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EASTERN MICHIGAN UNIVERSITY

Eastern Michigan University Board of Regents

Quarter ending December 31, 2014
Investment Performance Analysis

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Highlights of Fourth Quarter Happenings at NEPC

NEPC Research

Recent White Papers Posted

- *Improving Asset Allocation with Factor Analysis (November 2014)* - Mark Cintolo, CAIA, Research Consultant
- *Improving Governance Under an OCIO Structure (October 2014)* - Steven Charlton, CFA, Director of Consulting Services
- *NEPC 2014 Defined Contribution Plan & Fee Survey: What Plan Sponsors Are Doing Now (October 2014)* - Ross Bremen, CFA, Partner; Dan Beaton, Senior Analyst


IMPROVING ASSET ALLOCATION WITH FACTOR ANALYSIS

Professional Staff Updates

- **New Partner**: Sean Ruhmann, Partner, Director of Real Assets Research
- **New Principals**: Jeffrey Mitchell, CFA, CAIA, Principal, Senior Consultant; Terri Sacramone, SPHR, Principal, Senior Human Resources Manager; and Michael Sullivan, Principal, Senior Consultant
- We are also please to announch that Daniel Hennessy has joined NEPC as a Senior Consultant located in our Redwood City, CA office. Daniel will be focusing on Taft-Hartley and Public Funds in the West.

Recent/Upcoming Events

- 2015 Market Outlook Webinar—January 22, 2015 at 3:00 PM EST
- NEPC's 20th Annual Client Conference—May 19-20, 2015 in Boston at the Boston Convention & Exhibition Center (BCEC)

NEPC Gives Back

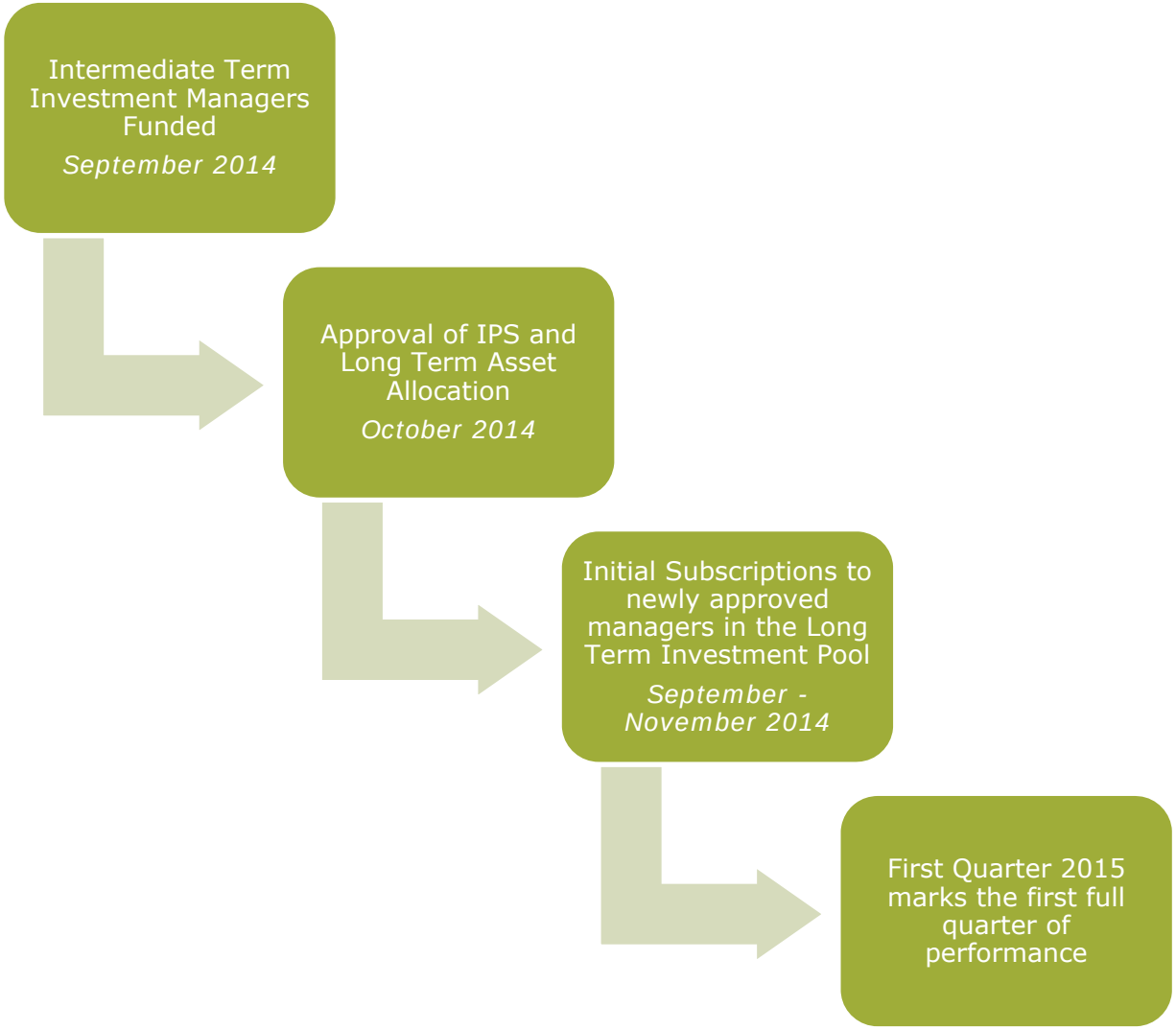
A team of NEPC employees participated in Movember once again this year. Movember is a global men's health charity requiring each 'Mo Bro' to sport a well-groomed mustache during the entire month of November to raise funds and awareness for men's prostate cancer, testicular cancer, and mental health. The team raised about $20,000 this year and ranked #49 nationally! Additionally, NEPC employees participated in Lee National Denim Day once again this year and raised $1,745. Lee National Denim Day is a fundraiser that takes place in October and was created by Lee Jeans to support the American Cancer Society's breast cancer programs.

NEPC Client Recognitions

Several of NEPC's clients were recognized by CIO Magazine recently. First, the October 2014 issue of CIO Magazine ranked the Power 100 CIOs, which included Tim Barrett, CIO of Texas Tech University System (#59), and Don Pierce, CIO of San Bernardino County Employees' Retirement Association (#61). Next, several NEPC clients were nominated for the CIO 2014 Industry Innovation Awards. Additionally, NEPC's client SBCERA was nominated for an Investor Intelligence Award in 'Portfolio Design'.

Transition Review

Summary of Asset Transition



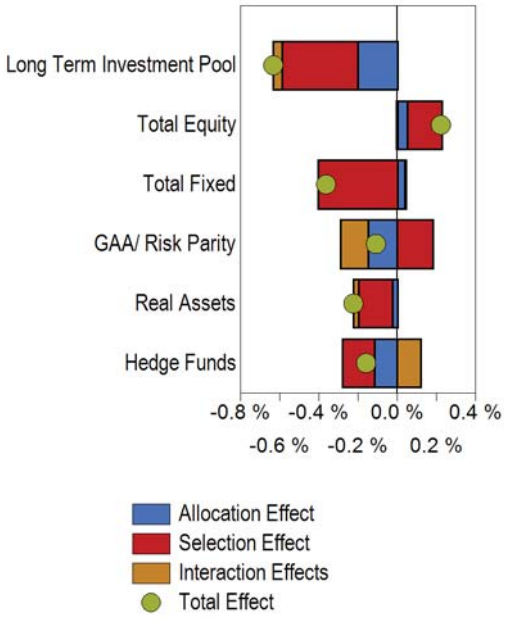
Performance Review

Total Fund Performance Summary

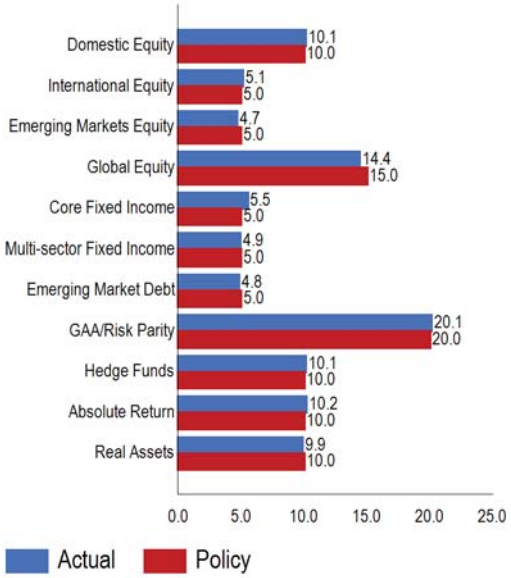
	Market Value	3 Mo	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank
Total Composite	**$21,162,201**	**0.2%**	**87**	**3.5%**	**62**	**5.8%**	**40**	**5.3%**	**47**
Allocation Index		*0.6%*	*72*	*3.1%*	*70*	--	--	--	--

	Market Value	3 Mo	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank
Long Term Investment Pool	**$19,728,780**	**0.5%**	**77**	**4.4%**	**49**	**8.0%**	**19**	**7.7%**	**20**
Long Term Allocation Index		*1.7%*	*29*	*6.2%*	*26*	--	--	--	--
Long Term Balanced Index		*1.2%*	*42*	*5.6%*	*32*	*6.9%*	*29*	*7.2%*	*25*

Long Term Investment Pool Attribution Effects
3 Months Ending December 31, 2014



Long Term Investment Pool Actual vs. Target Allocation



Year to Date

	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
Total Composite	3.48%	62	3.04%	67	1.14	85	2.42	76
Allocation Index	3.07%	70	2.91%	64	1.05	90	1.61	93

Composite Performance

- The portfolio returned 0.2% for the 4th Quarter. The portfolio lagged the Allocation Index by 40 basis points.

Fourth Quarter Transition

- Performance of prior managers and partial month performance of newly funded managers is reflected at the composite level.

Recommendations / Recent Decisions

- The newly approved Asset Allocation and manager lineup was implemented during the 4th Quarter.
- The Long Term Investment Pool transition is complete.

Long Term Investment Pool Asset Allocation vs. Policy Targets

Asset Allocation vs. Target

	Current	Policy	Current	Difference*	Policy Range	Within Range
Domestic Equity	$1,997,422	10.0%	10.1%	0.1%	5.0% - 20.0%	**Yes**
International Equity	$1,014,263	5.0%	5.1%	0.1%	0.0% - 10.0%	**Yes**
Emerging Markets Equity	$925,241	5.0%	4.7%	-0.3%	0.0% - 8.0%	**Yes**
Global Equity	$2,845,932	15.0%	14.4%	-0.6%	10.0% - 20.0%	**Yes**
Core Fixed Income	$1,090,168	5.0%	5.5%	0.5%	0.0% - 10.0%	**Yes**
Multi-sector Fixed Income	$976,274	5.0%	4.9%	-0.1%	0.0% - 10.0%	**Yes**
Emerging Market Debt	$950,429	5.0%	4.8%	-0.2%	0.0% - 8.0%	**Yes**
GAA/Risk Parity	$3,971,657	20.0%	20.1%	0.1%	10.0% - 30.0%	**Yes**
Hedge Funds	$1,999,335	10.0%	10.1%	0.1%	0.0% - 20.0%	**Yes**
Absolute Return	$2,008,038	10.0%	10.2%	0.2%	5.0% - 15.0%	**Yes**
Real Assets	$1,950,021	10.0%	9.9%	-0.1%	5.0% - 15.0%	**Yes**
Total	**$19,728,780**	**100.0%**	**100.0%**			

*Difference between Policy and Current Allocation

Due Diligence Monitor

Investment Options	Manager Changes/ Announcements (Recent Quarter)	NEPC Due Diligence Committee Recommendations
Artisan Partners Limited Partnership *Artisan Global Opportunities*	Changes to Growth Equity Platform 9/2014	Current Status Does Not Change

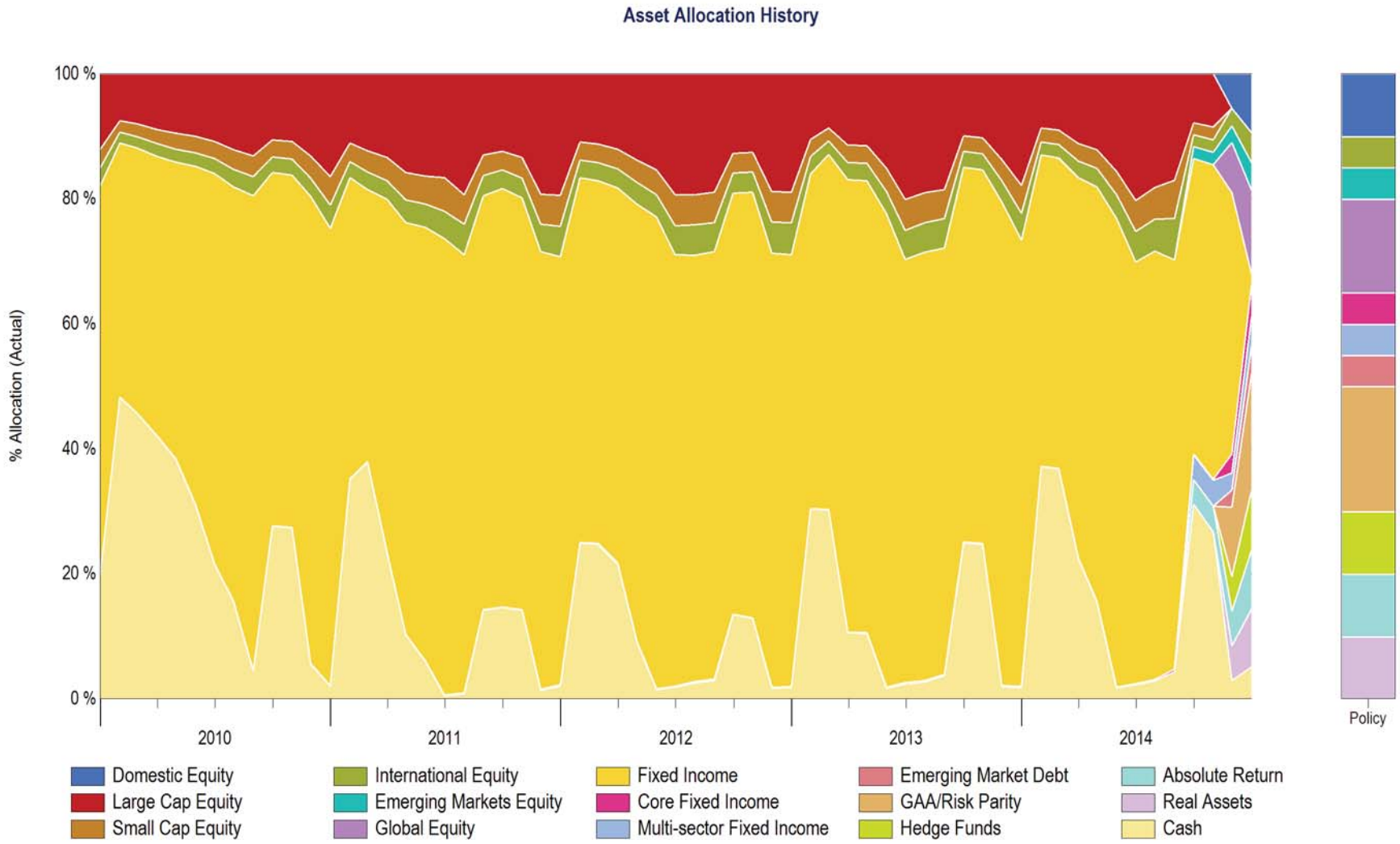
NEPC Due Diligence Status Key	
No Action	Informational items have surfaced; no action is recommended.
Watch	Issues have surfaced to be concerned over; manager can participate in future searches, but current and prospective clients must be made aware of the issues.
Hold	Serious issues have surfaced to be concerned over; manager cannot be in future searches unless a client specifically requests, but current and prospective clients must be made aware of the issues.
Client Review	Very serious issues have surfaced with a manager; manager cannot be in future searches unless a client specifically requests. Current clients must be advised to review the manager.
Terminate	We have lost all confidence in the product; manager would not be recommended for searches and clients would be discouraged from using. The manager cannot be in future searches unless a client specifically requests. Current clients must be advised to replace the manager.

Due Diligence Updates

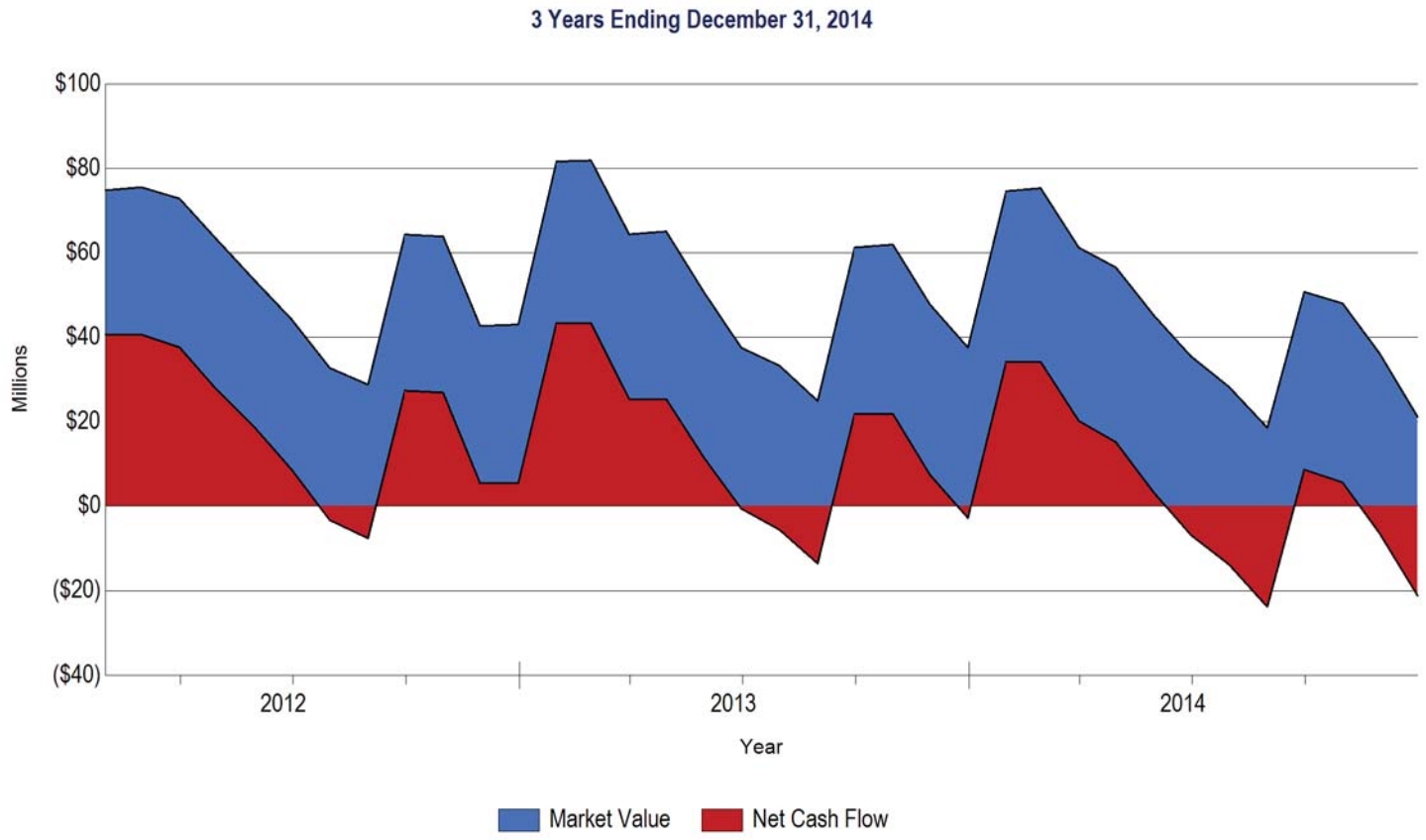
Investment Option	Commentary	NEPC Status
Artisan Partners Limited Partnership *Artisan Global Opportunities*	Artisan announced on September 30, 2014 that Andy Stephens will no longer have his name directly tied to any capital invested in the Global Opportunities fund. His function going forward will be a combination of the following roles: Managing Director, Advisory, and Research. He will remain active in the identification of secular themes and in the research process with the analysts. NEPC recommends **No Action** on this news.	**Preferred**

NEPC Due Diligence Rating Key	
Preferred	A high conviction investment product. Product has a clear and economically-grounded investment thesis, and is managed by an investment team that is sufficiently resourced and incented to execute on the thesis.
Preferred Conditional	A strategy that meets the definition of Preferred as described above, but may only be suitable for certain clients due to unique characteristics of the strategy, e.g. higher risk attributes such as concentration, transparency, etc.
Neutral	A satisfactory investment product. No major flaws, but may be lacking a compelling investment thesis, or NEPC's conviction regarding the investment team's ability to execute on the thesis may be less than that of Preferred products.
Not Recommended	Serious issues have been identified with an investment manager or product. This rating is similar to the Client Review or Terminate rating for client-owned products.
Not Rated	Due diligence has not been completed on the product or manager.

Total Fund Asset Allocation History



Total Fund Asset Growth Summary



	Last Three Months	One Year	Three Years
Beginning Market Value	$50,741,294	$37,585,321	$32,724,207
- Withdrawals	-$49,733,109	-$111,336,222	-$270,592,349
+ Contributions	$19,903,657	$92,958,037	$249,416,052
= Net Cash Flow	-$29,829,452	-$18,378,185	-$21,176,297
+ Net Investment Change	$250,358	$1,955,065	$9,614,291
= Ending Market Value	$21,162,201	$21,162,201	$21,162,201

Total Fund Performance - Net of Fees

	Market Value ($)	3 Mo (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
Total Composite	**21,162,201**	**0.2**	**0.0**	**3.5**	**5.8**	**5.3**	**6.3**	**Apr-09**
Allocation Index		*0.6*	*0.2*	*3.1*	--	--	--	*Apr-09*
Short Term Investment Pool	**1,081,941**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**	**Apr-09**
91 Day T-Bills		*0.0*	*0.0*	*0.0*	*0.0*	*0.1*	*0.1*	*Apr-09*
Dreyfus Institutional Preferred	118,907	0.0	0.0	0.0	0.1	0.1	0.1	Apr-09
91 Day T-Bills		*0.0*	*0.0*	*0.0*	*0.0*	*0.1*	*0.1*	*Apr-09*
Vanguard Prime MMKT Inst	130,315	0.0	0.0	0.1	0.1	0.1	0.2	Apr-09
91 Day T-Bills		*0.0*	*0.0*	*0.0*	*0.0*	*0.1*	*0.1*	*Apr-09*
Northern Inst Govt Select MMKT	100,001	0.0	0.0	0.0	0.0	0.0	0.0	Nov-09
91 Day T-Bills		*0.0*	*0.0*	*0.0*	*0.0*	*0.1*	*0.1*	*Nov-09*
Bank of Ann Arbor Trust Cash	732,717	0.0	0.0	0.0	0.0	0.0	0.0	Nov-09
91 Day T-Bills		*0.0*	*0.0*	*0.0*	*0.0*	*0.1*	*0.1*	*Nov-09*
Intermediate Term Investment Pool	**351,480**	**0.9**	**1.6**	**3.7**	**3.3**	**4.1**	**6.2**	**Apr-09**
Intermediate Term Allocation Index		*1.0*	*1.0*	*2.4*	--	--	--	*Apr-09*
Intermediate Term Balanced Index		*0.5*	*0.5*	*1.9*	*1.3*	*2.3*	*2.6*	*Apr-09*
BofA Merrill Lynch Gov 1-3 Yrs		*0.2*	*0.2*	*0.6*	*0.5*	*1.1*	*1.1*	*Apr-09*
Baird - Core Bond	247,533	1.8	--	--	--	--	1.8	Oct-14
Barclays Aggregate		*1.8*	*2.0*	*6.0*	*2.7*	*4.4*	*1.8*	*Oct-14*
DoubleLine Low Duration	103,947	0.1	--	--	--	--	0.1	Oct-14
BofA Merrill Lynch US Treasuries 1-3 Yrs		*0.2*	*0.2*	*0.6*	*0.5*	*1.1*	*0.2*	*Oct-14*

Allocation Index: Used to measure the value add from active management. Calculated as the asset weight from the prior month end mulitiplied by the specified market index.

Intermediate Term Balanced Index comprised of 50.0% Barclays Intermediate U.S. GV/CR Index and 50.0% BofA ML 1-3 Year Treasury Index.

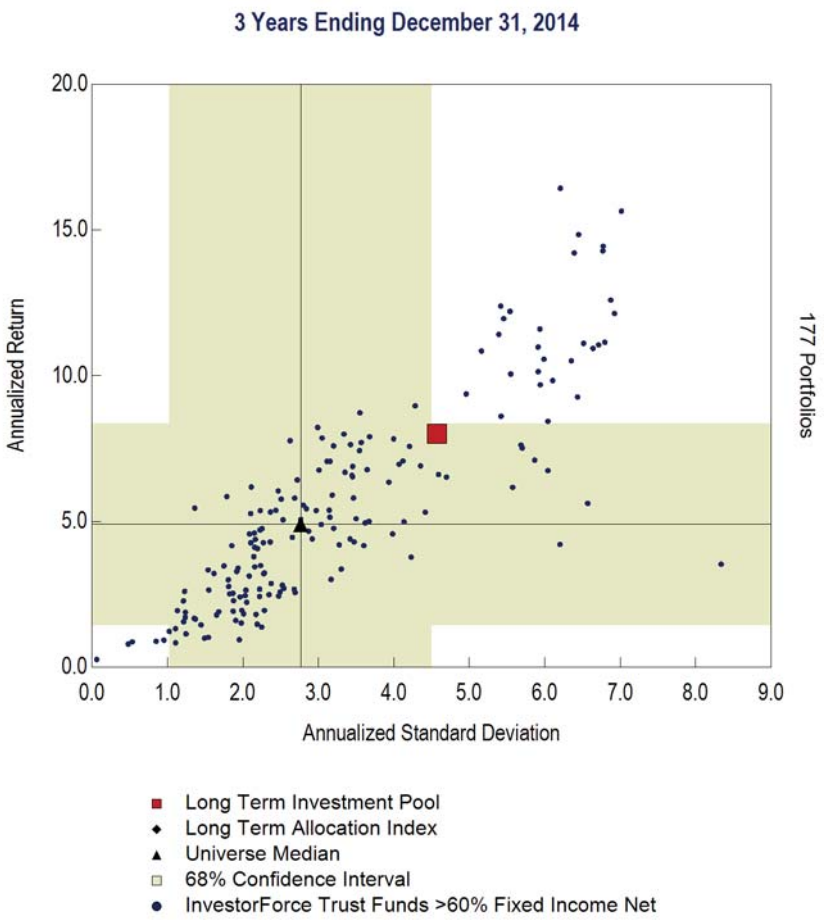
Total Fund Performance - Net of Fees

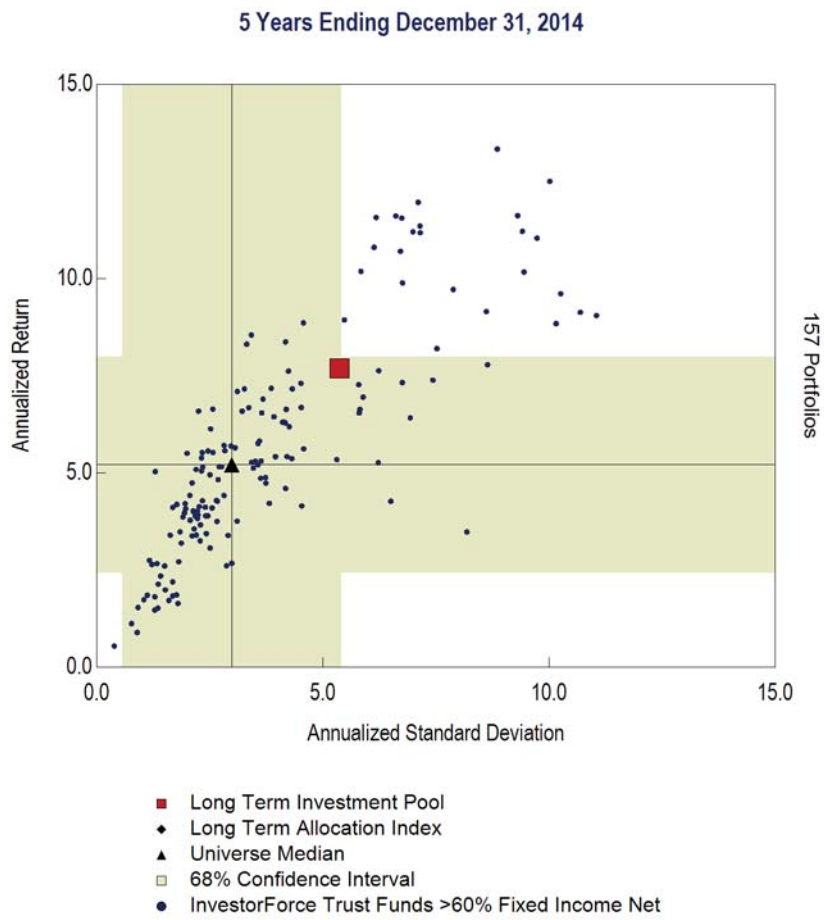
	Market Value ($)	% of Portfolio	Policy %	3 Mo (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
Long Term Investment Pool	**19,728,780**	**100.0**	**100.0**	**0.5**	**-0.6**	**4.4**	**8.0**	**7.7**	**6.2**	**Apr-09**
Long Term Allocation Index				*1.7*	*1.2*	*6.2*	--	--	--	*Apr-09*
Long Term Balanced Index				*1.2*	*0.9*	*5.6*	*6.9*	*7.2*	*5.8*	*Apr-09*
Total Equity	**6,782,857**	**34.4**	**35.0**	**2.1**	**0.1**	**6.7**	**--**	**--**	**6.7**	**Jan-14**
MSCI ACWI				*0.4*	*-1.9*	*4.2*	*14.1*	*9.2*	*4.2*	*Jan-14*
SSgA Russell 3000 Index ETF	1,997,422	10.1	10.0	--	--	--	--	--	0.5	Dec-14
Russell 3000				*5.2*	*5.3*	*12.6*	*20.5*	*15.6*	*0.0*	*Dec-14*
CopperRock International Small Cap	1,014,263	5.1	5.0	--	--	--	--	--	-0.2	Dec-14
MSCI EAFE Small Cap				*-2.3*	*-9.9*	*-4.9*	*13.8*	*8.6*	*-0.5*	*Dec-14*
Acadian Emerging Markets Equity	925,241	4.7	5.0	-3.0	--	--	--	--	-3.0	Oct-14
MSCI Emerging Markets				*-4.5*	*-7.8*	*-2.2*	*4.0*	*1.8*	*-4.5*	*Oct-14*
Artisan Global Opportunities	1,404,806	7.1	7.5	--	--	--	--	--	-1.9	Dec-14
MSCI ACWI				*0.4*	*-1.9*	*4.2*	*14.1*	*9.2*	*-1.9*	*Dec-14*
Hexavest GE	1,441,125	7.3	7.5	--	--	--	--	--	-1.8	Dec-14
MSCI ACWI				*0.4*	*-1.9*	*4.2*	*14.1*	*9.2*	*-1.9*	*Dec-14*
Total Fixed	**5,024,909**	**25.5**	**25.0**	**-0.6**	**-1.3**	**2.9**	**--**	**--**	**2.9**	**Jan-14**
Barclays Aggregate				*1.8*	*2.0*	*6.0*	*2.7*	*4.4*	*6.0*	*Jan-14*
Franklin Templeton- Global Multi-Sector Plus	976,274	4.9	5.0	-1.6	--	--	--	--	-1.6	Oct-14
Barclays Multiverse				*-1.2*	*-4.3*	*0.5*	*1.0*	*2.9*	*-1.2*	*Oct-14*
BlackRock- SIO	2,008,038	10.2	10.0	0.6	--	--	--	--	0.6	Oct-14
Barclays Aggregate				*1.8*	*2.0*	*6.0*	*2.7*	*4.4*	*1.8*	*Oct-14*
Baird - Core Bond	1,006,569	5.1	5.0	--	--	--	--	--	0.1	Dec-14
Barclays Aggregate				*1.8*	*2.0*	*6.0*	*2.7*	*4.4*	*0.1*	*Dec-14*
Ashmore EM Blended Debt Strategy	950,429	4.8	5.0	--	--	--	--	--	-5.0	Nov-14
50% JPM EMBI GD/ 25% JPM ELMI+/ 25% JPM GBI EM GD				*-3.1*	*-5.7*	*0.3*	*2.9*	*4.4*	*-3.3*	*Nov-14*
Treasury Strips	83,599	0.4		3.4	4.0	10.6	2.5	8.9	6.0	Apr-09
Barclays U.S. Treasury Long TR USD				*8.6*	*11.5*	*25.1*	*4.2*	*10.0*	*7.0*	*Apr-09*

Total Fund Performance - Net of Fees

	Market Value ($)	% of Portfolio	Policy %	3 Mo (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Return (%)	Since
GAA/ Risk Parity	**3,971,657**	**20.1**	**20.0**	**--**	**--**	**--**	**--**	**--**	**-1.2**	**Dec-14**
AQR GRP EL	1,976,600	10.0	10.0	--	--	--	--	--	-2.3	Dec-14
60% MSCI World (Gross) / 40% CITI WGBI				*0.1*	*-2.7*	*3.1*	*9.1*	*7.3*	*-1.2*	*Dec-14*
Standard Life GARS	1,995,057	10.1	10.0	--	--	--	--	--	-0.2	Dec-14
60% MSCI World (Gross) / 40% CITI WGBI				*0.1*	*-2.7*	*3.1*	*9.1*	*7.3*	*-1.2*	*Dec-14*
Real Assets	**1,950,021**	**9.9**	**10.0**	**--**	**--**	**--**	**--**	**--**	**-3.0**	**Dec-14**
PIMCO All Asset	1,950,021	9.9	10.0	--	--	--	--	--	-3.0	Dec-14
PIMCO All Asset Index				*0.7*	*-0.1*	*4.9*	*4.4*	*5.8*	*-0.8*	*Dec-14*
Hedge Funds	**1,999,335**	**10.1**	**10.0**	**--**	**--**	**--**	**--**	**--**	**0.0**	**Dec-14**
Permal Fixed Income Holdings	995,823	5.0	5.0	--	--	--	--	--	-0.4	Dec-14
HFRI Fund of Funds Composite Index				*0.9*	*1.2*	*3.4*	*5.7*	*3.3*	*0.3*	*Dec-14*
Prisma Spectrum Fund Ltd	1,003,512	5.1	5.0	--	--	--	--	--	0.4	Dec-14
HFRI Fund of Funds Composite Index				*0.9*	*1.2*	*3.4*	*5.7*	*3.3*	*0.3*	*Dec-14*

Long Term Investment Pool Risk/Return





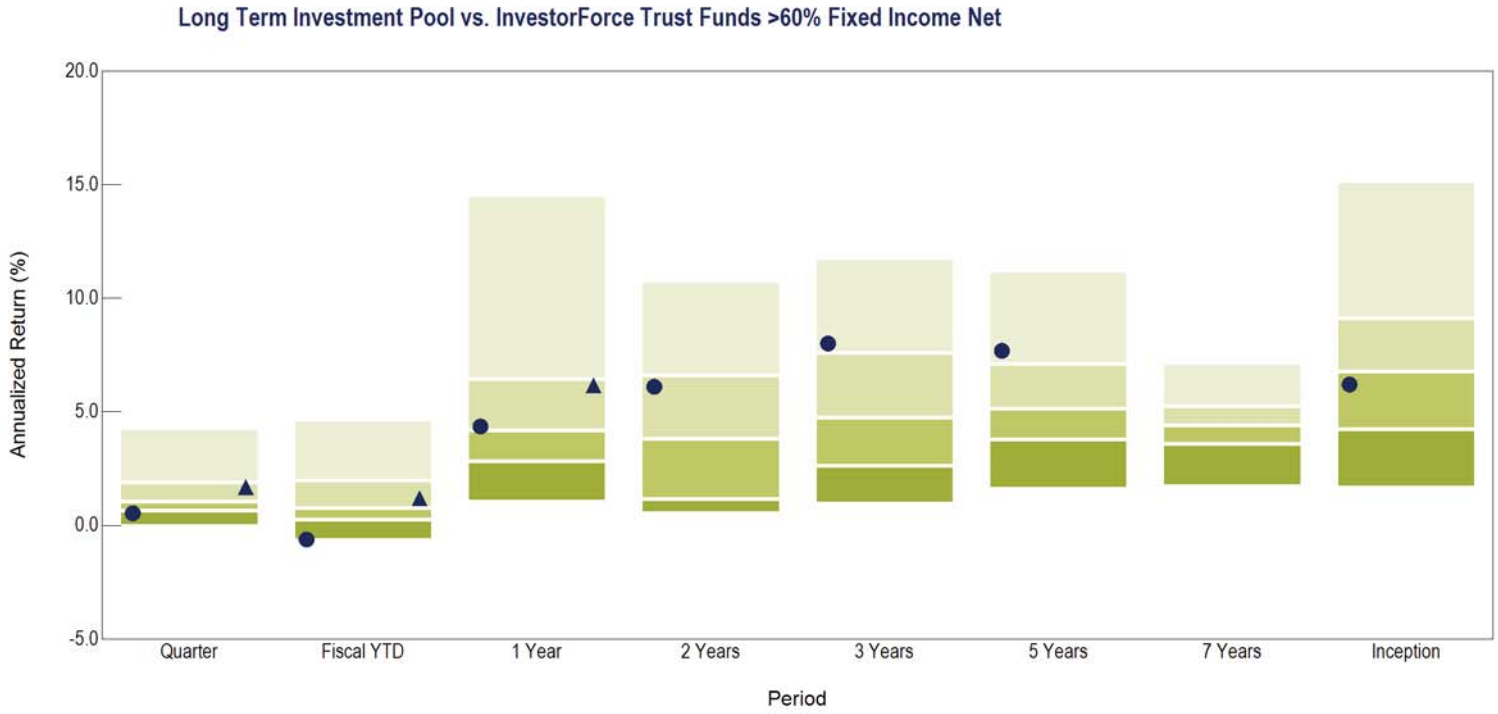
3 Years Ending December 31, 2014

	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank
Long Term Investment Pool	8.00%	19	4.57%	78	1.74	42
Long Term Allocation Index	--	--	--	--	--	--
Long Term Balanced Index	6.91%	29	3.59%	69	1.91	31

5 Years Ending December 31, 2014

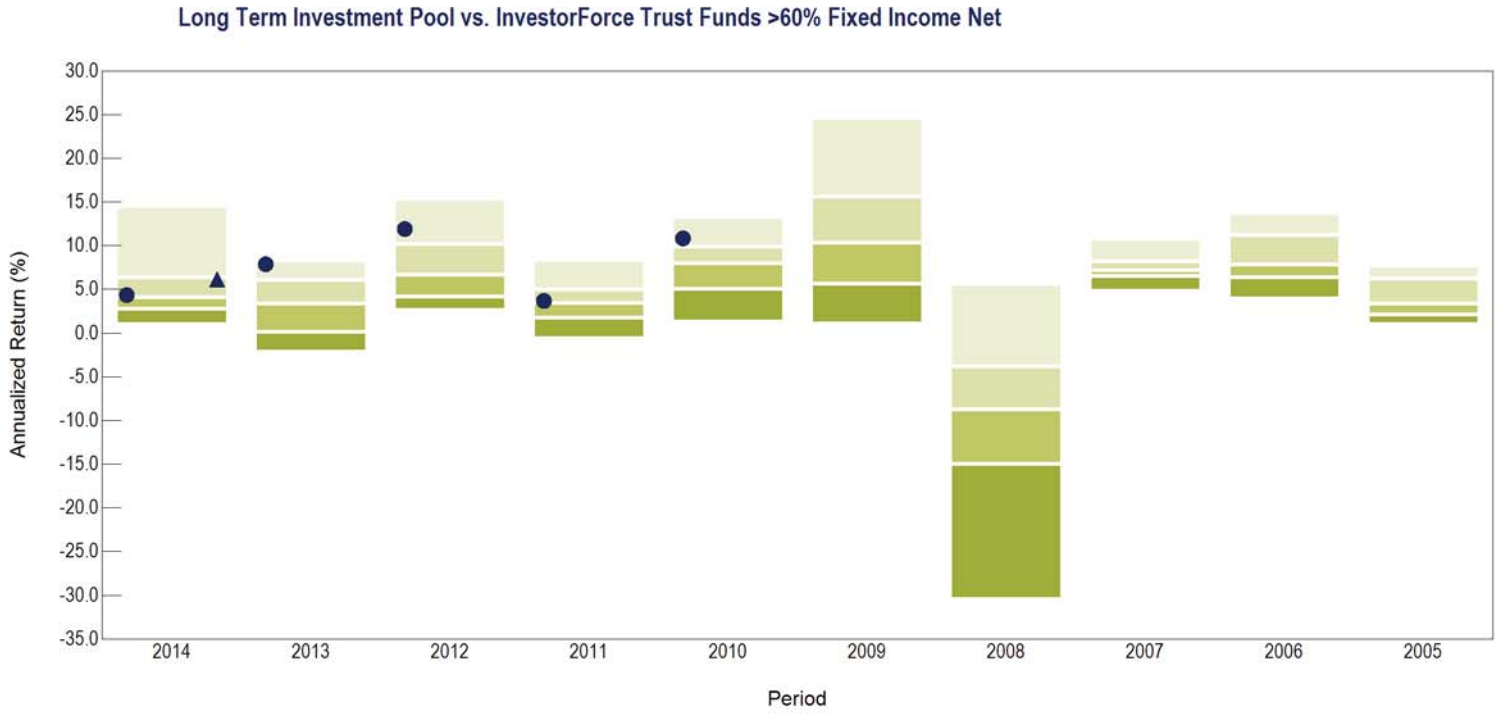
	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank
Long Term Investment Pool	7.68%	20	5.37%	77	1.42	66
Long Term Allocation Index	--	--	--	--	--	--
Long Term Balanced Index	7.16%	25	4.17%	68	1.70	37

Long Term Investment Pool Return Summary vs. Peer Universe



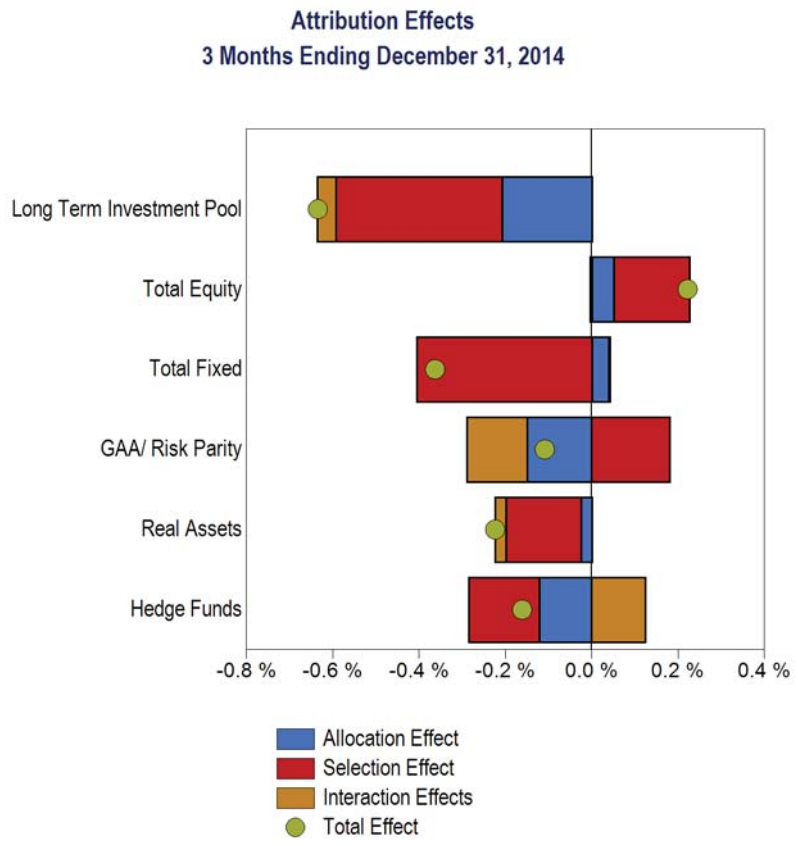
	Return (Rank)															
5th Percentile	4.3		4.7		14.5		10.7		11.8		11.2		7.1		15.1	
25th Percentile	1.9		2.0		6.5		6.6		7.6		7.1		5.3		9.1	
Median	1.1		0.8		4.2		3.8		4.8		5.2		4.4		6.8	
75th Percentile	0.7		0.3		2.8		1.2		2.6		3.8		3.6		4.2	
95th Percentile	0.0		-0.6		1.1		0.5		1.0		1.6		1.7		1.7	
# of Portfolios	132		131		128		120		115		99		85		93	
● Long Term Investment Pool	0.5	(81)	-0.6	(95)	4.4	(49)	6.1	(29)	8.0	(19)	7.7	(20)	--	(--)	6.2	(55)
▲ Long Term Allocation Index	1.7	(30)	1.2	(39)	6.2	(28)	--	(--)	--	(--)	--	(--)	--	(--)	--	(--)

Long Term Investment Pool Return Summary vs. Peer Universe



	Return (Rank)																			
5th Percentile	14.5		8.3		15.3		8.3		13.2		24.7		5.6		10.7		13.7		7.7	
25th Percentile	6.5		6.2		10.2		5.1		9.9		15.7		-3.8		8.2		11.3		6.3	
Median	4.2		3.4		6.7		3.5		8.0		10.4		-8.7		7.2		7.9		3.4	
75th Percentile	2.8		0.2		4.3		1.8		5.1		5.7		-14.9		6.6		6.4		2.2	
95th Percentile	1.1		-2.1		2.7		-0.5		1.4		1.2		-30.4		4.9		4.0		1.0	
# of Portfolios	128		46		46		44		43		40		35		34		30		26	
● Long Term Investment Pool	4.4	(49)	7.9	(8)	11.9	(13)	3.7	(45)	10.8	(19)	--	(--)	--	(--)	--	(--)	--	(--)	--	(--)
▲ Long Term Allocation Index	6.2	(28)	--	(--)	--	(--)	--	(--)	--	(--)	--	(--)	--	(--)	--	(--)	--	(--)	--	(--)

Long Term Investment Pool



Attribution Summary
3 Months Ending December 31, 2014

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total Equity	2.1%	1.6%	0.5%	0.2%	0.1%	0.0%	0.3%
Total Fixed	-0.6%	0.4%	-1.0%	-0.4%	0.0%	0.0%	-0.4%
GAA/ Risk Parity	--	-0.3%	--	0.2%	-0.2%	-0.2%	-0.2%
Real Assets	--	-0.4%	--	-0.2%	0.0%	0.0%	-0.3%
Hedge Funds	--	1.6%	--	-0.2%	-0.1%	0.1%	-0.2%
Total	**0.4%**	**1.1%**	**-0.7%**	**-0.4%**	**-0.3%**	**-0.1%**	**-0.7%**

Note: Fund attribution is a static, return based on calculation and the results reflect the composites shown. As a result, the total returns shown may vary from the calculated returns shown on the performance summary.

Total Fund Asset Growth Summary by Manager

	Quarter Ending December 31, 2014					
	Beginning Market Value	Withdrawals	Contributions	Net Cash Flow	Net Investment Change	Ending Market Value
Acadian Emerging Markets Equity	$954,224	$0	$0	$0	-$28,984	$925,241
AQR GRP EL	--	$0	$2,000,000	$2,000,000	-$23,400	$1,976,600
Artisan Global Opportunities	--	$0	$1,450,000	$1,450,000	-$45,194	$1,404,806
Ashmore EM Blended Debt Strategy	--	$0	$1,000,000	$1,000,000	-$49,571	$950,429
Baird - Core Bond	$7,526,108	-$7,400,000	$0	-$7,400,000	$121,425	$247,533
Baird - Core Bond	--	$0	$1,000,000	$1,000,000	$6,569	$1,006,569
Bank of Ann Arbor Trust Cash	$456,912	-$2,003,632	$2,279,472	$275,840	-$34	$732,717
BlackRock- SIO	$1,995,635	$0	$0	$0	$12,403	$2,008,038
CopperRock International Small Cap	--	$0	$1,000,000	$1,000,000	$14,263	$1,014,263
DoubleLine Low Duration	$7,498,423	-$7,400,000	$0	-$7,400,000	$5,525	$103,947
Dreyfus Institutional Preferred	$5,118,716	-$5,000,000	$130	-$4,999,870	$62	$118,907
Franklin Templeton- Global Multi-Sector Plus	$1,988,139	-$1,000,000	$0	-$1,000,000	-$11,865	$976,274
Hexavest GE	--	$0	$1,450,000	$1,450,000	-$8,875	$1,441,125
Northern Inst Govt Select MMKT	$5,100,021	-$5,000,000	$0	-$5,000,000	-$21	$100,001
Permal Fixed Income Holdings	--	$0	$1,000,000	$1,000,000	-$4,177	$995,823
PIMCO All Asset	--	$0	$2,000,000	$2,000,000	-$49,979	$1,950,021
Prisma Spectrum Fund Ltd	--	$0	$1,000,000	$1,000,000	$3,512	$1,003,512
SSgA Russell 3000 Index ETF	--	-$16,746	$2,002,418	$1,985,673	$11,750	$1,997,422
Standard Life GARS	--	$0	$2,000,000	$2,000,000	-$4,943	$1,995,057
Treasury Strips	$80,882	$0	$0	$0	$2,717	$83,599
Vanguard Prime MMKT Inst	$5,130,025	-$5,000,000	$0	-$5,000,000	$290	$130,315

Total Fund Asset Growth Summary by Manager

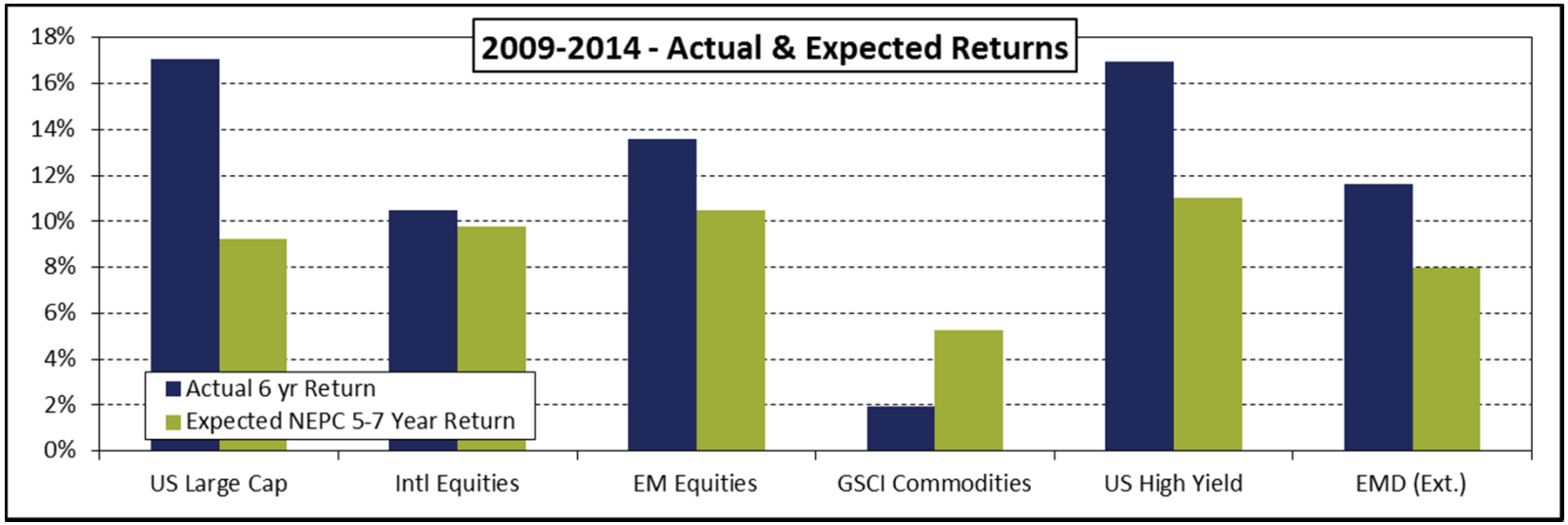
	Quarter Ending December 31, 2014					
	Beginning Market Value	Withdrawals	Contributions	Net Cash Flow	Net Investment Change	Ending Market Value
Z-Terminated JPMorgan Core Bond	$2,677,411	-$4,050,755	$1,338,686	-$2,712,069	$34,658	--
Z-Terminated Loomis Sayles Bond Fund	$2,642,585	-$3,997,199	$1,338,686	-$2,658,513	$15,928	--
Z-Terminated PIMCO Total Return	$2,672,522	-$2,677,372	$0	-$2,677,372	$4,850	--
Z-Terminated Vanguard Developed Mkts Index	$970,941	$0	-$955,735	-$955,735	-$15,207	--
Z-Terminated Vanguard Institutional Index	$3,976,434	-$4,148,083	$0	-$4,148,083	$171,649	--
Z-Terminated Vanguard SC Index Signal	$956,555	-$1,003,695	$0	-$1,003,695	$47,140	--
Z-Terminated Western Asset Inflation Protected Index	$995,761	-$1,003,706	$0	-$1,003,706	$7,945	--
Total	**$50,741,294**	**-$49,701,187**	**$19,903,657**	**-$29,797,530**	**$218,437**	**$21,162,201**

Context for Capital Market Assumptions

Extreme Outperformance Since Crisis; Understand Long-Term Implications

- **Returns have been exceptional since the global financial crisis**
  - Results dramatically outpaced expectations during a period of elevated uncertainty
  - Volatility spiked at times but overall experience well below expectations
- **Low realized volatility fuels shortsighted view for long-term investors**
  - Benefits of diversification are questioned but should be a cornerstone of success
- **NEPC's capital market forecasts cover a 5-7 year horizon which is unlikely to look like most recent trailing periods**
  - End point sensitivity is very pronounced
  - Last three years' results unlikely to continue for the next 5-7 years
- **Easy monetary policy supports near-term returns beyond what fundamentals may otherwise indicate**
  - Europe and Japan may provide further stimulus but effectiveness of extended easy monetary policy wanes in today's low yield environment
  - US strength can spur consumption and buoy global growth but profit margins may compress impacting valuations
  - Timing is key, but difficult to pinpoint; risk balance is encouraged
- **30 year forecasts are lower, challenging feasibility of success**
  - Extension of easy monetary policy has stymied expectations of higher yields
  - Low long term rates drive return expectations back towards levels seen prior to 2013
  - Conventional approaches may fall short going forward

Remember How Far We've Come…But How Much Further Can We Go?



Source: Bloomberg and NEPC as of 11/30

- **NEPC's 2009 5-7 assumptions were eye-popping relative to previous years**
  - Result of significant sell-off in the midst of the global financial crisis
- **Most fundamental forecasting models suggested even higher returns**
  - We discounted original expectations heavily given tremendous path uncertainty at that time
    - Still in the midst of drawdowns, frozen credit markets, unprecedented monetary policy
  - If we could have offered certainty of our expectations, most would have seized it
- **Patient, long-term investors have been rewarded beyond our expectations**
  - Tremendously beneficial in healing balance sheets, funded positions, grant making stability, etc.
  - But important to recall the range of outcomes that have been in play along the way
    - Quantitative Easing, Eurozone stability, etc.
- **Low yields and core fundamentals suggest muted returns looking forward**

Key Themes for 2015

- **Balance potential for short term strength with an acknowledgement of lofty recent returns relative to global growth**
  - Reallocate risk as appropriate while maintaining downside protection as a counterweight

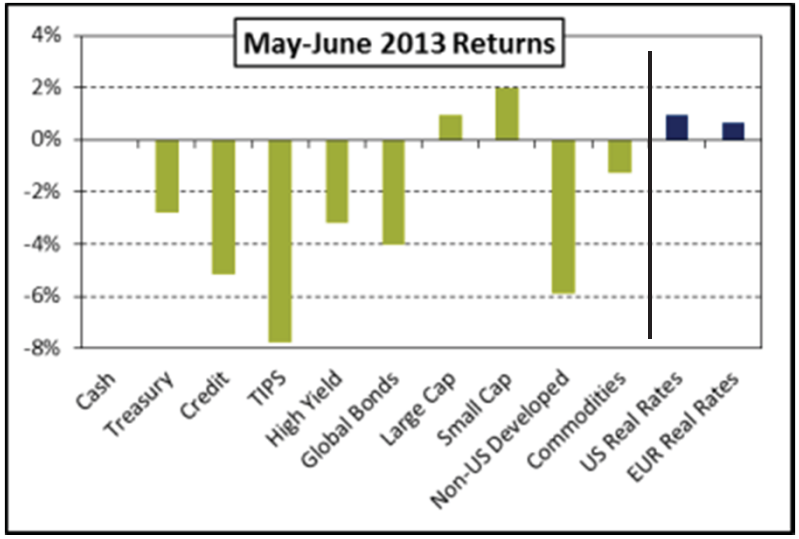
- **US equity and credit similarly valued vs. history; near-term favors stocks**
  - Credit's limited upside from potential IG spread compression, overall reduction in liquidity and proliferation of ETFs contribute to asymmetry
  - Real estate and direct lending (though less liquid) can be a substitute for high yield
  - Manage private commitments and maintain liquidity to exploit downturns

- **Non-US equity markets have not experienced the same rally as US**
  - Valuations and monetary easing support overweight; downside risks point to caution
    - Muted return expectations are sensitive to binary policy decisions (upside and downside)
  - Emerging growth expectations have compressed
    - Commodity driven countries face pressures but US strength supports exporters
    - Fundamental strength vs developed likely to win in the long run
  - Be globally diversified, hedge developed currency risks, and don't flee EM

- **We are one year closer to rate hikes by the Federal Reserve**
  - Curve has shifted in anticipation making both cash/short duration and long bonds relatively more attractive than core duration
  - Long rates likely range bound due to dynamics of supply (shrinking deficits) and demand (increasing LDI hedgers, global investors, aging population of savers)
  - Barbell of long treasuries and cash can offer similar core bond duration, volatility, yield, and a higher sensitivity to recession protection (counterweight)

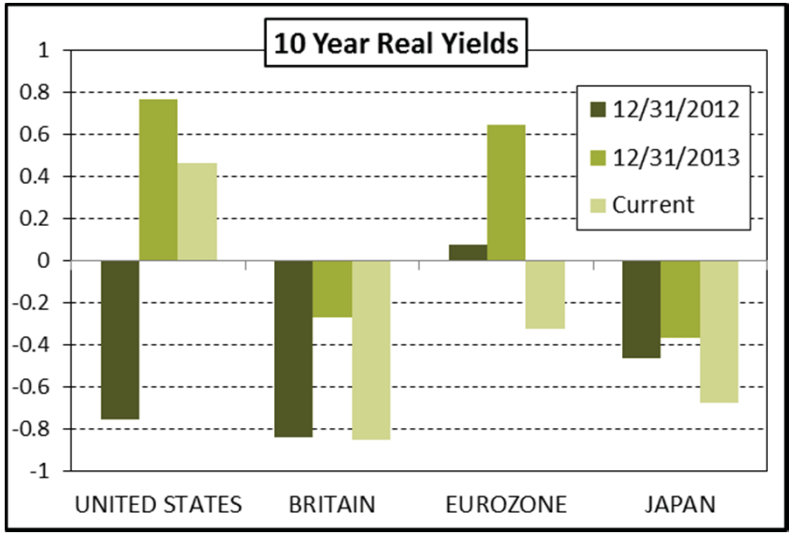
Importance of Real Yields on Global Market Returns; Caution to our Optimism

- **Many investors surprised by market impact of Bernanke's taper comments in Spring 2013**
  - The Primary driver was a change in underlying global real yields
  - Market discount rates increased driving down present values
  - And the surprise change in expectations of tighter policy spooked sentiment
  - US market strength may not persist with a repeat occurrence



Source: Bloomberg as of 11/30

- **Real yields in 2014 reversed the normalization trend of 2013 and are a key component of lower 5-7 year expected returns in 2015**
  - US gave up far less than other developed markets
  - Gravity of low interest rates in Germany and Japan may draw US rates lower



Source: Bloomberg as of 11/30

NEPC 2015 Observations and Actions

NEPC 2015 Capital Market Observations

- **Protracted bull market, slow growth, and low interest rates persist**
  - Cautious optimism for US economy, but length and strength of rally warrants inquiry
  - Negative real interest rates have supported elevated valuations and low volatility
  - Investor complacency, coupled with lower liquidity, may leave market more vulnerable
- **Global monetary policies and capital markets continue to diverge**
  - The US successfully navigated the end of quantitative easing in 2014, while Europe pondered and Japan pursued further aggressive monetary policy
  - Regional equity market valuation divergence grew as US P/E ratios expanded
- **The US economy shows strength relative to other developed markets**
  - Improving labor markets, increasing confidence, and expected rise in interest rates are supportive of a stronger dollar, which has been a headwind for foreign exposures
  - Meaningful structural reform and continued aggressive monetary policy are required in Europe & Japan to propel assets higher
- **Fed rate hikes are on the horizon but markets expect a slow pace**
  - High US growth may spur accelerated hike, decoupling rates from market expectations
  - Fed tightening is a first step in a multi-year policy normalization process
- **Emerging Market fatigue tangible; low valuations cannot be ignored**
  - Short- and medium-term challenges camouflage long-term economic growth prospects
  - Plummeting energy prices have potential to create challenges for certain economies

NEPC 2015 General Actions for Clients

- **Confirm alignment of portfolio positioning with long-term objectives**
  - Recognize investment program's tolerance to withstand short-term volatility
  - Some traditional approaches, such as core bonds, suboptimal in current environment
- **Balance desire for increased return with recognition of downside risks**
  - Barbell portfolio risk with defensive allocations to withstand range of outcomes
  - Shift judiciously across and within asset classes
    - Stretched liquid credit markets make equities relatively more attractive
    - Recognize potential for non-US developed markets to react to QE programs, both continued (Bank of Japan) and potential (European Central Bank)
- **Evaluate impact of expected US dollar strength on non-US allocations**
  - Consider strategic developed market currency hedging program to mitigate risk
  - Scrutinize allocation to and implementation within emerging markets
    - Attractive fundamentals and secular trends warrant market weight at a minimum
    - Challenging country specific conditions support pursuit of bold active management
- **Remain committed to high conviction active manager exposures**
  - Passive trends and market complacency may ignite dormant alpha opportunities
  - Use non-traditional strategies with reduced constraints across markets to capitalize
    - Global equity, tactical credit strategies, GAA, liquid alternative beta, global macro
- **Seek niche private strategies to mitigate challenge of high valuations**
  - Energy, European Real Estate, sector-focused growth equity, Asia-focused managers and select direct lending markets all provide compelling opportunities

NEPC 2015 Actions for Endowment & Foundation Clients

- **Strike the appropriate balance between offense and defense**
  - Niche areas like energy, European real estate, sector-focused growth equity, Asia-focused managers and select direct lending markets all provide compelling opportunities
  - On the margin, consider reducing liquid credit for other return seeking assets
  - Private equity and debt investments allow for tactical deployment of capital

- **Review inflation hedging allocations in light of recent market action**
  - Some areas have likely sold off more than is warranted
  - Private real estate and real asset investments offer attractive opportunities

- **Fixed income allocation should remain low and focused on high quality, liquid exposures**
  - Barbell portfolio risk with defensive allocations to withstand range of outcomes
  - Risk parity and unconstrained strategies can also satisfy the high quality allocation

- **Focus on global macro ideas within hedge fund portfolio**
  - Diverging central bank policies present opportunity for outsized returns
  - Broad, liquid opportunity set

- **Remain committed to high conviction active manager exposures, especially in emerging markets**
  - Passive trends and market complacency may ignite dormant alpha opportunities

- **Weigh the pros and cons of currency hedging in select areas**
  - Can mitigate risk, but may be a lower priority item for some programs based on ease of implementation

Development of Asset Class Assumptions

- **Combination of historical data and forward-looking analysis**
  - Expected returns based on current market pricing and forward-looking estimates
  - Volatility based on history, while recognizing current uncertainty
  - Correlations based on a mix of history and current trends

- **Historical data is used to frame current market environment as well as to compare to similar historical periods**
  - Historical index returns, volatility, correlations, valuations, and yields

- **Forward-looking analysis is based on current market pricing and a "building blocks" approach**
  - Return equals yield + changes in price (valuation, defaults, etc.)
  - Use of key economic observations (inflation, real growth, dividends, etc.)
  - Structural themes (supply and demand imbalances, capital flows, etc.)

- **Assumptions prepared by NEPC's Asset Allocation Committee**
  - Asset Allocation team plus members of various consulting practice groups meet throughout Q4 to develop themes and assumptions
  - Public markets, hedge funds, and private markets teams provide market insights

- **Assumptions and Actions reviewed and approved by Partners Research Committee**

Asset Allocation Review & 2015 Asset Class Assumptions

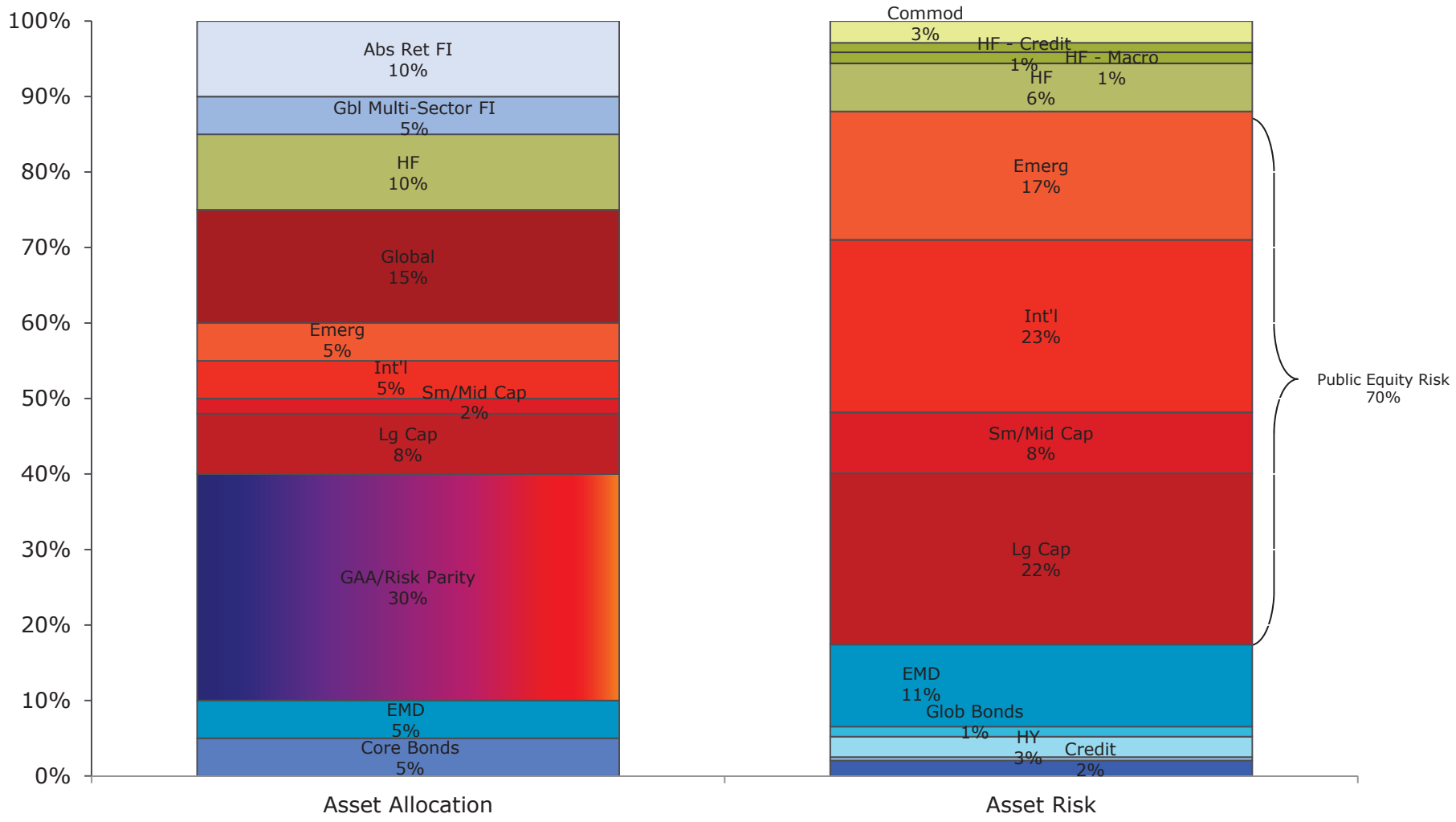
Eastern Michigan University Asset Allocation Review

	Long Term Target	5 – 7 Year Outlook	
		2015 Assumption	Change from 2014
Domestic All Cap Equity	10%	6.00%	-0.25%
International Equities	5%	7.00%	-0.25%
Emerging International Equities	5%	9.00%	-0.50%
Global Equity	15%	7.05%	-0.28%
Total Equity	**35%**		
Core Bonds	5%	2.30%	-0.23%
Emerging Market Debt	5%	5.72%	0.34%
Global Multi-Sector Fixed Income	5%	3.28%	-0.36%
Absolute Return Fixed Income	10%	3.16%	-0.05%
Total Fixed Income	**25%**		
Real Assets (Liquid)	10%	5.44%	-0.34%
Hedge Funds	10%	5.75%	0.25%
Total Alternatives	**20%**		
Standard Life GARS	10%	5.88%	-0.11%
AQR GRP EL 10%	10%	6.51%	0.28%
Total GAA / Risk Parity	**20%**		
Expected Return (compound)	***6.2%***		
Expected Risk (volatility)	***11.9%***		
Sharpe Ratio	***0.38***		

2014 Expected Return (compound)	***6.1%***
2014 Expected Risk (volatility)	***11.3%***
2014 Sharpe Ratio	***0.41***

- **After exceptional capital market returns over the past three years, most future expectations are more muted**
  - All of NEPC's 2015 5-7 year equity assumptions are lower as compared to 2014
  - The expected return for hedge funds is expected to increase by 25 basis points
- **With real yields in 2014 reversing the normalization trend of 2013, fixed income return expectations are lower**
  - Low interest rates in Japan and Germany may draw US rates low
- **Even with the 2015 revisions, the portfolio still is attractive from a risk/return perspective**

Eastern Michigan University Risk Budgeting



2015 5-to-7 Year Return Forecasts

Geometric Expected Return			
Asset Class	**2014**	**2015**	**2015-2014**
Cash	1.50%	1.75%	0.25%
Treasuries	2.00%	1.75%	-0.25%
IG Corp Credit	3.50%	3.25%	-0.25%
MBS	2.25%	2.00%	-0.25%
*Core Bonds**	*2.53%*	*2.30%*	*-0.23%*
TIPS	2.50%	2.25%	-0.25%
High-Yield Bonds	4.50%	4.00%	-0.50%
Bank Loans	5.00%	4.50%	-0.50%
Global Bonds (Unhedged)	1.25%	1.00%	-0.25%
Global Bonds (Hedged)	1.38%	1.17%	-0.21%
EMD External	5.00%	4.50%	-0.50%
EMD Local Currency	5.75%	5.50%	-0.25%
Large Cap Equities	6.25%	6.00%	-0.25%
Small/Mid Cap Equities	6.25%	6.00%	-0.25%
Int'l Equities (Unhedged)	7.25%	7.00%	-0.25%
Int'l Equities (Hedged)	7.50%	7.50%	0.00%
Emerging Int'l Equities	9.50%	9.00%	-0.50%
Private Equity	8.75%	8.50%	-0.25%
Private Debt	8.00%	7.50%	-0.50%
Private Real Assets	7.75%	8.00%	0.25%
Real Estate	6.25%	6.50%	0.25%
Commodities	5.00%	5.25%	0.25%
Hedge Funds	5.50%	5.75%	0.25%

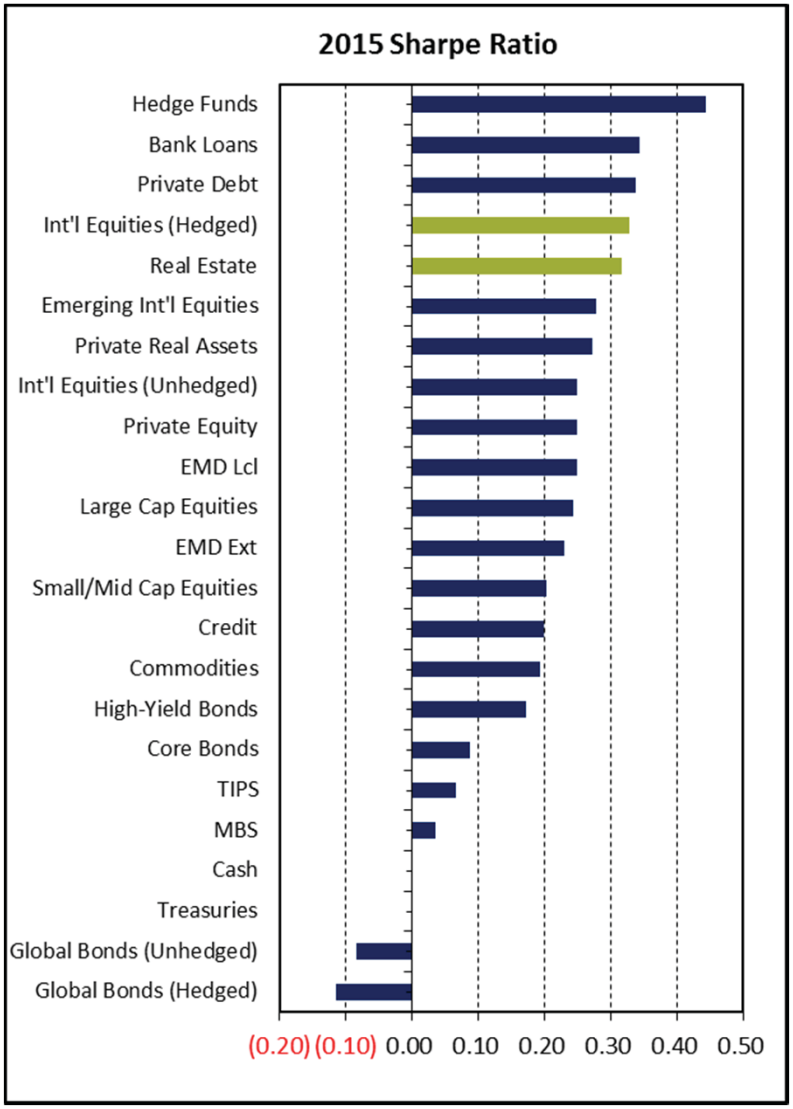
* Core Bonds assumption based on market weighted blend of components of Aggregate Index (Treasuries, IG Corp Credit, and MBS).

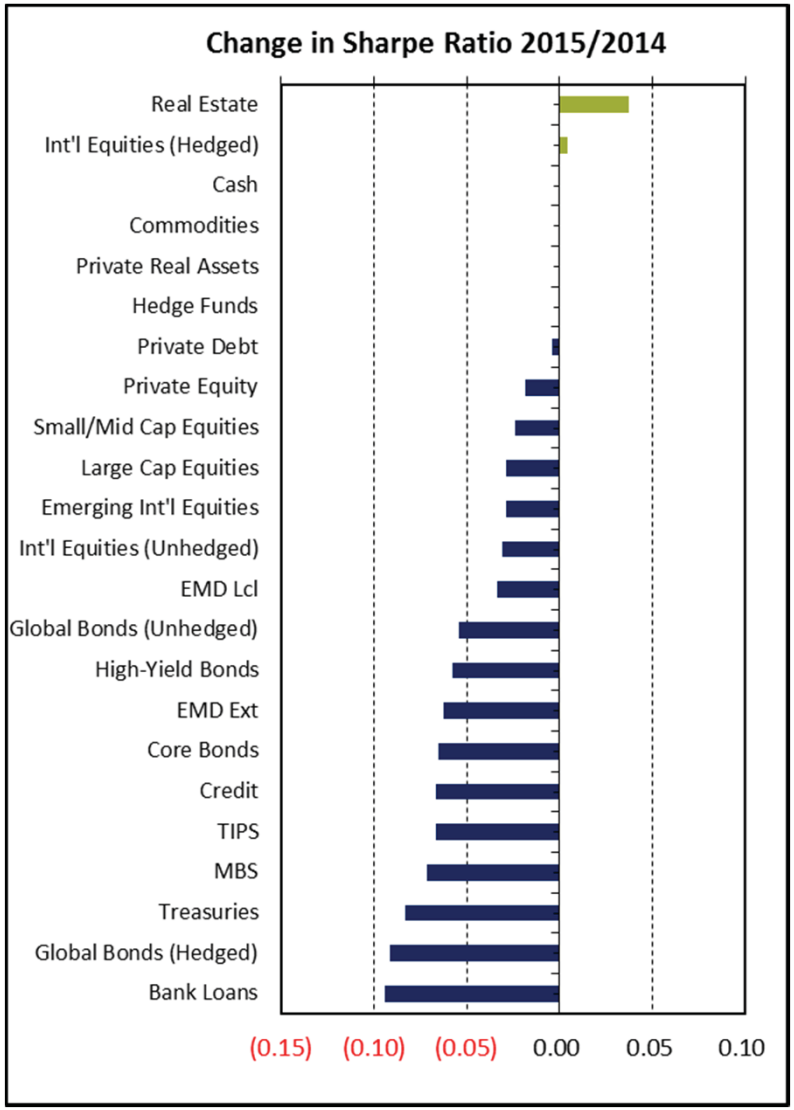
2015 Volatility Forecasts

Volatility			
Asset Class	**2014**	**2015**	**2015-2014**
Cash	1.00%	1.00%	
Treasuries	6.00%	5.50%	-0.50%
IG Corp Credit	7.50%	7.50%	
MBS	7.00%	7.00%	
*Core Bonds**	*6.32%*	*6.03%*	*-0.29%*
TIPS	7.50%	7.50%	
High-Yield Bonds	13.00%	13.00%	
Bank Loans	8.00%	8.00%	
Global Bonds (Unhedged)	8.50%	9.00%	0.50%
Global Bonds (Hedged)	5.00%	5.00%	
EMD External	12.00%	12.00%	
EMD Local Currency	15.00%	15.00%	
Large Cap Equities	17.50%	17.50%	
Small/Mid Cap Equities	21.00%	21.00%	
Int'l Equities (Unhedged)	20.50%	21.00%	0.50%
Int'l Equities (Hedged)	18.50%	17.50%	-1.00%
Emerging Int'l Equities	26.00%	26.00%	
Private Equity	27.00%	27.00%	
Private Debt	19.00%	17.00%	-2.00%
Private Real Assets	23.00%	23.00%	
Real Estate	17.00%	15.00%	-2.00%
Commodities	18.00%	18.00%	
Hedge Funds	9.00%	9.00%	

* Core Bonds assumption based on market weighted blend of components of Aggregate Index (Treasuries, IG Corp Credit, and MBS).

Relative Asset Class Attractiveness

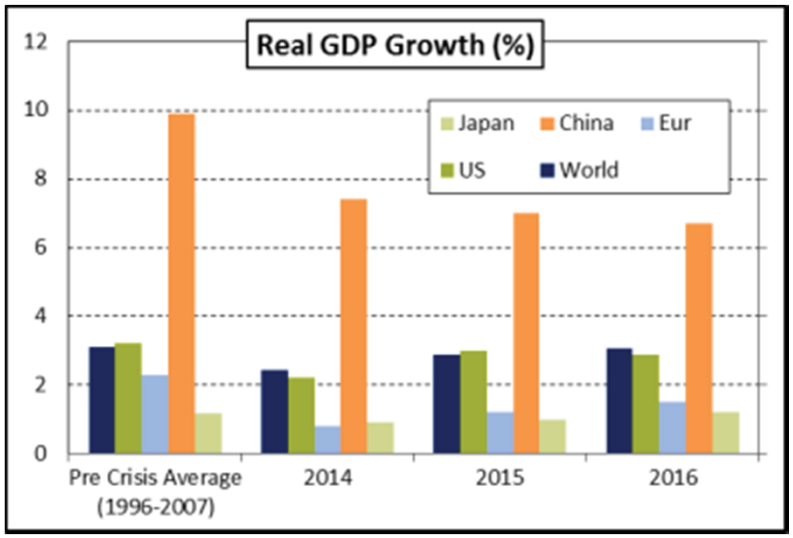




Observations and Actions – Detail

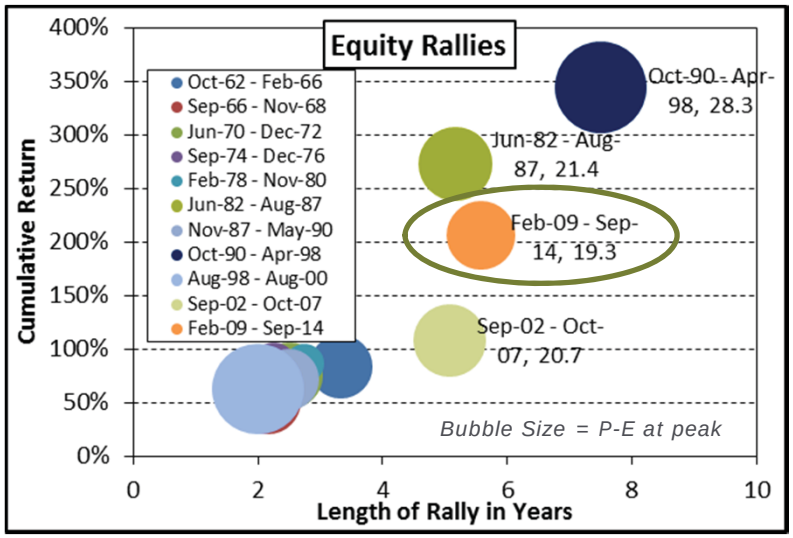
5-7 Year Returns Commensurate with Growth; Near-Term Strength Can Persist

- **Global growth forecasts low but approaching pre-crisis levels with less reliance on China**
  - Absolute figures projected to improve for the US and World
  - Europe joins Japan as a drag on global growth
  - China expectations compress but remain quite high



Source: Bloomberg as of 11/30

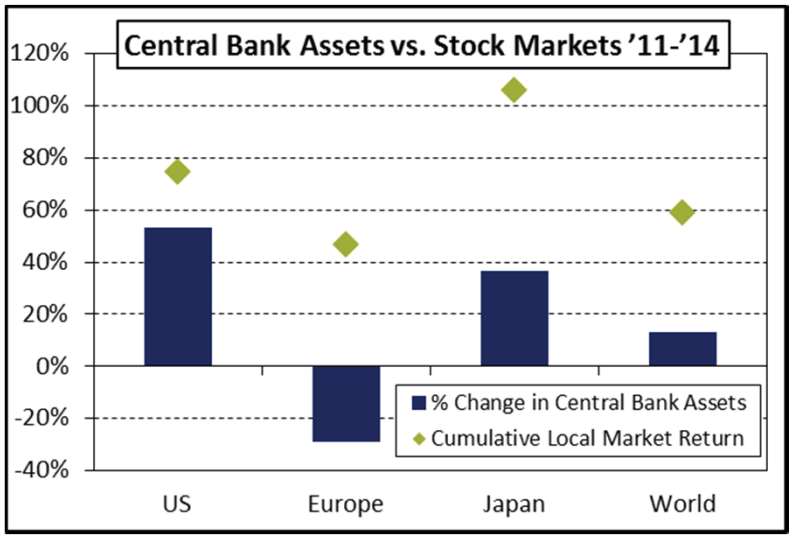
- **S&P rally unlikely to persist for another 5-7 years**
  - Low-for-longer interest rates may provide near term support for higher valuations
  - Tepid growth levels challenge ability to extend outsized returns over this horizon as stimulus wanes
  - While perceived tail-ends of bull markets can be false signs, the current length and magnitude is only outpaced by '82-'87 and '90-'98



Source: Bloomberg and Shiller Data as of 9/30

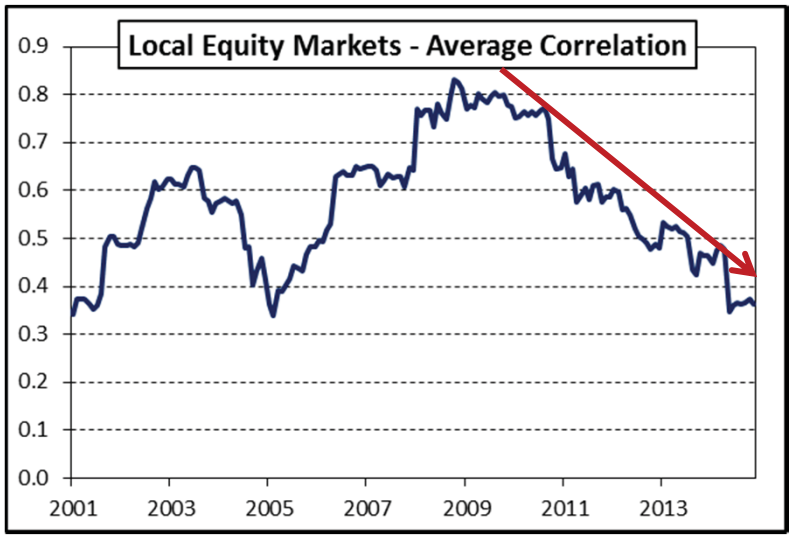
Policy and Market Divergences Continue to Develop

- **Central bank stimulus has been a key driver of market returns**
  - Post crisis monetary policy was first highly stimulative, waned in 2010-2011, then resumed unevenly
  - Greater stimulus led to strong ***local*** market returns
  - Continued stimulus in Japan and Europe should be incorporated into outlook but hedging developed market currency exposure is prudent



Source: Bloomberg as of 11/30

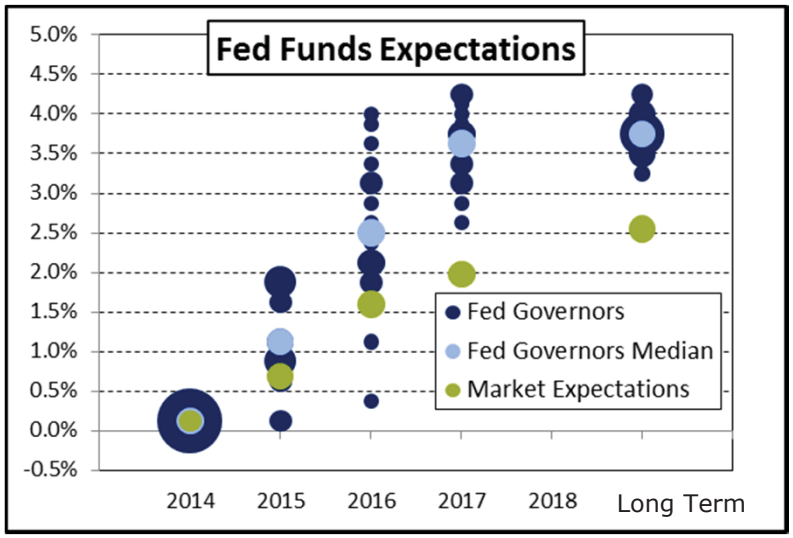
- **Policy responses have been key driver of capital market results**
  - Distinct economic environments across countries leads to differentiation in market returns
  - Evolving monetary policies continue to diverge and likely lead to more independent capital market outcomes among countries



Source: Bloomberg as of 11/30 - Local indices consist of Australia, Europe, UK, Emerging Markets, Japan, New Zealand, US, and Canada

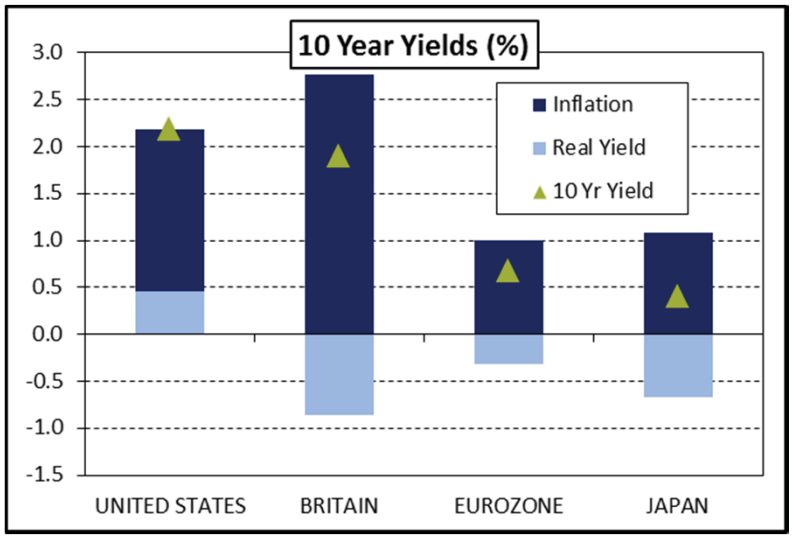
Fed Rate Hikes Expected in 2015; Timing and Pace Are Uncertain

- **Fed governors (blue dots) project higher rates over the next few years**
  - Market expectations (green dots) are less ambitious with reality likely in-between
  - Upside surprise to pace or level of interest rates supportive of higher USD; negative for US risk assets



Source: Bloomberg and Federal Open Market Committee as of 11/30

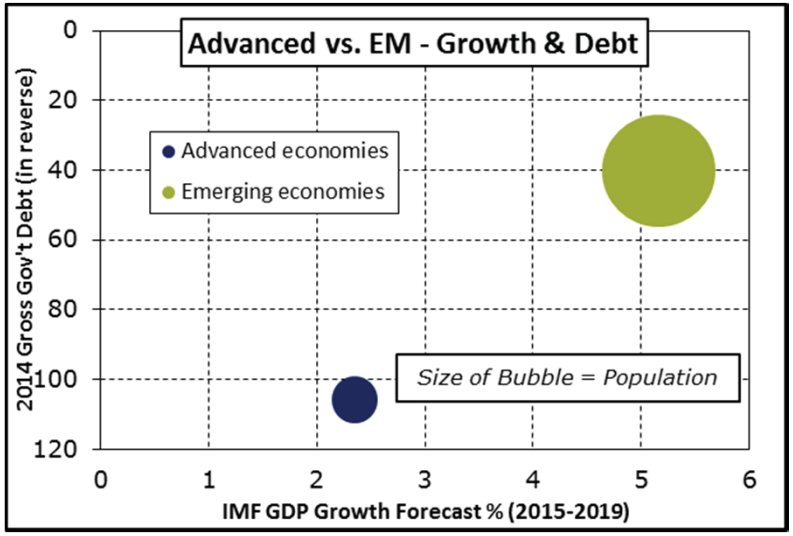
- **Low real rates suppressed by central banks, squeeze expectations for future returns**
  - UK, Europe & Japan all with negative 10 year real yields
  - US bonds look relatively attractive in this context
  - Real rates moving lower toward peers is bullish for risk assets
  - Long-term normalized monetary policy could reverse the trend



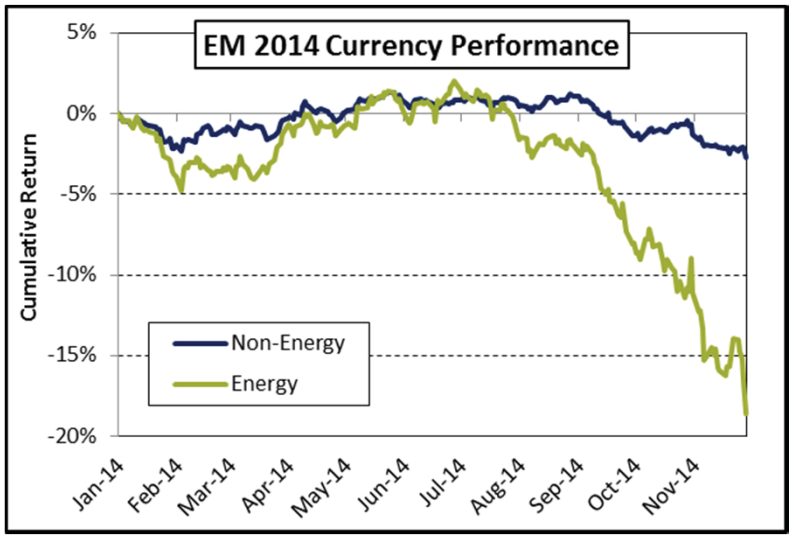
Source: Bloomberg as of 11/30

Structural Long-Term Positives of Emerging Markets Remain; So Do Idiosyncratic Risks

- **Emerging markets have higher growth and lower debt levels vs. developed markets**
  - Near term risks are present as both China and commodity cycle slows
  - Strong dollar will hurt some currencies but will also aid exporters, helping EM growth
- **Local currency debt offers a compelling yield but paired with heightened volatility**
- **Both exogenous and internal factors can drive major shifts across countries**
  - Drop in energy prices in 2014 is a recent structural shift that will have a major impact on certain countries
  - Venezuela, Nigeria, Russia and several frontier countries



Source: IMF as of 10/31



Source: Bloomberg as of 11/30

Appendix

Information Disclaimer

- **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.**
- **All investments carry some level of risk. Diversification and other asset allocation techniques do not ensure profit or protect against losses.**
- **This report is provided as a management aid for the client's internal use only. This report may contain confidential or proprietary information and may not be copied or redistributed to any party not legally entitled to receive it.**

It is important that investors understand the following characteristics of non-traditional investment strategies including hedge funds and private equity:

1. **Performance can be volatile and investors could lose all or a substantial portion of their investment**
2. **Leverage and other speculative practices may increase the risk of loss**
3. **Past performance may be revised due to the revaluation of investments**
4. **These investments can be illiquid, and investors may be subject to lock-ups or lengthy redemption terms**
5. **A secondary market may not be available for all funds, and any sales that occur may take place at a discount to value**
6. **These funds are not subject to the same regulatory requirements as registered investment vehicles**
7. **Managers may not be required to provide periodic pricing or valuation information to investors**
8. **These funds may have complex tax structures and delays in distributing important tax information**
9. **These funds often charge high fees**
10. **Investment agreements often give the manager authority to trade in securities, markets or currencies that are not within the manager's realm of expertise or contemplated investment strategy**