The Impact of Portfolio Choice On Key Risk Considerations

Asset Allocation/Risk Management

September 16, 2013

Key Risk Considerations

- The proposed key risk considerations for CalPERS are:
  - funded level;
  - employer contribution rate; and,
  - employer contribution rate volatility.
- The thresholds of key risk considerations will be different for the various CalPERS plans.
- Staff chose the following thresholds for illustrative purposes only.

Plan	Funded Level	Employer Contribution Rate	Employer Contribution Rate Volatility
State Miscellaneous	50%	35%	3%
Schools	50%	35%	3%
CHP	50%	45%	5%

Sample Portfolios

- Staff chose three portfolios on the efficient frontier to illustrate the impact of portfolio choice on the key risk considerations.

Asset Allocation of Sample Portfolios

Asset Class \ Sample Portfolio	P1	P2	P3
Global Equity	34.1%	38.2%	43.3%
Private Equity	14.0%	14.0%	14.0%
Fixed Income	23.6%	26.0%	22.7%
Real Estate	10.0%	10.0%	10.0%
Infrastructure and Forestland	3.0%	3.0%	3.0%
Inflation Assets	4.0%	4.0%	4.0%
Liquidity	9.4%	2.8%	1.0%
ARS	2.0%	2.0%	2.0%
Expected Return[1]:	**7.00%**	**7.25%**	**7.50%**
Expected Volatility:	**10.16%**	**10.87%**	**11.63%**

[1]Expected returns are the combinations of 2013 capital market assumptions and long-term projections from the Actuarial Office.

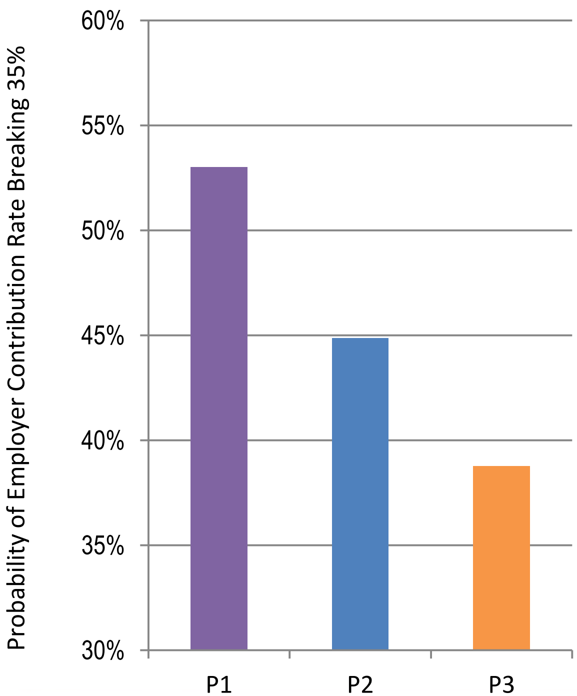
Higher Expected Return Comes With Higher Volatility

- A portfolio with higher expected return could lead to a lower employer contribution rate.

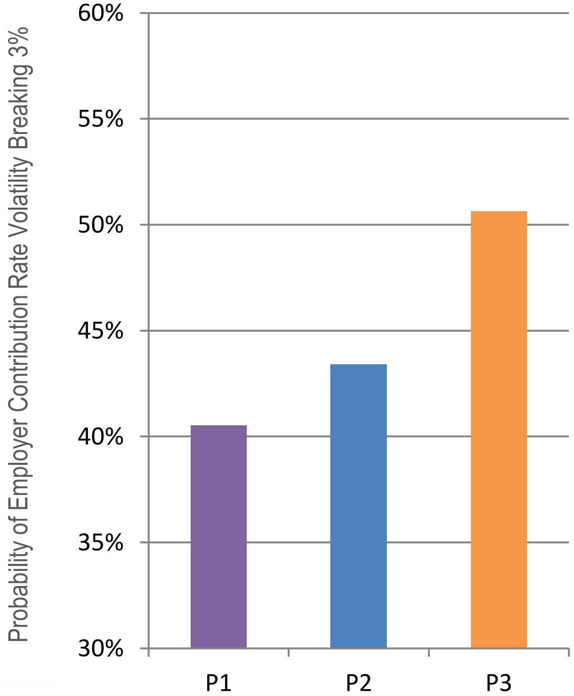
- However, as expected return increases, volatility increases. And increasing portfolio volatility increases the volatility of both employer contribution rate and funded level.

State Miscellaneous

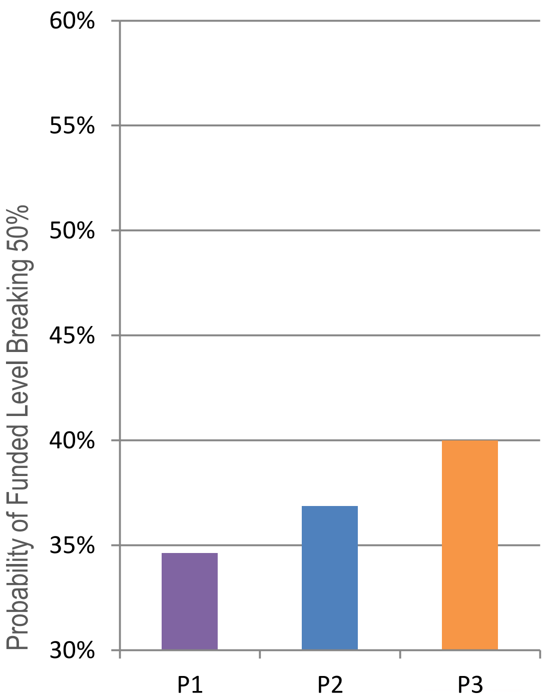
Probability of Employer Contribution Rate Breaking 35%



Probability of Employer Contribution Rate Volatility Breaking 3%



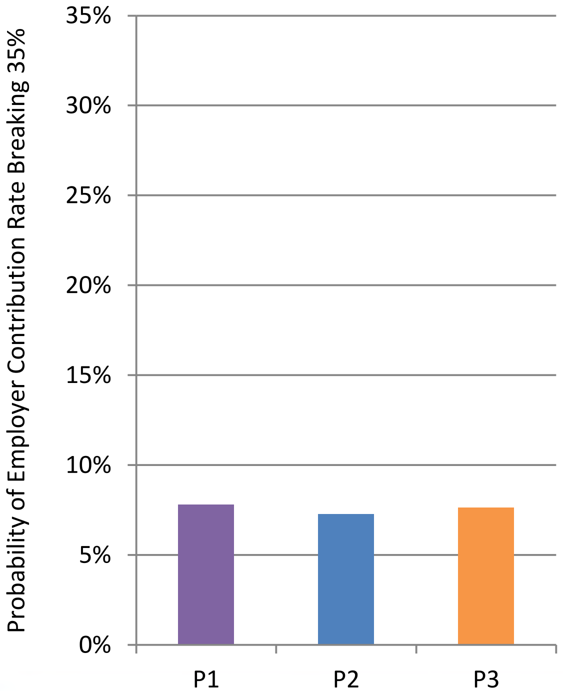
Probability of Funded Level Breaking 50%



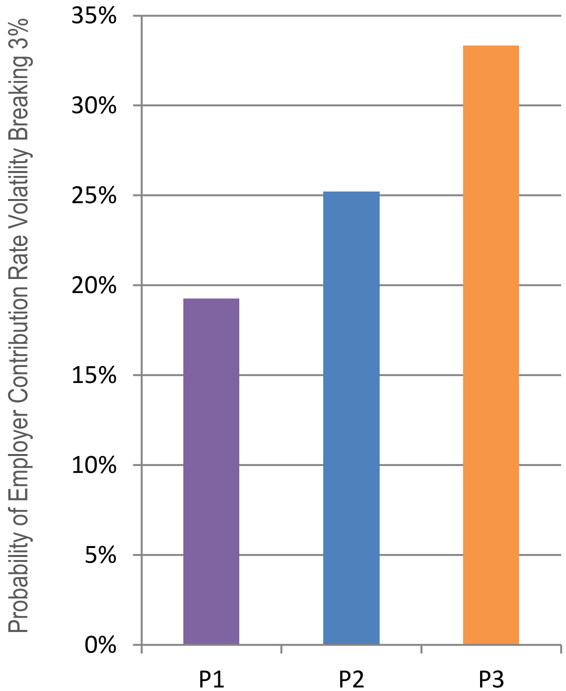
State Miscellaneous Expected Employer Contribution Rate (FY 2013-14) is 21.12%
State Miscellaneous Funded Level (as of 06/30/2012) is 66.3%
(Source: http://www.calpers.ca.gov/eip-docs/about/committee-meetings/agendas/financeadmin/201306/item5c-00.pdf)

Schools

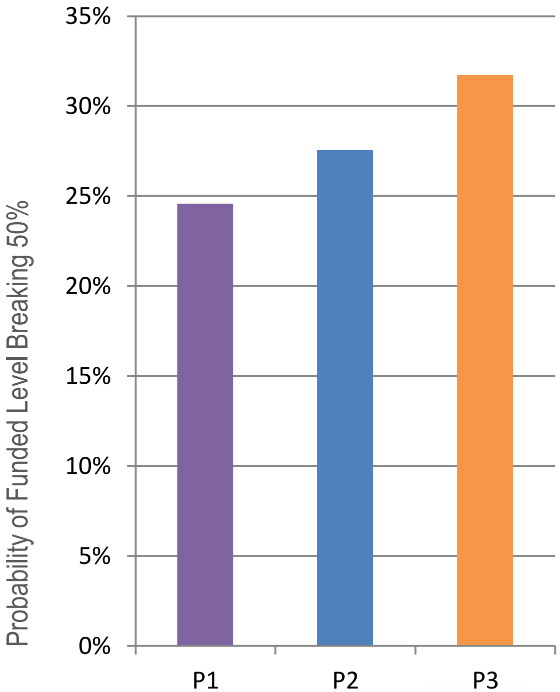
Probability of Employer Contribution Rate Breaking 35%



Probability of Employer Contribution Rate Volatility Breaking 3%

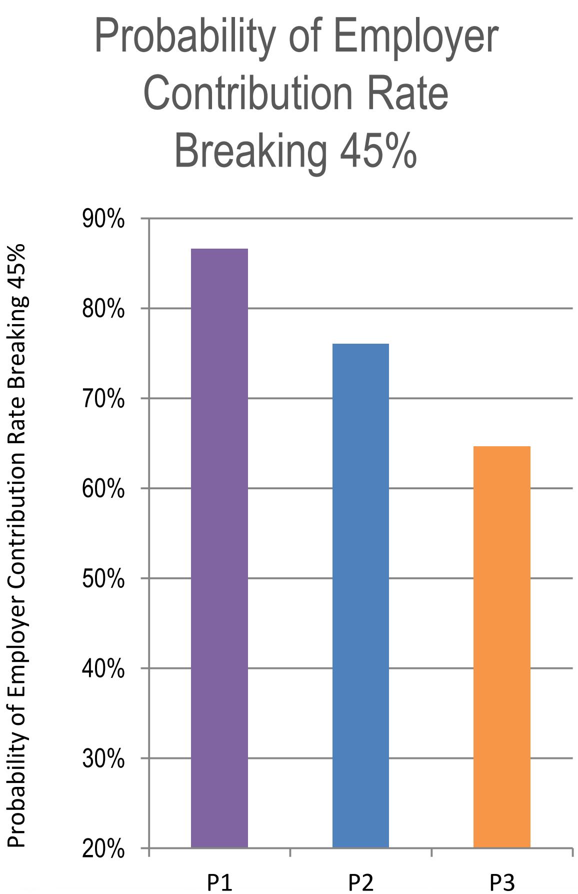


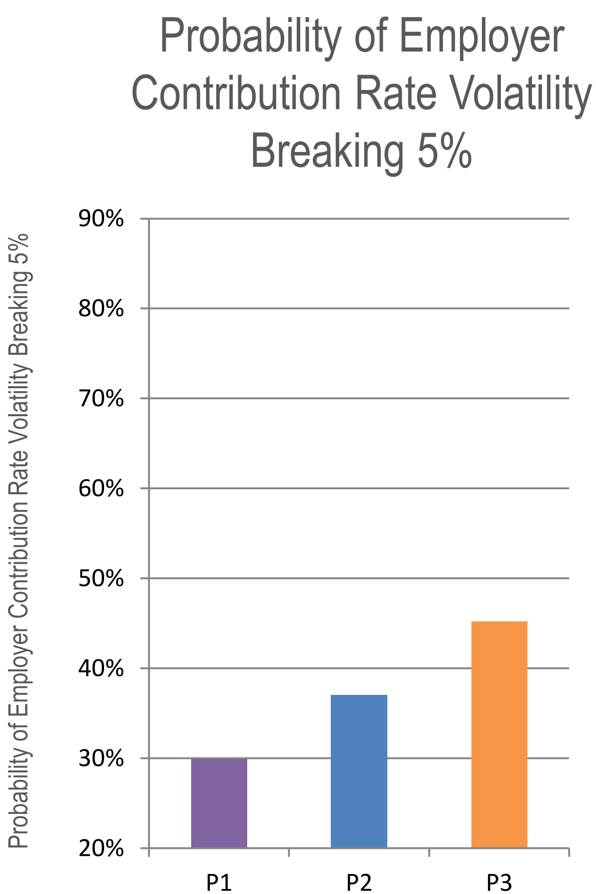
Probability of Funded Level Breaking 50%

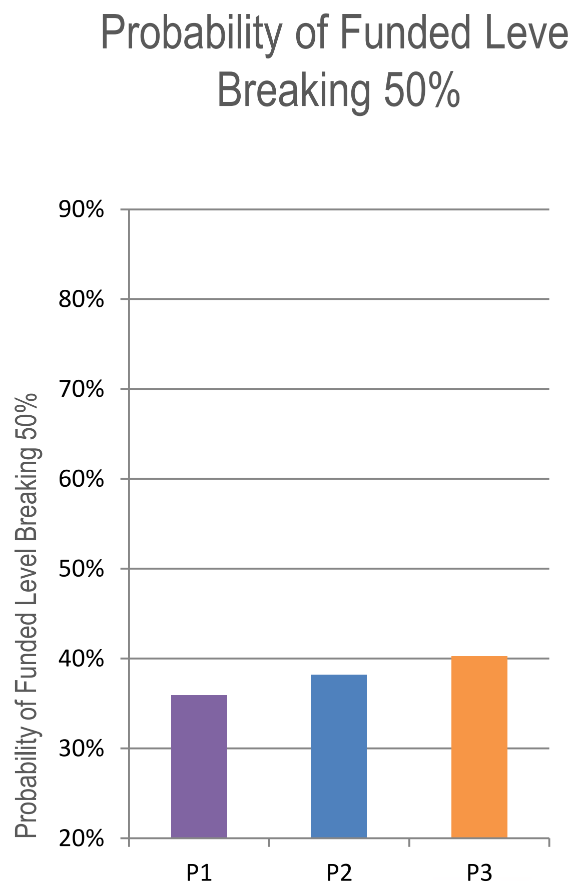


Schools Expected Employer Contribution Rate (FY 2013-14) is 11.44%
Schools Funded Level (as of 06/30/2012) is 75.5%
(Source: http://www.calpers.ca.gov/eip-docs/about/committee-meetings/agendas/financeadmin/201306/item5c-00.pdf)

CHP







CHP Expected Employer Contribution Rate (FY 2013-14) is 34.62%
CHP Funded Level (as of 06/30/2012) is 60.3%
(Source: http://www.calpers.ca.gov/eip-docs/about/committee-meetings/agendas/financeadmin/201306/item5c-00.pdf)

Impacts On Key Risk Considerations By Selecting Portfolios With Higher Expected Returns

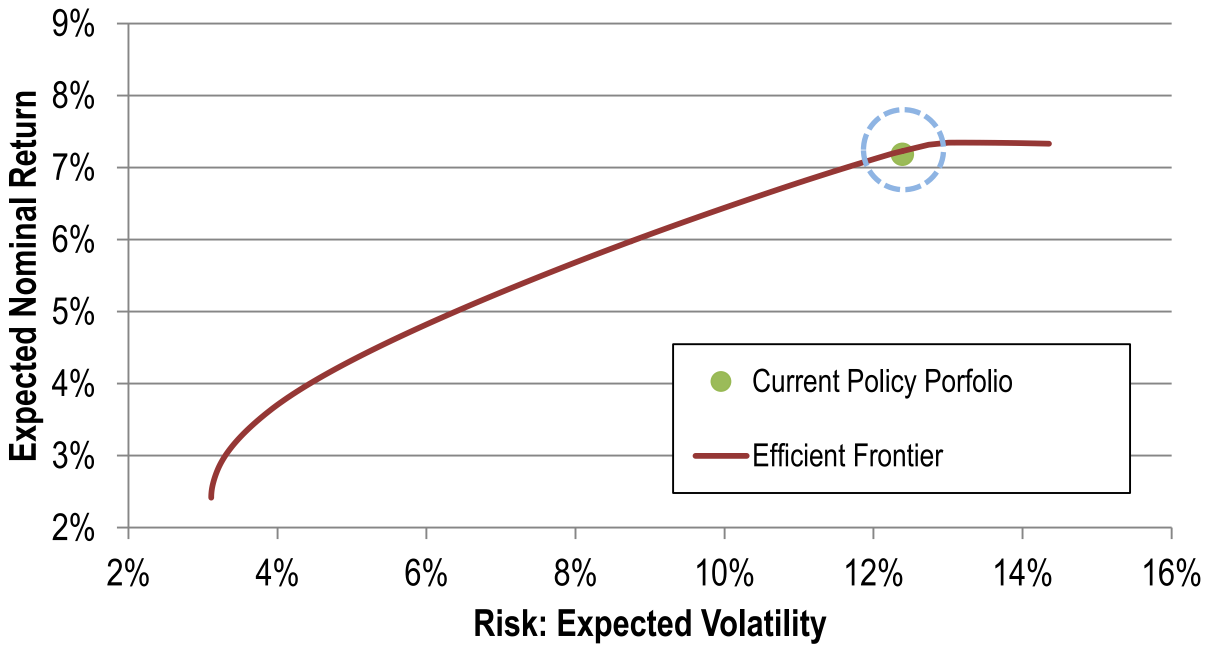
- Increasing expected returns by 0.25% (or increasing volatility by about 0.74%) could reduce the probabilities of breaking employer contribution rate thresholds; however, it increases the probabilities of breaking both funded level and employer contribution rate volatility thresholds.

Change of probabilities of breaking thresholds
with a 0.25% increase of expected return (or about 0.74% increase in volatility)

State Miscellaneous	Change of Probability	Schools	Change of Probability	CHP	Change of Probability
Employer Contribution Rate Above 35%	-7%	Employer Contribution Rate Above 35%	0%	Employer Contribution Rate Above 45%	-11%
Employer Contribution Rate Volatility Above 3%	+5%	Employer Contribution Rate Volatility Above 3%	+7%	Employer Contribution Rate Volatility Above 5%	+8%
Funded Level Below 50%	+3%	Funded Level Below 50%	+4%	Funded Level Below 50%	+2%

Current Policy Portfolio and Efficient Frontier

- The range of portfolio choice is narrow given our current funded status and 2013 capital market assumptions.

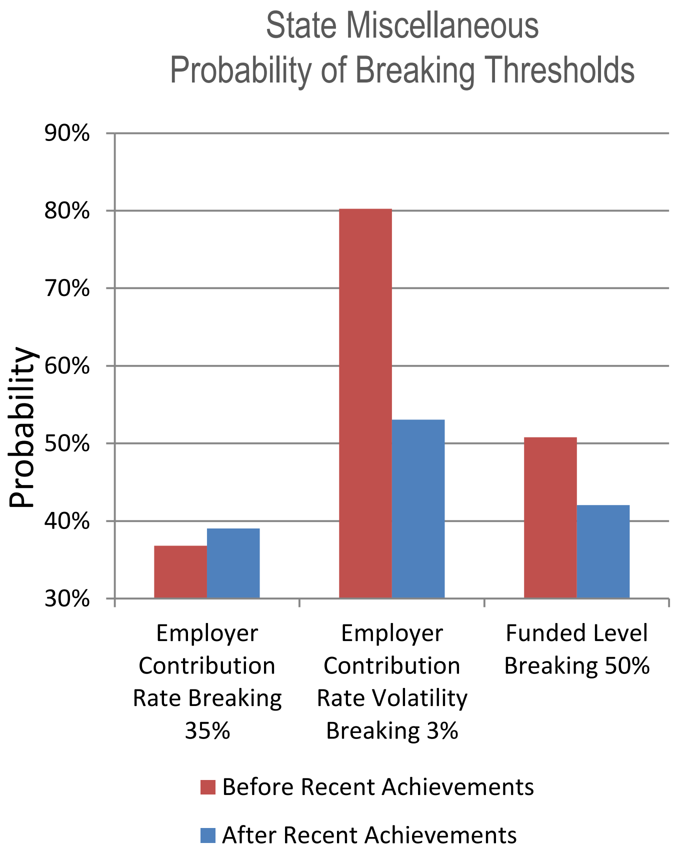


Proposed Role of Flexible De-risking

- A de-risking mechanism could be put in place when it is least costly, with the goal of:
  - Improving benefit security over time; and,
  - Lowering the volatility of future employer contribution rates.

Recent Achievements on De-risking

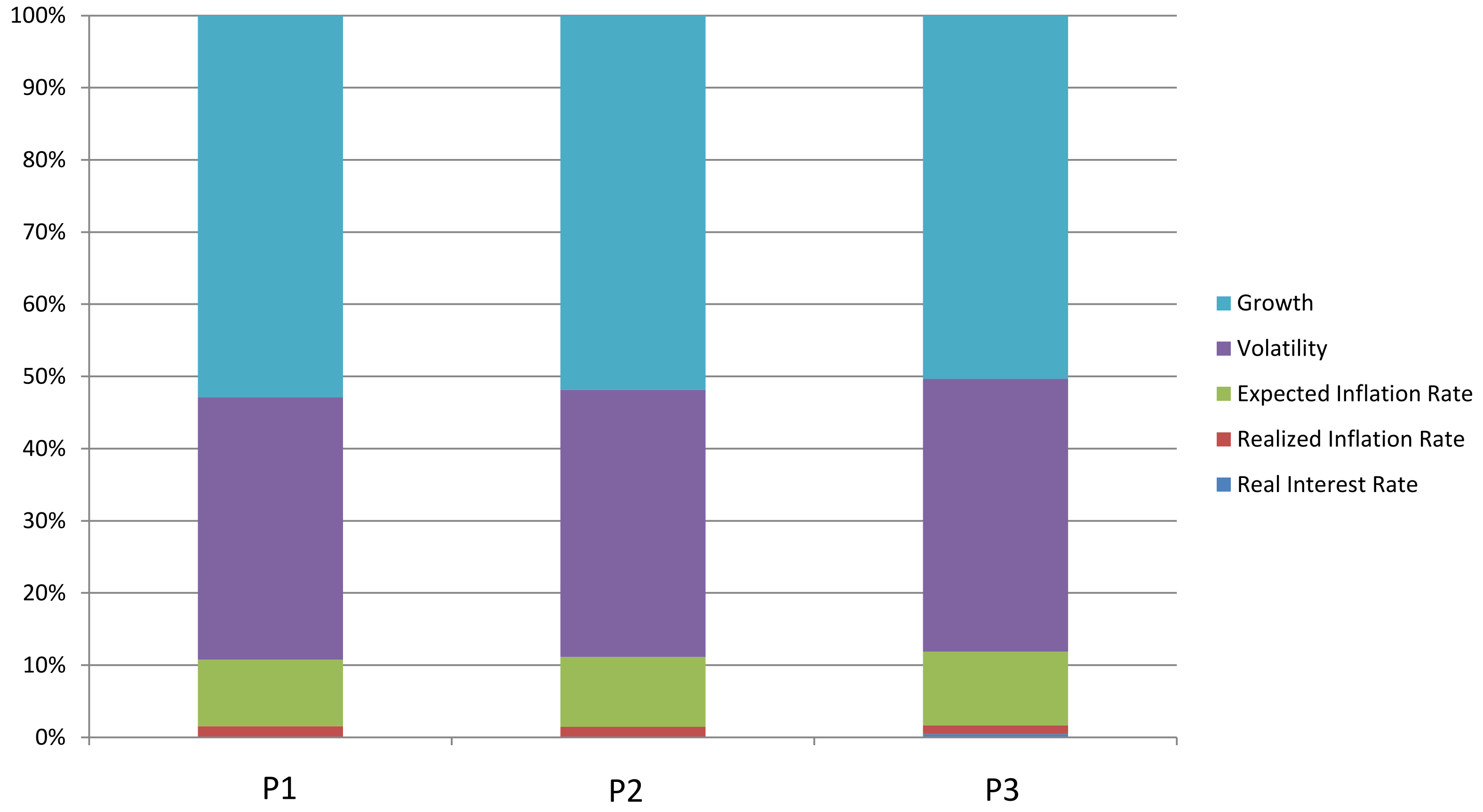
- Three recent achievements have contributed to reducing funding risk:
  – Pension Reform Act (PEPRA);
  – Direct Rate Smoothing method recently adopted by the Board; and,
  – 12.5% investment return during Fiscal Year 2012-13.



Current Policy Portfolio was used to illustrate the differences between before and after recent achievements.

Appendix

Risk Factor Contributions[1]



[1]Risk factor contribution excludes the unexplained risk contribution and scales the risk factor contribution so that sum is 100%

CalPERS