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# Lessons Learned from 25 Years of Variable Annuity Guarantees

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**V**ariable Annuity (VA) Guarantees have had a meaningful impact on the insurance industry over the last 25 years. They remain arguably the most complex liabilities that insurers write. The list of companies that have sustained significant financial damage from VA Guarantees is long, and includes both insurers and reinsurers.

This article opens with a brief history of VA Guarantees, split into 3 eras—Infancy, Tumultuous Adolescence and Middle Age. Then it lists a number of lessons that the industry has (hopefully) learned over the last 25 years. Finally, it speculates as to where VAs and their associated guarantees might be heading in the future.

## VARIABLE ANNUITIES—INFANCY

In the early years, VAs were essentially tax-advantaged mutual funds administered by insurers, with only a minor insurance component related to annuitization. At most, a simple Return of Premium Guaranteed Minimum Death Benefit (GMDB) might be included—although there was no real effort made to price this risk nor was there typically an explicit (or even implicit) charge to the policyholder. Regulations and risk management with respect to VA Guarantees were practically non-existent.

## VARIABLE ANNUITIES—TUMULTUOUS ADOLESCENCE

First, insurers began to compete on the aggressiveness of their GMDBs, rapidly moving from Return of Premium and Resets to substantially riskier designs such as Ratchets and Roll-ups. Then the industry developed new guarantees that paid on events other than death—the Guaranteed Living Benefits (GLBs), such as GMABs, GMIBs, and GMWBs/GLWBs. Explicit guarantee charges were added to VAs, and reinsurance and new hedging techniques emerged as ways for insurers to manage these new

risks. Insurers competed to have the most attractive benefits, and VA Guarantees became the driving factor behind rapidly increasing sales. Both insurers and reinsurers experienced enormous growth and profits—for a while. The market correction in 2000–01 caused significant losses and resulted in market exits and a re-examination of pricing and risk management. After another period of explosive growth, the market collapse in 2008–09 again caused huge losses for writers of VA risk. Along with pricing and risk management, regulations struggled (and often failed) to keep pace with product innovation.

## VARIABLE ANNUITIES—MIDDLE AGE

We have experienced a period of relative stability over the last 5+ years. VA Guarantees have been “de-risked” to be more conservative and to make the risks easier to manage through hedging. Several major VA writers exited the market and the concentration of market share in the top VA writers has increased, with the top 10 writers now claiming about 75 percent of the market. Pricing, risk management and regulations have become fairly robust, although they may still be perceived as lagging newer product designs. The low interest rate environment remains a challenge, but companies continue to offer GMDBs and GLBs as riders on their VA policies. More recently, VA sales have been adversely impacted by headwinds caused by regulatory changes and uncertainty.

## LESSONS LEARNED

### **Lesson #1: Successful products will be copied, but should they?**

Every successful new product innovation has been copied, usually very quickly. The competitive advantage of a new guarantee does not last long. However, in many cases, less-disciplined competitors have taken a short cut approach, simply copying VA Guarantee language directly from a competitor’s prospectus, perhaps with only minor wording or pricing changes. This approach has caused problems, as the copycat company may be unable to administer the VA Guarantee properly, may have inadequate risk management in place, or may find its sales force lacks adequate training to sell the new benefit. Minor changes to the language in a VA Guarantee can also drastically alter the risk profile—in one case, simply removing the maximum attained age language for a GMDB led directly to the severe impairment of a major VA writer.

### **Lesson #2: Past performance does not guarantee future results ...**

In the early days of VA Guarantees, actuaries and financial professionals argued over the proper pricing approach for the risk. Is it an insurance liability or a derivative? Should it be priced using historical/real-world modeling or risk-neutral/Black-Scholes option pricing? But those turned out to be less important than

the key question of how to project future results using only historical experience as a guideline. In the late 1990s, after several years of an historic bull equity market, a number of reinsurers entered the VA Guarantee reinsurance market, seemingly with overly optimistic expectations regarding future equity market growth. The 2000–01 recession proved them wrong, resulting in quick market exits and significant losses that their legacy books are still experiencing today. Other companies have relied on back-tested hedging strategies, but then found that 2008–09 was outside of the historical parameters used to calibrate the models, resulting in outsized hedge breakage and unhedged losses. One example: the U.S. 10-year treasury yield has been under 2.5 percent for the bulk of the last 6 years, a level which previously had been considered a safe “lower bound.”

### **Lesson #3: Policies last a loooooong time—and things change!**

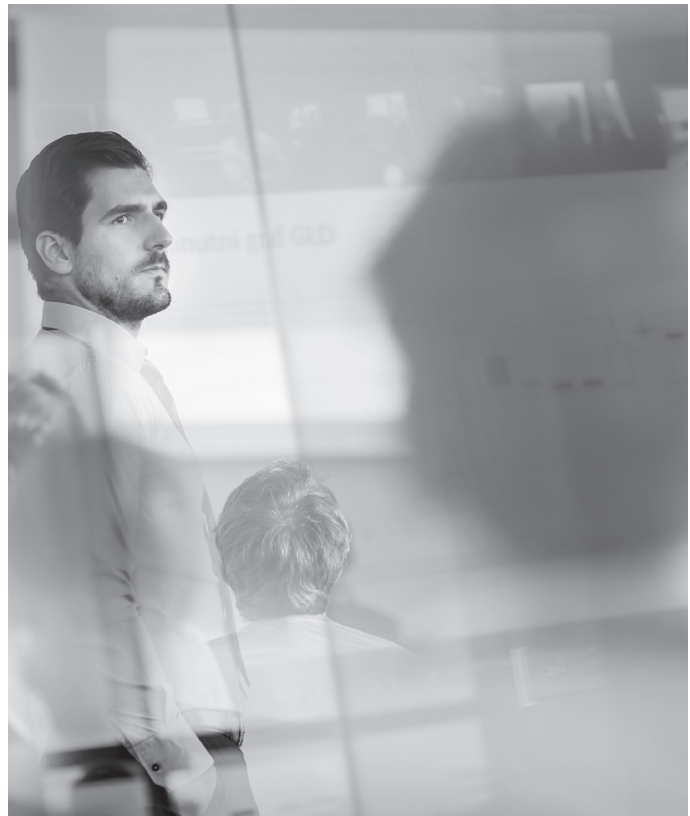
VA Guarantees are promises that can endure over decades. In the early days of VA Guarantees, company experience was that most policyholders lapsed at the end of their Surrender Charge period (typically year 7), as agents were incented to earn another commission by moving their customers to “new and better” VA products. More recently, lapse experience has been much lower, with these unexpectedly persisting policy cohorts bringing their VA Guarantees into increasingly volatile times. Regulations around reserving and capital have changed, and will likely change again. The capital market environment can change significantly and without warning. Even changes in the tax code can alter the risk profile of in-force VA Guarantees.

### **Lesson #4: Anti-selection**

VA Guarantees introduce mortality/longevity risk to a non-underwritten product. Experience studies now show higher mortality rates on policies electing enhanced GMDBs, and lower mortality rates on policies electing enhanced GLBs. In addition, while there has always been some expectation that lapse and withdrawal behavior will be driven in part by the value (or in-the-moneyness) of a policy’s VA Guarantee, experience studies now show that larger policies (measured by dollar amount) behave more rationally, increasing the insurer’s cost in providing the VA Guarantee.

### **Lesson #5: Partial withdrawals**

Historically, some VA Guarantees were issued with a provision that partial withdrawals cause the guaranteed value to be adjusted on a dollar-for-dollar basis, rather than the more accurate proportional basis. VA Guarantees with this dollar-for-dollar treatment of partial withdrawals are exposed to the risk of policy stripping, which can exponentially increase the cost to the insurer to provide the benefit. The arguments in favor of using the “dollar-for-dollar” approach tended to be that it was easier to explain and administer, and in any case many people assumed



that “nobody will ever actually use it.” Today we see some legacy VA books that continue to suffer losses due to the availability of this option. In a similar manner, many VA GLBs were issued with so-called hybrid withdrawals, which allow for a small withdrawal annually to be treated as dollar-for-dollar. Recent public announcements suggest that this feature is being used far more than initially expected and may result in future losses on existing VA books.

### **Lesson #6: Policyholder behavior can change**

In the early years, VA writers often believed (and their salespeople would insist) that no policyholder would ever buy a VA Guarantee with an explicit charge of more than 30bp per year. Then that maximum charge became 50bp, then 75bp, then 100bp, and today many VA Guarantees cost over 100bp per year. Also, the so-called spike lapse at the end of the surrender charge period has changed from 30 percent to 50 percent (or more) to a much lower level, often 10 percent to 20 percent (or less). This change results from a number of factors, including the increasing difficulty that salespeople have in moving a policy (and earning a new commission) because there are typically not any better policies to justify a move, and also increased regulatory scrutiny of salesforce behavior with respect to treating their customers fairly. Finally, experience has shown that the rationality or efficiency of policyholder behavior has increased substantially over

time. In other words, a VA Guarantee's in-the-moneyness has a much greater impact on the lapse and withdrawal behavior of a policyholder today than it did in prior periods. There appears to have been a significant change industry-wide in this level of efficient behavior, particularly after 2008–09.

### **Lesson #7: Policyholder behavior can vary by location/company**

We see significantly different behavior, including fund selections and lapse/withdrawal behavior, between North American (US/Canada) policyholders and Asian (Japan/Taiwan) policyholders. The policyholders in Asia are much more likely to take advantage of every option provided to them in order to maximize the value of the VA Guarantee. We also see significantly different behavior by company, even within the U.S. market. Lapse/annuitization/withdrawal behavior can vary by a factor of 3x–5x or more, even controlling for policy features and other factors. The driver(s) of this extreme variation remain unclear.

### **Lesson #8: Investments**

Policyholders tend to be lousy market timers—they are more likely to reduce (rather than increase) their equity exposure following a severe market drop. As a result, their account values may be less likely to participate in subsequent equity market recoveries. This is rarely factored into pricing or hedging strategies. In addition, equities can be far more volatile than expected, which may be a problem if the volatility risk is not specifically hedged; and also hedgeable indices may be poor proxies for the actively managed funds in a VA account. We have seen many of the major VA writers shift away from offering actively managed funds, instead offering more hedgeable funds such as index-trackers or volatility-controlled/target-volatility funds.

### **Lesson #9: Regulation is slow to react**

VA Guarantee product development has consistently outpaced regulation. Statutory reserve guidelines AG34, AG39, and AG43 lagged the respective VA Guarantees they governed by as much as 10 years. US GAAP rules FAS133, FAS157 and FAS159, and the classification of VA Guarantees as insurance or derivatives, were similarly lagged. The Risk-Based Capital C-3 Phase 2 calculation methodology is disconnected from both statutory and GAAP calculations; as a result, there are additional future modifications expected to help bring the three calculations more in line with each other. Market events can also outpace regulations; for example the 2008–09 market collapse demonstrated weaknesses in existing regulations as companies struggled with rules that became perceived as overly harsh in the post-collapse environment.

### **Lesson #10: Hedging**

In the late 1990s, as VA writers began to incorporate delta hedging in their VA Guarantee risk management programs, they

wrongly assumed that the delta hedging would remove the bulk of the risk. Most of these hedging programs failed in the 2000–01 recession. Similarly, the emergence of dynamic multi-greek hedging strategies did not protect VA writers from significant hedge breakage in the 2008–09 market collapse. Companies have learned that hedging strategies can be somewhat mutually exclusive. That is, the hedge program's goal might be to protect GAAP income statement volatility, or statutory capital, or long-term economic losses, but it will not be able to accomplish all three equally well. Even the most robust hedging strategies are now understood to experience regular breakage, due to the need to balance liability matching precision against over-trading (a buy high/sell low problem that introduces frictional costs). There are also a number of non-hedgeable risks, including both financial (basis, correlation) and non-financial (mortality, behavior) risks, all of which can generate substantial income statement and balance sheet volatility.

### **Lesson #11: Consistency vs. Flexibility**

Some companies have been successful with a more consistent approach to the VA market. They have not made frequent product changes and do not typically make dramatic changes to their market share of new sales in the short term. But in other cases, failing to respond quickly can exacerbate problems. Some companies have suffered materially from being too slow to adjust poorly designed products or risk management strategies, or from being too slow to de-risk VA Guarantees, increase rider prices, accept the low interest rate environment, or apply newly emerging policyholder behavior data. Striking a balance between stability and responsiveness is a key ingredient in a company's long-term success.

### **Lessons #12+: What might we learn in the future?**

It can be difficult to anticipate future lessons, as they are almost by definition unknown unknowns. But we can speculate on some possibilities. Perhaps large-scale transfers between equity and fixed income investments will be impossible in practice; that is, in a severe equity market downturn the market may lack the liquidity necessary to convert the volume of equities to fixed income that is required to maintain a CPPI-style approach to fund management or risk management/dynamic hedging. Perhaps policyholder behavior will become more efficient/rational/anti-selective. Perhaps longevity risk on GLBs will be far greater than currently anticipated.

### **Final Thoughts – What is Next for Variable Annuities?**

Possibility #1: A Leisurely Retirement. In this scenario, VAs experience stable or moderately slowing sales with somewhat negative net flows. This may be due to a number of factors, including: regulatory changes, the cost/benefit of the guarantees may no longer seem attractive to investors, persisting low interest

rates, or companies shifting towards products with fewer long-term guarantees.

**Possibility #2: Death.** In this scenario, VAs experience rapidly declining sales with companies exiting the market. This may be due to factors such as: a severe market downturn resulting in losses and increased capital requirements, particularly onerous regulatory or tax changes, an increase in longevity risk (real or perceived), demographic changes, or simply insurers finding they are unable to achieve a sufficient return on capital in their VA products.

**Possibility #3: Reincarnation.** In this scenario, substantive change reinvigorates the VA product line. This may be due to factors such as increased customer demand for longevity, health care, LTC or other protections to be included in retirement savings products, tax or regulatory change improving the value of a

VA, high interest rates/low volatility allowing for more aggressive VA Guarantee design and pricing, or an internet sales model that dramatically lowers the VA cost.

The last 25 years have seen the Variable Annuity marketplace experience a roller coaster in all aspects—product and guarantee design, accounting, regulations, risk management, etc. Important lessons can be learned from a review of the various ups and downs, twists and turns, and successes and failures that have occurred during this period. ■



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