CalPERS Trust Level Review

Period Ending June 30, 2015

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Investment Committee

August 2015

CalPERS | Investment Office

Executive Summary

Trust Level Performance

- Public Employees' Retirement Fund (PERF) generated 2.4% for the 1 year period ending June 30, 2015
- Affiliate Defined Benefit Plans captured strong relative performance over the 1-year, 3-year, and 5-year return periods.

Economic and Market Conditions

- The current economic expansion is now longer than the previous one, although imbalances are less evident than in the previous cycle

Portfolio Risk

- Portfolio volatility continues to be driven almost entirely by Growth assets

Review Outline

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I. Economics and Market Overview

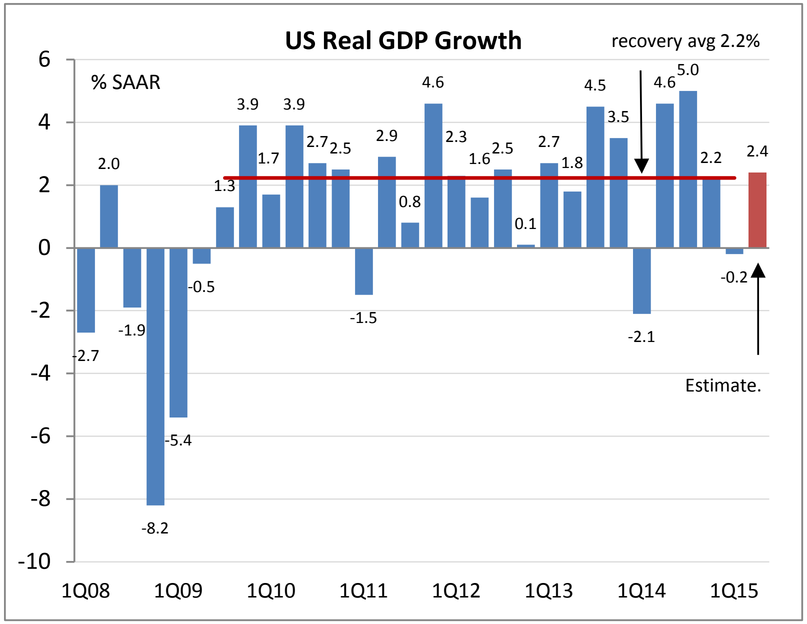
Economic Trends

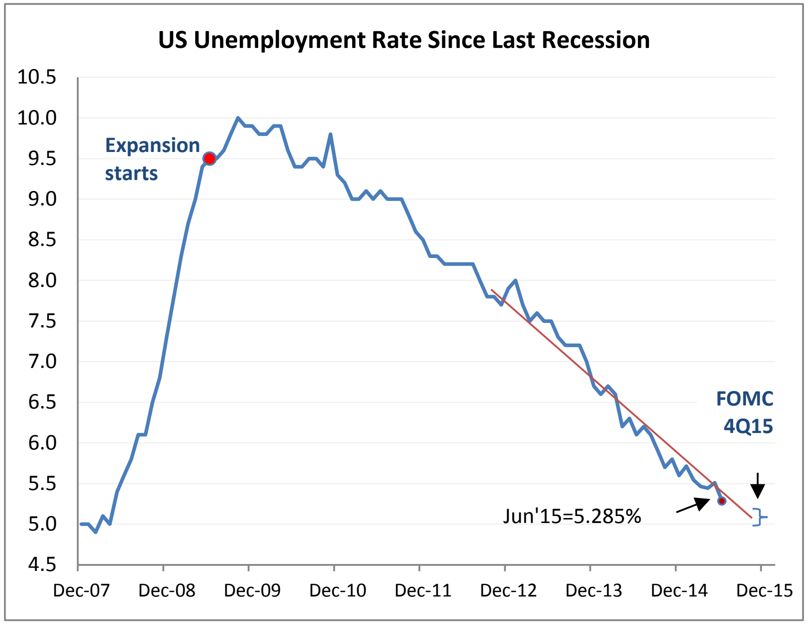
- US expansion enters its 7th year.

Positive	Same Trend	Negative
- Economy better than aggregate data suggests US might repeat last year's slow start/strong finish. Benchmark revisions might boost history. **- Stronger housing into the summer** Starts, sales, prices and plans-to-buy are going strong, while affordability remains OK. **- Strong household balance sheets** 1Q15 Flow of Funds Report confirmed that household fundamentals remain sound. **- Well supplied commodity markets** Across energy, bulk commodities and foodstuffs, it appears to be a buyers' market. **- Supportive public policy** Active ECB and BoJ, benign Fed and proactive PBOC are helping to see off tail risks.	**- The dollar** Benign outlook for the Fed has stemmed the advance of the dollar after nine strong months.	**- Soft first half for growth** US economy improved toward mid year but likely delivered growth in low 1's for first half. **- Capex and investment intentions** Little upside for investment based on already high GDP share, orders and surveys. **- Weak S&L spending** Significantly depressed state tax revenue vs past recoveries, yet increased social commitments. **- Tight labor markets** Available persons to fill job openings dropped below 2.7 … near the lows of the last expansion. **- Corporate debt** Rising at a quicker pace recently, although not excessive against company valuations. **- Tail risks** Numbers don’t add up in Greece, whist China is struggling to effect a transition.

US Economic Growth and Employment

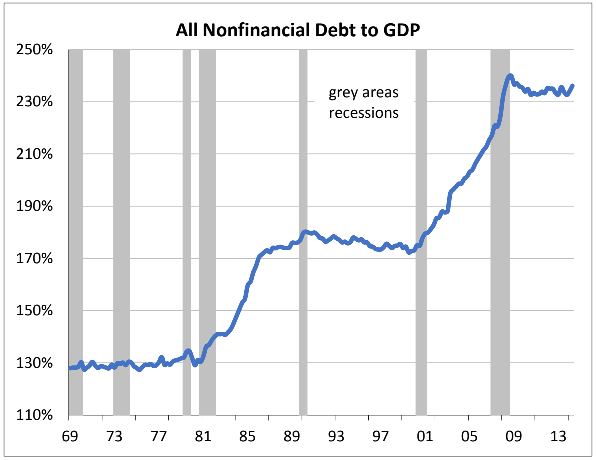
- The current US economic expansion has averaged only 2.2% in the first six years, but good enough for a reversal of the recessionary rise in the unemployment rate.

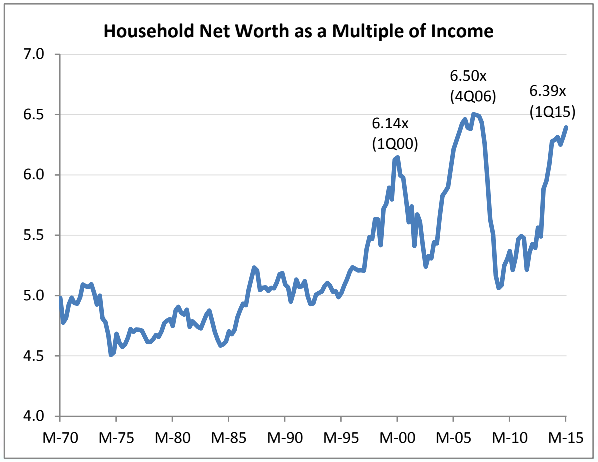




- The expansion has lacked excessive leverage and related imbalances … although valuations look elevated.

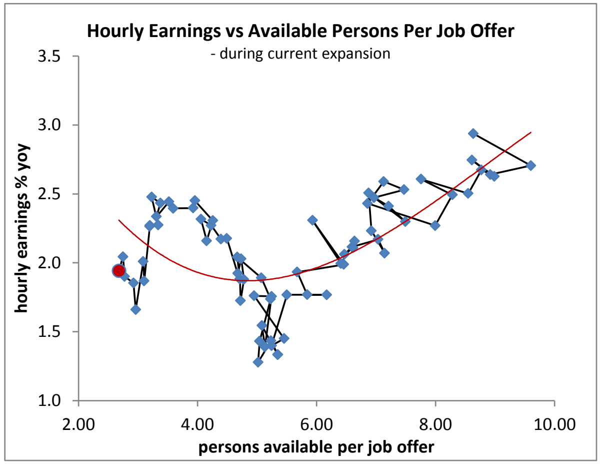
Expansion 4Q01 to 4Q07	Length 73-mo	Expansion 2Q09 to 2Q15	Length 74-mo
Household Debt	%/GDP	Household Debt	%/GDP
Start	102%	Start	128%
End	135%	Now	106%
Corporate Debt	YoY	Corporate Debt	YoY
Start	3%	Start	-1%
End	12%	Now	6%
Foreign Trade	%/GDP	Foreign Trade	%/GDP
Start	-3.3%	Start	-2.5%
Peak	-6.2%	Now	-2.6%
Federal Budget	$B	Federal Budget	$B
Start	+100	Start	-1255
End	-190	End	-400
Net Worth to Income		Net Worth to Income	
Start	5.4	Start	5.1
End	6.5	Now	6.4
U-rate		U-rate	
High	6.3%	High	10.0%
Low	4.4%	Now	5.3%
CPI Inflation	YoY	CPI Inflation	YoY
Start	1.9%	Start	-1.4%
End	4.3%	Now	0.0%

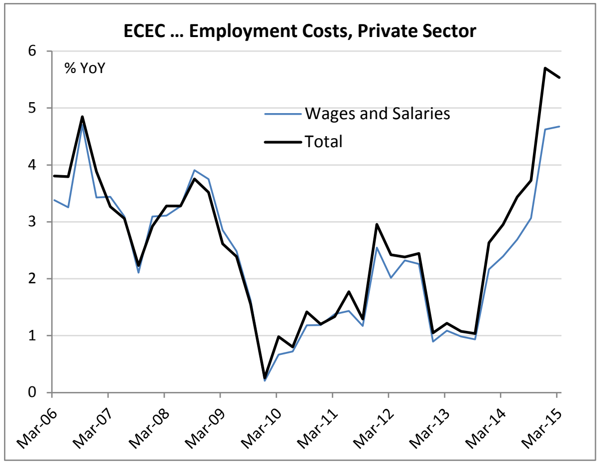




Tightening Labor Market Raising Employer Costs

- Pool of available labor to fill rapidly growing job openings has shrunk.
- Moreover there is evidence of a skills shortage.
- To date, conventional measures of wages growth remain benign, but growth in total employment costs has taken off.





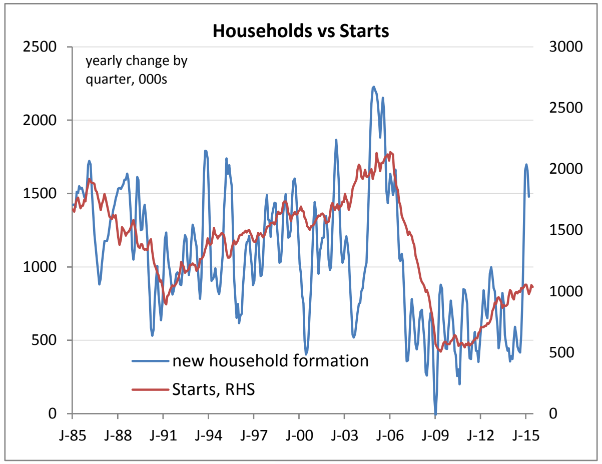
Domestic drivers of growth

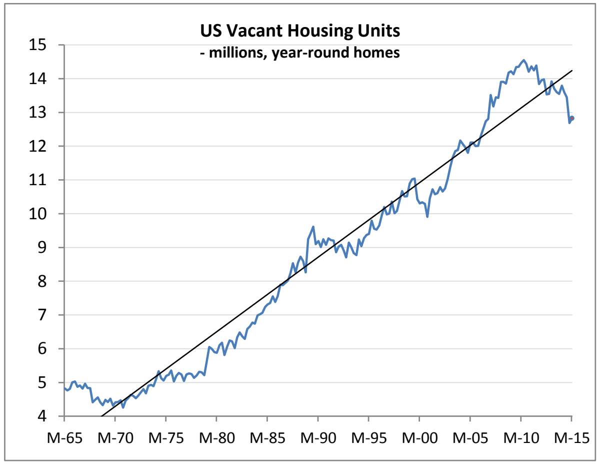
- Household (+2.3% pa) – Spending growth has shifted away from traditional retail. Moreover, the savings rate out of (improving) income growth remains elevated.
- Corporate (+4.8% pa) – Modest capex improvement is consistent with the slow-growth economy – investment to GDP is high.
- Housing (+5.5% pa) – Concentration on multis has restrained GDP share to low 3s, although household formation is now gaining.
- Government (-1.0% pa) – Post recession GDP growth would have been 0.8% higher were it not for lower government spending!

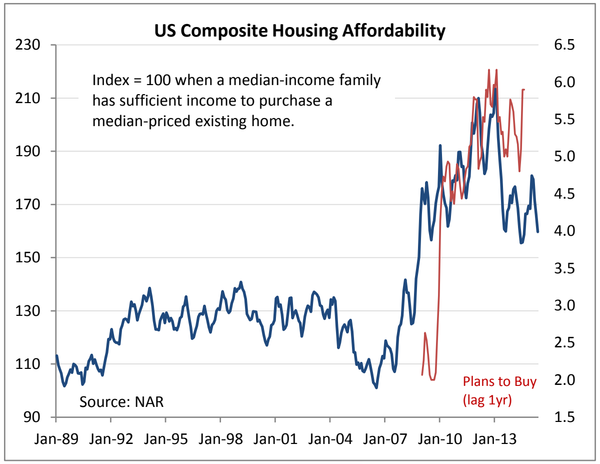
(bracketed numbers are growth rates during the present expansion)

Encouraging developments in housing

- A rise in household formation against a slowly responding homebuilding cycle, has resulted in a significant reduction in vacant homes.
- In the past year, affordability has been fairly steady … 9% rise in house prices offset by a 44bps drop in the mortgage rate.

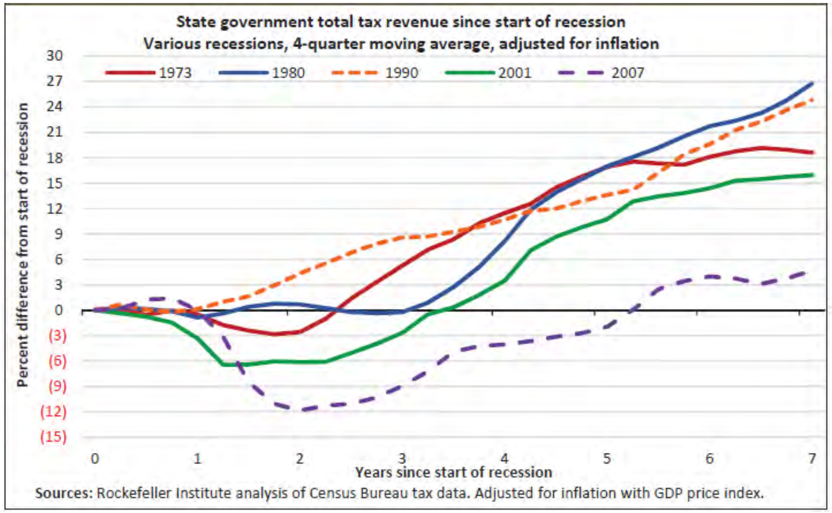


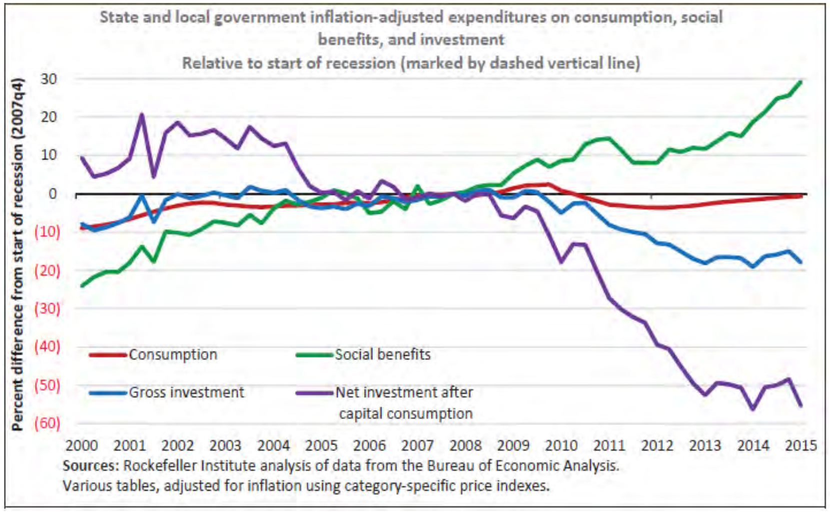




Inactive state governments has been a key development in this cycle so far

- Seven years after the recession started, State tax revenue is only 5% above the prior peak.
- States' social benefit spending is also taking larger share of outlays.





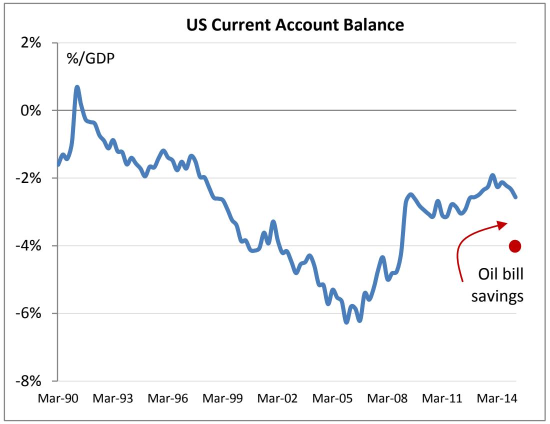
Source: Rockereller Institute, July 2015

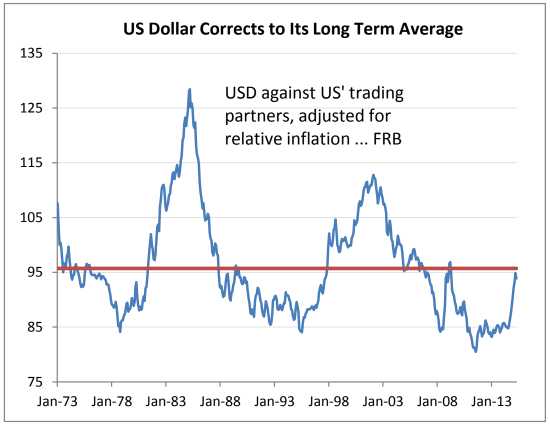
Global factors expected to gradually improve

- US oil imports will this year be ~ $240bn less than four years ago.

IMF World Outlook			Projections	
9-Jul-15	2013	2014	2015	2016
World Output	3.4	3.4	3.3	3.8
Advanced Economies	1.4	1.8	2.1	2.4
United States	2.2	2.4	2.5	3.0
Euro Area	-0.4	0.8	1.5	1.7
Japan	1.6	-0.1	0.8	1.2
United Kingdom	1.7	2.9	2.4	2.2
Canada	2.0	2.4	1.5	2.1
Other Advanced	2.2	2.8	2.7	3.1
Emerging Economies	5.0	4.6	4.2	4.7
Russia	1.3	0.6	-3.4	0.2
China	7.7	7.4	6.8	6.3
India	6.9	7.3	7.5	7.5
Brazil	2.7	0.1	-1.5	0.7
Mexico	1.4	2.1	2.4	3.0

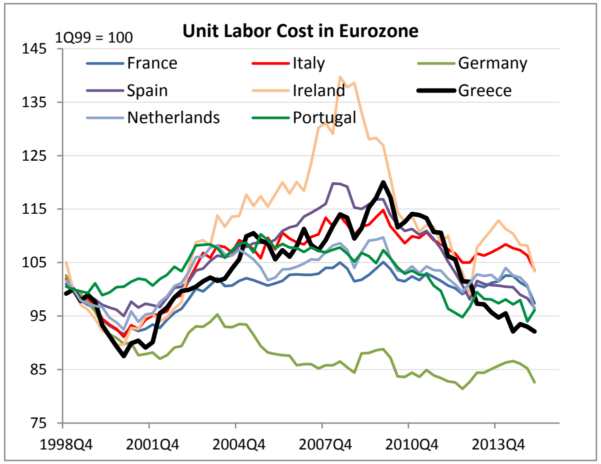
Source: International Monetary Fund, July 2015

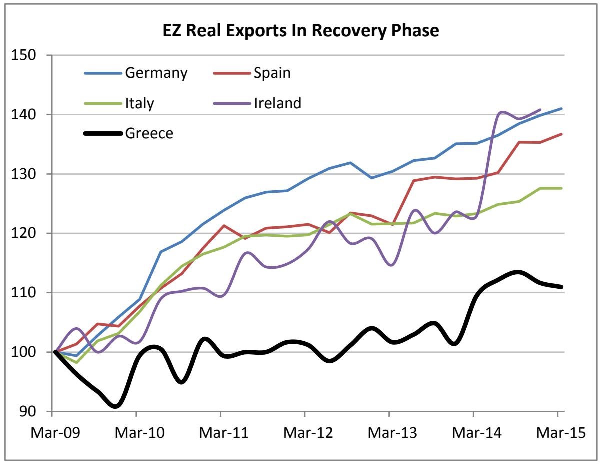


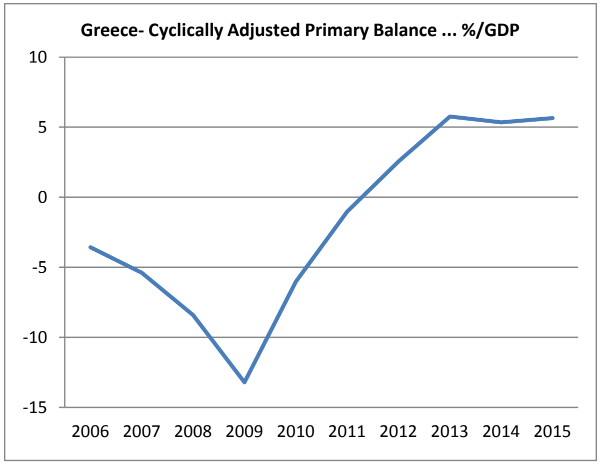


Tail risks … like Greece … will not go away

- It is going to be difficult for Greece to comply with the demands of a third loan program with Europe and the IMF.
  - Falling labor costs have not translated into improved exports.
  - The required primary budget surplus is onerous.

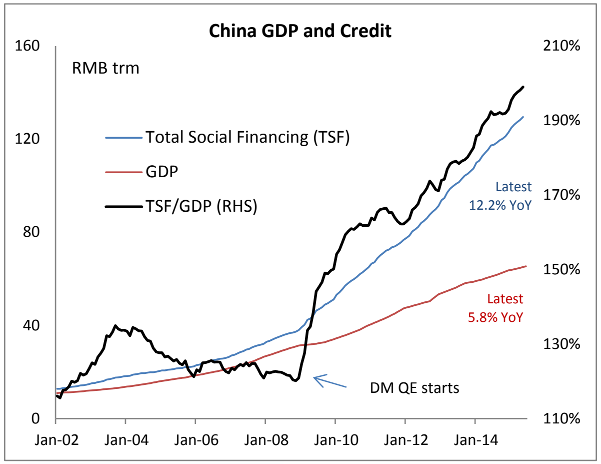


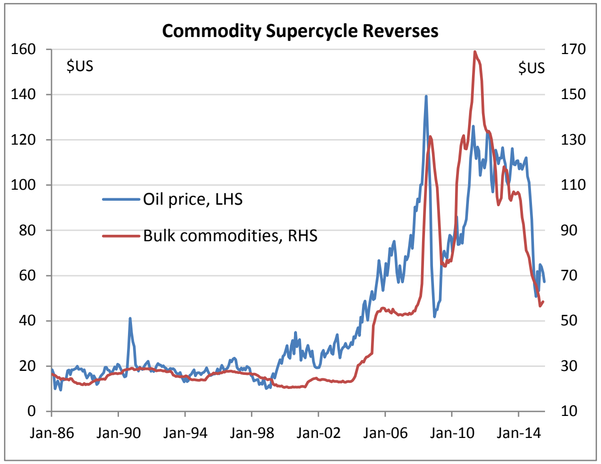


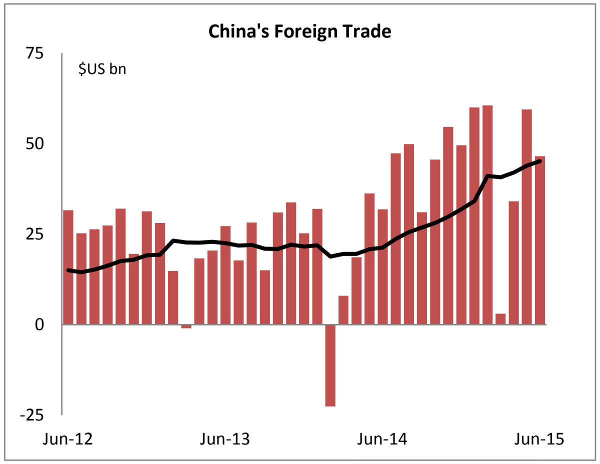


Side benefits of a slower China

- China is trying to contain leverage and deregulate financial markets at the same time.
- Growth has eased to a more sustainable 6-7% pa.
- Terms of trade and the external balance have improved.

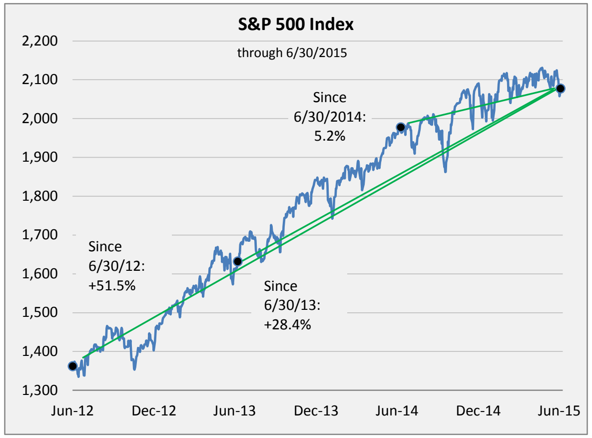


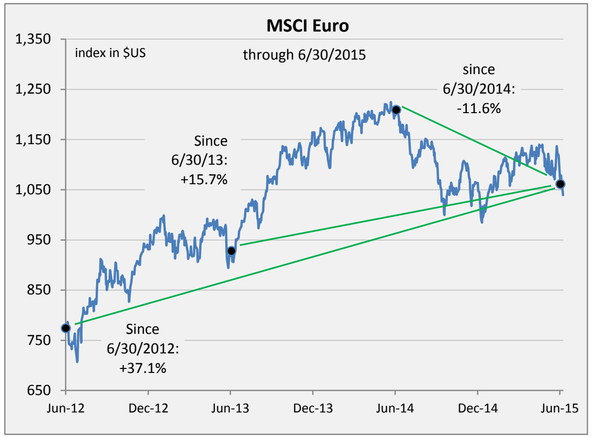


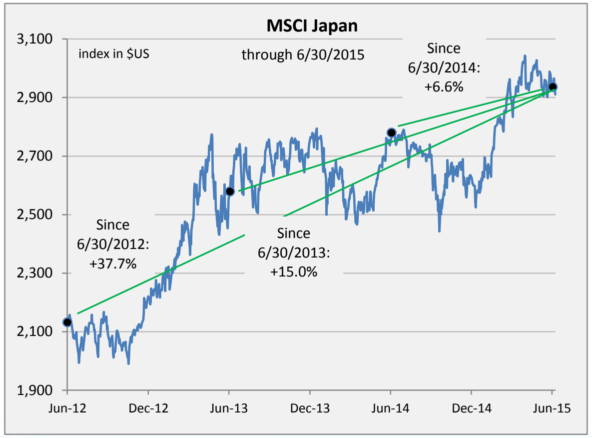


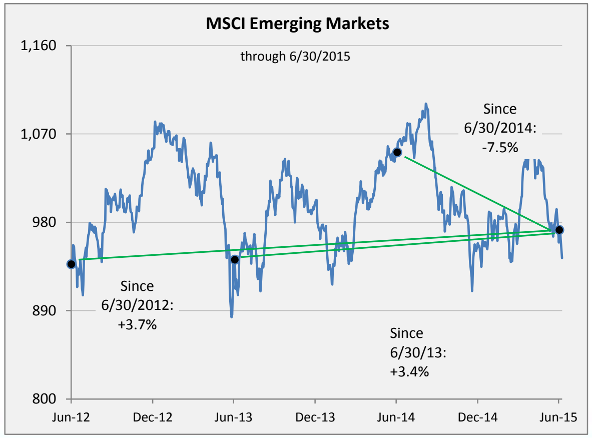
Market Environment - Stocks

- Foreign stocks returns dominated by currency.





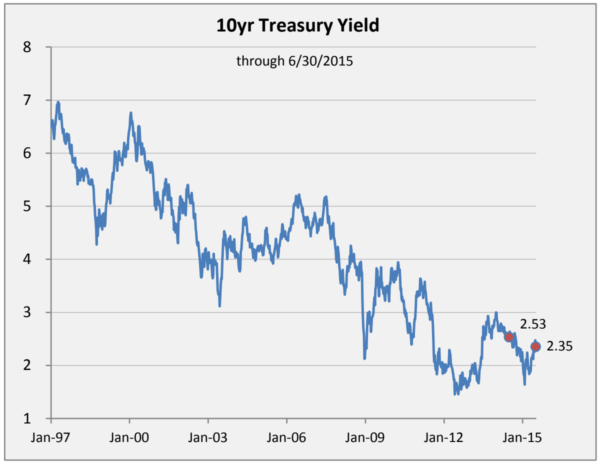


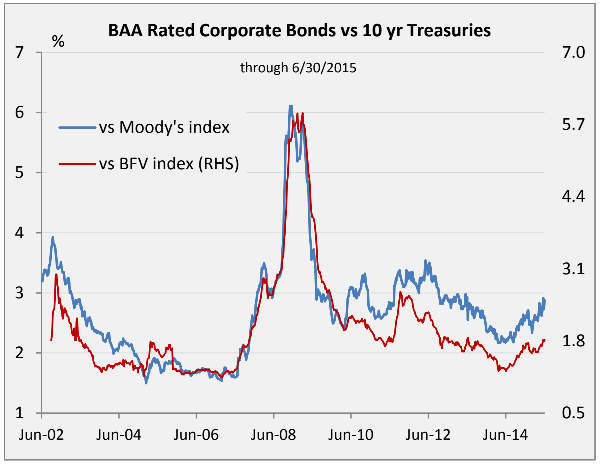


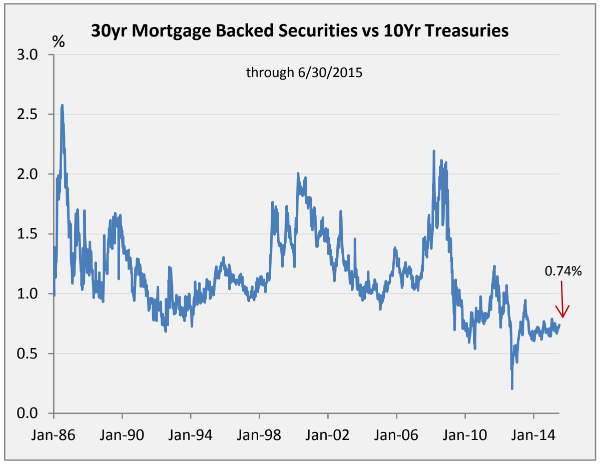
Market (SUD)	Local Equity	Curncy	Total Ret
China	108.8%	0.0%	108.9%
HK	13.2%	0.0%	13.2%
Ireland	31.2%	-18.6%	12.6%
S&P 500	5.3%	0.0%	5.3%
S&P Small	5.0%	0.0%	5.0%
S&P Midcap	4.8%	0.0%	4.8%
India	9.3%	-5.8%	3.6%
Japan	33.5%	-34.0%	-0.5%
Swiss	2.7%	-5.5%	-2.8%
Taiwan	-0.8%	-3.3%	-4.0%
Holland	14.4%	-18.6%	-4.2%
Korea	3.6%	-10.2%	-6.6%
Germany	11.3%	-18.6%	-7.3%
Emerging Markets			-7.47%
France	8.3%	-18.6%	-10.3%
UK	-3.3%	-8.1%	-11.5%
Stoxx	6.1%	-18.6%	-12.5%
Italy	5.5%	-18.6%	-13.1%
Mexico	5.4%	-21.4%	-15.9%
Aussie	1.2%	-18.3%	-17.1%
Spain	-1.4%	-18.6%	-20.0%
Canada	-3.9%	-17.1%	-21.0%
Brazil	-0.2%	-40.1%	-40.3%
Greece	-34.3%	-18.6%	-52.9%

Market Environment – Fixed Income

- Modest net decline in US 10Yr Treasury yield during FY14-15.
- Corporate bonds underperformed as supply ramped up.
- Mortgages, on the other hand, saw little origination.







II. Trust Level Overview

Program Role and Scope

Investment Program Strategic Objective

The overall objective of CalPERS' investment program is to provide members and beneficiaries with benefits as required by law. This will be accomplished through a carefully planned and executed long-term investment program that efficiently and effectively allocates and manages the assets of CalPERS.

Key Risks and Program Characteristics:

- Broad diversification of assets to minimize impact of individual security losses
- Prudent risk taking within the context of long-term investment horizon

PERF Policy Benchmark

CalPERS' Custom Policy Benchmark

- 5 Policy Asset Classes aligned with Asset Liability Management Target Weights

Asset Class	Interim Target Weight (Effective 7/1/2015)
GROWTH	61%
INCOME	20%
REAL ASSETS	12%
INFLATION	6%
LIQUIDITY	1%

- 14 Individual Benchmarks aligned with Strategies
- Customizations: Tobacco, Firearms, Iran/Sudan, Applies Emerging Market Principles

Investment Model

Guiding Philosophy

The Strategic Asset Allocation process seeks to support the long-term health and sustainability of the public pension system by deploying capital across asset classes in a manner that meets the long-term return expectations while taking prudent levels of risk and balancing the needs of beneficiaries and employer agencies.

Asset Liability Workshop

- Investable Asset Evaluation
- Long-Term Capital Market Assumptions
- Define Investment Constraints
- Portfolio Optimization
- Benchmark Evaluation

Investment Strategy

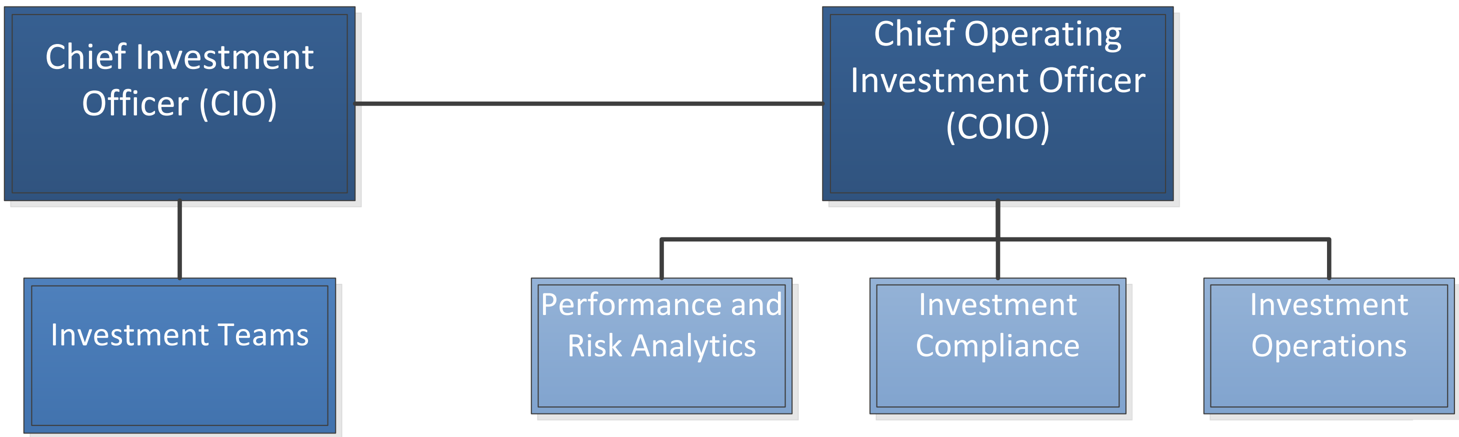
- Implementation Strategy & Capital Deployment
- Macro Economic Research
- Asset Class Research and Views
- Tactical Positioning

Monitoring and Evaluation

- Capital Market Assumption Evaluation
- Asset Class Evaluation
- Independent Risk and Analytics Engagement

Organizational Alignment

Investment Teams Supported by Dedicated Functional Groups



Team Oriented Approach with Support Areas that act as Key Internal Partners While Maintaining Clear Segregation of Duties

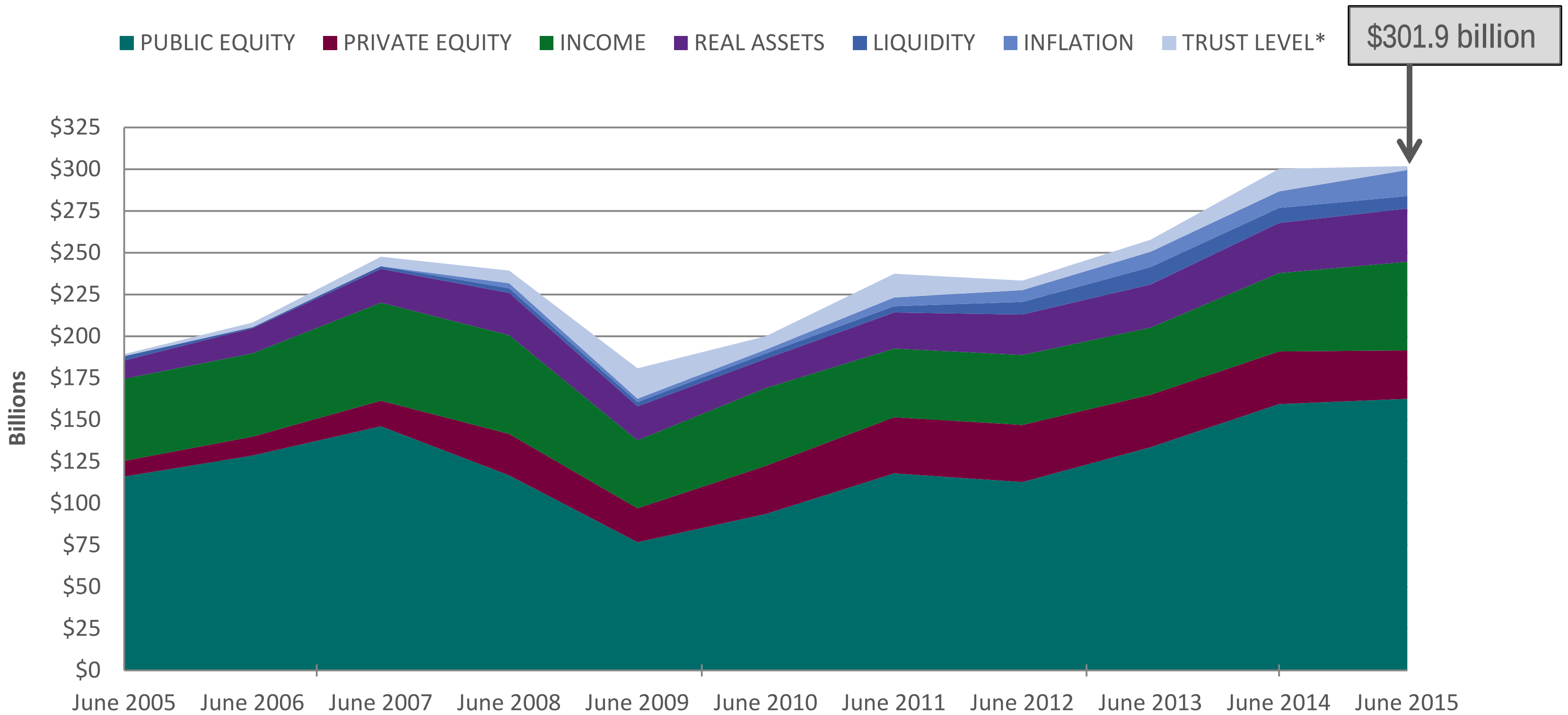
Trust Characteristics

As of June 30, 2015

• Defined Benefit Assets Managed	$311.7B
– PERF	$301.9B
– Long-Term Care Fund	$4.1B
– CERBT Fund	$4.4B
– Judges' Retirement System Fund II	$1.1B
– Legislators' Retirement System Fund	$0.12B
– Judges' Retirement Fund	$0.04B

PERF Allocation Trend

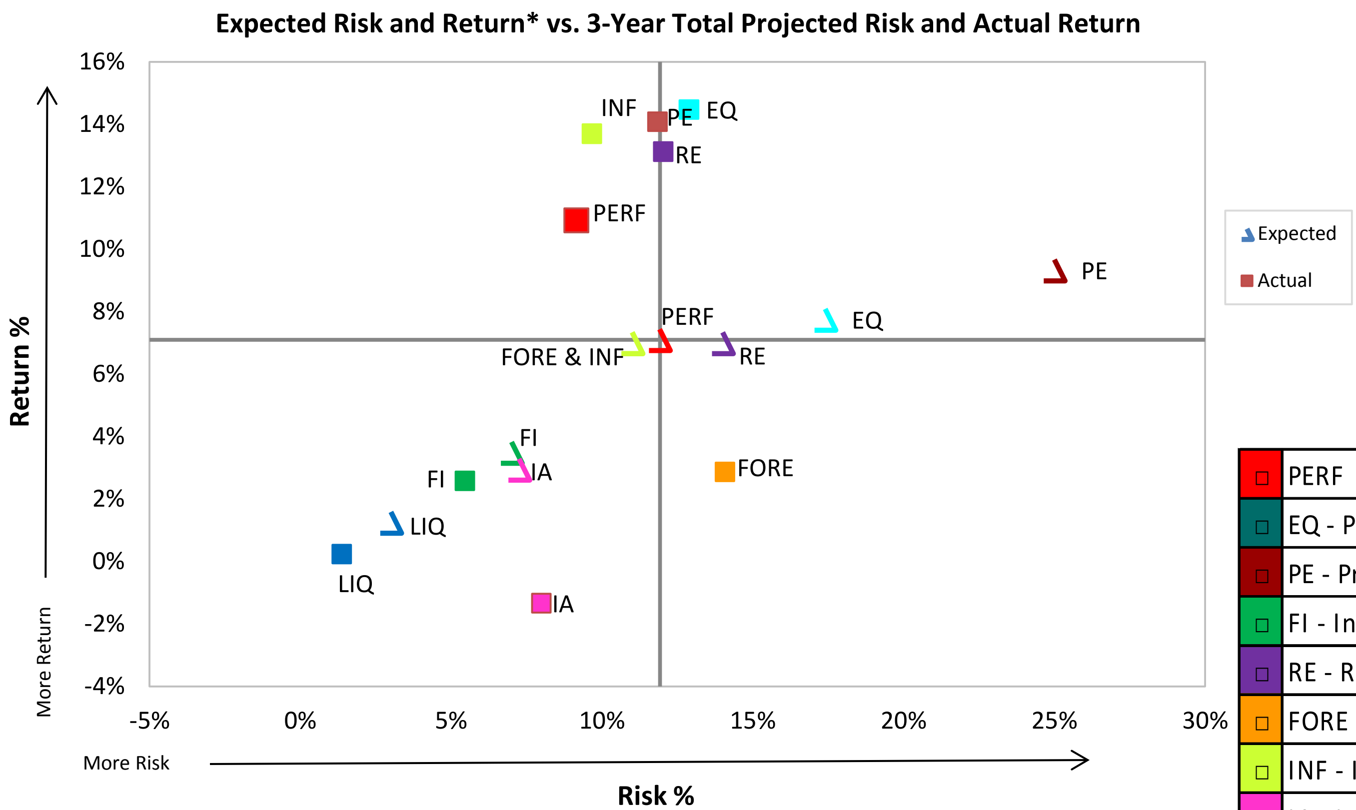
As of June 30, 2015



* Trust Level includes ARS, Multi-Asset Class (MAC), Overlay, Transition, and Plan Level Portfolios

III. Investment Review

PERF Asset Liability Management Assumptions



	PERF
	EQ - Public Equity
	PE - Private Equity
	FI - Income
	RE - Real Estate
	FORE - Forestland
	INF - Infrastructure
	IA - Inflation Assets
	LIQ - Liquidity

*Expected risk and return is based on the 2013 ALM Workshop and uses the short-term (1-10year) expected return from capital market assumptions.

PERF Performance Summary

- 1-year return of 2.4% underperformed strategic benchmark by 9 basis points (BPS).
- Over the long-term, the 10- year and 20-year returns underperformed the strategic policy benchmark.
- However, the 20-year return is above current actuarial return expectation of 7.5%.

	1-YR Net Return	3-YR Net Return	5-YR Net Return	10-YR Net Return	20-YR Net Return
PERF	**2.4%**	**10.9%**	**10.7%**	**6.2%**	**7.8%**
POLICY INDEX	**2.5%**	**10.3%**	**10.4%**	**7.2%**	**8.0%**
Excess Return	(0.1%)	0.6%	0.3%	(1.0%)	(0.2%)

Affiliate Funds Performance Summary

- All Defined Benefit Plans outperformed their respective benchmarks over the 1-year period
- The 5-year year return for all Defined Benefit Plans outperformed their respective benchmarks

	1-YR		3-YR		5-YR		10-YR	
Defined Benefit Plans	Net Return	Excess BPS	Net Return	Excess BPS	Net Return	Excess BPS	Net Return	Excess BPS
JUDGES' RETIREMENT FUND	0.1%	9	0.1%	(0)	0.1%	2	1.6%	14
JUDGES' RETIREMENT SYSTEM II FUND	-0.1%	23	9.9%	32	10.5%	7	6.3%	(16)
LEGISLATORS' RETIREMENT SYSTEM FUND	0.0%	36	6.1%	55	8.1%	28	5.9%	11
CERBT STRATEGY 1	-0.1%	46	9.8%	36	10.6%	15	-	-
CERBT STRATEGY 2	-0.3%	40	7.8%	38	-	-	-	-
CERBT STRATEGY 3	0.0%	54	5.9%	53	-	-	-	-
CALPERS HEALTH CARE BOND FUND	2.5%	69	2.7%	90	4.1%	72	4.9%	50
LONG-TERM CARE FUND	-0.9%	25	4.2%	35	7.1%	20	5.1%	6

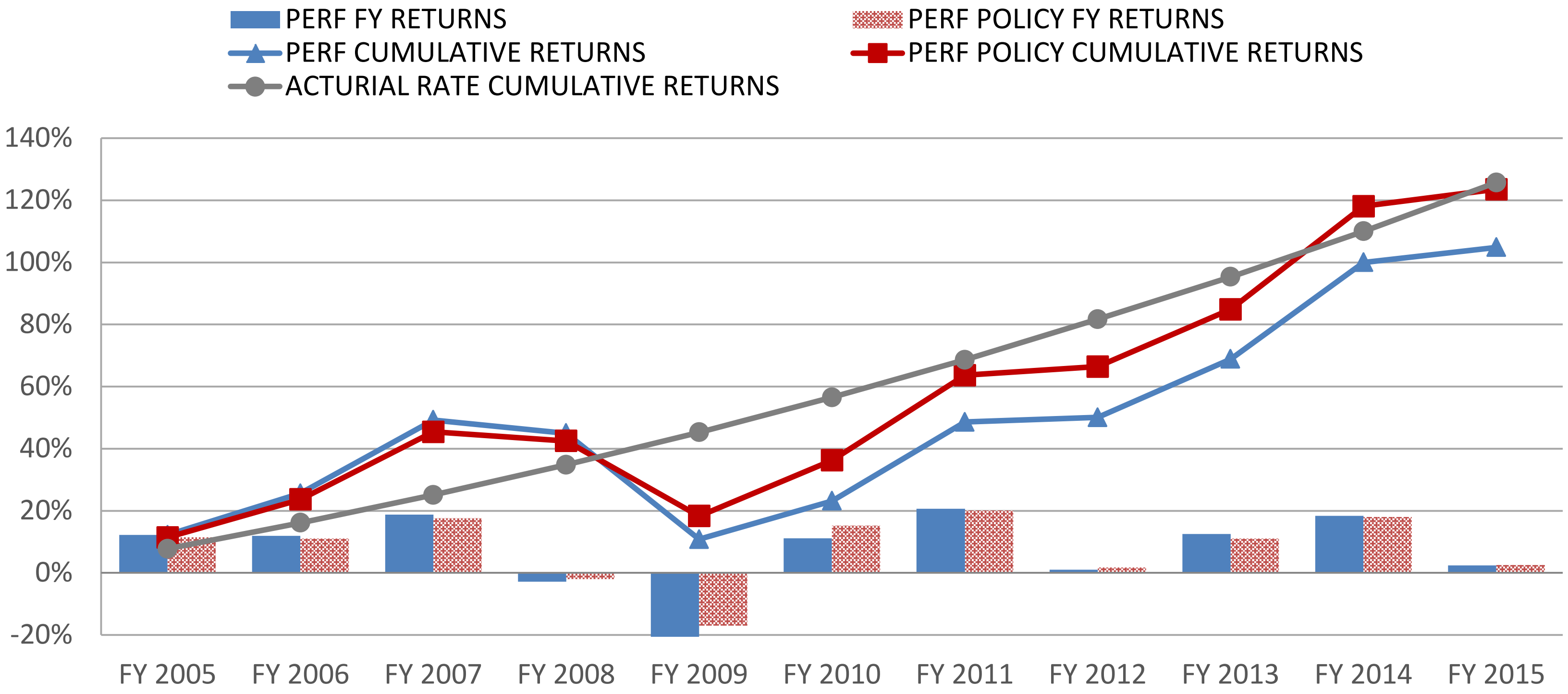
PERF Contribution to Return

Asset Class	Average Weight (%)	1-Year Return (%)	Contribution to Return (%)
GROWTH	63.5	2.2	1.4
PUBLIC EQUITY	*53.5*	*1.0*	*0.6*
PRIVATE EQUITY	*10.1*	*8.9*	*0.9*
INCOME	17.9	1.3	0.3
REAL ASSETS	10.0	12.4	1.2
REAL ESTATE	*8.6*	*13.5*	*1.1*
FORESTLAND	*0.8*	*-0.3*	*0.0*
INFRASTRUCTURE	*0.7*	*13.2*	*0.1*
LIQUIDITY	2.0	0.9	0.0
INFLATION	5.1	-11.5	-0.6
TRUST LEVEL	1.5	13.7	0.1
ARS WITH EQUITIZATION	*0.9*	*7.3*	*0.1*
TRANSITION+PLAN LEVEL	*0.4*	*-*	*0.0*
MAC	*0.2*	*6.0*	*0.0*
PERF ex OVERLAY	100.0	2.4	2.4

- Growth assets remain the primary contributors to returns accounting for 1.4% of 2.4% total return.

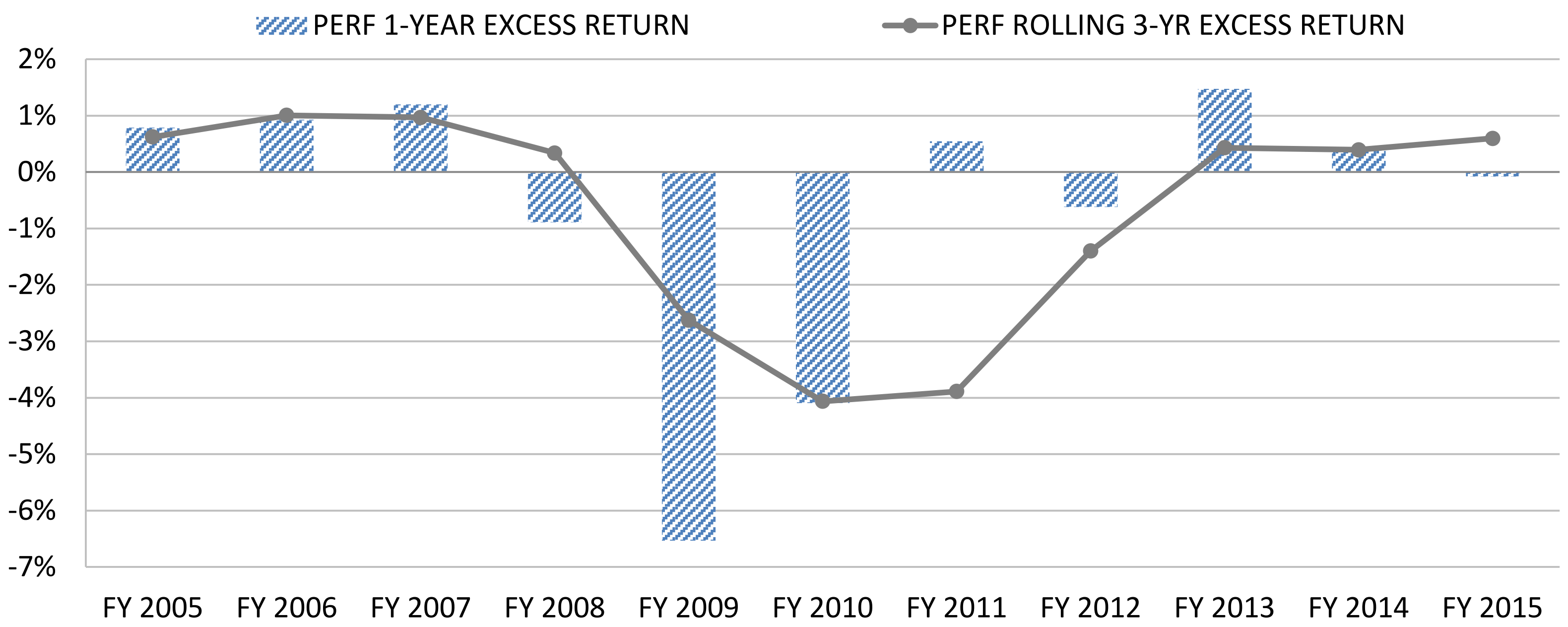
Source: FactSet; Weights and returns calculated utilizing monthly linked returns.

PERF Cumulative Returns

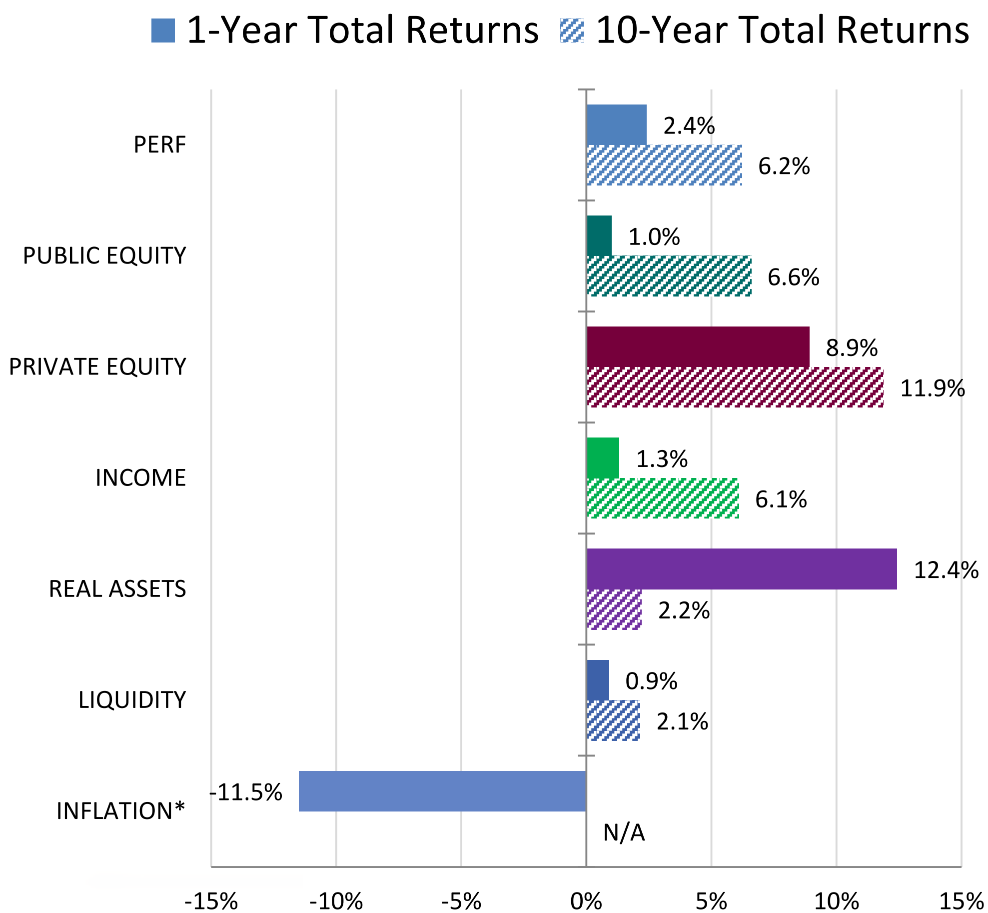


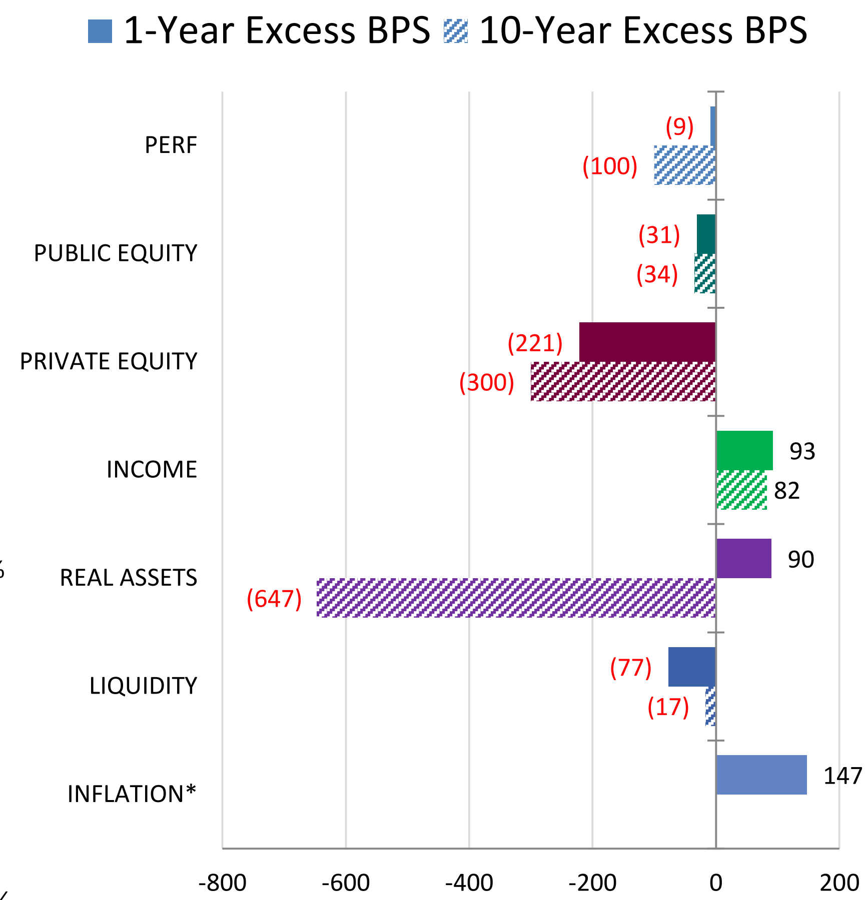
Note: Actuarial Rate of Return FY 2003-12 WAS 7.75%. FY 2012-FY2015 rate is 7.5%. :

PERF Rolling 3-Year Excess Return



PERF Short-Term vs. Long-Term Performance



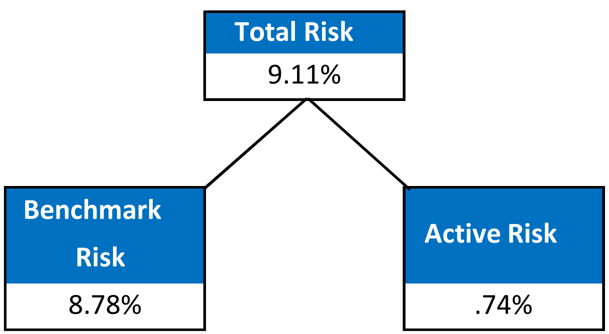


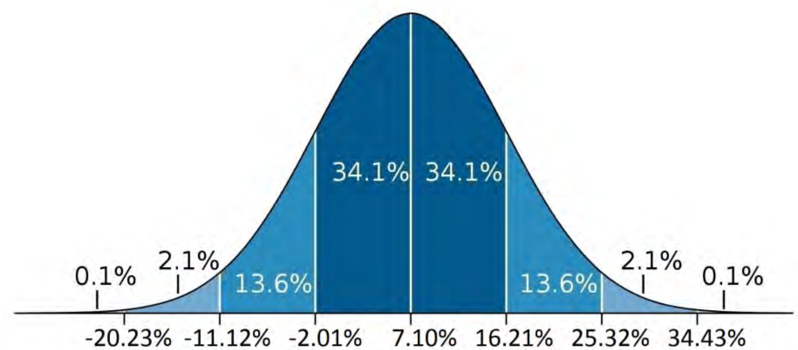
*Inflation has an inception date of October 2007, therefore 10-year returns and excess BPS are unavailable

PERF Risk Profile

As of June 30, 2015

- Total Fund Forecast Risk is 9.11%
- Forecast Tracking Error is 0.74% and is within guidelines
- 10-Day Value-at-Risk is $9.13 billion
- 10-Day Expected Shortfall is $11.52 billion



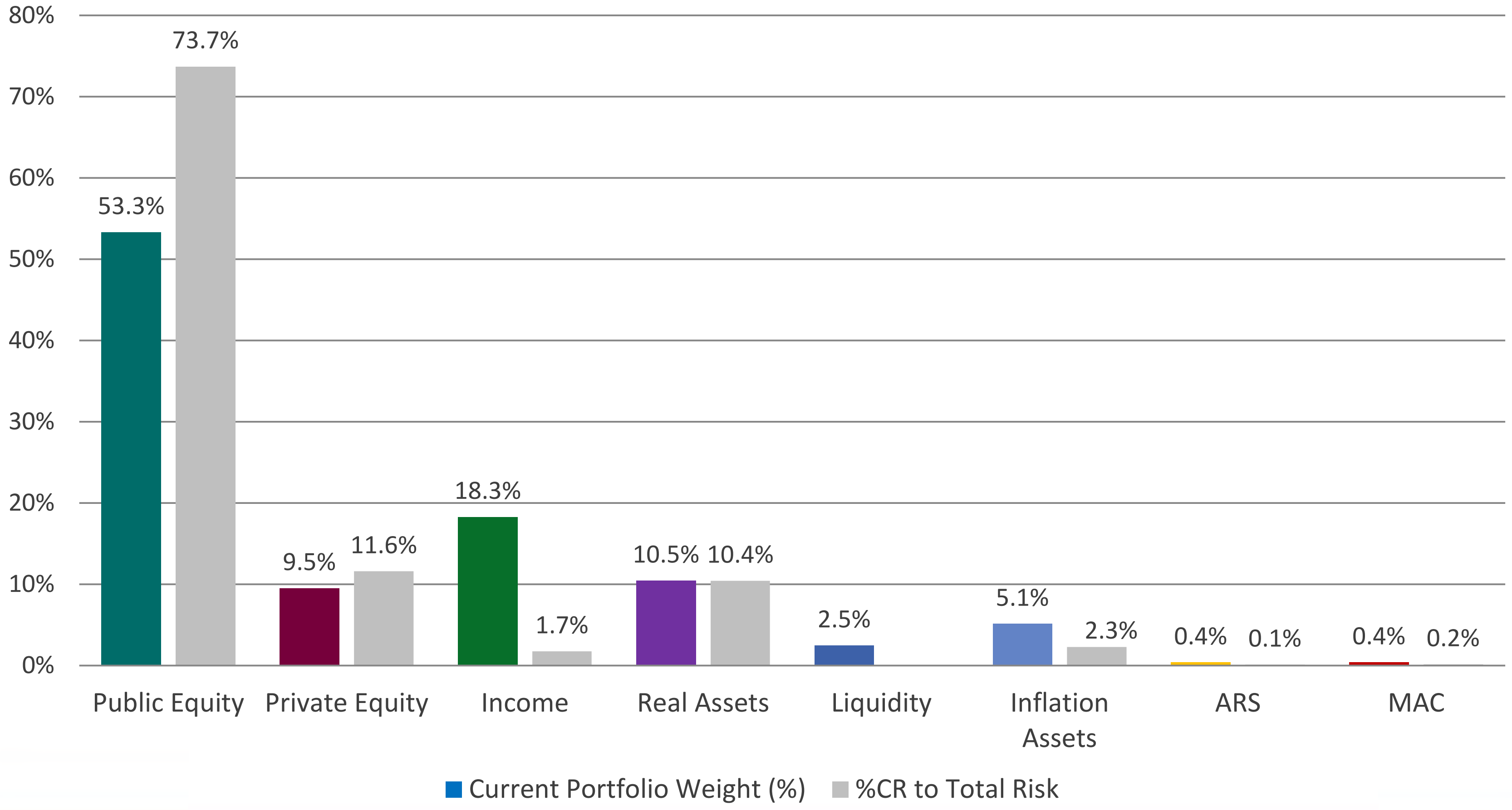


Forecasted Distribution of Returns*

*Based on Forecasted 10-Year Returns from 2013 Asset Liability Workshop of 7.1% and Predicted Risk of 9.11%

Contribution to Risk (CR)

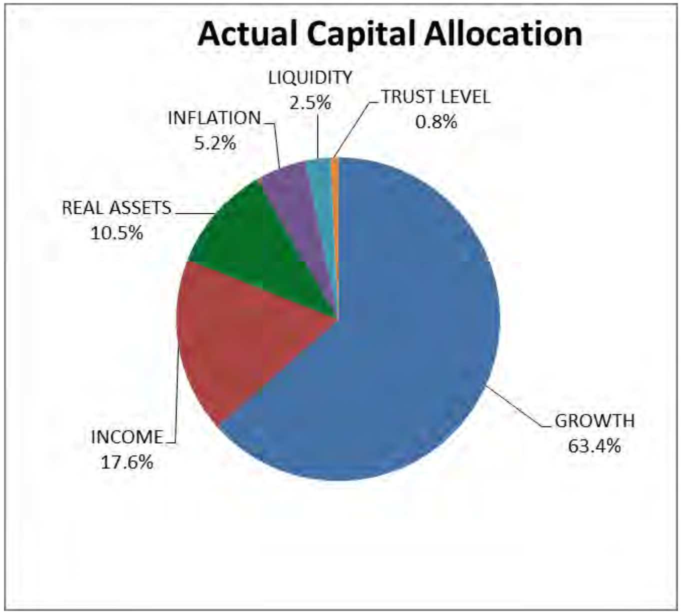
Portfolio Weight and Contribution to Total Risk – as of June 30, 2015



PERF Asset Allocation

As of June 30, 2015

	Actual Allocation (%)	Interim Strategic Target (%)*	Variance (%)
GROWTH	**63.4%**	**61%**	**2.4%**
PUBLIC EQUITY	*53.8%*	*51%*	*2.8%*
PRIVATE EQUITY	*9.6%*	*10%*	*-0.4%*
INCOME	**17.6%**	**20%**	**-2.4%**
REAL ASSETS	**10.5%**	**12%**	**-1.5%**
REAL ESTATE	*9.1%*	*10%*	*-0.9%*
FORESTLAND	*0.7%*	*1%*	*-0.3%*
INFRASTRUCTURE	*0.7%*	*1%*	*-0.3%*
INFLATION	**5.2%**	**6%**	**-0.8%**
LIQUIDITY	**2.5%**	**1%**	**1.5%**
TRUST LEVEL	**0.8%**	**N/A**	**0.8%**
ARS	*0.4%*	*N/A*	*0.4%*
MAC	*0.4%*	*N/A*	*0.4%*
OVERLAY+TRANS+PLAN	*0.0%*	*N/A*	*0.0%*
TOTAL FUND	**100.0%**	**100.0%**	**0.0%**



*Interim strategic targets were adopted by the Board and effective July 1, 2015.

PERF Positioning

- Asset allocations are closely aligned with the 2013 ALM workshop interim targets reflecting on illiquid asset class deployment
- More than 60% of the portfolio is allocated to Growth Assets, therefore, Public Equity and Private Equity will continue to be the primary contributors and drivers of performance
- Over allocation to Public Equity and under allocation to Inflation and Real Assets had a negative impact on returns relative to the Policy Benchmark for the calendar year.

Conclusion

- The PERF generated 2.41% for the 1-year period ending June 30, 2015 and underperformed the Policy Benchmark by 9 BPS
- Affiliate Defined Benefit Plans captured strong relative performance over the 1-year, 3-year, and 5-year return periods
- Stronger US economic growth but against a riskier global backdrop of disinflation and vulnerable growth
- Portfolio volatility continues to be driven almost entirely by Growth assets