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Risk Appetite for Variable Annuities: Managing the "Three-headed Monster" Challenging Variable Annuity Writers

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INTRODUCTION

The global financial crisis and meltdown from late 2008 to mid-2009 had a severe impact on variable annuity (VA) writers. The majority of VA writers suffered earnings and capital losses that placed them at the brink of insolvency. Due to inadequate capitalization, a number of companies had to borrow from the government or other sources to remain solvent or operational.

VA writers were faced with declining equity markets, increasing implied and realized volatility, decreasing interest rates and inadequate VA product design. These synergistic forces put a strain on capital, earnings and product profitability creating a veritable "three-headed monster" for many VA writers.

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This article focuses on how a risk appetite framework can help a company manage the "three-headed monster" and why a risk appetite framework is critical to effective business and risk management at both the corporate and product levels.

While risk appetite is often integrated into an enterprise risk management strategy, the material and diversified exposures in VA products serve as an avenue to apply a risk appetite framework at the product level.

COMPETING OBJECTIVES OF RISK MANAGEMENT: THE "THREE-HEADED MONSTER"

The crisis proved many VA writers did not fully understand the complexity involved in managing risk embedded in VA products. They sold these products in response to increased consumer demand and corporate profitability in benign economic times. At the height of the crisis, however, VA exposures were material enough to deplete capital levels, demonstrating their materiality in relation to a company's overall exposures.

From our experience talking with VA writers, chief risk officers and heads of VA equity risk management departments in major companies, we have identified a series of competing objectives in relation to risk management (three-headed monster):

- Reducing earnings volatility (Generally Accepted Accounting Principles)
- Reducing the required capital or required statutory reserves (Statutory)
- Maintaining economic profitability (Economic)

Here are some examples of how this "three-headed monster" is the perfect segue into risk appetite:

- Companies have different VA risk management strategies to help reduce their capital or statutory reserves. However, these may result in greater earnings volatility.
- Hedging to higher and higher order Greeks sensitivities to reduce earnings volatility may not reduce capital or statutory reserves.
- VA product profitability may be hurt by hedging strategies that only hedge to GAAP earnings volatility.

The real paradigm in the market is aiming for all three objectives simultaneously, recognizing that there are severe trade-offs. The goal for a VA risk appetite framework is to think about these three objectives and how they relate to each other, then to define a risk management strategy that incorporates all three.

THE BENEFITS OF IMPLEMENTING RISK APPETITE INTO A VA RISK FRAMEWORK AND STRATEGY

Risk appetite is often thought of at the corporate level to manage exposures at an enterprise level. However, the materiality and complexity of the inter-relationships of VA exposures provide a case study to build a risk appetite framework starting from the product level.

In addition to managing the competing objectives of the "three-headed monster," there are five major benefits of implementing a risk appetite framework into a VA financial risk management strategy:

- **Setting risk tolerances:** a risk appetite framework requires senior management and the Board of Directors to set risk tolerances around VA products. This forces introspection around whether a company's risk appetite is in line with the VA business already in-force or currently being issued. Risk tolerances will require answer-

"Managing the competing objectives of the "three-headed monster" is a logical segue into VA risk appetite…"

ing difficult questions, such as "can the overall business absorb the capital constraints imposed by VA products" and "are the exposures from VA products in line with the company's broader risk appetite?"

- **Reduce earnings surprises:** since VA business can be a material driver of overall company earnings, a risk appetite framework can help reduce earnings surprises to shareholders. Senior management and directors were surprised by the extent of losses in the recent crisis and the amount of risk embedded in their VA products, particularly in living or death guaranteed benefits. Building a risk appetite framework for VA can help management understand potential issues with VA business before issues arise.

- **Link management actions to risk limits:** a risk appetite that explicitly links remedial risk management actions to risk tolerances will enable a company to quantify the impact of prospective risk management actions.

- **Prospective assessment of VA risks and VA risk management strategies:** a risk appetite framework for VA should involve assessing VA exposures and risk mitigation strategies prospectively against risk tolerances. A risk appetite framework will help VA writers assess the evolution of VA risks. VA risk management strategies will evolve as state variables change in a dynamic environment. Many VA writers analyze the efficacy of VA risk management strategies retrospectively through back-testing analysis. A retrospective approach to risk management clearly failed for VA writers during the crisis. Changes were made after finding mistakes or determining that the risk management approach was ineffective.

- **Transparency:** a risk appetite creates transparency in how risks and exposures are managed by linking VA performance across a variety of metrics against risk tolerances.

A FOUR-STEP APPROACH TO ESTABLISH A VA RISK APPETITE

Outlined below is a four-step approach to implement a formal risk appetite framework for VAs:

Step 1: Define the risk appetite objective

It can be challenging to define the objective since the level of VA exposure differs from one company to another. For example, the VA concentration risk for a large firm may be less than for a smaller writer. Different types of VA products across companies have varying degrees of sensitivity to changing market conditions.

Defining the risk appetite objective first requires understanding the relative size of the risk or what portion of the total company exposure is related to VA. Variable annuities are only one product, but in terms of capital or earnings volatility, they represent a much larger exposure than more traditional life insurance products. In this step, an analysis of a company's enterprise risk appetite objectives require a thorough review to ensure that both the VA and enterprise risk appetite frameworks are fully integrated.

Second, it is important to perform a more granular analysis of the VA product mix, including the benefits offered and risk management strategies to cover those benefits. Certain VA exposures could be more material depending on the product, capital and market mix.

Step 2: Identification of VA risk tolerances

This step involves defining the major risk exposures across VA products, which may create more issues for some companies than others. For example, certain companies have been willing to take on greater equity risk or

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are open to more volatility in interest rate risk. For each material risk, alert and risk limit levels can be defined. Two levels for each material VA risk exposure should be defined to provide levels of remedial management action.

Step 3: Defining stress levels

After these VA risk tolerances across each material exposure are defined, stress levels across each exposure can be calibrated using statistical analysis and a blend of managerial discretion. By stressing VA policies across a variety of actuarial and economic scenarios, the competing objectives of managing earnings, statutory capital and product profitability can be assessed in a stressed environment.

Step 4: Assessing VA exposures and linking risk management actions

VA exposures are analyzed under various stress levels and compared against risk tolerances identified in Step 2 across each material risk exposure. The exposures are modeled using a "what if" analysis, with hedge simulations projected in the future and hedge strategies overlaid. If certain exposures breach the risk tolerances identified, then prospective management action can be taken before problems arise.

Using this risk appetite framework, companies can avoid the missteps in VA risk management that were evident during the crisis. Economic market conditions have been a catalyst for the need to improve transparency between the strategic objectives and VA risk management actions taken to achieve these goals.

The success of a risk appetite framework for VA depends on direct linkage to the enterprise risk appetite. It cannot be viewed in a vacuum, but must filter down from the enterprise risk appetite and be applied to products in a more quantitative and risk-focused way. Linking a VA risk appetite framework to the enterprise risk appetite framework ensures that the product level risk appetite is defined in a context that is appropriate for a company as a whole.

The prospective approach to identifying future risk management actions is a key attribute of an effective risk appetite for VA. A facet of VA risk appetite that should be found in enterprise risk appetite frameworks includes performing advanced projections to simulate "what if" analysis across a variety of hedging strategies and product development designs ; and to assess the "three-headed monster" under a variety of stress scenarios to link directly to risk management action. A VA risk appetite framework needs to be robust because of an advanced modeling requirement and integration of advanced risk modeling to management action. A risk appetite is not simply another tool in the arsenal of risk management. It is the tool that every company needs in its inventory.

The views expressed herein are those of the author and do not necessarily reflect the views of Ernst & Young LLP. ■