

GMDB and VAGLBs: What Have We Learned?

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Topics

- History of GMDBs
- History of VAGLBs
- Lessons from History

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History of GMDBs – Design

- Return of premium (ROP)
- Reset at end of CDSC period
- Ratchet at end of CDSC period
- Maximum anniversary value (MAV)
- Roll-up at 5% (RU)
- Roll-up at higher percentages
- Maximum of MAV and RU

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History of GMDBs – Premiums

- Initially, premiums ranged from 5 bps for ROP to 15 bps for RU and MAV
- Premiums grew in absence of reinsurance
- Reinsurance reappearing with premiums double to triple initial levels

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History of GMDBs

– Withdrawal Adjustments

- Initially, dollar-for-dollar reductions for partial withdrawals
- Reduced to less liberal design
 - Proportionate reduction
 - Limited dollar-for-dollar, then proportionate

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History of GMDBs

- Risk Management

- Initially, self-insured
- Heavily reinsured when rates became attractive
- Again self-insured when reinsurance market almost disappeared
- Dynamic hedging pursued
 - Rating agencies focused on the risk
 - FAS 133

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History of GMDBs – Reserving and RBC

- Initially, term reserve for six months to one year
- Volatility risk recognized deterministically in Actuarial Guideline 34
- Stochastic profiling and tail-risk recognition introduced with C-3 Phase II RBC/Reserving

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History of VAGLBs – GMIB

- Introduced with RU benefit and premium of 25 bps to 35 bps
- Benefits reduced and/or premiums raised with loss of reinsurance
- Benefit of fund allocation gains recognition
- Current premiums around 45-60 bps

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History of VAGLBs – GMAB

- Introduced with approximate ROP design and premium around 100 bps
- Lower cost designs introduced
- Benefit of fund allocation gains recognition
- Designs moved to automatic reallocation between fixed and variable to help achieve ROP benefit. “Customer dynamically hedges”

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History of VAGLBs – GMWB

- Introduced with 7% of premium withdrawal allowance
- Focus of current innovation
- Popularized at 35 bps premium
- Market moves to 50 bps premium level

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History of VAGLBs

– Withdrawal Adjustments

- Most had proportional reductions for excess withdrawals
- Some had dollar-for-dollar reductions
- Currently
 - Proportional reductions
 - Proportional reductions for excess withdrawals

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History of VAGLBs

- GMIB Risk Management

- Initial GMIB benefits were reinsured
- Reinsurance became unavailable or very expensive when GMBD reinsurance market contracted
- Reinsurance available on “start loss” basis due to unaffordability of full coverage

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History of VAGLBs - GMAB Risk Management

- Initial GMAB benefits were hedged in capital markets, which was costly
- Some later benefits were self-insured
- Dynamic hedging pursued when rating agencies focused on the risk
- Hedging became important with FAS 133

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History of VAGLBs - GMWB Risk Management

- Initial GMWB benefits were self-insured
- Dynamic hedging pursued when rating agencies focus on the risk
- Hedging becomes important with FAS 133

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History of VAGLBs

– Reserving and RBC

- Initially, RBC set at 1% if OTM and 2% if ITM
- Reserving set at cumulative premiums, or higher amount if indicated by asset adequacy analysis
- C-3 Phase II will set aggregate of RBC plus reserves on a stochastic basis
- Reserves to be determined separately as a subset of the aggregate

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Lessons from History

- Impact of design
- RBC and reserving
- External forces
- Risk management awareness
- Risk management techniques
- Modeling techniques
- Market conduct issues

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Lessons - Design

- GMDBs and VAGLBs have been effective differentiators
 - Attracting distribution outlets
 - Selling variable annuities
- Aggressive designs bring unwanted risk
 - Dollar-for-dollar reductions
 - High RU benefits
- Complexity can bring misunderstandings at the point of sale

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Lessons – Awareness of Risk

- Initially, derivative-based benefits were perceived as easily self-insurable
- Low-cost reinsurance reduced concern even more
- Rating agency concerns raised awareness of risk
- FAS 133 reporting added sense of urgency to risk management

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Lessons – C-3 Phase II

- Stochastic analysis is the norm and will flow into other areas of insurance
- Regime switching needed to create appropriate “fat tail”
- RBC may be indicative of necessary capital, rather than using a multiple of RBC
- RBC and reserves are two parts of the same thing, but reserves still require reasonableness and accuracy
- Good hedging will be rewarded.
- Impact depends upon business history, with OTM business offsetting some ITM business

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Lessons – External Forces

- Only one scenario will evolve. This indicates the need for good risk management.
- The positions of rating agencies must be anticipated and appreciated.
- The equity market bubble and burst will be remembered a long time, and should aid the sale of products with guarantees.
- Settlement companies may purchase VAs with dollar-for-dollar GMDBs deeply in the money, and could do the same with GMIBs.

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Lessons – Profitability of VAs

- VAs “pass through the investment risk” but are an insurer’s most volatile product.
 - Profit during bubble and burst
 - DAC write-offs after burst
 - Need balance between fixed and variable business
- Expense management became loose during bubble.
- Low historic capital usage facilitates high IRRs, and raises questions about IRR as profit measure.

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Lessons – Risk Management

- If reinsurance seems too good to be true, it probably is.
- Good risk management will be rewarded both by RBC requirements and by rating agencies.
- Dynamic hedging is emerging as the predominant tool for managing the GMDB and GMWB risk.
- Some benefit can be gained by offsetting put-based risks against call-based risks.

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Lessons

– Dynamic Hedging Overview

- Determine “Greeks” daily to profile required hedge position and needed responses to market movements.
- Manage hedges with futures positions supported by put/call structures
- Cost reflects actual volatility and risk-free rate experienced.

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Lessons - Dynamic Hedging Opportunities and Risks

- On average, savings over capital markets put
- But cost known only in arrears.
- Some efficiency realized through using tolerances to reduce transaction frequency.
- Hedge cost considerably more than going naked, but capital cost is reduced.
- Hedging is the cost of predictability.
- Opportunity to offset call-based risk, e.g., EEB and EIA, against put-based risk.

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Lessons

– Dynamic Hedging Challenges

- Modeling investment allocations requires approximations with indices.
- Utilization assumptions
 - GMDB is reasonably predictable
 - GMWB withdrawal patterns are evolving.
 - GMIB utilization patterns are unknown.

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Lessons – Modeling

- Projections may reflect historic equity growth
- But hedging cost must reflect the risk-free rate.
- Capital cost must reflect hedging profile.

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Lessons – Market Conduct

- VAs not immune to class action suits.
- Complex products require thorough training and clear sales material.
- SEC scrutiny of mutual fund activities will affect variable annuities.

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Lessons – VA with GLB vs. EIA

- Put-call parity: $S + P = C + PV(X)$
- EIA is redeployment of interest rate into hedging budget.
 - Long rates rise, benefits improve
 - Delivers, perhaps, 1% over declared rate
 - Floor protection generally provided annually.
- VAGLB is a floor on equity pass-through.
 - Rate rise lowers put option cost.
 - Protection floor generally has longer horizon

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Lessons – EIA Experience

- Hedging discipline has served companies well.
- This call-based business can help mitigate risks of put-based VA-guarantee business.