



**TOWERS
PERRIN**

TILLINGHAST

The Impact of Low Interest Rates on Long Term Insurance Products

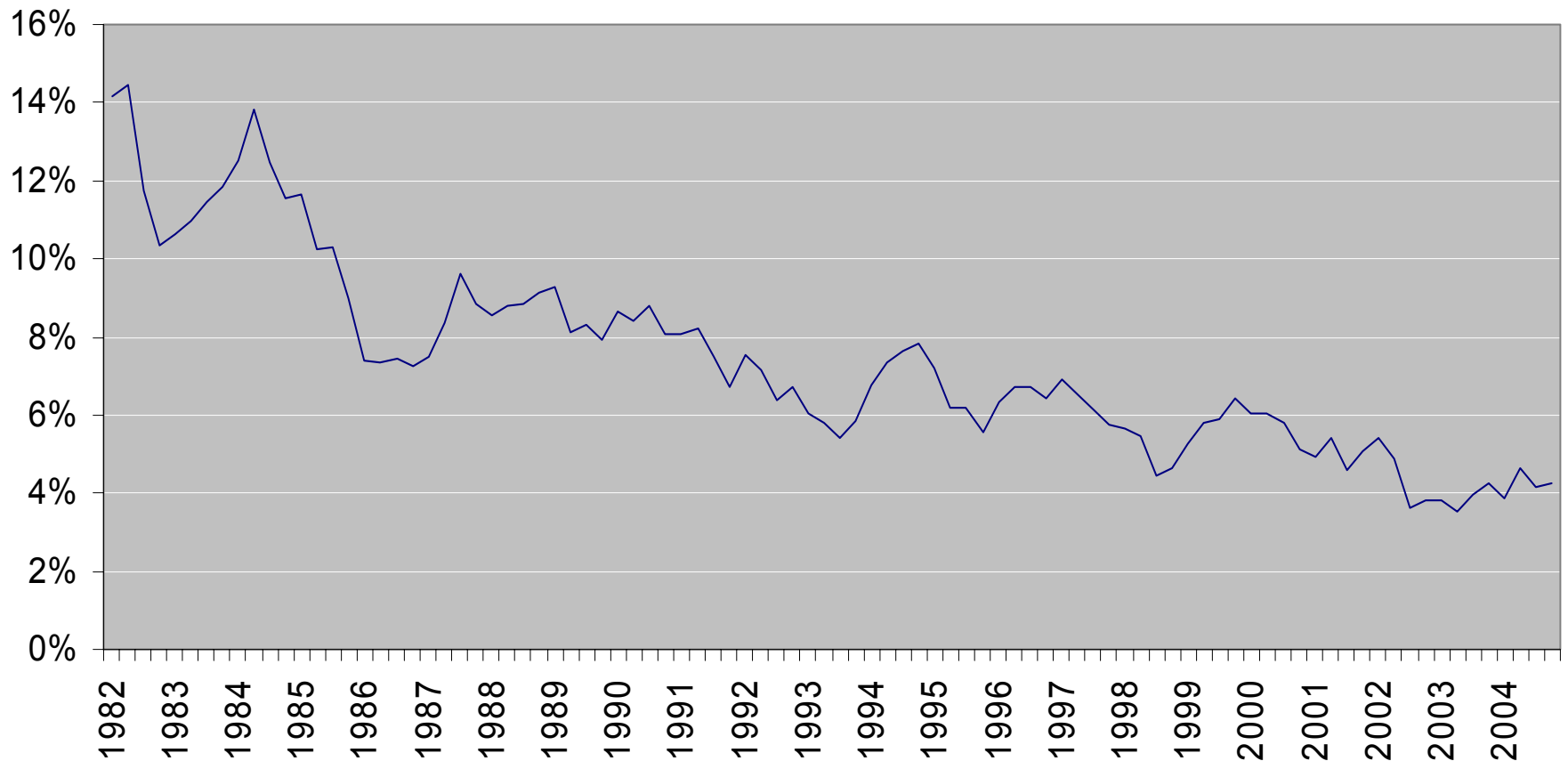
Actuaries' Club of the Southwest Spring Meeting

Jason Kehrberg

June 9, 2005 – Houston

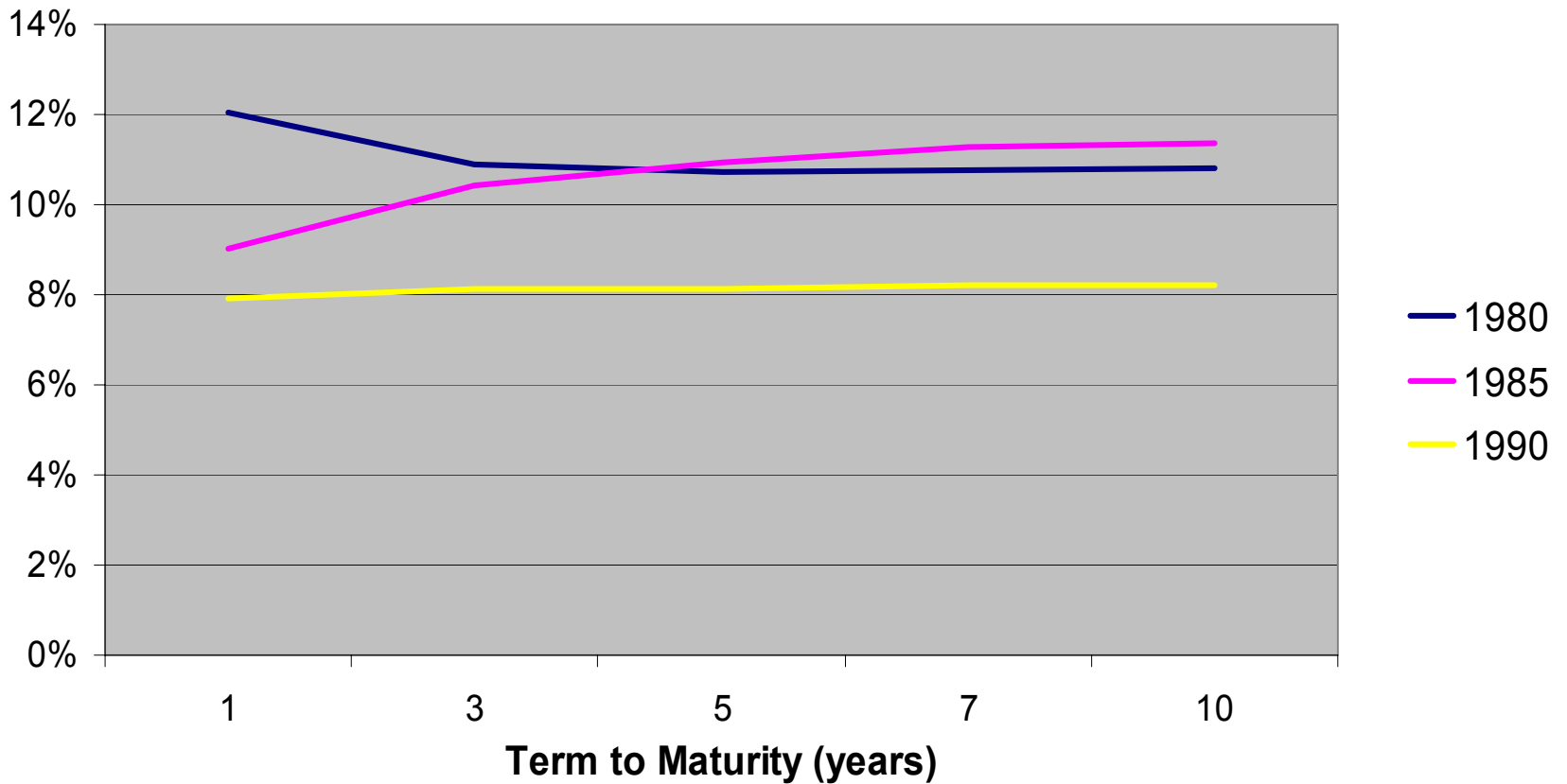
Need for Change

Quarterly Historical 10 Year Treasury Rates



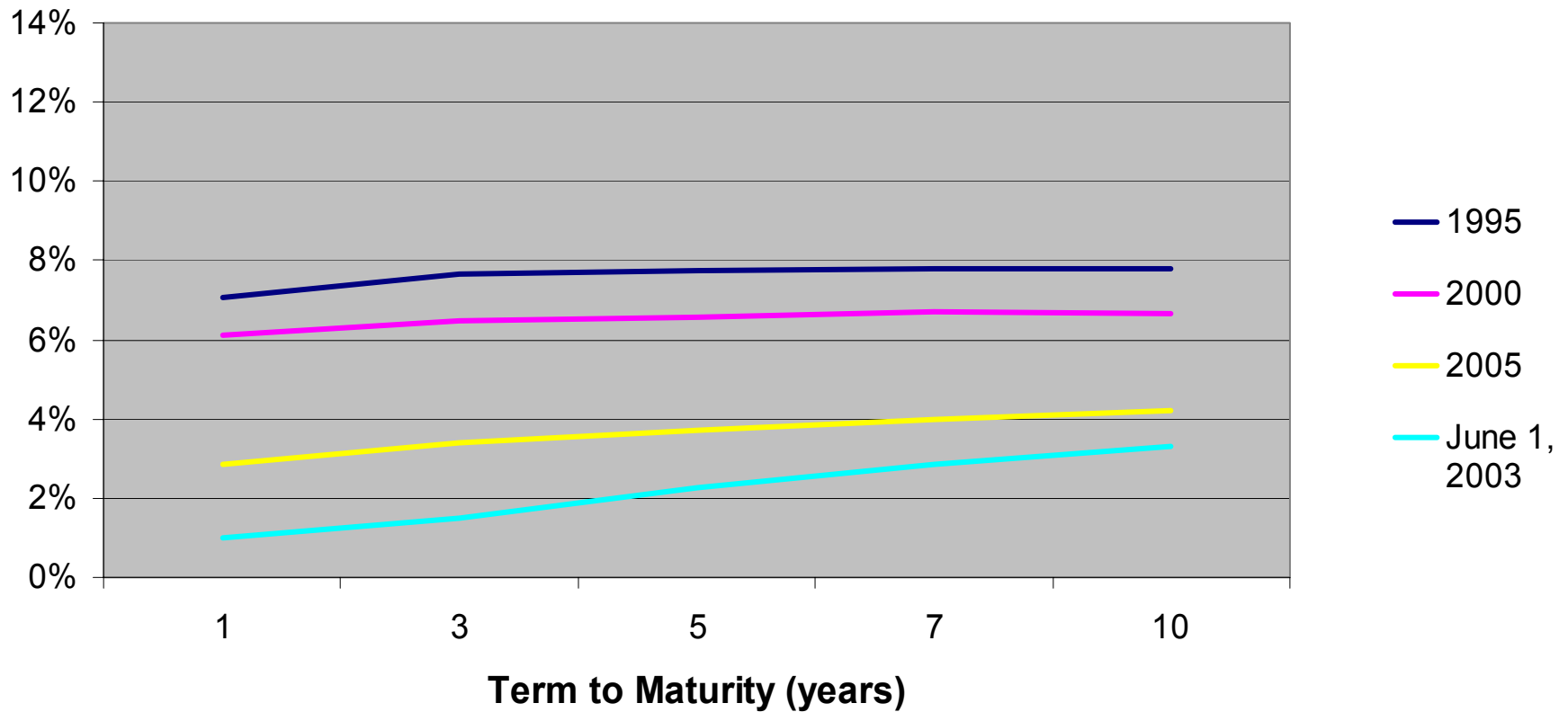
Need for Change

Historical Treasury Curves 1980-1990



Need for Change

Historical Treasury Data 1995-2005



Main Topics of Discussion Today

- New Nonforfeiture Guidelines for Annuities
- Long-Term Liabilities - ALM Case Study

New Nonforfeiture Guidelines for Annuities

- History of non-forfeiture guidelines
- Need for change
- Where we are today and what it means for fixed annuities
- Impact on disclosure and sale to customer
- Impact on company and distributor
- Questions

History of Nonforfeiture Guidelines

- 25 years ago, front-end loaded annuities were the norm
- Back-end loaded annuities (i.e. surrender charges) became the dominant design by the late 1980s
- The general rationale for the Standard Nonforfeiture Law (“SNFL”) is to have clear, legal requirements for minimum cash surrender values for deferred annuities
- General exemption for “group” annuities, variable annuities, SPIAs and some other annuities
- In general, there is good uniformity across states in terms of adopting SNFL
- Some states had developed unique interpretations on specific issues

History of Nonforfeiture Guidelines, cont.

- SNFL specifies:
 - Maximum loads
 - Maximum expense charges
 - Minimum interest rates during deferral stage (3%)
- With EIAs, it is the floor guarantee that has to comply with the SNFL
 - EIA floors generally fall into two categories:
 - Front-end load
 - Surrender charge

History of Nonforfeiture Guidelines, cont.

- Sales practices
 - In 1990s and prior, illustrations were common
 - More recently, illustrations have become the exception
 - Too much hassle?
 - Focus on the initial rate?
- Varying practices among distribution in terms of focusing on minimum guarantees as part of sale
 - Probably more common in bank channel in recent years

Where We Are Today...

New SNFL for individual DAs passed in 3/2003

- Adopted in all states except Florida and Mississippi
- Sets minimum NF rate at 5-year Treasury less 1.25%
 - Minimum of 1% and maximum of 3%
 - May be up to 1% lower for EIAs, as long as company can justify reduction (annually)
 - What is value of equity indexed benefits?
 - No one is doing this because guidance is unclear
 - AAA is working with NAIC (still complicated)
 - Usually constant but can be redetermined
 - May be calculated at a point in time or as an average over a period as long as 15 months

Where We Are Today..., cont.

NAIC Draft Annuity Non-Forfeiture Model Reg

- Clarifies implementation of Law passed in 2003
 - Currently being exposed for comments
 - Prior slide still applies
- Initial method used to set guarantee
 - Must be filed with state insurance department
 - May be changed as often as once per year
 - Method does not have to be disclosed to customers
 - Changes are only applicable to future issues
- Redetermination
 - If used, method must be disclosed in contract

Where We Are Today..., cont.

NAIC Draft Annuity Non-Forfeiture Model Reg

- Should address EIA “multiple bucket” issue
 - Does each bucket having its own NF rate?
 - Administratively complicated
 - Or is there one NF rate per contract?
 - In which case the presence of an equity indexed bucket could lower the NF rate for the whole contract
 - Prior draft would have required tracking buckets separately
 - There may be some resolution at NAIC this month

...And What it Means to Fixed Annuities

- Many companies are already taking advantage of lower floating rate guarantees
 - The guarantee floats until the policy is issued
 - Then it is fixed for the lifetime of the policy
- If you are selling fixed annuities as “guaranteed return of premium plus a little bit extra”, not much will change

...And What it Means to Fixed Annuities, cont.

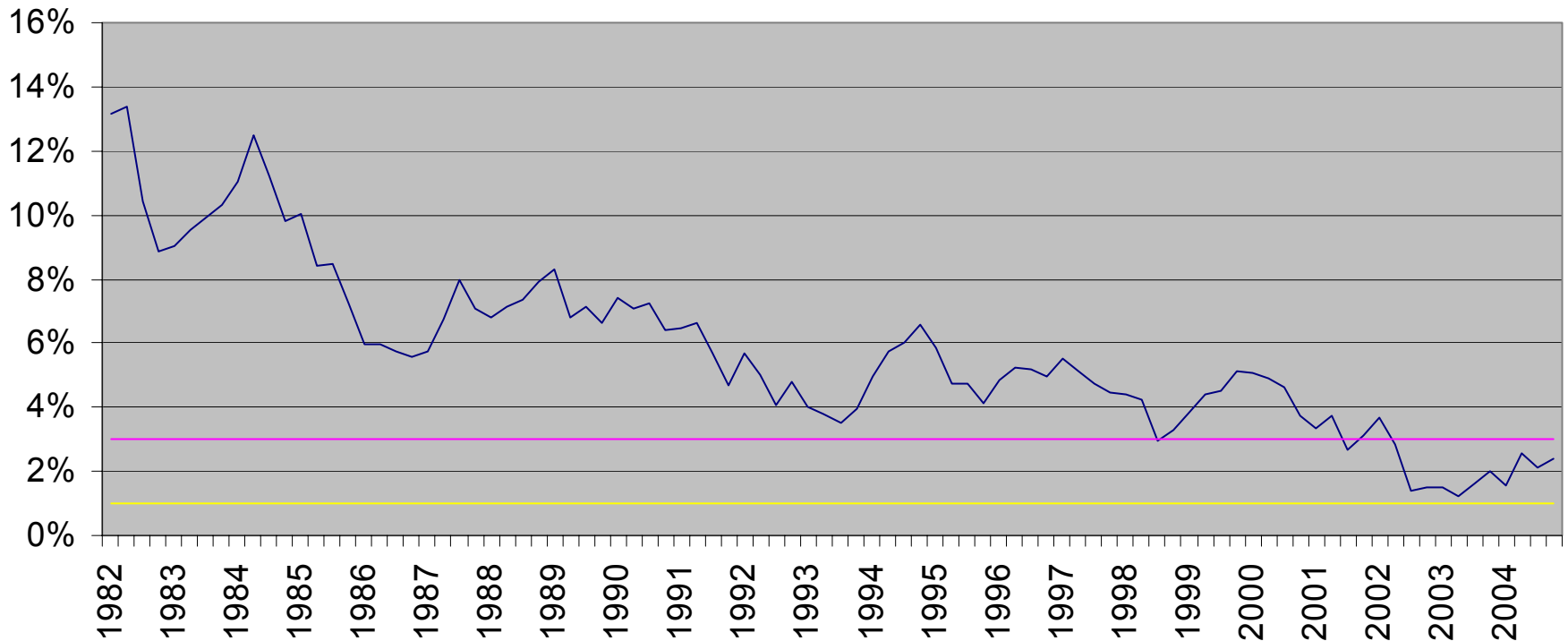
- Redetermination method
 - Rules are being developed right now
 - Floats between 1% minimum and 3% maximum
 - More complex from both an administrative and a sales perspective
- Redetermination of the guaranteed rate has not been embraced
 - Too much uncertainty as to how it will work
 - We expect redetermination will continue to be uncommon, based on current drafts of the rules

Impact on Disclosure and Sale to Customer

- Floating initial guarantee
 - Must be disclosed to customer before time of sale
- Redetermination method
 - Formula must be disclosed to customer
 - How will this be illustrated?
 - With absolute minimum of 1%?
 - Complexity of updating administrative and sales systems regularly
 - Must policyholders be notified each time guarantee is reset?

Impact on Disclosure and Sale to Customer, cont.

Historical 5 Year Treasury Rates less 1.25%



Impact on Distribution

- Distribution – fixed annuities
 - Commissions depend on guarantee levels
 - We saw a drop in compensation during 2003
 - Only thing companies could do
 - Some increases since new SNFL became effective
- Are distributors influenced by the guarantee structure?
 - Today?
 - 5 years ago?
 - 10 years ago?
- Until recently, the SNFL change was a non event for distributors

Impact on Company

- How do you value the minimum interest rate guarantee?
 - European Embedded Value guidelines
 - GAAP
 - M&A requires “fair value” of liabilities
 - So do fair value approaches in Europe
 - Not just an economic problem, also a financial reporting problem (more eyes are looking at this)

Long Term Liabilities – ALM Case Study

Low interest rates hurt reinvestment

- Reinvestment risk is a major concern for several lines:
 - Traditional life
 - SPIA, LTD, LTC
 - Qualified Flexible Premium Annuity
- Low reinvestment rates can also negatively impact other lines like an SPDA or the fixed portion of VAs
- There's a limit to lowering quality
 - Usually a 5-10% limit on high yield bonds
 - This strategy is not without its risks
- Floors are relatively expensive

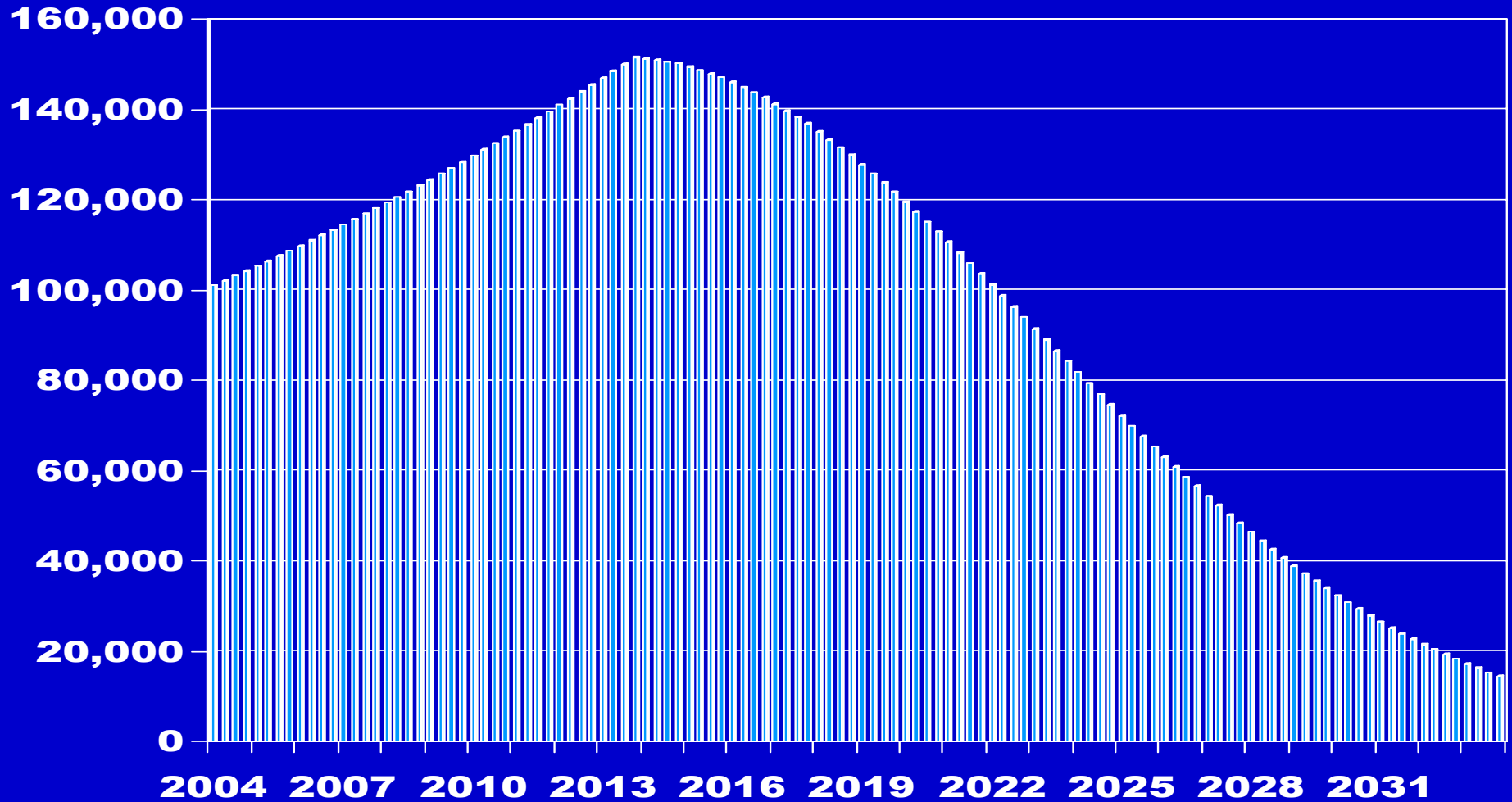
What about a swap strategy?

- Hypothesis
 - A swap strategy can mitigate reinvestment risk of long duration liability by locking in future investment yield
- Long duration liability
 - We developed generic product cash flows that exhibit a large build up in reserves for 10 years, and then an increasing runoff from that point forward
- Strategies tested
 - Basic investment strategy
 - Revised asset strategy with deferred swap strategy

Generic Product Description

- 4.25% credited interest in all years
- No mortality
- Withdrawals
 - None during policy years 1 through 10
 - Increasing from 5% in year 11 to 24% in year 30
- No expenses
- No commissions
- Assumptions chosen to create a long duration liability
 - Not trying to model a specific product
 - Although closest to a SPIA

Reserve Projection



Economic Scenario

- Treasury curve (spring 2004):
 - 90 day Treasury = 0.95%
 - 1 year Treasury = 1.53%
 - 5 year Treasury = 3.25%
 - 10 year Treasury = 4.09%
 - 20 year Treasury = 4.78%

- Credit spreads
 - 10-year A = 78 bps
 - 15-year A = 70 bps
 - 20-year A = 90 bps

- Default cost = 10 bps

Investment Strategy

- Basic asset strategy (Base Case)
 - 50% 15-year A-rated bonds
 - 50% 20-year A-rated bonds

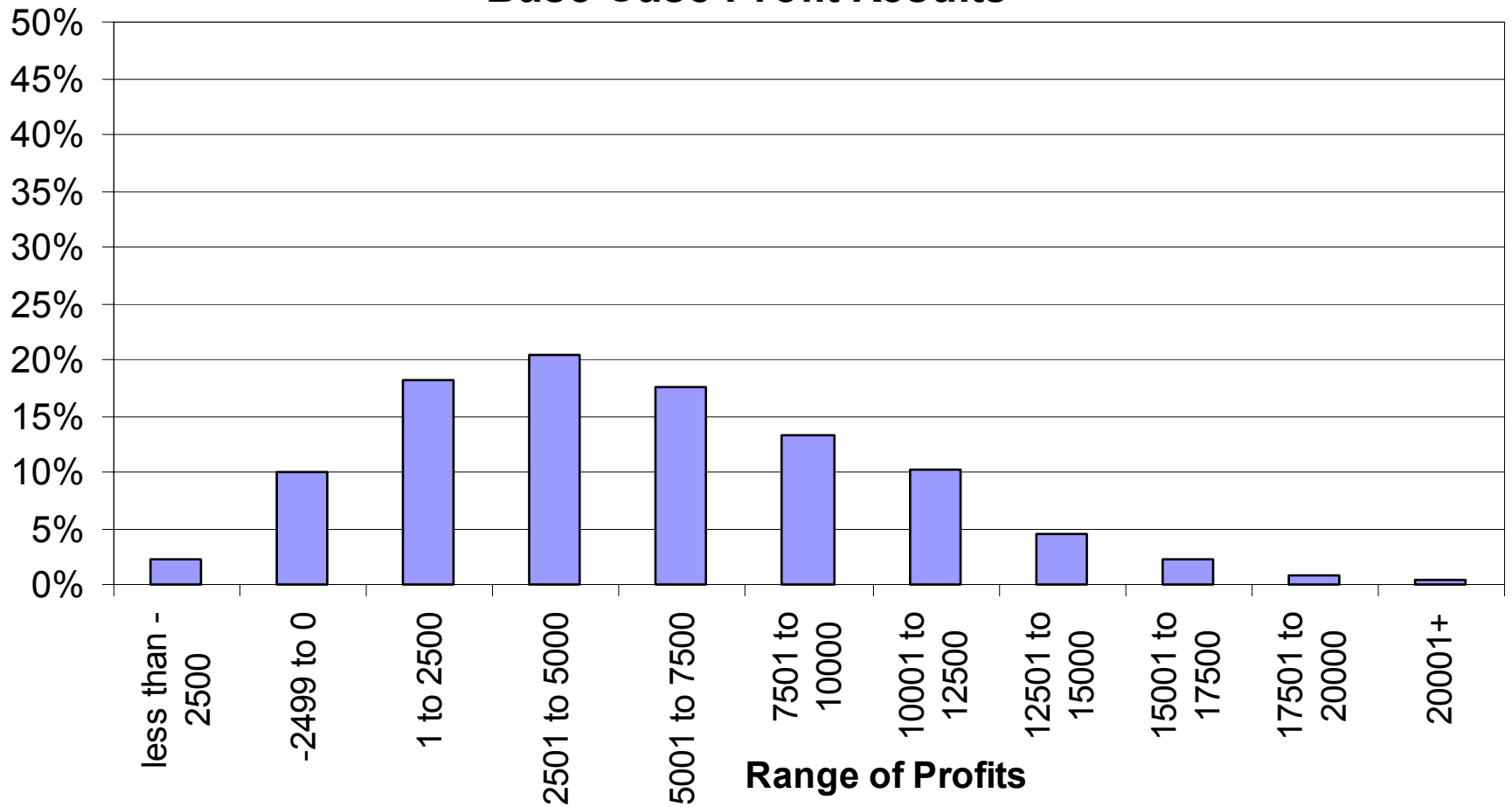
- Revised asset strategy with forward swaps
 - 100% 10-year A-rated bonds in years 1-10
 - During years 11+, reinvest 100% of cash flows in floating rate bonds paying 90-day Treasury + 75 bps
 - Plus deferred swap strategy (next page)
 - Forward Swaps #1
 - Forward Swaps #2

Deferred Swap Strategy

- Executed at start of projection
- Swap payments deferred to begin in year 10
- Swap matures at the end of the projection
- Notional amount =
 - Initial reserve, about $\frac{3}{4}$ of peak (#1)
 - 150% of initial reserve, about 100% of peak (#2)
- Payments occur semi-annually
- Receive fixed payments at 5.32%
- Pay floating rate equal to LIBOR

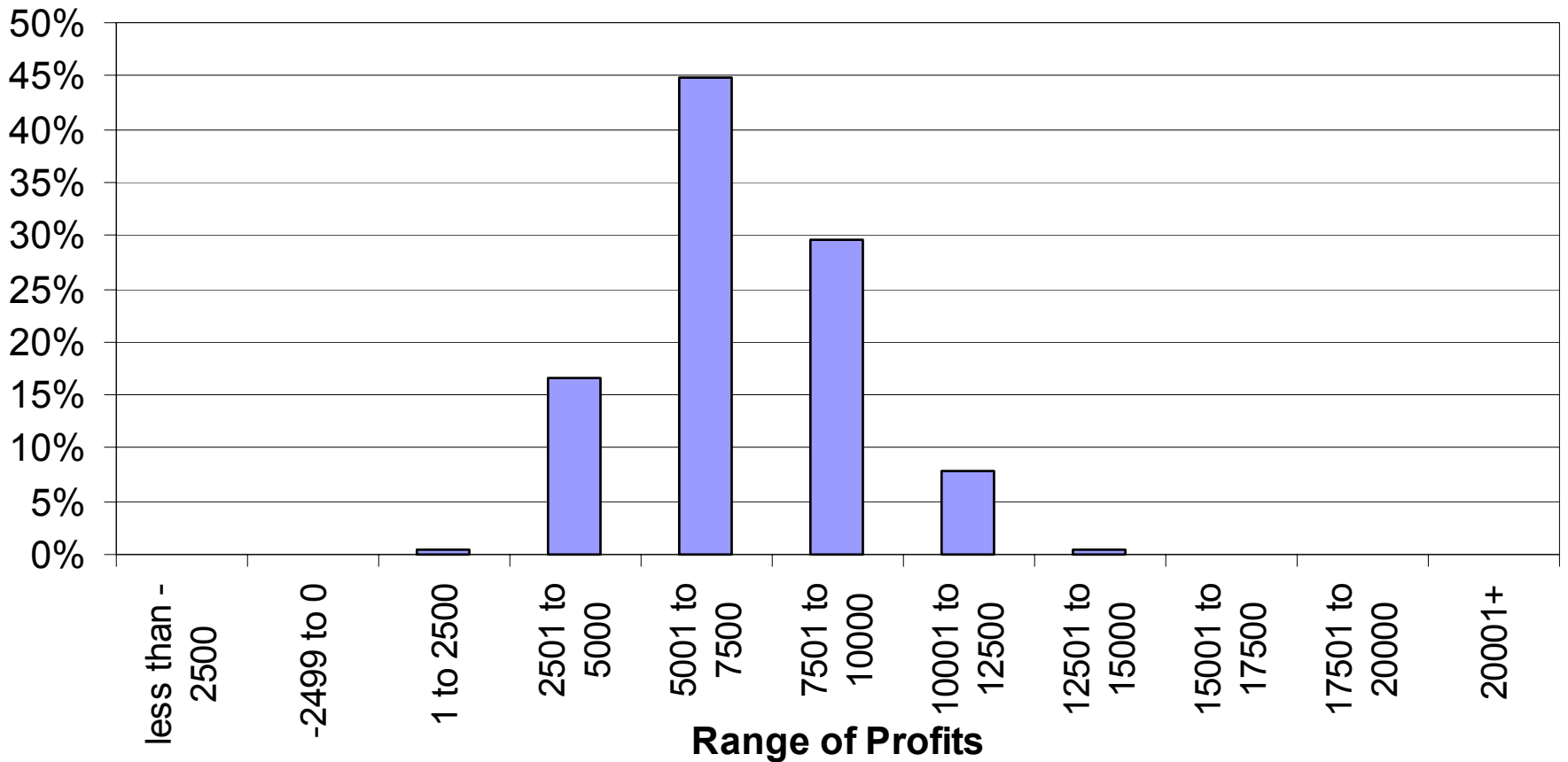
Distribution of Profit Results

Base Case Profit Results



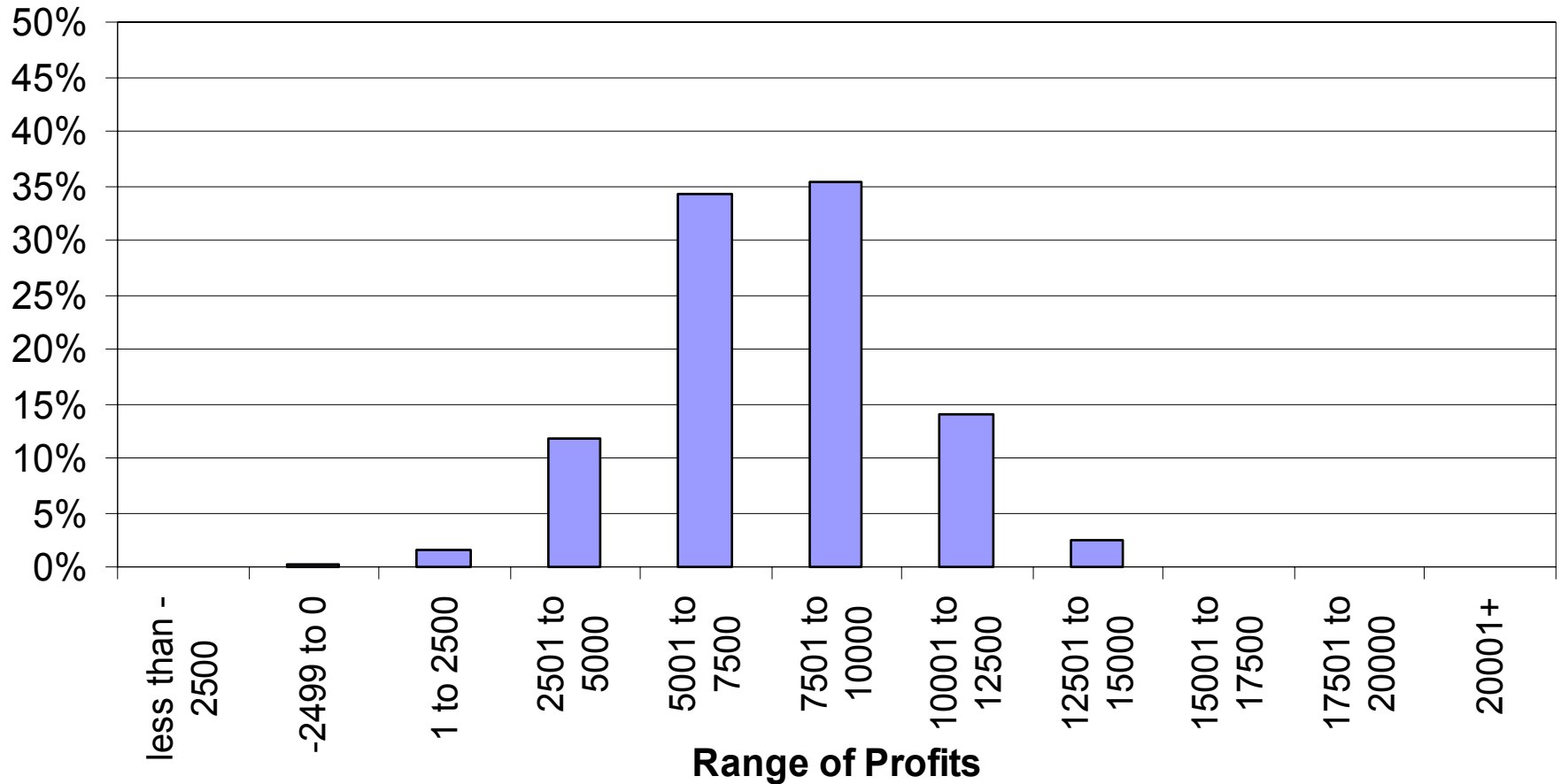
Distribution of Profit Results, cont.

Foward Swaps #1 Profit Results



Distribution of Profit Results, cont.

Foward Swaps #2 Profit Results



Results

- Swap strategy definitely alters the return profile
 - Significantly lower standard deviation of results
 - Less downside - good
 - Less upside - not so good
- Forward swap #1 is more realistic strategy
- Forward swap #2 is more of an sensitivity test

Additional Analysis Needed

- Customize swap notional amounts to better mimic reserve runoff (e.g. laddering)
 - Leads to better (i.e. less diverse) results
 - Need OTC swap quotes – prices still relatively good
 - Volatility is low compared to an equity derivative
 - Liquidity is relatively high
- Types of floating rate assets available
 - There aren't that many floating rate assets available
 - Have you substituted another type of risk?
 - Investment strategy invested in 10 yr bonds and then invested in floating, could bought fixed and swapped to floating

Additional Analysis Needed, cont.

- Understand source of earnings
 - Is it yield curve related?
 - This approach would have a different impact on profitability results if yield curve inverted
- Review major assumptions
 - Floating rate spreads and swap curve
 - Introduce more robust combination of assumptions
- There are companies with large LTC blocks that are using forward swaps
 - Not just as a risk management tool
 - But as the base product pricing strategy

More on deferred swaps

- The swap rate is fixed at inception (based on the forward curve) such that you don't pay anything to enter into the swap agreement
 - For example, there is no charge to pay LIBOR and received a certain fixed rate
 - But if you want to receive a higher fixed rate it will cost you something up front
- Yield curve used to be more positively sloped
 - Forward rates were quite high and you could lock those in
 - Not as much of a spread today
- Swaptions

Additional Considerations

- Extension to other product lines? – e.g., SPDA block
- Opportunistic versus base strategy
- Any ways to not give up so much up-side?
- Is this desirable for the company?
- More of an art than a science
 - Which risk profile do you like?
 - Subjective

Equity Indexed Annuities

- Economic environment =
 - low interest rates
 - relatively low implied volatility (equity)
 - → low option costs
- Many/most carriers have not taken advantage of a possible lower nonforfeiture rate
 - regulatory uncertainty
 - administrative burden
 - sales complexity

Variable Annuities

- Many recent/imminent changes
 - SOP 03-01 (GMDB, GMIB) , FAS 133 (GMAB, GMWB), C-3 Phase II, and VA CARVM
- Economic environment
 - low interest rates and relatively low implied volatility
 - → mixed impact on value of put options
- Recent equity market exhibit low, stable actual volatility
 - More delta hedging strategies introduced
 - Very small # of companies hedging beyond delta
- Good for VAs if int. rates increase, more ICs may hedge
 - SOP reserves vs FAS 133, i.e. real world vs risk neutral

Fixed Annuities

- Some companies have experienced:
 - Spread compression
 - Significant reinvestments
- Relatively stable rates since Q2, 2003
- Hedging a rising rate scenario versus a decreasing rate environment
 - What if interest rates shoot up?
 - Huge block outside surrender charge period
 - Negative results due to interest rates shooting up could hit bottom line quicker than if business moves to and stays at the guarantee (slow bleed)