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NAIC Impact Study Provides Early Look at Potential Impacts of New VM-20 Life Reserving Standard

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The National Association of Insurance Commissioners (NAIC) sponsored a study conducted by Towers Watson on the impact of proposed principle-based reserves for life insurance products (VM-20). On Feb. 9, 2012 we released our report entitled "Presentation and Analysis of Results of VM-20 Impact Study on Principle-Based Reserves for Life Insurance Products," to the Life Actuarial Task Force (LATF) of the NAIC for public comment. The report summarizes the VM-20 results submitted by the 35 insurance companies who participated in the study with Towers Watson's observations and recommended changes to VM-20. The VM-20 Impact Study was sponsored by the NAIC and we worked closely together with the participating companies to implement the draft VM-20 standard with assistance from the American Academy of Actuaries and the American Council of Life Insurers as issues arose. We were asked by the NAIC to focus on 14 specific objectives to assist in their understanding of the expected impact on reserve levels and the issues that companies will face when adopting this new life insurance valuation methodology for the first time. Selected objectives and our observations are summarized in Table 1. (Right)

WILL RESERVES INCREASE OR DECREASE UNDER VM-20?

The short answer is, "it depends on a number of factors." The results reported for one year of issues of the tested Universal Life with Secondary Guarantees (ULSG) products are shown below in Chart 1 (pg. 12, top) (Chart 5.3 in the report). The Impact Study participants were instructed to calculate the VM-20 reserves under two alternatives (shown as Alt 1 and Alt 2 in Chart 1) for determining future expected asset cash flows on reinvestment assets in the stochastic and deterministic reserve calculations. Based on the preliminary findings of the Impact Study and comments received from industry, LATF adopted a modified version of Alternative 2 in January 2012. The adopted spreads, which are lower than the Alternative 2 spreads presented in the study, would have produced reserves between Alternative 1 and Alternative 2.

As the results in chart 1 show, product design and company assumptions and margins have a very large impact on the level of the reserves under
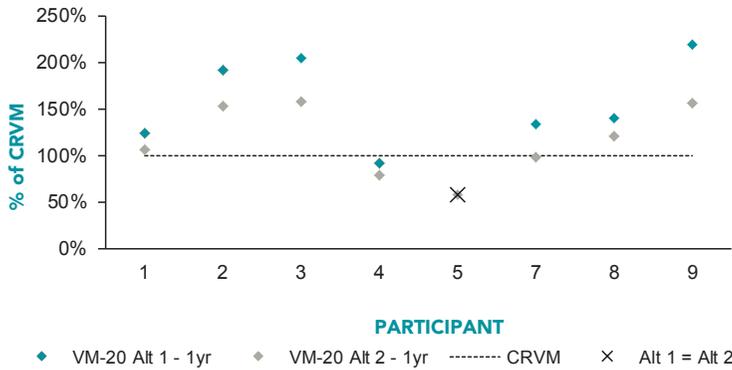
TABLE 1	
Selected NAIC Objectives for the VM-20 Impact Study	**Towers Watson's Observations**
1. The level of VM-20 reserves as compared to the current formula-based reserves	The VM-20 reserve level for the term and Universal Life with Secondary Guarantees (ULSG) varied widely from company-to-company as compared to current formula-based reserves.
2. The effectiveness of the exclusion tests	The exclusion tests were generally effective
3. The effectiveness of the Net Premium Reserve as a floor for the minimum reserve	The study found that the Net Premium Reserve was not effective as a floor for the minimum reserve. The ACLI is working on potential changes.
5. The impact of reinsurance on the level of the principle-based reserves	Inclusion of reinsurance did not generally change the direction of the VM-20 reserve relative to current formula-based reserves.
6. Determination of assumptions and margins	Setting the overall margins was reported by the participants as being difficult. Also, blending company mortality with the industry table added considerable margin in many cases.
8. Number of scenarios modeled	About one-half of the companies (and three-quarters of the companies modeling ULSG) ran 1,000 scenarios (no company ran more). The number of scenarios varied greatly by product and was primarily determined by time and resource constraints.
12. Ease of implementation of VM-20	Implementing VM-20 for the study was a significant exercise. The largest challenges reported were interpreting VM-20, developing margins and modifying the financial modeling software.
13. Areas where further refinements or changes are needed or suggested	The report lists several suggested changes and modifications suggested by the study participants.

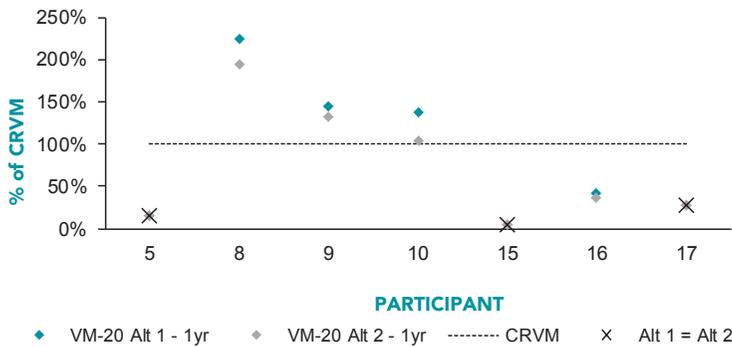**Chart 1 – Universal Life with Secondary Guarantees Results by Participant – One Year of Issues at Duration 1**

Chart 2 – Aggregate Term Insurance Results by Participant – One Year of Issues at Duration 1

VM-20. While this was an expected result, there was quite a range in the reported results with Alt 1 ranging from 58 – 219 percent of CRVM and Alt 2 ranging from 58 – 157 percent of CRVM.

As shown in Chart 2 (above, bottom) (Chart 5.8 in the report), the range of aggregate term insurance results also varied significantly relative to current CRVM reserves for one year of issues

It should be noted that these results are based on a sample of products using certain simplified assumptions and may not be representative of what happens

in actuality. Also, the results shown in Charts 1 and 2 may be impacted if the Net Premium Reserve (NPR) calculation is revised from what was defined in the draft of VM-20 used for the Impact Study. However, it is clear that the level of reserves will likely vary from company-to-company under a VM-20 approach.

All of the other products that were part of the Impact Study (Simplified Whole Life, Traditional Whole Life, Universal Life without Secondary Guarantees and Variable Universal Life) had reserves that were equal to current CRVM except for a small number of exceptions. Most products passed the exclusion tests and only the NPR calculation was required (the NPR was assumed to be equal to the current rules-based CRVM reserve in the Impact Study for these products)

LESSONS LEARNED FROM IMPLEMENTING VM-20

In assisting the companies through the implementation of VM-20, we received quite a bit of feedback that it was a challenge to implement VM-20 for the Impact Study (and this was just for one or a few products not their entire life new business). This was true even for those products that defaulted to the NPR reserve as there was work involved in calculating the exclusion test values required in VM-20. There were a number of questions about how to interpret the VM-20 language, but companies reported that most of the work was in setting assumptions and margins, running the stochastic models and in understanding the calculated results.

Assumptions and Margins

VM-20 requires anticipated experience assumptions to be determined based on expectation of future experience for a risk factor given available, relevant information pertaining to the assumption being estimated. Many companies performing the calculation used available experience studies in setting anticipated experience assumptions. This highlighted the need for up-to-date studies and for understanding how the experience studies were performed to make sure they were used appropriately in setting assumptions as part of the VM-20 calculations. Companies performed sensitivity testing as part of the Impact Study and the results showed that some of the results were quite sensitive to changes in assumptions. For example, the minimum

term insurance reserve under VM-20 increased an average of 33 percent if the mortality assumption was only increased by 10 percent (see Table 12.2 of the report).

The determination of the mortality assumption and margin was very complex and added significant margin to the ULSG and term calculations. LATF and industry are currently working on modifying the way the mortality assumption and margins are set and it is likely some modifications will be made. In any event, it is clear from the study that the setting of assumptions and margins under VM-20 is a very important part of the process and has a large impact on the level of reserves ultimately required (unless the products are excluded from the stochastic and deterministic calculation and are required to only hold the NPR reserve where the assumptions are specified in VM-20).

Model Management and Run-Time
Although most companies used their cash flow testing models as the starting point for the VM-20 work, many modifications and enhancements were necessary to properly calculate VM-20 reserves. The calculation requires companies to hold the maximum of three values: the stochastic reserve, deterministic reserve and the NPR (some calculations can be omitted if the exclusion tests are passed). This will require new valuation processes for some companies as the values may be determined using different systems (e.g., some companies may use valuation systems for the NPR calculation and modeling systems for the stochastic and deterministic reserves). And of course, using models to determine statutory liabilities will require more documentation, enhanced controls, auditability and reproducibility of the calculated values.

Many of the participants reported that they would have run more scenarios if not for run time and resource constraints. We expect companies to enhance their computing capabilities, which may include installing or adding computing power to their computer grids and/or bursting to the cloud to support the demands of performing principle-based calculations.

Understanding the Results
The valuation process will include not just the base valuation projections, but sensitivities and other required analysis to understand how the reserves change each period. As we have seen with the variable annuity principle-based reserve standard, AG 43 or VACARVM, results can be volatile and the reasons why the values change is not always readily apparent. This will be an additional challenge for the valuation actuary, particularly under the pressure of reporting deadlines.

WHAT DOES VM-20 MEAN FOR PRODUCT DEVELOPMENT?

The good news is that VM-20 will apply only to products issued after the effective date of the regulation. This gives companies some time to understand the level of statutory reserves required for their products and to make changes if necessary. The Impact Study demonstrated that product features can have a significant impact on the level of required stochastic reserves. As the level of reserves are very important to overall profitability of life insurance products (in particular ULSG and term products), we expect companies will want to understand how their future products will fare under VM-20 and analyze various product features that impact the level of reserves. Our experience helping companies price new variable annuity products has shown that projecting the stochastic element of principle-based reserves can be especially challenging in a pricing context, requiring a nested stochastic calculation, or use of other modeling techniques.

CONCLUSION

Although VM-20 is not finalized and there is still the legislative process to complete prior to adoption, VM-20 has significant momentum and appears to be much closer to becoming a reality. The VM-20 Impact Study revealed that there is a significant amount of work for companies to do in order to get ready for life principle-based reserves. Participants in the study have a head start on the work ahead, but realize it will be quite a challenge to be ready to value all of their life insurance new business as well as potentially repricing these products. Planning for the new principle-based reserve standard today will give companies time to get everything in place and be prepared for VM-20 when it becomes effective. ■

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