

Fixed Income Programs Annual Review

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Executive Summary

- Integrating Investment Beliefs into Program
- Strong excess performance of Global Fixed Income
- Low cost internal management of assets
- Staying the course with long term investment philosophy

Fixed Income Programs Annual Review

Review Outline

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Fixed Income Programs Annual Review

Investment Beliefs Key

	Short Name	Investment Belief
1	Liabilities	Liabilities must influence the asset structure.
2	Long-Term Horizon	A long time investment horizon is a responsibility and an advantage.
3	Stakeholders	CalPERS investment decisions may reflect wider stakeholder views.
4	Three Forms of Capital	Long-term value creation requires effective management of three forms of capital: financial, physical, and human.
5	Accountability	CalPERS must articulate its investment goals and performance measure and ensure clear accountability for their execution.
6	Strategic Allocation	Strategic asset allocation is the dominant determinant of portfolio risk and return.
7	Risk Reward	CalPERS will take risk only where we have a strong belief we will be rewarded.
8	Costs	Costs matter and need to be effectively managed.
9	Multi-faceted Risk	Risk of CalPERS is multi-faceted and not fully captured through measures such as volatility or tracking error.
10	Resources / Process	Strong processes and teamwork and deep resources are needed to achieve CalPERS' goals and objectives.

I. Program Overview

Program Roles¹

As defined through the Asset Liability Management Process:

Global Fixed Income (GFI)

Global Fixed Income serves as an economic diversifier to equity risk and a reliable source of income.

- Global Fixed Income accounts for \$56.0 billion or 19.2% of the Total Fund, which is 0.8% below Policy target.

Inflation Assets

Inflation Assets provide liquid and strong protection against inflation.

- Inflation Assets accounts for \$15.0 billion or 5.1% of the Total Fund, which is 0.9% below Policy target.

Liquidity

Liquidity exhibits safety and capital preservation properties as well as to provide an effective risk protection during financial crisis.

- Liquidity accounts for \$4.4 billion or 1.5% of the Total Fund, which is 0.5% above Policy target.

Program Investment Philosophy

- CalPERS' long-term investment horizon
- Active management adds value
- Costs matter
- Active management is human capital intensive

Investment Decision Process

- Primary Drivers and Decisions
 - Assess stage of economic cycle
 - Manage interest rate risk
 - Manage sector risk
 - Security selection
- Weekly senior team meeting
- FI Annual Long-Term Sector Spreads Meetings

Policy Benchmarks

Global Fixed Income Policy Benchmark

- 90% Barclays Long Liabilities
- 10% Barclays International Fixed Income Index GDP Weighted ex-U.S.

Inflation Assets Policy Benchmark

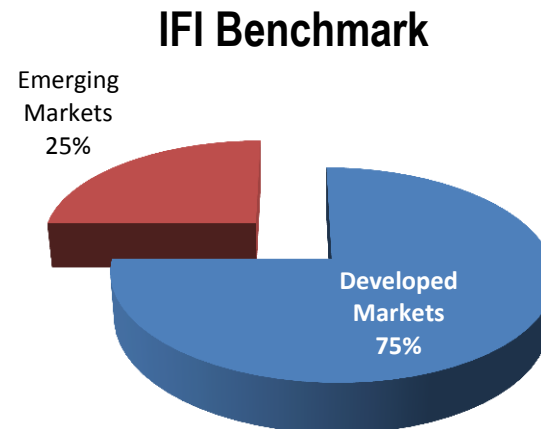
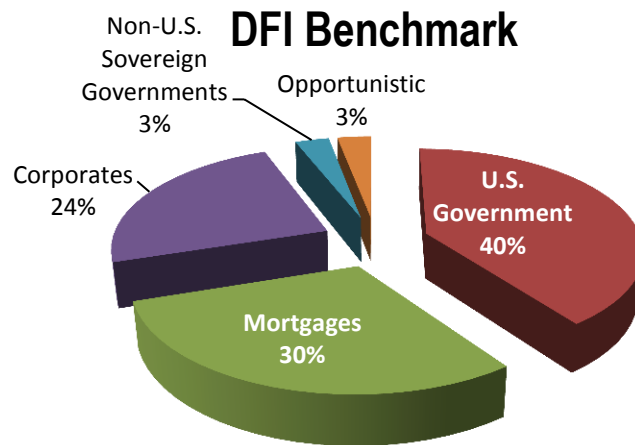
- 75% Global ILB Custom Index
- 25% Standard & Poor's GSCI Total Return Index

Liquidity Policy Benchmark

- 75% Barclays Treasury 2-10 Year
- 25% 1-Month Treasury Bill

Program Characteristics – Global Fixed Income

- Benchmark:
 - 90% U.S. Fixed Income Securities (DFI)
 - 10% Non-U.S. Fixed Income Securities (IFI).
- 90% of Global Fixed Income is managed internally¹



Program Characteristics – Inflation Assets

- Benchmark:
 - 75% Global Inflation-Linked Bonds (ILB)
 - 25% Commodities
- U.S. inflation-linked bonds (TIPS) comprise 2/3 of ILB and the remaining 1/3 is non-U.S. government ILB
- Commodities benchmark is the GSCI Total Return Index which is concentrated in hydrocarbons

Program Characteristics – Liquidity

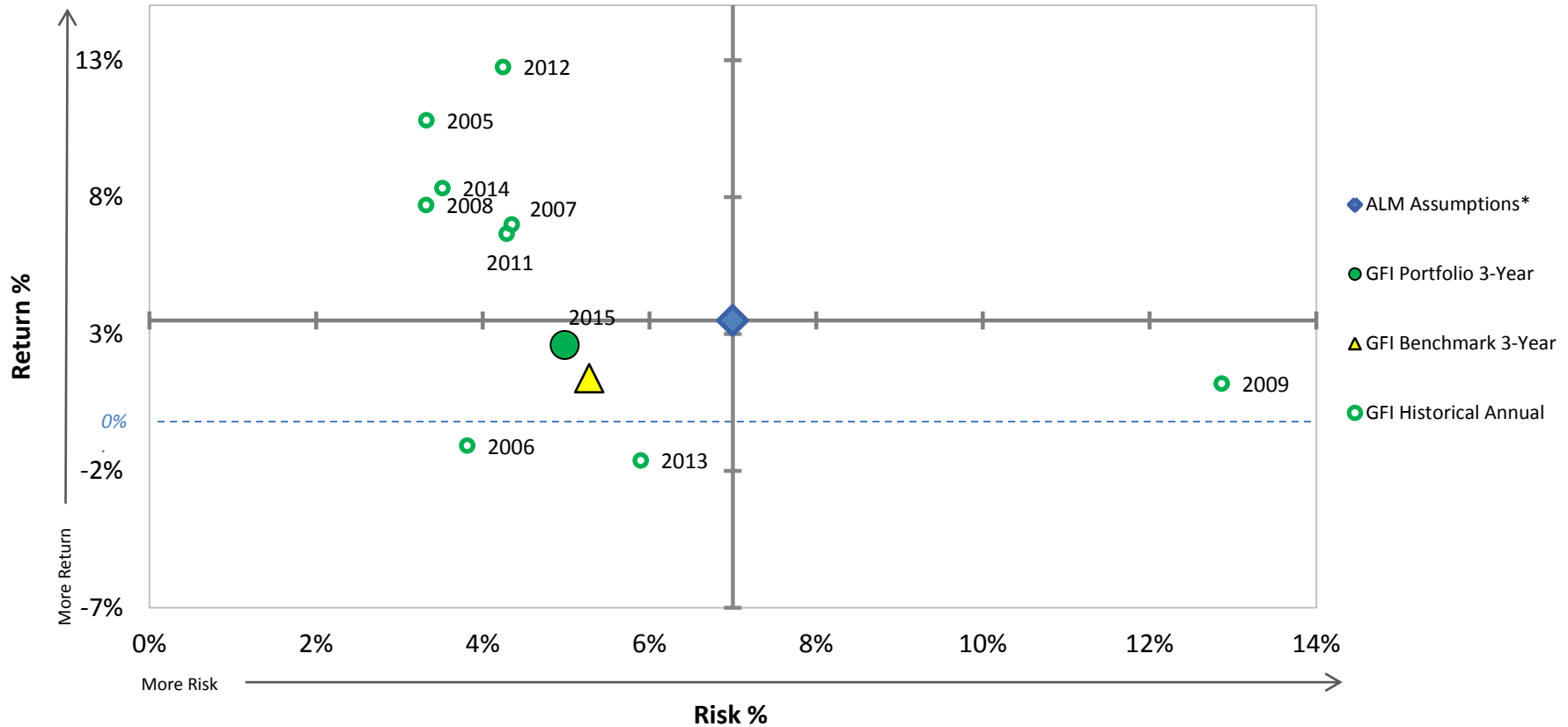
- Benchmark:
 - 75% U.S. Treasuries of 2-10 Year Maturities
 - 25% U.S. Treasury Bills of 1-Month Maturity

II. Investment Review

- a. **Global Fixed Income**
- b. Inflation Assets
- c. Liquidity

ALM Assumptions Validation – Global Fixed Income

Risk vs. Return



Past Year Environment Review – Global Fixed Income

- Improved U.S. economy
- G3 policy supports government securities
- Risk taking not rewarded, corporate and sovereign spreads widen
- Rising emerging markets challenges
- Sharp drop in commodities

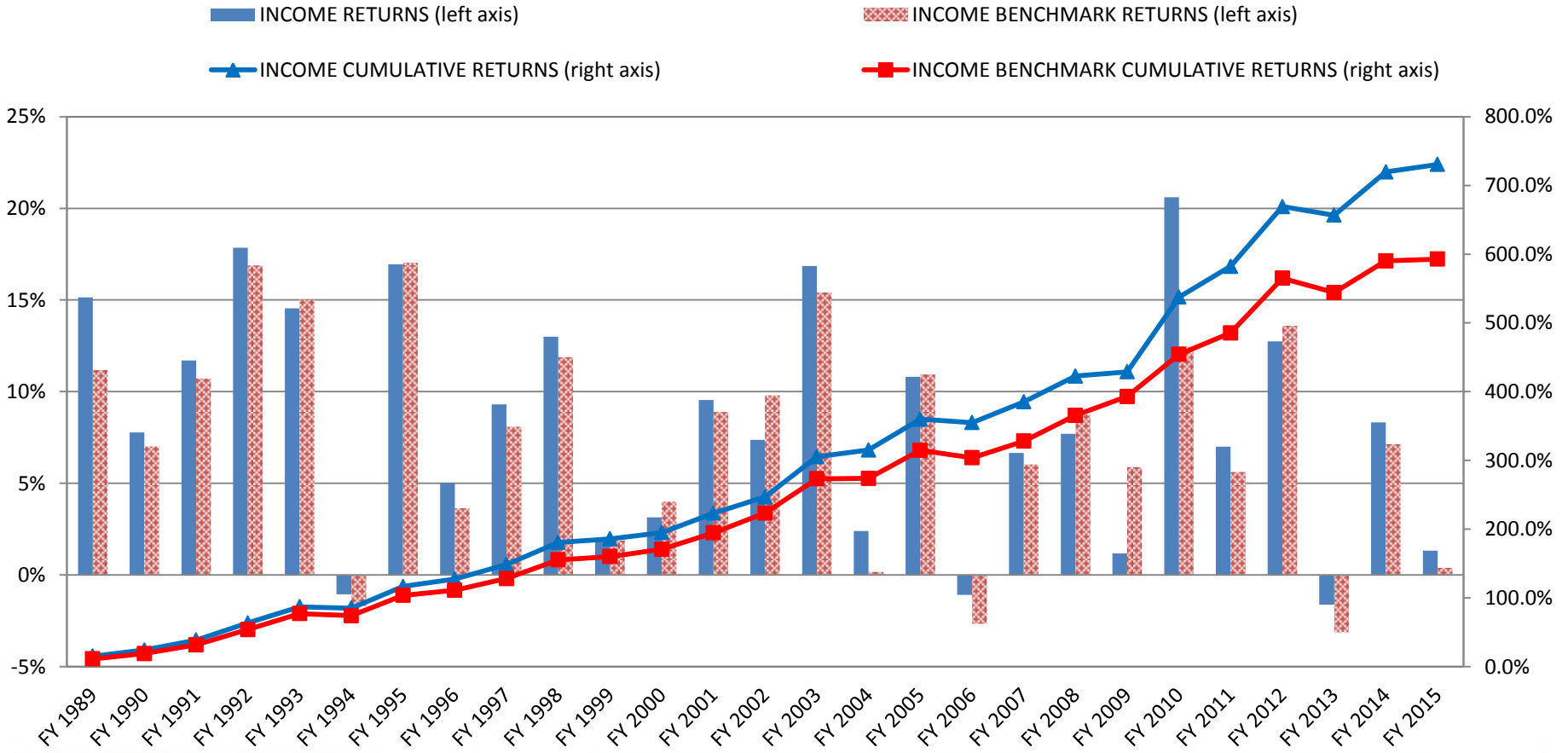
Program Performance Summary - Global Fixed Income

As of June 30, 2015	1-YR	3-YR	5-YR	10-YR	20-YR	Since Inception*
	Net Return	Net Return	Net Return	Net Return	Net Return	Net Return
INCOME	1.3%	2.6%	5.4%	6.1%	7.0%	8.2%
BENCHMARK	0.4%	1.4%	4.6%	5.3%	6.3%	7.4%
Excess Return	0.9%	1.2%	0.8%	0.8%	0.7%	0.8%

- Strong performance versus the benchmark in all time periods

Program Performance Review – Global Fixed Income

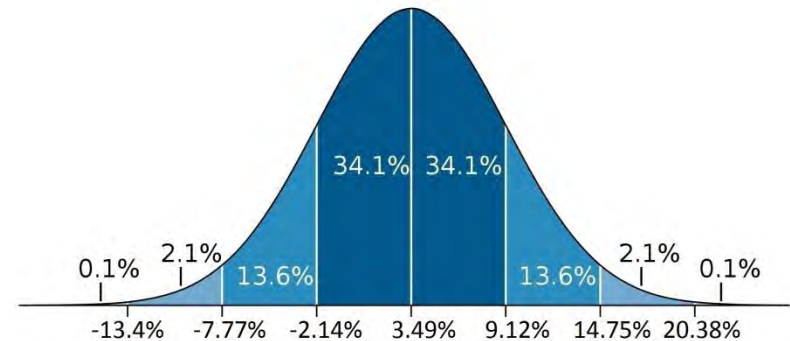
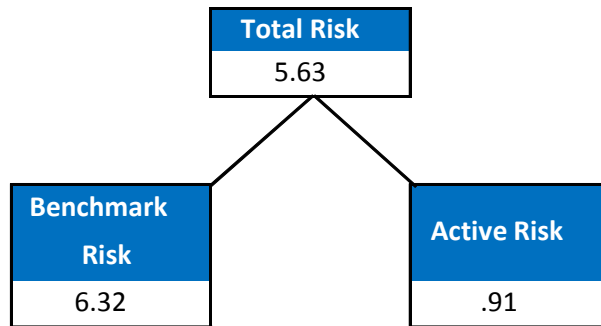
Cumulative Return



Volatility Profile – Global Fixed Income

As of June 30, 2015

- Income Forecast Volatility is 5.63%
- Forecast Tracking Error is 0.91%
- 10-Day Value-at-Risk is \$1.02 billion
- 10-Day Expected Shortfall is \$1.29 billion



Forecasted Distribution of Returns*

Portfolio Positioning – Global Fixed Income¹

Additional Risk Measures

		NAV	Duration	% Duration	Yield
Program/Sector	MV (bn)	Active	Active	Active	Active
DFI	\$51.0	1.1%	-0.2	0.0%	0.3%
US Government	\$18.0	-3.3%	0.6	-2.2%	0.1%
Corporates	\$13.0	1.1%	-0.1	1.2%	0.3%
Mortgages	\$13.2	-3.3%	0.3	-0.8%	0.2%
Sovereign	\$1.9	0.6%	0.0	0.7%	0.0%
Opportunistic	\$4.6	5.5%	-0.8	1.1%	-1.7%
Cash Securities	\$0.3	0.5%	0.0	0.0%	0.0%
IFI	\$5.0	-1.1%	-0.3	N/A	0.4%
GFI	\$56.0		-0.1	0.0	0.3%

Forward-Looking Commentary – Global Fixed Income

- Continued moderate U.S. expansion
- Stress in emerging markets
- Fed raising rates?

II. Investment Review

- a. Global Fixed Income
- b. Inflation Assets**
- c. Liquidity

ALM Assumptions Validation – Inflation Assets

Risk vs. Return



Past Year Environment Review – Inflation Assets

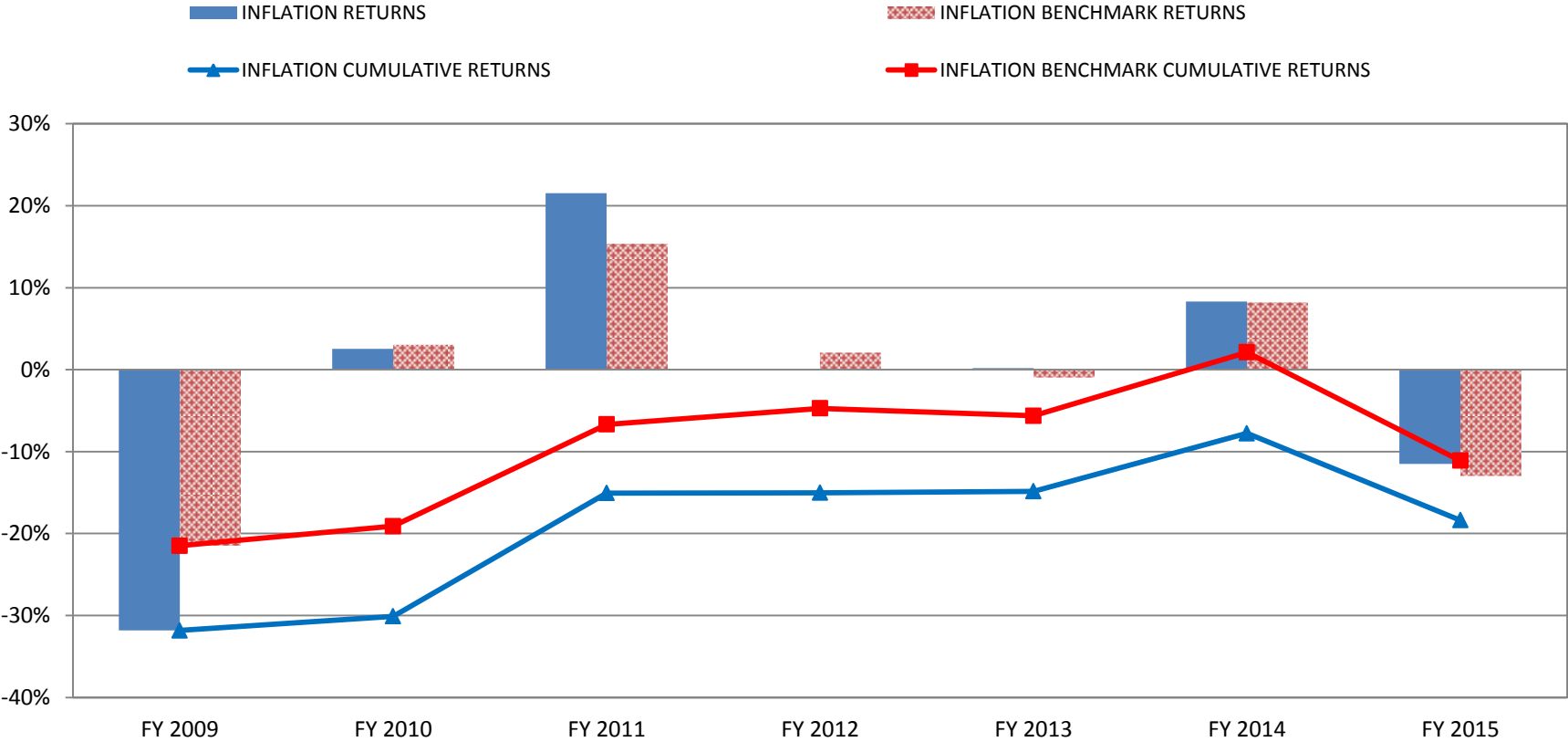
- U.S. inflation fell
- Eurozone inflation followed a similar pattern
- UK inflation moderated sharply as well
- China was a source of global disinflation

Program Performance Review – Inflation Assets

	1-YR	3-YR	5-YR	Since Inception*
As of June 30, 2015	Net Return	Net Return	Net Return	Net Return
INFLATION	(11.5%)	(1.3%)	3.2%	1.5%
BENCHMARK	(13.0%)	(2.3%)	1.9%	1.0%
Excess Return	1.5%	1.0%	1.3%	0.5%

- Strong excess returns versus the benchmark in all time periods

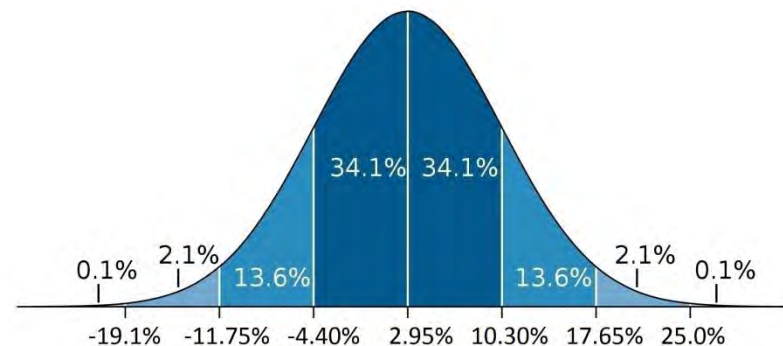
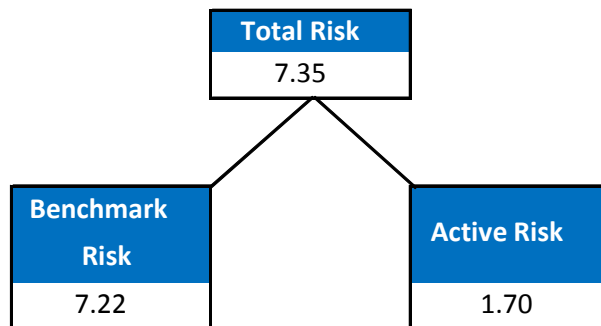
Program Performance Review – Inflation Assets Cumulative Return



Volatility Profile – Inflation Assets

As of June 30, 2015

- Inflation Forecast Volatility is 7.35%
- Forecast Tracking Error is 1.70%
- 10-Day Value-at-Risk is \$377 million
- 10-Day Expected Shortfall is \$427 million



Forecasted Distribution of Returns*

Portfolio Positioning – Inflation Assets¹

Additional Risk Measures

		NAV	Duration	Yield
Program/Sector	MV (bn)	Active	Active	Active
Inflation Linked Bonds	\$11.5	1.7%	-1.8	0.5
Commodities	\$3.5	-1.7%	N/A	N/A
Inflation Assets	\$15.0			

Forward-Looking Commentary – Inflation Assets

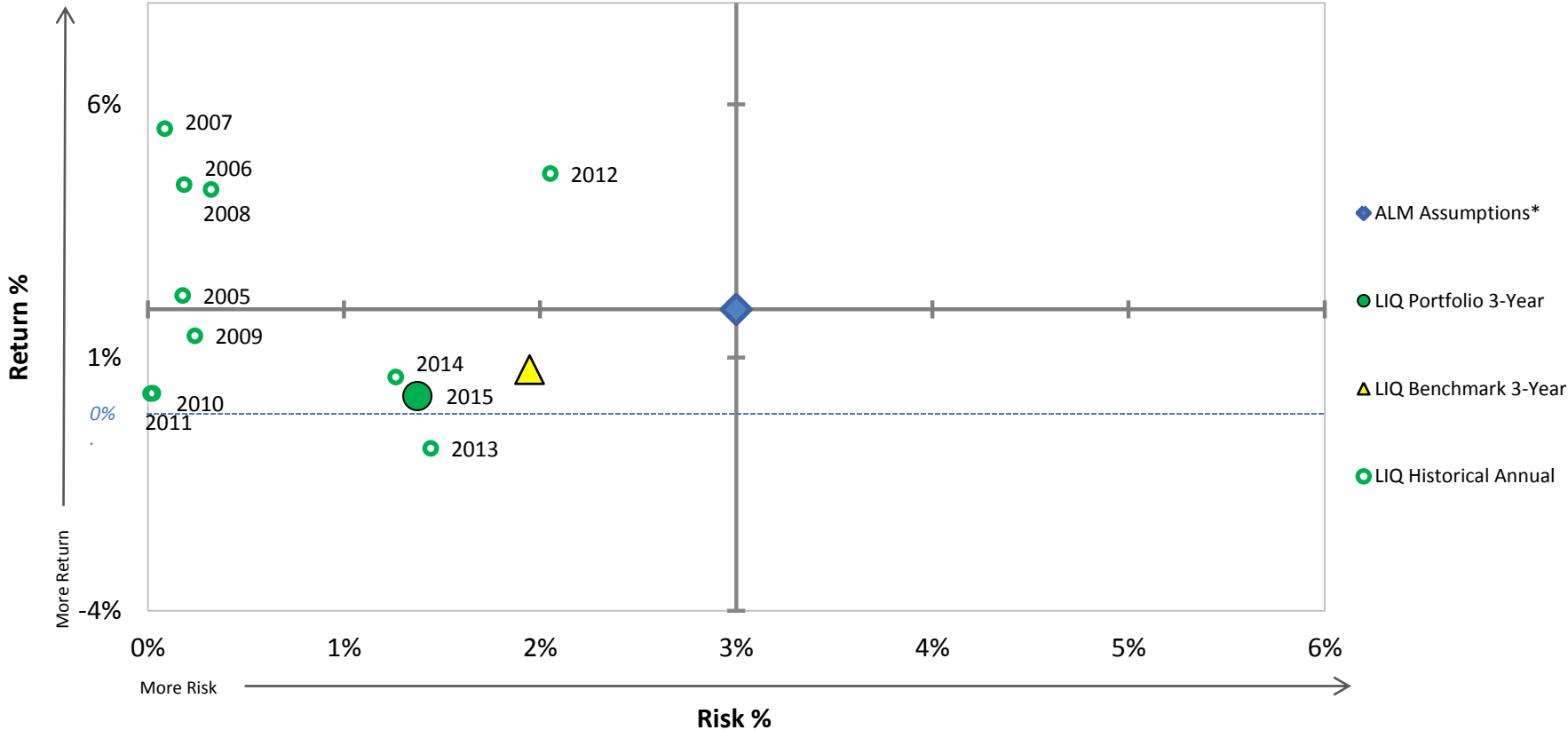
- Levels of inflation to remain constrained but slightly higher
- Real yields to remain low but slightly rising
- Commodities will continue to be challenged but not as severe
- U.S. Dollar should be strong

II. Investment Review

- a. Global Fixed Income
- b. Inflation Assets
- c. **Liquidity**

ALM Assumptions Validation – Liquidity

Risk vs. Return



*Capital Markets Assumptions used in the 2013 ALM Workshop, demonstrated by the solid horizontal and vertical lines

Past Year Environment Review – Liquidity

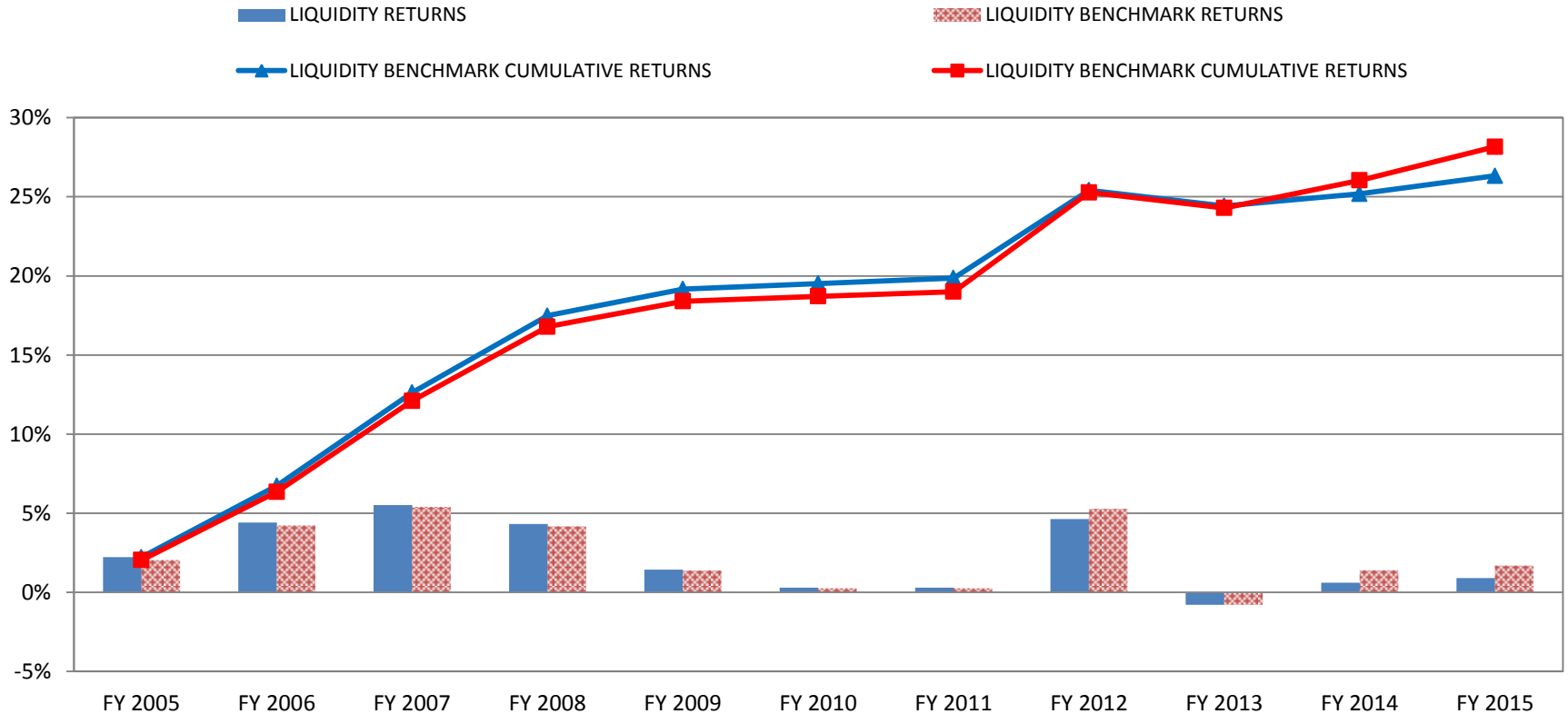
- Low Fed Funds rate

Program Performance Review – Liquidity

As of June 30, 2015	1-YR	3-YR	Since Inception*
	Net Return	Net Return	Net Return
LIQUIDITY	0.9%	0.2%	1.3%
BENCHMARK	1.7%	0.8%	1.9%
Excess Return	(0.8%)	(0.6%)	(0.6%)

- Short term, cash levels challenging to predict and manage

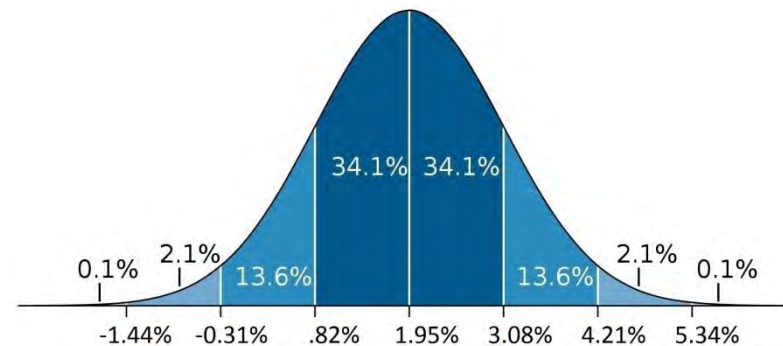
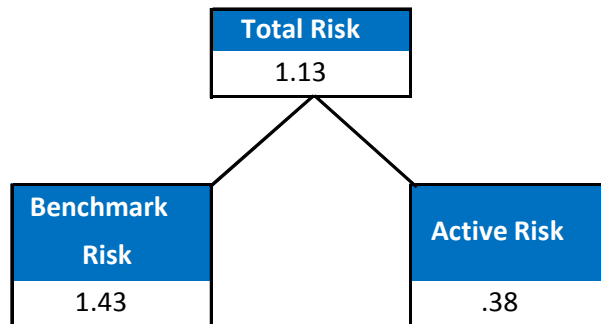
Program Performance Review – Liquidity Cumulative Return



Volatility Profile – Liquidity

As of June 30, 2015

- Liquidity Forecast Volatility is 1.13%
- Forecast Tracking Error is 0.38%
- 10-Day Value-at-Risk is \$27 million
- 10-Day Expected Shortfall is \$34 million



Forecasted Distribution of Returns*

Portfolio Positioning – Liquidity¹

Additional Risk Measures

		NAV	Duration	Yield
Program/Sector	MV (bn)	Active	Active	Active
U.S. Treasuries 2-10	\$2.7	-38.4%	-0.1	0.0
Short Term and Other	\$4.8	38.4%	N/A	0.1
Liquidity Program	\$7.5			-0.5

Forward-Looking Commentary – Liquidity

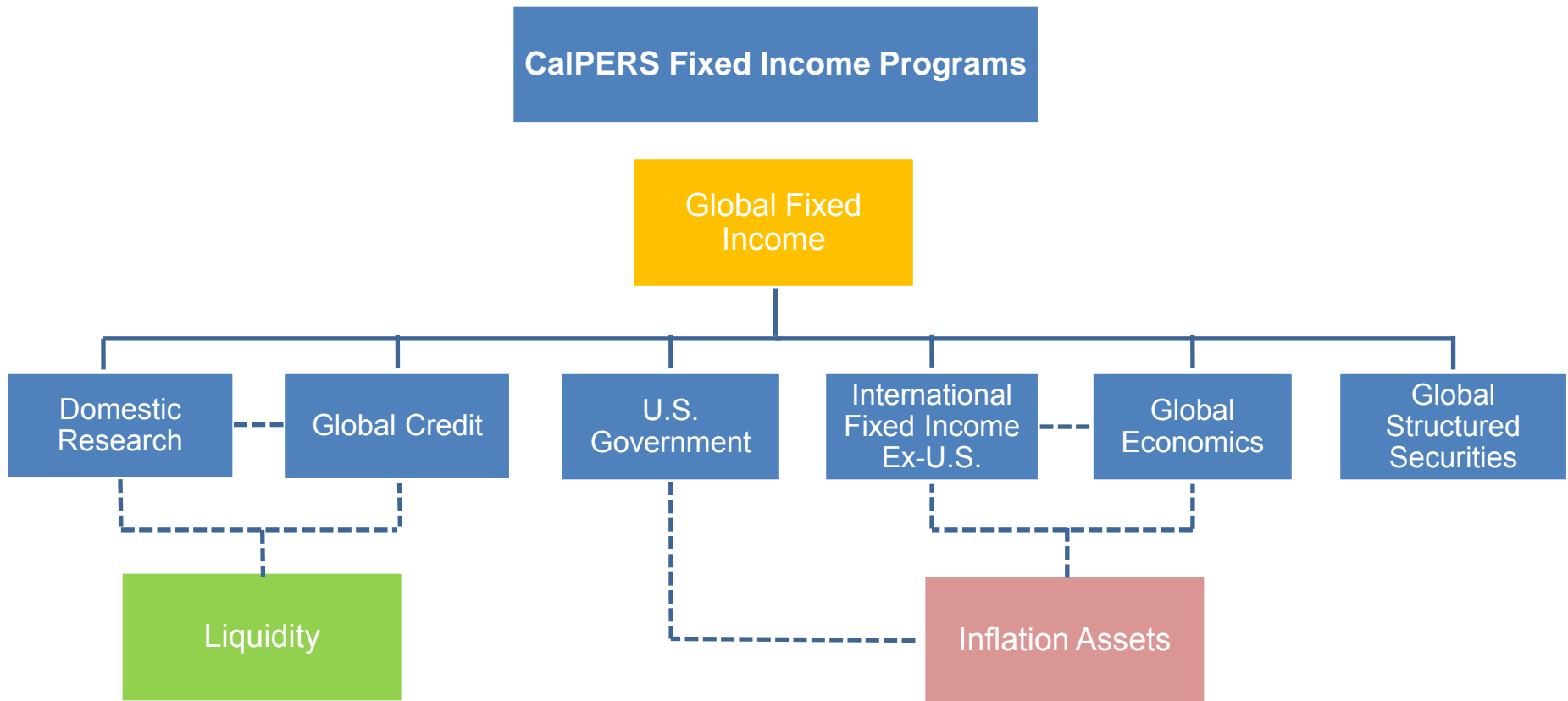
- Rising Fed Fund rates?

III. Business Review

Business Model

- Long-term investor
- Shifting risks within an economic cycle
- Keep costs low
- Ability to attract and retain investment professionals

Functional Organizational Chart



Staffing Overview

TOTAL PROGRAM ¹

- 56 total positions within Fixed Income compared to 57 positions in FY 2013-14

STAFFING UPDATES ¹

- Promoted 1 Investment Director
- Promoted 1 Investment Manager
- Promoted 7 Investment Officers
- Lost 1 Limited-Term Associate Government Program Analyst
- Lost 1 Investment Officer
- Transferred 1 Investment Officer Position to other INVO program

CURRENT VACANCIES ²

- 1 Investment Manager
- 5 Investment Officers

Strategic Initiatives

INITIATIVES	GOALS
20/20 Vision	FI Staff working on 8 initiatives
ESG Incorporation	Incorporate ESG into credit and sovereign process
Investing in CLO Equity Investments	Get approval from Investment Strategy Group for Total Fund opportunistic allocation
CalPERS STIF	Investigate and assess options for developing a CalPERS short-term investment fund (STIF)

Program Expenses

Expense Category	FY 2014-15			FY 2013-14		
	AUM (\$billions)	Fees Paid (\$millions)	Fees Paid ¹ (bps)	AUM (\$billions)	Fees Paid (\$millions)	Fees Paid ¹ (bps)
Internal Management	\$ 72	\$ 12	2	\$ 70	\$ 11	2
External Management ²	\$ 4	\$ 12	30	\$ 4	\$ 12	30
Consultants Expense	N/A	\$ 0	0	N/A	\$ 0	0
Technology & Operating Expense	N/A	\$ 13	2	N/A	\$ 10	1
<i>Total Program</i>	<i>\$ 76</i>	<i>\$ 37</i>	<i>5</i>	<i>\$ 74</i>	<i>\$ 33</i>	<i>4</i>

Conclusion

- Good relative performance
- Potentially insource short term