in easing mode, there may be upward pressure on the dollar as interest rate differentials increase.

The pound sterling fell to a 31-year low against the U.S. dollar, influenced by uncertainty surrounding the details of the U.K.'s exit from the European Union. Theresa May announced that she would invoke Article 50 by March 2017.

### LONG-TERM TRADE WEIGHTED USD



### **EFFECT OF CURRENCY (1YR ROLLING)**



Source: MSCI, as of 9/30/16

### GBP/USD



Source: FRED, as of 10/19/16



Source: FRED, as of 9/30/16

# Appendix

# Periodic table of returns – September 2016

BEST																											
<u>~</u>		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	YTD	5-Year	10-Year
Î	Small Cap Value	74.8	16.6	38.4	23.2	35.2	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	10.1	16.0	16.6	8.8
	Emerging Markets Equity	32.9	8.1	37.8	23.1	32.9	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	15.5	16.4	8.3
	Small Cap Equity	26.3	6.4	37.2	22.4	31.8	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	11.5	16.2	7.4
	Large Cap Value	23.8	4.4	31.0	21.6	30.5	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	10.0	16.1	7.4
	Large Cap Equity	19.3	3.2	28.5	21.4	22.4	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	8.9	15.8	7.1
	60/40 Global Portfolio	18.9	2.6	25.7	16.5	16.2	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	8.0	15.4	5.9
	Small Cap Growth	18.1	0.4	19.6	14.4	13.9	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	7.9	11.5	5.8
	US Bonds	13.4	-1.5	18.5	11.3	12.9	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	7.5	7.4	4.8
	Large Cap Growth	10.2	-1.8	15.2	10.3	10.6	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	6.0	7.2	4.6
	Commodities	9.7	-2.0	11.6	9.9	9.7	-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	5.8	3.2	3.9
	Real Estate	3.1	-2.4	11.1	6.4	5.2	-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	4.3	3.1	1.8
	International Equity	2.9	-2.9	7.5	6.0	2.1	-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	1.7	3.0	1.8
	Cash	1.4	-3.5	5.7	5.1	-3.4	-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	0.2	0.1	0.8
$\downarrow$	Hedge Funds of Funds	-1.1	-7.3	-5.2	3.6	-11.6	-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	-0.1	-9.4	-5.3
_																											
WORST				Large	Cap E	quity					Small (	Cap Gr	owth				Co	ommo	dities								
>				Large	Cap \	/alue					nterna	ationa	l Equit	у			Re	eal Est	ate								
				Large	Cap C	Growth	1				Emergi	ng Ma	rkets I	quity			Н	edge F	unds c	of Fund	S						
				Smal	l Cap E	quity				US Bonds					60% MSCI ACWI/40% BC Global Bond												
		Small Cap Value				Cash																					

Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, BC Agg, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, BC Global Bond. NCREIF Property performance data as of 6/30/16.



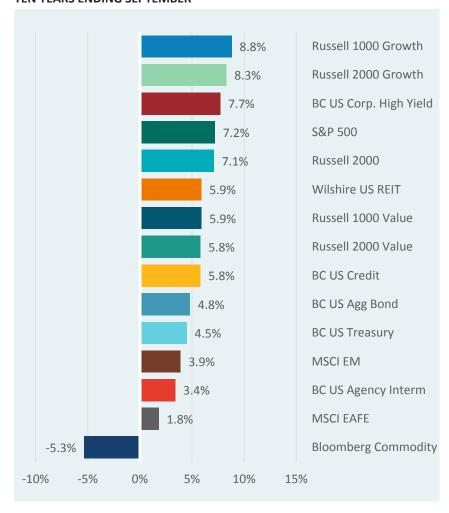
# Major asset class returns

### **ONE YEAR ENDING SEPTEMBER**



### Source: Morningstar, as of 9/30/16

### **TEN YEARS ENDING SEPTEMBER**

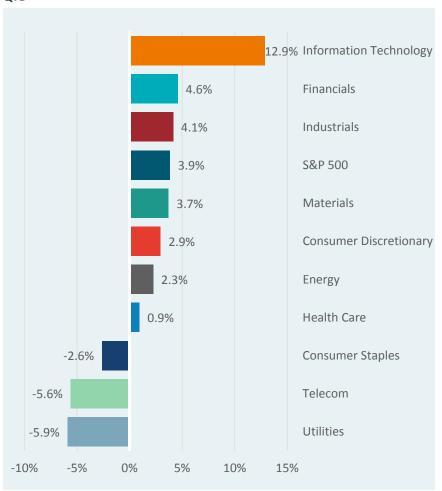


Source: Morningstar, as of 9/30/16

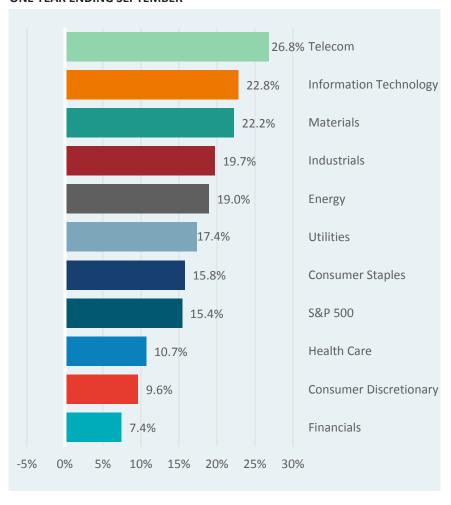


# S&P 500 and S&P 500 sector returns

### QTD



### **ONE YEAR ENDING SEPTEMBER**



Source: Morningstar, as of 6/30/16

Source: Morningstar, as of 6/30/16



# Detailed index returns

DOMESTIC FOLLITY			
	<b>AECTI</b>	CEO	IIIIT

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Core Index							
S&P 500	0.0	3.9	7.8	15.4	11.2	16.4	7.2
S&P 500 Equal Weighted	0.1	4.5	10.6	16.1	10.8	17.4	8.8
DJ Industrial Average	(0.4)	2.8	7.2	15.5	9.2	13.8	7.4
Russell Top 200	0.0	3.8	7.0	15.2	11.3	16.3	7.0
Russell 1000	0.1	4.0	7.9	14.9	10.8	16.4	7.4
Russell 2000	1.1	9.0	11.5	15.5	6.7	15.8	7.1
Russell 3000	0.2	4.4	8.2	15.0	10.4	16.4	7.4
Russell Mid Cap	0.2	4.5	10.3	14.2	9.7	16.7	8.3
Style Index							
Russell 1000 Growth	0.4	4.6	6.0	13.8	11.8	16.6	8.8
Russell 1000 Value	(0.2)	3.5	10.0	16.2	9.7	16.2	5.9
Russell 2000 Growth	1.4	9.2	7.5	12.1	6.6	16.1	8.3
Russell 2000 Value	0.8	8.9	15.5	18.8	6.8	15.4	5.8

### **FIXED INCOME**

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
BC US Treasury US TIPS	0.5	1.0	7.3	6.6	2.4	1.9	4.5
BC US Treasury Bills	0.0	0.1	0.3	0.3	0.2	0.1	1.0
BC US Agg Bond	(0.1)	0.5	5.8	5.2	4.0	3.1	4.8
Duration							
BC US Treasury 1-3 Yr	0.1	(0.1)	1.3	0.9	0.9	0.7	2.3
BC US Treasury Long	(1.6)	(0.4)	14.7	13.1	11.2	5.5	8.1
BC US Treasury	(0.1)	(0.3)	5.1	4.1	3.4	2.2	4.5
Issuer							
BC US MBS	0.3	0.6	3.7	3.6	3.6	2.6	4.7
BC US Corp. High Yield	0.7	5.6	15.1	12.7	5.3	8.3	7.7
BC US Agency Interm	0.2	(0.0)	2.3	1.7	1.8	1.4	3.4
BC US Credit	(0.3)	1.2	8.9	8.3	5.4	4.8	5.8

### INTERNATIONAL EQUITY

Broad Index							
MSCI ACWI	0.6	5.3	6.6	12.0	5.2	10.6	4.3
MSCI ACWI ex US	1.2	6.9	5.8	9.3	0.2	6.0	2.2
MSCI EAFE	1.2	6.4	1.7	6.5	0.5	7.4	1.8
MSCI EM	1.3	9.0	16.0	16.8	(0.6)	3.0	3.9
MSCI EAFE Small Cap	3.0	8.6	5.2	12.3	5.1	11.1	4.4
Style Index							
MSCI EAFE Growth	1.5	5.0	2.6	9.5	2.4	8.7	3.1
MSCI EAFE Value	1.0	8.0	0.8	3.5	(1.5)	6.0	0.4
Regional Index							
MSCI UK	1.0	4.0	0.8	1.5	(1.8)	6.0	1.4
MSCI Japan	1.6	8.6	2.5	12.1	3.3	7.4	1.0
MSCI Euro	0.7	7.3	(0.6)	2.8	(0.9)	7.3	0.2
MSCI EM Asia	1.3	10.5	13.0	16.9	3.5	6.3	5.6
MSCI EM Latin American	(0.8)	5.4	32.2	28.6	(7.9)	(3.9)	2.4

### **OTHER**

Index							
Bloomberg Commodity	3.1	(3.9)	8.9	(2.6)	(12.3)	(9.4)	(5.3)
Wilshire US REIT	(2.1)	(1.2)	9.7	17.9	14.3	15.8	5.9
Regional Index							
JPM EMBI Global Div	0.4	4.0	14.8	16.2	8.2	7.8	7.7
JPM GBI-EM Global Div	2.0	2.7	17.1	17.1	(2.6)	0.1	5.5
Currency (Spot)							
Euro	0.9	1.2	3.5	0.7	(6.0)	(3.5)	(1.2)
Pound	(0.8)	(2.8)	(11.9)	(14.2)	(7.1)	(3.6)	(3.6)
Yen	2.1	1.3	18.8	18.3	(1.0)	(5.3)	1.5

Source: Morningstar, as of 9/30/16



# **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. (<u>www.langerresearch.com</u>)

**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)

Citi Economic Surprise Index - objective and quantitative measures of economic news. Defined as weighted historical standard deviations of data surprises (actual releases vs Bloomberg survey median). A positive reading of the Economic Surprise Index suggests that economic releases have on balance been beating consensus. The indices are calculated daily in a rolling three-month window. The weights of economic indicators are derived from relative high-frequency spot FX impacts of 1 standard deviation data surprises. The indices also employ a time decay function to replicate the limited memory of markets. (www.Bloomberg.com)

Merrill Lynch Option Volatility Estimate (MOVE) Index – a yield curve weighted index comprised of a weighted set of 1-month Treasury options, including 2.5.10 and 30 year tenor contracts. This index is an indicator of the expected (implied) future volatility in the rate markets.

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# **Imperial County Employees' Retirement System**

**Investment Performance Review** 

Period Ending: September 30, 2016

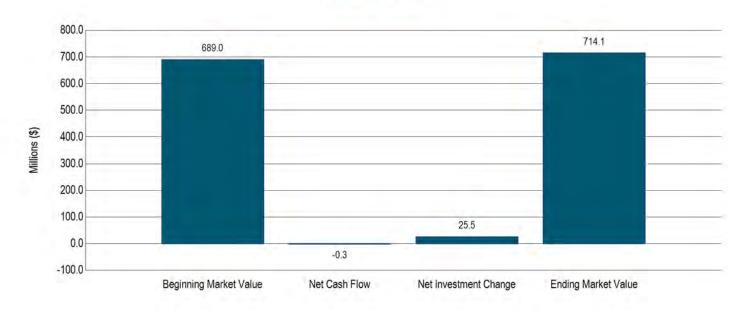


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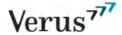
### **Portfolio Reconciliation**

	Last Three Months	Fiscal Year-To-Date	One Year
Beginning Market Value	\$688,962,382	\$688,962,382	\$650,087,996
Net Cash Flow	-\$307,109	-\$307,109	-\$741,385
Net Investment Change	\$25,485,322	\$25,485,322	\$64,793,983
Ending Market Value	\$714,140,595	\$714,140,595	\$714,140,595

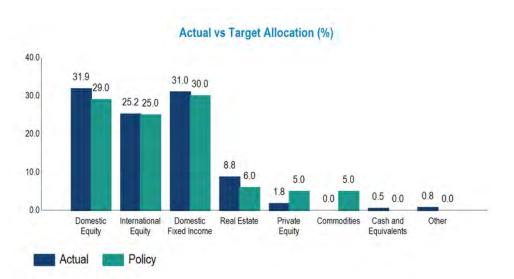
### Change in Market Value Last Three Months



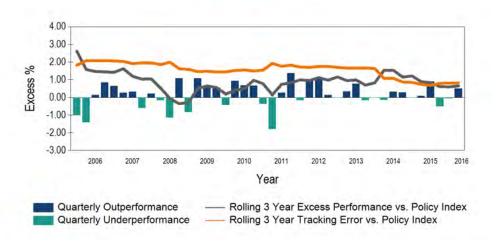
Contributions and withdrawals may include intra-account transfers between managers/funds. Fee transactions are excluded from Portfolio Reconciliation.



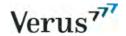
	QTD	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs
Total Fund	3.7	7.3	3.7	10.2	5.8	9.4	6.1
Total Fund ex Parametric	3.7	7.3	3.7	10.2	5.8	9.3	6.0
Policy Index	3.2	7.4	3.2	9.3	5.1	8.2	5.3
InvestorForce Public DB Gross Rank	38	28	38	32	59	49	27
Total Domestic Equity	4.4	8.3	4.4	14.2	9.8	16.2	7.9
Russell 3000	4.4	8.2	4.4	15.0	10.4	16.4	7.4
eA All US Equity Gross Rank	62	46	62	43	42	50	54
Total International Equity	7.1	6.1	7.1	10.3	0.9	6.9	3.0
MSCI ACWI ex USA Gross	7.0	6.3	7.0	9.8	0.6	6.5	2.6
eA ACWI ex-US All Cap Equity Gross Rank	43	37	43	47	81	87	79
Total Fixed Income	1.6	7.7	1.6	7.2	4.5	4.5	6.2
Barclays Aggregate	0.5	5.8	0.5	5.2	4.0	3.1	4.8
eA All US Fixed Inc Gross Rank	29	30	29	31	39	41	25
Total Real Estate	1.9	6.0	1.9	10.6	12.7	12.0	5.6
NCREIF Property Index	1.8	6.1	1.8	9.2	11.3	11.2	7.2
NCREIF-ODCE	2.1	6.5	2.1	10.1	12.4	12.4	6.0
Total Private Equity	3.1	8.2	3.1	9.7	19.1	15.3	
Russell 3000 +3% Lagged	3.4	12.6	3.4	5.2	14.4	14.9	
Total Opportunistic	2.8	6.8	2.8	9.0	12.1	19.3	
Assumption Rate + 1%	2.2	6.7	2.2	9.0	9.0	9.0	



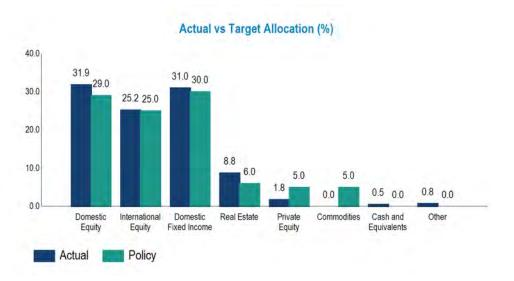
### Rolling Annualized Excess Performance and Tracking Error Total Fund vs. Policy Index



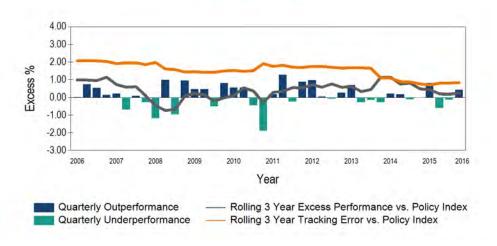
Policy Index (as of 7/1/2014): 29% Russell 3000, 25% MSCI ACWI Free Ex US, 30% BC Aggregate, 6% NCREIF Property, 5% Bloomberg Commodity Index, 5% Russell 3000 plus 300 bps (Lagged). Prior Policy Index (7/1/2010 to 6/30/2014): 24% S&P 500, 10% R2500, 21% MSCI ACWI Free Ex US, 30% BC Aggregate, 5% NCREIF Property, 5% Bloomberg Commodity Index, 5% CPI+ 5%. Prior quarter Private Equity returns and index data are used. All returns are (G) gross of fees.



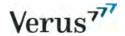
	QTD	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs
Total Fund	3.7	7.0	3.7	9.8	5.4	9.0	5.7
Total Fund ex Parametric	3.7	7.0	3.7	9.8	5.4	8.9	5.6
Policy Index	3.2	7.4	3.2	9.3	5.1	8.2	5.3
<b>Total Domestic Equity</b>	4.4	8.3	4.4	14.1	9.6	16.0	7.6
Russell 3000	4.4	8.2	4.4	15.0	10.4	16.4	7.4
Total International Equity	7.0	5.9	7.0	10.0	0.4	6.3	2.4
MSCI ACWI ex USA Gross	7.0	6.3	7.0	9.8	0.6	6.5	2.6
Total Fixed Income	1.6	7.5	1.6	6.9	4.2	4.2	5.9
Barclays Aggregate	0.5	5.8	0.5	5.2	4.0	3.1	4.8
Total Real Estate	1.6	5.2	1.6	9.6	11.6	11.2	4.8
NCREIF Property Index	1.8	6.1	1.8	9.2	11.3	11.2	7.2
NCREIF-ODCE	2.1	6.5	2.1	10.1	12.4	12.4	6.0
Total Private Equity	2.7	6.9	2.7	7.9	16.1	9.6	
Russell 3000 +3% Lagged	3.4	12.6	3.4	5.2	14.4	14.9	
Total Opportunistic	2.3	5.1	2.3	6.8	10.2	17.3	
Assumption Rate + 1%	2.2	6.7	2.2	9.0	9.0	9.0	

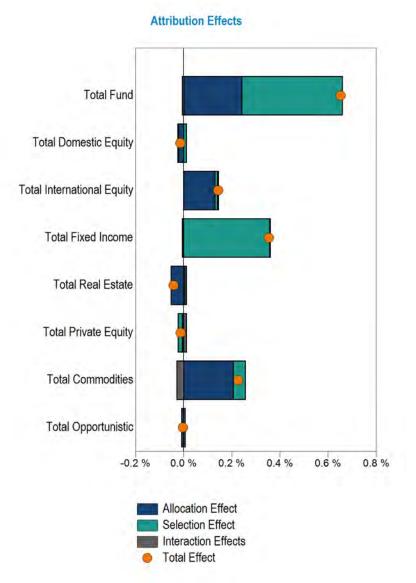


Rolling Annualized Excess Performance and Tracking Error
Total Fund vs. Policy Index



Policy Index (as of 7/1/2014): 29% Russell 3000, 25% MSCI ACWI Free Ex US, 30% BC Aggregate, 6% NCREIF Property, 5% Bloomberg Commodity Index, 5% Russell 3000 plus 300 bps (Lagged). Prior Policy Index (7/1/2010 to 6/30/2014): 24% S&P 500, 10% R2500, 21% MSCI ACWI Free Ex US, 30% BC Aggregate, 5% NCREIF Property, 5% Bloomberg Commodity Index, 5% CPI+ 5%. Prior quarter Private Equity returns and index data are used. All returns are (N) net of fees.





### **Performance Attribution**

	Quarter	YTD
Wtd. Actual Return	3.81%	7.41%
Wtd. Index Return *	3.24%	7.37%
Excess Return	0.57%	0.04%
Selection Effect	0.58%	0.42%
Allocation Effect	0.11%	-0.44%
Interaction Effect	-0.11%	0.09%

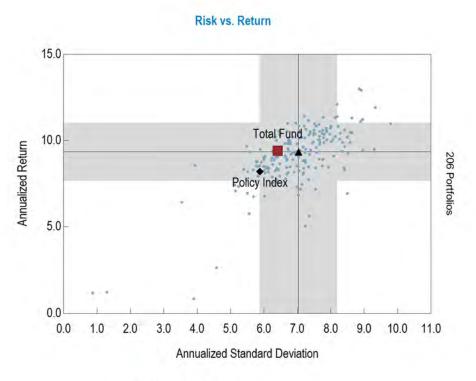
<sup>\*</sup>Calculated from benchmark returns and weightings of each component.

### Attribution Summary Last Three Months

	Wtd. Actual	Wtd. Index	Excess	Selection	Allocation	Interaction	Total
	Return	Return	Return	Effect	Effect	Effects	Effects
Total Domestic Equity	4.4%	4.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Total International Equity	7.1%	7.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Total Fixed Income	1.6%	0.5%	1.2%	0.4%	0.0%	0.0%	0.4%
Total Real Estate	1.9%	1.8%	0.1%	0.0%	0.0%	0.0%	0.0%
Total Private Equity	3.1%	3.4%	-0.3%	0.0%	0.0%	0.0%	0.0%
<b>Total Commodities</b>		-6.8%		0.2%	0.2%	-0.1%	0.3%
Total Opportunistic	2.8%	2.2%	0.6%	0.0%	0.0%	0.0%	0.0%
Total	3.8%	3.2%	0.6%	0.6%	0.1%	-0.1%	0.6%

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

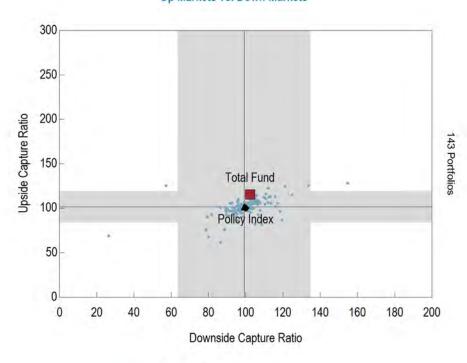
	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
Total Fund	9.40%	1.20%	6.41%	0.54%	1.08	0.97%	0.98	1.46	1.23	115.23%	102.30%





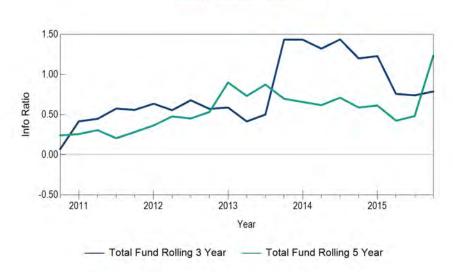
- Policy Index
- Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Gross

### Up Markets vs. Down Markets

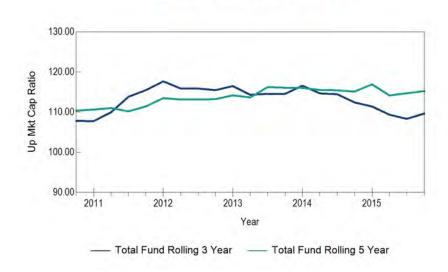


- Total Fund
- Policy Index
- Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Gross

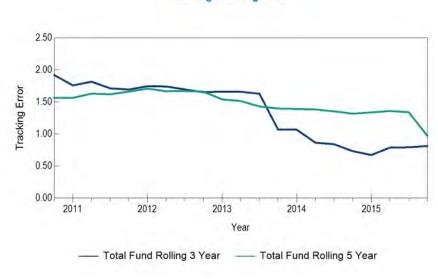
### Rolling Information Ratio



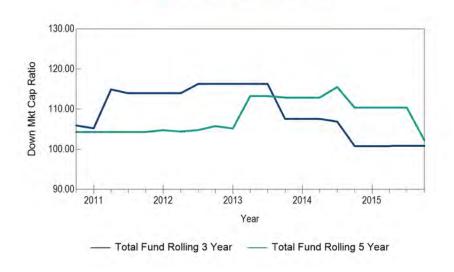
### Rolling Up Market Capture Ratio (%)



### **Rolling Tracking Error**

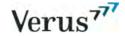


### Rolling Down Market Capture Ratio (%)



	Market Value	% of Portfolio	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2015	2014	2013	2012	2011	Return Since
Total Fund	714,140,595	100.0	3.7	7.3	3.7	10.2	5.8	9.4	6.1	0.0	4.8	14.8	14.6	-1.1	9.3 Mar-89
Policy Index			3.2	7.4	3.2	9.3	5.1	8.2	5.3	-1.2	4.9	13.5	11.2	0.4	Mar-89
InvestorForce Public DB Gross Rank			38	28	38	32	59	49	27	53	74	59	6	89	4 Mar-89
Total Fund ex Parametric			3.7	7.3	3.7	10.2	5.8	9.3	6.0	0.0	4.9	14.7	14.2	-1.0	9.3 Mar-89
Policy Index			3.2	7.4	3.2	9.3	5.1	8.2	5.3	-1.2	4.9	13.5	11.2	0.4	<i>Mar</i> -89
InvestorForce Public DB Gross Rank			38	28	38	31	59	51	29	53	72	59	11	88	4 Mar-89
Total Domestic Equity	227,830,289	31.9	4.4	8.3	4.4	14.2	9.8	16.2	7.9	0.3	10.2	33.9	17.1	0.9	
Russell 3000			4.4	8.2	4.4	15.0	10.4	16.4	7.4	0.5	12.6	33.6	16.4	1.0	
eA All US Equity Gross Rank			62	46	62	43	42	50	54	42	51	62	37	40	
BlackRock Russell 3000	227,830,289	31.9	4.4	8.3	4.4										6.9 Dec-15
Russell 3000			4.4	8.2	4.4										6.0 Dec-15
eA US All Cap Core Equity Gross Rank			55	37	55										49 Dec-15
Total International Equity	180,150,316	25.2	7.1	6.1	7.1	10.3	0.9	6.9	3.0	-3.5	-4.4	14.0	19.3	-15.6	
MSCI ACWI ex USA Gross			7.0	6.3	7.0	9.8	0.6	6.5	2.6	-5.3	-3.4	15.8	17.4	-13.3	
eA ACWI ex-US All Cap Equity Gross Rank	100 1== 00=		43	37	43	47	81	87	79	77	70	92	54	84	
BlackRock International Equity	126,155,967	17.7	6.5	2.1	6.5	6.9	0.8	7.7	2.2	-0.5	-4.7	23.2	17.8	-11.8	7.1 Jul-03
MSCI EAFE Gross			6.5	2.2	6.5	7.1	0.9	7.9	2.3	-0.4	-4.5	23.3	17.9	-11.7	7.2 Jul-03
eA All EAFE Equity Gross Rank	05.000.000	0.5	56	64	56	64	80	83	82	67	64	61	74	48	73 Jul-03
DFA Emerging Markets Value	25,322,380	3.5	9.9	21.5	9.9	20.5	-1.2	2.8		-18.3	-3.9	-3.2	20.1	-25.2	3.2 Jan-07
MSCI Emerging Markets Gross			9.2	16.4	9.2	17.2	-0.2	3.4		-14.6	-1.8	-2.3	18.6	-18.2	2.7 Jan-07
eA Emg Mkts Equity Gross Rank	00.074.000	4.0	25	10	25	30	89	90		92	84	84	56	92	63 Jan-07
Harding Loevner Emerging Markets	28,671,968	4.0	-			-						-			3.7 Aug-16
MSCI Emerging Markets Gross eA Emg Mkts Equity Gross Rank					 										3.9 Aug-16 47 Aug-16
Total Fixed Income	221,370,558	31.0	1.6	7.7	1.6	7.2	4.5	4.5	6.2	-0.3	5.9	-1.7	9.6	6.8	47 Aug-10
Barclays Aggregate	221,370,330	31.0	0.5	5.8	0.5	5.2	4.0	3.1	4.8	0.6	6.0	-2.0	4.2	7.8	
eA All US Fixed Inc Gross Rank			29	30	29	31	39	41	25	74	34	78	28	45	
Bradford & Marzec Fixed	110.548.310	15.5	1.6	7.8	1.6	7.5	5.7	5.3	6.6	1.2	7.0	-0.4	8.8	7.4	6.9 Dec-92
Barclays Aggregate	110,010,010	10.0	0.5	5.8	0.5	5.2	4.0	3.1	4.8	0.6	6.0	-2.0	4.2	7.8	5.8 Dec-92
eA US Core Plus Fixed Inc Gross Rank			45	35	45	28	13	33	21	15	16	52	45	51	50 Dec-92
MacKay Shields Core Plus Opportunities	89,332,597	12.5	1.9	7.7	1.9	6.9					_				2.7 Mar-15
Barclays Aggregate	-0,00=,001		0.5	5.8	0.5	5.2									3.2 Mar-15
eA US Core Plus Fixed Inc Gross Rank			32	38	32	41									91 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 on 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.

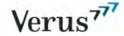


# Total Fund Performance Summary (Gross of Fees)

# Period Ending: September 30, 2016

	Market Value	% of Portfolio	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2015	2014	2013	2012	2011	Return Since
BlackRock US TIPS	21,489,651	3.0	1.0	7.3	1.0	6.7	2.5	2.0		-1.2	3.6	-8.5	7.1	13.7	4.8 Apr-07
Barclays US TIPS			1.0	7.3	1.0	6.6	2.4	1.9		-1.4	3.6	-8.6	7.0	13.6	4.6 Apr-07
eA TIPS / Infl Indexed Fixed Inc Gross Rank			67	42	67	38	41	55		43	45	62	59	37	68 Apr-07
Total Real Estate	62,681,410	8.8	1.9	6.0	1.9	10.6	12.7	12.0	5.6	16.1	13.0	12.6	10.6	14.9	
NCREIF Property Index			1.8	6.1	1.8	9.2	11.3	11.2	7.2	13.3	11.8	11.0	10.5	14.3	
NCREIF-ODCE			2.1	6.5	2.1	10.1	12.4	12.4	6.0	15.0	12.5	13.9	10.9	16.0	
ASB Real Estate	30,997,962	4.3	1.8	4.7	1.8	10.6	12.9			17.3	13.5	13.7			13.1 Dec-12
NCREIF Property Index			1.8	6.1	1.8	9.2	11.3			13.3	11.8	11.0			11.3 Dec-12
NCREIF-ODCE			2.1	6.5	2.1	10.1	12.4			15.0	12.5	13.9			12.8 Dec-12
Clarion Lion	30,271,736	4.2	2.1	7.5	2.1	11.1	13.3	12.6		15.7	13.2	12.8	10.9	18.7	4.7 Dec-06
NCREIF Property Index			1.8	6.1	1.8	9.2	11.3	11.2		13.3	11.8	11.0	10.5	14.3	6.9 Dec-06
NCREIF-ODCE			2.1	6.5	2.1	10.1	12.4	12.4		15.0	12.5	13.9	10.9	16.0	5.7 Dec-06
1221 State St. Corp	1,411,712	0.2	0.0	0.0	0.0	0.0	0.0	-2.7		0.0	0.0	0.0	0.1	-9.0	-0.5 Sep-08
Total Cash	3,865,652	0.5													
Cash Account	3,865,652	0.5	0.0	0.0	0.0	0.0	0.0	0.1		0.0	0.0	0.0	0.4	0.2	
91 Day T-Bills			0.1	0.2	0.1	0.2	0.1	0.1		0.0	0.0	0.0	0.1	0.0	

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 on 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.



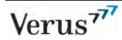
	Market Value	% of Portfolio	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2015	2014	2013	2012	2011	Return Since
Total Fund	714,140,595	100.0	3.7	7.0	3.7	9.8	5.4	9.0	5.7	-0.4	4.4	14.5	14.2	-1.5	8.9 Mar-89
Policy Index			3.2	7.4	3.2	9.3	5.1	8.2	5.3	-1.2	4.9	13.5	11.2	0.4	Mar-89
Total Fund ex Parametric			3.7	7.0	3.7	9.8	5.4	8.9	5.6	-0.4	4.4	14.4	13.8	-1.4	8.8 Mar-89
Policy Index			3.2	7.4	3.2	9.3	5.1	8.2	5.3	-1.2	4.9	13.5	11.2	0.4	Mar-89
Total Domestic Equity	227,830,289	31.9	4.4	8.3	4.4	14.1	9.6	16.0	7.6	0.1	10.0	33.6	16.9	0.7	
Russell 3000			4.4	8.2	4.4	15.0	10.4	16.4	7.4	0.5	12.6	33.6	16.4	1.0	
BlackRock Russell 3000	227,830,289	31.9	4.4	8.3	4.4										6.9 Dec-15
Russell 3000			4.4	8.2	4.4										6.0 Dec-15
Total International Equity	180,150,316	25.2	7.0	5.9	7.0	10.0	0.4	6.3	2.4	-4.0	-4.9	13.4	18.6	-16.1	
MSCI ACWI ex USA Gross			7.0	6.3	7.0	9.8	0.6	6.5	2.6	-5.3	-3.4	15.8	17.4	-13.3	
BlackRock International Equity	126,155,967	17.7	6.5	2.0	6.5	6.8	0.7	7.6	2.0	-0.6	-4.8	22.9	17.6	-11.9	6.9 Jul-03
MSCI EAFE Gross			6.5	2.2	6.5	7.1	0.9	7.9	2.3	-0.4	-4.5	23.3	17.9	-11.7	7.2 Jul-03
DFA Emerging Markets Value	25,322,380	3.5	9.7	21.0	9.7	19.8	-1.7	2.2		-18.8	-4.4	-3.8	19.4	-25.6	2.6 Jan-07
MSCI Emerging Markets Gross			9.2	16.4	9.2	17.2	-0.2	3.4		-14.6	-1.8	-2.3	18.6	-18.2	2.7 Jan-07
Harding Loevner Emerging Markets	28,671,968	4.0													3.5 Aug-16
MSCI Emerging Markets Gross															3.9 Aug-16
Total Fixed Income	221,370,558	31.0	1.6	7.5	1.6	6.9	4.2	4.2	5.9	-0.6	5.6	-2.0	9.3	6.5	
Barclays Aggregate			0.5	5.8	0.5	5.2	4.0	3.1	4.8	0.6	6.0	-2.0	4.2	7.8	
Bradford & Marzec Fixed	110,548,310	15.5	1.5	7.6	1.5	7.2	5.4	5.0	6.3	0.9	6.7	-0.8	8.5	7.1	6.6 Dec-92
Barclays Aggregate			0.5	5.8	0.5	5.2	4.0	3.1	4.8	0.6	6.0	-2.0	4.2	7.8	5.8 Dec-92
MacKay Shields Core Plus Opportunities	89,332,597	12.5	1.8	7.4	1.8	6.5	-				-	-			2.4 Mar-15
Barclays Aggregate			0.5	5.8	0.5	5.2									3.2 Mar-15
BlackRock US TIPS	21,489,651	3.0	0.9	7.3	0.9	6.6	2.4	1.9		-1.3	3.6	-8.6	7.0	13.6	4.7 Apr-07
Barclays US TIPS			1.0	7.3	1.0	6.6	2.4	1.9		-1.4	3.6	-8.6	7.0	13.6	4.6 Apr-07
Total Real Estate	62,681,410	8.8	1.6	5.2	1.6	9.6	11.6	11.2	4.8	15.0	11.6	12.1	10.3	14.2	
NCREIF Property Index			1.8	6.1	1.8	9.2	11.3	11.2	7.2	13.3	11.8	11.0	10.5	14.3	
NCREIF-ODCE			2.1	6.5	2.1	10.1	12.4	12.4	6.0	15.0	12.5	13.9	10.9	16.0	
ASB Real Estate	30,997,962	4.3	1.5	4.0	1.5	9.6	11.8			16.2	12.5	12.5			12.0 Dec-12
NCREIF Property Index			1.8	6.1	1.8	9.2	11.3			13.3	11.8	11.0			11.3 Dec-12
NCREIF-ODCE			2.1	6.5	2.1	10.1	12.4			15.0	12.5	13.9			12.8 Dec-12
Clarion Lion	30,271,736	4.2	1.8	6.7	1.8	10.0	12.2	11.6		14.6	12.2	11.8	9.9	17.8	3.7 Dec-06
NCREIF Property Index			1.8	6.1	1.8	9.2	11.3	11.2		13.3	11.8	11.0	10.5	14.3	6.9 Dec-06
NCREIF-ODCE			2.1	6.5	2.1	10.1	12.4	12.4		15.0	12.5	13.9	10.9	16.0	5.7 Dec-06
1221 State St. Corp	1,411,712	0.2	0.0	0.0	0.0	0.0	0.0	-2.7		0.0	0.0	0.0	0.1	-9.0	-0.5 Sep-08



# Total Fund Performance Summary (Net of Fees)

# Period Ending: September 30, 2016

	Market Value	% of Portfolio	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2015	2014	2013	2012	2011	Return	Since
Total Cash	3,865,652	0.5														
Cash Account	3,865,652	0.5	0.0	0.0	0.0	0.0	0.0	0.1		0.0	0.0	0.0	0.4	0.2		
91 Day T-Bills			0.1	0.2	0.1	0.2	0.1	0.1		0.0	0.0	0.0	0.1	0.0		



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

				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 International Equity	0.67%	-0.26%	10.46%	-0.26%	1.00	0.04%	1.00	0.06	-6.07	98.06%	101.13%
DFA Emerging Markets Value	-1.74%	-1.53%	15.52%	-1.51%	1.11	3.14%	0.97	-0.12	-0.49	101.93%	115.44%
Bradford & Marzec Fixed	5.36%	1.34%	2.99%	1.26%	1.02	1.10%	0.86	1.77	1.21	119.62%	48.10%
BlackRock US TIPS	2.42%	0.02%	4.32%	0.00%	1.01	0.12%	1.00	0.54	0.17	101.16%	101.30%
ASB Real Estate	11.81%	0.50%	2.66%	-4.56%	1.45	2.25%	0.31	4.41	0.22	104.97%	
Clarion Lion	12.22%	0.92%	1.78%	0.43%	1.04	1.43%	0.36	6.80	0.65	109.13%	

				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	7.59%	-0.29%	11.70%	-0.29%	1.00	0.04%	1.00	0.64	-6.84	98.32%	101.30%
DFA Emerging Markets Value	2.23%	-1.16%	16.31%	-1.57%	1.12	2.97%	0.98	0.13	-0.39	106.03%	113.51%
Bradford & Marzec Fixed	4.97%	1.89%	3.19%	1.63%	1.08	1.31%	0.84	1.53	1.44	146.32%	79.56%
BlackRock US TIPS	1.93%	0.00%	5.12%	-0.01%	1.01	0.10%	1.00	0.36	0.00	100.75%	101.03%
Clarion Lion	11.58%	0.40%	1.65%	-1.63%	1.18	1.35%	0.34	6.97	0.30	104.44%	



<sup>3</sup>Last known market value + capital calls - distributions (All HarbourVest funds are as of 6/30/2016)

<sup>5</sup>Gross IRR is calculated on the cash flows of the underlying investments of the fund and is net of the underlying fund fees and carried interest.

<sup>5</sup>Net 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.

<sup>6</sup>HarbourVest International Private Equity Partners VI-Partnership Fund L.P. values are originally presented in euros and are calculated to dollars using OANDA™.

7KKR: Total capital called is \$11,446,285, which includes recylced distributions. Unused capital commitment is \$1,327,002 after including distribution proceeds available for reinvestment

<sup>4</sup>Investment period ended, no further capital to be called.

<sup>8</sup>All HarbourVest fees and expenses are for 2Q 2016

Vintage	Manager & Fund Name	Estimated 9/30 Market Value <sup>3</sup>	Total Commitment	Capital Called	% Called	Remaining Commitment	Capital Returned	Market Value for IRR	Paid-In (DPI) <sup>1</sup>	Paid-In (TVPI) <sup>2</sup>	Since Inception <sup>5</sup>	IRR Date
2011	HarbourVest IX-Buyout	\$5,697,018	\$10,000,000	\$5,575,000	56%	\$4,425,000	\$1,276,189	\$5,697,018	22.9%	125.1%	14.6%	6/30/16
2011	HarbourVest IX-Credit	\$1,034,849	\$2,000,000	\$1,140,000	57%	\$860,000	\$352,074	\$1,034,849	30.9%	121.7%	13.9%	6/30/16
2008	HarbourVest Int'l VI <sup>6</sup>	\$2,553,904	\$3,712,930	\$2,849,644	77%	\$863,286	\$884,417	\$2,553,904	31.0%	120.7%	15.1%	6/30/16
2011	HarbourVest IX-Venture	\$3,500,812	\$4,000,000	\$3,080,000	77%	\$920,000	\$678,724	\$3,500,812	22.0%	135.7%	18.1%	6/30/16
2010	KKR Mezzanine <sup>7</sup>	\$4,222,578	\$10,000,000	\$10,000,000	100%	\$0	\$9,961,423	\$5,144,302	99.6%	141.8%	8.0%	6/30/16
2011	PIMCO BRAVO 4	\$1,233,204	\$10,000,000	\$10,000,000	100%	\$0	\$17,897,620	\$2,078,504	179.0%	191.3%	22.3%	9/30/16
	Total Alternative Illiquids	\$18,242,365	\$39,712,930	\$32,644,644	82%	\$7,068,286	\$31,050,447	\$20,009,389	61.3%	156.4%		
	% of Portfolio (Market Value)	2.6%						Management Fee	Admin Fee	Interest Expense	Other Expense	Total Expense <sup>8</sup>
						HarbourVest I	X-Buyout	\$24,901	\$0	\$0	\$2,291	\$27,192
						HarbourVest I	X-Credit	\$4,974	\$0	\$0	\$1,483	\$6,457
						HarbourVest I	nt'l VI	\$7,452	\$0	\$0	\$216	\$7,668
						HarbourVest I	X-Venture	\$9,978	\$0	\$0	\$1,084	\$11,062
						KKR Mezzani	ne	\$16,669	\$0	\$0	\$0	\$16,669
						PIMCO BRAV	0	\$7,218	\$1,592	\$777	\$2,515	\$12,102

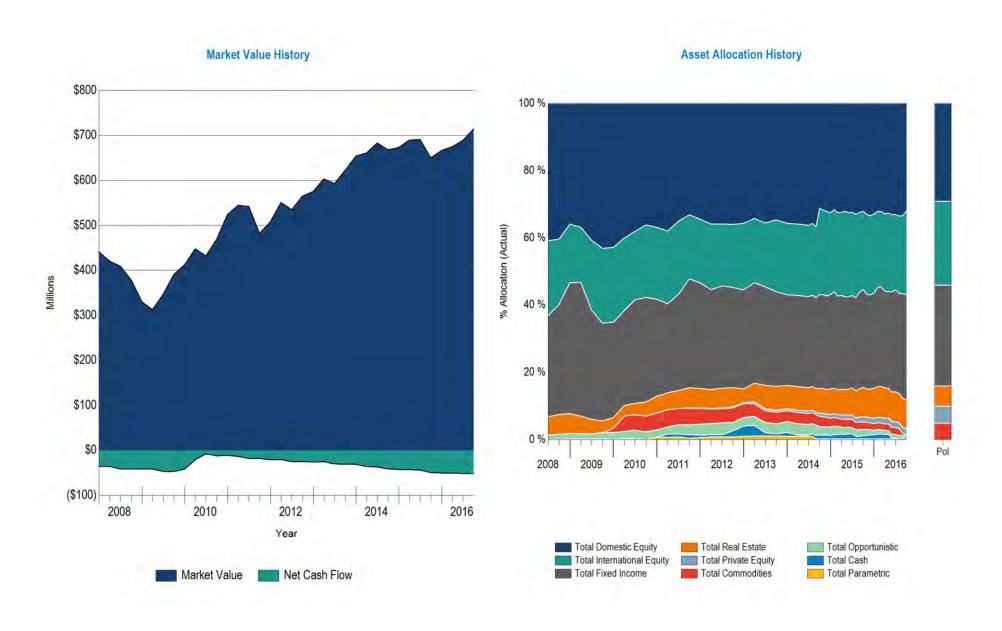
Verus<sup>77</sup>

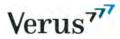
Manager	Beginning Market Value	Contributions	Disbursements	Fees <sup>2</sup>	Net Cash Flow	Investment Income	Capital Gain/ Loss	Total Gains/Earnings/ Losses	Ending Market Value
Blackrock Russell 3000 Index	\$227,744,985	\$0	(\$10,000,000)	\$0	(\$10,000,000)	\$0	\$10,085,305	\$10,085,305	\$227,830,289
DFA Emerging Markets	\$18,522,839	\$5,000,000	\$0	\$0	\$5,000,000	\$93,671	\$1,705,871	\$1,799,542	\$25,322,380
Harding Loevner Emerging Markets	\$0	\$26,937,763	\$0	\$0	\$26,937,763		\$1,734,205	\$1,734,205	\$28,671,968
Vontobel Global Emerging Markets	\$22,937,763	\$0	(\$22,937,763)	\$0	(\$22,937,763)		\$0	\$0	\$0
Blackrock International Equity	\$113,767,374	\$5,000,000	\$0	\$0	\$5,000,000		\$7,388,594	\$7,388,594	\$126,155,967
Bradford & Marzec, Inc.	\$104,714,068	\$14,184,629	(\$10,000,000)	\$0	\$4,184,629	\$874,195	\$775,418	\$1,649,613	\$110,548,310
MacKay Shields Core Plus Opp.	\$87,769,772	\$0	\$0	\$0	\$0	\$0	\$1,562,825	\$1,562,825	\$89,332,597
Blackrock US TIPS	\$15,341,329	\$6,000,000	\$0	\$0	\$6,000,000	\$0	\$148,322	\$148,322	\$21,489,651
Clarion Lion Properties	\$29,734,245	\$216,015	(\$305,389)	(\$79,191)	(\$168,565)	\$368,791	\$337,265	\$706,056	\$30,271,736
ICERS State Street Real Estate	\$1,390,539	\$33,561	(\$12,396)	\$0	\$21,166	\$7	\$0	\$7	\$1,411,712
ASB Allegiance Real Estate	\$30,459,360	\$0	\$0	(\$69,948)	(\$69,948)	\$233,362	\$375,188	\$608,550	\$30,997,962
PIMCO BRAVO	\$2,078,504	\$0	(\$886,063)	(\$12,102)	(\$898,165)	\$0	\$52,865	\$52,865	\$1,233,204
KKR Mezzanine I	\$4,364,880	\$16,669	(\$241,062)	(\$16,669)	(\$241,062)	\$0	\$98,760	\$98,760	\$4,222,578
Blackrock Global Commodity	\$4,628,966	\$0	(\$4,316,566)	\$0	(\$4,316,566)	\$0	(\$312,400)	(\$312,400)	\$0
Gresham TAP Commodity Builder	\$9,991,885	\$0	(\$9,802,523)	(\$5,927)	(\$9,808,450)	\$0	(\$183,436)	(\$183,436)	\$0
HarbourVest International VI	\$2,591,974	\$0	(\$51,646)	(\$7,452)	(\$59,098)	\$15	\$21,018	\$21,033	\$2,553,909
HarbourVest Buyout IX <sup>1</sup>	\$5,213,479	\$250,000	\$0	(\$24,901)	\$225,099	\$35	\$258,405	\$258,440	\$5,697,018
HarbourVest Credit Opportunities IX 1	\$974,292	\$30,000	\$0	(\$4,974)	\$25,026	\$2,998	\$32,533	\$35,531	\$1,034,849
HarbourVest Venture IX 1	\$3,342,943	\$140,000	(\$34,806)	(\$9,978)	\$95,216	\$3,077	\$59,576	\$62,653	\$3,500,812
Cash	\$2,001,429	\$1,864,222	\$0	\$0	\$1,864,222	\$0	\$0	\$0	\$3,865,652
The Clifton Group	\$1,391,756	\$0	(\$1,391,756)	\$0	(\$1,391,756)	\$0	\$0	\$0	\$0
Totals	\$688,962,382	\$59,672,860	(\$59,979,969)	(\$231,142)	(\$538,251)	\$1,576,151	\$24,140,312	\$25,716,463	\$714,140,595

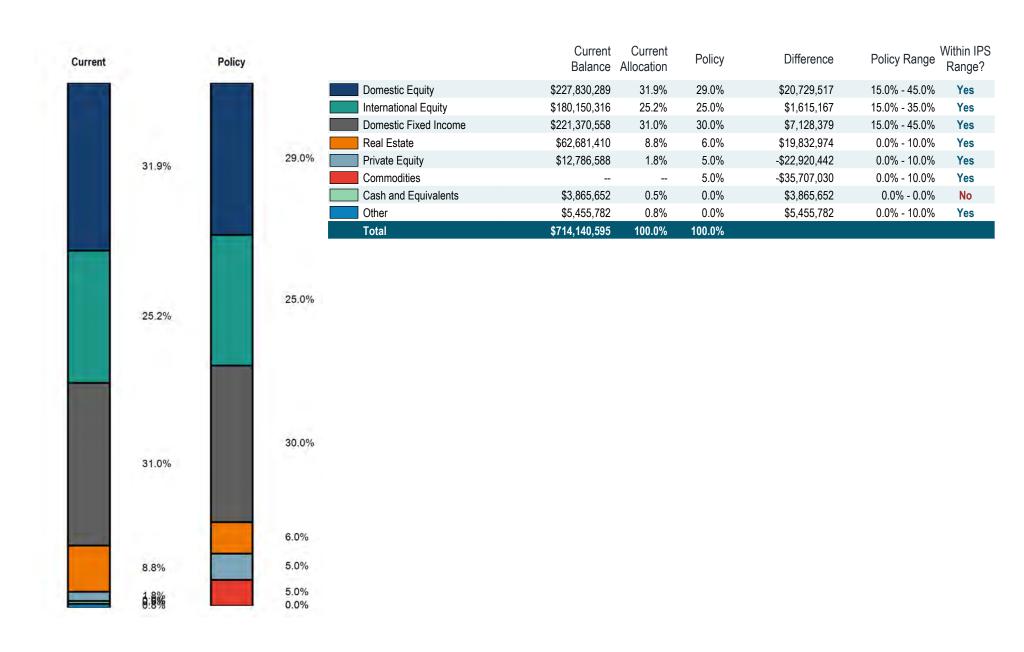
<sup>&#</sup>x27;2Q 2016 data

<sup>&</sup>lt;sup>2</sup>Fee transactions not included in the Portfolio Reconciliation page at beginning of report







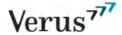


## Objective 1:Exceed passive benchmark on a net-of-fee basis

## Objective 2:Exceed median manager return in comparable universe on a gross-of-fee basis

		-		3-Year					5-Year		
Asset Class / Manager	Benchmark	Manager Return	Benchmark Return	Meets Expectations	Universe Ranking	Meets Expectations	Manager Return	Benchmark Return	Meets Expectations	Universe Ranking	Meets Expectations
Domestic Equity	A 7 7 - 2 7 .										
BlackRock	Russell 3000 Index										
International Equity		(1-4-									
BlackRock	MSCI EAFE Index	0.7%	0.9%	No	-		7.6%	7.9%	No		
Dimensional Fund Advisors	MSCI Emerging Markets Index + 150 basis points	-1.7%	1.3%	No	89	No	2.2%	4.9%	No	90	No
Harding Loevner	MSCI Emerging Markets Index + 150 basis points				1000			4		1.777	
Fixed Income											
Bradford & Marzec	Barclays Credit Aggregate Bond Index + 50 basis points	5.4%	4.5%	Yes	13	Yes	5.0%	3.6%	Yes	33	Yes
MacKay Shields	Barclays Credit Aggregate Bond Index + 50 basis points		-		1000					- 00	
BlackRock	Barclays Credit US TIPS Index	2.4%	2.4%	No			1.9%	1.9%	No		
Alternatives											
Clarion	NCREIF Property Index	12.2%	11.3%	Yes			11.6%	11.2%	Yes	-	
ASB Allegiance	NCREIF Property Index	11.8%	11.3%	Yes							
PIMCO	Actuarial Assumption Rate + 100 basis points	1 0000									
KKR	Actuarial Assumption Rate + 100 basis points										
HarbourVest Partners	Russell 3000 + 250 basis points										

	-			10-Year					15-Year		
Asset Class / Manager	Benchmark	Manager Return	Benchmark Return	Meets Expectations	Universe Ranking	Meets Expectations	Manager Return	Benchmark Return	Meets Expectations	Universe Ranking	Meets Expectations
Domestic Equity											
BlackRock	Russell 3000 Index										
International Equity											
BlackRock	MSCI EAFE Index	2.0%	2.3%	No							
Dimensional Fund Advisors	MSCI Emerging Markets Index + 150 basis points	11777	-								
Harding Loevner	MSCI Emerging Markets Index + 150 basis points										
Fixed Income							1.77				
Bradford & Marzec	Barclays Credit Aggregate Bond Index + 50 basis points	6.3%	5.3%	Yes	21	Yes	5.7%	5.3%	Yes	0	
MacKay Shields	Barclays Credit Aggregate Bond Index + 50 basis points		-					200			
BlackRock	Barclays Credit US TIPS Index										
Alternatives											
Clarion	NCREIF Property Index										
ASB Allegiance	NCREIF Property Index										
PIMCO	Actuarial Assumption Rate + 100 basis points										
KKR	Actuarial Assumption Rate + 100 basis points										
HarbourVest Partners	Russell 3000 + 250 basis points										



# Total Fund Investment Fee Analysis

# Period Ending: September 30, 2016

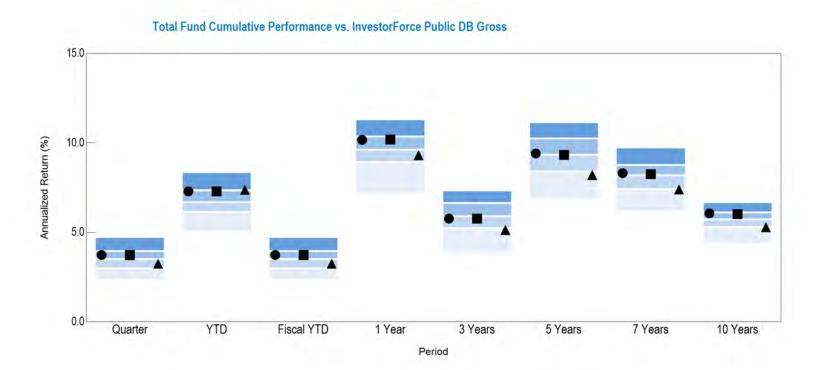
Account	Fee Schedule	Market Value As of 9/30/2016	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
1221 State St. Corp	No Fee	\$1,411,712	0.2%		
ASB Real Estate	1.25% of First \$5.0 Mil, 1.00% of Next \$10.0 Mil, 0.75% Thereafter	\$30,997,962	4.3%	\$282,485	0.91%
BlackRock International Equity	0.15% of First \$50.0 Mil, 0.10% of Next \$50.0 Mil	\$126,155,967	17.7%	\$125,000	0.10%
BlackRock Russell 3000	0.03% of Assets	\$227,830,289	31.9%	\$68,349	0.03%
BlackRock US TIPS	0.07% of Assets	\$21,489,651	3.0%	\$15,043	0.07%
Bradford & Marzec Fixed	0.29% of First \$100.0 Mil, 0.25% of Next \$100.0 Mil	\$110,548,310	15.5%	\$311,371	0.28%
Cash Account	No Fee	\$3,865,652	0.5%		
Clarion Lion	1.25% of First \$10.0 Mil, 1.00% of Next \$15.0 Mil, 0.85% Thereafter	\$30,271,736	4.2%	\$319,810	1.06%
DFA Emerging Markets Value	0.56% of Assets	\$25,322,380	3.5%	\$141,805	0.56%
Harbourvest Buyout IX	\$100,000 Annually	\$5,697,018	0.8%	\$100,000	1.76%
Harbourvest Credit Ops IX	\$20,000 Annually	\$1,034,849	0.1%	\$20,000	1.93%
Harbourvest International PE VI	\$35,000 Annually	\$2,553,909	0.4%	\$35,000	1.37%
Harbourvest Venture IX	\$40,000 Annually	\$3,500,812	0.5%	\$40,000	1.14%
Harding Loevner Emerging Markets	1.05% of Assets	\$28,671,968	4.0%	\$301,056	1.05%
KKR Mezzanine Partners	\$150,000 Annually	\$4,222,578	0.6%	\$150,000	3.55%
MacKay Shields Core Plus Opportunities	0.35% of Assets	\$89,332,597	12.5%	\$312,664	0.35%
PIMCO BRAVO	1.90% of Assets	\$1,233,204	0.2%	\$23,431	1.90%
Verus Advisory Fee	\$175,000 Annually	\$0	0.0%	-	-
Investment Management Fee		\$714,140,595	100.0%	\$2,246,013	0.31%

<sup>\*</sup>Verus advisory fee shown for disclosure purposes only and is not included in total investment management fee calculations.



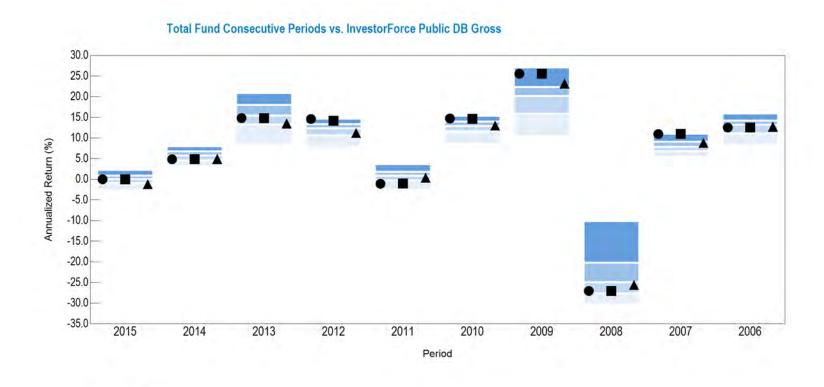
<sup>\*</sup>HarbourVest, KKR and PIMCO BRAVO fees are estimated gross management fees only and do not include incentive allocations or offsetting cash flows received by the fund.

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



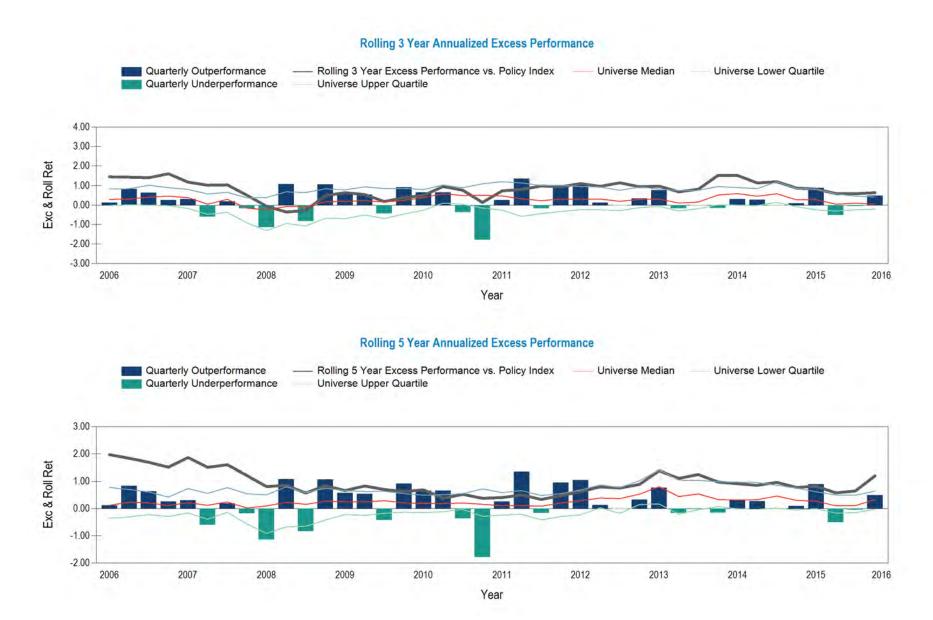
Return (R	ank)														
4.7		8.4		4.7		11.3		7.3		11.2		9.7		6.7	
4.0		7.3		4.0		10.4		6.6		10.3		8.8		6.1	
3.5		6.7		3.5		9.6		5.9		9.3		8.2		5.7	
3.0		6.1		3.0		8.9		5.2		8.4		7.4		5.3	
2.3		5.0		2.3		7.2		3.8		6.9		6.2		4.4	
269		256		269		255		226		206		181		165	
3.7	(38)	7.3	(28)	3.7	(38)	10.2	(32)	5.8	(59)	9.4	(49)	8.3	(48)	6.1	(27)
3.7	(38)	7.3	(28)	3.7	(38)	10.2	(31)	5.8	(59)	9.3	(51)	8.2	(50)	6.0	(29)
3.2	(65)	7.4	(25)	3.2	(65)	9.3	(64)	5.1	(78)	8.2	(81)	7.4	(76)	5.3	(76)
	4.7 4.0 3.5 3.0 2.3 269 3.7 3.7	3.5 3.0 2.3 269 3.7 (38) 3.7 (38)	4.7 8.4 4.0 7.3 3.5 6.7 3.0 6.1 2.3 5.0 269 256 3.7 (38) 7.3 3.7 (38) 7.3	4.7 8.4 4.0 7.3 3.5 6.7 3.0 6.1 2.3 5.0 269 256 3.7 (38) 7.3 (28) 3.7 (38) 7.3 (28)	4.7     8.4     4.7       4.0     7.3     4.0       3.5     6.7     3.5       3.0     6.1     3.0       2.3     5.0     2.3       269     256     269       3.7     (38)     7.3     (28)     3.7       3.7     (38)     7.3     (28)     3.7       3.7     (38)     7.3     (28)     3.7	4.7     8.4     4.7       4.0     7.3     4.0       3.5     6.7     3.5       3.0     6.1     3.0       2.3     5.0     2.3       269     256     269       3.7     (38)     7.3     (28)     3.7     (38)       3.7     (38)     7.3     (28)     3.7     (38)	4.7     8.4     4.7     11.3       4.0     7.3     4.0     10.4       3.5     6.7     3.5     9.6       3.0     6.1     3.0     8.9       2.3     5.0     2.3     7.2       269     256     269     255       3.7     (38)     7.3     (28)     3.7     (38)     10.2       3.7     (38)     7.3     (28)     3.7     (38)     10.2	4.7     8.4     4.7     11.3       4.0     7.3     4.0     10.4       3.5     6.7     3.5     9.6       3.0     6.1     3.0     8.9       2.3     5.0     2.3     7.2       269     256     269     255       3.7     (38)     7.3     (28)     3.7     (38)     10.2     (32)       3.7     (38)     7.3     (28)     3.7     (38)     10.2     (31)	4.7     8.4     4.7     11.3     7.3       4.0     7.3     4.0     10.4     6.6       3.5     6.7     3.5     9.6     5.9       3.0     6.1     3.0     8.9     5.2       2.3     5.0     2.3     7.2     3.8       269     256     269     255     226       3.7     (38)     7.3     (28)     3.7     (38)     10.2     (32)     5.8       3.7     (38)     7.3     (28)     3.7     (38)     10.2     (31)     5.8	4.7     8.4     4.7     11.3     7.3       4.0     7.3     4.0     10.4     6.6       3.5     6.7     3.5     9.6     5.9       3.0     6.1     3.0     8.9     5.2       2.3     5.0     2.3     7.2     3.8       269     256     269     255     226       3.7     (38)     7.3     (28)     3.7     (38)     10.2     (31)     5.8     (59)       3.7     (38)     7.3     (28)     3.7     (38)     10.2     (31)     5.8     (59)	4.7     8.4     4.7     11.3     7.3     11.2       4.0     7.3     4.0     10.4     6.6     10.3       3.5     6.7     3.5     9.6     5.9     9.3       3.0     6.1     3.0     8.9     5.2     8.4       2.3     5.0     2.3     7.2     3.8     6.9       269     256     269     255     226     206       3.7     (38)     7.3     (28)     3.7     (38)     10.2     (32)     5.8     (59)     9.4       3.7     (38)     7.3     (28)     3.7     (38)     10.2     (31)     5.8     (59)     9.3	4.7     8.4     4.7     11.3     7.3     11.2       4.0     7.3     4.0     10.4     6.6     10.3       3.5     6.7     3.5     9.6     5.9     9.3       3.0     6.1     3.0     8.9     5.2     8.4       2.3     5.0     2.3     7.2     3.8     6.9       269     256     269     255     226     206       3.7     (38)     7.3     (28)     3.7     (38)     10.2     (32)     5.8     (59)     9.4     (49)       3.7     (38)     7.3     (28)     3.7     (38)     10.2     (31)     5.8     (59)     9.3     (51)	4.7       8.4       4.7       11.3       7.3       11.2       9.7         4.0       7.3       4.0       10.4       6.6       10.3       8.8         3.5       6.7       3.5       9.6       5.9       9.3       8.2         3.0       6.1       3.0       8.9       5.2       8.4       7.4         2.3       5.0       2.3       7.2       3.8       6.9       6.2         269       256       269       255       226       206       181         3.7       (38)       7.3       (28)       3.7       (38)       10.2       (31)       5.8       (59)       9.3       (51)       8.2	4.7       8.4       4.7       11.3       7.3       11.2       9.7         4.0       7.3       4.0       10.4       6.6       10.3       8.8         3.5       6.7       3.5       9.6       5.9       9.3       8.2         3.0       6.1       3.0       8.9       5.2       8.4       7.4         2.3       5.0       2.3       7.2       3.8       6.9       6.2         269       256       269       255       226       206       181         3.7       (38)       7.3       (28)       3.7       (38)       10.2       (32)       5.8       (59)       9.4       (49)       8.3       (48)         3.7       (38)       7.3       (28)       3.7       (38)       10.2       (31)       5.8       (59)       9.3       (51)       8.2       (50)	4.7     8.4     4.7     11.3     7.3     11.2     9.7     6.7       4.0     7.3     4.0     10.4     6.6     10.3     8.8     6.1       3.5     6.7     3.5     9.6     5.9     9.3     8.2     5.7       3.0     6.1     3.0     8.9     5.2     8.4     7.4     5.3       2.3     5.0     2.3     7.2     3.8     6.9     6.2     4.4       269     256     269     255     226     206     181     165       3.7     (38)     7.3     (28)     3.7     (38)     10.2     (32)     5.8     (59)     9.4     (49)     8.3     (48)     6.1       3.7     (38)     7.3     (28)     3.7     (38)     10.2     (31)     5.8     (59)     9.3     (51)     8.2     (50)     6.0





	Return	(Rank)																		
5th Percentile	2.2		8.0		20.8		14.6		3.6		15.4		27.0		-10.1		11.0		15.9	
25th Percentile	0.9		6.8		18.0		13.4		1.9		14.0		22.4		-20.1		9.1		14.2	
Median	0.1		5.8		15.5		12.4		0.9		12.9		20.2		-24.9		7.9		13.2	
75th Percentile	-0.9		4.6		13.3		10.7		-0.3		11.7		15.9		-27.6		6.9		11.2	
95th Percentile	-2.6		3.2		8.5		7.8		-2.5		8.6		10.5		-30.3		5.4		8.3	
# of Portfolios	316		248		231		236		206		188		184		181		177		171	
Total Fund	0.0	(53)	4.8	(74)	14.8	(59)	14.6	(6)	-1.1	(89)	14.7	(13)	25.6	(11)	-27.1	(68)	10.9	(6)	12.5	(59)
Total Fund ex Parametric	0.0	(53)	4.9	(72)	14.7	(59)	14.2	(11)	-1.0	(88)	14.7	(15)	25.6	(11)	-27.1	(68)	10.9	(6)	12.5	(59)
Policy Index	-1.2	(81)	4.9	(72)	13.5	(74)	11.2	(72)	0.4	(63)	13.0	(49)	23.2	(23)	-25.6	(58)	8.8	(31)	12.7	(57)





	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2015	2014	2013	2012	2011
Total Domestic Equity	227,830,289	4.4	8.3	4.4	14.2	9.8	16.2	7.9	0.3	10.2	33.9	17.1	0.9
Russell 3000		4.4	8.2	4.4	15.0	10.4	16.4	7.4	0.5	12.6	33.6	16.4	1.0
eA All US Equity Gross Rank		62	46	62	43	42	50	54	42	51	62	37	40
BlackRock Russell 3000	227,830,289	4.4	8.3	4.4									
Russell 3000		4.4	8.2	4.4									
eA US All Cap Core Equity Gross Rank		55	37	55									

U.S. Effective Style Map 3 Years Ending September 30, 2016

Large
Value

Wid
Value

Total Domestic Equity

Mid
Value

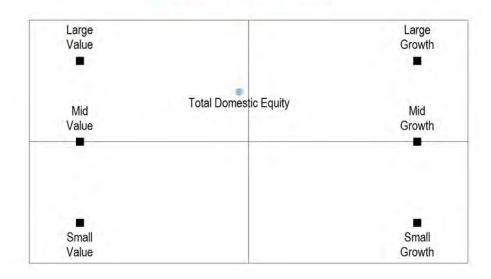
Small
Value

Small
Value

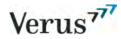
Large
Growth

Mid
Growth

U.S. Effective Style Map 5 Years Ending September 30, 2016

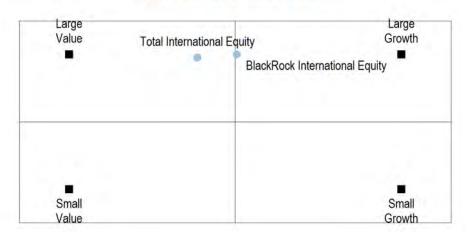


	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2015	2014	2013	2012	2011
Total Domestic Equity	227,830,289	4.4	8.3	4.4	14.1	9.6	16.0	7.6	0.1	10.0	33.6	16.9	0.7
Russell 3000		4.4	8.2	4.4	15.0	10.4	16.4	7.4	0.5	12.6	33.6	16.4	1.0
BlackRock Russell 3000	227,830,289	4.4	8.3	4.4									
Russell 3000		4.4	8.2	4.4									

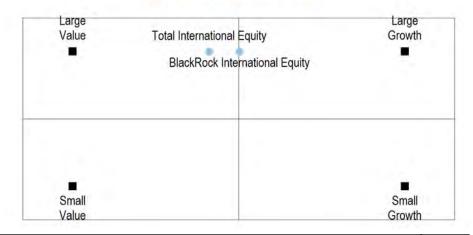


	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2015	2014	2013	2012	2011
Total International Equity	180,150,316	7.1	6.1	7.1	10.3	0.9	6.9	3.0	-3.5	-4.4	14.0	19.3	-15.6
MSCI ACWI ex USA Gross		7.0	6.3	7.0	9.8	0.6	6.5	2.6	-5.3	-3.4	15.8	17.4	-13.3
eA ACWI ex-US All Cap Equity Gross Rank		43	37	43	47	81	87	79	77	70	92	54	84
BlackRock International Equity	126,155,967	6.5	2.1	6.5	6.9	8.0	7.7	2.2	-0.5	-4.7	23.2	17.8	-11.8
MSCI EAFE Gross		6.5	2.2	6.5	7.1	0.9	7.9	2.3	-0.4	-4.5	23.3	17.9	-11.7
eA All EAFE Equity Gross Rank		56	64	56	64	80	83	82	67	64	61	74	48
DFA Emerging Markets Value	25,322,380	9.9	21.5	9.9	20.5	-1.2	2.8		-18.3	-3.9	-3.2	20.1	-25.2
MSCI Emerging Markets Gross		9.2	16.4	9.2	17.2	-0.2	3.4		-14.6	-1.8	-2.3	18.6	-18.2
eA Emg Mkts Equity Gross Rank		25	10	25	30	89	90		92	84	84	56	92
Harding Loevner Emerging Markets	28,671,968												
MSCI Emerging Markets Gross													
eA Emg Mkts Equity Gross Rank													

EAFE Effective Style Map 3 Years Ending September 30, 2016



EAFE Effective Style Map 5 Years Ending September 30, 2016

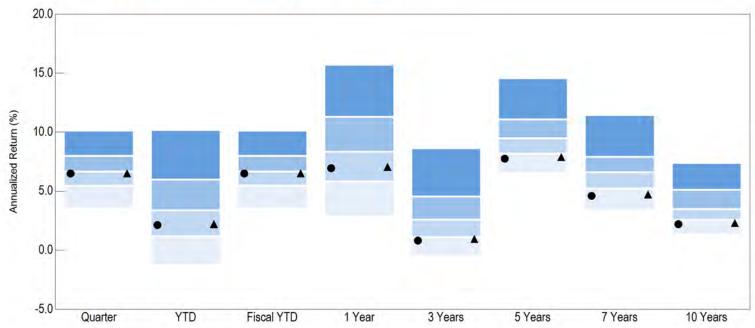


	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2015	2014	2013	2012	2011
Total International Equity	180,150,316	7.0	5.9	7.0	10.0	0.4	6.3	2.4	-4.0	-4.9	13.4	18.6	-16.1
MSCI ACWI ex USA Gross		7.0	6.3	7.0	9.8	0.6	6.5	2.6	-5.3	-3.4	15.8	17.4	-13.3
BlackRock International Equity	126,155,967	6.5	2.0	6.5	6.8	0.7	7.6	2.0	-0.6	-4.8	22.9	17.6	-11.9
MSCI EAFE Gross		6.5	2.2	6.5	7.1	0.9	7.9	2.3	-0.4	-4.5	23.3	17.9	-11.7
DFA Emerging Markets Value	25,322,380	9.7	21.0	9.7	19.8	-1.7	2.2		-18.8	-4.4	-3.8	19.4	-25.6
MSCI Emerging Markets Gross		9.2	16.4	9.2	17.2	-0.2	3.4		-14.6	-1.8	-2.3	18.6	-18.2
Harding Loevner Emerging Markets	28,671,968												
MSCI Emerging Markets Gross													



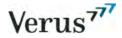


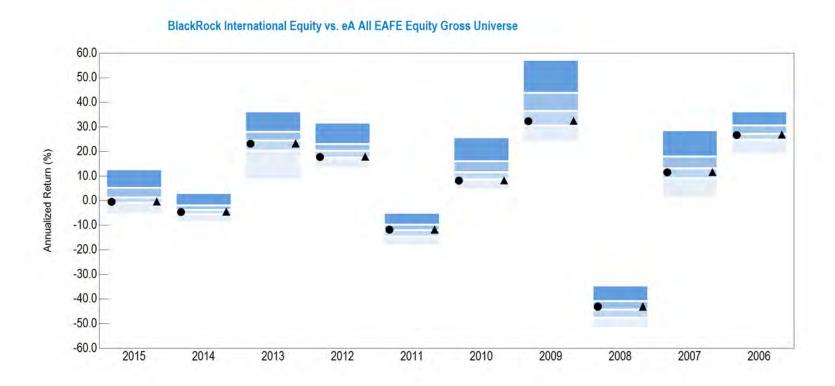
# BlackRock International Equity vs. eA All EAFE Equity Gross Universe



	5th Percentile
	25th Percentile
	Median
	75th Percentile
	95th Percentile
	# of Portfolios
•	BlackRock International Equity
•	MSCI EAFE Gross

Return (R	ank)														
10.1		10.2		10.1		15.7		8.6		14.6		11.4		7.4	
8.0		6.0		8.0		11.3		4.5		11.1		7.9		5.1	
6.7		3.4		6.7		8.4		2.6		9.5		6.6		3.5	
5.5		1.2		5.5		5.8		1.1		8.2		5.2		2.6	
3.6		-1.2		3.6		2.8		-0.5		6.6		3.4		1.4	
329		329		329		329		319		292		270		212	
6.5	(56)	2.1	(64)	6.5	(56)	6.9	(64)	0.8	(80)	7.7	(83)	4.6	(84)	2.2	(82)
6.5	(56)	2.2	(63)	6.5	(56)	7.1	(63)	0.9	(78)	7.9	(82)	4.7	(83)	2.3	(79)



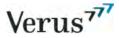


5th F	Percentile
25th	Percentile
Medi	an
75th	Percentile
95th	Percentile
# of	Portfolios

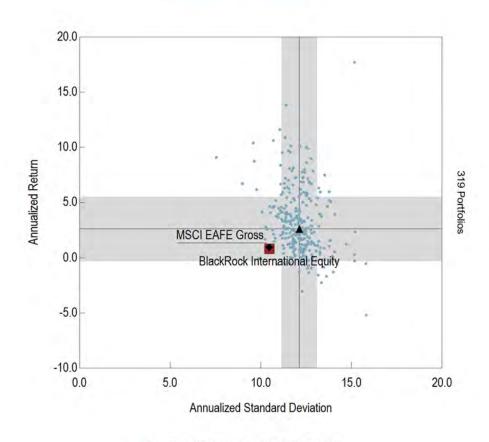
BlackRock International Equity

MSCI EAFE Gross

Return	(Rank)																		
12.6		3.0		36.3		31.7		-5.1		25.7		57.3		-34.5		28.5		36.2	
5.2		-1.9		28.1		23.1		-9.7		16.1		44.0		-40.8		18.0		30.7	
1.4		-3.7		24.6		20.4		-12.0		11.7		36.5		-44.1		13.2		27.3	
-0.9		-5.4		20.5		17.5		-14.5		8.7		30.7		-47.5		9.1		24.8	
-5.4		-8.6		8.6		13.3		-18.2		4.6		23.7		-51.5		1.2		18.9	
325		314		284		263		278		352		455		477		466		434	
-0.5	(67)	-4.7	(64)	23.2	(61)	17.8	(74)	-11.8	(48)	8.1	(79)	32.3	(68)	-43.1	(41)	11.5	(60)	26.7	(57)
-0.4	(66)	-4.5	(60)	23.3	(60)	17.9	(72)	-11.7	(47)	8.2	(78)	32.5	(67)	-43.1	(41)	11.6	(59)	26.9	(55)

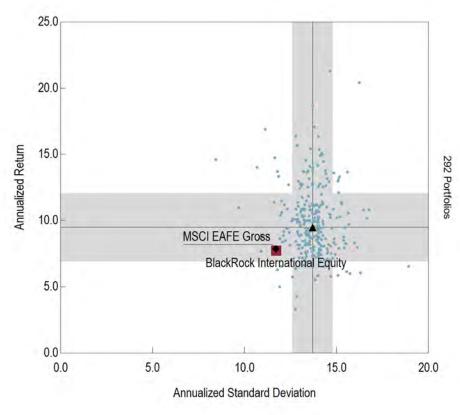


Annualized Return vs. Annualized Standard Deviation 3 Years Ending September 30, 2016



- BlackRock International Equity
- MSCI EAFE Gross
- Universe Median
- 68% Confidence Interval
- eA All EAFE Equity Gross

# Annualized Return vs. Annualized Standard Deviation 5 Years Ending September 30, 2016



- BlackRock International Equity
- MSCI EAFE Gross
- Universe Median
- 68% Confidence Interval
- eA All EAFE Equity Gross



	8.6 9.2
3.3 6.7	5.5 6.7
1.2 5.1	4.2 5.4
0.2 3.7	2.9 4.5
2.2 2.4	1.5 3.3
265 204	146 99
1.2 (89) 2.8 (90)	1.5 (95) ()
0.2 (76) 3.4 (81)	2.6 (83) 4.3 (78)
26	.2 (89) 2.8 (90)



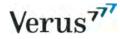
# DFA Emerging Markets Value vs. eA Emg Mkts Equity Gross Universe 110.0 90.0 70.0 50.0 Annualized Return (%) 30.0 10.0 -10.0 -30.0 -50.0 -70.0 2015 2014 2013 2012 2011 2010 2007 2009 2008 2006

5th Percentile
25th Percentile
Median
75th Percentile
95th Percentile
# of Portfolios

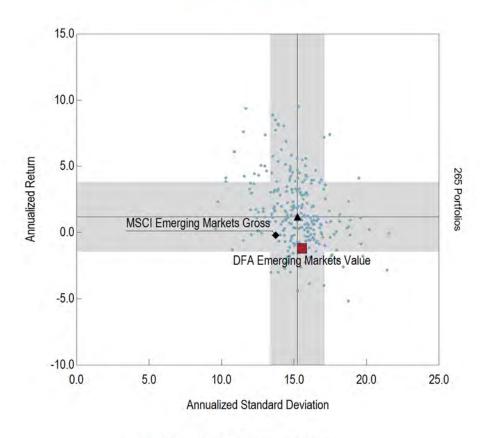
DFA Emerging Markets Value

MSCI Emerging Markets Gross

Return	(Rank)																			
-5.0	(**************************************	8.0		11.7		28.4		-11.1		29.6		106.8		-45.4	-	51.9		43.7		
-9.0		2.9		5.2		23.0		-16.4		23.9		85.5		-51.3		44.3		37.7		
-12.2		-0.1		1.0		20.9		-18.6		20.1		79.5		-54.0		40.5		34.2		
-15.3		-2.4		-2.0		17.3		-22.2		17.3		74.3		-56.3		37.1		31.2		
-19.2		-7.0		-6.3		13.7		-27.3		13.7		68.5		-60.7		29.1		28.1		
273		251		198		155		139		113		113		118		115		108		
-18.3	(92)	-3.9	(84)	-3.2	(84)	20.1	(56)	-25.2	(92)	22.8	(33)	93.3	(12)	-53.6	(44)		()	-	()	
-14.6	(67)	-1.8	(69)	-2.3	(78)	18.6	(68)	-18.2	(45)	19.2	(62)	79.0	(54)	-53.2	(37)	39.8	(58)	32.6	(62)	

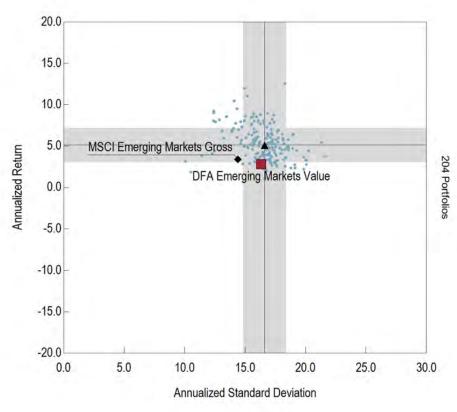


Annualized Return vs. Annualized Standard Deviation 3 Years Ending September 30, 2016

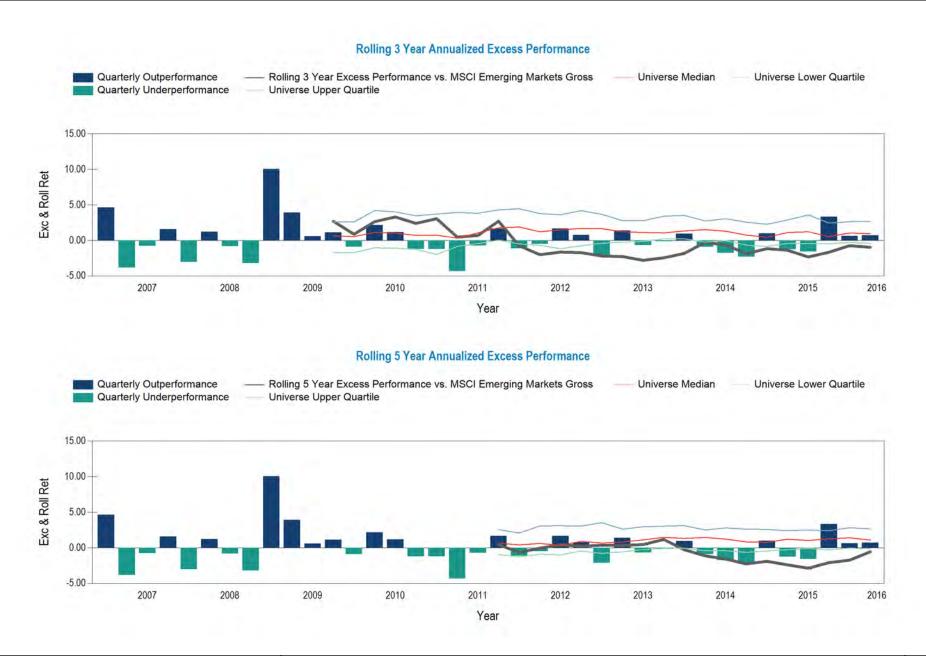


- DFA Emerging Markets Value
- MSCI Emerging Markets Gross
- Universe Median
- 68% Confidence Interval
- eA Emg Mkts Equity Gross

# Annualized Return vs. Annualized Standard Deviation 5 Years Ending September 30, 2016



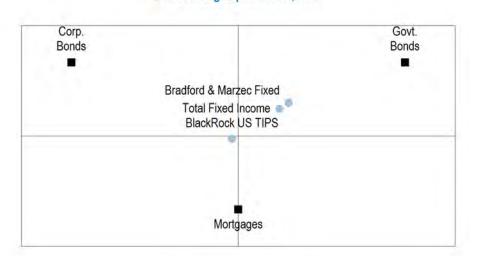
- DFA Emerging Markets Value
- MSCI Emerging Markets Gross
- Universe Median
- 68% Confidence Interval
- eA Emg Mkts Equity Gross



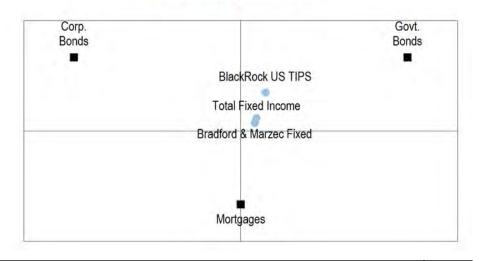


	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2015	2014	2013	2012	2011
Total Fixed Income	221,370,558	1.6	7.7	1.6	7.2	4.5	4.5	6.2	-0.3	5.9	-1.7	9.6	6.8
Barclays Aggregate		0.5	5.8	0.5	5.2	4.0	3.1	4.8	0.6	6.0	-2.0	4.2	7.8
eA All US Fixed Inc Gross Rank		29	30	29	31	39	41	25	74	34	78	28	45
Bradford & Marzec Fixed	110,548,310	1.6	7.8	1.6	7.5	5.7	5.3	6.6	1.2	7.0	-0.4	8.8	7.4
Barclays Aggregate		0.5	5.8	0.5	5.2	4.0	3.1	4.8	0.6	6.0	-2.0	4.2	7.8
eA US Core Plus Fixed Inc Gross Rank		45	35	45	28	13	33	21	15	16	52	45	51
MacKay Shields Core Plus Opportunities	89,332,597	1.9	7.7	1.9	6.9								
Barclays Aggregate		0.5	5.8	0.5	5.2								
eA US Core Plus Fixed Inc Gross Rank		32	38	32	41								
BlackRock US TIPS	21,489,651	1.0	7.3	1.0	6.7	2.5	2.0		-1.2	3.6	-8.5	7.1	13.7
Barclays US TIPS		1.0	7.3	1.0	6.6	2.4	1.9		-1.4	3.6	-8.6	7.0	13.6
eA TIPS / Infl Indexed Fixed Inc Gross Rank		67	42	67	38	41	55		43	45	62	59	37

Fixed Income Style Map 3 Years Ending September 30, 2016



Fixed Income Style Map 5 Years Ending September 30, 2016



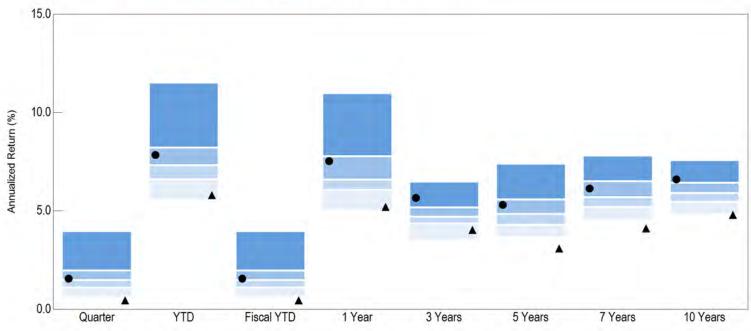
	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2015	2014	2013	2012	2011
Total Fixed Income	221,370,558	1.6	7.5	1.6	6.9	4.2	4.2	5.9	-0.6	5.6	-2.0	9.3	6.5
Barclays Aggregate		0.5	5.8	0.5	5.2	4.0	3.1	4.8	0.6	6.0	-2.0	4.2	7.8
Bradford & Marzec Fixed	110,548,310	1.5	7.6	1.5	7.2	5.4	5.0	6.3	0.9	6.7	-0.8	8.5	7.1
Barclays Aggregate		0.5	5.8	0.5	5.2	4.0	3.1	4.8	0.6	6.0	-2.0	4.2	7.8
MacKay Shields Core Plus Opportunities	89,332,597	1.8	7.4	1.8	6.5								
Barclays Aggregate		0.5	5.8	0.5	5.2								
BlackRock US TIPS	21,489,651	0.9	7.3	0.9	6.6	2.4	1.9		-1.3	3.6	-8.6	7.0	13.6
Barclays US TIPS		1.0	7.3	1.0	6.6	2.4	1.9		-1.4	3.6	-8.6	7.0	13.6

# Correlation Matrix Last 5 Years

	Total Fixed Income	Bradford & Marzec Fixed	MacKay Shields Core Plus Opportunities	BlackRock US TIPS	Barclays Aggregate
Total Fixed Income	1.00	1 2	2	~	-
Bradford & Marzec Fixed	0.98	1.00	ű.	-	C 4
MacKay Shields Core Plus Opportunities	4	4	4	+	U-\$1
BlackRock US TIPS	0.91	0.87		1.00	4
Barclays Aggregate	0.88	0.91	+	0.83	1.00

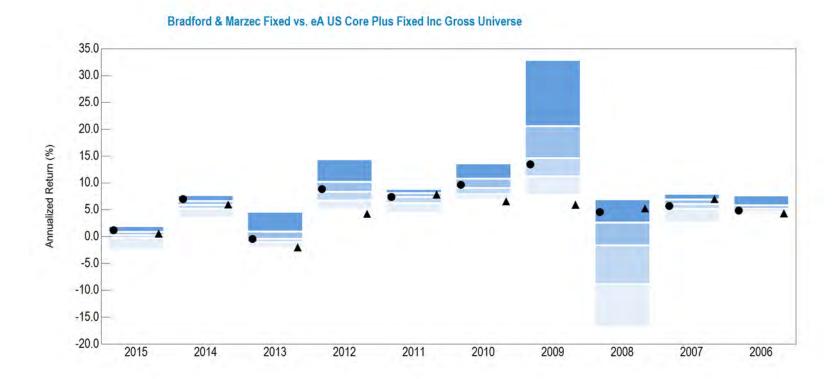


# Bradford & Marzec Fixed vs. eA US Core Plus Fixed Inc Gross Universe



	5th Percentile
	25th Percentile
	Median
	75th Percentile
	95th Percentile
	# of Portfolios
•	Bradford & Marzec Fixed
•	Rarclave Aggregate

eturn (R	ank)														
4.0		11.5		4.0		11.0		6.5		7.4		7.8		7.6	
2.0		8.2		2.0		7.8		5.2		5.6		6.5		6.4	
1.5		7.3		1.5		6.6		4.7		4.9		5.7		5.9	
1.1		6.6		1.1		6.1		4.4		4.3		5.2		5.5	
0.6		5.6		0.6		5.0		3.5		3.6		4.5		4.8	
124		124		124		124		122		119		113		94	
1.6	(45)	7.8	(35)	1.6	(45)	7.5	(28)	5.7	(13)	5.3	(33)	6.1	(33)	6.6	(21)
0.5	(99)	5.8	(93)	0.5	(99)	5.2	(94)	4.0	(89)	3.1	(99)	4.1	(99)	4.8	(96)

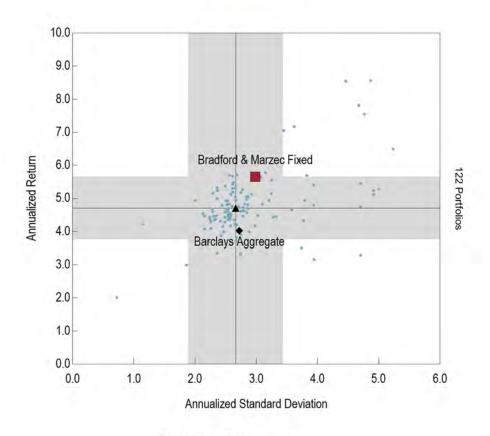


5th Percentile
25th Percentile
Median
75th Percentile
95th Percentile
# of Portfolios
Dradford & Marzon

Bradford & Marzec Fixed
 Barclays Aggregate

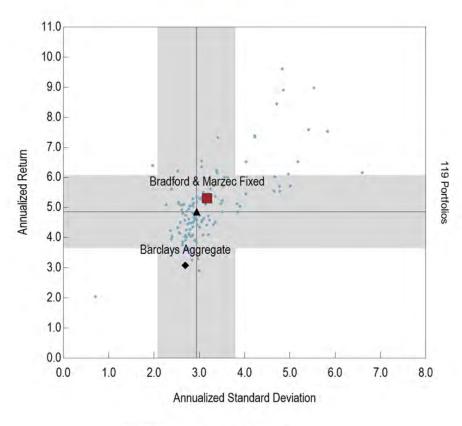
(Rank)																			
	7.7		4.6		14.4		8.8		13.6		32.9		6.9		7.9		7.6		
	6.7		1.0		10.2		8.1		10.8		20.6		2.7		6.9		5.9		
	5.9		-0.4		8.3		7.4		9.1		14.6		-1.6		6.1		5.2		
	5.2		-1.0		6.7		6.3		8.0		11.2		-8.9		5.2		4.7		
	3.6		-2.0		5.1		4.4		7.0		7.8		-16.8		2.7		4.2		
	118		116		124		118		123		128		136		144		146		
(15)	7.0	(16)	-0.4	(52)	8.8	(45)	7.4	(51)	9.6	(40)	13.5	(55)	4.6	(17)	5.7	(66)	4.8	(67)	
(42)	6.0	(50)	-2.0	(96)	4.2	(97)	7.8	(37)	6.5	(97)	5.9	(99)	5.2	(13)	7.0	(25)	4.3	(90)	
	(15)	7.7 6.7 5.9 5.2 3.6 118 (15) 7.0	7.7 6.7 5.9 5.2 3.6 118 (15) 7.0 (16)	7.7 4.6 6.7 1.0 5.9 -0.4 5.2 -1.0 3.6 -2.0 118 116 (15) 7.0 (16) -0.4	7.7 4.6 6.7 1.0 5.9 -0.4 5.2 -1.0 3.6 -2.0 118 116 (15) 7.0 (16) -0.4 (52)	7.7 4.6 14.4 6.7 1.0 10.2 5.9 -0.4 8.3 5.2 -1.0 6.7 3.6 -2.0 5.1 118 116 124 (15) 7.0 (16) -0.4 (52) 8.8	7.7 4.6 14.4 6.7 1.0 10.2 5.9 -0.4 8.3 5.2 -1.0 6.7 3.6 -2.0 5.1 118 116 124 (15) 7.0 (16) -0.4 (52) 8.8 (45)	7.7 4.6 14.4 8.8 6.7 1.0 10.2 8.1 5.9 -0.4 8.3 7.4 5.2 -1.0 6.7 6.3 3.6 -2.0 5.1 4.4 118 116 124 118 (15) 7.0 (16) -0.4 (52) 8.8 (45) 7.4	7.7	7.7 4.6 14.4 8.8 13.6 6.7 1.0 10.2 8.1 10.8 5.9 -0.4 8.3 7.4 9.1 5.2 -1.0 6.7 6.3 8.0 3.6 -2.0 5.1 4.4 7.0 118 116 124 118 123 (15) 7.0 (16) -0.4 (52) 8.8 (45) 7.4 (51) 9.6	7.7	7.7 4.6 14.4 8.8 13.6 32.9 6.7 1.0 10.2 8.1 10.8 20.6 5.9 -0.4 8.3 7.4 9.1 14.6 5.2 -1.0 6.7 6.3 8.0 11.2 3.6 -2.0 5.1 4.4 7.0 7.8 118 116 124 118 123 128 (15) 7.0 (16) -0.4 (52) 8.8 (45) 7.4 (51) 9.6 (40) 13.5	7.7	7.7 4.6 14.4 8.8 13.6 32.9 6.9 6.7 1.0 10.2 8.1 10.8 20.6 2.7 5.9 -0.4 8.3 7.4 9.1 14.6 -1.6 5.2 -1.0 6.7 6.3 8.0 11.2 -8.9 3.6 -2.0 5.1 4.4 7.0 7.8 -16.8 118 116 124 118 123 128 136 (15) 7.0 (16) -0.4 (52) 8.8 (45) 7.4 (51) 9.6 (40) 13.5 (55) 4.6	7.7	7.7	7.7	7.7	7.7

Annualized Return vs. Annualized Standard Deviation 3 Years Ending September 30, 2016



- Bradford & Marzec Fixed
- · Barclays Aggregate
- Universe Median
- 68% Confidence Interval
- eA US Core Plus Fixed Inc Gross

# Annualized Return vs. Annualized Standard Deviation 5 Years Ending September 30, 2016



- Bradford & Marzec Fixed
- · Barclays Aggregate
- Universe Median
- 68% Confidence Interval
- eA US Core Plus Fixed Inc Gross

2007

2008

2009

2015

2016



# Rolling 5 Year Annualized Excess Performance

2011

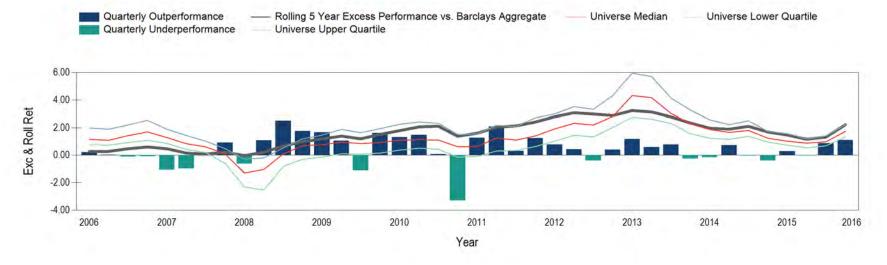
Year

2012

2013

2014

2010





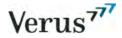
-4.00 -6.00

2006

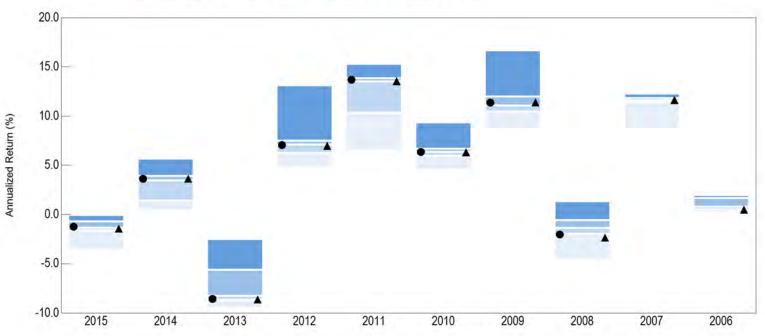
# BlackRock US TIPS vs. eA TIPS / Infil Indexed Fixed Inc Gross Universe 10.0 5.0 Quarter YTD Fiscal YTD 1 Year 3 Years 5 Years 7 Years 10 Years

	5th Percentile
	25th Percentile
	Median
	75th Percentile
	95th Percentile
	# of Portfolios
•	BlackRock US TIPS
•	Barclays US TIPS

Return (R	ank)														
2.5		9.4		2.5		8.8		2.9		3.1		4.7		5.1	
1.3		7.8		1.3		7.2		2.7		2.3		4.4		4.8	
1.0		7.1		1.0		6.5		2.4		2.1		4.2		4.6	
0.9		5.7		0.9		5.0		1.9		1.6		3.9		4.2	
0.6		3.5		0.6		3.4		1.0		1.4		2.8		3.9	
36		36		36		36		35		34		29		21	
1.0	(67)	7.3	(42)	1.0	(67)	6.7	(38)	2.5	(41)	2.0	(55)	4.1	(63)		()
1.0	(67)	7.3	(43)	1.0	(67)	6.6	(43)	2.4	(50)	1.9	(62)	4.0	(68)	4.5	(66)



# BlackRock US TIPS vs. eA TIPS / Infl Indexed Fixed Inc Gross Universe



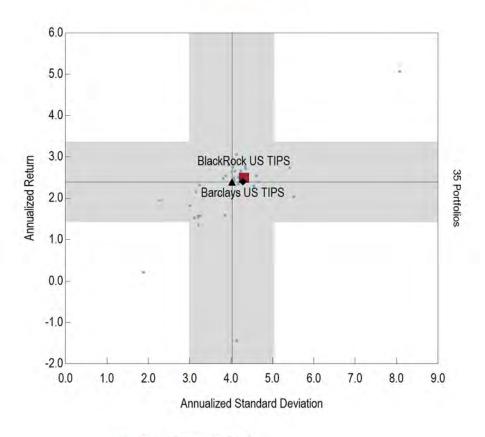
5	th Percentile
2	5th Percentile
N	ledian
7	5th Percentile
9	5th Percentile
#	of Portfolios

BlackRock US TIPS
 Barclays US TIPS

(Rank)																		
	5.7		-2.5		13.1		15.3		9.4		16.7		1.3		12.3		2.0	
	4.0		-5.6		7.5		13.9		6.7		12.0		-0.5		11.8		1.7	
	3.5		-8.2		7.1		13.5		6.4		11.1		-1.4		11.6		8.0	
	1.4		-8.6		6.3		10.4		6.0		10.5		-1.9		11.5		0.5	
	0.4		-9.4		4.9		6.6		4.6		8.7		-4.6		8.8		0.2	
	50		43		43		47		39		37		40		37		35	
(43)	3.6	(45)	-8.5	(62)	7.1	(59)	13.7	(37)	6.4	(52)	11.4	(36)	-2.0	(78)		()		()
(59)	3.6	(44)	-8.6	(76)	7.0	(66)	13.6	(49)	6.3	(57)	11.4	(35)	-2.4	(85)	11.6	(49)	0.5	(80)
		5.7 4.0 3.5 1.4 0.4 50 (43) 3.6	5.7 4.0 3.5 1.4 0.4 50 (43) 3.6 (45)	5.7 -2.5 4.0 -5.6 3.5 -8.2 1.4 -8.6 0.4 -9.4 50 43 (43) 3.6 (45) -8.5	5.7 -2.5 4.0 -5.6 3.5 -8.2 1.4 -8.6 0.4 -9.4 50 43 (43) 3.6 (45) -8.5 (62)	5.7	5.7	5.7	5.7	5.7	5.7	5.7     -2.5     13.1     15.3     9.4     16.7       4.0     -5.6     7.5     13.9     6.7     12.0       3.5     -8.2     7.1     13.5     6.4     11.1       1.4     -8.6     6.3     10.4     6.0     10.5       0.4     -9.4     4.9     6.6     4.6     8.7       50     43     43     47     39     37       (43)     3.6     (45)     -8.5     (62)     7.1     (59)     13.7     (37)     6.4     (52)     11.4	5.7     -2.5     13.1     15.3     9.4     16.7       4.0     -5.6     7.5     13.9     6.7     12.0       3.5     -8.2     7.1     13.5     6.4     11.1       1.4     -8.6     6.3     10.4     6.0     10.5       0.4     -9.4     4.9     6.6     4.6     8.7       50     43     43     47     39     37       (43)     3.6     (45)     -8.5     (62)     7.1     (59)     13.7     (37)     6.4     (52)     11.4     (36)	5.7     -2.5     13.1     15.3     9.4     16.7     1.3       4.0     -5.6     7.5     13.9     6.7     12.0     -0.5       3.5     -8.2     7.1     13.5     6.4     11.1     -1.4       1.4     -8.6     6.3     10.4     6.0     10.5     -1.9       0.4     -9.4     4.9     6.6     4.6     8.7     -4.6       50     43     43     47     39     37     40       (43)     3.6     (45)     -8.5     (62)     7.1     (59)     13.7     (37)     6.4     (52)     11.4     (36)     -2.0	5.7     -2.5     13.1     15.3     9.4     16.7     1.3       4.0     -5.6     7.5     13.9     6.7     12.0     -0.5       3.5     -8.2     7.1     13.5     6.4     11.1     -1.4       1.4     -8.6     6.3     10.4     6.0     10.5     -1.9       0.4     -9.4     4.9     6.6     4.6     8.7     -4.6       50     43     43     47     39     37     40       (43)     3.6     (45)     -8.5     (62)     7.1     (59)     13.7     (37)     6.4     (52)     11.4     (36)     -2.0     (78)	5.7     -2.5     13.1     15.3     9.4     16.7     1.3     12.3       4.0     -5.6     7.5     13.9     6.7     12.0     -0.5     11.8       3.5     -8.2     7.1     13.5     6.4     11.1     -1.4     11.6       1.4     -8.6     6.3     10.4     6.0     10.5     -1.9     11.5       0.4     -9.4     4.9     6.6     4.6     8.7     -4.6     8.8       50     43     43     47     39     37     40     37       (43)     3.6     (45)     -8.5     (62)     7.1     (59)     13.7     (37)     6.4     (52)     11.4     (36)     -2.0     (78)	5.7     -2.5     13.1     15.3     9.4     16.7     1.3     12.3       4.0     -5.6     7.5     13.9     6.7     12.0     -0.5     11.8       3.5     -8.2     7.1     13.5     6.4     11.1     -1.4     11.6       1.4     -8.6     6.3     10.4     6.0     10.5     -1.9     11.5       0.4     -9.4     4.9     6.6     4.6     8.7     -4.6     8.8       50     43     43     47     39     37     40     37       (43)     3.6     (45)     -8.5     (62)     7.1     (59)     13.7     (37)     6.4     (52)     11.4     (36)     -2.0     (78)      ()	5.7     -2.5     13.1     15.3     9.4     16.7     1.3     12.3     2.0       4.0     -5.6     7.5     13.9     6.7     12.0     -0.5     11.8     1.7       3.5     -8.2     7.1     13.5     6.4     11.1     -1.4     11.6     0.8       1.4     -8.6     6.3     10.4     6.0     10.5     -1.9     11.5     0.5       0.4     -9.4     4.9     6.6     4.6     8.7     -4.6     8.8     0.2       50     43     43     47     39     37     40     37     35       (43)     3.6     (45)     -8.5     (62)     7.1     (59)     13.7     (37)     6.4     (52)     11.4     (36)     -2.0     (78)      ()

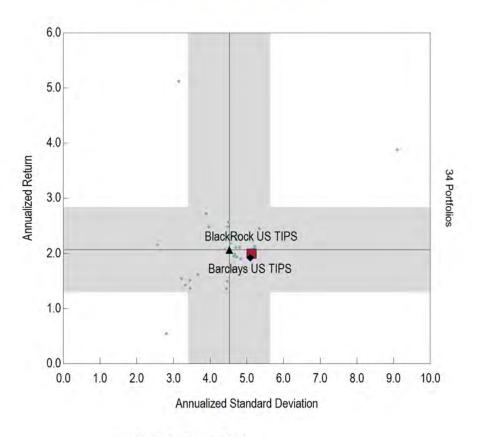


# Annualized Return vs. Annualized Standard Deviation 3 Years Ending September 30, 2016



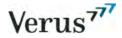
- BlackRock US TIPS
- Barclays US TIPS
- Universe Median
- 68% Confidence Interval
- eA TIPS / Infl Indexed Fixed Inc Gross

# Annualized Return vs. Annualized Standard Deviation 5 Years Ending September 30, 2016



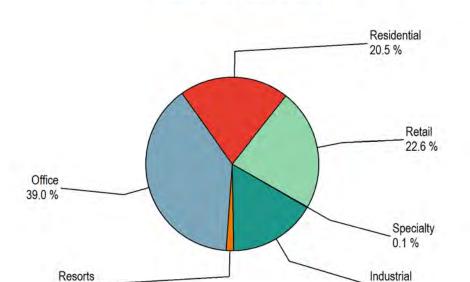
- BlackRock US TIPS
- · Barclays US TIPS
- ▲ Universe Median
- 68% Confidence Interval
- eA TIPS / Infl Indexed Fixed Inc Gross





	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2015	2014	2013	2012	2011
Total Real Estate	62,681,410	1.9	6.0	1.9	10.6	12.7	12.0	5.6	16.1	13.0	12.6	10.6	14.9
NCREIF Property Index		1.8	6.1	1.8	9.2	11.3	11.2	7.2	13.3	11.8	11.0	10.5	14.3
NCREIF-ODCE		2.1	6.5	2.1	10.1	12.4	12.4	6.0	15.0	12.5	13.9	10.9	16.0
ASB Real Estate	30,997,962	1.8	4.7	1.8	10.6	12.9			17.3	13.5	13.7		
NCREIF Property Index		1.8	6.1	1.8	9.2	11.3			13.3	11.8	11.0		
NCREIF-ODCE		2.1	6.5	2.1	10.1	12.4			15.0	12.5	13.9		
Clarion Lion	30,271,736	2.1	7.5	2.1	11.1	13.3	12.6		15.7	13.2	12.8	10.9	18.7
NCREIF Property Index		1.8	6.1	1.8	9.2	11.3	11.2		13.3	11.8	11.0	10.5	14.3
NCREIF-ODCE		2.1	6.5	2.1	10.1	12.4	12.4		15.0	12.5	13.9	10.9	16.0
1221 State St. Corp	1,411,712	0.0	0.0	0.0	0.0	0.0	-2.7		0.0	0.0	0.0	0.1	-9.0

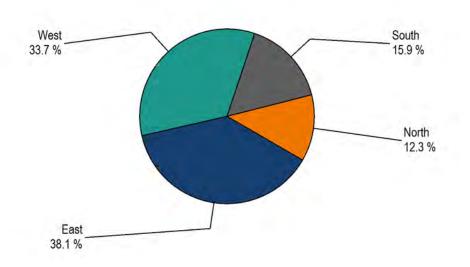
16.4 %



**Property Type Allocation** 

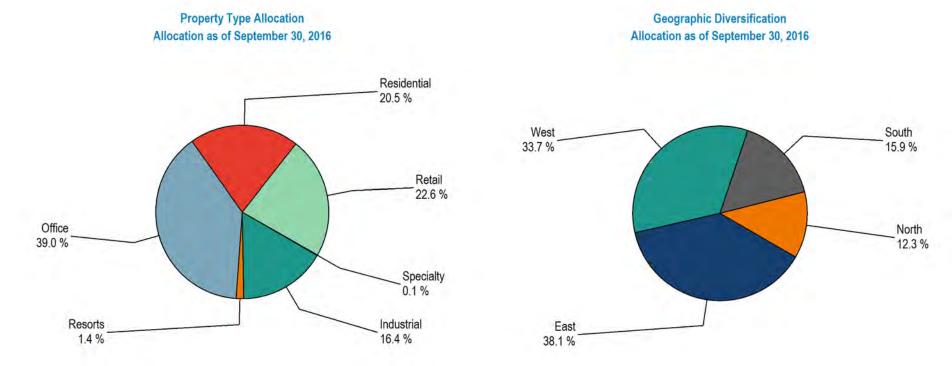
Allocation as of September 30, 2016

Geographic Diversification
Allocation as of September 30, 2016



1.4 %

	Market Value	3 Mo	YTD	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2015	2014	2013	2012	2011
Total Real Estate	62,681,410	1.6	5.2	1.6	9.6	11.6	11.2	4.8	15.0	11.6	12.1	10.3	14.2
NCREIF Property Index		1.8	6.1	1.8	9.2	11.3	11.2	7.2	13.3	11.8	11.0	10.5	14.3
NCREIF-ODCE		2.1	6.5	2.1	10.1	12.4	12.4	6.0	15.0	12.5	13.9	10.9	16.0
ASB Real Estate	30,997,962	1.5	4.0	1.5	9.6	11.8			16.2	12.5	12.5		
NCREIF Property Index		1.8	6.1	1.8	9.2	11.3			13.3	11.8	11.0		
NCREIF-ODCE		2.1	6.5	2.1	10.1	12.4			15.0	12.5	13.9		
Clarion Lion	30,271,736	1.8	6.7	1.8	10.0	12.2	11.6		14.6	12.2	11.8	9.9	17.8
NCREIF Property Index		1.8	6.1	1.8	9.2	11.3	11.2		13.3	11.8	11.0	10.5	14.3
NCREIF-ODCE		2.1	6.5	2.1	10.1	12.4	12.4		15.0	12.5	13.9	10.9	16.0
1221 State St. Corp	1,411,712	0.0	0.0	0.0	0.0	0.0	-2.7		0.0	0.0	0.0	0.1	-9.0



### **Performance Return Calculations**

Returns calculated in the performance summary tables are time-weighted rates of return (TWRR). TWRR are calculated from changes in monthly market values, adjusted for weighted cash flows between months. Returns are linked geometrically 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

Closed end funds including but not limited to Real Estate, Hedge Funds, Private Equity, and Private Credit may lag performance and market value data due to delayed reporting. Verus will show market values for closed end funds as of the most recent reported performance adjusted for capital calls and distributions. Closed end fund managers report performance using an internal rate of return (IRR), which differs from the TWRR calculation done by Verus. It is inappropriate to compare IRR and TWRR to each other. IRR figures reported in the illiquid alternative pages are provided by the respective managers, and Verus has not made any attempts to verify these returns. Until a partnership is liquidated (typically over 10-12 years), the IRR is only an interim estimated return. The actual IRR performance of any LP is not known until the final liquidation.

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Inception Date	Data Source	Manager	Inception Date	Data Source
12/10/2015	J.P. Morgan	1221 State Street Corp	09/30/2008	ICERS/Union Bank
07/03/2003	J.P. Morgan	Cash		J.P. Morgan
01/11/2007	J.P. Morgan	HarbourVest IX-Buyout	2011 <sup>1</sup>	HarbourVest
07/05/2016	Harding Loevner	HarbourVest IX-Credit	2011 <sup>1</sup>	HarbourVest
12/01/1992	J.P. Morgan	HarbourVest International VI	2008 <sup>1</sup>	HarbourVest
03/02/2015	CITCO	Harbourvest IX-Venture	2011 <sup>1</sup>	HarbourVest
04/11/2007	J.P. Morgan	KKR Mezzanine	2010 <sup>1</sup>	KKR
12/31/2012	ASB Real Estate	PIMCO BRAVO	2011 <sup>1</sup>	PIMCO
12/31/2006	Clarion Lion			
	12/10/2015 07/03/2003 01/11/2007 07/05/2016 12/01/1992 03/02/2015 04/11/2007 12/31/2012	12/10/2015 J.P. Morgan 07/03/2003 J.P. Morgan 01/11/2007 J.P. Morgan 07/05/2016 Harding Loevner 12/01/1992 J.P. Morgan 03/02/2015 CITCO 04/11/2007 J.P. Morgan 12/31/2012 ASB Real Estate	12/10/2015         J.P. Morgan         1221 State Street Corp           07/03/2003         J.P. Morgan         Cash           01/11/2007         J.P. Morgan         HarbourVest IX-Buyout           07/05/2016         Harding Loevner         HarbourVest IX-Credit           12/01/1992         J.P. Morgan         HarbourVest International VI           03/02/2015         CITCO         Harbourvest IX-Venture           04/11/2007         J.P. Morgan         KKR Mezzanine           12/31/2012         ASB Real Estate         PIMCO BRAVO	12/10/2015         J.P. Morgan         1221 State Street Corp         09/30/2008           07/03/2003         J.P. Morgan         Cash         -           01/11/2007         J.P. Morgan         HarbourVest IX-Buyout         2011¹           07/05/2016         Harding Loevner         HarbourVest IX-Credit         2011¹           12/01/1992         J.P. Morgan         HarbourVest International VI         2008¹           03/02/2015         CITCO         Harbourvest IX-Venture         2011¹           04/11/2007         J.P. Morgan         KKR Mezzanine         2010¹           12/31/2012         ASB Real Estate         PIMCO BRAVO         2011¹

## **Policy & Custom Index Composition**

29% Russell 3000, 25% MSCI ACWI ex-US (Gross), 30% Barclays U.S. Aggregate, 6% NCREIF Property Index, 5% Bloomberg Policy Index (7/1/2014-Current)

Commodity Index, 5% Russell 3000 plus 300 bps (Lagged).

24% S&P 500 Index, 10% Russell 2500, 21% MSCI ACWI ex-US (Gross), 30% Barclays U.S. Aggregate, 5% NCREIF Property Policy Index (7/1/2010-6/30/2014)

Index, 5% Bloomberg Commodity Index, 5% CPI+5%.



Represents fund vintage year.

# Glossary

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

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

**Beachmark R-squared:** Measures how well the Benchmark return series fits the manager's return series. The higher the Benchmark R-squared, the more appropriate the benchmark is for the manager. **Beta:** A measure of systematic, or market risk; the part of risk in a portfolio or security that is attributable to general market movements. Beta is calculated by dividing the covariance of a security by the variance of the market.

**Book-to-Market:** The ratio of book value per share to market price per share. Growth managers typically have low book-to-market ratios while value managers typically have high book-to-market ratios. Capture Ratio: A statistical measure of an investment manager's overall performance in up or down markets. The capture ratio is used to evaluate how well an investment manager performed relative to an index during periods when that index has risen (up market) or fallen (down market). The capture ratio is calculated by dividing the manager's returns by the returns of the index during the up/down market, and multiplying that factor by 100.

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

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

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

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

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

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

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

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

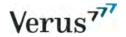
**Sharpe Ratio:** A measure of portfolio efficiency. The Sharpe Ratio indicates excess portfolio return for each unit of risk associated with achieving the excess return. The higher the Sharpe Ratio, the more efficient the portfolio. Sharpe ratio is calculated as: Portfolio Excess Return / Portfolio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

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

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

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

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



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