

ISSUE 40 SEPTEMBER 2013

smalltalk

1 **Update on Mortality Tables and Application**
By Mary J. Bahna-Nolan

3 **Chairperson's Corner Another Good Year for SmallCo**
By Mark C. Rowley

10 **Actuarial System Implications of VM-20**
By Robert Hrischenko

14 **Current Trends In Asset Adequacy Testing**
By Leon Langlitz

17 **My Expectations of Appointed Actuaries for Smaller Life Insurance Companies**
By Randall A. Stevenson

20 **Recent Developments on Principle-Based Reserves (PBR)**
By Norman E. Hill

23 **Regulatory Issues for Small Insurance Companies A Review of the June 4, 2013 Webinar**
By Grant Hemphill and Jerry Enoch

25 **SmallCo Sessions at ValAct**
By Roger Brown

26 **Upcoming Meeting Sessions at the SOA Annual Meeting**
By Mark C. Rowley

Update on Mortality Tables and Application

By Mary J. Bahna-Nolan

New Mortality Tables—A Change from Historical Approaches

Over the past year, the Joint American Academy of Actuaries and Society of Actuaries Project Oversight Group on Mortality (the Joint Committee) has been busy with developing mortality tables for life and annuity products. In particular, the Joint Committee has developed the 2012 Individual Annuity Reserve (IAR) Table and is currently developing the 2014 Valuation Basic Table (VBT), 2014 Commissioners' Standard Ordinary (CSO) Table and new tables for guaranteed issue (GI), simplified issue (SI) and preneed insurance products. The 2012 IAR Table structure is a departure from current tables in that it is dynamic and requires the use of projection factors. The 2014 VBT and CSO are being developed with the consideration for use within principle-based reserves and specifically VM-20. The GI/SI/Prenneed tables are in their earlier stages of development but will be used for valuation of these types of underwritten products. At least for GI and SI, these will be the first valuation tables specifically for this level of underwriting. The various tables will become effective in January 2014 for the annuity table, with VM-20 and PBR (likely 2016 or later) for

the VBT/CSO, and a future, undetermined date for the GI/SI/Prenneed. For the 2012 IAR Table in particular, the impact to reserves for annuities (both those in payout status and for deferred annuities) can be significant, and implementation of the new tables can have system implications. Companies, if they haven't already, should be paying close attention to the developments and, at least for the case of the annuity table, closely reviewing their systems and annuity pricing to make sure the new tables are incorporated.

Application and Clarification of 2012 IAR Table

The current individual annuity mortality tables are based on underlying mortality experience from the 1980s and 1990s and, for the Annuity 2000 (a2000) Table, the mortality rates were projected with mortality improvement to the year 2000 but not beyond. Since the development of the a2000 Table, the industry has experienced significant mortality improvement, especially at the older ages. This had caused concern amongst the regulators that annuities in payout status are under-reserved. The 2012 IAR Table and accompanying projection Scale G2 were developed to take into consideration the more recent industry

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Chairperson's Corner Another Good Year for SmallCo

By Mark C. Rowley

It has been my pleasure to serve as the chair of the Smaller Insurance Company Section (SmallCo) over the last year. We have had another year where information relevant for small company actuaries has been disseminated effectively through our newsletter, webinars, meeting sessions, and in the past year we have used our website more than ever before. This means we have been focused on our mission!

The most significant item on our website is what we call the PBR Corner; I strongly encourage you to check it out. Principle-based reserves (PBR) is the topic that we have devoted the most energy to this year. In addition to the website, there have been webinars, meeting sessions and research focused on PBR. We are represented on the project oversight group (POG) for the research project "PBR Implementation Guide." We are watching with all of you to see what happens with PBR, and we will be there for you to keep you up to date. Several more articles are planned for the PBR Corner this year.

In addition to the research project mentioned above, we are also on the POG for the project "Dynamic Policyholder Behavior." It is likely that we will be sponsoring more research soon as we find worthwhile projects. As I mentioned in the last issue of this newsletter, being able to participate in research at all is a significant step forward for SmallCo.

The other topic I should mention is our efforts to become international. This is an important effort for most sections as the Society of Actuaries becomes more and more international. We sponsored a successful breakfast at the Life and

Annuity Symposium in Toronto, where we received helpful feedback as to how to better serve our Canadian members. One conclusion we came to is that it is critical that we find a key liaison among our Canadian members, and we are close to finding that person. We also are in search of another country that could be a "sister" country. We are working with the International Section to find a country that has a lot of small company actuaries, and have some leads that we are researching further. This is definitely uncharted territory (no pun intended) and I look forward to seeing what develops.

This year has been a significant opportunity for me to practice my management and leadership skills, and of course I often learned things the hard way. It has definitely been a good learning experience. As always, my company and I have benefited from the networking, and I have enjoyed the friendships I have with those involved with SmallCo.

I look forward to continuing to be involved with SmallCo when my year as chair is done. ●



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experience as well as future improvement at each valuation date. This makes the table more dynamic with the intention to keep the table from becoming dated too quickly. As such, the 2012 IAR Table is a generational mortality table. This means that the mortality table contains a set of mortality rates that decrease for a given age from one projection year to the next.

The National Association of Insurance Commissioners (NAIC) adopted the NAIC Model Regulation for Recognizing New Annuity Mortality Tables (the Model Reg) at its December 2012 meeting. The model regulation recognizes the 2012 IAR Table for reserving purposes with a proposed effective date for issues on or after January 2014. The Model Reg is now in the process of going through the state legislative process. There is potential that the new table could go into effect for tax reserve purposes prior to it becoming effective in any given state. This could add further complexity to the implementation of the new table.

The new table applies to annuities in payout status, including deferred and certain and life annuities for life policies. In most states, the new table applies to the following reserving applications: AG IX-A, AG IX-B, AG IX-C, AG33, AG35 and AG43. In addition, the new table likely will apply to settlement options in life insurance contracts so companies may wish to review the guaranteed values within their life contracts in addition to their pricing and reserving for their annuities. While implementation of new valuation tables is not new, the generational nature of the 2012 IAR Table may create implementation challenges for companies due to tables with rates which vary from one year to the next. In addition, the new tables create an increase in reserves at most ages. Unlike when a new life mortality table goes into effect, there is no phase-in period for the mandatory effective date of the tables. That means that all scoped-in contracts issued in or after January 2014 are impacted.

The current model regulation defines several tables—the 2012 Annuity Mortality Period Table and the 2012 IAR Table as well as projection Scale G2. The model regulation defines the 2012 IAR Table as a table of mortality rates determined by applying a combination of a Period table and Projection Scale where the Period table is based on the Individual Annuity Mortality Basic Table, the underlying experience table with improvement factors to 2012 (i.e., the 2012 IAM Basic Table) and a margin. The margin is similar to that for the a2000 tables and is 10 percent for all attained ages up to 100, grading down 1 percent per year at ages beyond 100 until ultimate mortality cap of 0.400 is invoked.

The generational mortality table rate for a person age x in year (2012 + n) is determined as follows:

$$q_x^{2012+n} = q_x^{2012} * (1 - G2_x)^n$$

where,

- **G_{2x}** is the annual rate of mortality improvement for age x. For each age, the mortality improvement rate is projected for all years in the projection period, with no limit to the number of years the projection applies. The improvement rate varies by gender and attained age. The improvement factors start at 1.0 percent for ages 50 and under, grade up to 1.5 percent and 1.3 percent for ages 60 through 80 for males and females, respectively, then grade to 0 percent at ages 104 and above;
- **q_x** is the mortality rate from 2012 Individual Annuity Mortality Period Table; and
- **n** is the projection year beyond 2012.

Age	Male	Female
0-50	1.0%	1.0%
51	1.1%	1.0%
52	1.1%	1.1%
53	1.2%	1.1%
54	1.2%	1.1%
55	1.3%	1.2%
56	1.3%	1.2%
57	1.4%	1.2%
58	1.4%	1.2%
59	1.5%	1.3%
60-80	1.5%	1.3%
81	1.4%	1.2%
82	1.3%	1.2%
83	1.3%	1.1%
84	1.2%	1.0%
85	1.1%	1.0%
86	1.0%	0.9%
87	0.9%	0.8%
88	0.9%	0.7%
89	0.8%	0.7%
90	0.7%	0.6%
91	0.7%	0.6%
92	0.6%	0.5%
93	0.5%	0.5%
94	0.5%	0.4%
95	0.4%	0.4%
96	0.4%	0.4%
97	0.3%	0.3%
98	0.3%	0.3%
99	0.2%	0.2%
100	0.2%	0.2%
101	0.2%	0.2%
102	0.1%	0.1%
103	0.1%	0.1%
104+	0.0%	0.0%

For example, if the table were in effect for valuation year 2013, the period table would start with the 2013 table (i.e., the 2012 table projected forward one year). For the valuation, the second projection year (2014) would use the 2013 table improved one year; the third projection year (2015) would use the 2013 table improved two years and so on. The model regulation also specifies rounding rules which state that the ending mortality rates are rounded to three

decimal places per 1,000. It clarified that it would be incorrect to use the already rounded q_x 2012+n to calculate q_x 2012+(n+1).

The following illustrates the development of the 2012 IAR Mortality Table.

Age	2012	2013	2014	2015	2016	2017	2018	...	2070
65	q_{65}^{2012}	q_{65}^{2013}	q_{65}^{2014}	q_{65}^{2015}	q_{65}^{2016}	q_{65}^{2017}	q_{65}^{2018}	...	q_{65}^{2070}
66	q_{66}^{2012}	q_{66}^{2013}	q_{66}^{2014}	q_{66}^{2015}	q_{66}^{2016}	q_{66}^{2017}	q_{66}^{2018}	...	q_{66}^{2070}
67	q_{67}^{2012}	q_{67}^{2013}	q_{67}^{2014}	q_{67}^{2015}	q_{67}^{2016}	q_{67}^{2017}	q_{67}^{2018}	...	q_{67}^{2070}
68	q_{68}^{2012}	q_{68}^{2013}	q_{68}^{2014}	q_{68}^{2015}	q_{68}^{2016}	q_{68}^{2017}	q_{68}^{2018}	...	q_{68}^{2070}
69	q_{69}^{2012}	q_{69}^{2013}	q_{69}^{2014}	q_{69}^{2015}	q_{69}^{2016}	q_{69}^{2017}	q_{69}^{2018}	...	q_{69}^{2070}
...
120	q_{120}^{2012}	q_{120}^{2013}	q_{120}^{2014}	q_{120}^{2015}	q_{120}^{2016}	q_{120}^{2017}	q_{120}^{2018}	...	q_{120}^{2070}

An example of the mortality table for years 2013 through 2018 based on the 2012 IAM Period Table for males, using Scale G2 is shown below for attained ages 65 through 69.

Attained Age	Values of $1000q_x$							
	$1000q_x^{2012}$	$G2_x$	2013	2014	2015	2016	2017	2018
65	8.106	0.015	7.984	7.865	7.747	7.630	7.516	7.403
66	8.548	0.015	8.420	8.293	8.169	8.047	7.926	7.807
67	9.076	0.015	8.940	8.806	8.674	8.544	8.415	8.289
68	9.708	0.015	9.562	9.419	9.278	9.138	9.001	8.866
69	10.463	0.015	10.306	10.151	9.999	9.849	9.701	9.556
	2013 valuation year IAR Table							
	2014 valuation year IAR Table							

For example, for valuation year 2014, the projected mortality rate for a male attained age 65 at the valuation date (based on age nearest birthday), is determined as follows:

$$1000 * q_{65}^{2012} = 8.106; G2_{65} = 1.5\%.$$

$$1000 * q_{65}^{2014} = 8.106 * (1 - 0.015)^2 = 7.8646439 \text{ which is rounded to } 7.865.$$

$$1000 * q_{66}^{2015} = 8.548 * (1 - 0.015)^3 = 8.1690811, \text{ which is rounded to } 8.169$$

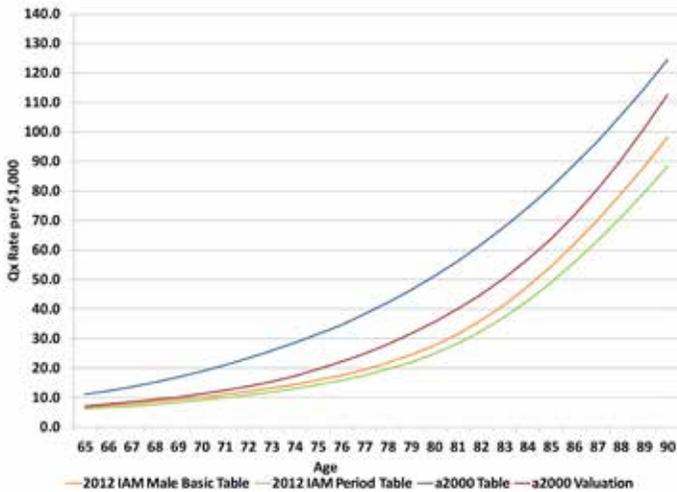
For the above, the rounding rules state it would not be correct to take $8.293 * (1 - 0.015) = 8.168$.

For joint life contracts or unisex policies, the rates are to be determined for each life or gender independently, then blended or frasierized. The rounding would then apply at the end after the blending has been performed.

An example of the mortality rates versus the a2000 Table is shown on page 6 for male and female risks, ages 65 through 90.

Continued on page 6

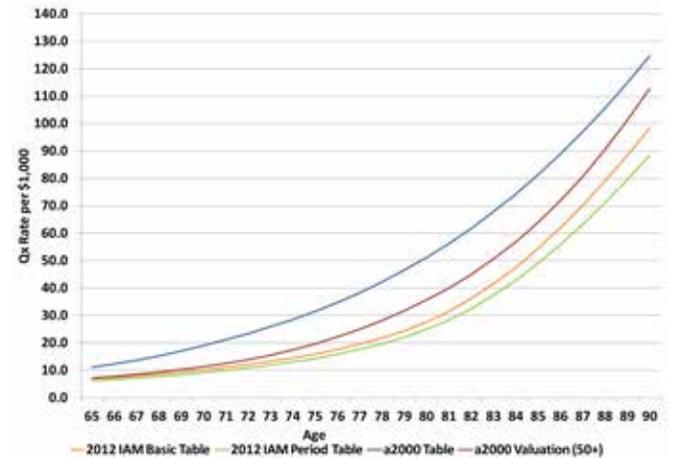
**Mortality Rate per 1,000 Comparison
2012 Table to a2000 Table
Male Risks, Ages 65-90**



The new tables result in an increase in the statutory reserves for most attained ages. For some ages, the increase is significant from current reserve levels. For example, for a male age 75, the reserve per \$1,000 of annual annuity payment increases between 8 and 11 percent over the first 10 valuation years since contract issuance.

Reserve per \$1000 of Annuity Payout						
	At Issue @ 5% Interest			10 Years after Issue @ 5% Interest		
	A2000	2012 IAR	% Increase	A2000	2012 IAR	% Increase
Life Annuity						
Male, Age 65	11.60	12.76	9.9%	8.50	9.79	15.1%
Male, Age 75	8.50	9.45	11.2%	5.50	5.95	8.1%
Female, Age 65	12.62	13.32	5.5%	9.41	10.43	10.8%
Female, Age 75	9.41	10.16	8.0%	5.91	6.57	11.1%

**Mortality Rate per 1,000 Comparison
2012 Table to a2000 Table
Female Risks, Ages 65-90**



One area noted of the underlying experience was significant variation in the mortality experience by type of payout selected and level of annual annuity benefit. The underlying experience exhibited significantly lower mortality (and thus anti-selection) for life-only annuities (i.e., without a certain period) and for higher annual annuity benefits. The underlying experience, however, was more heavily weighted toward lower contract amounts and annuities with some form of deferral or certain period. For various reasons, the Joint Committee recommended and the NAIC agreed to not vary the 2012 IAR Table by payout option or amount. While not a requirement of the model regulation, companies may want to consider the additional improvement in mortality for these types and levels of payout in their pricing, asset adequacy testing and business planning.

As described above, the 2012 IAR Table is a departure from how companies have been able to implement new annuity valuation tables in the past. How to incorporate the tables on their systems, in their settlement option pricing and contractual guarantees, annuity pricing and valuation systems are all areas companies will need to consider. The Joint Committee is in the process of developing a Q&A document for common questions it has received regarding the implementation of the new table. This document is expected to be completed in early fall. In addition, the Joint Committee will make available a table and reserve calculator for companies to use to verify the application of the new tables and model regulation.

Development Considerations for 2014 VBT and CSO

The VBT and CSO tables are being developed for use in a principle-based reserve environment and VM-20. The 2014 VBT tables are based on a significantly greater amount of underlying business and exposures from either the 2001 or 2008 VBT tables. In addition, there is materially more experience for preferred risks, older issue ages and female risks. The underlying experience also shows significant variation by issue age, face amount and smoking status, as well as significant improvement over the 2008 VBT. As shown in the table, the underlying mortality experience used to develop the table (actual to expected or A/E where the expected basis is the 2008 VBT RR 100 Table) decreased by over 6 percent while the exposure increased by over \$20 million in face amount and by nearly 2 million death claims.

Study Period	Male	Female	Aggregate	Exposure (Trillion)	# Death Claims
2002-2004	101.1%	100.5%	100.9%	\$ 7.4	699,890
2002-2007	96.2%	97.0%	96.4%	21.1	1,800,912
2002-2009 - Preliminary	94.2%	94.7%	94.3%	30.7	2,549,490

In addition to gender, the underlying experience has also exhibited variation by many factors including face amount, smoking status and issue age, with the oldest issue ages showing the greatest improvement.

Face Amount Band (\$)	A/E Ratio by Amount
50,000 – 99,999	105.6%
250,000 – 499,999	88.6%
1,000,000 – 2,499,999	81.9%
5,000,000 – 9,999,999	74.1%
Aggregate	92.7%

- The underlying experience shows significant variation by issue amount. For face amounts of \$250,000 and above, the A/E is approximately 84 percent.
- Currently, the new table is not expected to vary by amount; however, the need to have a limited underwriting table is still under consideration.

Issue Age	A/E Ratio by Amount
40 – 49	100.1%
60 – 69	95.1%
80-89**	61.6%

- The underlying experience shows fairly good fit to the 2008 VBT at the mid issue ages but starts to deviate from the 2008 VBT at the older ages. This is a combination of having more experience at the older ages in the underlying study and the structure of the 2008 VBT grading pattern into population mortality.
- Less variation has been observed by attained age.
- This experience is being reflected in the 2014 VBT.
- There has been significant focus by the 2014 VBT development team on the older issue ages; both select and ultimate.

Smoking Status	A/E Ratio by Amount
Nonsmoker	92.3%
Smoker	97.5%
Unknown Status	99.8%
Aggregate	94.3%

- The A/E for the underlying experience is similar for smoker and nonsmoker classes.
- Like the 2008 VBT, much of the ultimate experience is still issued under an unknown status. Therefore, the team has worked on developing smoker/nonsmoker splits.

Continued on page 8

A key difference between the 2008 VBT and the 2014 VBT and CSO is that the new tables will be prospective tables and really take into consideration the expected experience for issues 2014 *and later* informed from underlying historical experience versus purely a historical or retrospective table. The table structure will be similar to the 2008 VBT, with both Primary and RR tables. The RR tables are expected to be same in number as with the 2008 VBT but will likely have different relativity amongst the classes. The need for a limited underwriting table is still under examination and is somewhat dependent on the final results and table structures from the guaranteed issue/simplified issue/preneed tables, which are also in development. For the VBT, there will be an omega rate per 1,000 (0.5000 at attained age 112) but no omega age; the CSO will have omega age of 121.

The proposed select factor and period vary by both gender and issue age. The select periods were determined based on analysis of the underlying data. The VBT team attempted to normalize the socioeconomic impact over time as well as to consider changes in smoker prevalence. The team looked to “events” or changes in underwriting which have impacted the select period in the underlying 2002 to 2009 data such as smoker prevalence and changes in underwriting. The proposed select period remains at 25 for males but is 20 for females. The select period grades down by age to two years for both males and females by age 92. The underlying select

period is independent of any additional preferred wear-off that will apply in the RR tables. A sample of the proposed select periods is shown below.

Issue Age	Male Risks	Female Risks
50	25	20
60	21	20
70	17	15
80	11	10
90	4	4
95	2	2

The VBT team plans to release the aggregate select and ultimate tables for comment/review in early fall 2013 while it continues to work on the RR tables and the 2014 CSO. Within the context of PBR and VM-20, the CSO tables will be the prescribed table with no adjustment for own company experience used within the net premium reserve, as well as for non-forfeiture and tax. Where the 2014 VBT will have a similar number of RR tables as the 2008 VBT, the 2014 CSO Table will have fewer classes, more similar to the preferred structure tables of the 2001 CSO in place today.

The following table compares the use of the new life tables (VBT and CSO) within the context of their application to statutory reserves compared to the current 2001 CSO Table.

Criteria/Table Structure	2001 CSO	2014 CSO	Prudent Estimate Mortality
Uses	•Net Premium Reserves •Tax Reserves •Non forfeiture	•Net Premium Reserves •Tax Reserves •Non forfeiture	•VM20 Deterministic •VM20 Stochastic Reserves
Underlying mortality table and experience	2001 VBT (1990-1995 data)	2014 VBT (2002-2009 data)	Blend of (a) and (b) (a) Own Company (max 10 yrs) (b) 2014 VBT (2002-2009 data)
Number of tables	•Gender distinct/Composite •Smoker distinct/Composite •3 NT/NS •2 TB/SM	Expect to be similar to 2001 CSO	Subject to # of company mortality segments
Risk class tables aggregate back to composite	Yes	Yes (proposed)	No
Own company experience	None	None	Yes, subject to sufficient data period and credibility
Prescribed table	Yes	Yes	No, subject to VM-20 requirements
Considers mortality improvement	No	No	Yes, to valuation date – prescribed and own company
Smoothness versus fit	Smoothness	Smoothness	Fit
Omega age	121	121	None
Margins	Embedded within table	Margin levels as well as approach to margins being revisited with development of new tables	

Work continues by the various committees on the VBT and CSO tables and is expected to continue throughout the remainder of 2013. Companies interested should be able to get an early look at the aggregate VBT tables (select and ultimate, male/female, smoker/nonsmoker) in early fall 2013 when the tables are released for industry and regulator feedback/comment. For the CSO, considerable consideration on the margin development is underway. The CSO team is seeking additional volunteers and would welcome those interested in helping to shape the analysis and direction.

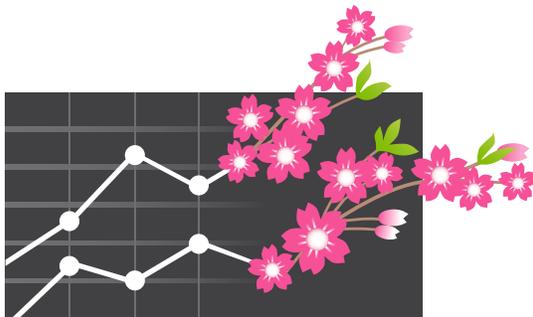
The Joint Committee is also working on new guaranteed issue, simplified issue and preneed tables to be used in valuation. With principle-based reserves approaching, companies may wish to take a greater interest in the development of these tables and resulting impacts. In the case of the 2012 IAR Table, companies should be planning for implemen-

tation or in the process of executing their implementation plan as the new tables, at least for some states, become effective for new contracts entered into starting January of next year, less than six months away.

Note: All figures and graphs are presented from work produced by the Society of Actuaries & American Academy of Actuaries Joint Project Oversight Group and American Academy of Actuaries Life Experience Sub-Committee. ●



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Actuarial System Implications of VM-20

By Robert Hrischenko

Actuarial software used by insurance companies in the United States has typically been application specific. This has commonly resulted in totally different software being used for valuation vs. projections and other ALM-based applications.

Valuation software has addressed static, formulaic-based valuation requirements, often relying on factor-based approaches, and is locked down or strictly limits the user's ability to modify the calculation engine for reason of model integrity and control.

Modeling software capable of integrated asset-liability projections has evolved independently from valuation software and is used more for research or less formal reporting purposes. Accordingly, it frequently has relied on business data compression (model points) to perform required analysis on a timely basis. Further, most modeling software systems are "open" to the extent that any user can modify the underlying code, generally to support perceived flexibility requirements but at the potential expense of increased model risk and reduced control.

Model-based valuation (MBV) approaches in the United States such as VACARVM and C3 Phase II already exist. Emerging approaches to MBV such as VM-20 and International Financial Reporting Standards (IFRS) will require a significant effort to develop and operate new valuation processes and supporting activities, putting strain on actuarial resources and new demands on software for all actuarial functions.

Under these MBV techniques a fragmented approach to software such as described above will present significant challenges for the actuary in the future. For many smaller

insurance companies, with limited software budgets and actuarial staff, the software implications of VM-20 may be hardest felt.

Overview of the VM-20 Minimum Reserve

The National Association of Insurance Commissioners (NAIC) has adopted the new principle-based approach (PBA) for reserves of life insurance products in section VM-20 of the new Valuation Manual. While the NAIC will continue to discuss and improve elements of VM-20 and the other sections of the Valuation Manual, the general structure and approach to the new valuation method described in the latest version appears well established. VM-20 provides for minimum reserves to be based on three distinct reserve calculations, plus two exclusion tests. The three reserve calculations are as follows:

For many smaller insurance companies, with limited software budgets and actuarial staff, the software implications of VM-20 may be hardest felt.

- Net premium reserve—A formulaic, seriatim net premium calculation using prescribed assumptions subject to a cash surrender value (CSV) floor, thus defaulting to current CRVM for many products.
- Deterministic reserve—A gross premium valuation over a prescribed deterministic interest rate scenario, discounted at future earned rates consistent with that scenario.
- Stochastic reserve—A full ALM model calculation with reserve set equal to the CTE(70) of greatest present value of accumulated deficiency (GPVAD) over a set of stochastically generated economic scenarios.

Smaller insurance companies selling more traditional products may be able to default to the net premium reserve floor

and rely on legacy valuation systems to perform this calculation but only after passing the exclusion tests. The deterministic and stochastic reserve calculations, if required, will require the use of an asset/liability cash flow model based on policies in force and allocated assets, projected with assumptions reflecting anticipated experience with prudent margins, subject to prescribed limitations and rules.

Implications for Financial Reporting

Multiple reserve calculations of varying complexity will be required to address all requirements under VM-20.

- Existing formulaic reserve calculations must be continued for existing business at the operative date of VM-20. Will the same valuation system be used to calculate the new net premium reserve for policies issued after the operative date of VM-20?
- The stochastic exclusion ratio test requires the use of a cash flow model to develop the components of the ratio.
- Newly issued business subject to VM-20 may require three separate calculations to determine minimum reserves. If net premium reserves are calculated in legacy valuation systems and the deterministic and stochastic reserves are performed using separate modeling software, then convenient and reliable processes will be needed to consolidate results from multiple systems.
- Production financial reporting systems will now require cash-flow-based projection models in addition to more traditional formulaic reserve calculations.
 - Tools to support stochastic scenario generation, cash flow projection and analysis will be needed to produce and analyze regularly reported results under production reporting timelines.
 - Assumptions will need to be determined and justified based on the appropriate combination of industry and company experience including an additional margin of conservatism to provide for the risk of misestimation.
 - The disclosure of the impact of margins will require an annual investigation and comparative analysis of alternatives, including sensitivity analysis on each assumption.
- Cash flow models will need to run more efficiently with increased flexibility, transparency and controls.
- Powerful analytical tools will need to be developed to

allow volumes of stochastic projection data to be easily retained and analyzed to support the development and explanation of financial reporting results.

Implications for Pricing and Internal Planning

The new valuation framework will be inherently more volatile, and future impacts on total reserves, capital and reported profits will be more difficult to predict or explain to management. Calculating reserves at the valuation date will be challenging enough for many companies, but projection of reserves for pricing and planning will place new demands on models.

- Reserve requirements for new business may be based on three distinct components, including stochastic ALM projections.
- Pricing and corporate planning must be able to project total aggregate reserves based on all three reserve components to understand future profitability and capital requirements.
- For products for which the stochastic reserve is required, realistic projection of reserves may require tools to manage data and analyze results from thousands of nested stochastic projections branching off of the primary projection path.
- Existing models will have to be substantially enhanced to allow nested stochastic simulation, optimize processing methods, and provide model efficiency solutions.
- Ideally, to assure consistency and reduce costs of model maintenance and reconciliation, the same models used for pricing and business planning will be used for valuation, subject to the use of appropriate assumptions for each application.

Implications for Model Management and Control

In December 2012, Deloitte Consulting LLP published a research paper, “Actuarial Modeling Controls: A Survey of Actuarial Modeling Controls in the Context of a Model-Based Valuation Framework” sponsored by the Society of Actuaries (SOA) Financial Reporting Section, Committee on Life Insurance Research and Committee on Finance Research. The paper is available on the SOA website at <http://www.soa.org/Files/Research/Projects/research-2012-act-mod-contr.pdf>.

The research included a survey of the current state of actuarial modeling controls at insurance companies to establish a benchmark consensus of leading industry practice. The

Continued on **page 12**

controls expected to be in place upon adoption of MBV approaches were measured relative to this benchmark. The paper identified the following key steps to move toward industry best practices for MBV solutions:

1. Establish a formal and documented governance policy for actuarial modeling processes.
2. Regularly review models and the modeling process against the governance policy.
3. Develop a corporate culture that values and aligns with the governance policy.
4. Consolidate models to a single platform or a single modeling system where feasible. Where this is not feasible, implement additional controls to ensure model integrity across all modeling platforms.
5. Establish a model steward with clearly defined responsibilities for ensuring adherence to the model governance standards.
6. Implement a formal change management process for governing model code changes and model updates.
7. Determine the calendar for internal model releases to ensure consistency of the model of record across the organization.
8. Automate the input of assumptions into the models.
9. Implement a formal sign-off process for the setting of model assumptions.
10. Analyze and document the impact of each significant assumption change.
11. Obtain model input data feeds automatically from a centralized data warehouse.
12. Automate and standardize a set of test analytics performed to test model input.
13. Automate and standardize model output used for reporting and analysis.
14. Store model output in a data warehouse that can be

queried to allow for additional analysis and evaluation of model results.

Implications for IT Infrastructure

Principle-based reserving will place new demands on companies' data and IT infrastructure.

- The combination of deterministic and seriatim reserve calculations and stochastic analysis will increase data and processing demands by an order of magnitude or more.
- Running multiple, separate software platforms to handle the components of VM-20 reserves and managing the communications and consistency between these multiple platforms may be inefficient and costly for actuarial and IT resources.
- Data and scenario compression tools will have to be developed to effectively compress models and stochastic scenario sets to enable generation of financial results in reasonable time frames.
- Hardware solutions will continue to be an attractive method of addressing run-time concerns as technology prices fall and actuarial staffing costs increase.

Looking Forward

The fundamental concepts and implications of VM-20 for U.S. statutory reporting are well-defined today. Selection and planning of software solutions to support financial reporting and analysis under VM-20 should begin as soon as possible. The considerations outlined in the SOA research paper, "Actuarial Modeling Controls: A Survey of Actuarial Modeling Controls in the Context of a Model-Based Valuation Framework," offer an excellent starting point for the evaluation of systems to support MBV and should be on every small company actuary's reading list. ●



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Tuesday, Oct. 22

3:45 – 5:00 p.m.

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Session 154 Open Forum

Wednesday, Oct. 23

8:30 – 9:45 a.m.

Get the latest thinking on how principle-based reserves (PBR) could impact smaller insurance companies. Presenters will discuss the regulatory status, how the exclusion tests work, and how to turn a cash flow testing model into a model useful for the exclusion tests and other PBR calculations.

SOAAAnnualMeeting.org

Current Trends In Asset Adequacy Testing

By Leon Langlitz

In late summer of 2012 the Smaller Insurance Company Section Council along with the Financial Reporting Section initiated a project to conduct a survey of all appointed actuaries with respect to current practices for asset adequacy testing or, more specifically, cash flow testing (CFT). While this was not the first time for a survey of this nature, it was by far the most comprehensive. The purpose was twofold: first, to educate actuaries prior to year-end work about current AOMR practice reflecting changes since the American Academy of Actuaries' (AAA's) 2004 Practice Note had been issued; secondly, to provide enough information such that an update of that practice note could be done should the AAA decide a revision to the note was desired.

Results of the survey were previewed at the 2012 SOA Annual Meeting, were posted on the SOA's website, and were discussed in a webinar last December. Currently, the results of the survey are being used by an AAA committee that is working to update the Asset Adequacy Testing Practice Note.

This was actually the third survey of this nature that has been conducted. The first survey, conducted in 2004 by the AAA Practice Note Committee, consisted of 55 questions. An updated survey of 89 questions was conducted in 2008 to provide information for the Valuation Actuary Symposium that year. The 2012 survey was comprised of 133 questions, many of which allowed the respondents to add comments and clarify their responses if the offered answer choices did not fully convey their own practices. The questions were divided into 12 sections, each focusing on a specific aspect of CFT.

A key aspect of the survey was to get it to the individuals who were actually the actuaries doing the work and determining assumptions, designing the methodologies and reviewing results. In many cases this is not the chief actuary. However, the SOA database really only has the title of a member, and many times the appointed actuary is not used as a member's title. The NAIC Annual Statement (Blue Book) does contain the name of the individual who signs the actuarial opinion for the company. SOA research staff, using available resources, was able to extract this information, and the survey was sent to 484 actuaries. Those individuals who sign more than one opinion had the option of completing a survey for each different company if they elected to do so. Out of this population approximately 190 responses were received. The respondents covered a wide range of company sizes, with assets ranging from less than \$1 billion to over \$25 billion.

A key aspect of the survey was to get it to the individuals who were actually the actuaries doing the work and determining assumptions, designing the methodologies and reviewing results.

The following chart shows the company size categories and the number of respondents in each grouping. As can be seen, the majority of responses came from the small size category. This reflects that a majority of life insurance companies fall into this category.

Size of Company	Number of Responses
Less than \$1 Billion	88
\$1 – \$5 Billion	39
\$5 – \$10 Billion	16
\$10 – \$25 Billion	17
More than \$25 Billion	24
Total	184

When asked what software is used for liability cash flow projections or gross premium models, the No. 1 answer in the smallest class category was homegrown or spreadsheet applications. After that TAS and MG-ALFA were the next choices. A number of other systems filled out the results. TAS was used by the smallest companies more often than MG-ALFA. However, the reverse was true for the largest category of companies. As can be seen in Chart 1, there is quite a lot of variety in the software used.

There is an even wider choice of software used when the same question is asked but for asset projections. Results also indicated that many companies are using more than one system for projecting both liabilities and assets.

When asked what the projection starting date is for liabilities and assets, the overwhelming favorite was three months before year-end. Out of 166 responses, only four companies reported something other than year-end or three months prior to year-end. Thus this seems to be fairly consistent.

It is interesting that even though most states have adopted the revised version of the AOMR Model Regulation, the seven interest scenarios commonly referred to as the New York 7 are still primarily used for the asset adequacy analysis opinion. This is probably a matter of consistency, convenience and familiarity.

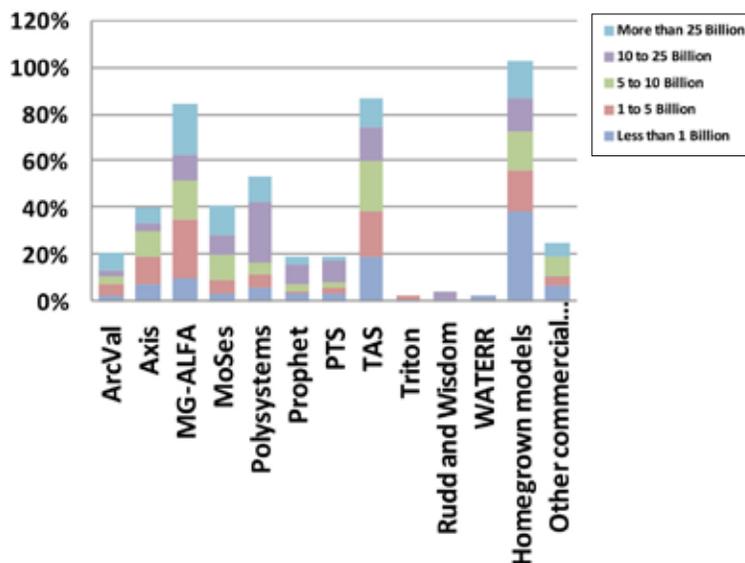
While stochastic modeling has started to become a little more prominent, it still seems to be used more at the larger companies than at smaller companies. This is probably a reflection of the business being tested, but also the time and learning curve necessary to implement, understand and summarize stochastic results.

Moving onto the investment reserves, the IMR is used by 80 percent of the respondents in their projections. And for those who include it, the modeling reflects the capitalization and amortization mechanics of the reserve. While the IMR is used, the AVR is not. Over 75 percent of the respondents reported that it is not reflected or is immaterial.

Once results have been obtained, liability model validation generally consists of two methods. The first is static validation of in-force or balance sheet amounts as of the valuation date. The second most common method is to review for reasonableness. Some dynamic validation occurs but to a much lesser degree.

Many questions were asked about assumptions used in the modeling for both liabilities and assets. Most companies, no matter the size, treated the more common assumptions—i.e., mortality, lapses, expenses—in the same manner. However, as company size increased, there appeared

Chart 1
Software for Liability Projections



to be more creative ways to include these basic as well as more complicated assumptions into the modeling. One interesting result concerning the consistency of reinvestment strategy across scenarios indicated that as companies increased in size, companies were more likely to reflect reinvestment strategy that was consistent with actual company practice. For the smallest size category, while the majority of the responses also indicated reinvestment strategy reflected actual company practice, there were many more (30 percent) that employed strategies that were not consistent with company practice.

When reviewing terminal results the most important criterion used varied by company size. Smaller companies indicated the criterion used was book value of assets minus book value of liabilities. However, larger companies analyzed the present value of market value of assets minus the present value of market value of liabilities. There were several other different criteria also used, but the described ones were by far the ones used most often. A similar result is indicated when looking at interim results. Most of the responses, no matter company size, used book value of assets minus book value of liabilities as the primary criterion. However, smaller companies had wider variability in what they chose.

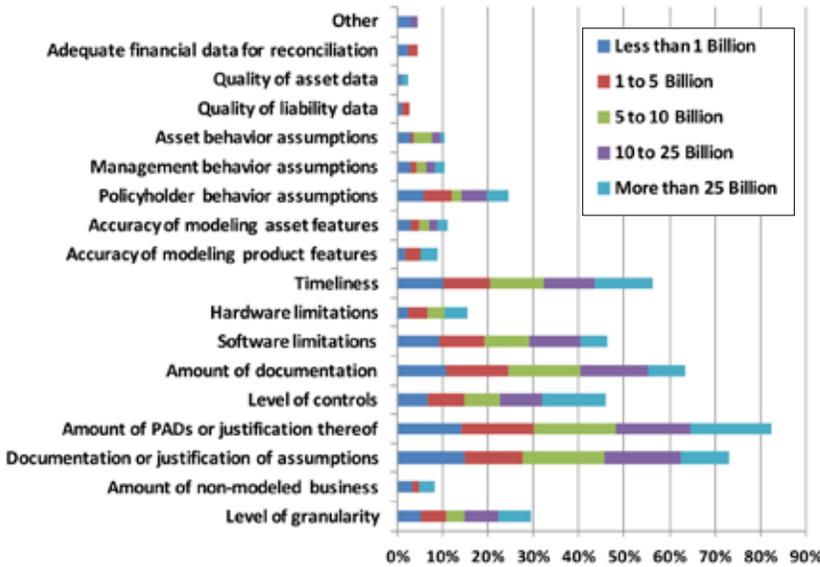
Additional questions regarding results indicated that most companies have not established additional actuarial reserves as a result of the asset adequacy testing performed. Of those that have set up additional reserves the most common determination is based on the present value of ending surplus.

Continued on page 16

A follow-up question asked whether additional actuarial reserves were established for the year ending 2011. Half of the respondents indicated that additional actuarial reserves

had been set up because of the 2011 testing. Then, of those, 62 percent indicated it was because of the low interest environment.

Chart 2
CFT Model Changes for PBA Implementation

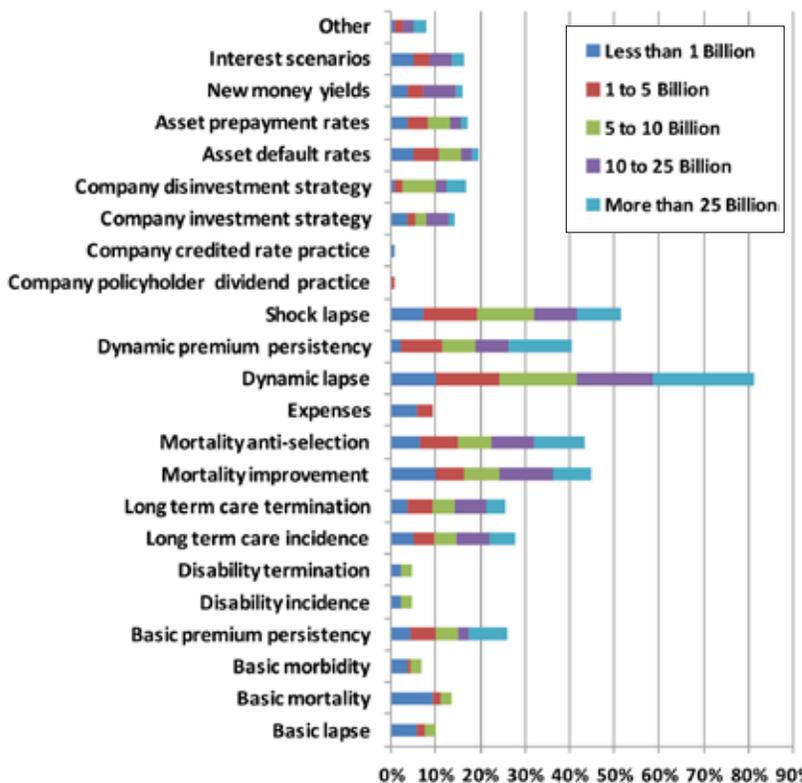


A number of questions were asked about the preparation for the implementation of the principle-based approach (PBA) to reserving. One question wanted to know the five most urgent aspects of CFT models and processes that would need to be addressed before the models could be used for PBA. As can be seen from chart 2, the determination of the amounts of provision for adverse deviation for the various assumptions is the most problematic.

As a corollary to the above, a question was asked about which assumptions the appointed actuary had the least amount of confidence in. Again, they could choose up to five listed assumptions. It appears that dynamic lapses is the assumption that concerns the appointed actuary the most. (See chart 3)

These were just some of the highlights that were gleaned from the wealth of data provided. The AAA is in the process of creating a revised Asset Adequacy Practice Note using the data from the survey. The schedule of the committee is to complete its work in early autumn so that the new note will be ready by the time asset adequacy again begins in earnest in the fourth quarter.

Chart 3
Lack of Confidence in Assumptions



The results of the survey can be found on the Smaller Insurance Company Section page of the SOA website. In addition, the completion of this survey would not have been possible without the diligent efforts of all of the members of the committee. Also, SOA staff provided superb support in putting the questions in survey form, determining the appointed actuaries to which to email the survey, and getting the results tabulated and compiled. The contributions of everyone involved are acknowledged and appreciated. ●



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My Expectations of Appointed Actuaries for Smaller Life Insurance Companies

By Randall A. Stevenson

For the past 15 years I have been involved in the financial solvency examinations and financial analyses of numerous smaller life insurance companies. During those reviews, I have developed certain expectations of actuaries performing work for smaller life insurance companies which differ from the expectations of actuaries performing work for large insurers. This article is primarily a reflection of my experiences and expectations related to actuarial work performed and reported for small life insurance companies by the appointed actuary, although the information should be useful for other actuaries. All actuaries are expected to follow the Actuarial Standards of Practice and Code of Professional Conduct. Here we will focus on issues, while not necessarily unique to smaller companies, which are more likely to be a concern or focus during a review of actuarial work that has been performed for smaller companies. Expectations vary between states and may vary between individuals within an insurance commissioner's office.

Regulation

In order to understand what regulators are likely to expect, one must understand the purpose of regulation. The goal of regulation is to protect the consumer, which includes providing a level playing field for insurers and a competitive market from which consumers can choose products. This is done through regulation of financial solvency and market conduct. Market conduct is primarily involved with ensuring the insurers treat the policyholders fairly and the companies compete under a uniform set of rules. Financial solvency is focused on assuring insurers will have adequate funds available to meet future obligations as they become due. While GAAP accounting focuses on the value of a business as a going concern, statutory accounting focuses on the liquidation value of a business. Statutory reserves are intentionally conservative, with the goal of releasing reserves as favorable experience unfolds. The appointed actuary should understand this and design products and establish reserves that do not attempt to circumvent the purpose of regulation.

Expertise and Knowledge

The appointed actuary should be involved in corporate governance. The actuary should have ready access to the company's senior management and communicate with them as needed, and at least annually. Normally actuaries for small companies operate from smaller actuarial firms and represent numerous regional clients. This presents a challenge, as the actuary must have sufficient breadth of expertise to service several clients and yet a certain depth of knowledge about each client. Part of the depth of knowledge includes an understanding of the products held, offered and planned; another part is knowledge of the clients' investments. Ideally the actuary would be involved in reviewing reinsurance treaties before they are enacted, since smaller companies do not always have the expertise which regulators assume exists with both parties of reinsurance treaties. With the risk-focused examination approach, controls of material risks have become the focus of solvency examinations. The appointed actuary should be a key advisor to the company in developing controls over liabilities, growth, asset management, data quality, sales illustrations, underwriting, and other areas where actuaries are involved. The actuary should also be familiar with the controls the company uses related to information provided for the computations of reserves and asset adequacy. And finally, actuaries should be sure adequate, effective controls are documented and operating with respect to the work they produce for a company.

Communication

The appointed actuary should present results that are consistent with expectations based on the prior years' results or provide an explanation as to why current results appear inconsistent with prior results. Actuaries should also make sure results are reasonable. It would be advisable for an appointed actuary to include an informal memorandum to the Department of Insurance along with the actuarial opinion that explains any anomalies when comparing subse-

Continued on **page 18**

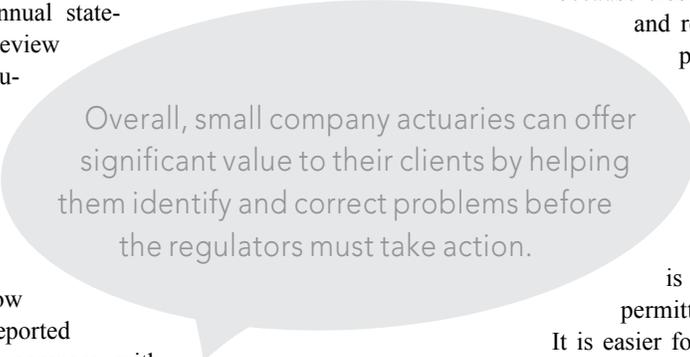
quent years. For example, if the premium, number of insurance policies and amount of insurance for a plan increases and the reserves for the plan decrease, this is likely to prompt the financial or actuarial analyst to inquire about the anomaly. It would save time and effort if the anomaly had an explanation submitted with the actuarial opinion.

Common Errors

The appointed actuary should check the data used to compute reserves to ensure it is reasonable. In general, small company databases are prone to errors due to lack of controls in data entry and data modification, lack of understanding of how reserves are computed by company personnel, and limited technical skills related to the software used. Some examples would include a large percentage of the policies having dates of birth the same as or after the dates of issue, policies with \$0 reserves absent from the database, and a relatively high number of policies with individuals well beyond the limiting age of the mortality table. A policy's issue date should not be earlier than the existence of the mortality tables used to establish its reserves. Premiums, total face amount of insurance, and the number of insured individuals in the database should reasonably match the company's reported information and from other available sources.

Annual Statement

The appointed actuary should be familiar with the company's annual statement. Even a cursory review of the company's annual statement can often provide the actuary with a tremendous amount of information and help establish the reasonableness of actuarial items. How does the company's reported return on investments compare with actuarial assumptions and the market based on the assets it holds? Are gross premiums greater than net premiums? What are commissions and expenses compared to premiums? If gross premiums are less than the sum of expenses, commissions and net premiums, is a gross premium valuation needed? How do deferred, advanced and due and uncollected premiums compare to annual premiums? What is the ratio of death benefits to the sum of reserves released due to death and tabular cost? Are there any unusual changes in the Five-Year History or the Exhibit of Life Insurance? Has the company reported reserves and other information as submitted by the appointed actuary? Many of these and similar questions can be answered by a



Overall, small company actuaries can offer significant value to their clients by helping them identify and correct problems before the regulators must take action.

quick review of the annual statement. Addressing unusual matters before the annual statement is sent to the regulators can save the company considerable expense and time. The main actuarial exhibits are the reserve exhibits, currently known as Exhibits 5 through 8. Exhibit 5 should include valuation standards, which is a minimum of the interest rate and mortality table. Ideally a notation of the method (i.e., FPT, NLP or CRVM) and range of years of issue for the policies would also be included.

State Law

The appointed actuary should be familiar with laws of the state of domicile. Often small companies, especially single-state companies, have state-specific exemptions or requirements. Some states permit single-state companies to forgo the asset adequacy requirements if certain other criteria are met; some permit specific types of business to discount certain reserves; and some permit the use of mortality tables that are not recognized by all members of the National Association of Insurance Commissioners (NAIC). If there is a particular concern, it is better to discuss it with the regulators as soon as possible. An annual call to the appropriate regulatory actuary of the state of domicile to inquire about any pending or recent legislation, including feedback on the impact, can help the regulator and the client. Insurance departments are very protective of their domiciliary companies and want to avoid closing them because closure deprives the state of jobs and revenue; it also reduces competition within the market and hurts the reputation of the insurance industry. If meeting an actuarial regulatory requirement does not make good business sense, make sure the regulatory actuary is aware of this and request a permitted practice, if appropriate. It is easier for a state to issue a permitted practice for a single-state company than for a multi-state company.

Reserve Analysis

Although the Analysis of Increase in Reserves (page 7 of the annual statement) is considered by some to be a dinosaur, if properly completed, it is a particularly useful tool for small companies and reviewing regulators. Underwriting for small companies can be an issue. Because a reviewing actuary noticed the death benefits paid were significantly more than the reserves released due to death plus the tabular cost, more than one company has been alerted to agents writing policies to people on their death beds. Tabular interest significantly greater than the invest-

ment earnings indicates a possible asset inadequacy or an investment program that needs improvement. Surrender benefits exceeding the reserves released for terminations should be a red flag concerning the amount being paid as cash surrender values.

Conclusion

Overall, small company actuaries can offer significant value to their clients by helping them identify and correct problems before the regulators must take action. The appointed actuary is often the best person to represent and advocate for the company when discussing financial solvency concerns with regulators, especially regulatory actuaries. Finally, small company actuaries must meet the

challenge of balancing the cost of the services they provide with the value provided to their clients. ●

Randall Stevenson, ASA, FCA, MAAA, is a consulting actuary with Risk & Regulatory Consulting, LLC. He was an actuary with the Louisiana Department of Insurance for seven years, worked at the NAIC for three years and has been a contract examining actuary for the past five years. He can be reached at randall.stevenson@riskreg.com.



On the Research Front

SOA RELEASES 2008-09 INDIVIDUAL LIFE EXPERIENCE REPORT

The Individual Life Experience Committee has completed their latest report on intercompany mortality experience by amount of insurance and number of policies under standard individually underwritten issues. This includes the two study years 2008-09. The Excel files contains more detail of the data summarized in the report as well as data from the two prior studies for comparative purposes. Some of the Excel files are pivot tables that allow examination of combinations of the factors presented in the report. If you have any questions, please do not hesitate to email Jack Luff at JLuff@soa.org or call him at 847.706.3571.

NOW AVAILABLE: OLDER AGE MORTALITY AND OTHER ASSUMPTIONS SURVEY RESULTS

Mortality at older ages has been an increasingly important issue for new products and profitability of current products. The Product Development Section sponsored a company survey of mortality and other actuarial assumptions for life and long term care insurance products sold at older ages. Results are now available in a new report authored by Tim Rozar, Catie Muccigrosso and Susan Willeat of RGA Reinsurance Company. Topics addressed include product designs and sales trends by age; underwriting requirements at older ages; mortality assumptions at older ages including selection factors, mortality level, preferred discounts and mortality improvement; and lapse assumptions. Comparisons between fully underwritten life insurance and long-term care insurance are also provided.

A background image featuring a financial line chart with multiple data series and a silver pen resting on a document. The chart shows various percentage changes and dates, such as -0.75% on 19 Dec and +2.33% on 30 Dec. The pen is positioned diagonally across the lower right portion of the chart.

Recent Developments on Principle-Based Reserves (PBR)

By Norman E. Hill

As always, this topic is extremely volatile and subject to change. It is highly recommended that readers keep up with email blasts from the Small Insurer Council (SIC).

PBR Implementation Task Force (TF) Call, June 21, 2013

The TF is working with two portions of the Legislative Packet, a Legislative Brief and an Educational Packet. The intent is to use the packet in lobbying for PBR with state legislatures.

Co-Chairman Joseph Torti said some significant improvements and simplified language, such as that pertaining to incentives for “workarounds,” have been made. Nancy Bennett spoke on behalf of the American Academy of Actuaries (AAA). They had worked extensively on the impact of PBR on reserves. They included numerous caveats for their section of the brief. They included a statement on impact without numbers. While retaining lengthy caveats in the Educational portion, they also included numbers on product impacts with these caveats.

A key Educational question is: “Is PBR more or less conservative?” No simple answer exists, so AAA, as stated above, showed impact by product. Also, they showed benefits resulting from this methodology change. Torti thanked AAA, but admitted their answer is longer than he had hoped.

Rob Easton of the New York Insurance Department (NYID) said they are generally satisfied with the Educational part. On the brief, under Background, there is a statement that the reserve impact is “small.” He moves to strike “small.” I believe this change was approved. The Packet, both portions, was adopted by TF, although NYID still abstained. The point was made that Plenary in August must still adopt.

Next, the PBR Implementation Plan itself was discussed. The goal on the call was to complete review of all sections of the plan.

On Section 6, Accreditation, a new key point was raised by NYID. Easton said that if a state doesn’t adopt the Valuation Manual (VM), but retains a formulaic reserve approach that is more conservative than PBR, it is fulfilling accreditation requirements. Torti replied that, since PBR’s impact will include “ups and downs,” the effect would have to be reviewed by the National Association of Insurance Commissioners’ (NAIC’s) Accreditation Committee.

I believe that Torti’s argument may be refuted. New formulaic valuation tables, such as the 2014 version for non-variable annuities, and pending life tables for limited underwritten or guaranteed issue life, are in process, all with higher reserves. They may well be in place before PBR.

I believe that Easton’s comment is very significant. It could provide states with effective defenses if they don’t go along and adopt PBR.

Section 1 is Review Process and Timing. First, Easton of NYID commented on p. 5, the collection of data for the Experience Reporting process. He proposed to say, “Expense mechanics will be developed.” NYID is concerned that the state’s domestics that participated in their study don’t bear an unfair amount of the cost. He’s addressing the interim period, not merely the final approval period. The American Council of Life Insurers (ACLI) agreed and said that, for the long term, there should be a sentence addressing who will pay the costs. Co-Chairman Julie Mix McPeak asked whether in the interim period the NAIC could bind anyone on costs. If Kansas’ goal in its data call is successful in covering 80 percent of the industry, including New York, will this satisfy NYID? Easton replied that, since they’re not ready to adopt PBR, they still wanted to ensure that concerns of their domestics on costs are addressed. So McPeak agreed to go with “will be developed,” subject to presentations in August, say, from NYID and Kansas, on the big cost issues.

Still in Section 1, the ACLI asked what is meant by a “working document.” Next, on p. 7, the ACLI brought up the subject of the VAWG, the Valuation Analysis Working Group, and its access to confidential information. Torti pointed out that another NAIC group, the Financial Analysis Working Group (FAWG), also accesses confidential information. But John Bruins said that, for PBR, confidentiality has been a lightning rod.

On Section 2, Pre-Implementation Training, no comments were made.

For Sections 3 and 4, on Valuation, Actuarial and Testing, NYID referred to comments about PBR’s smoothing out reserve “volatility.” He said this should be tested by the Life Actuarial Task Force (LATF). The same comment about LATF testing seemed to apply to p. 11, last bullet.

On p. 10, ACLI referred to LATF’s charge to address implementation timing for additional products, such as annuities and long-term care (LTC). Similarly, on p. 11, fourth bullet, references to Actuarial Guidelines 33 and 43 really addressed products issued prior to PBR. They recommended deletion of these two references.

On Section 5, on Captives and Special Purpose Vehicles, no comments were received. In an earlier call, Torti had mentioned that several companies had told him they were sure that these types of organizations should still exist, even after PBR becomes effective.

On Sections 7 and 8, no comments were received.

McPeak said that a new draft of the Implementation Plan is needed. The TF adopted this draft, although NYID still abstained.

LATF Call, June 25, 2013

Three proposed amendments to the VM were discussed. Chairman Mike Boerner said that several more LATF calls before the NAIC summer meeting may be required before LATF can finally adopt. Some language changes and clarifications in the amendments are needed. It was understood that no amendments can be effective until current VM and PBR have been adopted by a supermajority of state legislatures.

The first amendment was to use an iterative process to determine the overall discount for gross premium or

deterministic reserves. In March, a draft was exposed that required this new approach. Now, the ACLI and other parties have proposed that the iterative approach be optional.

One interesting question was posed by ACLI: Should this iterative process be applied to stochastic exclusion tests (SETs)? For the 16 scenarios in one

sub-option of SET, interest rates are specified in some detail.

I believe the likely intent of this question is to generate a brief discussion and preclude unwarranted interpretations of the process later on.

The second amendment was to simplify calculation of the pre-tax interest maintenance reserve (IMR), when used in PBR reserves. This was described as mathematically equivalent. This change would not change annual statement instructions for IMR.

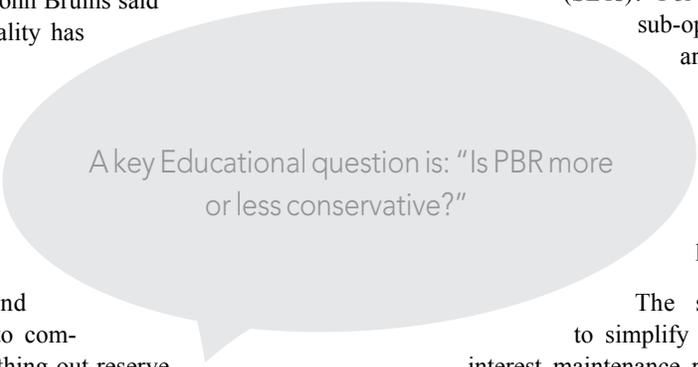
The third and final amendment was intended to clarify modeling of policy loan cash flows in gross premium and stochastic reserves.

Aggregate Margin Subgroup

An LATF subgroup is working with AAA on this question. If aggregate margins to best estimate assumptions are permitted in PBR reserves, it is expected to reduce reserves further than current requirements for separate margins by assumption. Several insurers and some AAA members strongly support the aggregate approach, while, among regulators, NYID has been adamantly in favor of the current separate assumption approach.

As the subgroup announced in its last June 3, 2013 call (and also last March at the NAIC), several approaches to aggregate margins are being studied. These include a flat percentage adjustment to reserves and some kind of cost of capital approach (which might result in a similar percentage reserve adjustment).

So far, one possible complication from the aggregate approach hasn’t been discussed. In an earlier TF call, the ACLI was asked to estimate the overall PBR impact on reserves for term and universal life with secondary guarantees. Paul Graham replied that, across all durations of blocks affected, reserves might be reduced about 20 percent. If the aggregate approach for assumptions is used, the reserve reduction could be significantly greater. If this possibility is conveyed to state legislatures during the ini-



Continued on page 22

tial VM approval process, it might increase their concerns about PBR.

Document Sources

Draft documents prepared so far by the EXPBR TF (dated June 21, 2013) are available under their section of the NAIC website (www.NAIC.org). Later versions may be attached to notices of future TF calls. Minutes of these calls that include discussions will probably be available at NAIC meetings.

The three VM20 amendments proposed to LATF should be available under LATF's portion of the same NAIC website. Also, they should be available in monthly LATF mailings. Minutes of these calls that include discussions should also be included in the mailings.

As for aggregate margins, a document detailing their work to date was distributed at the March LATF meeting. Minutes and discussions from their calls should be included in monthly LATF mailings.

Summary

Both the Product Implementation TF and LATF plan to hold several calls before the next NAIC meeting. Even while the state legislative approval process is still in its infancy, PBR itself continues to be volatile and contentious. ●



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Regulatory Issues for Small Insurance Companies A Review of the June 4, 2013 Webinar

By Grant Hemphill and Jerry Enoch

Jerry Enoch moderated a session with presenters Mark Birdsall, Mike Boerner and Perry Kupferman, regulatory actuaries with Kansas, Texas, and California, respectively. The webinar, which was co-sponsored by the Smaller Insurance Company Section and the American Academy of Actuaries (AAA), was well attended and received high review marks from the audience.

While also addressing product filing issues, Own Risk and Solvency Assessment (ORSA) and AG38 issues, most of the discussion involved general appointed actuary filings and future principle-based valuation issues.

I was reminded of the Internal Revenue Service (IRS) advice on how to get your refund quickly. Sign the return. Check your addition. Include the appropriate forms, etc. This clearly applies to policy form filings. In like fashion, the actuarial opinion, Regulatory Asset Adequacy Issues Summary, and the supporting actuarial memorandum are each subject to a review process in each state. If you want a smooth process, do the simple stuff as the IRS recommends. Domestic companies usually go through a finer filter than non-domestic companies. Companies with a problem history tend to get priority and increased scrutiny. The priority order is set by financial examiners. The actuarial items in the *Financial Analysis Handbook* are probably reviewed.

While there is not uniformity, participants got a sense of what probably occurs. Returning to the IRS analogy, the regulatory actuary will review the actuary's appointment, credentials and continuing education status. He will look for variation from standard language. He will see if the asset adequacy methods used (or not used) make sense for the respective blocks of business. Are the assets used appropriate? Are assumptions reasonable? Reserve and other figures will be checked with the annual statement. Are ending and interim negative results reasonably explained or

adequately reserved? Does the data support the conclusion? Is the reserve level justified? Concerns are discussed with the financial analyst and with the home state regulator for non-domestic companies. The appointed actuary will be contacted with questions. Are meaningful risks to the company disclosed and discussed?

This was not a theoretical discussion but a practical guide to finishing the work product. Properly finishing and documenting these obvious tasks will save the regulator and the appointed actuary time and improve their relationship. That relationship was the subject of further discussion. The regulator seeks an open environment with clear and concise communication. One regulator described the three types of response he gets to questions. Most appointed actuaries give him more information than he requests or needs. A significant number are minimalists who respond only to questions asked. A small number do not answer the questions asked and are uncooperative. It was suggested that consultants were more likely to resist providing needed information. ["Ouch!" says your consulting actuary reviewer.] The regulators appreciate a non-adversarial, collegial relationship. They appreciate good documentation.

The AAA has an AOMR Communication Group that brings company actuaries together with regulatory actuaries to find ways to improve communications to make the process easier for everyone. The group is developing a best practices guide. Contact Tom Campbell if you wish to be involved.

Risk-based examinations were discussed. This is expected to be an evolving process as experience is gained. Some companies examined felt it was everything from the older examinations plus much more. Eventually, it might save effort by focusing on areas of greater risk. The actuary will be interviewed during the audit. He or she should be ready to explain reserve and product development processes as

Continued on **page 24**

well as reinsurance. Any unusual features of products or experience trends are likely topics. It will expedite the audit if any internal audit data is provided to the examiners. A description of actuarial controls should be available. Regulators prefer to deal directly with the company actuary rather than to have a non-actuary point of contact.

It was suggested that we small company actuaries work with the National Association of Insurance Commissioners (NAIC) to improve various regulatory processes. The industry input to various committees and task forces typically comes from larger companies. The meetings are usually phone conferences and, usually, all are welcome.

ORSA was discussed. It will not initially be required of smaller companies. However, if it is as successful as its proponents expect, it will be applied to smaller companies in the future. It is a structure for getting the companies and regulators focused on risk analysis and mitigation. It will integrate reserve and risk-based capital (RBC) documentation under the ORSA. It will assist the regulators in quantifying industry risks. OK, this session was not entirely practical.

A good but brief overview of principle-based reserves (PBR) was provided. Small company actuaries are particularly interested in the exclusion tests. The three types of reserves (net premium, deterministic and stochastic) and

the exclusion tests (stochastic and deterministic) that might exempt a block of business from one of the reserve calculations were described. One of the stochastic exclusion tests requires a certification, at least every three years, that the block does not have material interest rate risk or asset return volatility risk. Further small company issues such as simplifications, approximations and efficient modeling techniques allowed in VM-20 were noted. There are also exemptions for experience reporting. Clearly the concern of small companies about the expense of doing PBR has been acknowledged. The political prospects for VM-20 were described. Although it could become law Jan. 1, 2015, companies can defer implementation for three years. There is ongoing work in many areas of PBR and participation was again encouraged. (By the time this is published the section will have had an August webinar on the topic of PBR and smaller companies.)

All of the speakers encouraged company actuaries to communicate with them. Regulators need understanding, and that can often develop most easily through telephone discussions. It should be recognized that regulatory actuaries are usually generalists. Consequently, we shouldn't expect an off-the-cuff response to a complex technical question; but they still want to work with us. Scheduling calls in advance and specifying the topic will improve the communication. ●



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SmallCo Sessions at ValAct

By Roger Brown

Regulator Discussion of PBR with Small Company Actuaries

Learn about provisions in PBR for small companies. Discuss utilizing these provisions with peers and regulators.

Smaller Insurance Company Issues (Buzz Group)

Come and network with your fellow smaller insurance company actuaries! We'll discuss any and all topics of current interest (participants will be surveyed for topics prior to the event).

Smaller Insurance Company Chief and Corporate Actuaries Forum

An interactive Corporate and Chief Actuaries Forum for smaller insurance companies. The focus is on issues faced by actuaries in leadership positions at smaller insurance companies. ●

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Upcoming Meeting Sessions at the SOA Annual Meeting

By Mark C. Rowley

The Smaller Insurance Company Section (SmallCo) has planned three events for the SOA Annual Meeting & Exhibit in San Diego, Calif., which will take place from Oct. 20 to 23.

What Small Company Actuaries Should Know about PBR

Building on our year-long efforts to learn more about PBR, this will be an open forum that will place special emphasis on the exclusion tests in VM20, a topic of special interest to small company actuaries.

Smaller Company Issues (Buzz Group)

Our regular buzz group session at the annual meeting. We will facilitate discussion about what is on your mind!

Smaller Insurance Company Hot Breakfast

Our regular hot breakfast at the annual meeting. Get an update as to what SmallCo is up to, meet council members and break bread with fellow small company actuaries.

SmallCo is dedicated to providing value to our members by sponsoring a variety of events at SOA meetings. We hope you can join us! ●



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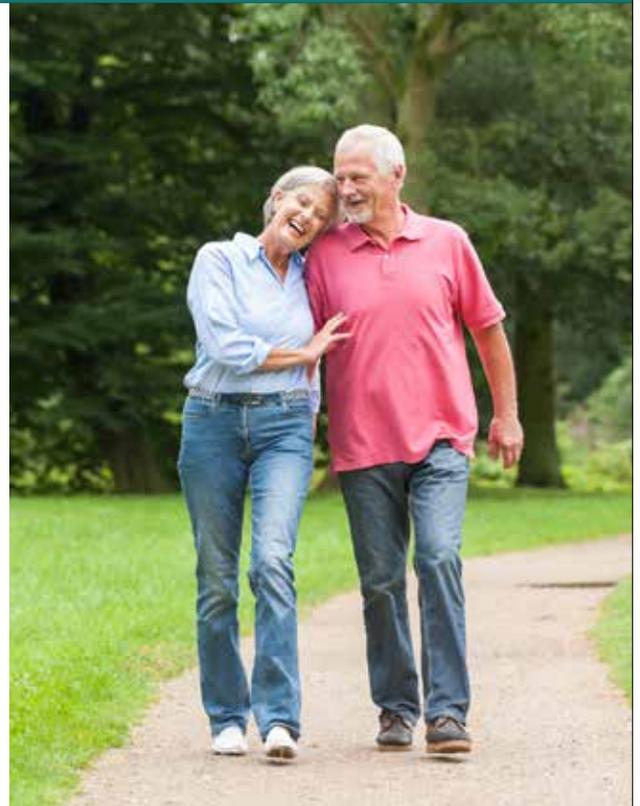
The international **Living to 100** Symposium will be held Jan. 8–10, 2014 in Orlando, FL. Thought leaders from around the world will once again gather to share ideas and knowledge on aging, changes in survival rates and their impact on society, and observed and projected increases in aging populations.

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The outcome of each **Living to 100** Symposium is a lasting body of research to educate and aid professionals and policymakers in identifying, analyzing and managing the potential needs and services of future advanced-age populations. Questions may be directed **Ronora Stryker**, SOA research actuary, at rstryker@soa.org.

Visit livingto100.soa.org to learn more.

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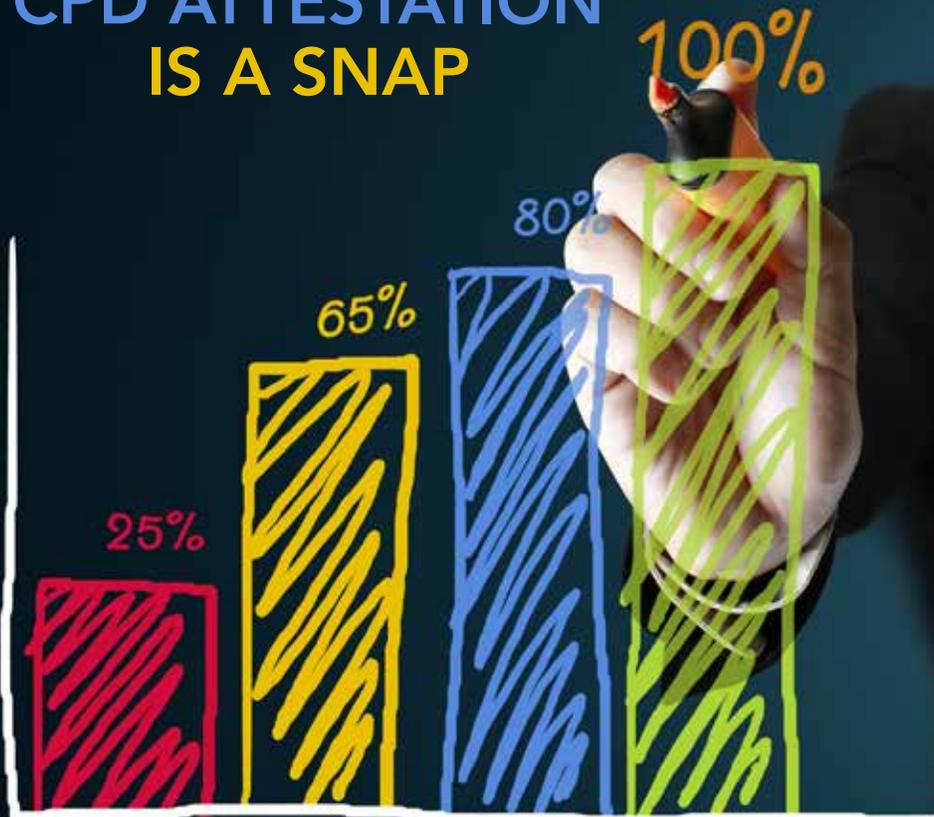
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