Secondary Guarantees – UL & VUL Products

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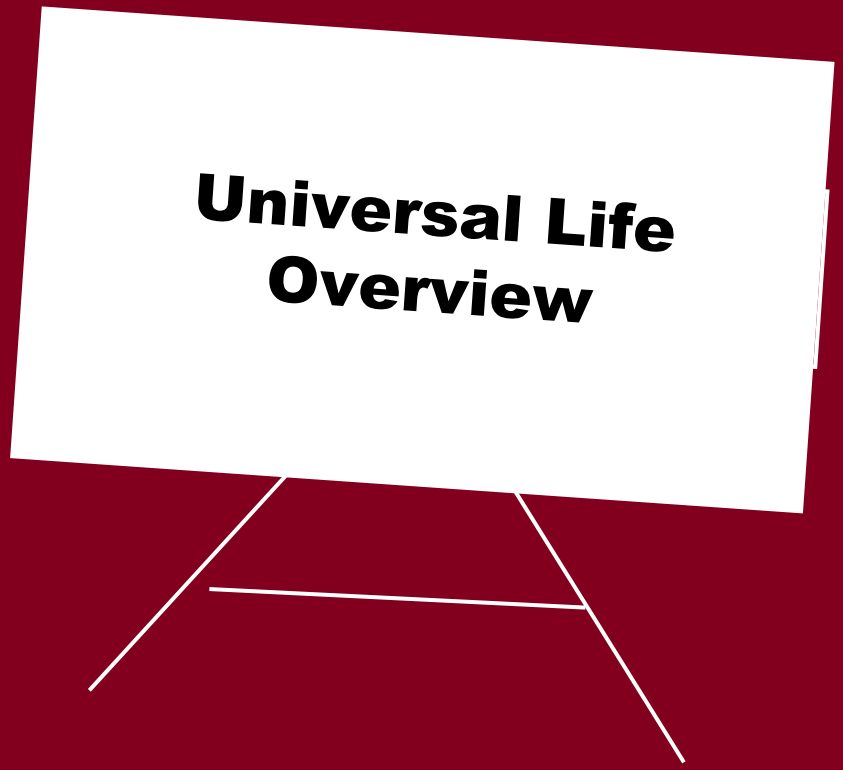
Presentation Overview

- For Universal Life and Variable Life Products
  - Description of Secondary Guarantee Provisions
  - Valuation Changes and Their Impact on Secondary Guarantee Designs
  - Methods Used to Manage the Financial Impact of XXX and AXXX
  - Impact of the 2001 CSO Mortality Table
- Reinsurance Market Overview
  - UL Secondary Guarantees
  - Current Environment


Universal Life
Overview

Description of Secondary Guarantee Provisions

- Stipulated Level Premium
  - Most common
  - Provides a guarantee of X years so long as a specified level annual premium of Y is paid.
  - Typically has little funding flexibility
    - May provide an interest discount for pre-payment of premium.
    - May provide a catch-up provision.

Description of Secondary Guarantee Provisions

- Shadow Accounts
  - Policy will not lapse so long as a secondary policy account has positive value.
    - Not clear-cut to the consumer.
  - COI guarantees < 1980 CSO and an interest rate > policy guarantees.
  - Total flexibility in structuring a secondary guarantee period on a policy.
    - Better pre-payment value by discounting pre-payments

Description of Secondary Guarantee Provisions

- Annually Renewable Term
  - A cross between Stipulated Level Premium and Shadow Account Designs.
    - A defined premium structure like the level premium approach.
    - Interest discounting provides funding flexibility of Shadow Account designs.
  - Provides many advantages of a Shadow Account design and can be administered on a system that can handle a Stipulated Level Premium design.

Valuation Changes
Impact on Secondary Guarantee Designs

- History
  - Initially no additional reserving requirements
    - Some Companies used a Gross Premium Valuation w/ PADS.
  - Valuation of Life Insurance Policies Model Regulation #830 (Guideline XXX)
    - Addresses the perceived inadequate reserve levels on secondary guarantee UL contracts.
  - Actuarial Guideline AXXX
    - Addresses how to appropriately value certain secondary guarantee designs under Guideline XXX.

Valuation Pre-XXX

- Offered long-term secondary guarantees and held the UL-CRVM reserve
  - UL Model Regulation did not address long-term guarantees.
- Some companies did recognize that the UL-CRVM reserve may not be sufficient.
  - Gross Premium Valuations used to become more comfortable that the UL-CRVM level was sufficient.

Valuation – The Impact of XXX

- Expected that secondary guarantee designs would now have reserve levels similar to traditional life contracts.
  - The new method for determining deficiency reserves resulted in large initial surplus strains
  - Depending on X-factors for the company
- Of course, the impact of XXX was not the same for all secondary guarantee designs…

Valuation – The Impact of XXX

- XXX does not apply to Shadow Account designs?
  - Policy forms did not have a specified premium(s).
  - That view ultimately went away.
- Today most view Shadow Account designs as a series of 1-year minimum premium guarantees for XXX.
  - The series of guarantees structured to be a single segment as defined under XXX (Section 4B).

Valuation – The Impact of XXX

- The resulting XXX reserve level for Shadow Accounts was at the ½ c_x level using the unitary method.
- The same XXX result occurs on ART designs.
  - This fueled their rise in popularity.

Valuation – The Impact of AXXX

- Actuarial Guideline AXXX addressed two issues.
  - Adjusting XXX reserves a "catch-up" provision.
    - Retroactive to the earlier of a state's adoption of XXX or the NAIC Accounting Practices and Procedures Manual.
  - Adjusting XXX reserves when the secondary guarantee is being pre-funded.
    - Applies to contracts issued on or after the later of the date of a state's adoption of XXX and 1/1/2003.

Valuation – The Impact of AXXX

- Adjusting XXX reserves for a catch-up provision
  - Basic and Deficiency reserves are computed as if the secondary guarantee premium requirements are met.
- Basic reserve is reduced by:

$$Catch-Up \times \frac{Basic\ \text{Re}serve}{Basic + Deficiency\ \text{Re}serve}$$

  - Basic reserve may not be less than zero.

Valuation – The Impact of AXXX

- Deficiency Reserve is reduced by

$$Catch-Up \times \frac{Deficiency\ \text{Re}serve}{Basic + Deficiency\ \text{Re}serve}$$

  - Deficiency reserve may not be less than zero.
- Adjustment for a catch-up provision effectively only impacts a Stipulated Level Premium design.

Valuation – The Impact of AXXX

- Adjusting XXX reserves for pre-funding the secondary guarantee premiums.
  - To establish appropriate reserve levels for Shadow Account and ART designs.
  - Impacts Stipulated Level Premium designs, but not as dramatically.

Valuation – The Impact of AXXX

Steps for adjusting XXX reserves for pre-funding

1. Establish minimum gross premiums at issue that satisfy the secondary guarantee requirement.
   - For Shadow Accounts = the series of 1 year minimum premiums.
2. Determine basic and deficiency reserves by applying 7B and 7C of the XXX Model Regulation.
   - For Shadow Account and ART designs, unitary reserves ($\frac{1}{2}\ c_x$) are developed

Valuation – The Impact of AXXX

3. Determine amount of actual premiums paid in excess of minimum gross premiums from step 1.
   - For Shadow Account designs = the value of the shadow account.
   - For ART and Stipulated Level Premium contracts = cumulative premiums paid in excess of minimum secondary guarantee requirements.
     - Adjusted with interest credited at the rate specified under the secondary guarantee.

Valuation – The Impact of AXXX

4. Determine the single premium payment necessary at the valuation date to fully fund the secondary guarantee.
   - Assume no previous pre-funding. I.e. For a Shadow Account design the value of the shadow account is zero
   - Divide the result in Step 3 by the result in Step 4.

Valuation – The Impact of AXXX

5. Compute a net single premium on the valuation date for the coverage provided by the secondary guarantee for the remainder of the secondary guarantee period.
   - Use any value table and select factors authorized in Section 5A of the XXX Model Regulation.
     - This allows the use of the 10-year select factors incorporated into the 1980 amendments to the SVL or the 19-year select mortality factors in the XXX Model Regulation.
     - X-factors may not be used.

Valuation – The Impact of AXXX

6. Determine the "net amount of additional premiums" by multiplying by multiplying ratio developed in Step 4 by the difference in the NSP from Step 5 and the XXX basic & deficiency reserves calculated in Step 2.

$$Step\ 6 = Step\ 4 \times (Step\ 5 - Step\ 2)$$

– This is the maximum amount of additional reserve impact from AXXX.

Valuation – The Impact of AXXX

7. Calculate a “reduced deficiency reserve” by multiplying the deficiency reserve by 1 - the ratio from Step 4.
   - Cannot be less than zero.
   - By pre-funding, part of the deficiency reserve can be turned into basic reserve.
     - A potential benefit from a tax reporting perspective.

Valuation – The Impact of AXXX

8. Total Reserve is the lesser of the NSP from Step 5 and the amount of Step 6 plus the total basic and deficiency reserves
   - This amount should be reduced by policy surrender charges.
     - Note the guideline indicates surrender charges are the account value less the cash surrender value.
   - If this amount is less than the basic and deficiency reserves from Step 2, then the Step 2 reserves are to be used and no further calculation is required.

Valuation – The Impact of AXXX

9. Determination of increased basic reserve
   - The increased basic reserve is equal to the total reserve from Step 8 less the reduced deficiency reserve from Step 7.

- Easy to see impact and formula usage through a simple example at one duration…

Impact of Regulation AXXX

Current AV	45.24	Step 2	2.46
Current CSV	22.39	Step 3	38.88
Surrender Charge	22.85	Step 4	145.92
UL CRVM Res	33.82	Ratio	27%
		Step 5	341.94
		Step 6	90.44
		Step 7	0.00
		Step 8	70.05
		Step 9	70.05

- Policy Reserves increased from 33.82 to 70.05 due to the impact of AXXX.

Methods Used to Manage the Financial Impact of XXX and AXXX

- Product Design
  - Significant effort today to minimize the impact of AXXX on Shadow Account and ART designs.
  - Focused on introducing features limiting early duration build-up of pre-payment values.

Methods Used to Manage the Financial Impact of XXX and AXXX

- Surplus Relief
  - Executed within the corporation or using an outside reinsurance facility.
  - While saving the company's own capital, the cost for the surplus relief has not sufficiently improved product returns to the company.

Methods Used to Manage the Financial Impact of XXX and AXXX

- Reinsurance
  - Reinsurance companies willing to reinsure both the mortality and no-lapse risk on the contract.
  - Some arrangements back-load the cost of the surplus relief for the insurance company.
    - Allowed the insurer to earn an acceptable return.
  - Unfortunately, current market conditions have severely limited reinsurance outlets.

Methods Used to Manage the Financial Impact of XXX and AXXX

- Other
  - Use of alternate accounting methods to determine whether or not the a policy with the secondary guarantee truly adds value to the company.
    - GAAP (incremental basis)
    - PPM for Canadian companies
  - OK as long as the company does an effective job of managing statutory capital.

Impact of the 2001 CSO Mortality Table

- Could see a decrease in level secondary DB guarantee premiums as a result of reserve relief from use of new table
- Note that typical of UL pricing, funding a pricing model with less premium yields higher profits due to increase in COI charges
  - 15 to 20 % reduction to level premiums possible to reach baseline profits; however, great likelihood of putting the "option into the money"
- Probably will see 5-10% decreases in level premiums
  - Impact varies by age and class

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Case Study - UL

Product Parameters:

- Annually Renewable Term Premium design with a competitive lifetime guarantee.
- Review Impact of XXX and AXXX on design
- Add a reinsurance arrangement to reach double digit profit targets
- Arrangement is an 90% first dollar, YRT agreement
- Mortality and financial reinsurance
- Financial reinsurance is for ceding of the difference between XXX and CRVM reserves

Case Study - UL

Model Office Parameters:

- $10,000,000 of first year new premium
- $1,000,000 face amount policies
- 4 age, male model: 35, 45, 55, 65, 75
- Risk classes are SPNS, PNS, SNS, SSM

Pre-XXX/Pre-AXXX Results

Profitability	
Measure	Baseline
IRR	14.54%
PVDE	$3,510,500
Profit Margin	3.83%

- No secondary guarantee
- Premium funding at level pay to endow
- Based on current assumptions

Impact of Regulation XXX

Profitability	
Measure	XXX
IRR	13.03%
PVDE	$3,588,000
Profit Margin	3.14%

- Secondary guarantee added, e.g by rider
- YRT design yields no additional reserve impact from XXX
- Profit declines due to premium increase for guarantee
  - Premium to endow based upon current charges and a reduced interest rate

Impact of Regulation AXXX

Profitability	
Measure	AXXX
IRR	6.63%
PVDE	$250,600
Profit Margin	0.22%

- Section 4 of AXXX for a YRT secondary guarantee produces reserves much higher than priced for
- “Pre-funding” of provision hurts
  - Paid level premium vs. stipulated YRT premium

Impact of Regulation AXXX

Model Office Reserve Comparison By Duration (in millions)					
Method	5	10	20	30	40
XXX	38	92	251	432	560
AXXX	49	123	278	445	560

- Reserve build-up
  - Cross-over point exists, but at late duration
- Need to find a solution
  - Reinsurance
  - Re-tooling product to manage the “pre-funding ratio”

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Impact of the 2001 CSO Table

1980 CSO vs. 2001 CSO - Baseline			
Measure	1980 CSO	2001 CSO	Difference
IRR	14.54%	15.05%	0.51%
PVDE	$3,510,500	$3,427,100	-$83,400
Profit Margin	3.83%	3.74%	-0.09%

- Reserves decrease, so do surrender charges
- Strain decreases, so does profit stream
- Basically, a wash

Impact of the 2001 CSO Table

1980 CSO vs. 2001 CSO - Secondary Guarantee Under AXXX			
Measure	1980 CSO	2001 CSO	Difference
IRR	6.63%	8.08%	1.45%
PVDE	$250,600	$1,878,000	$1,627,400
Profit Margin	0.22%	1.64%	1.42%

- Reserve decrease more substantial, outweighs decrease in surrender charges
- Strain decreases with increases to profit stream
- Improves results for secondary guarantee provisions

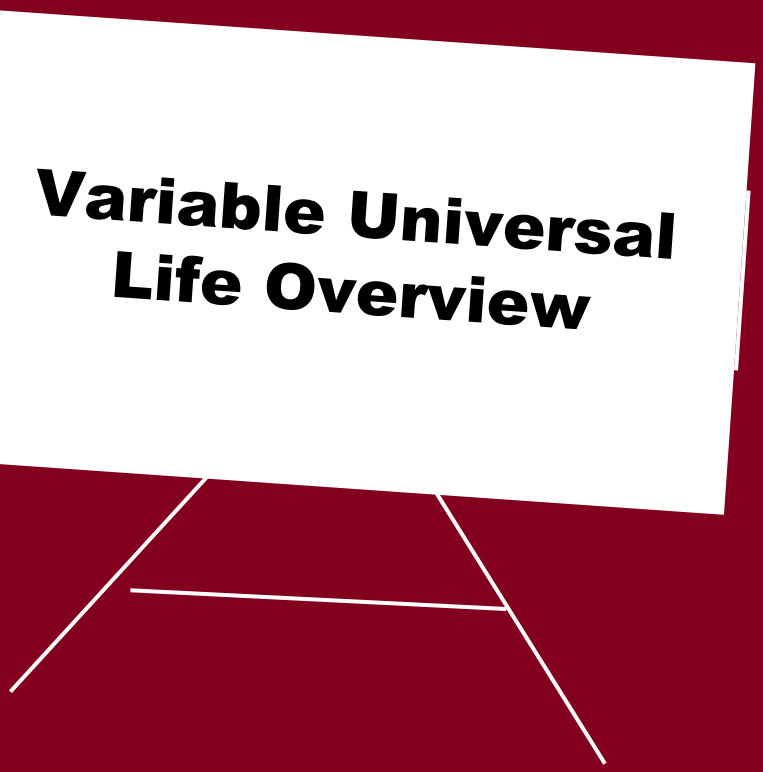
UL Case Study Summary

- XXX and AXXX have companies scrambling to find a solution without raising consumer prices
  - Who will raise prices first and at what cost?
  - Help is coming with 2001 CSO table, but will it be enough?
  - New designs will emerge over the next 6-12 months
    - Beware of designs that seem abusive
    - Regulators may implement the “next” or “revised” guideline on a retroactive basis for abusive designs

Closing Remarks

- Changes in Regulations often create opportunity to capture more market share through innovative product designs and alternative solutions.
- The full impact of AXXX is just now impacting companies.
- The next year should bring a flurry of new product activity from both insurance and reinsurance companies.

Variable Universal Life Overview



General Description

- Secondary Guarantees have been on VUL contracts for many years in the form of GMDB Benefits.
  - While commonly referred to as a GMDB benefit the risk profile under a VUL contract is very different from a VA contract.
  - Direct and reinsurance companies too often lump the structures together under one GMDB umbrella.
    - Leads to challenges introducing new designs to the market.

General Description

- Contracts currently offer guarantees for as short as 5 years to as long as a lifetime benefit
  - Short term guarantees
    - 5-10 years
    - Tied to contract minimum premium
    - Avoids early policy lapse by providing time to buildup sufficient cash surrender values.
  - Lifetime guarantees offered by many companies.
    - Premium requirements are typically 80 – 100% of the guideline level premium.
    - Not competitive with UL secondary guarantees.

Valuation Requirements

- Historically companies have not applied uniform reserve standards to GMDBs
- Regulatory sources that companies have looked to for guidance:
  - Standard Valuation Law
  - Variable Life Insurance Model Regulation (’83 & ’89 revisions)
  - Universal Life Insurance Model Regulation
  - Valuation of Life Insurance Model Regulation (XXX)

Why do companies not follow the VL Model Regulation?

- Many states have not passed either the ’83 or ’89 revision
- Companies therefore either look to the SVL or the UL Model Regulation for guidance.
- Companies that used the UL Model Regulation were holding no additional reserve for the secondary guarantee
  - Same situation we had with Universal Life until XXX.

Actuarial Guideline XXXVII

- Set forth appropriate valuation methodology for secondary guarantees on Variable Universal Life Insurance.
- The guideline focused on the 1989 revisions of the Variable Life Model Regulation.

Actuarial Guideline XXXVII

- Establishes the methodology for reserves to be held in addition to the basic policy reserve when a secondary guarantee is present on a VUL contract.

- The additional reserve = MAX (OYT, AALR)

  - OYT = One-Year Term reserve
  - AALR = Attained Age Level reserve

Actuarial Guideline XXXVII

- Defines method for calculating OYT reserve and AALR.
  - Project policy values using:
    - the valuation interest rate
    - COI charges equal to minimum valuation mortality
    - Premiums required to maintain the guarantee
    - No other credits or charges (I.e. policy loads are not used)
  - Assume contingent requirements to continue guarantee met.
    - I.e. “catch-up provision” is satisfied.
  - Projection of policy values for entire guarantee period
    - Even if projected values go negative.
    - Negative policy value set to zero.

OYT reserve

- Equals the “aggregate total of term costs”, if any, covering a period no more than one year from the valuation date.
  - “Aggregate total term costs” = PV of guaranteed death benefits provided for in absence of guarantee.
  - A death benefit provided for in absence of the guarantee is provided as long as the projected policy value > 0.
  - Project policy values assuming an immediate 1/3 drop in separate account asset values and using assumptions outlined earlier.

OYT Reserve

- If the one year projected policy value after the 1/3 drop is > 0, then the OYT Reserve is zero.
- If the projected policy value is < 0, then a reserve is established for the portion of the year not covered by the project value.
  - Maximum OYT Reserve = c_x

AALR

- Designed to fund any deficiency in the secondary guarantee premium over the secondary guarantee period.
- Structured to build and decrease slowly through periods of weak and strong performance in the policy's investments in the separate account.
- If an extended period of favorable investment performance results in redundant reserves, may be able to release all or part of the redundant reserves.

AALR

- The reserve can never be less than zero.
- The reserve is equal to the “residue” of the prior year’s AALR, increased or decreased by a “payment”.
- Residue is equal to:
  - Prior year’s AALR increased at the valuation interest rate
  - Less tabular claims not payable in the absence of the guarantee
  - Divided by the probability of survival

$$\frac{AALR_{t-1}(1+i_v) - (vq_{x+t}(if\ -\ AV_t\ =\ 0))}{1 - q_{x+t}}$$

AALR

- AALR
  - Payment is equal to:
    - PV of future guaranteed minimum death benefits (A), less
    - PV of projected future death benefits payable in the absence of the secondary guarantee (B), less
    - Prior year's residue (C)
    - Funded over the remaining period for the secondary guarantee.
    - Note that (A) – (B) is to be floored at zero.

AALR

$$Payment = \frac{A - B - C}{\ddot{a}_{x+t:gp-t}}$$

$$gp = guarantee \cdot period$$

$$GP = guarantee \cdot premium$$

$$A = A^{\overline{\ }}_{x+t:gp-t}$$

$$B = AV_t + GP\ \ddot{a}_{x+t:gp-t}$$

$$C = \text{Residue}_{t-1}$$

Recent Developments

- Guarantees maintained solely based on the funding allocated to the fixed account.
  - Removing the volatility potential in the separate account can result in premiums competitive with UL secondary guarantee premiums.
  - Approach may raise questions on appropriate valuation methodology
    - XXX (AXXX) or XXXVII.

Recent Developments

- Restrictions on the separate account investments.
  - Placing restrictions on investments reduces volatility of returns, while limiting the sacrifice in terms of yields.
    - Allows the insurer to manage the separate account risk that has been passed from the policyowner to the insurer by offering the guarantee.
  - May allow for more affordable long-term guarantees.

Case Study – VUL

- VUL contract designed specifically for low level premium sales.
  - Low target premium
  - High early duration policy loads
  - Current assumption level premiums to carry policy to maturity very competitive against similar UL designs.

Key Policy Design and Pricing Parameters

- Charge Structure:
  - 3 COI Bands
    - 0 – 249K / 249 – 999K / 1M+
    - Vary by class: 4 Nonsmoker / 2 Smoker
  - High Per Unit Loads for first 4 policy years.
    - Also vary by band & class
- Pricing Assumptions:
  - All premiums to Separate Account
  - Separate Account Yield net of expenses: 9%

Base Policy Profitability Results

- Assumed Premium = Level pay, term fund to maturity @ 5.75%
- Profit Results:
  - 1st Year Surplus Strain = 76.61% of Premium
  - Profit Margin = 7.06%
    - P.V. Profits / P.V. Premium @ 6.75%
  - Statutory IRR = 20.21%

Secondary Guarantee Rider Design

- Required Premium = Level Premium to Maturity @ 5%
  - Premium Level 25-50% higher than assumed premium on base policy pricing.
- Additional level lifetime unit load added to rider to offset additional risk and reserve costs.
  - Unit load greater than the .01 / 1,000 / month typically associated with VUL secondary guarantees.

Secondary Guarantee Rider Profit Results

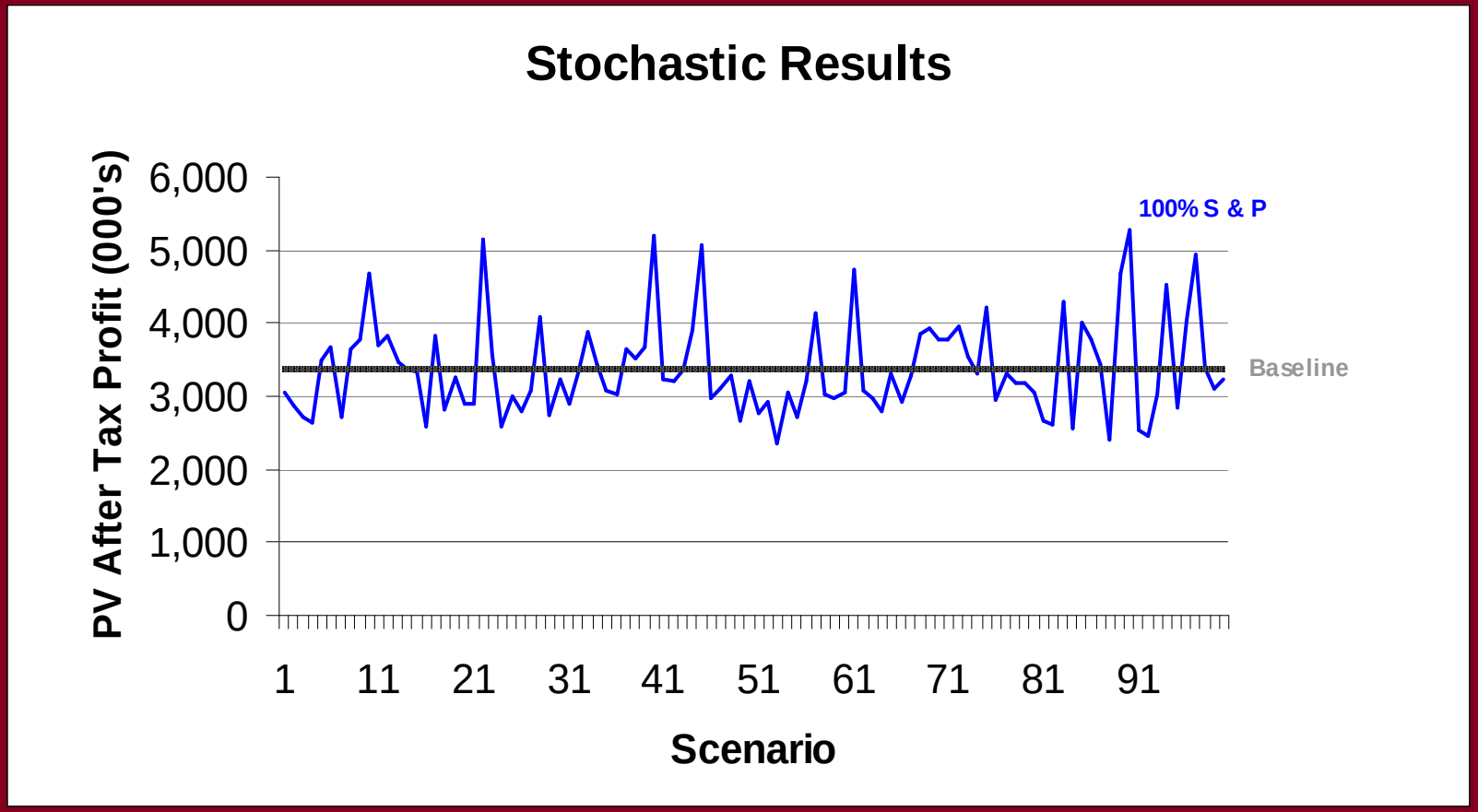
- Deterministic Scenario
  - Static Net Yield in Separate Account @ 9%
  - Secondary guarantee never “in the money”
- Profit Results
  - 1st Year Surplus Strain = 84.17% of Premium
  - Profit Margin = 10.00%
    - P.V. Profits / P.V. Premium @ 6.75%
  - Statutory IRR = 10.23%

Secondary Guarantee Rider Profit Results

- Initial Stochastic Model
  - Generated 100 scenarios.
- No investment restriction placed on policyowner
  - Assumed 100% Investment in S&P 500
    - High potential return / High volatility
- Reported results:
  - 31% of all cells go “in the money”
  - PV of Profits Statistics
    - Mean: $ 3.4M
    - Std. Dev. :$ 700k
    - Mean difference vs. baseline: $500k

Initial Stochastic Model

Graph – Range of Profitability on 100% S&P 500

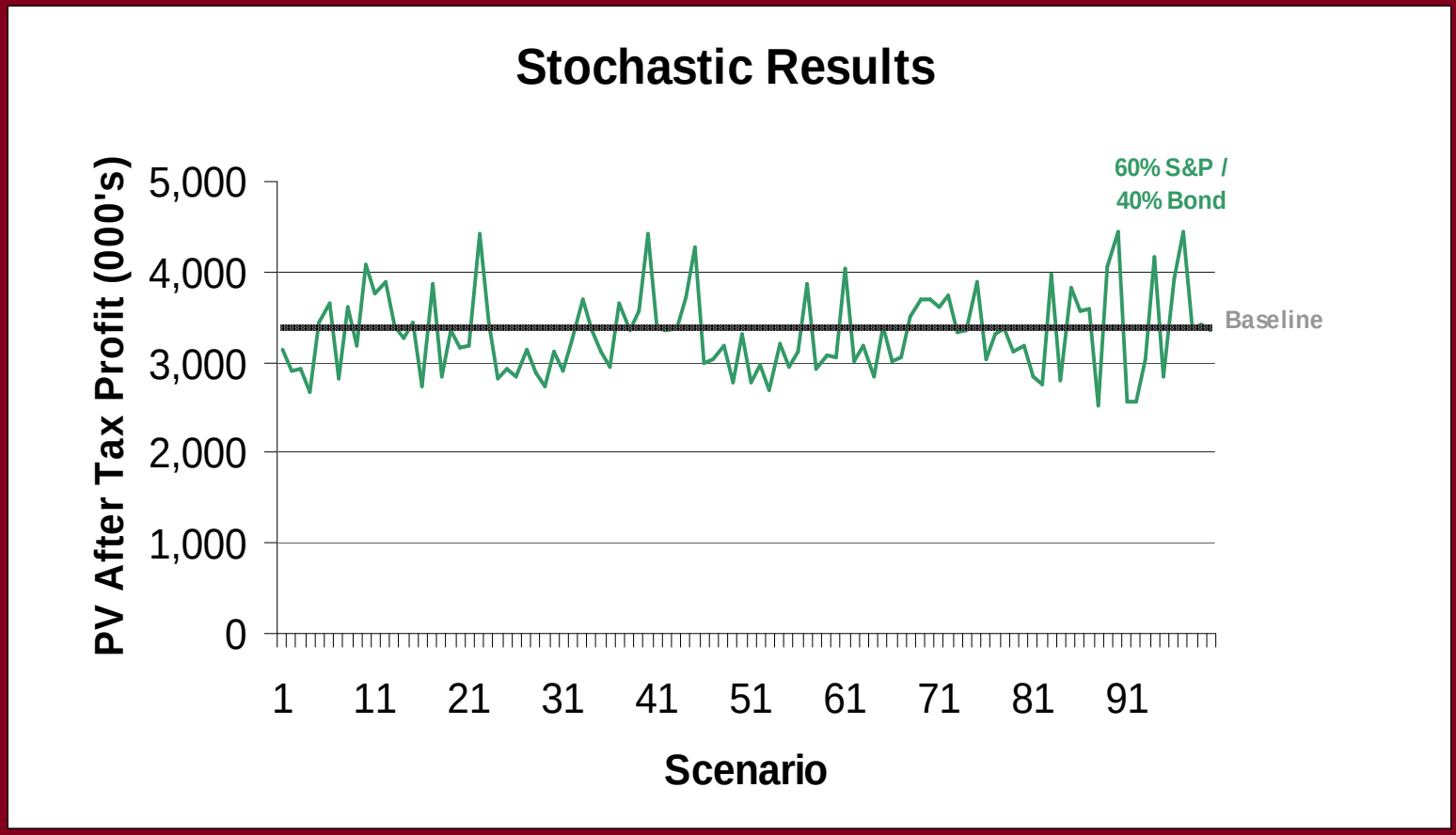


Secondary Guarantee Rider Profit Results

- Second Stochastic Model
  - 60% Investment in S&P 500
  - 40% in Intermediate Term Bond Fund
  - Portfolio Rebalanced Monthly
- Reported results:
  - 8% of all cells go “in the money”
  - PV of Profits Statistics
    - Mean: $ 3.3M
    - Std. Dev. :$ 460k
    - Mean difference vs. baseline: $385k

Second Stochastic Model

Graph – Range of Profitability on 60/40 Scenarios

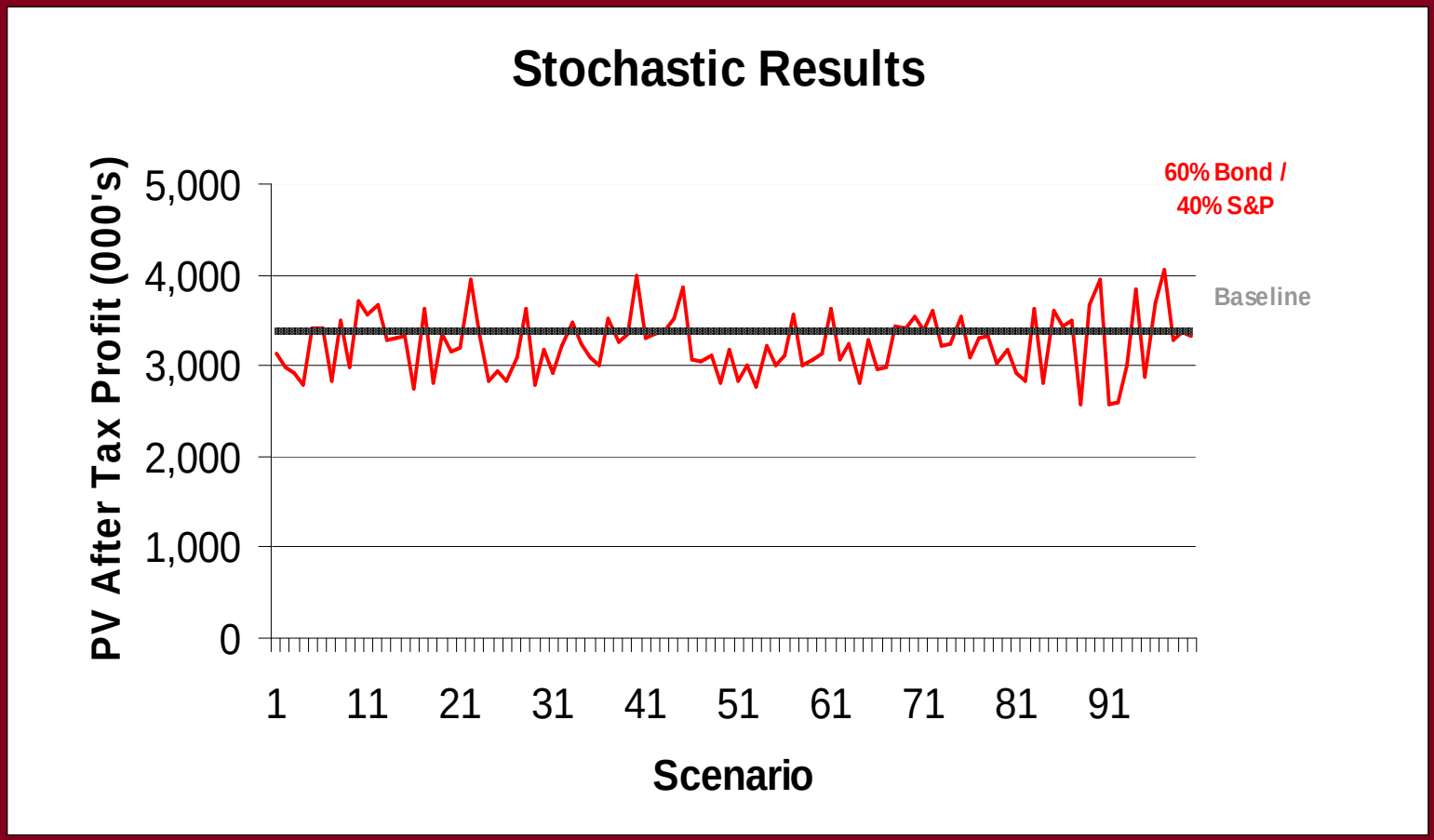


Secondary Guarantee Rider Profit Results

- Third Stochastic Model
  - 40% Investment in S&P 500
  - 60% in Intermediate Term Bond Fund
  - Portfolio Rebalanced Monthly
- Reported results:
  - 2% of all cells go “in the money”
  - PV of Profits Statistics
    - Mean: $ 3.2M
    - Std. Dev. :$ 330k
    - Mean difference vs. baseline: $300k

Third Stochastic Model

Graph – Range of Profitability on 40/60 Scenarios

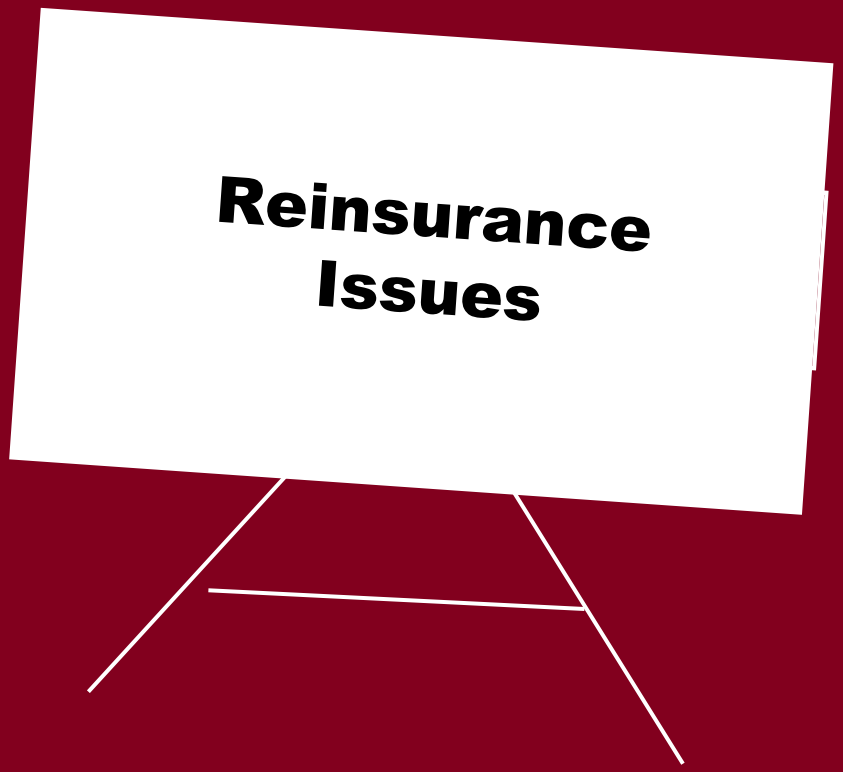


VUL Case Study Summary

- Placing investment restrictions can allow a company to offer more competitively positioned secondary guarantees on VUL.
- While risk can be minimized, profits are impacted by A.G. XXXVII.
  - Much less than UL has been impacted by XXX & AXXX, but takes additional capital nonetheless.
- Reinsurance has not been factored in
  - Need to work with reinsurance companies that understand this risk is not the same as GMDB on VAs

Closing Remarks

- Competitively priced guarantees are possible on VUL contracts.
  - Whether using the general account or an asset allocation model.
  - Individuals may be able to purchase competitive death benefit guarantee and invest excess funds all within one product.
  - Surplus impact of A.G. 37 is much less than XXX / AXXX.


Reinsurance
Issues

Reinsurance of Universal Life With Secondary Guarantees

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June 18, 2003

Reinsurance Issues

- Structure
- Market
- Future?

Structure

- YRT
- Coinsurance
- Surplus Relief

YRT

- Quota Share of Mortality Risk and Secondary Guarantee Risk
- Reinsurer agrees to reimburse ceding company for death benefits
- Reinsurer covers secondary guarantee risk

YRT-Secondary Guarantee Risk

- If the policy goes “in the money”, the reinsurer:

  1. Waives reinsurance premium, or

  2. Reimburses ceding company COI rate

YRT-Secondary Guarantee Risk

- Reinsurer must hold the difference between XXX reserve and CRVM reserve

YRT Costs

Three basic charges:

1. YRT rate for mortality

-Discount to COI charges

-Percentage of mortality table (e.g. 1975-80 Table)

2. Premium for actual secondary guarantee risk:

   Usually expressed as a percentage of 1 above.

3. Charge for holding reserves: Usually expressed as a basis point charge on reserves.

Secondary Guarantee Reserves

- Usually backed by Letter of Credit
- Sometimes backed by a Reg. 114 Trust

Coinsurance

- All policy benefits are coinsured
- Reinsurer participates in account values, surrender charges, secondary benefits, etc.
- Treaty must follow Model Reg.
- Much more complex than YRT structure

Financial Reinsurance

- Even more complicated
- Financial Reinsurance players not interested in long term arrangements

Current Reinsurance Market

- Very limited
- Only a few participants
- Little competition

Why the Lack of Capacity?

- Reinsurers do not want interest rate risk
- Limited LOC capacity
- Reduced revenue per dollar of LOC used compared to term coinsurance

Some Other Issues

- Reinsurance Premium Guarantees
- Extended Maturity
- Conversions
- Automatic Binding Limits

Reinsurance Premium Guarantees

- LOC charges are usually locked for lifetime for in-force business.
- Typically provides 30 days notice for increase of LOC charges for new business.
- Reinsurer reserves the right to modify reinsurance premiums if:

1. Ceding company changes COI charges
2. Ceding company changes expense loads

The Future?

- No new markets seen in the near future
- LOC capacity is dwindling

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