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WARNING: Investing Pension Assets in the Lehman Aggregate May Be Hazardous to Your Career

R E P R E S E N T I N G L O T S O F F C A P I T A L M A N A G E M E N T

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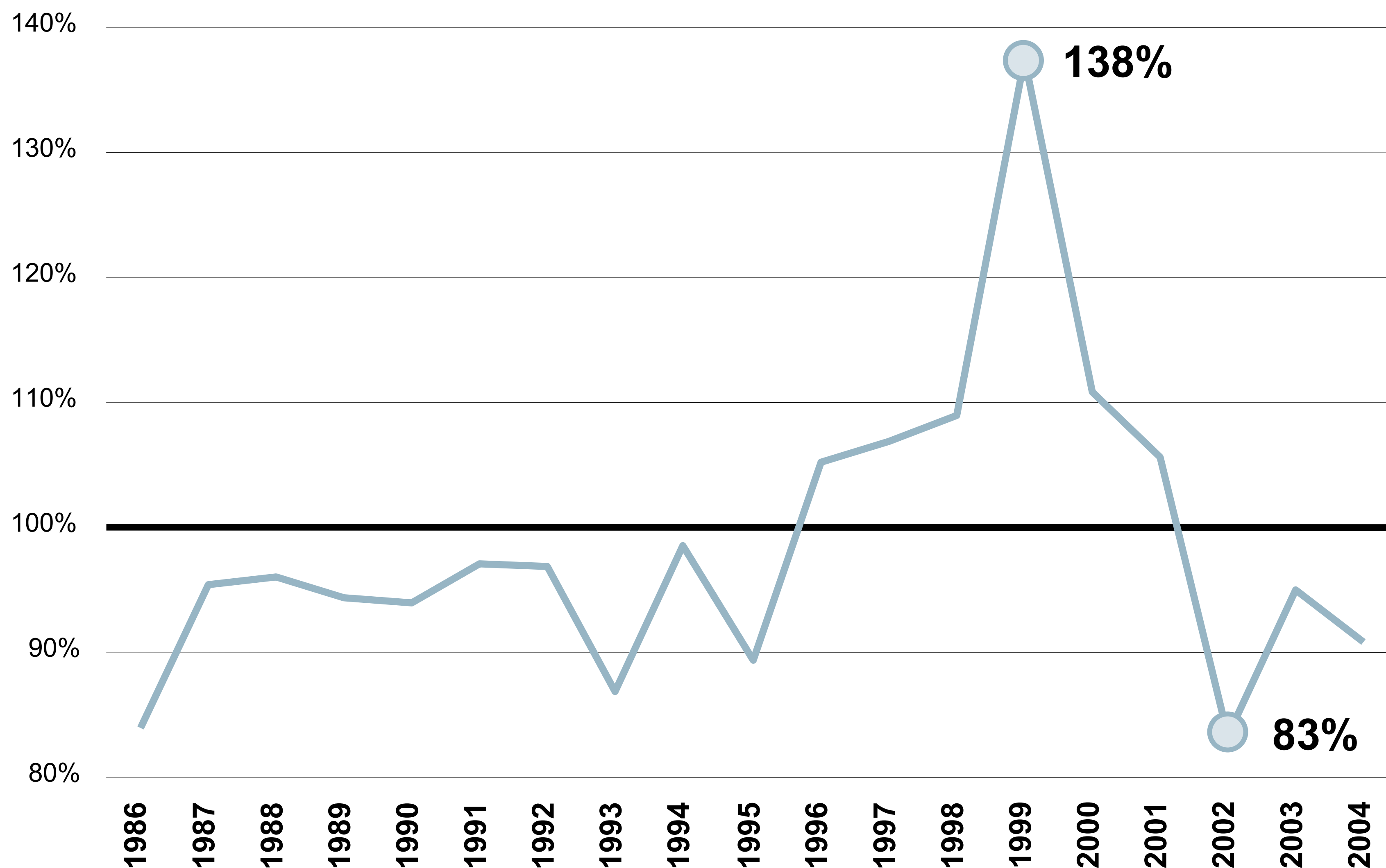
The Fall: *Historical Funding Ratio*



Asset: 50% S&P 500 + 50% Lehman Aggregate **Liabilities:** Ryan ALM Liability Index

The Balance Sheet Mismatch Problem

Sample Asset/Liability Mismatches

Typical Thrifts in the early 1980's

Thrifts		Duration
Assets:		
Mortgages	100%	6.5
Liabilities		
DD & Term Deposits	100%	-1.5
Rate Risk Exposure in Years		5.0

Typical Pension Plan in the late 1990's

		Duration
Stocks	50%	0.0
Bonds	50%	4.0
Assets	100%	2.0
PBO Liability	100%	-12.0
Rate Risk Exposure in Years		-10.0

Closing the Asset/Liability Gap

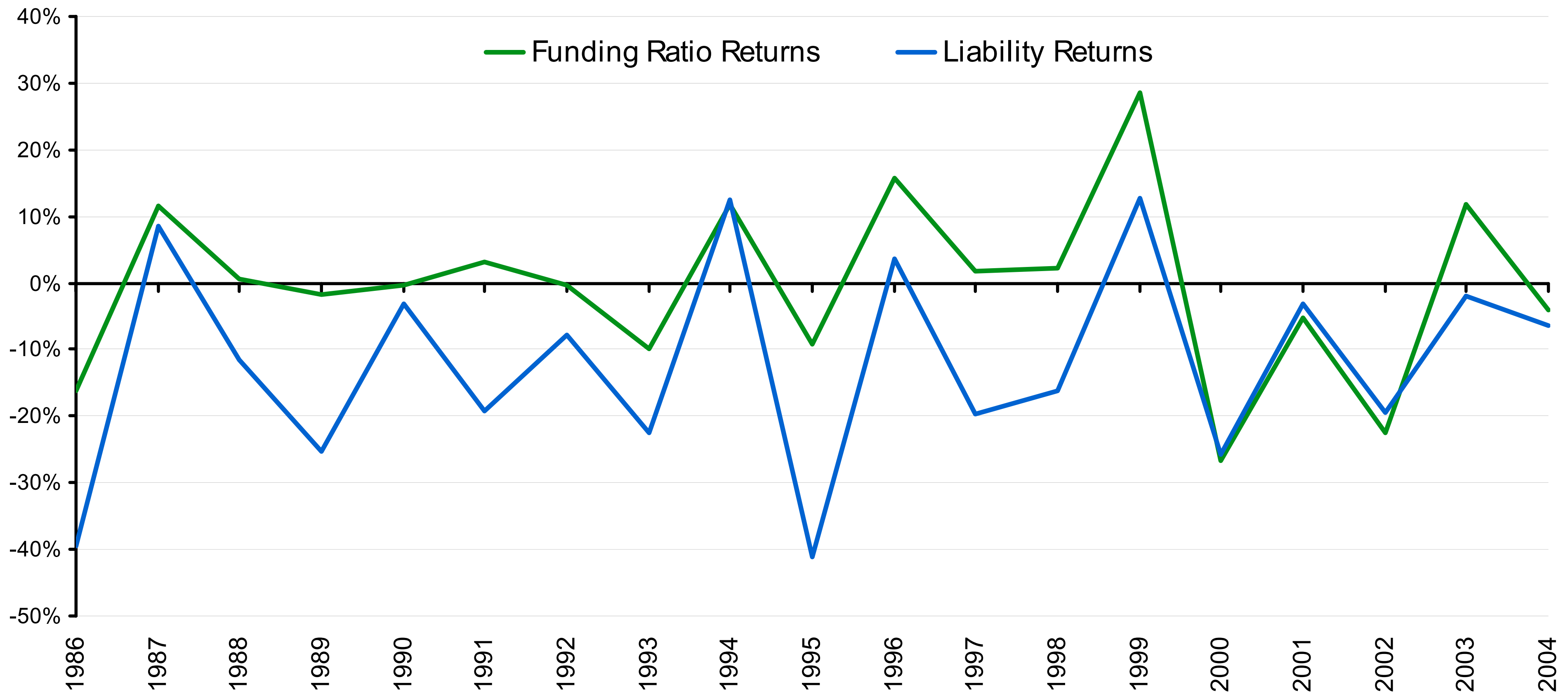
Plan that extends bond duration

		Duration
Stocks	50%	0.0
Bonds	50%	12.0
Total Assets	100%	6.0
PBO Liability	100%	-12.0
Rate Risk Exposure in Years		-6.0

Plan that covers rate risk exposure

		Duration
Stocks	50%	0.0
Bonds	50%	24.0
Assets	100%	12.0
PBO Liability	100%	-12.0
Rate Risk Exposure in Years		0.0

The Funding Ratio Results Are Dominated By Liabilities Return



Annual Funding Ratio Volatility = 13.3%

Annual Liability Volatility = 15.7%

Annual Yield Volatility = 111 basis points

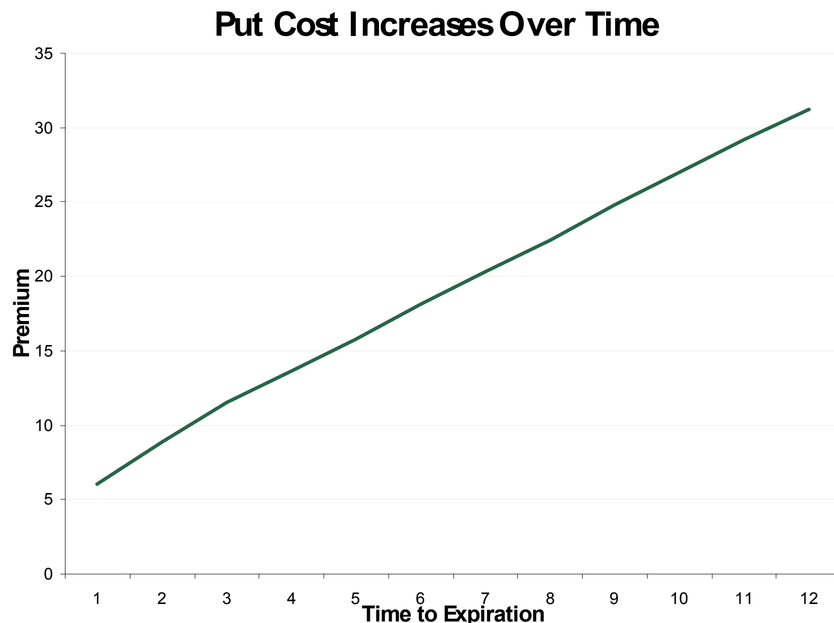
Descriptions:

Pension Assets = 50% S&P 500 plus 50% ML Master
Liability returns measured by the Ryan ALM's Liability Index
Yield volatility based on changes in 10 Year Treasury yields

The Equity Cult

Key tenets of the Equity Cult:

- Pension plans should maximize their total return without regard to funding needs.
- Pension plans can afford to take higher risks because they are long-term investors.
- Risks diminish over time as the probability a loss decreases.



Fallacy refuted:

- Volatility is a measure of uncertainty; not the appropriate measure of risk for pension schemes.
- A proper risk measure not only takes into account the chance of a loss but also its severity.
- As Zvi Bodie has made clear, the expected value of a loss is precisely measured by the cost of a put option.
- The cost of a put increases with time.
- If, over time capturing the equity premium is a near certainty, then we cannot maintain that the premium is a payment to investors for taking risk.

Pension Investment Strategy: Competing Paradigms

	The Sharpe Model	The Leibowitz Model
Model	Efficient Frontier	Finance Co. Subsidiary/Bank
Objective	High and stable asset returns	High and stable surplus value (positive return difference between assets and liabilities)
Benchmark	The risk-free asset is cash	The risk-free asset is a bond portfolio that resembles the plan's liability schedule (typically with a duration of 12 years)
Correlation	Assets negatively correlated with the stock market are valued as diversifiers	Assets positively correlated with liabilities are valued to stabilize the surplus value
Market of Liabilities	"Safely Ignored"	Integrated into asset allocation decision making
Role of Fixed Income	Intermediate term bonds added to dampen stock market volatility	Long duration bonds added for their ability to consistently generate positive surplus value and dampen volatility of the funding ratio
Tactical Asset Allocation	Market timing impossible. For best results stay fully invested in market portfolio with fixed weights of 65/35 stocks/bonds	Allocations outside the benchmark scaled to information ratios with the goal of optimizing the surplus value

A Repetition of the classic 16th century conflict:

We are replacing the Ptolemaic (geocentric) theory of the solar system with the Copernican (heliocentric) theory

- The trick is to relate these (investment) instruments to the characteristics of the liabilities.
  Peter Bernstein, FAJ, July/August 2003

- One kind of alternative benchmark does make sense for most institutions or assets pool—a benchmark that represents the return on the institutions' liabilities.
  Larry Siegel Benchmarks and Investment Management, 2003

- Any organization that invests its money to fund a liability will probably be gravitating to the use of custom fixed-income benchmarks…for the purpose of matching the market-related characteristics of their liability…It is a coming development.
  Barton Waring Dimensions of Active Management, 2003

- The numeraire for the investment portfolio, in other words, the riskless asset, should be a life annuity with expected maturity equal to the lifespan of the particular person for whom the advisor is planning.
  Robert C. Merton, FAJ, Jan/Feb 2003

- The essence of the liability puzzle is our definition of wealth… (which) is the real purchasing power that a portfolio can support over the span that the purchasing power is needed.
  Robert Arnott, FAJ, July/Aug 2004

- A benchmark can articulate a fund's key objective. For instance, the performance of a fund whose exclusive purpose is to meet a well-defined liability should be measured relative to a benchmark that expresses the funding costs of that liability.
  Martin Leibowitz, et al., FAJ, Sept/Oct 1995

Surplus Efficient Frontier