

# Fixed Income Programs Annual Review

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Managing Investment Director

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# Executive Summary - Program Performance

As of June 30, 2016	1-YR	3-YR	5-YR	10-YR	20-YR	Since Inception*
	Net Return	Net Return	Net Return	Net Return	Net Return	Net Return
<b>INCOME (\$59.9 bn)</b>	<b>9.3%</b>	<b>6.2%</b>	<b>5.9%</b>	<b>7.1%</b>	<b>7.2%</b>	<b>8.2%</b>
BENCHMARK	9.3%	5.5%	5.3%	6.5%	6.6%	7.5%
Excess Return	0.0%	0.7%	0.6%	0.6%	0.6%	0.7%

As of June 30, 2016	1-YR	3-YR	5-YR	Since Inception**
	Net Return	Net Return	Net Return	Net Return
<b>INFLATION (\$17.8 bn)</b>	<b>(3.6%)</b>	<b>(2.6%)</b>	<b>(1.5%)</b>	<b>0.9%</b>
BENCHMARK	(5.0%)	(3.6%)	(2.0%)	0.3%
Excess Return	1.4%	1.0%	0.5%	0.6%

As of June 30, 2016	1-YR	3-YR	5-YR***
	Net Return	Net Return	Net Return
<b>LIQUIDITY (\$4.5 bn)</b>	<b>0.4%</b>	<b>0.6%</b>	<b>1.1%</b>
BENCHMARK	0.2%	1.1%	1.5%
Excess Return	0.2%	(0.5%)	(0.4%)

\*The inception date is July 1988 and is based on custodian records

\*\*The inception date is October 2007 and is based on custodian records

\*\*\*Since inception reporting is omitted as the current Liquidity Program Policy went into effect in July 2011. Historical Liquidity composite returns are available from June 1993.

# Executive Summary - Portfolio Positioning

Program/Sector	MV (bn)	%NAV Active	Duration Active	% Duration Active	Yield Active
GFI	\$59.9	N/A	-0.1	N/A	0.4%
DFI	\$53.4	-0.9%	-0.1	N/A	0.4%
US Government	\$19.1	-3.6%	0.4	-2.6%	0.1%
Corporates	\$13.5	0.4%	-0.1	1.0%	0.4%
Mortgages	\$13.8	-3.9%	0.2	-0.6%	0.3%
Sovereign	\$2.2	0.9%	0.3	1.4%	0.0%
Opportunistic	\$3.8	3.6%	-0.5	0.8%	-0.8%
Cash Securities	\$1.0	1.7%	0.1	0.0%	-0.6%
IFI	\$6.5	0.9%	-0.2	N/A	0.7%

Program/Sector	MV (bn)	%NAV Active	Duration Active	Yield Active
Inflation Assets	\$17.8	N/A	N/A	N/A
Inflation Linked Bonds	\$13.1	-1.4%	0.2	0.4%
Commodities	\$4.7	1.4%	N/A	N/A

Program	MV (bn)	%NAV Port	Yield Active
Liquidity	\$4.5	N/A	0.1%
SSB STIF	\$3.8	84.3%	N/A
CP	\$0.7	14.8%	N/A
CD	\$0.0	0.9%	N/A

# Executive Summary – 2015/16 Strategic Initiatives Accomplishments

INITIATIVES	ACCOMPLISHMENTS
Liquidity	Operationalized the reporting and management of liquidity
CalPERS STIF	Completed investigation and assessment of options for developing a CalPERS STIF
High Yield Structured Investment Opportunities	Developed and delivered a presentation to ISG on the opportunity of investing in the first loss tranche of Collateralized Loan Obligations (CLOs)
Fixed Income Enhanced Cash	Developed a proposal for a portable alpha/enhanced cash strategy for the Total Fund

# Executive Summary - 2016/17 Strategic Initiatives

INITIATIVES	GOALS
INVO 2020 Vision	FI Staff working on 8 initiatives
ESG Incorporation	Continued to incorporate ESG into credit and sovereign process and quantify carbon footprint exposure in GFI portfolios
Investing in CLO Equity Investments	Move to new Opportunistic Credit Strategies Group
CalPERS STIF	Implement CalPERS short-term investment fund (STIF)
Currency Strategy Evaluation	Evaluate the current currency strategy, with a focus on private markets
Opportunistic Credit Strategies	Establish standard processes, reports, policies and procedures, and roles for the Opportunistic Credit Strategies group

# Appendix

Fixed Income Programs Annual Review

# Review Outline

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- 1 Liabilities
- 2 Long-Term Horizon
- 3 Stakeholders
- 4 Three Forms of Capital
- 5 Accountability
- 6 Strategic Allocation
- 7 Risk Reward
- 8 Costs Matter
- 9 Multi-faceted Risk
- 10 Resources/Process

## 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 Roles<sup>1</sup>

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 \$59.9 billion or 20.3% of the Total Fund, which is 0.3% above Policy target.

## Inflation Assets

Inflation Assets provide liquid and strong protection against inflation.

- Inflation Assets accounts for \$17.8 billion or 6.0% of the Total Fund, which is in line with 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 \$4.5 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
- Use of external managers as extension of staff

# 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

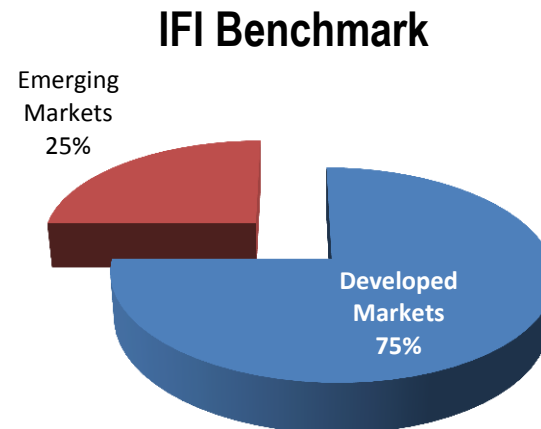
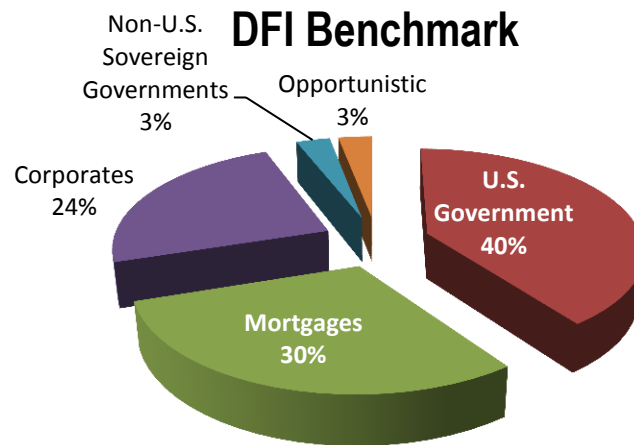
- 75% Global ILB Custom Index
- 25% Standard & Poor's GSCI Total Return Index

## Liquidity Policy Benchmark

- 91-Day 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 internally<sup>1</sup>



## 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
- 100% internally managed

## Program Characteristics – Liquidity

- Benchmark:
  - U.S. Treasury Bills of 91-Day Maturity
- 100% internally managed



## II. Investment Review

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

## Past Year Environment Review – Global Fixed Income

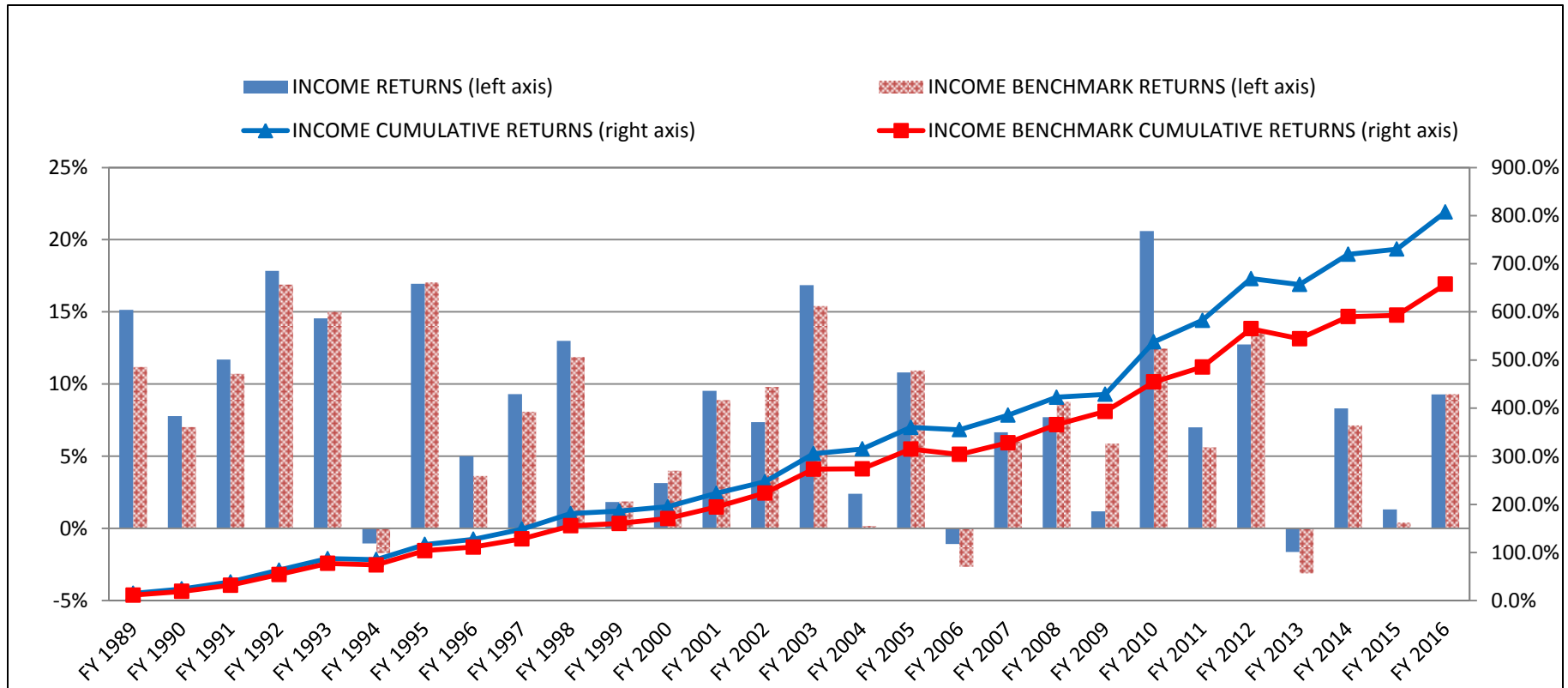
- Slow US growth (1.2%) with low inflation (1.0%)
- Quantitative easing by the Bank of Japan, European Central Bank, etc. supports foreign demand for US Fixed Income
- Increased savings by US Household Sector supports bonds
- Risk assets were not rewarded
- China and Japan engage in significant fiscal stimulus

# Program Performance Summary - Global Fixed Income

As of June 30, 2016	1-YR	3-YR	5-YR	10-YR	20-YR	Since Inception*
	Net Return	Net Return	Net Return	Net Return	Net Return	Net Return
<b>INCOME</b>	<b>9.3%</b>	<b>6.2%</b>	<b>5.9%</b>	<b>7.1%</b>	<b>7.2%</b>	<b>8.2%</b>
BENCHMARK	9.3%	5.5%	5.3%	6.5%	6.6%	7.5%
Excess Return	0.0%	0.7%	0.6%	0.6%	0.6%	0.7%

- Strong absolute performance versus the benchmark
- Index-like 1-year relative performance
- Strong long term excess return

# Program Performance Review – Global Fixed Income Cumulative Return

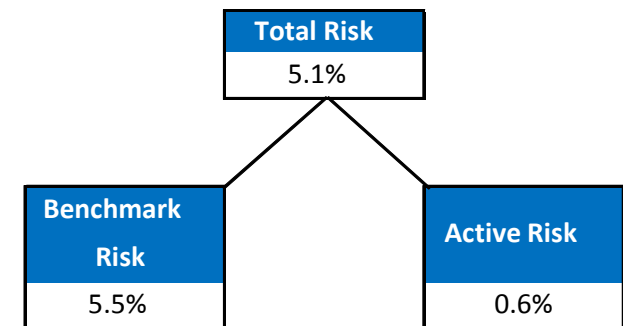


\*The inception date is July 1988 and is based on custodian records

# Volatility Profile – Global Fixed Income

As of June 30, 2016

- Income Forecast Volatility is 5.1%
- Forecast Tracking Error is 0.6%
- Correlation vs. the entire PERF portfolio is 0.17
- 1-Month Value-at-Risk is \$1.6 billion
- 1-Month Expected Shortfall is \$2.0 billion



# Portfolio Positioning – Global Fixed Income<sup>1</sup>

## Additional Risk Measures

		%NAV	Duration	% Duration	Yield
Program/Sector	MV (bn)	Active	Active	Active	Active
GFI	\$59.9	N/A	-0.1	N/A	0.4%
DFI	\$53.4	-0.9%	-0.1	N/A	0.4%
US Government	\$19.1	-3.6%	0.4	-2.6%	0.1%
Corporates	\$13.5	0.4%	-0.1	1.0%	0.4%
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Sovereign	\$2.2	0.9%	0.3	1.4%	0.0%
Opportunistic	\$3.8	3.6%	-0.5	0.8%	-0.8%
Cash Securities	\$1.0	1.7%	0.1	0.0%	-0.6%
IFI	\$6.5	0.9%	-0.2	N/A	0.7%

# Forward-Looking Commentary – Global Fixed Income

- More challenges likely for the Fed (higher inflation, tighter jobs market)
- US policy settings (and confidence) to be impacted by the US election
- Uncertainty in Europe around Brexit negotiations and elections in France and Germany
- International policy settings likely to remain easy but efficacy may be called into question
- Uncertain investor behavior due to \$10trn in negative yielding global bonds

## II. Investment Review

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



## Past Year Environment Review – Inflation Assets

- US and UK Inflation began to rise from 0% to 1% and 0.5%, respectively
- European Inflation was barely positive
- Oil prices declined during the fiscal year and hit a 12 year low in early 2016

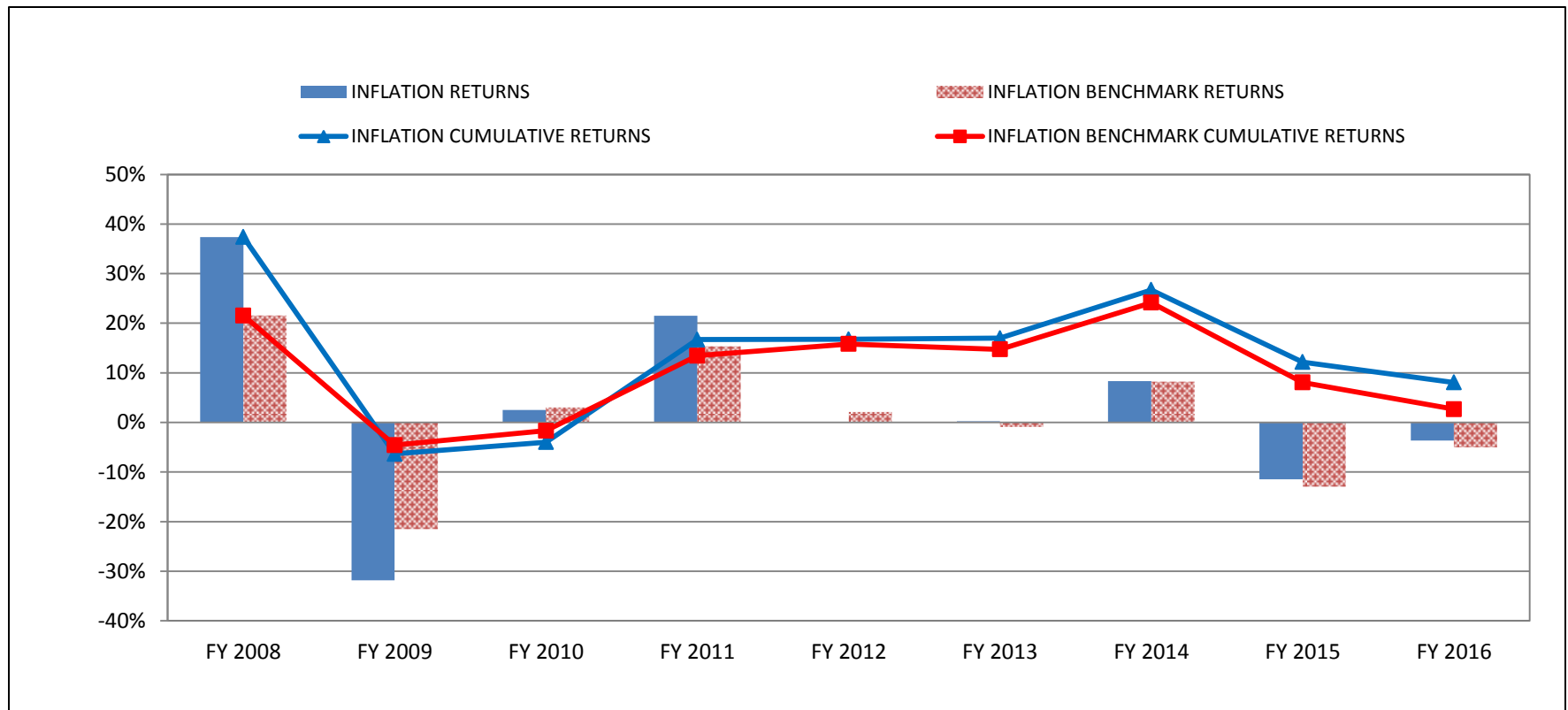
# Program Performance Review – Inflation Assets

	1-YR	3-YR	5-YR	Since Inception*
As of June 30, 2016	Net Return	Net Return	Net Return	Net Return
<b>INFLATION</b>	<b>(3.6%)</b>	<b>(2.6%)</b>	<b>(1.5%)</b>	<b>0.9%</b>
BENCHMARK	(5.0%)	(3.6%)	(2.0%)	0.3%
Excess Return	1.4%	1.0%	0.5%	0.6%

- Weak absolute returns
- Strong excess returns versus the benchmark in all time periods

# Program Performance Review – Inflation Assets

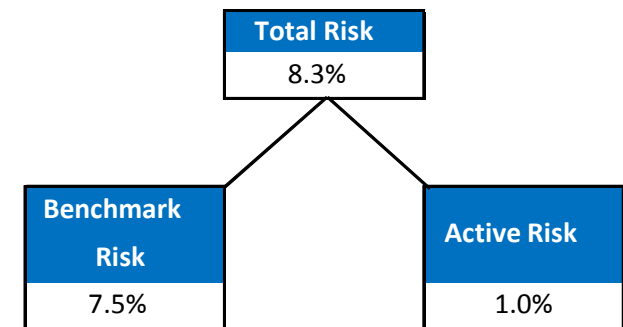
## Cumulative Return



# Volatility Profile – Inflation Assets

As of June 30, 2016

- Inflation Forecast Volatility is 8.3%
- Forecast Tracking Error is 1.0%
- Correlation vs. the entire PERF portfolio is 0.54
- 1-Month Value-at-Risk is \$655 million
- 1-Month Expected Shortfall is \$818 million



# Portfolio Positioning – Inflation Assets<sup>1</sup>

## Additional Risk Measures

		% NAV	Duration	Yield
Program/Sector	MV (bn)	Active	Active	Active
Inflation Assets	\$17.8	N/A	N/A	N/A
Inflation Linked Bonds	\$13.1	-1.4%	0.2	0.4%
Commodities	\$4.7	1.4%	N/A	N/A

## Forward-Looking Commentary – Inflation Assets

- Rising US Inflation above 2%
- Rising UK Inflation, Europe unchanged
- Real yields steady to higher
- Rising commodities

## II. Investment Review

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

## Past Year Environment Review – Liquidity

- Single rate hike from the US Federal Reserve due to global worries
- Low US trade deficits allowed for the US to fund cheaply from outside the US
- Financial sector regulation results in tighter credit conditions

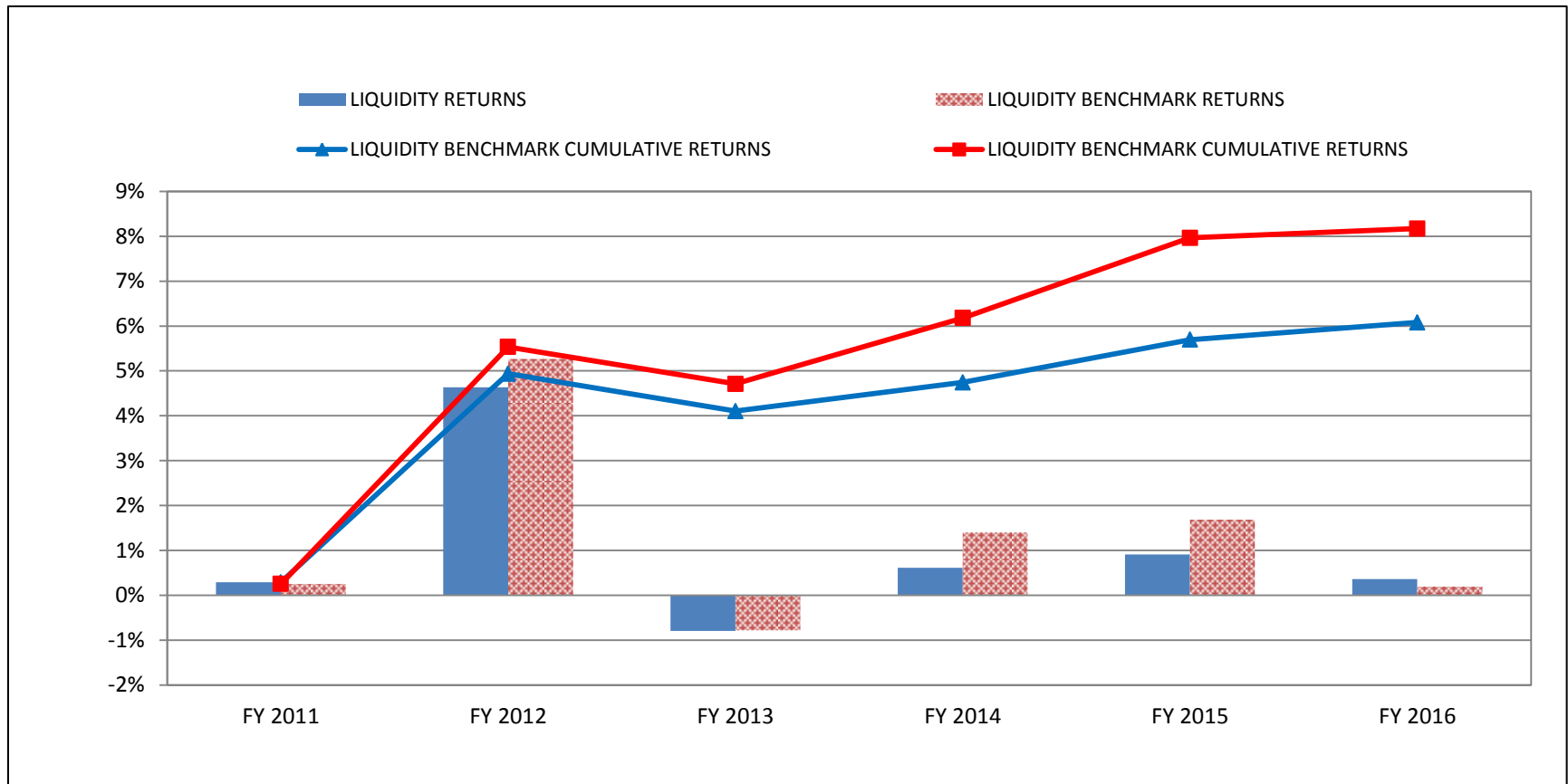


# Program Performance Review – Liquidity

As of June 30, 2016	1-YR	3-YR	5-YR*
	Net Return	Net Return	Net Return
<b>LIQUIDITY</b>	<b>0.4%</b>	<b>0.6%</b>	<b>1.1%</b>
BENCHMARK	0.2%	1.1%	1.5%
Excess Return	0.2%	(0.5%)	(0.4%)

- Low absolute and relative return
- Role of low-risk profile and high liquidity results in limited opportunities for excess return

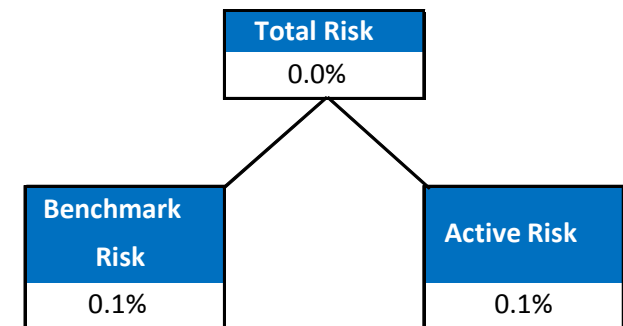
# Program Performance Review – Liquidity Cumulative Return



# Volatility Profile – Liquidity

As of June 30, 2016

- Liquidity Forecast Volatility is 0.0%
- Forecast Tracking Error is 0.1%
- 1-Month Value-at-Risk is \$17,760
- 1-Month Expected Shortfall is \$22,307



# Portfolio Positioning – Liquidity<sup>1</sup>

## Additional Risk Measures

		%NAV	Yield
Program	MV (bn)	Port	Active
Liquidity	\$4.5	N/A	0.1%
SSB STIF	\$3.8	84.3%	N/A
CP	\$0.7	14.8%	N/A
CD	\$0.0	0.9%	N/A

## Forward-Looking Commentary – Liquidity

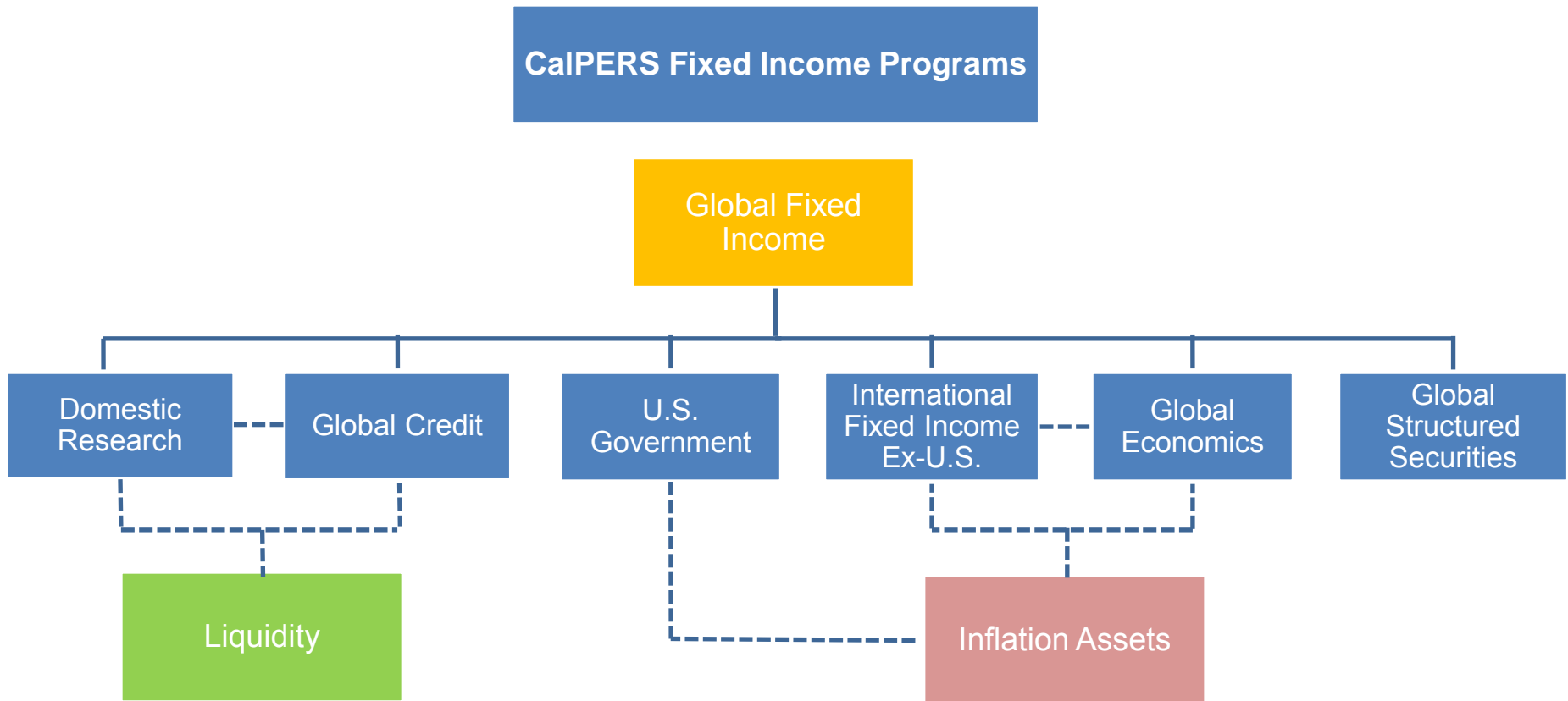
- Fed will tighten as inflation concerns rise

## 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 <sup>1</sup>

- 53 total positions within Fixed Income compared to 56 positions in FY 2014-15

## STAFFING UPDATES <sup>1</sup>

- Promoted 4 IOs
- Lost 3 IMs and filled 1 IM by promotion
- Promoted 1 Executive Secretary
- Transferred 2 IOs and 1 IM to other INVO programs

## CURRENT VACANCIES <sup>2</sup>

- 3 IMs
- 5 IOs

# Program Expenses

<i>Expense Category</i>	2015-16			FY 2014-15		
	AUM (\$billions)	Fees Paid (\$millions)	Fees Paid <sup>1</sup> (BPS)	AUM (\$billions)	Fees Paid (\$millions)	Fees Paid <sup>1</sup> (BPS)
Internal Management	\$76	\$12	2	\$70	\$12	2
External Management <sup>2</sup>	\$6	\$13	22	\$6	\$12	20
Consultants Expense	N/A	\$0	0	N/A	\$0	0
Technology & Operating Expense	N/A	\$10	1	N/A	\$13	2
<i>Total Program</i>	<i>\$82</i>	<i>\$35</i>	<i>4</i>	<i>\$76</i>	<i>\$37</i>	<i>5</i>