



TEXAS TECH UNIVERSITY SYSTEM

Timothy Barrett
Associate Vice Chancellor
Chief Investment Officer

MEMORANDUM

Date: March 5, 2015

To: Board of Regents

From: Tim Barrett, CFA

RE: Endowment Performance package

Please find attached the materials for your review at the upcoming Board of Regents meeting in San Angelo. While I will not be presenting at this meeting, I did want to provide a brief overview of key points to consider regarding the materials.

NACUBO Overview:

The performance of the TTUS endowment improved over the 1 and 3 year periods versus the peers. With that said, throughout the measurement period we were restructuring the portfolio. In fact, we should have the portfolio re-allocated by this upcoming June. Hence, the rebuilding of the portfolio will have an impact in this NACUBO ranking, as well as the next. While it will have an impact, we do expect that we will continue to improve our ranking on a go-forward basis. I am very pleased with the portfolio positioning and confident we will continue to improve in absolute terms and relative to the NACUBO universe.

Macroeconomic Overview:

Mixed signals for US equities continued to persist. As indicated on page 4, stronger growth and improving unemployment are counter-balanced by elevated profit margins and above average valuations (referenced on pages 5 and 8). Divergence in central banking policies creates opportunities for elevated volatility and wider ranges of outcomes. The Federal Reserve has wound down its easing program while the European Central Bank embarks on one, and other central banks face similar decisions (referenced on page 6). Moves along the Treasury yield curve have been difficult to time and the magnitude of changes has varied significantly by duration (referenced on page 13). Uncertainty remains around the timing of a Fed-led rate increase but in the interim rates have been kept relatively low by falling global rates despite encouraging domestic growth signals (referenced on page 13). Lastly, emerging market fundamentals remain intact but conditions vary by country and macro headwinds remain, such as retail flows, slowing growth, and currency volatility (referenced on pages 11 and 12).

Performance Overview:

In regard to the Performance Report for the period ending December 31, 2014, the 1 year return was poor on an absolute and relative to the policy benchmark. A substantial portion of the underperformance was driven by private investments. This is more attributable to a difference in our portfolio versus the private benchmark than anything else. We continue to close the gap in our public equity portfolio and liquid real assets portfolio versus their respective benchmarks and are confident we will continue to outperform the policy benchmark. In the past, greater than half of the underperformance versus the benchmark was attributable to these two areas and both will be completely restructured by June of this year. In short, I am excited about our positioning and confident in the improvements we are making in the portfolio.

Please review the detailed memorandum on our NACUBO performance, the Macro Overview and Investment Oversight Report.

Do not hesitate to reach out with any questions you may have, my contact information is:

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Board of Regents Report for December 2014

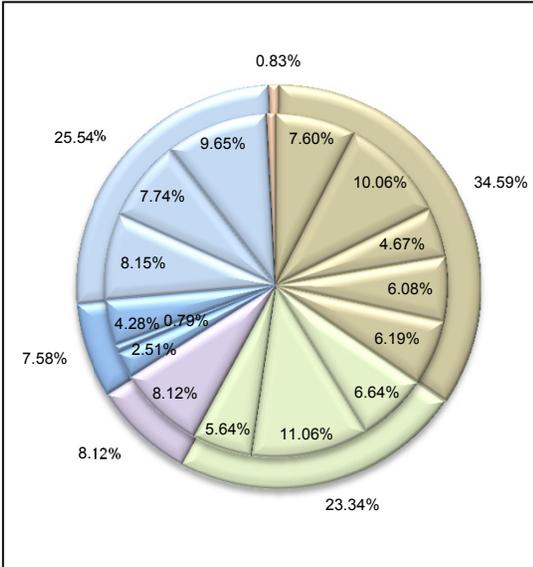
Texas Tech University Endowment

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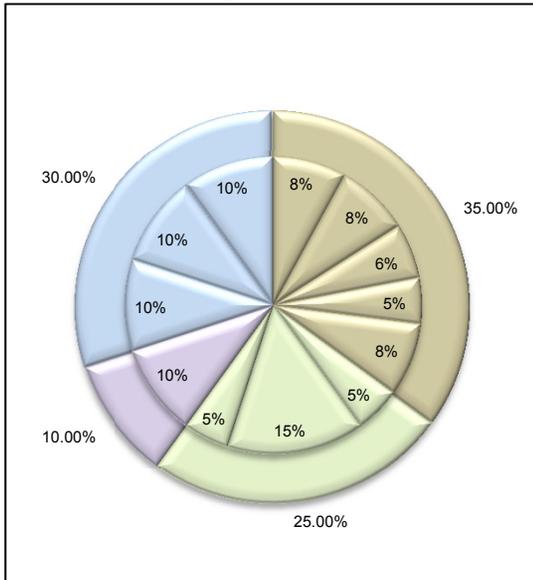


Asset Class Allocation: Actual vs. Target

Actual Allocation



Target Allocation



Asset Class	Sub-Asset Class	Actual \$ Allocation			Total % Allocation	Target % Allocation	Target Range
		Physical	Synthetic	Total			
Equity	US Equity	0	79,997,998	79,997,998	7.60%	8%	
	Global Equity	80,881,285	25,072,295	105,953,579	10.06%	8%	
	Non US Developed Equity	27,882,137	21,237,525	49,119,662	4.67%	6%	
	Non US Emerging Markets Equity	56,050,411	7,932,744	63,983,156	6.08%	5%	
	Alternative Equity	65,131,632		65,131,632	6.19%	8%	
	Sub-Total		229,945,465	134,240,561	364,186,027	34.59%	35%
Debt	Sovereign/Investment Grade Bonds	0	69,886,891	69,886,891	6.64%	5%	
	Credit	116,435,026		116,435,026	11.06%	15%	
	Emerging Markets Debt	59,434,773		59,434,773	5.64%	5%	
	Sub-Total	175,869,799	69,886,891	245,756,690	23.34%	25%	20% - 30%
Liquid Real Assets		75,383,664	10,098,166	85,481,830	8.12%	10%	5% - 15%
Cash & Alpha Pool	Cash	26,438,317	0	26,438,317	2.51%		
	Cash Collateral	51,150,172	-42,845,124	8,305,048	0.79%		
	Alpha Pool	216,424,237	-171,380,495	45,043,742	4.28%		
	Sub-Total	294,012,725	-214,225,619	79,787,106	7.58%	0%	0% - 10%
Private Investments	Private Equity	85,787,937		85,787,937	8.15%	10%	
	Private Credit	81,525,742		81,525,742	7.74%	10%	
	Private Real Assets	101,629,926		101,629,926	9.65%	10%	
	Sub-Total	268,943,605	0	268,943,605	25.54%	30%	10% - 55%
Liquidating		8,727,877	0	8,727,877	0.83%	0%	
Total		1,052,883,135	0	1,052,883,135	100%	100%	

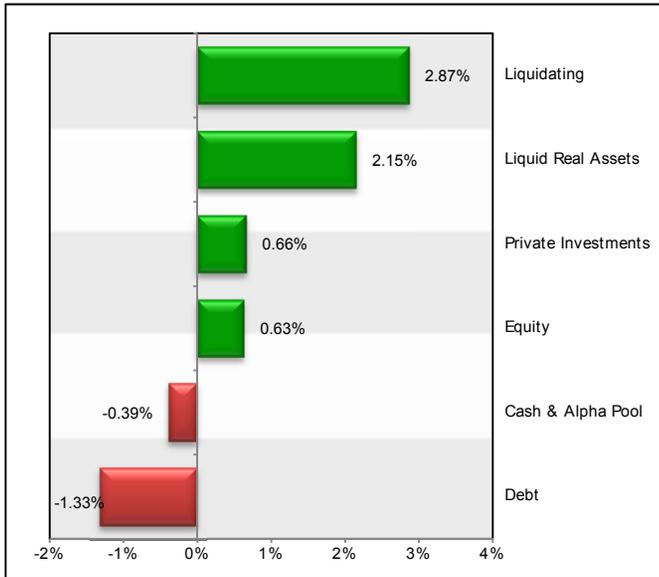
31st December 2014 (Preliminary)



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Asset Class Performance: Actual vs. Policy

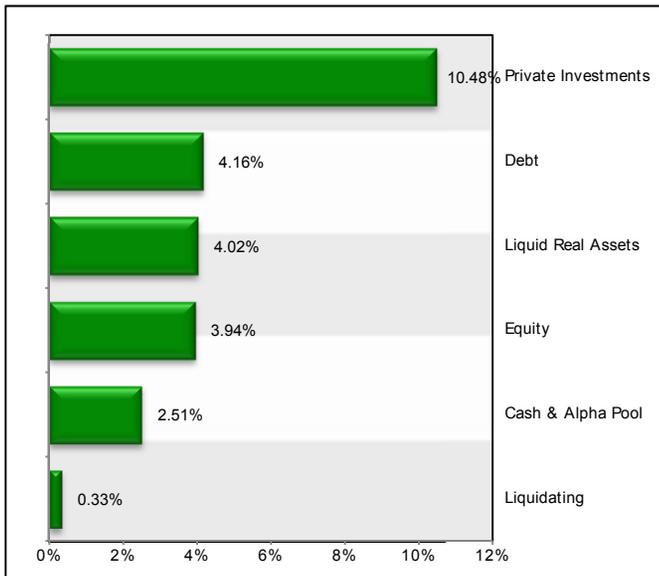
QTD Performance



Asset Class	Month				Policy
	Physical Return	Synthetic Overlay	Alpha Pool + Cash	Total Return	
Equity	-1.60%	-1.15%	-0.26%	-1.54%	-1.93%
Debt	-2.60%	-0.26%	-0.26%	-1.88%	0.09%
Liquid Real Assets	4.53%	1.64%	-0.26%	4.11%	-0.05%
Cash & Alpha Pool	-0.24%			-0.24%	0.00%
Private Investments	0.54%			0.54%	1.80%
Liquidating	1.28%			1.28%	
Total	-0.46%	-0.64%	-0.26%	-0.54%	-0.12%

Asset Class	QTD				
	Physical Return	Synthetic Overlay	Alpha Pool + Cash	Total Return	Policy
Equity	0.10%	2.41%	-0.36%	0.63%	0.41%
Debt	-2.23%	0.82%	-0.36%	-1.33%	1.79%
Liquid Real Assets	2.57%	1.64%	-0.26%	2.15%	0.36%
Cash & Alpha Pool	-0.39%			-0.39%	0.01%
Private Investments	0.66%			0.66%	1.80%
Liquidating	2.87%			2.87%	
Total	-0.06%	1.66%	-0.36%	0.12%	1.18%

One Year Performance



Asset Class	Calendar YTD				
	Physical Return	Synthetic Overlay	Alpha Pool + Cash	Total Return	Policy
Equity	3.28%	4.46%	1.50%	3.94%	4.16%
Debt	2.96%	1.36%	1.61%	4.16%	5.97%
Liquid Real Assets	4.45%	1.64%	-0.26%	4.02%	4.69%
Cash & Alpha Pool	2.51%			2.51%	0.03%
Private Investments	10.48%			10.48%	17.83%
Liquidating	0.33%			0.33%	
Total	4.19%	2.91%	1.54%	4.06%	8.64%

Asset Class	1 Year				
	Physical Return	Synthetic Overlay	Alpha Pool + Cash	Total Return	Policy
Equity	3.28%	4.46%	1.50%	3.94%	4.16%
Debt	2.96%	1.36%	1.61%	4.16%	5.97%
Liquid Real Assets	4.45%	1.64%	-0.26%	4.02%	4.69%
Cash & Alpha Pool	2.51%			2.51%	0.03%
Private Investments	10.48%			10.48%	17.83%
Liquidating	0.33%			0.33%	
Total	4.19%	2.91%	1.54%	4.06%	8.64%

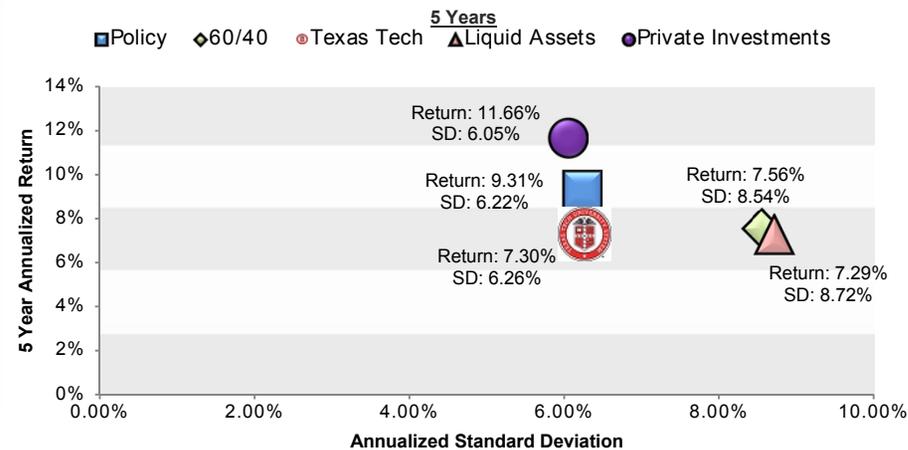
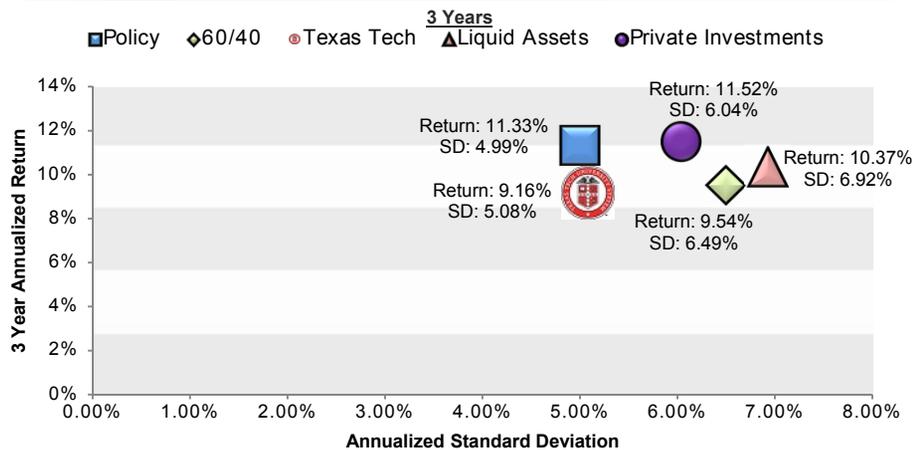
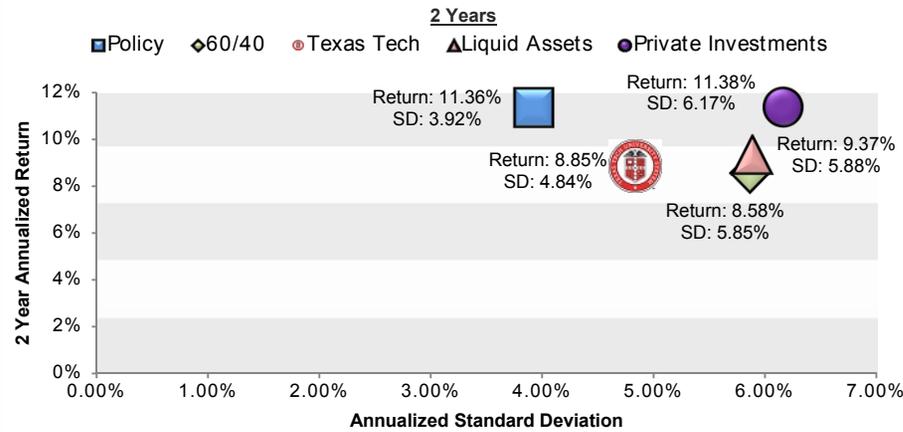
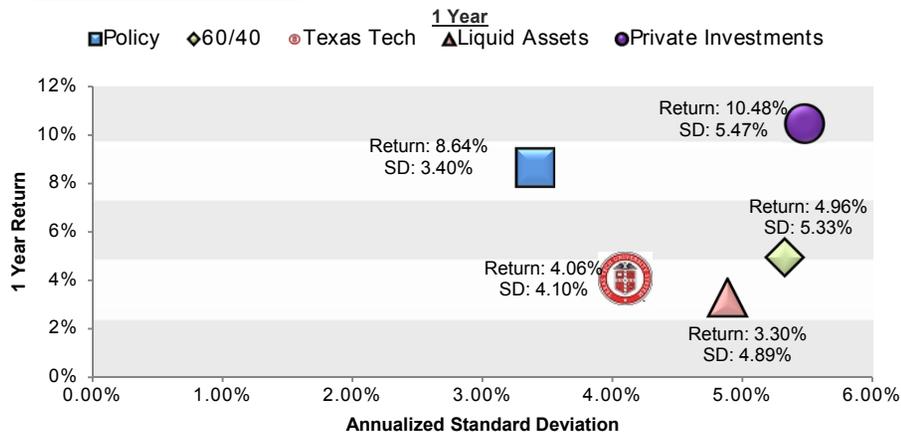
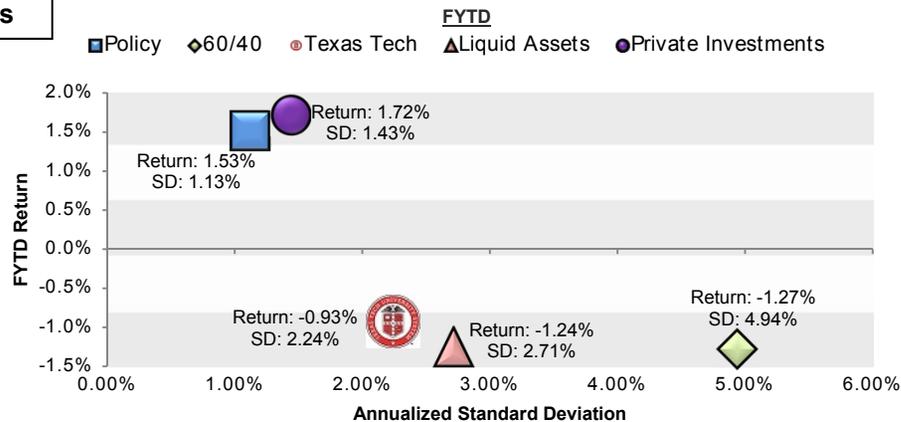


31st December 2014 (Preliminary)

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

Commentary

- The Texas Tech portfolio is less volatile than a 60/40 portfolio over all time horizons, and less volatile than the policy portfolio over three years.
- The 60/40 portfolio is more volatile than the Texas Tech portfolio and the policy portfolio over all periods.





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Risk Profile (VaR)

- The Texas Tech portfolio has a 5% chance of losing \$43 million (or more) in a month with a 1% chance of losing \$65 million (or more) in a month based on observed portfolio volatility.
- The Texas Tech portfolio has lower VaR than the 60/40 portfolio.

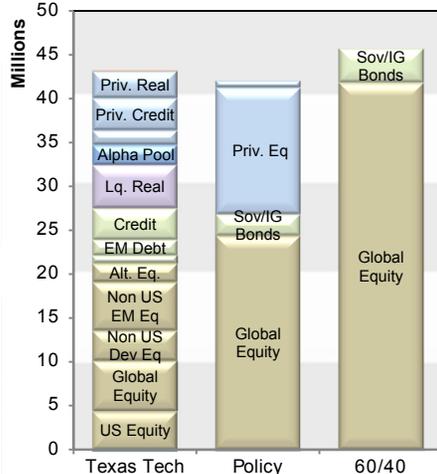
Value at Risk – One Month – 95% Confidence

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

Sub-Asset Class	5 % chance of losing \$
Global Equity	5,759,227
Non US Emerging Markets Equity	5,539,344
Long Commodities	4,959,901

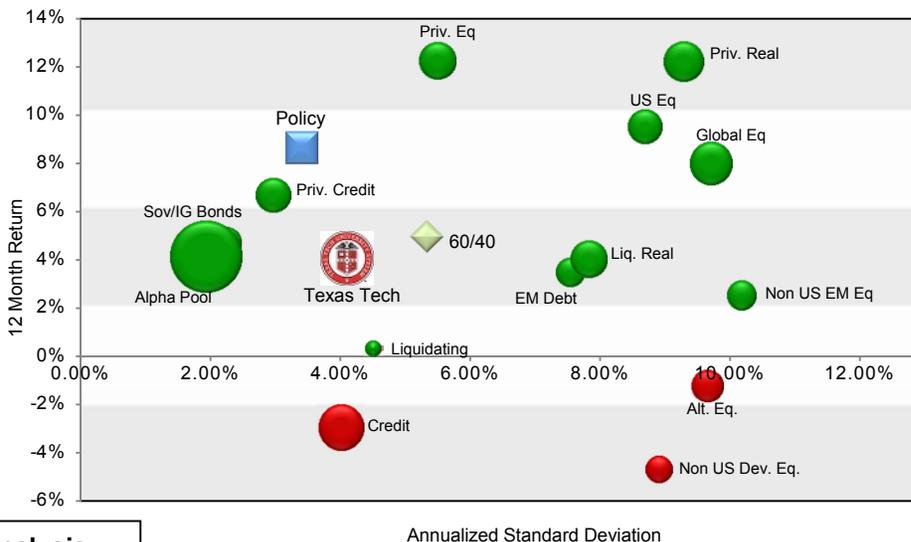
- **Sub Asset Classes with small Value at Risk:**

Sub-Asset Class	5 % chance of losing \$
Sovereign/Investment Grade Bonds	922,791
Private Equity	1,660,786
Emerging Markets Debt	1,761,832



Risk Profile

- Private Credit, Private Equity and Alpha Pool have provided the highest risk adjusted returns.
- Credit, Non US Developed Equity and Alternative Equity have generated the lowest risk adjusted returns.



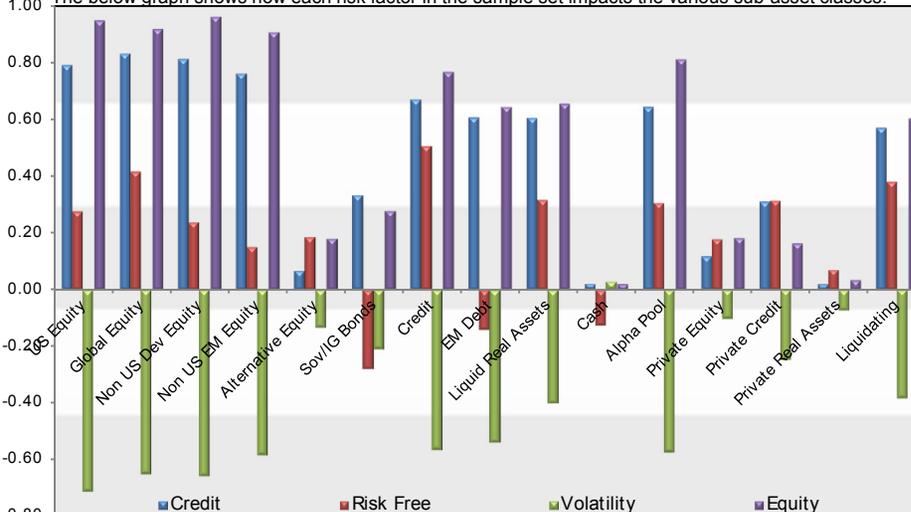
Factor Analysis

- 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 ²
Texas Tech	0.80	0.30	-0.68	0.93	0.82
60/40	0.81	0.18	-0.68	0.99	0.83
Policy	0.76	0.21	-0.61	0.95	0.77

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.

31st December 2014 (Preliminary)

Equity

(Total NAV: \$364,186,027)

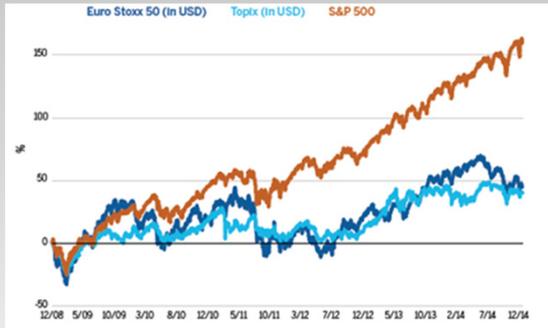


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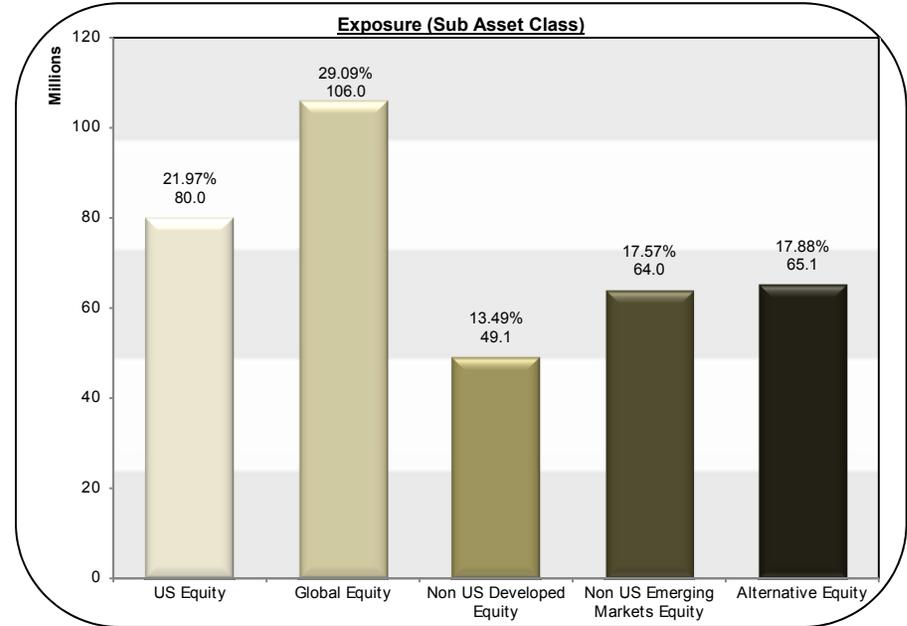
Overview and Risk Profile by Asset Class

Commentary

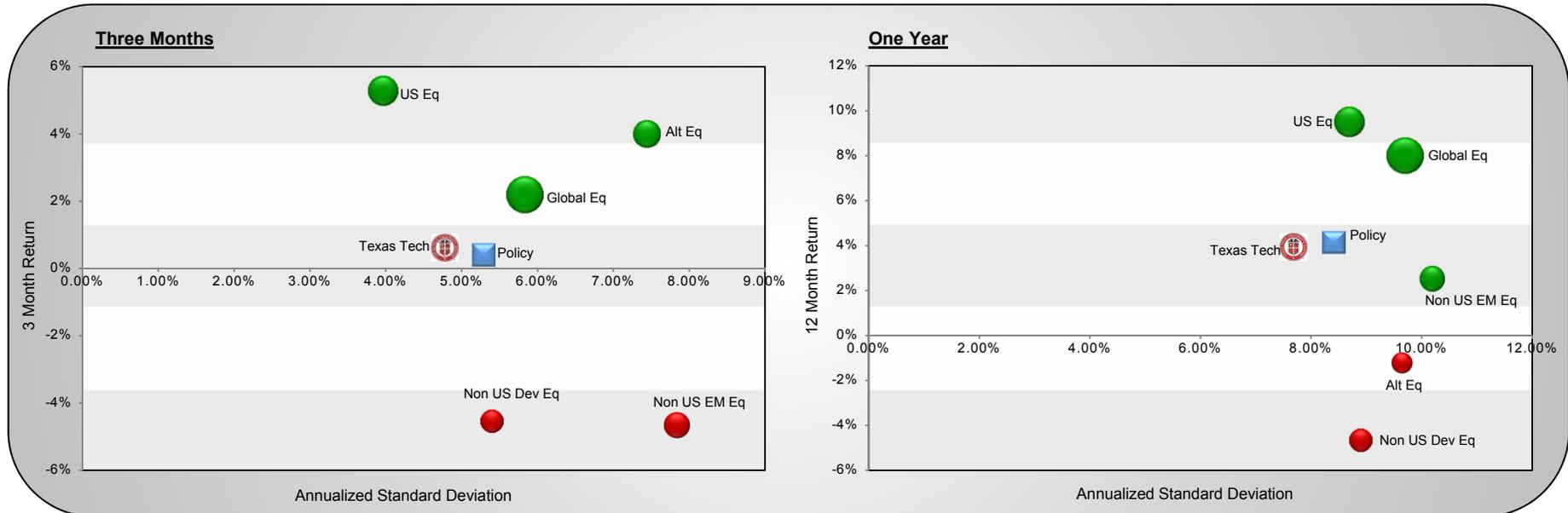
- While remaining positive on the outlook for global equities as we enter 2015, Wellington expect a change in the pattern of regional performance.
- The conditions are in place for improved fundamentals leading to better relative equity performance in both Europe and Japan.
- Lower oil prices should at least partly offset a tightening of monetary policy in the US, helping to support US equities.
- Remaining cautious on EM equities overall, especially the more commodity-related sectors.



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.



Debt

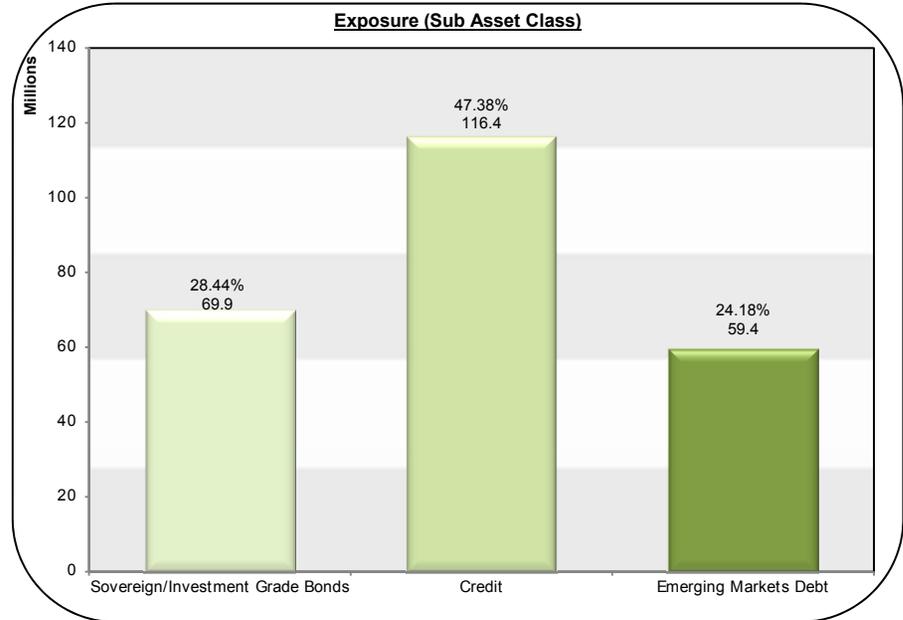
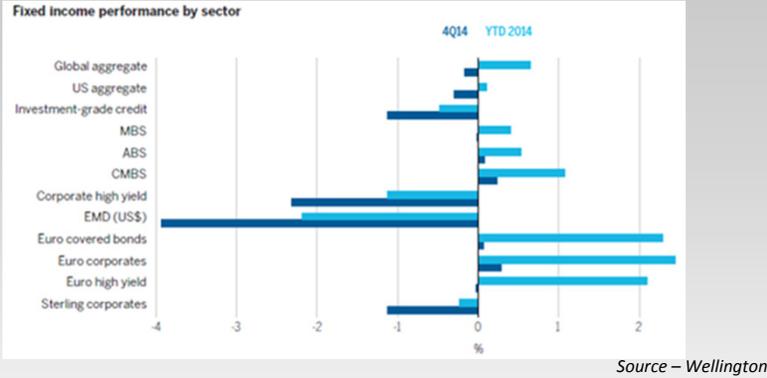
(Total NAV: \$245,756,690)

31st December 2014 (Preliminary)

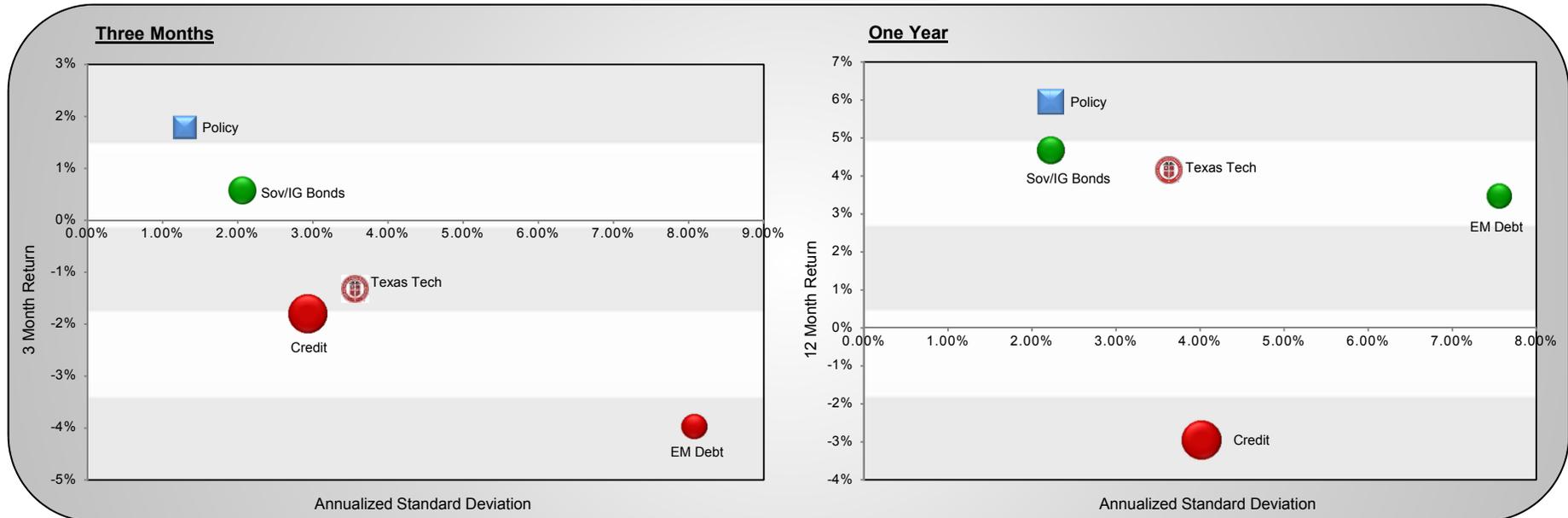
Overview and Risk Profile by Asset Class

Commentary

- Global credit spreads widened in the final quarter of 2014, driven by rising volatility across markets.
- Returns across emerging market fixed income were negative against a backdrop of lower commodity prices and emerging market currency depreciation.
- US high yield returned -1%, dragged down by the energy sector; European high yield also declined.



Risk vs. Return (Sub Assets)



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31st December 2014 (Preliminary)

Liquid Real Assets

(Total NAV: \$85,481,830)



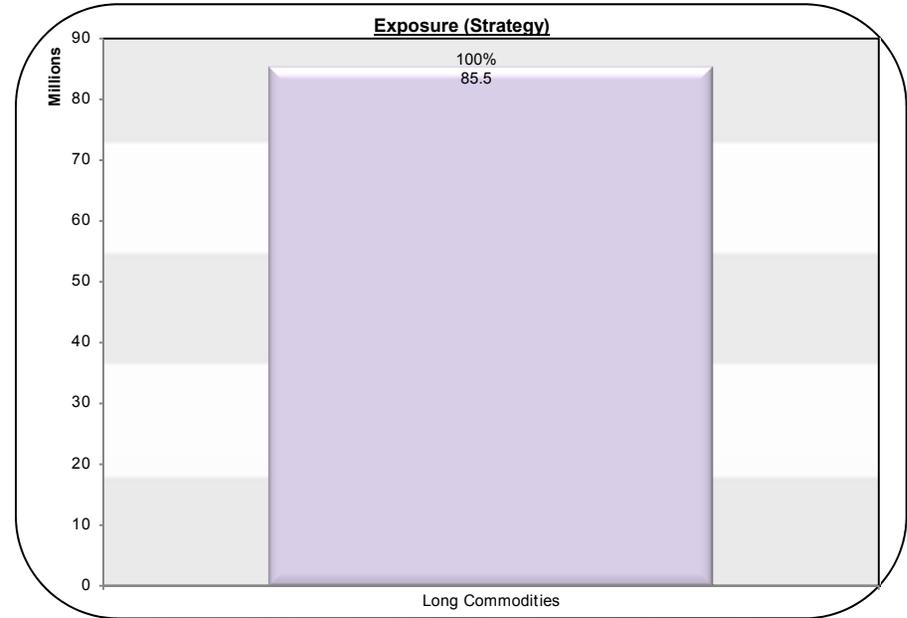
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Overview and Risk Profile by Asset Class

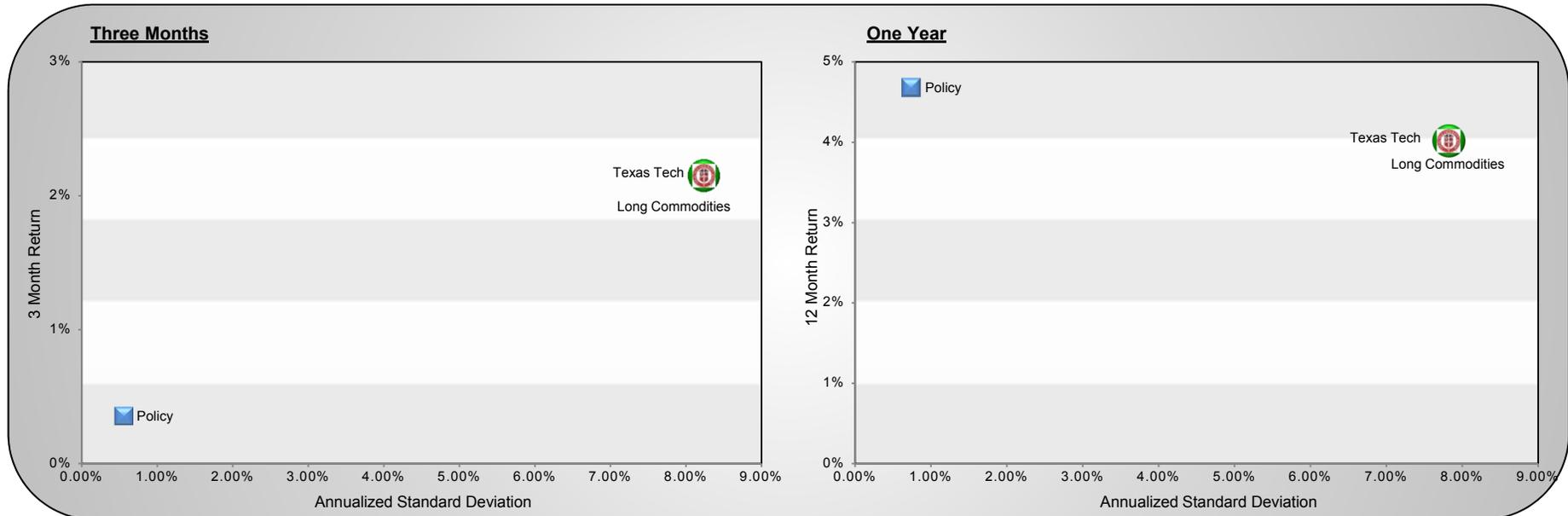
Commentary

- In the energy group, ample production concerns and slowing demand growth helped send crude oil prices sharply lower. North Sea Brent (-47.6% total return in the index) fell precipitously after the Organization of the Petroleum Exporting countries (OPEC) decided not to cut production and as geopolitical unrest failed to show any meaningful supply disruption. In the U.S., prices for West Texas Intermediate (-41.7%) crude oil followed global oil prices lower as production remained near 28+ year highs.
- Natural gas prices (-30.7%) surged at the outset amid a natural gas rig count that reached a 21-year low. Prices then fell sharply, reaching two-year lows towards the end of the period as winter weather proved warmer than expected. Current natural gas storage levels appear to be more than adequate given relatively cool weather this past summer and stronger-than-expected inventory builds.
- The precious metals sector (-6.7%) declined. High quality metals such as gold (-1.8%) started the period on a positive note, as geopolitical risks broadly supported prices for assets perceived as safe-havens. Those early gains soon faded, however, particularly for silver (-20.5%), amid U.S. dollar strength and expectations that the U.S. Federal Reserve could start raising rates as early as next June. Palladium (+11.3%) had strong returns as the fundamental picture continued to be favorable.

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.

Cash & Alpha Pool

(Total NAV: \$79,787,106)



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31st December 2014 (Preliminary)

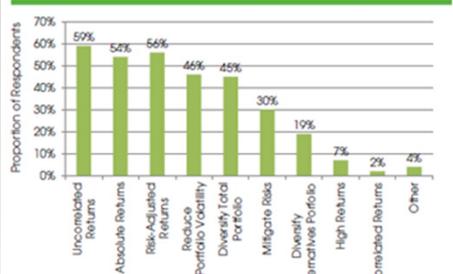
Overview and Risk Profile by Asset Class

Commentary

Source – Schroders

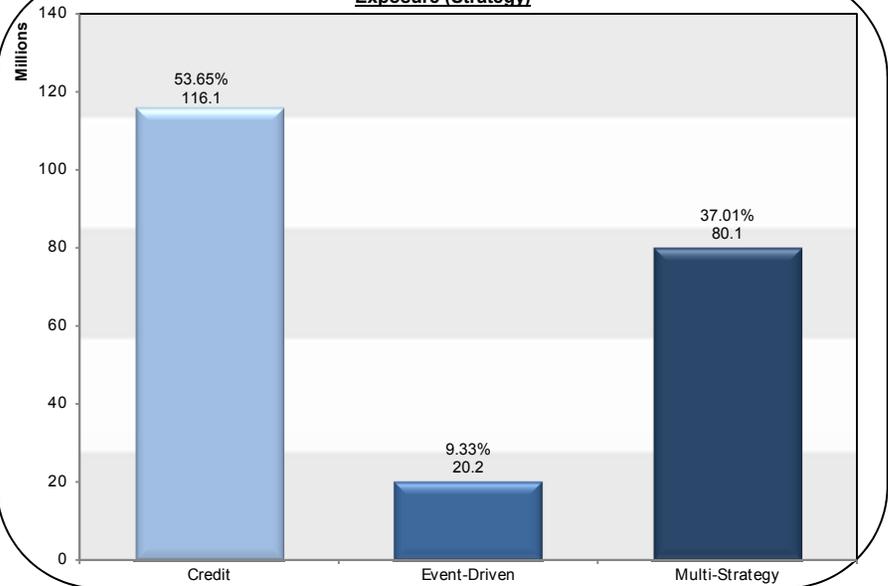
- According to Preqin, hedge fund investors are looking beyond high returns.
- Investors stated that they look for uncorrelated, risk-adjusted returns over high returns from their hedge fund allocations.
- Two-thirds of investors seek annualized returns of 4-6%.
- 46% of investors look for hedge funds to produce returns with lower volatility than equity markets.

Fig. 2: What Are Investors Looking for from Hedge Funds?



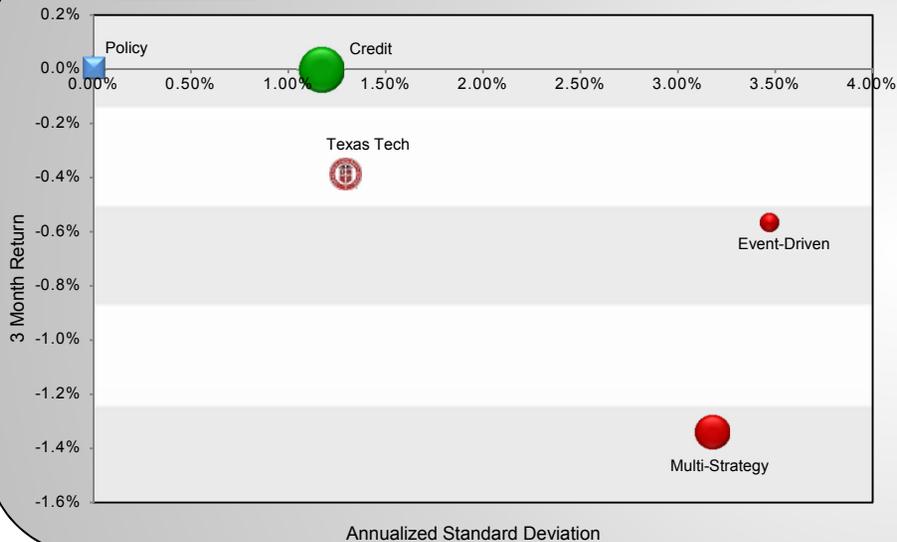
Source – Preqin

Exposure (Strategy)

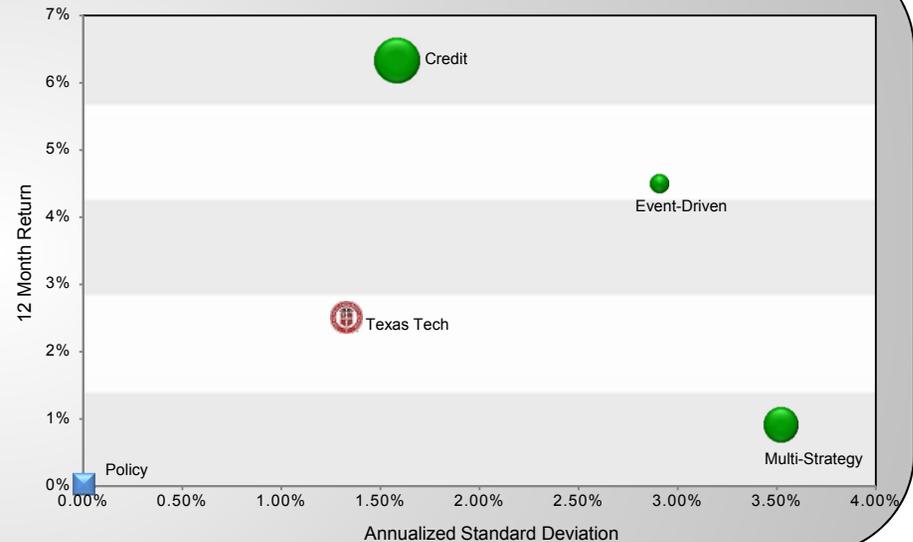


Risk vs. Return (Strategy)

Three Months



One Year



*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 Equity

(Total NAV: \$85,787,937)

31st December 2014 (Preliminary)

Overview and Risk Profile by Asset Class

Commentary

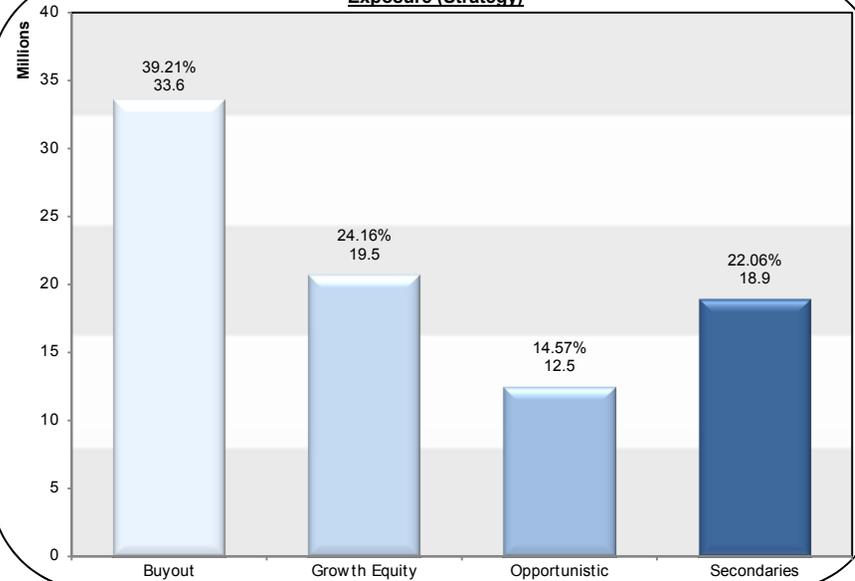
Source – Wall Street Journal

- According to Pitchbook data, 2014 was another banner year for sellers.
- 904 exits were completed, the second-highest tally of the decade, totaling \$240.9bn of capital exited. That topped the \$204.8bn recorded in 2012.
- A trio of factors produced this historic selling environment:
 1. Strong public markets
 2. Strategic acquirers hungry for acquisitive growth
 3. PE firms eagerness to empty aging portfolios and acquire worthwhile targets in a difficult deal-making environment.



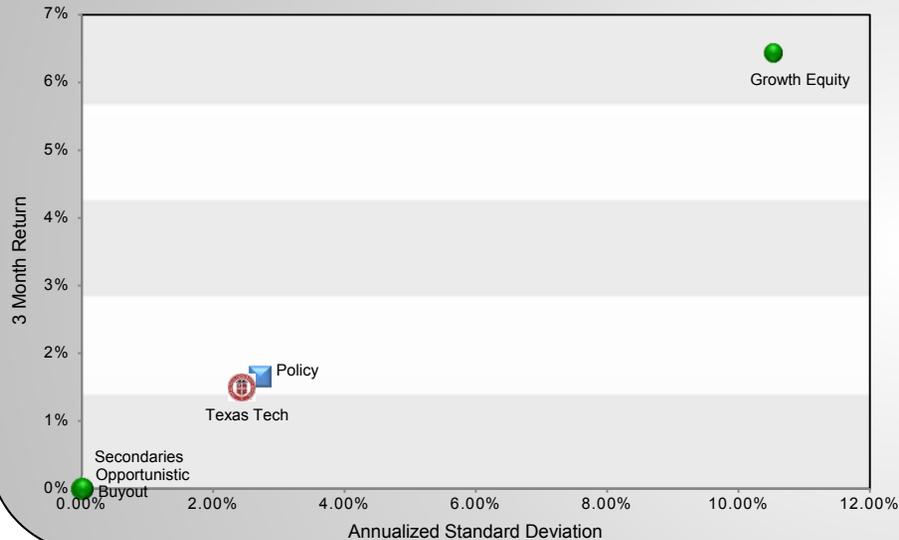
Source – Pitchbook

Exposure (Strategy)

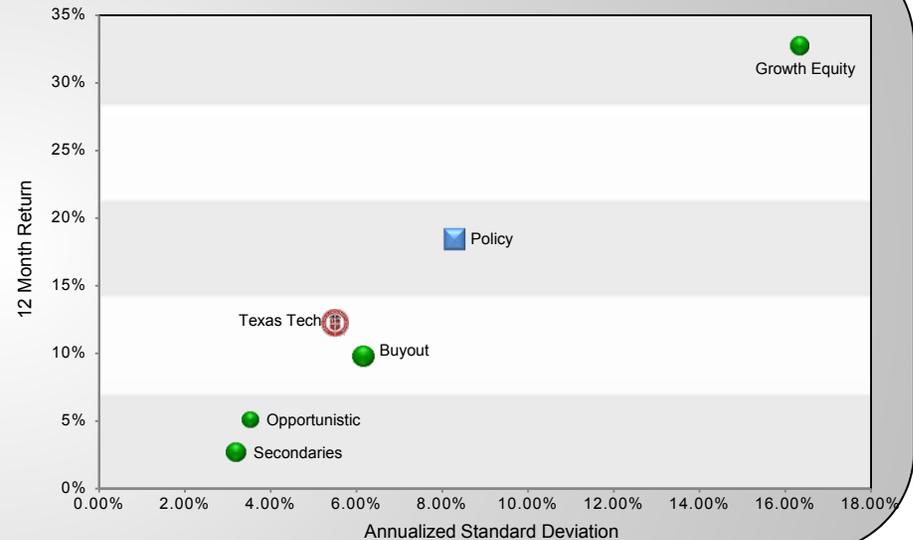


Risk vs. Return (Strategy)

Three Months



One Year



*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.

Private Credit

(Total NAV: \$81,525,742)



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31st December 2014 (Preliminary)

Overview and Risk Profile by Asset Class

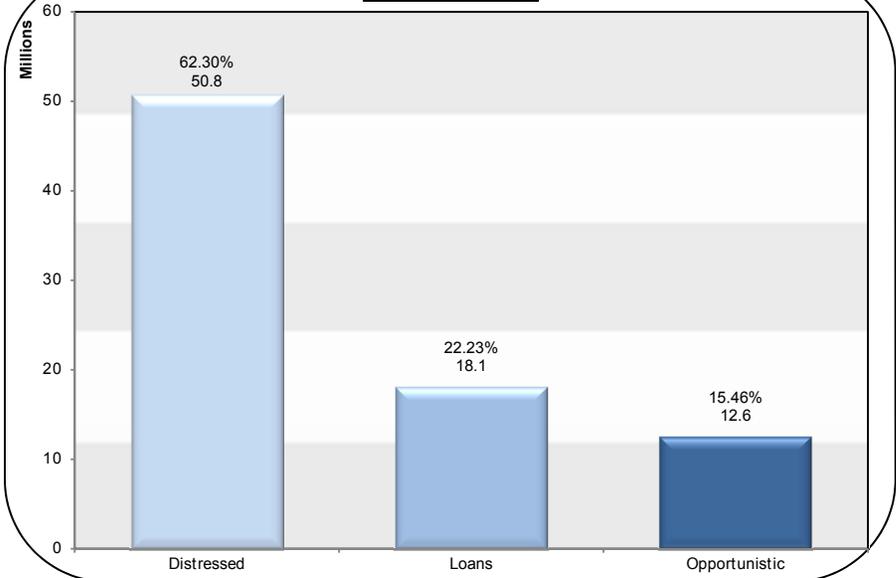
Commentary

- According to Pitchbook data, the median purchase price multiple for buyouts was 8.9x in 2014. The debt component was 5.8x, down from 6.5x in 2013, while equity comprised a median of 3.1x in the 2014 capital structure.
- High valuations have been blamed for dampened deal flow; investors have had to maintain discipline, sometimes staying on the sidelines altogether. For the deals that were made, debt was heavily utilized. The median debt percentage for 2014 buyouts was 65.3%, up from 65.1% in 2013 and 53.8% in 2011.



Source – Pitchbook

Exposure (Strategy)

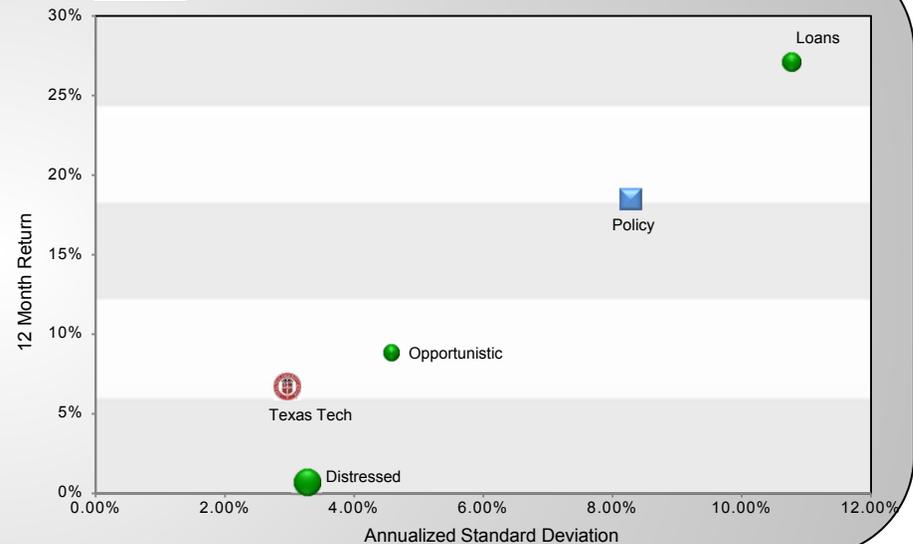


Risk vs. Return (Strategy)

Three Months



One Year



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31st December 2014 (Preliminary)

Private Real Assets

(Total NAV: \$101,629,926)

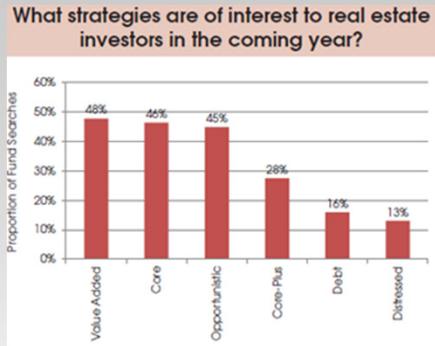


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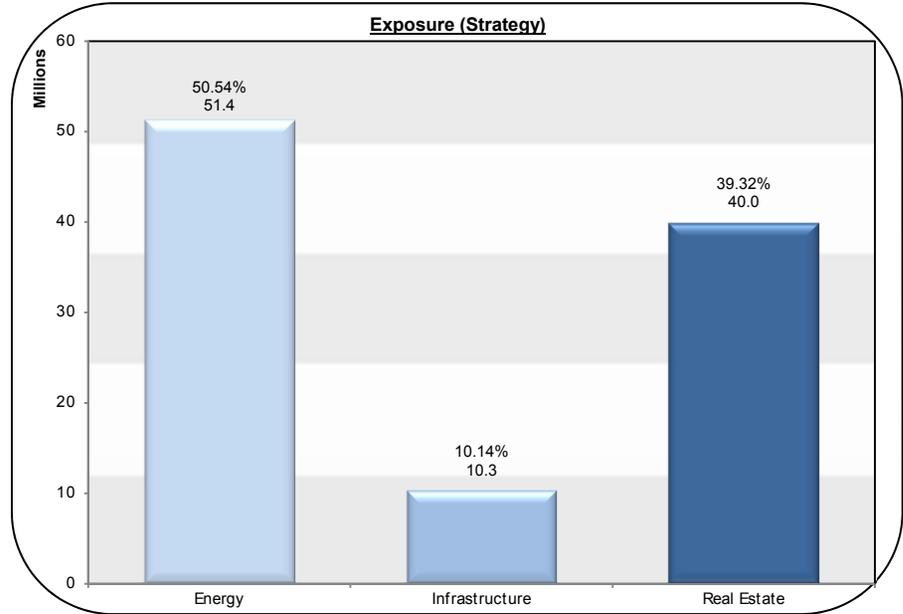
Overview and Risk Profile by Asset Class

Commentary

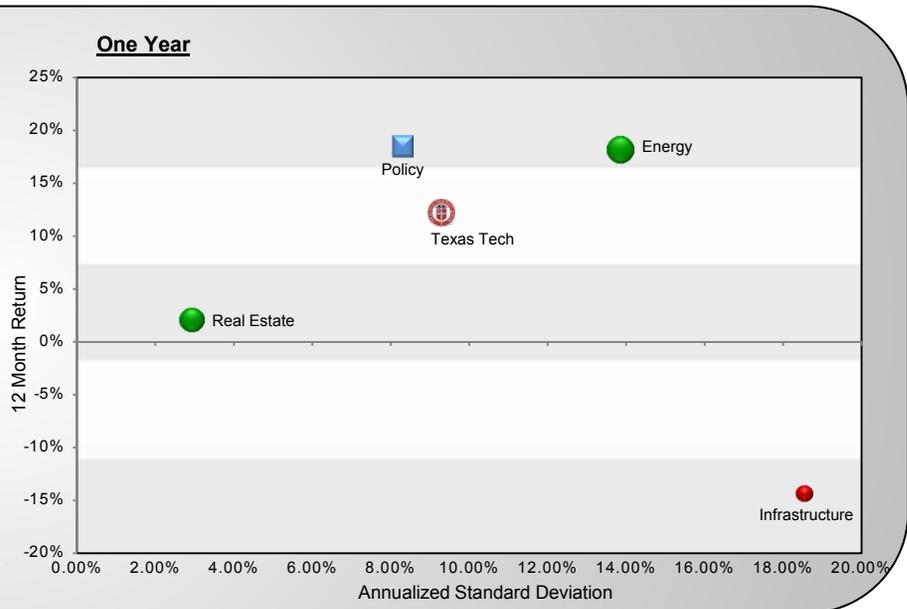
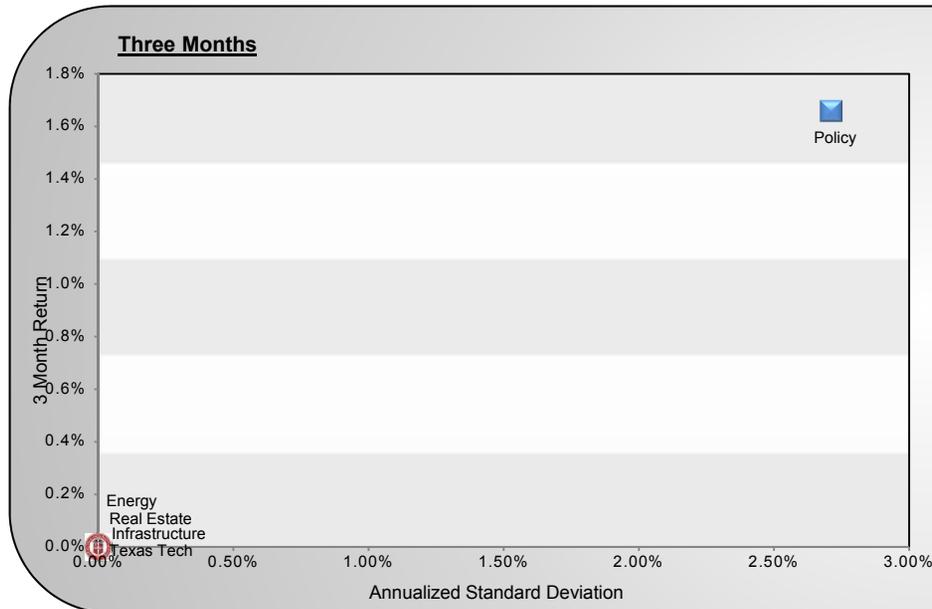
- As the year draws to a close, Preqin provide a round-up of some of the key numbers and statistics on the private real asset class in 2014:
 - \$742bn – Private real assets under management, an all-time high (as of June 2014)
 - \$221bn – Amount of uncalled capital available for investment (also a record high)
 - \$77bn – Capital raised in 2014 (as of 11/21/14), similar to the \$80bn raised in the same period in 2013



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. IRR returns can be seen in appendix II.

31st December 2014 (Preliminary)

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Appendix I – Sub-Asset Detail

Fund	Current Exposure	MTD Perf.	3 Mo. Perf.	Calendar YTD	Fiscal YTD	Nacubo YTD	1 Year Perf.	3 Year Perf.	5 Year Perf.
TOTAL	1,052,883,135	-0.54%	0.12%	4.06%	-0.93%	-0.72%	4.06%	9.16%	7.30%
Policy		-0.12%	1.18%	8.64%	1.53%	2.15%	8.64%	11.33%	9.31%
Equity	364,186,027	-1.54%	0.63%	3.94%	-1.65%	-0.55%	3.94%	14.14%	9.83%
US Equity	79,997,998	0.13%	5.30%	9.53%	2.89%	4.39%	9.53%	17.64%	13.10%
<i>Benchmark: S&P 500 Total Return</i>		-0.25%	4.93%	13.69%	3.46%	6.12%	13.69%	20.41%	15.45%
Global Equity	105,953,579	-1.60%	2.22%	8.02%	0.75%	2.90%	8.02%	23.44%	n/a
<i>Benchmark: MSCI ACWI</i>		-1.93%	0.41%	4.16%	-2.84%	-1.90%	4.16%	14.10%	9.17%
Non US Developed Equity	49,119,662	-3.01%	-4.53%	-4.66%	-7.65%	-8.97%	-4.66%	11.22%	6.65%
<i>Benchmark: MSCI EAFE</i>		-3.44%	-3.53%	-4.48%	-7.20%	-9.16%	-4.48%	11.56%	5.81%
Non US Emerging Markets Equity	63,983,156	-4.72%	-4.65%	2.53%	-8.79%	-5.15%	2.53%	5.41%	3.41%
<i>Benchmark: MSCI EMF</i>		-4.56%	-4.44%	-1.82%	-11.50%	-7.65%	-1.82%	4.41%	2.11%
Alternative Equity	65,131,632	1.53%	4.02%	-1.20%	4.57%	3.04%	-1.20%	11.78%	n/a
<i>Benchmark: MSCI ACWI</i>		-1.93%	0.41%	4.16%	-2.84%	-1.90%	4.16%	14.10%	9.17%
Debt	245,756,690	-1.88%	-1.33%	4.16%	-2.14%	-1.92%	4.16%	6.82%	6.99%
Sovereign/Investment Grade Bonds	69,886,891	-0.54%	0.58%	4.70%	0.33%	0.92%	4.70%	3.48%	4.62%
<i>Benchmark: Barclays Global Aggregate</i>		0.09%	1.79%	5.97%	1.10%	1.96%	5.97%	2.66%	4.45%
Credit	116,435,026	-1.69%	-1.80%	-2.94%	-2.43%	-2.21%	-2.94%	10.05%	9.69%
<i>Benchmark: Barclays Global Aggregate</i>		0.09%	1.79%	5.97%	1.10%	1.96%	5.97%	2.66%	4.45%
Emerging Markets Debt	59,434,773	-4.55%	-3.97%	3.49%	-6.10%	-6.93%	3.49%	6.09%	7.49%
<i>Benchmark: JP Morgan EM Bond Index</i>		-2.87%	-1.65%	5.53%	-4.02%	-3.27%	5.53%	5.33%	7.27%
Liquid Real Assets	85,481,830	4.11%	2.15%	4.02%	0.09%	-2.81%	4.02%	-2.78%	-1.46%
<i>Benchmark: CPI + 4%</i>		-0.05%	0.36%	4.69%	0.77%	1.32%	4.69%	5.36%	5.73%
Cash & Alpha Pool	79,787,106	-0.24%	-0.39%	2.51%	-0.28%	-0.03%	2.51%	5.21%	3.88%
Cash	(187,787,302)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.27%	0.23%
Cash Collateral	51,150,172	0.00%	0.00%	n/a	0.00%	0.00%	n/a	n/a	n/a
Alpha Pool	216,424,237	-0.32%	-0.45%	4.13%	-0.29%	0.16%	4.13%	7.93%	6.25%
<i>Benchmark: HFRI FOF Index</i>		0.32%	0.93%	3.35%	0.74%	1.21%	3.35%	5.67%	3.30%
Liquidating	8,727,877	1.28%	2.87%	0.33%	3.16%	3.23%	0.33%	2.48%	1.33%

*Cash is adjusted for synthetic exposures.

31st December 2014 (Preliminary)

TEXAS TECH UNIVERSITY SYSTEM

Appendix I – Sub-Asset Detail (cont.)
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Fund	Current Exposure	1 Year Performance	3 Year Performance	5 Year Performance
Private Investments	268,943,605	10.48%	11.52%	11.66%
<i>Benchmark: Private Market Index (90% VE, 10% NCREIF)</i>		17.84%	15.78%	15.01%
Private Equity	85,787,937	12.28%	12.00%	11.46%
Private Credit	81,525,742	6.70%	13.25%	10.39%
Private Real Assets	101,629,926	12.25%	10.21%	12.94%

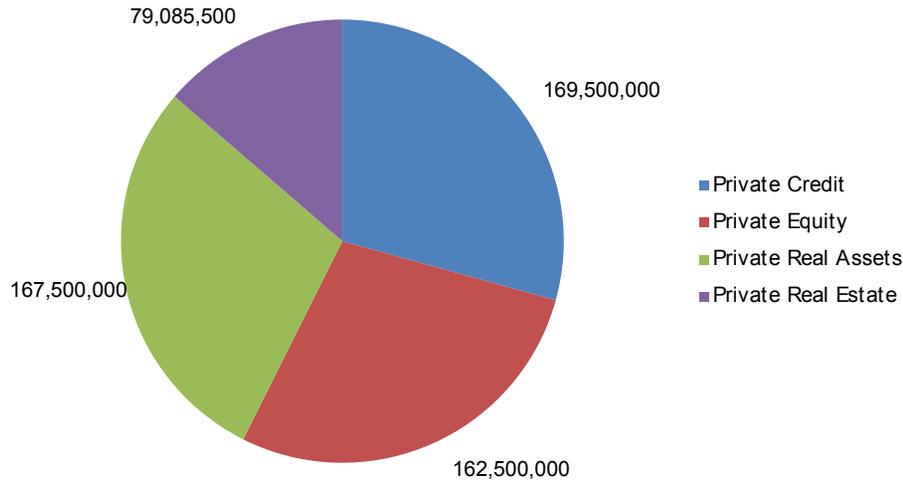
*Performance is calculated using time weighted Cash on Cash returns. This is an industry standard and allows direct comparison between manager returns and policy returns. IRR returns can be seen in appendix II.



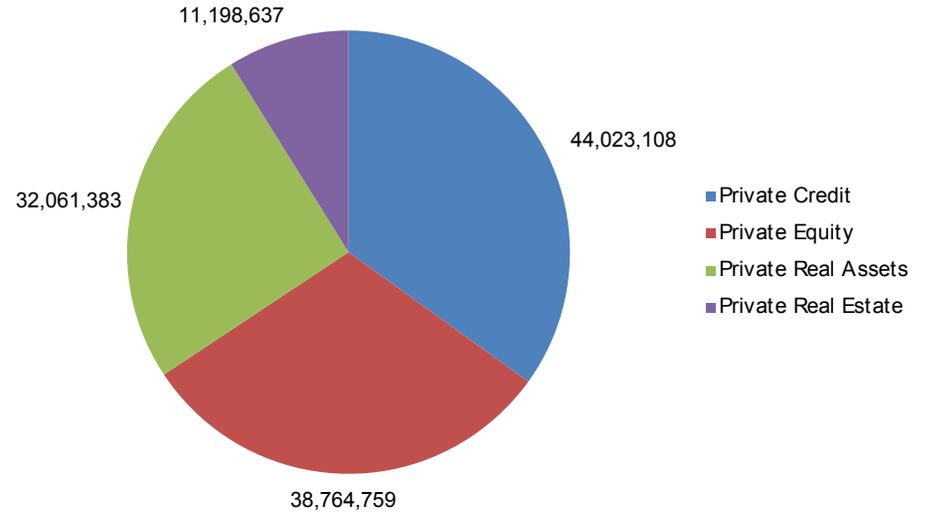
31st December 2014 (Preliminary)

Appendix II - Private Markets Report (as of September 2014) - Total Commitment

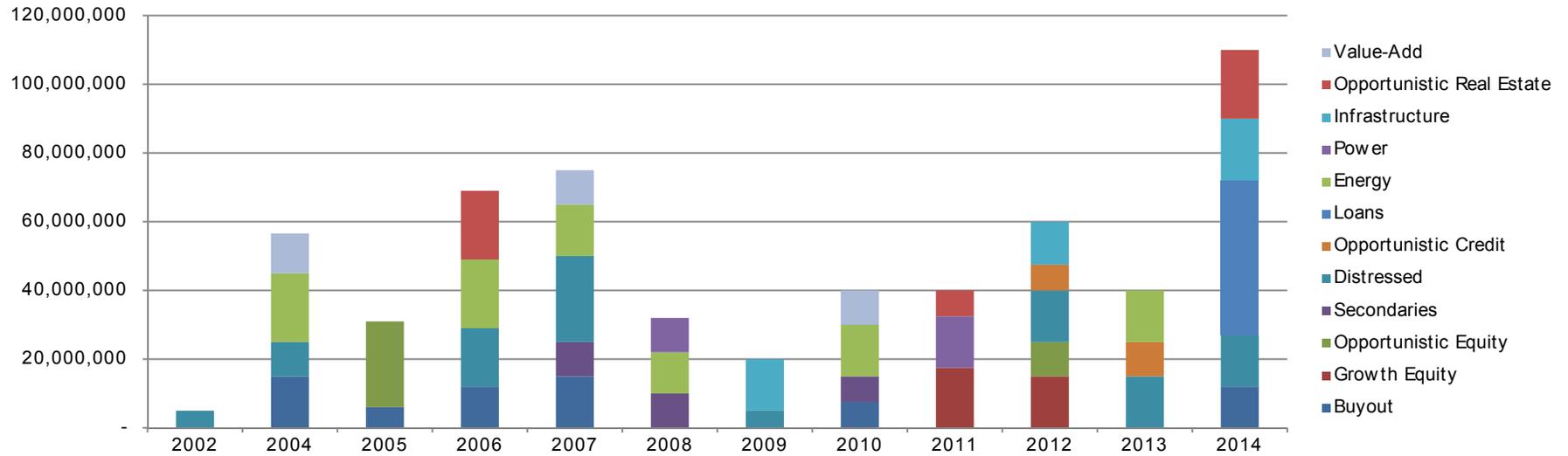
Total Commitment



Total Unfunded



Commitment by Vintage Year



Data Provided by Texas Tech University System
 Reported Valuations through September 30, 2014 Statements
 Adjusted Valuations included all cashflows through December 31, 2014

31st December 2014 (Preliminary)
Appendix II - Private Markets Report (as of September 2014) - 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	6	\$67,500,000	\$55,342,451	\$58,696,430	\$60,330,717	87%	\$31,620,324	\$33,054,662	12.21%	1.59
	Growth Equity	2	\$32,500,000	\$11,814,701	\$13,082,317	\$2,938,089	40%	\$13,169,225	\$11,261,304	5.70%	1.09
	Opportunistic Equity	2	\$35,000,000	\$31,950,000	\$31,957,850	\$15,916,021	91%	\$22,635,305	\$21,794,160	3.94%	1.18
	Secondaries	3	\$27,500,000	\$21,846,083	\$22,417,231	\$12,957,203	82%	\$19,079,496	\$18,684,424	9.51%	1.41
	Total	13	\$162,500,000	\$120,953,235	\$126,153,828	\$92,142,030	78%	\$86,504,350	\$84,794,550	9.34%	1.40
Private Credit	Distressed	10	\$107,000,000	\$97,384,997	\$97,449,145	\$87,394,861	91%	\$47,147,405	\$49,353,955	12.62%	1.40
	Loans	2	\$45,000,000	\$17,272,219	\$17,272,219	\$480,000	38%	\$18,367,800	\$17,887,800	7.13%	1.06
	Opportunistic Credit	2	\$17,500,000	\$9,833,875	\$10,927,257	\$1,235,917	62%	\$11,822,012	\$12,178,947	14.19%	1.23
	Total	14	\$169,500,000	\$124,491,091	\$125,648,621	\$89,110,778	74%	\$77,337,217	\$79,420,702	12.57%	1.34
Private Real Assets	Energy	6	\$97,000,000	\$82,681,932	\$86,482,189	\$97,361,395	89%	\$32,168,279	\$32,869,258	17.87%	1.51
	Infrastructure	3	\$45,500,000	\$30,894,758	\$35,298,649	\$34,122,710	78%	\$25,810,988	\$15,136,449	35.13%	1.40
	Power	2	\$25,000,000	\$18,161,152	\$18,682,947	\$6,496,734	75%	\$14,588,096	\$12,394,384	0.52%	1.01
	Total	11	\$167,500,000	\$131,737,842	\$140,463,785	\$137,980,839	84%	\$72,567,363	\$60,400,091	17.78%	1.41
Private Real Estate	Opportunistic Real Estate	4	\$47,500,000	\$38,298,098	\$39,263,777	\$3,711,610	83%	\$13,508,296	\$26,397,956	-9.70%	0.77
	Value-Add	3	\$31,585,500	\$28,561,157	\$28,623,086	\$23,017,997	91%	\$14,216,362	\$12,745,830	5.01%	1.25
	Total	7	\$79,085,500	\$66,859,255	\$67,886,863	\$26,729,607	86%	\$27,724,658	\$39,143,786	-0.88%	0.97

Performance by Asset Class

Asset Class	# of Funds	Commitment	Funded	Paid-In Capital	Distributions	% Drawn	Reported Valuation	Adjusted Valuation	IRR	MOC
Private Equity	13	\$162,500,000	\$120,953,235	\$126,153,828	\$92,142,030	78%	\$86,504,350	\$84,794,550	9.34%	1.40
Private Credit	14	\$169,500,000	\$124,491,091	\$125,648,621	\$89,110,778	74%	\$77,337,217	\$79,420,702	12.57%	1.34
Private Real Assets	11	\$167,500,000	\$131,737,842	\$140,463,785	\$137,980,839	84%	\$72,567,363	\$60,400,091	17.78%	1.41
Private Real Estate	7	\$79,085,500	\$66,859,255	\$67,886,863	\$26,729,607	86%	\$27,724,658	\$39,143,786	-0.88%	0.97
Total	45	\$578,585,500	\$444,041,423	\$460,153,097	\$345,963,254	80%	\$264,133,588	\$263,759,129	10.31%	1.33



31st December 2014 (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



31st December 2014 (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



31st December 2014 (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



TEXAS TECH UNIVERSITY SYSTEM

Tim Barrett, CFA
Associate Vice Chancellor
Chief Investment Officer

MEMORANDUM

Date: January 31, 2015
To: Board of Regents
From: Tim Barrett, CFA
RE: NACUBO Peer Group Analysis

The TTUS performance ranking improved over the plan year July 1, 2013 through June 30, 2014. I am very pleased with the performance and ranking within this year's NACUBO report. However, this year as well as the next, carries the brunt of the substantial portfolio restructuring. As you know, anytime you rebuild a portfolio there are transaction costs and higher cash holdings as you fund new strategies which negatively impact performance in the short run. With that said, TTUS was still able to improve over the one and three year periods versus the peer group. For the one year period, we moved from a 77.4% percentile to 68.8% percentile. Over the three year period, we moved from a 100% percentile to an 84.1% percentile. The 14.92% return for the one year period is the highest TTUS return in the last seven years. The IAC and staff are confident in our direction and expect continued improvement in our ranking going forward.

Over this plan year, each asset class was positive in absolute terms and all asset classes except for public equities outperformed their respective benchmarks. Thus, it was a very positive performance year overall. Asset Class performance versus benchmarks for the 2013-2014 NACUBO plan year were as follows:

Asset Class	12 month Return	Benchmark Return
Equities	19.40%	22.95%
Fixed Income	9.67%	4.37%
Real Assets (liquid)	8.33%	6.22%
Private Assets	19.02%	18.10%
Total LTIF	14.92%	16.38%

Unfortunately, the markets have been substantially more volatile and performed poorly since the end of this current NACUBO year. Monetary actions by Central Banks, increased geopolitical risk, an oversupply of oil coupled with declining global growth has negatively impacted global markets across rates, credit and equity markets. This can be seen in a dramatic increase in volatility over the last few

months. In short, the market environment is much more difficult in the current 2014-2015 NACUBO plan year.

A detailed listing of the U.S. institutions falling within this selected peer group and their 2013-2014 return data is below.

NACUBO Endowment Study 2014		Return			
	AUM (000's)	1 Year	3 Year	5 Year	10 Year
TTUS	\$1,195	14.92%	7.69%	9.83%	7.94%
Total NACUBO (832 reporting)		15.50%	9.00%	11.70%	7.10%
Greater than \$1 Billion		16.50%	9.50%	12.10%	8.20%
\$501 Million - \$1 Billion		15.80%	9.10%	11.80%	7.30%
\$25 to \$50 Million		15.20%	8.90%	11.40%	6.50%
less that \$25 Million		15.50%	9.40%	12.00%	6.60%

Below is the breakout of the institutions in our peer group along with their performance data for the 2014 NACUBO study.

Number of Schools between \$750 Million and \$1.5 Billion

Reporting Year	Assets	1 Year	3 Year	5 Year	10 Year
2014	64	64	63	63	58
2013	53	53	52	52	51
2012	51	50	50	50	46

2014		Return			
	AUM (000's)	1 Year	3 Year	5 Year	10 Year
High	\$ 1,496.4	24.11%	12.80%	14.87%	10.39%
Average	\$ 1,022.4	15.90%	9.10%	11.66%	7.48%
Low	\$ 750.9	10.35%	5.69%	8.00%	5.73%
Top Quartile	\$ 1,180.8	16.94%	9.79%	12.53%	8.05%
Median	\$ 965.0	15.70%	9.20%	11.80%	7.31%
Bottom Quartile	\$ 851.7	14.70%	8.38%	10.78%	6.80%
TTUS	\$ 1,195.4	14.92%	7.69%	9.83%	7.94%
Rank	22 / 53	44 / 64	53 / 63	59 / 63	17 / 58
Percentile	60.4%	68.8%	84.1%	93.7%	29.3%

Peer Group as of the 2014 NACUBO survey:

Institution	2014 Endowment Funds	1 Year Return %
University of California, Berkeley Foundation	1,496,436,670	15.43
University of Oklahoma	1,493,466,169	10.35
Washington and Lee University	1,477,923,000	14.71
The Kansas University Endowment Association	1,470,785,757	16.80

Georgetown University	1,461,276,000	14.90
Texas Christian University	1,442,518,000	17.70
University of Missouri System	1,440,561,089	16.70
University of Delaware	1,310,133,033	14.37
University of Minnesota Endowment	1,259,227,120	20.38
University of Iowa and University of Iowa Foundation	1,251,355,677	15.07
University of Alabama System	1,234,823,534	15.30
Bowdoin College	1,216,030,000	19.15
Lehigh University	1,215,926,000	14.00
Texas Tech University System	1,195,363,083	14.92
University of Cincinnati	1,183,921,686	15.70
Syracuse University	1,183,243,707	15.60
Trinity University	1,180,030,844	17.90
Texas A&M Foundation	1,164,749,777	16.90
Baylor University	1,153,626,000	12.60
Wake Forest University	1,148,026,087	11.06
Berea College	1,137,222,000	15.67
University of Kentucky	1,136,833,000	16.25
Yeshiva University	1,093,135,846	12.03
Middlebury College	1,081,894,000	16.50
Saint Louis University	1,076,959,263	15.40
University of Tennessee System	1,071,999,837	17.40
University of Colorado Foundation	1,063,088,761	19.14
Princeton Theological Seminary	1,041,847,091	17.09
Baylor College of Medicine	1,021,457,654	19.50
The University of Tulsa	1,015,474,204	13.90
Carnegie Institution of Washington	980,102,534	19.50
Vassar College	974,179,927	15.57
The University System of Maryland Foundation, Inc.	955,856,362	12.32
University of California, San Francisco Foundation	943,804,407	16.10
The University of Georgia Foundation	939,024,216	17.30
University of Arkansas - Fayetteville	929,693,370	14.50
Rutgers, the State University of New Jersey	918,575,322	16.00
Berry College, Inc.	916,828,435	16.80
NC State University and Related Foundations	885,055,000	15.84
University of Louisville Foundation	876,825,000	16.70
Santa Clara University	875,090,000	18.80
Washington State University	868,091,092	15.70
Colgate University	865,664,114	14.71
University of Miami	865,434,666	16.90
Brandeis University	861,152,377	16.25
Hamilton College	858,839,076	24.11
Oberlin College	855,728,392	16.12
Bryn Mawr College	854,035,014	18.16
The University of Utah	844,760,847	12.27
Lafayette College	800,677,724	14.40

College of William & Mary and Foundations	797,592,276	14.67
Virginia Tech Foundation	796,436,874	19.70
Carleton College	792,737,205	16.10
University of Houston System & Foundations	789,699,822	14.80
Pepperdine University	788,573,682	17.06
LSU System	788,019,566	12.87
Iowa State University and Foundation	777,017,930	16.23
Denison University	771,760,205	17.30
Wesleyan University	768,219,000	15.70
University of Arizona and University of Arizona Foundation	760,679,124	14.50
University of Massachusetts Foundation, Inc.	757,473,187	13.50
Macalester College	753,526,242	14.01
Rochester Institute of Technology	752,539,254	15.10
Bucknell University	750,912,781	15.60



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Texas Tech University System Market Overview Q4 2014

February 17th, 2015

Timothy Bruce, Partner
Chenae White, Consultant

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Investment Market Update: As of December 31, 2014

PERFORMANCE THROUGH 12/31/2014

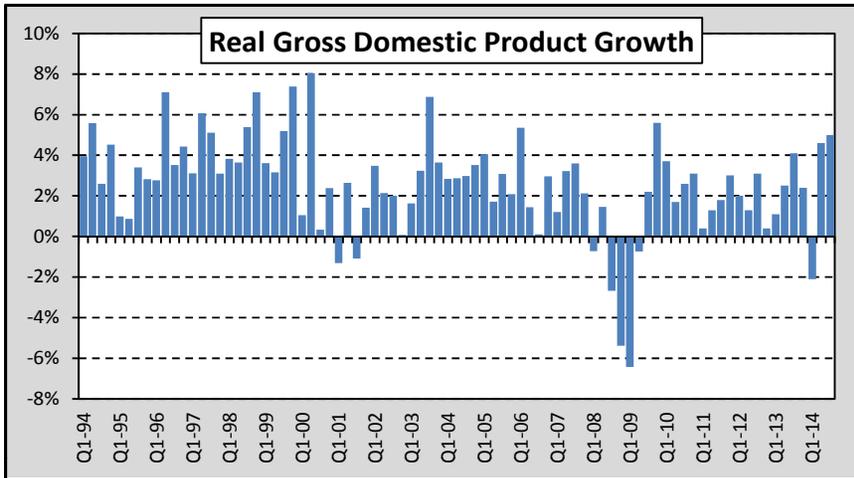
Sector	Index	2008	2009	2010	2011	2012	2013	Q1	Q2	Q3	OCT	NOV	DEC	Q4	2014
Treasury STRIPS	Barclays US Strips 20+ Yr	59.5%	-36.0%	10.9%	58.5%	3.0%	-21.0%	12.7%	7.8%	5.1%	4.2%	4.3%	5.5%	14.6%	46.4%
REITS	Wilshire US REIT	-39.2%	28.6%	28.6%	9.2%	17.6%	1.9%	10.1%	7.2%	-3.1%	10.7%	2.1%	1.9%	15.1%	31.8%
Long Govt/Credit	Barclays US Govt/Credit Long	8.4%	1.9%	10.2%	22.5%	8.8%	-8.8%	6.6%	4.9%	1.0%	2.2%	1.6%	1.6%	5.6%	19.3%
Long Credit	Barclays US Long Credit	-3.9%	16.8%	10.7%	17.1%	12.7%	-6.6%	6.3%	5.0%	0.2%	1.9%	1.0%	1.0%	4.1%	16.4%
Large Cap	S&P 500	-37.0%	26.5%	15.1%	2.1%	16.0%	32.4%	1.8%	5.2%	1.1%	2.4%	2.7%	-0.3%	4.9%	13.7%
Large Cap Value	Russell 1000 Value	-36.8%	19.7%	15.5%	0.4%	17.5%	32.5%	3.0%	5.1%	-0.2%	2.2%	2.0%	0.6%	5.0%	13.5%
Large Cap	Russell 1000	-37.6%	28.4%	16.1%	1.5%	16.4%	33.1%	2.0%	5.1%	0.7%	2.4%	2.6%	-0.2%	4.8%	13.2%
Large Cap Growth	Russell 1000 Growth	-38.4%	37.2%	16.7%	2.6%	15.3%	33.5%	1.1%	5.1%	1.5%	2.6%	3.2%	-1.0%	4.9%	13.0%
Muni Bonds	Barclays Municipal	-2.5%	12.9%	2.4%	10.7%	6.8%	-2.6%	3.3%	2.6%	1.5%	0.7%	0.2%	0.5%	1.4%	9.1%
Diversified	Diversified*	-24.5%	24.1%	13.5%	1.3%	12.7%	17.6%	2.1%	3.8%	-1.5%	2.2%	1.3%	-0.3%	3.2%	7.9%
SMID Cap	Russell 2500	-36.8%	34.4%	26.7%	-2.5%	17.9%	36.8%	2.3%	3.6%	-5.3%	4.4%	0.9%	1.4%	6.8%	7.1%
Core Bonds	Barclays US Agg Bond	5.2%	5.9%	6.5%	7.8%	4.2%	-2.0%	1.8%	2.0%	0.2%	1.0%	0.7%	0.1%	1.8%	6.0%
Small Cap Growth	Russell 2000 Growth	-38.5%	34.5%	29.1%	-2.9%	14.6%	43.3%	0.5%	1.7%	-6.1%	6.2%	0.6%	3.0%	10.1%	5.6%
Small Cap	Russell 2000	-33.8%	27.2%	26.9%	-4.2%	16.3%	38.8%	1.1%	2.0%	-7.4%	6.6%	0.1%	2.9%	9.7%	4.9%
MLP	Alerian MLP Index	-36.9%	76.5%	35.9%	13.9%	4.8%	27.6%	1.9%	2.7%	12.3%	-4.6%	-2.6%	-5.6%	-12.3%	4.8%
EMD USD	Barclays EM USD Agg	-14.7%	34.2%	12.8%	7.0%	17.9%	-4.1%	2.8%	4.5%	-0.8%	1.2%	-0.4%	-2.5%	-1.7%	4.8%
Global Equity	MSCI ACWI	-41.8%	35.4%	13.2%	-6.9%	16.8%	23.4%	1.2%	5.2%	-2.2%	0.7%	1.7%	-1.9%	0.5%	4.7%
Small Cap Value	Russell 2000 Value	-28.9%	20.6%	24.5%	-5.5%	18.1%	34.5%	1.8%	2.4%	-8.6%	7.0%	-0.5%	2.7%	9.4%	4.2%
Interm Core Bonds	Barclays US Agg Interm	4.9%	6.5%	6.1%	6.0%	3.6%	-1.0%	1.2%	1.6%	0.0%	0.8%	0.6%	-0.2%	1.2%	4.1%
Interm Govt/Credit	Barclays US Govt/Credit Interm	5.1%	5.2%	5.9%	5.8%	3.9%	-0.9%	1.0%	1.2%	-0.0%	0.7%	0.5%	-0.3%	0.9%	3.1%
High Yield	Barclays US Corp HY	-26.2%	58.2%	15.1%	5.0%	15.8%	7.4%	3.0%	2.4%	-1.9%	1.2%	-0.7%	-1.4%	-1.0%	2.5%
Govt/Credit	Barclays Govt/Credit 1-5 Yr	5.1%	4.6%	4.1%	3.1%	2.2%	0.3%	0.4%	0.7%	-0.0%	0.5%	0.3%	-0.3%	0.4%	1.4%
Govt/Credit	Barclays US Govt/Credit 1-3 Yr	5.0%	3.8%	2.8%	1.6%	1.3%	0.6%	0.2%	0.3%	0.0%	0.3%	0.1%	-0.3%	0.2%	0.8%
Global Bonds	Citi WGBI	10.9%	2.6%	5.2%	6.4%	1.6%	-4.0%	2.7%	2.3%	-3.8%	-0.2%	-0.6%	-0.7%	-1.5%	-0.5%
Emerging Equities	MSCI EM	-53.3%	78.5%	18.9%	-18.4%	18.2%	-2.6%	-0.4%	6.6%	-3.5%	1.2%	-1.1%	-4.6%	-4.5%	-2.2%
Int'l Developed	MSCI EAFE	-43.4%	31.8%	7.8%	-12.1%	17.3%	22.8%	0.7%	4.1%	-5.9%	-1.5%	1.4%	-3.5%	-3.6%	-4.9%
EMD Loc	JPM GBI EM Glob Div	-5.2%	22.0%	15.7%	-1.8%	16.8%	-9.0%	1.9%	4.0%	-5.7%	1.6%	-1.3%	-5.9%	-5.7%	-5.7%
Commodities	Bloomberg Commodity	-35.6%	18.9%	16.8%	-13.3%	-1.1%	-9.5%	7.0%	0.1%	-11.8%	-0.8%	-4.1%	-7.6%	-12.1%	-17.0%

* 35% LC, 10% SC, 12% Intl Equity, 3% Emerging Equity, 25% Core Bonds, 5% HY, 5% Global Bonds, 5% REITS

Source: Morningstar Direct

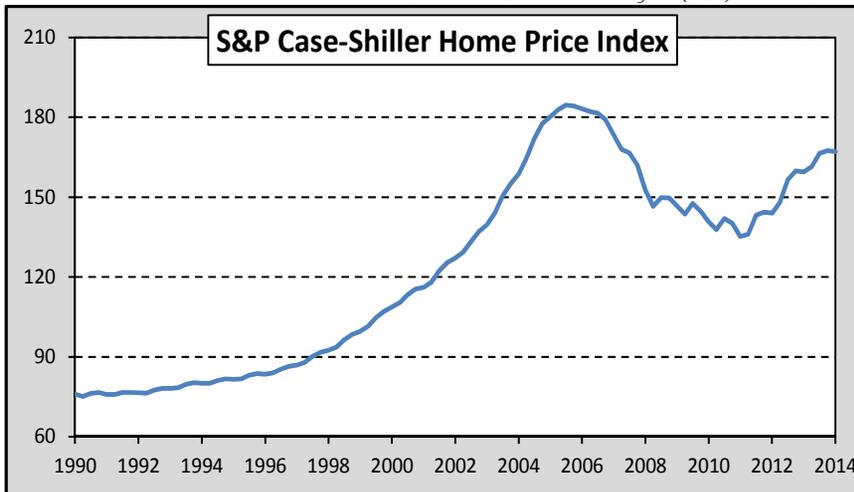
- **US Stocks continued their strong performance in Q4 on the back of strong employment numbers and the highest consumer confidence levels since 1999**
- **Reversing the trend in 2014, small cap stocks outperformed large cap stocks in Q4**
 - But for the full year 2014 large cap outperformed small cap by ~9%, which is the widest margin since 1998
- **Stocks of emerging markets didn't fare well losing (4.5%) in Q4**
- **Commodities continued their selloff losing (12.1%) in Q4**
- **MLP's sold off in Q4 with Alerian MLP index down (12.3%)**
- **The yield on 10-year US treasuries dropped 35 bps, finishing at 2.17%**
- **The spread between 2-year and 10-year treasuries fell 44 bps to 1.5%**
- **The US Dollar rallied against all major currencies in Q4**

US Economic Environment



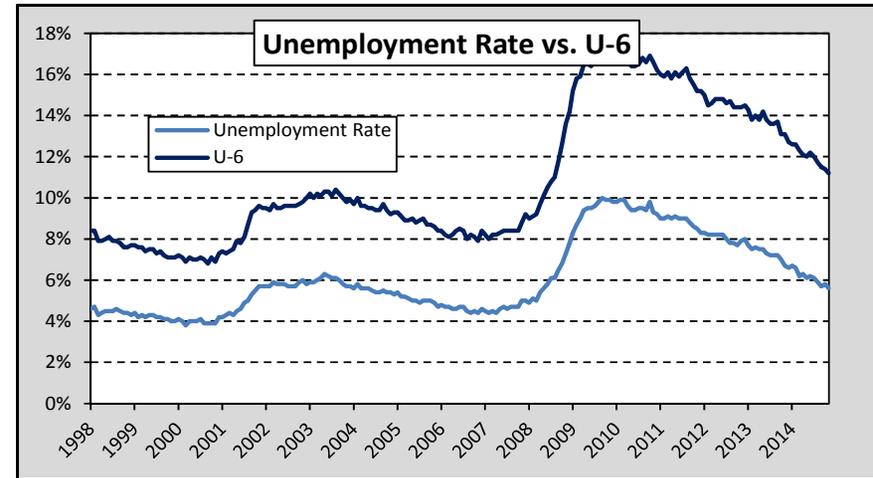
The GDP estimate for the 4th quarter of 2014 increased at an annual rate of 2.6 percent vs 5.0 percent in Q3

Source: U.S. Bureau of Economic Analysis (BEA) as of 12/31



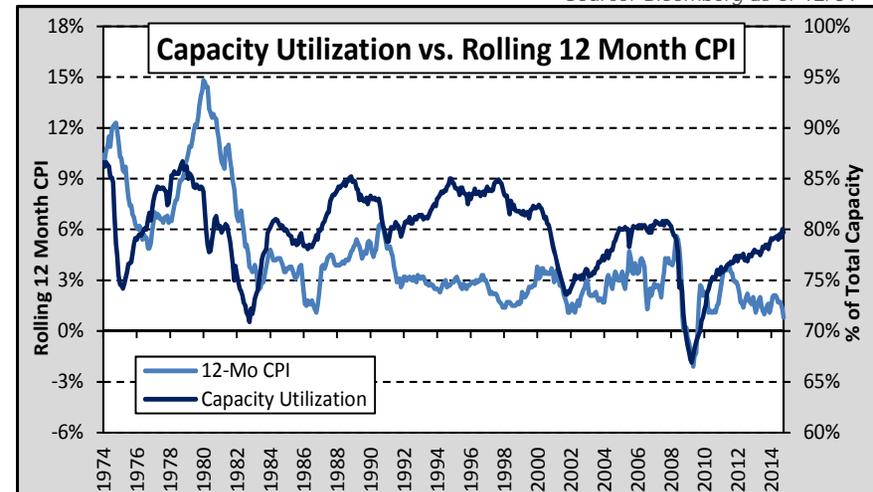
The Case-Shiller home price index (as of 12/31) dropped slightly to 167.1 by December end

Source: Bloomberg as of 12/31



Unemployment declined slightly to 5.8% in December; while the U-6, dropped to 11.2%

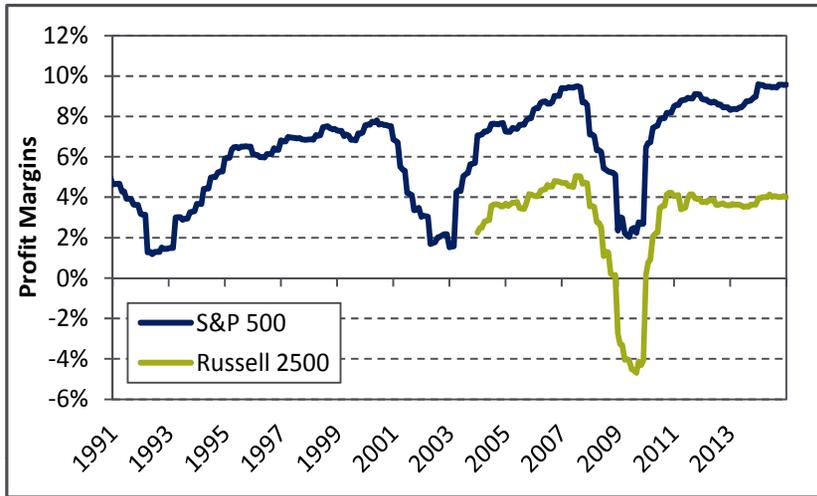
Source: Bloomberg as of 12/31



Rolling 12 month CPI dropped to 0.8% in December; capacity utilization dropped to 79.7% in the month

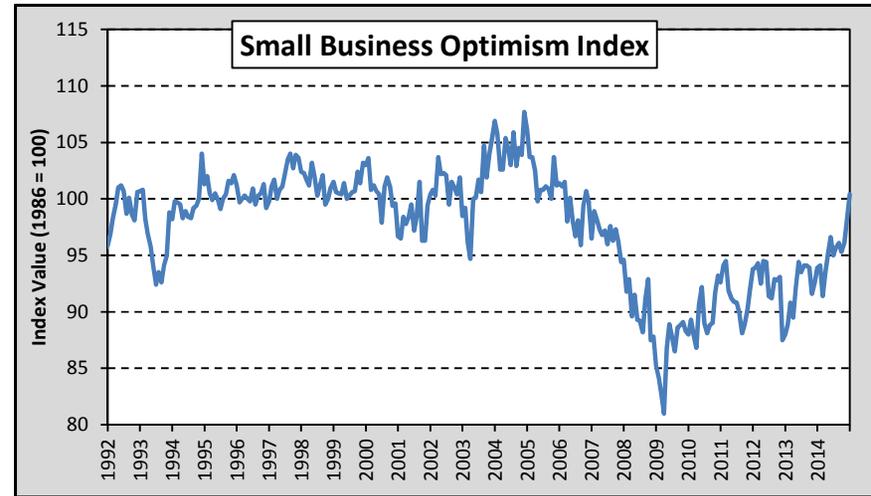
Source: Bloomberg as of 12/31

Key Economic Indicators



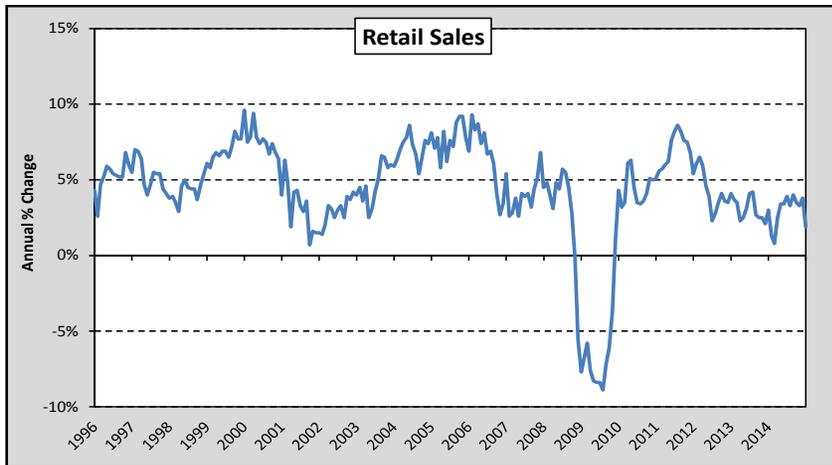
Profit margins remain elevated across US equities

Source: Bloomberg as of 12/31



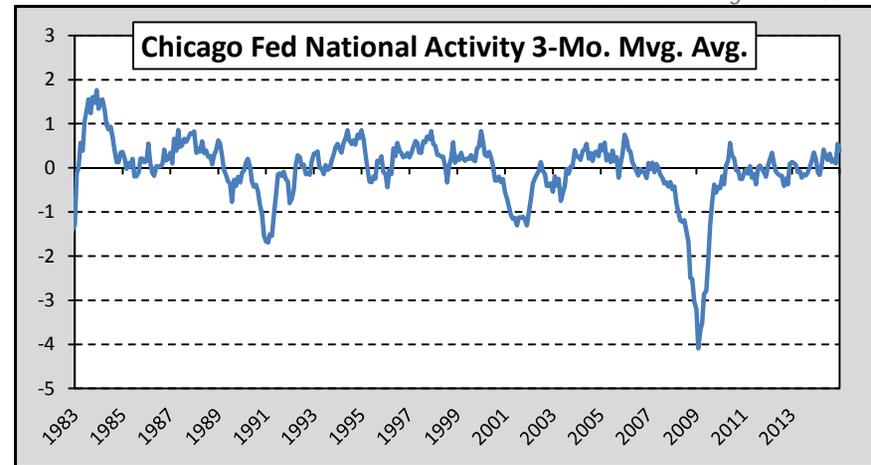
The small business optimism index increased through December

Source: Bloomberg as of 12/31



Retail sales rose to a 1.9% year-over-year growth rate in November

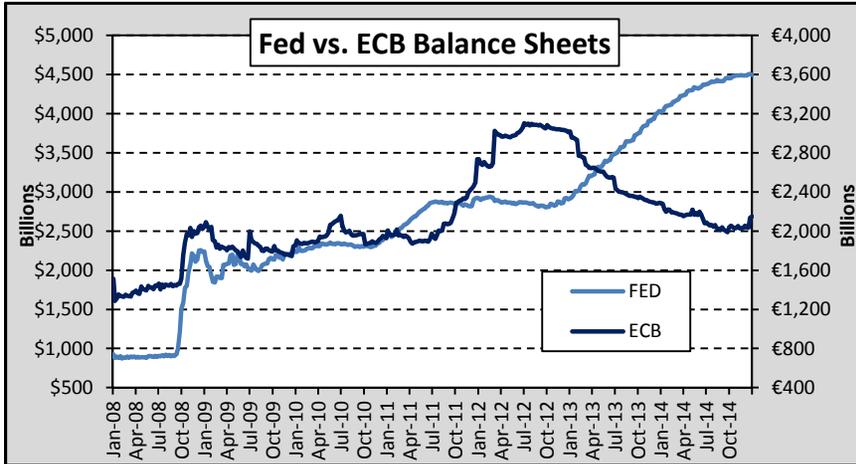
Source: Bloomberg as of 12/31



Chicago Fed National Activity 3 Month moving average was positive through December; typically a positive indicator for growth.

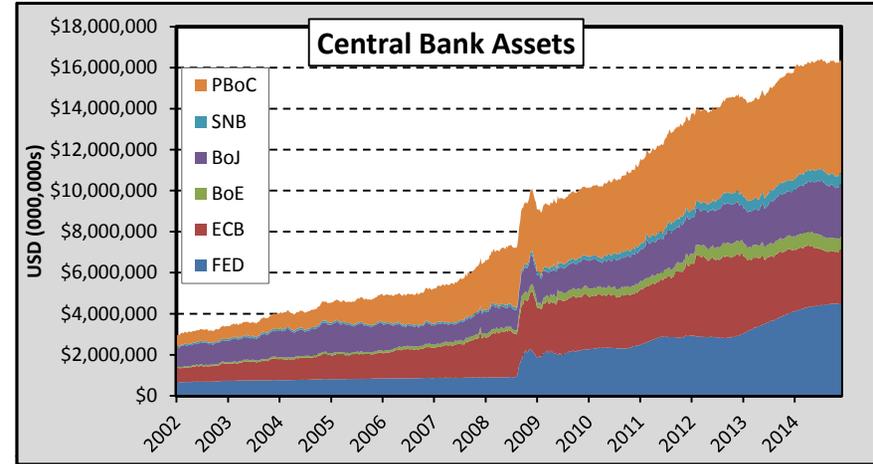
Source: Bloomberg as of 12/31

Economic Environment – Monetary Policy and Banks



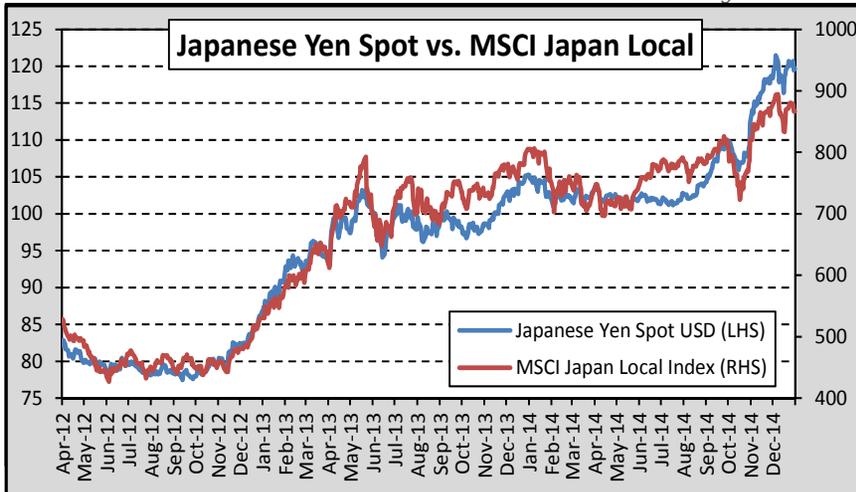
The Federal Reserve Bank balance sheet has increased in 2014 while the European Central Bank balance sheet has decreased

Source: Bloomberg as of 12/31



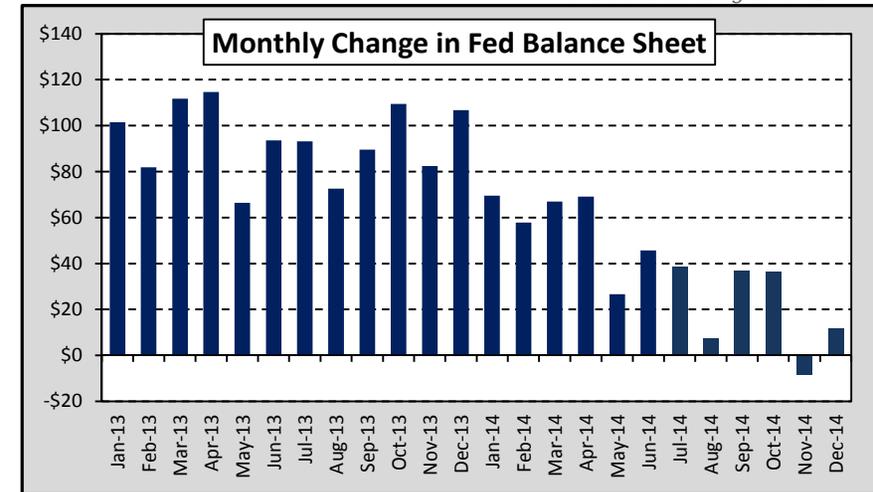
Central bank assets worldwide have risen significantly since 2008

Source: Bloomberg as of 12/31



The Japanese Yen has weakened 17.4% relative to the US dollar in 2014; while the MSCI Japan TR Net Local Index returned 17.29%

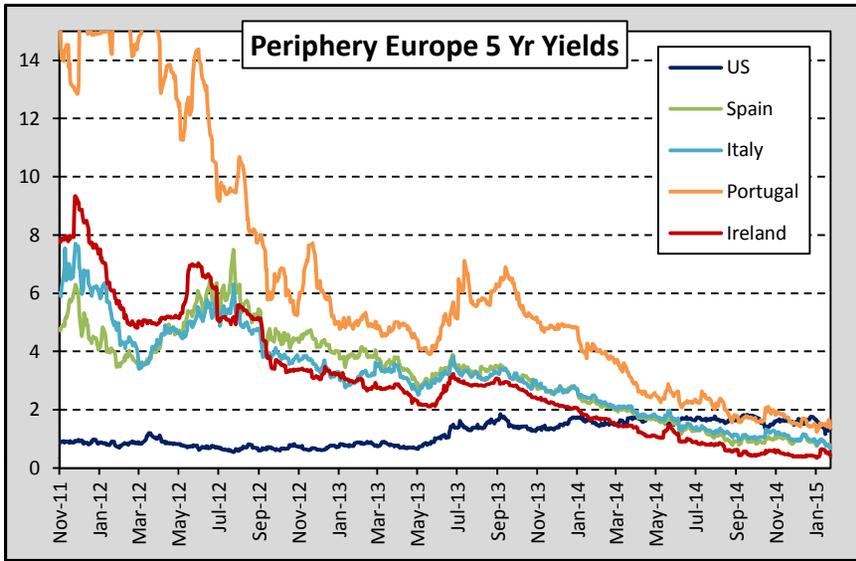
Source: Bloomberg as of 12/31



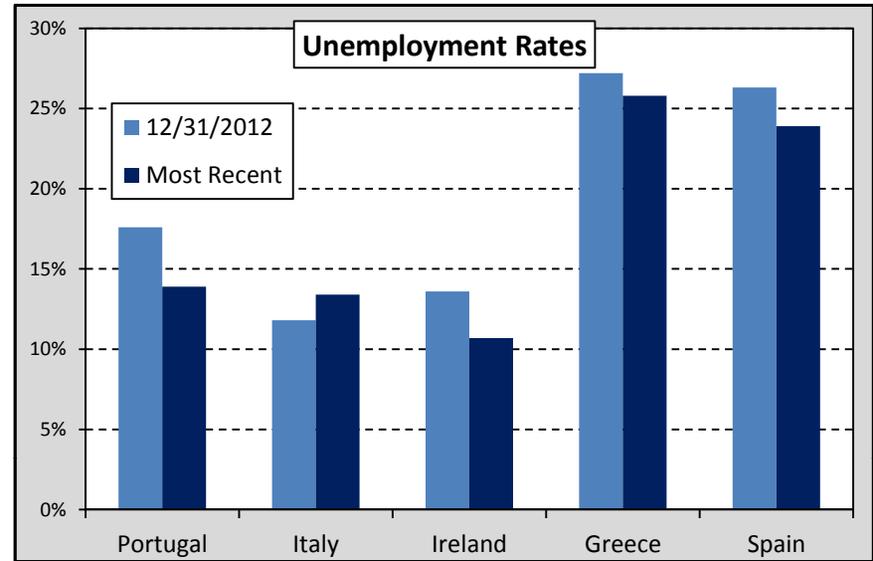
The Fed completed the taper as scheduled

Source: Bloomberg as of 12/31, Values after 11/30 based on market projections

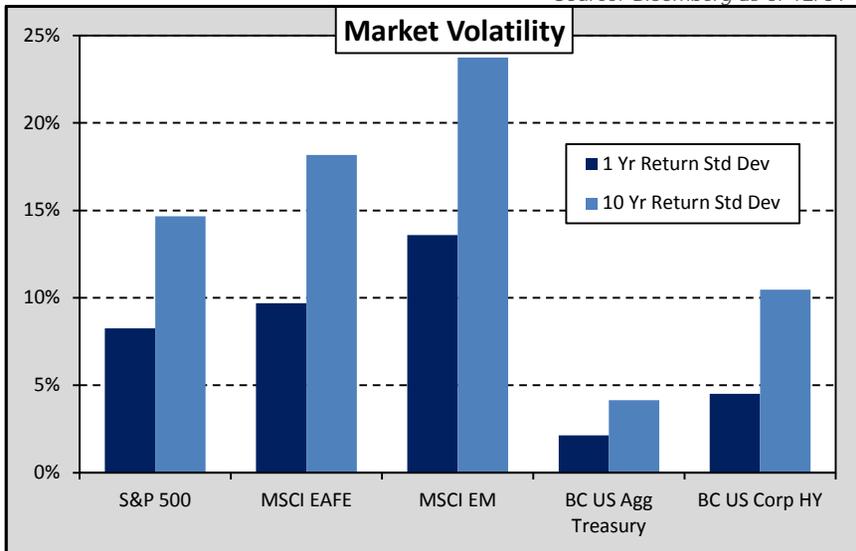
Looming Macro Uncertainties



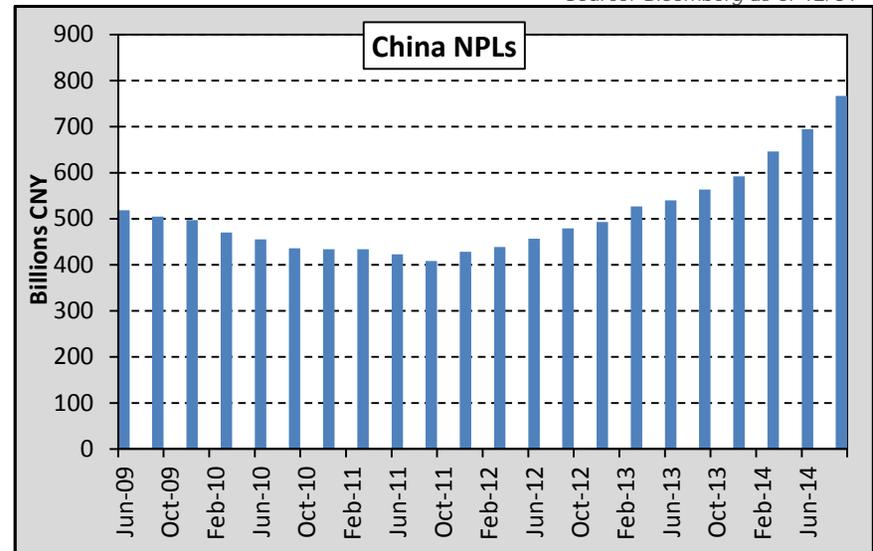
Source: Bloomberg as of 12/31



Source: Bloomberg as of 12/31

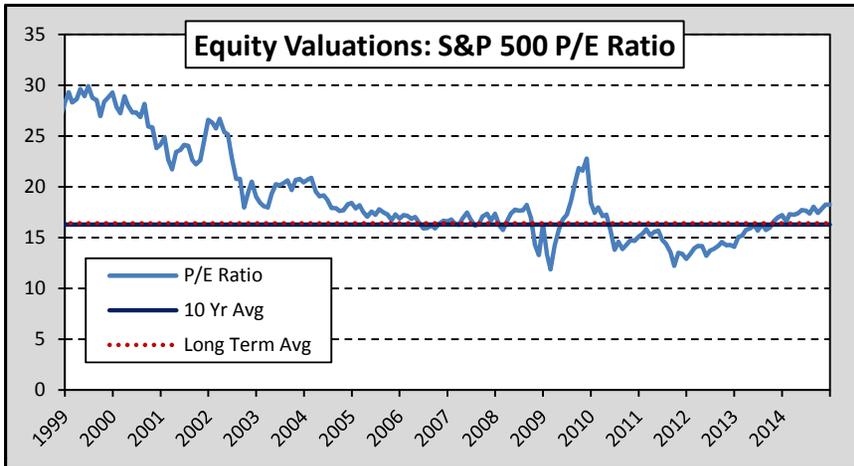


Source: Morningstar as of 12/31



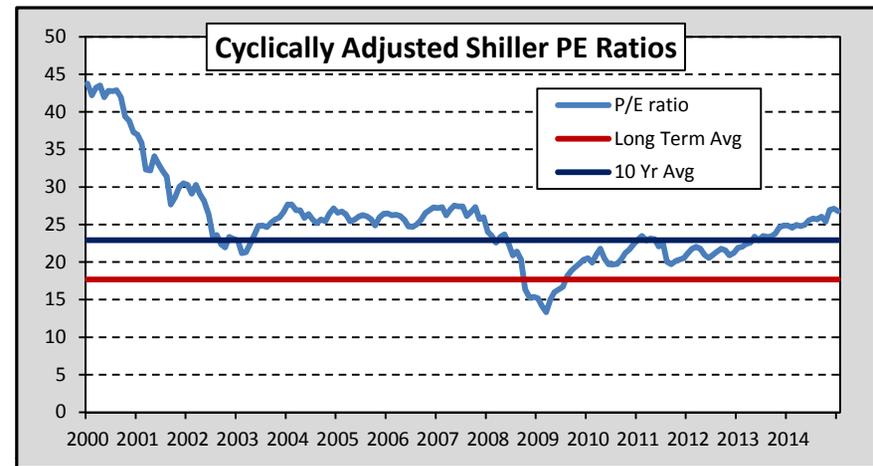
Source: Bloomberg as of 9/30

Market Environment – US Equity



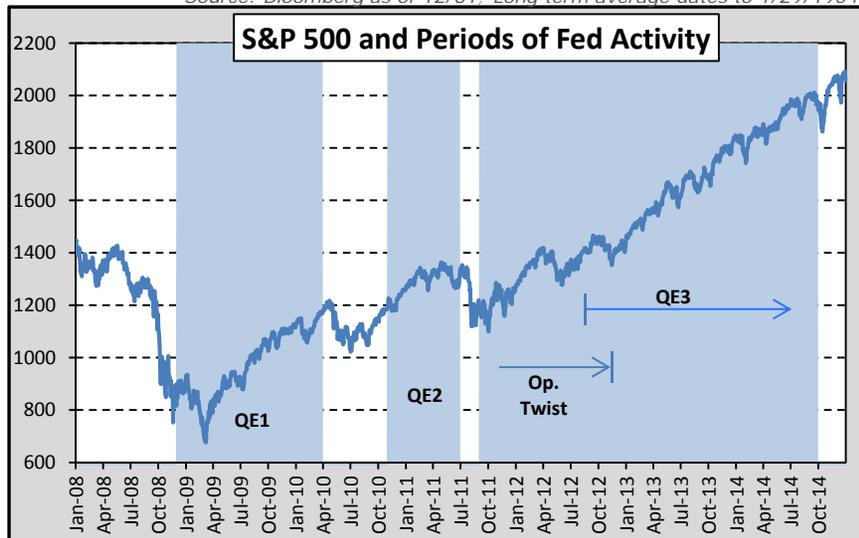
S&P valuations decreased slightly through December remaining above the 10 year and long term averages

Source: Bloomberg as of 12/31; Long term average dates to 1/29/1954

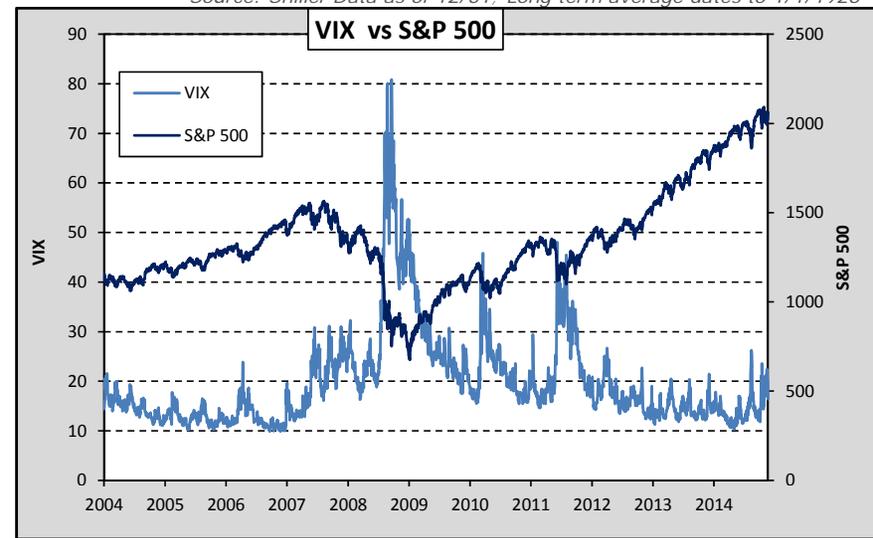


...The cyclically adjusted Shiller PE Ratio, is above the long term average of 17.7 and slightly above the 10 year average of 22.9

Source: Shiller Data as of 12/31; Long term average dates to 1/1/1926



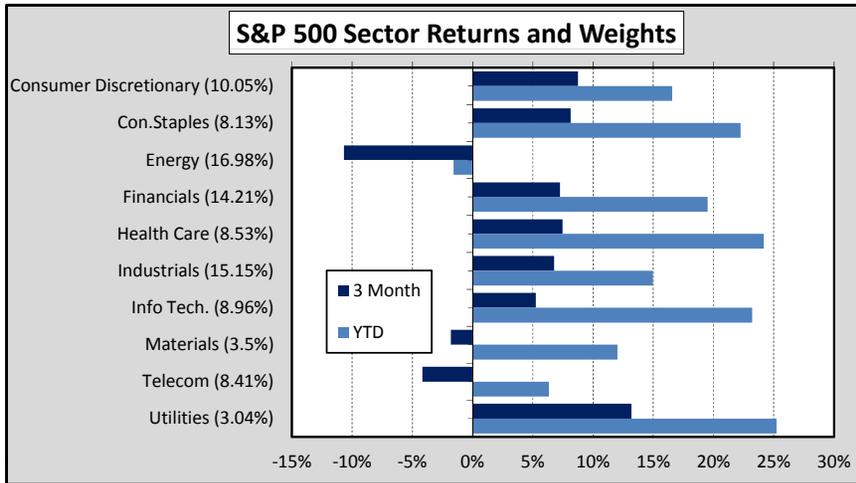
Source: Bloomberg as of 12/31



The VIX rose on the month; the S&P 500 declined -0.3% through December

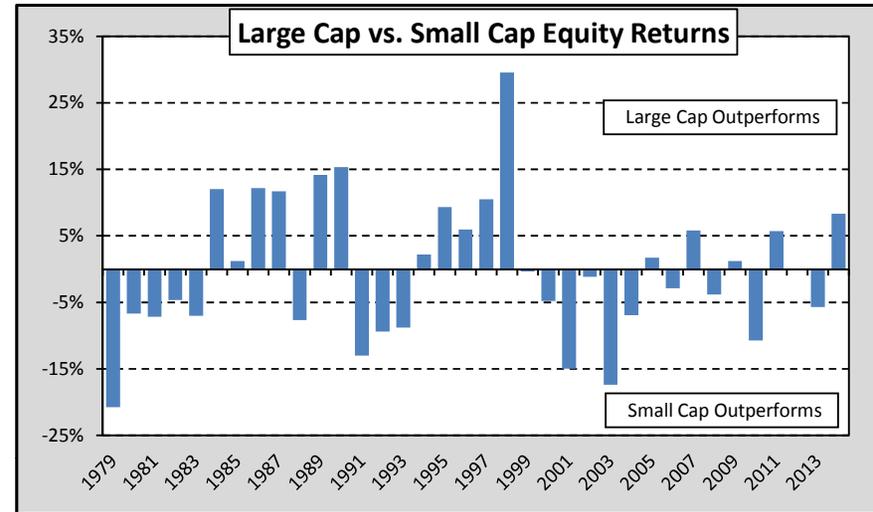
Source: Bloomberg as of 12/31

US Stock Market Performance



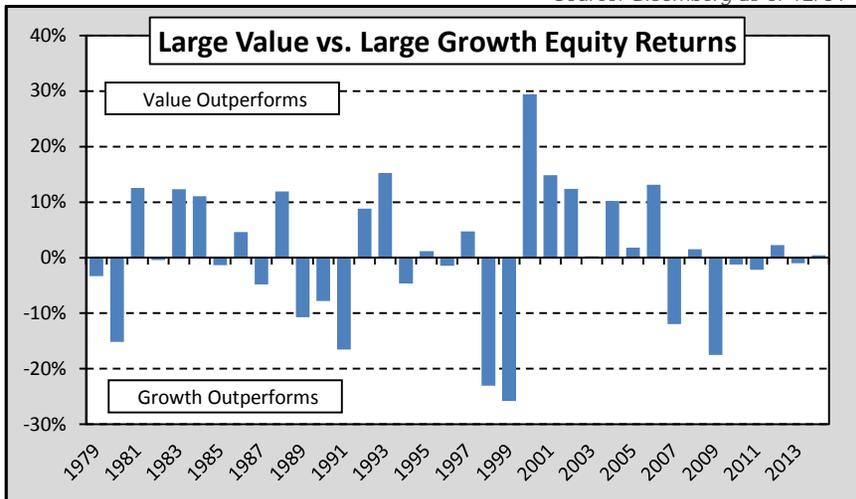
The energy sector was the greatest detractor in the S&P 500 in 2014 with utilities and healthcare providing the highest returns

Source: Bloomberg as of 12/31



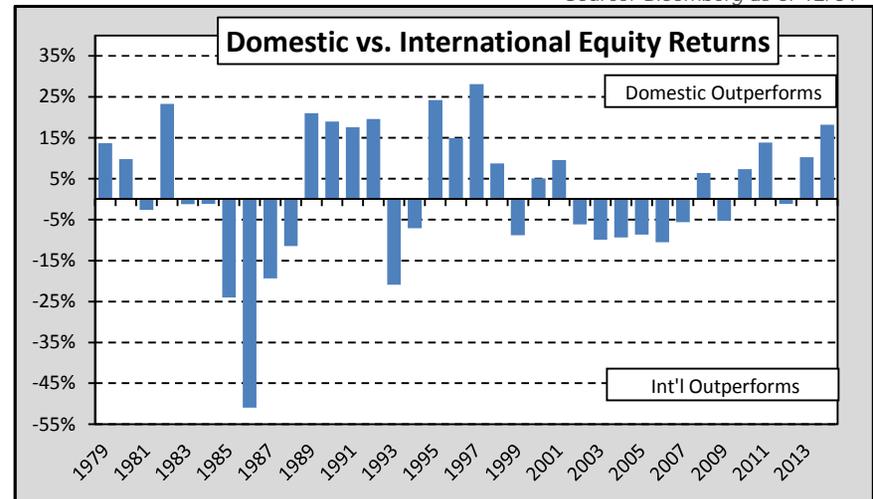
Large cap has outperformed small cap in 2014

Source: Bloomberg as of 12/31



Large growth stocks have slightly outperformed large value in 2014

Source: Bloomberg as of 12/31



Domestic equity has outperformed international equity in 2014

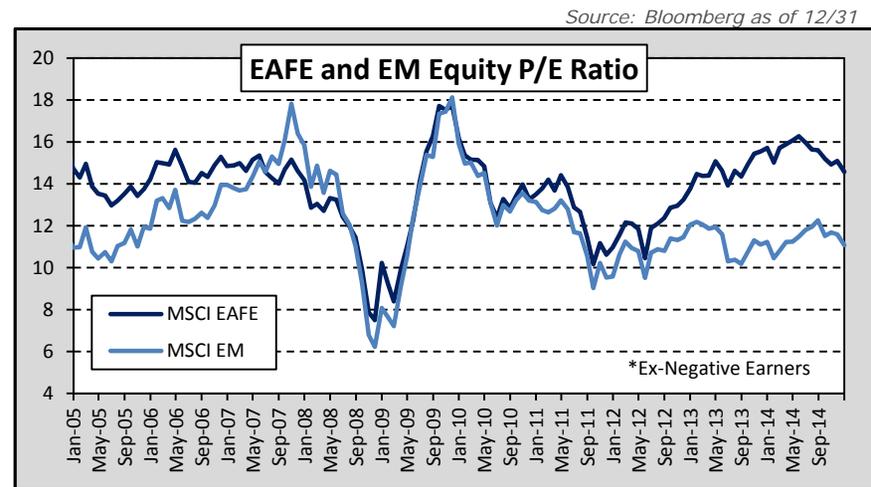
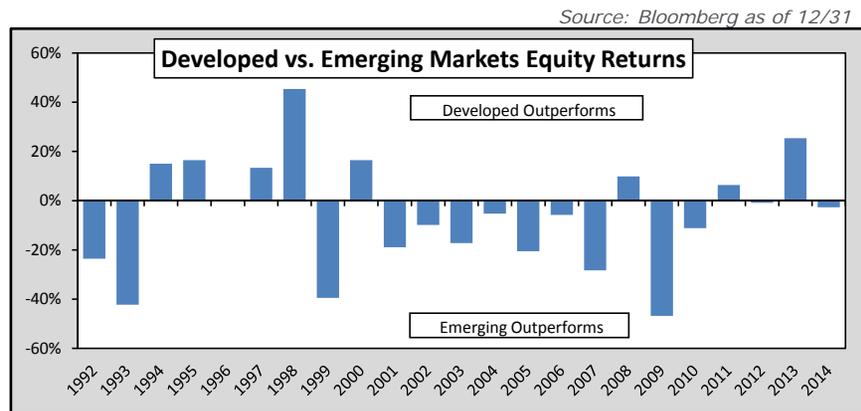
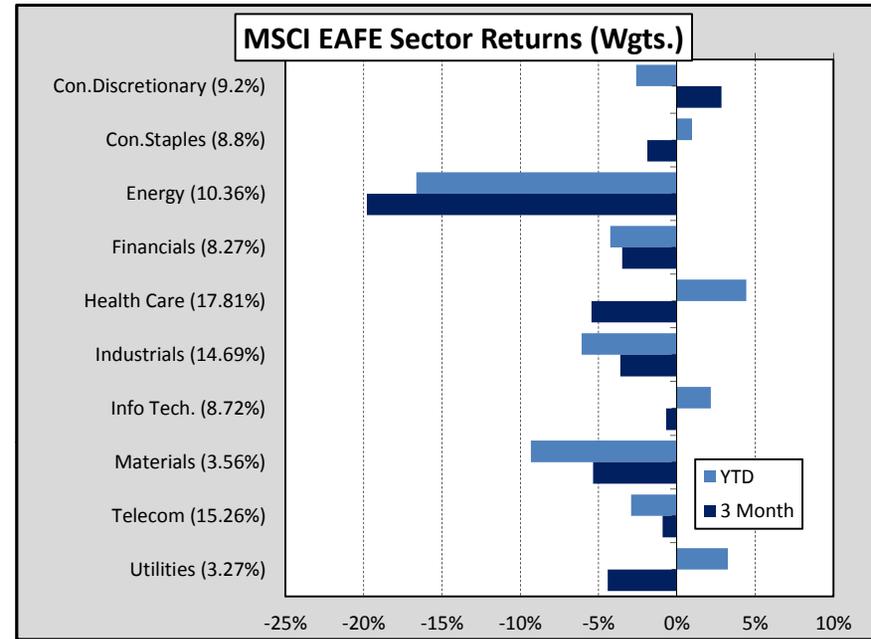
Source: Bloomberg as of 12/31

Non-US Stock Performance

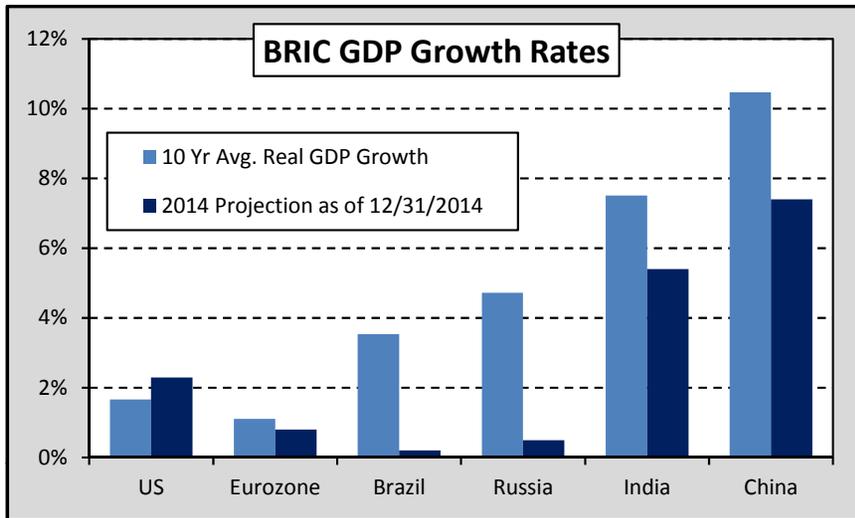
Developed Market Equity Returns (U.S. Dollars)				
	YTD	3-Mo	1 Yr.	3 Yr. Ann.
Europe ex UK	-8.5%	-4.5%	-8.5%	10.3%
United Kingdom	-8.7%	-4.8%	-8.7%	5.5%
Japan	-5.7%	-2.5%	-5.7%	7.6%
Pacific Ex Japan	-4.3%	-2.2%	-4.3%	5.0%
Canada	-0.6%	-5.3%	-0.6%	3.1%
USA	11.1%	4.3%	11.1%	17.9%

US Dollar Return vs. Major Foreign Currencies				
(Negative = Dollar Depreciates, Positive = Dollar Appreciates)				
	YTD	3-Mo	1 Yr.	3 Yr. Ann.
Euro	12.0%	4.2%	12.0%	2.3%
Japanese Yen	12.0%	8.4%	12.0%	13.7%
British Pound	5.9%	3.9%	5.9%	-0.1%
Canada	8.6%	3.6%	8.6%	4.2%
Australia	8.4%	6.6%	8.4%	7.1%

Currency Impact on Developed Mkt. Returns				
(Negative = Currency Hurt, Positive = Currency Helped)				
	YTD	3-Mo	1 Yr.	3 Yr. Ann.
MSCI EAFE (Local)	5.9%	1.8%	5.9%	16.4%
MSCI EAFE (USD)	-4.9%	-3.6%	-4.9%	11.1%
Currency Impact	-10.8%	-5.3%	-10.8%	-5.3%

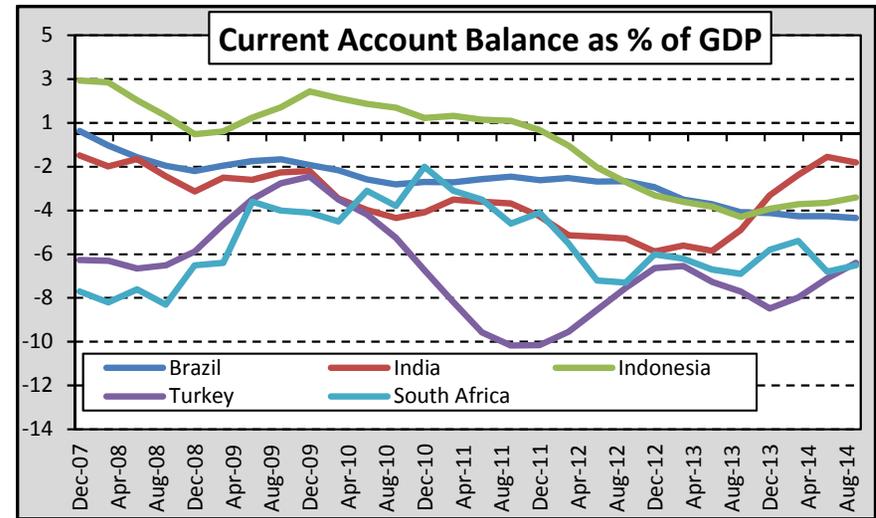


Market Environment – Emerging Markets



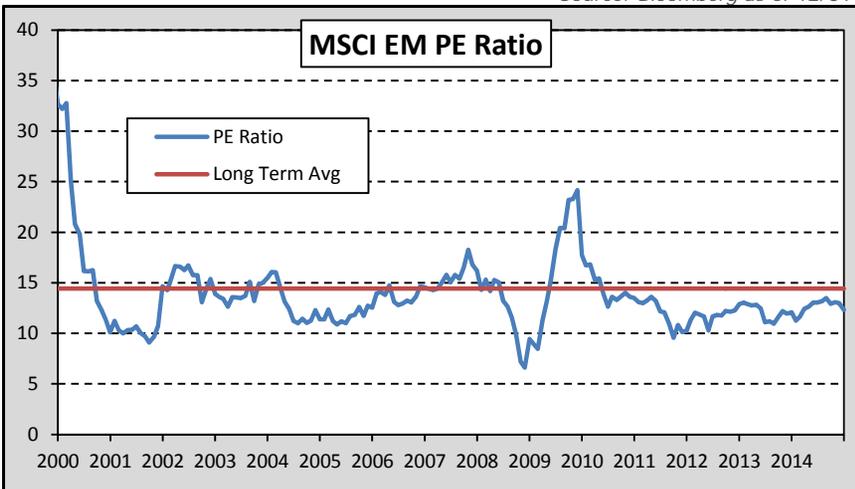
Projected GDP growth rates have declined in emerging market countries

Source: Bloomberg as of 12/31



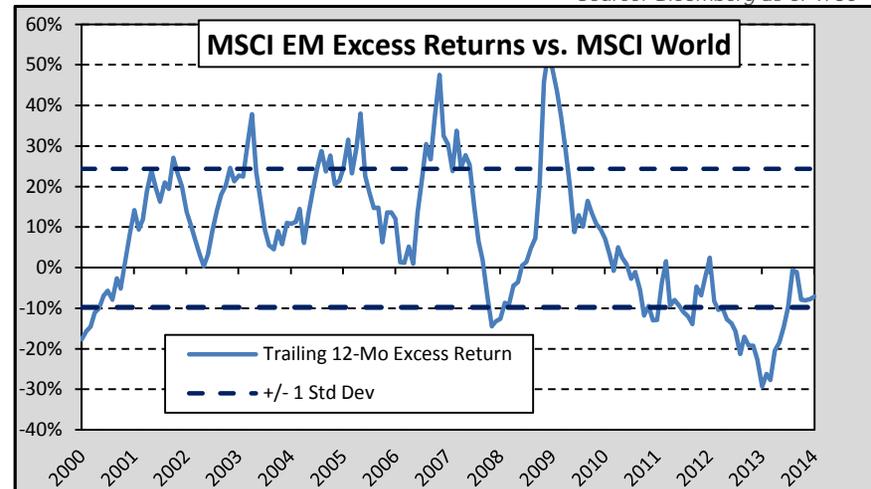
Balance of payment challenged countries have shown signs of improvement

Source: Bloomberg as of 9/30



The MSCI EM PE Ratio remains below its long term average

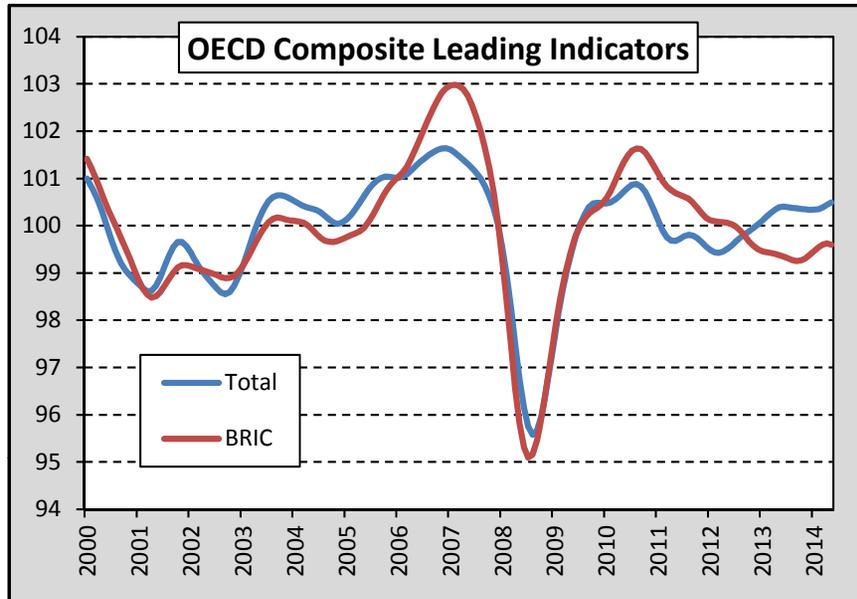
Source: Bloomberg as of 12/31



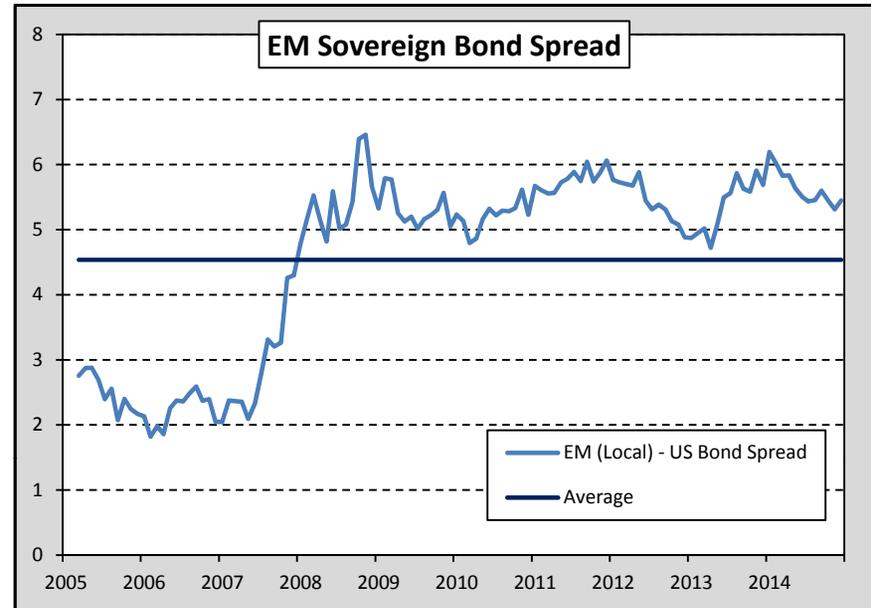
MSCI EM Rolling 12-Month excess returns relative to MSCI World have moved above the lower bound of the historical range

Source: Bloomberg as of 12/31

Emerging Markets



Source: Bloomberg as of 11/30



Source: Bloomberg as of 12/31

Emerging Markets Valuation		
	MSCI EM	MSCI EM Small Cap
PE Ratio	12.31	19.33
PE Historical Avg	14.44	18.34
PB Ratio	1.42	1.25
Historical Avg	1.53	1.28
PS Ratio	0.98	0.79
Historical Avg	1.11	0.72

- The MSCI EM index's PE, PB, and PS ended December below their historical averages.
- The MSCI EM Small Cap PE and PS ratios are above historical averages while the PB ratio is below its historical average

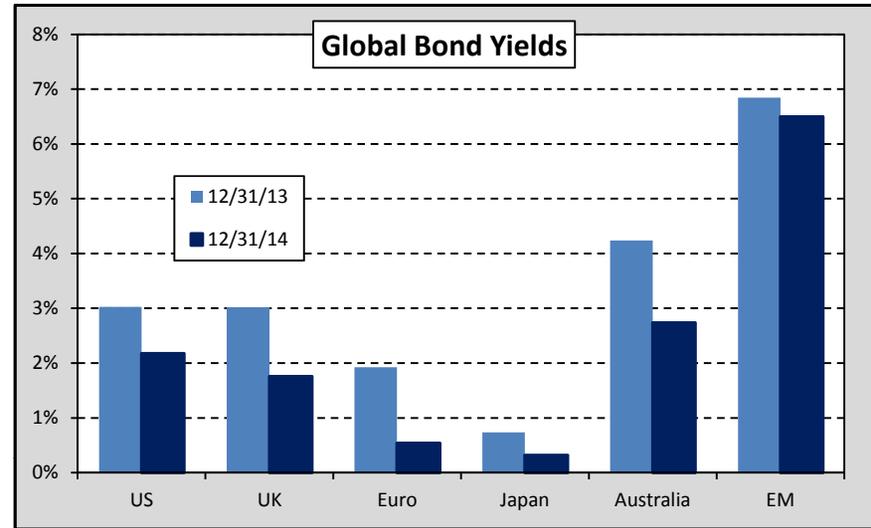
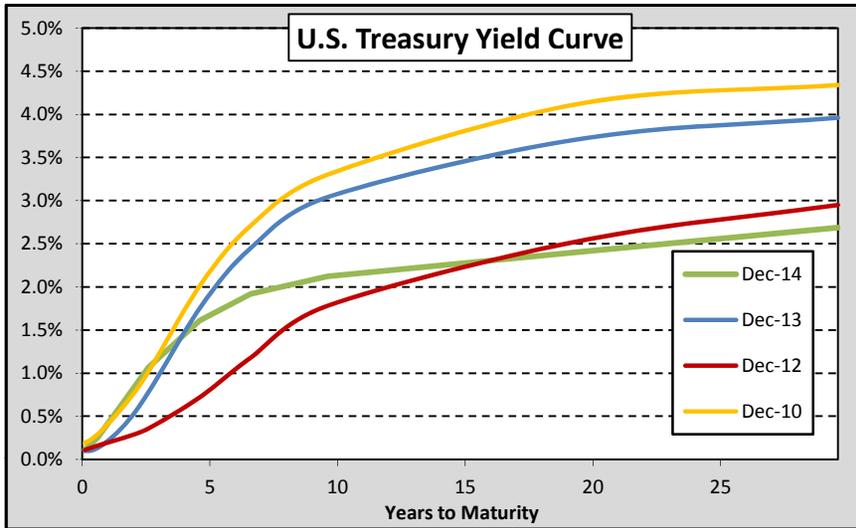
Source: Bloomberg as of 12/31

US Dollar Return vs. Major EM Currencies				
(Negative = Dollar Depreciates, Positive = Dollar Appreciates)				
	YTD	3-Mo	1 Yr.	3 Yr. Ann.
Brazilian Real	10.8%	7.8%	10.8%	11.1%
Russian Ruble	43.3%	31.8%	43.3%	17.9%
Indian Rupee	2.2%	2.1%	2.2%	5.6%
Chinese Renminbi	2.4%	1.1%	2.4%	-0.5%
Singapore Dollar	-0.9%	-0.2%	-0.9%	-0.9%
Hungarian Forint	17.3%	5.9%	17.3%	2.4%
Turkish Lira	7.9%	2.3%	7.9%	6.8%
Mexican Peso	11.7%	9.0%	11.7%	1.8%
So. African Rand	9.1%	2.4%	9.1%	11.3%
So. Korean Won	3.7%	3.2%	3.7%	-2.0%

Source: Bloomberg as of 12/31

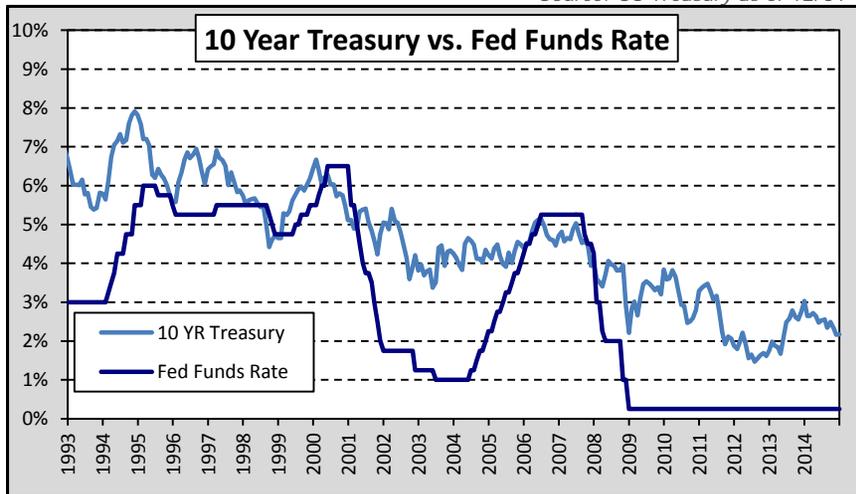


Market Environment – Interest Rates



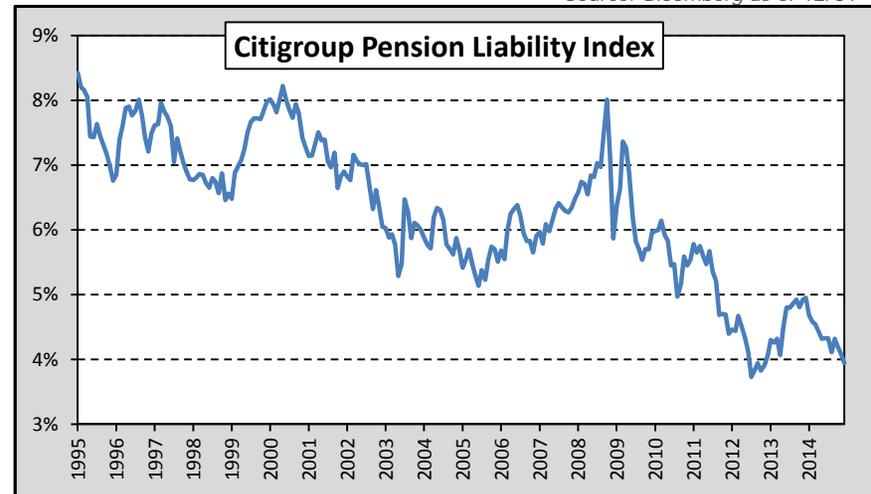
Bond yields across the globe have mostly declined in 2014

Source: Bloomberg as of 12/31



Fed Funds rate target remained at 0.25% while the 10 Yr. Treasury Yield finished December at 2.16%

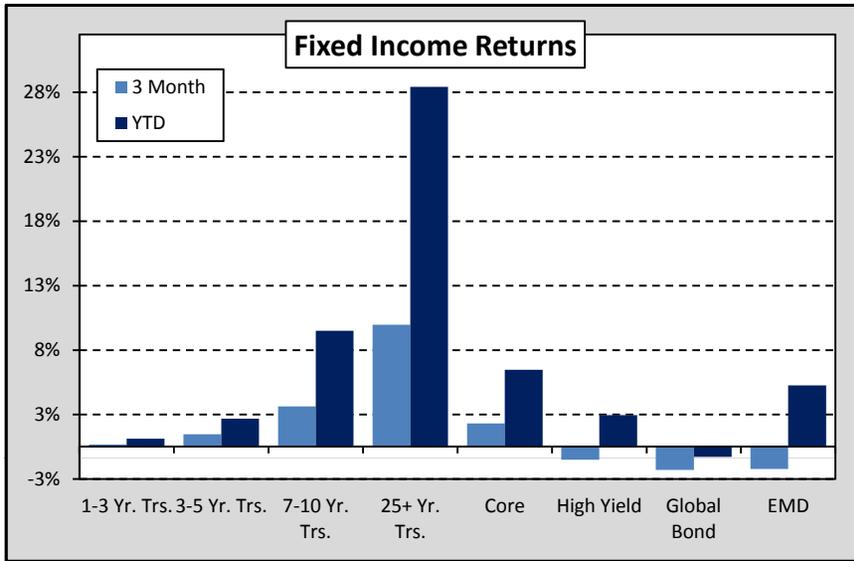
Source: Bloomberg as of 12/31



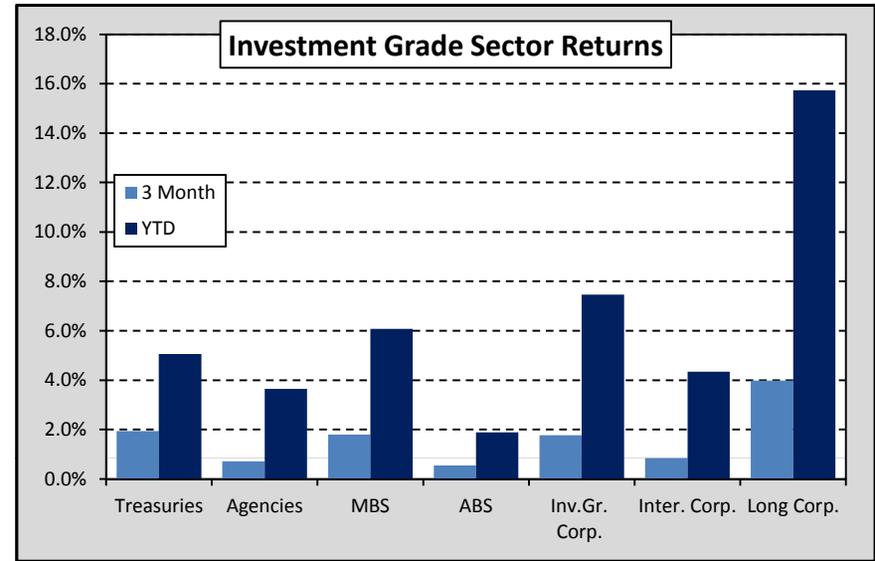
The Citi Pension discount rate decreased to 3.9% through December

Source: Citigroup as of 12/31

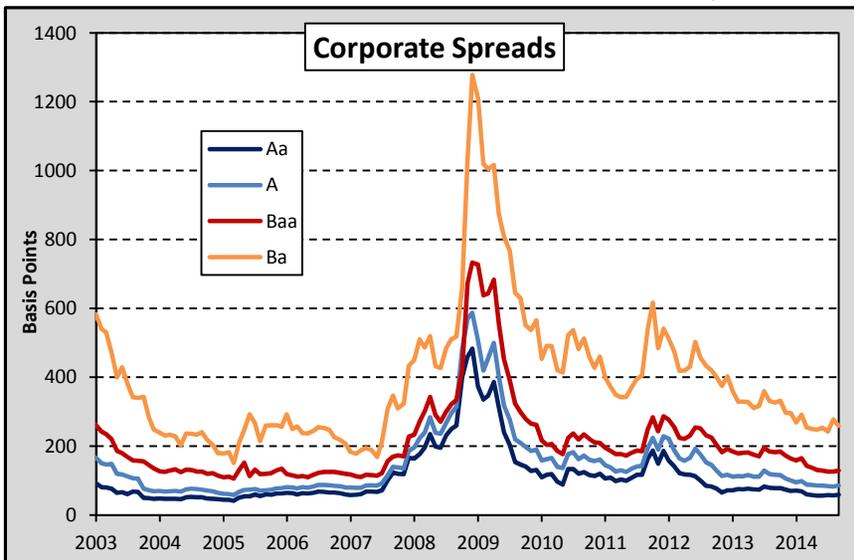
Fixed Income Performance



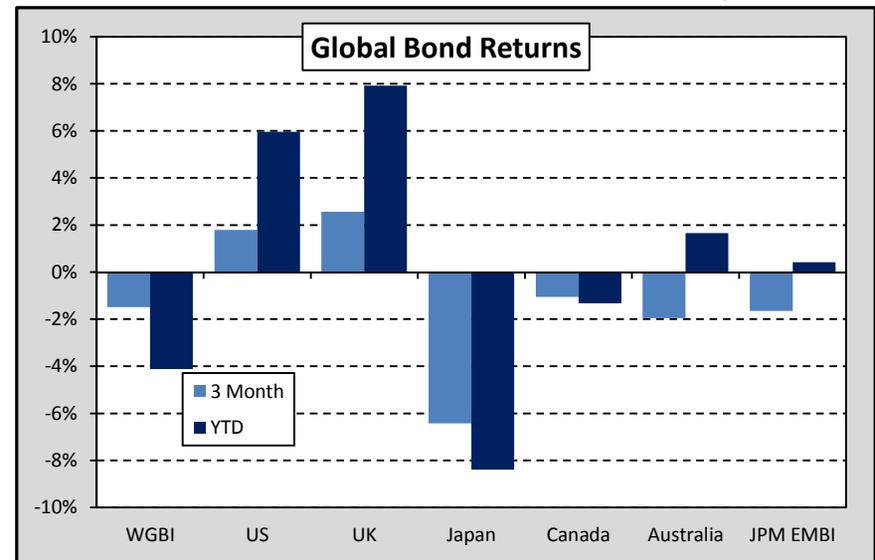
Source: Barclays as of 12/31



Source: Barclays as of 12/31



Source: Barclays as of 12/31



Source: Barclays, Bloomberg as of 12/31

- **Currency volatility is likely to continue**
 - Effect of divergent central bank policies is ongoing and subject to change themselves
 - Good opportunity to evaluate currency risk and consider a partially hedged approach
- **US equities have rallied since sell-off in October**
 - US has experienced moderate growth rebound and cheaper energy and stronger dollar can provide buffer to the economy
 - However, US valuations are above average and profit margins appear stretched
 - European equities have less positive macroeconomic outlook but ECB actions could provide short-term support
- **Low yields mean few opportunities in fixed income**
 - Core US and global benchmarks do not appear attractive
 - Utilize an unconstrained approach to access return in low-yield environment and consider longer duration instruments that still offer strong diversification benefits
- **Emerging market dispersion to remain an ongoing theme**
 - Geopolitical risks continue to simmer in many countries while others appear to be well positioned for strong growth
 - Employ active management with well-developed macro views to help navigate tricky environment and avoid pitfalls of benchmark biases
- **Stay positioned to take advantage of volatility as central bank policy expectations flow through to markets**
 - Uncertainty remains about the effectiveness of ECB stimulus and the timing of the Fed raising rates
 - Higher volatility should benefit active management and yield more attractive opportunities for dynamic strategies

- **Past performance is no guarantee of future results.**
- **The goal of this report is to provide a basis for substantiating asset allocation recommendations. The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.**
- **Information on market indices was provided by sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.**
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