

Rhode Island Employees' Retirement System

Asset / Liability Analysis

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Asset / Liability Analysis

Agenda

- Executive Summary
- Asset Allocation Observations
- Asset Allocation Process
- Asset Allocation Modeling
- Asset / Liability Simulation
- Conclusions / Recommendation
- Appendix: Asset Allocation Universe Comparisons



Executive Summary

Current Conditions

- Capital market expectations have changed significantly since 2001
- The current asset allocation policy for the Rhode Island Employees' Retirement System ("RIERS") is expected to generate a long-term return of 7.98%
- The actuarial discount rate assumption is 8.25%
- At June 30, 2001, the RIERS aggregate Plan funded ratio (i.e. market value of assets to accrued actuarial liability) was approximately 71%. Based on actuarial valuation of assets, the funded ratio was approximately 81%. For purposes of making asset allocation decisions, the actual market value of assets approach is utilized.
- At June 30, 2001, the period to amortize the unfunded liability was 28 years
- Based on the actuarial valuation at June 30, 2001, Wilshire estimated the aggregate accrued liabilities forward to June 30, 2002. Using this *estimated* data, the funded ratio based on market value fell to approximately 60%. Based on the actuarial valuation of assets technique, the funded ratio fell to approximately 72%.



Executive Summary

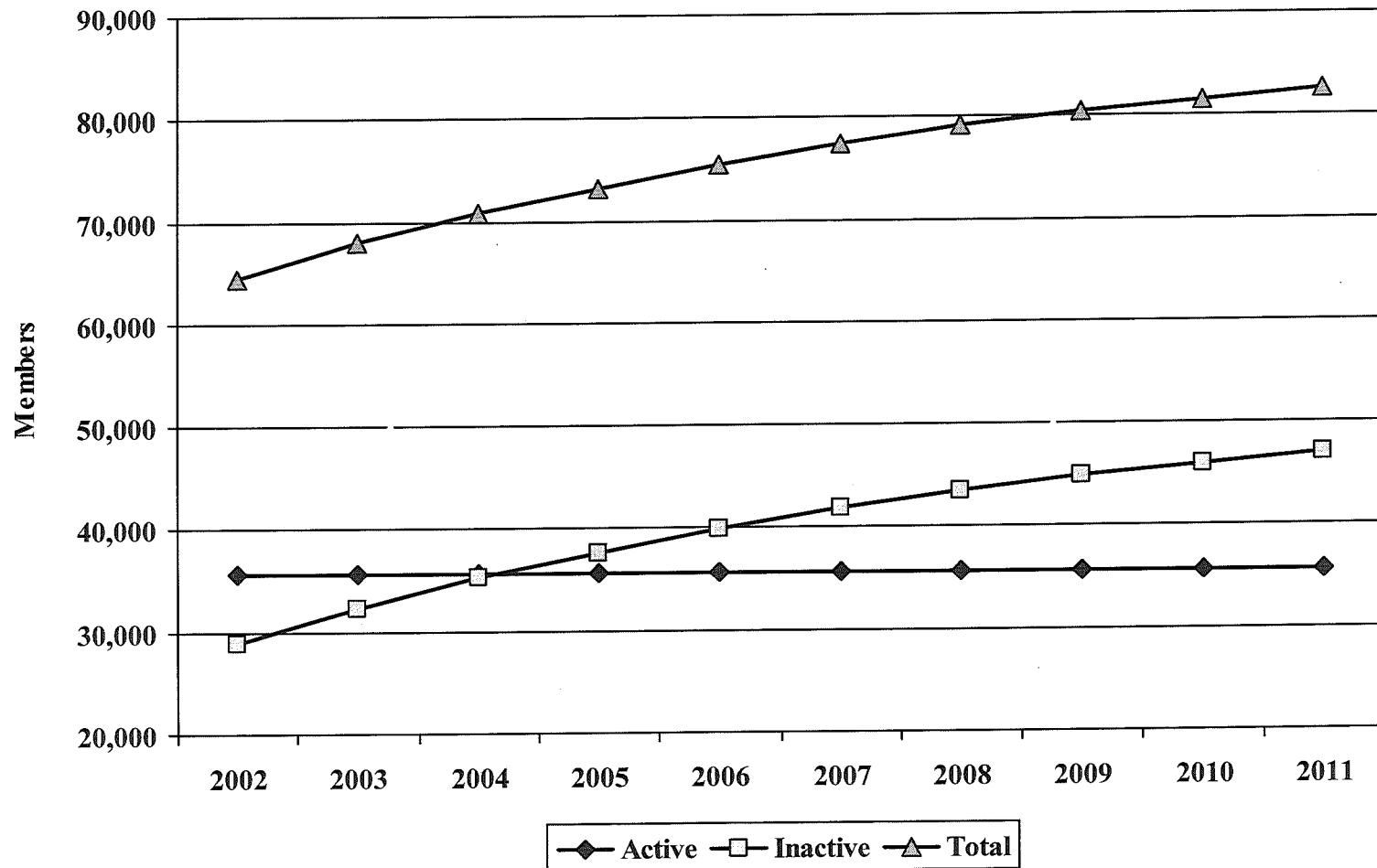
Expected Conditions

- Over the next ten years, the funded ratio (based on expected market value of assets) is expected to improve to a range between 67% and 72%
 - Cumulative employer contributions are expected to range from \$3.70 billion to \$3.82 billion. Cumulative total contributions are expected to range from \$5.19 billion to \$5.32 billion over the next ten years
 - Over the next ten years, projected market value of assets are expected to grow to a range between \$9.02 billion and \$9.77 billion
 - Accrued liabilities are expected to grow to \$13.53 billion in ten years
 - Based on the demographic profile of the RIERS membership, the inactive population is expected to increase rapidly over the next ten years. This important demographic shift in plan membership is depicted graphically on the following page.
 - The asset allocation policy decision alone is not expected to solve the unfunded liability status for RIERS
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Executive Summary

Demographic Shift in Plan Membership



Asset Allocation Observations

General Observations

- Throughout the 1990s – The Best of Times
 - ❑ Pension fund assets experienced high growth rates
 - ❑ Funding ratios improved – pension funds became fully / over funded
 - ❑ Contribution levels declined

- Since March 2000 – A Meaningful Reversal of Trend
 - ❑ Global equity prices declined dramatically
 - ❑ Interest rates declined significantly
 - ❑ Credit spreads expanded
 - ❑ Liability valuations increased
 - ❑ Confluence of these events has had a meaningful impact on funding levels and future contribution requirements



Asset Allocation Observations

Objectives

- Examine the current and projected financial condition of the System
- Evaluate the current asset allocation policy
- Test a number of alternative asset allocation policies
- Determine the most appropriate long-term asset allocation policy to pursue
- Provide recommendations designed to improve the long-term financial condition of the System



Asset Allocation Observations

Philosophy – Why Asset Allocation is Important

- Represents the most powerful tool for plan sponsors in meeting long-term objectives
- Establishes philosophical tone of investment program
- Explains 95% of plan's risk / return profile
- Provides a disciplined framework for diversifying and controlling investment risk
- Utilizes “forward looking” concepts



Asset Allocation Process

Inputs and Process

- Capital Market Expectations
 - ❑ Expected return
 - ❑ Expected risk (standard deviation of return)
 - ❑ Expected asset class correlation (diversification benefits)
- Asset class constraints
- Optimization / efficient frontier analysis
- Alternative policy portfolios



Asset Allocation Process

Capital Market Return Expectations -- 2002 Update vs. 2001

	Expected Return 2001	Expected Return 2002	Change to Expectations
US Equity	9.50%	8.00%	-1.50%
Non-US Equity	9.50%	8.00%	-1.50%
Fixed Income	6.25%	5.25%	-1.00%
Real Estate Securities	8.25%	6.75%	-1.50%
Private Equity	12.50%	11.00%	-1.50%
Cash Equivalents	4.25%	3.25%	-1.00%
Inflation (CPI)	2.50%	2.25%	-0.25%



Asset Allocation Process

Wilshire's Capital Market Expectations

	Expected Return	Expected Risk *	Correlation With US Equity
US Equity	8.00%	17.0%	1.00
Non-US Equity	8.00%	20.0%	0.65
US Fixed Income	5.25%	7.0%	0.40
Real Estate	6.75%	16.0%	0.45
Private Equity	11.00%	32.0%	0.75
Cash Equivalents	3.25%	3.0%	0.00
Inflation (CPI)	2.25%	3.0%	--

* Standard Deviation of Return



Asset Allocation Process

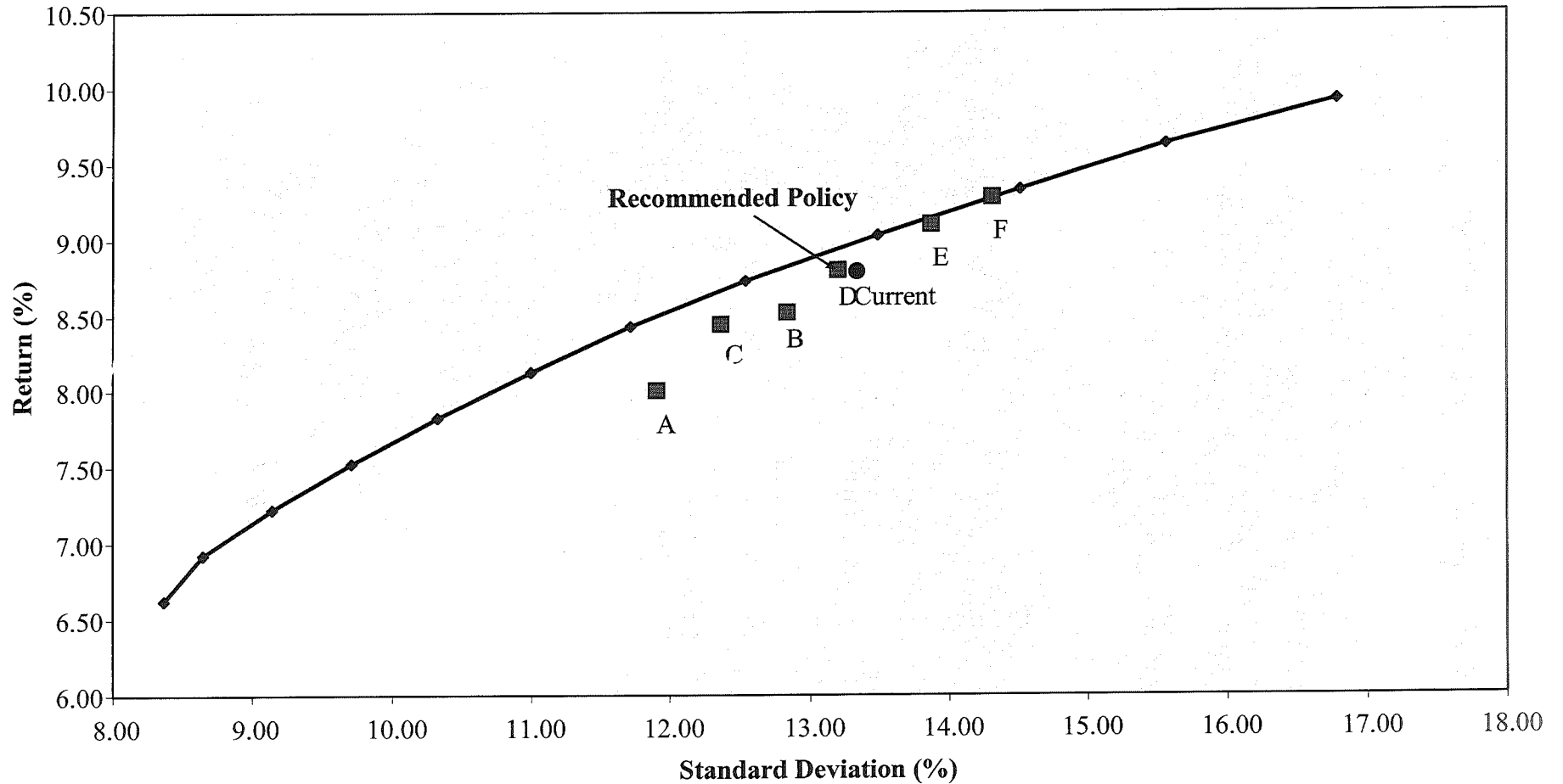
Asset Class Constraints

	Minimum	Maximum
US Equity	30%	60%
Non-US Equity	0%	25%
US Fixed Income	0%	100%
Real Estate	0%	10%
Private Equity	0%	10%
Cash Equivalents	0%	0%



Asset Allocation Modeling

Optimization / Efficient Frontier / Policy Alternatives



Asset Allocation Modeling

Alternative Policy Portfolios

	Current	Alternative Policy Portfolios					
		A	B	C	D	E	F
US Equity	45.0%	55.0%	50.0%	45.0%	42.5%	42.5%	40.0%
Non-US Equity	20.0%	10.0%	15.0%	15.0%	20.0%	20.0%	25.0%
Real Estate	0.0%	0.0%	0.0%	5.0%	5.0%	7.5%	10.0%
Alternative Investments	7.5%	0.0%	5.0%	5.0%	7.5%	10.0%	10.0%
<i>Total Equity-Oriented</i>	72.5%	65%	70%	70%	75%	80%	85%
Fixed Income	27.5%	35%	30%	30%	25%	20%	15%
Expectations							
Return	7.98%	7.36%	7.77%	7.74%	8.01%	8.23%	8.34%
Risk *	13.35%	11.92%	12.85%	12.38%	13.21%	13.88%	14.32%
Return / Risk	0.60	0.62	0.60	0.63	0.61	.59	0.58

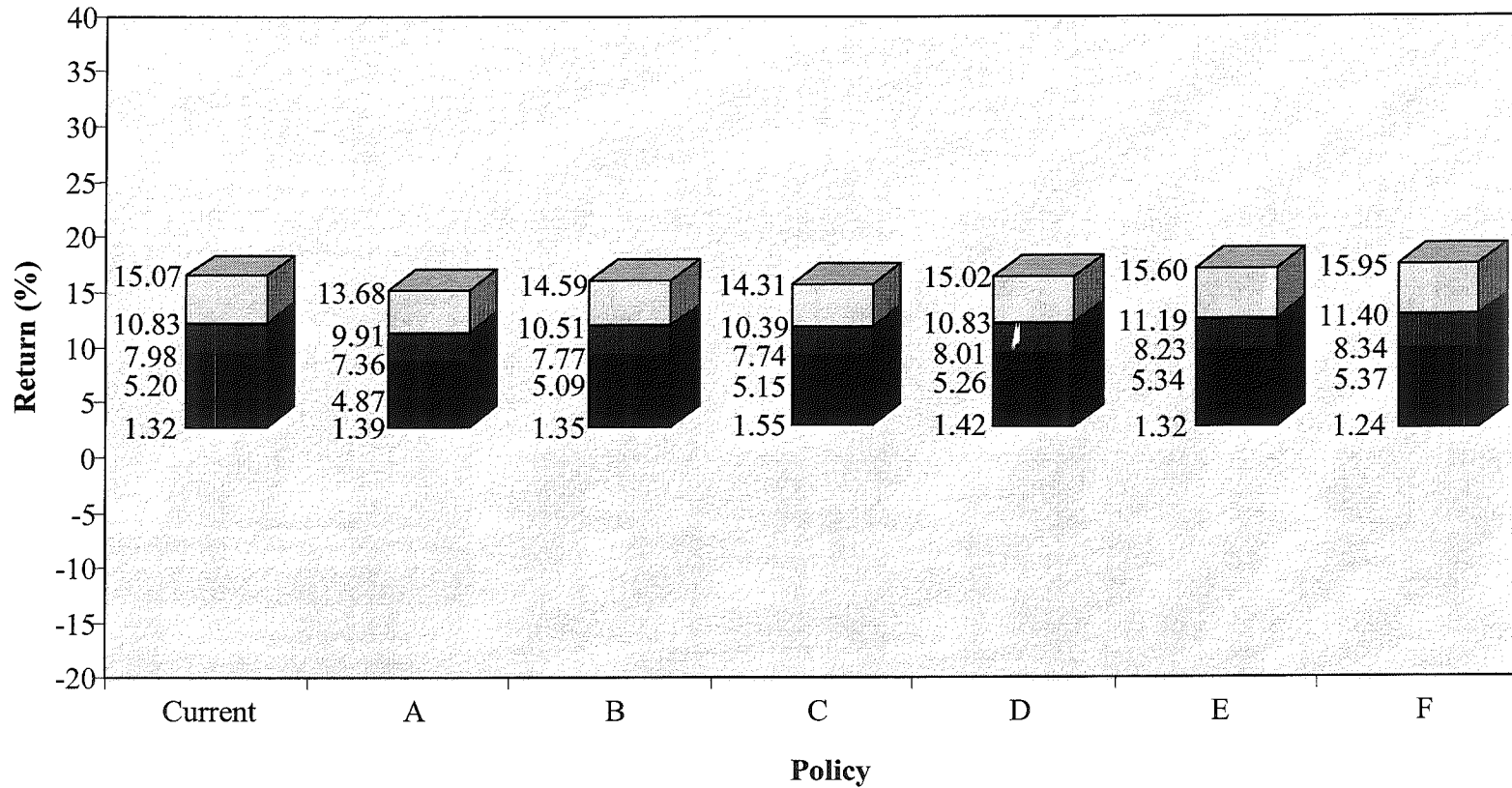
* Standard Deviation of Return



Asset Allocation Modeling

Distribution of Expected Returns

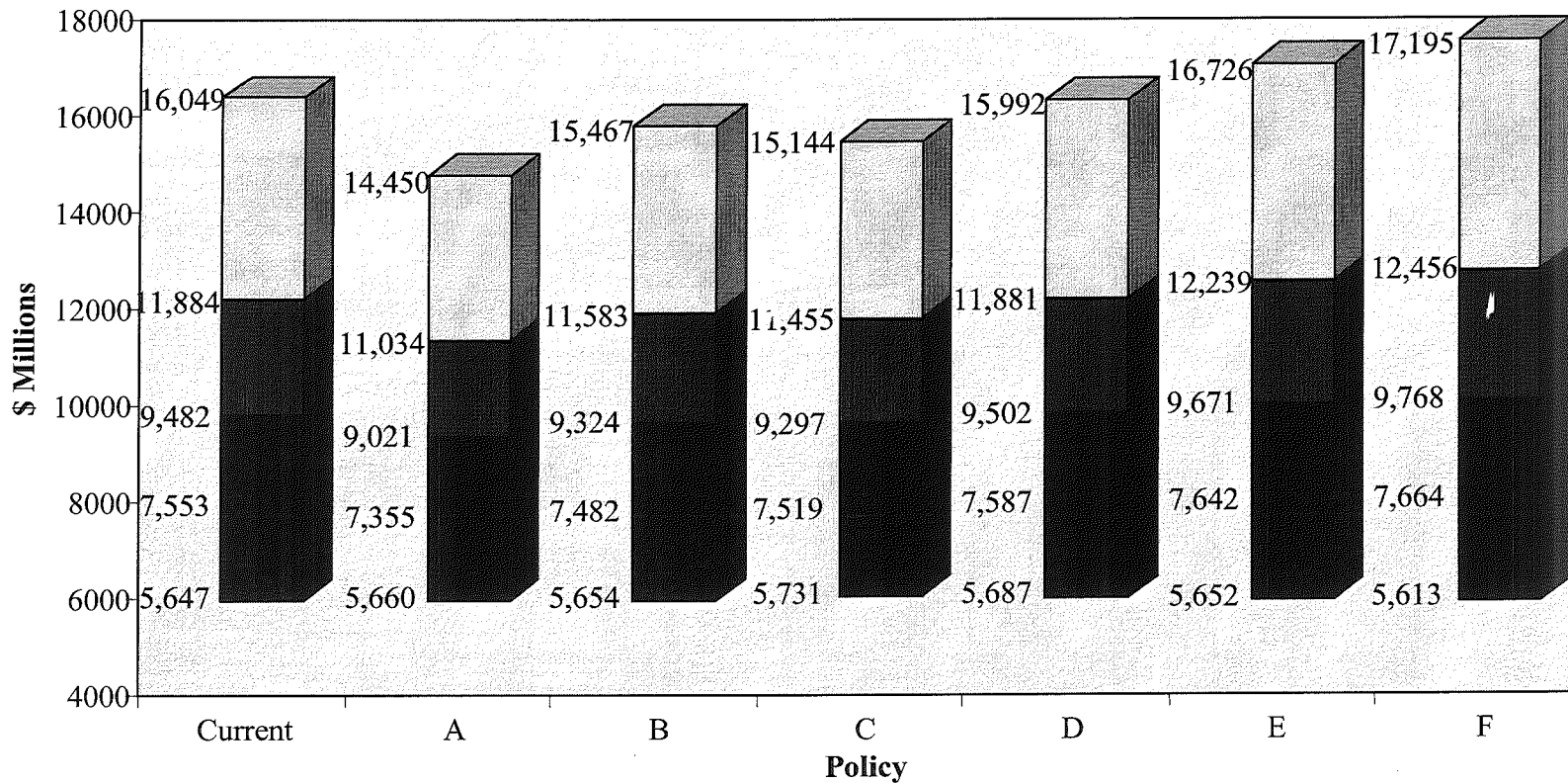
Year 10



Asset Allocation Modeling

Distribution of Expected Market Values

Year 10



Asset / Liability Simulation

Actuarial and Liability Projection Assumptions

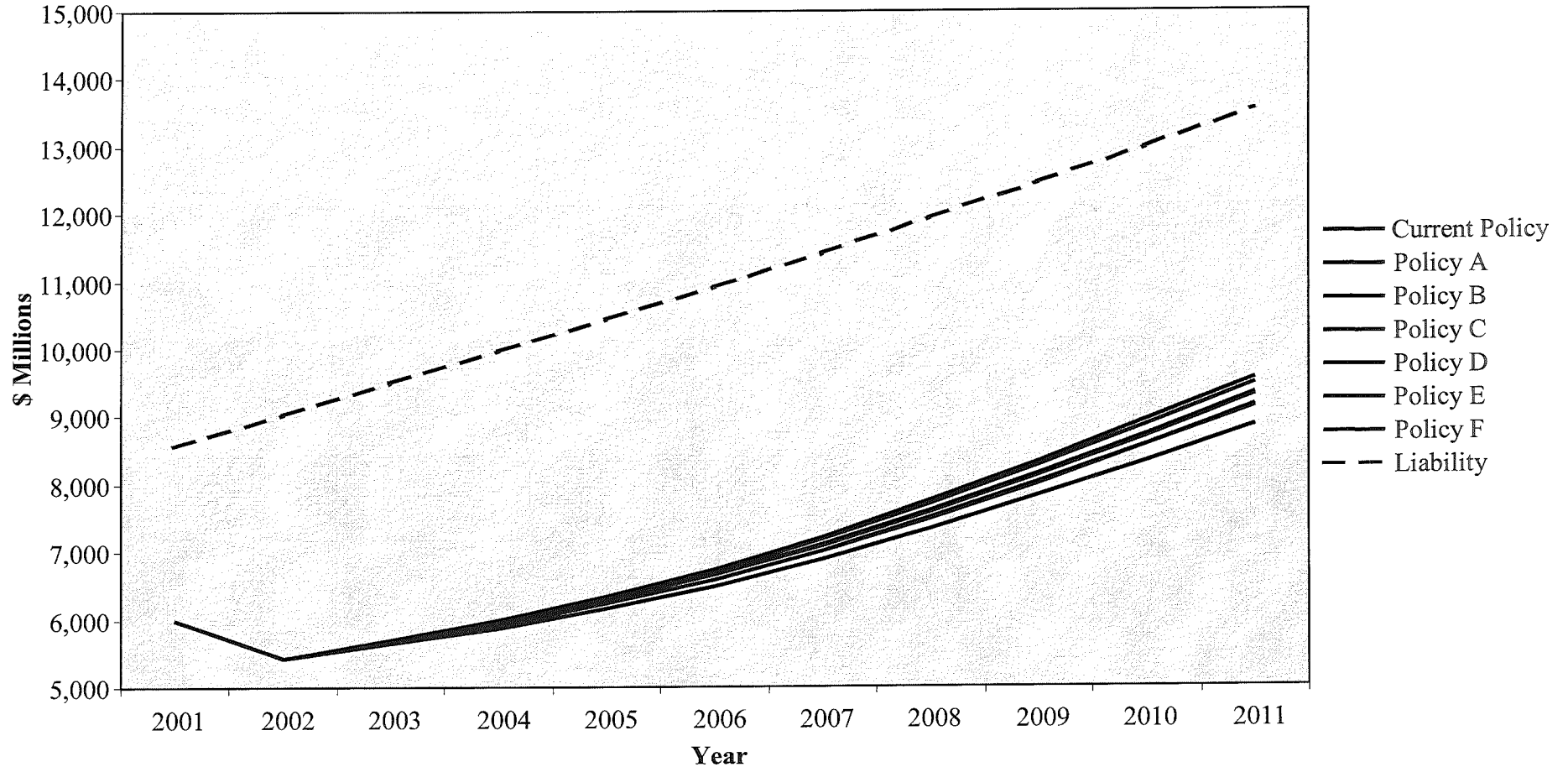
- Planning horizon: 10 years
- Start date: June 30, 2001
 - ❑ Market value of assets = \$6.12 billion
 - ❑ Actuarial value of assets = \$6.95 billion
 - ❑ Current accrued liability = \$8.56 billion
- Forward estimate: June 30, 2002
 - ❑ Market value of assets = \$5.42 billion
 - ❑ Actuarial value of assets = \$6.49 billion
 - ❑ Current accrued liability = \$9.03 billion
- Actuarial discount rate assumption: 8.25%
- Workforce growth rate: 0.00%
- Growth in payroll: 3.30%
- Cost of living adjustments for benefits: 3.00%



Asset / Liability Simulation

Expected Future Funding Ratio

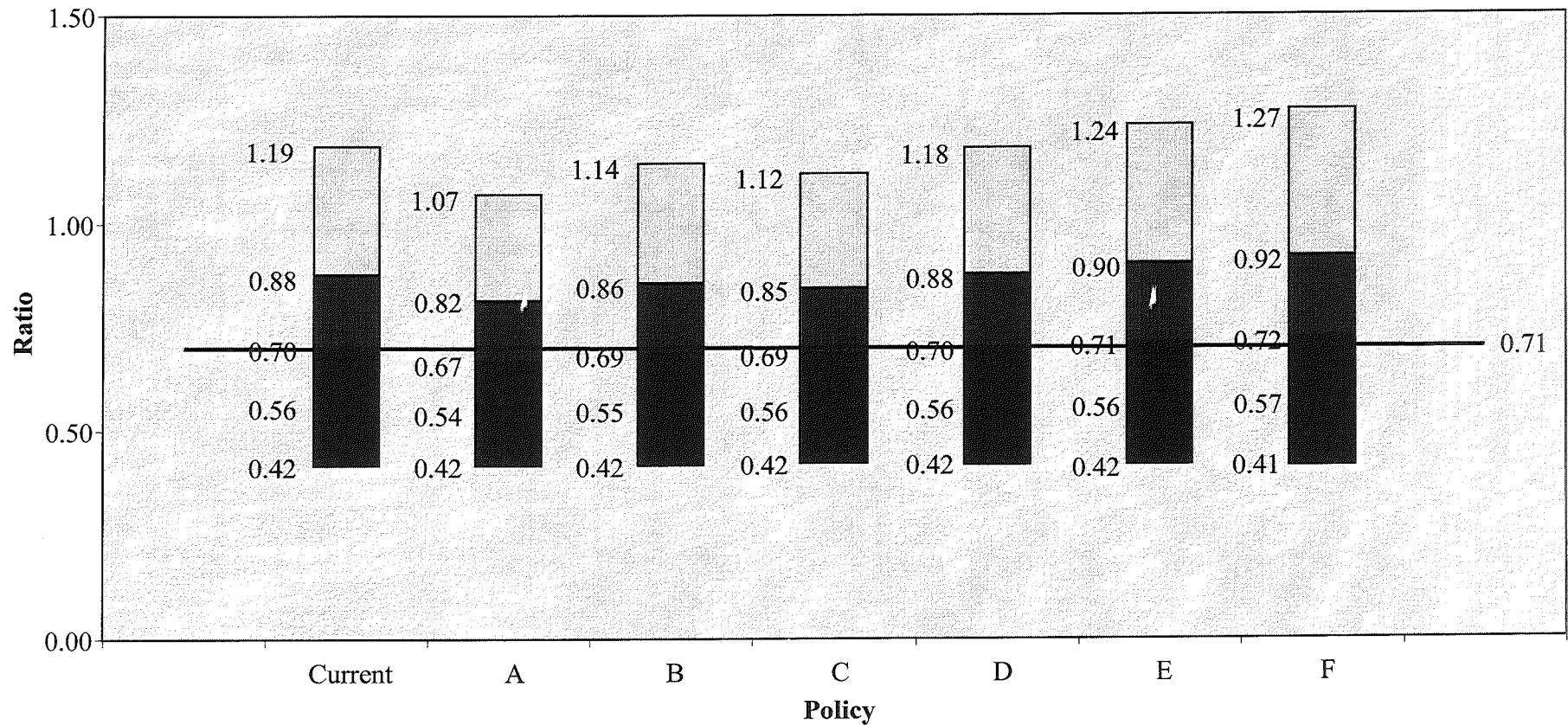
Projected Market Value of Assets vs Accrued Liability



Asset / Liability Simulation

Ratio of Expected Market Value of Assets to Accrued Liability

Year 10



Asset / Liability Simulation

Expected Contributions

Year	Expected Contributions (\$Millions)						
	Current Policy	Policy A	Policy B	Policy C	Policy D	Policy E	Policy F
2002	\$278.7	\$278.7	\$278.7	\$278.7	\$278.7	\$278.7	\$278.7
2003	\$323.5	\$323.5	\$323.5	\$323.5	\$323.5	\$323.5	\$323.5
2004	\$405.7	\$405.7	\$405.7	\$405.7	\$405.7	\$405.7	\$405.7
2005	\$455.8	\$456.6	\$456.0	\$456.1	\$455.7	\$455.5	\$455.3
2006	\$527.7	\$530.4	\$528.6	\$528.7	\$527.5	\$526.6	\$526.0
2007	\$590.8	\$596.7	\$592.8	\$593.1	\$590.6	\$588.5	\$587.3
2008	\$632.0	\$642.0	\$635.4	\$635.9	\$631.5	\$628.0	\$626.0
2009	\$654.8	\$669.8	\$659.9	\$660.6	\$654.1	\$648.7	\$645.8
2010	\$673.8	\$694.2	\$680.8	\$681.7	\$672.8	\$665.5	\$661.5
2011	\$691.3	\$717.4	\$700.3	\$701.5	\$690.0	\$680.6	\$675.4
Total	\$5,234.1	\$5,315.0	\$5,261.7	\$5,265.5	\$5,230.1	\$5,201.3	\$5,185.2



Conclusions / Recommendation

Observations

- Plan liabilities are long-term. The duration of plan liabilities is 14.6 years
- Plan membership is expected to experience an important demographic shift. Inactive members are expected to double over the next ten years
- The current and expected financial condition is challenged

	<u>June 30, 2001</u>	<u>June 30, 2002</u>	<u>June 30, 2011</u>
Market Value of Assets	\$6.12 B	\$5.42 B	\$9.02 B to \$9.77 B
Accrued Liability	\$8.56 B	\$9.03 B	\$13.53 B
Funding Ratio	71.5%	60.0%	66.7% to 72.2%
Actuarial Value of Assets	\$6.95 B	\$6.49 B	\$8.99 B to \$9.55 B
Accrued Liability	\$8.56 B	\$9.03 B	\$13.53 B
Funding Ratio	81.2%	71.9%	66.4% to 70.6%



Conclusions / Recommendation

Recommendation

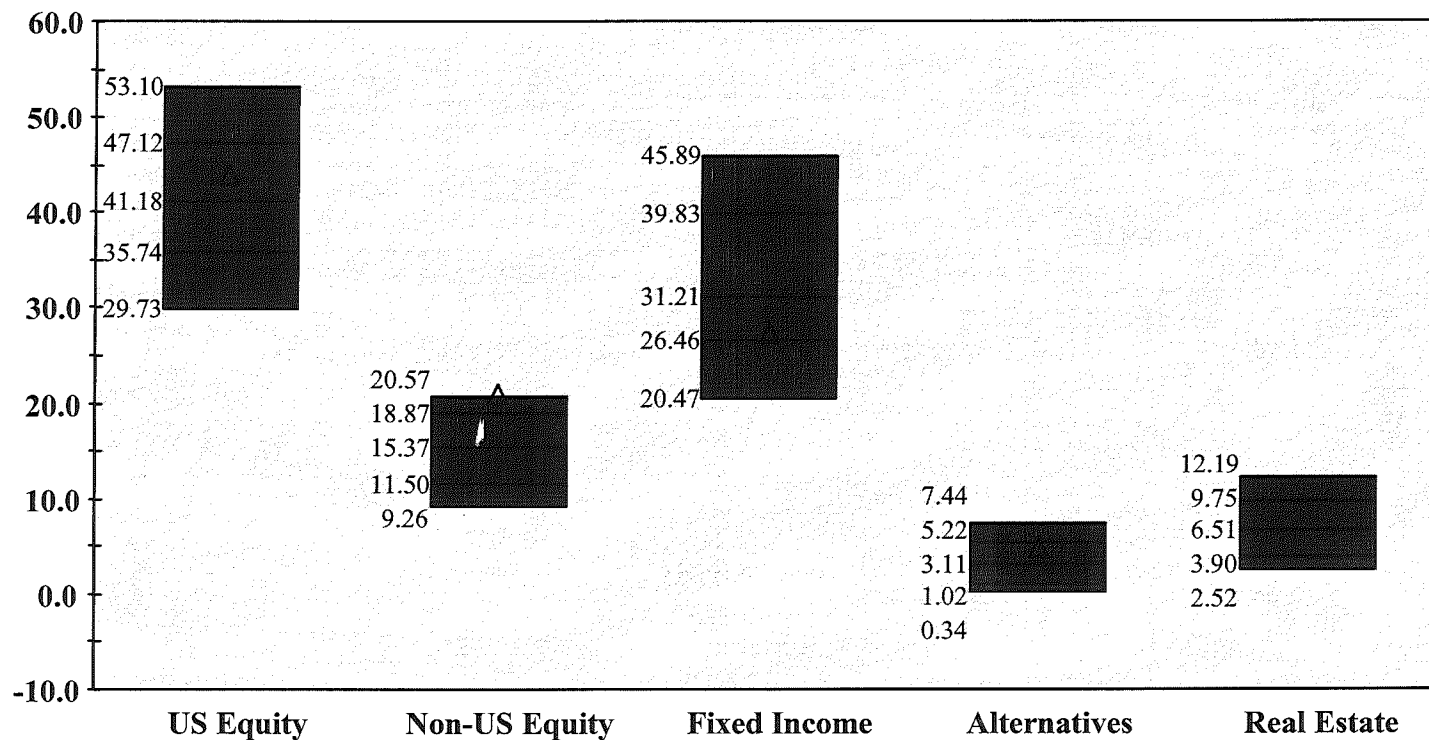
	Current Policy	Recommended Policy	Difference
Equity-Oriented	72.5%	75.0%	+2.5%
US Equity	45.0%	42.5%	-2.5%
Non-US Equity	20.0%	20.0%	0.0%
Alternative Investments	7.5%	7.5%	0.0%
Real Estate	0.0%	5.0%	+5.0%
Fixed Income	27.5%	25.0%	-2.5%
Total	100.0%	100.0%	100.0%
Expected Return	7.98%	8.01%	+0.03%
Expected Risk *	13.35%	13.21%	-0.14%

* Standard Deviation of Return



Appendix: Asset Allocation Universe Comparison

RIERS vs. Compass Total Fund Universe
Quarter Ending June 30, /2002



Δ RIERS	43.96 (42)	21.02 (7)	27.20 (71)	4.85 (34)	N/A
# of Funds	60	56	59	33	14

