

CIO Total Fund Performance & Risk Report

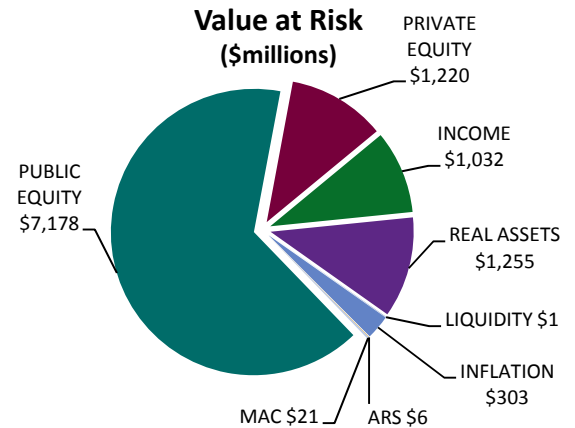
RISK MANAGEMENT SUMMARY



Period Ending November 30, 2015

Investment Belief 9: Risk to CalPERS is multi-faceted and not fully captured through measures such as volatility or tracking error. CalPERS shall develop a broad set of investment and actuarial risk measures and clear processes for managing risk. The path of returns matters, because highly volatile returns can have unexpected impacts on contribution rates and funding status.

Total Fund Volatility Trends (%)				
	Policy Limit	Current 11/30/2015	Last Qtr 9/30/2015	Last Year 11/30/2014
Total	n/a	9.9	9.7	9.5
Benchmark	n/a	9.5	9.5	9.2
Active	< 1.5%	0.8	0.7	0.8
Allocation	< .75%	0.2	0.0	0.1
Selection	n/a	0.7	0.7	0.7



Comments:

Forecast Total Volatility for the PERF has increased by 35bps in the past year to 11/30/15 in line with the Policy Benchmark. Forecast Active Volatility has been in the 70-80bps range for the past year.

Asset Class	Market Value (\$millions)	Total Volatility (%)	% Contribution to Total Vol	Tracking Error (%)	Correlation***	Value at Risk (\$millions)*	Conditional VaR(\$millions)**
PUBLIC EQUITY	\$ 157,799	13.7%	74.4%	0.3%	0.98	\$ 7,178	\$ 8,908
PRIVATE EQUITY	\$ 27,606	13.1%	11.5%	5.9%	0.92	\$ 1,220	\$ 1,491
INCOME	\$ 55,941	5.9%	1.4%	0.4%	0.13	\$ 1,032	\$ 1,313
REAL ASSETS	\$ 32,229	12.1%	10.8%	4.1%	0.81	\$ 1,255	\$ 1,562
LIQUIDITY	\$ 4,022	0.1%	0.0%	0.1%	(0.16)	\$ 1	\$ 1
INFLATION	\$ 14,356	6.6%	1.7%	1.5%	0.53	\$ 303	\$ 379
ARS	\$ 470	3.7%	0.0%	3.8%	0.51	\$ 6	\$ 7
MAC	\$ 1,207	5.6%	0.2%	5.6%	0.68	\$ 21	\$ 27
TOTAL FUND**	\$ 293,644	9.87	100.0%	0.82	1.00	\$ 9,417	\$ 11,827

*10 Day, 95% confidence Value at Risk (VaR)

** 10 Day, 95% confidence Value at Risk (VaR) simulation. Conditional VaR measures the mean of the tail distribution beyond the 95% confidence level

*** Correlations are vs. the entire PERF portfolio

Due to reporting constraints, all risk statistics are as of November 30, 2015 unless otherwise stated

Source: BarraOne / CalPERS

RISK MANAGEMENT TIME SERIES

Top Charts:

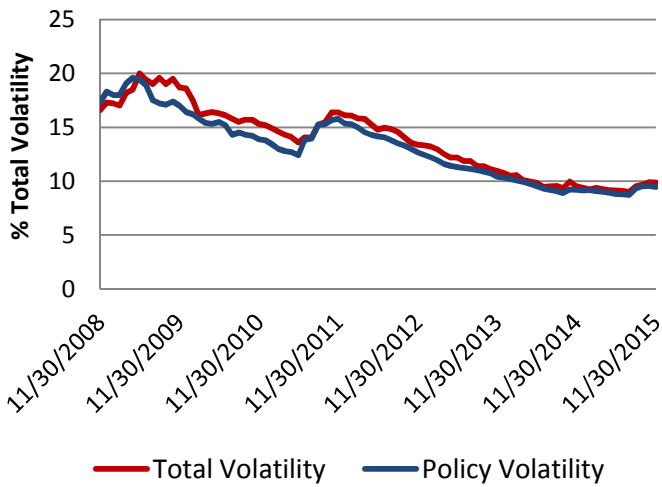
1 year Forecast Total Volatility and Forecast Tracking Error for the Total Fund are shown. The charts highlight the increased volatility from the 2008-2009 period.

Bottom Chart:

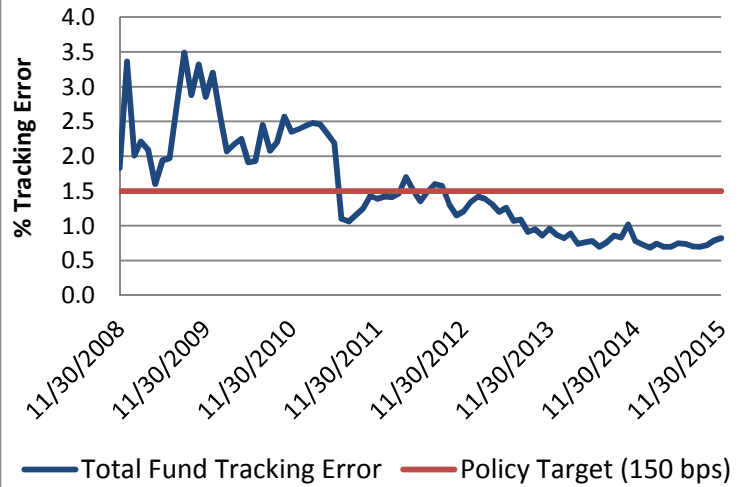
The bottom chart plots the forecast Total Volatility and Tracking Error for the Total Fund one year prior to each date vs. the Total Volatility and Tracking Error realized for that date. The graph shows the lagged nature of long term risk models that incorporate a larger backward estimation window which you can see from the realized volatility leading the forecast from the model and highlights the importance of looking at changes in realized volatility that may indicate a deviation from capital markets assumptions.

Source: BarraOne, SSB, CalPERS

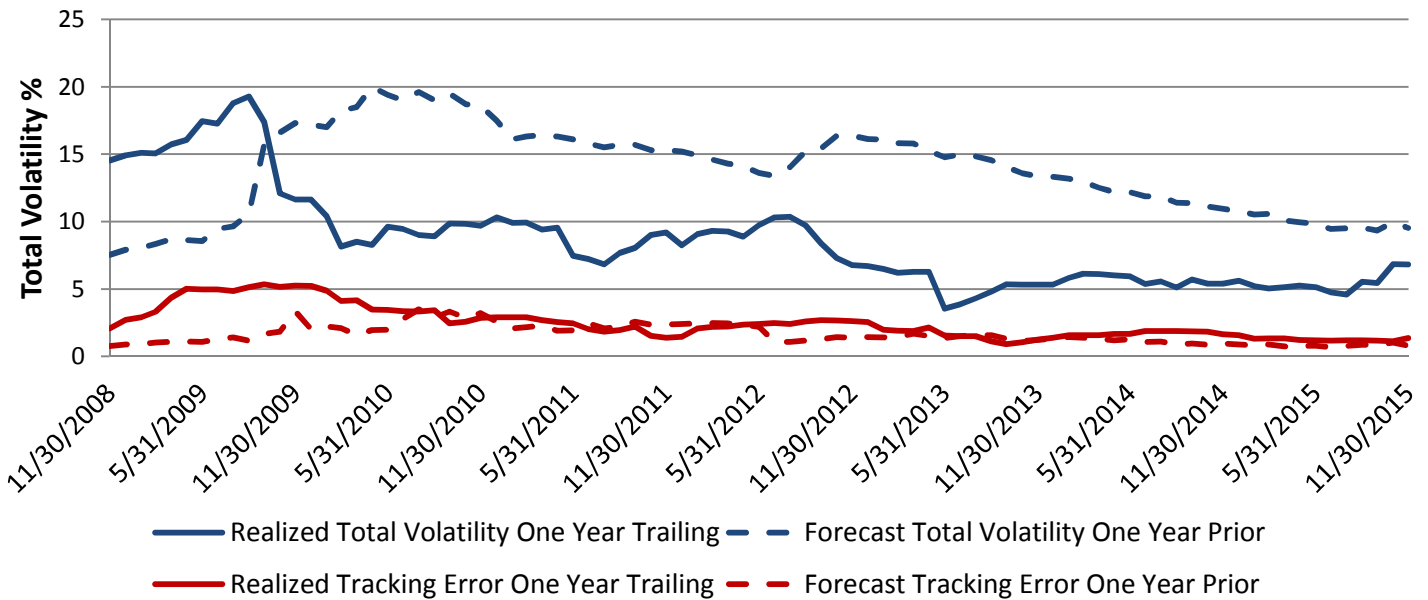
1 Year Forecast Total Volatility



1 Year Forecast Tracking Error

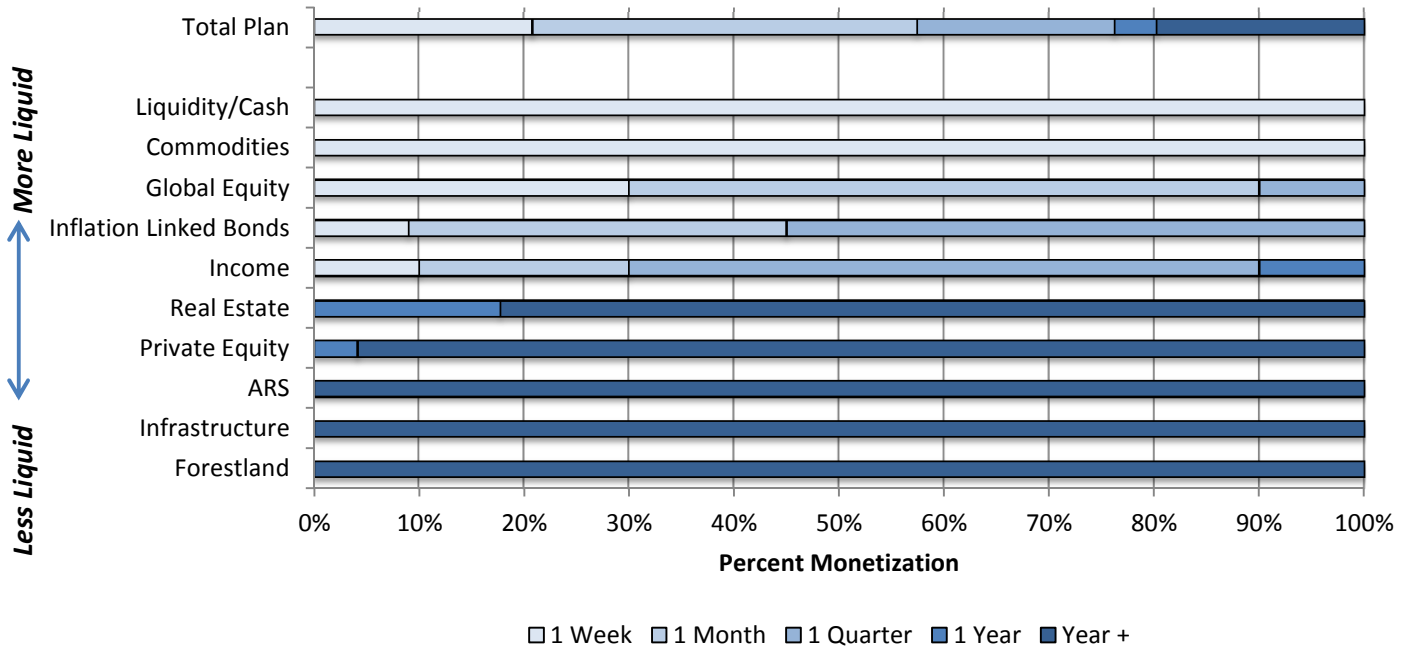


Total Volatility and Tracking Error: Forecast vs. Realized Volatility



LIQUIDITY

Liquidity Analysis: Total Plan



Transactional liquidity is estimated for each asset class /strategy based on the current market environment while also accounting for legal structures or other factors that may impact liquidity. *Source: SSB, CalPERS*

PERF TACTICAL LIQUIDITY SNAPSHOT

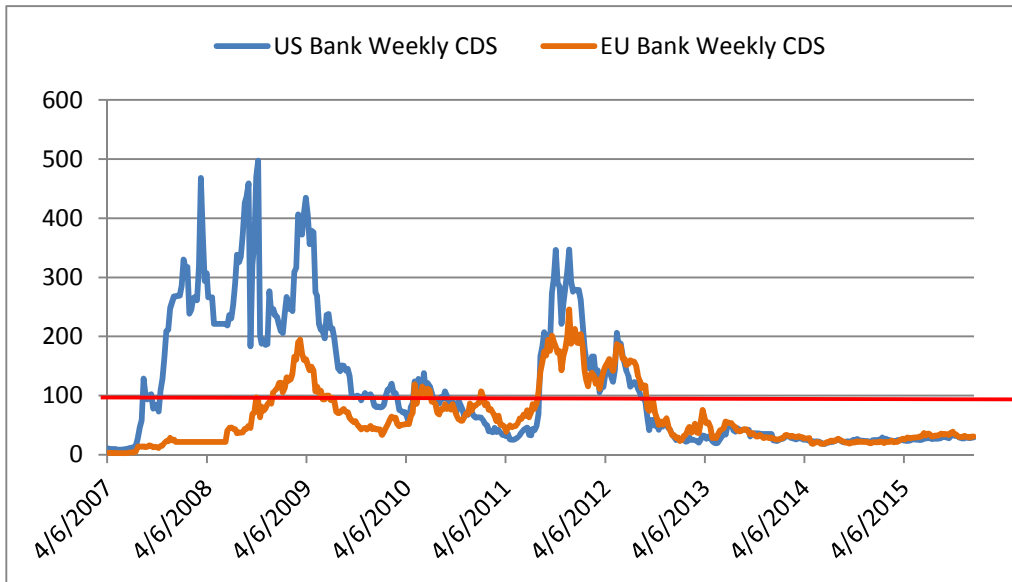
As of December 31, 2015

	Overnight	2 days - EOM	
Sources:			
a Sources Total (cash flow in)	-	\$ 1,392,061,732	
b Uses Total (cash flow out)	-	\$ (3,150,658,633)	
c Sources in Excess (Deficit) of Uses		\$ (1,758,596,901)	= a+b
d Contingency Use*		\$ (60,792,852)	
e Total Cash and Cash Equivalents	\$ 5,139,947,561	\$ 3,381,350,659	
Liquidity Coverage Ratio		203%	= (a+e)/(b+d)

* Contingency Use is based on a 10 Day, 99% confidence VaR of derivatives positions + contingent exposure estimates

The Tactical Liquidity snapshot is built from estimates of future cash inflows and outflows over a 1 year horizon. For this report the 1 month forward period is being shown along with a Liquidity Coverage ratio which can be interpreted as how many times (in this case 2.0 times) our available liquid cash /cash equivalents could cover our projected cash needs over a 1 month forward period assuming normal market conditions. *Source: BarraOne, SSB, CalPERS*

COUNTERPARTY RISK



Current CDS spreads are tracked for CalPERS counterparties. If the average of the CDS spreads rises above 100bps an internal meeting is held to discuss the change in trend and potential credit risk mitigating actions that might be taken.

Counterparty	NET MTM FORWARDS (\$)	Net MTM OPTIONS (\$)	Net MTM SWAPS (\$)	CalPERS Exposure (\$)	Counter Party Exposure (\$)	Net MTM Total (\$)	Collateral Posted (\$)*	Net Credit Net Exposure (\$)
Bank of Montreal	370,154.00			370,154.00		✓ 370,154.00	(350,000.00)	20,154
Bank of America	12,147,946.00		(5,127,362.00)	20,218,307.00	(13,197,723.00)	✓ 7,020,584.00	(5,487,442.15)	1,533,142
BNP Paribas	(1,879,412.00)		1,770,179.00	10,098,579.00	(10,207,812.00)	✓ (109,233.00)	(1,120,588.00)	(1,229,821)
Barclays	2,243,430.00	226.00		3,002,580.00	(758,924.00)	✓ 2,243,656.00	369,410.00	2,613,066
Commonwealth Bank of Australia	106,785.00			192,508.00	(85,723.00)	✓ 106,785.00	(110,000.00)	(3,215)
Citigroup	5,849,290.00		(542,055.00)	15,642,404.00	(10,335,169.00)	✓ 5,307,235.00	(2,371,002.49)	2,936,233
Canadian Imperial Bank of Commerce			(2,687,872.00)		(2,687,872.00)	✓ (2,687,872.00)	9,850,000.00	7,162,128
Credit Suisse	2,025.00			2,025.00		✓ 2,025.00	0.00	2,025
Credit Suisse International	4,700,238.00		(3,992,750.00)	6,762,974.00	(6,055,486.00)	✓ 707,488.00	(327,975.09)	379,513
Deutsche Bank	(2,222,455.00)	537,952.00	(3,872,792.00)	5,081,127.00	(10,638,422.00)	✓ (5,557,295.00)	9,270,000.00	3,712,705
Goldman Sachs Bank		(336,877.00)	(15,043,760.00)	19,427.00	(15,400,064.00)	✓ (15,380,637.00)	11,650,923.17	(3,729,714)
Goldman Sachs Intl.	1,921,480.00	237.00	(2,948,656.00)	3,356,739.00	(4,383,678.00)	✓ (1,026,939.00)	8,950,000.00	7,923,061
HSBC	12,506,856.00	(19,297.00)	(1,256,208.00)	25,672,913.00	(14,441,562.00)	✓ 11,231,351.00	(12,635,597.95)	(1,404,247)
JPMorgan Chase Bank	4,018,521.00	(16,371.00)	(5,993,226.00)	9,410,458.00	(11,401,534.00)	✓ (1,991,076.00)	21,692,637.22	19,701,561
Macquarie			(3,259,677.00)		(3,259,677.00)	✓ (3,259,677.00)	11,950,000.00	8,690,323
Morgan Stanley Capital Group			(1,752,051.00)		(1,752,051.00)	✓ (1,752,051.00)	0.00	(1,752,051)
Morgan Stanley Capital Service	(15,351,530.00)	7,874.00	(7,335,688.00)	15,914,591.00	(38,593,935.00)	✓ (22,679,344.00)	26,550,000.00	3,870,656
RBC Capital Markets	159,806.00			759,874.00	(600,068.00)	✓ 159,806.00	(310,000.00)	(150,194)
Standard Chartered Bank	(1,103,115.00)			55,010.00	(1,158,125.00)	✓ (1,103,115.00)	0.00	(1,103,115)
Societe Generale	1,046,100.00	(31,265.00)	(3,803,071.00)	5,492,364.00	(8,280,600.00)	✓ (2,788,236.00)	0.00	(2,788,236)
State Street	143,277.00			923,509.00	(780,232.00)	✓ 143,277.00	(1,880,000.00)	(1,736,723)
Toronto Dominion	2,012,561.00			2,086,554.00	(73,993.00)	✓ 2,012,561.00	(2,200,000.00)	(187,439)
UBS AGG	(2,161,262.00)			365,151.00	(2,526,413.00)	✓ (2,161,262.00)	(2,311,067.30)	(4,472,329)
Grand Total	24,510,695.00	142,479.00	(55,844,989.00)	125,427,248.00	(156,619,063.00)	✓ (31,191,815.00)	71,179,297.41	39,987,482

*As of 12/24 CalPERS posted 100mm to Counterparties which includes Internal and External Collateral

Above: Total market value exposure and net credit exposures are monitored for all of our OTC (over-the-counter) positions. The green check box in the OTC exposure table indicates that the total market value exposure is within our procedural tolerances.

Source: Blackrock, CalPERS

Below: FCM (Futures Commission Merchant) exposures are monitored for how much initial margin we have posted with our FCM in addition to reviewing key metrics that provide some insight on the FCM's risk profile such as Excess Net Capital (amount of additional capital the FCM has to support the business) and customer assets. Large changes in these metrics could be an indicator of potential credit or operational issues with the FCM and would trigger an internal review. Source: CalPERS, CFTC

FUTURES CLEARING MERCHANT EXPOSURE						
Futures Commission Merchant	Collateral Posted	Procedure Check	Excess Net Capital	Procedure Check	Customers' Assets	Procedure Check
CITIGROUP GLOBAL MARKETS INC	582,208,429	✓	4,984,659,588	✓	7,936,832,191	✓

*As of December 24, 2015

LEVERAGE

Total Fund Leverage Report

as of 12/31/15

Asset Class	Net Market Value (\$Billions)	Leverage Sources						Policy Leverage Calc % ¹⁰	Policy Limit	Leverage embedded in company structure or investment vehicle (\$Billions)	Total Gross Exposure ⁸ (\$Billions)
		Notional Exposure	Non Recourse Debt	Recourse Debt ⁴	Contingent Claim	CalPERS controlled leverage deployment (\$Billions)	Embedded Leverage Sources ^{4,6}				
Public Equity ^{2,3}	154.7	5.5	-	-	-	-	4%	10%	53.3	\$ 213.5	
Private Equity ⁵	27.4	-	-	-	-	-	-	-	12.4	39.7	
Income	55.6	0.8	-	-	-	-	1.4%	10%		56.4	
Liquidity	5.2	-	-	-	-	-	-	-		5.2	
Real Estate	26.9	-	12.5	0.02	-	-	32%	50%		39.4	
Infrastructure	2.3	-	2.1	-	-	-	47%	65%		4.4	
Forestland	2.2	-	0.6	-	-	-	21%	50%		2.8	
Inflation Linked	14.0	-	-	-	-	-	-	-		14.0	
ARS (incl. MAC) ⁹	1.6	-	-	-	-	-	-	-		1.6	
Transition + Overlay	0.0	-	-	-	-	-	-	-		0.0	
Total Fund	\$ 289.9	6.3	15.1	0.02	-	-	-	-	65.7	\$ 377.0	
Programs	Net Market Value (\$Billions)	Notional Exposure	Non Recourse Debt	Recourse Debt	Contingent Claim	Policy Leverage Calc %	Policy Limit	Embedded Leverage Sources	Total Gross Exposure ⁸ (\$Billions)		
Credit Enhancement ⁶	-	-	-	-	0.6	-	-	-	0.6		
Asset Based Lending ⁷	-	-	-	-	-	-	-	-	-		
Securities Lending ¹	-	1.6	-	-	-	18%	70%	-	1.6		
Total- Unfunded Programs/Overlays		1.6			0.6	-	-	-	\$ 2.2		
Total Asset Class + Programs	\$ 290	7.8	15.1	0.02	0.6	-	-	65.7	\$ 379.2		

1. Securities Lending notional exposure is the dollar amount of reinvested capital with maturity greater than 90 days. Policy Leverage % for Securities Lending is calculated as the notional exposure divided by the total size of the program. The size of the Securities Lending program as of 12-31 was \$8.6 Billion.

2. Public Equity Notional Exposure is the net notional value of derivatives that are not backed by cash like instruments.

3. Embedded leverage represented for Public Equity is non-recourse debt. This amount is estimated using the average LT Debt/Capital ratio (currently at 34.48%) of the underlying holdings.

4. Recourse Debt in Real Estate decreased by \$4 Million from the prior report.

5. Embedded leverage for Private Equity is non-recourse debt exposure at the investment company level or within commingled funds. This is estimated using the average Net Debt/Enterprise Value ratio (currently estimated at 45.2%) for all PE holdings.

6. Credit Enhancement - exposure is contingent upon default of underlying obligation being insured + estimated recovery ratio on the security.

7. Asset Based Lending - exposure is contingent upon default of underlying obligation + estimated sale of recoverable assets.

8. Total Gross Exposure is the sum of Net Market Value + Leverage Sources (within CalPERS direct control for implementation as well as embedded leverage).

9. ARS is currently being wound down.

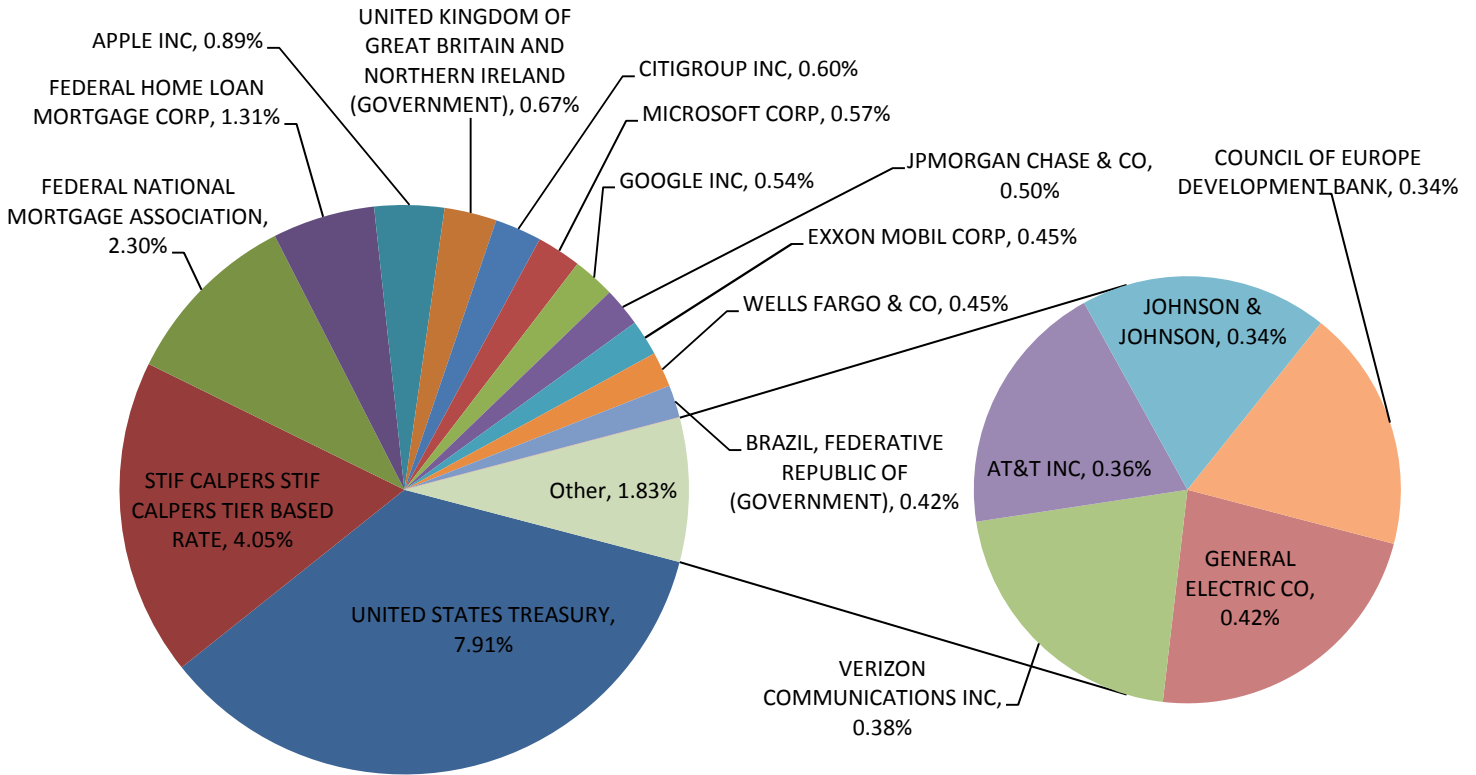
10. Policy Calculations - limits for leverage are typically set on leverage source(s) within an asset class/program where deployment is controlled or influenced by internal staff.

The below table summarizes the specific policy limits shown in the table above and which leverage source they are specified against.

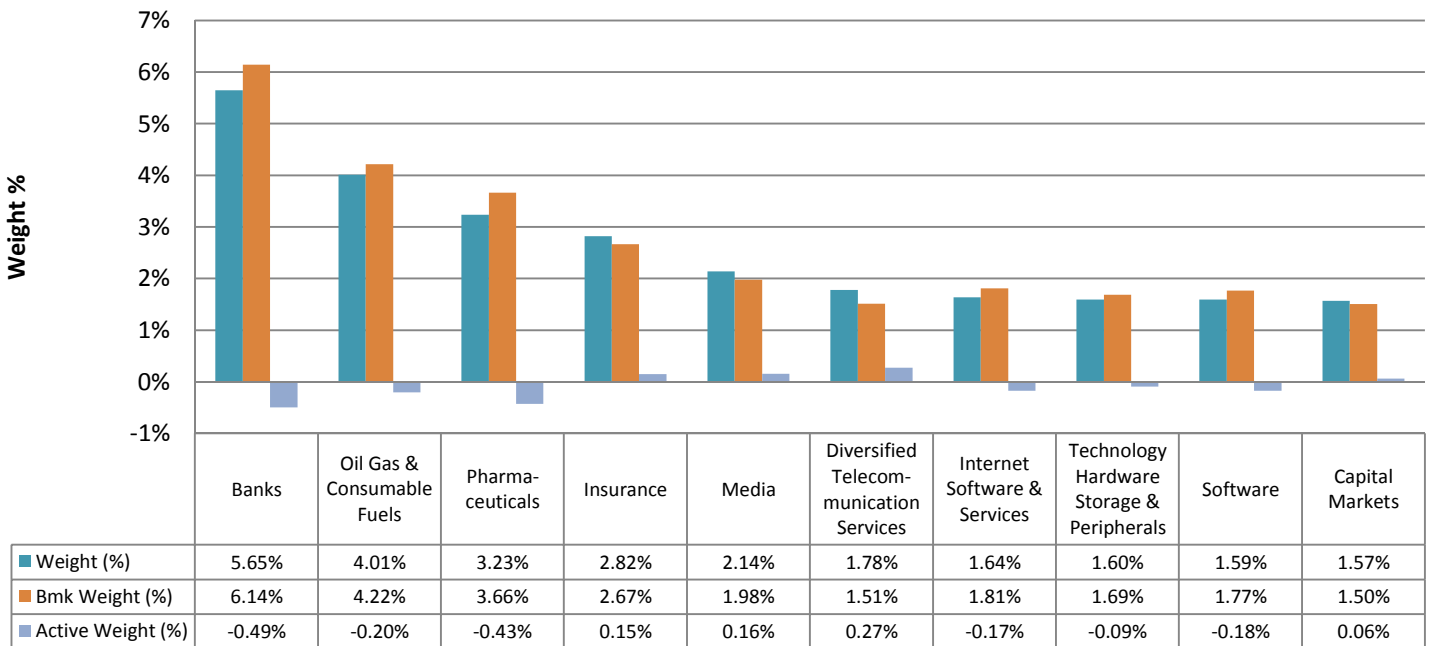
Asset Class / Program	Leverage Type	Policy Limit
Public Equity	Notional Leverage	10%
Income	Notional Leverage	10%
Real Estate	Non-Recourse + Recourse	50%
Infrastructure	Non-Recourse + Recourse	65%
Forestland	Non-Recourse + Recourse	50%
Securities Lending	Notional Leverage	70%

CONCENTRATION REPORT

Top 20 Public Assets Global Issuer Exposure

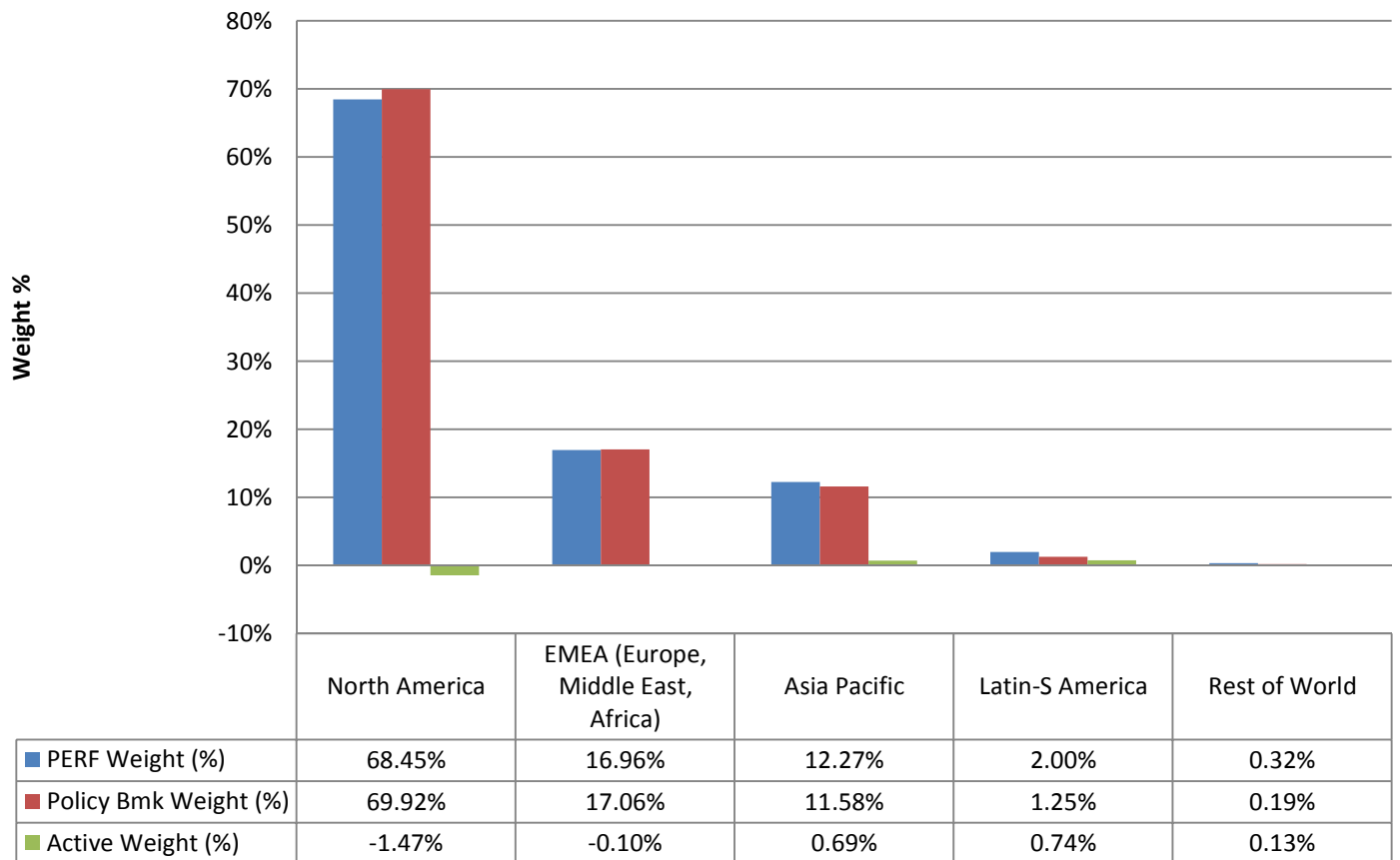


Top 10 GICS Industry Exposure



CONCENTRATION REPORT

Regional Exposures



Country	PERF Weight (%)	Policy Bmk Weight (%)	Active Weight (%)
United States	66.31%	67.97%	-1.65%
Japan	5.17%	5.49%	-0.33%
United Kingdom	5.14%	5.17%	-0.04%
Canada	2.14%	2.19%	-0.06%
France	1.99%	2.09%	-0.10%
Germany	1.95%	1.95%	0.00%
Switzerland	1.47%	1.73%	-0.26%
Australia	1.34%	1.36%	-0.02%
Brazil	1.08%	1.02%	0.06%
South Korea	0.96%	0.89%	0.07%

Currency	PERF Weight (%)	Policy Bmk Weight (%)	Active Weight (%)
US Dollar	67.67%	70.05%	-2.38%
Euro	7.06%	7.12%	-0.06%
Japanese Yen	5.18%	5.15%	0.03%
British Pound	4.91%	4.78%	0.13%
Canadian Dollar	1.92%	1.72%	0.20%
Hong Kong Dollar	1.62%	1.79%	-0.17%
Swiss Franc	1.47%	1.73%	-0.26%
Australian Dollar	1.37%	1.37%	0.00%
Brazilian Real	1.02%	0.44%	0.58%
Korean Won	0.95%	0.87%	0.07%

HISTORICAL SCENARIOS

Historical scenarios highlight the sensitivity of the portfolio to past economic regimes or specific events. The scenarios can be used as a "what if" gauge of current portfolio positioning to understand the potential impact if a similar event or regime were to repeat.

Best and Worst Scenarios - Excess Return

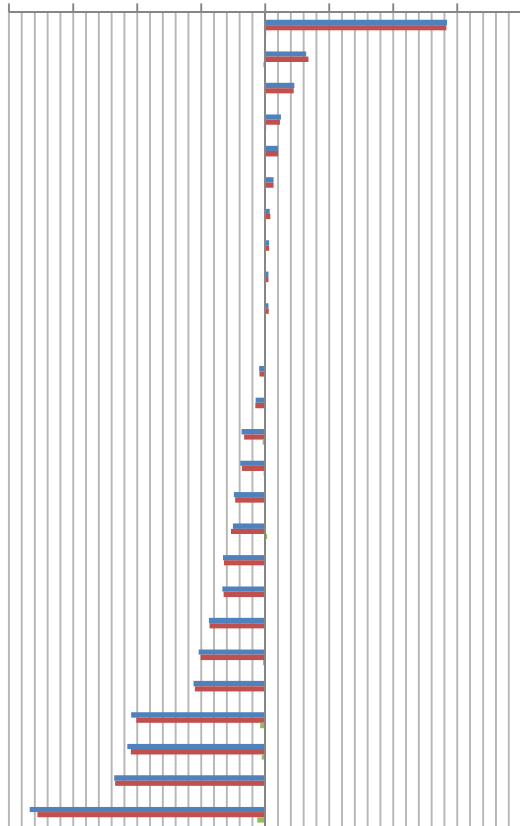
Scenario	Portfolio Return	Policy Benchmark Return	Excess Return
1994 US Rate Hike	-5.0%	-5.3%	0.3%
2003 Iraq War	2.4%	2.3%	0.2%
1997 - 1999 Oil Price Decline	28.4%	28.3%	0.1%
2001 Dot-com Slowdown	-21.5%	-21.0%	-0.5%
2000 - 2002 Argentine Economic Crisis	-20.9%	-20.1%	-0.8%
2007-2009 Subprime Mortgage Meltdown(Oct. to Feb.)	-36.8%	-35.6%	-1.2%

Best and Worst Scenarios - Portfolio Return

Scenario	Portfolio Return	Policy Benchmark Return	Excess Return
1997 - 1999 Oil Price Decline	28.4%	28.3%	0.1%
1992 - 1993 European Currency Crisis	6.4%	6.7%	-0.3%
2001 Fed Rate Cut	4.5%	4.5%	0.1%
2001 Dot-com Slowdown	-21.5%	-21.0%	-0.5%
1972 - 1974 Oil Crisis (Dec. to Sep.)	-23.6%	-23.4%	-0.1%
2007-2009 Subprime Mortgage Meltdown(Oct. to Feb.)	-36.8%	-35.6%	-1.2%

Historical Scenarios

-40% -30% -20% -10% 0% 10% 20% 30% 40%



1997 - 1999 Oil Price Decline
 1992 - 1993 European Currency Crisis
 2001 Fed Rate Cut
 2003 Iraq War
 2000 Emerging Market Decline
 1995 US Dollar Rally
 1999 Brazillian Real Crisis
 1998 LTCM Collapse
 2011 Egyptian Unrest
 1994 Mexican Peso Crisis
 1998 Japanese Yen Sell Off
 1997 Hong Kong Economic Turmoil
 1997 - 1998 Asian Financial Crisis
 1998 Russian Financial Crisis
 2001 September 11
 2000 Tech Bubble
 1994 US Rate Hike
 2010 Greek Crisis
 2010 Irish Debt Crisis
 1990 - 1991 Economic Slow Down
 1987 Market Crash (Aug. to Nov.)
 \$200 per Barrel - Oil Supply Shock
 2000 - 2002 Argentine Economic Crisis
 2001 Dot-com Slowdown
 1972 - 1974 Oil Crisis (Dec. to Sep.)
 2007-2009 Subprime Mortgage...

■ Portfolio Return
■ Policy Benchmark Return
■ Excess Return

Source: BarraOne / CalPERS

Appendix

1. How to interpret the OTC Counterparty Risk Exposure section

OTC Derivative Counterparty Exposure Report								
Counterparty	Net MTM FORWARDS (\$)	Net MTM OPTIONS (\$)	Net MTM SWAPS (\$)	CalPERS Exposure (\$)	Counter Party Exposure (\$)	Net MTM Total (\$)	Collateral Posted (\$)*	Net Credit Exposure (\$)
Counterparty 123	10,386,714	(84,745)	11,735,283	27,147,091	(5,109,839)	22,037,252	(6,749,962)	15,287,290

NET MTM BY PRODUCT TYPE

- Columns reflect the net mark to market (MTM) of all OTC trades by product type with a Counterparty
- + amount = CalPERS has a gain on the positions
- amount = CalPERS has a loss on the positions

DIRECTIONAL EXPOSURE

- The exposure columns reflect an un-net profit or loss (P&L) grouping across product type and is equivalent to the directional unwind exposure at a point in time
- Trades with positive P&L are bucketed together = CalPERS Exposure
- Trades with negative P&L are bucketed together = Counterparty Exposure

NET MTM TOTAL

- The net market to market column reflects the total current net profit or loss position across all open OTC trades with a counterparty
- + amount = CalPERS is owed money
- amount = CalPERS owes money

COLLATERAL POSTED

- The collateral posted column reflects the dollar amount of collateral that is either posted to CalPERS or that CalPERS has posted to a counterparty to offset credit risk
- + amount = CalPERS has posted money out
- amount = Counterparty has posted money to CalPERS

NET CREDIT EXPOSURE

- The net credit exposure column reflects the open uncollateralized credit exposure at risk if a Counterparty were to default with no change in mark to market prices
- + amounts reflect open credit risk where CalPERS is owed money

*Net mark to market (MTM): positions are adjusted to reflect current market values and then summed