

CCCERA Asset Allocation Discussion

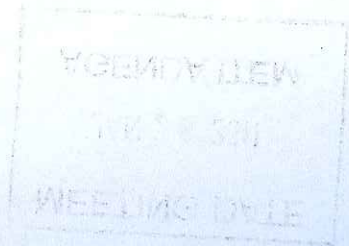
MEETING DATE
JAN 26 2011
AGENDA ITEM
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January 26, 2011

CCCERA Asset Allocation Discussion

- 1. Why are we conducting a study now?
 2. What role does an asset allocation study serve?
 3. How does asset allocation theory work?
 4. How are projected liabilities used in the study?
 5. What are the steps of an asset allocation study?
 6. What special issues must CCCERA consider in the course of the study?



CCCERA Strategic Asset Allocation

- Why does it matter?
 - Academic studies suggest that up to 90% of differences in funds' returns is due to differences in asset allocation.

- What drives the asset allocation decision?
 - Expected returns, risk tolerance, liabilities
 - CCCERA current allocation

- Last study conducted in early 2008
 - Milliman recommends conducting a study every 3-5 years
 - Credit crunch, recovery have altered capital market expectations

Why Conduct An Asset Allocation Study?

- Determine if the current risk profile is appropriate, and decide target risk given:
 - Projected benefit payments, and
 - The willingness of the Board to accept risk
- Evaluate asset classes for the Fund based on:
 - The ability of the asset class to add to expected Fund return without increasing overall risk, and
 - The Board's willingness to consider the asset class
- Adopt a target asset allocation based on the ability of the asset classes to deliver highest expected return for the desired risk level.

Two Types of Asset Allocation

- **Strategic (Policy or Long Term) Asset Allocation**
 - To meet long term goals
 - Conducted by Board with staff, consultant help
- **Tactical (Market Timing or Short Term) Asset Allocation**
 - Implemented by TAA manager or Overlay manager, occasionally by Board
 - Board has allowed up to 5% of the Total Fund to be invested in Opportunistic Investments, as identified by staff and consultants
- **Milliman study focuses on Strategic Asset Allocation**

Discipline is Essential to Asset Allocation

- Asset allocation is most effective when the policy is maintained in spite of market movements
- The stock market fell 508 points (a loss of 22.6%) in one day in 1987. After, some funds moved out of stocks. “Stocks are too risky for us,” they said in the press. In retrospect, perhaps these funds were too aggressive. Very similar events occurred in 2008.
- If your targets are well conceived, you can afford to stay with them through thick and thin. What is your risk tolerance? Sell to the “sleeping point”.

Asset Allocation Role

- Investment Objectives & Policy

- **Asset Allocation**
 - **Broad: Between Asset Classes**
 - **Specific: Structure of Individual Asset Classes**
 - example: Active vs. Passive, Sub-Asset classes
 - **Broad studies conducted every 3-5 years, specific asset class reviews as needed**

- Performance Evaluation & Measurement

- Manager Search

Return and Risk Definitions

- Return is measured in average annual % per year.
- Risk is usually measured in % standard deviation per year.
- Related Risks:
 - Interest rate risk ("Macro-economic risk") - If rates decline, newly invested assets will earn lower returns, so more funds are needed to pay benefits
 - Asset classes fail to meet expectations
 - Managers underperform
 - Pioneer risk of being different than peers

Standard Deviation

- One Standard Deviation

- Rate of Return=10%

- Std. Deviation=15%

- $10+15 = 25$

- $10-15 = -5$

- Range of Returns

- -5% to 25%

- Approx. 67% of the

Time

- Two Standard Deviations

- Rate of Return=10%

- Std. Deviation=15%

- $10+30 = 40$

- $10-30 = -20$

- Range of Returns

- -20% to 40%

- Approx. 95% of the

Time

Higher Return = Higher Risk

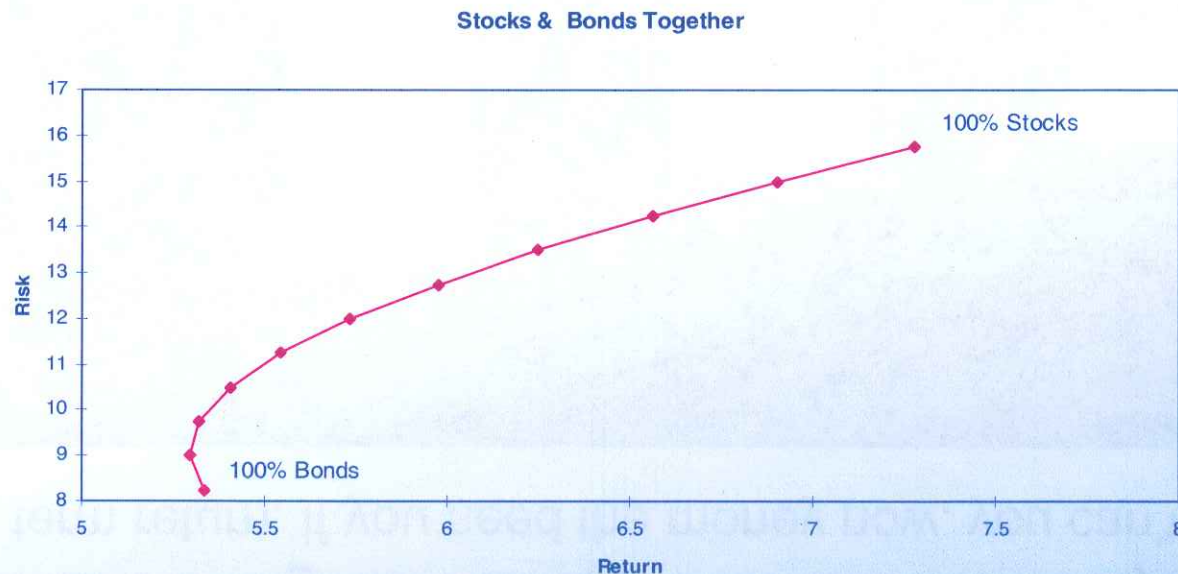
- Theory says that investors are risk averse, so riskier assets demand higher returns.

- | <u>38 yr., June 1972-2009</u> | <u>Geometric Return</u> | <u>Risk</u> |
|-------------------------------|-------------------------|-------------|
| – Long Government Bonds | 8.4% | 12.2% |
| – Large Company Stocks | 9.9% | 18.6% |
| – Small Stocks | 12.9% | 23.6% |

– Source: Ibbotson

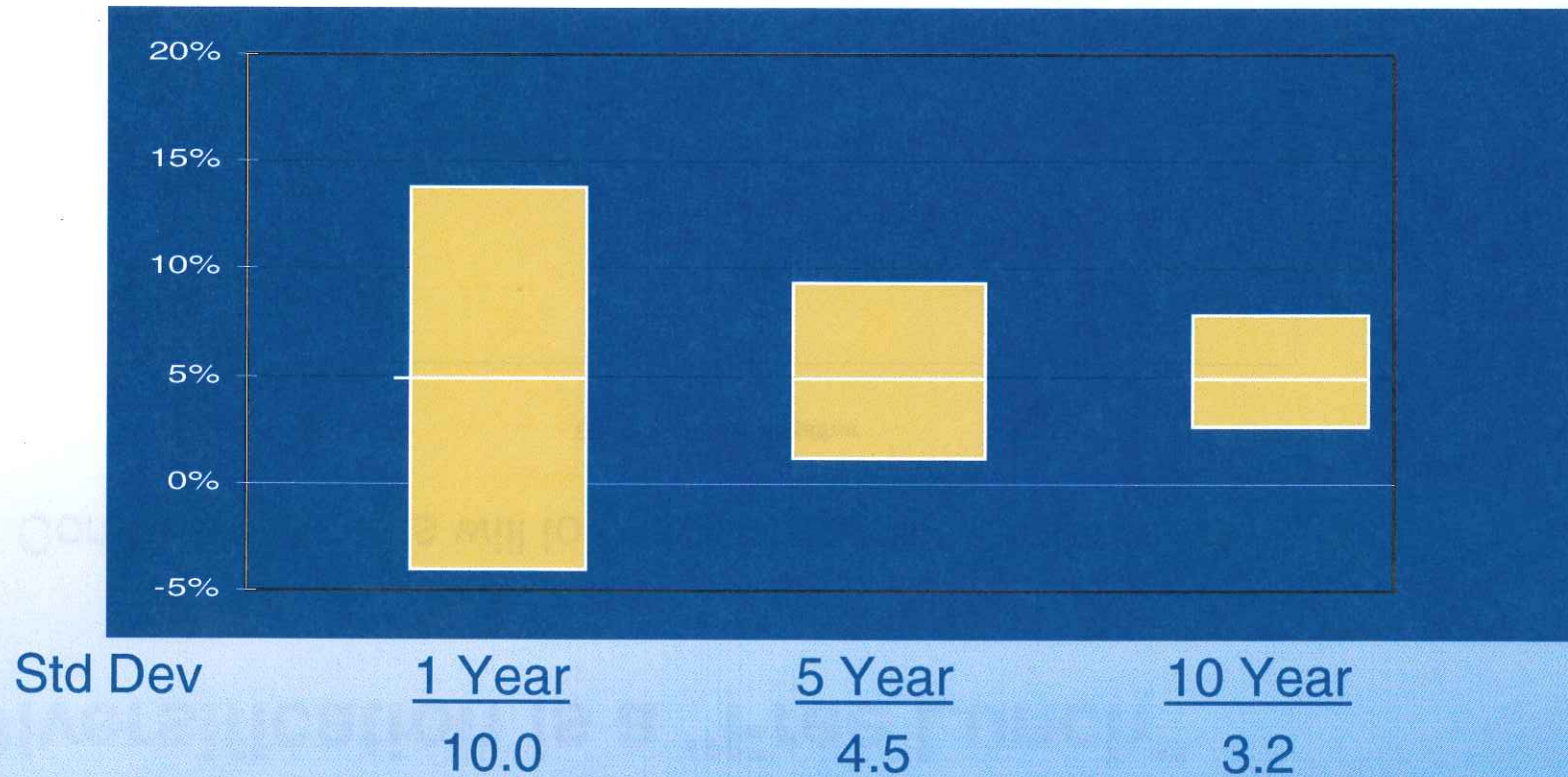
Diversification is a “Free Lunch”

- Combining assets will lower average risk, not return



Time Diversifies Away Short-Term Volatility

- If you have a long time frame, you can risk a terrible year for a higher long term return. If you need the money now, you can't risk it.



Your Asset Allocation Depends On...

- General Rules for Asset Allocation:
 - If you need the money soon, be very conservative
 - If you have less than what you owe and have the time to catch up, the time allows you to be aggressive
 - As you approach being fully funded, you may pull back on your aggressiveness (“de-risk”)
 - If you have lots more money than you need, you have a margin of safety and can take risk with the excess

How Do Liabilities Compare to Assets?

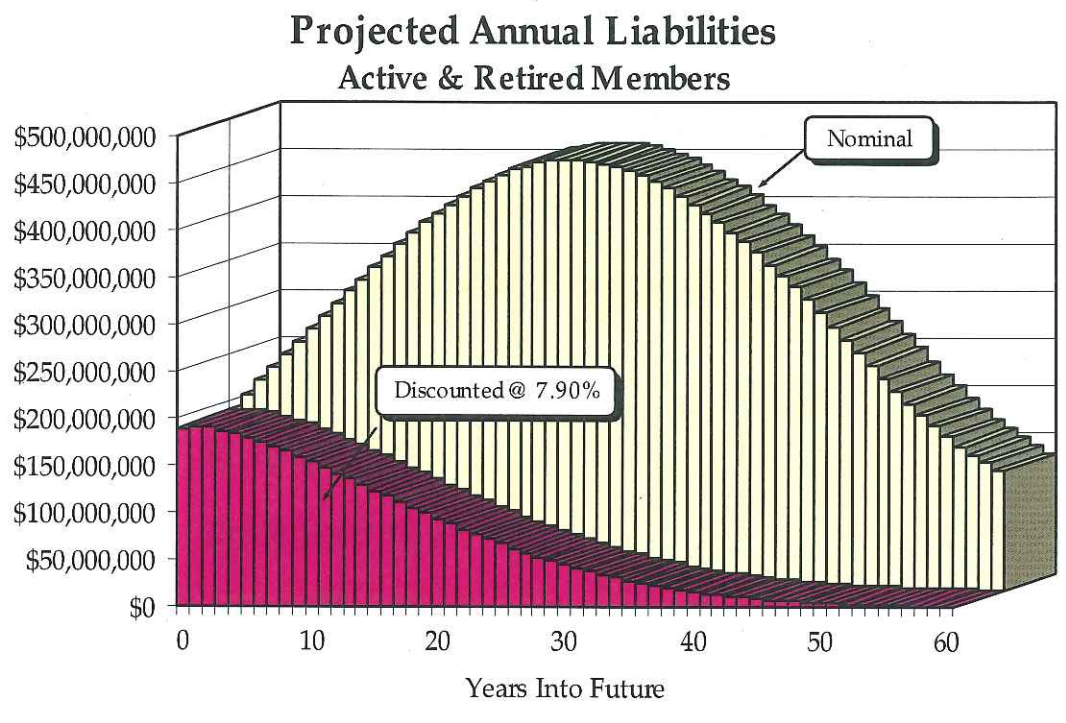
- Liabilities Resemble Long Term Bond
 - Average Payment 14-17 Years into Future
 - Some Uncertainty Due to Inflation, etc.
- Today's Value Depends on "Discount Rate"
 - Decline in Discount Rate Increases Liabilities
- Bonds Become the Low Risk Asset!
 - Longer-Duration Bonds Better Match Liabilities

Expense of Asset/Liability Mismatch

- What happens when interest rates fall?
 - Stocks Gain 12%
 - Bonds Gain 12%

- But what Happens with Liabilities?
 - Discount Rate Decreases
 - Benefits' Present Value Increases 20%

Typical Liabilities for Pension Plan



- Payments extend far into the future
- Discounting liabilities shifts the impact of the distribution towards the present and reduces it substantially
- Pension liabilities have long duration, typically 14-17 years

Timeline for Asset Allocation Study

- January:
 - Board education, asset class review
 - Request liability data from actuary
- February-March:
 - Model liability/asset correlations
 - Conduct initial asset allocation study phase
 - Discuss preliminary asset mixes with staff, fine tune
- April-May:
 - Present asset allocation study to Board, follow up with alternative asset mixes
 - Adopt new targets, draft updated investment policy statement
 - Conduct implementation study (if needed)

Asset/Liability Study Steps

- Define Asset Classes
- Analyze Liabilities
- Project Assets' & Liabilities' Characteristics:
 - Returns, Uncertainty & Correlations
- Optimize
- Review Implications
- Choose Target Allocation
- Analyze Structure of Each Asset Class
- Establish Framework for Monitoring & Reviewing Allocation

Define Asset Classes

- Asset/Liability Approach Well Suited for Comparing Broad Asset Classes
 - Asset Class Needs To Be Well Defined
 - Data For Analysis Needs To Be Available
- Other Approaches More Appropriate For Fine-Tuning Classes
 - Allocating Equities Between Large and Small Capitalization mandates
 - Active Versus Passive Composition
 - Allocating Alternative Investments Into Various Categories

Changes in Asset Class Assumptions

<u>Asset Class</u>	<u>2008 Assumptions</u>		<u>2011 Assumptions</u>	
	<u>Return</u>	<u>Standard Deviation</u>	<u>Return</u>	<u>Standard Deviation</u>
Global Equities	8.80%	18.50%	9.25%	19.55%
Global Fixed Income	4.90%	6.00%	3.35%	8.75%
High Yield Fixed Income	6.50%	9.00%	7.55%	11.35%
Long-Duration Bonds	6.00%	8.00%	4.85%	9.05%
Real Estate	7.50%	14.00%	7.60%	12.00%
Private Equity	12.75%	30.00%	11.95%	30.00%
Cash	3.00%	1.25%	3.00%	1.15%
Liabilities	n/a	20.07%	n/a	tbd

CCCERA Current Asset Classes

- Global Equities (Domestic, International and dedicated Global)
- Global Investment Grade Fixed Income
- High Yield Fixed Income
- Long Duration Fixed Income (not funded)
- Real Estate (Public and Private)
- Private Equity
- Cash and Equivalents

Tradeoffs of Adding Asset Classes

- Pros

- Diversification
 - Lower Overall Risk
 - Lower Correlations
- Possible Return for Level of Risk

- Cons

- More Managers
- Greater Investment of Board's time for oversight
- May Add to Costs

Possible Asset Classes

- Global Equities
- Global Investment Grade Fixed Income
 - Could be divided into credit issues vs. interest-rate sensitive issues
- High Yield Domestic Fixed Income
 - Could be included within credit allocation
- Emerging Market Debt
- Long-Duration Fixed Income
- Inflation-Protected Securities
- Global Real Estate (Public and Private)
- Private Equity
- Commodities

Current Asset Allocation Issues

- 5% allocation to long-duration fixed income approved in the 2008 study
- Temporarily placed in fixed income
- Board deferred the decision to fund this allocation indefinitely
- We recommend re-examining the role that long duration fixed income could serve in reducing funded status volatility

