Summit Strategies Group
8182 Maryland Avenue, 6th Floor
St. Louis, Missouri 63105
314.727.7211

Howard County Retirement Plans

Investment Performance Review

June 30, 2017

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Economic Overview

Economic & Capital Market Highlights

June 30, 2017

Economy

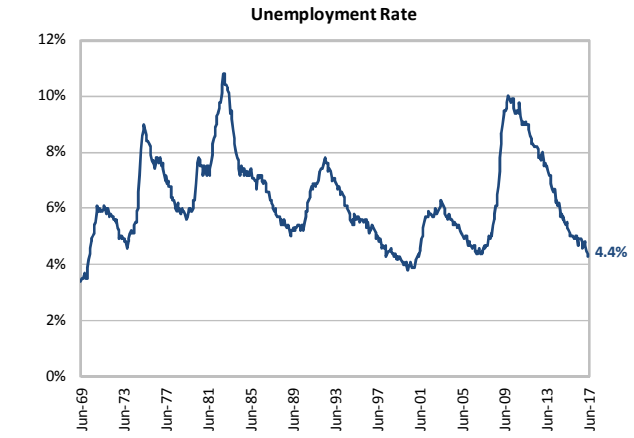
The second quarter of 2017 was characterized by continued economic strength throughout the world. Increased corporate sales and earnings growth, combined with high consumer and business confidence, set the stage for global equity indices to reach new all-time highs. In June, the US Federal Reserve looked past below-expected inflation readings and raised interest rates 25 basis points for the fourth time this cycle, bringing the Federal Funds rate target to 1.00% - 1.25%. The Federal Open Market Committee (FOMC) also announced that it would begin reducing its $4.5 trillion balance sheet, most likely later in 2017. Continued progress in the labor market supported the interest rate hike, as the unemployment rate reached its lowest level since May 2001 and 194,000 jobs were added per month, above the average of 185,000 per month since 2010.

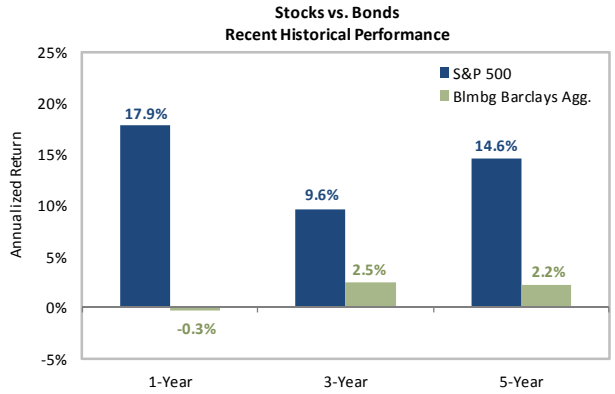
Capital Markets

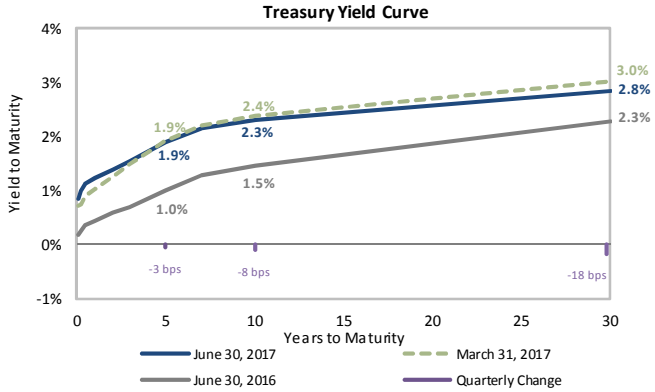
Strong global equity market performance continued, supported by gains across all major markets. Emerging markets were the best-performing equity region (MSCI EM, +6.3%), benefiting from currency appreciation and upward revisions in emerging market growth forecasts. Fixed income markets were supported by expectations for continued accommodative central bank policy, with yields declining modestly across the middle and long end of the curve despite the Federal Reserve rate hike. Within fixed income, credit outperformed treasuries as spreads continued to tighten to their lowest levels since the financial crisis.

Market Performance (Returns in USD)

		Quarter	1 Year	3 Year	5 Year
MSCI ACWI IMI	Global Equity	4.2%	19.0%	4.9%	10.7%
Russell 3000	US Equity	3.0%	18.5%	9.1%	14.6%
S&P 500	US Large Cap Equity	3.1%	17.9%	9.6%	14.6%
Russell 1000	US Large Cap Equity	3.1%	18.0%	9.3%	14.7%
Russell 1000 Value	US Large Cap Value Equity	1.3%	15.5%	7.4%	13.9%
Russell 1000 Growth	US Large Cap Growth Equity	4.7%	20.4%	11.1%	15.3%
Russell 2000	US Small Cap Core Equity	2.5%	24.6%	7.4%	13.7%
Russell 2000 Value	US Small Cap Value Equity	0.7%	24.9%	7.0%	13.4%
Russell 2000 Growth	US Small Cap Growth Equity	4.4%	24.4%	7.6%	14.0%
MSCI EAFE	Int'l Developed Large Cap Equity	6.1%	20.3%	1.1%	8.7%
MSCI EAFE Small Cap	Int'l Developed Small Cap Equity	8.1%	23.2%	5.6%	12.9%
MSCI Emerging Markets	Emerging Market Equity	6.3%	23.7%	1.1%	4.0%
Alerian MLP	Master Limited Partnerships	-6.4%	0.4%	-11.2%	1.8%
Blmbg Barc. US Aggregate	US Core Fixed Income	1.4%	-0.3%	2.5%	2.2%
Blmbg. Barc. US Treasury	US Treasuries	1.2%	-2.3%	2.0%	1.3%
Blmbg Barc. US Credit	US Corporate Bonds	2.4%	1.8%	3.4%	3.7%
Blmbg Barc. US MBS	US Mortgage Backed Securities	0.9%	-0.1%	2.2%	2.0%
Blmbg. Barc. High Yield	US High Yield Bonds	2.2%	12.7%	4.5%	6.9%







GROWTH ASSETS

Public Equities

- Strong global equity market performance continued during the second quarter, supported by gains across major markets. Across regions, emerging markets were the best performers (MSCI EM +6.3%) and international markets once again outperformed domestic (MSCI ACWI ex US +5.8%, Russell 3000 +3.0%).
- Master limited partnerships (MLPs) returned -6.4% for the second quarter. The largest losses were seen in the energy sector, returning -22.1%. Shipping as well as exploration and production (E&P) also contributed to underperformance, both declining more than 10% for the quarter. Year-to-date, distribution yields have risen 6 bps to 7.1%

Public Debt

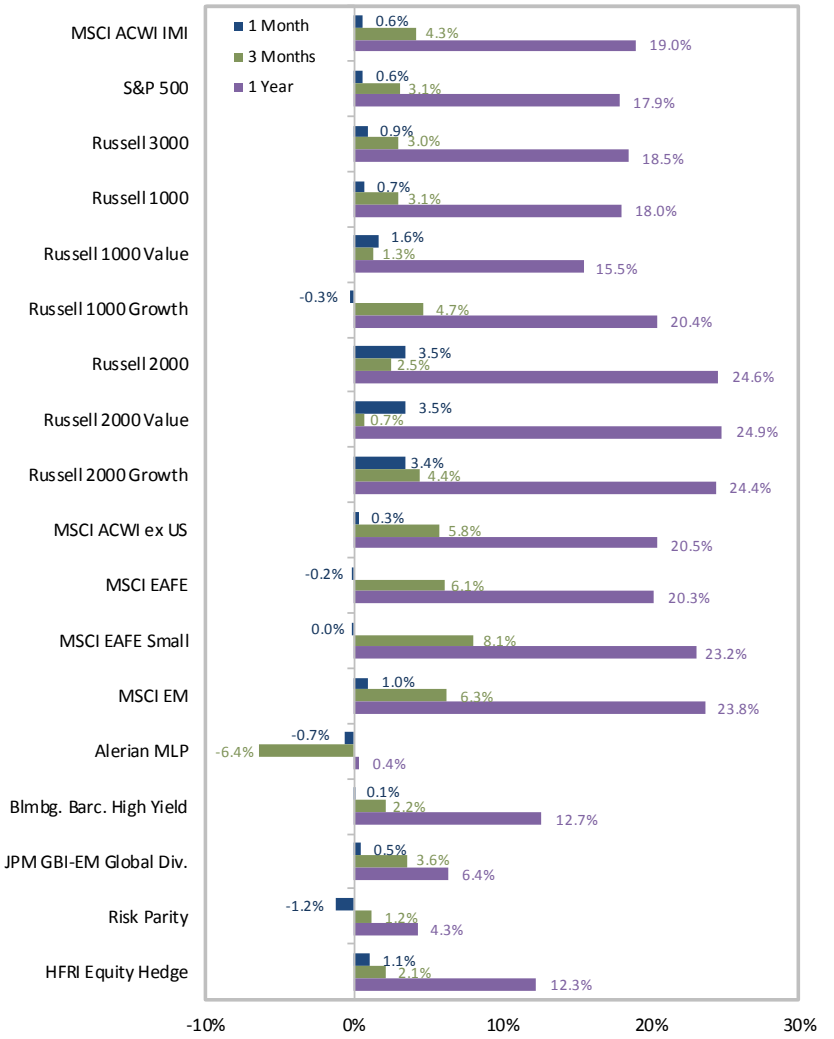
- The Bloomberg Barclays High Yield Index gained 2.2% during the second quarter of 2017. Spreads continued to tighten during the quarter, decreasing 19 bps to 364 bps. For the trailing 12 months, spreads have tightened by 230 bps; over the past 20 years, high yield spreads have averaged 552 bps.
- Local currency emerging market debt returned 3.6%, benefitting from currency appreciation and improving emerging market growth forecasts. Emerging market debt performance has been strong year-to-date, returning 10.4% as emerging market fundamentals continue to improve.

Private Assets

- The strong fundraising environment for private equity continued into the second quarter. Capital commitments have now exceeded $100b in five of the last seven quarters, with Preqin estimating that Q2 fundraising totaled $121b. The amount of capital raised has been relatively concentrated, with approximately 63% of the $121b raised being secured by the top 10 funds closed during the quarter. Purchase price multiples for middle-market LBOs, as measured by S&P Leveraged Commentary and Data (S&P LCD), have remained relatively stable from 2016 at 9.5x YTD.
- Momentum in private debt fundraising slowed during the first half of 2017 compared to record highs at the end of 2016. Twenty-eight funds, totaling $16b in capital, closed during the second quarter, down from $26b in Q1. The second quarter marked the first time in three years in which private debt fundraising did not surpass $20b.

Hedge Funds

- Risk parity funds performed well during the second quarter but lagged strong equity market gains. Equity and credit allocations contributed, while commodities detracted.
- Growth hedge funds gained in the second quarter, with a tailwind from strong risk asset performance. Equity long/short and activist strategies led performance, while merger arbitrage and distressed/restructuring strategies also contributed.



Note: Risk Parity returns are based on an internally comprised benchmark.
All returns are USD.

INCOME ASSETS

Public Debt

- The Bloomberg Barclays US Aggregate gained 1.4% during the quarter. The longer duration portion of the Index outperformed as yields along the long end of the curve declined and lower-quality outperformed higher quality issues as spreads tightened.

- International bonds returned 3.5% for the quarter, with international outperformance over domestic fixed income predominately driven by declines in the dollar against foreign currencies.

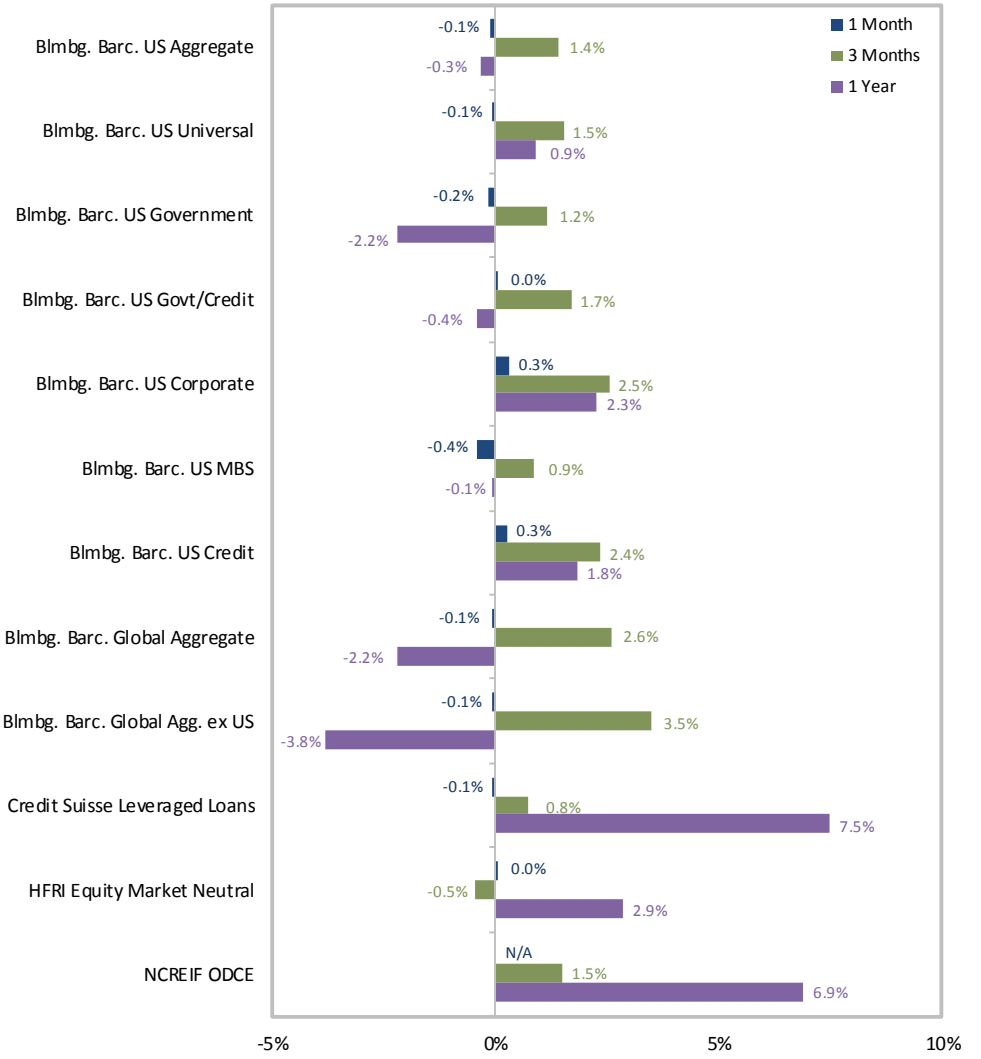
- Public bank loans, as measured by the Credit Suisse Leveraged Loan Index, returned 0.8% for the quarter. The trailing 12-month default rate in loans has remained relatively constant year-to-date at 1.5%, approximately in line with forecasts. Recovery rates have averaged 73% year-to-date compared to 63% in 2016.

Relative Value Hedge Funds

- Relative value hedge funds were mostly unchanged during the second quarter. Volatility strategies were the largest contributors, while credit strategies also gained, most notably in the asset-backed strategies. Equity market neutral strategies detracted.

Core Real Estate

- Core real estate returns for the second quarter of 2017 were 1.7% gross and 1.5% net, bringing the one-year gain for core funds to 6.9%. Strong but declining gains in the commercial real estate market have been supported by the US cyclical expansion, with strong labor market growth fueling demand while supply remains limited. In recent quarters price appreciation has slowed compared to prior in the expansion, with a larger percentage of real estate gains now being generated through income.



DIVERSIFICATION ASSETS

Inflation

- TIPS returned -0.4% during the second quarter, with losses predominately being driven by declining inflation expectations. At the end of the second quarter market-implied 10-year inflation expectations were 1.74%, below their 20-year average of 1.99%.

Deflation

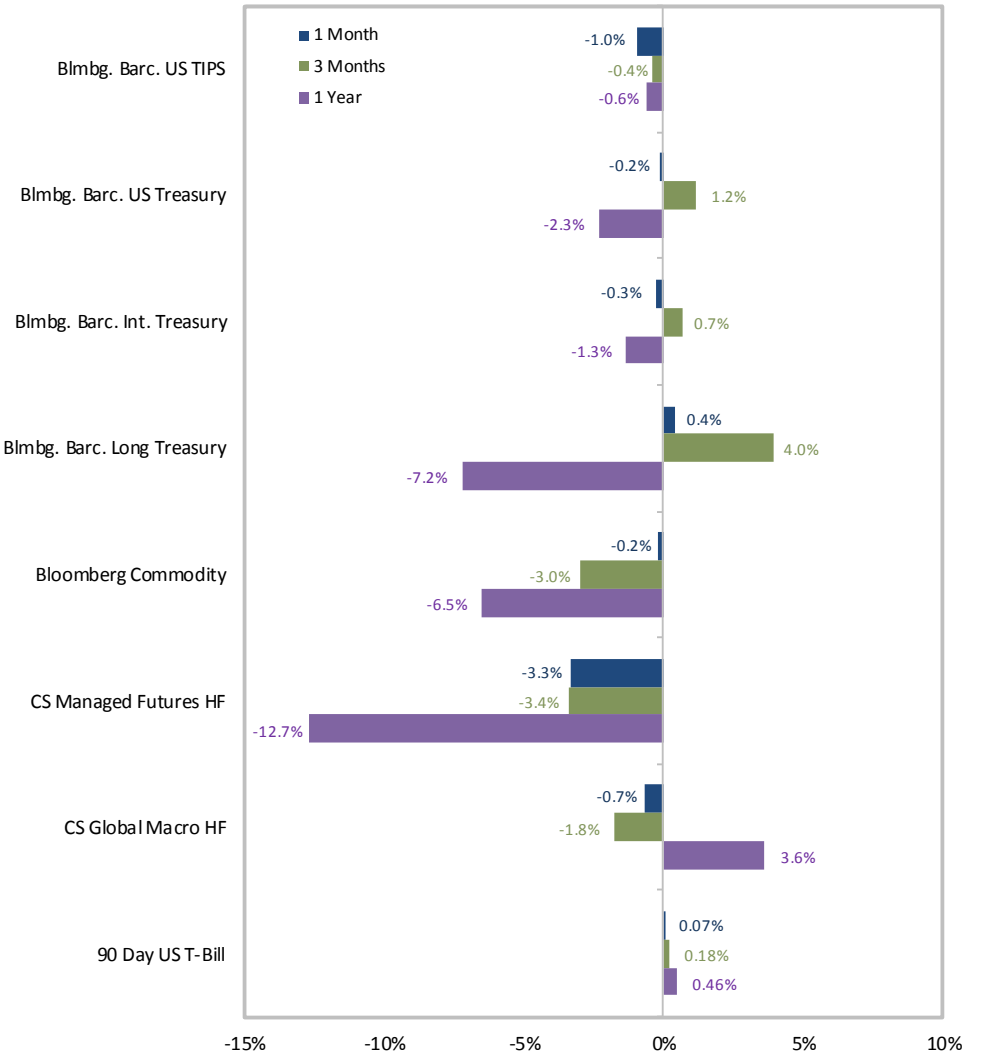
- Long treasuries were the best-performing sector of government fixed income for the quarter, returning 4.0% as yields at the long end of the curve declined modestly. The 30-year Treasury ended the quarter yielding 2.8%, a decline of 30 bps from the end of 2016.
- Cash returns have increased but remain low, with 90-day T-Bills offering 18 bps for the quarter and 46 bps over the past year.

Commodities

- The Bloomberg Commodity Index declined during the second quarter, returning -3.0%. Underperformance was largely attributed to losses in the energy (-9.7%) as OPEC members extended production cuts, but not to the extent expected by investors. Livestock produced the highest sector gains for the quarter, returning 11.2%, with lean hogs driving outperformance. Broad commodity prices have reversed from the beginning of the year, after originally benefitting from optimism around the prospects of infrastructure spending under the Trump administration.

Tactical Trading

- Tactical trading hedge funds detracted in the second quarter. Managed futures strategies were the larger detractor, though discretionary global macro was also negative.

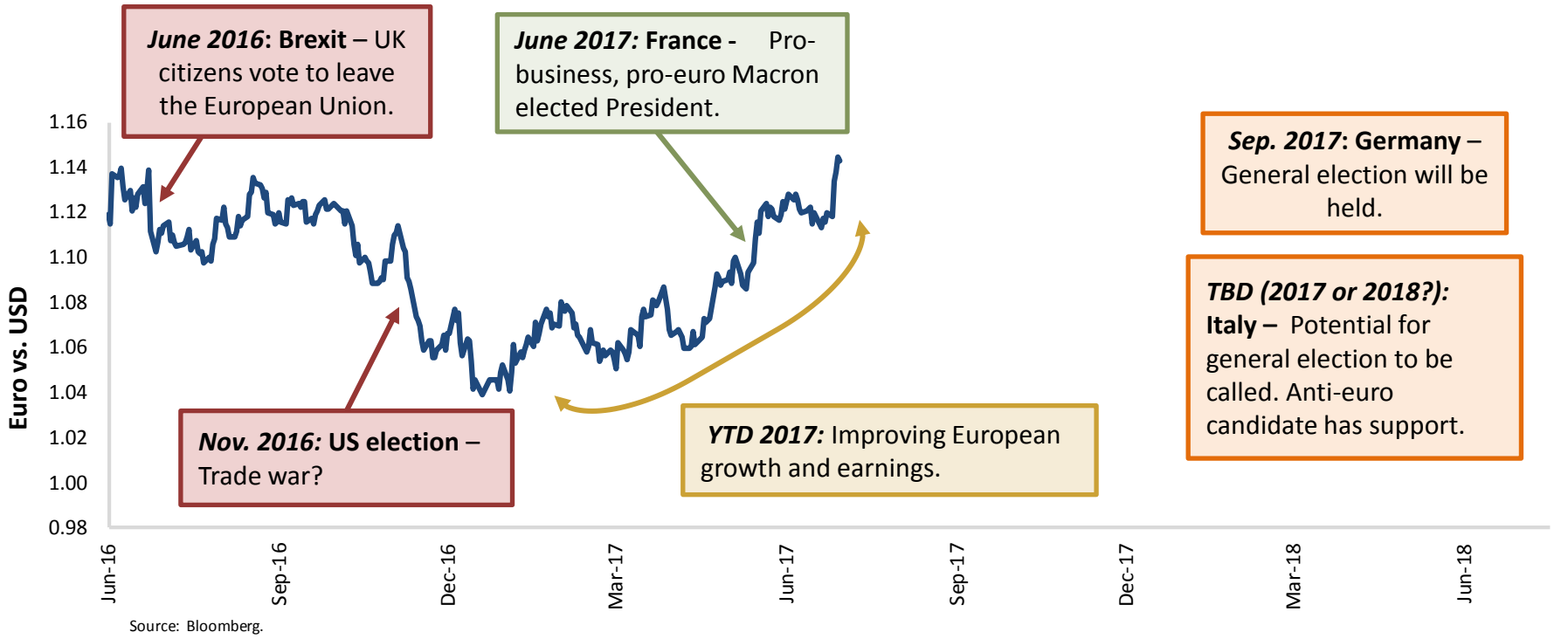


INVESTMENT THEMES: LOOKING FORWARD

What We Believe	*What Investors Should Do*
Growth	
• Equity market valuations, particularly in the US, remain elevated.	• Favor conservative positioning over aggressive return-seeking given current valuations. Within equity, tilt towards emerging and international developed markets.
• Short- to medium-term global growth prospects are positive given the broad-based nature of the cyclical upswing.	• With lower expected asset class returns going forward, emphasize active management in less efficient markets.
• High levels of uncertainty (central bank, political , economic, etc.) persist, while realized and implied market volatility remains low.	
Income	
• Muted returns for most fixed income assets as yields remain below historical levels.	• Favor return sources that diversify away from duration without significant credit risk (i.e. relative value hedge funds, unconstrained fixed income).
• Credit spreads have compressed despite levels of corporate debt-to-GDP at cyclical highs.	— Size these allocations appropriately given significant tracking error vs. core fixed income.
Diversification	
• The 'cost' of holding diversifying assets has declined given high equity valuations and low bond yields.	• Maintain equity diversification (tactical trading strategies) and fixed income diversification (commodities, TIPS) for portfolio balance and hedging qualities.

INTERNATIONAL MARKETS: POLITICAL PERSPECTIVE

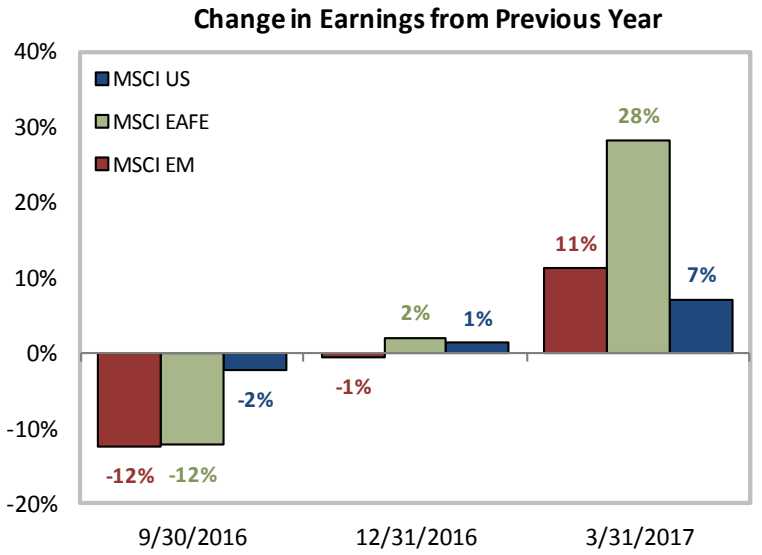
- Political events, specifically in Europe, have become increasingly frequent and impactful.
- Less traditional candidates have gained support due to the slow economic recovery and other issues such as immigration and terrorism.



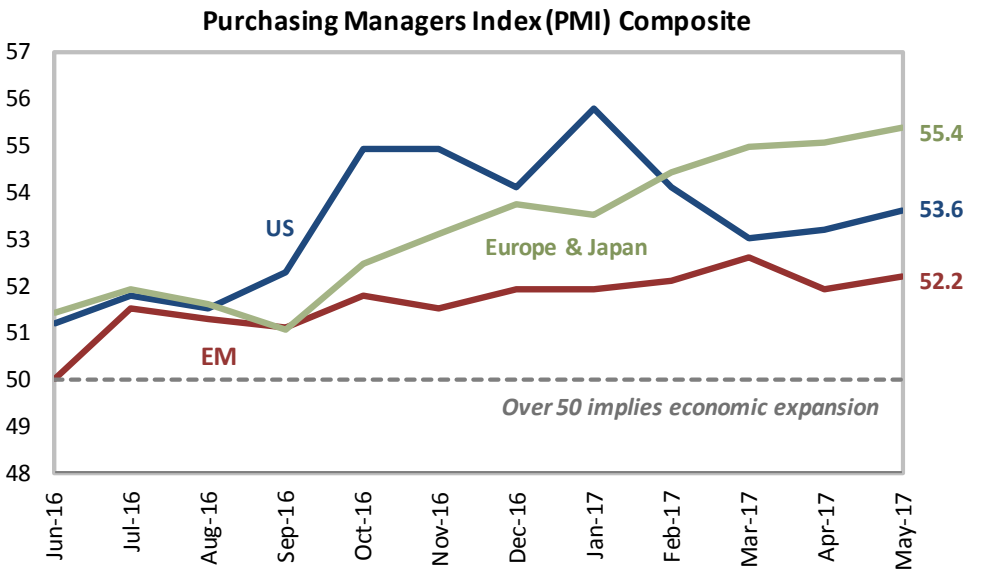
Source: Bloomberg.

Political events have impacted markets in spurts, but the most important driver has been economic fundamentals.

INTERNATIONAL RECOVERY: FUNDAMENTALS



Source: Bloomberg, MSCI.



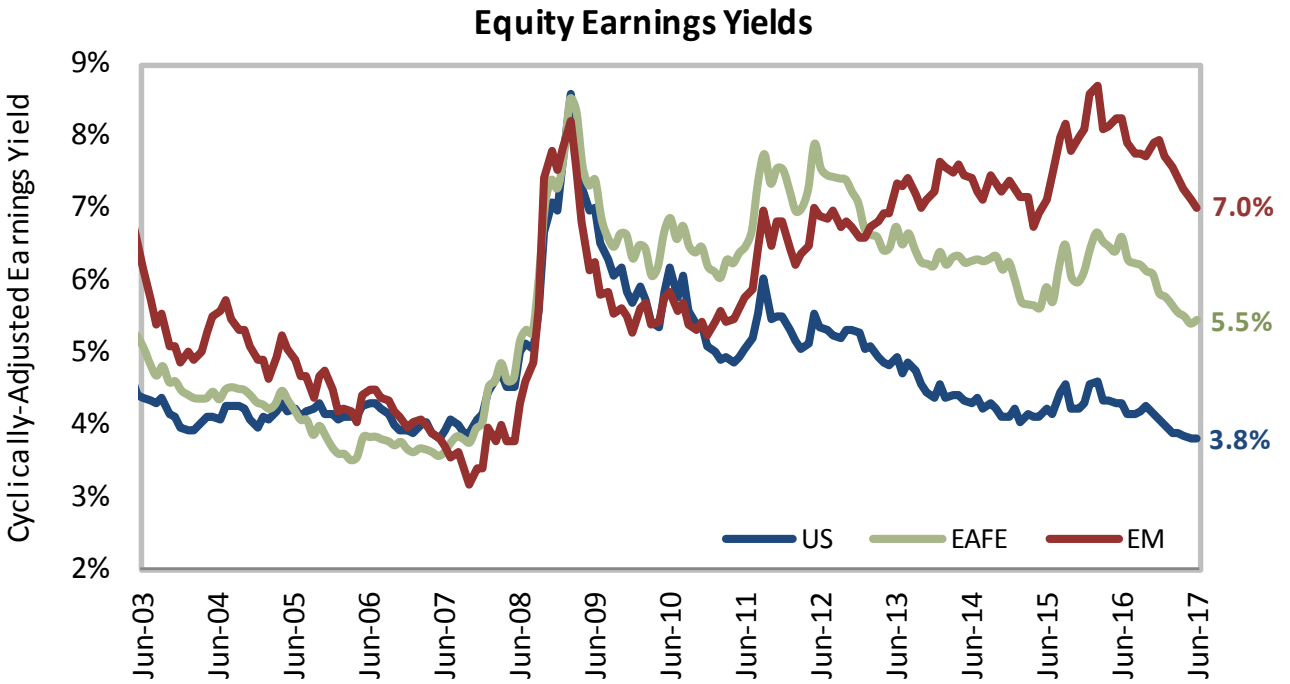
Source: Bloomberg. Europe and Japan composite based on country weights in MSCI EAFE.

- International developed equity markets have experienced the strongest earnings growth of any region over the past year.
- EAFE earnings have been supported by:
  - Increased consumer confidence and spending.
  - Higher trading partner growth (EAFE is more sensitive to global growth than the US).
  - Profit margin expansion through higher sales while costs remain low.
  - Continued low interest rates.

- The Purchasing Managers Index (PMI) has been a reliable indicator of future growth.
- All major regions have been expanding, with EAFE increasing significantly over the past year.

The international equity recovery has been supported by strengthening fundamentals and economic growth.

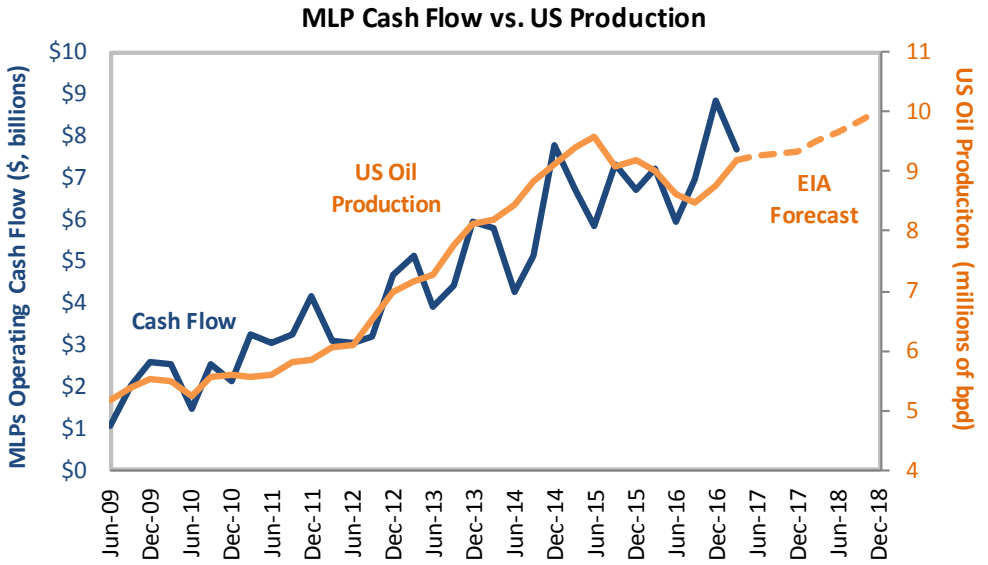
INTERNATIONAL RECOVERY: VALUATIONS



Source: AQR. Earnings yields are cyclically-adjusted, which averages earnings over the trailing ten years and adjusts for inflation.

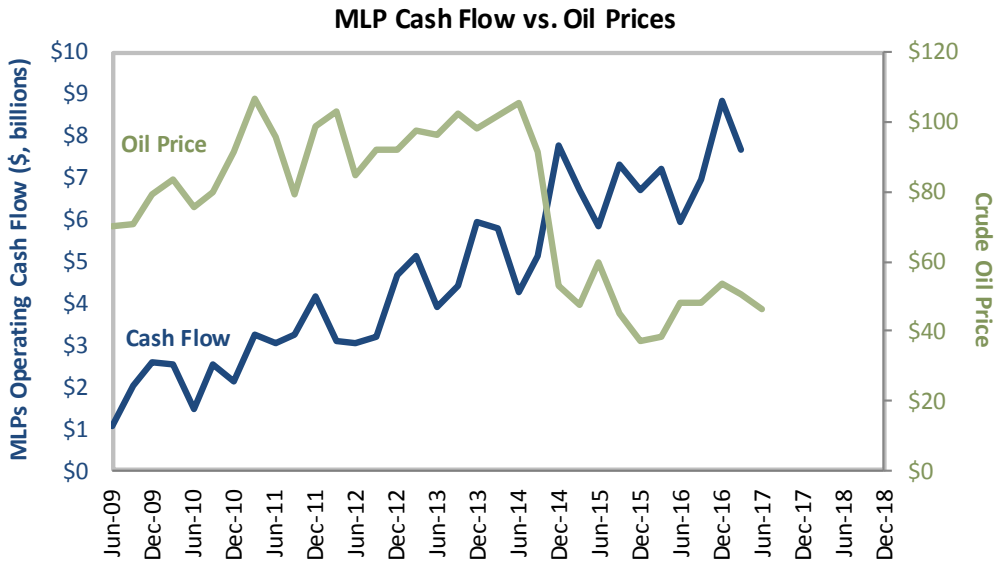
- Yields have compressed across markets over the past year as markets have experienced strong gains.
- From a valuation perspective, emerging markets remain the most attractive, followed by developed international.

MASTER LIMITED PARTNERSHIPS (MLPS)



Source: Bloomberg, Energy Information Administration.

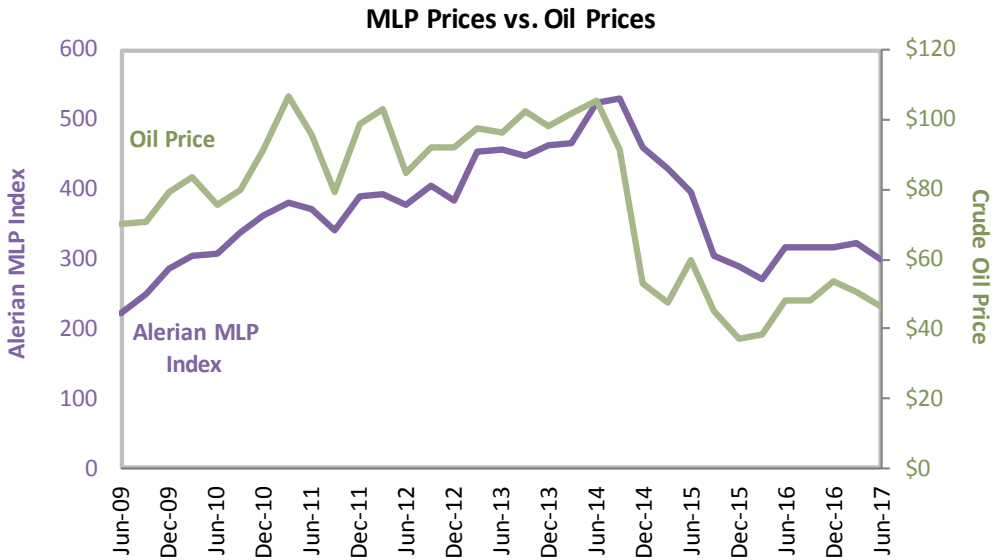
Cash flow generated by MLPs has grown in line with US oil production…



Source: Bloomberg.

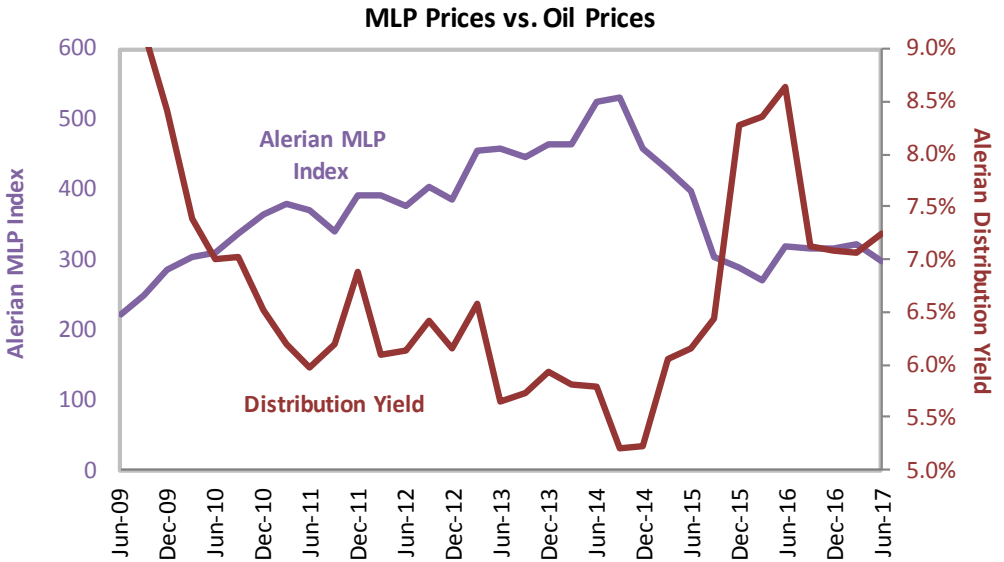
… not with oil prices. $110 billion of pipeline and related projects expected between now and the end of 2019 should support production and MLP cash flow.

MASTER LIMITED PARTNERSHIPS (MLPS)



Source: Bloomberg.

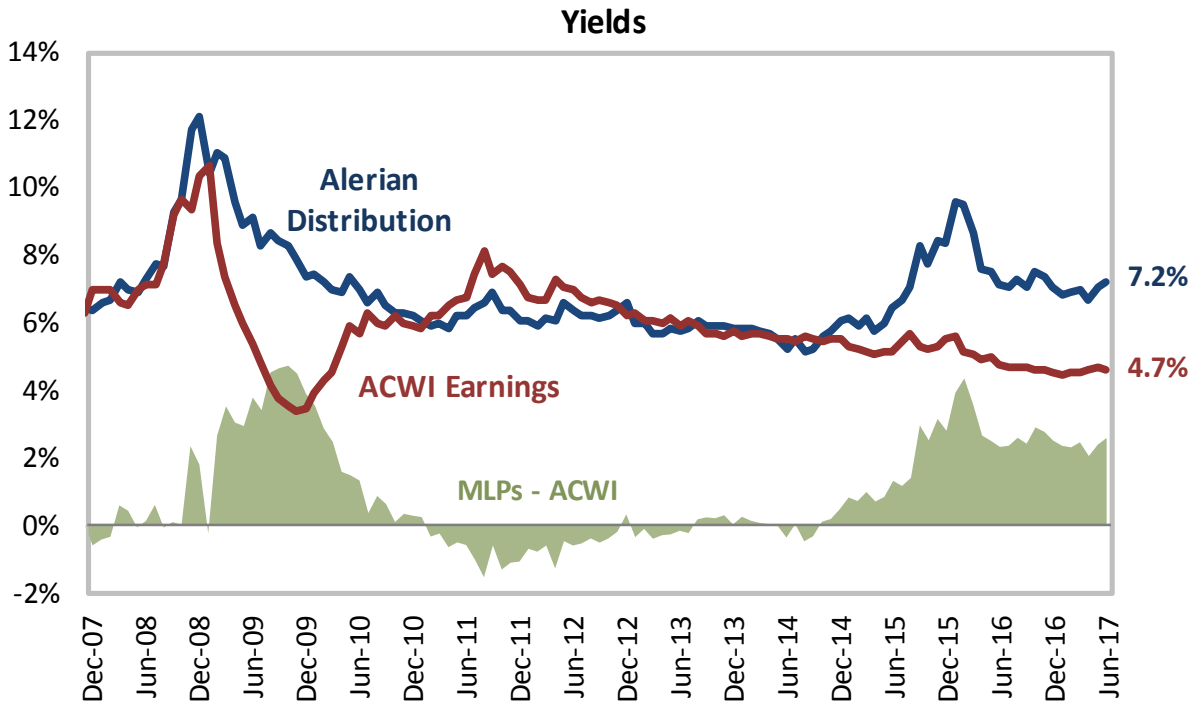
Despite this, MLPs have traded down with oil prices.



Source: Bloomberg, Alerian.

As a result, investors are now being compensated with a higher distribution yield (over 7% today compared to 5% in 2014).

MLPS ARE ATTRACTIVE RELATIVE TO GLOBAL EQUITIES



Source: Bloomberg, Alerian.

MLPs Tactical Allocation:

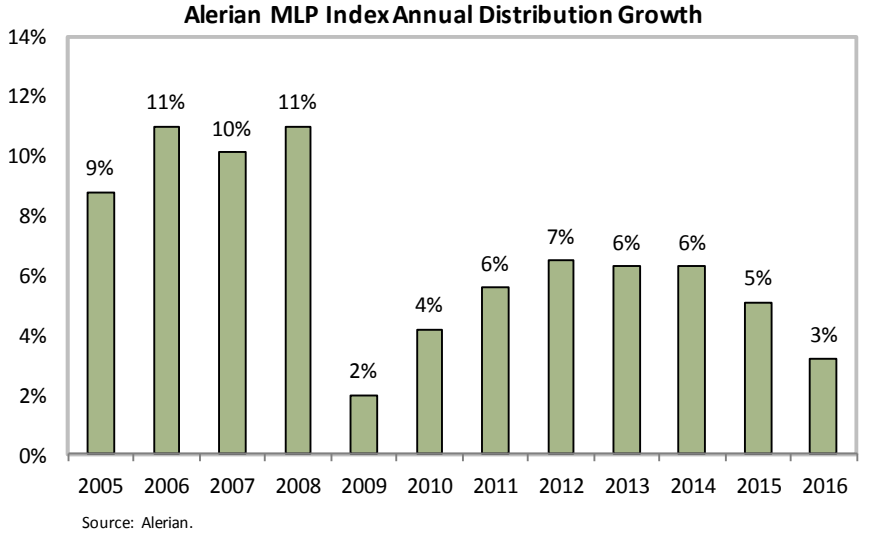
- June 2014 – Reduce allocation by half.
- March 2015 – Increase back to full weight.
- September 2015 – Increase to overweight.

Investors are also being compensated with a significant premium for owning MLPs compared to global stocks, which are trading near their least attractive valuations since the crisis.

MLP SCENARIOS LOOKING FORWARD SUGGEST FAVORABLE RETURNS

5-Year Forward Looking Scenarios Following Oil Market Deterioration

	Bear Scenario Low Distribution Growth + Reprice to Highest Yield	**Low Growth Scenario** Lowest Ever Distribution Growth	**Base Case Scenario** Historical Average Distribution Growth	**Upside Scenario** Reprice to Historical Average Yield
6/30/2017 Distribution Yield	7.2%	7.2%	7.2%	7.2%
Annual Distribution Growth	2.0%	2.0%	5.0%	5.0%
Ending Yield	12.1%	7.2%	7.2%	5.5%
IRR (Annual Return)	**0.9%**	**9.3%**	**12.6%**	**17.7%**



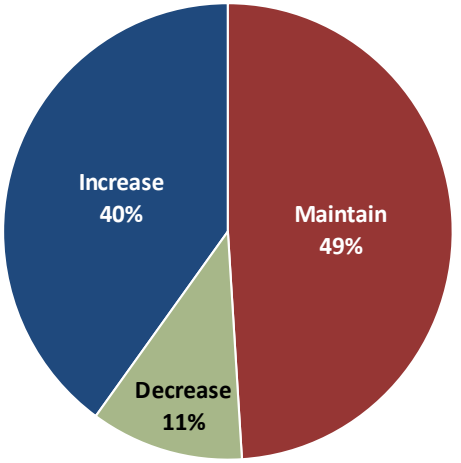
Source: Alerian.

Short-term price movements have been and may continue to be dominated by sentiment and oil prices, but investors with a longer time horizon are likely to see attractive returns.

INVESTORS ARE LOOKING TO PRIVATE MARKETS FOR HIGHER RETURNS

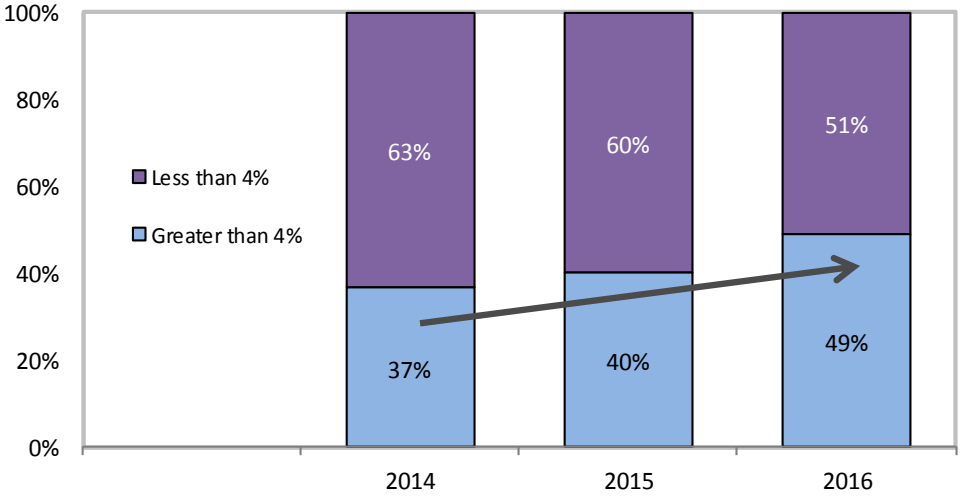
- As expected returns for traditional public asset classes have declined and private investments have performed well, investors have turned to private markets in hopes of higher returns.

Expected Change in 2017 P.E. Allocation
Preqin Survey of Private Investors



Source: Bridgewater Associates, Preqin.

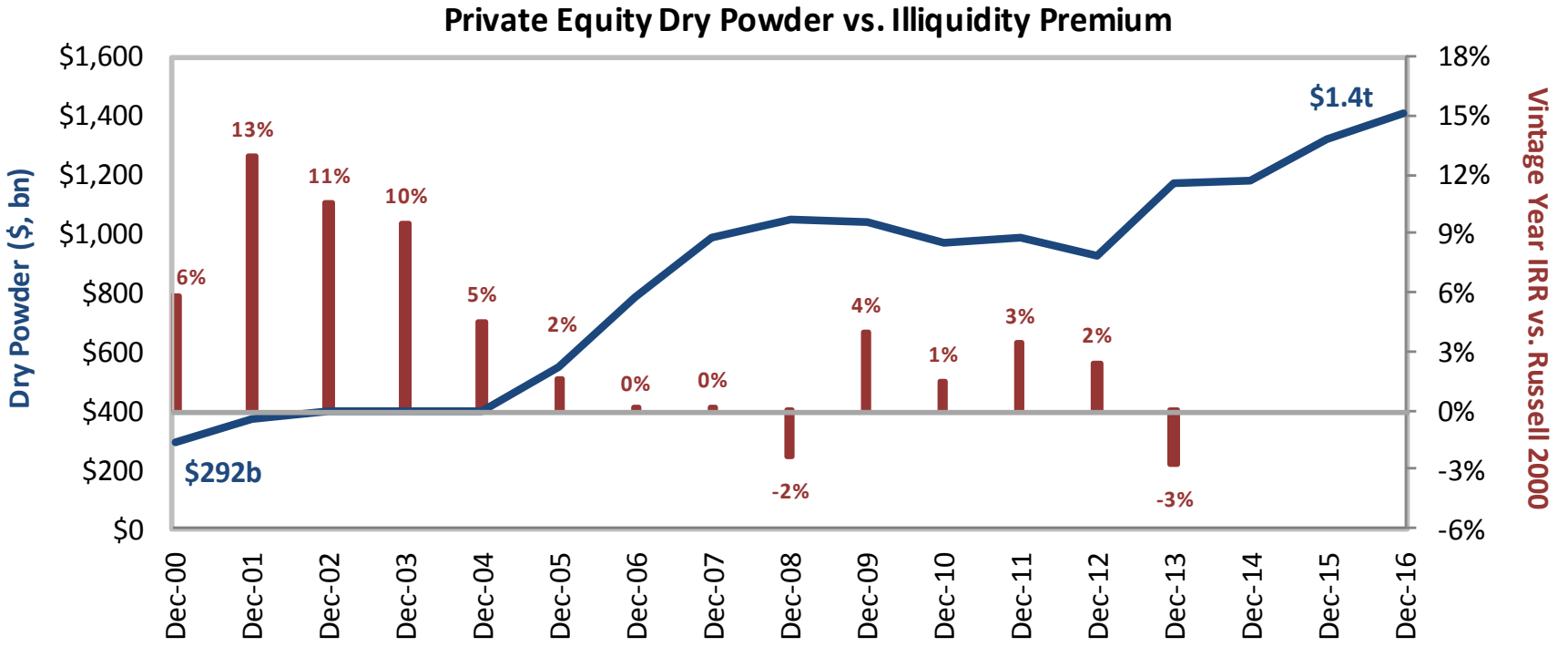
Expected P.E. Illiquidity Premium
Preqin Survey of Private Investors



Source: Bridgewater Associates, Preqin.

- 89% of investors surveyed by Preqin are expecting to increase or maintain their private asset allocation in 2017…
- … and these same investors have increased their expectations of the illiquidity premium looking forward.

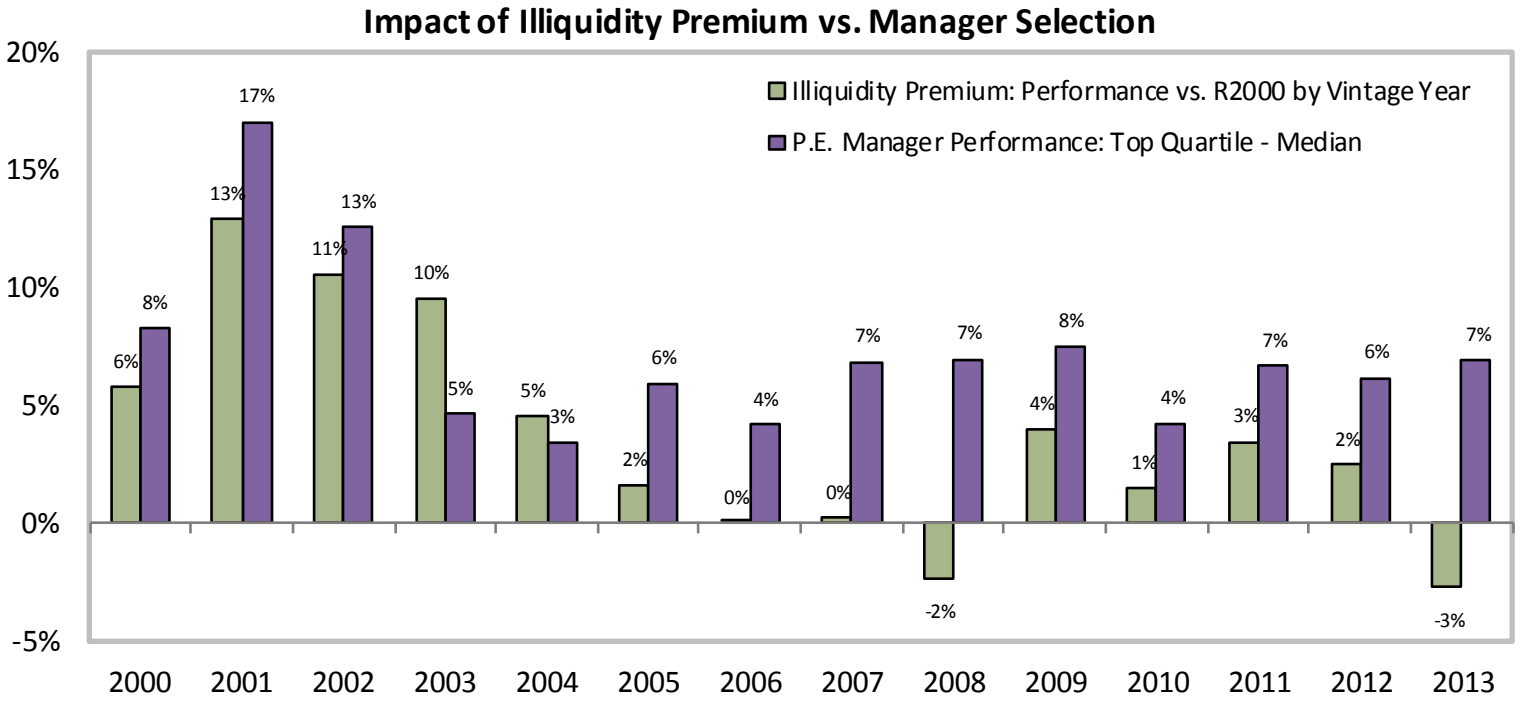
PERSPECTIVE ON CAPITAL IN PRIVATE MARKETS



Source: Preqin, Cambridge. Dry Powder is a total of buyout, distressed, growth equity, mezz., real estate, venture, and other. Vintage years still early in the investment cycle (2014 to current) have intentionally been omitted.

- Private equity uninvested capital has increased by $1.1 trillion since 2000 and $280 billion since 2012.
- The illiquidity premium has declined as the space has become more competitive and public market performance has been strong.

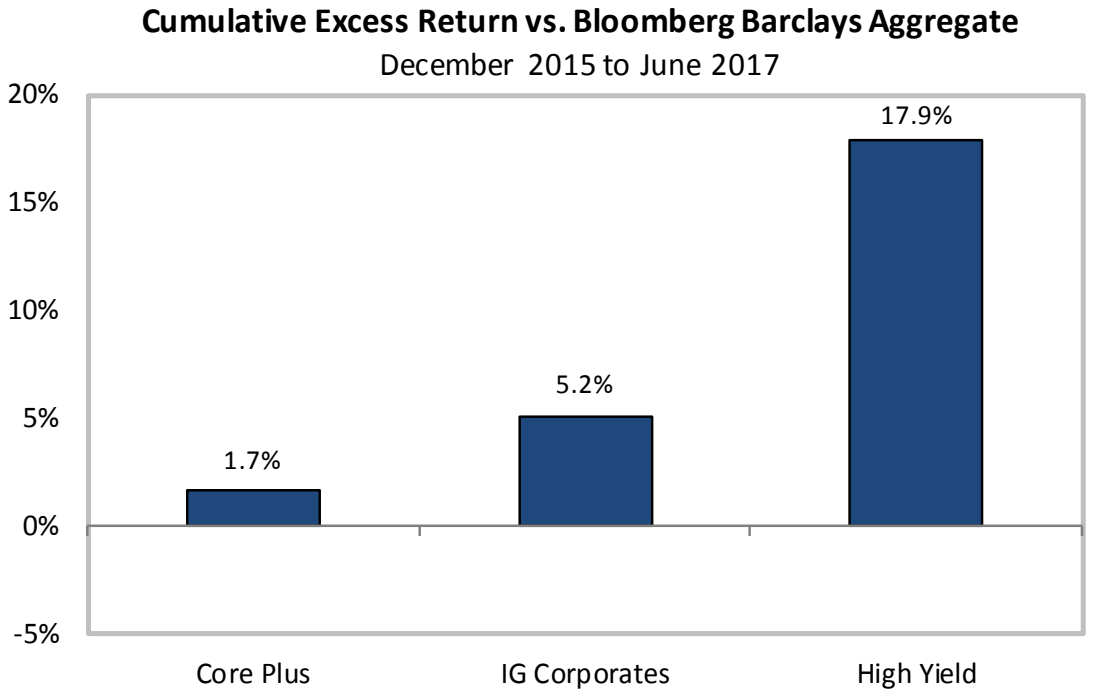
CONSIDERATIONS FOR PRIVATE INVESTMENTS



Source: Preqin, Cambridge.

- Manager selection has historically been a more important factor in determining private equity portfolio returns than the illiquidity premium.

CREDIT UPDATE

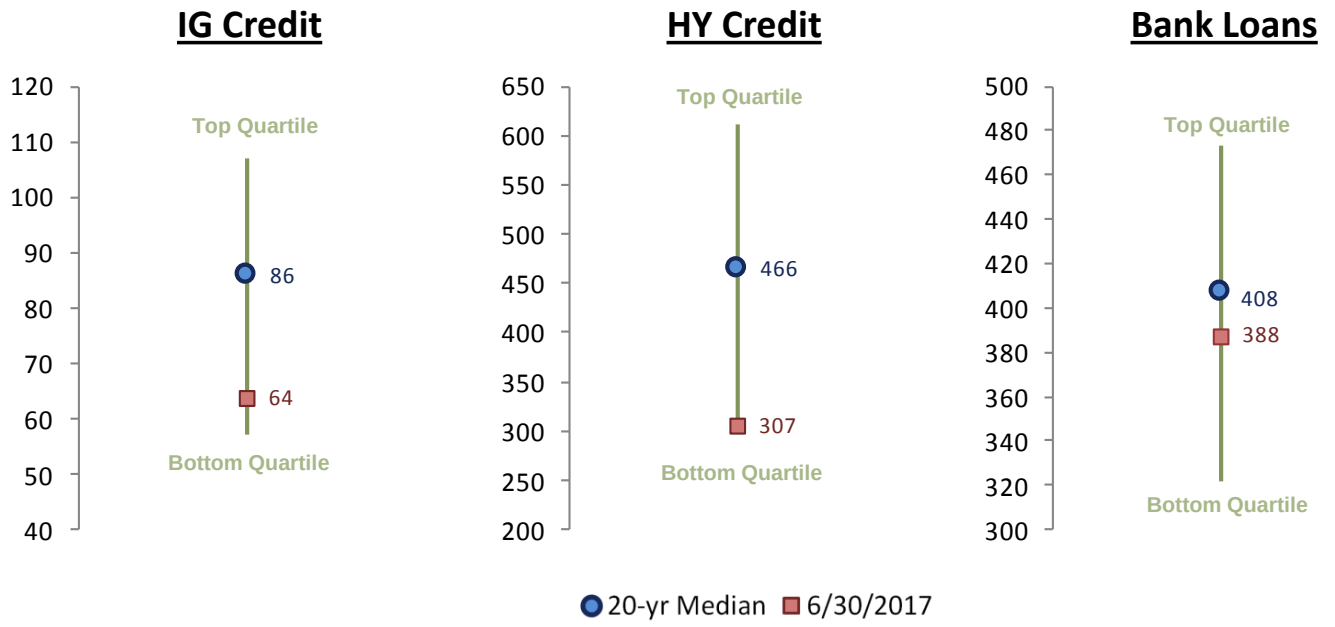


Spread Compression	-22 bps	-44 bps	-308 bps

Spreads have tightened considerably following their elevated levels at the end of 2015, driving significant excess returns for credit versus core fixed income.

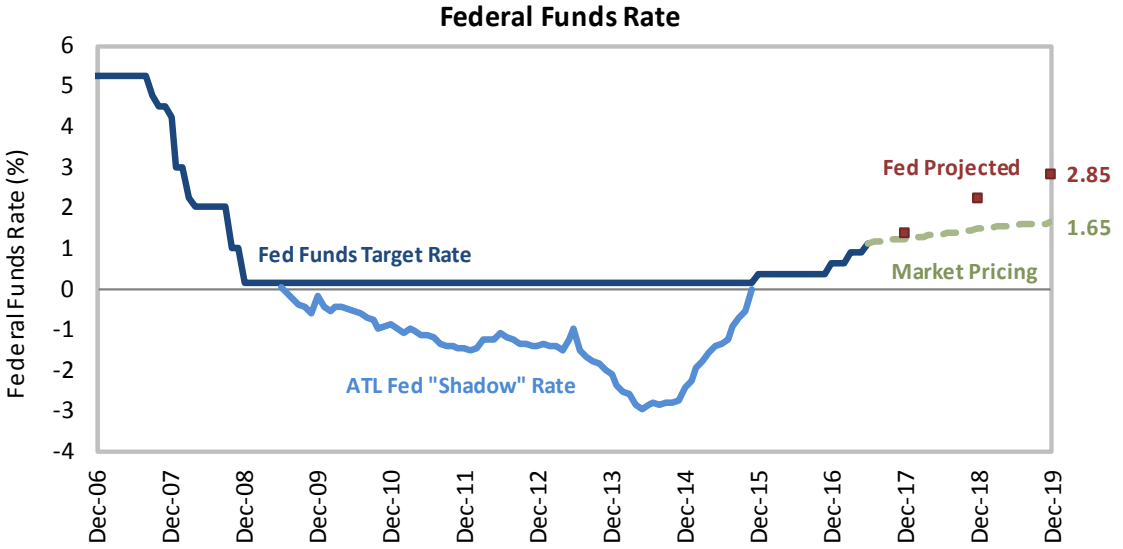
CREDIT UPDATE (CONTINUED)

Valuations (Yield Spreads vs. Bloomberg Barclays Agg.)

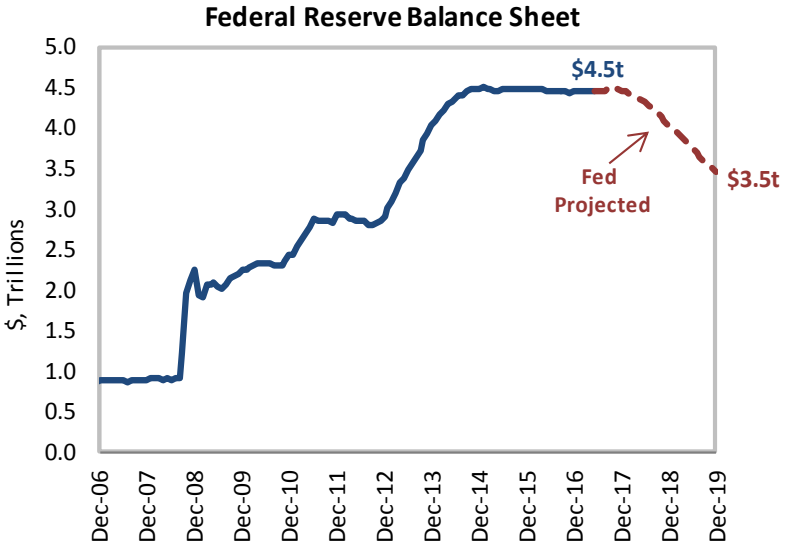


Spreads are reasonably tight across credit sectors; bank loans are the only asset class of the three offering spreads near historical median levels.

FEDERAL RESERVE UPDATE



Source: Bloomberg, Federal Reserve. Market Expectation is based on fed funds futures contracts, Fed Projection is based on published estimates by the Federal Open Market Committee.



Source: Bloomberg.

- The FOMC raised interest rates for the fourth time this cycle, bringing the target fed funds rate to 1.00% - 1.25%.
- The Atlanta Fed Shadow Fed Funds Rate estimates the rate equivalent adjusted for bond purchases, or quantitative easing.

Projected Fed Funds Rate	End of 2017	End of 2018	End of 2019
Federal Reserve Projection	1.38%	2.23%	2.85%
Market Pricing	1.24%	1.46%	1.65%

- The Fed also outlined its plan to reduce its balance sheet, likely beginning later this year.
- Assuming the Fed begins rolling off bond proceeds in September and follows the outline, the balance sheet will be reduced by $1 trillion, or 22%, by the end of 2019.

Relative Performance

June 30, 2017

CALENDAR YEAR PERFORMANCE COMPARISON

1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	YTD 2017	Q2 2017	10 Yr ROR	20 Yr ROR
EM 74.8%	EAFE 8.1%	Large Value 38.4%	Large Growth 23.1%	Large Value 35.2%	Large Growth 38.7%	EM 66.4%	Small Value 22.8%	Small Value 14.0%	Core Bonds 10.3%	EM 55.8%	EM 25.6%	EM 34.1%	EM 32.2%	EM 39.4%	Int. Treas. 11.4%	EM 78.5%	Small Growth 29.1%	Core Bonds 7.8%	EM 18.2%	Small Growth 43.3%	S&P 500 13.7%	Large Growth 5.7%	Small Value 31.7%	EM 18.4%	EM 6.3%	Large Growth 8.9%	Small Value 9.0%
EAFE 32.9%	Large Growth 2.7%	S&P 500 37.6%	S&P 500 23.0%	S&P 500 33.4%	S&P 500 28.6%	Small Growth 43.1%	Core Bonds 11.6%	Core Bonds 8.4%	Int. Treas. 9.6%	Small Growth 48.5%	Small Value 22.3%	EAFE 14.0%	EAFE 26.9%	Large Growth 11.8%	Core Bonds 5.2%	HY Bonds 58.2%	Small Cap 26.9%	Int. Treas. 6.6%	Small Value 18.1%	Small Cap 38.8%	Large Value 13.5%	S&P 500 1.4%	Small Cap 21.3%	Large Growth 14.0%	EAFE 6.1%	Small Growth 7.8%	Small Cap 8.0%
Small Value 23.8%	S&P 500 1.3%	Large Growth 37.2%	Large Value 21.6%	Small Value 31.8%	EAFE 20.3%	Large Growth 33.2%	Int. Treas. 10.3%	Int. Treas. 8.2%	HY Bonds -1.4%	Small Cap 47.3%	EAFE 20.7%	Large Value 7.1%	Small Value 23.5%	EAFE 11.6%	HY Bonds -26.2%	Large Growth 37.2%	Small Value 24.5%	HY Bonds 5.0%	Large Value 17.5%	Small Value 34.5%	Large Growth 13.1%	Int. Treas. 1.2%	Large Value 17.3%	EAFE 13.8%	Large Growth 4.7%	HY Bonds 7.7%	Large Value 7.7%
Small Cap 18.9%	HY Bonds -1.0%	Small Growth 31.0%	Small Value 21.4%	Large Growth 30.5%	Large Value 15.6%	EAFE 27.3%	Large Value 7.0%	HY Bonds 5.3%	EM -6.0%	Small Value 46.0%	Small Cap 18.3%	Large Growth 5.3%	Large Value 22.2%	Int. Treas. 8.8%	Small Value -28.9%	Small Growth 34.5%	EM 18.9%	Large Growth 2.6%	EAFE 17.3%	Large Growth 33.5%	Core Bonds 6.0%	Core Bonds 0.6%	HY Bonds 17.1%	Small Growth 10.0%	Small Growth 4.4%	S&P 500 7.2%	S&P 500 7.2%
Large Value 18.1%	Small Value -1.5%	Small Cap 28.4%	Small Cap 16.5%	Small Cap 22.4%	Core Bonds 8.7%	Small Cap 21.3%	Small Cap -3.0%	Small Cap 2.5%	Small Value -11.4%	EAFE 39.2%	Large Value 16.5%	S&P 500 4.9%	Small Cap 18.4%	Small Growth 7.1%	Small Cap -33.8%	EAFE 31.9%	Large Growth 16.7%	S&P 500 2.1%	Small Cap 16.3%	Large Value 32.5%	Small Growth 5.6%	EAFE -0.8%	S&P 500 12.0%	S&P 500 9.3%	S&P 500 3.1%	Small Cap 6.9%	HY Bonds 7.0%
HY Bonds 17.1%	Small Cap -1.8%	Small Value 25.8%	HY Bonds 11.4%	Small Growth 12.9%	Int. Treas. 8.6%	S&P 500 21.0%	HY Bonds -5.9%	EM -2.4%	Large Value -15.5%	Large Value 30.0%	Small Growth 14.3%	Small Value 4.7%	S&P 500 15.8%	Core Bonds 7.0%	Large Value -36.9%	Small Cap 27.2%	Large Value 15.5%	Large Value 0.4%	S&P 500 16.0%	S&P 500 32.4%	Small Cap 4.9%	Small Growth -1.4%	Small Growth 11.3%	Small Cap 5.0%	Small Cap 2.5%	Small Value 5.9%	Large Growth 6.6%
Small Growth 13.4%	Int. Treas. -1.8%	HY Bonds 19.2%	Small Growth 11.3%	HY Bonds 12.7%	HY Bonds 1.9%	Large Value 7.4%	S&P 500 -9.1%	Large Value -5.6%	EAFE -15.7%	Large Growth 29.8%	HY Bonds 11.1%	Small Cap 4.6%	Small Growth 13.4%	S&P 500 5.5%	S&P 500 -37.0%	S&P 500 26.5%	HY Bonds 15.1%	Small Growth -2.9%	HY Bonds 15.8%	EAFE 22.8%	Small Value 4.2%	Large Value -3.8%	EM 11.2%	HY Bonds 4.9%	HY Bonds 2.2%	Large Value 5.6%	Small Growth 6.5%
S&P 500 10.1%	Large Value -2.0%	Core Bonds 18.5%	EAFE 6.4%	Core Bonds 9.7%	Small Growth 1.2%	HY Bonds 2.4%	EAFE -14.0%	Small Growth -9.2%	Small Cap -20.5%	HY Bonds 29.0%	S&P 500 10.9%	Small Growth 4.1%	HY Bonds 11.9%	HY Bonds 1.9%	Large Growth -38.4%	Small Value 20.6%	S&P 500 15.1%	Small Cap -4.2%	Large Growth 15.3%	HY Bonds 7.4%	Int. Treas. 2.6%	Small Cap -4.4%	Large Growth 7.1%	Large Value 4.7%	Core Bonds 1.4%	Core Bonds 4.5%	EM 5.5%
Core Bonds 9.8%	Small Growth -2.4%	Int. Treas. 14.4%	EM 6.0%	Int. Treas. 7.7%	Small Cap -2.5%	Int. Treas. 0.4%	Large Growth -22.4%	S&P 500 -11.9%	S&P 500 -22.1%	S&P 500 28.7%	Large Growth 6.3%	HY Bonds 2.7%	Large Growth 9.1%	Large Value -0.2%	Small Growth -38.5%	Large Value 19.7%	EAFE 7.8%	Small Value -5.5%	Small Growth 14.6%	Int. Treas. -1.3%	HY Bonds 2.5%	HY Bonds -4.5%	Core Bonds 2.7%	Core Bonds 2.3%	Large Value 1.3%	Int. Treas. 3.5%	Core Bonds 5.2%
Int. Treas. 8.2%	Core Bonds -2.9%	EAFE 11.6%	Int. Treas. 4.0%	EAFE 2.1%	Small Value -6.5%	Core Bonds -0.8%	Small Growth -22.4%	Large Growth -20.4%	Large Growth -27.9%	Core Bonds 4.1%	Core Bonds 4.3%	Core Bonds 2.4%	Core Bonds 4.3%	Small Cap -1.6%	EAFE -43.4%	Core Bonds 5.9%	Core Bonds 6.5%	EAFE -12.1%	Core Bonds 4.2%	Core Bonds -2.0%	EM -2.2%	Small Value -7.5%	Int. Treas. 1.1%	Int. Treas. 1.2%	Small Value 0.7%	EM 1.9%	Int. Treas. 4.3%
Large Growth 2.9%	EM -7.3%	EM -5.2%	Core Bonds 3.6%	EM -11.6%	EM -25.3%	Small Value -1.5%	EM -30.6%	EAFE -21.2%	Small Growth -30.3%	Int. Treas. 2.1%	Int. Treas. 2.0%	Int. Treas. 1.6%	Int. Treas. 3.5%	Small Value -9.8%	EM -53.3%	Int. Treas. -1.4%	Int. Treas. 5.3%	EM -18.4%	Int. Treas. 1.7%	EM -2.6%	EAFE -4.9%	EM -14.9%	EAFE 1.0%	Small Value 0.5%	Int. Treas. 0.7%	EAFE 1.0%	EAFE 4.3%

Best Performing

Worst Performing

Winners for the Trailing 12 Months

- Accommodative policies around the world have aided risk assets, in particular small cap US equities and emerging markets.
  - Russell 2000 = 24.6%
  - MSCI Emerging Markets (Net) = 23.8%
  - Blmb. Barc. U.S. Corp. High Yield = 12.7%

Losers for the Trailing 12 Months

- There has been continued strength across asset classes for the trailing 12-month period. Fixed income asset returns for the trailing year fell slightly into negative territory. MLPs trailing 12-month performance is essentially flat.
  - Blmbg. Barc. US Aggregate = -0.4%
  - Alerian MLP = 0.4%

Areas of Positive Performance for the Trailing 12 Months

- The Total Fund Composite outperformed its Implementation Index by 2.1% for the trailing 12 months; Total Fund returned 12.6% versus the benchmark at 10.5%.
- The US Non-Large Composite returned 26.0%, outperformed the Russell 2500 Index by 6.2%, and ranked in the 13th percentile versus peers.
  - Brown Capital Management was the strongest performer on a relative basis, returning 28.0%, over the benchmark by 3.6%.
- The Emerging Markets Composite returned 28.4%, outpaced the benchmark by 4.6% and ranked in the 16th percentile of the peer universe.
- The Fixed Income Composite returned 3.7%, beat the benchmark by 4.0%, and ranked in the 16th percentile versus peers.
  - Dodge & Cox, PIMCO and Colchester all outperformed their benchmarks by at least 2.6%, and each fund ranked in the top decile versus peers.

Areas of Negative Performance for the Trailing 12 Months

- While positive, the Fixed Income composite return of 3.7% was lower than the other portfolio asset class composites.

Winners for the Recent Quarter:

- Strong global equity market performance was supported by stronger-than-expected corporate earnings. Short-term yields rose with the US Federal Reserve's June rate increase of 25 bps.
  - Russell 1000 = 3.1% (growth over value by 3.4%)
  - MSCI AC World ex USA (net) = 5.8%
  - Blmbg. Barc. U.S. Aggregate = 1.4%

Losers for the Recent Quarter:

- Inflation expectations declined in the second quarter, with TIPS/inflation-linked assets seeing corresponding losses. MLPs traded down alongside declining oil prices.
  - Alerian MLP Index = -6.4%
  - The U.S. Dollar Index (DXY) = -4.7%
  - Blmbg. Barc. U.S. TIPS = -0.4%

Areas of Positive Performance for the Recent Quarter

- The US Equity Composite returned 4.0%, beat the index by 94 bps and ranked in the 19th percentile versus peers.
- The Fixed Income Composite had a 1.9% return and outperformed the benchmark by 41 bps.

Areas of Negative Performance for the Recent Quarter

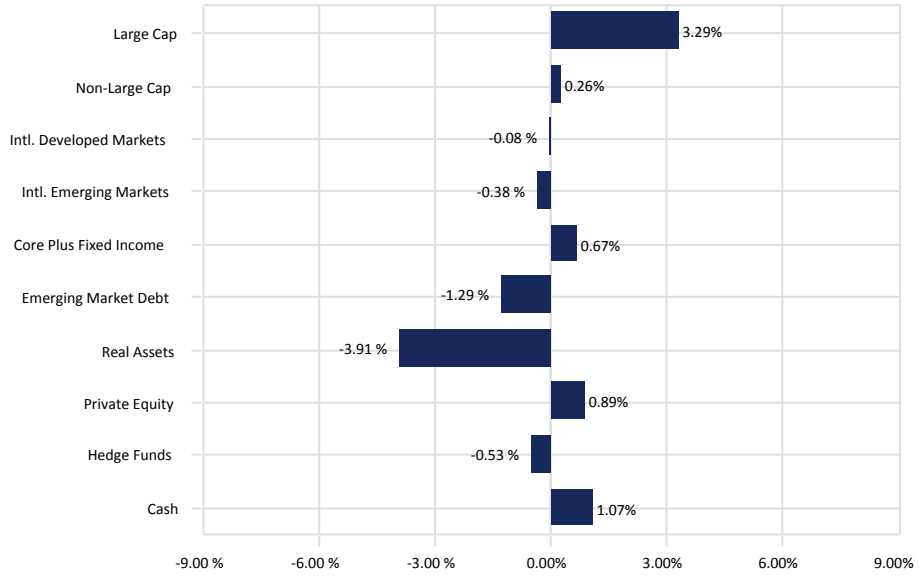
- The International Equity Composite returned 4.9% and underperformed the benchmark by 86 bps and ranked in the 81st percentile of the peer universe.
  - Pyramis was the only international equity manager that outpaced the benchmark and ranked above median in its peer universe.

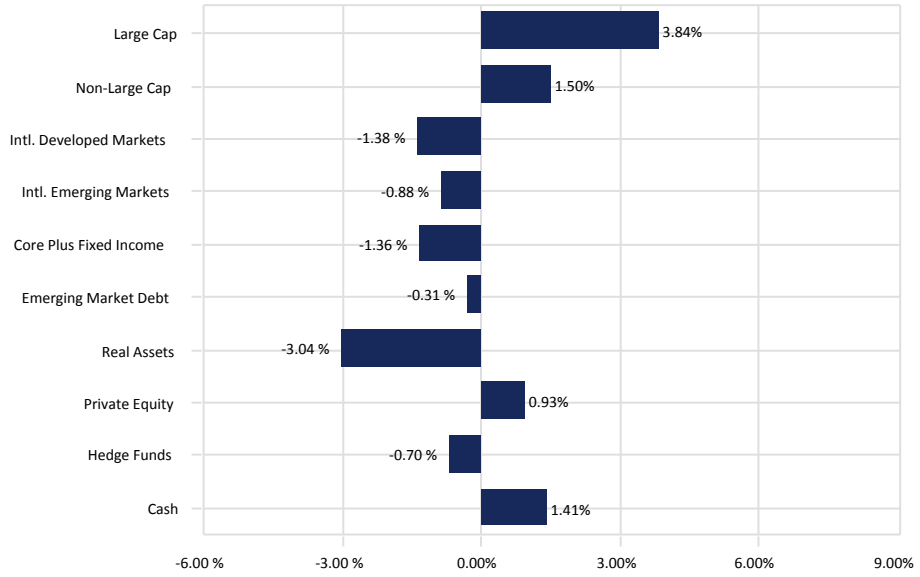
Total Fund

Howard County Retirement Plans

Asset Allocation vs. Target Allocation

June 30, 2017





June 30, 2017

	Market Value ($)	Allocation (%)	Target (%)
Large Cap	168,141,950	18.29	15.00
Non-Large Cap	48,323,782	5.26	5.00
Intl. Developed Markets	118,833,729	12.92	13.00
Intl. Emerging Markets	60,877,509	6.62	7.00
Core Plus Fixed Income	236,034,491	25.67	25.00
Emerging Market Debt	34,149,840	3.71	5.00
Real Assets	33,054,908	3.59	7.50
Private Equity	100,149,026	10.89	10.00
Hedge Funds	110,092,808	11.97	12.50
Cash	9,855,864	1.07	0.00
Total Fund	919,513,907	100.00	100.00

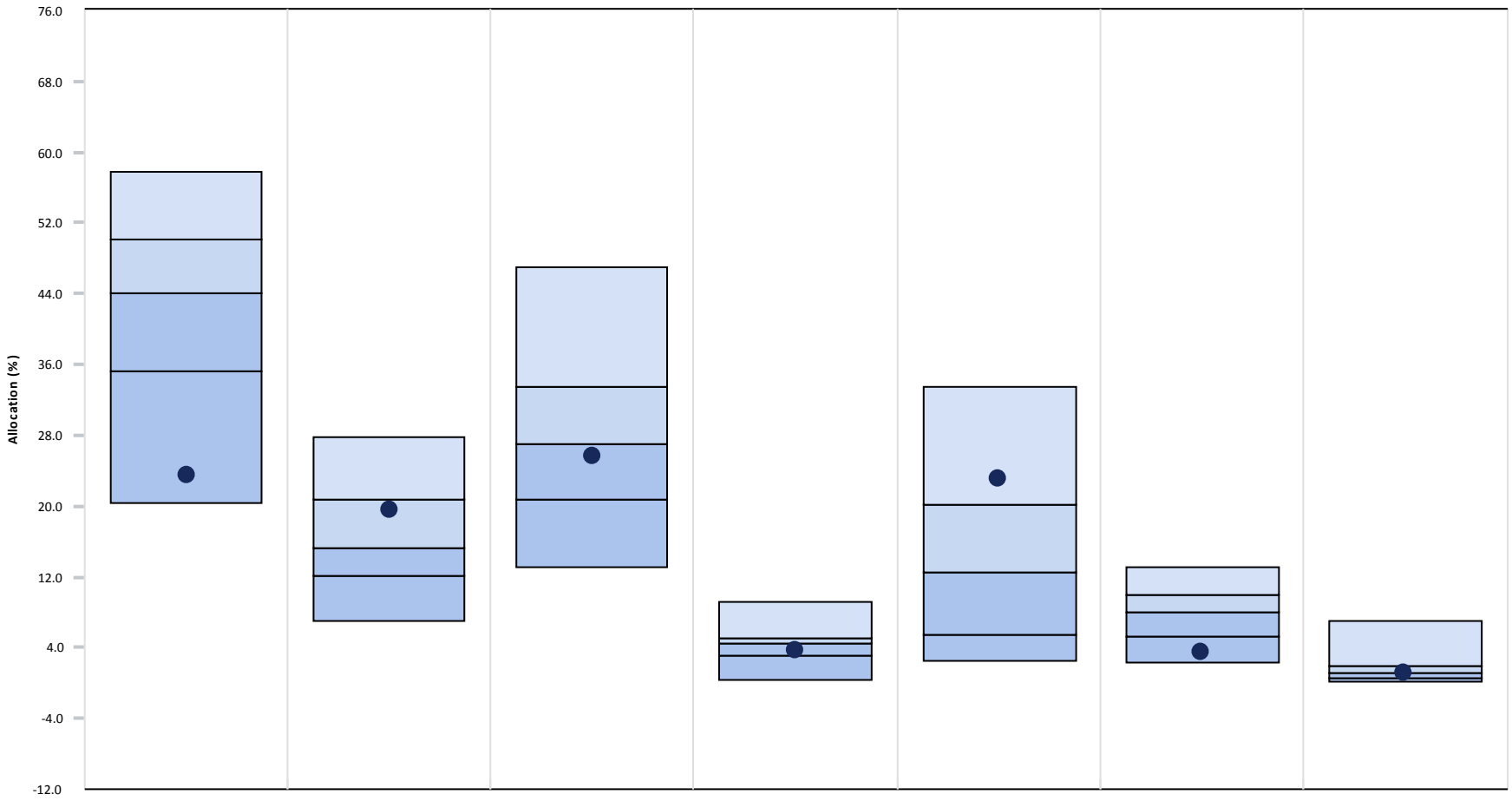
December 31, 2016

	Market Value ($)	Allocation (%)	Target (%)
Large Cap	159,594,476	18.84	15.00
Non-Large Cap	55,036,044	6.50	5.00
Intl. Developed Markets	98,468,346	11.62	13.00
Intl. Emerging Markets	51,843,903	6.12	7.00
Core Plus Fixed Income	200,243,300	23.64	25.00
Emerging Market Debt	39,724,694	4.69	5.00
Real Assets	37,773,341	4.46	7.50
Private Equity	92,571,805	10.93	10.00
Hedge Funds	99,979,362	11.80	12.50
Cash	11,981,952	1.41	0.00
Total Fund	847,217,222	100.00	100.00

Howard County Retirement Plans

Plan Sponsor TF Asset Allocation - All Public Plans

June 30, 2017



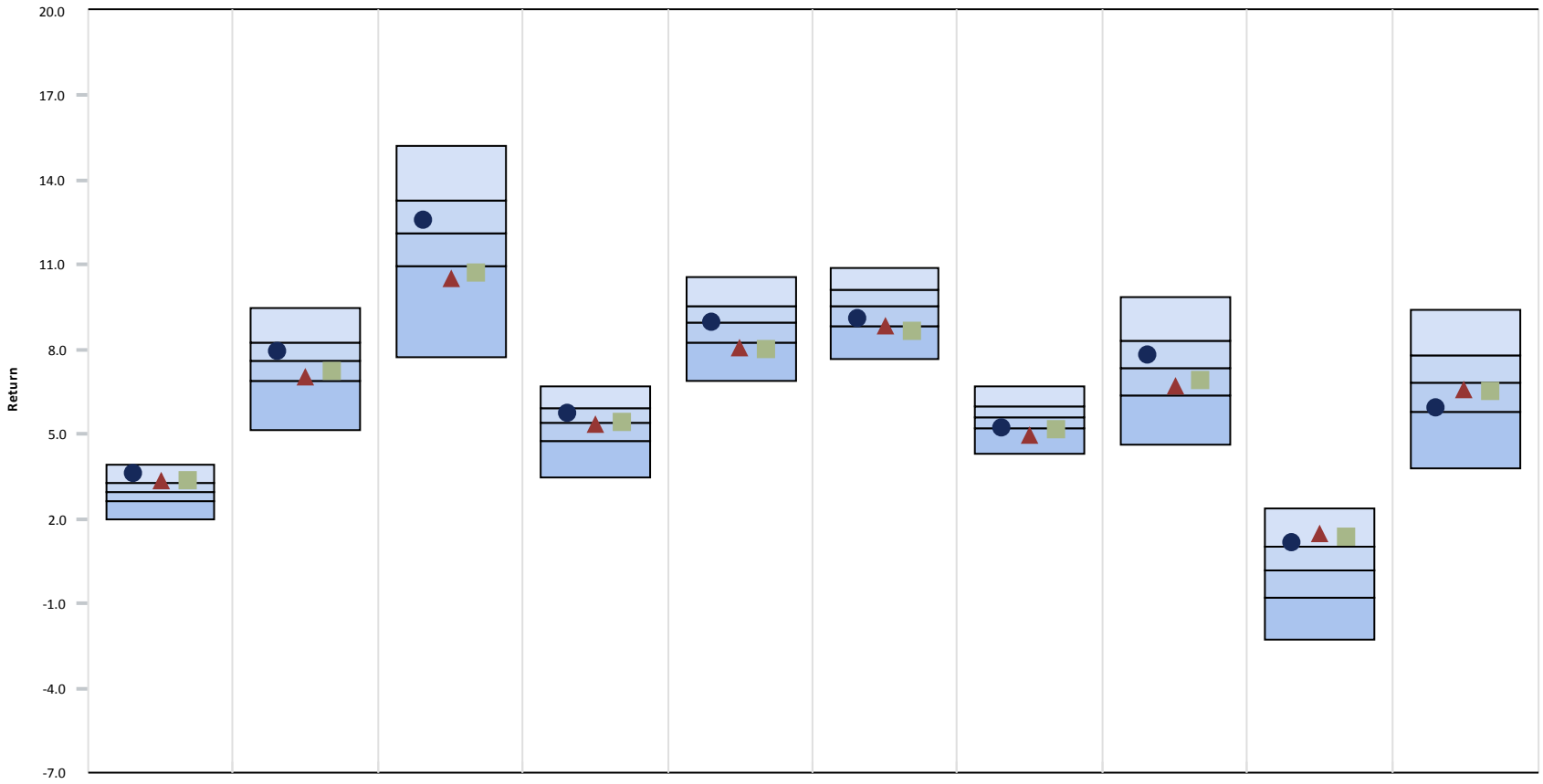
	US Equity	Intl. Equity	US Fixed Income	Intl. Fixed Income	Alternative Inv.	Real Estate	Cash
● Total Fund Composite	23.54 (93)	19.54 (30)	25.67 (54)	3.71 (73)	23.05 (19)	3.41 (92)	1.07 (50)
5th Percentile	57.80	27.77	47.00	9.18	33.43	13.13	7.00
1st Quartile	50.07	20.80	33.53	4.98	20.12	9.99	1.97
Median	**44.09**	**15.27**	**26.98**	**4.56**	**12.54**	**7.95**	**1.05**
3rd Quartile	35.14	12.16	20.79	3.16	5.39	5.15	0.55
95th Percentile	20.27	6.93	13.09	0.25	2.51	2.40	0.07
Population	368	353	366	144	114	237	312

Parentheses contain percentile rankings.

Howard County Retirement Plans

All Public Plans - Total Fund Peer Group Return

June 30, 2017



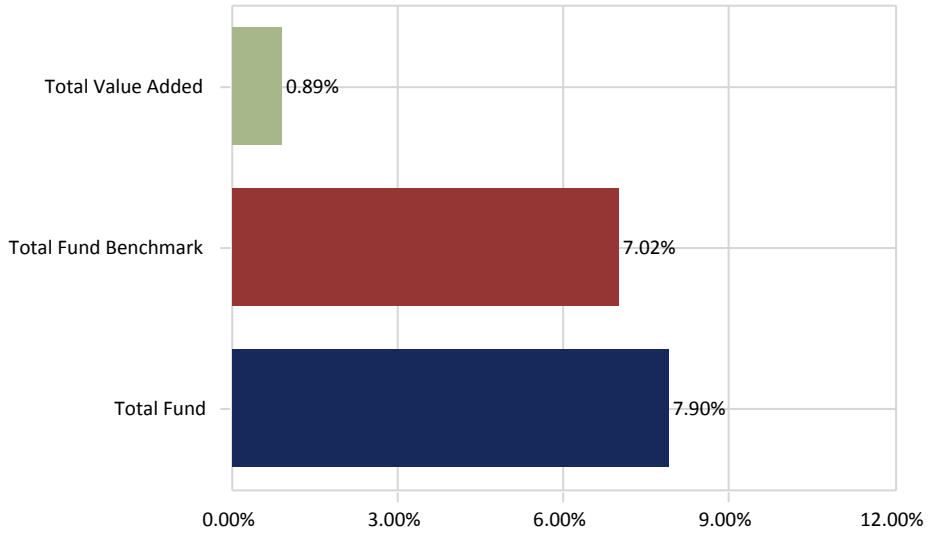
	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2016	2015	2014
● Total Fund Composite	3.58 (13)	7.90 (40)	12.57 (39)	5.72 (35)	8.93 (52)	9.09 (65)	5.19 (75)	7.81 (38)	1.15 (21)	5.90 (73)
▲ Total Implementation Index	3.31 (25)	7.02 (72)	10.52 (82)	5.32 (54)	8.02 (81)	8.80 (76)	4.95 (84)	6.71 (67)	1.44 (17)	6.59 (57)
■ Total Policy Index	3.35 (24)	7.18 (68)	10.71 (80)	5.40 (52)	8.00 (81)	8.64 (81)	5.17 (77)	6.87 (63)	1.31 (18)	6.51 (59)
5th Percentile	3.95	9.46	15.25	6.72	10.56	10.91	6.72	9.85	2.37	9.44
1st Quartile	3.30	8.27	13.28	5.94	9.56	10.10	5.99	8.32	0.98	7.81
Median	**2.97**	**7.61**	**12.12**	**5.42**	**8.97**	**9.51**	**5.58**	**7.34**	**0.17**	**6.81**
3rd Quartile	2.63	6.89	10.99	4.73	8.23	8.82	5.18	6.39	-0.77	5.77
95th Percentile	1.97	5.13	7.71	3.45	6.91	7.68	4.34	4.61	-2.26	3.76
Population	396	396	384	365	355	345	282	577	551	508

Howard County Retirement Plans

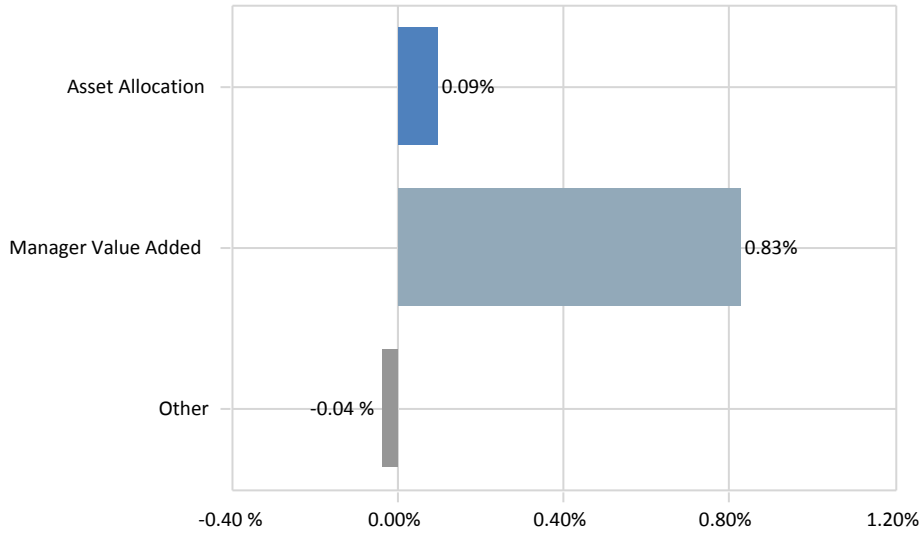
Total Fund Attribution

Year To Date Ending June 30, 2017

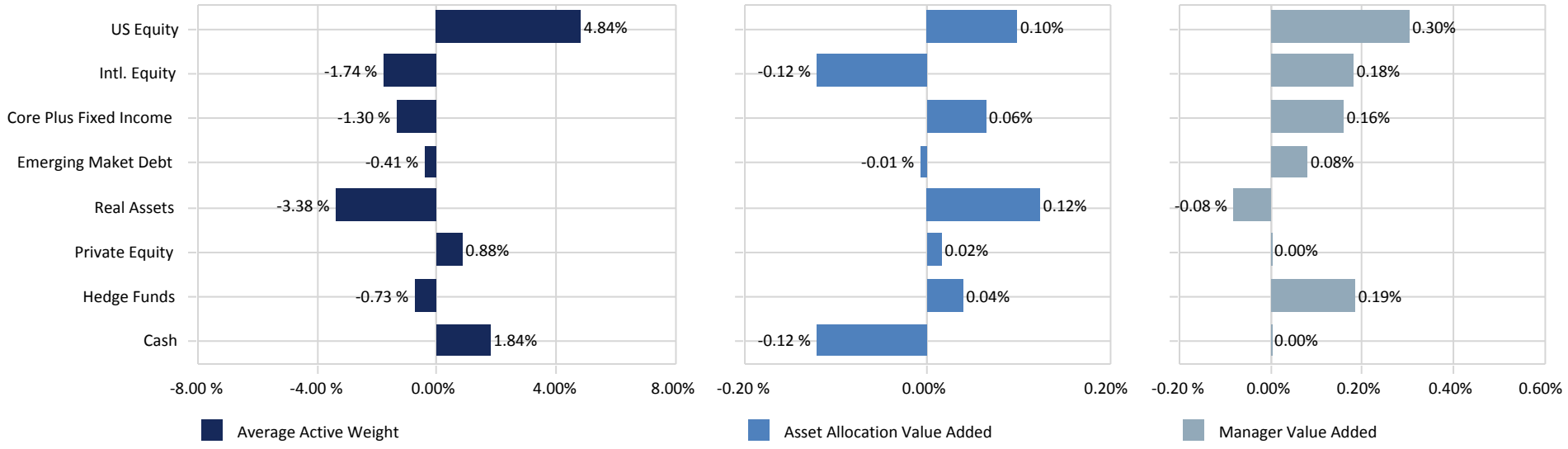
Total Fund Performance



Total Value Added:0.89%



Total Asset Allocation:0.09%



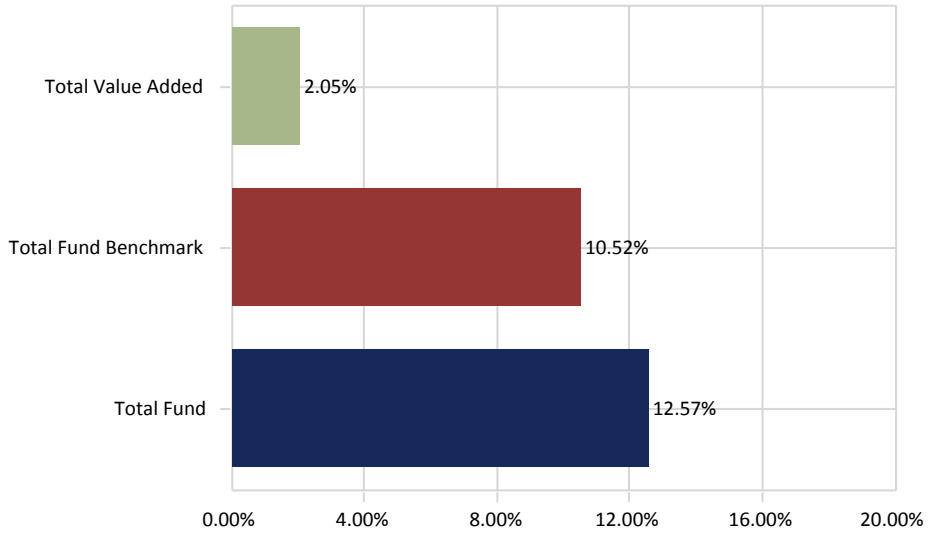
Total Manager Value Added:0.83%

Howard County Retirement Plans

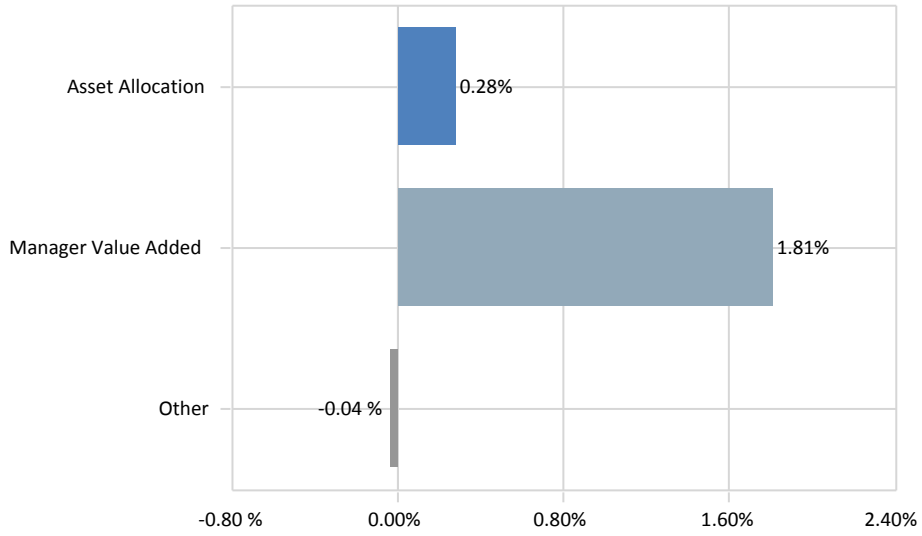
Total Fund Attribution

1 Year Ending June 30, 2017

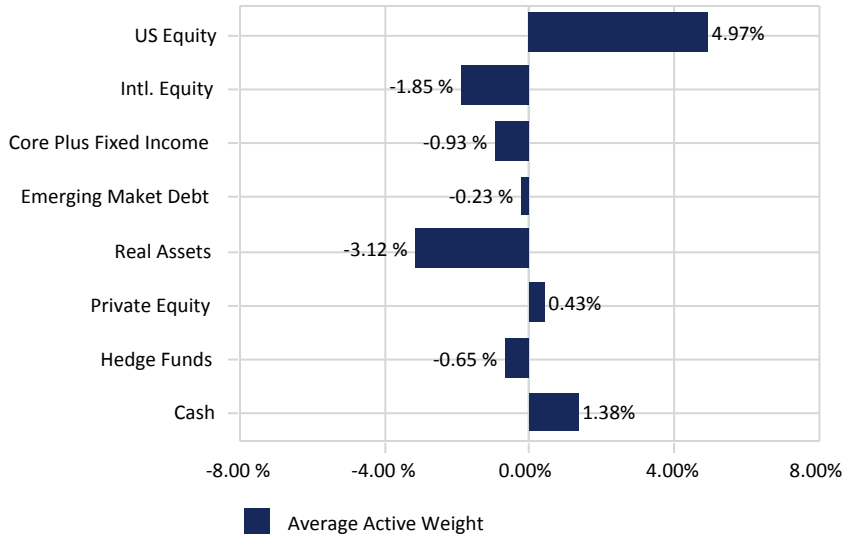
Total Fund Performance

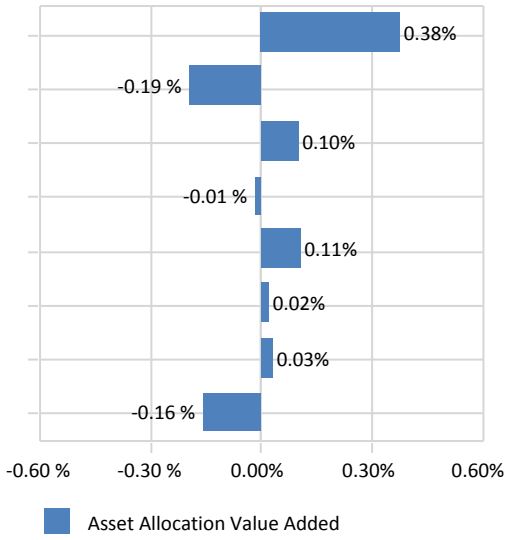


Total Value Added:2.05%

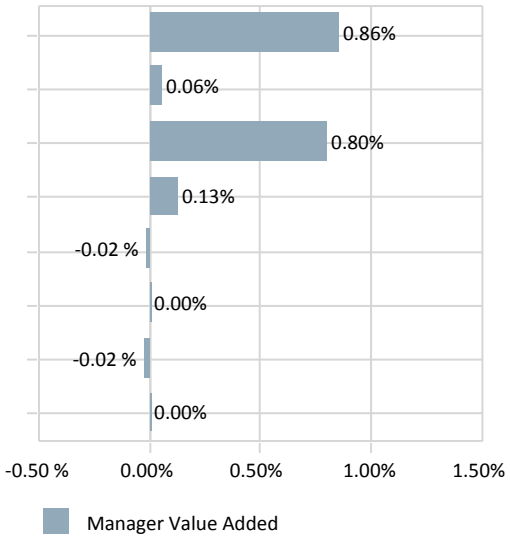


Total Asset Allocation:0.28%





Total Manager Value Added:1.81%

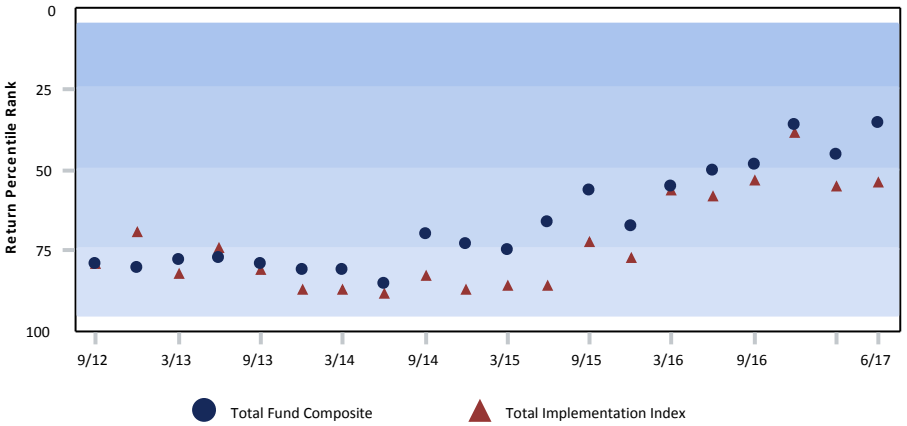


Howard County Retirement Plans

Total Fund Composite

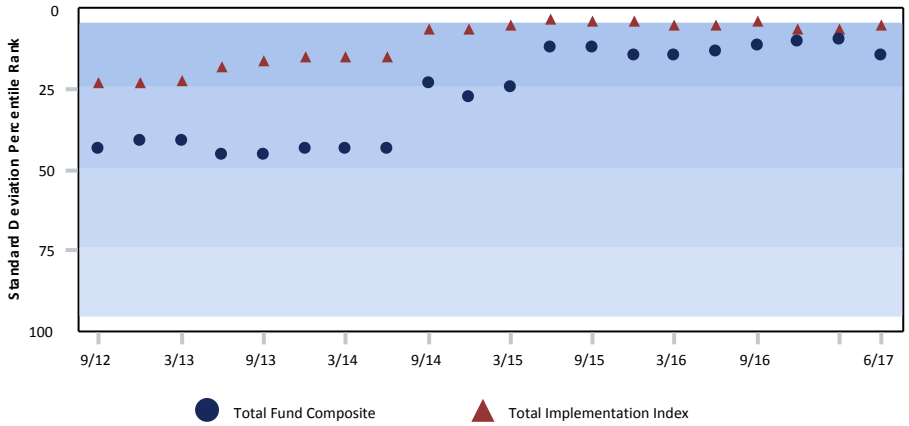
June 30, 2017

3 Year Rolling Return Rank



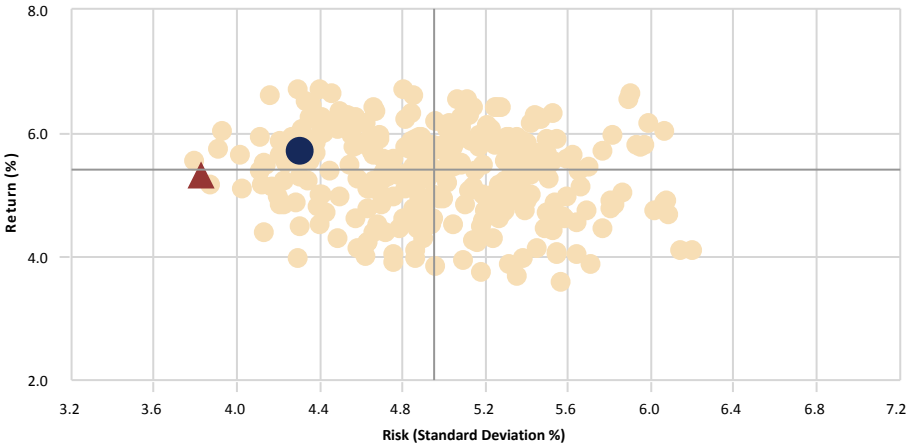
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Total Fund Composite	20	0 (0%)	5 (25%)	7 (35%)	8 (40%)
Total Implementation Index	20	0 (0%)	1 (5%)	8 (40%)	11 (55%)

3 Year Rolling Standard Deviation Rank



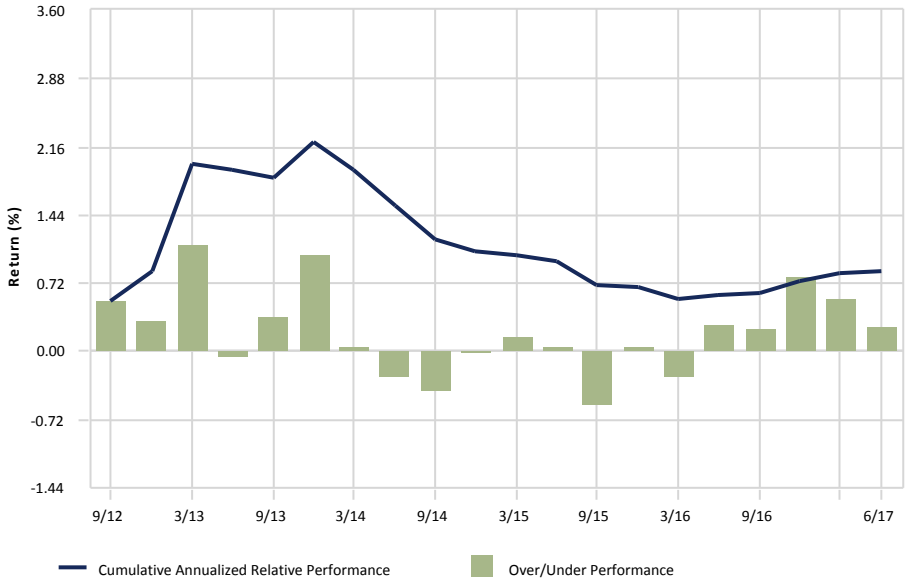
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Total Fund Composite	20	11 (55%)	9 (45%)	0 (0%)	0 (0%)
Total Implementation Index	20	20 (100%)	0 (0%)	0 (0%)	0 (0%)

Risk vs. Return (07/01/14 - 06/30/17)



	Return	Standard Deviation
Total Fund Composite	5.72	4.31
Total Implementation Index	5.32	3.83
Median	5.42	4.96

Relative Performance vs. Total Implementation Index



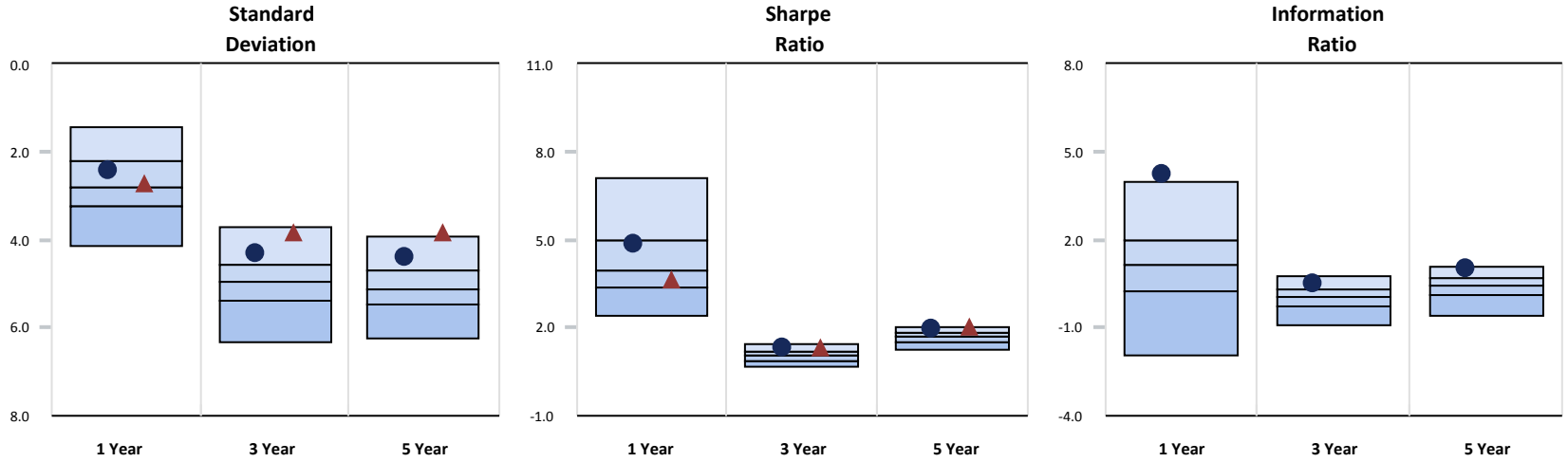
Summit Strategies Group

Howard County Retirement Plans

Total Fund Composite

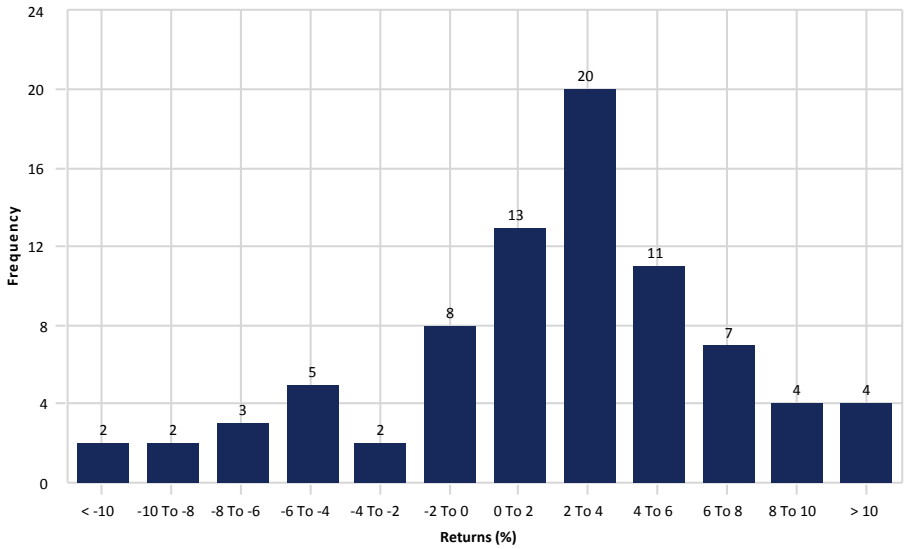
June 30, 2017

Peer Group Analysis: All Public Plans-Total Fund

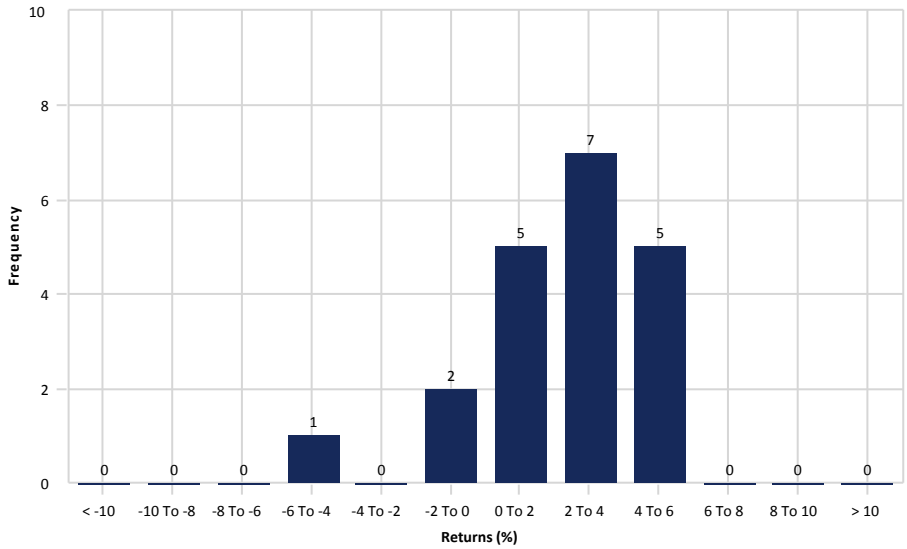


	Standard Deviation 1 Year	Standard Deviation 3 Year	Standard Deviation 5 Year	Sharpe Ratio 1 Year	Sharpe Ratio 3 Year	Sharpe Ratio 5 Year	Information Ratio 1 Year	Information Ratio 3 Year	Information Ratio 5 Year
● Total Fund Composite	2.41 (32)	4.31 (14)	4.40 (12)	4.88 (28)	1.29 (17)	1.96 (10)	4.26 (4)	0.55 (12)	1.00 (8)
▲ Total Implementation Index	2.72 (45)	3.83 (5)	3.83 (4)	3.63 (64)	1.35 (10)	2.02 (5)	-	-	-
Median	**2.78**	**4.96**	**5.14**	**3.97**	**1.06**	**1.70**	**1.19**	**0.08**	**0.44**

Inception - Quarterly Distribution of Returns



5 Years - Quarterly Distribution of Returns

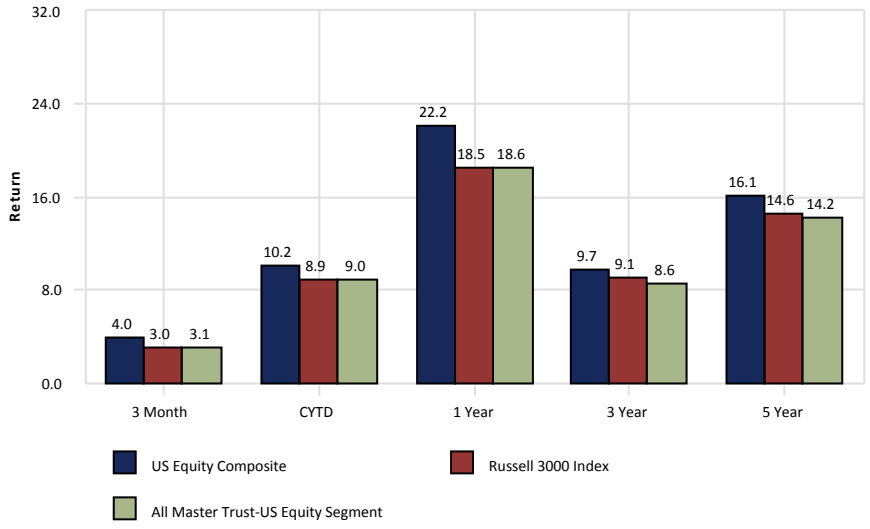


Howard County Retirement Plans

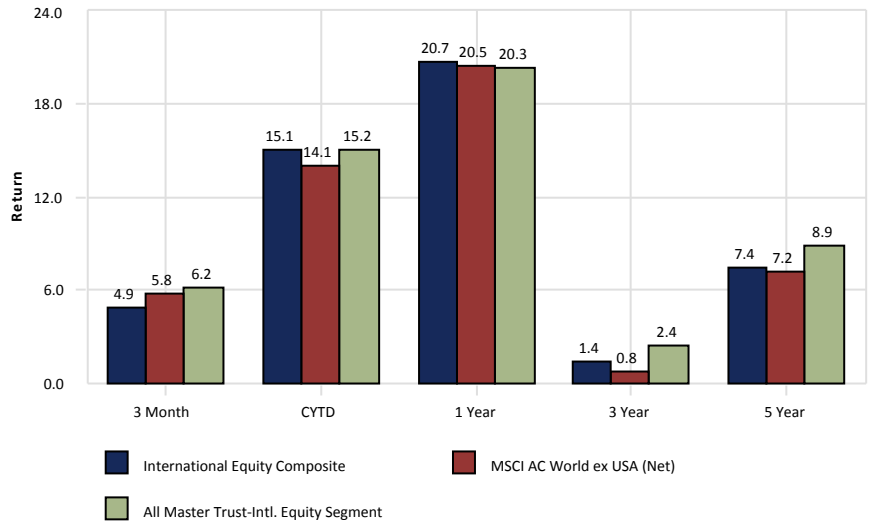
Composite Summary

June 30, 2017

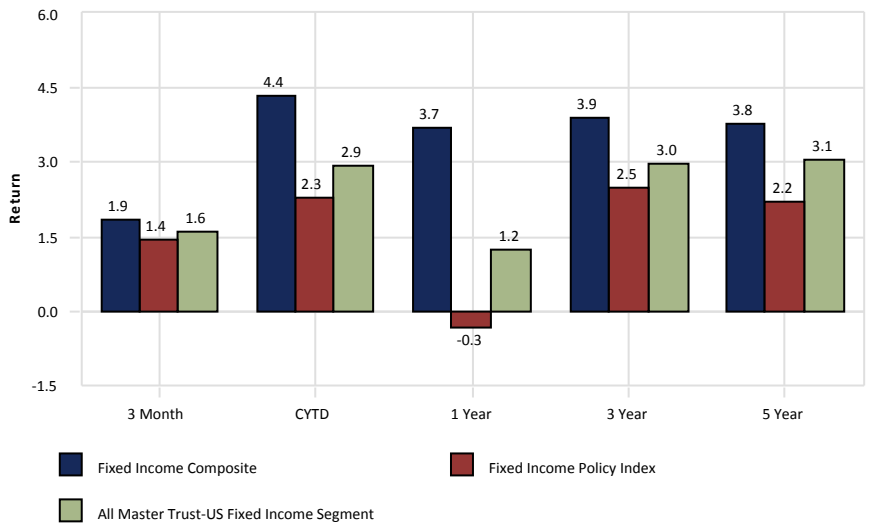
US Equity Composite



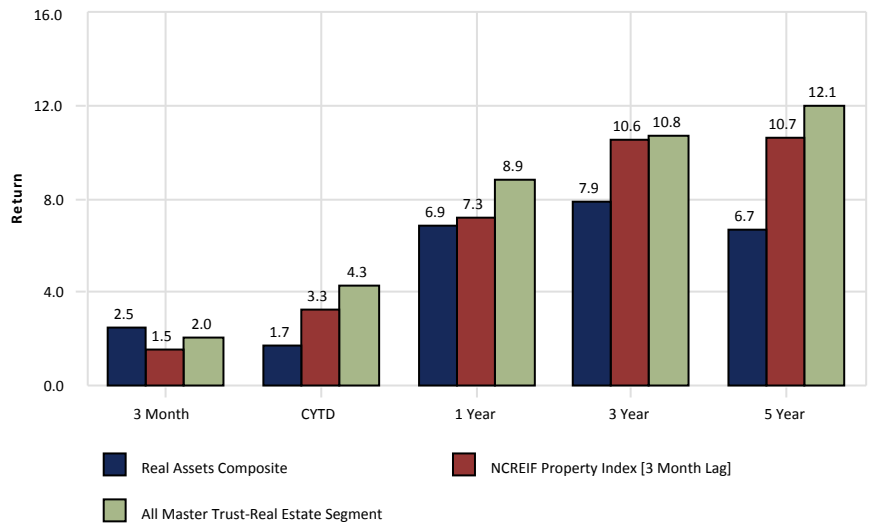
International Equity Composite



Fixed Income Composite



Real Assets Composite



Howard County Retirement Plans

Composite Asset Allocation & Performance - Gross of Fees
June 30, 2017

	Asset $	Asset %	3 Month		CYTD		FYTD		1 Year		3 Year		5 Year		Since Inception		Inception Date
			Performance(%) and Percentile Rank														
Total Fund Composite	**919,513,907**	**100.00**	**3.58**	**13**	**7.90**	**40**	**12.57**	**39**	**12.57**	**39**	**5.72**	**35**	**8.93**	**52**	**7.27**	**46**	**Apr-1997**
Total Implementation Index			3.31		7.02		10.52		10.52		5.32		8.02		6.81		
Excess Return			0.27		0.88		2.05		2.05		0.40		0.91		0.46		
Total Policy Index			3.35		7.18		10.71		10.71		5.40		8.00		7.34		Apr-1997
Total Fund EX Alternatives	709,272,074	77.14	3.21		8.44		13.44		13.44		5.23		8.79		6.38		Jul-2008
Total Fund EX Real Assets	886,458,999	96.41	3.63		8.19		12.83		12.83		5.62		9.06		7.32		Dec-2003
Total Equity Composite	396,176,971	43.09	4.35		12.22		21.61		21.61		6.10		12.44		6.86		Apr-2000
US Equity Composite	216,465,732	23.54	3.96	19	10.21	23	22.21	11	22.21	11	9.74	14	16.12	5	8.19	31	Jul-1997
Russell 3000 Index			3.02		8.93		18.51		18.51		9.10		14.58		7.44		
Excess Return			0.94		1.28		3.70		3.70		0.64		1.54		0.75		
US Equity Allocation Index			2.96		8.39		19.28		19.28		8.87		14.48		8.70		Jan-2004
Large Cap Composite	168,141,950	18.29	3.59	37	10.05	37	21.02	28	21.02	28	9.00	51	15.86	20	8.09	33	Apr-2001
Russell 1000 Index			3.06		9.27		18.03		18.03		9.26		14.67		7.03		
Excess Return			0.53		0.78		2.99		2.99		-0.26		1.19		1.06		
Non-Large Cap Composite	48,323,782	5.26	5.16	13	10.81	20	26.04	13	26.04	13	12.23	4	17.15	9	12.20	39	Apr-1993
Russell 2500 Index			2.13		5.97		19.84		19.84		6.93		14.04		10.45		
Excess Return			3.03		4.84		6.20		6.20		5.30		3.11		1.75		
International Equity Composite	179,711,238	19.54	4.92	81	15.13	51	20.74	43	20.74	43	1.37	79	7.44	87	4.64	91	Jul-1997
MSCI AC World ex USA (Net)			5.78		14.10		20.45		20.45		0.80		7.22		-		
Excess Return			-0.86		1.03		0.29		0.29		0.57		0.22		-		
International Developed Markets Composite	118,833,729	12.92	6.04	83	13.77	82	16.99	82	16.99	82	1.28	80	8.83	77	2.80	70	Mar-2008
MSCI EAFE Index (Net)			6.12		13.81		20.27		20.27		1.15		8.69		1.96		
Excess Return			-0.08		-0.04		-3.28		-3.28		0.13		0.14		0.84		
International Emerging Markets Composite	60,877,509	6.62	2.98	95	17.77	67	28.35	16	28.35	16	1.37	66	4.46	75	5.92	50	Feb-2006
MSCI Emerging Markets (Net)			6.27		18.43		23.75		23.75		1.07		3.96		4.70		
Excess Return			-3.29		-0.66		4.60		4.60		0.30		0.50		1.22		
Fixed Income Composite	270,184,331	29.38	1.86	37	4.36	24	3.68	16	3.68	16	3.91	29	3.77	35	5.62	56	Jul-1997
Fixed Income Policy Index			1.45		2.27		-0.31		-0.31		2.48		2.21		5.40		
Excess Return			0.41		2.09		3.99		3.99		1.43		1.56		0.22		
Real Assets Composite	33,054,908	3.59	2.51	37	1.71	97	6.92	83	6.92	83	7.87	85	6.71	100	6.76	100	Jul-2003
NCREIF Property Index [3 Month Lag]			1.55		3.30		7.27		7.27		10.58		10.69		9.23		
Excess Return			0.96		-1.59		-0.35		-0.35		-2.71		-3.98		-2.47		
NCREIF Fund Index-ODCE (VW) [M]			1.70		3.50		7.87		7.87		11.34		11.79		8.28		Jul-2003
Alternatives Composite	210,241,833	22.86	4.86		6.08		9.58		9.58		8.35		9.19		8.30		Jul-2008
Private Equity Composite	100,149,026	10.89	8.58		9.46		14.90		14.90		14.86		14.95		12.03		Jul-2008
Hedge Fund Composite	110,092,808	11.97	1.54		3.06		4.98		4.98		3.92		5.51		4.67		Jan-2011
HFRI FOF: Conservative Index			0.34		1.55		5.12		5.12		1.44		3.61		2.30		
Excess Return			1.20		1.51		-0.14		-0.14		2.48		1.90		2.37		

Howard County Retirement Plans

Composite Asset Allocation & Performance - Gross of Fees

June 30, 2017

			Performance(%) and Percentile Rank							
	Asset $	Asset %	3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
Cash Composite	9,855,864	1.07	0.14	0.19	0.19	0.19	0.09	0.06	1.33	Dec-2003
Citigroup 3 Month T-Bill			0.18	0.30	0.46	0.46	0.20	0.15	1.22	
Excess Return			-0.04	-0.11	-0.27	-0.27	-0.11	-0.09	0.11	

Howard County Retirement Plans

Manager Allocation & Performance - Gross of Fees

June 30, 2017

	Asset $	Asset %	Performance(%) and Percentile Rank																Inception Date
			3 Month		CYTD		FYTD		1 Year		3 Year		5 Year		Since Inception		
US Equity																			
Invesco	55,308,209	6.01	1.87	83	8.24	65	17.32	52	17.32	52	8.39	67	14.39	53	7.21	66	Apr-2001
S&P 500			3.09		9.34		17.90		17.90		9.61		14.63		6.75		
Excess Return			-1.22		-1.10		-0.58		-0.58		-1.22		-0.24		0.46		
LSV Asset Management*	55,268,550	6.01	2.00	51	5.22	65	21.04	29	21.04	29	8.39	36	16.84	5	9.91	9	Jun-2000
Russell 1000 Value Index			1.34		4.66		15.53		15.53		7.36		13.94		6.80		
Excess Return			0.66		0.56		5.51		5.51		1.03		2.90		3.11		
Westfield	57,565,190	6.26	6.95	13	17.15	23	24.78	11	24.78	11	10.20	54	16.33	21	15.84	48	Jul-2010
Russell 1000 Growth Index			4.67		13.99		20.42		20.42		11.11		15.30		16.48		
Excess Return			2.28		3.16		4.36		4.36		-0.91		1.03		-0.64		
William Blair	14,825,992	1.61	6.93	12	16.70	14	23.93	25	23.93	25	12.58	2	18.10	1	11.45	17	Jun-2006
Russell 2500 Growth Index			4.13		10.63		21.44		21.44		7.65		14.33		9.00		
Excess Return			2.80		6.07		2.49		2.49		4.93		3.77		2.45		
Investment Counselors of Maryland	20,461,019	2.23	2.13	26	2.94	38	26.36	21	26.36	21	9.81	15	15.65	34	12.29	65	Apr-1993
Russell 2000 Value Index			0.67		0.54		24.86		24.86		7.02		13.39		10.34		
Excess Return			1.46		2.40		1.50		1.50		2.79		2.26		1.95		
Brown Capital Management	13,036,771	1.42	7.86	13	17.71	8	28.02	26	28.02	26	14.88	2	20.52	1	18.89	1	Aug-2011
Russell 2000 Growth Index			4.39		9.97		24.40		24.40		7.64		13.98		11.93		
Excess Return			3.47		7.74		3.62		3.62		7.24		6.54		6.96		
International Equity																			
Mondrian International	57,158,747	6.22	4.24	96	12.04	95	16.33	86	16.33	86	0.63	90	8.58	84	1.44	80	Dec-2007
MSCI EAFE Index (Net)			6.12		13.81		20.27		20.27		1.15		8.69		0.79		
Excess Return			-1.88		-1.77		-3.94		-3.94		-0.52		-0.11		0.65		
Pyramis	61,674,983	6.71	7.67	33	15.40	56	17.95	79	17.95	79	1.86	71	9.06	74	5.63	71	Aug-2005
MSCI EAFE Index (Net)			6.12		13.81		20.27		20.27		1.15		8.69		4.69		
Excess Return			1.55		1.59		-2.32		-2.32		0.71		0.37		0.94		
DFA Emerging Markets	60,877,509	6.62	2.98	95	17.77	67	28.35	16	28.35	16	1.41	65	4.47	75	6.10	44	Feb-2006
MSCI Emerging Markets (Net)			6.27		18.43		23.75		23.75		1.07		3.96		4.70		
Excess Return			-3.29		-0.66		4.60		4.60		0.34		0.51		1.40		
Fixed Income																			
Dodge & Cox	114,179,065	12.42	1.60	40	2.97	13	3.47	3	3.47	3	3.43	9	3.90	5	4.69	12	May-2010
Blmbg. Barc. U.S. Aggregate			1.45		2.27		-0.31		-0.31		2.48		2.21		3.46		
Excess Return			0.15		0.70		3.78		3.78		0.95		1.69		1.23		
PIMCO Total Return	100,776,495	10.96	1.85	6	3.35	3	2.39	5	2.39	5	2.82	43	2.95	32	4.10	36	May-2010
Blmbg. Barc. U.S. Aggregate			1.45		2.27		-0.31		-0.31		2.48		2.21		3.46		
Excess Return			0.40		1.08		2.70		2.70		0.34		0.74		0.64		

* Inception date differs from manager; Summit does not calculate partial month returns.

Howard County Retirement Plans

Manager Allocation & Performance - Gross of Fees

June 30, 2017

			Performance(%) and Percentile Rank														
	Asset $	Asset %	3 Month		CYTD		FYTD		1 Year		3 Year		5 Year		Since Inception		Inception Date
Fixed Income (continued)																	
SSgA TIPS	21,078,931	2.29	-0.39	69	0.85	67	-0.65	80	-0.65	80	0.61	60	0.25	87	3.25	62	Nov-2009
Blmbg. Barc. U.S. TIPS			-0.40		0.85		-0.63		-0.63		0.63		0.27		3.27		
Excess Return			0.01		0.00		-0.02		-0.02		-0.02		-0.02		-0.02		
Colchester LMD	34,149,840	3.71	3.93	1	12.14	4	8.99	5	8.99	5	-		-		15.37	1	Oct-2015
JPM GBI-EM Global Diversified			3.62		10.36		6.41		6.41		-		-		11.67		
Excess Return			0.31		1.78		2.58		2.58		-		-		3.70		
Real Assets Composite	33,054,908	3.59	2.51	37	1.71	97	6.92	83	6.92	83	7.87	85	6.71	100	6.76	100	Jul-2003
NCREIF Property Index [3 Month Lag]			1.55		3.30		7.27		7.27		10.58		10.69		9.23		
Excess Return			0.96		-1.59		-0.35		-0.35		-2.71		-3.98		-2.47		
Private Equity Composite	100,149,026	10.89	8.58		9.46		14.90		14.90		14.86		14.95		12.03		Jul-2008
Hedge Funds																	
Magnitude International	54,336,097	5.91	2.21		2.86		2.55		2.55		3.95		4.86		4.72		Jan-2011
HFRI FOF: Conservative Index			0.34		1.55		5.12		5.12		1.44		3.61		2.30		
Excess Return			1.87		1.31		-2.57		-2.57		2.51		1.25		2.42		
Blackstone Offshore F1	55,756,711	6.06	0.90		3.26		7.46		7.46		3.90		6.16		4.70		Mar-2011
HFRI FOF: Conservative Index			0.34		1.55		5.12		5.12		1.44		3.61		2.14		
Excess Return			0.56		1.71		2.34		2.34		2.46		2.55		2.56		
Cash																	
Cash - General Employees	4,883,405	0.53	0.14		0.19		0.19		0.19		0.11		0.08		1.32		Jan-2004
Cash - Police & Fire	4,970,580	0.54	0.14		0.19		0.19		0.19		0.07		0.04		1.28		Jan-2004

* Inception date differs from manager; Summit does not calculate partial month returns.

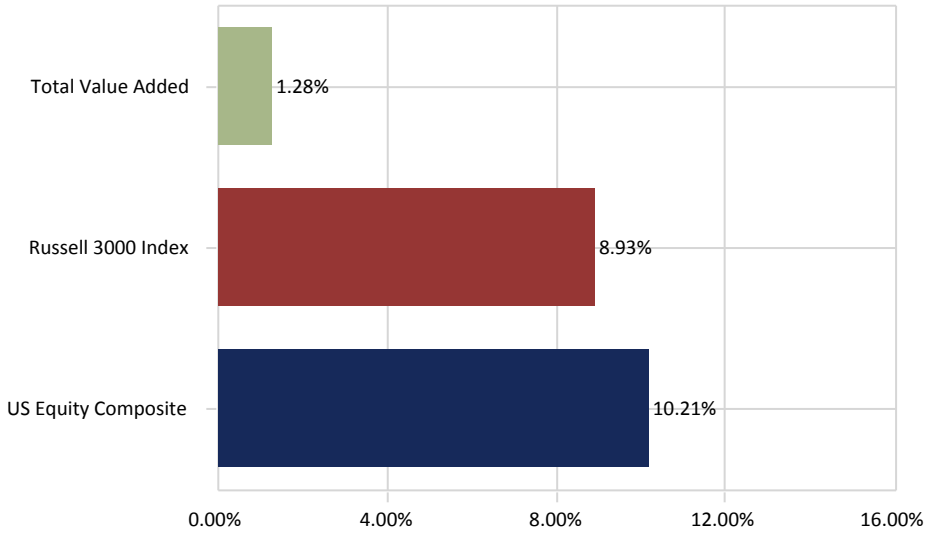
US Equity

Howard County Retirement Plans

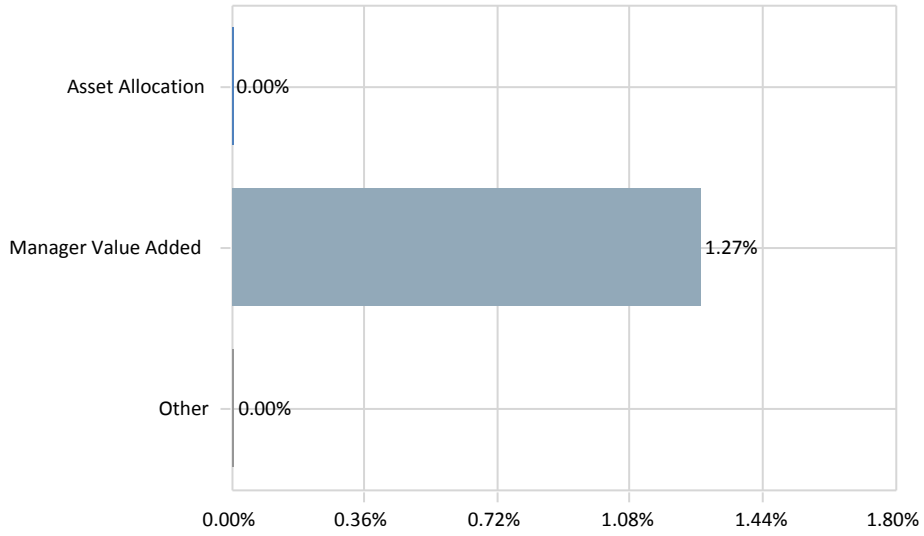
US Equity Composite Attribution

Year To Date Ending June 30, 2017

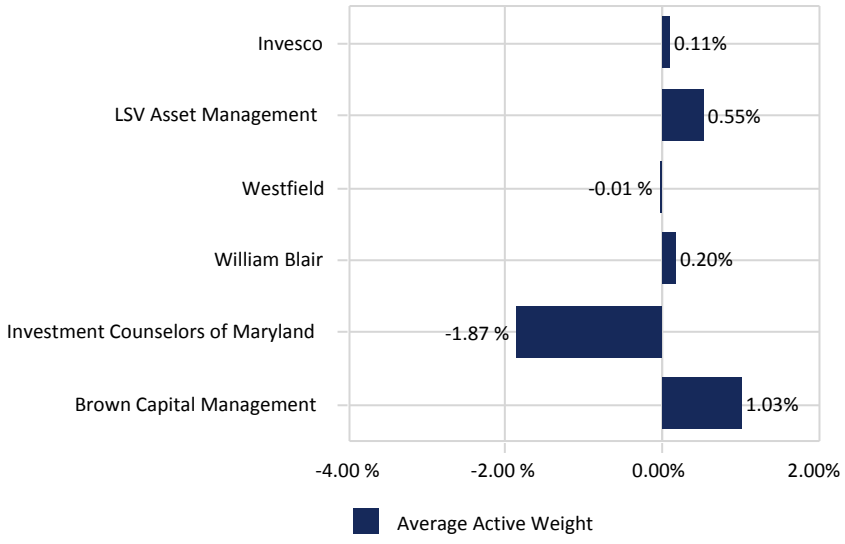
Total Fund Performance



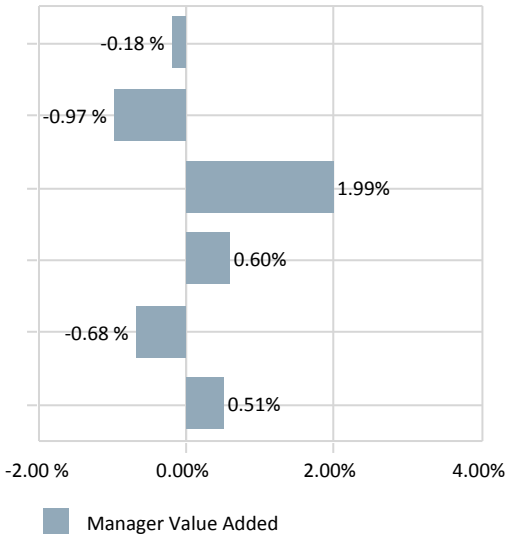
Total Value Added:1.28%



Total Asset Allocation:0.00%



Total Manager Value Added:1.27%



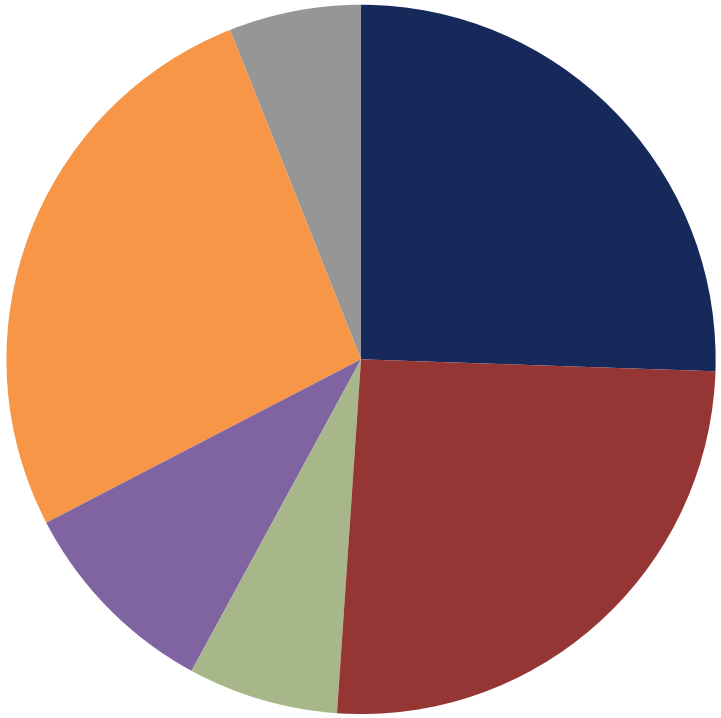
Howard County Retirement Plans

US Equity Composite vs. Russell 3000 Index

June 30, 2017

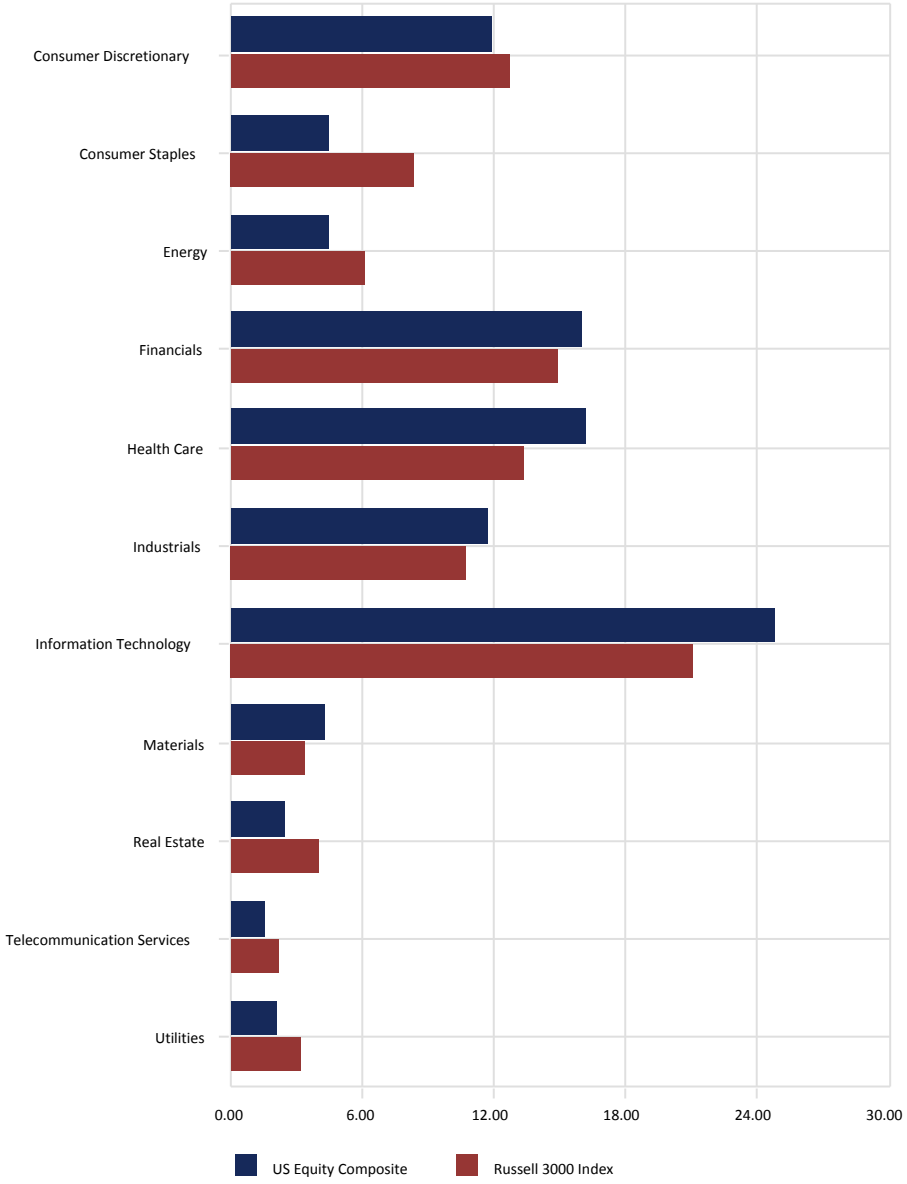
Manager Allocation

June 30, 2017 : $216,465,732



	Market Value ($)	Allocation (%)
LSV Asset Management	55,268,550	25.53
Invesco	55,308,209	25.55
William Blair	14,825,992	6.85
Investment Counselors of Maryland	20,461,019	9.45
Westfield	57,565,190	26.59
Brown Capital Management	13,036,771	6.02

Sector Allocation - Holdings Based

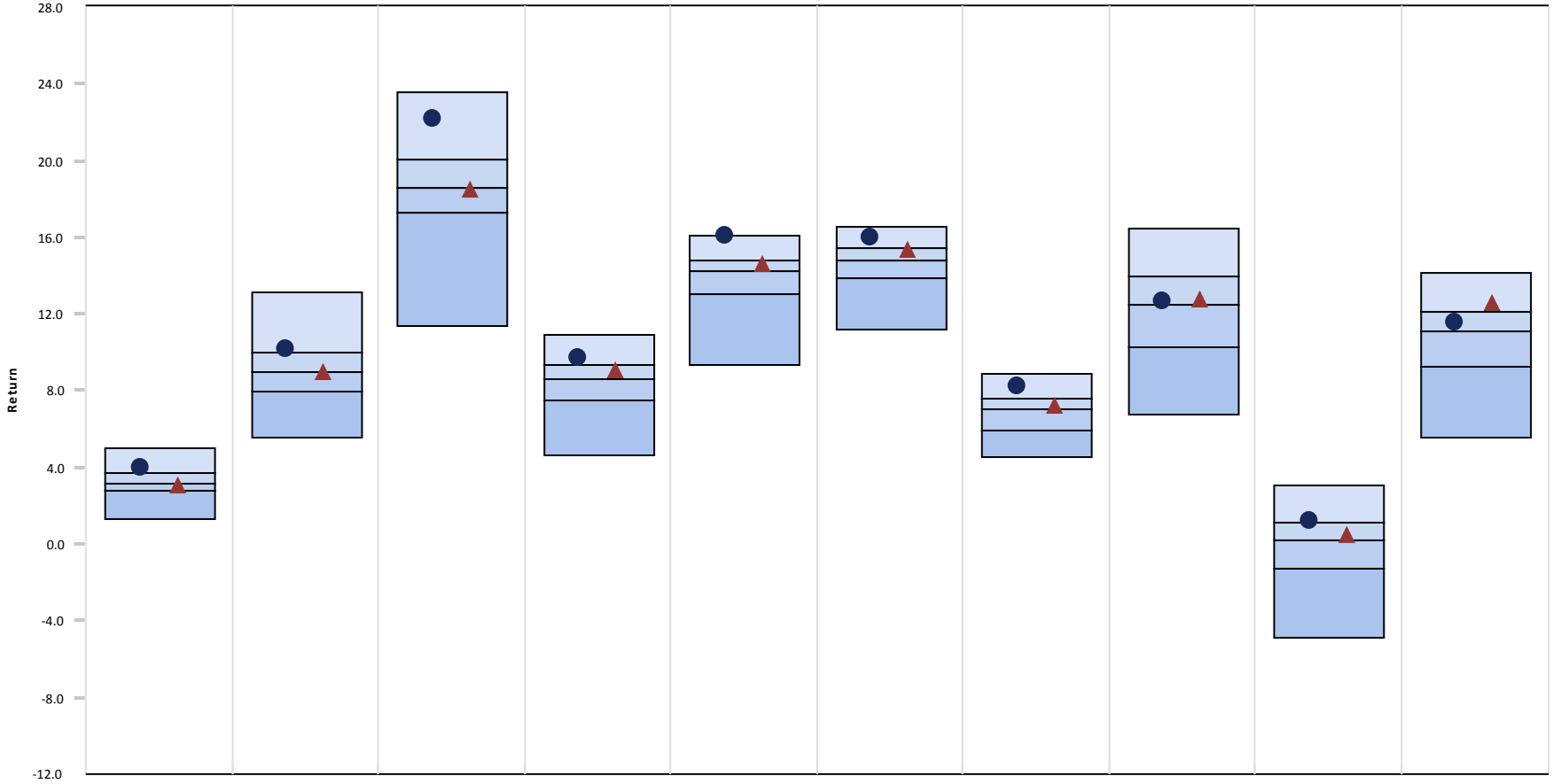


Summit Strategies Group

Howard County Retirement Plans

All Master Trust - US Equity Peer Group Return

June 30, 2017



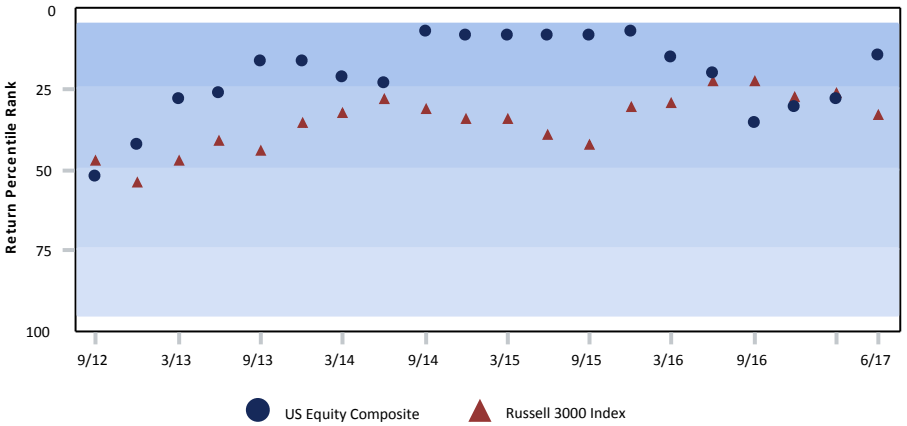
	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2016	2015	2014
● US Equity Composite	3.96 (19)	10.21 (23)	22.21 (11)	9.74 (14)	16.12 (5)	16.04 (9)	8.22 (11)	12.70 (45)	1.22 (24)	11.51 (39)
▲ Russell 3000 Index	3.02 (59)	8.93 (53)	18.51 (54)	9.10 (33)	14.58 (37)	15.34 (30)	7.26 (35)	12.74 (44)	0.48 (42)	12.56 (20)
5th Percentile	5.00	13.15	23.60	10.91	16.11	16.51	8.91	16.46	3.08	14.18
1st Quartile	3.70	10.00	20.02	9.38	14.80	15.43	7.55	13.94	1.08	12.13
Median	**3.11**	**8.98**	**18.58**	**8.57**	**14.25**	**14.82**	**7.00**	**12.44**	**0.22**	**11.05**
3rd Quartile	2.74	7.95	17.32	7.46	12.99	13.90	5.89	10.25	-1.32	9.29
95th Percentile	1.29	5.51	11.39	4.66	9.36	11.16	4.54	6.77	-4.86	5.58
Population	423	415	378	345	301	256	172	413	345	214

Howard County Retirement Plans

US Equity Composite

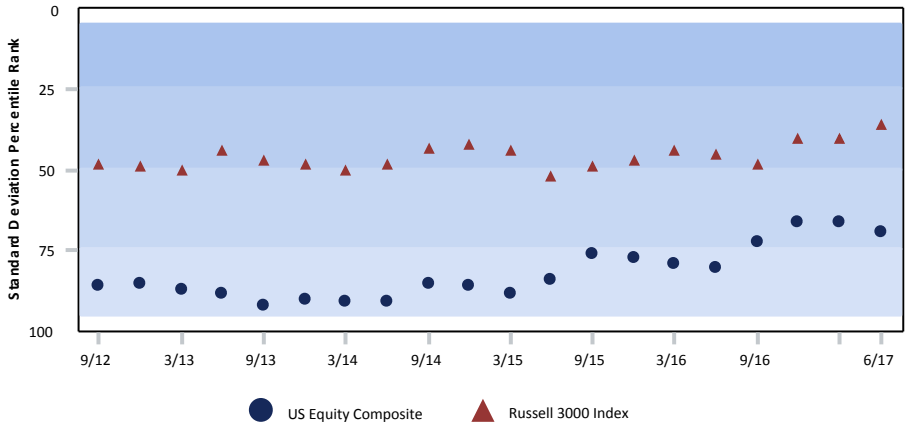
June 30, 2017

3 Year Rolling Return Rank



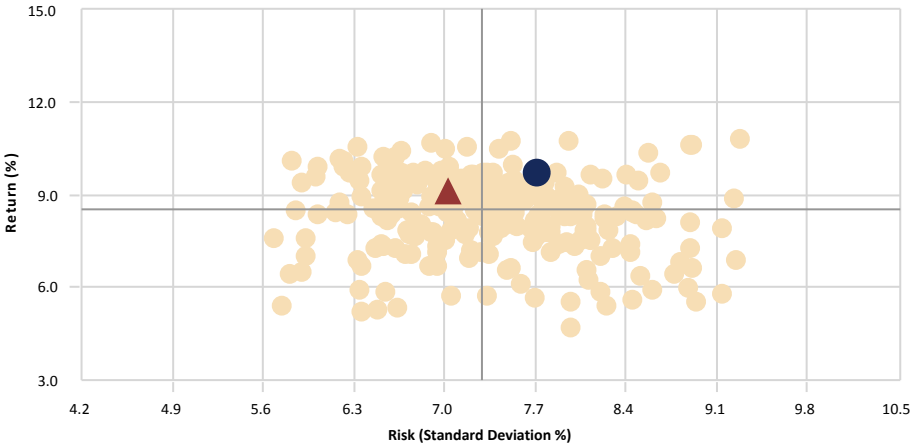
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
● US Equity Composite	20	13 (65%)	6 (30%)	1 (5%)	0 (0%)
▲ Russell 3000 Index	20	2 (10%)	17 (85%)	1 (5%)	0 (0%)

3 Year Rolling Standard Deviation Rank



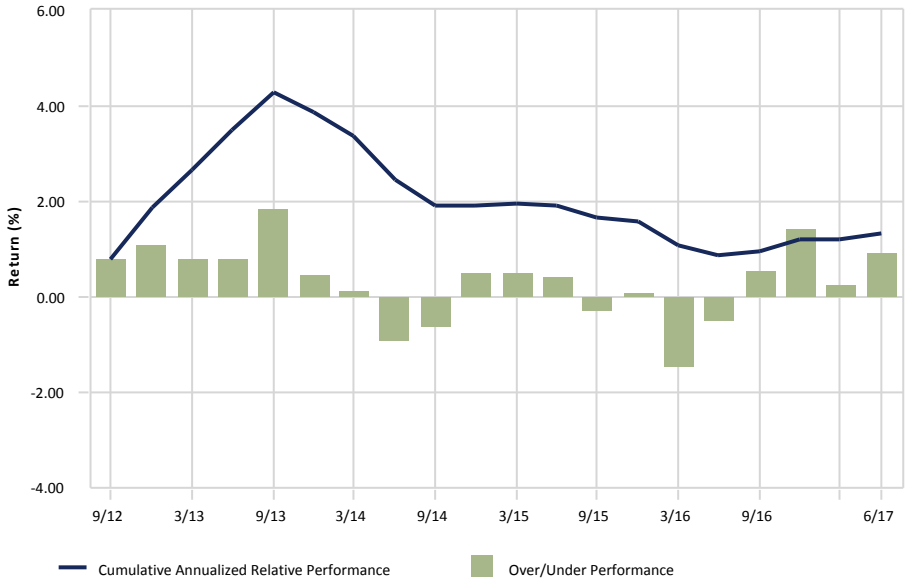
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
● US Equity Composite	20	0 (0%)	0 (0%)	4 (20%)	16 (80%)
▲ Russell 3000 Index	20	0 (0%)	19 (95%)	1 (5%)	0 (0%)

Risk vs. Return (07/01/14 - 06/30/17)



	Return	Standard Deviation
● US Equity Composite	9.74	7.72
▲ Russell 3000 Index	9.10	7.02
— Median	8.57	7.28

Relative Performance vs. Russell 3000 Index



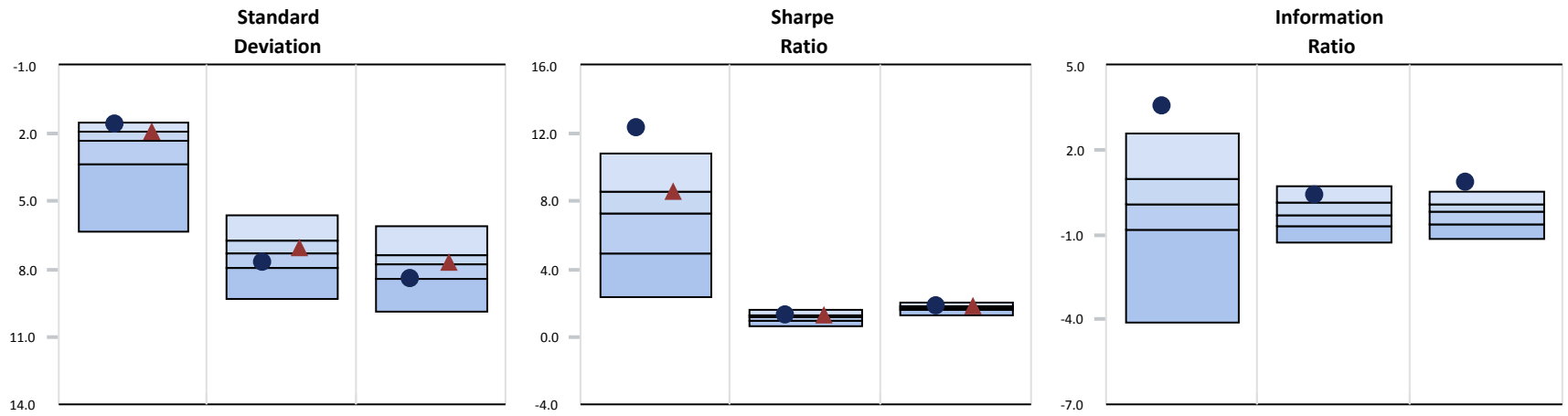
Summit Strategies Group

Howard County Retirement Plans

US Equity Composite

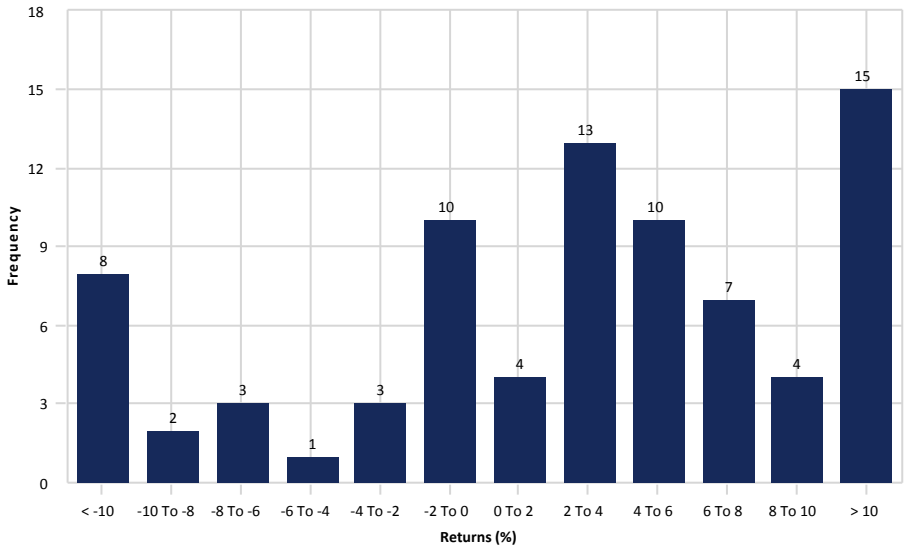
June 30, 2017

Peer Group Analysis: All Master Trust-US Equity Segment

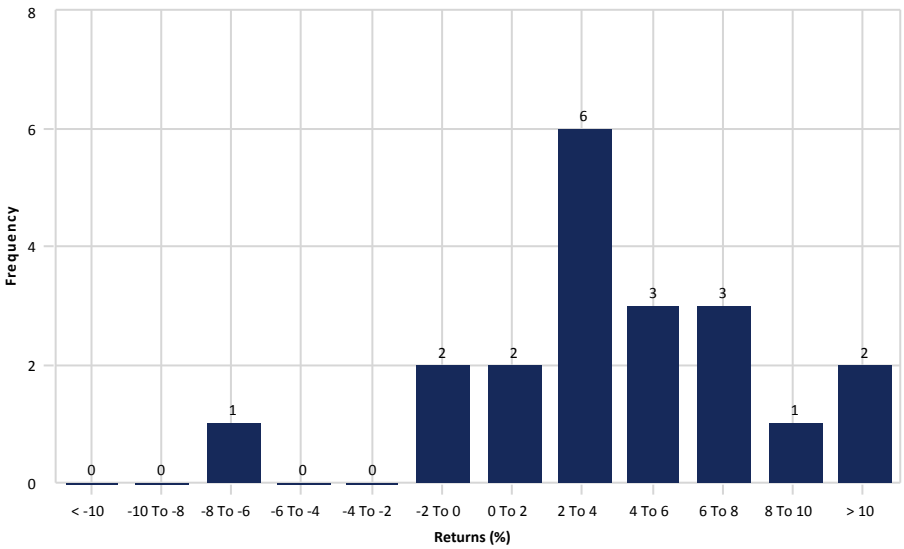


	Standard Deviation 1 Year	Standard Deviation 3 Year	Standard Deviation 5 Year	Sharpe Ratio 1 Year	Sharpe Ratio 3 Year	Sharpe Ratio 5 Year	Information Ratio 1 Year	Information Ratio 3 Year	Information Ratio 5 Year
● US Equity Composite	1.57 (7)	7.72 (69)	8.41 (75)	12.40 (2)	1.24 (36)	1.84 (29)	3.58 (2)	0.43 (13)	0.89 (2)
▲ Russell 3000 Index	1.93 (27)	7.02 (36)	7.72 (42)	8.55 (27)	1.27 (29)	1.81 (33)	-	-	-
Median	**2.27**	**7.28**	**7.80**	**7.31**	**1.15**	**1.74**	**0.09**	**-0.27**	**-0.16**

Inception - Quarterly Distribution of Returns



5 Years - Quarterly Distribution of Returns



Summit Strategies Group

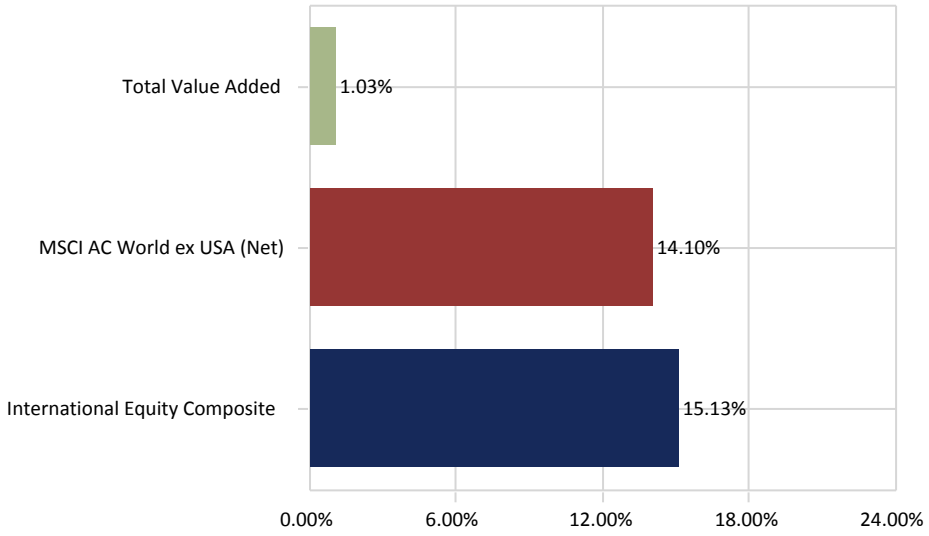
International Equity

Howard County Retirement Plans

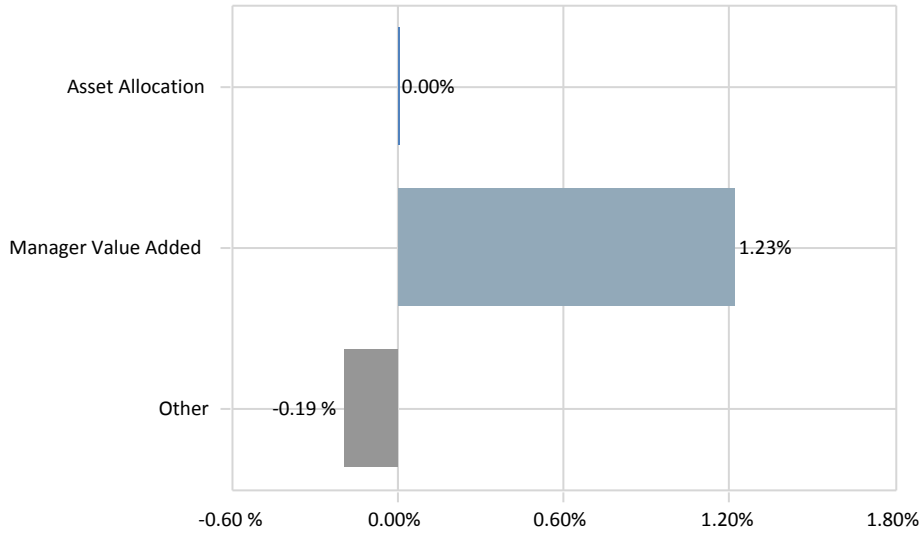
International Equity Composite Attribution

Year To Date Ending June 30, 2017

Total Fund Performance

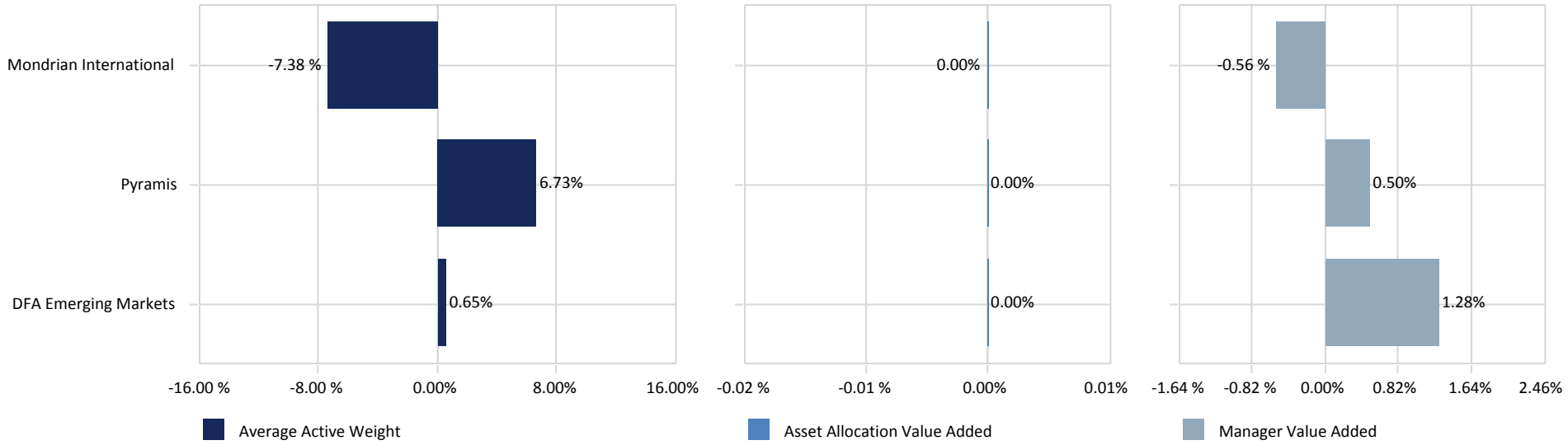


Total Value Added:1.03%



Total Asset Allocation:0.00%

Total Manager Value Added:1.23%



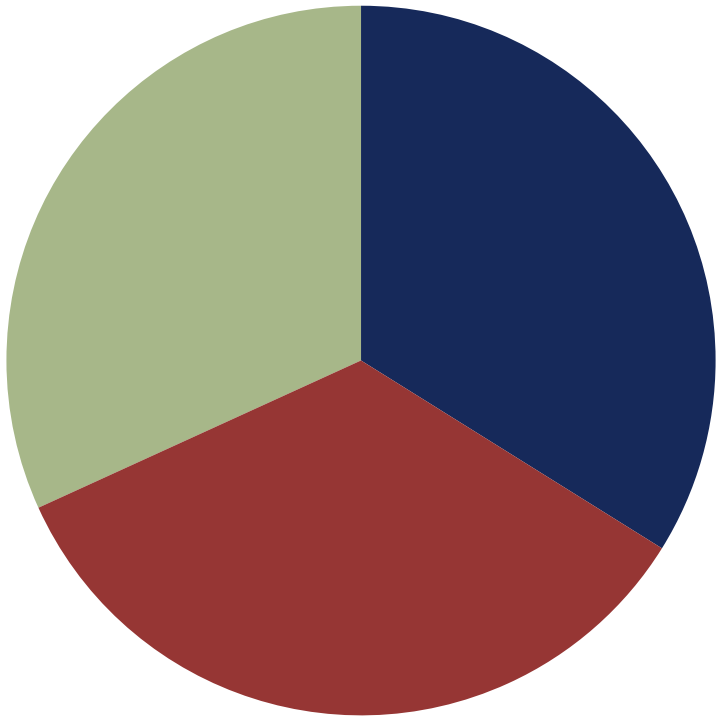
Howard County Retirement Plans

International Equity Composite vs. MSCI AC World ex USA (Net)

June 30, 2017

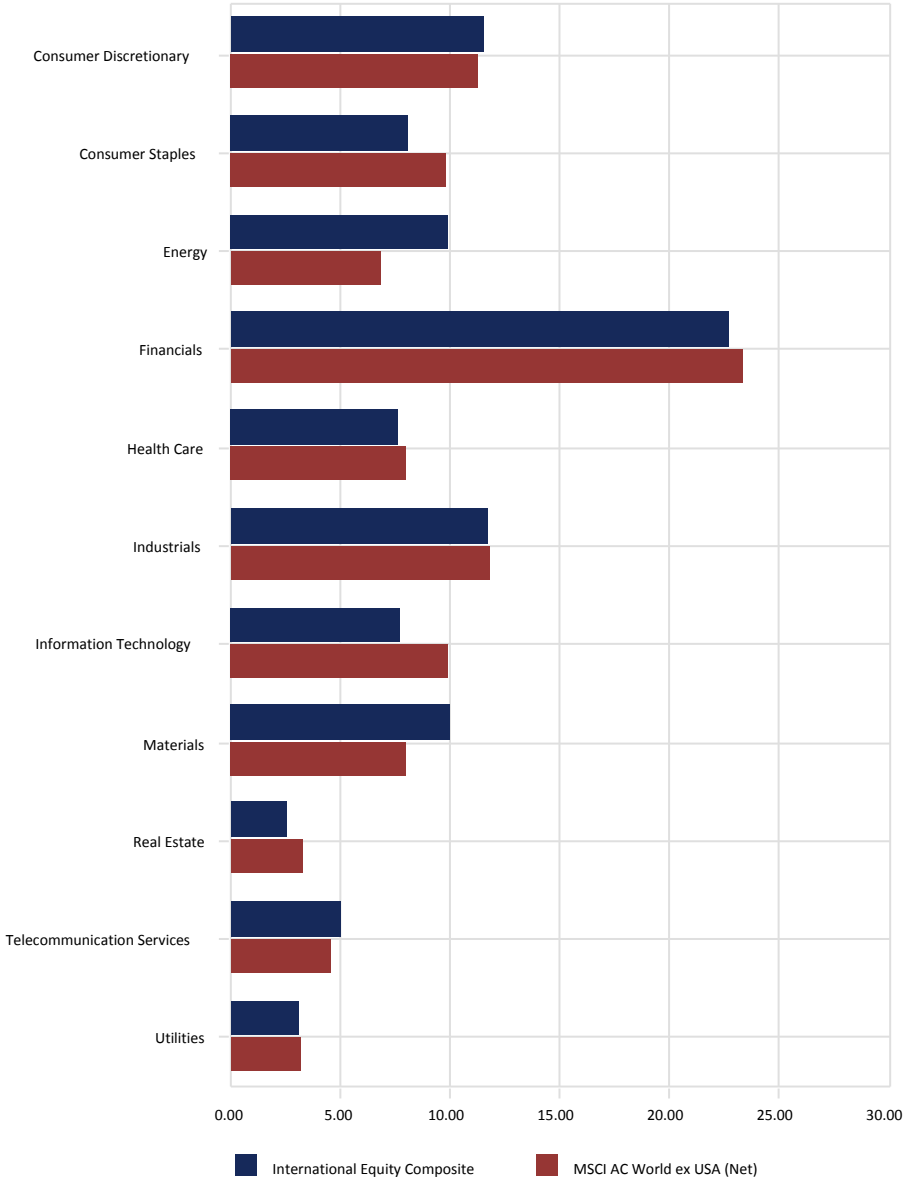
Manager Allocation

June 30, 2017 : $179,711,238



	Market Value ($)	Allocation (%)
DFA Emerging Markets	60,877,509	33.88
Pyramis	61,674,983	34.32
Mondrian International	57,158,747	31.81

Sector Allocation - Holdings Based



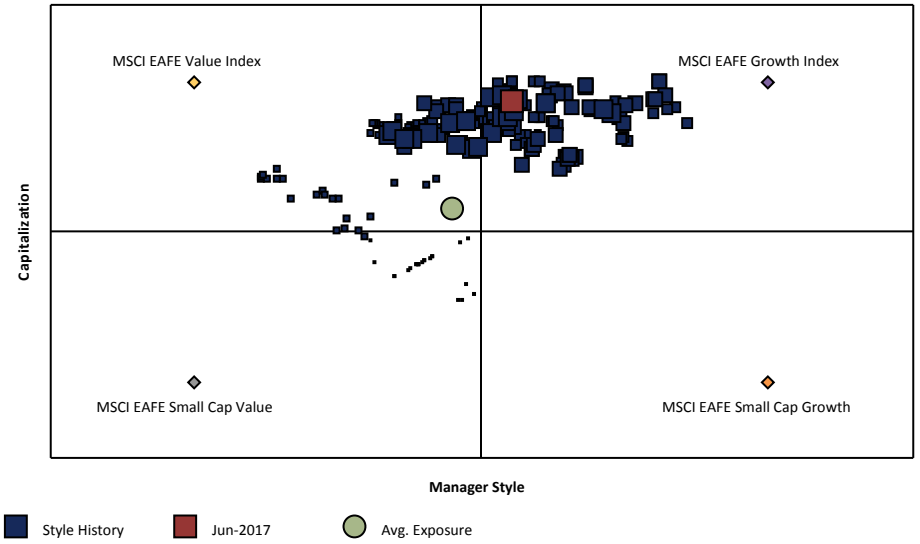
Summit Strategies Group

Howard County Retirement Plans

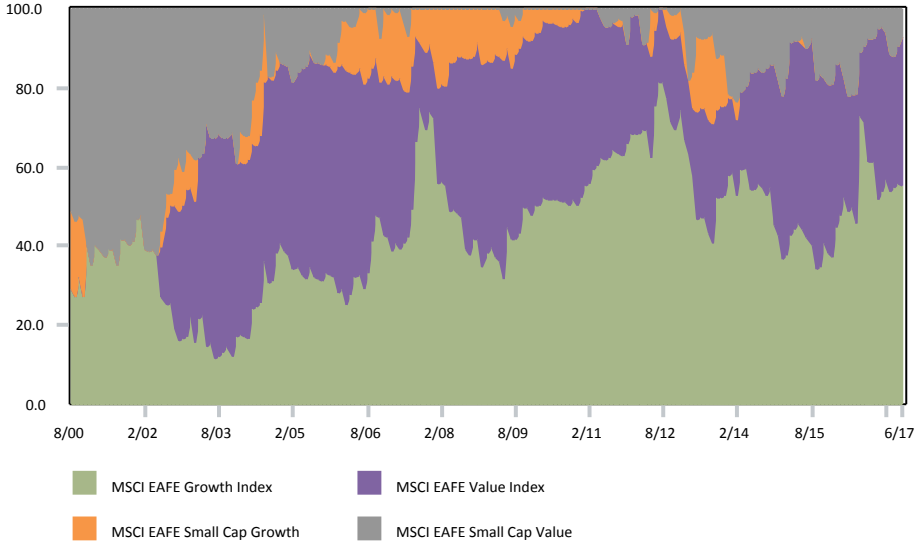
International Equity Composite vs. MSCI AC World ex USA (Net)

June 30, 2017

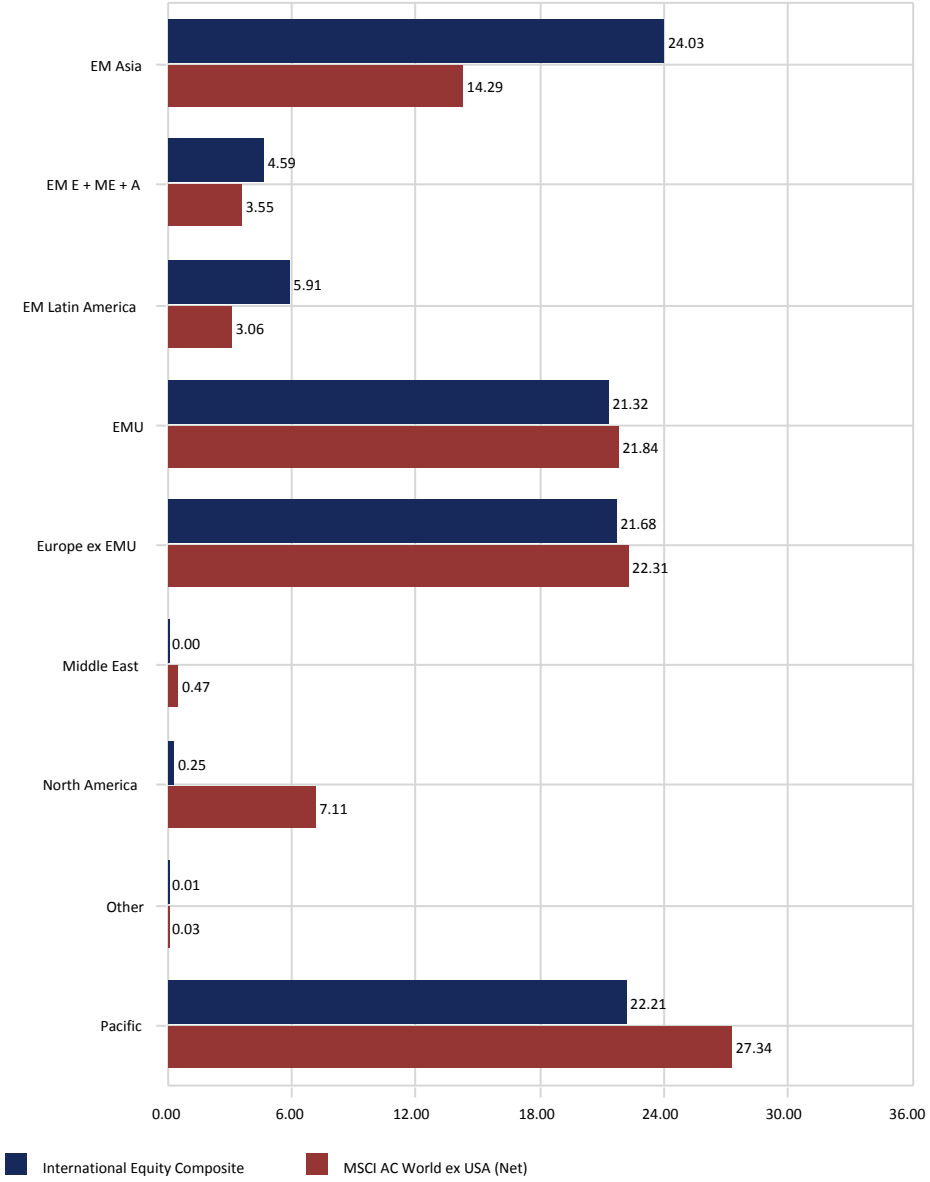
Style Analysis - Returns Based



3 Year Style Analysis



Region Allocation - Holdings Based

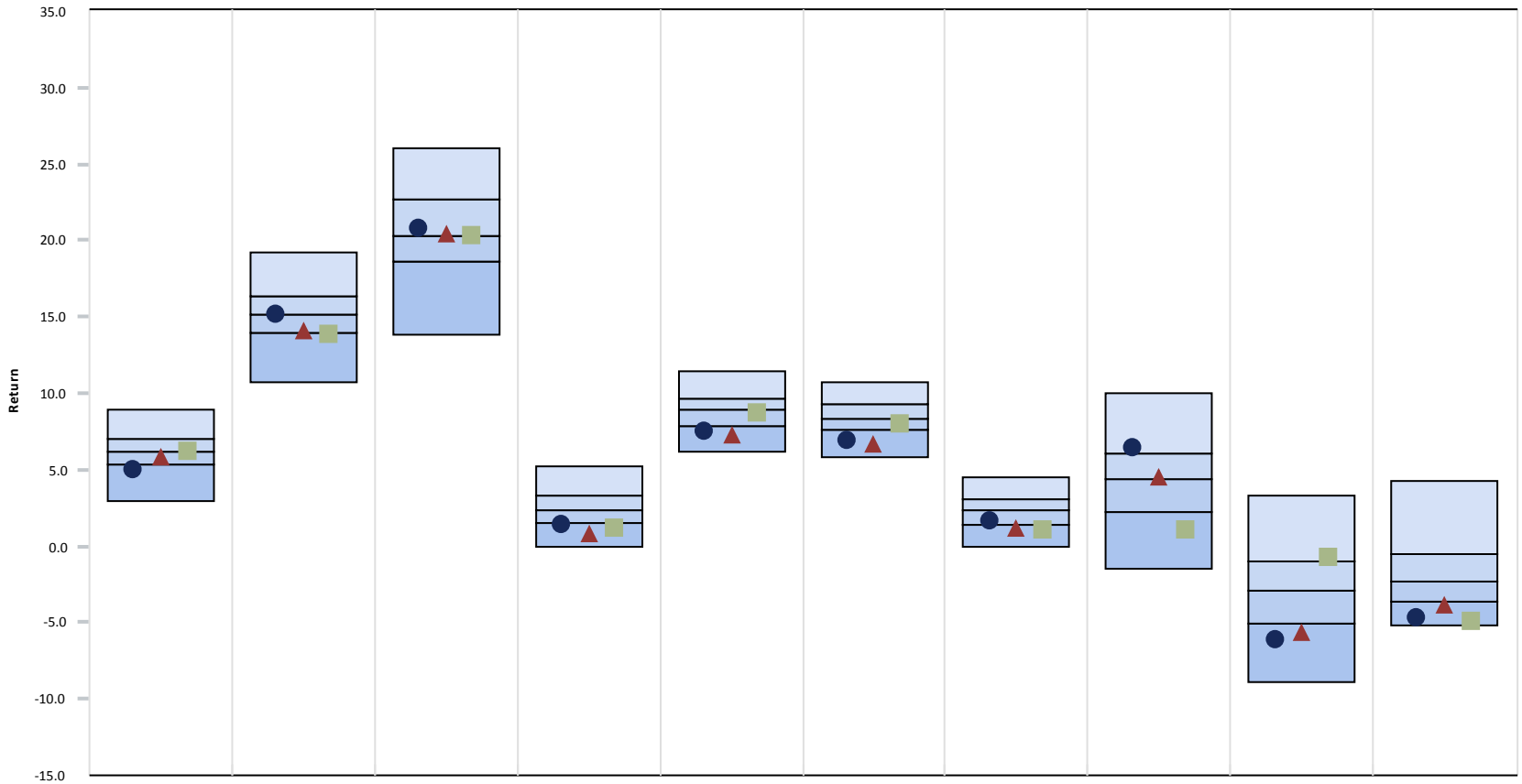


Summit Strategies Group

Howard County Retirement Plans

All Master Trust - International Equity Peer Group Return

June 30, 2017



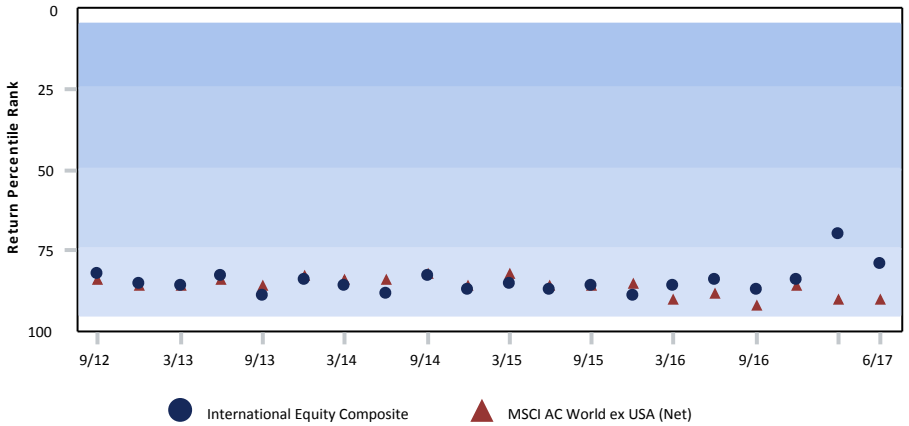
	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2016	2015	2014
● International Equity Composite	4.92 (81)	15.13 (51)	20.74 (43)	1.37 (79)	7.44 (87)	6.91 (85)	1.68 (72)	6.45 (23)	-6.13 (88)	-4.66 (89)
▲ MSCI AC World ex USA (Net)	5.78 (68)	14.10 (72)	20.45 (48)	0.80 (90)	7.22 (91)	6.66 (90)	1.13 (84)	4.50 (47)	-5.66 (83)	-3.87 (80)
■ MSCI EAFE Index (Net)	6.12 (54)	13.81 (78)	20.27 (51)	1.15 (86)	8.69 (57)	7.91 (66)	1.03 (86)	1.00 (85)	-0.81 (23)	-4.90 (92)
5th Percentile	8.90	19.16	26.04	5.26	11.46	10.74	4.54	9.97	3.28	4.30
1st Quartile	7.00	16.37	22.66	3.32	9.60	9.23	3.03	6.05	-1.00	-0.58
Median	**6.18**	**15.15**	**20.34**	**2.40**	**8.93**	**8.37**	**2.32**	**4.32**	**-2.94**	**-2.31**
3rd Quartile	5.38	13.92	18.60	1.56	7.88	7.60	1.41	2.26	-5.02	-3.66
95th Percentile	2.98	10.70	13.82	-0.02	6.20	5.83	-0.04	-1.51	-8.93	-5.16
Population	380	375	342	303	261	213	144	359	298	200

Howard County Retirement Plans

International Equity Composite

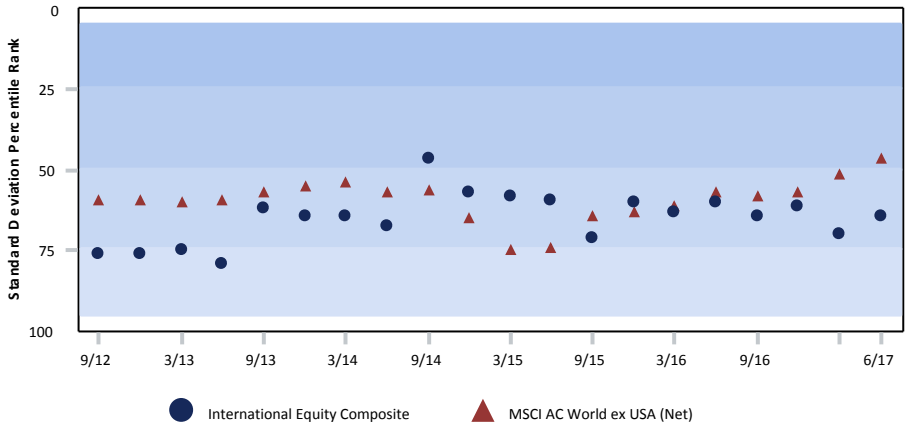
June 30, 2017

3 Year Rolling Return Rank



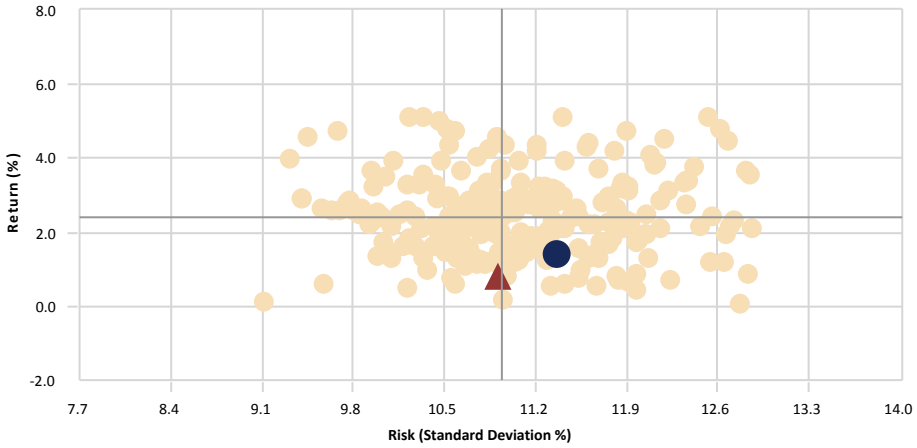
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
International Equity Composite	20	0 (0%)	0 (0%)	1 (5%)	19 (95%)
MSCI AC World ex USA (Net)	20	0 (0%)	0 (0%)	0 (0%)	20 (100%)

3 Year Rolling Standard Deviation Rank



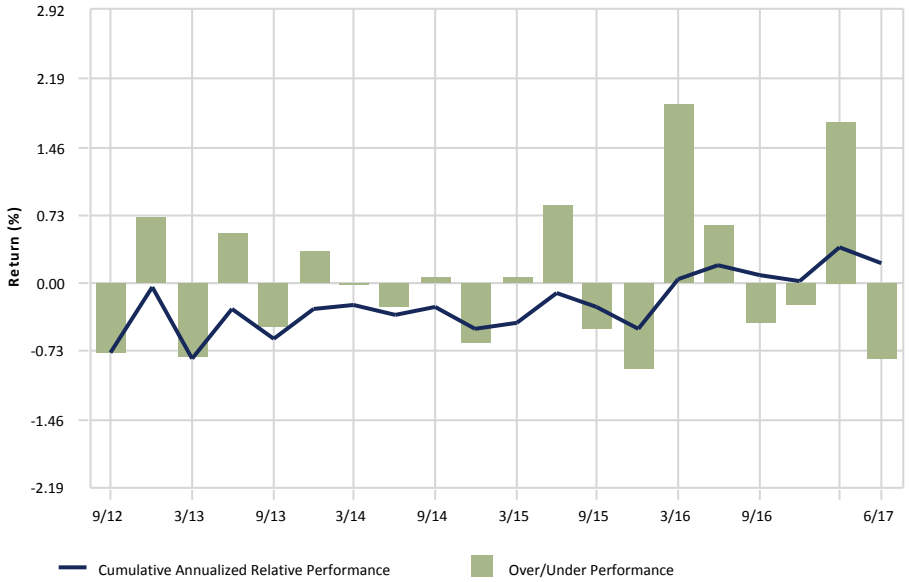
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
International Equity Composite	20	0 (0%)	1 (5%)	16 (80%)	3 (15%)
MSCI AC World ex USA (Net)	20	0 (0%)	1 (5%)	19 (95%)	0 (0%)

Risk vs. Return (07/01/14 - 06/30/17)



	Return	Standard Deviation
International Equity Composite	1.37	11.37
MSCI AC World ex USA (Net)	0.80	10.92
Median	2.40	10.95

Relative Performance vs. MSCI AC World ex USA (Net)



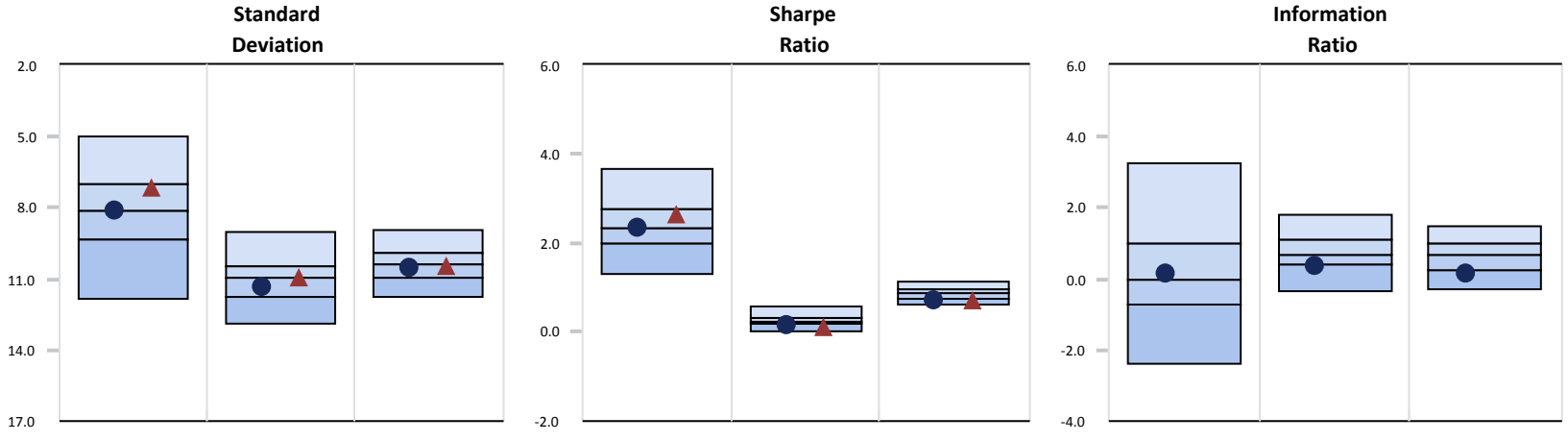
Summit Strategies Group

Howard County Retirement Plans

International Equity Composite

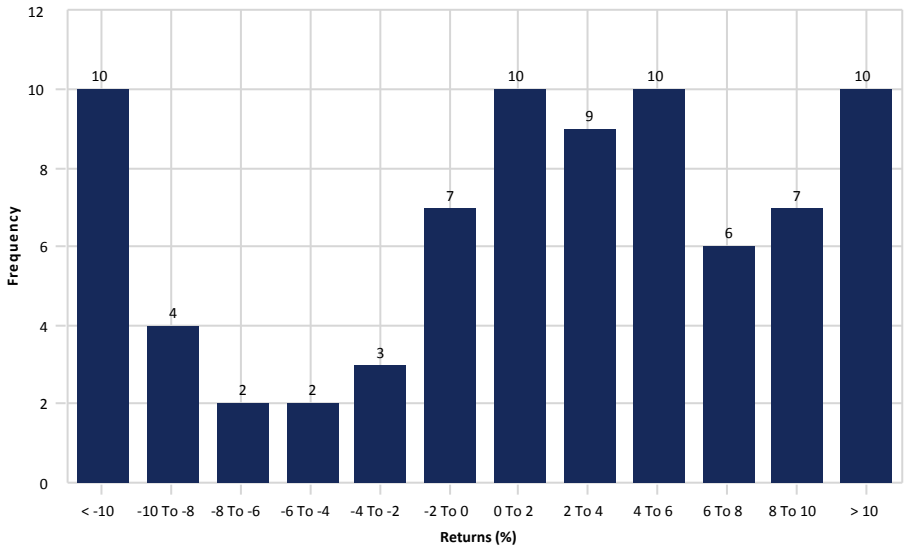
June 30, 2017

Peer Group Analysis: All Master Trust-Intl. Equity Segment

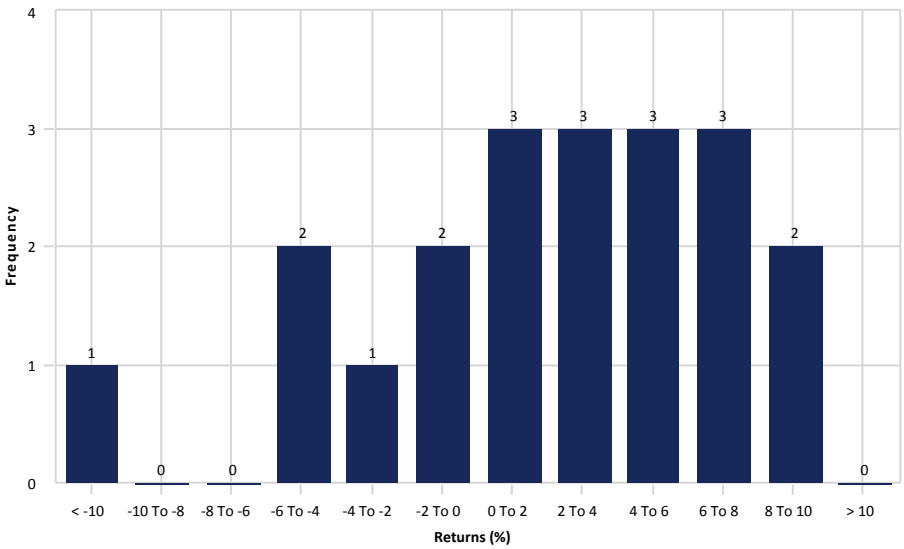


	Standard Deviation 1 Year	Standard Deviation 3 Year	Standard Deviation 5 Year	Sharpe Ratio 1 Year	Sharpe Ratio 3 Year	Sharpe Ratio 5 Year	Information Ratio 1 Year	Information Ratio 3 Year	Information Ratio 5 Year
● International Equity Composite	8.15 (49)	11.37 (64)	10.54 (60)	2.36 (50)	0.16 (80)	0.73 (85)	0.15 (45)	0.33 (78)	0.14 (84)
▲ MSCI AC World ex USA (Net)	7.17 (27)	10.92 (46)	10.45 (54)	2.64 (33)	0.11 (90)	0.71 (87)	-	-	-
Median	**8.16**	**10.95**	**10.38**	**2.34**	**0.25**	**0.86**	**-0.03**	**0.68**	**0.68**

Inception - Quarterly Distribution of Returns



5 Years - Quarterly Distribution of Returns



Summit Strategies Group

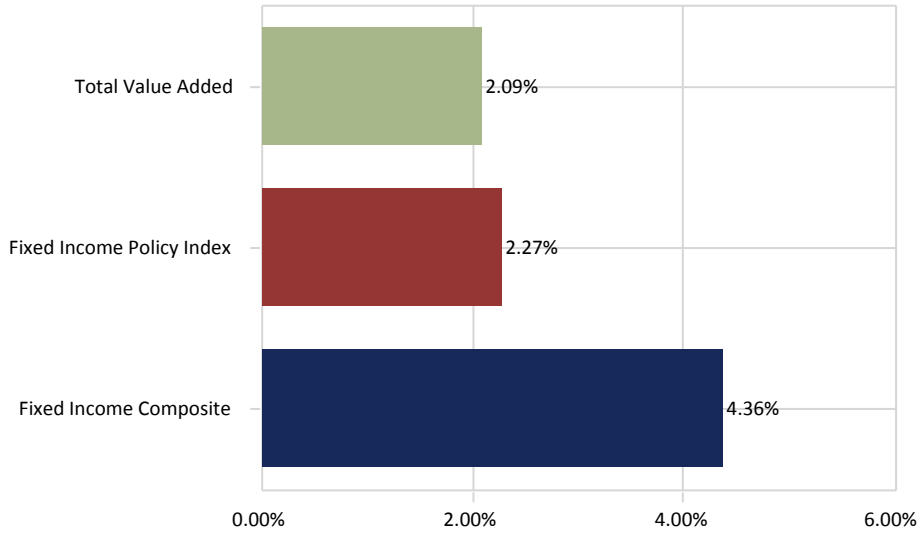
Fixed Income

Howard County Retirement Plans

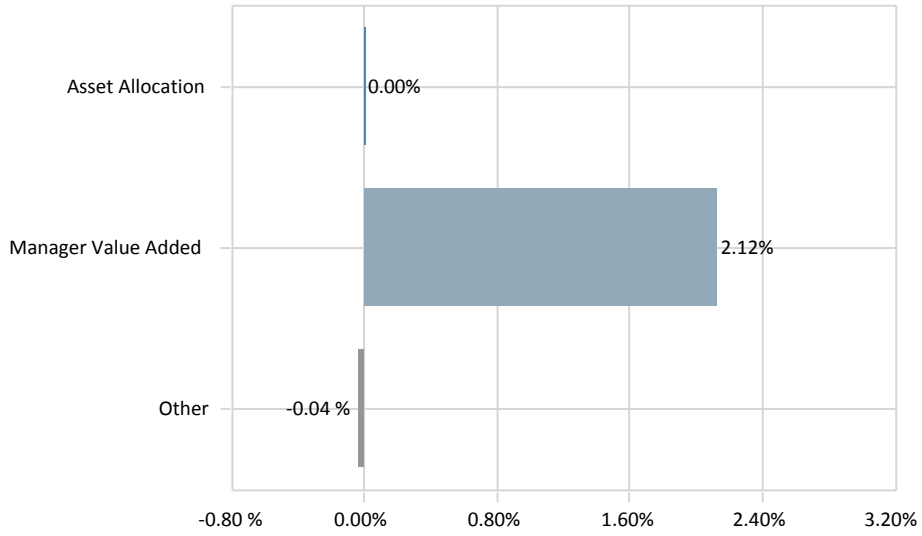
Fixed Income Composite Attribution

Year To Date Ending June 30, 2017

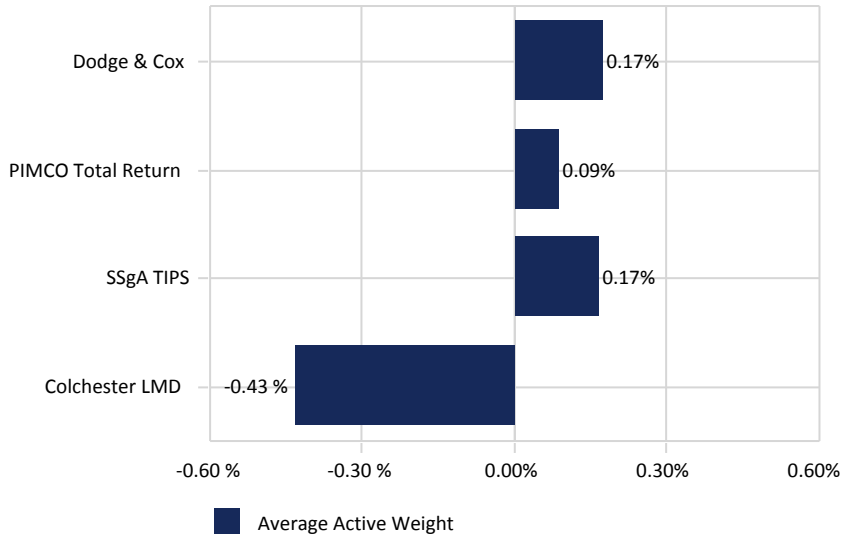
Total Fund Performance



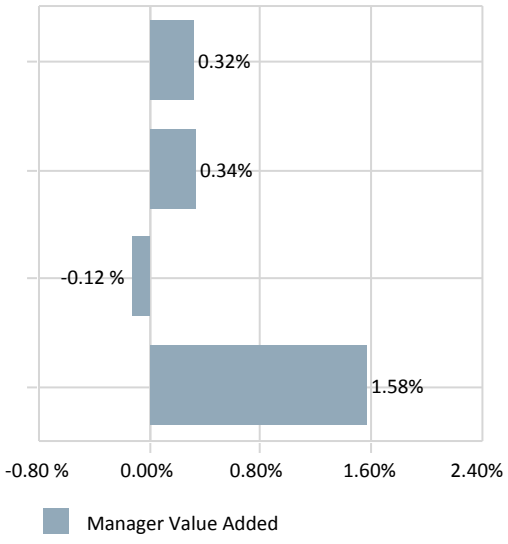
Total Value Added:2.09%



Total Asset Allocation:0.00%



Total Manager Value Added:2.12%



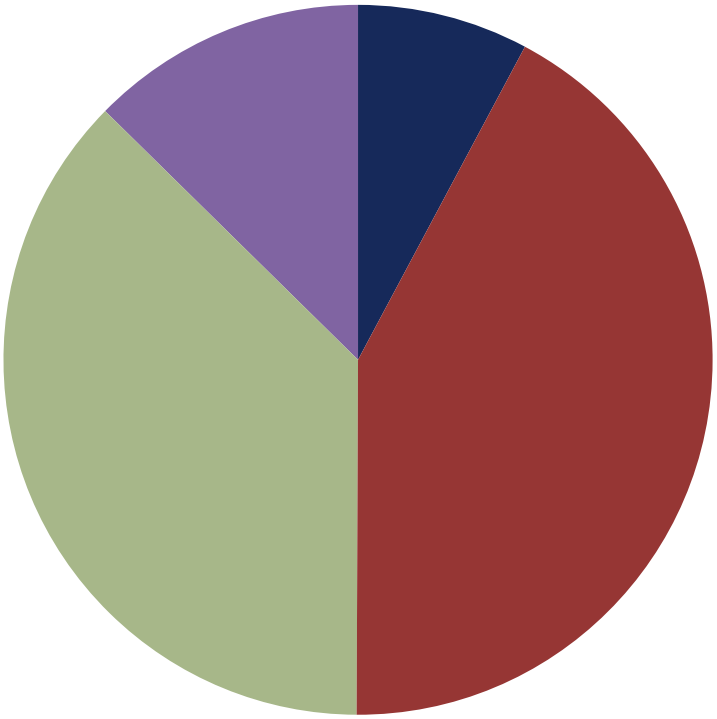
Howard County Retirement Plans

Fixed Income Composite

June 30, 2017

Manager Allocation

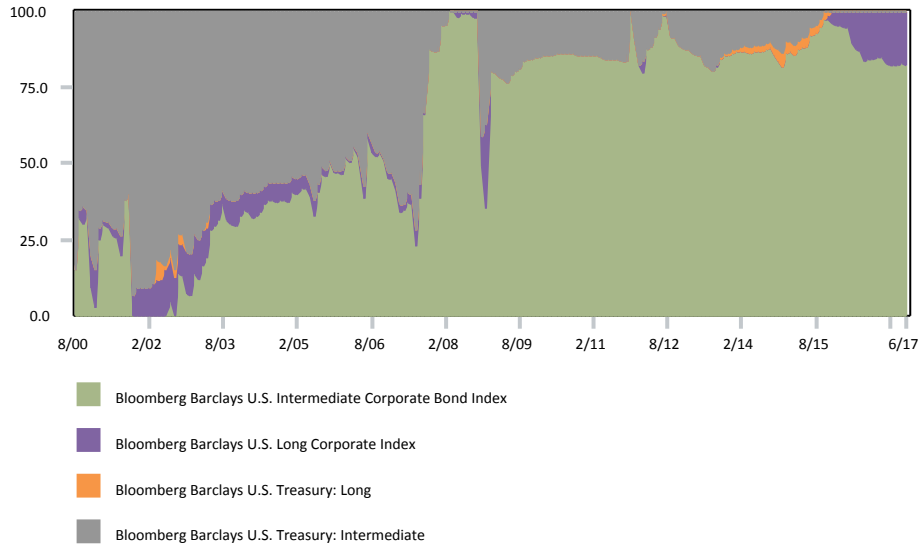
June 30, 2017 : $270,184,331



	Market Value ($)	Allocation (%)
SSgA TIPS	21,078,931	7.80
Dodge & Cox	114,179,065	42.26
PIMCO Total Return	100,776,495	37.30
Colchester LMD	34,149,840	12.64

Style Analysis - Returns Based

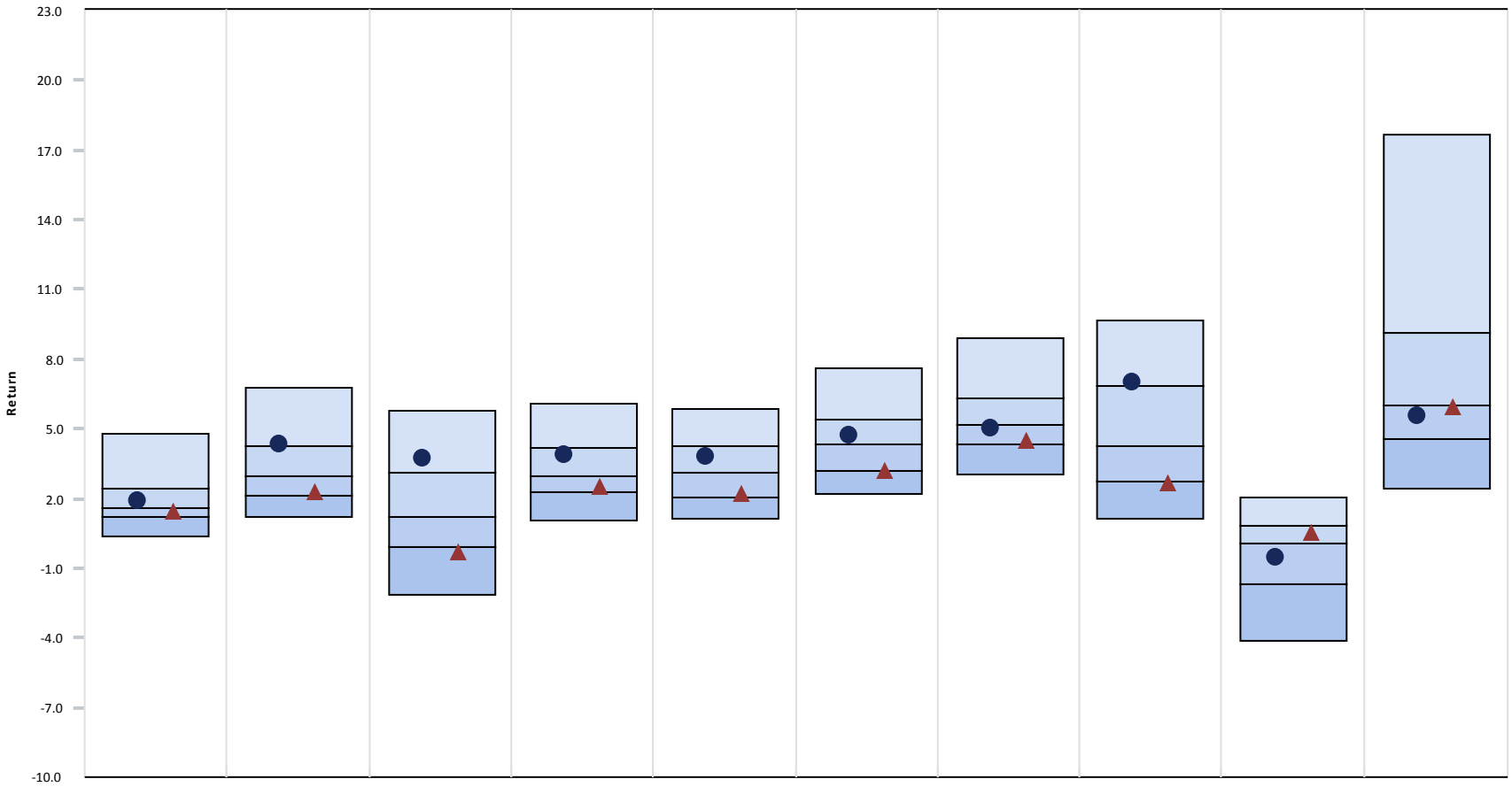
3 Year Style Analysis



Howard County Retirement Plans

All Master Trust - US Fixed Income Peer Group Return

June 30, 2017



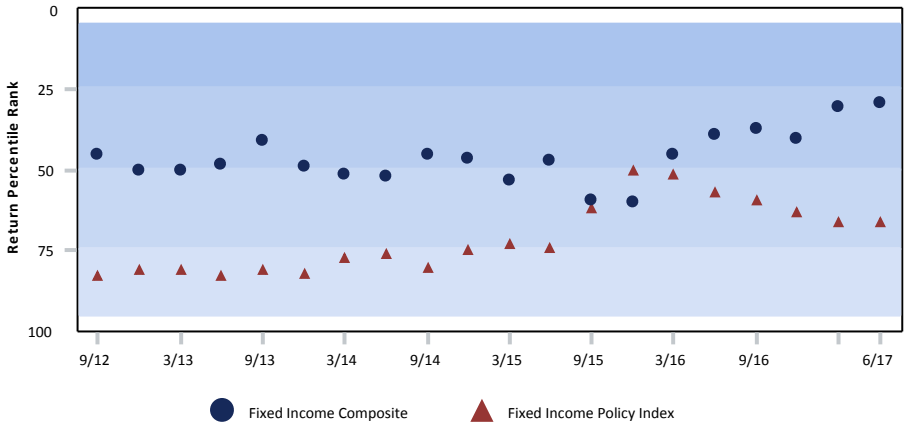
	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2016	2015	2014
● Fixed Income Composite	1.86 (37)	4.36 (24)	3.68 (16)	3.91 (29)	3.77 (35)	4.71 (40)	4.98 (55)	6.97 (24)	-0.53 (60)	5.56 (65)
▲ Fixed Income Policy Index	1.45 (59)	2.27 (70)	-0.31 (82)	2.48 (66)	2.21 (71)	3.19 (76)	4.48 (72)	2.65 (77)	0.55 (33)	5.97 (53)
5th Percentile	4.77	6.76	5.75	6.08	5.89	7.59	8.89	9.64	2.07	17.70
1st Quartile	2.39	4.29	3.07	4.16	4.27	5.42	6.32	6.81	0.80	9.13
Median	**1.59**	**2.92**	**1.22**	**2.97**	**3.07**	**4.35**	**5.15**	**4.24**	**0.02**	**6.04**
3rd Quartile	1.18	2.12	-0.06	2.28	2.07	3.20	4.34	2.70	-1.68	4.59
95th Percentile	0.39	1.22	-2.15	1.05	1.16	2.22	3.06	1.11	-4.14	2.42
Population	384	374	346	316	279	237	160	375	313	212

Howard County Retirement Plans

Fixed Income Composite

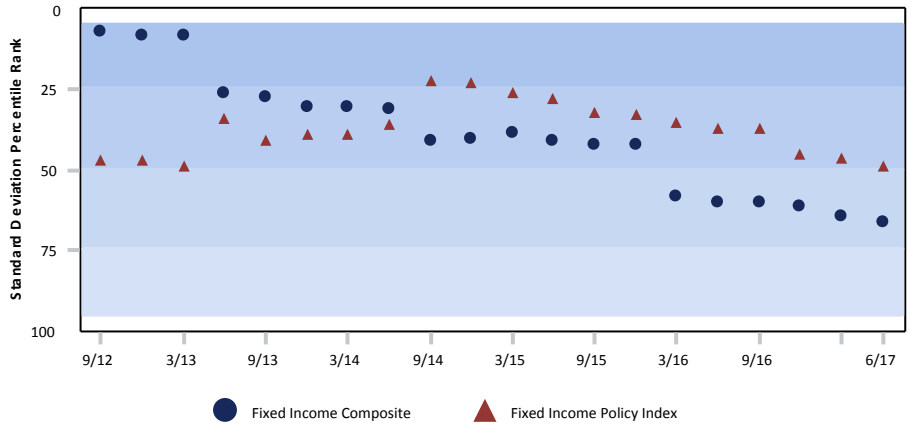
June 30, 2017

3 Year Rolling Return Rank



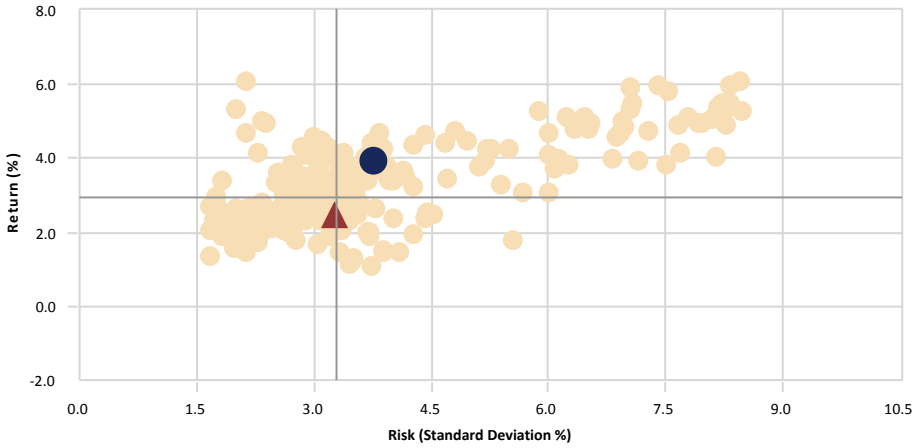
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Fixed Income Composite	20	0 (0%)	15 (75%)	5 (25%)	0 (0%)
Fixed Income Policy Index	20	0 (0%)	1 (5%)	10 (50%)	9 (45%)

3 Year Rolling Standard Deviation Rank



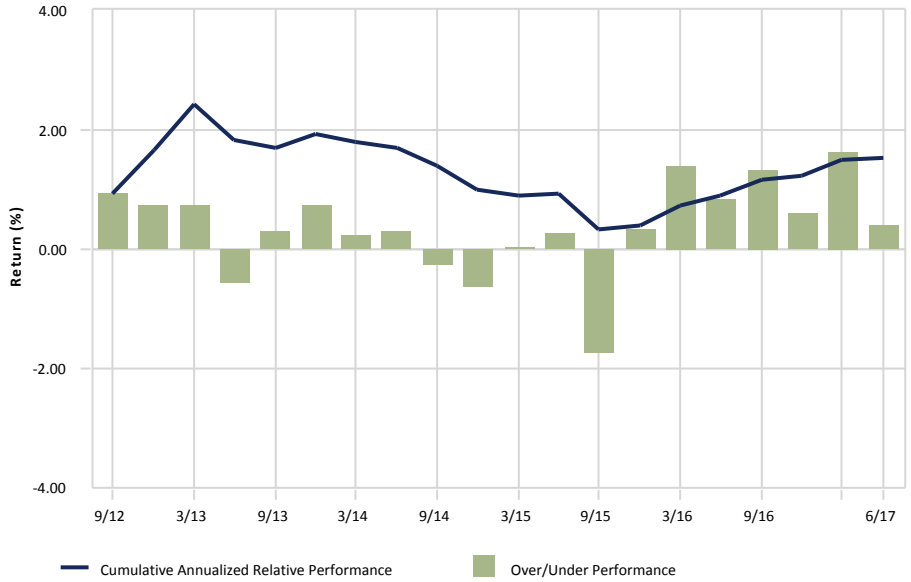
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Fixed Income Composite	20	3 (15%)	11 (55%)	6 (30%)	0 (0%)
Fixed Income Policy Index	20	2 (10%)	18 (90%)	0 (0%)	0 (0%)

Risk vs. Return (07/01/14 - 06/30/17)



	Return	Standard Deviation
Fixed Income Composite	3.91	3.77
Fixed Income Policy Index	2.48	3.25
Median	2.97	3.28

Relative Performance vs. Fixed Income Policy Index



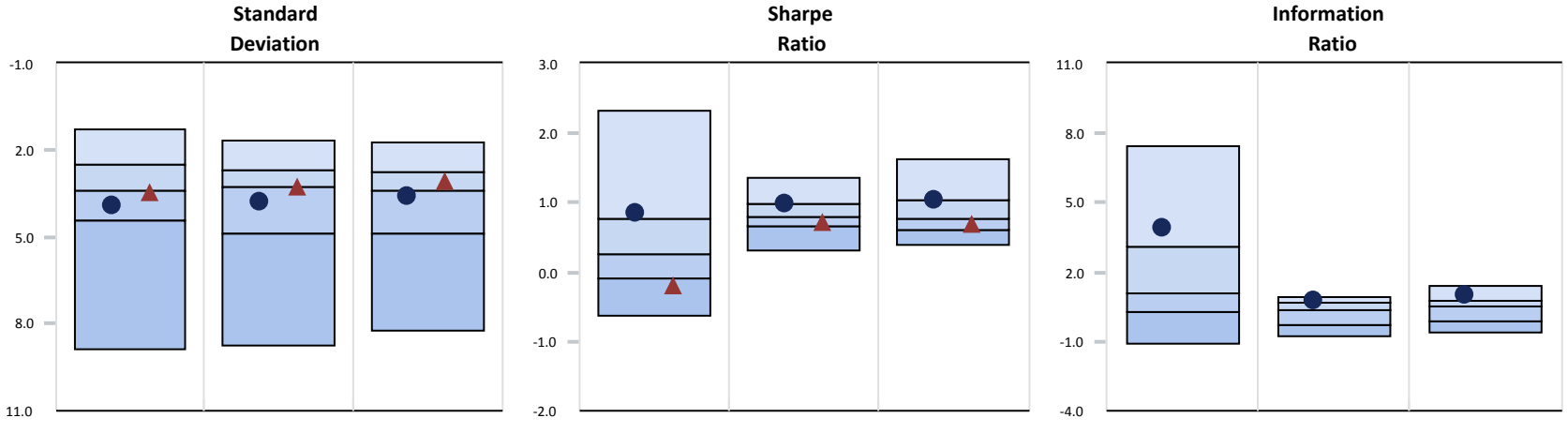
Summit Strategies Group

Howard County Retirement Plans

Fixed Income Composite

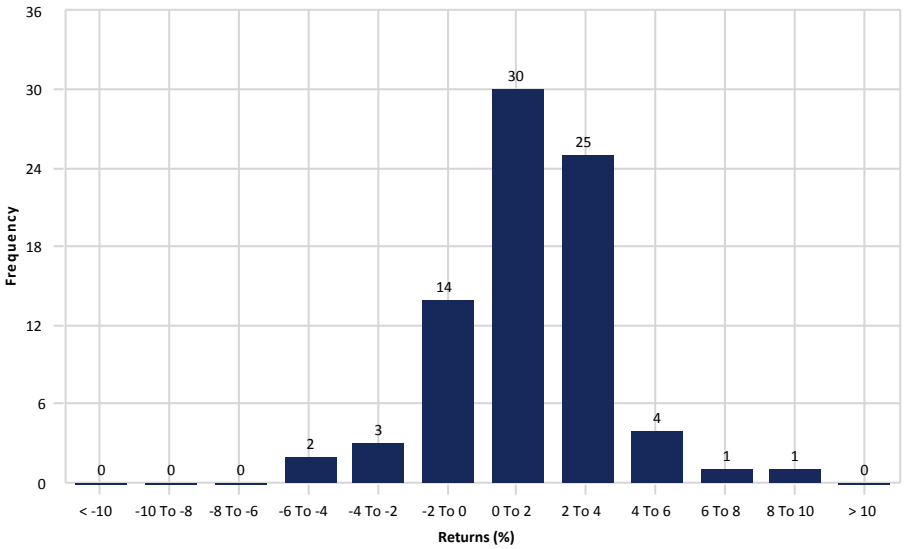
June 30, 2017

Peer Group Analysis: All Master Trust-US Fixed Income Segment

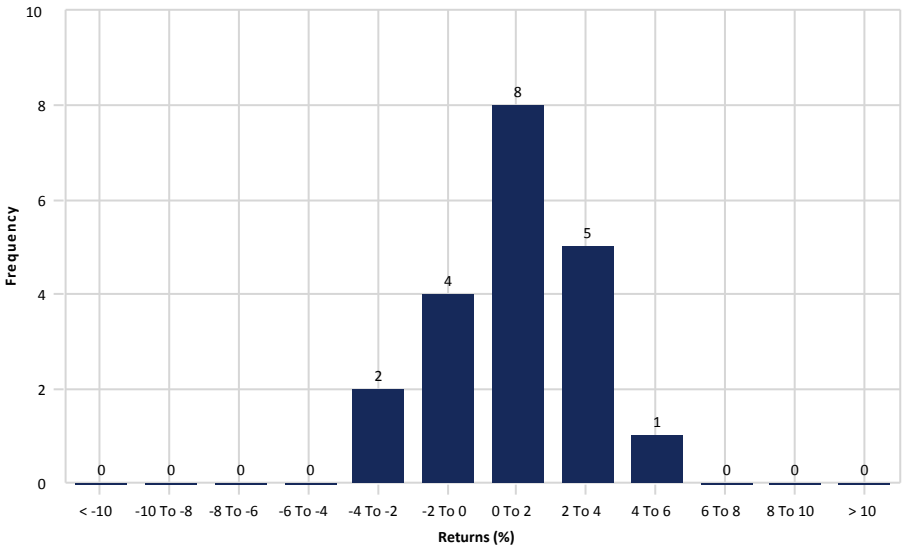


	Standard Deviation 1 Year	Standard Deviation 3 Year	Standard Deviation 5 Year	Sharpe Ratio 1 Year	Sharpe Ratio 3 Year	Sharpe Ratio 5 Year	Information Ratio 1 Year	Information Ratio 3 Year	Information Ratio 5 Year
● Fixed Income Composite	3.87 (68)	3.77 (66)	3.56 (58)	0.85 (23)	1.00 (23)	1.02 (26)	3.89 (19)	0.77 (11)	1.01 (16)
▲ Fixed Income Policy Index	3.44 (51)	3.25 (49)	3.03 (33)	-0.21 (83)	0.71 (66)	0.69 (62)	-	-	-
Median	**3.40**	**3.28**	**3.40**	**0.25**	**0.79**	**0.78**	**1.11**	**0.35**	**0.49**

Inception - Quarterly Distribution of Returns



5 Years - Quarterly Distribution of Returns



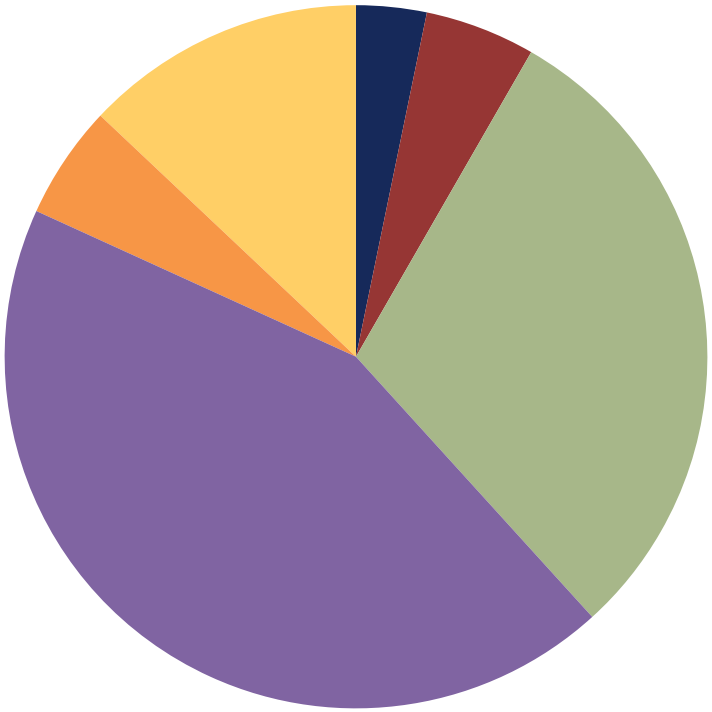
Real Assets

Real Assets Manager Allocation Chart

Asset Allocation By Manager

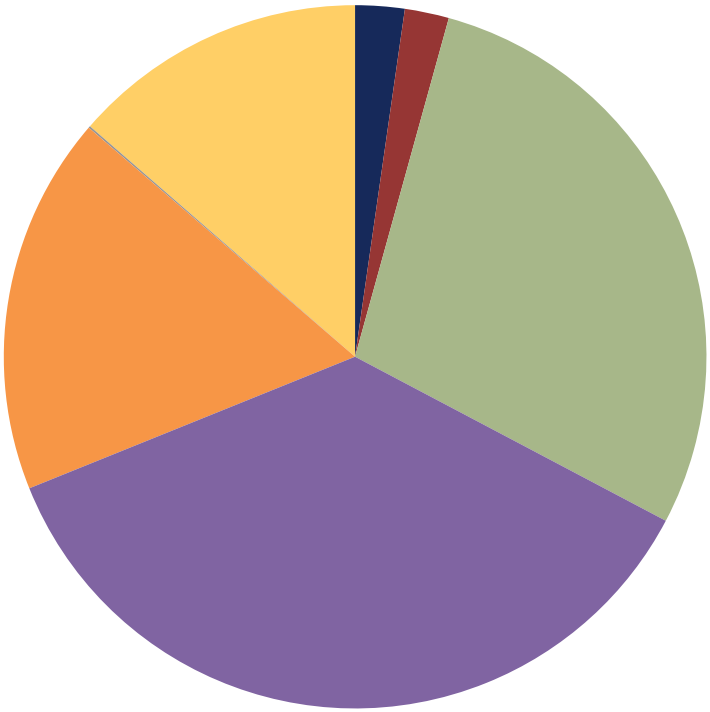
June 30, 2017

June 30, 2017 : $33,054,908



	Market Value ($)	Allocation (%)
Aether Real Assets IV	1,069,826	3.24
Commonfund Natural Resources X	1,677,950	5.08
Partners Group Global RE 2011	9,898,787	29.95
Partners Group Global RE 2014	14,393,288	43.54
TA Realty Associates IX	1,727,192	5.23
TA Realty Associates VII	-	0.00
TA Realty Associates VIII	4,287,863	12.97

December 31, 2016 : $37,773,341

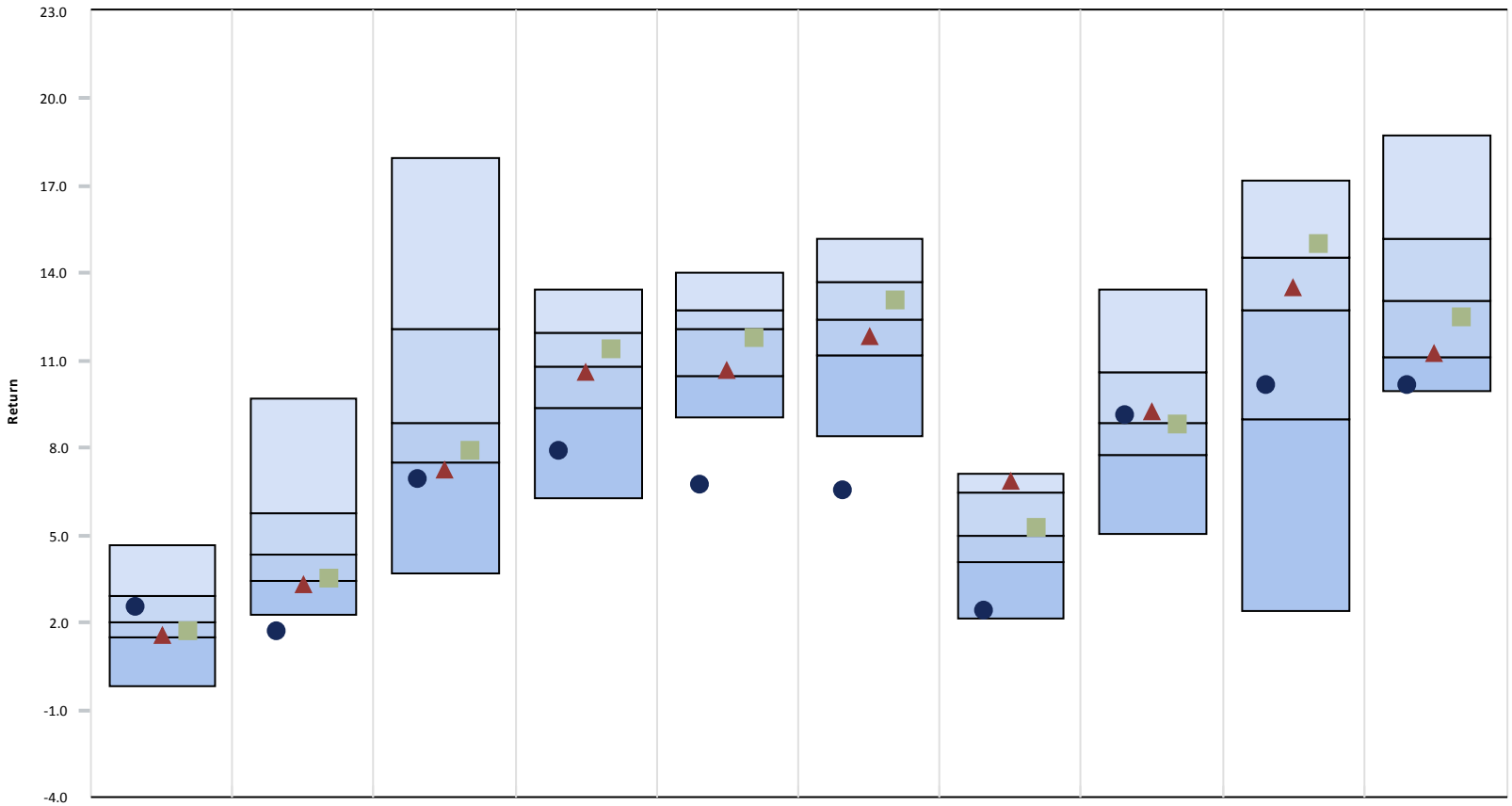


	Market Value ($)	Allocation (%)
Aether Real Assets IV	856,098	2.27
Commonfund Natural Resources X	767,376	2.03
Partners Group Global RE 2011	10,736,621	28.42
Partners Group Global RE 2014	13,665,700	36.18
TA Realty Associates IX	6,572,390	17.40
TA Realty Associates VII	31,729	0.08
TA Realty Associates VIII	5,143,428	13.62

Howard County Retirement Plans

All Master Trust - Real Estate Peer Group Return

June 30, 2017



	3 Month	CYTD	1 Year	3 Year	5 Year	7 Year	10 Year	2016	2015	2014
● Real Assets Composite	2.51 (37)	1.71 (97)	6.92 (83)	7.87 (85)	6.71 (100)	6.50 (100)	2.43 (91)	9.13 (50)	10.12 (70)	10.15 (94)
▲ NCREIF Property Index [3 Month Lag]	1.55 (72)	3.30 (81)	7.27 (80)	10.58 (64)	10.69 (67)	11.82 (61)	6.84 (9)	9.22 (48)	13.48 (36)	11.26 (75)
■ NCREIF Fund Index-ODCE (VW) [M]	1.70 (62)	3.50 (74)	7.87 (67)	11.34 (37)	11.79 (58)	13.08 (36)	5.25 (43)	8.77 (53)	15.02 (24)	12.50 (62)
5th Percentile	4.67	9.67	17.97	13.44	13.99	15.15	7.13	13.44	17.20	18.73
1st Quartile	2.92	5.73	12.07	11.96	12.75	13.70	6.47	10.58	14.56	15.20
Median	**2.04**	**4.33**	**8.86**	**10.80**	**12.07**	**12.40**	**5.01**	**8.85**	**12.73**	**13.06**
3rd Quartile	1.46	3.41	7.53	9.37	10.45	11.19	4.07	7.76	8.96	11.14
95th Percentile	-0.22	2.25	3.70	6.28	9.03	8.39	2.12	5.04	2.36	9.96
Population	157	128	106	68	48	34	22	105	75	37

Howard County Retirement Plans

Real Assets Summary of Partnerships*

June 30, 2017

Partnerships	Vintage Year	Investment Strategy	Capital Commitment ($)	Drawn Down ($)	Distributed ($)	Market Value ($,1)	IRR (%,1)	TVPI Multiple (1, 2)	Valuation Date (1)
Real Asset Partnerships									
TA Realty Associates VII	2004	Real Estate - Value Added	5,000,000	5,000,000	5,117,725	-	0.34	1.02	03/31/2017
TA Realty Associates VIII	2006	Real Estate - Value Added	10,000,000	10,000,000	5,280,313	4,287,863	-0.53	0.96	06/30/2017
TA Realty Associates IX	2008	Real Estate - Value Added	10,000,000	10,000,000	14,429,723	1,727,192	10.82	1.62	06/30/2017
Partners Group Global Real Estate 2011(3)	2011	Real Estate - Opportunistic (FOF)	15,000,000	13,351,599	5,996,061	9,898,787	5.13	1.19	06/30/2017
Partners Group Global Real Estate 2014	2013	Real Estate - Opportunistic (FOF)	25,000,000	13,833,263	1,679,104	14,393,288	9.31	1.16	06/30/2017
Commonfund Natural Resources X	2015	Natural Resources - Diversified (FOF)	7,500,000	1,346,284	52,445	1,677,950	71.27	1.29	06/30/2017
Aether Real Assets IV	2015	Natural Resources - Diversified (FOF)	7,500,000	1,192,657	3,902	1,069,826	-13.67	0.90	06/30/2017
Total Real Assets (4)			**90,000,000**	**63,672,370**	**46,496,594**	**33,054,908**	**5.68**	**1.25**	**06/30/2017**

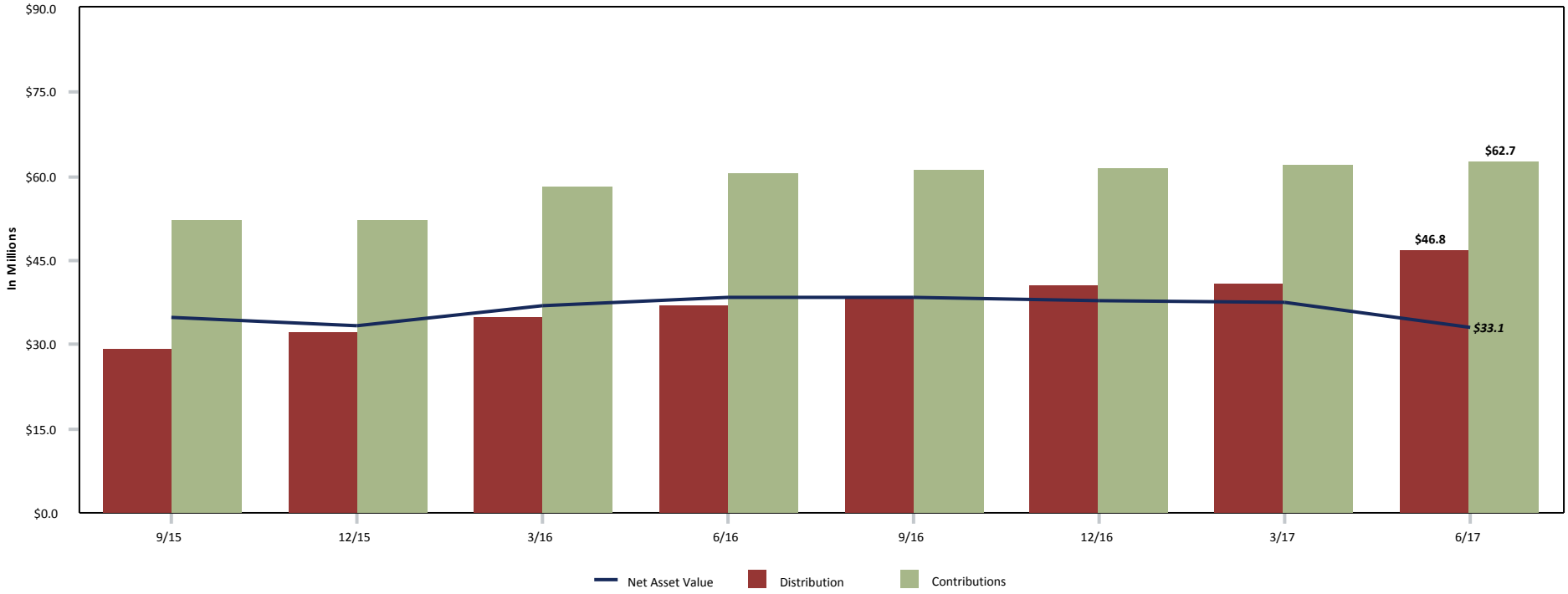
1) Valuations are typically reported on one quarter lag. If the valuation date is earlier than the statement's date, the market value and performance are estimated by rolling forward the latest reported balance to include relevant new cash flows.
2) Total Value to Paid In (TVPI) reflects total realized and unrealized performance.
3) Fund is not USD: Cash flows are in actual USD per the custodian. Market values and remaining commitment are translated using the spot on the valuation date.
4) Total Real Assets include fully realized partnerships.
*Source of performance data is from the Custodial Bank.

Howard County Retirement Plans

Real Assets Portfolio Summary*

June 30, 2017

Cumulative Cash Flow Analysis



*The Custodial Bank is the source of performance data for liquid real assets.

Alternatives

Howard County Retirement Plans

Private Equity Summary of Partnerships

June 30, 2017

Partnerships	Vintage Year	Investment Strategy	Capital Commitment ($)	Drawn Down ($,1)	Distributed ($,1)	Market Value ($,1,2)	IRR (%) (3)	TVPI Multiple (3)	Valuation Date
Private Equity									
Siguler Guff Distressed Opps III	2007	Distressed Debt (FOF)	10,000,000	10,217,661	13,135,537	2,615,224	10.54	1.54	06/30/2017
Greenspring IV	2008	Venture Capital (FOF)	4,000,000	3,796,255	3,776,032	4,684,427	19.20	2.23	06/30/2017
Pantheon Global Secondaries IV	2010	Secondaries (FOF)	3,000,000	2,186,420	2,243,421	937,040	13.83	1.46	06/30/2017
LGT Crown Asia-Pacific II	2011	International Private Equity (FOF)	14,000,000	10,515,006	2,058,000	13,425,285	12.41	1.47	06/30/2017
Greenspring V	2011	Venture Capital (FOF)	7,000,000	5,933,846	3,762,500	7,874,846	21.15	1.96	06/30/2017
Adveq Europe V	2012	Buyout - Small (FOF)	10,000,000	6,369,742	1,527,142	5,105,967	1.76	1.04	06/30/2017
LGT Crown Global Secondaries III	2012	Secondaries (FOF)	10,000,000	5,574,447	1,690,000	5,987,784	15.36	1.38	06/30/2017
Flag Private Equity V	2013	Diversified (FOF)	15,000,000	11,414,188	4,149,834	10,542,022	14.34	1.29	06/30/2017
HarbourVest Partners 2013 Direct	2013	Diversified (COI)	15,000,000	15,411,146	3,210,301	18,601,253	20.58	1.42	06/30/2017
Greenspring VI	2014	Venture Capital (FOF)	7,500,000	5,476,152	1,181,250	6,580,181	18.63	1.42	06/30/2017
Greenspring Secondaries Fund I	2014	Secondaries	2,500,000	2,349,097	416,664	2,923,249	21.90	1.42	06/30/2017
Adveq Europe VI	2015	Buyout - Small (FOF)	7,500,000	1,995,516	371,951	1,692,480	3.77	1.04	06/30/2017
Flag Private Equity VI	2014	Buyout - Small (FOF)	15,000,000	6,750,000	831,574	7,046,672	19.44	1.17	06/30/2017
57 Stars	2015	Diversified (FOF)	7,000,000	2,508,688	-	2,423,232	-3.87	0.97	06/30/2017
NB Crossroads XXI	2015	Diversified (FOF)	15,000,000	4,125,000	750,000	3,376,374	0.03	1.00	06/30/2017
LGT Crown Asia-Pacific III	2014	International Private Equity (FOF)	5,000,000	1,918,161	-	2,256,969	15.68	1.18	06/30/2017
HarbourVest IV	2016	Buyout - Mid (COI)	10,000,000	3,630,747	-	4,076,022	13.69	1.12	06/30/2017
Total Private Equity			**157,500,000**	**100,172,072**	**39,104,206**	**100,149,026**	**14.25**	**1.39**	**06/30/2017**

1. Information contained in this report is being derived from custodial data. 2. Custodial valuations may be lagged in comparison to actual fund valuations. 3. In the beginning life of a fund, fees and expenses are disproportionately large compared to investments (aka "J-Curve"); therefore performance is considered not meaningful until a fund is about 50% drawn.

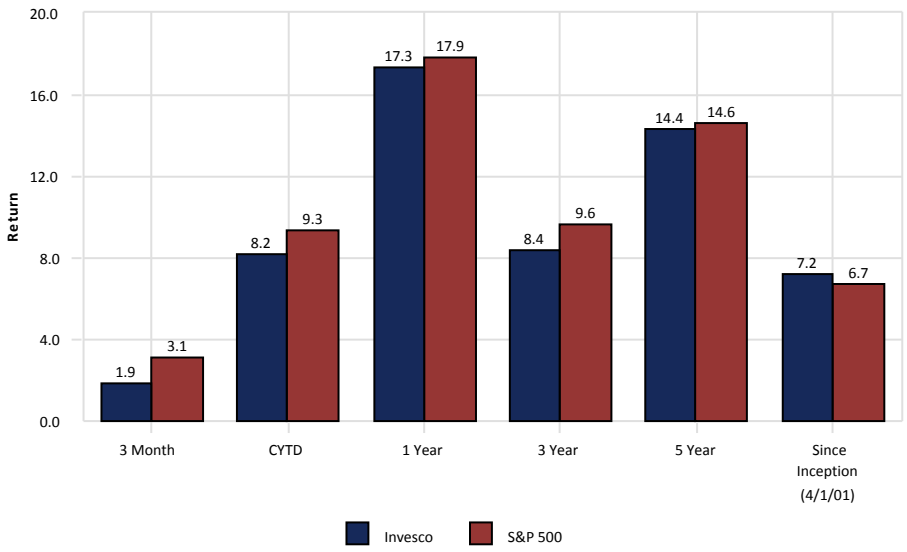
Manager Detail

Howard County Retirement Plans

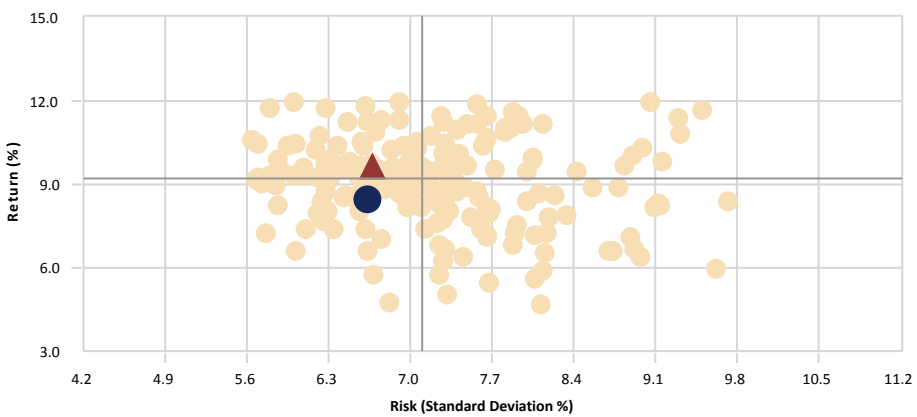
Invesco vs. IM U.S. Large Cap Core Equity (SA+CF)

June 30, 2017

Comparative Performance



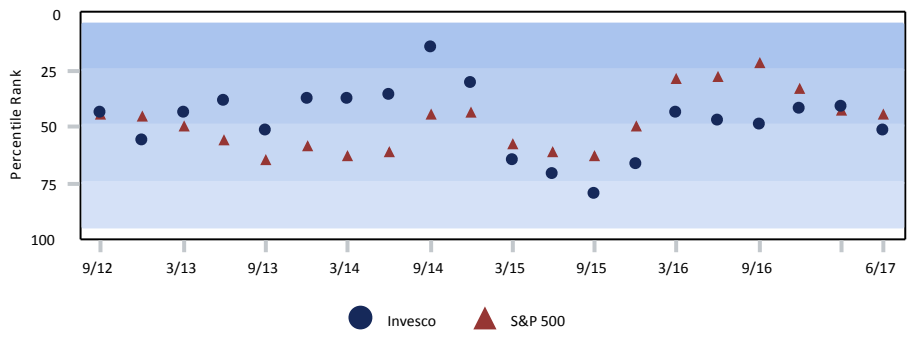
Risk/Return (07/01/14 - 06/30/17)



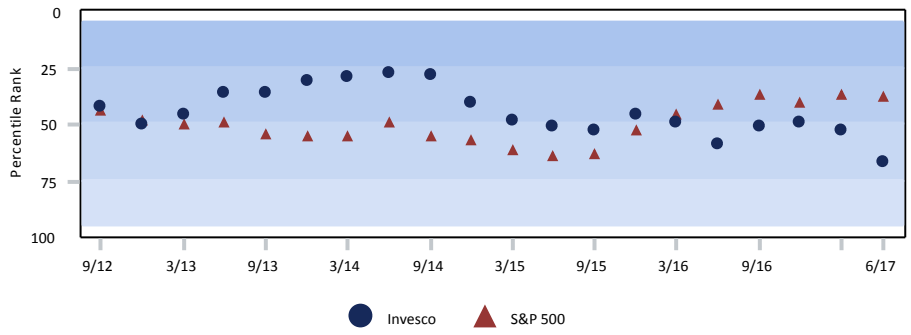
	Return	Standard Deviation
Invesco	8.39	6.64
S&P 500	9.61	6.67
Median	9.22	7.10

gross of fees

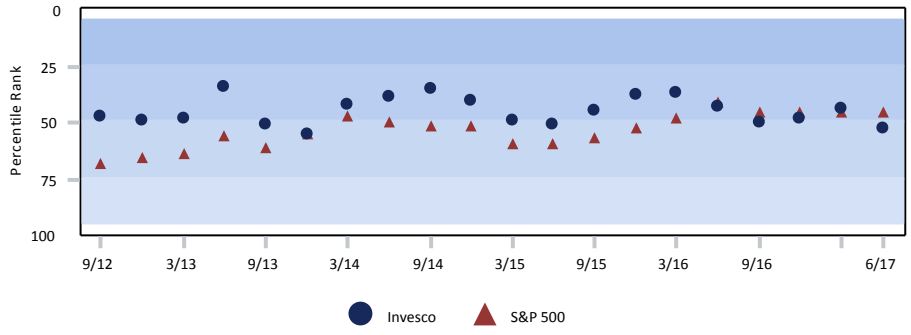
1 Year Rolling Percentile Ranking



3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Howard County Retirement Plans

Invesco

June 30, 2017

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
Invesco	**1.87**	**8.24**	**17.32**	**8.39**	**14.39**
S&P 500	*3.09*	*9.34*	*17.90*	*9.61*	*14.63*
IM U.S. Large Cap Core Equity (SA+CF) Median	*2.92*	*8.98*	*17.53*	*9.22*	*14.54*
Invesco Rank	83	65	52	67	53

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Apple Inc	3.75	3.62	0.13	0.66
Microsoft Corp	3.19	2.56	0.63	5.25
Procter & Gamble Co (The)	1.70	1.07	0.63	-2.26
JPMorgan Chase & Co	1.56	1.56	0.00	4.65
Alphabet Inc	1.54	1.33	0.21	9.66
Berkshire Hathaway Inc	1.53	1.55	-0.02	1.61
Unitedhealth Group Inc	1.42	0.86	0.56	13.53
Exxon Mobil Corp	1.41	1.65	-0.24	-0.64
Pfizer Inc	1.38	0.97	0.41	-0.86
Johnson & Johnson	1.37	1.72	-0.35	6.91

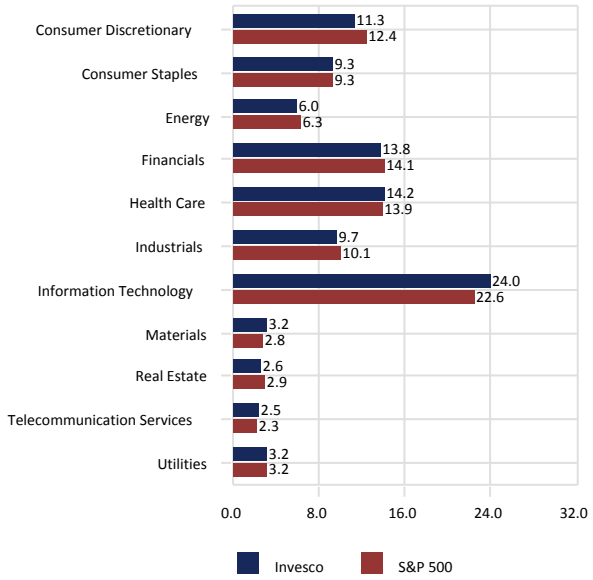
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
Invesco	-1.12	1.00	10.30	0.98	-0.85	95.19	102.55
S&P 500	*0.00*	*1.00*	*10.21*	*1.00*	-	*100.00*	*100.00*

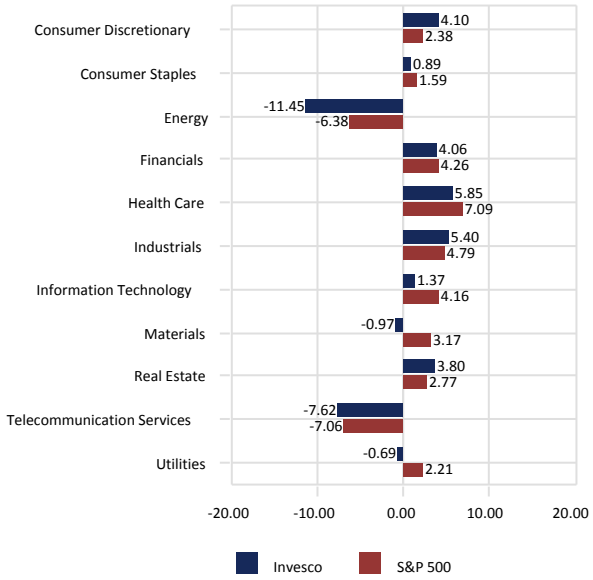
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap ($000)	158,444,690	166,645,550
Median Mkt. Cap ($000)	28,451,933	20,641,193
Price/Earnings ratio	19.40	21.58
Price/Book ratio	3.15	3.32
5 Yr. EPS Growth Rate (%)	10.50	11.34
Current Yield (%)	2.08	2.01
Beta (5 Years, Monthly)	1.01	1.00
Number of Stocks	250	505

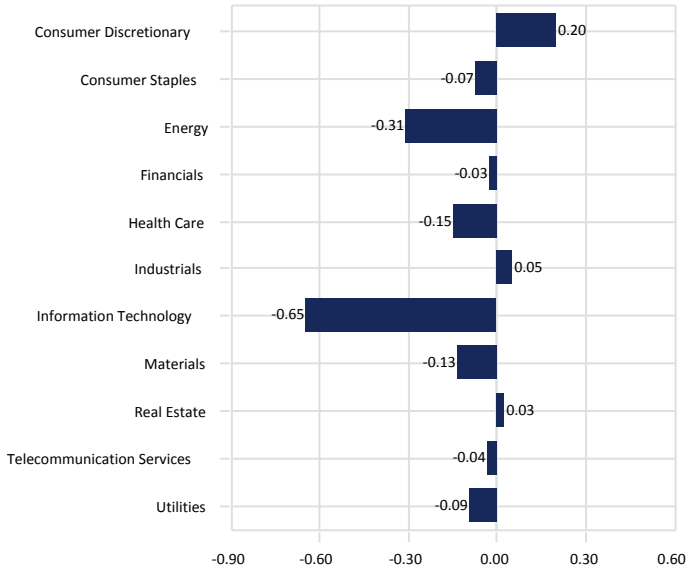
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

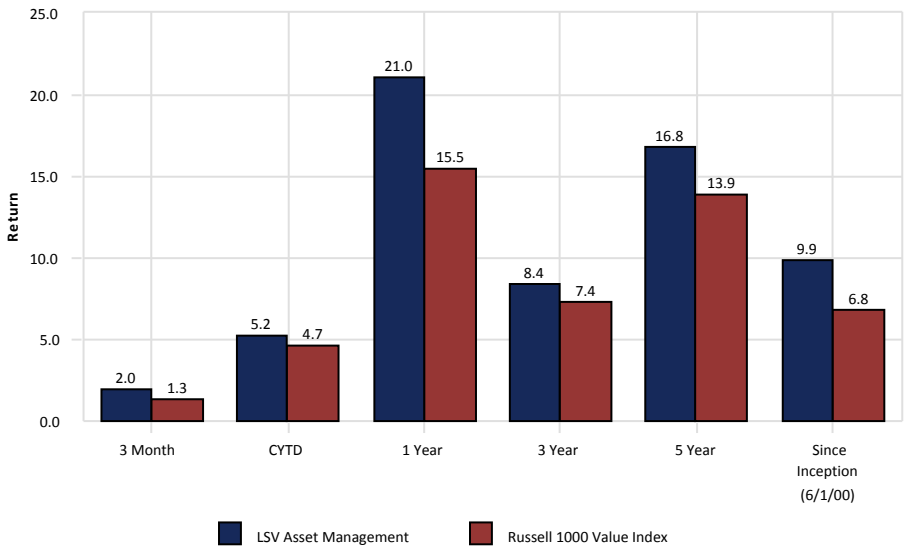
Summit Strategies Group

Howard County Retirement Plans

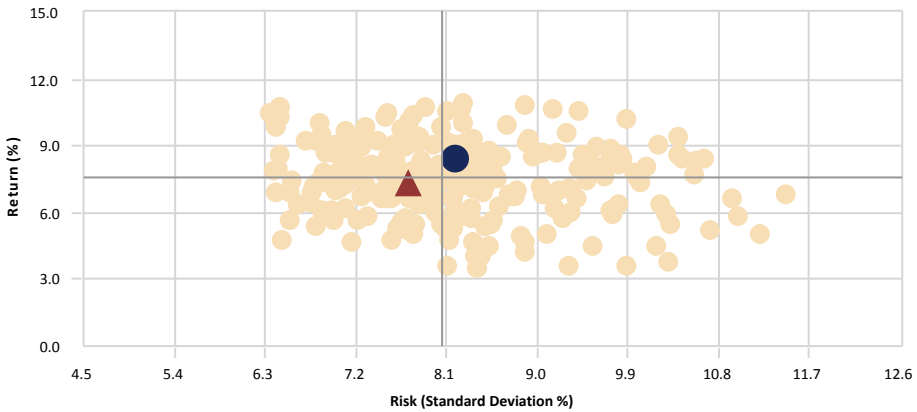
LSV Asset Management vs. IM U.S. Large Cap Value Equity (SA+CF)

June 30, 2017

Comparative Performance



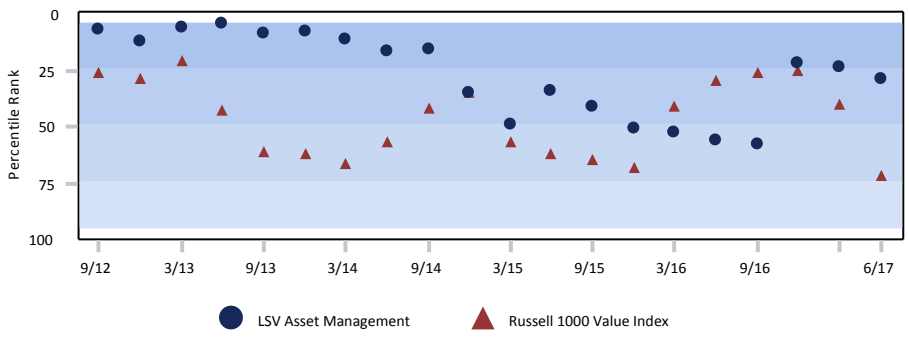
Risk/Return (07/01/14 - 06/30/17)



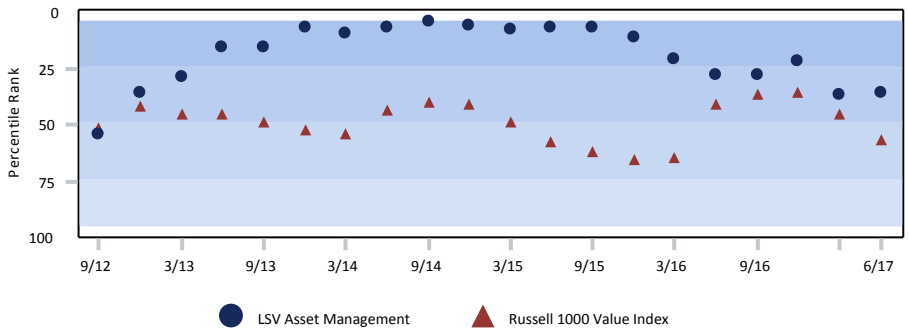
	Return	Standard Deviation
LSV Asset Management	8.39	8.20
Russell 1000 Value Index	7.36	7.72
Median	7.63	8.05

gross of fees

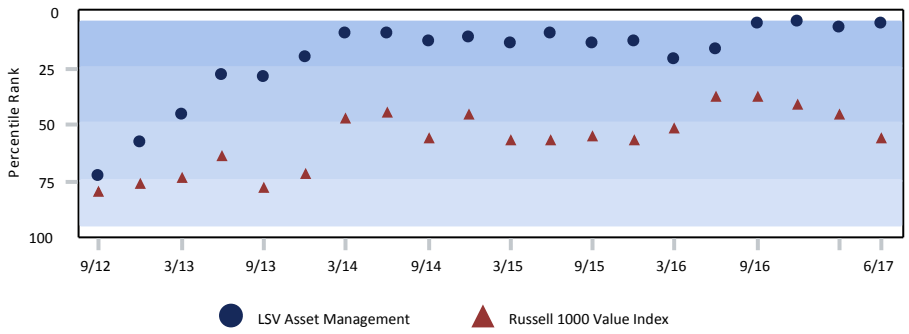
1 Year Rolling Percentile Ranking



3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Howard County Retirement Plans

LSV Asset Management

June 30, 2017

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
LSV Asset Management	**2.00**	**5.22**	**21.04**	**8.39**	**16.84**
Russell 1000 Value Index	*1.34*	*4.66*	*15.53*	*7.36*	*13.94*
IM U.S. Large Cap Value Equity (SA+CF) Median	*2.05*	*6.24*	*17.99*	*7.63*	*14.22*
LSV Asset Management Rank	51	65	29	36	5

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
JPMorgan Chase & Co	3.21	2.73	0.48	4.65
Johnson & Johnson	2.68	2.55	0.13	6.91
Pfizer Inc	2.38	1.68	0.70	-0.86
Citigroup Inc	2.24	1.55	0.69	12.10
Cisco Systems Inc	2.23	1.32	0.91	-6.59
Bank of America Corp	2.20	2.04	0.16	3.18
Exxon Mobil Corp	1.85	2.89	-1.04	-0.64
Anthem Inc	1.75	0.42	1.33	14.15
Intel Corp	1.73	1.34	0.39	-5.77
AT&T Inc	1.70	1.96	-0.26	-8.10

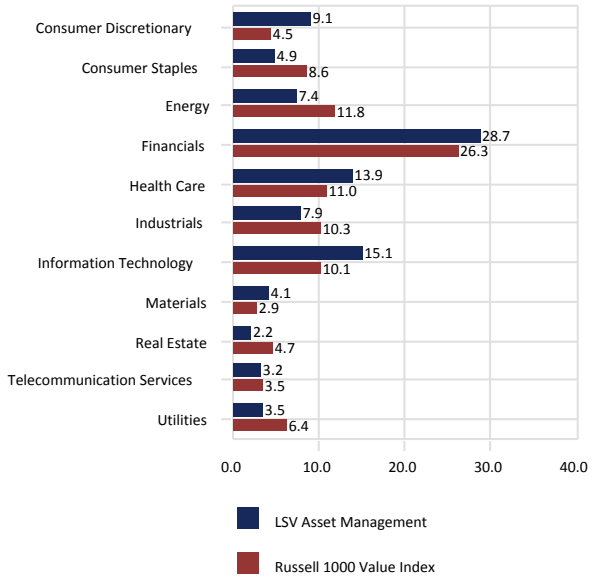
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
LSV Asset Management	0.50	1.08	11.42	0.96	0.43	108.17	103.74
Russell 1000 Value Index	*0.00*	*1.00*	*10.38*	*1.00*	*-*	*100.00*	*100.00*

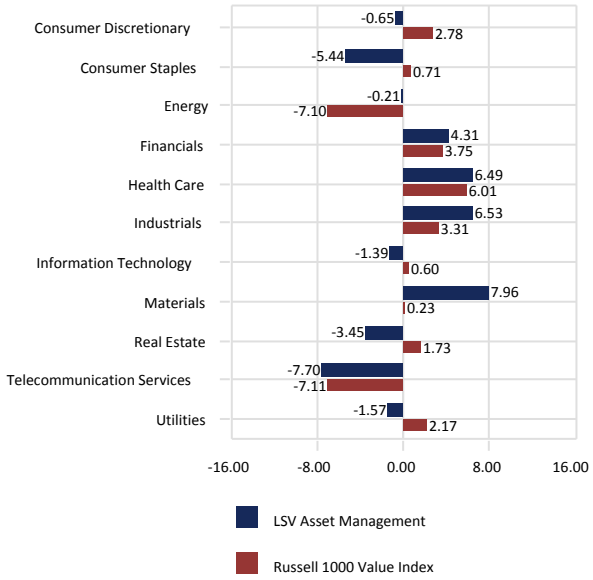
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap ($000)	83,297,031	115,486,685
Median Mkt. Cap ($000)	13,625,410	8,708,489
Price/Earnings ratio	15.42	18.65
Price/Book ratio	2.03	2.17
5 Yr. EPS Growth Rate (%)	13.45	9.59
Current Yield (%)	2.61	2.45
Beta (5 Years, Monthly)	1.09	1.00
Number of Stocks	142	719

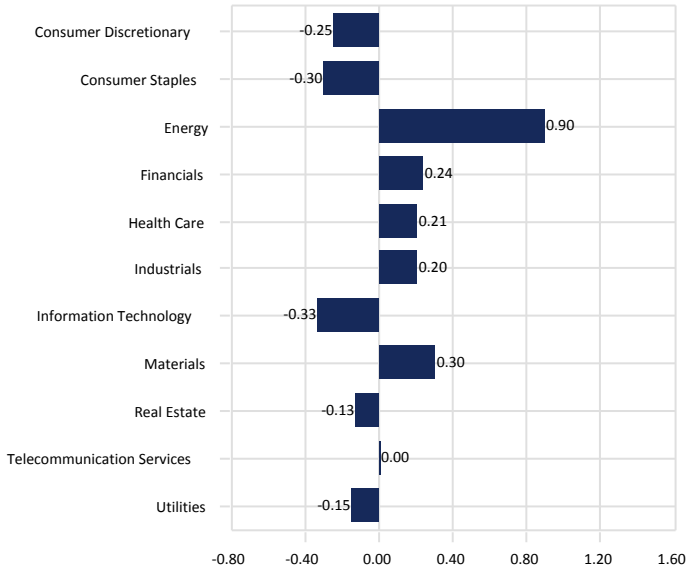
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

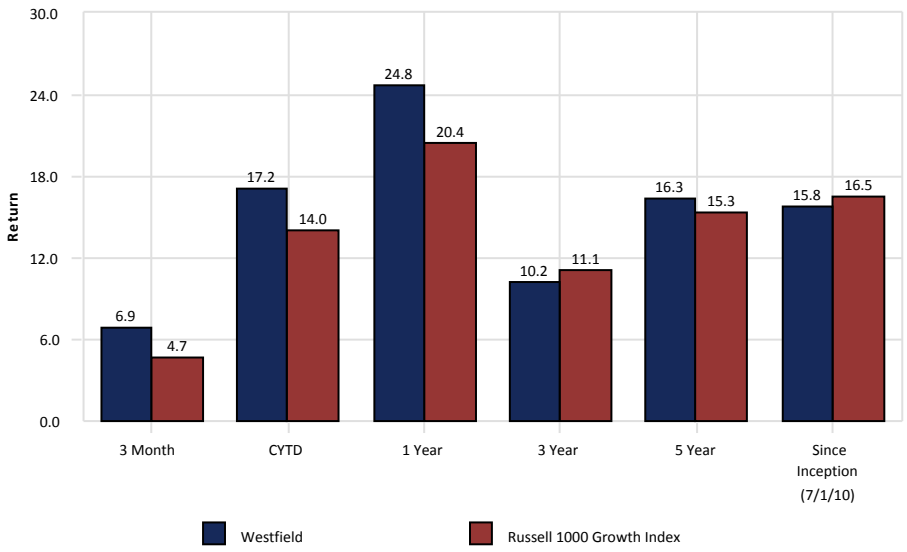
Summit Strategies Group

Howard County Retirement Plans

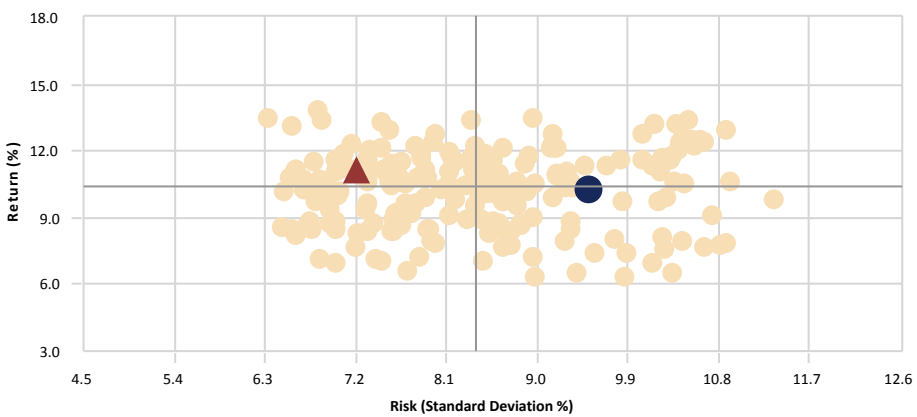
Westfield vs. IM U.S. Large Cap Growth Equity (SA+CF)

June 30, 2017

Comparative Performance



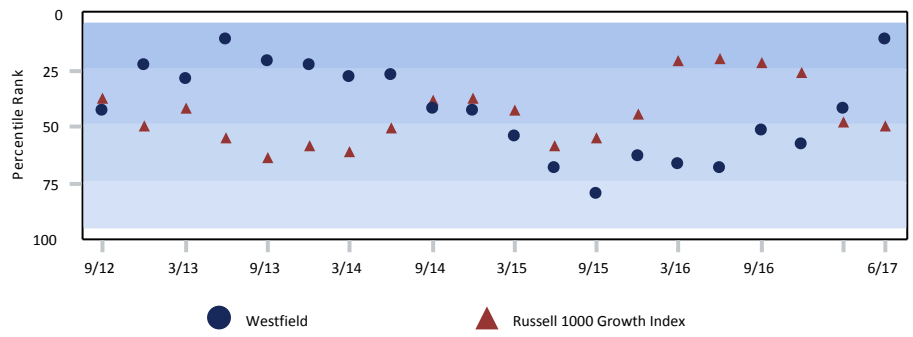
Risk/Return (07/01/14 - 06/30/17)



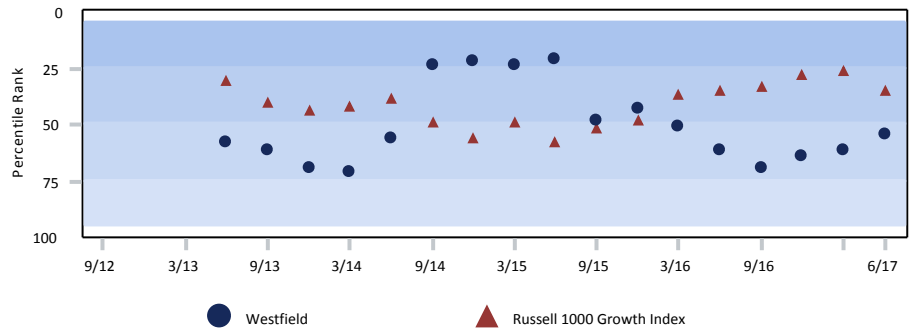
	Return	Standard Deviation
Westfield	10.20	9.53
Russell 1000 Growth Index	11.11	7.21
Median	10.41	8.38

gross of fees

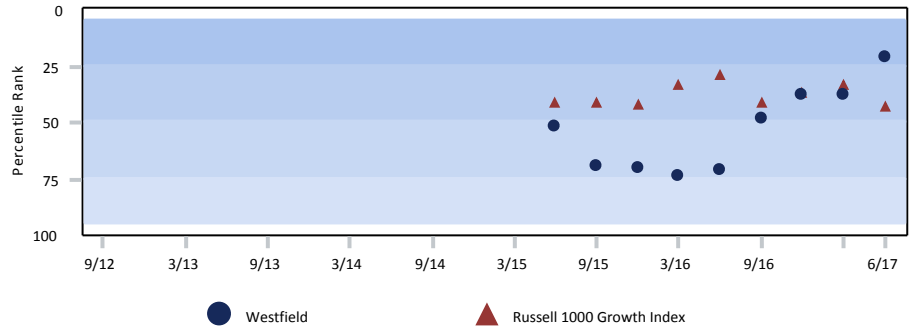
1 Year Rolling Percentile Ranking



3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Howard County Retirement Plans

Westfield

June 30, 2017

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
Westfield	**6.95**	**17.15**	**24.78**	**10.20**	**16.33**
Russell 1000 Growth Index	*4.67*	*13.99*	*20.42*	*11.11*	*15.30*
IM U.S. Large Cap Growth Equity (SA+CF) Median	*5.03*	*14.12*	*20.42*	*10.41*	*14.95*
Westfield Rank	13	23	11	54	21

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Apple Inc	5.12	6.62	-1.50	0.66
Facebook Inc	4.04	3.10	0.94	6.29
Amazon.com Inc	3.35	3.39	-0.04	9.19
Unitedhealth Group Inc	2.94	1.57	1.37	13.53
Microsoft Corp	2.90	4.55	-1.65	5.25
Alphabet Inc	2.75	2.44	0.31	9.66
Alphabet Inc	2.69	2.42	0.27	9.54
Visa Inc	2.69	1.53	1.16	5.71
Celgene Corp	2.64	0.89	1.75	4.37
Home Depot Inc. (The)	2.44	1.62	0.82	5.08

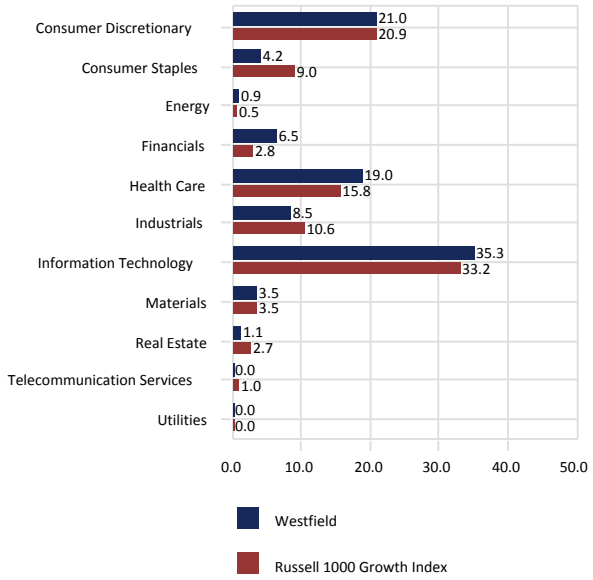
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
Westfield	-1.24	1.05	11.76	0.94	-0.24	102.62	113.31
Russell 1000 Growth Index	*0.00*	*1.00*	*10.87*	*1.00*	*-*	*100.00*	*100.00*

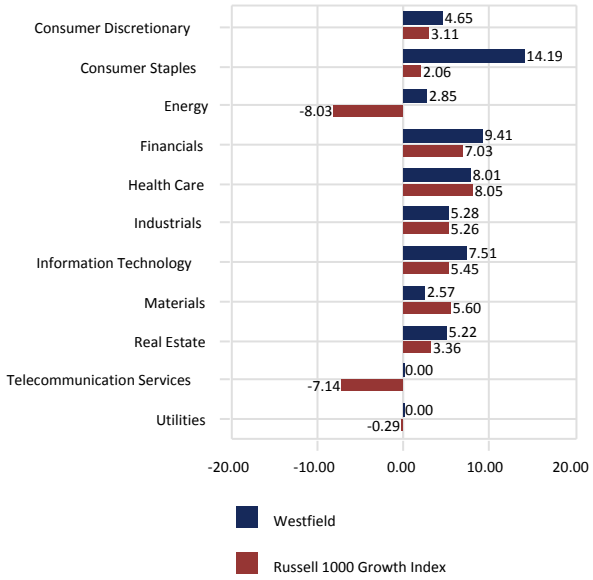
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap ($000)	172,418,888	185,470,322
Median Mkt. Cap ($000)	58,576,787	10,036,783
Price/Earnings ratio	26.84	25.74
Price/Book ratio	4.59	6.31
5 Yr. EPS Growth Rate (%)	15.06	13.30
Current Yield (%)	1.06	1.43
Beta (5 Years, Monthly)	1.06	1.00
Number of Stocks	51	557

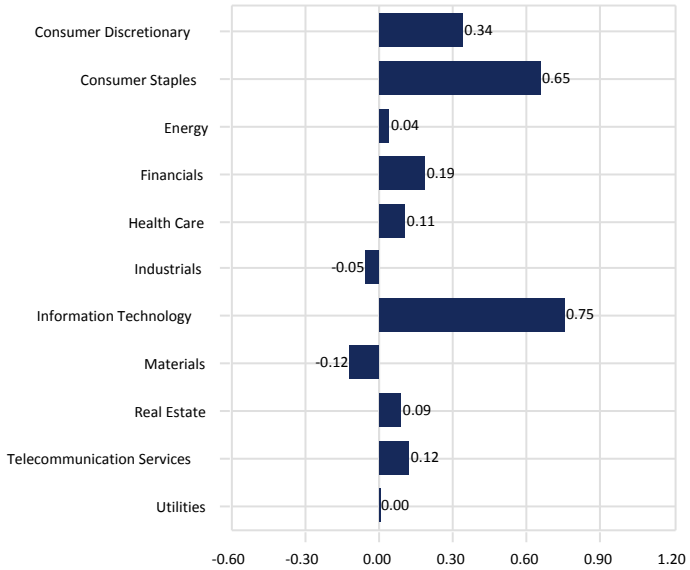
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

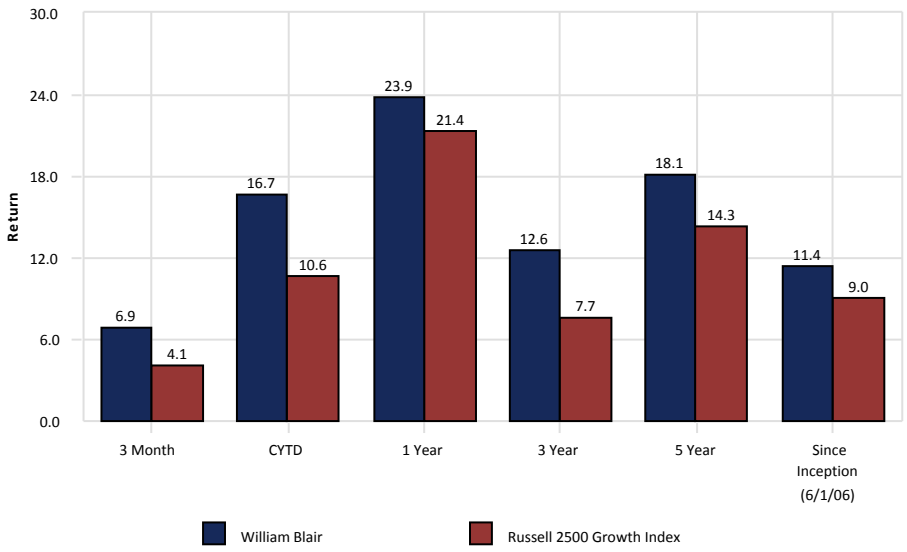
Summit Strategies Group

Howard County Retirement Plans

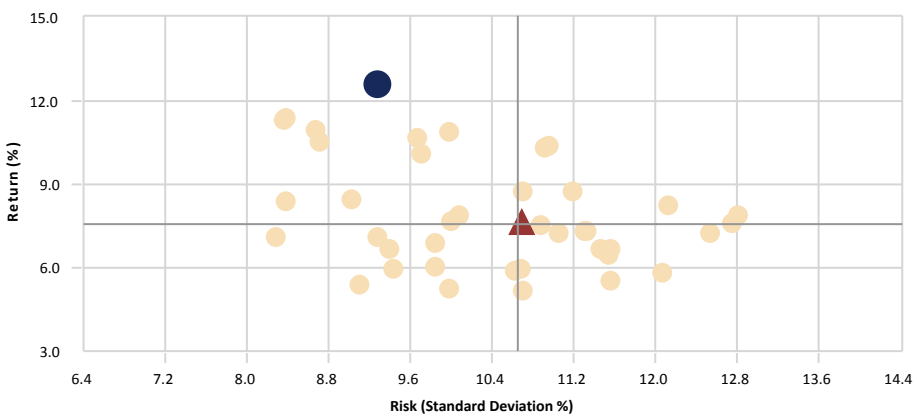
William Blair vs. IM U.S. SMID Cap Growth Equity (SA+CF)

June 30, 2017

Comparative Performance



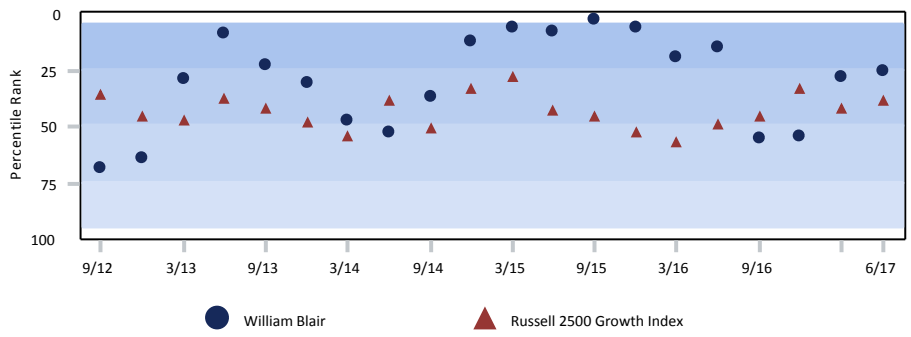
Risk/Return (07/01/14 - 06/30/17)



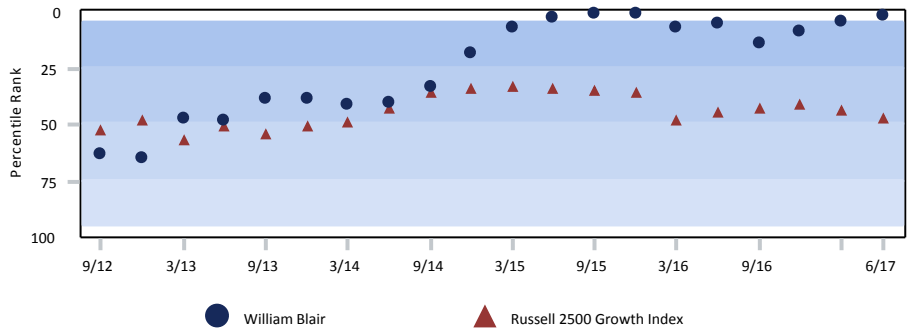
	Return	Standard Deviation
William Blair	12.58	9.29
Russell 2500 Growth Index	7.65	10.70
Median	7.54	10.66

gross of fees

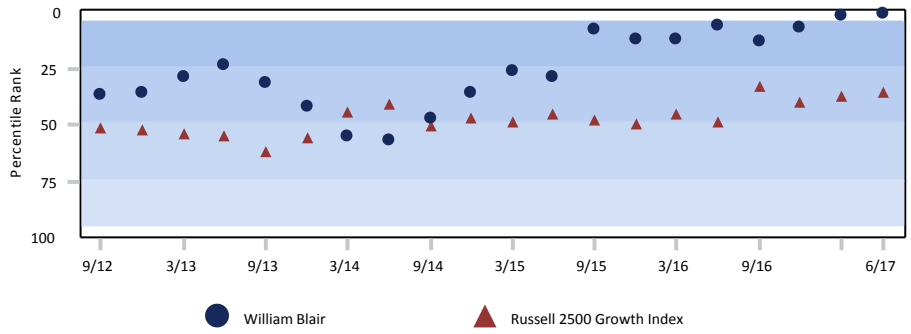
1 Year Rolling Percentile Ranking



3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Howard County Retirement Plans

William Blair

June 30, 2017

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
William Blair	**6.93**	**16.70**	**23.93**	**12.58**	**18.10**
Russell 2500 Growth Index	*4.13*	*10.63*	*21.44*	*7.65*	*14.33*
IM U.S. SMID Cap Growth Equity (SA+CF) Median	*4.23*	*11.56*	*19.74*	*7.54*	*13.87*
William Blair Rank	12	14	25	2	1

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
CoStar Group Inc	2.89	0.41	2.48	27.21
Ligand Pharmaceuticals Inc	2.88	0.12	2.76	14.70
Copart Inc	2.66	0.31	2.35	2.67
BWX Technologies Inc	2.57	0.22	2.35	2.64
Six Flags Entertainment Corp	2.41	0.21	2.20	1.25
Guidewire Software Inc	2.40	0.10	2.30	21.98
j2 Global Inc	2.29	0.19	2.10	1.87
SBA Communications Corp	2.23	0.00	2.23	12.07
Old Dominion Freight Line Inc	2.19	0.18	2.01	11.42
Ball Corp	2.12	0.00	2.12	13.96

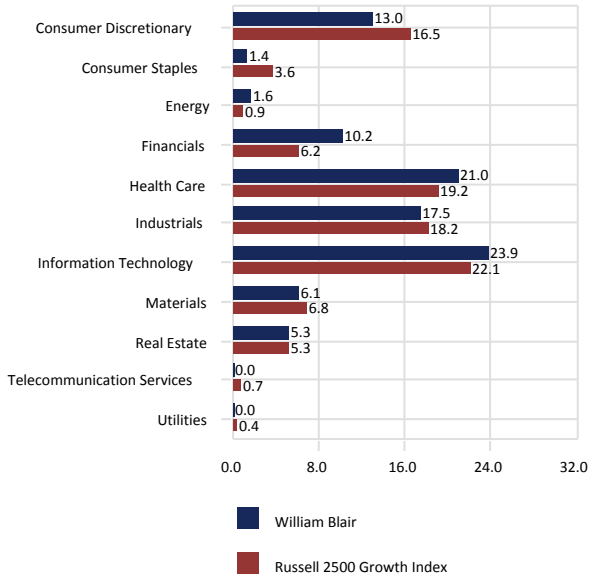
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
William Blair	6.06	0.80	11.61	0.92	0.96	95.89	65.76
Russell 2500 Growth Index	*0.00*	*1.00*	*13.96*	*1.00*	*-*	*100.00*	*100.00*

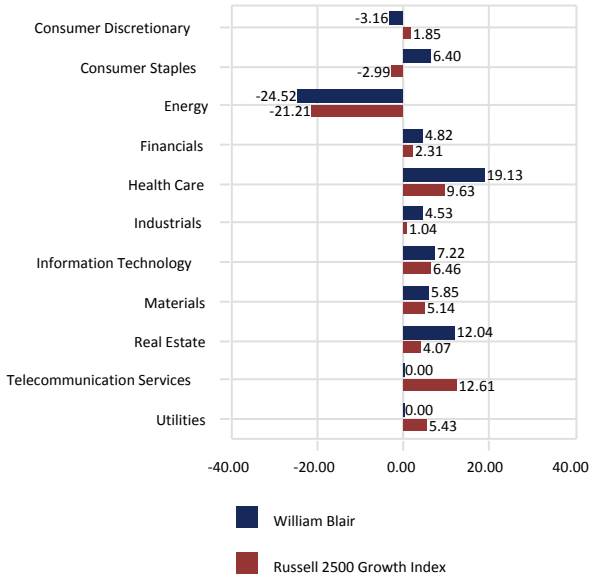
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap ($000)	6,599,933	4,704,081
Median Mkt. Cap ($000)	5,205,254	1,243,200
Price/Earnings ratio	30.51	27.12
Price/Book ratio	4.59	4.75
5 Yr. EPS Growth Rate (%)	20.01	16.17
Current Yield (%)	0.66	0.83
Beta (5 Years, Monthly)	0.82	1.00
Number of Stocks	70	1,436

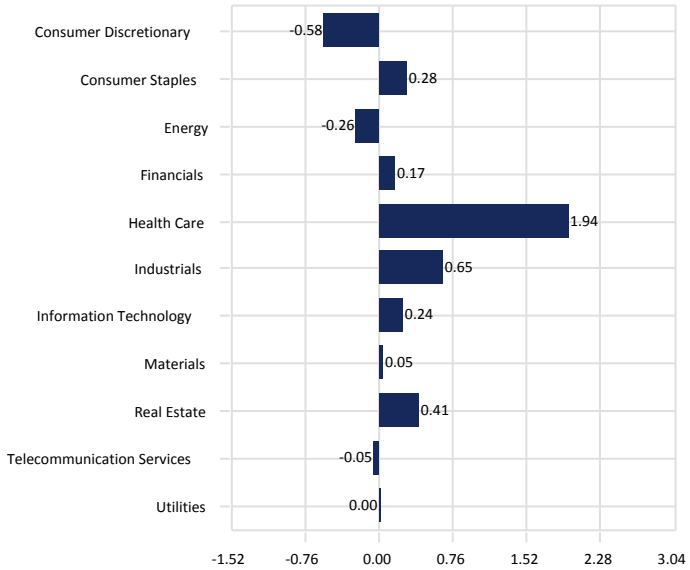
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

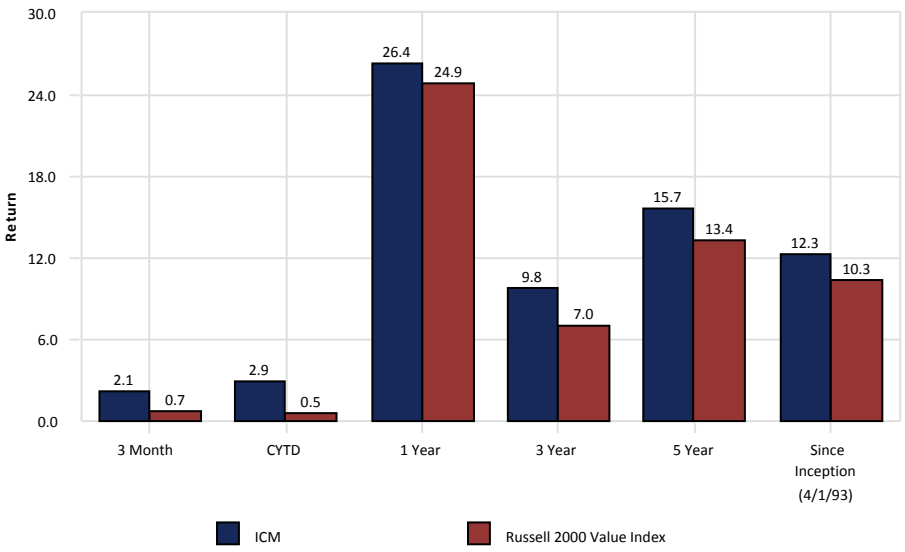
Summit Strategies Group

Howard County Retirement Plans

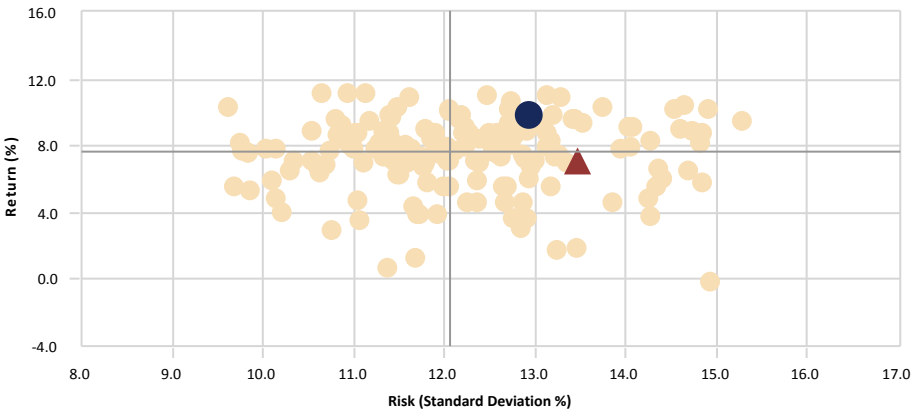
ICM vs. IM U.S. Small Cap Value Equity (SA+CF)

June 30, 2017

Comparative Performance



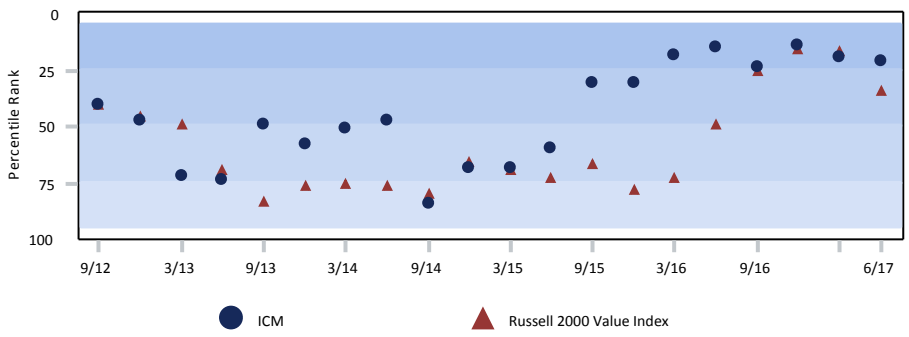
Risk/Return (07/01/14 - 06/30/17)



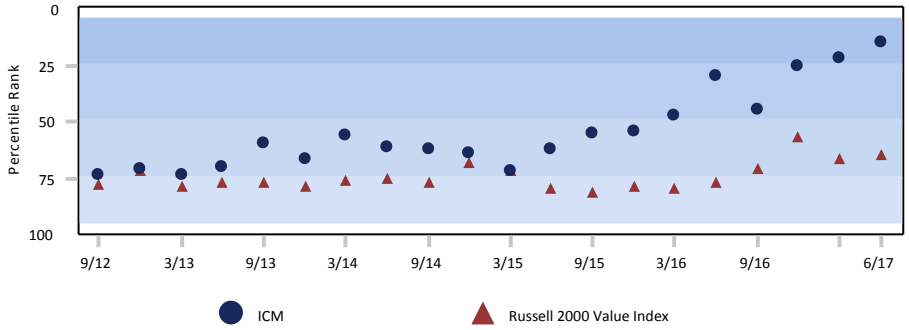
	Return	Standard Deviation
ICM	9.81	12.93
Russell 2000 Value Index	7.02	13.47
Median	7.70	12.06

gross of fees

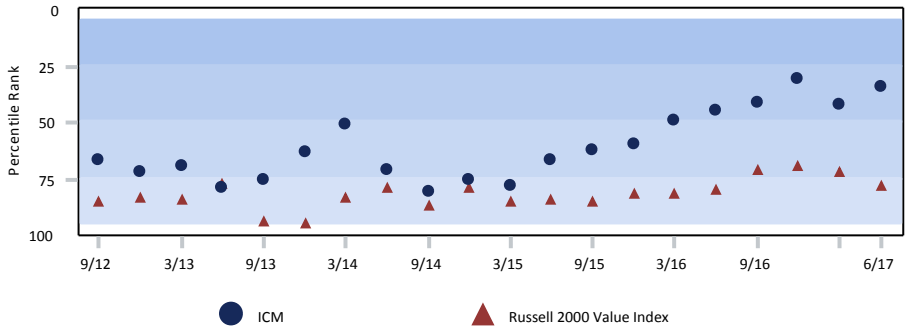
1 Year Rolling Percentile Ranking



3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Howard County Retirement Plans

ICM

June 30, 2017

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
ICM	**2.13**	**2.94**	**26.36**	**9.81**	**15.65**
Russell 2000 Value Index	*0.67*	*0.54*	*24.86*	*7.02*	*13.39*
IM U.S. Small Cap Value Equity (SA+CF) Median	*0.94*	*2.08*	*23.12*	*7.70*	*15.00*
ICM Rank	26	38	21	15	34

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Rogers Corp.	1.53	0.00	1.53	26.49
Novanta Inc	1.50	0.00	1.50	35.59
McDermott International Inc.	1.44	0.21	1.23	6.22
Sterling Bancorp	1.43	0.32	1.11	-1.61
US Concrete Inc	1.38	0.00	1.38	21.69
Bryn Mawr Bank Corp	1.38	0.07	1.31	8.12
Ameris Bancorp	1.35	0.04	1.31	4.77
Heritage Financial Corp	1.29	0.08	1.21	7.62
Quanex Building Products Corp	1.27	0.07	1.20	4.64
Dycom Industries Inc.	1.26	0.00	1.26	-3.69

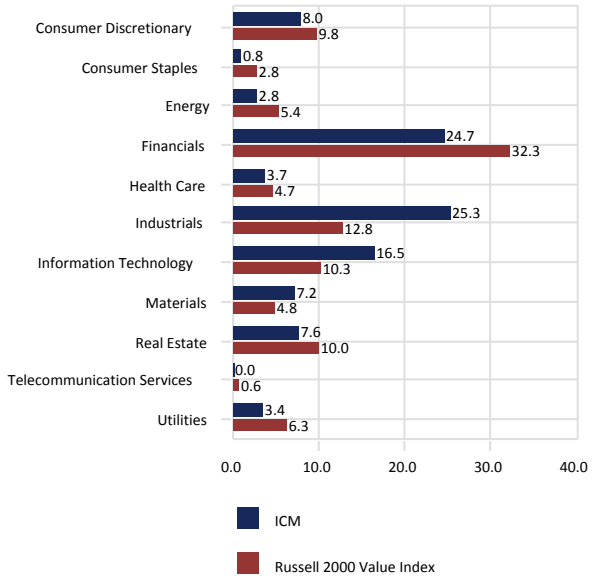
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
ICM	2.81	0.97	14.89	0.97	1.03	102.56	88.69
Russell 2000 Value Index	*0.00*	*1.00*	*15.14*	*1.00*	-	*100.00*	*100.00*

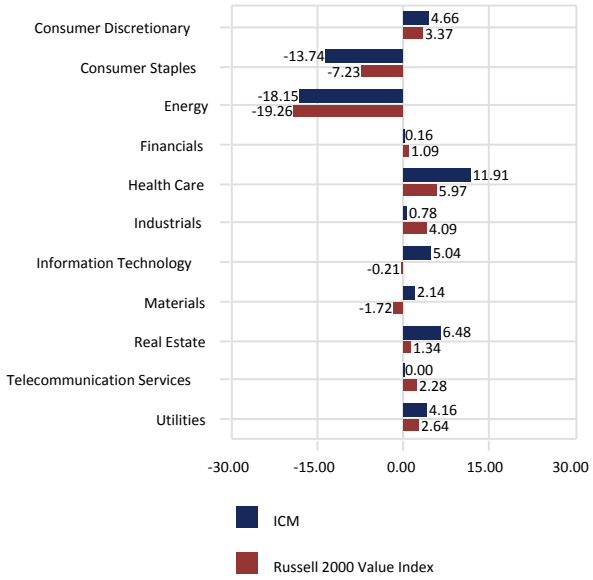
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap ($000)	1,827,147	1,862,365
Median Mkt. Cap ($000)	1,512,732	676,246
Price/Earnings ratio	23.16	18.06
Price/Book ratio	2.01	1.66
5 Yr. EPS Growth Rate (%)	13.38	8.81
Current Yield (%)	1.36	1.94
Beta (5 Years, Monthly)	0.99	1.00
Number of Stocks	106	1,399

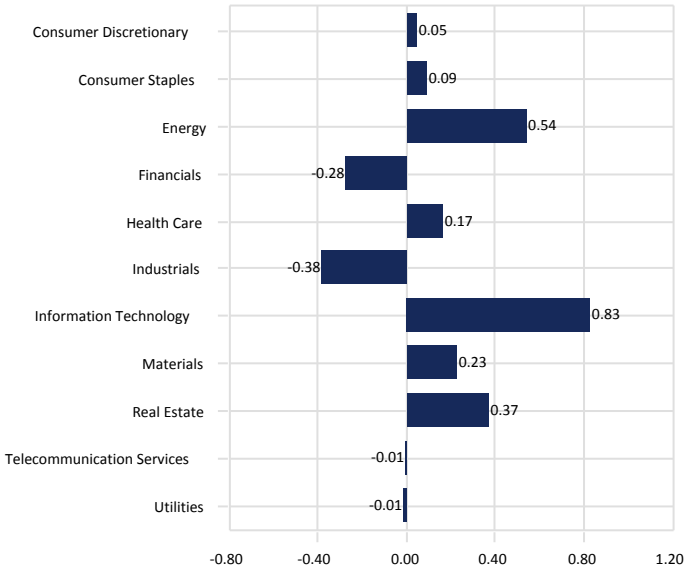
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

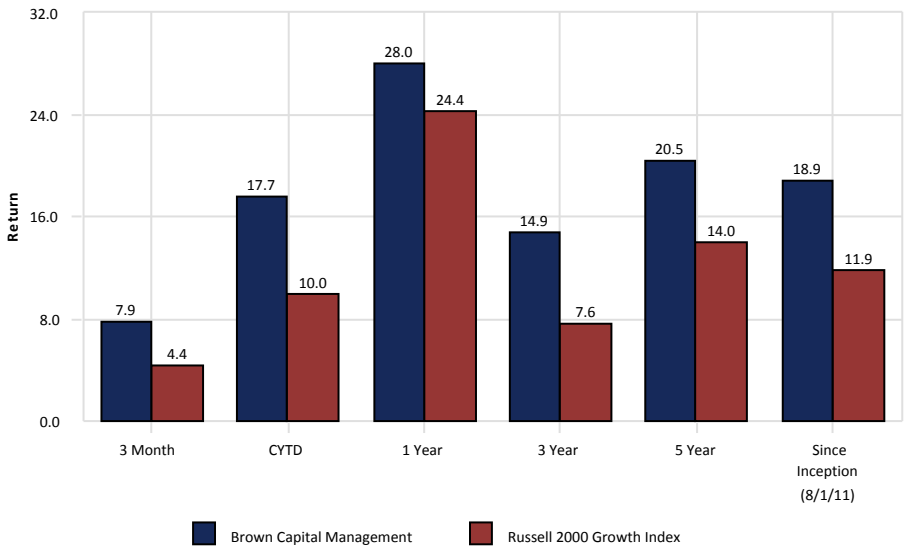
Summit Strategies Group

Howard County Retirement Plans

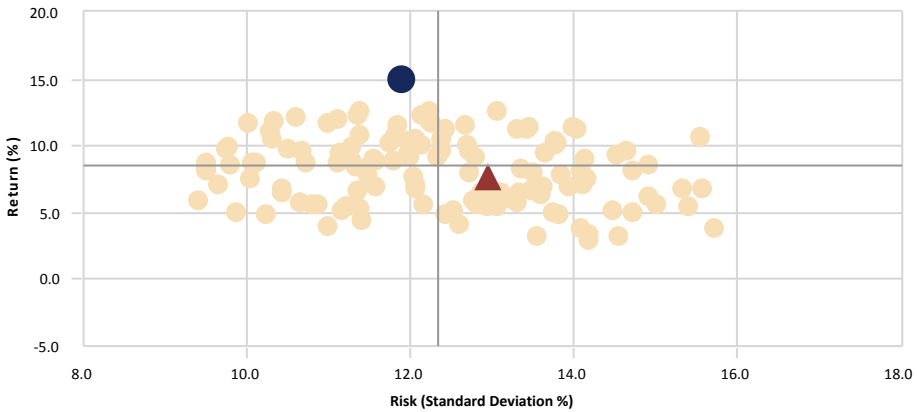
Brown Capital Management vs. IM U.S. Small Cap Growth Equity (SA+CF)

June 30, 2017

Comparative Performance



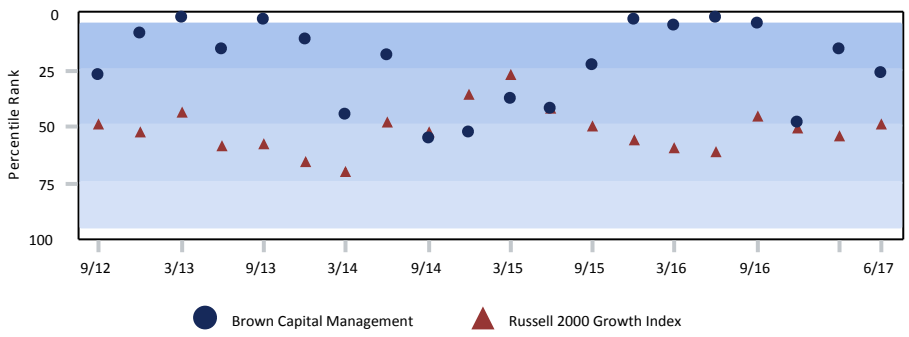
Risk/Return (07/01/14 - 06/30/17)



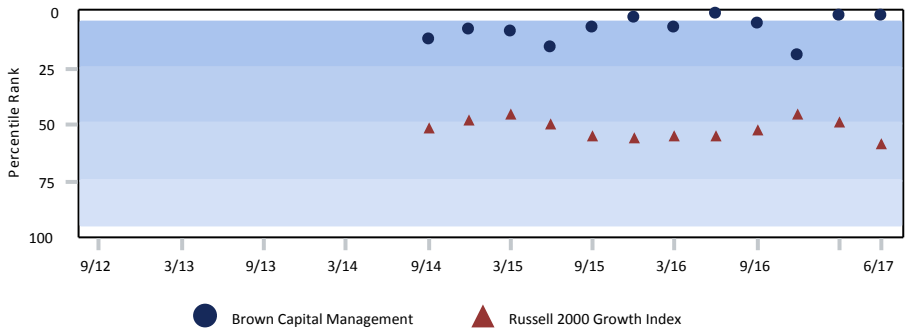
	Return	Standard Deviation
Brown Capital Management	14.88	11.90
Russell 2000 Growth Index	7.64	12.94
Median	8.51	12.35

gross of fees

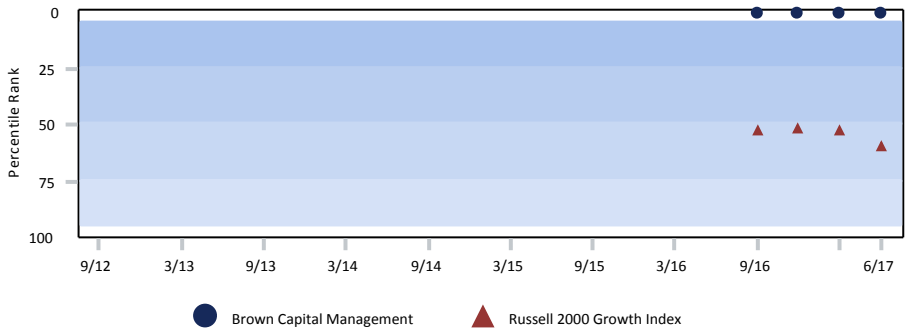
1 Year Rolling Percentile Ranking



3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Howard County Retirement Plans

Brown Capital Management

June 30, 2017

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
Brown Capital Management	**7.86**	**17.71**	**28.02**	**14.88**	**20.52**
Russell 2000 Growth Index	*4.39*	*9.97*	*24.40*	*7.64*	*13.98*
IM U.S. Small Cap Growth Equity (SA+CF) Median	*4.95*	*11.04*	*24.12*	*8.51*	*14.41*
Brown Capital Management Rank	13	8	26	2	1

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Medidata Solutions Inc	5.79	0.45	5.34	35.55
Cognex Corp	5.33	0.00	5.33	1.22
Tyler Technologies Inc.	5.23	0.00	5.23	13.66
Veeva Systems Inc	5.21	0.00	5.21	19.56
Blackbaud Inc	5.17	0.42	4.75	12.01
Cantel Medical Corp.	4.90	0.29	4.61	-2.73
Neogen Corp	4.80	0.26	4.54	5.43
Manhattan Associates Inc	4.06	0.00	4.06	-7.67
Guidewire Software Inc	3.80	0.00	3.80	21.98
Paycom Software Inc	3.78	0.34	3.44	18.95

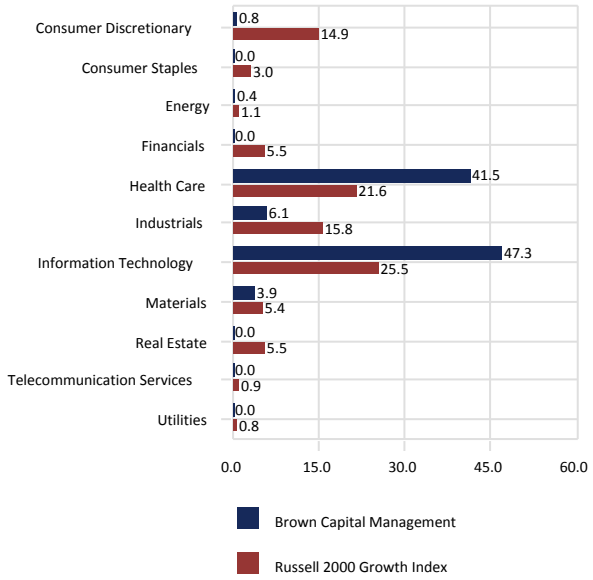
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
Brown Capital Management	8.19	0.82	14.70	0.79	0.87	96.84	60.15
Russell 2000 Growth Index	*0.00*	*1.00*	*15.84*	*1.00*	*-*	*100.00*	*100.00*

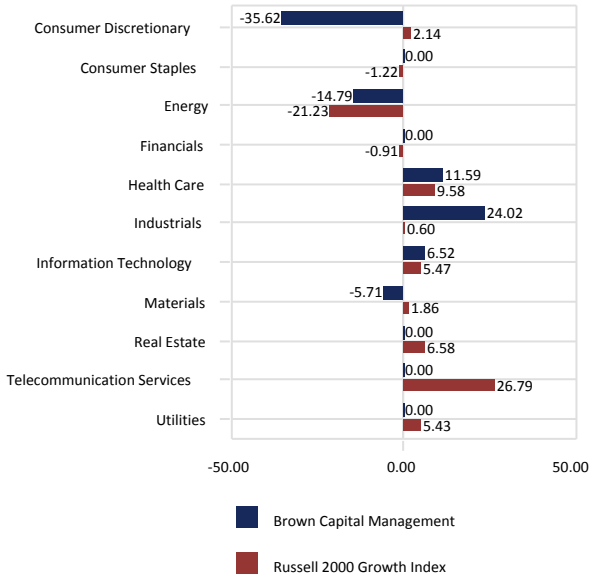
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap ($000)	4,093,493	2,206,467
Median Mkt. Cap ($000)	2,503,756	894,300
Price/Earnings ratio	57.64	26.37
Price/Book ratio	5.69	4.14
5 Yr. EPS Growth Rate (%)	10.19	14.12
Current Yield (%)	0.25	0.73
Beta (5 Years, Monthly)	0.87	1.00
Number of Stocks	36	1,171

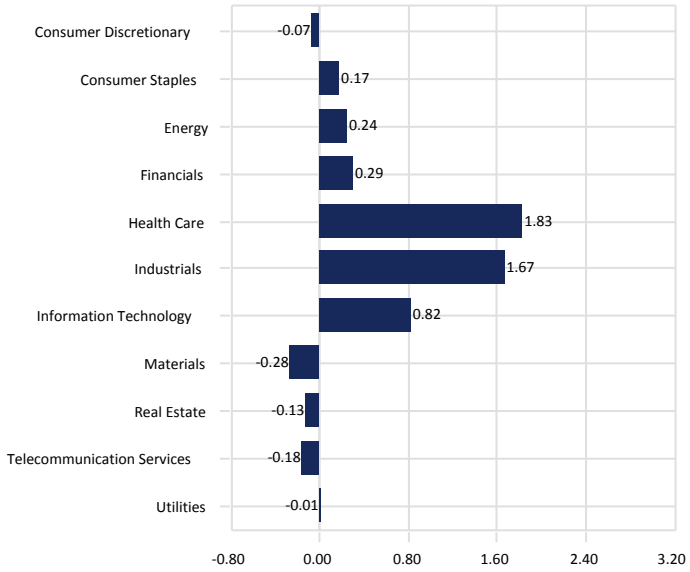
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

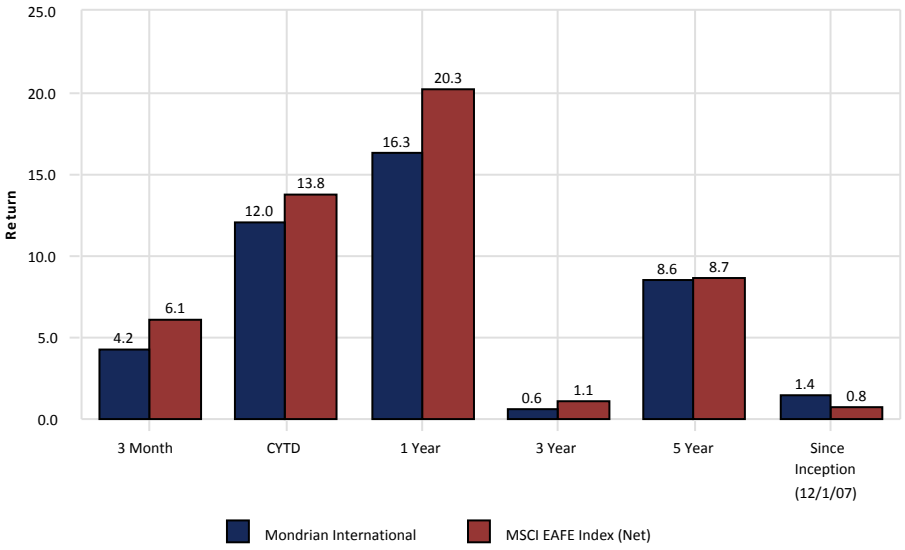
Summit Strategies Group

Howard County Retirement Plans

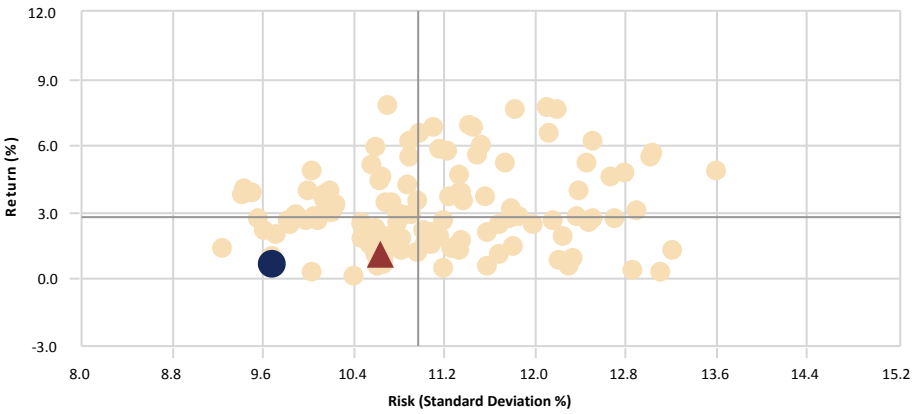
Mondrian International vs. IM International Core Equity (SA+CF)

June 30, 2017

Comparative Performance



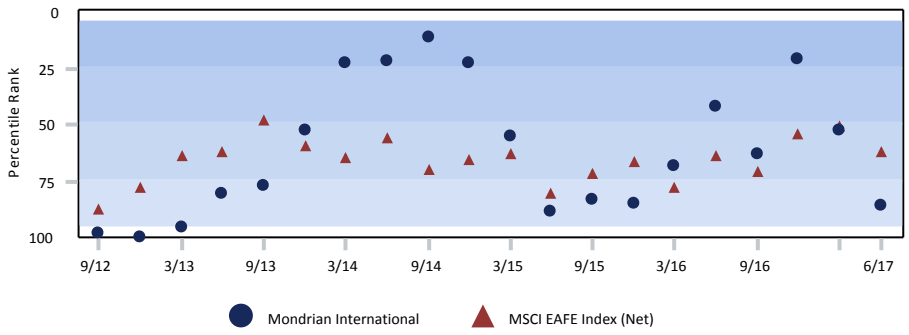
Risk/Return (07/01/14 - 06/30/17)



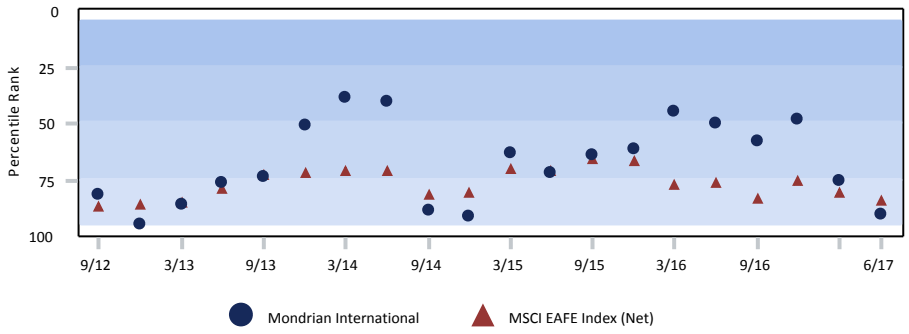
	Return	Standard Deviation
Mondrian International	0.63	9.68
MSCI EAFE Index (Net)	1.15	10.63
Median	2.78	10.97

gross of fees

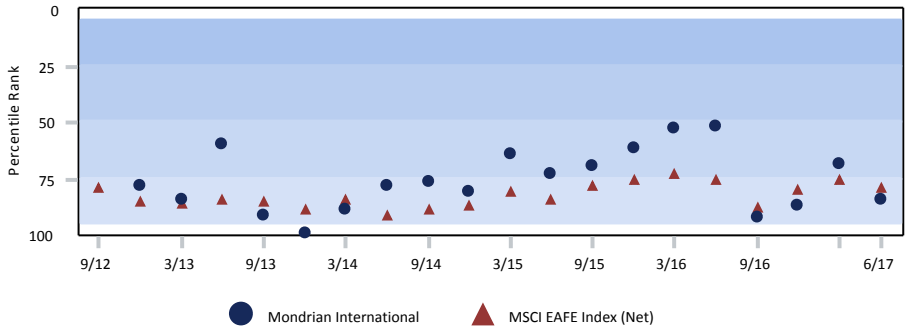
1 Year Rolling Percentile Ranking



3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Howard County Retirement Plans

Mondrian International

June 30, 2017

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
Mondrian International	**4.24**	**12.04**	**16.33**	**0.63**	**8.58**
MSCI EAFE Index (Net)	*6.12*	*13.81*	*20.27*	*1.15*	*8.69*
IM International Core Equity (SA+CF) Median	*6.83*	*15.57*	*21.39*	*2.78*	*10.04*
Mondrian International Rank	96	95	86	90	84

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Sanofi	4.00	0.81	3.19	9.00
Royal Dutch Shell PLC	3.55	0.73	2.82	-0.30
Telia Company AB	3.45	0.09	3.36	12.33
ABB Ltd	3.43	0.36	3.07	9.21
Takeda Pharmaceutical Co	3.30	0.26	3.04	8.32
Honda Motor Co Ltd	3.30	0.34	2.96	-8.57
Iberdrola SA, Bilbao	3.28	0.34	2.94	10.27
Kirin Holdings Co Ltd	3.22	0.13	3.09	9.02
United Overseas Bank Ltd	3.15	0.16	2.99	7.84
Enel Ente Nazionale Per L'Energia Elettrica SPA, Roma	3.14	0.32	2.82	13.41

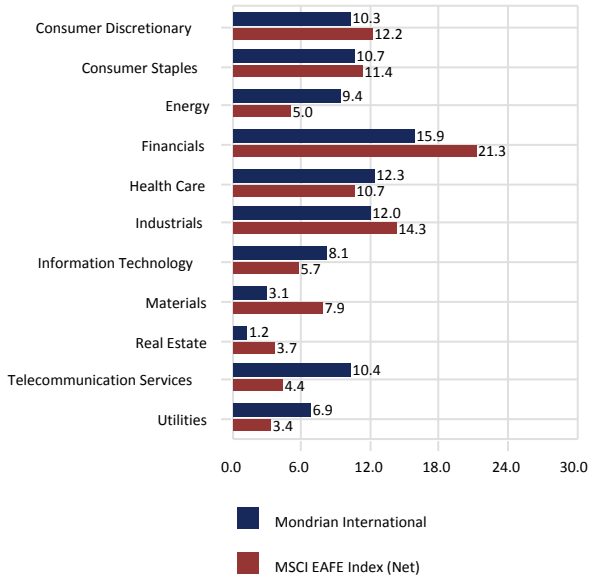
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
Mondrian International	-0.42	0.92	11.77	0.91	-0.16	98.61	101.99
MSCI EAFE Index (Net)	*0.00*	*1.00*	*12.25*	*1.00*	-	*100.00*	*100.00*

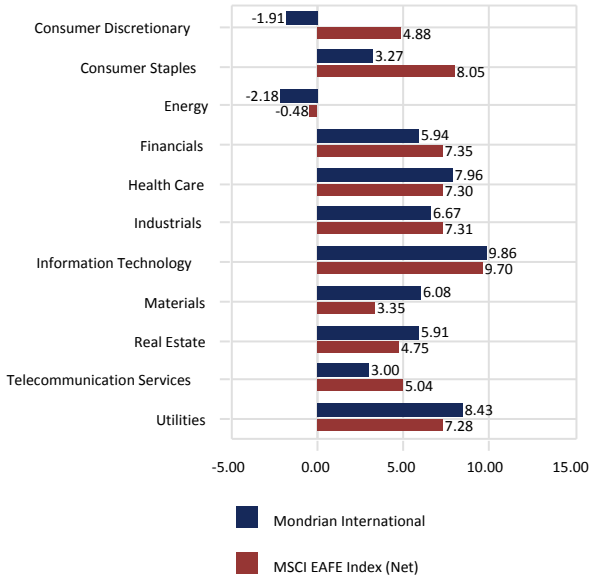
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap ($000)	67,628,812	58,507,248
Median Mkt. Cap ($000)	43,404,704	10,401,466
Price/Earnings ratio	16.81	17.31
Price/Book ratio	1.84	2.21
5 Yr. EPS Growth Rate (%)	2.61	5.13
Current Yield (%)	4.28	3.16
Beta (5 Years, Monthly)	0.93	1.00
Number of Stocks	59	927

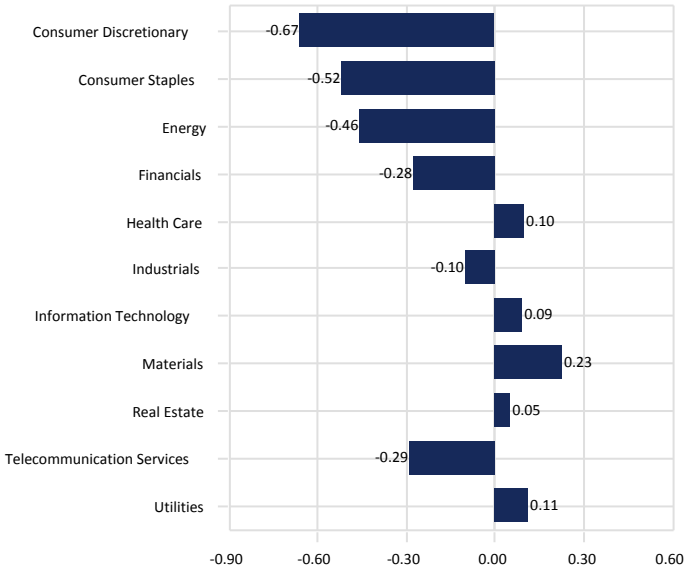
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

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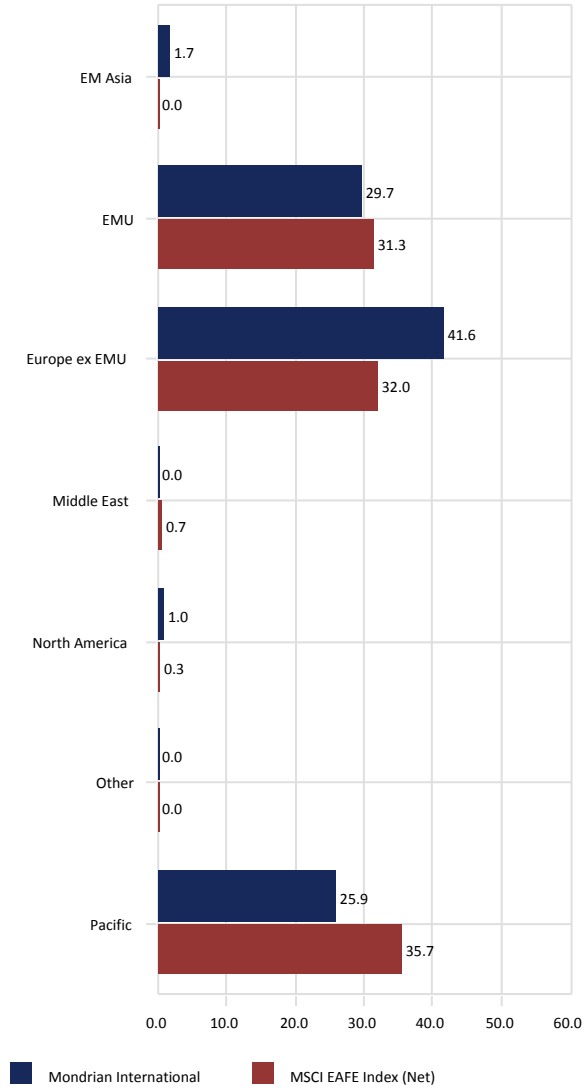
Howard County Retirement Plans

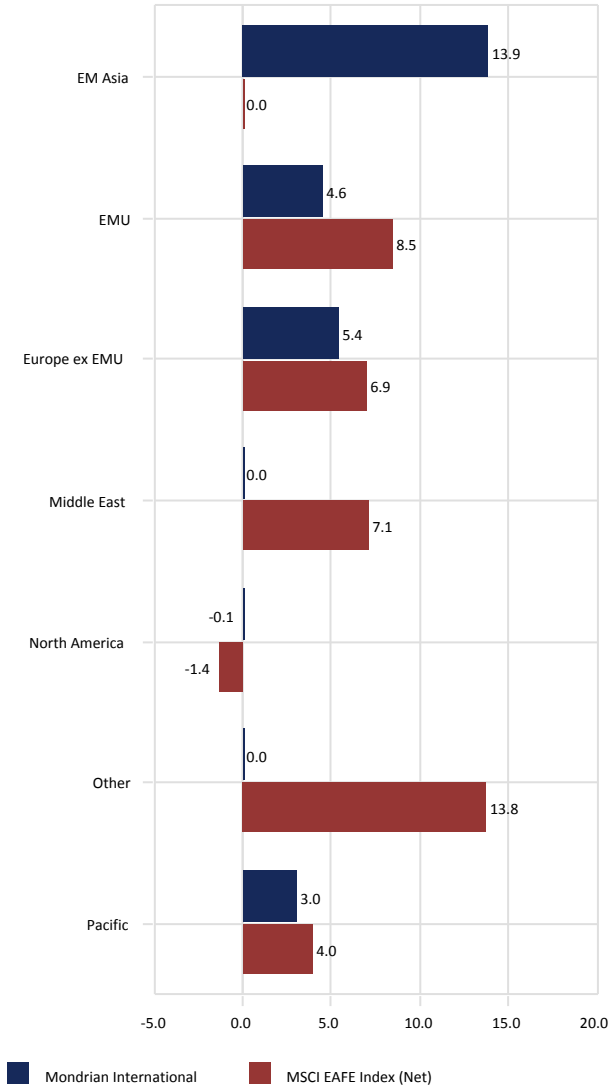
Mondrian International vs. MSCI EAFE Index (Net)

June 30, 2017

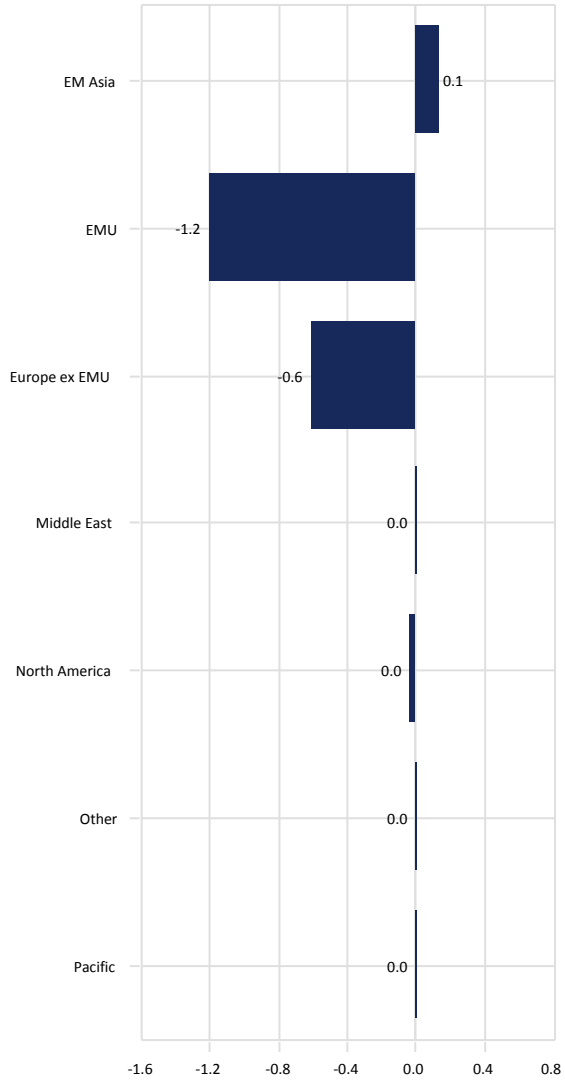
Allocation Quarterly



Performance Quarterly



Attribution Quarterly



gross of fees

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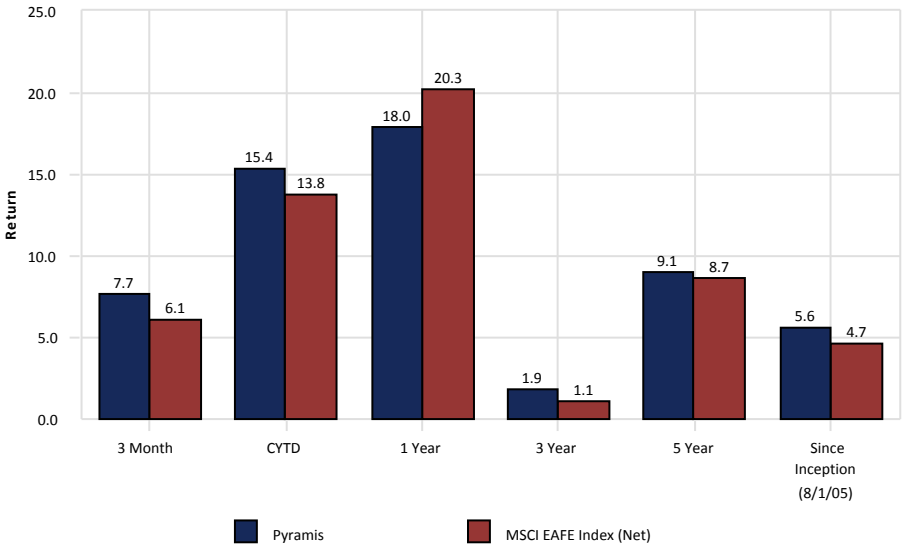
Howard County Retirement Plans

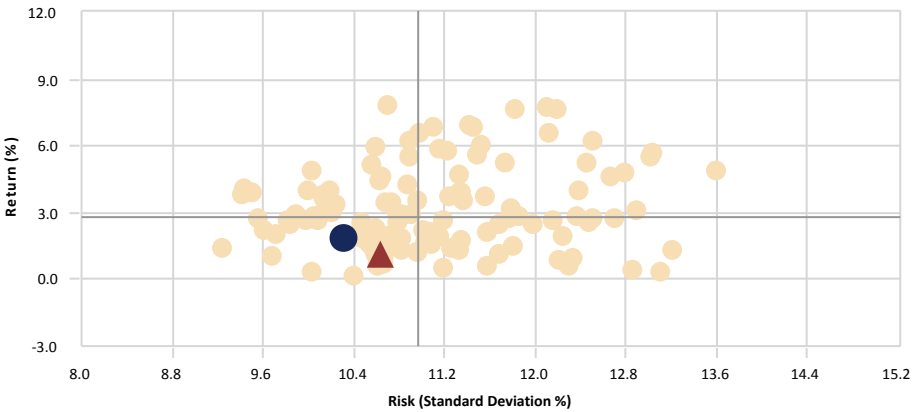
Pyramis vs. IM International Core Equity (SA+CF)

June 30, 2017

Comparative Performance



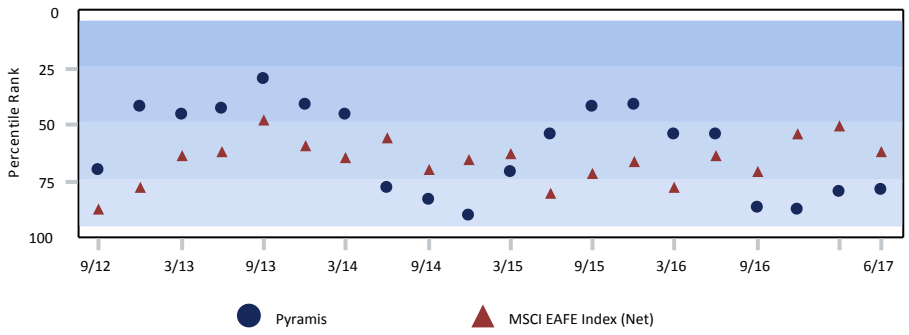
Risk/Return (07/01/14 - 06/30/17)



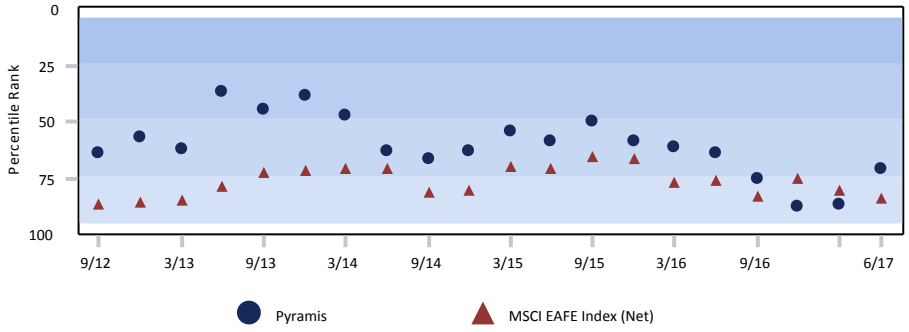
	Return	Standard Deviation
Pyramis	1.86	10.32
MSCI EAFE Index (Net)	1.15	10.63
Median	2.78	10.97

gross of fees

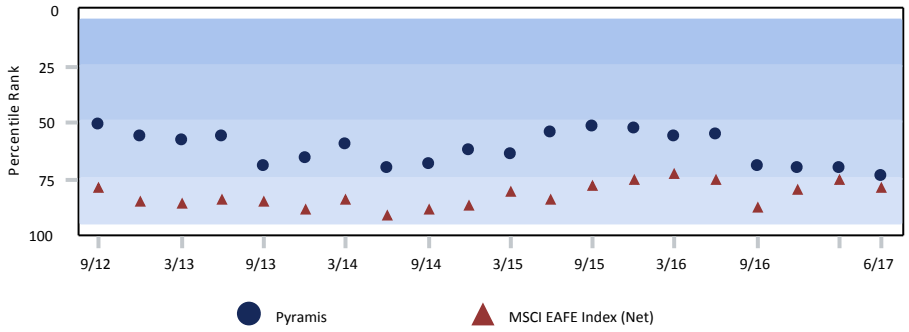
1 Year Rolling Percentile Ranking



3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Howard County Retirement Plans

Pyramis

June 30, 2017

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
Pyramis	**7.67**	**15.40**	**17.95**	**1.86**	**9.06**
MSCI EAFE Index (Net)	*6.12*	*13.81*	*20.27*	*1.15*	*8.69*
IM International Core Equity (SA+CF) Median	*6.83*	*15.57*	*21.39*	*2.78*	*10.04*
Pyramis Rank	33	56	79	71	74

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Royal Dutch Shell PLC	1.94	0.73	1.21	-0.30
Roche Holding AG	1.91	1.31	0.60	-0.24
Ipsen SA	1.52	0.04	1.48	37.29
Unilever PLC	1.47	0.51	0.96	10.37
Bayer AG	1.47	0.78	0.69	14.45
SAP SE	1.42	0.75	0.67	7.44
Anheuser-Busch InBev SA/NV	1.41	0.61	0.80	2.18
Sanofi	1.36	0.81	0.55	9.00
Mitsubishi UFJ Financial Group	1.27	0.59	0.68	7.03
Kering	1.27	0.19	1.08	32.59

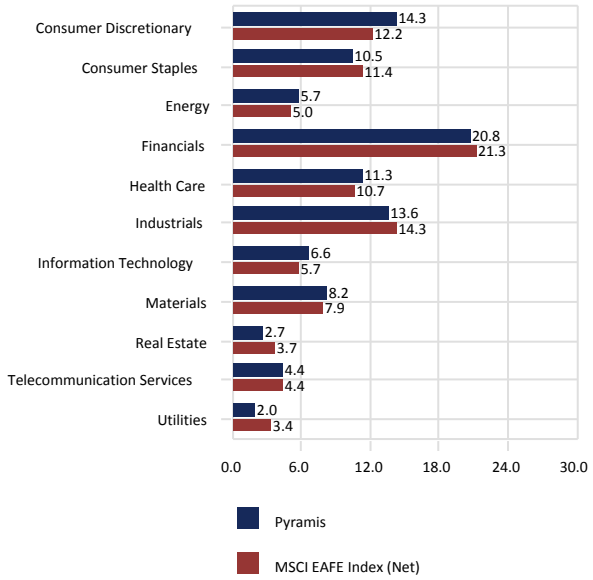
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
Pyramis	0.79	0.87	10.90	0.95	0.19	88.74	84.06
MSCI EAFE Index (Net)	*0.00*	*1.00*	*12.25*	*1.00*	*-*	*100.00*	*100.00*

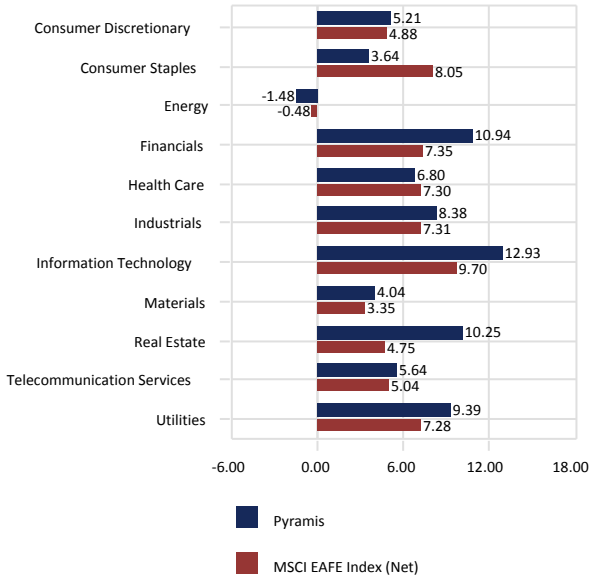
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap ($000)	52,362,563	58,507,248
Median Mkt. Cap ($000)	18,076,378	10,401,466
Price/Earnings ratio	19.98	17.31
Price/Book ratio	2.40	2.21
5 Yr. EPS Growth Rate (%)	6.80	5.13
Current Yield (%)	2.85	3.16
Beta (5 Years, Monthly)	0.92	1.00
Number of Stocks	167	927

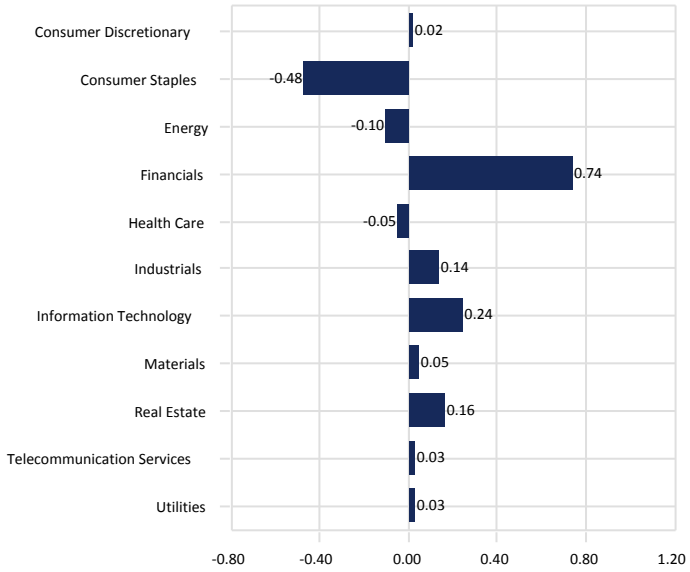
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

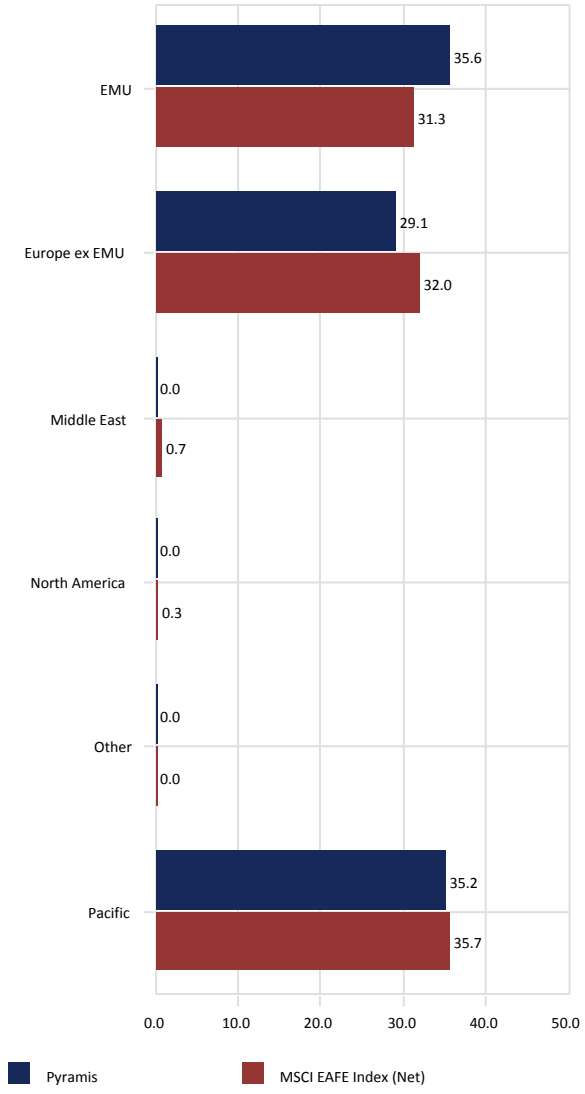
Summit Strategies Group

Howard County Retirement Plans

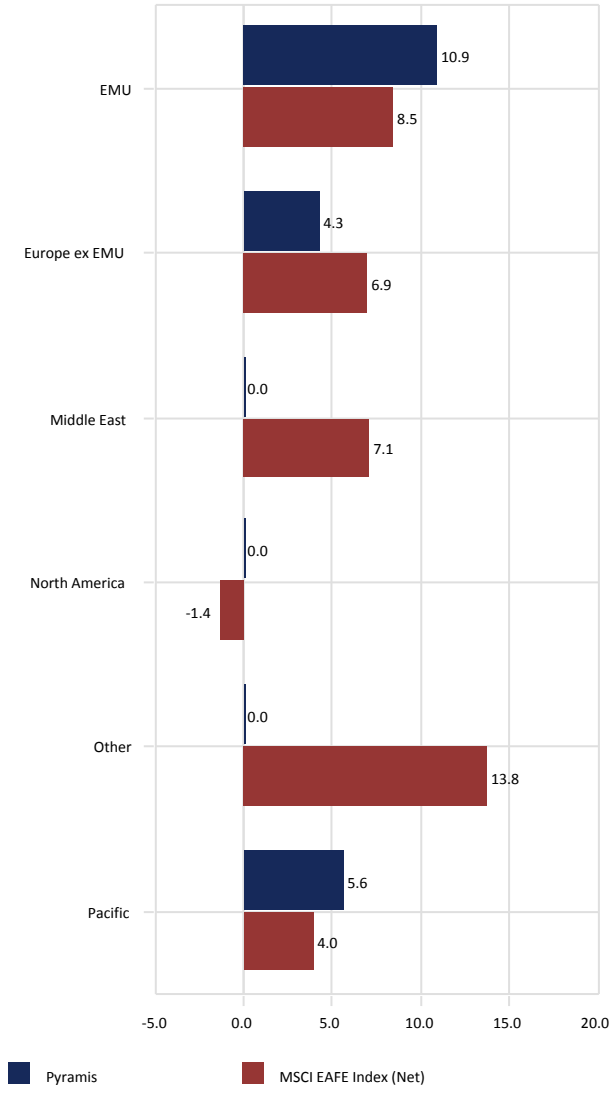
Pyramis vs. MSCI EAFE Index (Net)

June 30, 2017

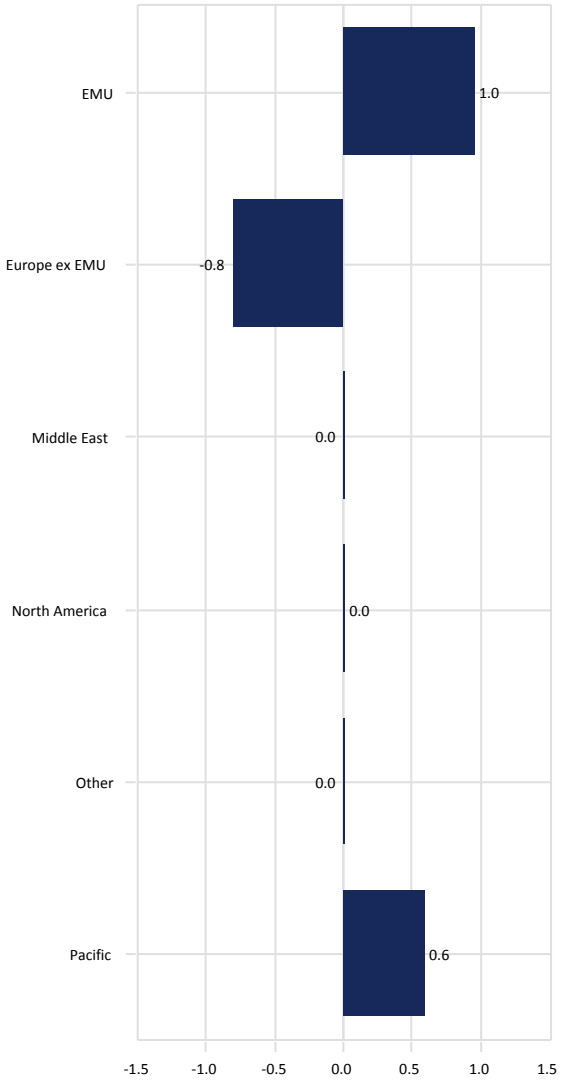
Allocation Quarterly



Performance Quarterly



Attribution Quarterly



gross of fees

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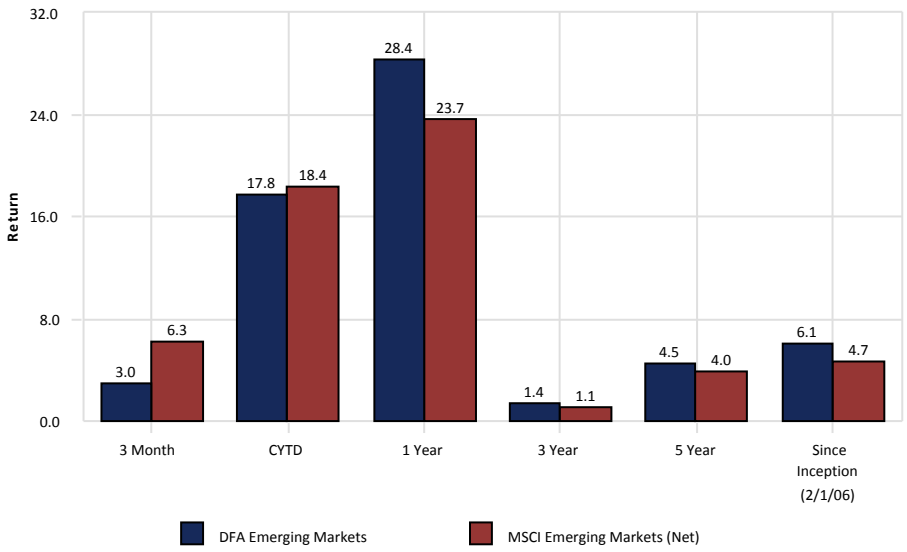
Howard County Retirement Plans

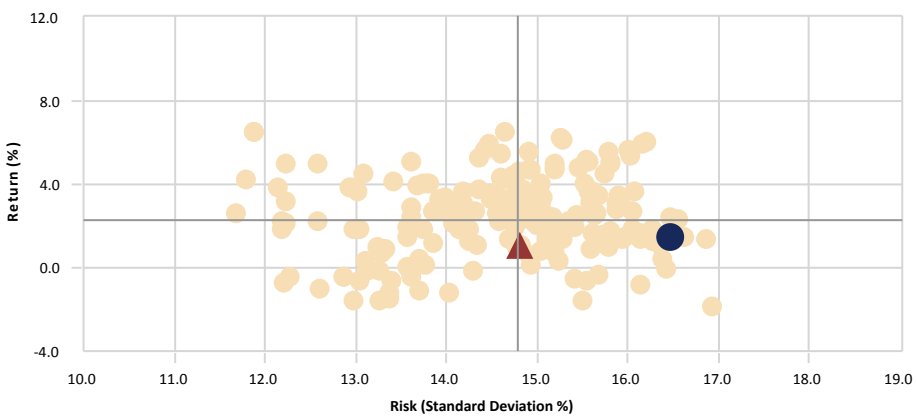
DFA Emerging Markets vs. IM Emerging Markets Equity (SA+CF)

June 30, 2017

Comparative Performance



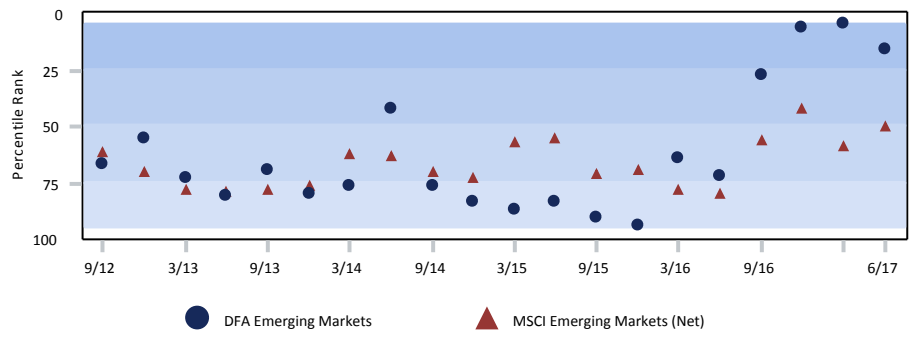
Risk/Return (07/01/14 - 06/30/17)



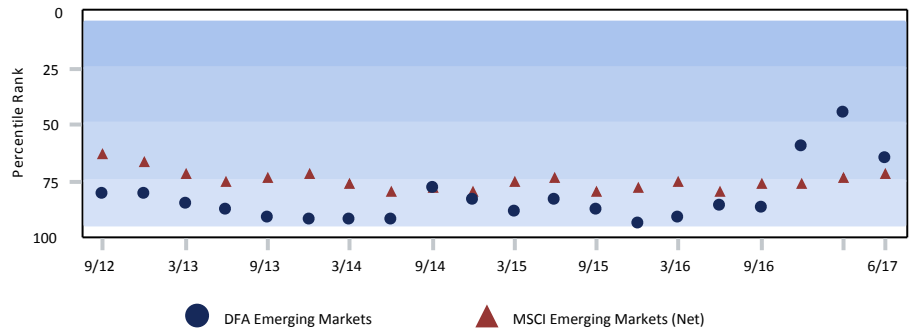
	Return	Standard Deviation
DFA Emerging Markets	1.41	16.47
MSCI Emerging Markets (Net)	1.07	14.80
Median	2.26	14.78

gross of fees

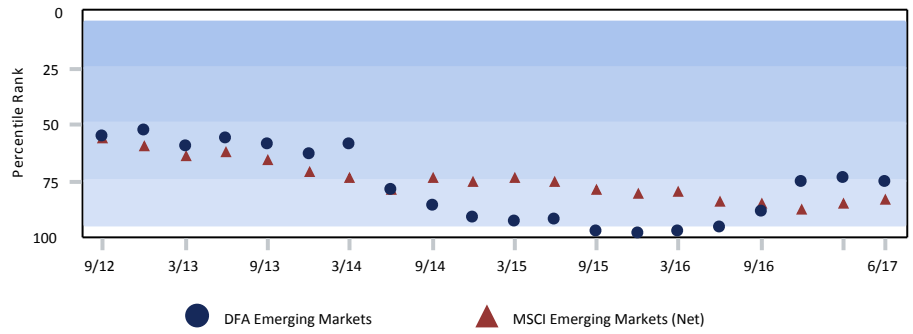
1 Year Rolling Percentile Ranking



3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Howard County Retirement Plans

DFA Emerging Markets

June 30, 2017

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
DFA Emerging Markets	**2.98**	**17.77**	**28.35**	**1.41**	**4.47**
MSCI Emerging Markets (Net)	*6.27*	*18.43*	*23.75*	*1.07*	*3.96*
IM Emerging Markets Equity (SA+CF) Median	*6.47*	*19.31*	*23.74*	*2.26*	*5.82*
DFA Emerging Markets Rank	95	67	16	65	75

Top 10 Positions

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
China Construction Bank Corp	2.98	1.40	1.58	1.41
Reliance Industries Ltd	2.07	0.59	1.48	4.79
Industrial & Commercial Bank of China Ltd	1.65	1.07	0.58	3.28
Hyundai Motor Co	1.47	0.46	1.01	-0.46
Bank of China Ltd	1.37	0.83	0.54	-1.21
PTT Public Co Ltd	1.07	0.25	0.82	-5.30
Standard Bank Group Ltd	1.01	0.30	0.71	2.65
Vale SA	0.98	0.33	0.65	-5.41
Gazprom PJSC	0.87	0.46	0.41	-11.45
Posco	0.82	0.40	0.42	-3.66

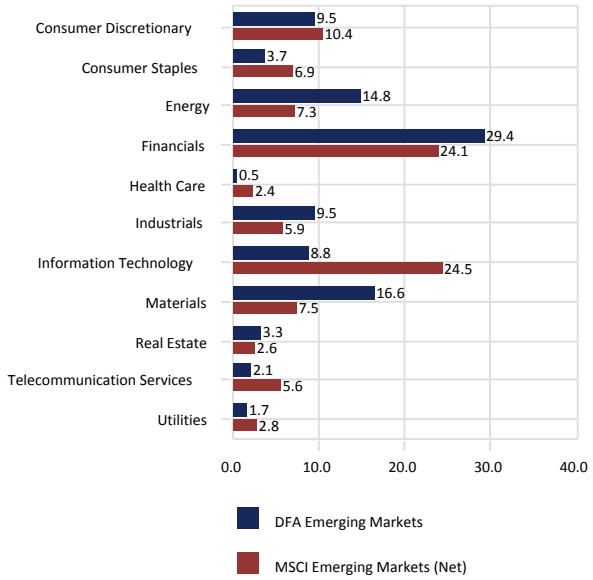
Historical Statistics (3 Year)

	Alpha	Beta	Standard Deviation	R-Squared	Information Ratio	Up Capture	Down Capture
DFA Emerging Markets	0.42	1.09	17.62	0.96	0.16	110.66	108.84
MSCI Emerging Markets (Net)	*0.00*	*1.00*	*15.83*	*1.00*	*-*	*100.00*	*100.00*

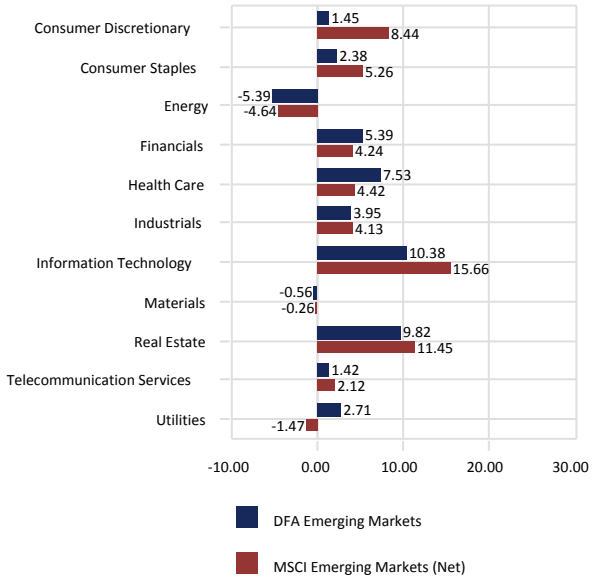
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap ($000)	18,744,127	68,310,310
Median Mkt. Cap ($000)	409,316	5,574,520
Price/Earnings ratio	10.68	14.06
Price/Book ratio	1.47	2.42
5 Yr. EPS Growth Rate (%)	1.08	10.55
Current Yield (%)	2.56	2.32
Beta (5 Years, Monthly)	1.10	1.00
Number of Stocks	2,298	845

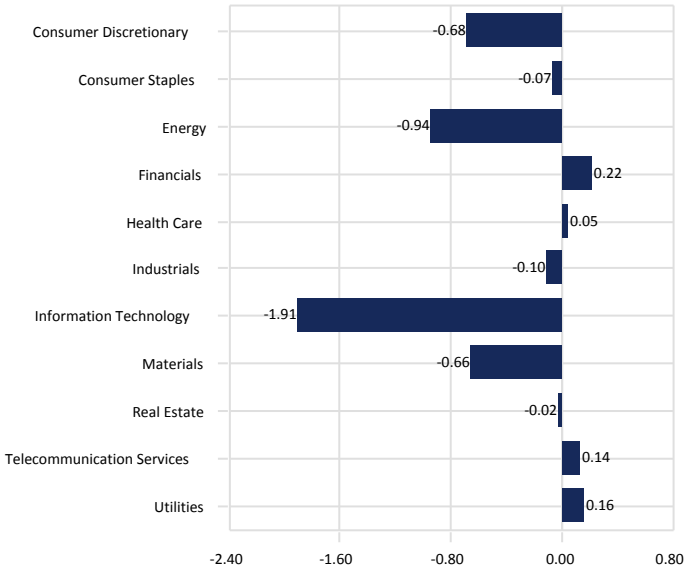
Sector Allocation



Sector Performance



Total Sector Attribution



gross of fees

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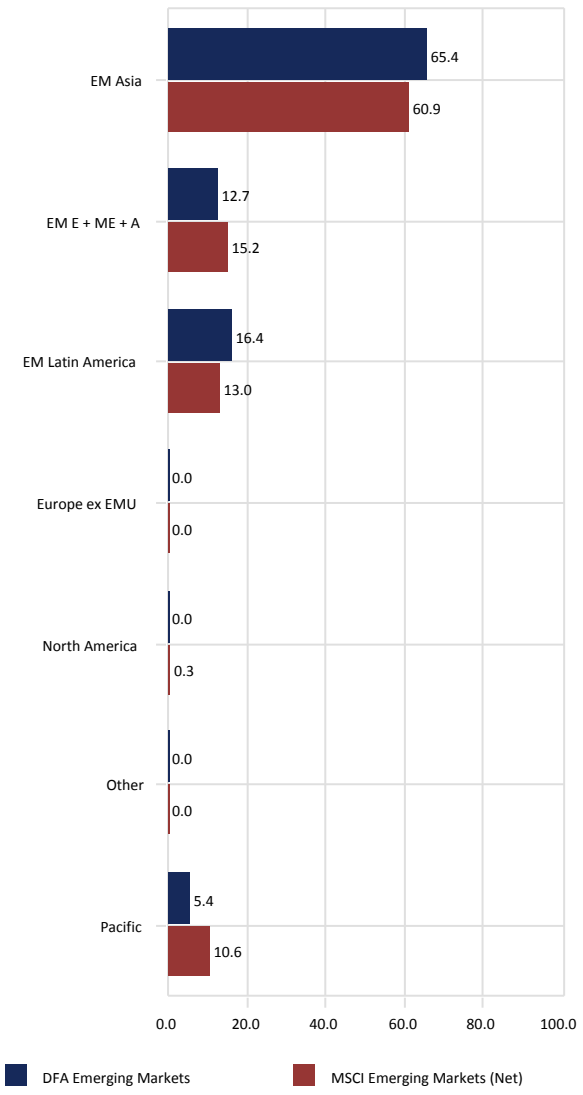
Howard County Retirement Plans

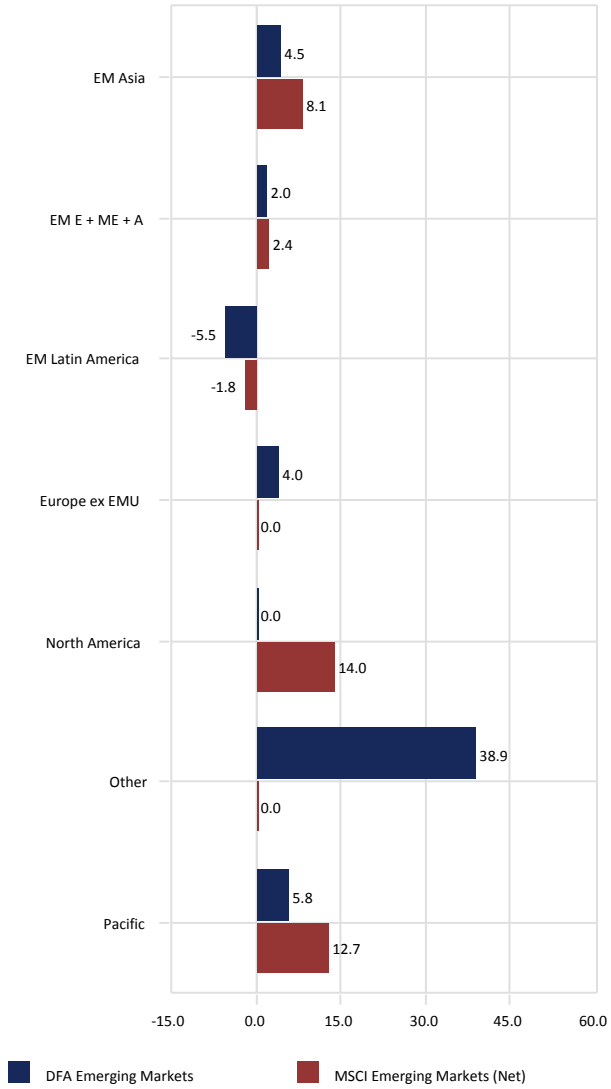
DFA vs. MSCI Emerging Markets Index (Net)

June 30, 2017

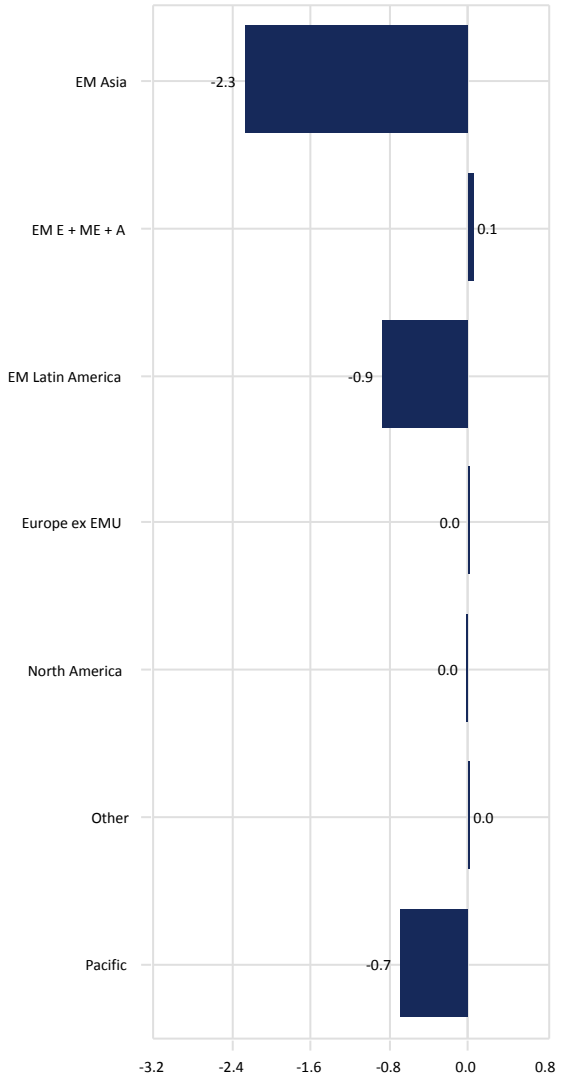
Allocation Quarterly



Performance Quarterly



Attribution Quarterly



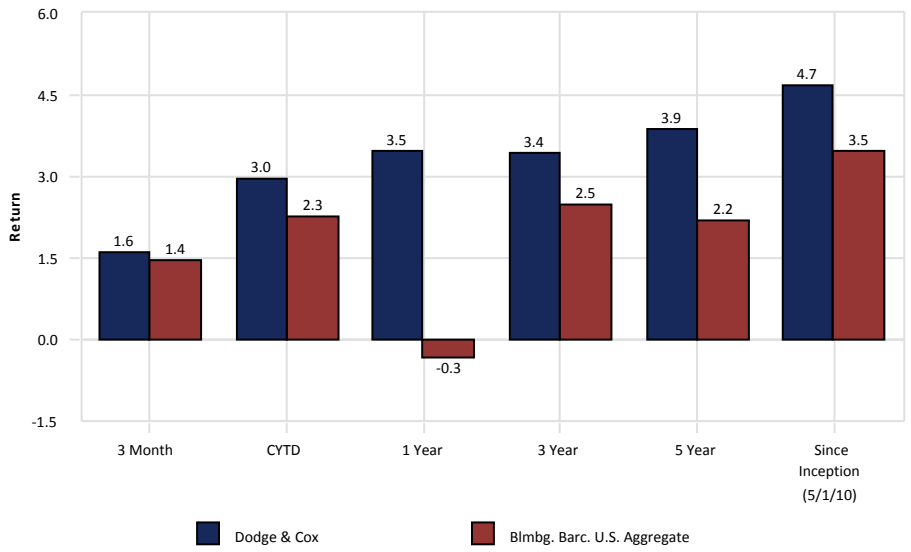
gross of fees

Howard County Retirement Plans

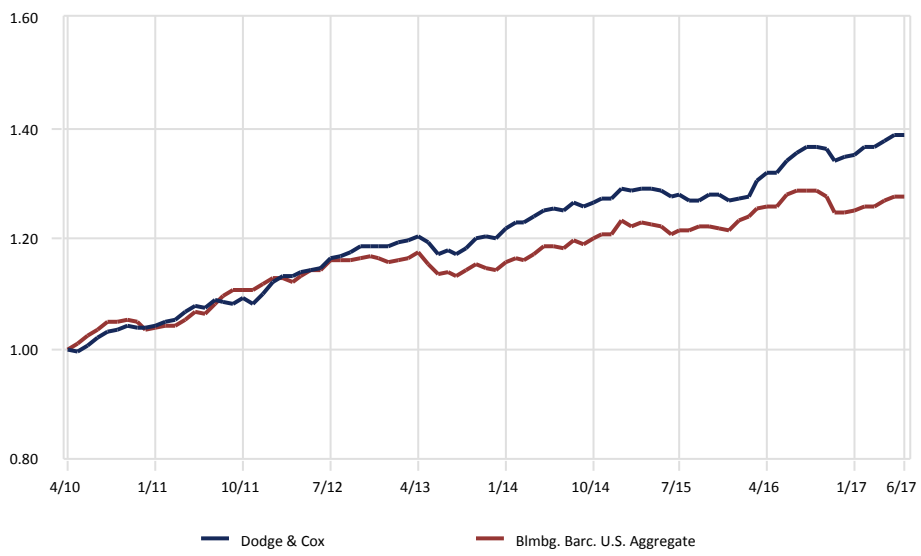
Dodge & Cox vs. IM U.S. Broad Market Core Fixed Income (SA+CF)

June 30, 2017

Comparative Performance

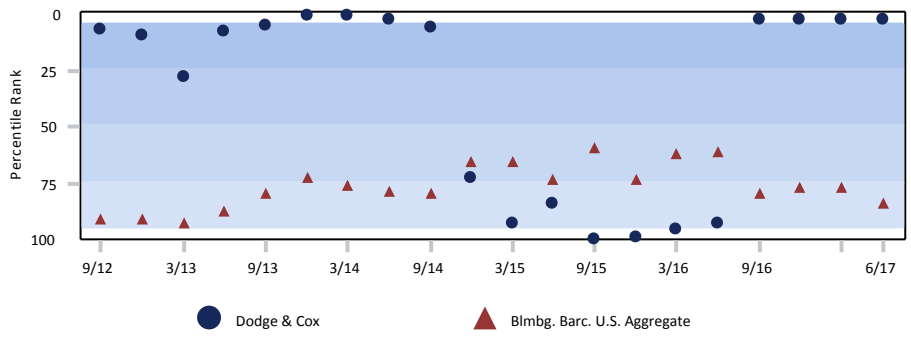


Growth of $1

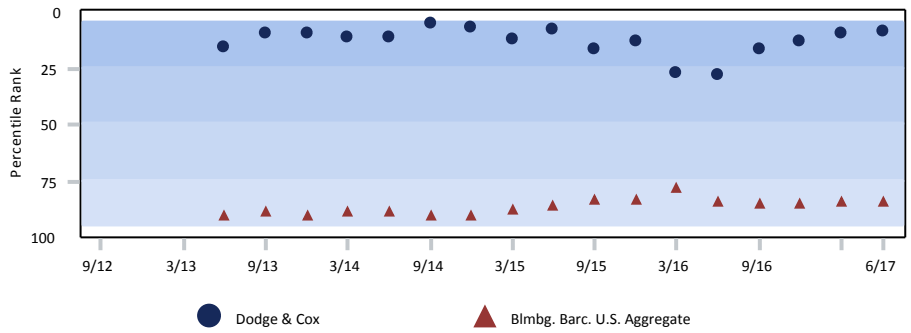


gross of fees

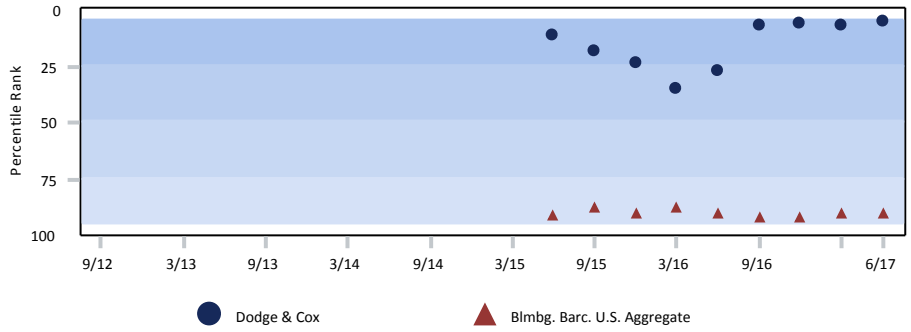
1 Year Rolling Percentile Ranking



3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Howard County Retirement Plans

Dodge & Cox

June 30, 2017

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
Dodge & Cox	**1.60**	**2.97**	**3.47**	**3.43**	**3.90**
Blmbg. Barc. U.S. Aggregate	*1.45*	*2.27*	*-0.31*	*2.48*	*2.21*
IM U.S. Broad Mkt Core Fixed Income (SA+CF)	*1.53*	*2.51*	*0.29*	*2.75*	*2.69*
Dodge & Cox Rank	40	13	3	9	5

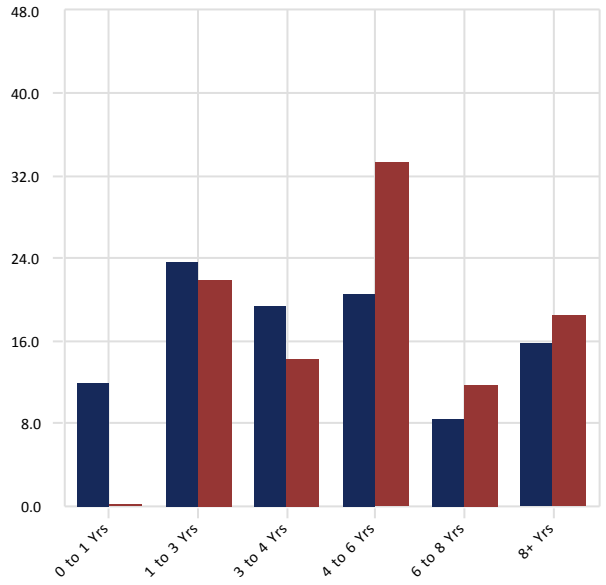
Portfolio Characteristics

	Portfolio	Benchmark
Modified Duration	4.56	6.01
Yield To Maturity (%)	2.99	2.56
Avg. Maturity	7.89	8.27
Avg. Quality	A+	AA1/AA
Coupon Rate (%)	4.25	3.06

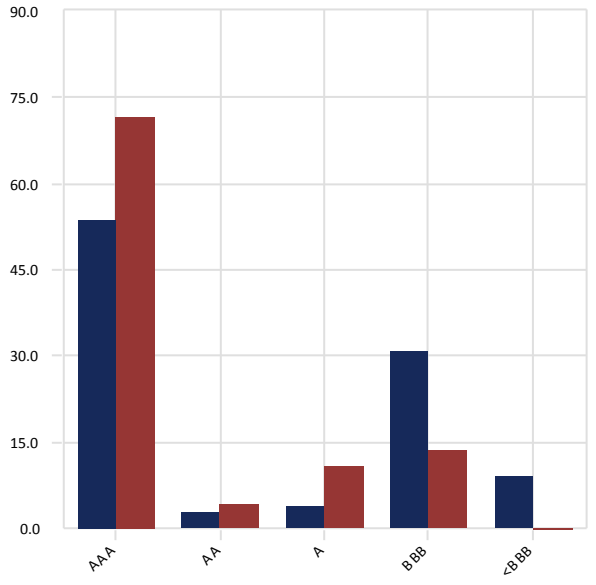
Historical Statistics (3 Year)

	Sharpe Ratio	Information Ratio	Standard Deviation
Dodge & Cox	1.21	0.51	2.66
Blmbg. Barc. U.S. Aggregate	*0.80*	-	*2.86*
Citigroup 3 Month T-Bill	-	-0.80	0.06

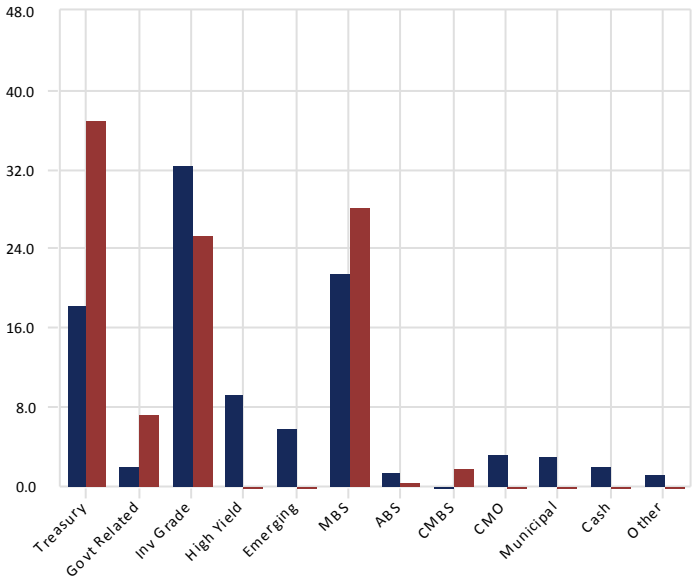
Duration Distribution (%)



Credit Quality Distribution (%)



Sector Distribution (%)



Dodge & Cox Blmbg. Barc. U.S. Aggregate

gross of fees

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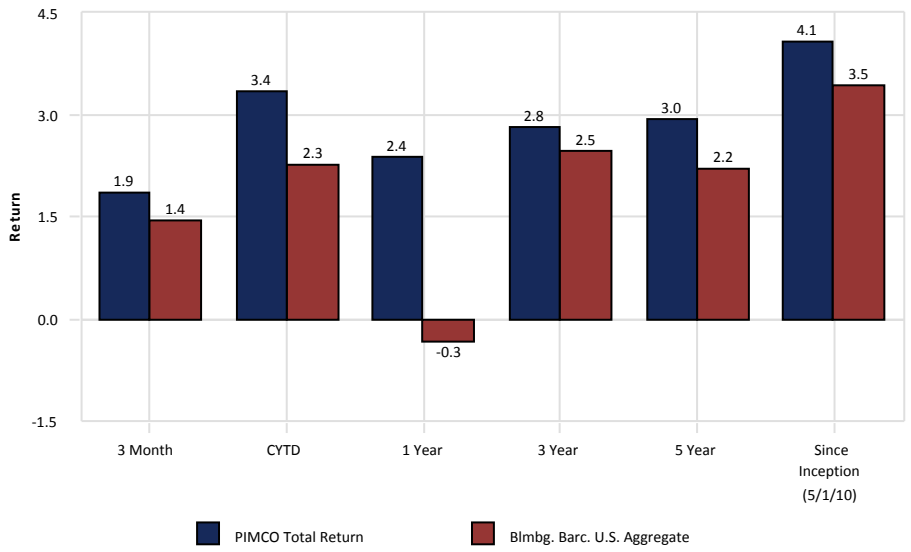
Howard County Retirement Plans

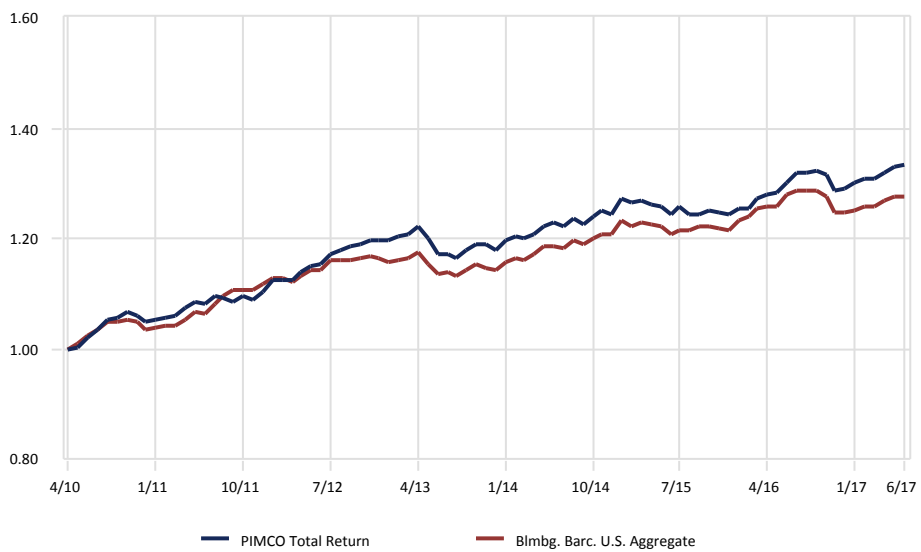
PIMCO Total Return vs. IM U.S. Broad Market Core Fixed Income (SA+CF)

June 30, 2017

Comparative Performance

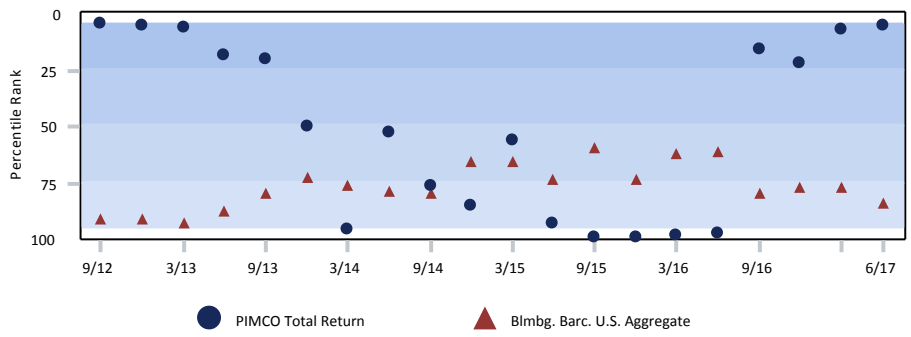


Growth of $1

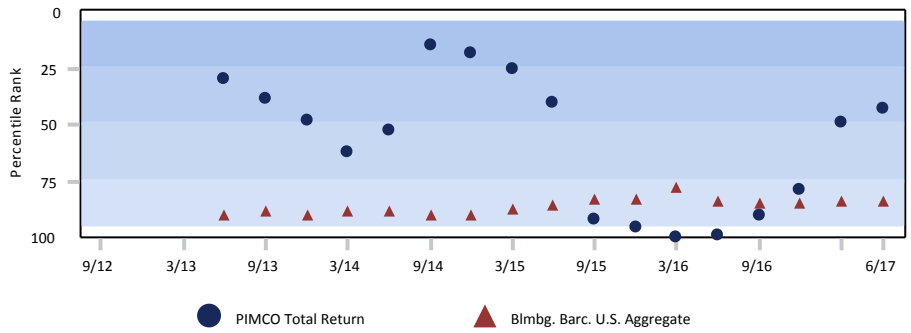


gross of fees

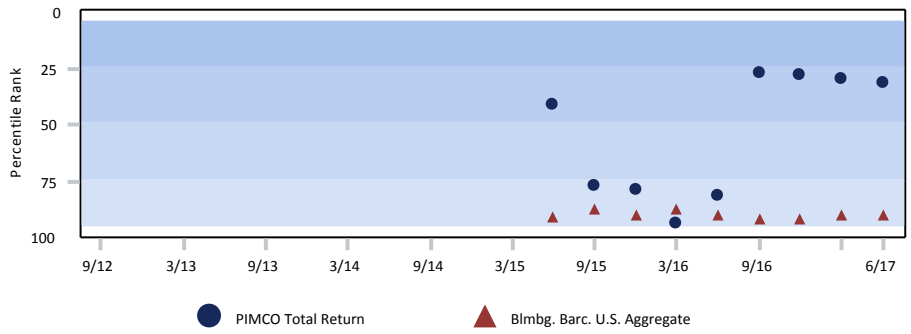
1 Year Rolling Percentile Ranking



3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Howard County Retirement Plans

PIMCO Total Return

June 30, 2017

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
PIMCO Total Return	**1.85**	**3.35**	**2.39**	**2.82**	**2.95**
Blmbg. Barc. U.S. Aggregate	*1.45*	*2.27*	*-0.31*	*2.48*	*2.21*
IM U.S. Broad Mkt Core Fixed Income (SA+CF)	*1.53*	*2.51*	*0.29*	*2.75*	*2.69*
PIMCO Total Return Rank	6	3	5	43	32

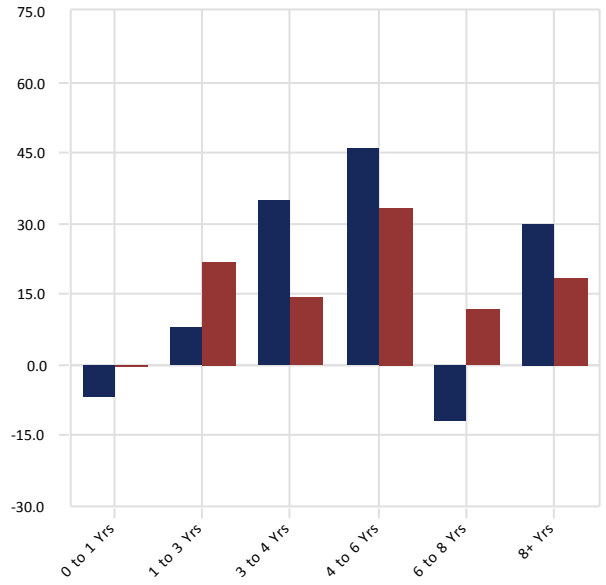
Portfolio Characteristics

	Portfolio	Benchmark
Modified Duration	5.08	6.01
Yield To Maturity (%)	3.03	2.56
Avg. Maturity	7.64	8.27
Avg. Quality	AA	AA1/AA
Coupon Rate (%)	2.77	3.06

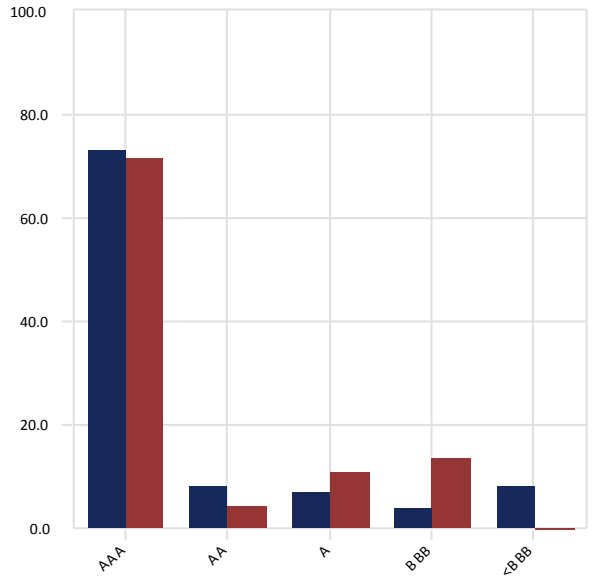
Historical Statistics (3 Year)

	Sharpe Ratio	Information Ratio	Standard Deviation
PIMCO Total Return	0.86	0.28	3.05
Blmbg. Barc. U.S. Aggregate	*0.80*	-	*2.86*
Citigroup 3 Month T-Bill	-	-0.80	0.06

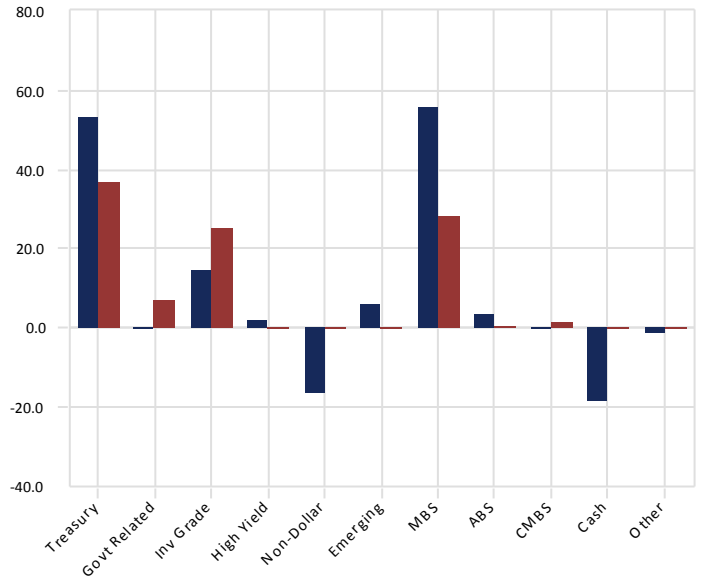
Duration Distribution (%)



Credit Quality Distribution (%)



Sector Distribution (%)



PIMCO Total Return Blmbg. Barc. U.S. Aggregate

gross of fees

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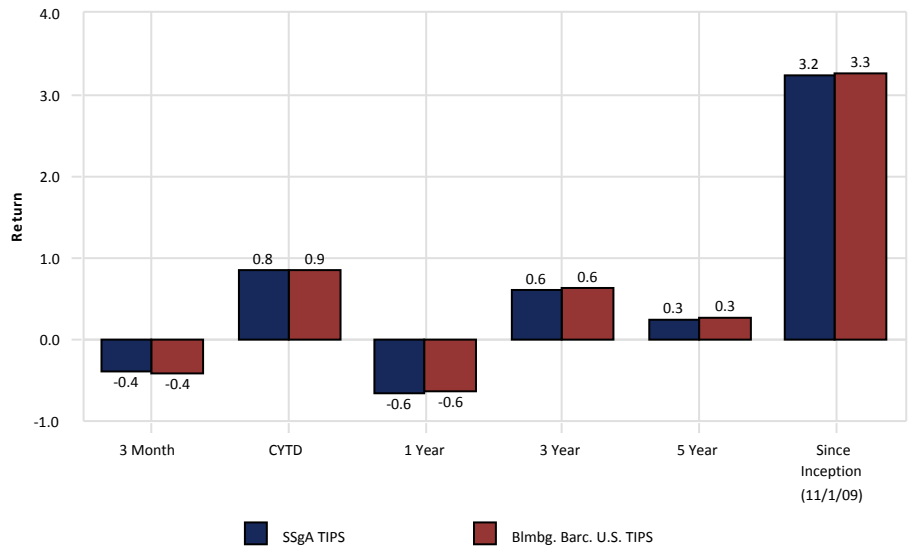
Howard County Retirement Plans

SSgA TIPS vs. IM U.S. TIPS (SA+CF)

June 30, 2017

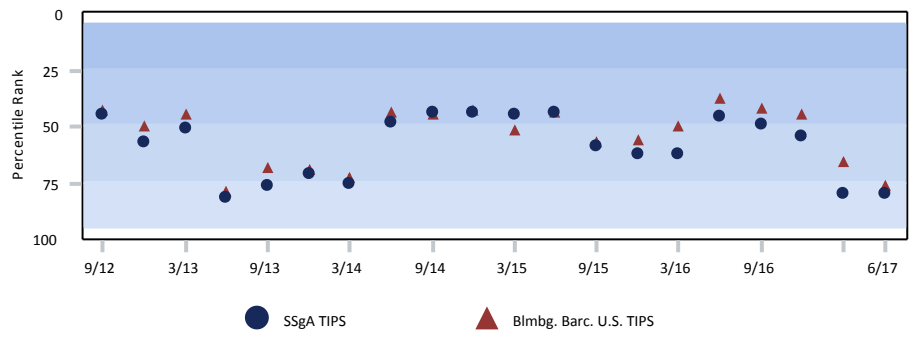
Comparative Performance



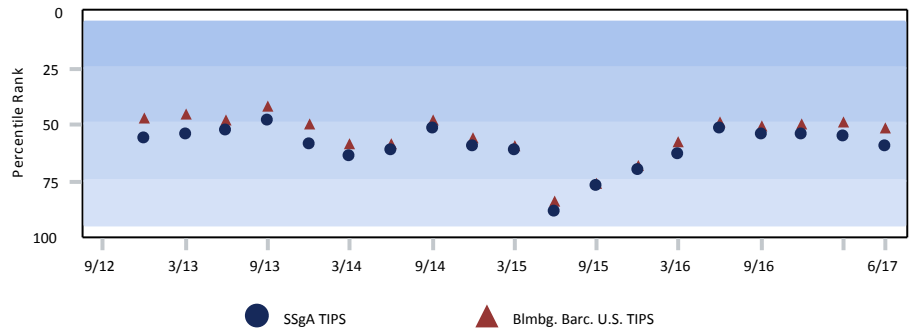
Growth of $1

gross of fees

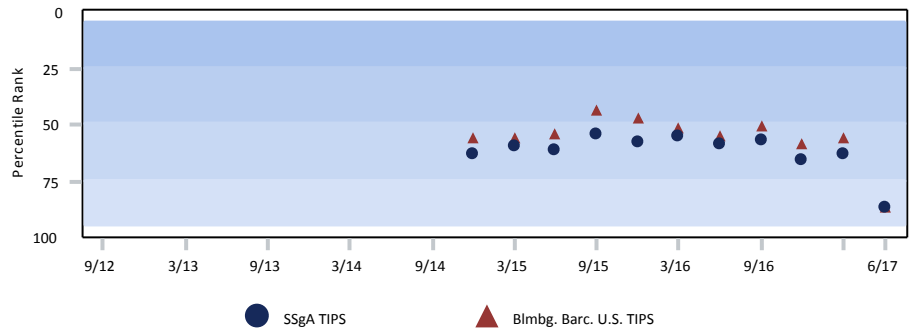
1 Year Rolling Percentile Ranking



3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



Howard County Retirement Plans

SSgA TIPS

June 30, 2017

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
SSgA TIPS	**-0.39**	**0.85**	**-0.65**	**0.61**	**0.25**
Blmbg. Barc. U.S. TIPS	*-0.40*	*0.85*	*-0.63*	*0.63*	*0.27*
IM U.S. TIPS (SA+CF) Median	*-0.37*	*0.87*	*-0.49*	*0.64*	*0.36*
SSgA TIPS Rank	69	67	80	60	87

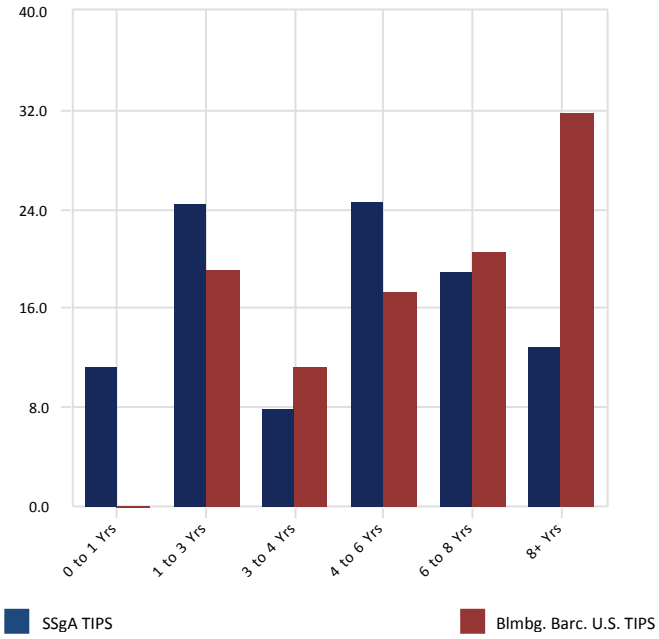
Portfolio Characteristics

	Portfolio	Benchmark
Modified Duration	5.72	5.38
Yield To Maturity (%)	2.20	2.23
Avg. Maturity	8.31	8.48
Avg. Quality	AAA	AAA/AAA
Coupon Rate (%)	0.86	0.82

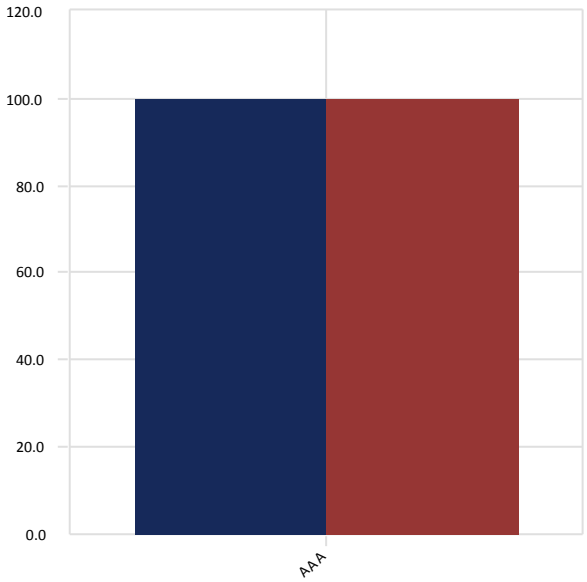
Historical Statistics (3 Year)

	Sharpe Ratio	Information Ratio	Standard Deviation
SSgA TIPS	0.13	-0.56	3.77
Blmbg. Barc. U.S. TIPS	*0.13*	-	*3.77*
Citigroup 3 Month T-Bill	-	-0.13	0.06

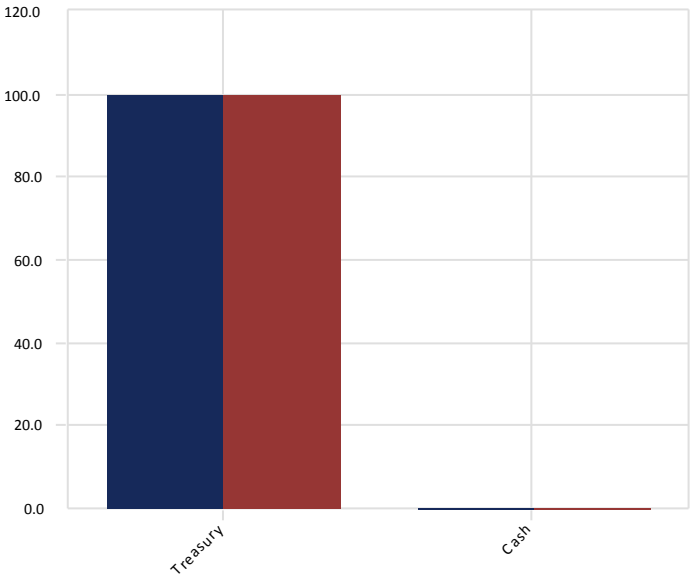
Duration Distribution (%)



Credit Quality Distribution (%)



Sector Distribution (%)



gross of fees

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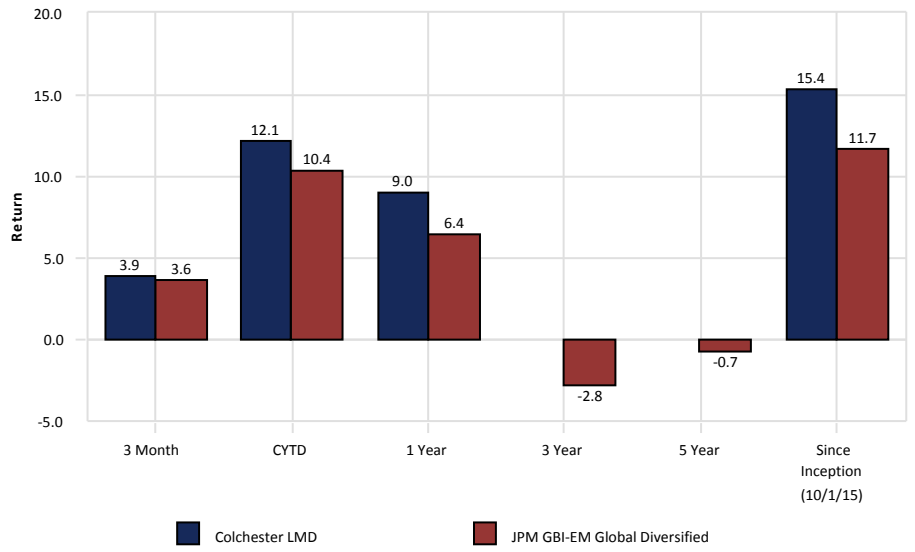
Howard County Retirement Plans

Colchester LMD vs. IM Emerging Markets Debt - LC (MF)

June 30, 2017

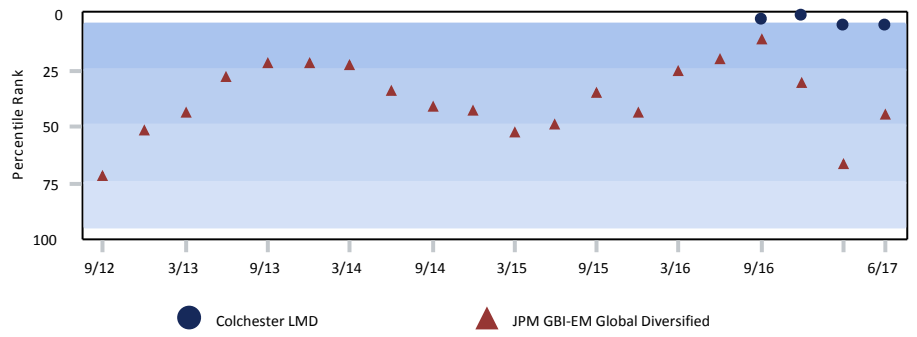
Comparative Performance



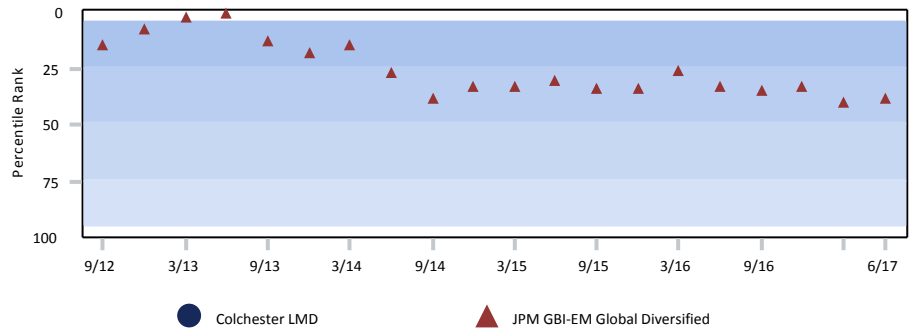
Growth of $1

gross of fees

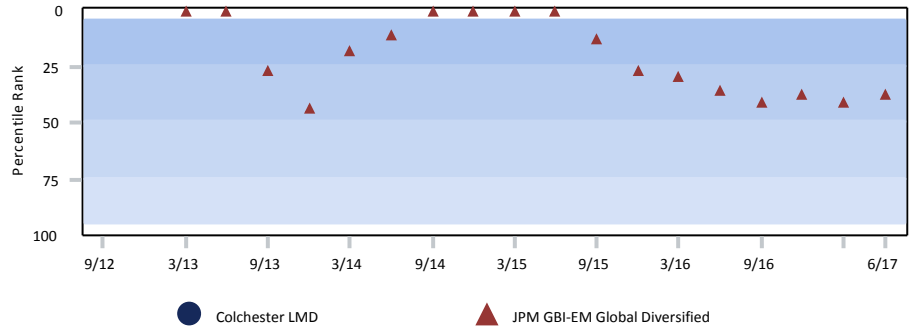
1 Year Rolling Percentile Ranking



3 Year Rolling Percentile Ranking



5 Year Rolling Percentile Ranking



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Howard County Retirement Plans

Colchester LMD

June 30, 2017

Comparative Performance

	3 Month	CYTD	1 Year	3 Year	5 Year
Colchester LMD	**3.93**	**12.14**	**8.99**	**-**	**-**
JPM GBI-EM Global Diversified	*3.62*	*10.36*	*6.41*	*-2.80*	*-0.67*
IM Emerging Markets Debt - LC (MF) Median	*2.94*	*10.17*	*6.07*	*-3.28*	*-1.26*
Colchester LMD Rank	1	4	5	-	-

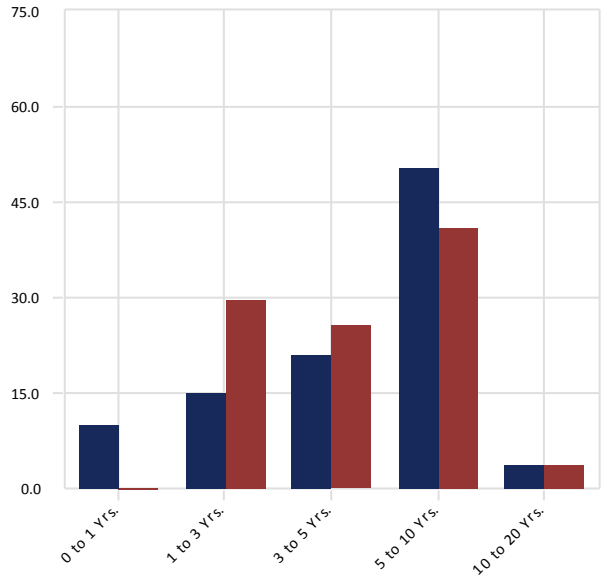
Portfolio Characteristics

	Portfolio	Benchmark
Modified Duration	5.27	5.02
Yield To Maturity (%)	6.73	6.09
Avg. Maturity	8.26	7.43
Avg. Quality	BBB	Baa2/BBB
Coupon Rate (%)	7.21	6.26

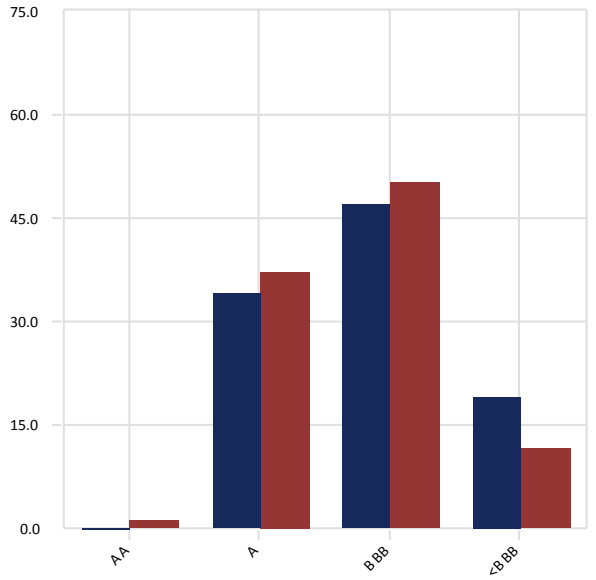
Historical Statistics (3 Year)

	Sharpe Ratio	Information Ratio	Standard Deviation
Colchester LMD	-	-	-
JPM GBI-EM Global Diversified	*-0.21*	-	*11.54*
Citigroup 3 Month T-Bill	-	0.21	0.06

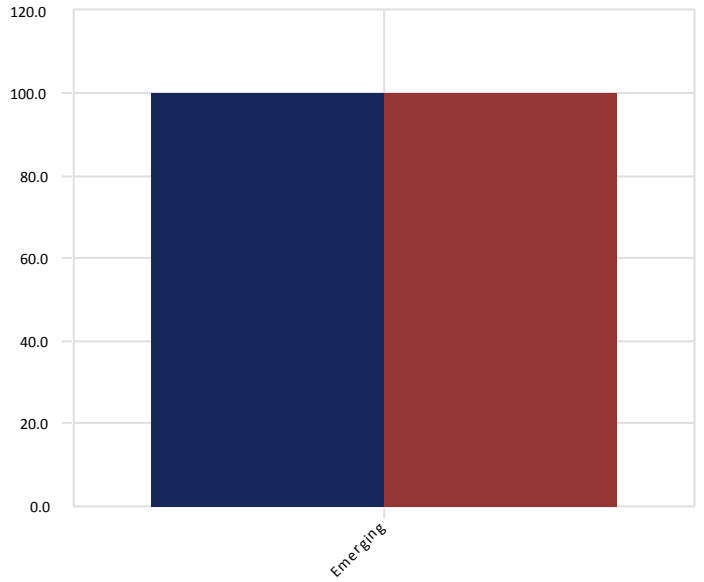
Duration Distribution (%)



Credit Quality Distribution (%)



Sector Distribution (%)



Colchester LMD JPM GBI-EM Global Diversified

gross of fees

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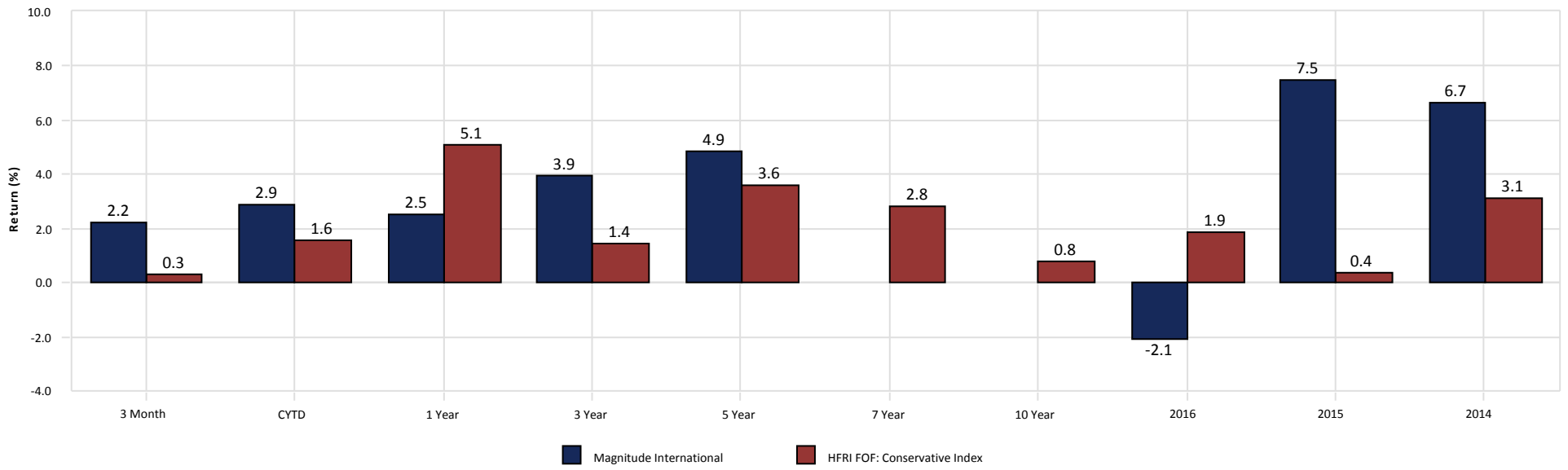
Howard County Retirement Plans

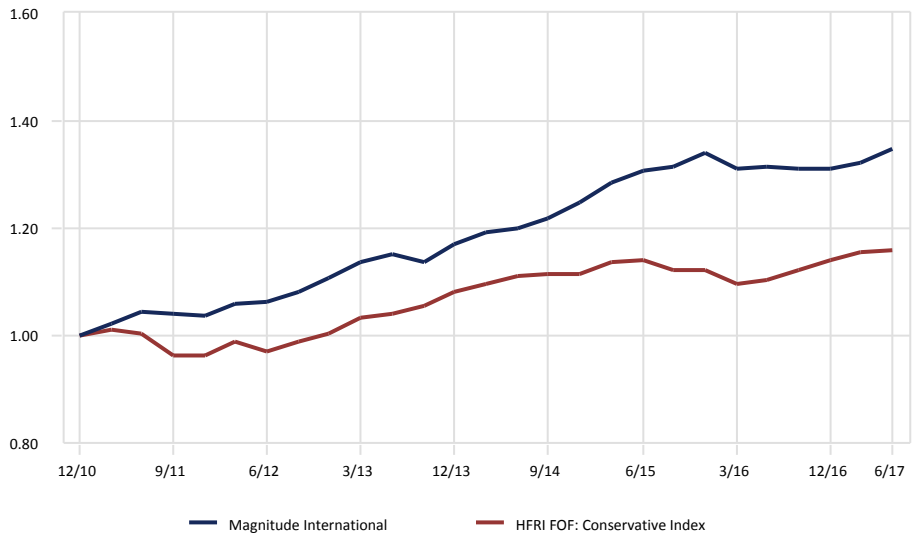
Magnitude International

June 30, 2017

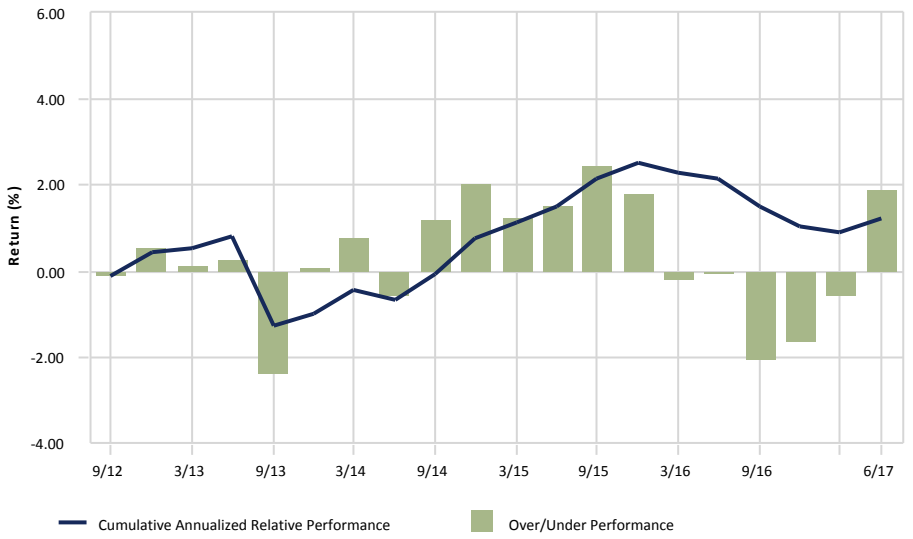
Comparative Performance



Growth of $1 - Since Inception (01/01/11)



Relative Performance vs. HFRI FOF: Conservative Index



net of fees

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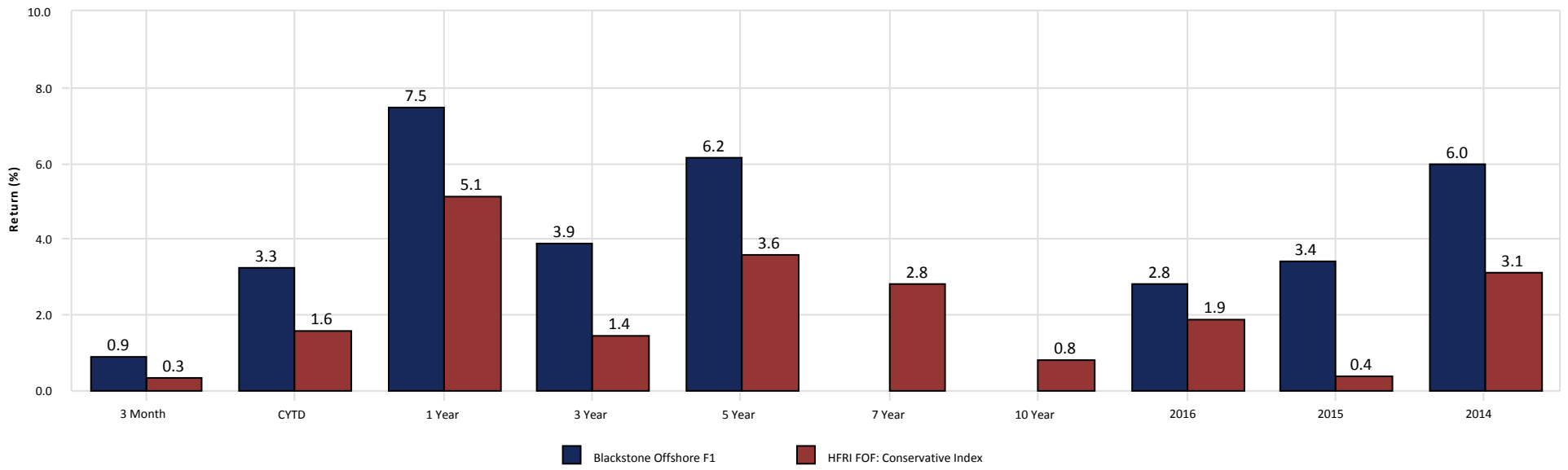
Howard County Retirement Plans

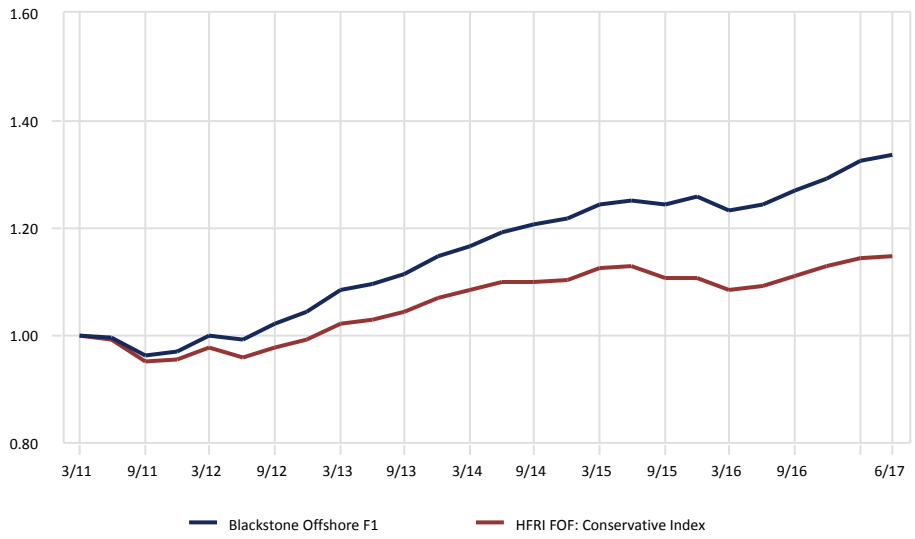
Blackstone Offshore F1

June 30, 2017

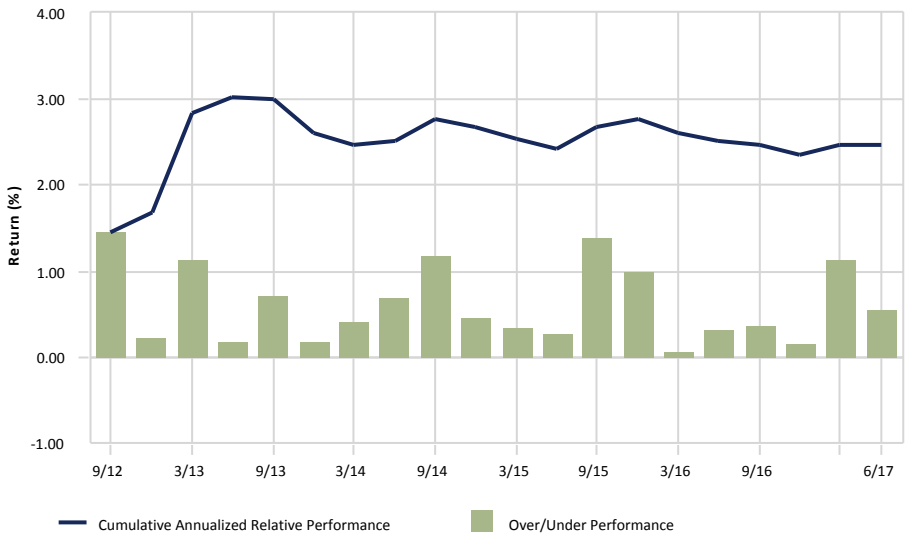
Comparative Performance



Growth of $1 - Since Inception (03/01/11)



Relative Performance vs. HFRI FOF: Conservative Index



net of fees

Summit Strategies Group

Appendix

Howard County Retirement Plans

Composite Asset Allocation & Performance - Net of Fees
June 30, 2017

	Asset $	Asset %	Performance(%) 3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
Total Fund Composite	**919,513,907**	**100.00**	**3.51**	**7.75**	**12.23**	**12.23**	**5.39**	**8.58**	**6.93**	**Apr-1997**
Total Implementation Index			3.31	7.02	10.52	10.52	5.32	8.02	6.81	
Excess Return			0.20	0.73	1.71	1.71	0.07	0.56	0.12	
Total Policy Index			3.35	7.18	10.71	10.71	5.40	8.00	7.34	Apr-1997
Total Fund EX Alternatives	709,272,074	77.14	3.12	8.24	13.00	13.00	4.82	8.37	5.99	Jul-2008
Total Fund EX Real Assets	886,458,999	96.41	3.55	8.03	12.47	12.47	5.27	8.69	6.74	Jan-2004
Total Equity Composite	396,176,971	43.09	4.24	11.96	21.02	21.02	5.54	11.86	7.78	Jan-2004
US Equity Composite	216,465,732	23.54	3.83	9.94	21.63	21.63	9.17	15.55	9.31	Jan-2004
Russell 3000 Index			3.02	8.93	18.51	18.51	9.10	14.58	8.39	
Excess Return			0.81	1.01	3.12	3.12	0.07	0.97	0.92	
US Equity Allocation Index			2.96	8.39	19.28	19.28	8.87	14.48	8.70	Jan-2004
Large Cap Composite	168,141,950	18.29	3.50	9.85	20.60	20.60	8.57	15.45	8.62	Jan-2004
Russell 1000 Index			3.06	9.27	18.03	18.03	9.26	14.67	8.37	
Excess Return			0.44	0.58	2.57	2.57	-0.69	0.78	0.25	
Non-Large Cap Composite	48,323,782	5.26	4.91	10.31	24.93	24.93	11.20	16.13	10.33	Jan-2004
Russell 2500 Index			2.13	5.97	19.84	19.84	6.93	14.04	9.25	
Excess Return			2.78	4.34	5.09	5.09	4.27	2.09	1.08	
International Equity Composite	179,711,238	19.54	4.83	14.87	20.13	20.13	0.82	6.85	5.74	Jan-2004
MSCI AC World ex USA (Net)			5.78	14.10	20.45	20.45	0.80	7.22	6.16	
Excess Return			-0.95	0.77	-0.32	-0.32	0.02	-0.37	-0.42	
International Developed Markets Composite	118,833,729	12.92	5.98	13.56	16.44	16.44	0.77	8.25	2.22	Mar-2008
MSCI EAFE Index (Net)			6.12	13.81	20.27	20.27	1.15	8.69	1.96	
Excess Return			-0.14	-0.25	-3.83	-3.83	-0.38	-0.44	0.26	
International Emerging Markets Composite	60,877,509	6.62	2.83	17.42	27.59	27.59	0.76	3.83	5.62	Feb-2006
MSCI Emerging Markets (Net)			6.27	18.43	23.75	23.75	1.07	3.96	4.70	
Excess Return			-3.44	-1.01	3.84	3.84	-0.31	-0.13	0.92	
Fixed Income Composite	270,184,331	29.38	1.78	4.20	3.36	3.36	3.63	3.51	4.54	Jan-2004
Fixed Income Policy Index			1.45	2.27	-0.31	-0.31	2.48	2.21	4.33	
Excess Return			0.33	1.93	3.67	3.67	1.15	1.30	0.21	

Howard County Retirement Plans

Composite Asset Allocation & Performance - Net of Fees
June 30, 2017

			Performance(%)							
	Asset $	Asset %	3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
Real Assets Composite	33,054,908	3.59	2.51	1.71	6.92	6.92	7.87	6.71	6.38	Jul-2003
NCREIF Property Index [3 Month Lag]			1.55	3.30	7.27	7.27	10.58	10.69	9.23	
Excess Return			0.96	-1.59	-0.35	-0.35	-2.71	-3.98	-2.85	
NCREIF Fund Index-ODCE (VW) [M]			1.70	3.50	7.87	7.87	11.34	11.79	8.28	Jul-2003
Alternatives Composite	210,241,833	22.86	4.86	6.08	9.58	9.58	8.35	9.19	8.30	Jul-2008
Private Equity Composite	100,149,026	10.89	8.58	9.46	14.90	14.90	14.86	14.95	12.03	Jul-2008
Hedge Fund Composite	110,092,808	11.97	1.54	3.06	4.98	4.98	3.92	5.51	4.67	Jan-2011
HFRI FOF: Conservative Index			0.34	1.55	5.12	5.12	1.44	3.61	2.30	
Excess Return			1.20	1.51	-0.14	-0.14	2.48	1.90	2.37	
Cash Composite	9,855,864	1.07	0.14	0.19	0.19	0.19	0.09	0.06	1.33	Jan-2004
Citigroup 3 Month T-Bill			0.18	0.30	0.46	0.46	0.20	0.15	1.22	
Excess Return			-0.04	-0.11	-0.27	-0.27	-0.11	-0.09	0.11	

Howard County Retirement Plans

Manager Allocation & Performance - Net of Fees

June 30, 2017

	Asset $	Asset %	Performance(%) 3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
US Equity										
Invesco	55,308,209	6.01	1.79	8.10	17.00	17.00	8.09	14.09	8.29	Jan-2004
S&P 500			3.09	9.34	17.90	17.90	9.61	14.63	8.16	
Excess Return			-1.30	-1.24	-0.90	-0.90	-1.52	-0.54	0.13	
LSV Asset Management*	55,268,550	6.01	1.86	4.94	20.39	20.39	7.80	16.25	9.44	Jan-2004
Russell 1000 Value Index			1.34	4.66	15.53	15.53	7.36	13.94	7.88	
Excess Return			0.52	0.28	4.86	4.86	0.44	2.31	1.56	
Westfield	57,565,190	6.26	6.89	17.01	24.48	24.48	9.83	15.99	15.50	Jul-2010
Russell 1000 Growth Index			4.67	13.99	20.42	20.42	11.11	15.30	16.48	
Excess Return			2.22	3.02	4.06	4.06	-1.28	0.69	-0.98	
William Blair	14,825,992	1.61	6.62	16.12	22.76	22.76	11.44	16.98	10.50	Jun-2006
Russell 2500 Growth Index			4.13	10.63	21.44	21.44	7.65	14.33	9.00	
Excess Return			2.49	5.49	1.32	1.32	3.79	2.65	1.50	
Investment Counselors of Maryland**	20,461,019	2.23	1.90	2.48	25.27	25.27	8.84	14.65	9.49	Jan-2004
Russell 2000 Value Index			0.67	0.54	24.86	24.86	7.02	13.39	8.25	
Excess Return			1.23	1.94	0.41	0.41	1.82	1.26	1.24	
Brown Capital Management	13,036,771	1.42	7.62	17.21	26.96	26.96	13.86	19.51	18.00	Aug-2011
Russell 2000 Growth Index			4.39	9.97	24.40	24.40	7.64	13.98	11.93	
Excess Return			3.23	7.24	2.56	2.56	6.22	5.53	6.07	
International Equity										
Mondrian International	57,158,747	6.22	4.13	11.77	15.70	15.70	0.03	7.94	0.82	Dec-2007
MSCI EAFE Index (Net)			6.12	13.81	20.27	20.27	1.15	8.69	0.79	
Excess Return			-1.99	-2.04	-4.57	-4.57	-1.12	-0.75	0.03	
Pyramis	61,674,983	6.71	7.67	15.24	17.47	17.47	1.40	8.52	5.04	Aug-2005
MSCI EAFE Index (Net)			6.12	13.81	20.27	20.27	1.15	8.69	4.69	
Excess Return			1.55	1.43	-2.80	-2.80	0.25	-0.17	0.35	
DFA Emerging Markets**	60,877,509	6.62	2.83	17.42	27.59	27.59	0.79	3.84	5.53	Feb-2006
MSCI Emerging Markets (Net)			6.27	18.43	23.75	23.75	1.07	3.96	4.70	
Excess Return			-3.44	-1.01	3.84	3.84	-0.28	-0.12	0.83	

* Inception date differs from manager; Summit does not calculate partial month returns.

*** Time-weighted rate of return; calculated using custodian data.

Howard County Retirement Plans

Manager Allocation & Performance - Net of Fees

June 30, 2017

	Asset $	Asset %	Performance(%) 3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
Fixed Income										
Dodge & Cox	114,179,065	12.42	1.55	2.86	3.24	3.24	3.21	3.70	4.48	May-2010
Blmbg. Barc. U.S. Aggregate			1.45	2.27	-0.31	-0.31	2.48	2.21	3.46	
Excess Return			0.10	0.59	3.55	3.55	0.73	1.49	1.02	
PIMCO Total Return	100,776,495	10.96	1.79	3.20	2.07	2.07	2.53	2.64	3.80	May-2010
Blmbg. Barc. U.S. Aggregate			1.45	2.27	-0.31	-0.31	2.48	2.21	3.46	
Excess Return			0.34	0.93	2.38	2.38	0.05	0.43	0.34	
SSgA TIPS	21,078,931	2.29	-0.41	0.82	-0.71	-0.71	0.56	0.19	3.19	Nov-2009
Blmbg. Barc. U.S. TIPS			-0.40	0.85	-0.63	-0.63	0.63	0.27	3.27	
Excess Return			-0.01	-0.03	-0.08	-0.08	-0.07	-0.08	-0.08	
Colchester LMD	34,149,840	3.71	3.74	11.75	8.22	8.22	-	-	14.55	Oct-2015
JPM GBI-EM Global Diversified			3.62	10.36	6.41	6.41	-	-	11.67	
Excess Return			0.12	1.39	1.81	1.81	-	-	2.88	
Real Assets										
TA Realty Associates VIII***	4,287,863	0.47	0.81	-0.43	3.04	3.04	9.87	7.55	0.28	Jul-2007
TA Realty Associates IX***	1,727,192	0.19	-1.27	-0.74	3.11	3.11	9.92	10.18	9.19	Apr-2010
Partners Group Global RE 2011	9,898,787	1.08	3.66	-2.20	1.39	1.39	3.38	5.59	4.78	Mar-2012
Partners Group Global RE 2014	14,393,288	1.57	2.78	5.32	11.73	11.73	-	-	7.18	Dec-2014
Commonfund Natural Resources X	1,677,950	0.18	12.66	12.66	98.47	98.47	-	-	23.04	Apr-2016
Aether Real Assets IV	1,069,826	0.12	-7.19	-7.19	-11.17	-11.17	-	-	-10.36	Jun-2016
Private Equity										
Siguler Guff Distressed Opps III	2,615,224	0.28	6.73	7.06	12.48	12.48	6.51	9.07	8.88	Jul-2008
Greenspring IV	4,684,427	0.51	1.99	1.99	13.28	13.28	14.67	20.58	16.44	Jul-2009
Pantheon Global Secondaries IV	937,040	0.10	8.79	8.79	12.06	12.06	6.81	10.00	12.12	Sep-2010
LGT Crown Asia-Pacific II	13,425,285	1.46	4.76	6.22	8.38	8.38	15.88	12.14	-15.40	Jul-2011
Greenspring V	7,874,846	0.86	18.23	18.23	22.98	22.98	22.27	20.75	18.08	Sep-2011

* Inception date differs from manager; Summit does not calculate partial month returns.

*** Time-weighted rate of return; calculated using custodian data.

Howard County Retirement Plans

Manager Allocation & Performance - Net of Fees
June 30, 2017

	Asset $	Asset %	Performance(%) 3 Month	CYTD	FYTD	1 Year	3 Year	5 Year	Since Inception	Inception Date
Private Equity (continued)										
Adveq Europe V	5,105,967	0.56	7.93	7.93	7.31	7.31	-1.61	-	2.65	Jan-2013
LGT Crown Global Secondaries III	5,987,784	0.65	5.65	6.49	11.59	11.59	13.34	-	17.41	Feb-2013
Flag Private Equity V	10,542,022	1.15	12.08	12.08	22.30	22.30	16.41	-	13.42	Oct-2013
HarbourVest Partners 2013 Direct	18,601,253	2.02	7.77	7.77	14.88	14.88	19.60	-	20.10	Jan-2014
Greenspring VI	6,580,181	0.72	18.05	18.05	26.69	26.69	16.55	-	15.19	Apr-2014
Greenspring Secondaries Fund I	2,923,249	0.32	0.37	10.07	24.14	24.14	24.36	-	22.94	May-2014
Adveq Europe VI	1,692,480	0.18	2.90	2.90	-12.50	-12.50	-	-	-0.99	Feb-2015
Flag Private Equity VI	7,046,672	0.77	8.53	13.00	21.36	21.36	-	-	15.28	Aug-2015
57 Stars	2,423,232	0.26	4.38	4.38	1.09	1.09	-	-	-8.48	Oct-2015
NB Crossroads XXI	3,376,374	0.37	4.11	5.99	5.00	5.00	-	-	-3.20	Nov-2015
LGT Crown Asia-Pacific III	2,256,969	0.25	9.79	6.32	7.95	7.95	-	-	6.65	Dec-2015
HarbourVest IV	4,076,022	0.44	11.87	13.58	-	-	-	-	13.58	Jan-2017
Hedge Funds										
Magnitude International	54,336,097	5.91	2.21	2.86	2.55	2.55	3.95	4.86	4.72	Jan-2011
HFRI FOF: Conservative Index			0.34	1.55	5.12	5.12	1.44	3.61	2.30	
Excess Return			1.87	1.31	-2.57	-2.57	2.51	1.25	2.42	
Blackstone Offshore F1	55,756,711	6.06	0.90	3.26	7.46	7.46	3.90	6.16	4.70	Mar-2011
HFRI FOF: Conservative Index			0.34	1.55	5.12	5.12	1.44	3.61	2.14	
Excess Return			0.56	1.71	2.34	2.34	2.46	2.55	2.56	
Cash										
Cash - General Employees	4,883,405	0.53	0.14	0.19	0.19	0.19	0.11	0.08	1.32	Jan-2004
Cash - Police & Fire	4,970,580	0.54	0.14	0.19	0.19	0.19	0.07	0.04	1.28	Jan-2004

* Inception date differs from manager; Summit does not calculate partial month returns.
*** Time-weighted rate of return; calculated using custodian data.

All asset class and master trust returns prior to 4/1/00 were approximated by using the actual quarterly returns from each plan and weighting them by the plans' beginning of period asset values.

Large Cap and Non-Large Cap Composites prior to 12/31/03 are approximated by using the actual quarterly returns for each manager and weighting them by the the accounts' beginning of period asset values.

Howard County Retirement Plans

US Equity Policy Index

June 30, 2017

	(%)
Jul-2006	
Russell 3000 Index	100.00
Jun-2002	
S&P 500	55.60
S&P MidCap 400	22.20
Russell 2000 Index	22.20
May-1992	
S&P 500	80.00
Russell 2000 Index	20.00

Howard County Retirement Plans

Fixed Income Policy Index

June 30, 2017

	(%)
Jul-2006	
Blmbg. Barc. U.S. Aggregate	100.00
Jun-2002	
Blmbg. Barc. U.S. Aggregate	85.70
Blmbg. Barc. U.S. Corp: High Yield	14.30
Apr-2002	
Blmbg. Barc. U.S. Aggregate	87.50
Blmbg. Barc. U.S. Corp: High Yield	12.50
Dec-1993	
Blmbg. Barc. U.S. Aggregate	100.00

Howard County Retirement Plans

Total Implementation Index

June 30, 2017

	(%)
Dec-2015	
Russell 3000 Index	20.00
MSCI AC World ex USA (Net)	20.00
Blmbg. Barc. U.S. Aggregate	25.00
JPM GBI-EM Global Diversified	5.00
NCREIF Property Index [3 Month Lag]	7.50
Private Equity Composite	10.00
HFRI FOF: Conservative Index	12.50
Citigroup 3 Month T-Bill	0.00
Jan-2012	
Russell 3000 Index	22.50
MSCI AC World ex USA (Net)	22.50
Blmbg. Barc. U.S. Aggregate	32.50
NCREIF Property Index [3 Month Lag]	5.00
Private Equity Composite	10.00
HFRI FOF: Conservative Index	7.50
Citigroup 3 Month T-Bill	0.00
Dec-2007	
Russell 3000 Index	39.00
MSCI World ex US	21.00
Blmbg. Barc. U.S. Aggregate	35.00
NCREIF Property Index [3 Month Lag]	5.00
Citigroup 3 Month T-Bill	0.00
Jul-2006	
Russell 3000 Index	39.00
MSCI World ex US	21.00
Blmbg. Barc. U.S. Aggregate	35.00
NCREIF Property Index [3 Month Lag]	5.00

	(%)
Sep-1986	
Russell 3000 Index	45.00
MSCI EAFE Index	15.00
Blmbg. Barc. U.S. Aggregate	30.00
BofA Merrill Lynch High Yield Master II	5.00
NCREIF Property Index [3 Month Lag]	5.00

Howard County Retirement Plans

Total Fund Policy Composition

June 30, 2017

	(%)
Dec-2015	
S&P 500	15.00
Russell 2500 Index	5.00
MSCI EAFE Index (Net)	13.00
MSCI Emerging Markets (Net)	7.00
Blmbg. Barc. U.S. Aggregate	25.00
JPM GBI-EM Global Diversified	5.00
NCREIF Property Index [3 Month Lag]	7.50
Private Equity Composite	10.00
HFRI FOF: Conservative Index	12.50
Citigroup 3 Month T-Bill	0.00
Jan-2012	
S&P 500	16.90
Russell 2500 Index	5.60
MSCI EAFE Index (Net)	14.60
MSCI Emerging Markets (Net)	7.90
Blmbg. Barc. U.S. Aggregate	32.50
NCREIF Property Index [3 Month Lag]	5.00
Private Equity Composite	10.00
HFRI Fund of Funds Composite Index	7.50
Citigroup 3 Month T-Bill	0.00
Jul-2008	
S&P 500	22.00
Russell 2500 Index	13.80
MSCI EAFE Index	14.70
MSCI Emerging Markets Index	4.50
Blmbg. Barc. U.S. Aggregate	35.00
NCREIF Property Index [3 Month Lag]	5.00
Citigroup 3 Month T-Bill	5.00
Citigroup 3 Month T-Bill	0.00

	(%)
Dec-2007	
S&P 500	24.00
Russell 2500 Index	15.00
MSCI EAFE Index	16.00
MSCI Emerging Markets Index	5.00
Blmbg. Barc. U.S. Aggregate	35.00
NCREIF Property Index [3 Month Lag]	5.00
Citigroup 3 Month T-Bill	0.00
Jul-2006	
S&P 500	24.00
Russell 2500 Index	15.00
MSCI EAFE Index	16.00
MSCI Emerging Markets Index	5.00
Blmbg. Barc. U.S. Aggregate	35.00
NCREIF Property Index [3 Month Lag]	5.00
Oct-2003	
S&P 500	25.00
S&P MidCap 400	10.00
Russell 2000 Index	10.00
MSCI EAFE Index	15.00
Blmbg. Barc. U.S. Aggregate	30.00
Blmbg. Barc. U.S. Corp: High Yield	5.00
NCREIF Property Index [3 Month Lag]	5.00

Howard County Retirement Plans

Total Fund Policy Composition

June 30, 2017

	(%)
Jun-2002	
S&P 500	26.00
S&P MidCap 400	11.00
Russell 2000 Index	11.00
MSCI EAFE Index	15.00
Blmbg. Barc. U.S. Aggregate	32.00
Blmbg. Barc. U.S. Corp: High Yield	5.00
Apr-2002	
S&P 500	40.00
Russell 2000 Index	10.00
MSCI EAFE Index	10.00
Blmbg. Barc. U.S. Aggregate	35.00
Blmbg. Barc. U.S. Corp: High Yield	5.00
Jul-1998	
S&P 500	40.00
Russell 2000 Index	10.00
MSCI EAFE Index	10.00
Blmbg. Barc. U.S. Aggregate	40.00
Jan-1997	
S&P 500	60.00
Blmbg. Barc. U.S. Aggregate	40.00
Jan-1996	
S&P 500	50.00
Blmbg. Barc. U.S. Aggregate	50.00
Oct-1994	
S&P 500	55.00
Blmbg. Barc. U.S. Aggregate	45.00
Jul-1990	
S&P 500	55.00
Blmbg. Barc. U.S. Aggregate	45.00

Glossary

Term	Description
Simple Alpha (Excess or Relative Return)	The arithmetic difference between the portfolio's return and the benchmark's return.
Alpha	A measure of the difference between a portfolio's actual returns and its expected performance, given its level of risk as measured by beta. It is a measure of the portfolio's historical performance not explained by movements of the market, or a portfolio's non-systematic return.
Asset Allocation Effect	In attribution analysis, the incremental return attibutable to diverging from the target weights of the policy benchmark holding all other factors constant.
Beta	Also called systematic risk or non-diversifiable risk, beta measures the sensitivity of asset returns to the market (benchmark). In isolation a lower beta is considered less risky but does not distinguish between upside and downside risk.
Consistency	The percentage of periods that a product achieved a rate of return higher than that of its benchmark. The higher the consistency figure, the more value a manager has contributed to the product's performance.
Down Market Capture	The ratio of average portfolio return over the benchmark during periods of negative benchmark return. Lower values indicate better product performance.
Excess Risk	A measure of the standard deviation of a portfolio's performance relative to the risk free return.
Information Ratio	Measured by dividing the active rate of return by the tracking error. The higher the Information Ratio, the more value-added contribution by the manager. Negative Information Ratios are difficult to interpret.
Manager Value-Added (Selection Effect)	In attribution analysis, the incremental return attributable to active management; the result of diverging from the benchmark allocation within a given asset class.
Market Timing / Other	In attribution analysis, represents the impact of intra-period shifts in asset allocation. For example a rapidly appreciating asset could have markedly different weights throughout the analysis period (which looks at fixed points in time).

Glossary

R-Squared	The percentage of portfolio performance explained by the performance of its benchmark; measured on a scale of 0 to 100, with 100 indicating that the portfolio's performance is entirely determined by the benchmark.
Sharpe Ratio	Also called the reward-to-variability ratio, Sharpe Ratio measures the absolute rate of return per unit of risk and is calculated as the Excess Return vs. the Risk Free Rate divided by the standard deviation of the Excess Return. Investors prefer higher Sharpe Ratios (more return per unit of risk).
Standard Deviation	Typically referred to as Volatility or Risk, standard deviation measures the dispersion of actual returns around their average.
Tracking Error	A measure of the standard deviation of a portfolio's performance relative to the performance of an appropriate market benchmark.
Treynor Ratio	Similar to Sharpe ratio, but focuses on beta rather than excess risk (standard deviation). Represents the excess rate of return over the risk free rate divided by the beta. The result is the absolute rate of return per unit of risk. The higher the value, the better the product's historical risk-adjusted performance.
Up Market Capture	The ratio of average portfolio return over the benchmark during periods of positive benchmark return. Higher values indicate better product performance.

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