Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

Minnesota Teachers Retirement Association
Interest Rate Assumption

Patrice Beckham, FSA, EA, MAAA, FCA
Brent Banister, PhD, FSA, EA, MAAA, FCA

October 19, 2011

Overview

- Why is there an interest rate assumption?
- Actuarial Assumptions
- Capital Market Assumptions
- Historical Analysis
- Considerations
- Options

Why is there an interest rate assumption?

- Pension funding is a long term proposition – some teachers who just started working this fall will still be alive in 70 or 80 years
- To make meaningful calculations over this time span, we must use values adjusted to the present time
- If a dollar is contributed to the trust in ten years, we want it to have the same value as an amount that is contributed to the trust now and allowed to grow with investment earnings for ten years
- Thus, the interest rate assumption should match the expected return on the trust fund

Actuarial Assumptions

- No "correct" assumptions
  - Blend of art and science
  - Range of acceptable assumptions
- Assumptions are long term estimates
  - Experience emerges short term
  - Year to year fluctuations expected
- Selection of assumptions does not determine the final costs of the plan
  - Final costs are dictated by the actual experience of the fund
  - If assumptions are too "aggressive", costs can be pushed to future generations
  - If assumptions are too "conservative", it can result in higher costs today to the detriment of other priorities

Investment Return Assumption

- Inflation should be consistent in both the investment return and salary increase assumption
- Real returns should reflect the asset allocation, which is the most significant factor
- Additional considerations
  - Should reflect the benefit payment period (long-term over 30-50 years)
  - Historical experience
  - Future expectations

Capital Market Assumptions

- Market professionals project the expected return for various asset classes (domestic stocks, foreign bonds, etc.) over the coming years

- By considering the asset allocation in the investment fund, an expected return can be calculated

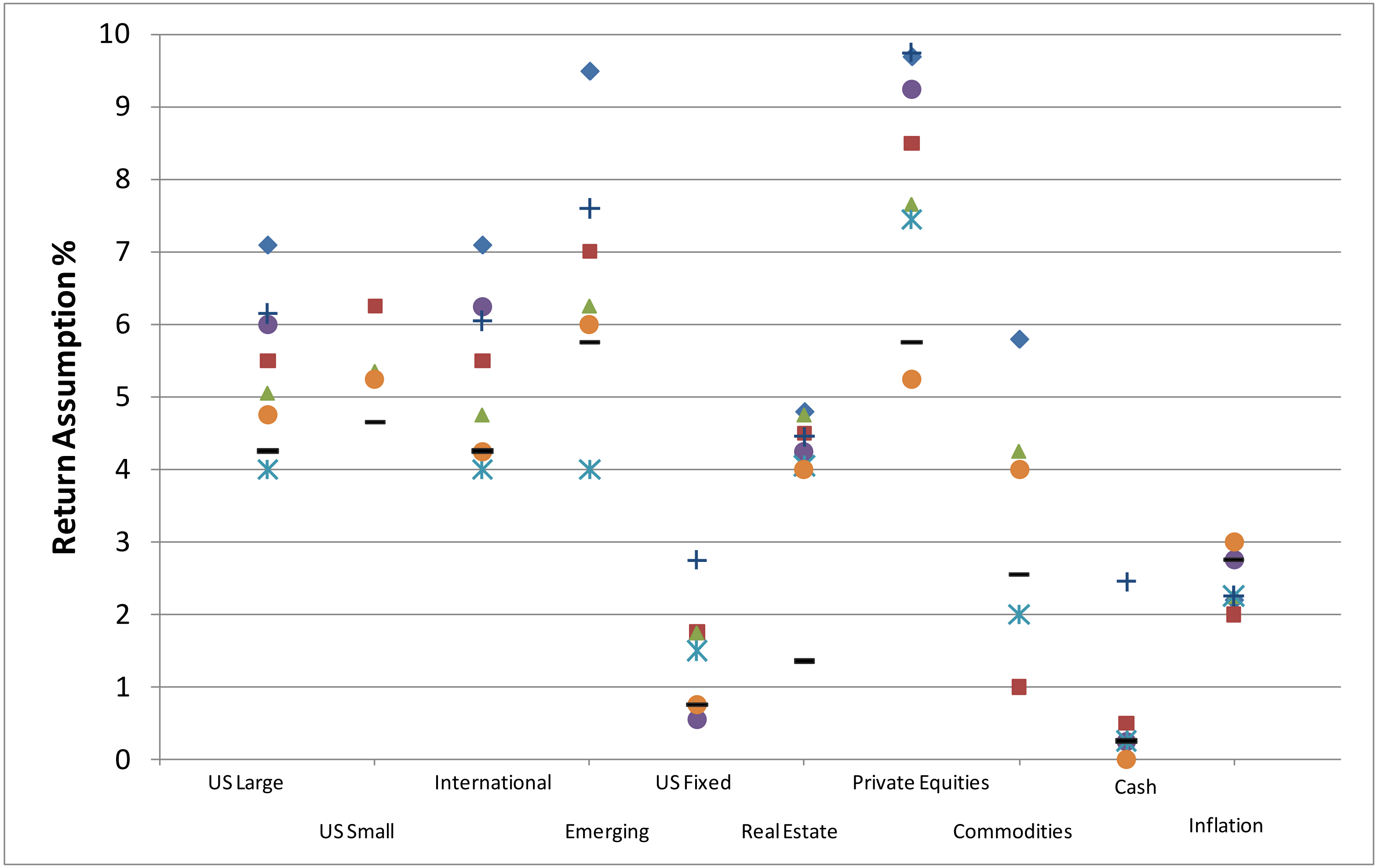
- Inflation must also be reflected

- SBI conducts research into what leading investment firms are assuming

Challenges of Using Capital Market Assumptions

- Investment professionals change these annually – or even more often
- Investment professionals have a wide range of expected returns – between 4.03% and 6.49% (excluding inflation) in the SBI study
- Capital market assumptions are typically for not longer than 10 or maybe 20 years, far shorter than the time frame of the retirement system
- Capital market assumptions may be unduly influenced by recent events and returns

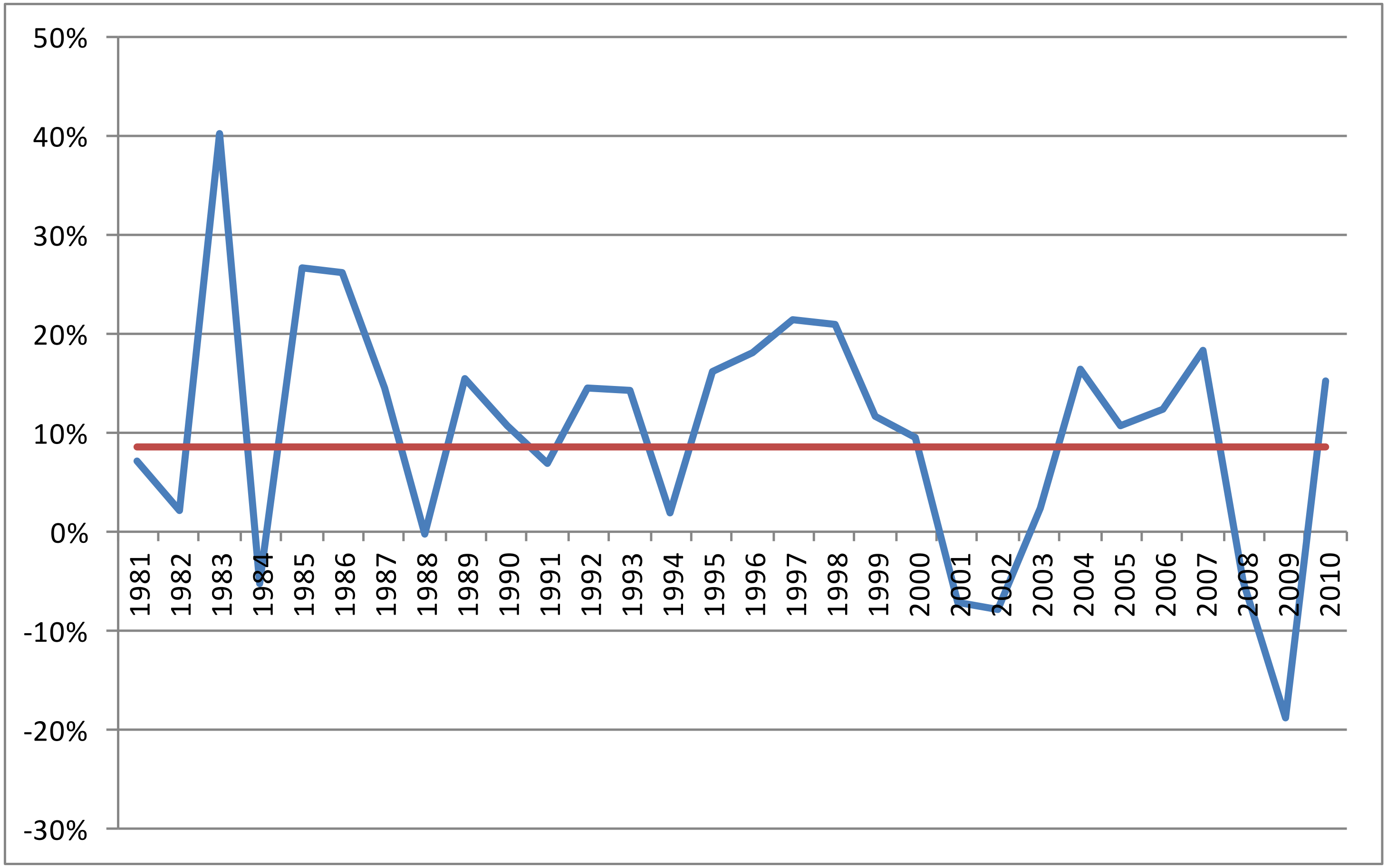
Variance Among Investment Consultants' CAPM Assumptions



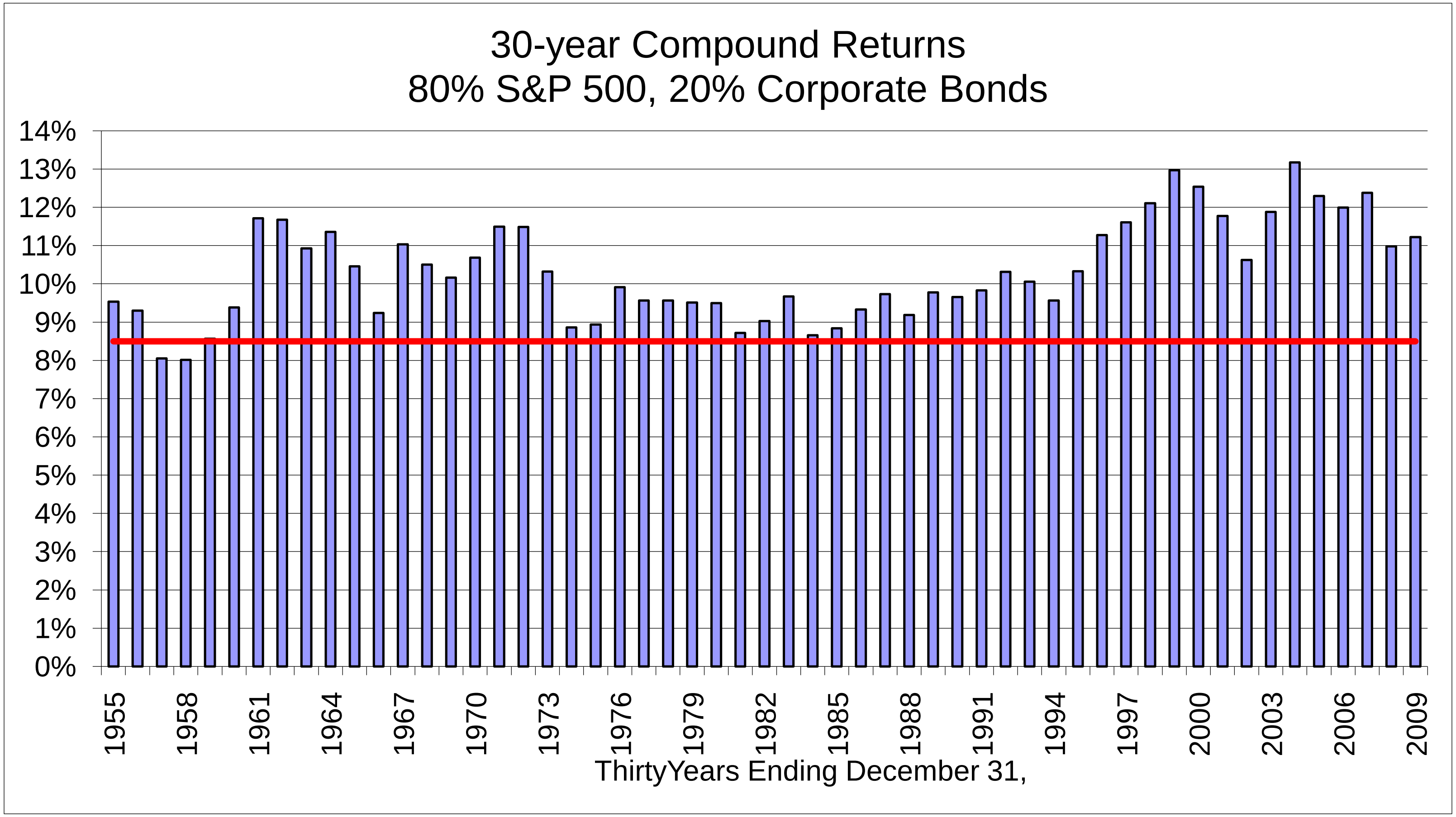
Historical Analysis

- Over the last 20 years, SBI has returned 8.80%
- Since 1980, the return has been 10.13%
- Past performance doesn't guarantee future results, but it can give some perspective
- Since 1925, the following have occurred:
  - Great Depression
  - World War II
  - Wars in Korea, Vietnam, Gulf
  - 9/11 Terrorist Attacks
  - Arab Oil Embargo
  - 2008-09 Financial Crash

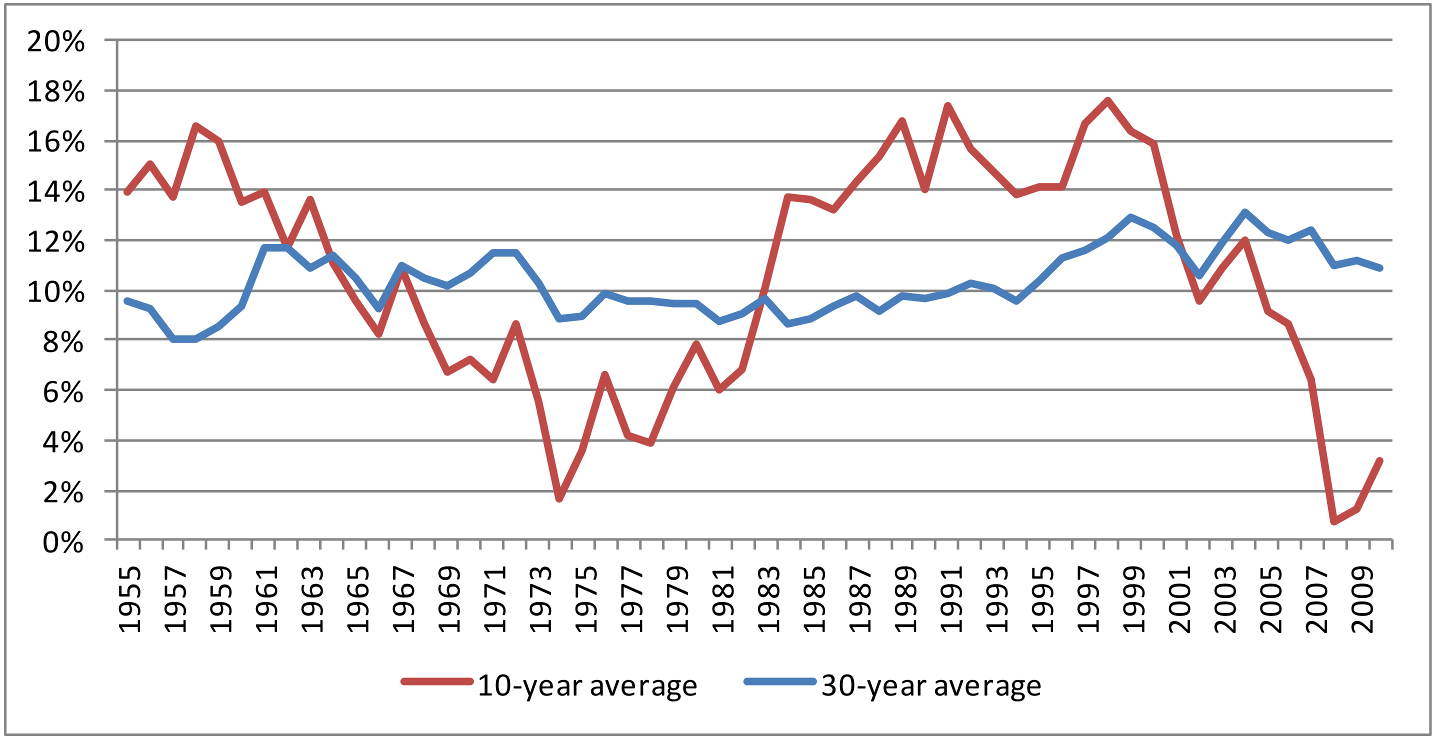
Actual Combined Fund Historical Returns



Historical Analysis



Historical Returns on Portfolio of 80% Stocks/20% Bonds



Considerations

- Intergenerational equity – current taxpayers should pay for current services by current employees
- TRA is funded equally by members and employers
- Pensions are a long term program – no need to rush into a decision
  - Experience studies every four years (2013 and 2017)
  - Change at this time will not impact the contributions into or benefit payments out of the system before the next experience study
  - Very important decision – careful and thorough analysis is needed

Options

- Keep the current rate for now – experience studies will continue to examine its appropriateness
- Change the rate - experience studies will continue to examine the assumption
  - Immediately
  - Phase in for contribution stability
- Select and ultimate rates
  - Use a lower rate for the next few years, followed by the long-term 8.5% rate thereafter
  - Reflects current market pessimism for short term
  - Retains historical market returns for longer term