

Liabilities, Investment Return and Asset Smoothing

**Los Angeles Fire & Police Pensions
Educational Retreat**

January 7, 2009

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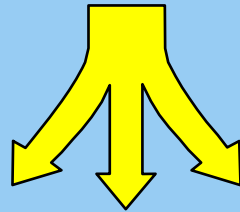
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Topics for Today

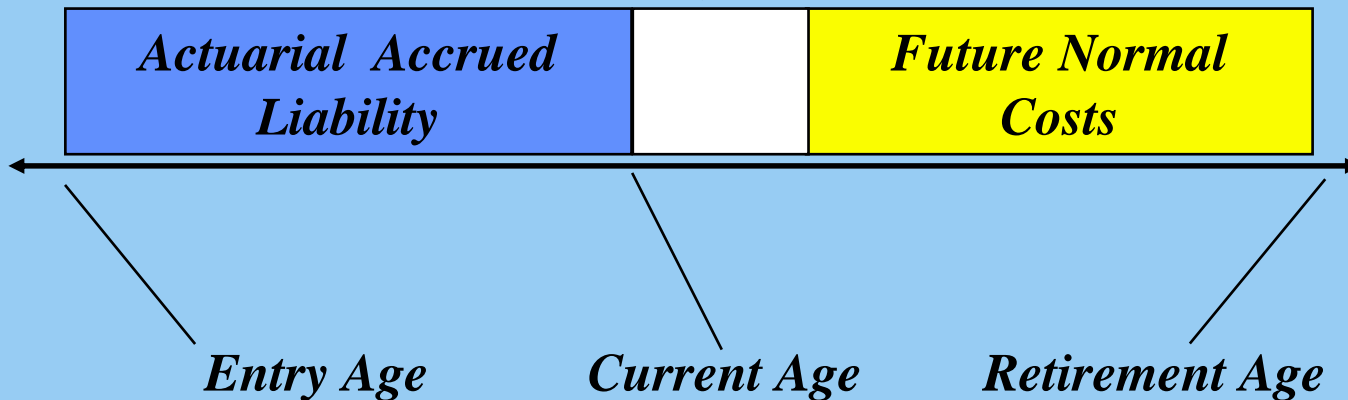
1. Pension Funding Basics
2. Risk and Return
 - a. Asset allocation and asset smoothing
 - b. Effect on investment earnings assumption
3. Asset smoothing: recent experience
4. Contribution Projections
 - a. Future investment return scenarios
 - b. Effect of asset smoothing “MVA Corridor”

Actuarial Cost Method

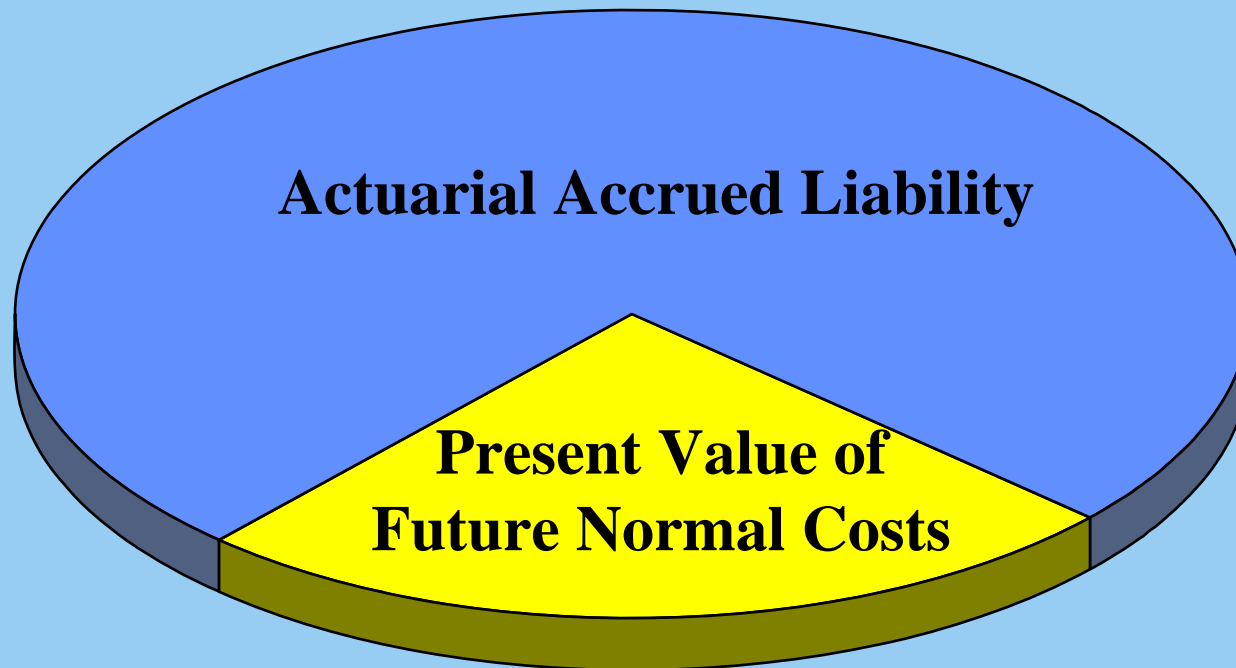
Present Value of Future Benefits



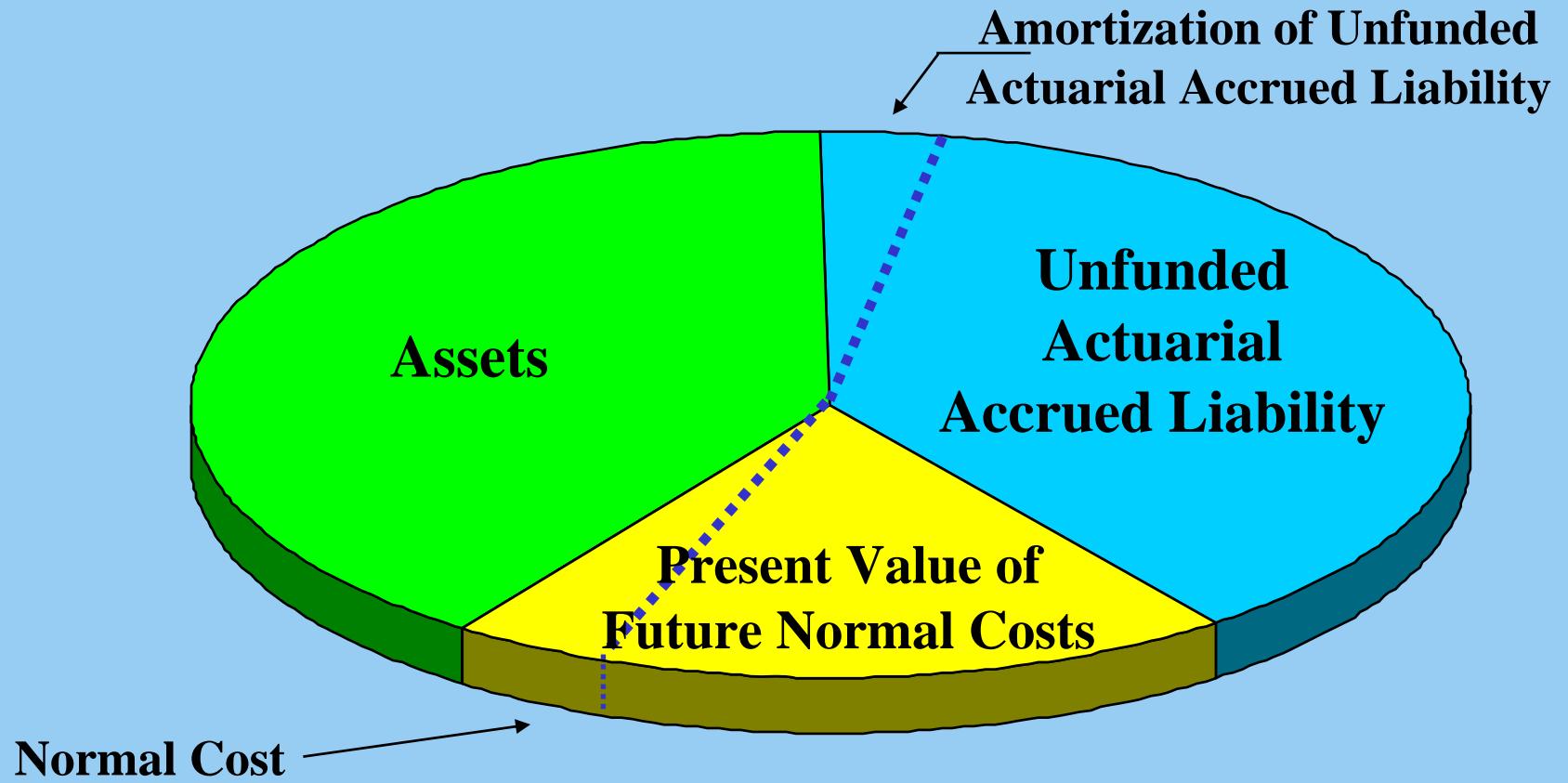
Current Year Normal Cost



Actuarial Accrued Liability



Current Contribution



Role of Assumptions and Methods

$$\mathbf{C + I = B + E}$$

Contributions + Investment Income
equals

Benefit Payments + Expenses

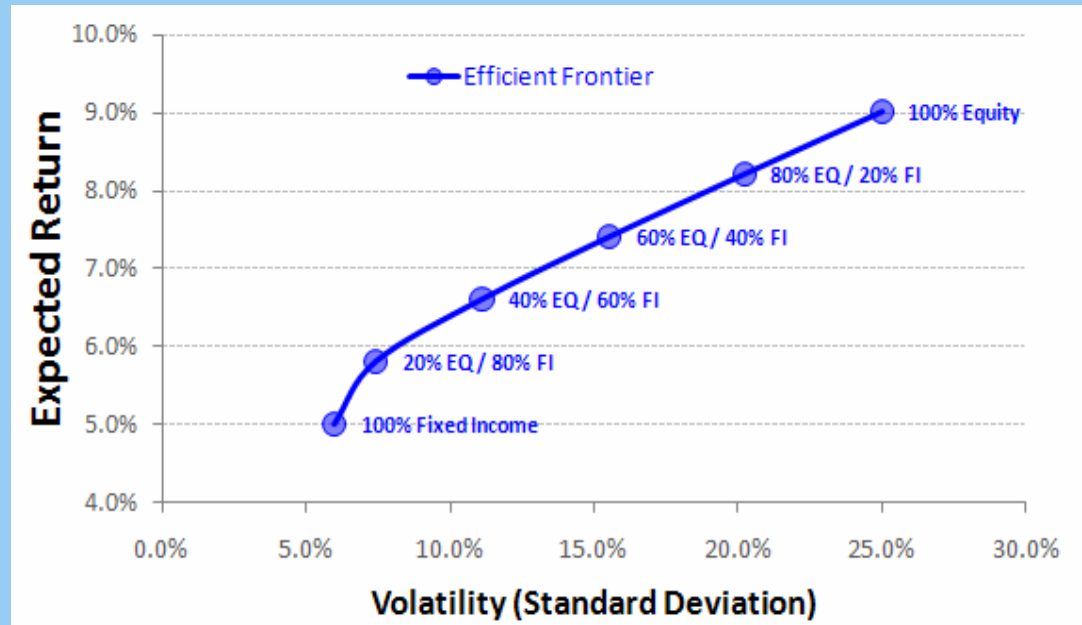
- Actuarial valuation determines the current or “measured” cost, not the ultimate cost
- Assumptions and funding methods affect only the timing of costs (unless benefits are affected!)

Asset Allocation: Risk and Reward

- “Reward” is long term expected return
- “Risk” is volatility of returns, measured by “standard deviation” (s.d.)
 - For “normal” distribution of returns:
 - 2/3 of returns will be within one standard deviation
 - 95% will be within two standard deviations
- More conservative asset allocation lowers volatility but at cost of lower expected return

Risk / Reward Tradeoff for Various “Efficient Portfolios”

	Equity	Fixed Income		
Mean	9.00%	5.00%		
Stdev	25.00%	6.00%		
Correl		0.15		
Portfolio	Equity	Fixed Income	ArithMean	Standard Deviation
1	0%	100%	5.0%	6.0%
2	20%	80%	5.8%	7.4%
3	40%	60%	6.6%	11.1%
4	60%	40%	7.4%	15.5%
5	80%	20%	8.2%	20.2%
6	100%	0%	9.0%	25.0%

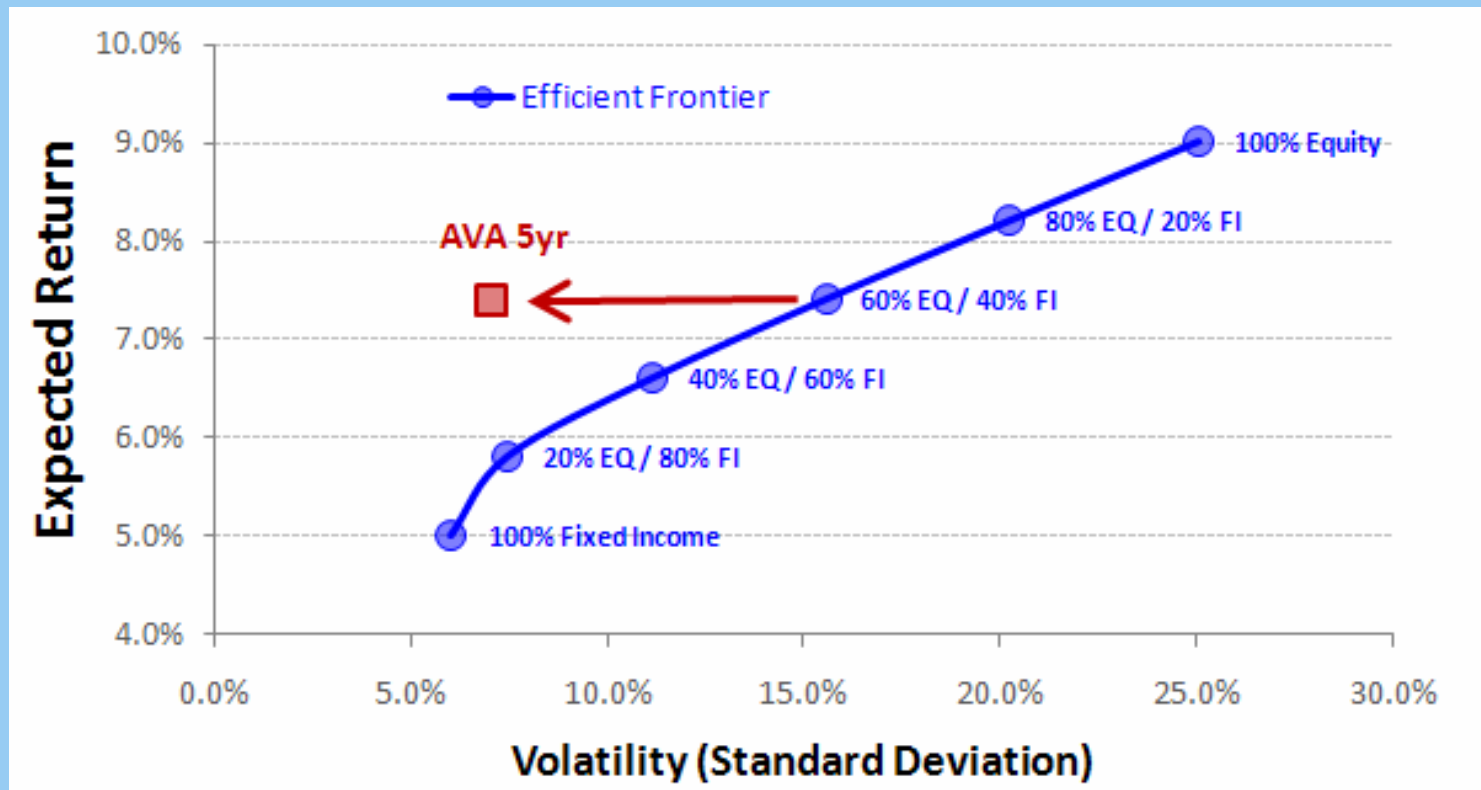


- For these market assumptions (NOT used for LAFPP): Typical 60% Equity / 40% Fixed Income portfolio has an expected return of 7.4% with 15.5% annual volatility

Actuarial Value of Assets

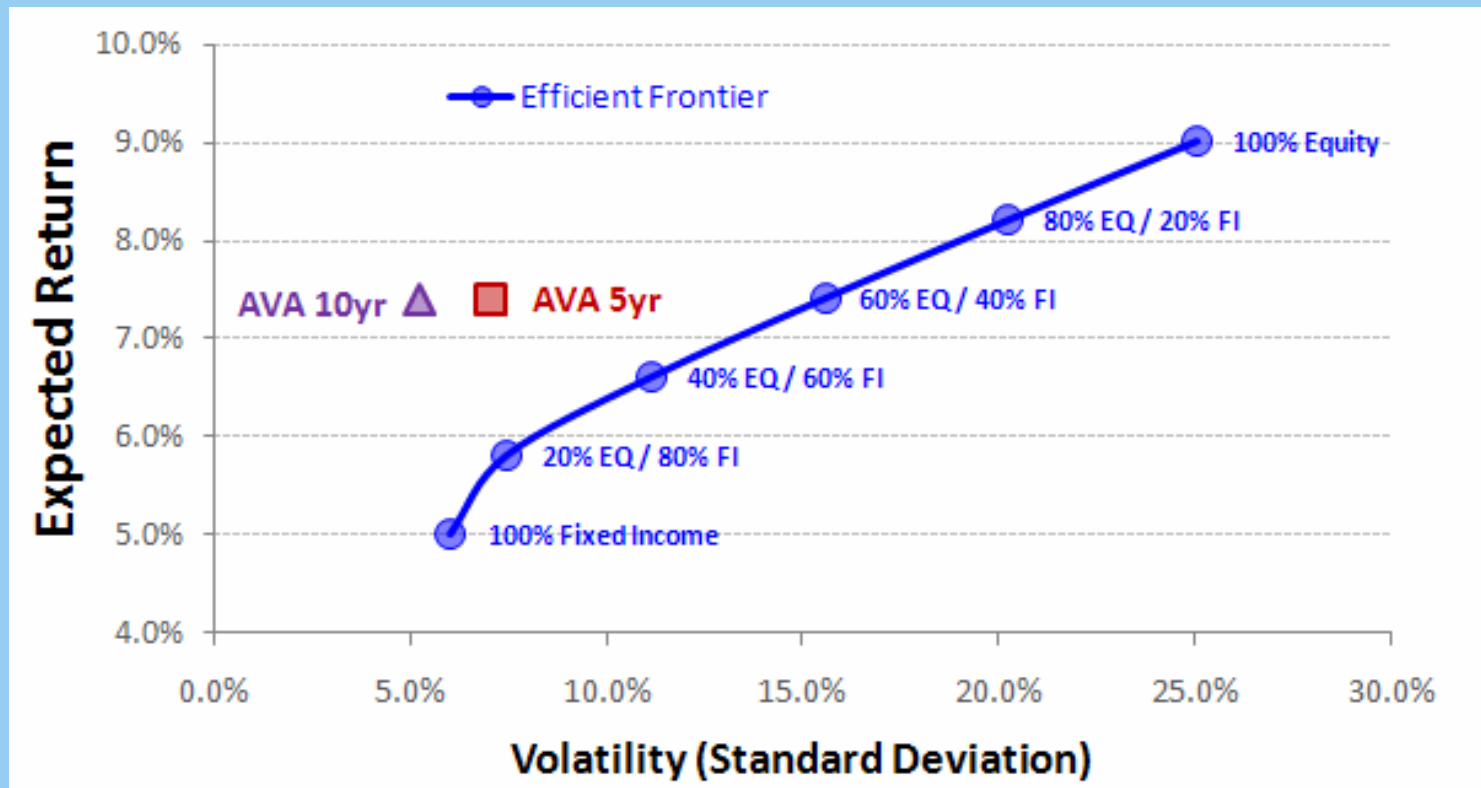
- To reduce the impact of short term asset volatility, plans use an Actuarial Value of Assets (AVA) which “smoothes” returns
 - Each year, take the difference between:
 - Actual return on Market Value of Assets (MVA)
 - Assumed return on MVA (currently 8%)
 - Difference is spread over (typically) five years
- Reduces volatility without reducing long term expected return

Actuarial Value of Assets: 5 yr. Smoothing



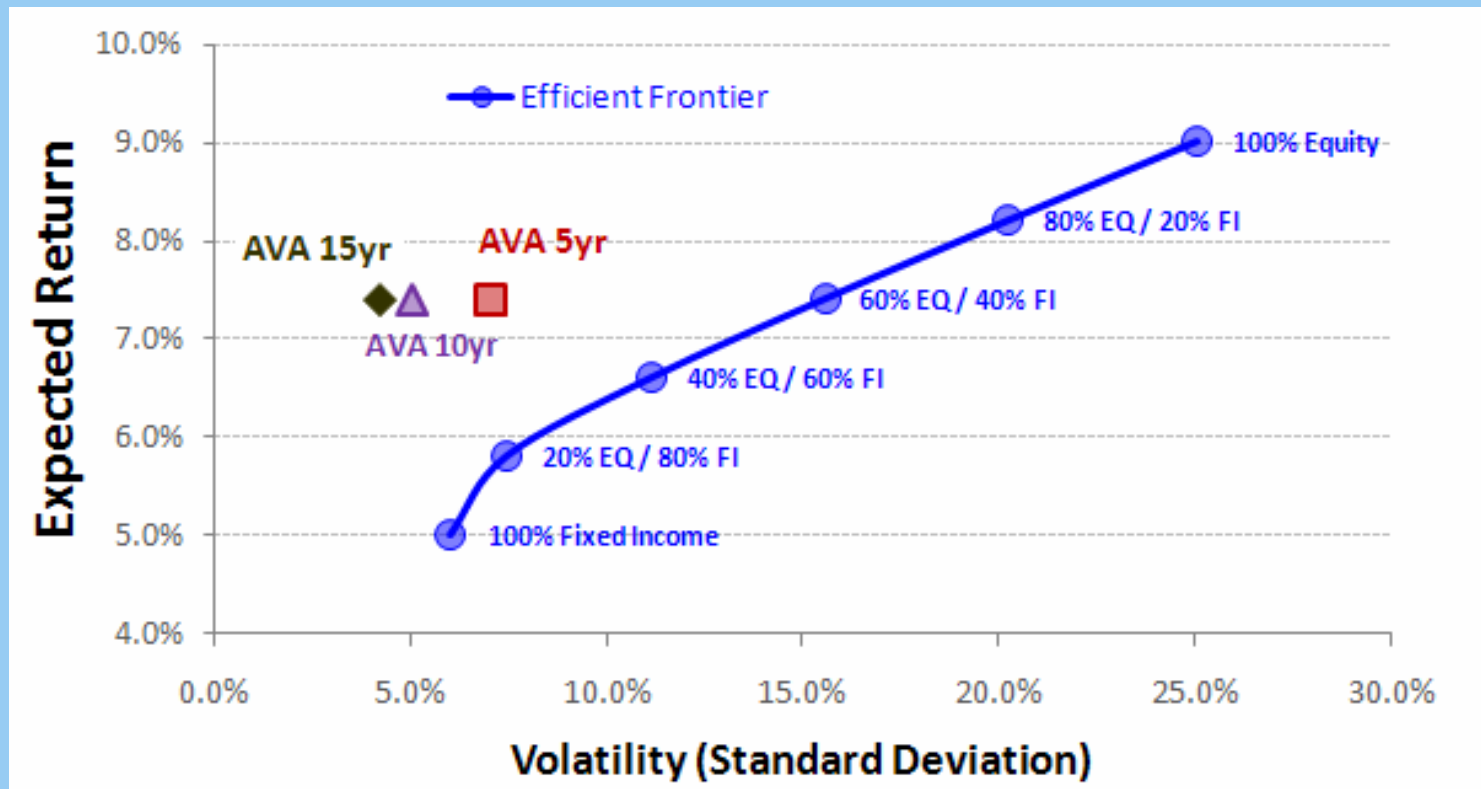
- The 60/40 allocation with a 5yr AVA has about the same volatility as a 20% Equity portfolio

Actuarial Value of Assets: 10 yr. Smoothing



- The 60/40 allocation with a 10yr AVA has less volatility than a 100% Fixed Income portfolio Slide 11

Actuarial Value of Assets: 15 yr. Smoothing



- The 60/40 allocation with a 15 yr AVA has only marginally lower volatility than 10 yr AVA

Effect on Investment Earnings Assumption

- Earnings assumption depends on:
 - Inflation and expense assumptions
 - Expected real returns by asset class
 - Asset allocation
- **Policy pitfalls:**
 - Setting allocation to “chase” assumed return
 - Using smoothing to justify more asset volatility



Q U E S T I O N S

Asset Smoothing Mechanics

- When MVA return is **greater** than assumed
 - Smoothing “defers gains”
 - Smoothed value (AVA) is **less** than MVA
 - UAAL and contributions are larger
- When MVA return is **less** than assumed
 - Smoothing “defers losses”
 - Smoothed value (AVA) is greater than MVA
 - UAAL and contributions are smaller

LAFPP Actuarial Value of Assets

6/30/2003 Valuation (\$000s, Combined)

Year-end	Return above (below) assumed	Percent not yet recognized	Amount not yet recognized
Jun-03	(\$307,120)	80%	(\$245,696)
Jun-02	(\$1,913,910)	60%	(\$1,148,346)
Jun-01	(\$2,410,152)	40%	(\$964,061)
Jun-00	\$818,157	20%	<u>\$163,631</u>
Net total LOSSES not yet recognized			(\$2,194,471)
Market value of assets			\$10,236,074
PLUS LOSSES not yet recognized			<u>\$2,194,471</u>
Actuarial value of assets (before corridor)			\$12,430,545
Actuarial value of assets (AFTER corridor)			\$12,283,289

LAFPP Actuarial Value of Assets

6/30/2004 Valuation (\$000s, Combined)

Year-end	Return above (below) assumed	Percent not yet recognized	Amount not yet recognized
Jun-04	\$875,163	80%	\$700,130
Jun-03	(\$307,120)	60%	(\$184,272)
Jun-02	(\$1,913,910)	40%	(\$765,564)
Jun-01	(\$2,410,152)	20%	<u>(\$482,030)</u>
Net total LOSSES not yet recognized			(\$731,736)
Market value of assets			\$11,609,959
PLUS LOSSES not yet recognized			<u>\$731,736</u>
Actuarial value of assets			\$12,341,695

LAFPP Actuarial Value of Assets

6/30/2005 Valuation (\$000s, Combined)

Year-end	Return above (below) assumed	Percent not yet recognized	Amount not yet recognized
Jun-05	\$161,742	80%	\$129,394
Jun-04	\$875,163	60%	\$525,098
Jun-03	(\$307,120)	40%	(\$122,848)
Jun-02	(\$1,913,910)	20%	<u>(\$382,782)</u>
Net total GAINS not yet recognized			\$148,861
Market value of assets			\$12,380,174
MINUS GAINS not yet recognized			<u>(\$148,861)</u>
Actuarial value of assets			\$12,231,313

LAFPP Actuarial Value of Assets

6/30/2006 Valuation (\$000s, Combined)

Year-end	Return above (below) assumed	Percent not yet recognized	Amount not yet recognized
Jun-06	\$477,862	80%	\$382,290
Jun-05	\$161,742	60%	\$97,045
Jun-04	\$875,163	40%	\$350,065
Jun-03	(\$307,120)	20%	<u>(\$61,424)</u>
Net total GAINS not yet recognized			\$767,976
Market value of assets			\$13,503,161
MINUS GAINS not yet recognized			<u>(\$767,976)</u>
Actuarial value of assets			\$12,735,185

LAFPP Actuarial Value of Assets

6/30/2007 Valuation (\$000s, Combined)

Year-end	Return above (below) assumed	Percent not yet recognized	Amount not yet recognized
Jun-07	\$1,375,798	80%	\$1,100,638
Jun-06	\$477,862	60%	\$286,717
Jun-05	\$161,742	40%	\$64,697
Jun-04	\$875,163	20%	<u>\$175,033</u>
Net total GAINS not yet recognized			\$1,627,085
Market value of assets			\$15,529,850
MINUS GAINS not yet recognized			<u>(\$1,627,085)</u>
Actuarial value of assets			\$13,902,765

LAFPP Actuarial Value of Assets

6/30/2008 Valuation (\$000s, Combined)

Year-end	Return above (below) assumed	Percent not yet recognized	Amount not yet recognized
Jun-08	(\$2,015,976)	80%	(\$1,612,781)
Jun-07	\$1,375,798	60%	\$825,479
Jun-06	\$477,862	40%	\$191,145
Jun-05	\$161,742	20%	<u>\$32,348</u>
Net total LOSSES not yet recognized			(\$563,809)
Market value of assets			\$14,357,135
PLUS LOSSES not yet recognized			<u>\$563,809</u>
Actuarial value of assets			\$14,920,944

LAFPP Actuarial Value of Assets

6/30/2009 PROJECTED (\$000s, Combined) - 25% MVA loss

Year-end	Return above (below) assumed	Percent not yet recognized	Amount not yet recognized
Jun-09	(\$4,711,896)	80%	(\$3,769,517)
Jun-08	(\$2,015,976)	60%	(\$1,209,586)
Jun-07	\$1,375,798	40%	\$550,319
Jun-06	\$477,862	20%	<u>\$95,572</u>
Net total LOSSES not yet recognized			(\$4,333,212)
Market value of assets			\$10,341,702
PLUS LOSSES not yet recognized			<u>\$4,333,212</u>
Actuarial value of assets (before corridor)			\$14,674,914
Actuarial value of assets (AFTER corridor)			\$12,410,042

Asset Smoothing and “MVA Corridor”

- Many plans (including LAFPP) limit how far the AVA can get from the MVA
- LAFPP’s “20% “Corridor” means the AVA must be between 120% and 80% of MVA
 - Maximum deferred gain or loss is 20% of MVA
- Hitting the corridor effectively stops smoothing
- Corridor impact small in 2003, major in 2009
 - 2003: AVA would have been 121.4% of MVA
 - 2009: AVA could be over 140% of MVA



Q U E S T I O N S

Contribution Projections

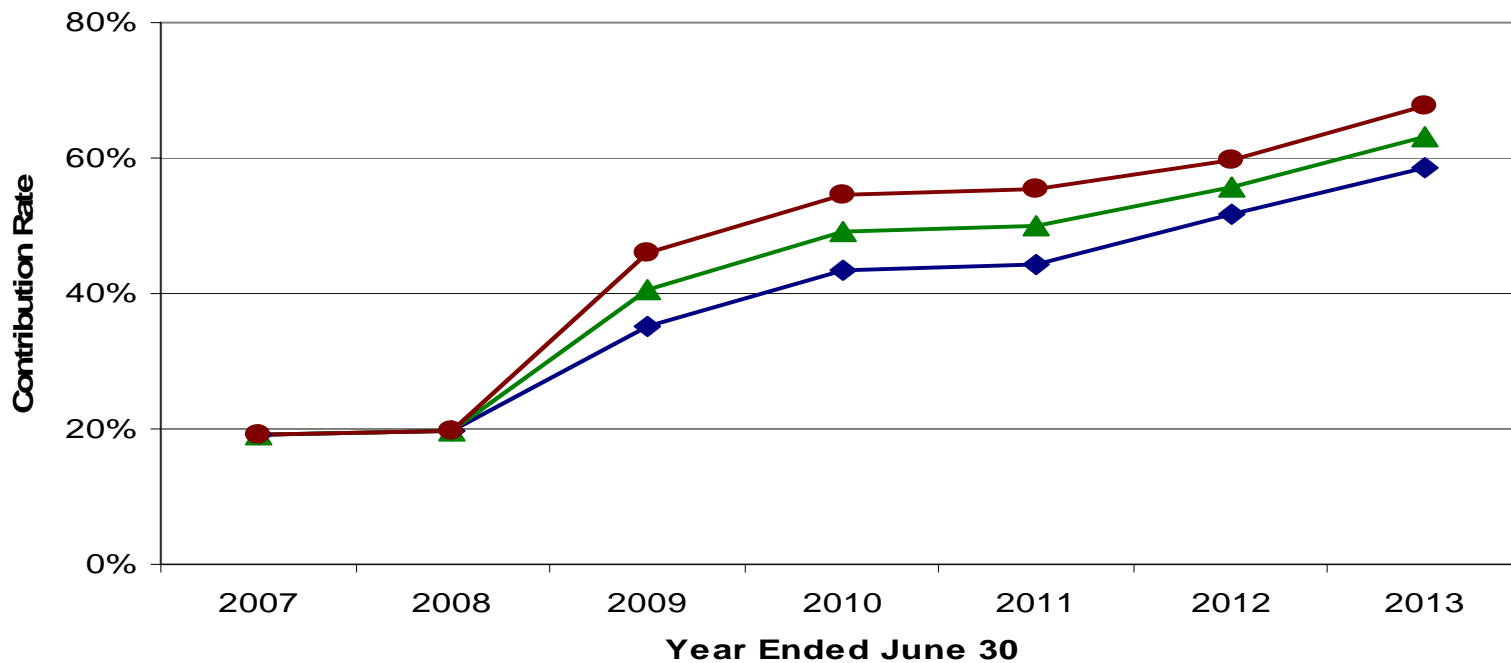
- Three current year returns, two future returns
 - Current loss (2008-2009): 20%, 25%, 30%
 - How long to return to 8%?
 - “a” scenarios: one zero then 8%
 - “b” scenarios: two zeros then 8%

Future Return Scenarios

	2008-09	2009-10	2010-11	2011-12	2012-13
Scen. 1a	(20%)	0%	8%	8%	8%
Scen. 2a	(25%)	0%	8%	8%	8%
Scen. 3a	(30%)	0%	8%	8%	8%
Scen. 1b	(20%)	0%	0%	8%	8%
Scen. 2b	(25%)	0%	0%	8%	8%
Scen. 3b	(30%)	0%	0%	8%	8%

Contribution Projections – Pension

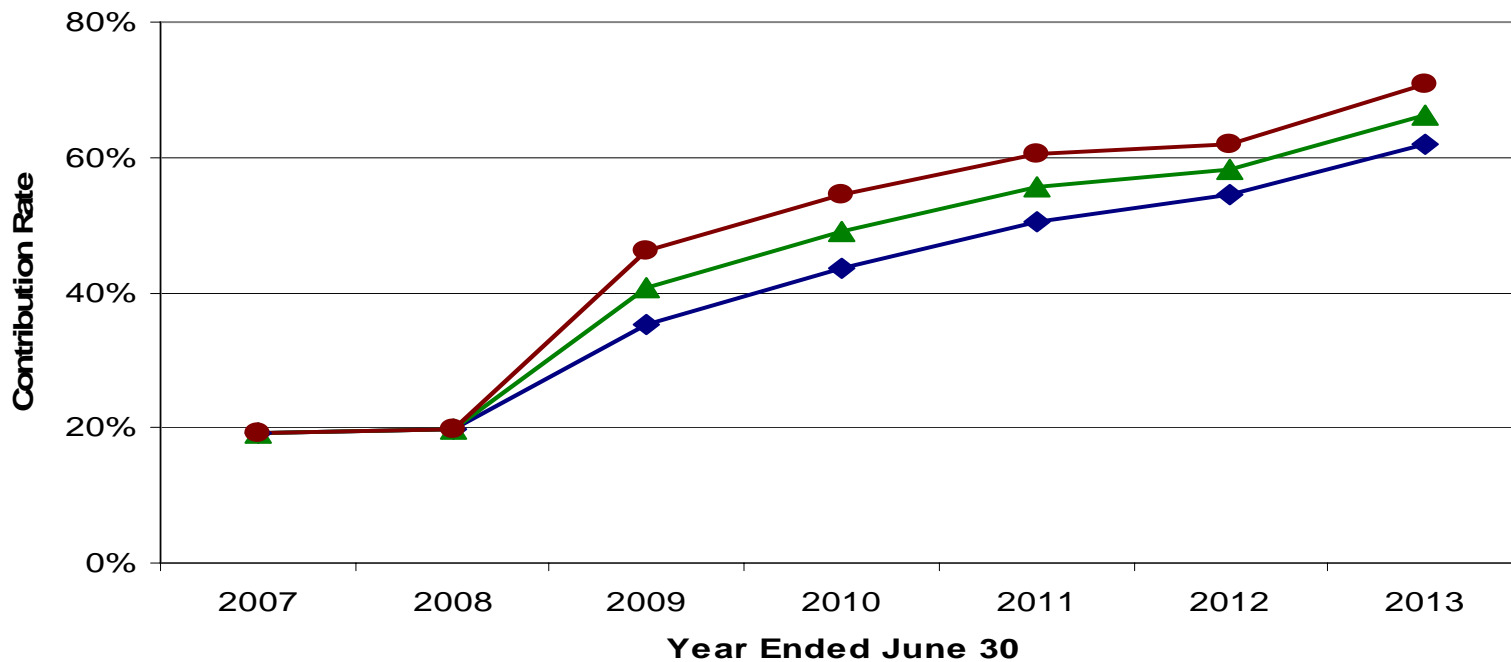
LAFPP Projected Contribution Rates - Pension Only
"a" Scenarios: Big Loss plus One Zero
(with Market Value Corridor)



◆ #1a: 20% loss ▲ #2a: 25% loss ● #3a: 30% loss

Contribution Projections - Pension

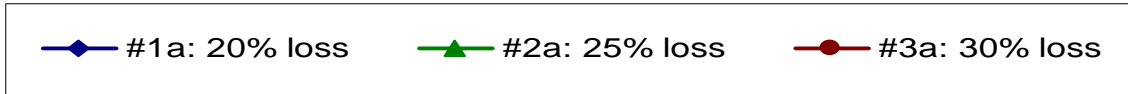
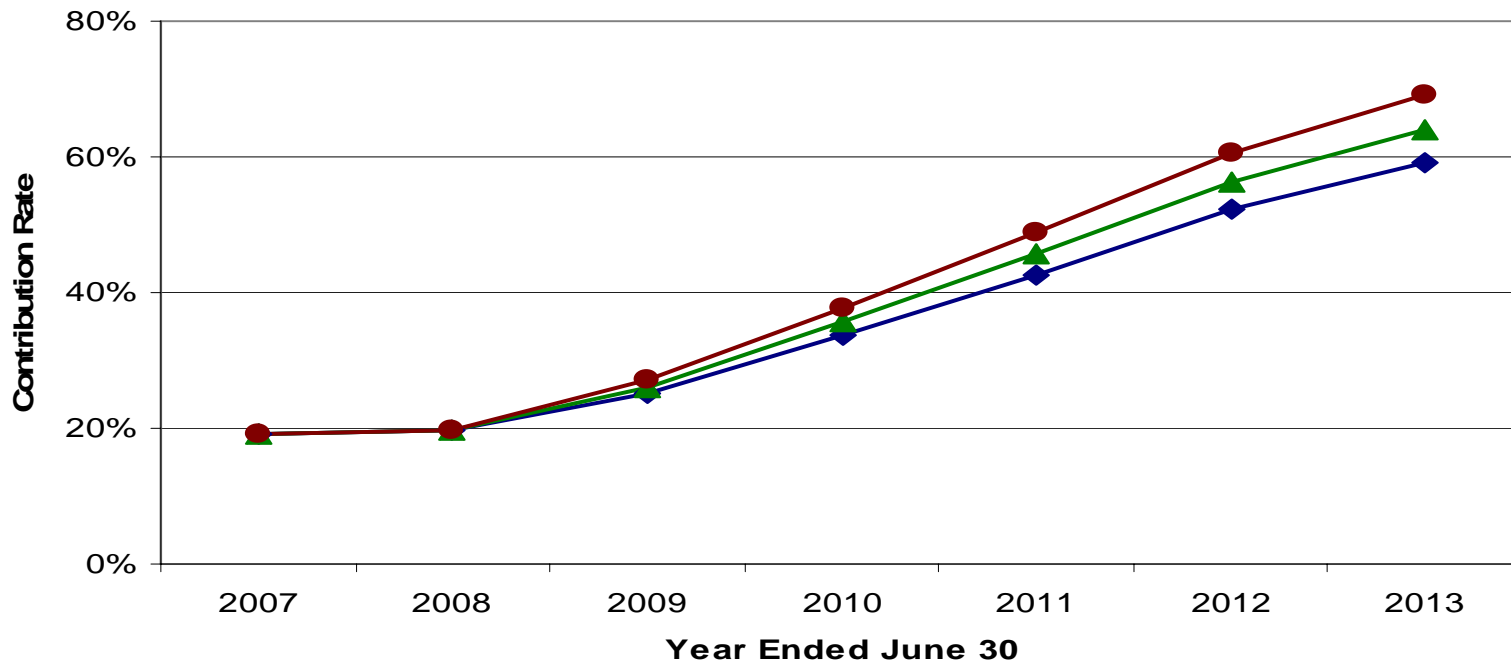
LAFPP Projected Contribution Rates - Pension Only
"b" Scenarios: Big Loss plus Two Zeroes
(with Market Value Corridor)



◆ #1b: 20% loss ▲ #2b: 25% loss ● #3b: 30% loss

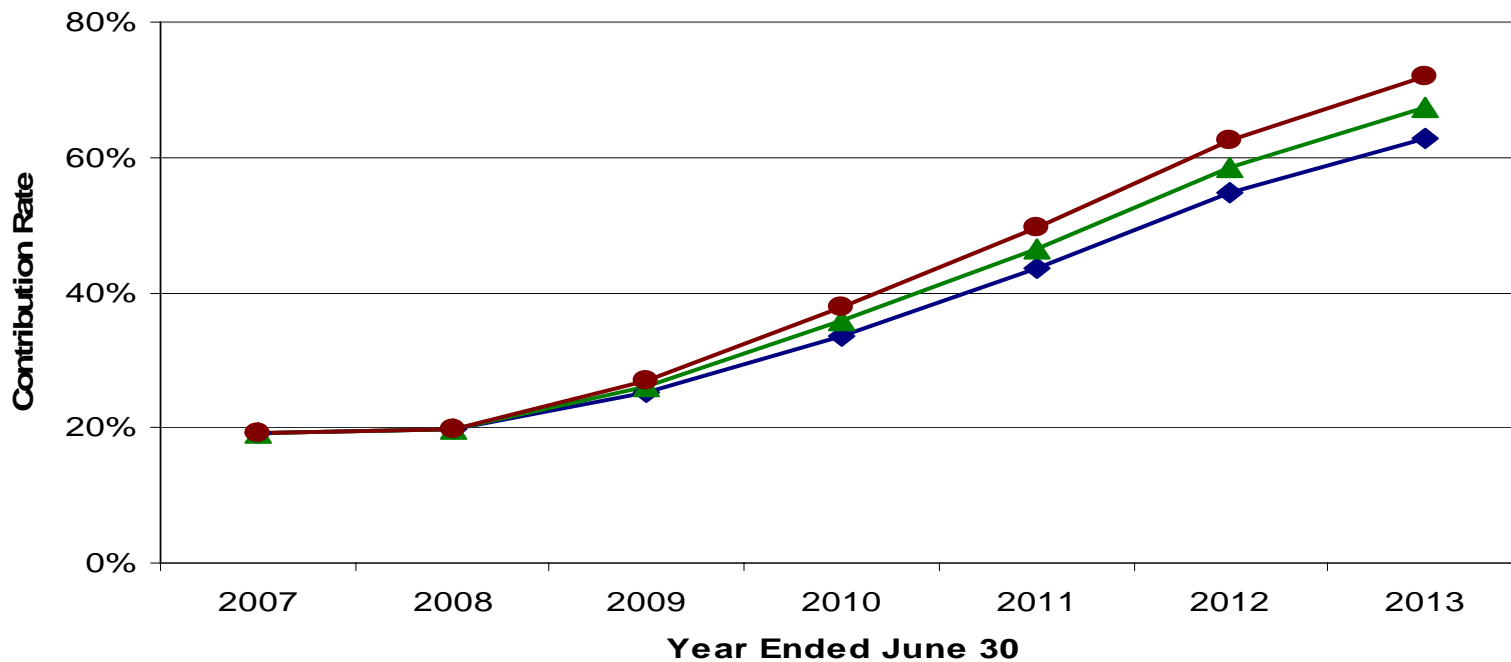
Contribution Projections – No Corridor

LAFPP Projected Contribution Rates - Pension Only
"a" Scenarios: Big Loss plus One Zero
(without Market Value Corridor)



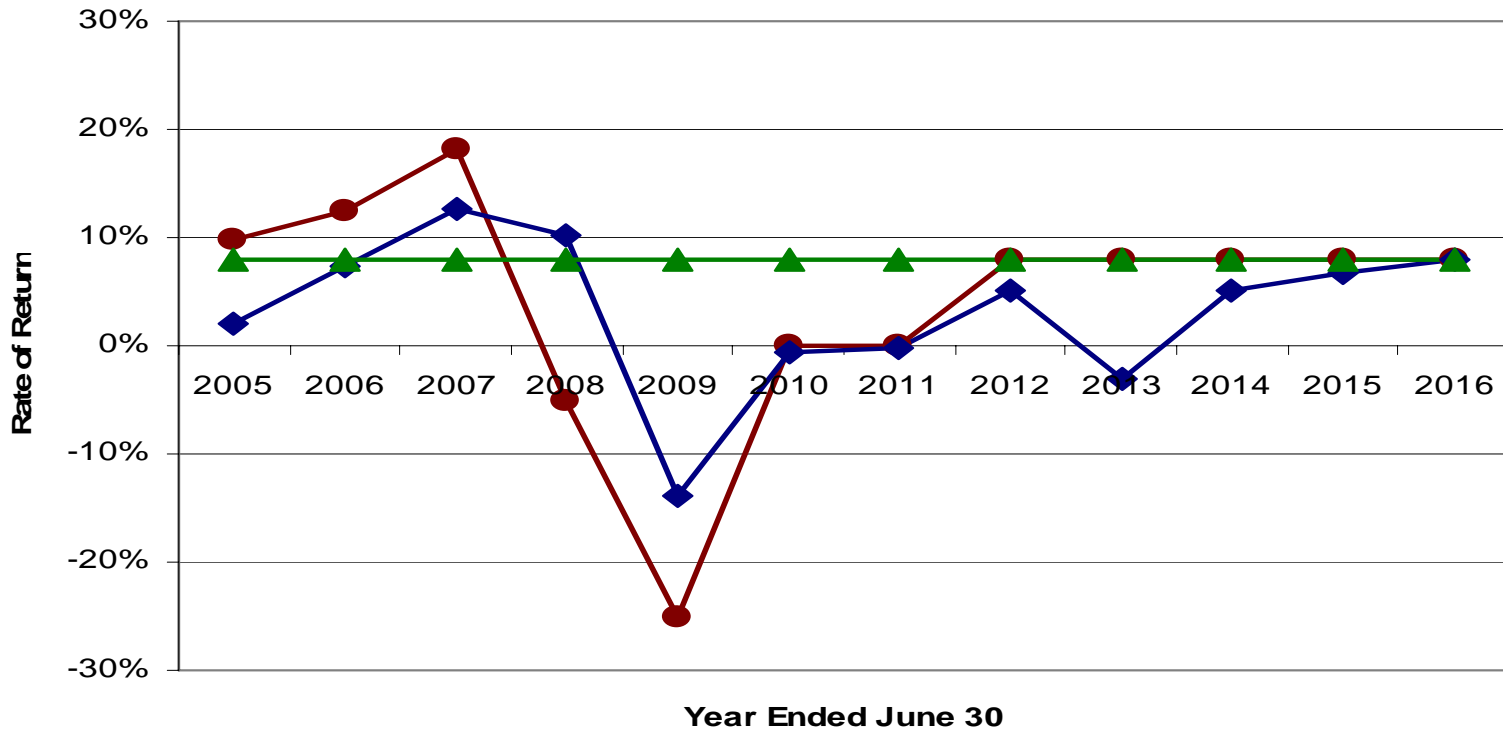
Contribution Projections – No Corridor

LAFPP Projected Contribution Rates - Pension Only
"b" Scenarios: Big Loss plus Two Zeroes
(without Market Value Corridor)



Rates of Return – MVA and AVA

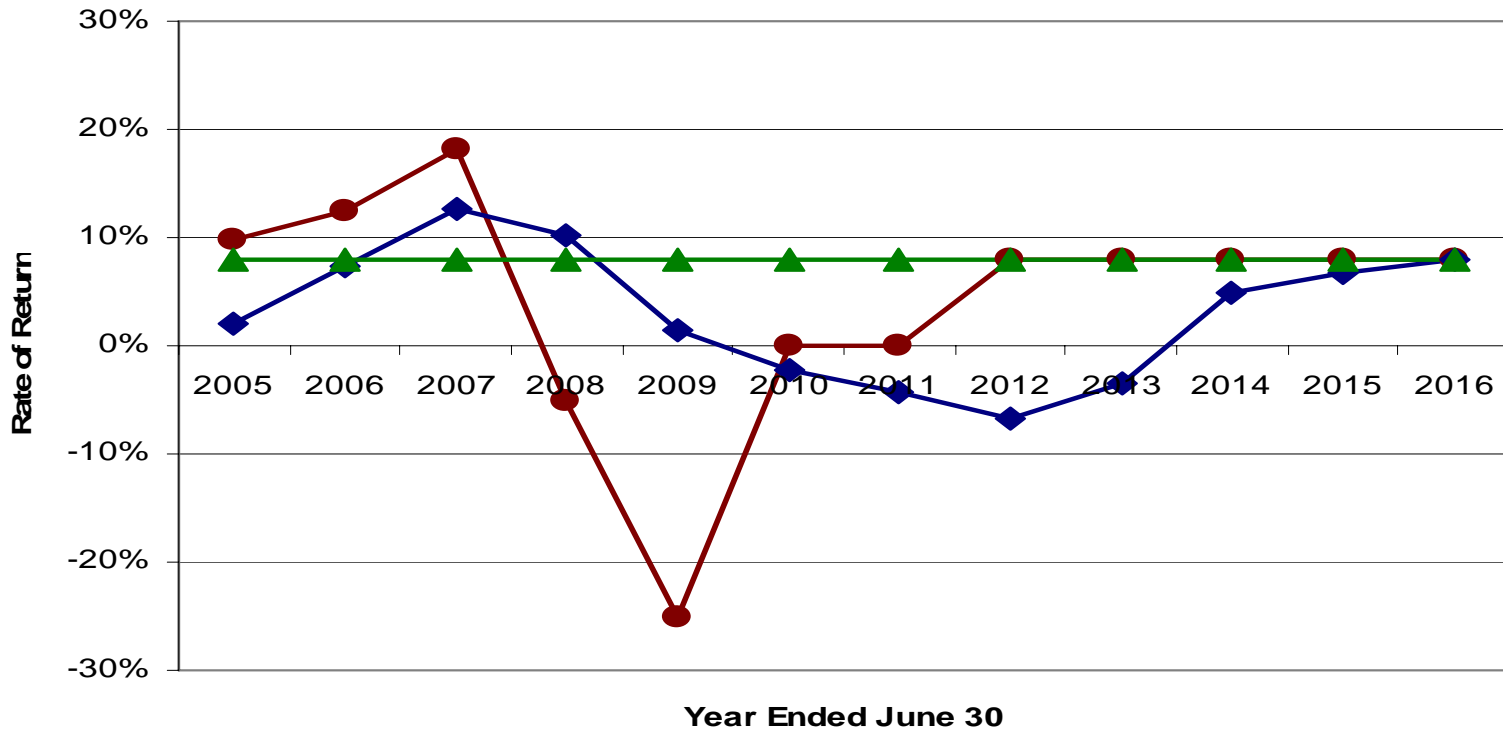
**LAFPP Projected MVA and AVA Rates of Return
Scenario # 2b (with Market Value Corridor)**



● Market Value of Assets (MVA) ◆ Actuarial Value of Assets (AVA) ▲ 8.0% Assumed

Rates of Return – No Corridor

**LAFPP Projected MVA and AVA Rates of Return
Scenario # 2b (without Market Value Corridor)**



● Market Value of Assets (MVA) ◆ Actuarial Value of Assets (AVA) ▲ 8.0% Assumed



QUESTIONS