



PERSPECTIVES THAT DRIVE ENTERPRISE SUCCESS



PERIOD ENDING: December 31, 2017

Investment Performance Quarterly Review for

Merced County Employees' Retirement Association

4th quarter summary

THE ECONOMIC CLIMATE

- Global growth forecasts for 2018 have been revised higher, most notably in the Eurozone. U.S. expected 2018 GDP growth is 2.6%, above the expansion average.
- The Eurozone has experienced an impressive economic recovery. In the third quarter, real GDP accelerated to 2.6%, the fastest pace of growth since 2011.
- The House and Senate agreed to a final tax bill that was signed into law by President Trump on December 22nd. The bill, formally known as the Tax Cuts & Jobs Act, represents a major overhaul of the U.S. tax system.

PORTFOLIO IMPACTS

- A synchronized pickup in global economic growth, low inflation, strong employment, and accommodative central banks should support global equities moving forward. We recommend maintaining an overweight equity position.
- Markets remain expensive by most measures. However, it is important to note the merits and flaws of various valuation metrics.

THE INVESTMENT CLIMATE

- Global equities produced strong returns over the quarter and finished the year on a positive note. Emerging market equities led the way, driven by high earnings growth and expansion of valuation multiples off of low levels.
- The outlook for U.S. equity earnings has improved further, following the signing of the Tax Cuts and Jobs Act. S&P 500 earnings expectations for 2018 were revised upwards from 11.1% to 13.1%.
- U.S. high yield spreads became increasingly tight. Credit premiums are near all time lows, which may warrant an underweight to U.S. credit.

ASSET ALLOCATION ISSUES

- Risk assets continue to deliver strong performance, fueled by improving fundamentals and accelerating growth. The current environment appears accommodative for further gains.
- Equity volatility is very low, helped by stable economic conditions and inflation. Historically, low volatility has indicated less risk of an equity downside event.

We believe a moderate overweight to risk is warranted

U.S. economics summary

- U.S. real GDP grew 2.3% from the previous year in Q3, the fastest pace in more than two years. Growth was driven by consumer spending, private inventory accumulation, and business investment.
- Growth in business investment has provided a material support to the economy over recent periods for the first time in the recovery. Rising domestic and external demand has influenced companies to ramp up production. Survey based measures indicate firms are planning to increase capex over the next six months.
- Core inflation rose slightly from 1.7% to 1.8% over the quarter, driven by higher shelter prices. Strong demand, higher raw material prices, and a weaker dollar may provide modest pressures on inflation, but overall levels remain low. Any material rise in inflation would likely be met by more aggressive monetary tightening than what is priced into markets.
- The U3 unemployment rate fell further from 4.2% to 4.1%, its lowest level in 17 years.
- Net job creation averaged 204,000 per month in Q3 - above the expansion average of 196,000. Despite robust job gains and low unemployment, wage growth remained modest at 2.5% YoY.
- The Fed raised interest rates for the third time this year to a target rate of 1.25-1.50%. Fed dot plots indicate three more interest rate hikes in 2018, while the market is only forecasting two. Officials noted that strong economic growth is expected to continue, and raised the 2018 GDP forecast from 2.1% to 2.5%.

	Most Recent	12 Months Prior
GDP (YoY)	2.3% 9/30/17	1.5% 9/30/16
Inflation (CPI YoY, Core)	1.8% 12/31/17	2.2% 12/31/16
Expected Inflation (5yr-5yr forward)	2.1% 12/31/17	2.1% 12/31/16
Fed Funds Target Range	1.25 – 1.50% 12/31/17	0.50 – 0.75% 12/31/16
10 Year Rate	2.4% 12/31/17	2.4% 12/31/16
U-3 Unemployment	4.1% 12/31/17	4.7% 12/31/16
U-6 Unemployment	8.1% 12/31/17	9.1% 12/31/16

International economics summary

- Economic growth advanced in the third quarter across developed and emerging markets. The United States grew at 2.3% YoY, the Eurozone improved to 2.6%, and overall growth in the BRICS nations accelerated to 5.6%. Central bank policy is still broadly accommodative, which is supportive of continued progress.
- Expectations for global GDP growth for the next two years has been revised upward in the past six months, according to the consensus estimate from Bloomberg. The upward revision to global growth forecasts were driven by the Eurozone and emerging markets.
- A pickup in lending and investment, strong external demand, and accommodative monetary policy has helped fuel an impressive economic recovery in the Eurozone. GDP grew 2.6% in Q3 from the previous year and the unemployment rate fell to 8.8%, the lowest level in nine years.
- PMIs across major markets were all above 50, indicating further expansion in the manufacturing sector.
- There are still concerns of a hard landing in China because the central bank has been tightening financial conditions on the short-end of the yield curve to reign in excessive leverage. Thus far, this process has been successful with economic growth slowing only moderately.
- Low inflation in developed economies has persisted, contributing to slower monetary tightening as central banks have been reluctant to raise rates too quickly.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	2.3% 9/30/17	2.1% 12/31/17	4.1% 12/31/17
Western Europe	2.5% 9/30/17	1.6% 12/31/17	7.4% 12/31/17
Japan	2.1% 9/30/17	0.6% 11/30/17	2.7% 11/30/17
BRICS Nations	5.6% 9/30/17	2.0% 12/31/17	5.7% 9/30/17
Brazil	1.4% 9/30/17	3.0% 12/31/17	12.1% 12/31/17
Russia	1.8% 9/30/17	2.5% 12/31/17	5.1% 11/30/17
India	5.3% 9/30/17	4.9% 11/30/17	8.0% 12/31/16
China	6.8% 9/30/17	1.8% 12/31/17	4.0% 9/30/17

Equity environment

- We maintain an overweight position to equities with a preference for emerging markets. Equity markets delivered strong returns over the quarter and were supported by robust earnings growth. Emerging markets provided outsized gains as is often the case in periods of strong economic growth.
- U.S. corporate earnings are expected to increase by 13.1% YoY in 2018 according to Factset. Expectations improved by a net 2% following the Tax Cuts & Jobs Act, which lowered the corporate tax rate from 35% to 21%, effective January 1st, 2018. Energy and Financial sectors are expected to lead in earnings with growth of 47% and 25%, respectively.
- The way businesses spend tax savings may have significant positive effects on wages, capital investment, and equity returns.

We will be monitoring this activity throughout the year.

- Equity volatility has stayed extraordinarily low. U.S. market volatility over the past year was 3.9% (S&P 500), followed by International at 4.2% (MSCI EAFE) and emerging markets at 6.5% (MSCI Emerging Markets). Low equity volatility has historically indicated less risk of an equity downside event.
- Currency movement contributed to volatility and uncertainty in international assets for investors with unhedged exposure. Recently, the U.S. dollar has weakened, creating a tailwind for unhedged performance.

	QTD TOTAL RETURN		YTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)	(unhedged)	(hedged)
US Large Cap (Russell 1000)	6.6%		21.7%		21.7%	
US Small Cap (Russell 2000)	3.3%		14.6%		14.6%	
US Large Value (Russell 1000 Value)	5.3%		13.7%		13.7%	
US Large Growth (Russell 1000 Growth)	7.9%		30.2%		30.2%	
International Large (MSCI EAFE)	4.3%	4.0%	25.7%	16.8%	25.7%	16.8%
Eurozone (Euro Stoxx 50)	(0.4%)	(1.8%)	25.3%	11.1%	25.3%	11.1%
U.K. (FTSE 100)	6.0%	5.3%	22.6%	12.9%	22.6%	12.9%
Japan (NIKKEI 225)	12.0%	12.3%	25.7%	21.9%	25.7%	21.9%
Emerging Markets (MSCI Emerging Markets)	7.3%	5.3%	37.3%	28.6%	37.3%	28.6%

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 12/31/17

Domestic equity

U.S. equities produced gains over the quarter (S&P 500 +6.6%), adding to record highs. Over the past year, U.S. equity performance (S&P 500 +21.8%) has lagged international developed equities (MSCI EAFE +25.0%) and emerging markets (MSCI Emerging Markets +37.3%). Performance of each equity market is in line with the degree of earnings growth – emerging markets have produced the strongest year-over-year growth and the U.S. has produced the weakest earnings growth. However, earnings growth in the U.S. has still been strong relative to history.

U.S. corporate earnings are expected to increase by 13.1% YoY in 2018, according to Factset. Forecasts were revised upwards by a net 2% following the passing of tax cuts. Energy and Financial sectors are expected to lead in earnings with growth of 47% and 25%, respectively. The way businesses spend additional tax savings may have significant positive effects on wages, capital investment, and equity returns. We will be monitoring the situation throughout the year.

We maintain a neutral weight to U.S. equities

U.S. EQUITIES



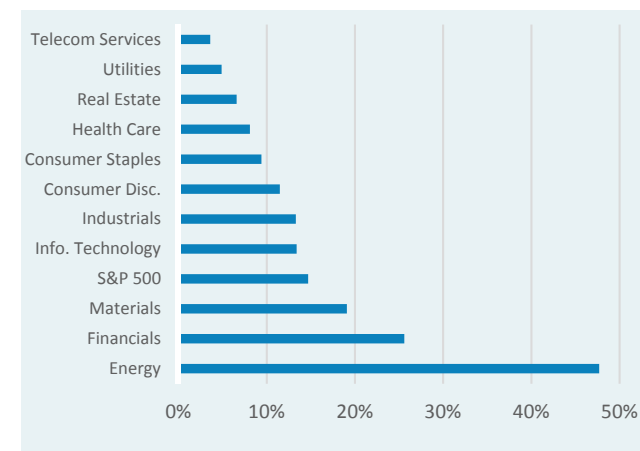
Source: Russell Investments, as of 12/31/17

EARNINGS GROWTH



Source: MSCI, as of 12/31/17, YoY growth in forward earnings

2018 S&P 500 EARNINGS EXPECTATIONS



Source: FactSet, as of 1/12/18

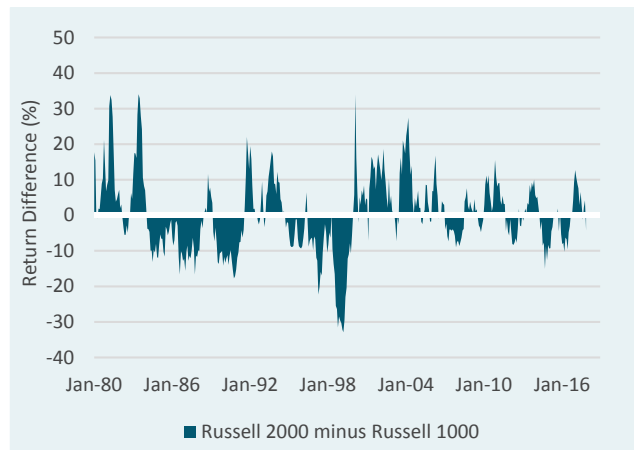
Domestic equity size and style

Large cap equities (Russell 1000 +6.6%) continued to outperform small cap equities (Russell 2000 +3.3%) during the quarter. Small cap stocks are very expensive relative to history based on traditional measures. It appears that a greater number of companies in the small cap universe with low or negative earnings has contributed to rising price-to-earnings multiples of the index.

Value equities underperformed growth equities over the quarter and the past year – caused by extremely positive

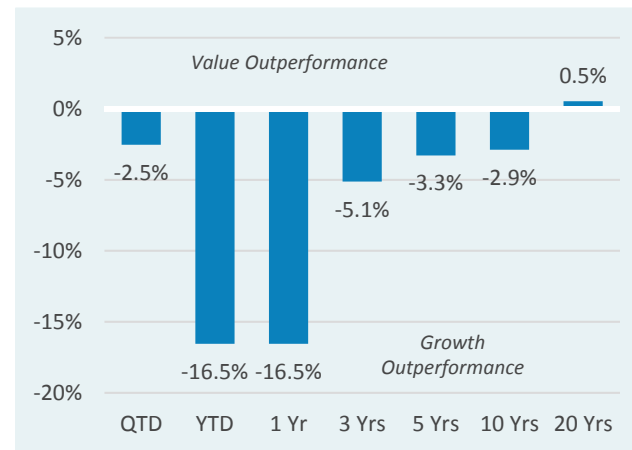
technology sector performance (growth stocks are highly concentrated in the tech sector). Value has now underperformed on a 1-, 3-, 5-, and 10-year basis. Value stocks have underperformed over a 10-year period only twice in the past 100 years – during the great depression (1937) and during the dotcom bubble (1999). Both of these occasions were followed by an impressive bounce back in value performance.

SMALL CAP VS LARGE CAP (YOY)



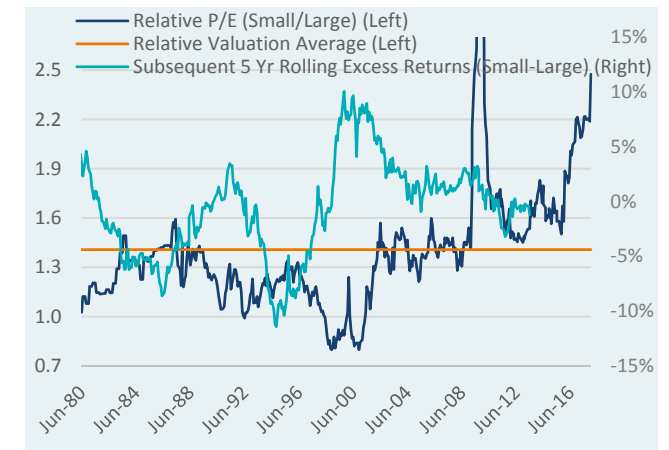
Source: Russell Investments, as of 12/31/17

U.S. VALUE VS GROWTH RELATIVE PERFORMANCE



Source: Morningstar, as of 12/31/17

U.S. LARGE VS. SMALL RELATIVE VALUATIONS



Source: Russell, Bloomberg, as of 12/31/17

International developed equity

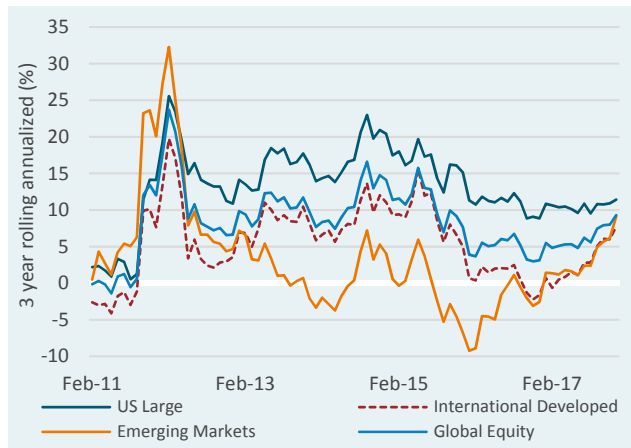
International equities lagged U.S. equities during the fourth quarter as U.S. tax reform contributed to a strong domestic rally. The MSCI EAFE Index returned 4.3% (+4.0% hedged) while the S&P 500 returned 6.6%. Emerging markets continued to outperform (MSCI EM +7.4% unhedged).

Japan outperformed among developed markets, which is particularly notable when considering the pessimism baked into Japan's equity valuations. Japan generated a

12.0% return in the fourth quarter and a 25.7% return in 2017 (Nikkei 225 unhedged). Recent equity gains were fundamentally supported by earnings growth.

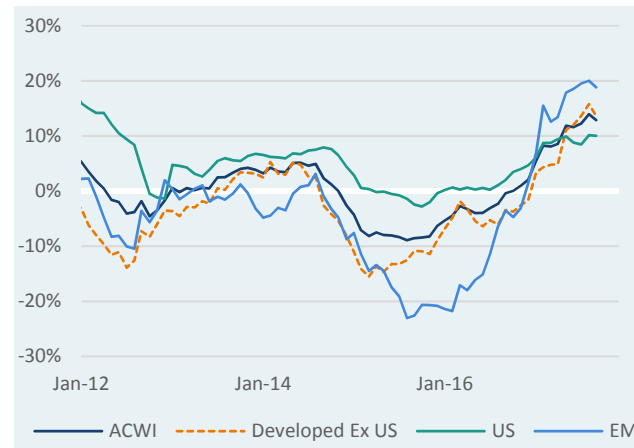
Currency effects added a positive 0.3% to the unhedged MSCI EAFE in Q4 (+8.9% year-to-date), as the U.S. dollar weakened slightly against a trade weighted basket of currencies.

EQUITY PERFORMANCE (3YR ROLLING)



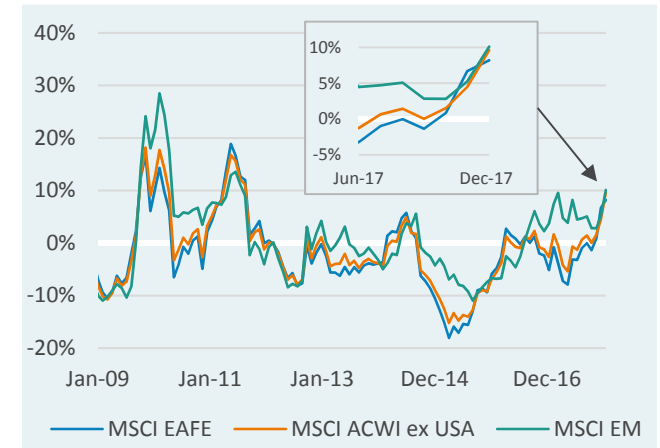
Source: Bloomberg, as of 12/31/17

EARNINGS GROWTH



Source: MSCI, as of 12/31/17 – YoY growth in forward earnings

EFFECT OF CURRENCY (1 YEAR ROLLING)



Source: MSCI, as of 12/31/17

Emerging market equity

We maintain an overweight to emerging market equities. These markets have led the way in economic growth, earnings, and equity performance. Emerging market equities delivered exceptional returns in 2017 (MSCI Emerging Markets +37.3%) relative to developed markets (MSCI ACWI +24.2%) and during the fourth quarter (7.4% vs. 4.2%).

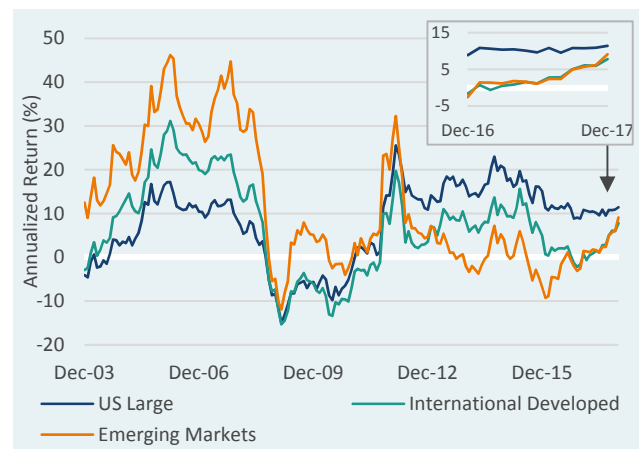
Emerging markets have lagged the U.S. significantly since the global financial crisis, prior to the recent rotation. Emerging market currencies remain depressed relative to

history, and a reversal could provide additional tailwinds to recent outperformance.

Equity multiples have risen modestly, supported by a brighter earnings outlook. As these economies evolve, it has become more difficult to refer to emerging markets as a distinct category. Different levels of economic progress, capital market development, and valuations can be witnessed across emerging market indices. Active management is typically preferred in this asset class.

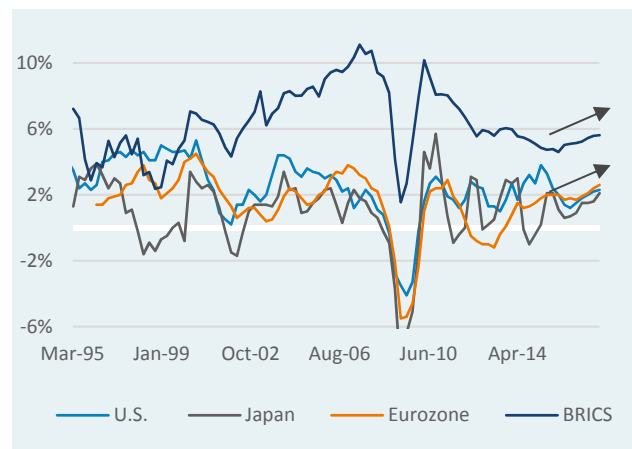
Coordinated global growth has helped propel emerging market equities

EQUITY PERFORMANCE (3YR ROLLING)



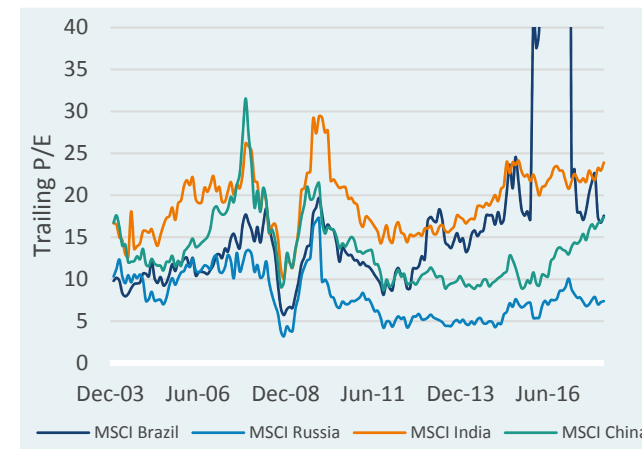
Source: Standard & Poor's, MSCI, as of 12/31/17

ECONOMIC MOMENTUM



Source: Bloomberg, as of 9/30/17

BRIC VALUATIONS



Source: MSCI, as of 12/31/17

Interest rate environment

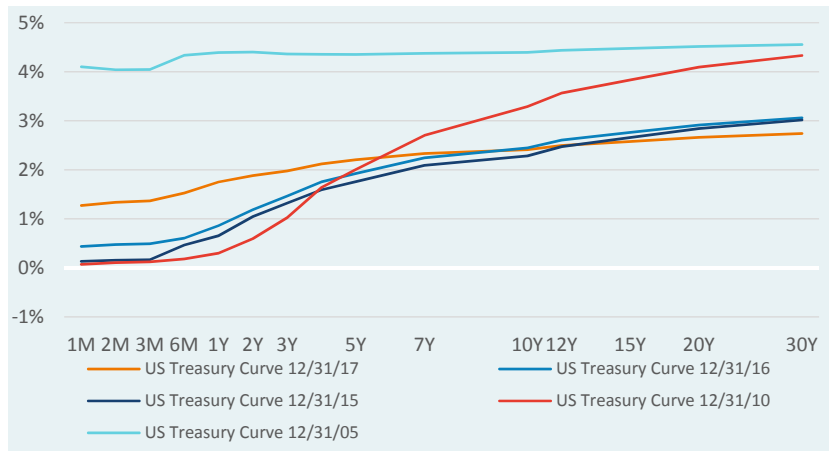
- On December 13th, the Federal Reserve raised the benchmark interest rate by 25 bps to a target range of 1.25%-1.50%. The Fed has communicated three rate hikes in 2018, while the market is pricing in only two.
- U.S. Treasury yields experienced significant increases on the short end of the curve, while longer term rates were modestly higher. The 2- and 10-year yields rose 40 bps and 8 bps, respectively. The increase in short-term rates was likely caused by the Fed raising overnight borrowing rates.
- The Fed began to reduce its balance sheet slowly. Approximately \$30 billion in Treasuries and mortgage-backed securities were trimmed from the balance sheet over the quarter, which did not have a material impact on the market.
- Minutes from the ECB meeting in December showed that officials discussed additional tapering of asset purchases in early 2018 due to stronger than expected economic growth.
- Markets generally expect minimal yield rises across developed markets – between 0% and 0.3% movement over the next year in U.S., U.K., German, and Japanese sovereign bonds. However, we remain watchful of bond market reactions to balance sheet unwinding, given the unprecedented size of central bank assets.
- We remain underweight to U.S. and developed sovereign bonds (currency hedged) primarily due to low yields. It is important to keep in mind the diversification benefits that fixed income provides to the portfolio, despite near record prices.

Area	Short Term (3M)	10 Year
United States	1.38%	2.41%
Germany	(0.80%)	0.42%
France	(0.78%)	0.78%
Spain	(0.58%)	1.56%
Italy	(0.63%)	2.00%
Greece	1.40%	4.10%
U.K.	0.36%	1.19%
Japan	(0.15%)	0.04%
Australia	1.74%	2.63%
China	3.95%	3.90%
Brazil	6.77%	10.25%
Russia	6.55%	7.42%

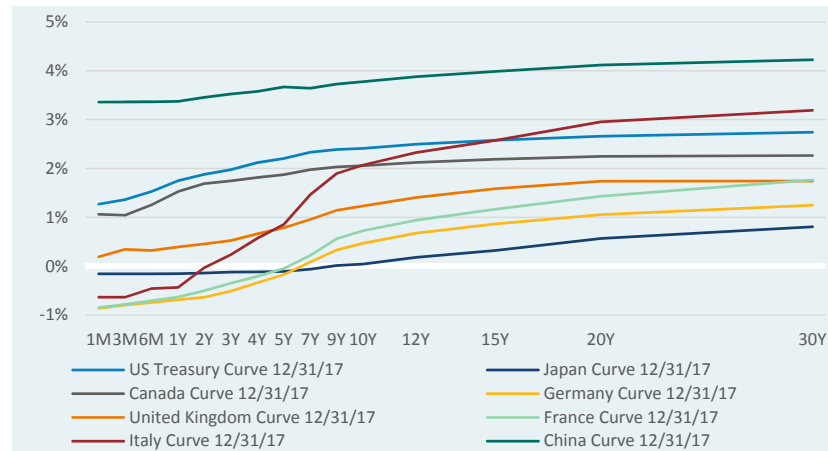
Source: Bloomberg, as of 12/31/17

Yield environment

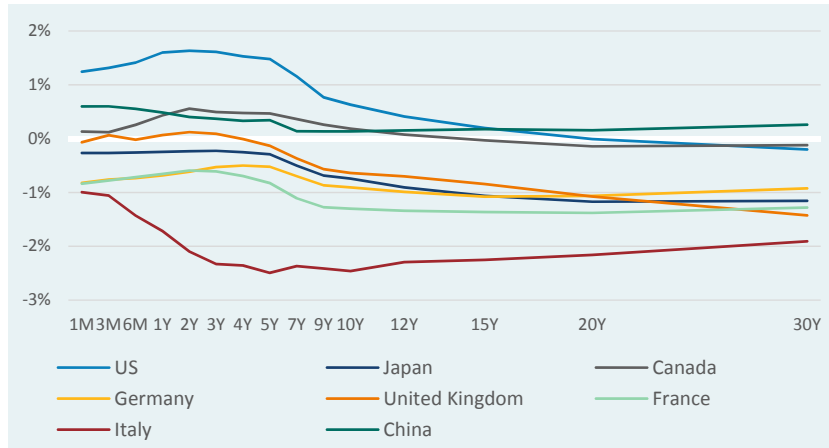
U.S. YIELD CURVE



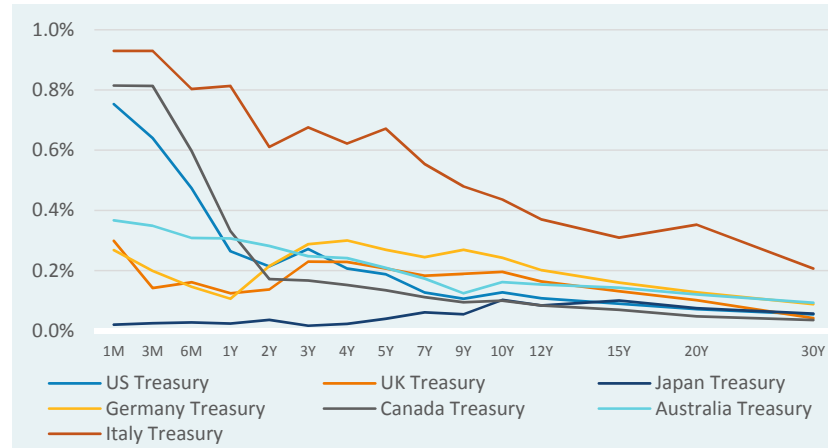
GLOBAL GOVERNMENT YIELD CURVES



YIELD CURVE CHANGES OVER LAST FIVE YEARS



IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 12/31/17

Currency

The U.S. dollar was little changed in the fourth quarter, but finished the year down 7%. Investors with unhedged international asset exposure have seen large disparities in performance as currency movement continued to contribute to volatility and uncertainty.

Recent strengthening of developed and developing economies relative to the U.S. has likely contributed to U.S. dollar weakness. The U.S. Federal Reserve is engaged in monetary tightening, which implies a stronger dollar on a standalone basis. However, U.S. growth expectations

have shifted relative to international economies which has influenced exchange rates and contributed to recent U.S. dollar movement. Fluctuations in relative growth expectations implies changes in expected inflation and interest rate levels, which directly impacts the foreign exchange market.

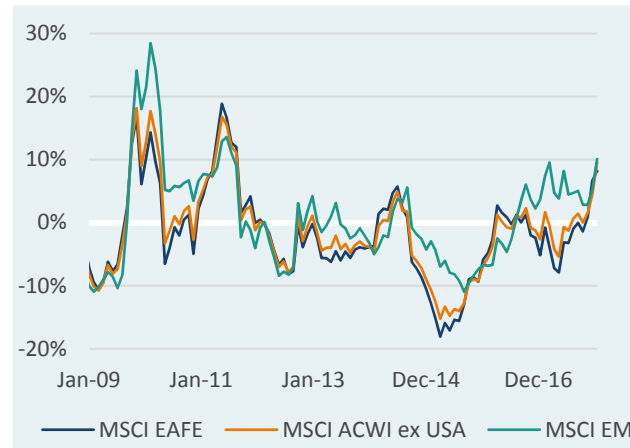
Forecasting currency movement over short periods of time can be extremely difficult. Hedging currency risk is an appropriate method for mitigating currency volatility and uncertainty.

U.S. DOLLAR TRADE WEIGHTED INDEX



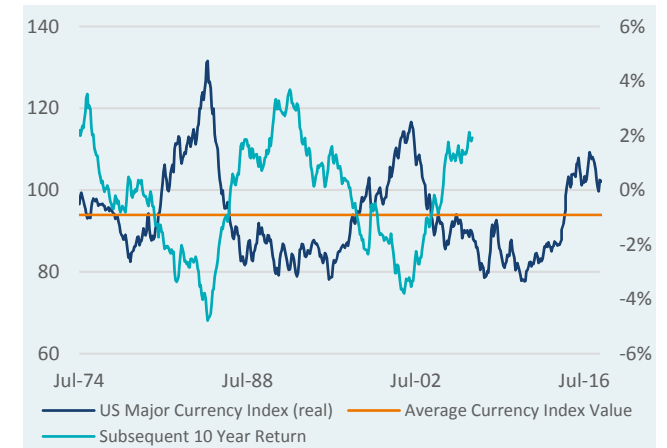
Source: Federal Reserve, as of 12/27/17

EFFECT OF CURRENCY (1-YEAR ROLLING)



Source: MPI, as of 12/31/17

U.S. DOLLAR MAJOR CURRENCY INDEX



Source: Federal Reserve, as of 12/31/17

Total Fund
Performance Summary (Gross of Fees)

Period Ending: December 31, 2017

	Market Value (\$)	3 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
Total Fund - Gross *	811,255,369	4.0	21	16.7	26	8.1	23	9.3	37	8.5	41	5.5	69	8.4	Dec-94
<i>Policy Index¹</i>		3.5	55	16.4	32	8.3	15	9.4	36	8.9	19	6.1	50	6.1	Dec-94
<i>InvestorForce Public DB \$250mm-\$1B Gross Median</i>		3.5		15.8		7.5		8.9		8.3		6.0		8.4	Dec-94
Total Fund w/o Alternatives - Gross	615,522,337	4.3	10	19.1	2	8.4	12	9.6	27	8.5	40	--	--	--	Dec-94
<i>Policy Index w/o AI¹</i>		4.1	20	17.7	7	7.9	27	8.7	59	--	--	--	--	--	Dec-94
<i>InvestorForce Public DB \$250mm-\$1B Gross Median</i>		3.5		15.8		7.5		8.9		8.3		6.0		8.4	Dec-94
US Equity - Gross	241,967,873	6.4	28	22.0	25	12.3	7	17.0	4	13.8	13	8.9	25	10.2	Dec-94
<i>80% R1000/ 20% R2000¹</i>		5.9	69	20.3	64	11.0	47	15.4	43	13.4	34	8.5	52	10.1	Dec-94
<i>InvestorForce All DB US Eq Gross Median</i>		6.2		20.8		11.0		15.3		13.1		8.6		10.1	Dec-94
Mellon Dynamic US Equity - Gross	79,235,054	8.0	21	28.5	4	14.0	4	19.8	1	--	--	--	--	19.8	Dec-12
<i>S&P 500</i>		6.6	57	21.8	53	11.4	36	15.8	45	13.8	47	8.5	66	15.8	Dec-12
<i>eV US Large Cap Core Equity Gross Median</i>		6.8		22.1		10.9		15.6		13.6		8.9		15.6	Dec-12
Mellon Large Cap - Gross	123,231,592	6.6	55	21.7	50	--	--	--	--	--	--	--	--	18.6	Mar-16
<i>Russell 1000</i>		6.6	54	21.7	50	11.2	41	15.7	45	13.7	45	8.6	58	18.6	Mar-16
<i>eV US Large Cap Equity Gross Median</i>		6.7		21.6		10.8		15.5		13.5		8.8		18.5	Mar-16
DFA Small Cap - Gross	20,259,962	3.8	57	12.3	67	11.0	47	--	--	--	--	--	--	10.1	Jun-14
<i>Russell 2000</i>		3.3	68	14.6	53	10.0	65	14.1	69	11.6	75	8.7	76	9.0	Jun-14
<i>eV US Small Cap Equity Gross Median</i>		4.0		15.1		10.8		15.2		12.9		10.0		9.7	Jun-14
PanAgora - Gross	19,241,266	2.7	78	11.7	70	9.2	75	--	--	--	--	--	--	11.4	Sep-13
<i>Russell 2000</i>		3.3	68	14.6	53	10.0	65	14.1	69	11.6	75	8.7	76	10.3	Sep-13
<i>eV US Small Cap Equity Gross Median</i>		4.0		15.1		10.8		15.2		12.9		10.0		11.2	Sep-13

* Managers are ranked against the eVestment Alliance (eA) style universes. Asset class composites are ranked against the InvestorForce universes.

** Since inception returns are based on the first full quarter of performance.

*** Since inception date denotes last day of the month.

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

¹ See Benchmark History.

Total Fund
Performance Summary (Gross of Fees)

Period Ending: December 31, 2017

	Market Value (\$)	3 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
International Equity - Gross	212,667,287	4.6	62	29.5	35	8.3	69	7.5	63	6.2	48	3.4	30	6.0	Dec-98
<i>International Equity Custom¹</i>		5.3	30	29.2	40	8.7	53	7.9	51	6.1	51	2.2	67	4.8	Dec-98
<i>InvestorForce All DB ex-US Eq Gross Median</i>		4.8		28.5		8.9		7.9		6.2		2.7		5.9	Dec-98
Copper Rock - Gross	31,625,557	5.8	60	32.6	72	10.7	99	--	--	--	--	--	--	10.0	Sep-13
<i>MSCI World ex US Small Cap GD</i>		5.9	55	31.5	81	13.4	81	11.8	88	8.2	94	--	--	9.3	Sep-13
<i>eV EAFE Small Cap Equity Gross Median</i>		6.0		35.1		15.2		14.2		10.9		6.8		11.3	Sep-13
EARNEST Partners - Gross²	121,863														
Mellon International - Gross	118,240,698	4.5	46	25.7	62	--	--	--	--	--	--	--	--	16.8	Mar-16
<i>MSCI EAFE Gross</i>		4.3	53	25.6	63	8.3	70	8.4	73	6.5	76	2.4	80	16.8	Mar-16
<i>eV All EAFE Equity Gross Median</i>		4.3		27.0		9.5		9.4		7.7		3.7		17.3	Mar-16
Wells Capital - Gross	62,679,169	4.2	96	37.0	57	11.1	37	5.6	59	--	--	--	--	5.4	Mar-12
<i>MSCI Emerging Markets Gross</i>		7.5	38	37.8	49	9.5	62	4.7	76	2.9	77	2.0	81	4.8	Mar-12
<i>eV Emg Mkts Equity Gross Median</i>		7.1		37.6		10.2		6.0		4.3		3.2		6.2	Mar-12
US Fixed Income - Gross	160,887,177	0.6	54	3.9	68	3.2	51	3.0	52	4.3	49	3.7	83	5.6	Dec-94
<i>US Fixed Custom¹</i>		0.6	54	3.7	72	3.0	57	2.5	67	3.5	74	4.2	72	5.8	Dec-94
<i>InvestorForce All DB US Fix Inc Gross Median</i>		0.6		4.7		3.3		3.0		4.3		5.0		6.2	Dec-94
Barrow Hanley - Gross	124,714,270	0.4	75	3.7	71	2.5	64	2.2	76	3.6	62	--	--	3.9	Mar-10
<i>BBgBarc Aggregate</i>		0.4	76	3.5	79	2.2	90	2.0	94	3.3	84	--	--	3.6	Mar-10
<i>eV US Core Fixed Inc Gross Median</i>		0.5		4.0		2.7		2.5		3.8		4.6		4.0	Mar-10
Guggenheim Loan - Gross	36,172,907	1.1	68	3.6	90	4.5	69	--	--	--	--	--	--	3.8	Aug-14
<i>Credit Suisse Leveraged Loans</i>		1.2	62	4.2	63	4.5	72	4.3	61	4.7	68	4.6	88	3.8	Aug-14
<i>eV Float-Rate Bank Loan Gross Median</i>		1.2		4.4		4.8		4.5		5.0		5.3		4.4	Aug-14

² Liquidating as of 9/14/2016.

Total Fund
Performance Summary (Gross of Fees)

Period Ending: December 31, 2017

	Market Value (\$)	3 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
Hedge Fund - Net	36,291,389	1.2	70	10.9	12	3.6	39	--	--	--	--	--	--	4.0	Jun-14
<i>Hedge Fund Custom¹</i>		2.0	44	7.2	43	3.6	40	--	--	--	--	--	--	3.4	Jun-14
<i>InvestorForce All DB Hedge Funds Gross Median</i>		1.7		6.6		2.9		4.8		4.2		2.5		2.6	Jun-14
OZ Domestic II - Net	17,131,738	1.4	56	13.0	30	5.6	42	--	--	--	--	--	--	5.9	Jun-14
<i>eV Alt All Multi-Strategy Median</i>		1.9		7.5		4.2		5.5		5.1		5.7		4.2	Jun-14
Graham Absolute Return - Net ³	2,969,238	-1.4	--	--	--	--	--	--	--	--	--	--	--	-1.0	Aug-17
Wellington-Archipelago - Net ³	3,050,183	0.5	--	--	--	--	--	--	--	--	--	--	--	1.7	Aug-17
KLS Diversified - Net ⁴	3,018,914	--	--	--	--	--	--	--	--	--	--	--	--	0.3	Oct-17
Winton - Net ⁴	3,077,761	--	--	--	--	--	--	--	--	--	--	--	--	2.6	Oct-17
Marshall Wace Eureka - Net ⁵	3,020,882	--	--	--	--	--	--	--	--	--	--	--	--	0.7	Nov-17
Silver Point Capital - Net ⁵	4,022,673	--	--	--	--	--	--	--	--	--	--	--	--	0.6	Nov-17
<i>HFRI Fund of Funds Composite Index</i>		2.0	--	7.7	--	2.6	--	4.0	--	2.7	--	1.1	--	0.9	Nov-17
Private Equity - Net⁺	35,553,066	6.6	4	12.2	57	8.3	68	8.4	80	9.4	65	6.9	59	7.4	Jun-05
<i>Thomson Reuters Cambridge Private Equity Index¹</i>		0.0	94	16.1	27	12.0	31	18.5	5	17.3	2	12.5	1	13.2	Jun-05
<i>InvestorForce All DB Private Eq Net Median</i>		2.6		13.2		10.0		11.3		10.4		7.3		10.1	Jun-05
Adams Street - Net	8,326,785	4.7	--	12.7	--	11.5	--	13.2	--	13.5	--	7.7	--	6.3	Sep-05
Invesco IV - Net	2,135,939	1.9	--	12.3	--	10.1	--	9.0	--	10.9	--	9.0	--	9.1	Jun-05
Invesco VI - Net	5,539,203	6.0	--	15.8	--	15.1	--	--	--	--	--	--	--	11.6	Jun-13
Ocean Avenue II - Net	7,874,990	18.7	--	36.1	--	14.1	--	--	--	--	--	--	--	7.9	Jun-14
Pantheon I - Net	1,438,690	3.4	--	11.8	--	5.2	--	6.8	--	7.5	--	4.9	--	3.5	Dec-05
Pantheon II - Net	3,957,119	6.0	--	20.1	--	12.3	--	14.8	--	--	--	--	--	11.5	Dec-11
Pantheon Secondary - Net	1,433,961	1.8	--	7.1	--	2.1	--	1.7	--	2.8	--	1.3	--	3.3	Jun-07
Raven Asset Fund II - Net	4,846,380	-0.2	--	-17.0	--	-7.2	--	--	--	--	--	--	--	-6.5	Aug-14
<i>Thomson Reuters Cambridge Private Equity Index</i>		0.0	--	16.1	--	12.0	--	18.5	--	17.3	--	12.5	--	12.0	Aug-14

+ Private Equity Managers are valued at a quarter lag.

3. Funded on 8/31/2017

4. Funded on 10/31/2017

5. Funded on 11/29/2017

Total Fund
Performance Summary (Gross of Fees)

Period Ending: December 31, 2017

	Market Value (\$)	3 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
Real Assets - Net	107,837,128	2.8	--	9.0	--	8.0	--	8.1	--	8.8	--	--	--	--	Mar-99
<i>Real Asset Custom¹</i>		3.3	--	12.9	--	--	--	--	--	--	--	--	--	--	Mar-99
SSgA - Net⁶	32,446,812	3.8	--	--	--	--	--	--	--	--	--	--	--	7.5	Apr-17
<i>Real Asset Custom</i>		3.3	--	12.9	--	--	--	--	--	--	--	--	--	9.1	Apr-17
Real Estate - Net	56,771,019	1.7	70	6.9	66	7.4	86	7.7	93	--	--	--	--	--	Mar-99
<i>NCREIF ODCE net¹</i>		1.9	53	6.7	71	9.4	57	10.4	69	10.9	63	6.0	25	8.8	Mar-99
<i>InvestorForce All DB Real Estate Pub+Priv Gross Median</i>		1.9		7.6		9.7		11.1		11.5		4.8		9.4	Mar-99
Greenfield Gap VII - Net	11,405,924	0.9	--	14.7	--	12.9	--	--	--	--	--	--	--	12.9	Dec-14
Patron Capital V - Net	3,068,884	0.0	--	13.2	--	--	--	--	--	--	--	--	--	-0.1	Jan-16
<i>NCREIF CEVA 1Q Lag - NET</i>		3.0	--	10.2	--	13.4	--	--	--	--	--	--	--	12.2	Jan-16
UBS Trumbull Property - Net	42,264,772	2.1	--	4.5	--	7.4	--	8.4	--	9.0	--	4.0	--	7.4	Mar-99
Carlyle Realty VIII - Net ⁷	31,438	--	--	--	--	--	--	--	--	--	--	--	--	--	Dec-17
<i>NCREIF ODCE net</i>		1.9	--	6.7	--	9.4	--	10.9	--	11.6	--	6.9	--	--	Dec-17
Infrastructure - Net	13,028,049	6.2	--	21.1	--	6.4	--	--	--	--	--	--	--	6.4	Dec-14
<i>S&P Global Infrastructure¹</i>		1.9	--	20.1	--	10.4	--	--	--	--	--	--	--	10.4	Dec-14
KKR Global II - Net	8,588,150	0.0	--	21.4	--	10.7	--	--	--	--	--	--	--	10.7	Dec-14
North Haven Infrastructure II - Net	4,439,899	17.3	--	20.9	--	--	--	--	--	--	--	--	--	5.8	May-15
<i>S&P Global Infrastructure</i>		1.9	--	20.1	--	10.4	--	--	--	--	--	--	--	11.6	May-15
Natural Resources - Net	5,591,248	2.7	--	10.1	--	--	--	--	--	--	--	--	--	21.5	Sep-15
<i>S&P Global Natural Resources¹</i>		8.6	--	22.7	--	--	--	--	--	--	--	--	--	13.5	Sep-15
EnCap XI - Net ⁸	151,648	-31.0	--	--	--	--	--	--	--	--	--	--	--	-31.0	Jul-17
GSO Energy Opportunities - Net	2,961,959	5.8	--	13.0	--	--	--	--	--	--	--	--	--	22.6	Nov-15
Taurus Mining - Net	1,690,975	0.0	--	2.0	--	--	--	--	--	--	--	--	--	19.2	Sep-15
Taurus Mining Annex - Net ⁹	786,666	0.0	--	38.5	--	--	--	--	--	--	--	--	--	38.5	Jan-17
<i>S&P Global Natural Resources</i>		8.6	--	22.7	--	7.2	--	2.5	--	0.5	--	-0.4	--	17.4	Jan-17
Cash - Gross	10,542,804	0.3	--	1.1	--	0.7	--	0.7	--	0.7	--	4.1	--	4.2	Sep-03
Treasury Cash - Gross	5,508,645	0.3	--	--	--	--	--	--	--	--	--	--	--	--	Sep-11

6. Funded on 4/3/2017

7. Funded on 12/4/2017

8. Funded on 7/17/2017

9. Funded on 1/31/2017

Total Fund
Performance Summary (Net of Fees)

Period Ending: December 31, 2017

	Market Value (\$)	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)
Total Fund - Net	811,255,369	4.0	16.5	7.8	8.9	--	--
<i>Policy Index¹</i>		3.5	16.4	8.3	9.4	--	--
Total Fund w/o Alternatives - Net	615,522,337	4.2	18.8	8.1	9.3	9.0	--
<i>Policy Index w/o AI¹</i>		4.1	17.7	7.9	8.7	--	--
US Equity - Net	241,967,873	6.4	21.8	12.1	16.8	16.6	--
<i>80% R1000/ 20% R2000¹</i>		5.9	20.3	11.0	15.4	13.4	8.5
Mellon Dynamic US Equity - Net	79,235,054	8.0	28.3	13.8	19.5	--	--
<i>S&P 500</i>		6.6	21.8	11.4	15.8	13.8	8.5
Mellon Large Cap - Net	123,231,592	6.6	21.6	--	--	--	--
<i>Russell 1000</i>		6.6	21.7	11.2	15.7	13.7	8.6
DFA Small Cap - Net	20,259,962	3.7	12.0	10.7	--	--	--
<i>Russell 2000</i>		3.3	14.6	10.0	14.1	11.6	8.7
PanAgora - Net	19,241,266	2.5	10.8	8.5	--	--	--
<i>Russell 2000</i>		3.3	14.6	10.0	14.1	11.6	8.7
International Equity - Net	212,667,287	4.5	29.1	7.7	6.8	5.6	--
<i>International Equity Custom¹</i>		5.3	29.2	8.7	7.9	6.1	2.2
Copper Rock - Net	31,625,557	5.5	31.6	9.8	--	--	--
<i>MSCI World ex US Small Cap GD</i>		5.9	31.5	13.4	11.8	8.2	--
EARNEST Partners - Net ²	121,863						
Mellon International - Net	118,240,698	4.5	25.7	--	--	--	--
<i>MSCI EAFE Gross</i>		4.3	25.6	8.3	8.4	6.5	2.4
Wells Capital - Net	62,679,169	4.0	35.7	10.2	4.6	--	--
<i>MSCI Emerging Markets Gross</i>		7.5	37.8	9.5	4.7	2.9	2.0
US Fixed Income - Net	160,887,177	0.5	3.7	3.1	2.7	3.9	--
<i>US Fixed Custom¹</i>		0.6	3.7	3.0	2.5	3.5	4.2
Barrow Hanley - Net	124,714,270	0.3	3.4	2.3	2.0	2.9	--
<i>BBgBarc Aggregate</i>		0.4	3.5	2.2	2.0	3.3	--
Guggenheim Loan - Net	36,172,907	1.1	3.6	4.5	--	--	--
<i>Credit Suisse Leveraged Loans</i>		1.2	4.2	4.5	4.3	4.7	4.6

¹ See Benchmark History.

² Liquidating as of 9/14/2016.

Total Fund
Performance Summary (Net of Fees)

Period Ending: December 31, 2017

	Market Value (\$)	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)
Hedge Fund - Net	36,291,389	1.2	10.9	3.6	--	--	--
<i>Hedge Fund Custom¹</i>		2.0	7.2	3.6	--	--	--
OZ Domestic II - Net	17,131,738	1.4	13.0	5.6	--	--	--
Graham Absolute Return - Net ³	2,969,238	-1.4	--	--	--	--	--
Wellington-Archipelago - Net ³	3,050,183	0.5	--	--	--	--	--
KLS Diversified - Net ⁴	3,018,914	--	--	--	--	--	--
Winton - Net ⁴	3,077,761	--	--	--	--	--	--
Marshall Wace Eureka - Net ⁵	3,020,882	--	--	--	--	--	--
Silver Point Capital - Net ⁵	4,022,673	--	--	--	--	--	--
<i>HFRI Fund of Funds Composite Index</i>		2.0	7.7	2.6	4.0	2.7	1.1
Private Equity - Net +	35,553,066	6.6	12.2	8.3	8.4	9.4	6.9
<i>Thomson Reuters Cambridge Private Equity Index¹</i>		0.0	16.1	12.0	18.5	--	--
Adams Street - Net	8,326,785	4.7	12.7	11.5	13.2	13.5	7.7
Invesco IV - Net	2,135,939	1.9	12.3	10.1	9.0	--	--
Invesco VI - Net	5,539,203	6.0	15.8	15.1	--	--	--
Ocean Avenue II - Net	7,874,990	18.7	36.1	14.1	--	--	--
Pantheon I - Net	1,438,690	3.4	11.8	5.2	6.8	--	--
Pantheon II - Net	3,957,119	6.0	20.1	12.3	14.8	--	--
Pantheon Secondary - Net	1,433,961	1.8	7.1	2.1	1.7	--	--
Raven Asset Fund II - Net	4,846,380	-0.2	-17.0	-7.2	--	--	--
<i>Thomson Reuters Cambridge Private Equity Index</i>		0.0	16.1	12.0	18.5	--	--

+ Private Equity Managers are valued at a quarter lag.

3. Funded on 8/31/2017

4. Funded on 10/31/2017

5. Funded on 11/29/2017

Total Fund
Performance Summary (Net of Fees)

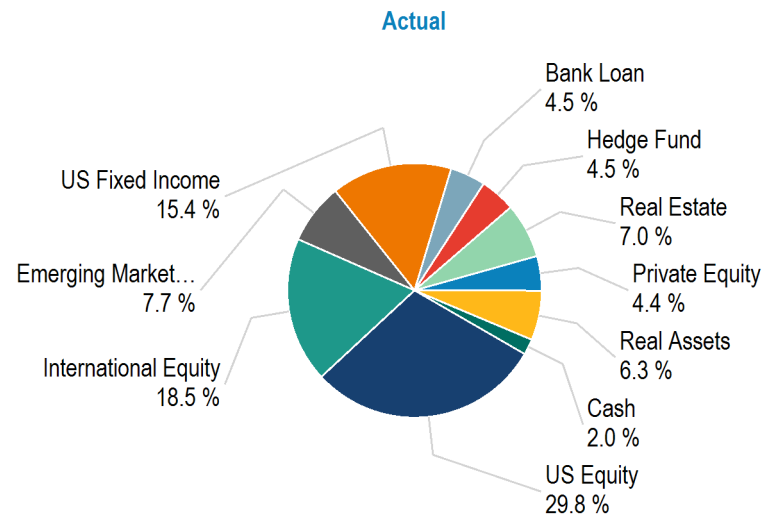
Period Ending: December 31, 2017

	Market Value (\$)	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)
Real Assets - Net	107,837,128	2.8	9.0	8.0	8.1	8.8	--
<i>Real Asset Custom¹</i>		3.3	12.9	--	--	--	--
SSgA - Net⁶	32,446,812	3.8	--	--	--	--	--
<i>Real Asset Custom</i>		3.3	12.9	--	--	--	--
Real Estate - Net	56,771,019	1.7	6.9	7.4	7.7	8.5	--
<i>NCREIF ODCE net¹</i>		1.9	6.7	9.4	10.4	11.1	--
Greenfield Gap VII - Net	11,405,924	0.9	14.7	12.9	--	--	--
Patron Capital V - Net	3,068,884	0.0	13.2	--	--	--	--
<i>NCREIF CEVA 1Q Lag - NET</i>		3.0	10.2	13.4	--	--	--
UBS Trumbull Property - Net	42,264,772	2.1	4.5	7.4	8.4	--	--
Carlyle Realty VIII - Net ⁷	31,438	--	--	--	--	--	--
<i>NCREIF ODCE net</i>		1.9	6.7	9.4	10.9	11.6	6.9
Infrastructure - Net	13,028,049	6.2	21.1	6.4	--	--	--
<i>S&P Global Infrastructure¹</i>		1.9	20.1	10.4	--	--	--
KKR Global II - Net	8,588,150	0.0	21.4	10.7	--	--	--
North Haven Infrastructure II - Net	4,439,899	17.3	20.9	--	--	--	--
<i>S&P Global Infrastructure</i>		1.9	20.1	10.4	--	--	--
Natural Resources - Net	5,591,248	2.7	10.1	--	--	--	--
<i>S&P Global Natural Resources¹</i>		8.6	22.7	--	--	--	--
EnCap XI - Net ⁸	151,648	-31.0	--	--	--	--	--
GSO Energy Opportunities - Net	2,961,959	5.8	13.0	--	--	--	--
Taurus Mining - Net	1,690,975	0.0	2.0	--	--	--	--
Taurus Mining Annex - Net ⁹	786,666	0.0	38.5	--	--	--	--
<i>S&P Global Natural Resources</i>		8.6	22.7	7.2	2.5	0.5	-0.4
Cash - Net	10,542,804	0.3	1.1	0.7	0.7	-5.8	--
Treasury Cash - Net	5,508,645	0.3	--	--	--	--	--

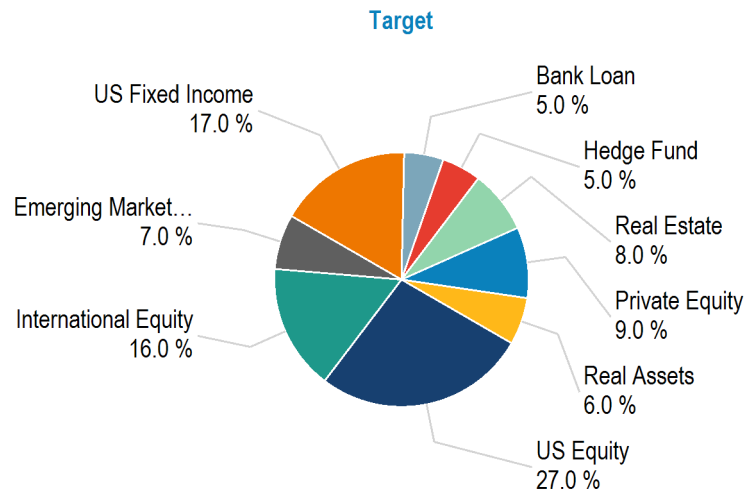
6. Funded on 4/3/2017
7. Funded on 12/4/2017
8. Funded on 7/17/2017
9. Funded on 1/31/2017

Total Fund Asset Allocation Analysis

Period Ending: December 31, 2017



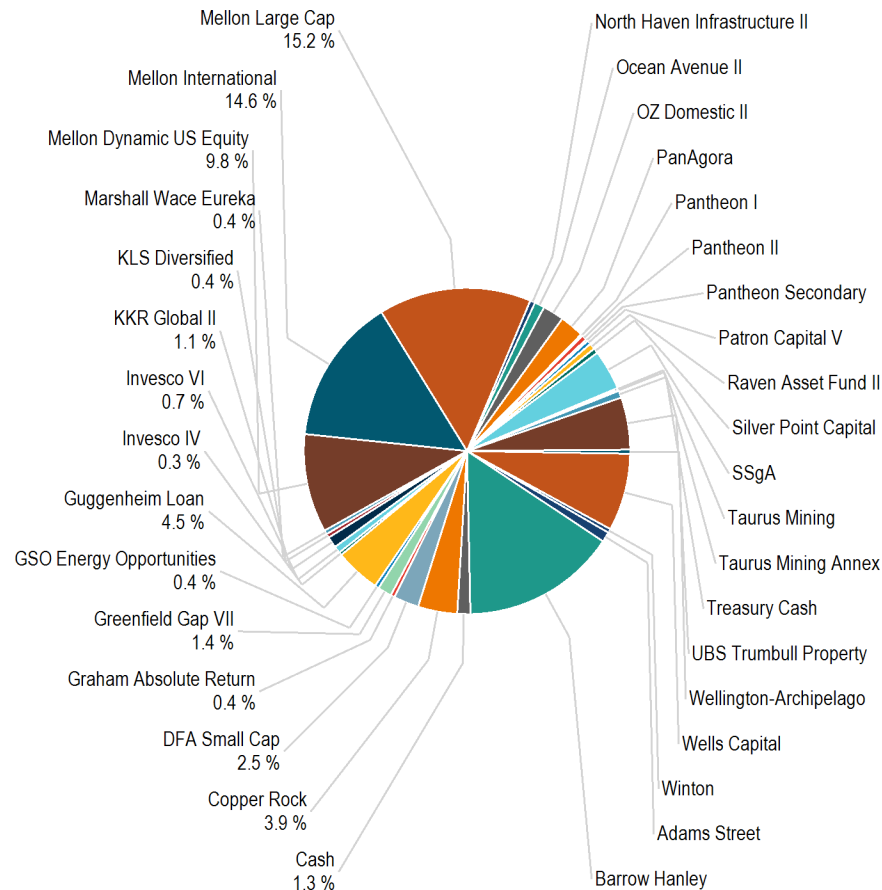
	Current	%
US Equity	\$241,967,873	29.8%
International Equity	\$149,988,118	18.5%
Emerging Market Equity	\$62,679,169	7.7%
US Fixed Income	\$124,714,270	15.4%
Bank Loan	\$36,172,907	4.5%
Hedge Fund	\$36,291,389	4.5%
Real Estate	\$56,771,019	7.0%
Private Equity	\$35,553,066	4.4%
Real Assets	\$51,066,109	6.3%
Cash	\$16,051,449	2.0%
Total	\$811,255,369	100.0%



	Current	Policy	Difference
US Equity	29.8%	27.0%	2.8%
International Equity	18.5%	16.0%	2.5%
Emerging Market Equity	7.7%	7.0%	0.7%
US Fixed Income	15.4%	17.0%	-1.6%
Bank Loan	4.5%	5.0%	-0.5%
Hedge Fund	4.5%	5.0%	-0.5%
Real Estate	7.0%	8.0%	-1.0%
Private Equity	4.4%	9.0%	-4.6%
Real Assets	6.3%	6.0%	0.3%
Cash	2.0%	--	2.0%
Total	100.0%	100.0%	

Total Fund Manager Allocation Analysis

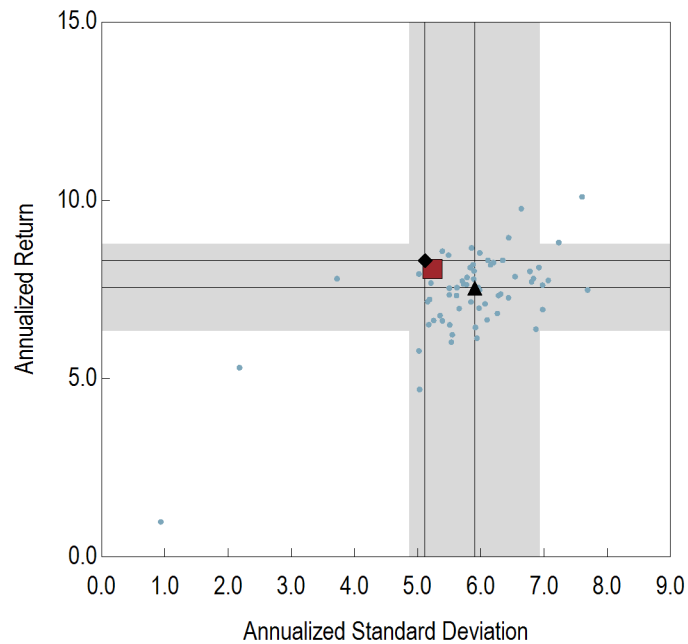
Period Ending: December 31, 2017



Adams Street	\$8,326,785	1.0%
Barrow Hanley	\$124,714,270	15.4%
Carlyle Realty VIII	\$31,438	0.0%
Cash	\$10,542,804	1.3%
Copper Rock	\$31,625,557	3.9%
DFA Small Cap	\$20,259,962	2.5%
EARNEST Partners	\$121,863	0.0%
EnCap XI	\$151,648	0.0%
Graham Absolute Return	\$2,969,238	0.4%
Greenfield Gap VII	\$11,405,924	1.4%
GSO Energy Opportunities	\$2,961,959	0.4%
Guggenheim Loan	\$36,172,907	4.5%
Invesco IV	\$2,135,939	0.3%
Invesco VI	\$5,539,203	0.7%
KKR Global II	\$8,588,150	1.1%
KLS Diversified	\$3,018,914	0.4%
Marshall Wace Eureka	\$3,020,882	0.4%
Mellon Dynamic US Equity	\$79,235,054	9.8%
Mellon International	\$118,240,698	14.6%
Mellon Large Cap	\$123,231,592	15.2%
North Haven Infrastructure II	\$4,439,899	0.5%
Ocean Avenue II	\$7,874,990	1.0%
OZ Domestic II	\$17,131,738	2.1%
PanAgora	\$19,241,266	2.4%
Pantheon I	\$1,438,690	0.2%
Pantheon II	\$3,957,119	0.5%
Pantheon Secondary	\$1,433,961	0.2%
Patron Capital V	\$3,068,884	0.4%
Raven Asset Fund II	\$4,846,380	0.6%
Silver Point Capital	\$4,022,673	0.5%
SSgA	\$32,446,812	4.0%
Taurus Mining	\$1,690,975	0.2%
Taurus Mining Annex	\$786,666	0.1%
Treasury Cash	\$5,508,645	0.7%
UBS Trumbull Property	\$42,264,772	5.2%
Wellington-Archipelago	\$3,050,183	0.4%
Wells Capital	\$62,679,169	7.7%
Winton	\$3,077,761	0.4%
Total	\$811,255,369	100.0%

Total Fund
Risk vs. Return (3 Years)

Period Ending: December 31, 2017

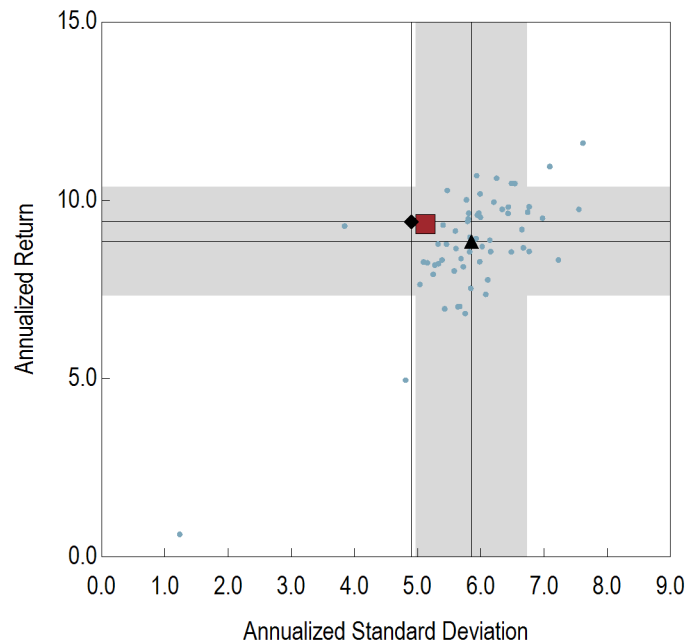


- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB \$250mm-\$1B Gross

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Total Fund	8.1%	23	5.2%	15	1.5	7
Policy Index	8.3%	15	5.1%	9	1.5	3
InvestorForce Public DB \$250mm-\$1B Gross Median	7.5%	--	5.9%	--	1.2	--

Total Fund
Risk vs. Return (5 Years)

Period Ending: December 31, 2017

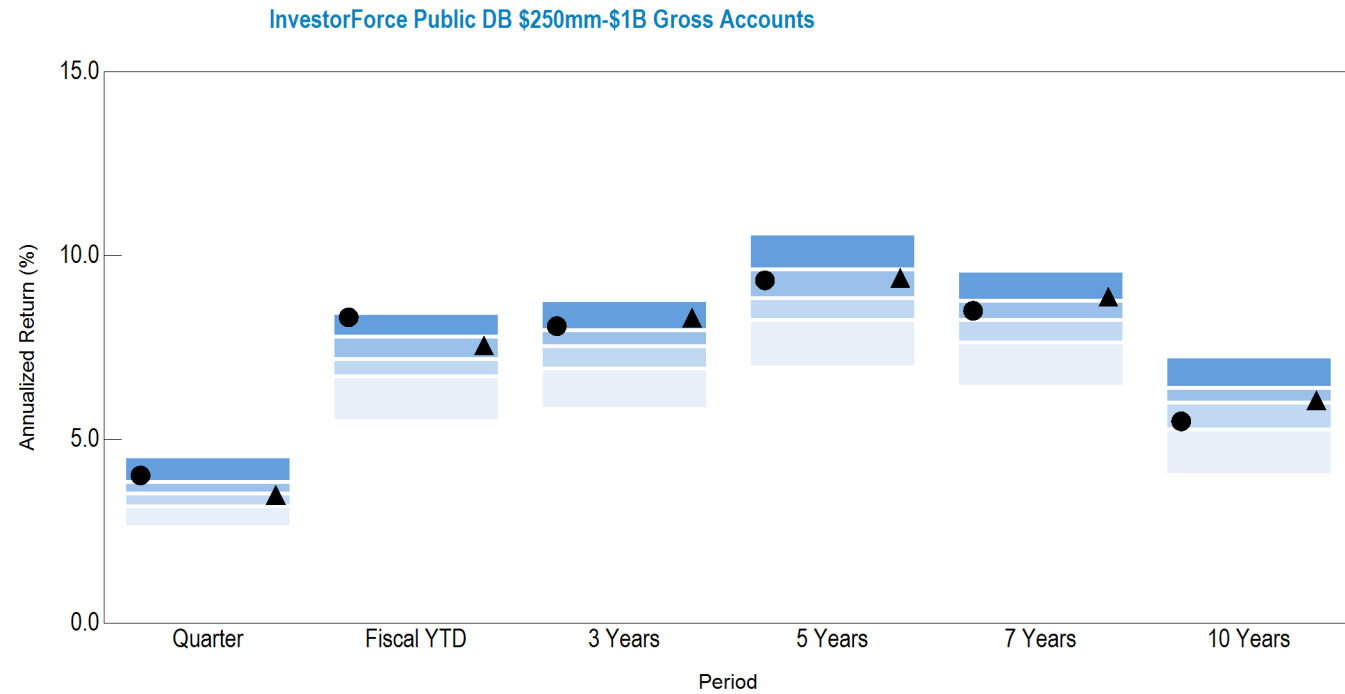


- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB \$250mm-\$1B Gross

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Total Fund	9.3%	37	5.1%	8	1.8	3
Policy Index	9.4%	36	4.9%	4	1.9	2
InvestorForce Public DB \$250mm-\$1B Gross Median	8.9%	--	5.9%	--	1.5	--

Total Fund
Peer Universe Comparison

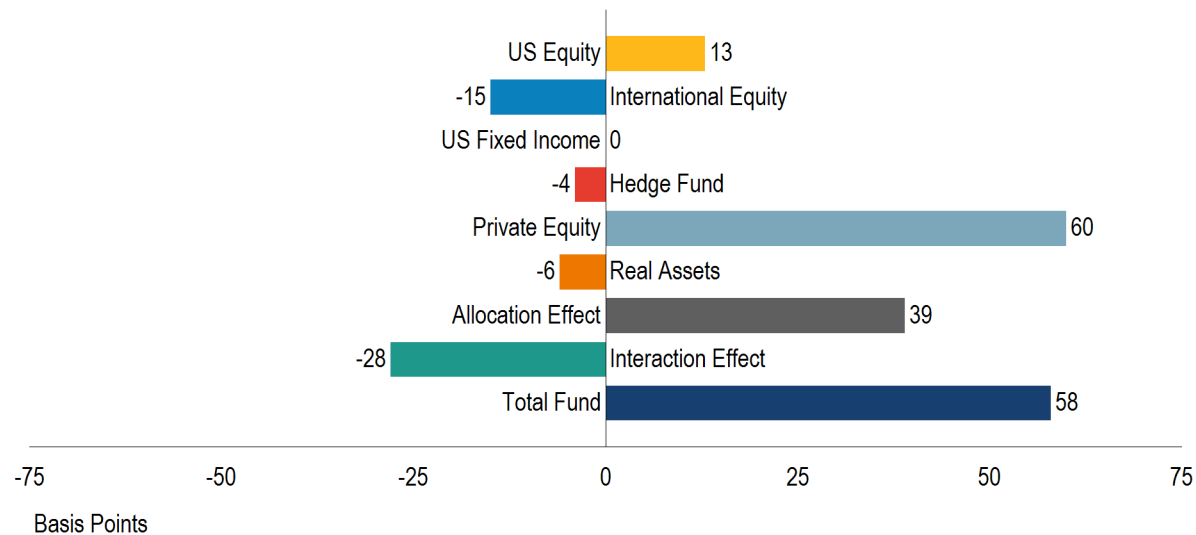
Period Ending: December 31, 2017



	Return (Rank)					
5th Percentile	4.5	8.4	8.8	10.6	9.6	7.2
25th Percentile	3.8	7.8	8.0	9.6	8.8	6.4
Median	3.5	7.2	7.5	8.9	8.3	6.0
75th Percentile	3.2	6.7	6.9	8.3	7.7	5.3
95th Percentile	2.6	5.5	5.8	7.0	6.5	4.1
# of Portfolios	67	67	66	64	61	57
● Total Fund	4.0 (21)	8.3 (7)	8.1 (23)	9.3 (37)	8.5 (41)	5.5 (69)
▲ Policy Index	3.5 (55)	7.6 (38)	8.3 (15)	9.4 (36)	8.9 (19)	6.1 (50)

Total Fund
Performance Attribution

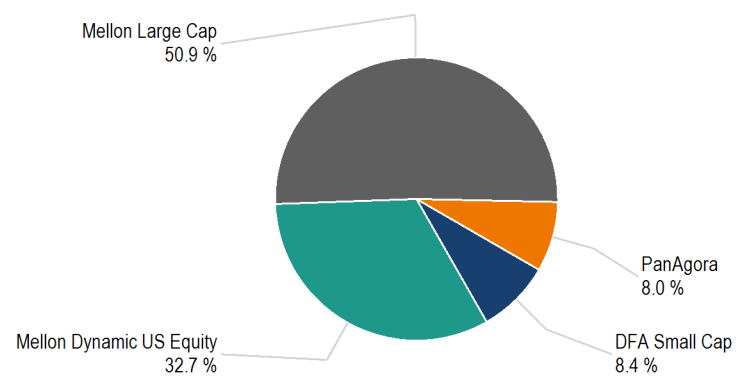
Period Ending: December 31, 2017



Attribution Summary							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
US Equity	6.45%	5.98%	0.47%	0.13%	0.11%	0.02%	0.26%
International Equity	4.60%	5.25%	-0.65%	-0.15%	0.06%	-0.02%	-0.11%
US Fixed Income	0.56%	0.57%	-0.01%	0.00%	0.03%	0.00%	0.03%
Hedge Fund	1.25%	1.98%	-0.73%	-0.04%	0.03%	0.01%	0.01%
Private Equity	6.62%	0.00%	6.62%	0.60%	0.15%	-0.29%	0.46%
Real Assets	2.84%	3.29%	-0.45%	-0.06%	0.00%	0.00%	-0.06%
Total	4.09%	3.51%	0.58%	0.47%	0.39%	-0.28%	0.58%

US Equity
Manager Allocation Analysis

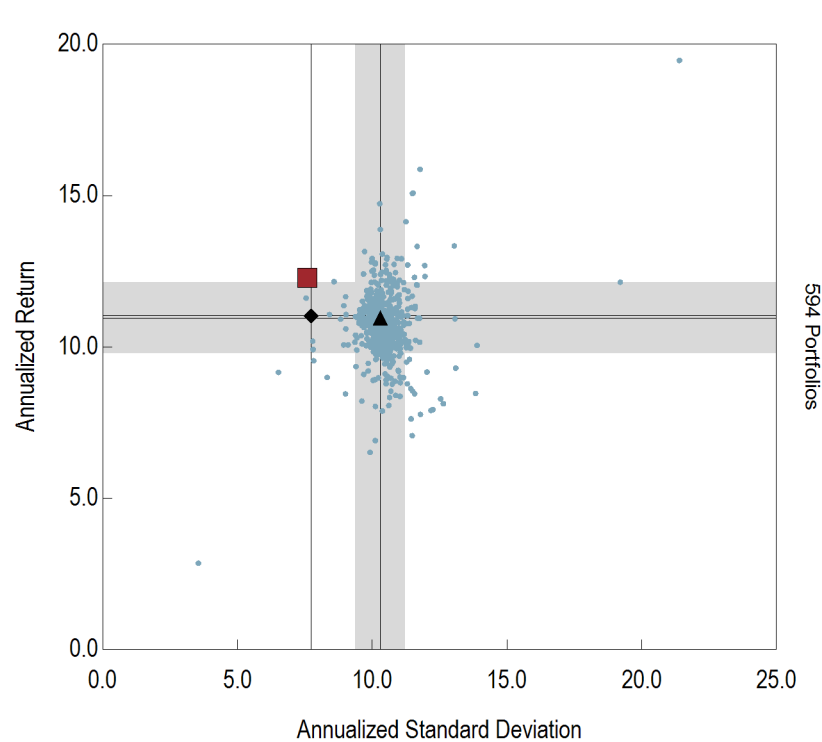
Period Ending: December 31, 2017



	Actual	Actual
DFA Small Cap	\$20,259,962	8.4%
Mellon Dynamic US Equity	\$79,235,054	32.7%
Mellon Large Cap	\$123,231,592	50.9%
PanAgora	\$19,241,266	8.0%
Total	\$241,967,873	100.0%

US Equity Risk vs. Return (3 Years)

Period Ending: December 31, 2017

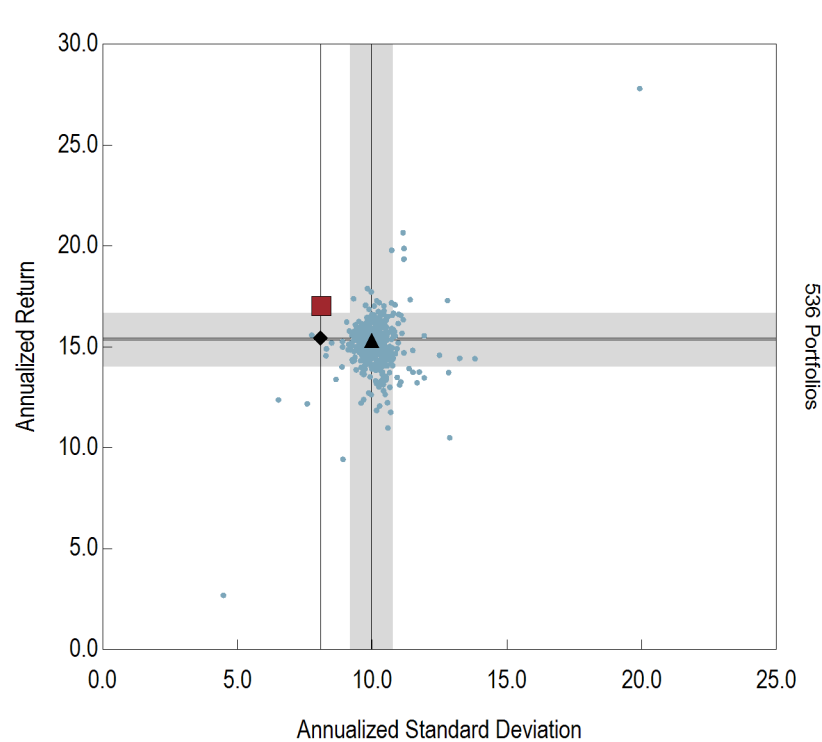


- US Equity
- ◆ 80% R1000/ 20% R2000
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce All DB US Eq Gross

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
US Equity	12.3%	7	7.6%	1	1.6	1
80% R1000/ 20% R2000	11.0%	47	7.7%	1	1.4	1
InvestorForce All DB US Eq Gross Median	11.0%	--	10.3%	--	1.0	--

US Equity Risk vs. Return (5 Years)

Period Ending: December 31, 2017

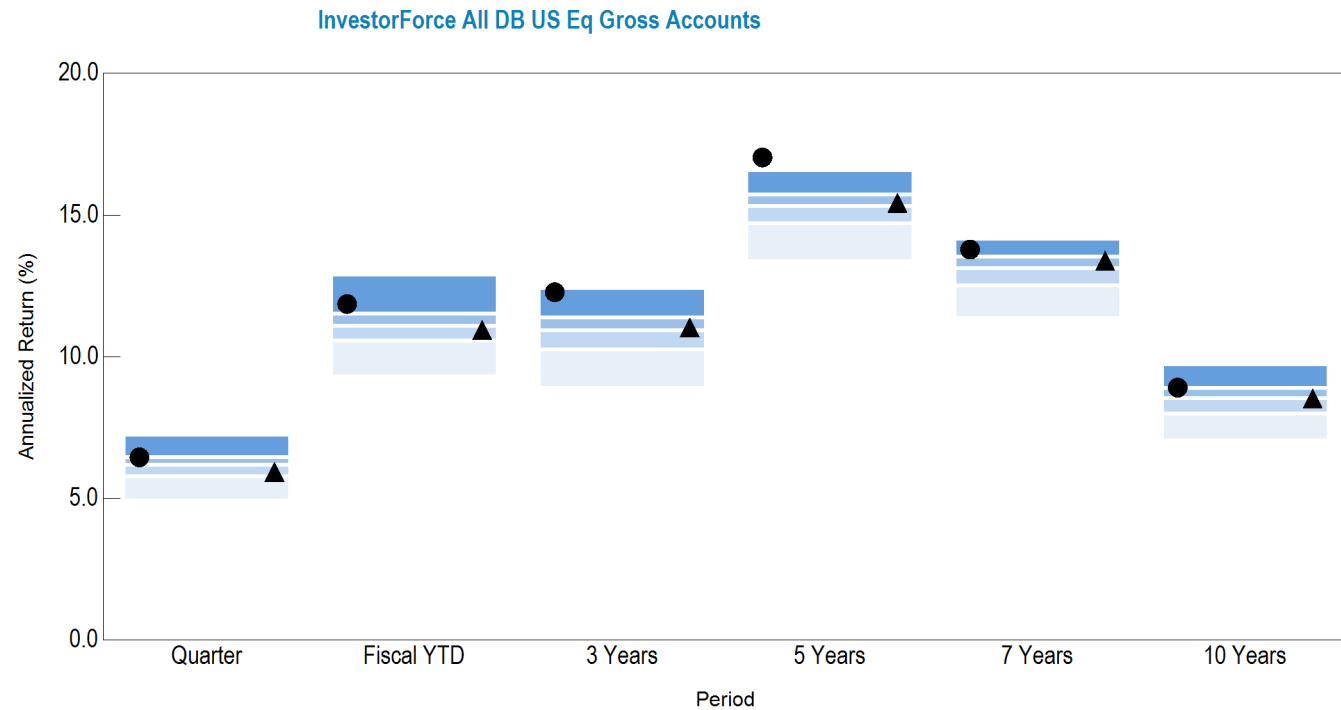


- US Equity
- ◆ 80% R1000/ 20% R2000
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce All DB US Eq Gross

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
US Equity	17.0%	4	8.1%	1	2.1	1
80% R1000/ 20% R2000	15.4%	43	8.1%	1	1.9	1
InvestorForce All DB US Eq Gross Median	15.3%	--	10.0%	--	1.5	--

US Equity Peer Universe Comparison

Period Ending: December 31, 2017



	Return (Rank)					
5th Percentile	7.2	12.9	12.4	16.6	14.2	9.7
25th Percentile	6.5	11.5	11.4	15.7	13.5	8.9
Median	6.2	11.1	11.0	15.3	13.1	8.6
75th Percentile	5.8	10.6	10.3	14.7	12.5	8.0
95th Percentile	4.9	9.3	8.9	13.4	11.4	7.1
# of Portfolios	649	648	594	536	457	354
● US Equity	6.4 (28)	11.9 (17)	12.3 (7)	17.0 (4)	13.8 (13)	8.9 (25)
▲ 80% R1000/ 20% R2000	5.9 (69)	10.9 (59)	11.0 (47)	15.4 (43)	13.4 (34)	8.5 (52)

US Equity Equity Only Summary Statistics

Period Ending: December 31, 2017

Characteristics

	Portfolio	Russell 3000
Number of Holdings	2,708	2,961
Weighted Avg. Market Cap. (\$B)	154.9	150.1
Median Market Cap. (\$B)	2.5	1.7
Price To Earnings	26.8	25.0
Price To Book	5.8	4.6
Price To Sales	3.8	3.6
Return on Equity (%)	22.6	17.5
Yield (%)	1.8	1.7
Beta (holdings; domestic)	1.1	1.1

Top Holdings

APPLE	3.3%
MICROSOFT	2.4%
AMAZON.COM	1.8%
FACEBOOK CLASS A	1.6%
BERKSHIRE HATHAWAY 'B'	1.4%
JOHNSON & JOHNSON	1.4%
JP MORGAN CHASE & CO.	1.4%
ALPHABET 'C'	1.4%
EXXON MOBIL	1.3%
BANK OF AMERICA	1.1%

Best Performers

	Return %
SIEBERT FINANCIAL (SIEB)	246.1%
VERSO 'A' (VRS)	245.2%
CATALYST BIOSCIENCES (CBIO)	169.6%
NEKTAR THERAPEUTICS (NKTR)	148.8%
SORRENTO THERAPEUTICS (SRNE)	123.5%
RESOLUTE FOREST PRODUCTS (RFP)	118.8%
OVERSTOCK COM (OSTK)	115.2%
ION GEOPHYSICAL (IO)	107.7%
KOSS (KOSS)	106.0%
MADRIGAL PHARMACEUTICALS (MDGL)	104.1%

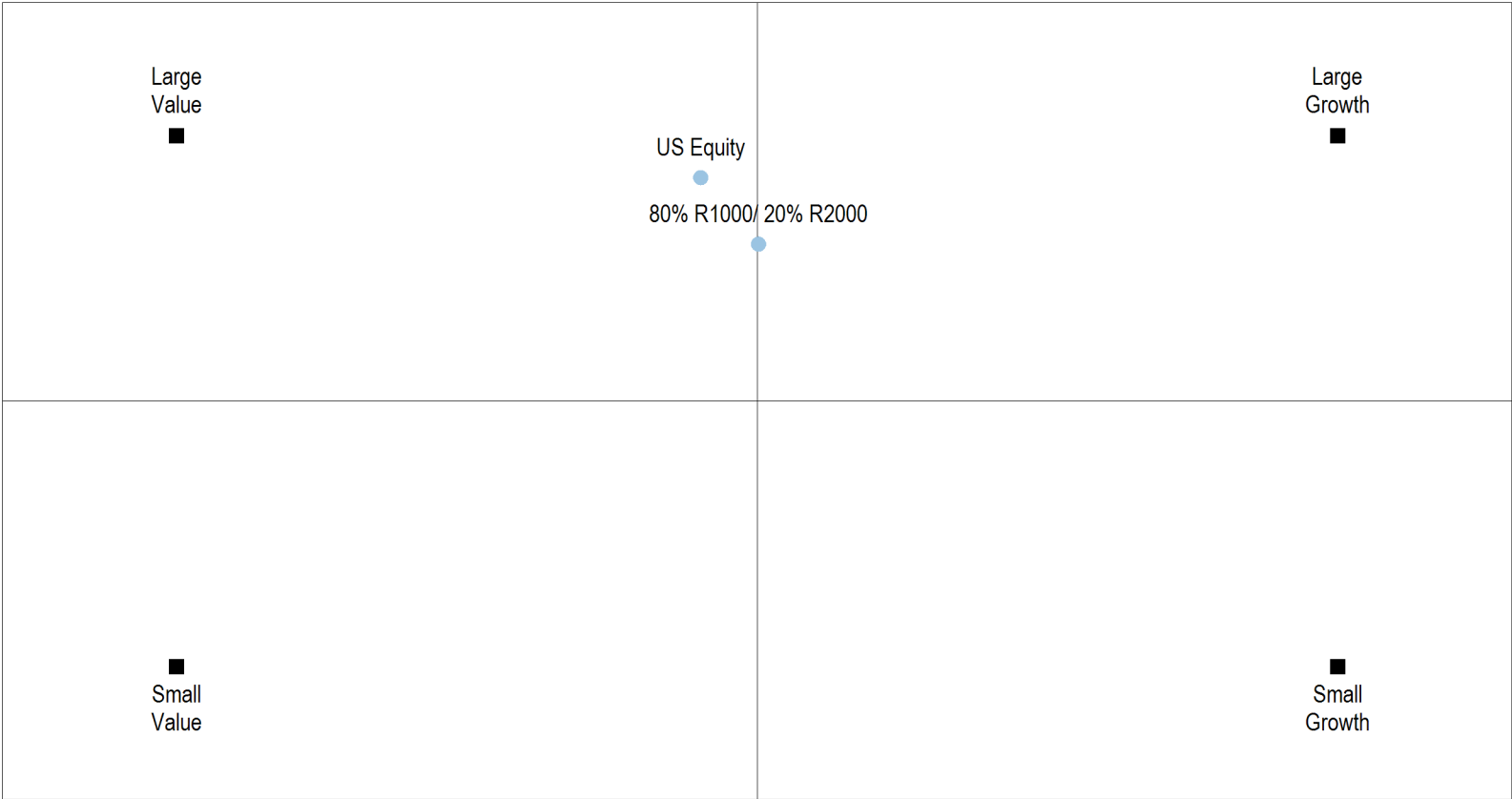
Worst Performers

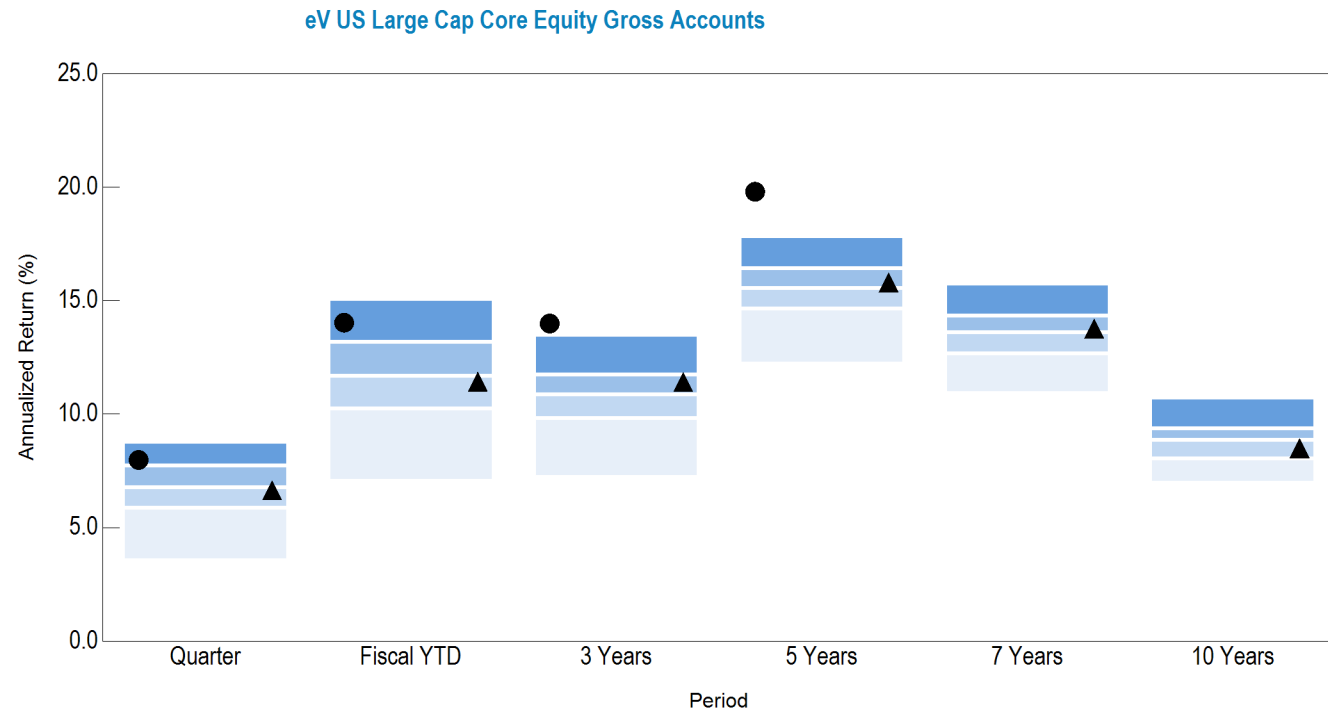
	Return %
REAL INDUSTRY (RELYQ)	-83.9%
ICONIX BRAND GROUP (ICON)	-77.3%
CENVEO (CVO)	-73.9%
IMMUNE DESIGN (IMDZ)	-62.3%
EASTMAN KODAK (KODK)	-57.8%
WILLBROS GROUP (WG)	-55.9%
KONA GRILL (KONA)	-53.9%
NANOSTRING TECHNOLOGIES (NSTG)	-53.8%
WESTMORELAND COAL (WLB)	-52.5%
RUBICON PROJECT (RUBI)	-51.9%

US Equity Performance Attribution vs. Russell 3000

	Attribution Effects							Returns		Sector Weights		
	Total Effects		Selection Effect		Allocation Effect		Interaction Effects		Portfolio	Benchmark	Portfolio	Benchmark
Energy	0.0%		0.0%		0.0%		0.0%		6.0%	6.4%	5.6%	5.7%
Materials	0.0%		0.0%		0.0%		0.0%		6.1%	6.7%	3.6%	3.4%
Industrials	0.0%		0.0%		0.0%		0.0%		6.3%	6.5%	11.7%	10.9%
Consumer Discretionary	-0.1%		0.0%		0.0%		0.0%		8.8%	9.1%	11.5%	12.2%
Consumer Staples	0.0%		0.0%		0.0%		0.0%		6.1%	6.4%	7.3%	7.4%
Health Care	0.0%		0.0%		0.0%		0.0%		1.6%	1.6%	14.0%	13.9%
Financials	-0.1%		-0.1%		0.0%		0.0%		7.2%	7.7%	15.8%	15.1%
Information Technology	-0.1%		-0.1%		0.0%		0.0%		7.9%	8.5%	21.9%	22.4%
Telecommunication Services	0.0%		0.0%		0.0%		0.0%		4.1%	3.2%	1.9%	1.9%
Utilities	0.0%		0.0%		0.0%		0.0%		0.4%	0.6%	3.2%	3.1%
Real Estate	0.0%		0.0%		0.0%		0.0%		2.6%	2.6%	3.5%	4.0%
Cash	0.0%		--		--		--		--	--	0.0%	0.0%
Portfolio	-0.3%	=	-0.3%	+	0.0%	+	0.0%		6.0%	6.4%	100.0%	100.0%

US Effective Style Map





	Return (Rank)											
5th Percentile	8.8		15.1		13.5		17.8		15.7		10.7	
25th Percentile	7.8		13.2		11.7		16.4		14.4		9.4	
Median	6.8		11.7		10.9		15.6		13.6		8.9	
75th Percentile	5.9		10.3		9.8		14.7		12.7		8.1	
95th Percentile	3.6		7.1		7.2		12.2		10.9		7.0	
# of Portfolios	318		318		308		289		263		232	
● Mellon Dynamic US Equity	8.0	(21)	14.0	(16)	14.0	(4)	19.8	(1)	--	(--)	--	(--)
▲ S&P 500	6.6	(57)	11.4	(55)	11.4	(36)	15.8	(45)	13.8	(47)	8.5	(66)

Mellon Dynamic US Equity Equity Only Summary Statistics

Period Ending: December 31, 2017

Characteristics

	Portfolio	S&P 500
Number of Holdings	500	505
Weighted Avg. Market Cap. (\$B)	179.5	180.1
Median Market Cap. (\$B)	21.4	21.6
Price To Earnings	27.5	24.8
Price To Book	6.1	4.9
Price To Sales	3.8	3.5
Return on Equity (%)	24.5	20.4
Yield (%)	1.9	1.9
Beta (holdings; domestic)	1.1	1.1

Top Holdings

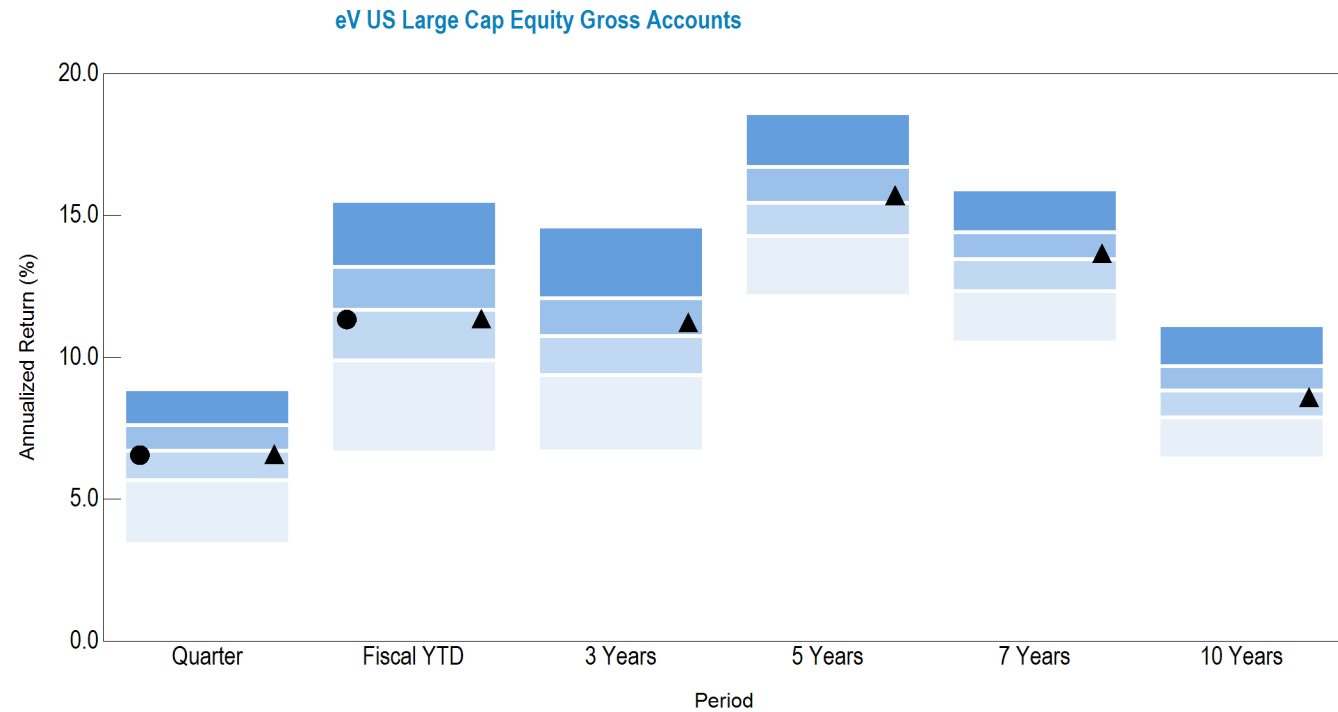
APPLE	3.8%
MICROSOFT	2.9%
ALPHABET A	2.8%
AMAZON.COM	2.1%
FACEBOOK CLASS A	1.8%
BERKSHIRE HATHAWAY 'B'	1.7%
JOHNSON & JOHNSON	1.6%
JP MORGAN CHASE & CO.	1.6%
EXXON MOBIL	1.6%
BANK OF AMERICA	1.3%

Best Performers

	Return %
L BRANDS (LB)	46.5%
KROGER (KR)	37.6%
FREEPORT-MCMORAN (FCX)	35.0%
MYLAN (MYL)	34.9%
FOOT LOCKER (FL)	34.4%
AKAMAI TECHS. (AKAM)	33.5%
TWENTY-FIRST CENTURY FOX CL.B (FOX)	32.3%
WW GRAINGER (GWW)	32.3%
MICHAEL KORS HOLDINGS (KORS)	31.6%
D R HORTON (DHI)	28.2%

Worst Performers

	Return %
PG&E (PCG)	-34.2%
CELGENE (CELG)	-28.4%
GENERAL ELECTRIC (GE)	-27.3%
NEWELL BRANDS (NWL)	-27.0%
ENVISION HEALTHCARE (EVHC)	-23.1%
ALLERGAN (AGN)	-19.9%
ADVANCED MICRO DEVC. (AMD)	-19.4%
INCYTE (INCY)	-18.9%
PPL (PPL)	-17.5%
EDISON INTL. (EIX)	-17.3%



	Return (Rank)											
5th Percentile	8.9		15.5		14.6		18.6		15.9		11.1	
25th Percentile	7.6		13.2		12.1		16.7		14.4		9.7	
Median	6.7		11.7		10.8		15.5		13.5		8.8	
75th Percentile	5.7		9.9		9.4		14.3		12.3		7.9	
95th Percentile	3.4		6.7		6.7		12.2		10.5		6.4	
# of Portfolios	925		925		907		865		799		724	
● Mellon Large Cap	6.6	(55)	11.3	(56)	--	(--)	--	(--)	--	(--)	--	(--)
▲ Russell 1000	6.6	(54)	11.4	(56)	11.2	(41)	15.7	(45)	13.7	(45)	8.6	(58)

Mellon Large Cap
Equity Only Summary Statistics

Period Ending: December 31, 2017

Characteristics

	Portfolio	Russell 1000
Number of Holdings	953	978
Weighted Avg. Market Cap. (\$B)	163.3	162.3
Median Market Cap. (\$B)	10.1	10.1
Price To Earnings	27.2	24.9
Price To Book	6.0	4.9
Price To Sales	3.8	3.7
Return on Equity (%)	23.6	18.8
Yield (%)	1.8	1.8
Beta (holdings; domestic)	1.1	1.1

Top Holdings

APPLE	3.4%
MICROSOFT	2.5%
ALPHABET 'C'	2.5%
AMAZON.COM	1.8%
FACEBOOK CLASS A	1.6%
BERKSHIRE HATHAWAY 'B'	1.5%
JOHNSON & JOHNSON	1.5%
JP MORGAN CHASE & CO.	1.5%
EXXON MOBIL	1.4%
BANK OF AMERICA	1.1%

Best Performers

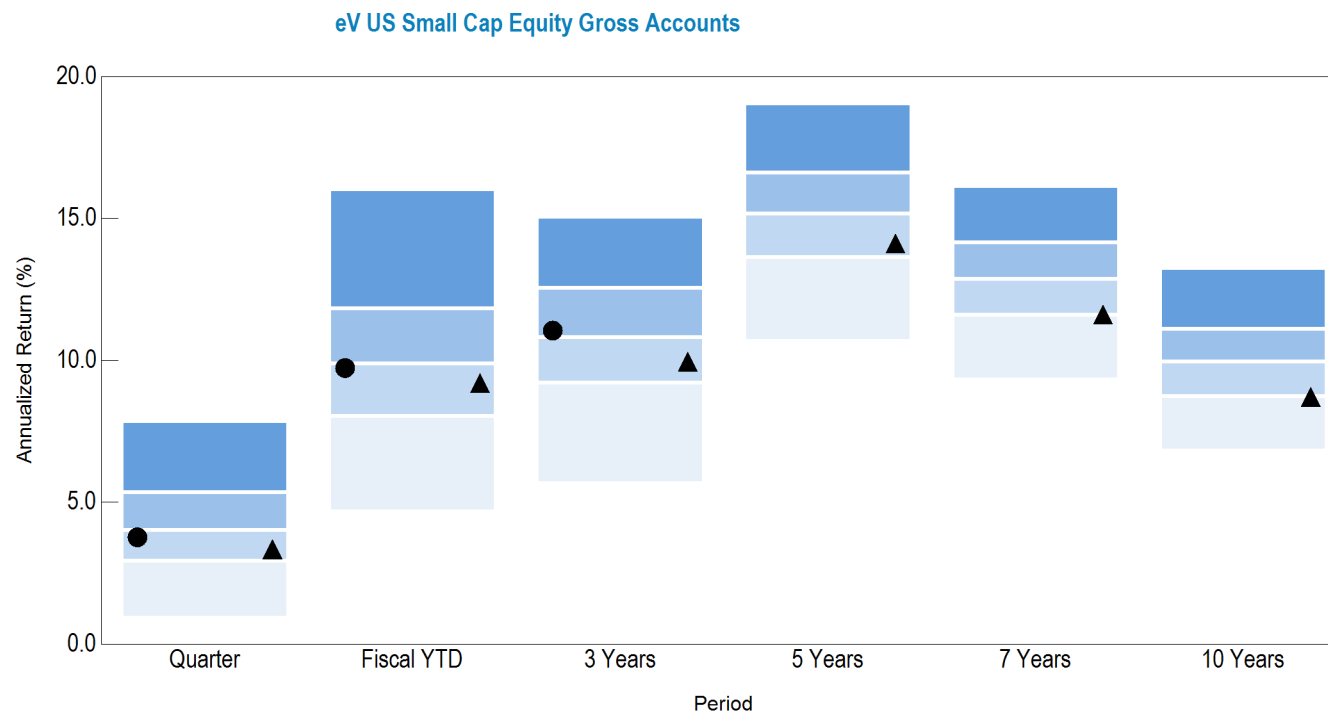
	Return %
CALATLANTIC GROUP (CAA)	54.1%
SKECHERS USA 'A' (SKX)	50.8%
FIRST SOLAR (FSLR)	47.2%
URBAN OUTFITTERS (URBN)	46.7%
L BRANDS (LB)	46.5%
REGAL ENTM.GP. 'A' (RGC)	45.4%
HOLLYFRONTIER (HFC)	43.5%
TWITTER (TWTR)	42.3%
KROGER (KR)	37.6%
UNITED STATES STEEL (X)	37.4%

Worst Performers

	Return %
MALLINCKRODT (MNK)	-39.6%
INTREXON (XON)	-39.4%
PANDORA MEDIA (P)	-37.4%
TESARO (TSRO)	-35.8%
PG&E (PCG)	-34.2%
ACADIA HEALTHCARE CO. (ACHC)	-31.7%
OPKO HEALTH (OPK)	-28.6%
CELGENE (CELG)	-28.4%
GENERAL ELECTRIC (GE)	-27.3%
NEWELL BRANDS (NWL)	-27.0%

Mellon Large Cap Performance Attribution vs. Russell 1000

	Attribution Effects				Returns		Sector Weights	
	Total Effects	Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark
Energy	0.0%	0.0%	0.0%	0.0%	6.3%	6.4%	6.0%	5.9%
Materials	0.0%	0.0%	0.0%	0.0%	6.9%	7.0%	3.3%	3.3%
Industrials	0.0%	0.0%	0.0%	0.0%	6.5%	6.5%	10.6%	10.5%
Consumer Discretionary	0.0%	0.0%	0.0%	0.0%	9.3%	9.2%	11.4%	12.2%
Consumer Staples	0.0%	0.0%	0.0%	0.0%	6.3%	6.4%	7.8%	7.7%
Health Care	0.0%	0.0%	0.0%	0.0%	1.4%	1.5%	13.9%	13.7%
Financials	0.0%	0.0%	0.0%	0.0%	8.3%	8.3%	15.0%	14.8%
Information Technology	0.0%	0.0%	0.0%	0.0%	9.0%	8.9%	23.0%	22.8%
Telecommunication Services	0.0%	0.0%	0.0%	0.0%	3.5%	3.5%	2.0%	2.0%
Utilities	0.0%	0.0%	0.0%	0.0%	0.5%	0.6%	3.2%	3.1%
Real Estate	0.0%	0.0%	0.0%	0.0%	3.2%	3.1%	3.7%	3.7%
Cash	0.0%	--	--	--	--	--	0.0%	0.0%
Portfolio	0.0%	=	0.0%	+	0.0%	+	0.0%	0.0%
					6.6%	6.6%	100.0%	100.0%



	Return (Rank)											
5th Percentile	7.8		16.0		15.1		19.1		16.1		13.2	
25th Percentile	5.4		11.8		12.6		16.6		14.2		11.1	
Median	4.0		9.9		10.8		15.2		12.9		10.0	
75th Percentile	2.9		8.1		9.2		13.7		11.6		8.8	
95th Percentile	0.9		4.7		5.7		10.7		9.3		6.8	
# of Portfolios	570		570		550		527		503		443	
● DFA Small Cap	3.8	(57)	9.7	(52)	11.0	(47)	--	(--)	--	(--)	--	(--)
▲ Russell 2000	3.3	(68)	9.2	(59)	10.0	(65)	14.1	(69)	11.6	(75)	8.7	(76)

DFA Small Cap Equity Only Summary Statistics

Period Ending: December 31, 2017

Characteristics

	Portfolio	Russell 2000
Number of Holdings	1,758	1,983
Weighted Avg. Market Cap. (\$B)	2.2	2.4
Median Market Cap. (\$B)	0.8	0.8
Price To Earnings	24.4	18.4
Price To Book	3.4	3.3
Price To Sales	2.3	3.1
Return on Equity (%)	11.1	7.8
Yield (%)	1.2	1.0
Beta (holdings; domestic)	1.2	1.3

Top Holdings

KNIGHT-SWIFT TRSP.HDG. 'A'	0.4%
SEABOARD	0.4%
STERLING BANCORP	0.3%
CANTEL MED.	0.3%
PRIMERICA	0.3%
WGL HOLDINGS	0.3%
MKS INSTRUMENTS	0.3%
INTERACTIVE BROKERS GP.	0.3%
CNO FINANCIAL GROUP	0.3%
CHEMED	0.3%

Best Performers

	Return %
SIEBERT FINANCIAL (SIEB)	246.1%
VERSO 'A' (VRS)	245.2%
CATALYST BIOSCIENCES (CBIO)	169.6%
SORRENTO THERAPEUTICS (SRNE)	123.5%
RESOLUTE FOREST PRODUCTS (RFP)	118.8%
OVERSTOCK COM (OSTK)	115.2%
ION GEOPHYSICAL (IO)	107.7%
KOSS (KOSS)	106.0%
EDUCATIONAL DEV. (EDUC)	97.0%
EGAIN (EGAN)	94.4%

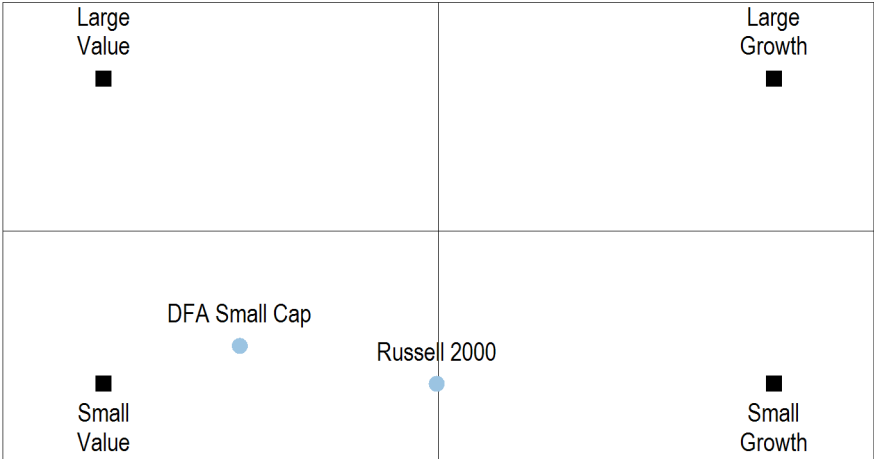
Worst Performers

	Return %
REAL INDUSTRY (RELYQ)	-83.9%
ICONIX BRAND GROUP (ICON)	-77.3%
CENVEO (CVO)	-73.9%
EASTMAN KODAK (KODK)	-57.8%
WILLBROS GROUP (WG)	-55.9%
KONA GRILL (KONA)	-53.9%
WESTMORELAND COAL (WLB)	-52.5%
RUBICON PROJECT (RUBI)	-51.9%
SYNLOGIC (SYBX)	-49.0%
CALITHERA BIOSCIENCES (CALA)	-47.0%

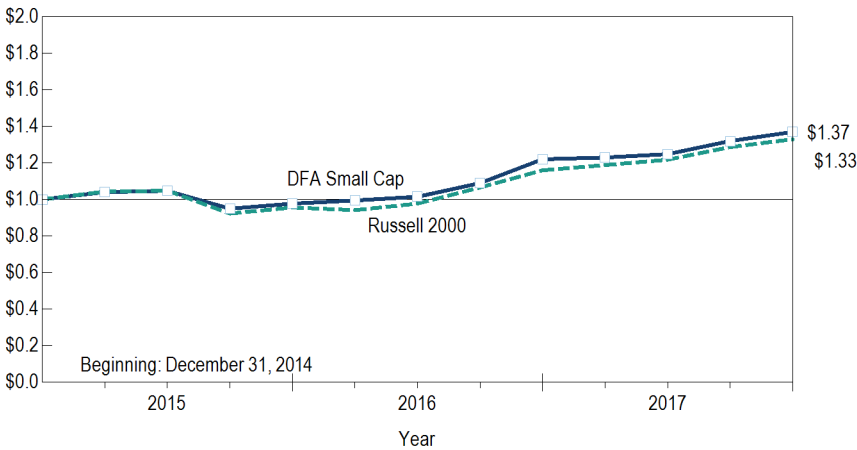
DFA Small Cap Performance Attribution vs. Russell 2000

	Attribution Effects								Returns		Sector Weights	
	Total Effects		Selection Effect		Allocation Effect		Interaction Effects		Portfolio	Benchmark	Portfolio	Benchmark
Energy	-0.1%		-0.1%		0.0%		0.0%		2.6%	6.8%	3.7%	3.6%
Materials	0.0%		0.0%		0.0%		0.0%		3.9%	4.2%	5.4%	4.5%
Industrials	0.1%		-0.1%		0.2%		0.0%		5.9%	6.4%	20.3%	14.9%
Consumer Discretionary	0.1%		-0.1%		0.2%		0.0%		7.4%	7.9%	15.6%	12.1%
Consumer Staples	-0.1%		-0.1%		0.1%		-0.1%		3.9%	7.1%	4.9%	2.7%
Health Care	0.0%		-0.2%		0.1%		0.1%		1.1%	2.4%	8.4%	15.4%
Financials	0.2%		0.2%		0.0%		0.0%		2.9%	1.7%	20.6%	18.1%
Information Technology	0.0%		0.0%		0.1%		0.0%		0.8%	1.0%	14.8%	17.1%
Telecommunication Services	0.0%		0.0%		0.0%		0.0%		-2.0%	-4.0%	1.1%	0.8%
Utilities	0.0%		0.0%		0.0%		0.0%		1.3%	1.0%	4.2%	3.7%
Real Estate	0.3%		0.3%		0.2%		-0.3%		3.8%	-0.4%	0.8%	7.1%
Cash	0.0%		--		--		--		--	--	0.0%	0.0%
Portfolio	0.4%	=	-0.1%	+	0.7%	+	-0.3%		3.7%	3.3%	99.7%	100.0%

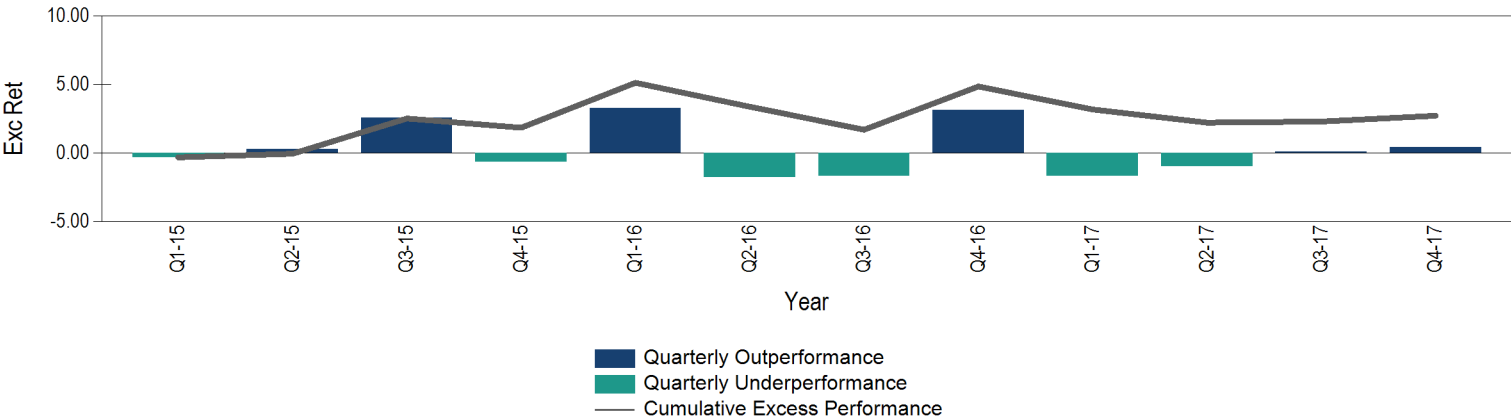
US Effective Style Map

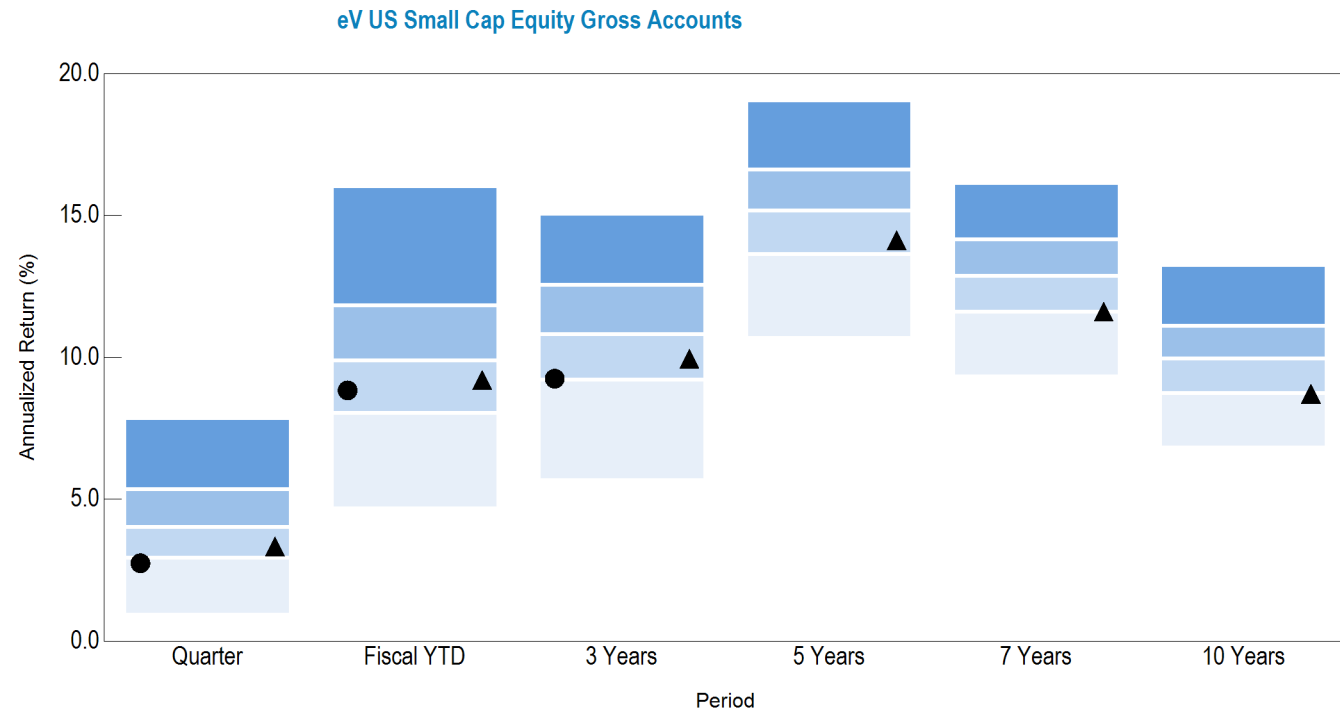


Growth of a Dollar



Quarterly and Cumulative Excess Performance





	Return (Rank)											
5th Percentile	7.8			16.0			15.1			19.1		
25th Percentile	5.4			11.8			12.6			16.6		
Median	4.0			9.9			10.8			15.2		
75th Percentile	2.9			8.1			9.2			13.7		
95th Percentile	0.9			4.7			5.7			10.7		
# of Portfolios	570			570			550			527		
● PanAgora	2.7	(78)		8.8	(63)		9.2	(75)		--	(--)	
▲ Russell 2000	3.3	(68)		9.2	(59)		10.0	(65)		14.1	(69)	

Characteristics

	Portfolio	Russell 2000
Number of Holdings	322	1,983
Weighted Avg. Market Cap. (\$B)	2.3	2.4
Median Market Cap. (\$B)	0.9	0.8
Price To Earnings	21.4	18.4
Price To Book	4.0	3.3
Price To Sales	3.1	3.1
Return on Equity (%)	7.4	7.8
Yield (%)	1.1	1.0
Beta (holdings; domestic)	1.3	1.3

Top Holdings

NEKTAR THERAPEUTICS	2.0%
PNM RESOURCES	1.4%
REALPAGE	1.2%
INGEVITY	1.2%
FIRST CTZN.BCSH.A	1.2%
PLEXUS	1.1%
PS BUSINESS PARKS	1.0%
EVERCORE A	1.0%
OASIS PETROLEUM	0.9%
EMPLOYERS HOLDINGS	0.9%

Best Performers

	Return %
NEKTAR THERAPEUTICS (NKTR)	148.8%
MADRIGAL PHARMACEUTICALS (MDGL)	104.1%
NACCO INDUSTRIES 'A' (NC)	92.8%
DENBURY RES. (DNR)	64.9%
NL INDUSTRIES (NL)	55.7%
FATE THERAPEUTICS (FATE)	54.3%
EXACTECH (EXAC)	50.1%
PIPER JAFFRAY (PJC)	45.9%
DEPOMED (DEPO)	39.0%
NMI HOLDINGS CL.A (NMIH)	37.1%

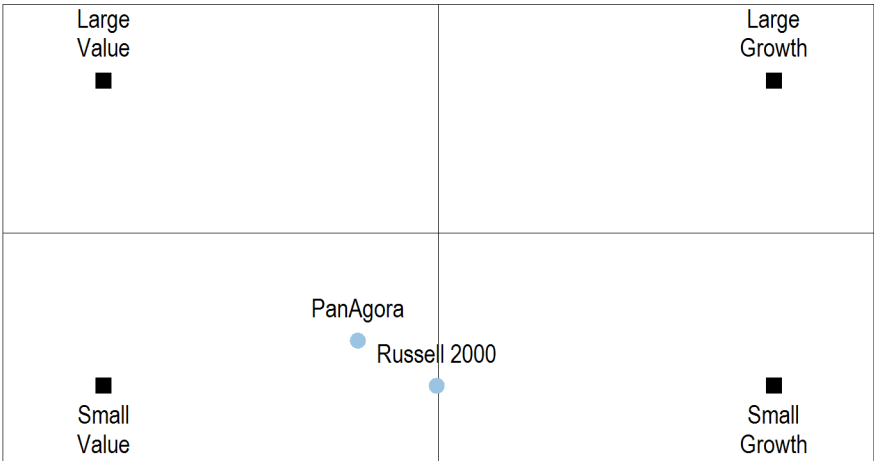
Worst Performers

	Return %
IMMUNE DESIGN (IMDZ)	-62.3%
NANOSTRING TECHNOLOGIES (NSTG)	-53.8%
PACIFIC BSCS.OF CAL. (PACB)	-49.7%
CALITHERA BIOSCIENCES (CALA)	-47.0%
CYTOKINETICS (CYTK)	-43.8%
ANTARES PHARMA (ATRS)	-38.6%
ARC DOCUMENT SOLUTIONS (ARC)	-37.7%
ACHILLION PHARMS. (ACHN)	-35.9%
3D SYSTEMS (DDD)	-35.5%
INOVIO PHARMACEUTICALS (INO)	-34.9%

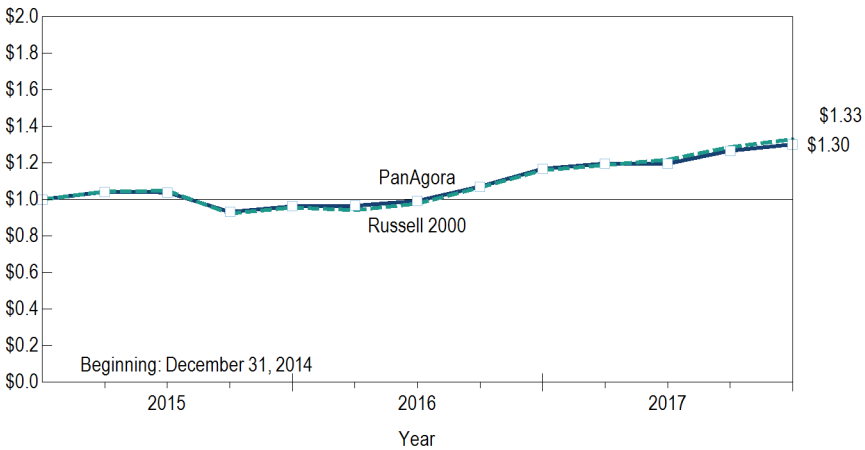
PanAgora Performance Attribution vs. Russell 2000

	Attribution Effects							Returns		Sector Weights	
	Total Effects		Selection Effect	Allocation Effect		Interaction Effects		Portfolio	Benchmark	Portfolio	Benchmark
Energy	0.0%		-0.1%	0.0%		0.0%		5.3%	6.8%	3.6%	3.6%
Materials	0.0%		0.0%	0.0%		0.0%		3.7%	4.2%	5.0%	4.5%
Industrials	0.0%		0.1%	0.0%		0.0%		6.8%	6.4%	14.1%	14.9%
Consumer Discretionary	-0.7%		-0.7%	-0.1%		0.2%		1.7%	7.9%	9.2%	12.1%
Consumer Staples	-0.1%		-0.1%	0.0%		0.0%		2.4%	7.1%	2.9%	2.7%
Health Care	0.1%		0.1%	0.0%		0.0%		2.9%	2.4%	17.7%	15.4%
Financials	0.2%		0.2%	0.0%		0.0%		3.0%	1.7%	19.4%	18.1%
Information Technology	-0.1%		-0.1%	0.0%		0.0%		0.4%	1.0%	16.8%	17.1%
Telecommunication Services	0.2%		0.2%	0.0%		0.0%		19.7%	-4.0%	1.0%	0.8%
Utilities	0.0%		-0.1%	0.0%		0.0%		-0.5%	1.0%	3.2%	3.7%
Real Estate	0.0%		0.0%	0.0%		0.0%		-0.1%	-0.4%	7.1%	7.1%
Cash	0.0%		--	--		--		--	--	0.0%	0.0%
Portfolio	-0.5%	=	-0.5%	+	-0.2%	+	0.2%	2.9%	3.3%	100.0%	100.0%

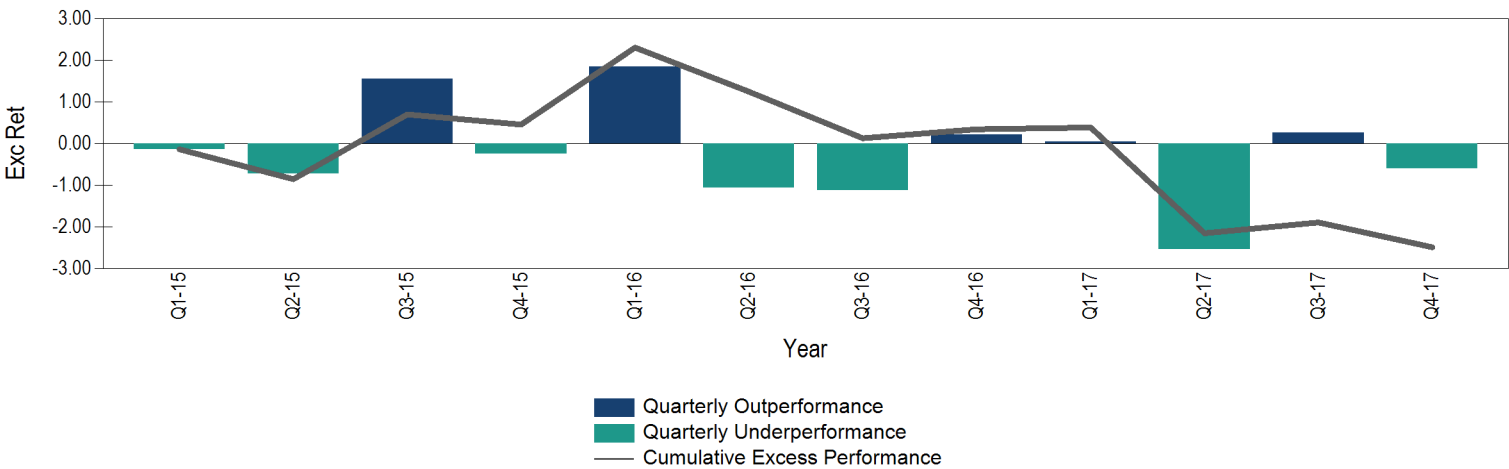
US Effective Style Map



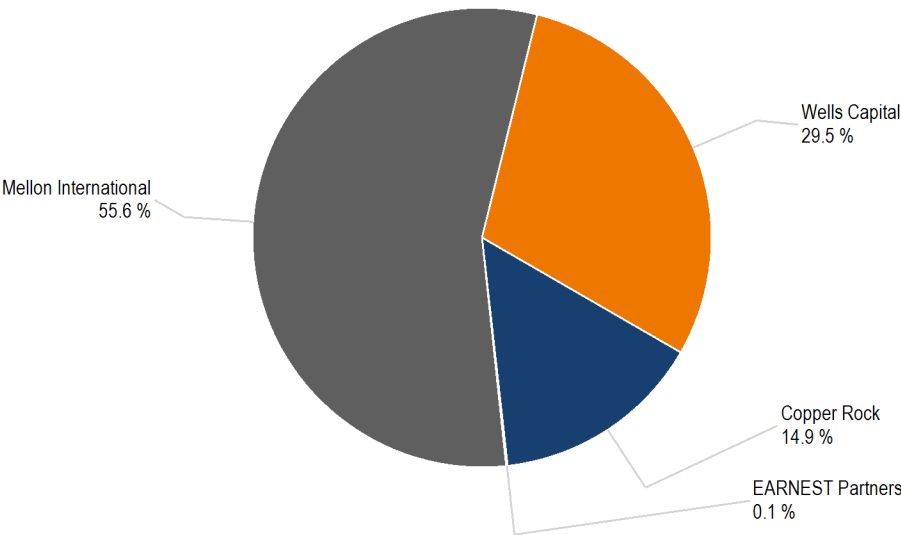
Growth of a Dollar



Quarterly and Cumulative Excess Performance

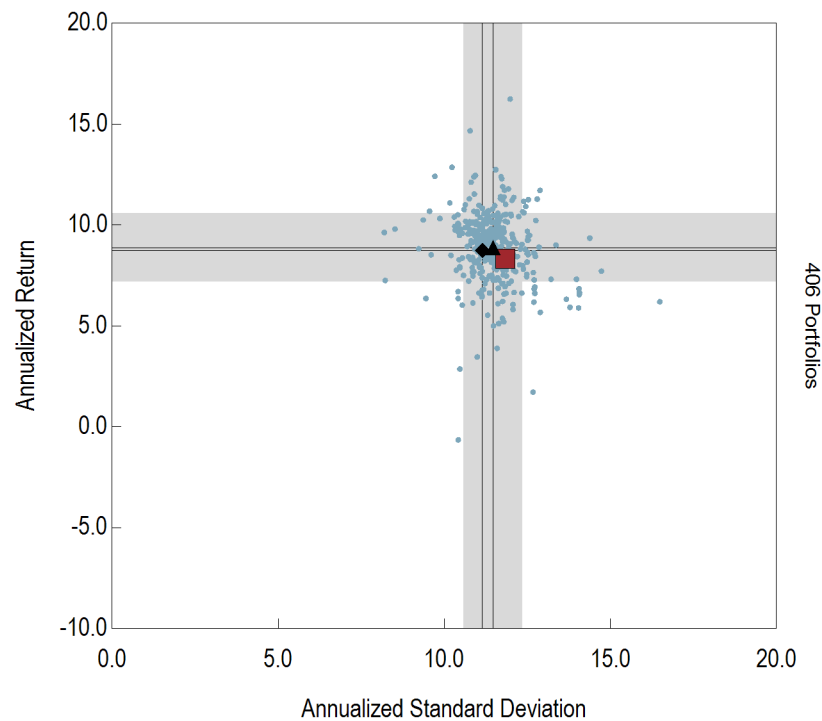


	Actual	Actual
Copper Rock	\$31,625,557	14.9%
EARNEST Partners	\$121,863	0.1%
Mellon International	\$118,240,698	55.6%
Wells Capital	\$62,679,169	29.5%
Total	\$212,667,287	100.0%



International Equity Risk vs. Return (3 Years)

Period Ending: December 31, 2017

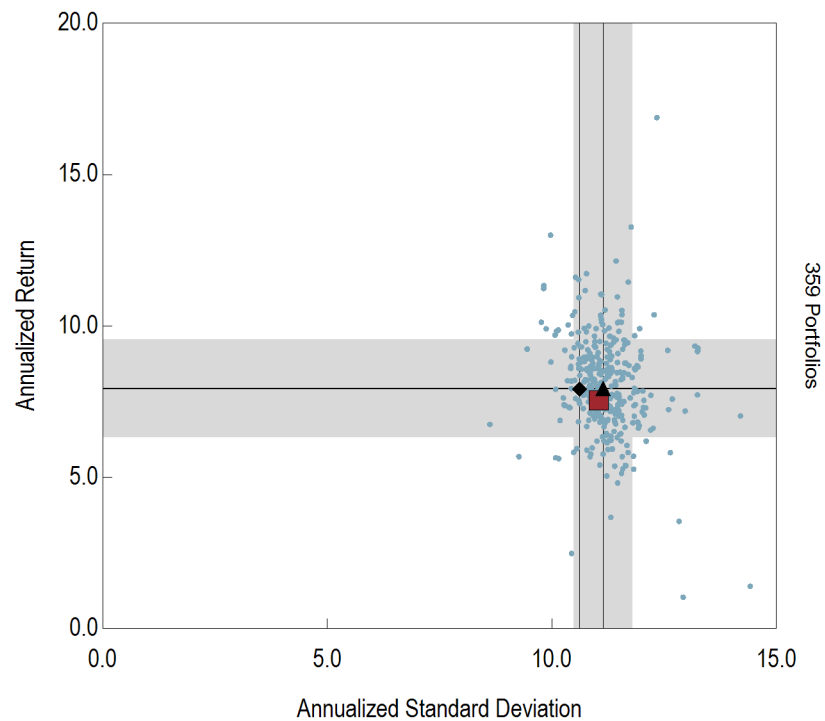


- International Equity
- ◆ International Equity Custom
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce All DB ex-US Eq Gross

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
International Equity	8.3%	69	11.8%	73	0.7	70
International Equity Custom	8.7%	53	11.1%	33	0.7	47
InvestorForce All DB ex-US Eq Gross Median	8.9%	--	11.5%	--	0.7	--

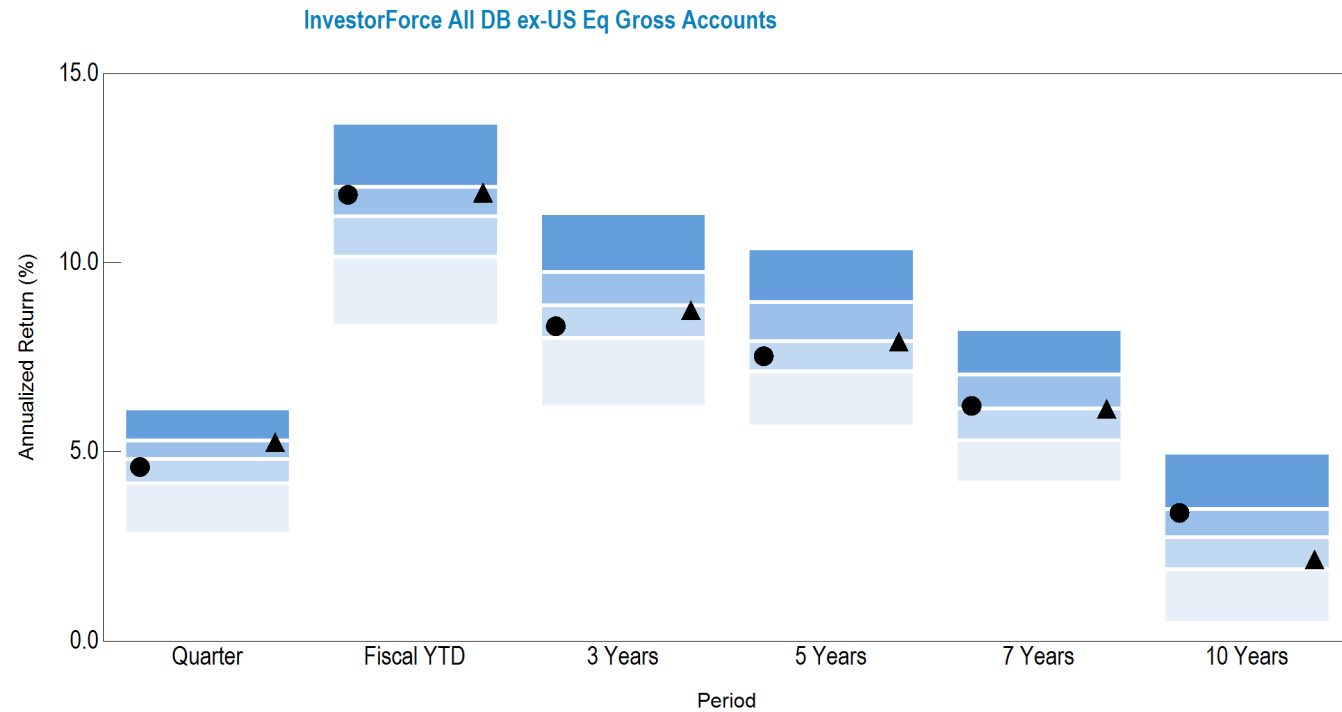
International Equity Risk vs. Return (5 Years)

Period Ending: December 31, 2017



- International Equity
- ◆ International Equity Custom
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce All DB ex-US Eq Gross

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
International Equity	7.5%	63	11.0%	41	0.7	60
International Equity Custom	7.9%	51	10.6%	14	0.7	41
InvestorForce All DB ex-US Eq Gross Median	7.9%	--	11.1%	--	0.7	--



	Return (Rank)					
5th Percentile	6.1	13.7	11.3	10.4	8.2	5.0
25th Percentile	5.3	12.0	9.8	9.0	7.1	3.5
Median	4.8	11.2	8.9	7.9	6.2	2.7
75th Percentile	4.2	10.2	8.0	7.1	5.3	1.9
95th Percentile	2.8	8.3	6.2	5.7	4.2	0.5
# of Portfolios	460	459	406	359	300	214
● International Equity	4.6 (62)	11.8 (33)	8.3 (69)	7.5 (63)	6.2 (48)	3.4 (30)
▲ International Equity Custom	5.3 (30)	11.9 (31)	8.7 (53)	7.9 (51)	6.1 (51)	2.2 (67)

Characteristics

	Portfolio	MSCI ACWI ex USA Gross
Number of Holdings	1,087	1,866
Weighted Avg. Market Cap. (\$B)	56.4	66.3
Median Market Cap. (\$B)	10.2	8.6
Price To Earnings	22.8	20.8
Price To Book	3.6	2.8
Price To Sales	2.7	2.2
Return on Equity (%)	17.1	15.0
Yield (%)	2.4	2.7
Beta (holdings; global)	1.1	1.1

Top Holdings

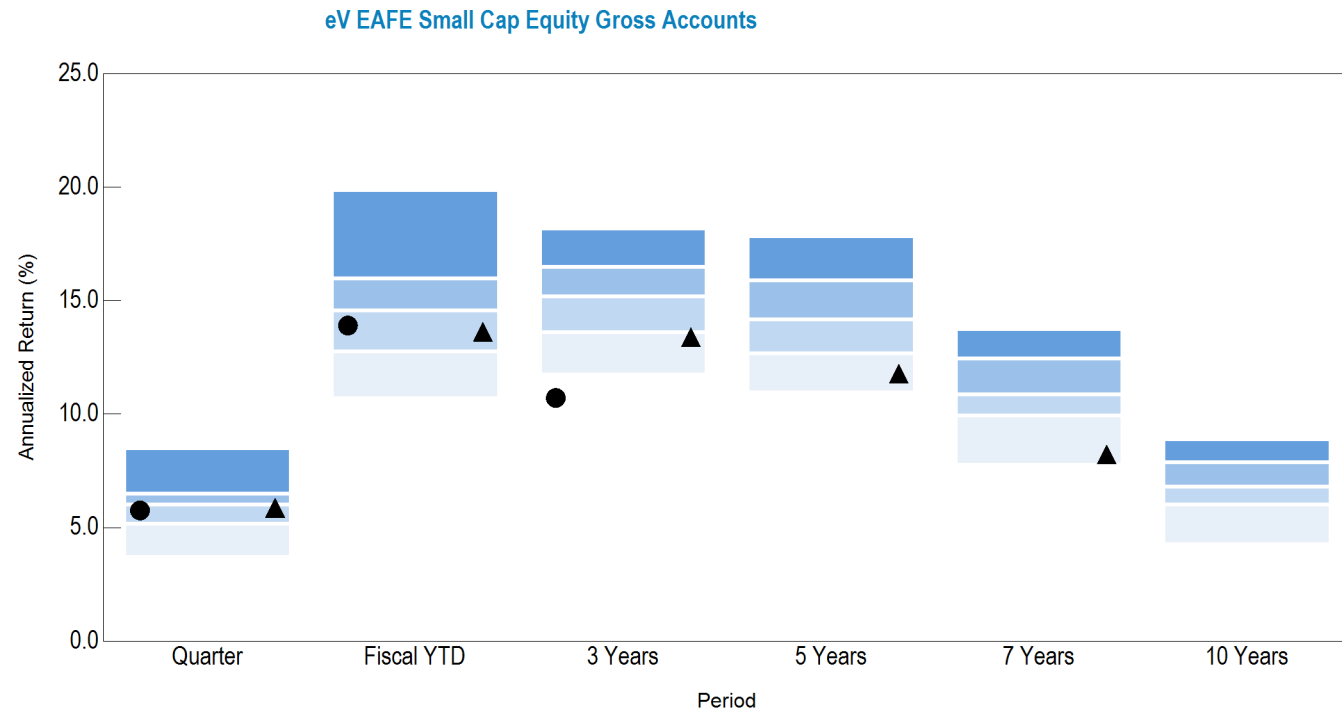
SAMSUNG ELECTRONICS	1.6%
ROYAL DUTCH SHELL B	1.1%
NESTLE 'R'	1.0%
AIA GROUP	1.0%
TENCENT HOLDINGS	1.0%
CHINA MOBILE	0.9%
HSBC HDG. (ORD \$0.50)	0.8%
TAIWAN SEMICON.SPN.ADR 1:5	0.8%
HDFC BANK ADR 1:3	0.8%
NOVARTIS 'R'	0.7%

Best Performers

	Return %
KINGSTON FINANCIAL GROUP (K:STIM)	88.3%
SUMCO (J:UMCO)	63.9%
OPEN HOUSE (J:OPEN)	54.1%
WHARF HOLDINGS (K:HKWH)	52.9%
BEACH ENERGY (A:BPTX)	52.9%
NESTE (M:NEST)	46.7%
ST BARBARA (A:SBMX)	44.8%
SUMITOMO METAL MINING (J:EM@N)	43.2%
IDEMITSU KOSAN (J:IDKO)	42.4%
TOTO (J:TOTO)	40.2%

Worst Performers

	Return %
ALTICE B (H:ATCB)	-46.9%
LEONARDO (I:LDO)	-36.4%
BLUEBIRD GROUP PT (ID:BLB)	-29.6%
SES FDR (PAR) (F:SESG)	-28.6%
CAPITA (UKIR:CPI)	-27.0%
BNC.STDR.AMER.DEPY. SHS. 1:5 (BSMX)	-25.8%
BEST SPN.ADR 1:1 'A' (BSTI)	-25.0%
GENMAB (DK:GEN)	-24.8%
CENTRICA (UKIR:CNA)	-24.5%
CONVATEC GROUP (UKIR:CTEC)	-24.4%



	Return (Rank)											
5th Percentile	8.5		19.9		18.2		17.8		13.7		8.9	
25th Percentile	6.5		16.0		16.5		15.9		12.5		7.9	
Median	6.0		14.6		15.2		14.2		10.9		6.8	
75th Percentile	5.2		12.8		13.6		12.7		9.9		6.0	
95th Percentile	3.7		10.7		11.8		11.0		7.8		4.3	
# of Portfolios	73		73		64		58		49		41	
● Copper Rock	5.8	(60)	13.9	(60)	10.7	(99)	--	(--)	--	(--)	--	(--)
▲ MSCI World ex US Small Cap GD	5.9	(55)	13.6	(66)	13.4	(81)	11.8	(88)	8.2	(94)	--	(--)

Characteristics

	Portfolio	MSCI World ex USA Small Cap
Number of Holdings	90	2,533
Weighted Avg. Market Cap. (\$B)	3.4	2.7
Median Market Cap. (\$B)	3.3	1.2
Price To Earnings	19.9	19.9
Price To Book	3.1	2.6
Price To Sales	2.1	2.3
Return on Equity (%)	18.9	12.6
Yield (%)	2.1	2.1
Beta (holdings; global)	1.1	1.0

Top Holdings

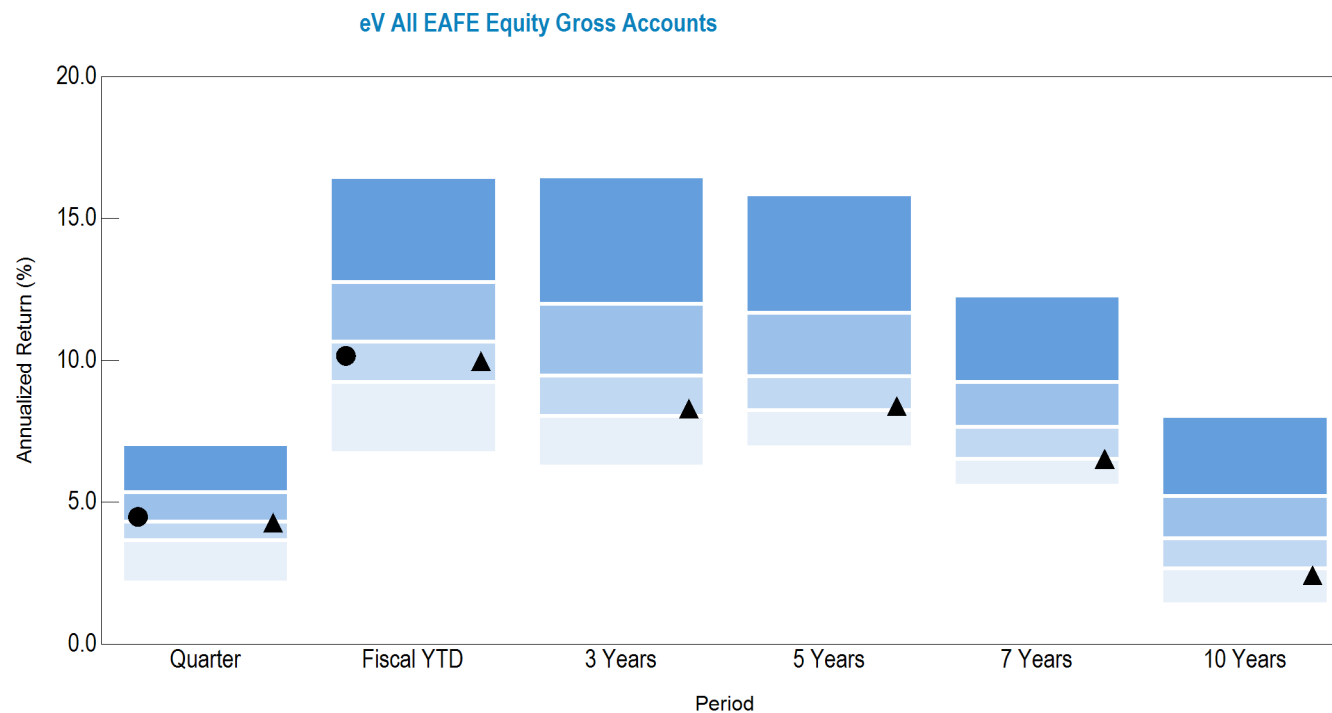
CEMBRA MONEY BANK N ORD	2.3%
RHEINMETALL	2.2%
ASR NEDERLAND	1.7%
WIZZ AIR HOLDINGS	1.7%
OPEN HOUSE	1.7%
SSP GROUP	1.6%
JUPITER FUND MANAGEMENT	1.6%
ROYAL UNIBREW	1.5%
BEACH ENERGY	1.5%
LEOPALACE21	1.4%

Best Performers

	Return %
OPEN HOUSE (J:OPEN)	54.1%
BEACH ENERGY (A:BPTX)	52.9%
ST BARBARA (A:SBMX)	44.8%
BLUESCOPE STEEL (A:BSLX)	39.7%
CHINA MED.SY.HDG.(DI) (K:CHM)	33.5%
WIZZ AIR HOLDINGS (UKIR:WIZZ)	29.7%
MANDO (KO:MDX)	29.7%
SSP GROUP (UKIR:SSPG)	28.1%
SALZGITTER (D:SZG)	26.5%
INTERMEDIATE CAPITAL GP. (UKIR:ICP)	24.5%

Worst Performers

	Return %
ELIOR PARTICIPATIONS (F:ELIO)	-21.9%
ENERFLEX WNI. (C:EFX)	-16.3%
SKYWORTH DIGITAL HDG. (K:SKYD)	-15.9%
OVS SPA (I:OVIE)	-12.7%
SUMIDA (J:SMDE)	-11.6%
AZIMUT HOLDING (I:AZM)	-11.4%
NH FOODS (J:FY@N)	-11.3%
NETENT (W:NET)	-10.9%
TRICAN WELL SER. (C:TCW)	-10.7%
BANCA IFIS (I:IF)	-10.5%



	Return (Rank)											
5th Percentile	7.0			16.4			16.5			15.8		
25th Percentile	5.4			12.8			12.0			11.7		
Median	4.3			10.7			9.5			9.4		
75th Percentile	3.7			9.3			8.0			8.3		
95th Percentile	2.2			6.7			6.3			6.9		
# of Portfolios	370			370			344			314		
● Mellon International	4.5	(46)		10.2	(60)		--	(--)		--	(--)	
▲ MSCI EAFE Gross	4.3	(53)		10.0	(61)		8.3	(70)		8.4	(73)	

Characteristics

	Portfolio	MSCI EAFE Gross
Number of Holdings	898	928
Weighted Avg. Market Cap. (\$B)	59.3	59.8
Median Market Cap. (\$B)	11.3	11.5
Price To Earnings	20.1	20.4
Price To Book	3.1	2.7
Price To Sales	2.4	2.1
Return on Equity (%)	15.8	13.8
Yield (%)	2.9	2.9
Beta (holdings; global)	1.1	1.1

Top Holdings

ROYAL DUTCH SHELL B	1.9%
NESTLE 'R'	1.8%
HSBC HDG. (ORD \$0.50)	1.4%
NOVARTIS 'R'	1.3%
ROCHE HOLDING	1.2%
TOYOTA MOTOR	1.1%
BRITISH AMERICAN TOBACCO	1.1%
BP	1.0%
TOTAL	0.9%
SAP	0.8%

Best Performers

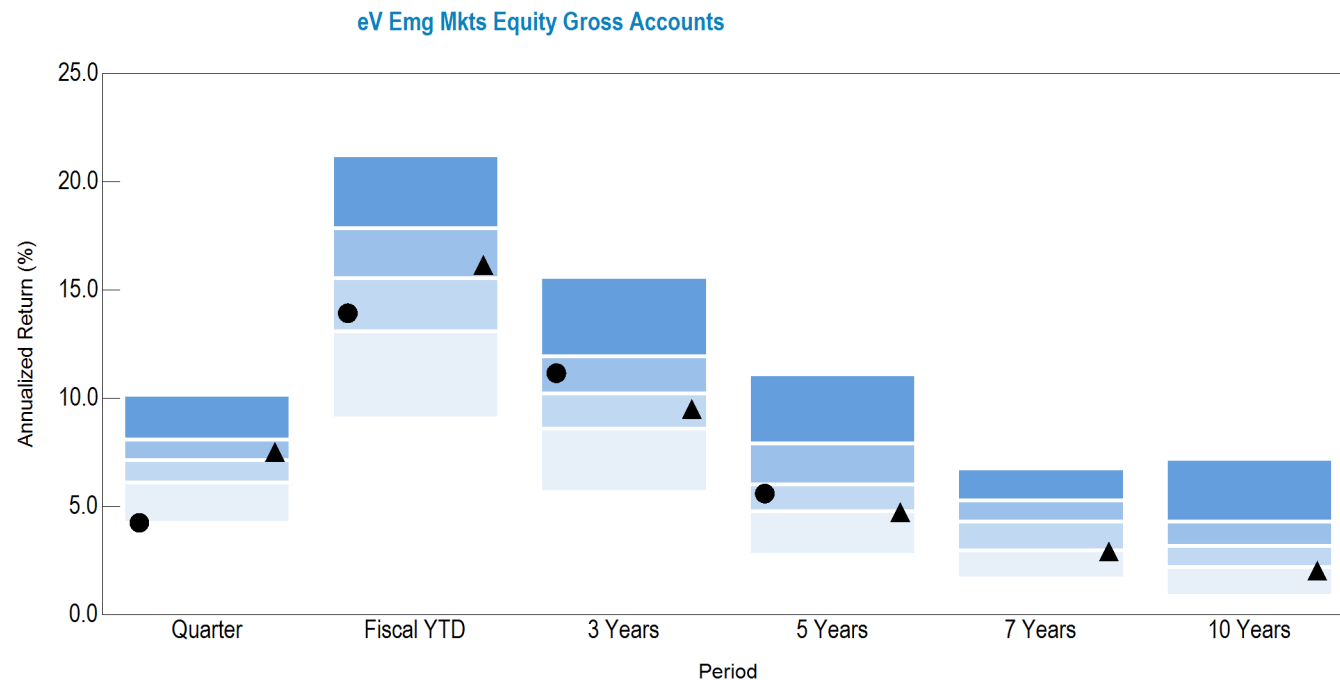
	Return %
KINGSTON FINANCIAL GROUP (K:STIM)	88.3%
SUMCO (J:UMCO)	63.9%
WHARF HOLDINGS (K:HKWH)	52.9%
NESTE (M:NEST)	46.7%
SUMITOMO METAL MINING (J:EM@N)	43.2%
IDEMITSU KOSAN (J:IDKO)	42.4%
TOTO (J:TOTO)	40.2%
DON QUIJOTE HOLDINGS (J:DONQ)	40.1%
BLUESCOPE STEEL (A:BSLX)	39.7%
YASKAWA ELECTRIC (J:YE@N)	39.2%

Worst Performers

	Return %
ALTICE B (H:ATCB)	-46.9%
LEONARDO (I:LDO)	-36.4%
SES FDR (PAR) (F:SESG)	-28.6%
CAPITA (UKIR:CPI)	-27.0%
GENMAB (DK:GEN)	-24.8%
CENTRICA (UKIR:CNA)	-24.5%
CONVATEC GROUP (UKIR:CTEC)	-24.4%
INMARSAT (UKIR:ISAT)	-23.1%
VESTAS WINDSYSTEMS (DK:VEV)	-23.0%
NOKIA (M:NOK1)	-22.1%

Emerging Markets Equity Peer Universe Comparison

Period Ending: December 31, 2017



	Return (Rank)					
5th Percentile	10.1	21.2	15.6	11.1	6.8	7.2
25th Percentile	8.1	17.9	11.9	7.9	5.3	4.3
Median	7.1	15.5	10.2	6.0	4.3	3.2
75th Percentile	6.1	13.1	8.6	4.8	3.0	2.2
95th Percentile	4.2	9.1	5.7	2.8	1.7	0.9
# of Portfolios	345	344	322	270	191	133
● Wells Capital	4.2 (96)	13.9 (67)	11.1 (37)	5.6 (59)	-- (--)	-- (--)
▲ MSCI Emerging Markets Gross	7.5 (38)	16.1 (41)	9.5 (62)	4.7 (76)	2.9 (77)	2.0 (81)

Characteristics

	Portfolio	MSCI Emerging Markets Gross
Number of Holdings	103	846
Weighted Avg. Market Cap. (\$B)	79.1	89.8
Median Market Cap. (\$B)	12.4	6.0
Price To Earnings	29.7	22.1
Price To Book	5.2	3.3
Price To Sales	3.7	2.7
Return on Equity (%)	18.5	18.1
Yield (%)	1.7	2.1
Beta (holdings; global)	1.1	1.0

Top Holdings

SAMSUNG ELECTRONICS	5.7%
TENCENT HOLDINGS	3.3%
CHINA MOBILE	3.2%
TAIWAN SEMICON.SPN.ADR 1:5	2.7%
HDFC BANK ADR 1:3	2.7%
SINA	2.4%
CHINA LIFE INSURANCE 'H'	2.3%
WH GROUP	2.1%
NEW ORIENTAL ED.& TECH. GP.ADS 1:1	2.1%
UNI-PRESIDENT ENTS.	2.1%

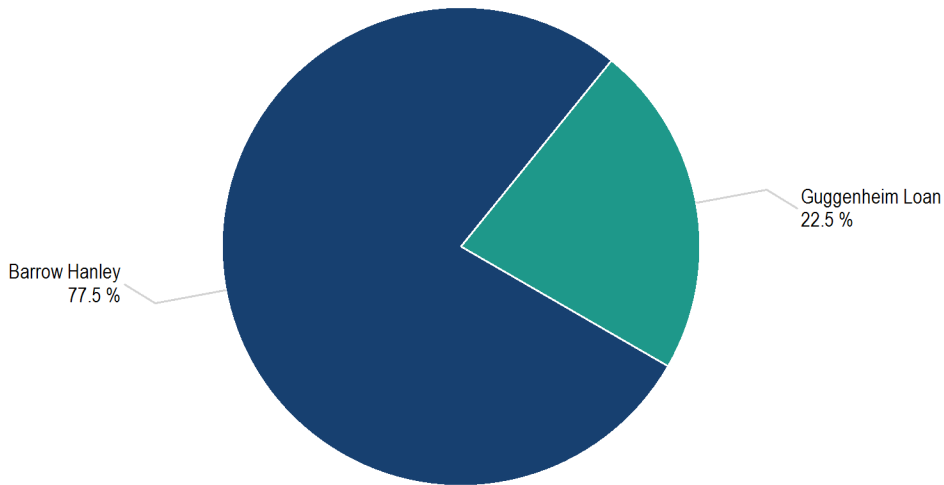
Best Performers

	Return %
CHINA DSN.ED.HDG.ADS (DL)	38.2%
STANDARD BK.GP. (R:SBKJ)	35.2%
TSINGTAO BREWERY 'H' (K:TSIN)	34.7%
VIPSHOP HOLDINGS ADR 5:1 (VIPS)	33.3%
NETMARBLE GAMES (KO:NTM)	33.1%
TIGER BRANDS (R:TBSJ)	33.0%
AMOREPACIFIC (KO:AMN)	25.5%
CLICKS GROUP (R:CLSJ)	25.0%
NAVER (KO:NHN)	24.9%
MERCADOLIBRE (MELI)	21.6%

Worst Performers

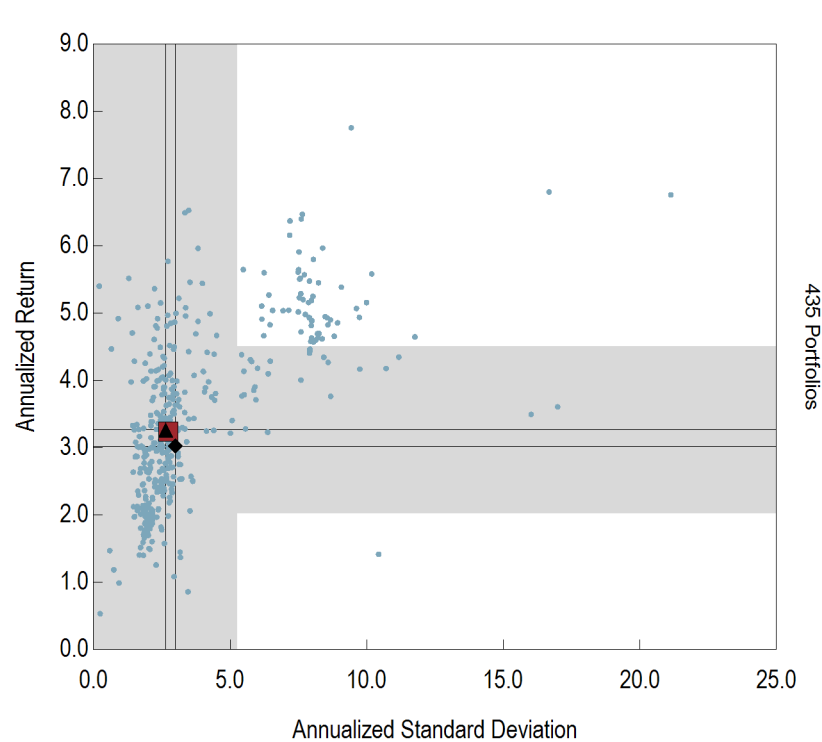
	Return %
BLUEBIRD GROUP PT (ID:BLB)	-29.6%
BNC.STDR.AMER.DEPY. SHS. 1:5 (BSMX)	-25.8%
BEST SPN.ADR 1:1 'A' (BSTI)	-25.0%
BRF SPONSORED ADR 1:1 (BRFS)	-21.9%
GPO FINANCE BANORTE (MX:GTB)	-20.3%
BIOTOSCANA INVESTMENTS BDR (BR:GBI)	-18.8%
CEMEX SPN.ADR 1:10 (CX)	-17.4%
CTRI.P.COM INTL.ADR 8:1 (CTRP)	-16.4%
LOJAS AMERICANAS PN REP1 PN (BR:LM4)	-15.5%
CHINA RAPID FINANCE ADR 'A' (XRF)	-13.2%

	Actual	Actual
Barrow Hanley	\$124,714,270	77.5%
Guggenheim Loan	\$36,172,907	22.5%
Total	\$160,887,177	100.0%



US Fixed Income Risk vs. Return (3 Years)

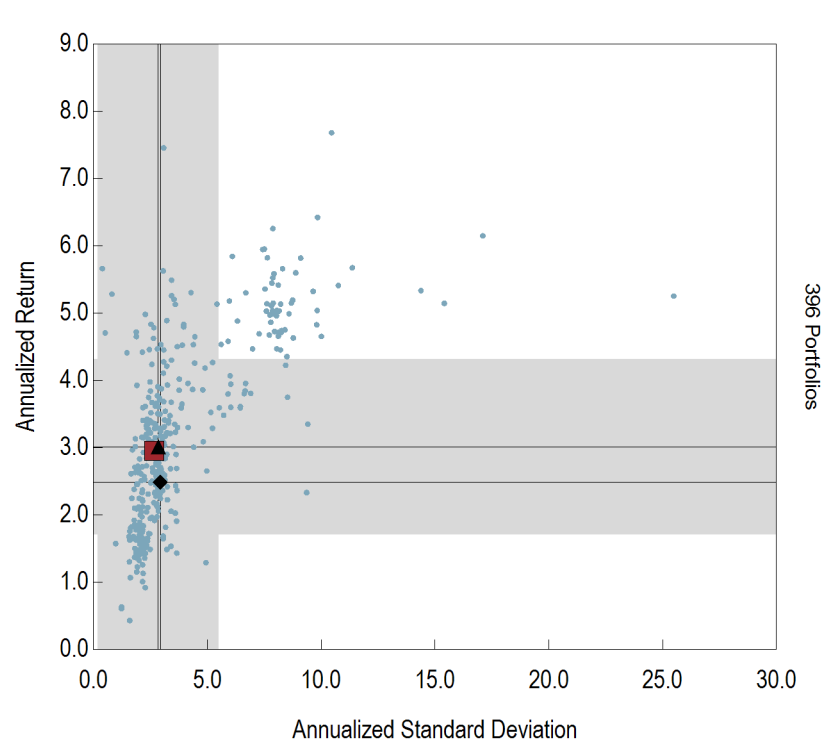
Period Ending: December 31, 2017



	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
US Fixed Income	3.2%	51	2.7%	55	1.0	38
US Fixed Custom	3.0%	57	3.0%	67	0.9	51
InvestorForce All DB US Fix Inc Gross Median	3.3%	--	2.6%	--	0.9	--

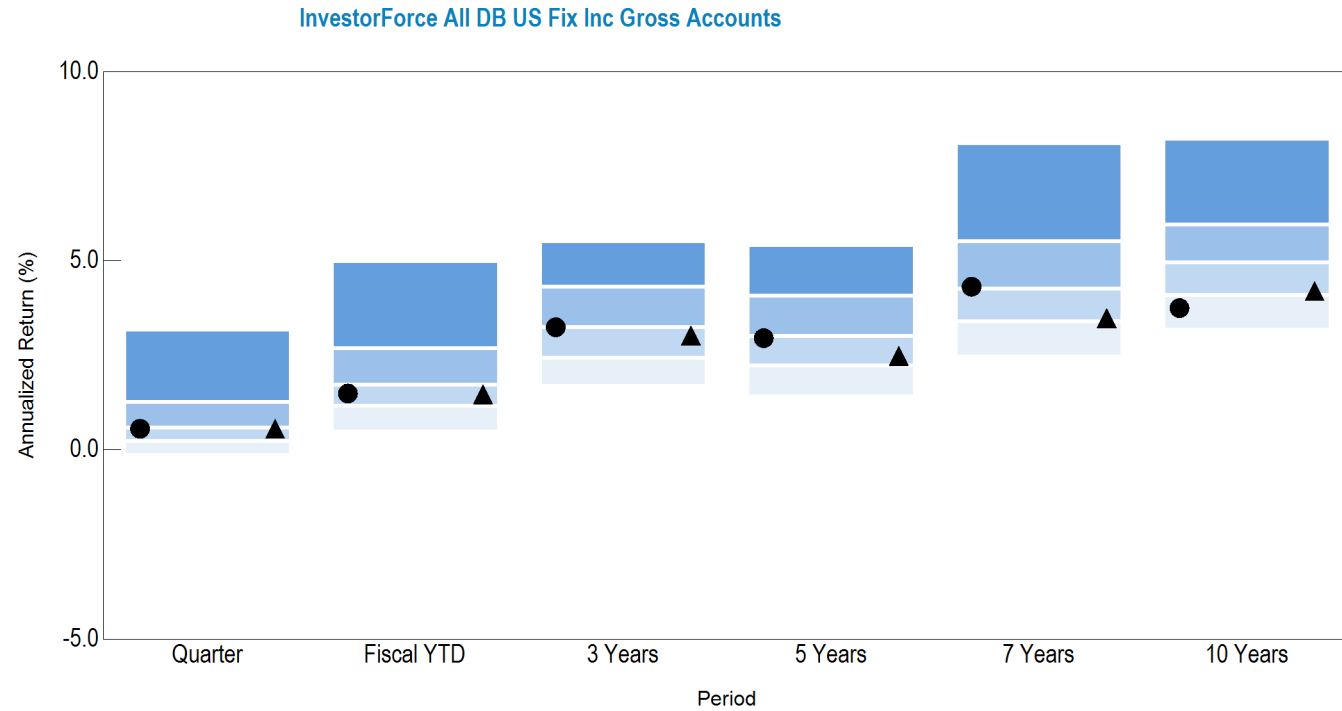
US Fixed Income Risk vs. Return (5 Years)

Period Ending: December 31, 2017



- US Fixed Income
- ◆ US Fixed Custom
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce All DB US Fix Inc Gross

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
US Fixed Income	3.0%	52	2.7%	40	1.0	27
US Fixed Custom	2.5%	67	2.9%	55	0.8	56
InvestorForce All DB US Fix Inc Gross Median	3.0%	--	2.8%	--	0.8	--

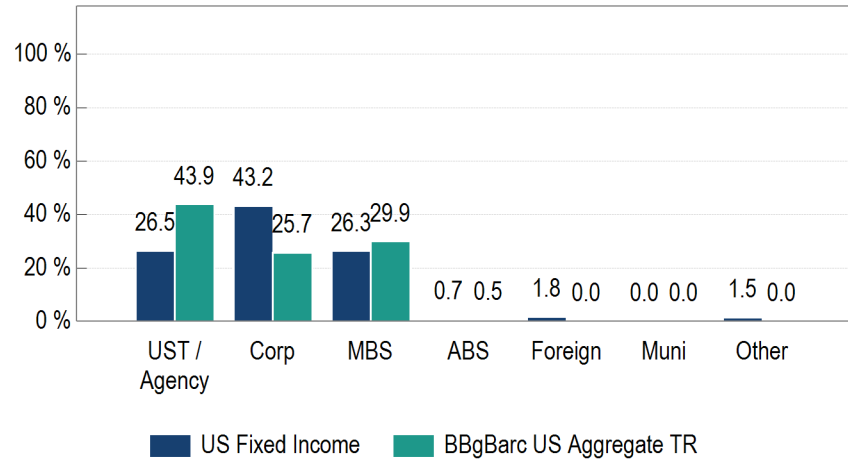


	Return (Rank)					
5th Percentile	3.2	5.0	5.5	5.4	8.1	8.2
25th Percentile	1.3	2.7	4.3	4.1	5.5	6.0
Median	0.6	1.7	3.3	3.0	4.3	5.0
75th Percentile	0.2	1.2	2.4	2.2	3.4	4.1
95th Percentile	-0.1	0.5	1.7	1.4	2.5	3.2
# of Portfolios	476	473	435	396	330	233
● US Fixed Income	0.6 (54)	1.5 (65)	3.2 (51)	3.0 (52)	4.3 (49)	3.7 (83)
▲ US Fixed Custom	0.6 (54)	1.5 (65)	3.0 (57)	2.5 (67)	3.5 (74)	4.2 (72)

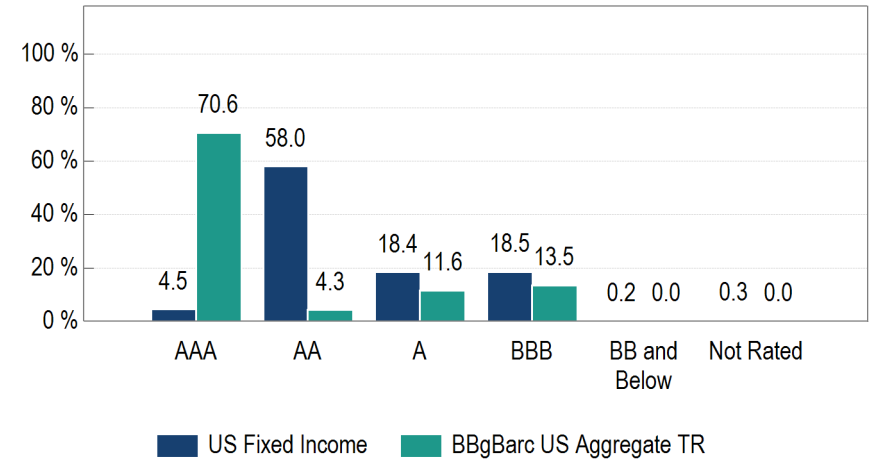
US Fixed Income Bond Summary Statistics

Period Ending: December 31, 2017

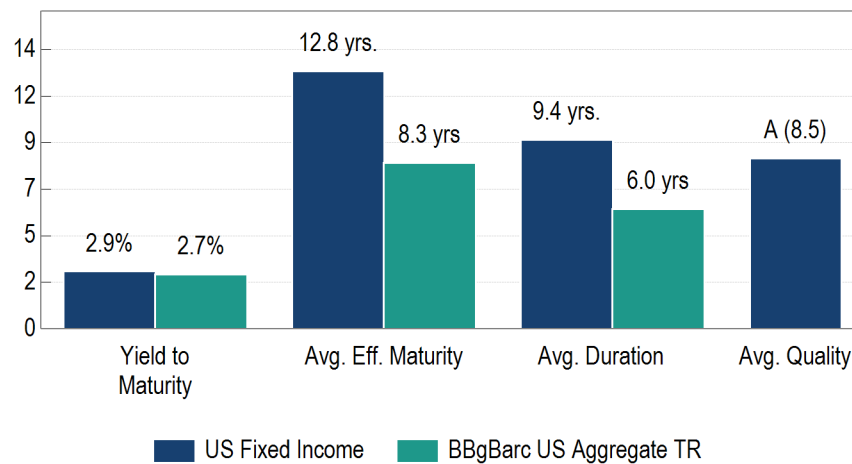
Sectors
US Fixed Income



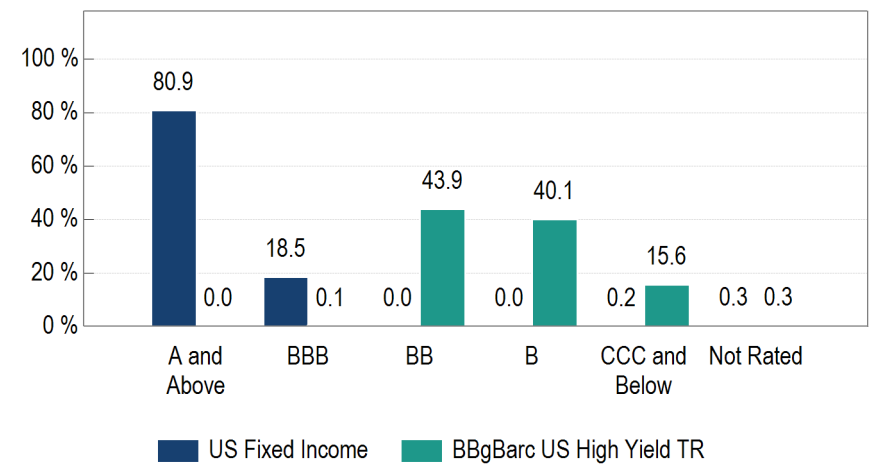
Quality Ratings
US Fixed Income



Characteristics
US Fixed Income

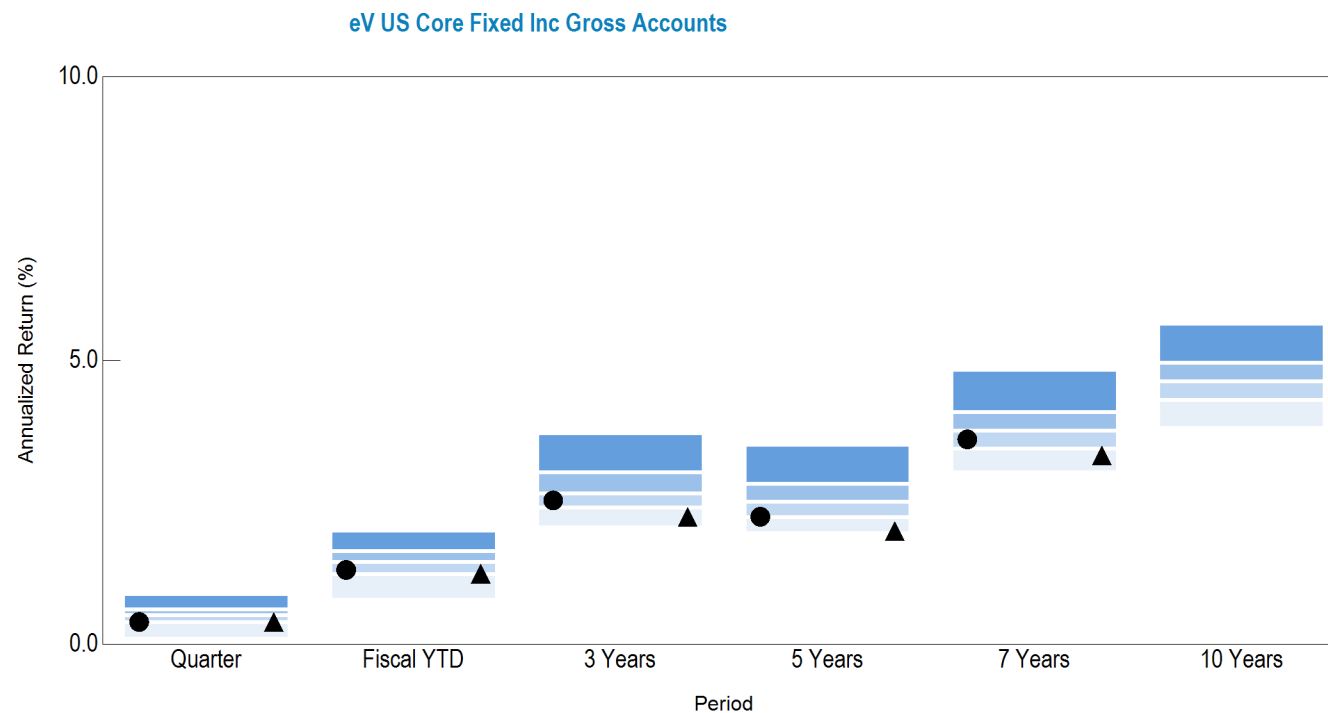


High Yield Quality Ratings
US Fixed Income



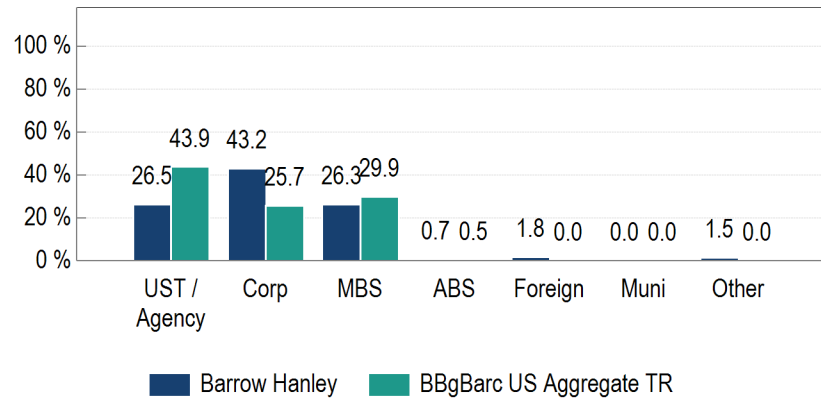
Core Fixed Income
Peer Universe Comparison

Period Ending: December 31, 2017

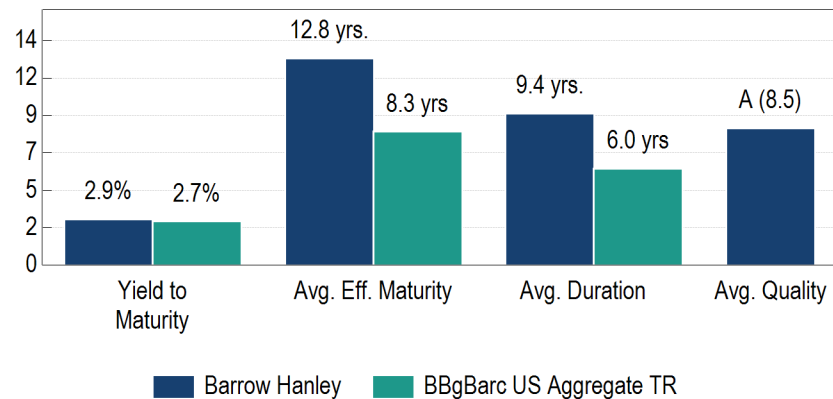


	Return (Rank)											
5th Percentile	0.9		2.0		3.7		3.5		4.8		5.6	
25th Percentile	0.6		1.6		3.0		2.8		4.1		5.0	
Median	0.5		1.5		2.7		2.5		3.8		4.6	
75th Percentile	0.4		1.2		2.4		2.2		3.4		4.3	
95th Percentile	0.1		0.8		2.1		2.0		3.0		3.8	
# of Portfolios	233		233		231		228		221		204	
● Barrow Hanley	0.4	(75)	1.3	(68)	2.5	(64)	2.2	(76)	3.6	(62)	--	(--)
▲ BBgBarc Aggregate	0.4	(76)	1.2	(76)	2.2	(90)	2.0	(94)	3.3	(84)	--	(--)

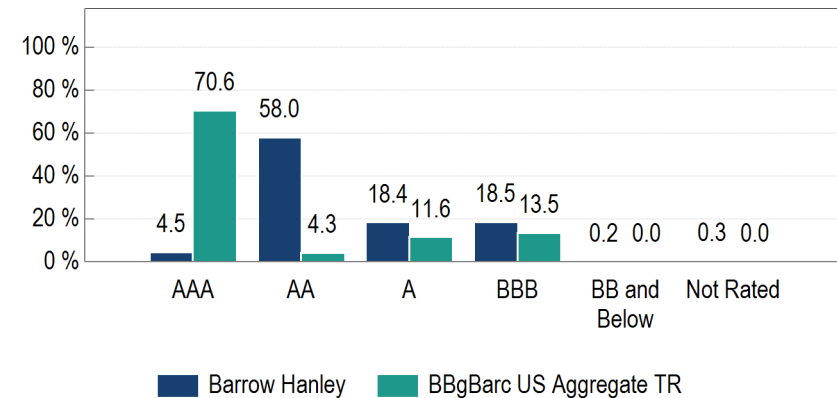
Sectors
Barrow Hanley

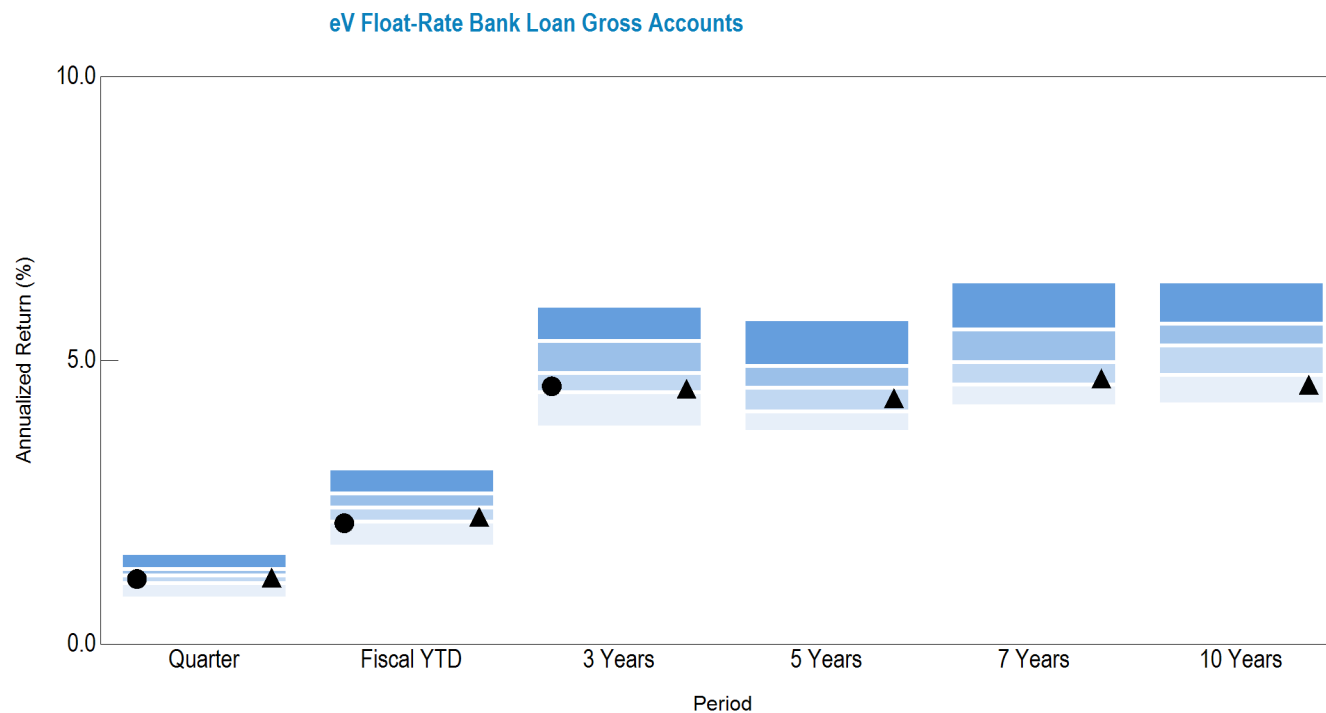


Characteristics
Barrow Hanley



Quality Ratings
Barrow Hanley

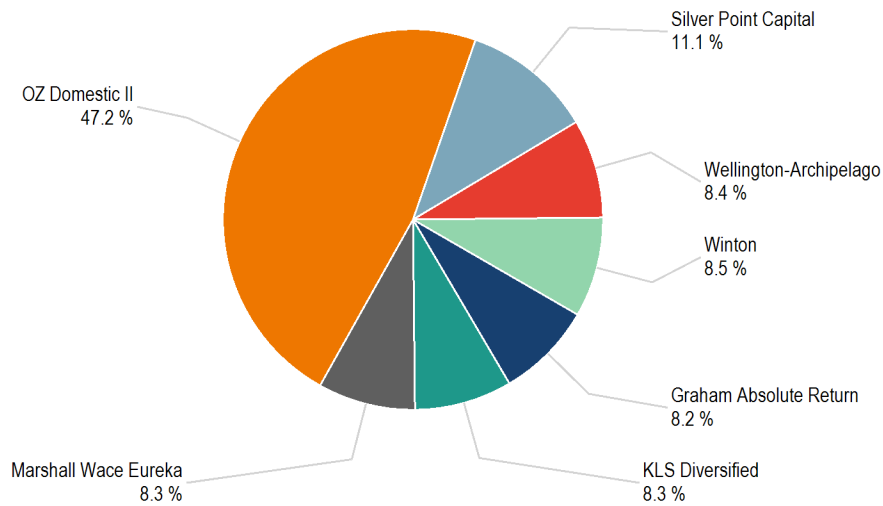




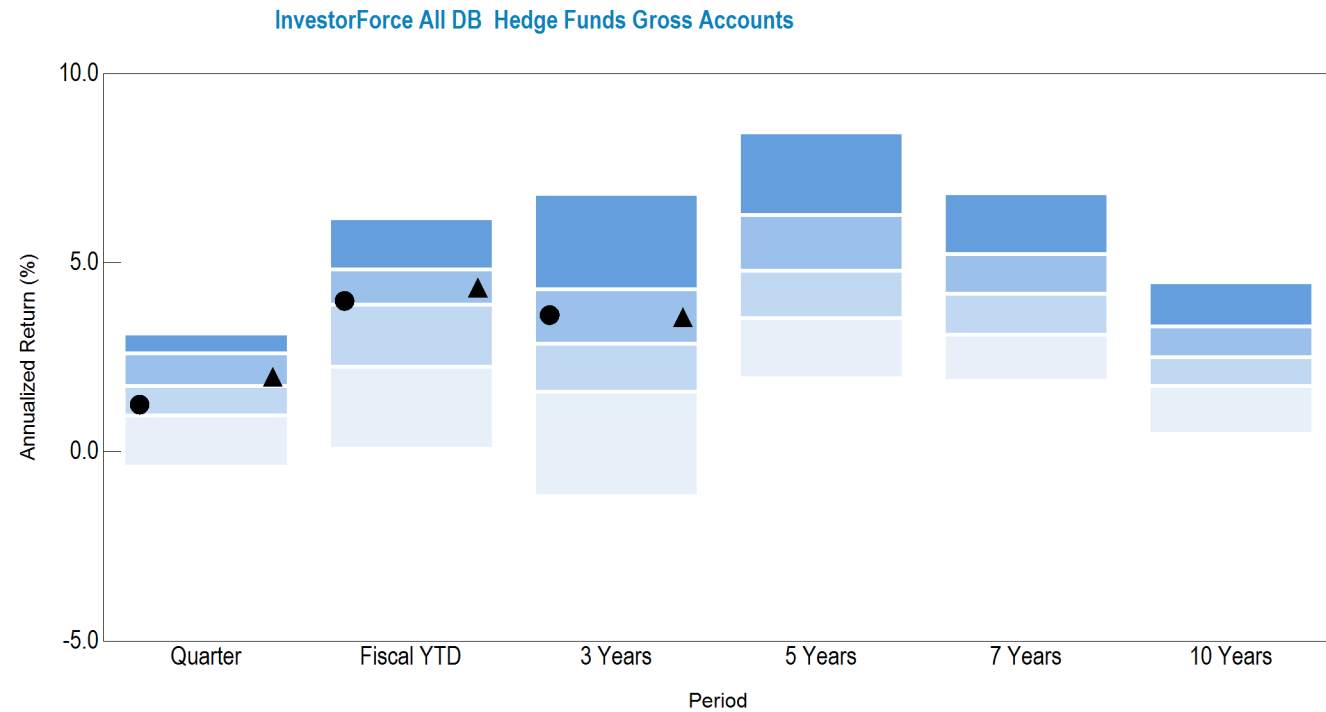
	Return (Rank)											
5th Percentile	1.6			3.1			6.0			5.7		
25th Percentile	1.3			2.7			5.3			4.9		
Median	1.2			2.4			4.8			4.5		
75th Percentile	1.1			2.2			4.4			4.1		
95th Percentile	0.8			1.7			3.8			3.7		
# of Portfolios	75			75			75			65		
● Guggenheim Loan	1.1	(68)		2.1	(79)		4.5	(69)		--	(--)	
▲ Credit Suisse Leveraged Loans	1.2	(62)		2.2	(71)		4.5	(72)		4.3	(61)	

Hedge Fund Manager Allocation Analysis

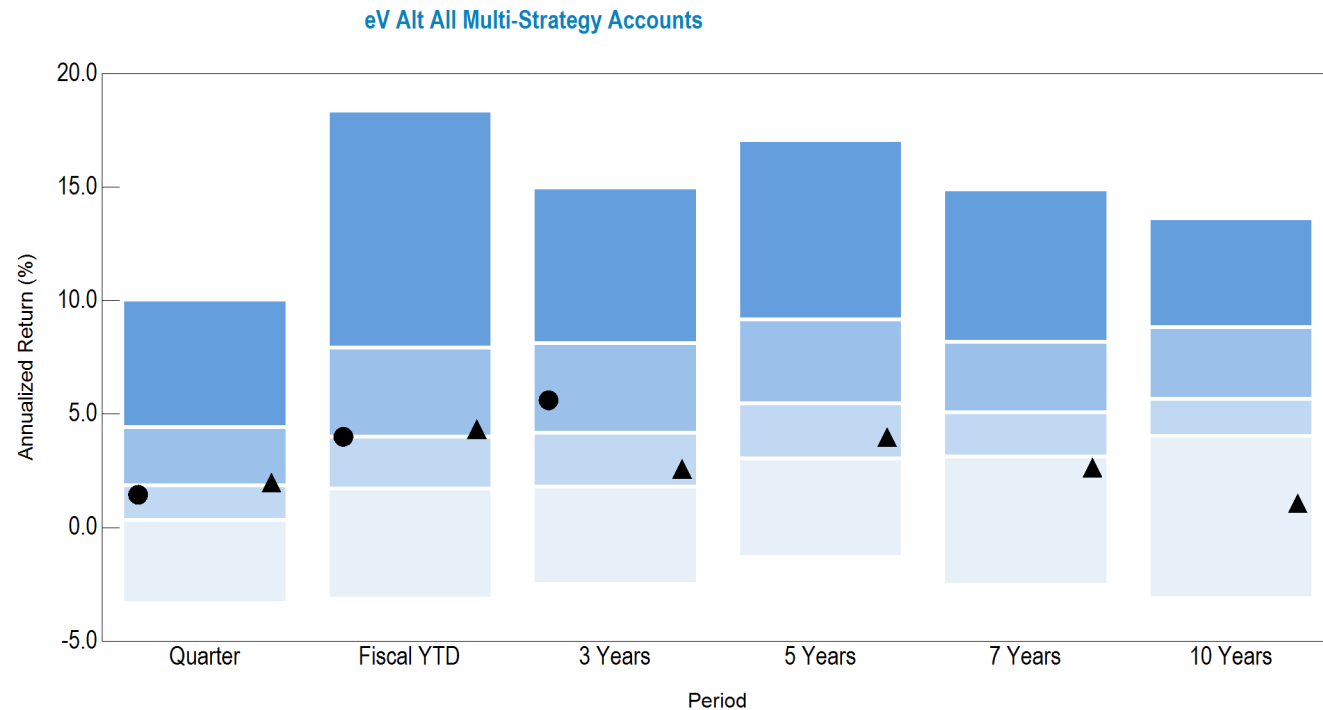
Period Ending: December 31, 2017



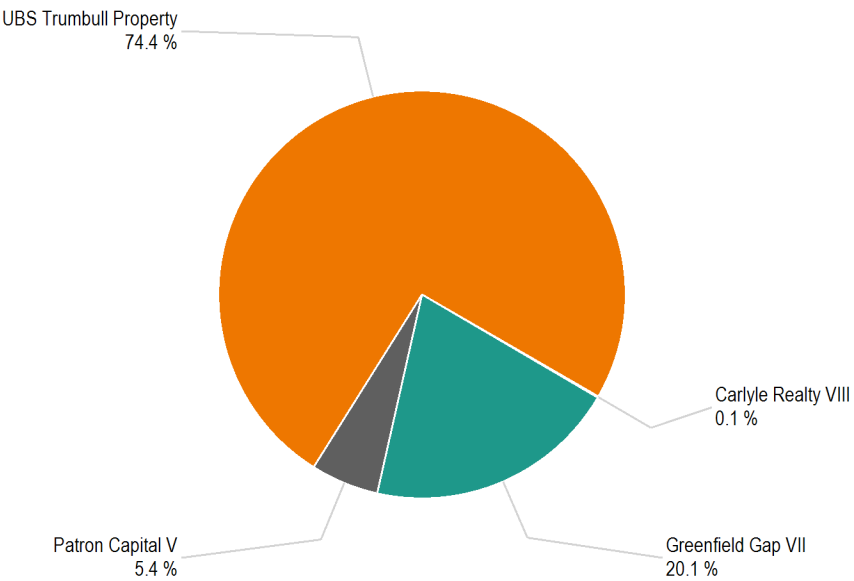
	Actual	Actual
Graham Absolute Return	\$2,969,238	8.2%
KLS Diversified	\$3,018,914	8.3%
Marshall Wace Eureka	\$3,020,882	8.3%
OZ Domestic II	\$17,131,738	47.2%
Silver Point Capital	\$4,022,673	11.1%
Wellington-Archipelago	\$3,050,183	8.4%
Winton	\$3,077,761	8.5%
Total	\$36,291,389	100.0%



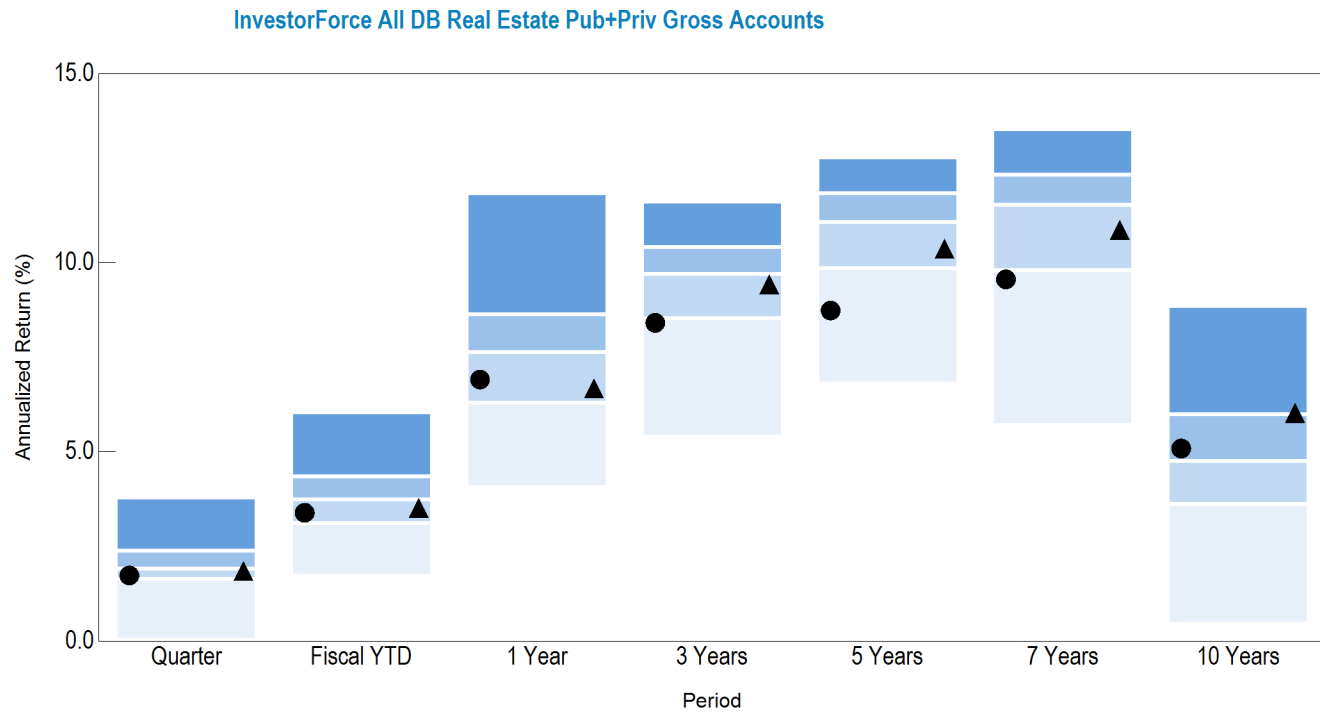
	Return (Rank)											
5th Percentile	3.1		6.2		6.8		8.4		6.8		4.5	
25th Percentile	2.6		4.8		4.3		6.3		5.2		3.3	
Median	1.7		3.9		2.9		4.8		4.2		2.5	
75th Percentile	1.0		2.3		1.6		3.5		3.1		1.7	
95th Percentile	-0.4		0.1		-1.2		1.9		1.9		0.5	
# of Portfolios	228		226		206		196		168		89	
● Hedge Fund	1.2	(70)	4.0	(49)	3.6	(39)	--	(--)	--	(--)	--	(--)
▲ Hedge Fund Custom	2.0	(44)	4.3	(41)	3.6	(40)	--	(--)	--	(--)	--	(--)



	Return (Rank)											
5th Percentile	10.0		18.4		15.0		17.1		14.9		13.6	
25th Percentile	4.4		7.9		8.1		9.2		8.2		8.9	
Median	1.9		4.0		4.2		5.5		5.1		5.7	
75th Percentile	0.3		1.7		1.8		3.1		3.1		4.1	
95th Percentile	-3.3		-3.1		-2.5		-1.3		-2.5		-3.1	
# of Portfolios	300		299		254		198		162		104	
● OZ Domestic II	1.4	(56)	4.0	(51)	5.6	(42)	--	(--)	--	(--)	--	(--)
▲ HFRI Fund of Funds Composite Index	2.0	(50)	4.3	(47)	2.6	(65)	4.0	(66)	2.7	(80)	1.1	(93)



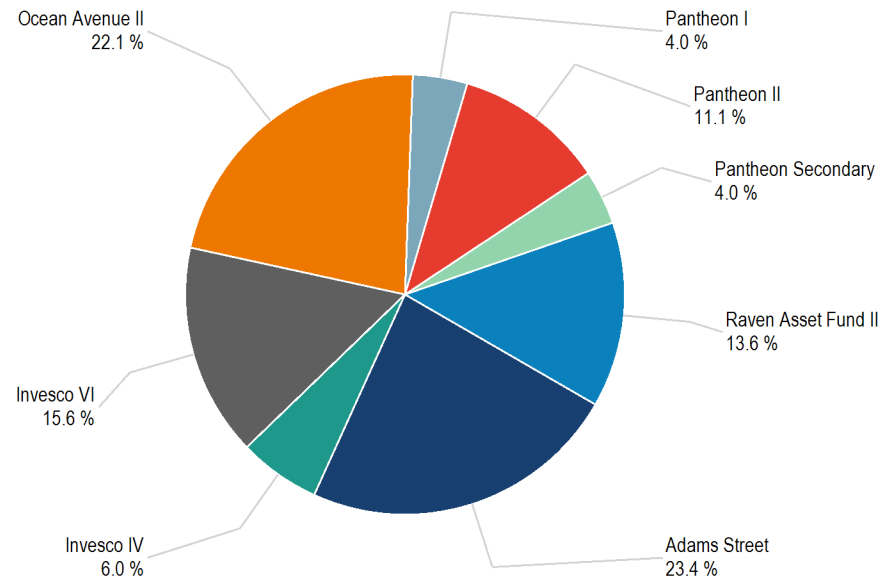
	Actual	Actual
Carlyle Realty VIII	\$31,438	0.1%
Greenfield Gap VII	\$11,405,924	20.1%
Patron Capital V	\$3,068,884	5.4%
UBS Trumbull Property	\$42,264,772	74.4%
Total	\$56,771,019	100.0%



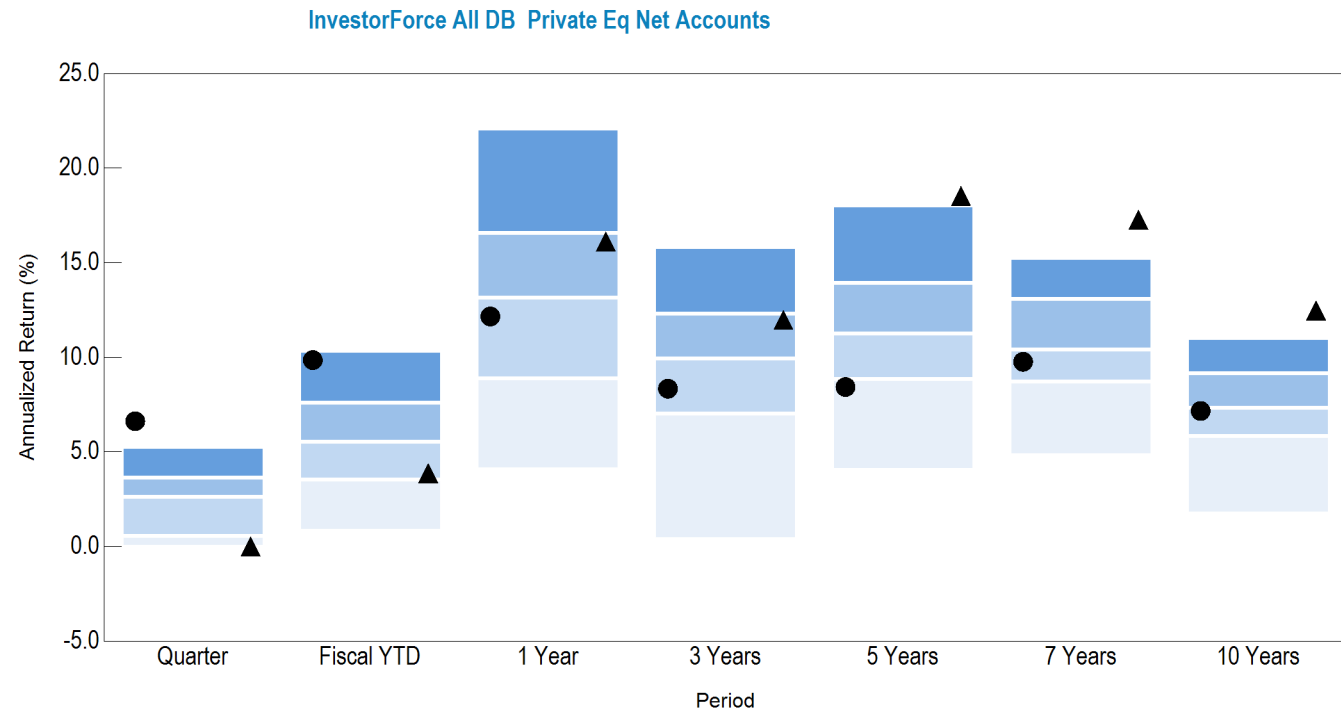
	Return (Rank)						
5th Percentile	3.8	6.0	11.8	11.6	12.8	13.5	8.8
25th Percentile	2.4	4.4	8.6	10.4	11.8	12.3	6.0
Median	1.9	3.8	7.6	9.7	11.1	11.5	4.8
75th Percentile	1.7	3.1	6.3	8.5	9.9	9.8	3.6
95th Percentile	0.0	1.7	4.1	5.4	6.8	5.7	0.5
# of Portfolios	188	185	180	143	121	94	63
● Real Estate	1.7 (70)	3.4 (67)	6.9 (66)	8.4 (80)	8.7 (90)	9.6 (83)	5.1 (44)
▲ NCREIF ODCE net	1.9 (53)	3.5 (61)	6.7 (71)	9.4 (57)	10.4 (69)	10.9 (63)	6.0 (25)

Private Equity Manager Allocation Analysis

Period Ending: December 31, 2017



	Actual	Actual
Adams Street	\$8,326,785	23.4%
Invesco IV	\$2,135,939	6.0%
Invesco VI	\$5,539,203	15.6%
Ocean Avenue II	\$7,874,990	22.1%
Pantheon I	\$1,438,690	4.0%
Pantheon II	\$3,957,119	11.1%
Pantheon Secondary	\$1,433,961	4.0%
Raven Asset Fund II	\$4,846,380	13.6%
Total	\$35,553,066	100.0%



	Return (Rank)						
5th Percentile	5.3	10.3	22.1	15.8	18.0	15.2	11.0
25th Percentile	3.7	7.6	16.6	12.3	14.0	13.1	9.2
Median	2.6	5.5	13.2	10.0	11.3	10.4	7.3
75th Percentile	0.6	3.6	8.9	7.1	8.9	8.7	5.9
95th Percentile	0.0	0.8	4.1	0.4	4.1	4.8	1.8
# of Portfolios	107	107	105	101	88	73	43
● Private Equity	6.6 (4)	9.9 (8)	12.2 (57)	8.3 (68)	8.4 (80)	9.8 (58)	7.2 (54)
▲ Thomson Reuters Cambridge Private Equity	0.0 (94)	3.9 (72)	16.1 (27)	12.0 (31)	18.5 (5)	17.3 (2)	12.5 (1)

Total Plan Policy Index	As of:								
	7/1/17	1/1/17	1/1/15	7/1/14	7/1/13	6/1/13	4/1/13	4/1/12	1/1/10
91-day US T Bill									
BBgBarc Aggregate	17%	17%	21%	21%	29%	29%	24%	24%	24%
BBgBarc US TIPS							5%	5%	5%
BofA ML High Yield II			5%	5%	5%	5%	5%	5%	5%
CPI +4%									
Credit Suisse Leveraged Loan	5%	5%	3%	3%					
FTSE NAREIT Developed				1%	2%	2%	2%	2%	2.0%
FTSE NAREIT Developed ex US				1%					
HFRI Fund of Funds Composite	5%	2.5%	2.3%	5%					
HFRI RV Multi-strategy		2.5%	2.3%						
MSCI ACWI ex US			24%	24%	24%				
MSCI EAFE	16%	16%				20%	20%	20%	24%
MSCI Emerging Markets	7%	7%				4%	4%	4%	
NCREIF									
NCREIF ODCE				5%	6%	6%	6%	6%	6%
NCREIF ODCE net	8%	8%	8%						
Russell 1000	22%	22%	23%	23%	25%	25%			
Russell 2000	5%	5%	6%	6%	4%	4%	6%	6%	4%
Russell 3000 +3% 1QL (PE)		9%	7%	7%	5%	5%	5%		
S&P 400							4%	4%	
S&P 500							19%	19%	25%
S&P 500 +5% (PE)								5%	5%
S&P Global Infrastructure	3%	3%							
S&P Global Natural Resources	3%	3%							
Thomson Reuters Cambridge Private Equity	9%								
Wilshire RE									
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Total Plan Policy Index	As of:							
	10/1/08	7/1/08	1/1/08	4/1/07	4/1/05	1/1/02	1/1/99	1/1/95
91-day US T Bill								
BBgBarc Aggregate			1%	1%	1%	1%	1%	
BBgBarc US TIPS	23%	23%	30%	30%	30%	38%	38%	
BofA ML High Yield II								
CPI +4%								
Credit Suisse Leveraged Loan								100%
FTSE NAREIT Developed								
FTSE NAREIT Developed ex US								
HFRI Fund of Funds Composite								
HFRI RV Multi-strategy								
MSCI ACWI ex US								
MSCI EAFE								
MSCI Emerging Markets	18%	18%	7%	7%	7%	6%	6%	
NCREIF								
NCREIF ODCE	6%	6%	6%	6%	6%	5%		
NCREIF ODCE net								
Russell 1000								
Russell 2000								
Russell 3000 +3% 1QL (PE)	6%	6.25%	7.65%	7.9%	7.7%	8%	8%	
S&P 400								
S&P 500								
S&P 500 +5% (PE)	43%	43.75%	46.35%	47.1%	48.3%	42%	42%	
Wilshire RE	4%	3%	2%	1%				
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Total Plan w/o AI Policy Index	As of:				
	1/1/17	7/1/14	7/1/13	6/1/13	4/1/13
91-day US T Bill					
BBgBarc Aggregate	24%	25%	33%	33%	27%
BBgBarc US TIPS					6%
BofA ML High Yield II		6%	6%	6%	6%
CPI +4%					
Credit Suisse Leveraged Loan	7%	4%			
FTSE NAREIT Developed				2%	2%
FTSE NAREIT Developed ex US					
HFRI Fund of Funds Composite					
HFRI RV Multi-strategy					
MSCI ACWI ex US		29%	28%		
MSCI EAFE	22%			22%	22%
MSCI Emerging Markets	10%			4%	4%
NCREIF					
NCREIF ODCE					
NCREIF ODCE net					
Russell 1000	31%	28%	29%	28%	
Russell 2000	7%	7%	5%	4%	7%
Russell 3000 +3% 1QL (PE)					
S&P 400					4%
S&P 500					21%
S&P 500 +5% (PE)					
S&P Global Infrastructure					
S&P Global Natural Resources					
Wilshire RE					
	100.0%	100.0%	100.0%	100.0%	100.0%

US Equity Benchmark

As of:			
7/1/14	6/1/13	1/1/95	
Russell 1000	80%	86%	
Russell 2000	20%	14%	
Russell 3000			100%
100.0%	100.0%	100.0%	

International Equity Benchmark

As of:				
1/1/17	7/1/13	4/1/12	1/1/99	
MSCI ACWI ex US	100%			
MSCI EAFE	69.6%		83.3%	100%
MSCI Emerging Markets	30.4%		16.7%	
100.0%	100.0%	100.0%	100.0%	

Fixed Income Benchmark

As of:						
1/1/17	8/1/14	7/1/14	6/1/13	4/1/13	1/1/95	
BBgBarc Aggregate	77.3%	71.9%	82.5%	85.3%	70.6%	100.0%
BBgBarc US TIPS					14.7%	
BofA ML High Yield II		17.5%	17.5%	14.7%	14.7%	
Credit Suisse Leveraged Loan	22.7%	10.5%				
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Hedge Fund Benchmark

As of:			
7/1/17	1/1/15	7/1/14	
HFRI Fund of Funds Composite	100%	50%	100%
HFRI RV Multi-strategy		50%	
100.0%	100.0%	100.0%	

Real Estate Benchmark

As of:					
1/1/15	7/1/14	1/1/10	1/1/02	4/1/99	
FTSE NAREIT Developed	17.5%	25%			
FTSE NAREIT Developed ex US	16.3%				
NCREIF			100%		
NCREIF ODCE	66.3%	75%			
NCREIF ODCE net	100%				
Wilshire RE				100%	
100.0%	100.0%	100.0%	100.0%	100.0%	

Private Equity Benchmark

As of:			
7/1/17	4/1/13	7/1/05	
Russell 3000 +3% 1QL	100%		
S&P 500 +5%		100%	
Thomson Reuters Cambridge Private Equity	100%		
100.0%	100.0%	100.0%	

Infrastructure Benchmark

As of:		
1/1/17	12/31/14	
S&P Global Infrastructure	100%	
CPI-U Headline +5%		100%
100.0%	100.0%	

Natural Resources Benchmark

As of:		
1/1/17	9/30/15	
S&P Global Natural Resources	100%	
CPI-U Headline +5%		100%
100.0%	100.0%	

Real Asset Benchmark

As of:	
1/1/17	
NCREIF ODCE net	57.1%
S&P Global Infrastructure	21.4%
S&P Global Natural Resources	21.4%
100.0%	

Barrow Hanley Benchmark

As of:

	6/1/13	4/1/10
BBgBarc Aggregate	100%	82.8%
BBgBarc US TIPS		17.2%
	100.0%	100.0%

UBS Trumbull Benchmark

As of:

	1/1/15	1/1/10	1/1/02	4/1/99
NCREIF			100%	
NCREIF ODCE		100%		
NCREIF ODCE net	100%			
Wilshire RE				100%
	100.0%	100.0%	100.0%	100.0%

KKR Global Benchmark

As of:

	1/1/17	12/31/14
S&P Global Infrastructure	100%	
CPI-U Headline +5%		100%
	100.0%	100.0%

North Haven Benchmark

As of:

	1/1/17	5/31/15
S&P Global Infrastructure	100%	
CPI-U Headline +5%		100%
	100.0%	100.0%

GSO Benchmark

As of:

	1/1/17	11/30/15
S&P Global Natural Resources	100%	
CPI-U Headline +5%		100%
	100.0%	100.0%

Taurus Mining Benchmark

As of:

	1/1/17	9/30/15
S&P Global Natural Resources	100%	
CPI-U Headline +5%		100%
	100.0%	100.0%

Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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