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PBA Corner

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MORTALITY AND PRINCIPLE-BASED RESERVING SURVEY

In October 2016, the Society of Actuaries published a report highlighting the results of a survey on mortality and other implications of principle-based reserves (PBR). This report was the second of a survey initially conducted and published in June 2015. The survey was the work product of the following two committees, which are referred to in this article as the joint committee:

- The Society of Actuaries' Committee on Life Insurance Mortality and Underwriting Surveys; and
- The National Association of Insurance Commissioners (NAIC) Principle-Based Reserving Implementation (EX) Task Force

The survey was conducted in July of 2016, with results published in the October 2016 report. This report provides an overview of the industry's plans for mortality table and PBR implementation. This article highlights some of the key observations and findings of the survey. The reader is directed to the survey report[1] for additional details of the survey outcomes.

CHARACTERISTICS OF THE RESPONDING COMPANIES AND IMPLEMENTATION PLANS

The joint committee initially preformed an outreach to companies known to be currently selling either term or universal life with secondary guarantee (ULSG) products. The initial outreach resulted in 72 companies identifying themselves as potential survey candidates. Of these 72 companies, 15 confirmed they would be valuing one or more policies issued during calendar year 2017 under VM-20. The VM-20 specific questions of the survey were then completed by these 15 companies.

The most frequent reason given for *not* implementing VM-20 valuations for 2017 issues was the company's use of the three-year transition period. Tied for second place: the company-wide exemption and the uncertainty surrounding the impact to tax basis reserves.

Within the 15 company group we fast-forward to year-end 2017. Companies were asked what product types they will be valuing under VM-20. The answers are summarized in Table 1.

Table 1

	Number of Companies
Only Term Insurance	10
Only ULSG	1
Only Universal Life	1
ULSG & Universal Life	2
Both Term & ULSG	1
Total	**15**

As a point of reference, companies were asked to estimate the average in force policy amount for policies within these product types. For companies intending to value policies under PBR beginning in 2017, there is an even distribution of estimated policy sizes ranging from under $200,000 to more than $500,000.

2017 CSO IMPLEMENTATION PLANS

For this aspect of the survey, responses from the larger set of 72 companies is provided. Companies were asked, "given the availability of the 2017 CSO for issues beginning in 2017, what are their implementation plans for valuation and nonforfeiture?" The responses are summarized in Table 2.

Table 2

	Policies Issued in 2017 to Use the 2017 CSO Mortality Table		
	For Statutory Valuation	For Minimum Cash values	Develop and file updated forms and policy values with the IIPRC in 2017
Yes	32 (44%)	19 (26%)	24 (33%)
No	27 (38%)	39 (54%)	34 (47%)
Don't Know	13 (18%)	14 (19%)	14 (19%)
Total	72 (100%)	72 (100%)	72 (100%)

Companies answering "No" or "Don't Know" to these questions will eventually need to move newly issued policies to the 2017 CSO valuation basis for issues of 2020 and later.

USE OF CAPTIVE REINSURANCE AGREEMENTS

Continued use of captive reinsurance arrangements was the subject of one survey question. Fifteen companies indicated

plans to cede life business of any type on or after Jan. 1, 2017, under an existing or a new captive. Most of this business will be term insurance where the policies are valued under formulaic or Model Regulation 830 (XXX) statutory methods, and only a small portion valued under VM-20. For ULSG, there was a similar outcome, but smaller numbers of respondents: three companies in total with 2017 captive arrangements with only one of these valuing according to VM-20.

COMPANY EXPERIENCE STUDIES AND USE OF COMPANY MORTALITY EXPERIENCE

This portion of the survey was completed by the 15 companies indicating their implementation of VM-20 for at least some 2017 issues.

Not surprisingly, responses were nearly unanimous with respect to regularly updated experience studies. All 15 companies reported having mortality, lapse without cash value, and company expense studies periodically updated. The category of "surrender with cash value" was available for 12 of the 15 companies. It is possible that for the three companies falling short on this type of experience study, the product being moved to VM-20 valuations is term insurance and would have no need for a surrender with cash value assumption.

With respect to mortality experience in particular, the survey queried respondents on three additional topics:

i. Reflecting company experience in modeled reserve calculations per VM-20;
ii. Credibility of mortality experience; and
iii. Use of the Relative Risk Tool (RR Tool).

Within the 15 companies that will be valuing products under VM-20 beginning in calendar year 2017, all companies expect to use credible company mortality experience in developing the prudent estimate mortality assumption. For these companies, the mortality experience analysis is performed no less frequently than every three years, and annually for most respondents. Where an industry experience table is needed, the 2015 VBT will be used. This table selection is consistent with the requirements of VM-20 for policies valued as of 2017.

Of the two credibility methods, Bühlmann and Limited Fluctuation, neither was heavily favored over the other for companies expecting to value products under VM-20 in 2017. For term, the split was 11 companies using Limited Fluctuation versus eight companies using Bühlmann. For ULSG, the split was one company using Limited Fluctuation and two companies using Bühlmann.

Surprisingly, there was a very broad range in the number of mortality segments being considered. This is summarized in Table 3.

Table 3

Product Category	Number of Mortality Segments					Number Responding
	1	2	4	10	12	
Term	1	0	3	1	3	8
ULSG	0	1	0	1	0	2

The process of mapping a company's risk classes to industry mortality tables can be facilitated by the Underwriting Criteria Score Calculator, now referred to as the RR Tool. The survey asked how companies plan to use the RR Tool. Responses came from 13 of the 15 companies as follows:

- three will exclusively use the RR Tool;
- one will use an alternative *partly* based on the RR Tool; and
- nine will use an alternative method *not* based on the RR Tool.

The RR Tool has been improved and updated recently, but it may be that underwriting advances are simply outpacing the ability of such a tool to keep up.

USE OF EXCLUSION TESTS

This portion of the survey was complicated by the timing of the requirement for calculating the Deterministic Reserve for all policies in the term product group. The revision was inserted to VM-20 shortly before the survey was distributed to companies. The survey asked for company expectations with respect to exclusion testing for the products being valued under VM-20 for 2017 issues—both deterministic exclusion test (DET) and stochastic exclusion test (SET). Of 24 responses for term insurance, 17 of these would expect the product group to pass the DET if such test were allowed for that product type. Only two responded that the product group would pass the SET. And no company expected to pass both tests. This seems unbalanced since the first gatekeeper is the SET. The report later asks for the type of SET expected to be utilized. For term insurance, the demonstration test is most popular with the ratio and certification test options being next.

For ULSG, of the four companies valuing 2017 issues under VM-20, none expect to pass the SET, and ULSG is not a candidate for the DET, unless the secondary guarantee provision meets the definition of non-material secondary guarantee. Only one company responded with the type of test they expect to use: the demonstration test. It is likely that a company not expecting to pass the SET would not go to the trouble of applying any of the tests, but rather move to a comprehensive calculation of principle-based reserves for the ULSG product group.

REINSURANCE; SIMPLIFICATIONS; SCENARIOS; AGGREGATION

Reinsurance will be a part of the VM-20 valuation for these companies. Most companies moving to VM-20 for 2017 issues have (or plan to have) at least one reinsurance agreement in place and some have several agreements. This is true for both term and ULSG.

About half of the companies valuing products under VM-20 for 2017 issues will use simplifications, approximations and modeling efficiency techniques in their valuations.

Responses to the question regarding the number of scenarios a company expects to use for the stochastic reserves for each product type were provided by seven of the 15 companies with plans to value under VM-20 in 2017. For term insurance of all types, the responses were either one scenario or 1000 scenarios. Since there was no follow-up taken on survey responses, it is difficult to know how a single scenario set will be used for determining stochastic reserves.

For ULSG, three of the four companies responded to this question; one expects to use a 200 scenario set, and the other two companies expect to use 1000 scenarios for the stochastic reserve. Clearly, scenario reduction techniques will play a part in VM-20 valuations.

At the outset of the survey in 2016, aggregation across product groups was still an option, but weeks before the survey was distributed, VM-20 was revised to prohibit aggregation of term and ULSG product groups. Responses to the aggregation question are influenced by this development as well as the fact that most companies plan to value only one product type under VM-20 initially. Given the timelines of companies with respect to moving products to VM-20, the three-year transition period, and the prohibition in VM-20 on aggregating across the three product groups of term, ULSG, and all other, the impacts of aggregation will not be observable for many years from the Valuation Manual operative date. ■

KEY OBSERVATIONS

Of 72 companies issuing product types falling into the term and ULSG product groups, 15 companies (21 percent) anticipate valuing the 2017 issues of these policies under VM-20.

Early implementers of VM-20 valuations are doing so primarily for term insurance with a broad range of face amounts.

For policies issued in 2017, far more companies are adopting the 2017 CSO valuation mortality table as a result of its availability through the Valuation Manual than are implementing VM-20 valuations. The use of the 2017 CSO for nonforfeiture value determination will lag.

At least for 2017, captive reinsurance arrangements will continue to be a part of some company's strategic plans.

Companies planning to implement VM-20 for 2017 issues appear to be adequately prepared with experience study data to facilitate assumption-setting.

Companies planning to implement VM-20 for 2017 issues will be using credible company mortality experience from studies updated on a regular basis. Where industry tables are required, most of these companies intend to use a method other than the RR Tool for mapping underwriting classes to industry tables.

Of companies planning to value 2017 issues under VM-20, term product groups would be expected to pass the DET, if allowed. ULSG product groups would not be expected to pass either the SET or DET. The demonstration test is favored by these companies over the ratio test or certification test options.

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ENDNOTES

1 *https://www.soa.org/Research/Experience-Study/Bus-Practice-Surveys/2016-mortality-implications-pbr-survey-part2.aspx*