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# Chairperson's Corner What Have you Done for me (and you) Lately?

By Bob Leach

Our section is able to provide a range of services, thanks to your payment of section dues. With Section Council elections coming soon, it seems appropriate to provide a sense of the functions performed by the Financial Reporting Section Council (FRSC), Friends of the Council and supporting SOA professional staff. These functions offer professional development opportunities to anyone who wishes to get involved in the work of our section.

As background, the Section Council consists of nine elected SOA members, three of whom are elected each year to serve for a term of three years. The FRSC currently consists of those listed in Table 1.

Table 1  
Current composition of FRSC

Term Expiring in 2018	Term Expiring in 2019	Term Expiring in 2020
Bob Leach David Ruiz Ashwini Vaidya	Simpa Baiye Katie Cantor Steve Finn	David Armstrong Lance Berthiaume Enzinma Miller

Friends of the Council include individuals who have volunteered to support the work of the FRSC. Some, but not all, are former elected members of the FRSC or other section councils. SOA professional staff provide guidance and implement FRSC decisions.

The mission of the SOA Financial Reporting Section is to encourage and facilitate the professional development of members through meetings, seminars, research and the generation and dissemination of literature in the field of life insurance company financial reporting. Some recent section activities include:

**SOA Meetings and Symposia**—The executive committee overseeing this year's Valuation Actuary Symposium consists of Katie Cantor, David Armstrong and Lance Berthiaume, with support from a number of dedicated volunteers and Jim Miles of the SOA professional staff. The 2018 ValAct will take place in Washington, D.C. on August 27–28 (<https://www.soa.org/prof-dev/events/2018-Valuation-Actuary-Symposium/>). Ashwini Vaidya,



Some members of the FRSC met at the SOA headquarters office in Schaumburg, Ill on March 12. Left to right: David Ruiz, Steve Finn, Lance Berthiaume, Enzinma Miller and Bob Leach. Also present were SOA staff members Jess Boyke and Jim Miles. FRSC members David Armstrong, Simpa Baiye, Katie Cantor and Ashwini Vaidya and Friend of the Council Michael Fruchter participated by phone.

Katie Cantor and Steve Finn are coordinating the nine sessions sponsored by the Financial Reporting Section at the 2018 Annual Meeting in Nashville, Tenn. on October 14–17 (<https://www.soa.org/prof-dev/events/2018-Annual-Meeting---Exhibit/>). David Ruiz, Simpa Baiye and Enzinma Miller coordinated six Financial Reporting Section sponsored sessions at the May 2018 Life and Annuity Symposium in Baltimore.

**Webinars:** Ashwini Vaidya and Katie Cantor coordinated three US GAAP seminars which took place in March, and the VM-22/Regulatory Web Resource webinar in April. Additional webinars are under development, and we are always looking for suggestions and/or presenters!

**Research:** David Armstrong works with SOA professional staff member Ronora Stryker on section sponsored research. The newly published Survey of Waiver of Premium Assumptions and Experience is at <https://www.soa.org/research-reports/2018/survey-waiver-premium-monthly-deduction-rider/>.

**Regulatory Web Resource:** Lance Berthiaume contributes to a working group chaired by Cindy Barnard. Recent additions to <https://www.soa.org/resources/regulatory-resource/life-annuity/> include links to the 2018 Valuation Manual, VM-22 discount rates and more.

**Podcasts:** Hear Steve Finn interview Paul Hance regarding the development and operation of VM-22 at <https://www.soa.org/sections/financial-reporting/financial-reporting-landing/>.

Hopefully this conveys a sense of the significant efforts that are made on behalf of the Financial Reporting Section. But it's not all about the work—involvement in these activities provides the opportunity to develop communication, research and project management skills. And it's a great way to develop professional connections. There are many ways to get involved in the work of our section:



- Get involved with the FRSC election process. Vote in the upcoming 2018 elections, and consider running for a position on the Council in 2019.
- Volunteer as a Friend of the Section.
- Contribute to specific section functions—examples include speaking at meetings, writing articles or conducting research.

The financial reporting world is changing at a furious pace, and many hands are needed to keep up with the educational demands this creates. If you are interested in lending your services, we would love to hear from you! ■



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# IFRS 17—A Paradigm Shift for U.S. Actuaries

By Darryl Wagner and Hui Shan

The IFRS insurance accounting standard, IFRS 17, was finally published by the IASB in May 2017 after two decades in the making. IFRS 17 is designed to align insurance accounting across the globe with increased comparability and transparency. More than 120 countries around the world have adopted IFRS. While the United States has not adopted IFRS, and does not expect to “at least for the foreseeable future,” IFRS is expected to be “very significant to both U.S. investors and companies” according to the SEC.<sup>1</sup> Companies that have a multinational footprint are likely impacted by IFRS, whether it is for public financial reporting, or from the perspective of cross-border activities that involve non-U.S. stakeholders. As a result, actuaries who practice in the United States, whether

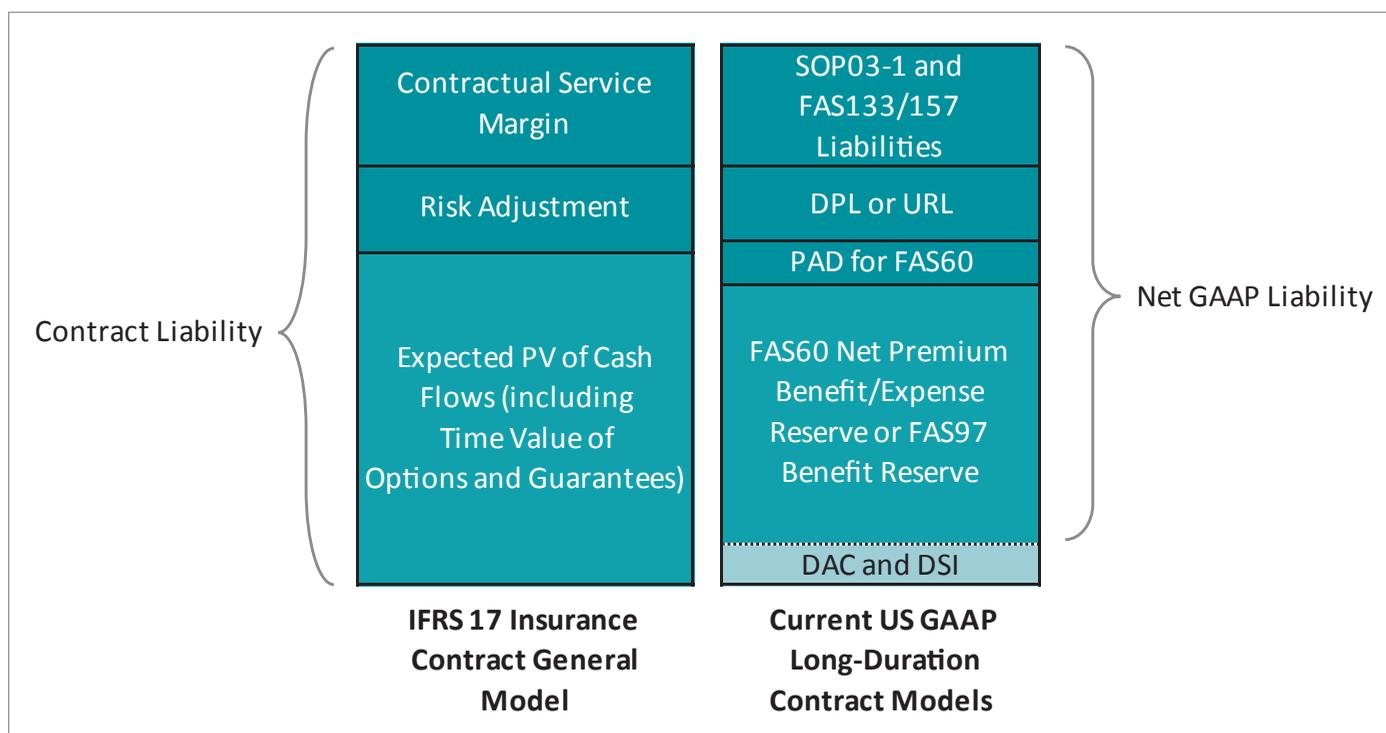
employed by or providing consulting services to these companies, will be impacted and need to be ready for the new standard. The effective date is not until Jan. 1, 2021, but the one-year comparative reporting, implementation efforts, as well as potential financial and business impact assessments that companies will want to conduct in preparation for the transition, will make IFRS 17 a reality sooner for U.S. actuaries. It is important for these actuaries to understand and embrace the changes.

In this article, we will focus on introducing where the IFRS 17 General Model differs from US GAAP conceptually, and key aspects of this paradigm shift from an actuary’s perspective. Unless otherwise noted, we will focus on long-duration insurance contracts.

## MEASUREMENT MODEL

IFRS 17 defines a General Model that is widely applicable to all (re)insurance products, with variations when applying to participation contracts and certain short-term contracts. As illustrated in Figure 1, under IFRS 17, insurance contract liabilities consist of three building blocks under the General Model—unbiased probability-weighted mean present value of future cash flows (expected PV of cash flows)<sup>2</sup>, risk adjustment (RA) and contractual service margin (CSM).

Figure 1  
Illustrative Comparison of Measurement Models—IFRS 17 vs. US GAAP



For U.S. actuaries, the three building blocks under the General Model can be analogized to what we are familiar with under US GAAP as follows:

1. The expected PV of cash flows is essentially a gross premium valuation reserve that is often computed as part of the premium deficiency test in the United States. Unlike U.S. accounting models that employ a net premium valuation approach which produces a zero reserve at inception that essentially pushes the profit loading in the gross premiums to later periods, the IFRS 17 General Model captures all future profits or losses in its initial recognition of the expected PV calculation plus a required risk compensation (i.e., the RA). For those U.S. actuaries who have already dealt with Solvency II, the Best Estimate Liability under Solvency II is also akin to this component of IFRS 17. It is worth highlighting that there is no explicit DAC under IFRS 17, though implicitly acquisition expenses are essentially deferred via the CSM which is discussed below.
2. The RA is defined under IFRS 17 as a provision to account for the compensation required by the issuing entity for bearing the non-financial risks associated with the insurance contracts. Under US GAAP, FAS 60 requires a provision for adverse deviation as a margin for uncertainty which is often set as a fixed percent of best estimate assumptions, whereas IFRS 17 sets out qualitative principles for the RA and a required confidence level disclosure. A closer analogy to the IFRS 17 RA is the risk margin required under FAS 157; however, FAS 157 is a fair value model and its risk margin reflects the view of the market, not the view of the issuing entity.<sup>3</sup> The Solvency II risk margin, which is a cost-of-capital calculation, is also akin to the IFRS 17 RA, despite its different measurement objective (i.e., regulatory). The Solvency II risk margin also reflects risks that are not allowed to be included in the IFRS 17 RA, such as general operational risk, asset liability mismatch risk and financial risk.
3. The CSM is set up at issue if any profit is resulted from the gross cash flow calculation. Conceptually, the CSM can be analogized to the deferred profit liability (DPL) under FAS 97 Limited Pay, or unearned revenue liability (URL) under FAS 97. Mechanically, it is released over time to reflect the services provided on the basis of duration and quantity of services, much like DAC under US GAAP. CSM under IFRS 17 also functions as a shock-absorber to offset favorable or unfavorable changes in future cash flows. The shock-absorbing feature is essentially a prospective unlocking where changes in assumptions related to future services do not result in any current period income statement impact, to the extent the impact can be absorbed by the CSM. In comparison, US GAAP applies a retrospective unlocking



for FAS 97 DAC under which future assumption changes impact the current period income. Under the FASB targeted improvements for long-duration contracts, retrospective unlocking will be eliminated for DAC, but it will be required for benefit reserves of long-duration contracts, according to FASB's latest tentative decisions as of November 2017.

In short, IFRS 17 sets out one comprehensive measurement model that is widely applicable to all contracts with some variations for certain short-duration contracts, and contracts with participation features. This model includes a mechanism to build a risk provision in the liability, recognize losses, and defer and release profits in a systemic way. This fundamentally differs from current US GAAP valuation which has a variety of measurement models depending on accounting classifications. In addition, IFRS 17 can be viewed as a balance-sheet-oriented framework, while US GAAP is often viewed as an income-statement-oriented framework.

## COMPUTATION REQUIREMENT

IFRS 17 requires the expected PV of cash flows to be a current estimate, equal to the unbiased “probability-weighted mean of the full range of possible outcomes considering all reasonable and supportable information available at the reporting date without undue cost or effort” (paragraph B37 of IFRS 17). The implication is that for contracts with embedded options or guarantees, companies will need to justify that the calculated PV of cash flows captures the resultant cash flow asymmetry, whether through a separate time value of options and guarantees (TVOG) or included as part of the expected PV of contract cash flows. This will require actuaries to exercise caution and carefully determine whether a stochastic run is warranted for contracts with optionalities. TVOG can be somewhat analogized to US GAAP liabilities that are supplemental to benefit reserves such as SOP 03-1.

Under existing US GAAP, deterministic valuation is the prevalent approach for both traditional and non-traditional insurance contracts. For guaranteed death benefits, no lapse guarantees, annuitization benefits and other life-contingent living benefits, SOP 03-1 is the applicable accounting guidance under US GAAP which requires the consideration of a range of scenarios. However, most companies still calculate the contract assessments in a deterministic fashion, or use hand-picked scenarios with assigned weights, even for variable products. Stochastic calculation is only common when estimating claims for variable products with dynamic policyholder behavior that is linked to capital market performance. One reason for the prevalence of deterministic approach is the “book value” nature of the SOP 03-1 liability. It is not a “current value” type of liability that is designed to capture future obligations resulted from optionalities embedded in the contracts at a given reporting date. Instead, it accretes over time based on the relationship of anticipated claims and assessments under the “going concern” premise. Hence, the SOP 03-1 liability is less volatile than a “current value” liability and it has not been deemed critical to employ a full stochastic approach to capture the optionality cost. However, under the IFRS paradigm, the contract liability is supposed to represent a current estimate of what is necessary to fulfill the contract, thus it becomes more critical to consider stochastic scenarios to capture cash flow asymmetry when there are embedded options or guarantees.

In addition, the required confidence level disclosure for the RA may also drive the increased use of stochastic modeling. IFRS 17 does not specify any technique, but requires the reporting entity to disclose the confidence level used to determine the RA. To meet this disclosure requirement, it will be necessary for actuaries to understand the probability distribution of cash flows. There may be shortcuts available by leveraging existing Solvency II or economic capital calculations, but it is certain that a traditional deterministic approach will no longer be adequate.

## SOURCE OF EARNINGS

Actuaries are often asked to perform a source of earnings (SOE) analysis to understand the emergence of profits in a way that highlights the impact of significant actuarial and economic drivers. Different companies may have different types of analyses that vary by product, which may range from basic restructuring of the current income statement to sophisticated comparison of actual and projected profit emergence on multiple accounting

... it will be necessary for actuaries to understand the probability distribution of cash flows.

and assumption bases. For instance, under US GAAP, due to the different designs of reporting for FAS 60 and FAS 97 products, the work involved in constructing an SOE analysis varies—US GAAP reporting for FAS 97 products presents a period’s financial results in the income statement in a way that somewhat already aligns with the objectives of an SOE analysis. Additional complexity may exist in order to construct an informative SOE if there is an SOP 03-1 liability. For FAS 60, a typical SOE generally involves disaggregating the reserve change line by using the Fackler recursive reserve formula, and analyzing the changes by profit drivers such as deaths, surrenders, investment income, etc.

What will an SOE analysis look like under IFRS 17, and what type of effort will be required to construct an IFRS 17 SOE? The IFRS 17 income statement plus associated disclosures is very actuarial-driven, unlike the conventional accounting presentation where the actuarial calculation is primarily corralled into the “change in reserve” line. As mentioned, the CSM is established at initial recognition and captures the future profit. If experience emerges exactly as anticipated, its release is expected to be the main profit driver. In reality, profits will not emerge as anticipated, and different dimensions could be used in constructing an SOE analysis under IFRS 17:

1. By assumption drivers—mortality, surrender, premium and expenses. Similar to how SOEs are constructed for US GAAP FAS 60 products, actuaries could continue to attempt to analyze actual to expected deviations around these assumptions. This dimension centers on the first building block of the IFRS General Model. However, given the prominence of the CSM in profit recognition, the CSM should be built into the SOE too, as well as the RA. In addition, the effect of changes in discount rates and other financial assumptions should be considered. Under IFRS 17, companies can choose where to present such effect to minimize accounting mismatch—either in profit or loss, or disaggregated between profit or loss and other comprehensive income. Such decisions will affect the SOE analysis.
2. By liability components—PV of cash flows, the RA and the CSM. Paragraph 101 of IFRS 17 requires disclosure of reconciliations from opening to closing separately for each of the three liability components. This disclosure can be directly leveraged for the SOE.
3. By service periods—IFRS 17 is very specific as to the treatment of services from the past, current and future. For instance, the General Model also applies to the claims reserve valuation, which is related to past services provided. For current period services, one can readily find from the income statement the release of CSM, RA recognized for the risk

expired during current period, and other experience adjustments. For future services, change in estimates will impact all three liability components, and there will be an impact on the income statement if the CSM for certain groups is not sufficient to absorb unfavorable changes related to future services. In addition, paragraph 104 of IFRS 17 requires the disclosure of the reconciliations (required by paragraph 101) to include changes that relate to past, current and future services. The IFRS's Effects Analysis on the standard<sup>4</sup> provided a sample table (Table 3 within Illustration 4 in Appendix B) that can serve as a reference point.

In short, it will take some careful design, but the restructuring exercise may not be a significant effort, on top of the preparation for the already comprehensive IFRS 17 income statement and associated disclosures. It can be further viewed that IFRS 17 provides an opportunity for actuarial and finance professionals to rethink and redesign the SOE.

### COORDINATION WITH OTHERS

As alluded to above, IFRS 17 presentation and disclosure are complicated and will require deep actuarial involvement. Under IFRS 17, there will be fingerprints of actuaries all over the statement of comprehensive income. More than ever, actuaries will need to work with finance professionals.

Even at the beginning of the financial reporting cycle, when products are first being introduced to the market, valuation actuaries will need to get together with pricing actuaries and finance professionals to determine contract grouping. Under IFRS 17, an entity is required to measure the CSM at the group level, and the grouping determination by default is performed based on individual contract level assessment of profitability. However, the contract level calculation may be avoided to the extent the entity has reasonable and supportable information to conclude whether a set of contracts are onerous<sup>5</sup> or have no significant possibility of becoming onerous subsequently (paragraph 17 of IFRS 17). One conceivable source of such information is from pricing. Over the years, U.S. valuation actuaries have coordinated more with the pricing team under the migration to a principle-based statutory framework. With the implementation of IFRS 17, the level of coordination required will only be heightened.

In addition, in the process of implementing IFRS 17, actuarial models and IT infrastructure will require significant enhancement to facilitate alternative assumptions, increase in number of runs, faster processing, more detailed and granular output, tracking of locked-in yield curves and other comprehensive incomes, and storage of cash flows and attributions. Tracking, releasing and unlocking of CSM will involve both finance and actuarial elements. It is fair to say that actuarial inputs will be

sought after throughout the IFRS financial reporting process including the transition exercise.

### CONCLUSION

The adoption of IFRS 17 is a paradigm shift which will effectively result in two mandatory public financial reporting standards for some U.S. companies. IFRS 17 defines a comprehensive measurement model and resultant financial presentation that are both conceptually and technically different from current US GAAP as well as the foreseeable future state of US GAAP. Implementing and reporting under IFRS 17 is going to be a significant challenge for US actuaries whose practice areas intersect with IFRS. However, this compliance exercise can be turned into opportunities for actuaries—it is an opportunity to coordinate with cross-disciplinary professionals, and to become more professionally well-rounded. It is an opportunity to provide actuarial expertise and insights into other areas of financial reporting and internal management to improve the process for your employer and clients. It is also an opportunity to think outside of the “valuation” box as to how to most efficiently standardize and modernize the overall reporting process, incorporating the efforts of actuaries, finance professionals and IT resources to prepare your company not only for IFRS 17, but also for the upcoming US GAAP changes. ■

*The views reflected in this article are the views of the authors and do not necessarily reflect the views of Deloitte.*



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### ENDNOTES

- <https://www.sec.gov/news/speech/keynote-address-2016-aicpa-conference-working-together.html>
- The first block is sometimes also referenced as two building blocks with the time value of money separated out from cash flows.
- FAS 60 is now incorporated in ASC 944 in the updated FASB Codification, along with FAS 97 and SOP 03-1 which are also referenced in the article. FAS 157 is now known as ASC 820.
- <http://www.ifrs.org/-/media/project/insurance-contracts/ifrs-standard/ifrs-17-effects-analysis.pdf>
- According to IFRS 17, an insurance contract is onerous at the date of initial recognition if the fulfilment cash flows in total are a net outflow for this contract.

# GAAP Targeted Opportunity

## Improving GAAP Through Annual True Up

By Steve Malerich

In the past few issues of *The Financial Reporter*, I introduced “Unlocking 2.0” (December 2017), a technique for dynamically adjusting a valuation assumption in response to actual experience. The technique is designed to minimize

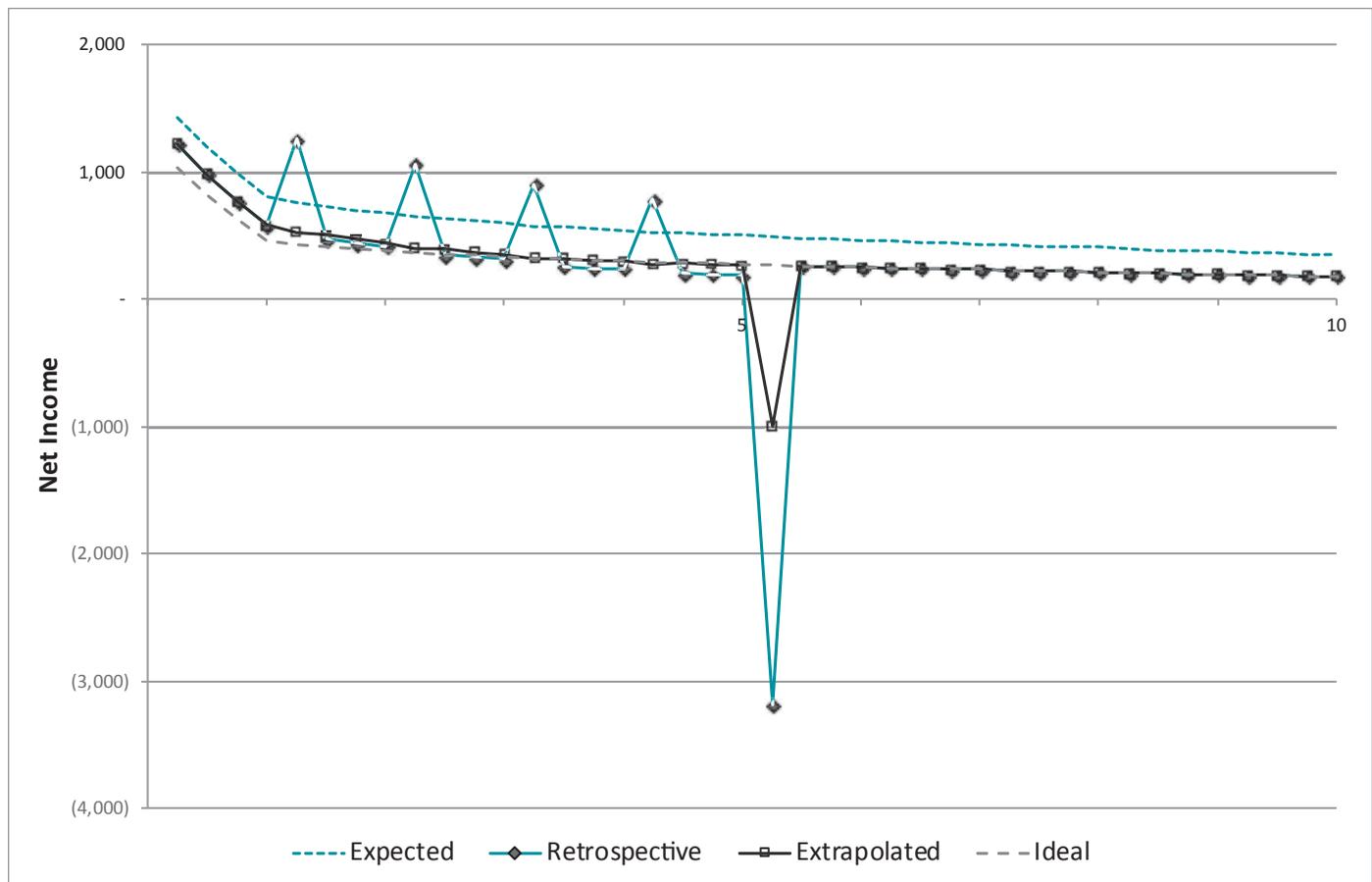
the “Retrospective Noise” (September 2017) caused when the reserve is updated for actual claims more frequently than assumptions are changed. In “Unlocking Persistency” (March 2018) I suggested that it might be best to hold the net premium ratio constant in between annual assumption reviews, updating it earlier only for especially large lapse variances.

In this article, I show how Unlocking 2.0 can also help to strengthen professional judgment while solving another old problem in a new way.

### TRUE UP FOR ACTUAL MORTALITY EXPERIENCE

Figure 1 shows quarterly income for the first 10 years of a 20-year term insurance contract with persistent adverse claim experience. True up for actual experience is performed only once each year and the mortality assumption is changed at the beginning of year six. (Except for the timing differences, this is the same situation shown in Figure 3 in “Unlocking 2.0.”)

Figure 1  
Persistent Adverse Mortality Experience



With an annual true up, the traditional retrospective approach saves the deferral of excess claim costs for the annual unlocking process. If there is no assumption change, the amount reported as unlocking is really just a deferral of part of the year's variance. This makes the unlocking quarter look especially good, and the reason it looks so good is that experience was so bad during the preceding year. The opposite would be true with favorable experience; the quarter with the true up would be especially bad because claims were so good.

This perverse result led to the common practice of true up for actual experience every quarter—to keep the true up tied to its cause. With Unlocking 2.0's extrapolated adjustments, however, the perverse effect practically disappears from the annual true up. (In the absence of a full assumption change, the extrapolation adjusts projected claims as a constant percent of a chosen basis, with the percent determined as the ratio of accumulated claim variances to an accumulation of the basis.)

## THE BENEFITS OF ANNUAL TRUE UP

Quarterly true up has never been a strict requirement and it will not become one under the targeted improvements. Unlocking 2.0 eliminates a significant reason for quarterly true up. Pairing it with annual true up could also:

- Help to shorten the monthly or quarterly close process by moving the update for actual experience into the annual assumption review process.
- Minimize disclosure volatility by allowing random variances to offset over the course of a year before including them in the net premium ratio.
- Allow time to evaluate the possible causes of experience variances, strengthening the valuation actuary's judgment in responding to them.

**Close time**—With immediate true up for actual experience, each quarter's reserve calculation depends on actual cash flows and certain accruals (such as the change in claim liabilities) for the quarter. That adds time to the process. Allowing for controls around that information adds more time. Altogether, the extra time might not be long, but with constant pressure to shorten close times and to better understand results, even a slight improvement can be significant.

**Disclosure volatility**—Including variances in the net premium ratio as they occur adds volatility to the ratio. With the new disclosure requirements, this could appear as instability in our valuation estimates. Though Unlocking 2.0 reduces reserve volatility, it could magnify volatility in the net premium ratio and

hence the appearance of instability. Annual updates would allow random fluctuations to offset, thereby minimizing the effect.

**Evaluate experience**—Immediate true up leaves the valuation actuary with only a few days to consider whether actual claim experience warrants a change in the projection. That's too little time for adequate analysis before making such a decision. In my experience, we seldom bother. Instead, we immediately adjust the history and wait for a regular annual assumption review before asking the question, "Do I have enough experience to credibly support an assumption change?"

If the answer is affirmative, we change an assumption. If the new assumption is directionally consistent with actual experience, the true up and the assumption change will have opposing effects on the reserve. If they're separated in time, this creates volatility. If they're paired in time, it reduces the magnitude of whatever we need to explain.

More often, the answer will be negative. For techniques, such as a gross premium reserve, that do not reduce the reserve for adverse experience or increase it for favorable experience, stopping with this answer is not a serious problem. For a current-assumption retrospective net premium reserve, however, this question ignores the tendency to over or under state the reserve for a favorable or adverse trend, respectively. With such a reserve method, we should next ask, "Can I confidently ignore this experience when projecting future experience and therefore adjust my reserve to partly offset its cost?"

It would be practically impossible to reliably answer this question every quarter within a normal close process. Outside of the quarterly close and with a full year of experience, we will have more time to consider possible causes and to make this judgment. Unless we can identify a cause that is both unusual and temporary, we should answer this question in the negative and use some technique, such as the Unlocking 2.0 extrapolation, to adjust projected claims consistent with actual experience.

In the rare event that we do identify an unusual and temporary cause, we can prevent it from inappropriately affecting the projection by excluding a portion of the variance from the excess claims ratio or by making a manual adjustment to the extrapolation formula's significance factor.

Thus, annual true up gives the actuary three possible practical conclusions to draw from actual experience:

1. There is enough experience to warrant a formal assumption change.

2. There is not enough experience to warrant a formal assumption change but neither can actual experience be dismissed as irrelevant to future experience.
3. The year's variance had a truly extraordinary cause and can be reasonably ignored in the projection of future claims.

Framed in this way, I expect that we'll find the second conclusion to be most common. It is in this situation that the extrapolation adjustment will be most valuable. It effectively minimizes the risk of over or understating the reserve for favorable or adverse trends even when such trends are not yet obvious.

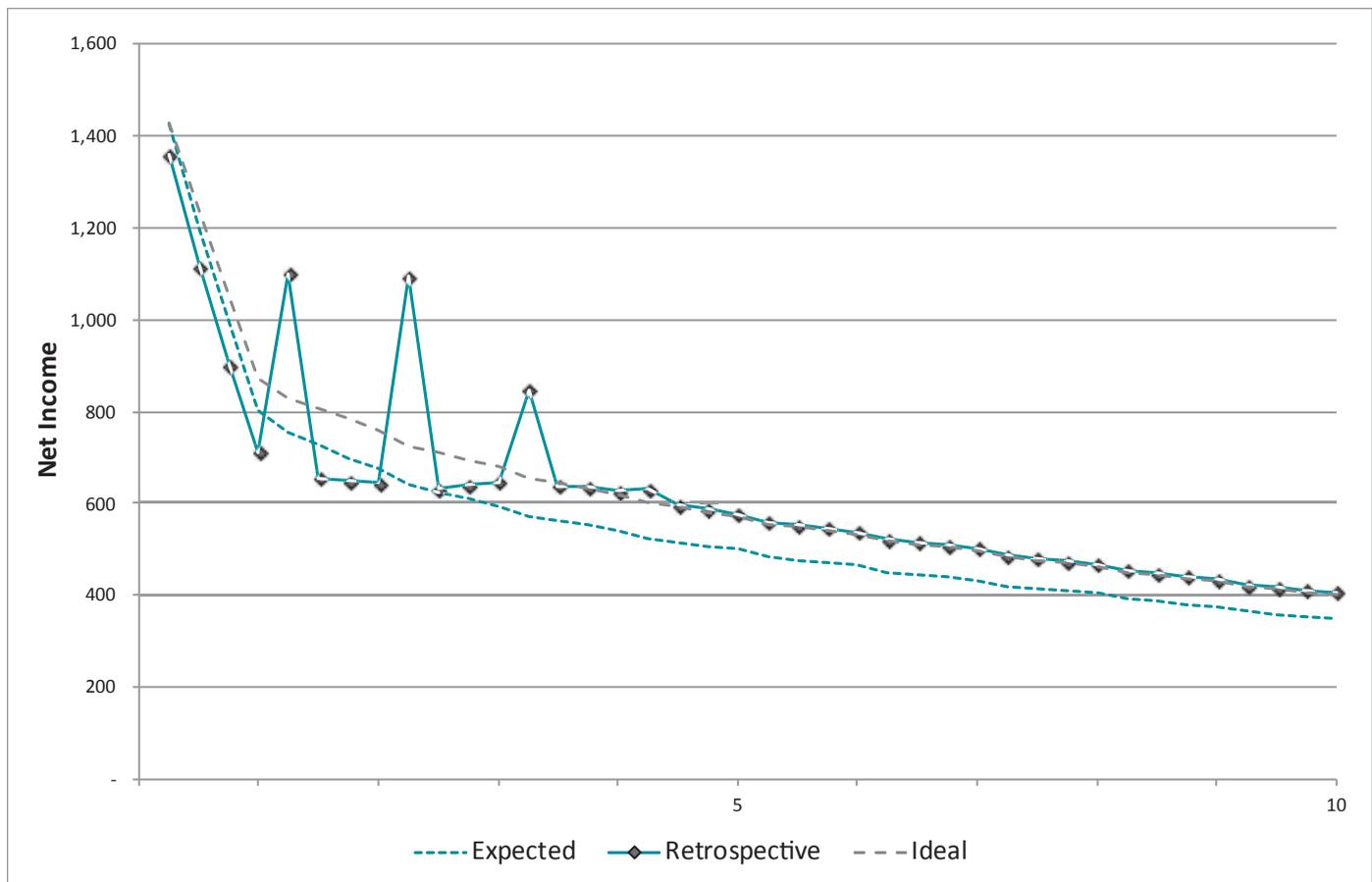
### TRUE UP FOR ACTUAL LAPSE EXPERIENCE

As described in "Unlocking Persistency," I do not anticipate using any technique short of a full assumption change to adjust projected lapses in light of actual experience. In part, that's

because it would be difficult to define a reasonable extrapolation technique for lapse experience. And, as shown in the earlier article, the distortions that make extrapolation important for claims are generally much less significant with lapse variances. Without the smoothing effect of an extrapolated adjustment, we must also consider the timing of true up for actual lapse experience.

Figure 2 shows quarterly income for the first 10 years of a 20-year term insurance contract with early lapses significantly lower than expected. True up for actual experience is performed only once each year and there is no need for an assumption change since experience converges with the original assumption after a few years. (Except for the timing differences, this is the same situation shown in figure 1 in "Unlocking Persistency.") Before true up, a fixed net premium ratio is applied to the present value of expected gross premiums in the determination of reserves for actual business in force each quarter.

Figure 2  
Favorable Early Lapse Experience





In this example, significant favorable persistency produces similar distortions to Figure 1's retrospective true up in the first few years.

Lapse variances of six percent and three percent of in force in the first two years, respectively, mean higher reserve accruals each quarter are followed by a significant reserve release when the net premium ratio is adjusted for the actual experience. In the third year, lapses are just one percent of in force below expected and the true up is relatively insignificant.

In my testing, that one percent deviation from annualized lapse rates seems to be a rough threshold during the early years of a cohort. Smaller variances can generally wait for an annual true up of the net premium ratio without producing large true up adjustments. Larger variances can produce a large true up adjustment. Above the threshold, an immediate true up of the net premium ratio for the unexpected change in amount in force may be needed to avoid the later distortion. In my testing of both 20-year term and whole life insurance, this volatility almost disappears after about the first 10 years of the cohort, even for

large lapse variances. By then, the amount of accumulated history stabilizes the net premium ratio despite the effect of the variance on projected claims and premium.

## CONCLUSIONS

In articles published over the past year, we have seen that significant earnings volatility around assumption changes and true up for actual experience is not an unavoidable consequence of retrospective unlocking. With this article, we have now seen that a solution to the volatility problem can bring other practical benefits, including the opportunity to strengthen our professional judgment when calculating traditional insurance contract liabilities. ■



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# ULSG SOP 03-1 Reserving Practices—Survey Highlights

By Emily Cassidy

*The views expressed in this article are those of the survey participants (on an anonymous basis) and do not necessarily reflect the views of KPMG nor are they intended as methods of regulatory or tax compliance.*

Universal life with secondary guarantees (ULSG) are a portfolio staple for many life insurers and have been for many years. The secondary guarantee generally takes the form of a required minimum premium or a shadow account. The guarantee serves to keep the policy in-force when the account value is zero if requirements outlined in the policy form have been met. These products are an attractive option for policyholders as they are guaranteed a minimum, albeit low, crediting rate with the potential for increased interest credits if interest rates rise without the higher mortality and expense charges and rider fees often associated with separate account products such as variable annuities.

Under US GAAP for these products, the base policy is classified as an insurance contract under ASC 944 (previously FAS 97) and reserves are equal to account value. However, the presence of the secondary guarantee leads to some complexity in the valuation process as these benefits typically fall under SOP 03-1 because the guarantees can lead to benefits being paid while the account value (AV) is zero or produce a pattern of earnings that can have profits followed by losses. SOP 03-1 values the excess benefit by accruing assessments for those benefits based on the ratio of excess benefits to assessments (commonly referred to as the benefit ratio). The change in SOP 03-1 reserves is subsequently reflected in estimated gross profits for the ASC 944 deferred acquisition cost (DAC) asset which requires an iterative valuation process since the DAC cash flows are needed to calculate the SOP 03-1 cash flows.

The guidance of SOP 03-1 is more principle-based than prescriptive which has led to a range of interpretations and applications of the requirements. The ultimate reserve formula is fairly standard across the industry, i.e.,  $SOP_t = SOP_{t-1} * (1+i) + \text{benefit ratio} * \text{assessments}_t - \text{excess benefits}_t$ , but there are

various practices for projecting and discounting the charges and benefits. In order to benchmark current industry practice, KPMG performed a survey of 14 companies in June 2017. The survey questions were broken down into four broad categories: (1) scenarios, (2) process, (3) output and (4) miscellaneous. This article summarizes the key findings of the survey.

## SCENARIOS

A key element of the SOP 03-1 calculation process is the scenario(s) used to project liability cash flows. The guidance references the use of a “range of scenarios” to reflect expected experience. This could be interpreted to mean that a stochastic approach is required. However, the survey results highlighted that there is variation in practice with about 70 percent of respondents using a deterministic approach.

The respondents that use a deterministic scenario most commonly use the same best estimate scenario that is used to amortize DAC. Many respondents took the view that the best estimate scenario would represent the average of a set of stochastic scenarios and thus fulfills the requirement to consider experience over a “range of scenarios.” For respondents using a stochastic approach, the number of scenarios ranged from 50 to 250 with scenarios being updated on a quarterly or annual basis.

The combination of tight reporting timelines and the iterative nature of the SOP 03-1 and DAC calculations leads to some challenges...

## PROCESS

The combination of tight reporting timelines and the iterative nature of the SOP 03-1 and DAC calculations leads to some challenges in executing the process in a timely manner with sufficient analysis of results. One method to address such challenges is to use a simplified methodology such as rules of thumb or roll-forward approach where a full valuation is performed once per year and the result rolled forward in other periods.

However, approximately 85 percent of respondents indicated that they perform a complete valuation in each reporting period with only a few companies indicating that any simplified approaches were employed. The reporting timelines varied across companies but most were able to have results by business day seven and on average the ledger was closed by business day eight. A key challenge to meeting these timeframes is obtaining data necessary to complete the reserve estimate, with actual

assessments being the most challenging element for a slight majority of respondents. To address this challenge and meet the reporting timelines, using data with a one quarter lag is a common approach.

Not surprisingly, companies perform their SOP 03-1 valuation on a quarterly or monthly basis. All respondents indicated that assumption unlocking occurs on an annual basis with some variance in timing although second quarter and third quarter were the most common responses.

## OUTPUT

The nature of the SOP 03-1 calculation and its relationship to the account value generally means that these reserves are a small percentage of the overall US GAAP reserve. Most respondents indicated that their SOP 03-1 reserve was 5 percent or less of total life US GAAP reserves. Only a few stated that it was greater than 10 percent of life US GAAP reserves. The basis for response was year-end 2016 reporting.

The SOP 03-1 calculation uses a variety of assumptions such as crediting rates, mortality and lapse which affect the reserve estimate to varying degrees. Changes in long-term interest rates was the most common response as the assumption that was most impactful to financial results. Lapse rates were also noted as a highly impactful assumption.

## MISCELLANEOUS

The use of stochastic scenarios in the valuation opens the door for the possibility of using a dynamic lapse assumption as commonly seen in variable annuity valuation. However, over half of the respondents indicated that they do not use a dynamic assumption and simply lower the lapse rate when the secondary guarantee is in-the-money.

As mentioned above, there is some inherent circularity in the nature of the SOP 03-1 and DAC calculations. There are a variety of approaches used to address this including iterating up to 1,000 times. Practices include using a methodology that is built into the valuation system, using an internally developed methodology, and calculating SOP 03-1 reserves first and then directly reducing EGPs.

Two other differences in methodology that arose from the survey relate to the projection period and definition of an excess benefit. Projection periods ranged from 30 to 100 years, with most companies indicating that no terminal value is used as it is assumed to be immaterial at the end of the projection period. Excess claims were most commonly defined as a benefit paid

when the account value is 0 or a benefit paid when the no lapse guarantee is in-the-money (ITM). Some additional responses included uncollected charges when the no lapse guarantee is ITM or death benefits paid less charges collected while the no lapse guarantee is ITM.

## SUMMARY

Based on the results of the survey, we observed the following key findings:

- There are a variety of approaches for calculating SOP 03-1 reserves including both stochastic and deterministic approaches. The number of stochastic scenarios is generally smaller than that seen in other applications (e.g., 100–200 scenarios as opposed to 1,000 scenarios for Actuarial Guideline 43). A full asset liability management approach (integrated asset and liability modeling) is not common.
- There was no consensus approach for setting crediting rates and discount rates, but the majority of participants were using some sort of simplified approach to setting these assumptions.
- Most respondents are performing a full SOP 03-1 valuation in each reporting period (i.e., projecting cash flows to calculate reserves) and are not using a roll-forward or other simplified methodology.
- The key challenge facing companies is getting data within tight reporting timelines. Most companies indicated that they aim to record reserves by business day five to eight of the reporting calendar and close the ledger by day 10.

Universal life insurance has been an industry staple for many years and is offered by most companies with a full suite of products. Since the financial crisis, low interest rates have become the new normal and tighter spreads have led to low guaranteed interest rates. Secondary guarantee benefits are a key design feature that companies can use to differentiate themselves from the competition in this low interest rate environment. The inclusion of these features raises the need for an SOP 03-1 reserve to account for the guarantees. The survey results showed that there is a range of practice in the application of this guidance and a single method has not yet emerged as the clear leader. ■



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# I Don't Have to Worry About PBR for Health Insurance, Right?

By Patricia Matson and Leslie Jones

**W**ell, we hate to say it, but that is not correct. While it may be true that, in general, the current post-PBR standards are similar to the pre-PBR standards at the moment, the truth is that health insurance is indeed impacted by the revisions to the Standard Valuation Law (SVL) adopted by the National Association of Insurance Commissioners (NAIC) in 2009.

Perhaps the first thing to clarify is the use of the acronym PBR, which stands for principle-based reserves. This acronym is typically associated with the new statutory reserving standards that the NAIC has developed that specify the requirements for a principle-based valuation for life insurance products and the preparation of a PBR Report. However, it is important to note that these standards for life insurance were developed pursuant to the 2009 revisions to the SVL noted above that have been adopted by the vast majority of states.

The truth is that health insurance is indeed impacted by the revisions to the Standard Valuation Law (SVL) adopted by the National Association of Insurance Commissioners (NAIC) in 2009.

The 2009 revisions to the SVL set forth a new framework for establishing statutory reserves for all policies that are subject to the SVL (i.e., life insurance contracts, annuity and pure endowment contracts, accident and health insurance contracts, and deposit type contracts) starting with policies issued in 2017. Specifically, the new framework includes the development of a valuation manual (VM) which prescribes the minimum required standards of valuation for all policies subject to the SVL that are

issued on or after the operative date of the VM, which is Jan. 1, 2017, in all states that have adopted the 2009 revisions to the SVL to date. For accident and health insurance policies that are issued on or after Jan. 1, 2017, the minimum required standards of valuation will now be established by the VM rather than state laws or regulations for companies that are domiciled in states that have adopted the 2009 revisions to the SVL with a couple of exceptions that we will touch on briefly below. Thus, in general, issuers will need to adhere to the standards prescribed in the VM rather than prior state standards in developing reserves for accident and health insurance for policies issued on or after Jan. 1, 2017.

The good news is that, in general, the standards prescribed in the VM for accident and health insurance (i.e., the post-PBR standards) are similar to the existing state standards (i.e., the pre-PBR standards). Specifically, the 2009 revisions to the SVL require the VM to specify which policies or contracts are subject to a principle-based valuation and the minimum valuation standards for those policies. For policies not subject to a principle-based valuation (as defined in the valuation manual regardless of the extent of PBR-like use of a combination of company assumptions and industry data) the minimum standard must: 1) be consistent with the standard of valuation prior to the operative date of the valuation manual; or 2) develop reserves that quantify the benefits, guarantees and funding associated with the contracts and their risks at a level of conservatism that reflects conditions that include unfavorable events that have a reasonable probability of occurring. With respect to the exceptions we noted above, a commissioner may prescribe a minimum valuation standard in the absence of a specific valuation requirement or if he or she is of the opinion that a specific requirement of the VM is not in compliance with the SVL. The latter would be considered a prescribed practice to be communicated in the footnotes. The commissioner may also require a company to change any assumption or method as deemed necessary to comply with the VM or the SVL.

The VM is updated regularly and a new edition of the VM is published to reflect the updates. In general, any changes are effective Jan. 1 of the year following the changes. The current version of the VM is titled the "Jan. 1, 2018 Edition." Section II of the VM provides the minimum reserve requirements by type of product. The 2018 edition of the VM states that the minimum reserve requirements for accident and health insurance contracts, other than credit disability, are those required by VM-25, "Health Insurance Reserves Minimum Reserve Requirements," and VM-A and VM-C requirements, as applicable.

VM-25 states that the requirements for individual accident and health insurance policies issued on or after the valuation manual operative date are applicable requirements found in

the Accounting Practices and Procedures Manual (APPM), Appendix A, which includes A-010, “Minimum Reserve Standards for Individual and Group Health Insurance Contracts”; and applicable requirements found in APPM Appendix C, which includes “Actuarial Guideline XXVIII—Statutory Claim Reserves For Group Long-Term Disability Contracts With a Survivor Income Benefit Provision (AG 28)”; “Actuarial Guideline XLIV—Group Term Life Waiver of Premium Disabled Life Reserves (AG 44)”; “Actuarial Guideline XLVII—The Application of Company Experience in the Calculation of Claim Reserves Under the 2012 Group Long-Term Disability Valuation Table (AG 47)”; and “Actuarial Guideline L—2013 Individual Disability Income Valuation Table (AG 50).” It also includes a clarification to ensure that the maximum interest rate for claim reserves remains unchanged from the current requirement. VM-A and VM-C include applicable reserve requirements from Appendix A and Appendix C of the APPM which are to be used for policies issued on or after the operative date of the VM.

Credit disability is defined in Section II of the VM. The minimum reserve requirements for credit life, credit disability and other credit related insurance issued on or after the operative date of the VM are provided in VM-26, “Credit Life and Disability Reserve Requirements.” The requirements in VM-26 are intended to emulate the existing treatment of credit life and disability products in the APPM including requirements applicable to credit insurance in SSAP 59, “Credit Life and Accident and Health Insurance Contracts”; A-010, “Minimum Reserve Standards for Individual and Group Health Insurance Contracts”; and A-818, “Determining Reserve Liabilities for Credit Life Insurance Model Regulation.”

Section III of the VM states that the requirements regarding the actuarial opinion and memorandum pursuant to the SVL are provided in VM-30, “Actuarial Opinion and Memorandum Requirements.” Currently VM-30 states that it is the intent to allow the annual statement instructions to address all issues relating to the actuarial opinion and memorandum for the health annual statement or the property and casualty annual statement.

As noted above, the VM is updated regularly, and the NAIC’s Health Actuarial Task Force (HATF) is currently considering in which part of the VM should “Actuarial Guideline LI—The Application of Asset Adequacy Testing to Long-Term Care Insurance Reserves (AG 51)” be incorporated and whether existing reserving mortality table requirements need to be updated to reflect reserving standards for short-term and long-term care policies. Also, there are complexities that are being discussed related to the fact that the VM standards are applicable to policies issued on or after the operative date of the VM whereas

standards for claim reserves for disability income contracts vary depending on the claim incurred date.

In summary, for states that have adopted the 2009 revisions to the SVL, standards for accident and health insurance contracts will be established by the VM rather than state laws and regulations. The current standards specified in the VM for accident and health insurance contracts are based on existing NAIC model laws, regulations and standards in the APPM and annual statement instructions. So, to the extent a state has adopted the most recent versions of applicable NAIC models without exception and does not have any state specific accident and health insurance requirements or permitted or prescribed practices that differ from the standards in the APPM or other differences, the impact on companies domiciled in those states is relatively minor. The companies that will feel the most impact will be those that are domiciled in states that have different standards for accident and health insurance reserves than those contained in the current NAIC standards.

So, we would argue that you do need to worry about PBR for health insurance. If your company is domiciled in a state that has adopted the 2009 revisions to the SVL, we would encourage you to identify any differences in state standards applicable to accident and health insurance contracts prior to the operative date of the VM and the current NAIC standards. We would also encourage you to monitor the activities of the NAIC as they relate to the development of reserving standards for accident and health insurance contracts since these standards, particularly the standards developed by HATF, will very likely be applicable to your company once they are adopted by the NAIC. Finally, it is certainly possible at some future date that the valuation manual could apply PBR requirements to accident and health insurance contracts (e.g., specific credibility rules for use of company experience, data collection for industry experience when company data is not fully credible, the continual updating of reserve assumptions and inclusion of health insurance in the PBR Report). So, we would encourage you to keep abreast of the evolving standards and deliberations. ■



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# New SPIA Interest Rates in VM-22

By Paul Hance, Heather Gordon and Chris Conrad

In 2015, the Standard Valuation Law (SVL) Interest Rate Modernization Work Group of the American Academy of Actuaries (Academy) was formed at the request of the VM-22 Subgroup of the Life Actuarial Task Force (LATF) of the National Association of Insurance Commissioners (NAIC) to review the valuation rate framework in place at the time and recommend changes to “modernize” the framework, if appropriate. The Academy group initially focused on Single Premium Immediate Annuities (SPIAs) and similar contracts. Their work culminated in the adoption of changes to the valuation interest rate regime for these contracts for the first time in more than 30 years.

As noted briefly in the March issue of *The Financial Reporter*, the statutory valuation rate changes took effect for contracts issued on or after Jan. 1, 2018. Products initially in scope for the new rate methodology are:

- Single premium group annuities (pension risk transfer),
- immediate annuities,
- deferred immediate annuities (DIAs),
- structured settlements,
- payout annuities (settlement options),

- supplementary contracts and
- living benefits (GLWBs) and contingent deferred annuities (CDAs) once account value is exhausted.<sup>1</sup>

A high-level comparison of the prior methodology and the resulting new methodology is shown in Table 1.

The interest rates used in the valuation of pension risk transfer (PRT) buyout transactions were identified as one example where the existing regime may have been out of date. Over the last decade, PRT transactions with single premiums over a billion dollars have become commonplace. Assuming the valuation rates are intended to be related to the yield on the assets purchased to back a given liability, the prior methodology, based on average annual yields, had started to make less sense to appropriately reserve for these infrequent, but potentially substantial, transactions. The “lumpiness,” i.e., disproportionately large sporadic transactions rather than fairly continual transactions throughout the year, of these so-called “jumbo” transactions was one of the factors which led regulators to ask the Academy to help them with the development of a new interest rate methodology.

Furthermore, it was determined that the credit quality of the index employed in the prior method may no longer accurately reflect the assets insurers are purchasing to back these liabilities. Also, under the prior regime, there was also only a single valuation rate regardless of the duration of the liability. Taken together, these features of the prior methodology could require carriers to post asset adequacy testing (AAT) reserves.

In light of these concerns, the Academy established the following principles to guide their efforts in the development of the methodology which was ultimately adopted, with minor modifications, by the NAIC:

Table 1  
Prior Versus New Methodology For SPIAs and Similar Contracts

		Prior	New
A	Reference Index	Moody’s Long-Term Corporate Bond Index	Treasuries plus VM-20 Spreads
B	Credit Quality	Moody’s Index	Based on Average Life Insurer Bond Portfolio
C	Prudence	20 percent of reference rate in excess of 3 percent	VM-20 Baseline Defaults and Spread Deduction
D	Floor	None, but bias toward 3 percent	None
E	Valuation Rate Buckets	One	Four to reflect duration differences
F	Frequency of Updates	Annual	Quarterly (non-jumbo) / Daily(jumbo)
G	Rounding	Nearest 25bp	Non-jumbo: nearest 25bp Jumbo: nearest 1bp

1. Valuation rates based on asset portfolios backing the liabilities.
2. Inclusion of appropriate prudence.
3. Equal treatment across companies.
4. Avoidance of perverse incentives.
5. Consistency with other recent statutory frameworks.
6. Daily valuation rate is ideal.
7. Optimal tradeoff of accuracy and effort.

To address the concerns, the new framework incorporates many changes. To address the “lumpiness” issue, there will now be different rates for “jumbo” contracts (initial premium greater than or equal to \$250 million) and “non-jumbo” contracts; jumbo contracts will use a rate that is updated daily, whereas non-jumbo contracts will use a rate that is updated quarterly. In line with the goal of achieving consistency across statutory frameworks, the new methodology uses U.S. Treasuries plus VM-20 credit spreads and expected defaults. In order to avoid enticing companies to invest in riskier assets in order to have a higher discount rate, the credit quality distribution is based on the public bond portion of an average life insurer’s asset portfolio. Finally, there are now four different valuation rates to reflect differences in liability duration. For simplicity, there is a mapping based on two liability characteristics highly correlated with duration, namely age and the “reference period” (generally the certain period).

For contracts or certificates without life contingencies, valuation rate buckets are assigned based on the length of the reference period<sup>2</sup> (RP), as shown in Table 2.

For contracts or certificates with life contingencies, valuation rate buckets are assigned based on the length of the reference period and the initial age of the annuitant, as shown in Table 3.

The impact of the new regime on valuation rates can be significant, especially for shorter duration liabilities. Table 4 provides a comparison of the valuation rates under the prior and new regimes for contracts issued during the fourth quarter of 2017.

The exhibit shows a 1.5 percent decrease in the interest rate for short duration liabilities (A), a 1 percent and 75 basis point decrease for moderate duration liabilities (B & C), respectively, and a 25 basis point decrease for long duration liabilities (D).

The NAIC publishes these rates on its website.<sup>3</sup> However, it still may be helpful for the practitioner to understand how the rates are calculated. The formula for non-jumbo rates is  $I_q = R + S - D - E$ , where:

Table 2  
Valuation Rate Buckets For Contracts Without Life Contingencies

RP ≤ 5Years	5Y < RP ≤ 10Y	10Y < RP ≤ 15Y	RP > 15Y
A	B	C	D

Table 3  
Valuation Rate Buckets For Contracts Without Life Contingencies

Initial Age	RP ≤ 5Years	5Y < RP ≤ 10Y	10Y < RP ≤ 15Y	RP > 15Y
90+	A	B	C	D
80-89	B	B	C	D
70-79	C	C	C	D
<70	D	D	D	D

- R is the Treasury reference rate,
- S is the defined spread,
- D is the VM-20 default cost, and
- E is the spread deduction (always equal to 0.25 percent).

As an example, let’s examine a sample non-jumbo valuation rate calculation for a SPIA issued on March 2, 2018, life-only, to a 68-year-old. Based on Table 3, this contract would fall in valuation rate bucket D, the longest duration bucket. The derivation of the various components of the valuation rate calculation is shown in Table 5 (pg. 20). Based on those calculated components,  $I_q$  is equal to 2.62017% + 1.29698% – 0.29670% – 0.25%, or 3.37045%. Rounding to the nearest 25 basis points we get 3.25%.

The formula for calculating jumbo rates is  $I_d = I_q + C_d - C_q$  where:

- $I_q$  is the quarterly valuation rate for the calendar quarter preceding the business day immediately preceding the contract’s premium determination date;
- $C_d$  is the daily corporate rate for the business day immediately preceding the contract’s premium determination date; and
- $C_q$  is the average daily corporate rate corresponding to the period used to develop  $I_q$ , which is the calendar quarter preceding the calendar quarter during which  $I_q$  is the quarterly valuation rate.

Table 4  
Prior Versus New SPIA Valuation Rates

Statutory Maximum Valuation Interest Rate for Non-Jumbo Contracts					
	New Regime				Prior Regime
	Valuation Rate Buckets				All Contracts
Premium Determination Date	RP ≤ 5Y <b>A</b>	5Y < RP ≤ 10Y <b>B</b>	10Y < RP ≤ 15Y <b>C</b>	RP > 15Y <b>D</b>	
<b>10/1/2017–12/31/2017</b>	2.25%	2.75%	3.00%	3.5%	3.75%

Table 5  
Derivation Of Components Of Valuation Rate

	Average Treasury Rate	Weight	Expected Spread	Weight	Expected Default Costs	Weight
2 Year	1.69%	2.23032%	0.59425%	2.23032%	0.19860%	2.23032%
5 Year	2.07%	7.52528%	0.79005%	7.52528%	0.26792%	7.52528%
10 Year	2.37%	26.26320%	1.03202%	26.26320%	0.30153%	90.24441%
30 Year	2.82%	63.98120%	1.48987%	63.98120%		
	<b>R</b>	<b>2.62017%</b>	<b>S</b>	<b>1.29698%</b>	<b>D</b>	<b>0.29670%</b>

As an example, take a sample jumbo valuation rate calculation for a SPIA issued on March 2, 2018, life-only, to a 68-year-old.  $I_q$  equals 3.481%, which is the unrounded Q4 2017 non-jumbo rate.  $C_d$  equals 4.256%, the daily rate for March 1, 2018. And  $C_q$  equals 3.968%, the average of daily rates for Q4 2017. Therefore,  $I_d = 3.481\% + 4.256\% - 3.968\% = 3.769\%$ . Rounding to the nearest basis point, we get 3.77%. ■



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**ENDNOTES**

- 1 The scope of products to be included in VM-22 is under review by regulators at the time of article submission. Also under consideration is the option to use the original issue date for policies that annuitize from a deferred annuity contract if it can be shown the underlying investments did not materially change as a result of the benefit election.
- 2 Reference period means the length of time, rounded to the nearest year, from the premium determination date to the date of the last non-life-contingent payment under the individual contract or group certificate, as applicable.
- 3 Rates will be published by the NAIC at [http://www.naic.org/index\\_industry.htm](http://www.naic.org/index_industry.htm). The text of the regulation is at [http://www.naic.org/documents/cmte\\_a\\_latf\\_related\\_vm22\\_170407\\_adoption.docx](http://www.naic.org/documents/cmte_a_latf_related_vm22_170407_adoption.docx). For background on the development of the regulation, see <https://www.actuary.org/committees/dynamic/SVLMODERNIZATION>.



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# A Review of Root Cause in Insurer Insolvencies and Impairments

By Dave Heppen and Veronika Cooper

In 2016 and 2017, we conducted a study of root causes in insurer insolvencies and impairments, with the focus on analyzing potential risk factors and prevention measures. The study was sponsored by the Canadian Institute of Actuaries, Casualty Actuarial Society and Society of Actuaries (collectively the sponsoring organizations). It looked at causes of insolvency and decisions made by management, regulators and policyholders over the life cycle of the insolvency. In addition, the study considered ways the actuarial profession can be equipped to help prevent or mitigate future insolvencies. It was also intended to assist other insurance industry practitioners in understanding the complexities of insurance company solvency and the benefits

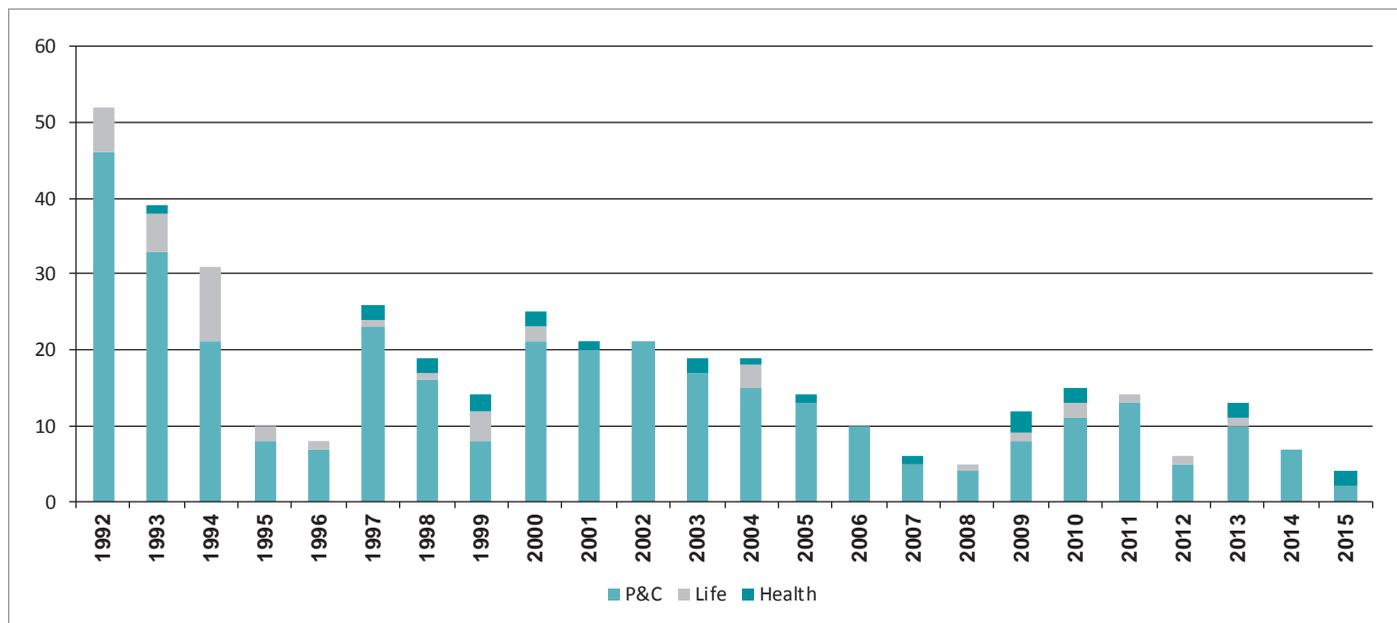
of keeping the actuarial profession in the forefront of company management, operations and regulatory communication. This article provides a summary of our study. The complete report and case studies can be found on the SOA's website.<sup>1</sup>

The study considered insurer insolvencies in both the United States and Canada. In Canada, the insolvency rates are very low, and detailed studies have previously been conducted on both individual company insolvencies as well as insolvency from an industry-wide perspective. Our analysis used available studies and insights from previous research on Canadian insolvencies to draw comparisons and contrasts to observations on risk drivers in the United States.

Figures 1 and 2 (pg. 23) illustrate the historical number of U.S. and Canadian insurer insolvencies by year and by product type. (Please note that there were no Health insurer insolvencies in Canada for the period from 1992 to 2015.)

A key aspect of our study was the review of insolvency risk factors by cohort. The use of cohorts allowed us to compare insolvency risk factors across life, health and P&C companies. The cohorts included P&C personal auto; P&C homeowners; P&C workers' compensation; P&C commercial liability; Life & Annuity, Health including long-term care (LTC); and Health cooperatives.

Figure 1  
Number Of U.S. Insurer Insolvencies



Sources: National Conference of Insurance Guaranty Funds (NCIGF) and the National Organization of Life & Health Insurance Guaranty Associations (NOLHGA).

## RISK DRIVERS

During the course of the study, we developed two comparative views of risk drivers when performing the analysis of U.S. insolvencies. The first view was based on a review of a sample of U.S. companies' insolvencies by risk factor and cohort. The risk factors considered in the study were grouped into two major categories—financial and demographic. This view allowed for comparisons of the potential importance of particular risk factors for each company and cohort within the study, relative to all insolvent companies and cohorts included in the study.

The financial risk factors were:

- Premium growth,
- profitability,
- liquidity,
- investment,
- leverage and
- risk-based capital.

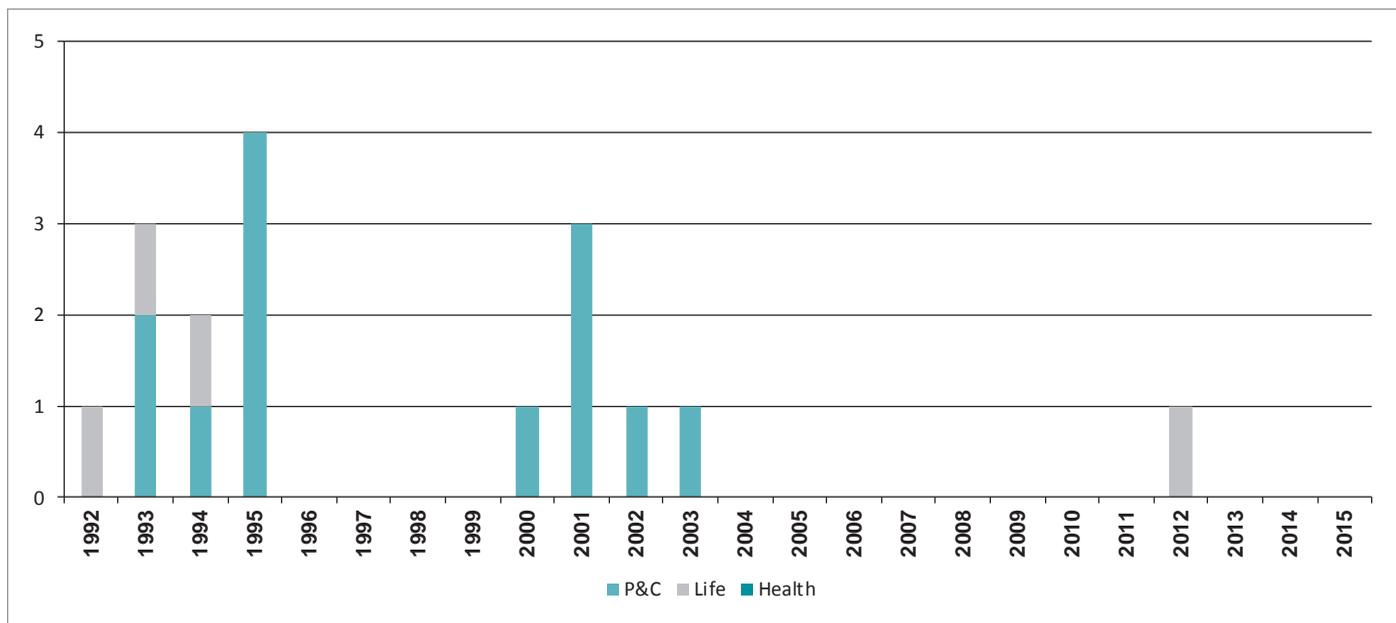
The demographic risk factors were:

- Company size,
- number of years in operation,
- geographic concentration and
- product concentration.

The second view was a comparison of the insolvent sample to the corresponding industry sample for each cohort, which allows for perspective on the extent to which the risk factors help distinguish insolvent companies from a broader industry sample with the same product focus. Risk factors are likely to be less useful in identifying potential insolvencies if they manifest the same way for insolvent companies as they do for similar going concern companies. They are more useful if they manifest differently, e.g., displaying higher risk characteristics for companies that ultimately experienced insolvency relative to similar going concern companies.

For example, one of the key risks identified as a potential insolvency driver for the U.S. companies was premium growth, and the charts below represent two main views (described above) for that risk. The first view includes only the insolvent sample of companies by cohort. Based on financial information for the companies in the study, we defined those companies showing low, medium or high premium growth (and therefore low, medium or high risk) in the years prior to the insolvency. It can be seen from the first view in Figure 3 that, among the insolvent insurers included in the study, high growth and high risk was present predominately in the P&C cohorts as well as the health cooperatives. In other words, the P&C companies and health cooperatives exhibited more risk associated with premium growth than the life or other health companies. The second view provides an industry overlay, in which the insolvent cohorts are

Figure 2  
Number Of Canadian Insurer Insolvencies



Sources: Assuris and Property and Casualty Insurance Compensation Corporation (PACICC).

Figure 3  
View 1: Insolvent Sample

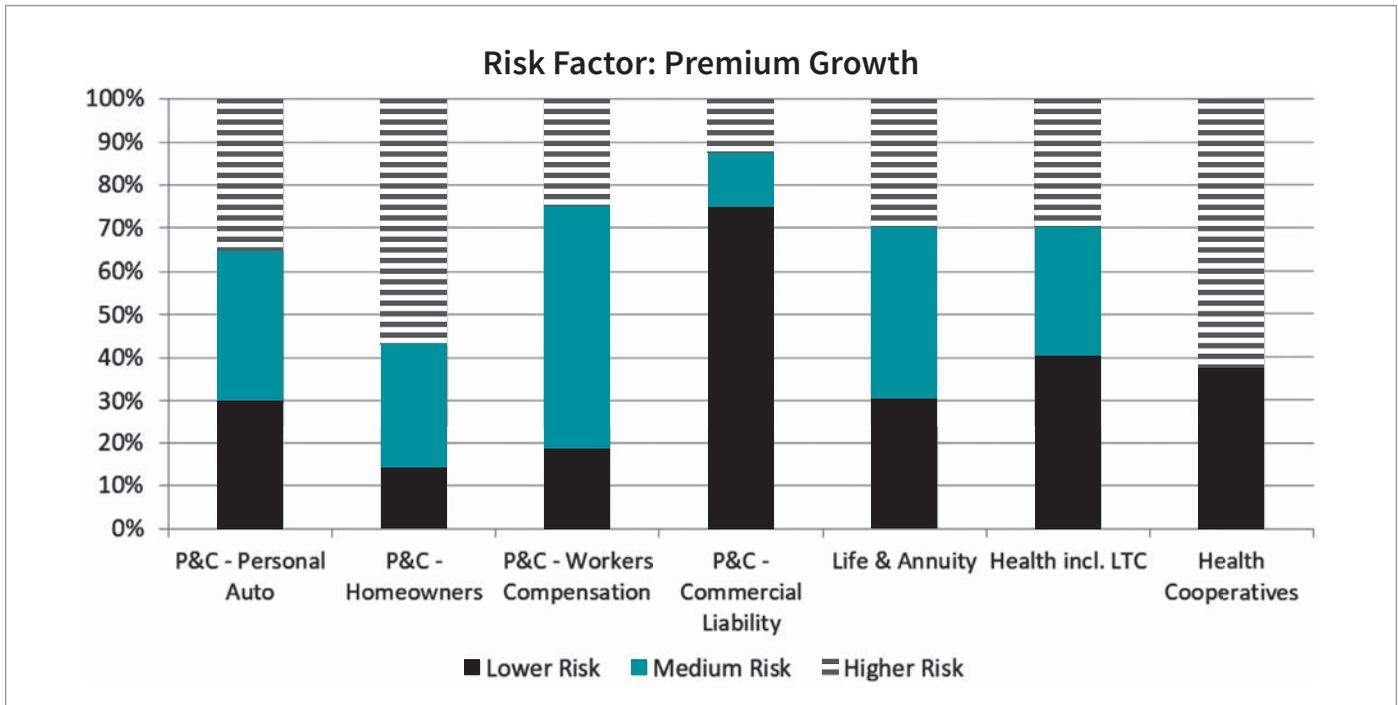
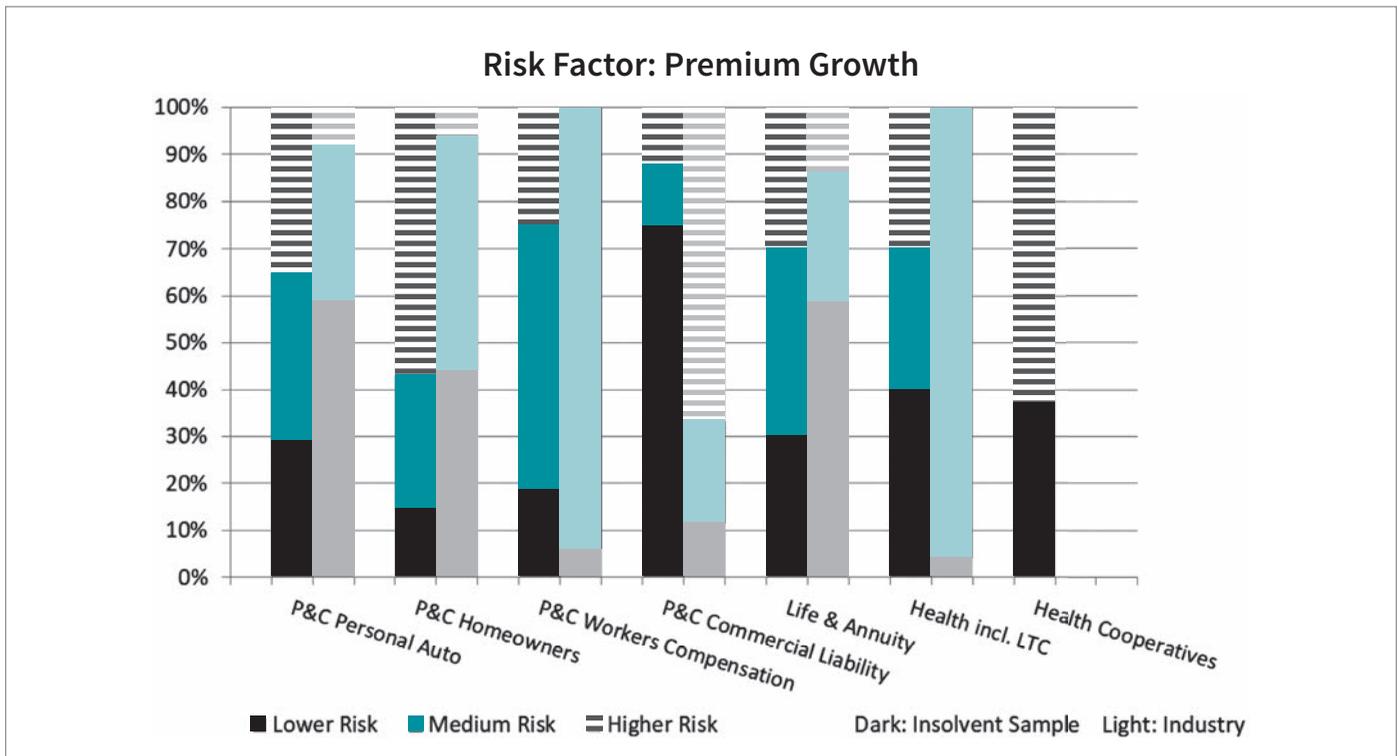


Figure 4  
View 2: Insolvent And Industry Sample



compared to the full industry set of companies in terms of premium growth and risk. This is shown in Figure 4 in which the insolvent sample and the industry sample are compared side by side with the industry shown in a lighter shade. The comparison shows a higher risk associated with premium growth for nearly all cohorts in the insolvent sample, which suggests this risk is a strong indicator of insolvency.

We used data derived from SNL Financial to develop these results for the U.S. companies, both for the insolvent cohorts and their industry counterparts.

## CASE STUDIES

In the earlier phases of the review, the focus was on analyzing the root causes of insurer impairment and insolvency across property and casualty, life and annuity, and health insurance in the United States and Canada with emphasis on potential indicators which may facilitate earlier intervention for companies at risk of becoming impaired or insolvent. In the later phases of the analysis, the focus shifted to specific case studies, where each case study targeted in-depth research on “what went wrong” for a life, health, and P&C insurance company. The goal of the case studies was to provide insight into potential actions that could be taken by actuaries and other insurance industry practitioners to help prevent or mitigate future insolvencies arising from similar circumstances.

Some insurer insolvencies point to one primary causal driver, such as fraud. However, a majority of the insolvencies evolved from multiple risk factors. The most significant of those were identified as financial risk factors. We also identified some of the key regulatory activities that now exist (or are under development) that may help detect issues that were present in some of the case studies under review. The regulatory activities include (but are not limited to) risk-focused examinations, regulatory stance on rate increases, reserve increase requirements, requirements for corporate governance, NAIC filing requirements for LTC on stand-alone basis, changes in opining actuary, and morbidity risk in capital.

## KEY FINDINGS

During the course of the study, we found that financial risk factors were better indicators of insolvency when compared to the industry, while demographic risk factors showed a weaker relationship between the insolvent sample and the industry.

Here are a few examples of our analysis of financial and demographic risk factors:

For purposes of this study, we considered negative operating cash flow as indicative of **liquidity risk**. The companies were

ranked by the number of years within the last five during which negative operating cash flow occurred. A review of liquidity in the insolvent sample as compared to the industry sample showed a higher risk mix in the insolvent sample, with the exception of commercial liability insurers. This suggested that liquidity challenges may be a significant indicator of insolvency risk.

Significant **premium growth** in short time frames may be problematic for any insurer. Industry studies from the PACICC found that rapid growth was a primary cause of 17 percent and a contributing cause to 43 percent of P&C insolvencies in Canada. The review of premium growth as a risk factor among cohorts within the insolvent sample shows a varied risk mix. The homeowners and health cooperative cohorts have the largest proportion of high-growth companies within the insolvent companies. A review of premium growth in the insolvent sample relative to the industry sample shows a higher risk mix in the insolvent sample, with the exception of commercial liability insurers. This suggests that growth is a strong indicator of insolvency risk.

**Company size** was based on the largest net written premium amount observed in the last five full years of company operations for the insolvent sample. The study **did not** categorize small companies as indicative of higher risk from an insolvency perspective. The analysis also indicated that when comparing to the broader industry results, company size did not appear to clearly indicate relative insolvency risk as there was no observable pattern of small or large companies predominating the insolvent cohorts relative to the industry counterparts. Company size may, therefore, be less predictive of future insolvency as compared to other financial risk factors.

Figure 5 (pg. 26) provides a summary of the risk factors for which we observed noticeable differences in the insolvent cohorts relative to their industry counterparts.

Consistent with the U.S. review, Canadian studies by the PAC-ICC showed growth and profitability (pricing) as leading factors in insolvency. They also highlighted foreign parent as a significant factor, which was less evident in the review of the U.S. companies.

As a result of the study, including the case studies, we observed key areas in which increased actuarial involvement may support earlier identification of some of the challenges that lead to insurer insolvencies:

- Increased involvement of actuaries in the surveillance process, which includes (but is not limited to) identifying issues such as underpricing and aggressive rate increase assumptions used in reserve adequacy analysis.

Figure 5  
Risk Factors Noticeable In Insolvencies

	P&C Personal Auto	P&C Homeowners	P&C Workers Compensation	P&C Commercial Liability	Life & Annuity	Health incl. LTC	Health Cooperatives
Premium Growth	X	X	X	X	X	X	X
Profitability		X	X	X		X	X
Liquidity	X	X	X		X	X	X
Investment	X	X	X	X	X		
Leverage			X		X	X	
Risk-Based Capital	X	X		X	X	X	X
Company Size (S/M/L)	X				X		
Number of Years in Operation		X					X
Geographic Concentration			X				X
Product Concentration		X	X	X			

- Improved practices and disclosures regarding the assumptions used in assessing reserve adequacy, which includes providing enhancements to Actuarial Standards of Practice, developing educational materials and updating practice notes.
- Increased coordination and consistency of actuarial requirements across states, including items such as additional disclosures to consumers, additional requirements for rate filings, experience tracking and additional requirements for testing adequacy of LTC reserves.<sup>2</sup>

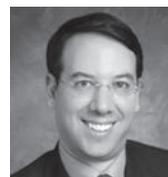
### CONCLUSION

The study was intended to educate insurance professionals on historical insurer impairments and insolvencies and possible future prevention indicators. It explored potential risk factors insurance professionals can monitor to mitigate future insolvent situations.

Overall, the analysis suggested that the financial risk factors (premium growth, profitability, liquidity, investment, leverage and risk-based capital) were useful indicators for insolvency. The financial risk factors in the insolvent sample analyzed generally showed a greater proportion in higher risk brackets when compared to the industry. The demographic risk factors analyzed (company size, number of years in operation, geographic concentration and product concentration) showed a less

significant relationship between risk levels within the insolvent sample and the industry.

We would like to thank the sponsoring organizations and the project oversight group for their contributions and support throughout this research process. ■



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### ENDNOTES

- 1 <https://www.soa.org/resources/research-reports/2018/actuarial-review-insurer-insolvencies/>
- 2 The NAIC recently adopted Actuarial Guideline 51 *The Application of Asset Adequacy Testing To Long-Term Care Insurance Reserves*, effective with December 31, 2017 annual statements.

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# A Few Thoughts About Tax Reform

By Pam Hutchins and Mark Rowley

*Editor's note: This article was originally published in Small Talk, issue 49, March 2018. Reprinted by permission. Updated information added.*

**W**ith tax reform passing in December 2017, insurance companies had some extra work to do for year-end 2017:

- The net deferred tax assets had to reflect the new tax law.
- Tax reserves had to be calculated the old way and the new way to be used in the net deferred tax calculation.
- Appointed actuaries had to decide what to do with asset adequacy analysis.

As with most new legislation or regulations, the new tax law had to be interpreted, and not all the details were clear. Actuaries and accountants used their best interpretations of the law to do their year-end work.

In this article, we summarize what is our best understanding, as of the date this article is written, of key provisions of the tax law. Our understanding of how to interpret the tax law will no doubt change as time goes on and certain provisions are clarified.

1. Small life insurance company deduction is repealed beginning with 2018 tax returns. The old law allowed lower marginal tax rates for certain amounts of taxable income if companies met the asset qualification test.
2. Capitalization and amortization of the policy deferred acquisition costs (DAC tax) rates increase, starting with 2018 premiums:
  - a. Nonqualified annuities go from 1.75 percent to 2.09 percent.
  - b. Group life goes from 2.05 percent to 2.45 percent.
  - c. All other business goes from 7.70 percent to 9.20 percent.



For companies that have used a 10-year amortization, the amortization period will increase to 15 years. However, companies can still use a five-year amortization for the first \$5 million of specified policy acquisition expenses. Some small companies only ever have to use the five-year amortization.

3. Adjustments for changes in basis to tax reserves after 2017 (strengthening or weakening) go from a 10-year amortization to four years. Companies may also need to review what results in a change in basis that must be spread.
4. Life insurance tax reserves calculation is changed. For non-variable contracts, it is, as of Jan. 1, 2018, the greater of:
  - a. The contract's net surrender value (cash value) or
  - b. 92.81 percent x (statutory reserve minus statutory net due and deferred premium).

However, the tax reserve cannot be greater than the statutory reserve and cannot include asset adequacy or deficiency reserves.

Our interpretation is that the 92.81 percent applies to (statutory reserve minus statutory net due and deferred premium). However, there are other interpretations that call for applying the 92.81 percent to just the statutory reserve. It is an important difference!

Our interpretation is that the contract's cash value is compared to 92.81 percent x (statutory reserve minus statutory

net due and deferred premium). However, as noted above, there are other interpretations that would compare it to 92.81 percent of the statutory reserve. Another important difference!

If your statutory reserves are not calculated using the method required by the minimum standards (CRVM, CARVM, XXX, etc.) in effect, it is our interpretation that the statutory reserves used for this calculation will need to be adjusted to use the appropriate method.

If the appropriate method is used, you may use any mortality or interest assumption allowed by the method as defined in the statutory Standard Valuation Law adopted by the NAIC.

5. The difference between old and new tax reserves as of Dec. 31, 2017, is amortized into taxable income over eight years, starting with the 2018 tax return.

For asset adequacy analysis, some actuaries will at least perform sensitivity analysis projecting the new tax reserves and marginal tax rates. This could be difficult as actuarial modeling software isn't set up to calculate tax reserves in this way. Some actuaries are doing the sensitivity but approximating the new tax reserve calculations. ■



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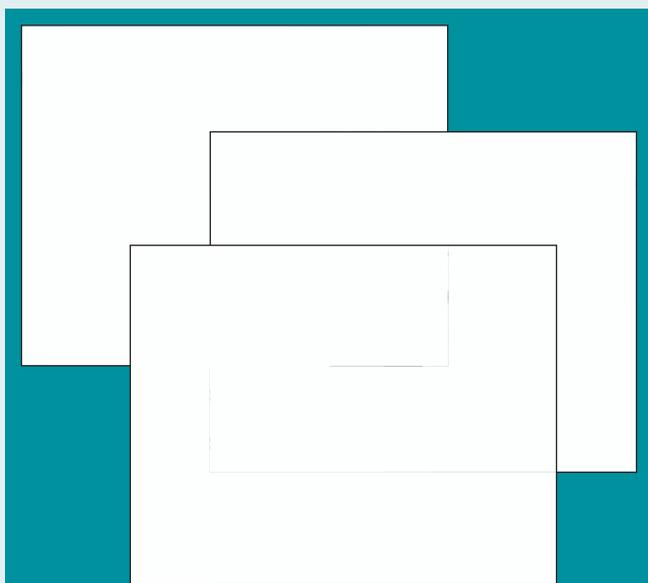


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## SOA Regulatory Resource Tool

The Society of Actuaries has developed a regulatory resource tool on the SOA website by practice area—Health, Life & Annuity, and LTC. The resource, while U.S. focused, is intended to provide links to other regulatory jurisdictions. The links are to original regulatory source information and are not intended to provide guidance, summary information or interpretations. SOA staff members and volunteers meet periodically, typical monthly, to keep the site current.

Feedback on the site has been extremely favorable. We continue to receive comments that many wish they had known about the resource sooner, so we will continue to seek out venues to promote awareness of this tool.



[www.soa.org/resources/regulatory-resource/default/](http://www.soa.org/resources/regulatory-resource/default/)

Joe Wurzburger of the Society of Actuaries developed a short video providing an overview of the site. Links to Joe's video and the regulatory resource tool are provided below. The video contains instructions on how to request routine updates and we highly recommend everyone sign-up.



<https://youtu.be/xlrPj6TsUA>

# Financial Reporting Research Update

By David Armstrong and Ronora Stryker

**R**esearch is a primary mission of the Financial Reporting Section and a significant use of our section dues revenue. Here is an update, as of April 2018, on projects in process and those recently completed.

## CURRENTLY IN PROCESS

The 2015 research report on Earnings Emergence Under Multiple Financial Reporting Bases is being expanded to examine an additional product and upcoming accounting changes. The original report looked at deferred annuities and term life insurance under US SAP, US GAAP, IFRS, CALM, and market-consistent balance sheet approaches. The expanded report will add universal life and make updates for principle-based U.S. statutory reserves, target changes to US GAAP, and the new IFRS for insurance products. The Financial Reporting Section is co-sponsoring this initiative with the Reinsurance Section. Work is in the late project stage.

“Simplified Methods for Principle-Based Reserve Calculations”—the project oversight group has selected the researcher and work is in the late project stage.

## COMPLETED IN 2018

“Survey of Waiver of Premium/Monthly Deduction Rider Assumptions and Experience”—this report summarizes the practices and assumptions used by different companies for waiver of premium and waiver of monthly deduction benefits. Survey topics included mortality, valuation and pricing, and may be valuable to companies as they prepare for a principle-based framework. The results were published in March. <https://www.soa.org/research-reports/2018/survey-waiver-premium-monthly-deduction-rider/>

## COMPLETED IN 2017

“PBA Change Attribution Analysis” this project studies the drivers of change in principle-based reserves. This project was published in August. An SOA webcast was also done at that time and the report was summarized in the December 2017 issue of this newsletter. <https://www.soa.org/research-reports/2017/2017-understand-vm-20-results/>



“Modern Deterministic Scenarios”—a review of possible deterministic scenario sets which could be useful to company management, regulators and rating agencies under PBA. This project was published in September and the report was summarized in the December 2017 issue of this newsletter. <https://www.soa.org/research-reports/2017/2017-modern-deterministic-scenarios/>

“Actuarial Model Governance: A Survey of Actuarial Modeling Governance and the Industry Evolution Report”—this is an update to the original 2012 report co-sponsored by the Financial Reporting and Modeling Sections. <https://www.soa.org/Research-Reports/2017/2017-01-actuarial-model-governance/>

## REQUEST FOR RESEARCH PROPOSALS

Do you have an idea for a research topic you would like to see the Financial Reporting Section consider for funding? If so, we want to hear from you! The Financial Reporting Section is seeking proposals for research projects that will produce valuable and useful information or tools for actuaries practicing in financial reporting and related functions. For more information, see the RFP on the section website: <https://www.soa.org/research-ops/life-insurance-annuities-fin-report/>. ■



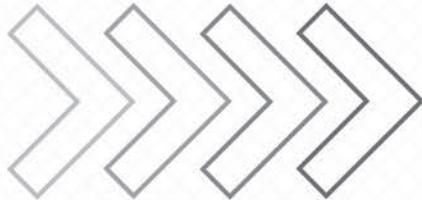
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