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Results From VA Assumptions Survey

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The valuation of excess benefit liabilities on variable annuities (VAs) is highly sensitive to the assumptions used. In this article, we share selected results from a survey conducted in May of best-estimate VA assumptions as of year-end 2018.

The survey consisted of 18 respondents that range from companies with small blocks of VA business to those with over $100 billion in separate account assets. All companies in the survey must report on a U.S. statutory basis, while most are also required to report on a U.S. GAAP basis, and only a few will report under IFRS 17. Five of the companies are closed to new VA business, and the 13 others are still selling variable annuities. The riders offered historically have been guaranteed minimum accumulation benefit (GMAB), guaranteed minimum death benefit (GMDB), guaranteed minimum income benefit (GMIB), guaranteed living withdrawal benefit (GLWB) and guaranteed minimum withdrawal benefit (GMWB), though not all of these are still available to policyholders. The number of riders companies are offering has fallen with GMDB being the most common for new policies.

In the following sections we report on the lapse, utilization and separate account return assumptions.
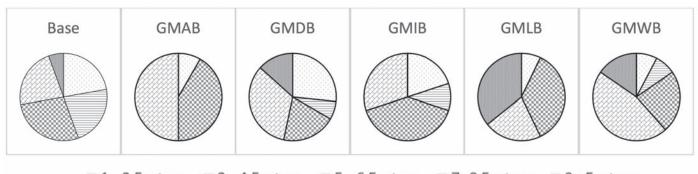
LAPSES

The lapse assumption is used to project how many policies are expected to remain in force at future periods, where a higher lapse assumption means that fewer policies are anticipated to remain active. This is a complex assumption for variable annuity products, and companies typically consider a wide range of factors to determine their policy-level assumption. Complexity is added because depending on the circumstances, either higher or lower lapse rates can result in higher reserves (e.g., lower lapses for deep in-the-money policies and higher lapses for out-of-the-money policies).

Factors Used in Lapse Assumption

Figure 1 summarizes the total number of factors considered when setting the base and dynamic lapse assumption for each GMxB benefit type.

Figure 1
Number of Factors Considered When Setting Lapse Assumption

☐ 1 - 2 Factors   ☰ 3 - 4 Factors   ⊠ 5 - 6 Factors   ⊡ 7 -8 Factors   ■ 9+ Factors

Table 1
Base and Dynamic Lapse Rates

	Duration	0	1	2	3	4	5	6	7	8	9	10	Ultimate
Base Lapse	Min	0.4%	0.5%	0.7%	1.0%	1.3%	1.4%	1.5%	10.3%	3.2%	2.6%	1.6%	1.5%
	Max	4.5%	4.5%	4.5%	6.5%	6.8%	9.1%	9.3%	30.0%	14.8%	12.0%	11.8%	11.8%
Dynamic Lapse 10% ITM	Min	0.2%	0.2%	0.3%	0.3%	0.4%	0.4%	0.6%	1.5%	1.0%	1.0%	1.0%	1.0%
	Max	3.6%	3.6%	3.6%	5.1%	6.2%	8.3%	8.5%	22.0%	14.3%	11.8%	11.8%	11.8%
Dynamic Lapse 50% ITM	Min	0.1%	0.2%	0.3%	0.3%	0.4%	0.4%	0.6%	1.5%	1.0%	1.0%	1.0%	1.0%
	Max	3.0%	3.0%	3.0%	4.3%	4.3%	5.9%	5.9%	16.6%	14.3%	11.8%	11.8%	11.8%

Among the 18 respondents, fewer than 25 percent use only one or two factors in developing base lapse assumptions; these companies tend to have a smaller VA GAAP liability. The most prevalent factor used in setting the base lapse assumption is policy duration, which is used by 83 percent of companies. The mean number of factors used by companies in the survey was 4.9.

When setting the dynamic lapse assumption, the rider in-the-moneyness (ITM) and policy duration are the two factors that were most frequently used for each GMxB rider. The mean number of factors used for the dynamic lapse assumption is greater than the mean number of factors used for base lapse assumption, with GLWB dynamic lapse assumption reflecting the highest number of factors used at 7.8, and GMWB dynamic lapse assumption reflecting the second most factors at 7.0. This relationship is expected given the need to reflect complex policyholder behavior for the riders under different economic circumstances.

The Moneyness of the Rider

As discussed above, ITM is a key factor influencing dynamic lapses. The definition of moneyness used most by respondents in their models is the ratio of benefit base (allowing for withdrawals) to account value. Other definitions include the ratio of actuarial present value of benefits to account value or 1 – (account value/benefit). In determining dynamic lapses, an exponential formula based on ITM is most widely used (33 percent). Other types of dynamic lapse formulas include constant factor based on each ITM range (22 percent), linear function within each ITM range (22 percent), exponential formula (11 percent), nonparametric formula (6 percent) and predictive modeling using logistic functions (6 percent).
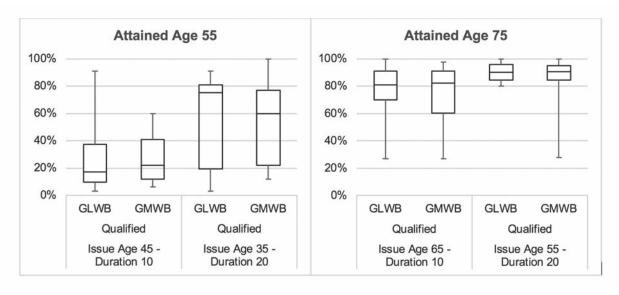
Lapse Rate

Respondents provided base and GMWB dynamic lapse rates for a seven-year surrender charge period variable annuity product, which are summarized in Table 1 (pg. 22).

The table shows how ITM affects the dynamic lapse assumption. For the respondents who participated in the VA assumption survey in 2018 and 2019, the average base lapse and GMWB dynamic lapse assumptions in the surrender charge period are generally consistent between the two years. However, in the post-surrender charge period, the average base lapse assumption decreased significantly between 2018 and 2019, with a smaller decrease for the 10 percent ITM and 50 percent ITM values.

Lapse Study Period

Our survey also asked about the assumption-setting process, and respondents provided the source data used in the experience study and the period used. Companies were evenly divided between using internal data and using a hybrid of internal data and industry studies. All respondents use at least three years of experience, while 65 percent of the respondents used more than six years of experience for developing lapse assumptions.

Figure 2
Range of Assumed Withdrawal Rates

WITHDRAWAL BENEFIT UTILIZATION

Another important assumption for VAs is the utilization assumption. The utilization assumption is divided into two elements, the frequency and the severity.

Utilization Frequency

The utilization frequency assumption is related to the propensity of policyholders to exercise their guaranteed withdrawal benefits (either for-life or not-for-life). This assumption is directly related to the excess benefits, and an increase in this assumption will increase reserves that are held. Figure 2 (pg. 23) shows the range (in quartiles) of withdrawal assumptions for attained age 55 and 75 at duration 10 and 20. We also asked about attained age 65 and the difference between qualified and unqualified policies.

Here are a few observations from the results of our survey on utilization frequency:

- As attained age increases, the percentage of policyholders assumed to be utilizing the benefit increases. As duration increases, the utilization also increases.

- The range of the utilization decreases only slightly as age increases, while the interquartile range decreases significantly, highlighting a trend toward convergence across the industry.

- The difference between GMWB and GLWB rates was not significant; in general, the qualified policies have similar rates to nonqualified policies.

Utilization Severity

Along with the frequency, companies must assign an assumption as to how much of the benefit a policyholder will elect. A "rational policyholder" might elect to take 100 percent of the annual amount; however, policyholders rarely react fully "rationally" based on an optimization of benefits. For example, policyholders may require additional liquidity at the time of benefit election and choose to withdraw over 100 percent of their annual withdrawal amount (eating into the base benefit). Alternatively, they may feel that the market growth they can achieve by leaving money invested justifies withdrawing less than their full guaranteed benefit. As one might expect given the complexity of predicting human behavior, our survey suggested that there is a wide range of practice in estimating policyholder utilization. Some observations include:

- Companies are split almost equally between three approaches: (1) assume 100 percent utilization, (2) assume less than 100 percent utilization, (3) a nonsingular assumption.

- Where an efficiency of less than 100 percent is used, the mean assumption was that policyholders were withdrawing 95 percent of the annual withdrawal amount.

• For those using a nonsingular assumption, they are using a more granular assumption at either the policy or the group level.

Utilization Study Period

We asked respondents about the experience study period that they use when setting the utilization assumptions. The experience study period varied significantly, with a minimum of two years and a maximum of 15 years used. As with lapses, companies were evenly divided between using internal data and using a hybrid of internal data and industry studies.

Separate Account Return

The separate account return assumption reflects management's view of the long-term growth in the separate account. Respondents were asked to provide their assumption used in the estimated gross profit projection (before taking out the mortality and expense charges), the composition of the portfolio backing the assumption, and the method of grading to their long-term assumption.

The separate account return assumptions used by the respondents ranged from 5.7 percent to 8.5 percent, with a mean value of 7.21 percent. Two-thirds of the respondents have a return assumption between 6.5 percent and 8 percent. For the 12 respondents that participated in the VA assumption survey in both 2018 and 2019, the average separate account return assumption decreased slightly from 7.26 percent to 7.22 percent.

The portfolio composition used to determine the separate account return assumption generally consists of a blend of equities, bonds and cash. The average portfolio is made up of 65 percent equity, 29 percent bonds and 6 percent cash.

Half of the respondents indicated that mean reversion is used for grading to the long-term separate account return assumption. One-third of respondents stated that the long-term separate account return assumption is reflected immediately without grading. The remaining respondents either used a fixed period for grading or graded differently for equity and fixed income securities. The most common grading period is five years.

CONCLUSION

As can be seen from the results discussed in this article, there is a considerable range of practice across assumptions used by the industry for variable annuities. There is a propensity to use complex assumptions to better match the underlying complexity in the products with the behavior expected from policyholders in a dynamic and volatile economic environment. Our thanks go to the participants of this survey for giving their time and input to this survey. ◼

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