



**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**



**PERIOD ENDING: DECEMBER 31, 2016**

Investment Performance Review for

**Contra Costa County Employees' Retirement Association**

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Verus<sup>77</sup>

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1<sup>ST</sup> QUARTER 2017

Investment Landscape



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# 4<sup>th</sup> quarter summary

## THE ECONOMIC CLIMATE

- Economies around the globe experienced higher inflation as the effects of lower energy prices fall out of year-over-year inflation figures. U.S. headline inflation rose to 1.7% YoY and the market's inflation expectations increased sharply, as indicated by TIPS breakeven rates. *p. 14*
- U.S. consumer and business sentiment indicators improved markedly in the fourth quarter based on positive expectations of future economic growth. *p. 12*

## MARKET PORTFOLIO IMPACTS

- U.S. interest rates moved higher in Q4, returning the yield curve to levels experienced one year ago. The Federal Reserve is not likely to increase rates drastically because of lower yields and economic growth around the globe, and due to an already strong U.S. dollar. *p. 22*
- The U.S. dollar rose 6.4% in Q4 on a trade-weighted basis. Currency movement continues to contribute to higher volatility for investors with unhedged currency exposure. *p. 37*

## THE INVESTMENT CLIMATE

- The U.S. presidential election results took many investors by surprise. After an initial overnight plunge in the futures market, U.S. equities rallied on expectations of a more pro-business regulatory environment and the possibility of large-scale fiscal stimulus. U.S. equities may possess greater upside potential post-election. *p. 16*
- Fourth quarter earnings for the S&P 500 are estimated to grow 3.2% YoY, according to FactSet. If this positive growth comes to fruition it will mark the second quarter of positive growth and may indicate that the recent oil-driven earnings slump is behind us. *p. 28*

## ASSET ALLOCATION ISSUES

- Global inflation rises in Q4 may mark a change in trend from disinflation seen in recent years. Investors should work to understand the degree of inflation protection in their portfolio. *p. 14 & 19*

A neutral risk stance seems warranted

Global reflation trends should be watched, and investors should understand the degree of inflation protection in their portfolio

# What drove the market in Q4?

## “World Markets Plunge, Then Steady, On Trump Victory”

### POST-ELECTION ASSET PRICE MOVEMENTS

S&P 500		10-Yr Treasury		Bloomberg USD Spot	
Nov 9 <sup>th</sup>	Dec 30 <sup>th</sup>	Nov 9 <sup>th</sup>	Dec 30 <sup>th</sup>	Nov 9 <sup>th</sup>	Dec 30 <sup>th</sup>
2163	2239	2.06%	2.44%	1237	1267

Source: Fortune, November 9<sup>th</sup> 2016

## “U.S. Consumer Sentiment Rises To Highest Level Since 2004”

### U OF MICHIGAN CONSUMER SENTIMENT SURVEY

Jul 31st	Aug 31st	Sep 30th	Oct 31st	Nov 30th	Dec 31st
90.0	89.8	91.2	87.2	93.8	98.2

Source: WSJ, December 23<sup>rd</sup> 2016

## “OPEC Reaches Deal To Limit Production, Sending Prices Soaring”

### WTI OIL (\$/BARREL)

Jul 29 <sup>th</sup>	Aug 31 <sup>st</sup>	Sep 30 <sup>th</sup>	Oct 31 <sup>st</sup>	Nov 30 <sup>th</sup>	Dec 30 <sup>th</sup>
\$41.60	\$44.70	\$48.24	\$46.86	\$49.44	\$53.72

Source: New York Times, November 30<sup>th</sup> 2016

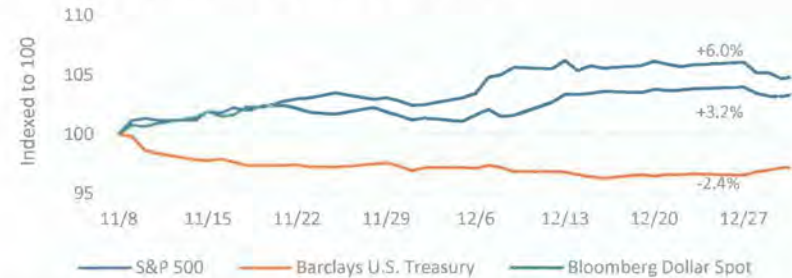
## “Inflation Expectations Hit Highest Level In More Than A Decade”

### 10-YEAR U.S. TIPS BREAKEVEN RATE

Jul 29 <sup>th</sup>	Aug 31 <sup>st</sup>	Sep 30 <sup>th</sup>	Oct 31 <sup>st</sup>	Nov 30 <sup>th</sup>	Dec 30 <sup>th</sup>
1.49%	1.47%	1.60%	1.73%	1.94%	1.95%

Source: Financial Times, November 16<sup>th</sup> 2016

### POST-ELECTION ASSET PRICE MOVEMENTS



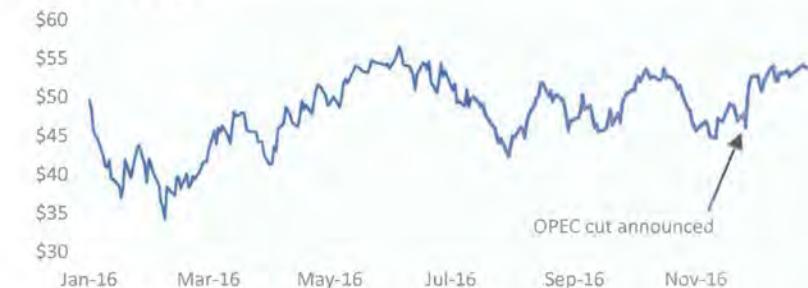
Source: Bloomberg, 11/8/16-12/31/16

### U.S. CONSUMER SENTIMENT



Source: Bloomberg, as of 12/31/16

### WTI CRUDE OIL



Source: Bloomberg, as of 12/31/16

# Economic environment



# U.S. economics summary

- U.S. real GDP grew 1.7% YoY in Q3, up from 1.3% in Q2. Consumer spending continued to account for the majority of economic growth, and rising sentiment may act as a boon for future growth. Net exports helped boost production, as well as private investment.
- Inflation moved higher during the quarter as headline CPI rose to 1.7% YoY, as of November, while core CPI rose to 2.1%. Increases in energy prices have resulted in a convergence between headline and core inflation figures. If oil prices remain stable, this will act as a tailwind for headline inflation in the future.
- The Fed raised its target federal funds rate to 0.50%-0.75% and forecast three rate hikes in 2017 at its December meeting, citing

continued modest economic growth and a tightening labor market, in addition to firming consumer prices.

- The labor market added 165,000 jobs per month on average during the fourth quarter. This is slightly below the expansion average of 199,000, but still a solid pace of hiring given where we are at in the labor cycle. The unemployment rate fell 0.2% to 4.7% at the end of December.

- While the economy continued to steadily add jobs, wage growth has lagged behind. Real average hourly earnings only increased 0.7% YoY in November. Softer wage growth may be due in part to workers taking on part-time roles who could not find full time work.

	Most Recent	12 Months Prior
GDP ( <i>annual YoY</i> )	1.7% 9/30/16	2.2% 9/30/15
Inflation ( <i>CPI YoY, Headline</i> )	1.7% 11/30/16	0.4% 11/30/15
Expected Inflation ( <i>5yr-5yr forward</i> )	2.1% 12/31/16	1.8% 12/31/15
Fed Funds Rate	0.50% 12/31/16	0.25% 12/31/15
10 Year Rate	2.5% 12/31/16	2.3% 12/31/15
U-3 Unemployment	4.7% 12/31/16	5.0% 12/31/15
U-6 Unemployment	9.2% 12/31/16	9.9% 12/31/15



# U.S. economics – GDP growth

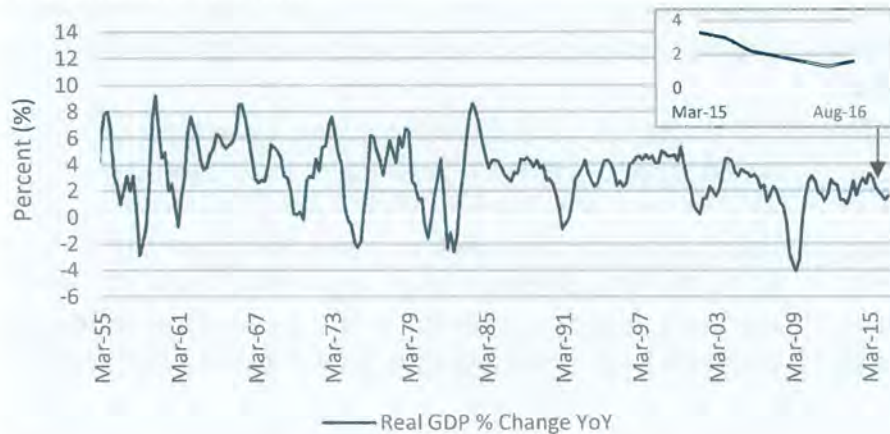
In the third quarter U.S. real GDP rose 1.7% YoY, and 3.5% (annualized) from the previous quarter. This marked the highest quarterly growth rate in two years.

Consumer spending continued to be the main driver of overall growth, contributing 2.0% to quarterly GDP growth. During this economic recovery, the American consumer has been aided by low interest rates that have decreased household debt burdens. The pace of interest rate increases will be an important factor in consumer spending moving forward.

Net exports and private domestic investment were the next two largest contributors to economic growth. Private domestic investment had been a drag on GDP over the past three quarters and was driven by a positive change in private inventories.

The Atlanta Fed GDP Now forecast as of January 10<sup>th</sup> for the fourth quarter stood at a 2.9% annualized rate, suggesting the economy is continuing to grow at a slow, but positive rate.

## U.S. REAL GDP GROWTH



Source: FRED, as of 9/30/16

## U.S. GDP COMPONENTS



Source: BEA, annualized quarterly rate, as of 9/30/16

# U.S. economics – Labor market

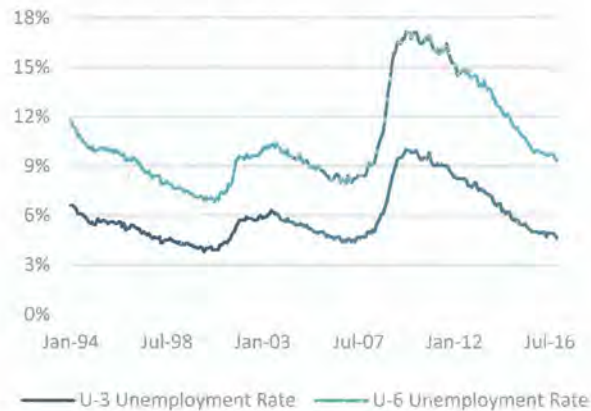
The U.S. labor market added 165,000 jobs on average in the third quarter, compared to an average of 199,000 during the current economic expansion. The unemployment rate fell to a recovery period low of 4.6% in November before rising to 4.7% in December. The participation rate continued its long-term downtrend to finish the quarter at 62.7%. Much of this effect can likely be explained by demographic changes.

While the overall labor market appears strong, some pockets of weakness may still exist. The broader U-6 unemployment rate that includes people who want a job but have stopped

looking and workers who are employed part-time but would like a full-time job currently sits at 9.2%, slightly above pre-recession levels. Another indicator of weakness is the lack of recovery in unemployment duration. It still takes job seekers 26 weeks to find a job after being unemployed, on average.

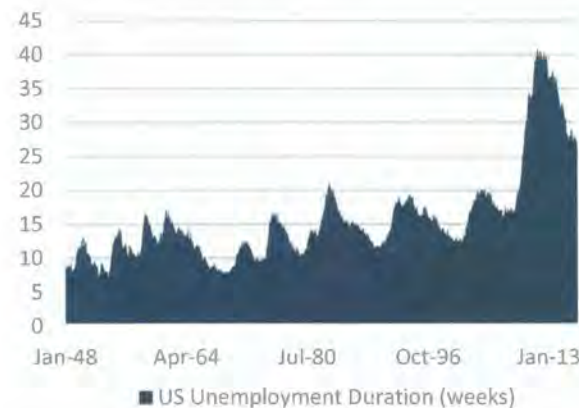
U.S. workers have yet to experience robust wage growth, which we would expect to see under current labor conditions. Real average hourly earnings only rose 0.7% in November.

**U.S. UNEMPLOYMENT**



Source: FRED, as of 11/30/16

**UNEMPLOYMENT DURATION**



Source: FRED, as of 11/30/16

**REAL AVERAGE HOURLY EARNINGS**



Source: FRED, as of 11/30/16

# U.S. economics – The consumer

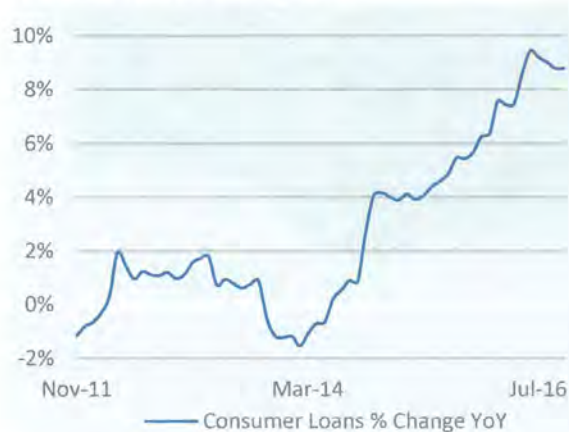
The U.S. consumer continued to buoy the overall economy as historically low interest rates have helped reduce debt burdens and provided a tailwind for consumer spending. While low interest rates have decreased consumer debt payments, they have not resulted in a credit boom. Tighter post-recession lending standards created a headwind to consumer loan growth.

Consumer spending grew 1.6% YoY in November, reiterating the trend of modest spending growth over the

past five years. Sales of durable goods, such as autos, however, have displayed relative strength.

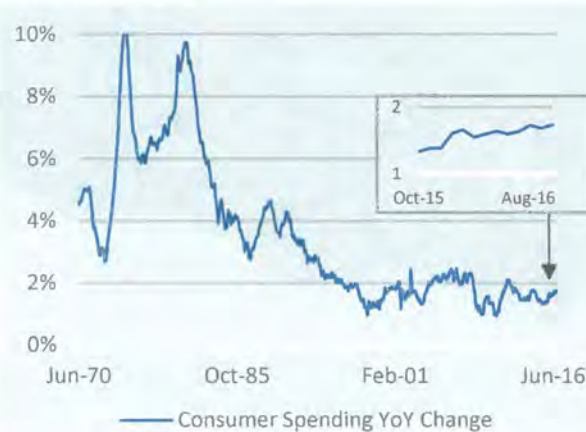
Consumer spending has been a relatively strong area of the economy despite only modest gains in wages and personal income. Higher wages could be an important factor for greater spending growth moving forward, especially if interest rates rise, resulting in greater household debt payments.

**CONSUMER LOAN GROWTH**



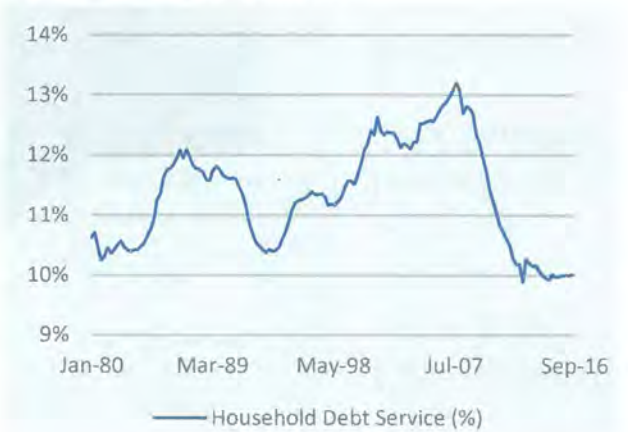
Source: FRED, as of 11/30/16

**CONSUMER SPENDING**



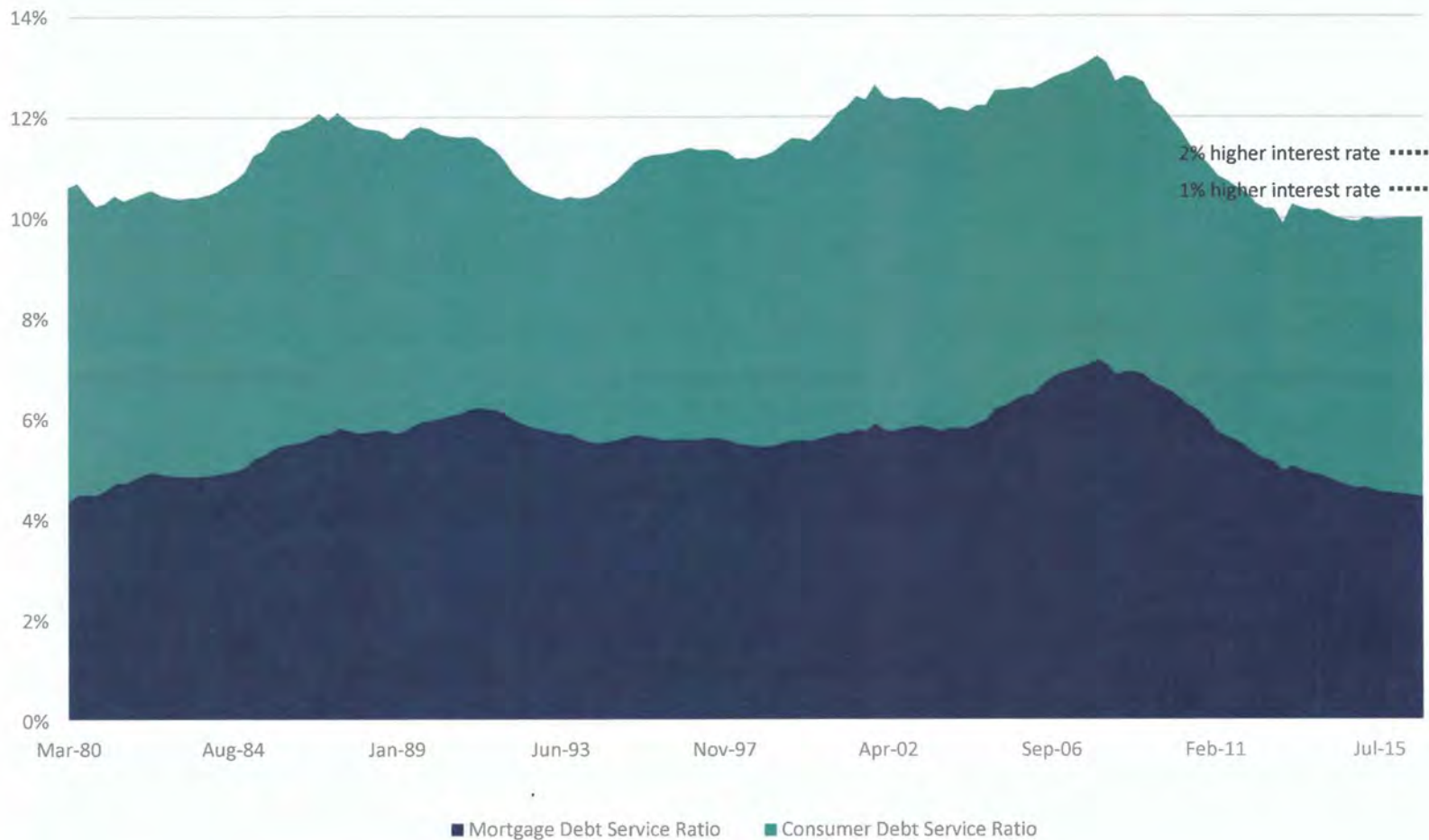
Source: Bloomberg, as of 10/31/16

**HOUSEHOLD DEBT SERVICE**



Source: FRED, as of 9/30/16

# A closer look at household debt burden



Low interest rates have helped decrease household debt burden

If interest rates continue to rise, concurrent gains in income will be important

Source: Federal Reserve Bank, as of 9/30/16. Household debt service payments are composed of mortgage payments and other consumer payments. This analysis assumes an equal weight of debt burden between mortgage and consumer debt. It is also assumed that interest rates on consumer debt move 1:1 with market rates and effective mortgage rates have only a 5% sensitivity to changes in market rates given the preference for fixed mortgages.

# U.S. economics – Sentiment

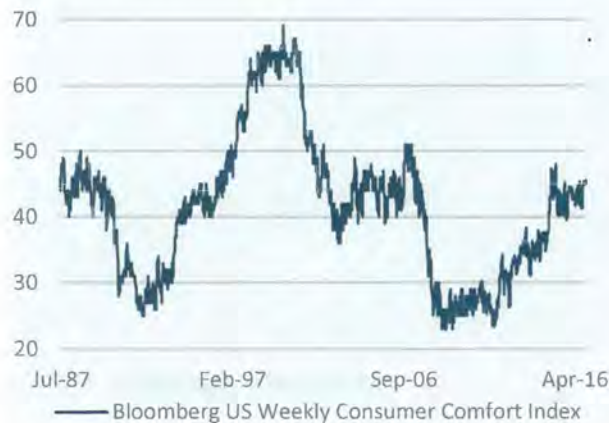
Consumer sentiment hit its highest level since January 2004 as the University of Michigan sentiment survey reached 98.2 in December. A record 18% of survey respondents spontaneously mentioned that they expected a favorable impact from Trump's economic policies. Favorable expectations of policy changes was the main reason identified for the jump in sentiment.

The Bloomberg Consumer Comfort Index also moved higher during the period. The index rose 4.4 points to

46.0 for the week ending December 25<sup>th</sup>.

Higher consumer sentiment could have positive flow through effects on the economy if consumers base current spending decisions on expectations of future economic conditions. However, much of this positive sentiment is based on the uncertain economic policies of the new political administration and may only be temporary if these policies do not come to fruition.

**CONSUMER COMFORT INDEX**



Source: Bloomberg, as of 12/4/16 (see Appendix)

**CONSUMER SENTIMENT**



Source: University of Michigan, as of 12/9/16 (see Appendix)

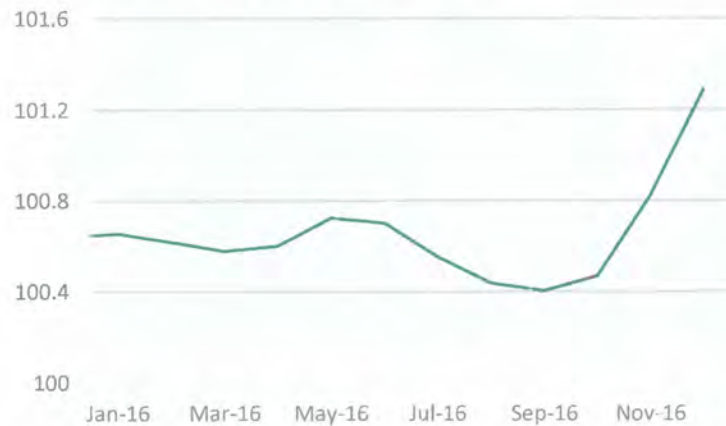
**ECONOMIC SURPRISE**



Source: Bloomberg, as of 11/30/16 (see Appendix)

# A broad rise in confidence

OECD U.S. CONSUMER CONFIDENCE

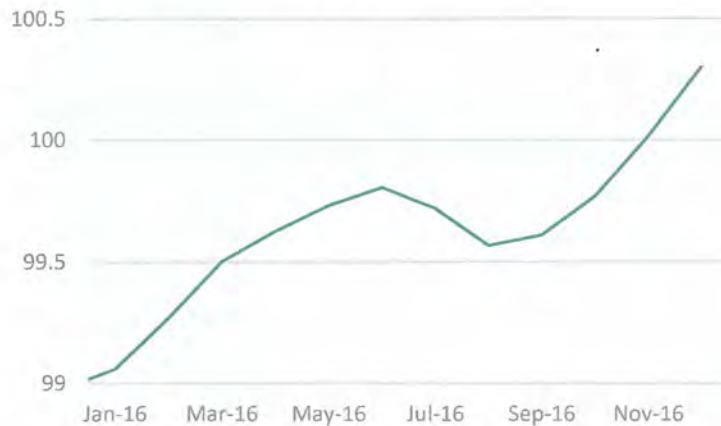


U OF MICHIGAN CONSUMER SENTIMENT

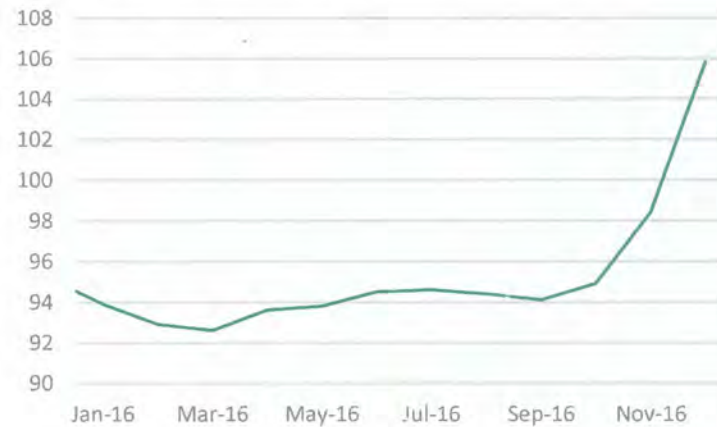


The U.S. has experienced a rise in confidence in nearly all areas of the economy

OECD U.S. BUSINESS CONFIDENCE



NFIB SMALL BUSINESS OUTLOOK



Sources: OECD, University of Michigan, NFIB, as of 12/31/16 See Appendix for details regarding the surveys shown above

# U.S. economics – Housing

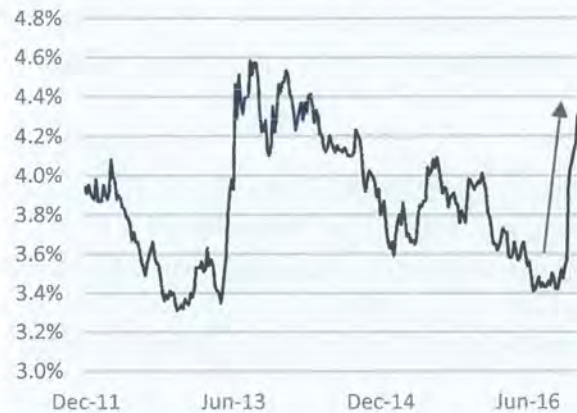
U.S. mortgage rates moved sharply higher during the quarter. The 30-year fixed mortgage rate rose 90 bps to 4.3% to finish the year at its highest rate since April of 2014. If higher mortgage rates are sustained, it will put downward pressure on demand for single-family homes and in turn home prices. However, if mortgage rates rise in tandem with consumer exuberance and higher spending the net effects could in fact be positive.

There is still a large imbalance between supply and demand in the housing market. While the number of

single-family houses for sale has recently increased, the overall supply of houses is well below historical norms. At the end of October, there were only 239,000 homes on the market – very low by historical standards.

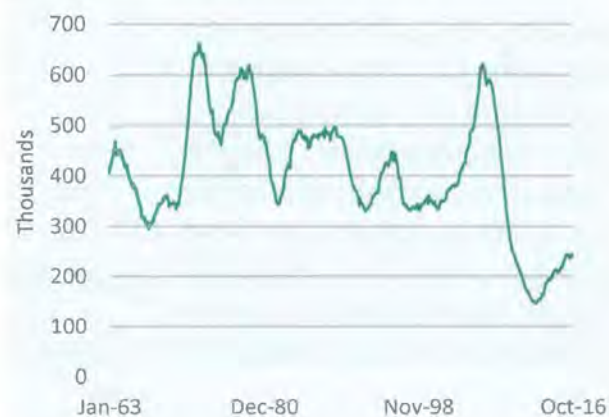
Low interest rates and a lack of supply have helped push median home prices well above pre-recession levels. Increasing interest rates and greater supply coming to market could provide a headwind for prices going forward.

**30-YEAR FIXED MORTGAGE RATE**



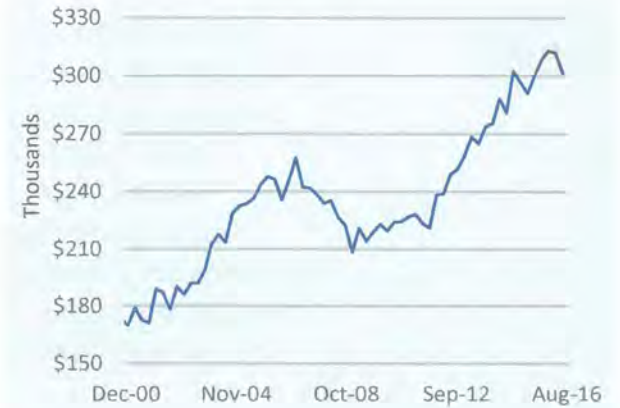
Source: FRED, as of 12/29/16

**SINGLE-FAMILY HOUSES FOR SALE**



Source: U.S. Census Bureau, as of 10/31/16, adj. for pop. growth

**MEDIAN HOUSE SALES PRICE**



Source: FRED, as of 9/30/16

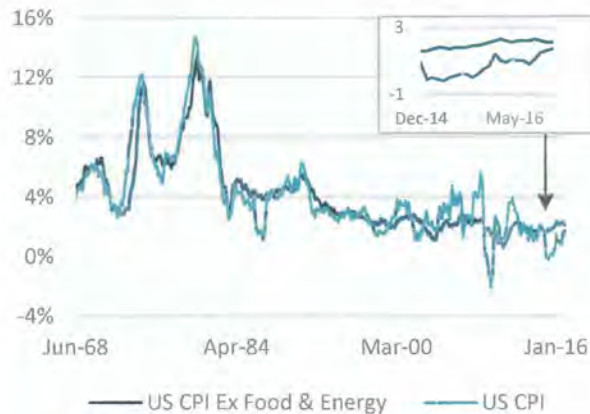
# U.S. economics – Inflation

Realized inflation and future inflation expectations both rose in recent months. Headline CPI was 1.7% YoY in November, up 0.2% from September, while core CPI fell 0.1% during the same time period to 2.1%. Higher rent and energy prices contributed to an increased headline CPI figure.

Market expectations for inflation rose after the U.S. presidential election on anticipation of increased fiscal stimulus from the new administration. The 10-year TIPS breakeven rate finished December at 1.95%, an increase of 35 bps during the quarter.

We believe the risk of inflation is skewed to the upside while the market is only discounting a small rise in prices over the next 10 years. Oil prices appear to have stabilized and may continue higher if global rebalancing occurs faster than anticipated. At the same time, the new political administration's proposed fiscal and trade policies suggest higher inflation. Investors may consider reexamining their inflation protecting portfolio and how their overall portfolio might behave in a rising inflation environment.

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



Source: FRED, as of 11/30/16

**U.S. TIPS BREAKEVEN RATES**



Source: FRED, as of 11/30/16

**INFLATION EXPECTATIONS**



Source: Bloomberg, as of 12/31/16



# Post-election price movements



Source: Bloomberg, 10/3/16-1/10/17

# Implications of the election

At first, financial markets reacted negatively to the news of Trump's victory as equity market futures fell sharply the night of the election. S&P 500 futures dropped 6% in a four hour span and then recovered before market open the next morning. Much like Brexit, this was another example where the market's initial response was incorrect and equity prices snapped back quickly.

Risk assets in the U.S. have moved higher while safe haven assets such as Treasuries have declined since the election results on the prospects of improved domestic economic growth.

While a Trump presidency has materially altered the confidence outlook for the U.S. economy, we believe that markets and consumers should avoid overreacting to policies that have yet to be determined in nature and scope.

Although much uncertainty surrounds Trump's actual policy changes, there has been an upswing in confidence in nearly every area of the U.S. economy. Higher confidence from consumers and businesses could have a self-enforcing effect on the economy. At the same time, expectations act as a double edged sword. Increased confidence in the Trump administration's economic policies could leave more room for disappointment.

Source: Bloomberg, 11/8/16-11/9/16

S&P 500 FUTURES THE NIGHT OF THE ELECTION



# Trump policies – Initial areas of focus

POLICY AREA	PROPOSED POLICY
Taxes	<ul style="list-style-type: none"> <li>– Trump has proposed tax cuts for both individuals and corporations that will cost \$4.5 trillion over the next 10 years according to the Center for a Responsible Fiscal Budget.</li> <li>– The CFRB has also estimated that more than half of the tax cuts for individuals will go to the richest 1% of Americans on a total dollar basis.</li> <li>– Corporate tax rates may be lowered to 15% from the current statutory rate of 35%, although the actual rate paid is estimated at only around 25%.</li> </ul>
Trade	<ul style="list-style-type: none"> <li>– The President has also promised to renegotiate trade deals, such as NAFTA, to better protect American businesses from foreign interests.</li> <li>– The details on how he will go about doing so remains unclear.</li> <li>– More protectionist policies could result in higher consumer prices as domestic businesses will face less competition.</li> </ul>
Deregulation	<ul style="list-style-type: none"> <li>– Perhaps the biggest unknown is how President Trump will work to lessen regulations on businesses.</li> <li>– This may also be the area that he can have the quickest impact through the use of executive orders.</li> <li>– Repealing parts of both the Affordable Care Act and the Dodd Frank Act are two of the more notable pieces of regulation Trump has said he will target.</li> </ul>
Infrastructure Spending	<ul style="list-style-type: none"> <li>– President Trump has proposed tax breaks on private infrastructure equity investment that he hopes will result in \$1 trillion of total spending on a levered basis.</li> <li>– While the private sector may be able to provide more efficiency, it may be difficult to incentivize them to complete projects that will benefit the public and overall economy.</li> </ul>

# International economics summary

— The central theme of slow, but positive growth in countries across the globe continued in the third quarter. The U.S., western Europe, and Japan all experienced year-over-year growth rates between 1-2%.

— Developed countries experienced a coordinated pick up in inflation in recent months, suggesting we may be moving into a reflationary environment. Headline CPI was up 1.1% in the Eurozone in December, its highest rate in more than three years.

— The ECB announced it would continue its asset purchase program through the initially scheduled end date of March 2017, but at a reduced rate. The program will extend until at least the end of 2017, and monthly

bond purchases will fall to €60 billion from €80 billion in April.

— The tapering of ECB purchases is likely more a result of mechanical and political obstacles than due to a need for tightening. If the central bank is forced to tighten quicker than desired, it could have an adverse impact on the current economic recovery.

— Italy voted against a referendum on constitutional reform on December 4<sup>th</sup> that would have weakened the power of the Senate in an attempt to make the country easier to govern. The Italian Prime Minister, Matteo Renzi, resigned shortly thereafter. Although Renzi's Democratic party will remain in power, the country's anti-establishment Five Star party has recently gained popularity.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	1.7% <i>9/30/16</i>	1.7% <i>11/30/16</i>	4.7% <i>12/31/16</i>
Western Europe	1.8% <i>9/30/16</i>	0.9% <i>12/31/16</i>	8.4% <i>9/30/16</i>
Japan	1.1% <i>9/30/16</i>	0.5% <i>11/30/16</i>	3.1% <i>11/30/16</i>
BRIC Nations	5.1% <i>9/30/16</i>	3.4% <i>6/30/16</i>	5.5% <i>9/30/16</i>
Brazil	(2.9%) <i>9/30/16</i>	6.3% <i>12/31/16</i>	11.9% <i>12/31/16</i>
Russia	(0.4%) <i>9/30/16</i>	5.4% <i>12/31/16</i>	5.2% <i>9/30/16</i>
India	7.3% <i>9/30/16</i>	3.6% <i>11/30/16</i>	7.1% <i>12/31/15</i>
China	6.7% <i>9/30/16</i>	2.1% <i>12/31/16</i>	4.0% <i>12/30/16</i>

# International economics

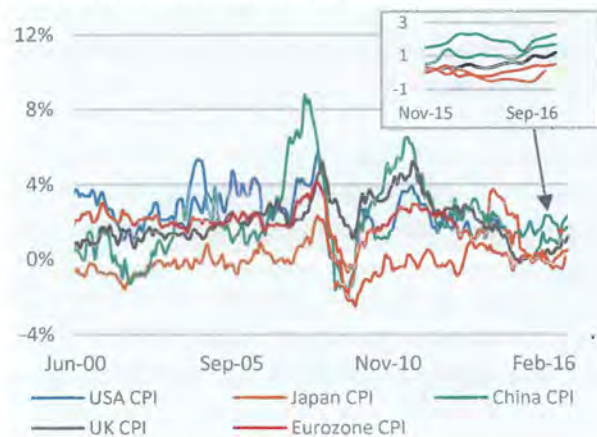
Outside of the U.S., developed market central banks have remained accommodative, which has helped inflation gradually increase and economic growth move forward slowly. Eurozone headline CPI was 1.1% YoY in December, its highest reading in more than three years. Unemployment rates have continued to trend downward, although the European rate is still elevated at 9.8%.

Both the Bank of Japan and European Central Bank have continued their negative rate policies and asset purchase programs, although the ECB announced a tapering of purchases that will begin in April.

Especially in Europe, there is a risk that the central bank may need to tighten more quickly than desired due to a lack of eligible bonds to purchase, and perhaps due to political opposition.

Emerging market economies grew at 5.1% in the third quarter based on the combined real GDP of the BRICs countries. Growth in these countries was driven by China and India, while Brazil and Russia remained in recession.

## INTERNATIONAL INFLATION



## REAL GDP GROWTH



## GLOBAL UNEMPLOYMENT



Source: Bloomberg, as of 11/30/16

Source: Bloomberg, as of 9/30/16

Source: Bloomberg, as of 11/30/16 or most recent release

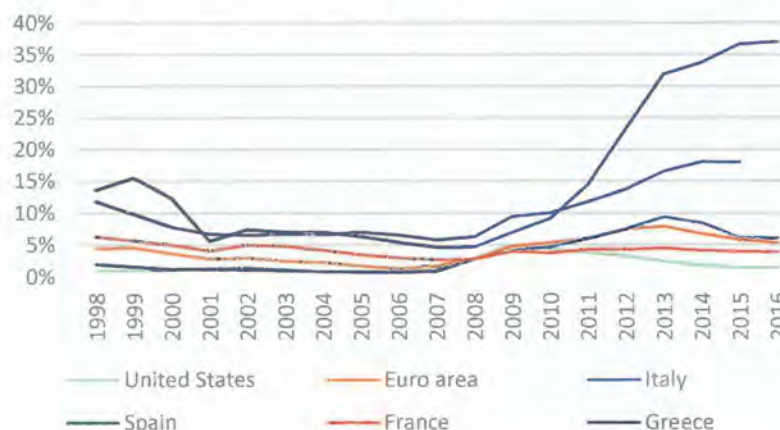
# European banking crisis

While the European economic recovery has continued at a modest pace, due in part to extremely accommodative monetary policy, a major systematic risk is still apparent in the financial system. In other areas, such as the United States, banks have worked through the pain of cleaning up their loan books after the financial crisis. Meanwhile, the loan quality in European banks, notably in Italy and Greece, has deteriorated.

Instead of writing off bad loans, many European banks have kept these loans as assets to avoid insolvency. Overall in the Euro Area, the percentage of non-performing loans (NPLs) to total gross loans was 5.4% as of year-end. This number has fallen only slightly since peaking at 7.9% in 2013. Comparatively, this figure in the U.S. was 1.5% at the end of December.

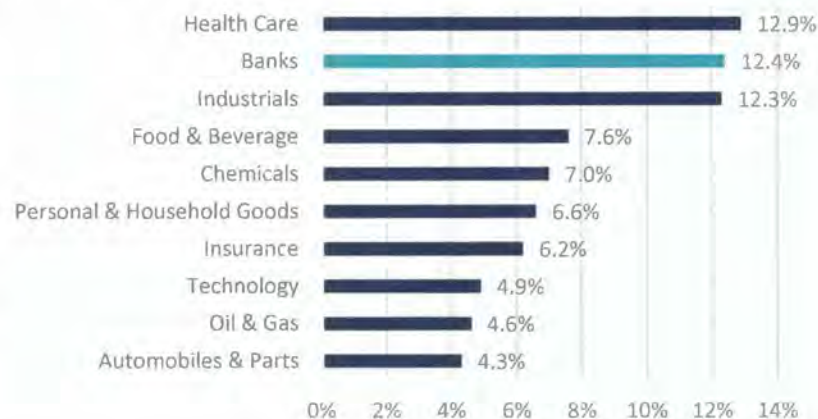
Risks stemming from the Italian financial system may be the most important to the overall health of Europe. As of the last data point, the ratio of NPLs to total gross loans was 18.0% at the end of 2015. In many circumstances, the banks have carried these loans at 50% of face value, when some analysts have suggested they would be more accurately valued at 20-30%. The adverse consequences from these NPLs cannot be avoided and only delayed. Given the risks and the large weight to financials, we believe exposure to European equities should be considered carefully.

**NON-PERFORMING LOANS TO TOTAL GROSS LOANS**



European equities should be considered carefully given the large exposure to banks

**EURO STOXX 600 EX U.K. SECTOR WEIGHTINGS (TOP 10)**



Top chart source: World Bank, as of 12/31/16. Data on Italy only available through 12/31/15. Bottom chart source: Stoxx, as of 11/30/16.

# Fixed income rates & credit

# Interest rate environment

- The Federal Reserve raised interest rates at its December meeting, increasing the federal funds target rate by 0.25%, to a range of 0.50% to 0.75%. The Fed also increased its outlook for the number of 2017 rate hikes from two to three. Lower yields and economic growth outside of the U.S., along with an already strong dollar, reduce the probability of drastic rate rises.
- U.S. Treasury yields moved higher and the curve steepened on the prospects of higher inflation and economic growth. The spread between the 10 and 2-year yields was 1.25% at the end of December, its highest level in more than a year.
- Developed sovereign yields increased along with U.S. rates following the presidential election. The Japanese 10-year bond yield moved out of negative territory to 0.46% at the end of December, while the German 10-year bund yield hit an 11-month high of 0.37% before falling to finish the month at 0.20%.
- The U.S. is much further ahead in the monetary policy cycle than other developed countries, which has led to a widening yield differential between Treasuries and global sovereign bonds. While Treasuries remain expensive compared to history, the higher yield makes them relatively attractive.

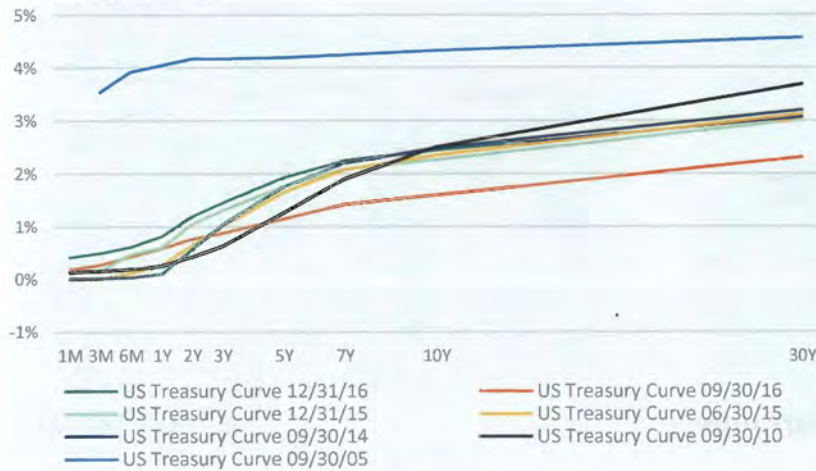
Area	Short Term (3M)	10 Year
United States	0.50%	2.45%
Germany	(0.99%)	0.20%
France	(0.90%)	0.68%
Spain	(0.49%)	1.38%
Italy	(0.50%)	1.81%
Greece	1.37%	7.02%
U.K.	0.51%	1.24%
Japan	(0.42%)	0.04%
Australia	1.70%	2.77%
China	2.35%	3.06%
Brazil	12.91%	10.55%
Russia	8.78%	8.29%

Source: Bloomberg, as of 12/31/16

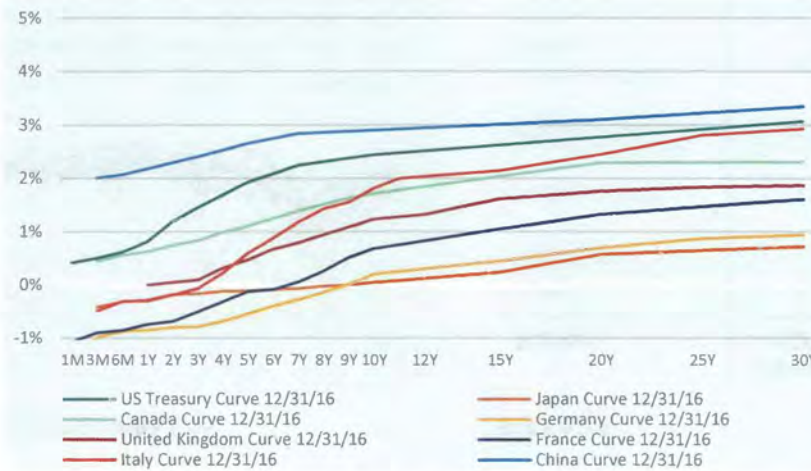


# Yield environment

**U.S. YIELD CURVE**

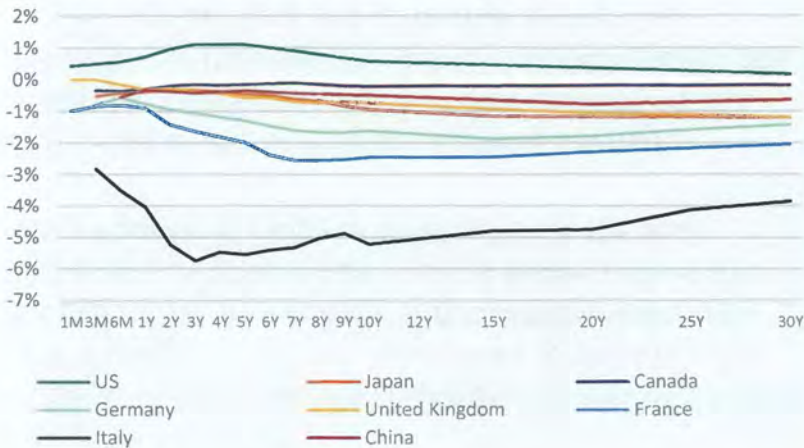


**GLOBAL GOVERNMENT YIELD CURVES**

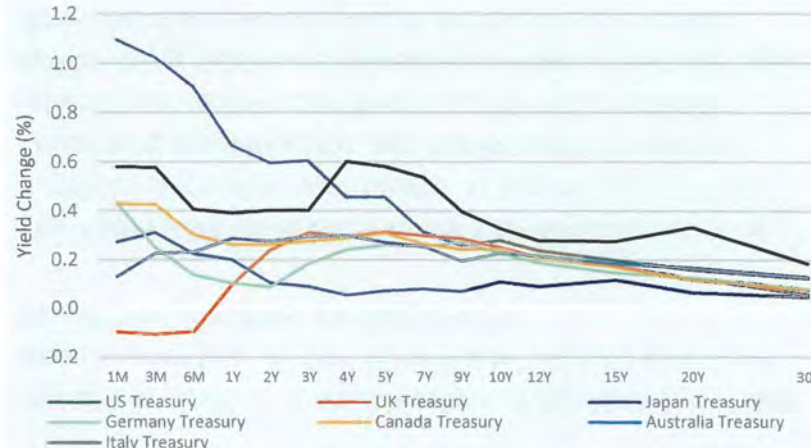


Global investors continue to prefer U.S. Treasuries due to higher relative yields

**YIELD CURVE CHANGES OVER LAST FIVE YEARS**



**IMPLIED CHANGES OVER NEXT YEAR**



Source: Bloomberg, as of 12/31/16

# Credit environment

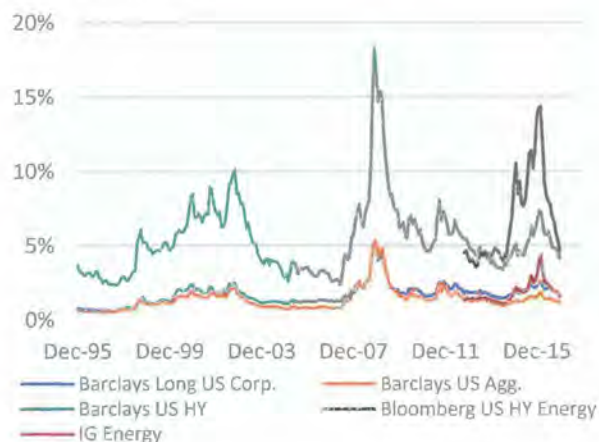
High yield returns across all sectors - energy and metals and mining in particular - have been strong since the trough in Q1. As evidence of this performance, high yield spreads have compressed to below 4.3% as of December from a high of 8.0% earlier in the year.

U.S. credit markets showed surprising strength following a brief period of increased volatility in Q1. While below the long-term trend, U.S. GDP growth has begun to show signs of improvement which has provided a tailwind to credit markets in general. Overall 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.

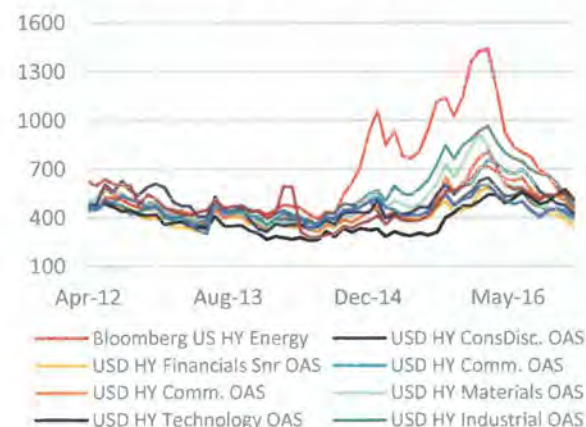
The Federal Reserve Bank moved to increase rates by 0.25% in December and hinted at higher rates in 2017. Continued growth in the job market and increasing inflation were key considerations for the increase. While rising rates may increase borrowing costs and put downward pressure on bond prices, the U.S. credit market remains attractive compared to other developed markets.

## CREDIT SPREADS



Source: Barclays Capital Indices, Bloomberg, as of 12/31/16

## HIGH YIELD SECTOR SPREADS



Source: Bloomberg, as of 12/31/16

## SPREADS

Market	Credit Spread (12/31/16)	Credit Spread (1 Year Ago)
Long US Corporate	1.5%	2.1%
US Aggregate	0.9%	1.1%
US High Yield	4.4%	7.1%
US High Yield Energy	4.6%	13.6%
US Bank Loans	3.9%	3.9%

Source: Barclays, Credit Suisse, Bloomberg, as of 12/31/16

# Issuance and default

Defaults have been trending higher from their lows in 2014 due mostly to lower commodity prices. While the current level of default have risen above the trailing 20-year average, it remains below the peak in 2002 and 2009, respectively.

Corporate issuance in emerging markets has remained strong due mainly to perceived relative value compared to developed market corporates. Rising U.S. rates will most likely result in increased borrowing costs.

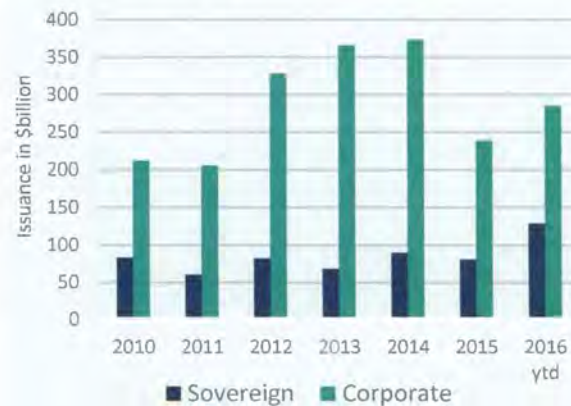
Issuance in both high yield bonds and bank loans has been trending lower. Some of the fall in issuance volume can be attributed to the recent sell off in the energy sector. Additionally, rising U.S. interest rates have resulted in increased borrowing costs which has acted as a headwind.

**HY DEFAULT TRENDS (ROLLING 1 YEAR)**



Source: Credit Suisse, BofA, as of 12/31/16

**EM DEBT ISSUANCE**



Source: JP Morgan, as of 11/30/16

**GLOBAL ISSUANCE**



Source: Bloomberg, BofA Merrill Lynch, as of 12/31/16



# Equity

# Equity environment

- We believe the U.S. election results have had a material impact on possible future equity return outcomes. There is likely greater upside potential for U.S. equities, though some of this has already been priced in with higher prices post-election.
- Both consumer and private sector sentiment have risen robustly. This positive shift may provide a tailwind to U.S. economic growth through spending and investment.
- Fourth quarter earnings for the S&P 500 are estimated to grow 3.2% year-over-year, according to FactSet. If this positive growth comes to fruition it will mark the second quarter of positive growth and may mean the recent earnings slump is now behind us.
- Value equities outperformed growth equities in the fourth quarter. The Russell 1000 Value index and Russell 1000 Growth index returned 6.7% and 1.0%, respectively. Energy and financial service companies have contributed to the performance rebound.
- The U.S. dollar rose 6.4% in Q4 on a trade-weighted basis which directly detracts from investment returns of U.S. investors with unhedged currency exposure.
- Japanese equities (Nikkei 225) delivered a 16.1% return on a hedged basis, but 1.2% on an unhedged basis – a 15% swing caused by currency movement.

	QTD TOTAL RETURN		YTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)	(unhedged)	(hedged)
US Large Cap (Russell 1000)	3.8%		12.1%		12.1%	
US Small Cap (Russell 2000)	8.8%		21.3%		21.3%	
US Large Value (Russell 1000 Value)	6.7%		17.3%		17.3%	
US Large Growth (Russell 1000 Growth)	1.0%		7.1%		7.1%	
International Large (MSCI EAFE)	(-0.7%)	7.3%	1.5%	6.2%	1.5%	6.2%
Eurozone (Euro Stoxx 50)	3.2%	10.3%	0.7%	5.1%	0.7%	5.1%
U.K. (FTSE 100)	(0.8%)	4.4%	(0.2%)	19.0%	(0.2%)	19.0%
Japan (NIKKEI 225)	1.2%	16.1%	5.8%	1.3%	5.8%	1.3%
Emerging Markets (MSCI Emerging Markets)	(4.1%)	(2.0%)	11.6%	7.5%	11.6%	7.5%

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 12/31/16

# Domestic equity

U.S. equity markets fell sharply in futures markets on the night of the election, but then recovered before market open the next morning. After this initial stumble, equities rallied higher to finish the quarter.

Post-election equity movement was likely driven by an improved economic outlook as well as several proposed policy changes that would benefit corporations, including lower tax rates and deregulation.

The financials sector was responsible for much of the gain in equity prices, likely due to the prospects of higher rates and a steeper curve. The S&P 500 Financials sector was up 16.5% after the election, compared to a 2.8% gain across the rest of the index.

As of December 30<sup>th</sup>, estimated earnings growth for the fourth quarter was 3.2% from the previous year, according to FactSet. Looking ahead, bottom-up analyst EPS forecasts point toward improving corporate earnings growth.

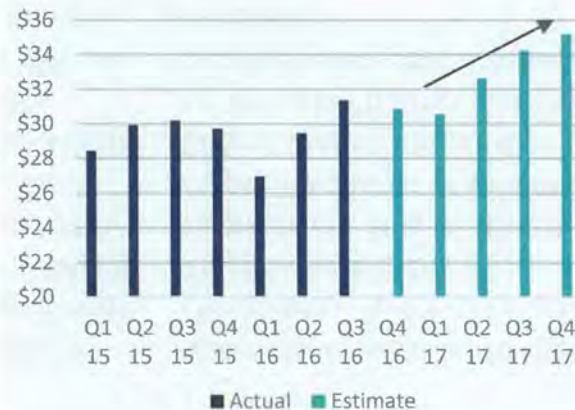
**Proposed tax reform and deregulation have helped improve the U.S. earnings outlook**

## U.S. EQUITIES



Source: Russell Investments, as of 12/30/16

## S&P 500 EPS



Source: FactSet, as of 12/30/16

## S&P 500 FINANCIALS



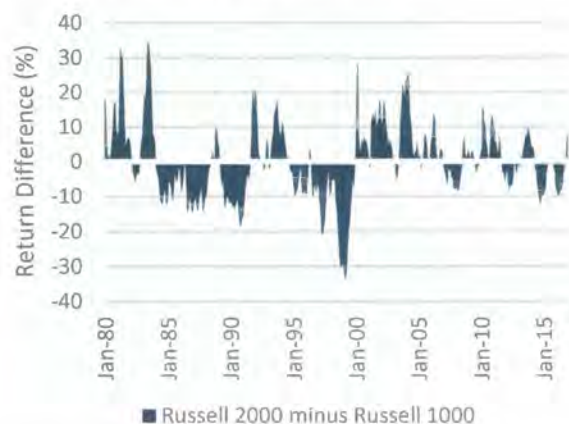
Source: Bloomberg, as of 12/30/16

# Domestic equity size and style

Small cap equities outperformed large cap equities in the fourth quarter as the Russell 2000 Index and Russell 1000 Index returned 8.8% and 3.8%, respectively. Much of this outperformance came after the U.S. presidential election as smaller companies could receive greater marginal benefit from deregulation proposed by Donald Trump. Renewed U.S. dollar strength also benefits smaller companies relative to larger companies due to greater insulation from foreign currency movements.

Value equities outperformed growth equities during the quarter. The Russell 1000 Value Index and Russell 1000 Growth Index returned 6.7% and 1.0%, respectively. This relative outperformance was driven by the Financials and Energy sectors, which are the two largest sectors in the value index. The magnitude of this recent value bounce back has brought the value premium back into positive territory for most trailing windows.

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



Source: Russell Investments, as of 12/31/16

**VALUE VS GROWTH (YOY)**



Source: Russell Investments, as of 12/31/16

**U.S. VALUE VS. GROWTH RELATIVE PERFORMANCE**



Source: Morningstar, as of 12/31/16



# International equity

International equity markets narrowly outperformed domestic equities in December (S&P 500 2.0%) as the MSCI ACWI ex U.S. returned 2.2%.

European equity markets remained calm on the back of the announcement that the ECB would continue its asset purchase program through the initially scheduled end date of March 2017, but at a reduced rate. Adjustments to program constraints will be likely, given the mandated rule that the ECB cannot purchase more than 33% of any one country's national debt.

International developed equities delivered a 7.3% total return on a hedged basis over the quarter, but delivered -0.7% on an unhedged basis. Unhedged currency exposure continues to cause higher volatility for investors who choose not to hedge.

Japanese equities delivered a 16.1% return on a hedged basis, but 1.2% on an unhedged basis – a 15% swing caused by currency movement. Expectations of continued loose monetary policy and low interest rates in Japan contributed to yen weakness.

## GLOBAL EQUITY PERFORMANCE



Source: Bloomberg, as of 12/31/16

## INTERNATIONAL FORWARD P/E RATIOS



Source: Bloomberg, as of 12/31/16

## EFFECT OF CURRENCY (1 YEAR ROLLING)



Source: MSCI, as of 12/31/16

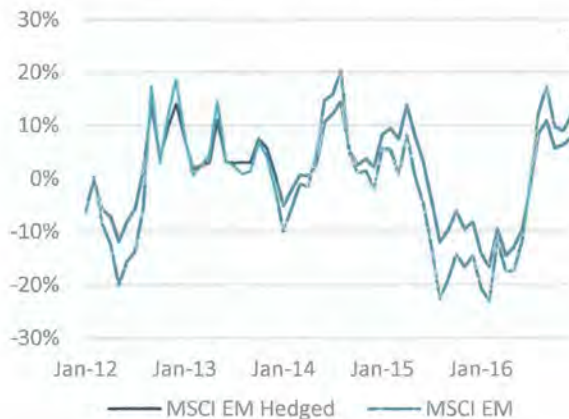
# Emerging market equity

Emerging market economic growth has shown recovery as Russia and Brazil begin moving out of severe depressions and as commodity prices improve. Economic growth of the “BRIC” nations continues at a pace materially higher than that of developed nations, consistent with recent decades.

Some renewed investor optimism can be seen as equity valuations move higher. Emerging market equities

provided a muted quarter with a -2.0% return on a hedged basis, but delivered a positive 7.5% return for the year (MSCI Emerging Markets). Much of the recent performance stability can be attributed to a reversal or flattening of emerging market currency depreciation trends occurring since 2012. Earnings across the broader emerging markets have also reversed their downward trend, though not as quickly as the pace of price improvement as demonstrated in higher equity valuations.

**12-MONTH ROLLING PERFORMANCE**



Source: MPI, as of 12/31/16

**FORWARD P/E RATIOS**



Source: Bloomberg, as of 12/31/16

**CDS SPREADS**



Source: MSCI, as of 12/31/16

# Equity valuations

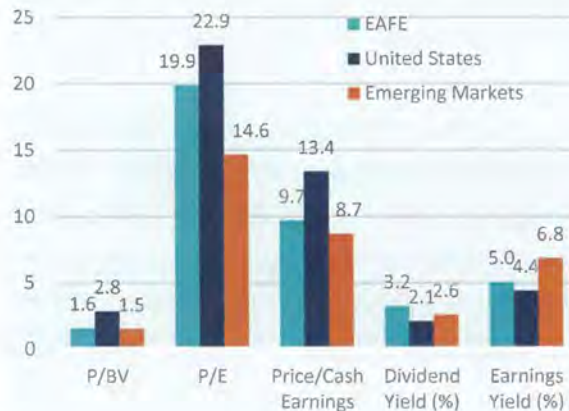
The forward P/E ratio for the S&P 500 was 18.8 at year-end and remains above the long-term average of 16.9 since 1995. The current P/E of 18.8 places it in the 79<sup>th</sup> percentile.

While elevated, valuations for U.S. large cap equities remain within one standard deviation of the average. The expected pick up in corporate earnings would help bring P/E ratios more in line with long-term averages, all else equal.

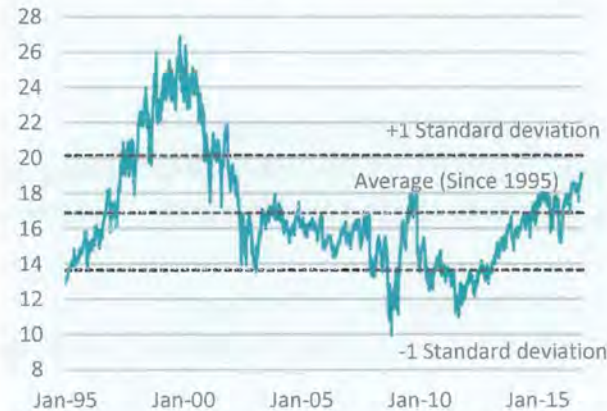
Low real interest rate and inflation environments have historically supported higher equity valuations, meaning current valuations may not be unusual given the conditions.

International developed valuations expanded during the quarter, especially in Europe, but are still relatively cheap compared to the U.S. Emerging market P/E ratios expanded off historic lows and emerging market equities remain relatively attractive from a valuation standpoint.

## MSCI VALUATION METRICS (3 MONTH AVERAGE)



## S&P 500 FORWARD P/E



## INTERNATIONAL FORWARD P/E RATIOS



Source: MSCI, as of 12/31/16

Source: Bloomberg, as of 12/31/16

Source: Bloomberg, as of 12/31/16

# Equity volatility

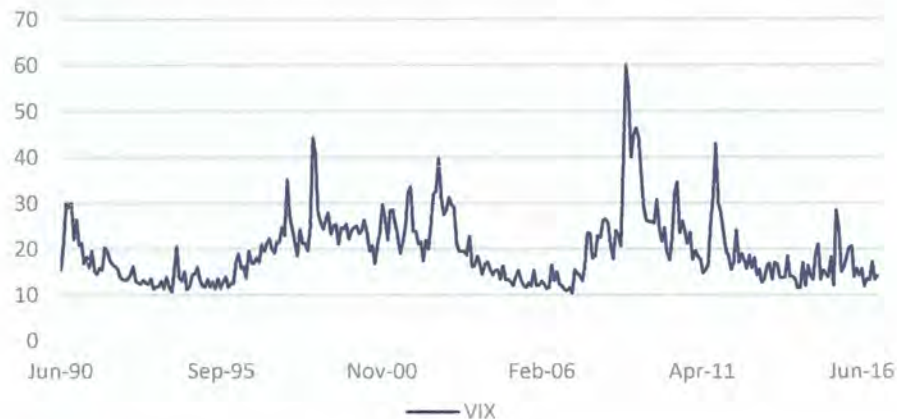
Equity volatility has remained subdued, despite the arguably surprising U.S. election results and uncertain future policy environment. However, uncertainty surrounding a set of policies with highly unclear ramifications for the markets is different from uncertainty in the traditional sense.

Low implied volatility, as shown by the VIX index, is consistent with the renewed bull market in U.S.

equities. Realized risk has also been low across international developed equity markets (MSCI EAFE).

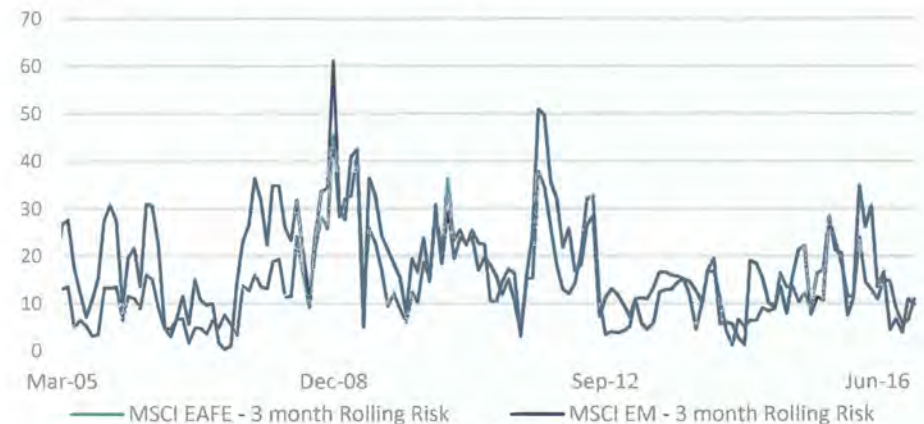
Unhedged currency exposure has resulted in materially higher volatility and often significant variation in equity portfolio performance.

**U.S. IMPLIED EQUITY VOLATILITY**



Source: CBOE, as of 12/30/16

**INTERNATIONAL EQUITY VOLATILITY**



Source: MSCI, as of 12/31/16

# Long-term equity performance



Source: MPI, as of 12/31/16



# Other assets



# Real estate & REITs

After six consecutive years of double digit returns in core real estate, 2016 is on pace to come in around 8-9% - still a very good return, but slightly down from the pace of recent history.

Fundamentals remain strong with generally declining vacancy rates. The exception is multifamily, where vacancies have come up slightly off historic lows. NOI growth rates are positive and strong for all property types, near or above 5% for all over the last year.

New supply remains below historical averages in all property types except multifamily. Continued tight lending standards have kept new construction, especially speculative construction, under control relative to previous cycles.

Pricing from a cap rate perspective looks historically high at 4.5%, however relative spreads to Treasuries remain healthy. Rising interest rates could put pressure on pricing, but the spread keeps a small cushion in place.

## VACANCY RATES



Source: NCREIF, as of 9/30/16

## NET OPERATING INCOME GROWTH



Source: NCREIF, as of 9/30/16

## CAP RATES AND SPREADS



Source: NCREIF, as of 9/30/16



# Currency

The U.S. dollar rose considerably in the fourth quarter, up 6.4% against a basket of major currencies. The strong dollar created a large gap between hedged and unhedged international exposures, as foreign currency losses eroded unhedged returns.

Renewed dollar strength occurred after the presidential election likely due to increased expectations of U.S. economic growth and higher interest rates. A widening gap between Treasury yields and other developed sovereign bonds could cause greater demand for

Treasuries and provide a tailwind for further dollar appreciation. However, higher inflation at the same time could offset some of the potential strength.

Emerging market currencies were hit hard by the strength in the U.S. dollar, influenced by the Fed pointing towards faster than anticipated interest rates increases and possible protectionist trade policies from the Trump administration. The JPM EM Currency Index was down 4.0% in the fourth quarter.

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



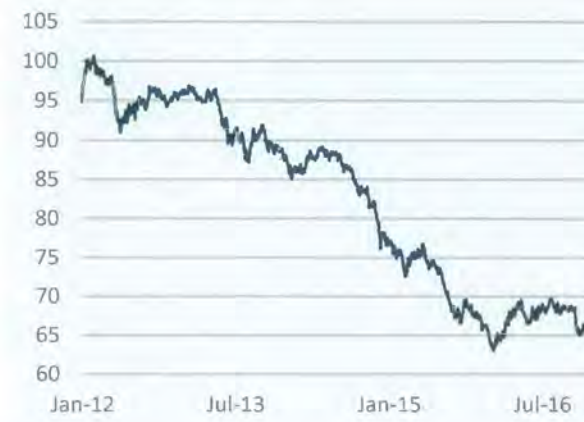
Source: MPI, as of 12/31/16

**LONG-TERM TRADE WEIGHTED DOLLAR**



Source: FRED, as of 12/31/16

**JPM EM CURRENCY INDEX**



Source: Bloomberg, as of 12/31/16



# Appendix



# Periodic table of returns – December 2016

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	5-Year	10-Year
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	31.7	15.1	8.3
Small Cap 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	21.3	14.8	7.8
Large Cap Value	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	17.3	14.7	7.2
Large Cap Equity	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	12.1	14.5	7.1
Commodities	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	11.8	14.5	7.1
Small Cap Growth	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	11.3	13.7	6.3
Emerging Markets Equity	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	11.2	11.2	5.7
Large Cap Growth	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	7.1	6.5	4.3
Real Estate	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	6.1	5.8	3.8
60/40 Global Portfolio	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	5.7	3.4	1.8
US Bonds	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	2.6	2.2	1.3
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	1.0	1.3	0.7
Hedge Funds of Funds	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	0.5	0.1	0.7
Cash	-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	0.3	-9.0	-5.6

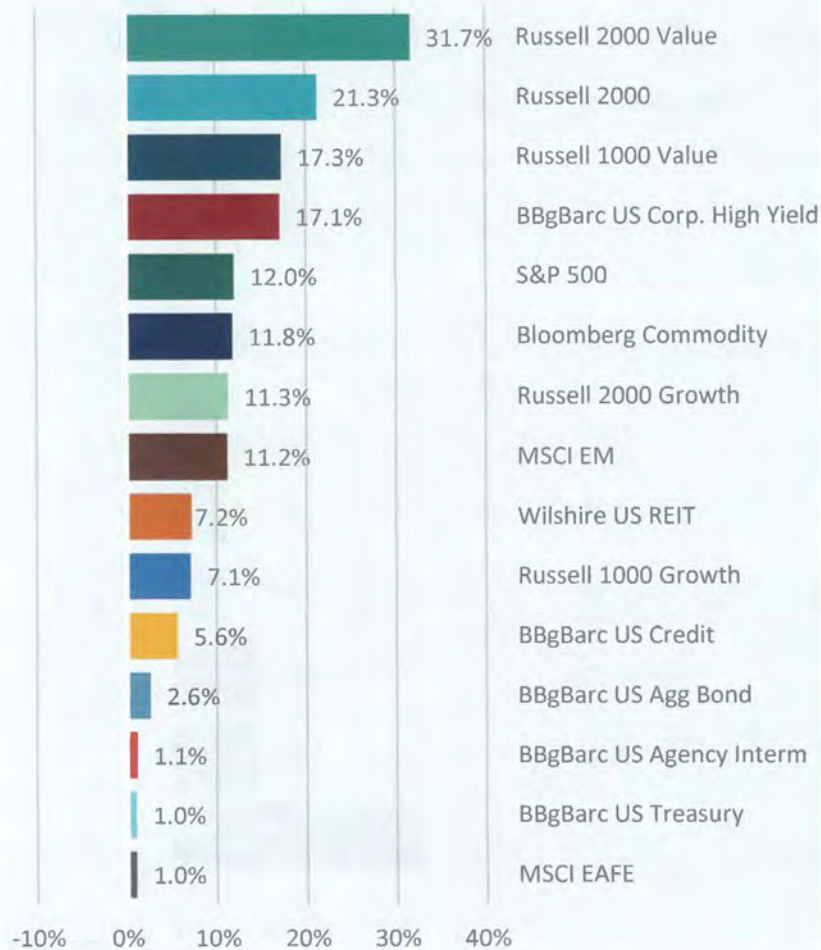
BEST  
↑  
WORST  
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- Large Cap Equity
- Small Cap Growth
- Commodities
- Large Cap Value
- International Equity
- Real Estate
- Large Cap Growth
- Emerging Markets Equity
- Hedge Funds of Funds
- US Bonds
- 60% MSCI ACWI/40% BC Global Bond
- Small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

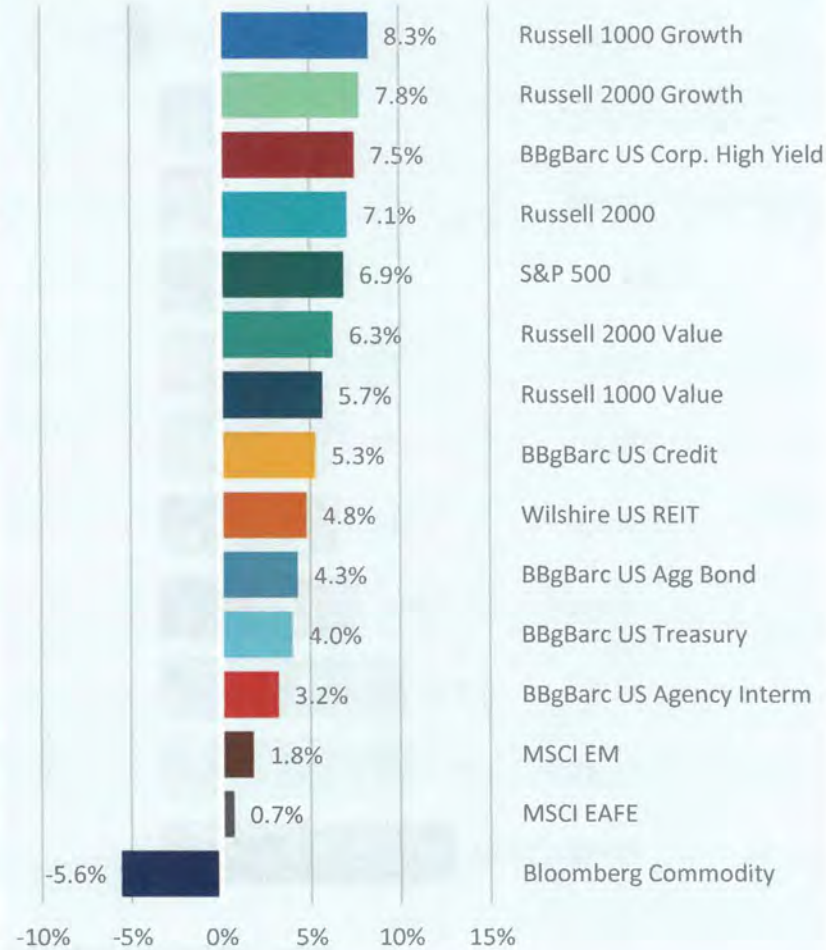
Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, BC Agg, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, BC Global Bond. NCREIF Property performance data as of 9/30/16.

# Major asset class returns

ONE YEAR ENDING DECEMBER



TEN YEARS ENDING DECEMBER



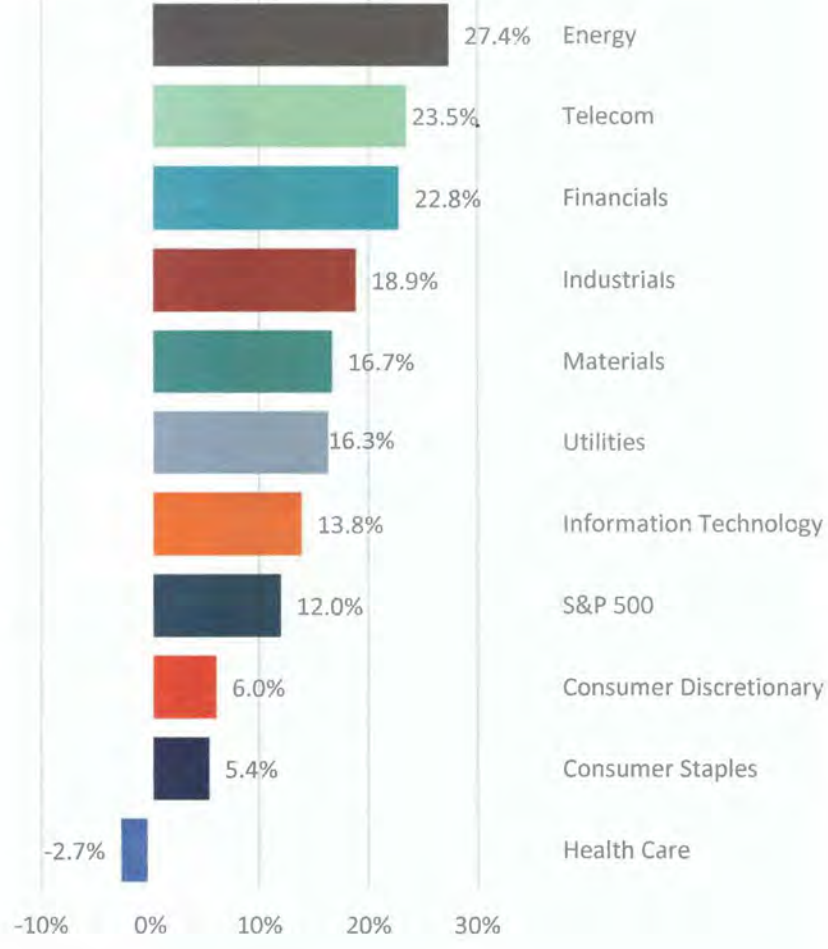
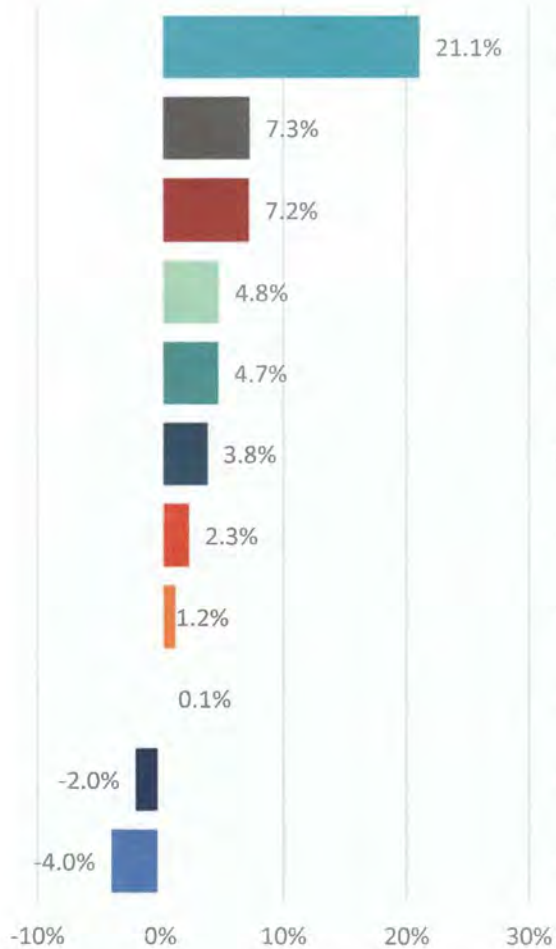
Source: Morningstar, as of 12/31/16

Source: Morningstar, as of 12/31/16

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

4<sup>TH</sup> QUARTER

ONE YEAR ENDING DECEMBER



Source: Morningstar, as of 12/30/16

Source: Morningstar, as of 12/30/16

# Detailed index returns

## DOMESTIC EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
<b>Core Index</b>							
S&P 500	2.0	3.8	12.0	12.0	8.9	14.7	6.9
S&P 500 Equal Weighted	1.1	3.8	14.8	14.8	8.7	15.5	8.4
DJ Industrial Average	3.4	8.7	16.5	16.5	8.7	12.9	7.5
Russell Top 200	2.2	4.1	11.3	11.3	8.9	14.7	6.8
Russell 1000	1.9	3.8	12.1	12.1	8.6	14.7	7.1
Russell 2000	2.8	8.8	21.3	21.3	6.7	14.5	7.1
Russell 3000	2.0	4.2	12.7	12.7	8.4	14.7	7.1
Russell Mid Cap	1.1	3.2	13.8	13.8	7.9	14.7	7.9
<b>Style Index</b>							
Russell 1000 Growth	1.2	1.0	7.1	7.1	8.6	14.5	8.3
Russell 1000 Value	2.5	6.7	17.3	17.3	8.6	14.8	5.7
Russell 2000 Growth	1.4	3.6	11.3	11.3	5.1	13.7	7.8
Russell 2000 Value	4.1	14.1	31.7	31.7	8.3	15.1	6.3

## INTERNATIONAL EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
<b>Broad Index</b>							
MSCI ACWI	2.2	1.2	7.9	7.9	3.1	9.4	3.6
MSCI ACWI ex US	2.6	(1.3)	4.5	4.5	(1.8)	5.0	1.0
MSCI EAFE	3.4	(0.7)	1.0	1.0	(1.6)	6.5	0.7
MSCI EM	0.2	(4.2)	11.2	11.2	(2.6)	1.3	1.8
MSCI EAFE Small Cap	2.9	(2.9)	2.2	2.2	2.1	10.6	2.9
<b>Style Index</b>							
MSCI EAFE Growth	2.2	(5.5)	(3.0)	(3.0)	(1.2)	6.7	1.6
MSCI EAFE Value	4.6	4.2	5.0	5.0	(2.1)	6.3	(0.2)
<b>Regional Index</b>							
MSCI UK	4.1	(0.9)	(0.1)	(0.1)	(4.4)	4.0	0.3
MSCI Japan	1.0	(0.2)	2.4	2.4	2.5	8.2	0.5
MSCI Euro	6.6	2.0	1.4	1.4	(3.3)	7.1	(0.6)
MSCI EM Asia	(1.4)	(6.1)	6.1	6.1	0.1	4.4	3.4
MSCI EM Latin American	0.9	(0.9)	31.0	31.0	(7.5)	(5.7)	0.3

## FIXED INCOME

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
<b>Broad Index</b>							
BBgBarc US Treasury US TIPS	(0.1)	(2.4)	4.7	4.7	2.3	0.9	4.4
BBgBarc US Treasury Bills	0.0	0.1	0.4	0.4	0.2	0.2	0.9
BBgBarc US Agg Bond	0.1	(3.0)	2.6	2.6	3.0	2.2	4.3
<b>Duration</b>							
BBgBarc US Treasury 1-3 Yr	0.0	(0.5)	0.9	0.9	0.7	0.6	2.1
BBgBarc US Treasury Long	(0.5)	(11.7)	1.3	1.3	7.8	2.5	6.7
BBgBarc US Treasury	(0.1)	(3.8)	1.0	1.0	2.3	1.2	4.0
<b>Issuer</b>							
BBgBarc US MBS	(0.0)	(2.0)	1.7	1.7	3.1	2.1	4.3
BBgBarc US Corp. High Yield	1.8	1.8	17.1	17.1	4.7	7.4	7.5
BBgBarc US Agency Interm	(0.0)	(1.1)	1.1	1.1	1.5	1.1	3.2
BBgBarc US Credit	0.6	(3.0)	5.6	5.6	4.1	3.8	5.3

## OTHER

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
<b>Index</b>							
Bloomberg Commodity	1.8	2.7	11.8	11.8	(11.3)	(9.0)	(5.6)
Wilshire US REIT	4.9	(2.3)	7.2	7.2	13.8	12.0	4.8
<b>Regional Index</b>							
JPM EMBI Global Div	1.3	(4.0)	10.2	10.2	6.2	5.9	6.9
JPM GBI-EM Global Div	1.9	(6.1)	9.9	9.9	(4.1)	(1.3)	3.8
<b>Hedge Funds</b>							
HFRI Composite	1.1	1.3	5.6	5.6	2.4	4.5	3.4
HFRI FOF Composite	0.9	0.8	0.5	0.5	1.2	3.4	1.3
<b>Currency (Spot)</b>							
Euro	(0.6)	(6.1)	(2.9)	(2.9)	(8.5)	(4.1)	(2.2)
Pound	(1.1)	(4.9)	(16.2)	(16.2)	(9.3)	(4.5)	(4.5)
Yen	(2.3)	(13.2)	3.1	3.1	(3.4)	(8.0)	0.2

Source: Morningstar, as of 12/31/16

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

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

**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](http://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. ([www.Bloomberg.com](http://www.Bloomberg.com))

**OECD Consumer Confidence Index** - based on households' plans for major purchases and their economic situation, both currently and their expectations for the immediate future. Opinions compared to a "normal" state are collected and the difference between positive and negative answers provides a qualitative index on economic conditions. (<https://data.oecd.org/>)

**OECD Business Confidence Index** - based on enterprises' assessment of production, orders and stocks, as well as its current position and expectations for the immediate future. Opinions compared to a "normal" state are collected and the difference between positive and negative answers provides a qualitative index on economic conditions. (<https://data.oecd.org/>)

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

# Notices & disclosures

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# Contra Costa County Employees' Retirement Association

Investment Performance Review  
Period Ending: December 31, 2016

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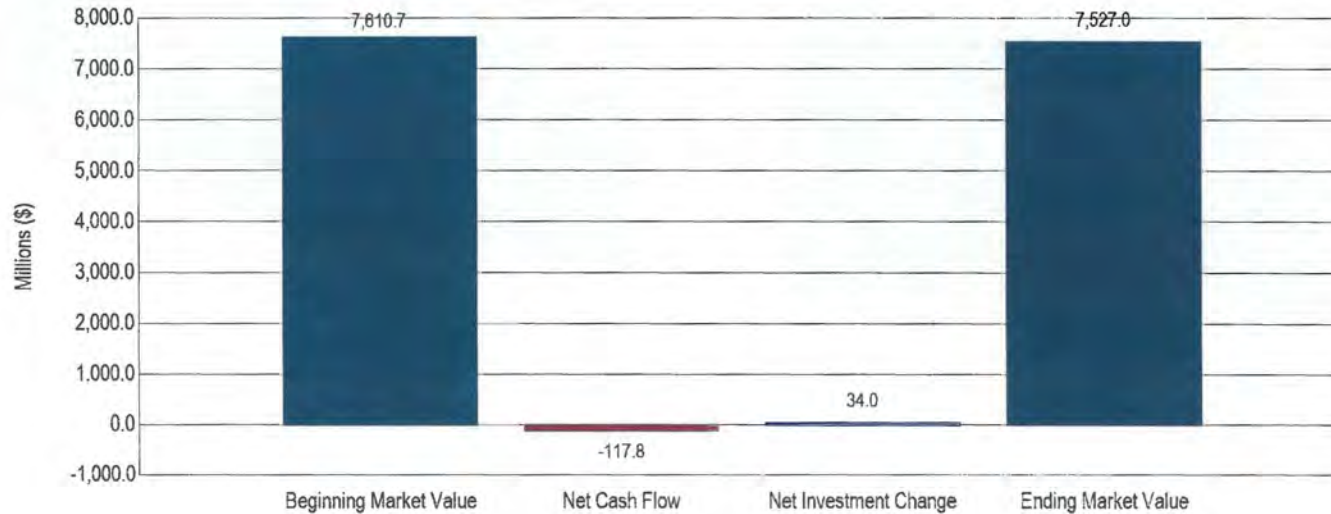
Total Fund  
Portfolio Reconciliation

Period Ending: December 31, 2016

Portfolio Reconciliation

	Last Three Months	Year-To-Date
Beginning Market Value	\$7,610,706,502	\$7,104,853,428
Net Cash Flow	-\$117,783,688	-\$83,078,622
Net Investment Change	\$34,028,809	\$505,176,816
Ending Market Value	\$7,526,951,623	\$7,526,951,623

Change in Market Value  
Last Three Months

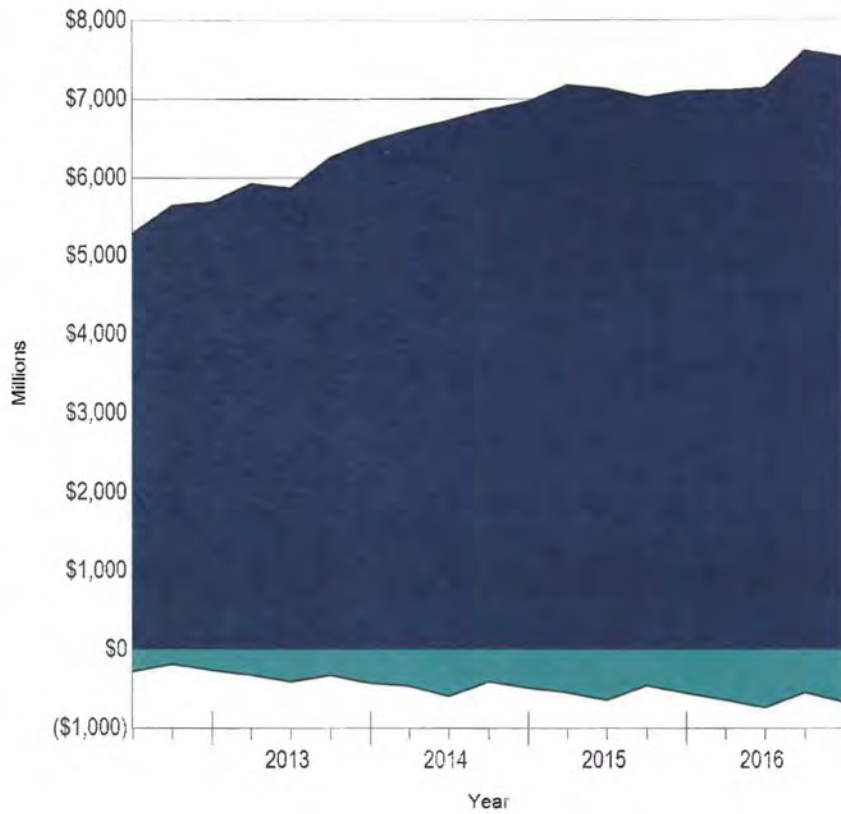


Contributions and withdrawals may include intra-account transfers between managers/funds.

Total Fund  
Asset Allocation History

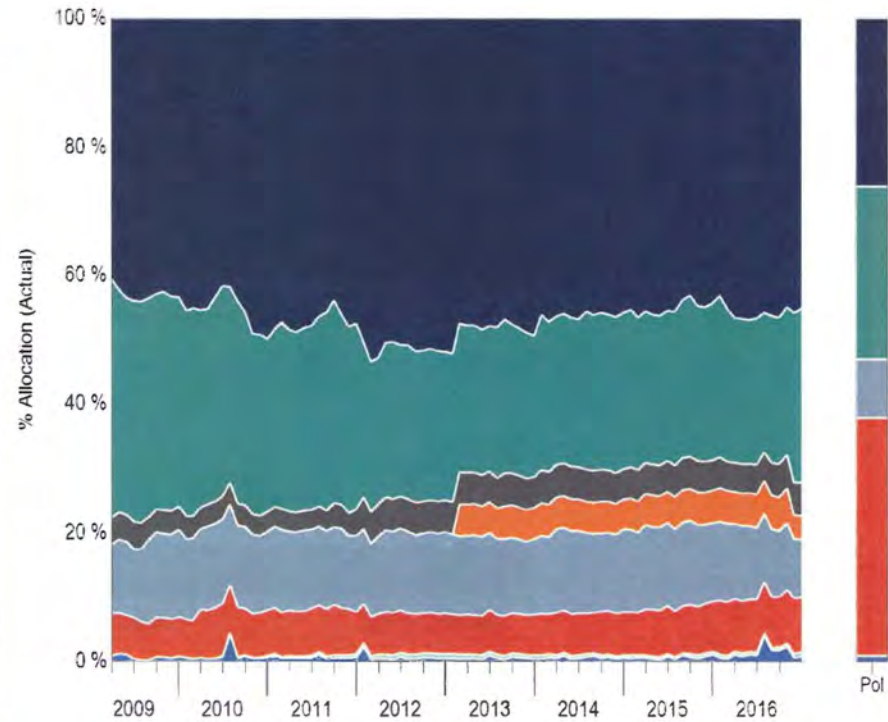
Period Ending: December 31, 2016

Market Value History  
Cumulative Cash Flows



Market Value Net Cash Flow

Asset Allocation History

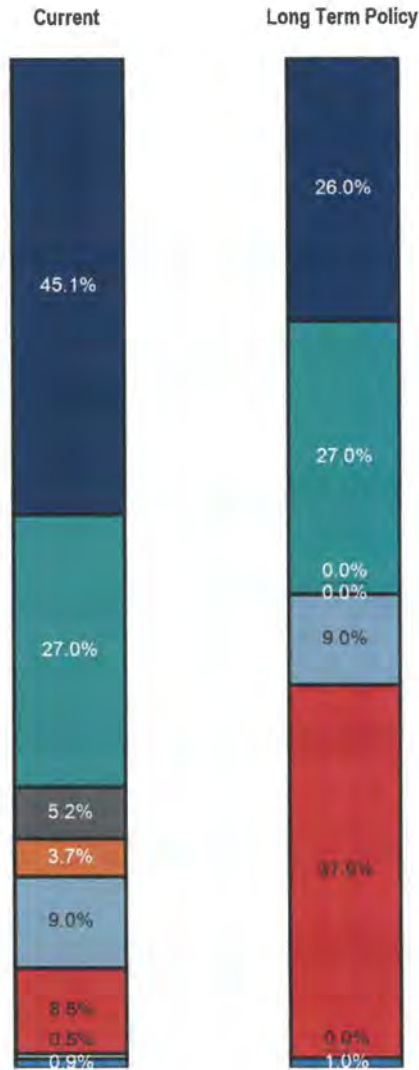


Global Equity Global Fixed Income High Yield Fixed Income  
Inflation Hedge/Real Assets Real Estate Cash  
Opportunistic Alternative Investments

Policy reflects FFP 4-Yr allocations approved in April 2016.

Total Fund  
 Asset Allocation vs. Long Term Target Policy

Period Ending: December 31, 2016



Allocation vs. Long Term Target

	Current Balance	Current Allocation	Long Term Target	Difference
Global Equity	\$3,395,939,172	45.1%	26.0%	\$1,438,931,751
Global Fixed Income	\$2,034,822,919	27.0%	27.0%	\$2,545,981
High Yield Fixed Income	\$387,946,543	5.2%	0.0%	\$387,946,543
Inflation Hedge/Real Assets	\$279,241,547	3.7%	0.0%	\$279,241,547
Real Estate	\$680,371,710	9.0%	9.0%	\$2,946,064
Alternative Investments	\$640,550,673	8.5%	37.0%	-\$2,144,421,428
Opportunistic	\$40,469,189	0.5%	0.0%	\$40,469,189
Cash	\$67,609,870	0.9%	1.0%	-\$7,659,646
<b>Total</b>	<b>\$7,526,951,623</b>	<b>100.0%</b>	<b>100.0%</b>	

Allocation vs. Current Targets

	Current Balance	Current Allocation	Current Target	Difference
Global Equity	\$3,395,939,172	45.1%	44.9%	\$16,337,894
Global Fixed Income	\$2,034,822,919	27.0%	27.3%	-\$20,034,874
High Yield Fixed Income	\$387,946,543	5.2%	5.1%	\$4,072,010
Inflation Hedge/Real Assets	\$279,241,547	3.7%	3.6%	\$8,271,288
Real Estate	\$680,371,710	9.0%	9.4%	-\$27,161,743
Alternative Investments	\$640,550,673	8.5%	7.7%	\$60,975,398
Opportunistic	\$40,469,189	0.5%	0.4%	\$10,361,382
Cash	\$67,609,870	0.9%	1.6%	-\$52,821,356
<b>Total</b>	<b>\$7,526,951,623</b>	<b>100.0%</b>	<b>100.0%</b>	

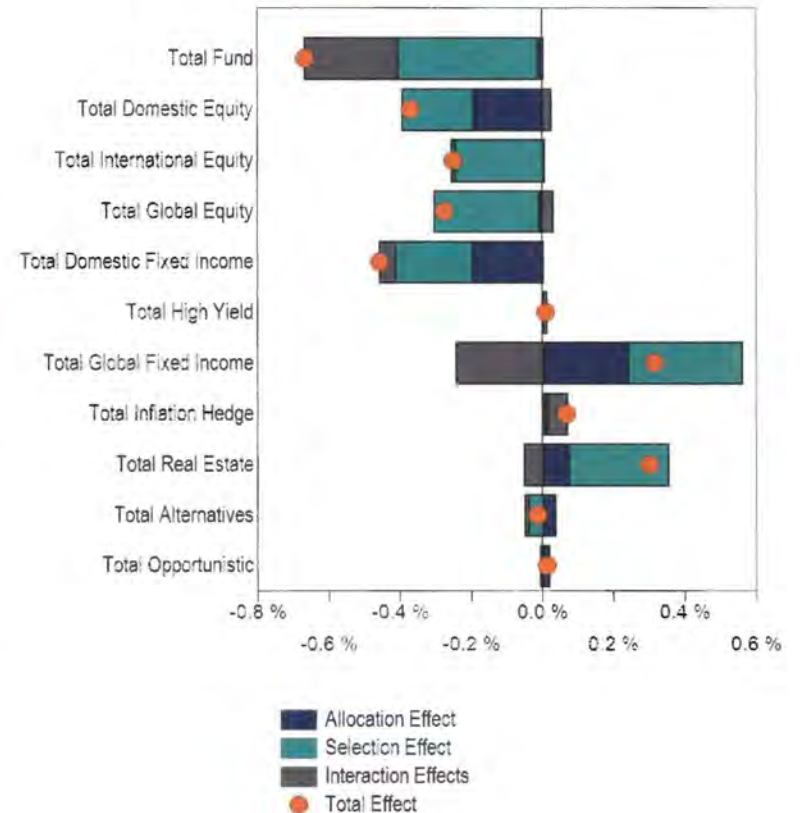
Long Term Targets reflect FFP 4-Yr allocations approved in April 2016.  
 Current Targets reflect Phase 1 Targets approved in October 2016.

# Total Fund Executive Summary (Gross of Fees)

Period Ending: December 31, 2016

	QTD	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs
<b>Total Fund</b>	<b>0.5</b>	<b>7.4</b>	<b>7.4</b>	<b>6.1</b>	<b>9.7</b>	<b>6.0</b>
Policy Index	0.4	8.8	8.8	6.1	9.6	--
InvestorForce Public DB > \$1B Gross Rank	69	72	72	1	11	10
<b>Total Domestic Equity</b>	<b>3.4</b>	<b>11.5</b>	<b>11.5</b>	<b>7.9</b>	<b>15.1</b>	<b>7.7</b>
Russell 3000	4.2	12.7	12.7	8.4	14.7	7.1
eA US All Cap Equity Gross Rank	52	49	49	33	29	45
<b>Total International Equity</b>	<b>-3.5</b>	<b>1.2</b>	<b>1.2</b>	<b>0.1</b>	<b>7.0</b>	<b>0.7</b>
MSCI ACWI ex USA Gross	-1.2	5.0	5.0	-1.3	5.5	1.4
MSCI EAFE Gross	-0.7	1.5	1.5	-1.2	7.0	1.2
eA All ACWI ex-US Equity Gross Rank	57	63	63	42	59	96
<b>Total Global Equity</b>	<b>-1.2</b>	<b>7.6</b>	<b>7.6</b>	<b>5.0</b>	<b>9.7</b>	<b>--</b>
MSCI ACWI	1.2	7.9	7.9	3.1	9.4	--
eA All Global Equity Gross Rank	64	44	44	33	73	--
<b>Total Domestic Fixed Income</b>	<b>-1.5</b>	<b>4.8</b>	<b>4.8</b>	<b>4.5</b>	<b>4.9</b>	<b>5.6</b>
BBgBarc US Aggregate TR	-3.0	2.6	2.6	3.0	2.2	4.3
BBgBarc US Govt/Credit 1-3 Yr. TR	-0.4	1.3	1.3	0.9	0.9	2.4
eA US Core Fixed Inc Gross Rank	4	8	8	4	3	9
<b>Total High Yield</b>	<b>2.0</b>	<b>14.3</b>	<b>14.3</b>	<b>3.7</b>	<b>6.7</b>	<b>7.5</b>
BofA ML High Yield Master II	1.9	17.5	17.5	4.7	7.4	7.3
eA US High Yield Fixed Inc Gross Rank	35	46	46	76	68	35
<b>Total Inflation Hedge</b>	<b>2.0</b>	<b>7.4</b>	<b>7.4</b>	<b>0.5</b>	<b>--</b>	<b>--</b>
CPI + 4%	1.0	6.2	6.2	5.2	--	--

Attribution Effects  
3 Months Ending December 31, 2016



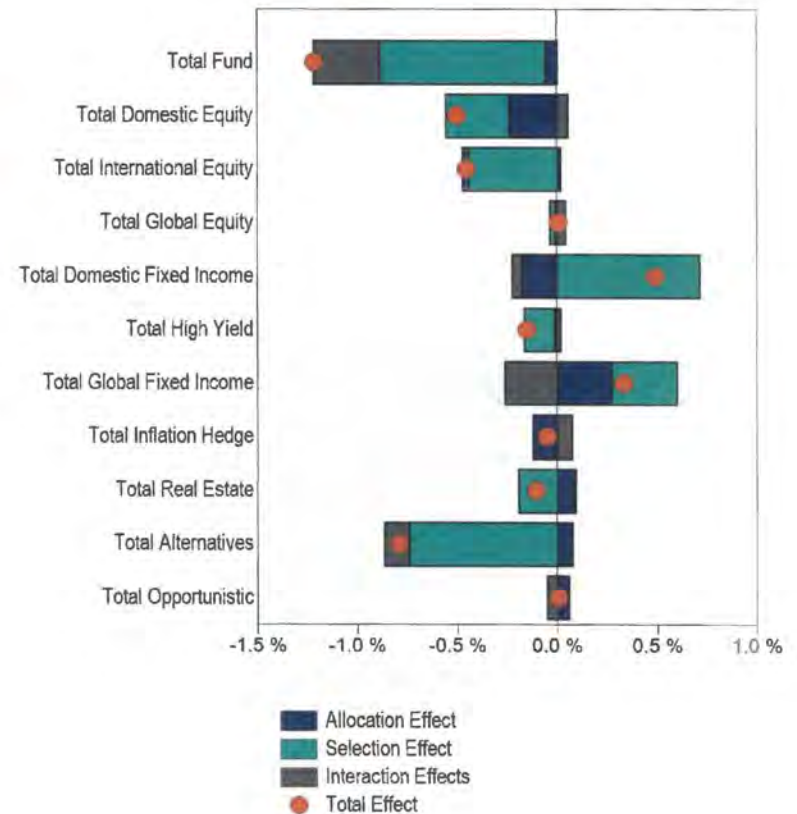
Policy Index (12/1/2016 - present): 22.9% Russell 3000, 11% MSCI ACWI ex-US (Gross), 10.9% MSCI ACWI (Net), 22.4% BBgBarc 1-3 Yr Govt/Credit, 3.2% BBgBarc US Aggregate, 1.7% BofA High Yield Master II +2%, 5.1% BofA High Yield Master II, 1% Wilshire REIT, 1.7% NCREIF Property Index, 6.8% NCREIF ODCE Index, 3.6% CPI +4%, 8.1% S&P 500 +4%, 1.6% 90-day T-Bills.  
 Policy Index (4/1/2012-11/30/16): 27.7% Russell 3000, 10.6% MSCI ACWI ex-US (Gross), 12.3% MSCI ACWI (Net), 19.6% BBgBarc U.S. Aggregate, 5% BofA High Yield Master II, 4% BBgBarc Global Aggregate, 5.4% Wilshire REIT, 6.75% NCREIF Property Index, 1.35% FTSE/EPRA NAREIT Developed exUS, 6.8% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.

**Total Fund**  
**Executive Summary (Gross of Fees)**

Period Ending: December 31, 2016

	QTD	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs
<b>Total Real Estate</b>	<b>0.7</b>	<b>5.5</b>	<b>5.5</b>	<b>13.1</b>	<b>13.3</b>	<b>4.6</b>
Real Estate Benchmark	-1.4	6.7	6.7	11.1	10.8	6.9
NCREIF-ODCE	2.1	8.8	8.8	12.1	12.2	5.8
NCREIF Property Index	1.7	8.0	8.0	11.0	10.9	6.9
<b>Total Alternatives</b>	<b>4.2</b>	<b>9.0</b>	<b>9.0</b>	<b>13.2</b>	<b>13.1</b>	<b>11.6</b>
S&P 500 Index +4% (Lagged)	4.9	20.0	20.0	15.6	21.0	11.5
<b>Total Opportunistic</b>	<b>3.7</b>	<b>10.1</b>	<b>10.1</b>	<b>1.7</b>	<b>6.9</b>	<b>--</b>
CPI + 4%	1.0	6.2	6.2	5.2	5.4	--

Attribution Effects  
 1 Year Ending December 31, 2016



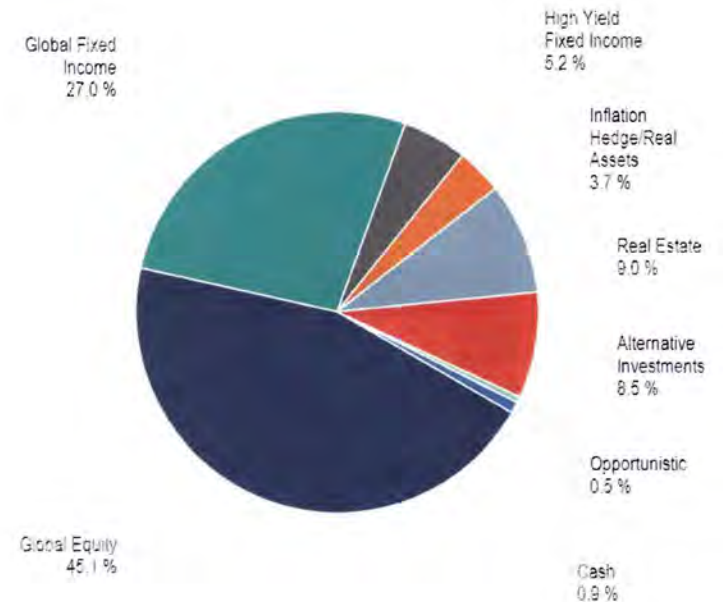
Policy Index (12/1/2016 -present): 22.9% Russell 3000, 11% MSCI ACWI ex-US (Gross), 10.9% MSCI ACWI (Net), 22.4% BBgBarc 1-3 Yr Gov/Credit, 3.2% BBgBarc US Aggregate, 1.7% BofA High Yield Master II +2%, 5.1% BofA High Yield Master II, 1% Wilshire REIT, 1.7% NCREIF Property Index, 6.8% NCREIF ODCE Index, 3.6% CPI +4%, 8.1% S&P 500 +4%, 1.6% 90-day T-Bills.  
 Policy Index (4/1/2012-11/30/16): 27.7% Russell 3000, 10.6% MSCI ACWI ex-US (Gross), 12.3% MSCI ACWI (Net), 19.6% BBgBarc U.S. Aggregate, 5% BofA High Yield Master II, 4% BBgBarc Global Aggregate, 5.4% Wilshire REIT, 6.75% NCREIF Property Index, 1.35% FTSE/EPRA NAREIT Developed exUS, 6.8% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.

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

Period Ending: December 31, 2016

	QTD	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs
<b>Total Fund</b>	<b>0.4</b>	<b>6.9</b>	<b>6.9</b>	<b>5.5</b>	<b>9.1</b>	<b>5.4</b>
<i>Policy Index</i>	0.4	8.8	8.8	6.1	9.6	--
<b>Total Domestic Equity</b>	<b>3.3</b>	<b>11.1</b>	<b>11.1</b>	<b>7.4</b>	<b>14.7</b>	<b>7.3</b>
<i>Russell 3000</i>	4.2	12.7	12.7	8.4	14.7	7.1
<b>Total International Equity</b>	<b>-3.6</b>	<b>0.8</b>	<b>0.8</b>	<b>-0.3</b>	<b>6.5</b>	<b>0.2</b>
<i>MSCI ACWI ex USA Gross</i>	-1.2	5.0	5.0	-1.3	5.5	1.4
<i>MSCI EAFE Gross</i>	-0.7	1.5	1.5	-1.2	7.0	1.2
<b>Total Global Equity</b>	<b>-1.3</b>	<b>6.9</b>	<b>6.9</b>	<b>4.3</b>	<b>9.1</b>	<b>--</b>
<i>MSCI ACWI</i>	1.2	7.9	7.9	3.1	9.4	--
<b>Total Domestic Fixed Income</b>	<b>-1.5</b>	<b>4.4</b>	<b>4.4</b>	<b>4.1</b>	<b>4.5</b>	<b>5.1</b>
<i>BBgBarc US Aggregate TR</i>	-3.0	2.6	2.6	3.0	2.2	4.3
<i>BBgBarc US Govt/Credit 1-3 Yr. TR</i>	-0.4	1.3	1.3	0.9	0.9	2.4
<b>Total High Yield</b>	<b>1.9</b>	<b>13.9</b>	<b>13.9</b>	<b>3.3</b>	<b>6.3</b>	<b>7.3</b>
<i>BofA ML High Yield Master II</i>	1.9	17.5	17.5	4.7	7.4	7.3
<b>Total Inflation Hedge</b>	<b>1.9</b>	<b>6.5</b>	<b>6.5</b>	<b>-0.4</b>	<b>--</b>	<b>--</b>
<i>CPI + 4%</i>	1.0	6.2	6.2	5.2	--	--
<b>Total Real Estate</b>	<b>0.6</b>	<b>4.8</b>	<b>4.8</b>	<b>11.9</b>	<b>12.1</b>	<b>3.6</b>
<i>Real Estate Benchmark</i>	-1.4	6.7	6.7	11.1	10.8	6.9
<i>NCREIF-ODCE</i>	2.1	8.8	8.8	12.1	12.2	5.8
<i>NCREIF Property Index</i>	1.7	8.0	8.0	11.0	10.9	6.9

Current Allocation



*Policy Index (12/1/2016 -present): 22.9% Russell 3000, 11% MSCI ACWI ex-US (Gross), 10.9% MSCI ACWI (Net), 22.4% BBgBarc 1-3 Yr Govt/Credit, 3.2% BBgBarc US Aggregate, 1.7% BofA High Yield Master II +2%, 5.1% BofA High Yield Master II, 1% Wilshire REIT, 1.7% NCREIF Property Index, 6.8% NCREIF ODCE Index, 3.6% CPI +4%, 8.1% S&P 500 +4%, 1.6% 90-day T-Bills.  
 Policy Index (4/1/2012-11/30/16): 27.7% Russell 3000, 10.6% MSCI ACWI ex-US (Gross), 12.3% MSCI ACWI (Net), 19.6% BBgBarc U.S. Aggregate, 5% BofA High Yield Master II, 4% BBgBarc Global Aggregate, 5.4% Wilshire REIT, 6.75% NCREIF Property Index, 1.35% FTSE/EPRA NAREIT Developed exUS, 6.8% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.*

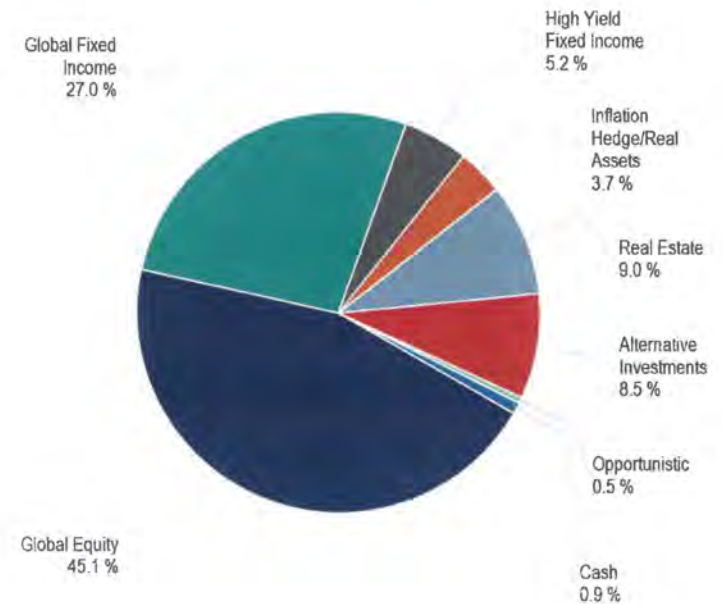


**Total Fund  
Executive Summary (Net of Fees)**

**Period Ending: December 31, 2016**

	QTD	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs
<b>Total Alternatives</b>	<b>4.2</b>	<b>8.6</b>	<b>8.6</b>	<b>11.8</b>	<b>11.3</b>	<b>9.3</b>
S&P 500 Index +4% (Lagged)	4.9	20.0	20.0	15.6	21.0	11.5
<b>Total Opportunistic</b>	<b>3.7</b>	<b>9.5</b>	<b>9.5</b>	<b>1.4</b>	<b>6.7</b>	<b>--</b>
CPI + 4%	1.0	6.2	6.2	5.2	5.4	--

**Current Allocation**



Policy Index (12/1/2016 -present): 22.9% Russell 3000, 11% MSCI ACWI ex-US (Gross), 10.9% MSCI ACWI (Net), 22.4% BBgBarc 1-3 Yr Gov/Credit, 3.2% BBgBarc US Aggregate, 1.7% BofA High Yield Master II +2%, 5.1% BofA High Yield Master II, 1% Wilshire REIT, 1.7% NCREIF Property Index, 6.8% NCREIF ODCE Index, 3.6% CPI +4%, 8.1% S&P 500 +4%, 1.6% 90-day T-Bills.

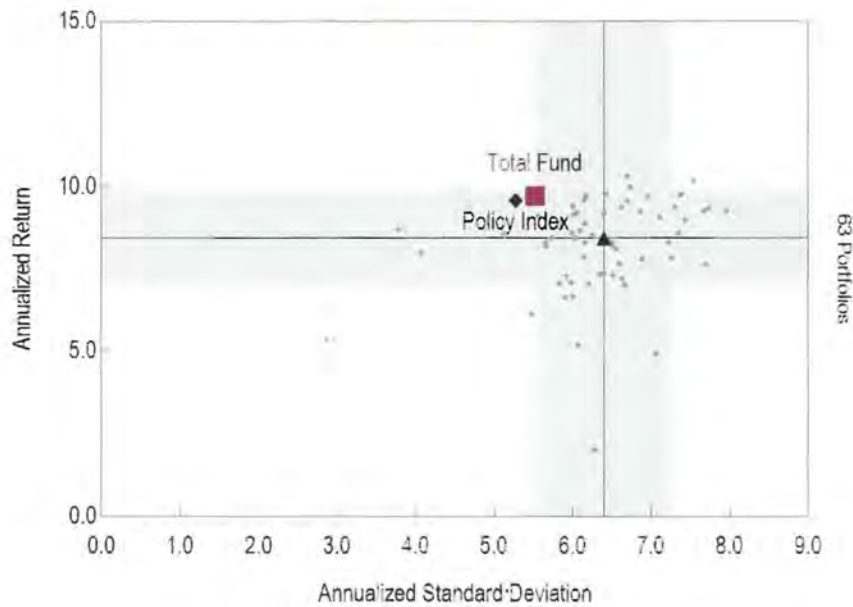
Policy Index (4/1/2012-11/30/16): 27.7% Russell 3000, 10.6% MSCI ACWI ex-US (Gross), 12.3% MSCI ACWI (Net), 19.6% BBgBarc U.S. Aggregate, 5% BofA High Yield Master II, 4% BBgBarc Global Aggregate, 5.4% Wilshire REIT, 6.75% NCREIF Property Index, 1.35% FTSE/EPRA NAREIT Developed exUS, 6.8% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.

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

**Period Ending: December 31, 2016**

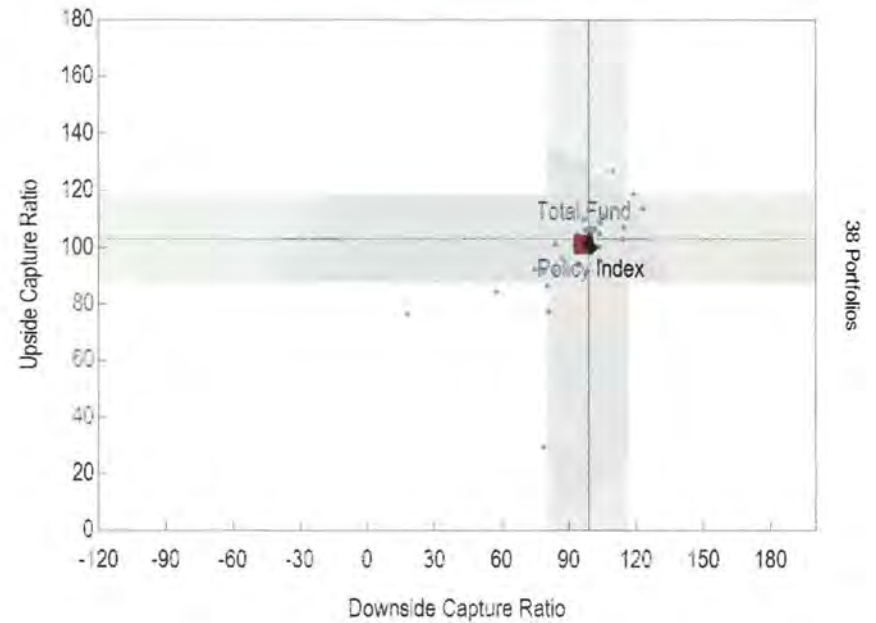
	Anlzd Ret	Ann Excess BM Return	Anlzd Std Dev	Anlzd Alpha	Beta	Tracking Error	R-Squared	Sharpe Ratio	Info Ratio	Up Mkt Cap Ratio	Down Mkt Cap Ratio
Total Fund	9.73%	0.14%	5.52%	-0.07%	1.02	1.17%	0.96	1.75	0.12	101.09%	96.59%

**Risk vs. Return**



- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB > \$1B Gross

**Up Markets vs. Down Markets**



- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB > \$1B Gross

Total Fund  
Performance Summary (Gross of Fees)

Period Ending: December 31, 2016

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total Fund</b>	<b>7,526,951,623</b>	<b>100.0</b>	<b>0.5</b>	<b>7.4</b>	<b>7.4</b>	<b>6.1</b>	<b>9.7</b>	<b>6.0</b>	<b>7.4</b>	<b>2.7</b>	<b>8.4</b>	<b>16.4</b>	<b>14.3</b>
<i>Policy Index</i>			0.4	8.8	8.8	6.1	9.6	--	8.8	0.6	9.0	15.6	14.6
<i>InvestorForce Public DB &gt; \$1B Gross Rank</i>			69	72	72	1	11	10	72	5	6	33	13
<b>Total Domestic Equity</b>	<b>1,792,468,714</b>	<b>23.8</b>	<b>3.4</b>	<b>11.5</b>	<b>11.5</b>	<b>7.9</b>	<b>15.1</b>	<b>7.7</b>	<b>11.5</b>	<b>1.1</b>	<b>11.4</b>	<b>36.2</b>	<b>18.2</b>
<i>Russell 3000</i>			4.2	12.7	12.7	8.4	14.7	7.1	12.7	0.5	12.6	33.6	16.4
<i>eA US All Cap Equity Gross Rank</i>			52	49	49	33	29	45	49	36	36	41	24
Intech Large Cap Core	292,698,273	3.9	1.2	7.7	7.7	8.6	14.4	7.1	7.7	3.8	14.7	32.7	15.3
<i>S&amp;P 500</i>			3.8	12.0	12.0	8.9	14.7	6.9	12.0	1.4	13.7	32.4	16.0
<i>eA US Large Cap Core Equity Gross Rank</i>			89	79	79	39	42	65	79	16	31	54	54
PIMCO Stocks+ Absolute Return	350,161,557	4.7	5.6	16.2	16.2	9.2	15.6	7.4	16.2	-1.2	13.6	31.4	20.6
<i>S&amp;P 500</i>			3.8	12.0	12.0	8.9	14.7	6.9	12.0	1.4	13.7	32.4	16.0
<i>eA US Large Cap Core Equity Gross Rank</i>			14	6	6	21	14	52	6	73	45	68	4
Jackson Square Partners	312,431,682	4.2	-4.0	-4.4	-4.4	4.9	12.8	7.9	-4.4	6.1	13.9	35.4	16.9
<i>Russell 1000 Growth</i>			1.0	7.1	7.1	8.6	14.5	8.3	7.1	5.7	13.0	33.5	15.3
<i>eA US Large Cap Growth Equity Gross Rank</i>			96	97	97	87	77	58	97	37	31	40	37
Robeco Boston Partners	342,951,779	4.6	8.3	15.1	15.1	7.4	15.6	7.7	15.1	-3.9	12.0	37.4	21.6
<i>Russell 1000 Value</i>			6.7	17.3	17.3	8.6	14.8	5.7	17.3	-3.8	13.5	32.5	17.5
<i>eA US Large Cap Value Equity Gross Rank</i>			20	49	49	64	20	22	49	65	55	24	5
Emerald Advisers	251,478,166	3.3	4.0	10.1	10.1	7.1	17.0	9.5	10.1	4.1	7.3	50.3	18.5
<i>Russell 2000 Growth</i>			3.6	11.3	11.3	5.1	13.7	7.8	11.3	-1.4	5.6	43.3	14.6
<i>eA US Small Cap Growth Equity Gross Rank</i>			35	53	53	24	14	27	53	19	21	27	22
Ceredex	242,747,257	3.2	6.5	29.8	29.8	8.6	15.8	--	29.8	-4.4	3.3	36.5	19.0
<i>Russell 2000 Value</i>			14.1	31.7	31.7	8.3	15.1	--	31.7	-7.5	4.2	34.5	18.1
<i>eA US Small Cap Value Equity Gross Rank</i>			94	32	32	52	54	--	32	52	74	66	38
<b>Total International Equity</b>	<b>807,551,033</b>	<b>10.7</b>	<b>-3.5</b>	<b>1.2</b>	<b>1.2</b>	<b>0.1</b>	<b>7.0</b>	<b>0.7</b>	<b>1.2</b>	<b>-1.2</b>	<b>0.3</b>	<b>17.8</b>	<b>18.5</b>
<i>MSCI ACWI ex USA Gross</i>			-1.2	5.0	5.0	-1.3	5.5	1.4	5.0	-5.3	-3.4	15.8	17.4
<i>MSCI EAFE Gross</i>			-0.7	1.5	1.5	-1.2	7.0	1.2	1.5	-0.4	-4.5	23.3	17.9
<i>eA All ACWI ex-US Equity Gross Rank</i>			57	63	63	42	59	96	63	61	17	69	63
Pyrford	403,822,679	5.4	-3.1	3.4	3.4	--	--	--	3.4	-2.9	--	--	--
<i>MSCI ACWI ex USA Value</i>			3.3	8.9	8.9	--	--	--	8.9	-10.1	--	--	--
<i>eA ACWI ex-US Value Equity Gross Rank</i>			89	75	75	--	--	--	75	59	--	--	--
William Blair	403,728,354	5.4	-3.9	-1.4	-1.4	-0.7	8.0	--	-1.4	0.5	-1.2	20.9	24.3
<i>MSCI ACWI ex USA Growth</i>			-5.7	0.1	0.1	-1.3	5.3	--	0.1	-1.3	-2.6	15.5	16.7
<i>eA ACWI ex-US Growth Equity Gross Rank</i>			24	56	56	60	39	--	56	69	37	44	6

Individual closed end funds are not shown in performance summary table. Goldman Sachs Park portfolio liquidated 10/26/2016. PIMCO All Asset liquidated 10/31/2016. Lord Abbett liquidated 11/3/2016. Goldman Sachs Core Plus liquidated 11/3/2016. PIMCO Fixed Income liquidated 11/3/2016. Lazard liquidated 11/3/2016. Invesco REIT liquidated 11/3/2016. Sit Short Duration funded 11/2/2016. DFA Short Credit funded 11/21/2016. Insight Short Duration funded 11/18/2016. Goldman Sachs has \$55,857 of residual cash. PIMCO Fixed Income has \$4,784 of residual cash. Lazard has \$1,030,760 of residual cash.

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

**Period Ending: December 31, 2016**

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total Global Equity</b>	<b>795,919,425</b>	<b>10.6</b>	<b>-1.2</b>	<b>7.6</b>	<b>7.6</b>	<b>5.0</b>	<b>9.7</b>	<b>-</b>	<b>7.6</b>	<b>2.2</b>	<b>5.2</b>	<b>23.7</b>	<b>11.1</b>
MSCI ACWI			1.2	7.9	7.9	3.1	9.4	--	7.9	-2.4	4.2	22.8	16.1
eA All Global Equity Gross Rank			64	44	44	33	73	--	44	31	44	64	90
Artisan Partners	321,213,026	4.3	-5.5	5.6	5.6	6.2	--	--	5.6	9.2	3.9	26.1	--
MSCI ACWI			1.2	7.9	7.9	3.1	--	--	7.9	-2.4	4.2	22.8	--
eA All Global Equity Gross Rank			94	61	61	19	--	--	61	4	56	51	--
First Eagle	324,077,255	4.3	0.2	11.7	11.7	5.3	9.5	--	11.7	0.2	4.5	17.9	13.9
MSCI ACWI			1.2	7.9	7.9	3.1	9.4	--	7.9	-2.4	4.2	22.8	16.1
eA All Global Equity Gross Rank			53	18	18	29	77	--	18	49	51	80	78
Intech Global Low Vol	23,167,577	0.3	-2.6	6.5	6.5	7.2	--	--	6.5	4.1	11.2	24.2	--
MSCI ACWI			1.2	7.9	7.9	3.1	--	--	7.9	-2.4	4.2	22.8	--
eA All Global Equity Gross Rank			77	53	53	13	--	--	53	18	14	62	--
JP Morgan Global Opportunities	127,461,568	1.7	3.7	6.6	6.6	3.4	10.8	--	6.6	-2.9	6.7	26.9	19.2
MSCI ACWI			1.2	7.9	7.9	3.1	9.4	--	7.9	-2.4	4.2	22.8	16.1
eA All Global Equity Gross Rank			18	51	51	61	49	--	51	75	30	46	32
<b>Total Domestic Fixed Income</b>	<b>2,033,792,159</b>	<b>27.0</b>	<b>-1.5</b>	<b>4.8</b>	<b>4.8</b>	<b>4.5</b>	<b>4.9</b>	<b>5.6</b>	<b>4.8</b>	<b>1.7</b>	<b>7.3</b>	<b>1.3</b>	<b>9.7</b>
BBgBarc US Aggregate TR			-3.0	2.6	2.6	3.0	2.2	4.3	2.6	0.6	6.0	-2.0	4.2
BBgBarc US Govt/Credit 1-3 Yr. TR			-0.4	1.3	1.3	0.9	0.9	2.4	1.3	0.7	0.8	0.6	1.3
eA US Core Fixed Inc Gross Rank			4	8	8	4	3	9	8	8	8	2	5
DFA Short Credit	400,515,583	5.3	--	--	--	--	--	--	--	--	--	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			--	--	--	--	--	--	--	--	--	--	--
eA US Short Duration Fixed Inc Gross Rank			--	--	--	--	--	--	--	--	--	--	--
Insight Short Duration	823,209,228	10.9	--	--	--	--	--	--	--	--	--	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			--	--	--	--	--	--	--	--	--	--	--
eA US Short Duration Fixed Inc Gross Rank			--	--	--	--	--	--	--	--	--	--	--
Sit Short Duration	432,740,476	5.7	--	--	--	--	--	--	--	--	--	--	--
BBgBarc US Govt 1-3 Yr TR			--	--	--	--	--	--	--	--	--	--	--
eA US Short Duration Fixed Inc Gross Rank			--	--	--	--	--	--	--	--	--	--	--
AFL-CIO	236,464,086	3.1	-2.9	2.4	2.4	3.5	2.6	4.7	2.4	1.6	6.6	-1.9	4.7
BBgBarc US Aggregate TR			-3.0	2.6	2.6	3.0	2.2	4.3	2.6	0.6	6.0	-2.0	4.2
eA US Core Fixed Inc Gross Rank			68	87	87	38	69	68	87	15	25	78	80
BlackRock Transition	1,942,987	0.0											

Individual closed end funds are not shown in performance summary table. Goldman Sachs Park portfolio liquidated 10/26/2016. PIMCO All Asset liquidated 10/31/2016. Lord Abbett liquidated 11/3/2016. Goldman Sachs Core Plus liquidated 11/3/2016. PIMCO Fixed Income liquidated 11/3/2016. Lazard liquidated 11/3/2016. Invesco REIT liquidated 11/3/2016. Sit Short Duration funded 11/2/2016. DFA Short Credit funded 11/21/2016. Insight Short Duration funded 11/18/2016. Goldman Sachs has \$55,857 of residual cash. PIMCO Fixed Income has \$4,784 of residual cash. Lazard has \$1,030,760 of residual cash.

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

**Period Ending: December 31, 2016**

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total High Yield</b>	<b>387,946,543</b>	<b>5.2</b>	<b>2.0</b>	<b>14.3</b>	<b>14.3</b>	<b>3.7</b>	<b>6.7</b>	<b>7.5</b>	<b>14.3</b>	<b>-3.5</b>	<b>1.2</b>	<b>8.8</b>	<b>14.1</b>
<i>BofA ML High Yield Master II</i>			1.9	17.5	17.5	4.7	7.4	7.3	17.5	-4.6	2.5	7.4	15.6
<i>eA US High Yield Fixed Inc Gross Rank</i>			35	46	46	76	68	35	46	68	83	28	73
Allianz Global Investors	387,946,543	5.2	2.0	14.3	14.3	3.7	6.7	7.5	14.3	-3.5	1.2	8.8	14.1
<i>BofA ML High Yield Master II</i>			1.9	17.5	17.5	4.7	7.4	7.3	17.5	-4.6	2.5	7.4	15.6
<i>eA US High Yield Fixed Inc Gross Rank</i>			35	46	46	76	68	35	46	68	83	28	73
<b>Total Inflation Hedge</b>	<b>279,241,547</b>	<b>3.7</b>	<b>2.0</b>	<b>7.4</b>	<b>7.4</b>	<b>0.5</b>	<b>--</b>	<b>--</b>	<b>7.4</b>	<b>-4.9</b>	<b>-0.6</b>	<b>1.3</b>	<b>--</b>
<i>CPI + 4%</i>			1.0	6.2	6.2	5.2	--	--	6.2	4.8	4.8	5.6	--
Wellington Real Total Return	187,667,054	2.5	-0.1	-0.1	-0.1	-2.5	--	--	-0.1	-4.9	-2.5	--	--
<i>CPI + 4%</i>			1.0	6.2	6.2	5.2	--	--	6.2	4.8	4.8	--	--
<b>Total Real Estate</b>	<b>680,371,710</b>	<b>9.0</b>	<b>0.7</b>	<b>5.5</b>	<b>5.5</b>	<b>13.1</b>	<b>13.3</b>	<b>4.6</b>	<b>5.5</b>	<b>13.5</b>	<b>20.6</b>	<b>10.5</b>	<b>16.7</b>
<i>Real Estate Benchmark</i>			-1.4	6.7	6.7	11.1	10.8	6.9	6.7	8.2	18.8	7.1	13.6
<i>NCREIF-ODCE</i>			2.1	8.8	8.8	12.1	12.2	5.8	8.8	15.0	12.5	13.9	10.9
<i>NCREIF Property Index</i>			1.7	8.0	8.0	11.0	10.9	6.9	8.0	13.3	11.8	11.0	10.5
Adelante	65,132,532	0.9	-2.6	4.1	4.1	13.4	12.2	4.2	4.1	5.1	33.4	3.6	17.7
<i>Wilshire REIT</i>			-2.3	7.2	7.2	13.8	12.0	4.8	7.2	4.2	31.8	1.9	17.6

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

**Period Ending: December 31, 2016**

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total Fund</b>	<b>7,526,951,623</b>	<b>100.0</b>	<b>0.4</b>	<b>6.9</b>	<b>6.9</b>	<b>5.5</b>	<b>9.1</b>	<b>5.4</b>	<b>6.9</b>	<b>2.1</b>	<b>7.7</b>	<b>15.6</b>	<b>13.6</b>
<i>Policy Index</i>			0.4	8.8	8.8	6.1	9.6	--	8.8	0.6	9.0	15.6	14.6
<b>Total Domestic Equity</b>	<b>1,792,468,714</b>	<b>23.8</b>	<b>3.3</b>	<b>11.1</b>	<b>11.1</b>	<b>7.4</b>	<b>14.7</b>	<b>7.3</b>	<b>11.1</b>	<b>0.6</b>	<b>11.0</b>	<b>35.7</b>	<b>17.8</b>
<i>Russell 3000</i>			4.2	12.7	12.7	8.4	14.7	7.1	12.7	0.5	12.6	33.6	16.4
Intech Large Cap Core	292,698,273	3.9	1.1	7.2	7.2	8.2	13.9	6.7	7.2	3.3	14.2	32.2	14.8
<i>S&amp;P 500</i>			3.8	12.0	12.0	8.9	14.7	6.9	12.0	1.4	13.7	32.4	16.0
PIMCO Stocks+ Absolute Return	350,161,557	4.7	5.6	16.0	16.0	9.0	15.3	7.1	16.0	-1.4	13.2	31.0	20.3
<i>S&amp;P 500</i>			3.8	12.0	12.0	8.9	14.7	6.9	12.0	1.4	13.7	32.4	16.0
Jackson Square Partners	312,431,682	4.2	-4.1	-4.8	-4.8	4.5	12.4	7.5	-4.8	5.6	13.4	35.0	16.4
<i>Russell 1000 Growth</i>			1.0	7.1	7.1	8.6	14.5	8.3	7.1	5.7	13.0	33.5	15.3
Robeco Boston Partners	342,951,779	4.6	8.2	14.7	14.7	7.0	15.3	7.3	14.7	-4.2	11.6	37.0	21.2
<i>Russell 1000 Value</i>			6.7	17.3	17.3	8.6	14.8	5.7	17.3	-3.8	13.5	32.5	17.5
Emerald Advisers	251,478,166	3.3	3.8	9.4	9.4	6.5	16.3	8.8	9.4	3.5	6.6	49.4	17.8
<i>Russell 2000 Growth</i>			3.6	11.3	11.3	5.1	13.7	7.8	11.3	-1.4	5.6	43.3	14.6
Ceredex	242,747,257	3.2	6.4	29.1	29.1	8.0	15.2	--	29.1	-5.0	2.7	35.8	18.6
<i>Russell 2000 Value</i>			14.1	31.7	31.7	8.3	15.1	--	31.7	-7.5	4.2	34.5	18.1
<b>Total International Equity</b>	<b>807,551,033</b>	<b>10.7</b>	<b>-3.6</b>	<b>0.8</b>	<b>0.8</b>	<b>-0.3</b>	<b>6.5</b>	<b>0.2</b>	<b>0.8</b>	<b>-1.6</b>	<b>0.0</b>	<b>17.4</b>	<b>17.9</b>
<i>MSCI ACWI ex USA Gross</i>			-1.2	5.0	5.0	-1.3	5.5	1.4	5.0	-5.3	-3.4	15.8	17.4
<i>MSCI EAFE Gross</i>			-0.7	1.5	1.5	-1.2	7.0	1.2	1.5	-0.4	-4.5	23.3	17.9
Pyrford	403,822,679	5.4	-3.2	3.0	3.0	--	--	--	3.0	-3.3	--	--	--
<i>MSCI ACWI ex USA Value</i>			3.3	8.9	8.9	--	--	--	8.9	-10.1	--	--	--
William Blair	403,728,354	5.4	-4.0	-1.8	-1.8	-1.1	7.6	--	-1.8	0.0	-1.7	20.4	23.7
<i>MSCI ACWI ex USA Growth</i>			-5.7	0.1	0.1	-1.3	5.3	--	0.1	-1.3	-2.6	15.5	16.7
<b>Total Global Equity</b>	<b>795,919,425</b>	<b>10.6</b>	<b>-1.3</b>	<b>6.9</b>	<b>6.9</b>	<b>4.3</b>	<b>9.1</b>	<b>--</b>	<b>6.9</b>	<b>1.6</b>	<b>4.5</b>	<b>22.9</b>	<b>10.6</b>
<i>MSCI ACWI</i>			1.2	7.9	7.9	3.1	9.4	--	7.9	-2.4	4.2	22.8	16.1
Artisan Partners	321,213,026	4.3	-5.6	4.8	4.8	5.4	--	--	4.8	8.4	3.1	25.2	--
<i>MSCI ACWI</i>			1.2	7.9	7.9	3.1	--	--	7.9	-2.4	4.2	22.8	--
First Eagle	324,077,255	4.3	0.0	10.9	10.9	4.6	8.7	--	10.9	-0.6	3.7	17.1	13.1
<i>MSCI ACWI</i>			1.2	7.9	7.9	3.1	9.4	--	7.9	-2.4	4.2	22.8	16.1
Intech Global Low Vol	23,167,577	0.3	-2.7	6.3	6.3	6.9	--	--	6.3	3.9	10.8	23.8	--
<i>MSCI ACWI</i>			1.2	7.9	7.9	3.1	--	--	7.9	-2.4	4.2	22.8	--
JP Morgan Global Opportunities	127,461,568	1.7	3.6	6.2	6.2	2.9	10.3	--	6.2	-3.3	6.2	26.4	18.7
<i>MSCI ACWI</i>			1.2	7.9	7.9	3.1	9.4	--	7.9	-2.4	4.2	22.8	16.1

Individual closed end funds are not shown in performance summary table. Goldman Sachs Park portfolio liquidated 10/26/2016. PIMCO All Asset liquidated 10/31/2016. Lord Abbett liquidated 11/3/2016. Goldman Sachs Core Plus liquidated 11/3/2016. PIMCO Fixed Income liquidated 11/3/2016. Lazard liquidated 11/3/2016. Invesco REIT liquidated 11/3/2016. Sit Short Duration funded 11/2/2016. DFA Short Credit funded 11/21/2016. Insight Short Duration funded 11/18/2016. Goldman Sachs has \$55,857 of residual cash. PIMCO Fixed Income has \$4,784 of residual cash. Lazard has \$1,030,760 of residual cash.

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

**Period Ending: December 31, 2016**

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2016	2015	2014	2013	2012
<b>Total Domestic Fixed Income</b>	<b>2,033,792,159</b>	<b>27.0</b>	<b>-1.5</b>	<b>4.4</b>	<b>4.4</b>	<b>4.1</b>	<b>4.5</b>	<b>5.1</b>	<b>4.4</b>	<b>1.4</b>	<b>6.7</b>	<b>0.9</b>	<b>9.2</b>
BBgBarc US Aggregate TR			-3.0	2.6	2.6	3.0	2.2	4.3	2.6	0.6	6.0	-2.0	4.2
BBgBarc US Govt/Credit 1-3 Yr. TR			-0.4	1.3	1.3	0.9	0.9	2.4	1.3	0.7	0.8	0.6	1.3
DFA Short Credit	400,515,583	5.3	--	--	--	--	--	--	--	--	--	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			--	--	--	--	--	--	--	--	--	--	--
Insight Short Duration	823,209,228	10.9	--	--	--	--	--	--	--	--	--	--	--
BBgBarc US Govt/Credit 1-3 Yr. TR			--	--	--	--	--	--	--	--	--	--	--
Sit Short Duration	432,740,476	5.7	--	--	--	--	--	--	--	--	--	--	--
BBgBarc US Govt 1-3 Yr TR			--	--	--	--	--	--	--	--	--	--	--
AFL-CIO	236,464,086	3.1	-3.0	1.9	1.9	3.0	2.2	4.3	1.9	1.1	6.1	-2.4	4.3
BBgBarc US Aggregate TR			-3.0	2.6	2.6	3.0	2.2	4.3	2.6	0.6	6.0	-2.0	4.2
BlackRock Transition	1,942,987	0.0											
<b>Total High Yield</b>	<b>387,946,543</b>	<b>5.2</b>	<b>1.9</b>	<b>13.9</b>	<b>13.9</b>	<b>3.3</b>	<b>6.3</b>	<b>7.3</b>	<b>13.9</b>	<b>-3.9</b>	<b>0.8</b>	<b>8.4</b>	<b>13.7</b>
BofA ML High Yield Master II			1.9	17.5	17.5	4.7	7.4	7.3	17.5	-4.6	2.5	7.4	15.6
Allianz Global Investors	387,946,543	5.2	1.9	13.9	13.9	3.3	6.3	7.1	13.9	-3.9	0.8	8.4	13.6
BofA ML High Yield Master II			1.9	17.5	17.5	4.7	7.4	7.3	17.5	-4.6	2.5	7.4	15.6
<b>Total Inflation Hedge</b>	<b>279,241,547</b>	<b>3.7</b>	<b>1.9</b>	<b>6.5</b>	<b>6.5</b>	<b>-0.4</b>	<b>--</b>	<b>--</b>	<b>6.5</b>	<b>-5.8</b>	<b>-1.5</b>	<b>0.3</b>	<b>--</b>
CPI + 4%			1.0	6.2	6.2	5.2	--	--	6.2	4.8	4.8	5.6	--
Wellington Real Total Return	187,667,054	2.5	-0.2	-0.6	-0.6	-3.0	--	--	-0.6	-5.4	-3.1	--	--
CPI + 4%			1.0	6.2	6.2	5.2	--	--	6.2	4.8	4.8	--	--
<b>Total Real Estate</b>	<b>680,371,710</b>	<b>9.0</b>	<b>0.6</b>	<b>4.8</b>	<b>4.8</b>	<b>11.9</b>	<b>12.1</b>	<b>3.6</b>	<b>4.8</b>	<b>12.4</b>	<b>19.1</b>	<b>8.9</b>	<b>15.7</b>
Real Estate Benchmark			-1.4	6.7	6.7	11.1	10.8	6.9	6.7	8.2	18.8	7.1	13.6
NCREIF-ODCE			2.1	8.8	8.8	12.1	12.2	5.8	8.8	15.0	12.5	13.9	10.9
NCREIF Property Index			1.7	8.0	8.0	11.0	10.9	6.9	8.0	13.3	11.8	11.0	10.5
Adelante	65,132,532	0.9	-2.8	3.6	3.6	12.9	11.7	3.7	3.6	4.6	32.7	3.0	17.2
Wilshire REIT			-2.3	7.2	7.2	13.8	12.0	4.8	7.2	4.2	31.8	1.9	17.6

Individual closed end funds are not shown in performance summary table. Goldman Sachs Park portfolio liquidated 10/26/2016. PIMCO All Asset liquidated 10/31/2016. Lord Abbett liquidated 11/3/2016. Goldman Sachs Core Plus liquidated 11/3/2016. PIMCO Fixed Income liquidated 11/3/2016. Lazard liquidated 11/3/2016. Invesco REIT liquidated 11/3/2016. Sit Short Duration funded 11/2/2016. DFA Short Credit funded 11/21/2016. Insight Short Duration funded 11/18/2016. Goldman Sachs has \$55,857 of residual cash. PIMCO Fixed Income has \$4,784 of residual cash. Lazard has \$1,030,760 of residual cash.

Total Fund  
Closed End Funds - Investment Summary

Period Ending: December 31, 2016

Verus Internal Analysis												
Inception Date	Manager Name/Fund Name	Estimated Market Value as of 12/31/16 <sup>1</sup>	Total Commitment	% Called	Capital Called	Current Qtr. Capital Called	Current Qtr. Distributions	Total Distributions <sup>4</sup>	Remaining Commitment	Distrib./ Paid-In (DPI) <sup>1</sup>	Tot. Value Paid-In (TVPI) <sup>2</sup>	Latest Valuation
<b>Fixed Income</b>												
07/01/2006	Torchlight II	\$43,448,512	\$128,000,000	100%	\$128,000,000	\$0	\$0	\$158,211,379	\$0	1.24	1.58	12/31/2016
12/12/2008	Torchlight III	\$10,927,021	\$75,000,000	100%	\$75,000,000	\$0	\$0	\$99,100,375	\$0	1.32	1.47	12/31/2016
08/01/2012	Torchlight IV	\$84,816,452	\$80,000,000	100%	\$80,000,000	\$0	\$968,863	\$37,092,503	\$0	0.62	1.70	12/31/2016
03/12/2015	Torchlight V	\$19,897,171	\$75,000,000	25%	\$18,749,912	\$3,750,000	\$0	\$0	\$56,250,088	0.00	1.06	09/30/2016
<b>Total Fixed Income</b>		<b>\$138,859,156</b>										
<b>% of Portfolio (Market Value)</b>		<b>1.8%</b>										
<b>Inflation Hedge</b>												
11/27/2013	Aether Real Assets III	\$15,434,424	\$25,000,000	57%	\$14,138,351	\$325,139	\$69,531	\$320,530	\$11,172,367	0.02	1.11	09/30/2016
11/27/2013	Aether Real Assets III Surplus	\$36,759,453	\$50,000,000	67%	\$33,618,146	\$398,330	\$138,321	\$363,925	\$16,697,287	0.01	1.10	09/30/2016
03/16/2016	Aether Real Assets IV	\$5,707,315	\$50,000,000	12%	\$5,981,984	\$1,205,897	\$0	\$0	\$44,038,036	0.00	0.96	09/30/2016
08/28/2013	Commonfund	\$33,673,301	\$50,000,000	60%	\$30,125,000	\$1,750,000	\$0	\$0	\$19,875,000	0.00	1.12	09/30/2016
<b>Total Inflation Hedge</b>		<b>\$91,574,493</b>										
<b>% of Portfolio (Market Value)</b>		<b>1.2%</b>										
<b>Opportunistic</b>												
02/18/2010	Oaktree PIF 2009 <sup>3</sup>	\$17,139,605	\$40,000,000	87%	\$34,800,000	\$0	\$1,120,000	\$29,238,579	\$6,308,960	0.84	1.33	12/31/2016
09/24/2015	Angelo Gordon Energy Credit Opp.	\$20,435,035	\$75,000,000	25%	\$18,750,000	\$3,750,000	\$0	\$0	\$56,250,000	0.00	1.09	09/30/2016
12/03/2015	Wastewater Opportunity Fund	\$2,863,549	\$25,000,000	15%	\$3,824,981	\$0	\$0	\$0	\$21,175,019	0.00	0.75	09/30/2016
<b>Total Opportunistic</b>		<b>\$40,469,189</b>										
<b>% of Portfolio (Market Value)</b>		<b>0.5%</b>										

<sup>1</sup>(DPI) is equal to (capital returned / capital called)

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

<sup>3</sup>Latest valuation + capital calls - distributions

<sup>4</sup>Total distributions may contain recallable capital



Total Fund  
Closed End Funds - Investment Summary

Period Ending: December 31, 2016

Verus Internal Analysis												
Inception Date	Manager Name/Fund Name	Estimated Market Value as of 12/31/16 <sup>3</sup>	Total Commitment	Total % Called	Capital Called	Current Qtr. Capital Called	Current Qtr. Distributions	Total Distributions <sup>7</sup>	Remaining Commitment	Distrib./Paid-In (DPI) <sup>1</sup>	Tot. Value/Paid-In (TVPI) <sup>2</sup>	Latest Valuation
<b>Real Estate</b>												
01/23/2012	Angelo Gordon Realty Fund VIII	\$52,210,228	\$80,000,000	94%	\$75,401,855	\$0	\$1,600,000	\$63,152,397	\$12,334,302	0.84	1.53	09/30/2016
12/08/2014	Angelo Gordon Realty Fund IX	\$29,866,263	\$65,000,000	39%	\$25,512,500	\$4,225,000	\$0	\$0	\$39,487,500	0.00	1.17	09/30/2016
06/23/2005	DLJ RECP III	\$31,824,423	\$75,000,000	95%	\$70,968,662	\$0	\$0	\$67,876,642	\$4,031,338	0.96	1.40	09/30/2016
02/11/2008	DLJ RECP IV	\$82,355,228	\$100,000,000	91%	\$90,943,569	\$0	\$0	\$56,595,635	\$9,056,431	0.62	1.53	09/30/2016
07/01/2014	DLJ RECP V	\$28,352,928	\$75,000,000	67%	\$50,552,862	\$0	\$14,249,383	\$35,722,220	\$43,777,551	0.71	1.27	09/30/2016
06/17/1998	Hearthstone II <sup>4</sup>	\$7,673	\$25,000,000	80%	\$19,925,048	\$0	\$0	\$19,952,734	\$2,527,686	1.00	1.00	09/30/2016
02/01/2005	Invesco Real Estate I	\$101,386	\$50,000,000	92%	\$46,241,947	\$0	\$0	\$50,000,907	\$3,758,053	1.08	1.08	12/31/2016
11/26/2007	Invesco Real Estate II	\$436,012	\$85,000,000	92%	\$78,202,813	\$0	\$8,197,839	\$100,620,489	\$6,797,187	1.29	1.29	12/31/2016
06/30/2013	Invesco Real Estate III	\$22,539,686	\$35,000,000	88%	\$30,685,961	\$0	\$0	\$22,527,850	\$4,314,039	0.73	1.47	12/31/2016
06/30/2014	Invesco Real Estate IV	\$15,006,958	\$35,000,000	46%	\$16,083,610	\$5,994,850	\$2,746,754	\$2,746,754	\$21,663,144	0.17	1.10	12/31/2016
07/16/2013	LaSalle Income & Growth VI	\$61,259,425	\$75,000,000	95%	\$71,428,571	\$0	\$9,157,813	\$38,306,924	\$3,571,429	0.54	1.39	09/30/2016
03/30/2007	Long Wharf Fund III	\$5,997,882	\$75,000,000	89%	\$66,940,230	\$0	\$2,740,899	\$83,462,983	\$8,059,770	1.25	1.34	12/31/2016
07/03/2013	Long Wharf Fund IV	\$22,876,973	\$25,000,000	100%	\$25,000,000	\$0	\$2,761,886	\$9,824,423	\$0	0.39	1.31	12/31/2016
09/30/2016	Long Wharf Fund V	\$13,005,215	\$50,000,000	27%	\$13,681,024	\$2,027,876	\$571,233	\$571,233	\$36,318,976	0.04	0.99	12/31/2016
12/31/2011	Oaktree REOF V	\$19,652,985	\$50,000,000	100%	\$50,000,000	\$0	\$4,250,000	\$61,750,000	\$25,750,000	1.24	1.63	12/31/2016
09/30/2013	Oaktree REOF VI <sup>5</sup>	\$73,386,422	\$80,000,000	100%	\$80,000,000	\$0	\$3,600,000	\$36,800,000	\$0	0.46	1.38	12/31/2016
04/01/2015	Oaktree REOF VII	\$6,812,262	\$65,000,000	10%	\$6,500,000	\$6,500,000	\$0	\$0	\$58,500,000	0.00	1.05	12/31/2016
11/10/2013	Paulson Real Estate Fund II	\$23,500,395	\$20,000,000	85%	\$17,007,123	\$1,700,000	\$0	\$0	\$2,992,877	0.00	1.38	09/30/2016
01/25/2012	Siguler Guff DREOF	\$58,575,318	\$75,000,000	93%	\$69,375,000	\$0	\$1,349,500	\$46,756,653	\$5,625,000	0.67	1.52	09/30/2016
08/31/2013	Siguler Guff DREOF II	\$53,522,016	\$70,000,000	73%	\$51,345,000	\$945,000	\$1,042,247	\$3,821,436	\$18,655,000	0.07	1.12	09/30/2016
01/27/2016	Siguler Guff DREOF II Co-Inv	\$13,949,501	\$25,000,000	55%	\$13,650,362	\$1,025,000	\$0	\$0	\$11,349,638	0.00	1.02	09/30/2016
<b>Total Closed End Real Estate</b>		<b>\$615,239,178</b>	<b>\$1,235,000,000</b>	<b>78%</b>	<b>\$969,446,138</b>	<b>\$22,417,726</b>	<b>\$52,267,354</b>	<b>\$700,489,260</b>	<b>\$318,569,921</b>	<b>0.33</b>	<b>0.96</b>	
<b>% of Portfolio (Market Value)</b>		<b>8.2%</b>										

<sup>1</sup>(DPI) is equal to (capital returned / capital called)

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

<sup>3</sup>Latest valuation + capital calls - distributions

<sup>4</sup>No further capital to be called

<sup>5</sup>Actual capital called is \$85,600,000 which includes recallable distributions

<sup>6</sup>Fund paid out it's final distribution during the quarter

<sup>7</sup>Total distributions may include recallable distributions

**Total Fund  
Closed End Funds - Investment Summary**

**Period Ending: December 31, 2016**

Verus Internal Analysis												
Inception Date	Manager Name/Fund Name	Estimated Market Value as of 12/31/16 <sup>3</sup>	Total Commitment	Total % Called	Capital Called	Current Qtr. Capital Called	Current Qtr. Distributions	Total Distributions	Remaining Commitment	Distrib./Paid-In (DPI) <sup>1</sup>	Tot. Value/Paid-In (TVPI) <sup>2</sup>	Latest Valuation
<b>Private Equity &amp; Venture Capital</b>												
03/18/1996	Adams Street Partners	\$124,688,193	\$210,000,000	74%	\$155,679,125	\$4,213,000	\$4,756,131	\$88,860,580	\$54,420,875	0.57	1.37	09/30/2016
01/16/2009	Adams Street Partners II	\$14,386,594	\$30,000,000	95%	\$28,365,000	\$0	\$1,844,008	\$31,474,004	\$1,635,000	1.17	1.62	09/30/2016
09/21/2012	Adams Street Partners - Fund 5	\$21,217,664	\$40,000,000	89%	\$27,771,900	\$3,263,900	\$0	\$7,474,771	\$12,229,100	0.27	1.03	09/30/2016
01/16/1996	Adams Street Partners - BPF	\$4,304,196	\$59,666,614	97%	\$57,517,409	\$0	\$917,304	\$99,836,142	\$2,048,205	1.74	1.81	09/30/2016
06/14/2004	Bay Area Equity Fund	\$2,890,549	\$10,000,000	100%	\$10,000,000	\$0	\$1,020,805	\$36,331,243	\$0	3.63	3.92	09/30/2016
12/07/2009	Bay Area Equity Fund II	\$7,901,087	\$10,000,000	100%	\$10,000,000	\$0	\$1,010,961	\$2,028,313	\$0	0.20	0.99	09/30/2016
11/26/2003	EIF US Power Fund I	\$759,607	\$30,000,000	100%	\$30,000,000	\$0	\$235,384	\$64,404,030	\$0	2.15	2.17	09/30/2016
06/16/2005	EIF US Power Fund II	\$42,149,908	\$50,000,000	100%	\$50,000,000	\$0	\$1,118,925	\$44,916,770	\$0	0.90	1.74	09/30/2016
05/30/2007	EIF US Power Fund III	\$87,672,022	\$65,000,000	101%	\$65,887,675	\$5,196,860	\$9,370,370	\$32,808,673	\$0	0.50	1.53	09/30/2016
11/29/2011	EIF US Power Fund IV	\$42,079,732	\$50,000,000	94%	\$46,882,483	\$0	\$625,318	\$17,817,527	\$15,196,601	0.38	1.28	09/30/2016
11/28/2016	EIF US Power Fund V	\$11,439,268	\$50,000,000	23%	\$11,439,268	\$11,439,268	\$0	\$0	\$38,560,732	0.00	1.00	09/30/2016
05/24/2011	Pathway 6	\$31,925,781	\$40,000,000	75%	\$30,138,388	\$1,420,706	\$603,246	\$4,552,526	\$9,861,692	0.15	1.21	09/30/2016
02/07/2013	Pathway 7	\$36,940,321	\$70,000,000	56%	\$38,347,677	\$3,614,909	\$511,506	\$2,752,898	\$31,652,323	0.07	1.04	09/30/2016
11/23/2015	Pathway 8	\$12,886,755	\$50,000,000	26%	\$13,201,349	\$3,605,621	\$370,495	\$424,274	\$36,798,651	0.03	1.01	09/30/2016
11/09/1998	Pathway	\$35,720,546	\$125,000,000	97%	\$121,834,174	\$188,100	\$3,025,115	\$143,843,539	\$3,165,826	1.18	1.47	09/30/2016
12/26/2006	Pathway 2008	\$23,909,204	\$30,000,000	82%	\$24,649,705	\$0	\$584,583	\$10,245,272	\$5,350,295	0.42	1.39	09/30/2016
01/31/2008	Carpenter Bancfund	\$26,727,246	\$30,000,000	97%	\$29,020,926	\$0	\$0	\$17,137,847	\$979,074	0.59	1.56	09/30/2016
02/15/2004	Nogales	\$51,652	\$15,000,000	99%	\$14,805,103	\$0	\$0	\$12,314,799	\$111,251	0.83	0.84	09/30/2016
11/30/2007	Paladini III	\$24,647,362	\$25,000,000	98%	\$24,384,152	\$0	\$312,253	\$14,816,868	\$1,059,071	0.61	1.62	09/30/2016
06/11/2014	Ocean Avenue Fund II	\$16,565,829	\$30,000,000	60%	\$18,000,000	\$0	\$900,000	\$1,489,938	\$12,000,000	0.08	1.00	09/30/2016
04/15/2016	Ocean Avenue Fund III	\$4,718,177	\$50,000,000	10%	\$5,000,000	\$0	\$0	\$0	\$45,000,000	0.00	0.94	09/30/2016
06/03/2014	Siguler Guff CCCERA Opportunities	\$80,926,550	\$200,000,000	35%	\$70,502,500	\$6,110,000	\$1,123,493	\$5,712,964	\$129,497,500	0.06	1.23	09/30/2016
11/30/2016	Siguler Guff Secondary Opportunities	\$3,842,431	\$50,000,000	17%	\$8,250,000	\$8,250,000	\$4,407,669	\$4,407,669	\$41,750,000	0.53	1.00	09/30/2016
<b>Total Private Equity and Venture Capital</b>		<b>\$640,550,673</b>	<b>\$1,319,565,614</b>	<b>67%</b>	<b>\$883,026,714</b>	<b>\$47,302,362</b>	<b>\$26,737,466</b>	<b>\$643,348,564</b>	<b>\$441,315,336</b>	<b>0.73</b>	<b>1.45</b>	
<b>% of Portfolio (Market Value)</b>		<b>8.5%</b>										

<sup>1</sup>(DPI) is equal to (capital returned / capital called)

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

<sup>3</sup>Latest valuation + capital calls - distributions

Total Fund  
Closed End Funds - IRR Summary

Period Ending: December 31, 2016

Fixed Income	Inception	Fund Level (G)	CCCERA (G)	Fund Level (N)	CCCERA (N)	IRR Date
Torchlight II	07/01/2006	-0.3%	-0.1%	-1.7%	-1.4%	12/31/2016
Torchlight III	12/12/2008	17.9%	18.0%	13.7%	13.8%	12/31/2016
Torchlight IV	08/01/2012	12.9%	13.6%	10.0%	10.9%	12/31/2016
Torchlight V	03/12/2015	24.7%	24.1%	9.0%	9.6%	09/30/2016

Inflation Hedge	Inception	Fund Level (G)	CCCERA (G)	Fund Level (N)	CCCERA (N)	IRR Date
Aether Real Assets III <sup>2</sup>	11/27/2013	14.9%	14.9%	10.0%	10.0%	09/30/2016
Aether Real Assets III Surplus <sup>2</sup>	11/27/2013	10.5%	10.5%	7.9%	7.9%	09/30/2016
Aether Real Assets IV <sup>1</sup>	01/01/2016	-	-	-	-	-
CommonFund <sup>4</sup>	06/28/2013	-2.1%	-	-5.1%	-5.2%	06/30/2016
Wastewater Opportunity Fund <sup>1</sup>	12/08/2015	-7.7%	-8.2%	-63.5%	-65.3%	09/30/2016

Opportunistic	Inception	Fund Level (G)	CCCERA (G)	Fund Level (N)	CCCERA (N)	IRR Date
Oaktree PIF	02/18/2010	7.2%	-	7.0%	-	12/31/2016
Angelo Gordon Energy Cred Opp. <sup>1</sup>	09/24/2015	-	-	-	-	-

Real Estate	Inception	Fund Level (G)	CCCERA (G)	Fund Level (N)	CCCERA (N)	IRR Date
Angelo Gordon VIII	01/23/2012	21.3%	22.3%	17.0%	18.3%	09/30/2016
Angelo Gordon IX <sup>1</sup>	12/08/2014	-	-	-	-	-
DLJ RECP III	06/23/2005	2.0%	-	-	-	09/30/2016
DLJ RECP IV	02/11/2008	6.0%	-	-	3.0%	09/30/2016
DLJ RECP V <sup>1</sup>	07/01/2014	-	-	-	-	-
Hearthstone II	06/17/1998	-	30.1%	-	30.1%	09/30/2016
Invesco Fund I	02/01/2005	2.6%	2.6%	1.6%	1.6%	06/30/2016
Invesco Fund II	11/26/2007	8.4%	7.5%	6.9%	6.7%	06/30/2016
Invesco Fund III	06/30/2013	21.8%	23.2%	20.4%	17.0%	06/30/2016
Invesco Fund IV	06/30/2014	32.4%	32.4%	22.8%	22.2%	06/30/2016
LaSalle Income & Growth	07/16/2013	18.3%	18.3%	14.9%	15.0%	09/30/2016
Long Wharf III	03/30/2007	9.7%	9.6%	7.6%	7.4%	09/30/2016
Long Wharf IV	07/03/2013	20.6%	21.0%	14.3%	14.4%	09/30/2016
Long Wharf V <sup>1</sup>	09/30/2016	12.5%	-	-1.2%	-	09/30/2016
Oaktree REOF V	12/31/2011	17.6%	-	12.9%	-	12/31/2016
Oaktree REOF VI	09/30/2013	16.9%	-	11.3%	-	12/31/2016
Oaktree REOF VII <sup>1</sup>	04/01/2015	-	-	-	-	-
Paulson <sup>1</sup>	11/10/2013	-	-	-	-	-
Siguler Guff I	01/25/2012	15.4%	16.5%	13.2%	14.4%	06/30/2016
Siguler Guff II	08/31/2013	8.6%	7.4%	5.9%	5.2%	06/30/2016
Siguler Guff DREOF II Co-Iny <sup>1</sup>	01/27/2016	-	-	-	-	-

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

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

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

<sup>4</sup>Manager has reported IRR figures, but does not consider them to be meaningful, due to the age of the fund.

Total Fund  
Closed End Funds - IRR Summary

Period Ending: December 31, 2016

Private Equity & Venture Capital	Inception	Fund Level (G)	CCCERA (G)	Fund Level (N)	CCCERA (N)	IRR Date
Adams Street Partners	03/18/1996	-	11.7%	-	8.7%	03/31/2016
Adams Street Partners II	01/16/2009	-	18.7%	-	16.0%	03/31/2016
Adams Street Partners - Fund 5	09/21/2012	-	2.3%	-	-1.6%	12/31/2015
Adams Street Partners - EPF	01/18/1996	-	14.3%	-	11.6%	03/31/2016
Bay Area Equity Fund I	06/14/2004	31.3%	31.8%	23.4%	23.8%	09/30/2016
Bay Area Equity Fund II	12/07/2009	4.7%	4.5%	-0.2%	-0.2%	09/30/2016
Energy Investor Fund	11/26/2003	33.6%	34.7%	28.6%	28.4%	06/30/2016
Energy Investor Fund II	08/16/2005	8.4%	7.9%	5.7%	5.2%	06/30/2016
Energy Investor Fund III	05/30/2007	8.3%	8.3%	5.7%	5.7%	06/30/2016
Energy Investor Fund IV	11/28/2011	18.4%	18.9%	11.8%	11.5%	06/30/2016
Pathway 6	05/24/2011	13.2%	13.2%	9.0%	9.0%	06/30/2016
Benchmark <sup>1</sup>		8.3%	-	-	-	06/30/2016
Pathway 7 <sup>1</sup>	02/07/2013	5.9%	5.9%	0.1%	0.1%	06/30/2016
Pathway 8 <sup>1</sup>	11/06/2015	-	-	-	-	-
Pathway Private Equity Fund	11/09/1998	10.1%	10.1%	8.3%	8.3%	06/30/2016
Benchmark <sup>2</sup>		8.3%	-	-	-	06/30/2016
Pathway Private Equity Fund 2008	12/26/2008	12.6%	12.6%	9.3%	9.3%	06/30/2016
Benchmark <sup>3</sup>		9.2%	-	-	-	06/30/2016
Carpenter Bancfund	01/31/2008	9.5%	9.4%	8.1%	8.0%	06/30/2016
Nogales	02/15/2004	-	-4.5%	-8.6%	-8.8%	03/31/2015
Paladin III	11/30/2007	16.5%	-	8.0%	7.9%	06/30/2016
Ocean Avenue II	06/11/2014	-	-	1.7%	-	06/30/2016
Ocean Avenue III	04/15/2016	-	-	-	-	03/31/2016
Siguler Guff CCCERA Opportunities	06/03/2014	-	26.7%	-	19.3%	06/30/2016
Siguler Guff Secondary Opportunities	11/30/2016	-	-	-	-	-

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

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

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

<sup>4</sup>Private iQ global all private equity median pooled return for vintage years 2011-2014, as of March 31, 2015.

<sup>5</sup>Private iQ global all private equity median pooled return for vintage years 1999-2011, as of March 31, 2015.

<sup>6</sup>Private iQ global all private equity median pooled return for vintage years 2008-2014, as of March 31, 2015.

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

Period Ending: December 31, 2016

	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
Intech Large Cap Core	8.16%	-0.71%	6.39%	1.65%	0.73	4.37%	0.61	1.26	-0.16	83.14%	58.84%
PIMCO Stocks+ Absolute Return	9.02%	0.15%	9.13%	-2.63%	1.31	2.81%	0.96	0.98	0.05	116.80%	158.51%
Jackson Square Partners	4.45%	-4.10%	10.59%	-7.73%	1.42	5.73%	0.78	0.41	-0.71	65.07%	136.22%
Robeco Boston Partners	7.04%	-1.54%	8.52%	-1.29%	0.97	2.93%	0.88	0.81	-0.53	83.33%	93.29%
Emerald Advisers	6.48%	1.43%	14.15%	1.62%	0.96	6.13%	0.81	0.45	0.23	104.40%	90.70%
Ceredex	8.00%	-0.30%	12.16%	1.81%	0.75	7.22%	0.73	0.65	-0.04	87.82%	84.26%
William Blair	-1.14%	0.13%	9.40%	0.01%	0.90	2.42%	0.95	-0.13	0.05	89.18%	91.15%
Artisan Partners	5.43%	2.30%	10.84%	1.96%	1.11	6.38%	0.66	0.49	0.36	121.05%	79.67%
First Eagle	4.56%	1.43%	6.79%	2.12%	0.78	3.29%	0.83	0.65	0.43	111.21%	84.70%
Intech Global Low Vol	6.95%	3.82%	6.56%	5.71%	0.40	7.50%	0.23	1.04	0.51	117.56%	39.79%
JP Morgan Global Opportunities	2.94%	-0.20%	9.29%	-0.50%	1.10	3.27%	0.88	0.30	-0.06	95.50%	97.66%
AFL-CIO	3.03%	0.00%	3.37%	0.18%	0.94	0.53%	0.98	0.87	0.01	97.41%	93.41%
Allianz Global Investors	3.32%	-1.40%	5.90%	-0.87%	0.89	1.33%	0.96	0.54	-1.06	81.16%	99.25%
Wellington Real Total Return	-3.04%	-8.27%	7.89%	-14.83%	2.25	7.26%	0.22	-0.40	-1.14	-24.40%	1,307.20%
Adelante	12.89%	-0.89%	12.83%	-0.12%	0.94	2.02%	0.98	1.00	-0.44	91.68%	93.11%

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

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

Period Ending: December 31, 2016

	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
Intech Large Cap Core	13.94%	-0.72%	8.57%	1.27%	0.86	3.56%	0.85	1.62	-0.20	87.78%	63.19%
PIMCO Stocks+ Absolute Return	15.35%	0.69%	10.51%	-1.21%	1.13	2.39%	0.96	1.45	0.29	111.66%	129.98%
Jackson Square Partners	12.35%	-2.15%	12.86%	-5.55%	1.23	4.79%	0.89	0.95	-0.45	87.69%	121.74%
Robeco Boston Partners	15.28%	0.48%	10.86%	-0.80%	1.09	3.36%	0.91	1.40	0.14	105.48%	107.12%
Emerald Advisers	16.26%	2.52%	16.87%	0.64%	1.14	6.57%	0.86	0.96	0.38	121.54%	103.91%
Ceredex	15.20%	0.13%	12.46%	2.21%	0.86	5.96%	0.79	1.21	0.02	97.06%	91.39%
William Blair	7.56%	2.22%	11.73%	2.30%	0.98	2.59%	0.95	0.64	0.86	110.05%	85.83%
First Eagle	8.65%	-0.71%	7.50%	1.81%	0.73	3.46%	0.91	1.14	-0.20	84.77%	79.03%
JP Morgan Global Opportunities	10.35%	0.98%	10.90%	0.24%	1.08	2.78%	0.94	0.94	0.35	105.84%	91.13%
AFL-CIO	2.17%	-0.06%	3.13%	0.00%	0.98	0.50%	0.97	0.66	-0.12	95.92%	94.88%
Allianz Global Investors	6.31%	-1.04%	5.27%	-0.31%	0.90	1.18%	0.96	1.18	-0.88	85.66%	94.55%
Adelante	11.68%	-0.35%	11.01%	0.61%	0.92	2.06%	0.97	1.05	-0.17	89.83%	83.13%

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

**Total Fund  
Investment Fund Fee Analysis**

**Period Ending: December 31, 2016**

Name	Asset Class	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
Intech Large Cap Core	Global Equity	0.50% of First \$100.0 Mil, 0.45% of Next \$100.0 Mil, 0.35% of Next \$100.0 Mil, 0.30% of Next \$200.0 Mil, 0.25% Thereafter	\$292,698,273	\$1,269,444	0.43%
PIMCO Stocks+ Absolute Return	Global Equity	0.15% of Assets	\$350,161,557	\$525,242	0.15%
Jackson Square Partners	Global Equity	0.50% of First \$100.0 Mil, 0.40% of Next \$150.0 Mil, 0.35% Thereafter	\$312,431,682	\$1,318,511	0.42%
Robeco Boston Partners	Global Equity	0.50% of First \$25.0 Mil, 0.30% Thereafter	\$342,951,779	\$1,078,855	0.31%
Emerald Advisers	Global Equity	0.75% of First \$10.0 Mil, 0.60% Thereafter	\$251,478,166	\$1,523,869	0.61%
Ceredex	Global Equity	0.85% of First \$10.0 Mil, 0.68% of Next \$40.0 Mil, 0.51% Thereafter	\$242,747,257	\$1,340,011	0.55%
Pyrford	Global Equity	0.70% of First \$50.0 Mil, 0.50% of Next \$50.0 Mil, 0.35% Thereafter	\$403,822,679	\$1,663,379	0.41%
William Blair	Global Equity	0.80% of First \$20.0 Mil, 0.60% of Next \$30.0 Mil, 0.50% of Next \$50.0 Mil, 0.45% of Next \$50.0 Mil, 0.40% of Next \$50.0 Mil, 0.30% Thereafter	\$403,728,354	\$1,626,185	0.40%
Artisan Partners	Global Equity	0.75% of Assets	\$321,213,026	\$2,409,098	0.75%
First Eagle	Global Equity	0.75% of Assets	\$324,077,255	\$2,430,579	0.75%
Intech Global Low Vol	Global Equity	0.25% of First \$100.0 Mil, 0.21% of Next \$100.0 Mil, 0.18% of Next \$100.0 Mil, 0.16% of Next \$200.0 Mil, 0.14% Thereafter	\$23,167,577	\$56,761	0.25%
JP Morgan Global Opportunities	Global Equity	0.50% of First \$100.0 Mil, 0.40% Thereafter	\$127,461,568	\$609,846	0.48%

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

Total Fund  
Investment Fund Fee Analysis

Period Ending: December 31, 2016

Name	Asset Class	Fee Schedule	Market Value	Estimated Fee Value	Estimated Fee
DFA Short Credit	Global Fixed Income	0.20% of First \$25.0 Mil, 0.10% Thereafter	\$400,515,583	\$425,516	0.11%
Insight Short Duration	Global Fixed Income	0.06% of First \$500.0 Mil, 0.05% of Next \$500.0 Mil, 0.04% Thereafter	\$823,209,228	\$461,605	0.06%
Sit Short Duration	Global Fixed Income	0.15% of Assets	\$432,740,476	\$649,111	0.15%
AFL-CIO	Global Fixed Income	0.43% of Assets	\$236,464,086	\$1,016,796	0.43%
Allianz Global Investors	High Yield Fixed Income	0.50% of First \$50.0 Mil, 0.40% of Next \$50.0 Mil, 0.35% Thereafter	\$387,946,543	\$1,457,813	0.38%
Wellington Real Total Return	Inflation Hedge/Real Assets	0.55% of Assets	\$187,667,054	\$1,032,169	0.55%

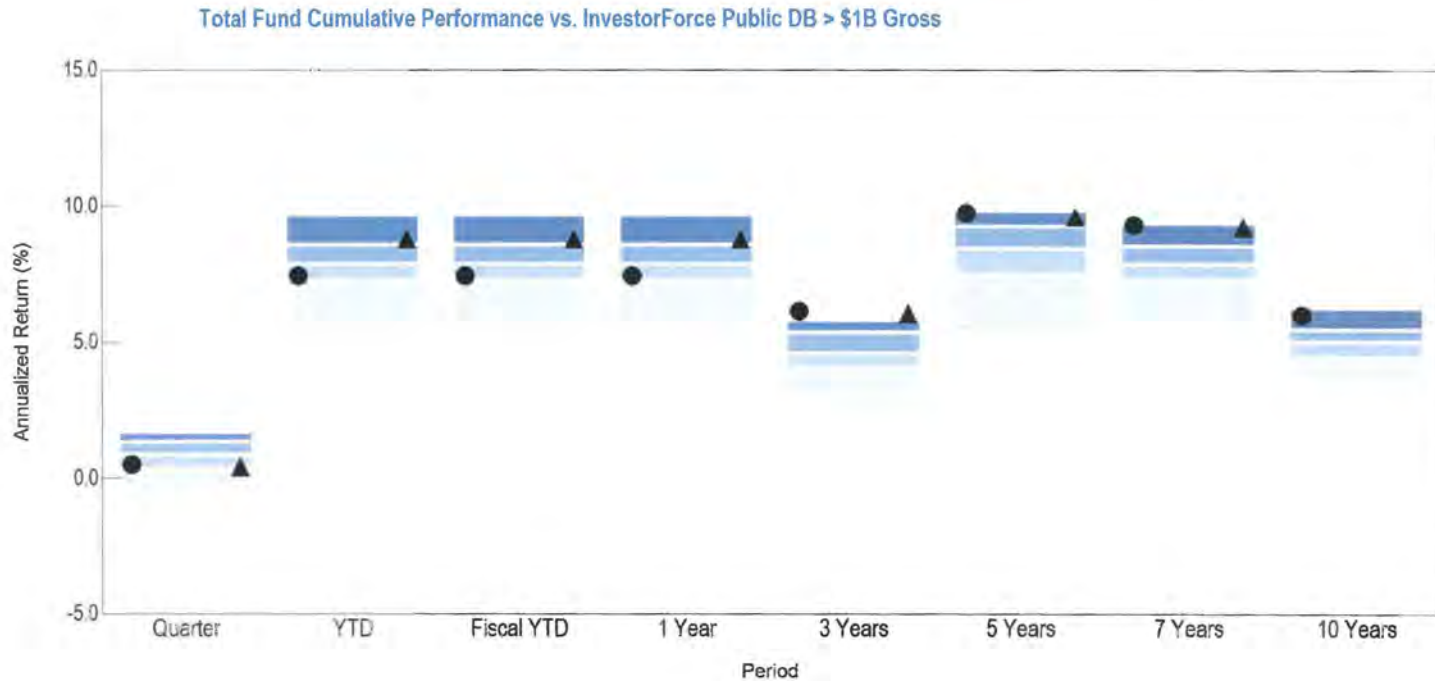
Mutual fund fees shown are sourced from Morningstar and are as of the most current prospectus.



Total Fund

Peer Universe Comparison: Cumulative Performance (Gross of Fees)

Period Ending: December 31, 2016

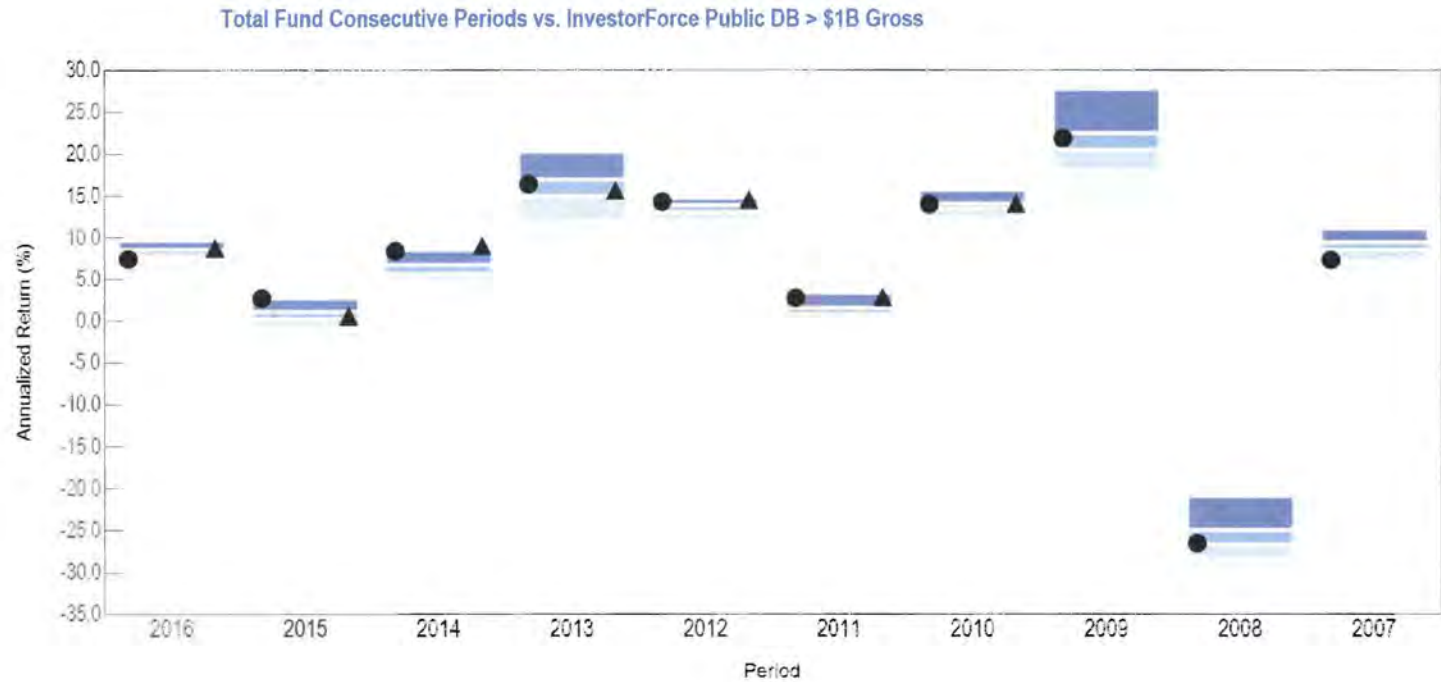


	Return (Rank)							
	Quarter	YTD	Fiscal YTD	1 Year	3 Years	5 Years	7 Years	10 Years
5th Percentile	1.7	9.7	9.7	9.7	5.8	9.8	9.4	6.3
25th Percentile	1.3	8.6	8.6	8.6	5.4	9.3	8.5	5.5
Median	0.9	7.9	7.9	7.9	4.6	8.5	7.9	5.1
75th Percentile	0.4	7.3	7.3	7.3	4.1	7.5	7.3	4.5
95th Percentile	-0.3	5.5	5.5	5.5	2.7	5.5	5.8	3.6
# of Portfolios	76	71	71	71	64	63	59	57
● Total Fund	0.5 (69)	7.4 (72)	7.4 (72)	7.4 (72)	6.1 (1)	9.7 (11)	9.3 (6)	6.0 (10)
▲ Policy Index	0.4 (72)	8.8 (17)	8.8 (17)	8.8 (17)	6.1 (1)	9.6 (14)	9.2 (7)	-- (-)

Total Fund

Peer Universe Comparison: Consecutive Periods (Gross of Fees)

Period Ending: December 31, 2016



	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
5th Percentile	9.7	2.7	8.5	20.2	14.7	3.3	15.7	27.7	-21.0	11.0
25th Percentile	8.6	1.1	6.8	17.0	13.9	1.6	14.2	22.5	-24.9	9.5
Median	7.9	0.3	5.7	15.0	13.0	0.8	13.5	20.5	-26.7	8.6
75th Percentile	7.3	-0.7	4.9	12.0	12.1	0.1	12.5	18.1	-28.3	7.4
95th Percentile	5.5	-2.8	3.1	8.7	9.2	-0.9	10.2	13.4	-30.2	6.2
# of Portfolios	71	98	79	67	74	68	66	66	65	64
● Total Fund	7.4 (72)	2.7 (5)	8.4 (6)	16.4 (33)	14.3 (13)	2.7 (9)	14.0 (29)	21.9 (34)	-26.5 (48)	7.3 (78)
▲ Policy Index	8.8 (17)	0.6 (40)	9.0 (2)	15.8 (43)	14.6 (8)	2.8 (9)	14.1 (27)	-- (--)	-- (--)	-- (--)

## **Domestic Equity Managers**

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# Intech Large Cap Core Manager Portfolio Overview

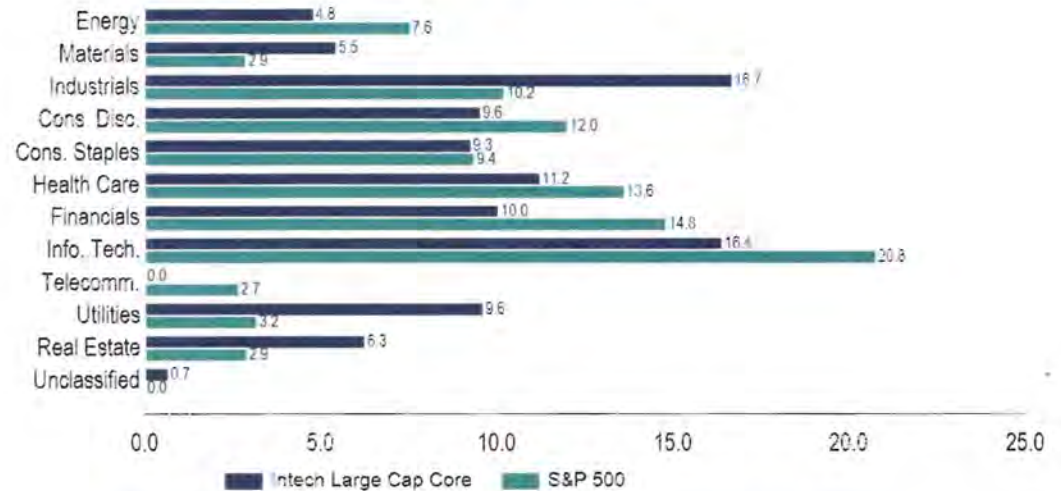
Period Ending: December 31, 2016

Domestic equity large cap core portfolio with high correlation exposure to a broad universe seeking enhanced returns. Primary personnel include Adrian Banner, Vassilios Papanthakos, Joseph Runnels, and Phillip Whitman.

## Characteristics

	Portfolio	S&P 500
Number of Holdings	304	505
Weighted Avg. Market Cap. (\$B)	32.75	138.54
Median Market Cap. (\$B)	18.46	18.83
Price To Earnings	25.98	22.27
Price To Book	5.07	4.38
Price To Sales	3.17	3.34
Return on Equity (%)	19.19	18.52
Yield (%)	1.87	2.10
Beta	0.73	1.00

## Sector Allocation (%) vs S&P 500



## Largest Holdings

	End Weight	Return
NORTHROP GRUMMAN	1.52	9.10
LOCKHEED MARTIN	1.41	4.98
NVIDIA	1.40	56.01
CONSTELLATION BRANDS 'A'	1.39	-7.69
FISERV	1.33	6.85
RAYTHEON 'B'	1.03	5.41
EQUINIX	0.98	-0.26
THERMO FISHER SCIENTIFIC	0.97	-11.20
DR PEPPER SNAPPLE GROUP	0.95	-0.12
MARSH & MCLENNAN	0.93	1.02

## Top Contributors

	Avg Wgt	Return	Contribution
NVIDIA	1.40	56.01	0.79
NORTHROP GRUMMAN	1.61	9.10	0.15
AUTOMATIC DATA PROC.	0.73	17.21	0.13
SOUTHWEST AIRLINES	0.38	28.43	0.11
UNITEDHEALTH GROUP	0.68	14.77	0.10
REPUBLIC SVS.'A'	0.71	13.72	0.10
PROGRESSIVE OHIO	0.75	12.70	0.10
NUCOR	0.45	21.11	0.09
FISERV	1.29	6.85	0.09
VULCAN MATERIALS	0.74	10.21	0.08

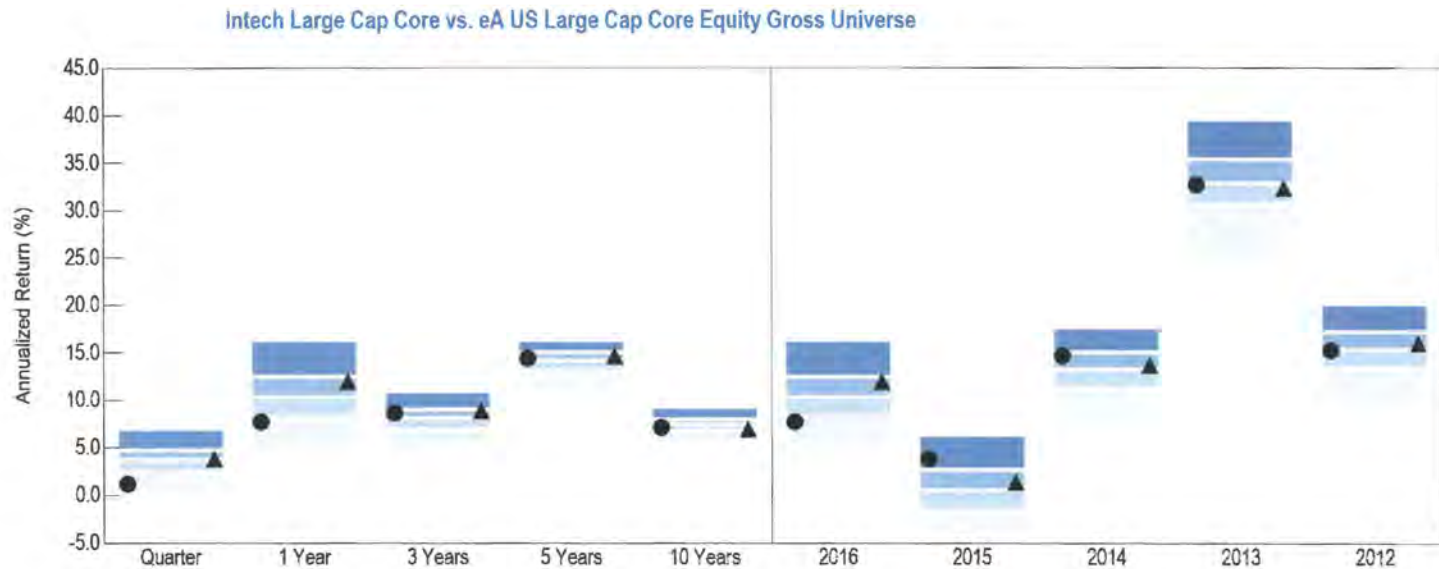
## Bottom Contributors

	Avg Wgt	Return	Contribution
EDWARDS LIFESCIENCES	0.87	-22.28	-0.19
ACTIVISION BLIZZARD	0.82	-18.49	-0.15
TYSON FOODS 'A'	0.88	-17.08	-0.15
CONSTELLATION BRANDS 'A'	1.54	-7.69	-0.12
EQUIFAX	0.84	-11.91	-0.10
INTL.FLAVORS & FRAG.	0.54	-17.14	-0.09
NEWELL RUBBERMAID	0.58	-14.87	-0.09
NEWMONT MINING	0.64	-13.15	-0.08
NIELSEN	0.40	-21.12	-0.08
THERMO FISHER SCIENTIFIC	0.74	-11.20	-0.08

Unclassified sector allocation includes cash allocations.

**Intech Large Cap Core  
Manager Performance Comparisons (Gross of Fees)**

**Period Ending: December 31, 2016**

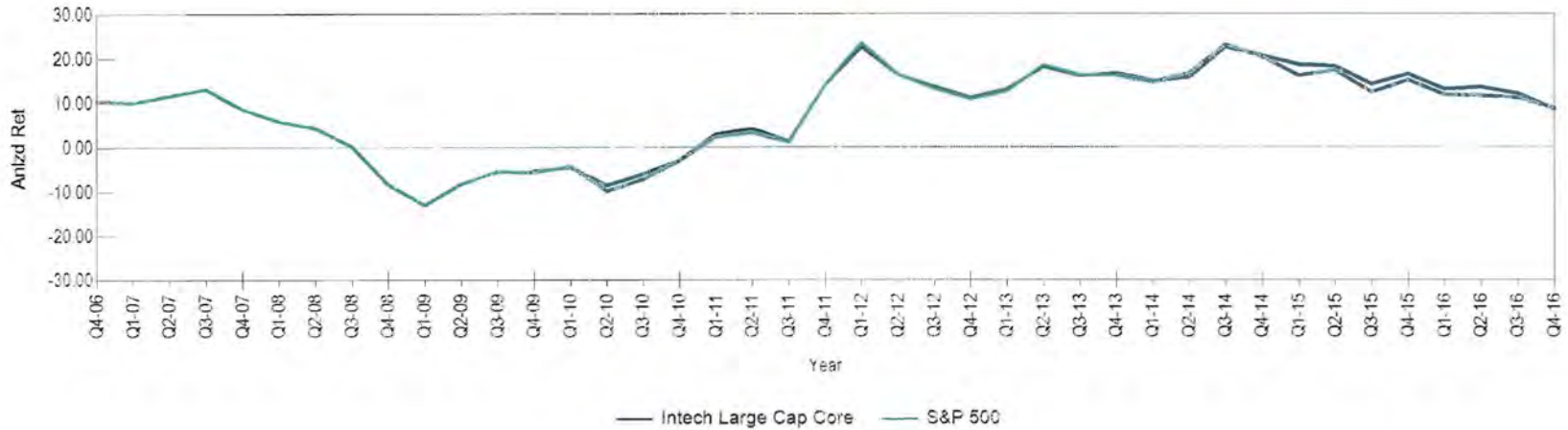


	Quarter	1 Year	3 Years	5 Years	10 Years	2016	2015	2014	2013	2012
<b>5th Percentile</b>	6.9	16.3	10.9	16.3	9.2	16.3	6.3	17.7	39.6	20.1
<b>25th Percentile</b>	4.8	12.5	9.0	15.1	8.0	12.5	2.7	15.1	35.5	17.2
<b>Median</b>	3.8	10.4	8.1	14.2	7.5	10.4	0.6	13.3	32.9	15.4
<b>75th Percentile</b>	2.4	8.2	7.0	13.1	6.8	8.2	-1.6	11.4	30.8	13.4
<b>95th Percentile</b>	0.2	4.3	4.9	10.9	5.9	4.3	-4.1	8.2	25.4	9.8
<b># of Portfolios</b>	302	302	295	271	220	302	267	267	261	254
<b>● Intech Large Cap Core</b>	1.2 (89)	7.7 (79)	8.6 (39)	14.4 (42)	7.1 (65)	7.7 (79)	3.8 (16)	14.7 (31)	32.7 (54)	15.3 (54)
<b>▲ S&amp;P 500</b>	3.8 (49)	12.0 (32)	8.9 (33)	14.7 (35)	6.9 (71)	12.0 (32)	1.4 (42)	13.7 (42)	32.4 (58)	16.0 (41)

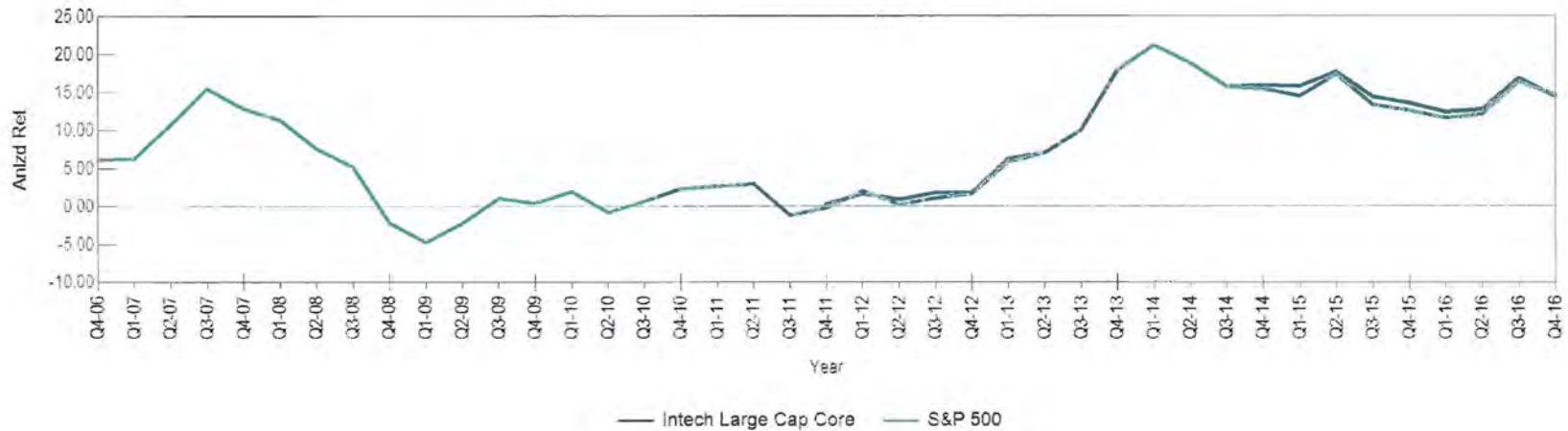
**Intech Large Cap Core  
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees)**

**Period Ending: December 31, 2016**

**Rolling 3 Year Annualized Return (%)**



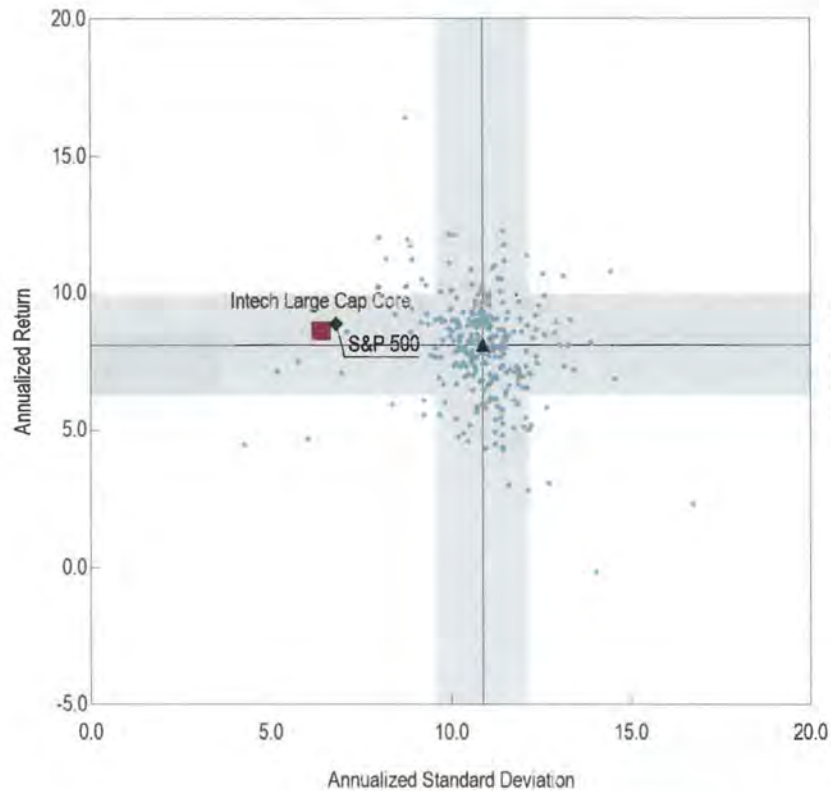
**Rolling 5 Year Annualized Return (%)**



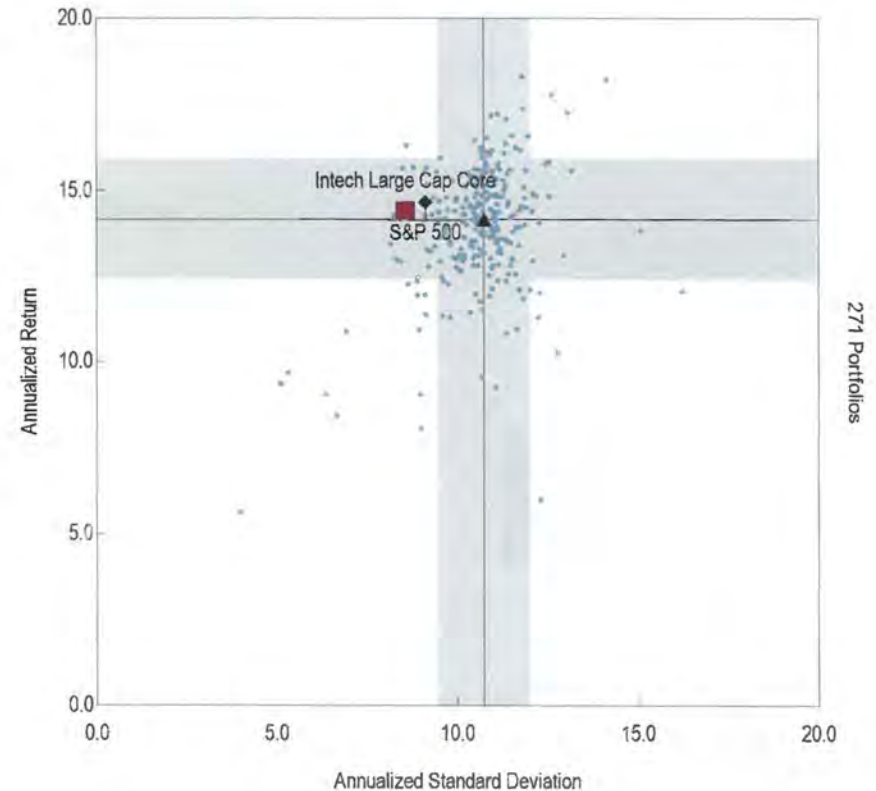
**Intech Large Cap Core**  
**Risk vs. Return 3 & 5 Year (Gross of Fees)**

**Period Ending: December 31, 2016**

3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Intech Large Cap Core	8.6%	6.4%	1.3
S&P 500	8.9%	6.8%	1.3
eA US Large Cap Core Equity Gross Median	8.1%	10.9%	0.7

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Intech Large Cap Core	14.4%	8.6%	1.7
S&P 500	14.7%	9.1%	1.6
eA US Large Cap Core Equity Gross Median	14.2%	10.7%	1.3

# PIMCO Stocks+ Absolute Return Manager Portfolio Overview

Period Ending: December 31, 2016

Domestic equity large cap core portfolio with high correlation exposure to a broad universe seeking enhanced returns. Primary personnel include Mohsen Fahmi and Scott Mather.

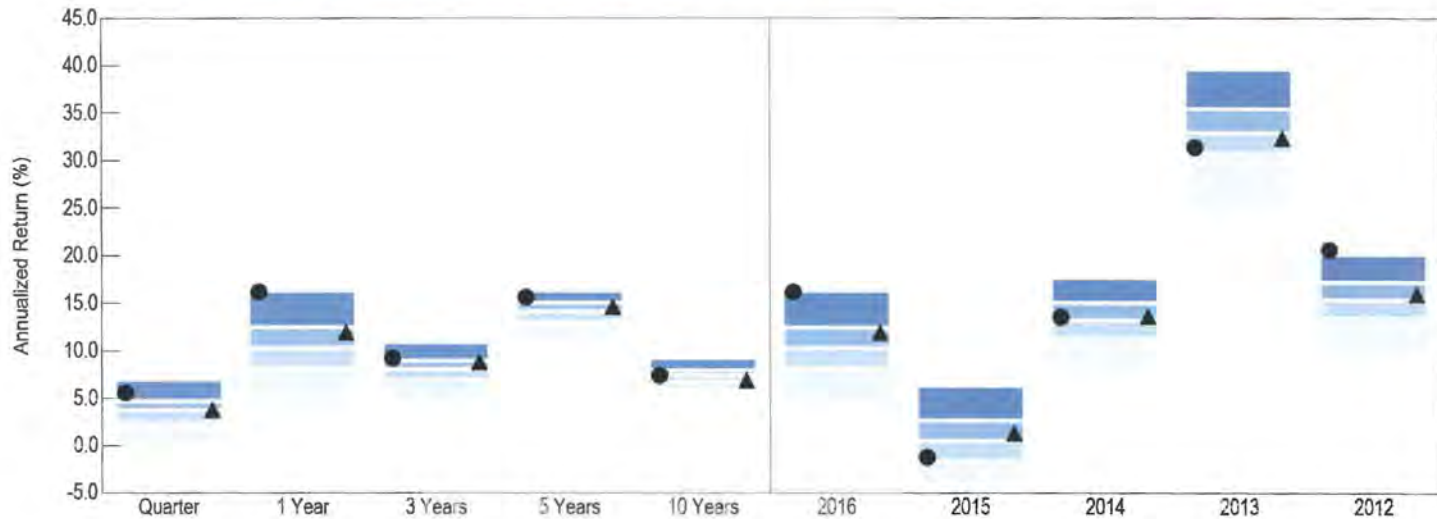




PIMCO Stocks+ Absolute Return  
 Manager Performance Comparisons (Gross of Fees)

Period Ending: December 31, 2016

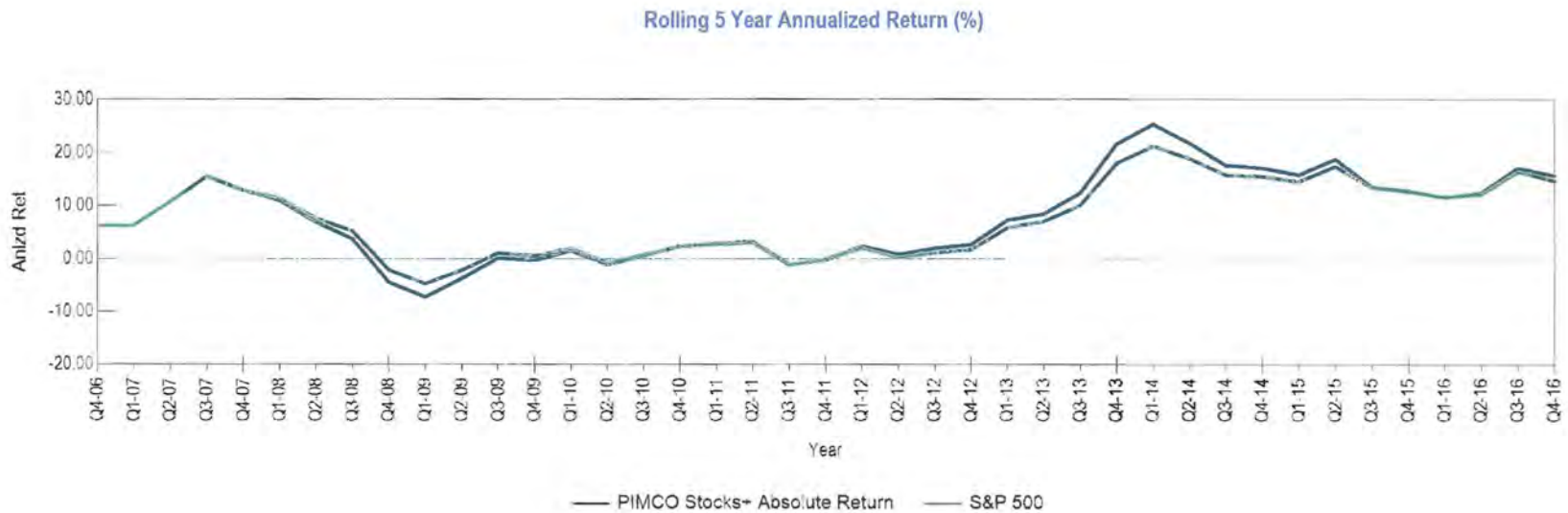
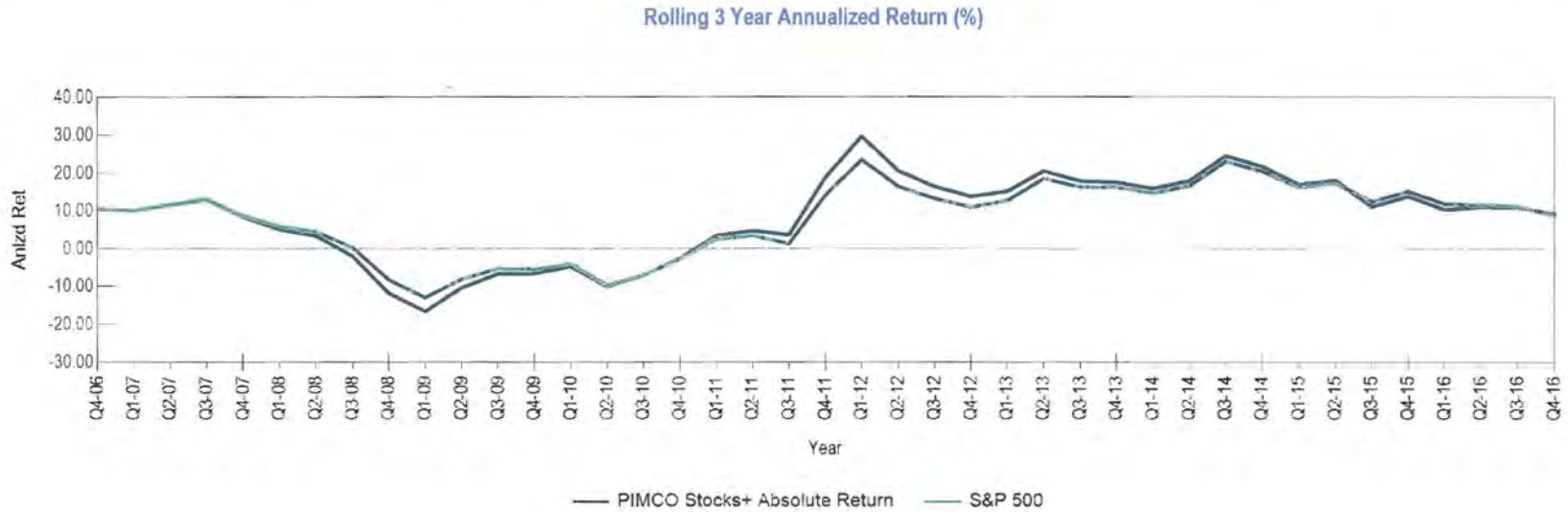
PIMCO Stocks+ Absolute Return vs. eA US Large Cap Core Equity Gross Universe



	Quarter	1 Year	3 Years	5 Years	10 Years	2016	2015	2014	2013	2012
5th Percentile	6.9	16.3	10.9	16.3	9.2	16.3	6.3	17.7	39.8	20.1
25th Percentile	4.8	12.5	9.0	15.1	8.0	12.5	2.7	15.1	35.5	17.2
Median	3.8	10.4	8.1	14.2	7.5	10.4	0.6	13.3	32.9	15.4
75th Percentile	2.4	8.2	7.0	13.1	6.8	8.2	-1.6	11.4	30.8	13.4
95th Percentile	0.2	4.3	4.9	10.9	5.9	4.3	-4.1	8.2	25.4	9.8
# of Portfolios	302	302	295	271	220	302	267	267	261	254
● PIMCO Stocks+ Absolute Return	5.6 (14)	16.2 (6)	9.2 (21)	15.5 (14)	7.4 (52)	16.2 (6)	-1.2 (73)	13.6 (45)	31.4 (68)	20.6 (4)
▲ S&P 500	3.8 (49)	12.0 (32)	8.9 (33)	14.7 (35)	6.9 (71)	12.0 (32)	1.4 (42)	13.7 (42)	32.4 (58)	16.0 (41)

PIMCO Stocks+ Absolute Return  
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees)

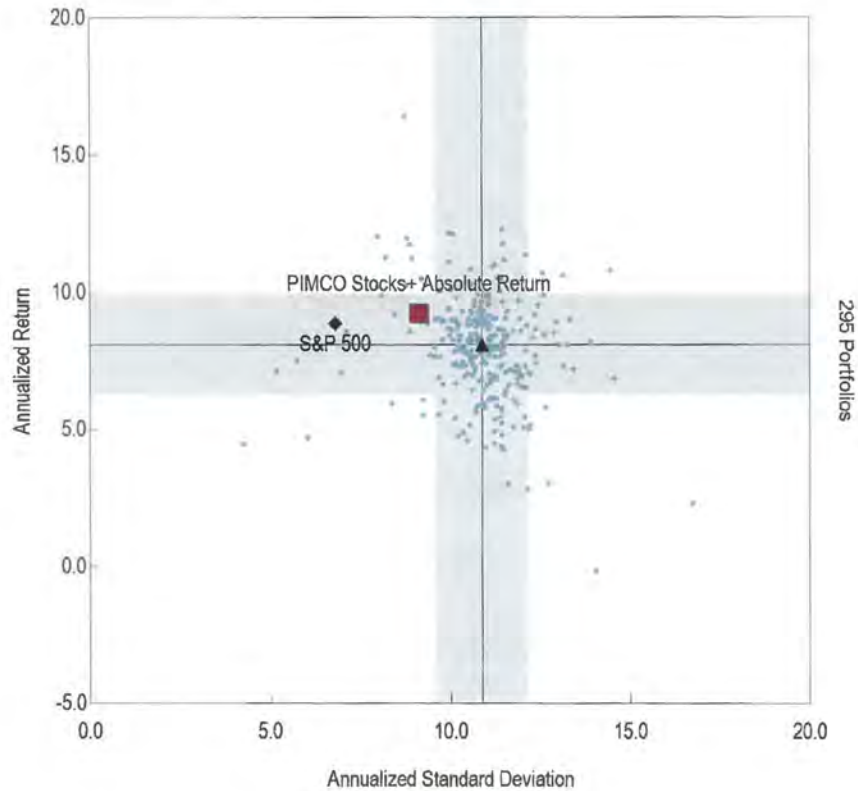
Period Ending: December 31, 2016



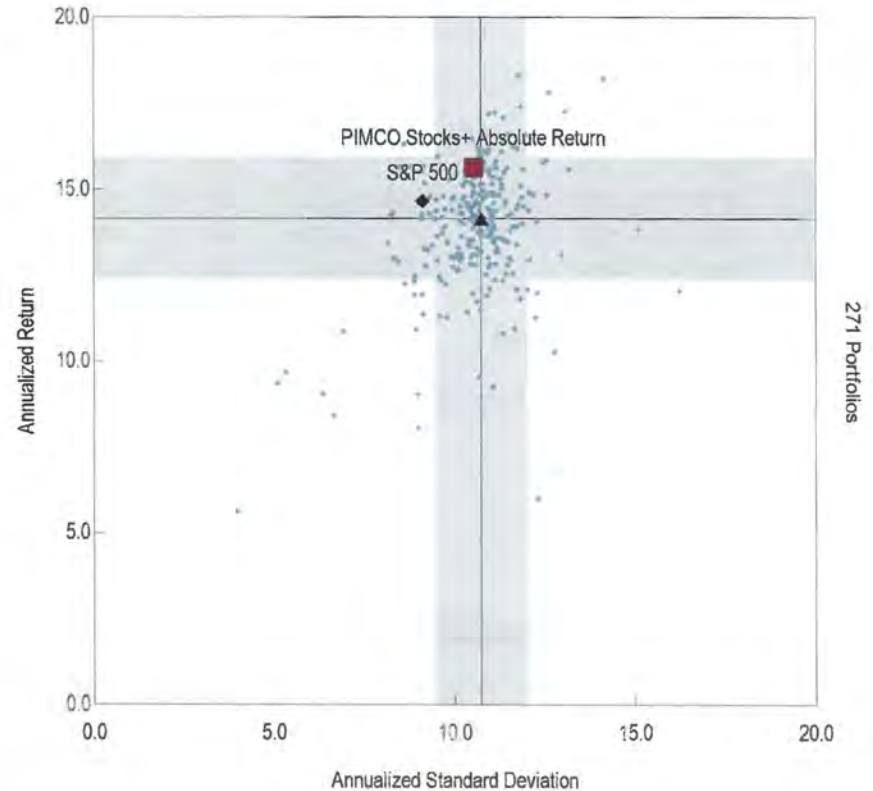
PIMCO Stocks+ Absolute Return  
 Risk vs. Return 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2016

3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
PIMCO Stocks+ Absolute Return	9.2%	9.1%	1.0
S&P 500	8.9%	6.8%	1.3
eA US Large Cap Core Equity Gross Median	8.1%	10.9%	0.7

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
PIMCO Stocks+ Absolute Return	15.6%	10.5%	1.5
S&P 500	14.7%	9.1%	1.6
eA US Large Cap Core Equity Gross Median	14.2%	10.7%	1.3

# Jackson Square Partners Manager Portfolio Overview

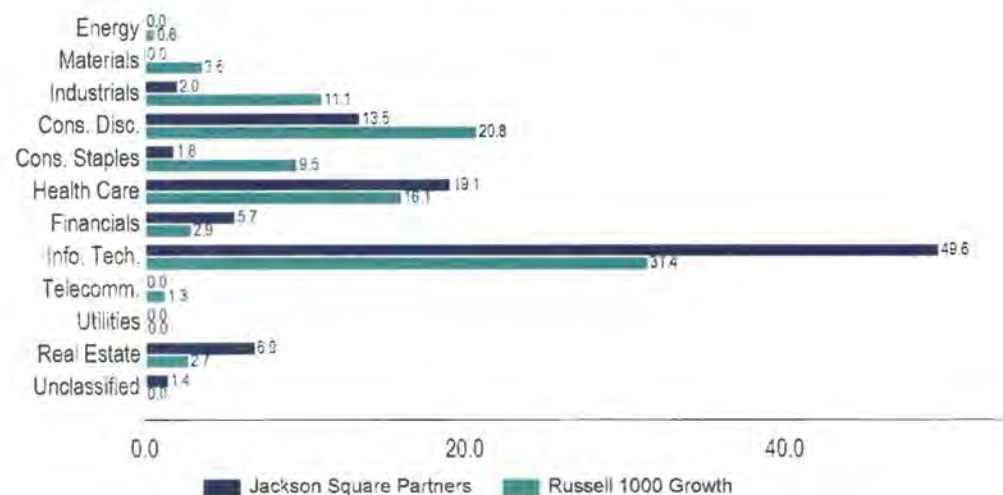
Period Ending: December 31, 2016

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

## Characteristics

	Portfolio	Russell 1000 Growth
Number of Holdings	32	606
Weighted Avg. Market Cap. (\$B)	101.92	136.85
Median Market Cap. (\$B)	33.61	8.78
Price To Earnings	29.95	25.17
Price To Book	6.51	6.64
Price To Sales	6.82	3.52
Return on Equity (%)	22.69	25.80
Yield (%)	1.02	1.59
Beta	1.43	1.00

## Sector Allocation (%) vs Russell 1000 Growth



## Largest Holdings

	End Weight	Return
MICROSOFT	6.23	8.60
VISA 'A'	5.73	-5.46
CELGENE	5.73	10.73
PAYPAL HOLDINGS	5.52	-3.66
MASTERCARD	4.67	1.64
CROWN CASTLE INTL.	4.50	-6.88
LIBERTY INTACT.QVC GROUP 'A'	4.22	-0.15
EBAY	4.19	-9.76
ALLERGAN	4.11	-8.60
BIOGEN	4.01	-9.41

## Top Contributors

	Avg Wgt	Return	Contribution
CELGENE	5.33	10.73	0.57
MICROSOFT	5.17	8.60	0.44
INTERCONTINENTAL EX.	3.58	5.03	0.18
CHARLES SCHWAB	0.60	25.28	0.15
DOLLAR GENERAL	1.52	6.18	0.09
INTUIT	1.99	4.51	0.09
MASTERCARD	4.63	1.64	0.08
WALGREENS BOOTS	1.78	3.12	0.06
ALLIANCE	0.00	-9.76	0.00
SYNGENTA SPN.ADR 5:1	0.00	-9.76	0.00
EQUINIX	2.30	-0.26	-0.01

## Bottom Contributors

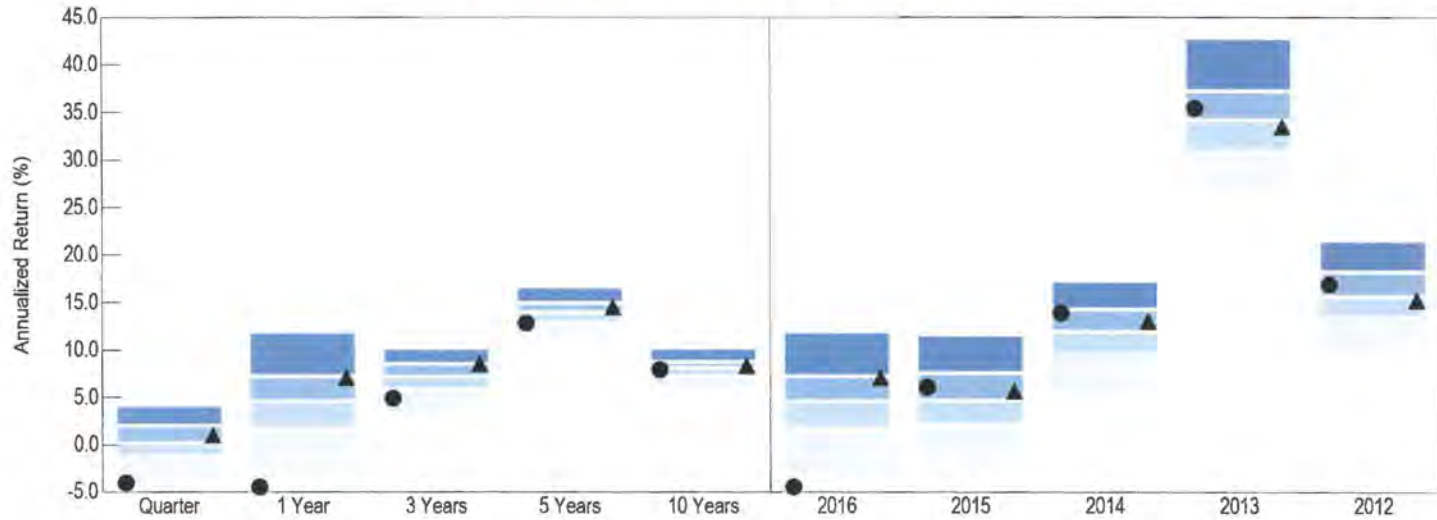
	Avg Wgt	Return	Contribution
TRIPADVISOR 'A'	2.93	-26.61	-0.78
NIELSEN	2.26	-21.12	-0.48
FACEBOOK CLASS A	4.21	-10.31	-0.43
EBAY	4.03	-9.76	-0.39
BIOGEN	4.09	-9.41	-0.38
ALLERGAN	4.15	-8.60	-0.36
VISA 'A'	5.86	-5.46	-0.32
CROWN CASTLE INTL.	4.62	-6.88	-0.32
ELECTRONIC ARTS	3.96	-7.78	-0.31
QUALCOMM	5.19	-4.07	-0.21

Unclassified sector allocation includes cash allocations.

Jackson Square Partners  
 Manager Performance Comparisons (Gross of Fees)

Period Ending: December 31, 2016

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



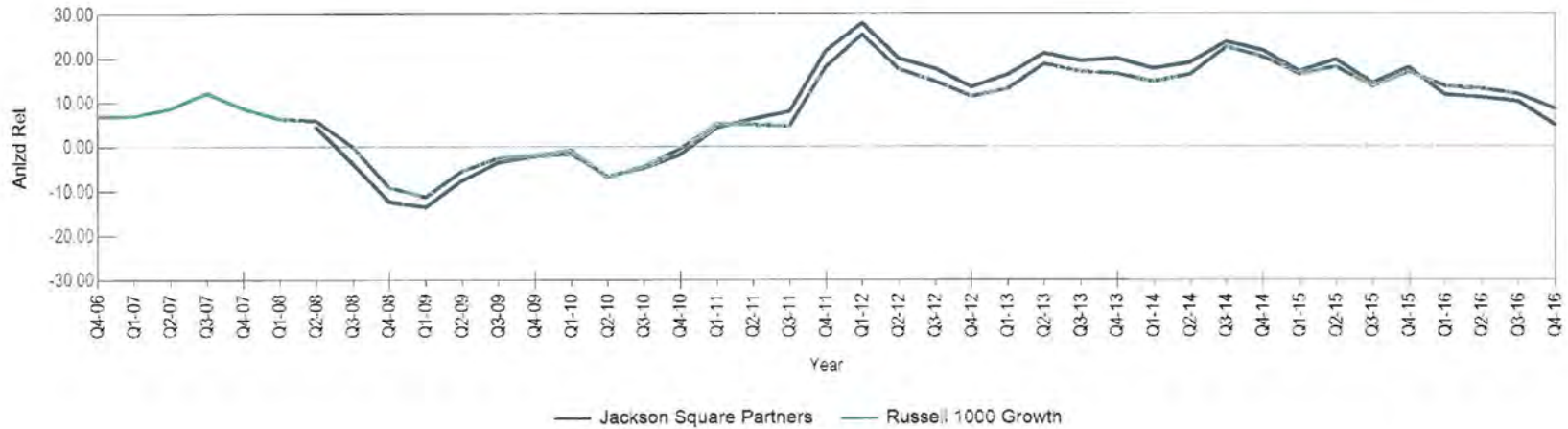
5th Percentile  
 25th Percentile  
 Median  
 75th Percentile  
 95th Percentile  
 # of Portfolios

Return (Rank)	Quarter	1 Year	3 Years	5 Years	10 Years	2016	2015	2014	2013	2012
5th Percentile	4.2	11.9	10.2	16.6	10.2	11.9	11.6	17.3	42.8	21.6
25th Percentile	2.0	7.3	8.6	15.0	8.8	7.3	7.6	14.3	37.3	18.2
Median	0.2	4.6	7.2	14.0	8.1	4.6	4.7	12.0	34.3	15.7
75th Percentile	-1.2	1.8	5.9	12.9	7.2	1.8	2.1	9.5	31.0	13.4
95th Percentile	-4.0	-2.9	3.2	11.2	6.1	-2.9	-2.4	5.8	26.6	10.2
# of Portfolios	266	266	264	248	211	266	270	291	274	274
● Jackson Square Partners	-4.0 (96)	-4.4 (97)	4.9 (87)	12.8 (77)	7.9 (58)	-4.4 (97)	6.1 (37)	13.9 (31)	35.4 (40)	16.9 (37)
▲ Russell 1000 Growth	1.0 (39)	7.1 (26)	8.6 (26)	14.5 (37)	8.3 (44)	7.1 (26)	5.7 (42)	13.0 (38)	33.5 (56)	15.3 (55)

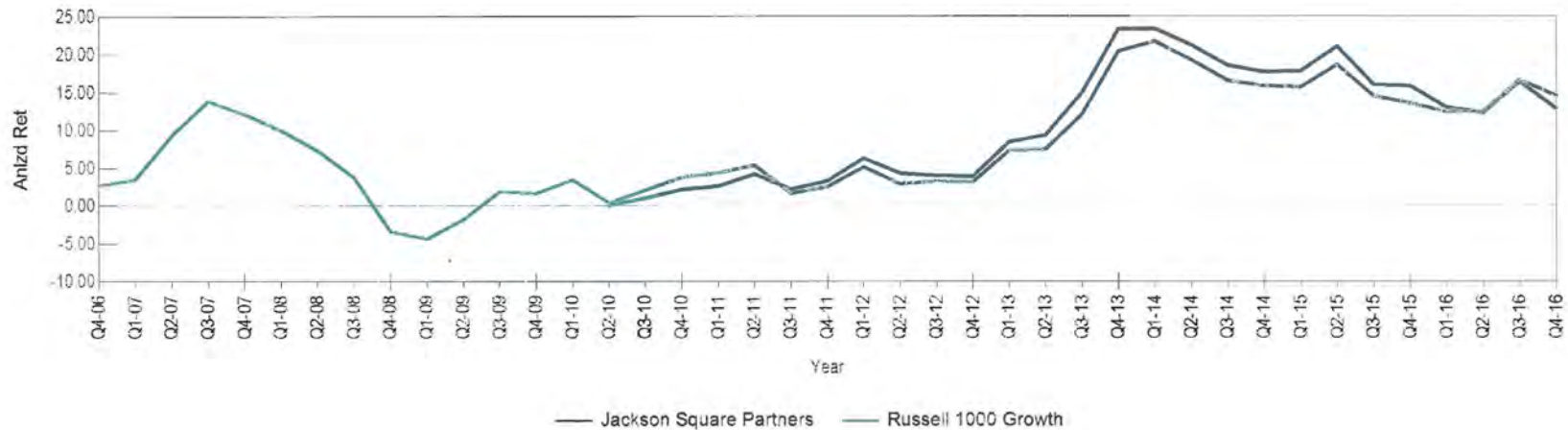
Jackson Square Partners  
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2016

Rolling 3 Year Annualized Return (%)



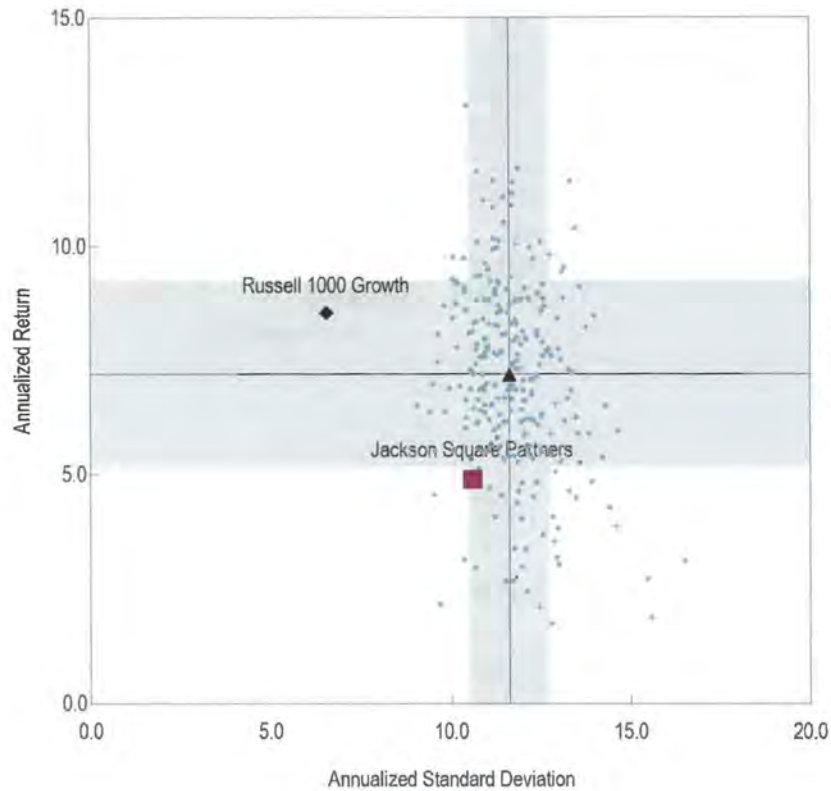
Rolling 5 Year Annualized Return (%)



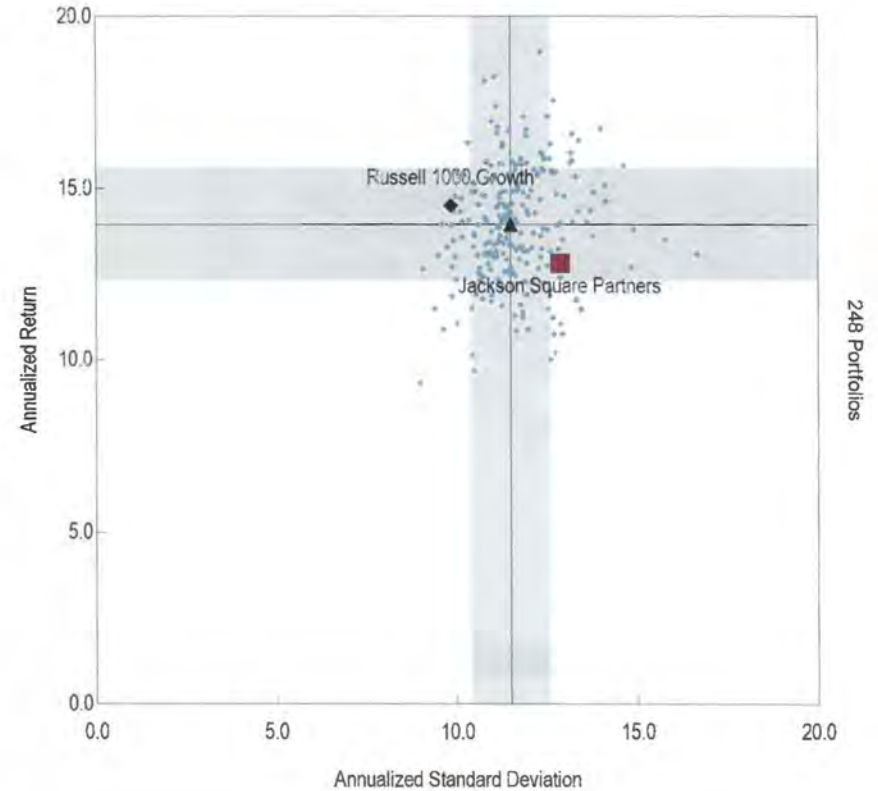
Jackson Square Partners  
 Risk vs. Return 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2016

3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Jackson Square Partners	4.9%	10.6%	0.5
Russell 1000 Growth	8.6%	6.5%	1.3
eA US Large Cap Growth Equity Gross Median	7.2%	11.6%	0.6

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Jackson Square Partners	12.8%	12.9%	1.0
Russell 1000 Growth	14.5%	9.8%	1.5
eA US Large Cap Growth Equity Gross Median	14.0%	11.5%	1.2

# Robeco Boston Partners Manager Portfolio Overview

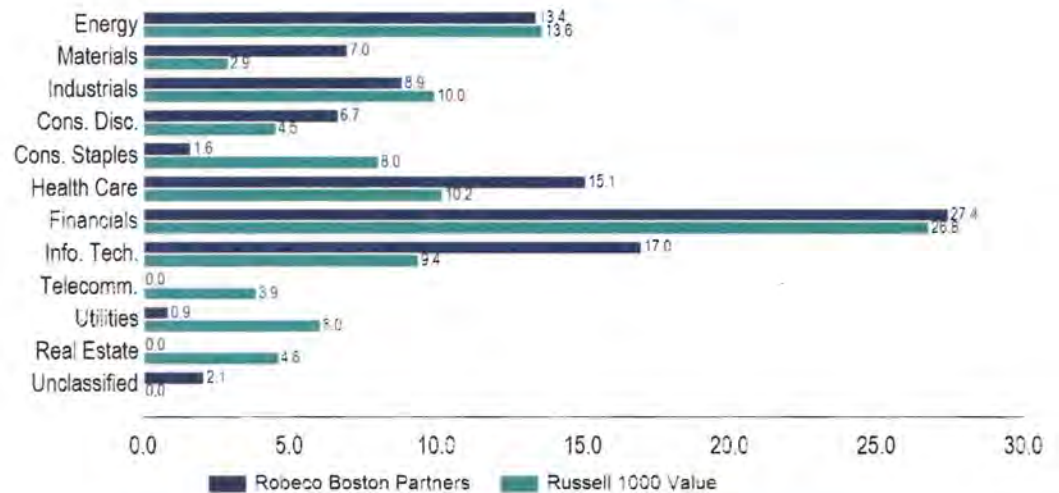
Period Ending: December 31, 2016

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

## Characteristics

	Portfolio	Russell 1000 Value
Number of Holdings	90	696
Weighted Avg. Market Cap. (\$B)	115.25	113.99
Median Market Cap. (\$B)	31.57	7.99
Price To Earnings	18.05	19.78
Price To Book	2.98	2.39
Price To Sales	2.17	2.81
Return on Equity (%)	15.71	11.64
Yield (%)	1.84	2.44
Beta	0.97	1.00

## Sector Allocation (%) vs Russell 1000 Value



## Largest Holdings

	End Weight	Return
JP MORGAN CHASE & CO.	4.87	30.52
JOHNSON & JOHNSON	4.06	-1.80
BANK OF AMERICA	3.98	41.72
BERKSHIRE HATHAWAY 'B'	3.71	12.81
CHEVRON	2.72	15.50
CITIGROUP	2.51	26.25
DISCOVER FINANCIAL SVS.	2.40	28.16
MERCK & COMPANY	2.35	-4.95
APPLE	1.91	2.98
TIME WARNER	1.86	21.78

## Top Contributors

	Avg Wgt	Return	Contribution
JP MORGAN CHASE & CO.	4.54	30.52	1.39
BANK OF AMERICA	3.15	41.72	1.31
DISCOVER FINANCIAL SVS.	2.15	28.16	0.61
CITIGROUP	2.04	26.25	0.53
GOLDMAN SACHS GP.	0.98	48.93	0.48
BERKSHIRE HATHAWAY 'B'	3.62	12.81	0.46
CHEVRON	2.60	15.50	0.40
TIME WARNER	1.65	21.78	0.36
DELTA AIR LINES	1.30	25.54	0.33
STEEL DYNAMICS	0.55	42.92	0.24

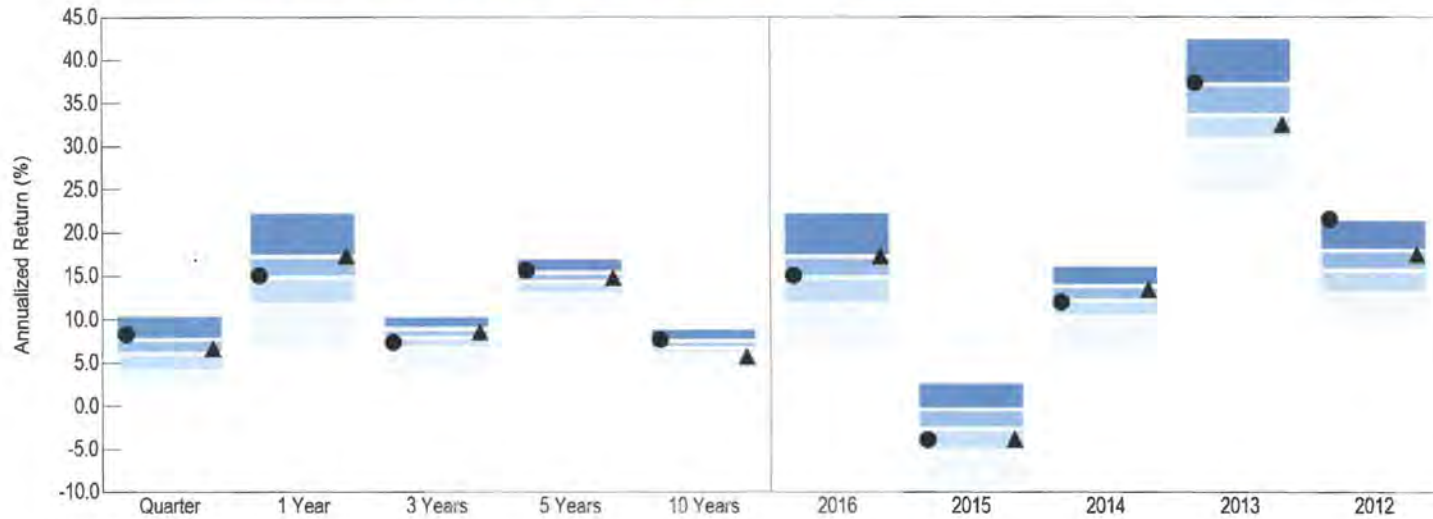
## Bottom Contributors

	Avg Wgt	Return	Contribution
MCKESSON	1.15	-15.61	-0.18
GILEAD SCIENCES	1.78	-8.92	-0.16
MERCK & COMPANY	2.59	-4.95	-0.13
EBAY	1.12	-9.76	-0.11
GULFPORT ENERGY	0.47	-23.40	-0.11
COCA COLA ENTS.	0.48	-20.86	-0.10
LIBERTY GLOBAL LILAC CLASS C	0.41	-24.53	-0.10
TYSON FOODS 'A'	0.55	-17.08	-0.09
PULTEGROUP	1.17	-7.85	-0.09
AES	1.03	-8.72	-0.09

Unclassified sector allocation includes cash allocations.



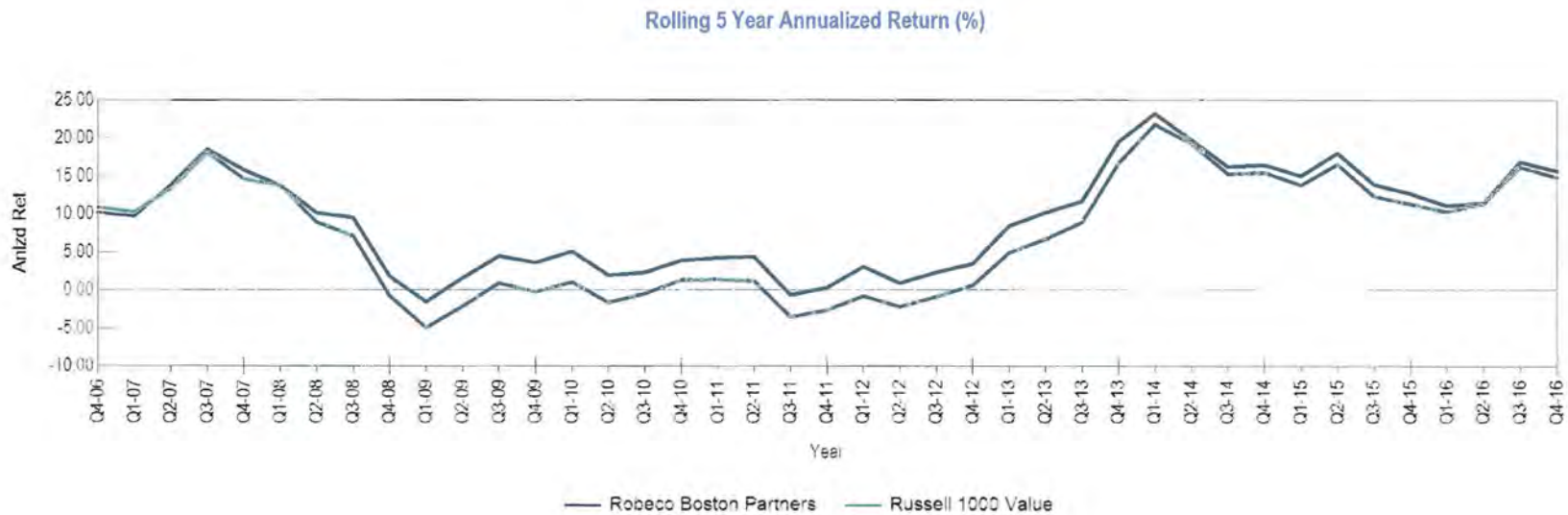
Robeco Boston Partners vs. eA US Large Cap Value Equity Gross Universe



	Quarter	1 Year	3 Years	5 Years	10 Years	2016	2015	2014	2013	2012
5th Percentile	10.5	22.4	10.5	17.0	9.0	22.4	2.8	16.3	42.5	21.5
25th Percentile	7.8	17.3	9.0	15.4	7.6	17.3	-0.4	13.9	37.2	18.0
Median	6.1	14.9	8.0	14.4	6.8	14.9	-2.6	12.2	33.6	15.7
75th Percentile	4.1	11.8	6.8	12.9	6.1	11.8	-5.1	10.4	30.8	13.0
95th Percentile	1.9	6.6	3.7	10.5	4.5	6.6	-9.4	5.9	24.6	9.6
# of Portfolios	331	331	323	305	250	331	312	307	310	303
● Robeco Boston Partners	8.3 (20)	15.1 (49)	7.4 (64)	15.6 (20)	7.7 (22)	15.1 (49)	-3.9 (65)	12.0 (55)	37.4 (24)	21.6 (5)
▲ Russell 1000 Value	6.7 (45)	17.3 (25)	8.6 (34)	14.8 (39)	5.7 (82)	17.3 (25)	-3.8 (64)	13.5 (33)	32.5 (60)	17.5 (30)

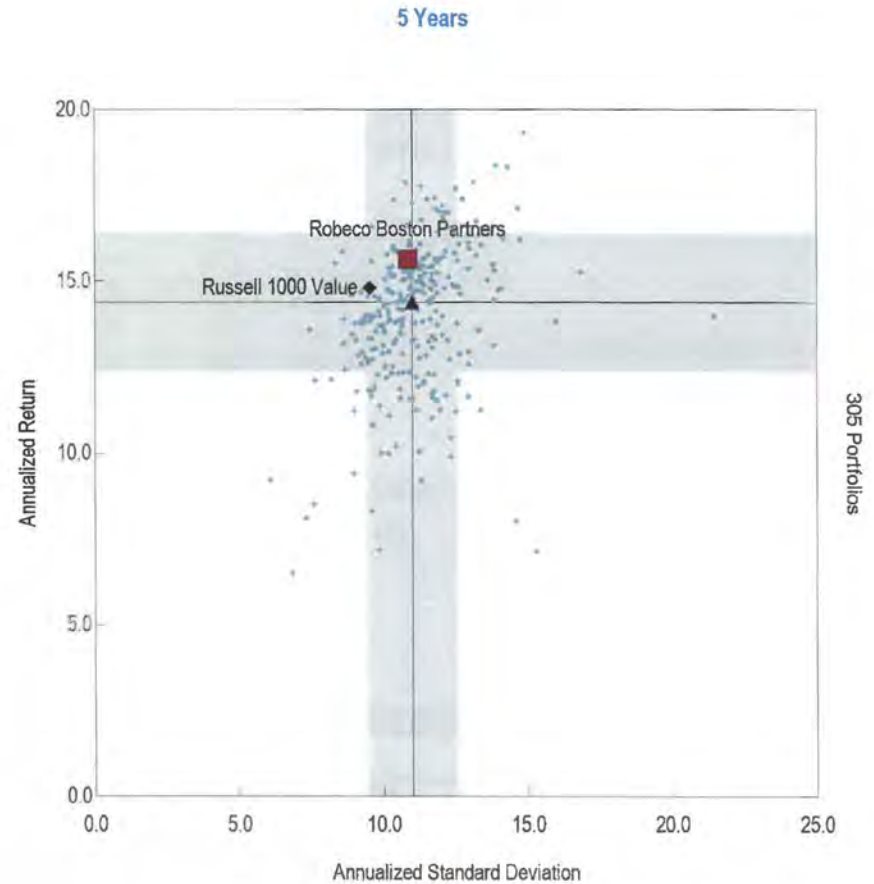
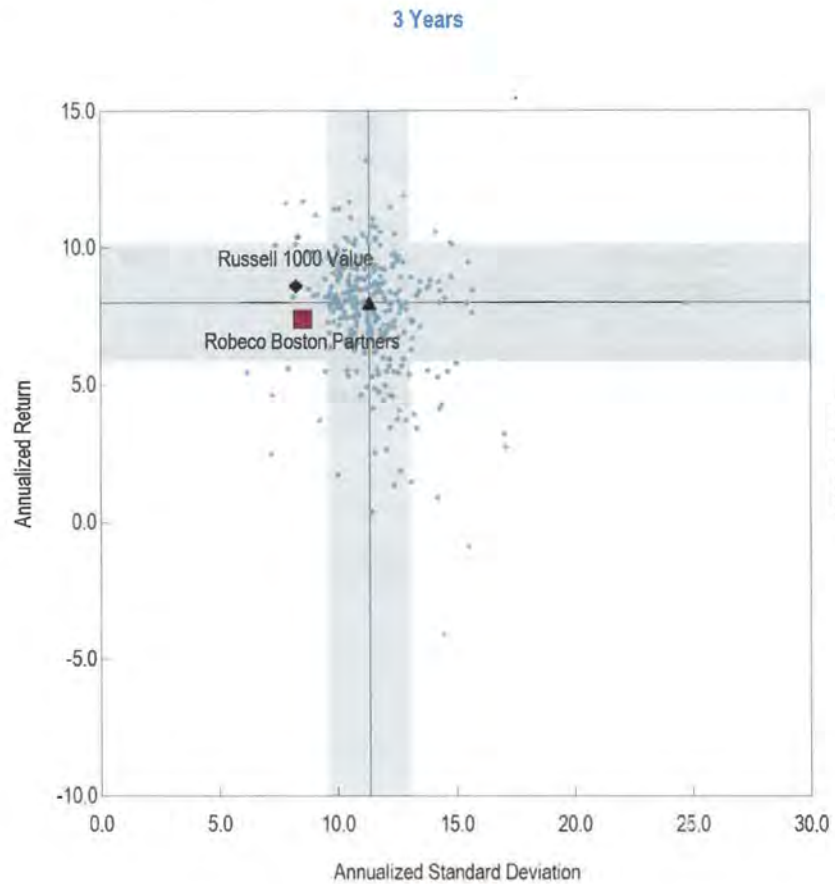
Robeco Boston Partners  
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2016



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

Period Ending: December 31, 2016



	3 Years			5 Years			
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	
Robeco Boston Partners	7.4%	8.5%	0.9	Robeco Boston Partners	15.6%	10.9%	1.4
Russell 1000 Value	8.6%	8.3%	1.0	Russell 1000 Value	14.8%	9.5%	1.5
eA US Large Cap Value Equity Gross Median	8.0%	11.3%	0.7	eA US Large Cap Value Equity Gross Median	14.4%	11.0%	1.3

# Emerald Advisers Manager Portfolio Overview

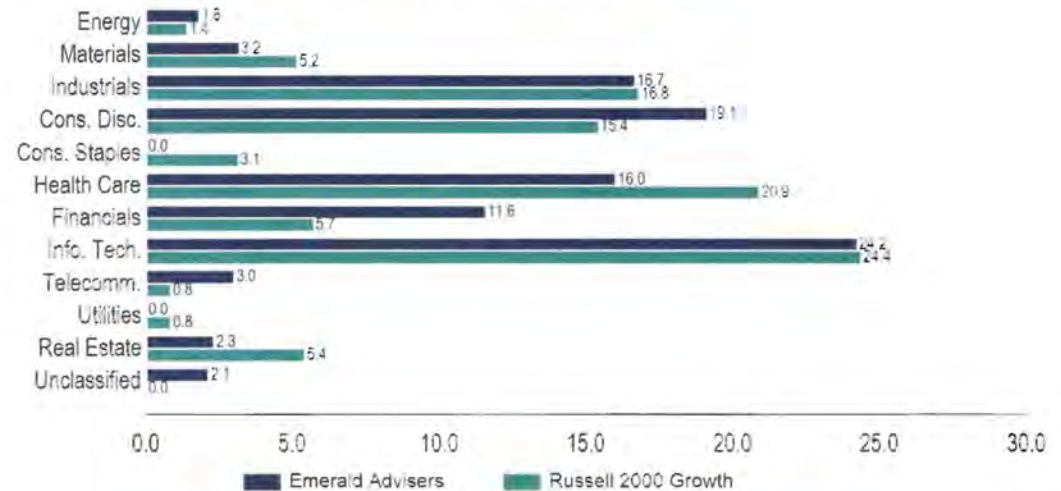
Period Ending: December 31, 2016

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

## Characteristics

	Portfolio	Russell 2000 Growth
Number of Holdings	114	1,177
Weighted Avg. Market Cap. (\$B)	2.22	2.16
Median Market Cap. (\$B)	1.50	0.85
Price To Earnings	27.14	28.99
Price To Book	4.85	4.81
Price To Sales	3.57	2.67
Return on Equity (%)	14.46	15.04
Yield (%)	0.39	0.61
Beta	0.96	1.00

## Sector Allocation (%) vs Russell 2000 Growth



## Largest Holdings

	End Weight	Return
VEEVA SYSTEMS CLA	2.43	-1.41
BANK OF THE OZARKS	2.13	37.54
MICROSEMI	2.12	28.56
VONAGE HOLDINGS	1.71	3.63
BOFI HOLDING	1.69	27.46
APOGEE ENTERPRISES	1.69	20.21
8X8	1.64	-7.32
LENDINGTREE	1.62	4.58
MICROSTRATEGY	1.61	17.89
GTT COMMUNICATIONS	1.59	22.18

## Top Contributors

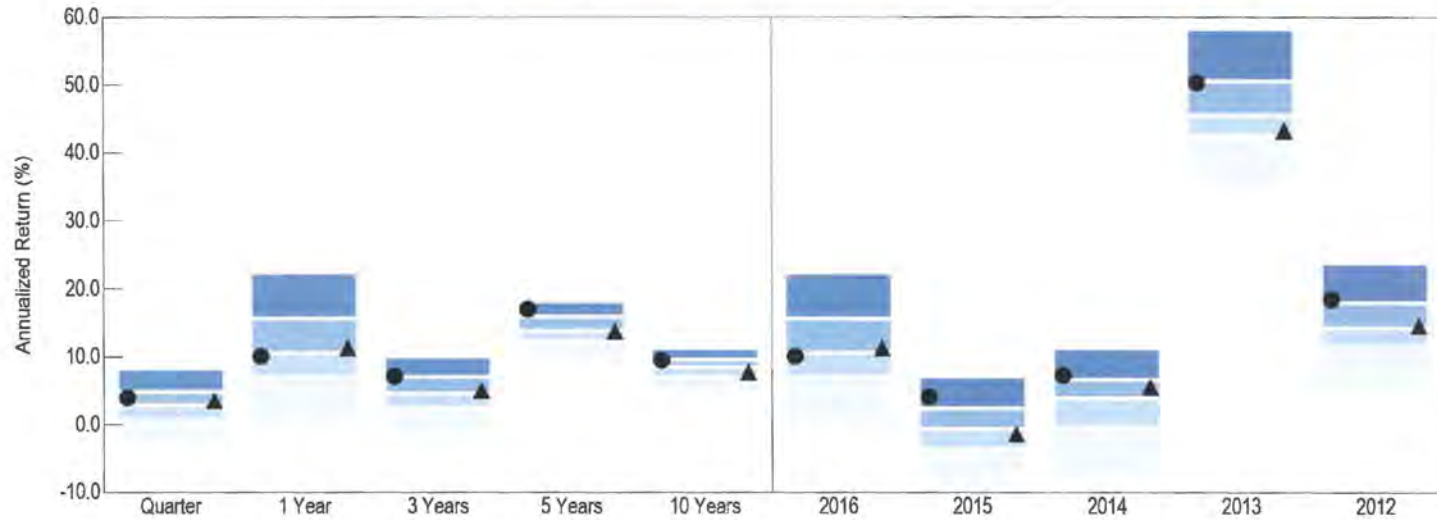
	Avg Wgt	Return	Contribution
BANK OF THE OZARKS	1.73	37.54	0.65
MICROSEMI	1.85	28.56	0.53
SPIRIT AIRLINES	1.28	36.05	0.46
HEADWATERS	1.01	39.01	0.39
PAC.PREMIER BANC.	1.01	33.60	0.34
BOFI HOLDING	1.21	27.46	0.33
TUTOR PERINI	1.09	30.41	0.33
GTT COMMUNICATIONS	1.41	22.18	0.31
APOGEE ENTERPRISES	1.47	20.21	0.30
MICROSTRATEGY	1.61	17.89	0.29

## Bottom Contributors

	Avg Wgt	Return	Contribution
SAREPTA THERAPEUTICS	0.72	-55.33	-0.40
ALDER BIOPHARMACEUTICALS	0.71	-36.53	-0.26
SEQUENTIAL BRANDS GROUP	0.59	-41.50	-0.24
IMPERVA	0.82	-28.50	-0.23
MACROGENICS	0.61	-31.66	-0.19
AMICUS THERAPEUTICS	0.59	-32.84	-0.19
INTERCEPT PHARMS.	0.52	-33.99	-0.18
NEUROCRINE BIOSCIENCES	0.74	-23.58	-0.17
OPUS BANK	1.14	-15.04	-0.17

Unclassified sector allocation includes cash allocations.

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



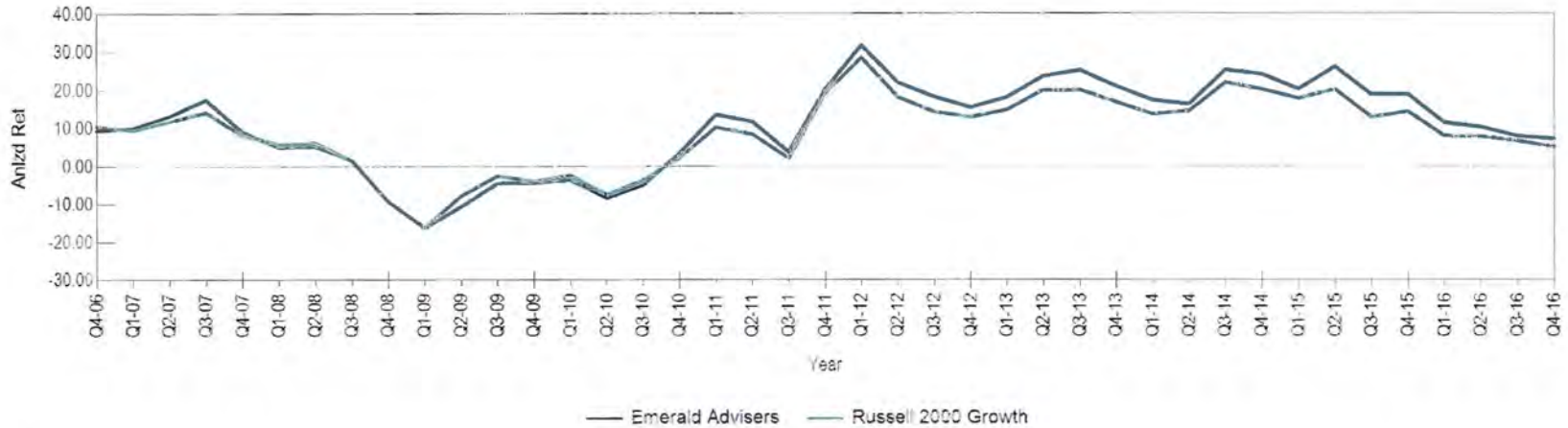
● Emerald Advisers  
 ▲ Russell 2000 Growth

	Quarter	1 Year	3 Years	5 Years	10 Years	2016	2015	2014	2013	2012
5th Percentile	8.3	22.3	10.0	18.1	11.3	22.3	7.1	11.3	58.2	23.8
25th Percentile	4.9	15.6	7.1	16.0	9.6	15.6	2.5	6.7	50.6	18.0
Median	2.9	10.6	4.7	13.9	8.5	10.6	-0.6	3.9	45.6	14.3
75th Percentile	0.8	7.1	2.5	12.3	7.0	7.1	-3.5	-0.1	42.6	11.6
95th Percentile	-2.8	0.1	-1.6	9.3	5.0	0.1	-8.7	-7.6	35.6	5.4
# of Portfolios	166	166	160	151	125	166	154	161	160	162
● Emerald Advisers	4.0 (35)	10.1 (53)	7.1 (24)	17.0 (14)	9.5 (27)	10.1 (53)	4.1 (19)	7.3 (21)	50.3 (27)	18.5 (22)
▲ Russell 2000 Growth	3.6 (38)	11.3 (48)	5.1 (47)	13.7 (54)	7.8 (62)	11.3 (48)	-1.4 (59)	5.6 (32)	43.3 (70)	14.6 (48)

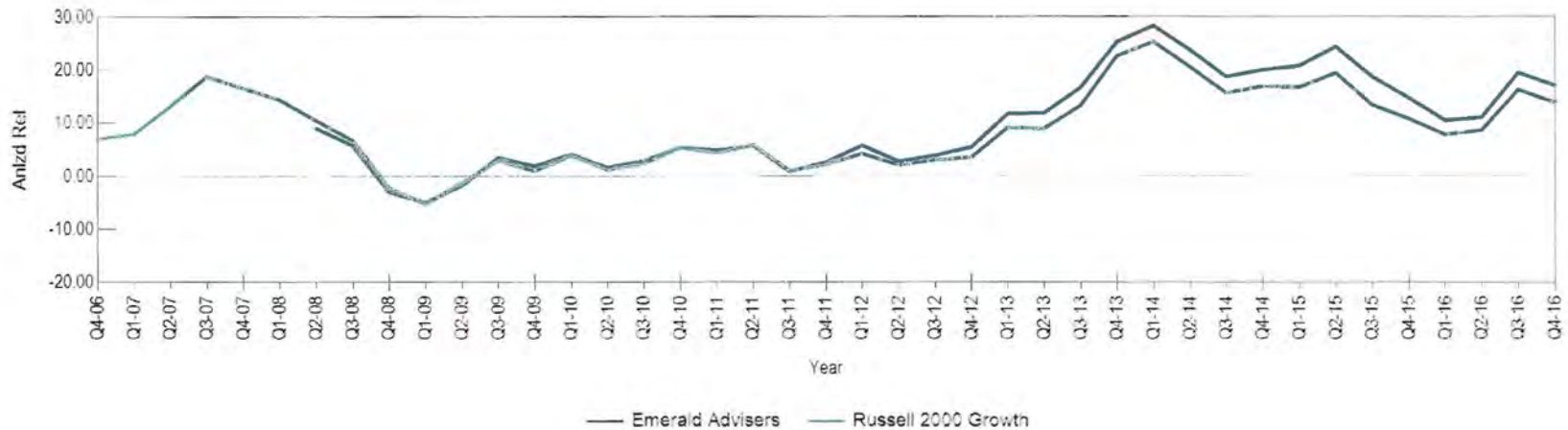
**Emerald Advisers**  
**Manager Performance - Rolling 3 & 5 Year (Gross of Fees)**

**Period Ending: December 31, 2016**

**Rolling 3 Year Annualized Return (%)**



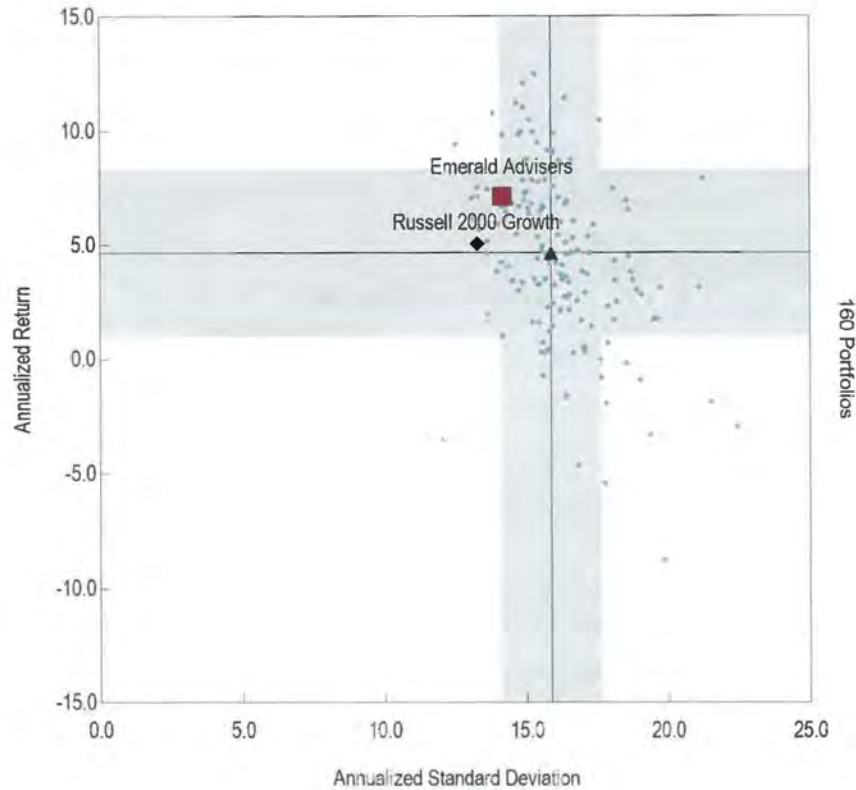
**Rolling 5 Year Annualized Return (%)**



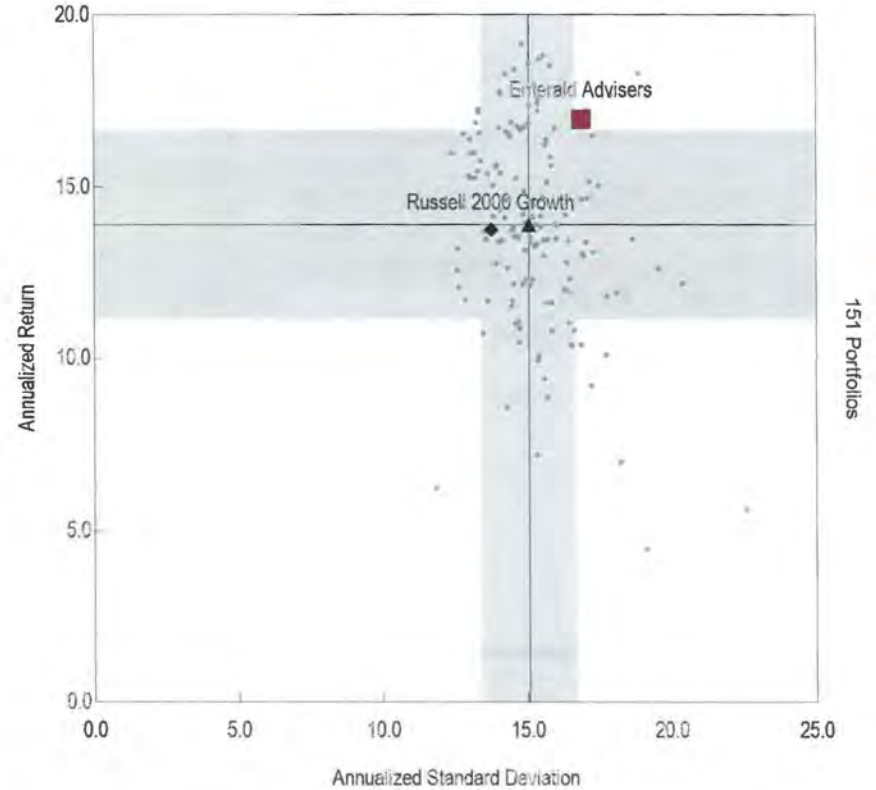
**Emerald Advisers**  
**Risk vs. Return 3 & 5 Year (Gross of Fees)**

**Period Ending: December 31, 2016**

3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Emerald Advisers	7.1%	14.2%	0.5
Russell 2000 Growth	5.1%	13.3%	0.4
eA US Small Cap Growth Equity Gross Median	4.7%	15.9%	0.3

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Emerald Advisers	17.0%	16.9%	1.0
Russell 2000 Growth	13.7%	13.8%	1.0
eA US Small Cap Growth Equity Gross Median	13.9%	15.1%	0.9

# Ceredex Manager Portfolio Overview

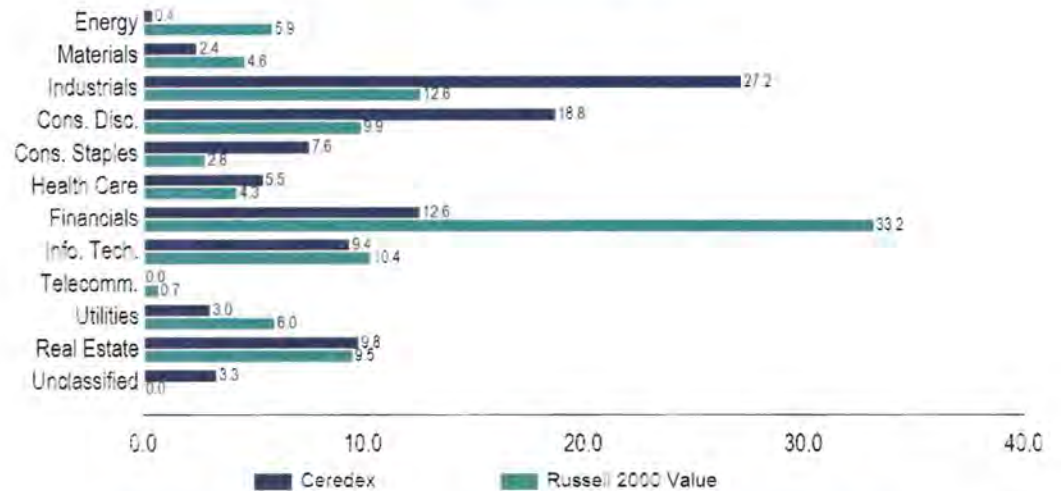
Period Ending: December 31, 2016

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

## Characteristics

	Portfolio	Russell 2000 Value
Number of Holdings	85	1,369
Weighted Avg. Market Cap. (\$B)	2.35	2.00
Median Market Cap. (\$B)	1.97	0.70
Price To Earnings	25.00	21.49
Price To Book	3.82	1.84
Price To Sales	1.94	1.59
Return on Equity (%)	16.49	7.20
Yield (%)	2.15	1.57
Beta	0.75	1.00

## Sector Allocation (%) vs Russell 2000 Value



## Largest Holdings

	End Weight	Return
FAIR ISAAC	4.76	-4.29
ENERGIZER HOLDINGS	3.15	-10.14
AMC ENTERTAINMENT HDG. CL.A	2.92	8.88
HILL-ROM HOLDINGS	2.64	-9.14
B & G FOODS	2.58	-9.99
PLANTRONICS	2.57	5.68
CLARCOR	2.46	27.39
EVERCORE PARTNERS 'A'	2.45	34.05
HERMAN MILLER	2.37	20.21
BANK OF HAWAII	2.25	22.84

## Top Contributors

	Avg Wgt	Return	Contribution
EVERCORE PARTNERS 'A'	2.13	34.05	0.73
UMB FINANCIAL	2.09	30.14	0.63
CLARCOR	2.22	27.39	0.61
PRIMERICA	1.76	30.74	0.54
HANOVER INSURANCE GROUP	2.36	21.35	0.50
BANK OF HAWAII	2.06	22.84	0.47
HERMAN MILLER	2.11	20.21	0.43
TETRA TECH	1.69	21.91	0.37
EMCOR GROUP	1.86	18.85	0.35
KELLY SERVICES 'A'	1.61	19.69	0.32

## Bottom Contributors

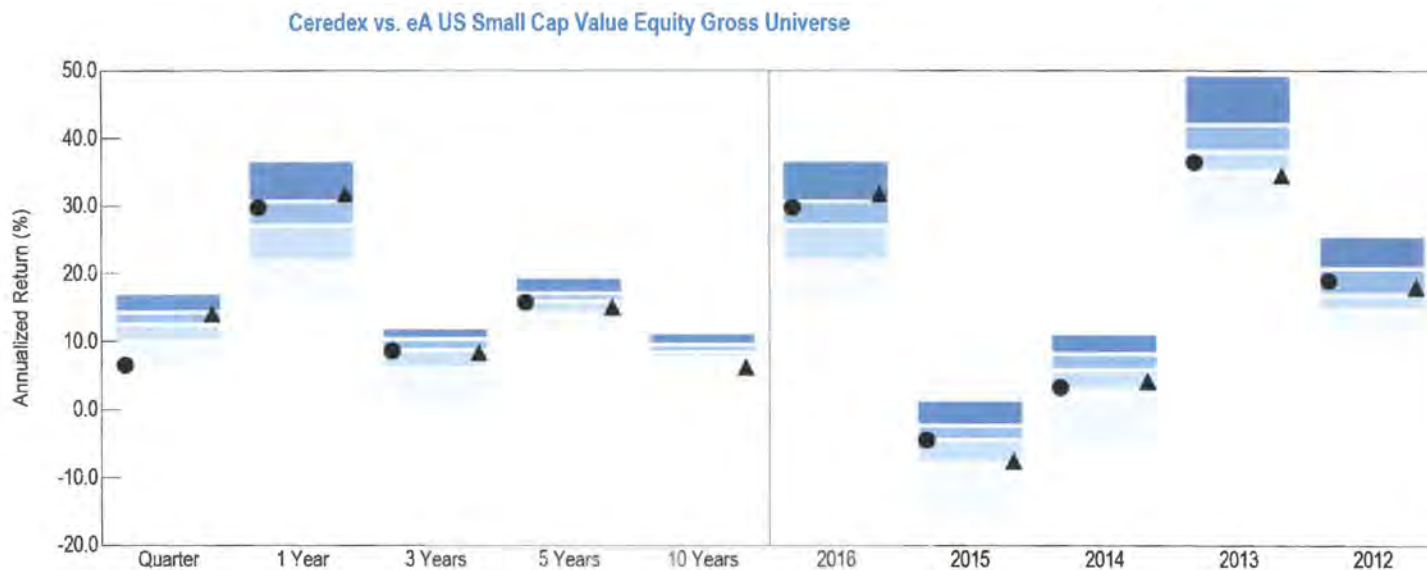
	Avg Wgt	Return	Contribution
MEDICAL PROPS.TRUST	2.48	-15.13	-0.38
ENERGIZER HOLDINGS	3.49	-10.14	-0.35
HSN	2.24	-12.98	-0.29
B & G FOODS	2.82	-9.99	-0.28
COHEN & STEERS	1.41	-19.70	-0.28
GUESS	1.66	-15.78	-0.26
HILL-ROM HOLDINGS	2.83	-9.14	-0.26
FAIR ISAAC	5.07	-4.29	-0.22
HECLA MINING	1.68	-8.03	-0.14
CARPENTER TECH.	0.78	-11.93	-0.09

Unclassified sector allocation includes cash allocations.



Ceredex  
 Manager Performance Comparisons (Gross of Fees)

Period Ending: December 31, 2016



	Quarter	1 Year	3 Years	5 Years	10 Years	2016	2015	2014	2013	2012
5th Percentile	17.2	36.7	12.0	19.5	11.3	36.7	1.5	11.2	49.4	25.7
25th Percentile	14.3	30.7	10.3	17.1	9.6	30.7	-2.2	8.2	42.1	20.8
Median	12.5	27.2	8.7	16.0	8.5	27.2	-4.3	5.8	38.1	16.9
75th Percentile	10.0	21.9	6.1	14.2	7.5	21.9	-7.7	3.1	35.2	14.7
95th Percentile	6.0	16.7	0.2	11.2	6.4	16.7	-15.8	-6.3	27.8	10.3
# of Portfolios	216	216	208	196	159	216	212	206	199	187
● Ceredex	6.5 (94)	29.8 (32)	8.6 (52)	15.8 (54)	-- (--)	29.8 (32)	-4.4 (52)	3.3 (74)	36.5 (66)	19.0 (38)
▲ Russell 2000 Value	14.1 (30)	31.7 (18)	8.3 (56)	15.1 (67)	6.3 (96)	31.7 (18)	-7.5 (74)	4.2 (68)	34.5 (78)	18.1 (43)

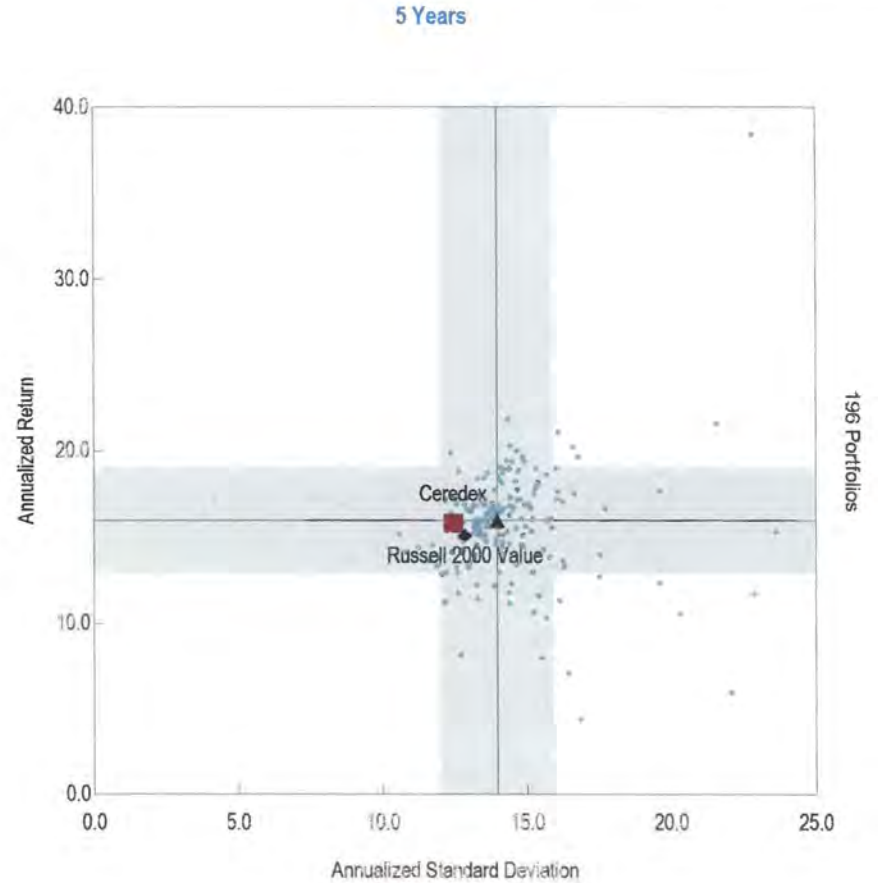
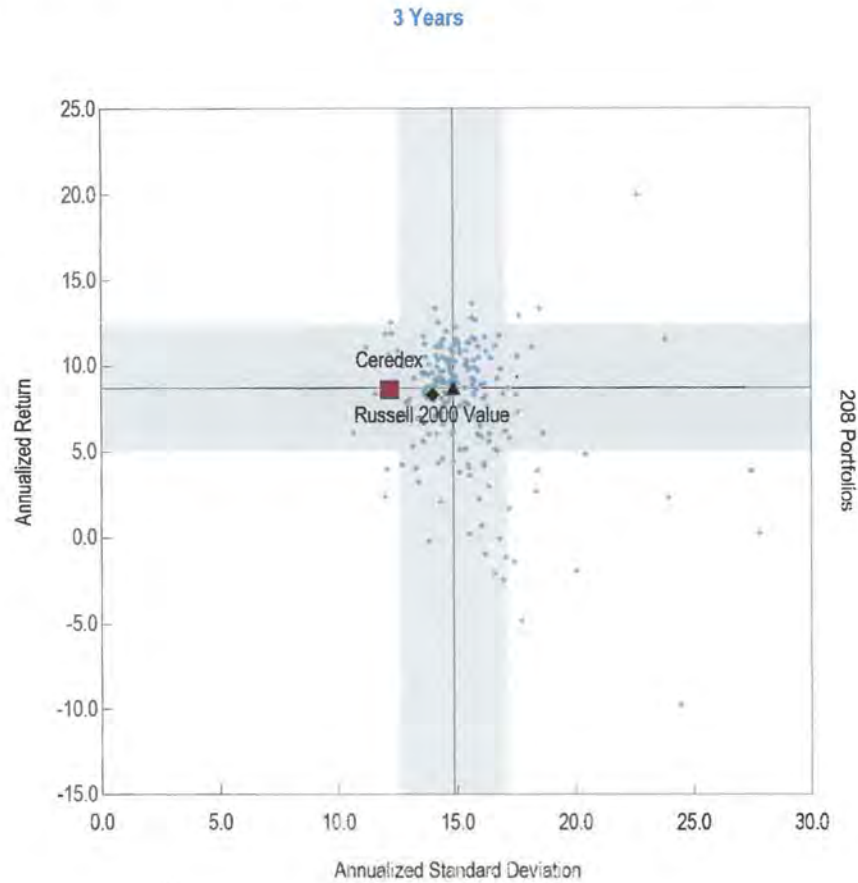
Ceredex  
 Manager Performance - Rolling 3 Year (Gross of Fees)

Period Ending: December 31, 2016



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

Period Ending: December 31, 2016



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Ceredex	8.6%	12.2%	0.7
Russell 2000 Value	8.3%	14.0%	0.6
eA US Small Cap Value Equity Gross Median	8.7%	14.9%	0.6

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Ceredex	15.8%	12.5%	1.3
Russell 2000 Value	15.1%	12.9%	1.2
eA US Small Cap Value Equity Gross Median	16.0%	14.0%	1.1



## **International Equity Managers**

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# Pyrford Manager Portfolio Overview

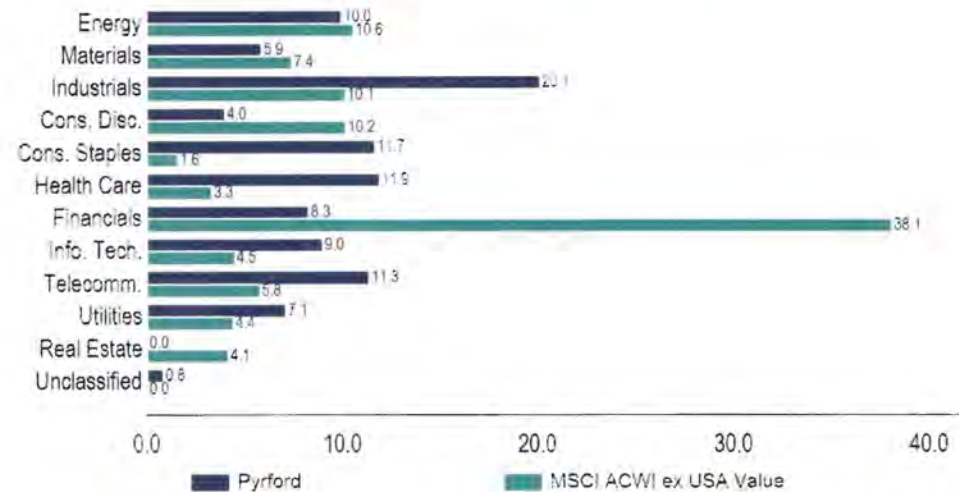
Period Ending: December 31, 2016

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

## Characteristics

	Portfolio	MSCI ACWI ex USA Value
Number of Holdings	73	1,061
Weighted Avg. Market Cap. (\$B)	52.04	47.86
Median Market Cap. (\$B)	18.72	6.46
Price To Earnings	22.40	15.28
Price To Book	3.63	1.54
Price To Sales	2.17	1.58
Return on Equity (%)	15.94	9.84
Yield (%)	3.58	3.75
Beta		1.00

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



## Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
<b>Totals</b>		
Developed	93.3%	77.6%
Emerging*	6.7%	22.4%
<b>Top 10 Largest Countries</b>		
United Kingdom	15.8%	13.8%
Switzerland	14.0%	3.5%
Australia	10.5%	5.2%
Japan	8.6%	17.2%
France	8.2%	8.1%
Germany	7.7%	6.6%
Hong Kong	6.9%	2.2%
Netherlands	6.0%	1.4%
Singapore	5.0%	0.9%
Sweden	4.3%	2.2%
<b>Total-Top 10 Largest Countries</b>	<b>87.0%</b>	<b>61.1%</b>

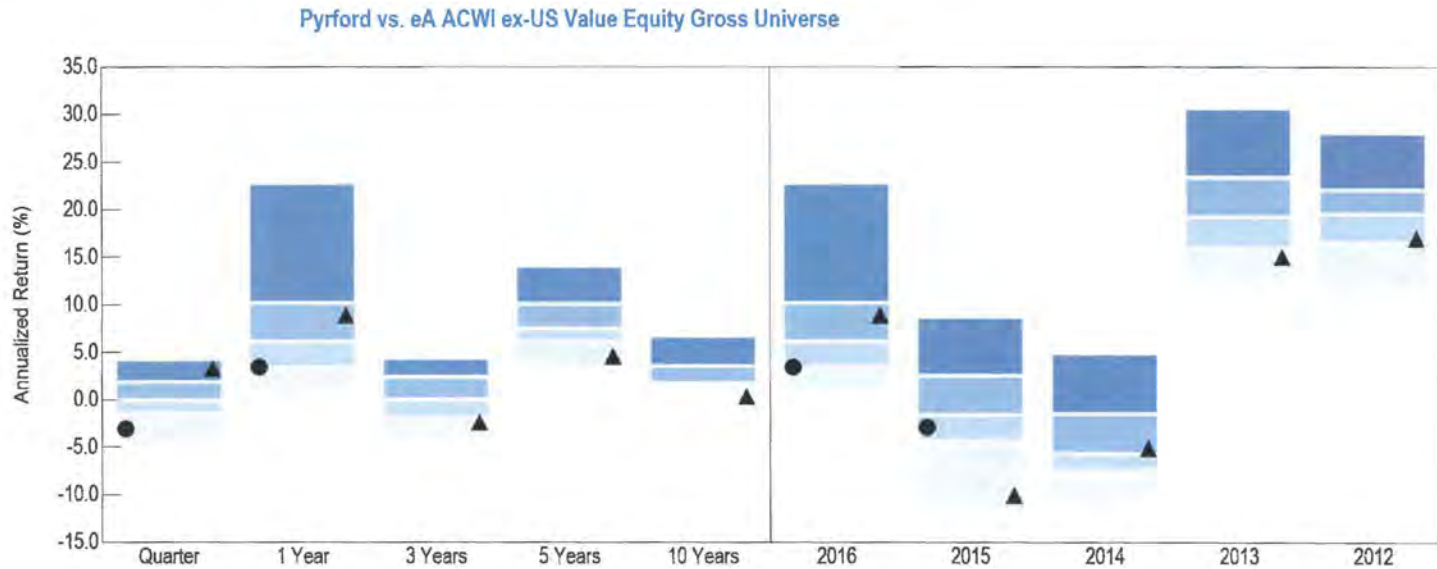
## Top Contributors

	Avg Wgt	Return	Contribution
ASM PACIFIC TECH.	1.24	28.61	0.35
QBE INSURANCE GROUP	1.06	26.51	0.28
VTECH HOLDINGS	1.18	18.91	0.22
COMPUTERSHARE	1.38	14.25	0.20
ROYAL DUTCH SHELL A	1.73	10.01	0.17
MITSUBISHI ELECTRIC	1.50	10.31	0.16
TOYOTA TSUSHO	1.14	13.42	0.15
ROYAL DUTCH SHELL B	1.27	12.13	0.15
SANOFI	2.27	6.71	0.15
TOTAL	1.52	9.83	0.15

## Bottom Contributors

	Avg Wgt	Return	Contribution
KDDI	1.81	-17.51	-0.32
NESTLE 'R'	3.47	-8.98	-0.31
NATIONAL GRID	1.95	-15.72	-0.31
GEA GROUP	1.11	-27.66	-0.31
ROCHE HOLDING	3.36	-7.94	-0.27
JAPAN TOBACCO	1.48	-17.62	-0.26
AXIATA GROUP	1.61	-15.85	-0.26
NOVARTIS 'R'	3.12	-7.49	-0.23
BRITISH AMERICAN TOBACCO	2.08	-10.83	-0.23
CHINA MOBILE	1.73	-12.38	-0.21

Unclassified sector allocation includes cash allocations.



	Quarter	1 Year	3 Years	5 Years	10 Years	2016	2015	2014	2013	2012
<b>5th Percentile</b>	4.3	22.8	4.4	14.1	6.7	22.8	8.7	4.9	30.7	28.1
<b>25th Percentile</b>	1.9	10.2	2.5	10.1	3.6	10.2	2.5	-1.4	23.4	22.1
<b>Median</b>	0.0	6.2	0.0	7.6	1.7	6.2	-1.6	-5.7	19.3	19.6
<b>75th Percentile</b>	-1.5	3.4	-1.9	6.1	1.4	3.4	-4.3	-7.4	15.9	16.5
<b>95th Percentile</b>	-4.5	0.9	-4.2	3.7	0.9	0.9	-11.6	-10.4	12.4	11.7
<b># of Portfolios</b>	52	52	47	40	27	52	45	37	34	32
● Pyrford	-3.1 (89)	3.4 (75)	-- (-)	-- (-)	-- (-)	3.4 (75)	-2.9 (59)	-- (-)	-- (-)	-- (-)
▲ MSCI ACWI ex USA Value	3.3 (9)	8.9 (33)	-2.4 (78)	4.6 (91)	0.3 (98)	8.9 (33)	-10.1 (93)	-5.1 (49)	15.0 (83)	17.0 (74)

# William Blair Manager Portfolio Overview

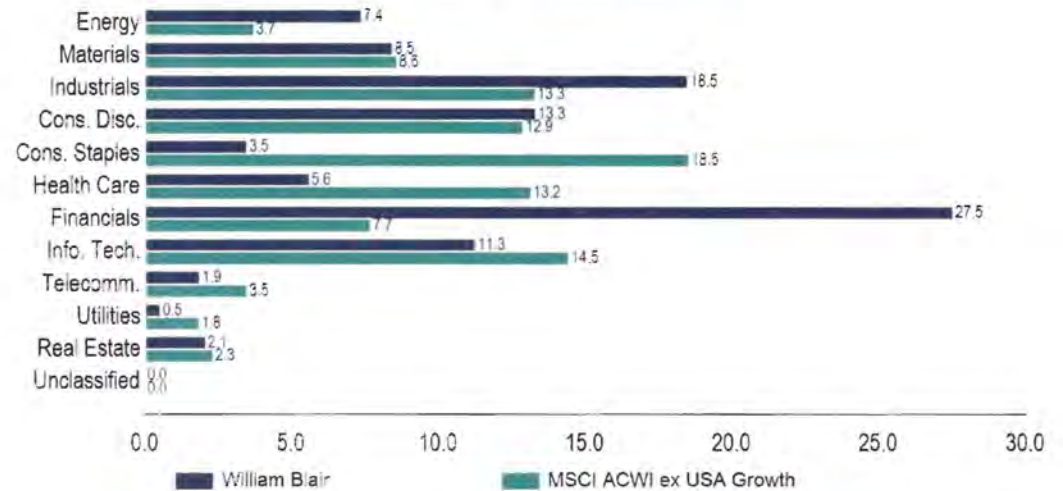
Period Ending: December 31, 2016

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

## Characteristics

	Portfolio	MSCI ACWI ex USA Growth
Number of Holdings	209	1,021
Weighted Avg. Market Cap. (\$B)	36.07	50.63
Median Market Cap. (\$B)	7.31	6.91
Price To Earnings	20.12	24.28
Price To Book	3.75	3.92
Price To Sales	2.38	2.78
Return on Equity (%)	19.05	16.73
Yield (%)	2.54	2.06
Beta	0.90	1.00

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



## Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
<b>Totals</b>		
Developed	85.9%	77.1%
Emerging*	14.1%	22.9%
<b>Top 10 Largest Countries</b>		
Japan	19.8%	16.9%
France	15.9%	6.1%
United Kingdom	15.0%	11.7%
Canada	7.2%	6.8%
Australia	4.1%	5.2%
Sweden	3.6%	1.8%
Switzerland	3.0%	8.8%
Spain	2.8%	1.1%
Korea*	2.8%	3.4%
China*	2.7%	6.1%
<b>Total-Top 10 Largest Countries</b>	<b>76.9%</b>	<b>67.8%</b>

## Top Contributors

	Avg Wgt	Return	Contribution
ACTELION	1.04	25.04	0.26
BNP PARIBAS	1.00	24.17	0.24
TORONTO-DOMINION BANK	1.22	12.49	0.15
RIO TINTO	1.51	9.82	0.15
AXA	0.72	18.86	0.14
ROYAL DUTCH SHELL A	1.16	10.01	0.12
FUJI HEAVY INDS.	1.12	10.34	0.12
TOTAL	1.16	9.83	0.11
MITSUBISHI UFJ FINL.GP.	0.46	23.80	0.11
ORIX	1.30	7.18	0.09

## Bottom Contributors

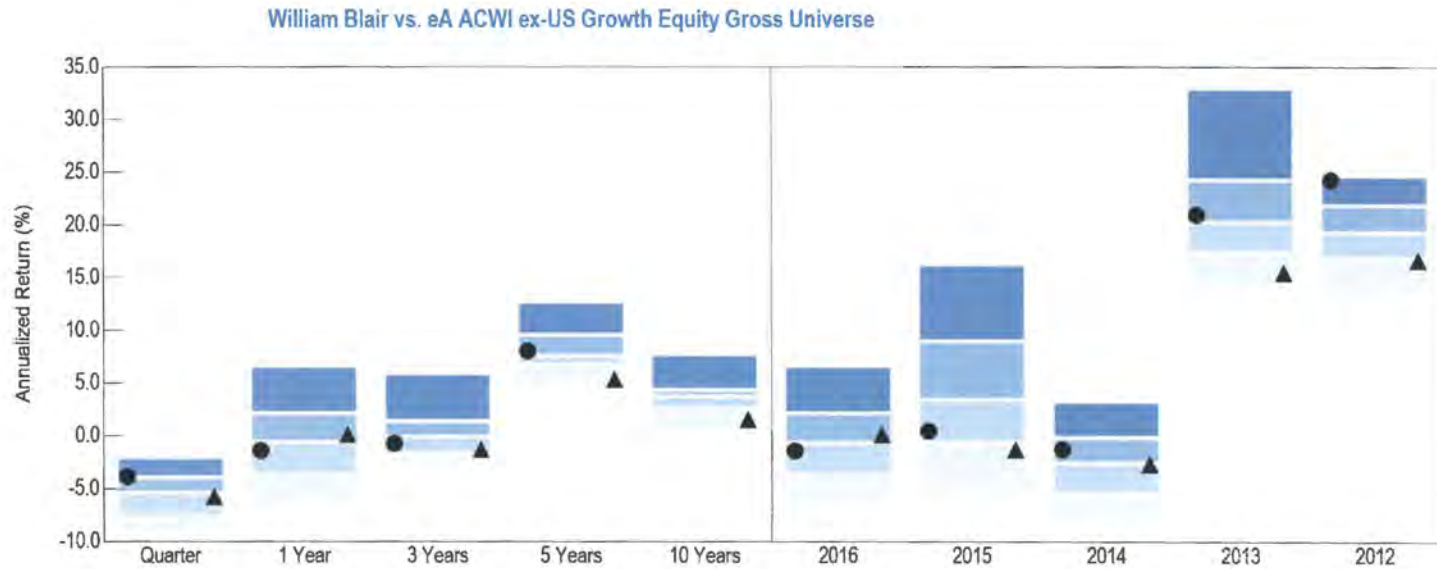
	Avg Wgt	Return	Contribution
AIA GROUP	1.77	-15.10	-0.27
TENCENT HOLDINGS	1.61	-10.91	-0.18
VESTAS WINDSYSTEMS	0.79	-20.91	-0.16
CHINA OS.LD.& INV.	0.72	-21.83	-0.16
VINCI	1.49	-9.97	-0.15
HEXAGON 'B'	0.78	-18.05	-0.14
KAO	0.94	-14.77	-0.14
CHINA MOBILE	1.08	-12.38	-0.13
AXIS BANK	0.72	-18.46	-0.13
KONE 'B'	1.13	-11.54	-0.13

Unclassified sector allocation includes cash allocations.



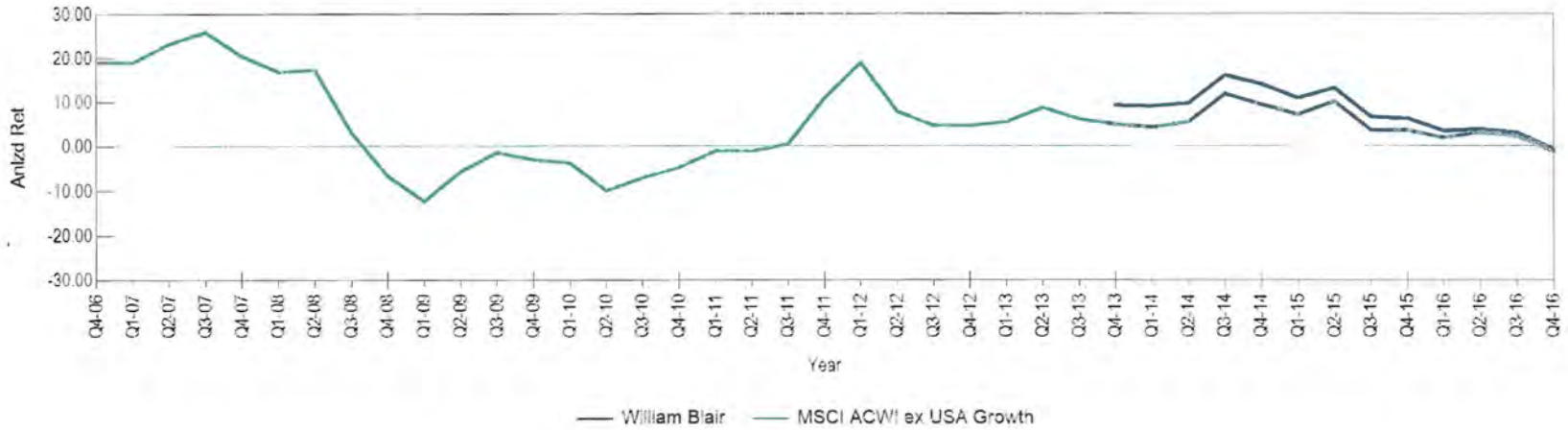
William Blair  
 Manager Performance Comparisons (Gross of Fees)

Period Ending: December 31, 2016

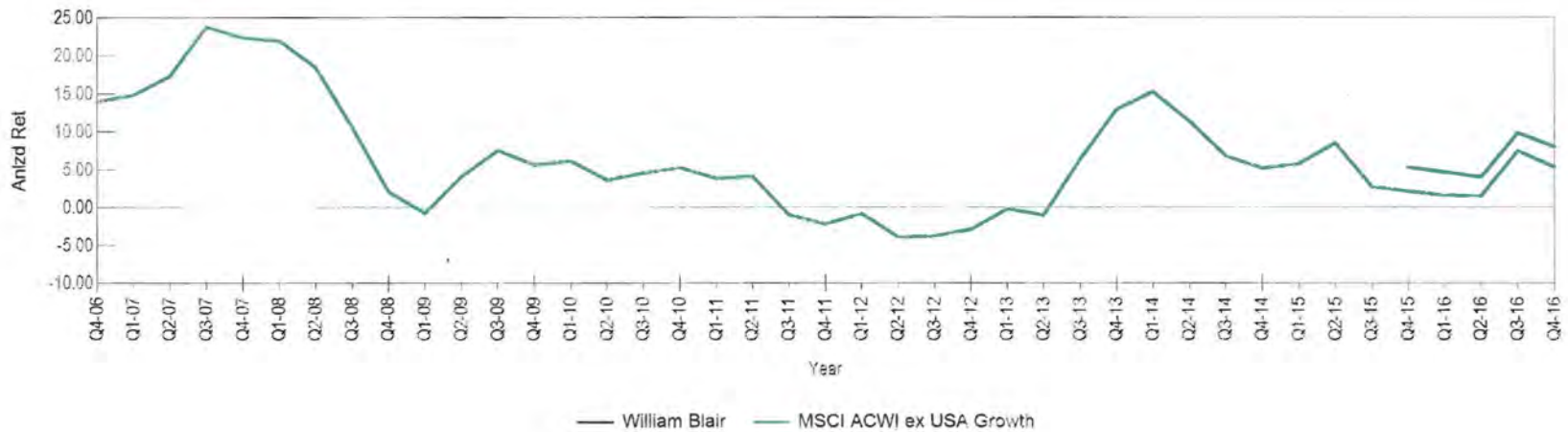


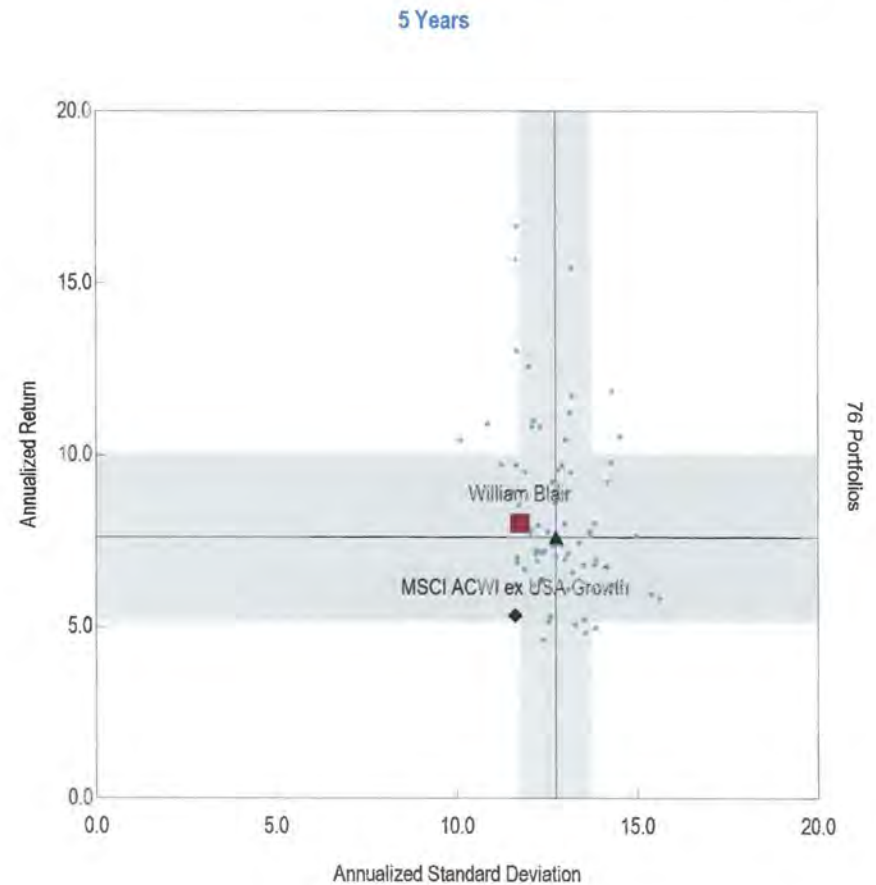
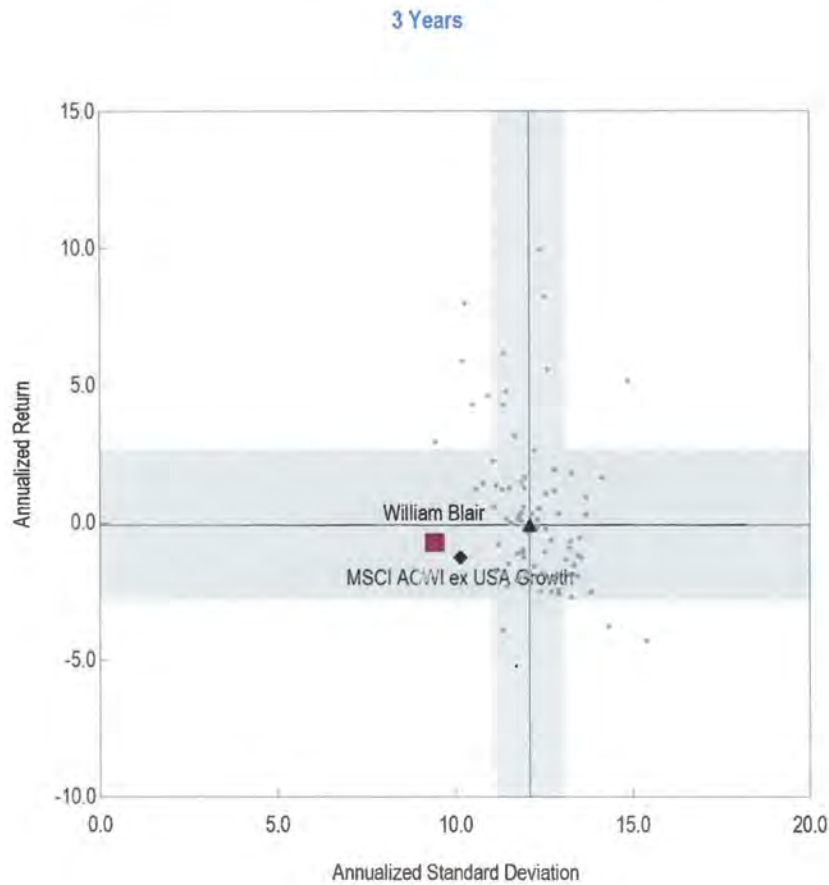
	Quarter	1 Year	3 Years	5 Years	10 Years	2016	2015	2014	2013	2012
5th Percentile	-2.1	6.6	5.8	12.7	7.7	6.6	16.3	3.2	33.0	24.6
25th Percentile	-3.9	2.1	1.4	9.6	4.4	2.1	9.0	-0.1	24.3	21.9
Median	-5.4	-0.6	-0.1	7.6	3.8	-0.6	3.5	-2.5	20.3	19.3
75th Percentile	-7.7	-3.6	-1.6	6.8	2.6	-3.6	-0.5	-5.3	17.5	16.9
95th Percentile	-9.4	-6.8	-2.6	5.1	0.6	-6.8	-5.4	-8.2	14.0	13.7
# of Portfolios	90	90	84	76	57	90	70	50	46	51
● William Blair	-3.9 (24)	-1.4 (56)	-0.7 (60)	8.0 (39)	-- (--)	-1.4 (56)	0.5 (69)	-1.2 (37)	20.9 (44)	24.3 (6)
▲ MSCI ACWI ex USA Growth	-5.7 (53)	0.1 (46)	-1.3 (69)	5.3 (92)	1.5 (90)	0.1 (46)	-1.3 (83)	-2.6 (53)	15.5 (87)	16.7 (78)

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)





	3 Years		
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
William Blair	-0.7%	9.4%	-0.1
MSCI ACWI ex USA Growth	-1.3%	10.1%	-0.1
eA ACWI ex-US Growth Equity Gross Median	-0.1%	12.1%	0.0

	5 Years		
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
William Blair	8.0%	11.8%	0.7
MSCI ACWI ex USA Growth	5.3%	11.6%	0.5
eA ACWI ex-US Growth Equity Gross Median	7.6%	12.7%	0.6



## Global Equity Managers

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# Artisan Partners Manager Portfolio Overview

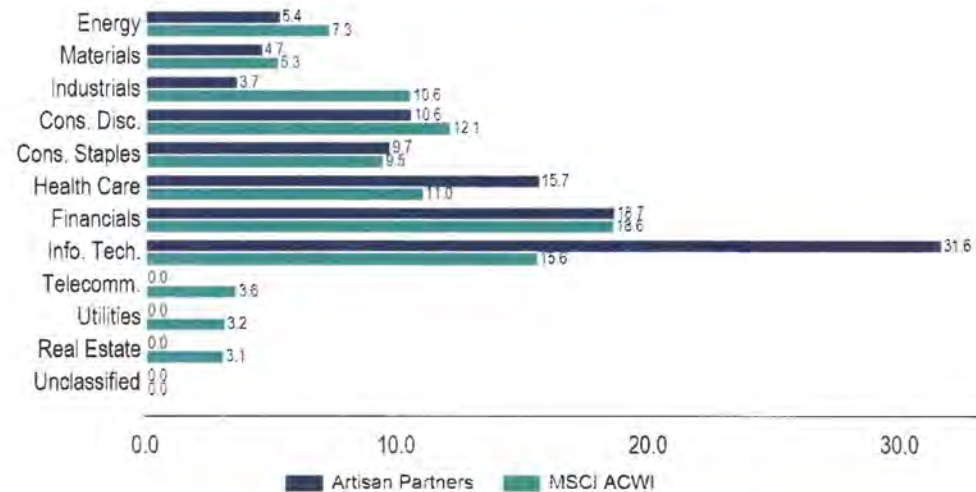
Period Ending: December 31, 2016

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

## Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	46	2,486
Weighted Avg. Market Cap. (\$B)	61.98	93.92
Median Market Cap. (\$B)	27.86	8.37
Price To Earnings	38.38	21.49
Price To Book	6.46	3.23
Price To Sales	7.47	2.52
Return on Equity (%)	14.21	15.32
Yield (%)	0.83	2.46
Beta	1.11	1.00

## Sector Allocation (%) vs MSCI ACWI



## Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
<b>Totals</b>		
Developed	95.5%	89.6%
Emerging*	4.5%	10.4%
<b>Top 10 Largest Countries</b>		
United States	60.8%	54.0%
Japan	8.5%	7.8%
United Kingdom	6.8%	5.9%
Hong Kong	5.0%	1.0%
Australia	4.7%	2.4%
Denmark	3.3%	0.5%
France	2.4%	3.3%
Germany	2.2%	3.0%
Netherlands	1.8%	1.1%
Brazil*	1.2%	0.8%
<b>Total-Top 10 Largest Countries</b>	<b>96.7%</b>	<b>79.9%</b>

## Top Contributors

	Avg Wgt	Return	Contribution
ANTHEM	1.73	15.25	0.26
NOBLE ENERGY	1.42	6.78	0.10
SCHLUMBERGER	1.19	7.38	0.09
JAMES HARDIE INDS.CDI.	2.35	2.98	0.07
AVAGO TECHNOLOGIES	2.15	3.05	0.07
BRENNTAG	2.10	2.93	0.06
STANLEY ELECTRIC	1.75	2.47	0.04
ASML HLDG.ADR 1:1	1.06	2.39	0.03
STARBUCKS	0.79	3.02	0.02
LION	0.91	2.57	0.02

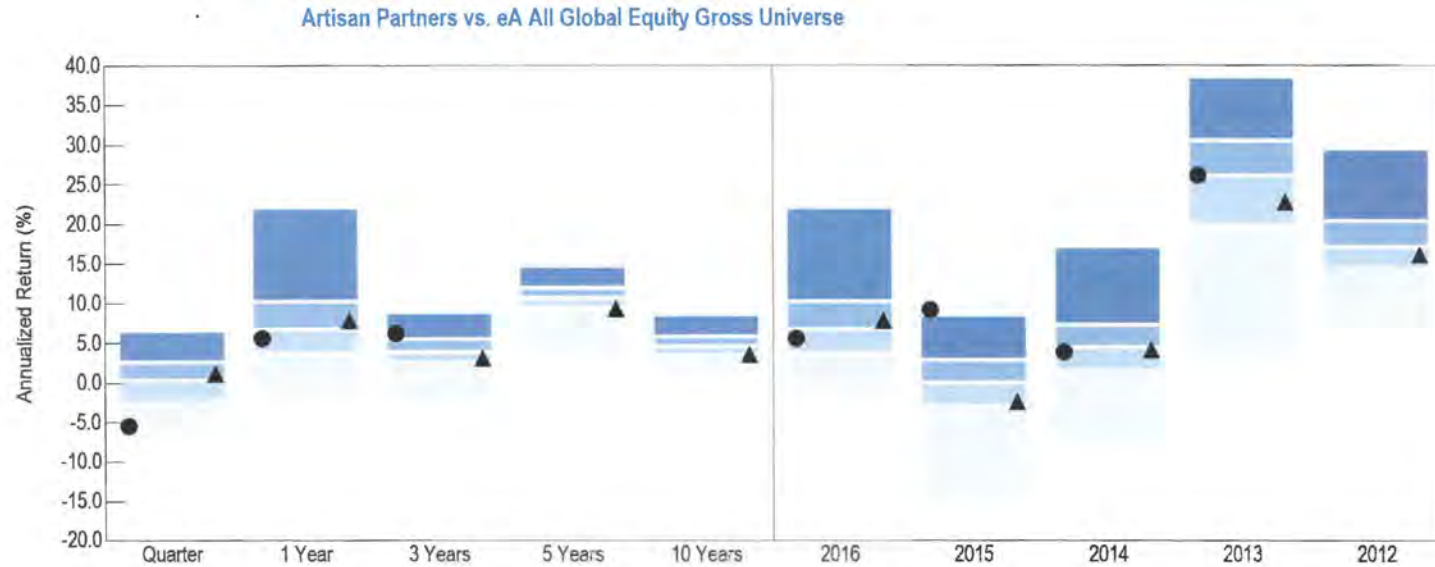
## Bottom Contributors

	Avg Wgt	Return	Contribution
MCGRAW HILL FINANCIAL	4.44	-14.77	-0.66
WORKDAY CLASS A	2.24	-27.92	-0.63
MARKIT	9.23	-5.70	-0.53
NINTENDO	2.51	-19.92	-0.50
LKQ	3.41	-13.56	-0.46
TENCENT HOLDINGS	4.19	-10.91	-0.46
FACEBOOK CLASS A	4.16	-10.31	-0.43
DEXCOM	1.27	-31.90	-0.40
AMOREPACIFIC	1.37	-24.64	-0.34
BOSTON SCIENTIFIC	3.67	-9.12	-0.33

Unclassified sector allocation includes cash allocations.

Artisan Partners  
 Manager Performance Comparisons (Gross of Fees)

Period Ending: December 31, 2016



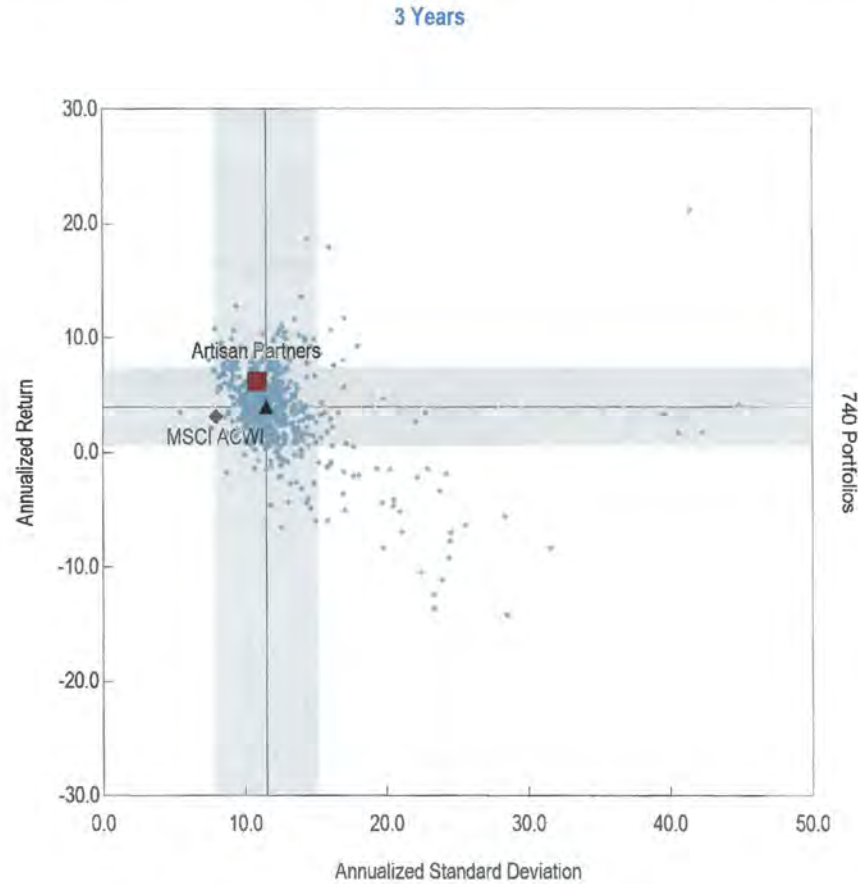
	Quarter	1 Year	3 Years	5 Years	10 Years	2016	2015	2014	2013	2012
5th Percentile	6.6	22.0	8.9	14.7	8.6	22.0	8.5	17.1	38.6	29.5
25th Percentile	2.7	10.3	5.6	12.0	5.9	10.3	3.0	7.4	30.6	20.4
Median	0.4	6.8	4.0	10.8	4.6	6.8	0.1	4.6	26.2	17.2
75th Percentile	-2.4	3.8	2.6	9.6	3.6	3.8	-2.9	1.5	20.0	14.4
95th Percentile	-5.8	-1.4	-2.1	3.7	0.9	-1.4	-15.1	-7.4	2.7	7.4
# of Portfolios	808	807	740	652	363	807	692	609	552	475
● Artisan Partners	-5.5 (94)	5.6 (61)	6.2 (19)	-- (--)	-- (--)	5.6 (61)	9.2 (4)	3.9 (56)	26.1 (51)	-- (--)
▲ MSCI ACWI	1.2 (43)	7.9 (42)	3.1 (66)	9.4 (78)	3.6 (75)	7.9 (42)	-2.4 (73)	4.2 (54)	22.8 (66)	16.1 (61)

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

Period Ending: December 31, 2016







3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Artisan Partners	6.2%	10.9%	0.6
MSCI ACWI	3.1%	8.0%	0.4
eA All Global Equity Gross Median	4.0%	11.5%	0.3

# First Eagle Manager Portfolio Overview

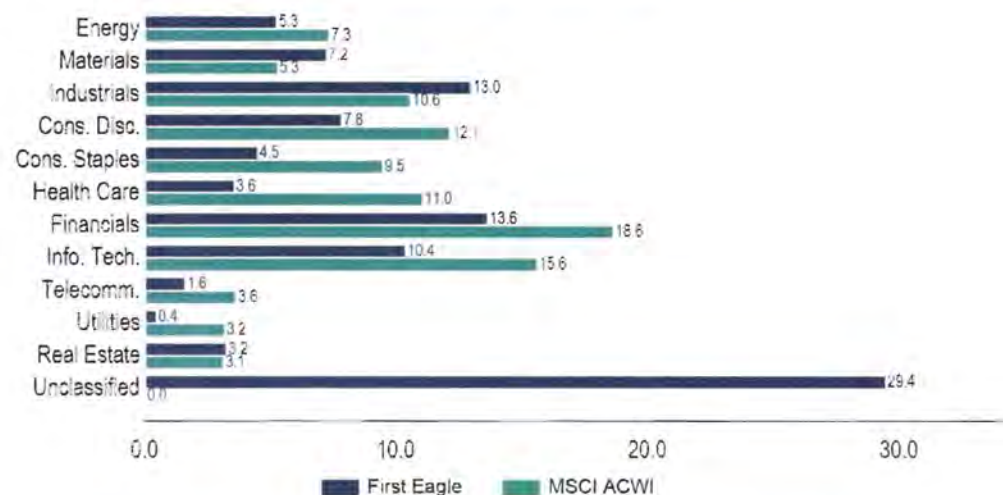
Period Ending: December 31, 2016

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

## Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	173	2,486
Weighted Avg. Market Cap. (\$B)	55.99	93.92
Median Market Cap. (\$B)	15.24	8.37
Price To Earnings	22.77	21.49
Price To Book	3.45	3.23
Price To Sales	2.89	2.52
Return on Equity (%)	14.92	15.32
Yield (%)	1.98	2.46
Beta	0.78	1.00

## Sector Allocation (%) vs MSCI ACWI



## Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
<b>Totals</b>		
Developed	77.1%	89.6%
Emerging*	3.3%	10.4%
Cash	19.6%	
<b>Top 10 Largest Countries</b>		
United States	45.6%	54.0%
Cash	19.6%	0.0%
Japan	12.1%	7.8%
France	5.3%	3.3%
Canada	3.6%	3.3%
United Kingdom	2.7%	5.9%
Germany	1.7%	3.0%
Mexico*	1.4%	0.4%
Switzerland	1.2%	2.8%
Singapore	1.2%	0.4%
<b>Total-Top 10 Largest Countries</b>	<b>94.5%</b>	<b>80.8%</b>

## Top Contributors

	Avg Wgt	Return	Contribution
BANK OF NEW YORK MELLON	1.39	19.33	0.27
AMERICAN EXPRESS	1.48	16.25	0.24
BB&T	0.86	25.62	0.22
SYNCHRONY FINANCIAL	0.68	30.13	0.20
DEERE	0.78	21.43	0.17
SOMPO JAPAN NPNK.HDG.	1.01	15.94	0.16
US BANCORP	0.79	20.42	0.16
MICROSOFT	1.86	8.60	0.16
FMC TECHNOLOGIES	0.69	19.75	0.14
W R BERKLEY	0.71	16.40	0.12

## Bottom Contributors

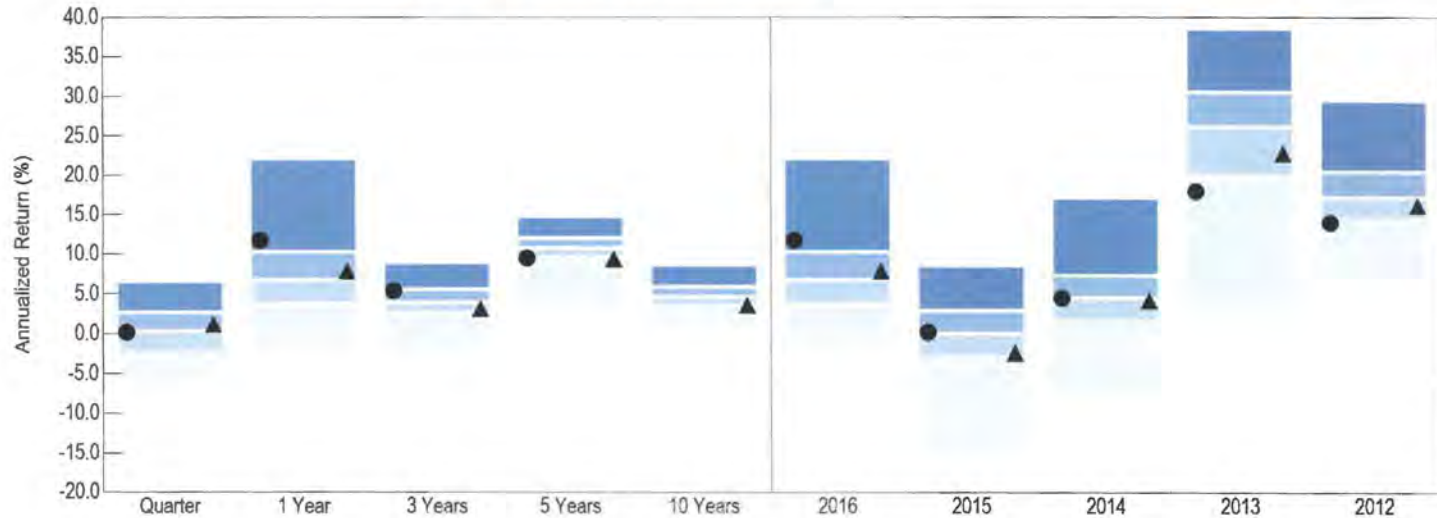
	Avg Wgt	Return	Contribution
KDDI	1.83	-17.51	-0.32
FRESNILLO	0.64	-35.97	-0.23
SMC	1.22	-16.14	-0.20
KT & G	0.64	-26.32	-0.17
GRUPO TELEVISIA SPN.ADR	0.82	-18.68	-0.15
1:5			
AGNICO EAGLE MINES	0.62	-21.84	-0.14
DANONE	0.93	-14.45	-0.13
NEWCREST MINING	0.86	-13.65	-0.12
GOLDCORP (NYS)	0.59	-17.55	-0.10
TERADATA	0.66	-12.35	-0.08

Unclassified sector allocation includes cash allocations and Gold allocations (5.9% as of 12/31/2016).

First Eagle  
 Manager Performance Comparisons (Gross of Fees)

Period Ending: December 31, 2016

First Eagle vs. eA All Global Equity Gross Universe

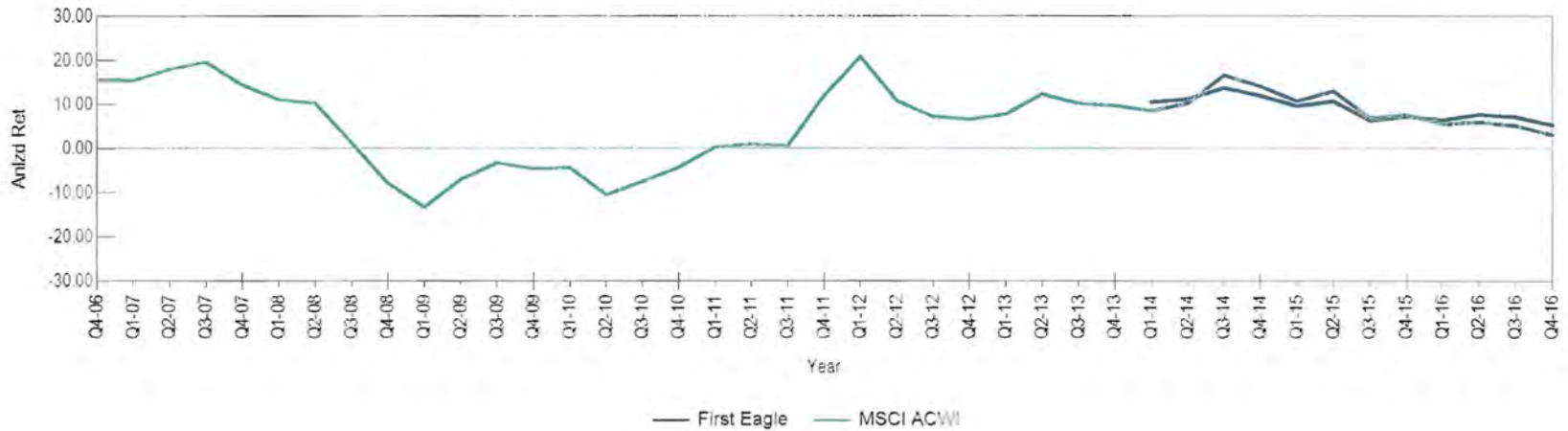


	Quarter	1 Year	3 Years	5 Years	10 Years	2016	2015	2014	2013	2012
5th Percentile	6.6	22.0	8.9	14.7	8.6	22.0	8.5	17.1	38.6	29.5
25th Percentile	2.7	10.3	5.6	12.0	5.9	10.3	3.0	7.4	30.6	20.4
Median	0.4	6.8	4.0	10.3	4.6	6.8	0.1	4.6	26.2	17.2
75th Percentile	-2.4	3.8	2.6	9.6	3.6	3.8	-2.9	1.5	20.0	14.4
95th Percentile	-5.8	-1.4	-2.1	3.7	0.0	-1.4	-15.1	-7.4	2.7	7.4
# of Portfolios	808	807	740	652	363	807	692	609	552	475
● First Eagle	0.2 (53)	11.7 (18)	5.3 (29)	9.5 (77)	-- (--)	11.7 (18)	0.2 (49)	4.5 (51)	17.9 (80)	13.9 (78)
▲ MSCI ACWI	1.2 (43)	7.9 (42)	3.1 (66)	9.4 (78)	3.6 (75)	7.9 (42)	-2.4 (73)	4.2 (54)	22.8 (66)	16.1 (61)

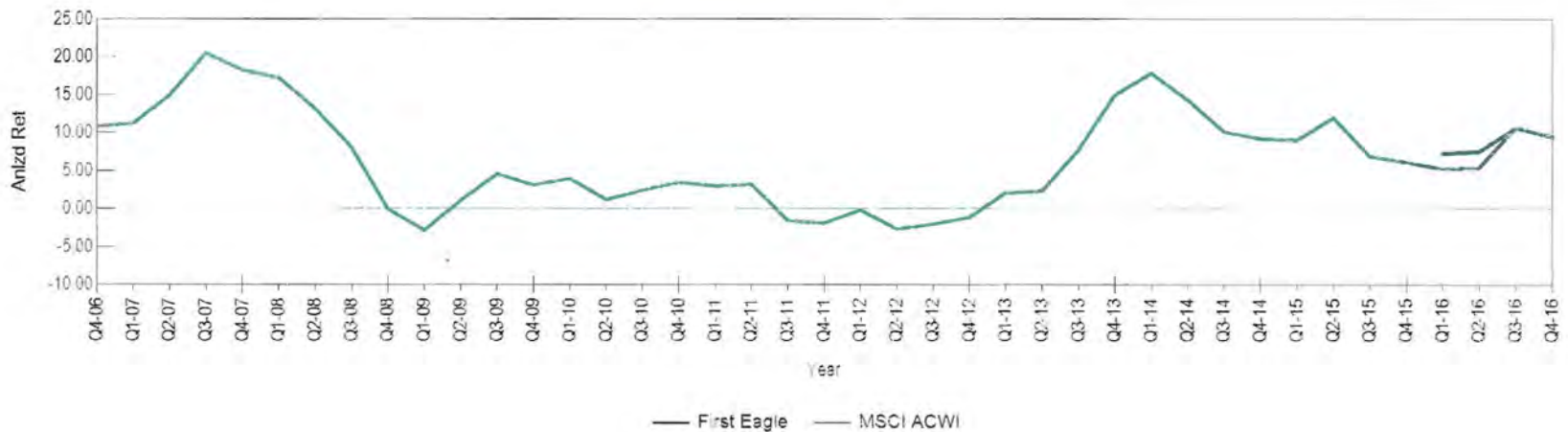
First Eagle  
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2016

Rolling 3 Year Annualized Return (%)



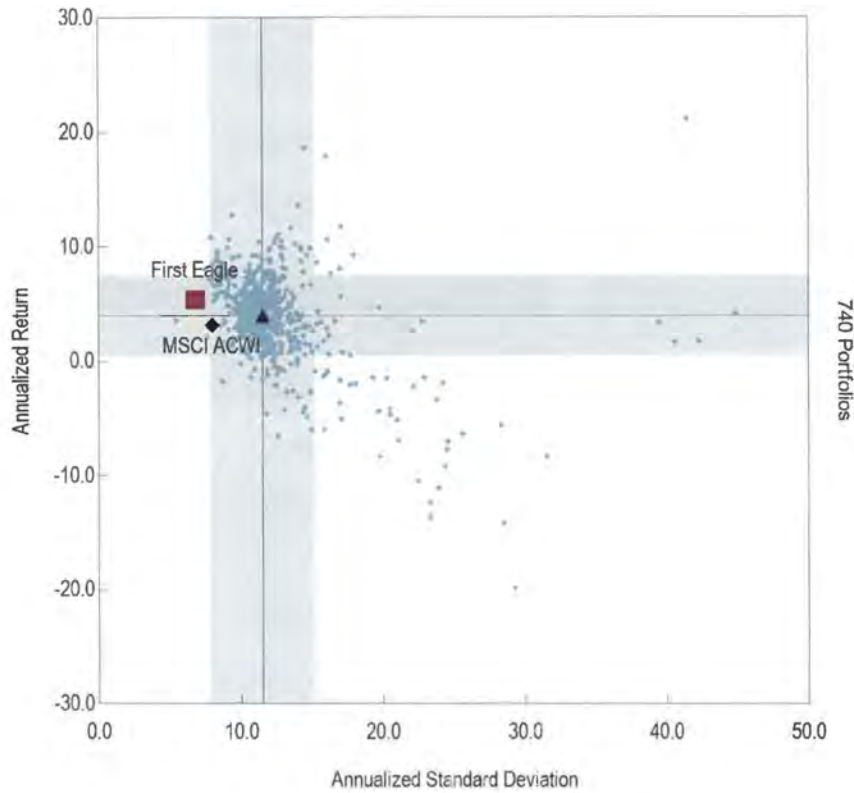
Rolling 5 Year Annualized Return (%)



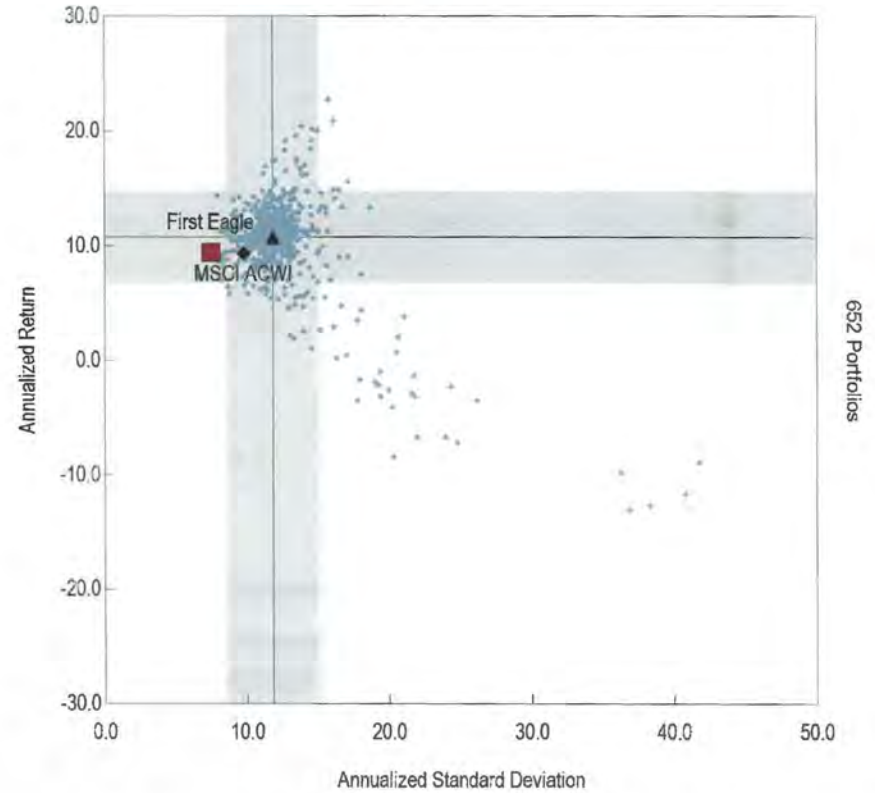
First Eagle  
Risk vs. Return 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2016

3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
First Eagle	5.3%	6.8%	0.8
MSCI ACWI	3.1%	8.0%	0.4
eA All Global Equity Gross Median	4.0%	11.5%	0.3

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
First Eagle	9.5%	7.5%	1.2
MSCI ACWI	9.4%	9.8%	0.9
eA All Global Equity Gross Median	10.8%	11.8%	0.9

# Intech Global Low Vol Manager Portfolio Overview

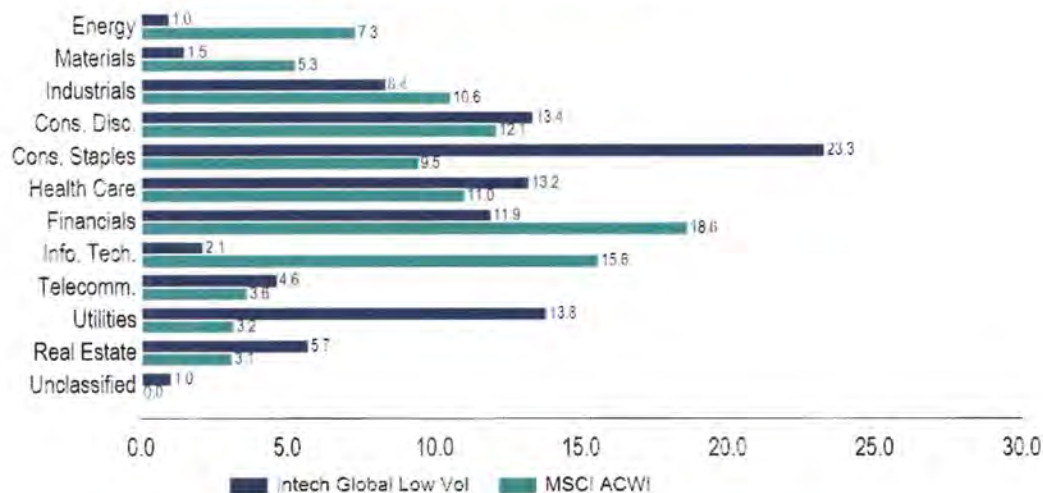
Period Ending: December 31, 2016

Global equity diversified portfolio focused on maintaining volatility at or below the benchmark. Primary personnel include Adrian Banner, Vassilios Paphanagos, and Joseph Runnels.

## Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	400	2,486
Weighted Avg. Market Cap. (\$B)	41.19	93.92
Median Market Cap. (\$B)	10.83	8.37
Price To Earnings	23.80	21.49
Price To Book	4.12	3.23
Price To Sales	3.16	2.52
Return on Equity (%)	17.67	15.32
Yield (%)	2.67	2.46
Beta	0.40	1.00

## Sector Allocation (%) vs MSCI ACWI



## Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
<b>Totals</b>		
Developed	99.0%	89.6%
Cash	1.0%	
<b>Top 10 Largest Countries</b>		
United States	60.3%	54.0%
Japan	17.2%	7.8%
Hong Kong	8.1%	1.0%
Canada	3.4%	3.3%
Israel	2.5%	0.2%
Switzerland	2.0%	2.8%
Singapore	1.5%	0.4%
Cash	1.0%	0.0%
Denmark	0.8%	0.5%
New Zealand	0.7%	0.1%
<b>Total-Top 10 Largest Countries</b>	<b>97.5%</b>	<b>70.2%</b>

## Top Contributors

	Avg Wgt	Return	Contribution
HUMANA	0.87	15.53	0.14
HERSHEY	1.39	8.87	0.12
MCDONALDS	1.88	6.34	0.12
AXIS CAPITAL HDG.	0.57	20.84	0.12
CME GROUP	0.77	13.99	0.11
ARCH CAP.GP.	1.09	8.87	0.10
FAST RETAILING	0.72	12.47	0.09
RENAISSANCERE HDG.	0.64	13.63	0.09
DARDEN RESTAURANTS	0.39	19.67	0.08
PEOPLES UNITED FINANCIAL	0.30	23.66	0.07

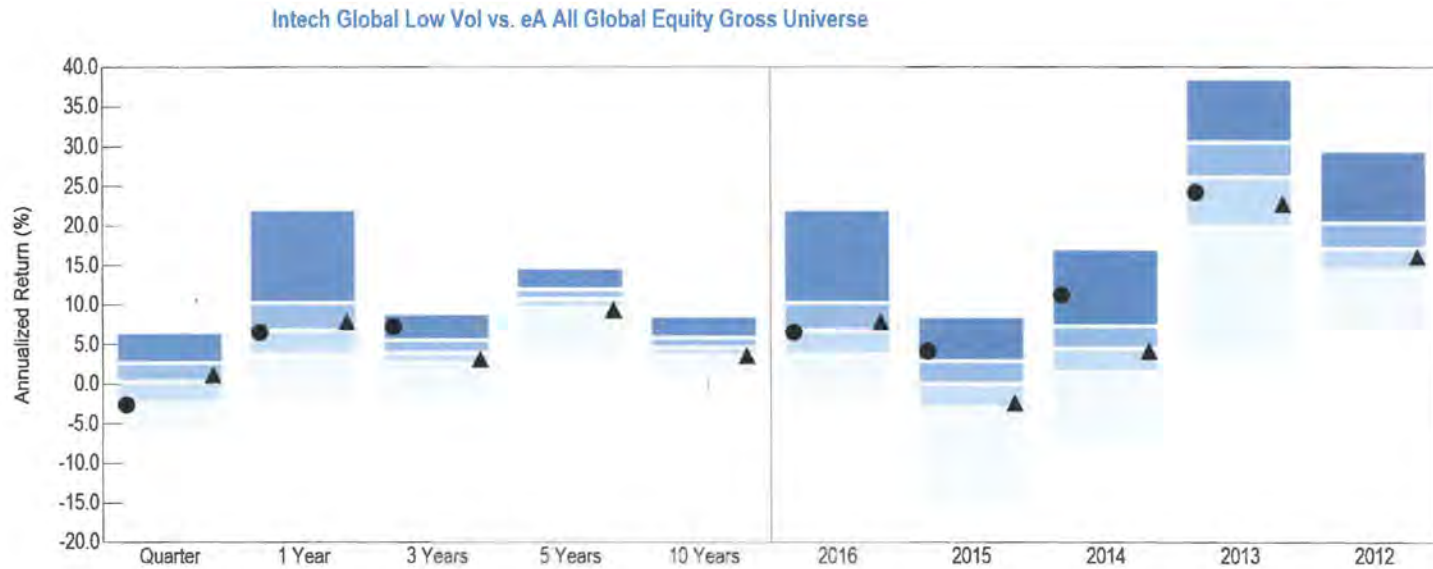
## Bottom Contributors

	Avg Wgt	Return	Contribution
CLP HOLDINGS	2.23	-10.38	-0.23
KIMBERLY-CLARK	2.18	-8.80	-0.19
PROCTER & GAMBLE	3.09	-5.58	-0.17
FAIRFAX FINL.HDG.	0.96	-17.32	-0.17
SOUTHERN HOLDINGS	5.21	-2.98	-0.16
POWER ASSETS HOLDINGS	1.06	-9.56	-0.10
GENERAL MILLS	3.77	-2.56	-0.10
TEVA PHARMACEUTICAL	0.38	-23.43	-0.09
AGNICO EAGLE MINES	0.40	-21.84	-0.09
CHUGAI PHARM.	0.42	-19.24	-0.08

Unclassified sector allocation includes cash allocations.

Intech Global Low Vol  
 Manager Performance Comparisons (Gross of Fees)

Period Ending: December 31, 2016



	Return (Rank)												
5th Percentile	6.6	22.0	8.9	14.7	8.6	22.0	8.5	17.1	38.6	29.5			
25th Percentile	2.7	10.3	5.6	12.0	5.9	10.3	3.0	7.4	30.6	20.4			
Median	0.4	6.8	4.0	10.8	4.6	6.8	0.1	4.6	26.2	17.2			
75th Percentile	-2.4	3.8	2.6	9.6	3.6	3.8	-2.9	1.5	20.0	14.4			
95th Percentile	-5.8	-1.4	-2.1	3.7	0.9	-1.4	-15.1	-7.4	2.7	7.4			
# of Portfolios	808	807	740	652	363	807	692	609	552	475			
● Intech Global Low Vol	-2.6 (77)	6.5 (53)	7.2 (13)	-- (-)	-- (-)	6.5 (53)	4.1 (18)	11.2 (14)	24.2 (62)	-- (-)			
▲ MSCI ACWI	1.2 (43)	7.9 (42)	3.1 (66)	9.4 (78)	3.6 (75)	7.9 (42)	-2.4 (73)	4.2 (54)	22.8 (66)	16.1 (61)			

Intech Global Low Vol  
 Manager Performance - Rolling 3 Year (Gross of Fees)

Period Ending: December 31, 2016

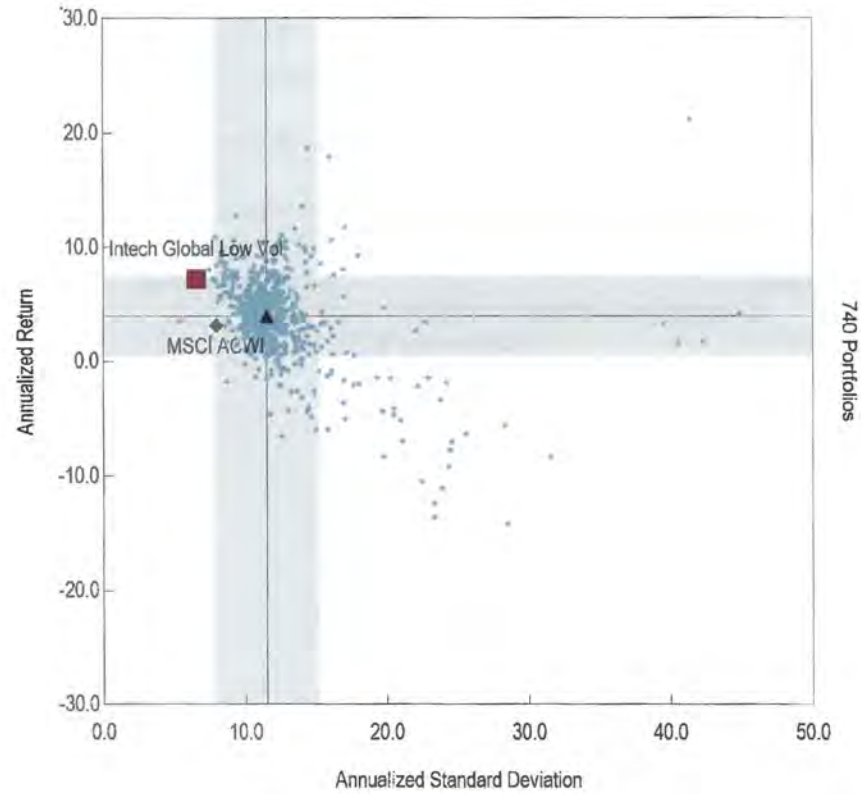




Intech Global Low Vol  
 Risk vs. Return 3 Year (Gross of Fees)

Period Ending: December 31, 2016

3 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Intech Global Low Vol	7.2%	6.6%	1.1
MSCI ACWI	3.1%	8.0%	0.4
eA All Global Equity Gross Median	4.0%	11.5%	0.3

# JP Morgan Global Opportunities Manager Portfolio Overview

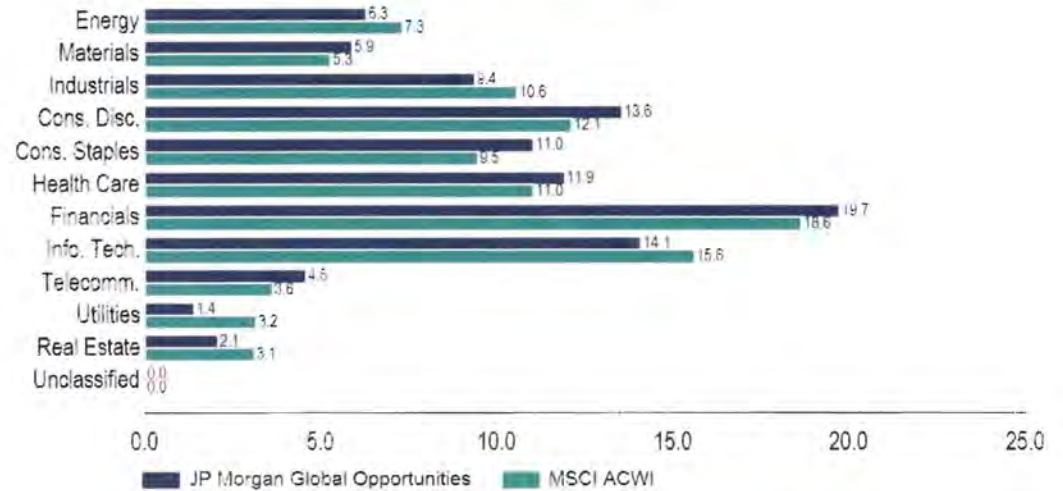
Period Ending: December 31, 2016

Global equity diversified portfolio focused on companies with valuations below their intrinsic value. Primary personnel include Jeroen Huysinga, Georgina Perceval-Maxwell, and Gerd Woort-Menker.

### Characteristics

	Portfolio	MSCI ACWI
Number of Holdings	106	2,486
Weighted Avg. Market Cap. (\$B)	73.36	93.92
Median Market Cap. (\$B)	41.53	8.37
Price To Earnings	21.40	21.49
Price To Book	3.92	3.23
Price To Sales	2.88	2.52
Return on Equity (%)	17.76	15.32
Yield (%)	1.87	2.46
Beta	1.10	1.00

### Sector Allocation (%) vs MSCI ACWI



### Country Allocation

	Manager Ending Allocation (USD)	Index Ending Allocation (USD)
<b>Totals</b>		
Developed	94.3%	89.6%
Emerging*	5.7%	10.4%
<b>Top 10 Largest Countries</b>		
United States	47.7%	54.0%
United Kingdom	11.4%	5.9%
Japan	9.2%	7.8%
France	5.5%	3.3%
Germany	3.3%	3.0%
Switzerland	2.8%	2.8%
Netherlands	2.7%	1.1%
Italy	2.2%	0.7%
Canada	1.9%	3.3%
Hong Kong	1.8%	1.0%
<b>Total-Top 10 Largest Countries</b>	<b>88.6%</b>	<b>82.8%</b>

### Top Contributors

	Avg Wgt	Return	Contribution
BANK OF AMERICA	1.38	41.72	0.58
MORGAN STANLEY	1.31	32.56	0.43
WELLS FARGO & CO	1.36	25.50	0.35
CITIGROUP	1.28	26.25	0.34
BNP PARIBAS	1.36	24.17	0.33
PRUDENTIAL	2.43	13.29	0.32
UNITEDHEALTH GROUP	1.74	14.77	0.26
ARCELORMITTAL	1.21	20.87	0.25
MITSUBISHI UFJ FINL.GP.	0.91	23.80	0.22
CHARLES SCHWAB	0.76	25.28	0.19

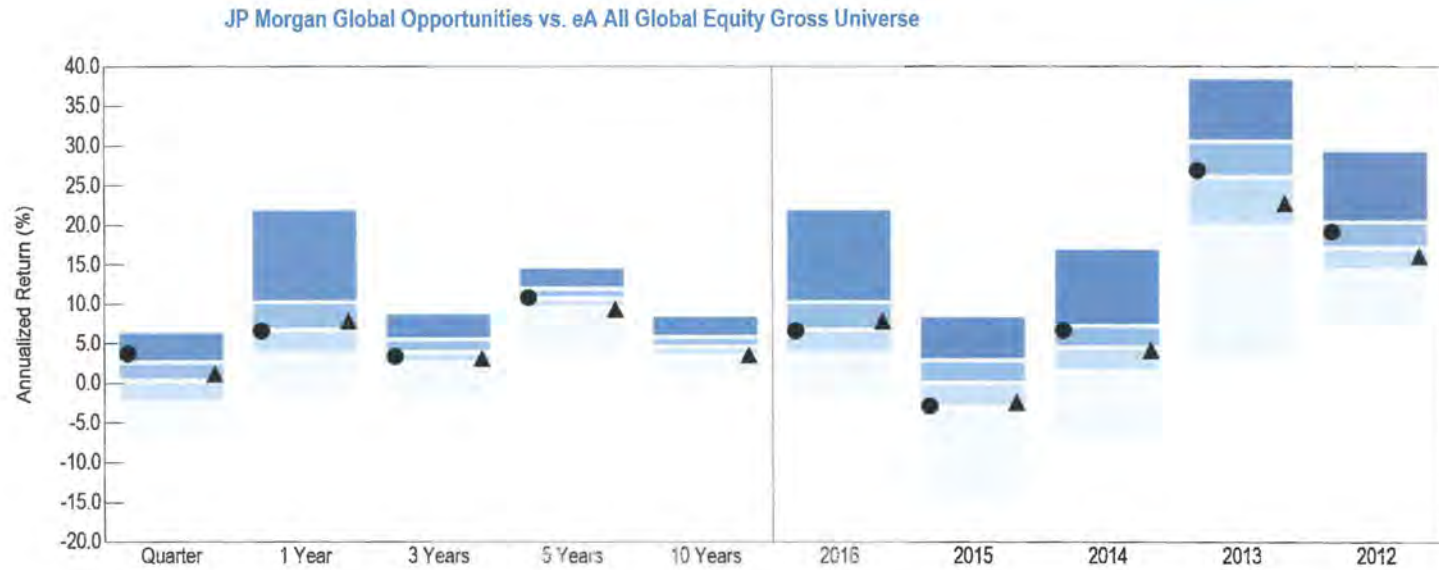
### Bottom Contributors

	Avg Wgt	Return	Contribution
ANHEUSER-BUSCH	1.70	-18.07	-0.31
INBEV	1.13	-21.83	-0.25
CHINA OS.LD.& INV.	1.87	-10.85	-0.20
SHIRE	1.36	-11.01	-0.15
MOLSON COORS BREWING 'B'	1.66	-7.94	-0.13
ROCHE HOLDING	0.80	-15.53	-0.12
VERTEX PHARMS.	0.96	-12.54	-0.12
VODAFONE GROUP	0.81	-14.73	-0.12
NASPERS	1.18	-8.60	-0.10
ALLERGAN	0.91	-11.04	-0.10
HENKEL PREF.			

Unclassified sector allocation includes cash allocations.

JP Morgan Global Opportunities  
 Manager Performance Comparisons (Gross of Fees)

Period Ending: December 31, 2016



	Quarter	1 Year	3 Years	5 Years	10 Years	2016	2015	2014	2013	2012
5th Percentile	6.6	22.0	8.9	14.7	8.6	22.0	8.5	17.1	38.6	29.5
25th Percentile	2.7	10.3	5.6	12.0	5.9	10.3	3.0	7.4	30.6	20.4
Median	0.4	6.8	4.0	10.8	4.6	6.8	0.1	4.6	26.2	17.2
75th Percentile	-2.4	3.8	2.6	9.6	3.6	3.8	-2.9	1.5	20.0	14.4
95th Percentile	-5.8	-1.4	-2.1	3.7	0.9	-1.4	-15.1	-7.4	2.7	7.4
# of Portfolios	808	807	740	652	363	807	692	609	552	475
● JP Morgan Global Opportunities	3.7 (18)	6.6 (51)	3.4 (61)	10.8 (49)	-- (-)	6.6 (51)	-2.9 (75)	6.7 (30)	26.9 (46)	19.2 (32)
▲ MSCI ACWI	1.2 (43)	7.9 (42)	3.1 (66)	9.4 (78)	3.6 (75)	7.9 (42)	-2.4 (73)	4.2 (54)	22.8 (66)	16.1 (61)

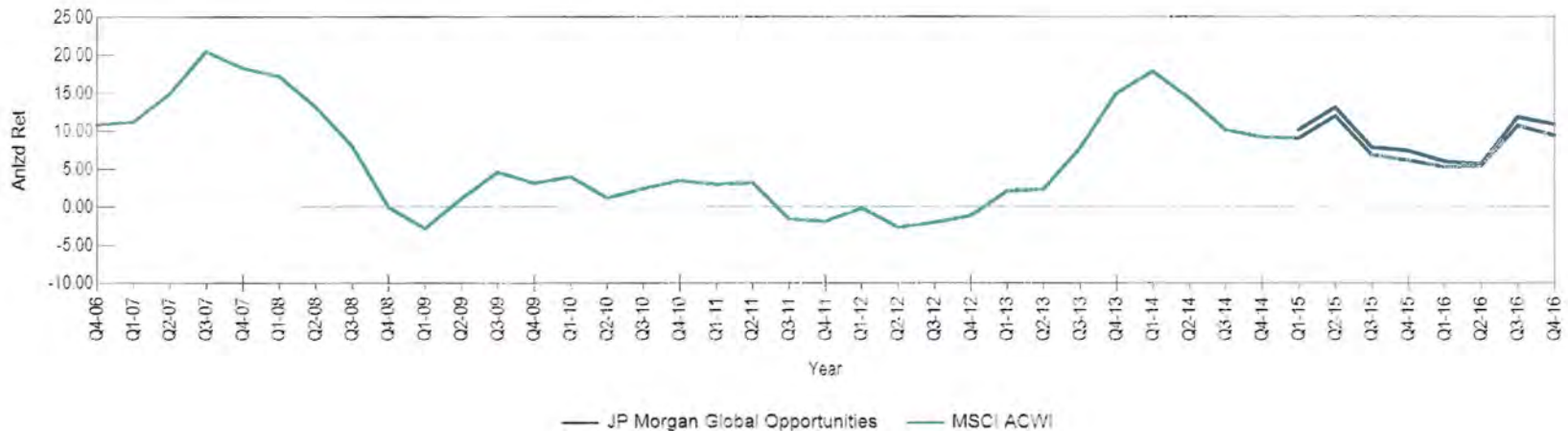
JP Morgan Global Opportunities  
 Manager Performance - Rolling 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2016

Rolling 3 Year Annualized Return (%)



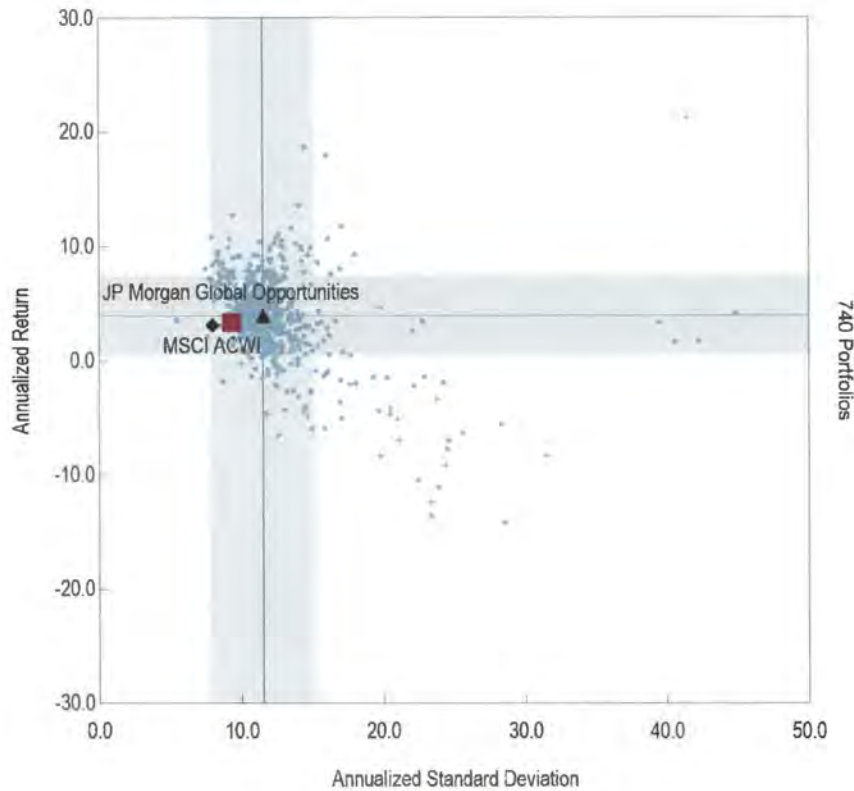
Rolling 5 Year Annualized Return (%)



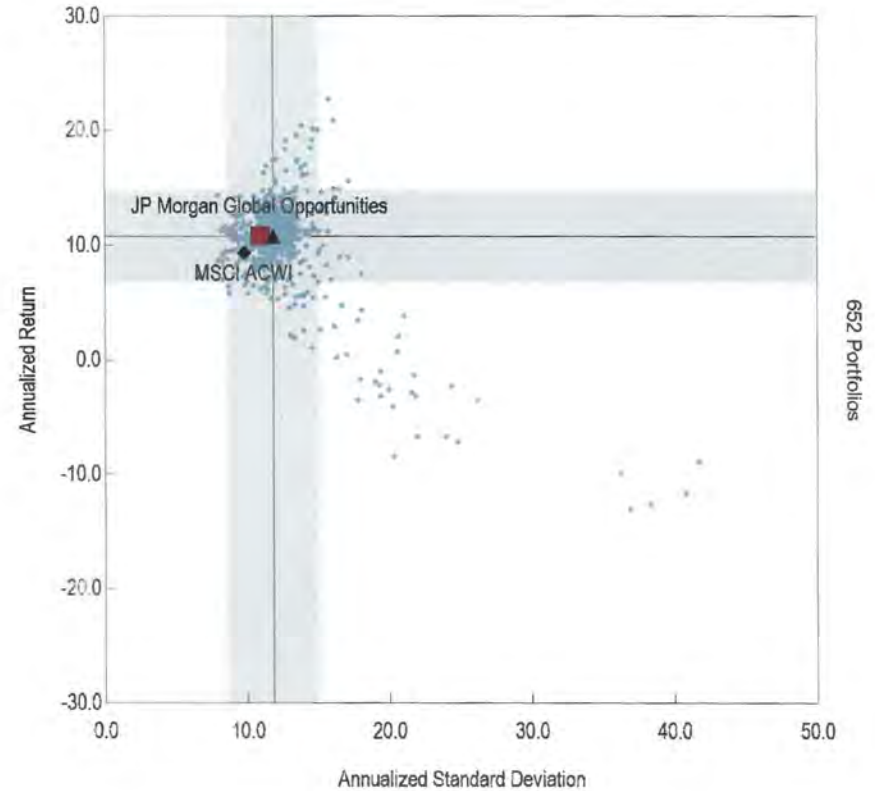
JP Morgan Global Opportunities  
 Risk vs. Return 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2016

3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
JP Morgan Global Opportunities	3.4%	9.3%	0.4
MSCI ACWI	3.1%	8.0%	0.4
eA All Global Equity Gross Median	4.0%	11.5%	0.3

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
JP Morgan Global Opportunities	10.8%	10.9%	1.0
MSCI ACWI	9.4%	9.8%	0.9
eA All Global Equity Gross Median	10.8%	11.8%	0.9



## **Domestic Fixed Income Managers**

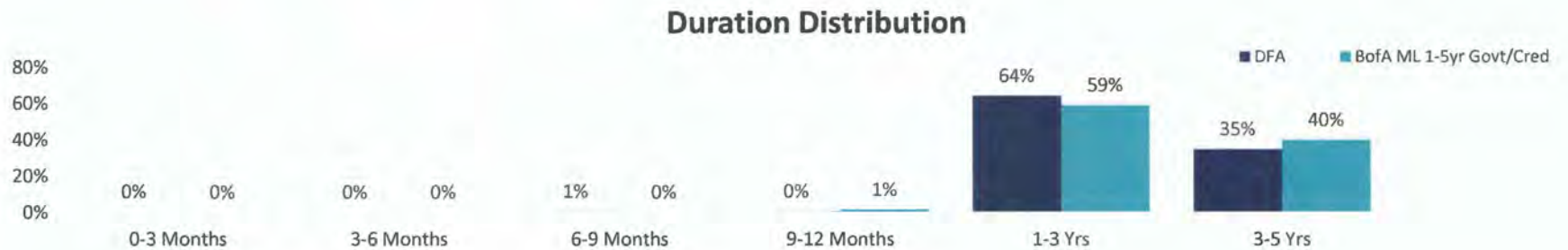
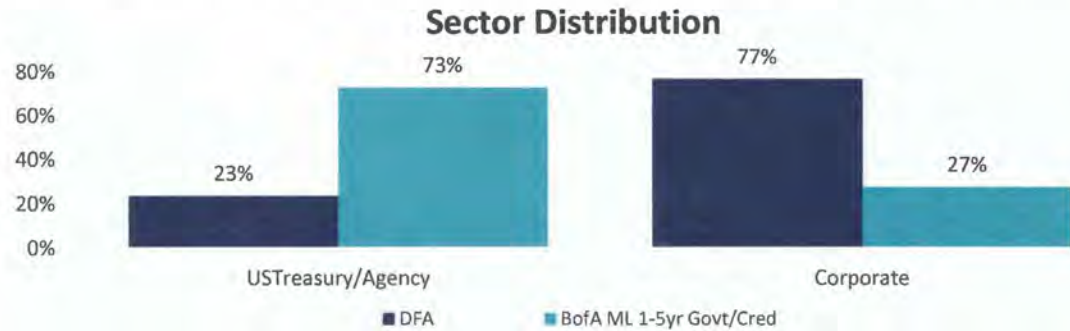
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DFA Short Credit  
 Manager Portfolio Overview

Period Ending: December 31, 2016

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

	DFA	BofA ML 1-5yr Gov/Credit
Effective Duration	2.70	2.70
Yield to Maturity	2.23	1.73
Average Quality	A	Aa1
Average Coupon	2.65%	2.45%



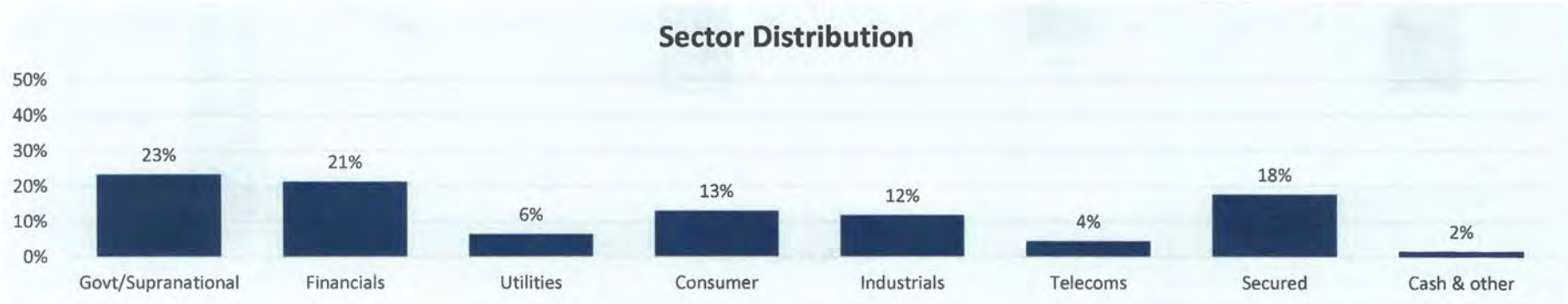


Insight Short Duration  
 Manager Portfolio Overview

Period Ending: December 31, 2016

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

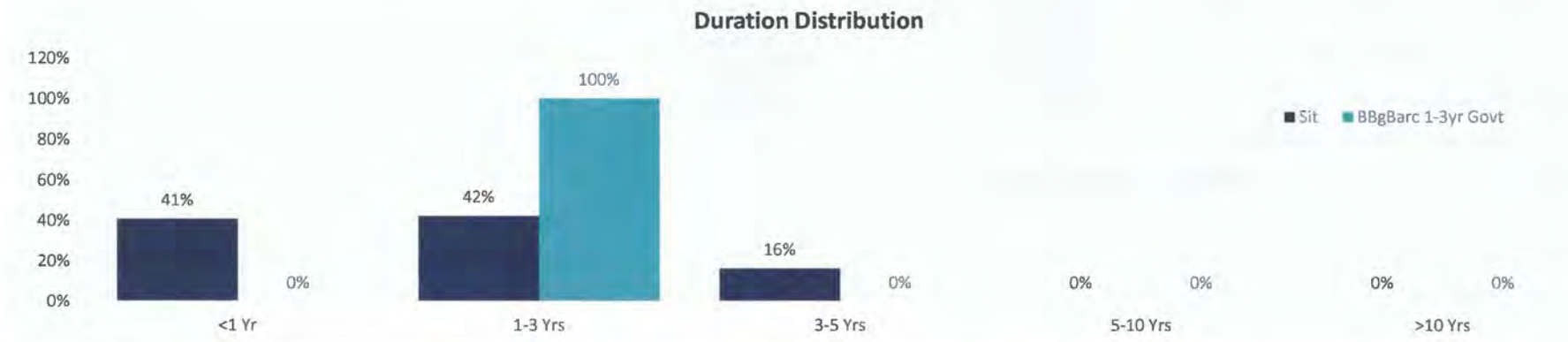
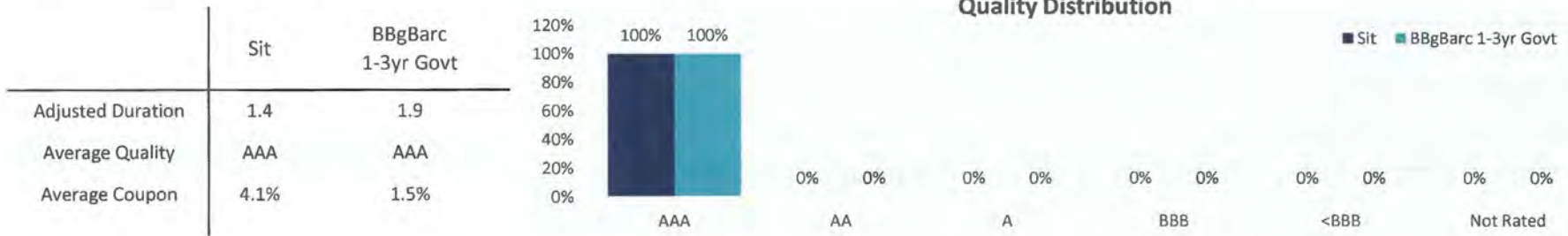
	Insight
Effective Duration	1.58
Yield to Maturity	1.60
Average Quality	AA-



# Sit Short Duration Manager Portfolio Overview

Period Ending: December 31, 2016

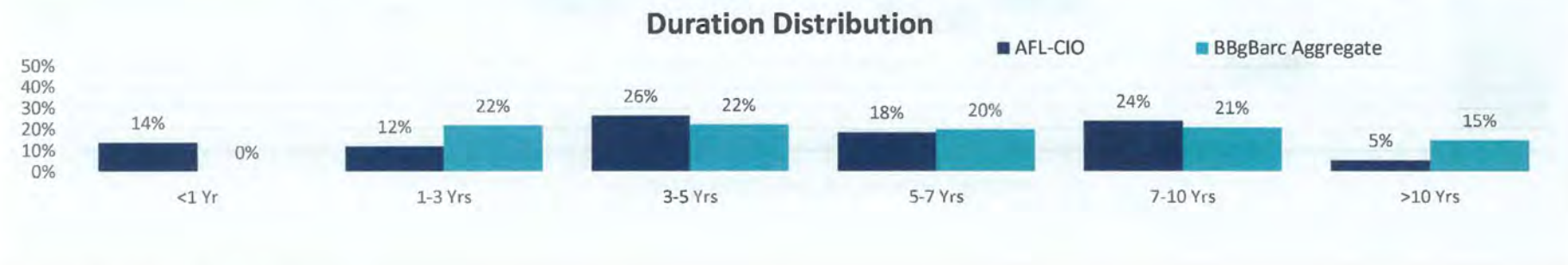
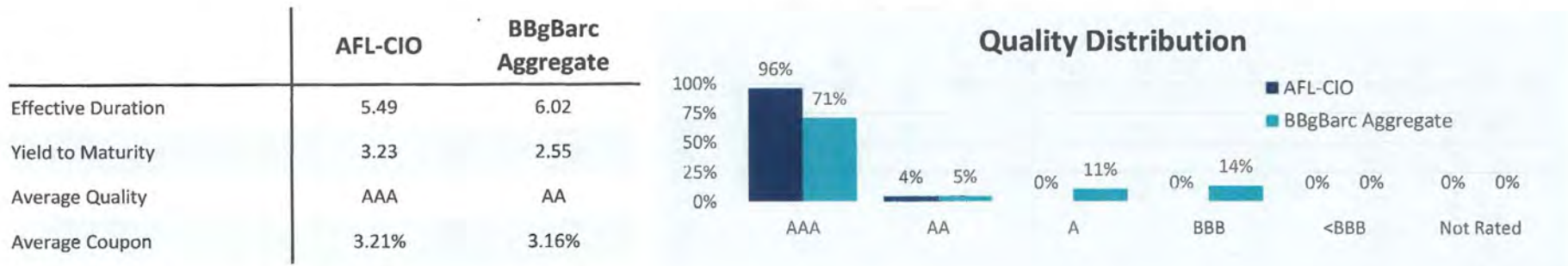
Short duration fixed income portfolio with a focus on earning high levels of interest income. Primary personnel include Bryce Doty, Paul Jungquist and Michael Brilley.



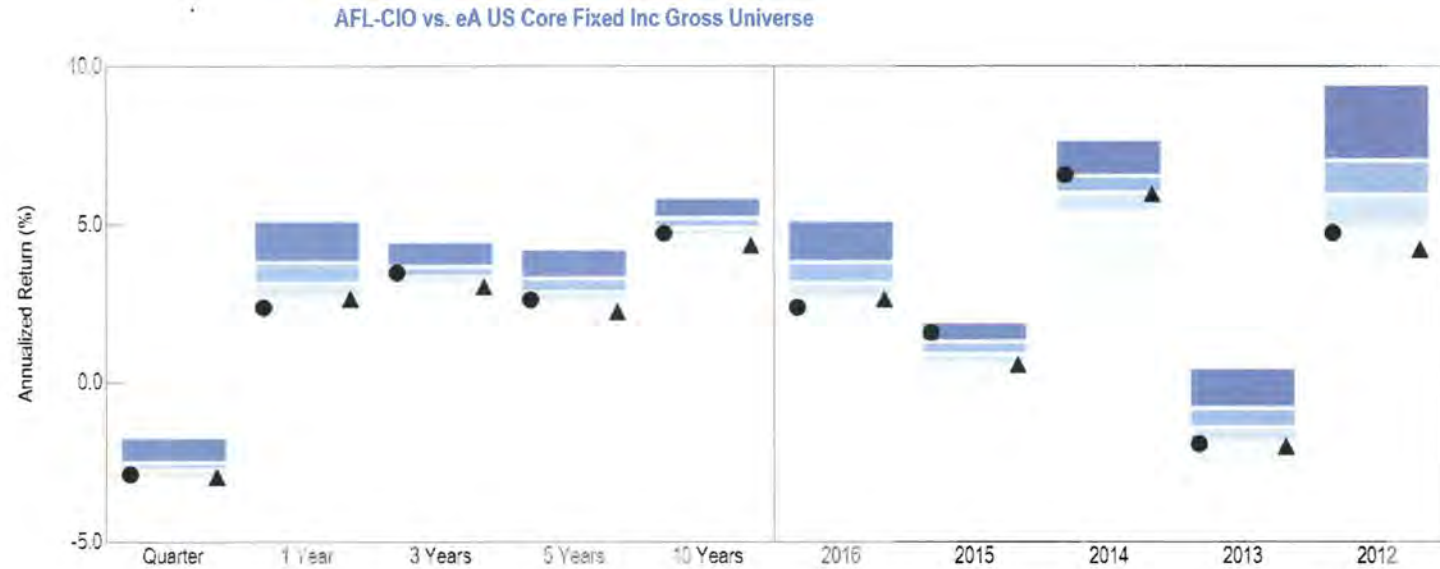
**AFL-CIO**  
**Manager Portfolio Overview**

Period Ending: December 31, 2016

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



Duration and Quality distributions exclude cash.



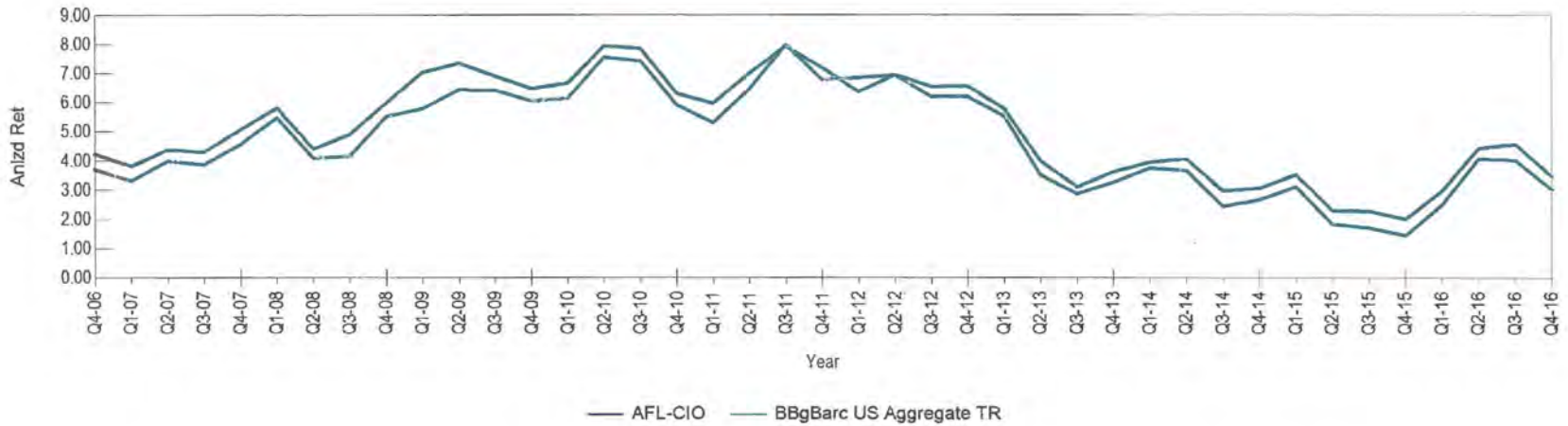
	Quarter	1 Year	3 Years	5 Years	10 Years	2016	2015	2014	2013	2012
5th Percentile	-1.7	5.1	4.5	4.2	5.8	5.1	1.9	7.7	0.5	9.4
25th Percentile	-2.5	3.8	3.7	3.3	5.2	3.8	1.3	6.5	-0.8	7.0
Median	-2.7	3.2	3.3	2.9	4.9	3.2	0.9	6.0	-1.4	5.9
75th Percentile	-3.0	2.7	3.1	2.5	4.6	2.7	0.5	5.4	-1.9	4.9
95th Percentile	-3.3	2.0	2.7	2.1	4.1	2.0	-0.1	2.9	-2.7	3.7
# of Portfolios	216	216	214	212	190	216	196	213	209	228
● AFL-CIO	-2.9 (68)	2.4 (87)	3.5 (38)	2.6 (69)	4.7 (68)	2.4 (87)	1.6 (15)	6.6 (25)	-1.9 (78)	4.7 (80)
▲ BBgBarc US Aggregate TR	-3.0 (75)	2.6 (77)	3.0 (81)	2.2 (92)	4.3 (90)	2.6 (77)	0.6 (75)	6.0 (52)	-2.0 (82)	4.2 (90)

AFL-CIO

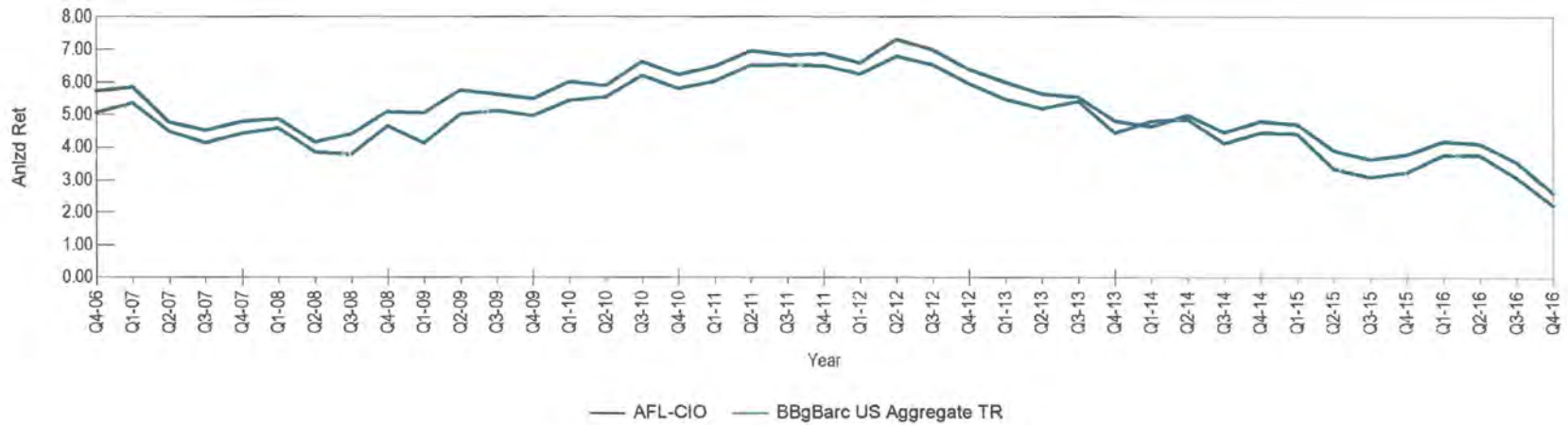
Manager Performance - Rolling 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2016

Rolling 3 Year Annualized Return (%)



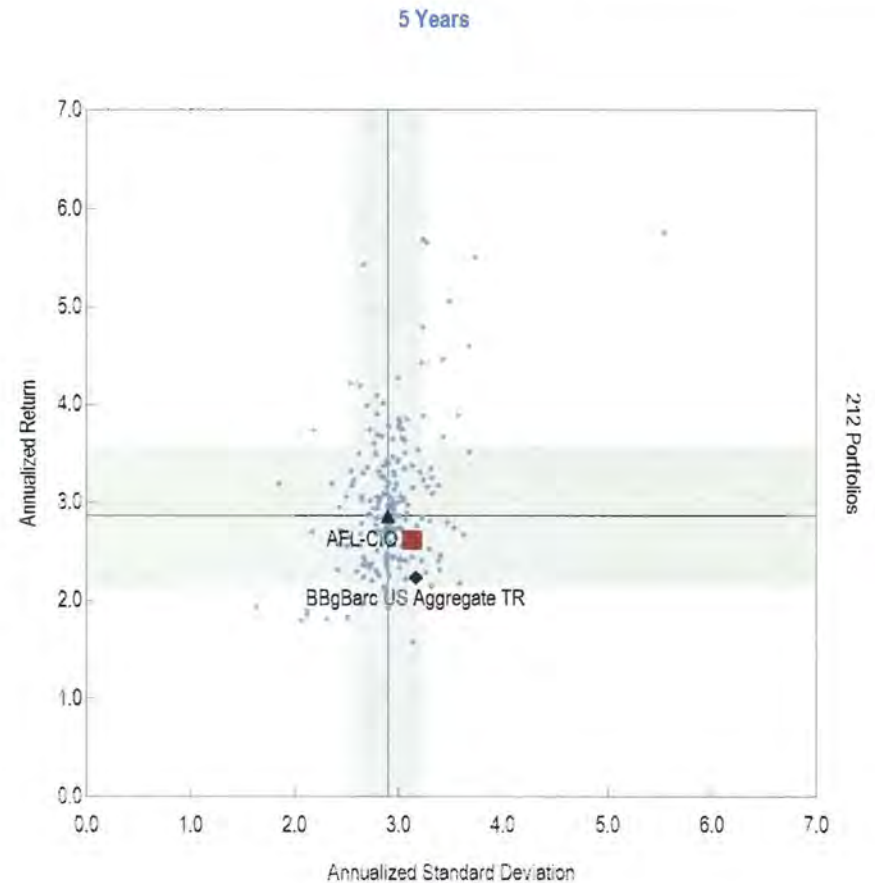
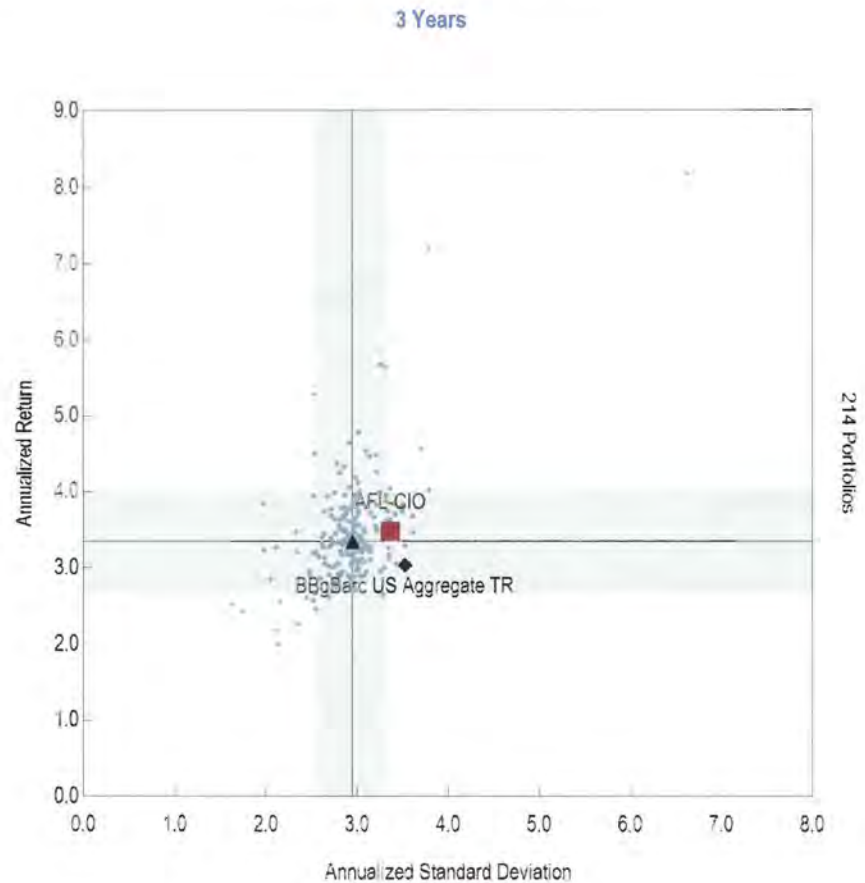
Rolling 5 Year Annualized Return (%)



# AFL-CIO

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

Period Ending: December 31, 2016



	3 Years		
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
AFL-CIO	3.5%	3.4%	1.0
BBgBarc US Aggregate TR	3.0%	3.5%	0.8
eA US Core Fixed Inc Gross Median	3.3%	3.0%	1.1

	5 Years		
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
AFL-CIO	2.6%	3.1%	0.8
BBgBarc US Aggregate TR	2.2%	3.2%	0.7
eA US Core Fixed Inc Gross Median	2.9%	2.9%	1.0

## High Yield Managers

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



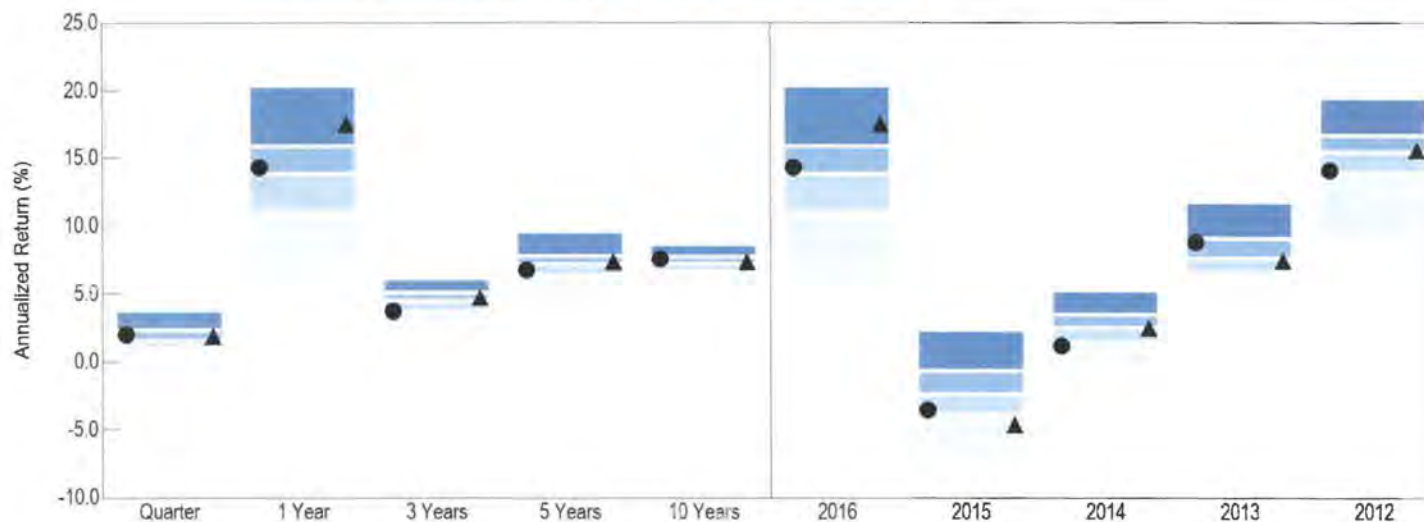
Quality distribution excludes cash.



Allianz Global Investors  
 Manager Performance Comparisons (Gross of Fees)

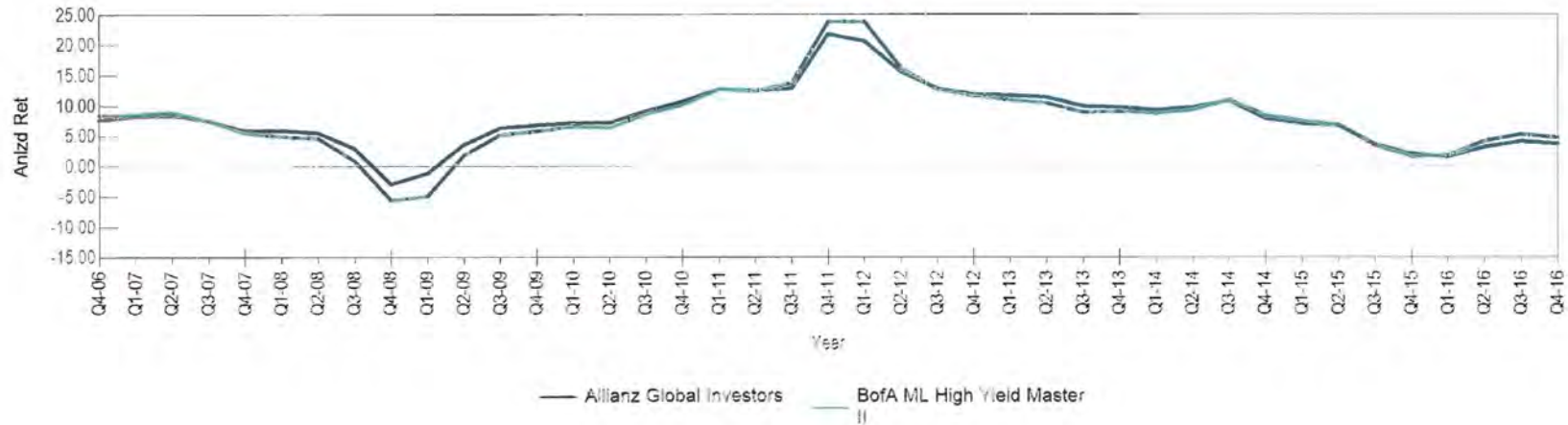
Period Ending: December 31, 2016

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

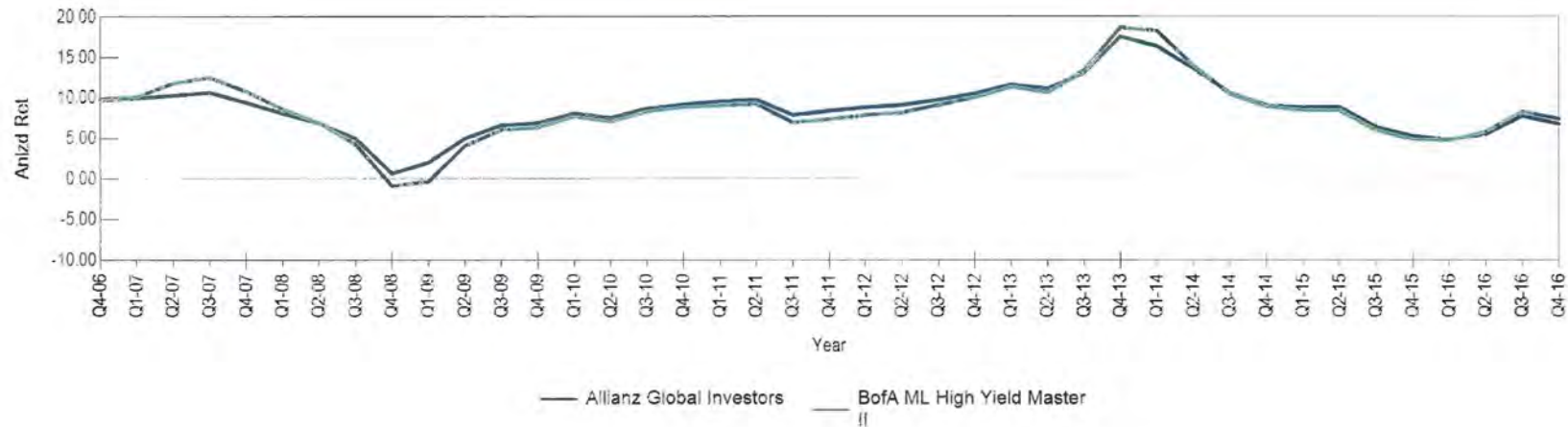


	Quarter	1 Year	3 Years	5 Years	10 Years	2016	2015	2014	2013	2012
<b>5th Percentile</b>	3.8	20.3	6.1	9.5	8.6	20.3	2.3	5.2	11.7	19.4
<b>25th Percentile</b>	2.3	15.9	5.1	7.7	7.7	15.9	-0.7	3.5	9.1	16.7
<b>Median</b>	1.6	13.8	4.5	7.2	7.2	13.8	-2.4	2.5	7.6	15.5
<b>75th Percentile</b>	1.1	11.0	3.7	6.4	6.7	11.0	-3.8	1.5	6.6	14.0
<b>95th Percentile</b>	0.5	6.5	2.4	4.3	5.4	6.5	-7.2	0.0	5.0	8.9
<b># of Portfolios</b>	180	180	168	152	113	180	155	141	130	129
<b>● Allianz Global Investors</b>	2.0 (35)	14.3 (46)	3.7 (76)	6.7 (68)	7.5 (35)	14.3 (46)	-3.5 (68)	1.2 (83)	8.8 (28)	14.1 (73)
<b>▲ BofA ML High Yield Master II</b>	1.9 (38)	17.5 (14)	4.7 (40)	7.4 (40)	7.3 (49)	17.5 (14)	-4.6 (83)	2.5 (50)	7.4 (55)	15.6 (47)

Rolling 3 Year Annualized Return (%)



Rolling 5 Year Annualized Return (%)

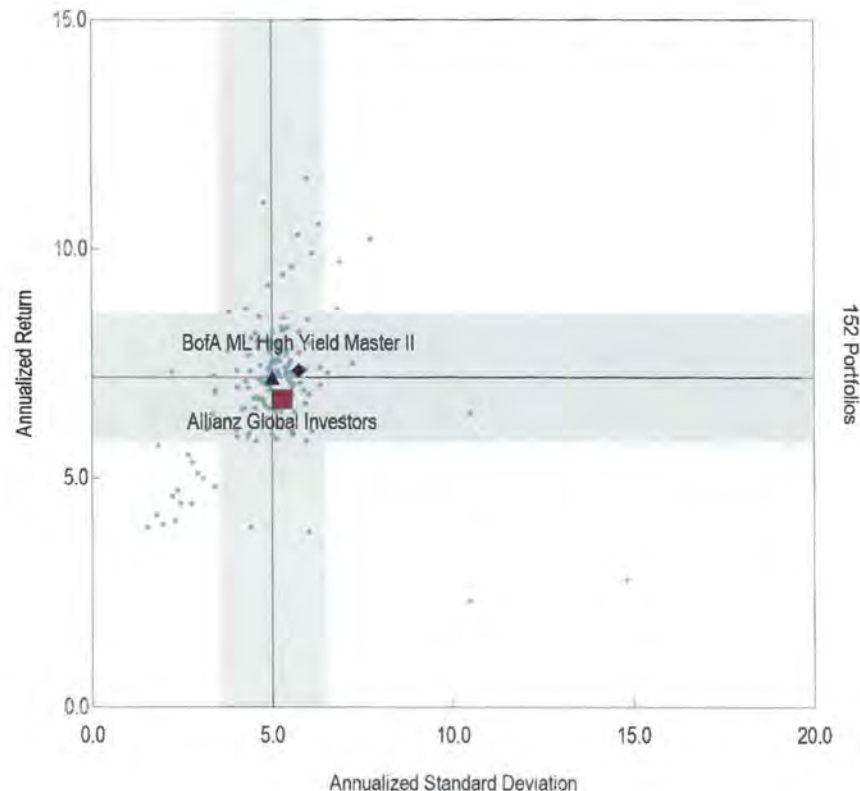
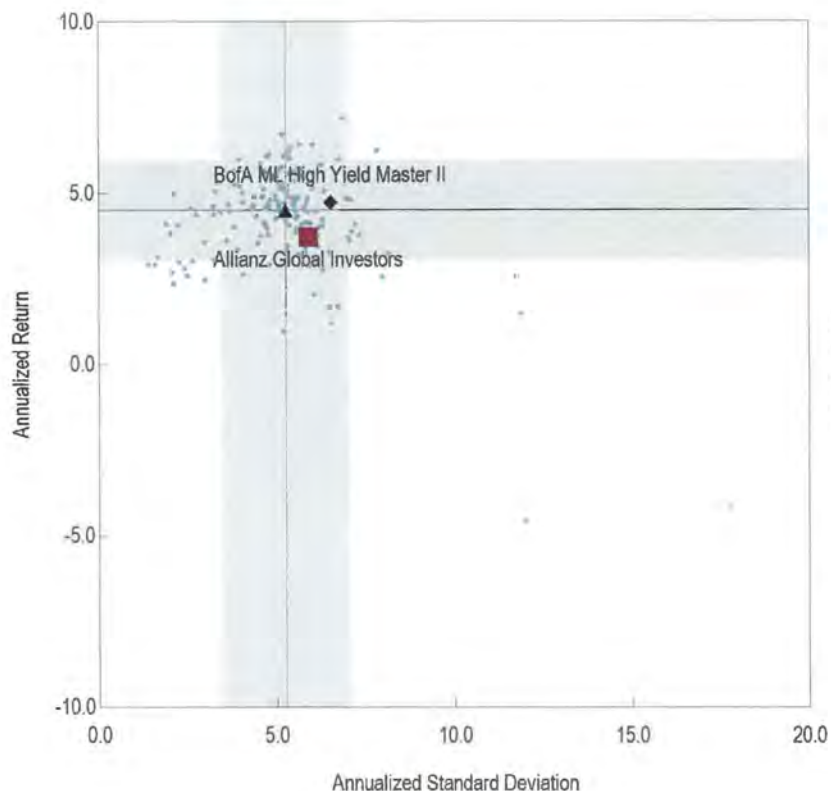


Allianz Global Investors  
 Risk vs. Return 3 & 5 Year (Gross of Fees)

Period Ending: December 31, 2016

3 Years

5 Years



3 Years

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Allianz Global Investors	3.7%	5.9%	0.6
BofA ML High Yield Master II	4.7%	6.5%	0.7
eA US High Yield Fixed Inc Gross Median	4.5%	5.2%	0.9

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Allianz Global Investors	6.7%	5.3%	1.3
BofA ML High Yield Master II	7.4%	5.7%	1.3
eA US High Yield Fixed Inc Gross Median	7.2%	5.0%	1.5



## **Inflation Hedge Managers**

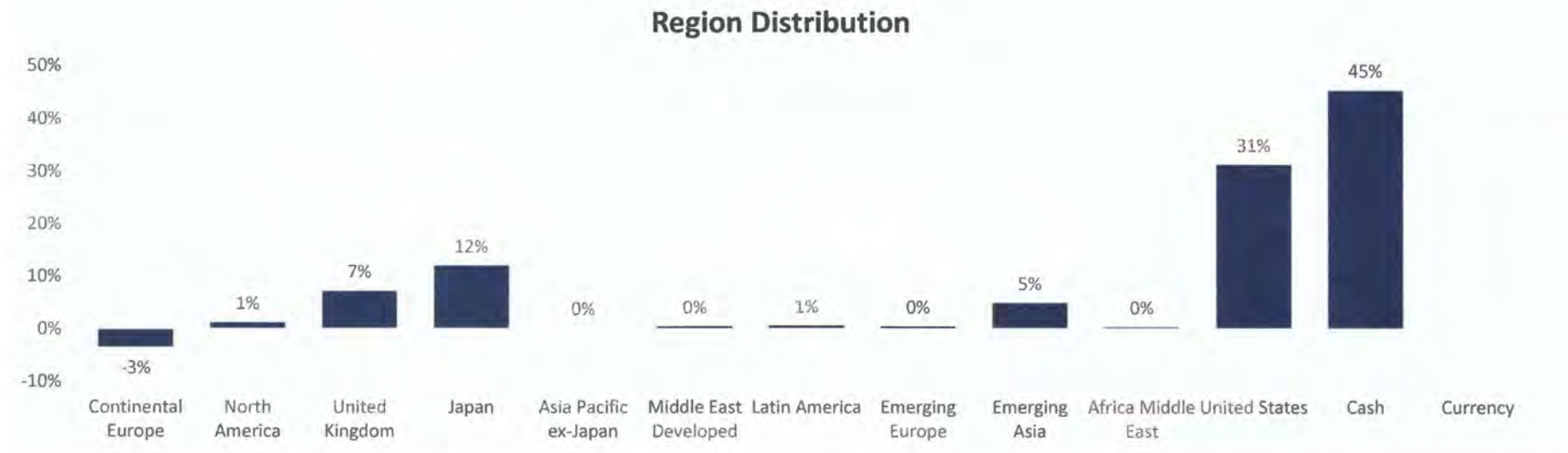
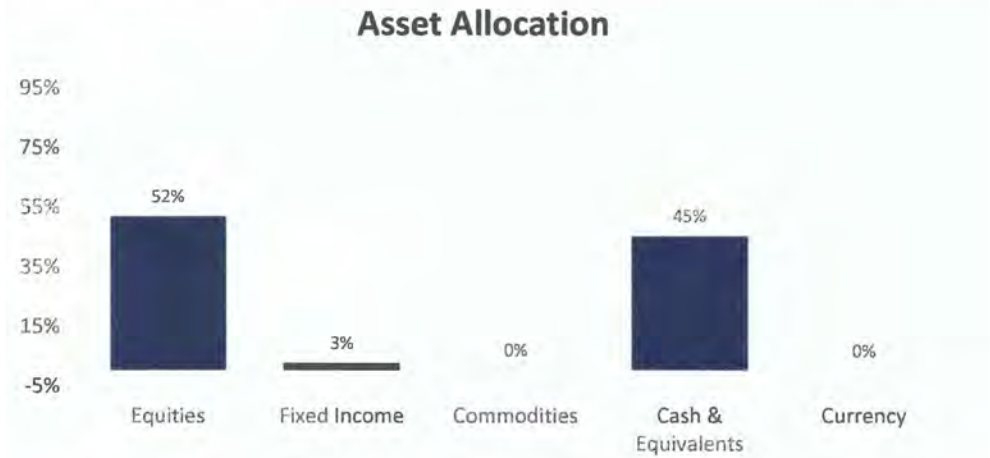
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Wellington Total Return  
 Manager Portfolio Overview

Period Ending: December 31, 2016

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

Wellington Total Return	
Number of Equity Holdings	815
Number of Commodity Holdings	128
Effective Duration (Years)	4.30
Average Quality	D



## Real Estate Managers

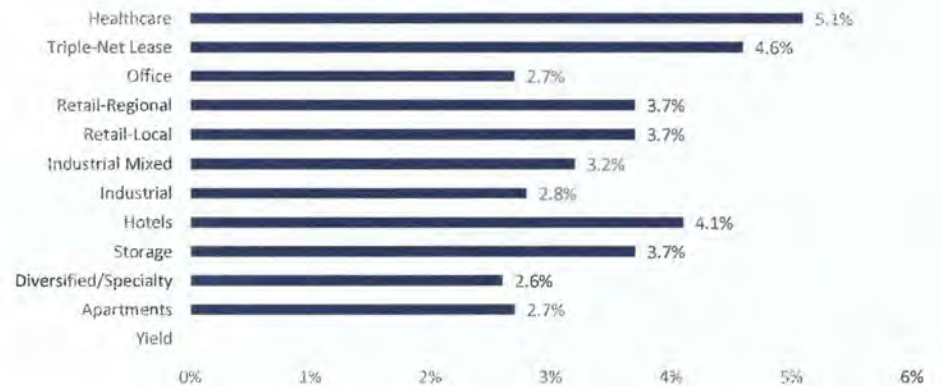
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Diversified portfolio of U.S. REITs with a focus on the underlying real estate assets

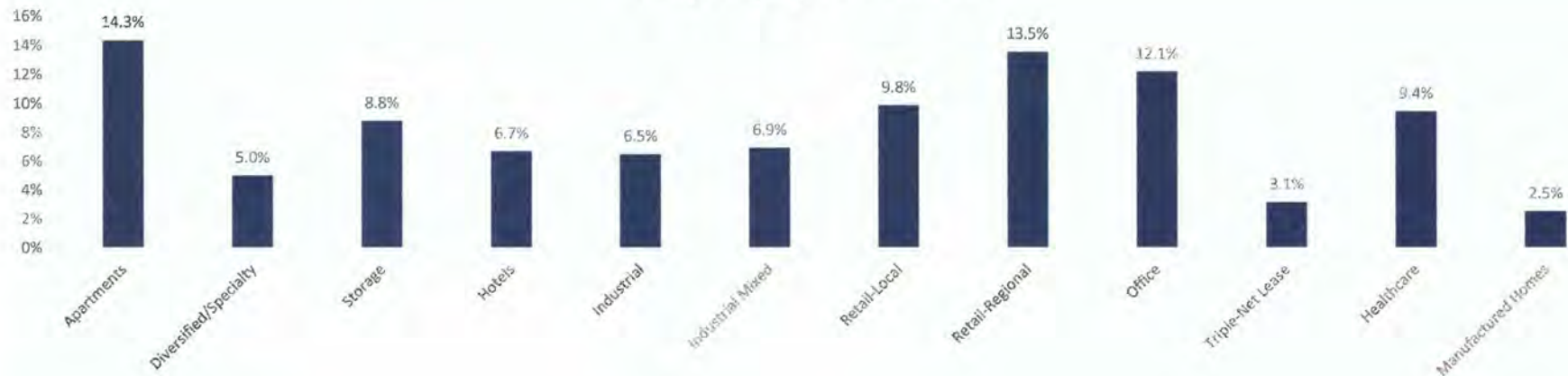
**Top Five Holdings**

Company	Property Type	Allocation
Simon Property Group	Retail-Regional	10.3%
Public Storage	Storage	6.1%
Welltower Inc.	Healthcare	5.5%
Equity Residential	Apartments	5.2%

**Dividend Yield by Property Type**



**Property Type Allocation**



4.3% is allocated to Cash and Cash Equivalents.



**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.

**Manager Line Up**

Manager	Inception Date	Data Source	Manager	Inception Date	Data Source
Intech Large Cap Core	11/10/2006	State Street	Long Wharf Fund III	03/30/2007	Long Wharf
PIMCO Stocks+ AR	08/31/2002	State Street	Long Wharf Fund IV	07/03/2013	Long Wharf
Jackson Square Partners	05/01/2005	State Street	Long Wharf Fund V	09/30/2016	Long Wharf
Robeco Boston Partners	06/01/1995	State Street	Invesco Real Estate I	02/01/2005	Invesco
Emerald Advisors	04/07/2003	State Street	Invesco Real Estate II	11/26/2007	Invesco
Ceredex	11/06/2011	State Street	Invesco Real Estate III	06/30/2013	Invesco
Pyrford	04/25/2014	State Street	Invesco Real Estate IV	06/30/2014	Invesco
William Blair	10/29/2010	William Blair	Oaktree REOF V	12/31/2011	Oaktree
Artisan Partners	10/01/2012	SEI Trust	Oaktree REOF VI	09/30/2013	Oaktree
First Eagle	01/18/2011	State Street	Oaktree REOF VII	04/01/2015	Oaktree
Intech Global Low Vol	05/06/2012	State Street	Siguler Guff DREOF	01/25/2012	Siguler Guff
JP Morgan Global Opportunities	01/31/2010	JP Morgan	Siguler Guff DREOF II	08/31/2013	Siguler Guff
AFL-CIO	06/30/1991	AFL-CIO	Siguler Guff DREOF II Co-Inv	01/27/2016	Siguler Guff
Sit Short Duration	11/02/2016	State Street	Paulson Real Estate Fund II	11/10/2013	State Street
DFA Short Credit	11/21/2016	State Street	Adams Street Partners	03/18/1996	Adams Street
Insight Short Duration	11/18/2016	State Street	Adams Street Partners II	01/16/2009	Adams Street
Torchlight II	09/30/2006	Torchlight	Adams Street Partners - BFP	01/18/1996	Adams Street
Torchlight III	12/31/2008	Torchlight	Adams Street Partners - Fund 5	09/21/2012	Adams Street
Torchlight IV	07/01/2012	Torchlight	Bay Area Equity Fund	06/14/2004	DBL Investors
Torchlight V	07/01/2012	Torchlight	Bay Area Equity Fund II	12/07/2009	DBL Investors
Allianz Global Investors	04/25/2000	State Street	Carpenter Bancfund	01/31/2008	Carpenter Bancfund
BlackRock Transition	11/01/2016	State Street	EIF US Power Fund I	11/26/2003	Ares Management
Wellington Real Total Return	02/26/2013	State Street	EIF US Power Fund II	08/16/2005	Ares Management
Aether Real Assets III	11/27/2013	Aether	EIF US Power Fund III	05/30/2007	Ares Management
Commonfund	06/28/2013	Commonfund	EIF US Power Fund IV	11/28/2011	Ares Management
Adelante	09/30/2001	State Street	EIF US Power Fund V	11/28/2016	Ares Management
Cash	-	State Street	Nogales	02/15/2004	Nogales
Angelo Gordon Realty Fund VIII	01/23/2012	Angelo Gordon	Paladin III	11/30/2007	Paladin
Angelo Gordon Realty Fund IX	12/08/2014	Angelo Gordon	Ocean Avenue Fund II	06/11/2014	Ocean Avenue
Angelo Gordon Energy Credit Opp	09/24/2015	Angelo Gordon	Ocean Avenue Fund III	04/15/2016	Ocean Avenue
DLJ RECP II	09/24/1999	DLJ	Pathway	11/09/1998	Pathway

DLJ RECP III	06/23/2005	DLJ	Pathway 2008	12/26/2008	Pathway
DLJ RECP IV	02/11/2008	DLJ	Pathway 6	05/24/2011	Pathway
DLJ RECP V	07/01/2014	DLJ	Pathway 7	02/07/2013	Pathway
Wastewater Opp. Fund	12/08/2015	Wastewater	Siguler Guff CCCERA Opps	06/03/2014	Siguler Guff
LaSalle Income & Growth VI	07/16/2013	LaSalle	Siguler Guff Secondary Opps	11/30/2016	Siguler Guff
Hearthstone II	06/17/1998	Hearthstone	Aether Real Assets IV	03/16/2016	Aether

**Policy & Custom Index Composition**

Policy Index (12/1/2016 - present)	22.9% Russell 3000, 11% MSCI ACWI ex-US (Gross), 10.9% MSCI ACWI (Net), 1% Wilshire REIT, 1.7% NCREIF Property Index, 6.8% NCREIF ODCE Index, 3.6% CPI +4%, 8.1% S&P 500 +4%, 1.7% BofA High Yield Master II +2%, 5.1% BofA High Yield Master II, 22.4% BBgBarc 1-3 Yr Gov/Credit, 1.6% 90-day T-Bills, 3.2% BBgBarc US Aggregate.
Policy Index (4/1/2012-11/30/2016)	27.7% Russell 3000, 10.6% MSCI ACWI ex-US (Gross), 12.3% MSCI ACWI (Net), 19.6% BBgBarc U.S. Aggregate, 5% BofA High Yield Master II, 4% BBgBarc Global Aggregate, 13.5% Real Estate Benchmark, 6.8% S&P 500 +4% (Lagged), 0.5% 91-Day T-Bills.
Real Estate Benchmark (current)	11% Wilshire REIT, 18% NCREIF Property Index, 71% NCREIF ODCE Index.
Real Estate Benchmark (4/1/2012-11/30/2016)	40% Wilshire REIT, 50% NCREIF Property Index, 10% FTSE/EPRA NAREIT Developed ex-US.

**Other Disclosures**

All data prior to 12/31/2014 was provided by previous consultant.

## Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## Disclaimer

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Verus receives universe data from InvestorForce, eVestment Alliance, and Morningstar. We believe this data to be robust and appropriate for peer comparison. Nevertheless, these universes may not be comprehensive of all peer investors/managers but rather of the investors/managers that comprise that database. The resulting universe composition is not static and will change over time. Returns are annualized when they cover more than one year. Investment managers may revise their data after report distribution. Verus will make the appropriate correction to the client account but may or may not disclose the change to the client based on the materiality of the change.

# Contra Costa County Employees' Retirement Association Portfolio Risk Report

December 31, 2016

## 1 Portfolio risk



Portfolio: 8.1%



Phase 1 Targets: 8.0%



Average Pension: 7.5%

## 2 Portfolio equity beta



Portfolio: 0.57



Phase 1 Targets: 0.57



Average Pension: 0.53

## 3 Portfolio interest rate risk - Duration



Portfolio: 0.9



Phase 1 Targets: 0.9



Average Pension: 1.9

## 4 Portfolio credit risk - Spread duration



Portfolio: 0.6



Phase 1 Targets: 0.6

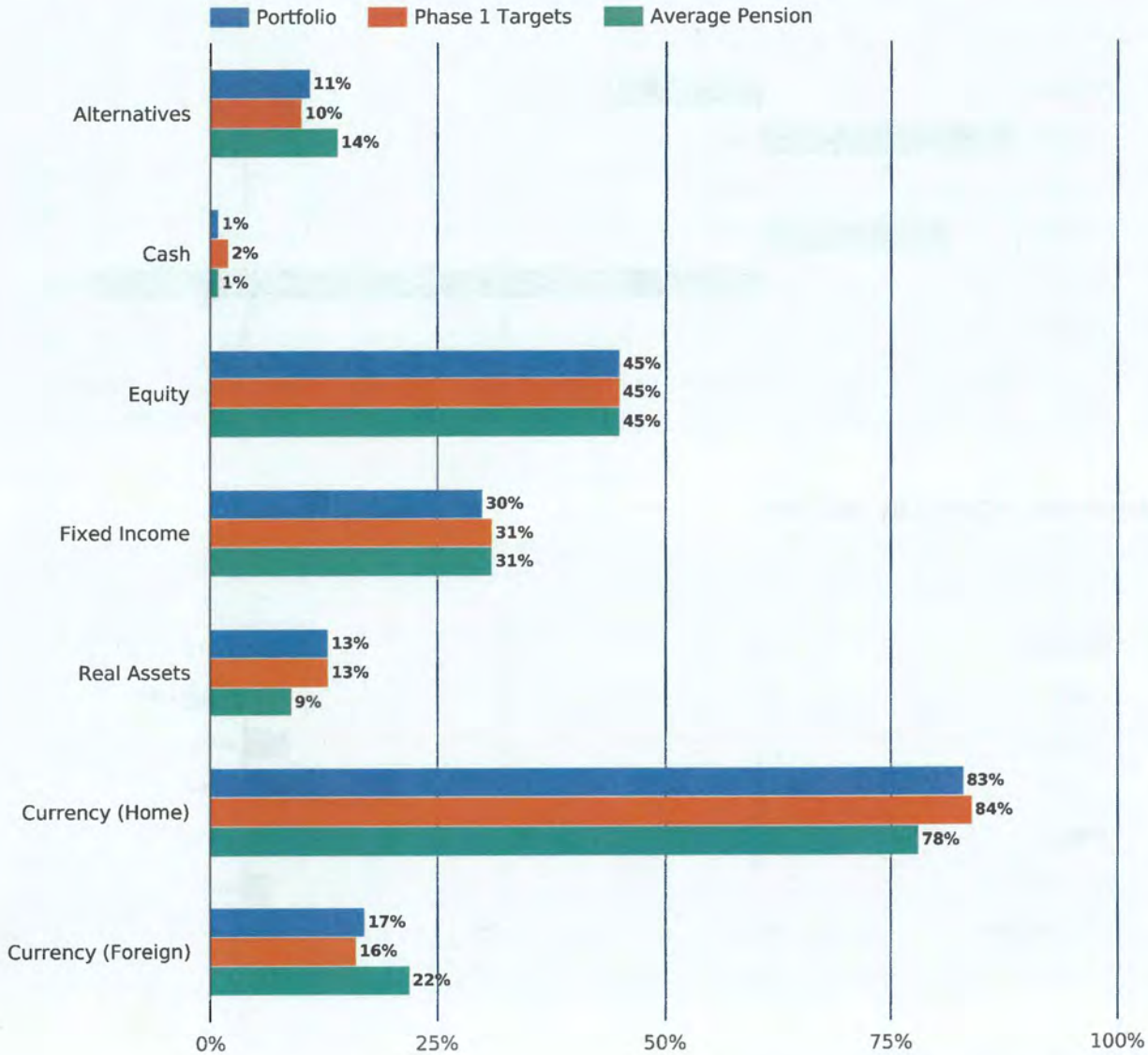


Average Pension: 1.1

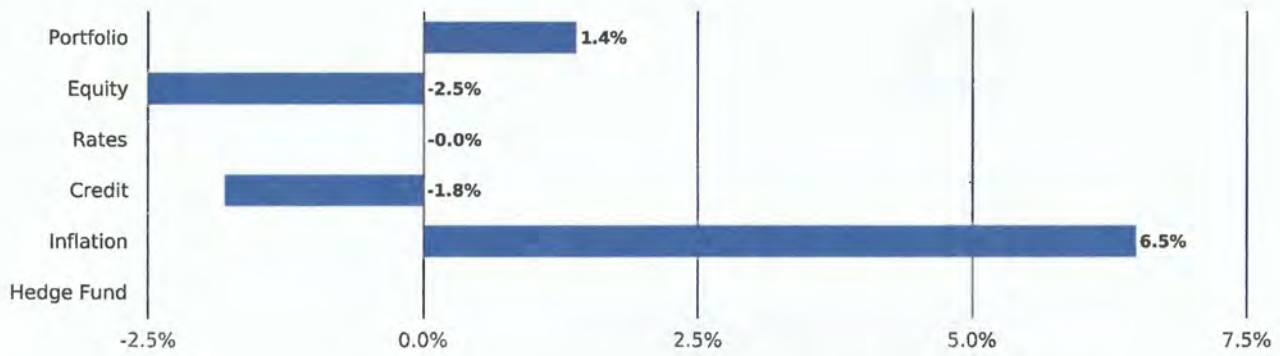
## 5 Exposure allocation by asset class

		Portfolio	Phase 1 Targets	Average Pension
Alternatives	Hedge Fund	0.0%		8.1%
	Opportunistic	0.5%		
	Private Credit	1.8%	1.7%	
	Private Equity	8.4%	8.1%	6.0%
<b>Alternatives Total</b>		<b>10.7%</b>	<b>9.8%</b>	<b>14.1%</b>
Cash	Cash	0.9%	1.7%	1.1%
<b>Cash Total</b>		<b>0.9%</b>	<b>1.7%</b>	<b>1.1%</b>
Equity	US Small	0.0%	6.2%	
	Global Equity	10.6%	10.9%	
	International Equity	10.7%	11.0%	18.5%
	US Large	23.8%	16.7%	26.1%
<b>Equity Total</b>		<b>45.2%</b>	<b>44.8%</b>	<b>44.6%</b>
Fixed Income	Global Bonds	0.0%		8.2%
	Core Fixed Income	3.2%	3.2%	22.5%
	High Yield	5.2%	5.1%	
	Short-term Gov or Credit	22.0%	22.4%	
<b>Fixed Income Total</b>		<b>30.4%</b>	<b>30.7%</b>	<b>30.7%</b>
Real Assets	Real Assets	3.8%	3.6%	2.1%
	Real Estate	9.1%	9.4%	7.4%
<b>Real Assets Total</b>		<b>12.8%</b>	<b>13.0%</b>	<b>9.5%</b>
<b>Total Portfolio</b>		<b>100%</b>	<b>100%</b>	<b>100%</b>

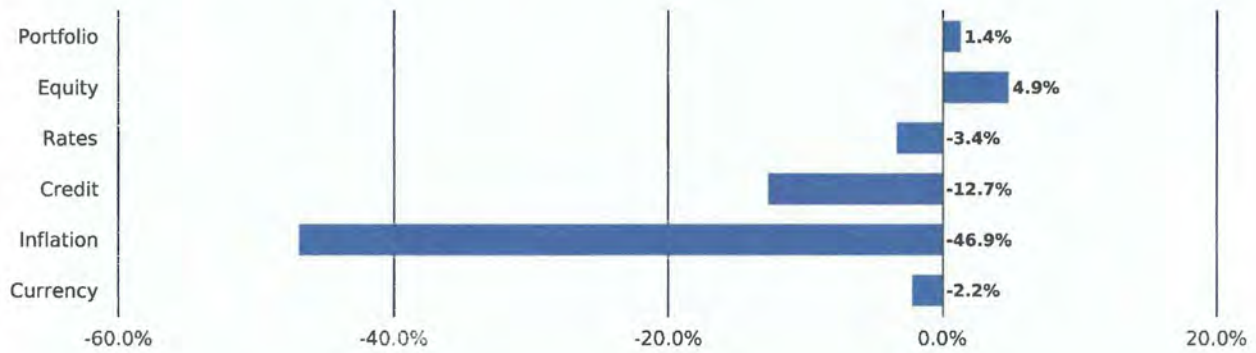
# 6 Exposure allocation



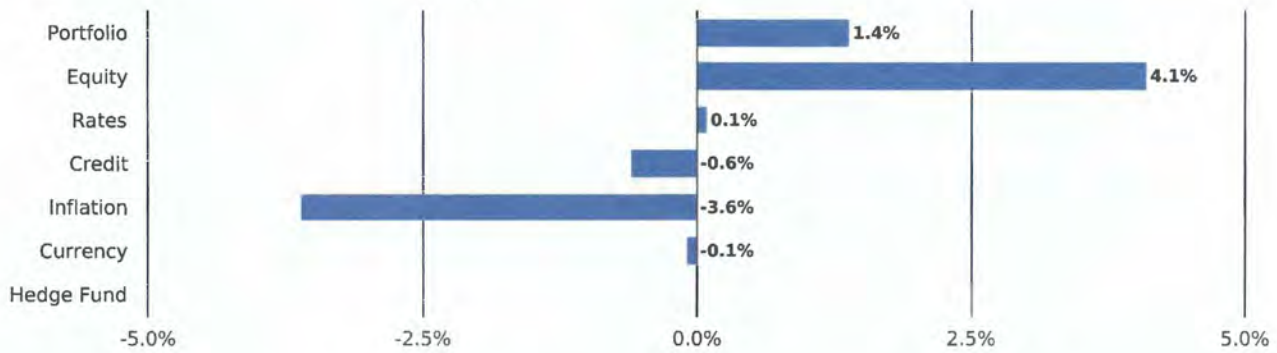
### 7 Relative risk vs target by bucket



### 8 Relative risk vs target by risk factor

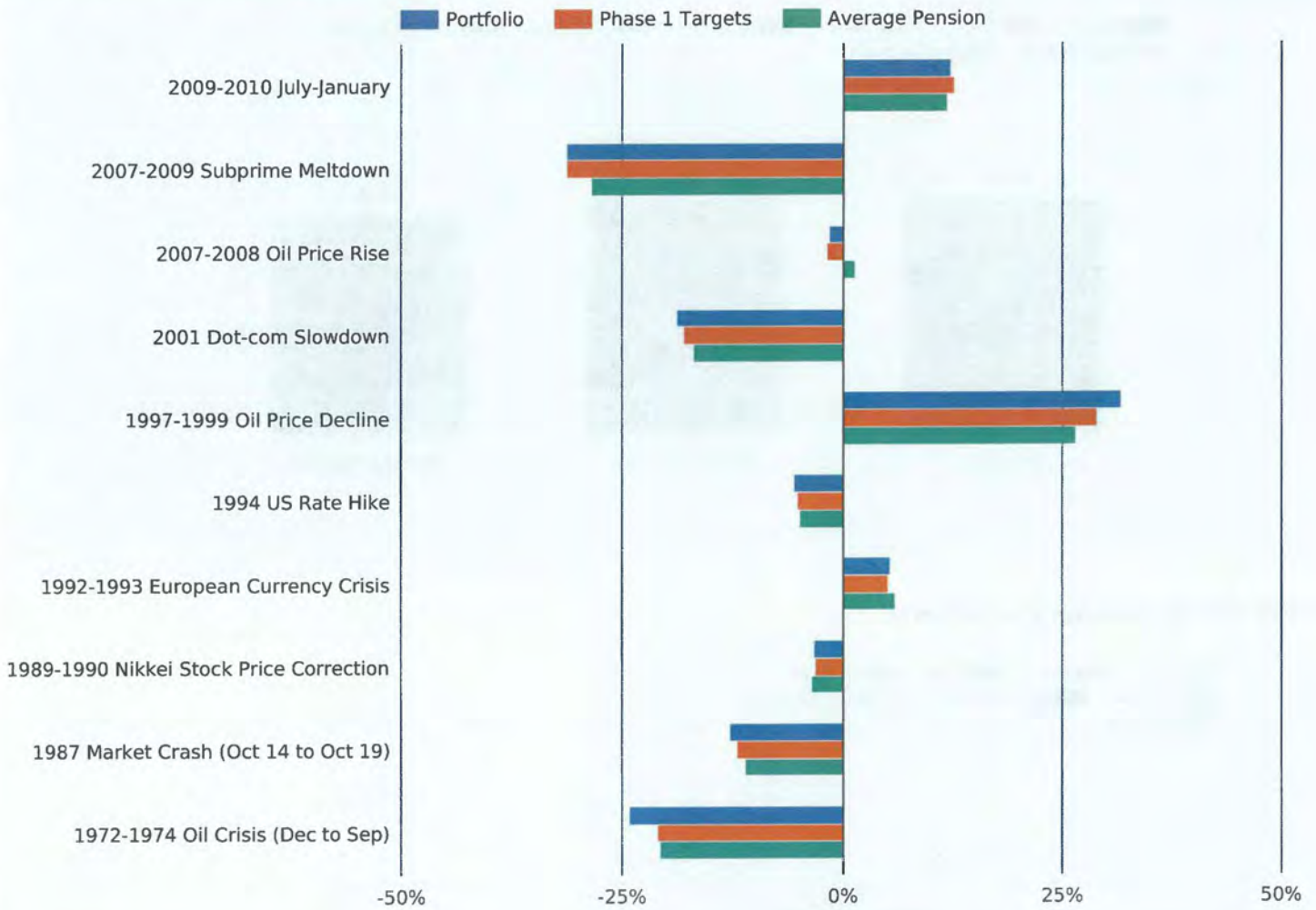


### 9 Risk factor weight relative to target

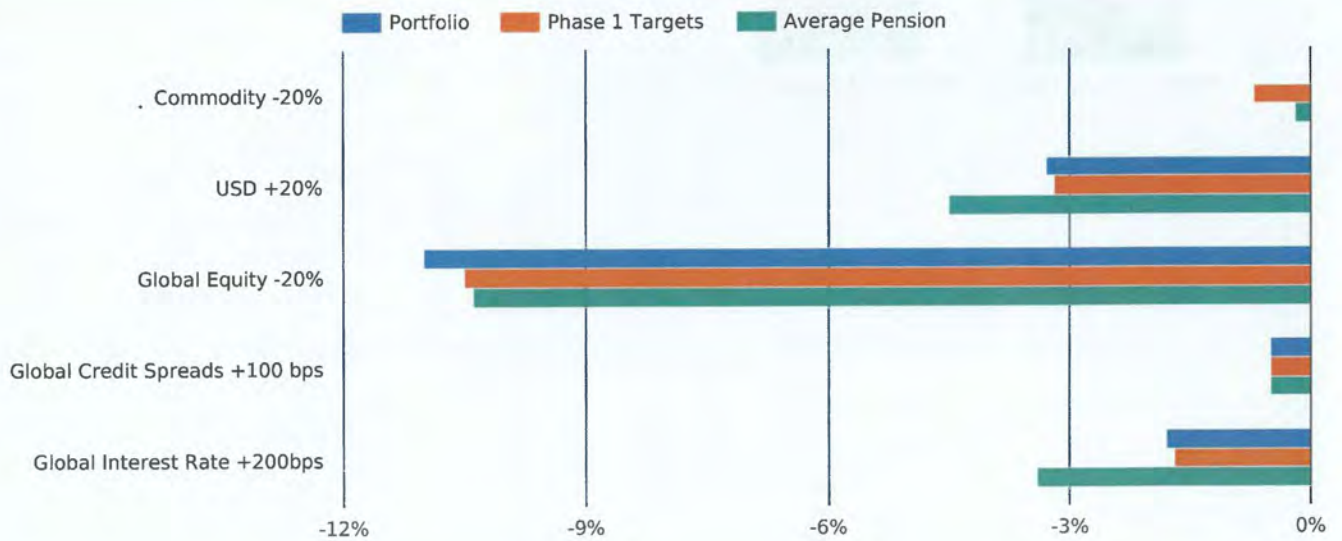




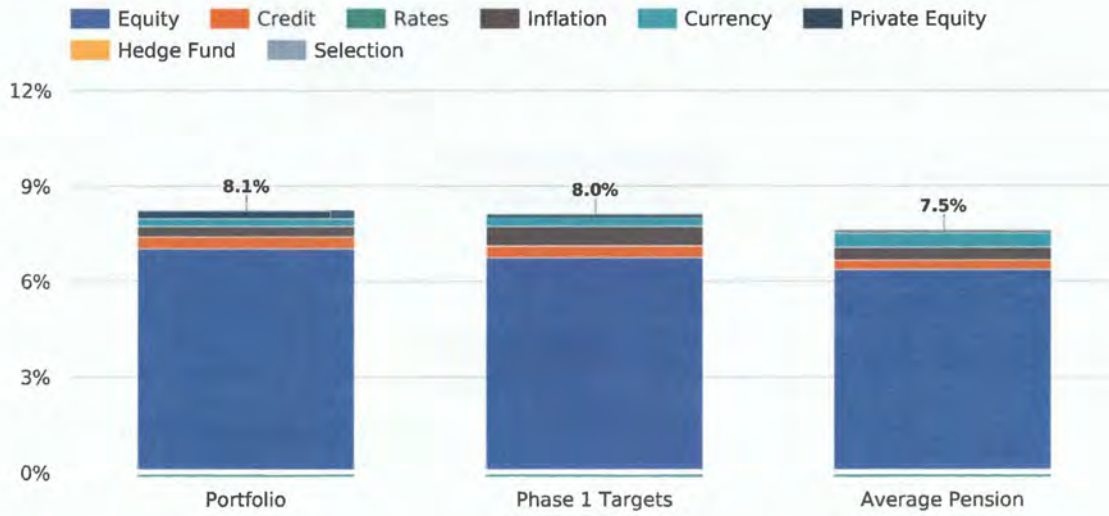
## 10 Tail risk - Scenario analysis



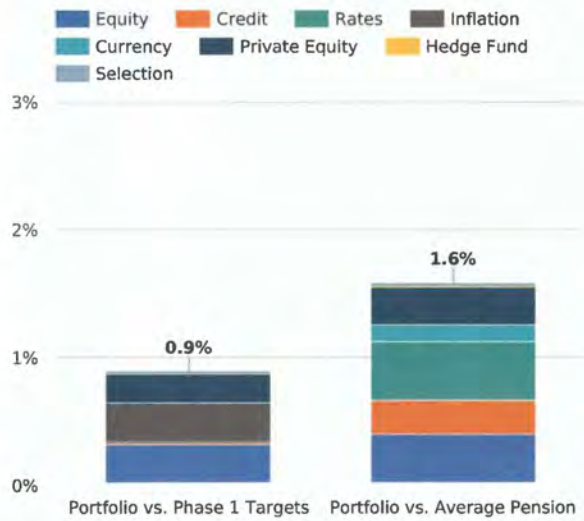
## 11 Tail risk - Stress tests



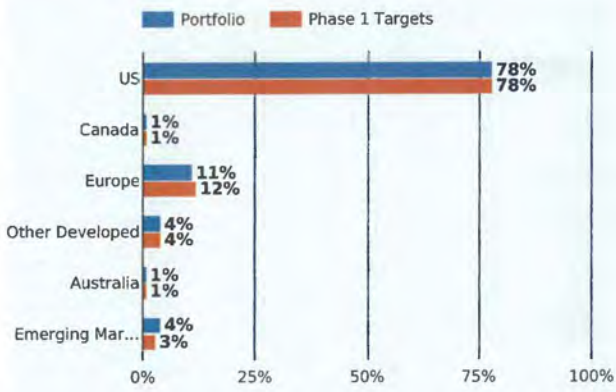
## 12 Risk contribution by risk factor



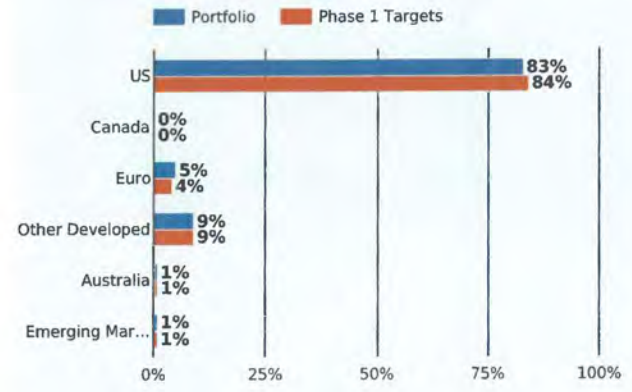
## 13 Active risk contribution by risk factor



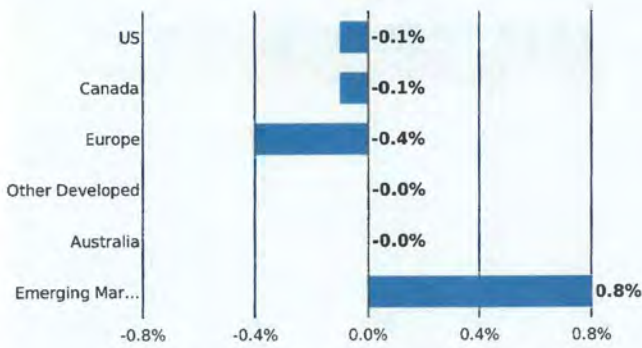
### 14 Geographic exposure



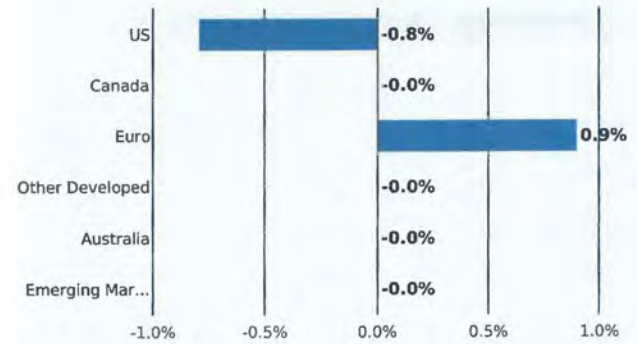
### 15 Currency exposure



### 16 Net geographic exposure



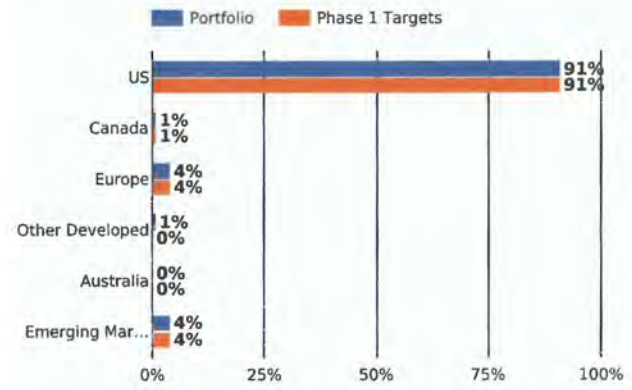
### 17 Net currency exposure



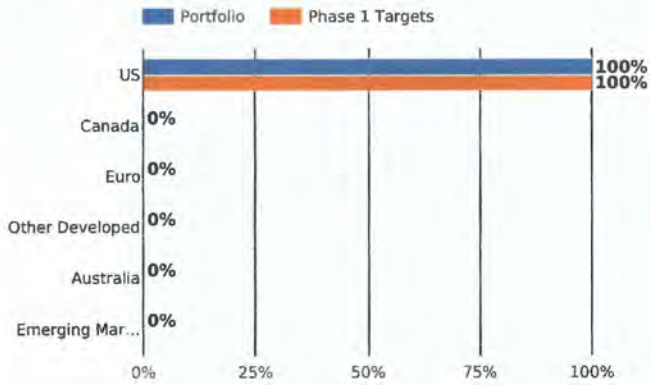
### 18 Interest rate bucket

	Portfolio	Phase 1 Targets	Difference
Duration	5.8	5.8	0.0
Yield to Maturity	3.1%	3.1%	-0.0%
Wt. Avg. Rating	Aa1 / Aa2	Aa1 / Aa2	

### 19 Rates bucket - Geographic exposure



### 20 Rates bucket - Currency exposure



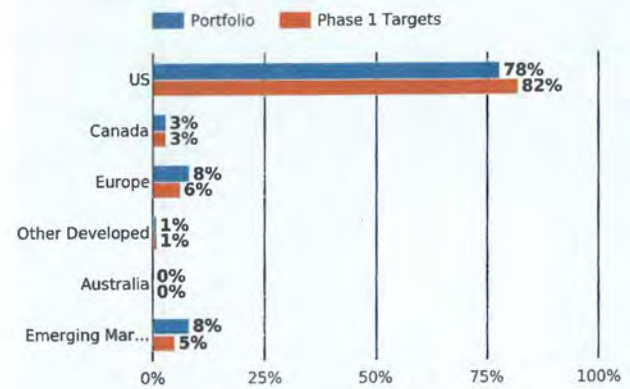
### 21 Rates bucket - Security type



## 22 Credit bucket

	Portfolio	Phase 1 Targets	Difference
Duration	2.5	2.4	0.1
Coupon Yield	2.9%	3.1%	-0.2%
Yield to Maturity	3.4%	3.5%	-0.1%
Wt. Avg. Rating	Aa3 / A1	A1 / A2	

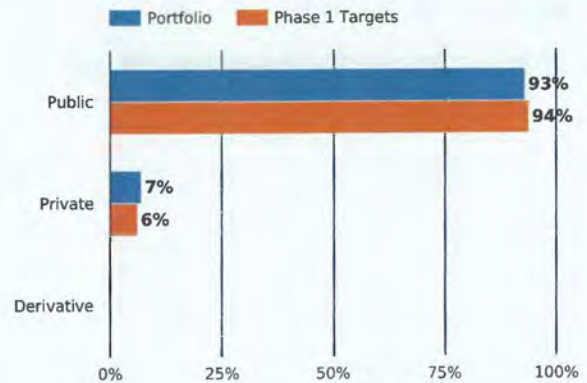
## 23 Credit bucket - Geographic exposure



## 24 Credit bucket - Currency exposure



## 25 Credit bucket - Security type



## 26 Inflation bucket

	Portfolio	Phase 1 Targets	Difference
Real Estate Allocation	9.1%	9.4%	-0.4%
Other Real Assets	3.8%	3.6%	0.2%

## 27 Inflation bucket - Geographic exposure



## 28 Inflation bucket - Currency exposure



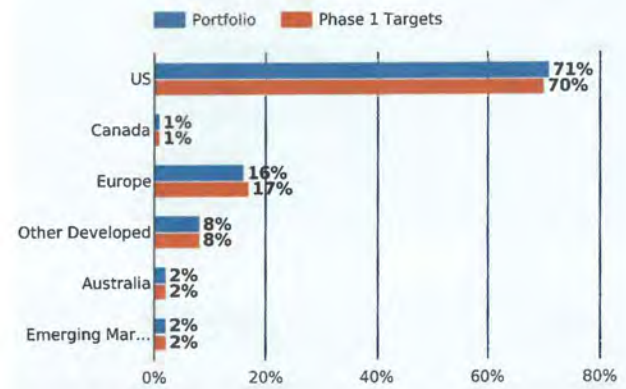
## 29 Inflation bucket - Security type



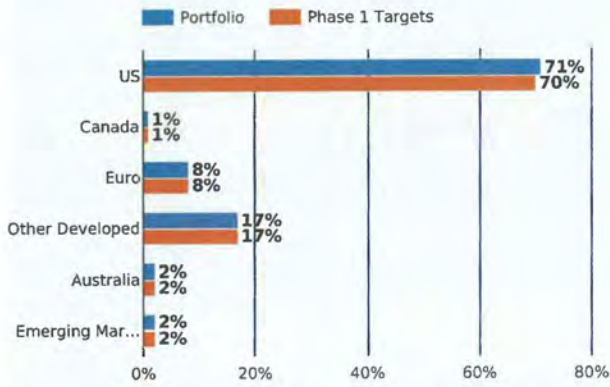
### 30 Equity bucket

	Portfolio	Phase 1 Targets	Difference
Beta	0.9	1.0	-0.1
Dividend Yield	2.4%	2.3%	0.1%
PE Ratio	25.8	25.6	0.2

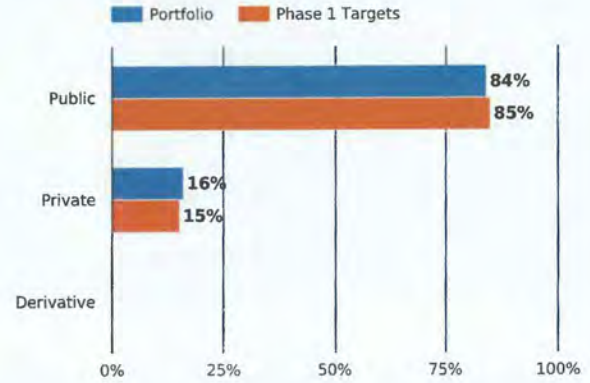
### 31 Equity bucket - Geographic exposure



### 32 Equity bucket - Currency exposure



### 33 Equity bucket - Security type



### 34 Market value summary per BarraOne

Bucket	Asset Class	Account Name	Account	Market Value (millions)
Cash	Cash	Unallocated Cash	CCCERAPen075	67.6
		Treasurer's Fixed	CCCERAPen076	0.0
		Transition	CCCERAPen077	0.0
Cash Total				67.6
Credit	HY Bonds	Allianz Global Investors	CCCERAPen023	388.0
		Opportunistic Credit	Angelo Gordon Energy Credit Opportunities	CCCERAPen074
	Private Credit	Torchlight IV	CCCERAPen020	64.6
		Torchlight II	CCCERAPen018	43.5
		Torchlight V	CCCERAPen021	19.9
		Torchlight III	CCCERAPen019	10.9
	Short-term Gov or Credit	Insight Short Duration	CCCERAPen081	823.2
		Sit Short Duration	CCCERAPen080	432.7
		DFA Short Credit	CCCERAPen079	400.5
	Credit Total			
Equity	EAFE Equity	Pyrford	CCCERAPen007	403.8
		William Blair	CCCERAPen008	403.7
	Global Equity	First Eagle	CCCERAPen011	324.1
		Artisan Partners	CCCERAPen010	321.2
		JP Morgan Global Opportunities	CCCERAPen013	127.5
		Intech Global Low Vol	CCCERAPen012	23.2
	Private Equity	Adams Street Partners	CCCERAPen052	120.6
		Siguler Guff CCCERA Opportunities Fund	CCCERAPen072	80.9
		Energy Investor Fund III	CCCERAPen060	67.9
		Energy Investor Fund IV	CCCERAPen061	42.1
	Energy Investor Fund II	CCCERAPen059	41.0	
	Pathway 7	CCCERAPen063	35.6	



		Pathway Private Equity Fund	CCCERAPen065	34.4
		Pathway 6	CCCERAPen062	30.9
		Carpenter Bancfund	CCCERAPen067	28.7
		Paladin III	CCCERAPen069	24.7
		Pathway Private Equity Fund 2008	CCCERAPen066	22.9
		Adams Street Partners Fund 5	CCCERAPen054	21.2
		Oaktree PIF 2009	CCCERAPen073	17.1
		Ocean Avenue Fund II	CCCERAPen070	16.6
		Adams Street Partners II	CCCERAPen053	14.4
		Pathway 8	CCCERAPen064	12.6
		Energy Investor Fund V	CCCERAPen085	11.4
		Bay Area Equity Fund II	CCCERAPen057	7.9
		Ocean Avenue Fund III	CCCERAPen071	4.7
		Brinson - Venture Capital	CCCERAPen055	4.1
		Siguler Guff Secondary Opportunities	CCCERAPen082	3.8
		Bay Area Equity Fund I	CCCERAPen056	2.9
		Energy Investor Fund	CCCERAPen058	0.6
		Nogales	CCCERAPen068	0.1
US Equity		PIMCO Stocks+ Absolute Return	CCCERAPen002	350.2
		Robeco Boston Partners	CCCERAPen004	343.0
		Jackson Square Partners	CCCERAPen003	312.4
		Intech Large Cap Core	CCCERAPen001	292.7
		Emerald Advisers	CCCERAPen005	251.5
		Ceredex	CCCERAPen006	242.8
		Equity Total		4,043.0
Inflation	Real Assets	Wellington Real Total Return	CCCERAPen026	187.7
		Aether Real Assets III	CCCERAPen027	52.2

		Commonfund	CCCERAPeno29	33.7
		Aether Real Assets IV	CCCERAPeno28	5.7
		Wastewater Opportunity Fund LLC	CCCERAPeno30	2.9
Real Estate		DLJ Real Estate IV	CCCERAPeno35	82.4
		Oaktree REOF VI	CCCERAPeno47	73.4
		Adelante	CCCERAPeno31	65.1
		LaSalle Income & Growth Fund VI	CCCERAPeno43	61.3
		Siguler Guff Distressed RE Opportunities	CCCERAPeno49	58.6
		Siguler Guff Distressed RE Opportunities II	CCCERAPeno50	53.5
		Angelo Gordon & Co. Realty Fund VIII	CCCERAPeno32	52.2
		DLJ Real Estate III	CCCERAPeno34	31.8
		Angelo Gordon & Co. Realty Fund IX	CCCERAPeno33	29.9
		DLJ Real Estate V	CCCERAPeno36	28.4
		Paulson Real Estate II	CCCERAPeno48	23.5
		Long Wharf Fund IV	CCCERAPeno45	22.9
		INVESCO Real Estate III	CCCERAPeno41	22.5
		Oaktree REOF V	CCCERAPeno46	19.7
		INVESCO Real Estate IV	CCCERAPeno42	15.0
		Siguler Guff Distressed RE Opportunities II Co-Inv	CCCERAPeno51	14.0
		Long Wharf Fund V	CCCERAPeno78	13.0
		Oaktree REOF VII	CCCERAPeno84	6.8
		Long Wharf Fund III	CCCERAPeno44	6.0
		INVESCO Real Estate II	CCCERAPeno40	0.4
		INVESCO Real Estate I	CCCERAPeno39	0.1
		Hearthstone Advisors II	CCCERAPeno37	0.0
		Inflation Total		962.5
Rates	Global Bonds	Lazard	CCCERAPeno24	1.0

US Bonds	AFL-CIO	CCCERAPen022	236.5
	BlackRock Transition	CCCERAPen083	1.9
	Goldman Sachs Core Plus	CCCERAPen014	0.1
	PIMCO Fixed Income	CCCERAPen017	0.0
Rates Total			239.5
Total Portfolio (millions)			7,516.3

## Chart Definitions

### 1 Portfolio risk

Total risk comparison of portfolio, Policy, and Avg. Pension. Policy is composed of 10.90% MSCI ACWI, 11.01% MSCI EAFE, 16.70% Russell 1000 Index, 6.21% Russell 2000 Index, 8.10% Private Equity, 1.72% Bloomberg Barclays U.S. Corporate High Yield, 3.23% Bloomberg Barclays U.S. Aggregate, 22.37% Bloomberg Barclays Capital 1-3 Yr Gov/Credit, 5.10% Bloomberg Barclays U.S. Corporate High Yield, 1.65% Bloomberg Barclays Capital U.S. Treasury Bills: 1-3 Months, 9.44% NCREIF NPI, and 3.58% Bloomberg Commodities. Average pension is based on median allocation of DB Plans > \$1 Billion, which is composed of 26.10% S&P 500, 15.10% MSCI EAFE, 3.40% MSCI EM, 6.00% Private Equity, 22.50% Bloomberg Barclays Capital U.S. Aggregate, 4.30% Bloomberg Barclays Global Aggregate, 1.50% Barclays Global Treasury ex U.S., 2.40% Bloomberg Capital Global Emerging Markets, 1.10% Bloomberg Capital U.S. Treasury Bills: 1-3 Months, 8.10% HFRI FOF Index, 1.05% Bloomberg Commodities, 1.05% Forestry, and 7.40% NCREIF NPI.

### 2 Portfolio equity beta

Equity risk presented by equity beta to market. Equity beta is a measure describing the sensitivity of portfolio returns with returns of the equity market (MSCI ACWI).

### 3 Portfolio interest rate risk - Duration

Interest rate risk presented by duration and dollar movement of portfolios. Duration of a financial asset that consists of fixed cash flows is the weighted average of the times until those fixed cash flows are received (measured in years). It also measures the percentage change in price for a given change in yields (the price sensitivity to yield). DVo1 \$ (dollar duration) is the change in price in dollars of a financial instrument resulting from a one basis point change in yield.

### 4 Portfolio credit risk - Spread duration

Credit risk presented by spread duration and dollar movement of portfolios. Spread duration measures the percentage change in price for a one percentage point change in spreads.

### 5 Exposure allocation by asset class

Exposure allocation among various asset classes.

### 6 Exposure allocation

Exposure allocation among major risk buckets (rates, credit, equity, inflation, currency) and net currency exposure (domestic vs. foreign). Full Cash collateral is assumed for all derivatives.

### 7 Relative risk vs target by bucket

Comparative riskiness of Portfolio vs. Policy on total portfolio and risk bucket levels: For example, equity bucket relative risk compares the riskiness of the Portfolio equity bucket vs the Policy equity bucket.

### 8 Relative risk vs target by risk factor

Comparative riskiness of Portfolio vs. Policy on a total portfolio level and major risk factor levels.

### 9 Risk factor weight relative to target

Contribution by factor to total relative risk of the Portfolio vs the Policy: For example, Equity is equity risk contribution to Portfolio minus equity risk contribution to the Policy, divided by total risk of the Policy. The factor overweights are additive to the total relative risk at the top line.

### 10 Tail risk - Scenario analysis

Tail risk is a form of risk measurement that considers the possibility that a market will experience losses greater than what the normal distribution would suggest. This graph shows the expected performance under various historical scenarios (described in the appendix at the end of this report). For each historical scenario, the current market value is recalculated to determine return under identical market conditions, assuming an instantaneous shock.

### 11 Tail risk - Stress tests

This display shows expected performance when individual risk factors are subjected to instantaneous shocks. Directly affected assets are revalued at factor level

### 12 Risk contribution by risk factor

Risk contribution by risk factor. Volatility measures the price variation of a portfolio or financial instrument over time.

### 13 Active risk contribution by risk factor

Active risk in terms of annual tracking error: Tracking Error (TE) measures how closely a portfolio follows its benchmark. It is the standard deviation of the difference between the portfolio and benchmark returns.

### 14 Geographic exposure

Geographic exposures are calculated using the notional exposure as a percentage of market value, including derivatives, cash securities and currency holdings, but excluding currency derivatives. Any portfolio that uses derivatives may have a total different than 100% because both cash and derivative country exposures are included.

### 15 Currency exposure

Currency portfolio allocation. Currency exposures from both the underlying securities and the purchasing currency of the futures contract are included.

### 16 Net geographic exposure

Difference between portfolio and policy allocation among major geographic areas.

### 17 Net currency exposure

Difference between portfolio and policy allocation among major currencies.

### 18 Interest rate bucket

Coupon yield (nominal yield) of a fixed income security is a fixed percentage of the par value that does not vary with the market price of the security. Yield to Maturity (YTM) is the interest rate of return earned by an investor who buys a fixed-interest security today at the market price and holds it until maturity. Ratings indicate credit quality of a security and the issuer's ability to make payments of interest and principal.

### 19 Rates bucket - Geographic exposure

Geographic exposures specific to the Rates bucket are calculated using the notional exposure as a percentage of market value, including derivatives, cash securities and currency holdings, but excluding currency derivatives. Any portfolio that uses derivatives may have a total different than 100% because both cash and derivative country exposures are included.

- 20 **Rates bucket - Currency exposure**  
Currency allocation of interest rate instruments.
- 21 **Rates bucket - Security type**  
Allocation of interest rate instruments among different security types.
- 22 **Credit bucket**  
Various characteristics of credit instruments.
- 23 **Credit bucket - Geographic exposure**  
Geographic exposures specific to the Credit bucket are calculated using the notional exposure as a percentage of market value, including derivatives, cash securities and currency holdings, but excluding currency derivatives. Any portfolio that uses derivatives may have a total different than 100% because both cash and derivative country exposures are included.
- 24 **Credit bucket - Currency exposure**  
Currency allocation of credit instruments.
- 25 **Credit bucket - Security type**  
Allocation of credit instruments among different security types.
- 26 **Inflation bucket**  
Composition of inflation hedging instruments in portfolio and benchmark. Notional duration of real rates instruments is also included.
- 27 **Inflation bucket - Geographic exposure**  
Geographic exposures specific to the Inflation bucket are calculated using the notional exposure as a percentage of market value, including derivatives, cash securities and currency holdings, but excluding currency derivatives. Any portfolio that uses derivatives may have a total different than 100% because both cash and derivative country exposures are included.
- 28 **Inflation bucket - Currency exposure**  
Currency allocation of inflation instruments.
- 29 **Inflation bucket - Security type**  
Allocation of inflation instruments among different security types.
- 30 **Equity bucket**  
P/E ratio is a valuation ratio of a company's current share price compared to its per-share earnings. Beta measures sensitivity to Global Equities.
- 31 **Equity bucket - Geographic exposure**  
Geographic exposures specific to the Equity bucket are calculated using the notional exposure as a percentage of market value, including derivatives, cash securities and currency holdings, but excluding currency derivatives. Any portfolio that uses derivatives may have a total different than 100% because both cash and derivative country exposures are included.
- 32 **Equity bucket - Currency exposure**  
Currency allocation of equity assets.
- 33 **Equity bucket - Security type**  
Allocation of equity assets among different security types.
- 34 **Market value summary per BarraOne**  
Summary of market value of Portfolio holdings by bucket as reported through BarraOne. Some differences may exist due to timing, pricing sources and availability of information on new investments.

## Tail Risk Scenario Definitions

- 1 **2009-2010 July-January**  
(7/1/2009 - 12/31/2009) As global economic woes persisted, many countries were saddled with widening budget deficits, rising borrowing costs, slowing growth, higher unemployment, and higher inflation, which made monetary stimulus difficult. Dubai World sought to delay its huge debt repayments, shocking the global market, while the financial distress in Greece and Ireland began to emerge in late 2009.
- 2 **2007-2009 Subprime Meltdown**  
(1/10/2007 - 2/27/2009) The burst of the housing bubble in mid-2007 marked the beginning of the years-long subprime mortgage crisis, rooted from the easy credit, low interest rates, and loose regulatory environment in the early 2000s, which made low quality (subprime) mortgaging extremely easy. The contagious meltdown quickly led to plunging asset prices in the financial markets, rising bankruptcies, delinquencies, and foreclosures, and central bank monetary rescues and fiscal interventions by governments around the globe.
- 3 **2007-2008 Oil Price Rise**  
(1/18/2007 - 5/27/2008) Oil prices spiked from around \$60/bbl in 2007 to a record high of \$145/bbl on 3 July 2008.
- 4 **2001 Dot-com Slowdown**  
(3/10/2001 - 10/9/2002) Upon the burst of the tech bubble in 2000, more and more internet companies went out of business as the stock market plummeted further.
- 5 **1997-1999 Oil Price Decline**  
(1/8/1997 - 2/16/1999) The combined effect of OPEC overproduction and lower oil demand due to the Asia economic crisis sent oil prices into a downward spiral.
- 6 **1994 US Rate Hike**  
(1/31/1994 - 12/13/1994) In combating inflation, the U.S. Federal Reserve raised its interest rate from 3.25% in February to 5.5% in November 1994.
- 7 **1992-1993 European Currency Crisis**  
(9/1/1992 - 8/13/1993) Upon Germany's reunification, the German mark appreciated rapidly, which destabilized exchange rates between European countries under the European Monetary System. It led to a series of European currency devaluations, interest rate increases, and the widening range of exchange rates in 1992.

- 8 **1989-1990 Nikkei Stock Price Correction**  
(12/29/1989 - 3/30/1990) After hitting the Nikkei stock index's all-time high on December 29, 1989, the Japan financial market crashed and plunged to a low in March 1990.
- 9 **1987 Market Crash (Oct 14 to Oct 19)**  
(10/14/1987 - 10/19/1987) The U.S. stock market began to topple on October 14, 1987 after reaching a record high. It was triggered by reports of a larger trade deficit and the elimination of the tax benefits of financing mergers. The aggravating selling pressure in October 19, from confused and fearful investors, and the failing portfolio insurers' models led to a substantial global market sell-off.
- 10 **1972-1974 Oil Crisis (Dec to Sep)**  
(12/1/1972 - 9/30/1974) Many developed countries suffered in this energy crisis as OPEC members placed an oil embargo on the U.S. and Israel's allies during the Yom Kippur War in October 1973, which sent global oil prices soaring.

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