



TEXAS TECH UNIVERSITY SYSTEM™

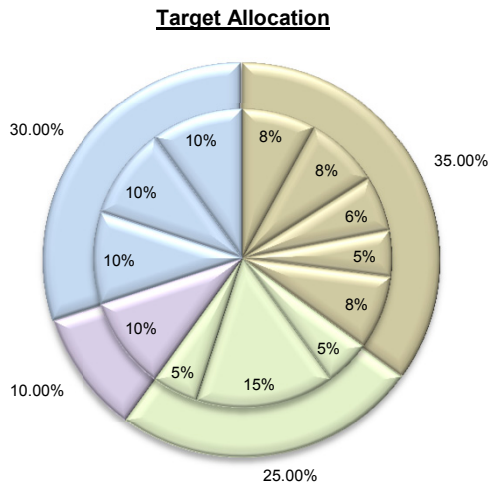
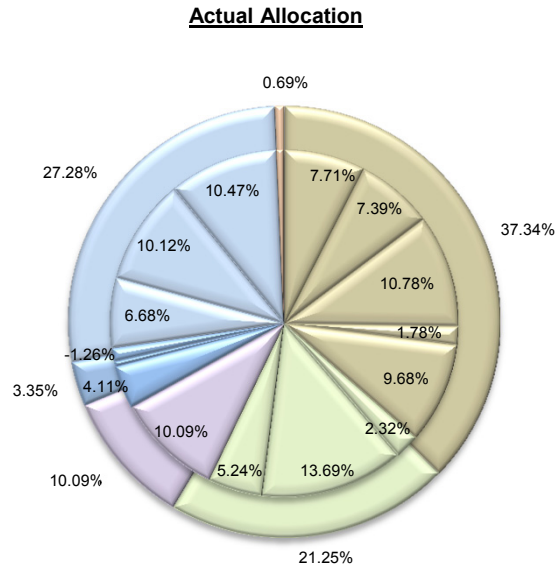
**Board of Regents Report for December 2015**

**Texas Tech University Endowment**

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**Asset Class Allocation: Actual vs. Target**



Asset Class	Sub-Asset Class	Actual \$ Allocation				Total % Allocation	Target % Allocation	Target Range
		Physical	Synthetic	Aegis	Total			
Equity	US Equity	0	70,026,905	9,964,810	79,991,715	7.71%	8%	
	Global Equity	76,725,814			76,725,814	7.39%	8%	
	Non US Developed Equity	15,955,438	85,829,060	10,045,536	111,830,034	10.78%	6%	
	Non US Emerging Markets Equity	20,478,301		-2,013,225	18,465,076	1.78%	5%	
	Alternative Equity	100,434,592			100,434,592	9.68%	8%	
	<b>Sub-Total</b>		<b>213,594,145</b>	<b>155,855,964</b>	<b>17,997,121</b>	<b>387,447,231</b>	<b>37.34%</b>	<b>35%</b>
Debt	Sovereign/Investment Grade Bonds	0	43,437,500	-19,354,725	24,082,775	2.32%	5%	
	Credit	142,039,709			142,039,709	13.69%	15%	
	Emerging Markets Debt	54,342,140			54,342,140	5.24%	5%	
	<b>Sub-Total</b>		<b>196,381,850</b>	<b>43,437,500</b>	<b>-19,354,725</b>	<b>220,464,625</b>	<b>21.25%</b>	<b>25%</b>
<b>Liquid Real Assets</b>		<b>93,192,129</b>	<b>10,066,141</b>	<b>1,468,700</b>	<b>104,726,970</b>	<b>10.09%</b>	<b>10%</b>	<b>5% - 15%</b>
Cash & Alpha Pool	Cash	53,697,997	-11,001,038		42,696,959	4.11%		
	Cash Collateral	30,870,883	-30,870,883		0	0.00%		
	Currency	0		5,117,047	5,117,047	0.49%		
	Alpha Pool	154,450,194	-167,487,684		-13,037,490	-1.26%		
	<b>Sub-Total</b>		<b>239,019,075</b>	<b>-209,359,605</b>	<b>5,117,047</b>	<b>34,776,516</b>	<b>3.35%</b>	<b>0%</b>
Private Investments	Private Equity	69,326,428			69,326,428	6.68%	10%	
	Private Credit	105,042,688			105,042,688	10.12%	10%	
	Private Real Assets	108,645,890			108,645,890	10.47%	10%	
	<b>Sub-Total</b>		<b>283,015,007</b>	<b>0</b>	<b>0</b>	<b>283,015,007</b>	<b>27.28%</b>	<b>30%</b>
<b>Liquidating</b>		<b>7,192,615</b>	<b>0</b>	<b>0</b>	<b>7,192,615</b>	<b>0.69%</b>	<b>0%</b>	
<b>Total</b>		<b>1,032,394,820</b>	<b>0</b>	<b>5,228,143</b>	<b>1,037,622,963</b>	<b>100%</b>	<b>100%</b>	

\*Please see Appendix I (page 23) for details on composition of Russell synthetic exposure.

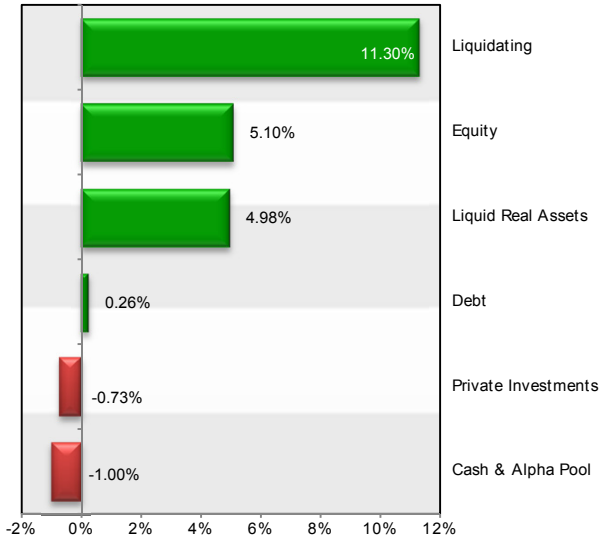
31<sup>st</sup> December 2015 (Preliminary)



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**Asset Class Performance: Actual vs. Policy**

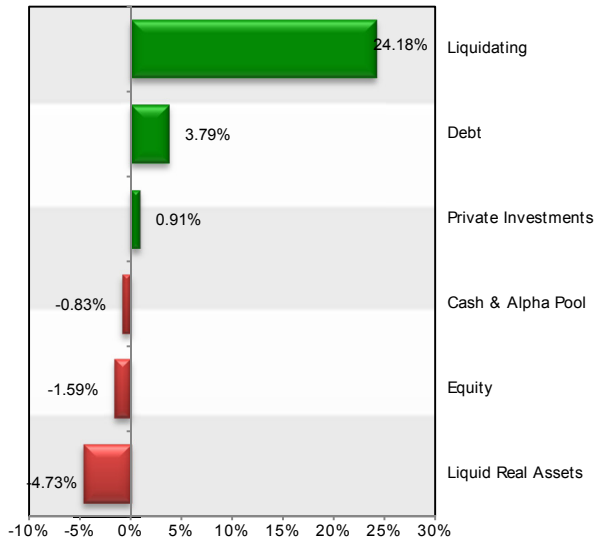
**QTD Performance**



Asset Class	Month					Policy
	Physical Return	Synthetic Overlay	Alpha Pool + Cash	Aegis Contr.	Total Return	
Equity	-1.32%	-3.07%	-0.47%	-0.07%	-2.32%	-1.86%
Debt	-1.53%	-0.14%	-0.47%	0.00%	-1.36%	0.53%
Liquid Real Assets	1.19%	7.23%	-0.47%	0.12%	1.93%	0.22%
Cash & Alpha Pool	-0.38%			-0.91%	-1.26%	
Private Investments	-0.76%				-0.76%	-1.34%
Liquidating	-0.46%				-0.46%	
<b>Total</b>	<b>-0.76%</b>	<b>-1.96%</b>	<b>-0.47%</b>	<b>-0.18%</b>	<b>-1.22%</b>	<b>-0.90%</b>

Asset Class	QTD					
	Physical Return	Synthetic Overlay	Alpha Pool + Cash	Aegis Contr.	Total Return	Policy
Equity	4.47%	6.82%	-0.80%	-0.09%	5.10%	4.91%
Debt	0.53%	-0.58%	-0.80%	0.03%	0.26%	-0.93%
Liquid Real Assets	4.51%	18.60%	-0.80%	0.18%	4.98%	1.10%
Cash & Alpha Pool	-0.50%			-0.35%	-1.00%	
Private Investments	-0.73%				-0.73%	-1.34%
Liquidating	11.30%				11.30%	
<b>Total</b>	<b>1.15%</b>	<b>5.86%</b>	<b>-0.80%</b>	<b>-0.08%</b>	<b>1.62%</b>	<b>1.22%</b>

**One Year Performance**



Asset Class	Calendar YTD					Policy
	Physical Return	Synthetic Overlay	Alpha Pool + Cash	Aegis Contr.	Total Return	
Equity	0.53%	-5.49%	0.57%	-0.05%	-1.59%	-2.19%
Debt	4.68%	0.40%	0.57%	0.02%	3.79%	-3.16%
Liquid Real Assets	-5.14%	10.08%	0.57%	0.23%	-4.73%	4.69%
Cash & Alpha Pool	0.60%			-1.42%	-0.83%	
Private Investments	0.91%				0.91%	6.22%
Liquidating	24.18%				24.18%	
<b>Total</b>	<b>1.14%</b>	<b>-2.22%</b>	<b>0.57%</b>	<b>-0.28%</b>	<b>0.20%</b>	<b>0.94%</b>

Asset Class	1 Year					
	Physical Return	Synthetic Overlay	Alpha Pool + Cash	Aegis Contr.	Total Return	Policy
Equity	0.53%	-5.49%	0.57%	-0.05%	-1.59%	-2.19%
Debt	4.68%	0.40%	0.57%	0.02%	3.79%	-3.16%
Liquid Real Assets	-5.14%	10.08%	0.57%	0.23%	-4.73%	4.69%
Cash & Alpha Pool	0.60%			-1.42%	-0.83%	
Private Investments	0.91%				0.91%	6.22%
Liquidating	24.18%				24.18%	
<b>Total</b>	<b>1.14%</b>	<b>-2.22%</b>	<b>0.57%</b>	<b>-0.28%</b>	<b>0.20%</b>	<b>0.94%</b>

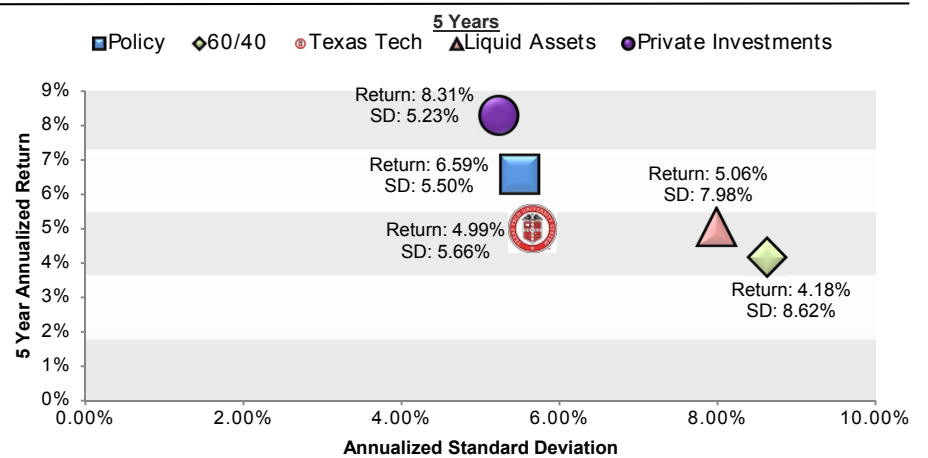
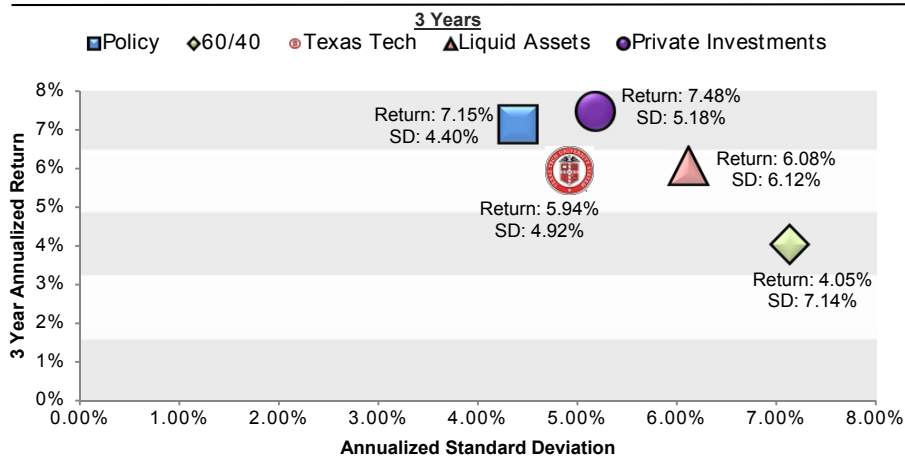
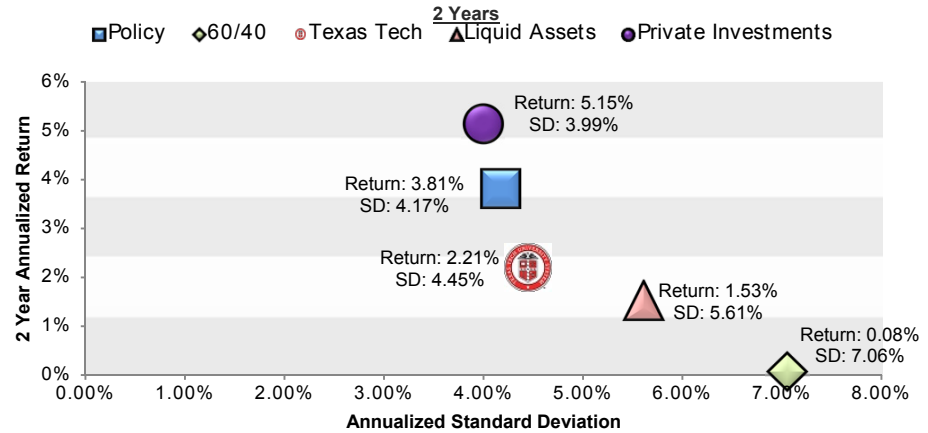
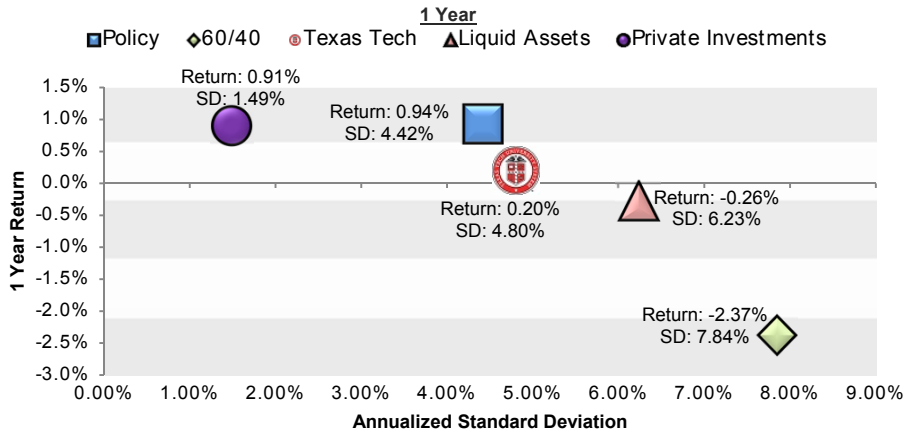
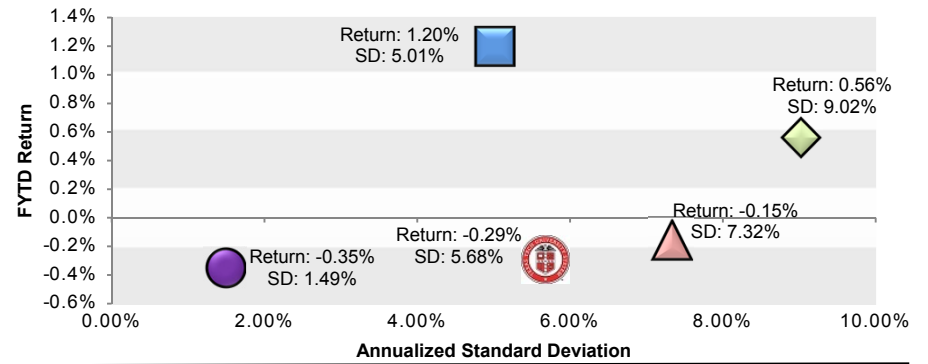


**Long Term Risk/Return of Endowment vs. 60/40 Portfolio & Policy Returns**

*Commentary*

- The Texas Tech portfolio is less volatile than the 60/40 portfolio over all time horizons.
- The Texas Tech portfolio outperforms the 60/40 portfolio over a 1 year, 2 year and 3 year time horizon.
- Volatility (measured by standard deviation) on the Texas Tech portfolio has decreased over the past 12 months compared with the annualized 3 year and 5 year volatility.

FYTD  
 ■ Policy    ◆ 60/40    ● Texas Tech    ▲ Liquid Assets    ● Private Investments



**Risk Profile (VaR)**

- The Texas Tech portfolio has a 5% chance of losing \$44 million (or more) in a month with a 1% chance of losing \$66 million (or more) in a month based on observed portfolio volatility.
- The Texas Tech portfolio has lower VaR than the 60/40 portfolio.

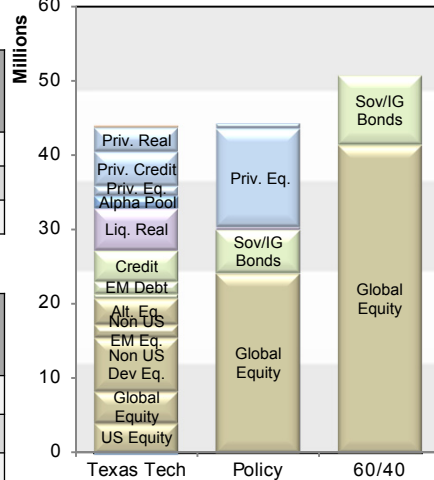
**Value at Risk – One Month – 95% Confidence**

**Sub Asset Classes with large Value at Risk:**

Sub-Asset Class	5 % chance of losing \$
Non US Developed Equity	7,240,593
Long Commodities	5,662,090
Private Credit	4,576,078

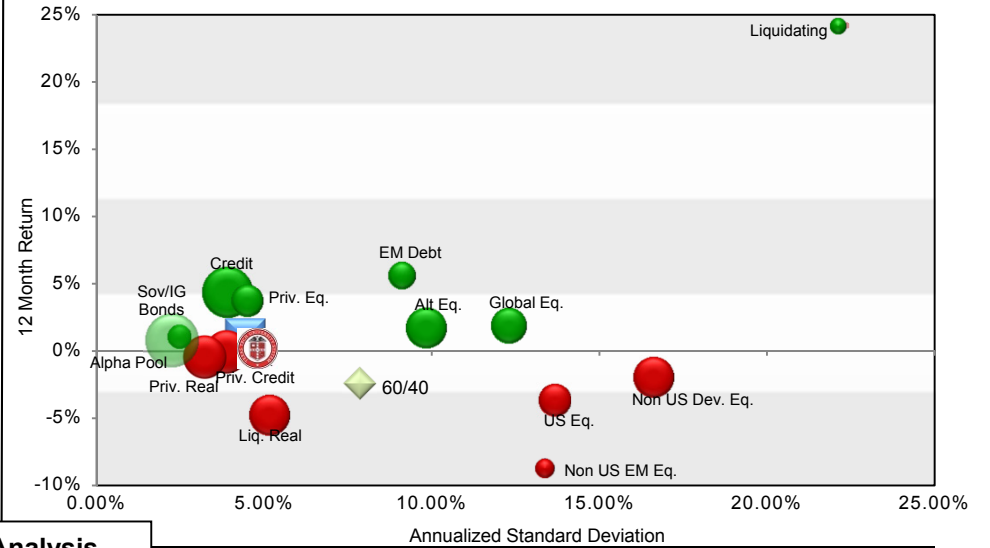
**Sub Asset Classes with small Value at Risk:**

Sub-Asset Class	5 % chance of losing \$
Sovereign/Investment Grade Bonds	564,812
Private Equity	1,349,799
Alpha Pool	1,688,062



**Risk Profile**

- Private Equity, Liquidating and Credit have provided the highest risk adjusted returns over the last 12 months
- Private Real Assets, Non US EM Equity, and Liquid Real Assets have generated the lowest risk adjusted returns over the last 12 months.



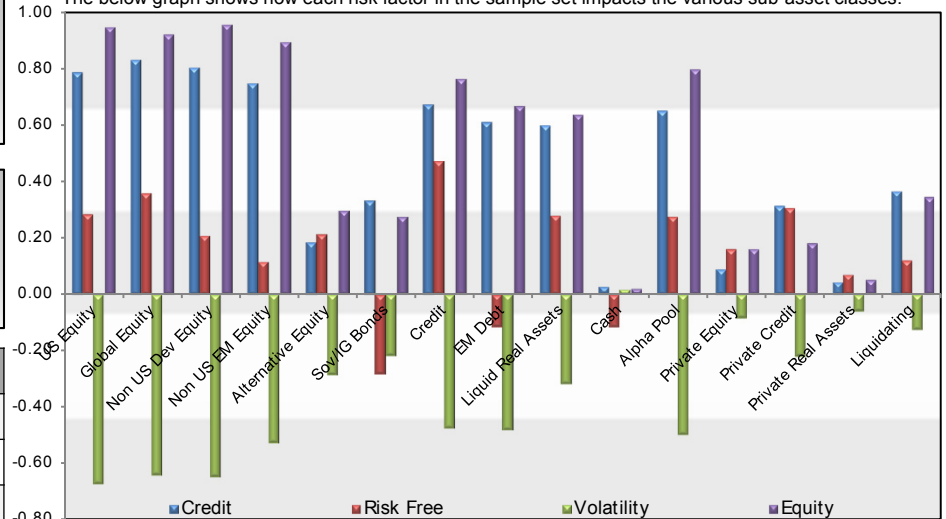
**Factor Analysis**

- The model analyses historical returns of the portfolio against the returns and volatility of key indicators:
  - Credit is benchmarked against the High Yield North American CDX Index.
  - Risk-Free is benchmarked against the US 10 Year Treasury Bond.
  - Volatility is benchmarked against the VIX Index.
  - Equity Markets is benchmarked against the MSCI AC World IMI (Net).

- The model shows that performance and volatility of both the Texas Tech portfolio and a 60/40 portfolio are well explained by the 4 factor model.
- The Texas Tech portfolio exhibits a lower correlation to the Equity markets than the 60/40 and Policy portfolios, but a higher correlation to the risk free index.

Portfolio	Credit	Risk Free	Volatility	Equity	R <sup>2</sup>
Texas Tech	0.81	0.29	-0.63	0.94	0.79
60/40	0.80	0.16	-0.62	0.99	0.79
Policy	0.52	0.27	-0.59	0.69	0.66

The below graph shows how each risk factor in the sample set impacts the various sub-asset classes.



Factor Analysis is calculated using the monthly return over the period January 2009 – current month.

31<sup>st</sup> December 2015 (Preliminary)

# Equity

(Total NAV: \$369,450,110)

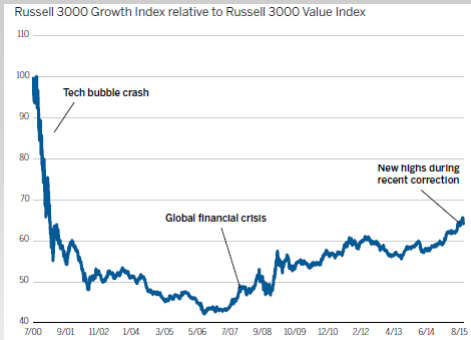


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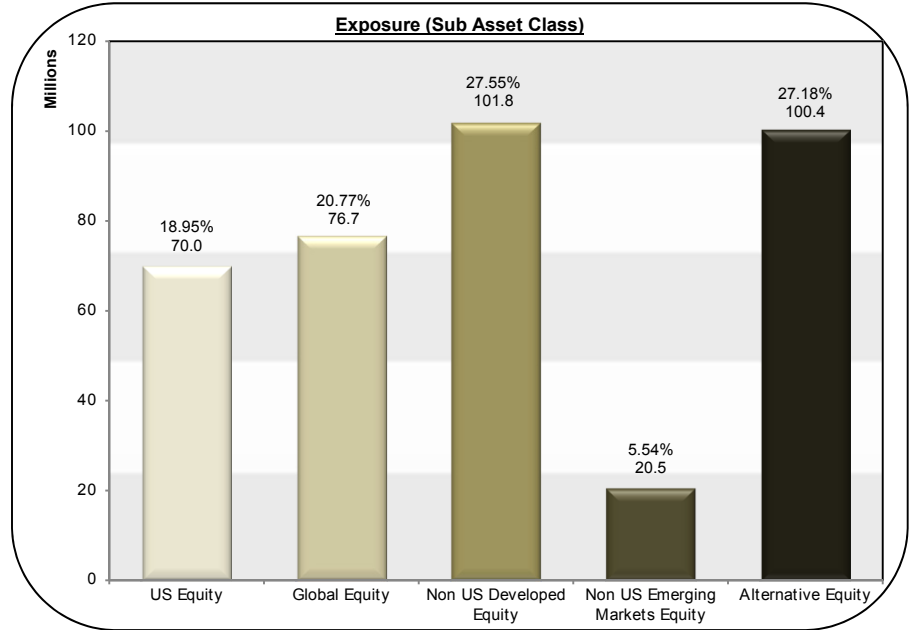
## Overview and Risk Profile by Asset Class

### Commentary

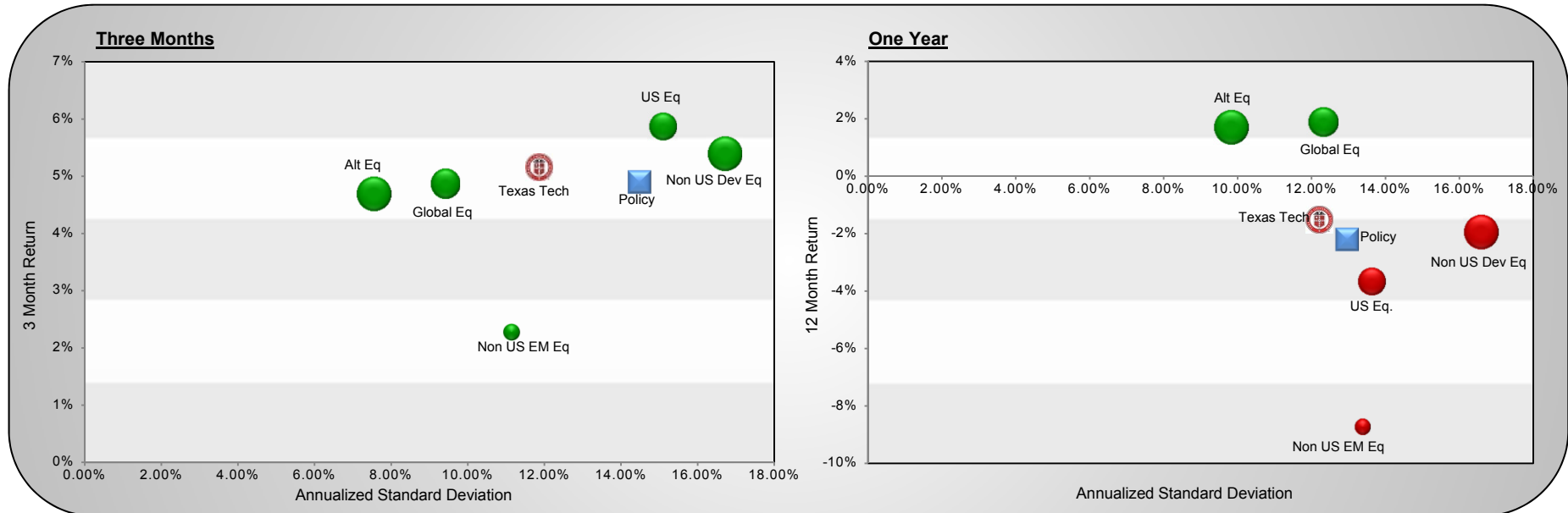
- Encouragingly, the past market leaders continue to lead. After the popping of the tech bubble in the early 2000s, growth (as measured by the Russell 3000 Growth Index relative to the Russell 3000 Value Index) underwent a prolonged period of underperformance, as Figure 2 illustrates. But growth began to outperform value before the global financial crisis (GFC) in 2008, and it has continued outperforming ever since. During the recent correction, we would have expected growth-related sectors, after their strong performance, to sell off the most, but that didn't happen. In fact, growth broke to a new high. That gives us confidence that the market still senses a low-growth environment globally and therefore puts a premium on sectors that offer the potential for at least some growth.



Source – Wellington



## Risk vs. Return (Sub Assets)



\*Performance is calculated using time weighted Cash on Cash returns. This is an industry standard and allows direct comparison between manager returns and policy returns.



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# Debt

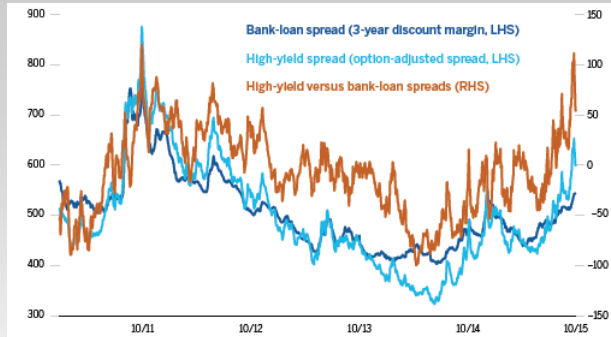
(Total NAV: \$239,819,350)

31<sup>st</sup> December 2015 (Preliminary)

## Overview and Risk Profile by Asset Class

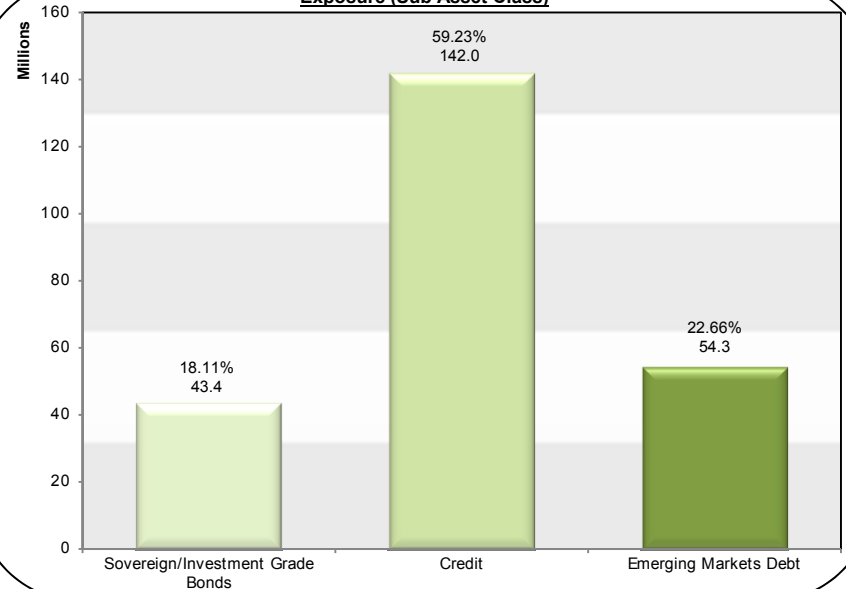
### Commentary

- Bank loans have been among the best-performing major fixed income sectors this year, up 2.25% as of the end of October. The outperformance of this sector versus US high yield in particular was extreme at the start of October. To give some historical context, in mid-2014, high-yield spreads were roughly 100 basis points (bps) below those of bank loans. Fast forward to early October and the relationship had reversed: High yield was trading 100 bps above bank loans. This spread premium of high yield over bank loans is nearly identical to levels reached in 2011, which in hindsight was a multiyear opportunity to switch into high yield.



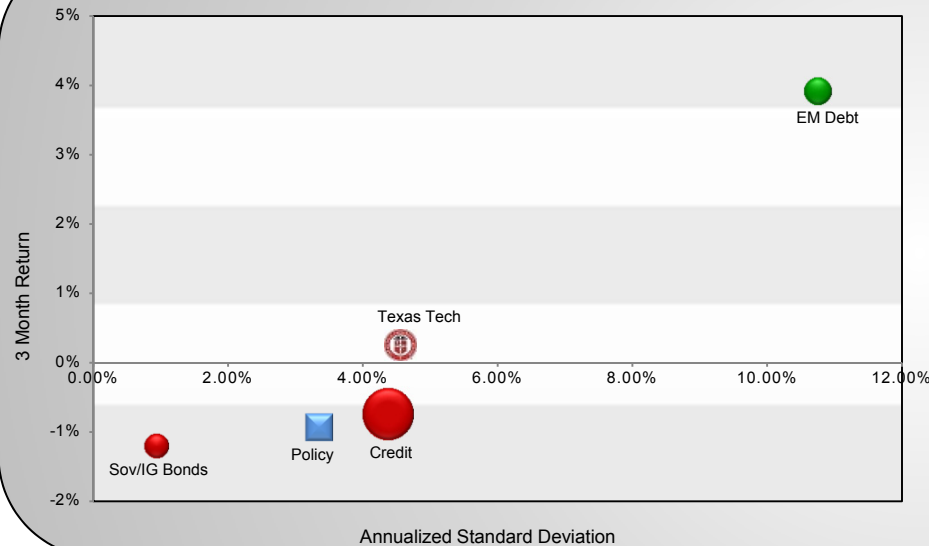
Source – Wellington

### Exposure (Sub Asset Class)

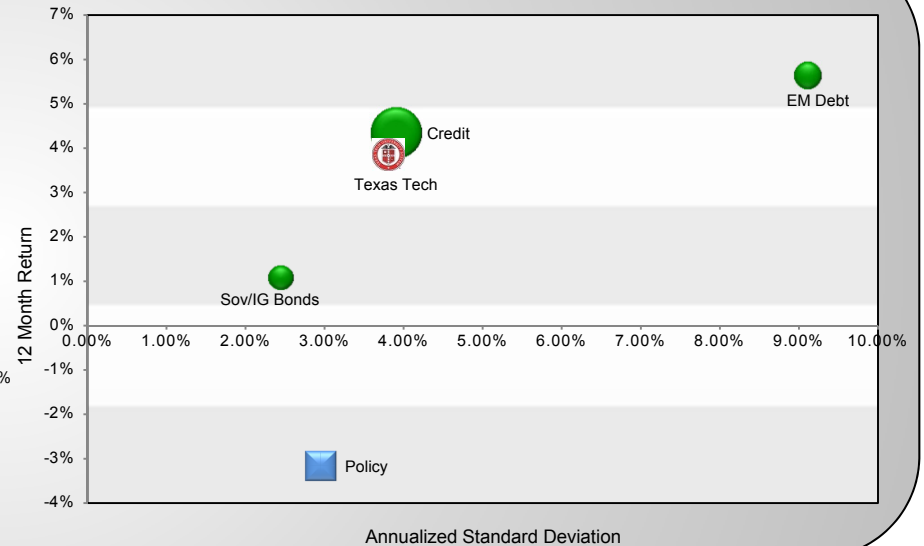


## Risk vs. Return (Sub Assets)

### Three Months



### One Year



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31<sup>st</sup> December 2015 (Preliminary)

# Liquid Real Assets

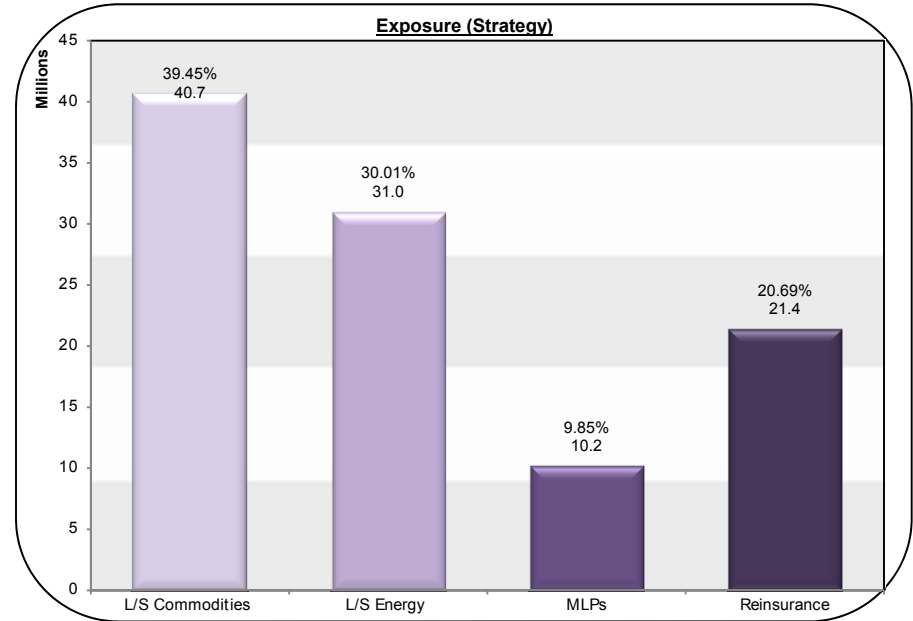
(Total NAV: \$103,258,270)

## Overview and Risk Profile by Asset Class

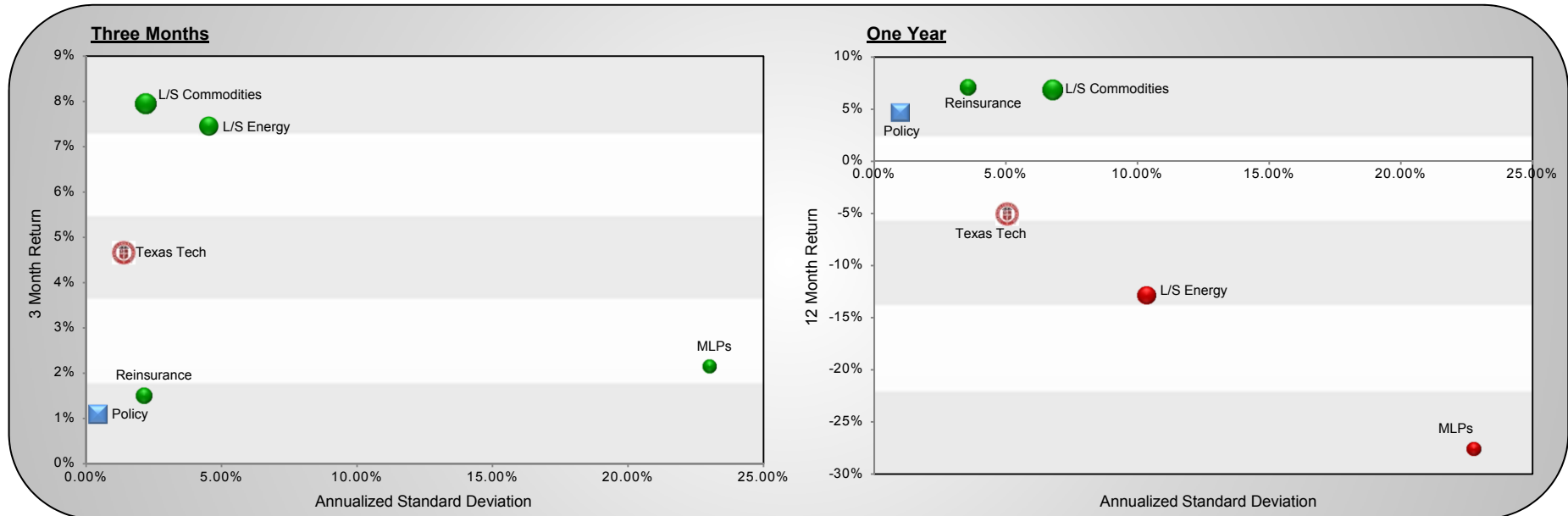
### Commentary

- Commodities were weighed down in November by the strong U.S. dollar and continued soft demand amid a tepid global economy. U.S. data released in November indicated a pickup in economic activity, though the expansion remains quite moderate. China macroeconomic data, meanwhile, point to a strong consumer but continued weakness in the country's export-driven manufacturing sector. Together, these served to pressure commodities, which fell to new 13-year lows during the month.
- Among the commodity subsectors, the energy group (-10.7% total return in the index) remained quite volatile. West Texas Intermediate (-12.3%) and North Sea Brent (-11.7%) crude oil retested their August lows as the world remains well supplied. Key producers, including Saudi Arabia, Iraq, Russia and companies in the U.S., display little or no willingness to cut output, despite sharp declines in oil revenue resulting from low prices.
- Natural gas (-10.2%) endured another difficult month as well. Continued strong domestic gas production and persistent warmer-than-normal weather across much of the continental U.S., abetted by El Nino conditions, pushed U.S. natural gas inventories to a record high of four trillion cubic feet. Barring significant changes in both weather conditions and gas production rates, the current gas surplus could persist for some time.

Source – Cohen & Steers



## Risk vs. Return (Strategy)



\*Performance is calculated using time weighted Cash on Cash returns. This is an industry standard and allows direct comparison between manager returns and policy returns.

31<sup>st</sup> December 2015 (Preliminary)

# Cash & Alpha Pool

(Total NAV: \$34,887,612)

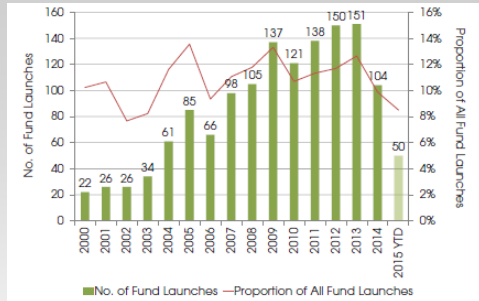


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## Overview and Risk Profile by Asset Class

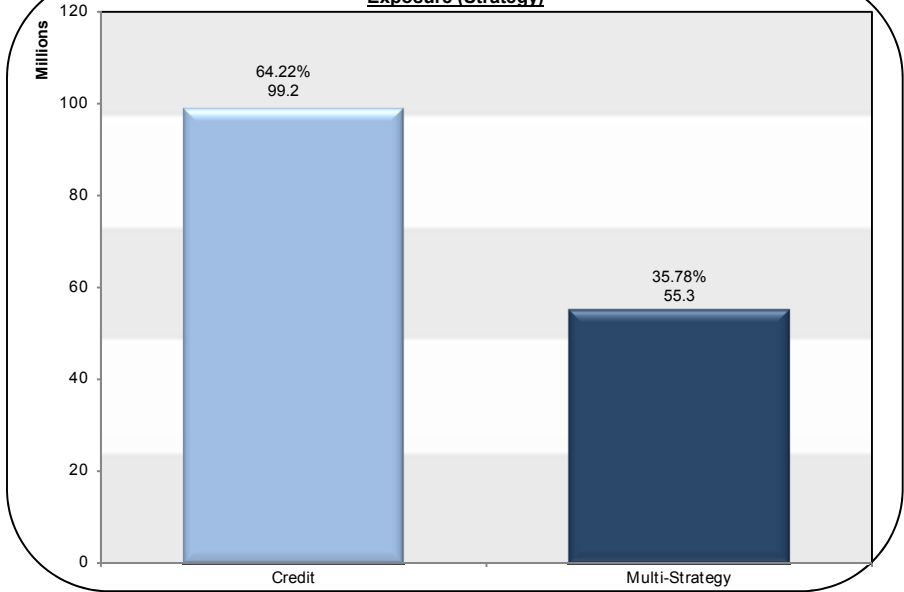
### Commentary

- Fifty CTAs have launched in the first nine months of 2015 to 30 September (Fig. 1). Although the number of funds launched this year is likely to grow as managers bring new funds to market in the final quarter, and also due to more data becoming available, 2015 looks set for the fewest CTA launches since 2006. Similarly, the proportion of CTAs launched, as a fraction of all hedge fund products incepted each year, has decreased to its lowest level since 2006, at 9% as at 30 September 2015.
- As a result, CTAs are operating in a challenging environment with a fall in commodity prices, poor performance and declining investor sentiment. The decline in new fund launches may be a result of fund managers focusing on existing products before taking new funds into the currently troublesome market.

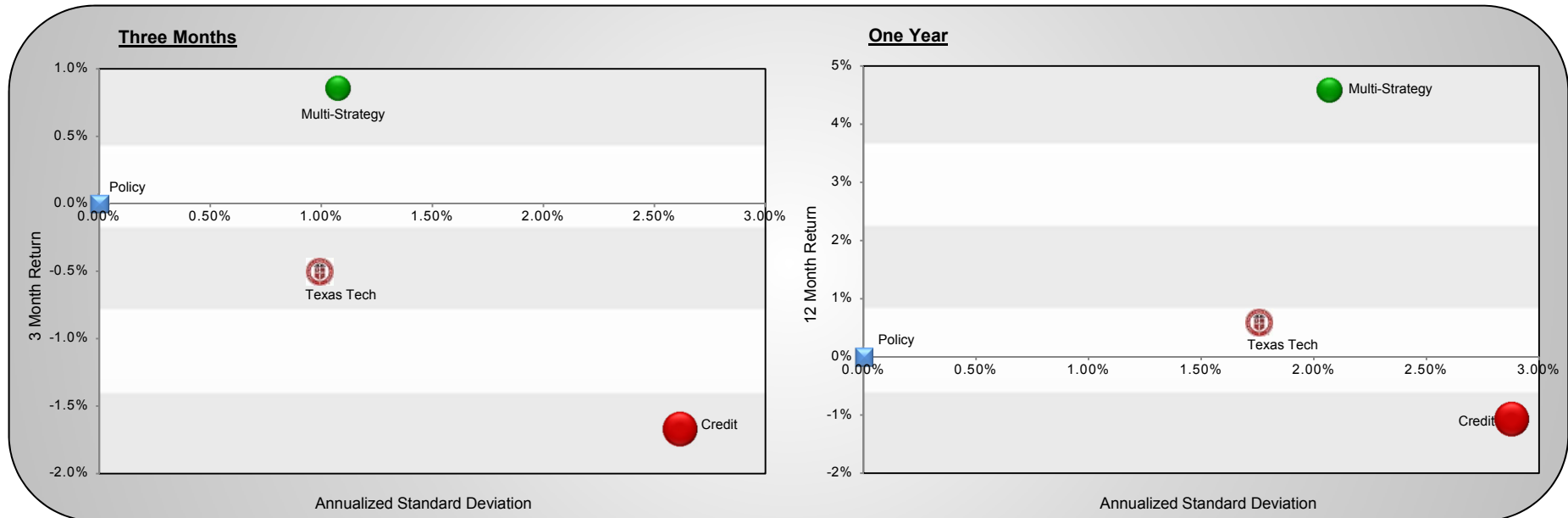


Source – Preqin

### Exposure (Strategy)



### Risk vs. Return (Strategy)



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31<sup>st</sup> December 2015 (Preliminary)

# Private Equity

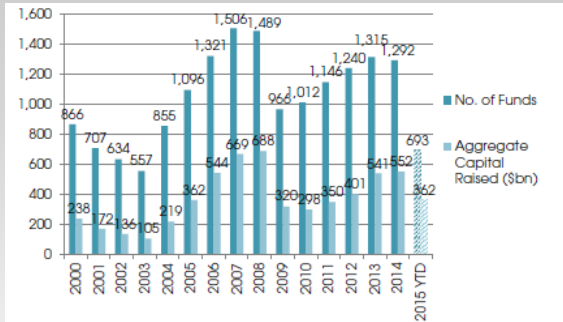
(Total NAV: \$69,326,428)

## Overview and Risk Profile by Asset Class

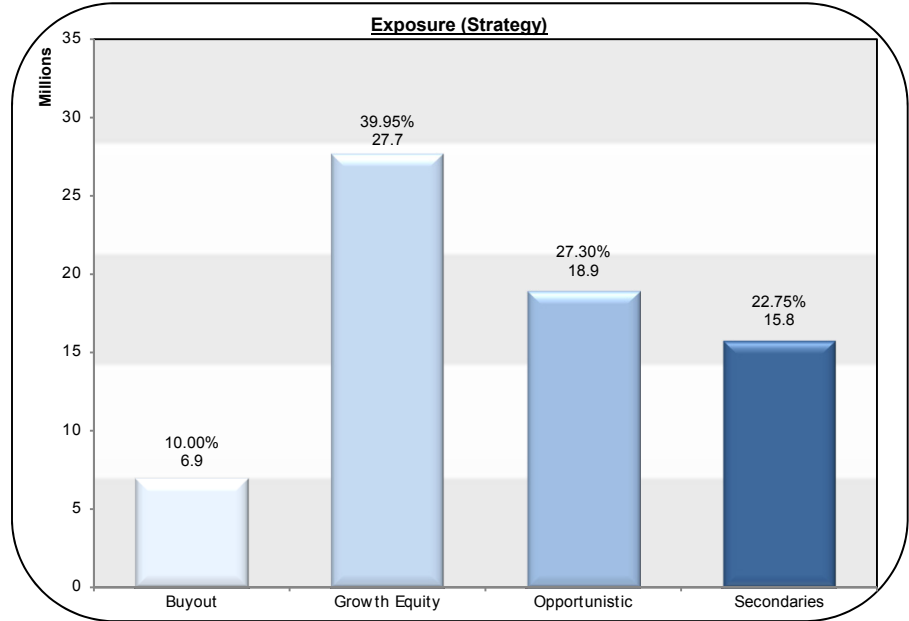
### Commentary

Source – Wall Street Journal

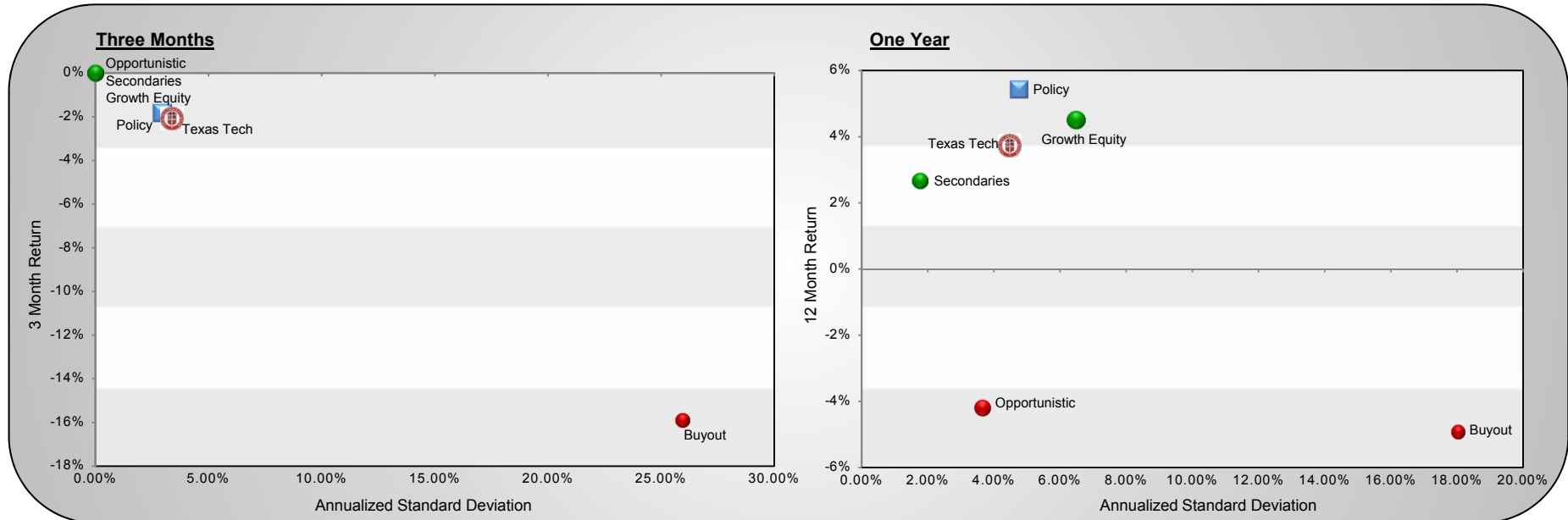
- There has been a notable uptick in aggregate capital raised within the private equity (including private real estate) industry in recent years, with funds closed in 2013 and 2014 raising total amounts of \$541bn and \$552bn respectively. Such levels of fundraising have not been seen since around the time of the Global Financial Crisis (GFC) in 2008, when \$688bn was raised by 1,489 funds. In the immediate aftermath of the GFC, private equity firms and their employees struggled with a slowdown in the fundraising environment, and in 2009, just \$320bn was raised by 966 funds. Nevertheless, with more funds expected to close by the end of 2015, and given that over \$360bn has already been secured, 2015 looks set to be another strong year for private equity fundraising.



Source – Preqin



## Risk vs. Return (Strategy)



\*Performance is calculated using time weighted Cash on Cash returns. This is an industry standard and allows direct comparison between manager returns and policy returns.

31<sup>st</sup> December 2015 (Preliminary)

# Private Credit

(Total NAV: \$105,042,628)

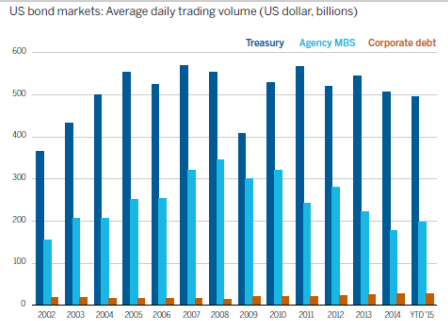


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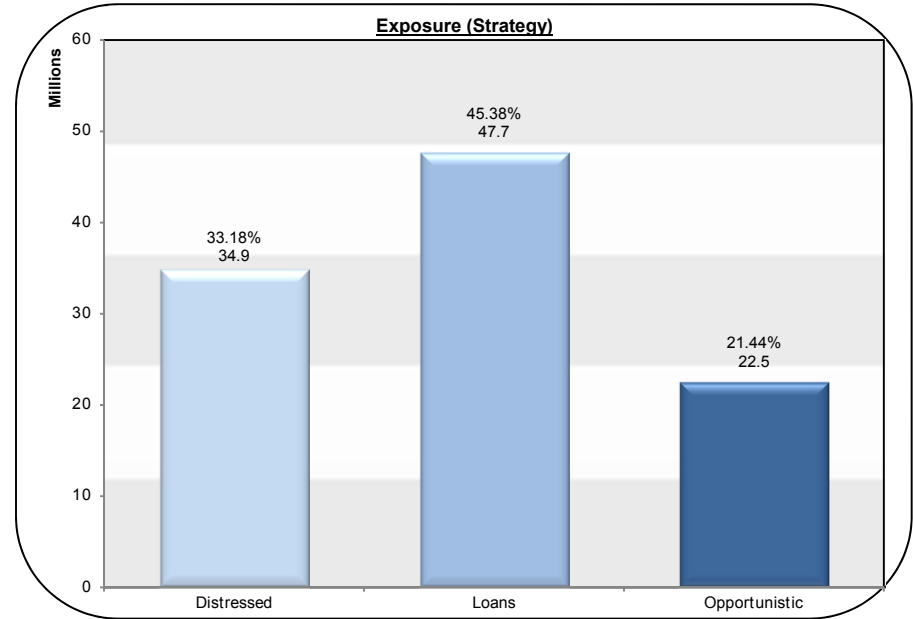
## Overview and Risk Profile by Asset Class

### Commentary

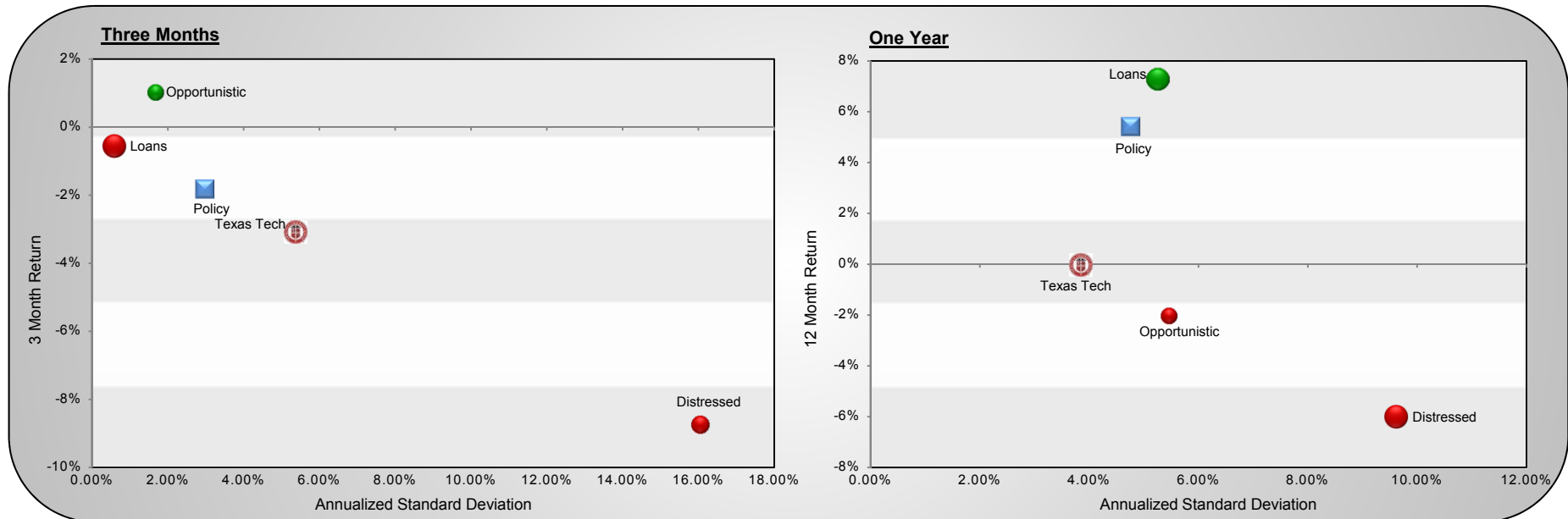
- One other area where MBS stand out among fixed income spread sectors is liquidity. Much has been written about the decline in bond-market liquidity in recent years, and these changes have affected the agency MBS market too. MBS liquidity is shallower than in the past, and it may deteriorate a bit further as yields rise or credit spreads widen. This has made tactical relative-value trading in agency MBS more difficult for active traders. However, liquidity from the perspective of an asset manager with a longer-term view has changed very little. The agency MBS market continues to accommodate extremely large trading volumes with relative ease, making the impact of a large buy or sell of agency MBS very small relative to any other fixed income spread sector.



Source – Wellington



## Risk vs. Return (Strategy)



\*Performance is calculated using time weighted Cash on Cash returns. This is an industry standard and allows direct comparison between manager returns and policy returns.

# Private Real Assets

(Total NAV: \$108,645,890)



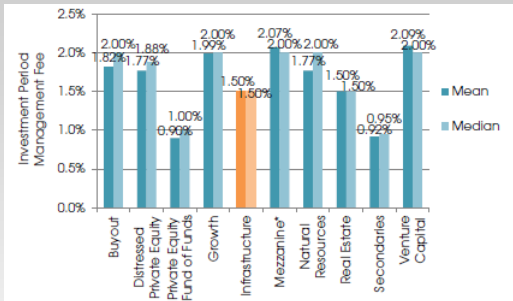
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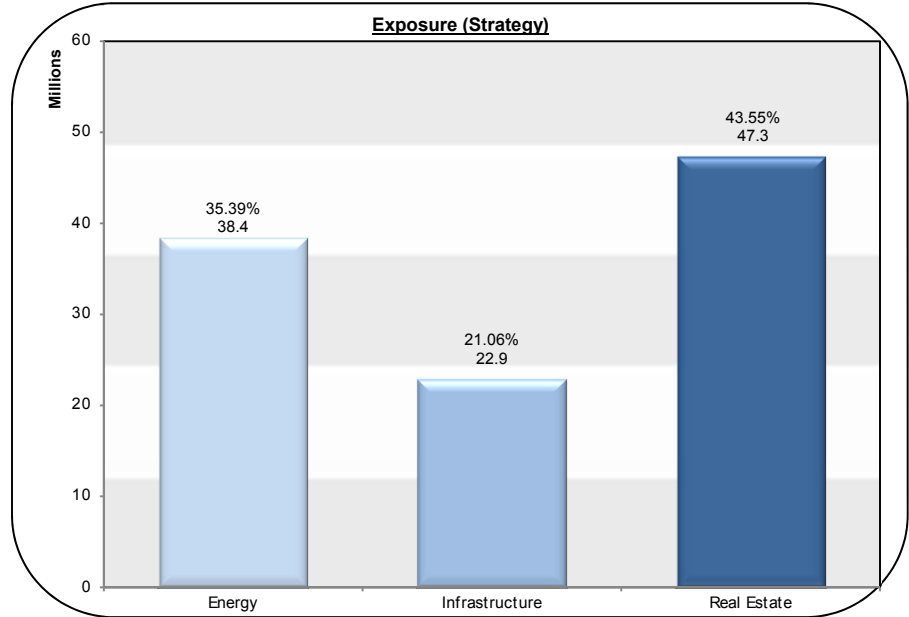
## Overview and Risk Profile by Asset Class

### Commentary

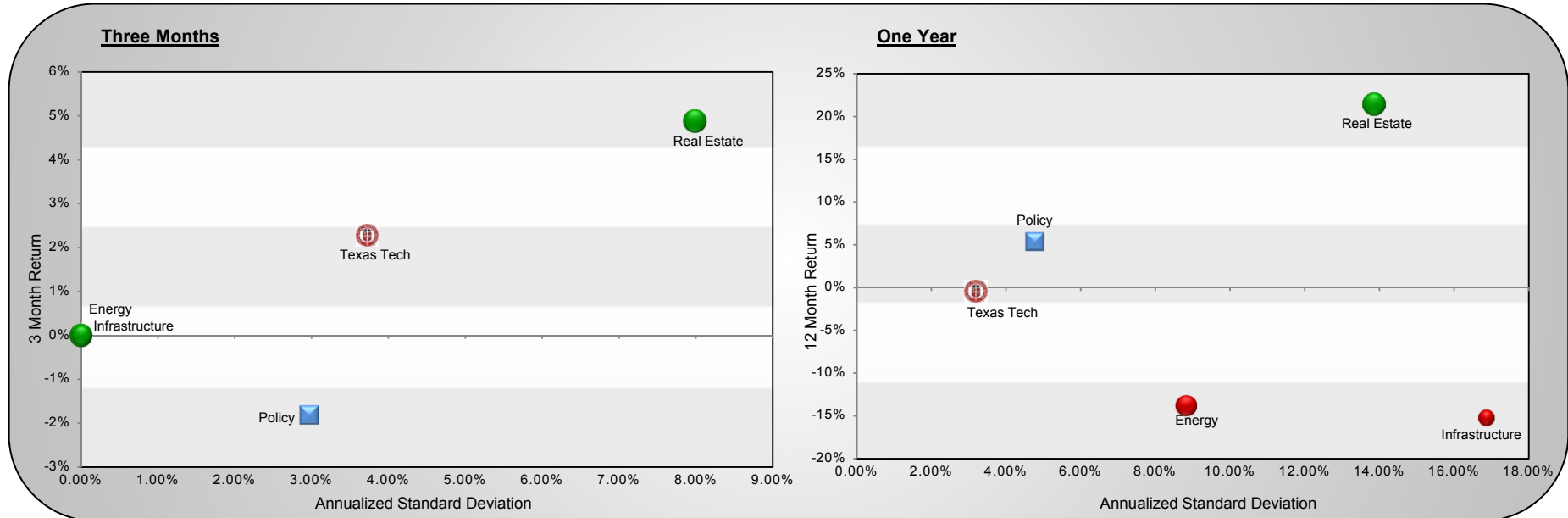
- Unlisted infrastructure funds have some of the lowest management fees of any private equity style investment strategy (1.50%), reflective of the main reasons investors choose infrastructure (Fig. 2). While the private equity fee model may be suited to higher risk/return strategies, most infrastructure investors are looking for fees to reflect the types of assets being invested in and the levels of returns expected when gaining exposure to lower risk/return infrastructure assets.
- The market has evolved over time to reflect investor demands, with fund managers making greater concessions in this area to attract investor commitments. The average management fee for infrastructure funds has been falling over recent years, with the median at 1.50% for most recent funds.



Source – Preqin



### Risk vs. Return (Strategy)



\*Performance is calculated using time weighted Cash on Cash returns. This is an industry standard and allows direct comparison between manager returns and policy returns.

31<sup>st</sup> December 2015 (Preliminary)

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<b>Appendix I – Sub-Asset Detail</b>
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Fund	Current Exposure	MTD Perf.	3 Mo. Perf.	Calendar YTD	Fiscal YTD	Nacubo YTD	1 Year Perf.	3 Year Perf.	5 Year Perf.
<b>TOTAL</b>	<b>1,037,622,963</b>	<b>-1.22%</b>	<b>1.62%</b>	<b>0.20%</b>	<b>-0.29%</b>	<b>-2.28%</b>	<b>0.20%</b>	<b>5.94%</b>	<b>4.99%</b>
Policy		-0.90%	1.22%	0.94%	1.20%	-0.82%	0.94%	7.15%	6.59%
Aegis Tactical		-0.18%	-0.08%	n/a	-0.01%	-0.09%	n/a	n/a	n/a
<b>Equity</b>	<b>369,450,110</b>	<b>-2.27%</b>	<b>5.16%</b>	<b>-1.50%</b>	<b>0.12%</b>	<b>-5.33%</b>	<b>-1.50%</b>	<b>8.23%</b>	<b>6.55%</b>
US Equity	70,026,905	-2.78%	5.87%	-3.69%	2.01%	-4.04%	-3.69%	11.48%	8.88%
Benchmark: S&P 500 Total Return		-1.58%	7.04%	1.38%	4.39%	0.15%	1.38%	15.13%	12.57%
Global Equity	76,725,814	-1.35%	4.88%	1.90%	-0.25%	-3.20%	1.90%	14.16%	n/a
Benchmark: MSCI ACWI (Net)		-1.86%	4.91%	-2.19%	1.08%	-5.16%	-2.19%	7.86%	6.11%
Non US Developed Equity	101,784,498	-3.69%	5.60%	-1.82%	-0.35%	-7.28%	-1.82%	5.83%	3.99%
Benchmark: MSCI EAFE (Net)		-1.35%	4.71%	-0.81%	-0.61%	-6.01%	-0.81%	5.01%	3.60%
Non US Emerging Markets Equity	20,478,301	-0.48%	2.86%	-8.52%	2.26%	-11.28%	-8.52%	-3.24%	-1.57%
Benchmark: MSCI EMF (Net)		-2.23%	0.66%	-14.92%	-2.37%	-17.36%	-14.92%	-6.76%	-4.81%
Alternative Equity	100,434,592	-1.49%	4.70%	1.71%	-1.18%	-3.05%	1.71%	8.05%	8.04%
Benchmark: MSCI ACWI (Net)		-1.86%	4.91%	-2.19%	1.08%	-5.16%	-2.19%	7.86%	6.11%
<b>Debt</b>	<b>239,819,350</b>	<b>-1.36%</b>	<b>0.26%</b>	<b>3.86%</b>	<b>-0.57%</b>	<b>-0.34%</b>	<b>3.86%</b>	<b>3.10%</b>	<b>5.66%</b>
Sovereign/Investment Grade Bonds	43,437,500	-0.61%	-1.38%	0.97%	-1.81%	-2.30%	0.97%	1.13%	3.12%
Benchmark: Barclays Global Aggregate		0.53%	-0.93%	-3.16%	-0.42%	-0.08%	-3.16%	-1.74%	0.90%
Credit	142,039,709	-1.22%	-0.73%	4.35%	-1.20%	-0.64%	4.35%	6.01%	7.36%
Benchmark: Barclays Global Aggregate		0.53%	-0.93%	-3.16%	-0.42%	-0.08%	-3.16%	-1.74%	0.90%
Emerging Markets Debt	54,342,140	-2.30%	3.92%	5.64%	2.68%	1.57%	5.64%	1.47%	5.89%
Benchmark: JP Morgan EM Bond Index		-1.50%	1.55%	1.23%	0.15%	-0.52%	1.23%	-0.07%	5.11%
<b>Liquid Real Assets</b>	<b>103,258,270</b>	<b>1.76%</b>	<b>4.67%</b>	<b>-5.01%</b>	<b>1.87%</b>	<b>-1.19%</b>	<b>-5.01%</b>	<b>-4.17%</b>	<b>-5.26%</b>
Benchmark: CPI + 4%		0.22%	1.10%	4.69%	1.28%	2.01%	4.69%	4.99%	5.58%
<b>Cash &amp; Alpha Pool</b>	<b>34,887,612</b>	<b>-0.38%</b>	<b>-0.50%</b>	<b>0.60%</b>	<b>-1.30%</b>	<b>-1.82%</b>	<b>0.60%</b>	<b>3.37%</b>	<b>3.35%</b>
Cash	53,697,997	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.21%
Cash Collateral	30,870,883	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	n/a	n/a
Adjustments for Synthetic and Aegis Exposure	(204,131,463)								
Alpha Pool	154,450,194	-0.58%	-0.79%	0.83%	-1.72%	-2.31%	0.83%	4.87%	5.27%
Benchmark: HFRI FOF Index		-0.53%	0.65%	-0.34%	-1.19%	-2.97%	-0.34%	3.92%	2.09%
<b>Liquidating</b>	<b>7,192,615</b>	<b>-0.46%</b>	<b>11.30%</b>	<b>24.18%</b>	<b>-1.51%</b>	<b>21.94%</b>	<b>24.18%</b>	<b>7.79%</b>	<b>2.40%</b>

\*Performance is calculated using time weighted Cash on Cash returns. This is an industry standard and allows direct comparison between manager returns and policy returns.

31<sup>st</sup> December 2015 (Preliminary)

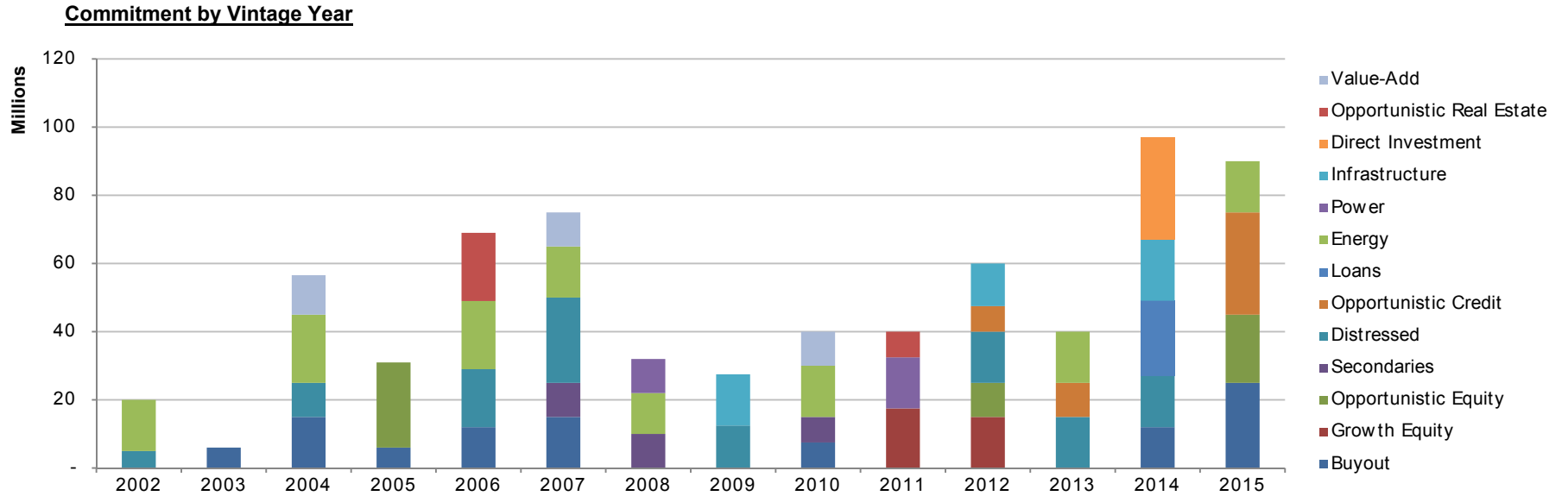
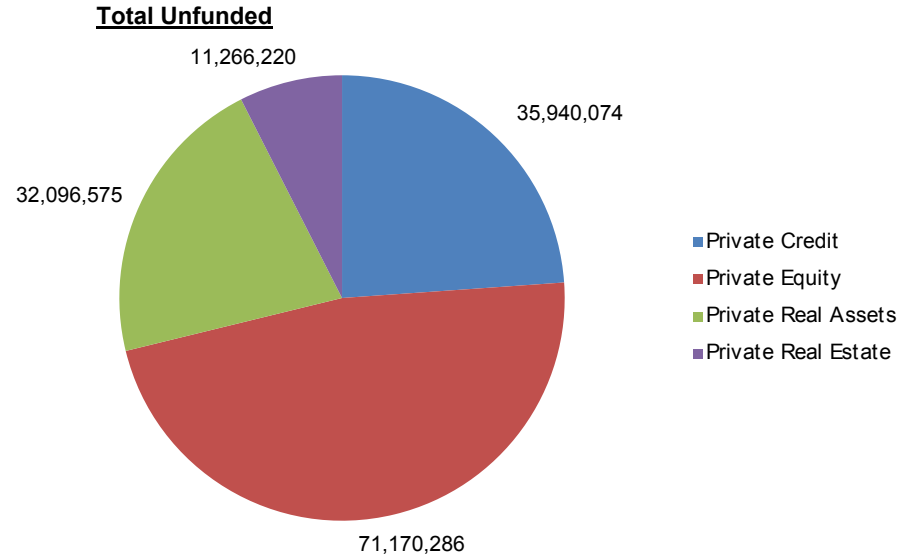
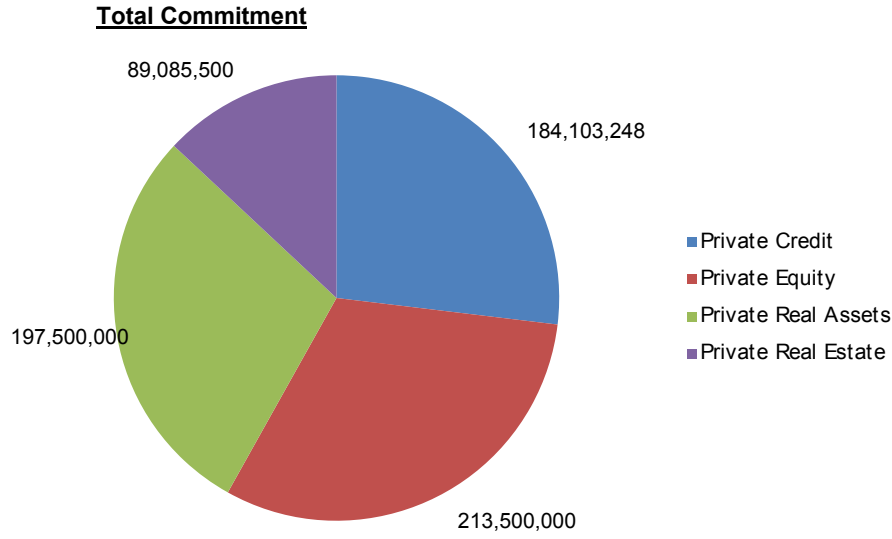
TEXAS TECH UNIVERSITY SYSTEM

<b>Appendix I – Sub-Asset Detail (cont.)</b>
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Fund	Current Exposure	MTD Perf.	3 Mo. Perf.	Calendar YTD	Fiscal YTD	Nacubo YTD	1 Year Perf.	3 Year Perf.	5 Year Perf.
<b>Private Investments</b>	<b>283,015,007</b>	<b>-0.76%</b>	<b>-0.73%</b>	<b>0.91%</b>	<b>-0.35%</b>	<b>-0.81%</b>	<b>0.91%</b>	<b>7.48%</b>	<b>8.31%</b>
<i>Benchmark: Private Market Index (90% VE, 10% NCREIF)</i>		-1.34%	-1.34%	6.22%	2.31%	2.31%	6.23%	12.92%	12.99%
<b>Private Equity</b>	69,326,428	-2.08%	-2.08%	3.73%	0.93%	0.26%	3.73%	9.78%	9.23%
<b>Private Credit</b>	105,042,688	-3.17%	-3.08%	-0.02%	-2.44%	-3.23%	-0.02%	8.18%	7.12%
<b>Private Real Assets</b>	61,326,575	2.28%	2.28%	-0.40%	0.46%	0.46%	-0.40%	5.59%	8.57%
<b>Real Estate</b>	47,319,315	2.28%	2.28%	-0.40%	0.46%	0.46%	-0.40%	5.59%	8.57%

\*Performance is calculated using time weighted Cash on Cash returns. This is an industry standard and allows direct comparison between manager returns and policy returns. IRR returns can be seen in appendix II.

**Appendix II - Private Markets Report (as of December 2015) - Total Commitment**



Data provided by Texas Tech University System  
 Reported valuations use latest available statements ranging from March 31<sup>st</sup>, 2015 to November 31<sup>st</sup>, 2015.  
 Adjusted Valuations include all cashflows through December 2015




**Appendix II - Private Markets Report (as of December 2015) - Performance Analysis by Strategy Type & Asset Class**
**Performance by Strategy Type**

Asset Class	Strategy	# of Funds	Commitment	Funded	Paid-In Capital	Distributions	% Drawn	Reported Valuation	Adjusted Valuation	IRR	MOC
Private Equity	Buyout	8	\$98,500,000	\$61,300,801	\$66,947,905	\$105,171,343	68%	\$24,632,157	\$8,344,083	15.31%	1.70
	Growth Equity	2	\$32,500,000	\$17,438,444	\$19,432,254	\$3,231,843	60%	\$15,832,651	\$17,567,824	4.12%	1.07
	Opportunistic Equity	3	\$55,000,000	\$41,636,054	\$41,643,904	\$18,887,880	76%	\$20,834,826	\$29,032,818	3.72%	1.15
	Secondaries	3	\$27,500,000	\$21,954,415	\$22,994,232	\$21,393,446	84%	\$16,176,476	\$11,527,591	8.94%	1.43
	<b>Total</b>	<b>16</b>	<b>\$213,500,000</b>	<b>\$142,329,714</b>	<b>\$151,018,295</b>	<b>\$148,684,512</b>	<b>71%</b>	<b>\$77,476,110</b>	<b>\$66,472,316</b>	<b>10.61%</b>	<b>1.42</b>
Private Credit	Distressed	11	\$114,500,000	\$106,555,581	\$106,770,957	\$109,189,075	93%	\$49,153,966	\$37,350,977	11.54%	1.37
	Loans	2	\$22,103,248	\$22,024,589	\$22,582,673	\$2,906,000	102%	\$23,193,175	\$22,680,175	8.79%	1.13
	Opportunistic Credit	4	\$47,500,000	\$19,583,004	\$22,366,738	\$2,951,502	47%	\$18,282,647	\$21,883,911	7.85%	1.11
	<b>Total</b>	<b>17</b>	<b>\$184,103,248</b>	<b>\$148,163,174</b>	<b>\$151,720,368</b>	<b>\$115,046,577</b>	<b>82%</b>	<b>\$90,629,788</b>	<b>\$81,915,063</b>	<b>11.17%</b>	<b>1.30</b>
Private Real Assets	Energy	8	\$127,000,000	\$108,078,389	\$112,231,356	\$129,713,499	88%	\$27,431,698	\$29,663,028	24.87%	1.42
	Infrastructure	3	\$45,500,000	\$37,844,795	\$42,907,469	\$36,598,117	94%	\$24,299,127	\$11,659,721	31.74%	1.39
	Power	2	\$25,000,000	\$20,057,855	\$20,811,065	\$8,750,636	83%	\$10,683,752	\$8,583,797	-7.63%	0.83
	<b>Total</b>	<b>13</b>	<b>\$197,500,000</b>	<b>\$165,981,039</b>	<b>\$175,949,890</b>	<b>\$175,062,252</b>	<b>89%</b>	<b>\$62,414,577</b>	<b>\$49,906,546</b>	<b>22.29%</b>	<b>1.34</b>
Private Real Estate	Direct Investment	1	\$30,000,000	\$24,469,500	\$25,300,000	\$363,032	84%	\$22,675,000	\$24,936,968	0.00%	1.00
	Opportunistic Real Estate	3	\$27,500,000	\$24,615,423	\$24,976,740	\$17,987,888	91%	\$11,289,577	\$4,230,502	-2.15%	0.89
	Value-Add	3	\$31,585,500	\$28,734,357	\$28,868,690	\$33,001,395	91%	\$13,228,799	\$8,513,136	7.30%	1.44
	<b>Total</b>	<b>7</b>	<b>\$89,085,500</b>	<b>\$77,819,280</b>	<b>\$79,145,430</b>	<b>\$51,352,315</b>	<b>89%</b>	<b>\$47,193,376</b>	<b>\$37,680,606</b>	<b>3.14%</b>	<b>1.12</b>

**Performance by Asset Class**

Asset Class	# of Funds	Commitment	Funded	Paid-In Capital	Distributions	% Drawn	Reported Valuation	Adjusted Valuation	IRR	MOC
Private Equity	16	\$213,500,000	\$142,329,714	\$151,018,295	\$148,684,512	71%	\$77,476,110	\$66,472,316	10.61%	1.42
Private Credit	17	\$184,103,248	\$148,163,174	\$151,720,368	\$115,046,577	82%	\$90,629,788	\$81,915,063	11.17%	1.30
Private Real Assets	13	\$197,500,000	\$165,981,039	\$175,949,890	\$175,062,252	89%	\$62,414,577	\$49,906,546	22.29%	1.34
Private Real Estate	7	\$89,085,500	\$77,819,280	\$79,145,430	\$51,352,315	89%	\$47,193,376	\$37,680,606	3.14%	1.12
<b>Total</b>	<b>53</b>	<b>\$684,188,748</b>	<b>\$534,293,207</b>	<b>\$557,833,983</b>	<b>\$490,145,656</b>	<b>82%</b>	<b>\$277,713,851</b>	<b>\$235,974,531</b>	<b>11.31%</b>	<b>1.32</b>



31<sup>st</sup> December 2015 (Preliminary)

## Appendix III – Glossary

### **Major Asset Classes**

Alpha Pool: Investments that tend to be uncorrelated with “traditional” stock and bond investments. Not technically an asset class, but rather an investment construct within a \*portable alpha framework

Cash & Equivalents: Cash and short term investments held in lieu of cash and readily converted into cash within a short time span (i.e., CDs, commercial paper, Treasury bills, etc.)

Global Debt: Investments in debt instruments located in developed markets, may include various credit, mortgage-backed and emerging markets debt securities

Global Equity: Investments in companies domiciled in developed market countries and may include opportunistic investments in emerging market countries

Liquidating: The residual investment in terminated managers

Liquid Real Assets: Liquid investments in strategies whose values are sensitive to inflation

Private Equity: Investments in equity securities and debt in operating companies that are not publicly traded on a stock exchange

Private Real Assets: Investments in equity securities and debt in operating companies that are not publicly traded on a stock exchange and whose strategies are sensitive to inflation

### **Sub-Asset Classes**

Alternative Equity: Investments in companies globally through both long and short positions and may include non-equity instruments such as fixed income, commodities, CDS, options, etc.

Credit: Investments in companies, often stressed or distressed, principally through the debt portion of capital structure

Emerging Market Debt: Investments in debt securities in emerging market countries, primarily in three categories - external sovereign, local sovereign, and corporate debt

Emerging Market Equity: Investments in companies located in emerging market countries

Investment Grade Bonds: Investments in investment grade rated debt securities

Non-US Developed Equity: Investments in companies domiciled in developed market countries

US Equity: Investments in companies domiciled in the US



31<sup>st</sup> December 2015 (Preliminary)

**Appendix III – Glossary (cont.)**

**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

**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



31<sup>st</sup> December 2015 (Preliminary)

**Appendix III – Glossary (cont.)**

**Investment Terms/Performance Statistics (cont.)**

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

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

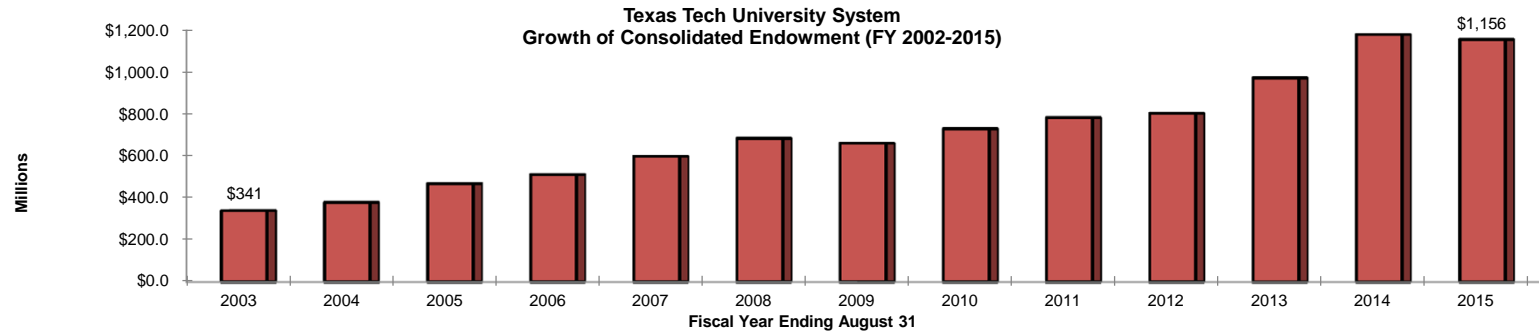
Up Number: The percentage of the time the fund was up when the benchmark was up

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

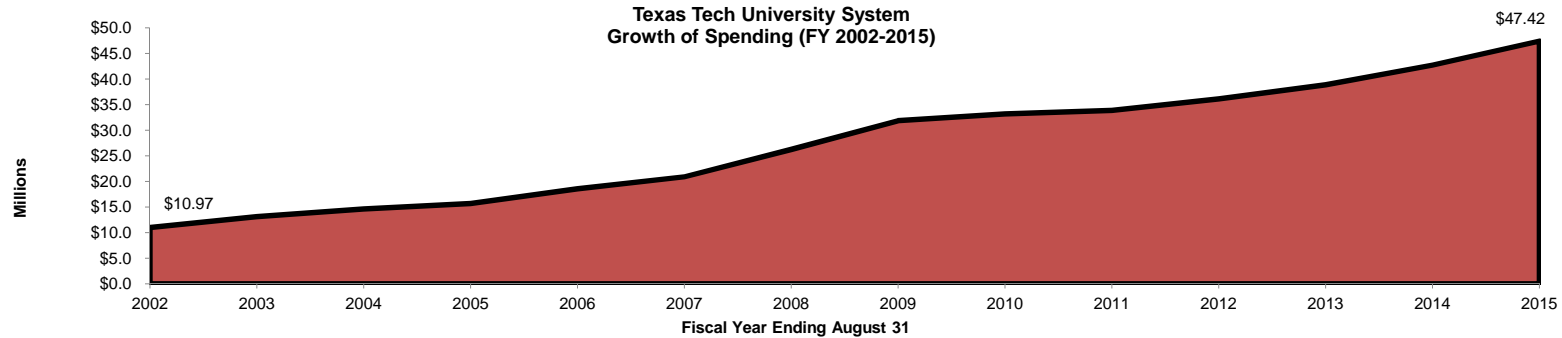
# LONG TERM INVESTMENT FUND Endowment Report

August 31, 2015

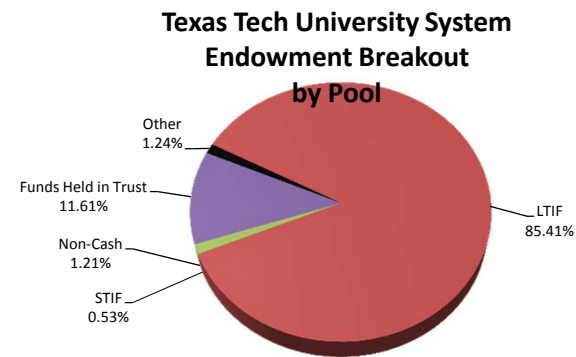
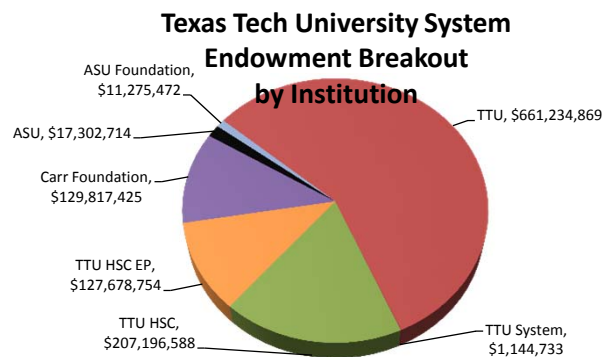
## HISTORICAL MARKET VALUE (Fiscal Year)



## HISTORICAL SPENDING (Fiscal Year)



## TOTAL ENDOWMENT (Fiscal Year 2015)



### Summary of Endowment

	TTU	TTU System	TTU HSC	TTU HSC EP	Carr Foundation	ASU	ASU Foundation	Total
LTIF	\$599,704,962	\$1,123,103	\$140,600,982	\$94,393,224	\$122,979,591	\$16,909,789	\$11,275,472	\$986,987,124
STIF	\$2,959,166	\$21,629	\$2,763,646	\$13,149	\$0	\$392,510	\$0	\$6,150,100
Non-Cash	\$4,888,301	\$0	\$2,280,023	\$0	\$6,837,834	\$415	\$0	\$14,006,573
Funds Held in Trust	\$39,335,510	\$0	\$61,551,899	\$33,272,380	\$0	\$0	\$0	\$134,159,788
Other	\$14,346,931	\$2	\$38	\$0	\$0	\$0	\$0	\$14,346,971
<b>Total</b>	<b>\$661,234,869</b>	<b>\$1,144,733</b>	<b>\$207,196,588</b>	<b>\$127,678,754</b>	<b>\$129,817,425</b>	<b>\$17,302,714</b>	<b>\$11,275,472</b>	<b>\$1,155,650,556</b>