



Investment Oversight

As at 29th February 2016 (Preliminary)



Investment Oversight

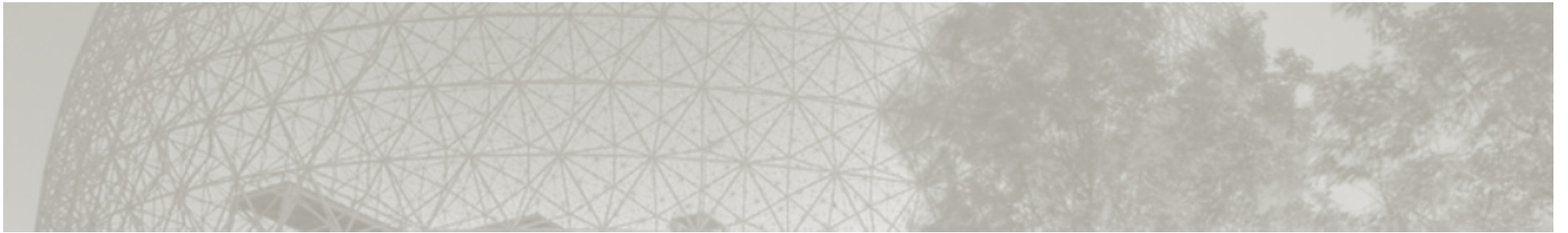
As at 29th February 2016

Dallas Police & Fire Pension System

Preliminary Contents

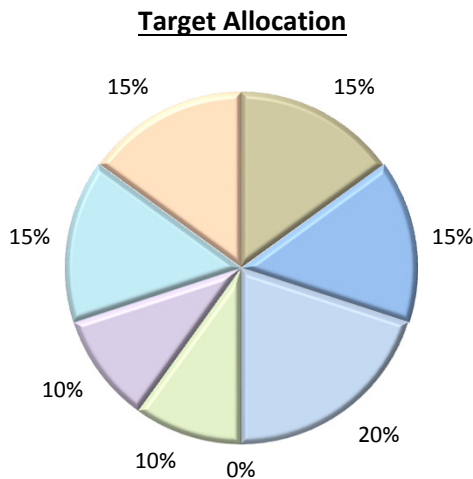
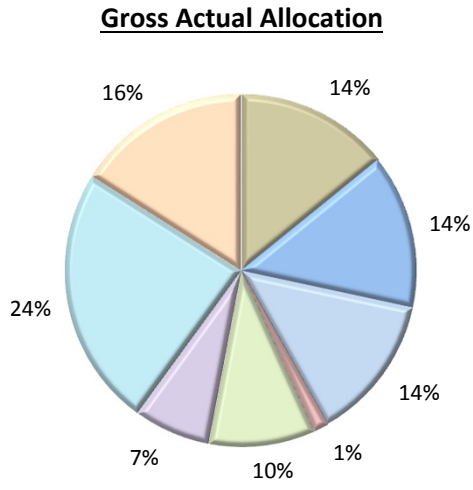


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February 2016 Snapshot

Preliminary
February 2016 Snapshot
Asset Allocation: Actual vs. Target



		Actual Allocation (\$)	Net Actual Allocation (%)	Gross Actual Allocation (%)	Target Allocation (%)	Target Range (%)
Liquid Assets						
Public Equity	Domestic Small Cap	48,457,815	1.80%	1.66%		
	Energy Public Equity	21,623,105	0.80%	0.74%		
	Global Core	107,006,184	3.98%	3.66%		
	Global Environmental Technology	16,079	0.00%	0.00%		
	Global Growth	191,206,593	7.12%	6.54%		
	Global REIT	21,042,666	0.78%	0.72%		
	Global Water Strategy	24,456,441	0.91%	0.84%		
	Sub-Total	413,808,884	15.40%	14.16%	15%	12% - 18%
Fixed Income	Emerging Market Debt	54,892,762	2.04%	1.88%		
	High Yield Global Fixed Income	55,953,942	2.08%	1.91%		
	Investment Grade Global Fixed Income	128,342,414	4.78%	4.39%		
	Multistrategy Private Debt	20,206,171	0.75%	0.69%		
	Opportunistic Global Fixed Income	106,721,037	3.97%	3.65%		
	Senior Floating Rate	48,956,226	1.82%	1.68%		
Sub-Total	415,072,551	15.45%	14.20%	15%	13% - 17%	
Asset Allocation		393,176,394	14.63%	13.45%	20%	18% - 22%
Cash & Cash Equivalents		42,159,991	1.57%	1.44%	0%	
Liquid Assets Total		1,264,217,820	47.05%	43.26%	50%	
Private Assets						
Natural Resources	Domestic Timberland	44,240,892	1.65%	1.51%		
	Global Agriculture	161,607,131	6.01%	5.53%		
	Global Timberland	79,356,793	2.95%	2.72%		
Sub-Total	285,204,816	10.61%	9.76%	10%	8% - 12%	
Infrastructure		204,892,837	7.63%	7.01%	10%	8% - 12%
Real Estate		699,410,353	26.03%	23.93%	15%	10% - 20%
Private Equity		468,672,895	17.44%	16.04%	15%	10% - 20%
Private Assets Total		1,658,180,901	61.71%	56.74%	50%	
Gross Total		2,922,398,721	109%	100%	100%	
Plan Leverage Facility		(235,314,513)				
Net Total		2,687,084,208				

Preliminary
February 2016 Snapshot
Asset Allocation: Actual vs. Target (cont.)



		Actual Allocation (\$)	Net Actual Allocation (%)	Gross Actual Allocation (%)	Target Allocation (%)
Equities	Public Equity	413,808,884	15.40%	14.16%	15%
	Private Equity	407,330,983	15.16%	13.94%	10%
	Sub-Total	821,139,867	30.56%	28.10%	25%
Credit	Fixed Income	415,072,551	15.45%	14.20%	15%
	Private Credit	61,341,912	2.28%	2.10%	5%
	Sub-Total	476,414,463	17.73%	16.30%	20%
Real Assets	Liquid Real Assets	0	0.00%	0.00%	0%
	Infrastructure	204,892,837	7.63%	7.01%	10%
	Natural Resources	285,204,816	10.61%	9.76%	10%
	Real Estate	699,410,353	26.03%	23.93%	15%
	Sub-Total	1,189,508,006	44.27%	40.70%	35%
Other	Asset Allocation	393,176,394	14.63%	13.45%	20%
	Cash & Cash Equivalents	42,159,991	1.57%	1.44%	0%
	Sub-Total	435,336,386	16.20%	14.90%	20%
Gross Total		2,922,398,721	109%	100%	100%
Plan Leverage Facility		(235,314,513)			
Net Total		2,687,084,208			

* Funds in the Private Credit bucket are not actually held separately, but are bucketed as such for future trend purposes. For details on the funds that will be reclassified, see appendix IV (page 41).

** Under current policy, the allocations to Private Equity and Private Credit are combined for a total of 15%.

Preliminary
February 2016 Snapshot
Public Securities Performance



Equity Holdings

February 2016 Estimated Values					
Holding	End NAV	Return	Benchmark	Benchmark Return	Alpha
Eagle Asset Management	48,457,815	0.43%	Russell 2000	0.00%	0.43%
Mitchell Group	21,623,105	-7.60%	Dow Jones Equal Weight US Oil & Gas	-7.74%	0.13%
OFI Global Institutional	111,707,426	-1.77%	MSCI World	-0.68%	-1.08%
Pyramis (Fidelity)	107,006,184	-1.31%	MSCI ACWI	-0.69%	-0.63%
RREEF	21,042,666	0.54%	FTSE EPRA/NAREIT	0.43%	0.12%
Sustainable Asset Management	24,456,441	0.33%	MSCI World	-0.68%	1.01%
Walter Scott	79,499,167	0.16%	MSCI ACWI	-0.69%	0.85%
Total	413,792,804	-1.12%	MSCI ACWI	-0.69%	-0.43%

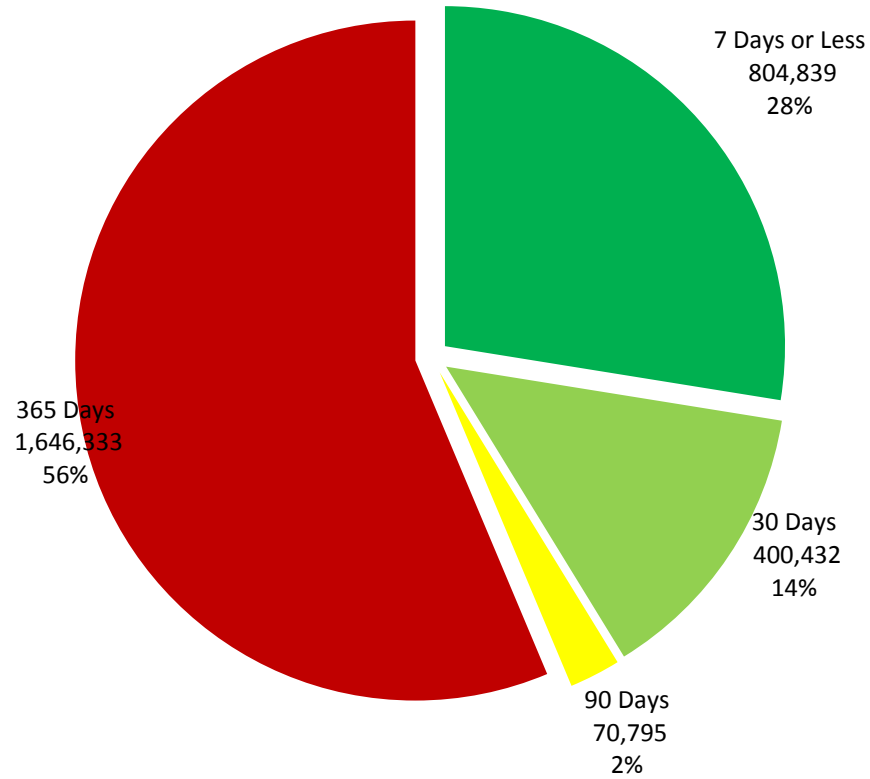
Fixed Income Holdings

February 2016 Estimated Values					
Holding	End NAV	Return	Benchmark	Benchmark	Alpha
Ashmore EM Debt Fund	38,741,021	-2.04%	JPM GBI-EM Global Diversified	1.48%	-3.52%
Ashmore EM Local CCY	16,151,741	0.50%	JPM GBI-EM Global Diversified	1.48%	-0.98%
Brandywine	87,072,814	1.91%	Barclays Global Aggregate	0.87%	1.04%
Loomis Sayles	106,721,037	-0.02%	70% ML HY / 30% JPM EM	0.77%	-0.79%
Loomis Sayles Sr. Floating Rate	48,956,226	-0.80%	S&P/LSTA Leveraged Loan Index	-0.86%	0.07%
Mondrian Investment Partners	41,269,600	2.32%	Barclays Global Aggregate	0.87%	1.45%
W.R. Huff High Yield	55,953,942	1.43%	Citi HY Index	0.36%	1.07%
Total	394,866,380	0.56%	Barclays Global Aggregate	0.87%	-0.30%

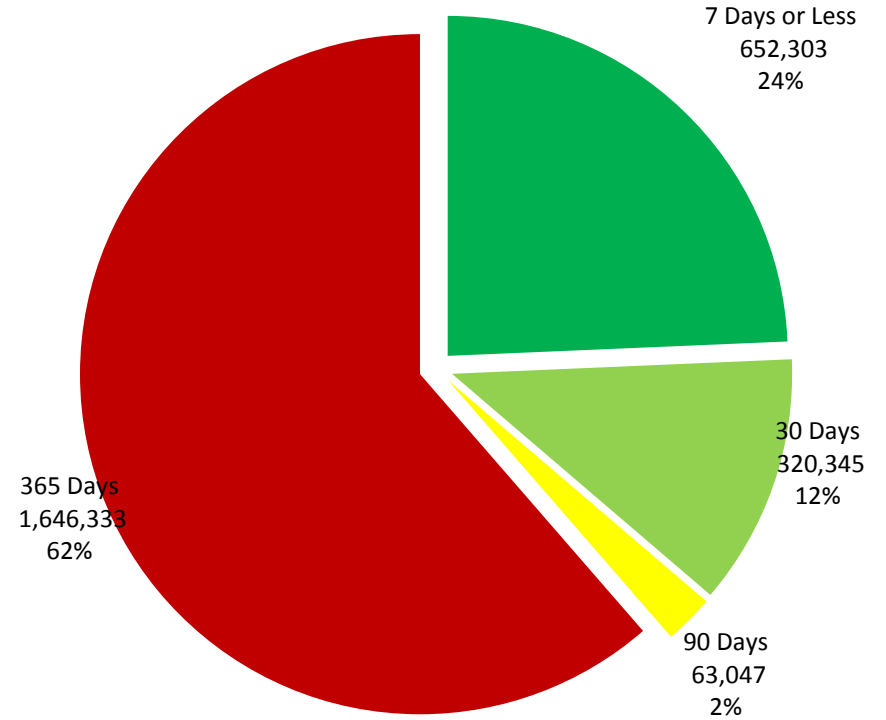
Preliminary February 2016 Snapshot Portfolio Liquidity



Normal Market Conditions



Stressed Scenario - 20% Market Drawdown



* Amounts detailed are in thousands, and are based on the gross asset value of the portfolio.

** Stressed scenario is a result of applying a 20% drawdown to the liquid portfolio.



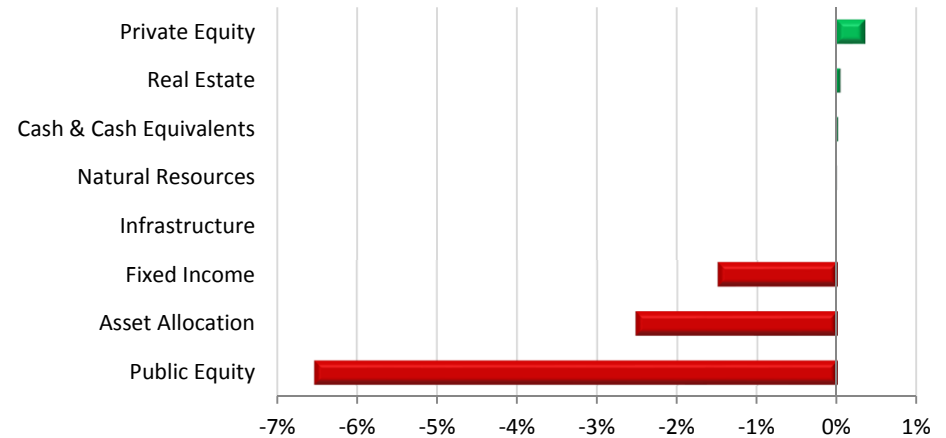
January 2016

Preliminary – Data as at January 2016 Asset Class Performance: Actual vs. Policy



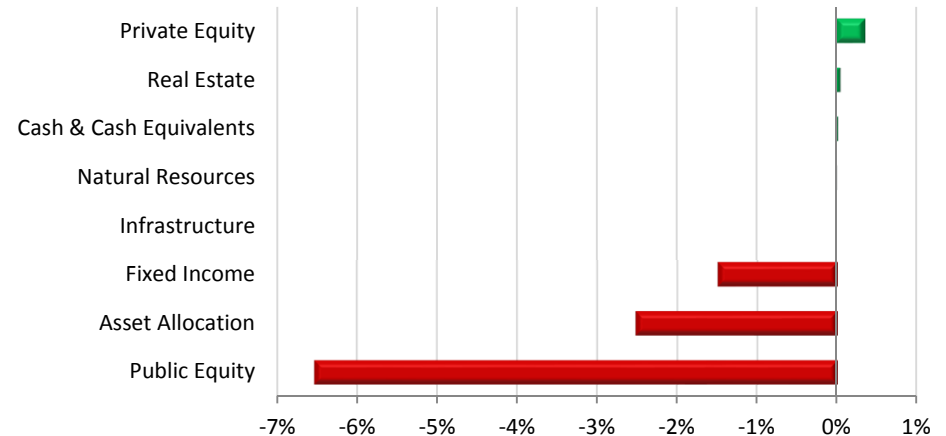
One Month Performance as at Jan. 2016

	One Month		
	DPFP Return	Policy Return (Beta)	Alpha
Public Equity	-6.54%	-6.03%	-0.51%
Fixed Income	-1.50%	0.87%	-2.37%
Asset Allocation	-2.53%	0.44%	-2.96%
Cash & Cash Equivalents	0.02%	0.00%	0.02%
Natural Resources	0.00%	0.00%	0.00%
Infrastructure	0.00%	0.44%	-0.44%
Real Estate	0.05%	0.00%	0.05%
Private Equity	0.35%	-4.80%	5.15%
Total	-1.59%	-1.36%	-0.22%
Total ex Real Estate	-1.92%	-1.36%	-0.56%



Quarter-to-Date Performance as at Jan. 2016

	Quarter-to-Date		
	DPFP Return	Policy Return (Beta)	Alpha
Public Equity	-6.54%	-6.03%	-0.51%
Fixed Income	-1.50%	0.87%	-2.37%
Asset Allocation	-2.53%	0.44%	-2.96%
Cash & Cash Equivalents	0.02%	0.00%	0.02%
Natural Resources	0.00%	0.00%	0.00%
Infrastructure	0.00%	0.44%	-0.44%
Real Estate	0.05%	0.00%	0.05%
Private Equity	0.35%	-4.80%	5.15%
Total	-1.59%	-1.36%	-0.22%
Total ex Real Estate	-1.92%	-1.36%	-0.56%



* Please see Appendix I (page 36) for details on the policy indexes.

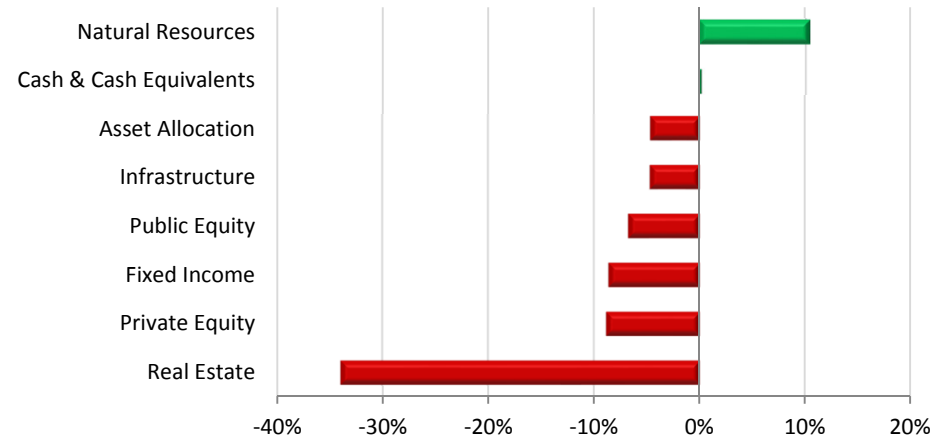
** Returns presented are calculated using custodian bank year-end source data and values, which do not include subsequent valuation adjustments completed for audit and actuarial purposes. Therefore, the returns shown here will differ from actuary calculated returns, as well as the official investment returns presented by NEPC.

Preliminary – Data as at January 2016
Asset Class Performance: Actual vs. Policy (cont.)



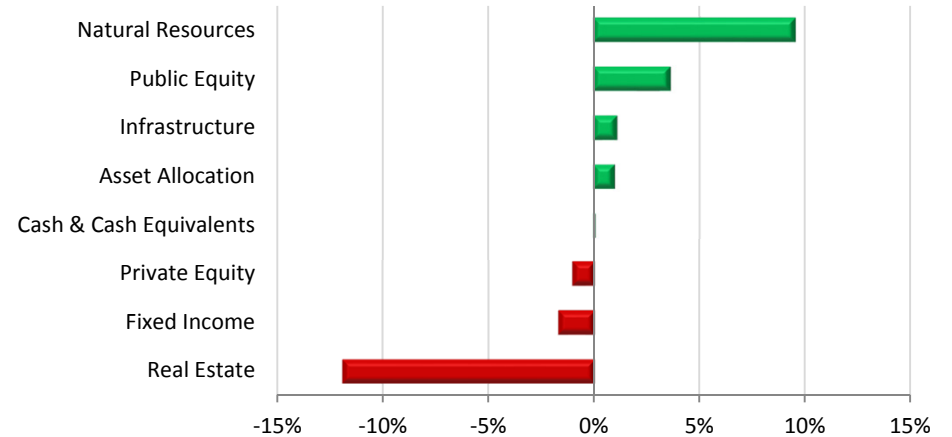
One Year Performance as at Jan. 2016

	One Year		
	DPFP Return	Policy Return (Beta)	Alpha
Public Equity	-6.88%	-6.80%	-0.08%
Fixed Income	-8.75%	-2.16%	-6.59%
Asset Allocation	-4.78%	6.44%	-11.23%
Cash & Cash Equivalents	0.25%	0.00%	0.25%
Natural Resources	10.43%	14.93%	-4.50%
Infrastructure	-4.83%	6.44%	-11.27%
Real Estate	-34.04%	13.33%	-47.37%
Private Equity	-8.99%	1.32%	-10.32%
Total	-14.65%¹	4.32%	-18.97%
Total ex Real Estate	-5.12%	2.35%	-7.47%



Three Year Performance as at Jan. 2016

	Three Year		
	DPFP Return	Policy Return (Beta)	Alpha
Public Equity	3.66%	3.91%	-0.25%
Fixed Income	-1.75%	-1.15%	-0.60%
Asset Allocation	1.03%	5.97%	-4.94%
Cash & Cash Equivalents	0.11%	0.00%	0.11%
Natural Resources	9.53%	12.84%	-3.31%
Infrastructure	1.14%	5.97%	-4.82%
Real Estate	-11.94%	12.04%	-23.97%
Private Equity	-1.08%	13.51%	-14.59%
Total	-2.04%	7.26%	-9.30%
Total ex Real Estate	1.93%	5.43%	-3.49%



¹ Approximately two-thirds of the one year loss relates to the lagged returns from Q4 2014 for private investments. These losses were reflected in the 2014 CAFR and 1/1/15 actuarial valuation

* Please see Appendix I (page 36) for details on the policy indexes.

** Returns presented are calculated using custodian bank year-end source data and values, which do not include subsequent valuation adjustments completed for audit and actuarial purposes. Therefore, the returns shown here will differ from actuary calculated returns, as well as the official investment returns presented by NEPC.

Preliminary – Data as at January 2016 Portfolio Attribution



Attribution Metrics

- Allocation refers to the proportion of the active return that can be attributed to tactical asset allocation decisions.
- Selection refers to the proportion of the active return that can be attributed to manager selection and subsequent performance of the selected managers.
- Interaction refers to the proportion of the active return that cannot be attributed solely to tactical asset allocation decisions or manager selection.

Preliminary – Data as at January 2016 Portfolio Attribution (cont.)



One Month as at Jan. 2016

Asset Class	Weights		Returns		Attribution			
	DFPF	Policy	DFPF	Policy	Allocation (1)	Selection (2)	Interaction (3)	Active Return (1+2+3)
Public Equity	16.27%	15.00%	-6.54%	-6.03%	-0.06%	-0.08%	-0.01%	-0.14%
Fixed Income	15.04%	15.00%	-1.50%	0.87%	0.00%	-0.35%	0.00%	-0.35%
Asset Allocation	14.66%	20.00%	-2.53%	0.44%	-0.10%	-0.59%	0.16%	-0.53%
Cash & Cash Equivalents	2.95%	0.00%	0.02%	0.00%	0.04%	0.00%	0.00%	0.04%
Natural Resources	10.33%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Infrastructure	7.27%	10.00%	0.00%	0.44%	-0.05%	-0.04%	0.01%	-0.08%
Real Estate	25.25%	15.00%	0.05%	0.00%	0.14%	0.01%	0.01%	0.15%
Private Equity	16.65%	15.00%	0.35%	-4.80%	-0.06%	0.77%	0.09%	0.80%
Plan Leverage Facility	-8.44%	0.00%	0.00%	0.00%	-0.12%	0.00%	0.00%	-0.12%
Total	100.00%	100.00%	-1.59%	-1.36%	-0.19%	-0.29%	0.25%	-0.22%

Calendar YTD as at Jan. 2016

Asset Class	Weights		Returns		Attribution			
	DFPF	Policy	DFPF	Policy	Allocation (1)	Selection (2)	Interaction (3)	Active Return (1+2+3)
Public Equity	16.27%	15.00%	-6.54%	-6.03%	-0.06%	-0.08%	-0.01%	-0.14%
Fixed Income	15.04%	15.00%	-1.50%	0.87%	0.00%	-0.35%	0.00%	-0.35%
Asset Allocation	14.66%	20.00%	-2.53%	0.44%	-0.10%	-0.59%	0.16%	-0.53%
Cash & Cash Equivalents	2.95%	0.00%	0.02%	0.00%	0.04%	0.00%	0.00%	0.04%
Natural Resources	10.33%	10.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Infrastructure	7.27%	10.00%	0.00%	0.44%	-0.05%	-0.04%	0.01%	-0.08%
Real Estate	25.25%	15.00%	0.05%	0.00%	0.14%	0.01%	0.01%	0.15%
Private Equity	16.65%	15.00%	0.35%	-4.80%	-0.06%	0.77%	0.09%	0.80%
Plan Leverage Facility	-8.44%	0.00%	0.00%	0.00%	-0.12%	0.00%	0.00%	-0.12%
Total	100.00%	100.00%	-1.59%	-1.36%	-0.19%	-0.29%	0.25%	-0.22%

One Year as at Jan. 2016

Asset Class	Weights		Returns		Attribution			
	DFPF	Policy	DFPF	Policy	Allocation (1)	Selection (2)	Interaction (3)	Active Return (1+2+3)
Public Equity	21.08%	15.00%	-6.88%	-6.80%	-0.58%	0.00%	0.04%	-0.54%
Fixed Income	14.14%	15.00%	-8.75%	-2.16%	0.09%	-0.90%	0.04%	-0.78%
Asset Allocation	13.35%	20.00%	-4.78%	6.44%	-0.07%	-1.94%	0.50%	-1.51%
Cash & Cash Equivalents	1.62%	0.00%	0.25%	0.00%	-0.07%	0.00%	0.00%	-0.06%
Natural Resources	9.06%	10.00%	10.43%	14.93%	-0.15%	-0.38%	0.03%	-0.50%
Infrastructure	6.26%	10.00%	-4.83%	6.44%	-0.05%	-1.08%	0.42%	-0.71%
Real Estate	28.29%	15.00%	-34.04%	13.33%	0.99%	-7.38%	-6.80%	-13.19%
Private Equity	16.04%	15.00%	-8.99%	1.32%	0.06%	-1.74%	-0.36%	-2.05%
Plan Leverage Facility	-9.84%	0.00%	0.88%	0.00%	0.46%	0.00%	-0.09%	0.37%
Total	100.00%	100.00%	-14.65%¹	4.32%	0.68%	-13.43%	-6.22%	-18.97%

¹ Approximately two-thirds of the one year loss relates to the lagged returns from Q4 2014 for private investments. These losses were reflected in the 2014 CAFR and 1/1/15 actuarial valuation

* Please see Appendix II (page 37) for details on the attribution calculation and methodology.

Preliminary – Data as at January 2016 Asset Allocations: Monthly Changes



The total NAV of the portfolio at January 31st 2016 is **2,716,489,103**

- P&L of the portfolio decreased by \$44million.
- 10 million was added in contributions, 32 million paid in benefit payments.
- No new managers were added during the month.
- No managers were liquidated during the month.
- Strategy with the largest cash inflow in Dec: Private Equity
- Strategy with the largest cash outflow in Dec: Public Equity
- Over the past 12 months, the largest increase in allocation was in Natural Res.
- Over the past 12 months, the largest decrease in allocation was in Real Estate.

Top Performing Asset Classes

Asset Class	Performance (Jan.)	
	\$	%
Private Equity	1,618,086	0.35%
Real Estate	359,487	0.05%
Cash & Cash Equivalents	15,837	0.02%

Top Performing Holdings

Holdings	Performance (Jan.)	
	\$	%
Oaktree Power Opportunities Fund III	841,186	5.42%
RE Separate Accounts	818,311	0.13%
Ashmore GSSF IV	716,780	15.90%

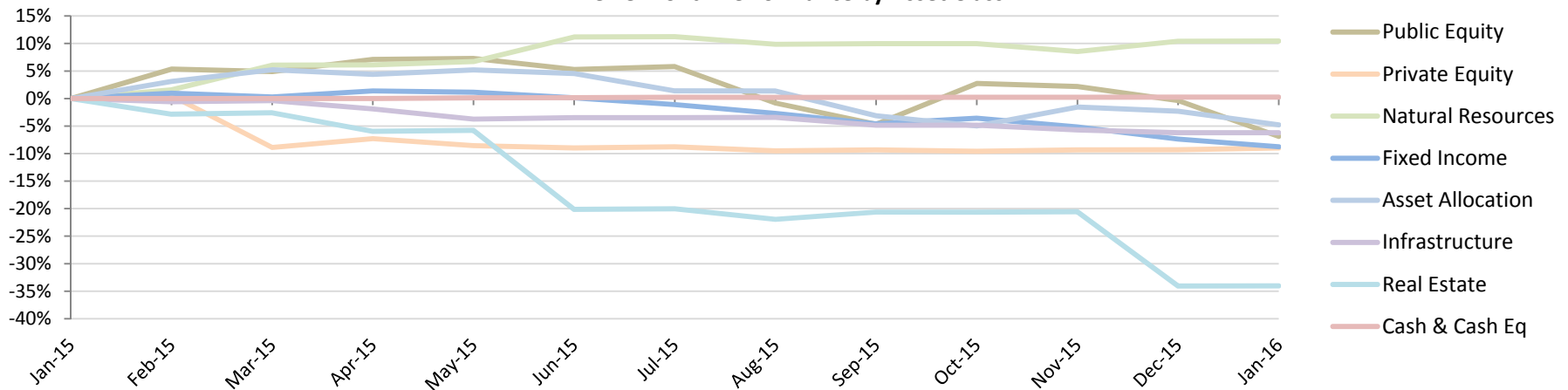
Bottom Performing Asset Classes

Asset Class	Performance (Jan.)	
	\$	%
Public Equity	(29,664,418)	-6.54%
Asset Allocation	(10,332,232)	-2.53%
Fixed Income	(6,288,462)	-1.50%

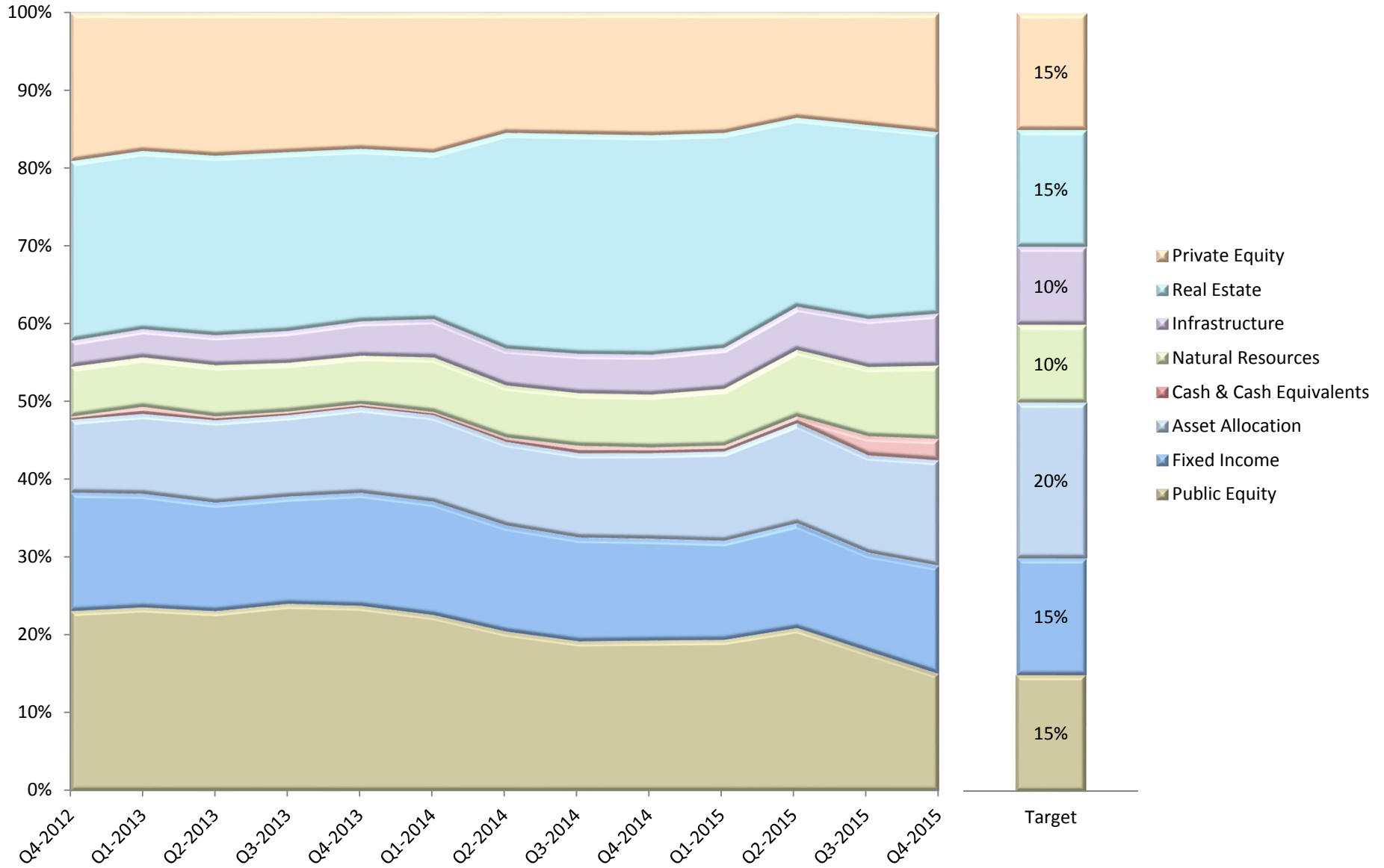
Bottom Performing Holdings

Holdings	Performance (Jan.)	
	\$	%
OFI Global Institutional	(12,603,360)	-9.98%
Pyramis (Fidelity)	(7,485,644)	-6.19%
Bridgewater	(4,898,833)	-3.70%

Twelve Month Performance by Asset Class



Preliminary – Data as at January 2016
Asset Allocations: Over Time (Quarterly)



Preliminary – Data as at January 2016 Long Term Plan Risk/Return vs Policy and 60/40

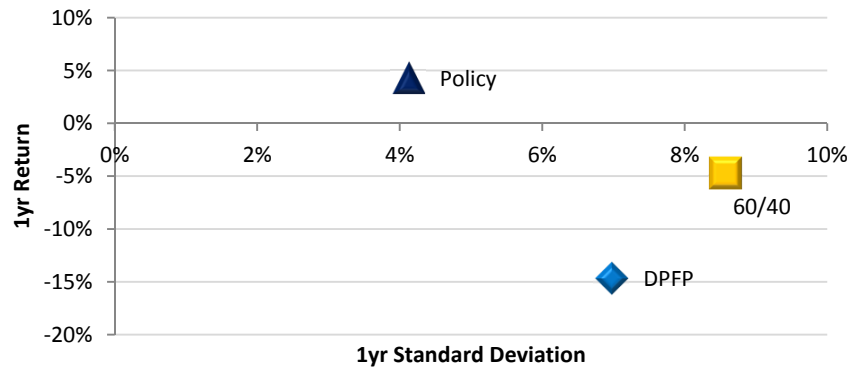


Trend Commentary

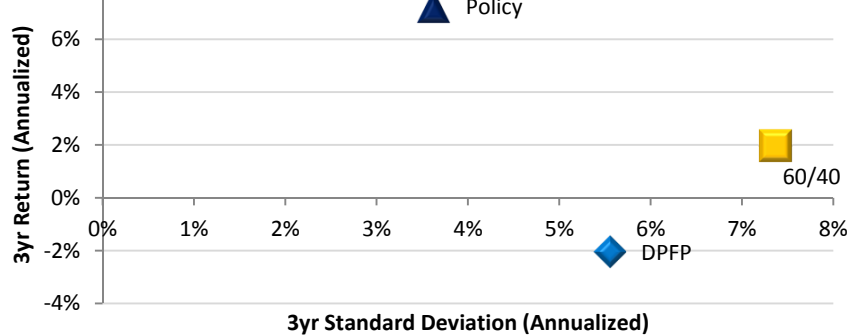
- The DPFP portfolio is less volatile than the 60/40 portfolio across the 1 year, 2 year, 3 year and 5 year time horizons.
- The DPFP portfolio is less volatile than the Policy benchmark across the 5 year time horizon.

Note: Higher allocations to illiquid assets tend to deemphasize volatility due to the infrequency of marks received. This may be particularly acute in the case of the DPFP plan portfolio.

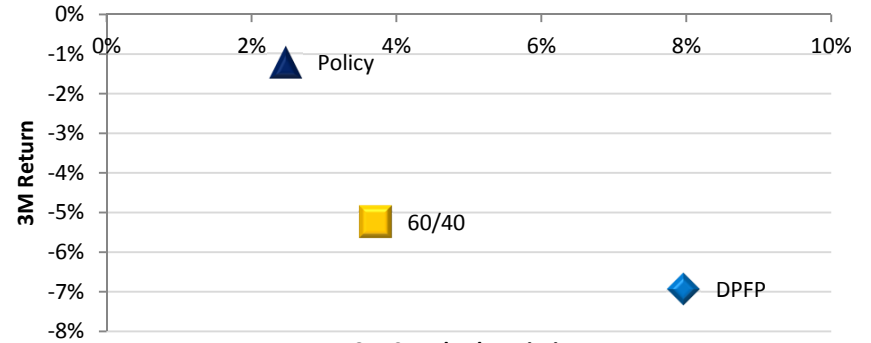
1 Year as at Jan. 2016



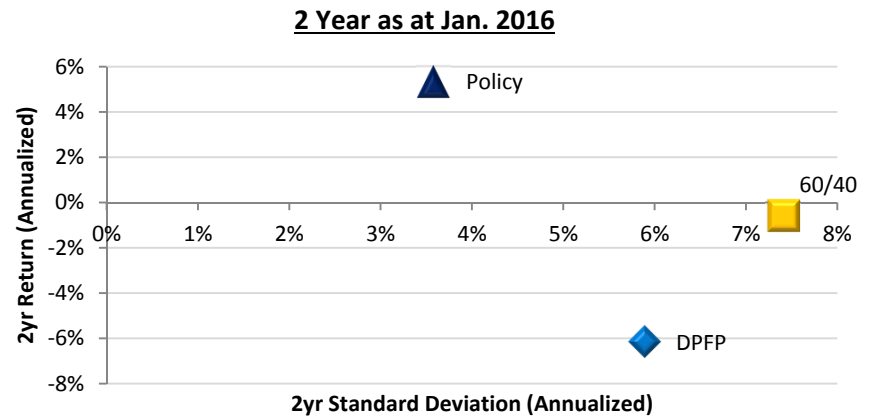
3 Year as at Jan. 2016



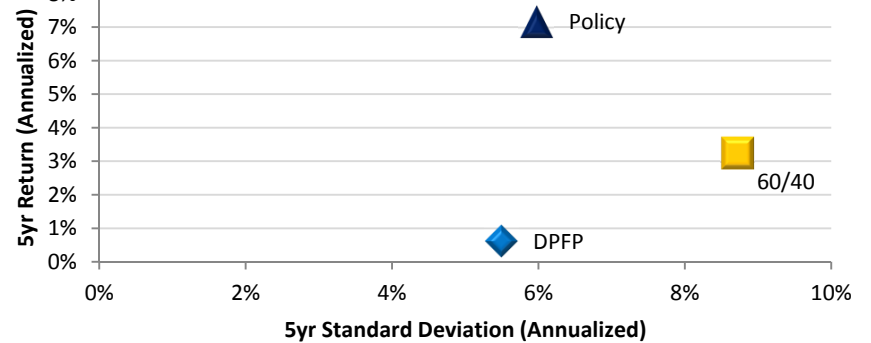
3 Month as at Jan. 2016



2 Year as at Jan. 2016



5 Year as at Jan. 2016



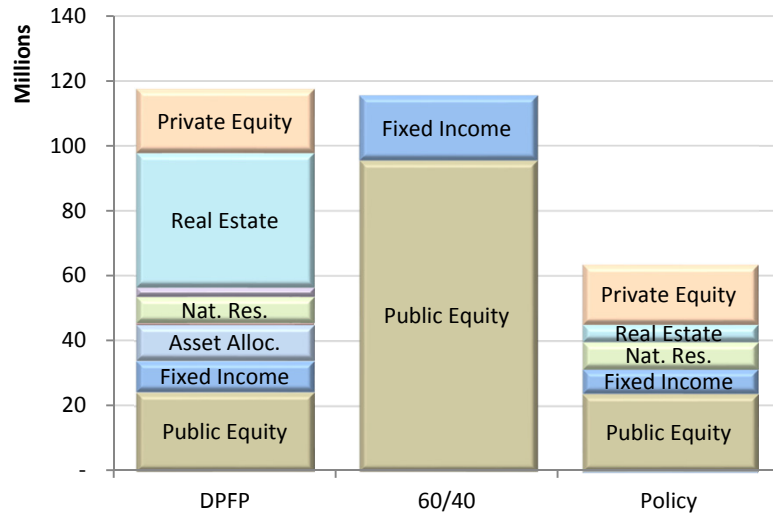
* Please see Appendix I (page 36) for details on the composition of the 60/40 and Policy benchmarks.

Preliminary – Data as at January 2016

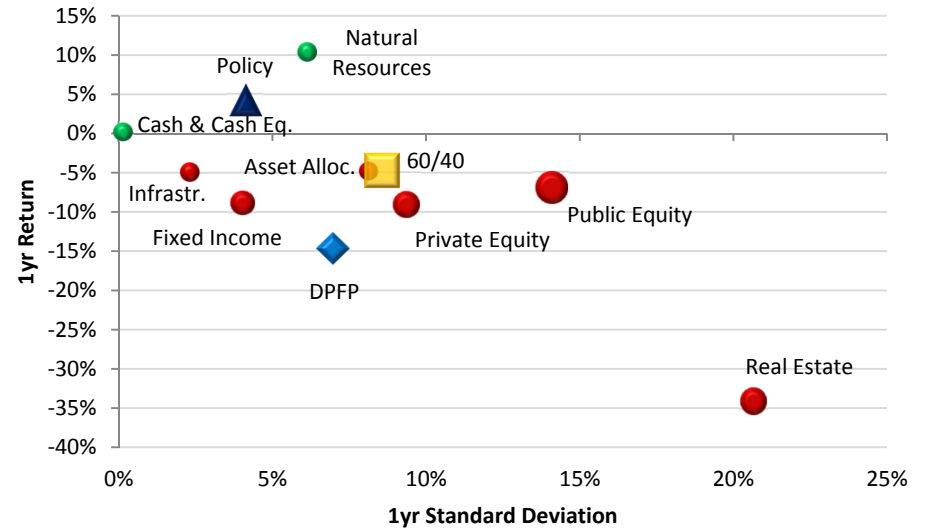
Risk Profile



Five Year Value at Risk (95% Confidence Level) as at Jan. 2016

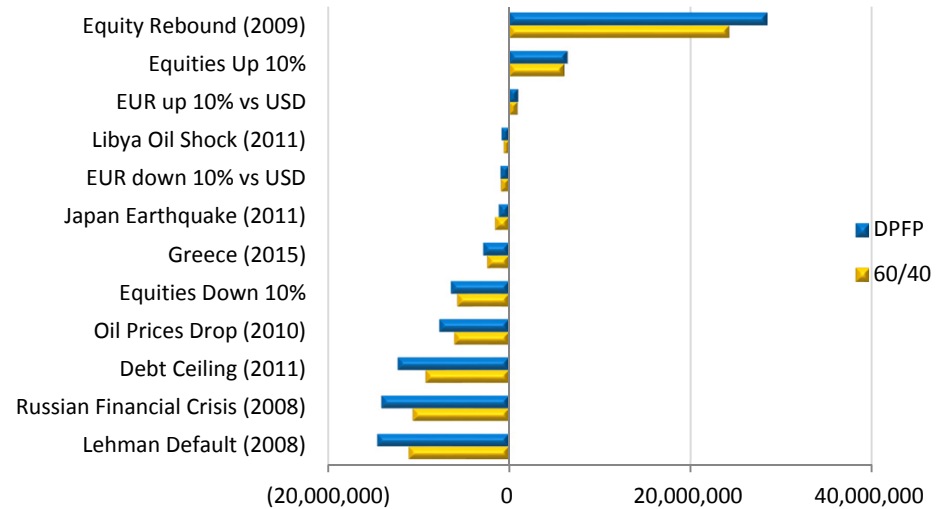


Asset Class Risk vs Return (Sharpe) as at Jan. 2016



Portfolio Stress Testing as at Jan. 2016

Scenario	P&L (\$)	P&L (%)
Equity Rebound (2009)	28,398,460	30.48%
Equities Up 10%	6,429,366	6.90%
EUR up 10% vs USD	973,731	1.05%
Libya Oil Shock (2011)	(850,991)	-0.91%
EUR down 10% vs USD	(973,731)	-1.05%
Japan Earthquake (2011)	(1,145,710)	-1.23%
Greece (2015)	(2,877,581)	-3.09%
Equities Down 10%	(6,429,333)	-6.90%
Oil Prices Drop (2010)	(7,722,615)	-8.29%
Debt Ceiling (2011)	(12,294,164)	-13.20%
Russian Financial Crisis (2008)	(14,081,569)	-15.11%
Lehman Default (2008)	(14,549,914)	-15.62%



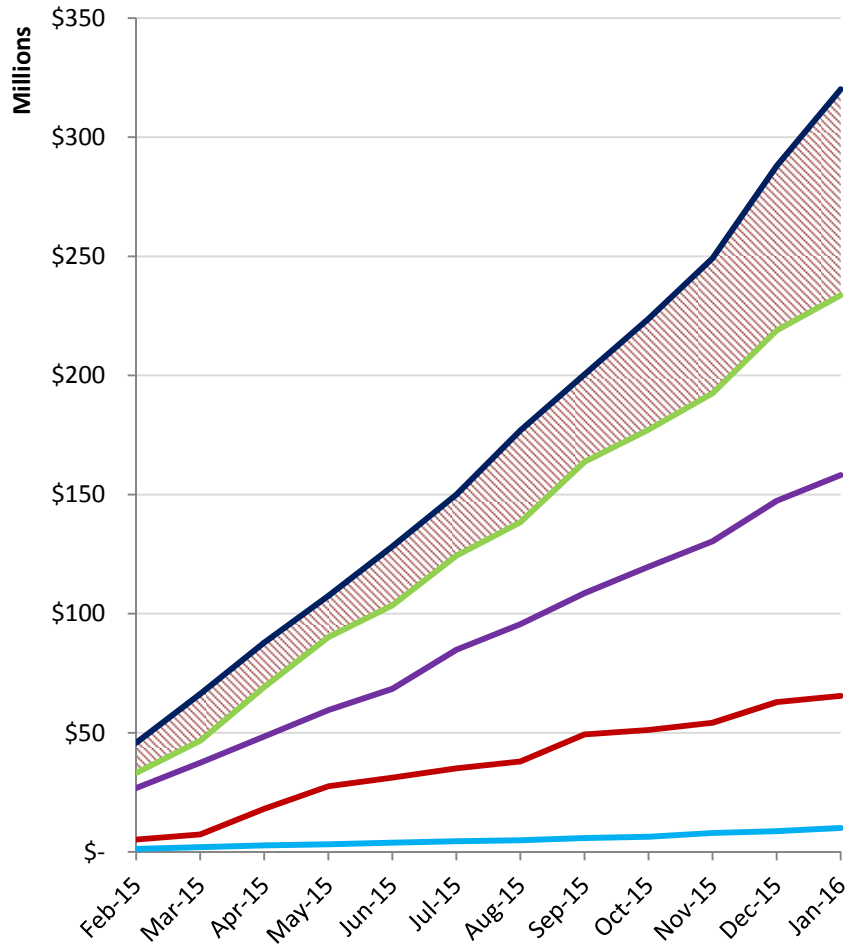
* Stress Test Scenarios and the proxy instruments used are detailed in Appendix I (page 36).

** Value at Risk on the DPFP portfolio is significantly higher than the policy, as realized losses and volatility are significant within the DPFP portfolio. This is particularly true in the case of the Real Estate Portfolio, which also contains leverage.

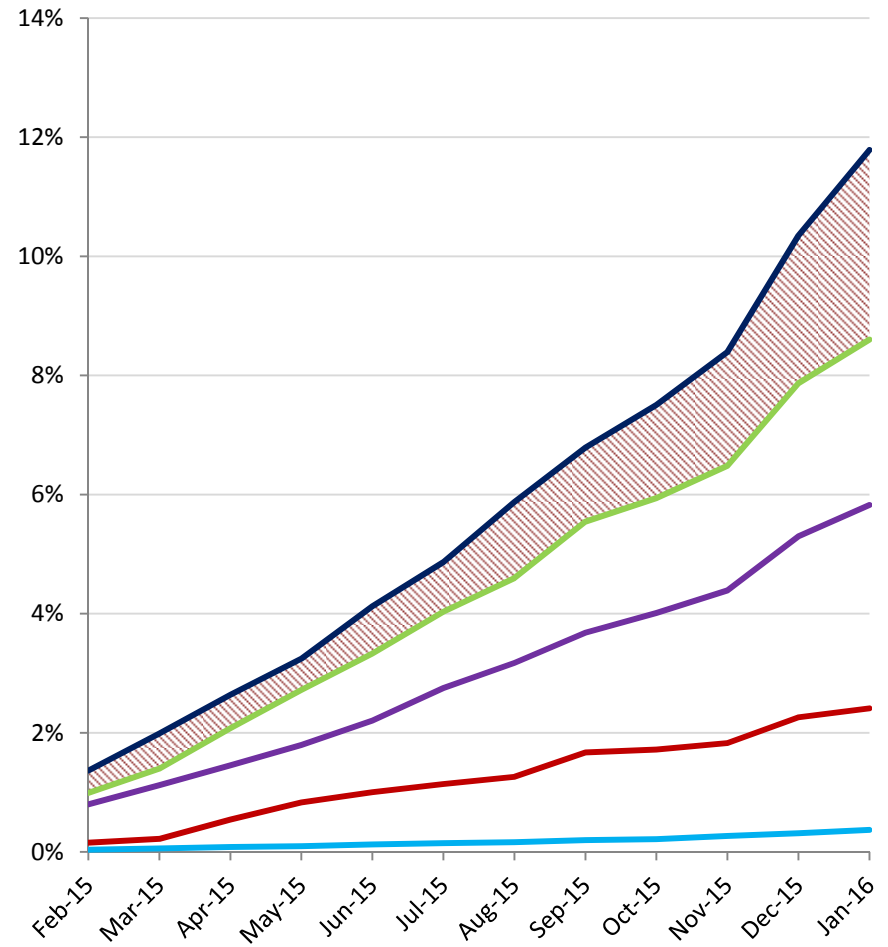
Preliminary – Data as at January 2016 Trailing 12 Month Funding Gap



Monthly Cumulative (\$)



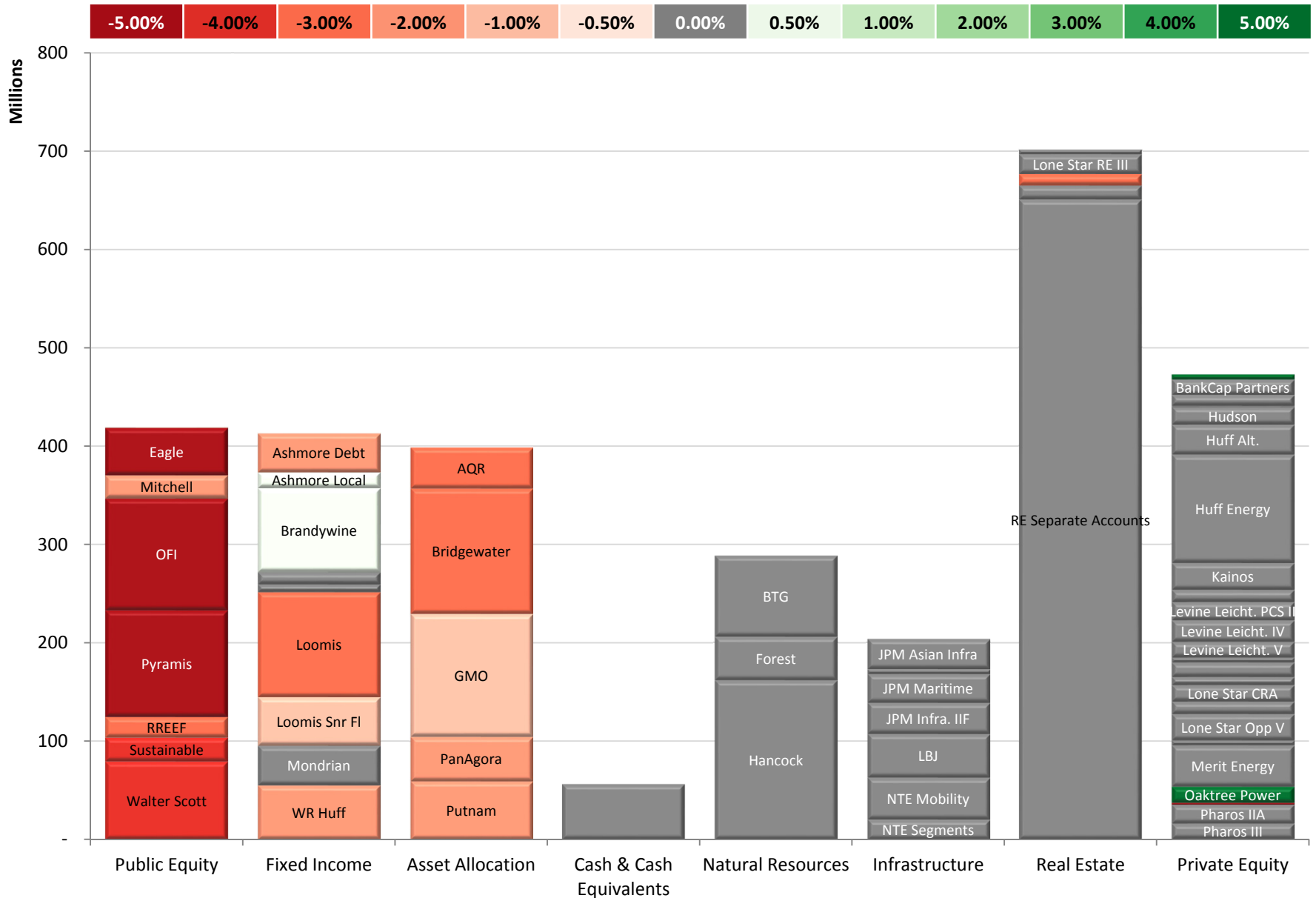
Monthly Cumulative (% of Plan NAV)



Funding Gap
 Benefit Payments
 Total Cash Inflows
 Dividends
 Interest
 Contributions

*53 accounts are contributing income to the above figures.

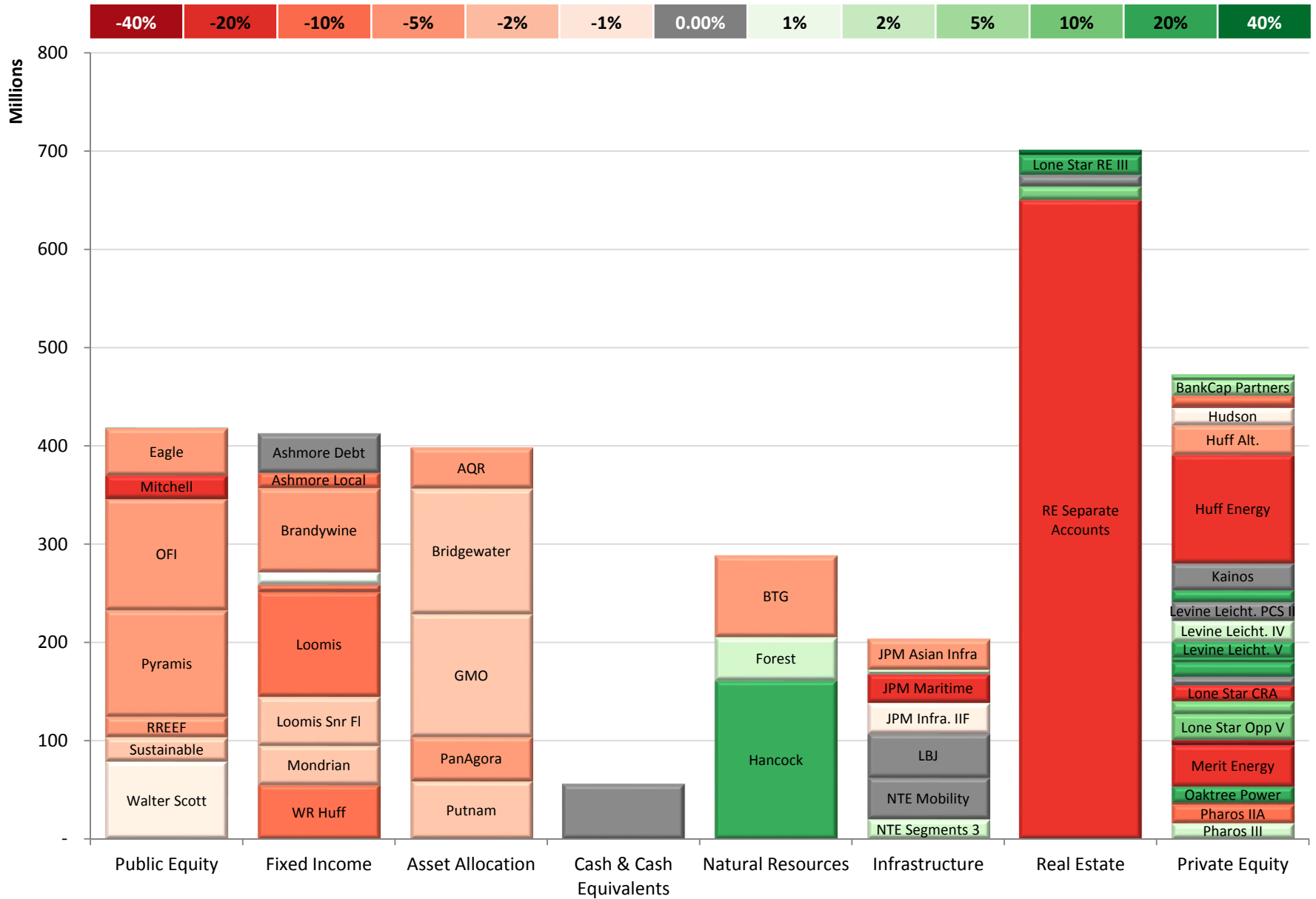
Preliminary – Data as at January 2016 One Month Performance Heat Map



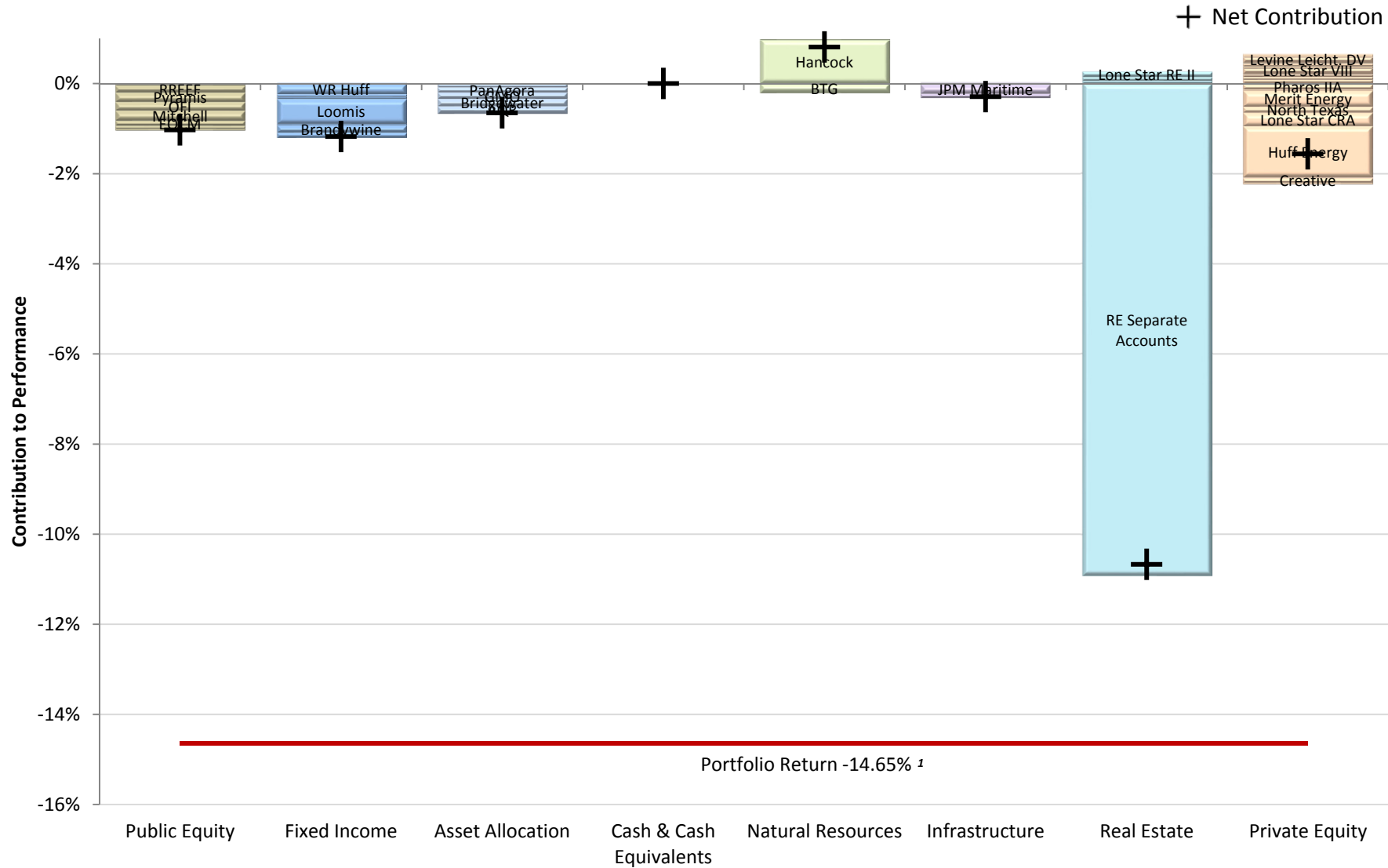
*Private assets only report on a quarterly basis therefore the one month return is often unchanged..

Preliminary – Data as at January 2016

Twelve Month Performance Heat Map



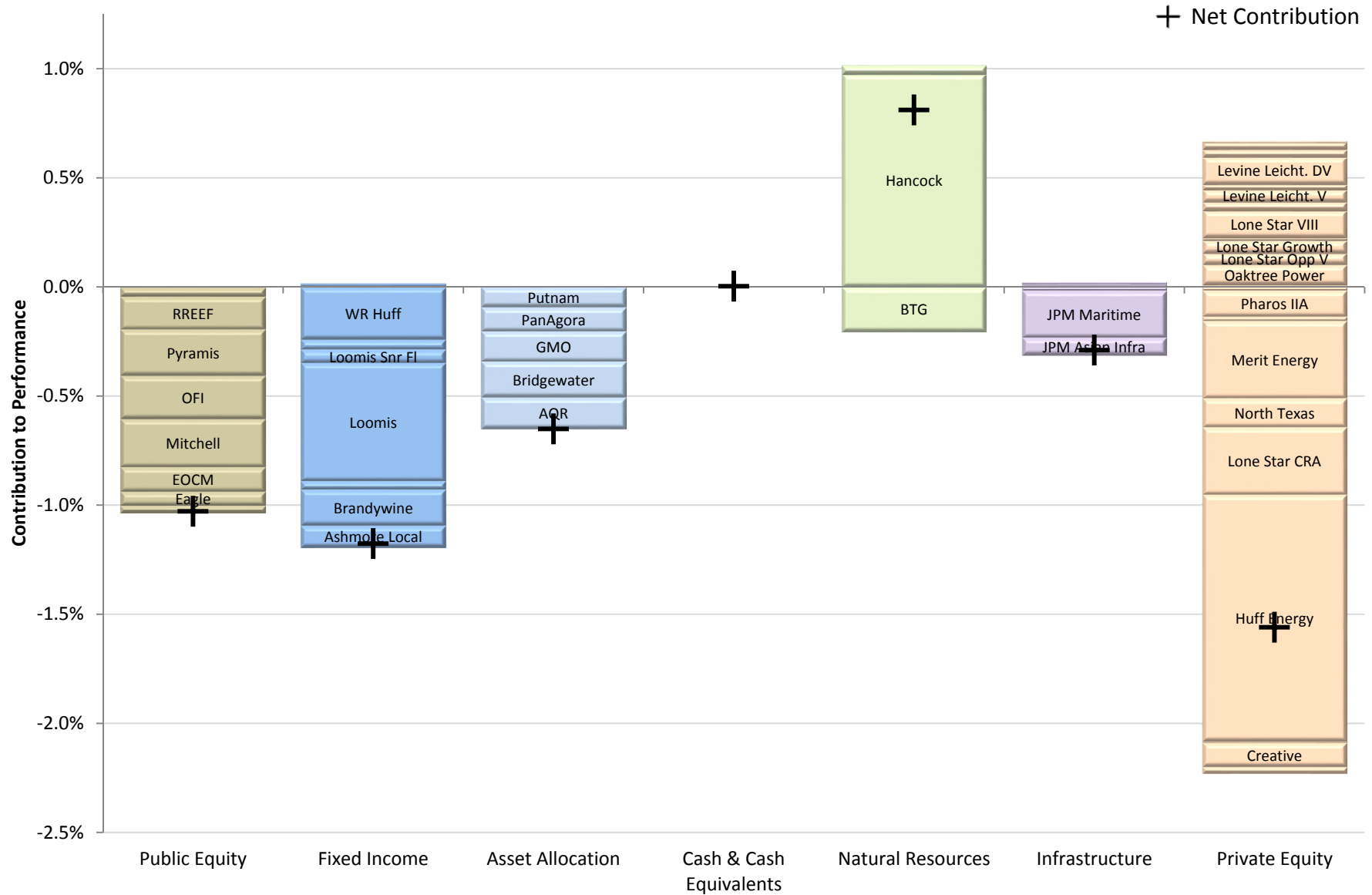
Preliminary – Data as at January 2016 Twelve Month Contribution to Performance



¹ Approximately two-thirds of the one year loss relates to the lagged returns from Q4 2014 for private investments. These losses were reflected in the 2014 CAFR and 1/1/15 actuarial valuation

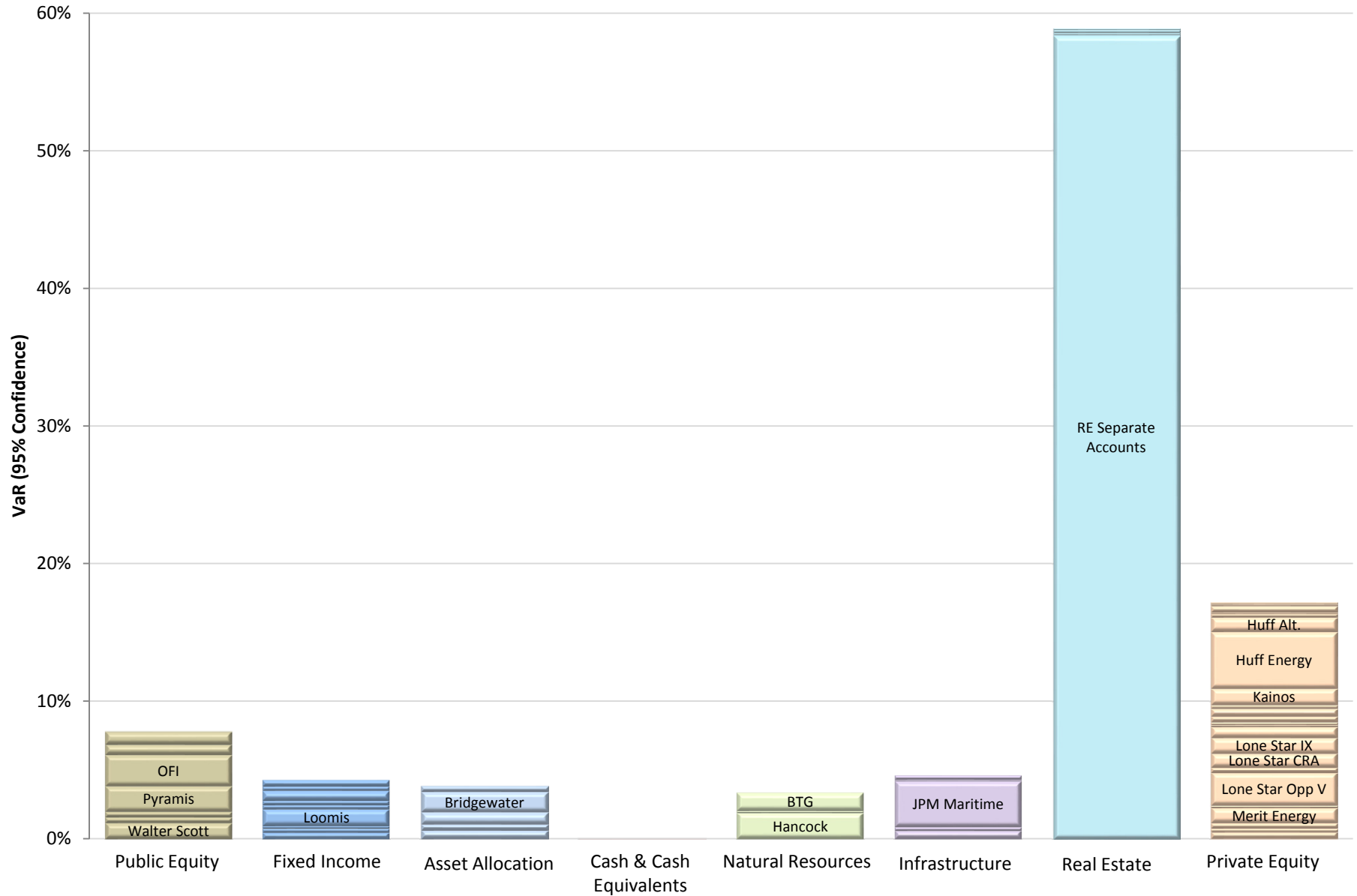
* Returns presented are calculated using custodian bank year-end source data and values, which do not include subsequent valuation adjustments completed for audit and actuarial purposes. Therefore, the returns shown here will differ from actuary calculated returns.

Preliminary – Data as at January 2016
Twelve Month Contribution to Performance
excluding Real Estate



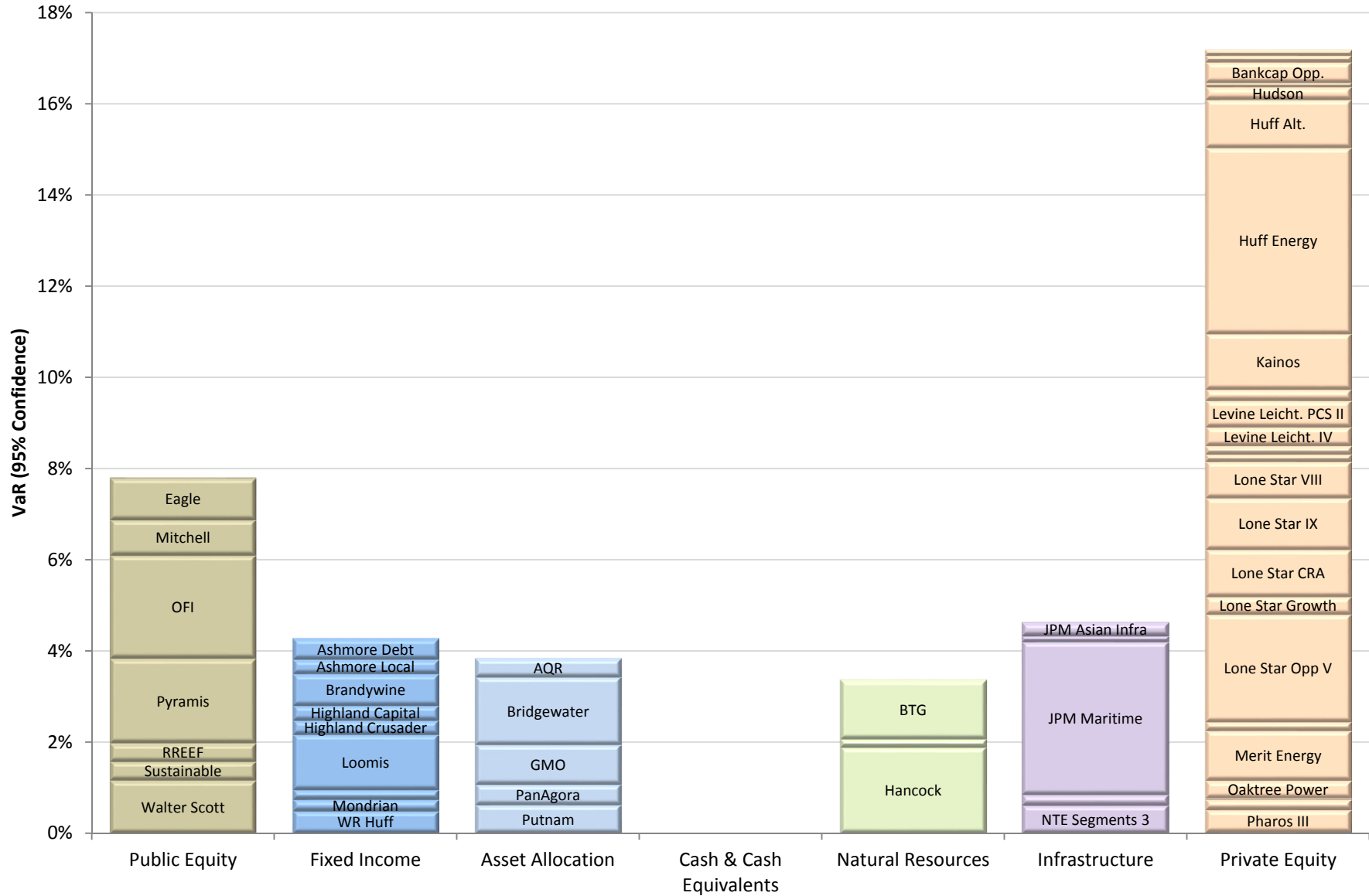
* Returns presented are calculated using custodian bank year-end source data and values, which do not include subsequent valuation adjustments completed for audit and actuarial purposes. Therefore, the returns shown here will differ from actuary calculated returns.

Preliminary – Data as at January 2016
Five Year Contribution to Risk



* VaR is expressed, on a position basis, as a percentage of the total portfolio VaR.

Preliminary – Data as at January 2016
Five Year Contribution to Risk
excluding Real Estate



* VaR is expressed, on a position basis, as a percentage of the total portfolio VaR.

Preliminary – Data as at January 2016 Public Equity Overview

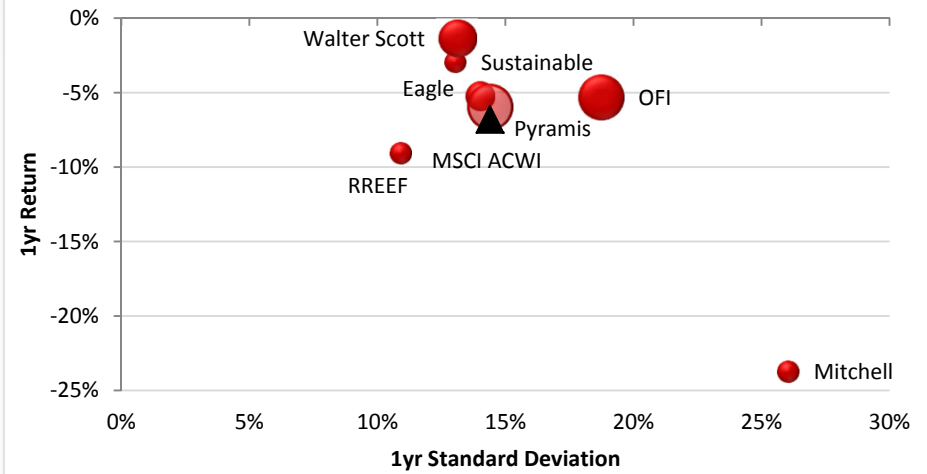


Commentary

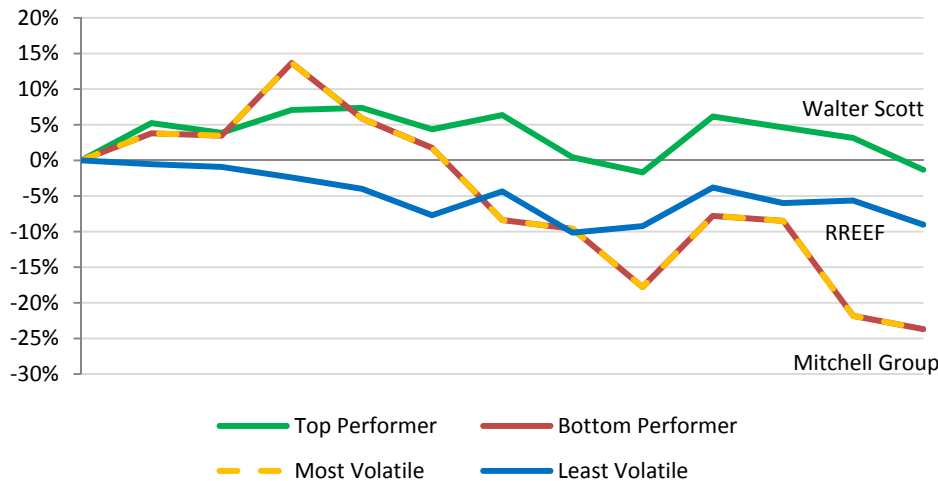
- 2016 began with the worst opening week in history for equities worldwide on concerns over Chinese growth, continued lower oil prices, uncertainty over future central bank actions, political and economic issues in emerging economies and the impending US presidential elections. The month saw incredible whipsaw price action and the S&P ultimately erased nearly \$2 trillion in market value by finishing down 5.1%.
- International markets, particularly emerging markets, declined even more during the month: Shanghai -22.7%, MSCI Emerging Markets Index -9.1%, Nikkei -8.0%, and Euro Stoxx -6.4%. The continued decline in oil prices hit emerging markets particularly hard, while rising political conflict and economic stagnation, particularly in Europe, weighed on developed markets.
- China's equity market had the worst start to the New Year of any country. A-Shares fell 22.7% on the month and two "circuit breakers" were triggered, which suspended equity trading nationwide. China then suspended the controversial circuit breaker system, the central bank moved to allow for further depreciation of the yuan, and state-controlled funds were rumored to be buying equities in order to support the plummeting stock market.
- Equity market volatility was elevated throughout the month and the VIX closed January at 20.2, up slightly from 18.2 at the end of December, but traded as high as 27.4 intra-month.

Source – Cliffwater

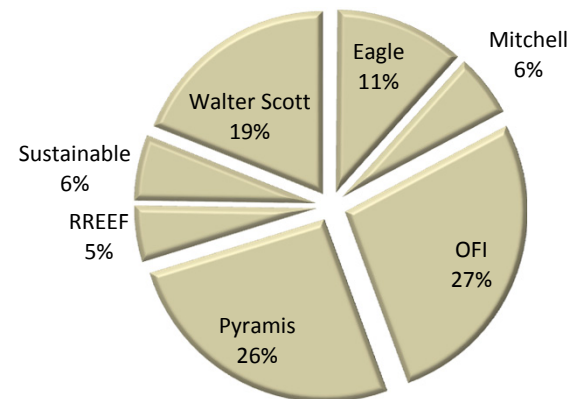
Manager Risk vs Return (Sharpe) as at Jan. 2016



Twelve Month Compounded Performance as at Jan. 2016



Exposure by Manager as at Jan. 2016



Preliminary – Data as at January 2016 Fixed Income Overview

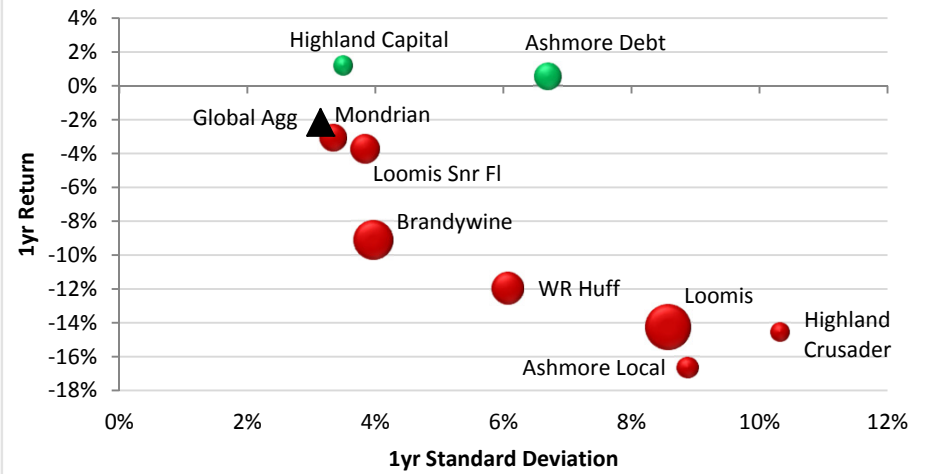


Commentary

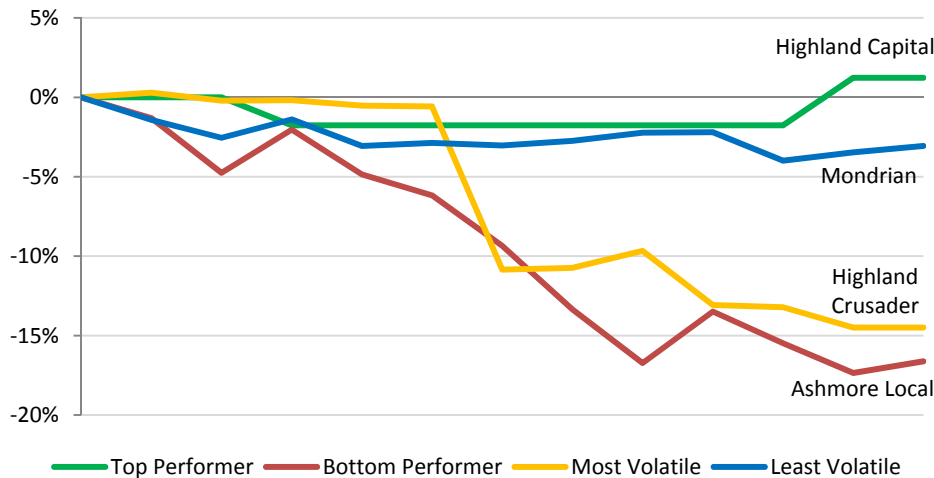
- Considering the colossal decline in investor sentiment, it was not surprising to see the flight-to-safety effect in global fixed income and the US Dollar. 10-Year US Treasuries rallied 35bps to 1.92%, German bunds rallied 30bps to 0.30%, and the US Dollar Index gained 1.0%.
- In their first meeting since raising interest rates in December, the Fed kept interest rates in January steady (between 0.25% and 0.50%). Although this was in line with investors' expectations, equities sold off and fixed income rallied following the Fed's decision as investors had expected language that offered greater reassurance and support from the Fed in light of recent global market volatility.
- The Barclays US High Yield Corporate Bond Index fell 2.2% for the month while Leveraged Loans declined 0.7%. The continued fall in the oil price was behind much of the underperformance of US high yield as default risk in the energy sector rose and inflation remained weak.
- The Bank of Japan surprised markets by joining the euro area, Switzerland, Sweden, and Denmark in moving short-term rates into negative territory. This was the first rate change for the BoJ in five years, and this effort marginally stemmed the bleeding in the Nikkei and the Yen, while Japanese 10 year notes (JGBs) rallied 17bps to 0.10%.

Source – Cliffwater

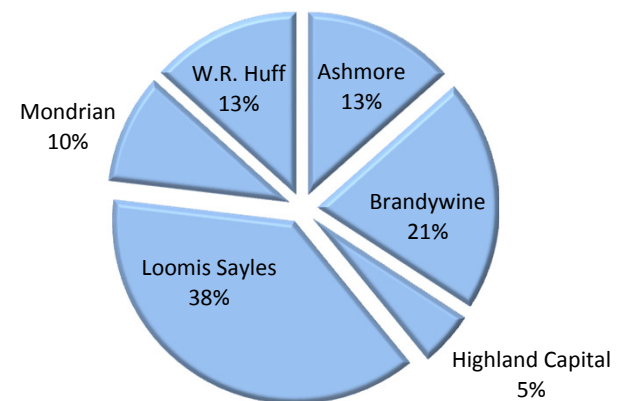
Manager Risk vs Return (Sharpe) as at Jan. 2016



Twelve Month Compounded Performance as at Jan. 2016



Exposure by Manager as at Jan. 2016



Preliminary – Data as at January 2016 Asset Allocation Overview

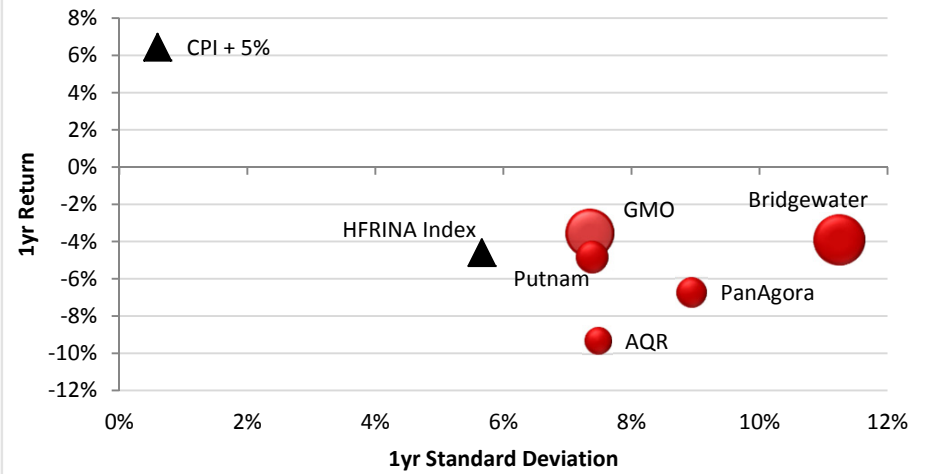


Commentary

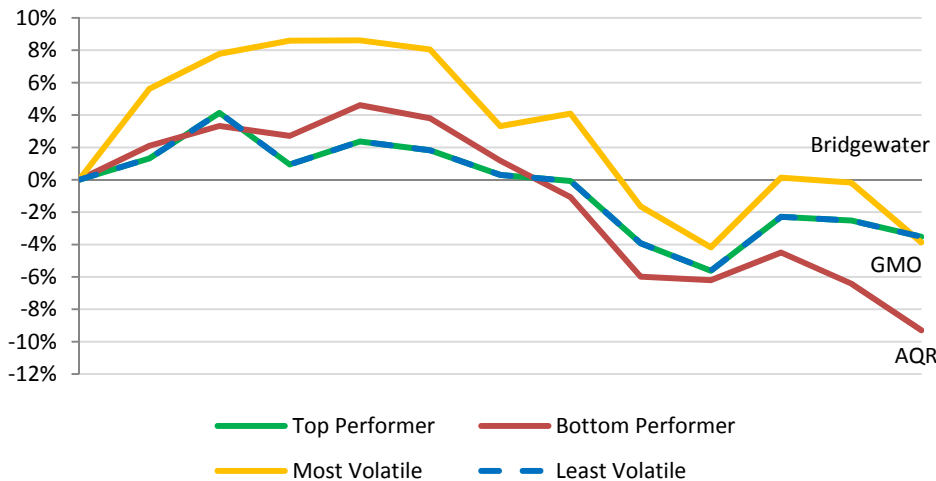
- In January, the HFRI Fund Weighted and Fund of Funds indices were down 1.7% and 2.9%, respectively. However there was a wide spread of returns and most funds managed to outpace the dismal global equity returns.
- Equity Strategies (-3.7%) and Even Driven Strategies (-2.3%) were impacted by both downside beta capture and significant negative alpha. Credit strategies held up marginally better as Distressed (-2.1%) and Credit (-0.9%) managers sidestepped the biggest losses in the high yield energy space.
- Relative Value (-1.7%) strategies, which generally perform best in low volatility markets, was challenged by continued market dislocations, but long volatility market neutral managers were able to generate modest positive returns.
- Global Macro (+1.6%) and Systematic Macro (+2.6%) were the bright spots for the month and provided strong diversification to both public markets and other hedge fund strategies. Systematic managers generally capitalized on the short oil trend while discretionary managers profited from fixed income flatteners and long US Dollar trades.

Source – Cliffwater

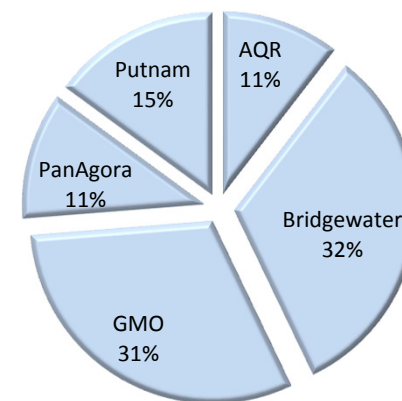
Manager Risk vs Return (Sharpe) as at Jan. 2016



Twelve Month Compounded Performance as at Jan. 2016



Exposure by Manager as at Dec. 2015



Preliminary – Data as at January 2016 Natural Resources Overview

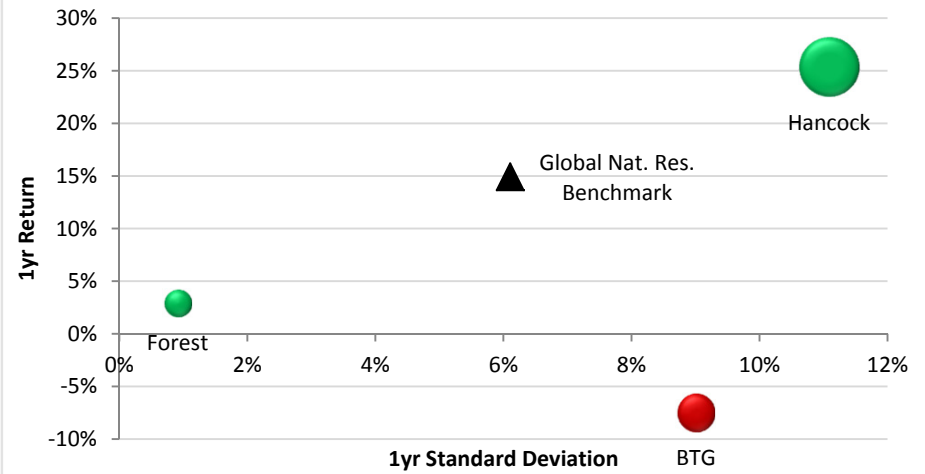


Commentary

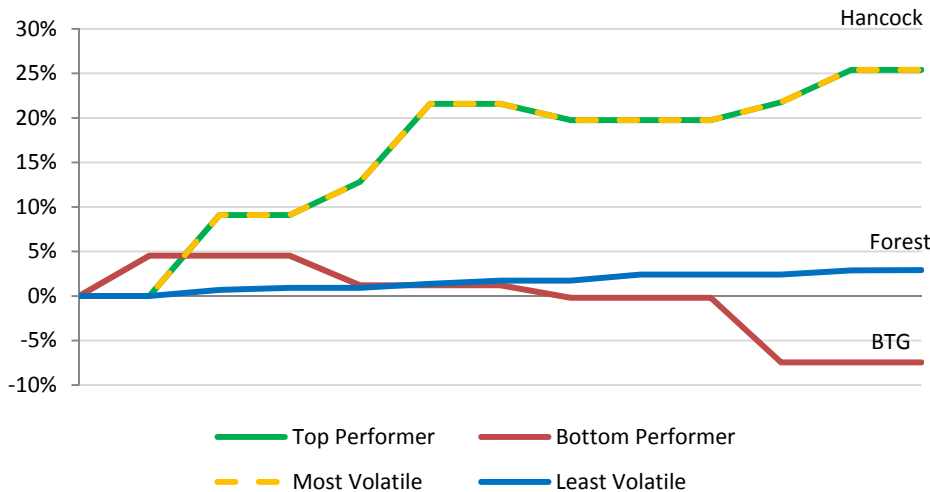
- Commodities stabilized in January after a rough 2015, with only a modest decline amid further signs that the global economy is losing momentum. China was once more in the spotlight as the country's manufacturing sector is in contraction. A weakening yuan, considerable capital outflows and stock market volatility there had spillover effects on other markets around the world, and increased expectations of additional accommodative central bank policies to combat sluggish growth and deflationary pressures. While expectations of further Federal Reserve interest-rate hikes lessened, the U.S. dollar climbed to a two-month high.
- The energy sector remained volatile, with record oil inventories in the U.S. and abroad pushing prices for West Texas Intermediate (-11.9% total return in the index) and North Sea Brent (-7.5%) to lows not seen since 2003. Prices rebounded somewhat on hopes that the Organization of Petroleum Exporting Countries (OPEC) and Russia would agree to production cuts. Natural gas (-2.8%) likewise continued to contend with high inventories, and prices were hurt by softer demand expectations due to a forecast of above-average temperatures in the U.S.
- In the precious metals sector, gold (5.3%) and silver (3.2%) were seen as safe havens during the turmoil in equity markets around the globe. Although short interest in gold remained relatively high, speculative open interest rose on a combination of short covering and the establishment of additional long positions. Likewise, investors edged back in the gold market via exchange traded funds (ETFs), which saw increased buying for four consecutive weeks in January.

Source – Cohen and Steers

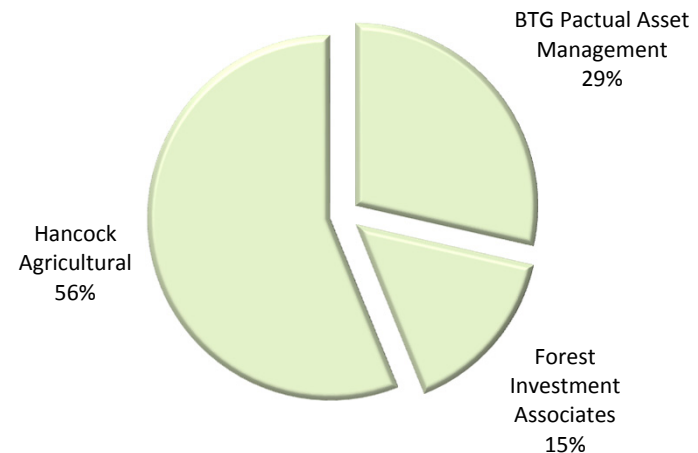
Manager Risk vs Return (Sharpe) as at Jan. 2016



Twelve Month Compounded Performance as at Jan. 2016



Exposure by Manager as at Jan. 2016



* Global Natural Resources Benchmark is the weighted average of NCREIF Farmland Single Use Perm/Mature Crops All and NCREIF Timberland South.

Preliminary – Data as at January 2016 Infrastructure Overview

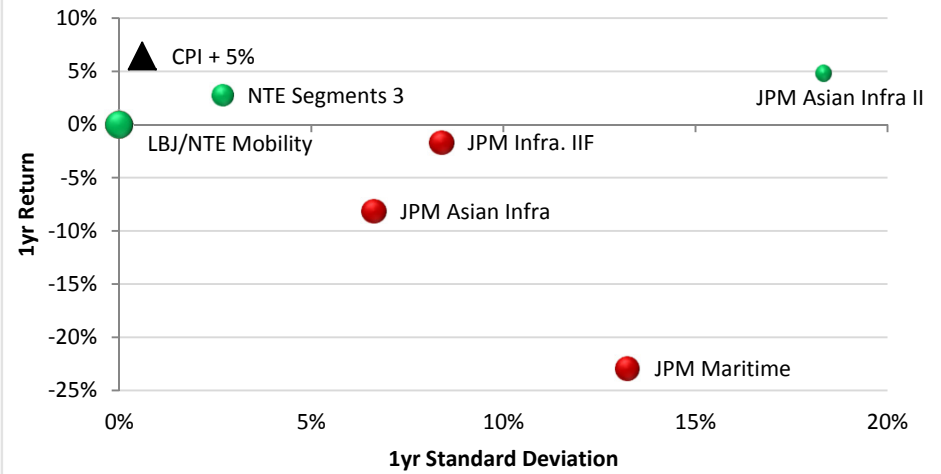


Commentary

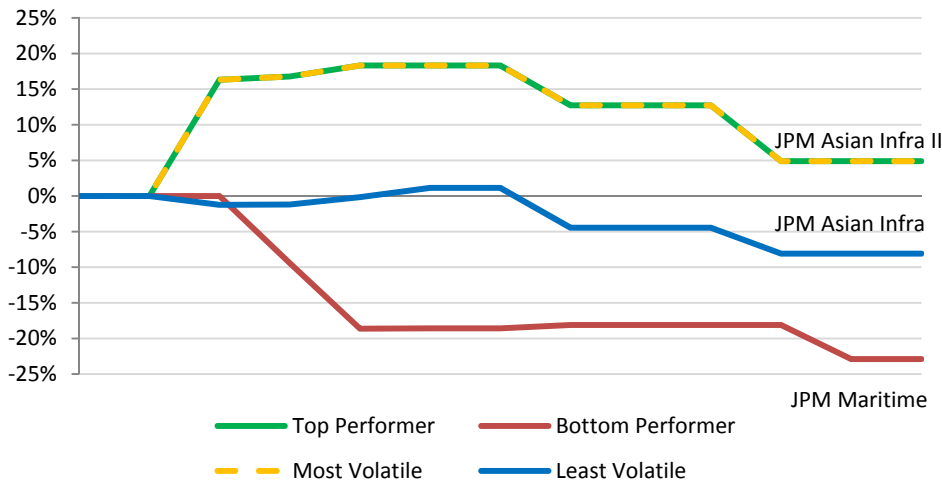
- Given the volatility in equities, infrastructure companies gained attention as investors looked for companies with relatively predictable cash flows, particularly those that are fairly insulated from changes in the business cycle. Adding to infrastructure's appeal was the prospect for continued accommodative monetary policies globally, which is supportive of capital-intensive businesses.
- Utilities outperformed the broad market in January as investors sought out safe havens. Water utilities (4.4% total return in the index), which are among the least cyclical of the infrastructure subsectors, enjoyed the strongest advance, led by U.S. and U.K. shares. Electric utilities (3.2%) were another solid relative performer, particularly regulated electric utilities. Among integrated utilities, however, a number of Japan-based companies suffered double-digit declines during the month, giving back a portion of the strong gains they logged in 2015. The gas distribution subsector (0.0%) saw losses in Asian companies largely offsetting gains in U.S. shares.
- The pipelines subsector (2.3%) showed signs of stabilization, despite continued volatility in the crude oil market, suggesting that investors are beginning to factor well-known industry negatives into the stocks' current valuations.
- Freight rails (-8.0%) wrestled with concerns of slowing freight volumes, which have expanded beyond weakness in energy related shipments to now include the intermodal segment, potentially a reflection of declining consumer activity and global trade.

Source – Cohen and Steers

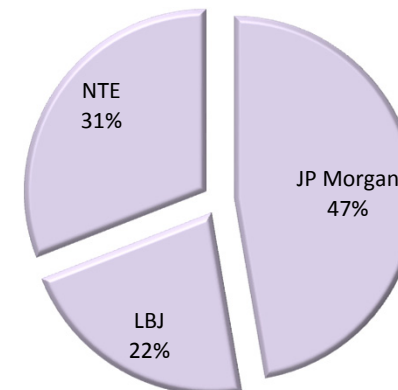
Manager Risk vs Return (Sharpe) as at Jan. 2016



Twelve Month Compounded Performance as at Jan. 2016



Exposure by Manager as at Jan. 2016



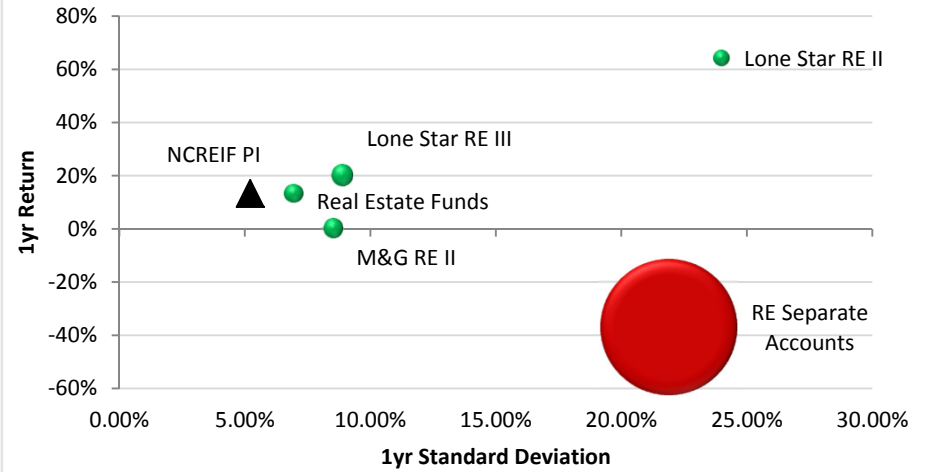
Preliminary – Data as at January 2016 Real Estate Overview



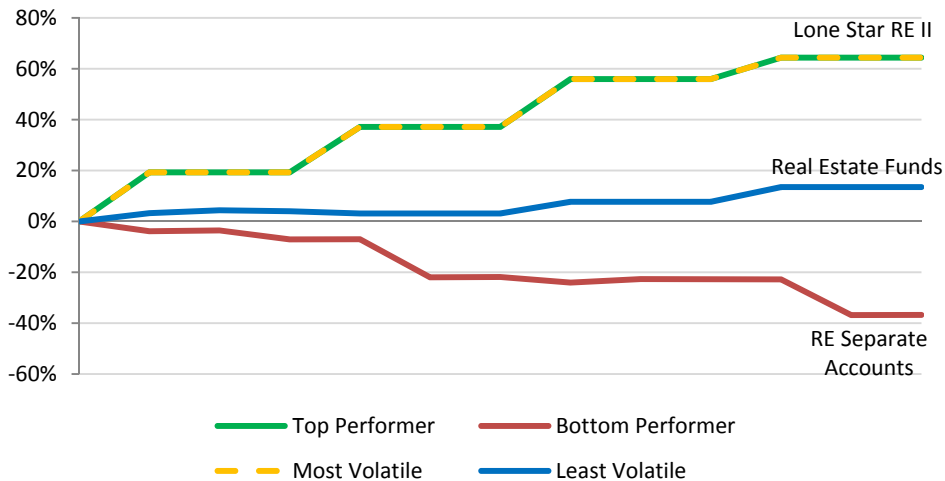
Commentary

- Global real estate stocks had a total return of -4.3% for the month as measured by the FTSE EPRA/NAREIT Developed Real Estate Index (net of dividend withholding taxes). In the U.S., performance varied widely by property type and company. REITs perceived as relatively defensive—companies with strong balance sheets, long leases in place and high-quality tenants—generally outperformed, while those with high sensitivity to economic cycles and more leverage underperformed.
 - In the U.K., shares of property companies struggled amid economic uncertainty and a clouded outlook for interest rates, although the country's central bank took a more dovish tone in the month. Markets on the continent fared somewhat better as a group, but sentiment was nonetheless hindered by slowing global growth and mostly lackluster regional economies. Those factors led the European Central Bank to suggest that even more quantitative easing could be coming as soon as March.
 - Hong Kong was under heavy pressure amid concerns about growth on the mainland as well as in HK. The market's REITs held up better than developers, aided by their more stable dividends. In Japan, developers had negative returns while J-REITs had a gain; both groups rallied at the end of the month when the Bank of Japan announced that it would impose negative interest rates on excess bank reserves. Australia modestly advanced, even as the Australian dollar continued to depreciate. The country's REITs are often perceived as being defensive by local investors, relative to more export-oriented companies such as resources producers.
- Source – Cohen and Steers*

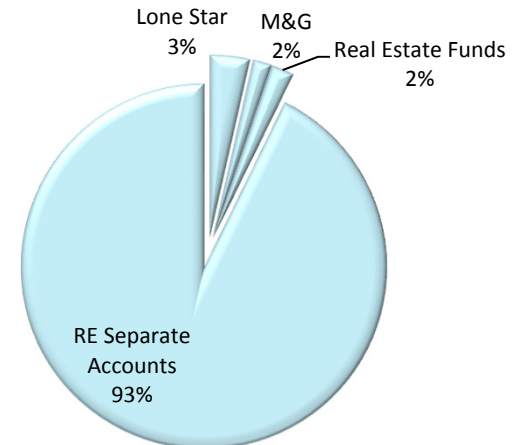
Manager Risk vs Return (Sharpe) as at Jan. 2016



Twelve Month Compounded Performance as at Jan. 2016



Exposure by Manager as at Jan. 2016



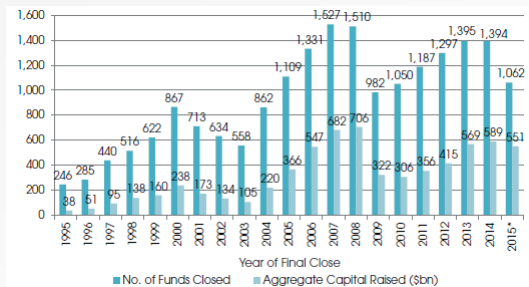
Preliminary – Data as at January 2016

Private Equity Overview



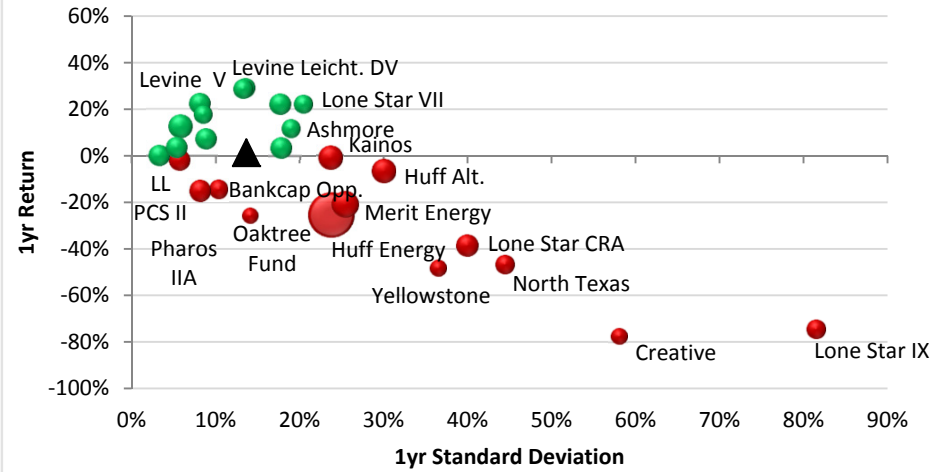
Commentary

- 2015 was the third consecutive year in which private capital fundraising surpassed the \$500bn mark. Capital remains concentrated among fewer funds: 1,062 private capital funds held a final close in 2015, the lowest number since 2010.
- Record distributions to LPs in 2014 helped 2015 become the third consecutive year in which private capital fundraising surpassed the \$500bn mark. An aggregate \$551bn was raised by 1,062 vehicles in 2015, less than the \$589bn raised in 2014; however, this figure will increase as more data becomes available. As a result, it is likely 2015 fundraising will surpass the levels seen in 2014, making it the highest amount of aggregate capital raised since the onset of the Global Financial Crisis.

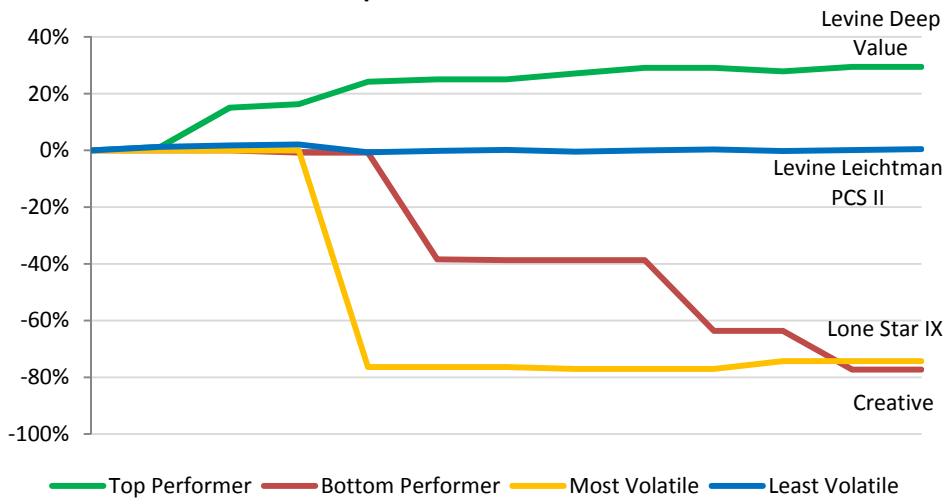


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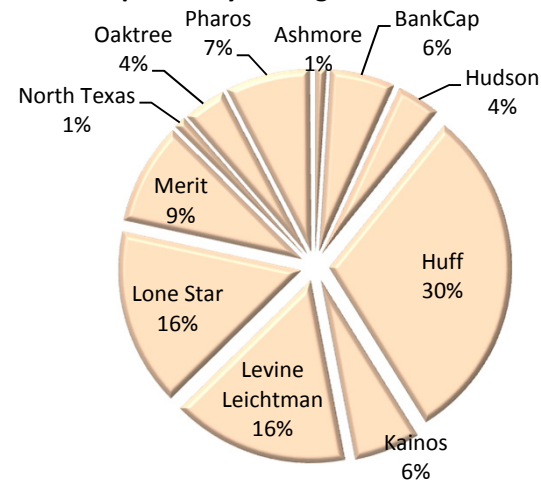
Manager Risk vs Return (Sharpe) as at Jan. 2016



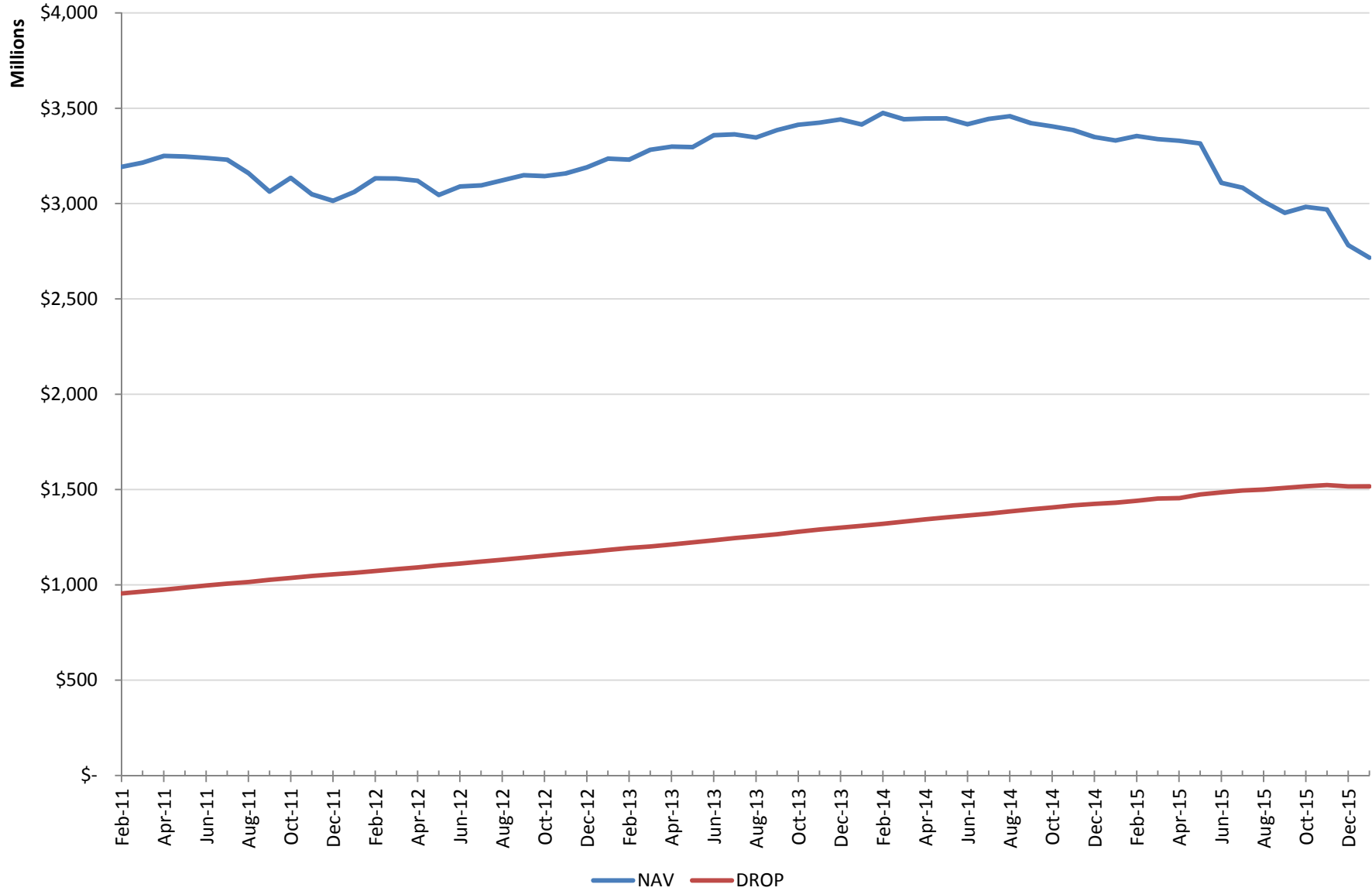
Twelve Month Compounded Performance as at Jan. 2016



Exposure by Manager as at Jan. 2016

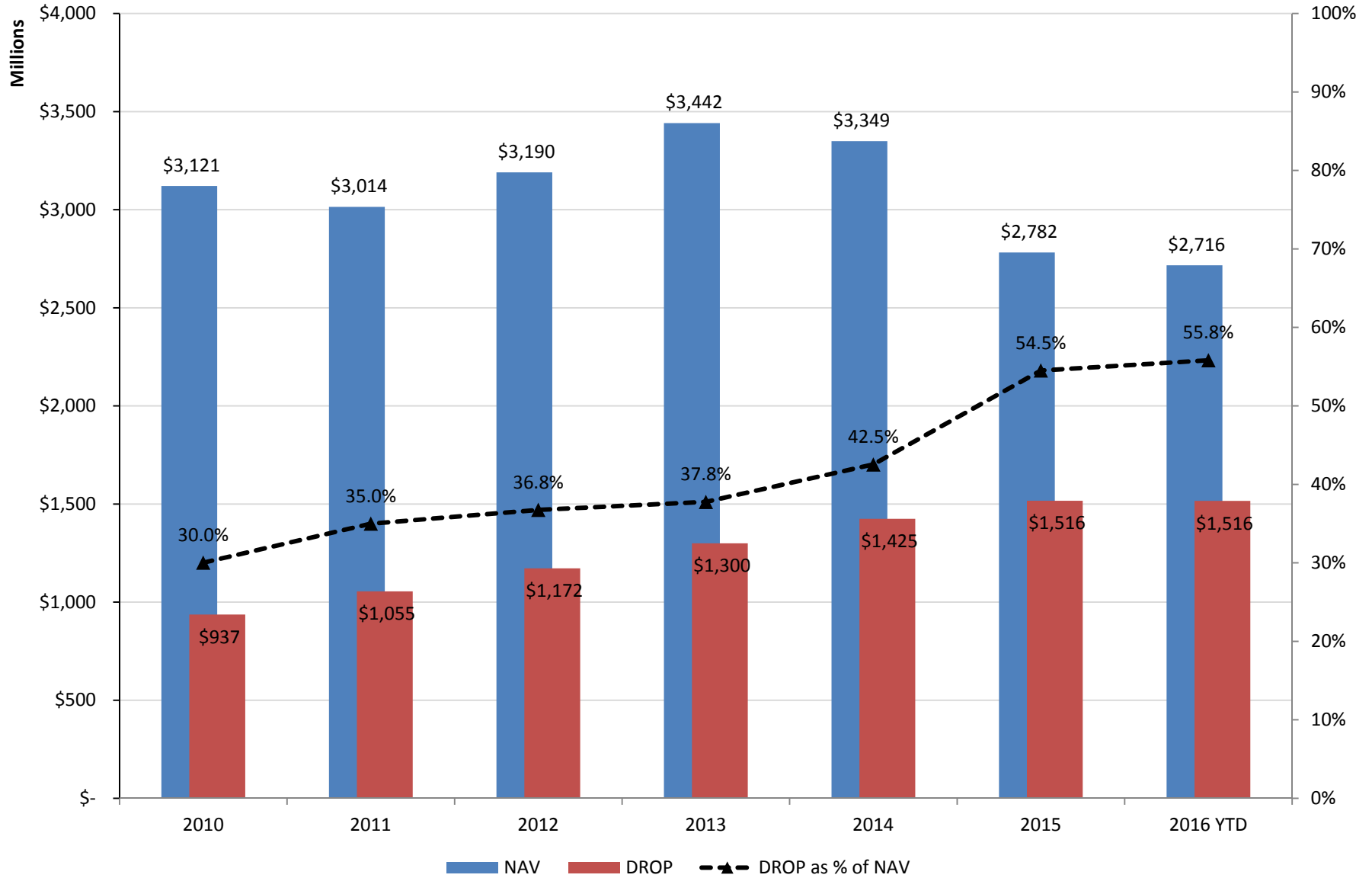


Preliminary – Data as at January 2016 Monthly NAV & Drop Balances



*On a rolling five year basis.

Preliminary – Data as at January 2016
DROP as % of NAV



Preliminary – Data as at January 2016 Manager Overview



Fund	Inception Date	Current Exposure	Net Allocation (%)	1M	3M	YTD	1yr	2yr	3yr	5yr
Portfolio	Jun 1996	\$ 2,716,489,103		-1.59%	-6.93%	-1.59%	-14.73%¹	-6.18%	-2.07%	0.61%
Plan Leverage Facility	Mar 2014	\$ (235,314,513)		0.00%	0.00%	0.00%	0.88%	n/a	n/a	n/a
Public Equity	Jul 2006	\$ 419,085,640	15.43%	-6.54%	-9.34%	-6.54%	-6.88%	-1.23%	3.66%	4.26%
<i>MSCI ACWI</i>				<i>-6.03%</i>	<i>-8.49%</i>	<i>-6.03%</i>	<i>-6.80%</i>	<i>-0.23%</i>	<i>3.91%</i>	<i>4.45%</i>
Allianz EcoTrends	Nov 2008	\$ 609,232	0.02%	-1.45%	2.84%	-1.45%	2.26%	-2.69%	5.04%	2.65%
Eagle Asset Management	Feb 2005	\$ 48,250,864	1.78%	-6.58%	-8.60%	-6.58%	-5.21%	1.67%	7.83%	7.73%
Energy Opportunities Capital Management	Jan 2008	\$ 24	0.00%	0.00%	0.08%	0.00%	-9.53%	-13.86%	-7.68%	-5.71%
Mitchell Group	Oct 2001	\$ 23,402,883	0.86%	-2.40%	-17.25%	-2.40%	-23.70%	-18.57%	-10.29%	-6.21%
OFI Global Institutional	Oct 2007	\$ 113,714,504	4.19%	-9.98%	-12.03%	-9.98%	-5.29%	-0.06%	5.27%	6.29%
Pyramis (Fidelity)	Mar 2002	\$ 108,431,344	3.99%	-6.19%	-8.54%	-6.19%	-5.91%	0.27%	5.18%	5.38%
RREEF	Feb 1999	\$ 20,929,014	0.77%	-3.60%	-5.43%	-3.60%	-9.03%	5.45%	3.77%	6.39%
Sustainable Asset Management	Nov 2008	\$ 24,376,698	0.90%	-4.70%	-5.79%	-4.70%	-2.90%	0.07%	6.72%	5.55%
Walter Scott	Dec 2009	\$ 79,371,077	2.92%	-4.35%	-7.05%	-4.35%	-1.33%	2.22%	4.79%	6.51%
Fixed Income	Jul 2006	\$ 413,007,603	15.20%	-1.50%	-5.36%	-1.50%	-8.75%	-3.79%	-1.75%	2.79%
<i>Barclays Global Aggregate</i>				<i>0.87%</i>	<i>-0.28%</i>	<i>0.87%</i>	<i>-2.16%</i>	<i>-1.40%</i>	<i>-1.15%</i>	<i>1.03%</i>
Ashmore EM Debt Fund	Feb 2005	\$ 39,547,302	1.46%	-2.93%	0.63%	-2.93%	0.56%	-0.67%	-1.43%	3.48%
Ashmore EM Local CCY	Mar 2011	\$ 16,139,022	0.59%	0.89%	-3.63%	0.89%	-16.62%	-8.70%	-11.28%	n/a
Brandywine	Oct 2004	\$ 85,441,701	3.15%	0.55%	-1.49%	0.55%	-9.08%	-1.26%	-2.44%	2.33%
Highland Capital Management	Jan 2007	\$ 12,432,015	0.46%	0.00%	3.04%	0.00%	1.23%	2.83%	11.46%	14.15%
Highland Crusader Fund	Jul 2003	\$ 7,858,856	0.29%	0.00%	-1.63%	0.00%	-14.50%	-8.51%	-1.63%	11.28%
Loomis Sayles	Oct 1998	\$ 106,738,481	3.93%	-3.21%	-11.79%	-3.21%	-14.24%	-6.19%	-1.39%	2.65%
Loomis Sayles Sr. Floating Rate	Jan 2014	\$ 49,349,448	1.82%	-1.76%	-5.28%	-1.76%	-3.71%	-0.75%	n/a	n/a
Mondrian Investment Partners	Oct 2003	\$ 40,334,655	1.48%	0.42%	-0.89%	0.42%	-3.06%	-0.69%	-1.19%	0.58%
W.R. Huff High Yield	Jun 1996	\$ 55,166,121	2.03%	-2.56%	-7.48%	-2.56%	-11.93%	-7.69%	-3.68%	0.90%
Asset Allocation	Jul 2007	\$ 398,507,714	14.67%	-2.53%	0.22%	-2.53%	-4.78%	0.25%	1.03%	3.56%
<i>CPI + 5%</i>				<i>0.44%</i>	<i>1.17%</i>	<i>0.44%</i>	<i>6.44%</i>	<i>5.62%</i>	<i>5.97%</i>	<i>6.54%</i>
AQR	Oct 2013	\$ 41,563,668	1.53%	-3.09%	-3.30%	-3.09%	-9.30%	-1.84%	n/a	n/a
Bridgewater	Sep 2007	\$ 127,517,743	4.69%	-3.70%	0.32%	-3.70%	-3.87%	2.16%	0.54%	6.41%
GMO	Sep 2007	\$ 124,915,407	4.60%	-1.04%	2.21%	-1.04%	-3.53%	-0.48%	2.62%	4.26%
PanAgora	Nov 2013	\$ 45,176,436	1.66%	-2.15%	-0.49%	-2.15%	-6.71%	3.61%	n/a	n/a
Putnam	Dec 2009	\$ 59,334,459	2.18%	-2.95%	-1.02%	-2.95%	-4.78%	-1.22%	0.64%	3.42%
Cash & Cash Equivalents		\$ 55,624,728	2.05%	0.02%	0.04%	0.02%	0.25%	0.07%	0.11%	-0.89%

¹ Approximately two-thirds of the one year loss relates to the lagged returns from Q4 2014 for private investments. These losses were reflected in the 2014 CAFR and 1/1/15 actuarial valuation

Preliminary – Data as at January 2016 Manager Overview (cont.)



Fund	Inception Date	Current Exposure	Net Allocation (%)	1M	3M	YTD	1yr	2yr	3yr	5yr
Natural Resources	Apr 2015	\$ 288,107,398	10.61%	0.00%	0.42%	0.00%	10.43%	8.73%	9.53%	8.92%
<i>"Global Nat. Res. Benchmark"</i>				0.00%	2.12%	0.00%	14.93%	10.94%	12.84%	9.03%
BTG Pactual Asset Management	Oct 2006	\$ 82,259,374	3.03%	0.00%	-7.28%	0.00%	-7.46%	-5.26%	-6.69%	-3.66%
Forest Investment Associates	Jan 1992	\$ 44,240,892	1.63%	0.02%	0.48%	0.02%	2.91%	6.71%	6.10%	3.71%
Hancock Agricultural	Dec 2002	\$ 161,607,131	5.95%	0.00%	4.70%	0.00%	25.39%	19.53%	22.19%	20.07%
Infrastructure	Jul 2012	\$ 203,567,200	7.49%	0.00%	-1.45%	0.00%	-4.83%	-1.31%	1.14%	1.15%
<i>CPI + 5%</i>				0.44%	1.17%	0.44%	6.44%	5.62%	5.97%	6.54%
JP Morgan Asian Infrastructure	Aug 2008	\$ 30,713,795	1.13%	0.00%	-3.80%	0.00%	-8.10%	-1.03%	-1.04%	2.86%
JP Morgan Asian Infrastructure II	Mar 2014	\$ 4,858,294	0.18%	0.00%	-6.97%	0.00%	4.88%	n/a	n/a	n/a
JP Morgan Global Maritime	Jun 2010	\$ 29,092,589	1.07%	0.00%	-5.84%	0.00%	-22.90%	-3.54%	18.54%	-80.86%
JP Morgan Infrastructure IIF	Oct 2007	\$ 31,628,689	1.16%	0.00%	-0.85%	0.00%	-1.64%	0.32%	3.02%	4.21%
LBJ Infrastructure Group Holdings	Jun 2010	\$ 44,346,035	1.63%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NTE Mobility Partners	Dec 2009	\$ 42,625,545	1.57%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NTE Segments 3	Sep 2013	\$ 20,302,254	0.75%	0.00%	2.79%	0.00%	2.79%	1.80%	n/a	n/a
Real Estate	Mar 1985	\$ 701,233,260	25.81%	0.05%	-16.87%	0.05%	-34.04%	-19.10%	-11.94%	-7.18%
<i>NCREIF PI</i>				0.00%	2.91%	0.00%	13.33%	12.57%	12.04%	12.18%
Lone Star RE II	Jul 1994	\$ 4,805,298	0.18%	0.00%	5.40%	0.00%	64.36%	52.53%	41.63%	n/a
Lone Star RE III	Sep 2011	\$ 20,053,987	0.74%	0.00%	3.21%	0.00%	20.34%	n/a	n/a	n/a
M&G Real Estate Debt Fund II, LP	May 2014	\$ 11,748,160	0.43%	-3.76%	-5.90%	-3.76%	0.49%	0.20%	n/a	n/a
RE Separate Accounts		\$ 650,415,320	23.94%	0.13%	-18.14%	0.13%	-36.75%	-21.04%	-14.21%	-8.99%
Real Estate Funds		\$ 14,210,495	0.52%	0.00%	5.41%	0.00%	13.52%	6.87%	5.52%	5.27%

* P&F Holdings returns are based on assets transferred into the account. Write-downs and write-ups have contributed to exaggerated performance.

** "Real Estate Funds" includes LSF III – VI, LSREF, Hearthstone and Olympus funds.

Preliminary – Data as at January 2016 Manager Overview (cont.)



Fund	Inception Date	Current Exposure	Net Allocation (%)	1M	3M	YTD	1yr	2yr	3yr	5yr
Private Equity	Oct 2005	\$ 472,670,073	17.40%	0.35%	0.66%	0.35%	-8.99%	-3.19%	-1.08%	1.29%
<i>S&P 500 + 2%</i>				-4.80%	-5.71%	-4.80%	1.32%	8.64%	13.51%	13.11%
Ashmore GSSF IV	Oct 2007	\$ 5,225,342	0.19%	15.90%	15.96%	15.90%	11.71%	-1.36%	-5.73%	-10.06%
BankCap Partners	Feb 2007	\$ 15,674,335	0.58%	0.00%	-0.69%	0.00%	7.47%	2.27%	2.14%	-0.39%
BankCap Opportunity Fund	Aug 2013	\$ 11,114,580	0.41%	0.00%	-1.79%	0.00%	-14.24%	-32.28%	n/a	n/a
Creative Attractions	Dec 2012	\$ 1,085,223	0.04%	0.00%	-37.48%	0.00%	-77.26%	-73.97%	-59.36%	n/a
Hudson Clean Energy	Aug 2009	\$ 17,977,837	0.66%	0.00%	-0.16%	0.00%	-1.61%	1.91%	-11.65%	-5.25%
Huff Alternative Fund	Jun 2001	\$ 30,390,587	1.12%	0.00%	-8.22%	0.00%	-6.50%	-2.35%	4.42%	-7.79%
Huff Energy Fund LP	Dec 2005	\$ 110,127,486	4.05%	0.00%	-0.08%	0.00%	-25.22%	-12.31%	-9.54%	-4.25%
Kainos Capital Partners	Jan 2014	\$ 27,241,869	1.00%	0.00%	8.45%	0.00%	-0.70%	15.00%	n/a	n/a
Levine Leichtman Capital Partners Deep Value	Oct 2006	\$ 12,294,522	0.45%	0.00%	0.26%	0.00%	29.41%	12.80%	-2.38%	3.10%
Levine Leichtman Capital Partners PCS II	Feb 2012	\$ 18,744,292	0.69%	0.33%	0.07%	0.33%	0.42%	-0.62%	5.52%	n/a
Levine Leichtman Capital Partners IV	Apr 2008	\$ 21,817,909	0.80%	0.38%	9.36%	0.38%	3.61%	7.85%	11.01%	20.79%
Levine Leichtman Capital Partners V	Aug 2013	\$ 15,944,378	0.59%	0.33%	2.33%	0.33%	22.56%	13.61%	n/a	n/a
Lone Star Fund VII, LP	Jul 2011	\$ 5,058,332	0.19%	0.00%	11.80%	0.00%	22.33%	31.15%	65.38%	n/a
Lone Star Fund VIII, LP	Jun 2013	\$ 14,660,221	0.54%	0.00%	5.94%	0.00%	28.93%	30.01%	n/a	n/a
Lone Star Fund IX, LP	Apr 2015	\$ 8,345,572	0.31%	0.03%	12.04%	0.03%	n/a	n/a	n/a	n/a
Lone Star CRA	Jul 2008	\$ 16,699,959	0.61%	0.00%	1.48%	0.00%	-38.35%	-11.24%	2.71%	19.50%
Lone Star Growth Capital	Dec 2006	\$ 12,707,831	0.47%	0.00%	2.52%	0.00%	17.86%	-10.61%	0.70%	6.42%
Lone Star Opportunities V	Jan 2012	\$ 26,715,249	0.98%	0.18%	1.05%	0.18%	12.81%	7.00%	37.74%	n/a
North Texas Opportunity Fund	Aug 2000	\$ 5,046,915	0.19%	0.00%	-0.07%	0.00%	-46.62%	-17.91%	-16.51%	-12.14%
Merit Energy E, F, G, H	Oct 2004	\$ 41,999,379	1.55%	0.00%	-4.97%	0.00%	-20.69%	-1.99%	-1.18%	-0.74%
Oaktree Power Opportunities Fund III	Apr 2011	\$ 16,350,516	0.60%	5.42%	21.03%	5.42%	22.33%	14.75%	21.35%	n/a
Oaktree Fund IV & 2x Loan Fund	Jan 2002	\$ 1,972,896	0.07%	-8.57%	-8.57%	-8.57%	-25.69%	-9.13%	-5.15%	-1.61%
Pharos IIA	Aug 2005	\$ 19,295,670	0.71%	0.00%	-7.95%	0.00%	-14.87%	-7.00%	-0.15%	5.68%
Pharos III	Dec 2012	\$ 15,571,470	0.57%	0.00%	0.27%	0.00%	3.81%	-3.89%	-21.08%	n/a
Yellowstone Capital	Sep 2008	\$ 607,703	0.02%	0.00%	-34.85%	0.00%	-48.16%	-53.29%	-41.99%	-33.25%

Preliminary – Data as at January 2016
Appendix I – Stress Test Scenarios, Proxies,
Policy Composition



Stress Test Scenarios

Scenario/Stress	Calculation Period	Description
Debt Ceiling Crisis & Downgrade (2011)	07/22/2011 - 08/08/2011	Debt ceiling crisis that led to USA credit downgrade. This stress scenario describes a 17-day period starting from 7/22/2011 when the market began to react to debt ceiling impasse. 8/8/2011 is the first business day after the downgrade announcement.
Equities Down 10%	Stress Test	Global market factors down 10%.
Equities Up 10%	Stress Test	Global market factors up 10%.
Equity Markets Rebound (2009)	03/04/2009 - 06/01/2009	Global equity markets rebound following 2008 drawdown.
EUR down 10% vs. USD	Stress Test	FX rate shift. EUR weakens 10% to USD.
EUR up 10% vs. USD	Stress Test	FX rate shift. EUR strengthens 10% to USD.
Greek Financial Crisis (2015)	06/22/2015 - 07/08/2015	Athens resistance via referendum and ultimately agreement to rush through long-resisted economic reforms, imposed by its creditors, in a bid to stay in the Eurozone
Lehman Default (2008)	09/15/2008 - 10/14/2008	Month immediately following default of Lehman Brothers in 2008.
Libya Oil Shock (2011)	02/14/2011 - 02/23/2011	Civil war in Libya breaks out on February 15th 2011, causing oil prices to surge.
Oil Prices Drop (2010)	05/03/2010 - 05/20/2010	The price of oil drops 20% due to concerns over how European countries would reduce budget deficits in the wake of the European economic crisis.
Russian Financial Crisis (2008)	08/07/2008 - 10/06/2008	War with Georgia and rapidly declining oil prices raise fears of an economic recession within the region.

Stress Test Proxies

Asset Class	Proxy
Public Equity	iShares MSCI ACWI ETF
Fixed Income	SPDR Barclays High Yield Bond ETF
Asset Allocation	Powershares Senior Loan Portfolio ETF
Cash & Cash Equivalents	n/a
Natural Resources	IQ ARB Global Resources ETF
Infrastructure	SPDR S&P Global Infrastructure ETF
Real Estate	Schwab US REIT ETF
Private Equity	iShares S&P 500 ETF

*Proxies for stress tests are chosen based on correlation analysis of index returns to tradeable ETFs.

Policy Composition

Asset Class	Benchmark	Weight
Public Equity	MSCI ACWI	15%
Fixed Income	Barclays Global Aggregate	15%
Asset Allocation	90 Day T-Bill + 6%	20%
Cash & Cash Equivalents	n/a	0%
Natural Resources	Global Nat. Res. Benchmark	10%
Infrastructure	CPI + 5%	10%
Real Estate	NCREIF PI	15%
Private Equity	S&P 500 + 2%	15%

* 60/40 Portfolio is defined as 60% MSCI ACWI, 40% Barclays Global Aggregate.

Attribution details

Single period attribution uses arithmetic attribution per the Brinson Model

$$\text{Asset Allocation} = \sum_j (w_j^p - w_j^b) \times (r_j^b - r_{total}^b)$$

$$\text{Stock Selection} = \sum_j w_j^b \times (r_j^p - r_j^b)$$

$$\text{Interaction} = \sum_j (w_j^p - w_j^b) \times (r_j^p - r_j^b)$$

$$\text{Total Value Added} = (r_{total}^p - r_{total}^b)$$

where

$$\begin{aligned} w_j^p &= \text{Weight of Portfolio component } j \\ w_j^b &= \text{Weight of Benchmark component } j \\ r_j^p &= \text{Return of Portfolio component } j \\ r_j^b &= \text{Return of Benchmark component } j \\ r_{total}^p &= \text{Total Return of Portfolio} \\ r_{total}^b &= \text{Total Return of Benchmark} \end{aligned}$$

Multi period attribution is calculated using the Frongello model to produce the cumulative effects of attribution across multiple periods.

$$F_{itb} = G_{itb} \left(\prod_{j=1}^{t-1} (1 + R_j) \right) + \bar{R}_t \left(\sum_{j=1}^{t-1} F_{ijb} \right)$$

In the Frongello method, each original attribute (G_{itb}) is scaled by the portfolio total return through the prior period ($1+R_j$) and the current period return of the benchmark (\bar{R}_t) compounds with the total return due to that attribute through the prior period (F_{ijb})

* For the one month attribution, the weights displayed on page 12 are the beginning weights for the period. For the Calendar YTD and One Year weights, they are the average of the beginning weights over the period

Preliminary – Data as at January 2016

Appendix III – Investment Terms & Performance Statistics



Active Premium: A measure of the investment’s annualized return minus the benchmark’s annualized return

Alpha: Return generated by the manager that is not explained by the returns of the benchmark. A measure of a fund’s performance beyond what its benchmark would predict

Annual Return: The annual rate at which an investment would have grown, if it had grown at a steady rate. Also called “Compound Annual Growth Rate” (CAGR), or the “Compound Rate of Return Annualized” (Compound RoR)

Annual Volatility: A statistical measure of the dispersion of returns around the average (mean) return. Often used as a measure of investment risk with a higher value indicating higher risk

Arbitrage: The simultaneous purchase and sale of an asset in order to profit from a difference in the price

Beta: A measure of the risk of the fund relative to the benchmark. Beta describes the sensitivity of the investment to benchmark movements where the benchmark is always assigned a beta of 1.0

Calmar Ratio: A return/risk ratio calculated over the last three year period as [annual compounded return / (Maximum Drawdown)]

Capital Commitment: Every investor in a private equity fund commits to investing a specified sum of money in the fund partnership over a specified period of time.

Capital Distribution: The returns that an investor in a private equity fund receives; the income and capital realized from investments less expenses and liabilities

Carried Interest: The share of profits that the fund manager is due once it has returned the cost of investment to investors

Catch up: A clause that allows the general partner to take, for a limited period of time, a greater share of the carried interest than would normally be allowed. This continues until the time when the carried interest allocation, as agreed in the limited partnership, has been reached.

Clawback: Ensures that a general partner does not receive more than its agreed percentage of carried interest over the life of the fund

Correlation: A measure between +1 and -1 that explains the degree to which the returns of the fund and a benchmark are related

Down Capture: Measures how much of the benchmark’s return the fund captures when the benchmark is negative

Down Number: The percentage of the time the fund was down when the benchmark was down

Drawdown: When a private equity firm has decided where it would like to invest, it will approach its own investors in order to draw down the money. The money will already have been pledged to the fund but this is the actual act of transferring the money so that it reaches the investment target

Excess Kurtosis: Measures the distribution of observed data around the mean with an emphasis on “outlier” data, both positive and negative

Exit: The means by which a fund is able to realize its investment in a company – by an initial public offering, a trade sale, selling to another private equity firm or a company buy-back

Fundraising: The process by which a private equity firm solicits financial commitments from limited partners for a fund

Preliminary – Data as at January 2016

Appendix III – Investment Terms & Performance Statistics (cont.)



General Partner: This can refer to the top-ranking partner(s) at a private equity firm as well as the firm managing the private equity fund

Gross Exposure: Aggregate of long and short investment positions in relation to the Net Asset Value (NAV)

Holding Period: The length of time that an investment is held

Information Ratio: The Active Premium divided by the Tracking Error. This measure explicitly relates the degree by which an investment has beaten the benchmark to the consistency by which the investment has beaten the benchmark

Internal Rate of Return: A time-weighted return expressed as a percentage that uses the present sum of cash drawdowns (money invested), the present value of distributions (money returned from investments) and the current value of unrealized investments and applies a discount

Leverage: Increasing exposure to markets (both long and short) by borrowing or the use of derivatives

Limited Partnership: The standard vehicle for investment in private equity funds

Long Position: Owning a security

Management Fee: The annual fee paid to the general partner

Max Drawdown: The largest percentage loss of Net Asset Value (NAV) as measured from peak-to-trough

Net Exposure: Difference between the long and short positions, representing the exposure to market fluctuations

Preferred Return: This is the minimum amount of return that is distributed to the limited partners until the time when the general partner is eligible to deduct carried interest

Omega Ratio: The weighted gain/loss ratio relative to the average monthly historical return; captures the effects of extreme returns and conveys the preference for positive volatility versus negative volatility

Sharpe Ratio: A return/risk ratio calculated as: $[(\text{annual compounded return} - \text{risk-free rate}) / (\text{annual volatility of returns})]$

Skewness: A measure of the symmetry of return distribution, as compared with a normal (bell-shaped) distribution

Sortino Ratio: A return/risk ratio calculated as such: $[(\text{annual compounded return} - \text{minimum acceptable return (MAR)}) / (\text{downside deviation of returns below MAR})]$. This ratio was developed to differentiate between good (upside) and bad (downside) volatility

Standard Deviation: Measures the dispersal or uncertainty in a random variable (in this case, investment returns). It measures the degree of variation of returns around the mean (average) return

Short Position: Selling a security

Tracking Error: A measure of the unexplained portion of an investments performance relative to a benchmark

Preliminary – Data as at January 2016
Appendix III – Investment Terms & Performance Statistics (cont.)



Up Capture: Measures the percentage of the benchmark's return the fund captures when the benchmark is positive

Up Number: The percentage of the time the fund was up when the benchmark was up

Value at Risk (VAR): The maximum loss that can be expected within a specified holding period with a specified confidence level

Preliminary – Data as at January 2016
Appendix IV – Private Credit



Investment	Current Classification	Future Classification
Levine Leichtman Capital Partners Deep Value	Private Equity	Private Credit
Levine Leichtman Capital Partners PCS II	Private Equity	Private Credit
Lone Star Fund VII, LP	Private Equity	Private Credit
Lone Star Fund VIII, LP	Private Equity	Private Credit
Lone Star Fund IX, LP	Private Equity	Private Credit
Oaktree Fund IV & 2x Loan Fund	Private Equity	Private Credit